

REQUEST FOR COMMITTEE ACTION

**HENDERSON COUNTY
TECHINICAL REVIEW COMMITTEE**

MEETING DATE: November 16, 2021

SUBJECT: Combined Master and Development Plan for Orchards at Highway 64
Major Subdivision (2021-M07)

STAFF CONTACT: Matt Champion, Project Development Planner

ATTACHMENTS: 1. Staff Report
2. Combined Master & Development Plan

SUMMARY OF REQUEST:

A subdivision application was submitted on behalf of property owners The Orchards at Hwy 64, LLC on November 3, 2021. The application is for a Master and Development Plan for Orchards at Highway 64 Major Subdivision, consisting of 18 lots for single family dwellings and 2,543 linear feet of new private roadway. The subject area is located off Chimney Rock Road (US 64) and contains 20.61 acres on PIN: 9690-49-8992.

TECHNICAL REVIEW COMMITTEE ACTION REQUESTED:

Staff has found that the Master and Development Plan meet the standards of the subdivision regulations of Chapter 42, Henderson County Land Development Code (LDC). Staff recommends the Master Plan and Development Plan be subject to the developer addressing any issues raised by the TRC and addressing the comments listed in the Staff Report.

Suggested Motion:

I move that the TRC approve, approve with conditions, or deny the Master and Development Plan based on the Henderson County Land Development Code and recommendations of the Henderson County Comprehensive Plan and any conditions in the staff report or as discussed by the TRC.

Henderson County Planning Department Staff Report

**Combined Master and Development Plan
Orchards at Highway 64 Major Residential Subdivision (2021-M07)**

**Property Owner(s)/Applicant(s): Luis Graef
Agent: John Hernandez & Engineer: Jared DeRidder
PIN: 9690-49-8992**

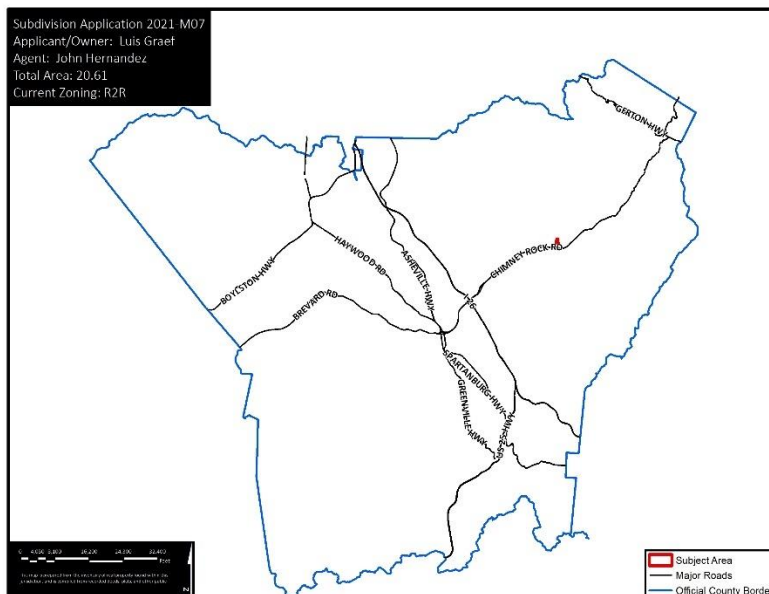
Master & Development Plan Comments:

According to Chapter 42, Henderson County Land Development Code (LDC) §42-341), the purpose of a Master Plan is to provide general information about the proposed development to allow for an assessment of its impact on the orderly growth and development of the County, environmental quality, land values, natural features identified on the site analysis sketch and the County’s roads and governmental services. During the review of the Combined the Master and Development Plan, the Technical Review Committee should take into consideration: applicable recommendations of the *Henderson County Comprehensive Plan*, the potential use of the land to be subdivided, and the impact of the subdivision and proposed use whether residential, commercial or industrial.

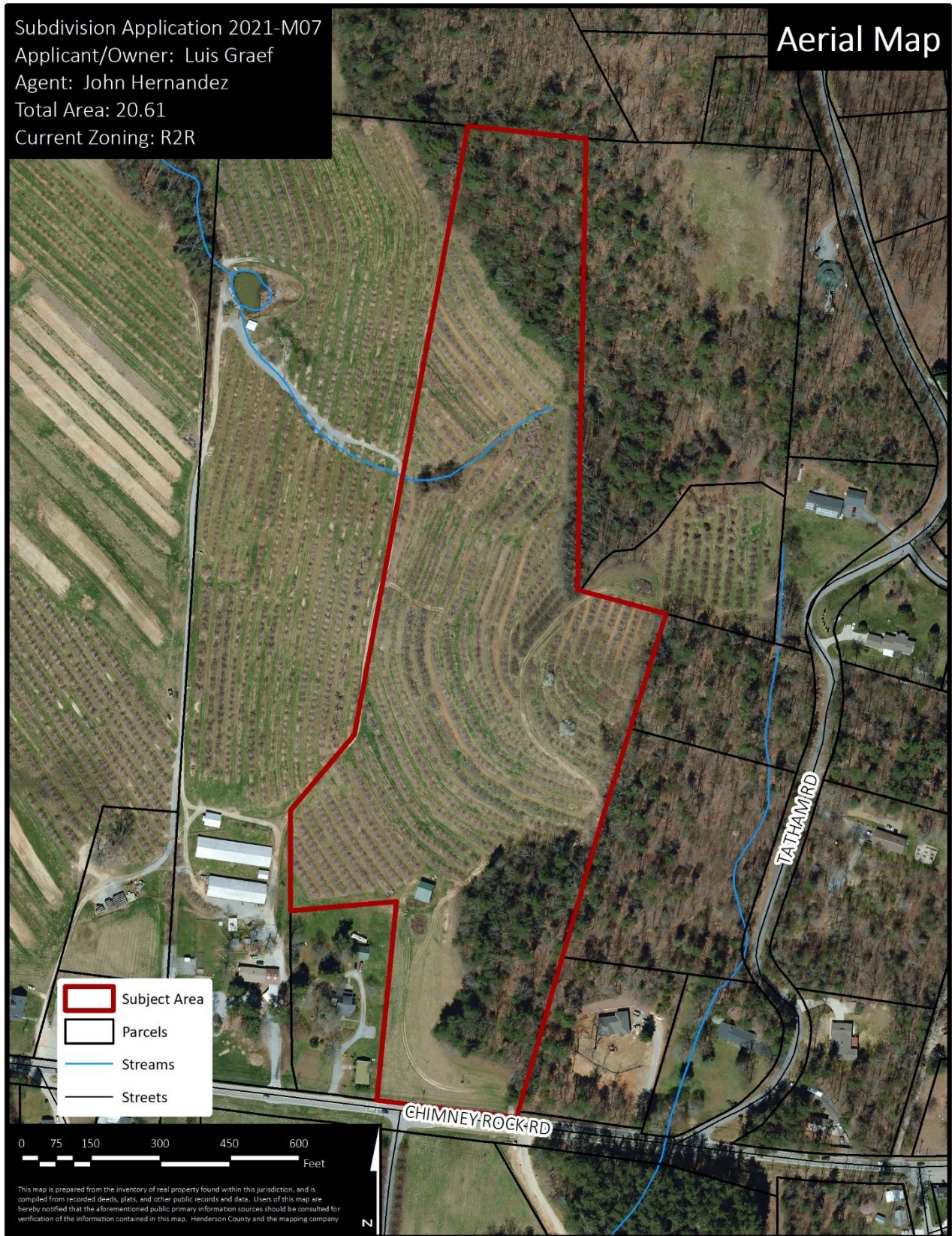
When reviewing the Combined Master and Development Plan it is important to consider that, due to severe topographic conditions, inadequate road access, distance from services, unique natural areas, soils that do not easily support soil drainage systems and/or the proximity to existing and incompatible land uses/zoning, all land may not be suitable to be subdivided for the purpose of dense development (LDC §42-75).

Staff has reviewed the submitted revised Combined Master and Development Plan for the Orchards at Highway 64 Major Subdivision, taking into consideration the recommendations of the *Henderson County Comprehensive Plan* and reviewing the plan for conformance with Henderson County Land Development Code. Staff offers the following comments:

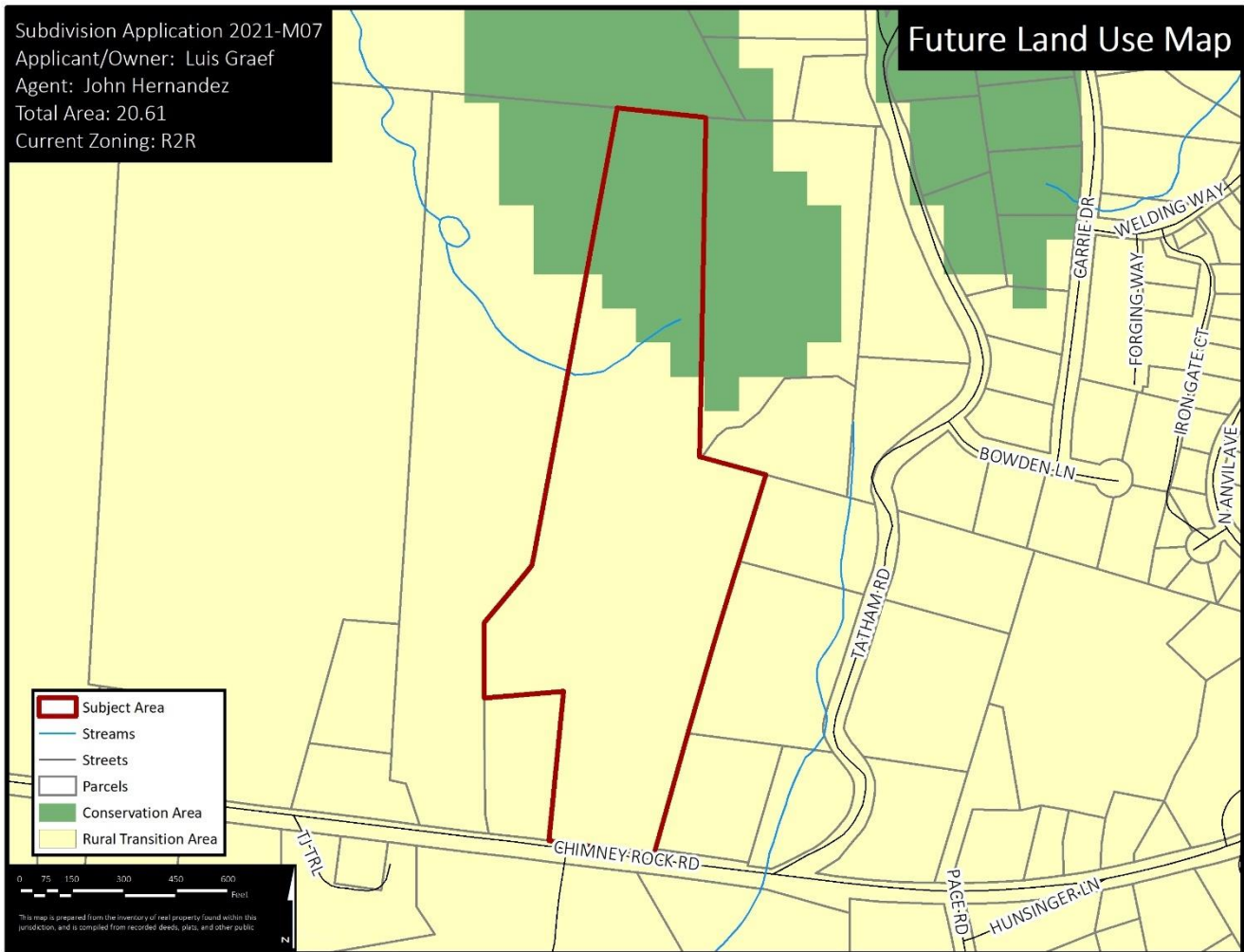
Map A: County Context



Map B: Aerial Imagery

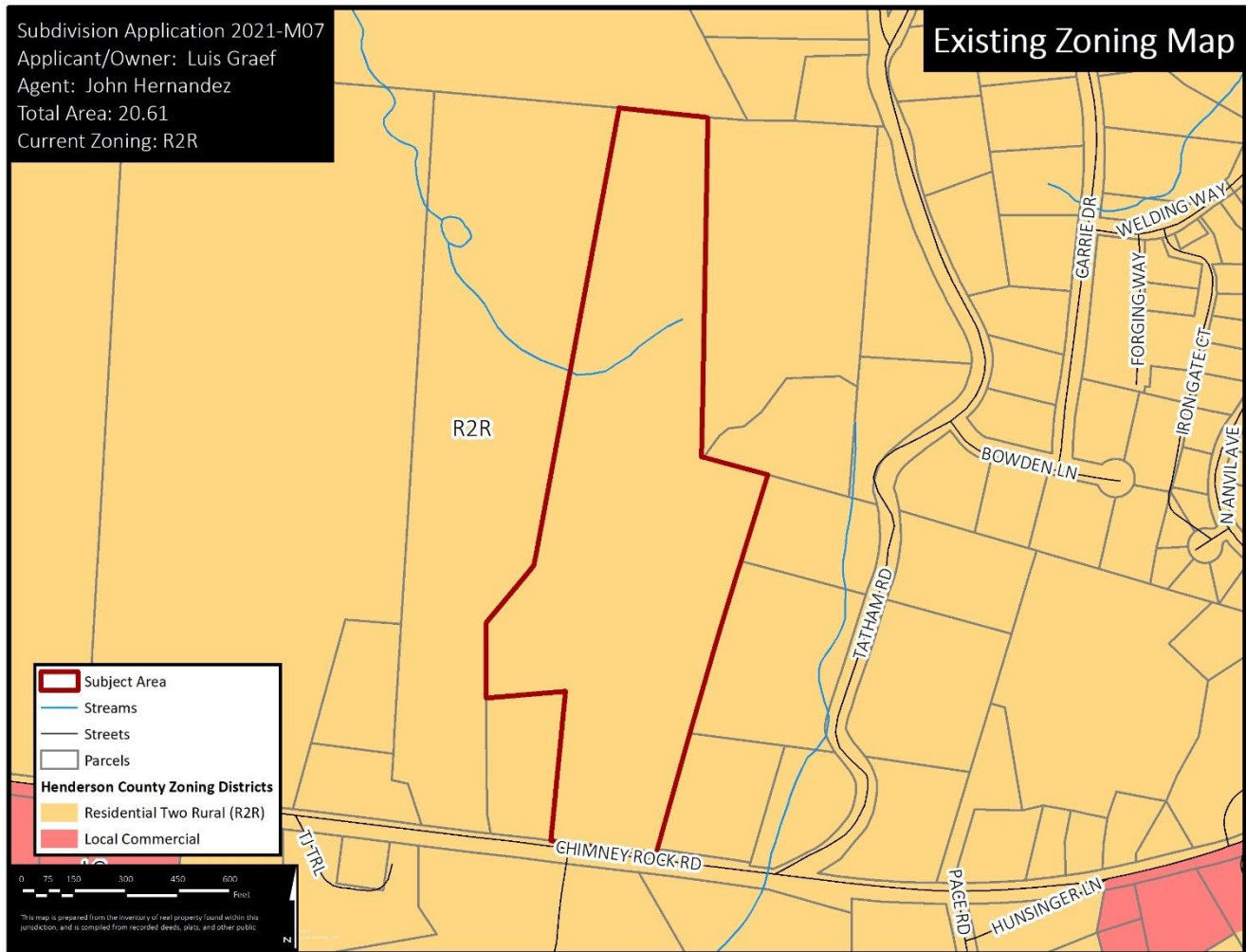


Map C: County Comprehensive Plan Future Land Use Map



1. **Henderson County Comprehensive Plan (CCP).** The Future Land Use Map of the CCP shows the Subject Area as being located within the Rural Transition Area (RTA) Classification and a portion in the Conservation Area Classification.
 - a. **Rural Transition Area:** “The RTA is currently rural in character, with existing pockets of limited higher density residential and commercial development. Slopes vary across the RTA, although the area can be considered generally developable. The primary factor preventing urban development in the RTA is the absence of sewer and water service. The RTA will continue to experience extensive development over the operational timeframe of this Comprehensive Plan.”
 - i. Population and residential densities should be generally lower than the more urban population densities found within the USA and should be generally in keeping with topography, septic limitations, and school and transportation capacities. The RTA will remain in a state of transition and will absorb much of the development pressure in the USA. The RTA will be necessary to allow more dense development where appropriate.

Map D: Official Zoning Map

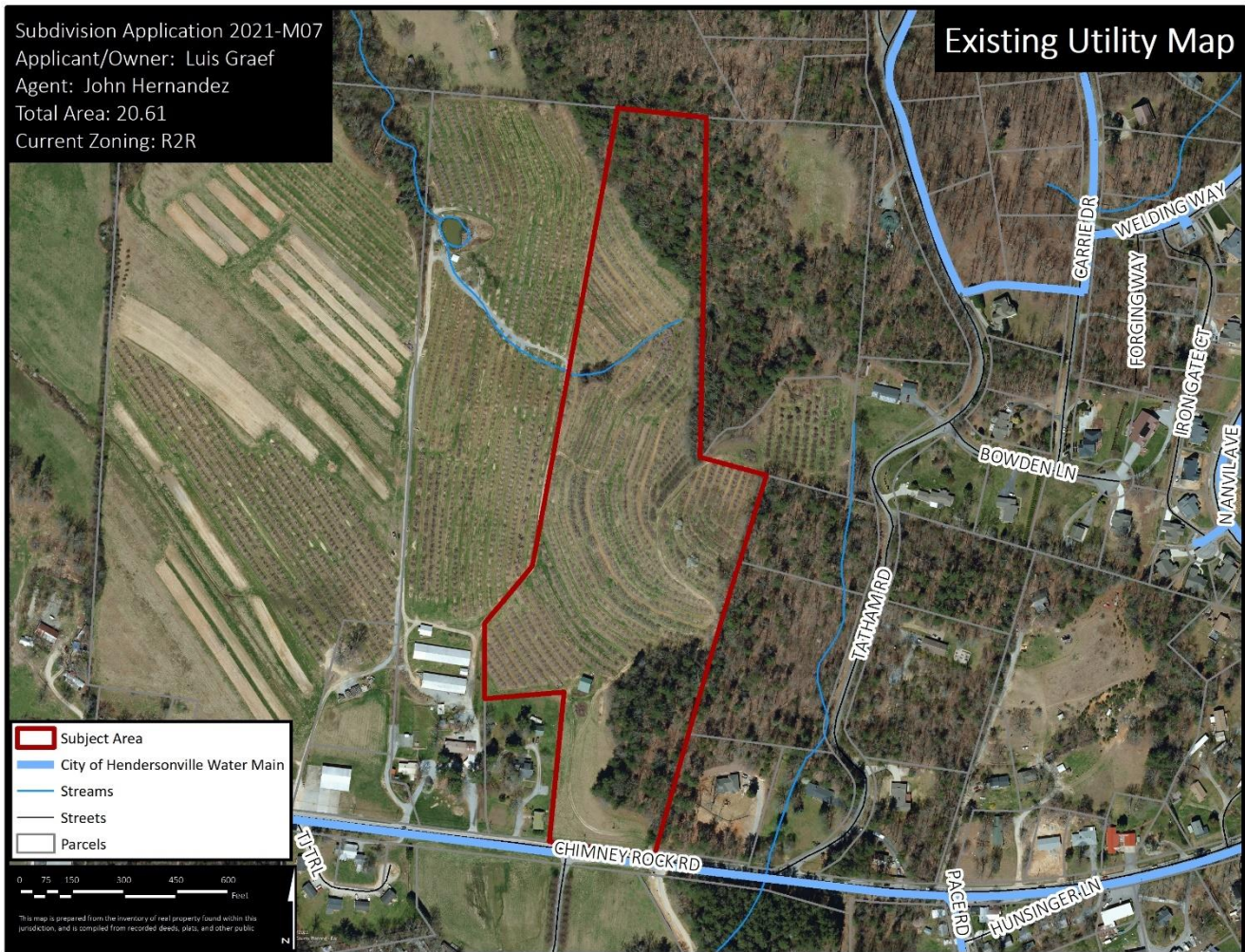


2. **Chapter 42, Henderson County Land Development Code (LDC).** According to Chapter 42, Henderson County Land Development Code (LDC) and its Official Zoning Map adopted September 19, 2007 (as amended), the proposed project site is located within the Residential Two Rural (R2R) Zoning District.

a. **Residential Two Rural (R2R):** “The purpose of Residential Two Rural (R2R) is to foster orderly growth where the *principal use* of land is residential. The intent of this district is to allow for low to medium *residential development* and rural commercial and light industrial development consistent with the recommendations of the *Comprehensive Plan*. This general *use district* is typically meant to be utilized in areas designated as Transitional (RTA) in the *Comprehensive Plan*.”

i. R2R allows for a standard density of 1 unit per acre. The overall density for the proposed Orchards at Highway 64 Major Subdivision is 0.87 units per acre.

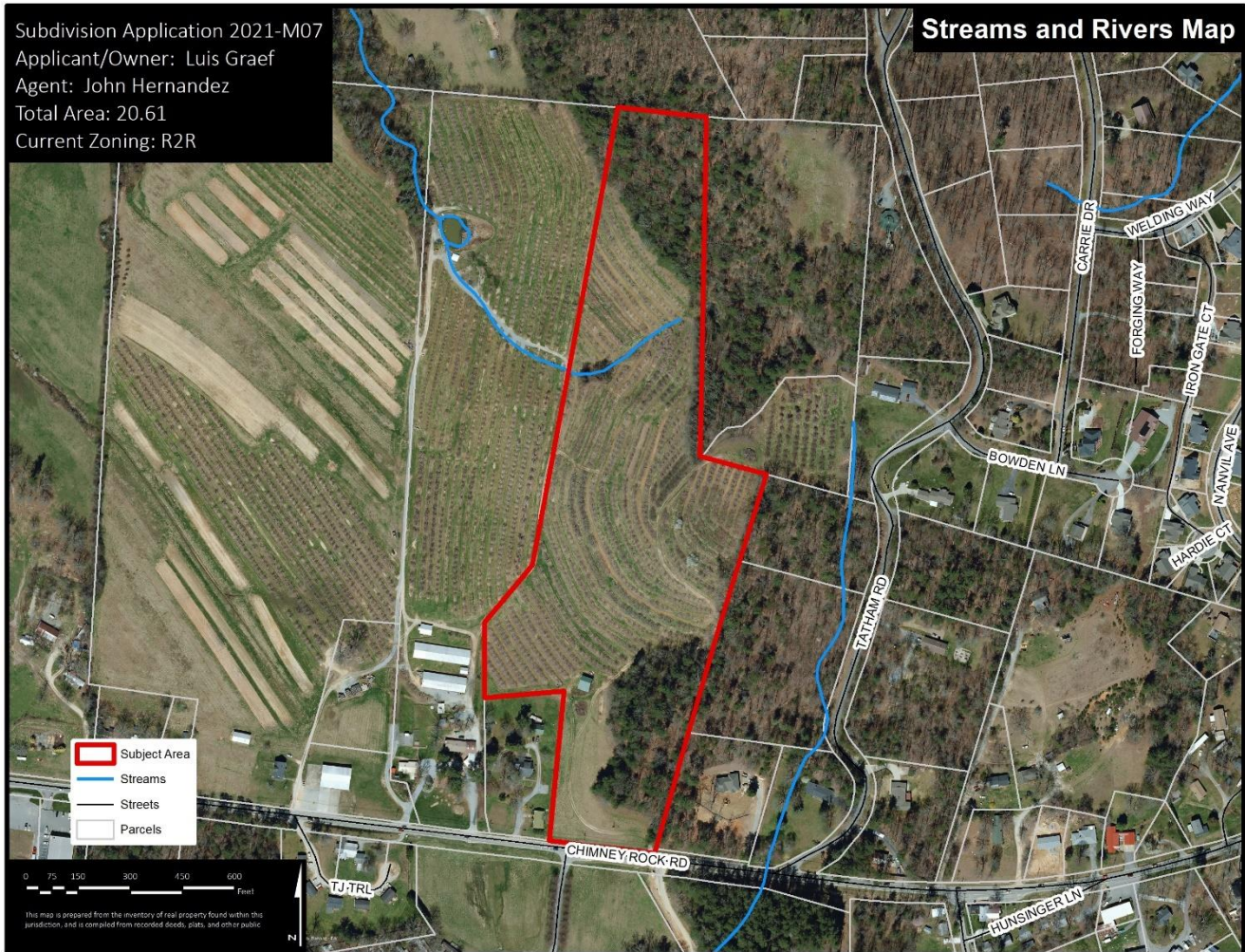
Map E: Utility Map



3. **Water and Sewer Availability.** The applicant proposes the use of public water from the City of Hendersonville and individual septic systems for each lot in the subdivision. Applicant has provided a Water Availability Letter from the City of Hendersonville indicating sufficient capacity to supply the proposed project.

4. **Road System:** The subdivision will be served by two private roads, accessed off Chimney Rock Rd (US 64), built in accordance with the Subdivision Local Road standards required in the LDC. The total linear footage of new roads proposed is 2,543 linear feet. Road profiles on the attached plan specify that the maximum grade does not exceed 18% on any of the proposed roads. The proposed private roads show as a 45' right-of-way an 18' asphalt roadway width with 6' shoulders and a 7' swale on one side of the road. The applicant is also proposing a 30' right-of-way to access lots after the cul-de-sac. The applicant will be required to show proof of purchase for road name identification signs from Henderson County prior to recording a Final Plat.

Map F: Streams & Rivers Map



5. **Perennial and Intermittent Surface Water Buffers:** The project site is partially encumbered by a perennial stream and a wetland area. Section §42-251 of the LDC regulates construction and permitting within the surface water buffer.
 - a. Surface water buffers shall apply to all *built-upon area* and be at a minimum of 30 feet landward of all perennial and intermittent surface waters.

6. **Total Project Proposal Summary:**
 - Overall tract size is 20.61 acres with 1.43 acres of open space
 - Total of 18 single-family lots and 2 open space lots
 - Overall density of 0.87 units/acre
 - Proposed private roadway length is 2,543 linear feet
 - Private individual septic systems and public water from City of Hendersonville

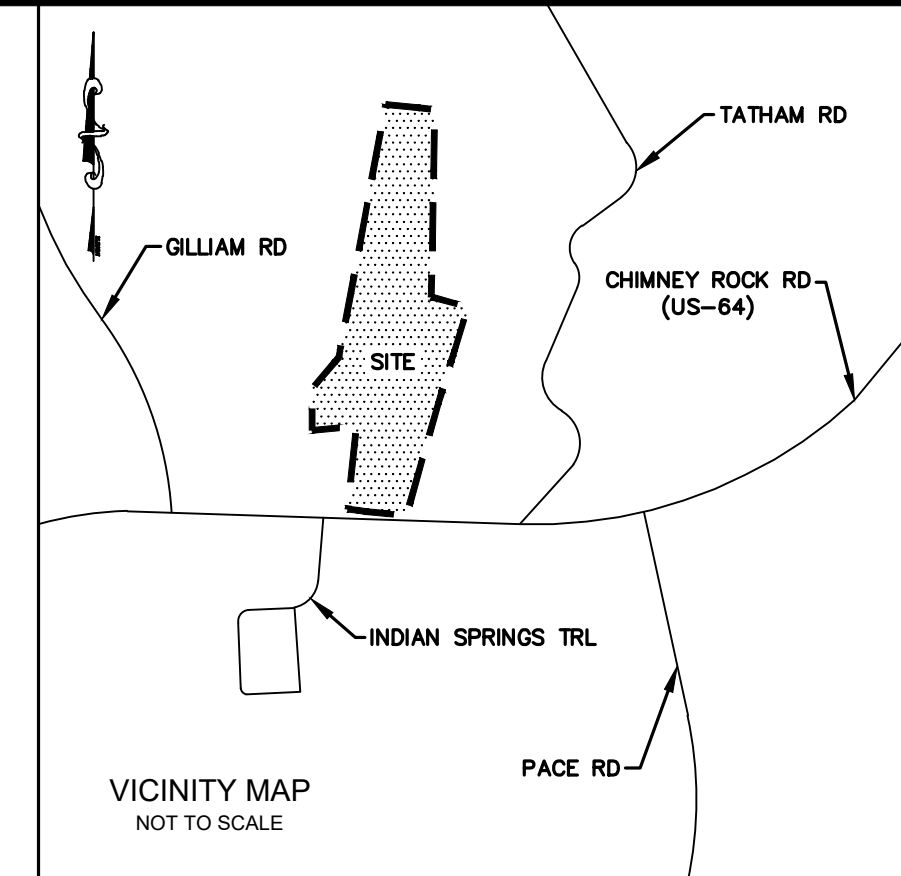
Master & Development Plan Comments:

1. **Soil Erosion and Sedimentation Control Plan.** The Applicant shall submit written notice from the appropriate local agencies verifying that an Erosion and Sedimentation Control Plan has been received or a written notice from a professional land surveyor, engineer, landscape architect, architect, or professional planner certifying that no plan is required (LDC §42-95B).
2. **Water Quality.** The Applicant shall submit written notice from the appropriate local agencies verifying that a Stormwater Management Permit has been received (LDC §42-95E).
3. **Private Roads.** Private roads shall be constructed in accordance with the Private Subdivision Local Road standards stated in Chapter 42 (LDC§42-109).
4. **Shoulder Stabilization.** All areas disturbed by the construction of a public road, including cut and fill slopes, shoulders and ditch banks, shall be seeded to stabilize the soil and prevent erosion. Seeding should be done as soon as feasible after road construction (LDC §42-102).
5. **Road Drainage, Culverts and Shoulder Stabilization.** Road or drainage structures shall be constructed in accordance with state roads standards. Road drainage side ditches shall be constructed with sufficient depth and width to carry the expected volume of storm water runoff (LDC §42-100). All areas disturbed by the construction of a public road, including cut and fill slopes, shoulders and ditch banks, shall be seeded to stabilize the soil and prevent erosion. Seeding should be done as soon as feasible after road construction (LDC §42-105).
6. **Dead Ends, Cul-de-sacs and Turnarounds.** The Applicant proposes two (2) cul-de-sacs or turnarounds located at the ends of both local roads. All turnarounds must meet of the LDC §42-105 C(8).
7. **Road Name Approval.** Proposed road names for a private and/or public road shall be preapproved by Henderson County in accordance with Chapter 42 of the Henderson County Code, Property Addressing (LDC §42-103). The names of the proposed roads and easements should be confirmed with the development plan approval.
8. **Road Name Signs and Regulatory Signs.** Road name signs and regulatory signs shall be provided in accordance with Chapter 142 of the Henderson County Code. Road name signs and regulatory signs must be acquired and installed prior to final plat approval (LDC §42-104).
9. **Perennial and Intermittent Surface Water Buffer.** All built-upon area shall be a minimum of 30 feet landward of all perennial and intermittent surface water, as defined in LDC §42-251.
10. **Miscellaneous Advisory Provisions.** The Applicant should become familiar with the Miscellaneous Advisory Provisions of Chapter 42 (LDC §42-87).
11. **Final Plat Requirements.** The Final Plat(s) must meet the requirements provided by the Planning Department whenever a subdivision of land occurs (LDC §42-343).
12. **NCDOT Driveway Permit.** An NCDOT Driveway Permit is required for the proposed private, paved road, to access the site. Design should meet requirements of NCDOT.

DEVELOPMENT BLOCK

PROJECT: THE ORCHARDS AT HIGHWAY 64
 ADDRESS: 99999 CHIMNEY ROCK ROAD
 HENDERSONVILLE, NC 28792
 OWNER: THE ORCHARDS AT HIGHWAY 64, LLC
 3872 NW 126 AVE
 CORAL SPRINGS, FL 33065
 DEVELOPER: LUIS GRAEF
 4880 N HIATUS RD
 SUNRISE FL 33351
 PIN #: 9690-49-8992
 DB: 3777 PG: 374
 ENGINEER: JARED L. DERIDDER, P.E.
 WGLA ENGINEERING, PLLC
 724 5TH AVENUE WEST
 HENDERSONVILLE NC 28739
 828-687-7177
 SURVEYOR: ASSOCIATED LAND SURVEYORS, P.C.
 PO BOX 578, HORSE SHOE, NC 28742
 828-890-3507
 ZONING: HENDERSON COUNTY - R2R

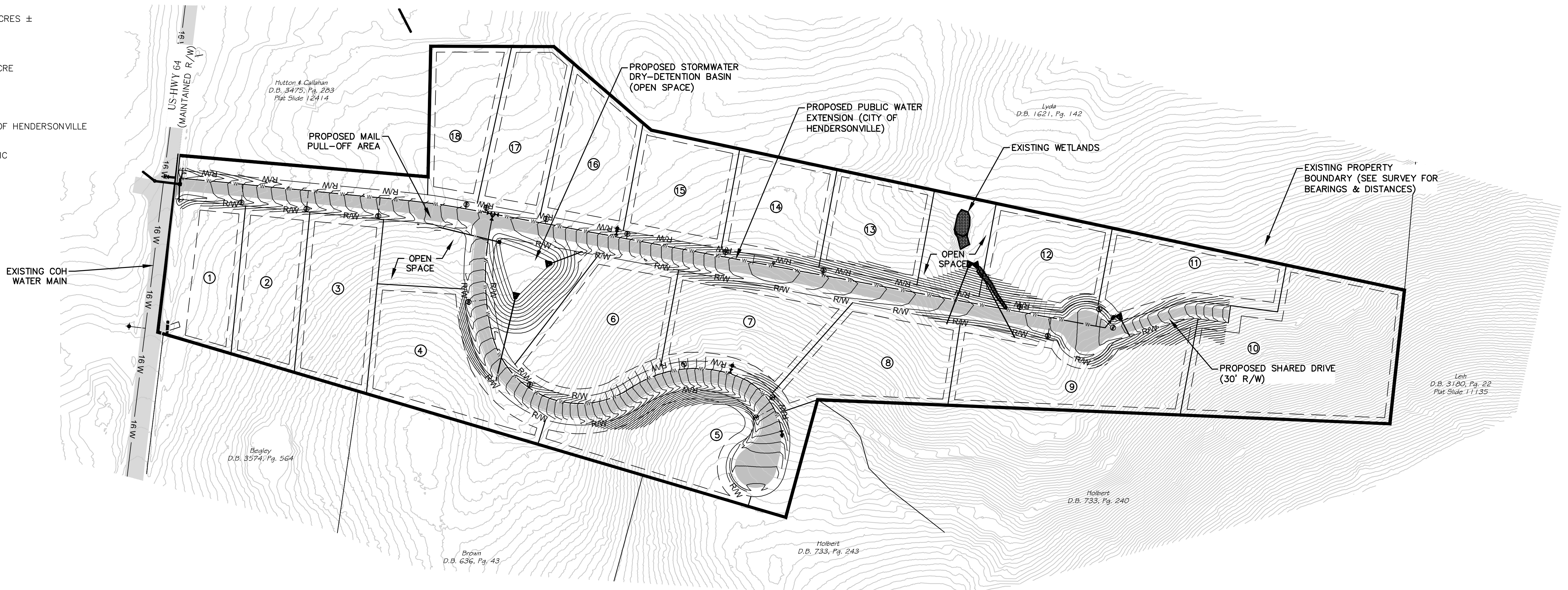
SETBACKS:
 FRONT: 15'
 SIDE: 10'
 REAR: 10'
 TOTAL PROJECT AREA: 20.61 ACRES ±
 PROPOSED LOTS : 18
 PROPOSED DENSITY:
 0.87 UNITS / ACRE
 PROPOSED ROADWAYS:
 2543 LF
 PROPOSED WATER SYSTEM:
 PUBLIC - CITY OF HENDERSONVILLE
 PROPOSED SEWER SYSTEM
 PRIVATE - SEPTIC



WGLA ENGINEERING, PLLC
 724 5th AVENUE WEST
 HENDERSONVILLE, NC 28739
 (828) 687-7177
 WGLA.COM
 NC LICENSE P-1342

THE ORCHARDS AT HIGHWAY 64

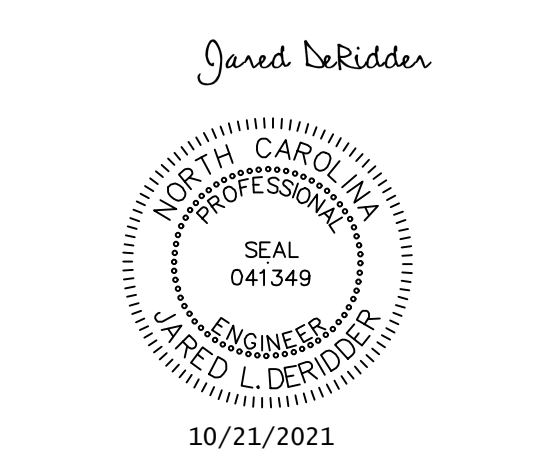
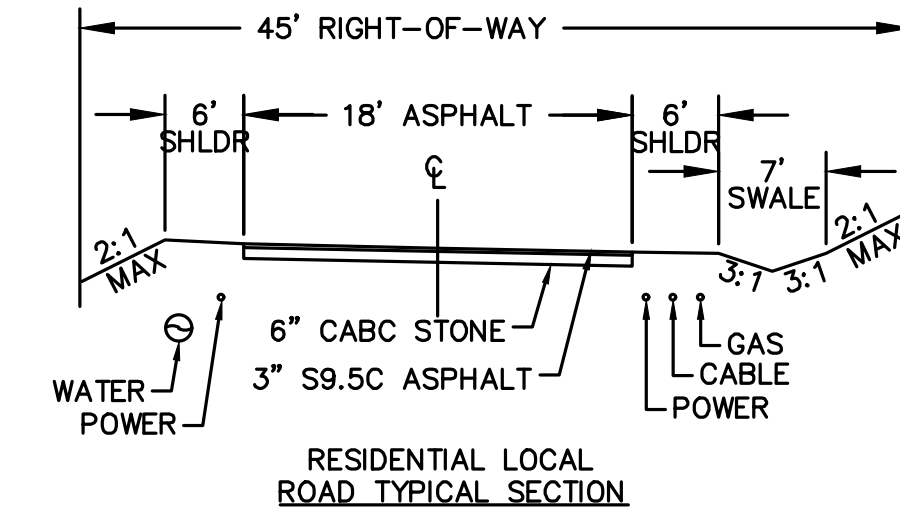
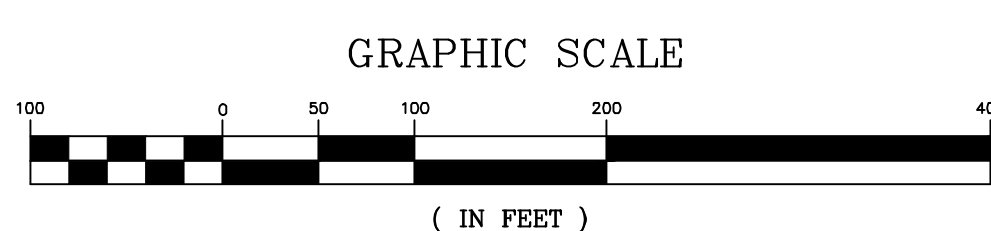
EDNEYVILLE
 HENDERSONVILLE
 NORTH CAROLINA



- NOTES:
- NO PORTION OF THIS PROJECT IS LOCATED WITHIN THE 100 YR FLOOD PLAIN.
 - THIS PROJECT WILL BE COMPLETED IN A SINGLE PHASE.
 - ALL LOTS WILL HAVE EITHER CONVENTIONAL OF MODIFIED/ENGINEERED SEPTIC SYSTEMS. ALL PERMITTING SHALL BE COORDINATED WITH THE HENDERSON COUNTY HEALTH DEPARTMENT.
 - REFER TO SHEET C-307 FOR SUBDIVISION SLOPE MAP

Lot	Area (SF)	Area (AC)
1	30,954	0.711
2	29,660	0.681
3	36,865	0.846
4	44,686	1.026
5	39,390	0.904
6	44,108	1.013
7	39,796	0.914
8	40,514	0.930
9	51,460	1.181
10	78,145	1.794
11	33,318	0.765
12	31,645	0.726
13	28,817	0.662
14	29,563	0.679
15	30,377	0.697
16	32,281	0.741
17	31,055	0.713
18	29,760	0.683

- LEGEND
- EXISTING CONTOURS
 - PROPERTY BOUNDARY
 - PROPOSED CONTOURS
 - PROPOSED ASPHALT
 - EXISTING WETLANDS



REVISIONS

DATE	DESCRIPTION

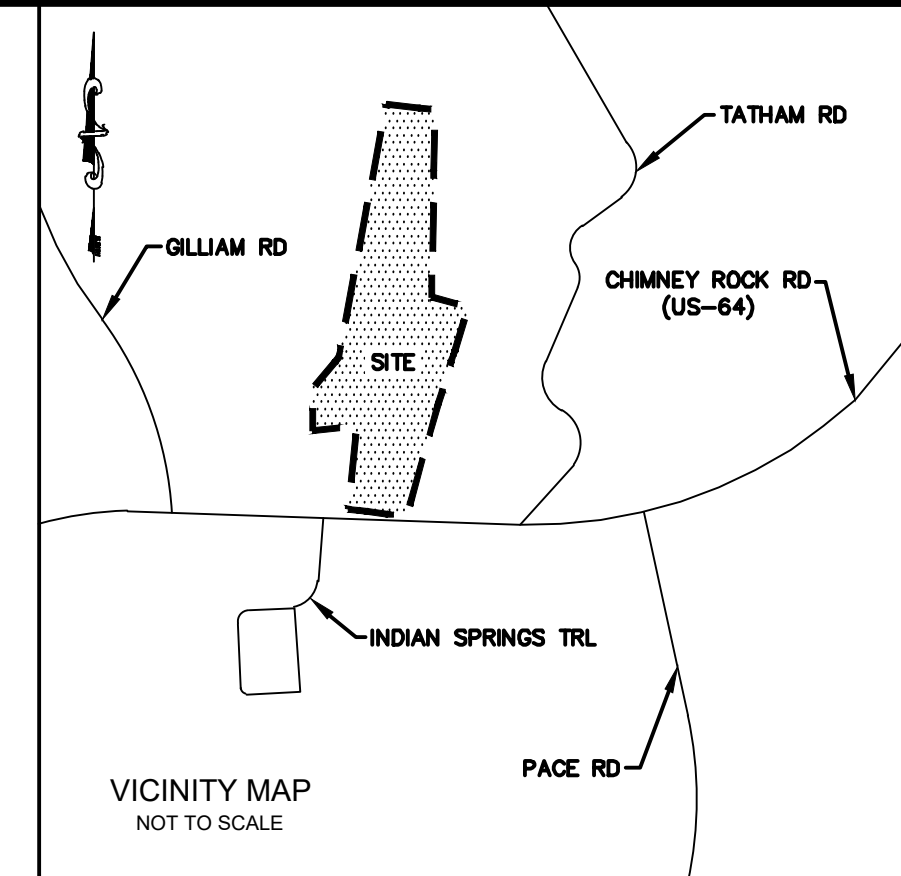


PROJECT NUMBER: 21161
 DATE: 9/29/21
 DRAWN BY: TJV
 CHECKED BY: JLD

MASTER PLAN

C-200

SCALE: 1"=100'



WGLA Engineering

WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

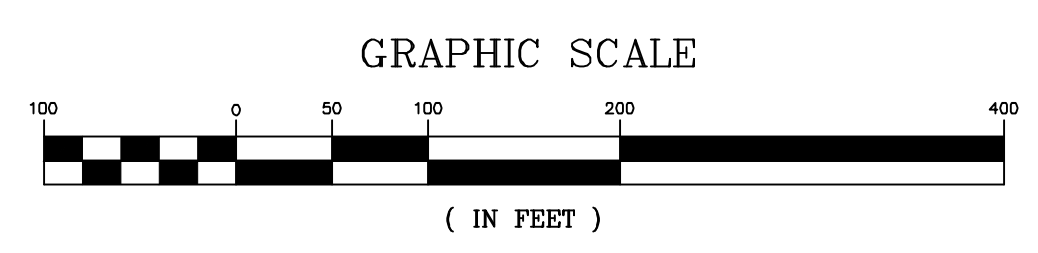
THE ORCHARDS AT HIGHWAY 64

EDNEYVILLE
HENDERSONVILLE
NORTH CAROLINA



Approximate Lot Areas

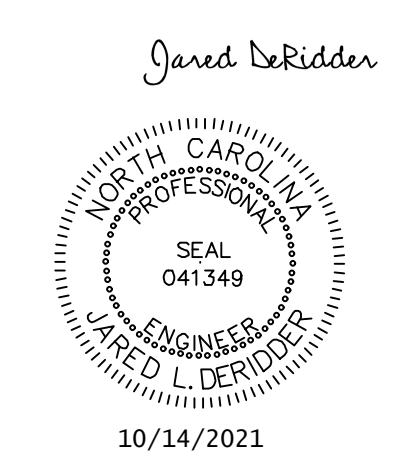
Lot	Area (SF)	Area (AC)
1	30,954	0.711
2	29,660	0.681
3	36,865	0.846
4	44,686	1.026
5	39,390	0.904
6	44,108	1.013
7	39,796	0.914
8	40,514	0.930
9	51,460	1.181
10	78,145	1.794
11	33,318	0.765
12	31,645	0.726
13	28,817	0.662
14	29,563	0.679
15	30,377	0.697
16	32,281	0.741
17	31,055	0.713
18	29,760	0.683



NOTES:
1) THE DEVELOPER'S AVERAGE SLOPE SHALL BE CALCULATED ONLY FOR THE DISTURBED AREA PER HC LDC.
2) SEE HC LDC SECTION 42-254C FOR WHEN AN EROSION CONTROL PLAN SHALL BE REQUIRED FOR PROPOSED DISTURBED AREA.

LEGEND

	NATURAL GRADE < 16%
	NATURAL GRADE 16% - 25%
	NATURAL GRADE 25% - 60%
	NATURAL GRADE > 60%



REVISIONS

DATE	DESCRIPTION



Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 9/29/21
DRAWN BY: TJV
CHECKED BY: JLD

SLOPE MAP

C-307

SCALE: 1"=100'

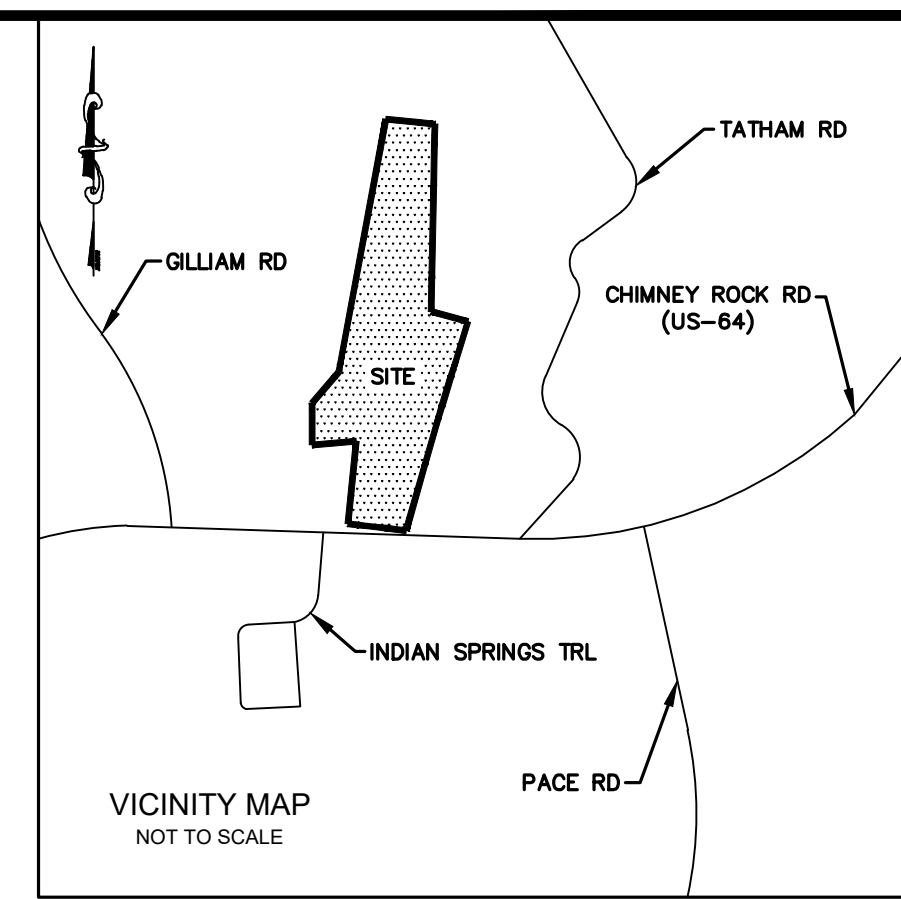
GRADING, DRAINAGE, AND EROSION CONTROL PLAN

for

THE ORCHARDS

AT HIGHWAY 64 SUBDIVISION

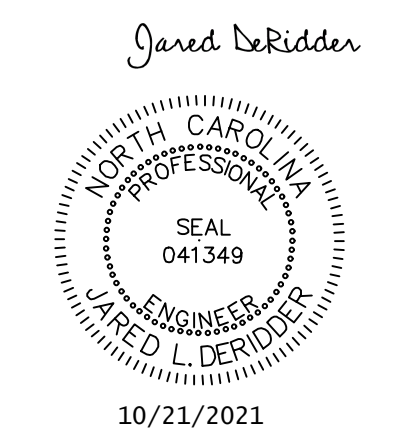
EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

THE ORCHARDS
AT HIGHWAY 64

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



DEVELOPMENT BLOCK

PROJECT: THE ORCHARDS AT HIGHWAY 64
 ADDRESS: 99999 CHIMNEY ROCK ROAD
HENDERSONVILLE, NC 28792
 OWNER: THE ORCHARDS AT HIGHWAY 64, LLC
3872 NW 126 AVE
CORAL SPRINGS, FL 33065
 DEVELOPER: LUIS GRAEF
4880 N HIATUS RD
SUNRISE FL 33351
 PIN #: 9690-49-8992
DB: 3777 PG: 374
 ENGINEER: JARED L. DERIDDER, P.E.
WGLA ENGINEERING, PLLC
724 5TH AVENUE WEST
HENDERSONVILLE NC 28739
828-687-7177
 SURVEYOR: ASSOCIATED LAND SURVEYORS, P.C.
PO BOX 578, HORSE SHOE, NC 28742
828-890-3507
 ZONING: HENDERSON COUNTY - R2R
 SETBACKS:
FRONT: 15'
SIDE: 10'
REAR: 10'
 TOTAL PROJECT AREA: 20.61 ACRES ±
 PERCENT IMPERVIOUS: 23.2% ±
 PROPOSED LOTS : 18
 PROPOSED DENSITY:
0.87 UNITS / ACRE
 PROPOSED ROADWAYS:
2543 LF
 PROPOSED WATER SYSTEM:
PUBLIC - CITY OF HENDERSONVILLE
 PROPOSED SEWER SYSTEM
PRIVATE - SEPTIC
 RECEIVING STREAM: CLEAR CREEK (CLASSIFICATION: C)

REVISIONS	
DATE	DESCRIPTION



Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJV
CHECKED BY: JLD

SHEET INDEX

SHEET NO.	DESCRIPTION
C-300-301	GRADING, DRAINAGE, AND EROSION CONTROL PLAN
C-302-306	GRADING, DRAINAGE, AND EROSION CONTROL DETAILS

COVER

SCALE: AS NOTED

REVISIONS	
DATE	DESCRIPTION



PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJV
CHECKED BY: JLD

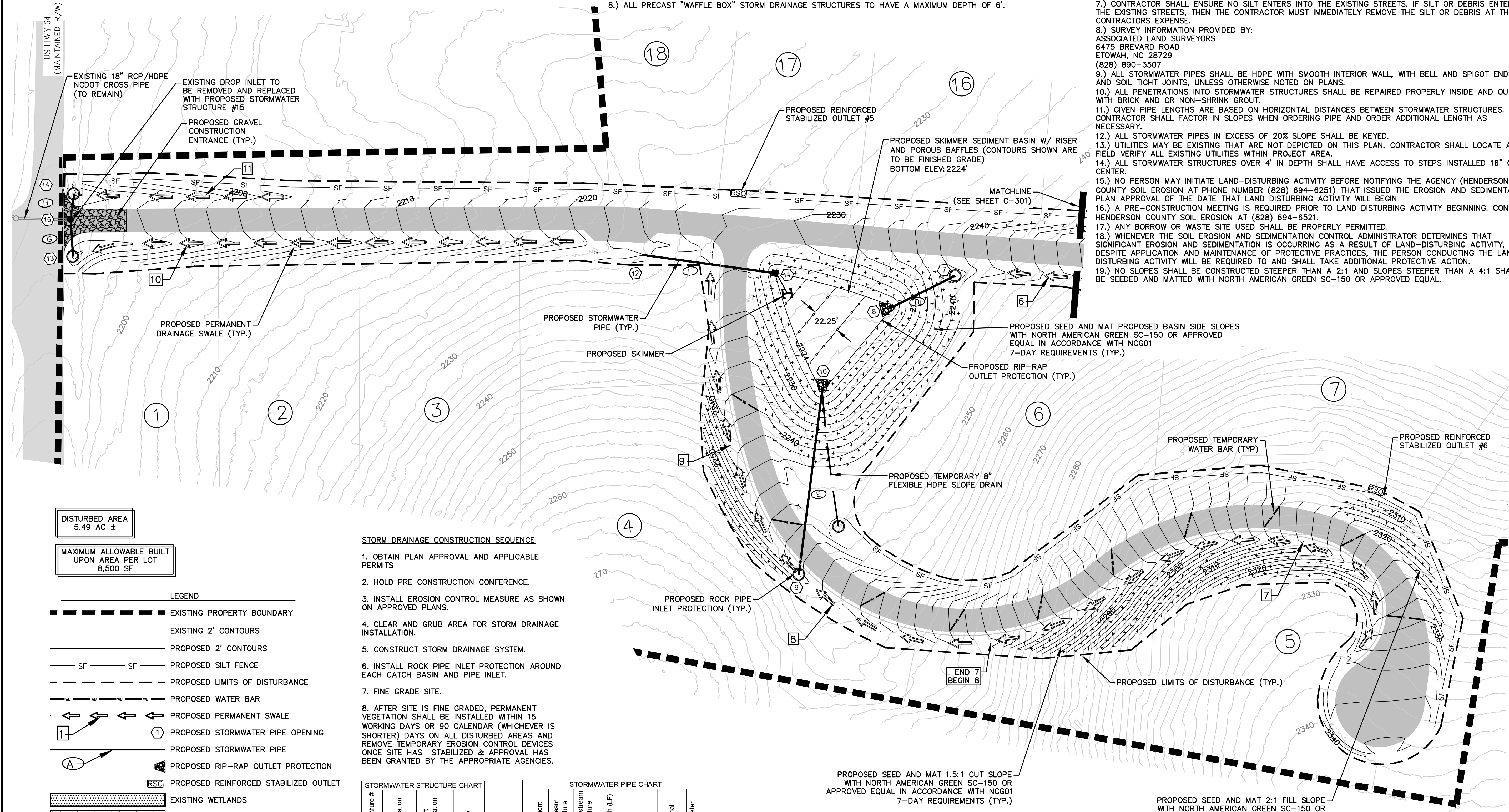
**GRADING,
DRAINAGE, AND
EROSION CONTROL
PLAN**

C-300

SCALE: 1"=40'

- GENERAL STORMWATER NOTES:**
- 1.) ALL STORMWATER PIPES SHALL BE HDPE WITH SMOOTH INTERIOR WALL, WITH BELL AND SPIGOT ENDS AND SOIL TIGHT JOINTS, UNLESS OTHERWISE NOTED ON PLANS.
 - 2.) ALL PENETRATIONS INTO STORMWATER STRUCTURES SHALL BE REPAIRED PROPERLY INSIDE AND OUTSIDE WITH BRICK AND OR NON-SHRINK GROUT.
 - 3.) GIVEN PIPE LENGTHS ARE BASED ON HORIZONTAL DISTANCES BETWEEN STORMWATER STRUCTURES. CONTRACTOR SHALL FACTOR IN SLOPES WHEN ORDERING PIPE AND ORDER ADDITIONAL LENGTH AS NECESSARY.
 - 4.) ALL STORMWATER PIPES IN EXCESS OF 20% SLOPE SHALL BE KEYED.
 - 6.) CONTRACTOR TO ENSURE THAT ALL EXISTING AND PROPOSED STORM DRAINAGE STRUCTURES, PIPES AND GRADES WILL PROVIDE POSITIVE DRAINAGE PRIOR TO INSTALLATION.
 - 7.) ALL DRAINAGE STRUCTURES GREATER THAN 4' IN DEPTH SHALL HAVE ACCESS TO STEPS INSTALLED 16" ON CENTER.
 - 8.) ALL PRECAST "WAFFLE BOX" STORM DRAINAGE STRUCTURES TO HAVE A MAXIMUM DEPTH OF 6'.

- NOTES:**
- 1.) MEASURES BEYOND THOSE SHOWN ON THE PLANS SHOULD BE APPROVED BY THE OWNER.
 - 2.) CONTRACTOR SHALL OBTAIN A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PERMIT AND FOLLOW ALL DIRECTIVES. CONTRACTOR SHALL READ AND UNDERSTAND THE NPDES REQUIREMENTS OF THE PERMIT INCLUDING BUT NOT LIMITED TO:
-PLACEMENT OF RAIN GAUGE ON THE SITE
-INSPECTION OF ALL EROSION CONTROL MEASURES FOLLOWING SPECIFIED RAINFALL EVENTS OR WEEKLY.
-UPKEEP OF INSPECTION LOG FOR REVIEW UPON REQUEST BY NCDENR, LOCAL EROSION CONTROL AUTHORITY, OWNER OR ENGINEER.
 - 3.) CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT THE LIFE OF THE PROJECT.
 - 4.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD STAKING NECESSARY FOR THE CONSTRUCTION OF THE PROJECT. THE ENGINEER WILL PROVIDE THE CONTRACTOR WITH AN ELECTRONIC COPY OF THE DESIGN FOR STAKING PURPOSES. HOWEVER ALL ELECTRONIC INFORMATION SHOULD BE COORDINATED WITH THE PLANS.
 - 5.) CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES AT COMPLETION OF PROJECT, AFTER SITE HAS STABILIZED AND RESTORE TO FINAL GRADE.
 - 6.) ALL STORM DRAINAGE INLETS SHALL HAVE GRAVEL INLET PROTECTION INSTALLED AROUND THEM AS SOON AS THEY ARE INSTALLED.
 - 7.) CONTRACTOR SHALL ENSURE NO SILT ENTERS INTO THE EXISTING STREETS. IF SILT OR DEBRIS ENTERS THE EXISTING STREETS, THEN THE CONTRACTOR MUST IMMEDIATELY REMOVE THE SILT OR DEBRIS AT THE CONTRACTORS EXPENSE.
 - 8.) SURVEY INFORMATION PROVIDED BY:
ASSOCIATED LAND SURVEYORS
6475 BREVARD ROAD
ETOWAH, NC 28729
(828) 890-3507
 - 9.) ALL STORMWATER PIPES SHALL BE HDPE WITH SMOOTH INTERIOR WALL, WITH BELL AND SPIGOT ENDS AND SOIL TIGHT JOINTS, UNLESS OTHERWISE NOTED ON PLANS.
 - 10.) ALL PENETRATIONS INTO STORMWATER STRUCTURES SHALL BE REPAIRED PROPERLY INSIDE AND OUTSIDE WITH BRICK AND OR NON-SHRINK GROUT.
 - 11.) GIVEN PIPE LENGTHS ARE BASED ON HORIZONTAL DISTANCES BETWEEN STORMWATER STRUCTURES. CONTRACTOR SHALL FACTOR IN SLOPES WHEN ORDERING PIPE AND ORDER ADDITIONAL LENGTH AS NECESSARY.
 - 12.) ALL STORMWATER PIPES IN EXCESS OF 20% SLOPE SHALL BE KEYED.
 - 13.) UTILITIES MAY BE EXISTING THAT ARE NOT DEPICTED ON THIS PLAN. CONTRACTOR SHALL LOCATE AND FIELD VERIFY ALL EXISTING UTILITIES WITHIN PROJECT AREA.
 - 14.) ALL STORMWATER STRUCTURES OVER 4' IN DEPTH SHALL HAVE ACCESS TO STEPS INSTALLED 16" ON CENTER.
 - 15.) NO PERSON MAY INITIATE LAND-DISTURBING ACTIVITY BEFORE NOTIFYING THE AGENCY (HENDERSON COUNTY SOIL EROSION AT PHONE NUMBER (828) 694-6251) THAT ISSUED THE EROSION AND SEDIMENTATION PLAN APPROVAL OF THE DATE THAT LAND DISTURBING ACTIVITY WILL BEGIN
 - 16.) A PRE-CONSTRUCTION MEETING IS REQUIRED PRIOR TO LAND DISTURBING ACTIVITY BEGINNING. CONTACT HENDERSON COUNTY SOIL EROSION AT (828) 694-6521.
 - 17.) ANY BORROW OR WASTE SITE USED SHALL BE PROPERLY PERMITTED.
 - 18.) WHENEVER THE SOIL EROSION AND SEDIMENTATION CONTROL ADMINISTRATOR DETERMINES THAT SIGNIFICANT EROSION AND SEDIMENTATION IS OCCURRING AS A RESULT OF LAND-DISTURBING ACTIVITY, DESPITE APPLICATION AND MAINTENANCE OF PROTECTIVE PRACTICES, THE PERSON CONDUCTING THE LAND DISTURBING ACTIVITY WILL BE REQUIRED TO AND SHALL TAKE ADDITIONAL PROTECTIVE ACTION.
 - 19.) NO SLOPES SHALL BE CONSTRUCTED STEEPER THAN A 2:1 AND SLOPES STEEPER THAN A 4:1 SHALL BE SEEDED AND MATTED WITH NORTH AMERICAN GREEN SC-150 OR APPROVED EQUAL.



- STORM DRAINAGE CONSTRUCTION SEQUENCE**
1. OBTAIN PLAN APPROVAL AND APPLICABLE PERMITS
 2. HOLD PRE CONSTRUCTION CONFERENCE.
 3. INSTALL EROSION CONTROL MEASURE AS SHOWN ON APPROVED PLANS.
 4. CLEAR AND GRUB AREA FOR STORM DRAINAGE INSTALLATION.
 5. CONSTRUCT STORM DRAINAGE SYSTEM.
 6. INSTALL ROCK PIPE INLET PROTECTION AROUND EACH CATCH BASIN AND PIPE INLET.
 7. FINE GRADE SITE.
 8. AFTER SITE IS FINE GRADED, PERMANENT VEGETATION SHALL BE INSTALLED WITHIN 15 WORKING DAYS OR 90 CALENDAR (WHICHEVER IS SHORTER) DAYS ON ALL DISTURBED AREAS AND REMOVE TEMPORARY EROSION CONTROL DEVICES ONCE SITE HAS STABILIZED & APPROVAL HAS BEEN GRANTED BY THE APPROPRIATE AGENCIES.

STORMWATER STRUCTURE CHART

Structure #	Top Elevation (ft)	Invert Elevation (ft)	Type
1	NA	2261.91	PIPE
2	NA	2260.60	PIPE
3	NA	2245.80	PIPE
4	NA	2226.38	PIPE
5	NA	2248.40	PIPE
6	NA	2228.17	PIPE
7	NA	2235.56	PIPE
8	NA	2224.00	PIPE
9	NA	2249.50	PIPE
10	NA	2224.00	PIPE
11	SEE DETAIL	OCS	OCS
12	NA	2222.00	PIPE
13	NA	2189.50	PIPE
14	NA	2189.50	PIPE
15	2192.56	2188.62	JMH

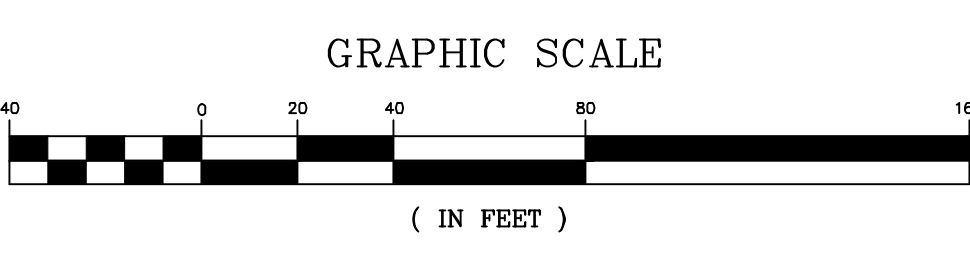
STORMWATER PIPE CHART

Pipe Segment	Upstream Structure	Downstream Structure	Length (LF)	Slope	Material	Diameter (in)
A	1	2	31.49	4.18%	HDPE	18
B	3	4	136.05	14.28%	HDPE	24
C	5	6	104.65	19.33%	HDPE	24
D	7	8	54.90	21.06%	HDPE	18
E	9	10	145.87	17.48%	HDPE	18
F	11	12	106.47	0.94%	HDPE	24
G	13	15	29.25	3.01%	HDPE	24
H	14	15	20.62	4.27%	HDPE	18

DISTURBED AREA
5.49 AC ±

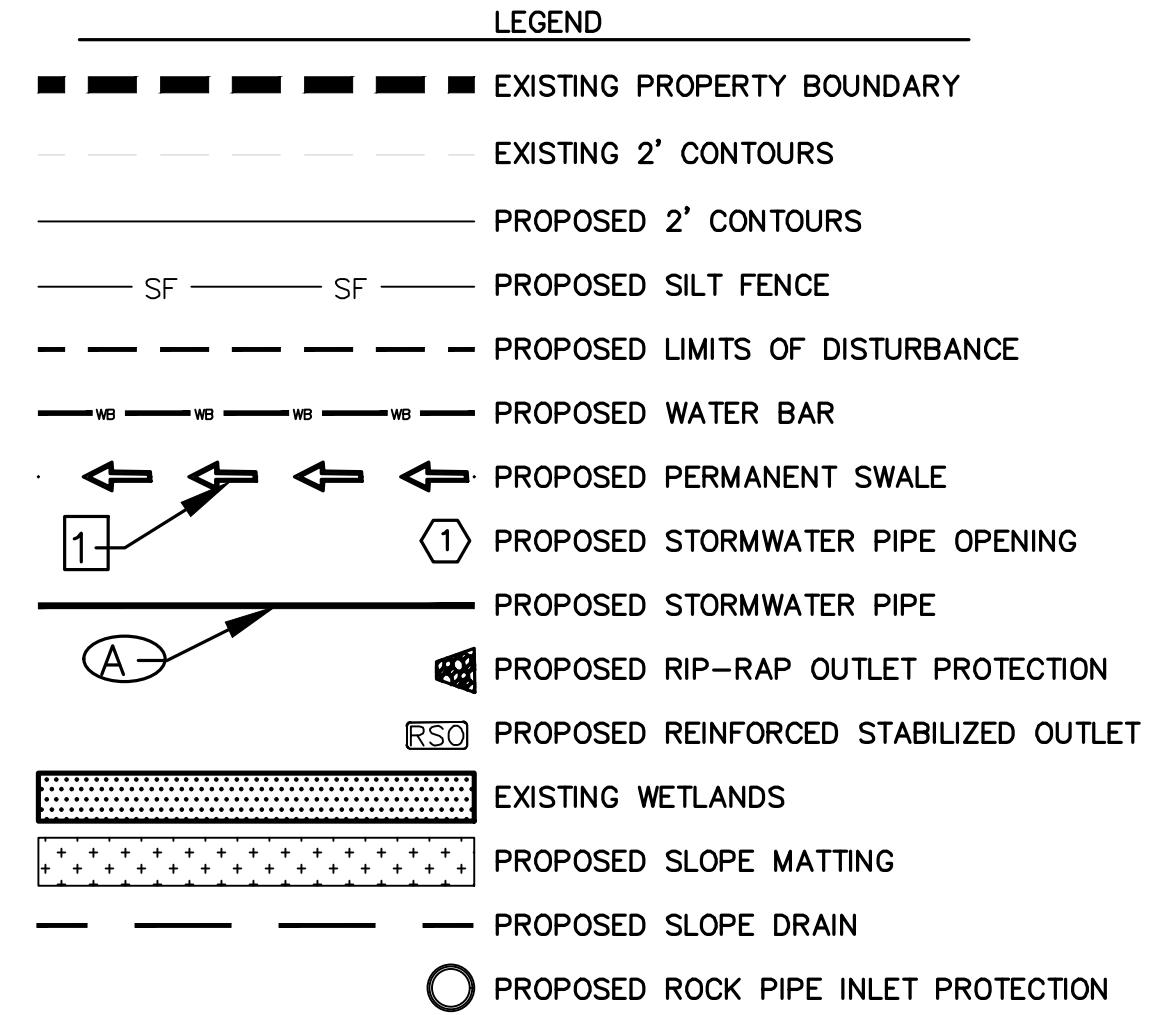
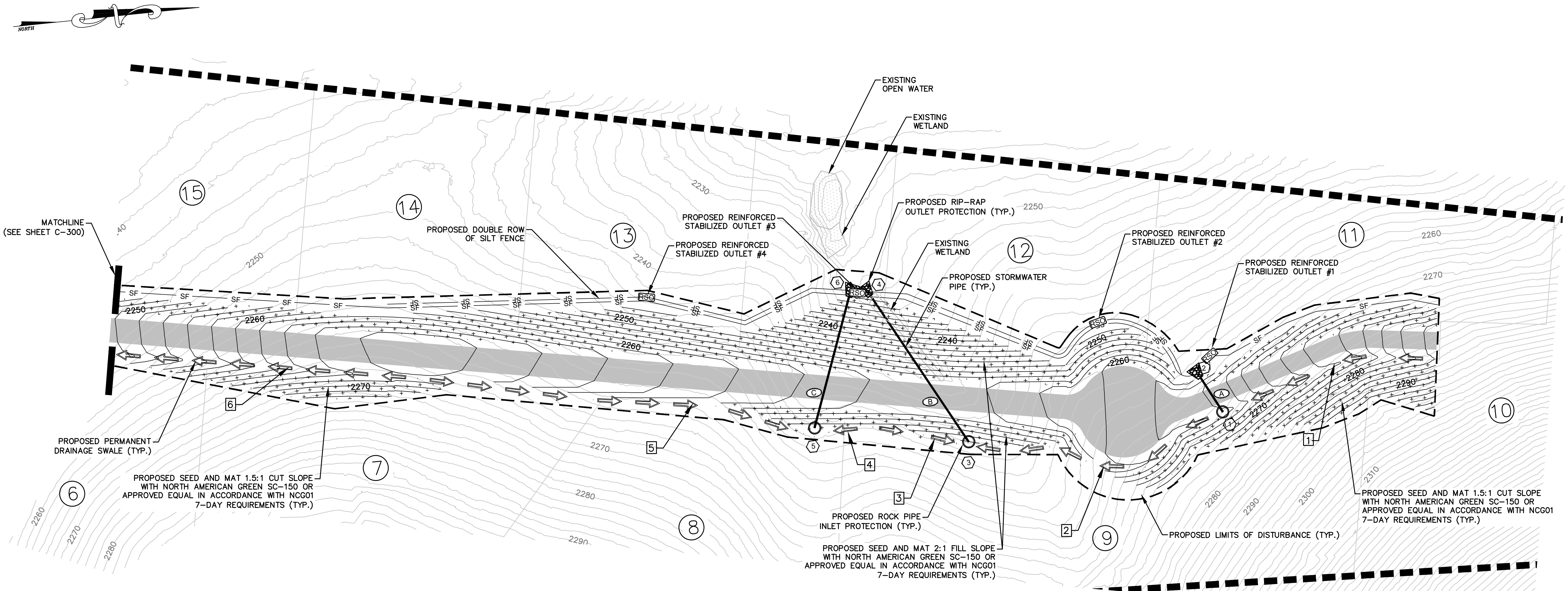
MAXIMUM ALLOWABLE BUILT
UPON AREA PER LOT
8,500 SF

- LEGEND**
- EXISTING PROPERTY BOUNDARY
 - EXISTING 2' CONTOURS
 - PROPOSED 2' CONTOURS
 - PROPOSED SILT FENCE
 - PROPOSED LIMITS OF DISTURBANCE
 - PROPOSED WATER BAR
 - PROPOSED PERMANENT SWALE
 - PROPOSED STORMWATER PIPE OPENING
 - PROPOSED STORMWATER PIPE
 - PROPOSED RIP-RAP OUTLET PROTECTION
 - PROPOSED REINFORCED STABILIZED OUTLET
 - EXISTING WETLANDS
 - PROPOSED SLOPE MATTING
 - PROPOSED SLOPE DRAIN
 - PROPOSED ROCK PIPE INLET PROTECTION



**THE ORCHARDS
AT HIGHWAY 64**

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



DISTURBED AREA
5.49 AC ±

MAXIMUM ALLOWABLE BUILT
UPON AREA PER LOT
8,500 SF

STORMWATER STRUCTURE CHART

Structure #	Top Elevation (ft)	Invert Elevation (ft)	Type
1	2281.91		PIPE
2	2280.60		PIPE
3	2245.80		PIPE
4	2226.38		PIPE
5	2248.40		PIPE
6	2228.17		PIPE
7	2235.56		PIPE
8	2224.00		PIPE
9	2249.50		PIPE
10	2224.00		PIPE
11	SEE DETAIL		OCS
12	NA	2222.00	PIPE
13	NA	2189.50	PIPE
14	NA	2189.50	PIPE
15	2192.56	2188.62	JMH

STORMWATER PIPE CHART

Pipe Segment	Upstream Structure	Downstream Structure	Length (LF)	Slope	Material	Diameter (in)
A	1	2	31.49	4.18%	HDPE	18
B	3	4	136.05	14.28%	HDPE	24
C	5	6	104.65	19.33%	HDPE	24
D	7	8	54.90	21.06%	HDPE	18
E	9	10	145.87	17.48%	HDPE	18
F	11	12	108.47	0.94%	HDPE	24
G	13	15	29.25	3.01%	HDPE	24
H	14	15	20.62	4.27%	HDPE	18

STORM DRAINAGE CONSTRUCTION SEQUENCE

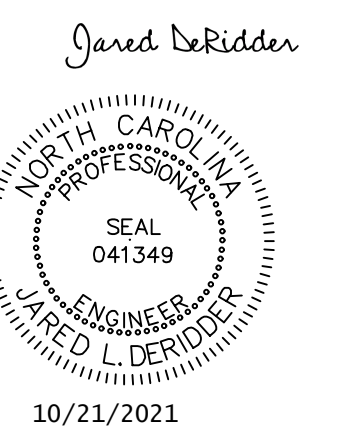
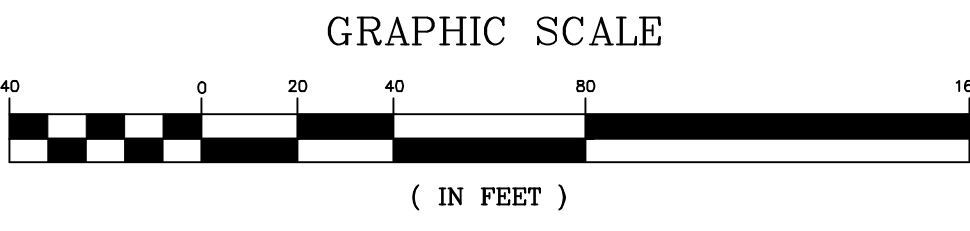
- OBTAIN PLAN APPROVAL AND APPLICABLE PERMITS
- HOLD PRE CONSTRUCTION CONFERENCE.
- INSTALL EROSION CONTROL MEASURE AS SHOWN ON APPROVED PLANS.
- CLEAR AND GRUB AREA FOR STORM DRAINAGE INSTALLATION.
- CONSTRUCT STORM DRAINAGE SYSTEM.
- INSTALL ROCK PIPE INLET PROTECTION AROUND EACH CATCH BASIN AND PIPE INLET.
- FINE GRADE SITE.
- AFTER SITE IS FINE GRADED, PERMANENT VEGETATION SHALL BE INSTALLED WITHIN 15 WORKING DAYS OR 90 CALENDAR (WHICHEVER IS SHORTER) DAYS ON ALL DISTURBED AREAS AND REMOVE TEMPORARY EROSION CONTROL DEVICES ONCE SITE HAS STABILIZED & APPROVAL HAS BEEN GRANTED BY THE APPROPRIATE AGENCIES.

GENERAL STORMWATER NOTES:

- ALL STORMWATER PIPES SHALL BE HDPE WITH SMOOTH INTERIOR WALL, WITH BELL AND SPIGOT ENDS AND SOIL TIGHT JOINTS, UNLESS OTHERWISE NOTED ON PLANS.
- ALL PENETRATIONS INTO STORMWATER STRUCTURES SHALL BE REPAIRED PROPERLY INSIDE AND OUTSIDE WITH BRICK AND OR NON-SHRINK GROUT.
- GIVEN PIPE LENGTHS ARE BASED ON HORIZONTAL DISTANCES BETWEEN STORMWATER STRUCTURES. CONTRACTOR SHALL FACTOR IN SLOPES WHEN ORDERING PIPE AND ORDER ADDITIONAL LENGTH AS NECESSARY.
- ALL STORMWATER PIPES IN EXCESS OF 20% SLOPE SHALL BE KEYED.
- CONTRACTOR TO ENSURE THAT ALL EXISTING AND PROPOSED STORM DRAINAGE STRUCTURES, PIPES AND GRADES WILL PROVIDE POSITIVE DRAINAGE PRIOR TO INSTALLATION.
- ALL DRAINAGE STRUCTURES GREATER THAN 4' IN DEPTH SHALL HAVE ACCESS TO STEPS INSTALLED 16" ON CENTER.
- ALL PRECAST "WAFFLE BOX" STORM DRAINAGE STRUCTURES TO HAVE A MAXIMUM DEPTH OF 6'.

NOTES:

- MEASURES BEYOND THOSE SHOWN ON THE PLANS SHOULD BE APPROVED BY THE OWNER.
- CONTRACTOR SHALL OBTAIN A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PERMIT AND FOLLOW ALL DIRECTIVES. CONTRACTOR SHALL READ AND UNDERSTAND THE NPDES REQUIREMENTS OF THE PERMIT INCLUDING BUT NOT LIMITED TO:
-PLACEMENT OF RAIN GAUGE ON THE SITE
-INSPECTION OF ALL EROSION CONTROL MEASURES FOLLOWING SPECIFIED RAINFALL EVENTS OR WEEKLY.
-UPKEEP OF INSPECTION LOG FOR REVIEW UPON REQUEST BY NCDENR, LOCAL EROSION CONTROL AUTHORITY, OWNER OR ENGINEER.
- CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT THE LIFE OF THE PROJECT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD STAKING NECESSARY FOR THE CONSTRUCTION OF THE PROJECT. THE ENGINEER WILL PROVIDE THE CONTRACTOR WITH AN ELECTRONIC COPY OF THE DESIGN FOR STAKING PURPOSES. HOWEVER ALL ELECTRONIC INFORMATION SHOULD BE COORDINATED WITH THE PLANS.
- CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES AT COMPLETION OF PROJECT, AFTER SITE HAS STABILIZED AND RESTORE TO FINAL GRADE.
- ALL STORM DRAINAGE INLETS SHALL HAVE GRAVEL INLET PROTECTION INSTALLED AROUND THEM AS SOON AS THEY ARE INSTALLED.
- CONTRACTOR SHALL ENSURE NO SILT ENTERS INTO THE EXISTING STREETS. IF SILT OR DEBRIS ENTERS THE EXISTING STREETS, THEN THE CONTRACTOR MUST IMMEDIATELY REMOVE THE SILT OR DEBRIS AT THE CONTRACTORS EXPENSE.
- SURVEY INFORMATION PROVIDED BY:
ASSOCIATED LAND SURVEYORS
6475 BREVARD ROAD
ETOWAH, NC 28729
(828) 890-3507
- ALL STORMWATER PIPES SHALL BE HDPE WITH SMOOTH INTERIOR WALL, WITH BELL AND SPIGOT ENDS AND SOIL TIGHT JOINTS, UNLESS OTHERWISE NOTED ON PLANS.
- ALL PENETRATIONS INTO STORMWATER STRUCTURES SHALL BE REPAIRED PROPERLY INSIDE AND OUTSIDE WITH BRICK AND OR NON-SHRINK GROUT.
- GIVEN PIPE LENGTHS ARE BASED ON HORIZONTAL DISTANCES BETWEEN STORMWATER STRUCTURES. CONTRACTOR SHALL FACTOR IN SLOPES WHEN ORDERING PIPE AND ORDER ADDITIONAL LENGTH AS NECESSARY.
- ALL STORMWATER PIPES IN EXCESS OF 20% SLOPE SHALL BE KEYED.
- UTILITIES MAY BE EXISTING THAT ARE NOT DEPICTED ON THIS PLAN. CONTRACTOR SHALL LOCATE AND FIELD VERIFY ALL EXISTING UTILITIES WITHIN PROJECT AREA.
- ALL STORMWATER STRUCTURES OVER 4' IN DEPTH SHALL HAVE ACCESS TO STEPS INSTALLED 16" ON CENTER.
- NO PERSON MAY INITIATE LAND-DISTURBING ACTIVITY BEFORE NOTIFYING THE AGENCY (HENDERSON COUNTY SOIL EROSION AT PHONE NUMBER (828) 694-6251) THAT ISSUED THE EROSION AND SEDIMENTATION PLAN APPROVAL OF THE DATE THAT LAND DISTURBING ACTIVITY WILL BEGIN.
- A PRE-CONSTRUCTION MEETING IS REQUIRED PRIOR TO LAND DISTURBING ACTIVITY BEGINNING. CONTACT HENDERSON COUNTY SOIL EROSION AT (828) 694-6521.
- ANY BORROW OR WASTE SITE USED SHALL BE PROPERLY PERMITTED.
- WHENEVER THE SOIL EROSION AND SEDIMENTATION CONTROL ADMINISTRATOR DETERMINES THAT SIGNIFICANT EROSION AND SEDIMENTATION IS OCCURRING AS A RESULT OF LAND-DISTURBING ACTIVITY, DESPITE APPLICATION AND MAINTENANCE OF PROTECTIVE PRACTICES, THE PERSON CONDUCTING THE LAND DISTURBING ACTIVITY WILL BE REQUIRED TO AND SHALL TAKE ADDITIONAL PROTECTIVE ACTION.
- NO SLOPES SHALL BE CONSTRUCTED STEEPER THAN A 2:1 AND SLOPES STEEPER THAN A 4:1 SHALL BE SEEDED AND MATTED WITH NORTH AMERICAN GREEN SC-150 OR APPROVED EQUAL.



10/21/2021

REVISIONS

DATE	DESCRIPTION



PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJV
CHECKED BY: JLD

**GRADING,
DRAINAGE, AND
EROSION CONTROL
PLAN**

C-301

SCALE: 1"=40'

GENERAL CONSTRUCTION NOTES

- All work and construction activities on the project site shall comply with all applicable OSHA regulations and requirements. It is the Contractor's responsibility to maintain a safe work site.
- The Engineer and Owner reserve the right to modify project work items (including grading) as deemed necessary for the successful completion of the project. The Contractor may suggest adjustments to grading or other work items to be approved by the Engineer or Owner.
- The Contractor shall comply with the Geotechnical Report for the placement of fill and compaction requirements. If no report is available, the following minimum standards shall apply:

Placement of fill:

- Place the material in successive horizontal layers not exceeding 8" for the full width of the cross section.
- Fill shall be placed only when it is within 3% of its optimum moisture content as determined by a Standard Proctor ASTM D 698.
- Each layer of fill shall be spread evenly and shall be compacted to its specified density as determined by Standard Proctor ASTM D 698 before new layers are placed and compacted.
- Sloped ground surfaces steeper than one vertical to four horizontal, on which fill is to be placed, shall be stepped or benched such that fill material will bond to the existing surfaces.
- Embankment slopes shall be constructed by filling one (1) foot beyond the proposed finished slope surface for each lift. Compaction equipment shall work to the edge of each lift. After the entire fill is placed and compacted, the outside foot of the slope shall be trimmed to the design slope with a dozer. Unless indicated on the drawings, no fill slopes shall be steeper than 2 horizontal to 1 vertical.

Compaction:

- Structural Fill Under Buildings and Within 10' of Building Perimeter: 100% of Standard Proctor the entire depth of fill.
 - Under Walks, Drives, Pads, and Paved Areas: 95% of Standard Proctor except 100% of Standard Proctor in the upper 2'.
 - Under Lawns and Planting Areas Beyond 10' from Building: 95% of Standard Proctor
 - Backfill in Trenches: Comply with compaction requirements for the area through which the trench runs.
- All erosion control devices such as silt fences, diversions, sediment traps, etc. shall be maintained in workable conditions for the life of the project and shall be removed at the completion of the project only with the engineer's approval. See the NPDES requirements on this plan sheet for more detail. If during the life of the project a storm causes soil erosion which changes the finished grades or creates gullies and washed areas, these shall be repaired by the contractor at no extra cost. The Contractor shall adhere to the approved erosion control plan and take any additional measures necessary to prevent sediment from leaving the site.

5. Disposable Materials:

- Clearing and grubbing wastes shall be removed from the site and properly disposed of by the contractor at their expense, unless otherwise specified.
- Solid wastes to be removed such as sidewalks, curbs, pavement, etc. may be placed in specified disposal areas if permitted by the appropriate agencies and approved by the Owner. This material shall be spread and mixed with dirt eliminating all voids. This material shall have a minimum cover of 2'. The Contractor shall maintain specified compaction requirements in these areas. When disposal sites are not provided, the Contractor shall remove this waste from the site and properly dispose of it at their expense.
- Abandoned utilities such as culverts, water pipe, hydrants, casting, pipe appurtenances, utility poles, etc. shall be the property of the specified utility agency or company having jurisdiction. Before the Contractor can remove, destroy, salvage, re-use, sell or store for their own use any abandoned utility, they must present to the owner written permission from the utility involved.
- Unless otherwise noted on the plans, burning will not be allowed on this project. Should burning be allowed by the owner, it is the Contractor's responsibility to obtain all necessary permits (at their expense) and follow all applicable rules and regulations.

- Unless otherwise specified, all base, paving, curbing and other concrete work shall conform to the local municipality or NCDOT specifications for construction. All water and sewer construction shall conform to the local utility requirements and/or the NCDENR minimum standards.
- In the event excessive ground water or springs are encountered within the limits of construction, the Contractor shall install necessary underdrains and stone as directed by the Engineer. All work shall be paid based upon the unit prices unless otherwise specified.
- The Contractor is responsible for the coordination of adjustment of all utility surface accesses (including manhole covers, valve boxes, etc.) whether he performs the work or the utility company performs the work.
- The Contractor shall control all "dust" by periodic watering and shall provide access at all times for property owners within the project and for emergency vehicles. All open ditches and hazardous areas shall be clearly marked in accordance with OSHA regulations.
- All areas of exposed soil shall be seeded, fertilized and mulched according to the specifications. The finished surface shall be to grade and smooth, free of all rocks larger than 3", equipment tracks, dirt clods, bumps, ripples, and gouges prior to seeding. The surface shall be loosened to a depth of 1" + to accept seed. The Contractor shall not proceed with seeding operations without first obtaining the Engineer's approval of the graded surface. All seeding shall be performed by a mechanical "hydro-seeder". The Engineer prior to seeding must approve hand seeding on any area.
- Graded slopes and fills shall be protected with rolled erosion control product if completed outside of optimum germination season when unfavorable weather conditions prevent establishment of vegetative ground cover.

6.06 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

Definition
A gravelled area or pad located at points where vehicles enter and leave a construction site.

Purpose
To provide a buffer area where vehicles can drop their mud and sediment to avoid transporting it onto public roads, to control erosion from surface runoff, and to help control dust.

Conditions Where Practice Applies
Wherever traffic will be leaving a construction site and moving directly onto a public road or other paved off-site area. Construction plans should limit traffic to properly constructed entrances.

Design Criteria
Aggregate Size—Use 2-3 inch washed stone.

Dimensions of gravel pad—
Thickness: 6 inches minimum
Width: 12-ft minimum or full width at all points of the vehicular entrance and exit area, whichever is greater
Length: 50-ft minimum

Location—Locate construction entrances and exits to limit sediment from leaving the site and to provide for maximum utility by all construction vehicles (Figure 6.06a). Avoid steep grades and entrances at curves in public roads.

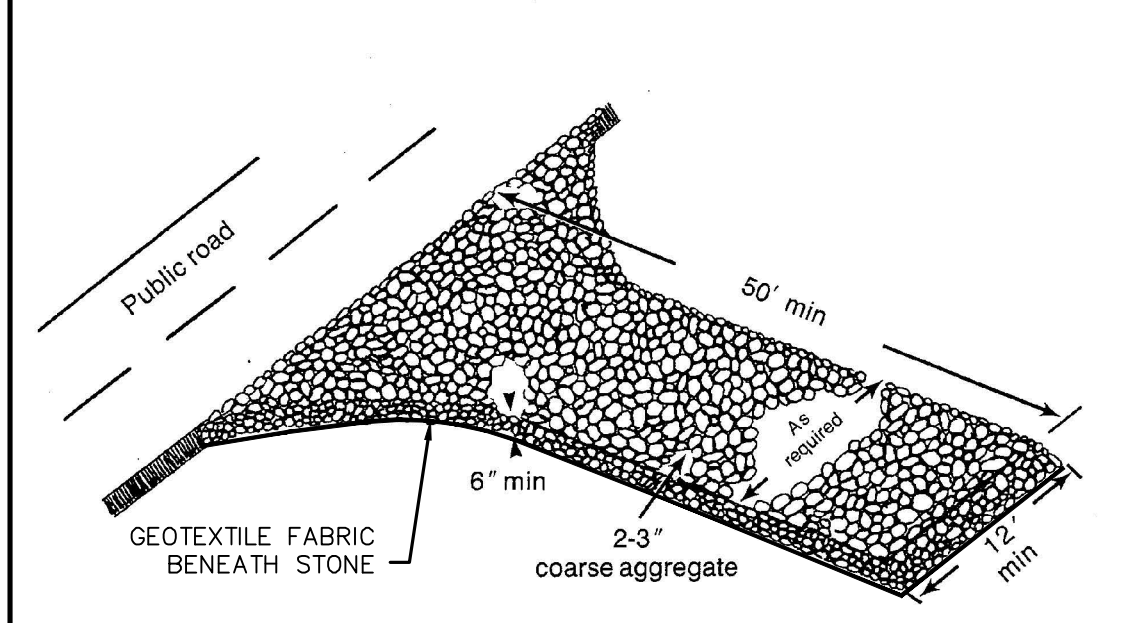
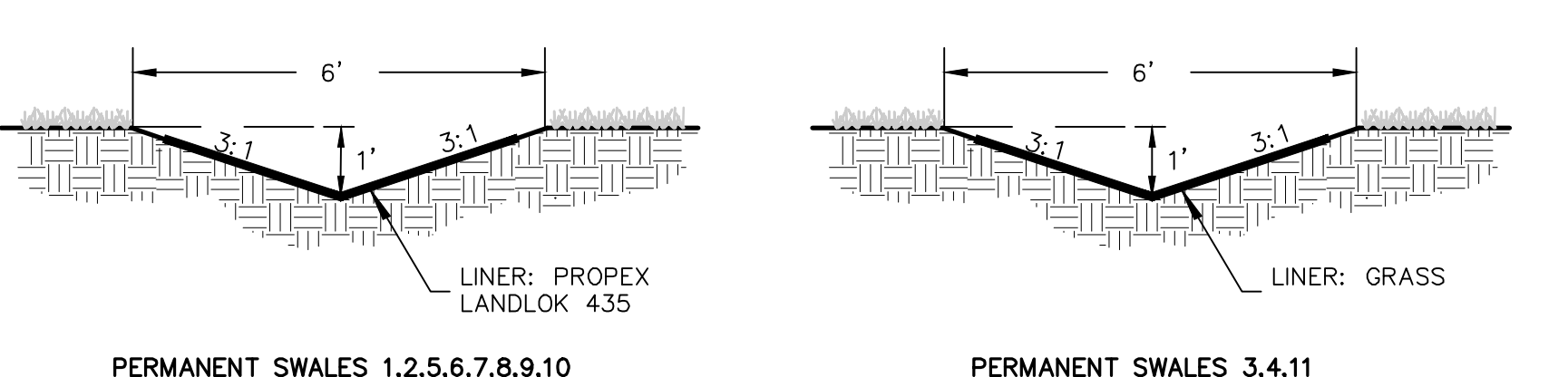


Figure 6.06a Gravel entrance/exit keeps sediment from leaving the construction site (modified from Va SWCC).
MAINTENANCE: MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2 INCH STONE. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.



PERMANENT SWALES 1,2,5,6,7,8,9,10 NOT TO SCALE
PERMANENT SWALES 3,4,11 NOT TO SCALE

NOTE: ALL SWALES TO BE SEEDED PRIOR TO PLACEMENT OF MATTING. SWALE WILL BE CONSIDERED STABILIZED ONCE GRASS IS ESTABLISHED IN SWALE.

Practice Standards and Specifications

- Ensure that posts for sediment fences are 1.33 lb/linear ft steel with a minimum length of 5 feet. Make sure that steel posts have projections to facilitate fastening the fabric.
- For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.

Table 6.62b Specifications For Sediment Fence Fabric

Test Material	Units	Supported Silt Fence	Un-Supported Silt Fence	Type of Value
Grab Strength	ASTM D 4632	N (lbs)		
Machine Direction		400 (90)	550 (90)	MARV
X-Machine Direction		400 (90)	450 (90)	MARV
Permittivity ¹	ASTM D 4491	sec-1	0.05 (90)	MARV
Apparent Opening Size ²	ASTM D 4751	mm (US Sieve #)	0.80 (30)	Max. ARV ³
Ultraviolet Stability	ASTM D 4355	% Retained Strength	70% after 500h of exposure 70% after 500h of exposure	Typical

¹ Silt Fence support shall consist of 14 gauge steel wire with a mesh spacing of 150 mm (6 inches), or prefabricated polymer mesh of equivalent strength.
² These default values are based on empirical evidence with a variety of sediment. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotechnical tests in accordance with Test Method D 5141 should be performed by the agency to confirm suitability of these requirements.
³ As measured in accordance with Test Method D 4632.

6 Practice Standards and Specifications

- Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upslope from the barrier (Figure 6.62a).
- Place 12 inches of the fabric along the bottom and side of the trench.
- Backfill the trench with soil placed over the filter fabric and compact. Through compaction of the backfill is critical to silt fence performance.
- Do not attach filter fabric to existing trees.

SEDMIMENT FENCE INSTALLATION USING THE SLICING METHOD

- Instead of excavating a trench, placing fabric and then backfilling trench, sediment fence may be installed using specially designed equipment that inserts the fabric into a cut sliced in the ground with a disc (Figure 6.62b).
- The base of both end posts should be at least one foot higher than the middle of the fence. Check with a level if necessary.
 - Install posts 4 feet apart in critical areas and 6 feet apart on standard applications.
 - Install posts 2 feet deep on the downstream side of the silt fence, and as close as possible to the fabric, enabling posts to support the fabric from upstream water pressure.
 - Install posts with the nipples facing away from the silt fabric.
 - Attach the fabric to each post with three ties, all spaced within the top 8 inches of the fabric. Attach each tie diagonally 45 degrees through the fabric, with each puncture at least 1 inch vertically apart. Also, each tie should be positioned to hang on a post nipple when tightened to prevent sagging.
 - Wrap approximately 6 inches of fabric around the end posts and secure with 3 ties.
 - No more than 24 inches of a 36 inch fabric is allowed above ground level.
 - The installation should be checked and corrected for any deviations before compaction.
 - Compaction is vitally important for effective results. Compact the soil immediately next to the silt fence fabric with the front wheel of the tractor, skid steer, or roller exerting at least 60 pounds per square inch. Compact the upstream side first, and then each side twice for a total of 4 trips.

MAINTENANCE: INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY. REMOVE SEDIMENT DEPOSIT AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

Practice Standards and Specifications

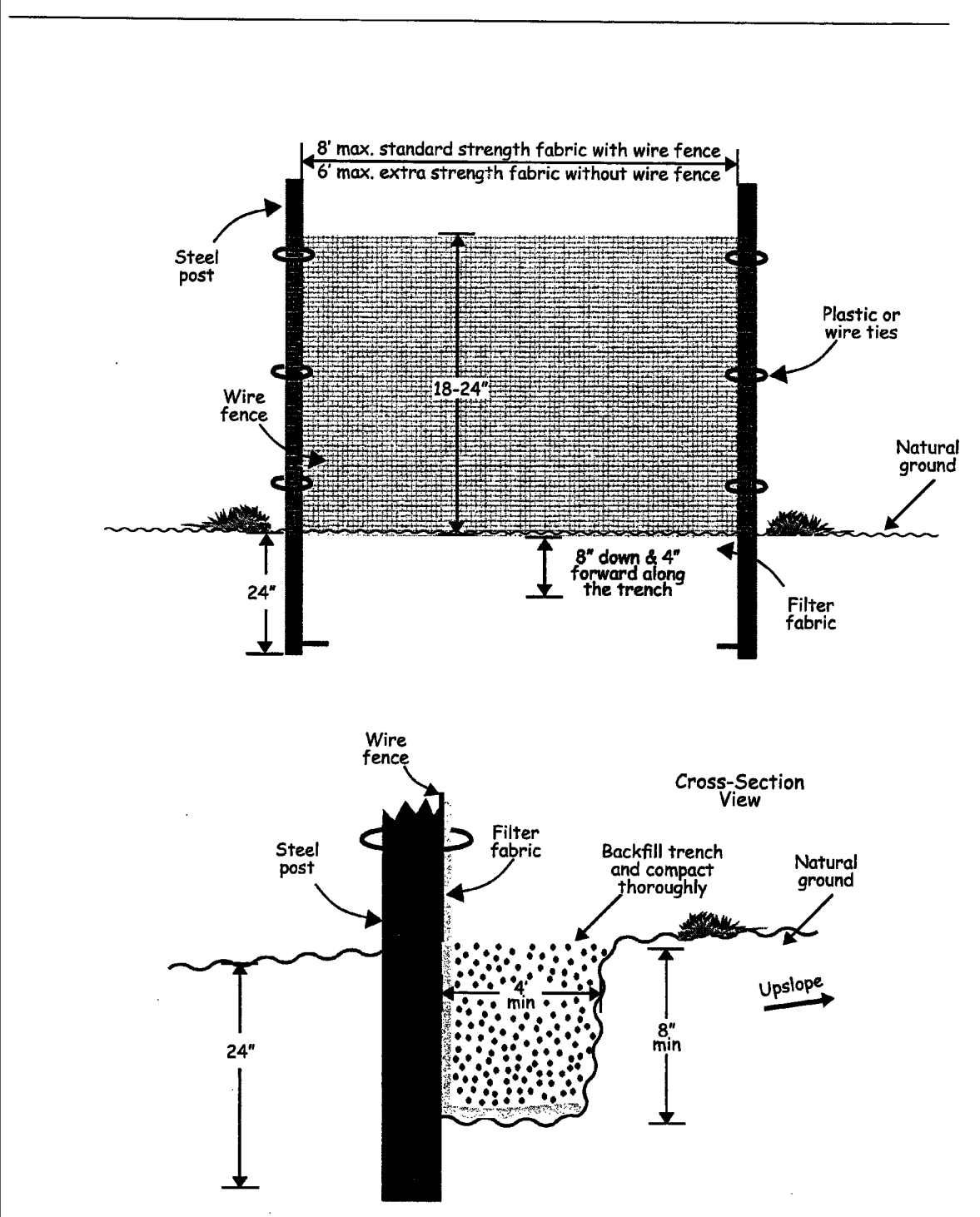


Figure 6.62a Installation detail of a sediment fence.

Practice Standards and Specifications

Sediment Fence (Silt Fence)

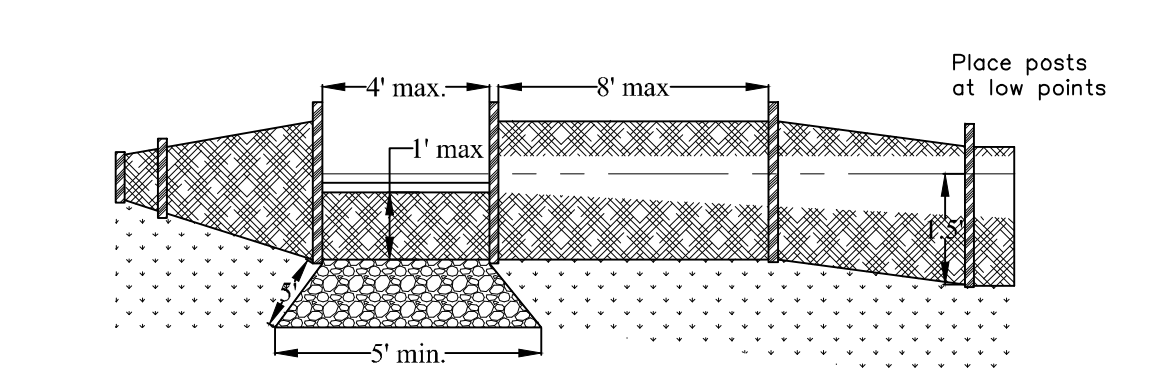
Reinforced, Stabilized Outlets

Any outlet where storm flow bypass occurs must be stabilized against erosion.

Set outlet elevation so that water depth cannot exceed 1.5 ft at the lowest point along the fence line.

Set fabric height at 1 ft, maximum between support posts spaced no more than 3 ft apart. Install a horizontal brace between the support posts to serve as an overflow and to support top of fabric. Provide a riprap splash pad.

Excavate foundation for the splash pad a minimum 5 ft wide, 1 ft deep, and 5 ft long on level grade. The finished surface of the riprap should blend with surrounding area, allowing no overfall. The area around the pad must be stable.



Perspective of reinforced stabilized outlet for sediment fence.

Construction

Dig a trench approximate 8 inches deep and 4 inches wide, or a V-trench, in the line of the fence.

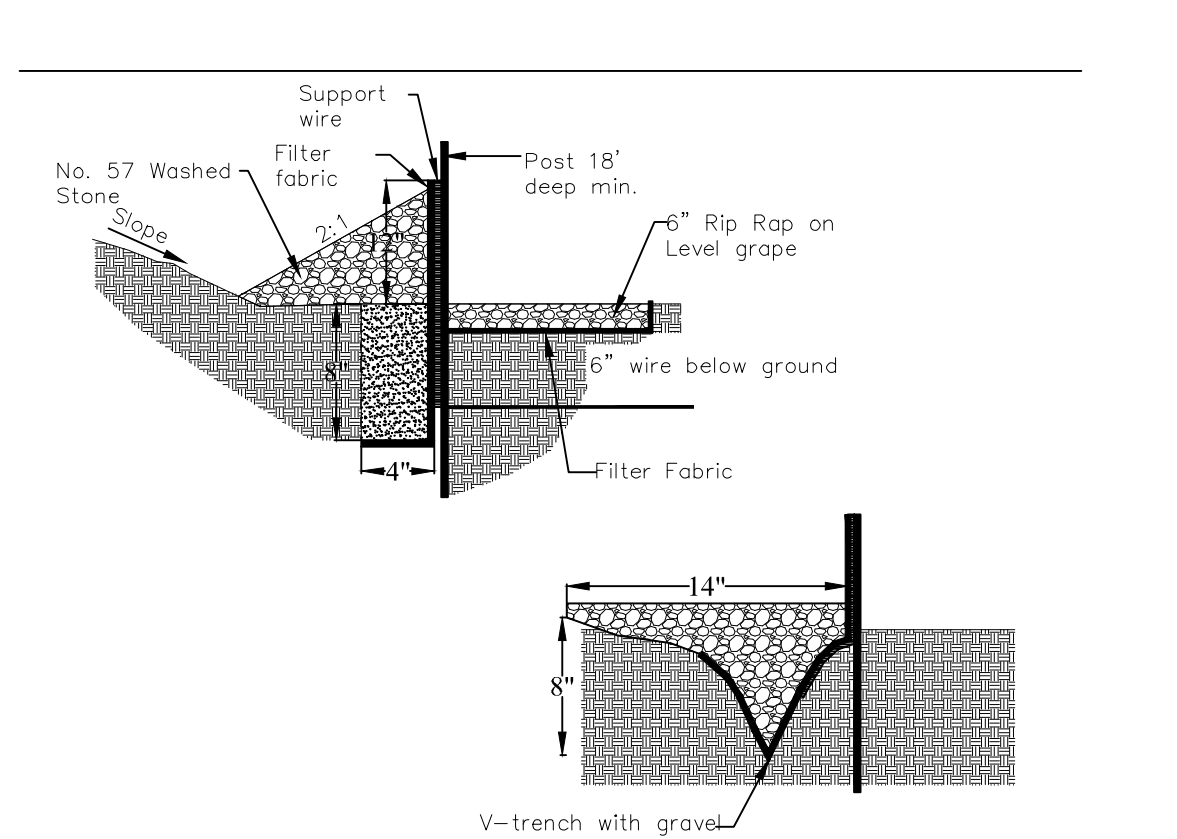
Drive posts securely, at least 18 inches into the ground, on the down slope side of the trench. Space posts a maximum of without support wire. Adjust spacing to place posts at low points along the fence line.

fasten support wire fence to upslope side of posts, extending 6 inches into the trench.

Attach continuous length of fabric to upslope side of fence posts. Avoid joints, particularly at low points in the fence line. Where joints are necessary, fasten fabric securely to support posts and overlap to the next post.

MAINTENANCE: INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY. REMOVE SEDIMENT DEPOSIT AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

Practice Standards and Specifications



Detail of sediment fence installation

Place the bottom 1 ft of fabric in 8-inch deep trench lapping toward the upslope side. Backfill with compacted earth or gravel as shown in Figure 6.62d.

To reduce maintenance, excavate a shallow sediment storage area on upslope side of fence where sedimentation is expected. Provide good access to deposition areas for cleanout and maintenance.

Allow for safe bypass of storm flow to prevent overlapping failure of fence.

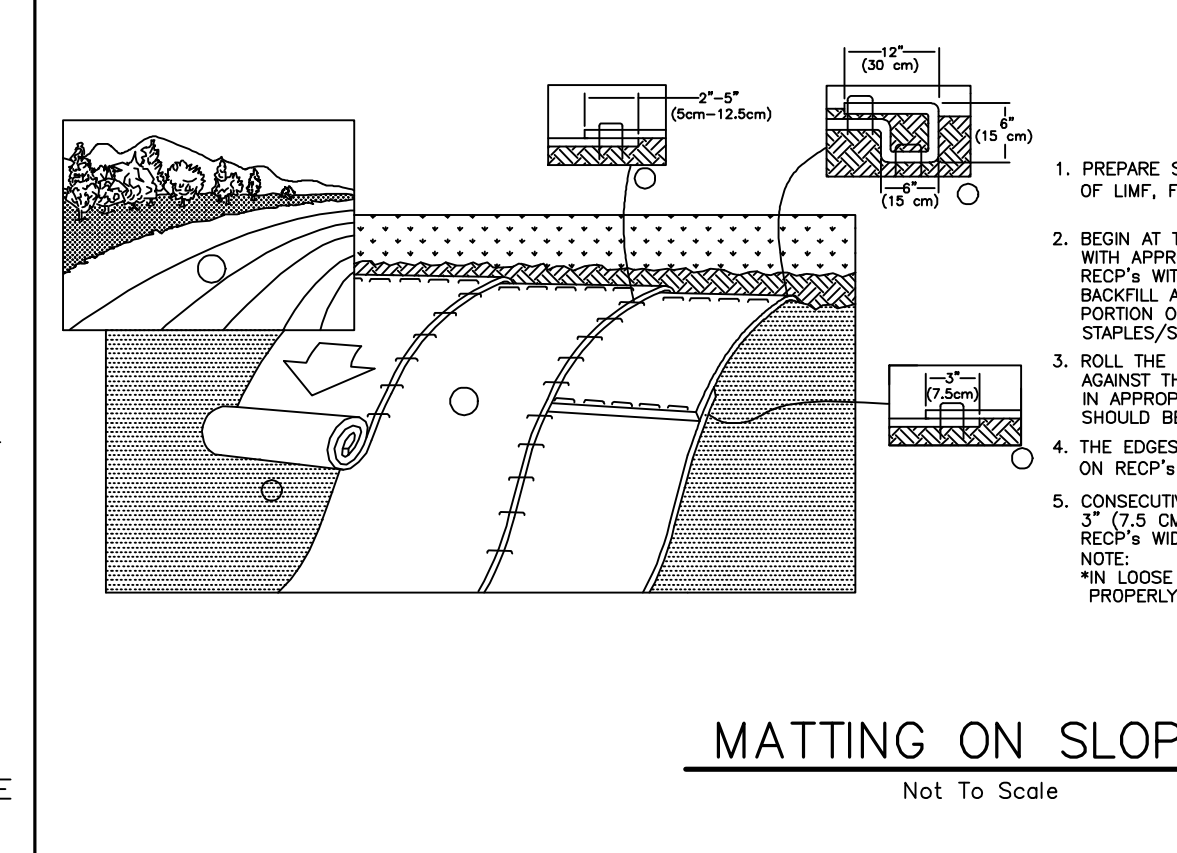
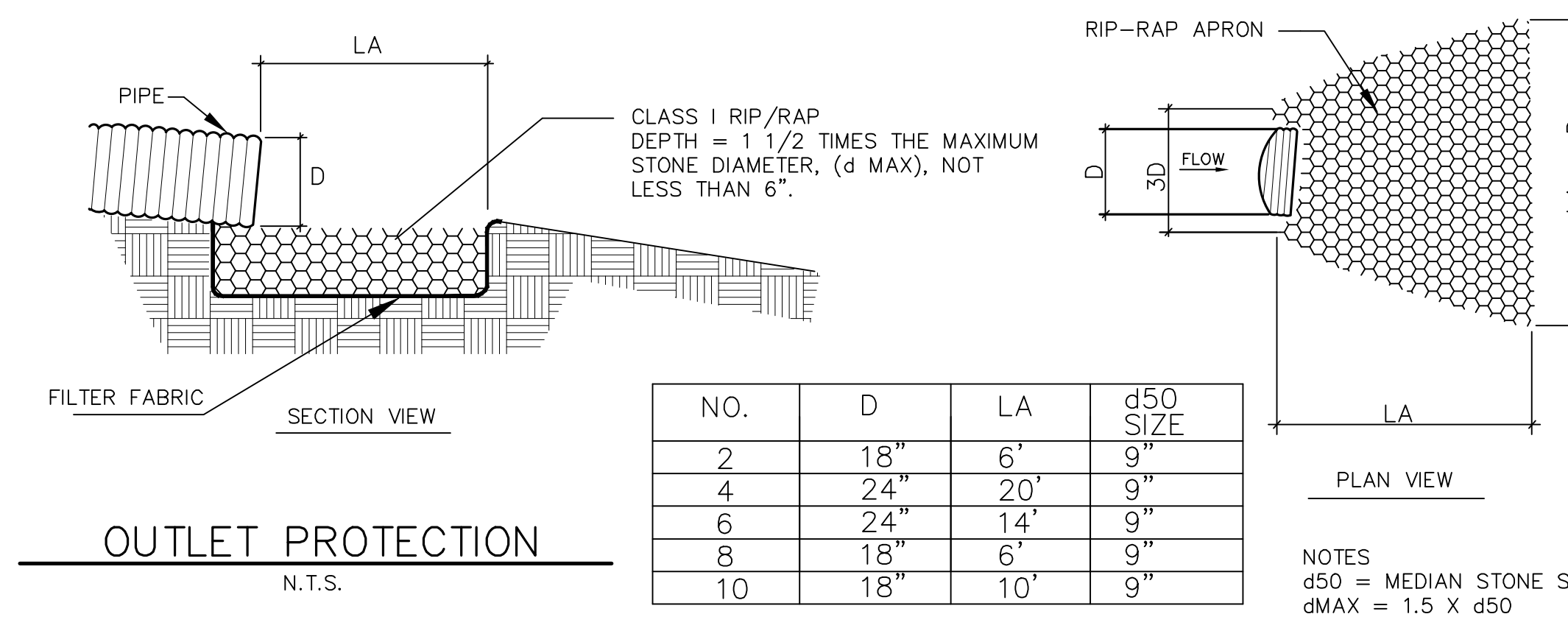
DO NOT install sediment fence across intermittent or permanent streams, channels, or any location where concentrated flow is anticipated.

Rev. 6/06 6.62.3

Rev. 6/06 6.62.3

Rev. 6/06 6.62.3

Rev. 6/06 6.62.3



- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIMF, FFR1L7FR, AND SFDD.
 - BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP'S EXTENDING BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP'S.
 - ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 - THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.
 - CONSECUTIVE RECP'S SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 0.5 CM OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.
- NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

WGLA Engineering

WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

THE ORCHARDS
AT HIGHWAY 64

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA

Jared Redden

NORTH CAROLINA PROFESSIONAL SEAL 041349

ENGINEER
L. REDDEN

10/21/2021

REVISIONS

DATE	DESCRIPTION

811

Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJV
CHECKED BY: JLD

GRADING, DRAINAGE AND EROSION CONTROL DETAILS

C-302

SCALE: AS NOTED

6.55

ROCK PIPE INLET PROTECTION

Definition A horseshoe shaped rock dam structure at a pipe inlet with a sediment storage area around the outside perimeter of the structure.

Purpose To prevent sediment from entering, accumulating in and being transferred by a culvert or storm drainage system prior to stabilization of the disturbed drainage area. This practice allows early use of the storm drainage system.

Conditions Where Practice Applies Rock pipe inlet protection may be used at pipes with a maximum diameter of 36 inches. This inlet protection may be used to supplement additional sediment traps or basins at the pipe outlet, or used in combination with an excavated sediment storage area to serve as a temporary sediment trap. Pipe inlet protection should be provided to protect the storm drainage system and downstream areas from sedimentation until permanent stabilization of the disturbed drainage area.

Do not install this measure in an intermittent or perennial stream.

Planning Considerations When construction on a project reaches a stage where culverts and other storm drainage structures are installed and many areas are brought to the desired grade, there is a need to protect the points where runoff can leave the site through culverts or storm drains. Similar to drop and curb inlets, culverts receiving runoff from disturbed areas can convey large amounts of sediment to lakes or streams. Even if the pipe discharges into a sediment trap or basin, the pipe or pipe system itself may clog with sediment.

Design Criteria When used in combination with an excavated sediment storage area to serve as a temporary sediment trap, the design criteria for temporary sediment traps must be satisfied. The maximum drainage area should be 5 acres, and 3600 cubic feet of sediment storage per acre of disturbed drainage area should be provided.

The minimum stone height should be 2 feet, with side slopes no steeper than 2:1. The stone "horseshoe" around the pipe inlet should be constructed of Class B or Class I riprap, with a minimum crest width of 3 feet. The outside face of the riprap should be covered with a 12-inch thick layer of #5 or #57 washed stone.

In preparing plans for rock pipe inlet protection, it is important to protect the embankment over the pipe from overtopping. The top of the stone should be a minimum of 1 foot below the top of the fill over the pipe. The stone should tie into the fill on both sides of the pipe. The inside toe of the stone should be no closer than 2 feet from the culvert opening to allow passage of high flows.

The sediment storage area should be excavated upstream of the rock pipe inlet protection, with a minimum depth of 18 inches below grade.

6

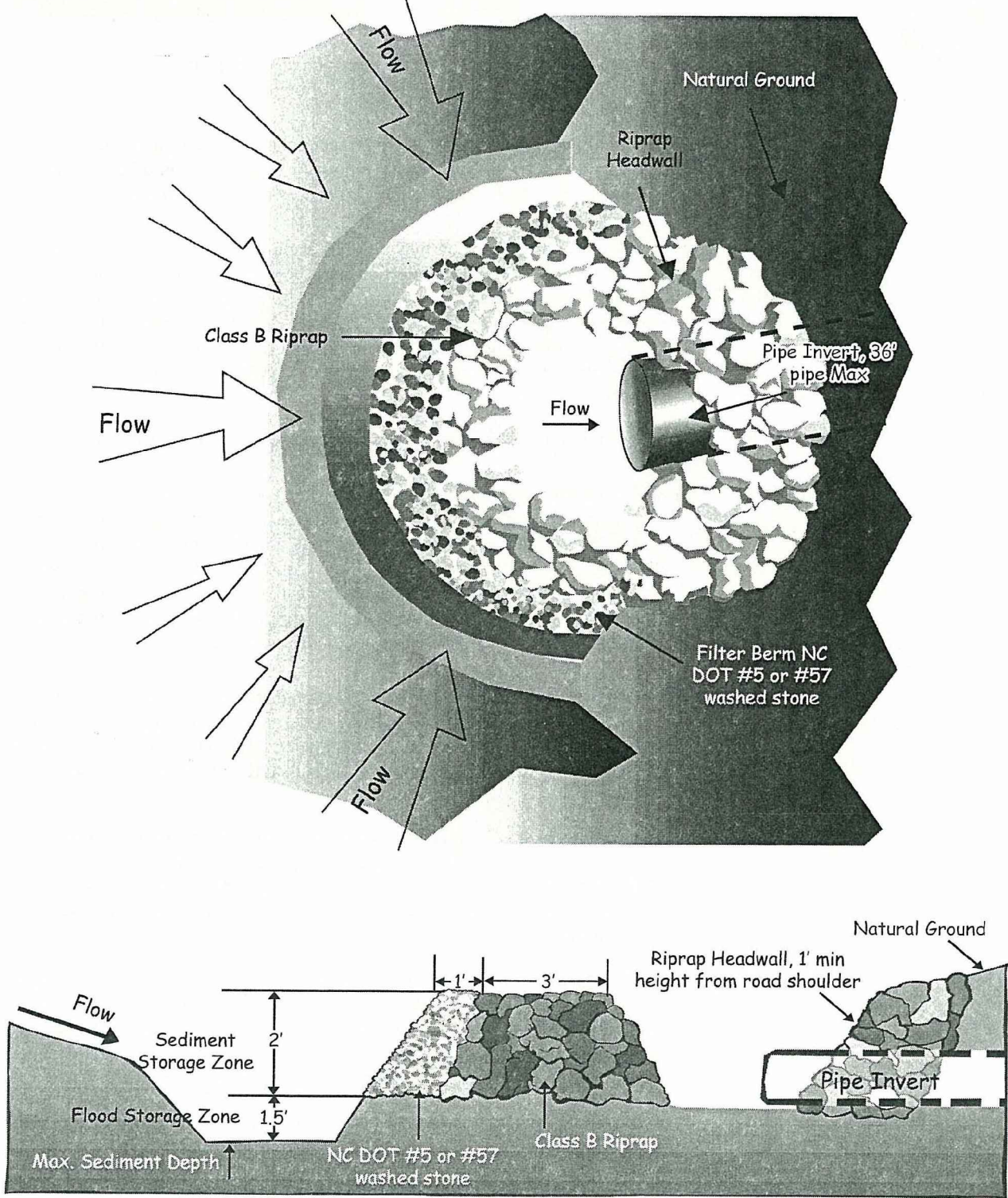


Figure 6.55a Rock pipe inlet protection plan view and cross-section view

Rev. 6/06

6.55.1

SEEDING SPECIFICATION

I. TEMPORARY COVER
A. LIME & FERTILIZER
CONTRACTOR SHALL FURNISH AND APPLY LIME AND FERTILIZER TO THE SOIL AS REQUIRED TO PROVIDE SATISFACTORY CONDITIONS FOR SEED GERMINATION. AN APPLICATION RATE OF 2000 LBS PER ACRE OF AN APPLICATION RATE OF 2000 LBS PER ACRE OF GROUND AGRICULTURAL LIME AND 750 LBS/ACRE OF FERTILIZER (10-10-10).

B. TEMPORARY COVER
SEEDING - CONTRACTOR SHALL SELECT A QUICK GROWING GRASS WITH HIGH SEEDING VIGOR THAT IS SUITED TO THE AREA, THE TIME OF PLANTING, AND THAT WILL NOT INTERFERE WITH PLANT TO BE SOWN LATER FOR PERMANENT COVER.

C. MULCHING
IN ORDER TO REDUCE DAMAGE FROM WATER RUN-OFF AND IMPROVE MOISTURE CONDITIONS FOR SEEDLINGS, A MULCH MATERIAL SHALL BE FURNISHED WHEN TEMPORARY SEEDING IS TO BE DONE. ACCEPTABLE MATERIALS ARE:

II. PERMANENT COVER
A. CONTRACTOR SHALL FURNISH AND APPLY
1-90 LBS / 1000 SF OF GROUND AGRICULTURAL LIME (2 TONS / ACRE)

APPLY NURSE CROP AS FOLLOWS:
MAY 1 - AUG 15 - 10 LBS / AC GERMAN MILLET OR
- 15 LBS / AC SUNDANGRASS
AUG 15 - MAY 1 - 40 LBS / AC RYE (GRAIN)

B. SEEDING DATES: KY 31 TALL FESCUE

(BELOW 2500' ELEV)
AUG 20 - SEPT 15
MARCH 1 - MAY 1
(ABOVE 2500' ELEV)
JULY 15 - AUG 30
MARCH 5 - MAY 15

III. SOIL PREPARATION
A. GENERAL REQUIREMENTS
1-PREPARATION FOR PRIMARY/PERMANENT STABILIZATION SHALL NOT BEGIN UNTIL ALL CONSTRUCTION AND UTILITY WORK WITHIN THE PREPARATION AREA IS COMPLETE.

2-A NORTH CAROLINA DEPARTMENT OF AGRICULTURE SOILS TEST (OR EQUAL) SHALL BE OBTAINED FOR ALL AREAS TO BE SEEDDED, SPRIGGED, SODDED OR PLANTED. RECOMMENDED FERTILIZER AND pH ADJUSTING PRODUCTS SHALL BE INCORPORATED INTO THE PREPARED AREAS AND BACKFILL MATERIAL PER THE TEST.

3-ALL AREAS TO BE SEEDDED OR PLANTED SHALL BE TILLED OR RIPPED TO A DEPTH OF 4". RIPPING CONSISTS OF CREATING FISSURES IN A CRISS-CROSS PATTERN OVER THE ENTIRE SURFACE AREA USING AN IMPLEMENT THAT WILL NOT GLAZE THE SIDE WALLS OF THE FISSURES. SITE PREPARATION THAT DOES NOT COMPLY WITH THESE DOCUMENTS SHALL NOT BE ACCEPTABLE.

4-ALL STONES LARGER THAN 3" ON ANY SIDE, STICKS, ROOTS, AND OTHER EXTRANEIOUS MATERIALS THAT SURFACE DURING THE BED PREPARATION SHALL BE REMOVED.

B. AREAS TO BE SEEDDED
1-TILL OR DISC THE PREPARED AREAS TO BE SEEDDED TO A MINIMUM DEPTH OF 4". REMOVE STONES LARGER THAN 3" ON ANY SIDE, STICKS, ROOTS, AND OTHER EXTRANEIOUS MATERIALS THAT SURFACE. IF NOT INCORPORATED IN THE RIPPING PROCESS, ADD pH MODIFIERS AND FERTILIZERS AT THE RATE SPECIFIED.

2-RECOMPACT THE AREA UTILIZING A CULTIPACKER ROLLER. THE FINISHED GRADE SHALL BE SMOOTH EVEN SOIL SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE. ALL RIDGES AND DEPRESSIONS SHALL BE REMOVED AND FILLED TO PROVIDE THE APPROVED SURFACE DRAINAGE. SEEDING THE GRADED AREAS IS TO BE DONE IMMEDIATELY AFTER FINISHED GRADES ARE OBTAINED AND SEEDBED PREPARATION IS COMPLETE.

C. AREAS TO BE SPRIGGED, SODDED, AND/OR PLANTED
1-AT THE TIME OF PLANTING, TILL OR DISC THE PREPARED AREA TO A DEPTH OF 4"-6" BELOW THE APPROVED FINISHED GRADE. REMOVE ALL STONES LARGER THAN 3" ON ANY SIDE, STICKS, ROOTS AND OTHER EXTRANEIOUS MATERIALS THAT SURFACE. IF NOT INCORPORATED DURING THE RIPPING PROCESS, ADD pH MODIFIERS, FERTILIZER AND OTHER RECOMMENDED SOIL AMENDMENTS.

2-RECOMPACT THE AREA UTILIZING A CULTIPACKER ROLLER AND PREPARE FINAL GRADES AND DESCRIBED ABOVE. INSTALL SPRIGS, SOD AND PLANTS AS DIRECTED IMMEDIATELY AFTER FINE GRADING IS COMPLETE. MULCH, MAT AND/OR TACK AS SPECIFIED.

Construction Specifications

- 1. Clear the area of all debris that might hinder excavation and disposal of spoil.
2. Install the Class B or Class I riprap in a semi-circle around the pipe inlet. The stone should be built up higher on each end where it ties into the embankment. The minimum crest width of the riprap should be 3 feet, with a minimum bottom width of 11 feet. The minimum height should be 2 feet, but also 1 foot lower than the shoulder of the embankment or diversions.
3. A 1 foot thick layer of NC DOT #5 or #57 stone should be placed on the outside slope of the riprap.
4. The sediment storage area should be excavated around the outside of the stone horseshoe 18 inches below natural grade.
5. When the contributing drainage area has been stabilized, fill depression and establish final grading elevations, compact area properly, and stabilize with ground cover.

Maintenance

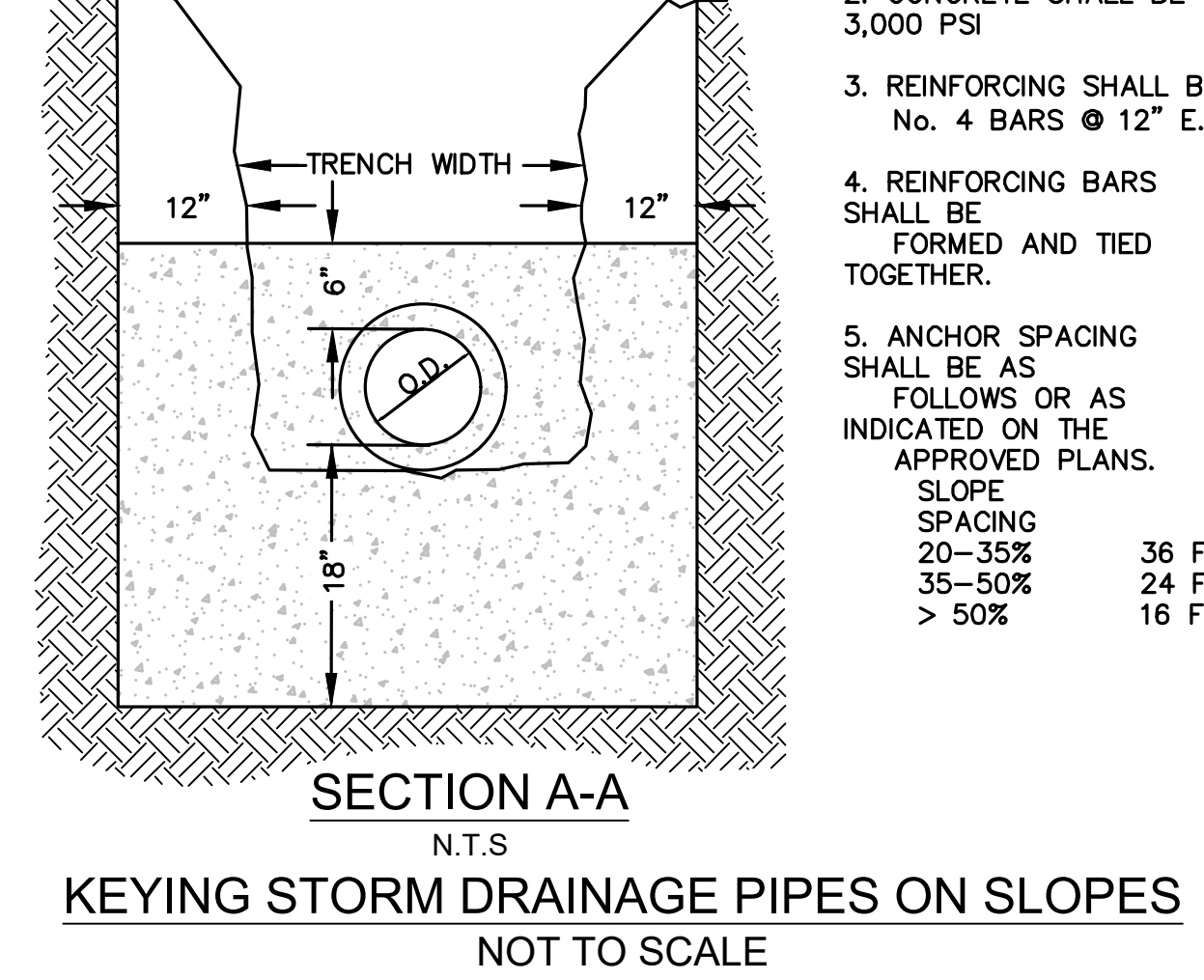
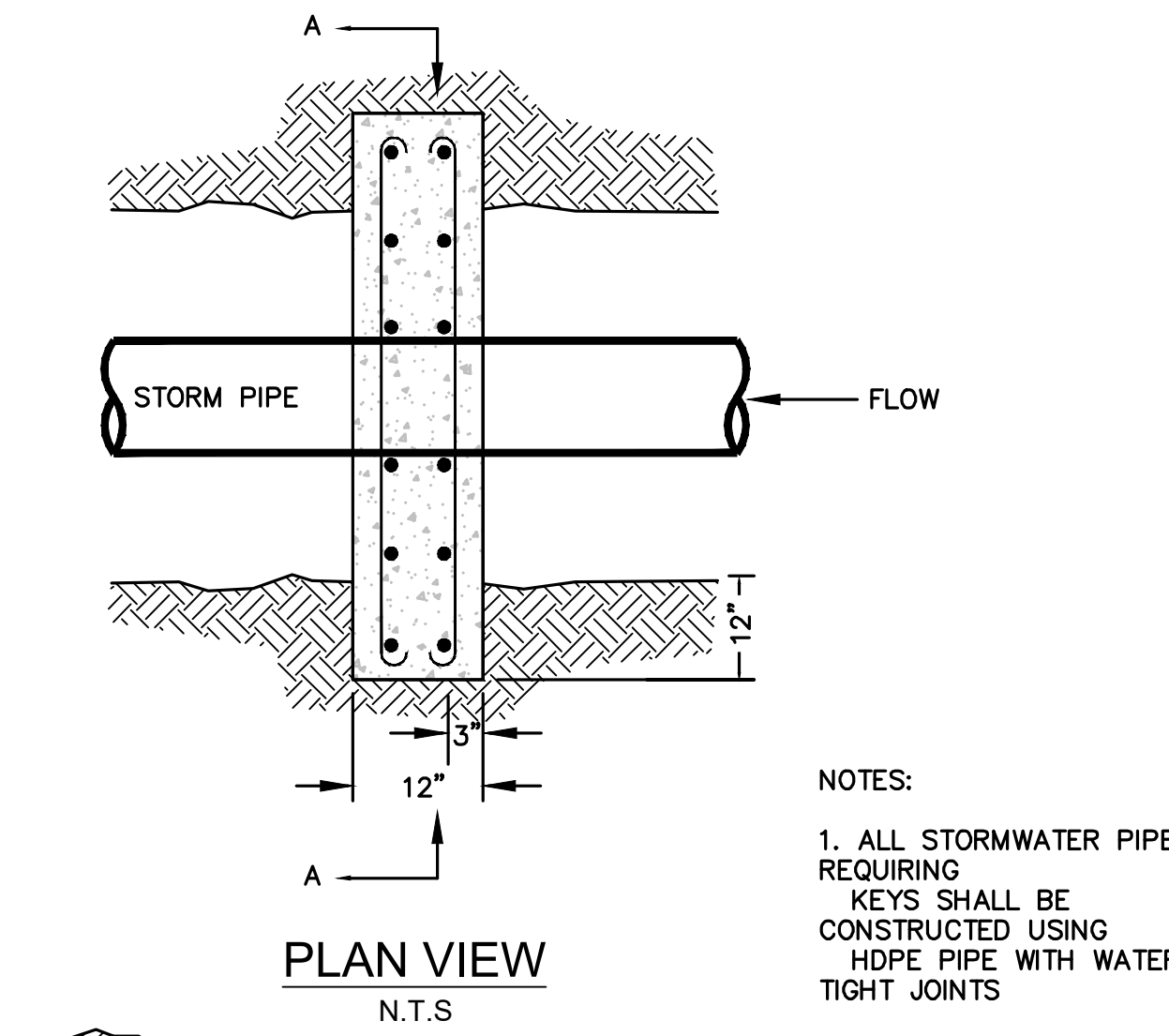
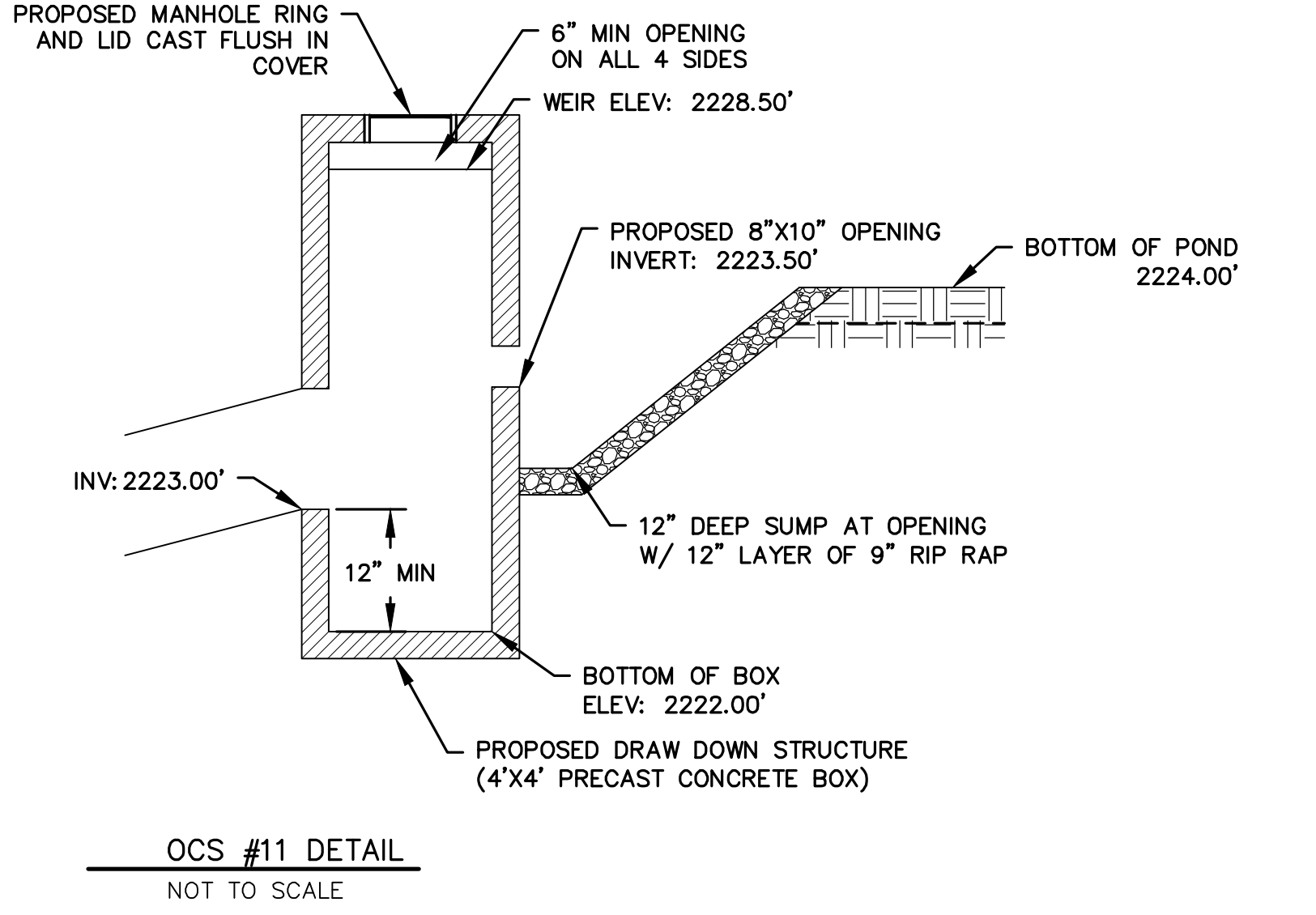
Inspect rock pipe inlet protection at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Remove sediment and restore the sediment storage area to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Place the sediment that is removed in the designated disposal area and replace the contaminated part of the gravel facing.

References

- Inlet protection
6.52, Block and Gravel Inlet Protection (Temporary)
Sediment Trap and Barriers
6.60, Temporary Sediment Trap
Surface Stabilization
6.15, Riprap
North Carolina Department of Transportation
Erosion & Sedimentation Guidelines for Division Maintenance Operation, 1993.
Virginia Erosion and Sediment Control Handbook, 1992. STD & SPEC 3.08, Culvert Inlet Protection, pages III-46 - III-51 (Culvert Inlets Sediment Trap).

Rev. 6/06

6.55.3



KEYING STORM DRAINAGE PIPES ON SLOPES NOT TO SCALE

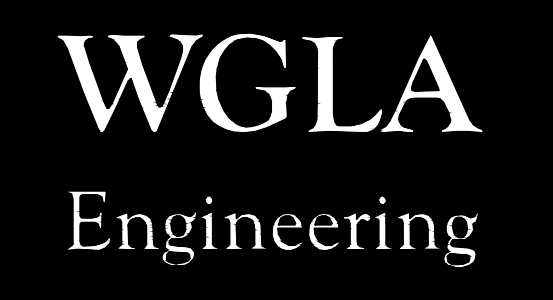
Table with 2 columns: PIPE DIAM., MIN. TRENCH WIDTH. Rows include 4", 6", 8", 10", 12", 15", 18", 24", 30", 36", 42", 48", 54", 60" diameters with corresponding trench widths.

Table with 3 columns: PIPE DIAM., H-25 SURFACE LIVE LOADING CONDITION, HEAVY CONSTRUCTION (75T AXLE LOAD) *. Rows include 12"-48", 54"-60" diameters with corresponding H-25 and heavy construction values.

Table with 2 columns: PIPE DIAM., COOPER E-80**. Rows include UP TO 24", 30"-36", 42"-60" diameters with corresponding Cooper E-80 values.

** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE. *** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

TYPICAL HDPE STORM DRAINAGE TRENCH DETAIL NOT TO SCALE



WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

THE ORCHARDS AT HIGHWAY 64

EDNEYVILLE HENDERSON COUNTY NORTH CAROLINA

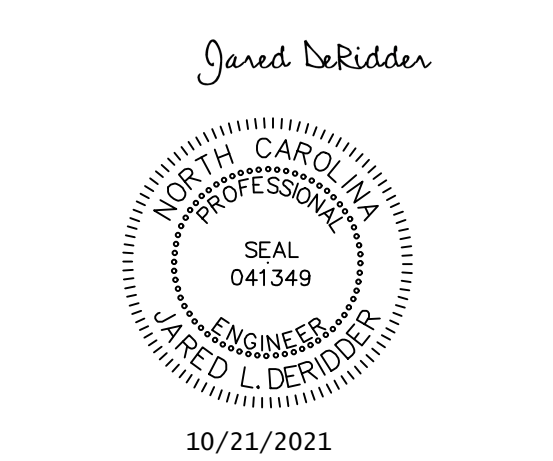


Table with 2 columns: DATE, DESCRIPTION. It is a revisions table for the drawing.



PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJV
CHECKED BY: JLD

GRADING, DRAINAGE AND EROSION CONTROL DETAILS

C-303

SCALE: AS NOTED

SEDIMENT BASIN BAFFLE DETAIL

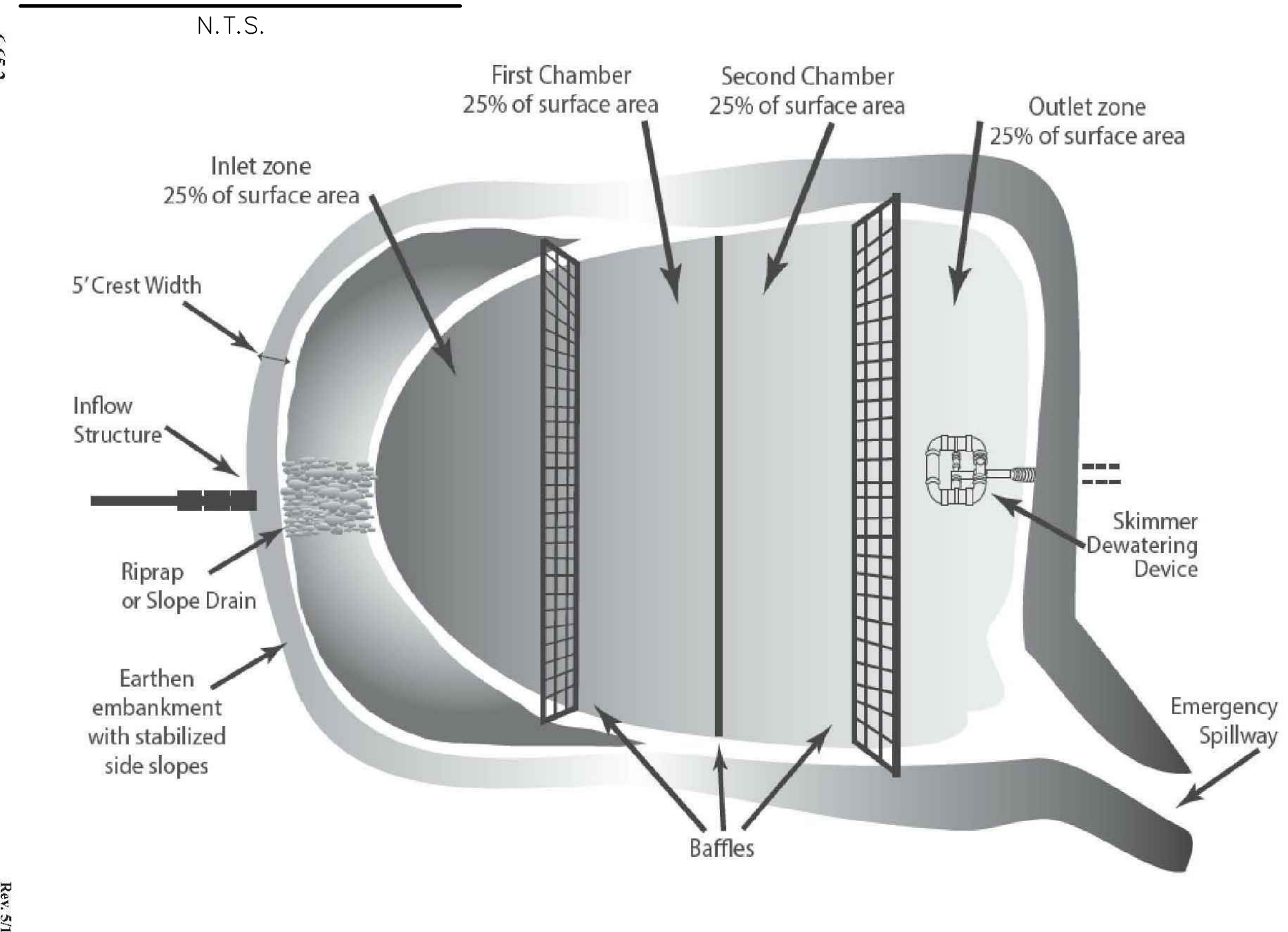
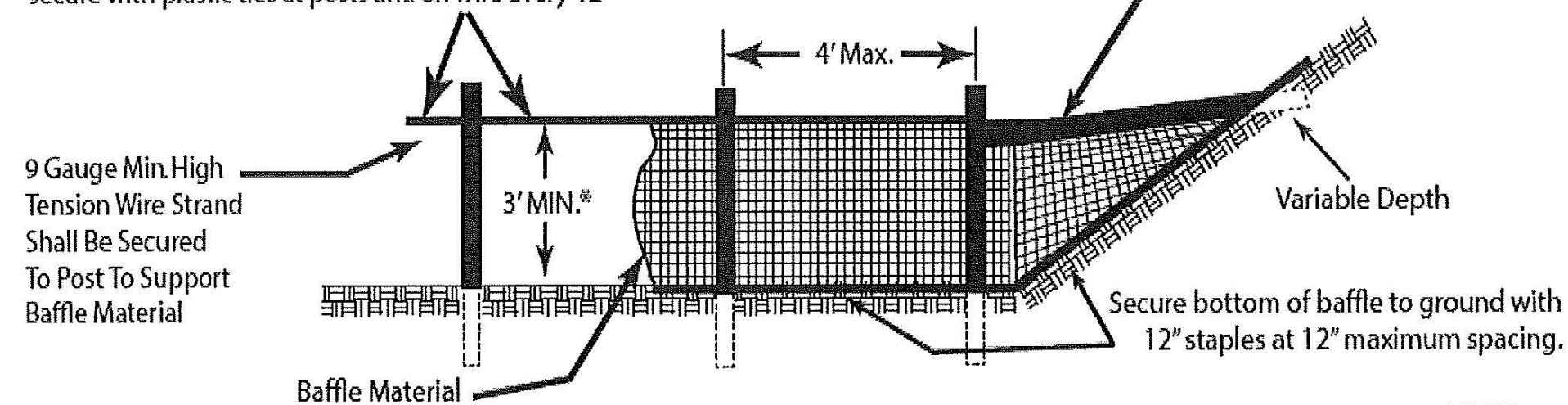


Figure 6.65a Porous baffles in a sediment basin. The flow is distributed evenly across the basin to reduce flow rates and turbulence, resulting in greater sediment retention.

Drape baffle material over wire strand and secure with plastic ties at posts and on wire every 12"



* If the temporary sediment basin will be converted to a permanent stormwater basin of greater depth, the baffle height should be based on the pool depth during use as a temporary sediment basin.

Note: Install three (3) coir fiber baffles in basins at drainage outlets with a spacing of 1/4 the basin length. Two (2) coir fiber baffles can be installed in the basins less than 20 ft. in length with a spacing of 1/3 the basin length.

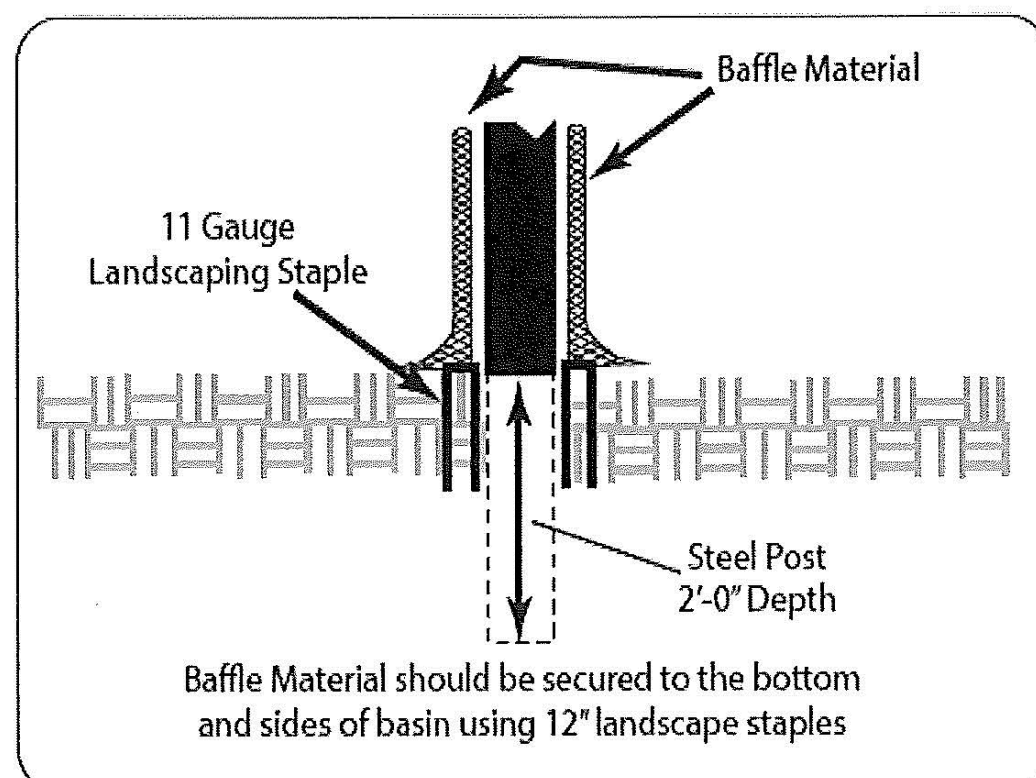
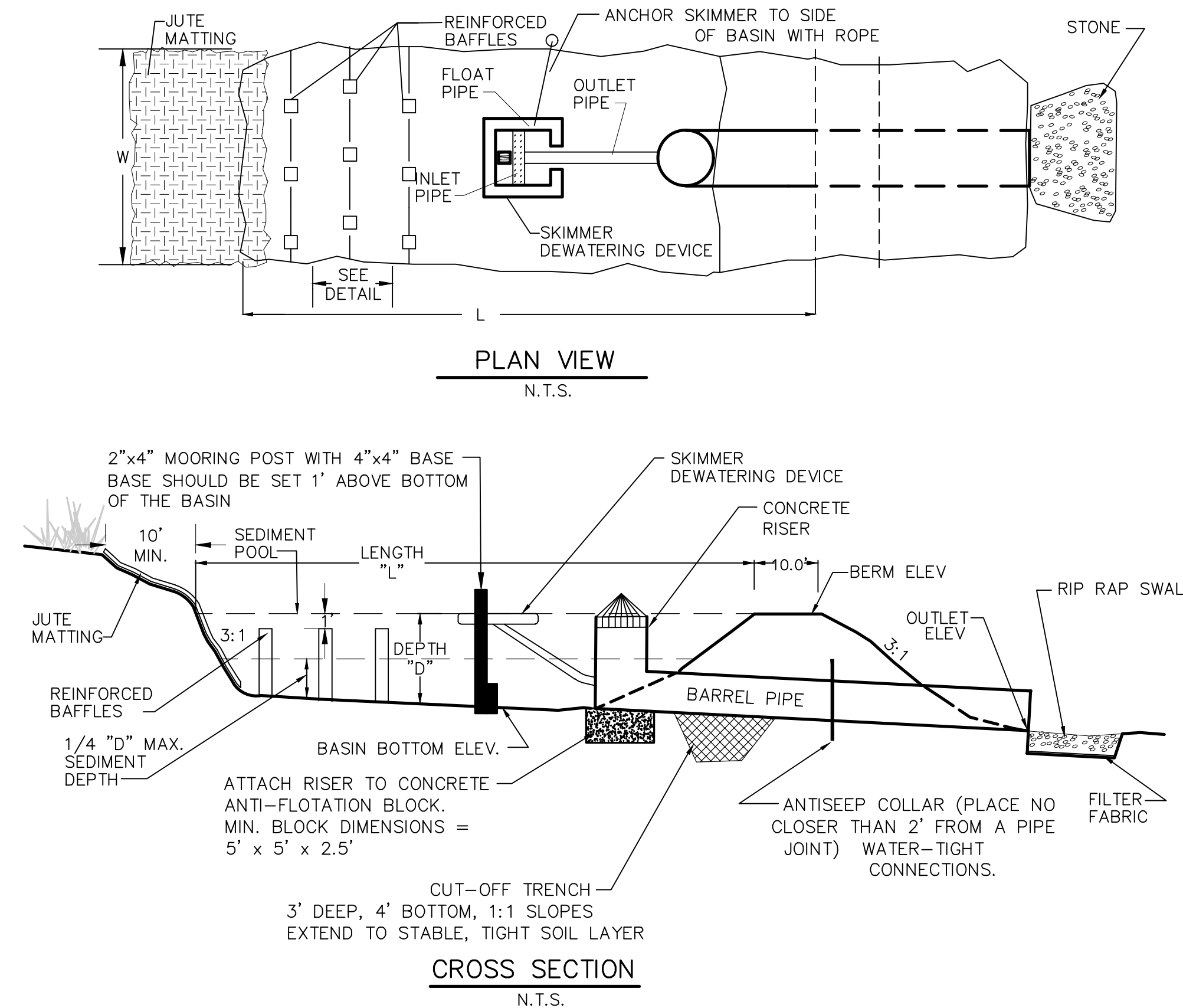


Figure 6.65b Coir Fiber Baffle Detail
Cross section of a porous baffle in a sediment basin.



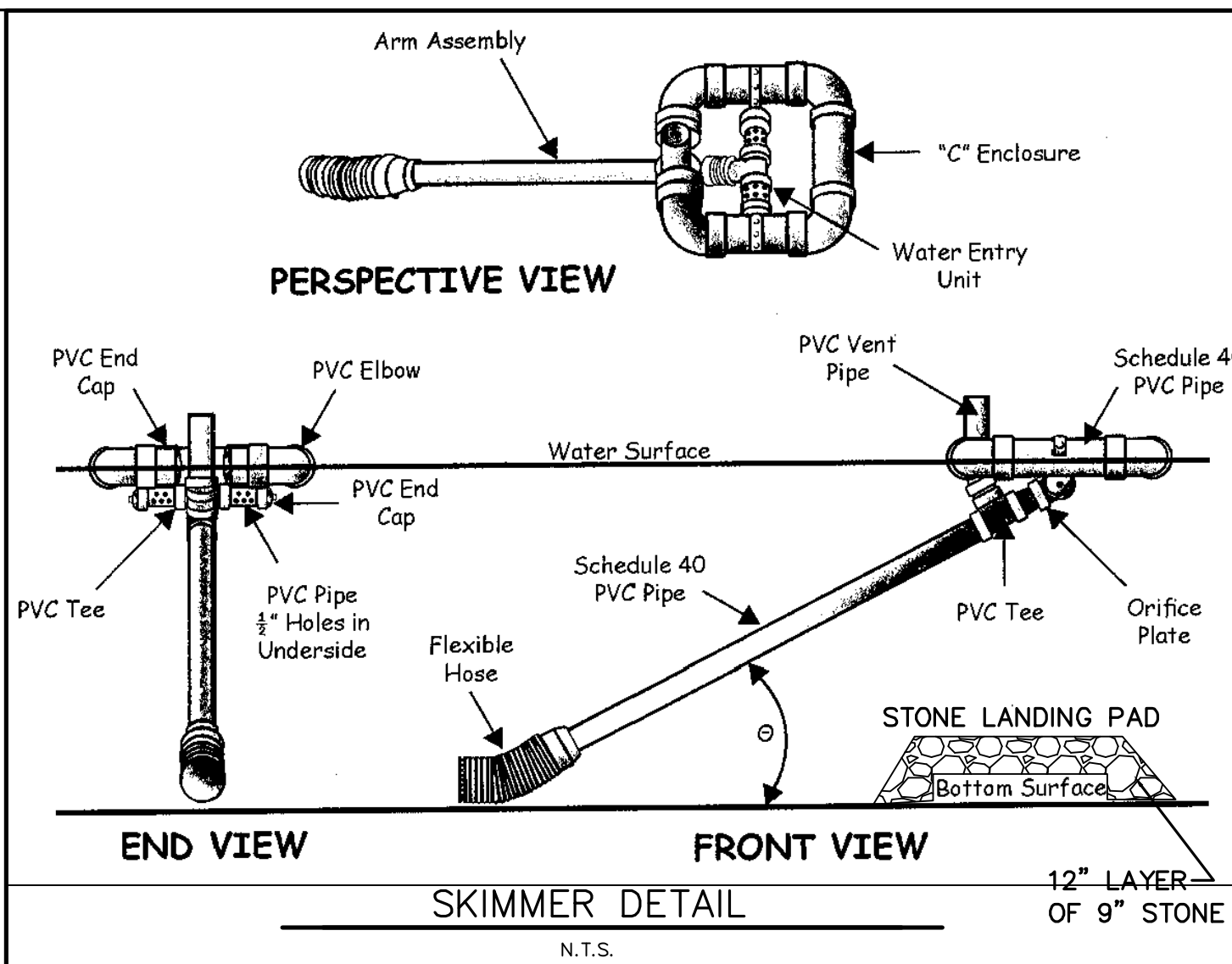
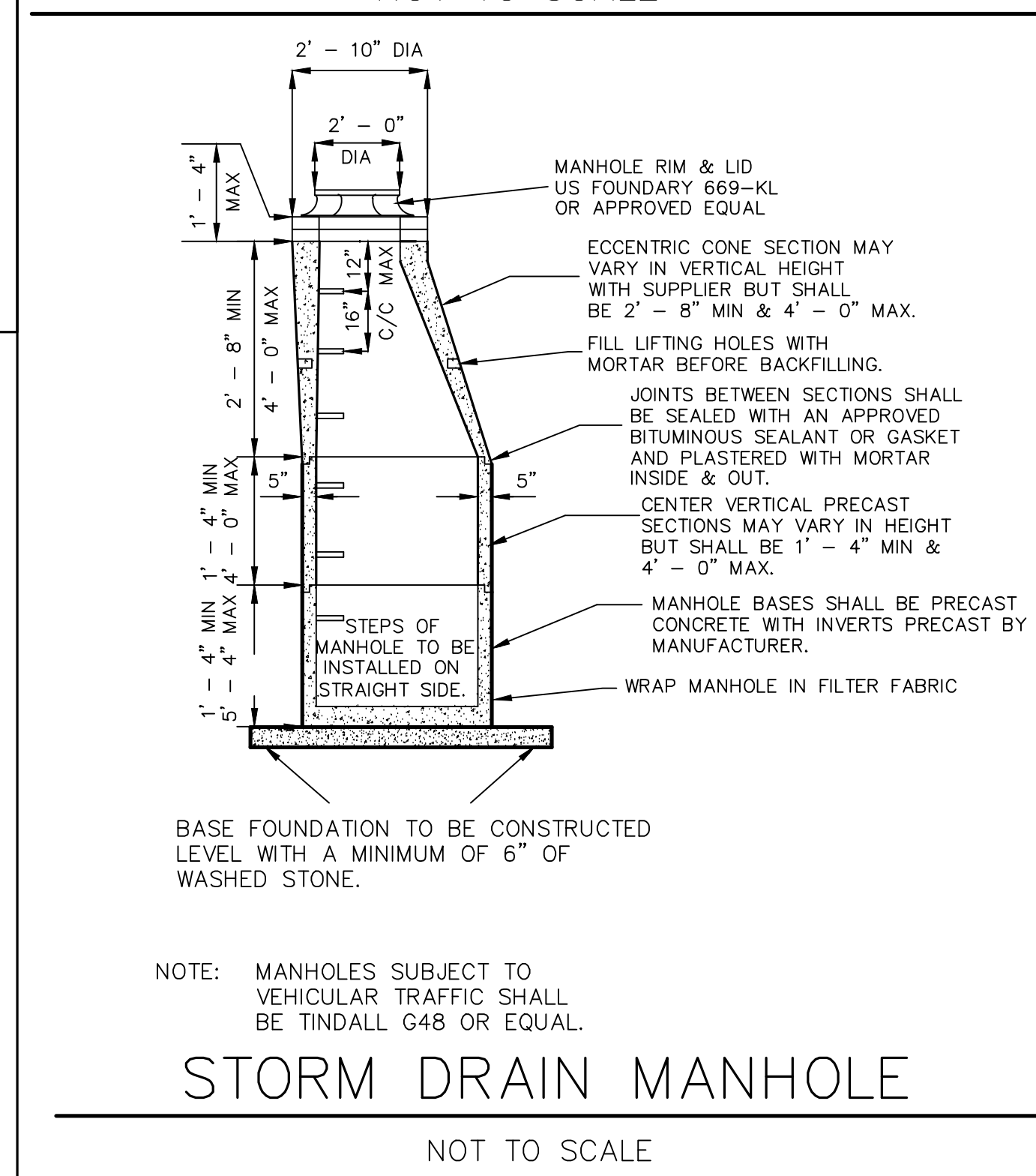
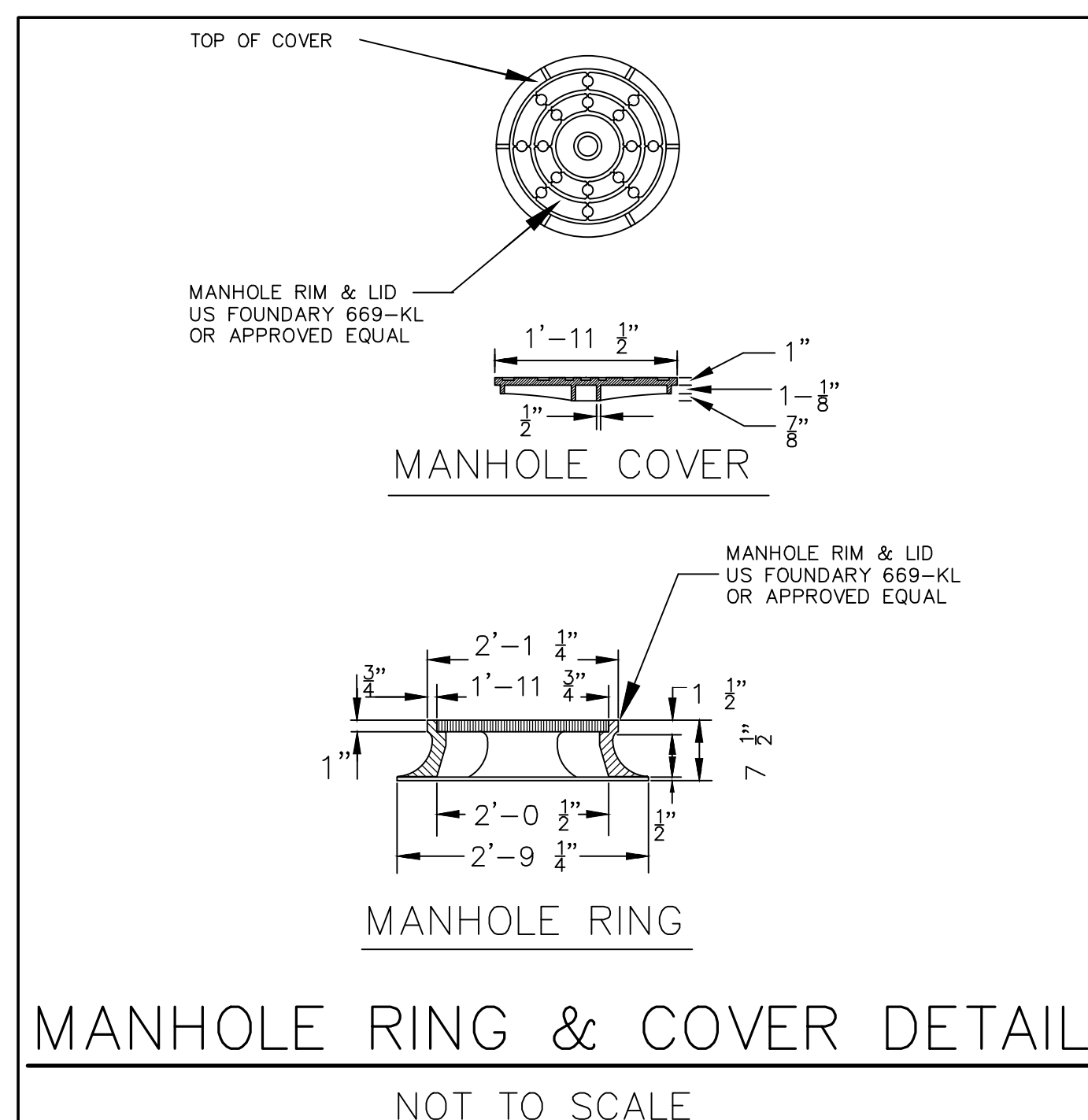
NOTE: 1.) ALL VALUES FOR "L", "W", "D" & "B" ARE IN FEET.
2.) FLOAT PIPE SIZE IS EQUAL TO THE INLET PIPE SIZE.

BASIN	"L"	"W"	"D"	"B"	RISER INVERT ELEV	BARREL OUTLET ELEV	BASIN BOTTOM ELEV	RISER TOP ELEV	10 YR STORM ELEV	EMER SPILLWAY ELEV	BERM ELEV	RISER PIPE SIZE	BARREL PIPE SIZE (IN)	BARREL PIPE SLOPE (%)	SKIMMER INLET SIZE	SKIMMER ORIFICE (Ø) PIPE SIZE
1	-	-	6'	-	2223.5'	2223'	2224'	2228.5'	2228.62'	-	2229.5'	4 X4'	24"	1%	4	5

SEDIMENT BASIN W/ SKIMMER
N.T.S.

CONSTRUCTION SPECIFICATIONS

- CLEAR GRUB & STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT.
 - CLEAR BASIN AREA.
 - USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION AND ORGANIC MATTER. PLACE FILL IN LIFTS NOT TO EXCEED 9" AND MACHINE COMPACT.
 - CONSTRUCT BERM AND SPILLWAY TO DIMENSIONS, SLOPES AND ELEVATIONS SHOWN.
 - ENSURE THAT THE SPILLWAY CREST IS LEVEL AND BELOW THE TOP OF THE DAM AT ALL POINTS.
 - STONE USED FOR LEVEL STONE APRON SHALL BE CLASS "B" EROSION CONTROL STONE.
 - EXTEND STONE OUTLET SECTION ON ZERO GRADE WITH TOP ELEVATION OF STONE LEVEL WITH BOTTOM OF BARRELL OUTLET.
 - STABILIZE THE EMBANKMENT AND ALL DISTURBED AREAS ABOVE THE SEDIMENT POOL AS SHOWN IN THE PLANS
 - USE PIPE WITH WATER-TIGHT JOINTS, HDPE SMOOTH WALL INTERIOR
 - USE 4'X4' RISER AS EMERGENCY SPILLWAY.
 - CONCRETE RISER SHALL NOT BE A KNOCK OUT PANEL "WAFFER BOX". CONCRETE RISER WILL BE CONVERTED TO OUTLET CONTROL STRUCTURE OF STORMWATER BIO-RETENTION CELL.
- * UPON FINAL STABILIZATION OF SITE, TEMPORARY RISER TO BE USED AS PERMANENT OUTLET STRUCTURE TO CONVERT SEDIMENT BASIN INTO STORMWATER DETENTION BASIN.



WGLA
Engineering

WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

**THE ORCHARDS
AT HIGHWAY 64**

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA

Jared DeKiddler

NORTH CAROLINA PROFESSIONAL SEAL 041349
ENGINEER
JARED L. DEKIDDLER
10/21/2021

REVISIONS

DATE	DESCRIPTION

811

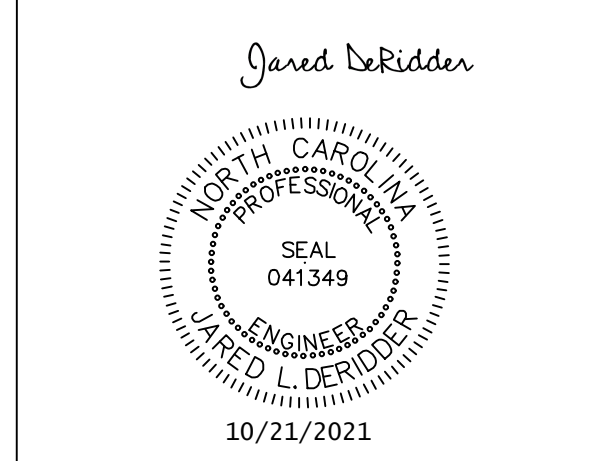
Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJV
CHECKED BY: JLD

**GRADING, DRAINAGE
AND
EROSION CONTROL
DETAILS**

C-304

SCALE: AS NOTED



REVISIONS	
DATE	DESCRIPTION



PROJECT NUMBER:	21161
DATE:	10-19-21
DRAWN BY:	TJIV
CHECKED BY:	JLD

GRADING, DRAINAGE
AND
EROSION CONTROL
DETAILS

C-305

SCALE: AS NOTED

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION C: REPORTING

1. Occurrences that Must be Reported

- Permittees shall report the following occurrences:
- (a) Visible sediment deposition in a stream or wetland.
 - (b) Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
 - (c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
 - (d) Anticipated bypasses and unanticipated bypasses.
 - (e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> • Within 24 hours, an oral or electronic notification. • Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	<ul style="list-style-type: none"> • Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> • A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> • Within 24 hours, an oral or electronic notification. • Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(l)(7)]	<ul style="list-style-type: none"> • Within 24 hours, an oral or electronic notification. • Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6)]. • Division staff may waive the requirement for a written report on a case-by-case basis.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- (a) This General Permit as well as the Certificate of Coverage, after it is received.
- (b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event \geq 1.0 inch in 24 hours	<ol style="list-style-type: none"> 1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event \geq 1.0 inch in 24 hours	<ol style="list-style-type: none"> 1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event \geq 1.0 inch in 24 hours	<p>If visible sedimentation is found outside site limits, then a record of the following shall be made:</p> <ol style="list-style-type: none"> 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event \geq 1.0 inch in 24 hours	<p>If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made:</p> <ol style="list-style-type: none"> 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	<ol style="list-style-type: none"> 1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

**PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT**

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- (a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
- (b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
- (c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
- (d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
- (e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
- (f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

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

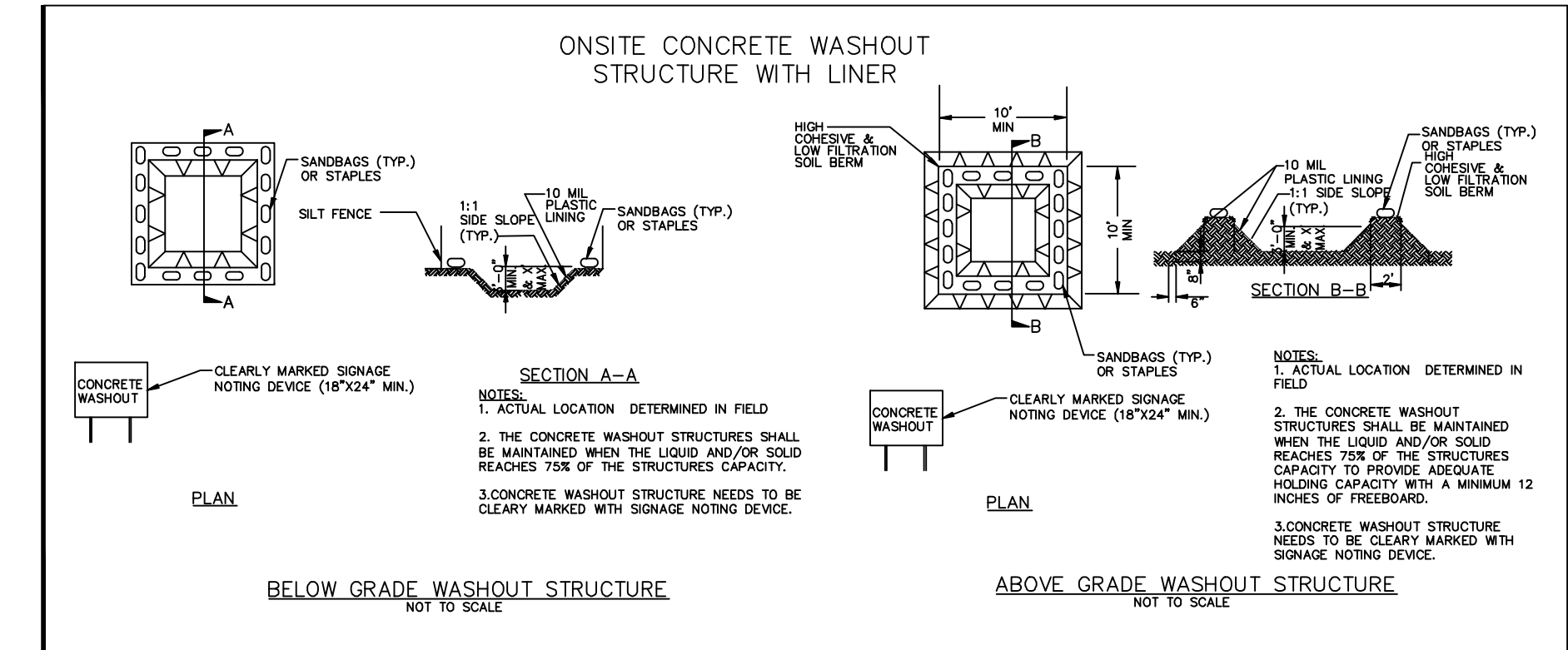
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled, 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

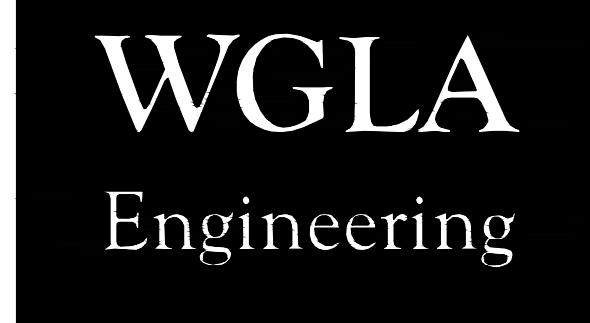
- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the 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

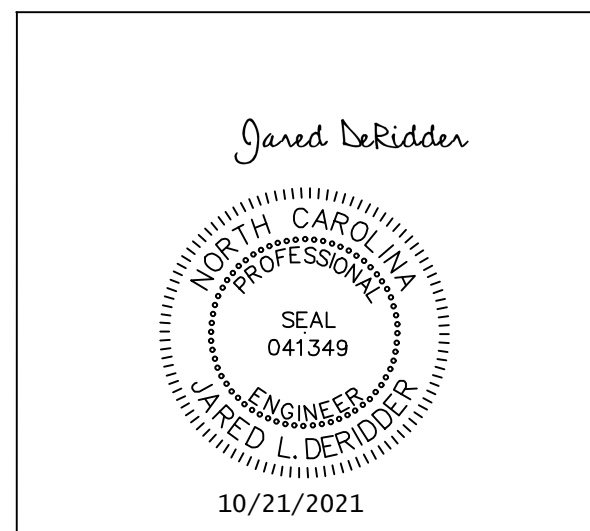
- Create designated hazardous waste collection areas on-site.
- Place hazardous waste containers under cover or in secondary containment.
- Do not store hazardous chemicals, drums or bagged materials directly on the ground.



WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

THE ORCHARDS
AT HIGHWAY 64

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



REVISIONS	
DATE	DESCRIPTION

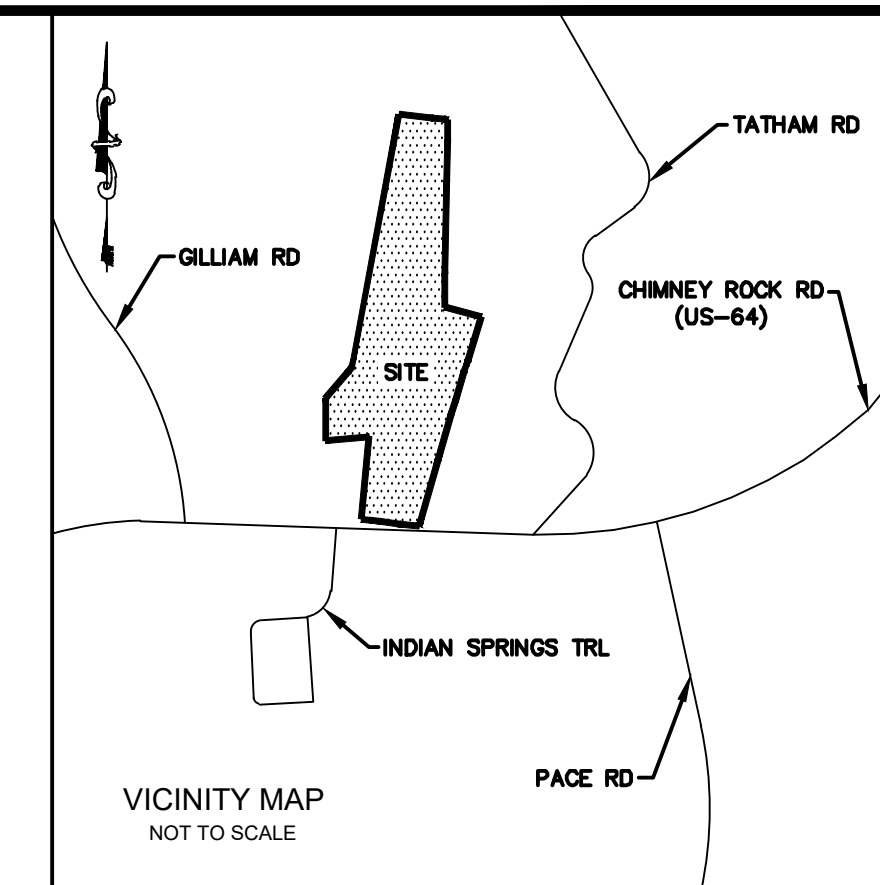


PROJECT NUMBER: 21161
DATE: 10-19-21
DRAWN BY: TJIV
CHECKED BY: JLD

GRADING, DRAINAGE
AND
EROSION CONTROL
DETAILS

C-306

SCALE: AS NOTED



WGLA
Engineering

WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

**THE ORCHARDS
AT HIGHWAY 64**

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA

PRIVATE ROADWAY
for
THE ORCHARDS
AT HIGHWAY 64 SUBDIVISION

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



REVISIONS	
DATE	DESCRIPTION



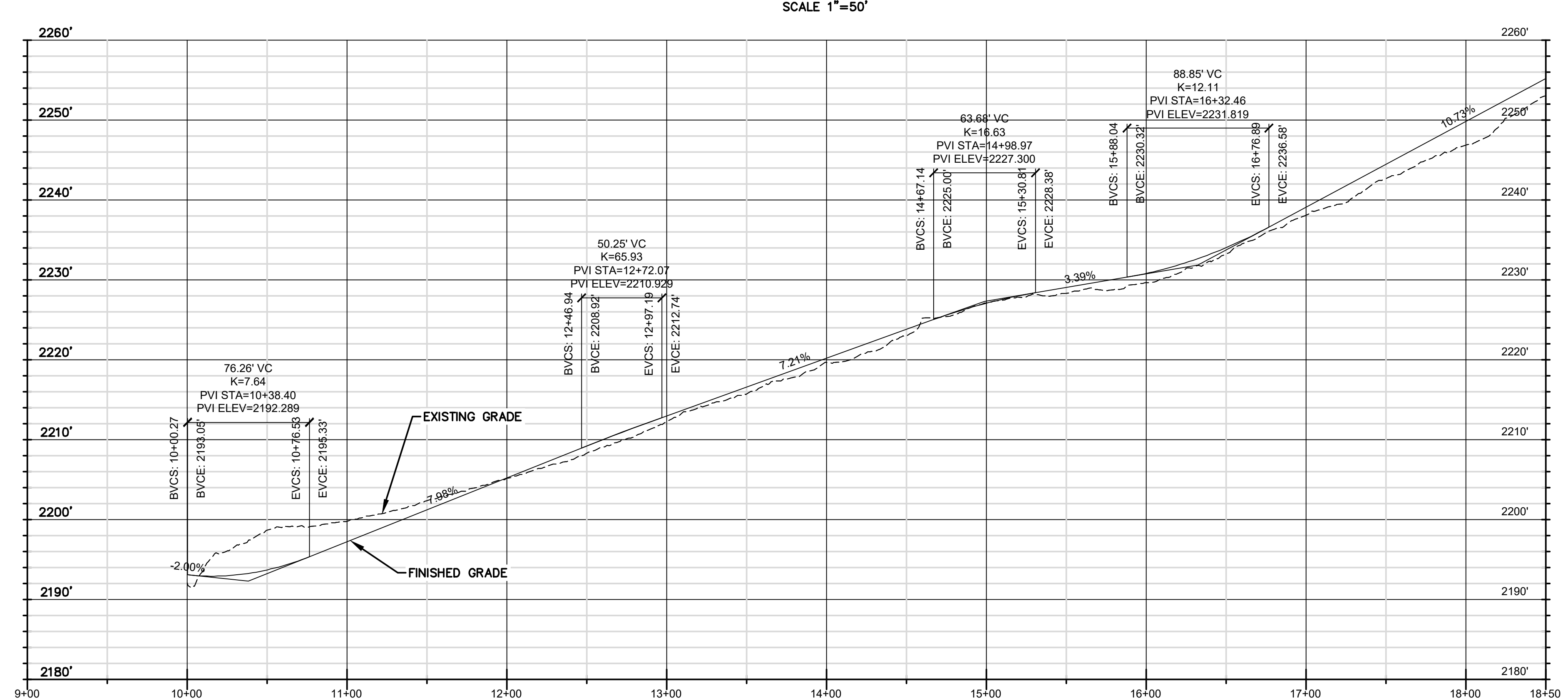
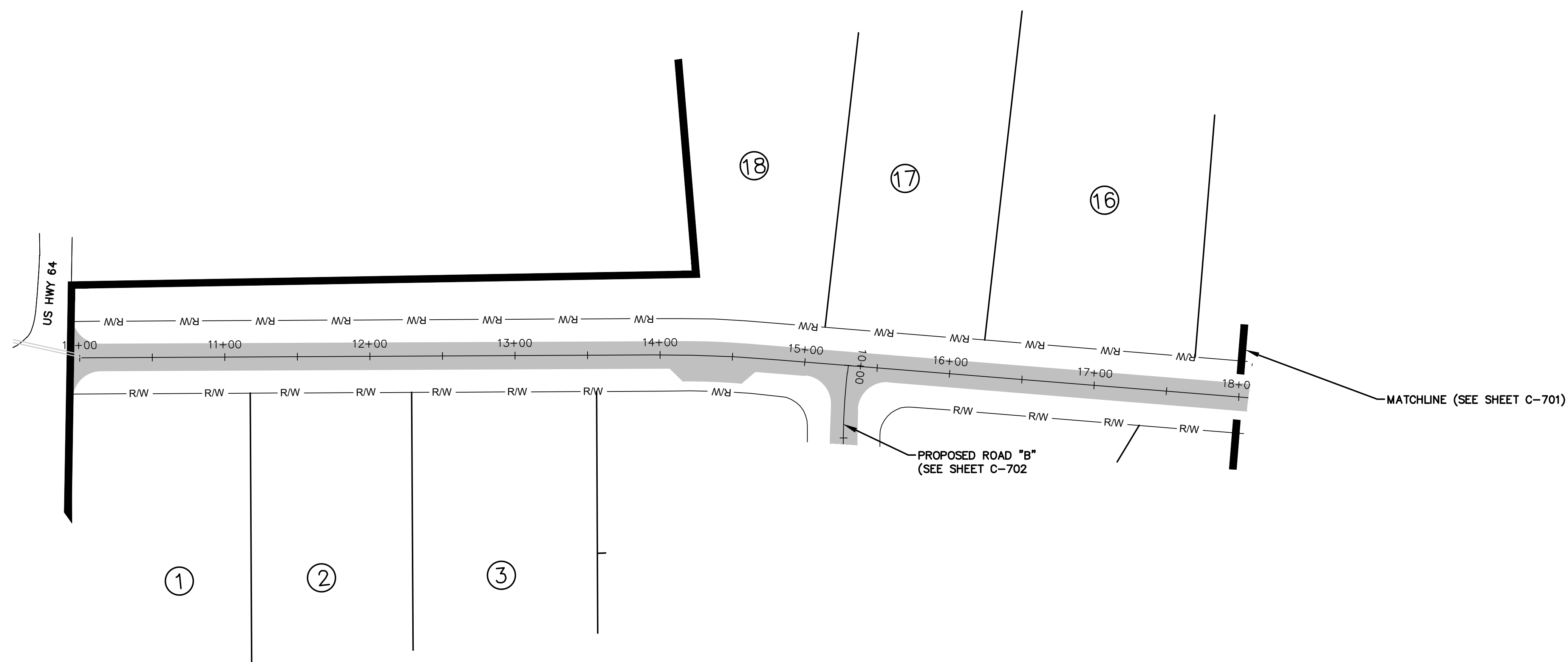
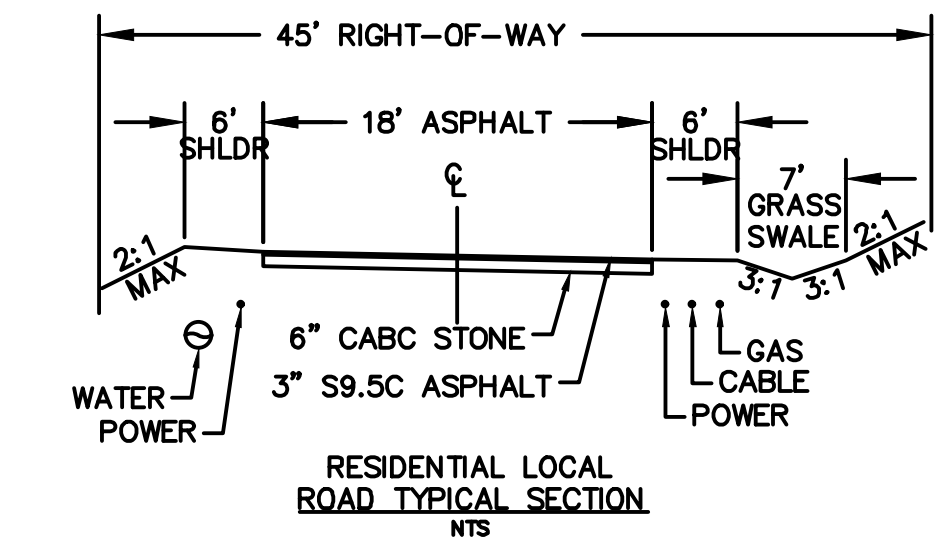
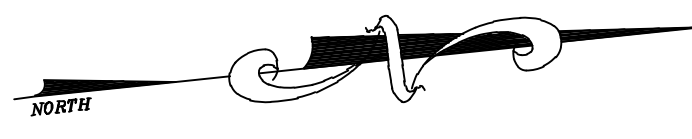
PROJECT NUMBER: 21161
DATE: 9/29/21
DRAWN BY: TJV
CHECKED BY: JLD

DEVELOPMENT BLOCK
PROJECT: THE ORCHARDS AT HIGHWAY 64
ADDRESS: 99999 CHIMNEY ROCK ROAD
HENDERSONVILLE, NC 28792
OWNER: PATRICE MINTZ
4131 BIG ISLAND RD
RUTHERFORDTON, NC 28139
DEVELOPER: LUIS GRAEF
4880 N HIATUS RD
SUNRISE FL 33351
PIN #: 9690-49-8992
DB: 2015E PG: 339
ENGINEER: JARED L. DERIDDER, P.E.
WGLA ENGINEERING, PLLC
724 5TH AVENUE WEST
HENDERSONVILLE NC 28739
828-687-7177
SURVEYOR: ASSOCIATED LAND SURVEYORS, P.C.
PO BOX 578, HORSE SHOE, NC 28742
828-890-3507
ZONING: HENDERSON COUNTY - R2R
SETBACKS:
FRONT: 15'
SIDE: 10'
REAR: 10'
TOTAL PROJECT AREA: 20.61 ACRES ±
PROPOSED LOTS : 18
PROPOSED DENSITY:
0.87 UNITS / ACRE
PROPOSED ROADWAYS:
2543 LF
PROPOSED WATER SYSTEM:
PUBLIC - CITY OF HENDERSONVILLE
PROPOSED SEWER SYSTEM
PRIVATE - SEPTIC

SHEET INDEX	
SHEET NO.	DESCRIPTION
C-700-701	ROAD "A" PLAN & PROFILE
C-702	ROAD "B" PLAN & PROFILE

COVER

SCALE: AS NOTED



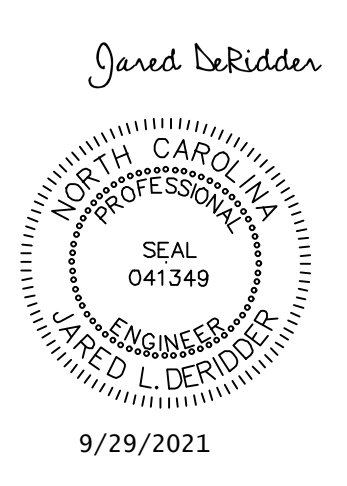
Profile View of Road A
Horizontal Scale: 1"=50' Vertical Scale: 1"=10'

WGLA Engineering

WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

THE ORCHARDS AT HIGHWAY 64

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



REVISIONS	
DATE	DESCRIPTION



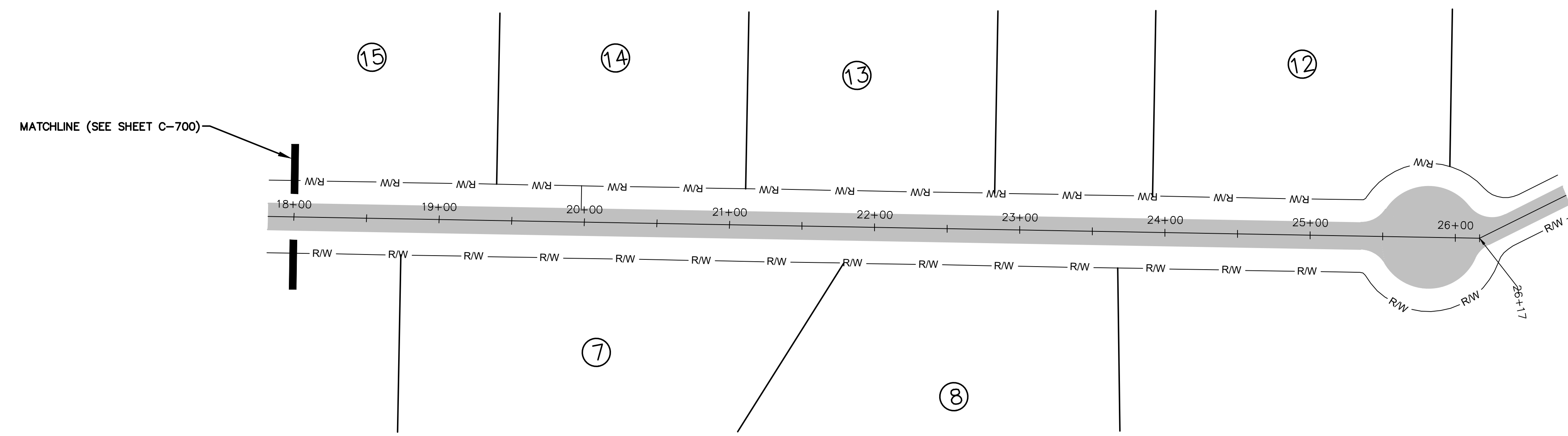
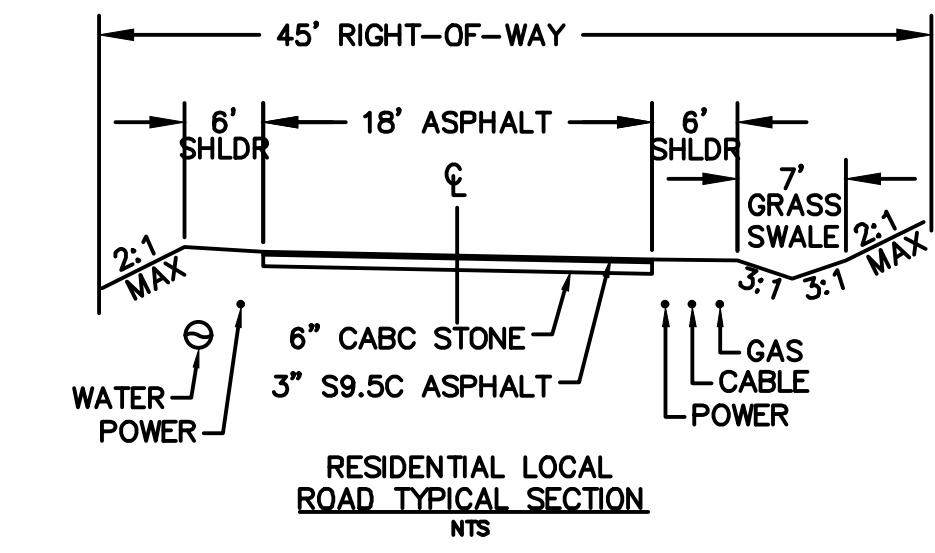
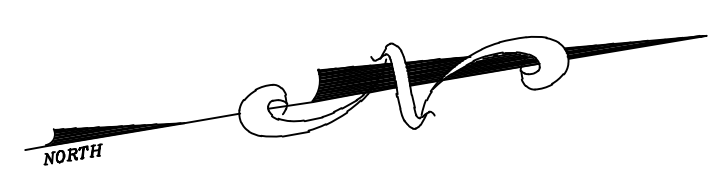
Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 9/29/21
DRAWN BY: TJV
CHECKED BY: JLD

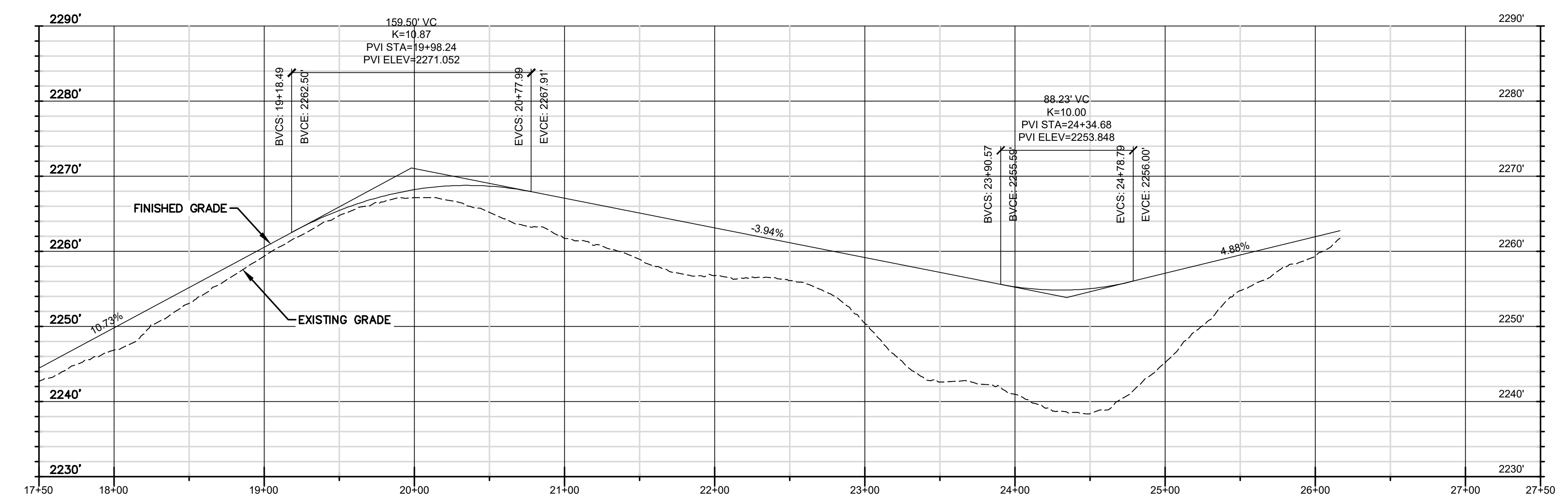
ROAD "A"
STA: 10+00 - 18+00

C-700

SCALE: AS NOTED ON SHEET



PLAN VIEW
SCALE 1"=50'



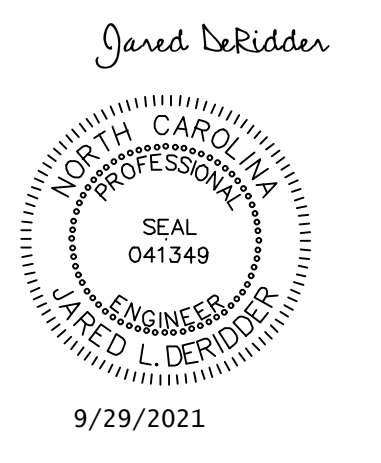
Profile View of Road A
Horizontal Scale: 1"=50' Vertical Scale: 1"=10'

WGLA Engineering

WGLA ENGINEERING, PLLC
724 5th AVENUE WEST
HENDERSONVILLE, NC 28739
(828) 687-7177
WGLA.COM
NC LICENSE P-1342

THE ORCHARDS AT HIGHWAY 64

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA



REVISIONS	
DATE	DESCRIPTION



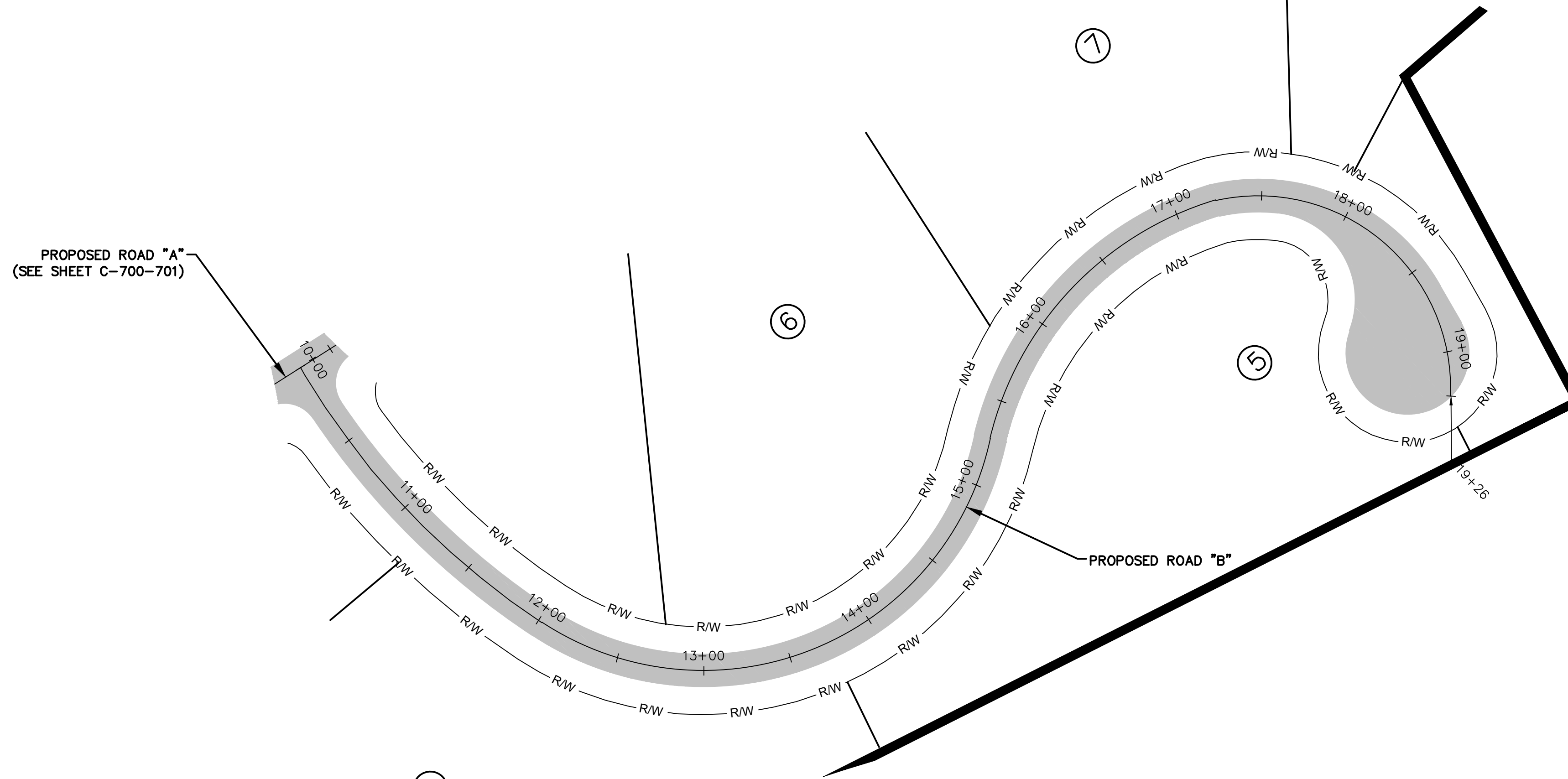
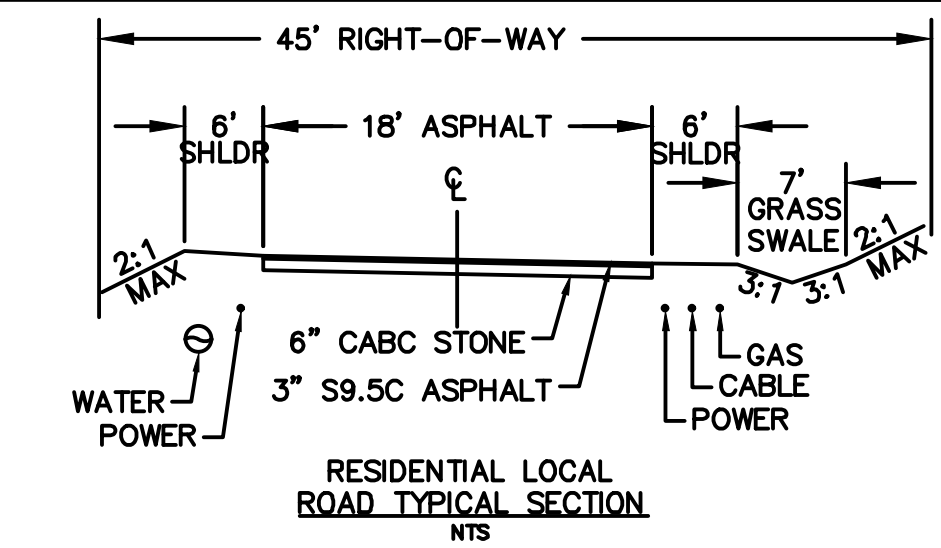
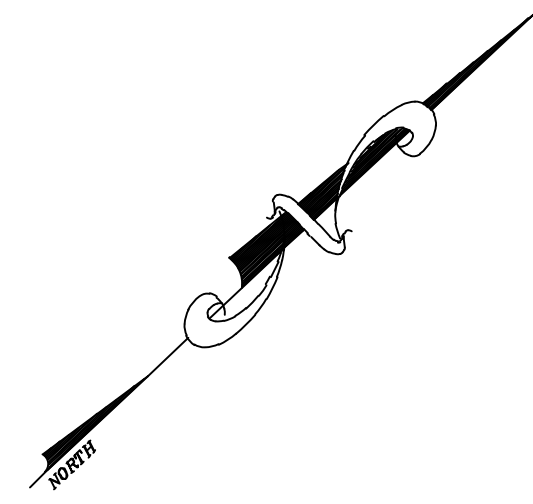
Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 9/29/21
DRAWN BY: TJIV
CHECKED BY: JLD

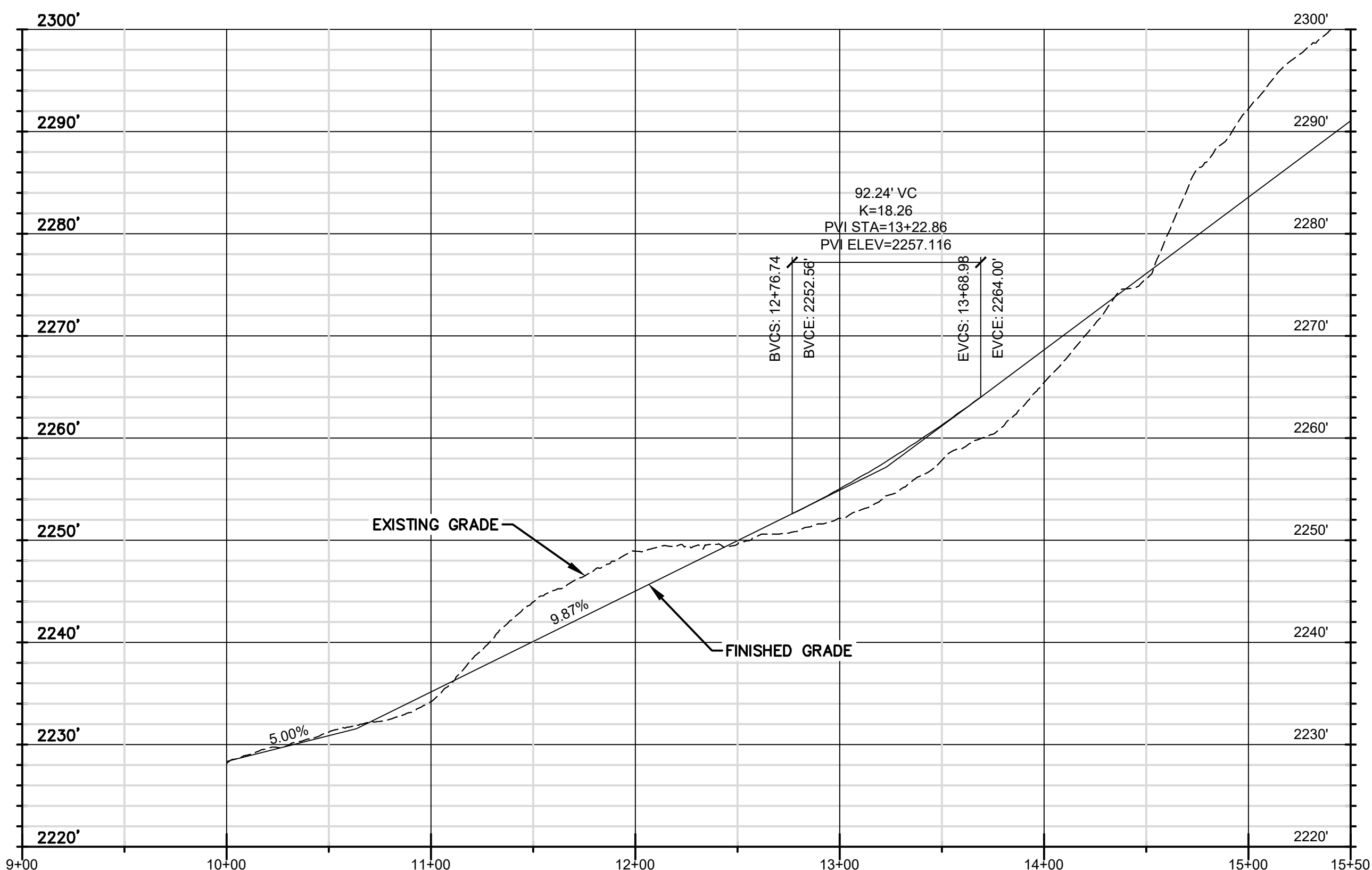
ROAD "A"
STA: 18+00 - END

C-701

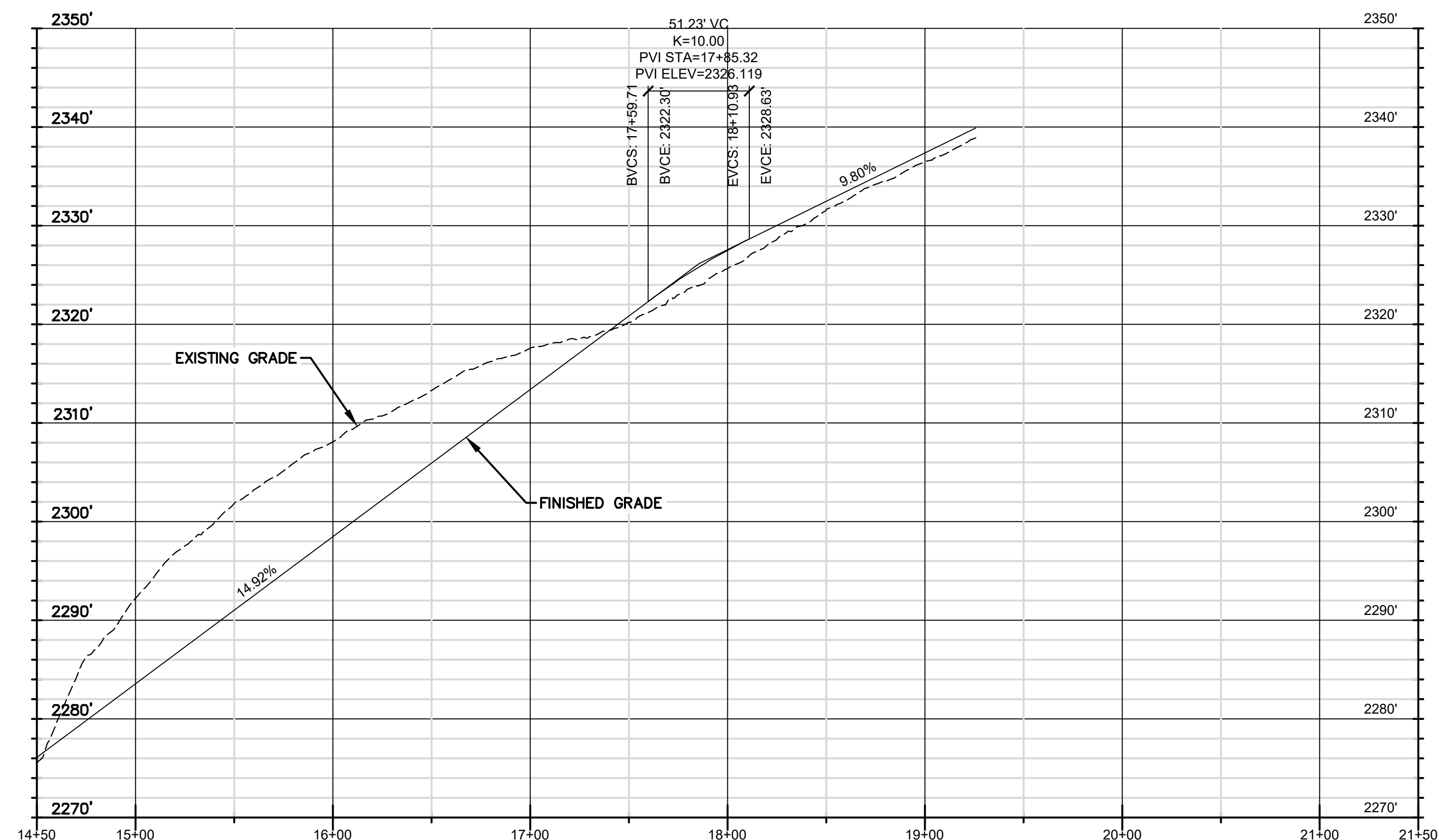
SCALE: AS NOTED ON SHEET



PLAN VIEW
SCALE 1"=50'



Profile View of Road B
Horizontal Scale: 1"=50' Vertical Scale: 1"=10'

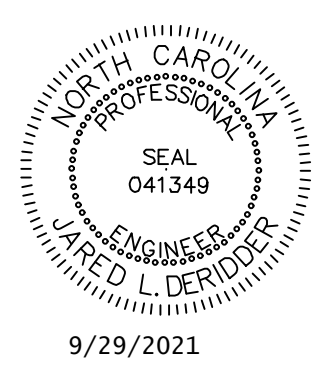


Profile View of Road B
Horizontal Scale: 1"=50' Vertical Scale: 1"=10'

**THE ORCHARDS
AT HIGHWAY 64**

EDNEYVILLE
HENDERSON COUNTY
NORTH CAROLINA

Jared DeRidder



9/29/2021

REVISIONS

DATE	DESCRIPTION



Know what's below.
Call before you dig.

PROJECT NUMBER: 21161
DATE: 9/29/21
DRAWN BY: TJV
CHECKED BY: JLD

ROAD "B"
STA: 10+00 - END

C-702

SCALE: AS NOTED ON SHEET