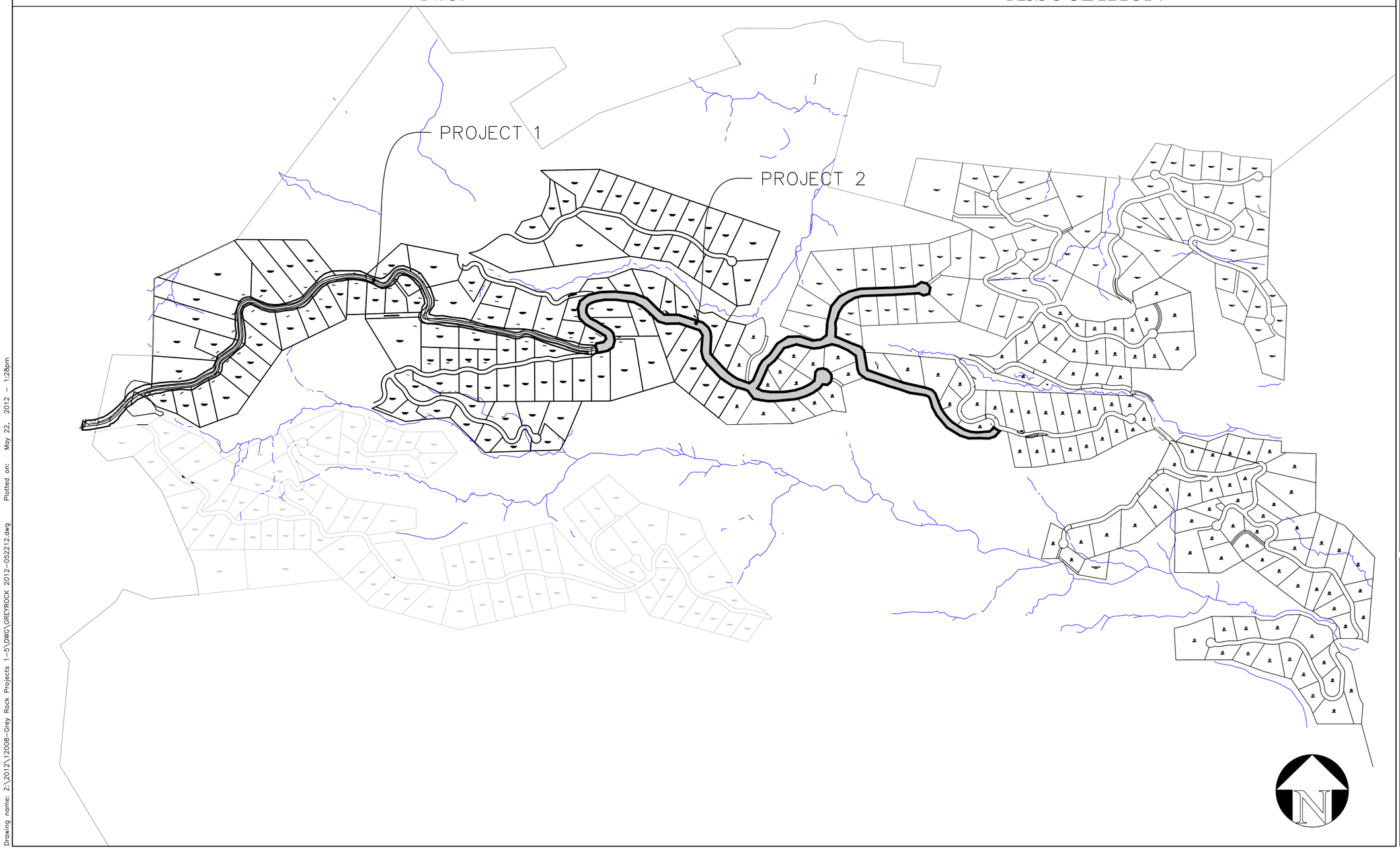
ROAD CONSTRUCTION PLANS PROJECT 1 FOR

GREYROCK SUBDIVISON

LAKE LURE RUTHERFORD COUNTY, N.C.

PROJECT OWNER:
RUTHERFORD COUNTY,
N.C.

PROPERTY OWNER:
GREYROCK HOMEOWNERS
ASSOCIATION



VICINITY MAP

NTS

GENERAL NOTES:

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TITLE	
COVER	
OVERALL	
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DETAILS	8

JOB NUMBER: 12008

REV	DESCRIPTION	BY	DATE
1			
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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.

NORTH CAROLINA PROFESSIONAL SEAL 21104 ENGINEER DAVID ODOM

CERTIFICATION

ROAD CONSTRUCTION PLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
COVER

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498

SCALE: N.T.S.
DATE: 04/10/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
COVER

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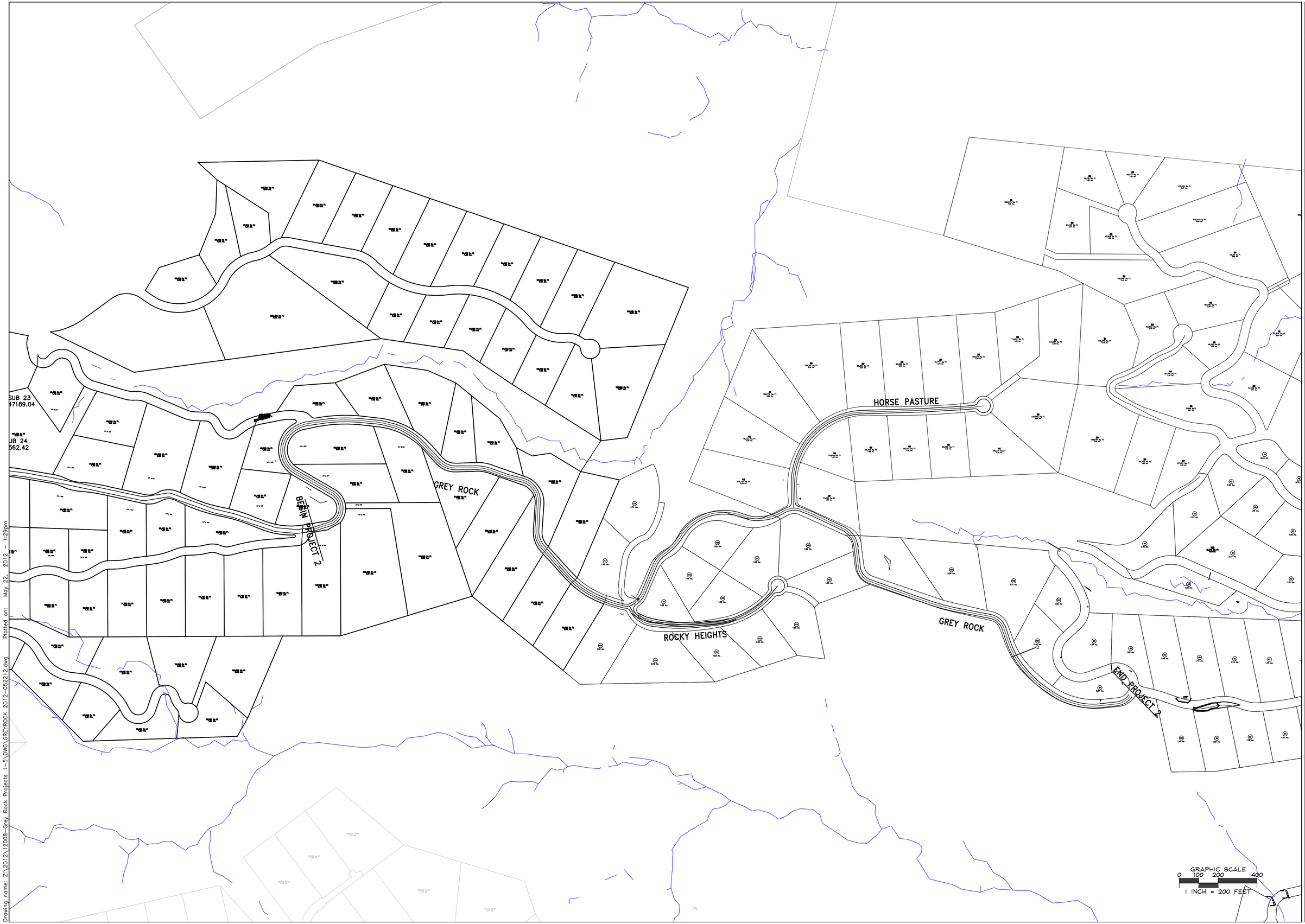

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11087

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NORTH CAROLINA PROFESSIONAL SEAL 21130 ENGINEER DAVID ODOM 05/19/12
CERTIFICATION

ROAD LAYOUT PHASE 1PLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
OVERALL PROJECT LAYOUT

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 200'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
OVERALL △

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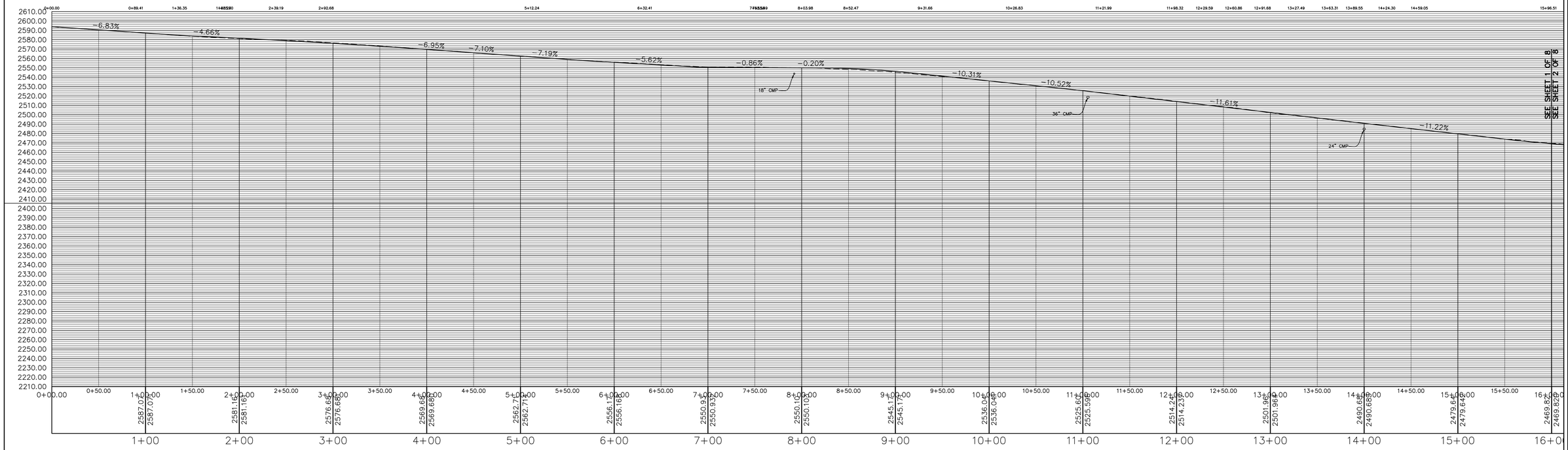
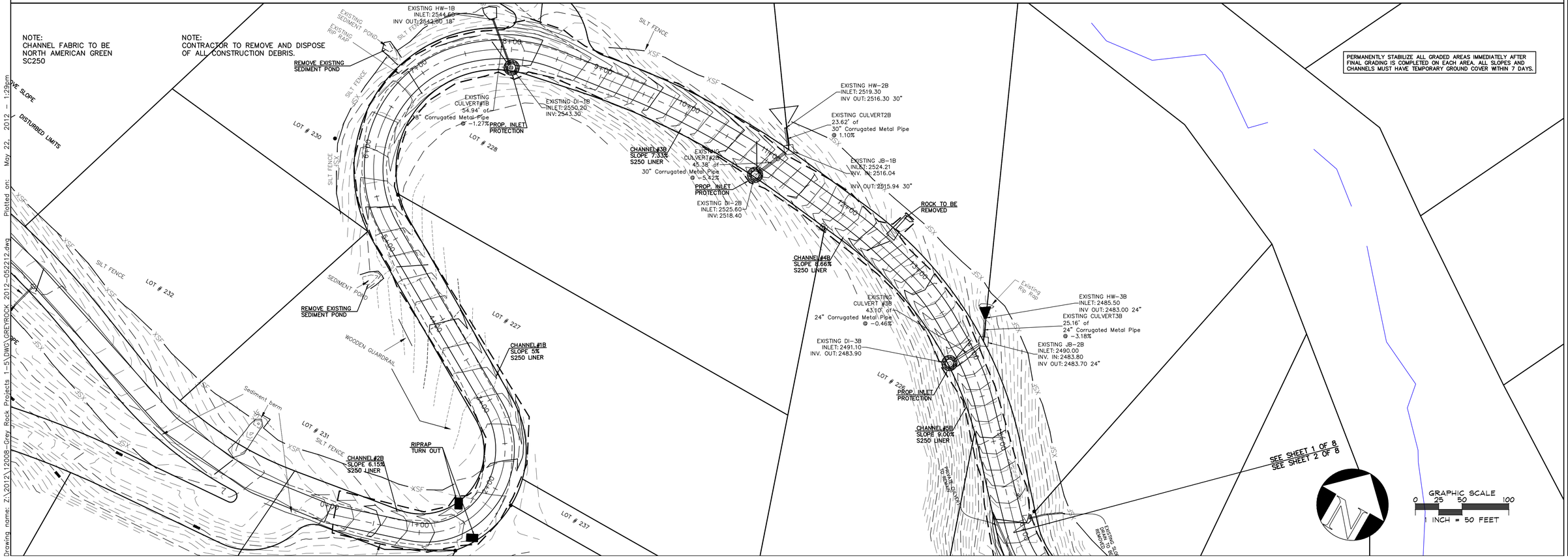


NOTE:
CHANNEL FABRIC TO BE NORTH AMERICAN GREEN SC250

NOTE:
CONTRACTOR TO REMOVE AND DISPOSE OF ALL CONSTRUCTION DEBRIS.

PERMANENTLY STABILIZE ALL GRADED AREAS IMMEDIATELY AFTER FINAL GRADING IS COMPLETED ON EACH AREA. ALL SLOPES AND CHANNELS MUST HAVE TEMPORARY GROUND COVER WITHIN 7 DAYS.



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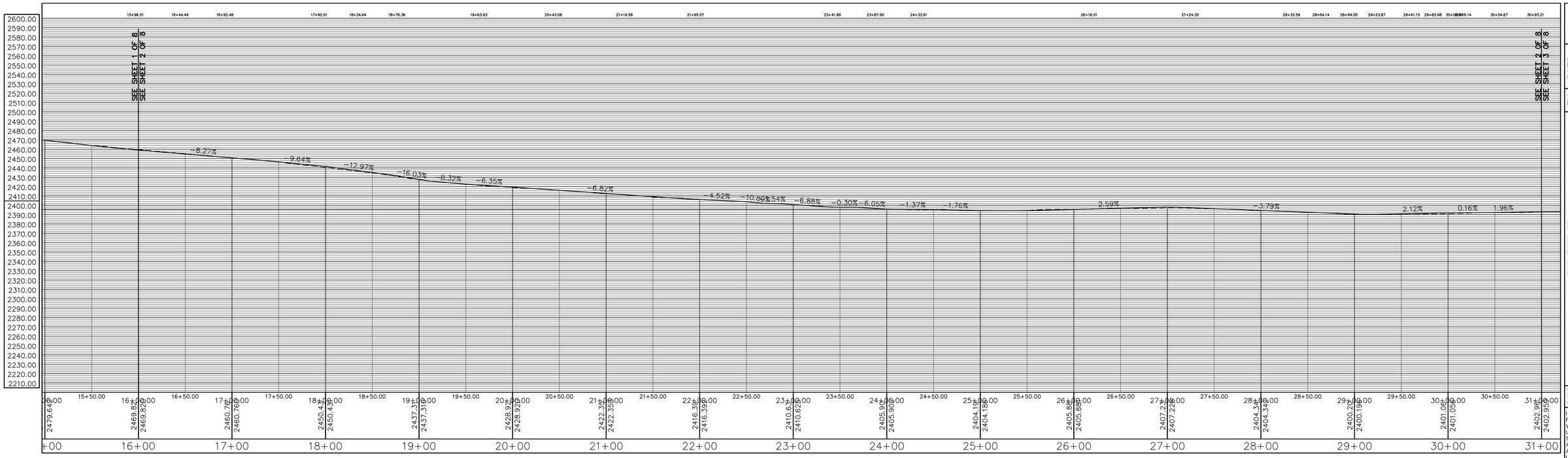
NORTH CAROLINA PROFESSIONAL SEAL 21306 ENGINEER DAVID ODOM

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
GREY ROCK ROAD

Odom Engineering PLLC
152 East Main Street, Forest City, N.C., 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 50'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
1 OF 9

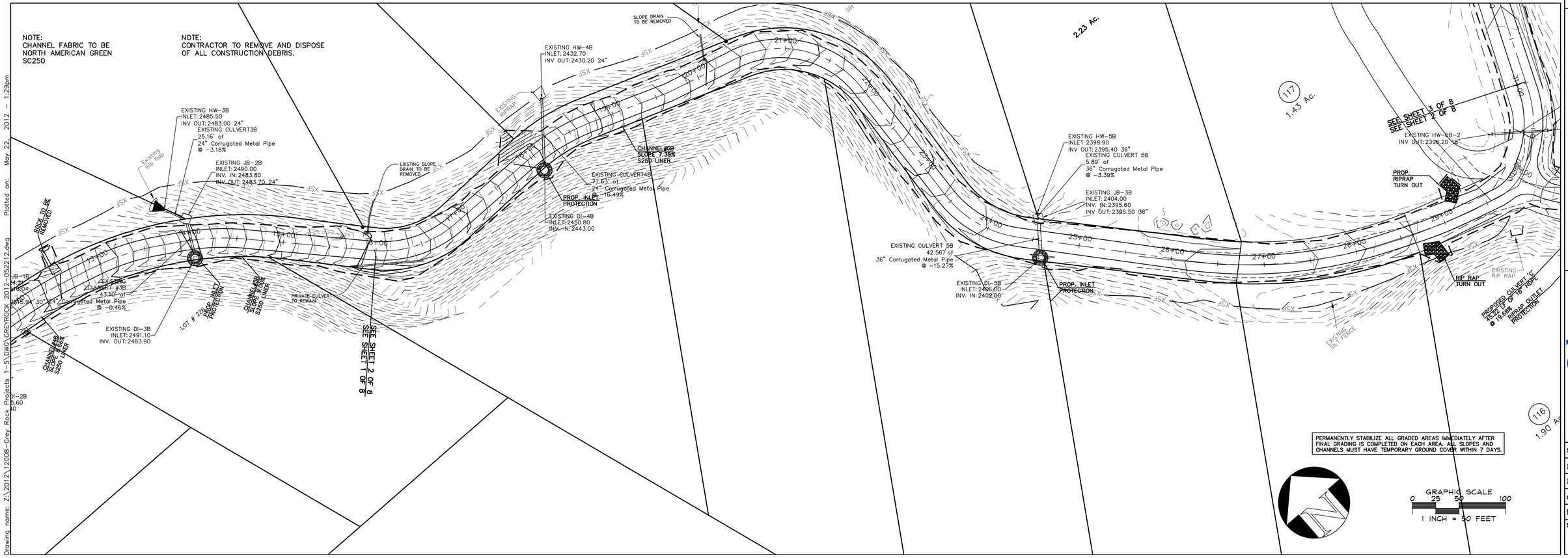


PARTIAL ROAD PROFILE

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

NOTE:
CHANNEL FABRIC TO BE NORTH AMERICAN GREEN SC250

NOTE:
CONTRACTOR TO REMOVE AND DISPOSE OF ALL CONSTRUCTION DEBRIS.



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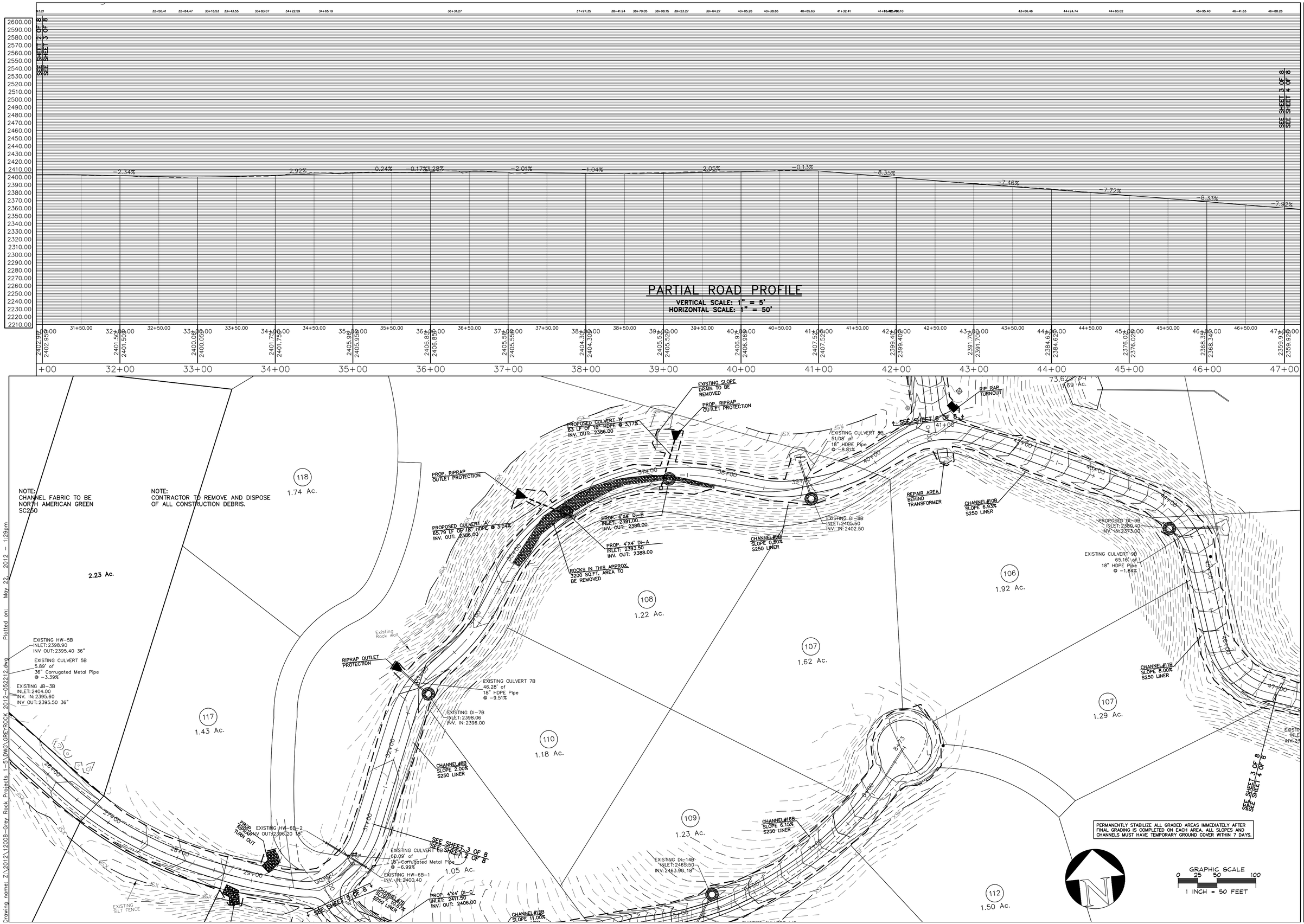
NORTH CAROLINA PROFESSIONAL SEAL 21206 ENGINEER DAVID ODOM

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
GREY ROCK ROAD

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 50'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
2 OF 9



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NORTH CAROLINA PROFESSIONAL SEAL 21130 ENGINEER DAVID ODOM 05/19/12

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR

GREYROCK SUBDIVISION

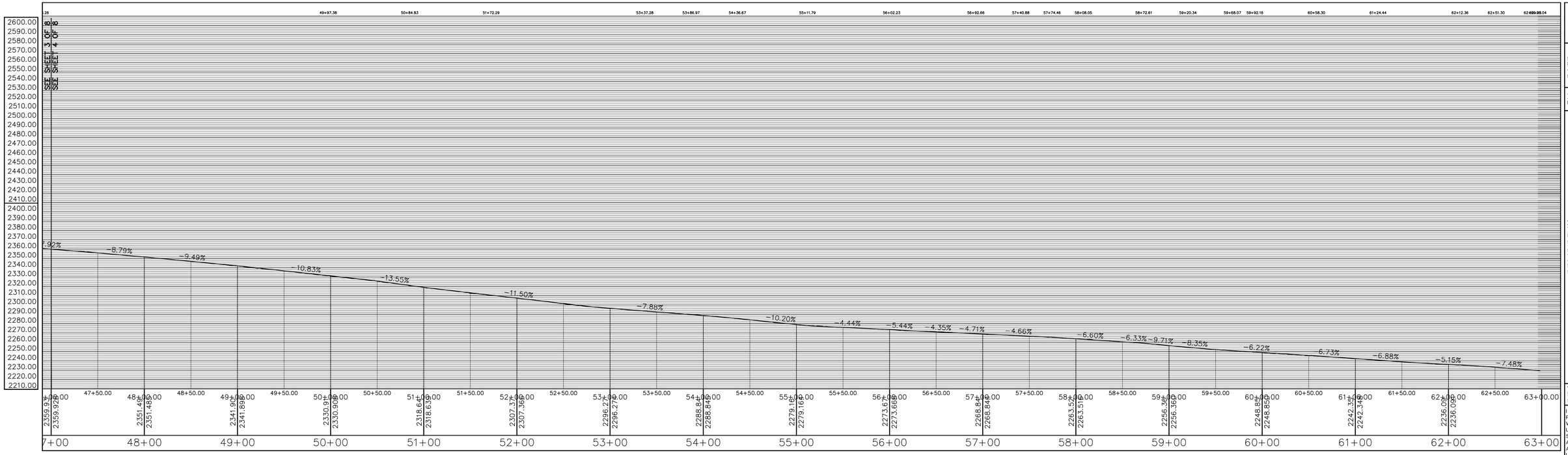
LAKE LURE RUTHERFORD COUNTY, NC

GREY ROCK ROAD

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

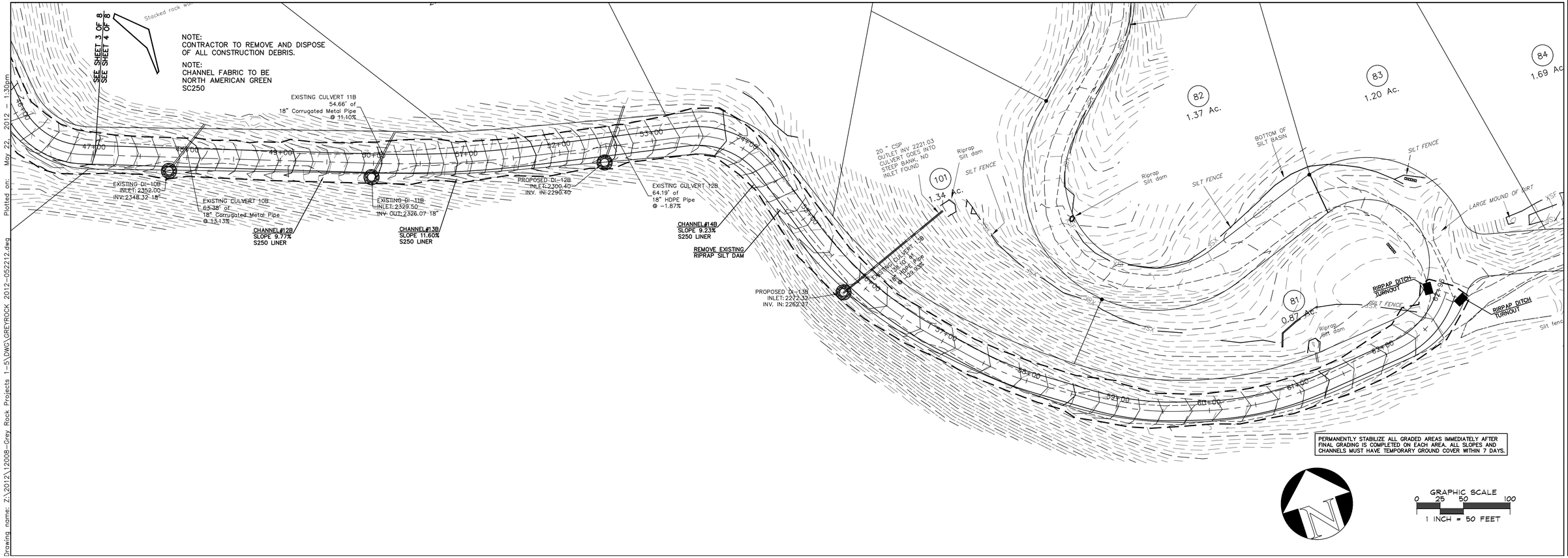
SCALE: 1" = 50'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET: 3 OF 9

Drawing name: Z:\2012\12008-Grey Rock Projects 1-5\DWG\GREYROCK 2012-052212.dwg Plotted on: May 22, 2012 - 1:29pm



PARTIAL ROAD PROFILE

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NORTH CAROLINA PROFESSIONAL SEAL 21130 ENGINEER DAVID ODOM 05/19/12

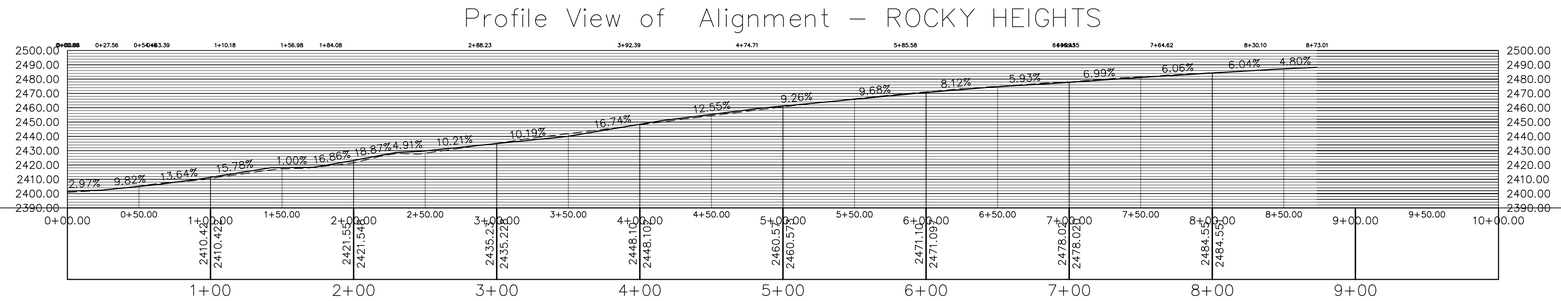
CERTIFICATION

ROAD LAYOUT PHASE 1PLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
GREY ROCK ROAD

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

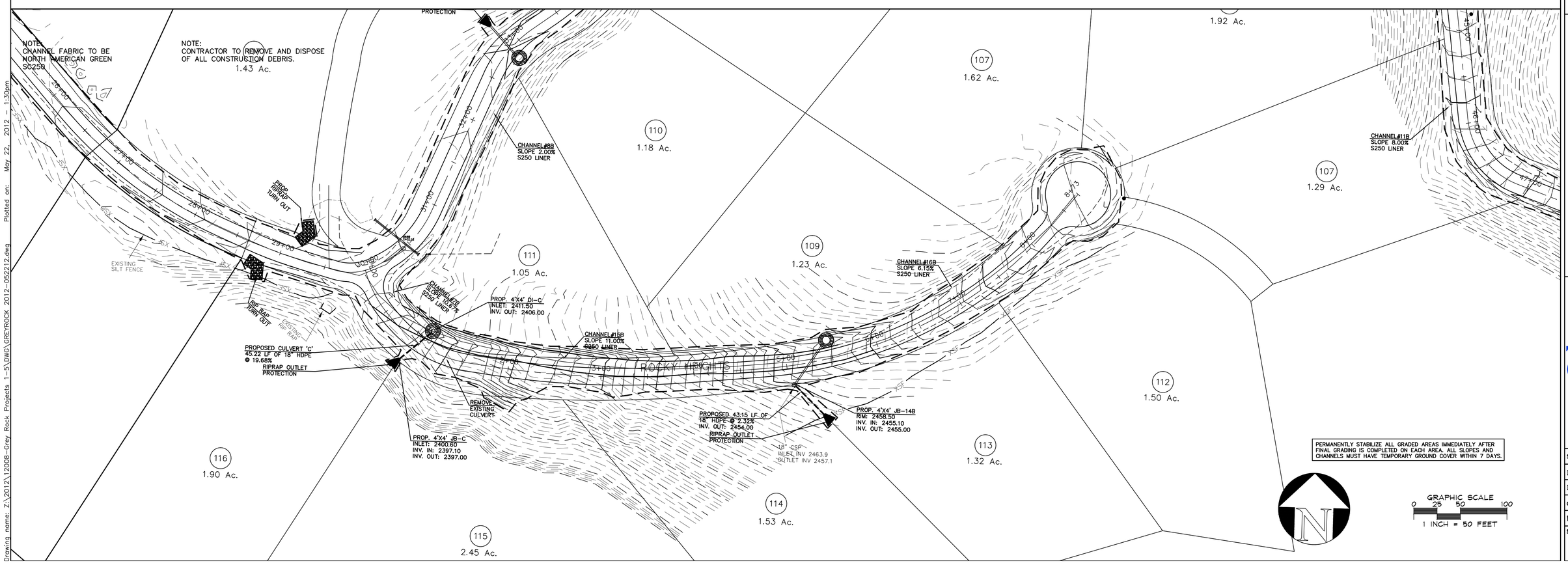
SCALE: 1" = 50'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET: 4 OF 9

Drawing name: Z:\2012\12008-Grey Rock Projects 1-5\DWG\GREYROCK 2012-052212.dwg Plotted on: May 22, 2012 - 1:30pm



PARTIAL ROAD PROFILE

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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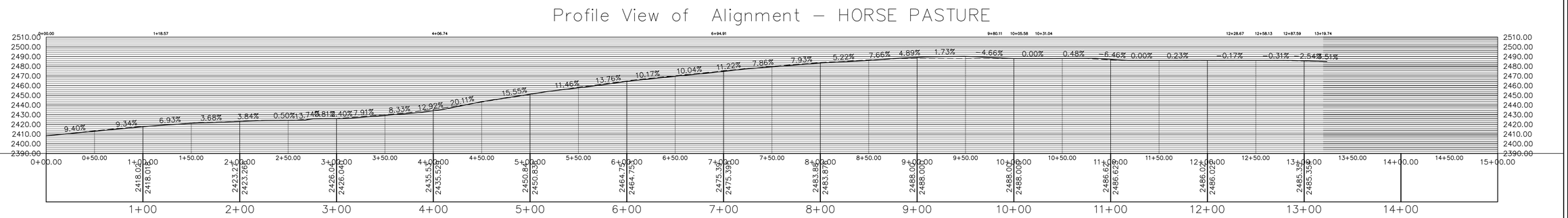
NORTH CAROLINA PROFESSIONAL SEAL 21206 ENGINEER DAVID ODOM

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
ROCKY HEIGHTS

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 50'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
5 OF 9

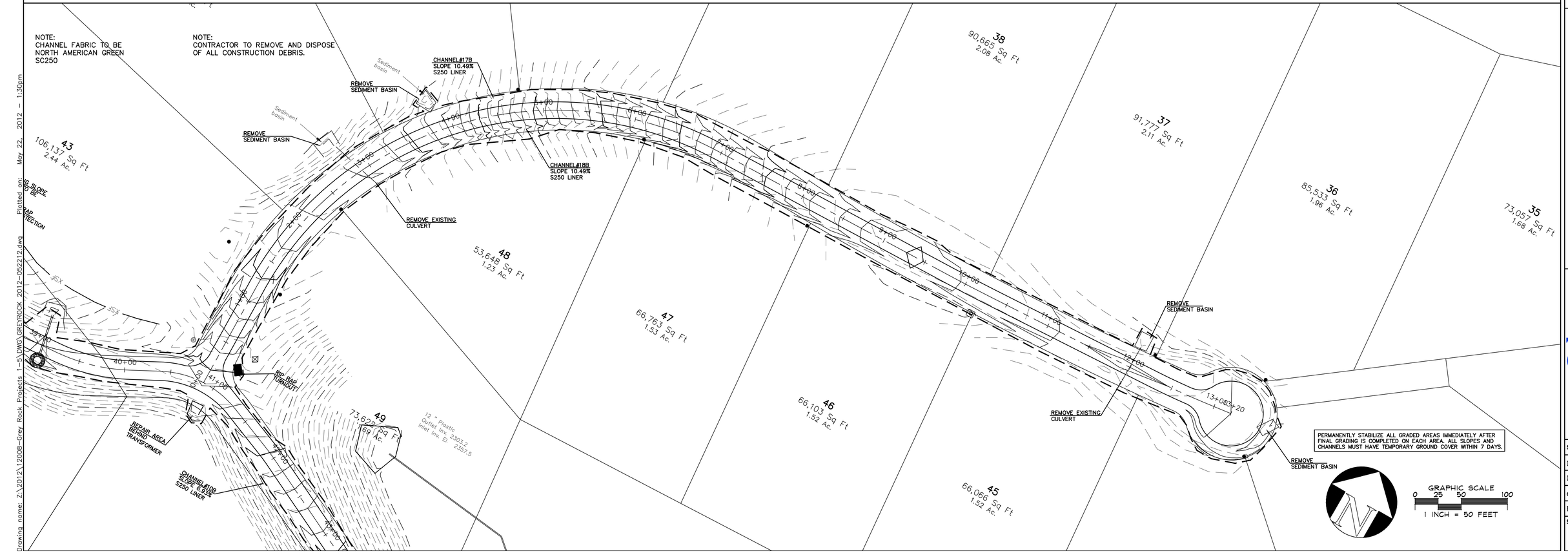


PARTIAL ROAD PROFILE

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

NOTE:
CHANNEL FABRIC TO BE NORTH AMERICAN GREEN SC250

NOTE:
CONTRACTOR TO REMOVE AND DISPOSE OF ALL CONSTRUCTION DEBRIS.



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JOB NUMBER: 11087			
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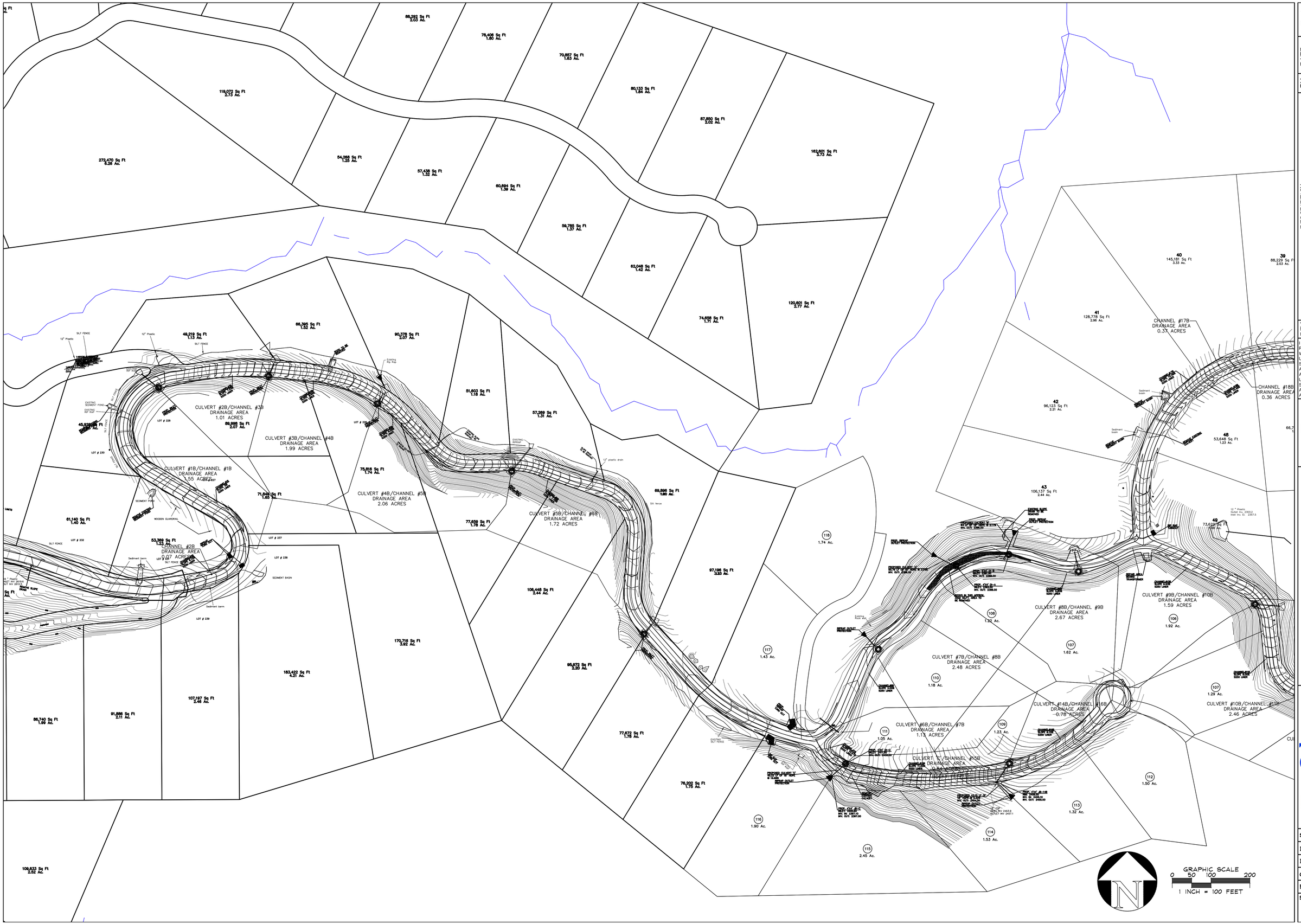
NORTH CAROLINA PROFESSIONAL SEAL 21206 ENGINEER DAVID ODOM

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
HORSE PASTURE

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 50'
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
6 OF 9



JOB NUMBER:
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NORTH CAROLINA PROFESSIONAL SEAL 21106 ENGINEER DAVID ODOM 05/19/12

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR

GREYROCK SUBDIVISION

LAKE LURE RUTHERFORD COUNTY, NC

DRAINAGE AREAS

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 100'

DATE: 05/19/12

DRAWN BY: JTP

CHECKED BY: DWO

PROJECT MGR: DWO

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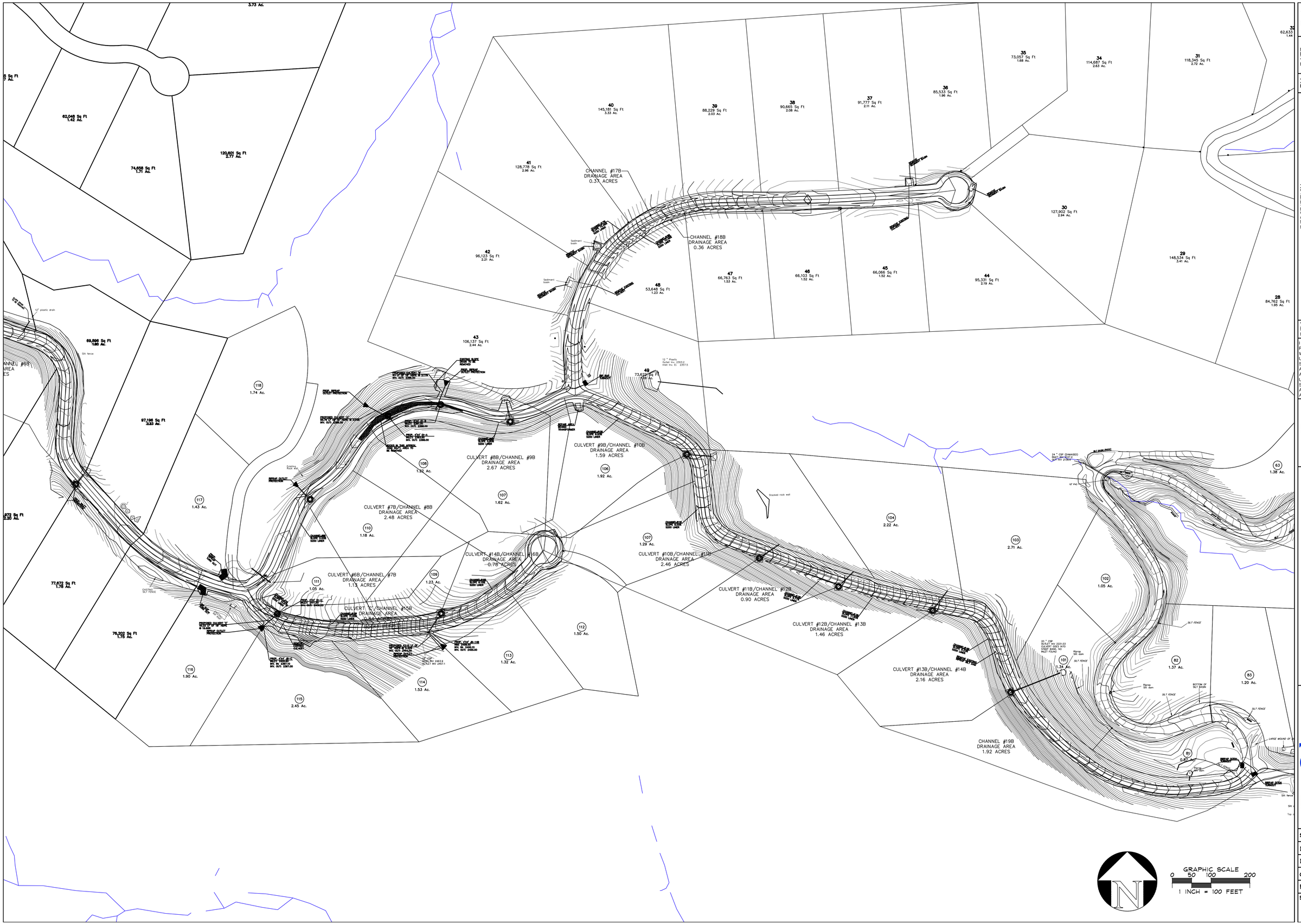
7 OF 9



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NORTH CAROLINA PROFESSIONAL SEAL 21106 ENGINEER DAVID ODOM 05/19/12

CERTIFICATION

ROAD LAYOUT PHASE IPLANS FOR

GREYROCK SUBDIVISION

LAKE LURE RUTHERFORD COUNTY, NC

DRAINAGE AREAS

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: 1" = 100'

DATE: 05/19/12

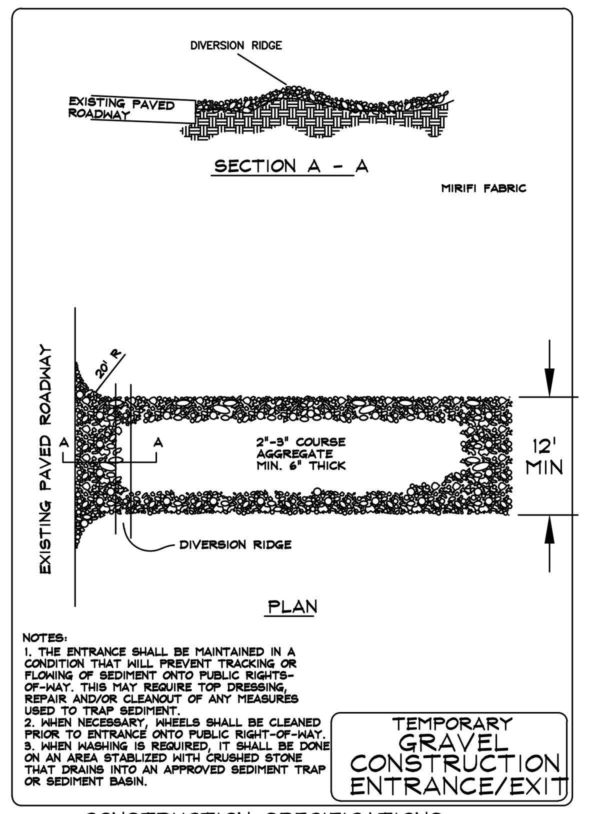
DRAWN BY: JTP

CHECKED BY: DWO

PROJECT MGR: DWO

SHEET:

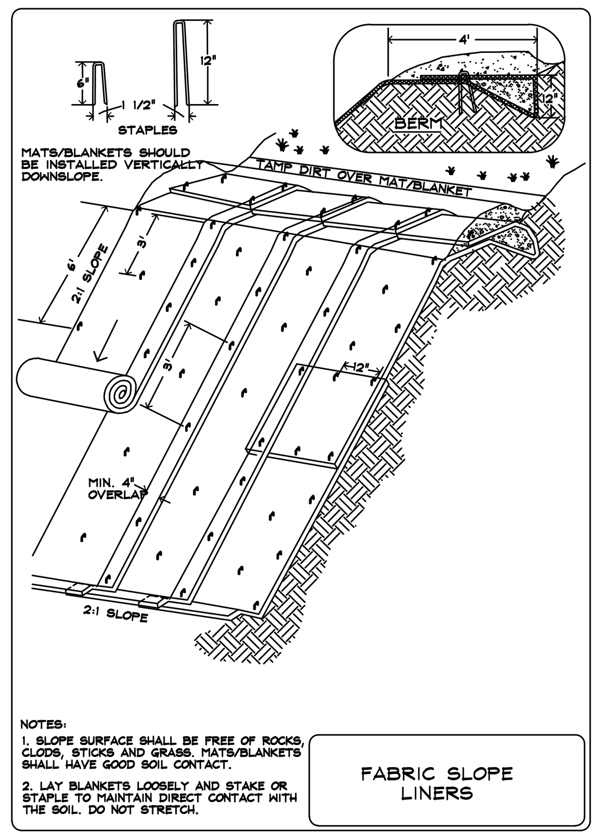
8 OF 9



CONSTRUCTION SPECIFICATIONS

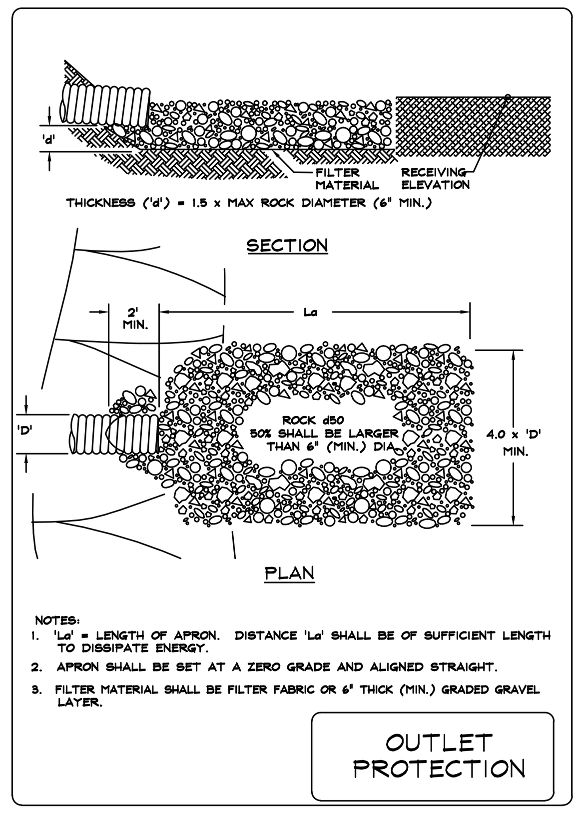
1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
3. Provide drainage to carry water to the sediment trap.
4. Gravel to be placed on Geotextile cloth.

CONSTRUCTION SCHEDULE
1. Obtain plan approval and other applicable permits.
2. Install sediment fencing and/or temporary berms for clearing and grubbing phase.
3. Install temporary sediment traps. Ensure access to traps throughout construction.
4. Grade site.
5. Slopes shall have ground cover established within 21 calendar days.
6. Install permanent vegetation on all disturbed areas within 15 working days or no more than 60 calendar days following completion of construction or development.
7. Remove temporary measures only after site is stabilized with vigorous and dense vegetative cover.
8. Estimated time to final stabilization 4 mos.
9. In fill situations contractor shall install a temporary berm above slope to divert any potential runoff that may occur overnight in lieu of inclimate weather.



CONSTRUCTION SPECIFICATIONS

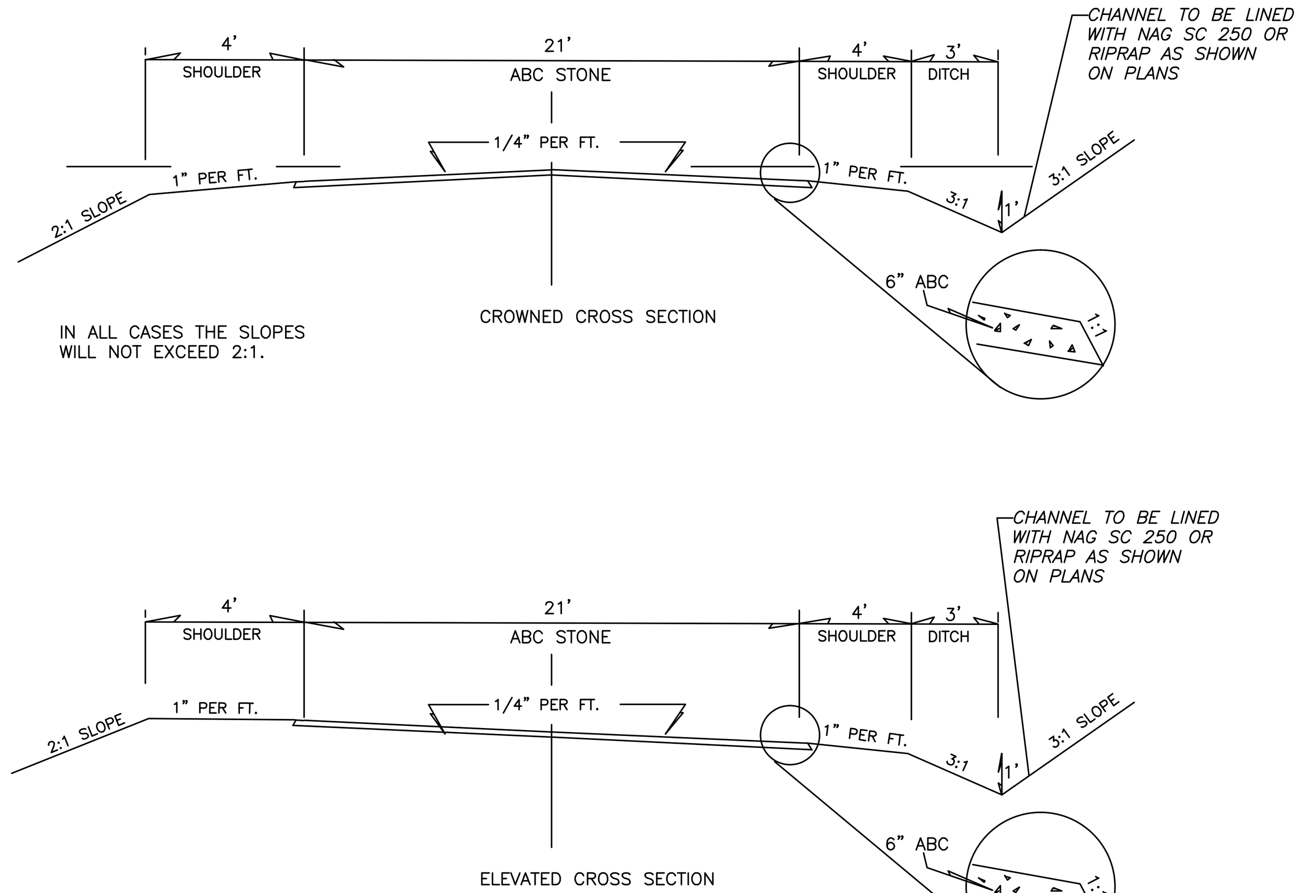
Begin at top of slope and anchor its blanket in a 6" deep x 6" wide trench. Backfill and compact.
2. Unroll blanket downslope in direction of flow.
3. Overlap edges of rolls 2"-3" and staple every 3'.
4. When blankets must be spliced, place blankets end over end with 6" overlap. Staple through overlapped area approximately 12" apart.
5. Lay blankets loosely and maintain direct contact with soil - do not stretch.
6. Blankets shall be stapled sufficiently to anchor blanket and maintain contact with soil. Staples shall be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 to 2:1 require 2 staples per square yard. Moderate slopes, 2:1 to 3:1, require 1 1/2 staples per square yard. Gentle slopes require 1 staple per square yard.

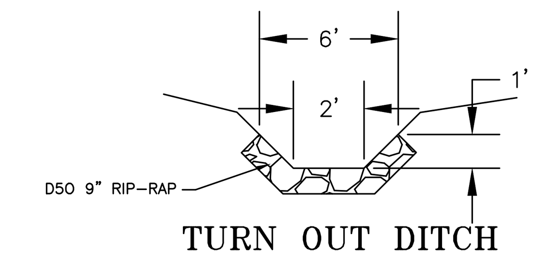


CONSTRUCTION SPECIFICATIONS

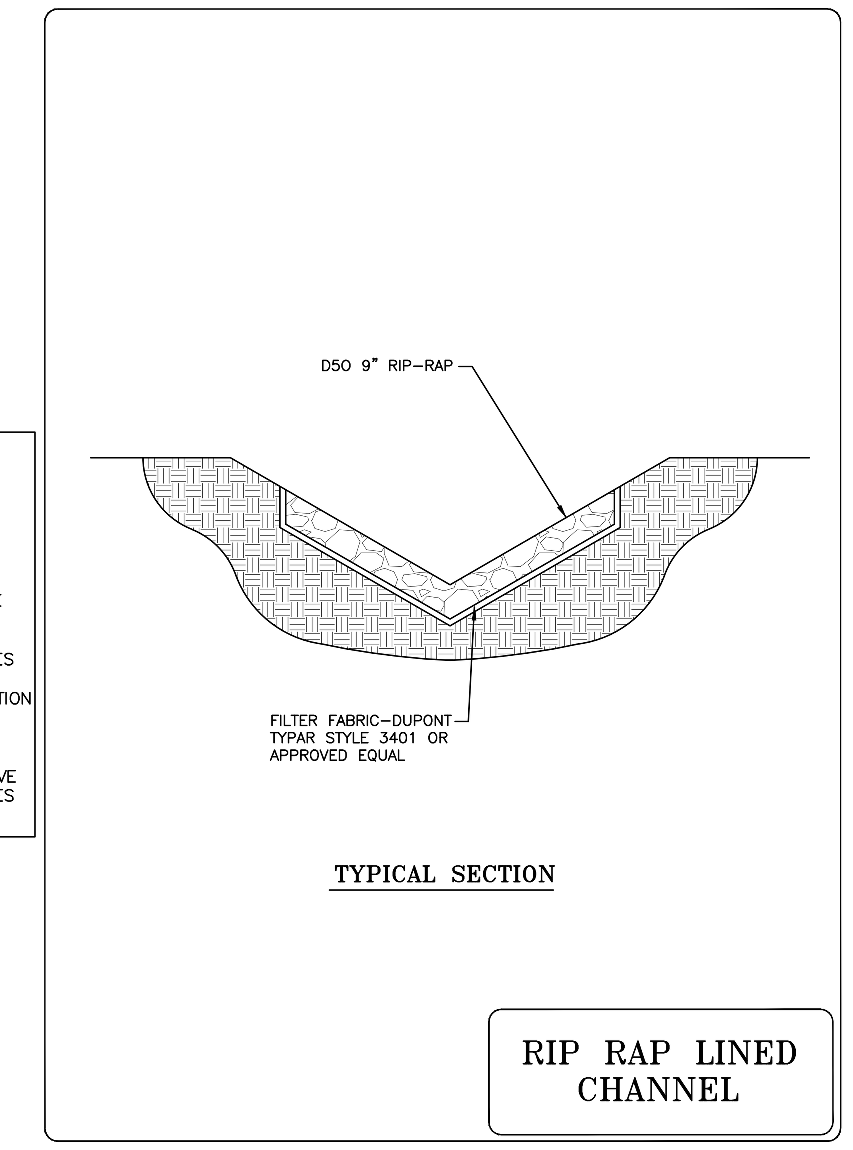
1. Ensure subgrade for the filter and riprap is at zero grade. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing riprap thickness.
2. Filter cloth, when used, must meet design requirements and be protected from punching or tearing. All connecting joints should overlap at least 1'.
3. Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
4. Construct the apron on zero grade with no overfall at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
5. 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.
6. Immediately after construction, stabilize all disturbed areas with vegetation.

1. All erosion and sediment control practices will be checked for stability and operation following every runoff-producing rainfall but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed.
2. Sediment will be removed behind the sediment fence when it becomes about 0.5' deep at the fence. The sediment fence will be repaired as necessary to maintain a barrier.
3. All seeded areas will be fertilized, reseeded as necessary according to specifications in the vegetative plan to maintain a vigorous, dense, vegetative cover.





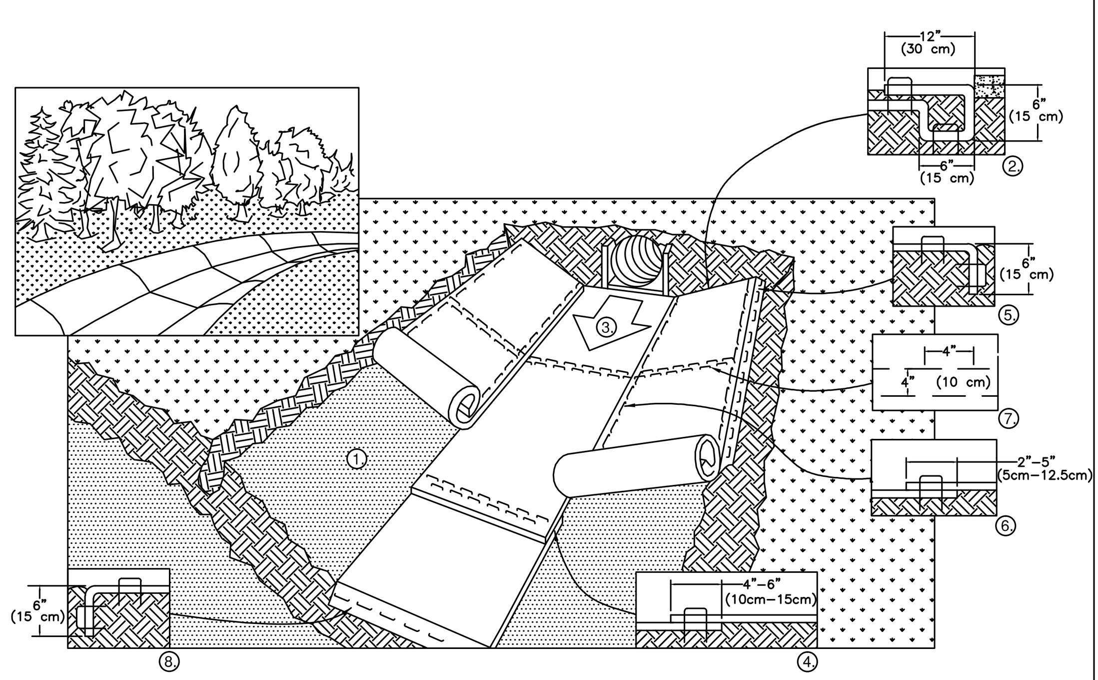
GENERAL NOTES:
1. ONLY DISTURB CLEAR OR GRADE AREAS NECESSARY FOR CONSTRUCTION. FLAG OR OTHERWISE DELINEATE AREAS NOT TO BE DISTURBED. EXCLUDE VEHICLES AND CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE NATURAL VEGETATION.
2. CLEAR AND GRUB AREAS TO BE FILLED TO REMOVE TREES, VEGETATION, MUCK, ROOTS, OR OTHER OBJECTIONABLE MATERIAL THAT WOULD AFFECT THE PLANTED STABILITY OF THE FILL.
3. 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.
4. KEEP DIVERSIONS AND CHANNELS AND OTHER WATER CONVEYANCE MEASURES FREE OF SEDIMENT AT ALL TIMES.
5. ROUGHEN THE SURFACE OF ALL SLOPES DURING THE CONSTRUCTION OPERATION TO RETAIN WATER, INCREASE INFILTRATION, AND FACILITATE VEGETATION ESTABLISHMENT.
6. PERMANENTLY STABILIZE ALL GRADED AREAS IMMEDIATELY AFTER FINAL GRADING IS COMPLETED ON EACH AREA. 2:1 OR STEEPER SLOPES MUST HAVE TEMPORARY GROUND COVER WITHIN 7 DAYS. 3:1 SLOPES OR FLATTER SLOPES MUST HAVE TEMPORARY GROUND COVER WITHIN 14 DAYS



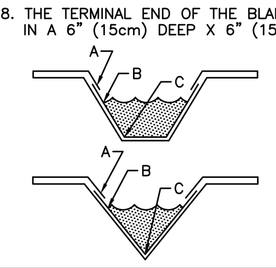
CONSTRUCTION SPECIFICATIONS

1. Excavate cross section to grades shown on plans. Overcut for thickness of rock and filter.
2. Place filter fabric or gravel filter layer, and rock as soon as the foundation is prepared.
3. Place rock so it forms a dense, uniform, well-graded mass with few voids. Hand placement may be necessary to obtain good size distribution.
4. No overfall of channel construction should exist. Grass lined channels with riprap bottoms must have a smooth contact between riprap and vegetation.
5. Outlet must be stable.
6. Use a foundation of extra strength filter fabric or and aggregate filter layer.

GREATER THAN 7% CHANNEL SHALL BE RIPRAP LINED.
LESS THAN 7% CHANNEL SHALL BE LINED WITH NAGS75 OR EQUIVALENT WITH RIP RAP CHECKDAM EVERY 50 FEET.



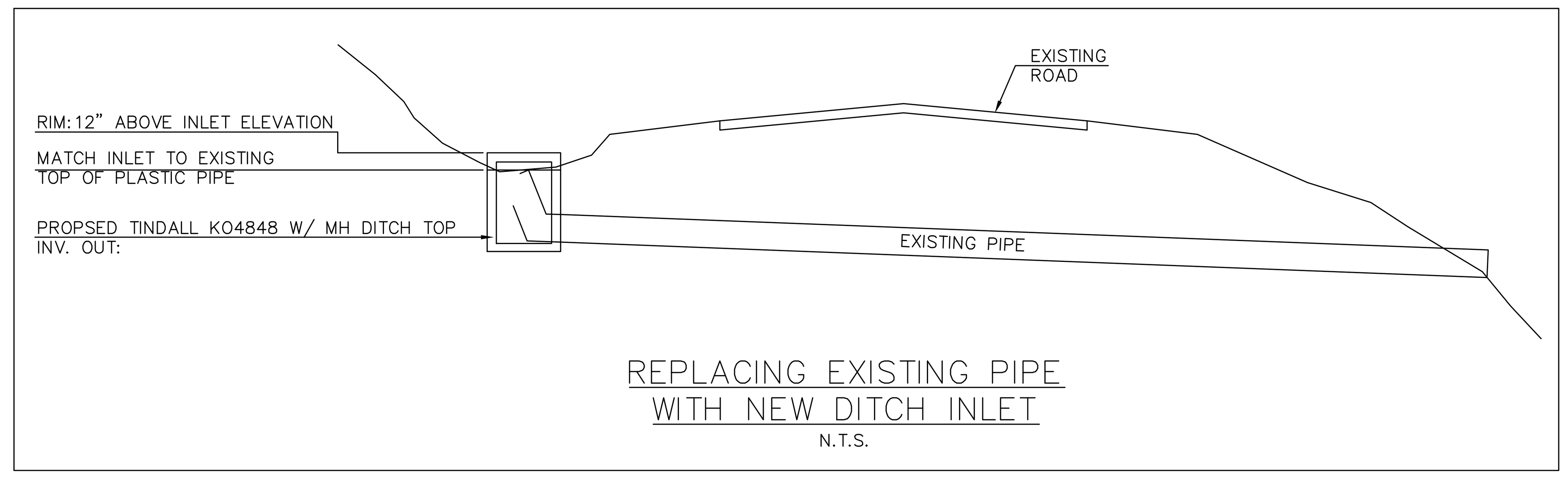
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" (10cm-15cm) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (5cm-12.5cm) (DEPENDING ON BLANKET TYPE) AND STAPLED. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH™ ON THE BLANKET BEING OVERLAPPED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9m-12m) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.



REPLACING EXISTING PIPE WITH NEW DITCH INLET
N.T.S.

MAINTENANCE PLAN

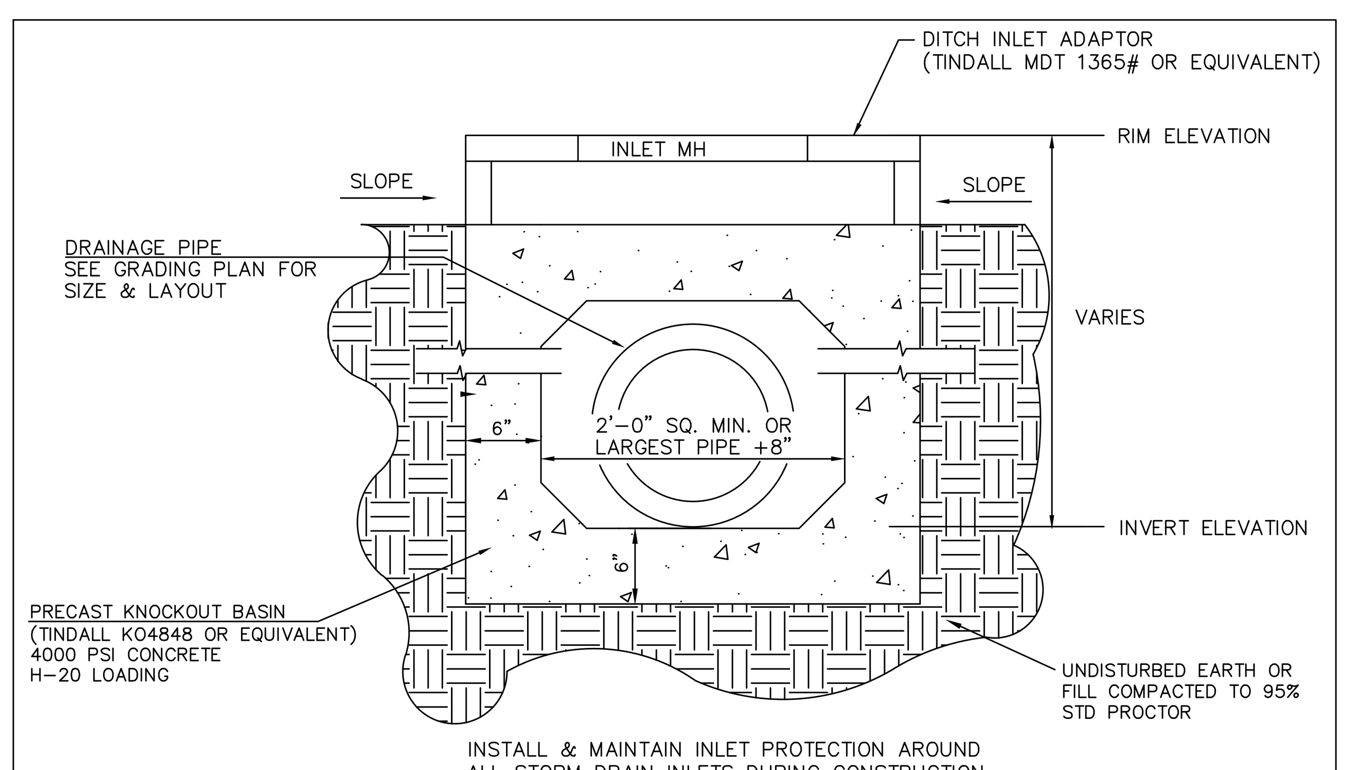
1. All erosion and sediment control practices will be checked for stability and operation following every runoff-producing rainfall but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed.
2. Sediment will be removed behind the sediment fence when it becomes about 0.5' deep at the fence. The sediment fence will be repaired as necessary to maintain a barrier.
3. Ensure temporary sediment trap is cleared once sediment reaches cleanout mark.
4. All seeded areas will be fertilized, reseeded as necessary according to specifications in the vegetative plan to maintain a vigorous, dense, vegetative cover.

PERMANENT SEEDING

GRASS-LINED CHANNELS	
Kentucky bluegrass	20 lb/ac
Rye (grain)	40 lb/ac
Lime	4000 lb/ac
10-10-10 fertilizer	1200 lb/ac
straw	4000 lb/ac
ALL OTHER SURFACES	
Tall fescue	100 lb/ac
Serica lespedeza (Scarified)	30 lb/ac
Kobe lespedeza	10 lb/ac
10-10-10 fertilizer	1000 lb/ac
straw	4000 lb/ac

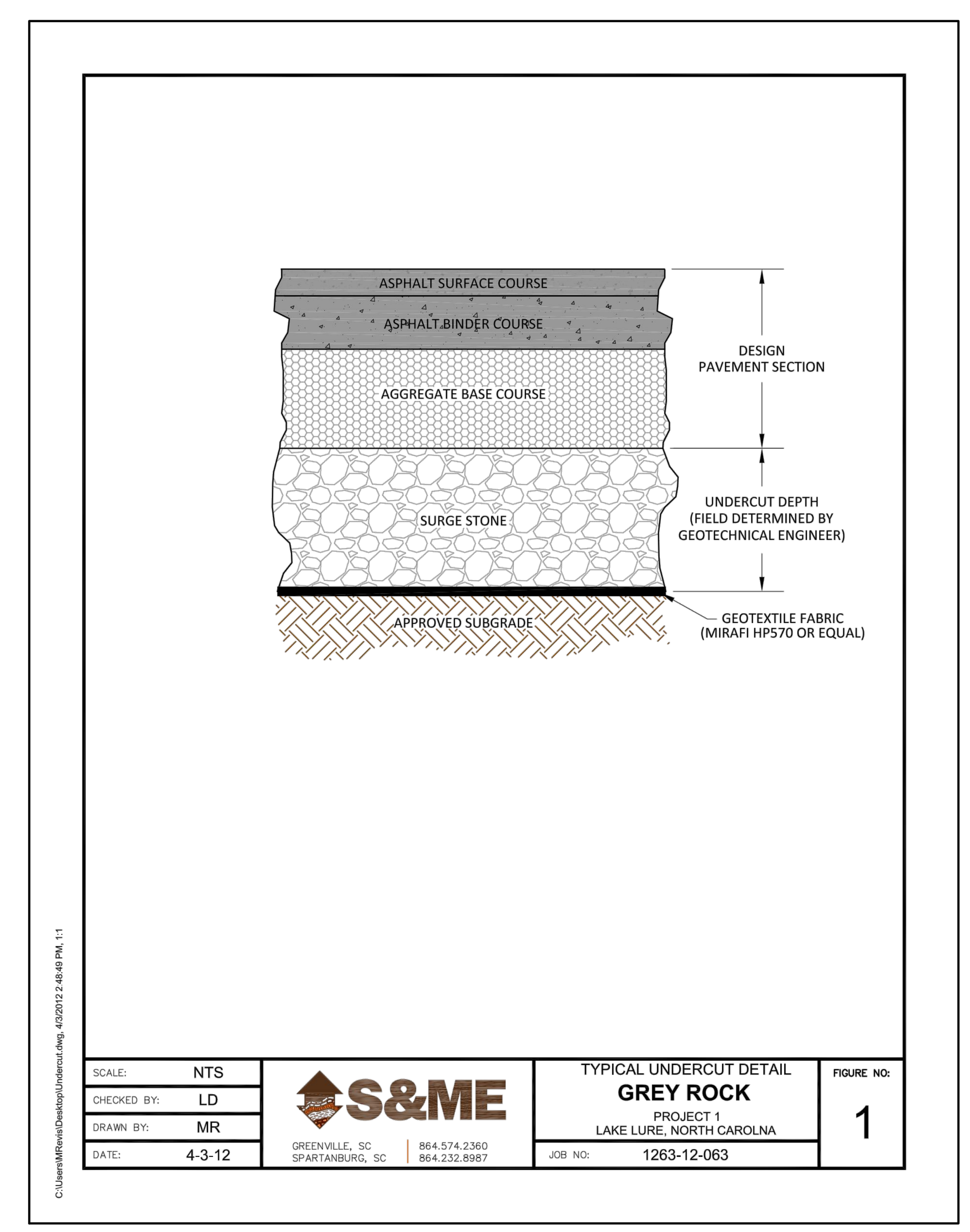
TEMPORARY SEEDING

SUMMER (May 15 - Aug 15)	
German millet	40 lb/ac
FALL (Aug 15 - Dec 15)	
Rye (grain)	120 lb/ac
WINTER/EARLY SPRING (Feb 1 - May 15)	
Rye (grain)	120 lb/ac
Korean lespedeza	50 lb/ac
Lime	2000 lb/ac
10-10-10	750 lb/ac
straw	4000 lb/ac



INSTALL & MAINTAIN INLET PROTECTION AROUND ALL STORM DRAIN INLETS DURING CONSTRUCTION.

DITCH INLET ADAPTOR
N.T.S.



SEEDING PROCEDURES:
1. Apply seed, at the rates above, in two intersecting directions. Rake in lightly.
2. Do not seed areas in excess of that which can be mulched on same day.
3. Do not sow immediately following rain, when ground is too dry, or during windy periods.
4. Roll seeded area with roller not exceeding 112 lbs.
5. Immediately following seeding and compacting, apply mulch to a thickness OF 8/8 inches. Maintain clear of shrubs and trees.
6. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

SEED PROTECTION:
1. Identify seeded areas with stakes and string around area periphery. Set string height to 6 inches.
2. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
3. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
4. Secure outside edges and overlaps at 36 inch intervals with stakes.
5. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
6. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

JOB NUMBER: XXXXX

REV	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			

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.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21130 DAVID ODOM 05/19/12
CERTIFICATION

ROAD LAYOUT PHASE 1PLANS FOR
GREYROCK SUBDIVISION
LAKE LURE RUTHERFORD COUNTY, NC
ECP DETAILS

Odom Engineering PLLC
152 East Main Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC FIRM# P-0880

SCALE: N.T.S.
DATE: 05/19/12
DRAWN BY: JTP
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET: 9 OF 9