

## REQUEST FOR COMMITTEE ACTION

### HENDERSON COUNTY TECHNICAL REVIEW COMMITTEE

**MEETING DATE:** January 17, 2023

**SUBJECT:** Revised Master & Phase 3 Development Plan for Sprout  
(formerly Rich) Mountain Major Subdivision (2021-M09)

**STAFF CONTACT:** Matt Champion, Zoning Administrator

**ATTACHMENTS:**

1. Staff Report
2. Original Combined Master & Phase 1 Development Plan
3. Revised Master Plan & Phase 3 Development Plan

#### **SUMMARY OF REQUEST:**

A Revised Master Plan and a Phase 3 Development Plan was received on behalf of Ripple Falls LLC, by John Kinnaird of Brooks Engineering on December 15, 2022. The revised Master Plan shows an additional 23 single-family lots in Phase 3 for a total of 83 single-family lots. The subject area is located north of Locust Grove Baptist Church off Locust Grove Road (SR 1528) in Hoopers Creek Township. The site consists of 377.96 acres and is accessed through New Sprout Ln.

#### **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 Revised Master Plan and Phase 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 forward the Revised Master Plan and Phase 3 Development Plan on to the Planning Board for further review if they meet all technical requirements based on the Henderson County Land Development Code, recommendations of the Henderson County Comprehensive Plan, and any conditions in the staff report or as discussed by the TRC.



# STAFF REPORT

## HENDERSON COUNTY PLANNING DEPARTMENT

100 North King Street | Hendersonville, NC 28792 | (828) 697-4819

### Prepared by:

Henderson County Planning & Zoning Departments

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**CASE**

2021-M09

Revised Master Plan & Phase III Development Plan

**TRC MEETING DATE**

January 17, 2022

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**PROPERTY OWNER/APPLICANT**

Ripple Falls LLC

**PROPERTY LOCATION/ADDRESS**

North of Locust Grove Road (SR 1528), off New Sprout Lane, Hoopers Creek Township

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**AGENT/ENGINEER**

John Kinnaird, PE & Zachary Wortman, EIT  
Brooks Engineering

**PIN(s)**

9672-53-0112, 9672-32-9718, 9672-32-9259,  
9672-22-0858, 9672-23-1444, 9672-22-0353,  
9672-21-2880

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**SUMMARY OF REQUEST**

An application for a Revised Master Plan and the Phase III Development Plan, for Sprout Mountain (formerly Rich Mountain) Major Subdivision, consisting of a total of 83 lots located at the above PIN(s), with 32 new lots proposed in Phase III.

**Existing Zoning**

Residential District Three (R3)

**Existing Land Use**

Rural Agricultural Area / Conservation

**Site Improvements**

Paved Roads

**Request Acreage**

377.96 acres, +/-

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**ADJACENT ZONING**

**North** Residential District Three (R3)

**East** Residential District Three (R3)

**South** Residential District Three (R3)

**West** Residential District Three (R3)

**USE OF LAND**

Vacant Land

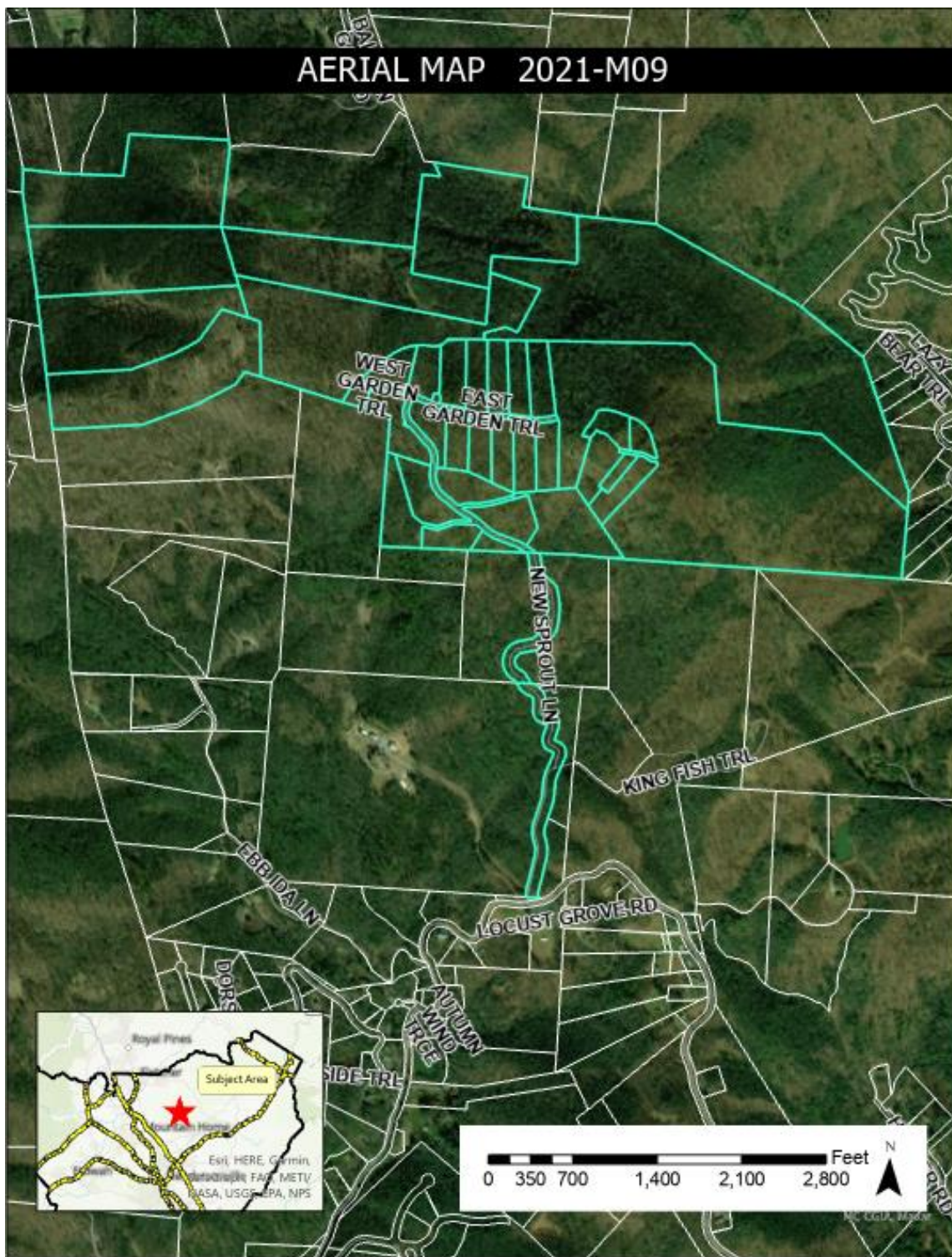
Vacant Land

Locust Grove Baptist Church

Vacant Land/Couch Mountain

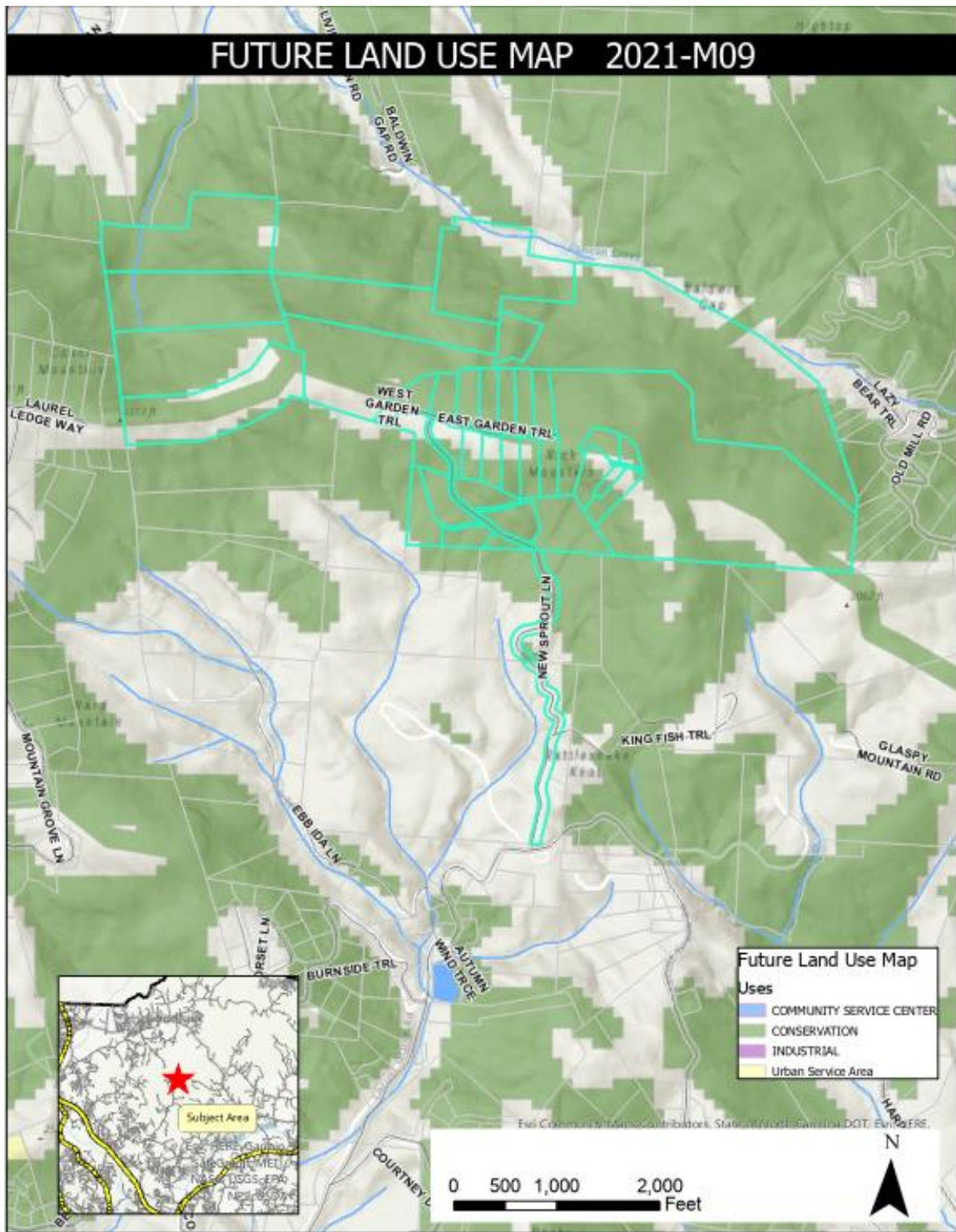
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Map A: Aerial Map





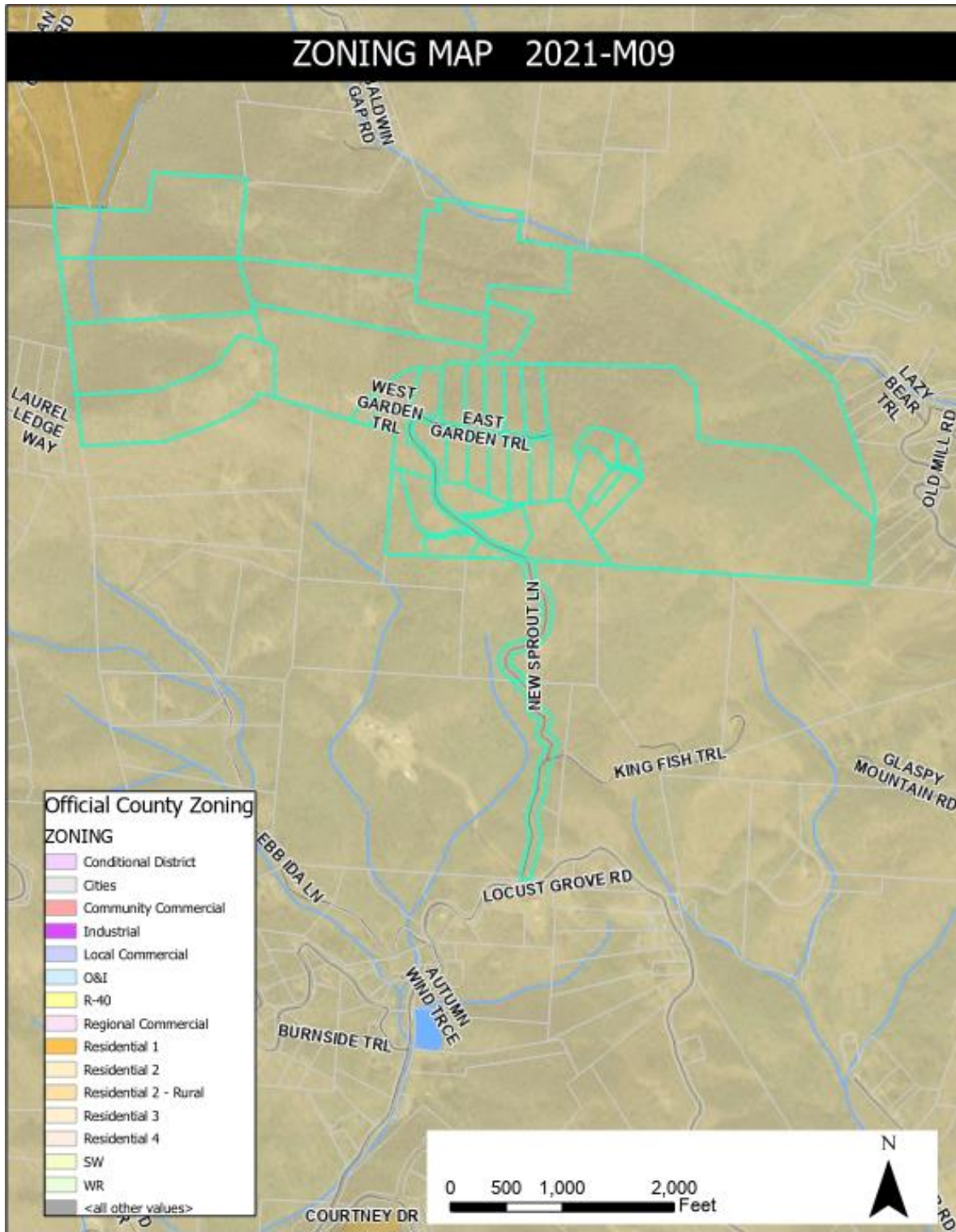
Map B: Future Land Use Map





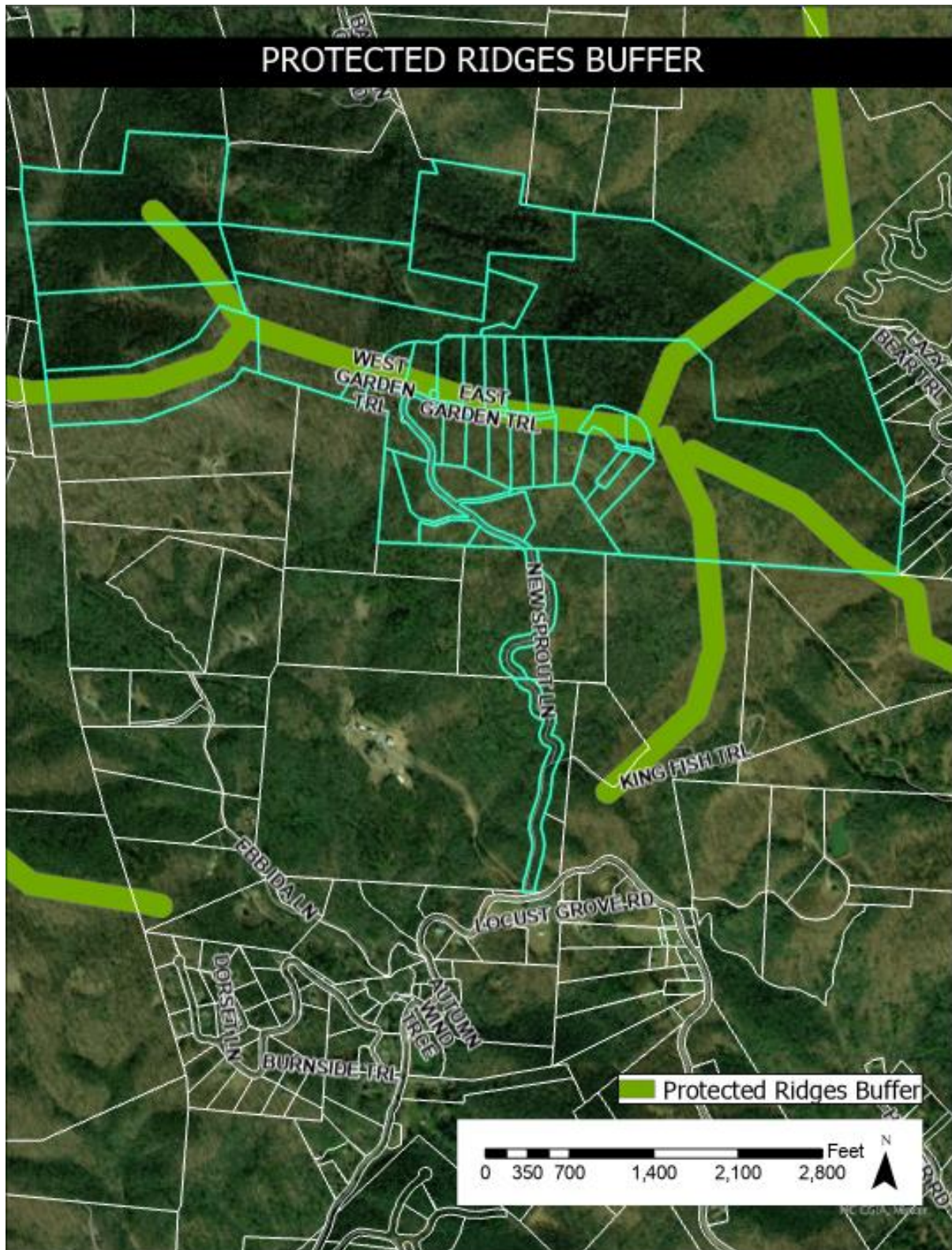


Map D: Zoning Map





Map E: Protected Ridges Buffer





**BACKGROUND:**

The applicant, Ripple Falls LLC, is seeking approval for a Revised Master Plan and a Phase III Development Plan for the Major Subdivision titled Sprout Mountain. The project was formally known and approved under the name Rich Mountain. The applicant is represented by their engineers, John Kinnaird and Zachary Wortman of Brooks Engineering.

Planning Board first approved the Master Plan and Phase 1 Development Plan on at their regularly scheduled meeting on December 16, 2021. The applicant was approved for 60 total lots on the master plan, with development identified in 3 total phases. The total project acreage was 245.86 acres at the time. Phase 1 approved 22 lots on 82.78 acres. The Phase 2 Development Plan was approved administratively on May 26, 2022, with 31 lots on 146 acres.

Now, the applicant has submitted a revised Master and Phase 3 Development Plan, detailing an expanded project with 23 additional lots on a proposed Phase 3. Phase 3 will extend west on West Garden Trail, onto property acquired by the applicant in April of 2022.

**ANALYSIS:**

According to Chapter 42, Henderson County Land Development Code (LDC) §42-340, 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 Master 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 Master 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 §42-74).

According to Chapter 42 of the Henderson County LDC, §42-341, the purpose of Development Plans is to provide general and specific information, displayed as a graphic representation or map, indicating all proposed divisions of land, their uses, improvements, and any other information required to fully disclose the applicant's intentions.

When reviewing the Development Plan, it is important to consider that it conforms with the Master Plan, no additional lots are created (other than indicated on the Master Plan), and all technical requirements and development standards have been met.

Staff has reviewed the submitted Combined Revised Master and Phase 3 Development Plan for the Sprout Mountain 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:

**Comprehensive Plan Compatibility:**

The Comprehensive Plan’s Future Land Use Map indicates the subject area as being located primarily with the Rural/Agriculture Area and a small portion within the Conservation Area.

*Rural/Agriculture Area:* “The RAA covers those portions of the county that are predominantly rural and are characterized by low-density residential development with substantial land areas devoted to agriculture and undeveloped lands. Land use policies will seek to retain that character. Land development ordinances in the RAA should strive for a *general, average* density of 1½ or more acres per residential dwelling unit, but due to topography and land use constraints, some areas in the RAA should have densities of 1 unit per 5 or more acres. Actual densities as defined by zoning requirements should vary across the RAA according to constraints and community characteristics.” (CCP, Pg 136.)

*Conservation:* Conservation Areas are “land areas that are intended to remain largely in their natural state, with only limited development.” (CCP, Pg. 138)

The Comprehensive Plan’s Growth Management Strategy Area also indicates the subject area as within the Rural/Agriculture Area.

**Henderson County Land Development Code Compatibility:**

Henderson County Zoning Map indicates the subject area as Residential District Three (R3).

**Residential District Three (R3):** The purpose of Residential District Three (R3) is to foster orderly growth where the principal use of land is low density residential. The intent of this district is to allow for residential development consistent with the recommendations of the Comprehensive Plan. This general use district is typically meant to be utilized in areas designated as Rural (RAA) in the Comprehensive Plan.

R3 allows for standard residential density of 1 unit per 1.5 acres. The proposed master and development plan shows 83 single family lots on a total site area of 377.96 acres. This is below the allowed threshold of 1 unit per 1.5 acres at a density of 0.22 lots per

acre. The proposed use and density do not appear to conflict with the zoning district regulations.

**Chapter 42-95 (Major Subdivision) Requirements:**

1. **Water Supply and Sewage Disposal:** The site is proposed to be served by private, individual water and septic systems.
2. **Fire Protection:** 42-95(D) requires a minimum of one (1) hydrant per 1000 feet of linear road distance (if served by a public water supply system who may impose more stringent fire protection requirements where necessary), or a dry fire hydrant system and all-weather access road for fire-fighting equipment to a permanent surface water supply.
3. **Stormwater Drainage:** Drainage systems (swales, ditches, pipes, culverts, detention ponds, lakes, or similar devices) shall be designed to minimize adverse effect on the proposed subdivision and on adjacent and downstream properties. Drainage improvements shall be designed and constructed in accordance with applicable State Road Standards and to follow natural drainage where possible, contain points of stormwater discharge onsite (unless offsite discharge is approved by the reviewing agency and adjoining property owners), maintain desirable groundwater conditions, minimize erosion, downstream sedimentation, flooding or standing water conditions, filter pollutants before stormwater reaches surface water, and avoid excessive stormwater discharge.
4. **Farmland Preservation Districts:** As indicated on the plans, Lots 1-51 and 83 are within a Farmland Preservation District, and Lots 52-82 are within a ½ mile or adjacent to the district. There is a 100' setback from structures adjacent to a Farmland Preservation District that must be observed by any lots adjacent to the district.
  - a. The applicant has indicated their intention of removing the subject area from the current Voluntary Agricultural District (VAD). A portion of the property is located within the Lower Hoopers Creek VAD. The applicant will need to work with the Soil & Water Conservation District to be removed from the VAD.
5. **Reasonable Pedestrian Access:** Reasonable pedestrian access must be provided to promote healthy and safe walking environments. As the proposed major subdivision does not contain 100 or more lots or propose a density of greater than 2 units per acre, sidewalks within the subdivision are not required.
6. **Street Tree Requirements:** Article V, Subpart C of the LDC requires Street Trees for Major Subdivisions, at a rate of either 1 large deciduous tree per 40 linear feet of property abutting an internal road, or 1 small deciduous tree per 40 linear feet of property abutting an internal road if overhead utilities are present.



- a. These trees must be within the right-of-way or within 20' of the right-of-way. The applicant may use existing trees in accordance with 42-184 and must also meet the right-of-way standards.
- b. With 4,415 new feet of internal roadway as indicated on the Phase 3 Development Plan, 111 street trees are required, or must be shown as to be preserved ( $4,415/40 = 110.375$ ). The applicant may use existing trees in accordance with LDC §42-184 instead of planting new trees. These existing trees must also be located within the right-of-way or 20 feet off the edge of the right-of-way as required by LDC §42-185.

**Miscellaneous Requirements:**

1. **Protected Mountain Ridges:** The project site is encumbered by the protected mountain ridges buffer. Section §42-251 of the LDC regulates the construction and permitting of "tall buildings" within the protected ridge buffer.

"Tall buildings or structures" include any building, structure or unit within a multiunit building with a vertical height of more than 40 feet measured from the top of the foundation of said building, structure or unit and the uppermost point of said building, structure or unit; provided, however, that where such foundation measured from the natural finished grade of the crest or the natural finished grade of the high side of the slope of a ridge exceeds 3 feet, then such measurement in excess of 3 feet shall be included in the 40-foot limitation described herein; provided, further, that no such building, structure or unit shall protrude at its uppermost point above the crest of the ridge by more than 35 feet.

2. **Open Space Requirements:** As a subdivision of greater than 35 lots, the application must meet the requirements of 42-88 as a Conservation Subdivision. The Master Plan indicates 158.73 acres (42%) as open space, exceeding the 25% requirement.
3. **Road System:** The applicant is proposing a total of 4.415 feet of new private roadway, with West Garden Trail extending westward. There are three (3) private driveway easements proposed off West Garden Trail, as shown on the roadway plans. All roads are indicated as to be paved, apart from gravel logging road. The driveway easement extending northward to access lots 81,82, and 83 will need a new road name that must be approved by the Henderson County Property Addresser prior to plat approval. The road name regulatory signs must be installed and inspected prior to plat approval. Private roads shall be constructed in accordance with the Private Subdivision Local Road Standards in Chapter 42 (LDC §42-109).
  - a. Subdivisions of 35 or more lots shall provide a minimum of two entrance roads. The second entrance road may be specifically waived by the approving authority where unique circumstances exist (LDC §42-95(I)).

4. **Dead Ends, Culs-de-sac, Turnarounds:** The Applicant proposes one new T-turnaround on West Garden Trail. All turnarounds must meet the requirements of the LDC §42-110(D).
5. **Perennial and Intermittent Surface Water Buffers:** The project site is encumbered by several perennial streams. Section §42-250 of the LDC regulates construction and permitting within the surface water buffer, requiring all built-upon area 30 feet landward of all perennial and intermittent surface waters.
6. **Soil Erosion and Sedimentation Control Plan:** The Applicant must submit a revised Soil Erosion and Sedimentation Control Plan to Henderson County and receive approval or waived by Henderson County Site Development (LDC §42-255).
7. **Stormwater/Water Quality:** The Applicant must apply for a revised Stormwater Management Permit to Henderson County, which must be issued or waived by Henderson County Site Development (LDC §42-239).
8. **Drainage, Culverts, 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 §42-105). 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).
9. **Miscellaneous Advisory Provisions:** The Applicant should become familiar with the Miscellaneous Advisory Provisions of Chapter 42 (LDC §42-87).
10. **Final Plat Requirements:** The Final Plat(s) must meet the requirements provided by the Planning Department whenever a subdivision of land occurs (LDC §42-342).
  - a. The proposed roadways and road name and regulatory signs will be inspected prior to Final Plat approval.
11. **NCDOT Driveway Permit.** A NCDOT Driveway permit was issued for New Sprout Lane's access to Locust Grove Road (SR for each driveway access onto Howard Gap Road (SR 1528). No further NCDOT driveway permits are required.

Other County Departments or agencies may have additional comments or requirements that may be discussed at the scheduled Technical Review Committee meeting.

Any comments made by the Technical Review Committee will be passed along to the Planning Board at the regularly scheduled January 19<sup>th</sup> meeting.

**STAFF CONCLUSION**

Per Chapter 42 of the Henderson County Land Development Code LDC §42-338, the Planning Board is the final approval authority for this proposed Major Subdivision. Should the Technical Review Committee find no deficiencies with the current application, they may recommend forwarding the application to the Planning Board. The Planning Board may approve, approve with conditions, or deny the proposed Master and Development plan if it exhibits deficiencies or is not in compliance with any statute, ordinance, or regulation of the Henderson County Code of Ordinances.



**MASTER PLAN LEGEND**

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. STREAM
- EXIST. STREAM BUFFER
- EXIST. WETLAND
- EXIST. FEMA NON-ENCROACHMENT FLOOD HAZARD AREA (1%)
- EXIST. FEMA FLOOD HAZARD AREA (0.2%)
- EXIST. RIGHT OF WAY
- EXIST. BUILDING SETBACK
- EXIST. BUILDING
- EXISTING SIDEWALK
- EXISTING PAVEMENT
- EXIST. CURB
- NEW PROPERTY LINES
- NEW RIGHT OF WAY
- NEW EASEMENT
- BUILDING SETBACK LINE
- NEW LANDSCAPE BUFFER
- NEW COMMON OPEN SPACE
- NEW BUILDING
- NEW PAVEMENT
- NEW HD PAVEMENT
- NEW CONCRETE SIDEWALK
- NEW GRAVEL
- NEW CURB & GUTTER
- NEW WALL (BY OTHERS)

**SITE AND ZONING NOTES**

PROPERTY ZONING: R3  
 PROPERTY SIZE: PH1: 88.89 - TOTAL: 256.28 AC.  
 PROPERTY STEEPER THAN 60%: 16.76 AC (6.82%)  
 MINIMUM LOT SIZE: 1.50 AC / 35,640 SQ.FT.  
 SMALLEST PROPOSED LOT: 1.86 ACRES / 80,936 SQ.FT.  
 MINIMUM LOT WIDTH: 30' @ R.O.W.  
 MAXIMUM BUILDING HEIGHT: 40'  
 SETBACKS:  
 FRONT: 15' (LOCAL)  
 REAR: 15'  
 SIDE: 15'  
 PROPOSED LINEAR FEET OF ROAD:  
 PHASE 1: 7,139 LF  
 TOTAL ON PROPERTY: 11,717 LF

\*ALL DIMENSIONS ARE FROM EDGE OF ASPHALT, FACE OF CURB, FACE OF WALL, OR FACE OF BUILDING UNLESS OTHERWISE NOTED.

\*ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF DETAILS, SPECIFICATIONS, AND OTHER DEVELOPMENT ORDINANCES OF HENDERSON CO.

**DEVELOPMENT DATA**

PROPERTY ADDRESS: LOCUST GROVE ROAD  
 HENDERSONVILLE NC  
 PIN NUMBER: 9672712573, 9672423071, 9672410864

PROPERTY SIZE: PH1: 88.89 AC - TOTAL: 256.28 AC  
 ZONING REVIEW: HENDERSON COUNTY  
 EROSION CONTROL REVIEW: HENDERSON COUNTY  
 STORMWATER REVIEW: HENDERSON COUNTY  
 ZONING CLASSIFICATION: R3  
 PROPOSED NUMBER OF UNITS: PH1: 22 - TOTAL: 60  
 PROPOSED DENSITY: PH1: 0.247 LOTS/AC - TOTAL: 0.234 LOTS / AC

PROPOSED LINEAR FEET OF ROAD: PHASE 1: 7,139 LF  
 TOTAL ON PROPERTY: 11,717 LF

LOTS 1-51 ARE LOCATED IN A FARMLAND PRESERVATION DISTRICT, LOTS 52-60 ARE WITHIN 1/2 MILE OF A THE FARMLAND PRESERVATION DISTRICT

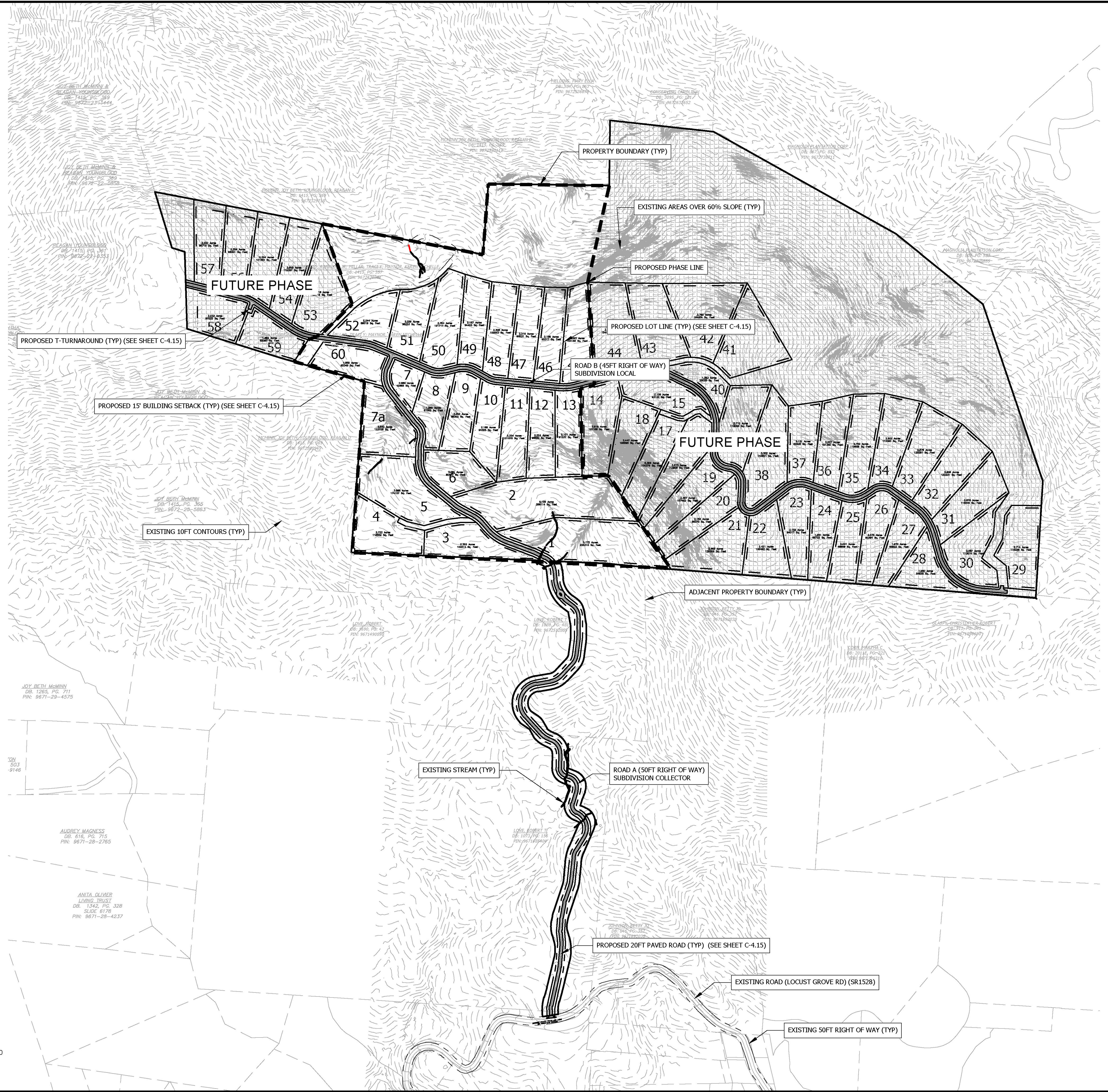
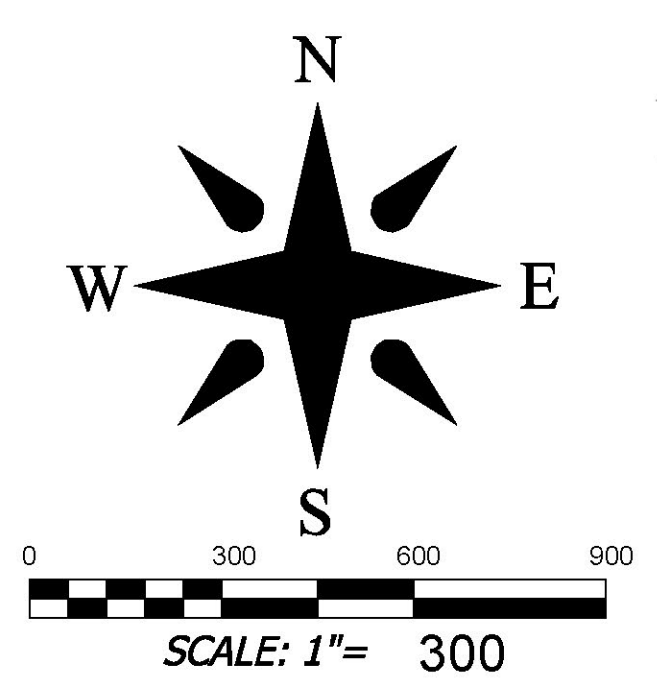
WATER AND SEWER WILL BE PROVIDED BY INDIVIDUAL WELLS AND SEPTIC SYSTEMS

PUBLIC WATER AND SEWER ARE APPROXIMATELY 3.0 MILES FROM THE SITE  
 DRY HYDRANT IS LOCATED APPROXIMATELY 0.90 ROAD MILES FROM THE ENTRANCE TO THE SITE

PROPERTY OWNER: MULTIPLE OWNERS - SEE SHEET C-0 FOR CONTACT INFORMATION

DEVELOPER: RIPPLE FALLS, LLC  
 CONTACT: ANDY BAKER  
 ADDRESS: 69 CLARK GAP ROAD  
 FLETCHER NC  
 EMAIL: ANDY@TFMNCAROLINA.COM  
 PHONE: (616) 402-0367

ENGINEER: BROOKS ENGINEERING  
 CONTACT: WYATT EDESEL PE  
 ADDRESS: 15 ARLINGTON ST  
 ASHEVILLE, NC 28801  
 EMAIL: WEDSEL@BROOKSEA.COM  
 PHONE: 828-232-4700



Project No: <b>543521</b>	Drawing Title: <b>MASTER PLAN</b>	RICH MOUNTAIN SUBDIVISION PHASE 1  RESIDENTIAL SUBDIVISION  HENDERSON COUNTY NORTH CAROLINA	Date 11-02-2021	REVISIONS/SUBMISSIONS 1 HENDERSON COUNTY TRC 2 HENDERSON COUNTY PLANNING
			Reviewed: WBE Scale: AS NOTED Date: 2021.12.09	Designed: WBE Drawn: WBE Checked: WBE



**HENDERSON COUNTY  
SUBDIVISION APPLICATION FORM**  
(Please fill out all applicable items)

**SUBDIVISION INFORMATION**

Subdivision Name: Rich Mountain Subdivision

Subdivision Type (Circle One):      Major      Minor      Non-Standard      Special

Proposed Use of Property (Circle One): Residential      Commercial      Industrial

Conservation Subdivision:      Yes      No      Gated entrance to property:      Yes      No

Existing Number of Lots: 14      Total Number of Proposed Lots: 83

Total Number Proposed Units: 83      Proposed Density (units per acre): 0.22

Road System:    ( ) Public      (x) Private      ( ) Combination Public and Private

Water System: (x) Individual      ( ) Community      ( ) Municipal

Sewer System: (x) Individual      ( ) Community      ( ) Municipal

**PARCEL INFORMATION**

PIN: SEE PLANS      Total Acreage: 377.96      Deed Book/Page: SEE PLANS Township \_\_\_\_\_

Location of property to be divided: The subject parcel is located North of Locust Grove Rd

Zoning District: R3      Fire District: HOPPERS CREEK

Water Supply Watershed: N/A      School District: NORTH HIGH

Any portion of property within or containing the following:

Floodplain or floodway:      Yes      No      Perennial streams:      Yes      No

Protected mountain ridges:      Yes      No      Cemetery:      Yes      No

Within 1/2 mile of a Farmland Preservation District:      Yes      No

Adjacent to a Farmland Preservation District:      Yes      No

**CONTACT INFORMATION**

**Property Owner:**

Name: Ripple Falls LLC      Phone: 616-402-0367

Address: 69 Clark Gap Road      City, State, Zip: Fletcher, NC 28732

**Applicant:**

Name: Ripple Falls LLC      Phone: 616-402-0367

Address: 69 Clark Gap Road      City, State, Zip: Fletcher, NC 28732

**Agent:** Agent Form (Circle One):      Yes      No

Name: \_\_\_\_\_      Phone: \_\_\_\_\_

Address: \_\_\_\_\_      City, State, Zip: \_\_\_\_\_

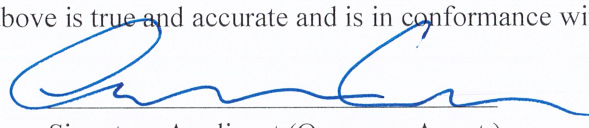
**Plan Preparer:**

Name: John Kinnaird      Phone: 828-232-4700

Address: 15 Arlington Street      City, State, Zip: Asheville, NC 28801

I certify that the information shown above is true and accurate and is in conformance with the Subdivision regulations of Henderson County.

Andy Baker

 12/13/2022

Print Applicant (Owner or Agent )

Signature Applicant (Owner or Agent )

Date

**County Use Only**

Fee: \$ \_\_\_\_\_ Paid: \_\_\_\_\_ Method: \_\_\_\_\_ Final Plat Approved On: \_\_\_\_\_



# RICH MOUNTAIN PHASE 3

MAJOR SUBDIVISION

HENDERSON COUNTY

## NOTES

### SITE NOTES:

- PROJECT ADDRESS: LOCUST GROVE ROAD, HENDERSONVILLE NC
- TOTAL ACREAGE: 377.96 AC.
- ZONING: R3
- PROJECT PIN NUMBER(S): 9672530112, 9672329718, 9672329259, 9672220858, 9672231444, 9672220353, 9672212880
- EXISTING TOPO INFO SHOWN WAS PROVIDED BY: BROOKS ENGINEERING ASSOCIATES
- EXISTING BOUNDARY INFO PROVIDED BY: BROOKS ENGINEERING ASSOCIATES
- FEMA FLOOD PANEL: 3700967200J, EFF. 10/02/2008
- RECEIVING STREAM: DUNCAN CREEK (6-57-19-2), CLASS C, TR); FLYNN BRANCH (6-57-19-3, CLASS C, TR); FEATHER STONE CREEK (6-55-12, CLASS C)
- SOIL TYPE(S): AhF, AhG, EdE, EdF, PoE, PoF, PoG, TuE, TuF
- DEED BOOK / PAGE: 3897/292, 3822/592
- LATITUDE / LONGITUDE: 35.409521/-82.438765
- DISTURBED ACREAGE: 6.45 AC.
- EROSION CONTROL REVIEW: HENDERSON COUNTY
- STORMWATER MANAGEMENT REVIEW: HENDERSON COUNTY

### GENERAL NOTES:

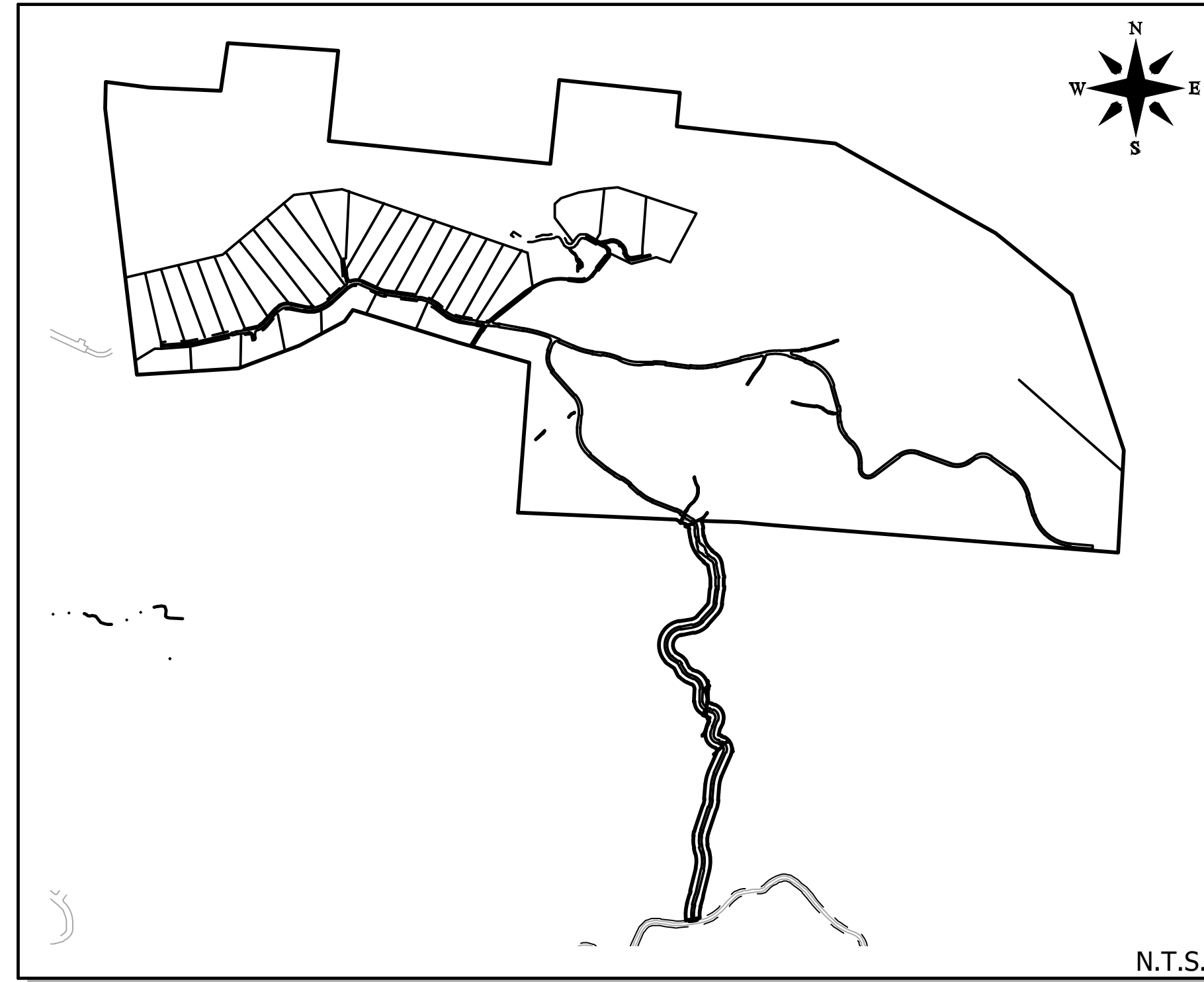
- CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES, THE GENERAL PUBLIC AND ALL OF THE OWNER'S FACILITIES AND SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL DAMAGES WHICH OCCUR DURING CONSTRUCTION.
- LOCATION OF ALL EXISTING UTILITIES, AS SHOWN HEREON, ARE APPROXIMATE ONLY. NO GUARANTEE IS MADE OR IMPLIED BY THE LOCATION REFLECTED IN THE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE TYPE, SIZE AND LOCATION OF ALL UTILITIES AND OTHER FEATURES WHICH MAY AFFECT CONSTRUCTION OR THE INTENDED FUNCTION OF THE DESIGN. CONTRACTOR SHALL NOTIFY DESIGNER PRIOR TO CONSTRUCTION IF EXISTING CONDITIONS DIFFER FROM THAT INDICATED IN THE PLANS.
- NO STREAM OR WETLAND DISTURBANCE SHALL OCCUR WITHOUT A ARMY CORPS OF ENGINEERS PERMIT.
- THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND DISTURBING ACTIVITIES.
- ANY EXCESS CUT MATERIAL DEVELOPED IN THE CONSTRUCTION OF THIS SITE SHALL BE DISPOSED OF IN AN APPROPRIATELY PERMITTED SPOIL SITE. CONTRACTOR TO PROVIDE PROOF OF PERMITS PRIOR TO CONSTRUCTION.
- ANY ALTERATION TO THE PLANS MUST BE APPROVED BY THE PROJECT ENGINEER, OR APPROPRIATE AGENCY PRIOR TO THE COMMENCEMENT OF WORK.
- THE CONTRACTOR SHALL OBTAIN, AND PAY FOR, PRIOR TO BEGINNING ANY WORK, ALL PERMITS AND LICENSES NECESSARY TO ACCOMPLISH THE WORK.
- CONTRACTOR(S) SHALL BE RESPONSIBLE FOR ADEQUATE SUPERVISION TO PREVENT DAMAGE AND MOVEMENT FROM EQUIPMENT WORKING AROUND CONSTRUCTION STAKES. THESE CONSTRUCTION STAKES SHALL REMAIN IN PLACE AND BE PROTECTED UNTIL OWNER APPROVES THEIR REMOVAL. ANY STAKES THAT HAVE BEEN DISPLACED AS A RESULT OF CONSTRUCTION ACTIVITY ARE TO BE REPLACED BY A LICENSED LAND SURVEYOR ENGAGED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE ENGINEER WILL NOT BE CONTINUOUSLY PRESENT IN THE FIELD, IT IS SPECIFICALLY UNDERSTOOD THAT HE DOES NOT UNDERTAKE NOR ASSUME ANY OBLIGATION FOR SUPERVISION OF CONSTRUCTION, SAFETY MEASURES TAKEN DURING THE COURSE OF CONSTRUCTION, RESPONSIBILITY FOR SCHEDULING THE WORK FOR INSURING COMPLETE COMPLIANCE WITH THE CONTRACT DOCUMENTS AND/OR ALL CODE REQUIREMENTS, RULES AND REGULATION OF ANY PUBLIC OR PRIVATE AUTHORITY HAVING JURISDICTION OVER THE WHOLE OR ANY PART OF THE WORK. IN ADDITION, THE ENGINEER NEITHER UNDERTAKES, ASSUMES, NOR GUARANTEES THE WORK AND/OR PERFORMANCE OF THE CONTRACTOR.

### INSPECTION SCHEDULE:

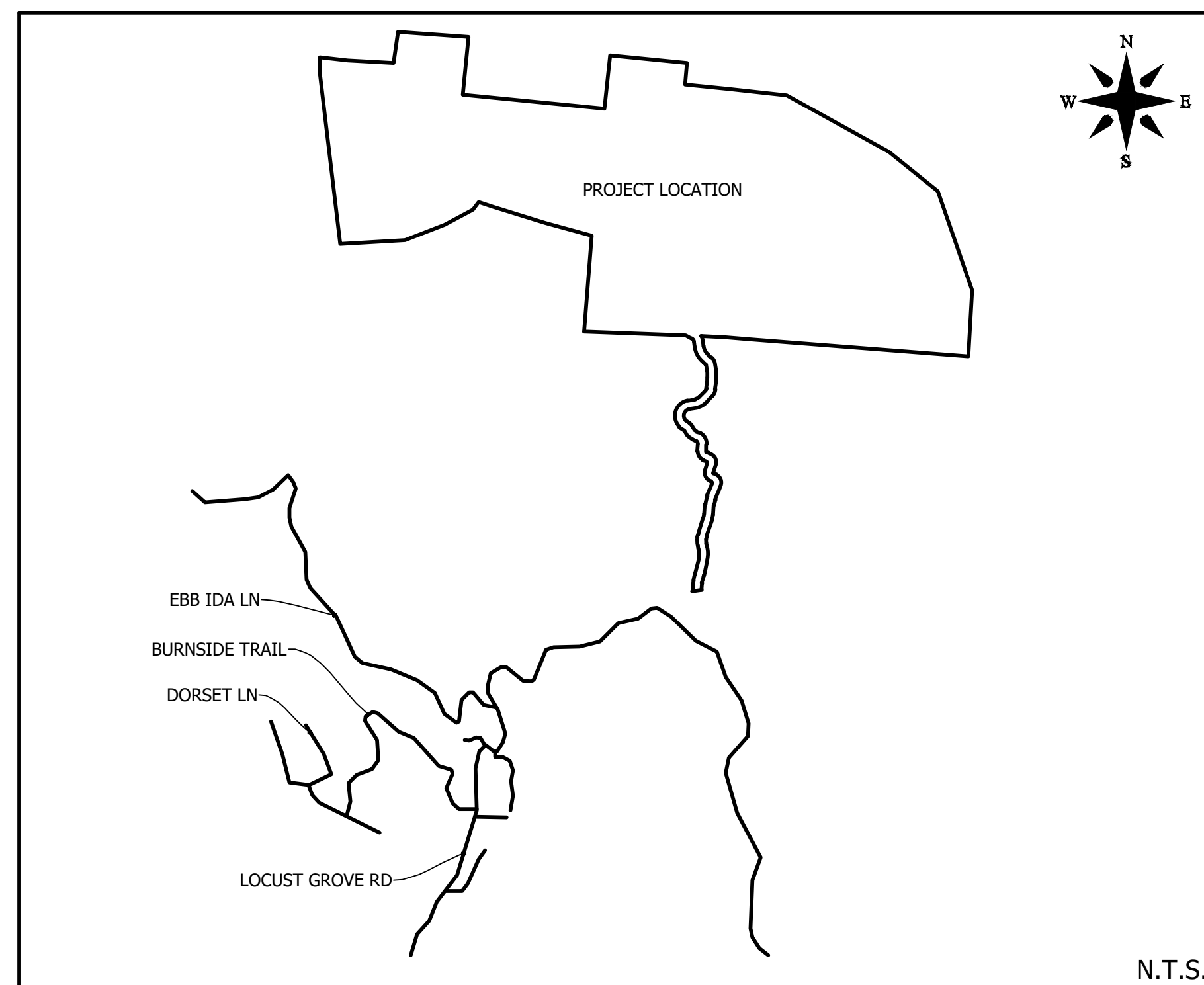
- NO CONSTRUCTION SHALL COMMENCE PRIOR TO A PRECONSTRUCTION MEETING WITH THE OWNER, THE CONTRACTOR, THE ENGINEER, AND A REPRESENTATIVE OF THE APPROVING JURISDICTION.
- ALL SHOP DRAWINGS SHALL BE SUBMITTED AT OR PRIOR TO THE PRECONSTRUCTION MEETING.
- ENGINEER TO BE CALLED FOR PERIODIC INSPECTIONS.
- CALL ENGINEERING PRIOR TO COVERING UNDERGROUND STRUCTURES FOR FINAL INSPECTIONS.
- REFER TO MANUFACTURER'S SPECIFICATION MANUAL AND STATE AND LOCAL STANDARDS FOR ADDITIONAL REQUIREMENTS AND STANDARDS.



## PROJECT MAP



## VICINITY MAP



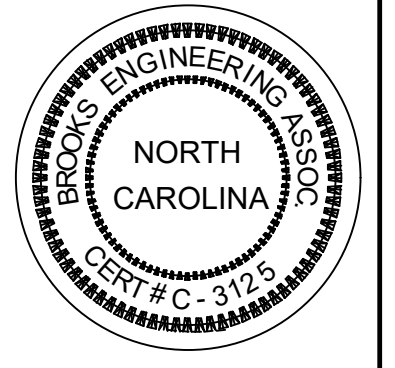
## CONTACTS

<b>DEVELOPER:</b> RIPPLE FALLS LLC	<b>CONTACT INFO:</b> ANDY BAKER ANDY@TFMCAROLINA.COM (616) 402-0367 69 CLARK GAP ROAD FLETCHER NC
<b>OWNER:</b> RIPPLE FALLS LLC	<b>CONTACT INFO:</b> ANDY BAKER ANDY@TFMCAROLINA.COM (616) 402-0367 69 CLARK GAP ROAD FLETCHER NC
<b>ENGINEER:</b> BROOKS ENGINEERING ASSOCIATES, PA	<b>CONTACT INFO:</b> JOHN KINNAIRD, PE JKINNAIRD@BROOKSEA.COM 828-232-4700 17 ARLINGTON STREET ASHEVILLE, NC 28801
<b>SURVEYOR:</b> BROOKS ENGINEERING ASSOCIATES	<b>CONTACT INFO:</b> TROY SHRIVER, PLS TSHRIVER@BROOKSEA.COM 15 ARLINGTON STREET ASHEVILLE, NC 28801

## SHEET INDEX

NO.:	TITLE:	NO.:	TITLE:
C-0	COVER SHEET		
C-1.0	MASTER PLAN		
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C-2.0	EXISTING CONDITIONS & DEMO PLAN		
C-3.0	CLEARING & GRUBBING PLAN		
C-3.1	OVERALL ESC AND STORMWATER PLAN		
C-3.2	ESC AND STORM PLAN W/ ROAD PROFILES		
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C-3.6	ESC AND STORM PLAN W/ ROAD PROFILES		
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C-4.0	OVERALL SITE PLAN		
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C-4.5	SITE DETAILS		
C-4.6	LINE AND CURVE TABLES		

No.	REVISIONS/SUBMISSIONS	Date
1	HENDERSON COUNTY PLANNING	12-15-2022



Designed: ZAW	Reviewed: JHK
Drawn: ZAW	Scale: AS NOTED
Checked: JHK	Date: 12-15-2022

15 Arlington Street  
Asheville, N.C. 28801  
Phone: 1-828-232-4700  
Fax: 1-828-232-1331  
www.brooksea.com



Project No: 543521  
Drawing Title: COVER SHEET

RICH MOUNTAIN PHASE 3  
MAJOR SUBDIVISION  
HENDERSON COUNTY  
NORTH CAROLINA

FINAL DRAWING - FOR REVIEW PURPOSES ONLY







### MASTER PLAN LEGEND

	EXIST. BOUNDARY
	EXIST. ADJOINER
	EXIST. STREAM
	EXIST. STREAM BUFFER
	EXIST. WETLAND
	EXIST. FEMA NON-ENCROACHMENT
	FEMA FLOOD HAZARD AREA (1%)
	FEMA FLOOD HAZARD AREA (0.2%)
	EXIST. RIGHT OF WAY
	EXIST. BUILDING SETBACK
	EXIST. BUILDING
	EXISTING SIDEWALK
	EXISTING PAVEMENT
	EXIST. CURB
	NEW RIGHT OF WAY
	NEW EASEMENT
	BUILDING SETBACK LINE
	NEW LANDSCAPE BUFFER
	NEW COMMON OPEN SPACE
	NEW BUILDING
	NEW PAVEMENT

SCALE: 1" = 300'

### SITE AND ZONING NOTES

PROPERTY ZONING: R3  
 PROPERTY SIZE: PH3: 150.06 AC | TOTAL: 377.96 AC  
 PROPERTY STEEPER THAN 60%: 16.76 AC (6.82%)  
 MINIMUM LOT SIZE: 1.50 AC / 35,640 SQ.FT.  
 SMALLEST PROPOSED LOT: 1.52 ACRES / 66,136 SQ.FT.  
 COMMON OPEN SPACE: 158.73 AC. (42.0%)  
 MINIMUM LOT WIDTH: 30' @ R.O.W.  
 MAXIMUM BUILDING HEIGHT: 40'  
 SETBACKS:  
 FRONT: 15' (LOCAL)  
 REAR: 15'  
 SIDE: 15'  
 PROPOSED LINEAR FEET OF ROAD:  
 PHASE 1: 7,139 LF  
 PHASE 2: 3,681 LF  
 PHASE 3: 4,415 LF  
 TOTAL ON PROPERTY: 15,235 LF

\*ALL DIMENSIONS ARE FROM EDGE OF ASPHALT, FACE OF CURB, FACE OF WALL, OR FACE OF BUILDING UNLESS OTHERWISE NOTED.

\*ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF DETAILS, SPECIFICATIONS, AND OTHER DEVELOPMENT ORDINANCES OF HENDERSON CO.

### DEVELOPMENT DATA

PROPERTY ADDRESS: LOCUST GROVE ROAD  
 HENDERSONVILLE NC

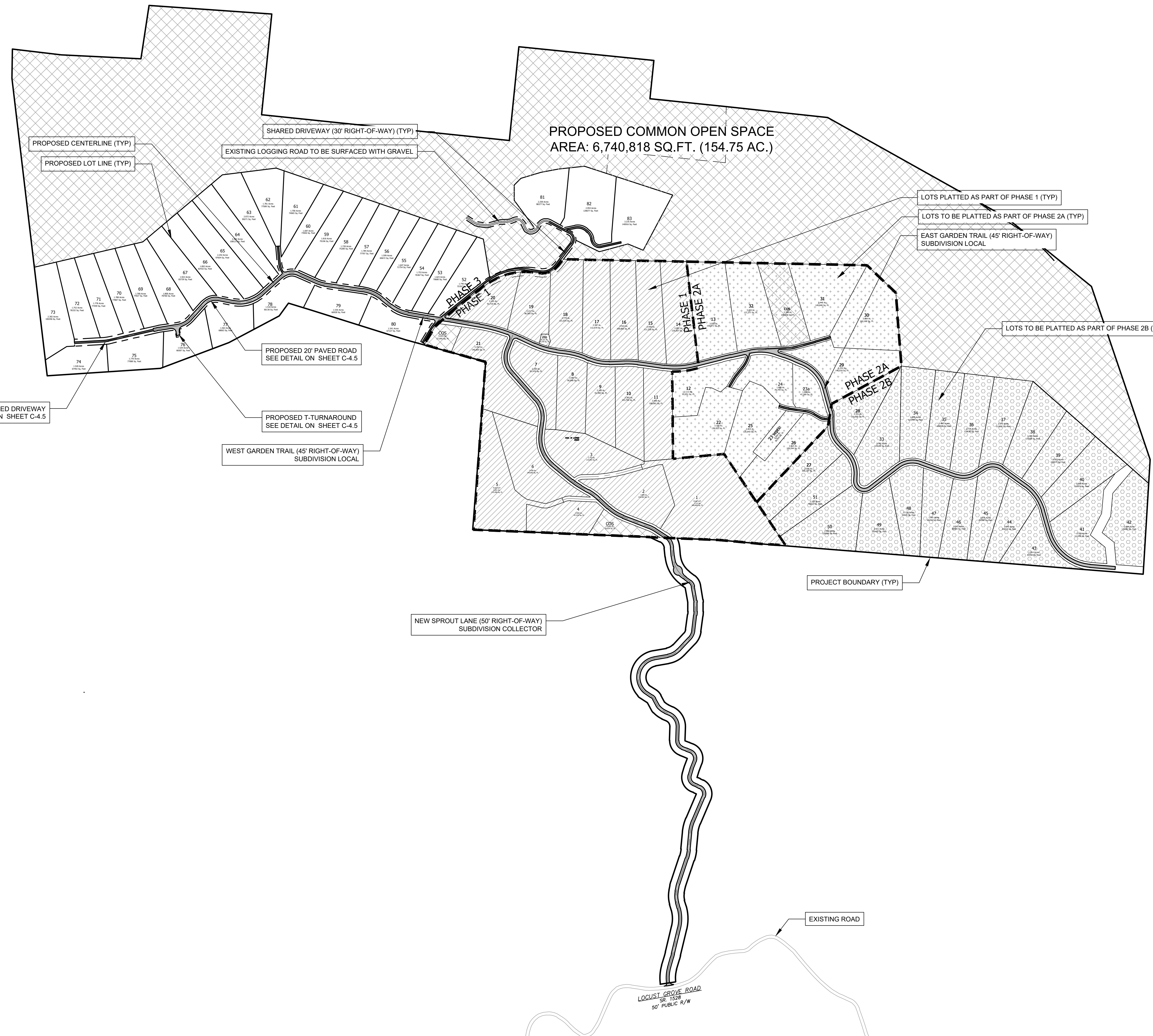
PIN NUMBER: SEE COVER SHEET  
 PROPERTY SIZE: PH3: 150.06 AC - TOTAL: 377.96 AC.  
 ZONING REVIEW: HENDERSON COUNTY  
 EROSION CONTROL REVIEW: HENDERSON COUNTY  
 STORMWATER REVIEW: HENDERSON COUNTY  
 ZONING CLASSIFICATION: R3  
 PROPOSED NUMBER OF UNITS: PH3: 32 - TOTAL: 83  
 PROPOSED DENSITY: PH3: 0.21 LOTS/AC - TOTAL: 0.22 LOTS/AC  
 LOTS 1-51 AND 83 ARE LOCATED WITHIN A FARMLAND PRESERVATION DISTRICT. LOTS 52-82 ARE WITHIN 1/2 MILE OF A FARMLAND DISTRICT.

WATER AND SEWER WILL BE PROVIDED BY INDIVIDUAL WELLS AND SEPTIC SYSTEMS.  
 PUBLIC WATER AND SEWER ARE APPROXIMATELY 3.0 MILES FROM THE SITE.  
 DRY HYDRANT IS LOCATED APPROXIMATELY 0.90 ROAD MILES FROM THE ENTRANCE TO THE SITE.

PROPERTY OWNER: RIPPLE FALLS LLC  
 CONTACT: ANDY BAKER  
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 EMAIL: ANDY@TFMCAROLINA.COM  
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 EMAIL: JKINNAIRD@BROOKSEA.COM  
 PHONE: 828-232-4700



Project No: <b>543521</b>	Drawing Title: <b>PHASING PLAN</b>	Rich Mountain Phase 3 Major Subdivision North Carolina Henderson County		Date: 12-15-2022 REVISIONS/SUBMISSIONS: HENDERSON COUNTY PLANNING
				No.: 1
Design: ZAW Drawn: ZAW Checked: JHK			Review: JHK Scale: AS NOTED Date: 12-15-2022	
15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com			FINAL DRAWING - FOR REVIEW PURPOSES ONLY	

File Location: L:\2021 Projects\543521 Ripple Falls\_Rich.Mtn\_Due Diligence\Dwg (Phase 3)\Civil-Basic-543521 PH3.dwg



**EXIST. CONDITIONS LEGEND**

- EXIST. BOUNDARY
- - - EXIST. ADJOINER
- MONUMENT FOUND
- REBAR FOUND
- IRON PIPE FOUND
- ▲ NAIL FOUND
- CORNER TREE FOUND
- - - EXIST. STREAM
- - - EXIST. STREAM BUFFER
- - - EXIST. WETLAND
- - - EXIST. FEMA NON-ENCROACHMENT
- - - EXIST. FEMA FLOOD HAZARD AREA (1%)
- - - EXIST. FEMA FLOOD HAZARD AREA (0.2%)
- - - EXIST. RIGHT OF WAY
- - - EXIST. EASEMENT
- - - EXIST. BUILDING SETBACK
- ▭ EXISTING BUILDING
- ▨ EXISTING SIDEWALK
- ▩ EXISTING PAVEMENT
- ▧ EXISTING GRAVEL
- - - EXIST. MINOR CONTOUR
- - - EXIST. MAJOR CONTOUR

SCALE: 1" = 200'

**DEVELOPMENT DATA**

PROPERTY ADDRESS: LOCUST GROVE ROAD  
HENDERSONVILLE NC

PIN NUMBER: SEE COVER SHEET

PROPERTY SIZE: PH3: 150.06 AC. - TOTAL: 377.96 AC.

ZONING REVIEW: HENDERSON COUNTY

EROSION CONTROL REVIEW: HENDERSON COUNTY

STORMWATER REVIEW: HENDERSON COUNTY

ZONING CLASSIFICATION: R3

PROPOSED NUMBER OF UNITS: PH3: 32 - TOTAL: 83

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PHONE: (616) 402-0367

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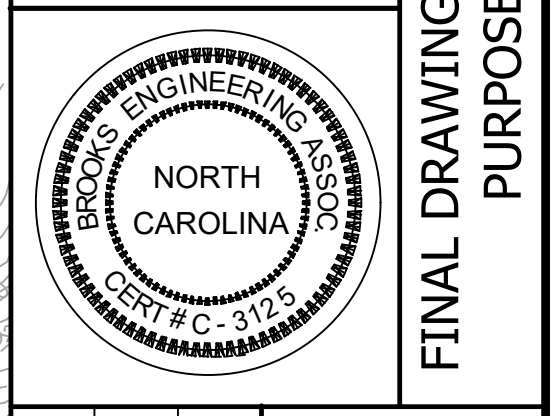
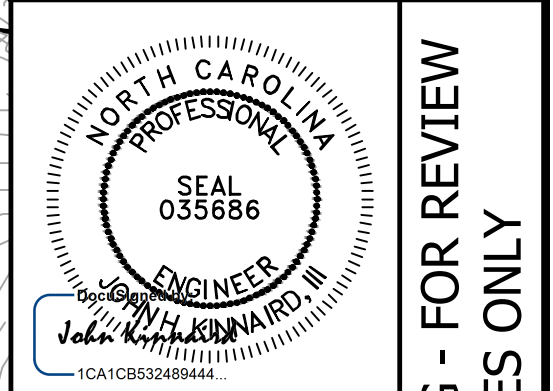
ENGINEER: BROOKS ENGINEERING ASSOCIATES

CONTACT: JOHN KINNAIRD, PE  
ADDRESS: 17 ARLINGTON ST  
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EMAIL: JKINNAIRD@BROOKSEA.COM  
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No.	REVISIONS/SUBMISSIONS	Date
1	HENDERSON COUNTY PLANNING	12-15-2022



DESIGNED: ZAW  
DRAWN: ZAW  
CHECKED: JHK

REVIEWED: JHK  
SCALE: AS NOTED  
DATE: 12-15-2022

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Brooks Engineering Associates  
ENGINEERING ASSOCIATES

Planning • Engineering • Surveying  
• Environmental Services •

Project No: 543521

Drawing Title: EXISTING CONDITIONS & DEMO PLAN

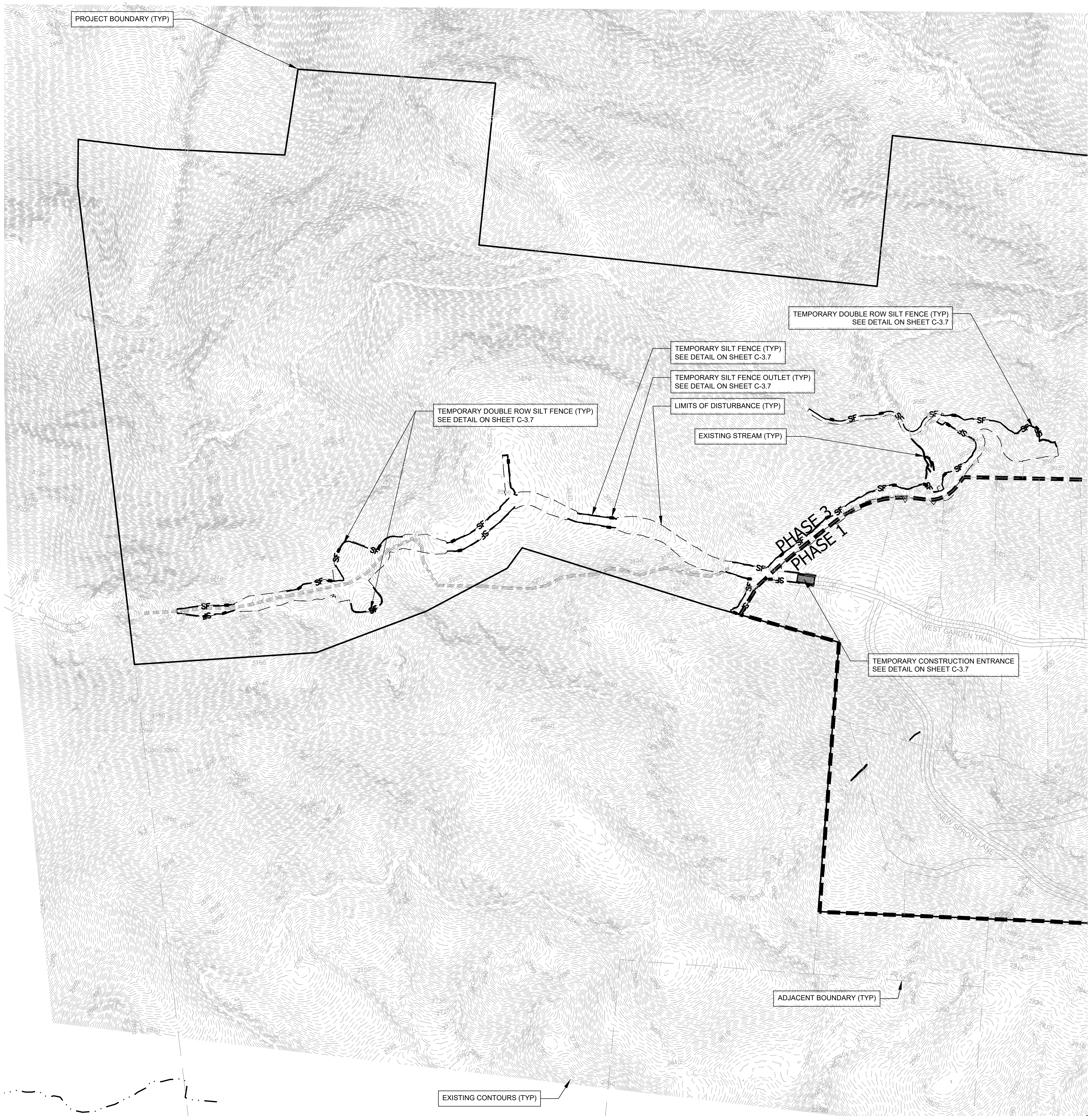
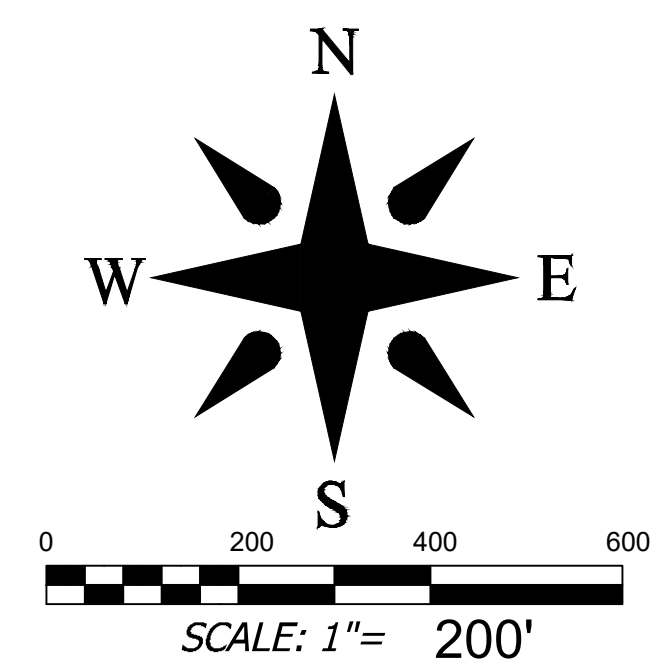
RICH MOUNTAIN PHASE 3  
MAJOR SUBDIVISION  
HENDERSON COUNTY  
NORTH CAROLINA

C-2.0



**CLEARING AND GRUBBING LEGEND**

	EXIST. BOUNDARY
	EXIST. ADJOINER
	EXIST. STREAM
	EXIST. STREAM BUFFER
	EXIST. WETLAND
	EXIST. FEMA NON-ENCROACHMENT
	FEMA FLOOD HAZARD AREA (1%)
	FEMA FLOOD HAZARD AREA (0.2%)
	EXIST. RIGHT OF WAY
	EXIST. MINOR CONTOUR
	EXIST. MAJOR CONTOUR
	TEMP. SILT FENCE
	TEMP. TREE PROTECTION FENCE
	TEMP. CONSTRUCTION ENTRANCE
	LIMITS OF DISTURBANCE
	TEMP. REINFORCED STABILIZED OUTLET
	TEMP. SLOPE MATTING



**DEVELOPMENT DATA**

PROPERTY ADDRESS: LOCUST GROVE ROAD  
HENDERSONVILLE NC  
PIN NUMBER: SEE COVER SHEET  
PROPERTY SIZE: PH3: 150.06 AC - TOTAL: 377.96 AC  
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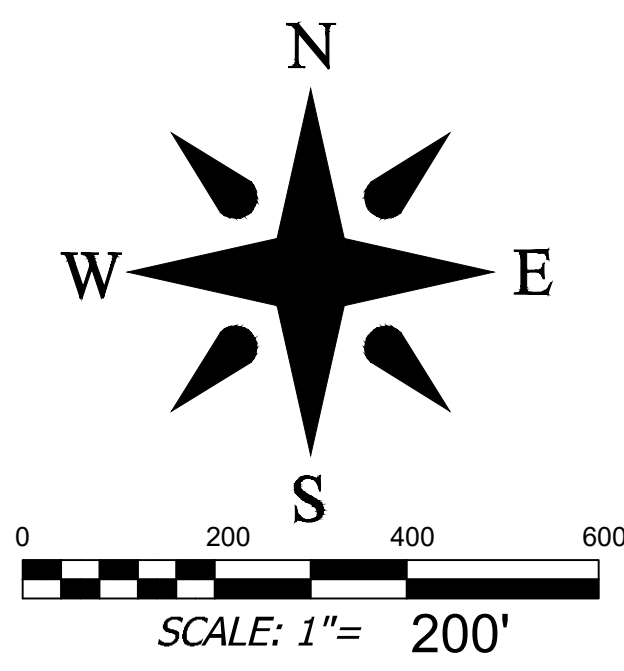
- EROSION CONTROL NOTES**
- ALL EROSION MEASURES AND PRACTICES SHALL BE IN ACCORDANCE WITH THE APPROPRIATE JURISDICTION'S DETAILS AND SPECIFICATIONS.
  - IN ACCORDANCE WITH THE NPDES GENERAL STORMWATER PERMIT, THE FOLLOWING CONDITIONS MUST BE MET:  
2. THE EROSION CONTROL PLAN MUST BE IMPLEMENTED - DEVIATIONS ARE A VIOLATION OF THE PERMIT.  
2. A COPY OF ALL PLANS MUST BE RETAINED BY THE PERMIT DEPOSITION OF SEDIMENT OFFSITE OR IN A STREAM OR WETLAND ARE CONSIDERED A VIOLATION OF THE PERMIT.  
2. VISIBLE DEPOSITION OF SEDIMENT SHALL BE REPORTED TO NCDEQ WITHIN 24 HOURS OF INSPECTION.  
2. A RAIN GAUGE SHALL BE MAINTAINED ON SITE.  
2. A WRITTEN RECORD OF THE DAILY RAINFALL AMOUNTS SHALL BE RETAINED.  
2. AT LEAST ONCE PER WEEK, EACH EROSION CONTROL MEASURE SHALL BE INSPECTED TO ENSURE THAT IT IS OPERATING CORRECTLY AND RECORDS MAINTAINED.  
2. INSPECTIONS SHALL ALSO BE MADE WITHIN 24 HOURS OF RAIN EVENTS OVER 1/2 INCH.  
2. THE QUALITY OF ALL STORMWATER DISCHARGES SHALL BE OBSERVED AND RECORDED.  
2. IF ANY VISIBLE SEDIMENTATION IS LEAVING THE SITE OR ENTERING WATERS OF THE STATE, CORRECTIVE ACTION SHALL BE TAKEN IMMEDIATELY TO CONTROL THE DISCHARGE OF SEDIMENTS.
  - AN APPROVED COPY OF THE E&S PLAN WITH PLACARD AND APPROVAL LETTER AND A COPY OF THE NPDES PERMIT, WITH A MINIMUM OF 30 DAYS OF SELF-INSPECTION REPORTS, ARE TO BE KEPT ON SITE UNTIL PROJECT CLOSURE BY NCDEQ. THEY MUST BE MADE AVAILABE TO THE EROSION CONTROL INSPECTOR UPON REQUEST.
  - THE SELF-INSPECTION PROGRAM IS SEPARATE FROM THE WEEKLY SELF-MONITORING PROGRAM OF THE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL USE THE INSPECTION AND MONITORING RECORDS FOR ACTIVITIES UNDER STORMWATER GENERAL PERMIT NCG010000 AND SELF-INSPECTION RECORDS FOR LAND DISTURBING ACTIVITIES PER G.S. 113A-54.1. THE INSPECTIONS SHOULD BE CONDUCTED AFTER EACH PHASE OF THE PROJECT, AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.  
5. ALL DRAINAGE EASEMENTS MUST BE GRASSED AND/OR RIP-RAPPED PER THE PLANS TO CONTROL EROSION.  
6. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND-DISTURBING ACTIVITIES.  
7. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE AND AN AMENDED PLAN BE SUBMITTED AND APPROVED SHOWING MODIFIED EROSION CONTROL DEVICES.  
8. A RAIN GAUGE WILL BE INSTALLED ON THE SITE.  
9. THE SITE SHALL RECEIVE TEMPORARY/PERMANENT SEEDING WHEN CONSTRUCTION IS COMPLETE OR DELAYED FOR ANY REASON. SEE SHEET C-3.9 FOR A DETAILED TIME FRAME.  
10. CONTRACTOR TO PROVIDE INLET PROTECTION AT EACH STRUCTURE AS STORM SYSTEM IS CONSTRUCTED.  
11. PROVIDE WATERTIGHT JOINTS ON ANY STORM DRAINS WHERE VELOCITIES EXCEED 15 FT/SEC (SEE PIPE CHART).  
12. STOCKPILES OF TAGS, AND LAYDOWN AREAS ARE TO BE WITHIN THE LIMITS OF DISTURBANCE AND SHOULD BE LOCATED AT LEAST 50 FEET AWAY FROM STORM DRAIN OUTLETS AND SURFACE WATERS.  
13. CONTACT HENDERSON COUNTY SITE DEVELOPMENT 48 HOURS PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITIES.

Project No: <b>543521</b>	RICH MOUNTAIN PHASE 3		NORTH CAROLINA	Date 12-15-2022
	MAJOR SUBDIVISION			
C-3.0		HENDERSON COUNTY		REVISIONS/SUBMISSIONS 1 HENDERSON COUNTY PLANNING
Drawing Title: <b>CLEARING &amp; GRUBBING PLAN</b>		 <b>BROOKS ENGINEERING ASSOCIATES</b> Planning • Engineering • Surveying • Environmental Services •		No. 1   FINAL DRAWING - FOR REVIEW PURPOSES ONLY
Designated: ZAW Drawn: ZAW Checked: JHK		Reviewed: JHK Scale: AS NOTED Date: 12-15-2022		15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com



**GRADING AND STORMWATER LEGEND**

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. STREAM
- EXIST. STREAM BUFFER
- EXIST. RIGHT OF WAY
- EXIST. EASEMENT
- EXIST. BUILDING SETBACK
- EXISTING BUILDING
- EXISTING SIDEWALK
- EXISTING PAVEMENT
- EXIST. MINOR CONTOUR
- EXIST. MAJOR CONTOUR
- NEW BUILDING
- NEW PAVEMENT
- NEW HEADWALL
- NEW FLARED END SECTION
- ST — NEW STORM PIPE
- <-SW — RIP RAP LINED DITCH
- ELEV — NEW MINOR CONTOUR
- ELEV — NEW MAJOR CONTOUR
- ELEV — NEW SPOT GRADE
- NEW RIGHT OF WAY
- LIMITS OF DISTURBANCE
- NEW WALL (BY OTHERS)



**DEVELOPMENT DATA**

PROPERTY ADDRESS: LOCUST GROVE ROAD  
HENDERSONVILLE NC

PIN NUMBER: SEE COVER SHEET

PROPERTY SIZE: PH3: 150.06 AC. - TOTAL: 377.96 AC.

ZONING REVIEW: HENDERSON COUNTY

EROSION CONTROL REVIEW: HENDERSON COUNTY

STORMWATER REVIEW: HENDERSON COUNTY

ZONING CLASSIFICATION: R3

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**STORM AND EROSION NOTES**

PROPERTY SIZE: PH3: 150.06 AC. - TOTAL: 377.96 AC.

PROPERTY STEEPER THAN 60%: 16.76 AC. (6.82%)

PROJECT DENSITY: PH3: 0.21 LOTS/AC. - TOTAL 0.22 LOTS/AC.

IMPERVIOUS SUMMARY:

ROADS: PH3: 1.48 AC. - TOTAL: 6.68 AC.

HOUSES & DRIVES (15,000 SF / LOT): 11.02 AC. - TOTAL: 28.58 AC.

TOTAL: 12.50 AC. (8.3%) - 35.26 AC. (9.3%)

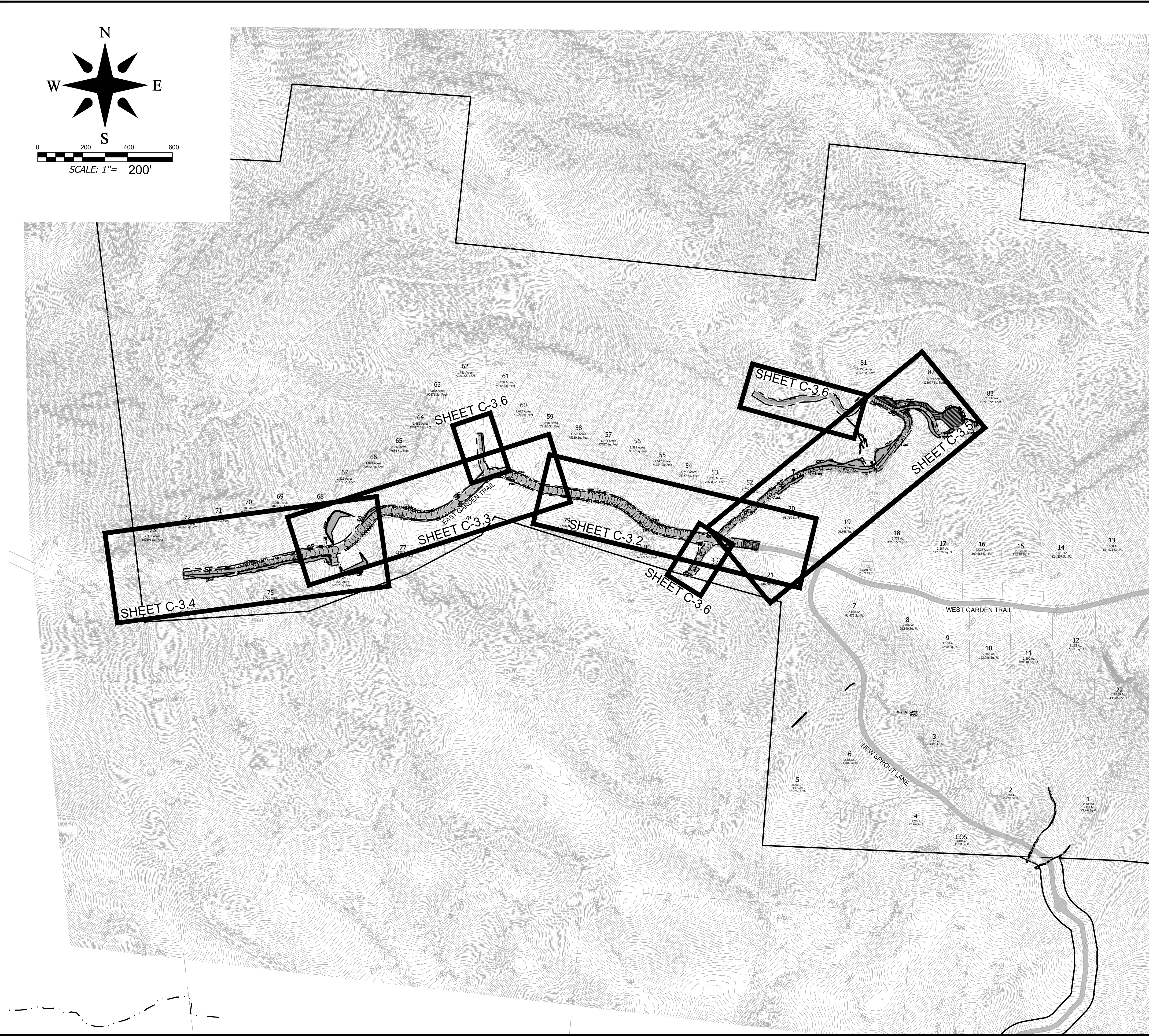
EROSION CONTROL NOTES:

- SEE SHEET C-3.9 FOR STABILIZATION TIME FRAMES.
- EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE AND AN AMENDED PLAN BE SUBMITTED AND APPROVED SHOWING MODIFIED EROSION CONTROL DEVICES.

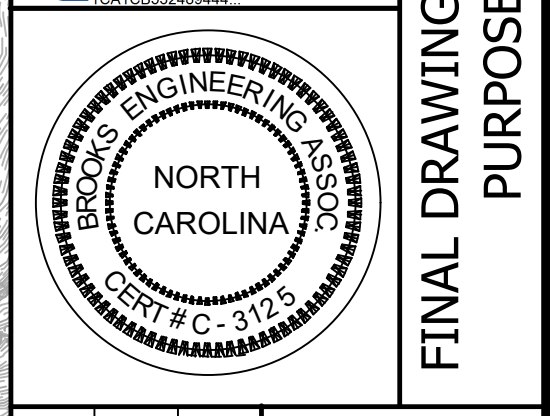
STORMWATER NOTES:

- ALL STREAMS SHALL HAVE A 30' SETBACK FOR NEW BUILT-UPON AREAS.
- ALL PIPE SHALL BE DOUBLE-WALL HDPE WITH PROPER STONE BEDDING AND SHALL HAVE A MINIMUM COVER OF 30".
- ALL FILL SLOPES SHALL BE COMPACTED FULL DEPTH TO NOT LESS THAN 95 PERCENT MAXIMUM DENSITY (STANDARD PROCTOR), SHALL BE PLACED ON A SURFACE CLEAR OF GROWTH AND DEBRIS AND BE PROPERLY BENCHED AND DRAINED.
- ALL SLOPES GREATER THAN 3:1 AND TALLER THAN 10 FEET SHALL BE SEEDED AND COVERED WITH MATTING AS SHOWN IN THE PLANS.
- AN APPROVED GRADING PERMIT IS REQUIRED FOR ANY BORROW OR WASTE SITE PRIOR TO INITIATION OF ANY LAND DISTURBING ACTIVITY.

\*ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF DETAILS, SPECIFICATIONS, AND OTHER DEVELOPMENT ORDINANCES OF HENDERSON CO.



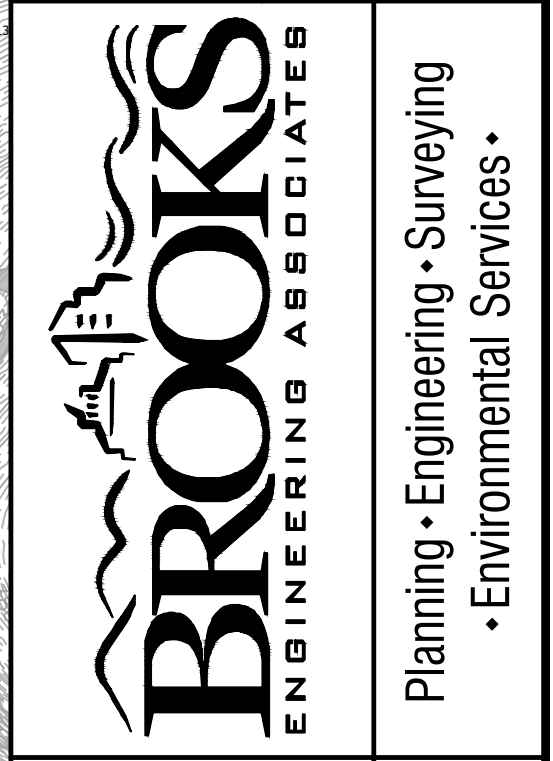
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1	HENDERSON COUNTY PLANNING	12-15-2022



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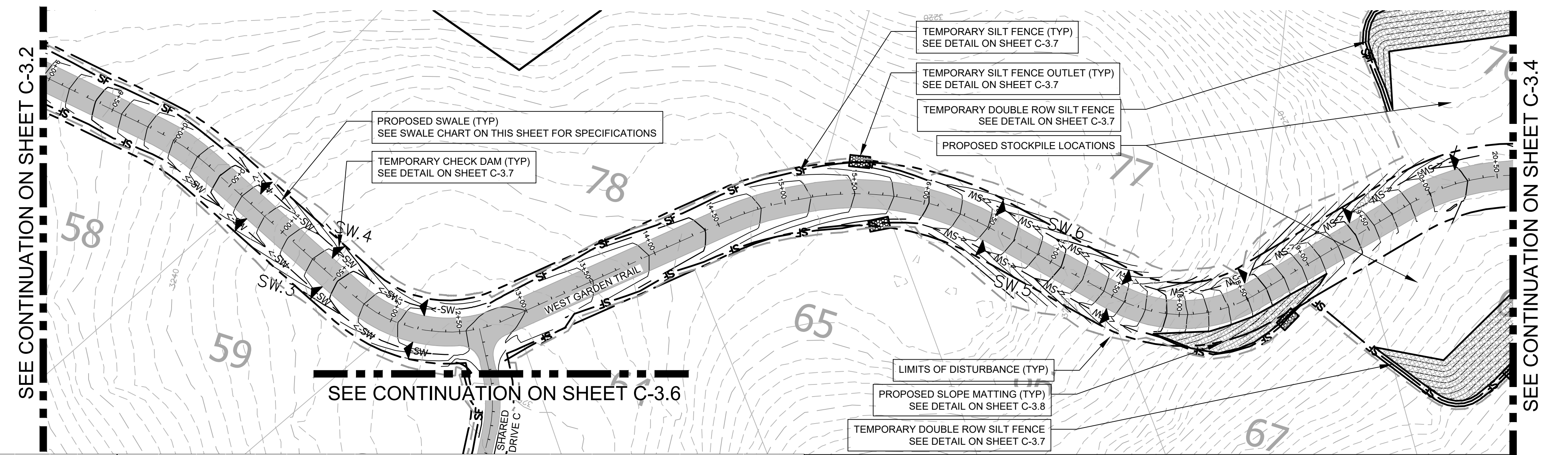
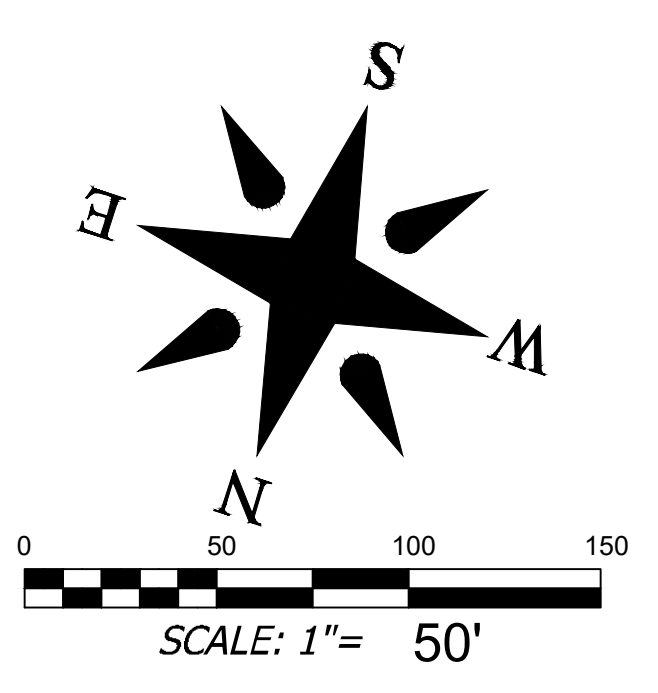


Project No: <b>543521</b>	<b>RICH MOUNTAIN PHASE 3</b>	NORTH CAROLINA
<b>C-3.1</b>	<b>MAJOR SUBDIVISION</b>	HENDERSON COUNTY
Drawing Title: <b>OVERALL ESC AND STORMWATER PLAN</b>		

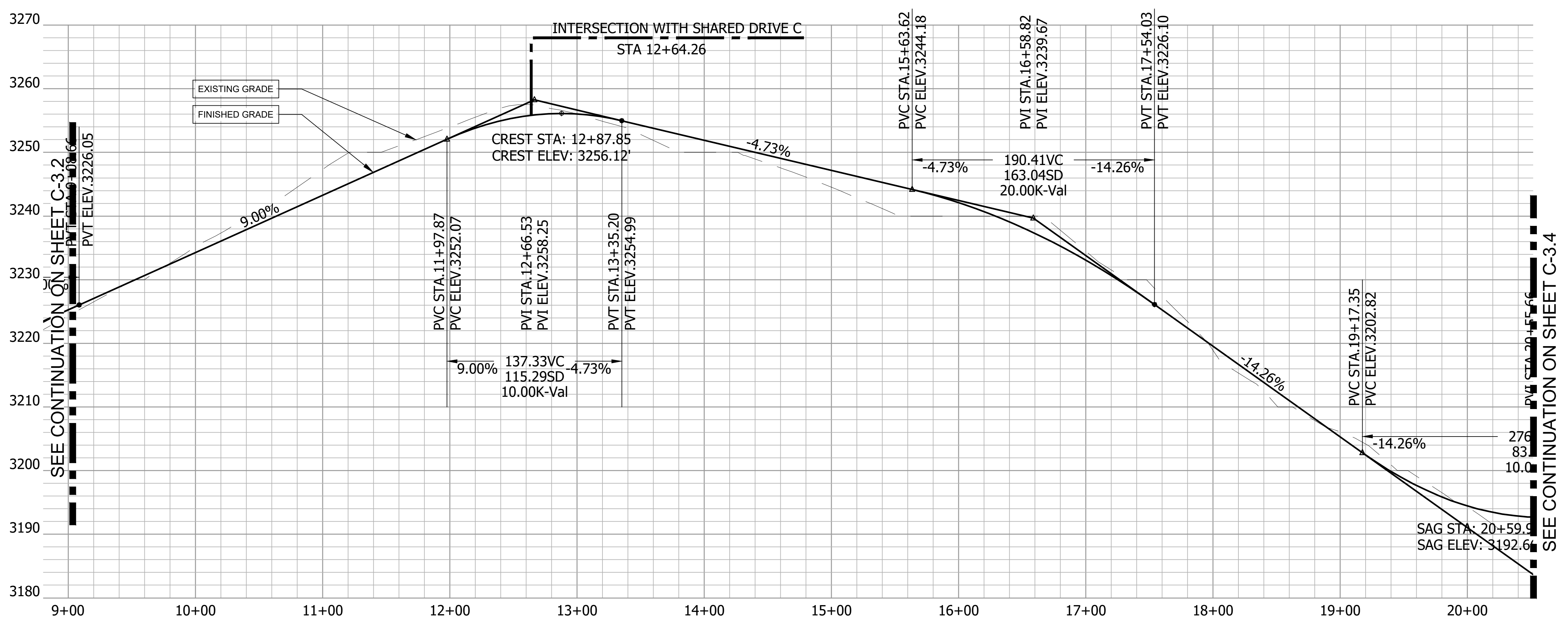
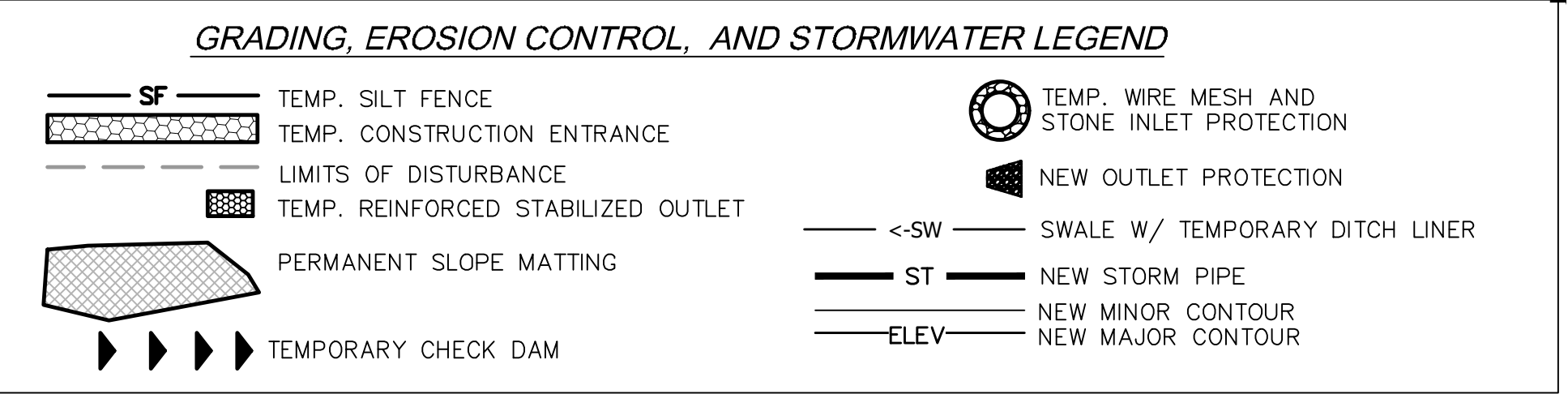






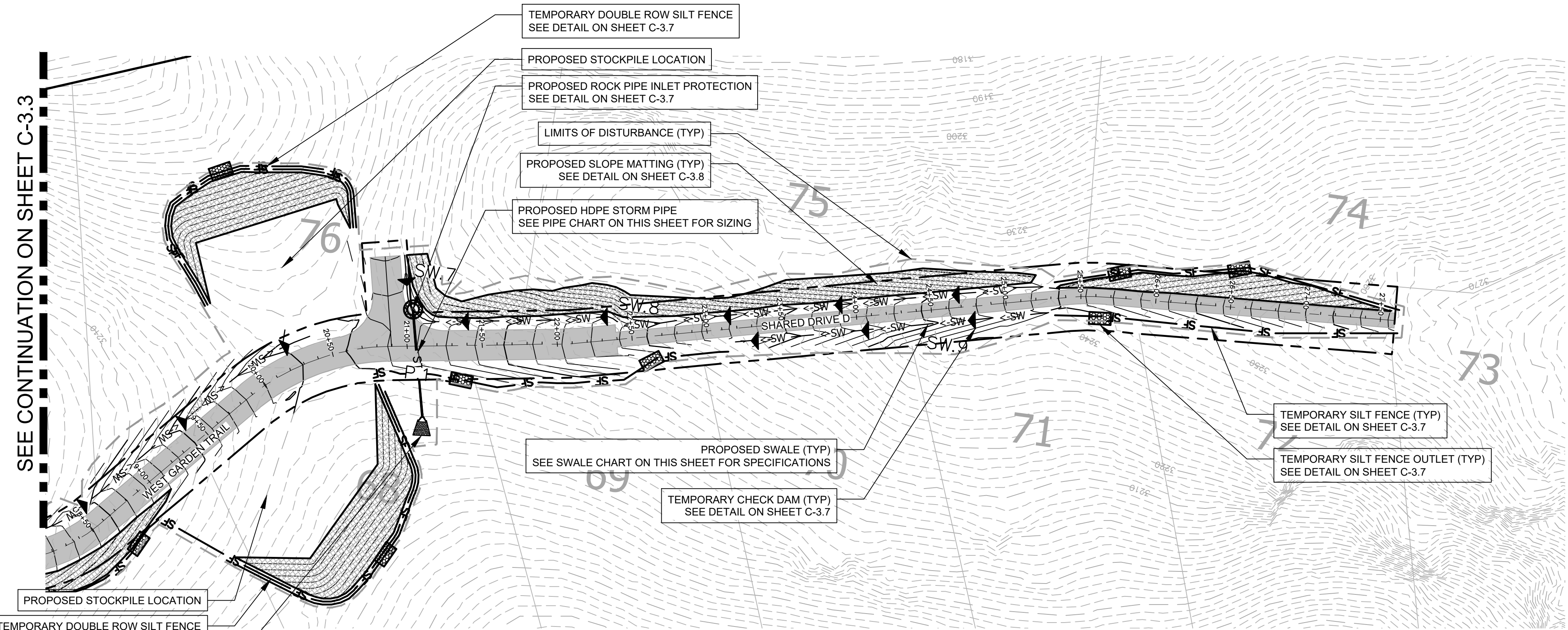
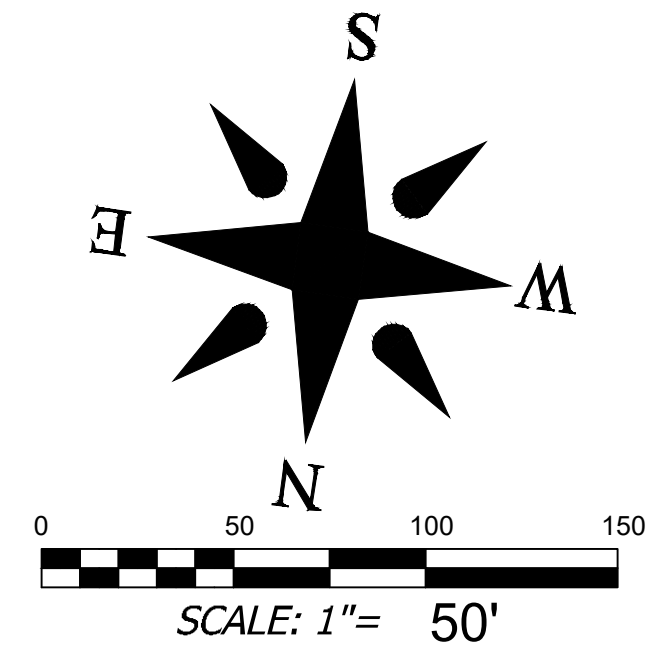


SWALE CHART										SWALE CALCULATIONS												
Swale Name	Swale Type	Up Invert	Down Invert	Side Slope - Z	Bottom Width b(ft)	Length	Slope	Da to Inlet	Da to Outlet	C Value	TOC	ls	q swale	nf	structure	structure	Upstream q	Total q	Flow Depth	Velocity	Shear Stress	Reinforcement
SW.3	GRASS	3256.0	3235.0	3.0	0.5 ft	250 ft	8.4%	5.029 sf	0.7 ac	0.63	5 min	8.34	0.61 cfs	0.025	none	none	0.00 cfs	0.61 cfs	1.9 in	3.9 fps	0.84	Straw with Net (Temporary)
SW.4	GRASS	3256.0	3239.0	3.0	0.0 ft	225 ft	7.6%	4.961 sf	0.7 ac	0.62	5 min	8.34	0.58 cfs	0.025	none	none	0.00 cfs	0.58 cfs	2.6 in	4.0 fps	1.04	Straw with Net (Temporary)
SW.5	GRASS	3239.0	3221.0	3.0	0.0 ft	170 ft	10.6%	6.688 sf	0.2 ac	0.51	5 min	8.34	0.66 cfs	0.025	none	none	0.00 cfs	0.66 cfs	2.8 in	4.5 fps	1.45	Synthetic Net (Temporary)
SW.6	GRASS	3239.0	3189.0	3.0	0.0 ft	430 ft	11.6%	11.457 sf	0.3 ac	0.58	5 min	8.34	1.28 cfs	0.025	none	none	0.00 cfs	1.28 cfs	3.4 in	5.4 fps	2.03	NAG P300

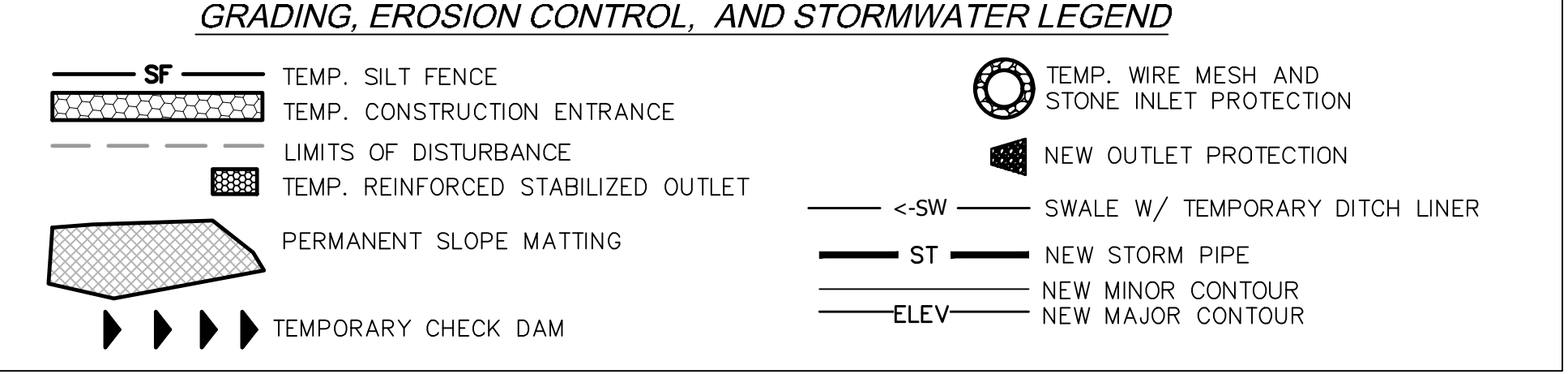


Project No: <b>543521</b>	Drawing Title: <b>C-3.3</b>	Rich Mountain Phase 3 Major Subdivision HENDERSON COUNTY NORTH CAROLINA	 ENGINEERING ASSOCIATES Planning • Engineering • Surveying • Environmental Services •	Design: ZAW Drawn: ZAW Checked: JHK	Review: JHK Scale: AS NOTED Date: 12-15-2022	15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brookssea.com
				No. 1 REVISIONS/SUBMISSIONS HENDERSON COUNTY PLANNING	Date 12-15-2022	FINAL DRAWING - FOR REVIEW PURPOSES ONLY





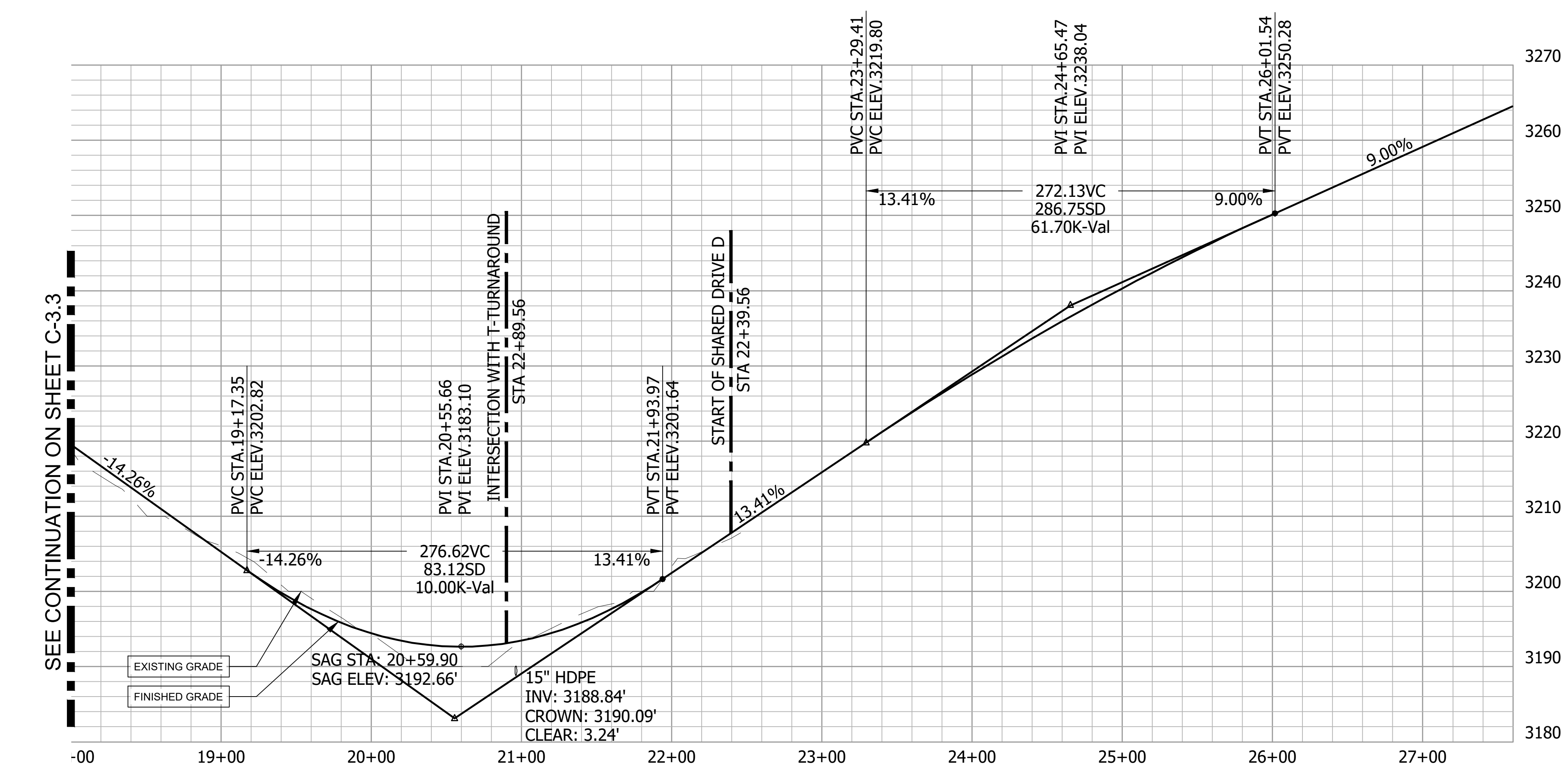
GRADING, EROSION CONTROL, AND STORMWATER LEGEND



SWALE CHART										SWALE CALCULATIONS												
Swale Name	Swale Type	Up Invert	Down Invert	Side Slope - Z	btm width (bft)	Length	Slope	Da to Inlet	Da to Inlet	C Value	TOC	$t_s$	q swale	nf	structure	structure	Upstream q	Total q	Flow Depth	Velocity	Shear Stress	Reinforcement
SW.6	GRASS	3239.0'	3189.0'	3.0	0.0 ft	430 ft	11.6%	11,457 sf	0.3 ac	0.58	5 min	8.34	1.28 cfs	0.025	none	none	0.00 cfs	1.28 cfs	3.4 in	5.4 fps	2.03	NAG P300
SW.7	GRASS	3195.0'	3191.0'	3.0	0.0 ft	40 ft	10.0%	4,221 sf	0.1 ac	0.39	5 min	8.34	0.32 cfs	0.025	none	none	0.00 cfs	0.32 cfs	2.0 in	3.7 fps	1.06	Strawwh Net (Temporary)
SW.8	GRASS	3238.0'	3191.0'	3.0	0.0 ft	425 ft	11.1%	21,868 sf	0.5 ac	0.42	5 min	8.34	1.76 cfs	0.025	none	none	0.00 cfs	1.76 cfs	3.8 in	5.7 fps	2.21	NAG P300
SW.9	GRASS	3238.0'	3215.0'	3.0	0.0 ft	210 ft	11.0%	3,940 sf	0.1 ac	0.51	5 min	8.34	0.39 cfs	0.025	none	none	0.00 cfs	0.39 cfs	2.2 in	4.0 fps	1.23	Strawwh Net (Temporary)

PIPE CHART										PIPE CALCULATIONS															
Pipe Name	Road Elevation	Up Invert	Down Invert	Pipe Size	Pipe Material	Length	Slope	Da to Inlet	Da to Inlet	C Value	TOC	$t_s$	q Inlet	nf	structure	structure	Upstream q	Total q	Flow Depth	Velocity	d50 Stone Size	Outlet Protection	Apron Thickness	Pad Length	Pad Width
P.1	3193.0'	3190.0'	3187.0'	15.0 in	HDPE	66 ft	4.5%	0.0 ac	0.0 ac	0.58	5 min	8.34	0.00 cfs	0.011	SW.7	SW.8	2.08 cfs	2.08 cfs	3.7 in	8.7 fps	6 in	9 in	10 ft	14 ft	

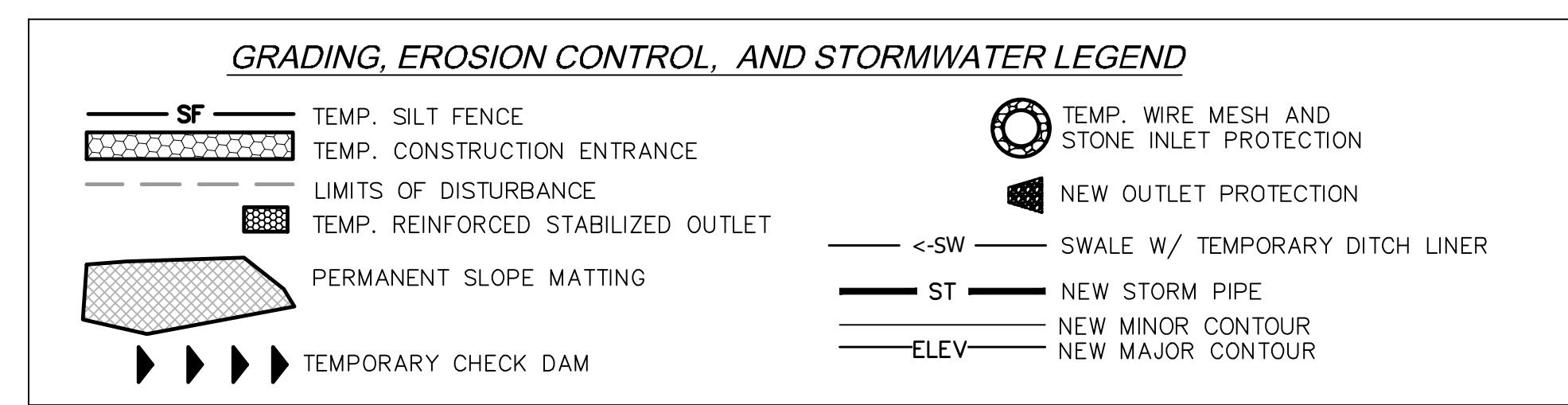
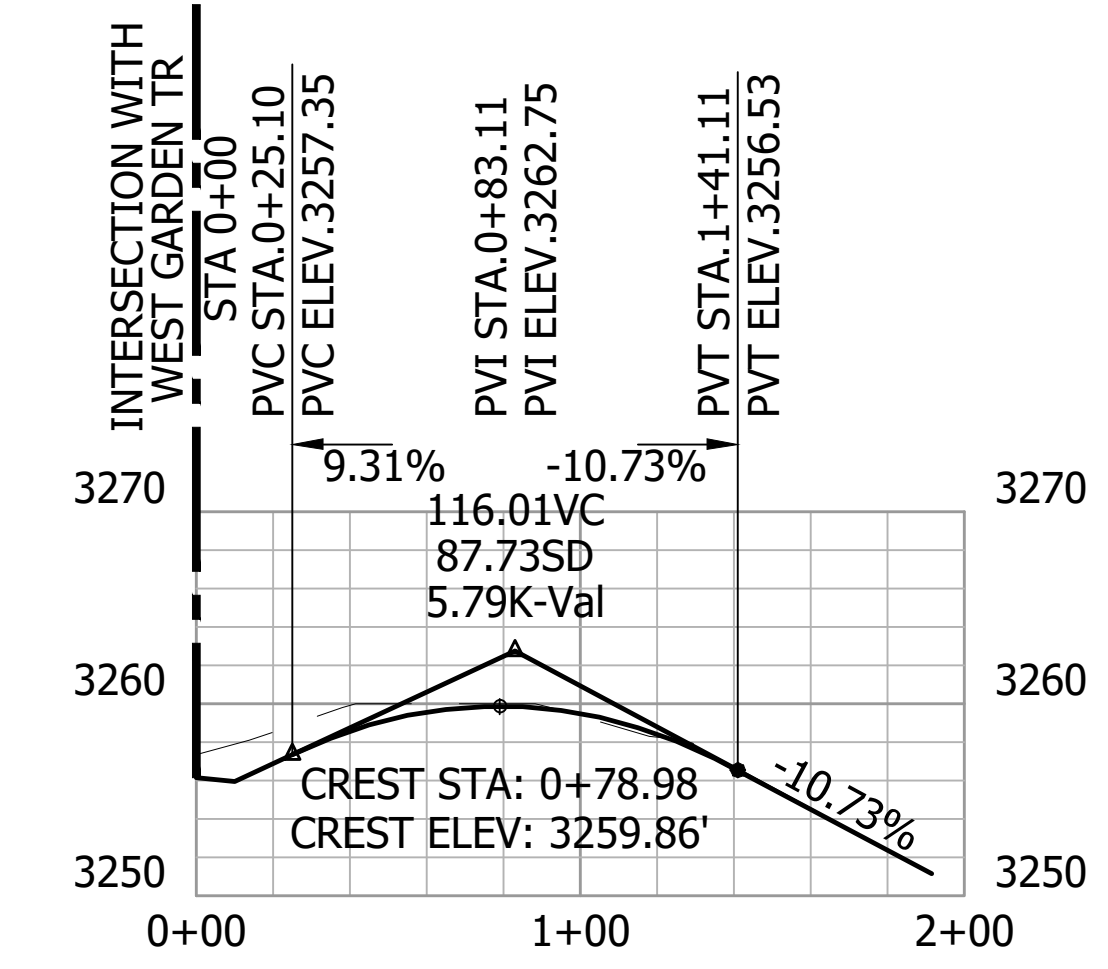
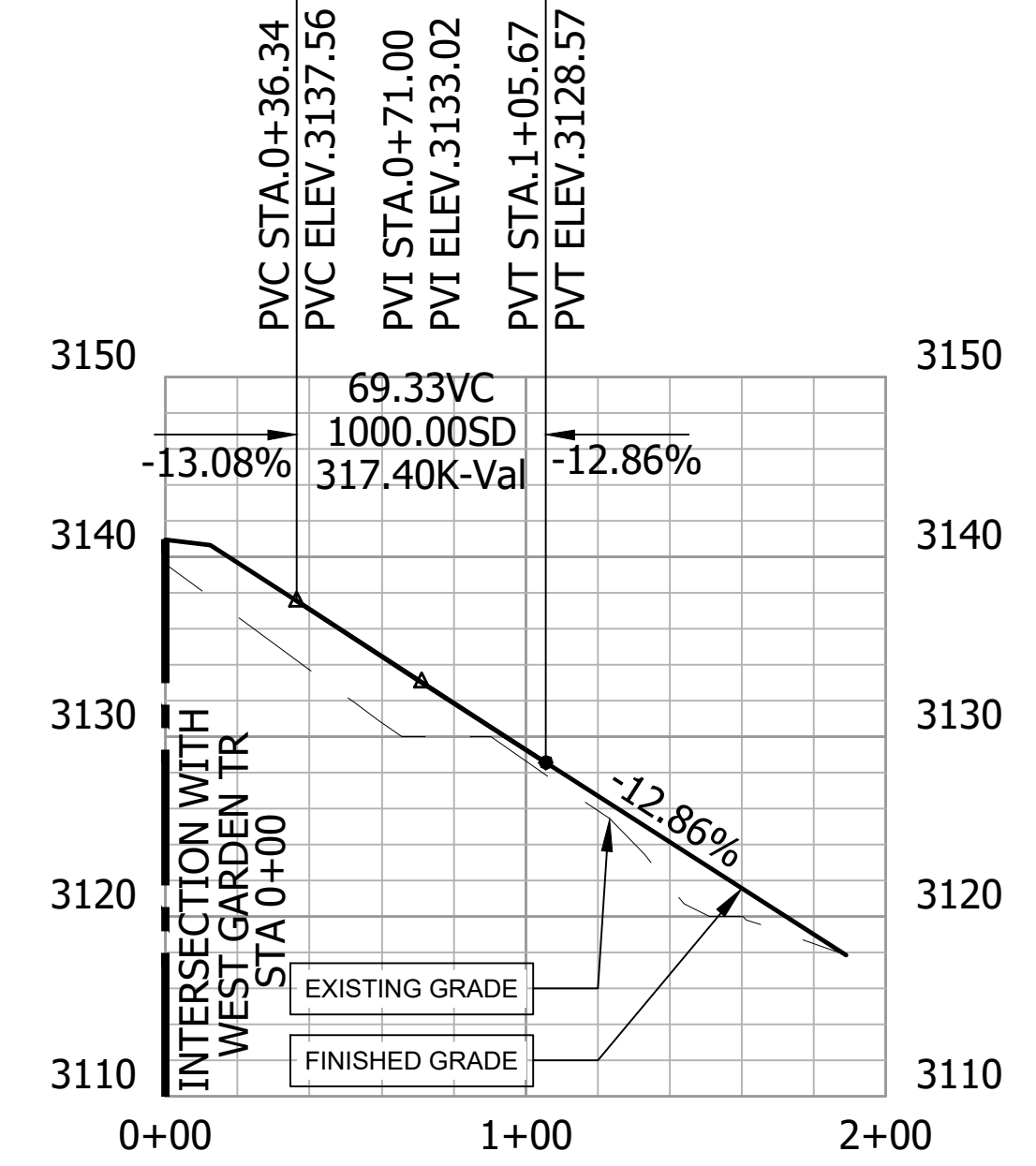
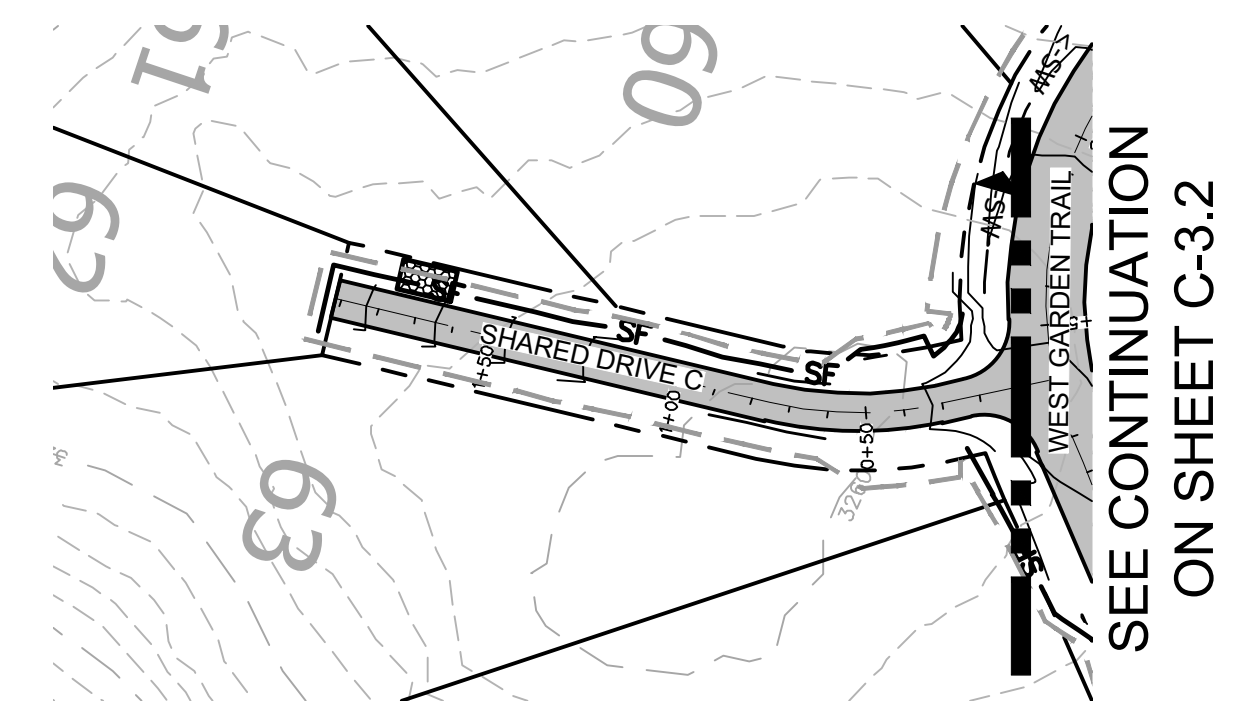
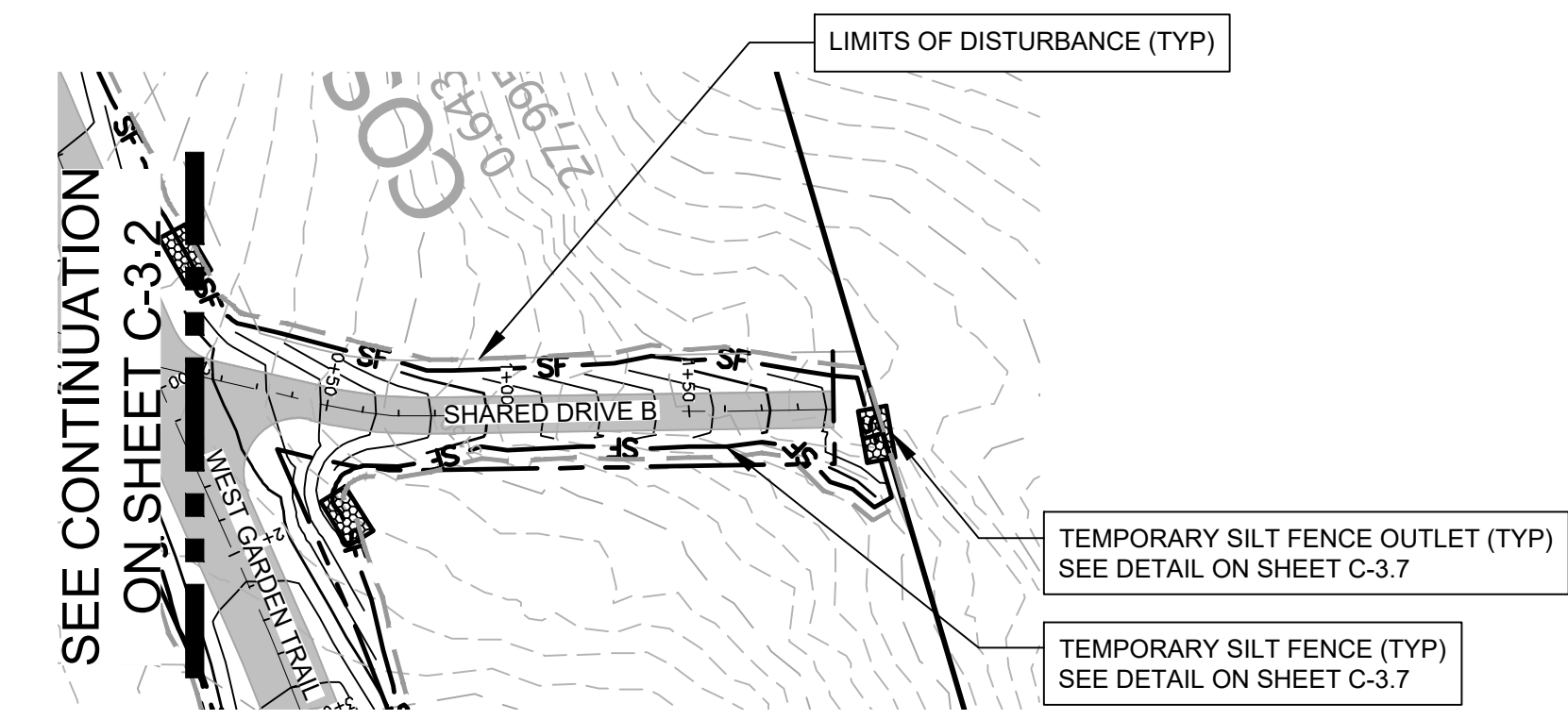
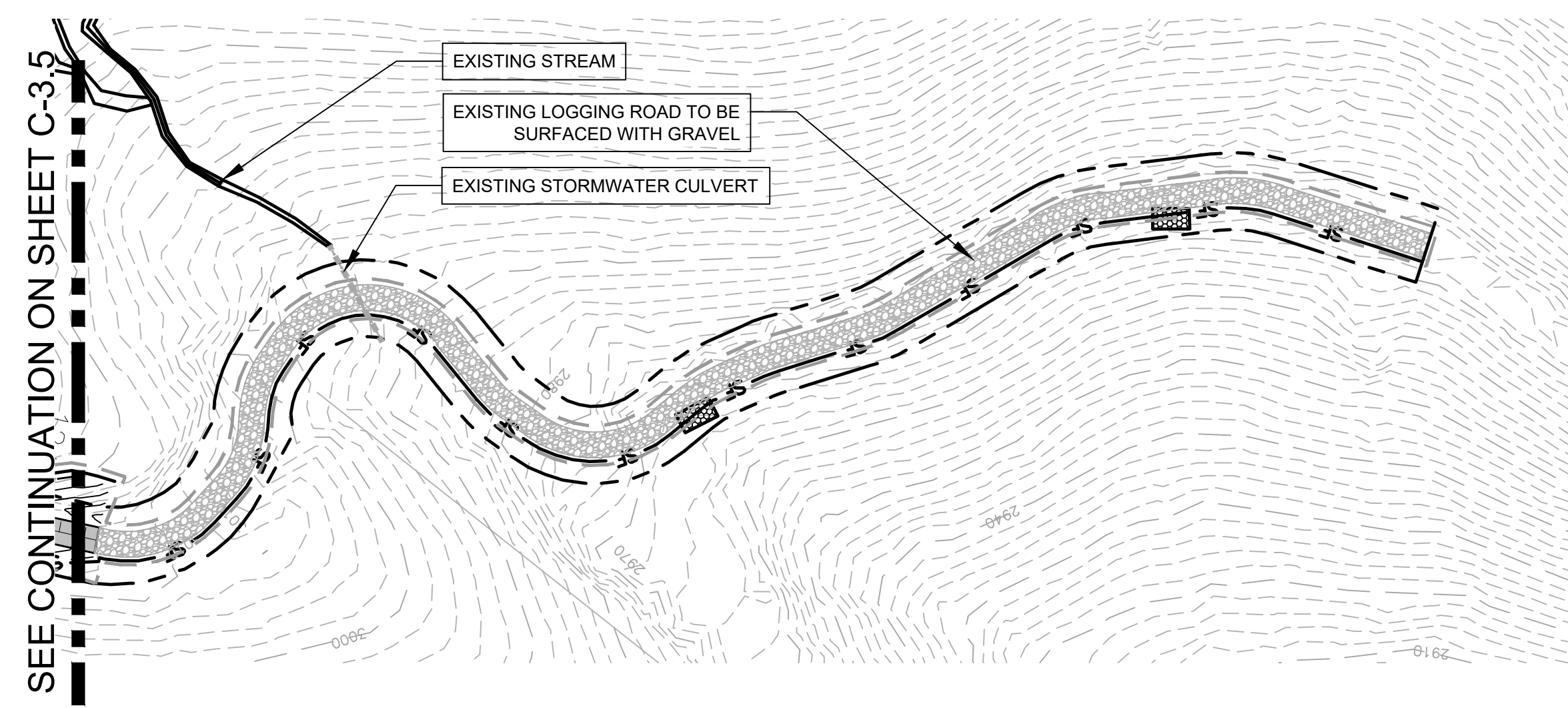
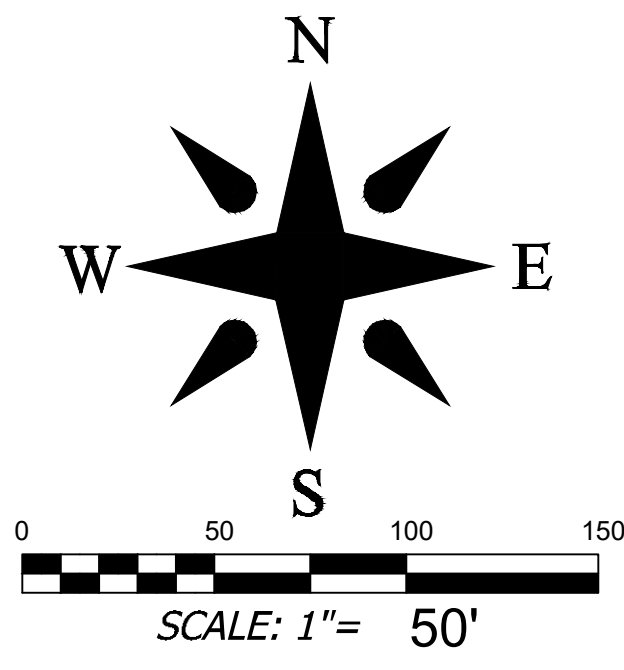


<b>Project No:</b> 543521	<b>Rich Mountain Phase 3</b>	<b>Date:</b> 12-15-2022	<b>Revisions/Submissions:</b> 1 HENDERSON COUNTY PLANNING
<b>Drawing Title:</b> C-3.4	<b>Major Subdivision:</b> MAJOR SUBDIVISION	<b>Scale:</b> AS NOTED	<b>Revisions:</b> JHK ZAW ZAW JHK
<b>Drawing Title:</b> ESC AND STORM PLAN WITH ROAD PROFILES		<b>Design:</b> ZAW	
<b>Location:</b> RICH MOUNTAIN PHASE 3 MAJOR SUBDIVISION HENDERSON COUNTY NORTH CAROLINA		<b>Checked:</b> JHK	
<b>Professional Engineer:</b> JHK		<b>Professional Engineer:</b> JHK	
<b>Company:</b> BROOKS ENGINEERING ASSOCIATES		<b>Company:</b> BROOKS ENGINEERING ASSOCIATES	
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Project No: <b>543521</b>	Drawing Title: <b>C-3.6</b>	RICH MOUNTAIN PHASE 3		Date 12-15-2022
		MAJOR SUBDIVISION		
HENDERSON COUNTY		REVISIONS/SUBMISSIONS		No.
HENDERSON COUNTY		1		HENDERSON COUNTY PLANNING
NORTH CAROLINA		SEAL		035686
NORTH CAROLINA		ENGINEER		J.H.K.
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DESIGNED: ZAW		REVIEWED: JHK		
DRAWN: ZAW		SCALE: AS NOTED		
CHECKED: JHK		DATE: 12-15-2022		
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PLANNING • ENGINEERING • SURVEYING				
• ENVIRONMENTAL SERVICES •				
ESC AND STORM PLAN WITH ROAD PROFILES				



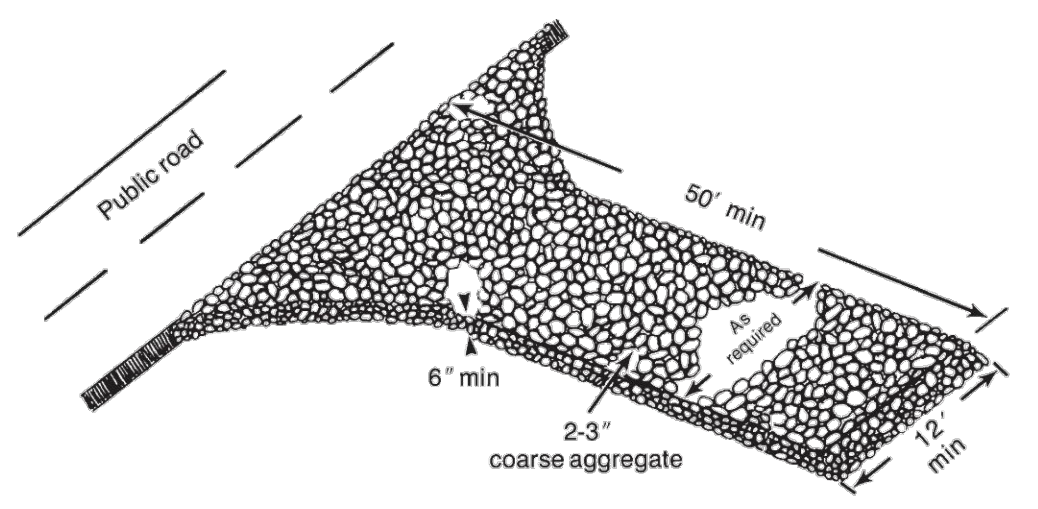


Figure 6.09a Gravel entrance/exit traps sediment from leaving the construction site (modified from Va SWCD).

**Washing**—If conditions at the site are such that most of the mud and sediment are not removed by vehicles traveling over the gravel, the tires should be washed. Washing should be done on an area stabilized with crushed stone that drains into a sediment trap or other suitable disposal area. A wash rack may also be used to make washing more convenient and effective.

- Construction Specifications**
1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
  2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
  3. Provide drainage to carry water to a sediment trap or other suitable outlet.
  4. Use geotextile fabrics because they improve stability of the foundation in locations subject to seepage or high water table.

**Maintenance** Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing 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.

**A CONSTRUCTION ENTRANCE/EXIT - NCDEQ 6.06**  
SCALE= NTS

**Construction Specifications**

- MATERIALS**
1. Use a synthetic filter fabric of at least 95% by weight of polyolefins or polyester, which is certified by the manufacturer or supplier as conforming to the requirements in ASTM D 6461, which is shown in part in Table 6.62b. Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120° F.
  2. Ensure that posts for sediment fences are 1.25 lb/lin ft minimum steel with a minimum length of 3 feet. Make sure that steel posts have projections to facilitate fastening the fabric.
  3. 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

Temporary Silt Fence Material Property Requirements				
Test Material	Units	Supported <sup>1</sup> Silt Fence	Un-Supported <sup>2</sup> 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 <sup>3</sup>	ASTM D 4491	sec-1	0.05 (90)	MARV
Apparent Opening Size <sup>4</sup>	ASTM D 4751	mm	0.60 (30)	Max. ARV <sup>5</sup>
		(US Sieve #)		
Ultraviolet Stability	ASTM D 4355	% Retained Strength	70% after 500h of exposure	70% after 500h of exposure
			Typical	

<sup>1</sup> 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.  
<sup>2</sup> 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.  
<sup>3</sup> As measured in accordance with Test Method D 4632.

- CONSTRUCTION**
1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabrics.
  2. Ensure that the height of the sediment fence does not exceed 24 inches above the ground surface. (Higher fences may impound volumes of water sufficient to cause failure of the structure.)
  3. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with 4 feet minimum overlap to the next post.
  4. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts. Extend the wire mesh support to the bottom of the trench. Fasten the wire reinforcement, then fabric on the upslope side of the fence post. Wire or plastic zip ties should have minimum 50 pound tensile strength.
  5. When a wire mesh support fence is used, space posts a maximum of 8 feet apart. Support posts should be driven securely into the ground a minimum of 24 inches.
  6. Extra strength filter fabric with 6 feet post spacing does not require wire mesh support fence. Securely fasten the filter fabric directly to posts. Wire or plastic zip ties should have minimum 50 pound tensile strength.
  7. 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).
  8. Place 12 inches of the fabric along the bottom and side of the trench.
  9. Backfill the trench with soil placed over the filter fabric and compact. Thorough compaction of the backfill is critical to silt fence performance.
  10. Do not attach filter fabric to existing trees.

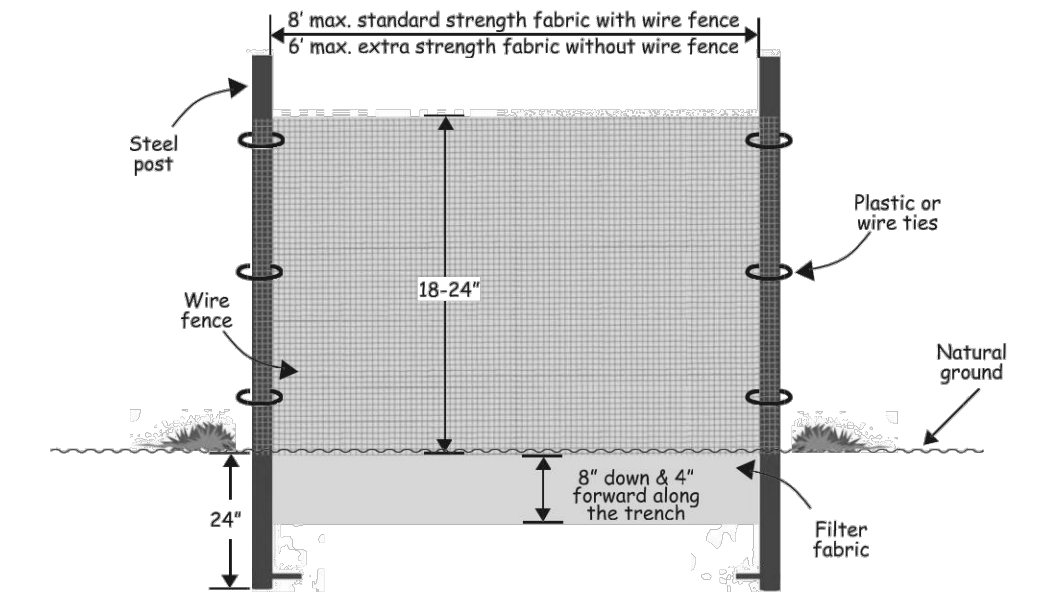


Figure 6.62a Installation detail of a sediment fence.

- 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 deposits 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.

**B SILT FENCE - NCDEQ 6.62**  
SCALE= NTS

- Construction Specifications**
1. Place stone to the lines and dimensions shown in the plan on a filter fabric foundation.
  2. Keep the center stone section at least 9 inches below natural ground level where the dam abuts the channel banks.
  3. Extend stone at least 1.5 feet beyond the ditch bank (Figure 6.83b) to keep water from cutting around the ends of the check dam.
  4. Set spacing between dams to assure that the elevation at the top of the lower dam is the same as the toe elevation of the upper dam.
  5. Protect the channel after the lowest check dam from heavy flow that could cause erosion.
  6. Make sure that the channel reach above the most upstream dam is stable.
  7. Ensure that other areas of the channel, such as culvert entrances below the check dams, are not subject to damage or blockage from displaced stones.

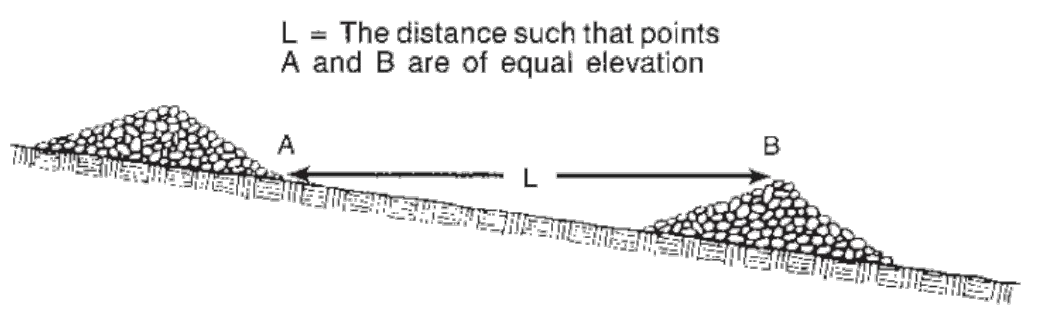
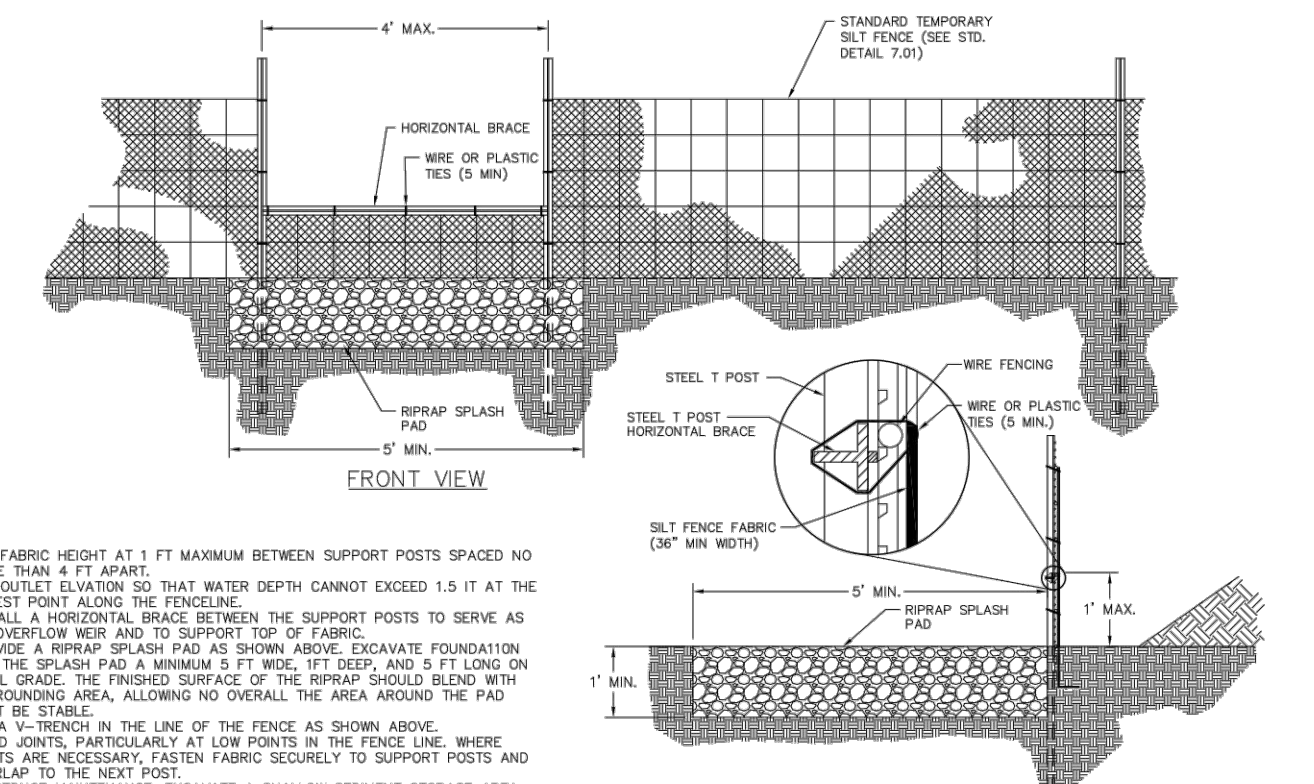


Figure 6.83a Space check dams in a channel so that the crest of downstream dam is at elevation of the toe of upstream dam.

**D TEMPORARY CHECK DAM SPACING SPECIFICATION**  
SCALE= NTS



- NOTES:**
1. SET FABRIC HEIGHT AT 1 FT MAXIMUM BETWEEN SUPPORT POSTS SPACED NO MORE THAN 4 FT APART.
  2. SET OUTLET ELEVATION SO THAT WATER DEPTH CANNOT EXCEED 1.5 FT AT THE LOWEST POINT ALONG THE FENCELINE.
  3. INSTALL A HORIZONTAL BRACE BETWEEN THE SUPPORT POSTS TO SERVE AS AN OVERFLOW WEIR AND TO SUPPORT TOP OF FABRIC.
  4. PROVIDE A RIPRAP SPLASH PAD AS SHOWN ABOVE. EXCAVATE FOUNDATION FOR THE SPLASH PAD A MINIMUM 3 FT WIDE, 1 FT DEEP, AND 9 FT LONG ON LEVEL GRADE. THE FINISHED SURFACE OF THE RIPRAP SHOULD BLEND WITH SURROUNDING AREA, ALLOWING NO OVERALL AREA AROUND THE PAD MUST BE STABLE.
  5. USE A V-TRENCH IN THE LINE OF THE FENCE AS SHOWN ABOVE.
  6. 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.
  7. 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.

**E SILT FENCE REINFORCED OUTLET - NCDEQ 6.62**  
SCALE= NTS

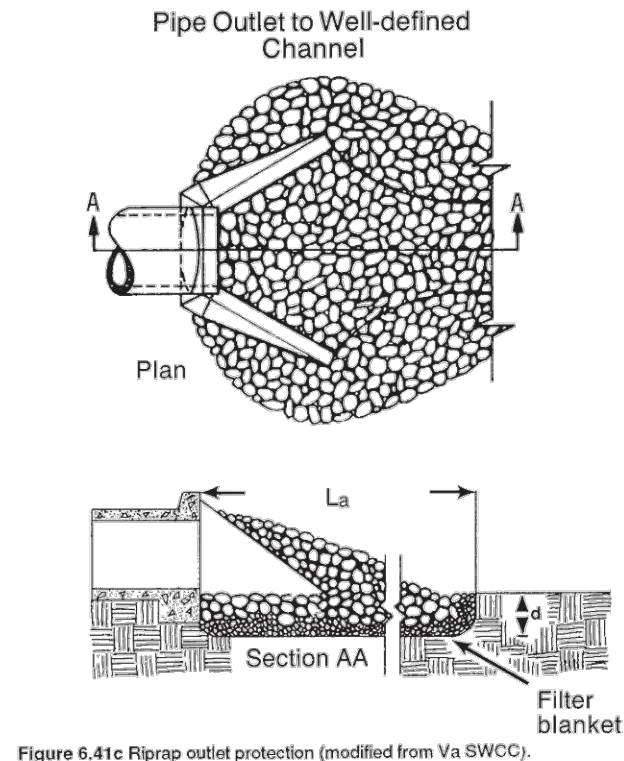
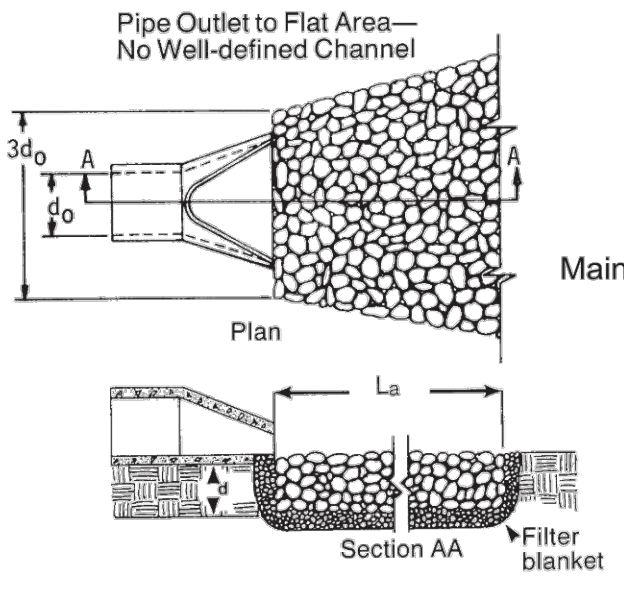


Figure 6.41c Riprap outlet protection (modified from Va SWCD).

- Construction Specifications**
1. Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
  2. The riprap and gravel filter must conform to the specified grading limits shown on the plans.
  3. Filter cloth, when used, must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of filter cloth over the damaged area. All connecting joints should overlap so the top layer is above the downstream layer a minimum of 1 foot. If the damage is extensive, replace the entire filter cloth.
  4. Riprap may be placed by equipment, but take care to avoid damaging the filter.
  5. The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.
  6. Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
  7. Construct the apron on zero grade with no overflow at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
  8. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron.
  9. Immediately after construction, stabilize all disturbed areas with vegetation (Practices 6.10, Temporary Seeding, and 6.11, Permanent Seeding).

- Maintenance** Inspect riprap outlet structures weekly and after significant (1/2 inch or greater) rainfall events to see if any erosion around or below the riprap has taken place, or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

- Notes**
1.  $L_a$  is the length of the riprap apron.
  2.  $d = 1.5$  times the maximum stone diameter but not less than 6".
  3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the bank, whichever is less.
  4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.
- OUTLET PROTECTION DIMENSIONS ON SHEET C-5.1.

**F OUTLET PROTECTION - NCDEQ 6.41**  
SCALE= NTS

**C TEMPORARY CHECK DAM - NCDEQ 6.83**  
SCALE= NTS

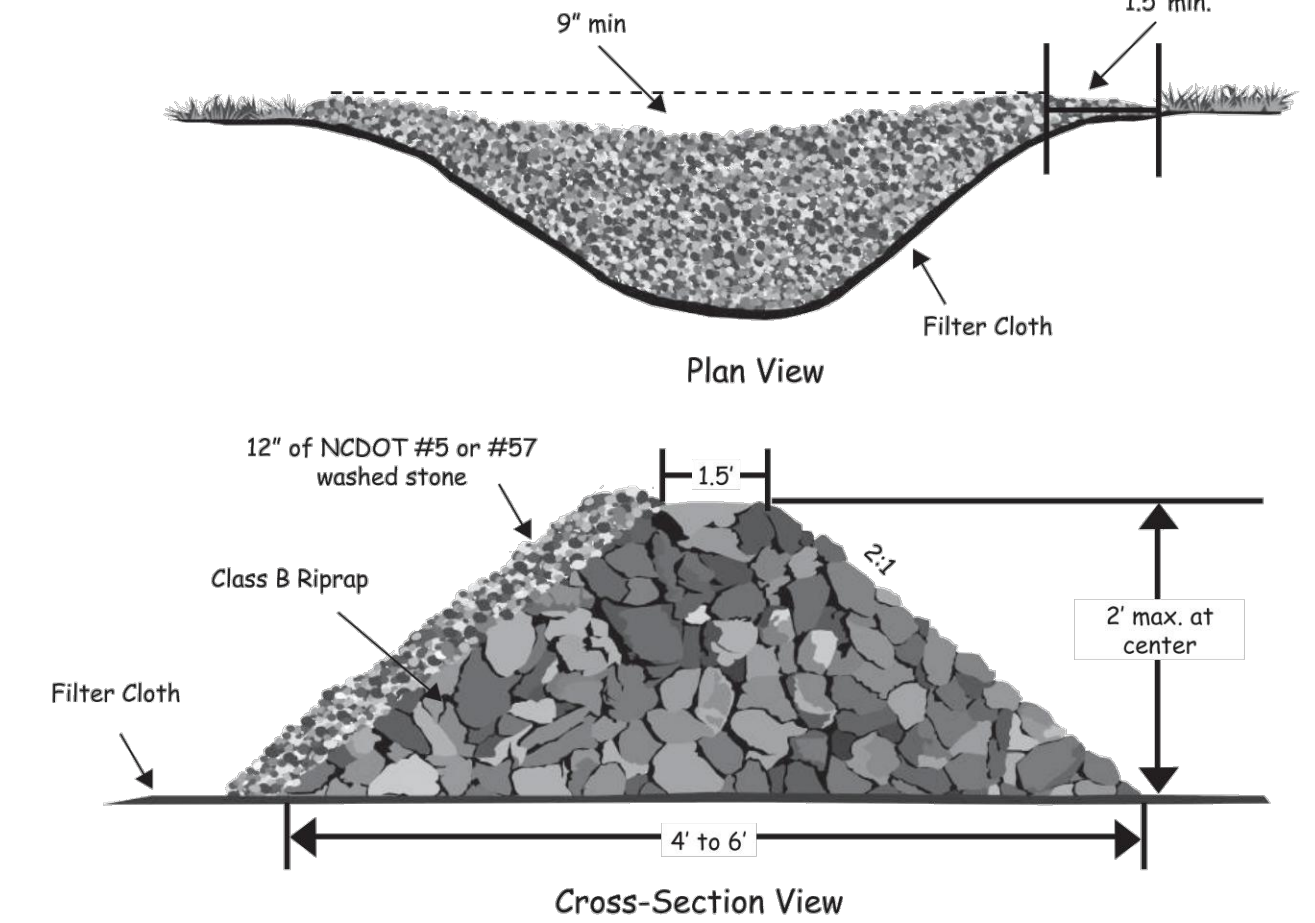
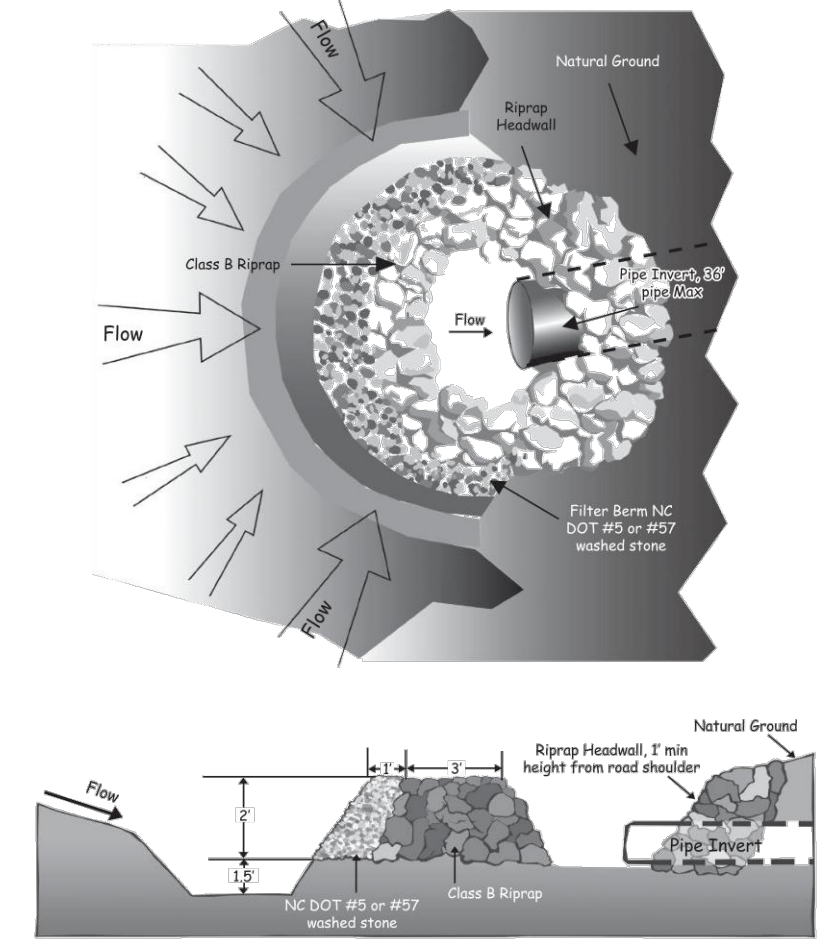


Figure 6.83b Stone check dam stone should be placed over the channel banks to keep water from cutting around the dam.

- Maintenance** Inspect check dams and channels at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Clean out sediment, straw, limbs, or other debris that could clog the channel when needed.
- Anticipate submergence and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, additional measures can be taken such as, installing a protective riprap liner in that portion of the channel (Practice 6.31, Riprap-line and Paved Channels).
- Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.

- References** Runoff Conveyance Measures  
 6.30, Grass-lined Channels  
 6.31, Riprap-lined and Paved Channels  
 North Carolina Department of Transportation  
 Standard Specifications for Roads and Structures

**G ROCK PIPE INLET PROTECTION - NCDEQ 6.55**  
SCALE= NTS



- 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 NCDOT #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.
- Check the structure for damage. Any riprap displaced from the stone horseshoe must be replaced immediately.
- After all the sediment-producing areas have been permanently stabilized, remove the structure and all the unstable sediment. Smooth the area to blend with the adjoining areas and provide permanent ground cover (Surface Stabilization).

Date	12-15-2022
REVISIONS/SUBMISSIONS	HENDERSON COUNTY PLANNING
No.	1

**SEAL 035686**  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
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 BROOKS ENGINEERING ASSOCIATES  
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 Planning • Engineering • Surveying  
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Project No: 543521  
 RICH MOUNTAIN PHASE 3  
 MAJOR SUBDIVISION  
 HENDERSON COUNTY  
 NORTH CAROLINA  
 Drawing Title: EROSION CONTROL DETAILS  
 C-3.7





**ROLLMAX™**  
ROLLED EROSION CONTROL

**Specification Sheet**  
**EroNet™ S150™ Erosion Control Blanket**

**DESCRIPTION**  
The short-term double net erosion control blanket shall be a machine-produced mat of 100% agricultural straw with a functional longevity of up to 12 months. (NOTE: seasonal longevity may vary depending upon climate conditions, soil, geographical location, and elevation). The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with a lightweight photodegradable polypropylene netting having an approximate 0.50 x 0.50 in. (12.7 x 12.7 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers with degradable thread. The blanket shall be manufactured with a colored thread stitched along both outer edges (approximately 2 1/2 inches [6-12.5 cm] from the edge) as an overlap guide for adjacent mats.

The S150 shall meet Type 2-D specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FIP-03 Section 713.17.

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.32 in. (8.13 mm)
Resiliency	ECTC Guidelines	80.5%
Water Absorbency	ASTM D197	370%
Mass/Unit Area	ASTM D6475	8.38 lb/sq yd (7.71 g/cm <sup>2</sup> )
Stiffness	ECTC Guidelines	15%
Soil Resistance	ECTC Guidelines	Yes
Light Penetration	ASTM D6587	12.4%
Tensile Strength - MD	ASTM D6818	798.6 N/m (2.87 kN/m)
Tensile Strength - TD	ASTM D6818	914.8 N/m (3.18 kN/m)
Elongation - MD	ASTM D6818	26.7%
Elongation - TD	ASTM D6818	26.7%
Biomass Improvement	ASTM D7322	37%

Material Content	
Matrix	100% Straw Fiber 0.5 lbs/sq yd (0.27 kg/m <sup>2</sup> )
Netting	Top and bottom mats: lightweight photodegradable 1.5 lbs/1000 sq ft (0.73 kg/100 sq m)
Thread	Degradable

Design Permissible Shear Stress	
Unvegetated Shear Stress	1.5 psf (0.04 Pa)
Unvegetated Velocity	6.0 fps (1.83 m/s)

NTPEP ASTM D6460 Large-Scale Channel	
Unvegetated Shear Stress	2.42 psf (0.5 Pa)
Unvegetated Velocity	9.0 fps (2.75 m/s)

Slope Design Data: C Factors	
Slope Length (L)	< 31 3.1 - 2.1 > 2.1
< 20 ft (6 m)	0.004 0.106 N/A
20-50 ft	0.02 0.118 N/A
> 50 ft (15.2 m)	0.12 0.180 N/A

NTPEP Large-scale Slope	
ASTM D6460 - C Factor	0.029

Standard Roll Sizes	
Width	6.67 ft (2.03 m) 8 ft (2.4 m) 16.0 ft (4.87 m)
Length	108 ft (32.92 m) 112 ft (34.14 m) 112 ft (34.14 m)
Weight ± 10%	40 lbs (18.14 kg) 50 lbs (22.68 kg) 100 lbs (45.36 kg)
Area	80 sq yd (66.9 sq m) 100 sq yd (89.01 sq m) 200 sq yd (178.02 sq m)

Roughness Coefficients - Unveg.	
Flow Depth	Manning's n
< 0.50 ft (0.15 m)	0.055
0.50 - 2.0 ft	0.055-0.021
> 2.0 ft (0.60 m)	0.021

Western Green 4020 E. Boulevard, Raleigh, NC 27604  
800-772-2040

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**ROLLMAX™**  
ROLLED EROSION CONTROL

**Specification Sheet**  
**EroNet™ P300™ Permanent Erosion Control Blanket**

**DESCRIPTION**  
The permanent erosion control blanket shall be a machine-produced mat of 100% UV stable polypropylene fiber. The matting shall be of consistent thickness with the synthetic fibers evenly distributed over the entire area of the mat. The matting shall be covered on the top side with black heavyweight UV-stabilized polypropylene netting having ultraviolet additives to delay breakdown and an approximate 0.50 x 0.50 inch (12.7 x 12.7 cm) mesh. The bottom net shall also be UV-stabilized polypropylene with 0.63 x 0.63 inch (1.57 x 1.57 cm) mesh size. The blanket shall be sewn together on 1.5 inch (3.81 cm) centers with non-degradable thread. All mats shall be manufactured with a colored thread stitched along both outer edges as an overlap guide for adjacent mats. The P300 shall meet Type 5A, 5B, specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FIP-03 Section 713.18.

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.42 in. (10.67 mm)
Resiliency	ASTM D6524	91.5%
Density	ASTM D792	0.18 g/cm <sup>3</sup>
Mass/Unit Area	ASTM 4666	13.01 lb/sq yd (10.43 kg/m <sup>2</sup> )
UV Stability	ASTM D4151/1	1000 hr
Porosity	ECTC Guidelines	95.89%
Softness	ASTM D1988	0.24 in. (6.10 mm)
Light Penetration	ASTM D6587	17.9%
Tensile Strength - MD	ASTM D6818	428.8 N/m (1.51 kN/m)
Tensile Strength - TD	ASTM D6818	228.8 N/m (0.81 kN/m)
Elongation - MD	ASTM D6818	28.1%
Elongation - TD	ASTM D6818	26.7%
Biomass Improvement	ASTM D7322	49%

Material Content	
Matrix	100% UV stable Polypropylene Fiber 0.7 lbs/sq yd (0.38 kg/m <sup>2</sup> )
Netting	Top: UV-stabilized Polypropylene 5 lbs/1000 sq ft (2.4 kg/m <sup>2</sup> )
Bottom: UV-stabilized Polypropylene	3 lbs/1000 sq ft (1.4 g/m <sup>2</sup> )
Thread	Polypropylene, UV stable

Design Permissible Shear Stress	
Unvegetated Shear Stress	9.0 psf (0.25 Pa)
Unvegetated Velocity	9.0 fps (2.75 m/s)

NTPEP ASTM D6460 Large-Scale Channel	
Unvegetated Shear Stress	2.42 psf (0.5 Pa)
Unvegetated Velocity	9.0 fps (2.75 m/s)

Slope Design Data: C Factors	
Slope Length (L)	< 31 3.1 - 2.1 > 2.1
< 20 ft (6 m)	0.001 0.029 0.082 0.034
20-50 ft	0.036 0.060 0.086 0.034-0.020
> 50 ft (15.2 m)	0.070 0.090 0.110 0.020

Standard Roll Sizes	
Width	6.67 ft (2.03 m) 8 ft (2.4 m)
Length	108 ft (32.92 m) 112 ft (34.14 m)
Weight ± 10%	61 lbs (27.66 kg) 76.25 lbs (34.59 kg)
Area	80 sq yd (66.9 sq m) 100 sq yd (89.01 sq m)

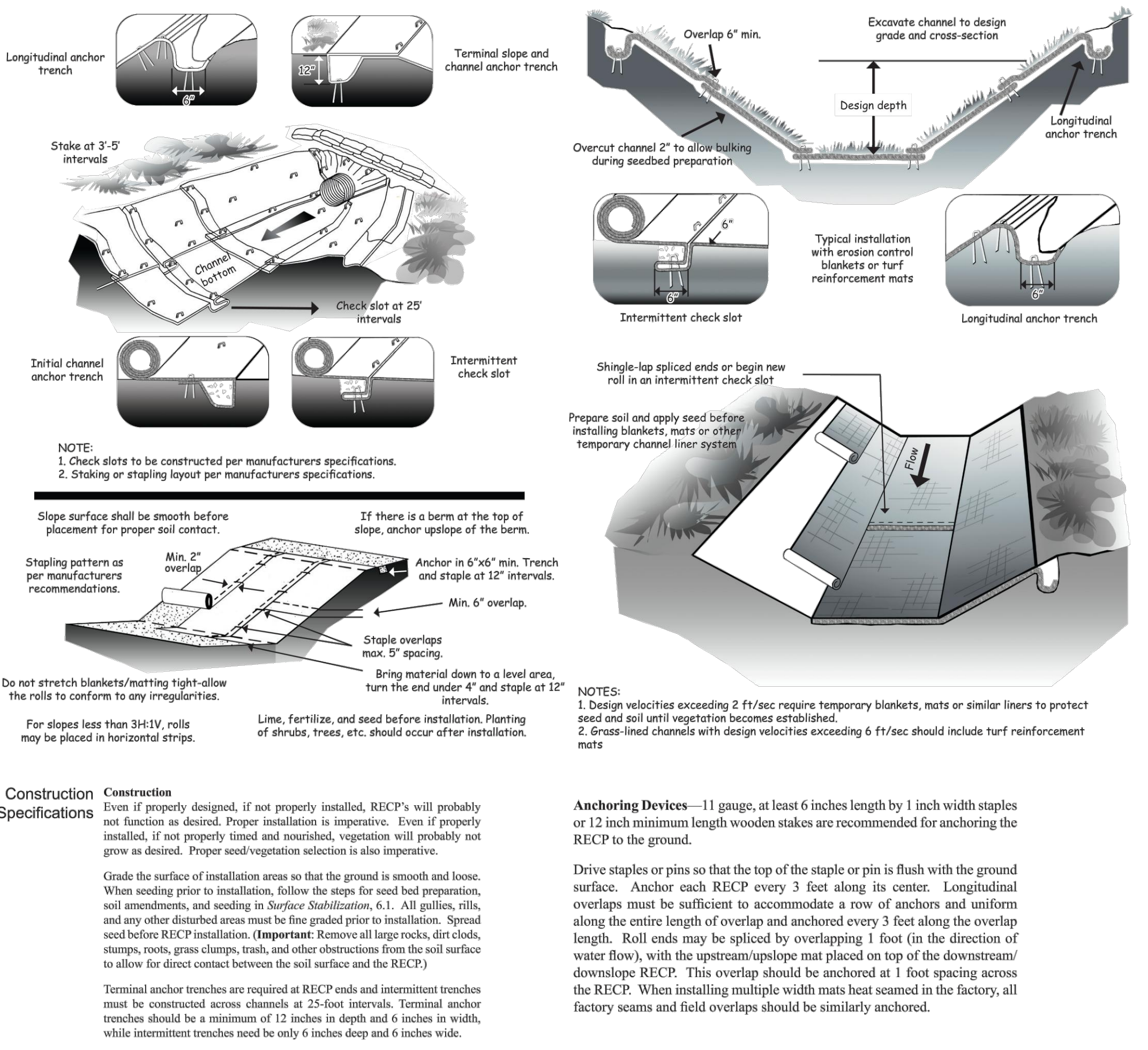
Roughness Coefficients - Unveg.	
Flow Depth	Manning's n
< 0.50 ft (0.15 m)	0.034
0.50 - 2.0 ft	0.034-0.020
> 2.0 ft (0.60 m)	0.020

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**H NORTH AMERICAN GREEN SC-150**  
SCALE= NTS

**I NORTH AMERICAN GREEN P-300**  
SCALE= NTS



**J MATTING INSTALLATION - NCDEQ 6.17**  
SCALE= NTS

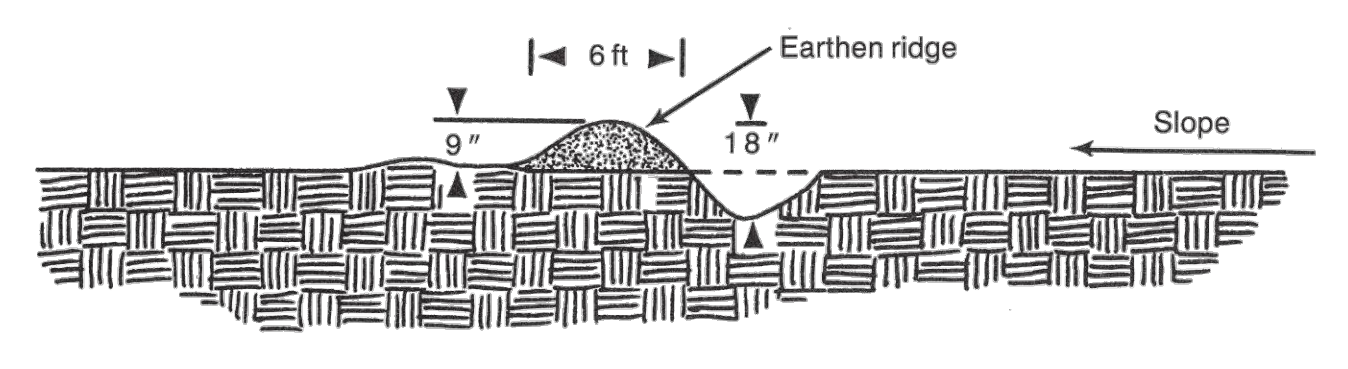


Figure 6.23b Section view of a water bar.

**Maintenance**  
Periodically inspect right-of-way diversions for wear and after every heavy rainfall for erosion damage. Immediately remove sediment from the flow area, and repair the dike. Check outlet areas, and make timely repairs as needed. When permanent road drainage is established and the area above the temporary right-of-way diversions is permanently stabilized, remove the dike, and fill the channel to blend with the natural ground, and appropriately stabilize the disturbed area.

**References**  
**Outlet Protection**  
6.40, Level Spreader  
6.41, Outlet Stabilization Structure

**Appendix**  
8.03, Estimating Runoff

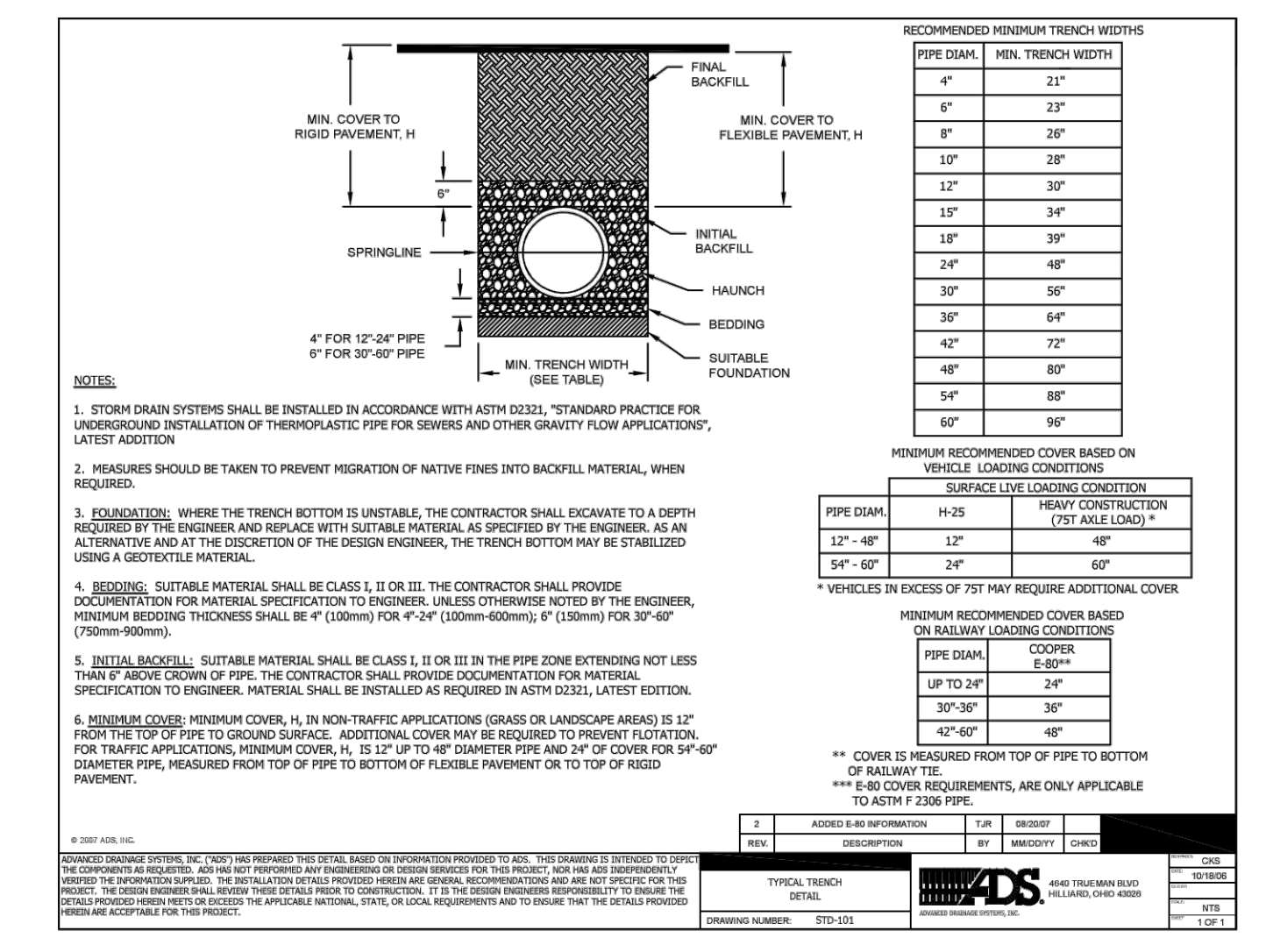
**Design Criteria**  
**Height**—18-inch minimum measured from the channel bottom to the ridge top.  
**Side slope**—2:1 or flatter  
3:1 or flatter where vehicles cross  
**Base width of ridge**—6 feet minimum (Figure 6.23b).  
**Spacing of water bars** is shown in Table 6.23a:

Slope (%)	Spacing (Ft)
<5	125
5 to 10	100
10 to 20	75
20 to 35	50
>35	25

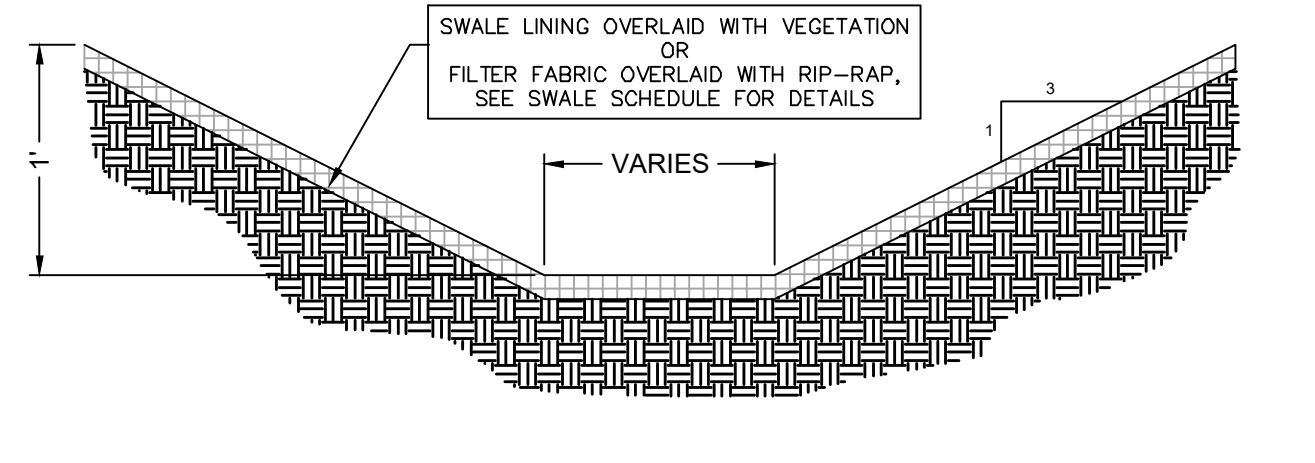
**Grade and angle**—A crossing angle should be selected to provide a positive grade not to exceed 2%  
**Outlet**—Diversions should have stable outlets, either natural or constructed. Site spacing may need to be adjusted for field conditions to use the most suitable areas for water disposal.

**Construction Specifications**  
1. Install the diversion as soon as the right-of-way has been cleared and graded.  
2. Disk the base for the constructed ridge before placing fill.

**K RIGHT OF WAY DIVERSION (WATER BARS)**  
SCALE= NTS



**L PIPE BEDDING DETAIL**  
SCALE= NTS



**M TYPICAL SWALE CROSS-SECTION**  
SCALE= NTS

**REVISIONS/SUBMISSIONS**

No.	Date
1	12-15-2022

HENDERSON COUNTY PLANNING

**PROFESSIONAL SEAL**  
NORTH CAROLINA ENGINEER  
SEAL 035686  
JAMES H. KIRBY, III  
10A108220004

**ENGINEERING ASSOCIATES**  
NORTH CAROLINA  
CERT. # C-3725

**FINAL DRAWING - FOR REVIEW PURPOSES ONLY**

**Design:** ZAW  
**Drawn:** ZAW  
**Checked:** JHK

**Reviewed:** JHK  
**Scale:** AS NOTED  
**Date:** 12-15-2022

15 Arlington Street  
Asheville, N.C. 28801  
Phone: 1-828-232-4700  
Fax: 1-828-232-1331  
www.brookssea.com

**BROOKS ENGINEERING ASSOCIATES**

Planning • Engineering • Surveying • Environmental Services •

**Project No:** 543521  
**Rich Mountain Phase 3**  
**Major Subdivision**  
HENDERSON COUNTY

**Drawing Title:** EROSION CONTROL DETAILS

**C-3.8**

Project Location: L:\2021 Projects\543521 Riddle Falls\_Rich.Mtn. Dwg\Detail\DWG (Phase 3)\Call-Details-543521 PH3.dwg







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

**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**

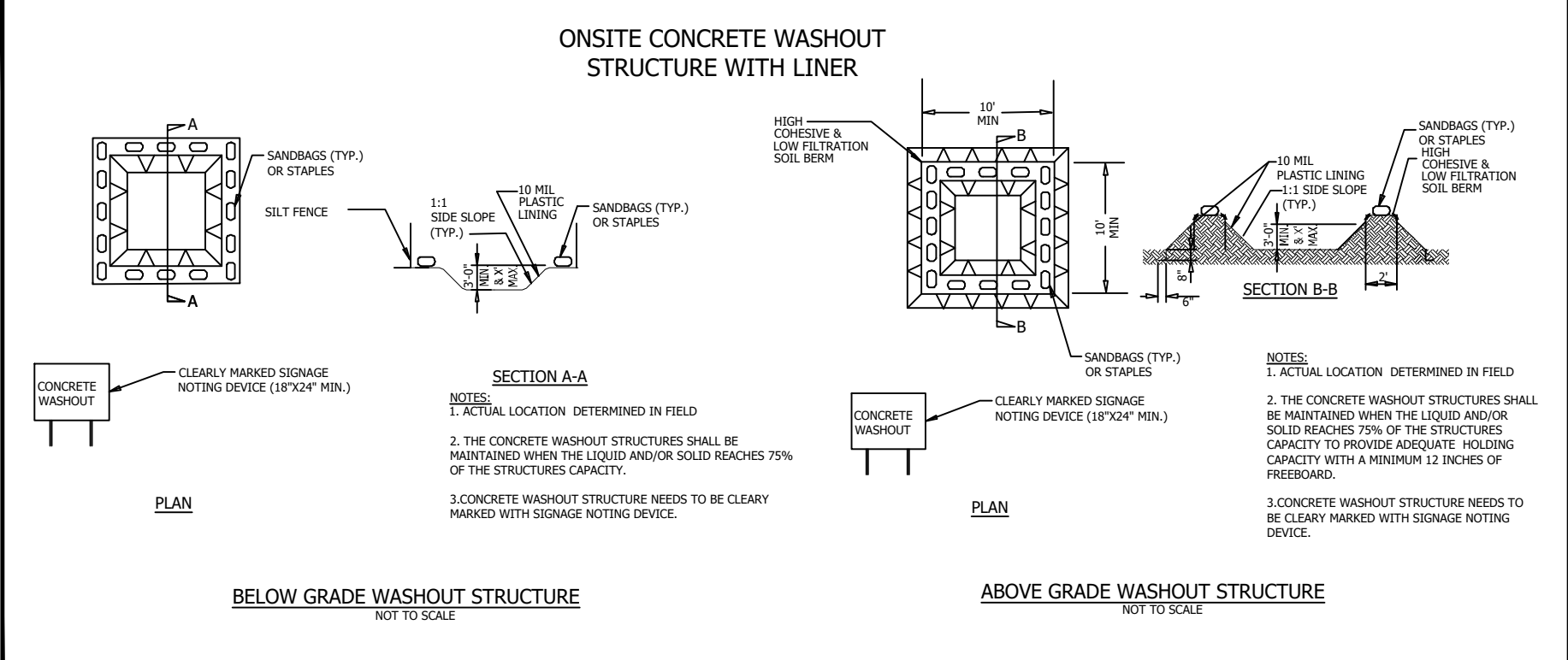
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled,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

**NCG01 GROUND STABILIZATION AND MATERIALS HANDLING**

**EFFECTIVE: 04/01/19**

Project No: <b>543521</b>	Drawing Title: <b>C-3.10</b>	NORTH CAROLINA <b>RICHLAND COUNTY</b> MAJOR SUBDIVISION	REVISIONS/SUBMISSIONS 1 HENDERSON COUNTY PLANNING	Date 12-15-2022
			<b>FINAL DRAWING - FOR REVIEW PURPOSES ONLY</b>	
Designated: ZAW Drawn: ZAW Checked: JHK		Reviewed: JHK Status: AS NOTED Date: 12-15-2022 15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brookssea.com		
Planning • Engineering • Surveying • Environmental Services •		NORTH CAROLINA <b>RICHLAND COUNTY</b> MAJOR SUBDIVISION		



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.

Table with 3 columns: Inspect, Frequency (during normal business hours), Inspection records must include: (1) Rain gauge maintained in good working order, (2) E&SC Measures and within 24 hours of a rain event > 1.0 inch in 24 hours, (3) Stormwater discharge outfalls (SDCs), (4) Perimeter of site, (5) Streams or wetlands onsite or offsite (where accessible), (6) Ground stabilization measures

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

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.

Table with 2 columns: 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. (b) A phase of grading has been completed. (c) Ground cover is located and installed in accordance with the approved E&SC plan. (d) The maintenance and repair requirements for all E&SC measures have been performed. (e) Corrective actions have been taken to E&SC measures.

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 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.

Table with 2 columns: Occurrence, Reporting Timeframes (After Discovery) and Other Requirements. (a) Visible sediment deposition in a stream or wetland, (b) Oil spills and release of hazardous substances per Item 1(b)-(c) above, (c) Anticipated bypasses [40 CFR 122.41(m)(3)], (d) Unanticipated bypasses [40 CFR 122.41(m)(3)], (e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(1)(6)].

NORTH CAROLINA  
Environmental Quality

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.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

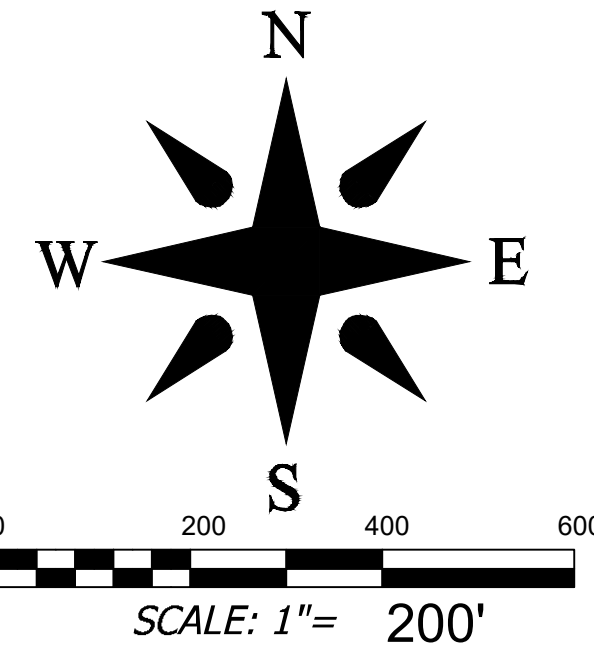
EFFECTIVE: 04/01/19

Vertical sidebar containing: Date (12-15-2022), REVISIONS/SUBMISSIONS (HENDERSON COUNTY PLANNING), No. 1, Professional Engineer Seal (SEAL 035686), BROOKS ENGINEERING ASSOCIATES logo, Review/Design/Draw/Check info (JHK, ZAW, JHK), Project No. 543521, Drawing Title: C-3.11, RICH MOUNTAIN PHASE 3 MAJOR SUBDIVISION, HENDERSON COUNTY, NCG01 DETAILS, and File Location: L:\2021 Projects\543521 Riddle Falls\_Rich Mtn. Dam Diligence\Dwg (Phase 3)\Civil-Details-543521 PH3.dwg



**SITE PLAN LEGEND**

- EXIST. BOUNDARY
- - - EXIST. ADJOINER
- · - · EXIST. STREAM
- · - · EXIST. STREAM BUFFER
- · - · EXIST. WETLAND
- EXIST. FEMA NON-ENCROACHMENT
- EXIST. FEMA FLOOD HAZARD AREA (1%)
- EXIST. FEMA FLOOD HAZARD AREA (0.2%)
- - - EXIST. RIGHT OF WAY
- - - EXIST. BUILDING SETBACK
- EXIST. BUILDING
- EXISTING SIDEWALK
- EXISTING PAVEMENT
- - - NEW RIGHT OF WAY
- - - NEW EASEMENT
- - - BUILDING SETBACK LINE
- NEW COMMON OPEN SPACE
- NEW BUILDING
- NEW PAVEMENT



**DEVELOPMENT DATA**

PROPERTY ADDRESS: LOCUST GROVE ROAD  
HENDERSONVILLE NC

PIN NUMBER: SEE COVER SHEET

PROPERTY SIZE: PH3: 150.06 AC - TOTAL: 377.96 AC

ZONING REVIEW: HENDERSON COUNTY

EROSION CONTROL REVIEW: HENDERSON COUNTY

STORMWATER REVIEW: HENDERSON COUNTY

ZONING CLASSIFICATION: R3

PROPOSED NUMBER OF UNITS: PH3: 32 - TOTAL: 83

PROPOSED DENSITY: PH3: 0.21 LOTS/AC - TOTAL: 0.22 LOTS/AC

LOTS 1-51 AND 83 ARE LOCATED WITHIN A FARMLAND PRESERVATION DISTRICT. LOTS 52-82 ARE WITHIN 1/2 MILE OF A FARMLAND DISTRICT.

WATER AND SEWER WILL BE PROVIDED BY INDIVIDUAL WELLS AND SEPTIC SYSTEMS.

PUBLIC WATER AND SEWER ARE APPROXIMATELY 3.0 MILES FROM THE SITE.

DRY HYDRANT IS LOCATED APPROXIMATELY 0.90 ROAD MILES FROM THE ENTRANCE TO THE SITE.

PROPERTY OWNER: RIPPLE FALLS LLC

CONTACT: ANDY BAKER

ADDRESS: 69 CLARK GAP ROAD  
FLETCHER NC

EMAIL: ANDY@TFMCAROLINA.COM

PHONE: (616) 402-0367

DEVELOPER: RIPPLE FALLS LLC

CONTACT: ANDY BAKER

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EMAIL: ANDY@TFMCAROLINA.COM

PHONE: (616) 402-0367

ENGINEER: BROOKS ENGINEERING ASSOCIATES

CONTACT: JOHN KINNAIRD, PE

ADDRESS: 17 ARLINGTON ST  
ASHEVILLE, NC 28801

EMAIL: JKINNAIRD@BROOKSEA.COM

PHONE: 828-232-4700

**SITE AND ZONING NOTES**

PROPERTY ZONING: R3

PROPERTY SIZE: PH3: 150.06 AC | TOTAL: 377.96 AC

PROPERTY STEEPER THAN 60%: 16.76 AC (6.82%)

MINIMUM LOT SIZE: 1.50 AC / 35,640 SQ.FT.

SMALLEST PROPOSED LOT: 1.52 ACRES / 66,136 SQ.FT.

COMMON OPEN SPACE: 158.73 AC. (42.0%)

MINIMUM LOT WIDTH: 30' @ R.O.W.

MAXIMUM BUILDING HEIGHT: 40'

SETBACKS:

- FRONT: 15' (LOCAL)
- REAR: 15'
- SIDE: 15'

PROPOSED LINEAR FEET OF ROAD:

- PHASE 1: 7,139 LF
- PHASE 2: 3,681 LF
- PHASE 3: 4,415 LF
- TOTAL ON PROPERTY: 15,235 LF

\*ALL DIMENSIONS ARE FROM EDGE OF ASPHALT, FACE OF CURB, FACE OF WALL, OR FACE OF BUILDING UNLESS OTHERWISE NOTED.

\*ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF DETAILS, SPECIFICATIONS, AND OTHER DEVELOPMENT ORDINANCES OF HENDERSON CO.

	Date	12-15-2022			
	REVISIONS/SUBMISSIONS	HENDERSON COUNTY PLANNING			
No.	1				
		<b>FINAL DRAWING - FOR REVIEW PURPOSES ONLY</b>			
Reviewed:	JHK	Scale:	AS NOTED	Date:	12-15-2022
Designed:	ZAW	Drawn:	ZAW	Checked:	JHK
		15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com			
		Planning • Engineering • Surveying • Environmental Services •			
RICH MOUNTAIN PHASE 3 MAJOR SUBDIVISION HENDERSON COUNTY NORTH CAROLINA		Project No: <b>543521</b> C-4.0 Drawing Title: <b>OVERALL SITE PLAN</b>			



SEE CONTINUATION ON SHEET C-4.4

**SITE PLAN LEGEND**

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. STREAM
- EXIST. STREAM BUFFER
- EXIST. WETLAND
- EXIST. FEMA NON-ENCROACHMENT FLOOD HAZARD AREA (1%)
- EXIST. FEMA FLOOD HAZARD AREA (0.2%)
- EXIST. RIGHT OF WAY
- EXIST. BUILDING SETBACK
- EXIST. BUILDING
- EXISTING SIDEWALK
- EXISTING PAVEMENT
- NEW RIGHT OF WAY
- NEW EASEMENT
- BUILDING SETBACK LINE
- NEW COMMON OPEN SPACE
- NEW BUILDING
- NEW PAVEMENT

**SITE AND ZONING NOTES**

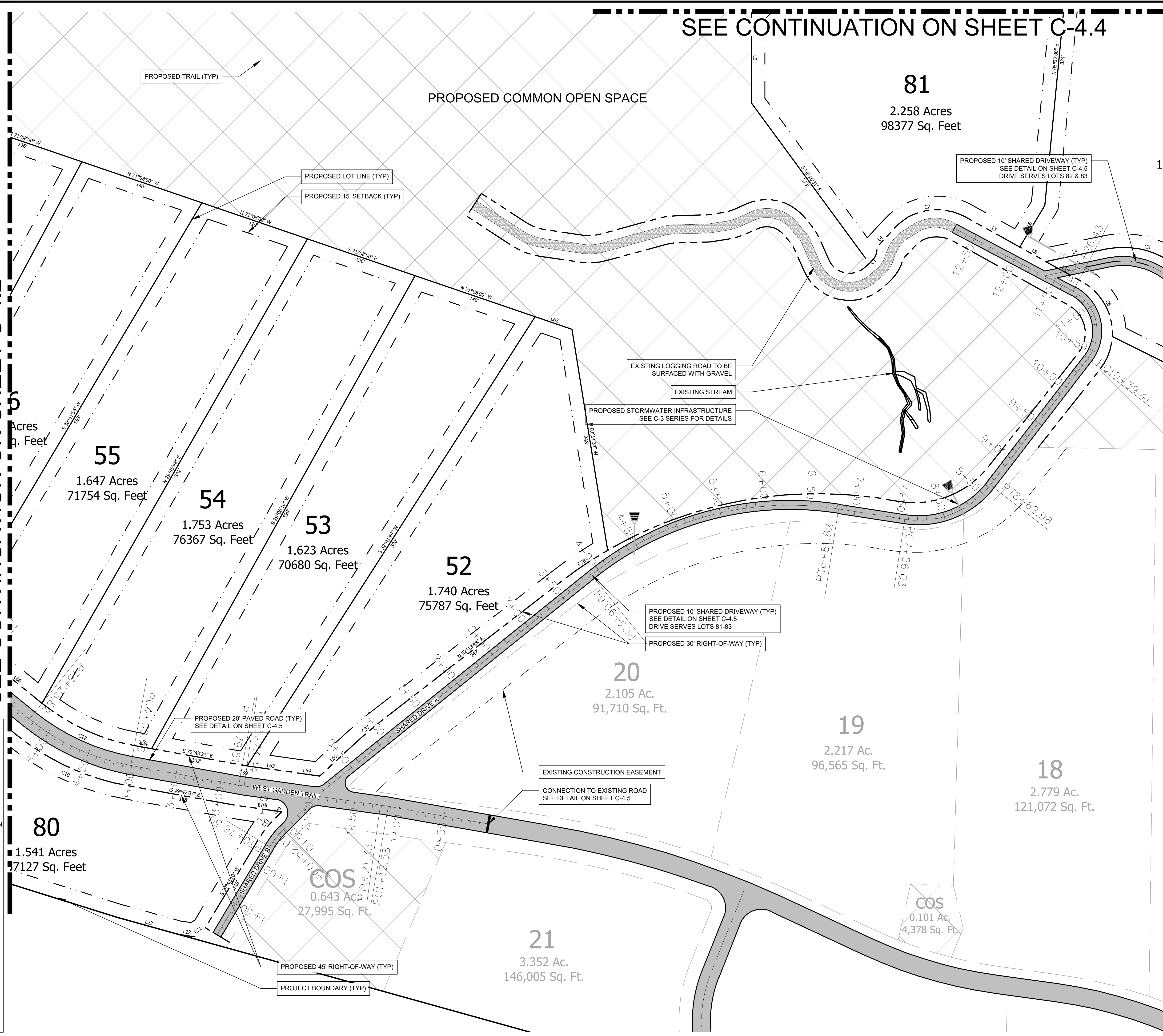
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SCALE: 1" = 50'

**DEVELOPMENT DATA**

PROPERTY ADDRESS: LOCUST GROVE ROAD  
 HENDERSONVILLE NC  
 PIN NUMBER: SEE COVER SHEET  
 PROPERTY SIZE: PH3: 150.06 AC - TOTAL: 377.96 AC  
 ZONING REVIEW: HENDERSON COUNTY  
 EROSION CONTROL REVIEW: HENDERSON COUNTY  
 STORMWATER REVIEW: HENDERSON COUNTY  
 ZONING CLASSIFICATION: R3  
 PROPOSED NUMBER OF UNITS: PH3: 32 - TOTAL: 83  
 PROPOSED DENSITY: PH3: 0.21 LOTS/AC - TOTAL: 0.22 LOTS/AC  
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 PHONE: 828-232-4700

SEE CONTINUATION ON SHEET C-4.2



Date	12-15-2022
REVISIONS/SUBMISSIONS	HENDERSON COUNTY PLANNING
No.	1

Project No: 543521

C-4.1

Drawing Title: SITE PLAN

Project Name: RICH MOUNTAIN PHASE 3 MAJOR SUBDIVISION

Location: HENDERSON COUNTY NORTH CAROLINA

Professional Engineer Seal: JOHN KINNAIRD, PE, NORTH CAROLINA, ENGINEER, SEAL 035686, LICENSE NO. 10470

Professional Engineer Seal: BROOKS ENGINEERING ASSOCIATES, NORTH CAROLINA, ENGINEERING, LICENSE NO. 3725

Design: ZAW, Drawn: ZAW, Checked: JHK, Scale: AS NOTED, Date: 12-15-2022

15 Arlington Street  
 Asheville, N.C. 28801  
 Phone: 1-828-232-4700  
 Fax: 1-828-232-1331  
 www.brooksea.com

Final Drawing - For Review Purposes Only

File Location: L:\2021 Projects\543521 Ripple Falls\_Rich Mtn. Due Diligence\DWG (Phase 3)\Civil-Bases-543521 PH3.dwg

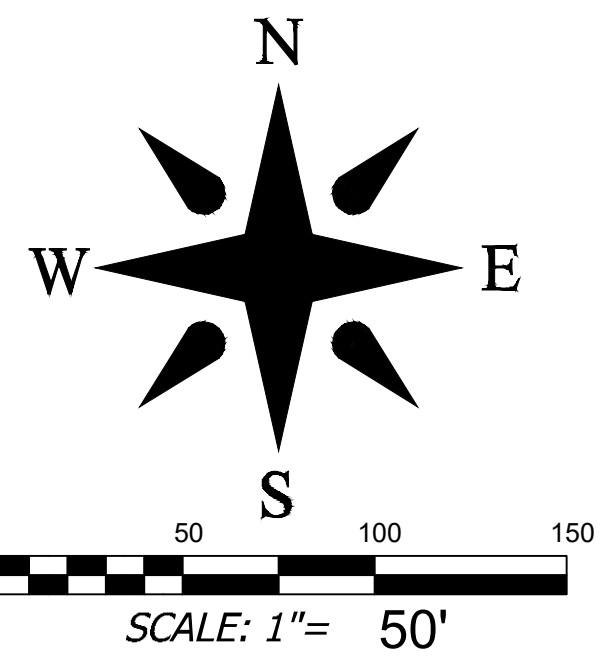


**SITE PLAN LEGEND**

- EXIST. BOUNDARY
- - - EXIST. ADJOINER
- - - EXIST. STREAM
- - - EXIST. STREAM BUFFER
- - - EXIST. WETLAND
- EXIST. FEMA NON-ENCROACHMENT FLOOD HAZARD AREA (1%)
- EXIST. FEMA FLOOD HAZARD AREA (0.2%)
- - - EXIST. RIGHT OF WAY
- - - EXIST. BUILDING SETBACK
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- NEW COMMON OPEN SPACE
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**SITE AND ZONING NOTES**

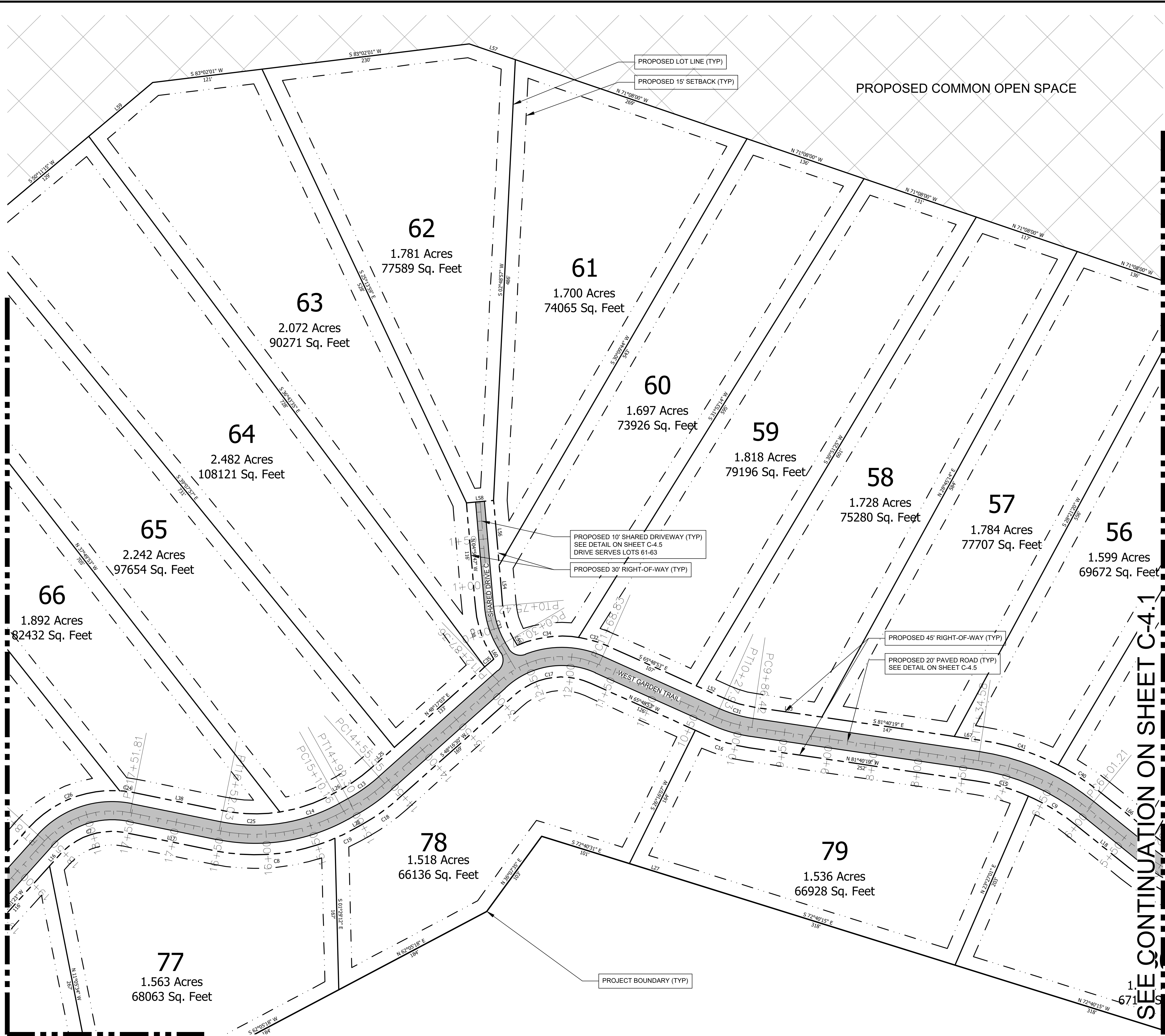
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 HENDERSONVILLE NC  
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 EMAIL: JKINNAIRD@BROOKSEA.COM  
 PHONE: 828-232-4700

SEE CONTINUATION ON SHEET C-4.3



SEE CONTINUATION ON SHEET C-4.1

<b>Project No:</b> 543521	<b>Rich Mountain Phase 3</b>	<b>Date:</b> 12-15-2022	<b>REVISIONS/SUBMISSIONS</b>		
<b>C-4.2</b>	<b>MAJOR SUBDIVISION</b>	<b>HENDERSON COUNTY</b>	<b>1</b>	<b>HENDERSON COUNTY PLANNING</b>	
<b>Drawing Title:</b> SITE PLAN		<b>Professional Engineer Seal:</b> 		<b>FINAL DRAWING - FOR REVIEW PURPOSES ONLY</b>	
<b>Design:</b> ZAW <b>Drawn:</b> ZAW <b>Checked:</b> JHK		<b>Scale:</b> AS NOTED <b>Date:</b> 12-15-2022		<b>15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com</b>	
<b>Brooks Engineering Associates</b>					
<b>Planning • Engineering • Surveying • Environmental Services •</b>					

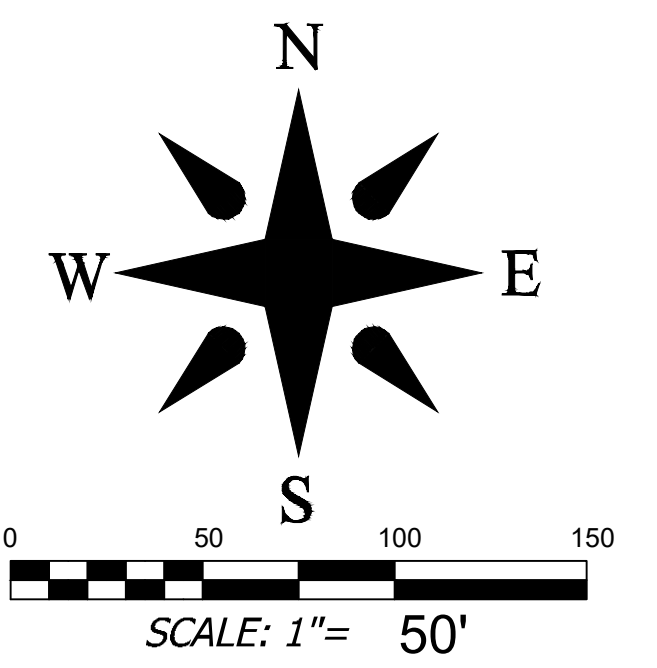


**SITE PLAN LEGEND**

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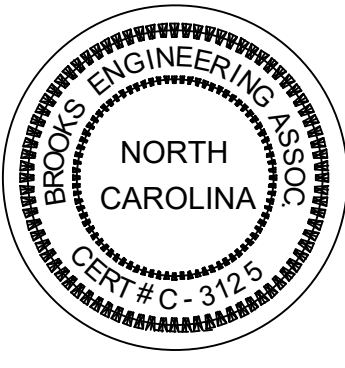


**DEVELOPMENT DATA**

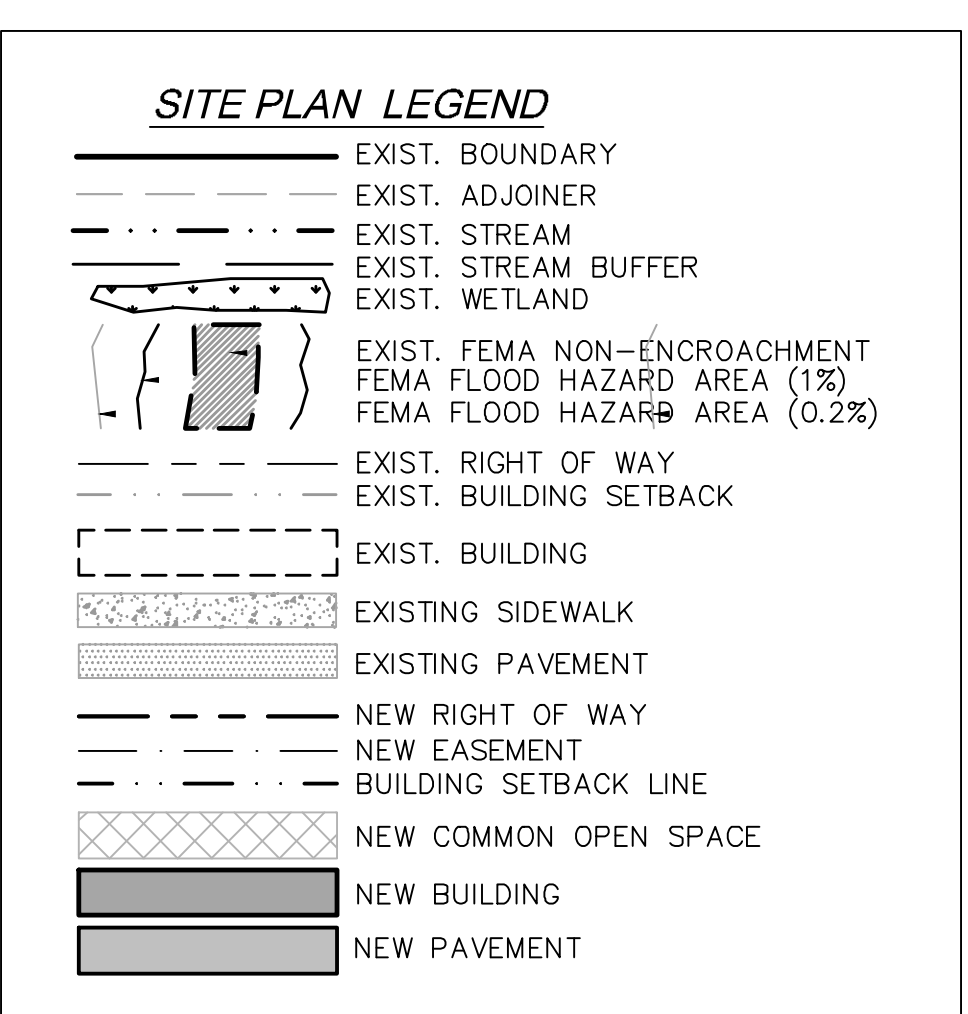
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SEE CONTINUATION ON SHEET C-4.2

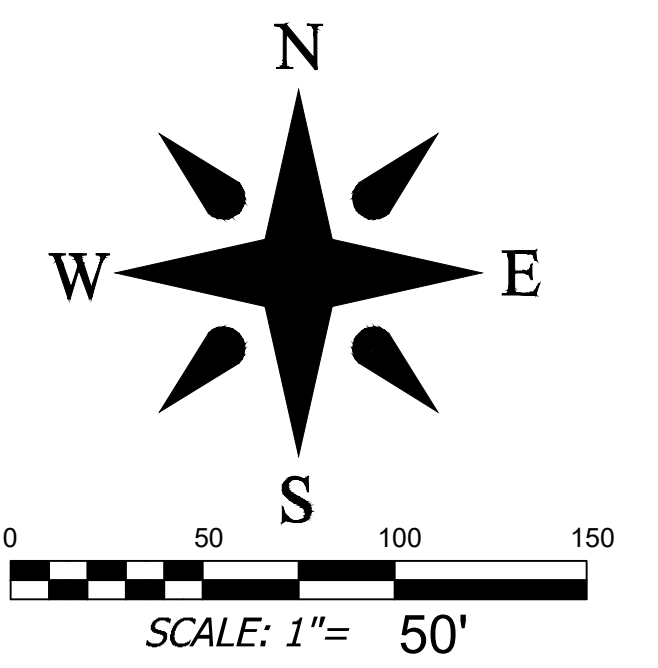
Project No: <b>543521</b>	Drawing Title: <b>C-4.3</b>	Drawing Title: <b>SITE PLAN</b>	File Location: L:\2021 Projects\543521 Ripple Falls_Rich Mtn_Due Diligence\Dwg (Phase 3)\Civil-Bases\543521 PH3.0.dwg			Reviewer: JHK Scale: AS NOTED Date: 12-15-2022	Designer: ZAW Drawn: ZAW Checked: JHK	15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com	REVISIONS/SUBMISSIONS No. 1 HENDERSON COUNTY PLANNING Date 12-15-2022	FINAL DRAWING - FOR REVIEW PURPOSES ONLY
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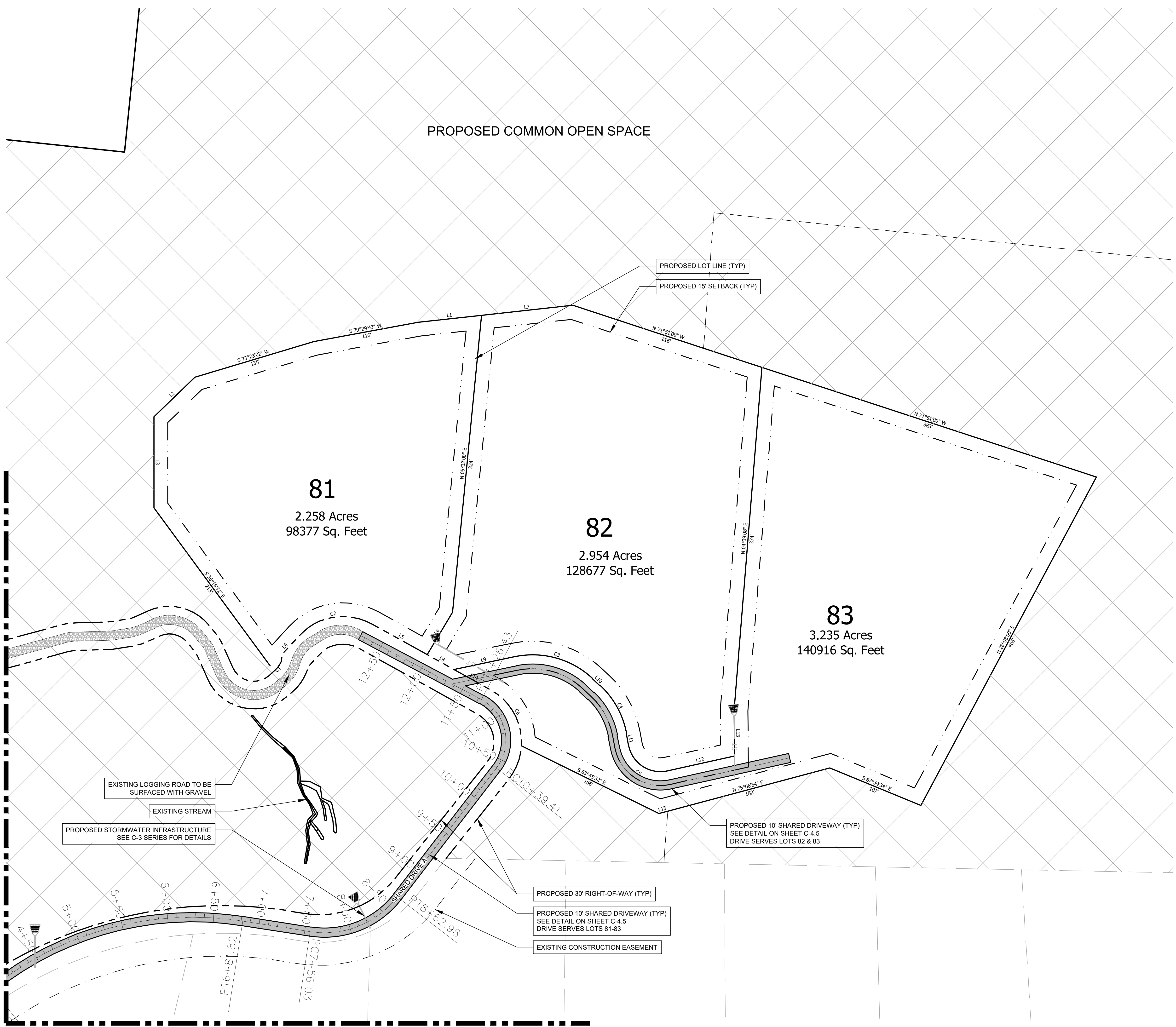
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### DEVELOPMENT DATA

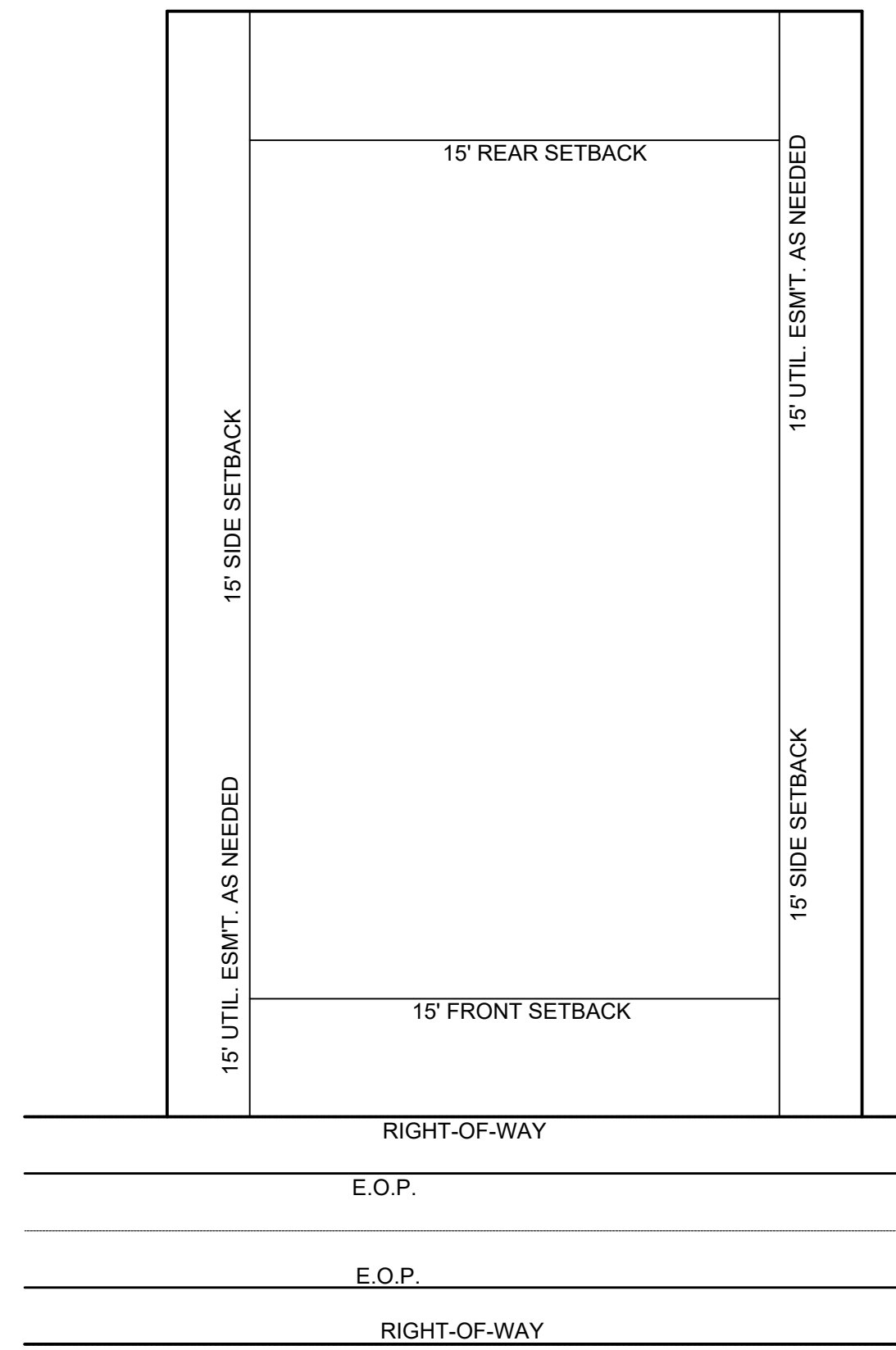
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SEE CONTINUATION ON SHEET C-4.1

Project No: <b>543521</b>	Drawing Title: <b>C-4.4</b>	Drawing Title: <b>SITE PLAN</b>	 Planning • Engineering • Surveying • Environmental Services •	RICH MOUNTAIN PHASE 3 MAJOR SUBDIVISION HENDERSON COUNTY NORTH CAROLINA	Reviewer: JHK Scale: AS NOTED Date: 12-15-2022	Design: ZAW Drawn: ZAW Checked: JHK	15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com	REVISIONS/SUBMISSIONS No. 1 HENDERSON COUNTY PLANNING Date: 12-15-2022	Date: 12-15-2022
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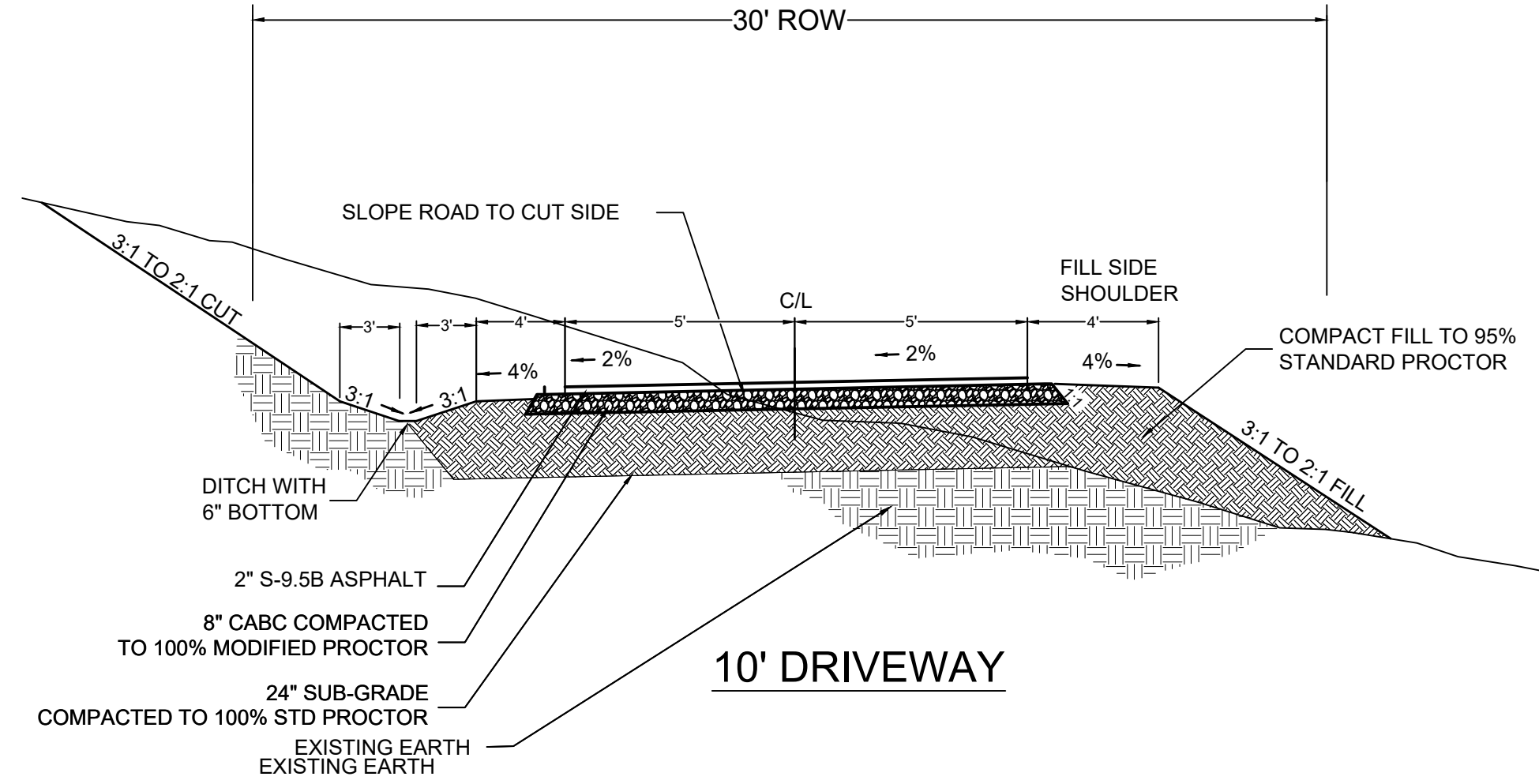
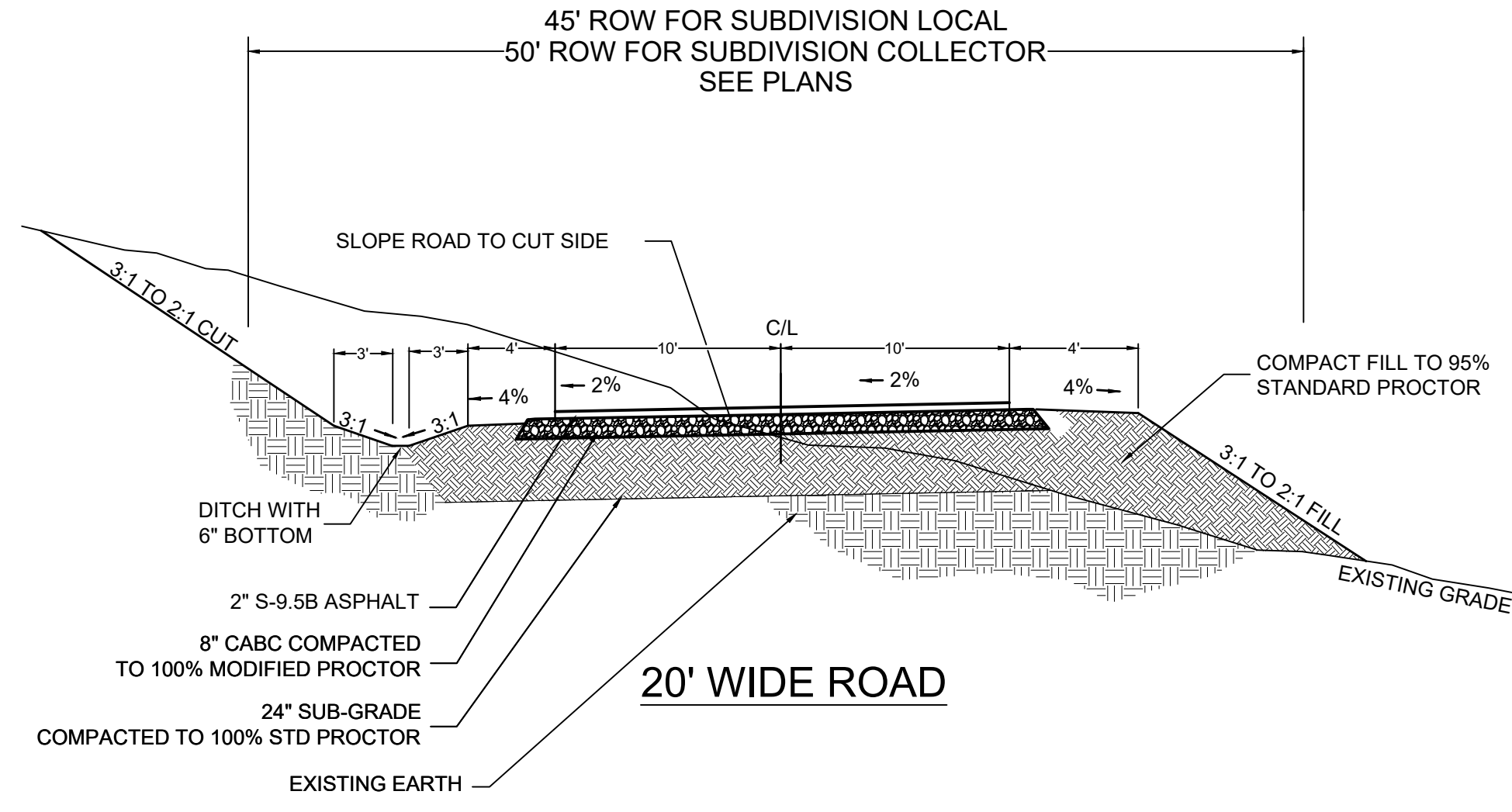




**STORMWATER NOTES:**

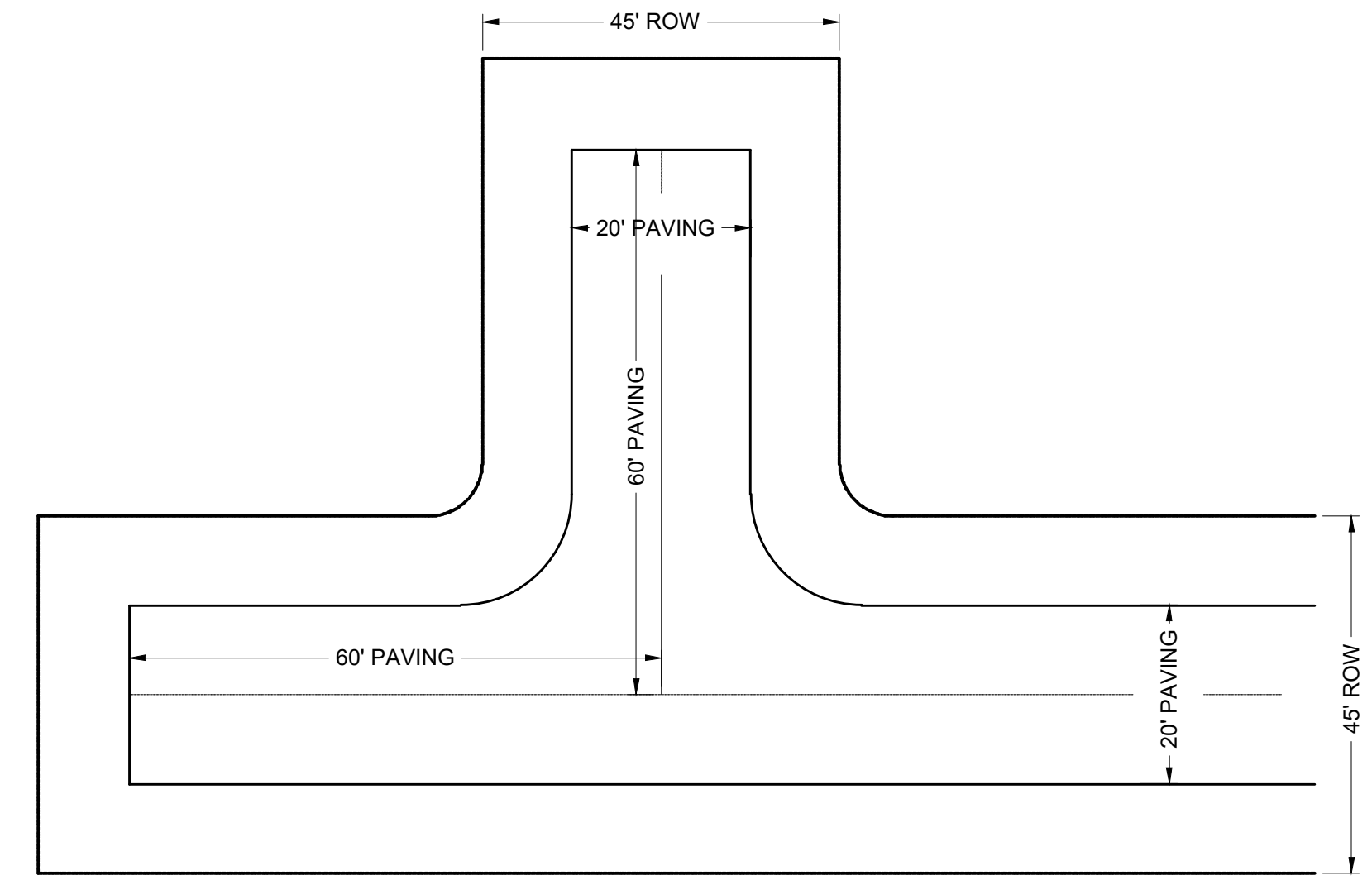
1. FOR PROPOSED LOTS UP GRADIENT OF THE ROAD, DIRECT IMPERVIOUS AREA TO ROADSIDE SWALES BY USE OF DRIVEWAY DITCHES. DRIVEWAYS SHALL BE SLOPED TOWARDS VEGETATED CONVEYANCES.
2. FOR PROPOSED LOTS DOWN GRADIENT OF THE ROAD, DIRECT WATER TO SHEET FLOW OFF SITE.
3. ROOF DRAINS SHALL TERMINATE 10' FROM THE FOOTPRINT & ENTER VEGETATED STORMWATER CONVEYANCES.

**TYPICAL LOT LAYOUT** SCALE= NTS



- NOTES:**
1. NO BASE COURSE SHALL BE PLACED ON MUCK, PIPE CLAY, ORGANIC MATTER, OR OTHER UNSUITABLE MATERIAL.
  2. DITCHES SHALL HAVE A MAXIMUM 3:1 SIDE SLOPE ON EACH SIDE FOR 1 VERTICAL FROM THE BOTTOM OF DITCH.
  3. ROADS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH "PRIVATE SUBDIVISION LOCAL ROAD" STANDARDS PER THE HENDERSON COUNTY SUBDIVISION REGULATIONS, LATEST EDITION.

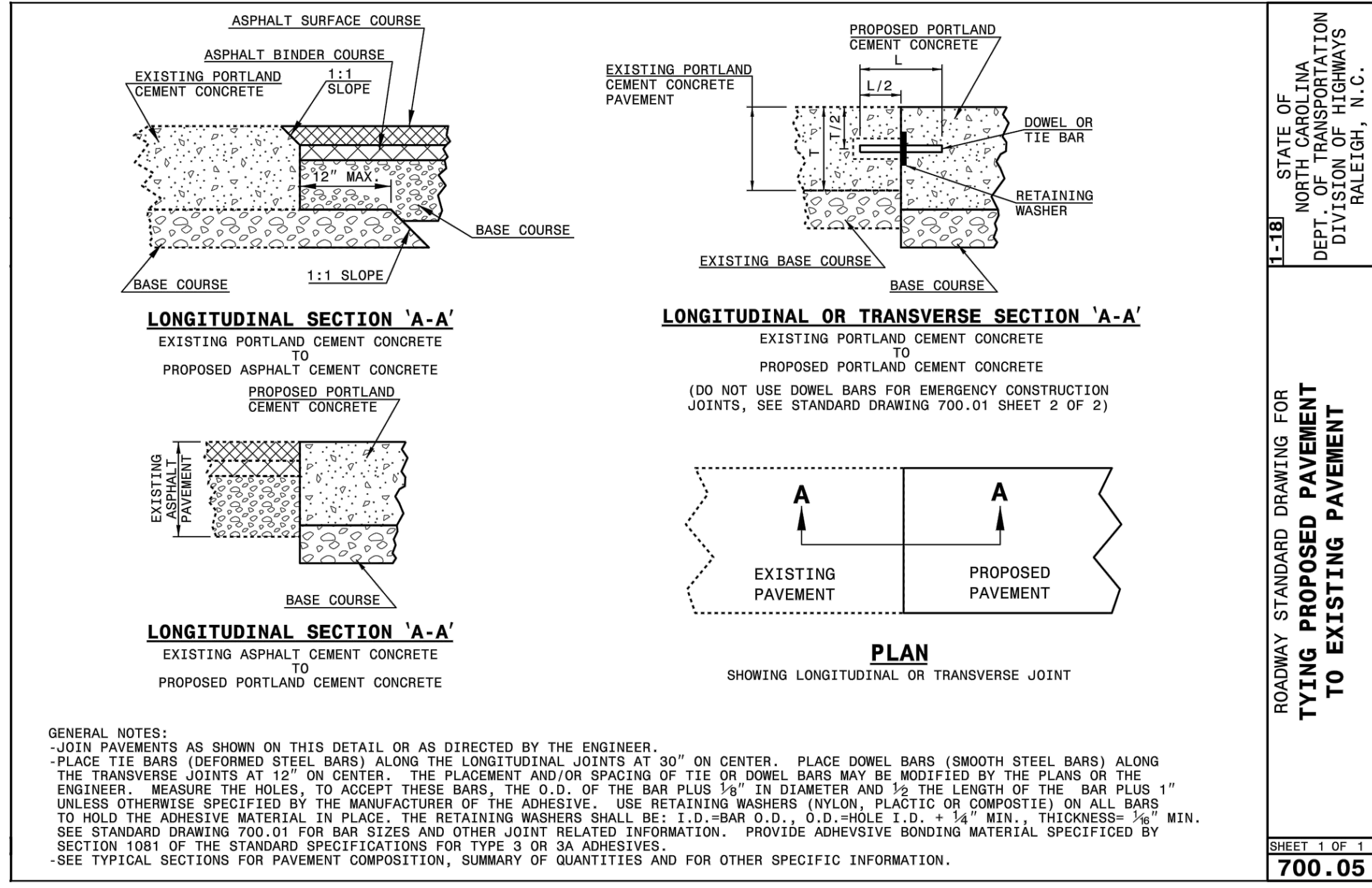
**ROAD & DRIVEWAY CROSS SECTIONS** SCALE= NTS



**NOTES:**

1. USE SAME PAVING SECTION AS ROADS UNLESS DIRECTED BY GEOTECHNICAL ENGINEER.
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**T-TURNAROUND** SCALE= NTS



**GENERAL NOTES:**  
 -JOIN PAVEMENTS AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER.  
 -PLACE TIE BARS (DEFORMED STEEL BARS) ALONG THE LONGITUDINAL JOINTS AT 30" ON CENTER. PLACE DOWEL BARS (SMOOTH STEEL BARS) ALONG THE TRANSVERSE JOINTS AT 12" ON CENTER. THE PLACEMENT AND/OR SPACING OF TIE OR DOWEL BARS MAY BE MODIFIED BY THE PLANS OR THE ENGINEER. MEASURE THE HOLES, TO ACCEPT THESE BARS, THE O.D. OF THE BAR PLUS 1/8" IN DIAMETER AND 1/2 THE LENGTH OF THE BAR PLUS 1" UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER OF THE ADHESIVE. USE RETAINING WASHERS (NYLON, PLASTIC OR COMPOSITE) ON ALL BARS TO HOLD THE ADHESIVE MATERIAL IN PLACE. THE RETAINING WASHERS SHALL BE: I.D.=BAR O.D., O.D.=HOLE I.D. + 1/4" MIN., THICKNESS= 1/8" MIN. SEE STANDARD DRAWING 700.01 FOR BAR SIZES AND OTHER JOINT RELATED INFORMATION. PROVIDE ADHESIVE BONDING MATERIAL SPECIFIED BY SECTION 1081 OF THE STANDARD SPECIFICATIONS FOR TYPE 3 OR 3A ADHESIVES.  
 -SEE TYPICAL SECTIONS FOR PAVEMENT COMPOSITION, SUMMARY OF QUANTITIES AND FOR OTHER SPECIFIC INFORMATION.

1-181  
 STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR  
 TYING PROPOSED PAVEMENT  
 TO EXISTING PAVEMENT  
 SHEET 1 OF 1  
**700.05**

**TYING PROPOSED PAVEMENT TO EXISTING PAVEMENT (NCDOT 700.05)** SCALE= NTS

Project No: <b>543521</b>	C-4.5	Drawing Title: <b>SITE DETAILS</b>	RICH MOUNTAIN PHASE 3 MAJOR SUBDIVISION HENDERSON COUNTY NORTH CAROLINA	Planning • Engineering • Surveying • Environmental Services • <b>BROOKS ENGINEERING ASSOCIATES</b>	Design: ZAW Drawn: ZAW Checked: JHK	Review: JHK Scale: AS NOTED Date: 12-15-2022	15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brooksea.com	No. 1 REVISIONS/SUBMISSIONS HENDERSON COUNTY PLANNING	Date 12-15-2022
					SEAL 035686 NORTH CAROLINA PROFESSIONAL ENGINEER JAMES W. KNIGHT, III License No. 1041038204944		NORTH CAROLINA PROFESSIONAL ENGINEERING ASSOCIATION NORTH CAROLINA CERT. NO. C-3725		FINAL DRAWING - FOR REVIEW PURPOSES ONLY





LINE	BEARING	DISTANCE
L1	S 45°54'39" W	61.72'
L2	S 00°00'00" E	99.04'
L3	N 42°44'08" E	37.12'
L4	S 60°58'28" E	68.29'
L5	N 31°07'06" E	53.70'
L6	S 83°43'59" W	99.84'
L7	S 60°58'28" E	33.23'
L8	N 78°12'33" E	67.46'
L9	S 46°50'57" E	11.66'
L10	S 10°56'53" E	13.90'
L11	N 77°30'03" E	74.96'
L12	N 00°35'19" W	49.55'
L13	S 60°58'28" E	45.88'
L14	N 75°06'54" E	10.16'
L15	N 42°01'23" E	16.63'
L16	S 78°32'40" E	99.77'
L17	S 51°06'19" E	75.39'
L18	S 82°02'19" E	44.50'
L19	S 47°08'09" W	3.92'
L20	S 53°14'11" W	14.32'
L21	N 81°29'40" W	18.79'
L22	N 74°27'28" W	69.18'
L23	N 79°43'21" W	19.22'
L24	S 48°17'03" W	34.22'
L25	S 60°48'44" W	10.87'
L26	S 72°40'31" E	57.24'
L27	S 60°48'44" W	10.87'
L28	S 03°02'48" E	7.50'
L29	S 86°57'12" W	50.93'
L30	N 13°02'49" W	7.46'
L31	N 69°20'46" E	14.95'
L32	S 81°30'07" W	23.80'
L33	S 11°37'12" E	47.24'
L34	S 78°22'48" W	30.00'
L35	N 11°37'12" W	48.28'
L36	S 81°40'46" W	73.94'
L37	S 78°32'40" E	99.77'
L38	N 42°01'01" E	78.15'
L39	S 76°47'32" W	57.83'
L40	N 81°30'07" E	56.78'
L41	N 42°01'01" E	52.60'
L42	S 49°54'20" W	33.21'
L43	S 76°47'32" W	22.27'
L44	N 76°57'11" E	55.72'
L45	N 13°02'49" W	7.50'
L46	N 76°57'11" E	22.56'
L47	N 81°30'07" E	56.78'
L48	N 86°57'12" E	21.27'
L49	S 03°02'48" E	7.50'
L50	N 03°02'48" W	45.00'
L51	S 65°48'53" E	33.58'
L52	S 81°40'19" E	74.41'
L53	S 04°56'47" E	44.59'
L54	S 30°24'51" E	9.37'
L55	S 04°56'47" E	71.45'
L56	N 71°08'00" W	53.48'
L57	N 85°03'13" E	30.00'
L58	S 49°30'38" W	92.03'
L59	N 30°24'51" W	9.42'
L60	S 49°54'20" W	34.71'
L61	N 71°08'00" W	42.95'
L62	S 82°02'19" E	51.92'
L63	S 82°02'19" E	29.25'
L64	N 47°08'09" E	49.51'
L65	S 51°06'19" E	75.39'
L66	S 81°40'19" E	30.12'

LINE TABLE  
SCALE= NTS

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	35.00'	8.51'	8.49'	N 49°41'54" E	13°55'32"
C2	65.00'	86.55'	80.30'	N 80°52'50" E	76°17'24"
C3	95.00'	91.10'	87.65'	S 74°19'12" E	54°56'30"
C4	95.00'	59.53'	58.56'	S 28°53'55" E	35°54'04"
C5	35.00'	55.93'	50.16'	S 56°43'25" E	91°33'04"
C6	65.00'	73.06'	69.27'	S 28°46'26" E	64°24'03"
C7	77.50'	80.39'	76.84'	N 71°44'16" E	59°26'08"
C8	222.50'	134.62'	132.58'	N 84°07'20" E	34°40'00"
C9	227.50'	60.68'	60.50'	S 58°44'49" E	15°17'00"
C10	272.50'	136.10'	134.69'	S 65°24'50" E	28°37'02"
C11	115.01'	32.81'	32.70'	S 38°57'45" W	16°20'46"
C12	227.50'	113.63'	112.45'	N 65°24'50" W	28°37'02"
C13	177.50'	38.83'	38.75'	S 54°32'45" W	12°31'58"
C14	177.50'	62.96'	62.63'	S 70°58'23" W	20°19'18"
C15	227.50'	60.68'	60.50'	N 74°01'49" W	15°17'00"
C16	189.20'	62.26'	61.98'	N 71°53'40" W	18°51'15"
C17	77.50'	91.86'	86.57'	S 80°13'50" W	67°54'35"
C18	222.50'	48.69'	48.59'	S 54°32'37" W	12°32'14"
C19	222.50'	23.21'	23.20'	S 63°48'02" W	5°58'36"
C20	165.00'	14.97'	14.96'	S 84°21'15" W	5°11'53"
C21	165.00'	13.83'	13.82'	S 79°21'15" W	4°48'08"
C22	343.13'	36.66'	36.64'	S 77°53'27" W	6°07'17"
C23	172.50'	100.27'	98.86'	S 60°07'22" W	33°18'13"
C24	123.49'	15.97'	15.96'	S 82°30'43" E	7°24'41"
C25	177.50'	62.96'	62.63'	S 88°42'19" E	20°19'18"
C26	123.49'	112.14'	108.33'	N 67°46'02" E	52°01'49"
C27	127.50'	42.32'	42.12'	N 71°59'40" E	19°00'56"
C28	127.50'	42.32'	42.12'	N 52°58'44" E	19°00'56"
C29	222.50'	17.67'	17.66'	N 79°13'39" E	4°32'56"
C30	135.00'	23.56'	23.53'	N 81°57'12" E	10°00'01"
C31	127.50'	35.29'	35.17'	S 73°44'36" E	15°51'27"
C32	122.50'	33.04'	32.94'	S 73°32'31" E	15°27'17"
C33	85.00'	37.78'	37.47'	S 17°40'49" E	25°28'04"
C34	122.50'	68.83'	67.93'	N 82°38'05" E	32°11'32"
C35	122.50'	13.25'	13.24'	N 49°22'25" E	6°11'45"
C36	115.00'	51.12'	50.70'	N 17°40'49" W	25°28'04"
C37	515.00'	45.79'	45.77'	N 49°40'58" E	5°05'39"
C38	465.00'	62.61'	62.56'	N 56°05'14" E	7°42'52"
C39	127.50'	5.15'	5.15'	S 80°52'50" E	2°18'58"
C40	272.50'	56.14'	56.04'	S 57°00'24" E	11°48'11"
C41	272.50'	89.24'	88.84'	S 72°17'25" E	18°45'49"

CURVE TABLE  
SCALE= NTS

Project No: <b>543521</b>	RICH MOUNTAIN PHASE 3  MAJOR SUBDIVISION	HENDERSON COUNTY  NORTH CAROLINA	REVISIONS/SUBMISSIONS HENDERSON COUNTY PLANNING	Date 12-15-2022
Drawing Title: <b>C-4.6</b>  <b>LINE AND CURVE TABLES</b>	PLANNING • ENGINEERING • SURVEYING • ENVIRONMENTAL SERVICES •			
				
15 Arlington Street Asheville, N.C. 28801 Phone: 1-828-232-4700 Fax: 1-828-232-1331 www.brookssea.com				
REVIEWED FOR REVIEW PURPOSES ONLY				
				
REVIEWED: JHK SCALE: AS NOTED DATE: 12-15-2022 DESIGNED: ZAW DRAWN: ZAW CHECKED: JHK				



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