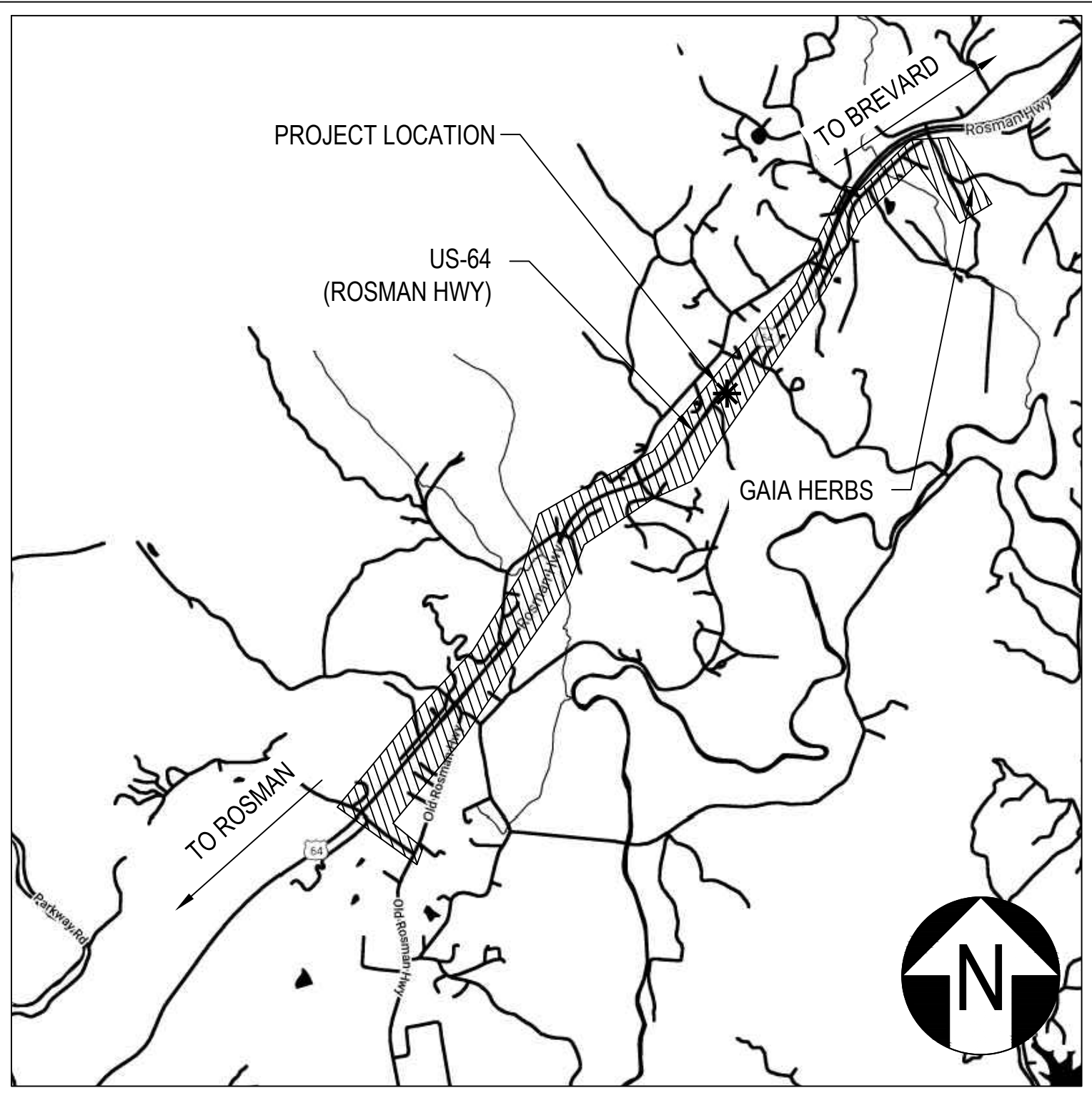


ARC# 19156-2020



LOCATION MAP
NOT TO SCALE

CONSTRUCTION PLANS FOR THE SEWERLINE EXTENSION WATERLINE EXTENSION AND SEWER PUMP STATION TRANSYLVANIA COUNTY, NORTH CAROLINA MARCH 16, 2022

PREPARED FOR:
TRANSYLVANIA COUNTY
101 S. BROAD STREET
BREVARD, NC 28712
&
TOWN OF ROSMAN
6 MAIN STREET
ROSMAN, NC 28772

SHEET INDEX

SHEET NO.	DESCRIPTION
-	COVER SHEET
C-1	MASTER PLAN
C-2	FORCE MAIN 'A' & WATERLINE 'T' (STA. 0+00 TO 30+00)
C-3	FORCE MAIN 'A' & WATERLINE 'T' (STA. 30+00 TO 60+00)
C-4	FORCE MAIN 'A' & WATERLINE 'T' (STA. 60+00 TO 90+00)
C-5	FORCE MAIN 'A' & WATERLINE 'T' (STA. 90+00 TO 120+00)
C-6	FORCE MAIN 'A' & WATERLINE 'T' (STA. 120+00 TO 137+31)
C-7	FORCE MAIN 'B' (STA. 0+00 TO 27+34)
C-8	WATERLINE 'S' (STA. 0+00 TO 27+85)
C-8A	WATERLINE 'W' (STA. 0+00 TO 14+80)
C-9	PUMP STATION SITE, GRADING, & NCDOT DRIVEWAY PLAN
C-10	DETAILS
C-11	DETAILS
C-12	DETAILS
C-13	EROSION CONTROL PLAN FM 'A' & WL 'T' (STA. 0+00 TO 45+00)
C-14	EROSION CONTROL PLAN FM 'A' & WL 'T' (STA. 45+00 TO 90+00)
C-15	EROSION CONTROL PLAN FM 'A' & WL 'T' (STA. 90+00 TO 137+26)
C-16	E.C. PLAN FM 'B' (STA. 0+00 TO 27+34) & WL 'S' (STA. 0+00 TO 15+00)
C-17	EROSION CONTROL PLAN WL 'S' (STA. 15+00 TO 27+85) & PUMP STATION
C-18	EROSION CONTROL PLAN WL 'R' (STA. 0+00 TO 13+60)
C-19	DETAILS

REVISIONS

REVISION AND ISSUE NO.	SHEET NO.	DESCRIPTION	DATE
A - ISSUE 1	ALL	SUBMITTAL TO CLIENT AND REGULATORY AGENCIES FOR REVIEW	10/13/2021
A - ISSUE 2	ALL	RESUBMITTAL TO REGULATORY AGENCIES TO ADDRESS REVIEW COMMENTS	12/14/2021
A - ISSUE 3	ALL	SUBMITTAL TO CLIENT AND REGULATORY AGENCIES FOR REVIEW	2/11/2022
B - ISSUE 1	ALL	ISSUED FOR BID	3/16/2022

EARTHWORK SPECIFICATIONS:

1. Clearing and Grubbing

SPECIAL PROJECT NOTE: Due to potential presence of endangered species (various bat species), clearing SHALL be limited to November 16 through March 14. Clearing shall NOT be conducted outside this time window.

Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, logs, snags, brush, undergrowth, heavy growth of grass, weeds, fence structures, debris and rubbish of any nature, natural obstructions such as objectionable soil material unsatisfactory for foundations. It shall also consist of grubbing of stumps, roots foundations and disposal of all such material. All holes remaining after the grubbing operation in embankment areas and in excavation areas less than two (2) feet in depth, shall have sides broken down and leveled if necessary to flatten out slopes, refilled with acceptable material that is properly compacted in layers by tampers, rollers or construction equipment.

Burning on site is not permitted without written approval of the local governing authorities having jurisdiction.

2. Existing trees and area outside of grading limits line

Trees and vegetation to be saved shall be protected from damage by a fence barricade prior to, or during, clearing operations. Trees to be saved shall be designated by the owner. No trees are to be removed from the area outside the limits of grading or from specifically designated areas within the construction areas. If, in the opinion of the engineer, a contractor damages a tree not to be removed, the contractor will be fined a predetermined amount for each damaged tree. The contractor shall also be responsible for all costs associated in removing the damaged trees from the site.

3. Fill

All vegetation such as roots, brush, heavy growth of grass, topsoil, all decayed vegetable matter, rubbish, and other unsuitable material within the area upon which fill is to be placed shall be stripped or be otherwise removed before the fill operation is started. In no case shall unsuitable material remain in or under the fill area. Sloped ground surface steeper than one vertical to four horizontal, on which fill is to be placed, shall be placed, stepped or benched in such a manner that the fill to be placed shall be 95 percent of the maximum laboratory dry density according to standard proctor (ASTM D 1557, ASTM D 698). Moisture content shall be within 3 percent of the optimum moisture content. Proof-roll the areas to be filled or on which structures are to be placed. A loaded dump truck or other rubber tired equipment shall be used proof-rolling. Overlapping passes of a vehicle should be made across the site in one direction and then perpendicular to the original direction of rolling.

Any filling, pumping or soft areas should be cut out and replaced with fill compacted as described herein.

The proposed fill should be limited to soils classified in accordance with ASTM D-2487 as GM, GC, SW, SM, SC, ML and CL. Soil classified as PT, OH, OL, CH and MH are not satisfactory as compacted fill.

Fills and embankments shall be constructed at the locations and to the lines and grades indicated on construction plans. The slope shall not exceed two feet horizontal to one foot vertical. The completed fill shall correspond to the shape of the typical sections indicated on the construction plans. Material removed from the excavation shall be used in forming the fill. Fill material shall be reasonably free from roots, other organic material, trash and stones having maximum dimensions greater than 6 inches (4 inches in trenches for utilities). No frozen material will be permitted in the fill. Stones having a maximum dimension of 4 inches will not be permitted in the upper six inches of fill or embankment or utility trench. The material shall be placed in successive horizontal layers not more than 8 inches thick, unless otherwise noted, in loose depth for the width of the cross-section and shall be compacted to at least 95 percent of the maximum laboratory dry density according to standard proctor (ASTM D-698, AASHTO T-99). Moisture shall be within 3 percent of the optimum moisture content. The top 12 inches of the paving, parking and/or roadway sub-grade shall be compacted to 95 percent of the maximum dry density (standard proctor). Each lift shall be rolled with a vibratory roller, a sheepfoot roller, or a loaded rubber tired dump truck, scraper or loader. If the soil is to dry, a water truck with spreader bar or spray hose shall be used to bring the soil to the proper moisture range. The water shall be thoroughly and properly mixed with the soil prior to compaction.

Storm drain pipes shall be placed on a firm bottom and hand tamped to shore up the pipe. A cushion of soil shall be tamped above the crown of the pipe in accordance with the pipe manufacturer's recommendations so that the heavier compaction equipment can then be used to bring the soil to a density as described above for fill areas.

If soils investigation report is provided, then follow the recommendations of the report if they exceed the recommendations of these specifications.

4. Topsoil

Unless otherwise specified, areas designated for grading operations that contain a blanket of topsoil shall be stripped and placed in convenient stockpiles for later use as a topsoil blanket on the new graded areas specified herein, or as designated. Topsoil shall be stripped from all areas designated to receive fill. The stripping of material for topsoil shall be carefully determined and only the quantity required shall be stockpiled. Material stockpiled shall be stored in a satisfactory manner to afford proper drainage. When grading operations permit, instead of stockpiling, the topsoil shall be hauled and spread directly on the areas designated to receive topsoil.

5. Rock excavation

If rock is encountered, clear away earth to expose material. Notify owner and receive written instructions prior to excavation. Remove rock to a depth of 6 inches below and 8 inches on each side of pipes or trenches. A measurement of the extent of rock to be removed shall be made. Rock excavation shall be paid for in accordance with agreement with the owner.

CONSTRUCTION NOTES:

1. The drawings and specifications are intended to cover a complete project, ready to use, and all items necessary for a complete and workable job shall be furnished and installed. Any discrepancy shall be immediately reported to the owner or his representative.

2. All work shall comply with all applicable local, state, and federal codes. The contractor, at his expense shall obtain all necessary licenses and permits, unless already obtained by the owner.

3. The contractor shall coordinate location and installation of all underground utilities and appurtenances to minimize disturbing curbing, paving and all other utilities.

4. The existing utilities shown are for the contractor's convenience only. There may be other utilities not shown on these drawings. The utilities shown are based on the best available information and surface evidence where available. The engineer assumes no responsibility for the location of the utilities shown. It shall be the contractor's responsibility to verify the locations of all utilities within the limits of work. All damage made to existing utilities by the contractor shall be the sole responsibility of the contractor.

5. Deviations from these plans and specifications without prior consent of the engineer and the municipality may be cause for the work to be unacceptable.

6. All materials shall be new unless used or salvaged materials are authorized by the owner.

7. The contractor shall furnish and maintain all necessary barricades around the work and shall provide protection against water damage and soil erosion.

8. All work shall be performed in a finished and workmanlike manner to the entire satisfaction of the owner, and in accordance with the best-recognized trade practices.

9. The contractor shall provide sheeting and shoring for all trench construction in accordance with OSHA guidelines.

10. All pipe lengths shown are to the centerline of the structures unless specifically noted.

11. Pipes (storm and sanitary sewer) shall be laid on smooth, continuous grades with no visible bends at the joints.

12. Bedding requirements specified herein are to be considered as minimum required for relatively dry stable earth conditions. Additional bedding shall be required for rock trenches to provide such additional bedding as required to properly construct work.

13. All storm drainage inlet structures shall have metal ring and cover for access.

14. All angles shown are 90 degrees unless shown otherwise.

15. All grades shown are finished grades. Contractor shall verify dimensions, grades, and existing elevations prior to construction.

16. Concrete curbs shall be constructed in accordance with the details shown on plans. Materials, equipment, methods of construction and workmanship shall conform to state D.O.T. standard specifications.

17. All concrete shall have 3000-PSI compressive strength after 28 days, with a maximum slump of four (4) inches, unless specified otherwise.

18. All exposed concrete shall have a fine hair broomed finish.

19. Parking and driveway base course and asphaltic concrete surface and prime materials, equipment, methods for construction and workmanship shall conform to state D.O.T. standard specifications.

20. Contractor to field verify all storm, sanitary, water and other utilities locations and inverts prior to installation of any utilities. Notify engineer prior to proceeding with any work if discrepancies found.

21. Contractor shall notify the proper local authorities 24 hours prior to any road being closed for construction, including but not limited to local newspaper, radio station, fire department, county sheriff's department, ambulance service, and county emergency agency. All traffic control shall conform to the requirements of NCDOT.

22. All fences damaged during construction shall be replaced with like materials in a workmanlike manner and in accordance with standard fence construction practices at the contractor's expense.

23. Contractor shall be responsible for any damage to existing roads during construction and shall repair road per requirements of NCDOT. No open cuts of existing roads shall be allowed except where indicated on the drawings or where specific permission is granted by NCDOT.

24. Contractor shall be responsible for any damage to existing property during construction and shall repair said property to pre-existing or better conditions.

SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. Provisions to prevent erosion of the soil from the site shall conform to the requirements of the "North Carolina Sedimentation Pollution Control Act of 1973" as shown herein and stipulated in the "Erosion and Sediment Control Planning and Design Manual". Installation shall be in a manner so as to minimize erosion of the disturbed areas and prevent sediment from leaving the site.

2. The contractor shall incorporate all temporary and permanent erosion control measures into the project at the earliest practicable time during construction. The erosion control measures detailed herein shall be continued until permanent drainage structures have been installed and until grass on planted shoulders and slopes is sufficiently established to be an effective erosion deterrent. The sediment removed from the control structures shall be evenly distributed outside construction limits. Disposed sediment shall be permanently grassed.

3. Temporary and permanent vegetative cover shall be installed in accordance with the requirements of Chapter 6, Section 10 - Temporary Seeding, and Section 11 - Permanent Seeding of the "Planning and Design Manual" as described in note no. 1 above.

4. The contractor shall not restrict the use of silt fences or any other means of erosion control to the locations shown on these plans. Moreover, the contractor should constantly be aware of minimizing soil erosion and use erosion control means accordingly. The contractor shall promptly repair, improve or add erosion control measures as required by the local reviewing agency.

5. Divert all runoff to the erosion control devices shown on the drawings.

6. Provide daily maintenance of erosion control devices to maintain their function at all times.

7. Disturbed areas shall be stabilized at the end of each work day. No work shall take place during period of wet weather or periods of predicted wet weather. Work within riparian buffers shall be restored at the end of each work day. Restoration shall utilize native grass seed mixes and fertilizers shall not be used. Erosion control matting shall be 100% biodegradable such as coconut coir fabric.

8. All silt fences must be installed immediately following clearing. No grading shall be performed until silt fence installation is complete.

9. Additional sediment control measures may be required based on actual field conditions as per local governing authorities.

10. All erosion control measures shall be checked and maintained daily.

11. Maximum cut and fill slopes shall be two (2) foot horizontal to one (1) foot vertical, unless otherwise noted.

12. Erosion control measures shall be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source.

13. The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land-disturbing activities.

PROJECT NOTES:

OWNER:
Transylvania County
101 S. Broad Street
Brevard, NC 28712

ENGINEER:
High Country Engineering, PC (C-3347)
111 E. Chestnut Street
Asheville, North Carolina 28801
T:828-230-4511
Contact: James N. Johnston, PE
Email: johnston@hccpc.net

- Proposed use is for Public Water and Sewer Infrastructure.
- Project Coordinates: 35.198329° N, 82.780805° W
- The receiving water courses as classified by the NCDEQ for this project are:
 - Cathy's Creek, Stream Index 6-16-(9.5), Class: C, Tr: HQW
 - Wilson Mill Creek, Stream Index 6-16-12, Class: C, HQW
 - Lime Kiln Branch, Stream Index 6-15, Class: C
 - Patterson Creek, Stream Index 6-14, Class: C, Tr
 - Cherryfield Creek, 6-11, Class: C, Tr
- Total disturbed area= ±9.6 acres. Total new impervious area = ±0.01 acres (0.13%).
- Topographical information obtained from survey by Cameron Baker, PLS # L-4920 of Associated Land Surveyors and Planners, PC.
- Contour interval is 2 feet. (Contour Interval @ Pump Station Site is 1 foot)
- This property is shown on F.I.R.M. parcel numbers 37008553000, 37008553001, 37008554000, & 37008574001, all dated October 2, 2009 and a portion of the development is located within a special flood hazard zone "X".
- The location of underground utilities shown is approximate based on surface field evidence and information supplied by utility agencies. The survey makes no certification as to the completeness of the locations shown. Appropriate utility companies should be contacted for verification of locations prior to any construction activity.
- The contractor shall verify the invert elevations of all existing storm and sanitary sewer structures prior to commencement of storm and sanitary sewer construction.
- Contractor shall notify the engineer and owner/developer of any information found in the field that is different from what is shown on these design plans.



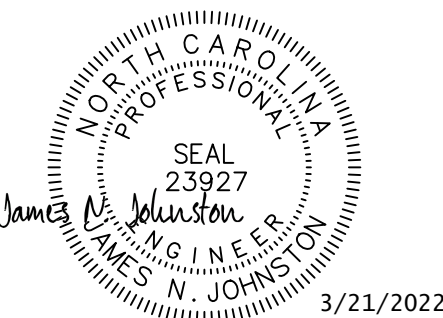
HIGH COUNTRY ENGINEERING, P.C.

111 E. CHESTNUT STREET
ASHEVILLE, NORTH CAROLINA 28801

T: 828.230.4511

F: 828.348.5040

FIRM NO.: C-3347





CONSTRUCTION PLANS

FOR THE

SEWERLINE EXTENSION
WATERLINE EXTENSION
& SEWER PUMP STATION

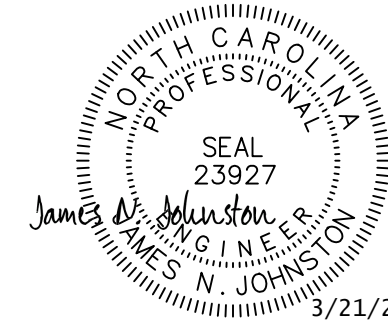
TRANSYLVANIA COUNTY, NORTH CAROLINA

March 16, 2022



HIGH COUNTRY ENGINEERING, P.C.
111 E. CHESTNUT STREET
ASHEVILLE, NORTH CAROLINA 28801
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NC FIRM NO.: C-3347



SEWERLINE EXTENSION WATERLINE EXTENSION AND SEWER PUMP STATION for TRANSYLVANIA COUNTY Transylvania County, North Carolina

[illegible]

PROJECT NAME:									
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SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION

Transylvania County, NC

SHEET TITLE:

MASTER PLAN

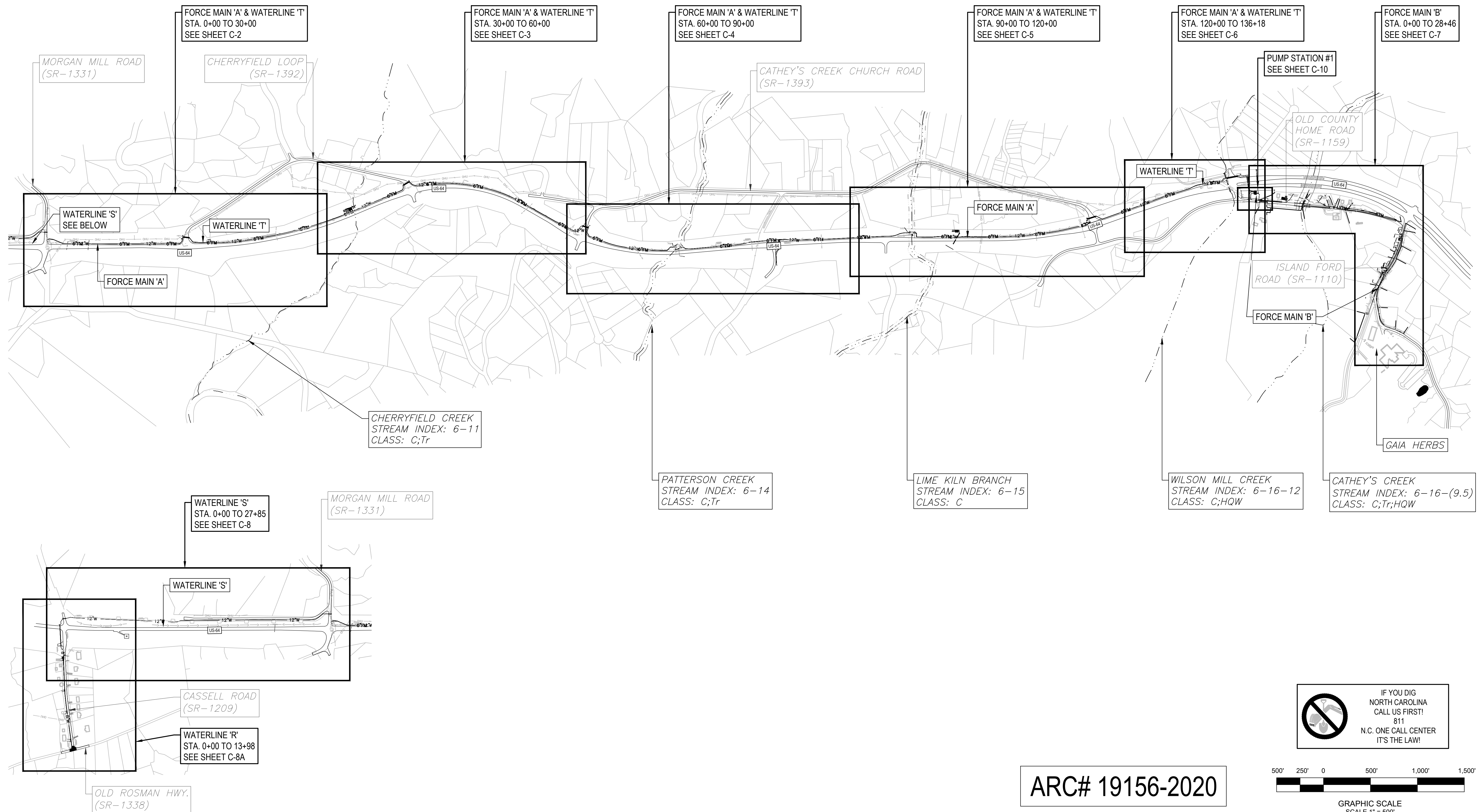
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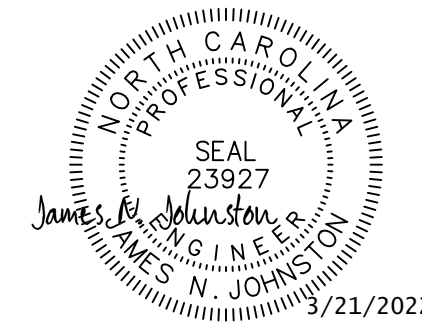
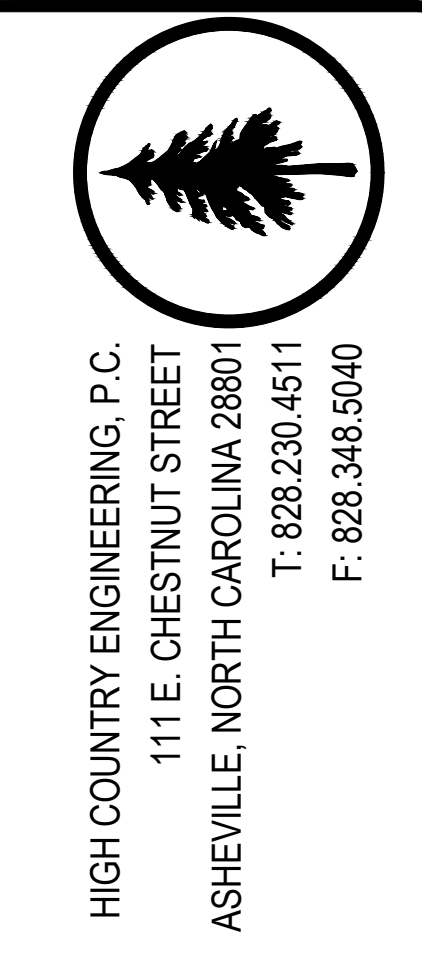
TRA008

DATE: C-1

3/16/2022 of 19

ISSUE No. B-1	01	19
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SEWERLINE EXTENSION WATERLINE EXTENSION AND SEWER PUMP STATION for PENNSYLVANIA COUNTY

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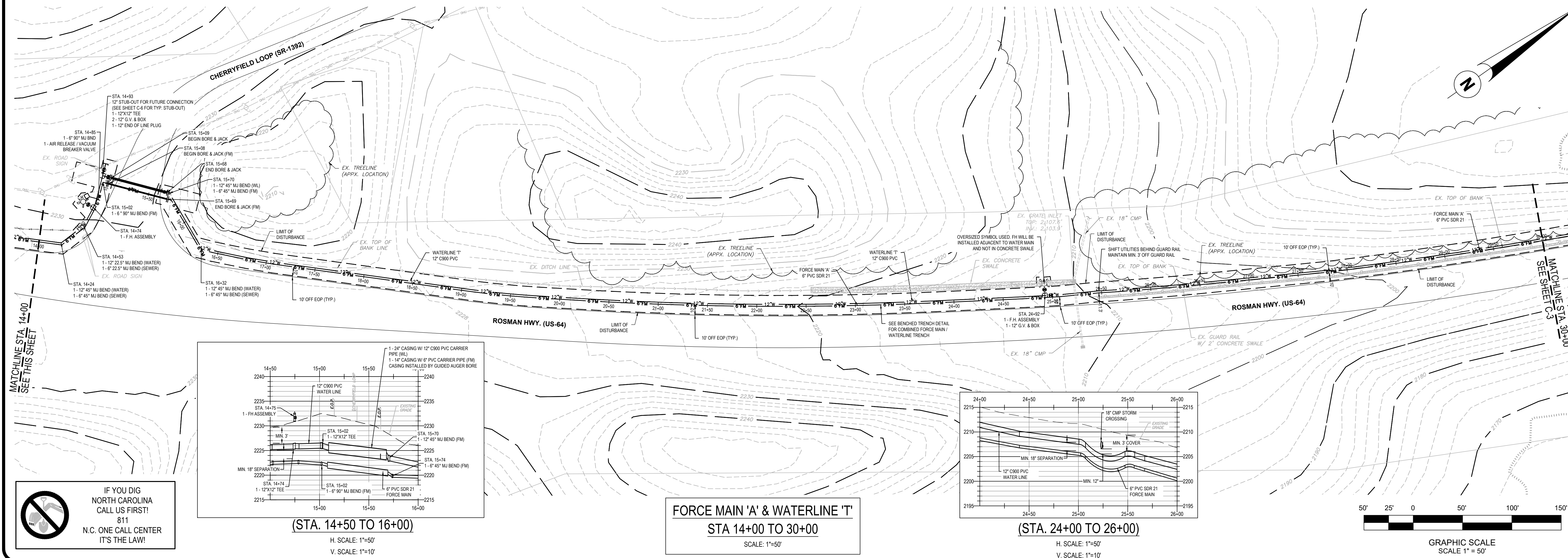
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WATERLINE EXTENSION
AND
SEWER PUMP STATION

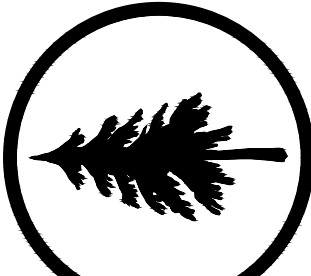
Transylvania County, NC

SHEET TITLE:
FORCE MAIN 'A'
& WATERLINE 'T'
(STA. 0+00 TO 30+00)

PROJECT NO. TRA008	SHEET NO.
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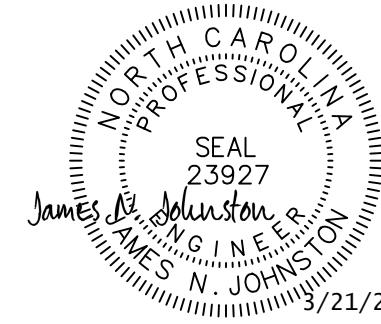
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ISSUE No. B-1





HIGH COUNTRY ENGINEERING, P.C.
111 E. CHESTNUT STREET
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NC FIRM NO.: C-3347



SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION
for
TRANSYLVANIA COUNTY
Transylvania County, North Carolina

PRELIMINARY PLANS FOR

REVISION DESCRIPTION	
Issue 1 - Submitted to Client and Regulatory Agencies for Review	
Issue 2 - Resubmitted to Regulatory Agencies to Address Review Comments	
Issue 3 - Resubmitted to Regulatory Agencies to Address Review Comments	
Issue 4 - Issued for Bid	

#	DATE
A	10/13/2021
A	12/14/2021
A	2/17/2022
B	3/16/2022

PROJECT NAME:

SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION

Transylvania County, NC

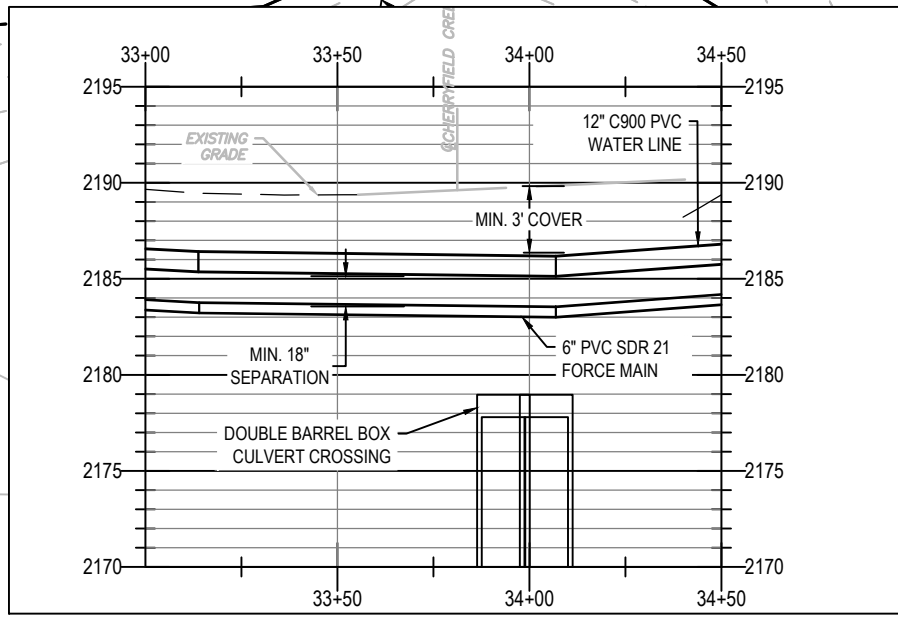
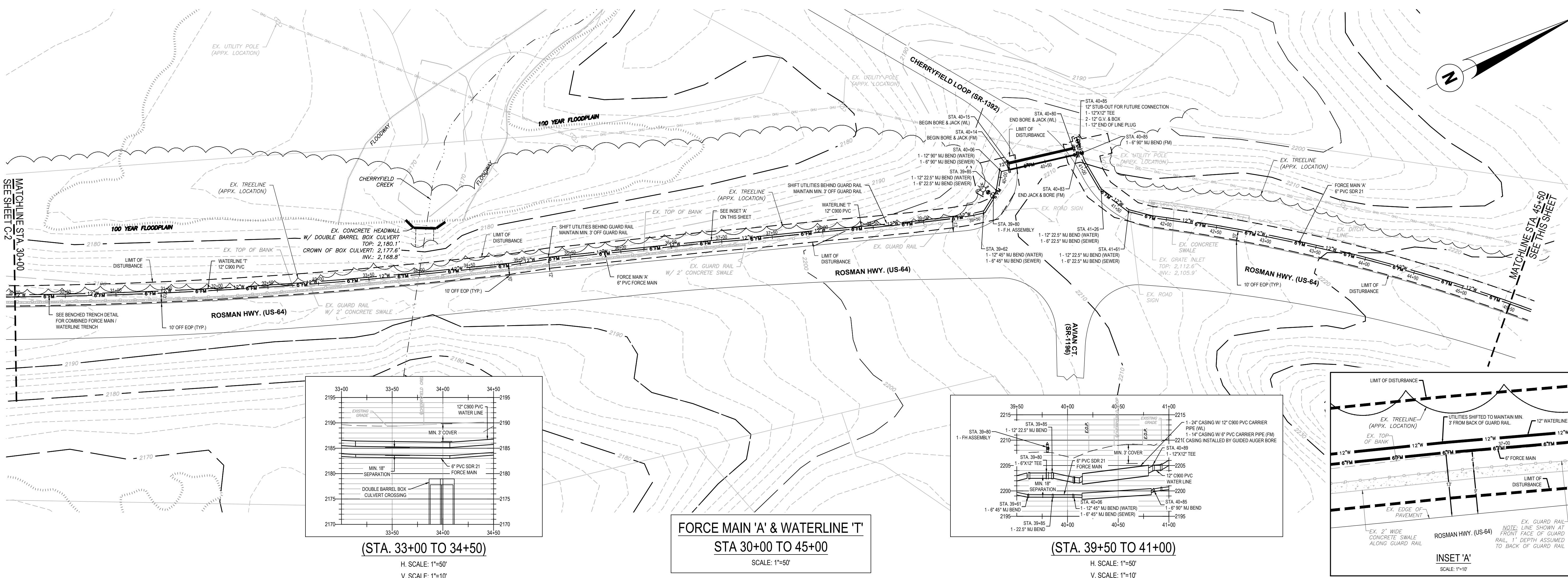
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**FORCE MAIN 'A'
& WATERLINE 'T'**
(STA 30+00 TO 60+00)

PROJECT NO:
TRA008

DATE:
3/16/2022
ISSUE NO: B-1

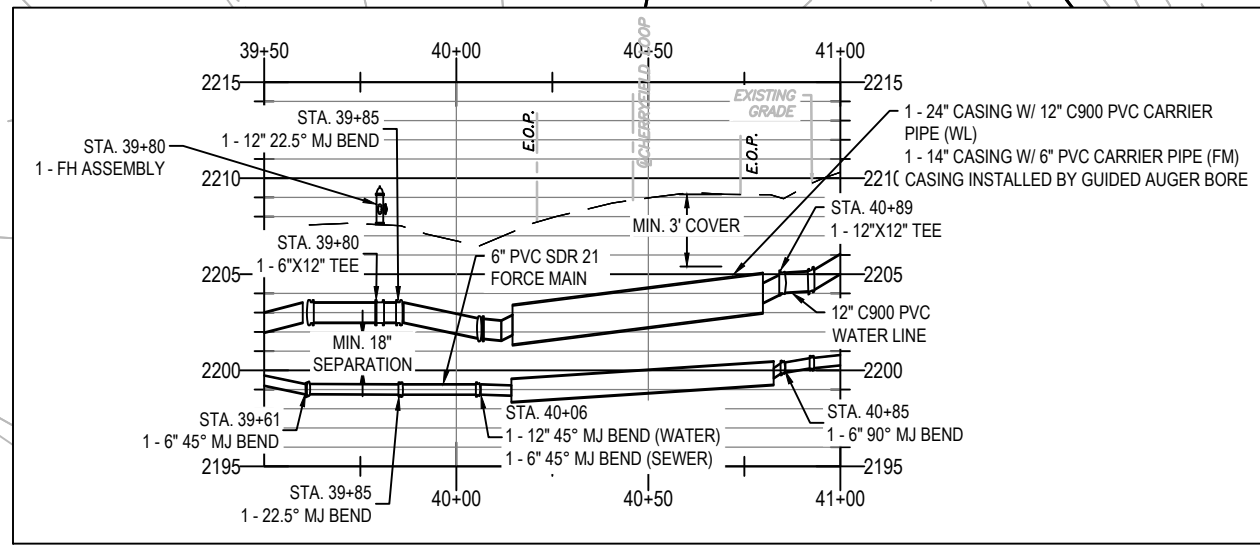
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C-3

of 19



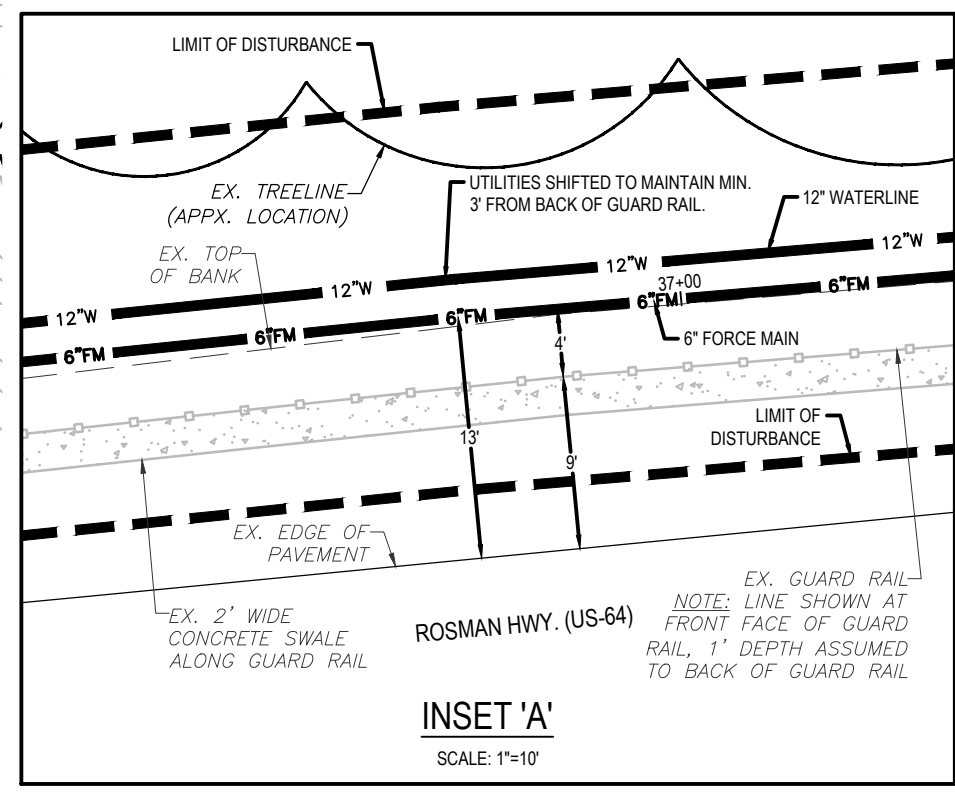
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STA 30+00 TO 45+00

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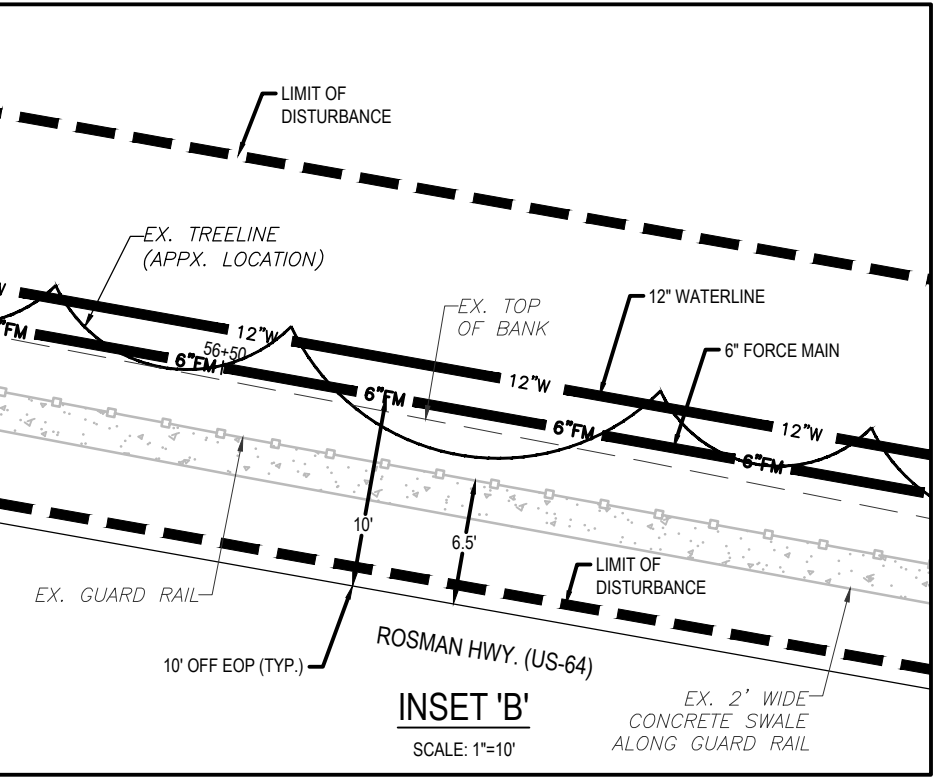
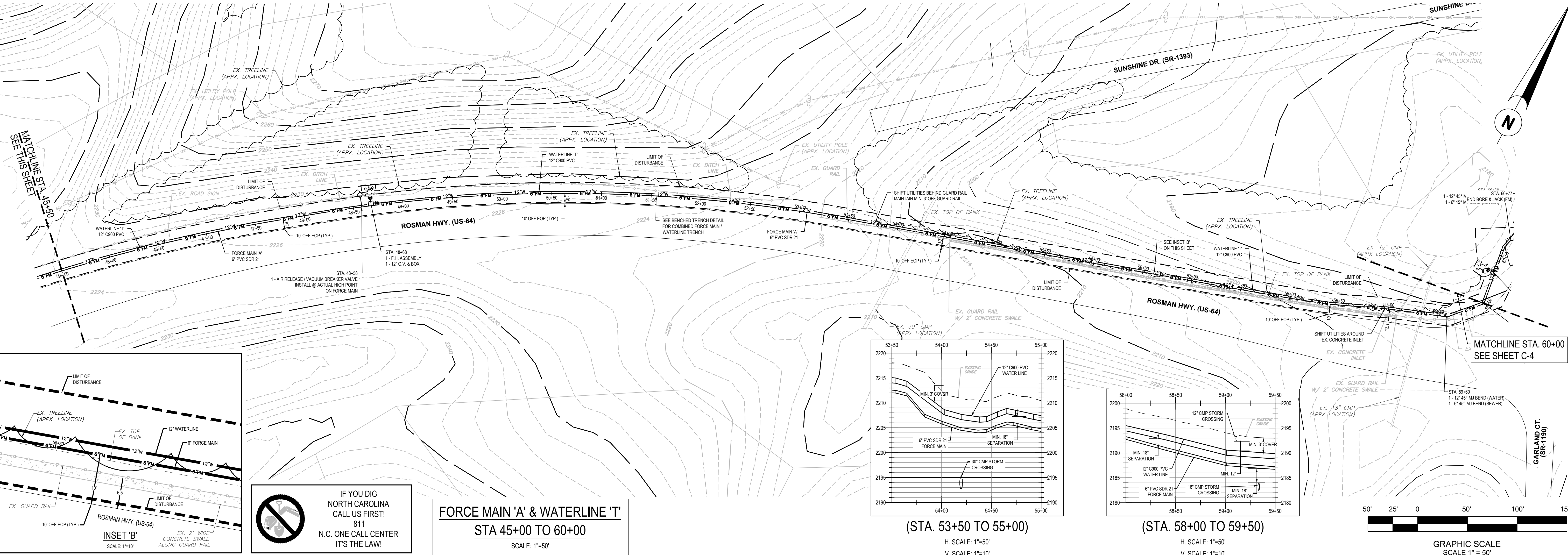


FORCE MAIN 'A' & WATERLINE 'T'
STA 39+50 TO 41+00

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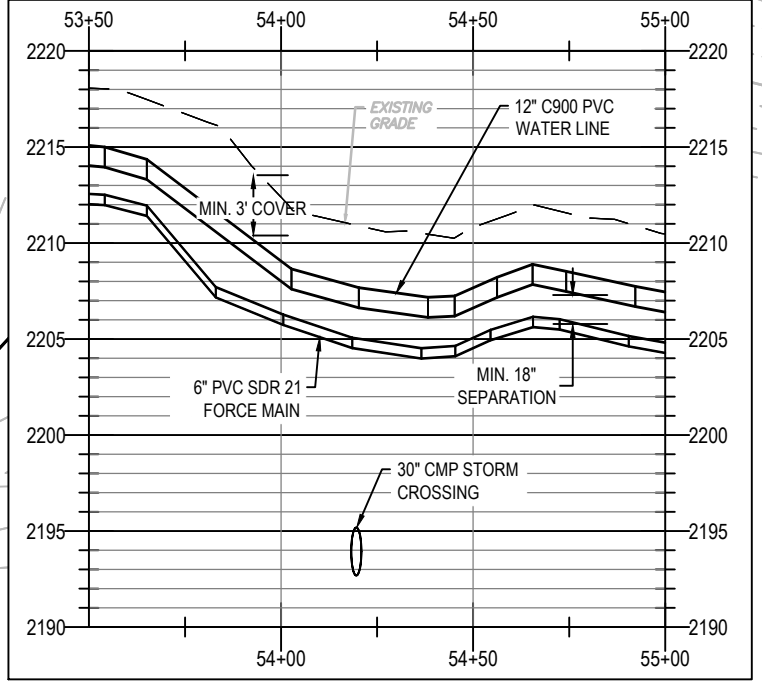


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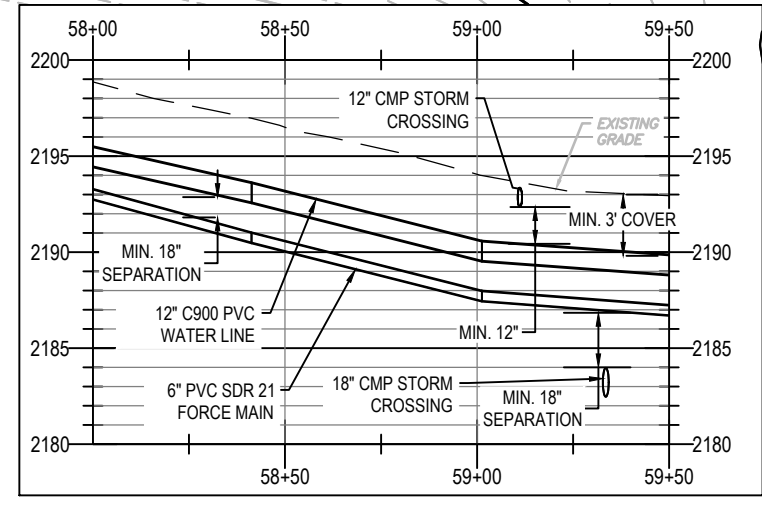
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STA 45+00 TO 60+00

SCALE: 1\"=50'



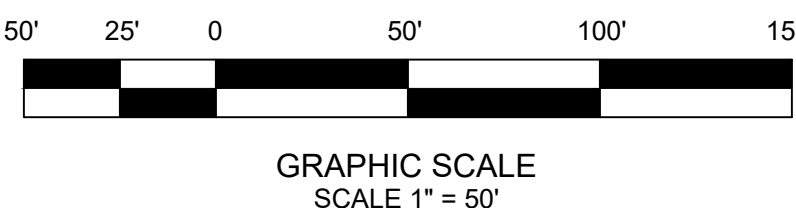
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STA 53+50 TO 55+00

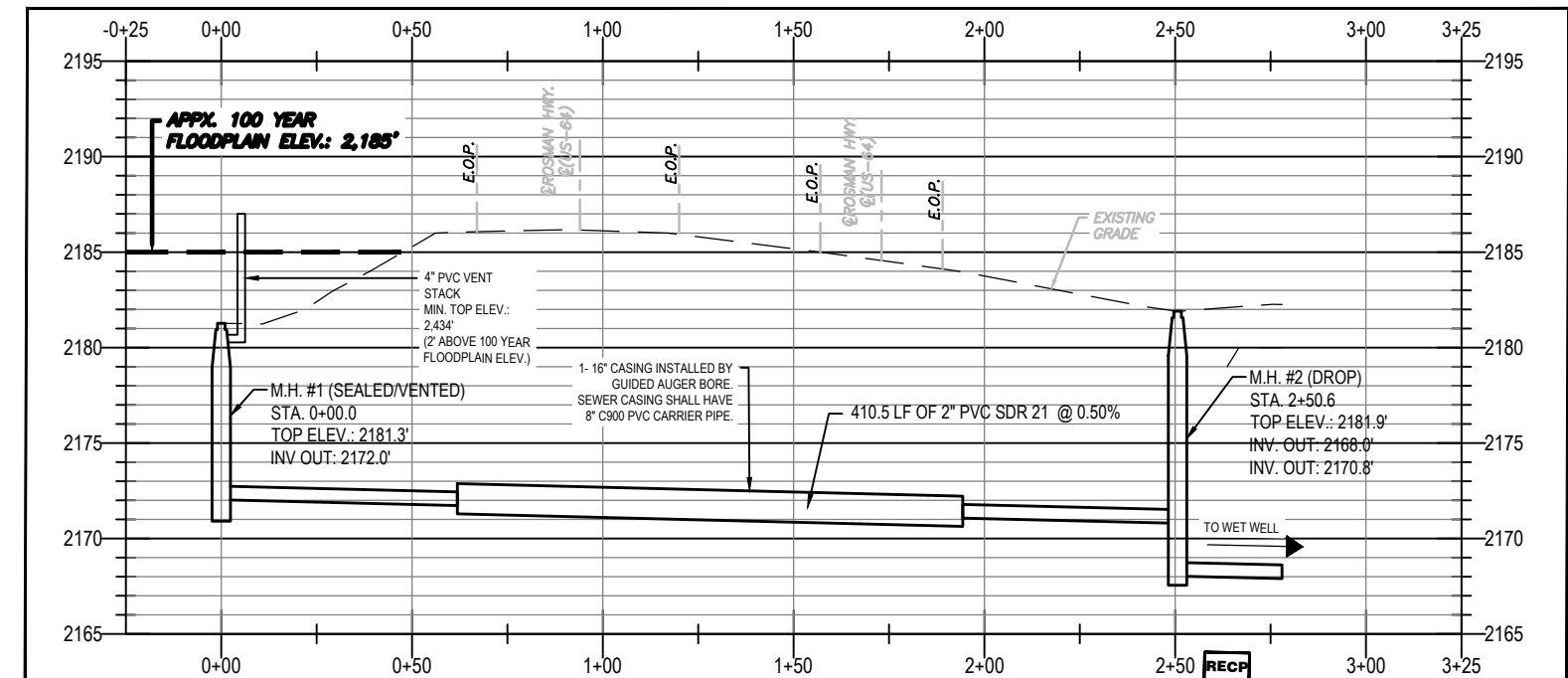
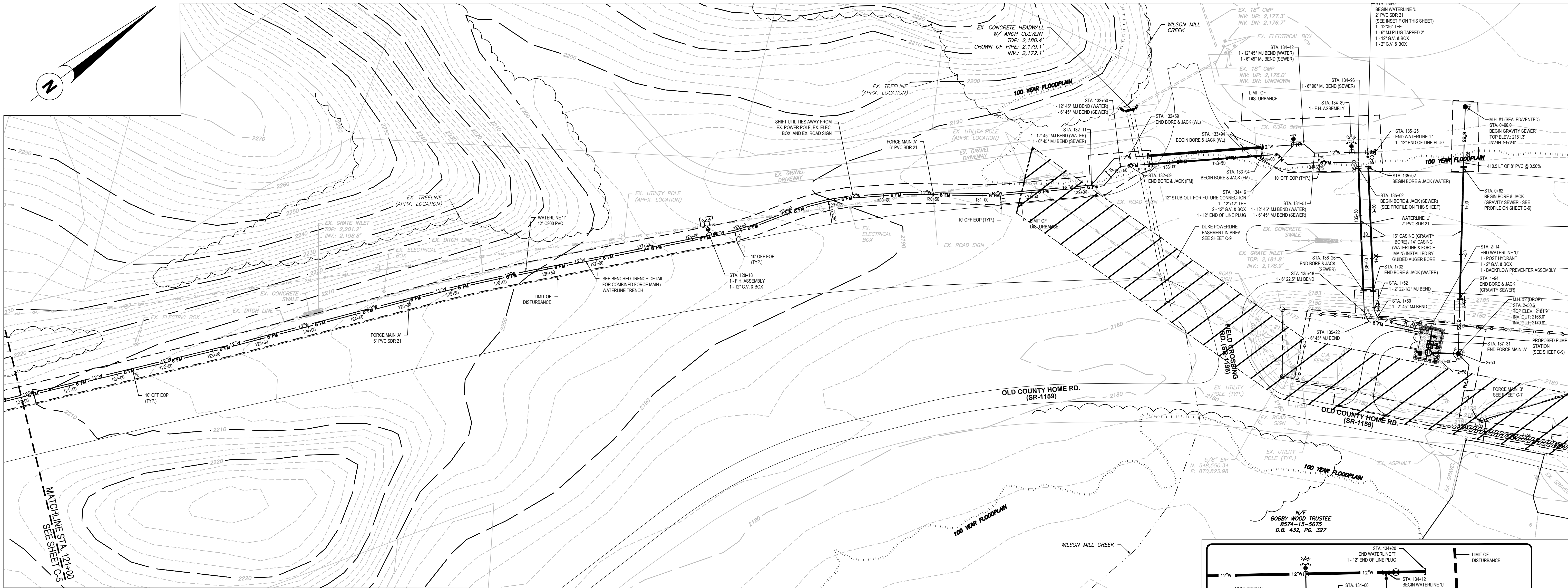
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FORCE MAIN 'A' & WATERLINE 'T'
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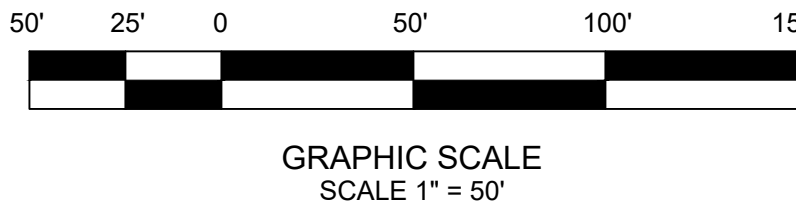
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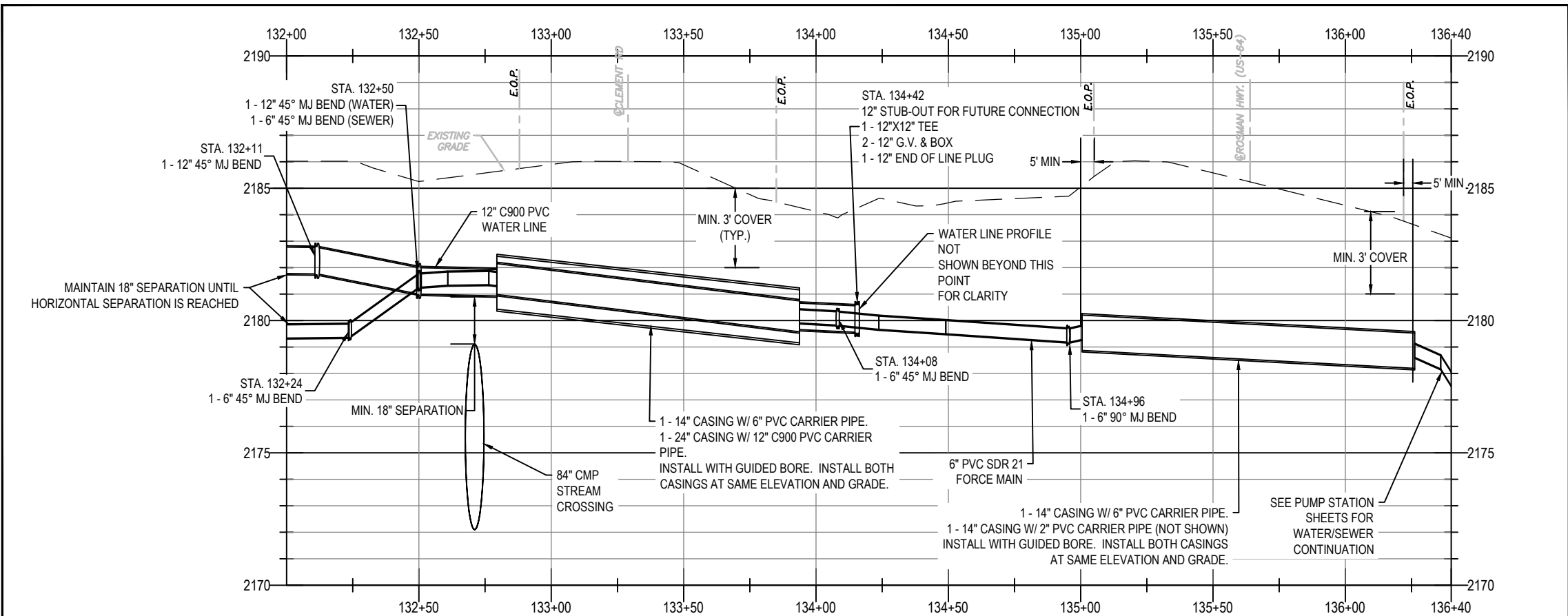
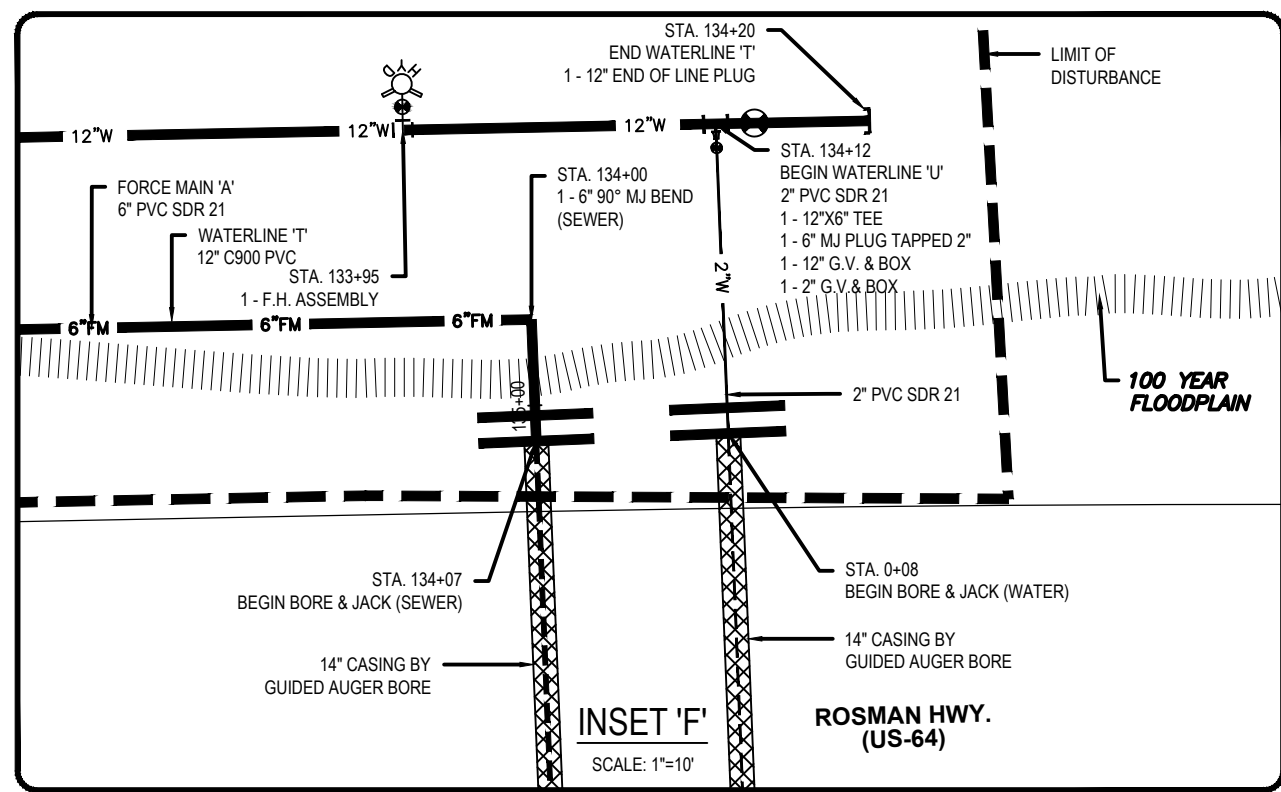


(GRAVITY SEWER PROFILE STA. 0+00 TO END)

FORCE MAIN 'A' & WATERLINE 'T'
STA 120+00 TO 137+31
SCALE: 1"=50'

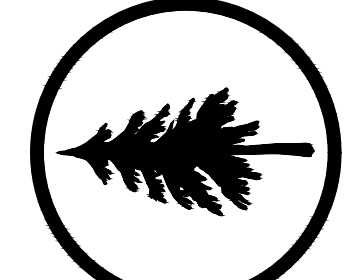



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IT'S THE LAW!



(STA. 132+00 TO END)

H. SCALE: 1"=50'
V. SCALE: 1"=5'


HIGH COUNTRY ENGINEERING, P.C.
111 E. CHESTNUT STREET
ASHEVILLE, NORTH CAROLINA 28801
T: 828.230.4511
F: 828.348.5040
NC FIRM NO.: C-3347


JAMES W. JOHNSON
PROFESSIONAL ENGINEER
3/21/2022

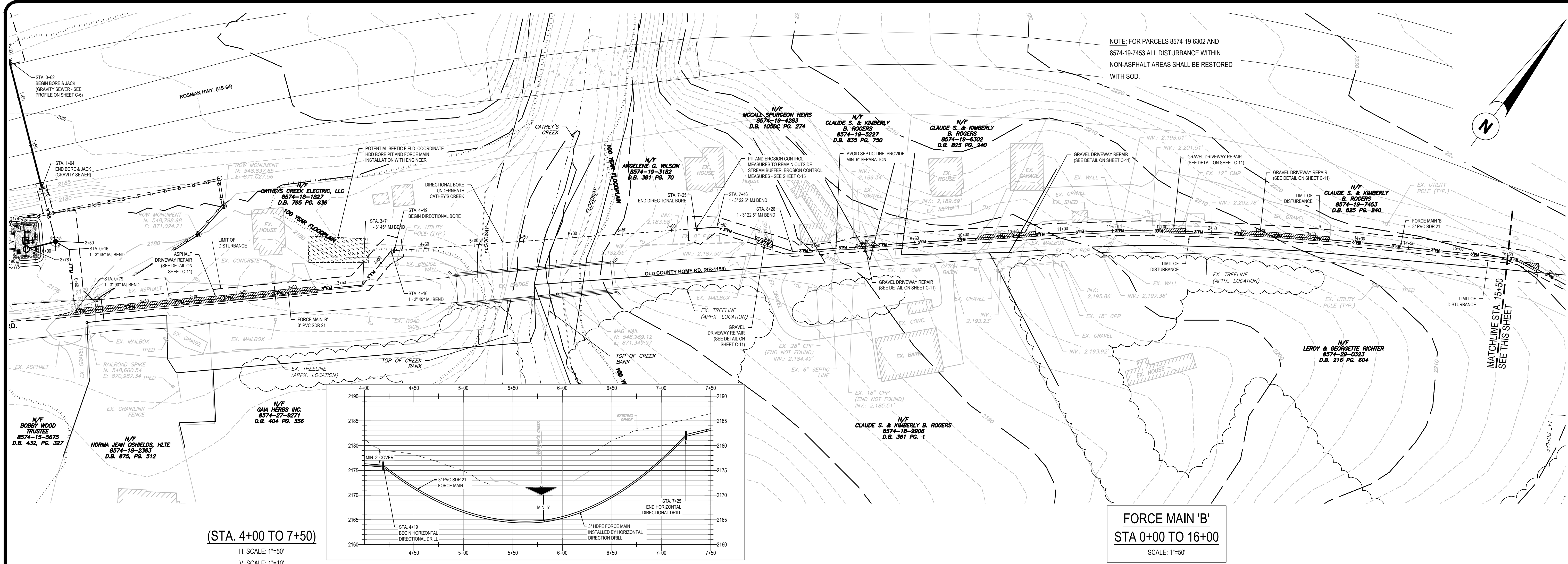
PRELIMINARY PLANS FOR
**SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION**
for
TRANSYLVANIA COUNTY
Transylvania County, North Carolina

REVISION DESCRIPTION		DATE	
Issue 1 - Submitted to Client and Regulatory Agencies for Review	A	10/13/2021	
Issue 2 - Resubmitted to Regulatory Agencies to Address Review Comments	A	12/14/2021	
Issue 3 - Resubmitted to Regulatory Agencies to Address Review Comments	A	2/17/2022	
Issue 4 - Issued for Field	B	3/16/2022	

PROJECT NAME:
**SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION**
Transylvania County, NC

SHEET TITLE:
**FORCE MAIN 'A' &
WATERLINE 'T'
(STA. 120+00 TO 137+31)**

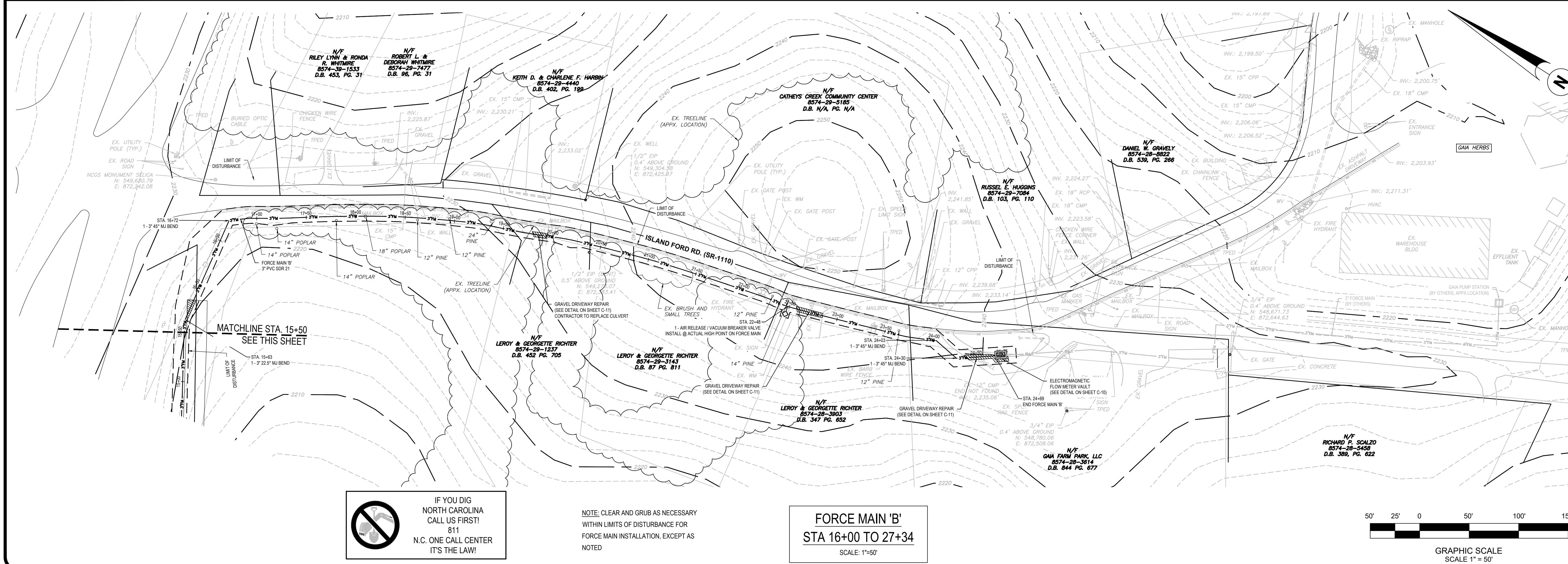
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TRA008	C-6
DATE:	of 19
3/16/2022	
ISSUE NO. B-1	



TRAFFIC
SEWERLINE EXTENSION, P.C.
111 E. CHESTNUT STREET
ASHEVILLE, NORTH CAROLINA 28801
T: 828.230.4511
F: 828.348.5040
NC FIRM NO.: C-3347

SEAL
23927
JAMES E. JOHNSON, P.E.
NORTH CAROLINA PROFESSIONAL ENGINEER
EXPIRATION DATE 12/31/2022

PRELIMINARY PLANS FOR
SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION
for
TRANSYLVANIA COUNTY
Transylvania County, North Carolina



REVISION DESCRIPTION	
Issue 1 - Submitted to Client and Regulatory Agencies for Review	
Issue 2 - Resubmitted to Regulatory Agencies to Address Review Comments	
Issue 3 - Resubmitted to Regulatory Agencies to Address Review Comments	
Issue 4 - Issued for Bid	

DATE	#	DATE	#
10/13/2021	A	12/14/2021	A
12/14/2021	A	2/17/2022	B
2/17/2022	B		

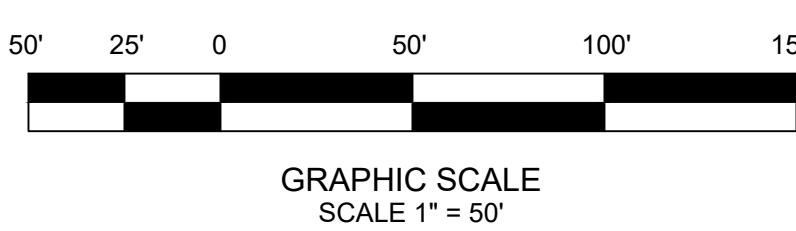
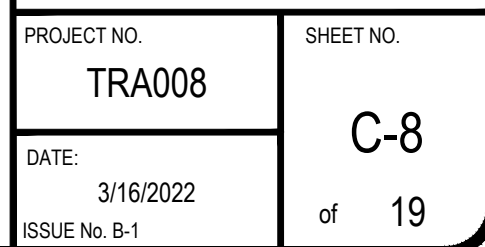
PROJECT NAME:
SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION
Transylvania County, NC

SHEET TITLE:
FORCE MAIN 'B'
(STA. 0+00 TO 27+34)

PROJECT NO:
TRA008

DATE:
3/16/2022
ISSUE No. B-1

SHEET NO.
C-7
of 19



PROJECT NAME:SHEET TITLE:

PROJECT NO.	SHEET NO.
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ISSUE No. B-1

3,591.47
1,769.33

LIMIT OF DISTURBANCE

APPROXIMATE LOCATION OF
DUKE POWERLINE EASEMENT

STA. 135+87
FORCE MAIN 'A'

48"Ø RECEIVING MANHOLE
W/ RAVEN 405 COATING
(OR APPROVED EQUAL)
RIM: 2,180.0'
INV. IN: 2,175.0' (FORCE MAIN 'B'
INV. OUT: 2,170.0'

PUMP STATION DRIVEWAY PROFILE VIEW

H. SCALE: 1"=20'

FLOOR PLAN

NCDOT CONTROLLED
ACCESS FENCE
(SEE DETAIL ON THIS SHEET)

PROPOSED NCDOT CA
FENCE CONTINUES AROUND

STA. 0+00
BEGIN FORCE MAIN 'B'
3" PVC SDR 35
(SEE SHEET C-7)

LIMIT OF DISTURBANCE

CONTROLLED ACCESS FENCE
TIE IN W/ EXISTING FENCE
(SEE DETAIL ON THIS SHEET)

10'X70' NCDOT SIGHT
VISIBILITY TRIANGLE

16' WIDE GRAVEL
DRIVEWAY

EX. NCDOT
C.A. FENCE

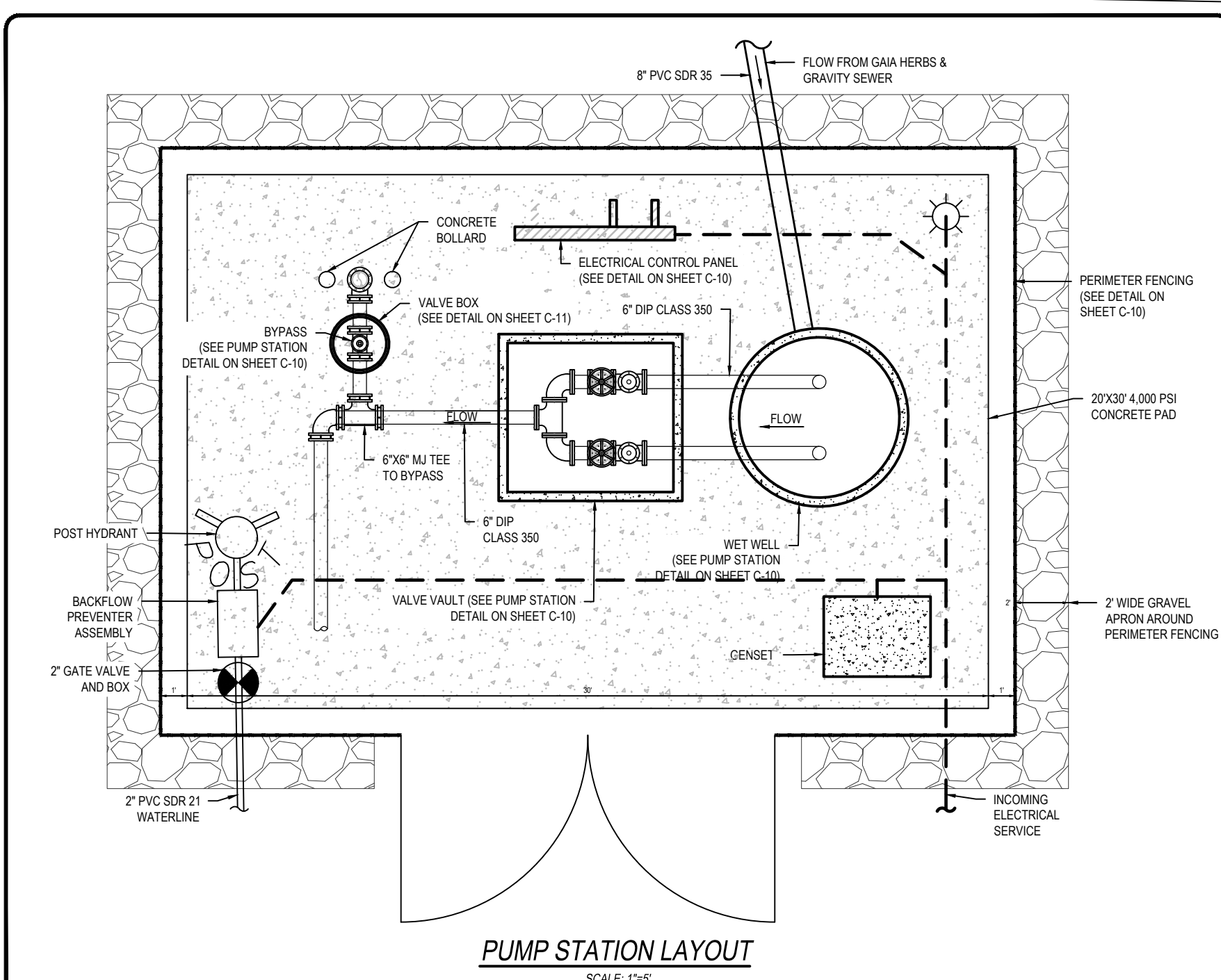
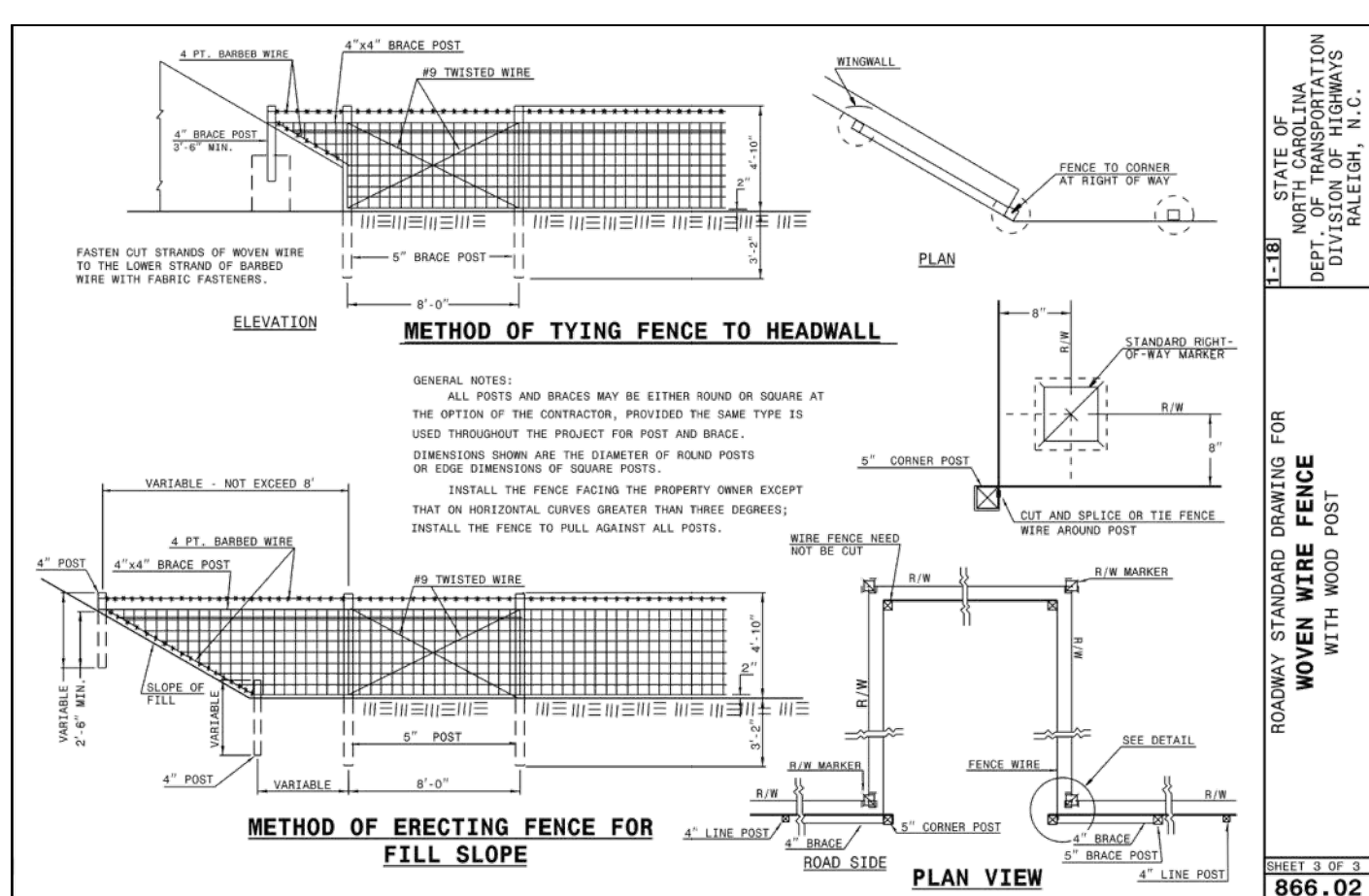
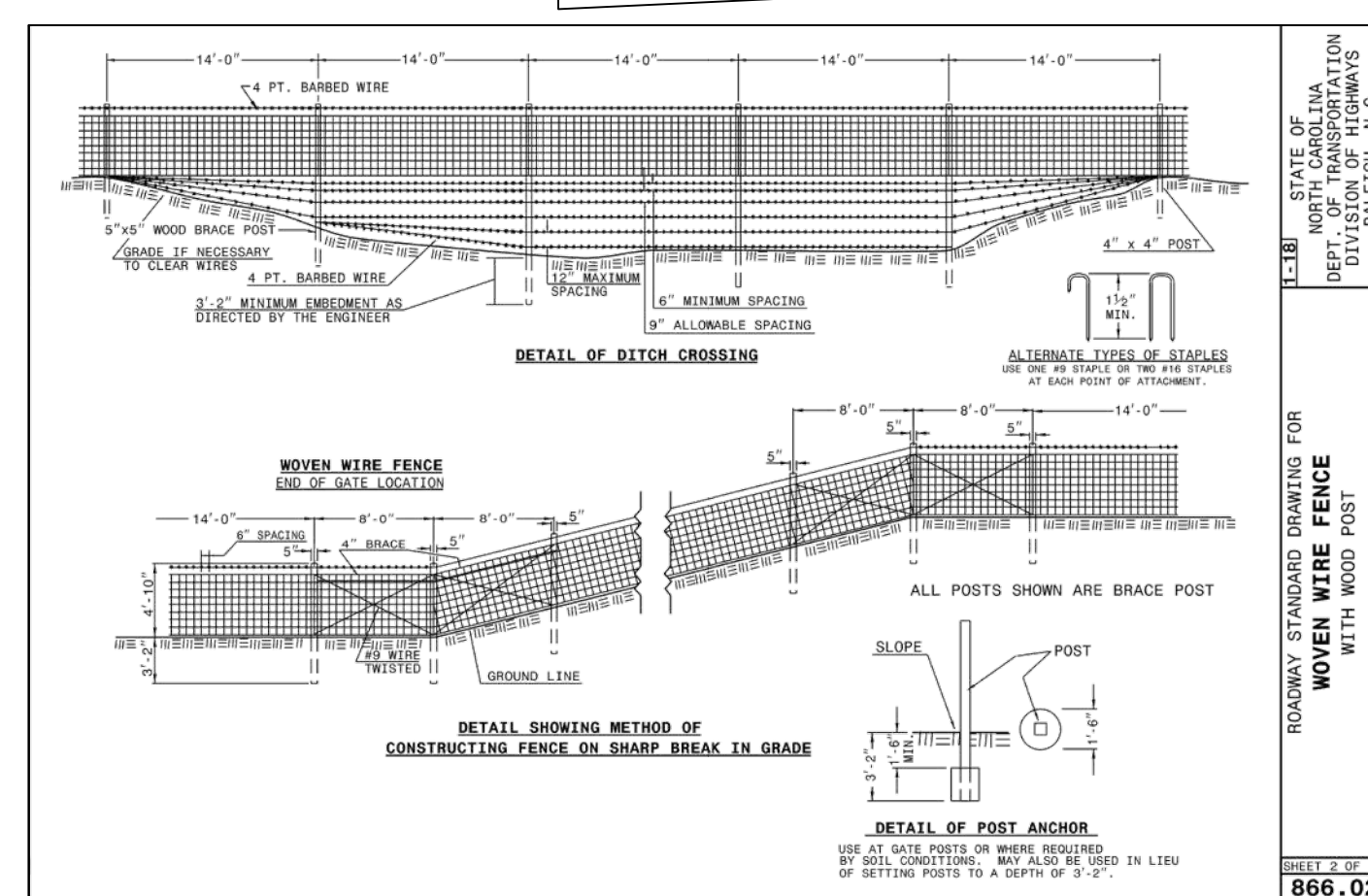
OLD COUNTY HOME RD. (SR-1159)

PUMP STATION
EARTHWORK VOLUMES

- CUT: 0 CY
- FILL: 370 CY
- NET: 370 CY (FILL)



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PUMP STATION LAYOU

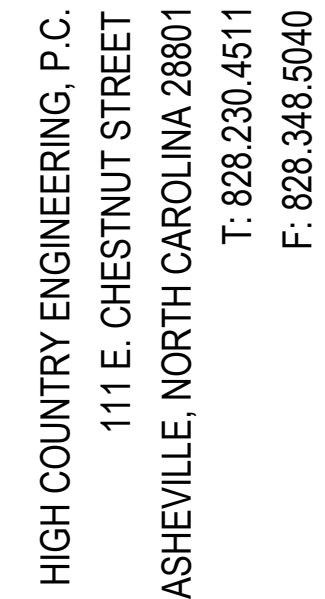
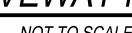
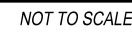
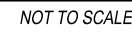
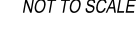
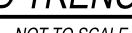
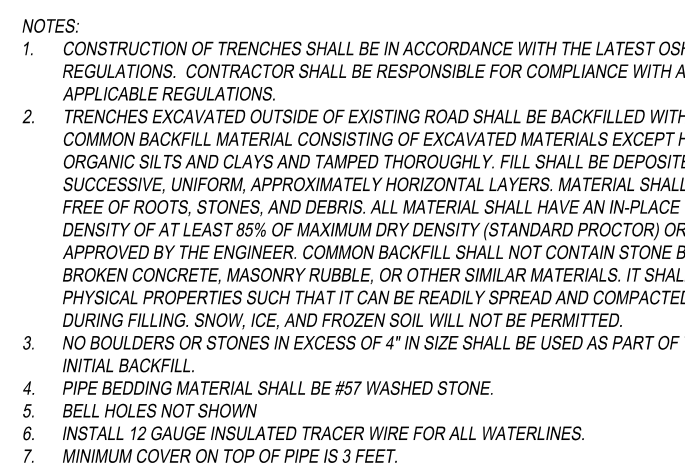
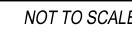
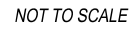
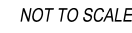
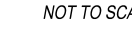
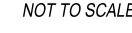
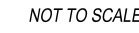
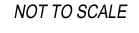
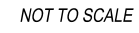
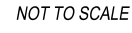
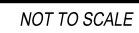
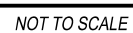
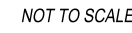
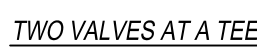
SCALE: 1"=

NC FIRM NO. C-3347

Transylvania County, North Carolina

Transylvania County, NC

of 19



PRELIMINARY PLANS FOR

SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION

for

TRANSYLVANIA COUNTY

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D	3/16/2022	Issue 4 - Issued for Bid
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PROJECT NAME

SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION

SHEET TITLE:

DETAILS

PROJECT NO.

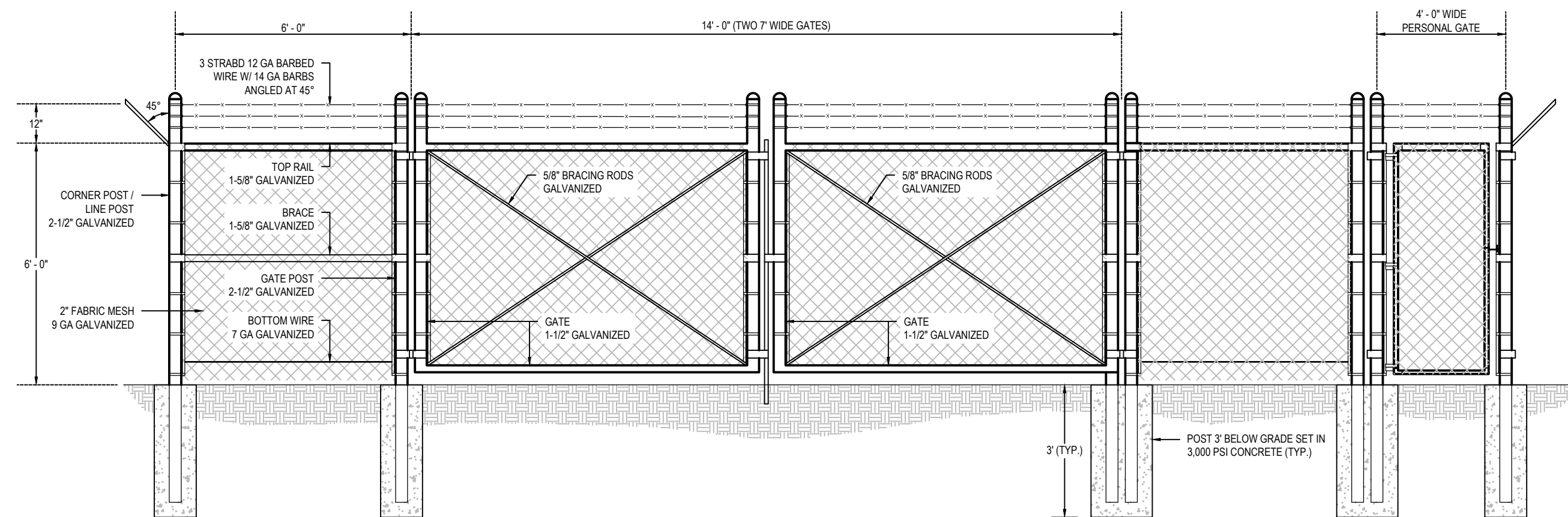
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DATE: 2/16/2023

ISSUE No. B-1

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PUMP STATION FENCING DETAIL

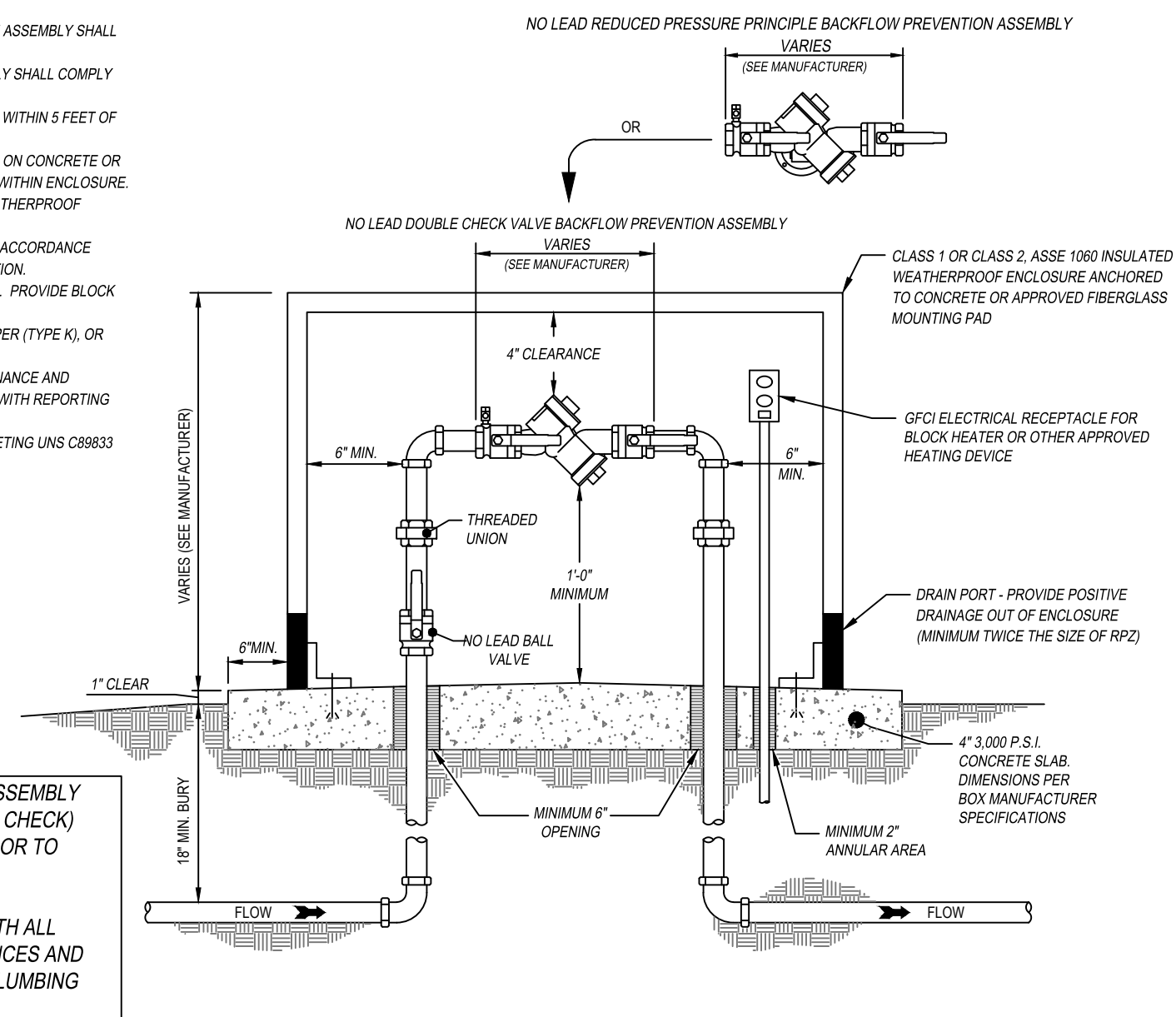
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- NOTES:

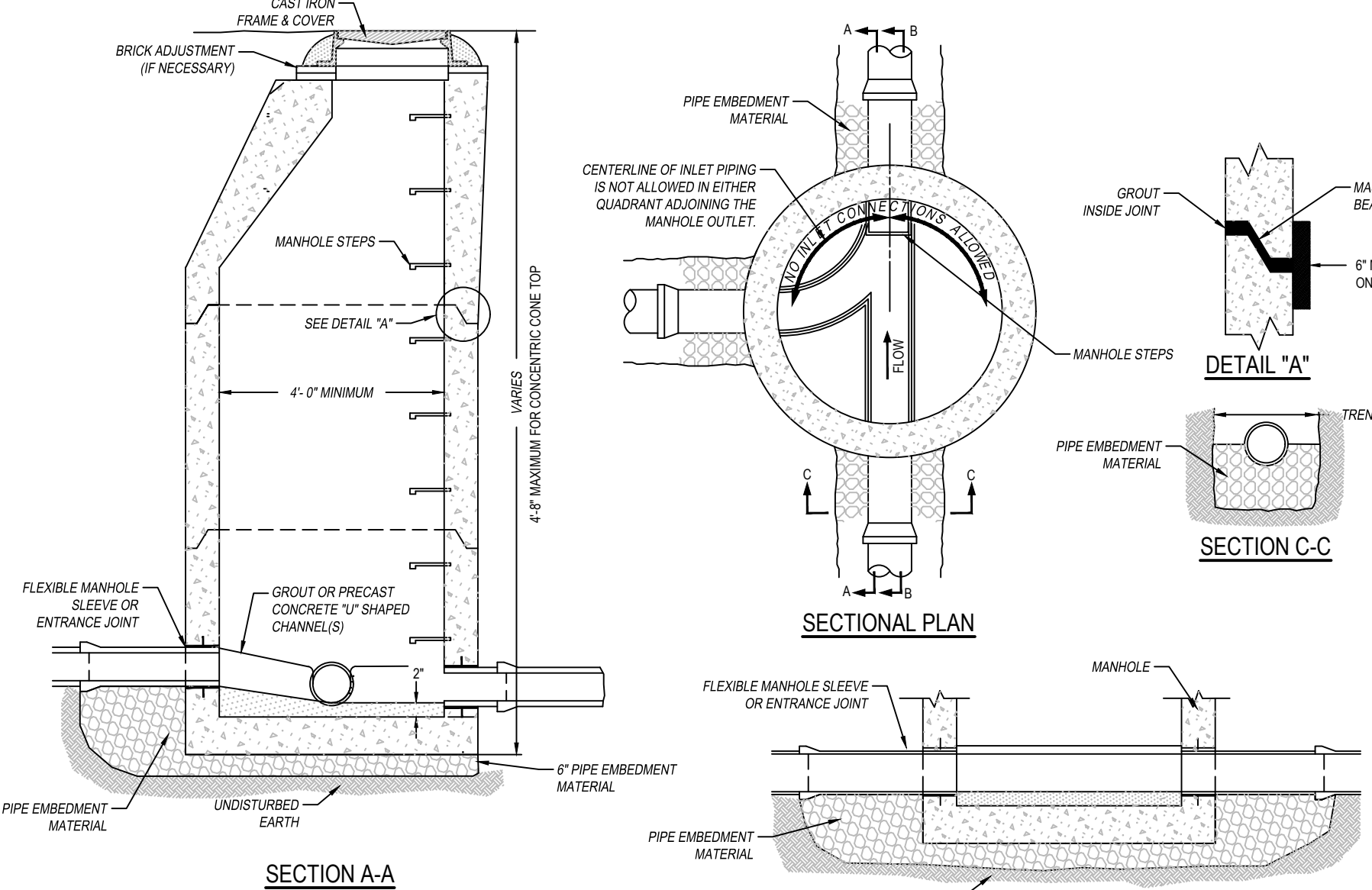
1. REDUCED PRESSURE PIPING & BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511
2. DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1018 & AWWA C510
3. EXISTING BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED WITHIN 5 FEET OF THE METER BOX.
4. BACKFLOW PREVENTION ASSEMBLY SHALL BE CENTERED ON CONCRETE OR APPROVED IRREGULAR MOUNTING PAD AND CENTERED WITHIN ENCLOSURE. ENCLOSURE SHALL BE CLASS 150 OR CLASS A-SEA 1000 WEATHERPROOF ENCLOSURE REQUIRED.
5. 100V GPO ELECTRICAL RECEPTACLE TO BE INSTALLED OUTDOOR WITH THE N.E.C. ELECTRICAL CODE FOR OUTDOOR OPERATION.
6. EXISTING ELECTRICAL PANEL SHALL BE REMOVED AND REPLACED WITH PROVIDE BACK HEATER OR OTHER APPROVED PIPE HEATING DEVICE.
7. PPE MATERIAL SHALL BE PVC (SCH 40 OR BETTER), COPPER TYPE I, OR EQUIVALENT.
8. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS.
9. ALL BACKFLOW COMPONENTS SHALL BE LEAD BRASS MEETING ASTM C98833 AS PER ASTM B584.

CONTRACTOR TO VERIFY THE BACKFLOW ASSEMBLY
REQUIREMENT (RPZ VS. DOUBLE DETECTOR CHECK)
WITH APPLICABLE WATER JURISDICTION PRIOR TO
CONSTRUCTION.

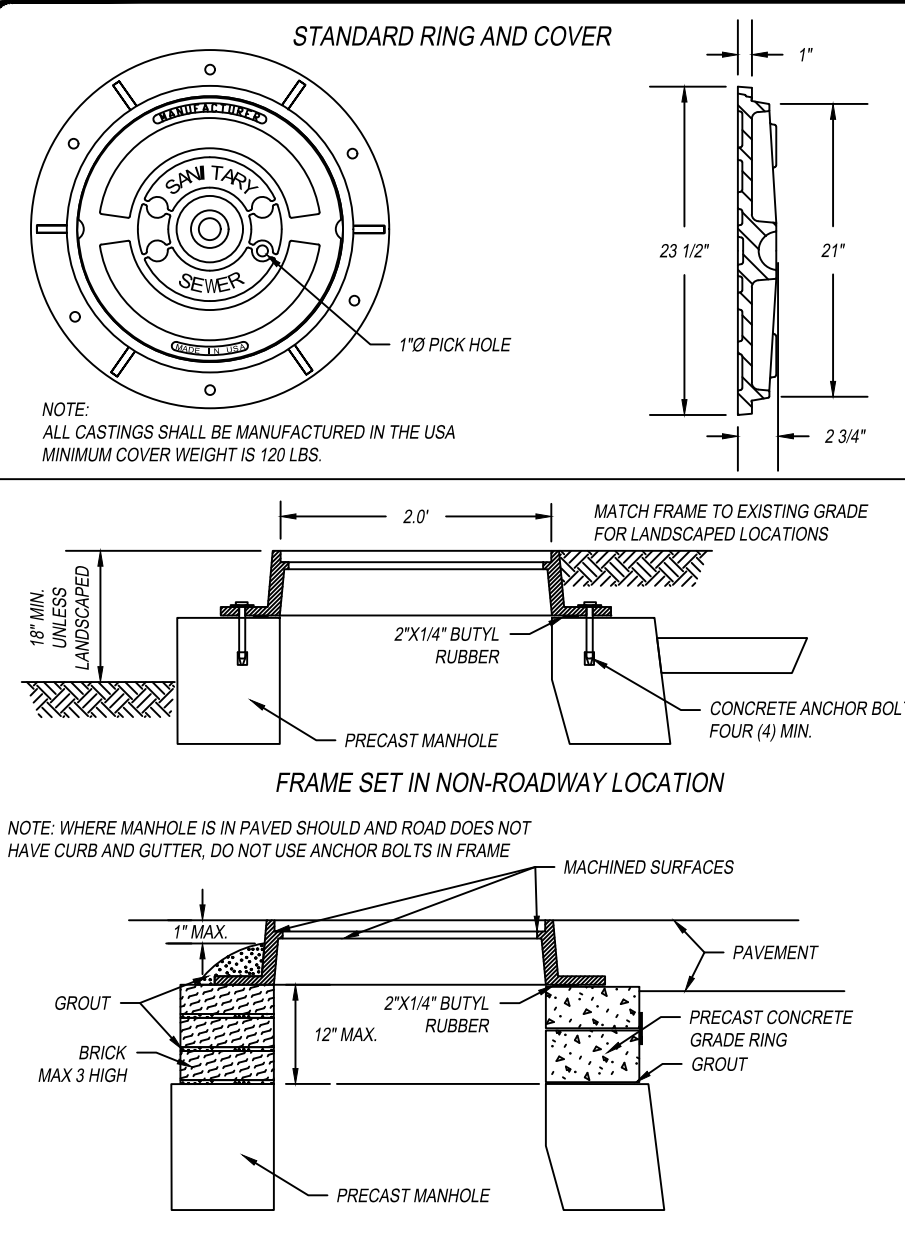
INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE WATER JURISDICTION ORDINANCES AND SPECIFICATIONS IN ADDITION TO THE N.C. PLUMBING CODE.



1" TO 2" OUTDOOR BACKFLOW ASSEMBLY
NOT TO SCALE



STANDARD MANHOLE
NOT TO SCALE



STANDARD FRAME AND COVER
NOT TO SCALE

[illegible]

PROJECT NAME:

SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION

Transylvania County, NC

SHEET TITLE:

DETAILS

PROJECT NO.

TRA008

DATE:

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3/16/2022

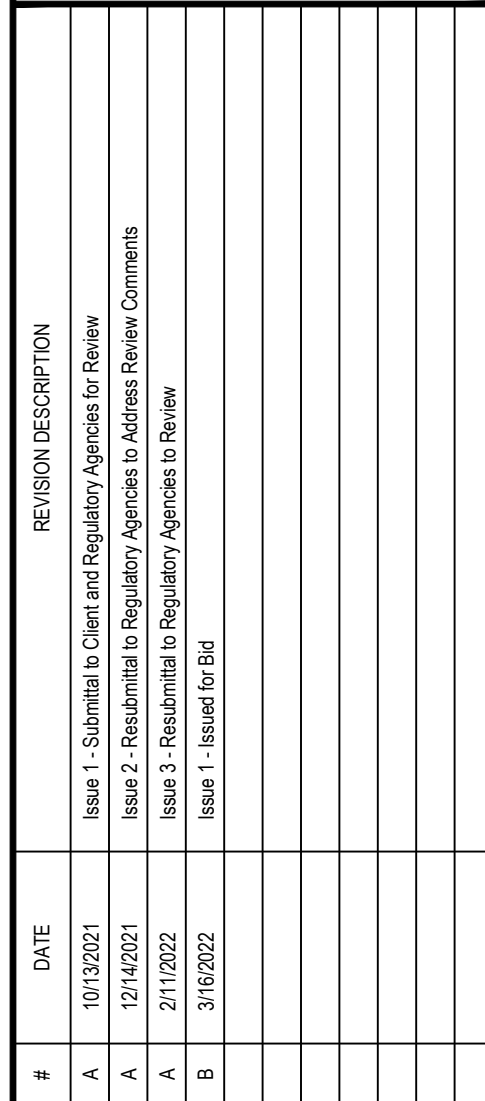
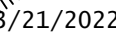
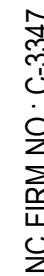
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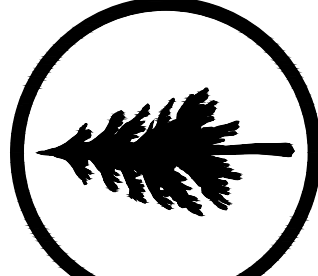
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of 10

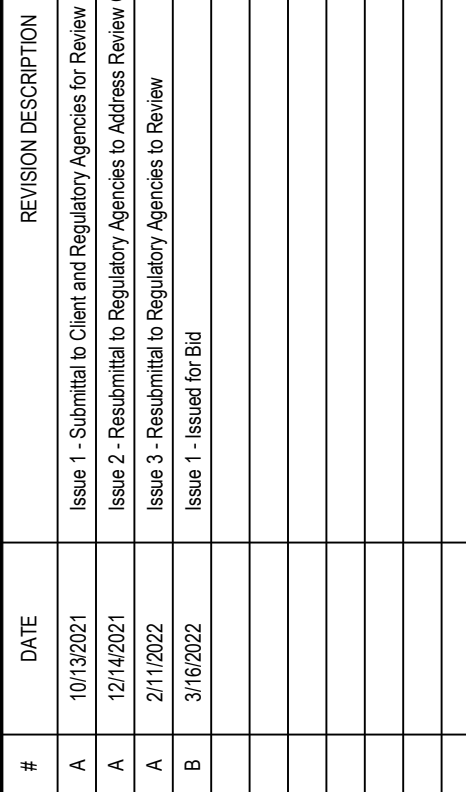
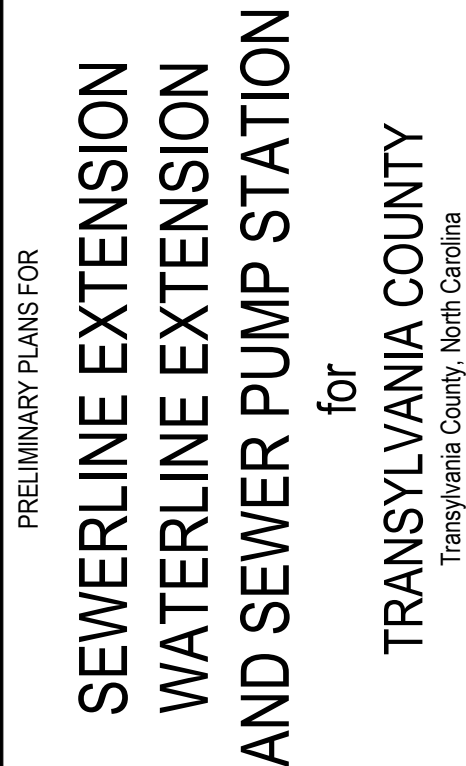
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NC FIRM NO.: C-3347



SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION

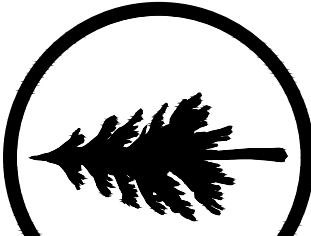
SHEET TITLE:
EROSION CONTROL PLAN
FM 'A' & WL 'T'
(STA. 45+00 TO 90+00)

ISSUE No. B-1

of 19

of 19

BRIAN SHELTON
(828) 884-6859



HIGH COUNTRY ENGINEERING, P.C.
111 E. CHESTNUT STREET
ASHEVILLE, NORTH CAROLINA 28801
T: 828.230.4511
F: 828.348.5040

NC FIRM NO.: C-3347



PRELIMINARY PLANS FOR
**SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION**
for
TRANSYLVANIA COUNTY
Transylvania County, North Carolina

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**SEWERLINE EXTENSION
WATERLINE EXTENSION
AND
SEWER PUMP STATION**

Transylvania County, NC

SHEET TITLE:
**EROSION CONTROL PLAN
FM 'A' & WL 'T'
(STA. 90+00 TO 137+26)**

PROJECT NO.

TRA008

DATE:

3/16/2022

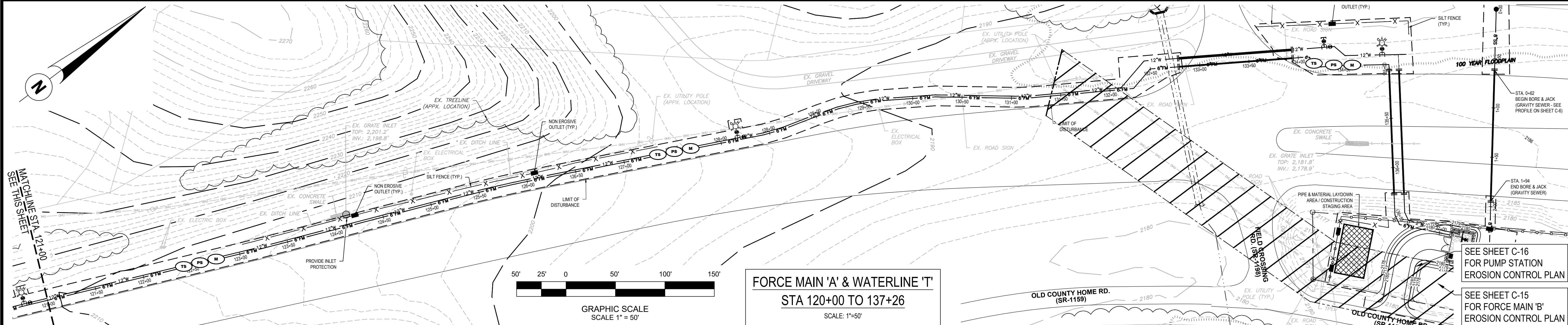
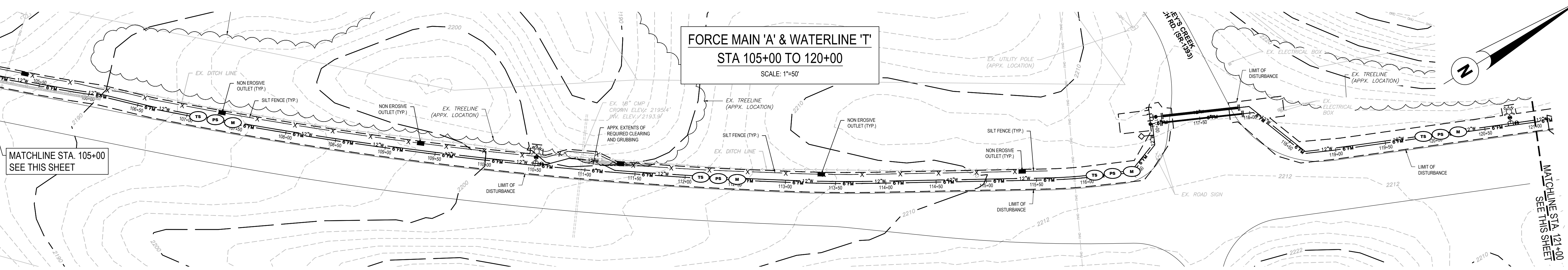
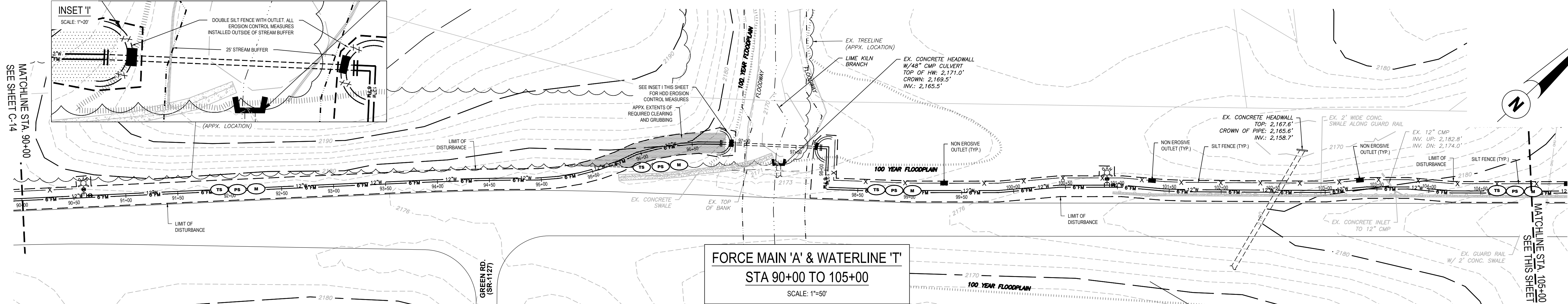
ISSUE NO. B-1

SHEET NO.

C-15

of

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SOIL EROSION AND SEDIMENT CONTROL NOTES:

- Provisions to prevent erosion of the soil from the site shall conform to the requirements of the "North Carolina Sedimentation Pollution Control Act of 1977" as shown herein and stipulated in the "Erosion and Sediment Control Planning and Design Manual". Installation shall be in a manner so as to minimize erosion of the disturbed areas and prevent sediment from leaving the site.
- The contractor shall incorporate all temporary and permanent erosion control measures into the project at the earliest practicable time during construction. The erosion control measures detailed herein shall be continued until permanent drainage structures have been installed and until grass on planted shoulders and slopes is sufficiently established to be an effective erosion deterrent. The sediment removed from the control structures shall be evenly distributed outside construction limits. Disposed sediment shall be permanently grassed.
- Temporary and permanent vegetative cover shall be installed in accordance with the requirements of Chapter 6, Section 10 - Temporary Seeding, and Section 11 - Permanent Seeding of the "Planning and Design Manual" as described in note no. 1 above.
- The contractor shall not restrict the use of silt fences or any other means of erosion control to the locations shown on these plans. Moreover, the contractor should constantly be aware of minimizing soil erosion and use erosion control means accordingly. The contractor shall promptly repair, improve or add erosion control measures as required by the local reviewing agency.
- Divert all runoff to the erosion control devices shown on the drawings.
- Provide daily maintenance of erosion control devices to maintain their function at all times.
- Disturbed areas shall be stabilized at the end of each work day. No work shall take place during period of wet weather or periods of predicted wet weather. Work within riparian buffers shall be rescheduled at the end of each work day. Restoration shall utilize native grass seed mixes and fertilizers shall not be used. Erosion control matting shall be 100% biodegradable such as coconut coir fabric.
- No clearing or grading shall be performed until silt fence installation is complete and slopes are sufficiently established to be an effective erosion deterrent.
- Additional sediment control measures may be required based on actual field conditions as per local governing authorities.
- All erosion control measures shall be checked and maintained daily.
- Maximum cut and fill slopes shall be two (2) foot horizontal to one (1) foot vertical, unless otherwise noted.
- Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source.
- The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land-disturbing activities.

EROSION CONTROL CONSTRUCTION SEQUENCE

- GENERAL: ALL EROSION CONTROL MEASURES ARE TO BE PERFORMED IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND QUALITY SECTION. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE COMPLIED WITH FOR ALL WORK.
- Install all perimeter erosion control devices and mark surface water buffer prior to any ground disturbance.
 - Install construction entrance at entrance to site.
 - Install all erosion and sedimentation control measures in areas as designated on the plans.
 - Obtain Certificate of Compliance through on-site inspection by a representative of NCDEQ, Land Quality Section.
 - Perform directional boring as directed on plans.
 - Perform trenching, utility installation, backfill and compaction as directed on the plans.
 - Establish seeding according to NPDES table on plans. Seed and mulch denuded areas within 14 days on disturbed flat areas and 7 days on all perimeter dikes, swales, ditches, perimeter slopes steeper than 3 feet horizontal to 1 foot vertical. Ground cover shall be required as soon as practicable but in any event within 14 or 7 calendar days from the last land disturbing activity.
 - All seeding shall be maintained, watered, etc., until permanent vegetative ground cover is established over all disturbed areas.
 - At slopes 2:1 or steeper shall be covered by erosion control matting.
 - Construct sewer pump station.
 - Maintain all soil and erosion control measures for duration of the construction project and until permanent ground cover is established.
 - Perform final restoration of disturbed areas and install permanent grassing/landscaping.
 - Remove all temporary erosion control devices after permanent seeding is established.
 - Request Final Approval by NCDEQ, Land Quality Section and obtain Certificate of Compliance.
- EROSION CONTROL IS FIELD PERFORMANCE BASED AND ADDITIONAL SILT FENCES, TEMPORARY SEDIMENT BASINS AND ALL OTHER MEASURES MAY NEED TO BE ADDED IN ADDITION TO THE APPROVED PLAN AS NECESSARY. MEASURES SHOWN CAN AND SHOULD BE ADJUSTED TO ASSURE MAXIMUM PROTECTION OF SITE.

Major Elements of DWO Construction General Permit - August 4, 2011

This document contains the major elements of the recently-revised North Carolina Division of Water Quality (DWO) Construction General Permit (CGP) with emphasis on those elements that differ from the previous permit (expiration on August 2, 2011). Since the summary list below cannot contain details of every change, the complete permit should be used to assure full representation. See: <http://portal.ncdwr.org/web/web/ncdwr/construction>

Site Area Description	Stabilization Time Frame	Stabilization Time Frame Exception
1) Ground Stabilization*		
Perimeter dikes, swales, ditches, and slopes	7 days	None
High Quality Water (H2W) 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 than 4:1	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 H2W Zones)

* Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.B.2(b)(i))

- Building Wastes Handling
 - No paint or liquid wastes in stream or storm drains.
 - Dedicated areas for demolition, construction and other wastes must be located 50' from storm drains and streams unless no reasonable alternatives are available.
 - Earthier materials stockpiles must be located 50' from storm drains and streams unless no reasonable alternatives are available.
 - Concrete materials must be controlled to avoid contact with surface waters, wetlands, or buffers.
- Discharges to Federally-Listed Waters
 - Requirements are the same as in previous permit.
 - The permit allows reduction from the 20-acre minimum if the Director of DWO determines that other BMPs provide equivalent protection.
- Inspections
 - Same weekly inspection requirements.
 - Same rain gauge & inspection after 0.5" rain event.
 - Inspections are only required during "normal business hours".
 - Inspection reports must be available on-site during business hours unless a site-specific exemption is approved.
 - Records must be kept for 3 years and available upon request.
 - Electronically available records may be substituted under certain conditions.

- Implementation of New Permit Conditions
 - Projects permitted under the previous permit can continue to follow conditions of approved application.
 - Complete applications received prior to August 3, 2011 can follow conditions of approved application.
 - Applications received after August 2, 2011 must comply with new permit conditions.
 - Conditions in Erosion & Sedimentation Control Plans
 - Designation on the plans where the 7 and the 14-day ground stabilization requirements of the NPDES permit apply.
 - Designation on the plans where basins that comply with the surface-withdrawal requirements of the NPDES permit are located.
 - Building Wastes Handling
 - No paint or liquid wastes in stream or storm drains.
 - Dedicated areas for demolition, construction and other wastes located 50' from the storm drains and streams unless no reasonable alternatives are available.
 - Earthier materials stockpiles located 50' from storm drains unless no reasonable alternatives are available.
 - Dedicated areas for demolition, construction and other wastes located 50' from the storm drains and streams unless no reasonable alternatives are available.
 - Sediment Basins
 - Outlet structures must withdraw from basin surface unless drainage area is less than 1 acre.
 - Use only DWO-approved flocculants.
- *In order for the EASC plan to satisfy the conditions of the Construction General Permit, it must identify areas where the ground stabilization requirements apply and the location of the basins where the surface-withdrawal requirements apply.
- Document prepared by the Division of Water Quality



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NORTH CAROLINA DEQ - LAND QUALITY SECTION

NPDES INSPECTION REQUIREMENTS

THE CONTRACTOR SHALL MAKE INSPECTIONS OF THE SITE DURING AND AFTER THE INSTALLATION OF EROSION CONTROL FACILITIES. THE COMPLETION OF EACH PHASE OF CLEARING AND GRADING, THE INSTALLATION OF STORM DRAINAGE FACILITIES, THE COMPLETION OF CONSTRUCTION, IMMEDIATELY AFTER EACH RAINFALL EVENT, AND CONTINUALLY UNTIL PERMANENT GROUND COVER IS ESTABLISHED, THE SITE INSPECTION SHALL DOCUMENT THE INSTALLATION OF ALL REQUIRED FACILITIES, THE COMPLETION OF ALL GRADING AND GROUND COVER, THE MAINTENANCE OF ALL FACILITIES, AND ANY DEVIATIONS FROM THE APPROVED PLANS.

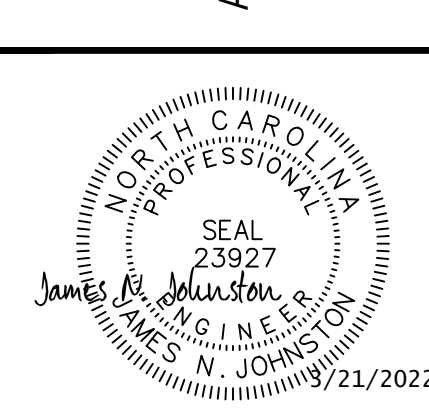
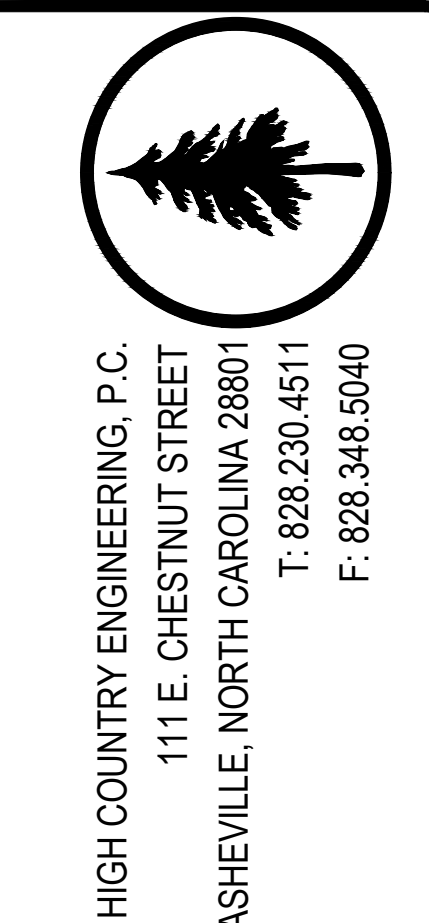
AT A MINIMUM, THE DOCUMENTATION SHALL BE PROVIDED USING DEMUR Monitoring Form Revision 08012013 PROVIDED AT LEAST WEEKLY TO THE ENGINEER.

DEMUR Monitoring Form Revision 08012013 can be found at the following web address: <http://demur.nc.gov/bou/divisions/energy-mineral-land-resources/erosion-sediment-control-forms>

Under subheading, "Self-inspection and Self-Monitoring Continued Form"

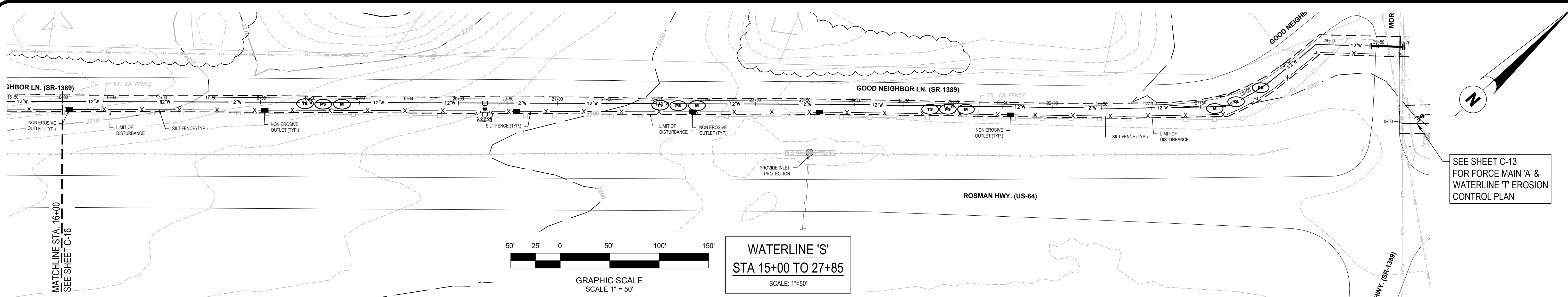
EROSION CONTROL LEGEND			
SYM.	DEVICE NAME	SYM.	DEVICE NAME
PS	PERMANENT SEEDING	— x —	SILT FENCE
TS	TEMPORARY SEEDING		NON-EROSIVE OUTLET
M	MULCHING		CLEARING & GRUBBING
RECP	ROLLED EROSION CONTROL PRODUCTS		STRAW/WATTLE CHECK DAM
SR	SURFACE ROUGHENING		INLET PROTECTION

EMERGENCY & EROSION CONTROL CONTACT:
BRIAN SHELTON
(828) 884-6859

[illegible]

EMERGENCY & EROSION CONTROL CONTACT:
BRIAN SHELTON
 (828) 884-6859

of 19



Major Elements of DQW Construction General Permit - August 4, 2011

This document contains the major elements of the recently revised North Carolina Division of Water Quality (DQW) Construction General Permit (CGP) with emphasis on those elements that differ from the previous permit (expiration on August 2, 2011). Since the summary list below cannot contain details of every change, the complete permit should be used to assure full implementation. See: <http://portal.ncdwr.org/web/water/construction>

1) Ground Stabilization*

Site Area Description	Stabilization Time Frame	Stabilization Time Frame Exception
Perimeter dikes, swales, ditches, and slopes	7 days	None
High Quality Water (H2W) 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
Slopes 3:1 or flatter than 4:1	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 perimeter and H2W Zones)

* Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.B(2)(b))

2) Building Wastes Handling

- No paint or liquid wastes in stream or storm drains.
- Dedicated areas for demolition, construction and other wastes must be located 50' from storm drains and streams unless no reasonable alternatives available.
- Earth-en-material stockpiles must be located 50' from storm drains and streams unless no reasonable alternatives available.
- Concrete materials must be controlled to avoid contact with surface waters, wetlands, or buffers.

3) Discharges to Federally-listed Waters

- Requirements are the same as in previous permit.
- The permit allows reduction from the 20-acre minimum if the director of DQW determines that other BMPs provide equivalent protection.

4) Inspections

- Same weekly inspection requirements.
- Same rain gauge & inspection after 0.5" rain event.
- Inspections are only required during "normal business hours".
- Inspection reports must be available on-site during business hours unless a site-specific exemption is approved.
- Records must be kept for 3 years and available upon request.
- Electronically-available records may be substituted under certain conditions.

5) Implementation of New Permit Conditions

- Projects permitted under the previous permit can continue to follow conditions of approved application.
- Complete applications received prior to August 3, 2011 can follow conditions of approved application.
- Applications received after August 2, 2011 must comply with new permit conditions.

6) Conditions in Erosion & Sedimentation Control Plans*

- Designation on the plans where the 7 and the 14-day ground stabilization requirements of the NPDES permit apply.
- Designation on the plans where basins that comply with the surface-withdrawal requirements of the NPDES permit are located.

7) Building Wastes Handling

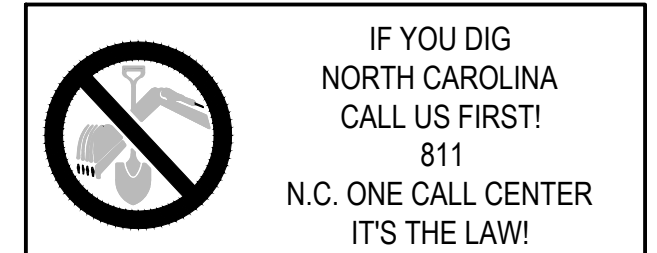
- No paint or liquid wastes in stream or storm drains.
- Dedicated areas for demolition, construction and other wastes located 50' from the storm drains and streams unless no reasonable alternatives are available.
- Earth-en-material stockpiles located 50' from storm drains unless no reasonable alternatives available.
- Concrete materials must be controlled to avoid contact with surface waters, wetlands, or buffers.

8) Sediment Basins

- Outlet structures must withdraw from basin surface unless drainage area is less than 1 acre.
- Use only DQW-approved flocculants.

*In order for the EASC to satisfy the conditions of the Construction General Permit, it must identify areas where the ground stabilization requirements apply and the location of the basins where the surface-withdrawal requirements apply.

Document prepared by the Division of Water Quality



EROSION CONTROL LEGEND			
SYM.	DEVICE NAME	SYM.	DEVICE NAME
PS	PERMANENT SEEDING	—x—	SILT FENCE
TS	TEMPORARY SEEDING	■	NON-EROSIVE OUTLET
M	MULCHING	▨	CLEARING & GRUBBING
RECP	ROLLED EROSION CONTROL PRODUCTS	◀	STRAW WATTLE CHECK DAM
SR	SURFACE ROUGHENING	●	INLET PROTECTION

EMERGENCY & EROSION CONTROL CONTACT:
BRIAN SHELTON
(828) 884-6859

SOIL EROSION AND SEDIMENT CONTROL NOTES:

- Provisions to prevent erosion of the soil from the site shall conform to the requirements of the "North Carolina Sedimentation Pollution Control Act of 1973" as shown herein and stipulated in the "Erosion and Sediment Control Planning and Design Manual". Installation shall be in a manner so as to minimize erosion of the disturbed areas and prevent sediment from leaving the site.
- The contractor shall incorporate all temporary and permanent erosion control measures into the project at the earliest practicable time during construction. The erosion control measures detailed herein shall be continued until permanent drainage structures have been installed and until grass on planted shoulders and slopes is sufficiently established to be an effective erosion deterrent. The sediment removed from the control structures shall be evenly distributed outside construction limits. Disposed sediment shall be permanently grassed.
- Temporary and permanent vegetative cover shall be installed in accordance with the requirements of Chapter 6, Section 10 - Temporary Seeding, and Section 11 - Permanent Seeding of the "Planning and Design Manual" as described in note no. 1 above.
- The contractor shall not restrict the use of silt fences or any other means of erosion control to the locations shown on these plans. Moreover, the contractor should constantly be aware of minimizing soil erosion and use erosion control means accordingly. The contractor shall promptly repair, improve or add erosion control measures as required by the local reviewing agency.
- Divert all runoff to the erosion control devices shown on the drawings.
- Provide daily maintenance of erosion control devices to maintain their function at all times.
- Disturbed areas shall be stabilized at the end of each work day. No work shall take place during period of wet weather or periods of predicted wet weather. Work within riparian buffers shall be restored at the end of each work day. Restoration shall utilize native grass seed mixes and fertilizers shall not be used. Erosion control matting shall be 100% biodegradable such as coconut coir fabric.
- No clearing or grading shall be performed until silt fence installation is complete.
- Additional sediment control measures may be required based on actual field conditions as per local governing authorities.
- All erosion control measures shall be checked and maintained daily.
- Maximum cut and fill slopes shall be two (2) foot horizontal to one (1) foot vertical, unless otherwise noted.
- Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source.
- The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land-disturbing activities.

NORTH CAROLINA DEQ - LAND QUALITY SECTION
NPDES INSPECTION REQUIREMENTS

THE CONTRACTOR SHALL MAKE INSPECTIONS OF THE SITE DURING AND AFTER THE INSTALLATION OF EROSION CONTROL FACILITIES, THE COMPLETION OF EACH PHASE OF CLEARING AND GRADING, THE INSTALLATION OF STORM DRAINAGE FACILITIES, THE COMPLETION OF CONSTRUCTION, IMMEDIATELY AFTER EACH RAINFALL EVENT, AND CONTINUALLY UNTIL PERMANENT GROUND COVER IS ESTABLISHED.

THE SITE INSPECTION SHALL DOCUMENT THE INSTALLATION OF ALL REQUIRED FACILITIES, THE COMPLETION OF ALL GRADING AND GROUND COVER, THE MAINTENANCE OF ALL FACILITIES, AND ANY DEVIATIONS FROM THE APPROVED PLANS.

AT A MINIMUM, THE DOCUMENTATION SHALL BE PROVIDED USING DEMLR Monitoring Form Revision 08012013 PROVIDED AT LEAST WEEKLY TO THE ENGINEER.

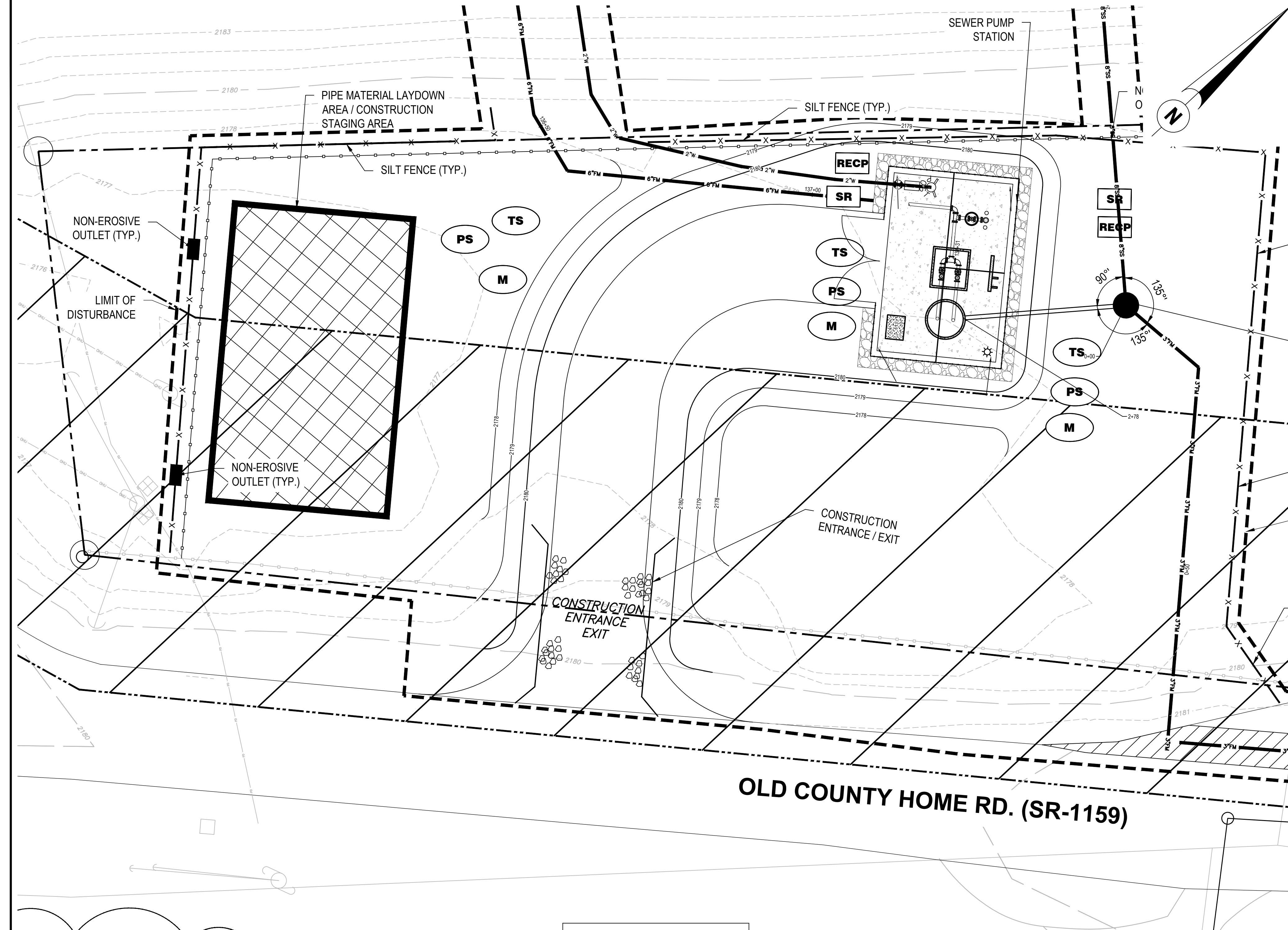
DEMLR Monitoring Form Revision 08012013 can be found at the following web address:
<http://dex.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/forms> Under subheading, "Self-inspection and Self-Monitoring Combined Form."

EROSION CONTROL CONSTRUCTION SEQUENCE

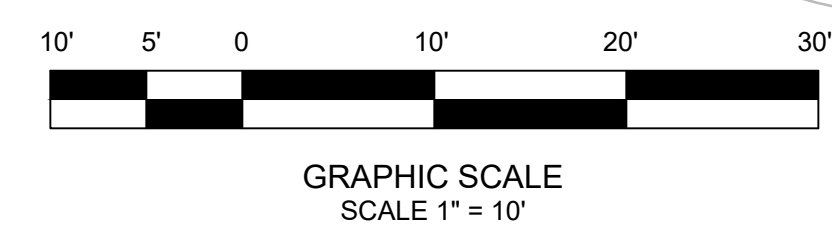
GENERAL: ALL EROSION CONTROL MEASURES ARE TO BE PERFORMED IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND QUALITY SECTION. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE COMPLIED WITH FOR ALL WORK.

- Install all pertinent perimeter erosion control devices and mark surface water buffer prior to any ground disturbance.
- Install construction entrance at entrance to site.
- Install all erosion and sedimentation control measures in areas as designated on the plans.
- Obtain Certificate of Compliance through on-site inspection by a representative of NCDEQ, Land Quality Section.
- Perform directional bores as directed on plans.
- Perform trenching, utility installation, backfill and compaction as directed on the plans.
- Establish seeding according to NPDES table on plans. Seed and mulch denuded areas within 14 days on disturbed fat areas and 7 days on all perimeter dikes, swales, ditches, perimeter slopes steeper than 3 feet horizontal to 1 foot vertical. Ground cover shall be required as soon as practicable but in any event within 14 or calendar days from the last land disturbing activity.
- All seeding shall be maintained, watered, etc., until permanent vegetative ground cover is established over all disturbed areas. All slopes 2:1 or steeper shall be covered by erosion control matting.
- Construct sewer pump station.
- Maintain all soil and erosion control measures for duration of the construction project and until permanent ground cover is established.
- Perform final restoration of disturbed areas and install permanent grassing/landscaping.
- Remove all temporary erosion control devices after permanent seeding is established.
- Request Final Approval by NCDEQ, Land Quality Section and obtain Certificate of Compliance.

EROSION CONTROL IS FIELD PERFORMANCE BASED AND ADDITIONAL SILT FENCES, TEMPORARY SEDIMENT BASINS AND ALL OTHER MEASURES MAY NEED TO BE ADDED IN ADDITION TO THE APPROVED PLAN AS NECESSARY. MEASURES SHOWN CAN AND SHOULD BE ADJUSTED TO ASSURE MAXIMUM PROTECTION OF SITE.



PUMP STATION EROSION CONTROL PLAN
SCALE: 1"=10'



GRAPHIC SCALE
SCALE 1" = 10'

HIGH COUNTRY ENGINEERING, P.C.
111 E. CHESTNUT STREET
ASHEVILLE, NORTH CAROLINA 28801
T: 828.230.4511
F: 828.348.5040

SEAL
23927
JAMES K. JOHNSON, P.E.
NORTH CAROLINA PROFESSIONAL ENGINEER
01/19/2022

PRELIMINARY PLANS FOR
**SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION**
for
TRANSYLVANIA COUNTY
Transylvania County, North Carolina

DATE	REVISION DESCRIPTION
10/13/2021	Issue 1 - Submitted to Client and Regulatory Agencies for Review
12/14/2021	Issue 2 - Resubmitted to Regulatory Agencies to Address Review Comments
2/17/2022	Issue 3 - Resubmitted to Regulatory Agencies to Address Review Comments
3/16/2022	Issue 4 - Issued for Bid

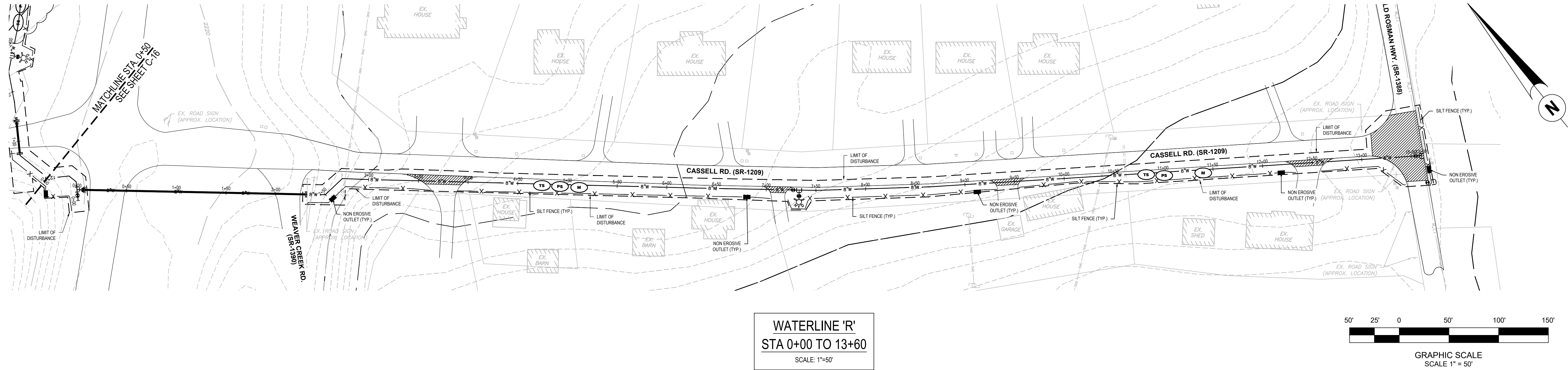
PROJECT NAME:
**SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION**
Transylvania County, NC

SHEET TITLE:
**EROSION CONTROL PLAN
WL 'S' - (STA. 15+00 TO 27+85)
& PUMP STATION**

PROJECT NO.	SHEET NO.
TRA008	C-17

DATE:
3/16/2022
ISSUE NO. B-1

of 19



SOIL EROSION AND SEDIMENT CONTROL NOTES:

- Provisions to prevent erosion of the soil from the site shall conform to the requirements of the "North Carolina Sedimentation Pollution Control Act of 1973" as shown herein and stipulated in the "Erosion and Sediment Control Planning and Design Manual". Installation shall be in a manner so as to minimize erosion of the disturbed areas and prevent sediment from leaving the site.
- The contractor shall incorporate all temporary and permanent erosion control measures into the project at the earliest practicable time during construction. The erosion control measures detailed hereon shall be continued until permanent drainage structures have been installed and until grass on planted shoulders and slopes is sufficiently established to be an effective erosion deterrent. The sediment removed from the control structures shall be evenly distributed outside construction limits. Disposed sediment shall be permanently grassed.
- Temporary and permanent vegetative cover shall be installed in accordance with the requirements of Chapter 6, Section 10 - Temporary Seeding, and Section 11 - Permanent Seeding of the "Planning and Design Manual" as described in note no. 1 above.
- The contractor shall not restrict the use of silt fences or any other means of erosion control to the locations shown on these plans. Moreover, the contractor should constantly be aware of minimizing soil erosion and use erosion control means accordingly. The contractor shall promptly repair, improve or add erosion control measures as required by the local reviewing agency.
- Divert all runoff to the erosion control devices shown on the drawings.
- Provide daily maintenance of erosion control devices to maintain their function at all times.
- Any disturbed area left exposed for a period greater than fourteen (14) days shall be stabilized with mulch or temporary seeding.
- No clearing or grading shall be performed until silt fence installation is complete.
- Additional sediment control measures may be required based on actual field conditions as per local governing authorities.
- All erosion control measures shall be checked and maintained daily.
- Maximum cut and fill slopes shall be two (2) foot horizontal to one (1) foot vertical, unless otherwise noted.
- Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source.
- The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land-disturbing activities.


EROSION CONTROL CONSTRUCTION SEQUENCE

- GENERAL: ALL EROSION CONTROL MEASURES ARE TO BE PERFORMED IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND QUALITY SECTION. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE COMPLIED WITH FOR ALL WORK.
- Install all pertinent perimeter erosion control devices and mark surface water buffer prior to any ground disturbance.
 - Install construction entrance at entrance to site.
 - Install all erosion and sedimentation control measures in areas as designated on the plans.
 - Obtain Certificate of Compliance through on-site inspection by a representative of NCEQ, Land Quality Section.
 - Perform trenching, utility installation, backfill and compaction as directed on the plans.
 - Establish seeding according to NPDES table on plans. Seed and mulch disturbed areas within 14 days on disturbed flat areas and 7 days on all perimeter dikes, swales, ditches, perimeter slopes steeper than 3 feet horizontal to 1 foot vertical. Ground cover shall be required as soon as practicable but in any event within 14 or 7 calendar days from the last land disturbing activity.
 - All seeding shall be maintained, watered, etc., until permanent vegetative ground cover is established over all disturbed areas.
 - All slopes 2:1 or steeper shall be covered by erosion control matting.
 - Construct sewer pump station.
 - Maintain all soil and erosion control measures for duration of the construction project and until permanent ground cover is established.
 - Perform final restoration of disturbed areas and install permanent grassing/landscaping.
 - Remove all temporary erosion control devices after permanent seeding is established.
 - Request Final Approval by NCEQ, Land Quality Section and obtain Certificate of Compliance.
- EROSION CONTROL IS FIELD PERFORMANCE BASED AND ADDITIONAL SILT FENCES, TEMPORARY SEDIMENT BASINS AND ALL OTHER MEASURES MAY NEED TO BE ADDED IN ADDITION TO THE APPROVED PLAN AS NECESSARY. MEASURES SHOWN CAN AND SHOULD BE ADJUSTED TO ASSURE MAXIMUM PROTECTION OF SITE.

Major Elements of DWQ Construction General Permit - August 4, 2011

- This document contains the major elements of the recently-revised North Carolina Division of Water Quality (DWQ) Construction General Permit (NCG01) with emphasis on those elements that differ from the previous permit (expiration on August 2, 2011). Since the summary list below cannot contain details of every change, the complete permit should be used to assure full implementation. See: <http://portal.ncdnet.org/web/wq/wqslu/construction>
- | Site Area Description | Stabilization Time Frame | Stabilization Time Frame Exception |
|--|--------------------------|---|
| 1) Ground Stabilization* | | |
| Perimeter dikes, swales, ditches, and slopes | 7 days | None |
| High Quality Water (H2W) 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 than 4:1 | 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 H2W Zones) |
- * Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.6(2)(b))
- Building Wastes Handling
 - No paint or liquid wastes in stream or storm drains.
 - Dedicated areas for demolition, construction and other wastes must be located 50' from storm drains and streams unless no reasonable alternatives available.
 - Earthen-material stockpiles must be located 50' from storm drains and streams unless no reasonable alternatives available.
 - Concrete materials must be controlled to avoid contact with surface waters, wetlands, or buffers.
 - Discharges to Federally-listed Waters
 - Requirements are the same as in previous permit.
 - The permit allows reduction from the 20-acre minimum if the director of DWQ determines that other BMPs provide equivalent protection.
 - Inspections

- Same weekly inspection requirements.
 - Same rain gauge & inspection after 0.5" rain event.
 - Inspections are only required during "normal business hours".
 - Inspection reports must be available on-site during business hours unless a site-specific exemption is approved.
 - Records must be kept for 3 years and available upon request.
 - Electronically-available records may be substituted under certain conditions.
 - Implementation of New Permit Conditions
 - Projects permitted under the previous permit can continue to follow conditions of approved application.
 - Complete applications received prior to August 3, 2011 can follow conditions of approved application.
 - Applications received after August 2, 2011 must comply with new permit conditions.
 - Conditions in Erosion & Sedimentation Control Plans
 - Designation on the plans where the 7 and the 14-day ground stabilization requirements of the NPDES permit apply.
 - Designation on the plans where basins that comply with the surface-withdrawal requirements of the NPDES permit are located.
 - Building Wastes Handling
 - No paint or liquid wastes in stream or storm drains.
 - Dedicated areas for demolition, construction and other wastes located 50' from the storm drains and streams unless no reasonable alternatives are available.
 - Earthen-material stockpiles located 50' from storm drains unless no reasonable alternatives available.
 - Concrete materials must be controlled to avoid contact with surface waters, wetlands, or buffers.
 - Sediment Basins
 - Outlet structures must withdraw from basin surface unless drainage area is less than 1 acre.
 - Use only DWQ-approved baffleboxes.
- *In order for the E&S plan to satisfy the conditions of the Construction General Permit, it must identify areas where the ground stabilization requirements apply and the location of the basins where the surface-withdrawal requirements apply.
- The permit allows reduction from the 20-acre minimum if the director of DWQ determines that other BMPs provide equivalent protection.
- Document prepared by the Division of Water Quality



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NORTH CAROLINA
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811
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IT'S THE LAW!

NORTH CAROLINA DEQ - LAND QUALITY SECTION

NPDES INSPECTION REQUIREMENTS

THE CONTRACTOR SHALL MAKE INSPECTIONS OF THE SITE DURING AND AFTER THE INSTALLATION OF EROSION CONTROL FACILITIES; THE COMPLETION OF EACH PHASE OF CLEARING AND GRADING; THE INSTALLATION OF STORM DRAINAGE FACILITIES; THE COMPLETION OF CONSTRUCTION, IMMEDIATELY AFTER EACH RAINFALL EVENT; AND CONTINUALLY UNTIL PERMANENT GROUND COVER IS ESTABLISHED.

THE SITE INSPECTION SHALL DOCUMENT THE INSTALLATION OF ALL REQUIRED FACILITIES, THE COMPLETION OF ALL GRADING AND GROUND COVER, THE MAINTENANCE OF ALL FACILITIES, AND ANY DEVIATIONS FROM THE APPROVED PLANS.

AT A MINIMUM, THE DOCUMENTATION SHALL BE PROVIDED USING DEMLR Monitoring Form Revision 08012013 PROVIDED AT LEAST WEEKLY TO THE ENGINEER.

DEMLR Monitoring Form Revision 08012013 can be found at the following web address: <http://ides.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/forms>. Under subheading, "Self-inspection and Self-Monitoring Combined Form"

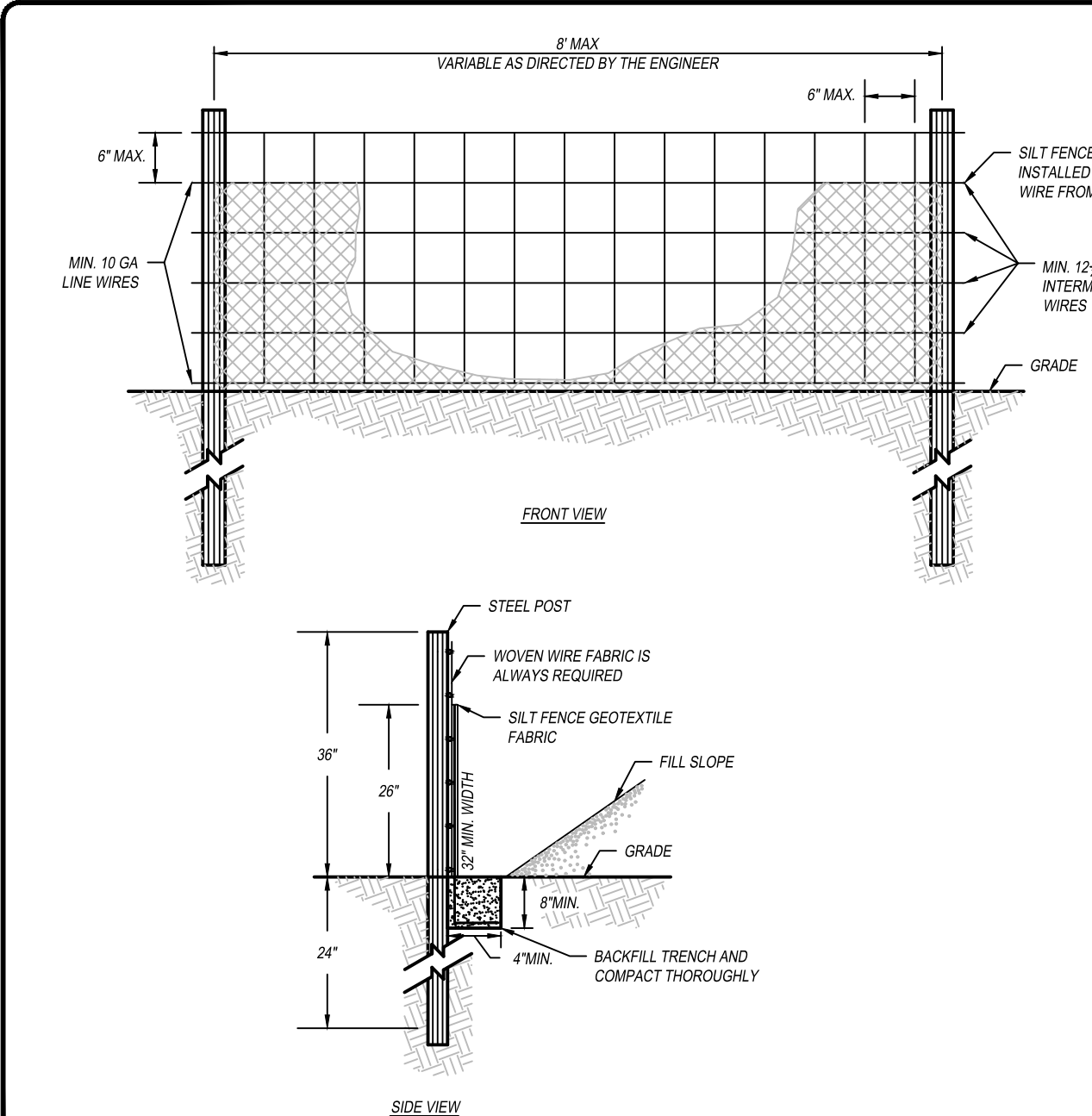
EROSION CONTROL LEGEND	
SYM.	DEVICE NAME
PS	PERMANENT SEEDING
TS	TEMPORARY SEEDING
M	MULCHING
RECP	ROLLED EROSION CONTROL PRODUCTS
SR	SURFACE ROUGHENING

EMERGENCY & EROSION CONTROL CONTACT:
BRIAN SHELTON
(828) 884-6859

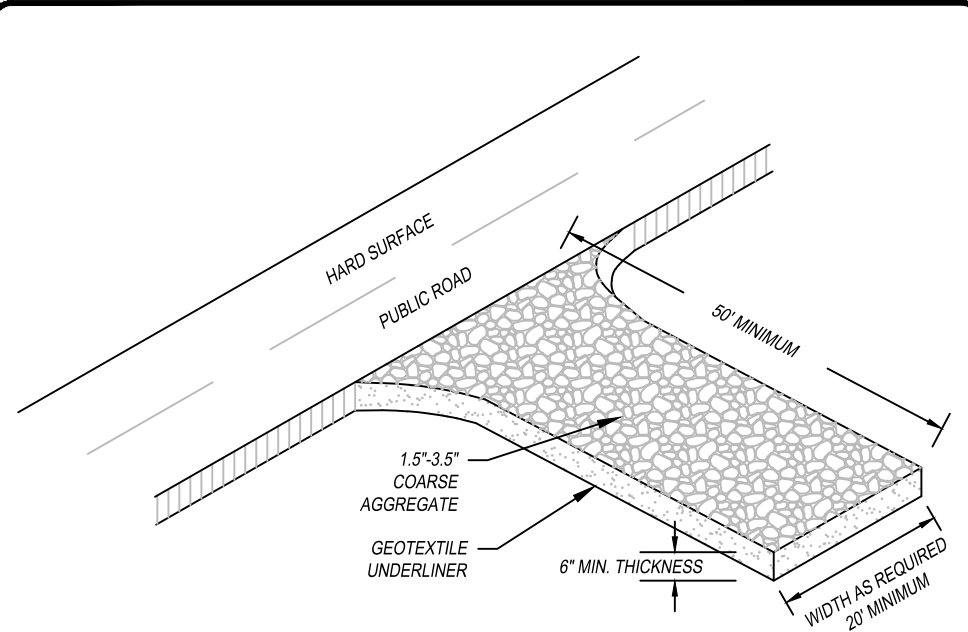
SEWERLINE EXTENSION
WATERLINE EXTENSION
AND SEWER PUMP STATION
for
TRANSYLVANIA COUNTY
Transylvania County, North Carolina

REVISION DESCRIPTION	
Issue 1 - Submitted to Client and Regulatory Agencies for Review	
Issue 2 - Resubmitted to Regulatory Agencies to Address Review Comments	
Issue 3 - Resubmitted to Regulatory Agencies to Review	
Issue 4 - Issued for Bid	

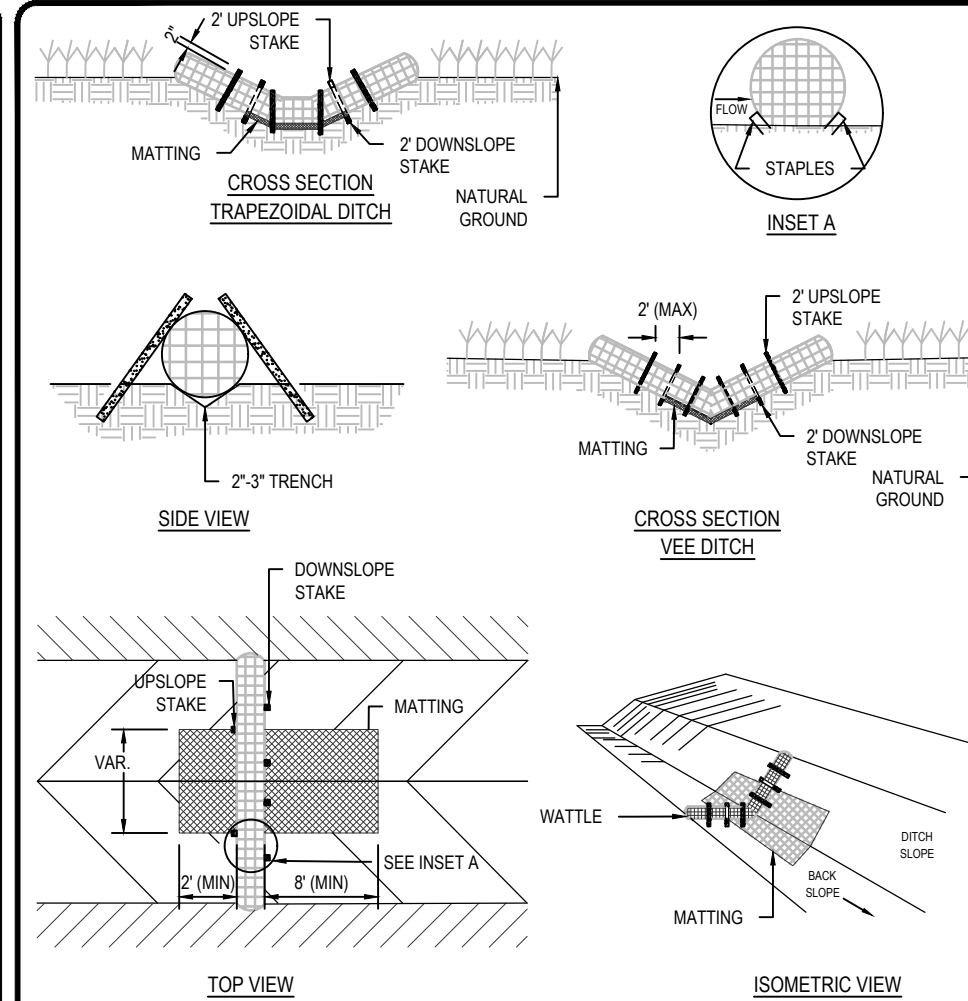
#	DATE	PROJECT NAME:
A	10/13/2021	SEWERLINE EXTENSION WATERLINE EXTENSION AND SEWER PUMP STATION
A	12/14/2021	Transylvania County, NC
A	2/17/2022	SHEET TITLE:
B	3/16/2022	EROSION CONTROL PLAN WL 'R' - (STA. 0+00 TO 13+60)
PROJECT NO.		SHEET NO.
TRA008		C-18
DATE:		of
3/16/2022		19
ISSUE No. B-1		



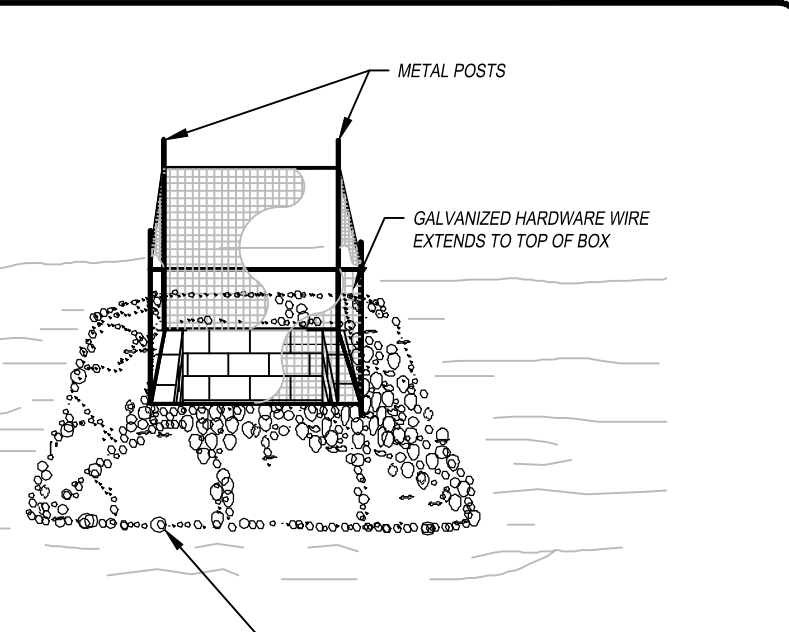
TEMPORARY SEDIMENT FENCE
NOT TO SCALE



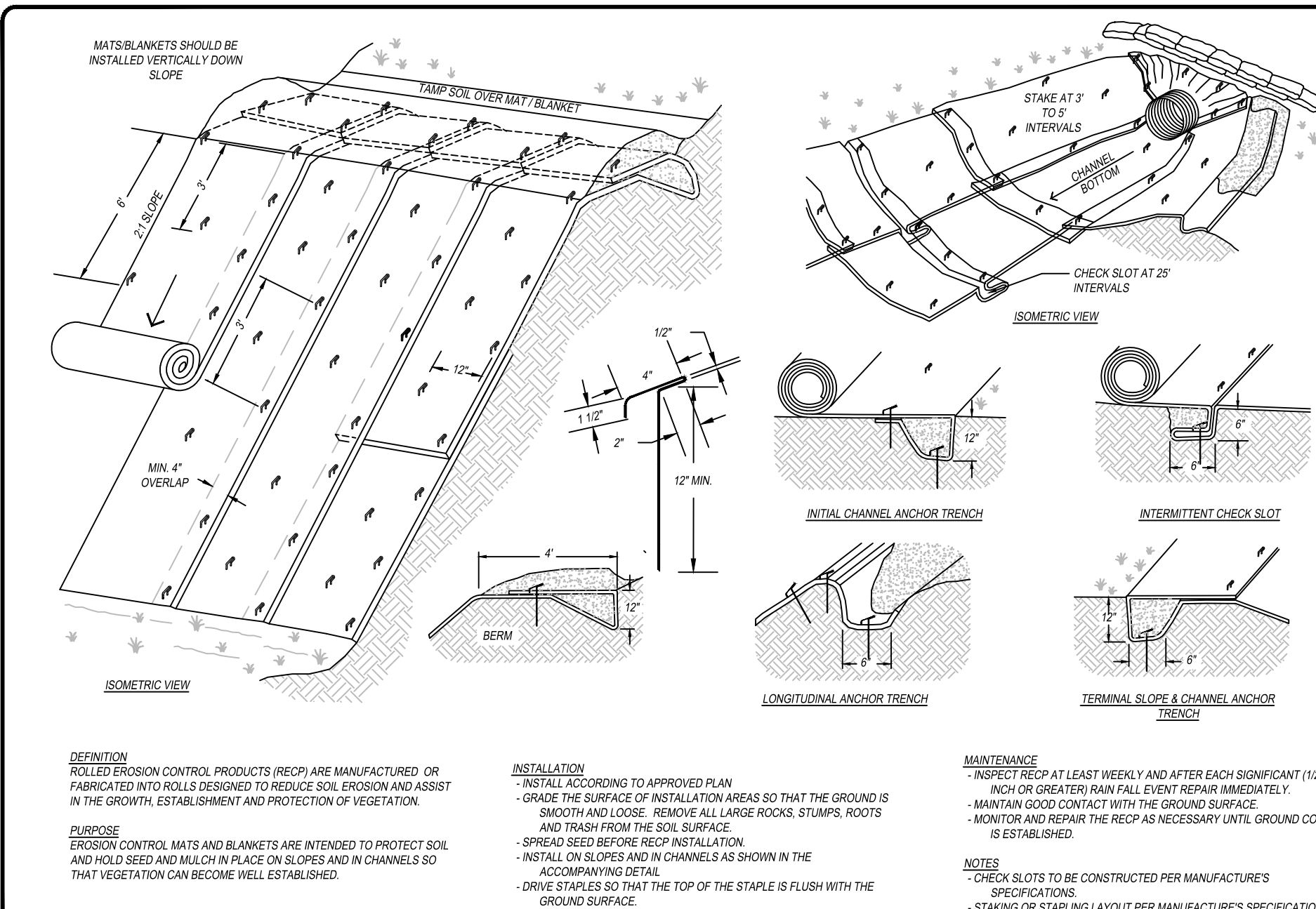
NON-EROSIVE OUTLET
NOT TO SCALE



WATTLE CHECK DAM INSTALLATION DETAIL
NOT TO SCALE



INLET PROTECTION
NOT TO SCALE



ROLLED EROSION CONTROL PRODUCTS
NOT TO SCALE

DEFINITION

CONTROLLING RUNOFF AND EROSION ON DISTURBED AREAS BY ESTABLISHING PERENNIAL VEGETATIVE COVER WITH SEED.

PURPOSE

TO REDUCE EROSION AND DECREASE SEDIMENT YIELD FROM DISTURBED AREAS, TO PERMANENTLY STABILIZE SUCH AREAS IN A MANNER THAT IS ECONOMICALLY ADAPTS TO SITE CONDITIONS, AND ALLOWS SELECTION OF THE MOST APPROPRIATE PLANT MATERIALS.

INSTALLATION

- APPLY ACCORDING TO APPROVED PLANS
- IF POSSIBLE, USE CONVENTIONAL PLANTING METHODS

CHECK THE TAG ON THE BAG OF SEED TO VERIFY TYPE AND GERMINATION OF THE SEED TO BE PLANTED AND THE DATE OF THE TEST

- SCARIFY, PIT OR TRENCH SEALED OR CRUSTED SOIL
- FERTILIZE BASED ON SOIL, TESTS OR AS SHOWN IN TABLE
- APPLY AGRICULTURAL LIME AS PRESCRIBED BY SOIL TESTS OR AT A RATE OF 1 TON TO 2 TONS PER ACRE
- FERTILIZE BY HAND, CYCLOSE SEEDER, DRILL OR HYDRO-SEEDER. SEED PLANTED WITH A DRILL SHOULD BE PLANTED 1/2" TO 1" DEEP
- IRRIGATION SHOULD BE USED TO SUPPLEMENT RAINFALL, BUT NOT TO THE POINT TO CAUSE EROSION.

MAINTENANCE

- RESSEED AREAS WHERE AN ADEQUATE STAND OF TEMPORARY VEGETATION FAILS TO EMERGE OR WHERE A POOR STAND EXISTS
- APPLY ONE TON OF AGRICULTURAL LIME AS INDICATED BY SOIL TEST OR EVERY 4 TO 6 YEARS
- MONITOR BURN AND SAVANNAH AREAS DESIRED. MOW SAVANNAH ESPECIALLY AFTER FROST TO ENSURE SEEDS ARE MATURE
- MAINTAIN 6" OR MORE OF POOR GROWTH.

NOTES

- GRADING AND SHAPING REQUIRED WHERE FEASIBLE AND PRACTICAL
- CRITICAL AREA, DISTURBED LAND THAT IS EITHER HIGHLY ERODIBLE OR HIGHLY EROSIONAL. TYPICALLY ADJACENT TO NATURAL AREAS, LESS FORMAL AND HAVING LOWER MAINTENANCE REQUIREMENTS THAN GRASSED LAWN AREAS
- SEEDING PREPARATION: NOT REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIPMENT IS TO BE USED WITH CONVENTIONAL SEEDING.

SLOPE, SEED BED

3:1 OR FLATTER/4:1-6:1 DEPTH
3:1 TO 2:1 1/4" - 4" DEPTH
2:1 OR STEEPER = HAND TOoled TRENCHES (6" x 6" APART)

FOR INDIVIDUAL PLANTS PREPARE SOIL BY EXCAVATING SOIL, OPENING FURROWS OR DOUBLE PLANTING

-NO TILL SEEDING, WITH APPROPRIATE EQUIPMENT, IS PERMISSIBLE UNTO ANNUAL COVER CROPS IF THE PLANTING IS DONE AFTER THE COVER CROPS HAS MATURED OR IF THE TEMPORARY COVER STAND IS SPARSE ENOUGH TO ALLOW ADEQUATE GROWTH OF THE PERMANENT SPECIES

-TAKE SOIL SAMPLES FROM SEVERAL AREAS FOR EFFICIENT CHEMICAL APPLICATION AND OPTIMUM PLANT HEALTH

-MULCH IS REQUIRED ON ALL SLOPES STEEPER THAN 3 PERCENT. IN THE BOTTOM OF SLOPWAYS, ON ROADWAYS, AND WHEN SEEDING IS DONE TOO LATE IN THE FALL OR WINTER FOR GERMINATION TO BE EXPECTED BEFORE SPRING. REFER TO MULCHING DETAIL FOR EXACT SPECIFICATIONS

-SOIL RETENTION BLANKETS, EROSION CONTROL NETTING, OTHER MANUFACTURE MATERIALS OR BULK SOOD MAY BE REQUIRED IN ADDITION TO MULCH ON UNSTABLE SOILS AND CONCENTRATED EROSION AREAS

-ANCHOR STRAW OR HAY MULCH IMMEDIATELY AFTER APPLICATION WITH ONE OF THE FOLLOWING METHODS:

- SPRAY WITH EMULSIFIED ASPHALT
- PRESS INTO THE SOIL WITH A ROLLER, PARKER DISK, ETC.
- APPLY SYNTHETIC TACKIFIERS OR BINDERS
- ADD ROPE OR WHAT SEED TO FALL, AND WINTER PLANTINGS

-INSTALL 1/4" MESH NETTING

-WOOD CELLULOSE AND WOOD FIBER MULCH IS SELF-ANCHORING.

NON-NATIVE SPECIES

OPTIMAL PLANTING DATES

COMMON NAME

BROADCAST SEEDING RATES
lb/acre

MOUNTAINS

PIEDMONT

SUNSHADE TOLERANT

KY 31 TALL FESCUE

100 lbs

8/15-8/1

8/1-8/15

SUN/MOD SHADE

KY BLUE GRASS

15 lbs

8/15-8/1

NOT RECOMMENDED

SUN/MOD SHADE

HARD FESCUE

15 lbs

8/1-8/1

NOT RECOMMENDED

SHADE

NOTE:

USE MANUFACTURERS RECOMMENDED FERTILIZATION/LIME/STONE RATES OR FROM A SOIL TEST

NATIVE SPECIES

OPTIMAL PLANTING DATES

COMMON NAME

SEEDING RATES*

MOUNTAINS

PIEDMONT

SUNSHADE TOLERANT

SWITCHGRASS

35 lb

12/1-4/15

NOT RECOMMENDED

SUN

INDIAN GRASS

70 lb

12/1-4/15

12/1-4/1

SUN

DEERTONGUE

60 lb

5/1-4/15

5/1-4/1

SUN & SHADE

BIG BLUESTEM

70 lb

12/1-4/15

12/1-4/1

SUN

LITTLE BLUESTEM

100 lb

12/1-4/15

NOT RECOMMENDED

SUN

SWEET WOODED

25 lb

12/1-4/15

12/1-4/1

SUN & MOD SHADE

RICE CUTGRASS

60 lb

12/1-4/15

12/1-4/1

SUN

SOFT RUSH

25 lb

12/1-9/15

12/1-5/1

SUN

SHALLOW FOXGE

25 lb

12/1-5/15

12/1-5/1

SUN

FOX SEEDGE

25 lb

12/1-5/15

12/1-5/1

SUN

NOTE:

- * WHEN MIXED WITH 3 OTHER VARIETIES. SEE NC DEG TABLE 6.11 FOR ALL SEEDING RATES
- * USE MANUFACTURERS RECOMMENDED FERTILIZATION/LIME/STONE RATES OR FROM A SOIL TEST

PERMANENT SEEDING
NOT TO SCALE

DEFINITION

PLANTING RAPID-GROWING, ANNUAL GRASSES OR SMALL GRAINS TO PROVIDE INITIAL, TEMPORARY COVER FOR EROSION CONTROL ON DISTURBED AREAS.

PURPOSE

TO TEMPORARILY STABILIZE DENUDED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 27 CALENDAR DAYS.

INSTALLATION

- INSTALL ALL EROSION CONTROL MEASURES PRIOR TO APPLYING TEMPORARY VEGETATION.
- GRADING AND SHAPING ARE NOT REQUIRED IF SLOPES CAN BE PLANTED WITH A HYDROSEEDER OR HAND SEEDER.
- SEEDBED PREPARATION IS NOT REQUIRED IF SOIL IS LOOSE AND NOT SEALED.
- WHEN THE SOIL IS SEALED, IT SHOULD BE PITTED, TRENCHED OR SCARIFIED TO PROVIDE A PLACE FOR SEED TO LODGE AND GERMINATE.
- APPLY AGRICULTURAL LIME AT RATES RECOMMENDED BY SOIL REPORTS OR A MINIMUM OF 100 LBS/ACRE.
- FERTILIZE LOW FERTILITY SOILS BY ADDING AND MIXING INTO SOIL PRIOR TO PLANTING AT THE RATE OF 500-700 POUNDS PER ACRE OF 10-10-10 FERTILIZER OR EQUIVALENT.
- IT IS IMPERATIVE THAT YOU CHECK THE TAG ON THE BAG OF SEED TO VERIFY TYPE AND GERMINATION OF THE SEED TO BE PLANTED.
- APPLY SEED BY HAND, CYCLONE SEEDER, DRILL, OR HYDRO-SEEDER. SEED PLANTED WITH A DRILL SHOULD BE PLANTED 1/2" TO 1" DEEP.

MAINTENANCE

RESEED AREAS WHERE SEEDLING EMERGENCE IS POOR, OR WHERE EROSION OCCURS, AS SOON AS POSSIBLE. DO NOT MOW AND PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE.

NOTES

- SEEDING DATES MAY BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.
- UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES.
- SEEDINGS FOR JANUARY AND FEBRUARY FOLLOW WYDOT RECOMMENDATIONS (USE 2 TONS OF WYDOT OR STRAW PER ACRE IF NECESSARY).

DEFINITION

ROUTING A BARE SOIL SURFACE WITH HORIZONTAL GROOVES ACROSS THE SLOPE, OR TRACKING WITH CONSTRUCTION EQUIPMENT.

PURPOSE

TO AID THE ESTABLISHMENT OF VEGETATIVE COVER FROM SEED, TO REDUCE RUNOFF VELOCITY AND INCREASE INFILTRATION.

INSTALLATION

- INSTALL ACCORDING TO APPROVED PLAN.
- INSTALL ALL OTHER BMP'S FIRST.
- ROUGHEN ALL SLOPES STEEPER THAN 3:1.

MAINTENANCE

PERIODICALLY CHECK THE SEEDED SLOPES FOR RILLS AND WASHES. FILL THESE AREAS SLIGHTLY ABOVE THE ORIGINAL GRADE, THEN RESEED AND MULCH AS SOON AS POSSIBLE.

SURFACE ROUGHENING

NOT TO SCALE

DEFINITION

A TEMPORARY PROTECTIVE BLANKET OF STRAW OR OTHER PLANT RESIDUE, GRASS, OR SYNTHETIC MATERIAL, TO THE SOIL SURFACE FOR A PERIOD OF SIX (6) MONTHS OR LESS WHEN SEEDING IS NOT PRACTICAL.

PURPOSE

- REDUCE RUNOFF, EROSION, AND SEDIMENTATION, FOSTER THE GROWTH OF VEGETATION, CONSERVE MOISTURE, INSULATE THE SOIL, SUPPRESS WEED GROWTH.

INSTALLATION

- INSTALL ALL OTHER REQUIRED BMP'S FIRST.
- GRADE SITE, IF POSSIBLE, TO PERMIT THE USE OF EQUIPMENT FOR APPLYING AND ANCHORING MULCH.
- IF POSSIBLE, LOOSEN/COMPACTED SOIL TO A DEPTH OF THREE (3) INCHES.
- APPLY 1" STRAW OR MULCH UNIFORMLY, BY HAND AND/OR BY PRESSING INTO SOIL OR USE NETTING.
- MULCH ON SLOPES GREATER THAN 3% SHOULD BE ANCHORED WITH EMULSIFIED ASPHALT (GRADE 6-8 OR SS-1) OR OTHER SUITABLE TACKIFIER.
- WOOD MATS ON SLOPES FLATTER THAN 3:1 DO NOT NEED ANCHORING.

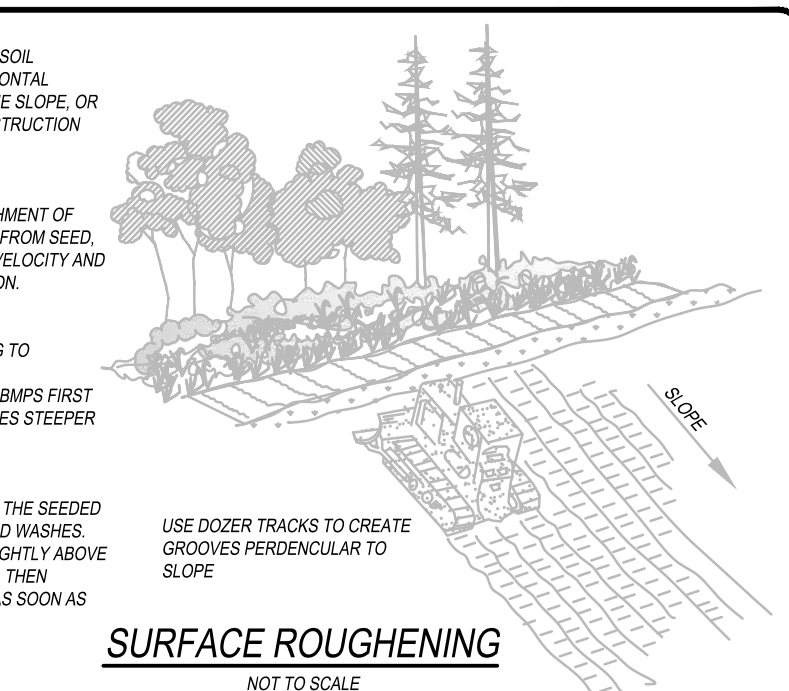
MAINTENANCE

- INSPECT AFTER HEAVY RAINS FOR EROSION AND DISLOOSED MULCH.
- ADD MULCH AS NEEDED TO MAINTAIN THE SUGGESTED DEPTH.

TEMPORARY SEEDING SCHEDULE		
DATE RANGE	SEEDING MIXTURE	RATE (LB./ACRE)
FEB. 1 - MAY 15	RYE (GRAN)	120
	ANNUAL LESPEDEZA	50
MAY 15 - AUG. 15	GERMAN MILLET	80
AUG. 15 - DEC. 31	RYE (GRAN)	120

MULCHING APPLICATION RATES			
MATERIAL	RATE PER ACRE	DEPTH	
STRAW OR HAY	1.5 TO 2.5 TONS	6" TO 10"	
WOOD CHIPS OR FIBERS	5 TO 6 TONS	2" TO 3"	
BAKED	35 CUBIC YARDS	3" TO 4"	
CORN STALKS	4 TO 6 TONS	5" TO 6"	
GEOTEXTILES, JUTE MATTING, NETTING, ETC.			SEE MANUFACTURER'S RECOMMENDATIONS

TEMPORARY SEEDING
NOT TO SCALE



SURFACE ROUGHENING
NOT TO SCALE

[illegible][illegible]