

CONSTRUCTION SEQUENCE

- CONTRACTOR SHALL ENSURE THAT ALL NECESSARY PERMITS HAVE BEEN RECEIVED AND THAT THOSE REQUIRED TO BE DISPLAYED ON-SITE ARE AVAILABLE.
- CONTRACTOR SHALL HOLD PRE-CONSTRUCTION MEETING AT LEAST 48 HOURS BEFORE THE ACTUAL START OF CONSTRUCTION.
- CONTRACTOR SHALL CONTACT CAROLINA ONE CALL AND ALL ENTITIES HAVING BURIED UTILITIES AT LEAST 72 HOURS PRIOR TO DIGGING OR AS DIRECTED AT THE PRE-CONSTRUCTION MEETING.
- CONTRACTOR SHALL MAINTAIN TRAFFIC AND SAFETY CONTROL MEASURES AT ALL TIMES ON THE PROJECT. (SEE TRAFFIC CONTROL.)
- CONTRACTOR SHALL INSTALL TEMPORARY CONSTRUCTION ENTRANCES (IF ANY) AT EACH POINT OF ACCESS TO STORAGE AND CONSTRUCTION AREAS.
- SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH PLANS AND BEFORE STARTING WORK.
- CONTRACTOR SHALL CLEAR RIGHT-OF-WAY IF NECESSARY.
- STOCKPILE RIP-RAP ON SITE AND INSTALL ALL OTHER EROSION CONTROL MEASURES WHERE THE WORK IS OCCURRING. THE CONTRACTOR SHALL NOT INSTALL EROSION CONTROL MEASURES IN AREAS WHERE THE WORK WILL NOT OCCUR FOR SOME TIME. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY THE CITY/PROJECT ENGINEER OR UPON RECOMMENDATION OF NC DEQ PERSONNEL AS CONDITIONS WARRANT.
- STABILIZATION FOR THIS PROJECT SHALL COMPLY WITH THE TIME FRAME GUIDELINES AS SPECIFIED BY THE NC06-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.
- CONTRACTOR SHALL COORDINATE ALL BLOW-OFFS AND TESTING WITH THE CITY ENGINEERING DEPARTMENT'S CONSTRUCTION ADMINISTRATOR AT LEAST 24 HOURS IN ADVANCE OF SUCH WORK. NOTIFY THE RESPONSE AREA FIRE DEPARTMENT IF EXISTING SYSTEM VALVES NEED TO BE SHUT OFF IN THE COURSE OF THE WORK.
- UPON COMPLETION OF THE INSTALLATION AND WITH APPROVAL OF NC DEQ-DLR, ALL EROSION CONTROL DEVICES EXCEPT FOR CREEK/STREAM BANK STABILIZATION SHALL BE REMOVED AND DISPOSED OF IN AN ACCEPTABLE MANNER. EACH SECTION SHALL BE SEEDED AT EARLIEST POSSIBLE DATE AFTER INSTALLATION OF PIPE, STRUCTURE, OR ACCESS.
- ONCE GROUND COVER IS FIRMLY ESTABLISHED, ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITH THE APPROVAL OF NC DEQ-DLR.
- CONTRACTOR SHALL REFERENCE SPECIAL CONDITIONS FOR JOB SEQUENCE AND OTHER DIRECTIONS, IF ANY. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH THE CITY ENGINEERING DEPARTMENT.

GENERAL NOTES

- ALL MATERIALS, EQUIPMENT, LABOR, AND WORKMANSHIP IS TO BE IN ACCORDANCE WITH AND SUBJECT TO THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY'S STANDARD SPECIFICATIONS; THE CITY OF CONCORD'S ORDINANCES, POLICIES, AND STANDARD SPECIFICATIONS, AND NCDOT STANDARD SPECIFICATIONS, AND THE NORTH CAROLINA ADMINISTRATIVE CODE FOR WASTEWATER COLLECTION AND WATER DISTRIBUTION SYSTEMS. IN THE EVENT OF CONFLICT BETWEEN THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY'S STANDARD SPECIFICATION; THE CITY OF CONCORD'S ORDINANCES, POLICIES, AND STANDARD SPECIFICATIONS, AND NCDOT STANDARD SPECIFICATIONS, OR THE NORTH CAROLINA ADMINISTRATIVE CODE, THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY.
- ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL CONFORM TO THE LATEST STANDARDS OF THE N.C. SEDIMENTATION POLLUTION CONTROL ACT AND APPLICABLE LOCAL AND FEDERAL REQUIREMENTS.
- CONTRACTOR SHALL NOTIFY THE CONSTRUCTION ADMINISTRATOR OF THE CITY OF CONCORD ENGINEERING DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF BEGINNING WORK.
- INDIVIDUAL WATER, GAS, SEWER, TELEPHONE, AND CABLE SERVICES MAY OR MAY NOT BE SHOWN ON THE PLANS. CONTRACTOR TO CONTACT APPROPRIATE AGENCY FOR FIELD LOCATIONS.
- CITY OF CONCORD ELECTRIC, WATER, AND SEWER DEPARTMENT PERSONNEL WILL ASSIST THE CONTRACTOR IN LOCATING ALL CITY OF CONCORD UTILITY SERVICES AND LINES.
- IF MAILBOX PULL-OFF AREAS ARE DISTURBED, CRUSHED STONE STABILIZER SHALL BE PLACED WITH SUFFICIENT LENGTH TO ACCOMMODATE VEHICULAR TRAFFIC. THESE AREAS SHALL BE MAINTAINED FOR THE ONE-YEAR WARRANTY PERIOD. THE COST OF THESE ITEMS SHALL BE INCLUDED IN THE COST OF LAYING PIPE AND OR REPLACING CULVERTS.
- THIS PROJECT IS SUBJECT TO 100 YEAR FLOOD PER FIRM MAP 3710562200K, NOVEMBER 16, 2018.
- FIRE HYDRANT EXTENSIONS, IF NEEDED, SHALL BE INCLUDED IN THE COST OF THE HYDRANT INSTALLATION.
- GATE OR BUTTERFLY VALVES, BLOW-OFFS, AND FIRE HYDRANTS MAY BE FIELD ADJUSTED 50 FEET IN EITHER DIRECTION WITH THE PERMISSION OF THE ENGINEERING AND WATER RESOURCES DEPARTMENTS.

RIGHT-OF-WAY NOTES

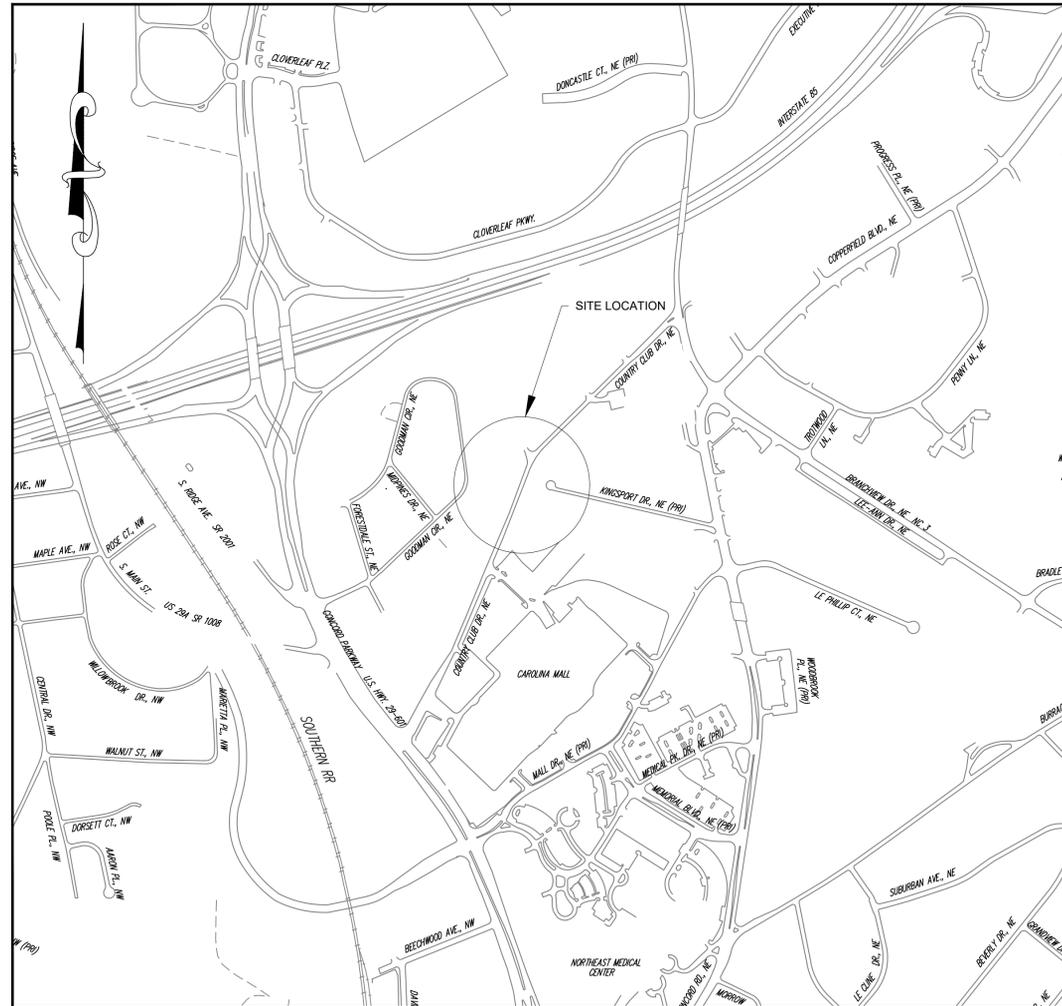
- RIGHT-OF-WAY LINES AND PROPERTY LINES ARE SHOWN ON THE DESIGN DRAWINGS AND ARE FOR REFERENCE ONLY. FOR EXACT LOCATIONS REFER TO THE SURVEY PLATS BY THE CITY OF CONCORD'S CONSULTING REGISTERED LAND SURVEYOR OR BY THE CITY SURVEYOR.
- REFER TO STANDARDS AND SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION FOR FURTHER DETAILS CONCERNING THE RIGHT-OF-WAY.

TRAFFIC CONTROL

- THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR WORK ZONE TRAFFIC SAFETY AND CONTROL.
- ALL WORK ZONE TRAFFIC CONTROL DEVICES AND OPERATIONS USED ON STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY OR INCIDENT MANAGEMENT SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS IN THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD).
- ALL TRAFFIC/SAFETY CONTROL DEVICES SHALL BE IN GOOD REPAIR AND SHALL BE POSITIONED AT ALL TIMES IN THE APPROPRIATE LOCATIONS FOR THE WORK OPERATION. THE CONTRACTOR SHALL CAREFULLY MONITOR SITE CONDITIONS SUCH AS LIGHT, WEATHER, TRAFFIC VOLUME, ETC. TO ENSURE THAT ALL TRAFFIC/SAFETY CONTROL MEASURES ARE OPERATING EFFECTIVELY.

CITY OF CONCORD CONCORD, NORTH CAROLINA

COUNTRY CLUB DR. CULVERT REPLACEMENT PROJECT # :2021-043



VICINITY MAP
SCALE: N.T.S.

NARRATIVE DESCRIPTION

THIS PROJECT CONSISTS OF THE REMOVAL OF 3 EXISTING 72" PIPES AND THE INSTALLATION OF 2 CONCRETE BOX CULVERTS 78' LF AND 12'Wx11'H, AND APPROXIMATELY 181' OF 18" RCP STORM PIPE AND 200' OF 24" RCP STORM PIPE ALONG WITH COORDINATION WITH UTILITY AGENCIES ON OTHER UTILITY ADJUSTMENTS BY OTHERS, ROADWAY PAVEMENT RECONSTRUCTION, AND OTHER APPURTENANCES ALONG COUNTRY CLUB DR., CONCORD NC.

THE EFFECTIVE AREA OF GROUND DISTURBANCE IS 1.64± ACRES. THE WORK IS TO PROCEED IN SUCH A MANNER AS TO LIMIT THE AMOUNT OF GROUND DISTURBANCE BY HAVING ONLY ONE SECTION OF THE DITCH OPEN AT A TIME THEREBY REDUCING THE POTENTIAL FOR LARGE QUANTITIES OF SEDIMENT TO BE TRANSPORTED OFF SITE. SEEDING OF DENuded AREAS SHALL BE DONE AS SOON AS POSSIBLE, BUT IN NO CASE LONGER THAN 10 DAYS AND IN ACCORDANCE WITH THE SPECIFICATIONS GIVEN IN THE PLANS. REMOVAL OF ALL SEDIMENTATION AND EROSION CONTROL DEVICES SHALL ONLY BE DONE AFTER APPROVAL HAS BEEN COORDINATED WITH NCDEQ - DIVISION OF ENERGY, MINERAL AND RESOURCES AND THE CITY OF CONCORD.

LOCATION AND PROTECTION OF ALL UTILITIES IN THE WORK AREA SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. IN THE EVENT OF AN UNFORESEEN CONFLICT, THE CONTRACTOR SHALL NOTIFY THE CITY OF CONCORD ENGINEERING DEPARTMENT IMMEDIATELY.

ALL TRAFFIC CONTROL AND SAFETY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CONDUCTED IN STRICT ACCORDANCE WITH THE LATEST REVISION OF PART IV OF THE M.U.T.C.D., NCDOT, AND ALL OTHER STATE AND FEDERAL REGULATIONS. COMPLETION AND ACCEPTANCE OF THE WORK IS ANTICIPATED TO BE SPRING OF 2023.

LEGEND

- PROPOSED SEWER LINE, MANHOLE & CLEAN-OUT
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED BLOW-OFF
- SEDIMENT FENCING
- DA-GLO ORANGE PERSONNEL FENCING
- PROPOSED ENCASEMENT
- EXISTING SEWER AND MANHOLE
- EXISTING SEWER FORCE MAIN
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING TELEPHONE (OVERHEAD OR UNDERGROUND)
- EXISTING ELECTRIC (OVERHEAD OR UNDERGROUND)
- PROPERTY LINE AND IRON PIN
- TEMPORARY CONSTRUCTION EASEMENT
- RIGHT OF WAY/PERMANENT EASEMENT
- WATERWAY/DITCH LINE
- EXISTING BARBED WIRE FENCE
- EXISTING WOVEN WIRE FENCE
- EXISTING CHAIN LINK FENCE
- TREE/WOODS LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING WELL
- EXISTING TELEPHONE/POWER RISER
- EXISTING LIGHT POLE
- EXISTING POWER POLE/GUY WIRE
- EXISTING STREET OR LOCATION SIGN
- EXISTING CONCRETE R/W MONUMENT
- BENCHMARK/TEMPORARY BENCHMARK
- EXISTING RCP OR CMP
- EXISTING MAILBOX

DRAWING INDEX

SHEET	DESCRIPTION
SHEET 1	PROJECT NARRATIVE, NOTES, LEGEND, SITE MAP
SHEET 2	EXISTING CONDITIONS
SHEET 3	EROSION CONTROL PLAN
SHEET 4	DEMOLITION PLAN
SHEET 5	CULVERT PLAN & PROFILE
SHEET 6	UPSTREAM CULVERT PLAN & PROFILE
SHEET 7	DOWNSTREAM CULVERT PLAN & PROFILE
SHEET 8	ROADWAY PLAN & PROFILE
SHEET 9-11	STORM DRAINAGE PLAN & PROFILE
SHEET 12-15	ROADWAY CROSS SECTIONS
SHEET 16	WATER PLAN
SHEET 17	GUARDRAIL PLAN
SHEET 18-20	EROSION CONTROL DETAILS
SHEET 21	CULVERT DETAILS
SHEET 22	STREAM STANDARD DETAILS
SHEET 23	STREET DESIGN DETAILS
SHEET 24	STORM DRAINAGE DETAILS
SHEET 25	WATER DETAILS
SHEET 26	GUARDRAIL STANDARD DETAILS
SHEET 27	TRAFFIC CONTROL PLAN



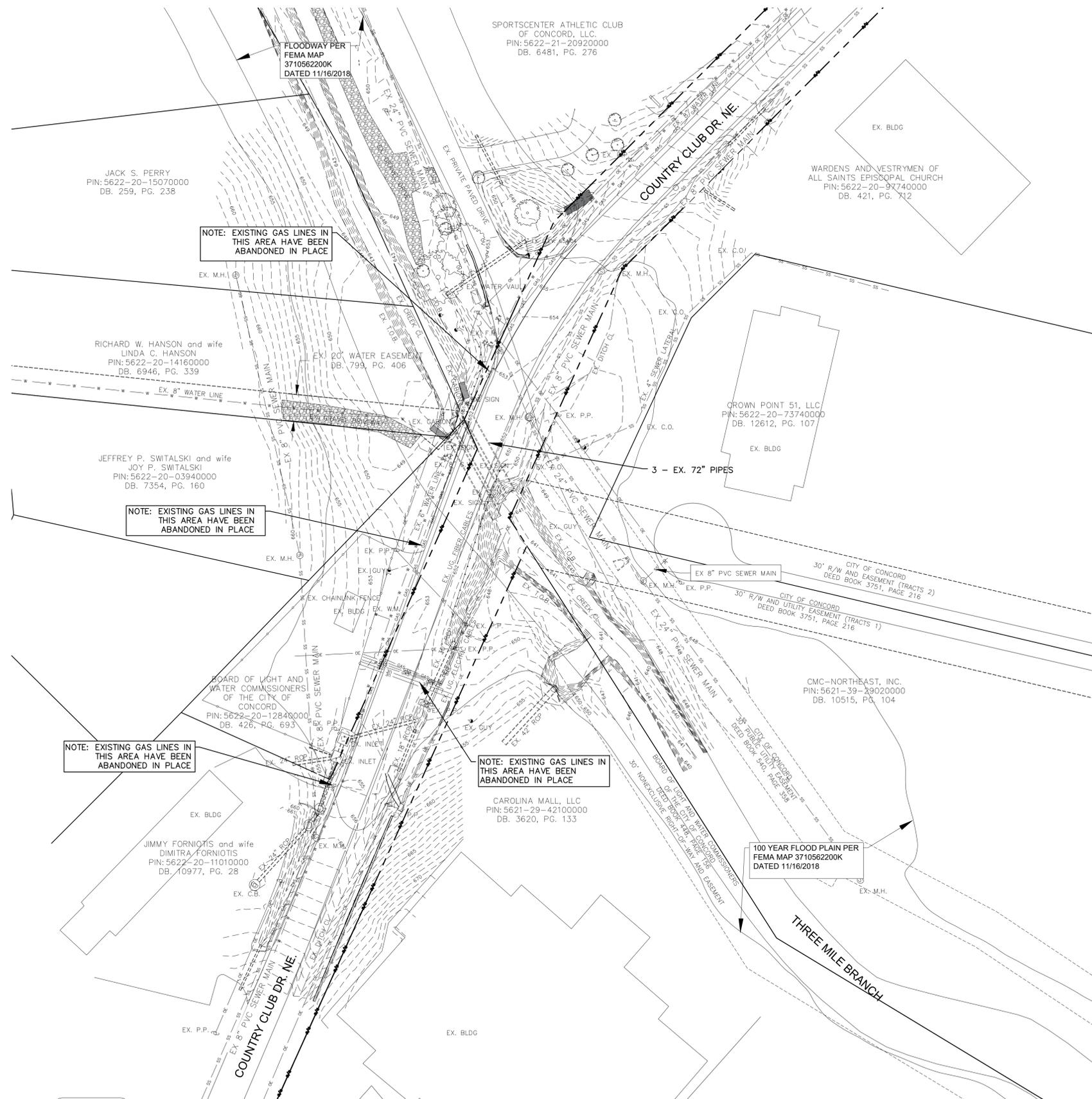
PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



Engineer's Seal

Surveyor's Seal

REV. #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL, FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL, FOR BIDDING PURPOSES	BCC



NOTE: EXISTING GAS LINES IN THIS AREA HAVE BEEN ABANDONED IN PLACE

NOTE: EXISTING GAS LINES IN THIS AREA HAVE BEEN ABANDONED IN PLACE

NOTE: EXISTING GAS LINES IN THIS AREA HAVE BEEN ABANDONED IN PLACE

NOTE: EXISTING GAS LINES IN THIS AREA HAVE BEEN ABANDONED IN PLACE

PLAN
SCALE: 1" = 40'

PROTECTION OF EXISTING UTILITIES
THE CONTRACTOR SHALL CONTACT THE APPROPRIATE AGENCY FOR THE EXACT FIELD LOCATIONS OF ALL WATER, SEWER, ELECTRIC, TELEPHONE, TELEVISION AND ANY OTHER UNDERGROUND AND OVERHEAD UTILITY BEFORE STARTING CONSTRUCTION. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE CONTRACT DRAWINGS IS NOT TO BE CONSIDERED AS THE INDICENCE OF A DEFINITE LOCATION OF EXISTING UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF WORK.

THE FOLLOWING LISTING OF UTILITY COMPANIES (WHICH MAY OR MAY NOT BE COMPLETE) MAY HAVE EXISTING UNDERGROUND OR OVERHEAD UTILITIES IN THE CONTRACT VICINITY:

COMPANY NAME	OFFICE	AFTER HOURS EMERGENCY
Amtrak	N/A	1-800-331-0008
AT&T	1-878-627-5335	1-800-252-1133
Cabarrus County Emergency Mgmt	704-920-2143	704-920-3000
Carolina Water - Utilities Inc. (Zenosa Acres)	704-525-7900	704-525-7900
City of Concord Electric Systems	704-920-5315	704-920-5555
City of Concord Emergency Mgmt	704-920-5528	704-920-5555
Colonial Pipeline Company	704-392-8610	704-392-8610
CSX Railroad	N/A	1-800-232-0144
Duke Energy	1-800-769-3766	1-800-769-3766
NC Dept. of Transportation	704-962-3104	704-986-3700
NC One Call Center Area Rep	1-336-855-3760	1-800-632-4949
Norfolk Southern Railway	N/A	1-800-453-2530
North Carolina Railroad Company	919-954-7601	N/A
Piedmont Natural Gas (aka NONG)	704-364-3120	1-800-752-7504
Plantation Pipeline	N/A	1-800-510-5678
Dominion Energy	704-810-3208	N/A
Sprint Embargo	N/A	1-888-723-8010
Terra Warner Cable Concord	704-378-2856	704-378-2626
Union Power	N/A	1-800-922-8840
UNIQUEL Locator Concord	704-864-8333	1-800-635-4949
Water & Sewer Authority of Cabarrus Co.	704-786-1783	704-786-4164
Westinghouse	704-722-0000	1-800-805-6669
NOTE: SOME OF THE ABOVE COMPANIES DO NOT SUBSCRIBE TO CAROLINA ONE CALL (FORMERLY 11000)		
NORTH CAROLINA ONE CALL		1-800-632-4949



PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



Surveyor's Seal

COUNTRY CLUB DR. CULVERT REPLACEMENT EXISTING CONDITIONS PROJECT # : 2021-043

REV #	DATE	DESCRIPTION
0	09/29/22	FINAL FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL, FOR BIDDING PURPOSES

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 2 OF 27



JEFFREY P. SWITALSKI and wife
JOY P. SWITALSKI
PIN: 5622-20-03940000
DB. 7354, PG. 160

EX. 20' WATER EASEMENT
DB. 799, PG. 406

JACK S. PERRY
PIN: 5622-20-15070000
DB. 259, PG. 248

RICHARD W. HANSON and wife
LINDA C. HANSON
PIN: 5622-20-0441600000
DB. 694, PG. 389

JIMMY FORNIOTIS and wife
DIMITRA FORNIOTIS
PIN: 5622-20-11010000
DB. 10977, PG. 28

BOARD OF LIGHT AND
WATER COMMISSIONERS
OF THE CITY OF
CONCORD
PIN: 5622-20-12840000
DB. 26, PG. 693

TEMPORARY DIVERSION
PARABOLIC DITCH
DIMENSIONS:
100'Lx4'Wx1.5'D. USE
LINER NAG SC150BN OR
EQ. AND SEED WITH TALL
FESCUE

GRAVEL CONSTRUCTION
ENTRANCE, PER NCDOT
STD. 1607.01

PROP. INLET SEDIMENT
CONTROL DEVICE

CHECK DAMS @ 30FT

CHECK DAMS @ 30FT

COUNTRY CLUB DR. NE

SPORTSCENTER ATHLETIC CLUB
OF CONCORD, LLC.
PIN: 5622-21-20920000
DB. 6491, PG. 276

STABILIZE PROP DITCH WITH
RIP RAP PER PLAN SHEET 11 IN
A TIMELY MANNER

PROP. INLET SEDIMENT
CONTROL DEVICES

COUNTRY CLUB DR. NE

CMC-NORTHEAST, INC.
PIN: 5621-30-29220000
DB. 10515, PG. 104

GRAVEL CONSTRUCTION
ENTRANCE, PER NCDOT
STD. 1607.01

PROP. TOPSOIL STOCKPILE
AREA, SURROUND WITH SILT
FENCE

SAFETY FENCING

TEMPORARY DIVERSION
PARABOLIC DITCH
DIMENSIONS:
280'Lx4'Wx1.5'D. USE
LINER NAG SC150BN OR
EQ. AND SEED WITH TALL
FESCUE

TEMPORARY STABILIZED
OUTLET FOR PUMP AROUND
OPERATION PER DETAIL
SHEET 22

SEDIMENT REMOVAL DEVICE
FOR PUMP AROUND
OPERATION PER DETAIL
SHEET 22

CHECK DAMS @ 17FT

STREAM BUFFER,
WIDTH VARIES.

STREAM BUFFER,
WIDTH VARIES.

CAROLINA MALL, LLC
PIN: 5621-29-42100000
DB. 3620, PG. 133

100 YEAR FLOOD PLAIN PER
FEMA MAP 371056200K
DATED 11/16/2018

CROWN POINT 51, LLC
PIN: 5622-20-73740000
DB. 12612, PG. 107

WARDENS AND VESTRYMEN OF
ALL SAINTS EPISCOPAL CHURCH
PIN: 5622-20-97740000
DB. 421, PG. 712

NCDEQ-DWR APPROVED THE 401 WATER QUALITY CERTIFICATION FOR THIS PROJECT (DWR# 22-0222) ON FEBRUARY 18, 2022. USACE PROVIDED SECTION 404 AUTHORIZATION ON FEBRUARY 25, 2022 (SAW-2022-00323).

THE PROJECT MEETS THE NO-RISE REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY DIVISION OF EMERGENCY MANAGEMENT RISK MANAGEMENT NATIONAL FLOOD INSURANCE PROGRAM (NCFIP).

SEDIMENTATION AND EROSION CONTROL LEGEND

- TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT PER NCDOT STD. 1607.01
- SEDIMENT FENCE (SILT FENCE)
- STONE OUTLETS/SSCS BREAK
- CONSTRUCTION SAFETY FENCE/TREE PROTECTION FENCE
- TEMPORARY DIVERSION
- DROP INLET PROTECTION, FABRIC
- T.B.P. TO BE PROTECTED
- CHECK DAM

NOTES

1. REMOVAL OF TREES AND SHRUBS ARE TO BE MINIMIZED AS MUCH AS POSSIBLE. CONTRACTOR TO AVOID AND MINIMIZE DAMAGE TO THOSE TREES AND SHRUBS DETERMINED TO REMAIN.
2. STREAM AREAS IMPACTED DUE TO SITE DEWATERING ACTIVITIES SHALL BE REGRADED TO ITS PRECONSTRUCTION CONTOURS AND REVEGETATED WITH APPROPRIATE STREAM NATIVE SPECIES, SUCH AS "ELDERBERRY" (SAMBUCUS CANADENSIS), "SILKY DOGWOOD" (CORNUS AMOMUM), "SILKY WILLOW" (SALIX SERICEA), "BLUE FLAG IRIS", "SOFT RUSH", AND "LIZARD'S TAIL"
3. THE MIXING OF TOPSOIL AND SUBSOILS WITHIN THE WETLANDS ALONG UTILITY CORRIDOR SHALL BE MINIMIZED TO THE GREATEST EXTENT PRACTICAL. DURING EXCAVATION, THE SOILS SHALL BE PLACED ON FABRIC TO MINIMIZE IMPACTS WHENEVER POSSIBLE. TOPSOIL EXCAVATED FROM CONSTRUCTION AREA WILL BE PILED SEPARATELY FROM SUBSOILS AND WILL BE BACKFILLED ONLY AFTER THE SUBSOILS HAVE BEEN PLACED AND COMPACTED
4. HEAVY EQUIPMENT WORKING IN WETLANDS OR MUDFLATS MUST BE PLACED ON MATS, OR OTHER MEASURES MUST BE TAKEN TO MINIMIZE SOIL DISTURBANCE.
5. UNLESS OTHERWISE STATED IN PLANS, ALL SLOPES 4:1 AND STEEPER SHALL BE STABILIZED WITH BIODEGRADABLE SINGLE-NET STRAW BLANKET STABILIZATION MATTING.

AREA TO BE DISTURBED - 1.64 ACRES



PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



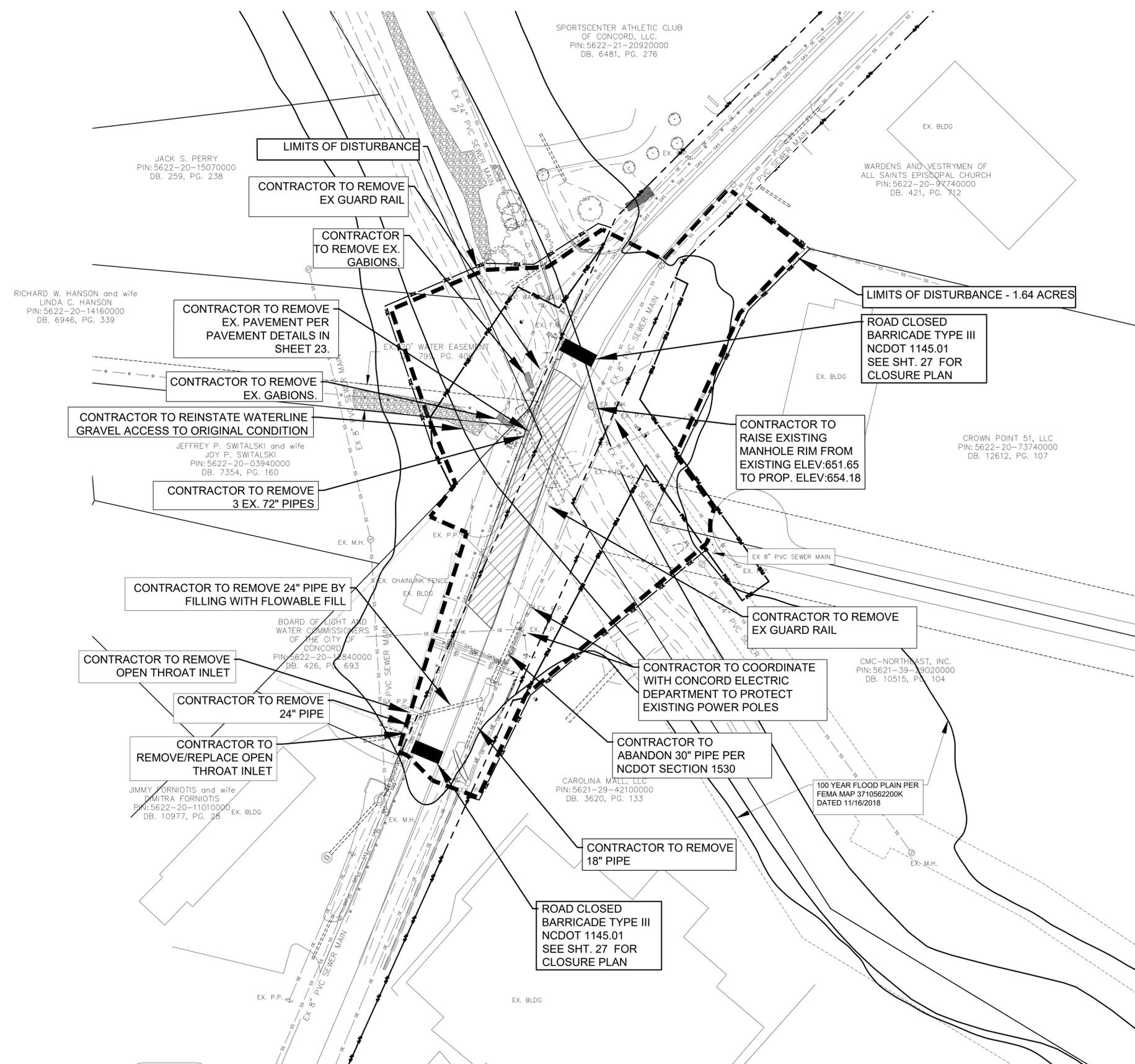
Engineer's Seal

Surveyor's Seal

COUNTRY CLUB DR.
CULVERT REPLACEMENT
EROSION CONTROL PLAN
PROJECT # : 2021-043

REV #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL, NOT FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL, FOR BIDDING PURPOSES	BCC

DESIGNED BY:	CGZ
DRAWN BY:	BCC
CHECKED BY:	EAB
SCALE:	AS SHOWN
DATE:	07/01/22
PROJECT NUMBER:	2021-043
SHEET:	3 OF 27



- NOTES**
1. REMOVAL OF TREES AND SHRUBS ARE TO BE MINIMIZED AS MUCH AS POSSIBLE. CONTRACTOR TO AVOID AND MINIMIZE DAMAGE TO THOSE TREES AND SHRUBS DETERMINED TO REMAIN.
 2. ALL EXISTING SERVICE CONNECTIONS TO REMAIN IN SERVICE AND TO BE PROTECTED DURING CONSTRUCTION. CONTRACTOR SHALL LOCATE AND MAKE PROVISIONS IN ACCORDANCE WITH THE CITY OF CONCORD FOR PROTECTION.
 3. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN INGRESS AND EGRESS TO ALL BUSINESSES AND DWELLINGS, AND EASY ACCESS TO FIRE HYDRANTS.
 4. CONTRACTOR SHALL REMOVE, PROTECT AND RESET ALL EX. ROAD SIGNS
 5. ALL NATURAL GAS LINES WITHIN DISTURBED AREA ARE ABANDONED PER THE GAS COMPANY

Concord
NORTH CAROLINA
High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

Professional Engineer Seal
10/27/22
Engineer's Seal

Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
DEMOLITION PLAN
PROJECT # : 2021-043**

REV #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL, FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL, FOR BIDDING PURPOSES	BCC

DESIGNED BY: GCZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 4 OF 27

PROTECTION OF EXISTING UTILITIES
THE CONTRACTOR SHALL CONTACT THE APPROPRIATE AGENCY FOR THE EXACT FIELD LOCATIONS OF ALL WATER, SEWER, ELECTRIC, TELEPHONE, TELEVISION AND ANY OTHER UNDERGROUND AND OVERHEAD UTILITY BEFORE STARTING CONSTRUCTION. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE CONTRACT DRAWINGS IS NOT TO BE CONSIDERED AS THE INDICENCE OF OR A DEFINITE LOCATION OF EXISTING UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF WORK.

THE FOLLOWING LISTING OF UTILITY COMPANIES (WHICH MAY OR MAY NOT BE COMPLETE) MAY HAVE EXISTING UNDERGROUND OR OVERHEAD UTILITIES IN THE CONTRACT VICINITY:

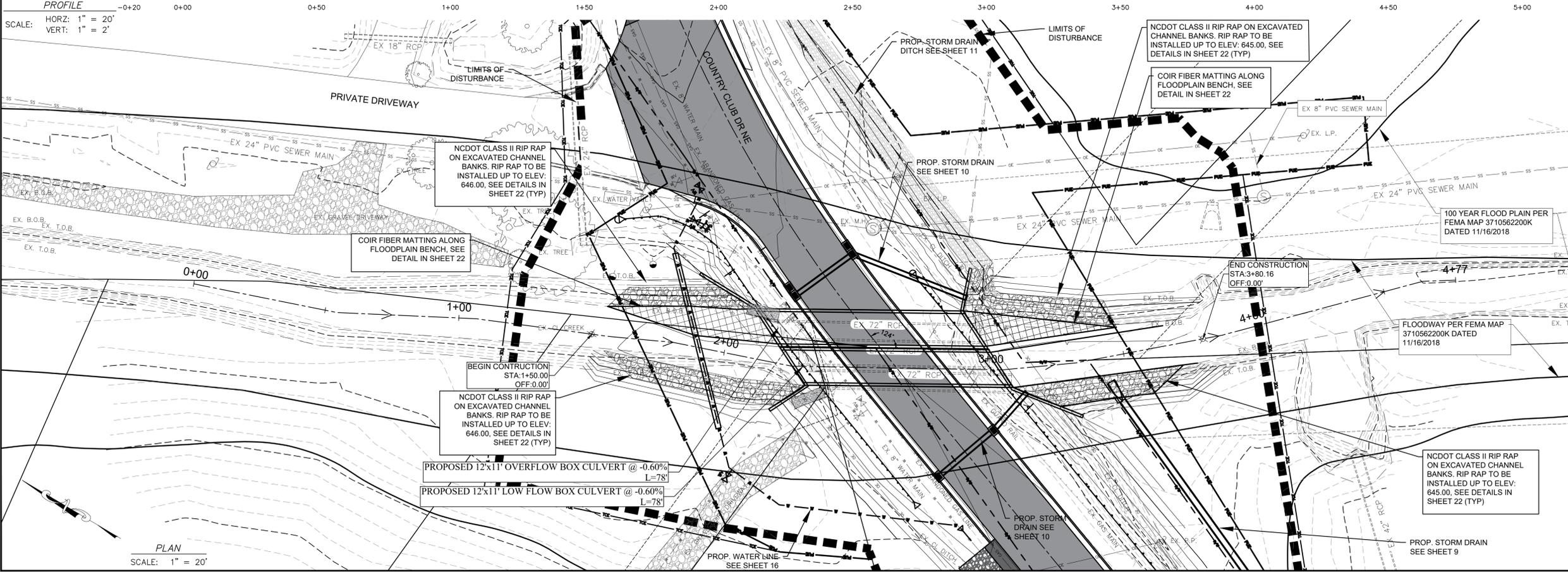
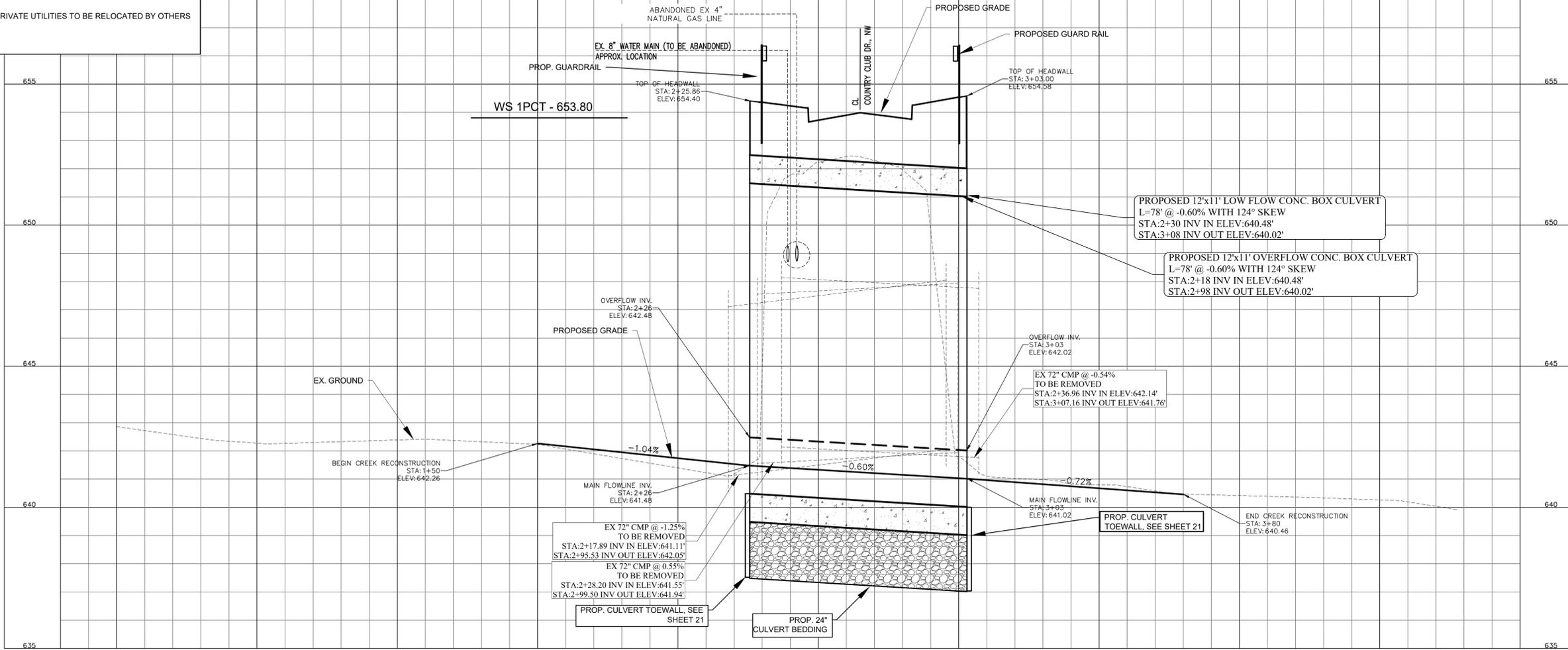
COMPANY NAME	OFFICE	AFTER HOURS EMERGENCY
Amtrak	N/A	1-800-331-0008
AT&T	1-878-627-5335	1-800-252-1133
Cabarrus County Emergency Mgmt.	704-920-2143	704-920-3000
Carolina Water - Utilities Inc. (Zenosa Acres)	704-525-7990	704-525-7990
City of Concord Electric Systems	704-920-5315	704-920-5555
City of Concord Emergency Mgmt.	704-920-5928	704-920-5955
Colonial Pipeline Company	704-392-8610	704-392-8610
CSX Railroad	N/A	1-800-232-0144
Duke Energy	1-800-769-3766	1-800-769-3766
NC Dept. of Transportation	704-962-5104	704-986-3700
NC One Call Center Area Rep.	1-336-855-3760	1-800-632-4949
Norfolk Southern Railway	N/A	1-800-453-2530
North Carolina Railroad Company	919-954-7601	N/A
Piedmont Natural Gas (aka NONG)	704-364-3120	1-800-752-7504
Plantation Pipeline	N/A	1-800-510-5678
Dominion Energy	704-810-3208	N/A
Sprint Embargo	N/A	1-888-723-8010
Texas Western Cable Concord	704-378-2856	704-378-2626
Union Power	N/A	1-800-922-8840
UNIQUEtel Locator Concord	704-864-8333	1-800-635-4949
Water & Sewer Authority of Cabarrus Co.	704-786-1785	704-786-4164
Westinghouse	704-722-2000	1-800-805-6659

NOTE: SOME OF THE ABOVE COMPANIES DO NOT SUBSCRIBE TO CAROLINA ONE CALL (FORMERLY 11000)

NORTH CAROLINA ONE CALL 1-800-632-4949

PLAN
SCALE: 1" = 40'

NOTE:
1. ALL PRIVATE UTILITIES TO BE RELOCATED BY OTHERS



PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



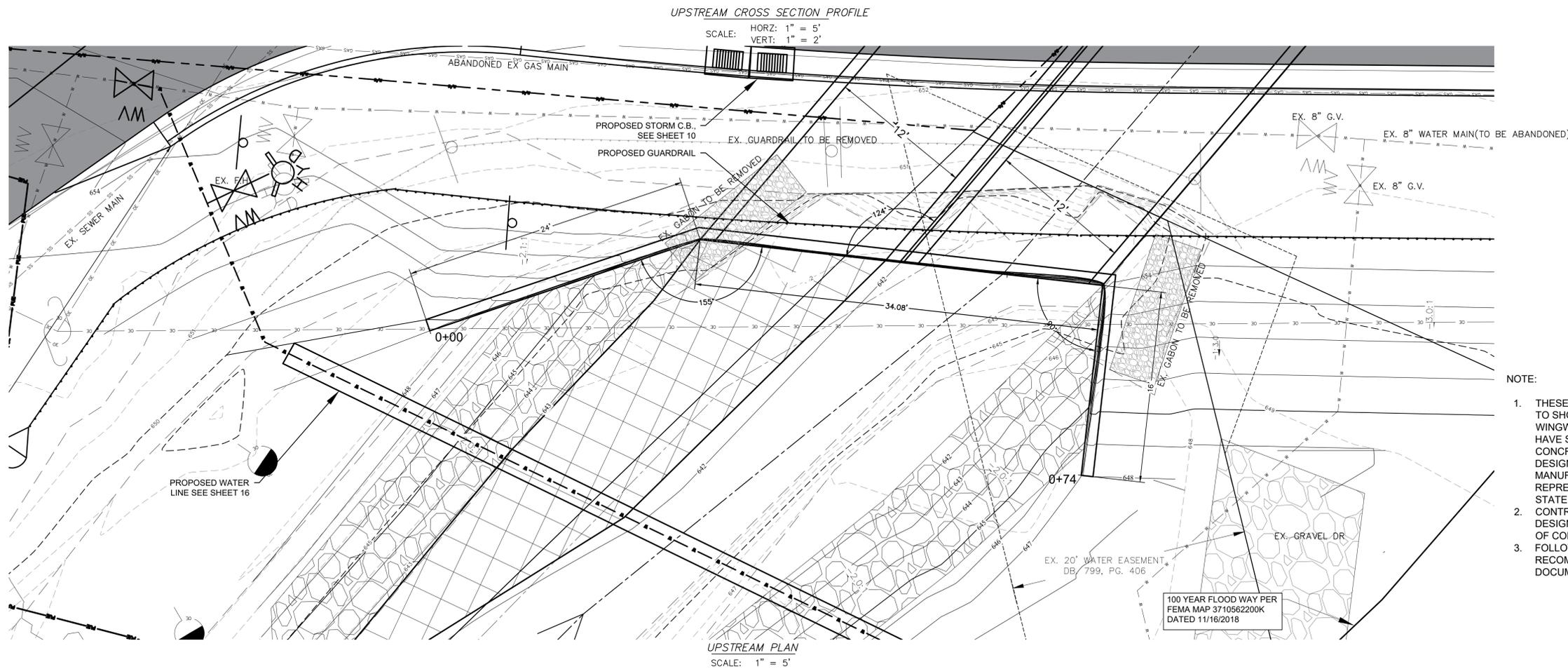
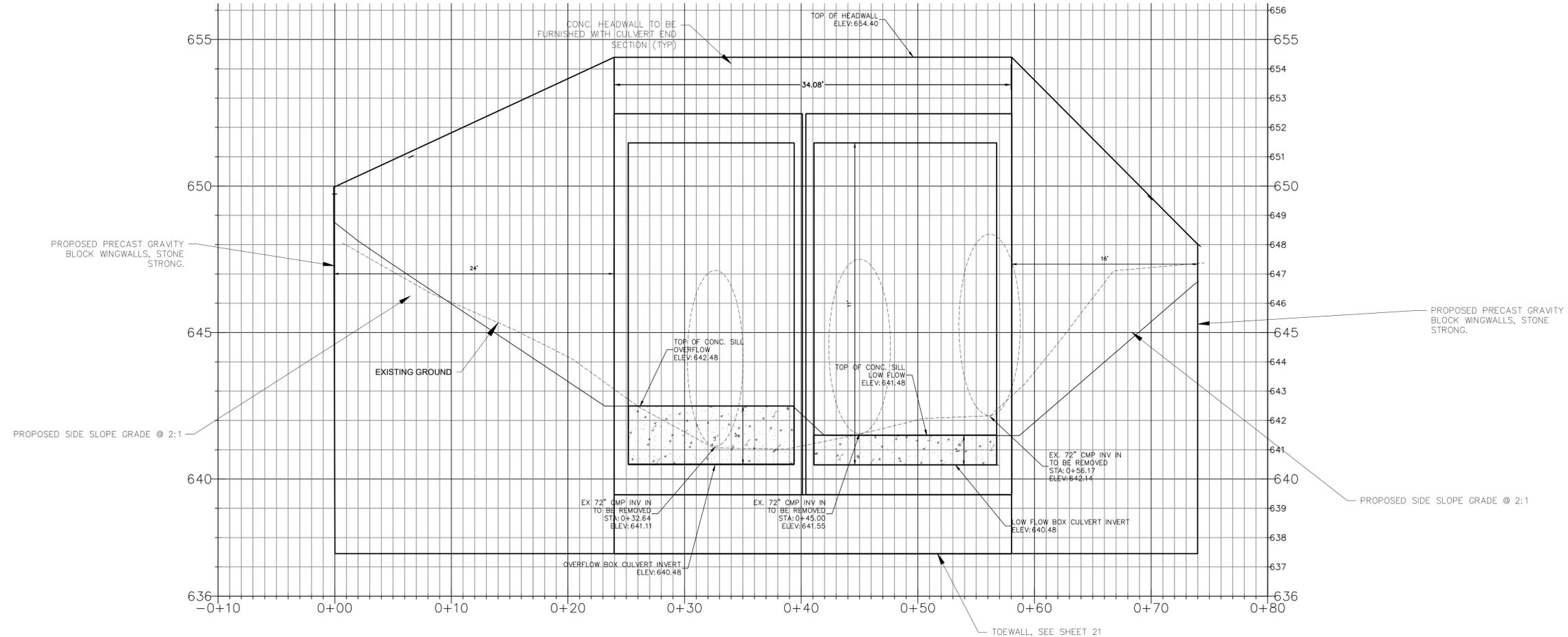
Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
CREEK PLAN & PROFILE**
PROJECT # : 2021-043

REV. #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL FOR BIDDING PURPOSES	BCC

DESIGNED BY:	CGZ
DRAWN BY:	BCC
CHECKED BY:	CGZ
SCALE:	AS SHOWN
DATE:	07/01/22
PROJECT NUMBER:	2021-043
SHEET:	5 OF 27

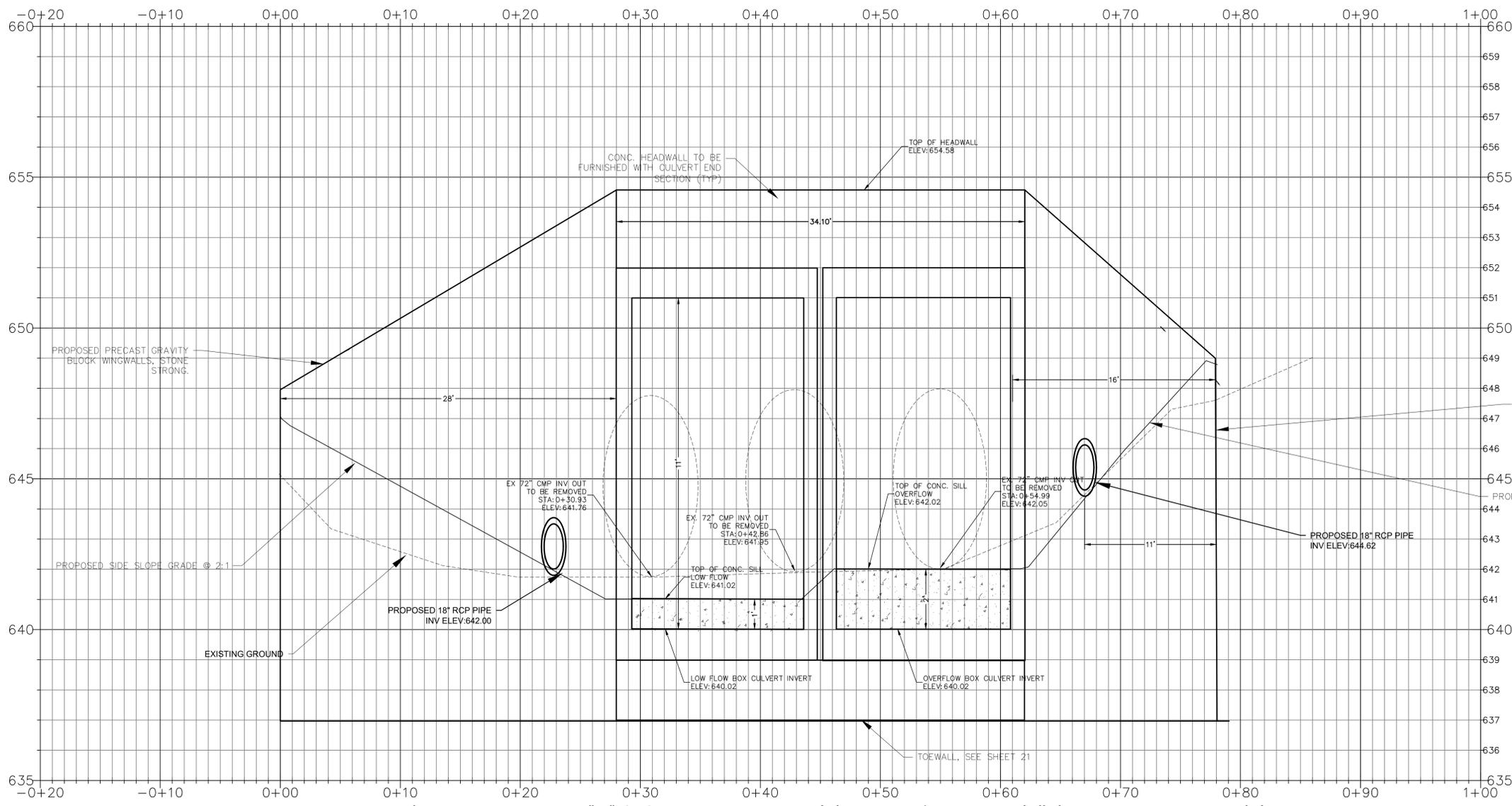
**COUNTRY CLUB DR.
CULVERT REPLACEMENT
UP-STREAM PLAN & PROFILE
PROJECT # : 2021-043**



- NOTE:
1. THESE PLANS AND DETAILS ARE MEANT TO SHOW THE GENERAL INTENT OF THE WINGWALL DESIGN. CONTRACTOR SHALL HAVE STONE STRONG PRECAST CONCRETE BLOCK GRAVITY WINGWALLS DESIGNED, DETAILED AND SPECIFIED BY MANUFACTURER OR MANUFACTURER'S REPRESENTATIVE LICENSED IN THE STATE OF NORTH CAROLINA.
 2. CONTRACTOR SHALL SUBMIT FINAL DESIGN AND CALCULATIONS TO THE CITY OF CONCORD FOR APPROVAL.
 3. FOLLOW GEOTECHNICAL RECOMMENDATIONS IN CONTRACT DOCUMENTS FOR WALL BEDDING.

REV. #	DATE	DESCRIPTION
0	09/22/22	FINAL FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL FOR BIDDING PURPOSES

DESIGNED BY:	CGZ
DRAWN BY:	BCC
CHECKED BY:	CGZ
SCALE:	AS SHOWN
DATE:	07/01/22
PROJECT NUMBER:	2021-043
SHEET:	6 OF 27



- NOTE:
1. THESE PLANS AND DETAILS ARE MEANT TO SHOW THE GENERAL INTENT OF THE WINGWALL DESIGN. CONTRACTOR SHALL HAVE STONE STRONG PRECAST CONCRETE BLOCK GRAVITY WINGWALLS DESIGNED, DETAILED AND SPECIFIED BY MANUFACTURER OR MANUFACTURER'S REPRESENTATIVE LICENSED IN THE STATE OF NORTH CAROLINA.
 2. CONTRACTOR SHALL SUBMIT FINAL DESIGN AND CALCULATIONS TO THE CITY OF CONCORD FOR APPROVAL.
 3. FOLLOW GEOTECHNICAL RECOMMENDATIONS IN CONTRACT DOCUMENTS FOR WALL BEDDING.
 4. STORM PIPE OUTLET ELEVATION CAN BE ADJUSTED TO BETTER FIT THROUGH WINGWALL UNIT LAYOUT. CHANGES SHALL BE APPROVED BY THE ENGINEER.

Concord
NORTH CAROLINA
High Performance Living

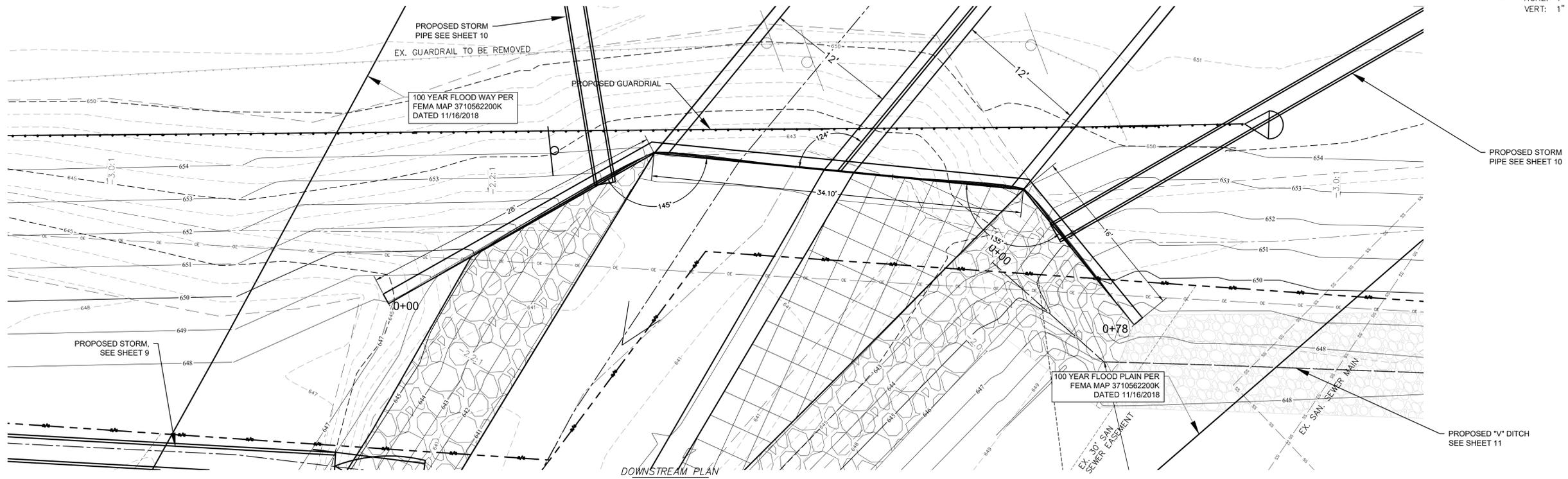
PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

Carolina Professional Seal
SEAL
044150
ENGINEER
GARCIA ZARAGUA VILLA
10/27/22
Engineer's Seal

Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
DOWNSTREAM PLAN & PROFILE**
PROJECT # : 2021-043

DOWNSTREAM CROSS SECTION PROFILE
SCALE: HORIZ: 1" = 5'
VERT: 1" = 2'

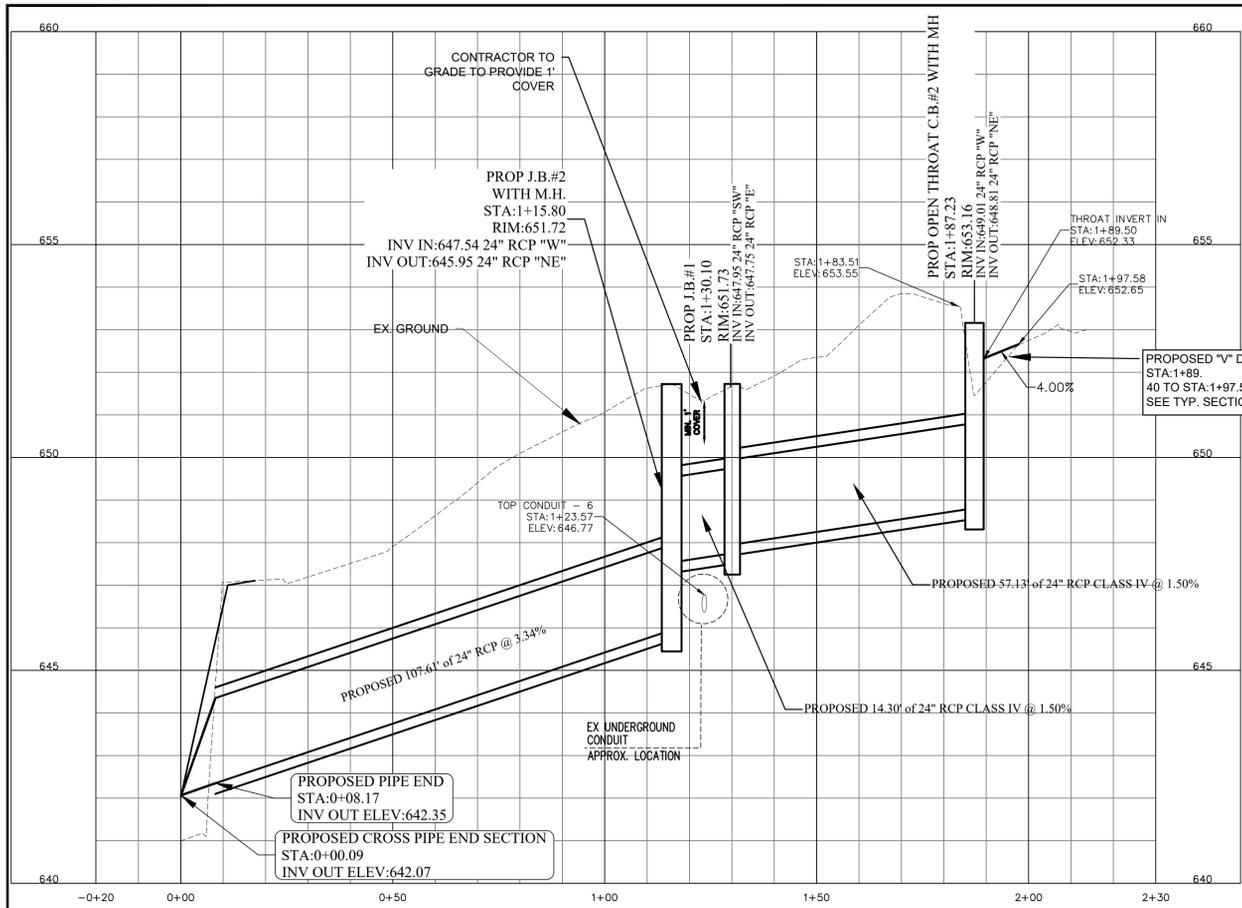


DOWNSTREAM PLAN
SCALE: 1" = 5'

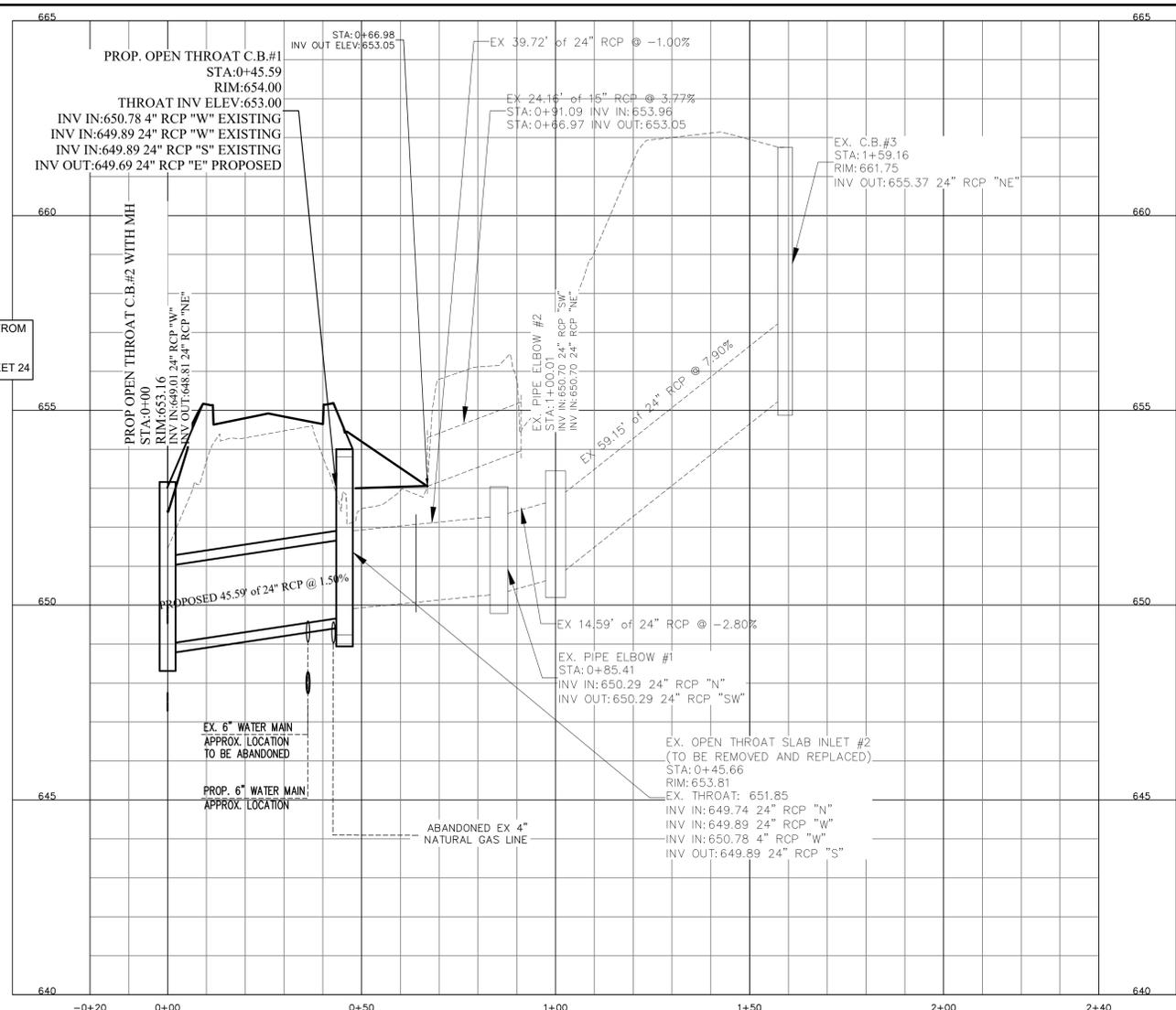
REV. #	DATE	DESCRIPTION
0	09/22/22	FINAL FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL FOR BIDDING PURPOSES

DESIGNED BY:	CGZ
DRAWN BY:	BCC
CHECKED BY:	CGZ
SCALE:	AS SHOWN
DATE:	07/01/22
PROJECT NUMBER:	2021-043
SHEET:	7 OF 27

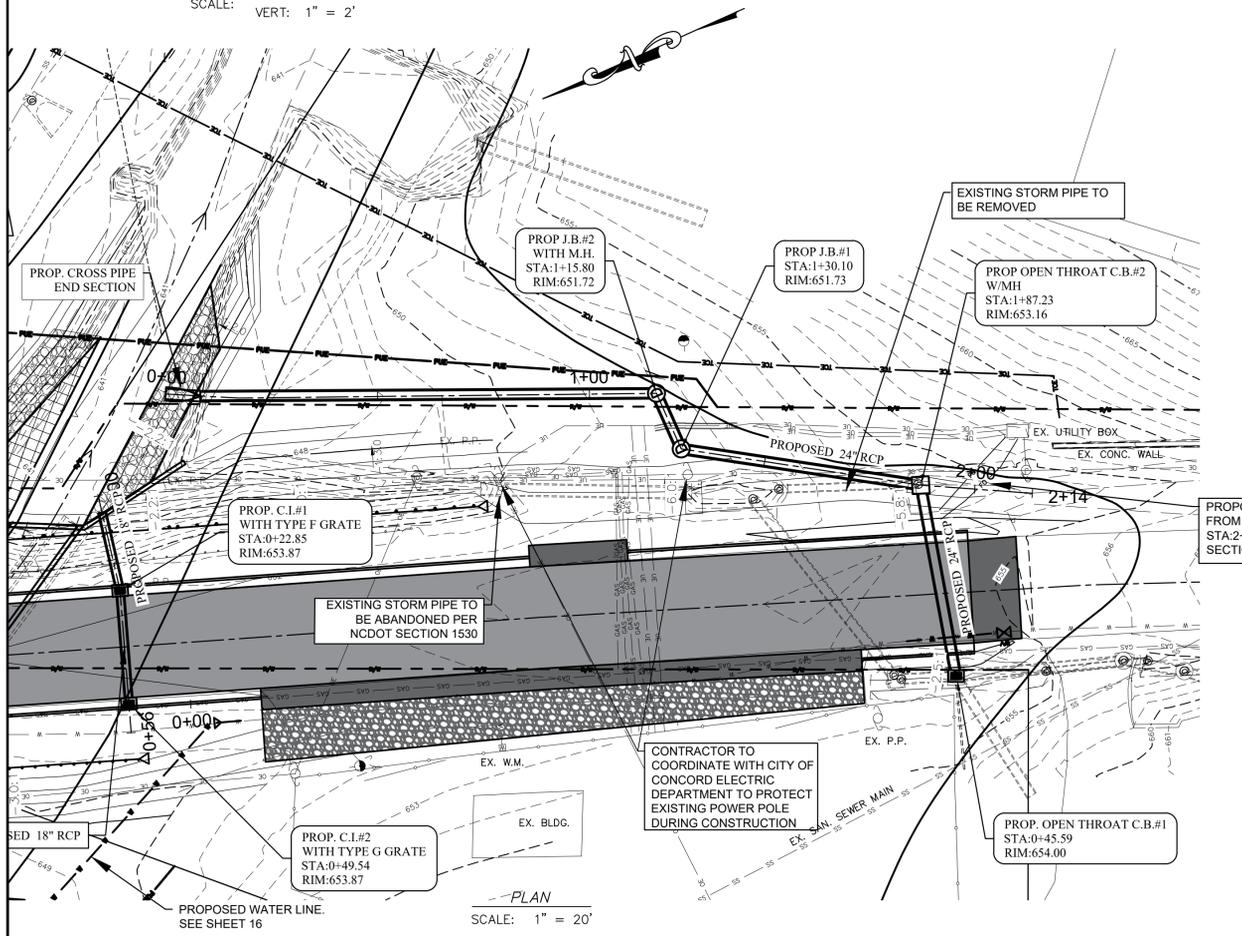
**COUNTRY CLUB DR.
CULVERT REPLACEMENT
STORM DRAINAGE
PLAN & PROFILE
PROJECT # : 2021-043**



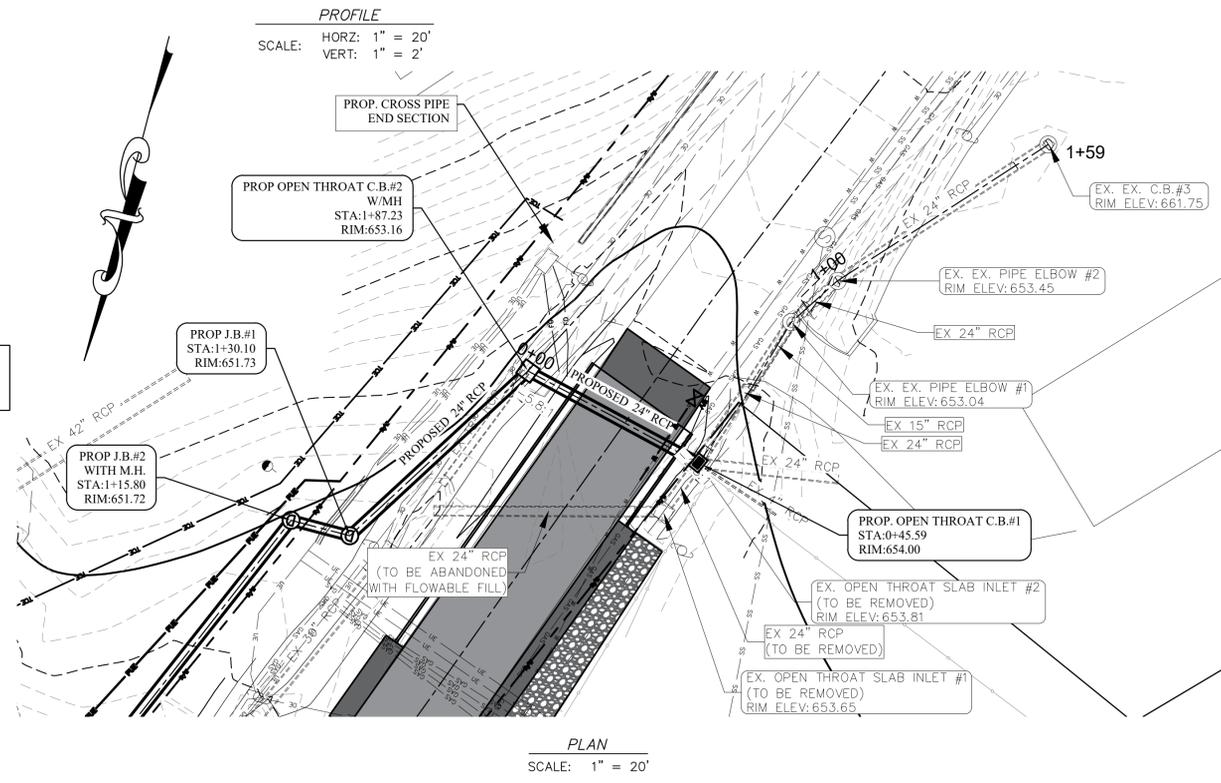
PROFILE
SCALE: HORIZ: 1" = 20'
VERT: 1" = 2'



PROFILE
SCALE: HORIZ: 1" = 20'
VERT: 1" = 2'



PLAN
SCALE: 1" = 20'



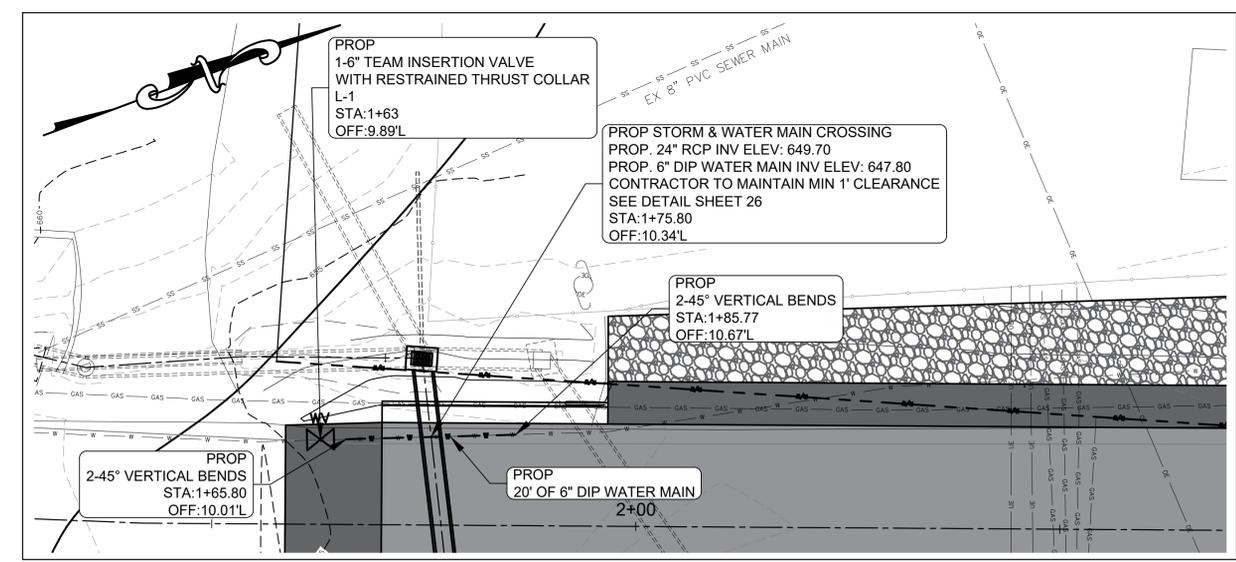
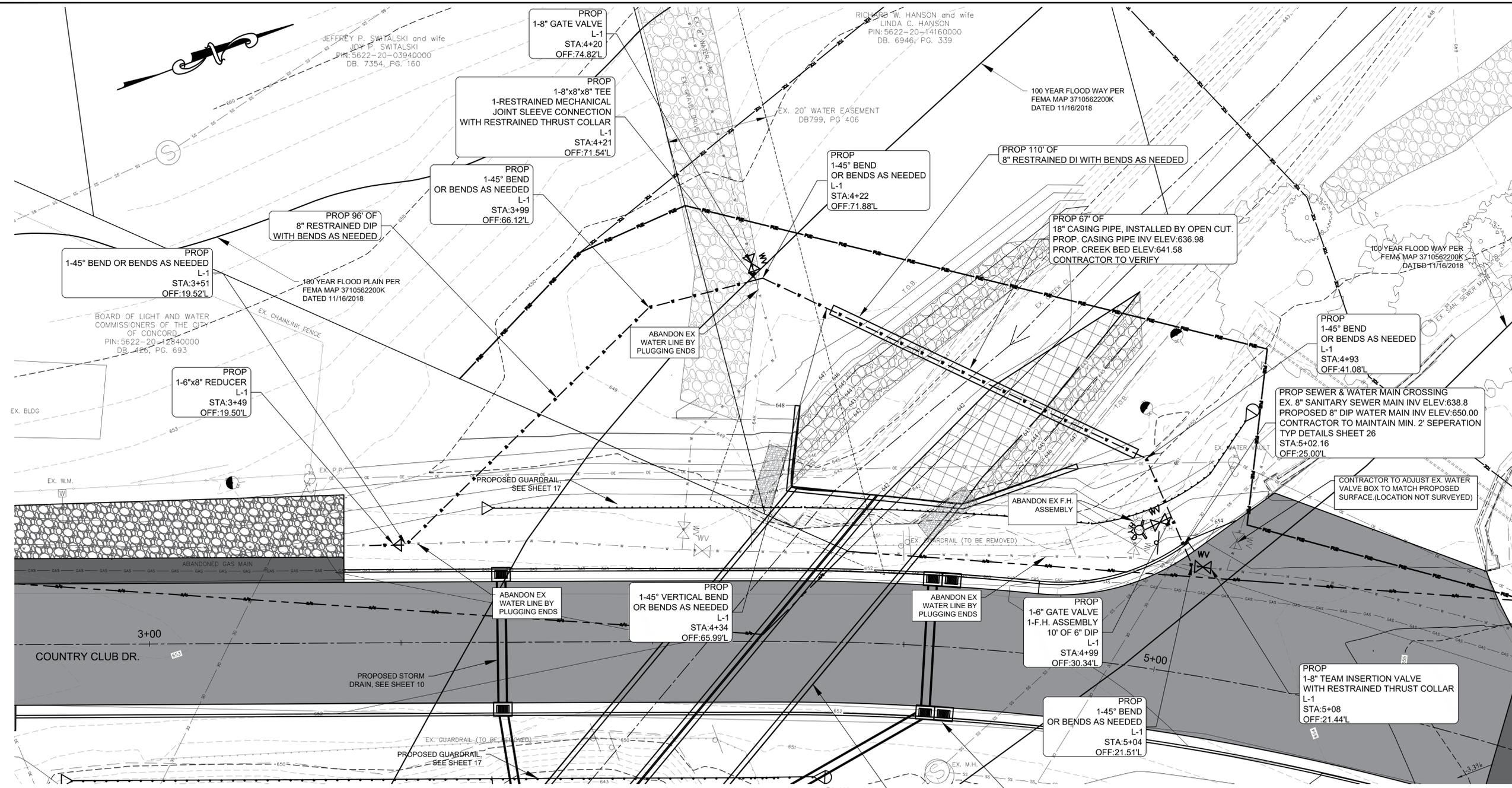
PLAN
SCALE: 1" = 20'

REV. #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL FOR BIDDING PURPOSES	BCC

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: CGZ
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 9 OF: 27



**COUNTRY CLUB DR.
CULVERT REPLACEMENT
WATER PLAN
PROJECT # : 2021-043**



PLAN
SCALE: 1" = 10'

PLAN
SCALE: 1" = 10'

WATER NOTES:

- PROPOSED WATER LINE LENGTH IS APPROXIMATE, ACTUAL LENGTH AND LOCATION TO BE DETERMINED IN THE FIELD.
- CONTRACTOR IS TO MAINTAIN A MINIMUM COVER OF 3'-0" OVER THE PROPOSED WATERLINE.
- ALL JOINTS AT VALVES, TEES, BENDS AND PLUGS SHALL BE RESTRAINED BY BOTH PUSH-ON JOINTS AND THRUST BLOCKS.
- PROPOSED WATERLINE FROM STA:3+43.86, OFF:19.26'L TO STA:4+20.75, OFF:71.54'L SHALL BE COMPLETED AND PUT IN SERVICE BEFORE THE CULVERT CONSTRUCTION.
- ALL EXISTING SERVICE CONNECTIONS TO REMAIN IN SERVICE AND TO BE PROTECTED DURING CONSTRUCTION. CONTRACTOR SHALL LOCATE AND MAKE PROVISIONS IN ACCORDANCE WITH THE CITY OF CONCORD FOR PROTECTION.
- MAINTAIN WATER AND SEWER SERVICE TO EXISTING CUSTOMERS DURING CONSTRUCTION. MINIMIZE THE DURATION OF ANY SERVICE DISRUPTION. NOTIFY THE CITY OF CONCORD CONSTRUCTION MANAGER AT LEAST 48 HOURS IN ADVANCE OF ANY SCHEDULED SERVICE DISRUPTION. PROVIDE NOTICE ON A CITY APPROVED FORM TO CITY OF CONCORD CUSTOMERS SPECIFYING THE DAY AND DURATION OF ANY SCHEDULED DISRUPTION, INCLUDING APPROPRIATE CITY CONTACT NUMBERS. PROVIDE TEMPORARY POTABLE WATER SUPPLIES TO CITY OF CONCORD CUSTOMERS WHEN THE DURATION OF WATER SERVICE DISRUPTION EXCEEDS 4 HOURS. THIS WORK IS CONSIDERED INCIDENTAL TO THE PROJECT. NO ADDITIONAL PAYMENT WILL BE MADE.
- ALL EXISTING UTILITIES LOCATIONS TO BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
- PROPOSED FITTINGS MAY BE FIELD ADJUSTED WITH THE PERMISSION OF THE ENGINEER.

PROTECTION OF EXISTING UTILITIES

THE CONTRACTOR SHALL CONTACT THE APPROPRIATE AGENCY FOR THE EXACT FIELD LOCATIONS OF ALL WATER, SEWER, ELECTRIC, TELEPHONE, TELEVISION AND ANY OTHER UNDERGROUND AND OVERHEAD UTILITY BEFORE STARTING CONSTRUCTION. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE CONTRACT DRAWINGS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF A DEFINITE LOCATION OF EXISTING UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF WORK.

THE FOLLOWING LISTING OF UTILITY COMPANIES (WHICH MAY OR MAY NOT BE COMPLETE) MAY HAVE EXISTING UNDERGROUND OR OVERHEAD UTILITIES IN THE CONTRACT VICINITY:

COMPANY NAME	OFFICE	AFTER HOURS EMERGENCY
Attrak	N/A	1-800-331-0008
A&T	1-678-627-5335	1-800-252-1133
Cabarrus County Emergency Mgmt	704-920-2143	704-920-3000
Carolina Water - Utilities Inc. (Zenosa Acres)	704-525-7990	704-525-7990
City of Concord Electric Systems	704-920-5315	704-920-5555
City of Concord Emergency Mgmt	704-920-5928	704-920-5055
Colonial Pipeline Company	704-392-8610	704-392-8610
CSX Railroad	N/A	1-800-232-0144
Duke Energy	1-800-769-3766	1-800-769-3766
NC Dept. of Transportation	704-982-2104	704-986-3705
NC One Call Center Area Rep.	1-336-855-3760	1-800-632-4949
Norfolk Southern Railway	N/A	1-800-453-2530
North Carolina Railroad Company	919-954-7601	N/A
Piedmont Natural Gas (aka NONG)	704-364-3120	1-800-752-7504
Plantation Pipeline	N/A	1-800-510-5678
Dominion Energy	704-810-3208	N/A
Sprint Embargo	N/A	1-888-723-8010
Time Warner Cable Concord	704-378-2856	704-378-2828
Union Power	N/A	1-800-922-8840
Uniqueloc Locator Concord	704-864-8333	1-800-635-4949
Water & Sewer Authority of Cabarrus Co.	704-786-1785	704-786-4164
Westinghouse	704-723-2000	1-800-805-6659

NOTE: SOME OF THE ABOVE COMPANIES DO NOT SUBSCRIBE TO CAROLINA ONE CALL (FORMERLY 11000).

NORTH CAROLINA ONE CALL 1-800-632-4949

REV #	DATE	DESCRIPTION
0	09/22/22	FINAL, FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL, FOR BIDDING PURPOSES

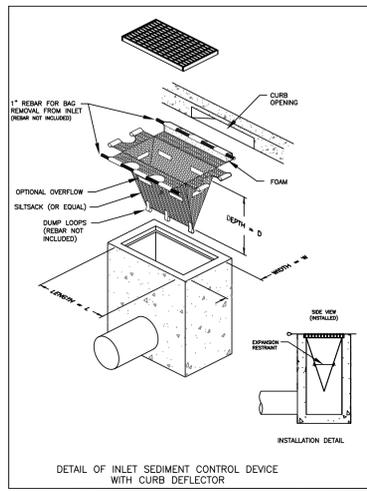
DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 16 OF 27

EROSION CONTROL NOTES

- THE CONTRACTOR SHALL INSTALL AND MAINTAIN THROUGHOUT THE PROJECT CONSTRUCTION ALL EROSION CONTROL MEASURES SHOWN WITHIN THESE PLANS IN ACCORDANCE WITH APPLICABLE NCDQ EROSION AND SEDIMENT CONTROL AND NCDOT REGULATIONS.
- ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL REGULATIONS, NCDOT, U.S. DEPARTMENT OF AGRICULTURE, AND U.S. SOIL CONSERVATION SERVICE REGULATIONS.
- ALL CONSTRUCTION WORK SHALL BE IN COMPLIANCE WITH REGULATIONS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER GENERAL PERMIT.
- THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES TO MINIMIZE EROSION. THE CONTRACTOR SHALL MAINTAIN CLOSE CONTACT WITH THE NCDQ EROSION CONTROL INSPECTOR SO THAT PERIODIC INSPECTIONS CAN BE PERFORMED AT APPROPRIATE STAGES OF CONSTRUCTION.
- APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED FROM THE AFFECTED PROPERTY OWNERS. CONTACT PROJECT ENGINEER AND PROJECT EROSION CONTROL INSPECTOR TO ENSURE ADDITIONAL EROSION CONTROL MEASURES ARE INSTALLED PRIOR TO OFF-SITE GRADING.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
- STABILIZATION IS THE BEST FORM OF EROSION CONTROL. ALL DISTURBED AREAS WHICH ARE NOT OTHERWISE STABILIZED SHALL BE TOP SOILED AND SEEDED, TEMPORARILY OR PERMANENTLY IN ACCORDANCE WITH THE NORTH CAROLINA SEDIMENT CONTROL REGULATIONS. PERMANENT SEEDING AND GRASS ESTABLISHMENT IS REQUIRED PRIOR TO PROJECT COMPLETION AND ACCEPTANCE.
- WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.
- WHEN A CRUSHED STONE CONSTRUCTION ENTRANCE HAS BEEN COVERED WITH SOIL OR HAS BEEN PUSHED INTO THE SOIL BY CONSTRUCTION TRAFFIC, IT SHALL BE REPLACED WITH A DEPTH OF STONE EQUAL TO THAT OF THE ORIGINAL APPLICATION.
- ALL DRAINAGE INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
- DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE, AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN EROSION AND SEDIMENTATION PERMIT FROM THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES FOR ANY NEW OFF-SITE BORROW AREA. ANY OFF-SITE BORROW AND WASTE REQUIRED FOR THIS PROJECT MUST COME FROM AN APPROVED EROSION CONTROL PLAN SITE, A SITE REGULATED UNDER THE MINING ACT OF 1971, OR A LANDFILL REGULATED BY THE DIVISION OF SOLID WASTE MANAGEMENT. DEBRIS FROM DEMOLITION ACTIVITIES SHOULD BE DISPOSED OF AT AN APPROVED FACILITY.

MAINTENANCE PLAN

- ALL EROSION AND SEDIMENTATION CONTROL DEVICES WILL BE CHECKED BY THE CONTRACTOR FOR STABILITY AND OPERATION WITHIN 24 HOURS AFTER EVERY RUNOFF PRODUCING RAINFALL INCLUDING ANY STORM EVENT GREATER THAN 0.5" OF PRECIPITATION DURING ANY 24 HOUR PERIOD, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED AS NECESSARY.
- MAINTAIN EROSION CONTROL DEVICES AS FOLLOW:
 - TEMPORARY SILT FENCE - REMOVE SEDIMENT DEPOSITS WHEN IT BECOMES 0.5 FT DEEP AT THE FENCE AND AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. AVOID UNDERMINING THE FENCE.
 - TEMPORARY CHECK DAM - REMOVE SEDIMENT ACCUMULATION BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION. ADD STORE TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.
 - STORM DRAIN INLET PROTECTION - REMOVE SEDIMENT AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAINFALL.
 - TEMPORARY DIVERSION DITCH - INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AFTER EVER RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND.
 - SEDIMENT DAMS - REMOVE SEDIMENT AND RESTORE BASIN TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE TRAP. CHECK THE STRUCTURE FOR DAMAGE FROM EROSION TO ENSURE IT IS A MINIMUM 1.5 FEET BELOW THE LOW POINT OF THE EMBANKMENT.
 - TEMPORARY SLOPE DAM - INSPECT THE SLOPE DRAIN AND SUPPORTING DIVERSION AFTER EVERY RAINFALL AND PROMPTLY MAKE NECESSARY REPAIRS. WHEN THE PROTECTED AREA HAS BEEN PERMANENTLY STABILIZED, TEMPORARY MEASURES MAY BE REMOVED. MATERIALS DISPOSED OF PROPERLY AND ALL DISTURBED AREAS STABILIZED APPROPRIATELY.
 - SEDIMENT TUBE - CHECK SEDIMENT TUBE AFTER EACH RAINFALL. REMOVE SEDIMENT AND RESTORE ORIGINAL VOLUME WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE DESIGN VOLUME.
- ALL GRADED AREAS WILL BE SEEDED, FERTILIZED AND MULCHED ACCORDING TO SPECIFICATIONS, SPECIAL PROVISIONS AND THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL TO MAINTAIN A VIGOROUS, DENSE, VEGETATIVE COVER WITHIN REQUIRED SOIL STABILIZATION TIMEFRAMES. IF WORK ON THE PROJECT CEASES FOR MORE THAN THE AFOREMENTIONED LENGTH OF TIME, ALL DISTURBED AREAS SHALL HAVE TEMPORARY VEGETATIVE GROUND COVER ESTABLISHED AND EROSION CONTROL DEVICES MAINTAINED.
- PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES AS MAY BE REQUIRED TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION.
- ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
- THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT AS MAY BE REQUIRED.
- TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR DIVERT SEDIMENT. LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS. TEMPORARY SEDIMENT BASIN MUST BE MAINTAINED PRIOR TO TRANSITIONING TO PERMANENT DRY OR WET BASINS.



DETAIL OF INLET SEDIMENT CONTROL DEVICE WITH CURB DEFLECTOR

SILTSACK® SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

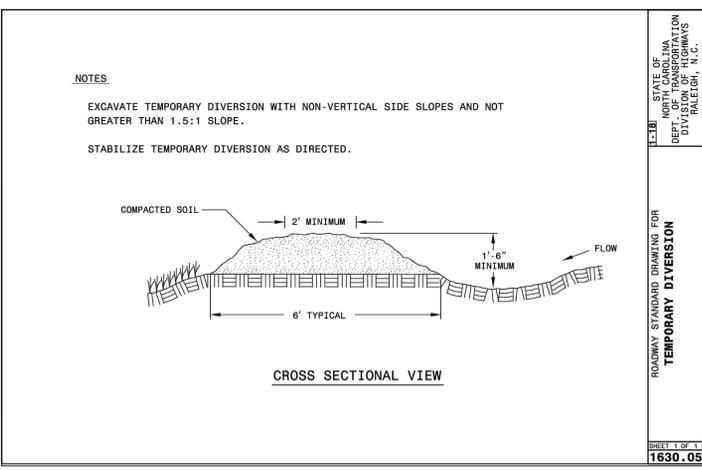
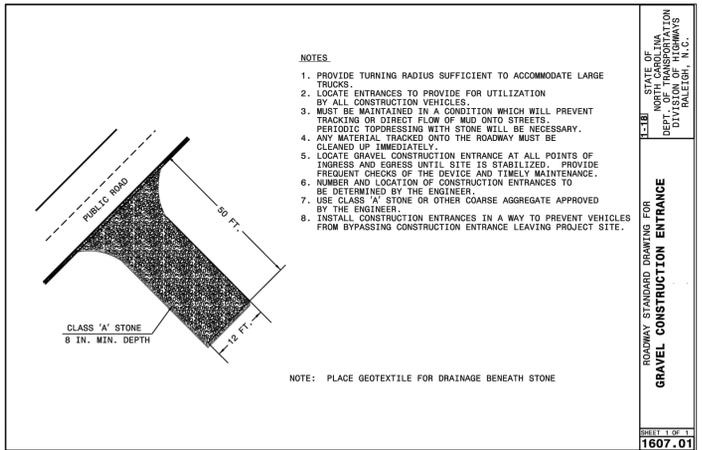
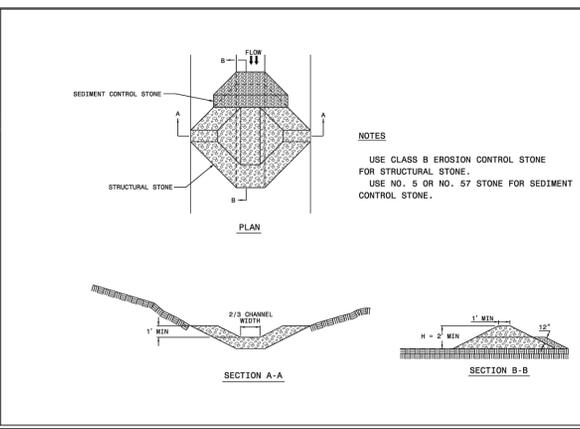
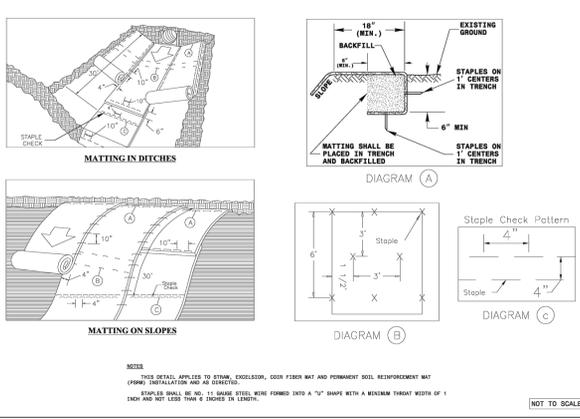
REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS) DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK WITH A WOVEN PILLOW INSERT.



SELF-INSPECTION

PERSONS RESPONSIBLE FOR LAND DISTURBING ACTIVITIES MUST INSPECT THE SEDIMENT AND EROSION CONTROL MEASURES ON THIS PROJECT AFTER EACH PHASE TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. SELF-INSPECTION REPORTS ARE REQUIRED. A SAMPLE REPORT AND DETAILS OF THE PROGRAM CAN BE FOUND ON THE LAND QUALITY WEBSITE.

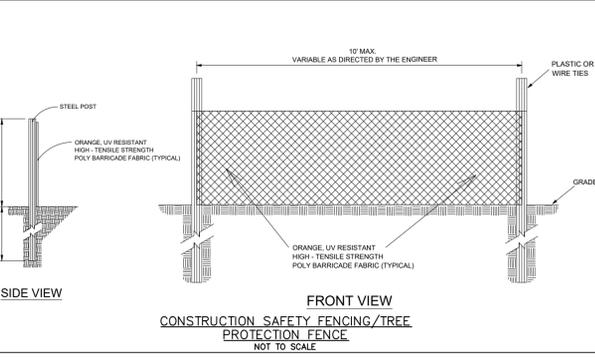
STABILIZATION REQUIREMENTS

Stabilization Requirements:
(03-11-16)S-3
Stabilization for this project shall comply with the time frame guidelines as specified by the NCG-010000 general construction permit effective August 3, 2011 issued by the North Carolina Department of Environment and Natural Resources Division of Water Quality. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity:

- Slopes between 2:1 and 3:1, with a slope length of 10 ft. or less
- Slopes 3:1 or flatter, with a slope of length of 50 ft. or less
- Slopes 4:1 or flatter

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

Provisions for a permanent ground cover sufficient to restrain erosion must be accomplished within 15 working days of 90 calendar days following completion of construction or development, whichever period is shorter.



SOIL STABILIZATION TIME FRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

SEEDING AND MULCHING:
(West)
The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

Shoulder and Median Areas

August 1 - June 1	May 1 - September 1
20# Kentucky Bluegrass	20# Kentucky Bluegrass
75# Hard Fescue	75# Hard Fescue
25# Rye Grain	10# German or Browntop Millet
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

Areas Beyond the Mowing Pattern, Waste and Borrow Areas:

August 1 - June 1	May 1 - September 1
100# Tall Fescue	100# Tall Fescue
15# Kentucky Bluegrass	15# Kentucky Bluegrass
30# Hard Fescue	30# Hard Fescue
25# Rye Grain	10# German or Browntop Millet
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

Approved Tall Fescue Cultivars

06 Dust	Escalade	Justice	Serengeti
2nd Millennium	Essential	Kalahari	Shelby
3rd Millennium	Evergreen 2	Kitty Hawk 2000	Sheridan
Apache III	Falcon IV	Legitimate	Signia
Avenger	Falcon NG	Lexington	Silver Hawk
Barlekas	Falcon V	LSD	Silverstar
Barlekas II	Faith	Magellan	Shenandoah Elite
Bar Fa	Fat Cat	Matador	Sidewinder
Barrera	Festnova	Millennium	SRP Skyline
Barrington	Fidelity	Monet	Solara
Barrobusto	Finelawn Elite	Mustang 4	Southern Choice II
Barvado	Finelawn Xpress	Ninja 2	Speedway
Biltmore	Finesse II	O' Glory	Spyder LS
Bingo	Firebird	Olympic Gold	Sunset Gold
Bizem	Firecracker LS	PadreTaccua	Blackwatch
Bizen	Fitagonia	Tanzonia	Blade Runner II
Blue Point	Pedigree	Trio	Bonsai
Focus	Picasso	Tahoe II	
Braveheart	Forté	Piedmont	Talladega
Bravo	Garrison	Plantation	Tarheel
Bullseye	Gazelle II	Proseeds 5301	Terrano
Cannavaro	Gold Medallion	Prospect	Titan Itd
Catalyst	Grande 3	Pure Gold	Titanium LS
Cayenne	Greenbrooks	Quest	Tracer
Cesaronne Rz	Greenkeeper	Raptor II	Traverse SRP
Chippew	Gremlin	Rebel Exeda	Tulsa Time
Cochise IV	Greystone	Rebel Sentry	Turbo
Constitution	Guardian 21	Rebel IV	Turbo RZ
Corgi	Guardian 41	Regiment II	Tuxedo RZ
Corona	Hemi	Regenerate	Ultimate
Coyote	Honky Tonk	Rendition	Venture
Darlington	Hot Rod	Rhambler 2 SRP	Umbrella
Davinci	Hunter	Rembrandt	
Van Gogh	Inferno	Desire	
Reunion	Watchdog	Dominion	Innovator
Riverside	Wolfpack II	DynamicIntegrity	RNPXtremegreen
DynastyJaguar 3	Rocket	Endeavor	Jamboree
Scorpion			

Approved Kentucky Bluegrass Cultivars:

4-Season	Blue Velvet	Gladstone	Quantum
Lenn	Alexa II	Blueberry	Granite
Rambo	America	Boomerang	Hampton
Rhapsody	Apolla	Bright	Harmonie
Rhythm	Arcadia	Cabernet	Impact
Rita	Aries	Champagne	Jefferson
Royce	Armada	Champain	Juliet
Rubicon	Arrow	Chicago II	Jump Start
Rugby II	Arrowhead	Chicago II	Keeneland
Shiraz	Auro	Courtyard	Langora
Avid	Delight	Liberator	Skye Award
Diva	Madison	Solar Eclipse	Awesome
Dynamo	Mercury	Sanoma	Bandera
Eagleton	Midnight	Sorbonne	Barduke
Emblem	Midnight II	Storburst	Barnique
Empire	Moon Shadow	Sudden Impact	Baroness
Envicta	Moonlight SLT	Total Eclipse	Barrister
Everest	Mystere	Touche	Barvette HGT
Everglade	Nu Destiny	Tsunami	Bedazzled
Excursion	Nu Chicago	Chicago	Unique
Belissimo	Freedom II	Nu Glade	Valor
Bewitched	Freedom III	Odyssey	Voyager II
Beyond	Front Page	Perfection	Washington
Blacksburg II	Futurity	Pinot	Zinfandel
Blackstone	Gaelic	Princeton 105	Blue Note Ginney II
Prosperity			

Approved Hard Fescue Cultivars:

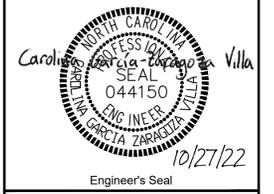
Aurora II	Eureka II	Oxford	Scaldis II
Aurora Gold	Firefly	Reliant II	Spartan II
Berkshire	Granite	Reliant IV	Stonehenge
Bighorn GT	Chariot	Heron	Nordic
Rescue 911	Rhino		

On cut and fill slopes 2:1 or steeper add 20# Sericea Lespedeza January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.



PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
EROSION CONTROL DETAILS
PROJECT #: 2021-043**

REV. #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL FOR BIDDING PURPOSES	BCC

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 18 OF: 27

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> Temporary grass seed covered with straw or other mulches and tackifiers Hydroseeding Rolled erosion control products with or without temporary grass seed Appropriately applied straw or other mulch Plastic sheeting 	<ul style="list-style-type: none"> Permanent grass seed covered with straw or other mulches and tackifiers Geotextile fabrics such as permanent soil reinforcement matting Hydroseeding Shrubs or other permanent plantings covered with mulch Uniform and evenly distributed ground cover sufficient to restrain erosion Structural methods such as concrete, asphalt or retaining walls Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
- Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
- Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
- Provide ponding area for containment of treated Stormwater before discharging offsite.
- Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

- Maintain vehicles and equipment to prevent discharge of fluids.
- Provide drip pans under any stored equipment.
- Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
- Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off-site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

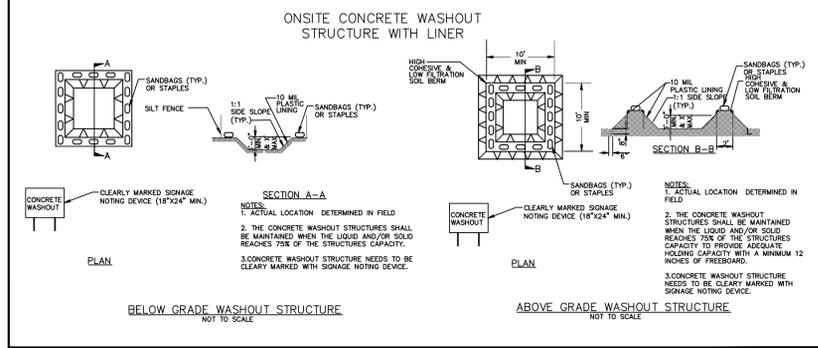
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled, sized and placed appropriately for the needs of site.
- Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

- Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone access point when feasible.
- Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



CONCRETE WASHOUTS

- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
- Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
- Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
- Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
- Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
- Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
- Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
- At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

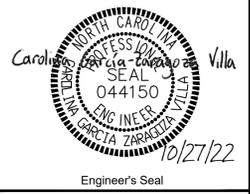
- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
- Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
- Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

- Create designated hazardous waste collection areas on-site.
- Place hazardous waste containers under cover or in secondary containment.
- Do not store hazardous chemicals, drums or bagged materials directly on the ground.



PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



**COUNTRY CLUB DR.
CULVERT REPLACEMENT
EROSION CONTROL DETAILS**
PROJECT # : 2021-043

REV. #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL, FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL, FOR BIDDING PURPOSES	BCC

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 19 OF: 27

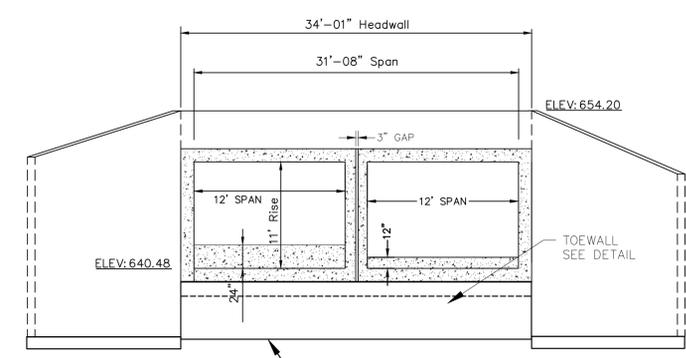
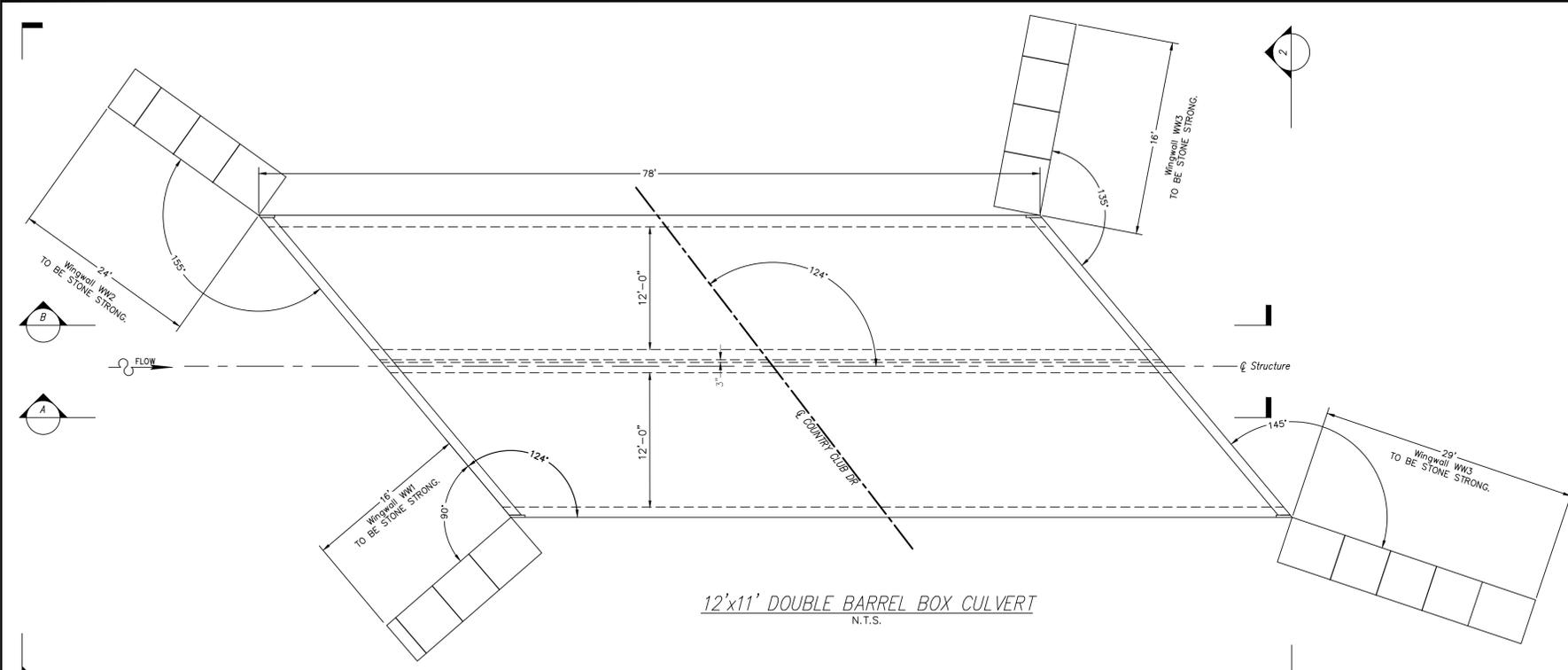
G:\Eng\Engineering Projects\Projects\2021\043 Country Club Culvert Replacement\Design\Technical\2021-043.dwg Oct 27, 2022 - 1:23pm



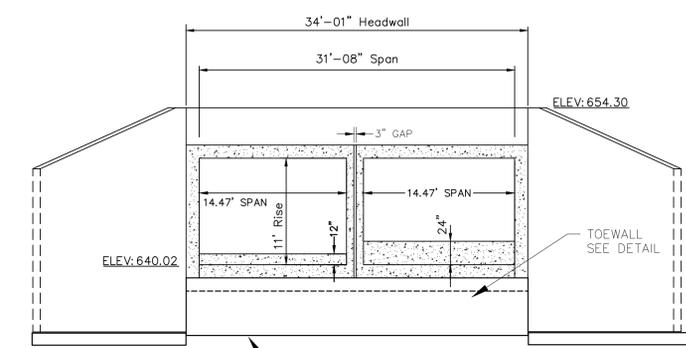
Engineer's Seal

Surveyor's Seal

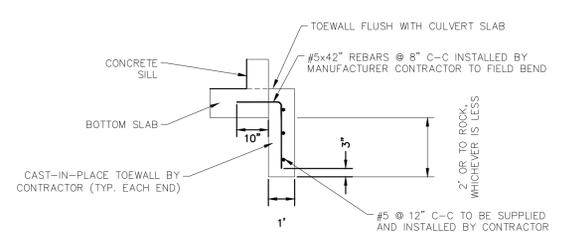
**COUNTRY CLUB DR.
CULVERT REPLACEMENT
CULVERT DESIGN DETAILS**
PROJECT # : 2021-043



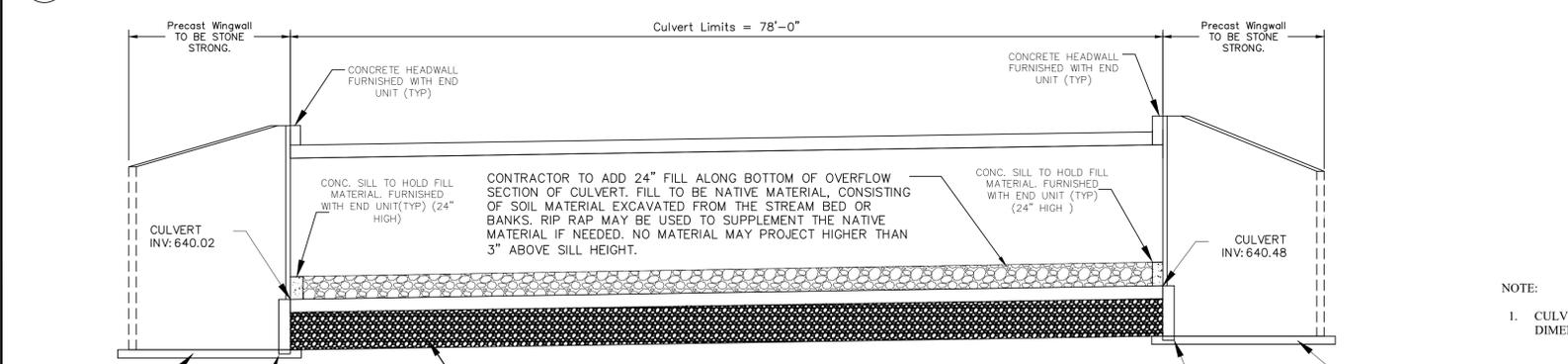
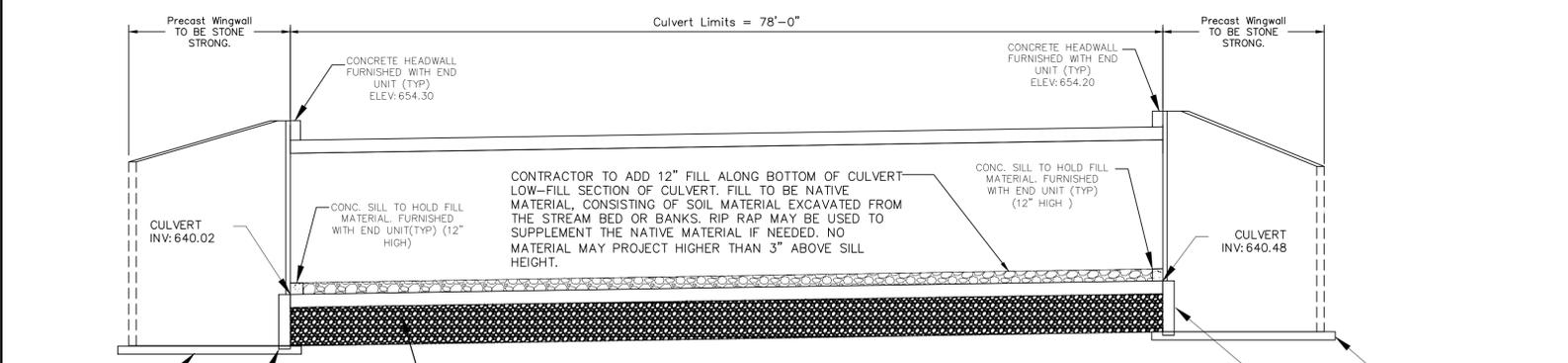
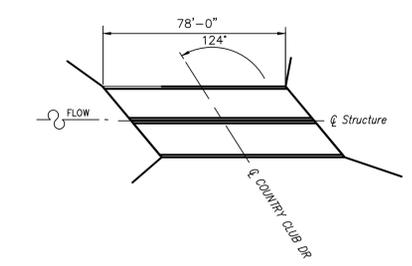
Note:
U.S. - denotes Upstream
D.S. - denotes Downstream



Note:
U.S. - denotes Upstream
D.S. - denotes Downstream



NOTE:
1. CULVERT SLAB AND WALL DIMENSIONS ARE PRELIMINARY. FINAL DIMENSIONS TO BE DETERMINED BY CULVERT STRUCTURAL DESIGNER.



REV. #	DATE	DESCRIPTION	BY
0	09/22/22	FINAL, FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL, FOR BIDDING PURPOSES	BCC

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 21 OF: 27

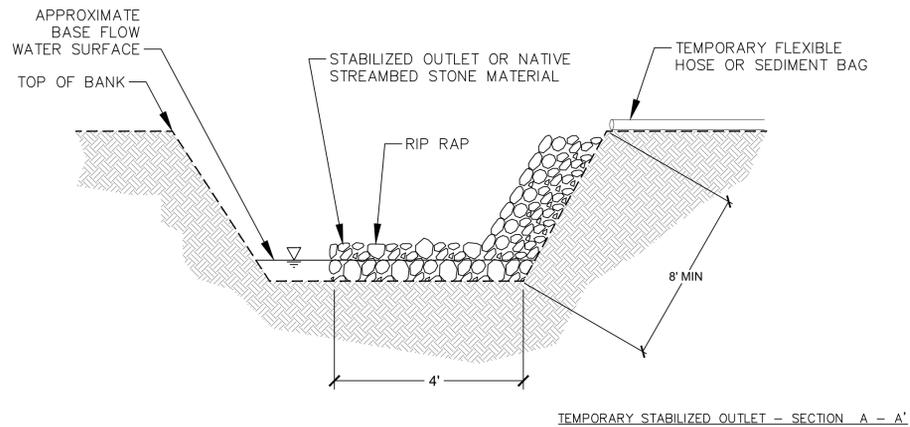
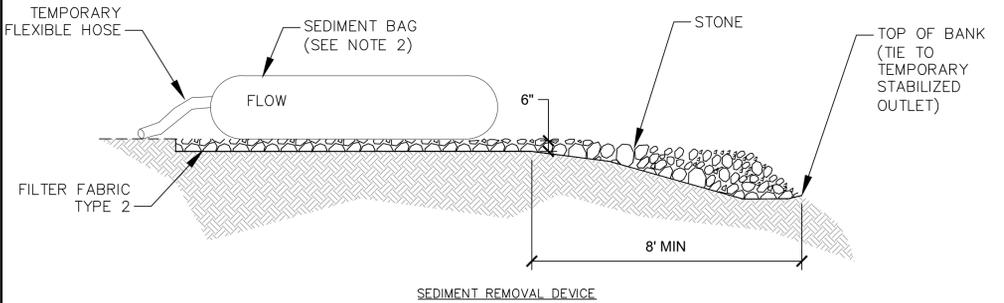
NOTES:

1. SEDIMENT FILTER BAG FABRIC SHALL BE GEOTEXTILE MANUFACTURED FROM WOVEN POLYPROPYLENE OR POLYMER MATERIAL. SEDIMENT FILTER BAG FABRIC MAY BE MADE FROM RECYCLED POLYMER MATERIALS. POLYMER MATERIALS SHALL NOT CONTAIN BIODEGRADABLE FILLER MATERIALS AND SHALL CONFORM TO THE REQUIREMENTS IN ASTM DESIGNATION: E 204
2. SEDIMENT FILTER BAG SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

SPECIFICATION	REQUIREMENTS
GRAB TENSILE STRENGTH (ONE INCH GRIP), POUNDS MINIMUM IN EACH DIRECTION ASTM DESIGNATION: D 4832 OR APPROPRIATE TEST METHOD FOR SPECIFIC POLYMER	255
ELONGATION, PERCENT, MINIMUM IN EACH DIRECTION ASTM DESIGNATION: D 4832 OR APPROPRIATE TEST METHOD FOR SPECIFIC POLYMER	15
PERMITTIVITY, 1/SEC., MINIMUM ASTM DESIGNATION: D 4491	1.5
FLOW RATE, GALLONS PER MINUTE PER SQUARE FOOT MINIMUM ASTM DESIGNATION: D 4491	200
ULTRAVIOLET STABILITY, PERCENT TENSILE STRENGTH RETAINED AFTER 500 HOURS, MINIMUM ASTM DESIGNATION: D 4355 (XENON-ARC LAMP AND WATER SPRAY WEATHERING METHOD)	80

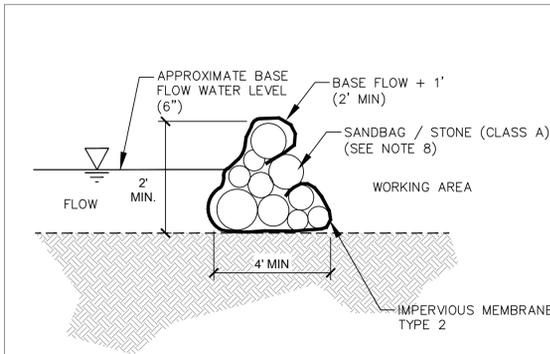
NOTES:

3. THE SEDIMENT FILTER BAG SHALL BE 10"x12"x1.5" (MIN) AND SHALL BE COMPLETE WITH LIFTING LOOPS AND DUMP STRAPS ATTACHED AT THE BOTTOM TO FACILITATE EMPTYING OF SEDIMENT FILTER BAG.
4. LIFTING STRAPS, SHOULD BE PLACED UNDER THE DEWATERING SEDIMENT FILTER BAG TO FACILITATE REMOVAL AFTER USE.
5. PLACE THE DEWATERING SEDIMENT FILTER BAG ON A LEVEL STABILIZED AREA OVER DENSE VEGETATION/STRAW, OR GRAVEL (IF INCREASED DRAINAGE SURFACE AREA IS NEEDED)
6. INSERT DISCHARGE HOSE FROM PUMP INTO THE DEWATERING SEDIMENT FILTER BAG A MINIMUM OF SIX INCHES (6") AND TIGHTLY SECURE WITH ATTACHED STRAP TO PREVENT WATER FROM FLOWING OUT OF THE UNIT WITHOUT BEING FILTERED.
7. REPLACE THE UNIT WHEN ONE HALF (1/2) FULL OF SEDIMENT OR WHEN SEDIMENT HAS REDUCED THE FLOW RATE OF THE PUMP DISCHARGE TO AN IMPRACTICAL RATE.
8. REMOVE THE UNIT AND SEDIMENT FROM ENVIRONMENTALLY SENSITIVE AREA AND WATERWAYS AT THE APPROVED DISPOSAL SITE OPEN OR SLIT THE UNIT, REMOVE SEDIMENT AND GRADE SMOOTHLY INTO EXISTING TOPOGRAPHY. DISPOSE OF THE DEWATERING SEDIMENT FILTER BAG, AT AN APPROPRIATE RECYCLING OR SOLID WASTE FACILITY.



DEWATERING SEDIMENT FILTER BAG

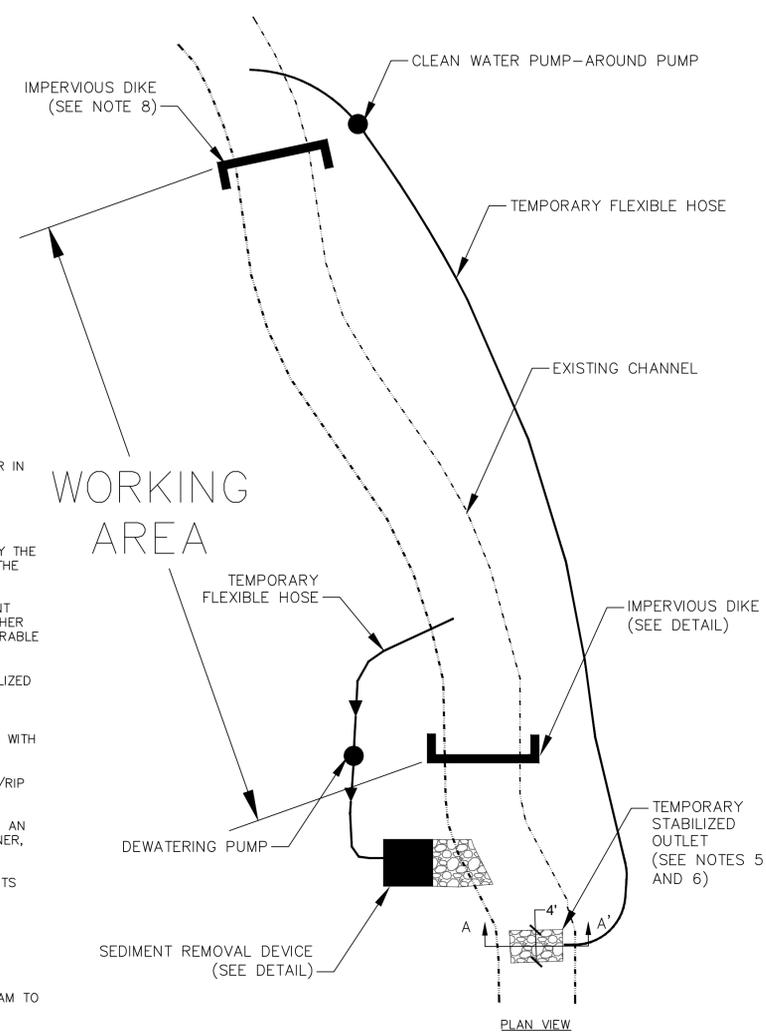
NTS



IMPERVIOUS DIKE DETAIL

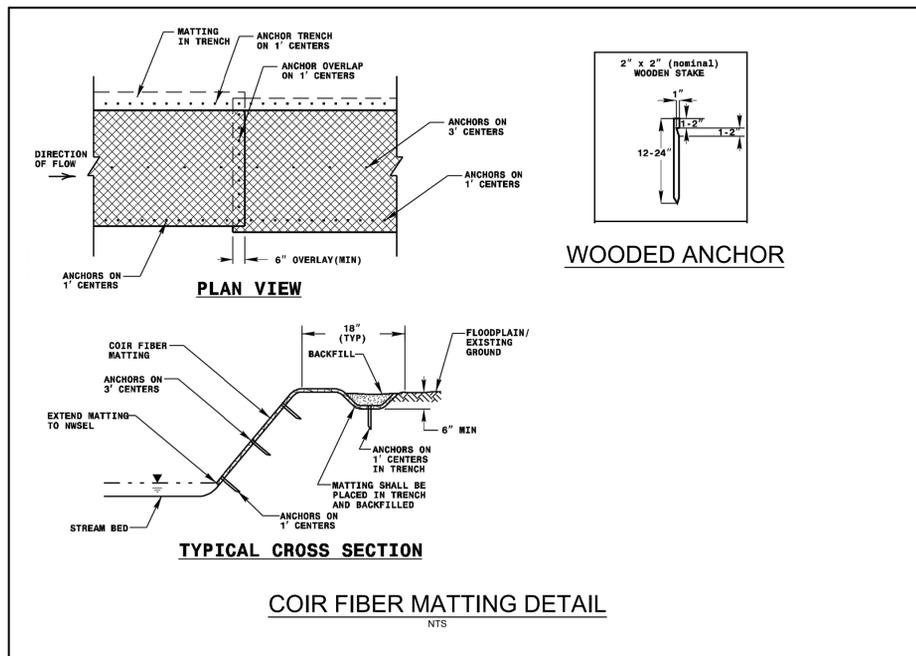
NOTES:

1. ALL CHANNEL WORK INVOLVING EXCAVATION SHALL BE PERFORMED IN DRY CONDITIONS OR IN CHANNEL SECTIONS ISOLATED BY IMPERVIOUS DIKES AND KEPT DE-WATERED.
2. THE CONTRACTOR SHALL NOT DISTURB MORE AREA THAN CAN BE STABILIZED THE SAME WORKING DAY.
3. PUMP-AROUND PUMP AND HOSE SHALL ADEQUATELY CONVEY BASEFLOW AS SPECIFIED BY THE DESIGNER. DE-WATERING PUMP SHALL ADEQUATELY DE-WATER THE WORKING AREA AT THE DOWNSTREAM IMPERVIOUS DIKE.
4. GRAVITY-BASED GEOTEXTILE BAG FILTERS SHALL BE USED TO COLLECT SILT AND SEDIMENT FROM WORK AREA DEWATERING. THE DESIGNER MAY SPECIFY A SEDIMENT BASIN OR OTHER SEDIMENT CONTROL MEASURE IN LIEU OF A SEDIMENT BAG IF SITE CONDITIONS ARE FAVORABLE (I.E. - TREES WILL NOT BE IMPACTED FOR BASIN EXCAVATION, ETC.).
5. EFFLUENT FROM CLEAN WATER PUMP AROUND MAY BE DISCHARGED DIRECTLY INTO STABILIZED OUTLET (NO SEDIMENT REMOVAL DEVICE REQUIRED).
6. A STABILIZED OUTLET SHALL BE USED TO CONTROL THE EFFLUENT FROM ALL PUMPING OPERATIONS. THE DESIGNER SHALL SPECIFY ALL MATERIALS AND DIMENSIONS ASSOCIATED WITH STABILIZED OUTLETS.
7. FILTER FABRIC AS SPECIFIED BY THE DESIGNER SHALL BE USED UNDERNEATH ALL STONE/RIP RAP PLACED FOR SEDIMENT BAGS, STABILIZED OUTLETS, SPLASH PADS.
8. IMPERVIOUS DIKES SHALL BE CONSTRUCTED TO ISOLATE THE IN-STREAM WORKING AREA. AN IMPERVIOUS FABRIC MEMBRANE AND SAND BAGS OR STONE, AS SPECIFIED BY THE DESIGNER, SHALL BE USED TO CREATE THE DIKES.
9. STREAM AREAS IMPACTED DUE TO SITE DEWATERING ACTIVITIES SHALL BE REGRADED TO ITS PRECONSTRUCTION CONTOURS AND REVEGETATED WITH APPROPRIATE NATIVE SPECIES.
10. THE WORK SEQUENCE IN PUMP-AROUND OPERATIONS PROCEEDS TYPICALLY AS FOLLOWS:
 - A. INSTALL SEDIMENT REMOVAL DEVICE AND TEMPORARY STABILIZED OUTLETS AT THE DOWNSTREAM END OF WORKING AREA.
 - B. INSTALL PUMP-AROUND PUMP AND FLEXIBLE HOSE.
 - C. INSTALL UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING (CLEAN WATER) DOWNSTREAM TO STABILIZED OUTLET.
 - D. INSTALL DOWNSTREAM IMPERVIOUS DIKE AND DE-WATERING PUMP.
 - E. PERFORM CHANNEL WORK IN ACCORDANCE WITH THE PLANS IN THE WORKING AREA.
 - F. DE-WATER THE WORKING AREA (AS NEEDED) INTO THE SEDIMENT BAG AND TEMPORARY STABILIZED OUTLET.
 - G. UPON COMPLETION OF WORK, REMOVE ANY SEDIMENT ACCUMULATION BEHIND IMPERVIOUS DIKES.
 - H. REMOVE DOWNSTREAM AND THEN UPSTREAM DIKES AND ALL PUMPS AND HOSE.
 - I. SEED AND MULCH ALL DISTURBED AREAS PER THE PLANTING PLAN.



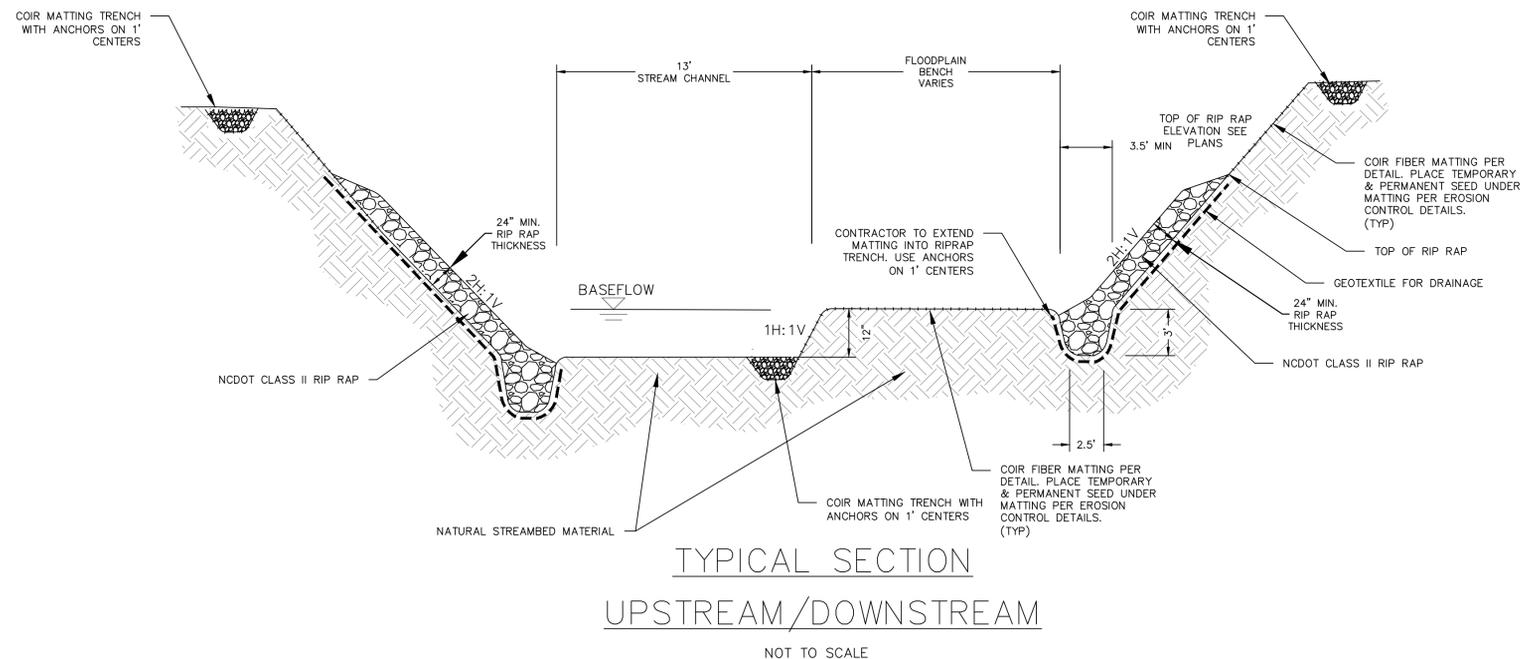
PUMP AROUND DETAIL

NTS



COIR FIBER MATTING DETAIL

NTS

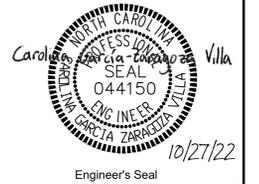


TYPICAL SECTION
UPSTREAM/DOWNSTREAM

NOT TO SCALE



PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425



Engineer's Seal

Surveyor's Seal

COUNTRY CLUB DR.
CULVERT REPLACEMENT
STREAM STANDARD DETAILS
PROJECT # : 2021-043

REV. #	DATE	DESCRIPTION
0	09/22/22	FINAL, FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL, FOR BIDDING PURPOSES

BY:	BCC
DATE:	10/27/22
DESIGNED BY:	CGZ
DRAWN BY:	BCC
CHECKED BY:	EAB
SCALE:	AS SHOWN
DATE:	07/01/22
PROJECT NUMBER:	2021-043
SHEET:	22 OF 27

BY	DESCRIPTION	DATE	REV.
BCC	FINAL, FOR CONSTRUCTION	09/22/22	0
BCC	ADDRESSING COMMENTS	10/07/22	1
BCC	FINAL, FOR BIDDING PURPOSES	10/27/22	2

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 23 OF: 27

TYPE III BARRICADE
1" MAXIMUM (SEE NOTE 5)

GENERAL NOTES

- HORIZONTAL RAILS FOR MAY BE CONSTRUCTED OF APPROVED COMPOSITE, HOLLOW/CORUGATED EXTRUDED RIGID POLYOLEFIN, HIGH DENSITY POLYETHYLENE, OR OTHER NCOT APPROVED MATERIAL.
- BARRICADE SHALL BE LIMITED TO A MAXIMUM LENGTH OF 8 FT UNLESS NCORP 350 GRAH TESTED FOR CATEGORY II DEVICES AND NCOT APPROVED.
- ONLY NCOT APPROVED COMPOSITE AND ROLL-UP STONS MAY BE MOUNTED ON THE BARRICADE RAILS. MOUNT STONS TO BARRICADE RAILS TO ENSURE STON WILL NOT BECOME DETACHED UNDER NORMAL WIND AND TRAFFIC CONDITIONS.
- STONS SHALL BE MOUNTED A MINIMUM OF 1 FOOT FROM THE GROUND TO THE BOTTOM OF THE STON UNLESS STONS R11-3 OR R11-4 ARE REQUIRED BY THE PLANS OR DIRECTED BY THE ENGINEER.
- BARRICADE MUST BE NCORP 350 FOR CATEGORY II DEVICES AND NCOT APPROVED WITH STABILIZER BAR OR ADEQUATE LATERAL BRACING.
- ASSEMBLY OF THE GENERIC BARRICADES MUST BE SELF CERTIFIED BY THE ASSEMBLER.
- BARRICADES USED TO CLOSE A ROADWAY SHALL EXTEND ACROSS THE ENTIRE ROADWAY. WHERE LOCAL TRAFFIC MUST BE MAINTAINED, THEY MAY BE PLACED IN A STAGGERED PATTERN.
- STRIPES ON WORK ZONE BARRICADE RAILS SHALL BE ALTERNATE ORANGE AND WHITE RETROREFLECTIVE STRIPES, SLOPED DOWNWARD TOWARD THE SIDE WHICH TRAFFIC IS TO PASS OR TURN IN DETOURING. WHERE NO TURNING ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.
- USE RED AND WHITE STRIPES FOR PERMANENT BARRICADES.
- ALL BARRICADES MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.
- PLACE MANUFACTURER'S NAME AND FEDERAL HIGHWAY ADMINISTRATION'S NCORP 350 APPROVAL LETTER NUMBERS ON BARRICADE FRAME.
- PLACE SANDBAGS OR OTHER APPROVED BALLASTING METHODS ON THE FEET OF THE FRAME. DO NOT PLACE SANDBAGS OR TOP OF A STRIPED RAIL OR STABILIZER BAR. DO NOT BALLAST BARRICADES BY HEAVY OBJECTS SUCH AS ROAD CURBS, CHAINS OF CONCRETE OR OTHER ITEMS THAT WOULD CAUSE DAMAGE IF THE BARRICADE IS STRUCK BY A VEHICLE.

ROADWAY STANDARD DRAWING FOR BARRICADES TYPE-III
SHEET 1 OF 1
1145.01

PORTABLE WORK ZONE SIGNS
MOUNTING HEIGHT & LATERAL CLEARANCE

GENERAL NOTES

- DIMENSIONS SHOWN ARE MINIMUM VALUES. MOUNT SIGNS SO THEY WILL BE CLEARLY VISIBLE TO APPROACHING TRAFFIC EVEN WHEN SIGNS ARE MOUNTED BEHIND TRAFFIC CONTROL DEVICES SUCH AS DRUMS, BARRIER, OR OTHER OBJECTS.
- ALL PORTABLE SIGNS AND STANDS MUST MEET OR EXCEED THE REQUIREMENTS OF NCORP 350 FOR CATEGORY II DEVICES. USE PORTABLE WORK ZONE SIGNS AND STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER.
- ALL PORTABLE WORK ZONE SIGNS AND STANDS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

ROADWAY STANDARD DRAWING FOR PORTABLE WORK ZONE SIGNS MOUNTING HEIGHT & LATERAL CLEARANCE
SHEET 1 OF 1
1110.02

TEMPORARY ROAD CLOSURES
CLOSURE BEYOND DETOUR POINT

GENERAL NOTES

- IF NECESSARY USE THIS ROD. FOR 2-LANE, 2-WAY, AND MULTILANE DIVIDED AND UNDIVIDED ROADWAYS.
- INSTALLATION OF DETOUR ROUTING PANELS, TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY OTHERS (STATE OR CITY FORCES) UNLESS OTHERWISE DESIGNATED IN THE PLANS. PROVIDE A MINIMUM 30 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INSTALL DETOUR ROUTE SIGNS, BEFORE LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS, OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
- INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
- USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
- DO NOT DISPLAY FRACTIONS OR DECIMALS ON SIGN R11-3 "ROAD CLOSED XX MILES AHEAD".
- POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
- USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN THREE DAYS, OR FOR EMERGENCIES.

ROADWAY STANDARD DRAWING FOR TEMPORARY ROAD CLOSURES CLOSURE BEYOND DETOUR POINT
SHEET 1 OF 1
1101.03

DRIVEWAY TURNOUT
DROP CURB TYPE

GENERAL NOTES

- **NO CONSTRUCTION JOINT WILL BE PERMITTED IF FORMS ARE USED TO CAST DRIVEWAY. SLIP FORMING OF CURB AND GUTTER PERMITS THE USE OF CONSTRUCTION JOINT.

ROADWAY STANDARD DRAWING FOR DRIVEWAY TURNOUT DROP CURB TYPE
SHEET 1 OF 2
848.03

DRIVEWAY GRADES

BERM WIDTH	DIST.	GRADE	DIST.	GRADE
8' OR LESS	5'-0"	+2%	2'-6"	+5%
8' OR LESS	2'-0"	+6%	5'-6"	+2%
10'	4'-0"	+4%	5'-6"	+2%
12' & OVER	4'-6"	+4%	7'-0"	+2%

ROADWAY STANDARD DRAWING FOR DRIVEWAY TURNOUT DRIVEWAY GRADES
SHEET 2 OF 2
848.03

OVERLAY DETAIL

OVERLAY DETAIL
h < 7"

ROADWAY STANDARD DRAWING FOR DRIVEWAY TURNOUT DRIVEWAY GRADES
SHEET 2 OF 2
848.03

TYPICAL DETAIL

TYPICAL DETAIL
h < 7" < 9.25"

ROADWAY STANDARD DRAWING FOR DRIVEWAY TURNOUT DRIVEWAY GRADES
SHEET 2 OF 2
848.03

SECTION VIEW OF CURBS OR CURBS AND GUTTERS

GENERAL NOTES

- PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
- JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
- CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS.
- CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1 1/2" DEEP.
- FILL ALL CONTRACTION JOINTS, EXCEPT IN 8" X 6" MEDIAN CURB WITH JOINT FILLER AND SEALER.
- SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.

ROADWAY STANDARD DRAWING FOR CONCRETE CURB, GUTTER AND CURB & GUTTER
SHEET 1 OF 3
846.01

TYPICAL PAVEMENT SECTION

TYPICAL PAVEMENT SECTION
FULL CONSTRUCTION SECTION h > 9.25"

ROADWAY STANDARD DRAWING FOR DRIVEWAY TURNOUT DRIVEWAY GRADES
SHEET 2 OF 2
848.03



Engineer's Seal

Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
STANDARD STORM SEWER
DETAILS**
PROJECT #: 20121-043

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

ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

840.02

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON W.T. HEIGHT, H, WITH NO RISERS) *

PIPE SIZE	DIMENSIONS OF BOX AND PIPE			COVER DIMENSION		NO. BARS	NO. BARS	NO. BARS	TOTAL LENGTH	TOP SLAB	BOTTOM SLAB	REDUCTIONS
	D	B	H	E	F							
12"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	12	12	12	36	0.187	0.187	0.000
15"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	12	12	12	36	0.187	0.187	0.000
18"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	12	12	12	36	0.187	0.187	0.000
24"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	18	18	18	54	0.290	0.290	0.000
30"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	18	18	18	54	0.290	0.290	0.000
36"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	24	24	24	72	0.413	0.413	0.000
42"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	24	24	24	72	0.413	0.413	0.000
48"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	30	30	30	90	0.517	0.517	0.000
54"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	30	30	30	90	0.517	0.517	0.000

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

ROADWAY STANDARD DRAWING FOR
FRAME, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

840.03

DETAIL SHOWING TYPES OF GRATES
USE ACCORDING TO WATER FLOW.

TYPE "G" TYPE "E" TYPE "F"

WATER FLOW SAG WATER FLOW

TYPE "F" TYPE "E" TYPE "G"

WATER FLOW SAG WATER FLOW

RAISED FLOW ARROW 1/8" HIGH

TYPE - E

TYPE - F

TYPE G

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

ROADWAY STANDARD DRAWING FOR
CONCRETE JUNCTION BOX
(WITH OPTIONAL MANHOLE)

12" THRU 66" PIPE

840.31

GENERAL NOTES:
CHAMFER ALL EXPOSED CORNERS 1/4".
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION: MONOLITHIC FOUR, 2" KEYWAY, OR #4 BAR DOMELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORM TO CONSTRUCT THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
PROVIDE ALL JUNCTION BOXES OVER 3' 0" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.06.
ADJUST THE STEEL, CONCRETE AND BRICK MANDATORY QUANTITIES TO THE LOCAL SITUATION ON THE WALL (I.E. STAIRCASE BARS SHORTENED AROUND OPENING IN TOP SLAB, ADDITIONAL VARIABLE HEIGHT BRICK MANDATORY, OPENING IN TOP SLAB).
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

MINIMUM WEIGHTS - LBS.
FRAME - 180
COVER - 150
TOTAL - 330

MINIMUM WEIGHTS - LBS.
FRAME - 180
COVER - 150
TOTAL - 330

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

ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

840.02

DETAIL SHOWING METHOD OF RISER CONSTRUCTION

SECTION Y-Y

SECTION J-J

SECTION M-M

PLAN

PLAN

PLAN

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

ROADWAY STANDARD DRAWING FOR
CROSS PIPE END SECTION
PRECAST CONCRETE SECTION FOR 18" TO 30" PIPE

310.03

ROADWAY CROSS PIPE TYPICAL SECTION

GROOVE INSTALLATION

SIDE VIEW

TONGUE INSTALLATION

ISOMETRIC VIEW

END TREATMENT DIMENSIONS

D	L	W	Ts	Tb	Te	A	B
18"	6'-0"	23"	4"	4"	6"	21 1/4"	25"
24"	8'-2"	30"	4"	4"	6"	27 7/8"	32"
30"	10'-4"	37"	4"	4"	6"	33 3/8"	39"

NOTES:
1. CONSTRUCT PIPE END SECTION USING #4 REBAR SPACED 9"
EACH WAY AND MEET ALL REQUIREMENTS OF STD. SPEC. 310.
2. CHAMFER ALL EXPOSED CORNERS 3/4".

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

ROADWAY STANDARD DRAWING FOR
MANHOLE FRAME AND COVER

840.54

PLAN OF FRAME

PLAN OF COVER

SECTION A-A

MINIMUM WEIGHTS - LBS.
FRAME - 180
COVER - 150
TOTAL - 330

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

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
12" THRU 48" PIPE

840.04

GEOTEXTILE

NCDOT CLASS B RIP RAP SECTION 1042

"V" DITCH TYPE "A" TYP.
NTS

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

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
12" THRU 48" PIPE

840.04

GEOTEXTILE

NCDOT CLASS B RIP RAP SECTION 1042

"V" DITCH TYPE "C" TYP.
NTS

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

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
12" THRU 48" PIPE

840.04

GEOTEXTILE

NCDOT CLASS B RIP RAP SECTION 1042

"V" DITCH TYPE "B" TYP.
NTS

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

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
12" THRU 48" PIPE

840.04

GEOTEXTILE

NCDOT CLASS B RIP RAP SECTION 1042

"V" DITCH TYPE "B" TYP.
NTS

APPROVED HOOD DESIGNS

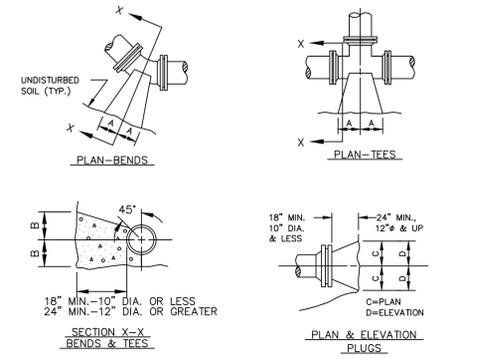
DUMP NO WASTE! DRAINS TO WATERWAYS

DUMP NO WASTE! DRAINS TO RIVERS

GENERAL NOTES:
1. THE FRAME SHALL BE RATED HEAVY DUTY FOR HIGHWAY TRAFFIC LOADS (H-20 OR HS-20).
2. THE MATERIAL SHALL CONFORM TO THE LATEST ASTM STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS (ASTM A48, CLASS 35).
3. APPROVED HOOD DESIGN MANUFACTURERS: U.S. FOUNDRY HOOD (USF 5183-2 MODIFIED WITH FISH) AND FRAME (USF 5182), VULCAN FOUNDRY (EAST JORDAN IRON WORKS, INC.) HOOD AND FRAME (V-4066 WITH FISH LOGO) OR APPROVED EQUAL.

REV. #	DATE	DESCRIPTION
0	09/22/22	FINAL, FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL, FOR BIDDING PURPOSES

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 24 OF: 27



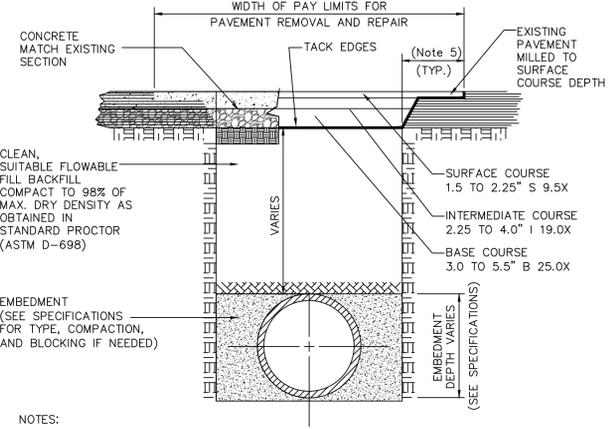
PIPE SIZE	90° BEND		45° BEND		22-1/2° BEND		11-1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	18"	12"	10"	13"	7"	10"	7"	10"	12"	14"	13"	6"
6"	18"	12"	10"	13"	7"	10"	7"	10"	12"	14"	19"	9"
8"	24"	18"	13"	18"	10"	12"	10"	12"	16"	18"	25"	11"
10"	28"	22"	15"	22"	12"	15"	12"	15"	20"	22"	31"	14"
12"	32"	28"	19"	28"	14"	18"	14"	18"	22"	28"	37"	17"
16"	54"	38"	30"	36"	18"	36"	18"	36"	36"	42"	54"	24"
24"	68"	68"	50"	50"	36"	36"	26"	68"	68"	68"	68"	38"

2000 PSF SOIL (SAND & GRAVEL WITH CLAY)
THRUST BLOCKING DETAIL
 NOT TO SCALE

- NOTES:**
- BASED ON 200 PSI STATIC PRESSURE PLUS AWA WATER HAMMER ALLOWANCE.
 - ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
 - THRUST BLOCKS TO BE USED AT ALL LINES OPERATING UNDER PRESSURE.
 - KEEP ALL PIPING JOINTS CLEAR OF CONCRETE THRUST BLOCKS.

CITY OF CONCORD STANDARD DETAIL TYPICAL THRUST BLOCK

No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		SVM		PK	MSH	05/11	1	1

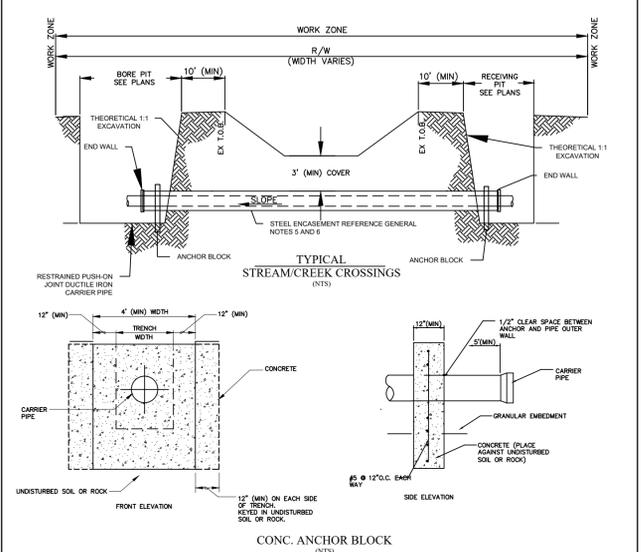


- NOTES:**
- NEW PAVEMENT SHALL HAVE SECTION THICKNESS DESIGNED TO NCDOT SUPERPAVE STANDARDS AS PROVIDED BY ENGINEER OR MATCH EXISTING CONSTRUCTION, WHICH EVER IS GREATER OR AS SPECIFIED BY THE CONTRACT DOCUMENTS.
 - TRENCH IS TO BE BACKFILLED IN COMPACTED 6" LAYERS BEFORE PAVEMENT REPAIRS ARE MADE.
 - REFER TO EARTHWORK SPECIFICATIONS FOR EMBEDMENT AND FILL REQUIREMENTS.
 - THIS DETAIL SHOWS ASPHALT PAVEMENT REPLACEMENT. THE WIDTH OF PAY LIMITS SHALL APPLY TO STONE AND CONCRETE PAVEMENT AS WELL.
 - 18" MIN. AROUND PATCHES AND 36" MIN. AT CURB CUTS.

UTILITY CUT REPLACEMENT DETAIL
 SCALE: NONE

CITY OF CONCORD STANDARD DETAIL TYPICAL UTILITY CUT REPLACEMENT

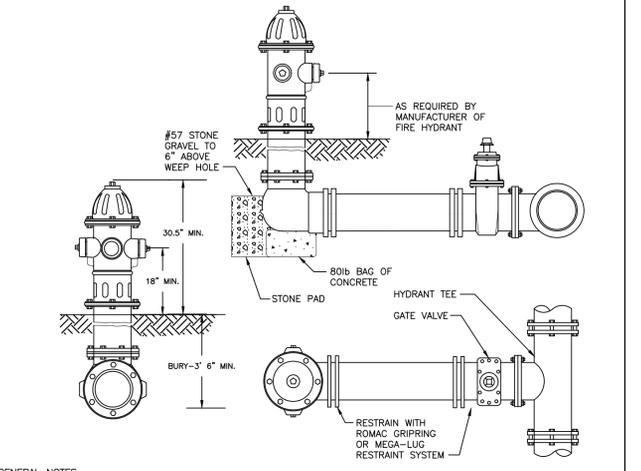
No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		BCC		SVM	MSH	05/21	1	1



- GENERAL NOTES:**
- SEE DRAWINGS FOR LOCATION, SIZE AND LENGTH OF STEEL PIPE CASINGS; AND RESTRAINED DUCTILE IRON CARRIER PIPE.
 - INSTALL TWO (2) 1-INCH DRAINS EACH SIDE OF CARRIER PIPE IN DOWNHILL END WALL.
 - ENCASEMENT PIPE WITH RESTRAINED DUCTILE IRON CARRIER IS TO EXTEND OUTSIDE OF THE PROJECTED THEORETICAL 1:1 EXCAVATION SLOPE AT LEAST 10-FT FROM THE TOP OF BANK TO THE EXCAVATION FACE FLOOR CLOSEST TO STREAM/CREEK BANK.
 - RESTRAINED PUSH-ON JOINT DUCTILE IRON CARRIER PIPE SHALL EXTEND THROUGH CASING PIPE ASSEMBLY. SEE CITY DETAIL "CASING SPIDER" FOR CASING PIPE AND SPIDER REQUIREMENTS.
 - CATHODIC PROTECTION REQUIREMENT - WHERE CATHODIC PROTECTION IS REQUIRED FOR GAS LINE CROSSINGS, THE CASING PIPE SPIDERS SHALL BE ADVANCE PRODUCTS AND SYSTEMS, INC. STAINLESS STEEL BAND CASING SPIDERS, MODEL SSI, OR EQUAL; AND THE STEEL CASING PIPE IS TO BE UNCOATED.

CITY OF CONCORD STANDARD DETAIL TYPICAL STREAM/CREEK CROSSING

No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		BCC		SVM	MSH	05/21	1	1

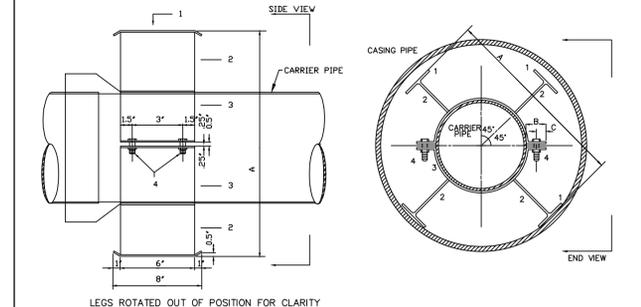


- GENERAL NOTES:**
- HYDRANTS SHALL BE MUELLER COMPANY - MODEL: SUPER CENTURION 250; AMERICAN FLOW CONTROL - MODEL 54" B-94-B; MEDALLION; OR EQUAL WITH BLACK PRIMER FINISH.
 - HYDRANT SHALL HAVE INTEGRAL SNAP-TIGHT STYLE STORZ CONNECTION WITH 5/8" VALVE OPENING, OPEN LEFT, 1/2" PENTAGON NUTS, TWO-2 1/2" NST CONNECTIONS, ONE-5" STORZ CONNECTION, DRAIN HOLES OPEN, AND 6" MJ SHOE.
 - MINIMUM BURY DEPTH OF 3'-6".
 - ALL HYDRANTS SHALL STAND PLUMB. HYDRANTS WITH PUMPER NOZZLES SHALL HAVE HOSE NOZZLES PARALLEL WITH, AND THE PUMPER NOZZLE PERPENDICULAR TO, THE CURB LINE. ALL HYDRANTS SHALL BE ORIENTED SO THAT THE PUMPER NOZZLE FACES THE CURB OR AS DIRECTED BY THE CITY.
 - HYDRANT SHALL BE LOCATED AT LEAST 3' BEHIND THE CURB AND LESS THAN 10' FROM THE EDGE OF THE ROAD PAVEMENT OR AS DIRECTED BY THE CITY.
 - ALL OTHER MATERIALS AND INSTALLATION MUST CONFORM WITH THE TECHNICAL STANDARDS OF WSACC AND CITY OF CONCORD.

FIRE HYDRANT PAINT COLOR CODE REQUIREMENTS:
 ALL NEW FIRE HYDRANTS INSTALLED IN THE CITY OF CONCORD SHALL BE PAINTED IN ACCORDANCE WITH THE FOLLOWING COLORS:
 1. HYDRANTS ON PUBLIC WATER MAINS SHALL BE PAINTED SAFETY YELLOW, SHERWIN WILLIAMS STEEL MASTER 9500 B56-300 SERIES LRV 30% OR EQUAL.
 2. PRIVATE HYDRANTS ON PRIVATE WATER MAINS SHALL BE PAINTED SAFETY RED, SHERWIN WILLIAMS SW4081 LVR 11% OR EQUAL.
 FOR ALL FIELD PAINTING, ALL SURFACES SHALL BE SANDBLASTED AND PROPERLY PREPARED ACCORDING TO THE PAINT MANUFACTURER'S RECOMMENDATION PRIOR TO PAINTING. ALL FIRE HYDRANTS AND ANY PORTIONS OF THE HYDRANT ASSEMBLY EXPOSED TO VIEW (ABOVE ADJACENT GROUND ELEVATION) SHALL BE PAINTED WITH TWO (2) OR MORE EVENLY APPLIED COATS OF HYDRANT ENAMEL PAINT. HYDRANTS WILL BE RETOUCHE/REPAINTED AS NECESSARY AFTER INSTALLATION AND PRIOR TO ACCEPTANCE.

CITY OF CONCORD STANDARD DETAIL TYPICAL FIRE HYDRANT

No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		SVM/BCC		MSH		07/21		



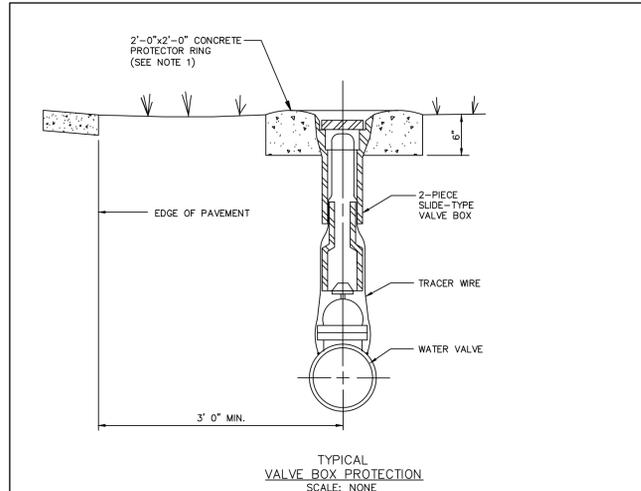
LEGS ROTATED OUT OF POSITION FOR CLARITY

CARRIER PIPE NOMINAL DIA.	CASING PIPE				SPIDER/SPACER DIMENSIONS			
	O.D.	HIGHWAY WALL	RAILROAD WALL	O.D.	A	B	C	
6"	6.90"	12.75"	0.188"	12.75"	0.250"	11"	1 1/4"	5/8"
8"	9.05"	18"	0.250"	18"	0.312"	16 1/2"	2 1/4"	1"
12"	13.20"	24"	0.250"	24"	0.406"	22 1/2"	3"	1 1/4"
16"	17.40"	30"	0.312"	30"	0.500"	28 1/2"	3 1/2"	1 1/2"
24"	25.80"	36"	0.375"	36"	0.5625"	34 1/2"	4"	2"

- NOTES:**
- CARRIER PIPE SHALL BE RESTRAINED PUSH-ON JOINT DUCTILE IRON JOINT PIPE.
 - A MINIMUM OF 2 SPIDERS/SPACERS PER JOINT OF CARRIER PIPE. ADDITIONAL SPIDERS/SPACERS MAY BE REQUIRED PER MANUFACTURER'S RECOMMENDATIONS AND/OR AS DIRECTED BY THE CITY.
 - SPACERS SHALL BE ADVANCE PRODUCTS & SYSTEMS, INC. STAINLESS STEEL BANDED SPACERS, MODEL SSI OR EQUAL WITH STAINLESS STEEL NUTS, BOLTS AND WASHERS.
 - FOR SEWER - CASING PIPE SLOPE TO MATCH SEWER SLOPE & FOR WATER - SPIDER/SPACER HEIGHT CAN BE ADJUSTED.
 - CASING PIPE MATERIAL IS UNCOATED STEEL.
 - FOR 24-INCH OR LARGER DIAMETER CASING PIPES LOCATED WITHIN NCDOT'S RIGHT OF WAY, ALL VOIDS SHALL BE FILLED WITH FLOWABLE FILL IN ACCORDANCE WITH NCDOT STANDARDS.

CITY OF CONCORD STANDARD DETAIL TYPICAL CASING PIPE SPIDERS/SPACERS

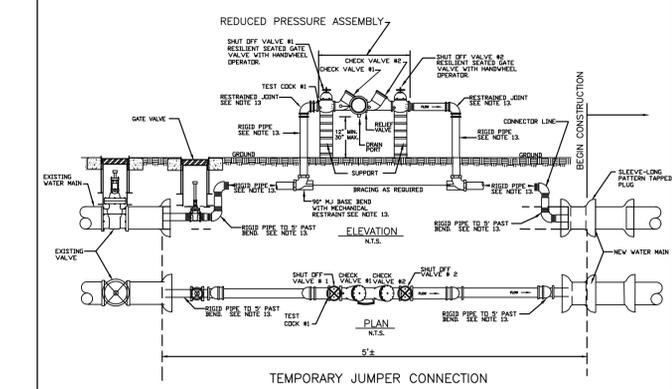
No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		BCC		SVM	MSH	08/21	1	1



- NOTES:**
- EACH BURIED VALVE TO A DEPTH OF 4 FEET OR LESS SHALL BE PROVIDED WITH A CHARLOTTE FOUNDRY VALVE BOX, OR EQUAL. VALVE BOXES SHALL BE CAST IRON, EXTENSION SLEEVE TYPE, FOR THE DEPTH OF COVER REQUIRED BY THE DRAWINGS. NOT MORE THAN ONE EXTENSION WILL BE ALLOWED WITH EACH SLIDE TYPE VALVE BOX. VALVE BOXES SHALL BE NOT LESS THAN 5 INCHES IN INSIDE DIAMETER, SHALL HAVE A MINIMUM THICKNESS AT ANY POINT OF 3/16 INCH, AND SHALL BE PROVIDED WITH SUITABLE CAST IRON BASES AND COVERS.
 - EACH VALVE BURIED TO A DEPTH GREATER THAN 4 FEET SHALL BE PROVIDED WITH A VALVE BOX CONSISTING OF A CAST IRON COVER AND A 6 INCH DUCTILE IRON PIPE SECTION. THE COVER SHALL BE CLAY & BAILEY "NO. 2193" OR TYLER "SERIES 6890-A". THE PIPE SHAFT SHALL BE SIZED TO EXTEND FROM THE VALVE TO 5 INCHES INSIDE THE VALVE BOX COVER.
 - ALL PARTS OF VALVE BOXES, BASES, AND COVERS SHALL BE SHOP COATED BY DIPPING IN ASPHALT VARNISH.
 - VALVES AND VALVE BOXES SHALL BE SET PLUMB. EACH VALVE BOX SHALL BE PLACED DIRECTLY OVER THE VALVE IT SERVES, WITH THE TOP OF THE BOX BROUGHT FLUSH WITH THE FINISHED GRADE. AFTER BEING PLACED IN PROPER POSITION, EARTH/FILL SHALL BE PLACED AROUND EACH VALVE BOX AND THOROUGHLY TAMPED ON EACH SIDE OF THE BOX. THE TOP OF THE BOX SHALL BE SET IN A CONCRETE PROTECTOR RING.
 - NO MORE THAN 6" OF GRADE RINGS SHALL BE USED FOR GRADE ADJUSTMENTS.

CITY OF CONCORD STANDARD DETAIL TYPICAL VALVE BOX

No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		SVM/BCC		PK	MSH	07/21	1	1



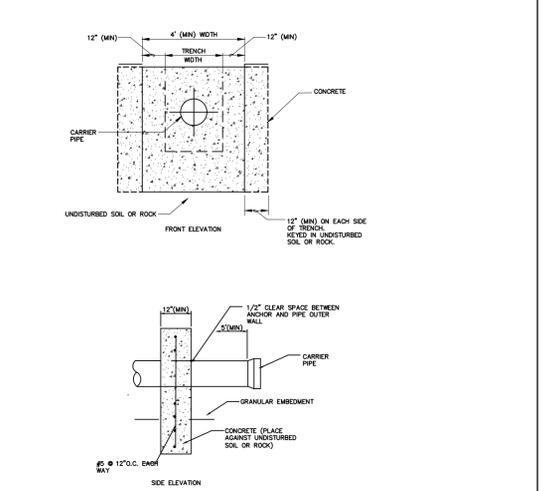
- NOTES:**
- INSTALL CONNECTOR LINE FROM EXISTING BLOW-OFF ASSEMBLY TO NEW MAIN FOR FILLING, TESTING, AND STERILIZING NEW MAIN.
 - CONNECTOR LINE TO BE ASSEMBLED WITH CHECK VALVE AND TO BE OPERATED INDEPENDENT OF EXISTING MAIN.
 - BLOCKING ON EXISTING LINE NOT TO BE DISTURBED.
 - FINAL CONNECTION TO EXISTING MAIN TO BE MADE ONLY AFTER TOTAL PROJECT HAS BEEN ACCEPTED BY THE CITY OF CONCORD INSPECTIONS DEPARTMENT.
 - VALVES ON EXISTING SYSTEM TO BE OPERATED BY THE CITY OF CONCORD'S WATER RESOURCES DEPARTMENT STAFF ONLY.
 - ONLY ONE CONNECTION WILL BE ALLOWED BETWEEN THE EXISTING SYSTEM AND THE NEW CONSTRUCTION UNTIL TESTING AND DISINFECTION IS COMPLETE.
 - WATER IN REASONABLE AMOUNTS REQUIRED FOR AN IN CONNECTION WITH THE WORK TO BE PERFORMED WILL BE FURNISHED AT LOCATIONS AS APPROVED BY OWNER AT RATES SPECIFIED BY OWNER AND IN ACCORDANCE WITH THE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND POICIES.
 - CONTRACTOR SHALL FURNISH NECESSARY PIPE, HOSE, REDUCED PRESSURE ZONE BACK FLOW DEVICE, AS APPROVED BY THE OWNER AND METER APPROVED BY OWNER, NOZZLES, AND TOOLS AND SHALL PERFORM ALL NECESSARY LABOR.
 - CONTRACTOR SHALL ENSURE THAT THE EQUIPMENT HAS BEEN INSPECTED BY AND APPROVED BY THE OWNER AND HAS OBTAINED THE APPLICABLE PERMITS AND CERTIFICATIONS PRIOR TO WATER SYSTEM CONNECTION.
 - CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OWNER (WHO WILL FIX THE LOCATION, TIME, RATE, AND DURATION OF EACH WITHDRAWAL FROM THE DISTRIBUTION SYSTEM) AS TO THE AMOUNT OF WATER REQUIRED AND THE TIME WHEN THE WATER WILL BE NEEDED. UNNECESSARY WASTE OF WATER WILL NOT BE TOLERATED. IF CONTRACTOR WASTES WATER AS DETERMINED BY OWNER, CONTRACTOR SHALL BE REQUIRED TO OBTAIN ALL REMAINING WATER NECESSARY FOR COMPLETION OF THE WORK MEASURED THROUGH A METER AND AT THE CONTRACTOR'S EXPENSE.
 - SPECIAL HYDRANT WRENCHES SHALL BE USED FOR OPENING AND CLOSING FIRE HYDRANTS. IN NO CASE SHALL PIPE WRENCHES BE USED FOR THIS PURPOSE.
 - 6" TO 10" RP SHALL BE SUPPORTED WITH ADEQUATE SUPPORT PEDESTALS(S). SUPPORT PEDESTALS SHALL NOT BLOCK RELIEF VALVE OR DRAIN PORT.
 - 12" TO 3" K-COPPER PIPE, 4" TO 10" DIP, RESTRAINED JOINTS SHALL BE MEGA LUG RESTRAINTS OR APPROVED EQUAL.
 - TEST COCK SHALL BE UPSTREAM OF SHUT-OFF VALVE #1 AND IS PART OF THE APPROVED ASSEMBLY.

CITY OF CONCORD STANDARD DETAIL TYPICAL JUMPER CONNECTION

WATER MAIN SIZE	MIN. BACKFLOW DEVICE SIZE	MIN. END OF LINE BLOWOFF
6" OR 8"	2"	2"
12"	4"	2.5"
16"	6"	4"
24"	8"	6"

CITY OF CONCORD STANDARD DETAIL TYPICAL JUMPER CONNECTION

No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		SVM		PK	MSH	05/11	1	1



- NOTES:**
- CONCRETE AND REINFORCING STEEL BARS FOR BURIED BLOCKING AND ENCASEMENT OF PIPE SHALL CONFORM TO THE LIMITING REQUIREMENTS SPECIFIED IN WSACC TECHNICAL SPECIFICATION SECTION 0330, EXCEPT THAT THE CEMENT FACTOR AND TOTAL WATER CONTENT MAY BE ADJUSTED TO PROVIDE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. CONCRETE SHALL HAVE A SLUMP OF NOT LESS THAN 3 INCHES NOR MORE THAN 8 INCHES WHEN PLACED.
 - KEEP ALL PIPING JOINTS CLEAR OF CONCRETE ANCHOR BLOCKS

CITY OF CONCORD STANDARD DETAIL TYPICAL ANCHOR BLOCK

No.	Date	By	REVISION	Checked By	Approved By	Date	Sht	of
1		BCC		SVM	MSH	05/21	1	1

Concord
 NORTH CAROLINA
 High Performance Living

PREPARED BY
 ENGINEERING DEPARTMENT
 CITY OF CONCORD
 P.O. BOX 308
 CONCORD N.C. 28026
 (704) 920-5425

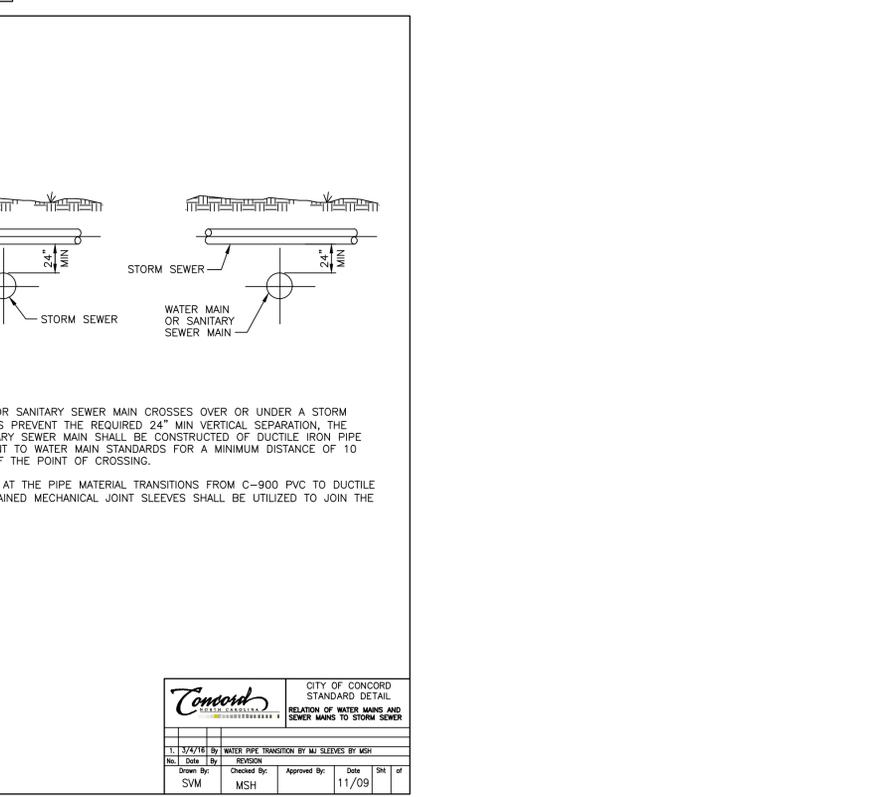
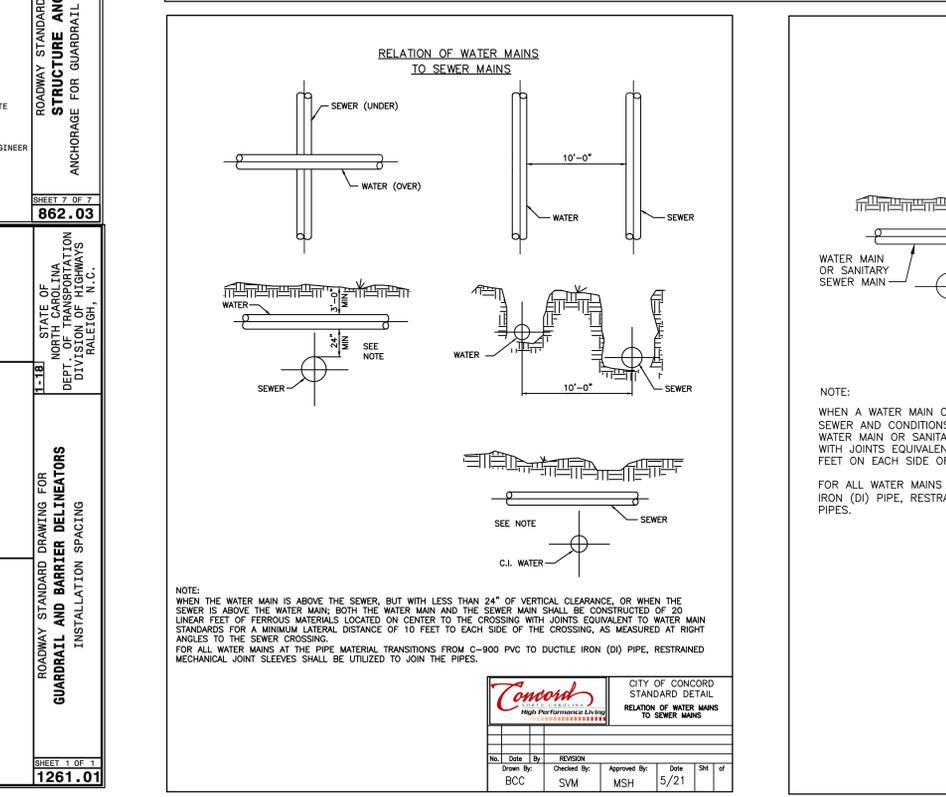
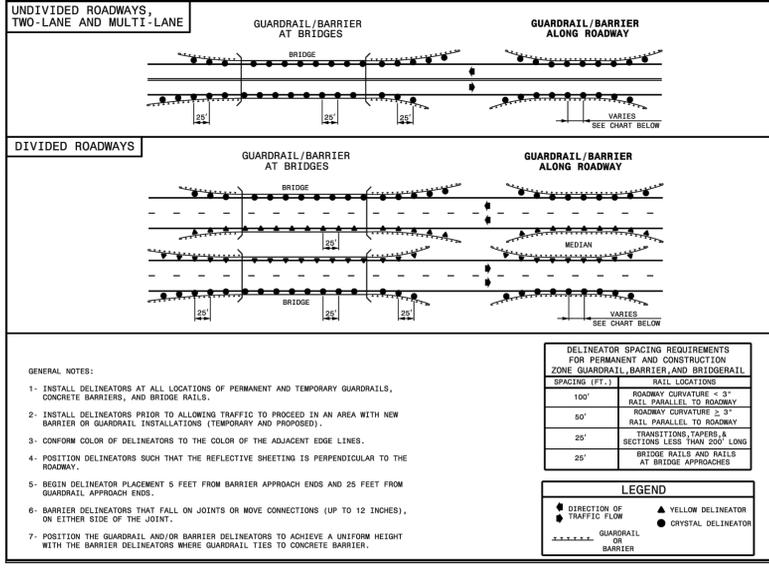
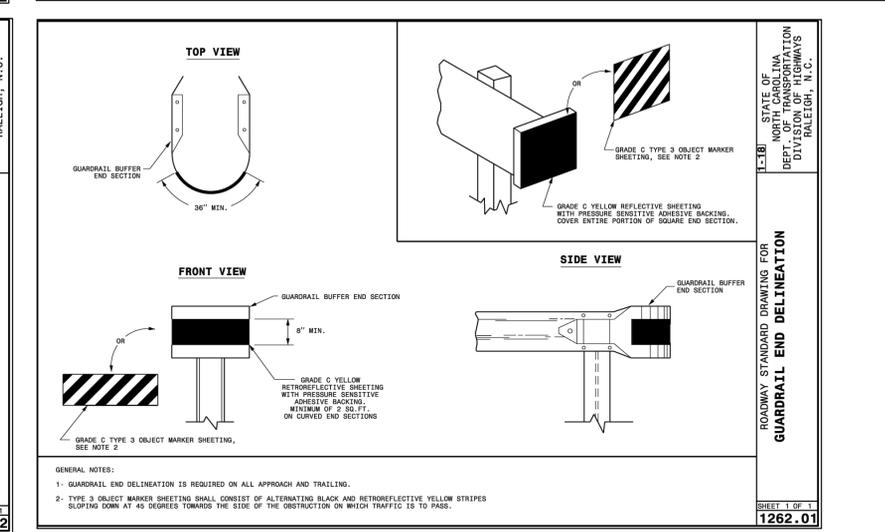
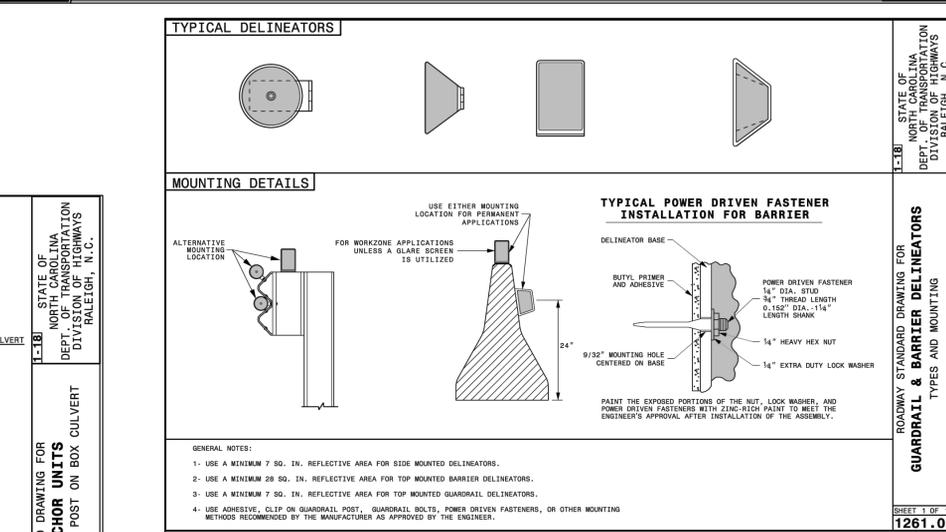
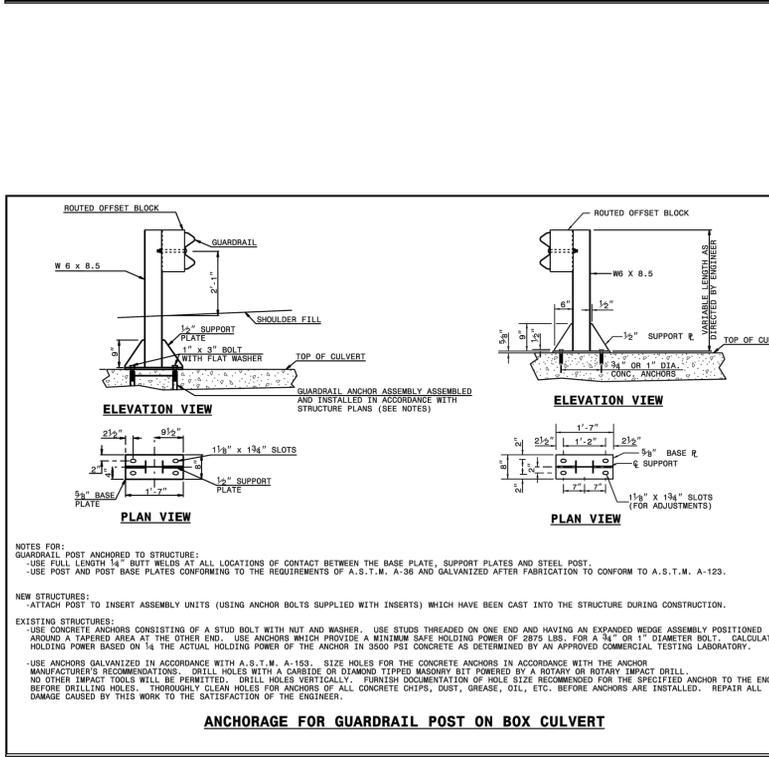
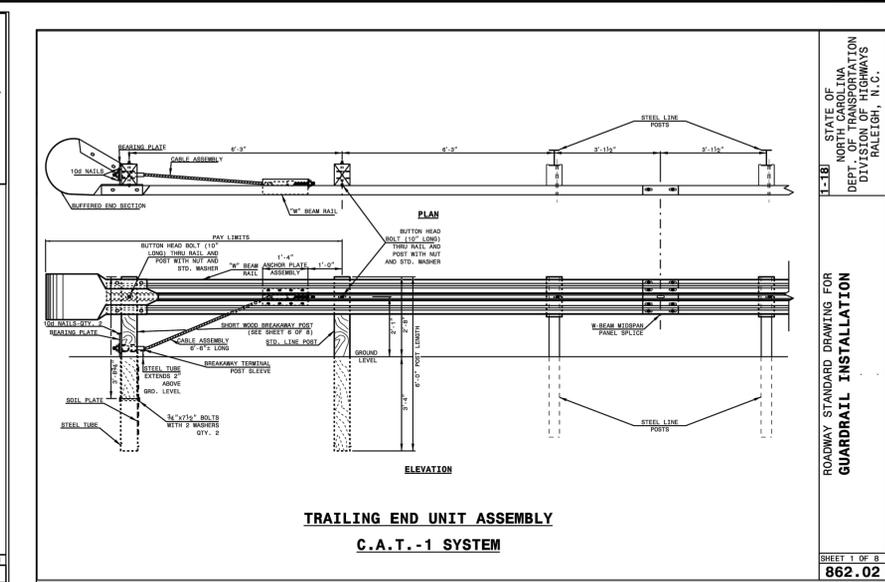
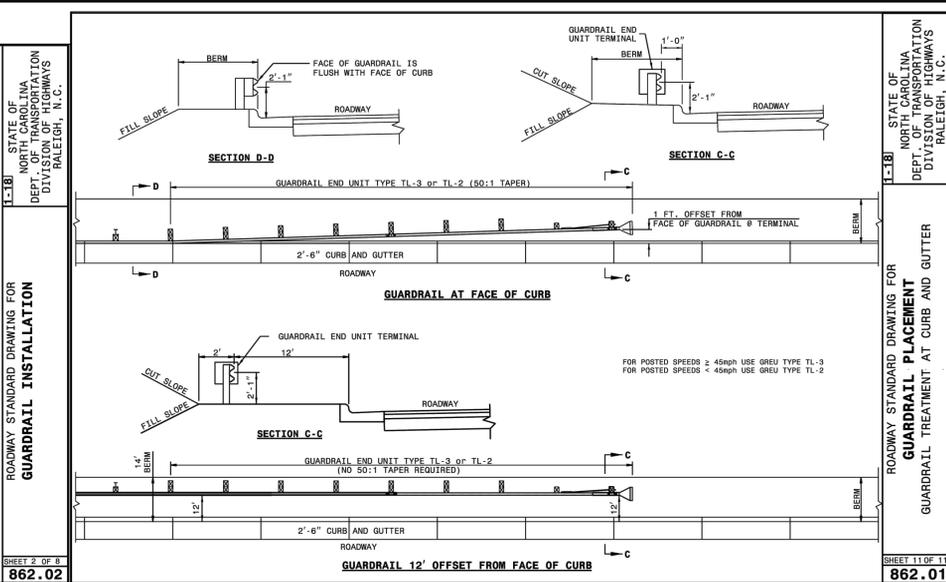
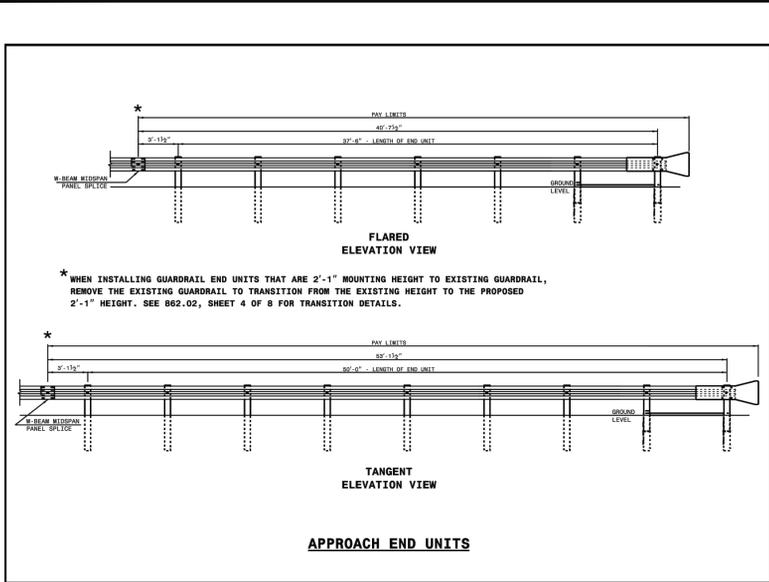
Professional Engineer Seal
 Carolina Professional Engineer Seal
 No. 044150
 Date: 10/27/22
 Engineer's Seal

Surveyor's Seal

COUNTRY CLUB DR. CULVERT REPLACEMENT STANDARD WATER DETAILS
 PROJECT #: 2021-043

REV.#	DATE	DESCRIPTION	BY
0	09/22/22	FINAL, FOR CONSTRUCTION	BCC
1	10/07/22	ADDRESSING COMMENTS	BCC
2	10/27/22	FINAL, FOR BIDDING PURPOSES	BCC

DESIGNED BY: CGZ
 DRAWN BY: BCC
 CHECKED BY: EAB
 SCALE: AS SHOWN
 DATE: 07/01/22
 PROJECT NUMBER: 2021-043
 SHEET: 25 OF 27



Concord
NORTH CAROLINA
High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

Carolina Professional Seal
SEAL
044150
ENGINEER
ANGELA ZENKOWSKI
10/27/22
Engineer's Seal

Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
GUARDRAIL STANDARD DETAILS**
PROJECT # : 2021-043

REV. #	DATE	DESCRIPTION	BY
0	09/22/21	FINAL, FOR CONSTRUCTION	BCC
1	10/07/21	ADDRESSING COMMENTS	BCC
2	10/27/21	FINAL, FOR BIDDING PURPOSES	BCC

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 26 OF 27



TYPE III BARRICADE(S)

① R11-2 48"X30" ROAD CLOSED

② R11-4 60"X30" ROAD CLOSED TO THRU TRAFFIC
M4-10R 48"X18" DETOUR

TYPE III BARRICADE

③ R11-4 60"X30" ROAD CLOSED TO THRU TRAFFIC
M4-10L 48"X18" DETOUR

TYPE III BARRICADE

④ W20-2 48"X48" DETOUR AHEAD

⑤ W20-3 48"X48" ROAD CLOSED AHEAD
SP-4L 42"X12" NEXT LEFT

⑥ W20-3 48"X48" ROAD CLOSED AHEAD
SP-4R 48"X12" NEXT RIGHT

⑦ W20-3 48"X48" ROAD CLOSED 500 FT

⑧ W20-3 48"X48" ROAD CLOSED 1000 FT

⑨ COUNTRY CLUB DR 36"X18" DETOUR
M4-8 24"X12" M6-1 21"X15"

⑩ COUNTRY CLUB DR 36"X18" DETOUR
M4-8 24"X12" M6-1 21"X15"

⑪ COUNTRY CLUB DR 36"X18" DETOUR
M4-8 24"X12" M6-3 21"X15"

LEGEND

— DETOUR

🚦 TRAFFIC LIGHT

— CLOSED

NOTES:

- USE ROW STD DWG 1101.03 SHEET 1 OF 9 TO INSTALL SIGNS OR AS DIRECTED BY ENGINEER
- PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- COVER OR REMOVE ALL SIGNS AND DEVICES WHEN ROAD CLOSURE AND OFF-SITE DETOUR ARE NOT IN OPERATION.

Concord
NORTH CAROLINA
High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

Carolina Seal
Professional Engineer
SEAL
044150
10/27/22
Engineer's Seal

Surveyor's Seal

**COUNTRY CLUB DR.
CULVERT REPLACEMENT
TRAFFIC CONTROL PLAN**
PROJECT # : 2021-043

REV #	DATE	DESCRIPTION
0	09/29/22	FINAL, FOR CONSTRUCTION
1	10/07/22	ADDRESSING COMMENTS
2	10/27/22	FINAL, FOR BIDDING PURPOSES

DESIGNED BY: CGZ
DRAWN BY: BCC
CHECKED BY: EAB
SCALE: AS SHOWN
DATE: 07/01/22
PROJECT NUMBER: 2021-043
SHEET: 27 OF: 27