

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 is practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

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

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

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants.
- Apply flocculants at or before the time of 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 (whenever possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- Bring used fluids, 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 to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off site at an approved disposal facility.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- 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, sited 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 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. 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 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 inlets (c) 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 the facility.
- Remove loadings 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 or debris 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

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 or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained at good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, no indication of rainfall information is available, record the cumulative rain measurement for those circumstances days (and the self-inspection date if a site inspector is present). Days on which no rainfall occurs shall be recorded as "zero".
(2) EESC Measures	At least once per 7 calendar days and within 24 hours of rain events > 1.0 inch in 24 hours	1. Identification of the measures inspected. 2. Date and time of the inspection. 3. Name of the person performing the inspection. 4. Indication of all of the measures were operating properly. 5. Description of maintenance needs for the measures. 6. Description, extent, and date of corrective actions taken.
(3) Stormwater discharge (outfall) (SDO)	At least once per 7 calendar days and within 24 hours of rain events > 1.0 inch in 24 hours	1. Identification of the discharge outfall inspected. 2. Date and time of the inspection. 3. Name of the person performing the inspection. 4. Evidence of discharge of stormwater pollution such as oil, silt, debris, floating or suspended solids or discoloration.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of rain events > 1.0 inch in 24 hours	1. Description, extent, and date of corrective actions taken. 2. Disposition, evidence, and date of corrective actions taken, and a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits. 2. Disposition, evidence, and date of corrective actions taken, and an indication as to the action taken to prevent future erosion.
(5) Storms on wetlands onsite or offsite (where known)	At least once per 7 calendar days and within 24 hours of rain events > 1.0 inch in 24 hours	1. If the storm or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, their a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the measure reports to the appropriate Division Registrar Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter EESC measures, stormwater ponding, installation of erosion control facilities, completion of all land disturbing activities, construction or redevelopment, permanent ground cover). 2. Evidence that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection rests the required 7 calendar inspection requirement.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. EESC Plan Documentation

The approved EESC plan, as well as any approved deviation shall be kept on the site. The approved EESC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the EESC plan shall be documented in the manner described:

Item to Document	Documentation Requirements
(a) Each EESC Measure has been installed and does not significantly deviate from the location, dimensions and relative elevations shown on the approved EESC Plan.	Initial and date each EESC Measure on a copy of the approved EESC Plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(b) A phase of grading has been completed.	Initial and date a copy of the approved EESC Plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved EESC Plan.	Initial and date a copy of the approved EESC Plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all EESC Measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to EESC Measures.	Initial and date a copy of the approved EESC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation

In addition to the EESC Plan documents above, the following items shall be kept on the site and available for agency 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:

- This general permit as well as the certificate of coverage, after it is received.
- Records of inspections made during the previous 30 days. 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.
- All data used to complete the Notice of Intent and older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.43]

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that must be reported

Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- 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).
- 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. 149-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

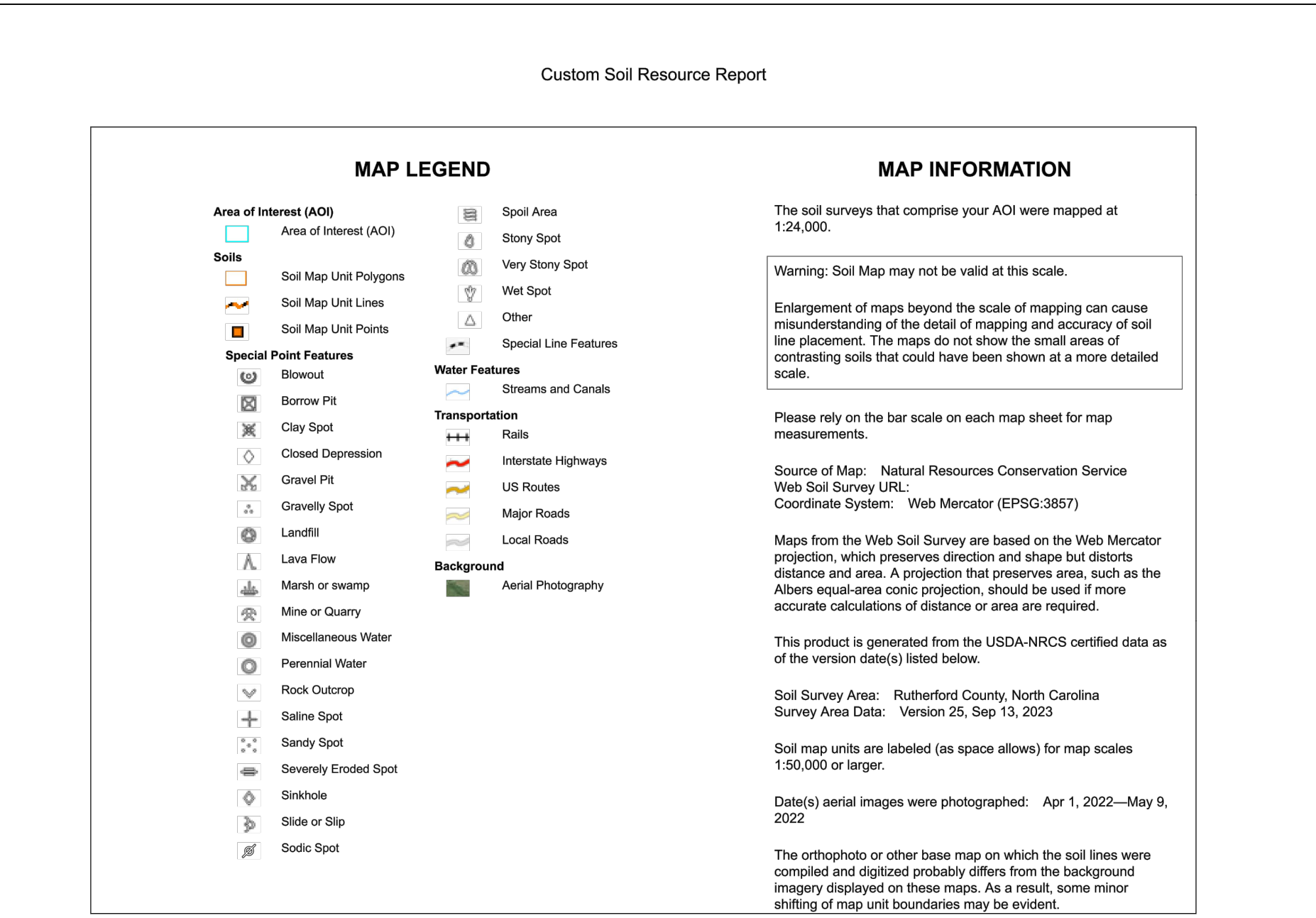
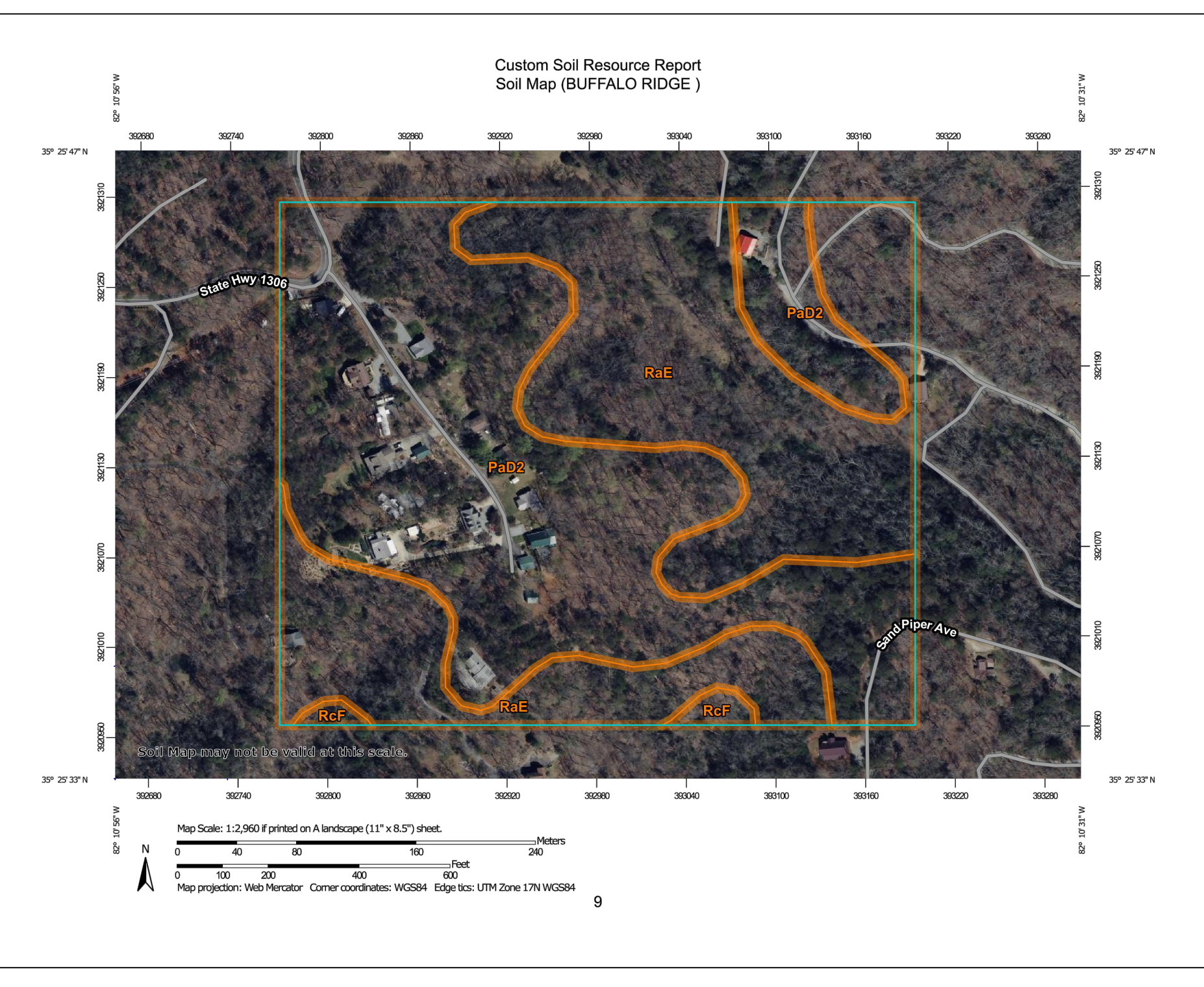
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)(i) above	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release. Within 7 calendar days, a report that includes an evaluation of the anticipated quality and effect of the bypass. Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the noncompliance, and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. [40 CFR 122.41(i)(5). Division staff may waive the requirement for a written report on a case-by-case basis.
(d) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(j)(7)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the noncompliance, and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. [40 CFR 122.41(i)(5). Division staff may waive the requirement for a written report on a case-by-case basis.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING EFFECTIVE: 04/01/19

GENERAL NOTES:

- SITE IS IN BROAD RIVER BASIN.
- INSTALL ALL OUTER PERIMETER MEASURES BEFORE BEGINNING ANY DEMOLITION / CLEARING # GRUBBING or ROUGH GRADING.
- ONLY DISTURB CLEAR OR GRADE AREAS NECESSARY FOR CONSTRUCTION. FLAG OR OTHERWISE DELINEATE AREAS NOT TO BE DISTURBED. EXCLUDE VEHICLES AND CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE NATURAL VEGETATION.
- CLEAR AND GRUB AREAS TO BE FILLED TO REMOVE TREES, VEGETATION, MUCK, ROOTS, OR OTHER OBJECTIONABLE MATERIAL THAT WOULD AFFECT THE PLANTED STABILITY OF THE FILL.
- PLACE FILL IN LAYERS NOT TO EXCEED 6" IN THICKNESS AND COMPACT THE LAYERS AS REQUIRED TO TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS.
- KEEP DIVERSIONS AND CHANNELS AND OTHER WATER CONVEYANCE MEASURES FREE OF SEDIMENT AT ALL TIMES.
- ROUGHEN THE SURFACE OF ALL SLOPES DURING THE CONSTRUCTION OPERATION TO RETAIN WATER, INCREASE INFILTRATION, AND FACILITATE VEGETATION ESTABLISHMENT.
- AT THE END OF EACH DAY, CONTRACTOR SHALL ESTABLISH A BERM or DITCH AT THE TOP OF THE FILL SLOPE. THIS BERM or DITCH SHALL KEEP POTENTIAL WATER FROM SHEET FLOWING OVER AND DOWN THE SLOPE. POSITIVE DRAINAGE SHALL BE ESTABLISHED TO THE INLETS OF THE PROPOSED SLOPE DRAINS.
- PERMANENTLY STABILIZE ALL GRADED AREAS IMMEDIATELY AFTER FINAL GRADING IS COMPLETED ON EACH AREA. APPLY TEMPORARY MEASURES ON ALL GRADED AREAS WHEN WORK IS TO BE INTERRUPTED OR DELAYED FOR 15 WORKING DAYS OR 90 CALENDAR DAYS.
- DENUDED LIMITS = 1.92 AC.
- SLOPES LEFT EXPOSED SHALL, WITHIN 14 CALENDAR DAYS BE OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.
- CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND UPKEEP OF ALL TEMPORARY MEASURES and SHALL MAINTAIN ALL MEASURES UNTIL SITE IS PERMANENTLY STABILIZED.
- ANY BORROW OR WASTE MUST COME FROM OR GO TO A PERMITTED SITE AND/OR FACILITY.



Map Unit Legend (BUFFALO RIDGE)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PaB2	Paolet sandy clay loam, 15 to 25 percent slopes, moderately eroded	19.7	53.7%
RaE	Rion sandy loam, 25 to 45 percent slopes	16.7	45.3%
RfC	Rion-Ashlar-Rock outcrop complex, 45 to 70 percent slopes	0.4	1.1%
Totals for Area of Interest		36.8	100.0%

Map Unit Descriptions (BUFFALO RIDGE)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

JOB NUMBER: 22112

DATE: 10/24/2023

BY: EHM

DESCRIPTION: REVISE PER EMAIL FROM L. CHRISTIANSEN, NCDHQ

REV: 1 2 3 4 5 6

REVISION: I HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

PLANS FOR: BUFFALO RIDGE TOWN OF LAKE LURE RUTHERFORD COUNTY, NC

NOTES:

SCALE: N.T.S.

DATE: 01/19/2023

DRAWN BY: EHM

CHECKED BY: DWO

PROJECT MGR: DWO

SHEET: C-100

ODOM Engineering PLLC
169 Oak Street, Forest City, N.C. 28043
PH: 828.247.4946 Fax: 828.247.4988
www.odom-engineering.com

Drawing name: Z:\2022\22112 - BUFFALO RIDGE and BUFFALO RIDGE EAST\DWG - BUFFALO RIDGE\DWG\SECC\2023_1003_ECP - BUFFALO RIDGE_recover.dwg Plotted on: Oct 25, 2023 - 12:53pm

JOB NUMBER:
22112

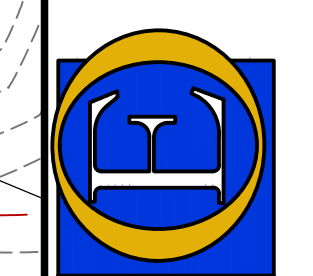
REV	DATE	DESCRIPTION
1	10/24/2023	REVISION PER EMAIL FROM L. CHRISTIANSEN, NCDOT
2		
3		
4		
5		

HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

PLANS FOR
BUFFALO RIDGE
TOWN OF LAKE LURE
CHIMNEY ROCK TOWNSHIP RUTHERFORD COUNTY, NC

EXISTING CONDITIONS

Odom Engineering PLLC
100 Oak Street, Forest City, N.C. 28043
PH: 828.247.4496 FAX: 828.247.4498
www.odomeng.com



SCALE: 1" = 50'
DATE: 01/19/2023
DRAWN BY: EHM
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
C-200

GRIMES
DB 676 PG 223
540-1-51
PB 30 PG 97

Spring Head x

CLAYTON AND LINDA DURKIN
DB 1095 PG 91
502-1-63

KEVIN DORSEY
DB 732 PG 21
502-1-60

DEVELOPMENT CAPITAL INVESTMENTS LLC
DB 2062 PG 2397
540-1-47
PB 43 PG 181

GRIMES
DB 676 PG 223
540-1-51
PB 30 PG 97

WELL HOUSE

CHRISTOPOULOS OASIS, LLC
DB 2066 PG 051399
502-1-58

CHRISTOPOULOS OASIS, LLC
DB 1166 PG 698
502-1-57

CHRISTOPOULOS OASIS, LLC
DB 1166 PG 698
502-1-56

AARON HOFF
DB 1102 PG 470
LOT 150 PB 10 PG 77
540-4-135

MOUNTAIN HAVEN PROPERTIES
DB 2074 PG 4614
LOT 149 PB 10 PG 77
540-4-146

TRUEBA
DB 592 PG 666
LOT 148 PB 10 PG 77
540-4-147

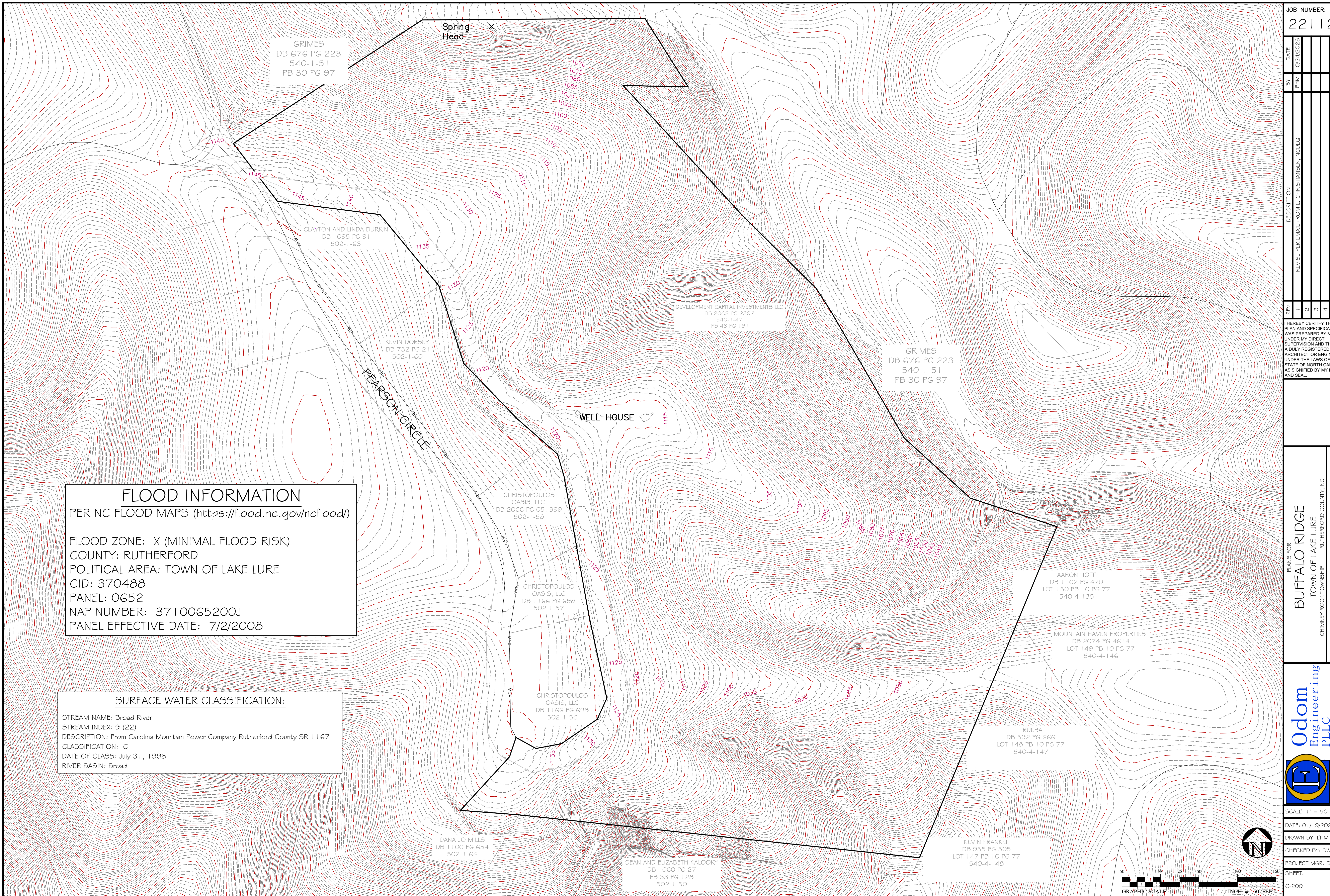
KEVIN FRANKEL
DB 955 PG 505
LOT 147 PB 10 PG 77
540-4-148

DANA JO MILLS
DB 1100 PG 654
502-1-64

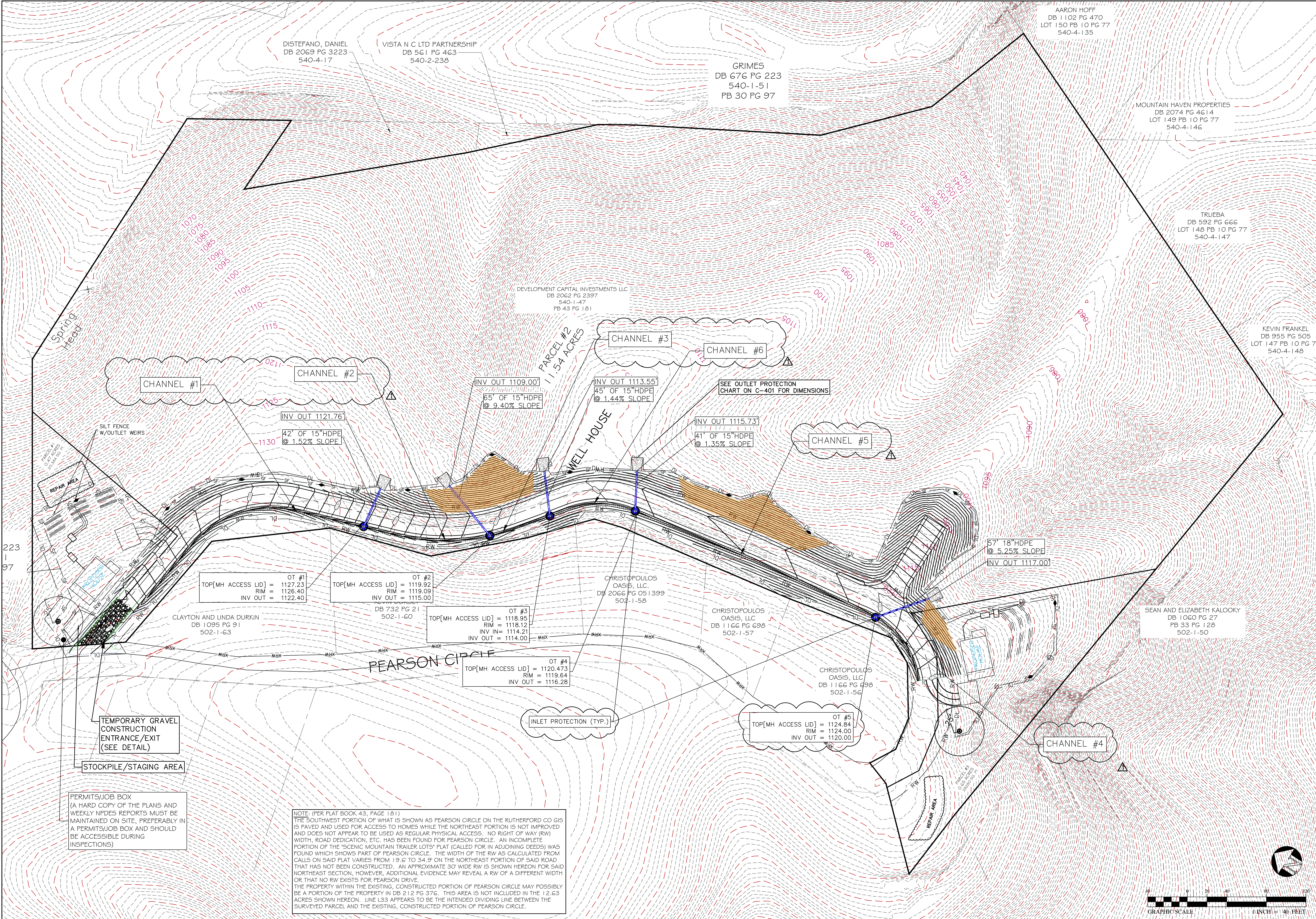
SEAN AND ELIZABETH KALOOKY
DB 1060 PG 27
PB 33 PG 128
502-1-50

FLOOD INFORMATION
PER NC FLOOD MAPS (<https://flood.nc.gov/ncflood/>)
FLOOD ZONE: X (MINIMAL FLOOD RISK)
COUNTY: RUTHERFORD
POLITICAL AREA: TOWN OF LAKE LURE
CID: 370488
PANEL: 0652
NAP NUMBER: 3710065200J
PANEL EFFECTIVE DATE: 7/2/2008

SURFACE WATER CLASSIFICATION:
STREAM NAME: Broad River
STREAM INDEX: 9-(22)
DESCRIPTION: From Carolina Mountain Power Company Rutherford County SR 1167
CLASSIFICATION: C
DATE OF CLASS: July 31, 1998
RIVER BASIN: Broad



Drawing name: Z:\2022\22112 - BUFFALO RIDGE and BUFFALO RIDGE EAST.DWG - BUFFALO RIDGE\DWG\SECC\2023_1003.ECP - BUFFALO RIDGE_recover.dwg
Plotted on: Oct 25, 2023 - 12:53pm



REV	DATE	BY	DESCRIPTION
1	10/24/2023	EHM	REVISE PER EMAIL FROM L. CHRISTIANSEN, NCDCO
2			
3			
4			
5			
6			

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PLANS FOR
BUFFALO RIDGE
TOWN OF LAKE LURE
RUTHERFORD COUNTY, NC
CHIMNEY ROCK TOWNSHIP
OVERALL SITE PLAN

Odom Engineering PLLC
100 Oak Street, Forest City, N.C. 28043
PH: 828.274.4986 FAX: 828.274.4988
N.C. License # 4808

SCALE: 1" = 40'
DATE: 01/19/2023
DRAWN BY: EHM
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
C-300

REV	DATE	DESCRIPTION
1	10/24/2023	REVISION PER EMAIL FROM L. CHRISTIANSEN, NCDDCO
2		
3		
4		
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6		

KEVIN FR
DB 955
LOT 147 PB
540-4

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PLANS FOR
BUFFALO RIDGE
TOWN OF LAKE LURE
CHIMNEY ROCK TOWNSHIP RUTHERFORD COUNTY, NC

ECP PHASE I

Odom Engineering PLLC
100 OAK STREET, FARMERS CITY, N.C. 28433
PH: 828.274.4986 FAX: 828.274.4988
N.C. ENGINEER # 4988

SCALE: 1" = 40'

DATE: 01/19/2023
DRAWN BY: EHM
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
C-400

- ADDITIONAL NOTES:**
1. INSTALL ALL MEASURES ACCORDING TO THE EROSION CONTROL PLANS.
 2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO KEEP SEDIMENT OFF ALL PAVED ROADS.
 3. THE SITE SHOULD BE "STORM READY" AT THE END OF EACH WORK DAY.
 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF SEDIMENT ON SITE. IF THE APPROVED EROSION AND SEDIMENT CONTROL MEASURES PROVE INSUFFICIENT, THE CONTRACTOR MUST TAKE ADDITIONAL STEPS NECESSARY TO STOP SEDIMENT FROM LEAVING THE SITE.
 5. WORKERS AND EQUIPMENT SHALL STAY WITHIN THE LOD, AND OUT OF AREAS CUTOUT AS SHOWN ON PLANS.
 6. EXISTING DIRT ROAD SHALL NOT BE USED TO ACCESS THE SITE, CONSTRUCTION ENTRANCE WILL BE THE ACCESS POINT.

PARTNERSHIP
PG 463
2-238

GRIMES
DB 676 PG 223
540-1-51
PB 30 PG 97

TRUEBA
DB 592 PG 666
LOT 148 PB 10 PG 77
540-4-147

DEVELOPMENT CAPITAL INVESTMENTS LLC
DB 2062 PG 2397
540-1-47
PB 43 PG 181

KEVIN FR
DB 955
LOT 147 PB
540-4

SEAN AND ELIZABETH KALOOKY
DB 1060 PG 27
PB 33 PG 128
502-1-50

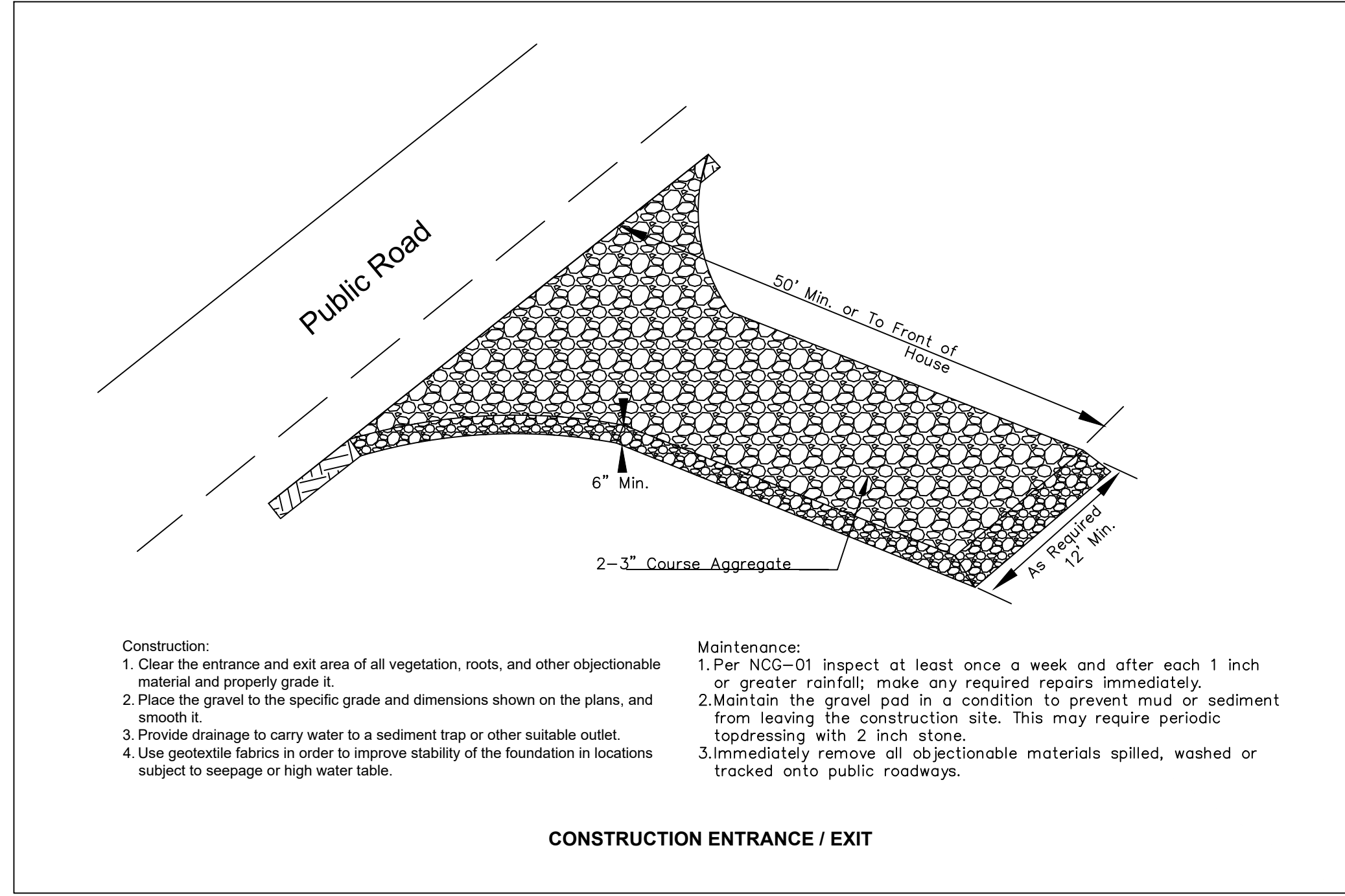
CHRISTOPOULOS OASIS, LLC
DB 1166 PG 698
502-1-57

CHRISTOPOULOS OASIS, LLC
DB 2066 PG 051399
502-1-58

KEVIN DORSEY
DB 732 PG 21
502-1-60

CLAYTON AND LINDA DURKIN
DB 1095 PG 91
502-1-63

GRIMES
76 PG 223
40-1-51
30 PG 97



- Construction:**
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 in order to improve stability of the foundation in locations subject to seepage or high water table.
- Maintenance:**
1. Per NCG-01 inspect at least once a week and after each 1 inch or greater rainfall; make any required repairs immediately.
 2. 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.
 3. Immediately remove all objectionable materials spilled, washed or tracked onto public roadways.

CONSTRUCTION ENTRANCE / EXIT

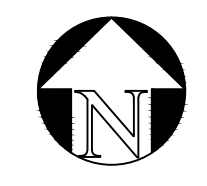
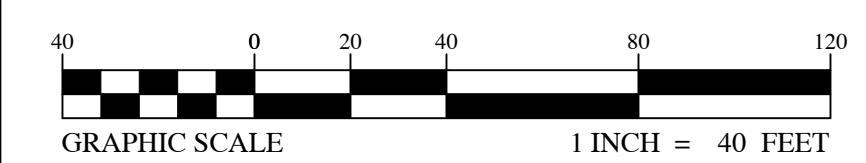
TOTAL ACREAGE DISTURBED OR UNCOVERED: 1.92 ACRES

- PHASE I CONSTRUCTION SEQUENCE**
1. OBTAIN ALL NECESSARY PERMITS.
- CONTACT LQS INSPECTOR, MACK GRANGER, WHEN PROJECT IS SCHEDULED TO BEGIN. (828) 296-4500
2. NO HEAVY GRADING ACTIVITIES ARE TO BE PERFORMED DURING WET WEATHER OR PREDICTED WET WEATHER.
 3. INSTALL TEMPORARY CONSTRUCTION ENTRANCE.
 4. INSTALL SILT FENCE AND REINFORCED OUTLETS.

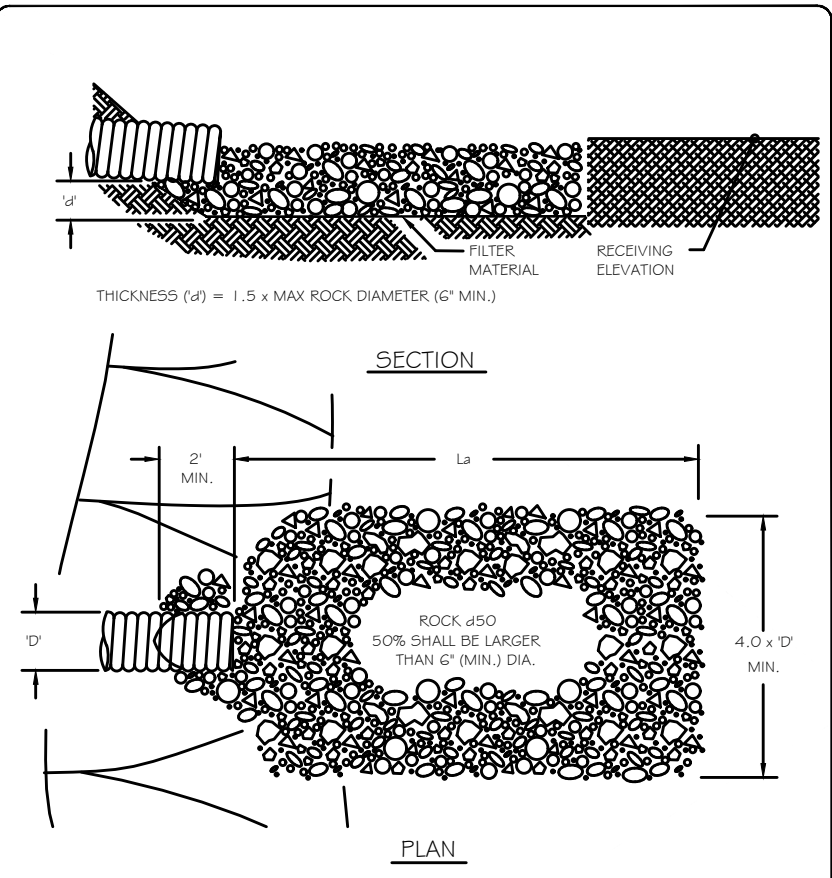
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (SEE DETAIL)

STOCKPILE/STAGING AREA

PERMITS/JOB BOX (A HARD COPY OF THE PLANS AND WEEKLY NPDES REPORTS MUST BE MAINTAINED ON SITE, PREFERABLY IN A PERMITS/JOB BOX AND SHOULD BE ACCESSIBLE DURING INSPECTIONS)



CHANNEL ID	CHANNEL SLOPE (%)	IMPERVIOUS AREA (AC)	PERVIOUS AREA (AC)	TOTAL AREA (AC)	WEIGHTED "C"	INTENSITY (IN/HR)	RUNOFF (CFS)	UPSTREAM FLOW (CFS)	TOTAL FLOW (CFS)	SIDE SLOPE (Z)	MAX DEPTH (FT)	TOP WIDTH (FT)	CROSS-SECTIONAL AREA (SF)	WETTED PERIMETER (FT)	HYDRAULIC RADIUS (FT)	CHANNEL LINER	PERMISSIBLE VELOCITY (FPS)	RETARDANCE (VR)	RETARDANCE CLASS	MANNING'S COEFFICIENT	VELOCITY (FPS)	LINER CHECK	VELOCITY CHECK	CHANNEL CAPACITY (CFS)	CAPACITY CHECK	PERMISSIBLE SHEAR STRESS (PSF)	SHEAR STRESS (PSF)	SHEAR CHECK
CHANNEL 1	5.69%	0.92	0	0.92	0.90	8.39	6.95	0.00	6.95	2.00	1.00	4.00	2.00	4.47	0.45	SC-250	9.50	4.25	C	0.044	4.72	LINER REQ'D	PROCEED	9.4	PROCEED	10.0	3.55	PROCEED
CHANNEL 2	5.69%	0.90	0	0.90	0.90	8.39	6.80	0.00	6.80	2.00	1.00	4.00	2.00	4.47	0.45	SC-250	9.50	4.25	C	0.044	4.71	LINER REQ'D	PROCEED	9.4	PROCEED	10.0	3.53	PROCEED
CHANNEL 3	1.50%	0.92	0	0.92	0.90	8.39	6.95	0.00	6.95	2.00	1.50	6.00	4.50	6.71	0.67	SC-250	9.50	6.37	C	0.044	3.18	LINER REQ'D	PROCEED	14.3	PROCEED	10.0	1.40	PROCEED
CHANNEL 4	4.91%	0.92	0	0.92	0.90	8.39	6.95	0.00	6.95	2.00	1.00	4.00	2.00	4.47	0.45	SC-250	9.50	4.25	C	0.044	4.39	LINER REQ'D	PROCEED	8.8	PROCEED	10.0	3.06	PROCEED
CHANNEL 5	1.82%	0.89	0	0.89	0.90	8.39	6.72	0.00	6.72	2.00	1.50	6.00	4.50	6.71	0.67	SC-250	9.50	6.37	C	0.044	3.50	LINER REQ'D	PROCEED	15.8	PROCEED	10.0	1.71	PROCEED
CHANNEL 6	3%	0.23	0	0.23	0.90	8.39	1.74	0.00	1.74	2.00	1.00	4.00	2.00	4.47	0.45	SC-250	9.50	4.25	C	0.044	3.19	LINER REQ'D	PROCEED	6.4	PROCEED	10.0	1.62	PROCEED



- CONSTRUCTION SPECIFICATIONS**
- Ensure subgrade for the filter and riprap is at zero grade. 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 riprap thickness.
 - Filter cloth, when used, must meet design requirements and be protected from punching or tearing. All connecting joints should overlap at least 1'.
 - Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
 - Construct the apron on zero grade with no over-fall at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
 - Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed, place it in the upper end of the apron.
 - Immediately after construction, stabilize all disturbed areas with vegetation.

VISTA N C LTD PARTNERSHIP
DB 561 PG 463
540-2-238

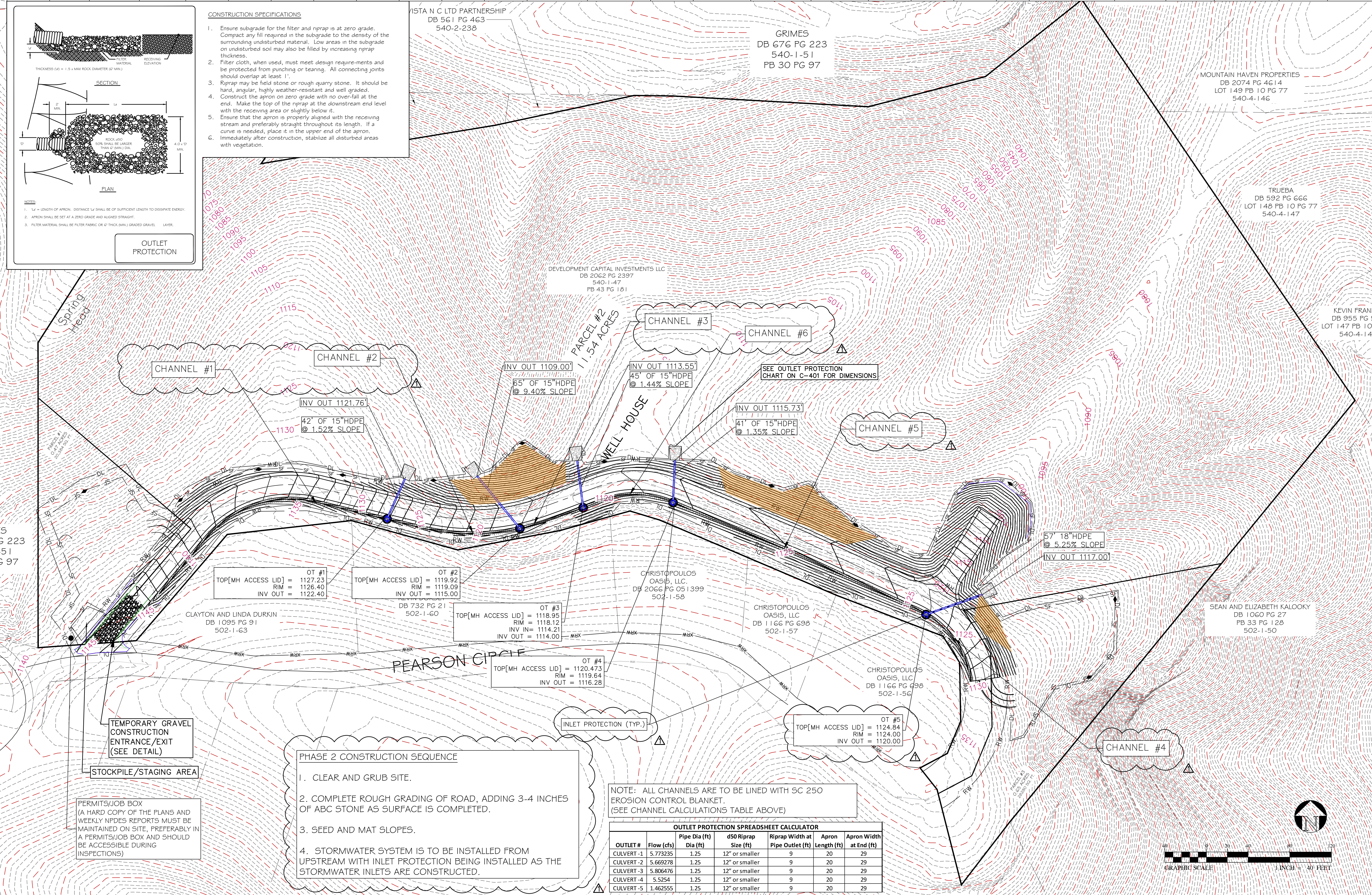
GRIMES
DB 676 PG 223
540-1-51
PB 30 PG 97

MOUNTAIN HAVEN PROPERTIES
DB 2074 PG 4614
LOT 149 PB 10 PG 77
540-4-146

TRUEBA
DB 592 PG 666
LOT 148 PB 10 PG 77
540-4-147

DEVELOPMENT CAPITAL INVESTMENTS LLC
DB 2062 PG 2397
540-1-47
PB 43 PG 181

KEVIN FRANKEL
DB 955 PG 50
LOT 147 PB 10 PG
540-4-148



OUTLET PROTECTION

- PHASE 2 CONSTRUCTION SEQUENCE**
- CLEAR AND GRUB SITE.
 - COMPLETE ROUGH GRADING OF ROAD, ADDING 3-4 INCHES OF ABC STONE AS SURFACE IS COMPLETED.
 - SEED AND MAT SLOPES.
 - STORMWATER SYSTEM IS TO BE INSTALLED FROM UPSTREAM WITH INLET PROTECTION BEING INSTALLED AS THE STORMWATER INLETS ARE CONSTRUCTED.

NOTE: ALL CHANNELS ARE TO BE LINED WITH SC 250 EROSION CONTROL BLANKET.
(SEE CHANNEL CALCULATIONS TABLE ABOVE)

OUTLET PROTECTION SPREADSHEET CALCULATOR

OUTLET #	Flow (cfs)	Pipe Dia (ft)	d50 Riprap Size (ft)	Riprap Width at Pipe Outlet (ft)	Apron Length (ft)	Apron Width at End (ft)
CULVERT-1	5.773235	1.25	12" or smaller	9	20	29
CULVERT-2	5.669278	1.25	12" or smaller	9	20	29
CULVERT-3	5.806476	1.25	12" or smaller	9	20	29
CULVERT-4	5.5254	1.25	12" or smaller	9	20	29
CULVERT-5	1.462555	1.25	12" or smaller	9	20	29

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (SEE DETAIL)

STOCKPILE/STAGING AREA

PERMITS/JOB BOX (A HARD COPY OF THE PLANS AND WEEKLY NPDES REPORTS MUST BE MAINTAINED ON SITE, PREFERABLY IN A PERMITS/JOB BOX AND SHOULD BE ACCESSIBLE DURING INSPECTIONS)

REV	DATE	DESCRIPTION
1	10/24/2023	EHM
2		
3		
4		
5		
6		

REVISION PER EMAIL FROM L. CHRISTIANSEN, NCDOT

HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

PLANS FOR
BUFFALO RIDGE
TOWN OF LAKE LURE
RUTHERFORD COUNTY, NC

ECP PHASE II

Odom Engineering PLLC
100 Oaks Street, Forest City, N.C. 28043
ph: 828.274.4986 fax: 828.274.4988
www.odomeng.com

SCALE: 1" = 40'

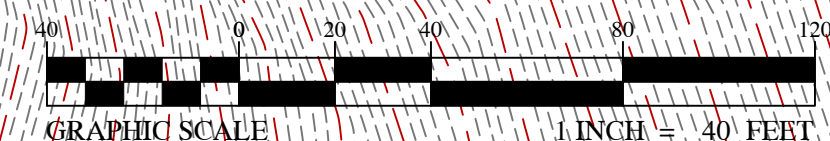
DATE: 01/19/2023

DRAWN BY: EHM

CHECKED BY: DWO

PROJECT MGR: DWO

SHEET: C-401



Drawing name: Z:\2022\22112 - BUFFALO RIDGE and BUFFALO RIDGE EAST.DWG - BUFFALO RIDGE EAST.DWG - BUFFALO RIDGE - 1003_ECP - BUFFALO RIDGE_recover.dwg
 Plotted on: Oct 25, 2023 - 12:53pm

DISTEFANO, DANIEL
DB 2069 PG 3223
540-4-17

VISTA N C LTD PARTNERSHIP
DB 561 PG 463
540-2-238

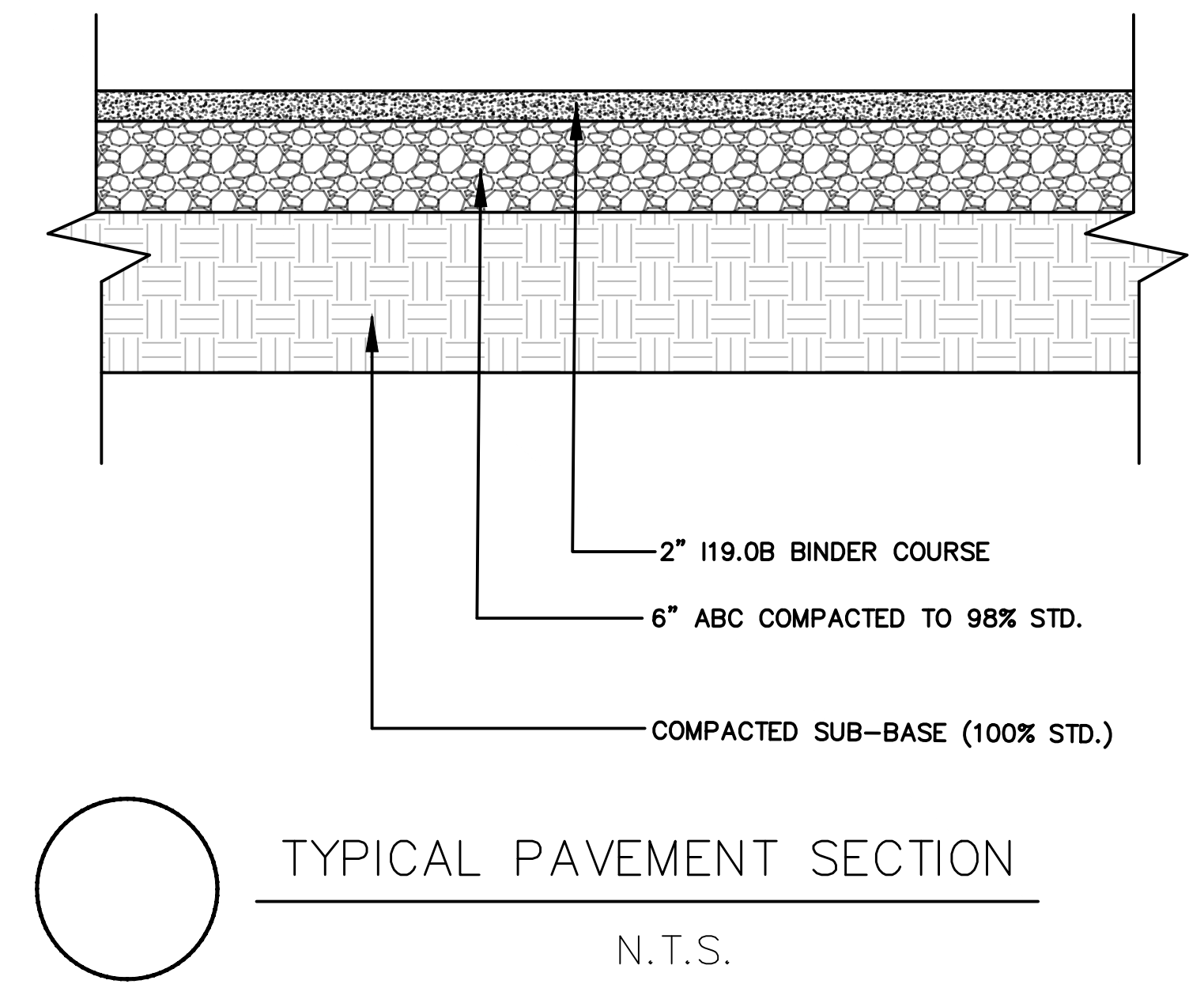
GRIMES
DB 676 PG 223
540-1-51
PB 30 PG 97

DEVELOPMENT CAPITAL INVESTMENTS LLC
DB 2062 PG 2397
540-1-47
PB 43 PG 181

DB 102 PG 470
LOT 150 PB 10 PG 77
540-4-135

JOB NUMBER:
22112

REV	DATE	DESCRIPTION
1	10/24/2023	REVISION PER EMAIL FROM L. CHRISTIANSEN, NCDOT
2		
3		
4		
5		
6		

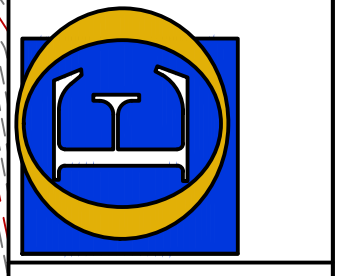


KEVIN FRANKEL
DB 955 PG 505
LOT 147 PB 10 PG 77
540-4-148

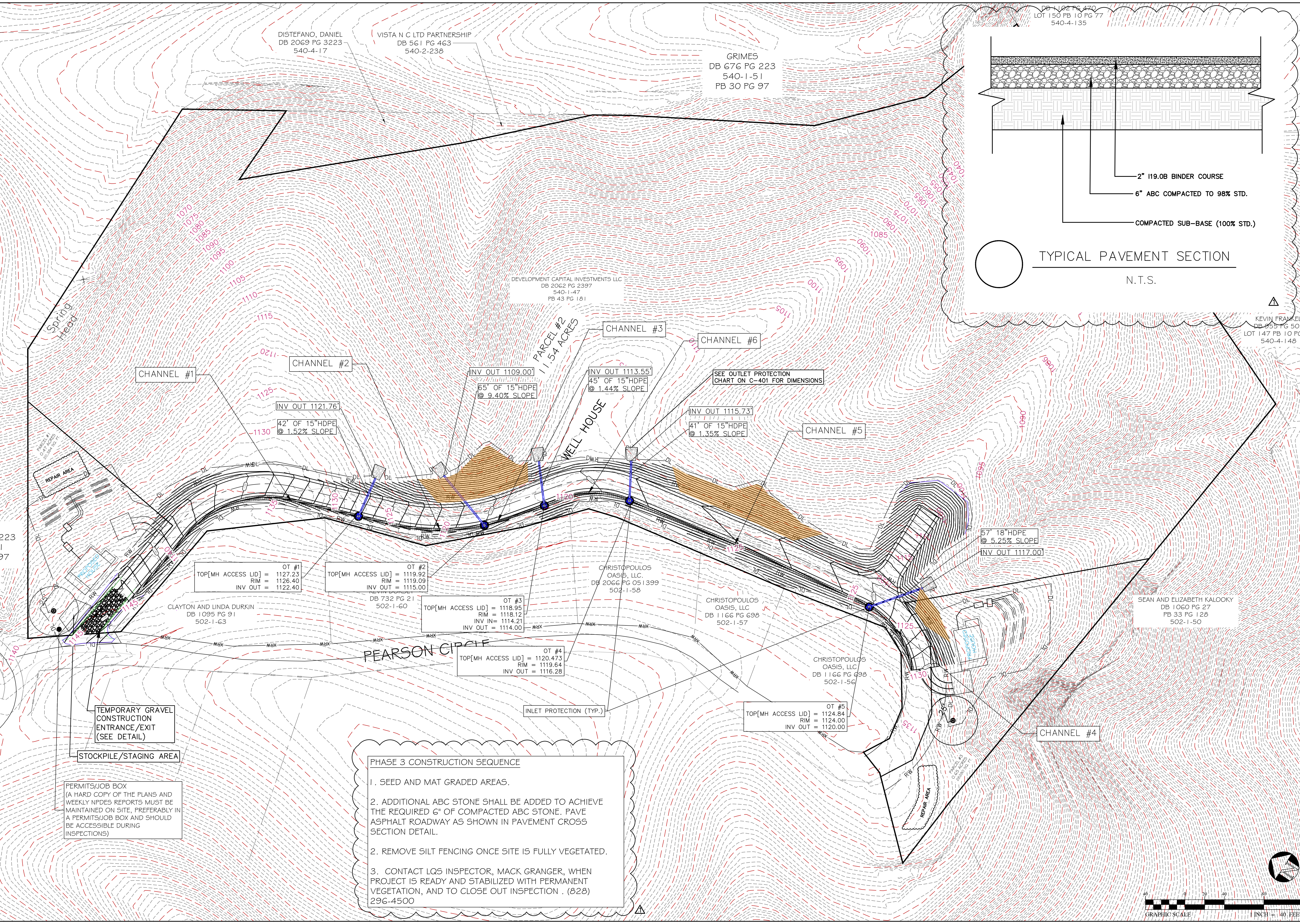
HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

PLANS FOR
BUFFALO RIDGE
TOWN OF LAKE LURE
RUTHERFORD COUNTY, NC
CHIMNEY ROCK TOWNSHIP
ECP PHASE III

Odom Engineering PLLC
100 Oak Street, Forest City, N.C. 28043
ph: 828.274.4986 fax: 828.274.4988
www.odomeng.com



SCALE: 1" = 40'
DATE: 01/19/2023
DRAWN BY: EHM
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
C-402



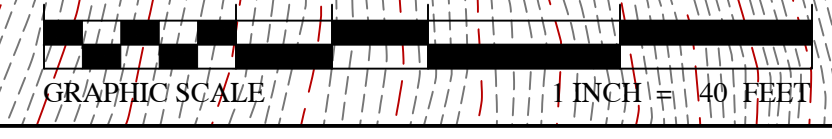
PHASE 3 CONSTRUCTION SEQUENCE

1. SEED AND MAT GRADED AREAS.
2. ADDITIONAL ABC STONE SHALL BE ADDED TO ACHIEVE THE REQUIRED 6" OF COMPACTED ABC STONE. PAVE ASPHALT ROADWAY AS SHOWN IN PAVEMENT CROSS SECTION DETAIL.
2. REMOVE SILT FENCING ONCE SITE IS FULLY VEGETATED.
3. CONTACT LQS INSPECTOR, MACK GRANGER, WHEN PROJECT IS READY AND STABILIZED WITH PERMANENT VEGETATION, AND TO CLOSE OUT INSPECTION . (828) 296-4500

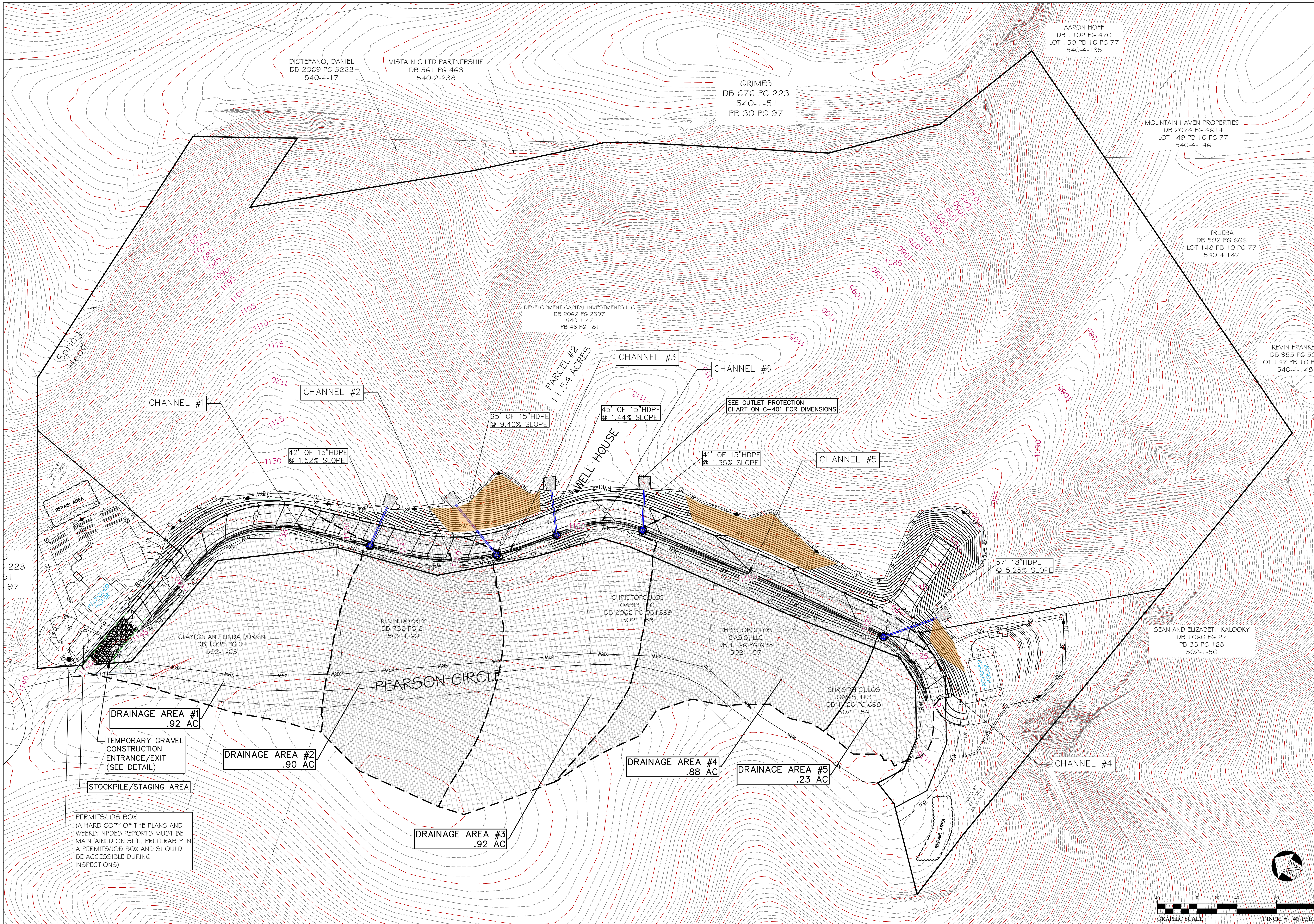
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (SEE DETAIL)

STOCKPILE/STAGING AREA

PERMITS/JOB BOX (A HARD COPY OF THE PLANS AND WEEKLY NPDES REPORTS MUST BE MAINTAINED ON SITE, PREFERABLY IN A PERMITS/JOB BOX AND SHOULD BE ACCESSIBLE DURING INSPECTIONS)



Drawing name: Z:\2022\22112 - BUFFALO RIDGE and BUFFALO RIDGE EAST.DWG - BUFFALO RIDGE.DWG\SESS\2023_1003.ECP - BUFFALO RIDGE_recover.dwg
Plotted on: Oct 25, 2023 - 12:53pm



DISTEFANO, DANIEL
DB 2069 PG 3223
540-4-17

VISTA N C LTD PARTNERSHIP
DB 561 PG 463
540-2-238

GRIMES
DB 676 PG 223
540-1-51
PB 30 PG 97

AARON HOFF
DB 1102 PG 470
LOT 150 PB 10 PG 77
540-4-135

MOUNTAIN HAVEN PROPERTIES
DB 2074 PG 4614
LOT 149 PB 10 PG 77
540-4-146

TRUEBA
DB 592 PG 666
LOT 148 PB 10 PG 77
540-4-147

DEVELOPMENT CAPITAL INVESTMENTS LLC
DB 2062 PG 2397
540-1-47
PB 43 PG 181

KEVIN FRANKEL
DB 955 PG 505
LOT 147 PB 10 PG
540-4-148

CLAYTON AND LINDA DURKIN
DB 1095 PG 91
502-1-63

KEVIN DORSEY
DB 732 PG 21
502-1-60

CHRISTOPOULOS
OASIS, LLC
DB 2066 PG 051 399
502-1-58

CHRISTOPOULOS
OASIS, LLC
DB 1166 PG 698
502-1-57

CHRISTOPOULOS
OASIS, LLC
DB 1166 PG 698
502-1-56

SEAN AND ELIZABETH KALOOKY
DB 1060 PG 27
PB 33 PG 128
502-1-50

DRAINAGE AREA #1
.92 AC

DRAINAGE AREA #2
.90 AC

DRAINAGE AREA #4
.88 AC

DRAINAGE AREA #5
.23 AC

DRAINAGE AREA #3
.92 AC

TEMPORARY GRAVEL
CONSTRUCTION
ENTRANCE/EXIT
(SEE DETAIL)

STOCKPILE/STAGING AREA

PERMITS/JOB BOX
(A HARD COPY OF THE PLANS AND
WEEKLY NPDES REPORTS MUST BE
MAINTAINED ON SITE, PREFERABLY IN
A PERMITS/JOB BOX AND SHOULD
BE ACCESSIBLE DURING
INSPECTIONS)

65' OF 15" HDPE
@ 9.40% SLOPE

45' OF 15" HDPE
@ 1.44% SLOPE

41' OF 15" HDPE
@ 1.35% SLOPE

42' OF 15" HDPE
@ 1.52% SLOPE

57' 18" HDPE
@ 5.25% SLOPE

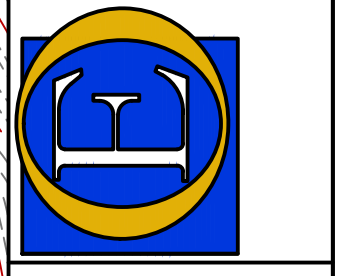
SEE OUTLET PROTECTION
CHART ON C-401 FOR DIMENSIONS

JOB NUMBER:		22112	
DATE	BY	DESCRIPTION	REV
10/24/2023	EHM	REVISE PER EMAIL FROM L. CHRISTIANSEN, NCDCO	1
			2
			3
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			7
			8
			9
			10

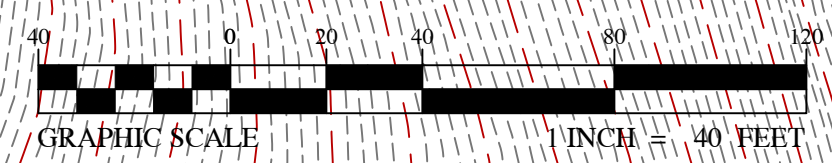
HEREBY CERTIFY THAT THIS
PLAN AND SPECIFICATION
WAS PREPARED BY ME OR
UNDER MY DIRECT
SUPERVISION AND THAT I AM
A DULY REGISTERED
ARCHITECT OR ENGINEER
UNDER THE LAWS OF THE
STATE OF NORTH CAROLINA
AS SIGNIFIED BY MY HAND
AND SEAL.

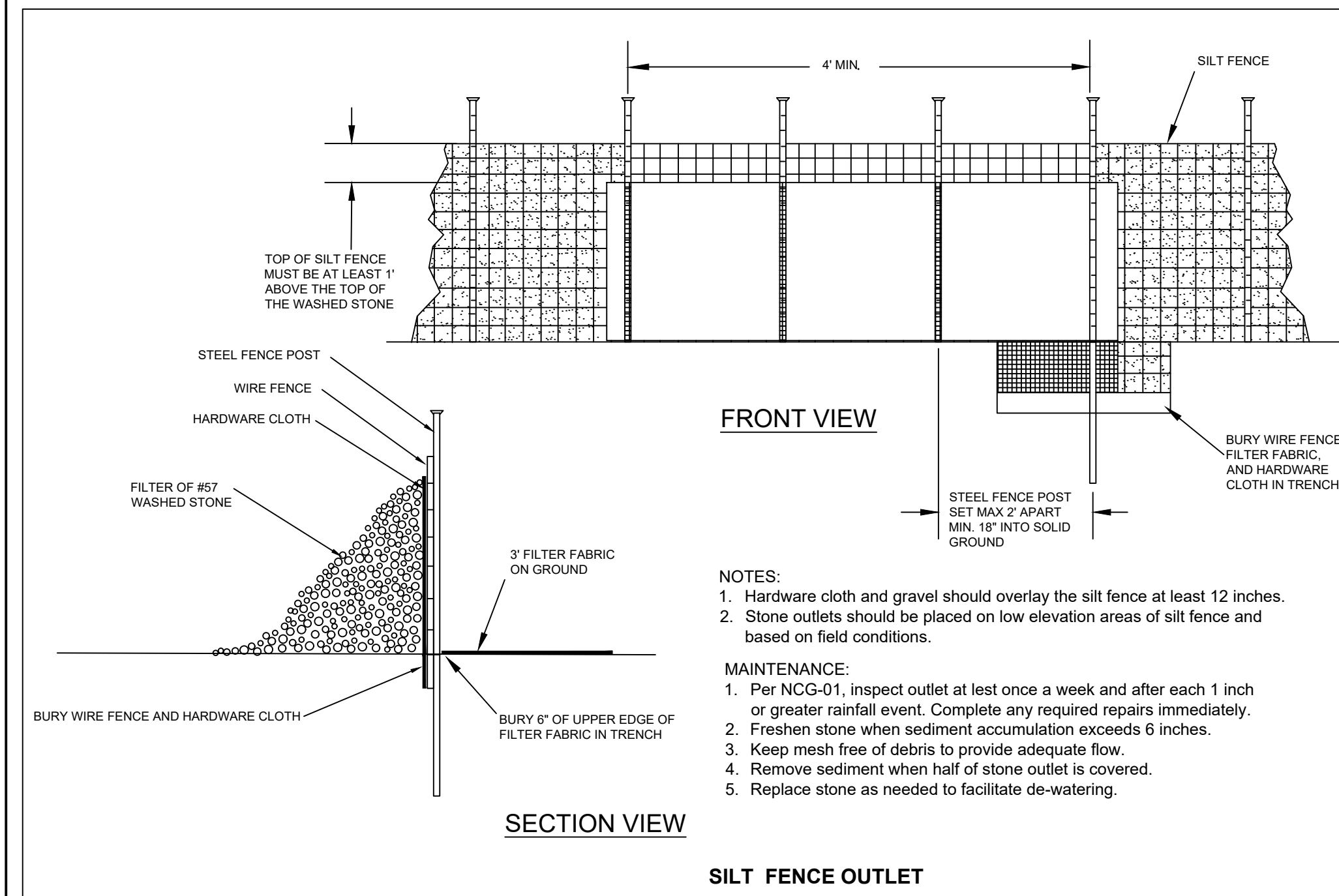
PLANS FOR
BUFFALO RIDGE
TOWN OF LAKE LURE
CHIMNEY ROCK TOWNSHIP
RUTHERFORD COUNTY, NC
DRAINAGE AREAS

Odom
Engineering
PLLC
100 Oak Street, Forest City, N.C. 28043
PH: 828.274.4986 FAX: 828.274.4988
www.odomeng.com



SCALE: 1" = 40'
DATE: 01/19/2023
DRAWN BY: EHM
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
C-403





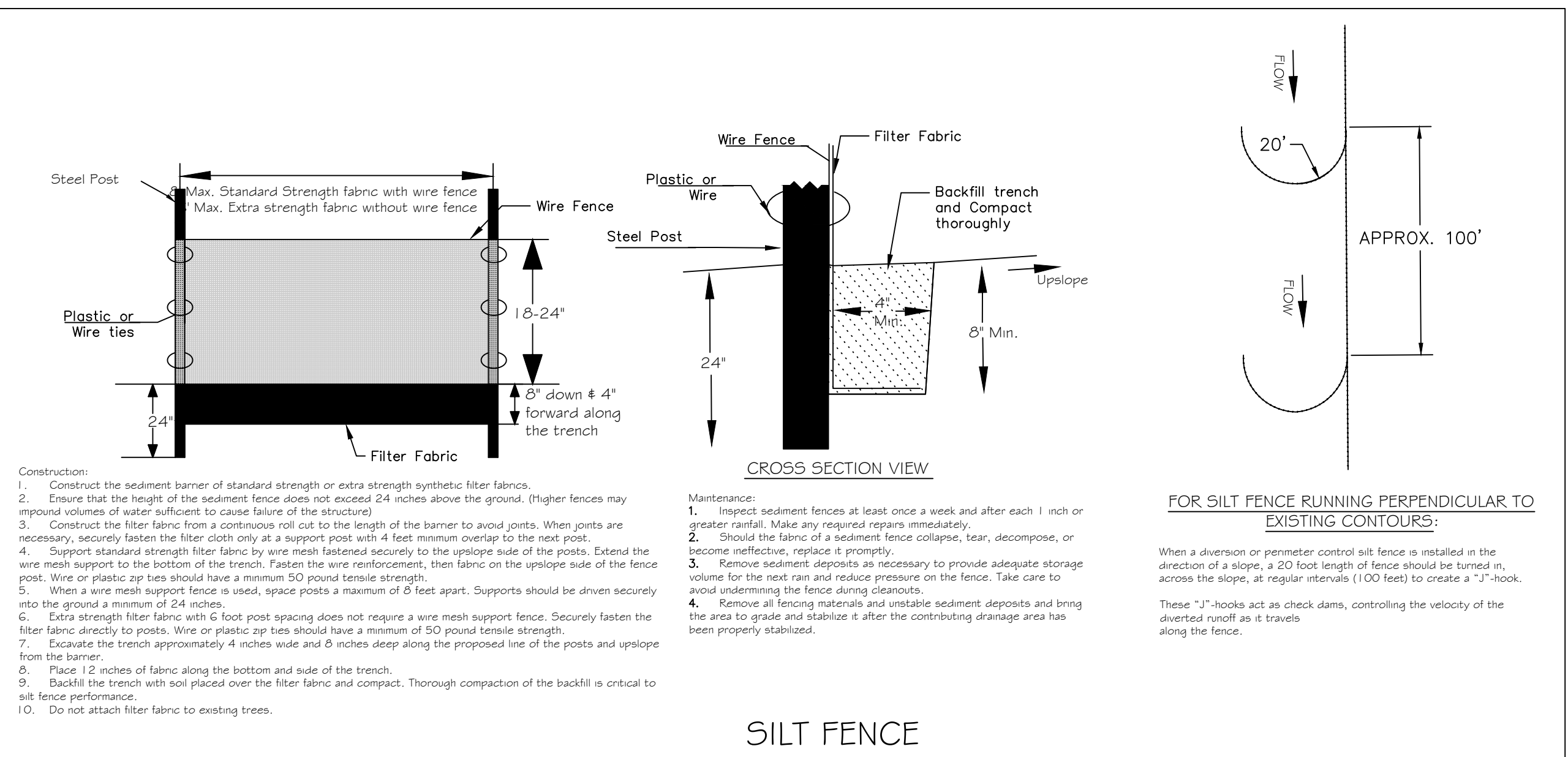
FRONT VIEW

SECTION VIEW

SILT FENCE OUTLET

- NOTES:**
1. Hardware cloth and gravel should overlay the silt fence at least 12 inches.
 2. Stone outlets should be placed on low elevation areas of silt fence and based on field conditions.

- MAINTENANCE:**
1. Per NCG-01, inspect outlet at least once a week and after each 1 inch or greater rainfall event. Complete any required repairs immediately.
 2. Fresh stone when sediment accumulation exceeds 6 inches.
 3. Keep mesh free of debris to provide adequate flow.
 4. Remove sediment when half of stone outlet is covered.
 5. Replace stone as needed to facilitate de-watering.



CROSS SECTION VIEW

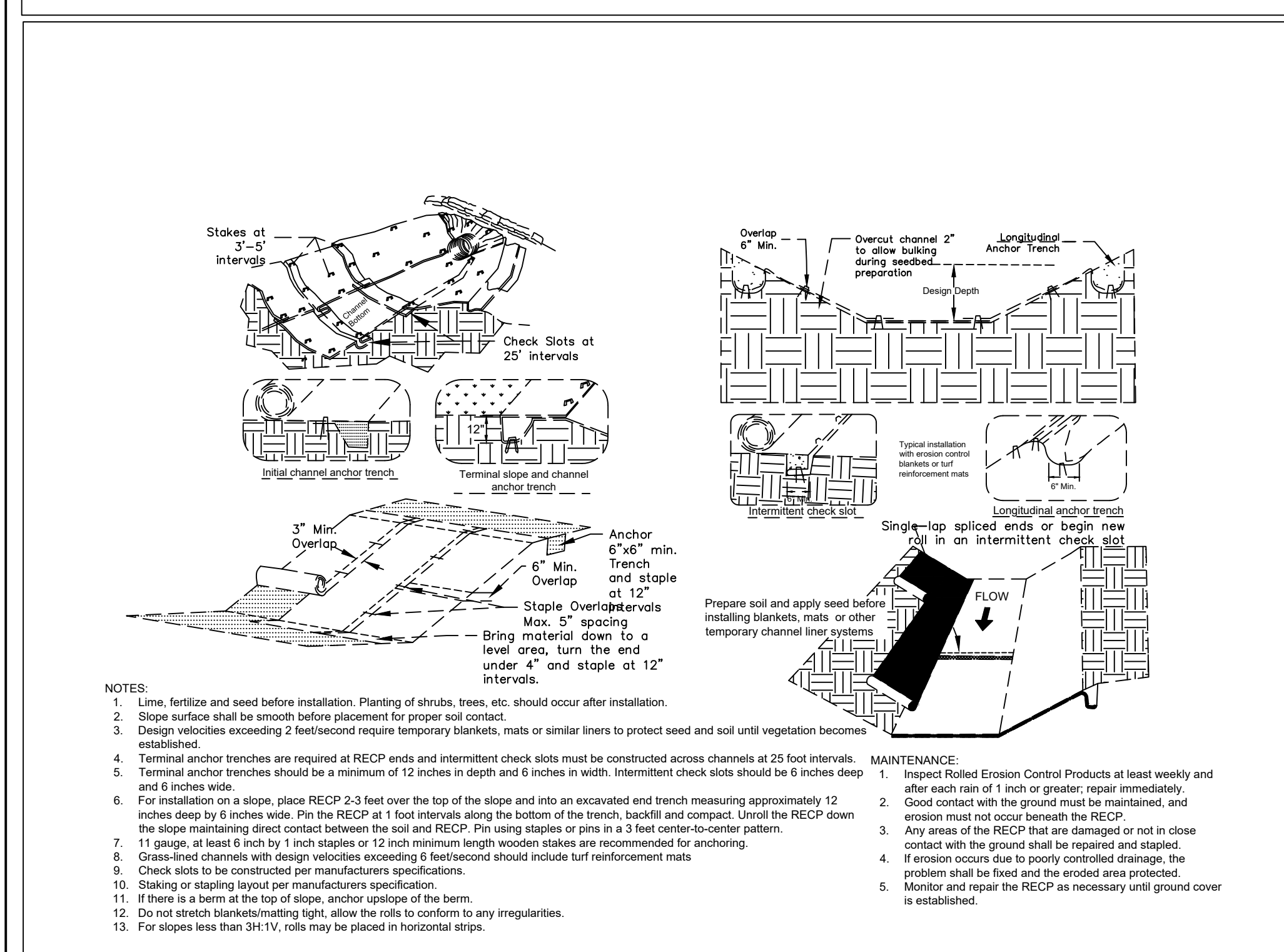
SILT FENCE

- 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. (Higher fences may improve 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 a minimum 50 pound tensile strength.
 5. When a wire mesh support fence is used, space posts a maximum of 8 feet apart. Supports should be driven securely into the ground a minimum of 24 inches.
 6. Extra strength filter fabric with 4 foot post spacing does not require a wire mesh support fence. Securely fasten the filter fabric directly to posts. Wire or plastic zip ties should have a minimum of 50 pound tensile strength.
 7. Excavate the trench approximately 4 inches wide and 8 inches deep along the proposed line of the posts and upslope from the barrier.
 8. Place 12 inches of 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.
- Maintenance:**
1. Inspect sediment fences at least once a week and after each 1 inch or greater rainfall. Make any required repairs immediately.
 2. Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
 3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and reduce pressure on the fence. Take care to avoid undermining the fence during cleanouts.
 4. 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.

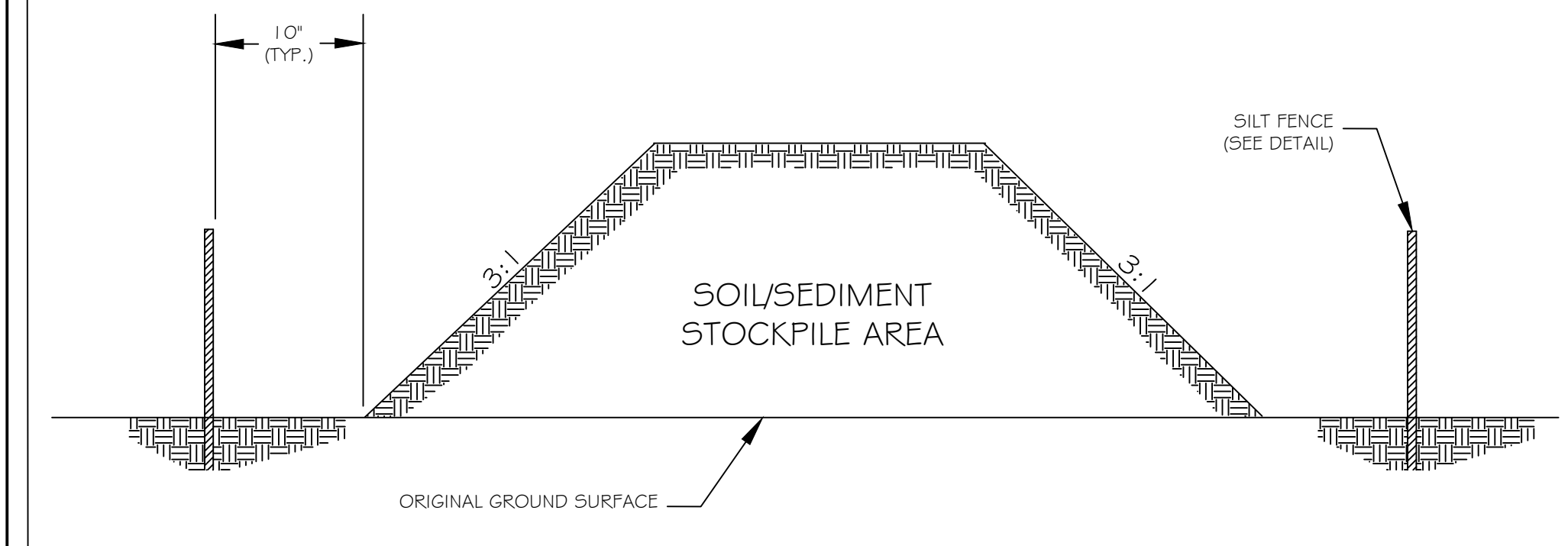
FOR SILT FENCE RUNNING PERPENDICULAR TO EXISTING CONTOURS:

When a diversion or perimeter control silt fence is installed in the direction of a slope, a 20 foot length of fence should be turned 90° across the slope, at regular intervals (100 feet) to create a "J"-hook.

These "J"-hooks act as check dams, controlling the velocity of the diverted runoff as it travels along the fence.



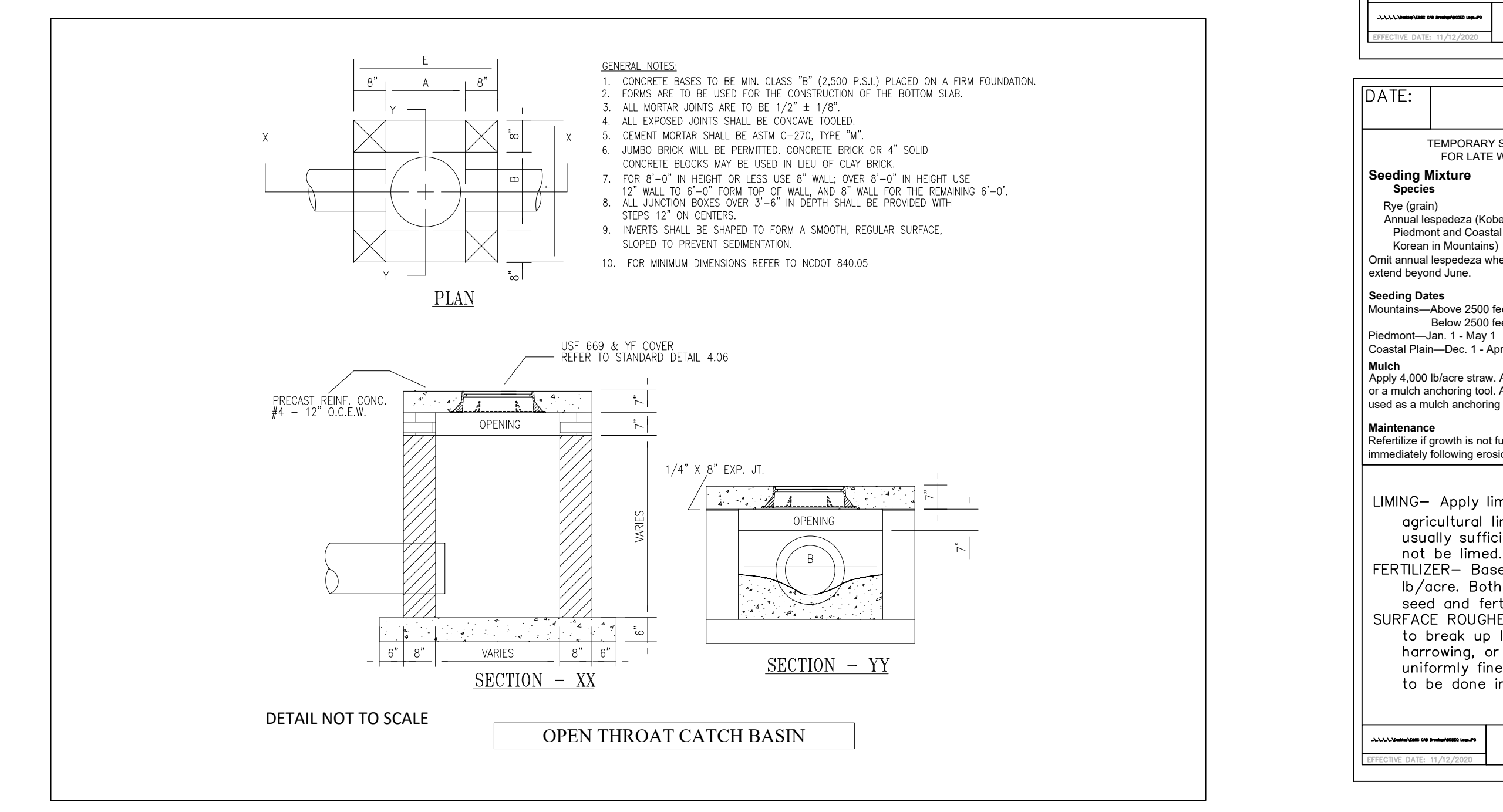
TEMPORARY STOCKPILE AREA



INLET PROTECTION

- Construction:**
1. Uniformly grade a shallow depression approaching the inlet.
 2. Drive 5-foot steel posts 2 feet into the ground surrounding the inlet. Space posts evenly around the perimeter of the inlet, a maximum of 4 feet apart.
 3. Surround the posts with wire mesh hardware cloth. Secure the wire mesh to the steel posts at the top, middle, and bottom. Placing a 2-foot flap of the wire mesh under the gravel for anchoring is recommended.
 4. Place clean gravel (NC DOT #5 or #57 stone) on a 2:1 slope with a height of 16 inches around the wire, and smooth to an even grade.
 5. Once the contributing drainage area has been stabilized, remove accumulated sediment, and establish final grading elevations.
 6. Compact the area properly and stabilize with groundcover.
- Maintenance:**
1. Inspect inlet protections at least once a week and after each 1 inch or greater rainfall. Make any required repairs immediately.
 2. Clear the mesh wire of any debris or other objects to provide adequate flow for subsequent rains. Take care not to damage or undercut the mesh during sediment removal.
 3. Replace stone as needed.

- NOTES:**
1. SILT FENCE TO EXTEND AROUND ENTIRE PERIMETER OF STOCKPILE, OR IF STOCKPILE AREA IS LOCATED ON NEAR A SLOPE THE SILT FENCE IS TO EXTEND ALONG CONTOURS OF THE DOWN-GRADIENT AREA.
 2. IF STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, TEMPORARY STABILIZATION MEASURES MUST BE IMPLEMENTED.
 3. SILT FENCE SHALL BE MAINTAINED UNTIL STOCKPILE AREA HAS EITHER BEEN REMOVED OR PERMANENTLY STABILIZED.
 4. THE KEY TO FUNCTIONAL TEMPORARY STOCKPILE AREAS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.



OPEN THROAT CATCH BASIN

- GENERAL NOTES:**
1. CONCRETE BASES TO BE MIN. CLASS 30' (2,500 P.S.I.) PLACED ON A FIRM FOUNDATION.
 2. FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 3. ALL MORTAR JOINTS ARE TO BE 1/2" ± 1/8"
 4. ALL EXPANDED JOINTS SHALL BE CONCRETE TOGGLED.
 5. CEMENT MORTAR SHALL BE ASTM C-270, TYPE "M".
 6. JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.
 7. FOR 8'-0" IN HEIGHT OR LESS USE 8" WALL OVER 8'-0" IN HEIGHT USE 12" WALL TO 8'-0" FORM TOP OF WALL AND 8" WALL FOR THE REMAINING 6'-0".
 8. ALL JUNCTION BOXES OVER 3'-4" IN DEPTH SHALL BE PROVIDED WITH STEPS 12" ON CENTERS.
 9. INVERTS SHALL BE SLOPED TO FORM A SMOOTH, REGULAR SURFACE, SLOPED TO PREVENT SEDIMENTATION.
 10. FOR MINIMUM DIMENSIONS REFER TO NCDOT 840.05

MATERIAL PROPERTY DATA SHEET

WESTERN GREEN **VMax® SC250™**
Permanent • Triple Net • Organic Fiber Matrix • Turf Reinforcement Mat

DESCRIPTION

SC250 Turf Reinforcement Mat (TRM) is composed of 70% straw and 30% coconut fibers mechanically (stitch) bound between a three-dimensional UV stabilized, synthetic net structure. Stitching is secured on two-inch centers using UV stabilized, synthetic thread. SC250 is a permanent, three-dimensional TRM that provides immediate erosion protection and long-term turf reinforcement and is intended for applications requiring erosion protection for greater than thirty-six months.

Each roll of SC250 is made in the USA and manufactured under Western Green's Quality Assurance Program to ensure a continuous distribution of fibers and consistent thickness.

Material Content	Index Property	Test Method	Typical
Matrix: Straw/Coconut	Thickness	ASTM D6525	0.58 in. (15 mm)
Top Net: Medium-weight, UV stable	Mass/Unit Area	ASTM D6566	15.0 oz/yd ² (500 g/m ²)
Middle Net: Corrugated Ultra-High-weight, UV stable	Tensile Strength - MD	ASTM D6818	700 lbs/ft (10.2 kN/m)
Bottom Net: Medium-weight, UV stable	Tensile Strength - TD	ASTM D6818	675 lbs/ft (9.9 kN/m)
Thread: Synthetic, UV Stable	Elongation - MD	ASTM D6818	30%
	Elongation - TD	ASTM D6818	20%
	UV Stability	ASTM D4355	80% @1000 hr
	Light Penetration	ASTM D6567	5%
	Biomass Improvement	ASTM D7322	400%
	Specific Gravity	ASTM D792	57.4 lb/ft ³ (0.92 g/cm ³)
	Porosity	ECTC	N/A

Property	Unvegetated	Vegetated ^d
RUSLE C Factor ^a	0.05	N/A
Slope Maximum Gradient ^b	0.5H:1V	0.5H:1V
Permissible Shear Stress ^c	3.0 psf (145 Pa)	10.0 psf (480 Pa)
Permissible Velocity ^c	9.5 fps (2.9 m/s)	15 fps (4.6 m/s)
τ_c / τ_{c0} (HEC-15)	N/A	0.67

Design Parameters

Property	Unvegetated	Vegetated ^d
RUSLE C Factor ^a	0.05	N/A
Slope Maximum Gradient ^b	0.5H:1V	0.5H:1V
Permissible Shear Stress ^c	3.0 psf (145 Pa)	10.0 psf (480 Pa)
Permissible Velocity ^c	9.5 fps (2.9 m/s)	15 fps (4.6 m/s)
τ_c / τ_{c0} (HEC-15)	N/A	0.67

Manning's n Roughness (HEC-15)

τ_c	τ_{c0}	n
0.038	0.032	0.027

Approvals & Classification

Approval	Type
FHWA	Type 5 C / ECTC: Type 5 C
TTI Approvals	Class 2 Type H
NTPFP Number	ECP-2019-03-014

Western Green • 4609 E. Boonville-New Harmony Rd. Evansville, IN 47725 • (800) 772-2040

westerngreen.com

NON-INVASIVE PERMANENT SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE	Species	Rate
Centipede	5 lbs/acre	
Indian Woodrats	1.5-2.5 lbs/acre*	
Virginia Wild Rye	4-6 lbs/acre*	

NON-INVASIVE PERMANENT SEEDING RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE	Species	Rate
Indian Woodrats	1.5-2.5 lbs/acre*	
Virginia Wild Rye	4-6 lbs/acre*	

SEEDING MIXTURE

Species	Rate
Hard Fescue	15 lbs/acre
Switchgrass	2.5-3.5 lbs/acre*
Indian Grass	5-7 lbs/acre*
Big Bluestem	5-7 lbs/acre*
Indian Woodrats	1.5-2.5 lbs/acre*
Virginia Wild Rye	4-6 lbs/acre*

PERMANENT SEEDING RECOMMENDATIONS

TEMPORARY SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING	TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER	TEMPORARY SEEDING RECOMMENDATIONS FOR FALL
Seeding Mixture Species Ryegrass (grain) Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains) Omit annual lespedeza when duration of temporary cover is not to extend beyond June. Seeding Dates Mountains—Above 2500 feet: Feb. 15 - May 15 Mountains—Below 2500 feet: Feb. 1 - May 15 Piedmont—Jan. 1 - May 1 Coastal Plain—Dec. 1 - Apr. 15 Mulch Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool. Maintenance Referfertilize if growth is not fully adequate. Reseed, referfertilize and mulch immediately following erosion or other damage.	Seeding Mixture Species German millet In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre. Seeding Dates Mountains—Above 2500 feet: Aug. 15 - Dec. 15 Coastal Plain and Piedmont—Aug. 15 - Dec. 31 Mulch Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool. Maintenance Referfertilize if growth is not fully adequate. Reseed, referfertilize and mulch immediately following erosion or other damage.	Seeding Mixture Species Ryegrass (grain) Seeding Dates Mountains—Aug. 15 - Dec. 15 Coastal Plain and Piedmont—Aug. 15 - Dec. 31 Mulch Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool. Maintenance Repair and referfertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

TEMPORARY SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

Seeding Mixture	Species	Rate (lb/acre)
	Ryegrass (grain)	100
	Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains)	50

TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER

Seeding Mixture	Species	Rate (lb/acre)
	German millet	40

TEMPORARY SEEDING RECOMMENDATIONS FOR FALL

Seeding Mixture	Species	Rate (lb/acre)
	Ryegrass (grain)	120

SEED BED PREPARATION:

LIMING— Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1-1 1/2 tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.

FERTILIZER— Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.

SURFACE ROUGHENING— If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. The finished grade shall be a smooth even soil surface with a looser uniform fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed.

JOB NUMBER: 22112

DATE: 01/19/2023

DESCRIPTION: REVISE PER EMAIL FROM L. CHRISTIANSEN, NCDOT

BY: EHM

REVISIONS:

REV	NO	DATE	DESCRIPTION
1	1	01/19/2023	ISSUE FOR PERMITS
2	2	01/19/2023	ISSUE FOR PERMITS
3	3	01/19/2023	ISSUE FOR PERMITS
4	4	01/19/2023	ISSUE FOR PERMITS
5	5	01/19/2023	ISSUE FOR PERMITS

HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

PLANS FOR: BUFFALO RIDGE TOWN OF LAKE LURE CHIMNEY ROCK TOWNSHIP RUTHERFORD COUNTY, NC

Odom Engineering PLLC
169 Oak Street, Forest City, N.C. 28043
PH: 828.274.9496 FAX: 828.274.4988
www.odomeng.com

DATE: 01/19/2023

DRAWN BY: EHM

CHECKED BY: DWO

PROJECT MGR: DWO

SHEET: C-900