Town of Rolesville, NC
Department of Planning

502 Southtown Circle
Rolesville, NC 27571
Phone: (919) 556-3506

Comments on #CID-26-0006 - Planning & Zoning: Construction Infrastructure Drawing

Application Number: #CID-26-0006
Application Type: Construction Infrastructure Drawing
Date: May 27, 2026
Address: 0 Rolesville Rd

THIS DOCUMENT IS NOT YOUR PERMIT.

The Rolesville Planning Department has reviewed your application for a Construction Infrastructure Drawing Application and has responded with a set of comments that require your attention. These comments must be addressed in full before an approval will be issued.

Reviewing this document on GovWell, our online portal, will allow you to view interactive markups on the document. If you are viewing this as a PDF or offline, a list of all comments will be provided below in this cover sheet. These comments must be acknowledged before a permit is issued.

After you have addressed all comments, please upload corrected versions of the plans by clicking here or by visiting https://app.govwell.com/record/97943887-3015-425b-8baf-6e2d9254bfd6.

Contacts

Austin Bain City of Raleigh Engineer	(919) 996-3468 austin.bain@raleighnc.gov	Updates Requested
Eddie Henderson Parks & Recreation	ehenderson@rolesvillenc.gov	Repeat Comment(s)
Jacob Butler Interim Fire Chief	jbutler@rolesvillenc.gov	No Comment
Jacqueline Thompson On-Call Civil Engineer	jacqueline.thompson@bolton-menk.com	Updates Requested
Lorna Withrow Wake County Watershed Mgmt	lorna.withrow@wake.gov	Repeat Comment(s)

Meredith Gruber Senior Planner	mgruber@rolesvillenc.gov	Updates Requested
Michael Elabarger Assistant Planning Director	melabarger@rolesvillenc.gov	Updates Requested
Michele Raby Planner II	mraby@rolesvillenc.gov	Updates Requested
Scott Miles Town Engineer PE	smiles@rolesvillenc.gov	Repeat Comment(s)
Stephen Wensman Planning Director	swensman@rolesvillenc.gov	Updates Requested
Stephen Wolf Wake County Deputy Fire Marshal	stephen.wolf@wake.gov	Approved
Tanner Hayslette Planner I	thayslette@rolesvillenc.gov	No Comment

Comments on Plan

Reviewer feedback tied to specific locations on the plan. The number on each comment corresponds to a matching number marked on the plan page. Each comment must be resolved in GovWell.

1 ME Michael Elabarger
Assistant Planning Director

Contact WC GIS/911 to request ADDRESSES. per other comments, addresses are required for site features needing Wake Co Permits. Also, per the example cover sheet, Town requests a Lot Data Table driven by Lot #/Lot Address/ Max Imp Cvrge (and Land use ie SFD or SFA/TH when there is mix, which is not the case here).

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:48am

2 LW Lorna Withrow
Wake County Watershed Mgmt

Application to Wake County for stormwater and erosion & sedimentation control review required. Any changes, additions, or deletions to plans or other supporting documentation are to be clearly identified or delineated (i.e., bubbled, circled, noted, etc.)

Kalas 4 CVR.pdf · Page 1 • May 27, 2026, 3:29pm

3 MR Michele Raby
Planner II

PLEASE ADD CID-26-0006 AND ADDRESS OBTAINED FROM WC.

Kalas 4 CVR.pdf · Page 1 • May 5, 2026, 10:07am

4 AB Austin Bain
City of Raleigh Engineer

Please see Energov comments.

Kalas 4 CVR.pdf · Page 1 • May 27, 2026, 1:49pm

5 ME Michael Elabarger
Assistant Planning Director

PLease continue to add/list subsequent Submittal dates right here, it's nice to see them all clearly, thank you.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:17am

6 MR Michele Raby
Planner II

PLEASE ADD TOTAL NUMBER THIS PHASE AND DWELLING TYPE

Kalas 4 CVR.pdf · Page 1 • May 5, 2026, 10:08am

7 ME Michael Elabarger
Assistant Planning Director

revise Usage to 'Single-family Detached dwelling units."

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:01am

8 ME Michael Elabarger
Assistant Planning Director

What regulation or standard is governing this "Maximum density" - 2.10 Du/ac is a very odd standard; this being a UDO era subdivision, cite the UDO where 2.10 comes from.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:03am

9 ME Michael Elabarger
Assistant Planning Director

"Proposed Density" differs from the Proposed density of 1.62 just a few columns above - ? Explain/revise - if trying to express the whole of KF and where Ph 4 fits within, find better ways to express that w/o showing such unexplained conflicts of data. TY.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:05am

10 ME Michael Elabarger
Assistant Planning Director

revised to CID-26-0006

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:12am

11 SW Stephen Wensman
Planning Director

Per Lot Impervious?

Kalas 4 CVR.pdf · Page 1 • May 5, 2026, 4:00pm

12 ME Michael Elabarger
Assistant Planning Director

update to CID-26-0006 and include this on ALL sheets; if sheets coming from other entities (*like lighting plans) please ensure they also include CID-26-0006 reference.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:18am

13 MR Michele Raby
Planner II

PLEASE COVENANTS BM & PG

Kalas 4 CVR.pdf · Page 1 • May 5, 2026, 10:11am

14 ME Michael Elabarger
Assistant Planning Director

Sheet G002 is NOT in the sheet index - explain or add this, revise Index accordingly.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:16am

15 ME Michael Elabarger
Assistant Planning Director

Is Note #2 still pertinent/timely? I thought all the Harris Creek downstream improvements were completed - confirm/ discuss w COR reviewers.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:11am

16 ME Michael Elabarger
Assistant Planning Director

Will need space for CORPUD signature blocks (see previous CD plans for example or contact COR) and a Stamp of approval from teh town that will measure approximately 3"x4" at scale. Preferable to stack/locate near one another all 3 govt. signatures, consider this in how you design and place information on this cover sheet. See example as referenced by M Raby.

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:15am

17 MR Michele Raby
Planner II

PLEASE ADD SCM NOTE: TO BE MAINTAINED BY HOA.

Kalas 4 CVR.pdf · Page 1 • May 5, 2026, 10:11am

18 ME Michael Elabarger
Assistant Planning Director

There is a LARGE amount of Retaining wall and safety fencing on top that is on private residential lots - add note that clarifies ownership and responsibility for all of that - is it the HOA? Is it each lot owner?

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:24am

19 ME Michael Elabarger
Assistant Planning Director

All the retaining walls will need Permits, which means they need ADDRESSES - how is that intended to be accomplished? Suggest an overall addressing plan for "site features").

Kalas 4 CVR.pdf · Page 1 • May 26, 2026, 9:46am

20 MR Michele Raby
Planner II

PLEASE ADD LOT DEVELOPMENT STANDARDS, CONDISIONS, OPEN SPACE TABLE, LOT ADDRESSING TABLE, STREET INFORMATION TABLE AS SHOWN ON CID COVER SHEET EXAMPLE
https://www.rolesvillenc.gov/sites/default/files/uploads/cid-coversheet-example-2025.09.18.pdf

V1_CID-TBD_Kalas Phase 4.pdf · Page 1 • May 5, 2026, 10:10am

21 JT Jacqueline Thompson
On-Call Civil Engineer

Provide street names

V1_CID-TBD_Kalas Phase 4.pdf · Page 7 • May 26, 2026, 10:48am

22 SW Stephen Wensman
Planning Director

Confirm access slope

V1_CID-TBD_Kalas Phase 4.pdf · Page 17 • May 5, 2026, 4:02pm

23 SW Stephen Wensman
Planning Director

Confirm access slope

V1_CID-TBD_Kalas Phase 4.pdf · Page 17 • May 5, 2026, 4:02pm

24 SW Stephen Wolf
Wake County Deputy Fire Marshal

** No fire service issues with Kalas Falls Phase 4.

V1_CID-TBD_Kalas Phase 4.pdf · Page 23 • May 7, 2026, 1:53pm

25 MR Michele Raby
Planner II

REATINING WALLS REQUIRE ADDRESSES. PLEASE ADD A RETAINING WALL IDENTIFICATION TABLE.

V1_CID-TBD_Kalas Phase 4.pdf · Page 23 • May 5, 2026, 10:18am

26 MG Meredith Gruber
Senior Planner

Check accuracy of property owners; the Jones' are three owners back.

V1_CID-TBD_Kalas Phase 4.pdf · Page 24 • May 26, 2026, 1:26pm

27 JT Jacqueline Thompson
On-Call Civil Engineer

Please label all buffers and setbacks throughout the site plan

V1_CID-TBD_Kalas Phase 4.pdf · Page 24 • May 26, 2026, 10:49am

28 SW Stephen Wensman
Planning Director

Confirm this meets cul-de-sac radius requirements for the Fire Marshal

V1_CID-TBD_Kalas Phase 4.pdf · Page 24 • May 5, 2026, 4:05pm

29 SW Stephen Wensman
Planning Director

Confirm that the HOA is responsible for this wall

V1_CID-TBD_Kalas Phase 4.pdf · Page 24 • May 5, 2026, 4:08pm

30 MR Michele Raby
Planner II

PLEASE ADD ADDRESSES BEFORE CID APPROVAL.

V1_CID-TBD_Kalas Phase 4.pdf · Page 25 • May 5, 2026, 10:13am

31 JT Jacqueline Thompson
On-Call Civil Engineer

The Town has actively moved to not accept these bubbles in town. The original approved PSP did not have this, and while I recognize the connector road here was approved for removal, this bubble should be removed and the layout of this corner revised.

V1_CID-TBD_Kalas Phase 4.pdf · Page 25 • May 26, 2026, 11:56am

32 SW Stephen Wensman
Planning Director

Does the cul-de-sac meet Fire Code requirements?

V1_CID-TBD_Kalas Phase 4.pdf · Page 26 • May 5, 2026, 4:09pm

33 JT Jacqueline Thompson
On-Call Civil Engineer

Please confirm crosswalk striping

V1_CID-TBD_Kalas Phase 4.pdf · Page 27 • May 26, 2026, 10:57am

34 JT Jacqueline Thompson
On-Call Civil Engineer

Include stop bars

V1_CID-TBD_Kalas Phase 4.pdf · Page 27 • May 26, 2026, 10:57am

35 JT Jacqueline Thompson
On-Call Civil Engineer

Please define what the speed limit signs will be (25 mph? 35 mph?)

V1_CID-TBD_Kalas Phase 4.pdf · Page 27 • May 26, 2026, 10:58am

36 SM Scott Miles
Town Engineer PE

is mail kiosk for this phase located in another phase?

V1_CID-TBD_Kalas Phase 4.pdf · Page 28 • May 18, 2026, 8:40am

37 JT Jacqueline Thompson
On-Call Civil Engineer

This easement appears to just stop - please confirm linework

V1_CID-TBD_Kalas Phase 4.pdf · Page 29 • May 26, 2026, 11:11am

38 JT Jacqueline Thompson
On-Call Civil Engineer

Please submit your stormwater package including riprap calculations, HGLs, spread calcs, etc.

V1_CID-TBD_Kalas Phase 4.pdf · Page 29 • May 26, 2026, 11:00am

39 JT Jacqueline Thompson
On-Call Civil Engineer

Confirm all pond maintenance access routes and grades

V1_CID-TBD_Kalas Phase 4.pdf · Page 29 • May 26, 2026, 10:59am

40 JT Jacqueline Thompson
On-Call Civil Engineer

Please confirm slopes for access

V1_CID-TBD_Kalas Phase 4.pdf · Page 29 • May 26, 2026, 11:11am

41 JT Jacqueline Thompson
On-Call Civil Engineer

Please confirm the maintenance access routes for the proposed storm with the slopes.

V1_CID-TBD_Kalas Phase 4.pdf · Page 29 • May 26, 2026, 11:11am

42 JT Jacqueline Thompson
On-Call Civil Engineer

Adjacent property information being cut off - please review all sheets

V1_CID-TBD_Kalas Phase 4.pdf · Page 30 • May 26, 2026, 11:13am

43 JT Jacqueline Thompson
On-Call Civil Engineer

How is access occurring to the pond for maintenance? Please review all ponds.

V1_CID-TBD_Kalas Phase 4.pdf · Page 31 • May 26, 2026, 11:14am

44 JT Jacqueline Thompson
On-Call Civil Engineer

This leader is not pointing to any lines.

V1_CID-TBD_Kalas Phase 4.pdf · Page 31 • May 26, 2026, 11:15am

45 JT Jacqueline Thompson
On-Call Civil Engineer

Confirm if there is a proposed wall or fall protection adjacent to the sidewalk since adjacent grades are 2:1

V1_CID-TBD_Kalas Phase 4.pdf · Page 31 • May 26, 2026, 11:14am

46 JT Jacqueline Thompson
On-Call Civil Engineer

Minimum 18" separation should be provided between utility crossings

V1_CID-TBD_Kalas Phase 4.pdf · Page 39 • May 26, 2026, 11:28am

47 JT Jacqueline Thompson
On-Call Civil Engineer

The Town has implemented a new ADA policy for sidewalks adjacent to streets that cannot meet ADA compliance. For sidewalks steeper than 5% a steep grade warning sign (W7-3P) shall be installed approximately every 300 feet. It should be considered whether sidewalks are warranted when grades are greater than 8%. Please review all grades and update the signing and striping plan accordingly.

V1_CID-TBD_Kalas Phase 4.pdf · Page 40 • May 26, 2026, 11:20am

48 JT Jacqueline Thompson
On-Call Civil Engineer

Minimum K Value is 30, unless at a stop condition. Consider combining these 2 curves into a longer one to meet these requirements.

V1_CID-TBD_Kalas Phase 4.pdf · Page 42 • May 26, 2026, 11:24am

49 JT Jacqueline Thompson
On-Call Civil Engineer

Please confirm steep pipe velocities. Steeper grades/higher velocity flows can cause erosion over time in pipe and structures.

V1_CID-TBD_Kalas Phase 4.pdf · Page 45 • May 26, 2026, 11:26am

50 JT Jacqueline Thompson
On-Call Civil Engineer

Please review all crossings to ensure 18" minimum separation is being provided.

V1_CID-TBD_Kalas Phase 4.pdf · Page 48 • May 26, 2026, 11:29am

51 JT Jacqueline Thompson
On-Call Civil Engineer

Please review all pipe crossings to ensure a minimum 18" separation is being provided.

V1_CID-TBD_Kalas Phase 4.pdf · Page 49 • May 26, 2026, 11:30am

52 JT Jacqueline Thompson
On-Call Civil Engineer

With these steeper ditches, please include the velocity calculations in the stormwater package to ensure grass ditches won't erode away - riprap or concrete may need considered.

V1_CID-TBD_Kalas Phase 4.pdf · Page 50 • May 26, 2026, 11:32am

53 EH Eddie Henderson
Parks & Recreation

Please consider revising to show more of a diversity of native trees.
See the following links for alternative native tree species:

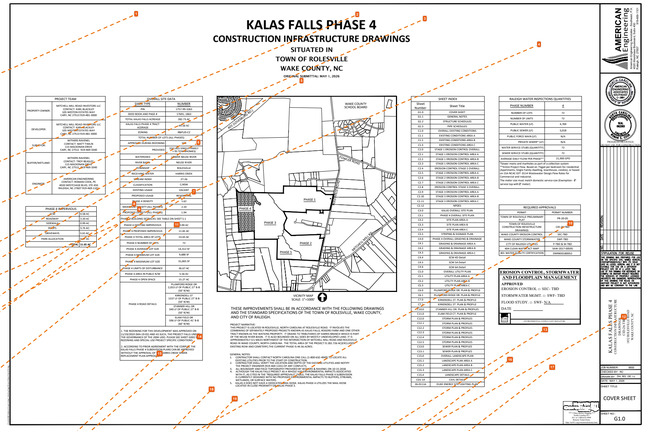
https://ncwildflower.org/recommended-native-species/

V1_CID-TBD_Kalas Phase 4.pdf · Page 53 • May 13, 2026, 10:29am

54 SW Stephen Wensman
Planning Director

red maples are not the best trees for Rolesville, please choose another species.

V1_CID-TBD_Kalas Phase 4.pdf · Page 53 • May 5, 2026, 4:13pm



Kalas 4 CVR.pdf · Page 1

1 **Michael Elabarger**

Contact WC GIS/911 to request ADDRESSES. per other comments, addresses are required for site features needing Wake Co Permits. Also, per the example cover sheet, Town requests a Lot Data Table driven by Lot #/Lot Address/ Max Imp Cvrge (and Land use ie SFD or SFA/TH when there is mix, which is not the case here).

2 **Lorna Withrow**

Application to Wake County for stormwater and erosion & sedimentation control review required. Any changes, additions, or deletions to plans or other supporting documentation are to be clearly identified or delineated (i.e., bubbled, circled, noted, etc.)

3 **Michele Raby**

PLEASE ADD CID-26-0006 AND ADDRESS OBTAINED FROM WC.

4 **Austin Bain**

Please see Energov comments.

5 **Michael Elabarger**

PLease continue to add/list subsequent Submittal dates right here, it's nice to see them all clearly, thank you.

6 **Michele Raby**

PLEASE ADD TOTAL NUMBER THIS PHASE AND DWELLING TYPE

7 **Michael Elabarger**

revise Usage to 'Single-family Detached dwelling units."

8 **Michael Elabarger**

What regulation or standard is governing this "Maximum density" - 2.10 Du/ac is a very odd standard, this being a UDO era subdivision, cite the UDO where 2.10 comes from.

9 **Michael Elabarger**

"Proposed Density" differs from the Proposed density of 1.62 just a few columns above - ? Explain/revise - if trying to express the whole of KF and where Ph 4 fits within, find better ways to express that w/o showing such unexplained conflicts of data. TY.

10 **Michael Elabarger**

revised to CID-26-0006

11 **Stephen Wensman**

Per Lot Impervious?

12 **Michael Elabarger**

update to CID-26-0006 and include this on ALL sheets; if sheets coming from other entities (*like lighting plans) please ensure they also include CID-26-0006 reference.

13 **Michele Raby**

PLEASE COVENANTS BM & PG

14 **Michael Elabarger**

Sheet G002 is NOT in the sheet index - explain or add this, revise Index accordingly.

15 **Michael Elabarger**

Is Note #2 still pertinent/timely? I thought all the Harris Creek downstream improvements were completed - confirm/discuss w COR reviewers.

16 **Michael Elabarger**

Will need space for CORPUD signature blocks (see previous CD plans for example or contact COR) and a Stamp of approval from teh town that will measure approximately 3"x4" at scale. Preferable to stack/locate near one another all 3 govt. signatures, consider this in how you design and place information on this cover sheet. See example as referenced by M Raby.

17 **Michele Raby**

PLEASE ADD SCM NOTE: TO BE MAINTAINED BY HOA.

18 **Michael Elabarger**

There is a LARGE amount of Retaining wall and safety fencing on top that is on private residential lots - add note that clarifies ownership and responsibility for all of that - is it the HOA? Is it each lot owner?

19 **Michael Elabarger**

All the retaining walls will need Permits, which means they need ADDRESSES - how is that intended to be accomplished? Suggest an overall addressing plan for "site features").

KALAS FALLS PHASE 4

CONSTRUCTION INFRASTRUCTURE DRAWINGS

SITUATED IN
TOWN OF ROLESVILLE
WAKE COUNTY, NC

ORIGINAL SUBMITTAL: MAY 1, 2026

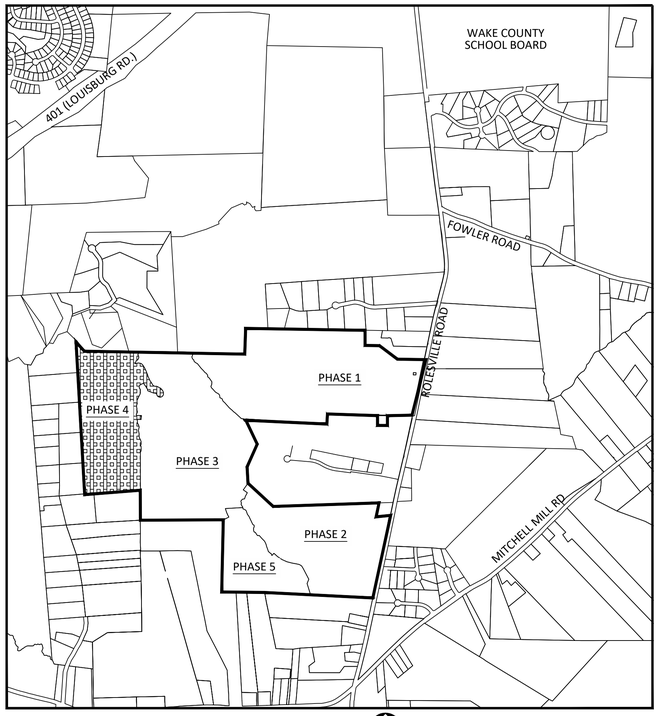
PROJECT TEAM	
PROPERTY OWNER:	MITCHELL MILL ROAD INVESTORS LLC CONTACT: KARL BLACKLEY 105 WESTON ESTATES WAY CARY, NC 27513 919-481-3000
DEVELOPER:	MITCHELL MILL ROAD INVESTORS LLC CONTACT: KARL BLACKLEY 105 WESTON ESTATES WAY CARY, NC 27513 919-481-3000
SURVEYOR:	WITHERS RAVENEL CONTACT: MATT TIMLIN 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340
BUFFER/WETLAND:	WITHERS RAVENEL CONTACT: TROY BEASLEY 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340
ENGINEER:	AMERICAN ENGINEERING CONTACT: ROMAN COOK, PE 4020 WESTCHASE BLVD, STE 450 RALEIGH, NC 27607 919-469-1101

PHASE 4 IMPERVIOUS	
SCM	0.58 AC
ROADWAY	3.20 AC
SIDEWALK	0.99 AC
ROOFS	5.78 AC
DRIVEWAYS	0.93 AC
PARK ALLOCATION	0.17 AC
TOTAL	**11.65 AC**

OVERALL SITE DATA	
DATA TYPE	NUMBER
PIN	1757-99-3263
DEED BOOK AND PAGE #	17691, 1863
TOTAL KALAS FALLS ACREAGE	282.73 AC
KALAS FALLS PHASE 4 TRACT ACERAGE	44.56 AC
ZONING	R&PUD-CZ
TOTAL NUMBER OF LOTS (ALL PHASES)	
APPROVED DURING REZONING	550
PROVIDED	550 (455 SINGLE FAMILY + 95 TOWNHOMES)
WATERSHED	LOWER NEUSE RIVER
RIVER BASIN	NEUSE RIVER
TOWNSHIP	ROLESVILLE
RECEIVING WATER	HARRIS CREEK
STREAM INDEX	27-26
CLASSIFICATION	C;NSW
EXISTING USAGE	VACANT
PROPOSED USAGE	RESIDENTIAL
PHASE 4 DENSITY	1.62
MAXIMUM DENSITY (ALL PHASES)	2.10
PROPOSED DENSITY (ALL PHASES)	1.94
PHASE 4 BUILDING SETBACKS: SEE TABLE ON SHEET 5.1	
PHASE 4 EXISTING IMPERVIOUS	0.00 AC
PHASE 4 PROPOSED IMPERVIOUS	11.65 AC
PHASE 4 TOTAL AREA OF LOTS	23.65 AC
PHASE 4 NUMBER OF LOTS	72
PHASE 4 AVERAGE LOT SIZE	14,312 SF
PHASE 4 MINIMUM LOT SIZE	9,688 SF
PHASE 4 MAXIMUM LOT SIZE	31,065 SF
PHASE 4 LIMITS OF DISTURBANCE	36.67 AC
PHASE 4 AREA IN PUBLIC R/W	5.56 AC
PHASE 4 OPEN SPACE	15.27 AC
PHASE 4 ROAD DETAILS	PLUMFORD RIDGE DR 2,053 LF OF PUBLIC 27' B-B (50' R/W)
	KIRKENDELL ST 1537 LF OF PUBLIC 27' B-B (50' R/W)
	STANNER HILL DR 340 LF OF PUBLIC 27' B-B (50' R/W)
	ELAM FIELD DR 596 LF OF PUBLIC 41' B-B (60' R/W)

1. THE REZONING FOR THIS DEVELOPMENT WAS APPROVED ON 11/19/2019 (MA-19-02) AND AS SUCH, THE PROJECT FALLS UNDER THE GOVERNANCE OF THE 2004 UDO. PLEASE SEE SHEET G002 FOR REZONING AND SPECIAL USE PROJECT SPECIFIC CONDITIONS.

2. ACCORDING TO PRIOR AGREEMENT WITH THE CORPUD, THE KALAS FALLS PHASE 4 SUBDIVISION PLANS CAN BE APPROVED WITHOUT THE APPROVAL OF THE HARRIS CREEK SEWER REPLACEMENT PLAN APPROVAL.



VICINITY MAP
SCALE: 1"=1000'

THESE IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND THE STANDARD SPECIFICATIONS OF THE TOWN OF ROLESVILLE, WAKE COUNTY, AND CITY OF RALEIGH.

PROJECT NARRATIVE:
THIS PROJECT IS LOCATED IN ROLESVILLE, NORTH CAROLINA AT ROLESVILLE ROAD. IT INVOLVES THE COMBINING OF SEPARATELY PROPOSED PROJECTS KNOWN AS KALAS FALLS, ROGERS FARM AND ONE OTHER TRACT KNOWN AS THE WATKINS PROPERTY. IT DRAINS TO TRIBUTARIES OF HARRIS BRANCH WHICH IS PART OF THE NEUSE RIVER BASIN. IT IS ALSO BOUNDED ON ALL SIDES BY MOSTLY UNDEVELOPED LAND. IT IS APPROXIMATELY 0.5 MILES NORTHWEST OF THE INTERSECTION OF MITCHELL MILL ROAD AND ROLESVILLE ROAD IN WAKE COUNTY, NORTH CAROLINA. THE TOTAL AREA OF THE PROJECT IS 282.726 AC(EXCLUDES EXISTING ROW AND CEMETERY).THE CURRENT PHASE IS 44.56 ACRES.

GENERAL NOTES:
1. CONTRACTOR SHALL CONTACT NORTH CAROLINA ONE CALL (1-800-632-4949) TO LOCATE ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE EXISTING UTILITIES AND NOTIFY THE PROJECT ENGINEER (919-469-1101) OF ANY CONFLICTS.
3. ALL BOUNDARY AND FIELD TOPOGRAPHY PROVIDED BY WITHERS & RAVENEL ON 10-15-2018.
4. ALTHOUGH THE KALAS FALLS PROJECT AS A WHOLE HAS ENVIRONMENTAL IMPACTS ASSOCIATED WITH IT, AS CITED IN THE "REQUIRED APPROVALS" TABLE, THE KALAS FALLS PHASE 4 SUBDIVISION IS CURRENTLY DESIGNED WITH NO PROPOSED ENVIRONMENTAL IMPACTS TO BUFFERS, STREAMS, WETLANDS, OR SURFACE WATERS.
5. KALAS 4 DOES NOT HAVE A DEDICATED MAIL KIOSK. KALAS PHASE 4 UTILIZES THE MAIL KIOSK LOCATED IN CLOSE PROXIMITY ON KALAS PHASE 3.

SHEET INDEX	
Sheet Number	Sheet Title
G1.0	COVER SHEET
G1.1	GENERAL NOTES
G1.2	STRUCTURE SCHEDULES
G1.3	PIPE SCHEDULES
C1.0	OVERALL EXISTING CONDITIONS
C1.1	EXISTING CONDITIONS AREA A
C1.2	EXISTING CONDITIONS AREA B
C1.3	EXISTING CONDITIONS AREA C
C2.0	STAGE 1 EROSION CONTROL OVERALL
C2.1	STAGE 1 EROSION CONTROL AREA A
C2.2	STAGE 1 EROSION CONTROL AREA B
C2.3	STAGE 1 EROSION CONTROL AREA C
C2.4	EROSION CONTROL STAGE 2 OVERALL
C2.5	STAGE 2 EROSION CONTROL AREA A
C2.6	STAGE 2 EROSION CONTROL AREA B
C2.7	STAGE 2 EROSION CONTROL AREA C
C2.8	EROSION CONTROL STAGE 3 OVERALL
C2.9	STAGE 3 EROSION CONTROL AREA A
C2.10	STAGE 3 EROSION CONTROL AREA B
C2.11	STAGE 3 EROSION CONTROL AREA C
C2.12	NPDES
C3.0	KALAS OVERALL SITE PLAN
C3.1	PHASE 4 OVERALL SITE PLAN
C3.2	SITE PLAN AREA A
C3.3	SITE PLAN AREA B
C3.4	SITE PLAN AREA C
C3.5	STRIPING & SIGNAGE PLAN
C4.0	PHASE 4 OVERALL GRADING & DRAINAGE
C4.1	GRADING & DRAINAGE AREA A
C4.2	GRADING & DRAINAGE AREA B
C4.3	GRADING & DRAINAGE AREA C
C4.4	SCM 4D Detail
C4.5	SCM 5A Detail
C4.6	SCM 6A Detail
C5.0	OVERALL UTILITY PLAN
C5.1	UTILITY PLAN AREA A
C5.2	UTILITY PLAN AREA B
C5.3	UTILITY PLAN AREA C
C6.0	PLUMFORD RIDGE DR. PLAN & PROFILE
C6.1	PLUMFORD RIDGE DR. PLAN & PROFILE
C7.0	KIRKENDELL ST. PLAN & PROFILE
C7.1	KIRKENDELL ST. PLAN & PROFILE
C10.0	STANNER HILL DR. PLAN & PROFILES
C11.0	ELAM FIELD CT. PLAN & PROFILE
C12.0	STORM PLAN & PROFILES
C12.1	STORM PLAN & PROFILES
C12.2	STORM PLAN & PROFILES
C12.3	STORM PLAN & PROFILES
C12.4	STORM PLAN & PROFILES
C12.5	STORM PLAN & PROFILES
C13.0	SEWER PLAN & PROFILES
C13.1	SEWER PLAN & PROFILES
C15.0	OVERALL LANDSCAPE PLAN
C15.1	LANDSCAPE PLAN AREA A
C15.2	LANDSCAPE PLAN AREA B
C15.3	LANDSCAPE PLAN AREA C
C15.4	LANDSCAPE DETAILS
CD1-14	CIVIL DETAILS
26-0111A	DUKE ENERGY SITE LIGHTING PLAN

RALEIGH WATER INSPECTIONS QUANTITIES	
PHASE NUMBER	4
NUMBER OF LOTS	72
NUMBER OF UNITS	72
PUBLIC WATER (LF)	4,769
PUBLIC SEWER (LF)	5,018
PUBLIC FORCE MAIN (LF)	N/A
PRIVATE SEWER* (LF)	N/A
WATER SERVICE STUBS (QUANTITY)	72
SEWER SERVICE STUBS (QUANTITY)	72
AVERAGE DAILY FLOW PER PHASE**	21,900 GPD

*Sewer mains and manholes as part of a collection system
**Entire Project Flow. Based on 75gpd per bedroom for residential (Apartments, Single Family dwelling, townhouse, condos), or based on 15A NCAC 02T .0114 Wastewater Design Flow Rates for Commercial and Industrial.
The meter size must match domestic service size (Exemption - $\frac{3}{4}$" service tap with $\frac{5}{8}$" meter)

REQUIRED APPROVALS	
PERMIT	PERMIT NUMBER:
TOWN OF ROLESVILLE PRELIMINARY PLAT	PR-20-05
TOWN OF ROLESVILLE CONSTRUCTION INFASTRUCTURE DRAWINGS	CID-26-TBD
WAKE COUNTY EROSION CONTROL	SEC-TBD
WAKE COUNTY STORMWATER	SWF-TBD
CITY OF RALEIGH UTILITIES	P-TBD & W-TBD
404 CLEAN WATER ACT NWP	SAW-2017-00595
401 WATER QUALITY CERTIFICATION	DWR#20180052

EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

APPROVED

EROSION CONTROL □ SEC- TBD

STORMWATER MGMT. □ SWF- TBD

FLOOD STUDY. □ SWF- N/A

DATE _____

WAKE COUNTY NORTH CAROLINA EFFECTIVE: 08/23/18

ENVIRONMENTAL CONSULTANT SIGNATURE

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607 919-469-1101

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 062383 ROMAN S. COOK

AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:

COVER SHEET

SHEET NO.:

G1.0

North Carolina 811 811 Before You Dig
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

J:\Jobs\9900\Working Personal\Plans_Working Dwgs\Phase 4\Sheet Files\COV.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 1

20 **Michele Raby**
PLEASE ADD LOT DEVELOPMENT STANDARDS, CONDISIONS, OPEN SPACE TABLE, LOT ADDRESSING TABLE, STREET INFORMATION TABLE AS SHOWN ON CID COVER SHEET EXAMPLE https://www.rolesvillenc.gov/sites/default/files/uploads/cid-coversheet-example-2025.09.18.pdf

CONSTRUCTION SEQUENCE FOR THE KALAS FALLS PHASE 4, STAGE 1 SHALL BE AS FOLLOWS:

1. THE OWNER SHALL OBTAIN NCG01 PERMIT AND PAY ANY FEE THAT MAY BE ASSOCIATED WITH THIS PERMIT.
2. SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE WAKE COUNTY WATERSHED MANAGER.
3. ENSURE THAT ALL LIMITS OF DISTURBANCE, SURFACE WATERS, AND RIPARIAN BUFFERS ARE FLAGGED PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES.
4. TREE PROTECTION FENCES, SILT FENCES, AND CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS SHOWN ON THE APPROVED EROSION CONTROL PLANS.
5. CONTRACTOR TO KEEP PERMIT BOX CURRENT ON SITE WITH NCG01 CERTIFICATE OF COVERAGE, APPLICABLE PERMITS, SELF-INSPECTION RECORDS/LOGS, MAINTENANCE RECORDS, AND ANY OTHER APPLICABLE INFORMATION. RAIN GAUGE TO BE KEPT AT PERMIT BOX.
6. APPROXIMATELY 300 LF OF ELAM FIELD DRIVE MUST BE EXTENDED TO FINAL GRADE ELEVATIONS TO PROVIDE SITE ACCESS AND ALLOW CONSTRUCTION OF TSB #4A. THIS WORK WILL REQUIRE USE OF THE TEMPORARY CONSTRUCTION EASEMENT (TCE) GRANTED BY KALAS PHASE 3. THE FOLLOWING ACTIVITIES ARE INCLUDED WITHIN THIS SCOPE:
   - STOCKPILING, CONSTRUCTION ENTRANCE, CONCRETE WASHOUT, RECORD BOX AND ALL CONSTRUCTION ACTIVITIES SHALL REMAIN ON THE KALAS PHASE 4 SITE OR WITHIN TCE LIMITS.
   - INSTALLATION OF 30" RCP CLASS IV CULVERT.
   - INSTALLATION OF PERMANENT STORM DRAINAGE INFRASTRUCTURE AS SHOWN ON SHEET C2.3 OF THE CID PLAN SET.
   - UTILITY INSTALLATION AS DETERMINED BY CONTRACTOR MEANS AND METHODS.
   - CONSTRUCTION OF TSB 4A AS SHOWN IN THE CID PLAN SET.
   - INSTALLATION OF ROLLED EROSION CONTROL BLANKET FOR STABILIZATION OF 2:1 SLOPES.
   - INSTALL RIP RAP STABILIZATION AS SHOWN IN CID PLAN SET.
7. THE TEMPORARY SEDIMENT BASINS (TSB) ARE TO BE FULLY CONSTRUCTED PRIOR TO THE INSTALLATION OF ANY TEMPORARY DIVERSION DITCHES (TDD) OR PERMANENT DIVERSION DITCHES (PDD). CONSTRUCT TSB'S 4A, 4D, AND 5A FOLLOWING THE PROJECT CID PLAN SET. CONSTRUCT TEMPORARY SKIMMER BASIN (TSKB) #1 FOLLOWING THE PROJECT APPROVED CID PLAN SET.
8. INSTALL ONE (1) TDD AND FOUR (4) PDD'S TO CONVEY RUNOFF TO SEDIMENT TRAPS AS SEEN IN THE APPROVED CID PLAN SET. SEE PROJECT SCHEDULE SHEETS FOR RECOMMENDED CALCULATIONS AND LINERS. INSTALL DIVERSION DIKES #1-#2 TO CONTROL RUNOFF ON SITE AND COVEY SEDIMENT LADEN WATER TO SEDIMENT TRAPS.
9. STOCKPILE LOCATIONS SHOULD BE ENCLOSED BY SILT FENCE AS SHOWN ON THE PLANS. SEED TEMPORARY DIVERSIONS, DIKES, AND SEDIMENT BASINS IMMEDIATELY AFTER CONSTRUCTION.
10. INSTALL ANY PERMANENT/TEMPORARY STORMWATER INFRASTRUCTURE NOTED IN STAGE 1 OF THE APPROVED CID PLAN SET. ANY PERMANENT STORMWATER INFRASTRUCTURE INSTALLED FOR STAGE 1 CONVEYANCE IS TO BE UTILIZED AND MAINTAINED THROUGH ALL THREE (3) STAGES OF EROSION AND SEDIMENT CONTROL. THE INFRASTRUCTURE WILL NEED TO BE MONITORED FOR SEDIMENT BUILD UP AND CLEANED PERIODICALLY. THESE PERMANENT PIPES AND STRUCTURES WILL SERVE THE TEMPORARY SEDIMENT BASINS AND ACT AS INLETS/OUTLETS FOR THE TDD'S AND PDD'S UNTIL THEY ARE EVENTUALLY MODIFIED TO FINAL SITE DESIGN IN STAGE 3 (FOLLOWING FINAL SITE STABILIZATION). THESE STORM DRAINAGE STRUCTURES MAY NEED TO BE MODIFIED AS THE PROJECT SITE IS BROUGHT TO THE FINAL GRADE ELEVATIONS. SEE EROSION AND SEDIMENT CONTROL PLANS FOR MORE DETAIL.
11. ANY STORMWATER INFRASTRUCTURE INSTALLED SHOULD HAVE INLETS PROTECTED WITH BLOCK AND GRAVEL INLET CONTROL, SEDIMENT TRAPS, OR OTHER APPROVED MEASURES AS SHOWN IN THE CID PLAN SET.
12. RIP RAP DISSIPATERS ARE TO BE INSTALLED AS SEEN IN THE APPROVED CID PLAN SET SCHEDULES.
13. CALL FOR AN ONSITE INSPECTION BY THE WAKE COUNTY WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE. ADDITIONAL MEASURES OR DITCH EXTENSIONS MAY BE REQUIRED BY THE WAKE COUNTY FIELD INSPECTOR TO ROUTE RUNOFF TO SEDIMENT BASINS BASED ON FIELD CONDITIONS AND THESE MEASURES SHALL BE INSTALLED UPON THE INSPECTOR'S DETERMINATION.
14. STABILIZE SITE AREAS THAT ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH-LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
15. CALL FOR INSPECTION BY WAKE COUNTY WATERSHED MANAGER FOR APPROVAL BEFORE PROCEEDING TO STAGE 2 CONSTRUCTION.

CONSTRUCTION SEQUENCE FOR KALAS FALLS PHASE 4, STAGE 2 SHALL BE AS FOLLOWS:

1. GENERAL SITE GRADING MAY BEGIN. ANY SLOPES GREATER THAN 3:1 ARE TO HAVE ROLLED EROSION CONTROL BLANKETS UTILIZED TO PREVENT SEDIMENT LOSS WHILE AREA IS STABILIZING. SEE APPROVED EROSION CONTROL PLAN SHEETS FOR RECOMMENDED AREAS.
2. INSTALL STORM DRAINAGE INFRASTRUCTURE AS SEEN IN THE APPROVED CID PLAN SHEETS. EXCAVATE TRENCH, INSTALL SECTION(S) OF PIPE, BACKFILL AND STABILIZE GROUND DISTURBANCE WITHIN A WORKDAY. IF UNABLE TO FINALIZE SECTION OF PIPE INSTALLATION BY END OF WORKDAY, ADDITIONAL TEMPORARY E&SC MEASURES MAY BE REQUIRED TO DENUDED AREA. MODIFICATIONS AND/OR RETROFITTING OF STORM DRAINAGE INFRASTRUCTURE INSTALLED IN STAGE 1 WILL BE REQUIRED AS THE FINISH GRADE IS ESTABLISHED ON SITE.
3. ANY STORMWATER INFRASTRUCTURE INSTALLED SHOULD HAVE INLETS PROTECTED WITH BLOCK AND GRAVEL INLET CONTROL, SEDIMENT TRAPS, OR OTHER APPROVED MEASURES AS SHOWN IN THE PLANS.
4. ROAD CONSTRUCTION SHALL TAKE PLACE AS SEEN IN APPROVED CID PLAN SET. CONTRACTOR TO MAINTAIN TEMPORARY BARRICADES AT ROAD STUBS. THE CONTRACTOR SHALL ENSURE THAT AS ROADS ARE BROUGHT TO FINAL GRADE ELEVATIONS, DRAINAGE IS ADEQUATELY CAPTURED AND DIRECTED TO SEDIMENT TRAPS ON SITE.
5. CLEAN SEDIMENT BASINS WHEN ONE-HALF FULL.
6. SEED AND MULCH DENUDED AREA INCLUDING ANY CUT/FILL SLOPES WITHIN FOURTEEN (14) DAYS AFTER FINISHED GRADES ARE ESTABLISHED.
7. MAINTAIN SOIL EROSION CONTROL MEASURES.
8. UTILITIES (WATER, ELECTRIC, GAS, CABLE TV, TELEPHONE, ETC.) WILL BE INSTALLED DURING THIS PHASE.
9. RETAINING WALLS, DESIGNED BY OTHERS, ARE TO BE INSTALLED.
10. SAFETY RAILS AND FENCES ARE TO BE INSTALLED.
11. TSKB #1 TO BE REMOVED ONCE CONTRIBUTING DRAINAGE AREAS ARE AT FINAL GRADE ELEVATIONS AND FULLY STABILIZED. STORM WATER RUNOFF TO BE DIRECTED TOWARD INLET PROTECTION WITH POSITIVE DRAINAGE. DIVERSION DIKE #1-#2 CAN BE REMOVED FOLLOWING THE REMOVAL OF TSKB #1. TDD #1 CAN BE REMOVED. ANY PDD'S NOT YET IMPLEMENTED ON SITE SHOULD BE DONE SO BEFORE MOVING TO STAGE 3 FOLLOWING CID APPROVED PLAN SET.
12. CALL FOR INSPECTION BY WAKE COUNTY WATERSHED MANAGER FOR APPROVAL BEFORE PROCEEDING TO STAGE 3 CONSTRUCTION.

CONSTRUCTION SEQUENCE FOR KALAS FALLS PHASE 4, STAGE 3 SHALL BE AS FOLLOWS:

1. CALL FOR AN ONSITE INSPECTION BY THE WAKE COUNTY WATERSHED MANAGER FOR APPROVAL TO CONVERT TSB'S TO STORMWATER CONTROL MEASURES (SCM'S) FOLLOWING THE APPROVED CID PLAN SET. SCM CONVERSION AND AS-BUILT DATA IS TO BE COMPLETED AT THE SAME TIME FOR ALL SCM'S ON SITE. STORMWATER INFRASTRUCTURE SHOULD BE CLEANED OUT IF SEDIMENT IS VISIBLE WITHIN THE NETWORK.
2. VERTICAL CONSTRUCTION MAY BEGIN.
3. CLEAN/INSPECT INLET PROTECTION FOLLOWING ANY STORM EVENTS OF 1" OR EVERY FOURTEEN (14) DAYS.
4. SEED AND MULCH DENUDED AREA INCLUDING ANY CUT/FILL SLOPES WITHIN FOURTEEN (14) DAYS AFTER FINISHED GRADES ARE ESTABLISHED.
5. MAINTAIN SOIL EROSION CONTROL MEASURES UNTIL PERMANENT GROUND IS ESTABLISHED.
6. REQUEST INSPECTION BY WAKE COUNTY WATERSHED MANAGER AFTER VEGETATION IS ESTABLISHED TO REMOVE REMAINING EROSION CONTROL MEASURES.
7. REMOVE REMAINING SOIL EROSION CONTROL MEASURES AND STABILIZE THE RESULTING BARE AREAS. CONTACT WAKE COUNTY WATERSHED MANAGER TO REQUEST A FINAL INSPECTION FOR APPROVAL TO CLOSE THE LAND DISTURBANCE PERMIT.
8. THE OWNER IS TO FINALIZE THE NCG01 PERMIT.

NOTES FOR CONSTRUCTION:

1. PLANS FOR INFRASTRUCTURE ONLY.
2. ALL CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH CURRENT CITY OF RALEIGH STANDARD SPECS AND DETAILS, WAKE COUNTY SPECIFICATIONS, NCDOT SPECIFICATIONS AND TOWN OF ROLESVILLE SPECIFICATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES BETWEEN FIELD CONDITIONS AND THESE DRAWINGS.
4. CONTRACTOR WILL KEEP STREETS CLEAN AT ALL TIMES, OR A WASH STATION WILL BE REQUIRED.
5. ALL CATCH BASINS SHALL HAVE INLET PROTECTION.
6. ALL CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 14 DAYS OF ANY PHASE OF GRADING, WITH SOME SLOPES TO BE STABALIZED WITHIN 7 DAYS AS SHOWN ON CHART TO THE LEFT AND ON THE EC SHEETS..
7. TREE PROTECTION FENCING ON THIS PROJECT WILL BE INSTALLED AND INSPECTED BEFORE THE GRADING PERMIT IS ISSUED.
8. A PRE-CONSTRUCTION CONFERENCE MAY BE REQUIRED BEFORE GRADING PERMIT IS ISSUED.
9. PERMANENT GROUND COVER WILL BE ESTABLISHED IN 15 WORKING DAYS OR 90 CALENDAR DAYS WHICHEVER IS SHORTER.
10. THE AREA DESIGNATED SHALL BE USED FOR TOPSOIL STOCKPILE.
11. THIS PROJECT IS IN THE NEUSE RIVER WATERSHED. PROJECT AREA = 44.56 ACRES.
12. WETLANDS ON THIS PROJECT ARE AS SHOWN.
13. MINIMUM CORNER CLEARANCE FROM THE CURB LINE OF INTERSECTING STREETS SHALL BE AT LEAST TWENTY (20) FEET FROM THE POINT OF TANGENCY.
14. ALL TREE PROTECTION FENCING SHALL BE MAINTAINED UNTIL ALL SITE WORK IS COMPLETED. THE FENCING SHALL BE REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE CERTIFICATE OF OCCUPANCY (CO).
15. WITHIN THE SIGHT TRIANGLES SHOWN ON ALL SITE PLAN AND LANDSCAPE PLAN SHEETS, NO OBSTRUCTION BETWEEN 2 FEET AND 8 FEET IN HEIGHT ABOVE THE CURB LINE ELEVATION SHALL BE LOCATED IN WHOLE OR PART. OBSTRUCTIONS INCLUDE, BUT ARE NOT LIMITED TO, ANY BERM, FOLIAGE, FENCE, WALL SIGN, PARKED CAR, OR OTHER OBJECT. ALL STREET TREES FALLING WITHIN THE SIGHT TRIANGLES SHOWN ON THIS PLAN SHALL BE LIMBED UP BETWEEN 2 FEET AND 8 FEET IN HEIGHT ABOVE THE CURB LINE ELEVATION.
16. MINIMUM CORNER CLEARANCE FROM THE CURB LINE OF INTERSECTING STREETS SHALL BE AT LEAST 20 FEET FROM THE POINT OF TANGENCY OF THE CURB. NO DRIVEWAYS SHALL ENCROACH ON THIS MINIMUM CORNER CLEARANCE.
17. ALL STREETS SHOWN ON THESE PLANS HAVE FULL WIDTH OF RIGHT-OF-WAY CLEARED AND GRADED WITHIN 50 FEET OF ALL STREET INTERSECTIONS. THE FULL WIDTH OF RIGHT-OF-WAY SHALL BE CLEARED AND GRADED ALONG ALL MAJOR, MINOR AND SENSITIVE AREA THOROUGHFARES.
18. WHEEL CHAIR ACCESS RAMPS WILL BE PROVIDED IN ACCORDANCE WITH STANDARD DRAWING SHOWN ON DETAIL SHEETS. WHERE SIDEWALK IS NOT REQUIRED ALONG THE PUBLIC RIGHT-OF-WAY, CURB IS TO BE DEPRESSED AT ALL RAMP LOCATIONS SHOWN ON THE STANDARD DETAIL.
19. ALL INDIVIDUAL LOTS SHALL HAVE AN EROSION CONTROL PLAN SUBMITTED PRIOR TO CONSTRUCTION OF HOUSES THERE UPON. IF MULTIPLE LOTS WITH A TOTAL DISTURBED AREA OF MOTRE THAN 12,000 SF ARE TO BE BUILT UPON AT ONE TIME, A COORDINATED EROSION CONTROL PLAN SHALL BE SUBMITTED.
20. ALL PUBLIC WATER AND SEWER MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
21. CONTRACTOR SHALL CONTACT NORTH CAROLINA ONE CALL (1-800-632-4949) TO LOCATE ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.
22. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE EXISTING UTILITIES AND NOTIFY THE PROJECT ENGINEER (919-469-1101) OF ANY CONFLICTS.
23. ALL BOUNDARY AND FIELD TOPOGRAPHY PROVIDED BY WITHERS & RAVENEL.

STOCKPILE DESIGN CRITERIA

A. A 25-FOOT TEMPORARY MAINTENANCE AND ACCESS EASEMENT SHALL BE SHOWN AROUND ALL PROPOSED STOCKPILES (EROSION CONTROL MEASURES SURROUNDING THE STOCKPILE SHALL BE SHOWN AT THE OUTER LIMIT OF THIS EASEMENT).
B. STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
C. A NOTE SHALL BE PROVIDED ON THE APPROVED PLAN THAT STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
D. STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
E. APPROVED BMPS SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.
F. STOCKPILING MATERIALS ADJACENT TO A DITCH, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM BUFFER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS DEMONSTRATED TO BE UNAVAILABLE.
G. ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.
H. OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDO AND STATE REGULATIONS. ALL SPOIL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY WAKE COUNTY OF ANY OFFSITE DISPOSAL OF SOIL, PRIOR TO DISPOSAL. FILL OF FEMA FLOODWAYS AND NON-ENCROACHMENT AREAS ARE PROHIBITED EXCEPT AS OTHERWISE PROVIDED BY SUBSECTION 14-19-2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).

MAINTENANCE REQUIREMENTS TO BE NOTED ON THE PLAN

I. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEYED IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
J. IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
K. THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.
L. ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

SCM CONVERSION SEQUENCE

1. WHEN ALL CONTRIBUTING AREAS TO THE STORMWATER CONTROL MEASURE (SCM) HAVE BEEN STABILIZED CONTACT THE EROSION CONTROL OFFICER FOR PERMISSION TO CONVERT THE SEDIMENT BASIN TO A SCM.
2. REMOVE ALL SEDIMENT FROM THE BASIN AND RESTORE GRADES TO DESIGNED CONFIGURATION, IF NEEDED.
3. CONSTRUCT FOREBAY DIVIDERS AS SHOWN.
4. MAKE ANY REPAIRS, ETC. NECESSARY TO THE OUTLET STRUCTURE, OUTLET PIPE, EMERGENCY OVERFLOW, ETC. EXAMINE RIP-RAP TO SEE IF REFRESHING OR CLEANING OF ROCK IS NECESSARY.
5. REMOVE SKIMMER AND CLOSE OUTLET VALVE.
6. CONTACT EROSION CONTROL OFFICER FOR APPROVAL.
7. CONTACT A LICENSED SURVEYOR FOR SURVEY OF AS-BUILT CONDITIONS. NOTIFY ENGINEER-OF-RECORD FOR PREPARATION OF AS-BUILT DRAWINGS.

REQUIRED WAKE COUNTY CONSTRUCTION SEQUENCE*

1.1. SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANGER,JEEVAN NEUPANE,PE (919)819-8907.
OBTAIN A LAND-DISTURBING PERMIT.

2. INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR
OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL
THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.

2.1. CALL JEEVAN NEUPANE,PE (919)819-8907 FOR AN ONSITE INSPECTION BY THE WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE.

3. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.

4. INSTALL STORM SEWER, IF SHOWN, AND PROTECT INLETS WITH BLOCK AND GRAVEL INLET CONTROLS,
SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION, BUILDING, ETC.

5. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH
LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.

6. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL

JEEVAN NEUPANE,PE (919)819-8907 FOR AN INSPECTION BY THE WATERSHED MANAGER.

7. IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION
CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.

8. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE WATERSHED MANAGER, JEEVAN NEUPANE,PE (919)819-8907. OBTAIN A CERTIFICATE OF COMPLETION.

STANDARD UTILITY NOTES:

1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
2. UTILITY SEPARATION REQUIREMENTS:
   2.a. A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
   2.b. WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
   2.c. WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
   2.d. 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER
   2.e. MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORMDRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W- 41 & S-49).
   2.f. ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
3. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
4. DEVELOPER SHALL PROVIDE 30 DAYS ADVANCE WRITTEN NOTICE TO OWNER FOR ANY WORK REQUIRED WITHIN AN EXISTING CITY OF RALEIGH UTILITY EASEMENT TRAVERSING PRIVATE PROPERTY.
5. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24-HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
6. SEWER BYPASS PUMPING – A BYPASS PLAN SEALED BY AN NC PROFESSIONAL ENGINEER SHALL BE PROVIDED TO RALEIGH WATER PRIOR TO PUMPING OPERATIONS FOR APPROVAL. THE OPERATIONS AND EQUIPMENT SHALL COMPLY WITH THE PUBLIC UTILITIES HANDBOOK.
7. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
8. IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.
9. INSTALL WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
10. INSPECTIONS OF 4" AND LARGER WATER MAINS OF THE PRIVATE DISTRIBUTION SYSTEM WILL BE INSPECTED AS PART OF THE INFRASTRUCTURE PERMIT.
11. PRIVATE SEWER MAINS AS PART OF A COLLECTION SYSTEM ARE PERMITTED AND INSPECTED UNDER THE PRIVATE INFRASTRUCTURE PERMIT FOR SEWER.
12. ANY WATER OR SEWER SERVICES ON PRIVATE PROPERTY THAT WILL BE INSTALLED UNDER CONSTRUCTION DRAWINGS MAY REQUIRE A PLUMBING UTILITY PERMIT IN THE CITY OF RALEIGH. CONSULT WITH THE ENGINEERING INSPECTION COORDINATOR DURING THE PRE-CONSTRUCTION MEETING ON THE NECESSARY PERMITS.
13. INSTALL SEWER SERVICES WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED PER THE CURRENT NC PLUMBING CODE. PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
14. ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
15. NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
16. GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE RW FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A UC AND/OR BUILDING PERMIT. CONTACT (919) 996-4516 OR FOG@RALEIGHNC.GOV FOR MORE INFORMATION.
17. CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON THE DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA.
18. THE DEVICES SHALL MEET THE AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS AND BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST.
19. THE DEVICE AND INSTALLATION SHALL MEET THE GUIDELINES OF APPENDIX A – GUIDELINES AND REQUIREMENTS FOR THE CROSS CONNECTION PROGRAM IN RALEIGH'S SERVICE AREA.
20. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH, INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT CROSS.CONNECTION@RALEIGHNC.GOV FOR MORE INFORMATION.
21. NOTICE FOR PROJECTS THAT INVOLVE AN OVERSIZED MAIN OR URBAN MAIN REPLACEMENT. ANY CITY REIMBURSEMENT GREATER THAN $250,000.00 MUST UNDERGO THE PUBLIC BIDDING PROCESS.
22. PRIVATE SUB-METERING - NO RESALE OF WATER SHALL OCCUR WITHOUT APPROVAL OF THE NORTH CAROLINA UTILITY COMMISSION. SUB-METERING SHALL BE IN ACCORDANCE WITH SECTION 1400 OF THE "SAFE DRINKING WATER ACT".

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450 919-469-1101
Raleigh, NC 27607

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
GENERAL NOTES

SHEET NO.:
G1.1

Z:\Jobs\9900\Working Drawings\Phase 4\Sheet Files\Sheet No. 3.0.1 Phase 4 General Notes Legends Schedule.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 2

PERMANENT DIVERSION DITCHES CHART (TRIANGULAR CROSS-SECTION)

Ditch I.D. #	D.A., AC.	C	i10, in/hr	Q10, cfs	Left Side Slope, Z	Right Side Slope, Z	Avg. Ditch Slope, %	Recommend Ditch Lining (or approved equal)	Manning, n	Min. Ditch Depth, ft	Flow Velocity V10, fps	Calc.Shear Stress, psf	Allowable Linear Shear Stress, psf
PDD #1	1.94	0.50	7.20	6.98	3.00	3.00	6.00	Profile/Enkamat; 7003 (BFM)	0.033	1.25	5.02	4.68	5.00
PDD #2	1.80	0.50	7.20	6.48	3.00	3.00	7.00	Profile/Enkamat; 7003 (BFM)	0.033	1.00	5.27	4.37	5.00
PDD #3	1.58	0.50	7.20	5.69	3.00	3.00	8.00	Profile/Enkamat; 7003 (BFM)	0.033	1.00	5.44	4.99	5.00
PDD #4A	2.72	0.50	7.20	9.79	3.00	3.00	8.00	Profile/Enkamat; 7010 – 7220, seed, BFM; Veg	0.033	1.25	6.12	6.24	8.00
PDD #4B	1.30	0.50	7.20	4.68	3.00	3.00	2.00	E. Coast Ero. Blank.; Coir, 2 Jute nets	0.033	1.25	3.00	1.56	3.20
PDD #5	0.89	0.50	7.20	3.20	3.00	3.00	2.00	Am. Excelsior Co.; Straw; 1 net	0.033	1.00	2.77	1.25	1.55
PDD #6	0.96	0.50	7.20	3.46	3.00	3.00	2.00	Am. Excelsior Co.; Straw; 1 net	0.033	1.00	2.81	1.25	1.55
PDD #7	3.91	0.50	7.20	14.08	3.00	3.00	2.50	E. Coast Ero. Blank.; Straw/Coir, 2 nets	0.033	1.50	4.33	2.34	2.60
PDD #8	0.73	0.50	7.20	2.63	3.00	3.00	3.00	NAG; 70% straw: 30% Coconut; double net	0.033	1.00	2.99	1.87	2.00

NOTE: ALL PERMANENT DIVERSION DITCHES (PDD) CROSS SECTIONS ARE TRIANGULAR.
TRACTIVE FORCE, τ, IS CALCULATED USING: $\tau = (\gamma)(D_{TOW})(S_{TOW})$
WHERE:
- γ IS THE UNIT WEIGHT OF WATER (ASSUMED TO BE 62.4 LB/FT^3)
- D_{TOW} IS THE DEPTH OF FLOW IN THE CHANNEL (FT/FT)
- S_{TOW} IS THE SLOPE OF THE CHANNEL (FT/FT)

PLEASE SEE PERMANENT DIVERSION DITCH NOMENCLATURE ON GRADING ENLARGEMENT SHEETS WITHIN THIS PLANSET.

Rip Rap Dissipater Calculations (10-Year Storm)

Outlet ID	Pipe Diameter (in)	Pipe Velocity (fps)	Stone Class	Stone Depth (in)	Start Width (ft)	End Width (ft)	Length (ft)
FES 200	30	1.80	B	18	5.0	15.0	10.0
FES 400	24	5.31	B	18	4.0	12.0	8.0
FES 410	24	5.12	B	18	4.0	12.0	8.0
FES 420	30	7.85	B	18	5.0	15.0	10.0
FES 450	24	5.68	B	18	4.0	12.0	8.0
FES 480	18	3.93	B	18	3.0	9.0	6.0
FES 490	24	10.41	B	18	4.0	12.0	8.0
FES 500	30	6.62	B	18	5.0	15.0	10.0
FES 550	30	8.47	B	18	5.0	15.0	10.0
Temp. RR #11	24	10.25	B	18	4.0	12.0	8.0
Temp. RR #12	18	7.38	B	18	3.0	9.0	6.0
Calculations were determined from NCDOT Detail 876.02 Guide for Rip Rap at Pipe Outlets							
Values shown in table above are minimum quantities and dimensions							

PH4 - Sanitary Sewer - STRUCTURE TABLE

STRUCTURE NAME:	DESCRIPTION	PIPES IN:	PIPES OUT
EX MH 7	SSWR MH 5' RIM = 270.18 INV IN = 261.15	8" SDR35 INV.=261.15	*15" SDR 26 INV.=260.57*
EX MH 322A	SSWR MH 4' RIM = 367.45 INV IN = 359.46	8" SDR35 INV.=359.46	*8" SDR 26 INV.=359.26*
MH-409A	SSWR MH 4' RIM = 370.15 INV IN = 358.75 INV OUT = 358.55	8" SDR35 INV.=358.75	8" SDR 26 INV.=358.55
MH-416	SSWR MH 4' RIM = 368.24 INV OUT = 364.45	N/A	8" SDR35 INV.=364.45
MH 327	SSWR MH 4' RIM = 365.75 INV IN = 361.25 INV OUT = 361.05	8" SDR35 INV.=361.25	8" SDR35 INV.=361.05
MH 328	SSWR MH 4' RIM = 371.85 INV IN = 363.80 INV IN = 363.80 INV OUT = 363.60	8" SDR35 INV.=363.80 8" SDR35 INV.=363.80	8" SDR35 INV.=363.60
MH 329	SSWR MH 4' RIM = 374.30 INV IN = 365.62 INV OUT = 365.42	8" SDR35 INV.=365.62	8" SDR35 INV.=365.42
MH 330	SSWR MH 4' RIM = 375.61 INV OUT = 366.92	N/A	8" SDR35 INV.=366.92
MH 331	SSWR MH 4' RIM = 369.06 INV OUT = 364.71	N/A	8" SDR35 INV.=364.71
MH 400	SSWR MH 4' RIM = 271.30 INV IN = 263.38 INV OUT = 263.18	8" SDR35 INV.=263.38	8" SDR35 INV.=263.18
MH 401	SSWR MH 4' RIM = 281.84 INV IN = 274.29 INV OUT = 272.09	8" SDR35 INV.=274.29	8" SDR35 INV.=272.09
MH 402	SSWR MH 4' RIM = 295.56 INV IN = 285.60 INV OUT = 285.40	8" SDR 26 INV.=285.60	8" SDR35 INV.=285.40
MH 403	SSWR MH 5' RIM = 300.26 INV IN = 289.80 INV IN = 289.80 INV OUT = 287.40	8" SDR35 INV.=289.80 8" SDR35 INV.=289.80	8" SDR 26 INV.=287.40
MH 404	SSWR MH 4' RIM = 315.89 INV IN = 305.00 INV OUT = 304.80	8" SDR35 INV.=305.00	8" SDR35 INV.=304.80
MH 405	SSWR MH 4' RIM = 331.41 INV IN = 320.20 INV OUT = 320.00	8" SDR35 INV.=320.20	8" SDR35 INV.=320.00
MH 406	SSWR MH 4' RIM = 343.17 INV IN = 333.00 INV OUT = 332.80	8" SDR35 INV.=333.00	8" SDR35 INV.=332.80
MH 407	SSWR MH 4' RIM = 347.40 INV IN = 337.00 INV OUT = 336.80	8" SDR35 INV.=337.00	8" SDR35 INV.=336.80
MH 408	SSWR MH 4' RIM = 355.09 INV IN = 347.00 INV OUT = 346.80	8" SDR 26 INV.=347.00	8" SDR35 INV.=346.80
MH 409	SSWR MH 5' RIM = 365.11 INV IN = 353.97 INV IN = 353.25 INV OUT = 352.19	8" SDR 26 INV.=353.97 8" SDR 26 INV.=353.25	8" SDR 26 INV.=352.19
MH 410	SSWR MH 4' RIM = 365.53 INV IN = 357.70 INV OUT = 357.50	8" SDR35 INV.=357.70	8" SDR 26 INV.=357.50
MH 411	SSWR MH 4' RIM = 367.85 INV IN = 360.18 INV OUT = 359.65	8" SDR35 INV.=360.18	8" SDR35 INV.=359.65
MH 412	SSWR MH 4' RIM = 372.57 INV OUT = 364.33	N/A	8" SDR35 INV.=364.33
MH 413	SSWR MH 4' RIM = 373.00 INV IN = 363.50 INV IN = 363.50 INV OUT = 363.30	8" SDR35 INV.=363.50 8" SDR35 INV.=363.50	8" SDR35 INV.=363.30
MH 414	SSWR MH 4' RIM = 374.20 INV IN = 365.71 INV OUT = 365.51	8" SDR35 INV.=365.71	8" SDR35 INV.=365.51
MH 415	SSWR MH 4' RIM = 374.78 INV OUT = 366.43	N/A	8" SDR35 INV.=366.43
MH 416	SSWR MH 4' RIM = 302.09 INV IN = 293.20 INV OUT = 293.00	8" SDR35 INV.=293.20	8" SDR35 INV.=293.00
MH 417	SSWR MH 4' RIM = 309.65 INV IN = 300.90 INV OUT = 300.70	8" SDR35 INV.=300.90	8" SDR35 INV.=300.70
MH 418	SSWR MH 4' RIM = 318.22 INV IN = 309.37 INV OUT = 309.17	8" SDR35 INV.=309.37	8" SDR35 INV.=309.17
MH 419	SSWR MH 4' RIM = 328.16 INV IN = 318.25 INV OUT = 318.05	8" SDR35 INV.=318.25	8" SDR35 INV.=318.05
MH 420	SSWR MH 4' RIM = 354.54 INV IN = 343.24 INV OUT = 343.04	8" SDR35 INV.=343.24	8" SDR35 INV.=343.04
MH 421	SSWR MH 4' RIM = 370.02 INV OUT = 361.10	N/A	8" SDR35 INV.=361.10

PH4-Storm 5A - Structure Table

Structure Name	Details
CB-504	RIM = 308.62 INV IN = 302.00 INV OUT = 300.00
CB-505	RIM = 308.61 INV IN = 302.50 INV IN = 302.50 INV OUT = 302.30
CB-506	RIM = 320.27 INV IN = 314.20 INV OUT = 314.00
CB-507	RIM = 332.89 INV IN = 325.70 INV IN = 325.70 INV OUT = 325.50
CB-507B	RIM = 332.90 INV OUT = 326.00
CB-508	RIM = 360.51 INV IN = 353.70 INV IN = 353.70 INV OUT = 353.50
CB-508B	RIM = 360.51 INV OUT = 355.00
CB-510A	RIM = 372.51 INV IN = 367.30 INV OUT = 367.10
CB-510B	RIM = 372.59 INV IN = 367.07 INV OUT = 366.87
CB-511A	RIM = 372.53 INV IN = 368.77 INV OUT = 367.57
CB-511B	RIM = 372.67 INV OUT = 368.84
CB-520	RIM = 369.24 INV IN = 361.19 INV IN = 360.15 INV OUT = 359.95
CB-521	RIM = 369.24 INV OUT = 361.66
FES-500	RIM = 278.88 INV IN = 276.00
JB-502	RIM = 297.65 INV IN = 285.60 INV OUT = 283.60
JB-503	RIM = 304.87 INV IN = 293.40 INV OUT = 291.40
JB-509	RIM = 372.79 INV IN = 359.10 INV IN = 365.40 INV OUT = 358.90
YD-501	RIM = 280.87 INV IN = 277.20 INV IN = 277.20 INV OUT = 277.00
YD-522	RIM = 363.71 INV OUT = 360.73
YD-540	RIM = 308.13 INV IN = 303.70 INV OUT = 303.50
YD-541	RIM = 344.01 INV IN = 339.00 INV OUT = 336.00
YD-542	RIM = 352.79 INV IN = 347.20 INV OUT = 347.00
YD-543	RIM = 362.37 INV OUT = 353.50
YD-550	RIM = 280.53 INV IN = 278.00 INV OUT = 277.80
YD-551	RIM = 297.06 INV IN = 290.00 INV OUT = 287.00
YD-552	RIM = 306.92 INV IN = 296.00 INV OUT = 293.00
YD-553	RIM = 328.52 INV IN = 320.00 INV OUT = 317.00
YD-554	RIM = 349.17 INV IN = 343.00 INV OUT = 340.00
YD-555	RIM = 364.12 INV OUT = 359.00

PH4-Storm 4D - Structure Table

Structure Name	Details
CB-451A	RIM = 294.89 INV IN = 288.20 INV OUT = 288.00
CB-451B	RIM = 294.92 INV OUT = 288.39
CB-452	RIM = 299.74 INV IN = 294.06 INV OUT = 293.77
CB-453	RIM = 300.39 INV IN = 294.50 INV IN = 294.50 INV OUT = 294.30
CB-454	RIM = 303.10 INV IN = 296.20 INV IN = 296.75 INV OUT = 296.00
CB-454B	RIM = 303.10 INV OUT = 297.73
CB-455	RIM = 327.15 INV IN = 319.30 INV IN = 319.55 INV OUT = 318.80
CB-455B	RIM = 327.15 INV OUT = 319.71
CB-456	RIM = 339.01 INV IN = 332.20 INV IN = 332.20 INV OUT = 332.00
CB-456B	RIM = 339.01 INV OUT = 333.03
CB-457	RIM = 344.05 INV IN = 336.90 INV OUT = 336.70
CB-458	RIM = 348.41 INV IN = 341.20 INV IN = 342.25 INV OUT = 341.00
CB-459	RIM = 352.79 INV IN = 346.20 INV IN = 346.20 INV OUT = 346.00
CB-459B	RIM = 352.42 INV OUT = 346.47
CB-461	RIM = 359.02 INV IN = 351.40 INV IN = 351.40 INV OUT = 351.20
CB-462	RIM = 359.15 INV OUT = 351.56
CB-470	RIM = 305.33 INV IN = 298.50 INV OUT = 298.30
FES-450	INV IN = 280.50
FES-480	INV IN = 281.00
JB-451	RIM = 296.17 INV IN = 286.00 INV IN = 286.75 INV OUT = 285.00
JB-460	RIM = 355.20 INV IN = 349.40 INV OUT = 349.20
YD-458A	RIM = 346.19 INV OUT = 343.11
YD-461A	RIM = 356.89 INV OUT = 353.93
YD-471	RIM = 303.08 INV IN = 299.20 INV OUT = 299.00
YD-472	RIM = 324.90 INV IN = 318.00 INV OUT = 315.00
YD-473	RIM = 336.19 INV OUT = 330.00
YD-481	RIM = 297.80 INV IN = 288.50 INV OUT = 285.50
YD-482	RIM = 308.71 INV IN = 302.50 INV OUT = 302.30
YD-483	RIM = 330.85 INV OUT = 323.00

PH4 4A Out - Structure Table

Structure Name	Details
CS-421	RIM = 342.64 INV OUT = 337.50
FES-420	INV IN = 337.00

PH4-Storm 4A - Structure Table

Structure Name	Details
CB-402	RIM = 366.77 INV IN = 357.75 INV IN = 355.10 INV OUT = 354.00
CB-404	RIM = 373.58 INV IN = 361.70 INV OUT = 361.50
CB-405	RIM = 373.58 INV OUT = 362.00
CB-406A	RIM = 364.80 INV IN = 356.70 INV IN = 356.70 INV OUT = 356.50
CB-406B	RIM = 364.80 INV OUT = 356.73
CB-407A	RIM = 364.80 INV IN = 358.00 INV IN = 357.20 INV OUT = 357.00
CB-407B	RIM = 364.80 INV OUT = 358.03
CB-410	RIM = 370.32 INV IN = 361.60 INV IN = 361.01 INV OUT = 361.40
CB-411	RIM = 369.51 INV IN = 362.10 INV OUT = 361.90
CB-412	RIM = 369.51 INV OUT = 362.25
CB-422	RIM = 369.02 INV IN = 358.20 INV OUT = 358.00
CB-423	RIM = 367.92 INV IN = 360.20 INV OUT = 360.00
CB-424	RIM = 368.10 INV OUT = 360.27
FES-400	INV IN = 339.00
FES-408	INV OUT = 358.50
FES-410	INV IN = 340.66
JB-401	RIM = 358.49 INV IN = 350.80 INV OUT = 343.50
JB-403	RIM = 371.85 INV IN = 360.20 INV IN = 360.20 INV OUT = 360.00
JB-421	RIM = 363.71 INV IN = 346.00 INV IN = 343.20 INV OUT = 343.00
JB-430	RIM = 355.63 INV IN = 345.70 INV OUT = 345.50
YD-415	RIM = 364.69 INV OUT = 362.07
YD-431	RIM = 349.67 INV IN = 346.70 INV OUT = 346.50
YD-432	RIM = 352.54 INV IN = 348.55 INV OUT = 348.35
YD-433	RIM = 357.33 INV OUT = 353.30

Ph4 4D Out - Structure Table

Structure Name	Details
CS-491	RIM = 280.00 INV OUT = 275.35
FES-490	INV IN = 273.00

Ph4 5A Out - Structure Table

Structure Name	Details
CS-551	RIM = 279.25 INV OUT = 269.50
FES-550	INV IN = 268.50

Ph4 Culverts - Structure Table

Structure Name	Details
FES 100	INV OUT = 350.00
FES 200	INV IN = 342.60

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:

STRUCTURE SCHEDULES

SHEET NO.:

G1.2

North Carolina 811 Before You Dig
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Final_Working Dwg\Ph4 Plan Set\Sheet Files\[Sheet No. 3 0 3.1 Phase 4 General Notes Legends Schedule.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 3

PH4 - Sanitary Sewer - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
MH-409A	MH 409	8"	SDR 26	101.71	4.50%	353.97	358.55
MH-416	MH 413	8"	SDR35	157.67	0.60%	363.50	364.45
MH 327	EX MH 322A	8"	SDR35	273.76	0.58%	359.46	361.05
MH 328	MH 327	8"	SDR35	398.75	0.59%	361.25	363.60
MH 329	MH 328	8"	SDR35	167.69	0.97%	363.80	365.42
MH 330	MH 329	8"	SDR35	118.04	1.10%	365.62	366.92
MH 331	MH 328	8"	SDR35	165.39	0.55%	363.80	364.71
MH 400	Ex MH 7	8"	SDR35	25.40	7.98%	261.15	263.18
MH 401	MH 400	8"	SDR35	124.36	7.00%	263.38	272.09
MH 402	MH 401	8"	SDR35	222.30	5.00%	274.29	285.40
MH 403	MH 402	8"	SDR 26	94.18	1.91%	285.60	287.40
MH 404	MH 403	8"	SDR35	189.65	7.91%	289.80	304.80
MH 405	MH 404	8"	SDR35	198.43	7.56%	305.00	320.00
MH 406	MH 405	8"	SDR35	218.54	5.77%	320.20	332.80
MH 407	MH 406	8"	SDR35	81.19	4.68%	333.00	336.80
MH 408	MH 407	8"	SDR35	149.93	6.54%	337.00	346.80
MH 409	MH 408	8"	SDR 26	148.16	3.50%	347.00	352.19
MH 410	MH 409	8"	SDR 26	283.19	1.50%	353.25	357.50
MH 411	MH 410	8"	SDR35	129.93	1.50%	357.70	359.65
MH 412	MH 411	8"	SDR35	94.41	4.39%	360.18	364.33
MH 413	MH-409A	8"	SDR35	181.81	2.50%	358.75	363.30
MH 414	MH 413	8"	SDR35	290.55	0.69%	363.50	365.51
MH 415	MH 414	8"	SDR35	72.08	1.00%	365.71	366.43
MH 416	MH 403	8"	SDR35	97.03	3.30%	289.80	293.00
MH 417	MH 416	8"	SDR35	111.83	6.71%	293.20	300.70
MH 418	MH 417	8"	SDR35	102.57	8.07%	300.90	309.17
MH 419	MH 418	8"	SDR35	108.39	8.00%	309.37	318.05
MH 420	MH 419	8"	SDR35	291.67	8.50%	318.25	343.04
MH 421	MH 420	8"	SDR35	297.74	6.00%	343.24	361.10

PH4-Storm 4A - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
CB-402	JB-401	24"	Reinforced Concrete Pipe	38.61	8.29%	350.80	354.00
CB-404	JB-403	15"	Reinforced Concrete Pipe	81.66	1.59%	360.20	361.50
CB-405	CB-404	15"	Reinforced Concrete Pipe	27.00	1.11%	361.70	362.00
CB-406A	CB-402	18"	Reinforced Concrete Pipe	175.96	0.80%	355.10	356.50
CB-406B	CB-406A	15"	Reinforced Concrete Pipe	4.99	0.60%	356.70	356.73
CB-407A	CB-406A	18"	Reinforced Concrete Pipe	41.00	0.73%	356.70	357.00
CB-407B	CB-407A	15"	Reinforced Concrete Pipe	4.99	0.60%	358.00	358.03
CB-410	JB-403	15"	Reinforced Concrete Pipe	127.52	0.94%	360.20	361.40
CB-411	CB-410	15"	Reinforced Concrete Pipe	52.35	0.57%	361.60	361.90
CB-412	CB-411	15"	Reinforced Concrete Pipe	27.00	0.56%	362.10	362.25
CB-422	JB-421	15"	Reinforced Concrete Pipe	131.43	9.13%	346.00	358.00
CB-423	CB-422	15"	Reinforced Concrete Pipe	58.96	3.05%	358.20	360.00
CB-424	CB-423	15"	Reinforced Concrete Pipe	7.27	1.00%	360.20	360.27
FES-408	CB-407A	15"	Reinforced Concrete Pipe	35.87	3.62%	357.20	358.50
JB-401	FES-400	24"	Reinforced Concrete Pipe	56.09	8.02%	339.00	343.50
JB-403	CB-402	18"	Reinforced Concrete Pipe	318.22	0.71%	357.75	360.00
JB-421	FES-410	24"	Reinforced Concrete Pipe	65.14	3.59%	340.66	343.00
JB-430	JB-421	24"	Reinforced Concrete Pipe	98.46	2.34%	343.20	345.50
YD-415	CB-410	15"	Reinforced Concrete Pipe	211.36	0.50%	361.01	362.07
YD-431	JB-430	24"	Reinforced Concrete Pipe	87.16	0.92%	345.70	346.50
YD-432	YD-431	18"	Reinforced Concrete Pipe	123.03	1.34%	346.70	348.35
YD-433	YD-432	15"	Reinforced Concrete Pipe	239.52	1.98%	348.55	353.30

PH4 4A Out - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
CS-421	FES-420	30"	Reinforced Concrete Pipe	54.76	0.91%	337.00	337.50

PH4-Storm 4D - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
CB-451A	JB-451	15"	Reinforced Concrete Pipe	31.99	3.91%	286.75	288.00
CB-451B	CB-451A	15"	Reinforced Concrete Pipe	6.06	3.18%	288.20	288.39
CB-452	JB-451	24"	Reinforced Concrete Pipe	92.02	8.44%	286.00	293.77
CB-453	CB-452	24"	Reinforced Concrete Pipe	27.02	0.90%	294.06	294.30
CB-454	CB-453	18"	Reinforced Concrete Pipe	42.48	3.53%	294.50	296.00
CB-454B	CB-454	15"	Reinforced Concrete Pipe	27.02	3.64%	296.75	297.73
CB-455	CB-454	18"	Reinforced Concrete Pipe	280.75	8.05%	296.20	318.80
CB-455B	CB-455	15"	Reinforced Concrete Pipe	27.01	0.60%	319.55	319.71
CB-456	CB-455	18"	Reinforced Concrete Pipe	200.00	6.35%	319.30	332.00
CB-456B	CB-456	15"	Reinforced Concrete Pipe	27.00	3.06%	332.20	333.03
CB-457	CB-456	15"	Reinforced Concrete Pipe	98.70	4.56%	332.20	336.70
CB-458	CB-457	15"	Reinforced Concrete Pipe	87.43	4.69%	336.90	341.00
CB-459	CB-458	15"	Reinforced Concrete Pipe	76.44	6.28%	341.20	346.00
CB-459B	CB-459	15"	Reinforced Concrete Pipe	26.90	1.00%	346.20	346.47
CB-461	JB-460	15"	Reinforced Concrete Pipe	44.68	4.03%	349.40	351.20
CB-462	CB-461	15"	Reinforced Concrete Pipe	27.00	0.60%	351.40	351.56
CB-470	CB-453	15"	Reinforced Concrete Pipe	99.09	3.84%	294.50	298.30
JB-451	FES-450	24"	Reinforced Concrete Pipe	71.08	6.33%	280.50	285.00
JB-460	CB-459	15"	Reinforced Concrete Pipe	44.68	6.71%	346.20	349.20
YD-458A	CB-458	15"	Reinforced Concrete Pipe	33.75	2.53%	342.25	343.11

Ph4 4D Out - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
CS-491	FES-490	24"	Reinforced Concrete Pipe	76.16	3.09%	273.00	275.35

PH4-Storm 5A - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
CB-504	JB-503	24"	Reinforced Concrete Pipe	68.00	9.71%	293.40	300.00
CB-505	CB-504	24"	Reinforced Concrete Pipe	26.96	1.11%	302.00	302.30
CB-506	CB-505	18"	Reinforced Concrete Pipe	131.16	8.77%	302.50	314.00
CB-507	CB-506	18"	Reinforced Concrete Pipe	129.45	8.73%	314.20	325.50
CB-507B	CB-507	15"	Reinforced Concrete Pipe	27.00	1.11%	325.70	326.00
CB-508	CB-507	18"	Reinforced Concrete Pipe	321.35	8.65%	325.70	353.50
CB-508B	CB-508	15"	Reinforced Concrete Pipe	27.00	4.81%	353.70	355.00
CB-510A	CB-510B	15"	Reinforced Concrete Pipe	6.86	0.50%	367.07	367.10
CB-510B	JB-509	15"	Reinforced Concrete Pipe	33.94	4.33%	365.40	366.87
CB-511A	CB-510A	15"	Reinforced Concrete Pipe	27.00	1.00%	367.30	367.57
CB-511B	CB-511A	15"	Reinforced Concrete Pipe	6.96	1.00%	368.77	368.84
CB-520	JB-509	15"	Reinforced Concrete Pipe	161.15	0.53%	359.10	359.95
CB-521	CB-520	15"	Reinforced Concrete Pipe	27.00	1.74%	361.19	361.66
JB-502	YD-501	24"	Reinforced Concrete Pipe	68.15	9.39%	277.20	283.60
JB-503	JB-502	24"	Reinforced Concrete Pipe	63.17	9.18%	285.60	291.40
JB-509	CB-508	18"	Reinforced Concrete Pipe	351.23	1.48%	353.70	358.90
YD-501	FES-500	30"	Reinforced Concrete Pipe	45.77	2.18%	276.00	277.00
YD-522	CB-520	15"	Reinforced Concrete Pipe	107.48	0.54%	360.15	360.73
YD-540	CB-505	18"	Reinforced Concrete Pipe	37.01	2.70%	302.50	303.50
YD-541	YD-540	15"	Reinforced Concrete Pipe	400.22	8.07%	303.70	336.00
YD-542	YD-541	15"	Reinforced Concrete Pipe	146.08	5.48%	339.00	347.00
YD-543	YD-542	15"	Reinforced Concrete Pipe	120.11	5.25%	347.20	353.50
YD-550	YD-501	18"	Reinforced Concrete Pipe	32.14	1.87%	277.20	277.80
YD-551	YD-550	18"	Reinforced Concrete Pipe	152.07	5.92%	278.00	287.00
YD-552	YD-551	18"	Reinforced Concrete Pipe	41.59	7.21%	290.00	293.00
YD-553	YD-552	15"	Reinforced Concrete Pipe	257.14	8.17%	296.00	317.00
YD-554	YD-553	15"	Reinforced Concrete Pipe	240.00	8.33%	320.00	340.00
YD-555	YD-554	15"	Reinforced Concrete Pipe	240.16	6.66%	343.00	359.00

Ph4 5A Out - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
CS-551	FES-550	30"	Reinforced Concrete Pipe	64.95	1.54%	268.50	269.50

Ph4 Culverts - PIPE SUMMARY							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE SIZE	PIPE MATERIAL	LENGTH	SLOPE	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)
FES 100	FES 200	30"	Reinforced Concrete Pipe*	145.67	5.08%	342.60	350.00

* DENOTES RCP CLASS IV PIPE, OTHERWISE TO BE CLASS III

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:

PIPE SCHEDULES

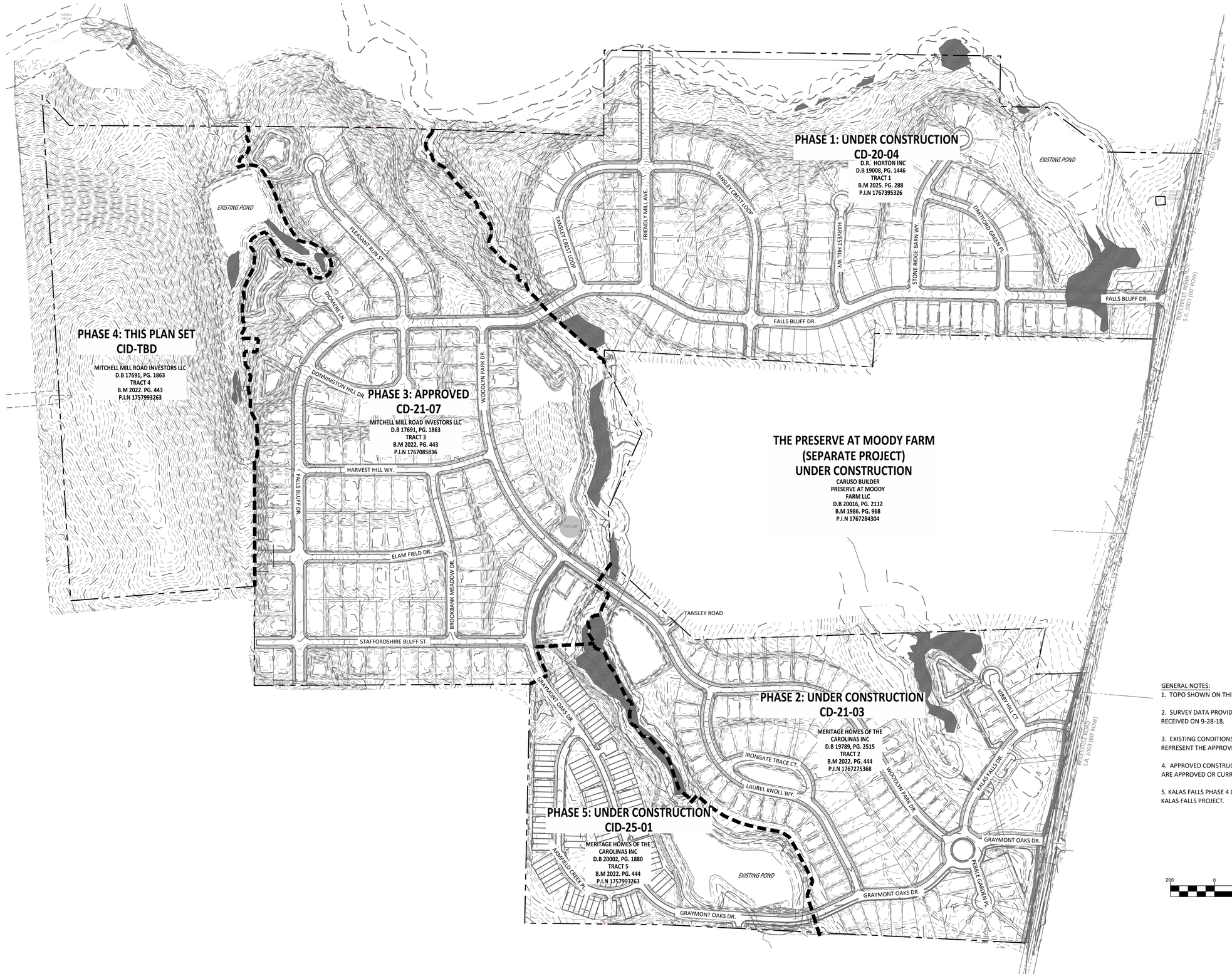
SHEET NO.:

G1.3

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Drawings\Engineering\Working Dwgs\Phase 4\Sheet Files\Sheet No. 3.0-3.3 Phase 4 General Notes-Legends-Schedule.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 4



GENERAL NOTES:

1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.

2. SURVEY DATA PROVIDED BY WITHERSRAVENEL WITH THE LATEST SURVEY DATA RECEIVED ON 9-28-18.

3. EXISTING CONDITIONS DEPICTED IN PRECEDING KALAS FALLS PHASES REPRESENT THE APPROVED DESIGN OR ARE CURRENTLY UNDER CONSTRUCTION.

4. APPROVED CONSTRUCTION PLANS SHOWN AS EXISTING FOR PHASES 1-3 THAT ARE APPROVED OR CURRENTLY UNDER CONSTRUCTION.

5. KALAS FALLS PHASE 4 COMPRISES 44.56 ACRES OF THE TOTAL 282.73 ACRE KALAS FALLS PROJECT.

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch =200

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates, Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
PROFESSIONAL
SEAL
062383
ENGINEER
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

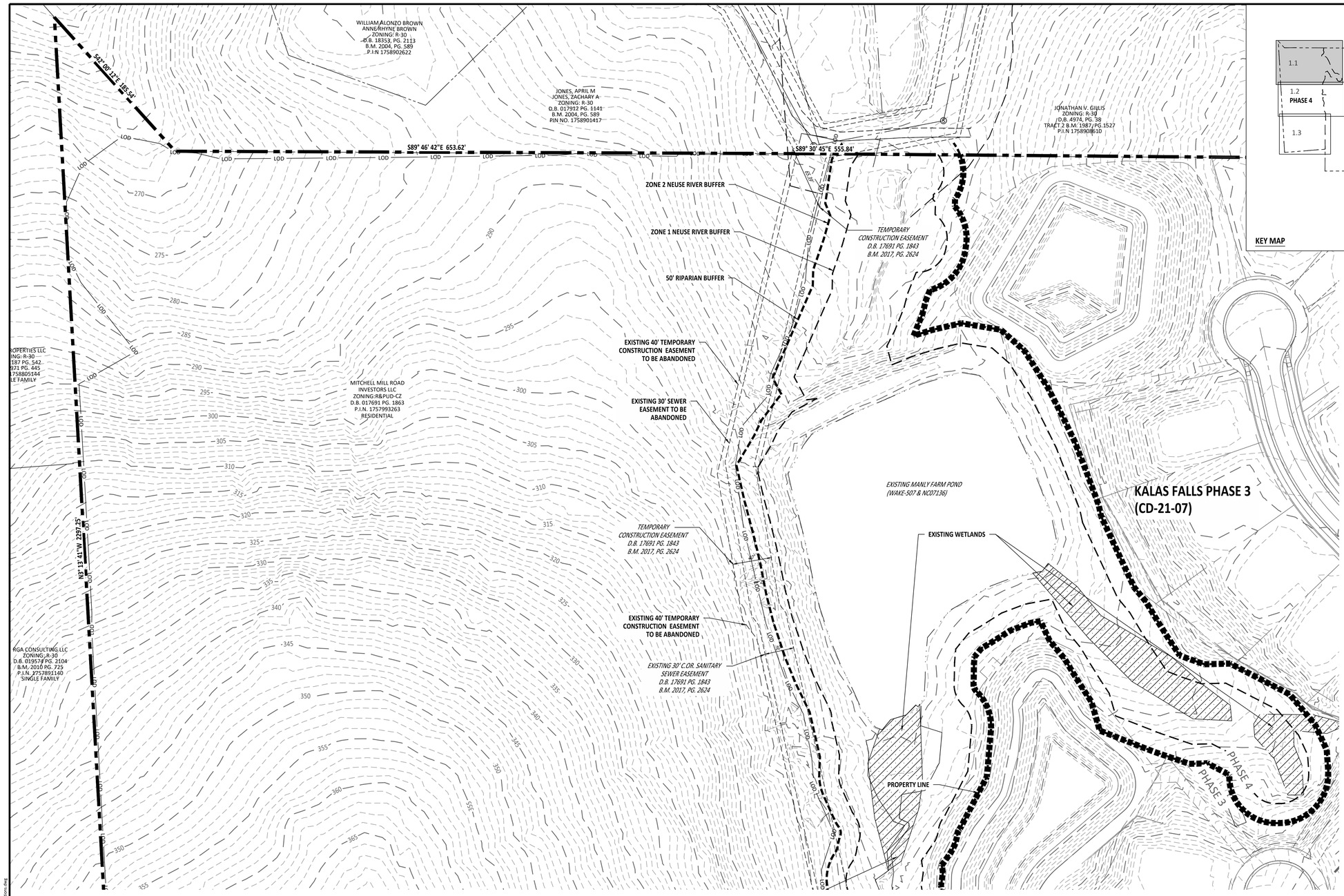
KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

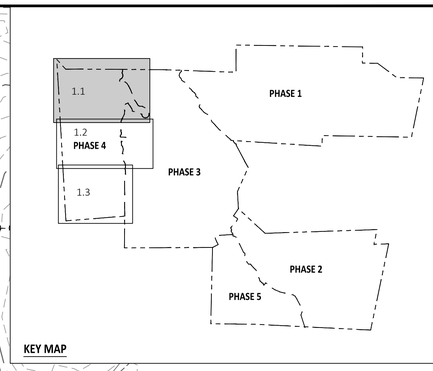
JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
OVERALL EXISTING CONDITIONS

SHEET NO.:
C1.0

Z:\Jobs\1990\Workin Progress\Dwg_Working Dwgs\Phase 4\Sheet Files\[Sheet No. 1.0-1.2 Phase 4 Existing Conditions.dwg





GENERAL NOTES:
1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.
2. EXISTING CONDITIONS DEPICTED ON PRECEDING KALAS FALLS PHASES REPRESENT THE APPROVED DESIGN OR ARE CURRENTLY UNDER CONSTRUCTION.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

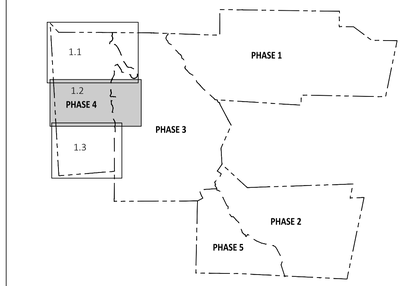
SHEET TITLE:
EXISTING CONDITIONS AREA A

SHEET NO.:
C1.1

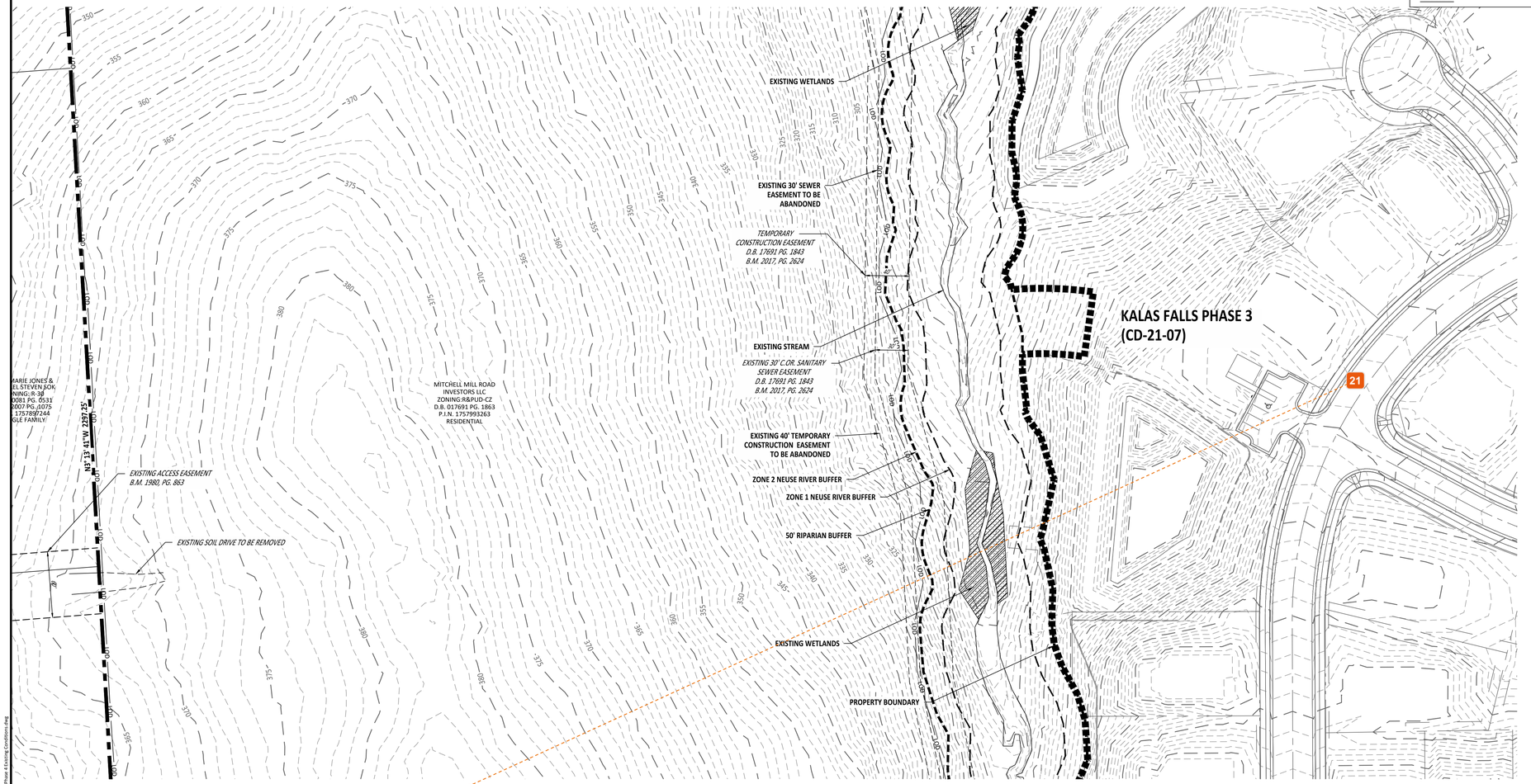
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Drawings\Phase 4\Sheet Files\Sheet No. 1.0-1.3 Phase 4 Existing Conditions.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 6



KEY MAP



EXISTING LEGEND

- EXISTING ADJACENT PROPERTY
- EXISTING TREE LINE
- EXISTING TOPOGRAPHY
- EXISTING BOUNDARY
- EXISTING WETLANDS
- EXISTING WETLANDS AREA
- EXISTING 50' NEUSE RIPERIAN BUFFER
- EXISTING BUFFER ZONES
- EXISTING TOP OF BANK
- EXISTING OVERHEAD ELECTRIC
- EXISTING FENCE TO BE REMOVED
- EXISTING CENTERLINE
- EXISTING EOP TO BE REMOVED
- EXISTING ROW TO BE REMOVED
- EXISTING CHANNEL TO BE REMOVED
- EXISTING GRAVEL DRIVE TO BE REMOVED
- EXISTING STREAM CENTERLINE
- EXISTING GRAVEL PATHWAY
- EXISTING WATERLINE
- PHASE LINE

GENERAL NOTES:
1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.
2. EXISTING CONDITIONS DEPICTED ON PRECEDING KALAS FALLS PHASES REPRESENT THE APPROVED DESIGN OR ARE CURRENTLY UNDER CONSTRUCTION.

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.:	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
EXISTING CONDITIONS AREA B

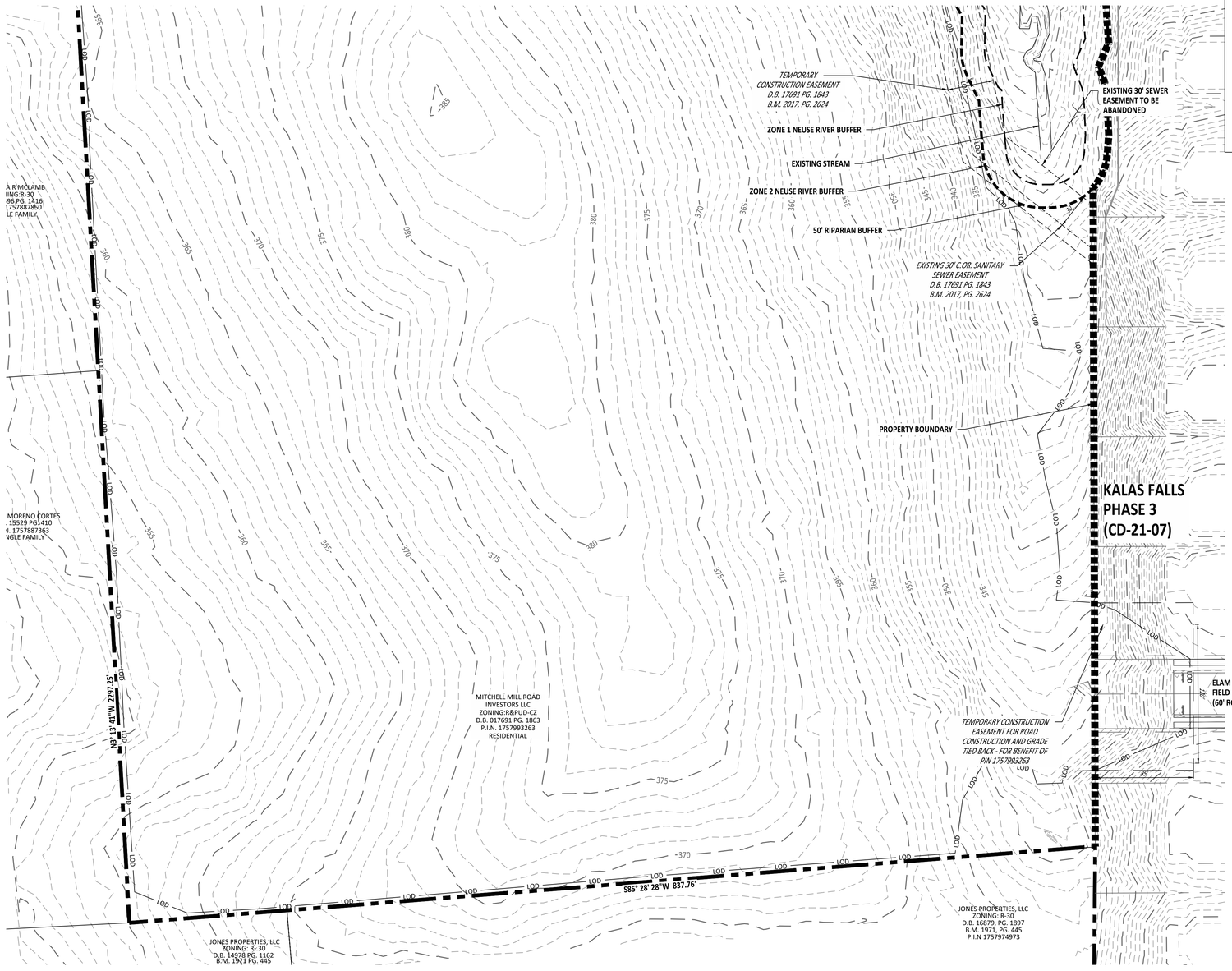
SHEET NO.:
C1.2

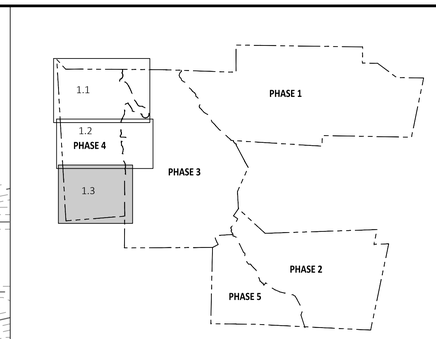
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Wireless Property\ArcGIS_Working Data\Phase 4\Sheet Files\Sheet No. 1 0-1 2 Phase 4 Existing Conditions.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 7

21 **Jacqueline Thompson**
Provide street names





KEY MAP

EXISTING LEGEND
- EXISTING ADJACENT PROPERTY
- EXISTING TREE LINE
- EXISTING TOPOGRAPHY
- EXISTING BOUNDARY
- EXISTING WETLANDS
- EXISTING WETLANDS AREA
- EXISTING 50' NEUSE RIPERIAN BUFFER
- EXISTING BUFFER ZONES
- EXISTING TOP OF BANK
- EXISTING OVERHEAD ELECTRIC
- EXISTING FENCE TO BE REMOVED
- EXISTING CENTERLINE
- EXISTING EOP TO BE REMOVED
- EXISTING ROW TO BE REMOVED
- EXISTING CHANNEL TO BE REMOVED
- EXISTING GRAVEL DRIVE TO BE REMOVED
- EXISTING STREAM CENTERLINE
- EXISTING GRAVEL PATHWAY
- EXISTING WATERLINE
- PHASE LINE

GENERAL NOTES:
1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.
2. EXISTING CONDITIONS DEPICTED ON PRECEDING KALAS FALLS PHASES REPRESENT THE APPROVED DESIGN OR ARE CURRENTLY UNDER CONSTRUCTION.

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
EXISTING CONDITIONS AREA C

SHEET NO.:
C1.3

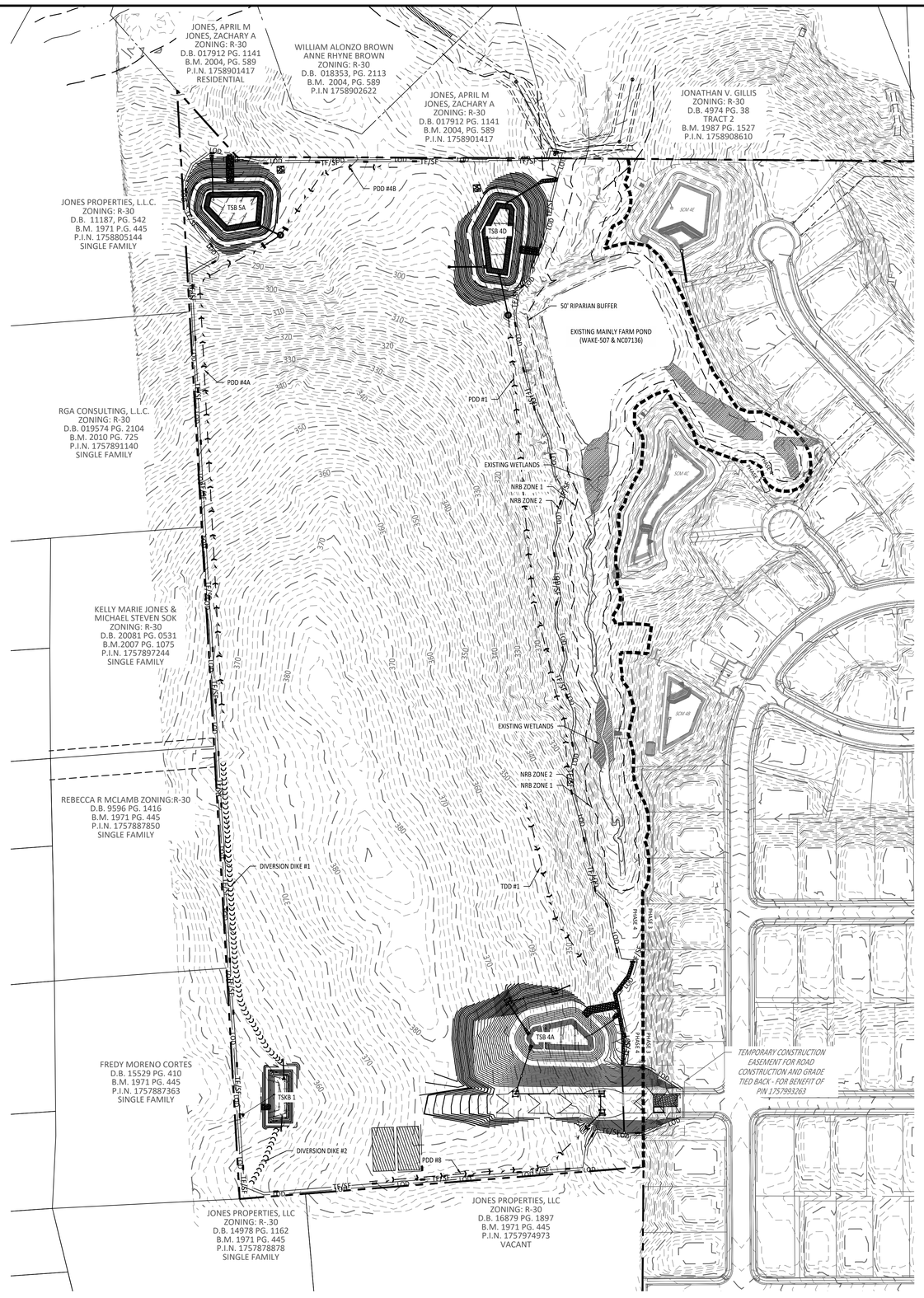
North Carolina 811 Call Before You Dig
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Civil_Working\Dwg\Phase 4\Sheet Files\[Sheet No. 1.0-1.2 Phase 4 Existing Conditions.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 8

EROSION CONTROL NOTES:

1. TOTAL LIMITS OF DISTURBANCE: 36.67 AC
2. CONTRACTOR SHALL STRICTLY CONFINE ALL GRADING, CLEARING, AND CONSTRUCTION ACTIVITIES WITHIN THE DESIGNATED LIMITS OF DISTURBANCE (LOD), AS SHOWN ON PLANS. NO GRADING EXCAVATION, STOCKPILING, OR EQUIPMENT ACCESS SHALL OCCUR OUTSIDE OF THESE LIMITS.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEARLY IDENTIFYING AND MAINTAINING THE LOD IN THE FIELD (E.G. STALKING, FLAGGING, OR FENCING) PRIOR TO THE START OF WORK. ANY DISTURBANCE OUTSIDE THE APPROVED LIMITS SHALL BE IMMEDIATELY REPORT AND MAY REQUIRE REMEDIATION AT THE CONTRACTOR'S EXPENSE.
4. NO IMPACT TO JURISDICTIONAL WETLANDS, STREAMS, OR ASSOCIATED BUFFERS ARE PROPOSED AS PART OF THIS PROJECT. ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO UPLAND AREAS AS SHOWN ON THE APPROVED PLANS.
5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ENCROACHMENT, DISTURBANCE, OR DEGRADATION OF ANY ADJACENT WETLANDS, STREAMS, OR BUFFERS. ANY UNAUTHORIZED IMPACTS SHALL BE IMMEDIATELY REPORTED AND MAY REQUIRE RESTORATION AT THE CONTRACTOR'S EXPENSE.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL STANDARDS, SPECIFICATIONS, AND DETAILS.
7. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF SITE.
8. REFER TO PHASED EROSION AND SEDIMENT CONTROL PLANS TEMPORARY EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCING LAND DISTURBANCE OR CLEARING CONSTRUCTION ACTIVITIES.
9. ALL EROSION AND SEDIMENT CONTROL PRACTICES TO BE INSPECTED WEEKLY AND AFTER EVERY RAINFALL EVENT, AS DIRECTED BY LOCAL AUTHORITIES. REPAIRS WILL BE MADE IMMEDIATELY AS NEEDED.
10. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING SELF-INSPECTIONS AFTER EACH PHASE OF TE PROJECT UNTIL AFTER FINAL STORMWATER/SITE STABILIZATION INSPECTION AND THE SITE HAS BEEN APPROVED AS STABILIZED. PLEASE KEEP RECORDS AVAILABLE WITHIN THE PERMIT BOX AT CONSTRUCTION ENTRANCE.
11. ALL EROSION AND SEDIMENT CONTROL MEASURES, FENCING, AND PROTECTIONS ARE TO REMAIN IN PLACE UNTIL AFTER FINAL INSPECTION AND APPROVAL.
12. TREE PROTECTION FENCE SHALL BE MAINTAINED ON SITE UNTIL ALL SITE WORK IS COMPLETE AND THE FINAL SITE INSPECTION HAS BEEN SCHEDULED. FENCING SHALL BE IMMEDIATELY REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE SITE.
13. ALL 3:1 OR GREATER SLOPES ARE TO BE STABILIZED WITH SEED AND A MINIMUM OF JUTE NETTING.
14. ANY DEWATERING OF STORM OR UTILITY TRENCHES IS TO BE DONE THROUGH A SILT BAG.
15. SOIL AND OTHER ERODABLE MATERIALS SHALL ONLY BE TEMPORARILY STOCKPILED ON SITE WITHIN THE CONSTRUCTION LIMITS. THESE ITEMS SHOULD BE PROTECTED BY SEDIMENT AND EROSION CONTROL MEASURES.
16. STOCKPILES TO BE STABILIZED AS REQUIRED AND INDICATED IN THE SLOPE AND SURFACE STABILIZATION NOTES ON THE EROSION CONTROL PLAN.
17. ROADSIDE DITCHES AND CHANNELS SHALL BE STABILIZED DAILY UNTIL PERMANENT GROUND COVER HAS BEEN ESTABLISHED.
18. MAXIMUM SLOPES SHALL NOTE EXCEED 2:1 SLOPE. 2:1 SLOPES SHOULD E IMMEDIATELY STABILIZED WITH A ROLLED BLANKET PRODUCT.
19. IF THE CONSTRUCTION ENTRANCE IS FOUND INSUFFICIENT TO PREVENT SEDIMENT FROM TRACKING ONTO THE ROAD, THE CONTRACTOR SHALL UTILIZE A TIRE WASH STATION.
20. STREETS LOCATED ALONG PROJECT FRONTAGE SHALL BE KEPT CLEAN AT ALL TIMES.



DISTURBED AREA

SF — SILT FENCE

TF — TREE FENCE/LOD

TF/SF EXHIBIT N.T.S

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
CCCC	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)

1 inch =120

AMERICAN Engineering

American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900

CHECKED BY: RC

DRAWN BY: DH, BG, GE, LL

DATE: MAY 1, 2026

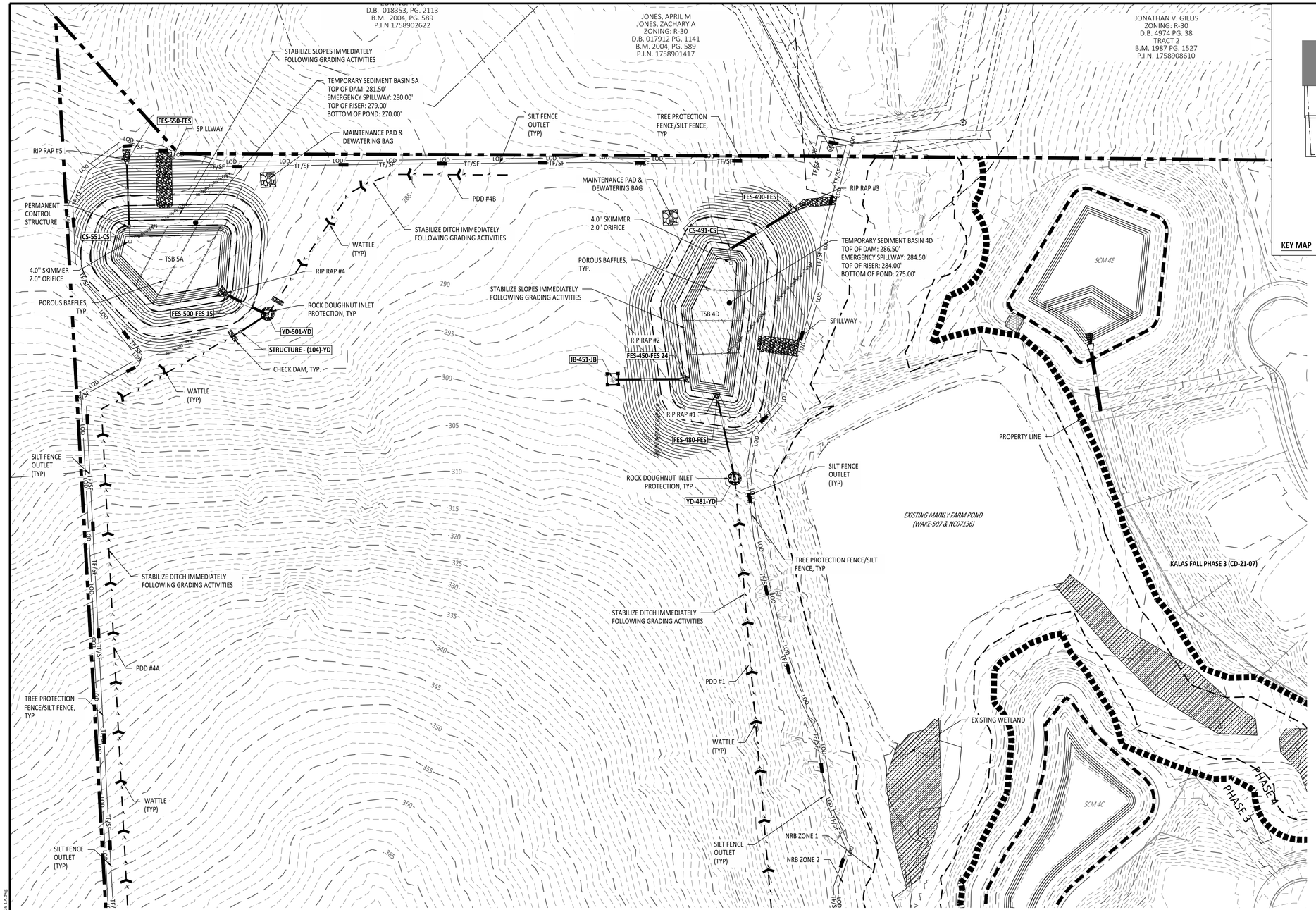
SHEET TITLE:
STAGE 1 EROSION CONTROL OVERALL

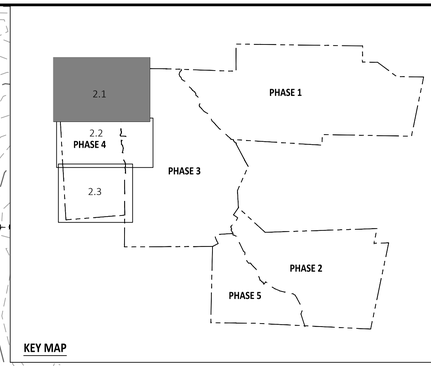
SHEET NO.:
C2.0

North Carolina 811

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Civil\1_Working Dwg\Draw A3\Sheet Files\2.0 EROSION CONTROL Stage 1 OVERALL.dwg





KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCG01
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

DISTURBED AREA
SF SILT FENCE
TF TREE FENCE/LOD

TF/SF EXHIBIT N.T.S

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

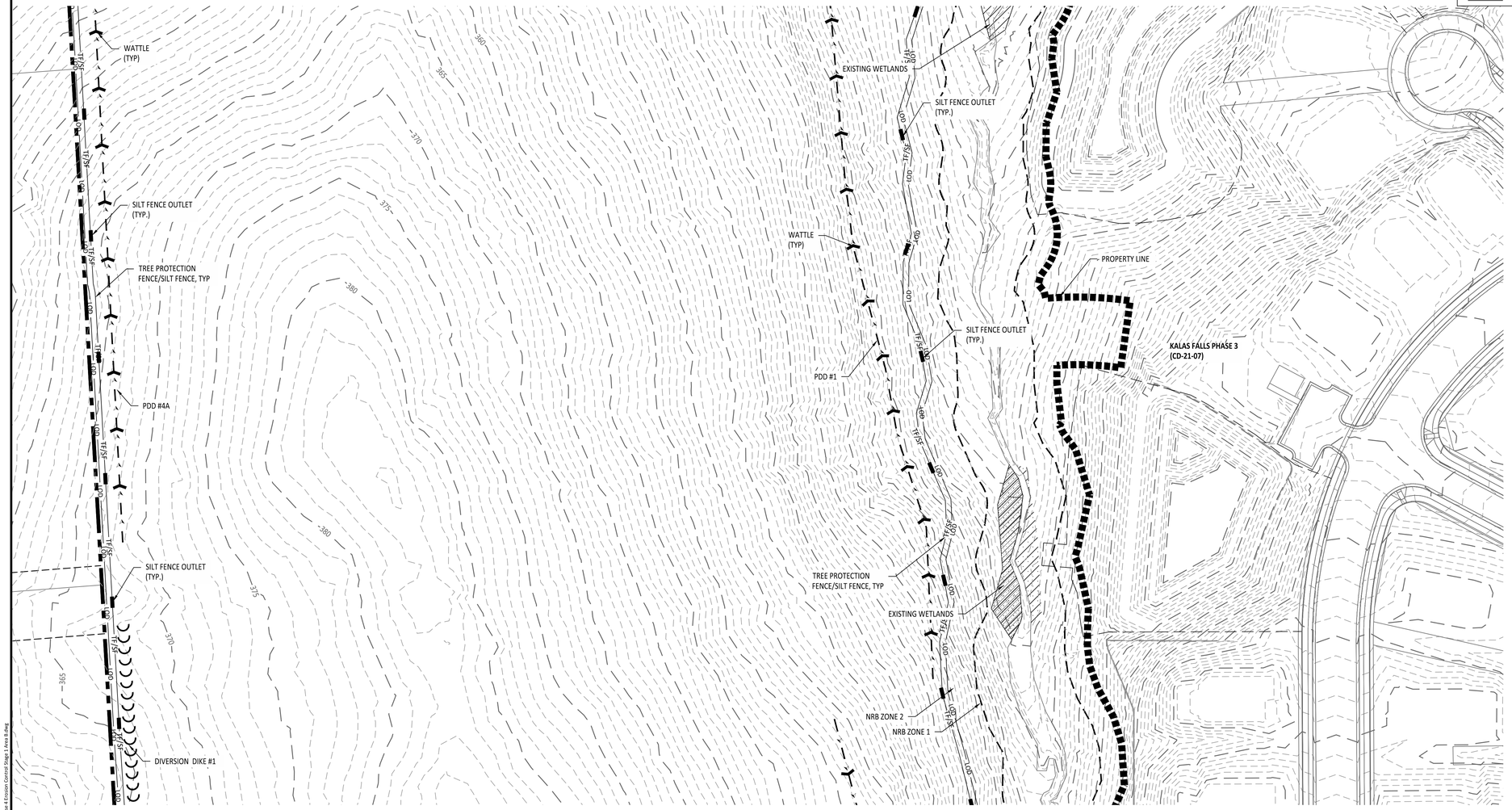
SHEET TITLE:
STAGE 1 EROSION CONTROL AREA A

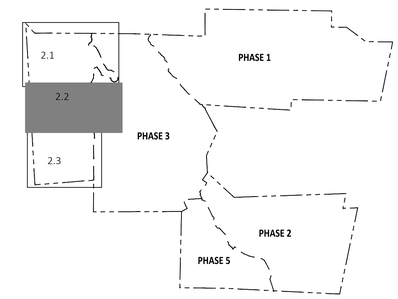
SHEET NO.:
C2.1

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Projects\Final_Working Dwgs\Phase 4\Sheet Files\Sheet No. 2.1 Phase 4 Erosion Control STAGE 1 A.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 10





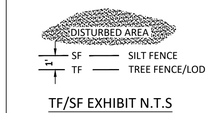
KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
CCCC	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50



TF/SF EXHIBIT N.T.S

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

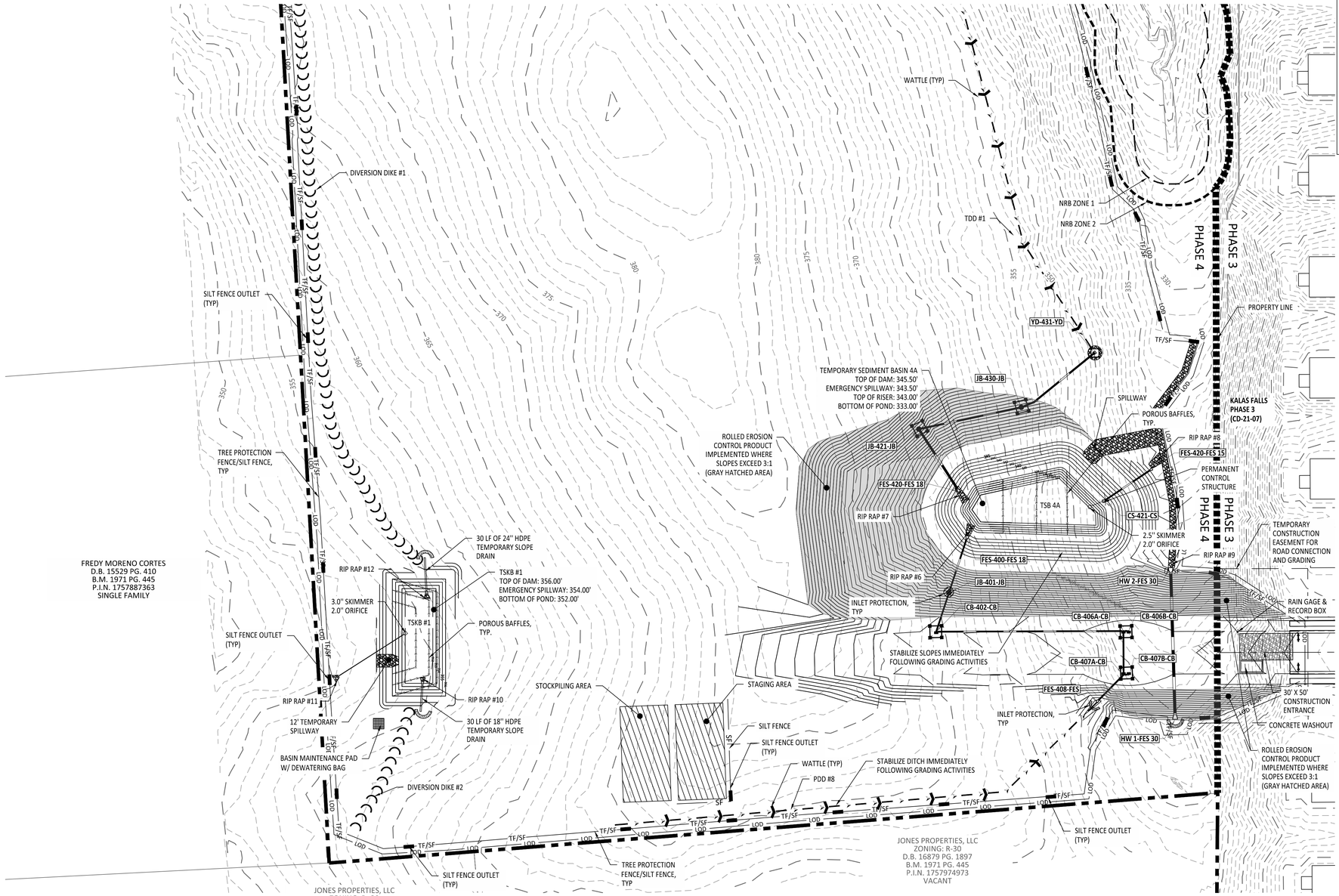
SHEET TITLE:
STAGE 1 EROSION CONTROL AREA B

SHEET NO.:
C2.2

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remotc Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 2.2 Phase 4 Erosion Control Stage 1 Area B.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 11

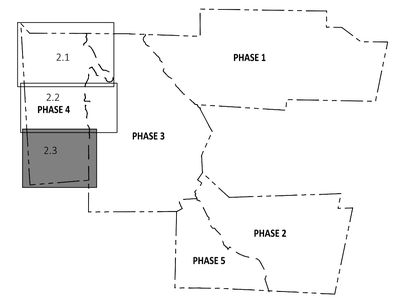


GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50



KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
STAGE 1 EROSION CONTROL AREA C

SHEET NO.:
C2.3

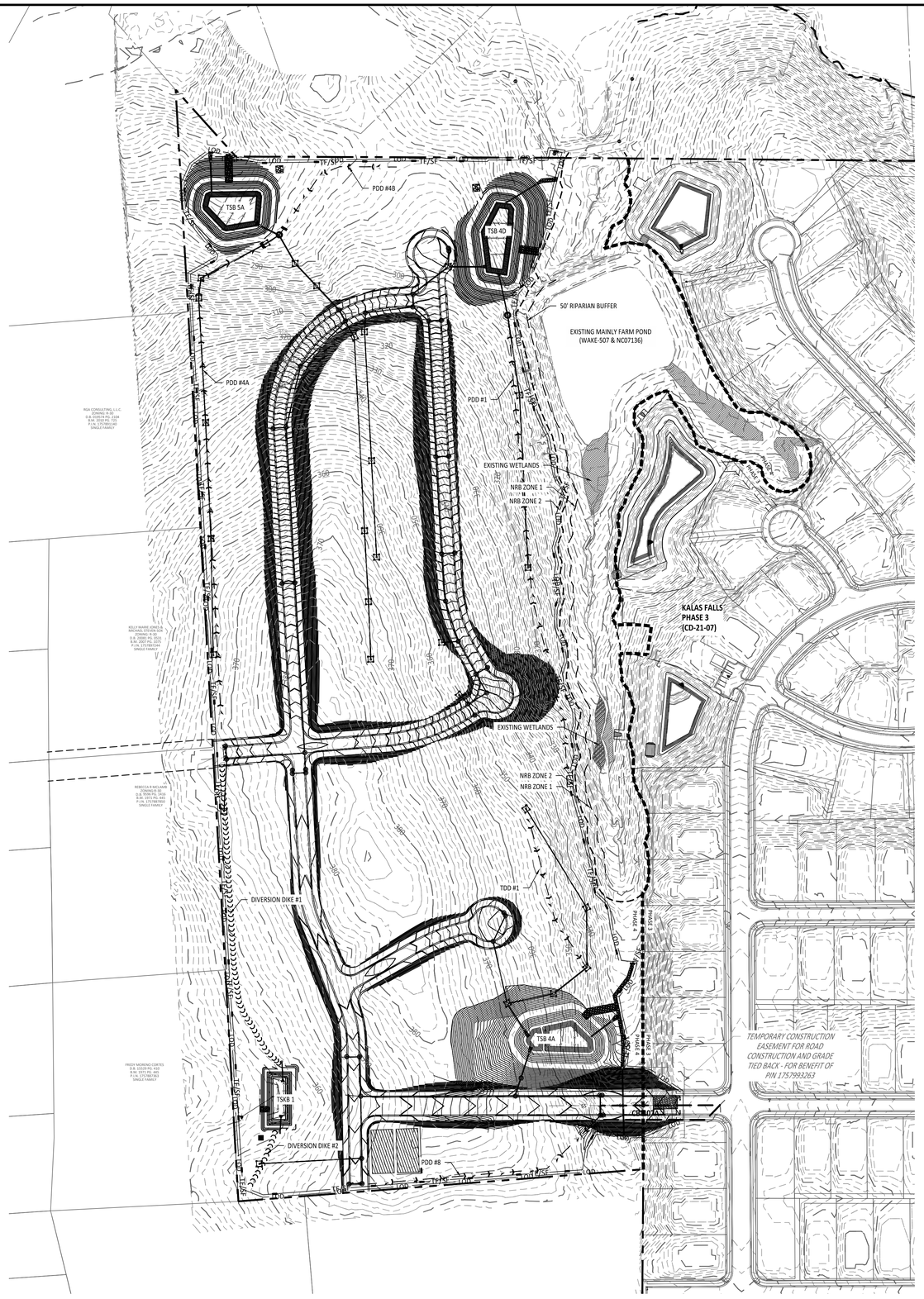
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

V1_CID-TBD_Kalas Phase 4.pdf · Page 12

Z:\Jobs\9900\Working Property\Final_Working Dwgs\Phase 4\Sheet Files\Sheet No. 3.3 Phase 4 Erosion Control Stage 1 Area C.dwg

EROSION CONTROL NOTES:

1. TOTAL LIMITS OF DISTURBANCE: 36.67 AC
2. CONTRACTOR SHALL STRICTLY CONFINE ALL GRADING, CLEARING, AND CONSTRUCTION ACTIVITIES WITHIN THE DESIGNATED LIMITS OF DISTURBANCE (LOD), AS SHOWN ON PLANS. NO GRADING EXCAVATION, STOCKPILING, OR EQUIPMENT ACCESS SHALL OCCUR OUTSIDE OF THESE LIMITS.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEARLY IDENTIFYING AND MAINTAINING THE LOD IN THE FIELD (E.G. STALKING, FLAGGING, OR FENCING) PRIOR TO THE START OF WORK. ANY DISTURBANCE OUTSIDE THE APPROVED LIMITS SHALL BE IMMEDIATELY REPORT AND MAY REQUIRE REMEDIATION AT THE CONTRACTOR'S EXPENSE.
4. NO IMPACT TO JURISDICTIONAL WETLANDS, STREAMS, OR ASSOCIATED BUFFERS ARE PROPOSED AS PART OF THIS PROJECT. ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO UPLAND AREAS AS SHOWN ON THE APPROVED PLANS.
5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ENCROACHMENT, DISTURBANCE, OR DEGRADATION OF ANY ADJACENT WETLANDS, STREAMS, OR BUFFERS. ANY UNAUTHORIZED IMPACTS SHALL BE IMMEDIATELY REPORTED AND MAY REQUIRE RESTORATION AT THE CONTRACTOR'S EXPENSE.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL STANDARDS, SPECIFICATIONS, AND DETAILS.
7. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF SITE.
8. REFER TO PHASED EROSION AND SEDIMENT CONTROL PLANS TEMPORARY EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCING LAND DISTURBANCE OR CLEARING CONSTRUCTION ACTIVITIES.
9. ALL EROSION AND SEDIMENT CONTROL PRACTICES TO BE INSPECTED WEEKLY AND AFTER EVERY RAINFALL EVENT, AS DIRECTED BY LOCAL AUTHORITIES. REPAIRS WILL BE MADE IMMEDIATELY AS NEEDED.
10. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING SELF-INSPECTIONS AFTER EACH PHASE OF TE PROJECT UNTIL AFTER FINAL STORMWATER/SITE STABILIZATION INSPECTION AND THE SITE HAS BEEN APPROVED AS STABILIZED. PLEASE KEEP RECORDS AVAILABLE WITHIN THE PERMIT BOX AT CONSTRUCTION ENTRANCE.
11. ALL EROSION AND SEDIMENT CONTROL MEASURES, FENCING, AND PROTECTIONS ARE TO REMAIN IN PLACE UNTIL AFTER FINAL INSPECTION AND APPROVAL.
12. TREE PROTECTION FENCE SHALL BE MAINTAINED ON SITE UNTIL ALL SITE WORK IS COMPLETE AND THE FINAL SITE INSPECTION HAS BEEN SCHEDULED. FENCING SHALL BE IMMEDIATELY REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE SITE.
13. ALL 3:1 OR GREATER SLOPES ARE TO BE STABILIZED WITH SEED AND A MINIMUM OF JUTE NETTING.
14. ANY DEWATERING OF STORM OR UTILITY TRENCHES IS TO BE DONE THROUGH A SILT BAG.
15. SOIL AND OTHER ERODABLE MATERIALS SHALL ONLY BE TEMPORARILY STOCKPILED ON SITE WITHIN THE CONSTRUCTION LIMITS. THESE ITEMS SHOULD BE PROTECTED BY SEDIMENT AND EROSION CONTROL MEASURES.
16. STOCKPILES TO BE STABILIZED AS REQUIRED AND INDICATED IN THE SLOPE AND SURFACE STABILIZATION NOTES ON THE EROSION CONTROL PLAN.
17. ROADSIDE DITCHES AND CHANNELS SHALL BE STABILIZED DAILY UNTIL PERMANENT GROUND COVER HAS BEEN ESTABLISHED.
18. MAXIMUM SLOPES SHALL NOTE EXCEED 2:1 SLOPE. 2:1 SLOPES SHOULD E IMMEDIATELY STABILIZED WITH A ROLLED BLANKET PRODUCT.
19. IF THE CONSTRUCTION ENTRANCE IS FOUND INSUFFICIENT TO PREVENT SEDIMENT FROM TRACKING ONTO THE ROAD, THE CONTRACTOR SHALL UTILIZE A TIRE WASH STATION.
20. STREETS LOCATED ALONG PROJECT FRONTAGE SHALL BE KEPT CLEAN AT ALL TIMES.



DISTURBED AREA
SF — SILT FENCE
TF — TREE FENCE/LOD

TF/SF EXHIBIT N.T.S

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE
120 0 60 120 240 480
(IN FEET)
1 inch = 120

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST P.A.
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL
SEAL 062383
ENGINEER
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
EROSION CONTROL STAGE 2 OVERALL

SHEET NO.:
C2.4

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Kalas_Working Dwg\Plan-4\Sheet Files\Sheet No. 3-4 Phase 4 Erosion Control Stage 2 Overall.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 13

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
CCCC	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

DISTURBED AREA
SF SILT FENCE
TF TREE FENCE/LOD
TF/SF EXHIBIT N.T.S

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

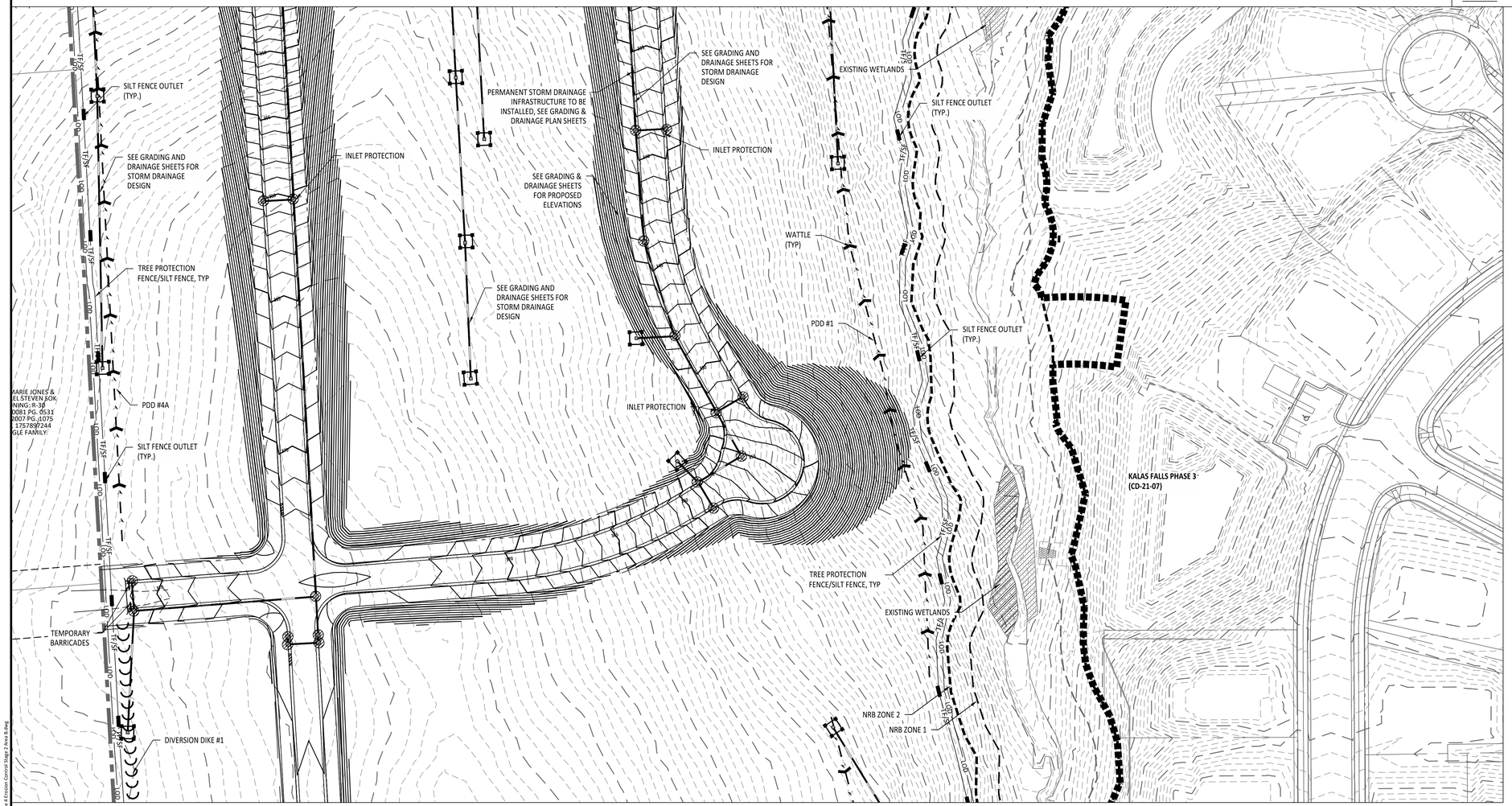
KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

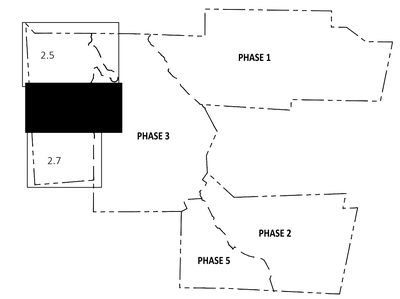
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
STAGE 2 EROSION CONTROL AREA A

SHEET NO.:
C2.5

Z:\Jobs\9900\Workflow Process\Land_Working Dwgs\Phase 4\Sheet Files\Sheet No. 2.5 Phase 4 Erosion Control Stage 2 Area A.dwg





KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60

TF/SF EXHIBIT N.T.S

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

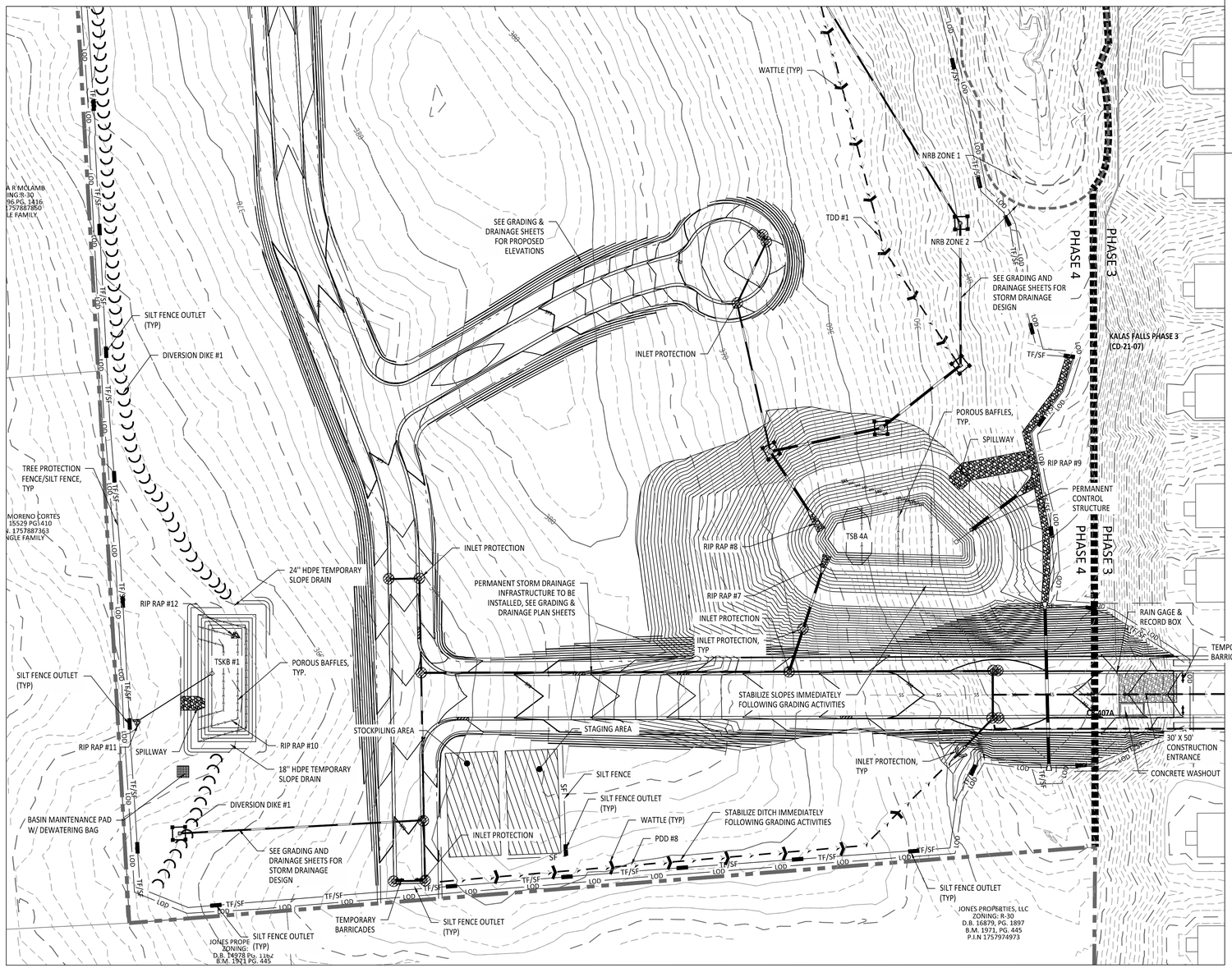
KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

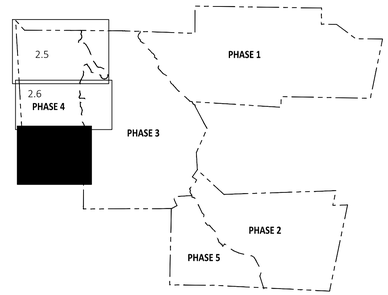
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
STAGE 2 EROSION CONTROL AREA B

SHEET NO.:
C2.6

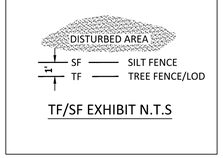
Z:\Jobs\9900\Kenton Property\Eng_Working Dwg\Phase 4\Sheet Files\Sheet No. 2.6 Phase 4 Erosion Control Stage 2 Area B.dwg





KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16



TF/SF EXHIBIT N.T.S

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
STAGE 2 EROSION CONTROL AREA C

SHEET NO.:
C2.7

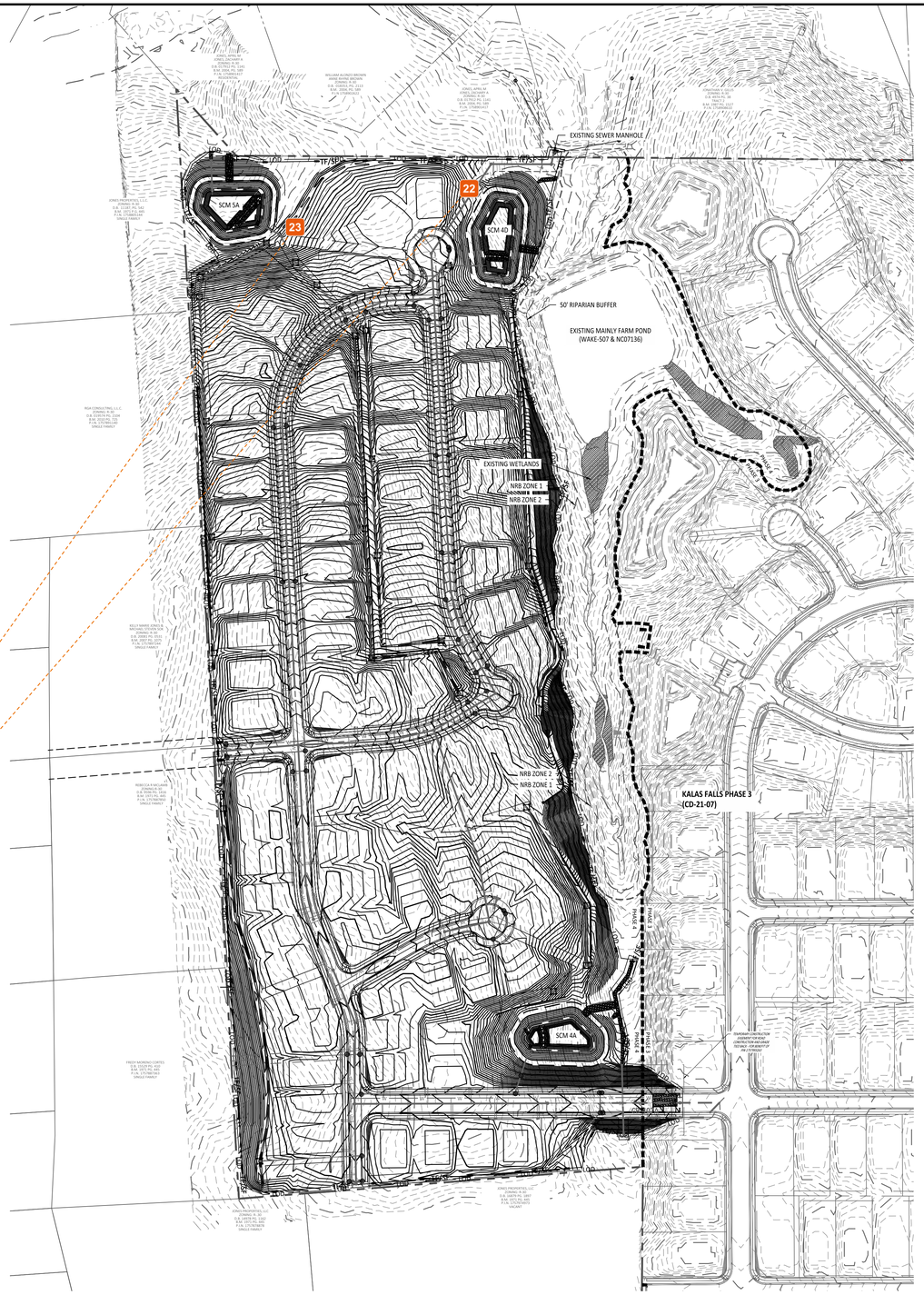
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Walden Property\Civil\CL_Working Dwgs\Phase 4\Sheet Files\Sheet No. 2.7 Phase 4 Erosion Control Stage 2 Area C.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 16

EROSION CONTROL NOTES:

1. TOTAL LIMITS OF DISTURBANCE: 36.67 AC
2. CONTRACTOR SHALL STRICTLY CONFINE ALL GRADING, CLEARING, AND CONSTRUCTION ACTIVITIES WITHIN THE DESIGNATED LIMITS OF DISTURBANCE (LOD), AS SHOWN ON PLANS. NO GRADING EXCAVATION, STOCKPILING, OR EQUIPMENT ACCESS SHALL OCCUR OUTSIDE OF THESE LIMITS.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEARLY IDENTIFYING AND MAINTAINING THE LOD IN THE FIELD (E.G. STALKING, FLAGGING, OR FENCING) PRIOR TO THE START OF WORK. ANY DISTURBANCE OUTSIDE THE APPROVED LIMITS SHALL BE IMMEDIATELY REPORT AND MAY REQUIRE REMEDIATION AT THE CONTRACTOR'S EXPENSE.
4. NO IMPACT TO JURISDICTIONAL WETLANDS, STREAMS, OR ASSOCIATED BUFFERS ARE PROPOSED AS PART OF THIS PROJECT. ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO UPLAND AREAS AS SHOWN ON THE APPROVED PLANS.
5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ENCROACHMENT, DISTURBANCE, OR DEGRADATION OF ANY ADJACENT WETLANDS, STREAMS, OR BUFFERS. ANY UNAUTHORIZED IMPACTS SHALL BE IMMEDIATELY REPORTED AND MAY REQUIRE RESTORATION AT THE CONTRACTOR'S EXPENSE.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL STANDARDS, SPECIFICATIONS, AND DETAILS.
7. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF SITE.
8. REFER TO PHASED EROSION AND SEDIMENT CONTROL PLANS TEMPORARY EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCING LAND DISTURBANCE OR CLEARING CONSTRUCTION ACTIVITIES.
9. ALL EROSION AND SEDIMENT CONTROL PRACTICES TO BE INSPECTED WEEKLY AND AFTER EVERY RAINFALL EVENT, AS DIRECTED BY LOCAL AUTHORITIES. REPAIRS WILL BE MADE IMMEDIATELY AS NEEDED.
10. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING SELF-INSPECTIONS AFTER EACH PHASE OF TE PROJECT UNTIL AFTER FINAL STORMWATER/SITE STABILIZATION INSPECTION AND THE SITE HAS BEEN APPROVED AS STABILIZED. PLEASE KEEP RECORDS AVAILABLE WITHIN THE PERMIT BOX AT CONSTRUCTION ENTRANCE.
11. ALL EROSION AND SEDIMENT CONTROL MEASURES, FENCING, AND PROTECTIONS ARE TO REMAIN IN PLACE UNTIL AFTER FINAL INSPECTION AND APPROVAL.
12. TREE PROTECTION FENCE SHALL BE MAINTAINED ON SITE UNTIL ALL SITE WORK IS COMPLETE AND THE FINAL SITE INSPECTION HAS BEEN SCHEDULED. FENCING SHALL BE IMMEDIATELY REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE SITE.
13. ALL 3:1 OR GREATER SLOPES ARE TO BE STABILIZED WITH SEED AND A MINIMUM OF JUTE NETTING.
14. ANY DEWATERING OF STORM OR UTILITY TRENCHES IS TO BE DONE THROUGH A SILT BAG.
15. SOIL AND OTHER ERODABLE MATERIALS SHALL ONLY BE TEMPORARILY STOCKPILED ON SITE WITHIN THE CONSTRUCTION LIMITS. THESE ITEMS SHOULD BE PROTECTED BY SEDIMENT AND EROSION CONTROL MEASURES.
16. STOCKPILES TO BE STABILIZED AS REQUIRED AND INDICATED IN THE SLOPE AND SURFACE STABILIZATION NOTES ON THE EROSION CONTROL PLAN.
17. ROADSIDE DITCHES AND CHANNELS SHALL BE STABILIZED DAILY UNTIL PERMANENT GROUND COVER HAS BEEN ESTABLISHED.
18. MAXIMUM SLOPES SHALL NOTE EXCEED 2:1 SLOPE. 2:1 SLOPES SHOULD E IMMEDIATELY STABILIZED WITH A ROLLED BLANKET PRODUCT.
19. IF THE CONSTRUCTION ENTRANCE IS FOUND INSUFFICIENT TO PREVENT SEDIMENT FROM TRACKING ONTO THE ROAD, THE CONTRACTOR SHALL UTILIZE A TIRE WASH STATION.
20. STREETS LOCATED ALONG PROJECT FRONTAGE SHALL BE KEPT CLEAN AT ALL TIMES.



EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch =120

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
EROSION CONTROL STAGE 3 OVERALL

SHEET NO.:
C2.8

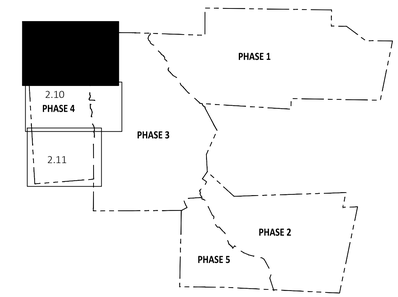
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Worklist Projects\Permit_Drawings\Phase 4\Sheet Files\[Sheet No. 2.8 Phase 4 Erosion Control Stage 3 Overall.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 17

22 **Stephen Wensman**
Confirm access slope

23 **Stephen Wensman**
Confirm access slope



KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

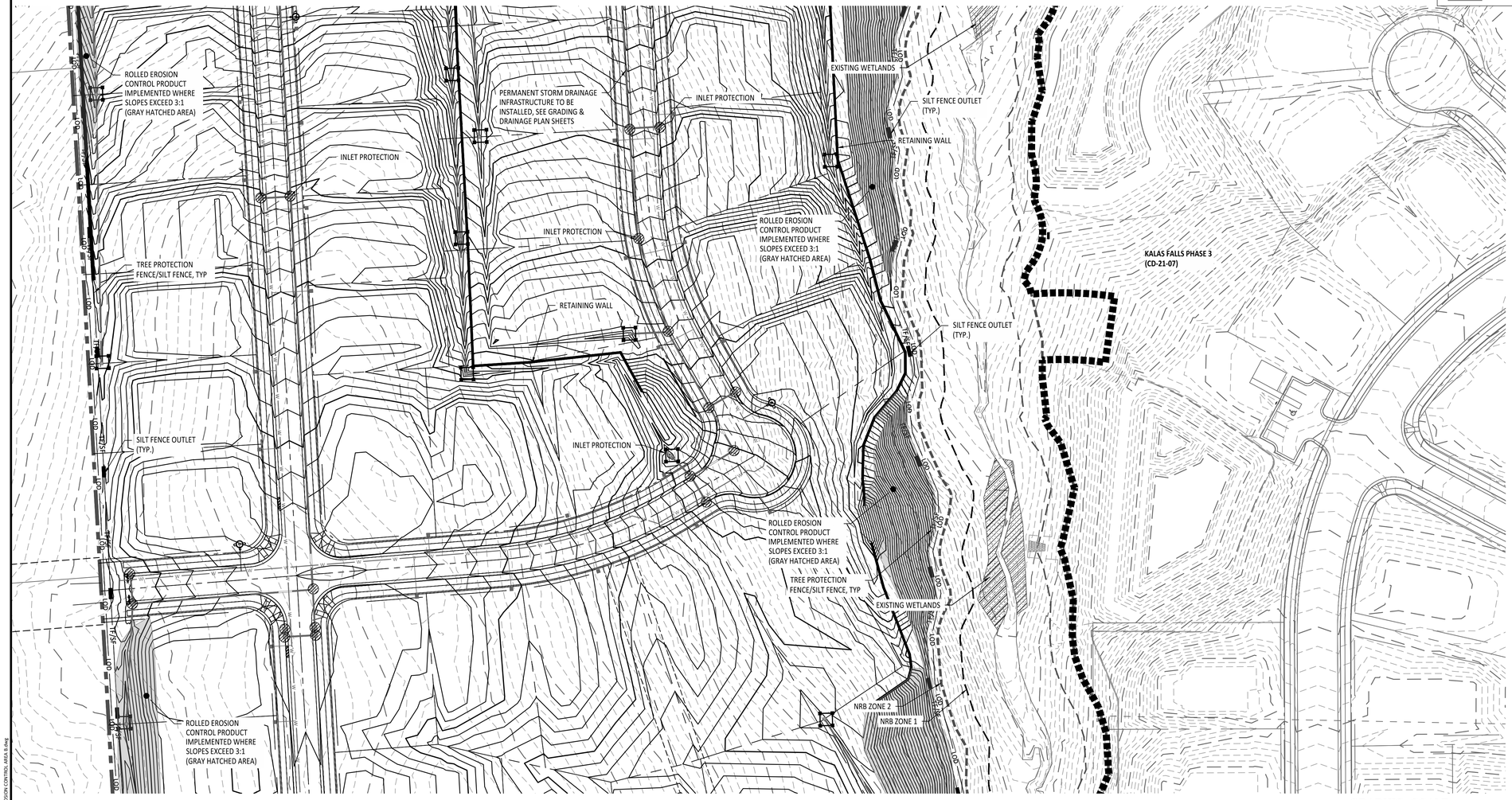
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

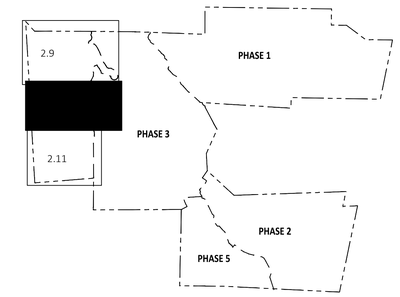
SHEET TITLE:
STAGE 3 EROSION CONTROL AREA A

SHEET NO.:
C2.9

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Written Property\Engineering\Working Dwgs\Phase 4\Sheet Files\L2\ STAGE 3 EROSION CONTROL AREA A.dwg





KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
CCCC	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

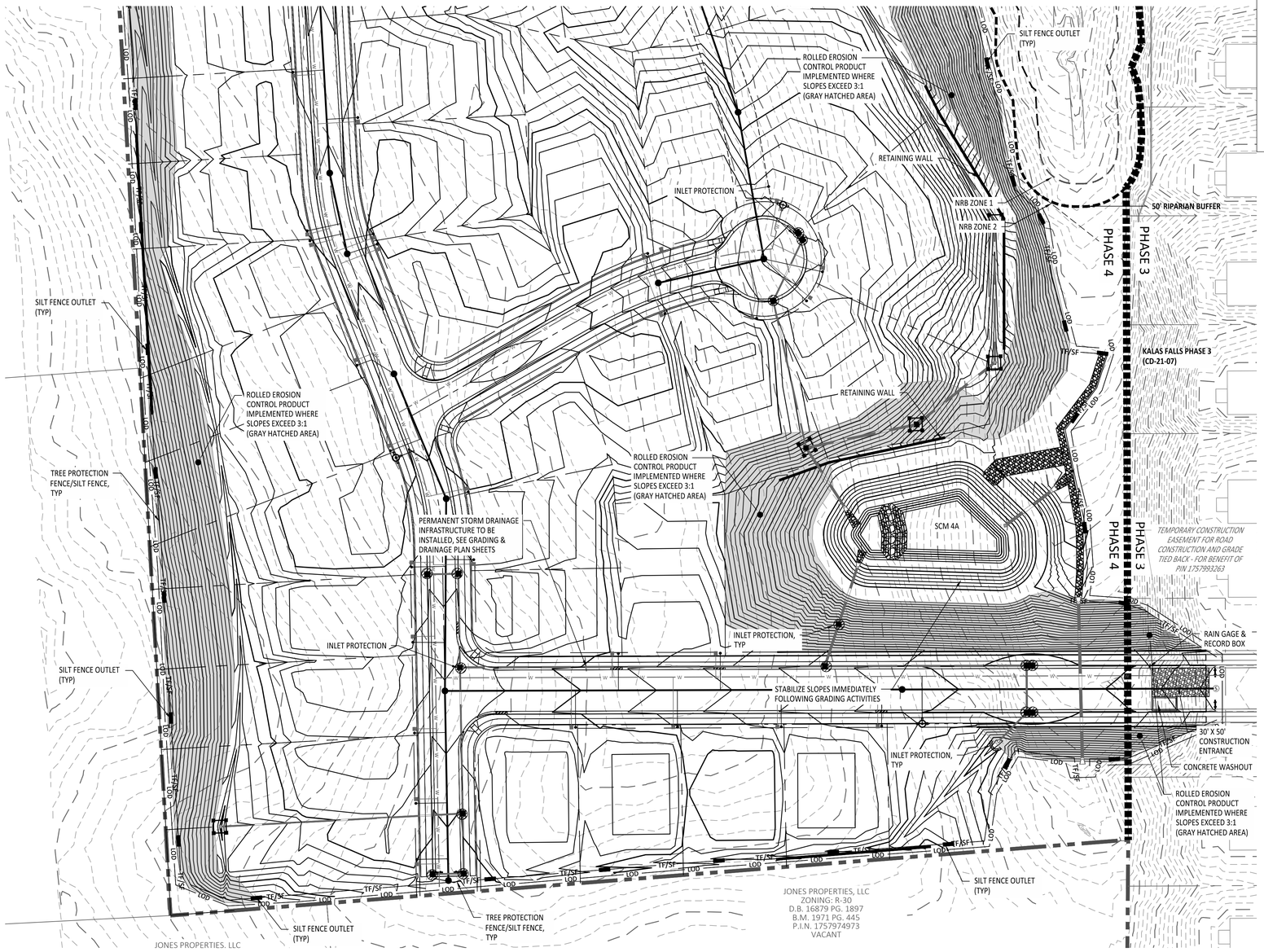
SHEET TITLE:
STAGE 3 EROSION CONTROL AREA B

SHEET NO.:
C2.10

North Carolina 811 811 or 1-800-632-4949
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Project\Civil_Working Dwgs\Phase 4\Sheet Files\3.10 STAGE 3 EROSION CONTROL AREA B.dwg

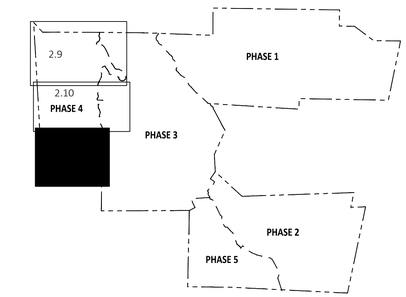
V1_CID-TBD_Kalas Phase 4.pdf · Page 19



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50



KEY MAP

EROSION CONTROL LEGEND		SHEET	DETAIL
TF/SF	SILT / TREE PROTECTION FENCE	CD1	9
SF	SILT FENCE	CD3	19
LOD	LIMITS OF DISTURBANCE	N/A	N/A
	TEMPORARY DIVERSION DITCH	CD1	6
CCCC	DIVERSION DIKE	CD3	24
	SILT FENCE OUTLET	CD3	22
	WATTLE	CD1	1
	GRAVEL INLET PROTECTION	CD1	4
	STANDARD PIPE INLET PROTECTION	CD2	11
	ROCK DOUGHNUT INLET PROTECTION	CD3	25
	SILT BAG	CD2	13
	CHECK DAM	CD1	2
	BASIN MAINTENANCE PAD	CD1	3
	RIPRAP DISSIPATOR	CD1	5
	SKIMMER	CD2&3	3&20
	SEDIMENT BASIN	CD1	3
	CONSTRUCTION ENTRANCE	CD1	8
	CONCRETE WASHOUT	CD5	NCGO1
	EROSION CONTROL BLANKET	CD4	
	STOCK PILE	CD2	16

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

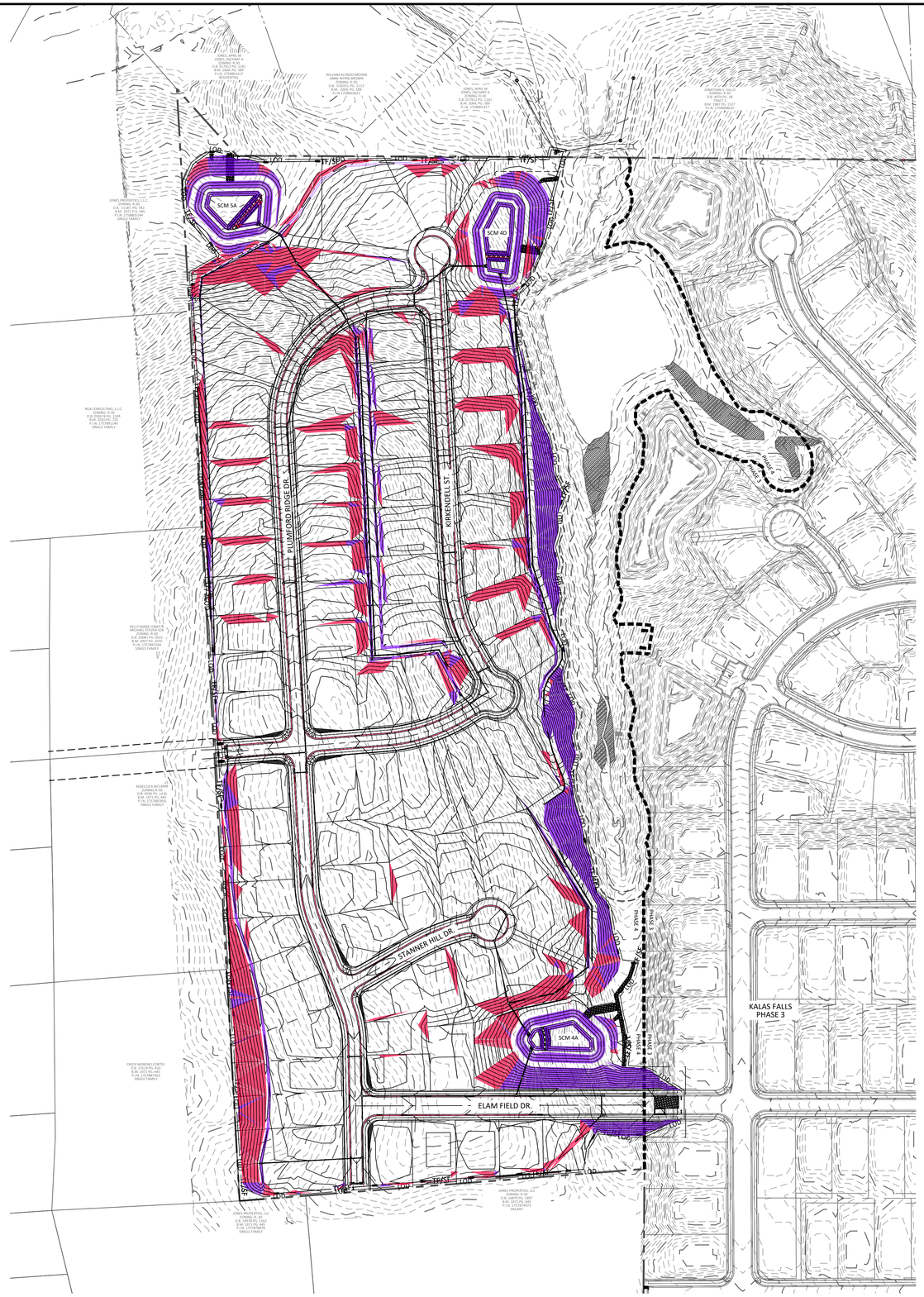
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
STAGE 3 EROSION CONTROL AREA C

SHEET NO.:
C2.11

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Projects\Kalas_Working Dwgs\Phase 4\Sheet Files\2.11 STAGE 3 EROSION CONTROL AREA C.dwg



Stabilization Area	Required Ground Stabilization Timeframes: Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
1	(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
2	(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
3	(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.

NDPES DOCUMENTATION NOTES

1. THIS PAGE IS SUBMITTED TO COMPLY WITH THE NPDES GENERAL STORMWATER PERMIT NCG010000.
2. THIS PAGE CAN BE APPROVED BY THE TOWN PURSUANT TO NPDES GENERAL STORMWATER PERMIT NCG010000 ONLY.
3. THIS PAGE OF THE APPROVED PLANS IS ENFORCEABLE EXCLUSIVELY PURSUANT TO NPDES GENERAL STORMWATER PERMIT NCG010000.
4. THE TOWN IS NOT AUTHORIZED TO ENFORCE THIS PAGE OF THE PLANS AND IT IS NOT A PART OF THE APPROVED PLANS FOR PURPOSES OF ENFORCEMENT ACTION UNDER THE CITY CODE.

NPDES STABILIZATION LEGEND	
	NPDES STABILIZATION AREA 1
	NPDES STABILIZATION AREA 2
	NPDES STABILIZATION AREA 3

SEEDBED PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6-INCH DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW *).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED, RE-ESTABLISHED FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

*APPLY: AGRICULTURAL LIMESTONE - 2 TONS/ACRE (3 TONS/ACRE IN CLAY SOILS)
FERTILIZER - 1,000 LB/ACRE - 10-10-10
SUPERPHOSPHATE - 500 LB/ACRE - 20% ANALYSIS
MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR - ASPHALT EMULSION @ 300 GALS/ACRE

SEEDING SCHEDULE

SHOULDERS, SIDE DITCHES, SLOPES (Maximum 3:1)

Date	Type*	Planting Rate
Aug 15 - Nov 1	Tall Fescue or Hard Fescue	300 lb./acre
Nov 1 - Mar 1	Tall Fescue and Abriuzzi Rye or Annual Rye	300 lb./acre
Mar 1 - Apr 15	Tall Fescue or Hard Fescue	300 lb./acre
Apr 15 - June 30	Hulled common Bermuda grass, Weeping Love Grass	25 lb./acre
July 15 - Aug 15	Tall Fescue and ***Browntop Millet ***or Sorghum-Sudan Hybrids	35 lb./acre

SHOULDERS, SIDE DITCHES, SLOPES Slopes (3:1 and 2:1) (not mowed)

Date	Type*	Planting Rate
Mar 1 - Apr 15	Add Tall Fescue or	120 lb./acre
Mar 1 - June 30	Add Weeping Love Grass or	10 lb./acre
Mar 1 - June 30	Add Hulled Common Bermuda grass	25 lb./acre
June 1 - Sept 1	***Tall Fescue and ***Browntop Millet ***or Sorghum-Sudan Hybrids	120 lb./acre 35 lb./acre 30 lb./acre
Sept 1 - Mar 1	Tall Fescue Add Abruzzi Rye or Annual Rye	120 lb./acre 25 lb./acre

NOTES:
Consult Erosion Control Officer or NRCS for additional alternatives for vegetating denuded areas. The above vegetation rates are those which do well under local conditions; other seeding rate combinations are possible.
***Temporary - Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12 inches in height before mowing to keep fescue from being shaded out.
*Bahia grass shall not be used in City maintained areas.

GRAPHIC SCALE
120 0 60 120 240 480
(IN FEET)
1 inch =120

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

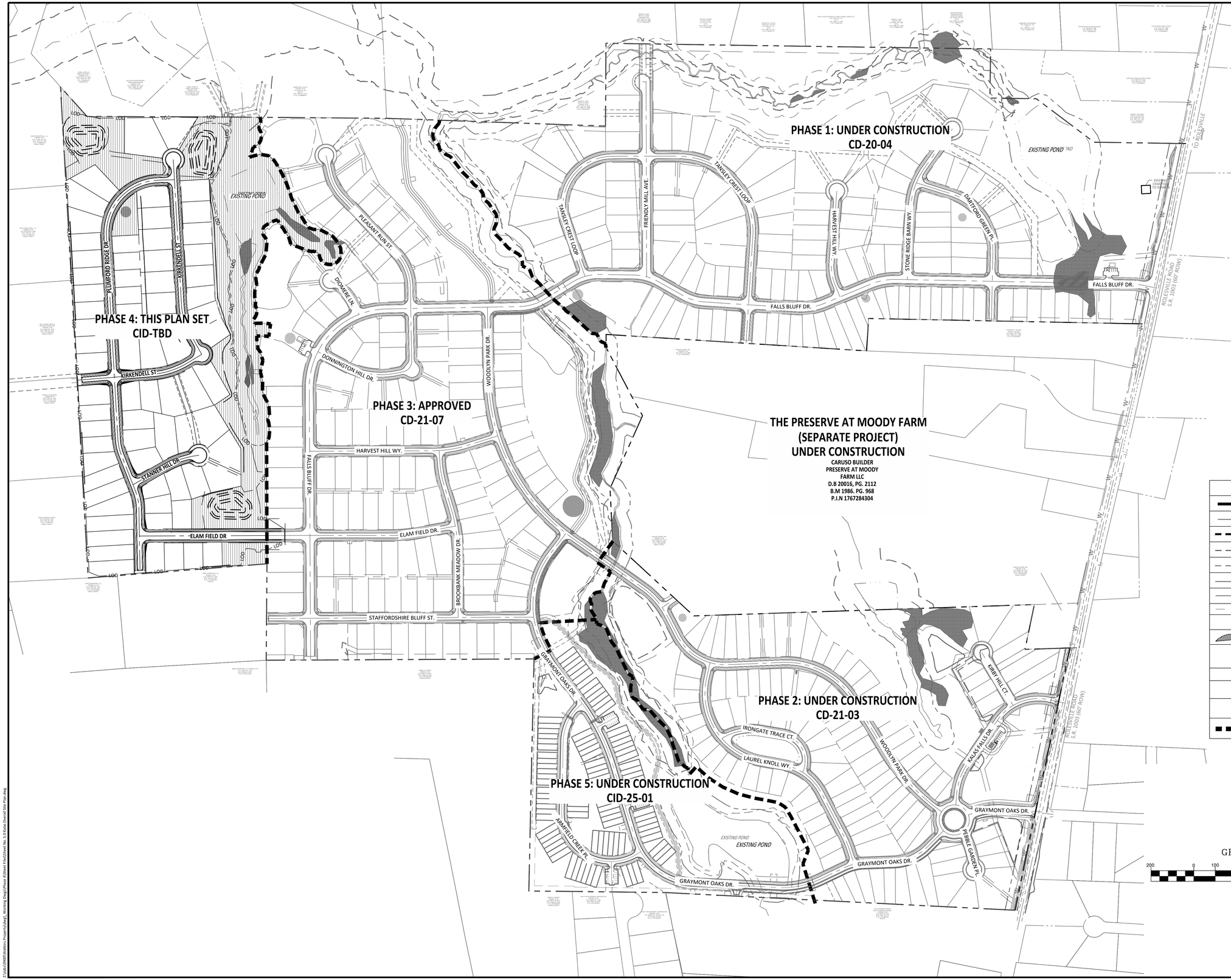
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
NPDES

SHEET NO.:
C2.12

Z:\Jobs\9900\Working Property\Proj_Working Dwgs\Phase 4\Sheet Files\Sheet No. 2.12 Phase 4 NPDES.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 21



SITE LEGEND	
	EXISTING PROJECT BOUNDARY
	PROPOSED LOT LINE
	100 YEAR FLOOD EASEMENT
	BUILDING RESTRICTION LINE
	PROPOSED LOT SETBACK
	PROPOSED ROW
	PROPOSED CENTERLINE
	PROPOSED UTILITY EASEMENT
	PROPOSED HANDICAP RAMPS
	PROPOSED SIGHT TRIANGLE
	TOT LOT
	POCKET PARK
	PUBLIC ROADSIDE TRAIL
	EXISTING WETLANDS
	PROPOSED PHASELINE

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch =200

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

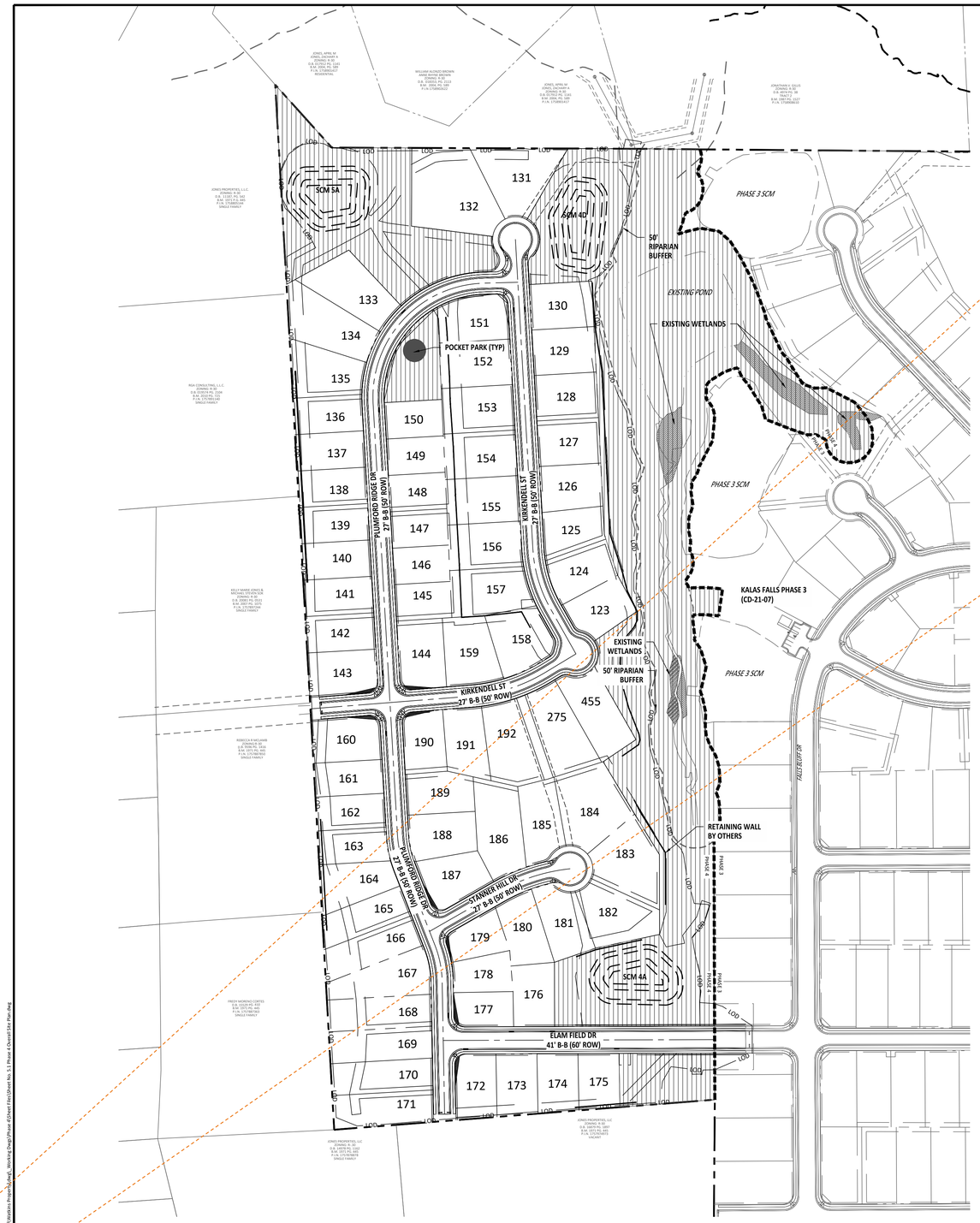
JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
KALAS
OVERALL SITE
PLAN

SHEET NO.:
C3.0

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

J:\Jobs\9900\Workbook Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 5.0 Kalas Overall Site Plan.dwg



GENERAL NOTE:

1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCROACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
2. BACK OF CURB RADIUS AT INTERSECTIONS:
   - 2.1. RESIDENTIAL-RESIDENTIAL- 28'
   - 2.2. RESIDENTIAL-COLLECTOR- 30'
   - 2.3. COLLECTOR-COLLECTOR- 30'
   - 2.4. ENTRANCE AT CUL-DE-SAC- 32.5
   - 2.5. ENTRY ROADS-ROLESVILLE RD.- 35'
3. IF HANDICAP RAMP LOCATIONS CONFLICT WITH DRIVEWAY LOCATION PLEASE SEE THIS SHEET FOR STANDARD DETAIL MODIFIED DRIVEWAY DETAIL

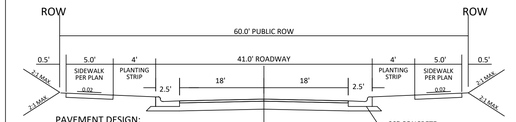
LEGEND

PROPERTY LINE	
RIGHT-OF-WAY	
ROAD CENTERLINE	
PROPERTY SETBACKS	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
OPEN SPACE	
EXISTING WETLANDS	
10' CURB TRANSITION	

SINGLE FAMILY SETBACK TABLE

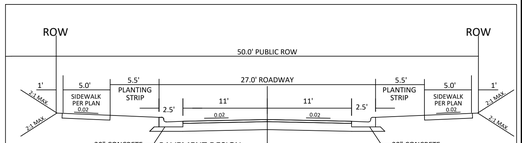
	50'-59'	60'-69'	70'-79'	80'-100'	101'+
FRONT	20'	25'	25'	25'	25'
REAR	20'	25'	25'	25'	30'
SIDE	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	15'	18'
MINIMUM LOT SIZE	6,000 SF	6,600 SF	8,400 SF	10,400 SF	14,000 SF

* AGGREGATE 12' (MINIMUM 5')
** AGGREGATE 10' (MINIMUM 3')



NOTE:
1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.
2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

41' B-B ON A 60' R/W
TYPICAL SECTION



NOTE:
1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.
2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

27' B-B ON A 50' R/W
TYPICAL SECTION

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch =120

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 062383 ROMAN S. COOK

AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
PHASE 4
OVERALL SITE
PLAN

SHEET NO.:
C3.1

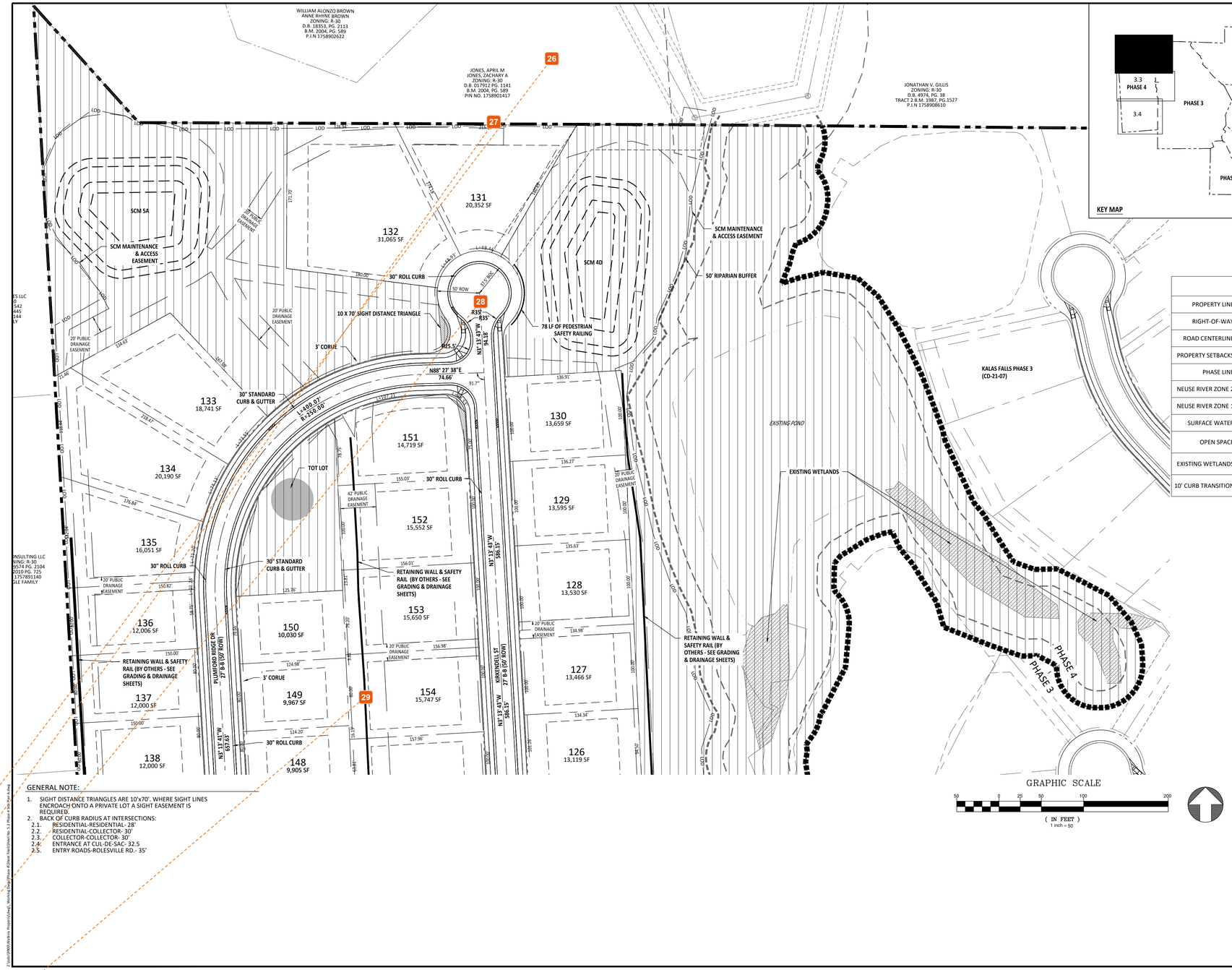
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\JOB\9900\Working Property\Revit_ Working Dwgs\Phase 4\Sheet Files\Sheet No. 5.1 Phase 4 Overall Site Plan.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 23

24 **Stephen Wolf**
** No fire service issues with Kalas Falls Phase 4.

25 **Michele Raby**
REATINING WALLS REQUIRE ADDRESSES. PLEASE ADD A RETAINING WALL IDENTIFICATION TABLE.



GENERAL NOTE:

1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCROACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
2. BACK OF CURB RADIUS AT INTERSECTIONS:
   - 2.1. RESIDENTIAL-RESIDENTIAL- 28'
   - 2.2. RESIDENTIAL-COLLECTOR- 30'
   - 2.3. COLLECTOR-COLLECTOR- 30'
   - 2.4. ENTRANCE AT CUL-DE-SAC- 32.5
   - 2.5. ENTRY ROADS-ROLESVILLE RD.- 35'

AMERICAN Engineering
American Engineering Associates • Southeast, P.A.
4020 Westchase Boulevard, Suite 400
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE: SITE PLAN AREA A

SHEET NO.: C3.2

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

26 Meredith Gruber
Check accuracy of property owners; the Jones' are three owners back.

27 Jacqueline Thompson
Please label all buffers and setbacks throughout the site plan

28 Stephen Wensman
Confirm this meets cul-de-sac radius requirements for the Fire Marshal

29 Stephen Wensman
Confirm that the HOA is responsible for this wall

GENERAL NOTE:

1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCROACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
2. BACK OF CURB RADIUS AT INTERSECTIONS:
   - 2.1. RESIDENTIAL-RESIDENTIAL- 28'
   - 2.2. RESIDENTIAL-COLLECTOR- 30'
   - 2.3. COLLECTOR-COLLECTOR- 30'
   - 2.4. ENTRANCE AT CUL-DE-SAC- 32.5
   - 2.5. ENTRY ROADS-ROLESVILLE RD.- 35'

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
SITE PLAN AREA B

SHEET NO.:
C3.3

North Carolina 811 811.com
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Civil_Working\Dwgs\Phase 4\Sheet Files\Sheet No. 5.3 Phase 4 Site Plan B.dwg

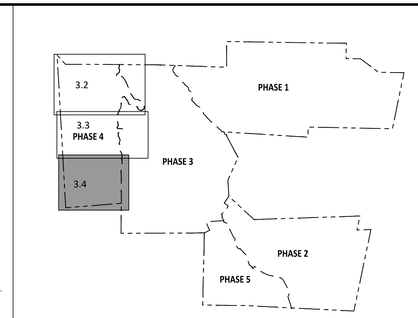
V1_CID-TBD_Kalas Phase 4.pdf · Page 25

30 Michele Raby

PLEASE ADD ADDRESSES BEFORE CID APPROVAL.

31 Jacqueline Thompson

The Town has actively moved to not accept these bubbles in town. The original approved PSP did not have this, and while I recognize the connector road here was approved for removal, this bubble should be removed and the layout of this corner revised.



KEY MAP

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
ROAD CENTERLINE	
PROPERTY SETBACKS	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
OPEN SPACE	
EXISTING WETLANDS	
10' CURB TRANSITION	

GENERAL NOTE:

1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCROACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
2. BACK OF CURB RADIUS AT INTERSECTIONS:
   - 2.1. RESIDENTIAL-RESIDENTIAL- 28'
   - 2.2. RESIDENTIAL-COLLECTOR- 30'
   - 2.3. COLLECTOR-COLLECTOR- 30'
   - 2.4. ENTRANCE AT CUL-DE-SAC- 32.5
   - 2.5. ENTRY ROADS-ROLESVILLE RD.- 35'

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES - SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:

SITE PLAN
AREA C

SHEET NO.:

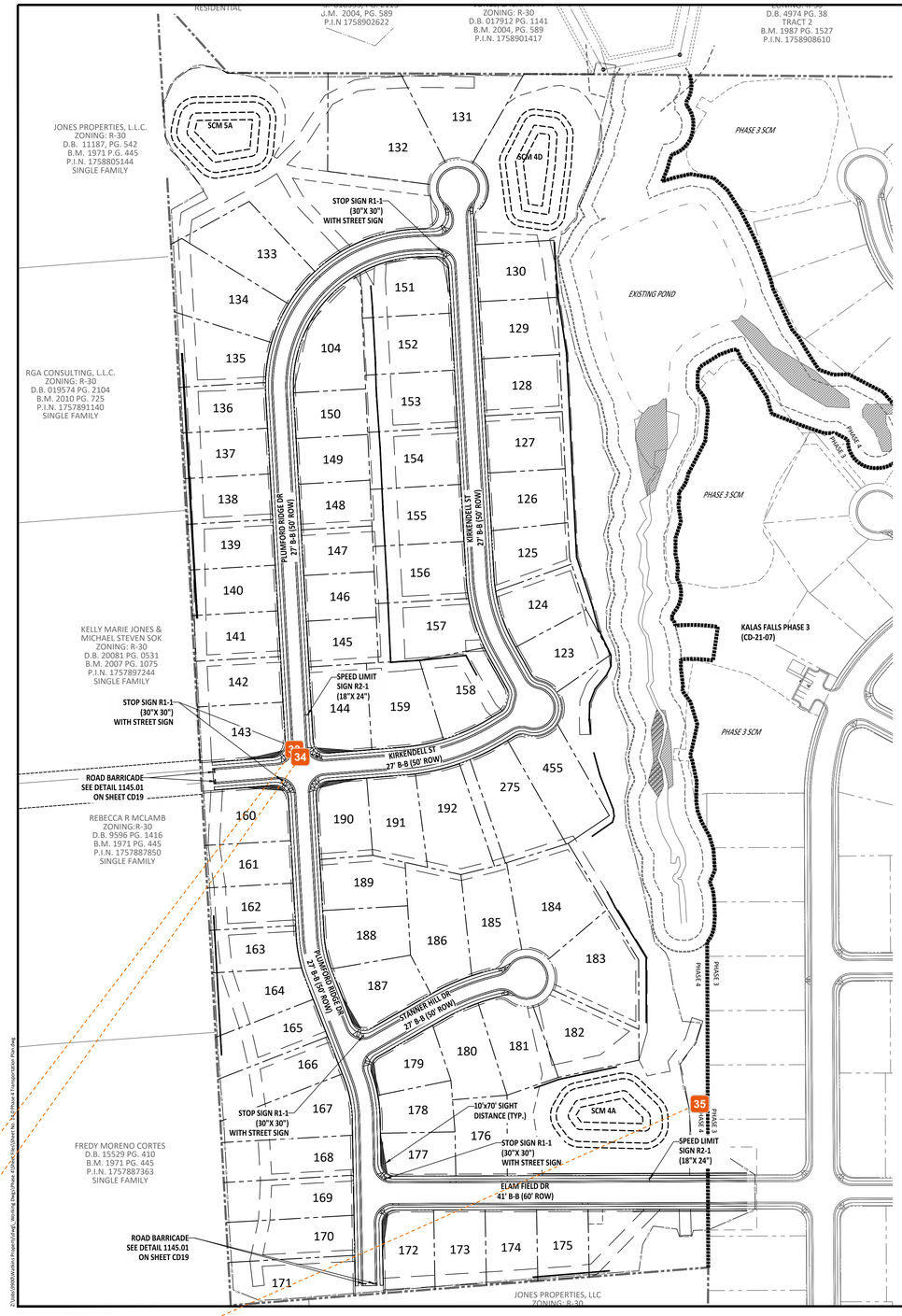
C3.4

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\0900\Kalas\Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 3.4 Phase 4 Site Plan C.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 26

32 **Stephen Wensman**
Does the cul-de-sac meet Fire Code requirements?



PAVEMENT MARKINGS & SIGNAGE NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC TYPE EXCEPT FOR PARKING SPACE LINES WHICH SHALL BE ALKYN-RESIN PAINT.
2. CONTRACTOR TO REFERENCE NCDOT STANDARDS AS NOTED FOR MORE DETAIL ON STRIPING.
3. ALL SIGNAGE SHALL BE FIELD STAKED AND THE LOCATIONS APPROVED BY TOWN OF ROLESVILLE PRIOR TO SIGN INSTALLATION.
4. ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.
5. ALL SIGNS ARE TO BE MOUNTED WITH 7 FT MINIMUM CLEARANCE TO THE BOTTOM OF THE SIGN, ON 3 LB GALVANIZED STEEL U-CHANNEL POST AND SET WITHIN 3 FT DEEP X 12 INCH DIAMETER CONCRETE FOOTING.

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch =100

AMERICAN Engineering

American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

ISSUED FOR:
PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:

STRIPING & SIGNAGE PLAN

SHEET NO.:

C3.5

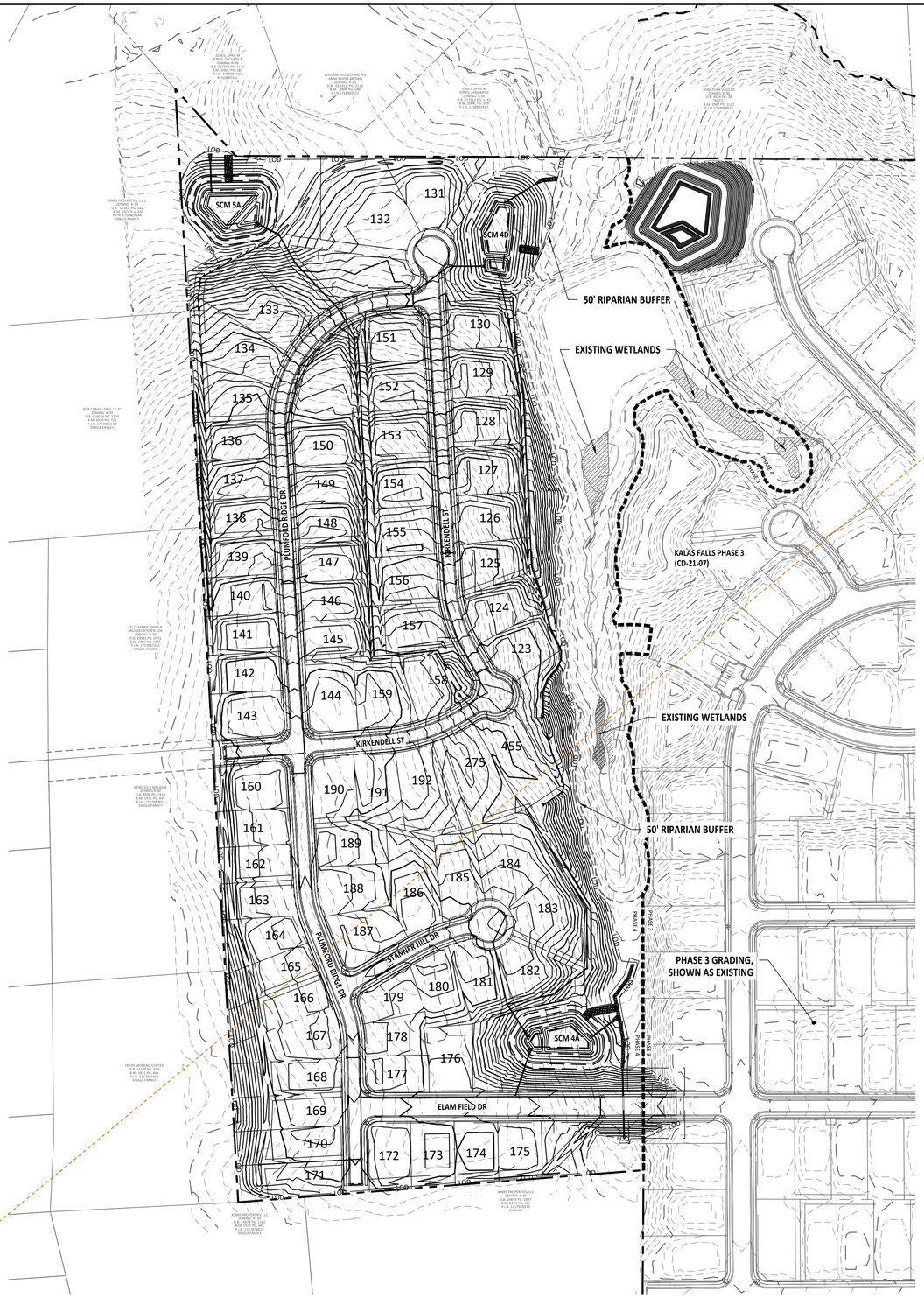
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

V1_CID-TBD_Kalas Phase 4.pdf - Page 27

33 **Jacqueline Thompson**
Please confirm crosswalk striping

34 **Jacqueline Thompson**
Include stop bars

35 **Jacqueline Thompson**
Please define what the speed limit signs will be (25 mph? 35 mph?)



NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLEECE, III AND ASSOCIATES, P.A.

36

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)

1 inch =120

AMERICAN Engineering

American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL
SEAL
062383
ENGINEER
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
PHASE 4 OVERALL GRADING & DRAINAGE

SHEET NO.:
C4.0

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Prospect\Civil_Working Dwgs\Phase 4\Sheet Files\Sheet No. 4.0 Phase 4 Grading and Drainage.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 28

Scott Miles
is mail kiosk for this phase located in another phase?

GRADING & DRAINAGE NOTES

1. PDD ABBREVIATES PERMANENT DIVERSION DITCH
2. THIS GRADING PLAN SUPPORTS THE IMPLEMENTATION OF CRAWL SPACE AND BASEMENT FOUNDATIONS. CONTRACTOR TO DETERMINE THE PREFERRED FOUNDATION TYPE ON A LOT BY LOT BASIS.
3. PAD ELEVATIONS HAVE BEEN PROVIDED FOR SELECT LOTS WHERE IT IS ANTICIPATED THAT THE FOUNDATION WILL HAVE TO BE BUILT UP FROM PROPOSED GRADE TO MAINTAIN DRAINAGE AND GRADING DESIGN ON SITE.
4. EXT. FFE ABBREVIATES ESTIMATED FINISH FLOOR ELEVATION.
5. THE ESTIMATED FINISH FLOOR ELEVATION, FINE GRADING, AND DRIVEWAY & BUILDING LOCATIONS TO BE ESTABLISHED BY THE CONTRACTOR/ARCHITECT AT THE TIME OF BUILDING PERMITS.
6. APPROVED CID DRAINAGE PATTERNS AND EASEMENTS TO BE MAINTAINED WITH FINE GRADING ACTIVITIES.
7. DRIVEWAY LONGITUDINAL SLOPES TO BE A MINIMUM OF 2.00% AND A MAXIMUM OF 10.00%.
8. BUILDING AND DRIVEWAYS SHOWN ARE APPROXIMATES TO CONVEY DESIGN INTENT.
9. CHECK DAMS ARE TO BE 1.5-FEET IN HEIGHT AND SPAN THE ENTIRE DIVERSION DITCH CROSS SECTION.
10. ROCK CHECK DAMS ARE INDICATED AT APPROXIMATE 50 LINEAR FOOT INTERVALS. FINAL LOCATIONS SHALL BE FIELD-ADJUSTED BY THE CONTRACTOR TO AVOID CONFLICTS WITH UTILITIES, DRAINAGE STRUCTURES, AND OTHER SITE INFRASTRUCTURE.

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
GRADING & DRAINAGE AREA A

SHEET NO.:
C4.1

V1_CID-TBD_Kalas Phase 4.pdf · Page 29

37 Jacqueline Thompson
This easement appears to just stop - please confirm linework

38 Jacqueline Thompson
Please submit your stormwater package including riprap calculations, HGLs, spread calcs, etc.

39 Jacqueline Thompson
Confirm all pond maintenance access routes and grades

40 Jacqueline Thompson
Please confirm slopes for access

41 Jacqueline Thompson
Please confirm the maintenance access routes for the proposed storm with the slopes.

GRADING & DRAINAGE NOTES

1. PDD ABBREVIATES PERMANENT DIVERSION DITCH
2. THIS GRADING PLAN SUPPORTS THE IMPLEMENTATION OF CRAWL SPACE AND BASEMENT FOUNDATIONS. CONTRACTOR TO DETERMINE THE PREFERRED FOUNDATION TYPE ON A LOT BY LOT BASIS.
3. PAD ELEVATIONS HAVE BEEN PROVIDED FOR SELECT LOTS WHERE IT IS ANTICIPATED THAT THE FOUNDATION WILL HAVE TO BE BUILT UP FROM PROPOSED GRADE TO MAINTAIN DRAINAGE AND GRADING DESIGN ON SITE.
4. EXT. FFE ABBREVIATES ESTIMATED FINISH FLOOR ELEVATION.
5. THE ESTIMATED FINISH FLOOR ELEVATION, FINE GRADING, AND DRIVEWAY & BUILDING LOCATIONS TO BE ESTABLISHED BY THE CONTRACTOR/ARCHITECT AT THE TIME OF BUILDING PERMITS.
6. APPROVED CID DRAINAGE PATTERNS AND EASEMENTS TO BE MAINTAINED WITH FINE GRADING ACTIVITIES.
7. DRIVEWAY LONGITUDINAL SLOPES TO BE A MINIMUM OF 2.00% AND A MAXIMUM OF 10.00%.
8. BUILDING AND DRIVEWAYS SHOWN ARE APPROXIMATES TO CONVEY DESIGN INTENT.
9. CHECK DAMS ARE TO BE 1.5-FEET IN HEIGHT AND SPAN THE ENTIRE DIVERSION DITCH CROSS SECTION.
10. ROCK CHECK DAMS ARE INDICATED AT APPROXIMATE 50 LINEAR FOOT INTERVALS. FINAL LOCATIONS SHALL BE FIELD-ADJUSTED BY THE CONTRACTOR TO AVOID CONFLICTS WITH UTILITIES, DRAINAGE STRUCTURES, AND OTHER SITE INFRASTRUCTURE.

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
GRADING & DRAINAGE AREA B

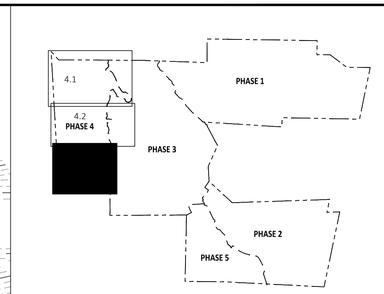
SHEET NO.:
C4.2

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Workfiles\Property\Civil_ Working Dwgs\Phase 4\Sheet Files\Sheet No. 4.2 Phase 4 Grading and Drainage B.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 30

42 Jacqueline Thompson
Adjacent property information being cut off - please review all sheets



KEY MAP

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

GRADING & DRAINAGE NOTES

1. PDD ABBREVIATES PERMANENT DIVERSION DITCH
2. THIS GRADING PLAN SUPPORTS THE IMPLEMENTATION OF CRAWL SPACE AND BASEMENT FOUNDATIONS. CONTRACTOR TO DETERMINE THE PREFERRED FOUNDATION TYPE ON A LOT BY LOT BASIS.
3. PAD ELEVATIONS HAVE BEEN PROVIDED FOR SELECT LOTS WHERE IT IS ANTICIPATED THAT THE FOUNDATION WILL HAVE TO BE BUILT UP FROM PROPOSED GRADE TO MAINTAIN DRAINAGE AND GRADING DESIGN ON SITE.
4. EXT. FFE ABBREVIATES ESTIMATED FINISH FLOOR ELEVATION.
5. THE ESTIMATED FINISH FLOOR ELEVATION, FINE GRADING, AND DRIVEWAY & BUILDING LOCATIONS TO BE ESTABLISHED BY THE CONTRACTOR/ARCHITECT AT THE TIME OF BUILDING PERMITS.
6. APPROVED CID DRAINAGE PATTERNS AND EASEMENTS TO BE MAINTAINED WITH FINE GRADING ACTIVITIES.
7. DRIVEWAY LONGITUDINAL SLOPES TO BE A MINIMUM OF 2.00% AND A MAXIMUM OF 10.00%.
8. BUILDING AND DRIVEWAYS SHOWN ARE APPROXIMATES TO CONVEY DESIGN INTENT.
9. CHECK DAMS ARE TO BE 1.5-FEET IN HEIGHT AND SPAN THE ENTIRE DIVERSION DITCH CROSS SECTION.
10. ROCK CHECK DAMS ARE INDICATED AT APPROXIMATE 50 LINEAR FOOT INTERVALS. FINAL LOCATIONS SHALL BE FIELD-ADJUSTED BY THE CONTRACTOR TO AVOID CONFLICTS WITH UTILITIES, DRAINAGE STRUCTURES, AND OTHER SITE INFRASTRUCTURE.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

North Carolina 811 — *** 3 Days Before Digging *** North Carolina 811 811 or 1-800-632-4949 Remote Ticket Entry http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PRELIMINARY PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE: GRADING & DRAINAGE AREA C

SHEET NO.: C4.3

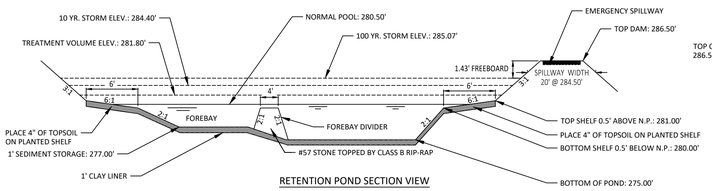
J:\Jobs\9900\Working Projects\Kalas_Working Dwgs\Phase 4\Sheet Files\Sheets No. 4.3 Phase 4 Grading and Drainage Plan C.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 31

43 Jacqueline Thompson
How is access occurring to the pond for maintenance? Please review all ponds.

44 Jacqueline Thompson
This leader is not pointing to any lines.

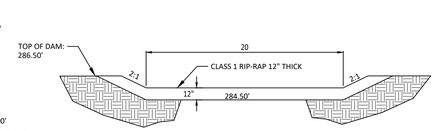
45 Jacqueline Thompson
Confirm if there is a proposed wall or fall protection adjacent to the sidewalk since adjacent grades are 2:1



RETENTION POND SECTION VIEW

SCM 4D SECTION VIEW

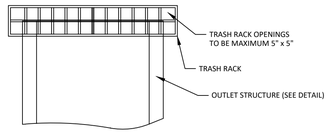
N.T.S.



EMERGENCY SPILLWAY SECTION VIEW

N.T.S.

NOTES:
1. SEE SHEET G1.1 FOR SCM CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



NOTES:
1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
3. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THOUGH AN OPENING.
4. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
5. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 6"x6").

TRASH RACK DETAIL

N.T.S.

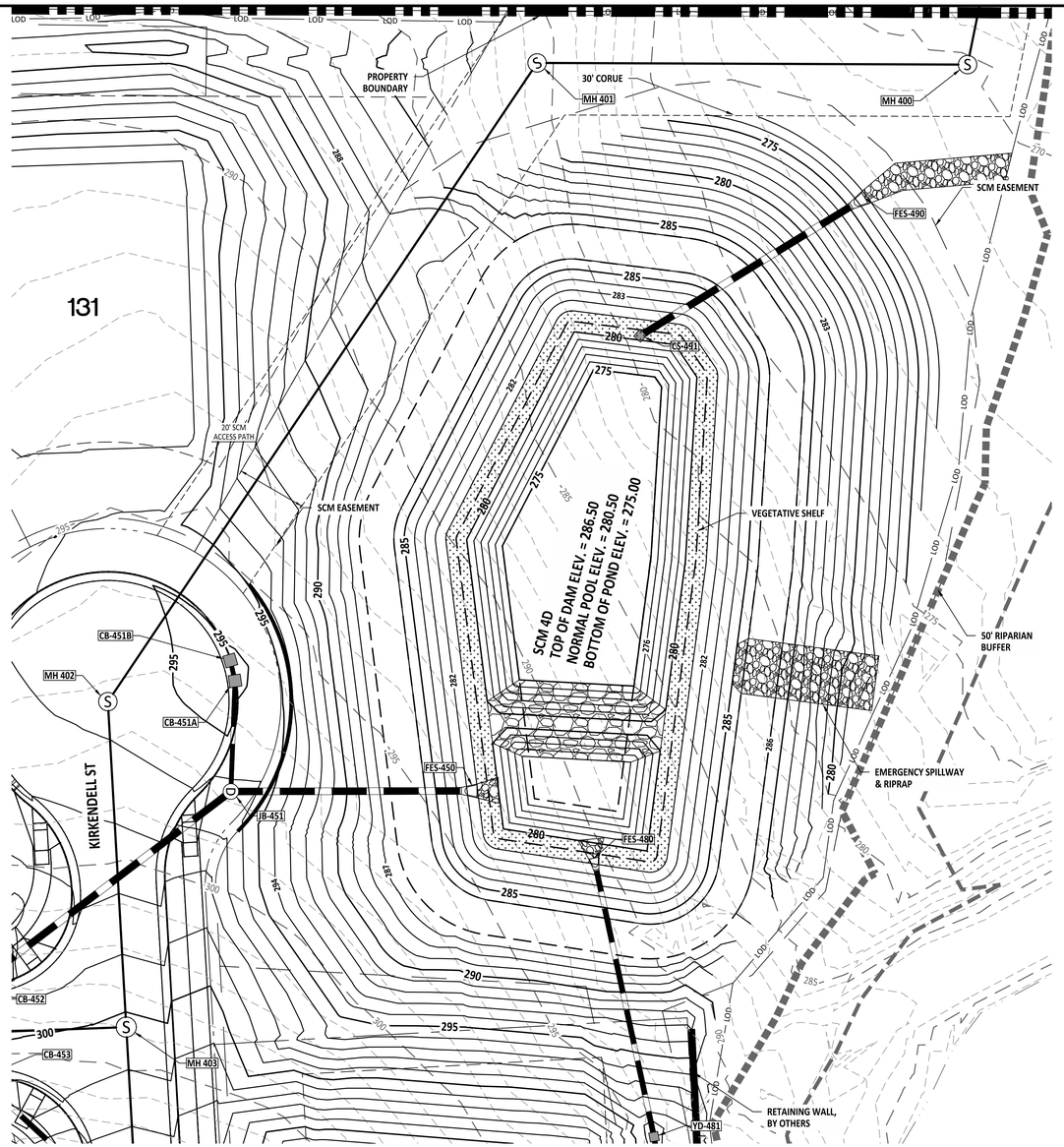
PLANT LIST VEGETATED SHELF PLANT SCHEDULE:

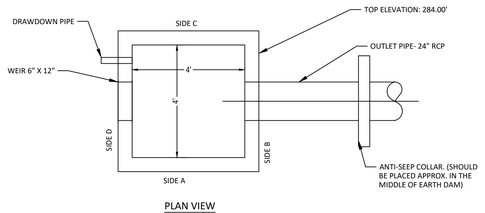
VEGETATED SHELF
(HERB.)
EF EUPATORUIM FISTRULOSUM JOE PYE WEED 4-6" POT @ 3' SPACING
HC HIBICUS COCCINEA SCARLET ROSE MALLOW 4-6" POT @ 3' SPACING
CG CHELONE GLABRA WHITE TURTLEHEAD 4-6" POT @ 3' SPACING
LC LOBELIA CARDINALIS CARDINAL FLOWER 4-6" POT @ 3' SPACING

LANDSCAPE PLAN:

VEGETATED SHELF= 2,290 sf (USE 573 PLANTS FROM LIST ABOVE)
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

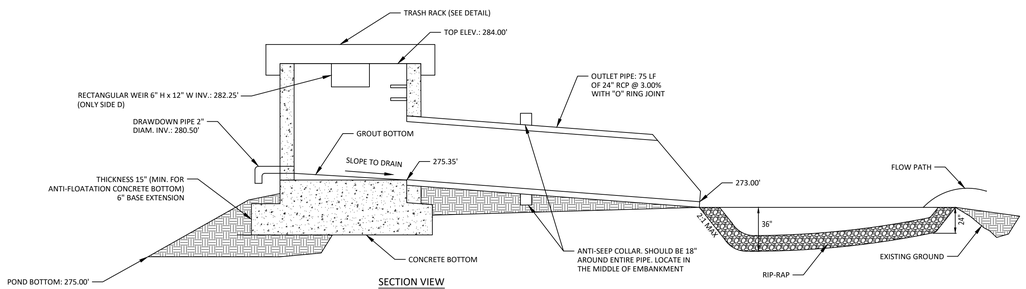
CALCULATION: 50 PLANTS PER 200 SF





PLAN VIEW

NOTES:
1. WALL THICKNESS AND REINFORCEMENT TO BE DETERMINED BY PRECAST CONCRETE MANUFACTURER.
2. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.



SECTION VIEW

OUTLET STRUCTURE SCM 4D

N.T.S.

GRAPHIC SCALE

30 0 10 20 40 80

(IN FEET)
1 inch = 20

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

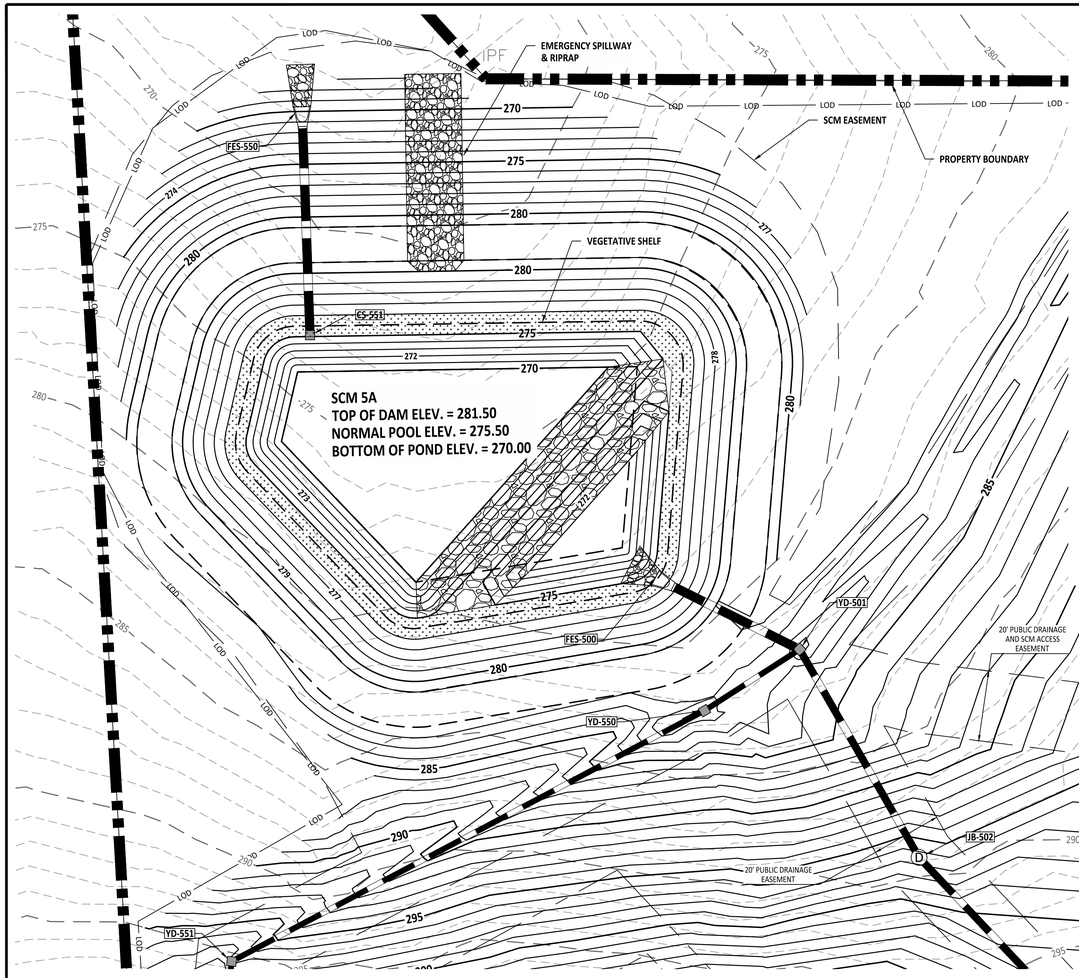
SHEET TITLE:
SCM 4D DETAIL

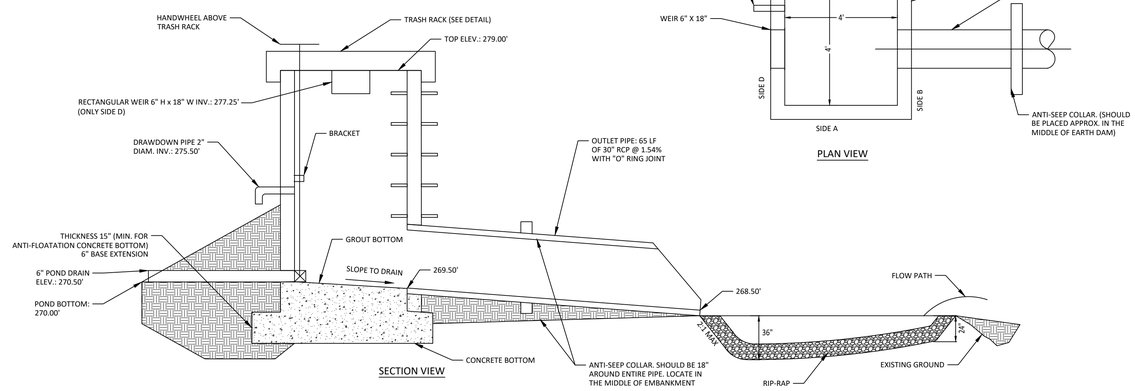
SHEET NO.:
C4.4

North Carolina 811 Call Before You Dig
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Final_Working Dwg\Phase 4\Sheet Files\[Sheet No. 4.4 Phase 4 SCM 4D Detail].dwg

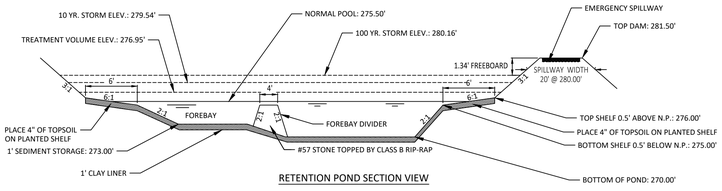
V1_CID-TBD_Kalas Phase 4.pdf · Page 32





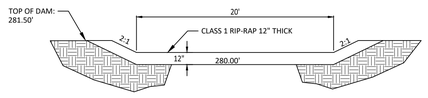
OUTLET STRUCTURE SCM 5A
N.T.S.

NOTES:
1. WALL THICKNESS AND REINFORCEMENT TO BE DETERMINED BY PRECAST CONCRETE MANUFACTURER.
2. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.



SCM 5A SECTION VIEW
N.T.S.

NOTES:
1. SEE SHEET G1.1 FOR SCM CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



EMERGENCY SPILLWAY SECTION VIEW
N.T.S.

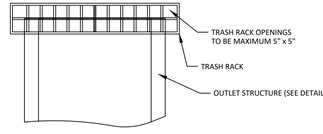
PLANT LIST VEGETATED SHELF PLANT SCHEDULE:

VEGETATED SHELF (HERB.)

EF	EUPATORUIM FISTRULOSUM	JOE PYE WEED	4-6" POT @ 3' SPACING
HC	HIBICUS COCCINEA	SCARLET ROSE MALLOW	4-6" POT @ 3' SPACING
CG	CHELONE GLABRA	WHITE TURTLEHEAD	4-6" POT @ 3' SPACING
LC	LOBELIA CARDINALIS	CARDINAL FLOWER	4-6" POT @ 3' SPACING

LANDSCAPE PLAN:
VEGETATED SHELF= 2,195 sf (USE 549 PLANTS FROM LIST ABOVE)
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF



NOTES:
1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
3. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THOUGH AN OPENING.
4. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
5. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 6"x6").

TRASH RACK DETAIL
N.T.S.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

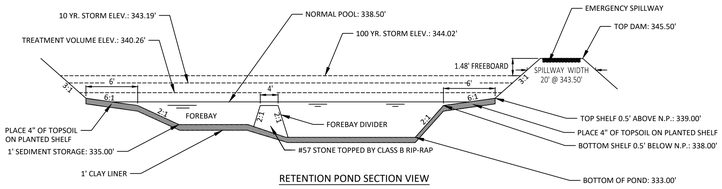
KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
SCM 5A DETAIL

SHEET NO.:
C4.5

J:\Jobs\9900\Construction Property\Final_Working Dwgs\Phase 4\Sheet Files\Sheet No. 4.5 Phase 4 SCM 5A Detail.dwg

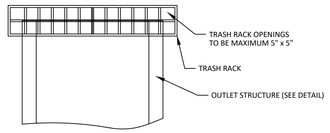


RETENTION POND SECTION VIEW

SCM 4A SECTION VIEW

N.T.S.

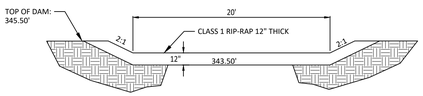
NOTES:
1. SEE SHEET G1.1 FOR SCM CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



NOTES:
1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
3. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THOUGH AN OPENING.
4. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
5. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 6"x6").

TRASH RACK DETAIL

N.T.S.



EMERGENCY SPILLWAY SECTION VIEW

N.T.S.

PLANT LIST VEGETATED SHELF PLANT SCHEDULE:

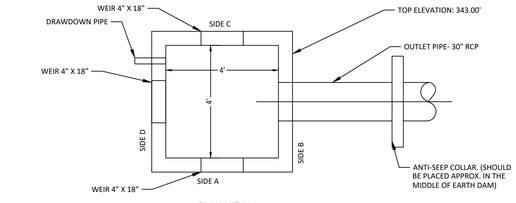
VEGETATED SHELF (HERB.)

EF	EUPATORUIM FISTRULOSUM	JOE PYE WEED	4-6" POT @ 3' SPACING
HC	HIBICUS COCCINEA	SCARLET ROSE MALLOW	4-6" POT @ 3' SPACING
CG	CHELONE GLABRA	WHITE TURTLEHEAD	4-6" POT @ 3' SPACING
LC	LOBELIA CARDINALIS	CARDINAL FLOWER	4-6" POT @ 3' SPACING

LANDSCAPE PLAN:

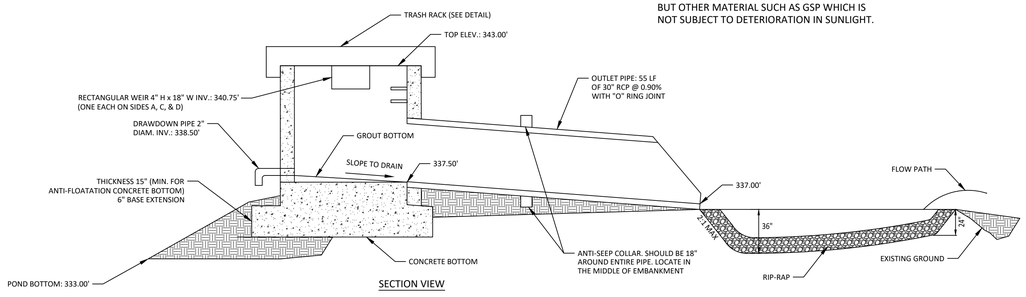
VEGETATED SHELF= 2,054 sf (USE 514 PLANTS FROM LIST ABOVE)
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF



PLAN VIEW

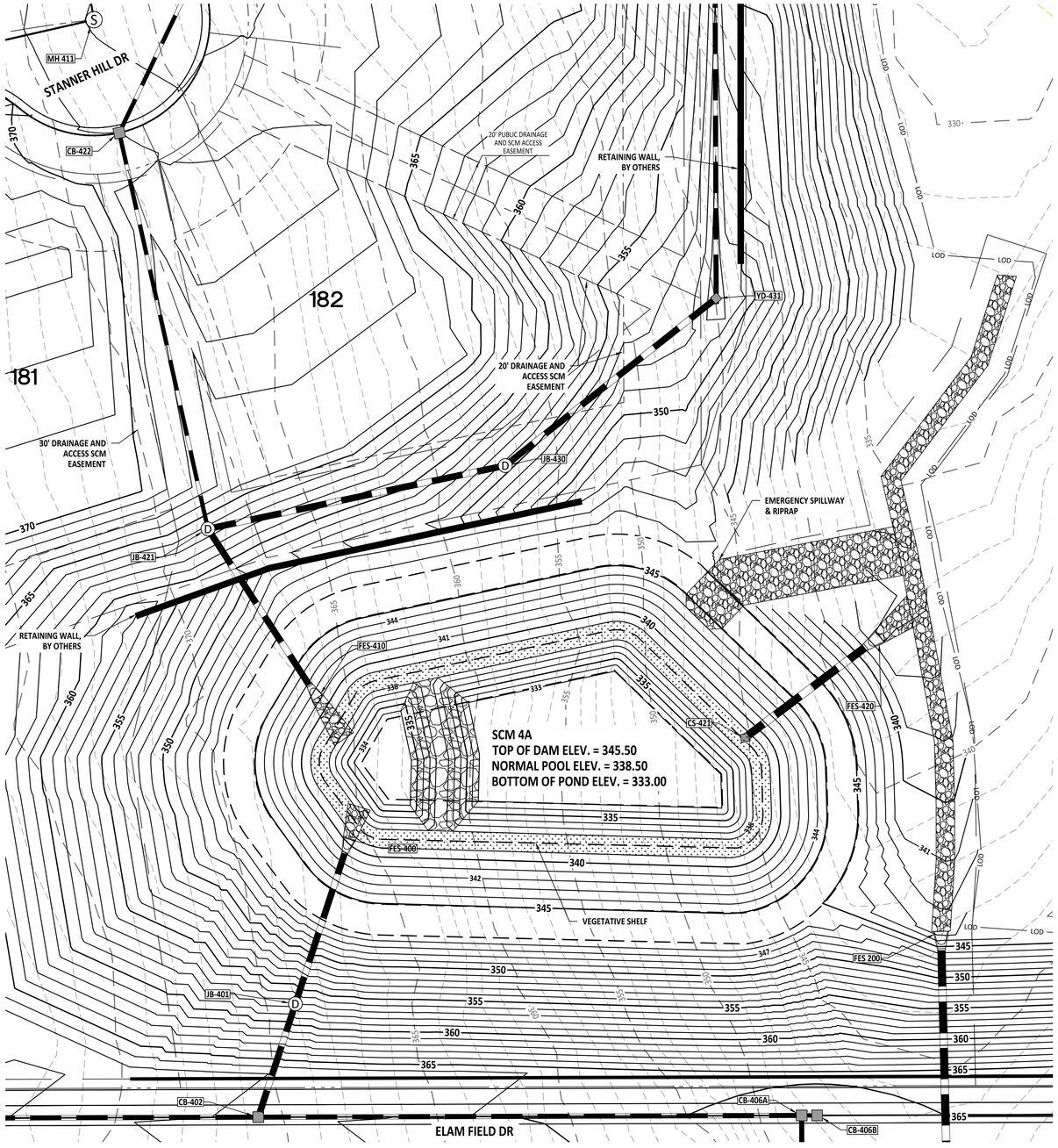
NOTES:
1. WALL THICKNESS AND REINFORCEMENT TO BE DETERMINED BY PRECAST CONCRETE MANUFACTURER.
2. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.



SECTION VIEW

OUTLET STRUCTURE SCM 4A

N.T.S.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION AMERICAN ENGINEERING ASSOCIATES SOUTHEAST P.A. C-3881

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
SCM 4A DETAIL

SHEET NO.:
C4.6

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Final_Working Dwg\Phase 4\Sheet Files\[Sheet No. 4.4 Phase 4 SCM 4A Detail.dwg

NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLEECE, III AND ASSOCIATES, P.A.

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)

1 inch =120

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection** system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # _____

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST P.A.
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:

OVERALL UTILITY PLAN

SHEET NO.:
C5.0

Z:\Jobs\9900\Kalas Project\Final_Working Dwg\Phase 4\Sheet Files\Sheet No. 6.0 Phase 4 Utility Plan.dwg

D.B. 018353, PG. 2113
B.M. 2004, PG. 589
P.I.N 1758902622

JONES, APRIL M
JONES, ZACHARY A
ZONING: R-30
D.B. 017912 PG. 1141
B.M. 2004, PG. 589
P.I.N. 1758901417

JONATHAN V. GILLIS
ZONING: R-30
D.B. 4974 PG. 38
TRACT 2
B.M. 1987 PG. 1527
P.I.N. 1758908610

N 89°39'22" W
1308.45'

131 132 133 134 135 136 137 138 130 129 128 127 126 151 152 153 154 150 149 148

FES-550 CS-551 SCM 5A FES-500 YD-501 YD-550 JB-502 YD-551 YD-552 JB-503 CB-504 MH 417 CB-505 YD-540 MH 418 CB-506 MH 419 YD-553 CB-507 CB-507B

MH 401 Ex MH 7 FES-490 CS-491 SCM EASEMENT 50' RIPARIAN BUFFER SCM 4D FES-450 FES-480 CB-451B CB-451A JB-451 MH 402 CB-452 MH 403 CB-454B YD-481 MH 416 CB-470 CB-453 YD-471 CB-454 MH 404 YD-482 CB-455B CB-455 MH 405 YD-472

SCM ACCESS & MAINTENANCE EASEMENT

20' PUBLIC DRAINAGE EASEMENT

3' CORUE

8" DIP WATERLINE

FHA

8" X 6" REDUCER
8" X 8" TEE
(3) 8" GV

PLUMFORD RIDGE DR.

KIRKENDELL ST

RETAINING WALL (BY OTHERS)

42' PUBLIC DRAINAGE EASEMENT

RETAINING WALL (BY OTHERS)

EXISTING POND

KALAS FALLS PHASE 3
(CD-21-07)

EXISTING WETLANDS

PHASE 4
PHASE 3

KEY MAP

5.1 PHASE 1
5.2 PHASE 4
PHASE 3
5.3
PHASE 2
PHASE 5

LEGEND

PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50

UTILITY NOTES:
1. CORUE STANDS FOR CITY OF RALEIGH PUBLIC UTILITY EASEMENT
2. FHA STANDS FOR FIRE HYDRANT ASSEMBLY
3. GV STANDS FOR GATE VALVE

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection** system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # _____

North Carolina 811 It's the Law
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

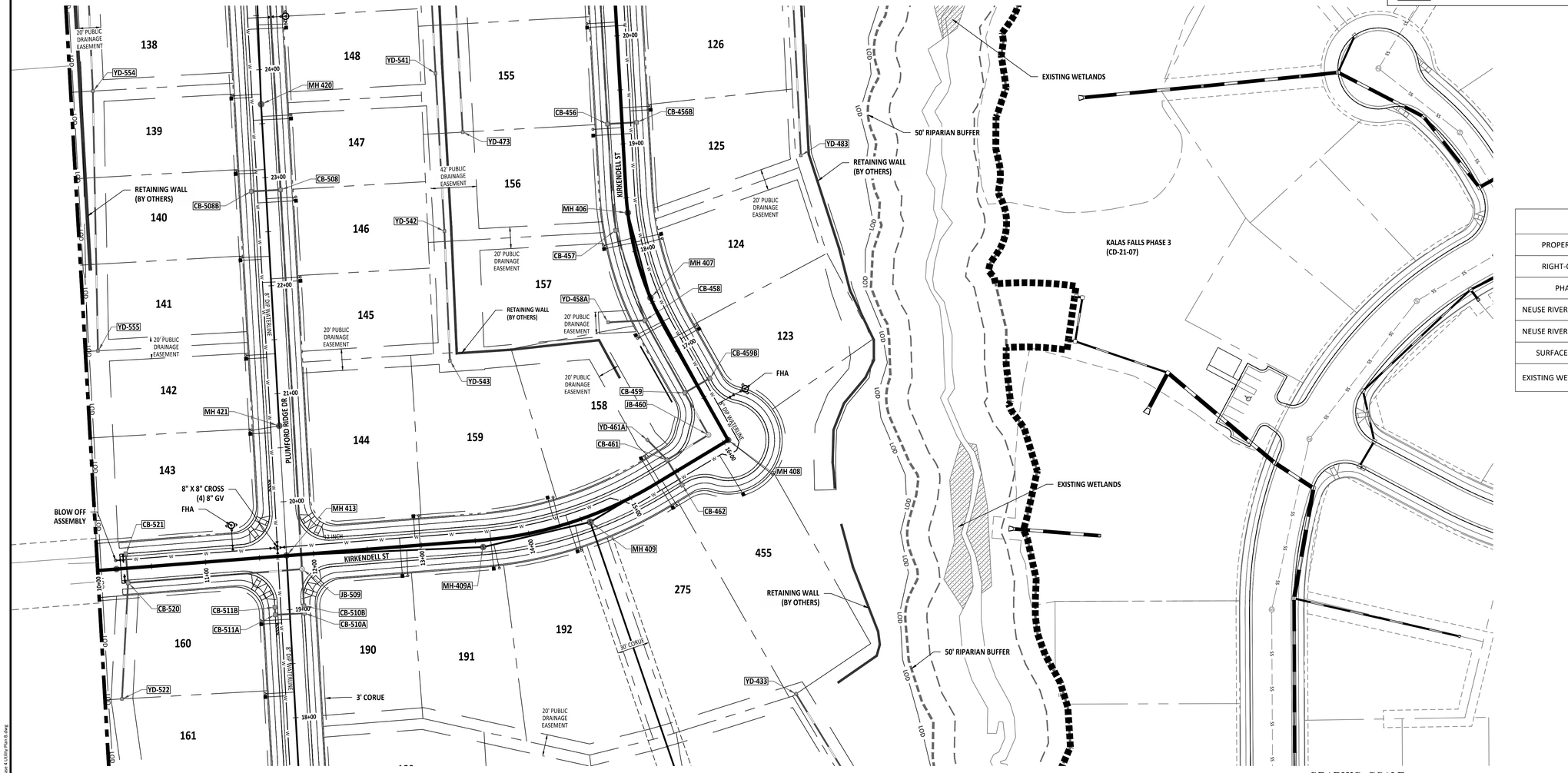
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

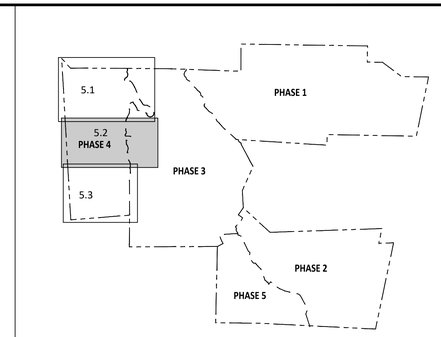
SHEET TITLE:
UTILITY PLAN
AREA A

SHEET NO.:
C5.1

Z:\Jobs\9900\Working Property\Proj_Working Dwgs\Phase 4\Sheet Files\Sheet No. 6.1 Phase 4 Utility Plan A.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 36





KEY MAP

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50

UTILITY NOTES:

1. CORUE STANDS FOR CITY OF RALEIGH PUBLIC UTILITY EASEMENT
2. FHA STANDS FOR FIRE HYDRANT ASSEMBLY
3. GV STANDS FOR GATE VALVE

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection** system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # _____

North Carolina 811 811 It's Free!

*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE, ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

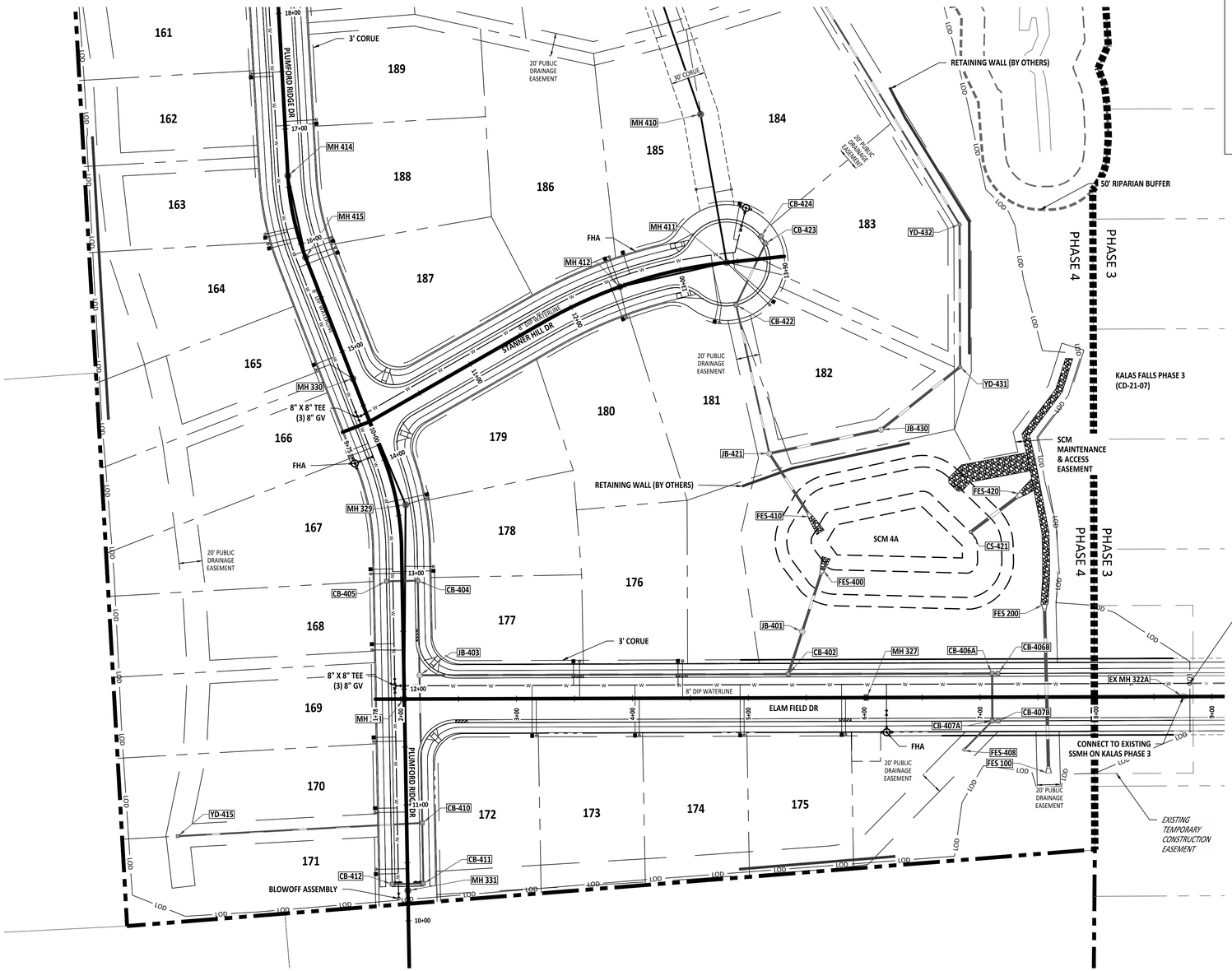
SHEET TITLE:

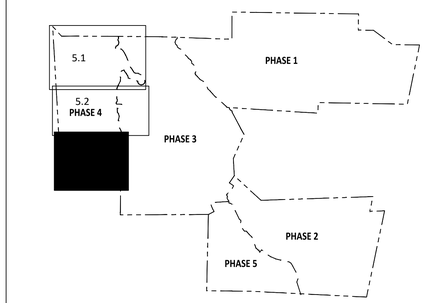
UTILITY PLAN AREA B

SHEET NO.:
C5.2

Z:\Jobs\9900\Kalas Property\Eng_Working Dwg\Phase 4\Sheet Files\Sheet No. 5.2 Phase 4 Utility Plan B.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 37





KEY MAP

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

LEGEND	
PROPERTY LINE	
RIGHT-OF-WAY	
PHASE LINE	
NEUSE RIVER ZONE 2	
NEUSE RIVER ZONE 1	
SURFACE WATER	
EXISTING WETLANDS	

UTILITY NOTES:
1. CORUE STANDS FOR CITY OF RALEIGH PUBLIC UTILITY EASEMENT
2. FHA STANDS FOR FIRE HYDRANT ASSEMBLY
3. GV STANDS FOR GATE VALVE

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit #** _____

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection** system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # _____

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

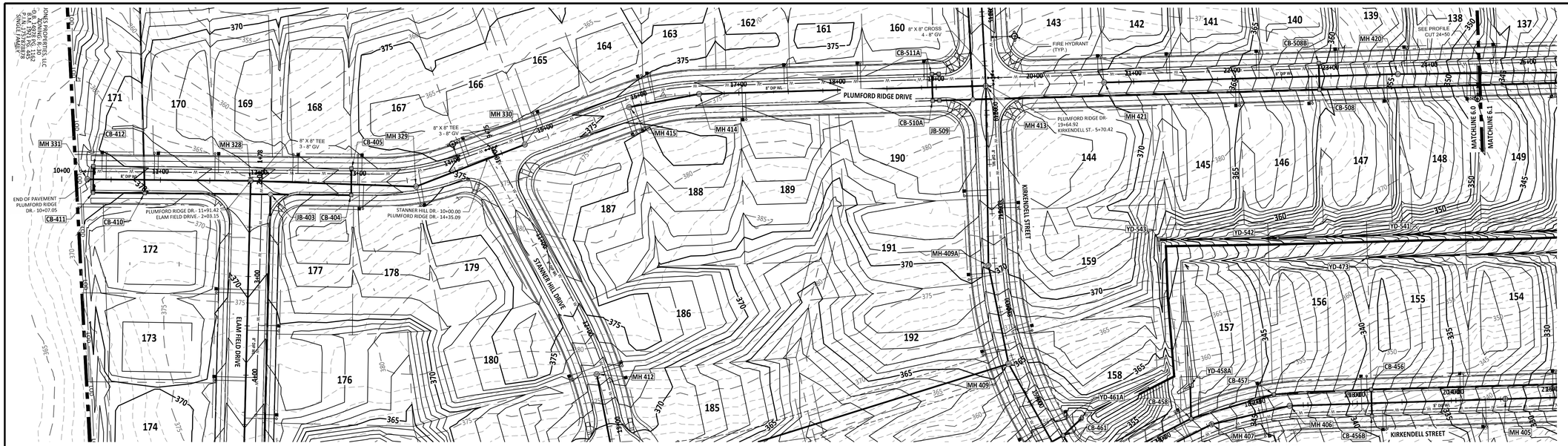
KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
UTILITY PLAN
AREA C

SHEET NO.:
C5.3

Z:\Jobs\9900\Kalas Property\Kalas_Working Dwg\Phase 4\Sheet Files\Sheet No. 4.3 Phase 4 Utility Plan C.dwg

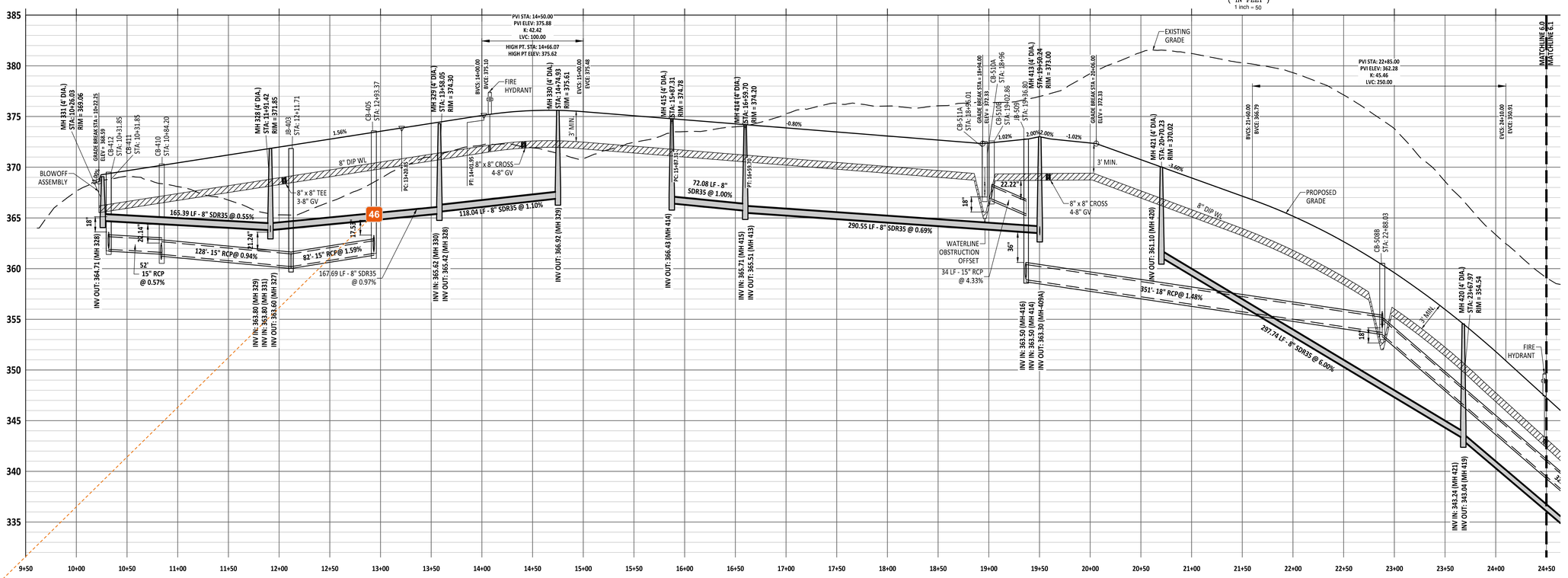


GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

PLUMFORD RIDGE DRIVE PLAN (STN. 10+00 TO 24+50)



PLUMFORD RIDGE DRIVE PROFILE (STN. 10+00 TO 24+50)

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES - SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
PLUMFORD RIDGE DR. PLAN & PROFILE

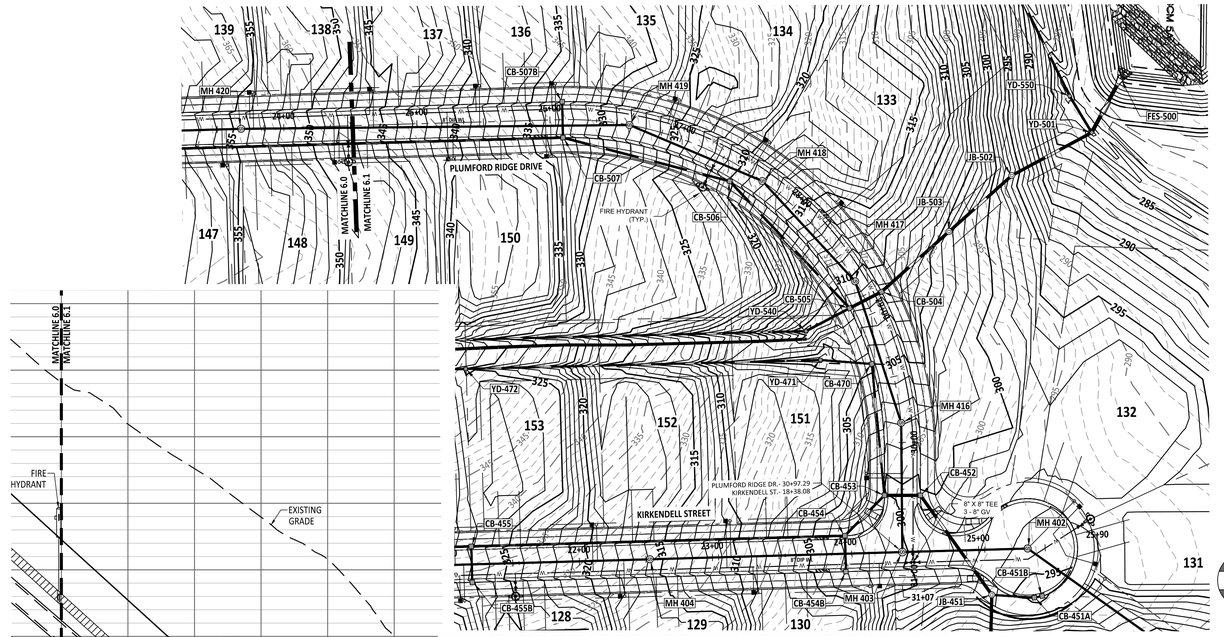
SHEET NO.:
C6.0

North 811 Carolina
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-8004632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 6.0 Phase 4 Plumford Ridge Dr - Plan and Profile.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 39

46 **Jacqueline Thompson**
Minimum 18" separation should be provided between utility crossings

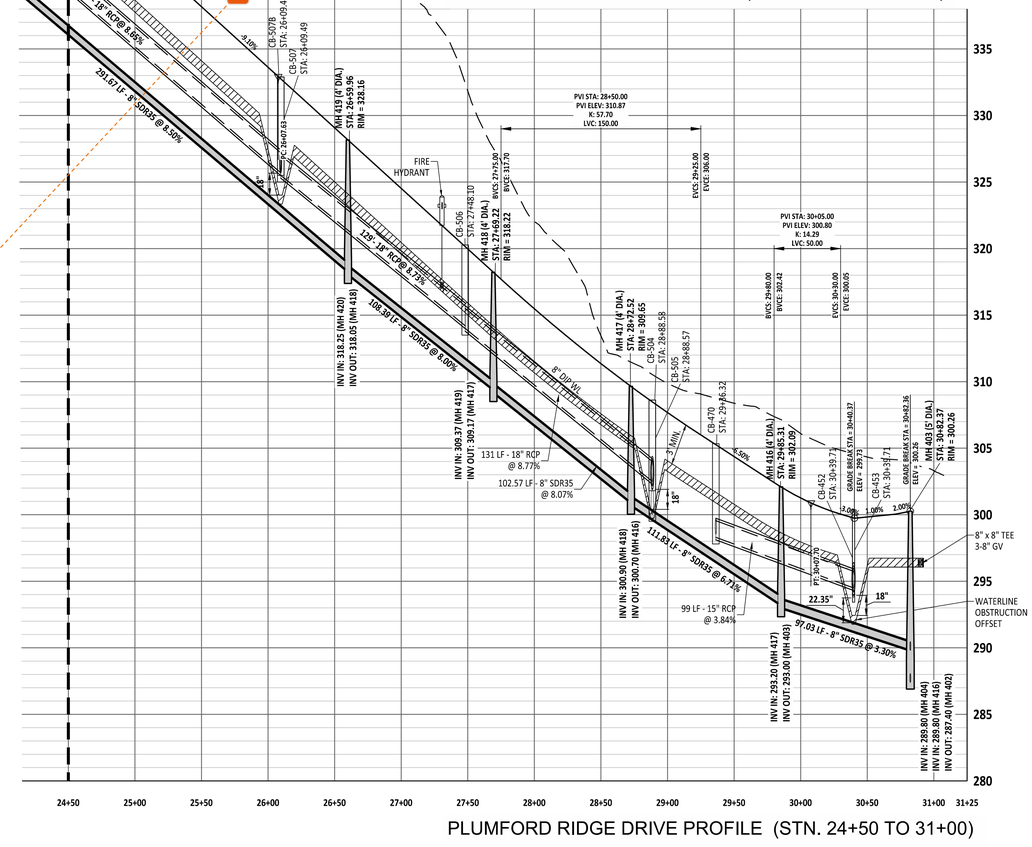


PLUMFORD RIDGE DRIVE PLAN (STN. 24+50 TO 31+00)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50



PLUMFORD RIDGE DRIVE PROFILE (STN. 24+50 TO 31+00)

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
PLUMFORD RIDGE DR. PLAN & PROFILE

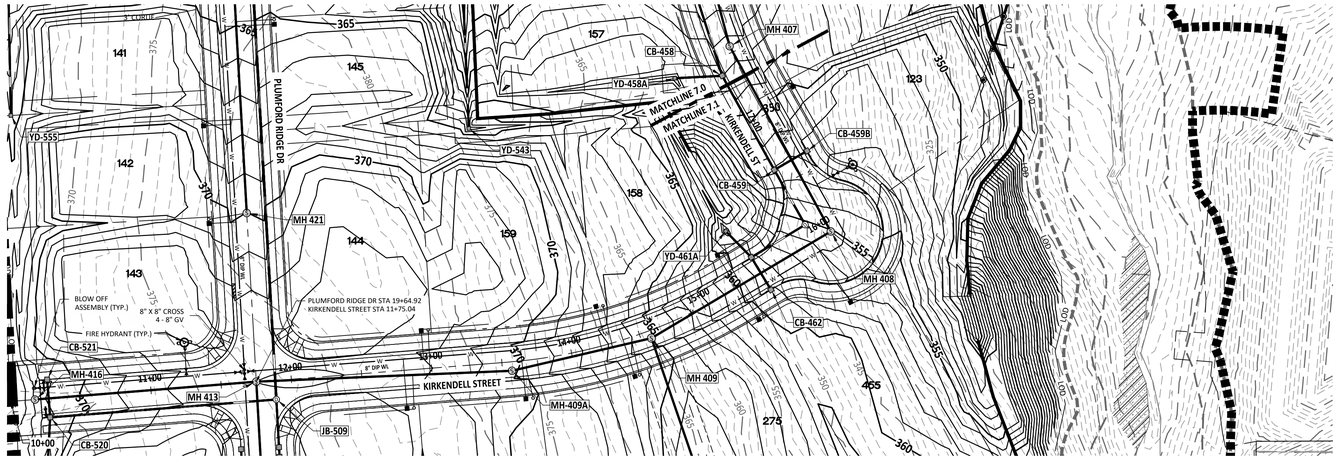
SHEET NO.:
C6.1

North Carolina 811 Dig Rite
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Projects\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 8.1 Phase 4 Plumford Ridge Dr. Plan and Profile.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 40

47 **Jacqueline Thompson**
The Town has implemented a new ADA policy for sidewalks adjacent to streets that cannot meet ADA compliance. For sidewalks steeper than 5% a steep grade warning sign (W7-3P) shall be installed approximately every 300 feet. It should be considered whether sidewalks are warranted when grades are greater than 8%. Please review all grades and update the signing and striping plan accordingly.



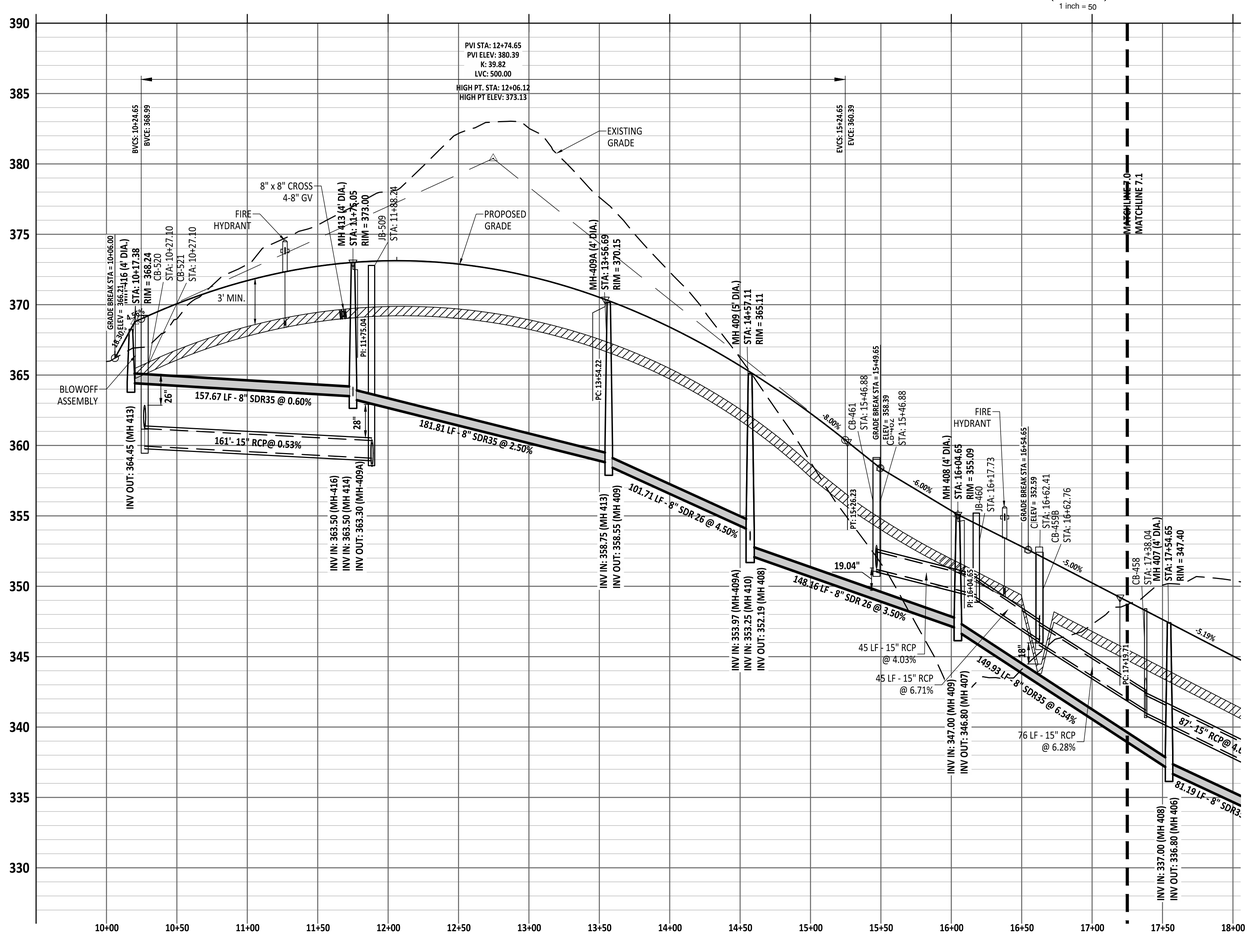
KIRKENDELL STREET PLAN (STN. 10+00 TO 17+25)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50



KIRKENDELL STREET PROFILE (STN. 10+00 TO 17+25)

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

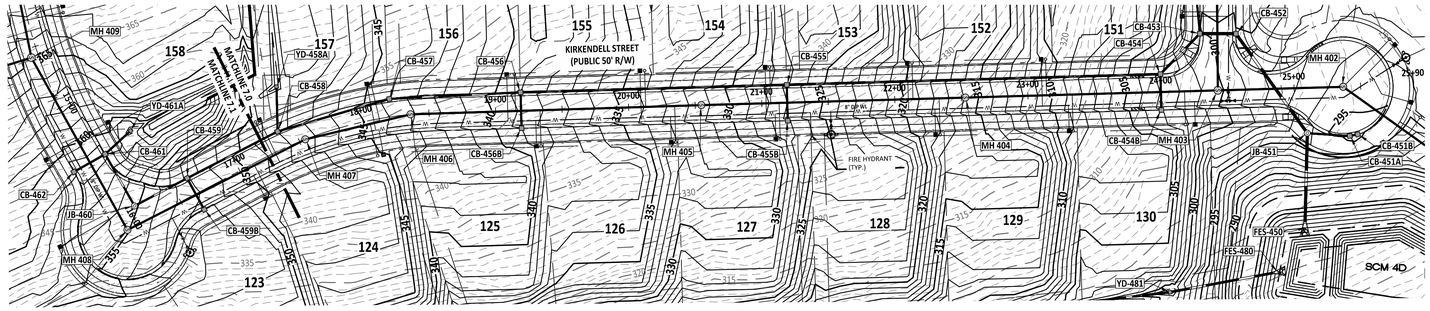
JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
KIRKENDELL ST. PLAN & PROFILE

SHEET NO.:
C7.0

North Carolina 811 It's the Law!
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Vertical Projects\Kalas_Working Dwgs\Phase 4\Sheet Files\[Sheet No. 7.0 Phase 4 Donnington Hill Dr. Plan & Profile.dwg

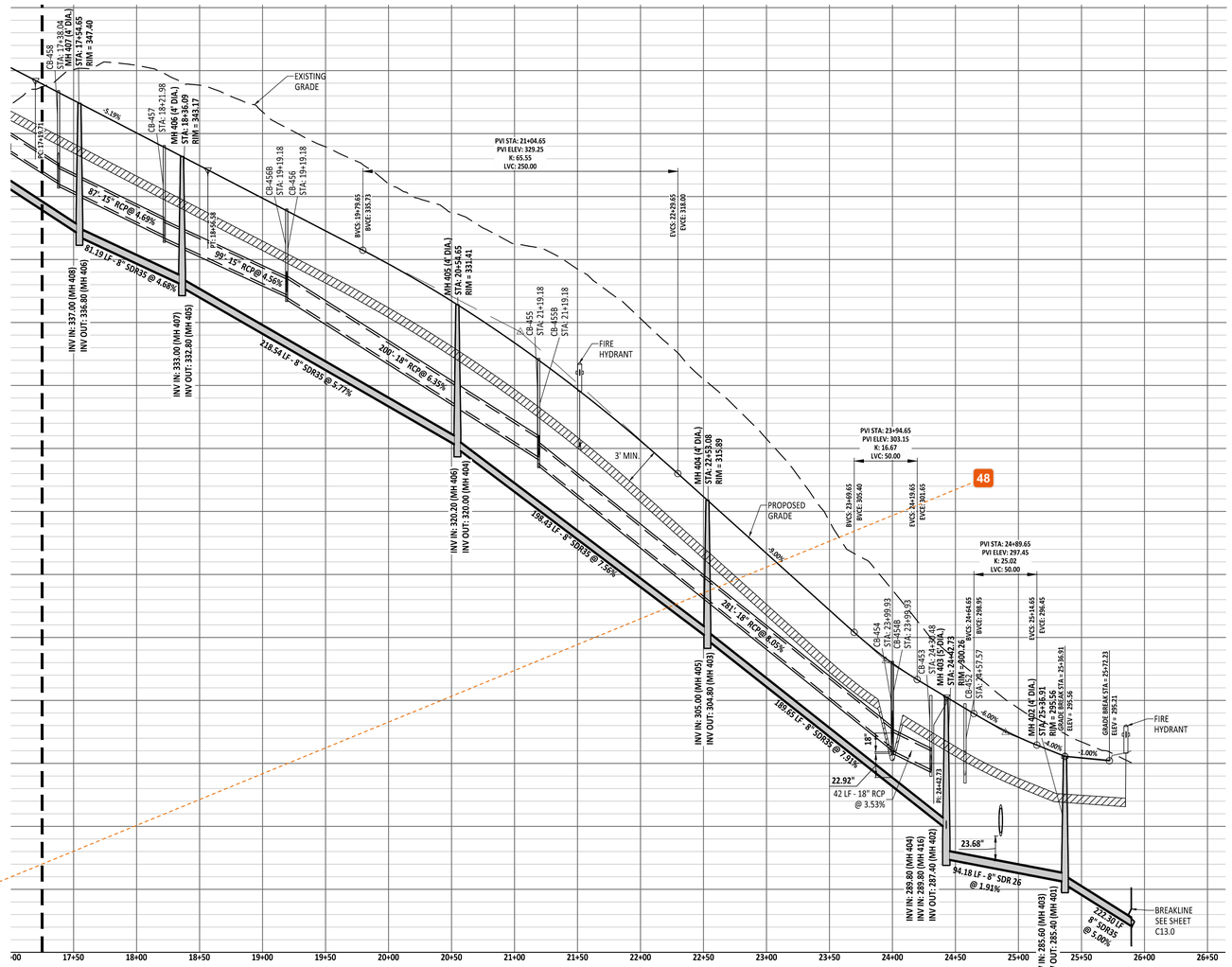


GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

KIRKENDELL STREET PLAN (STN. 17+25 TO 26+00)



KIRKENDELL STREET PROFILE (STN. 17+25 TO 26+00)

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 062383
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
KIRKENDELL ST. PLAN & PROFILE

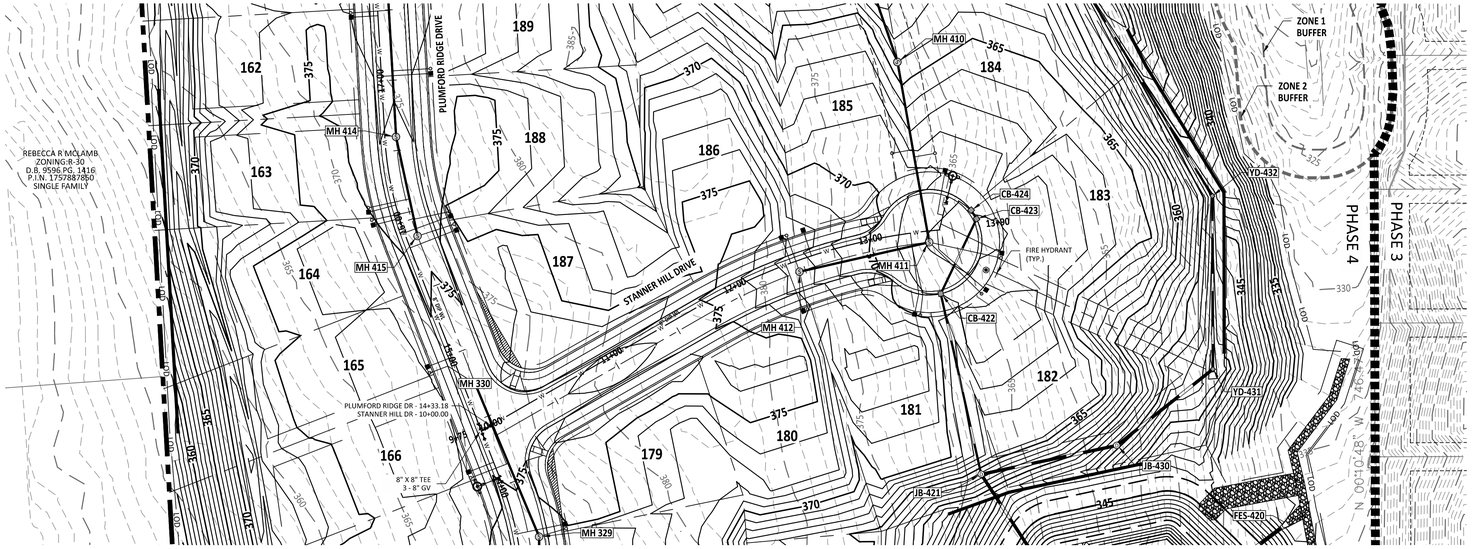
SHEET NO.:
C7.1

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Job\9900\Workfiles\Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 9.0 Phase 4 Kirkendell St. Plan and Profile.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 42

48 **Jacqueline Thompson**
Minimum K Value is 30, unless at a stop condition. Consider combining these 2 curves into a longer one to meet these requirements.

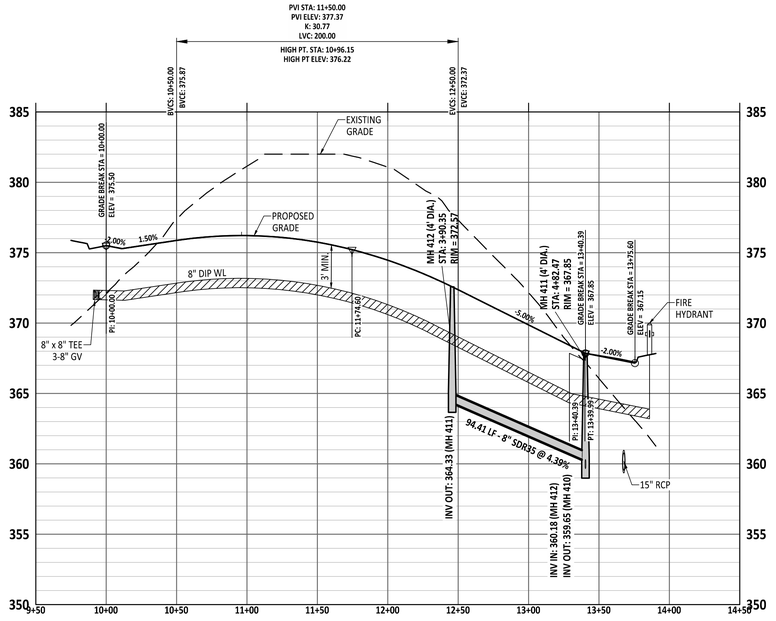


STANNER HILL DRIVE PLAN (STN. 10+00 TO 14+00)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50



STANNER HILL DRIVE PROFILE (STN. 10+00 TO 14+00)

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

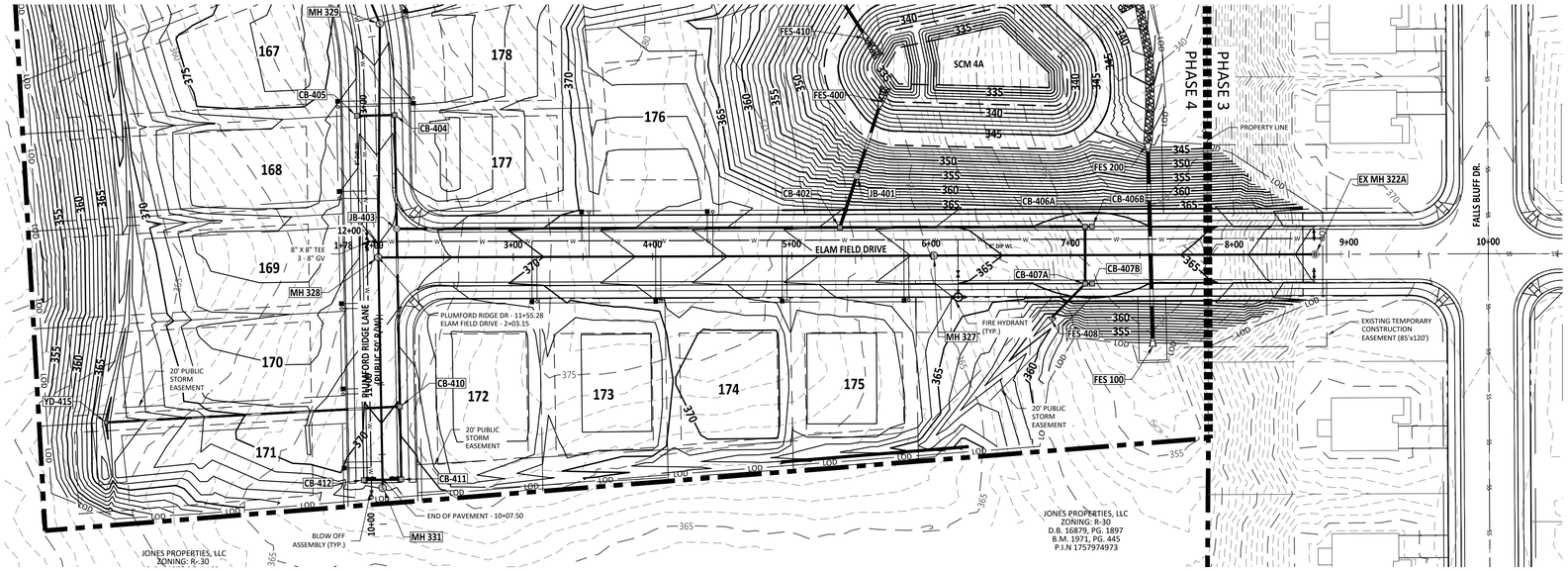
SHEET TITLE:
STANNER HILL DR. PLAN & PROFILES

SHEET NO.:
C10.0

North Carolina 811 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Widow Property\Kalas_Working Dwg\Phase 4\Sheet Files\Sheet No. 10.0 Phase 4 Stanner Hill Dr. Plan & Profiles.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 43

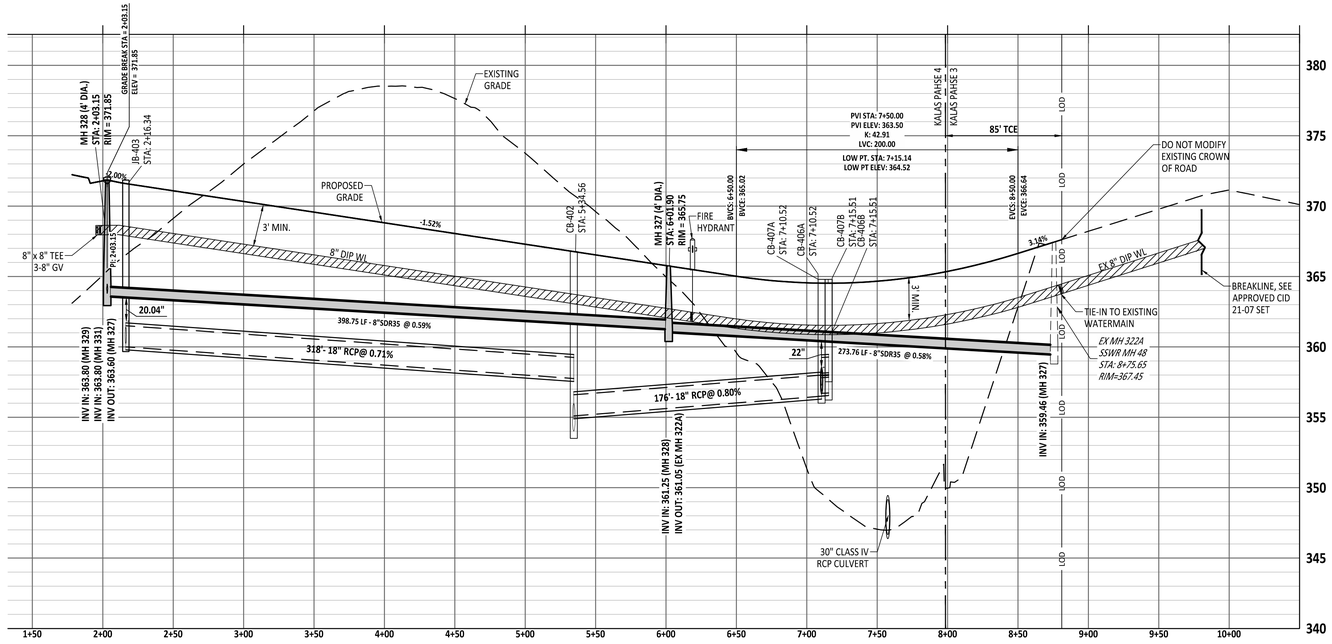


ELAM FIELD DRIVE PLAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50



ELAM FIELD DRIVE PROFILE

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
SEAL 062383
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

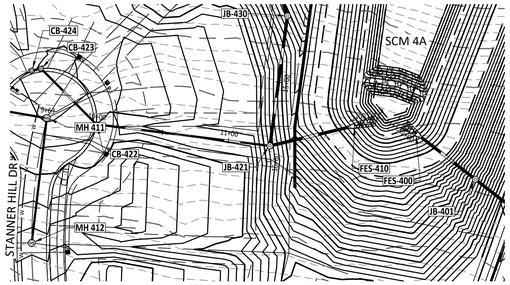
SHEET TITLE:
ELAM FIELD CT. PLAN & PROFILE

SHEET NO.:
C11.0

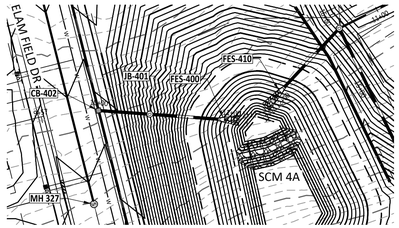
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalama Property\Kalas_Working Dwgs\Phase 4\Sheet Files\Sheet No. 11.0 Phase 4 Mendenhall Meadows Ln. Plan & Profile.dwg

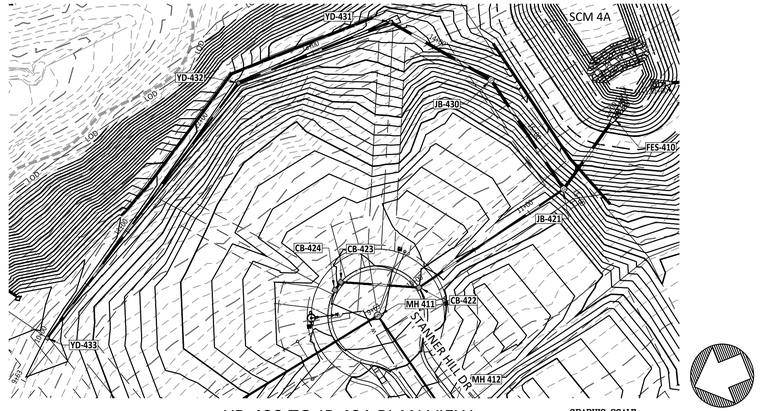
V1_CID-TBD_Kalas Phase 4.pdf · Page 44



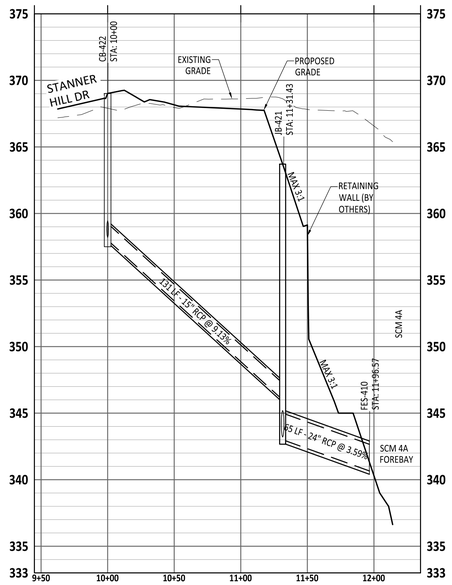
CB 422 TO FES 420 PLAN VIEW



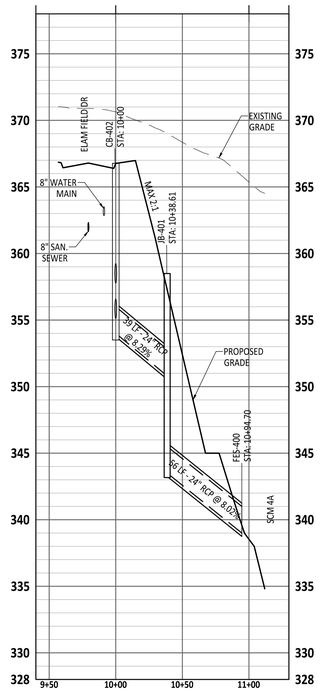
CB 402 TO FES 400 PLAN VIEW



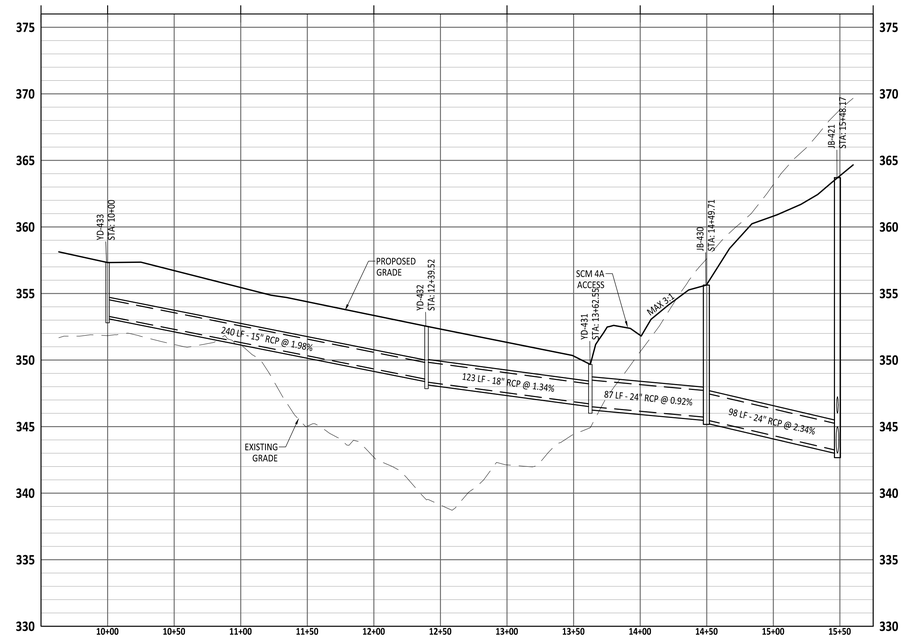
YD 433 TO JB 421 PLAN VIEW



CB 422 TO FES 420 PROFILE VIEW



CB 402 TO FES 400 PROFILE VIEW



YD 433 TO JB 421 PROFILE VIEW

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING CORPORATION
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO:	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
STORM PLAN & PROFILES

SHEET NO.:
C12.0

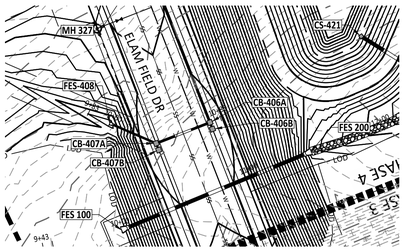
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Job\9900\Workin\ Projects\Shared_ Working Dwgs\Phase 4\Sheet Files\Sheet No. 12.0 Phase 4 Offsite Storm Plan & Profiles.dwg

49

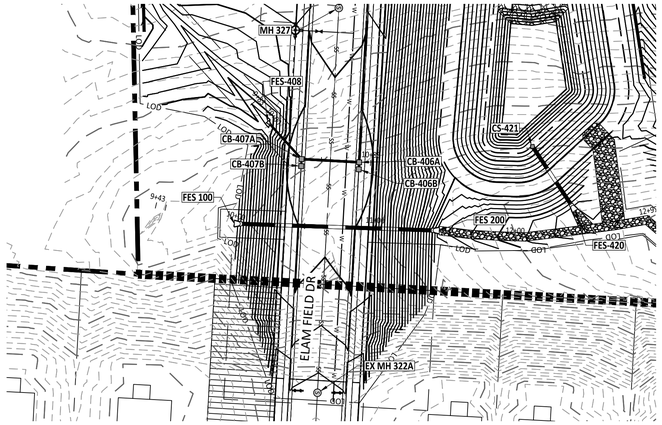
V1_CID-TBD_Kalas Phase 4.pdf · Page 45

Jacqueline Thompson
Please confirm steep pipe velocities. Steeper grades/higher velocity flows can cause erosion over time in pipe and structures.



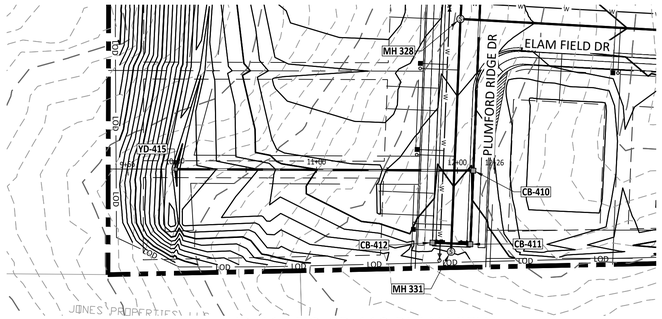
FES 408 TO CB 406A PLAN VIEW

GRAPHIC SCALE



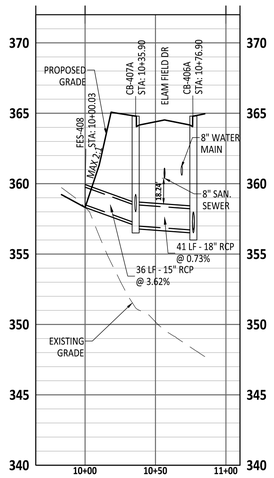
CULVERT CROSSING PLAN VIEW

GRAPHIC SCALE

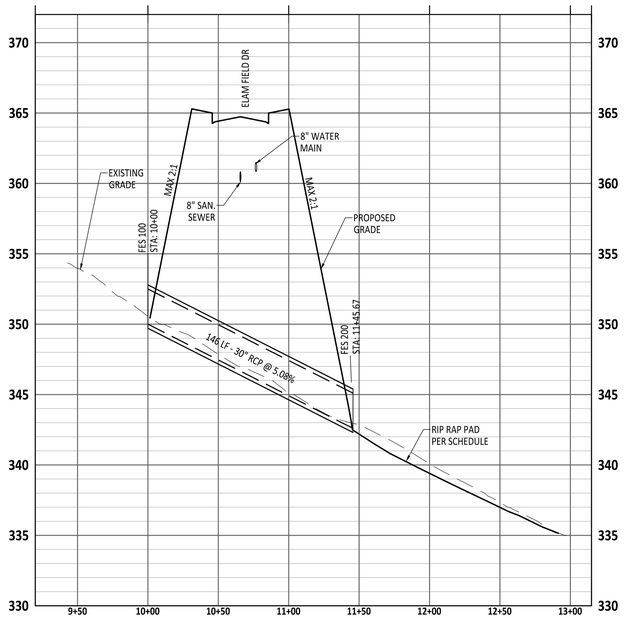


YD 415 TO CB 410 PLAN VIEW

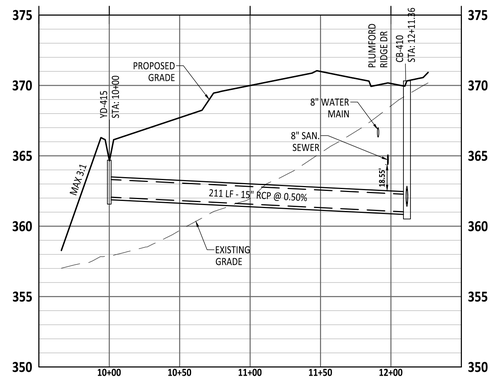
GRAPHIC SCALE



FES 408 TO CB 406A PROFILE VIEW



CULVERT CROSSING PROFILE VIEW



YD 415 TO CB 410 PROFILE VIEW

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

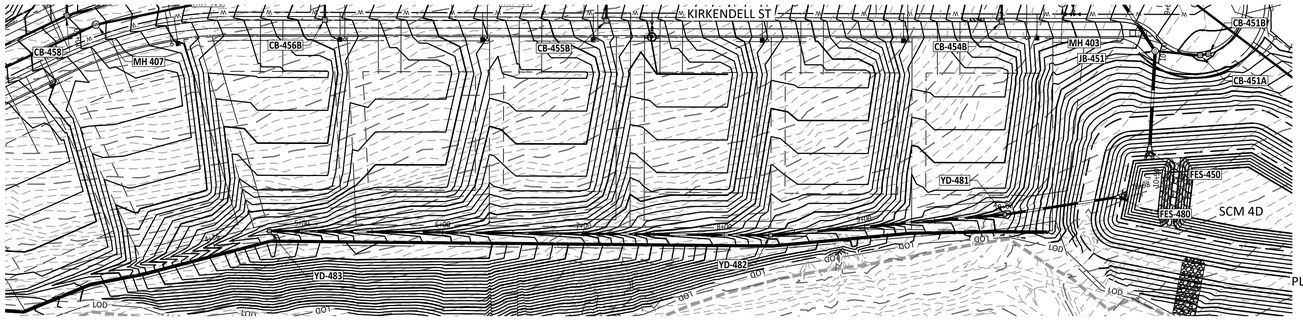
SHEET TITLE:
STORM PLAN & PROFILES

SHEET NO.:
C12.1

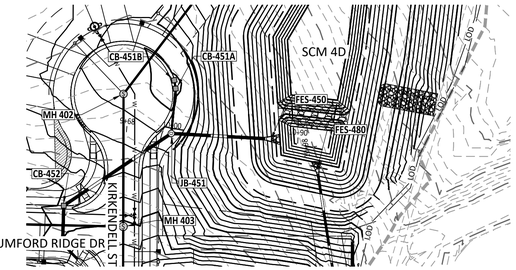
North Carolina 811 811.org
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Final_Working Dwg\Phase 4\Sheet Files\[Sheet No. 12.1-Phase 4 Different Storm Plan & Profiles.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 46

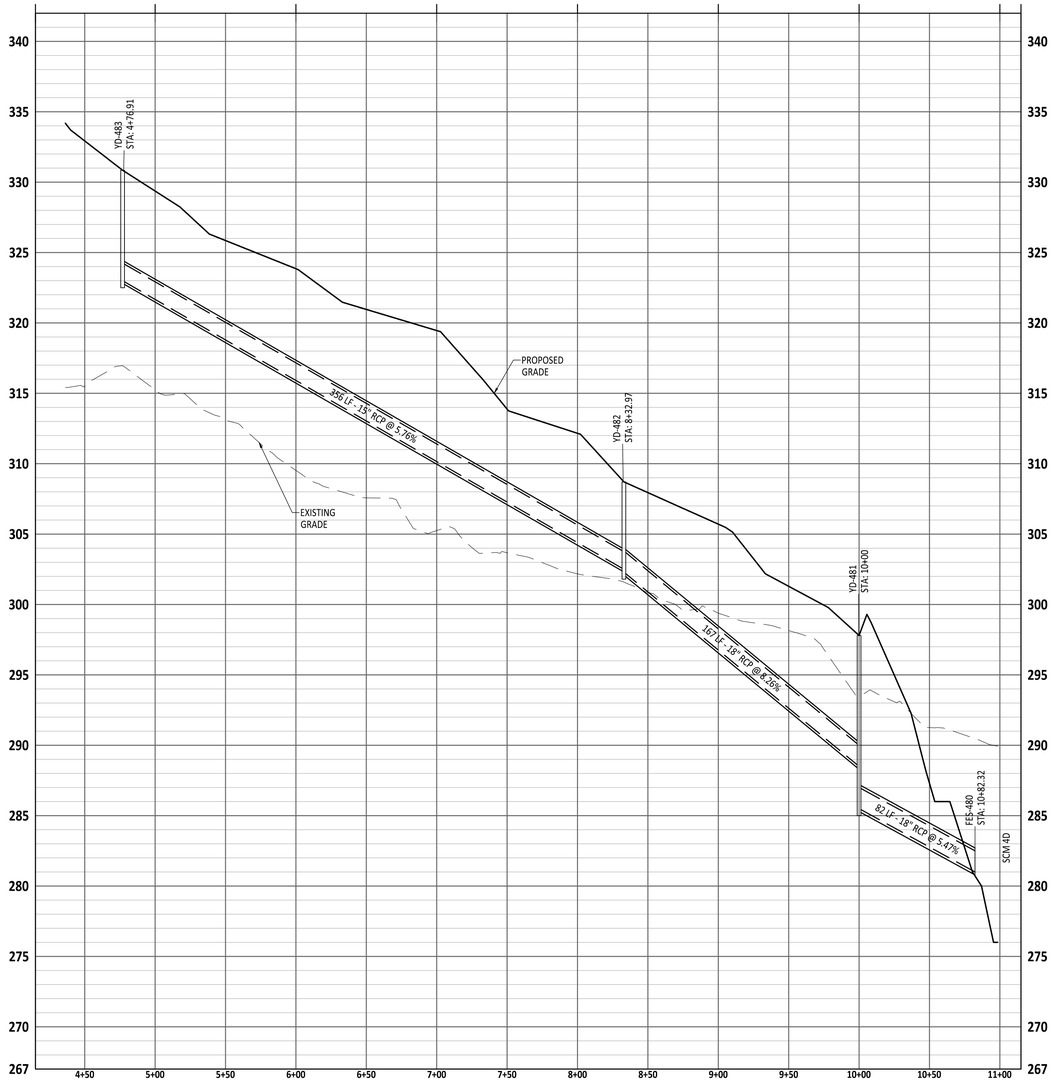


YD 483 TO FES 480 PLAN VIEW

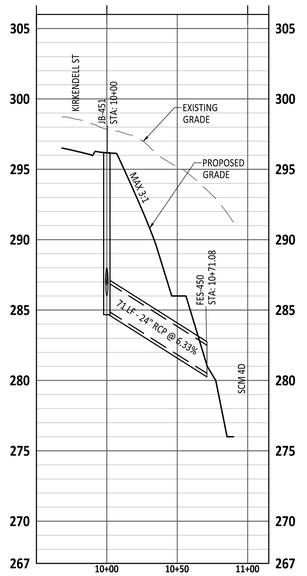


JB 451 TO FES 450 PLAN VIEW

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50



YD 483 TO FES 480 PROFILE VIEW



JB 451 TO FES 450 PROFILE VIEW

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST, P.A. C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

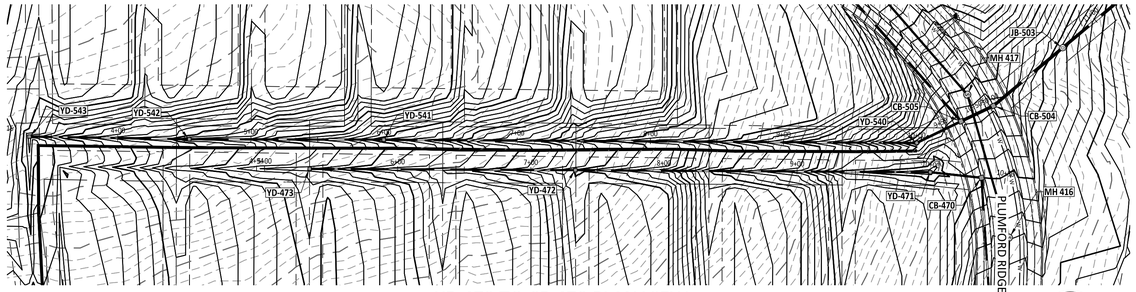
SHEET TITLE:
STORM PLAN & PROFILES

SHEET NO.:
C12.2

North Carolina 811 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Watkins Property\Final_Working Dwgs\Phase 4\Sheet Files\Sheet No. 12 Phase 4 Allotment Storm Plan & Profiles.dwg

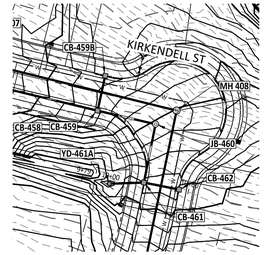
V1_CID-TBD_Kalas Phase 4.pdf · Page 47



YD 473 TO CB 470 PLAN VIEW

GRAPHIC SCALE

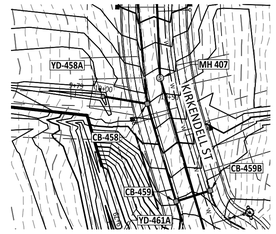
(IN FEET)
1 inch = 50



YD 461A TO CB 462 PLAN VIEW

GRAPHIC SCALE

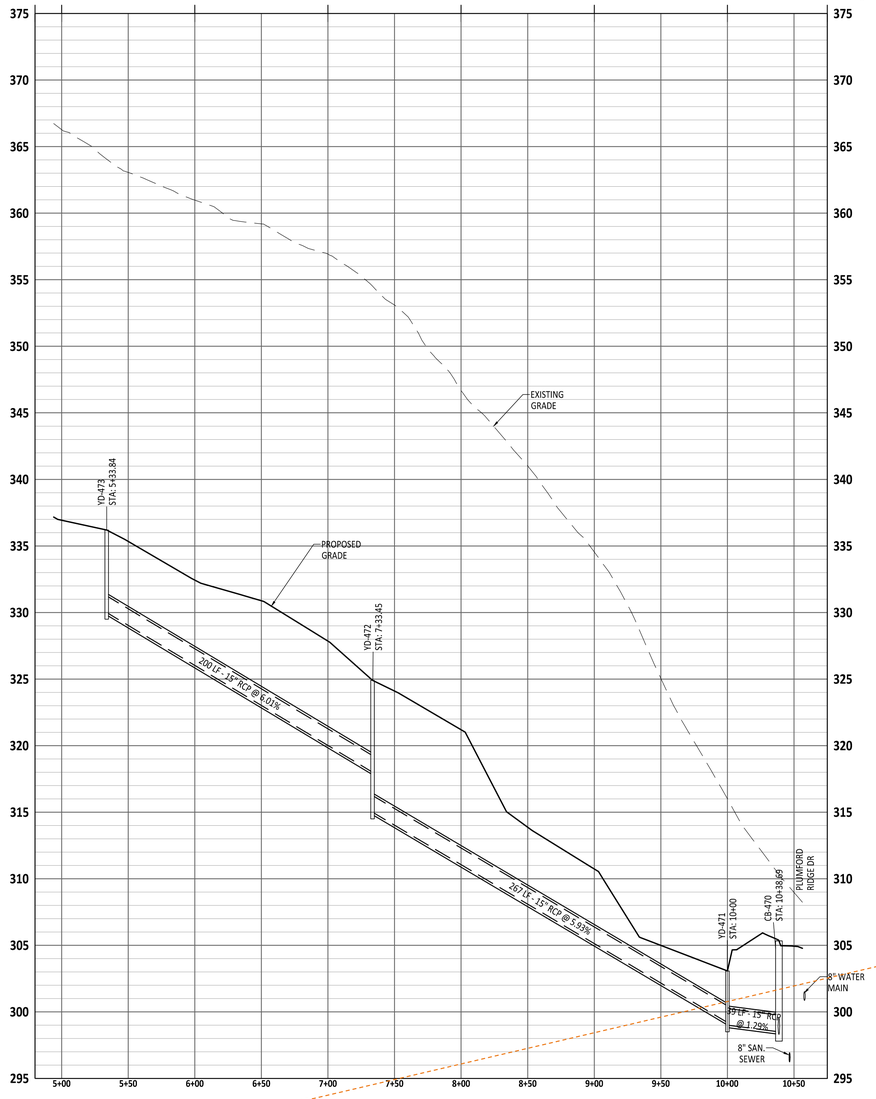
(IN FEET)
1 inch = 50



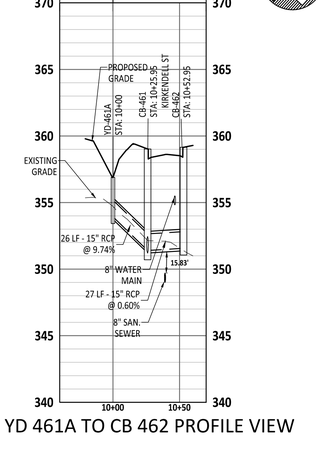
YD 458A TO CB 458 PLAN VIEW

GRAPHIC SCALE

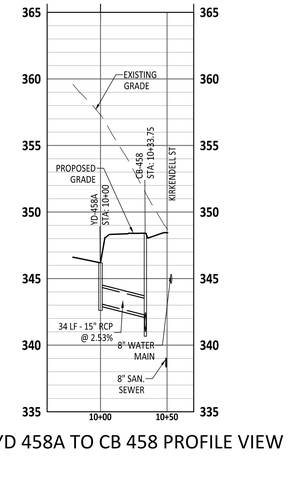
(IN FEET)
1 inch = 50



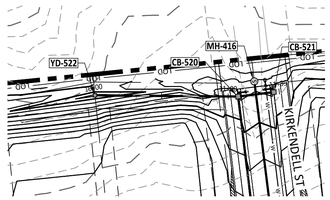
YD 473 TO CB 470 PROFILE VIEW



YD 461A TO CB 462 PROFILE VIEW



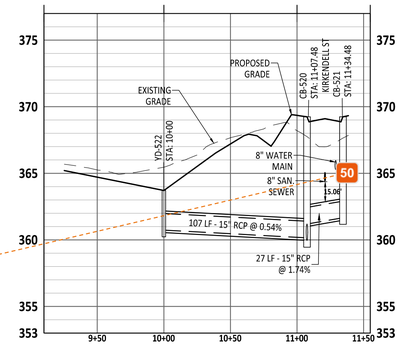
YD 458A TO CB 458 PROFILE VIEW



YD 522 TO CB 521 PLAN VIEW

GRAPHIC SCALE

(IN FEET)
1 inch = 50



YD 522 TO CB 521 PROFILE VIEW

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 062383
ROMAN S. COOK
Registered

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
STORM PLAN & PROFILES

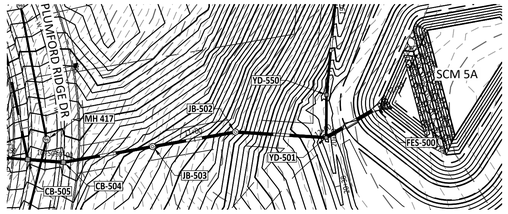
SHEET NO.:
C12.3

North Carolina 811 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working\Property\Final_Working Dwg\Phase 4\Offsite Roads\Offsite Roads\Offsite Roads Plan & Profiles.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 48

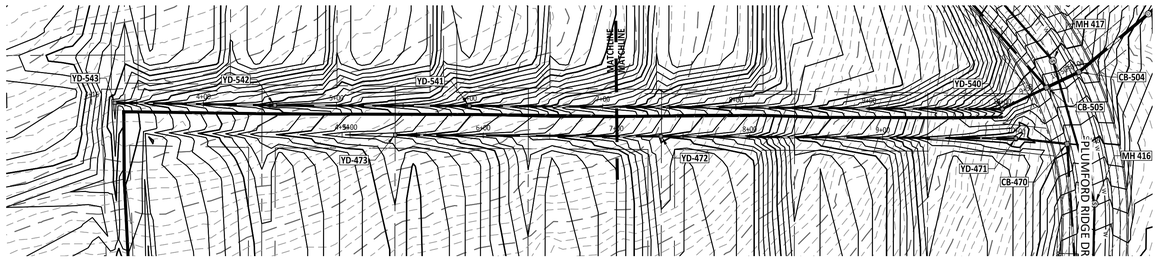
50 **Jacqueline Thompson**
Please review all crossings to ensure 18" minimum separation is being provided.



CB 505 TO FES 500 PLAN VIEW

GRAPHIC SCALE

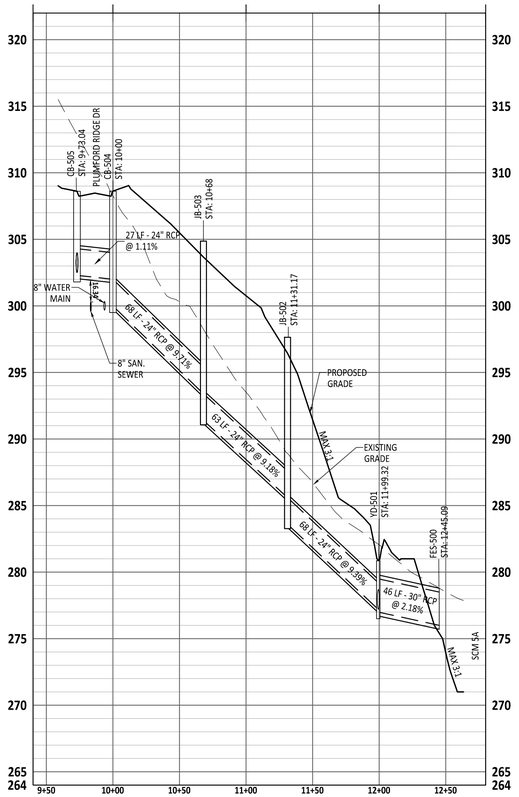
(IN FEET)



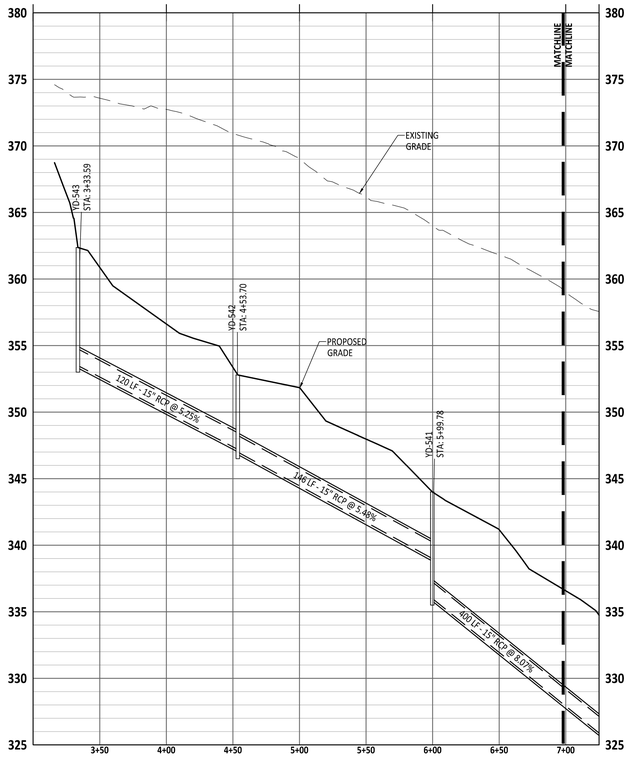
YD 543 TO CB 505 PLAN VIEW

GRAPHIC SCALE

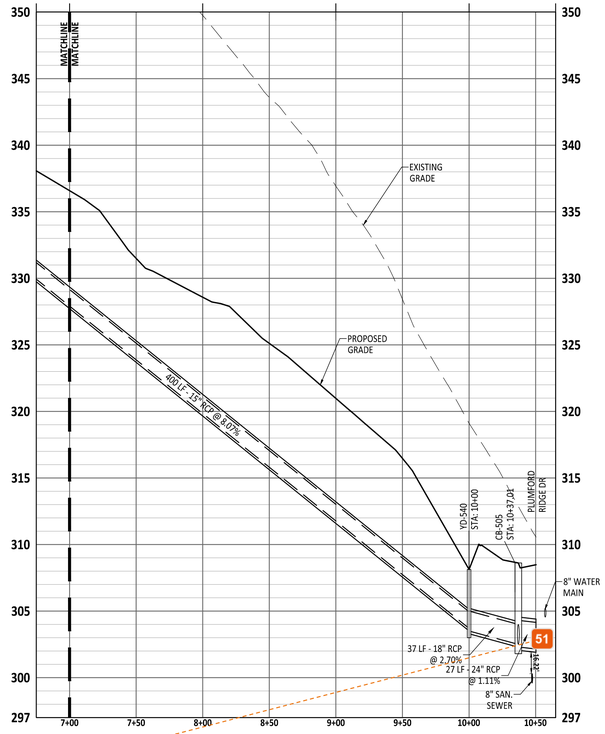
(IN FEET)



CB 505 TO FES 500 PROFILE VIEW



YD 543 TO CB 505 PROFILE VIEW



YD 543 TO CB 505 PROFILE VIEW

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL
SEAL 062383
ENGINEER
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
STORM PLAN & PROFILES

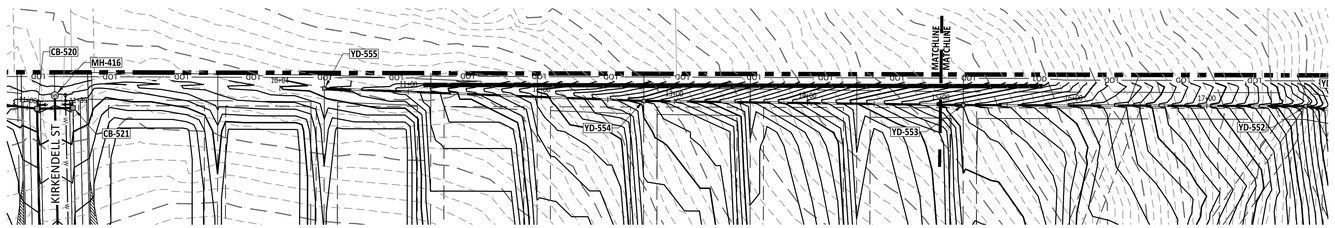
SHEET NO.:
C12.4

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Windows Properties\Civil_Working\Dwgs\Phase 4\Sheet Files\Sheet No. 12.4 Phase 4 Plf\Sheet Storm Plan & Profile.dwg

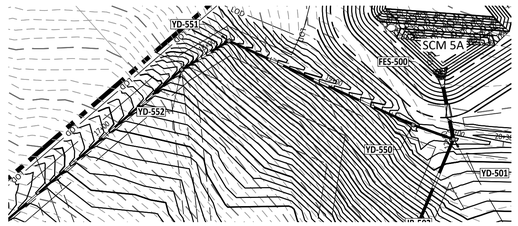
V1_CID-TBD_Kalas Phase 4.pdf · Page 49

51 **Jacqueline Thompson**
Please review all pipe crossings to ensure a minimum 18" separation is being provided.



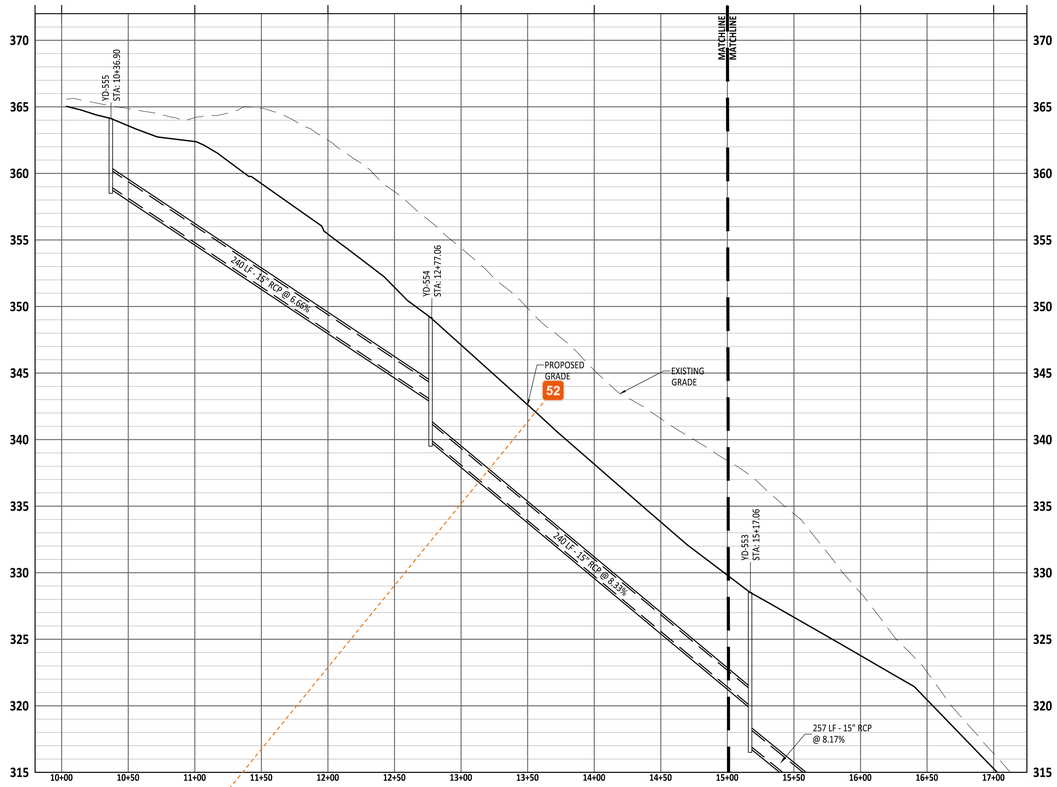
YD 555 TO YD 501 PLAN VIEW

GRAPHIC SCALE
(IN FEET)
1 inch = 50

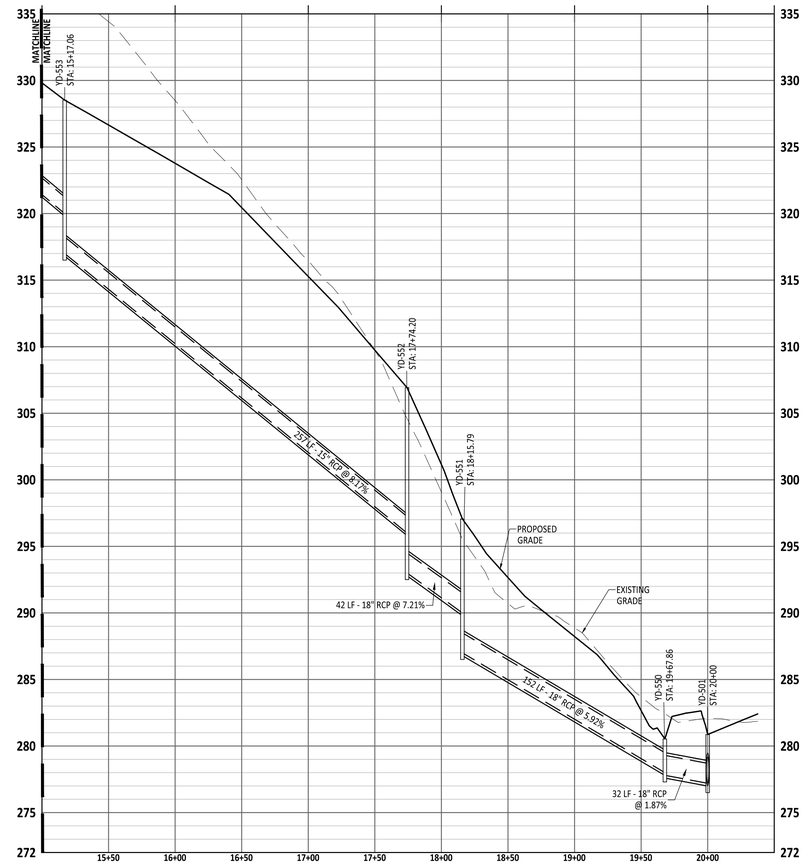


YD 555 TO YD 501 PLAN VIEW

GRAPHIC SCALE
(IN FEET)
1 inch = 50



YD 555 TO YD 501 PROFILE VIEW



YD 555 TO YD 501 PROFILE VIEW

GRAPHIC SCALE
(IN FEET)
1 inch = 50

Z:\Jobs\9900\Kalas\Project\dwg_Working Dwgs\Plans\45Sheet Files\Sheet No. 12 5 Phase 4 Offsite Storm Plan & Profiles.dwg

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 062383
ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

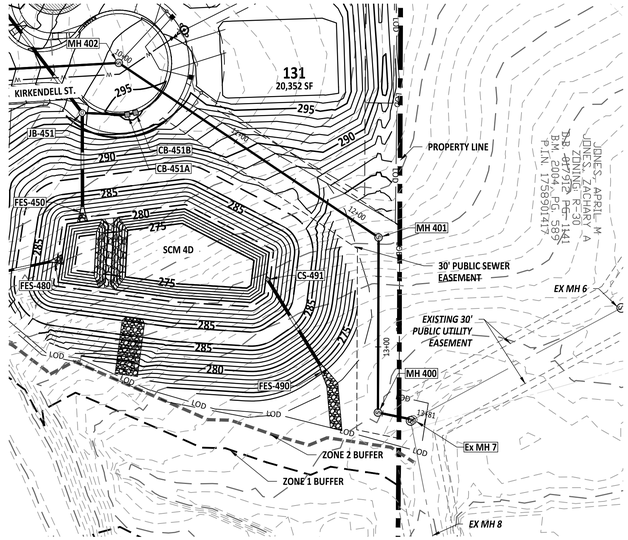
SHEET TITLE:
STORM PLAN & PROFILES

SHEET NO.:
C12.5

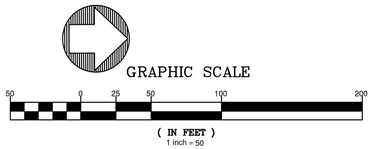
North Carolina 811 one call center
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

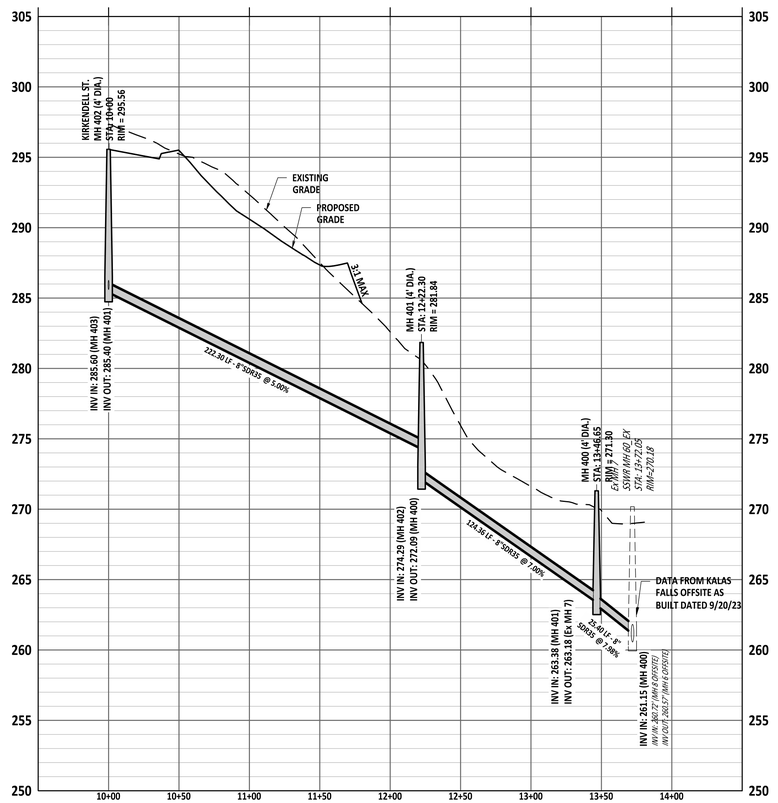
V1_CID-TBD_Kalas Phase 4.pdf · Page 50

52 **Jacqueline Thompson**
With these steeper ditches, please include the velocity calculations in the stormwater package to ensure grass ditches won't erode away - riprap or concrete may need considered.



SEWER OUTFALL PLAN MH 402 TO EX MH 7





SEWER OUTFALL PROFILE MH 402 TO EX MH 7

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

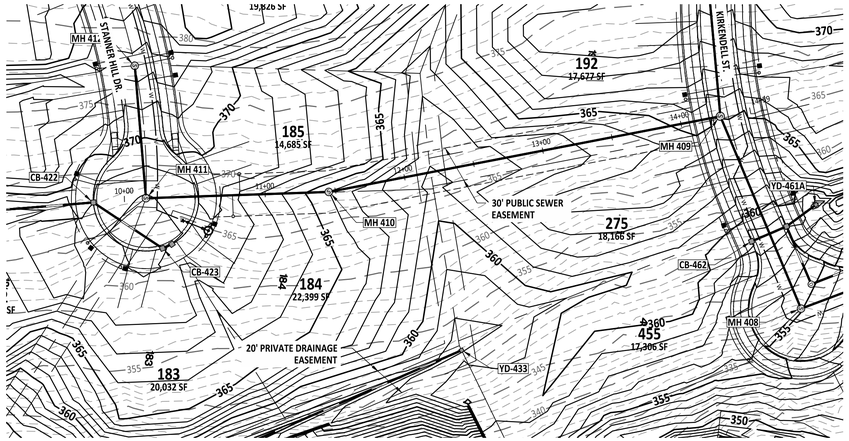
SHEET TITLE:
SEWER PLAN & PROFILES

SHEET NO.:
C13.0

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Drawings\dwg_Working Dwgs\[Phase 4] Sheet Files\[Sheet No. 13.0 Phase 4 Sewer Plan & Profiles.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 51

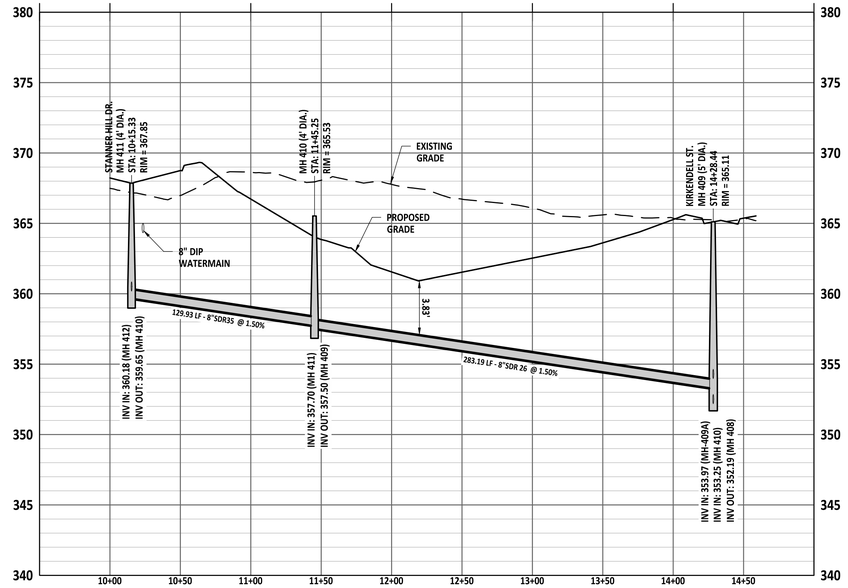


SEWER OUTFALL PLAN MH 411 TO MH 409

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50



SEWER OUTFALL PROFILE MH 411 TO MH 409

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON. AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

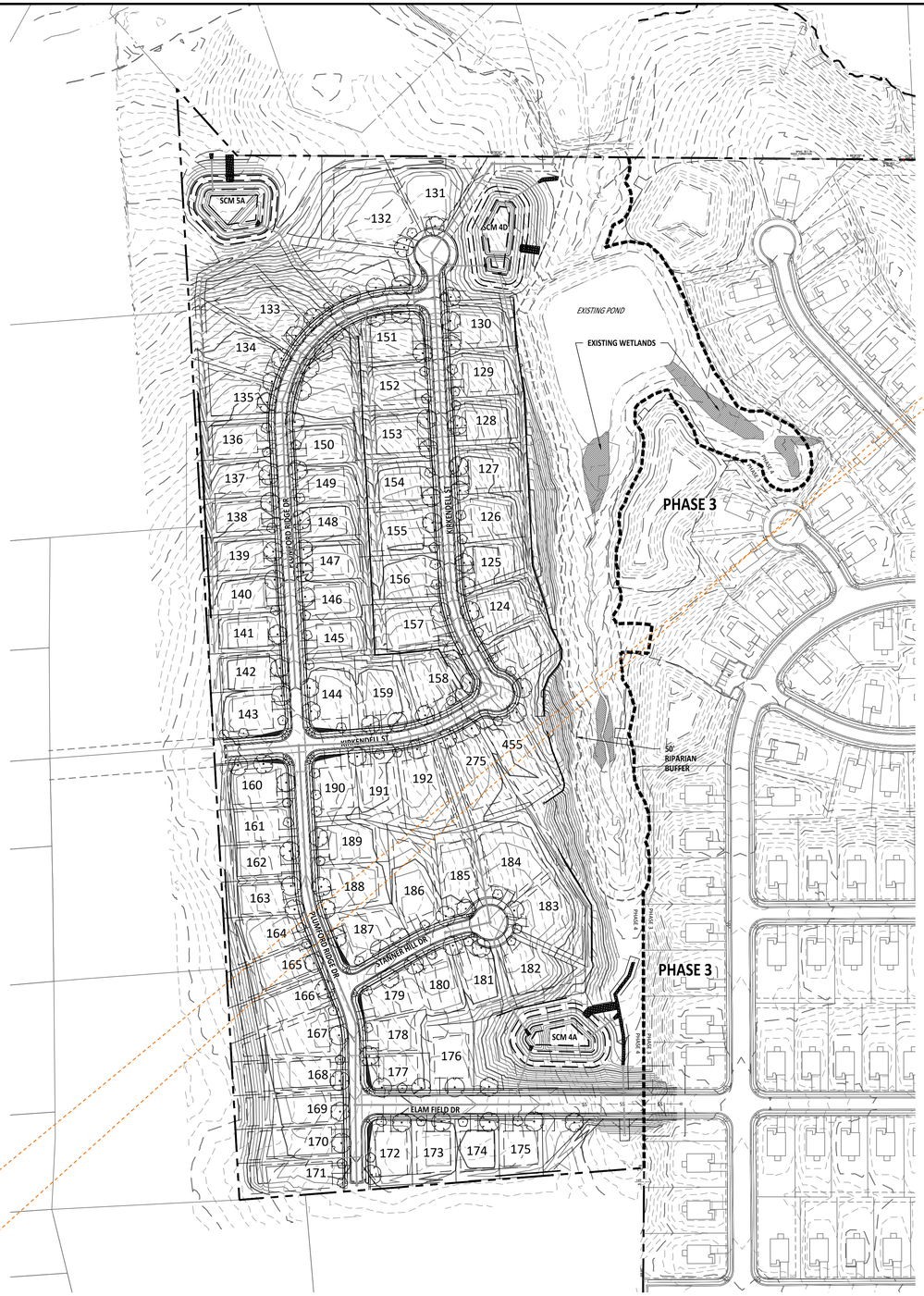
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
SEWER PLAN & PROFILES

SHEET NO.:
C13.1

North Carolina 811 one call
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Final_Working Dwg\Phase 4\Sheet Files\[Sheet No. 13.1 Phase 4 Sewer Plan & Profiles.dwg



LANDSCAPE REQUIREMENTS		
STREET TREES	REQUIRED	PROVIDED
LOCAL STREETS	1 EVERY 60' ON CENTER	1 EVERY 60' ON CENTER

OVERALL PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	CAL	CONT	QTY	REMARKS
TREES						
	ACE APL	Acer rubrum 'Built to Last' / Built to Last® Red Maple	3" Cal.	B&B	30	Single straight leader.
	CAR PAL	Carpinus caroliniana 'CCSQU' / Palisade® American Hornbeam	3" Cal.	B&B	32	Single straight leader
	MAG GR2	Magnolia virginiana 'Green Shadow' / Green Shadow Sweetbay Magnolia	3" Cal.	B&B	29	Single straight leader.
	QUE PTI	Quercus bicolor `JFS-KW12` / American Dream® Oak	3" Cal.	B&B	33	Single straight leader.
	QUE SUP	Quercus phellos 'QPFT06' / Fortitude™ Willow Oak	3" Cal.	B&B	29	Single straight leader.

GENERAL PLANTING NOTES:

1. All plant material shall conform with the standards set forth by the American Association of Nurserymen, American Standard for Nursery Stock, ANSI.Z60.1.
2. Locate all existing utilities prior to installation of plant material. Notify owner of any discrepancies between field conditions and those shown on the plan.
3. Contractor engaged in landscape installation shall be a landscape contractor registered in the state of North Carolina.
4. Tree protection fence shall be maintained on site until all site work and the final site inspection is completed. The fencing shall be removed prior to the certificate of occupancy (CO) inspection is scheduled
5. Verification of total quantities as shown on the plant list shall be the responsibility of the contractor.
6. All plant groupings shall be mulched as one bed. 3" of triple shredded hardwood mulch shall be used around all plantings.
7. Apply pre-emergent herbicide to all new planting beds at manufacturer's recommended rate prior to installation of mulch.
8. Establish positive drainage in all planting beds and away from buildings.
9. Do not install plant material in impervious soils, (i.e. holes which , when filled with water, do not completely drain within two hours.)
10. Lawn areas shall be seeded with Riviera or Sunstar Bermuda grass 95% coverage (based on a per square yard sample) shall be attained prior to final inspection. All 3:1 slopes shall be stabilized with biodegradable erosion control matting. See detail sheet seeding schedule.
11. General contractor shall be responsible for keeping all equipment & subcontractors away from seeded areas. If damage occurs, through no fault of the owner, areas shall be regraded and reseeded immediately at no additional cost to the owner. Contractor shall water and maintain those areas until they are at 95% coverage at final completion.
12. Install permanent seeding along all roadside ditches and channels within construction limits of project. see erosion control plans for additional information.
13. Areas damaged from plant relocation or other activities of landscape contractor to be reseeded and established at no additional cost to the owner.
14. Mulch shall be replenished as needed, especially after heavy rain events.
15. Contractor is responsible for importing, testing, and preparing the soil on site per the recommendations of a soil test. Plants shall be watered at least 2 times per week unless soil is moist based on core sample or moisture meter reading. Water more frequently during establishment.
16. Remove (either manually or with pesticide treatment) all weeds in mulch areas, plant beds, tree rings, and hardscape areas: including but not limited to nutsedge, grasses, invasive plants, and any non-desirable plant material. This treatment shall occur monthly until the end of the warranty / maintenance period.
17. Mulch line smooth continuous curves.
18. All trees not within a plant bed to be treated with a 6-ft diameter mulch ring (typ).
19. All foundation trees are to be planted a minimum of 8' away from building wall. Notify Owner of any discrepancies.

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)

1 inch =120

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 West Chapel Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS: DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE: OVERALL LANDSCAPE PLAN

SHEET NO.: C15.0

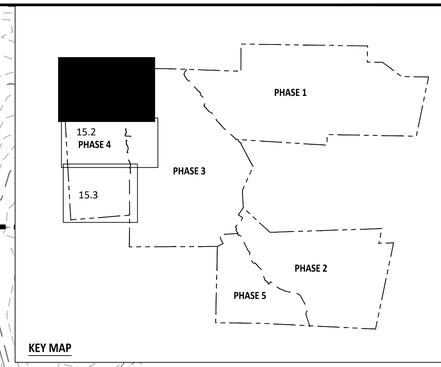
811 North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remotetickentry.htm

V:\Kalas\Phase 4\Drawings\Plans & Profiles\Profile Sheets\Working Drawings\Phase 4\Overall Plan\Phase 4 Landscape Plan Overall.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 53

53 **Eddie Henderson**
Please consider revising to show more of a diversity of native trees.
See the following links for alternative native tree species:
https://ncwildflower.org/recommended-native-species/

54 **Stephen Wensman**
red maples are not the best trees for Rolesville, please choose another species.



KEY MAP

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

PLANT SCHEDULE A

SYMBOL	CODE	BOTANICAL / COMMON NAME	CAL	CONT	QTY	REMARKS
TREES						
	ACE APL	Acer rubrum 'Built to Last' / Built to Last® Red Maple	3" Cal.	B&B	9	Single straight leader.
	CAR PAL	Carpinus caroliniana 'CCSQU' / Palisade® American Hornbeam	3" Cal.	B&B	6	Single straight leader
	MAG GR2	Magnolia virginiana 'Green Shadow' / Green Shadow Sweetbay Magnolia	3" Cal.	B&B	7	Single straight leader.
	QUE PTI	Quercus bicolor `JFS-KW12` / American Dream® Oak	3" Cal.	B&B	11	Single straight leader.
	QUE SUP	Quercus phellos 'QPFT06' / Fortitude™ Willow Oak	3" Cal.	B&B	9	Single straight leader.

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
LANDSCAPE PLAN AREA A

SHEET NO.:
C15.1

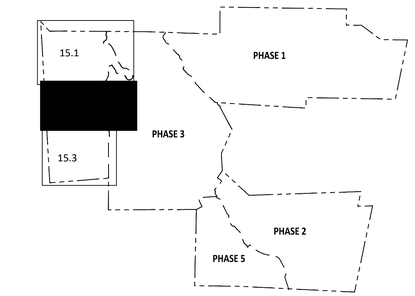
North Carolina 811 It's the law!
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remotc Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Drawings\Phase 4\Sheet Files\Sheet No. 15.1 Phase 4 Landscape Plan A.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 54

PLANT SCHEDULE B

SYMBOL	CODE	BOTANICAL / COMMON NAME	CAL	CONT	QTY	REMARKS
TREES						
	ACE APL	Acer rubrum 'Built to Last' / Built to Last® Red Maple	3" Cal.	B&B	10	Single straight leader.
	CAR PAL	Carpinus caroliniana 'CCSQU' / Palisade® American Hornbeam	3" Cal.	B&B	14	Single straight leader
	MAG GR2	Magnolia virginiana 'Green Shadow' / Green Shadow Sweetbay Magnolia	3" Cal.	B&B	8	Single straight leader.
	QUE PTI	Quercus bicolor `JFS-KW12` / American Dream® Oak	3" Cal.	B&B	10	Single straight leader.
	QUE SUP	Quercus phellos 'QPFT06' / Fortitude™ Willow Oak	3" Cal.	B&B	9	Single straight leader.



KEY MAP

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE, OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

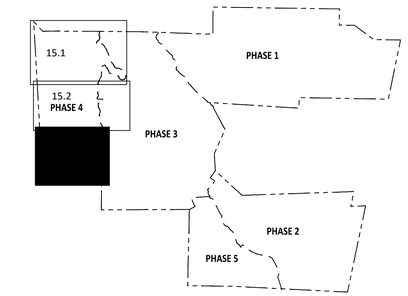
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
LANDSCAPE PLAN AREA B

SHEET NO.:
C15.2

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Workbox Projects\Eng_Working Dwgs\Phase 4\Sheet Files\[Sheet No. 15.2-Phase 4 Landscape Plan B.dwg



KEY MAP

PLANT SCHEDULE C						
SYMBOL	CODE	BOTANICAL / COMMON NAME	CAL	CONT	QTY	REMARKS
TREES						
	ACE APL	Acer rubrum 'Built to Last' / Built to Last® Red Maple	3" Cal.	B&B	11	Single straight leader.
	CAR PAL	Carpinus caroliniana 'CCSQU' / Palisade® American Hornbeam	3" Cal.	B&B	12	Single straight leader
	MAG GR2	Magnolia virginiana 'Green Shadow' / Green Shadow Sweetbay Magnolia	3" Cal.	B&B	14	Single straight leader.
	QUE PTI	Quercus bicolor `JFS-KW12` / American Dream® Oak	3" Cal.	B&B	12	Single straight leader.
	QUE SUP	Quercus phellos 'QPFT06' / Fortitude™ Willow Oak	3" Cal.	B&B	11	Single straight leader.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

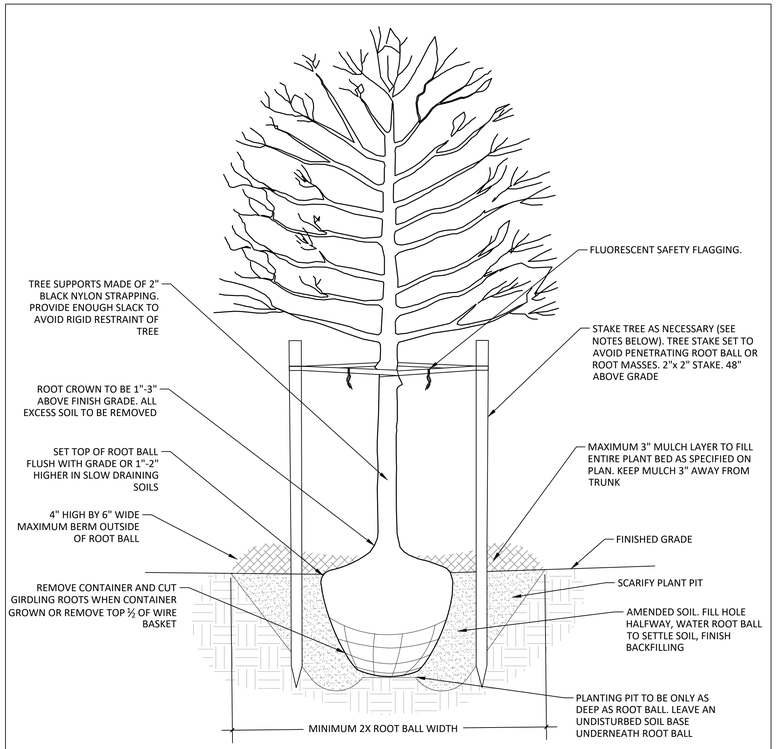
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
LANDSCAPE PLAN AREA C

SHEET NO.:
C15.3

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Written Property\dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No. 15.3 Phase 4 Landscape Plan C.dwg



NOTES:

1. ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004)
2. REMOVE WIRE AND NYLON TWINE FROM BALL AND CANOPY.
3. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.
4. DO NOT STAKE OR WRAP TRUNK UNLESS:
   A. TREE HAS A LARGE CROWN.
   B. PLANTING SITE IS CONSISTENTLY WINDY OR IS A STEEP SLOPE.
   C. PLANTING SITE IS SUSCEPTIBLE TO VANDALISM.
6. REMOVE ALL STAKING MATERIAL AFTER 1 YEAR.
7. REMOVE ALL TAGS AND LABELS FROM PLANT MATERIAL.
8. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. ONLY PRUNE CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED.

1 TYPICAL TREE PLANTING

NOT TO SCALE

P-RE-R-R180115-01

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

PROGRESS DRAWINGS:
DO NOT USE FOR CONSTRUCTION

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

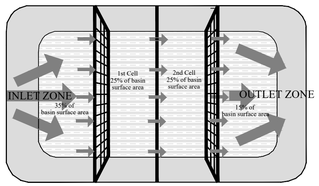
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
LANDSCAPE DETAILS

SHEET NO.:
C15.4

North Carolina 811 811.com
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

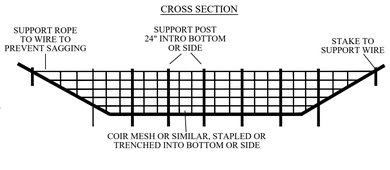
Z:\Jobs\9900\Kalas Property\Final_Working Dwg\Phase 4\Sheet Files\Sheet No. 15.4 Phase 4 Landscape Details.dwg

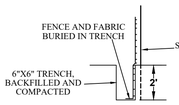


PLAN VIEW

NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 700 G/M2 COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL

CROSS SECTION



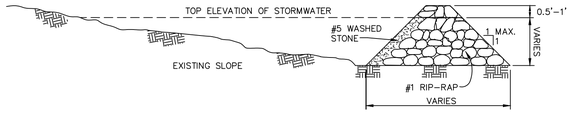


SECTION VIEW AT OPENING

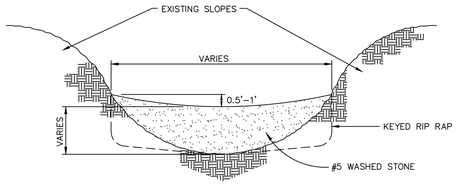
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD BAFFLES DETAIL 1



SIDE VIEW



FRONT VIEW

CONSTRUCTION NOTES:

HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.

KEY RIP RAP INTO THE DAM FOR STABILIZATION.

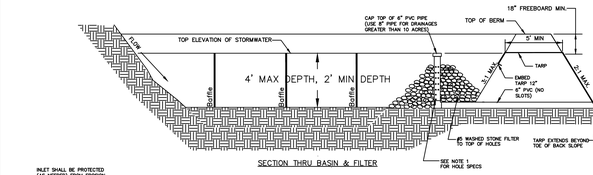
STEP SEQUENCE

NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

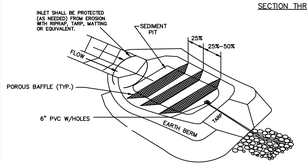
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

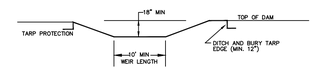
STANDARD CHECK DAM 2



SECTION THRU BASIN & FILTER



PERSPECTIVE VIEW



SECTION THRU WEIR

NOTE 1

HOLE SPECS:

DEWATERING HOLES WILL BE INSTALLED IN SETS OF HORIZONTAL RINGS. THE FIRST SET OF HOLES WILL BE SET 6 INCHES FROM THE BOTTOM OF THE RISER. RINGS WILL CONTINUE UP THE RISER IN INTERVALS OF 3 INCHES. HOLES WILL BE 3/4 INCH IN DIAMETER AND WILL BE SPACED EQUALLY AROUND THE RISER. THE NUMBER OF HOLES PER RING WILL EQUAL TO THE DRAINAGE AREA.

EXAMPLE
A BASIN DRAINING 2.0 ACRES SHOULD HAVE 2 HOLES PER RING EVERY 3 INCHES ON THE RISER PIPE. THE FIRST RING (2 HOLES) WILL BE SET 6 INCHES FROM THE BOTTOM OF THE RISER.

NOTE: ROUND DRAINAGE AREA TO THE NEAREST WHOLE NUMBER TO DETERMINE NUMBER OF HOLES.

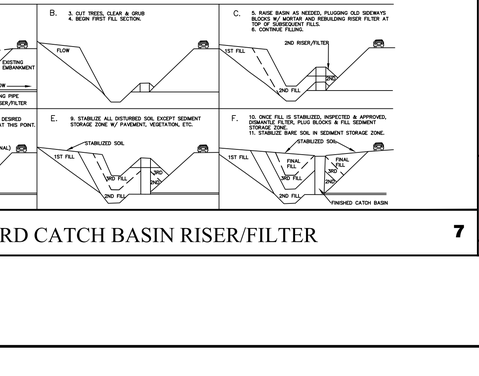
GENERAL NOTES

1. DRAW DOWN RISER & BARREL SHALL BE 6" SCH. 40 PVC WITH CLEAN-OUT CAP AND 3/4" HOLES. SEE NOTE 1 FOR NUMBER AND SPACING OF HOLES.
2. THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE 50 MIL. HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR U.V. RESISTANCE.
3. MAINTENANCE: SEDIMENT TO BE REMOVED AND PROPERLY DISPOSED OF WHEN BASIN IS HALF FULL. GRAVEL FILTER AROUND RISER SHOULD BE REPLACED AS NEEDED TO ENSURE DEWATERING.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

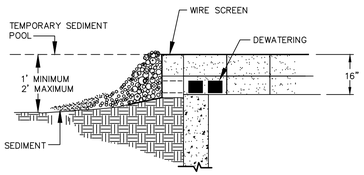
STANDARD CUSTOM BASIN 3



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4 TO 1/2 INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #57 WASHED STONE IS RECOMMENDED.

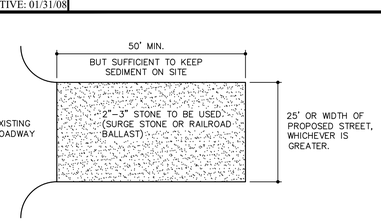
MAINTENANCE: INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

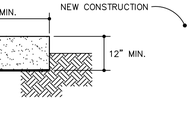
STANDARD BLOCK & GRAVEL DROP INLET PROTECTION 4



PARABOLIC-SHAPED WATERWAY WITH STONE CENTER DRAIN
(SHAPED BY BULLDOZER)

V-SHAPED WATERWAY WITH STONE CENTER DRAIN
(SHAPED BY MOTOR GRADER)

TYPICAL RIP RAP CHANNEL



TRAPEZOIDAL

NOTES:

- TO BE USED WHERE EXCESSIVE STORMWATER VELOCITIES PROHIBIT VEGETATIVE LININGS.
- SIZE OF STONE MUST BE DETERMINED BY APPROPRIATE DESIGN PROCEDURE.
- DIMENSIONS FOR d & W VARIES ACCORDING TO DESIGN.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD RIP-RAP LINED CHANNELS 5

NOTES:

1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.

CROSS SECTIONAL VIEW

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD TEMPORARY DIVERSION DITCH 6

PERSPECTIVE VIEW

SECTION VIEW

USE OF CATCH BASIN RISER/FILTER ON FILL SITES

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD CATCH BASIN RISER/FILTER 7

PLAN VIEW

NOTES:

1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.

CROSS SECTION

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD CONSTRUCTION ENTRANCE 8

NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 300 FEET. THE SIZE OF EACH SIGN MUST BE A MINIMUM OF 2' x 2' AND BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
3. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
4. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

TREE PROTECTION FENCE 9

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

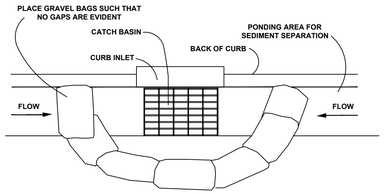
JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD1

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

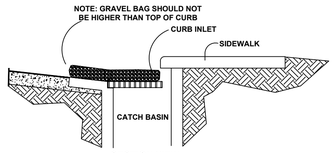
Z:\Jobs\9900\Kalas Property\Kalas_Working Dwg\Phase 4\Sheet Files\Sheet No CD1 CD1 Phase 4 Details.dwg



PLAN VIEW

NOTES:

1. PLACE GRAVEL BAG BARRIER ON GENTLY SLOPING STREET, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNNOFF.
2. USE SAND BAGS OF WOVEN GEOTEXTILE FABRIC (NOT BURLAP) AND FILL WITH ¾ INCH (OR SMALLER) GRAVEL. BAGS MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.
4. WHEN INSTALLING CURB INLET PROTECTION DEVICES, NEVER BLOCK THE CURB INLET.

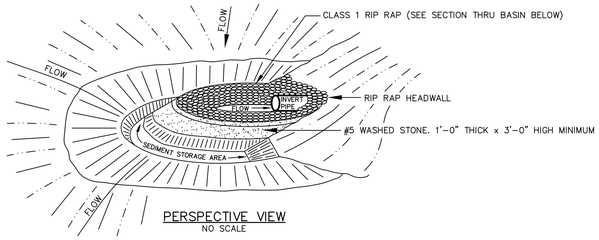


SECTION VIEW

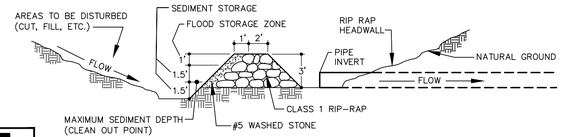
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD GRAVEL BAG CURB INLET PROTECTION **10**



PERSPECTIVE VIEW
NO SCALE

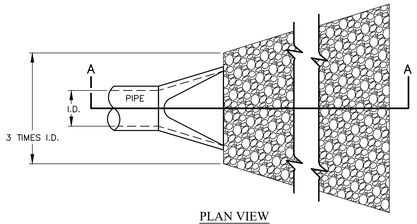


SECTION THRU CATCH BASIN, FILTER AND CULVERT PIPE
NO SCALE

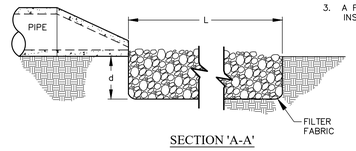
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD HORSESHOE INLET PROTECTION **11**



PLAN VIEW



SECTION 'A-A'

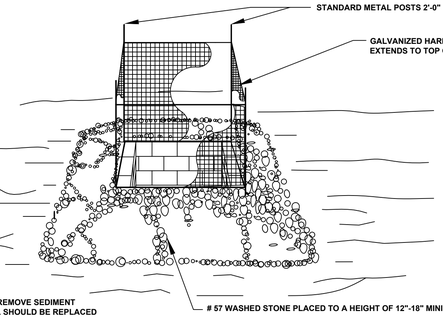
NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL **12**



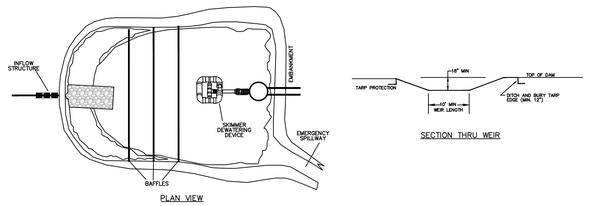
NOTE:

1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

WAKE COUNTY NORTH CAROLINA

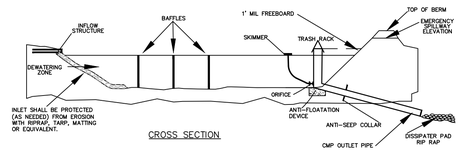
EFFECTIVE: 01/31/08

STANDARD GRAVEL YARD INLET PROTECTION **13**



PLAN VIEW

SECTION THRU WEIR



CROSS SECTION

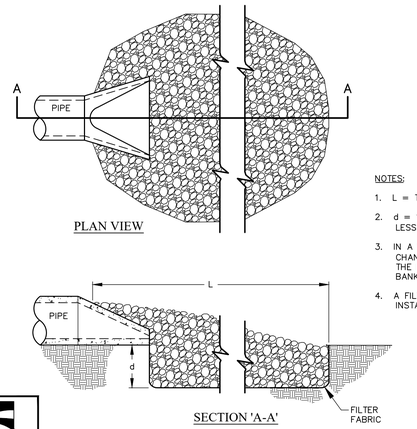
NOTES:

1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE 50 ML. HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR U.V. RESISTANCE.
3) PROVIDE A MINIMUM OF THREE POROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) DURING THE CONSTRUCTION PHASE OF THE PROJECT, PERMANENT STORMWATER RISER SHALL ONLY DEWATER FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

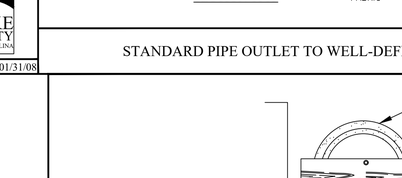
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER ATTACHED TO PERMANENT RISER **14**



PLAN VIEW



SECTION 'A-A'

NOTES:

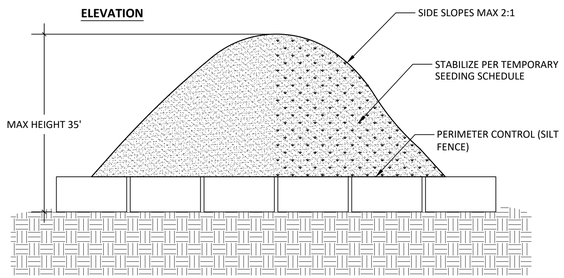
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL **15**

ELEVATION

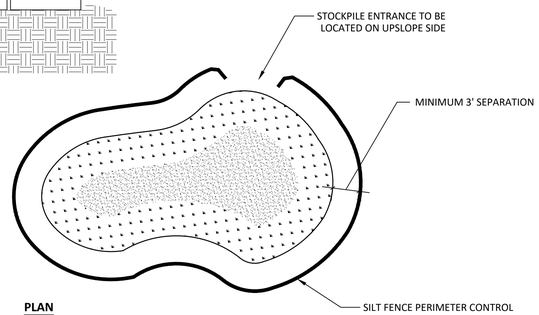


NOTES:

1. LOCATE STOCKPILE SO THAT THEY ARE 50FT FROM ANY STORM DRAIN INLET, OPEN CHANNEL, WETLAND, OR WATERBODY. REDIRECT ANY CONCENTRATED FLOW AROUND STOCKPILE USING AN APPROVED EROSION AND SEDIMENT CONTROL MEASURE.
2. SECURE THE PERIMETER OF THE STOCKPILE WITH AN APPROVED EROSION AND SEDIMENT CONTROL PERIMETER DEVICE.
3. IF STOCKPILE IS TO REMAIN INACTIVE FOR MORE THAN 14 CALENDAR DAYS, THE STOCKPILE MUST BE VEGETATED. FOLLOW THE TEMPORARY SEEDING SCHEDULE. THE VEGETATION CHOSEN SHALL LAST THE DURATION OF THE STOCKPILE; THE STOCKPILE SHALL BE RESTABILIZED IF THE TEMPORARY VEGETATION DIES OR EROSION RESULTS.

MAINTENANCE NOTES:

1. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEYED IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
2. IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE(BUILDERS, ETC.) THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
3. THE APPROVED PLAN SHALL PROVIDE FOR USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCK PILE IS IN USE.
4. ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).



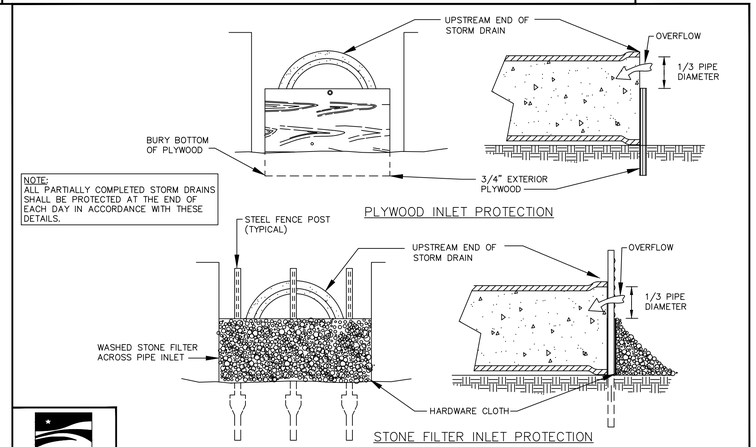
PLAN

1 STOCK PILE

NOT TO SCALE

P-12

16



NOTE:
ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.

PLYWOOD INLET PROTECTION

STONE FILTER INLET PROTECTION

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE) **17**

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:

KALAS FALLS CIVIL DETAILS

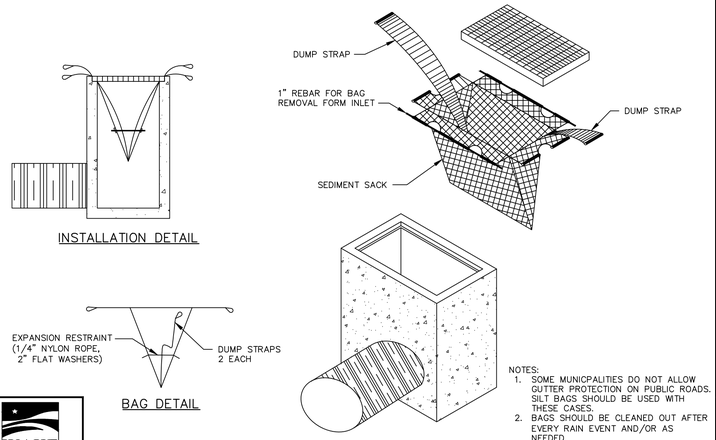
SHEET NO.:

CD2

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

J:\Jobs\9900\Kalas Property\Dwg_Working\Dwg\Phase 4\Sheet Files\Sheet file CD\ CD13 Phase 4 Details.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 59

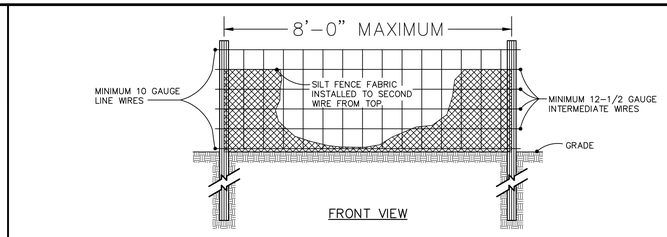


NOTES:
1. SOME MUNICPALITIES DO NOT ALLOW GUTTER PROTECTION ON PUBLIC ROADS. SILT BAGS SHOULD BE USED WITH THESE CASES.
2. BAGS SHOULD BE CLEANED OUT AFTER EVERY RAIN EVENT AND/OR AS NEEDED.

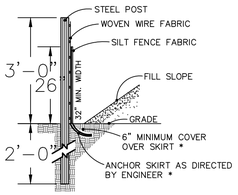
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE 18



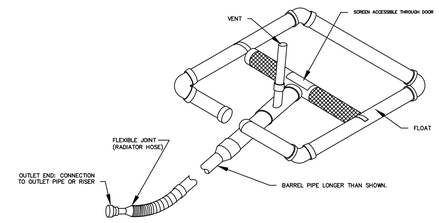
NOTE:
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD TEMPORARY SILT FENCE 19



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER DETAIL 20

INLET SHALL BE PROTECTED (AS NEEDED) FROM EROSION WITH RIPRAP, TARP, MATTING OR EQUIVALENT.

NOTES:
1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE 50 MIL. HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR U.V. RESISTANCE.
3) PROVIDE A MINIMUM OF THREE POROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) DURING THE CONSTRUCTION PHASE OF THE PROJECT, PERMANENT STORMWATER RISER SHALL ONLY DEWATER FROM THE TOP OF PIPE
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER BASIN 21

NOTES:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SILT FENCE OUTLET 22

NOTES:

1. CONSTRUCT THE ENTRANCE TO THE SLOPE DRAIN OF A STANDARD FLARED-END SECTION OF PIPE WITH A MINIMUM 6-INCH METAL TOE PLATE (CROSS-SECTION VIEW). MAKE ALL FITTINGS WATERTIGHT. A STANDARD T-SECTION FITTING MAY ALSO BE USED AT THE INLET.
2. USE AN EARTHEN DIVERSION TO DIRECT SURFACE RUNOFF INTO THE TEMPORARY SLOPE DRAIN. MAKE THE HEIGHT OF THE BERM OVER THE DRAIN CONDUIT A MINIMUM OF 1.5 FT AND AT LEAST 6 INCHES HIGHER THAN THE ADJOINING BERM ON EITHER SIDE. THE LOWEST POINT OF THE DIVERSION BERM SHOULD BE A MINIMUM OF 1 FT ABOVE THE TOP OF THE DRAIN SO THAT DESIGN FLOW CAN FREELY ENTER THE PIPE.
3. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION WITH RIPRAP DISSIPATOR.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD TEMPORARY SLOPE DRAIN 23

DATE:

PAGE: 24

Design Criteria

Drainage Area:		5 acres or less	
Dike Design		Channel Design	
Side Slope:	2:1 or flatter	Shape:	Parabolic, Trapezoidal, or V-Shaped
	3:1 of flatter where vehicles must cross	Side Slope:	2:1 or flatter
			3:1 or flatter where vehicles must cross
Width:	2.0 ft minimum		
Height:	1.5 ft minimum	Stabilization:	Based on velocity of reaches
Freeboard:	0.5 ft minimum		
Settlement:	10% of total fill height minimum		

NOTES:
1. Remove and properly dispose of all trees, brush, stumps, and other objectionable material. Fill and compact all ditches and gullies that will be crossed by machinery to natural ground level or above.
2. Disk the base of the dike before placing fill.
3. Ensure that the constructed cross section meets all design requirements.
4. Compact the dike by tracking with construction equipment.
5. Divert all sediment laden water into a temporary sediment trap or sediment basin. Runoff from undisturbed areas should empty into an outlet protection device such as a level spreader or riprap outlet structure unless well stabilized natural outlets exist.
6. Ensure that the top of the dike is not lower at any point than the design elevation plus the specified settlement after it has been compacted.
7. Leave sufficient area along the dike to permit machine re-grading and cleanout.
8. Immediately seed and mulch the dike after its construction, and stabilize the flow portion in accordance with design requirements.

Maintenance:
1. Inspect diversion dikes at least weekly and after each rainfall of 1.0 inch or greater.
2. Immediately remove sediment from the flow area and repair the dike.
3. Check outlets, and make timely repairs as needed to avoid gully formation.
4. when area above the temporary diversion dike is permanently stabilized, remove the dike, and fill and stabilized the channel to blend with the natural surface.

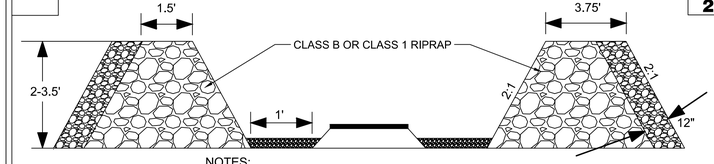
DEQ

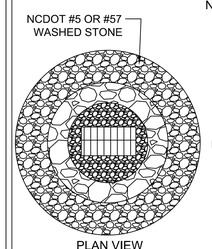
DIVERSION DIKE (PERIMETER PROTECTION)

Effective Date: 9/1/2023 In accordance with the 2013 Design Manual Updates

DATE:

PAGE: 25





NOTES:
1. Clear the area of all debris that might hinder excavation and disposal of spoil.
2. Grade shallow depression uniformly towards the inlet with side slopes no greater than 2:1. Grade a 1-foot wide level area set 4 inches below the area adjacent to the inlet.
3. Install the Class B or Class 1 riprap in a circle around the inlet. The minimum crest width of the riprap should be 18 inches, with a minimum bottom width of 7.5 feet. The minimum height of the stone is 2 feet.
4. The outside face of the riprap is then lined with 12 inches of NC DOT #5 or #57 washed stone.

MAINTENANCE:
1. Inspect all measures at least weekly and after each rainfall of 1.0 inch or greater; make any repairs immediately.
2. Remove sediment form the sediment pool area when the volume is decreased by half. Stabilize excavated material appropriately.
3. Do not damage or undercut the structure during sediment removal. Remove debris and replace stone as needed. If inlet is covered with wire mesh, clean wire mesh free of debris.

DEQ

ROCK DOUGHNUT INLET PROTECTION

Effective Date: 9/1/2023 In accordance with the 2013 Design Manual Updates

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

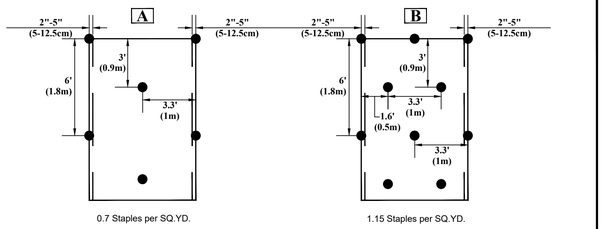
SHEET TITLE:
KALAS FALLS CIVIL DETAILS

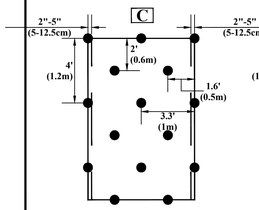
SHEET NO.:
CD3

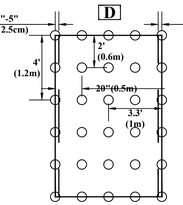
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

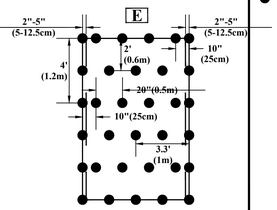
Z:\DATA\9900\Kalas\Property\Shell_Working Dwg\Phase 4\Sheet Files\Sheet No.CD3 Phase 4 Details.dwg

STAPLE PATTERN GUIDE









- 4:1 Slopes (A)
- 3:1 Slopes (B)
- 2:1 Slopes (C)
- 1:1 & Steeper Slopes (D)
- Medium/High Flow Channel (D)
- High Flow Channel And Shoreline (E)

NOTES:

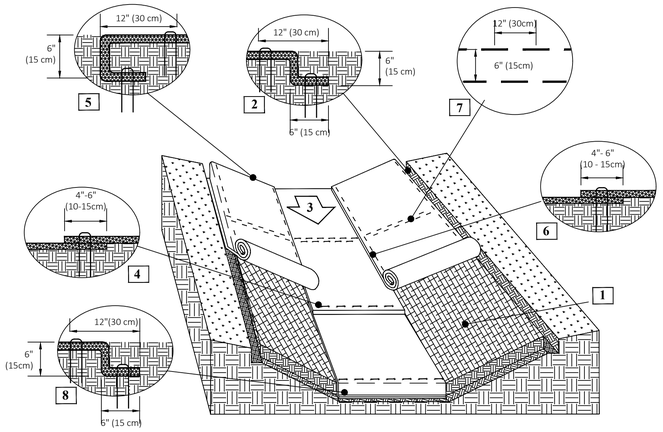
* Use ECMDS© for more accurate staple pattern selection.

Drawing Not To Scale

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd. PH: 800-722-2040
Poseyville, IN 47633 www.nagreen.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

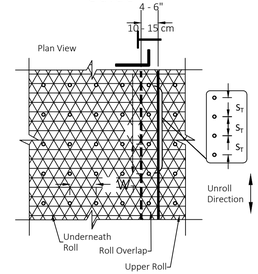
Drawn on: 5-4-17



Instructions

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed. Ground surface must be free of debris, rocks, clay clods and raked smooth sufficient to allow intimate contact of the RECP with the soil over the entirety of the installation.
2. Begin at the top of the channel by anchoring the RECPs in a 6" (15 cm) deep X 6" (15 cm) wide trench with approximately 12" (30 cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs with a row of staples/stakes/pins approximately 12" (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12" (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes/pins spaced approximately 12" (30 cm) apart across the width of the RECPs.
3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes/pins in appropriate locations as shown in the staple pattern guide.
4. Place consecutive RECPs end-over-end (shingle style) with a 4"- 6" (10 - 15 cm) overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.
5. Full length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes/pins spaced at S_T apart in a 6" (15 cm) deep X 6"(15 cm) wide trench. Backfill and compact the trench after stapling.
6. Adjacent RECPs must be overlapped approximately 4"- 6" (10 - 15 cm) and secured with staples/stakes/pins at S_T.
7. In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9 -12m) intervals. Use a double row of staples staggered 6" (15 cm) apart and 12" (30 cm) on center over entire width of the channel.
8. The terminal end of the RECPs must be anchored with a row of staples/stakes/pins spaced at S_T apart in a 6" (15 cm) deep X 6" (15 cm) wide trench. Backfill and compact the trench after stapling.
9. Fasteners should provide a minimum of twenty pounds of pullout resistance. Six-inch (10 cm) X one-inch (2.5 cm) eleven gauge staples are typically adequate. In loose soils, longer staples may be necessary, twist pins can provide the greatest pullout resistance. In hard or rocky soils, straight pins may by used where staples or twist pins are refused, provided the minimum pullout requirements are met. Bio-degradable fasteners shall not be used with VMax (TRM) or TMax (HPTRM) materials.

Staple Pattern Guide



○ Pin / Staple / Twist Pin, as appropriate for field conditions

	Staple Pattern
Dimension	E
W_T	20" (50 cm)
L_T	20" (50 cm)
S_T	18" (45 cm)
Nominal Frequency	3.8 / SY

Figure 1. Minimum Anchor Pattern

Maximum Design Conditions			Anchor Pattern
Shear Stress	Velocity	Wave Heigth	
<= 6 lbs/ft2	<= 14 ft/s	6 in.	F
> 6-8 lbs/ft2	> 14-18 ft/s	12 in.	G
> 8 lbs/ft2	> 18 ft/s	18 in.	H

Figure 2. Minimum Anchor Type

Soil Type	Anchor Type
Clay-Clay Loam	10 in Wire Staple
Silt Loam - Loam	10 in Wire Staple
Sandy Loam	12 in Wire Staple
Sand / Muck <= 6 in	12in Rebar Staple
Sand / Muck 6-12 in	18 in Rebar Staple
Sand / Muck 12-18 in	24 in Earth Anchor + 12 in Rebar Staple
Sand / Muck > 18 in	36 in Earth Anchor + 18 in Rebar Staple

Figure 3. Anchor Patterns for use with Wire/Rebar Staples

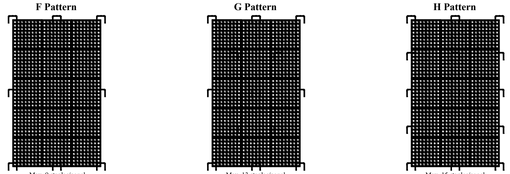
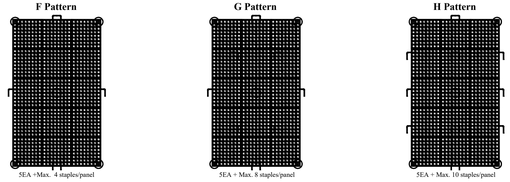


Figure 4. Anchor Patterns for use with Combination of Earth Anchors and Staples



NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd. PH: 800-772-2040
Poseyville, IN 47633 www.nagreen.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

Drawing Not To Scale

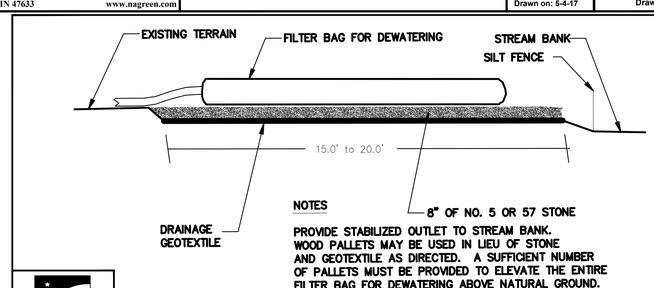
ShoreMax

ANCHORING GUIDE

1. When installing ShoreMax mat, the anchor pattern (figure 3 or 4) should be selected based on the expected maximum design conditions (shear stress, velocity, or wave impact) (figure 1).
2. Anchor selection should be based on the soil type and pull-out strength required (figure 2). In soft, highly erodible soils percussion earth anchors may be necessary. Earth anchors can be installed in conjunction with rebar staples (figure 4).
3. When using percussion earth anchors, position anchors in each corner and the center of the panel. Place staples in the appropriate pattern through remainder of mat. Staples can be shared between two adjacent panels.

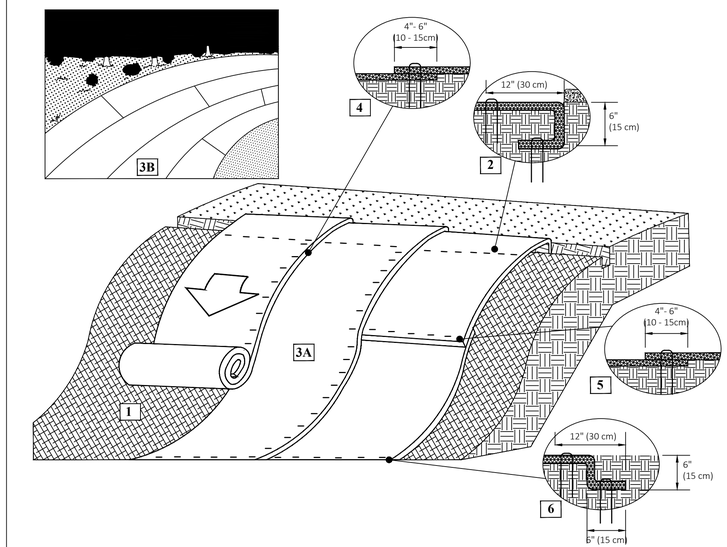
***Note:**
Number of staples used per panel can be reduced by 30-40% when sharing staples between panels.

- Wire/Rebar Staple
- Percussion Earth Anchor



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

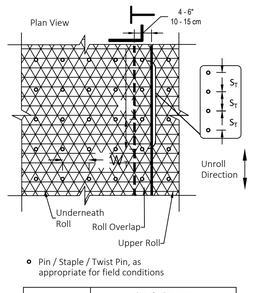
STANDARD FILTER BAG FOR DEWATERING ACTIVITIES **26**



Instructions

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed. Ground surface must be free of debris, rocks, clay clods and raked smooth sufficient to allow intimate contact of the RECP with the soil over the entirety of the installation.
2. Begin at the top of the slope by anchoring the RECPs in a 6" (15 cm) deep X 6" (15 cm) wide trench. Anchor the RECPs with a row of staples/stakes/pins spaced at S_T apart in the bottom of the trench. Backfill and compact the trench after stapling and fold the roll over downslope. Secure RECPs over compacted soil with a row of staples/stakes/pins spaced at S_T apart across the width of the RECPs.
3. Roll the RECPs (A) down or (B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes/pins in appropriate locations as shown in the staple pattern guide. RollMax RECPs and ECBs should utilize Staple Pattern C, TRMs and VMax materials should utilize Staple Pattern D.
4. The edges of parallel RECPs must be stapled with approximately 4" - 6" (10 - 15 cm) overlap.
5. Consecutive RECPs spliced down the slope must overlapped with the upstream mat atop the downstream mat (shingle style). The overlap should be 4" - 6" (10 - 15 cm).
6. At the terminal end, secure each mat across the width with a row of staples/stakes/pins spaced at S_T. if exposed to flow, foot traffic, wind uplift or other disruption, trench the terminal end in as shown in detail.
7. Fasteners should provide a minimum of twenty pounds of pullout resistance. Six-inch (10 cm) X one-inch (2.5 cm) eleven gauge staples are typically adequate. In loose soils, longer staples may be necessary, twist pins can provide the greatest pullout resistance. In hard or rocky soils, straight pins may by used where staples or twist pins are refused, provided the minimum pullout requirements are met. Bio-degradable fasteners shall not be used with VMax (TRM) or TMax (HPTRM) materials.

Staple Pattern Guide



○ Pin / Staple / Twist Pin, as appropriate for field conditions

	Staple Pattern	
Dimension	C	D
W_T	30" (75 cm)	24" (60 cm)
L_T	30" (75 cm)	20" (50 cm)
S_T	18" (45 cm)	18" (45 cm)
Nominal Frequency	1.7 / SY	3.0 / SY
Application	ECB (Degradable)	TRM (Permanent)

*Note: Staple Pattern A and B used prior to 8/2019 have been discontinued.

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

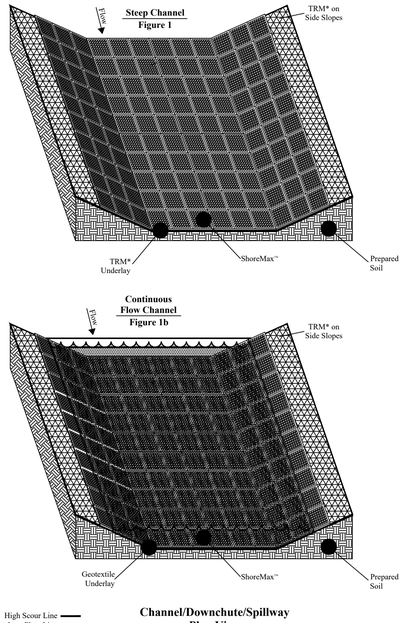
SHEET TITLE:
KALAS FALLS CIVIL DETAILS

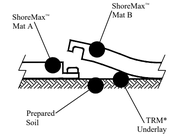
SHEET NO.:
CD4

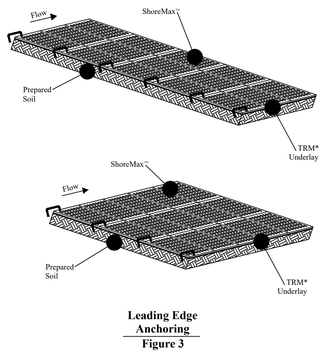
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

X:\Jobs\9900\Water Property\Dwgs_Working Dwgs\Phase 4\Sheet Files\Sheet No CD1-CD19 Phase 4 Details.dwg

Drawing Not To Scale







ShoreMax™

STEEP CHANNEL/ CHUTE/SPILLWAY DETAIL

* ShoreMax mats can be installed over a variety of underlayments including: sod, turf reinforcement mats (TRMs), geotextiles, and in some cases erosion control blankets (ECBs).

1. Prepare soil before installing erosion control products, including any necessary application of lime, fertilizer, and seed (when installing TRM or ECB underlayment).
2. Install turf reinforcement mat (TRM) over prepared soils according to manufacturer's recommendations.
3. Place ShoreMax mat in the bottom of the channel over the installed TRM (figure 1). The ShoreMax mat should be installed up to the appropriate elevation on the side slope as determined by the engineer. When using multiple panels, connect the panels using the Integrated Panel Interlock System (figure 2). ShoreMax mat can be laid in either direction.
4. For channels carrying continuous water flows, an appropriate geotextile should be placed under the ShoreMax mat for submerged applications (figure 1b).
5. Place staples/anchors in the appropriate pattern. Perimeter staples can be shared between two adjacent panels. In soft or highly erodible soils, percussion earth anchors may be required. View ShoreMax Anchoring Guide, for additional details.
6. At beginning of channel and areas where significant concentrated flows are directed onto the ShoreMax mat, place 1 staple/pin per linear foot along the leading edge of the ShoreMax system, resulting in 1 staple/pin on each corner and gridline (figure 3).

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd. PH: 800-772-2040
Poseyville, IN 47633 www.nagreen.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

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

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 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 whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then 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. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part IIII, 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 E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

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

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

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

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

2. Additional Documentation to be Kept on Site

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

(a) This General Permit as well as the Certificate of Coverage, after it is received.

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

3. Documentation to be Retained for Three Years

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

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

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

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41((7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41((6). • Division staff may waive the requirement for a written report on a case-by-case basis.

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

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-468-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:

KALAS FALLS CIVIL DETAILS

SHEET NO.:

CD5

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
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. 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

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. 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.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

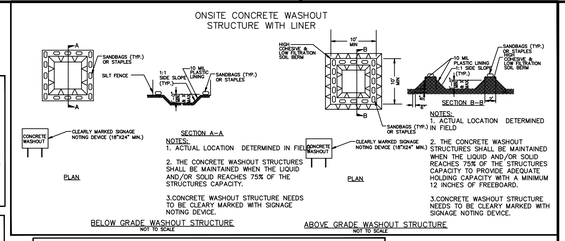
1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

1. 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.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. 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

1. 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.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. 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

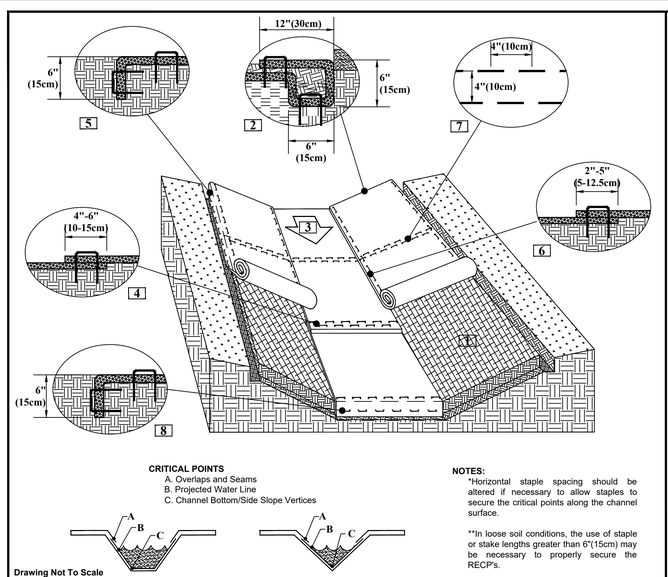
1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. 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.
3. 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.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

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



Drawing Not To Scale

NOTES:
*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"(15cm) may be necessary to properly secure the RECP's.

CHANNEL INSTALLATION DETAIL

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12"(30cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs 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 the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12" apart across the width of the RECPs.
3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. Place consecutive RECPs end-over-end (Shingle style) with a 4"-6" overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.
5. Full length edge of RECPs 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 RECPs must be overlapped approximately 2"-5" (5-12.5cm) (Depending on RECPs type) and stapled.
7. In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9 -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 RECPs 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.

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd. PH: 800-722-2040
Poseyville, IN 47633 www.nagreen.com

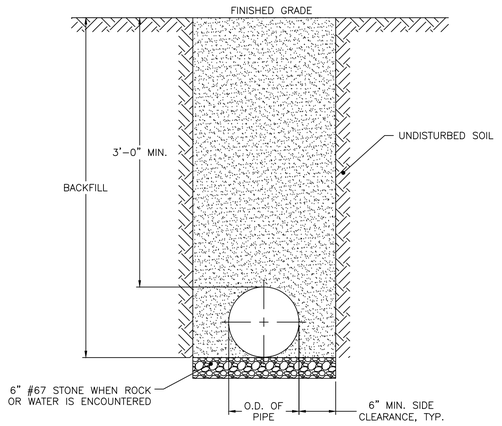
Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

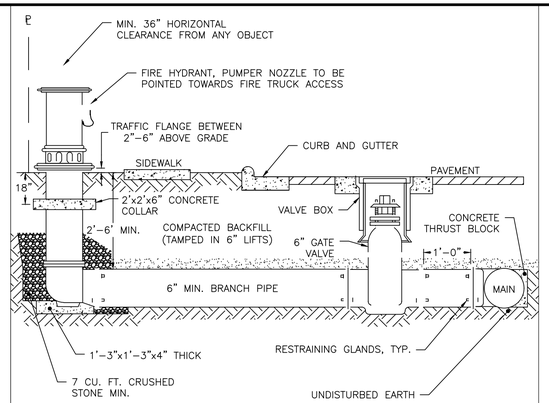
EFFECTIVE: 04/01/19



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

CITY OF RALEIGH
STANDARD DETAIL

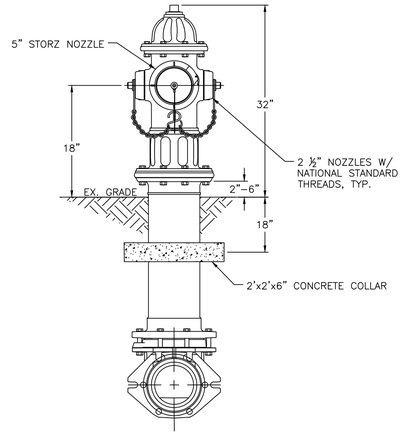
REVISIONS	DATE: 01/18/2025 NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR DUCTILE IRON
	W-3



NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY OR CLOW.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150.
3. 6" GATE VALVE SHALL BE AWWA C500 OPEN LEFT.
4. RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
6. RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
7. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2.5 FOOT EASEMENT (ON ALL SIDES OF HYDRANT) FOOT EASEMENT ADJACENT TO ROW.
8. ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH
STANDARD DETAIL

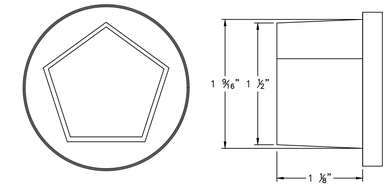
REVISIONS	DATE: 01/18/2025 NOT TO SCALE
	STANDARD FIRE HYDRANT INSTALLATION (RESTRAINT GLANDS)
	W-4

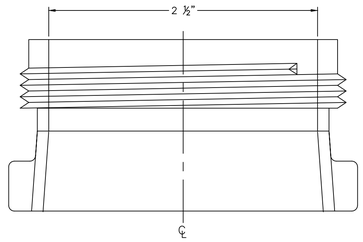


NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.
2. ALL PRIVATE FIRE HYDRANTS SHALL BE RED.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025 NOT TO SCALE
	STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE
	W-5

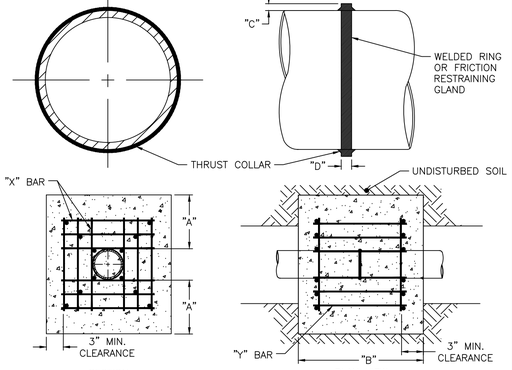




2 ½" NATIONAL STANDARD OUTLET THREADS

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025 NOT TO SCALE
	HYDRANT OPERATING NUT AND 2 ½" OUTLET THREADS
	W-6



SECTION PLAN VIEW

REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6"–36"	#5	2'–2"+ O.D. PIPE	1.043 LBS/FT	1'–1"	1.1 LBS. EACH	X–24 Y–12
≥48"	#6	3'–0"+ O.D. PIPE	1.502 LBS/FT	1'–3"	1.9 LBS. EACH	X–24 Y–12

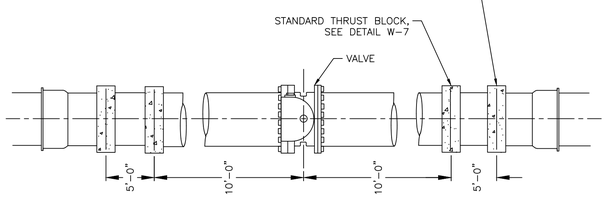
THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"	"D"
6"–16"	1'–4"	1'–7"	2"	⅜"
20"–24"	1'–4"	1'–7"	3"	½"
30"–36"	1'–4"	1'–7"	4"	⅝"
≥48"	1'–8"	1'–9"	6"	⅞"

NOTES:
1. SEE DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3,000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS, SEE DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH
STANDARD DETAIL

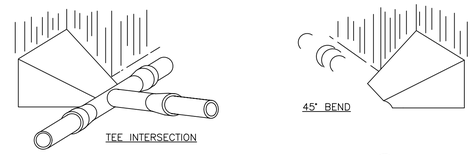
REVISIONS	DATE: 01/18/2025 NOT TO SCALE
	THRUST BLOCKING DESIGN DATA FOR WATER MAINS
	W-7

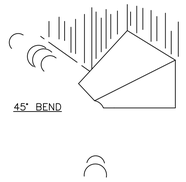


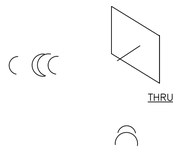
THRUST BLOCKING AT VALVES 16" AND LARGER

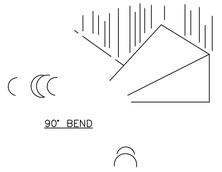
W-8 — CITY OF RALEIGH STANDARD DETAIL — NOT TO SCALE — DATE: 01/18/2025 — REVISIONS — STANDARD THRUST BLOCKING INSTALLATION AT VALVES AND DEAD END MAINS

THRUST BLOCKING









NOTES:
1. CONCRETE SHALL BE 3,000 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO DETAIL W-3.
4. SEE DETAIL W-10 & W-11 (THRUST BLOCK TABLES) FOR AREA OF CONCRETE REQUIRED.
5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025 NOT TO SCALE
	THRUST BLOCKING VIEWS
	W-9

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA — AMERICAN ENGINEERING ASSOCIATES SOUTHEAST — C-3881 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL — SEAL 062383 — ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD6

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Project\Final_Working Dwgs\Phase 4\Sheet files\Sheet No\CD1-CD19 Phase 4 Details.dwg

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 PSI										
ALL AREAS GIVEN IN SQUARE FEET										
SIZE OF BEND	DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4,000 LBS/FT²	SOFT CLAY 2,000 LBS/FT²	1,600 LBS/FT² GRAVEL/ COARSE SAND	8,000 LBS/FT² DRY CLAY (ALWAYS DRY)	SAND, COMPACT FIRM 8,000 LBS/FT²	SAND– CLEAN DRY 4,000 LBS/FT²	SOIL 1,000 LBS/FT² QUICKSAND (VERY POOR)	ROCK– POOR 10,000 LBS/FT²
6"	11 ¼°	1,108	1	1	1	1	1	1	2	1
	22 ½°	2,207	1	2	2	1	1	1	3	1
	45°	4,328	2	3	3	1	1	2	5	1
	90°	7,996	2	4	5	1	1	2	8	1
	PLUG	5,655	2	3	4	1	1	2	6	1
8"	11 ¼°	1,970	1	1	2	1	1	1	2	1
	22 ½°	3,922	1	2	3	1	1	1	4	1
	45°	7,694	2	4	5	1	1	2	8	1
	90°	14,215	4	8	9	2	2	4	15	2
	PLUG	10,053	3	5	6	2	2	3	10	1
12"	11 ¼°	4,433	2	3	3	1	1	2	5	1
	22 ½°	8,826	3	5	6	2	2	3	9	1
	45°	17,312	5	9	11	3	3	5	18	2
	90°	31,983	8	16	19	4	4	8	32	4
	PLUG	22,619	6	12	14	3	3	6	23	3
16"	11 ¼°	7,881	2	4	5	1	1	2	8	1
	22 ½°	15,691	4	8	10	2	2	4	16	2
	45°	30,779	8	16	19	4	4	8	31	4
	90°	56,861	15	29	35	8	8	15	57	6
	PLUG	40,213	10	21	25	5	5	10	41	5

NOTES:
1. REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. USE 6" 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
STANDARD DETAIL

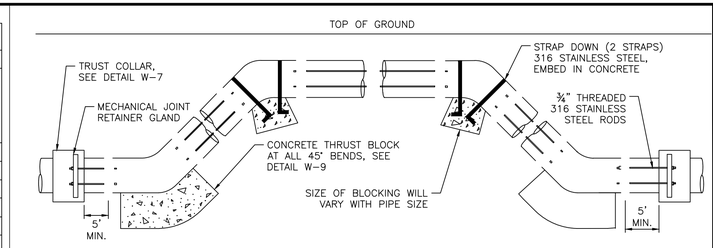
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	THRUST BLOCKING DESIGN QUANTITY TABLE	
	W-10	

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 PSI										
ALL AREAS GIVEN IN SQUARE FEET										
SIZE OF BEND	DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4,000 LBS/FT²	SOFT CLAY 2,000 LBS/FT²	1,600 LBS/FT² GRAVE/ COARSE SAND	8,000 LBS/FT² DRY CLAY (ALWAYS DRY)	SAND, COMPACT FIRM 8,000 LBS/FT²	SAND– CLEAN DRY 4,000 LBS/FT²	SOIL 1,000 LBS/FT² QUICKSAND (VERY POOR)	ROCK– POOR 10,000 LBS/FT²
24"	11 ¼°	17,734	5	9	11	3	3	5	18	2
	22 ½°	35,305	9	18	22	5	5	9	36	4
	45°	69,252	18	35	42	9	9	18	70	7
	90°	127,936	32	64	77	16	16	32	128	113
	PLUG	90,478	23	46	55	12	12	23	91	10
30"	11 ¼°	27,709	7	14	17	4	4	7	2	3
	22 ½°	55,163	14	28	34	7	7	14	56	6
	45°	108,206	28	55	65	14	14	28	109	11
	90°	199,900	50	100	120	25	25	50	200	20
	PLUG	141,372	36	71	85	18	18	36	142	15
36"	11 ¼°	39,901	10	20	24	5	5	10	40	4
	22 ½°	79,439	20	40	48	10	10	20	30	8
	45°	155,816	39	78	94	20	20	39	156	16
	90°	287,855	72	144	172	36	36	72	288	29
	PLUG	203,575	51	102	122	26	26	51	204	21
48"	11 ¼°	70,935	18	36	43	9	9	18	71	8
	22 ½°	141,218	36	71	85	18	18	36	142	15
	45°	277,007	70	139	166	35	35	70	277	28
	90°	511,742	128	256	320	64	64	128	512	52
	PLUG	361,911	91	181	217	46	46	91	362	37

NOTES:
1. REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. USE 6" 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	THRUST BLOCKING DESIGN QUANTITY TABLE	
	W-11	



ROD REQUIREMENTS

SIZE OF 45° BEND	STATIC TRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

STRAP REQUIREMENTS

STRAP WIDTH	STRAP THICKNESS
1"	3/16"
1.5"	3/16"
2"	¼"
2"	½"
4"	½"

RESTRAINT REQUIREMENTS

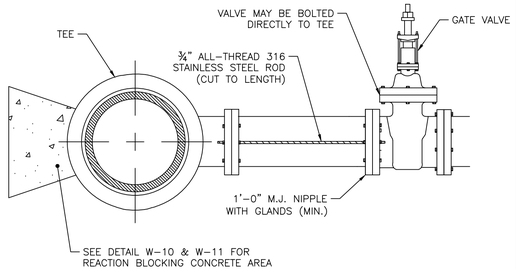
PIPE DIA	RODDING	RJ GLAND S	THRUST COLLAR	THRUST BLOCKIN G
<12"	X	X	X	
≥12"	X	X	X	X

"X" DENOTES REQUIRED RESTRAINT.

NOTES:
1. STEEL RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. 3' MINIMUM COVER MUST BE MAINTAINED.
6. EXTERNAL RESTRAINT REQUIRED. INTEGRAL BELL RESTRAINT REQUIRES DIRECTOR'S APPROVAL.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD VERTICAL BEND	
	W-12	



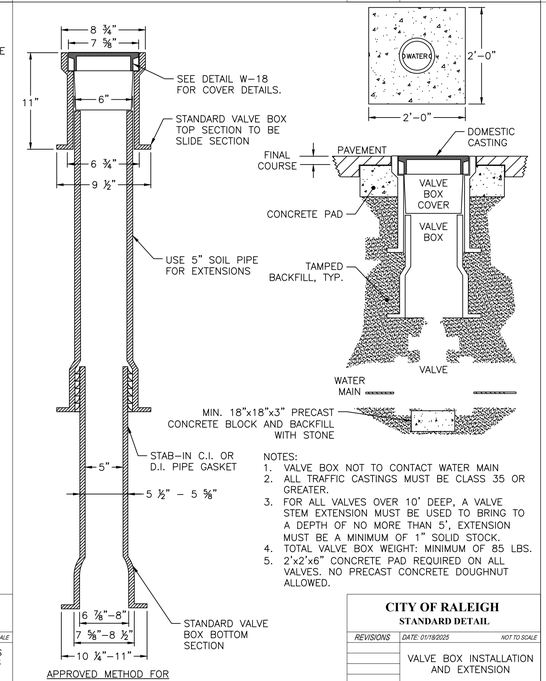
ROD REQUIREMENTS

BRANCH SIZE	NO. OF RODS
4"	2
6"	2
8"	4
12"	4
16"	6
24"	6
30"	8
36"	8

NOTES:
1. STEEL RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.
2. SEE DETAIL W–10 AND W–11 (THRUST BLOCK TABLES) FOR CONCRETE.
3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
4. THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.

CITY OF RALEIGH
STANDARD DETAIL

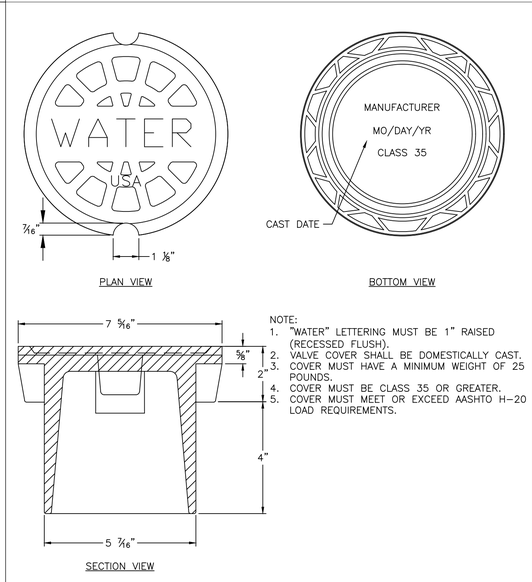
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4"–24")	
	W-15	



NOTES:
1. VALVE BOX NOT TO CONTACT WATER MAIN
2. ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
3. FOR ALL VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5', EXTENSION MUST BE A MINIMUM OF 1" SOLID STOCK.
4. TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.
5. 2'x2'x6" CONCRETE PAD REQUIRED ON ALL VALVES. NO PRECAST CONCRETE DOUGHNUT ALLOWED.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	VALVE BOX INSTALLATION AND EXTENSION	
	W-17	



NOTE:
1. "WATER" LETTERING MUST BE 1" RAISED (RECESSED FLUSH).
2. VALVE COVER SHALL BE DOMESTICALLY CAST.
3. COVER MUST HAVE A MINIMUM WEIGHT OF 25 POUNDS.
4. COVER MUST BE CLASS 35 OR GREATER.
5. COVER MUST MEET OR EXCEED AASHTO H–20 LOAD REQUIREMENTS.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	5 ¼" VALVE BOX DROP LID WITH 4" SKIRT	
	W-18	

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C–3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID–26–TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

SHEET TITLE:
KALAS FALLS CIVIL DETAILS

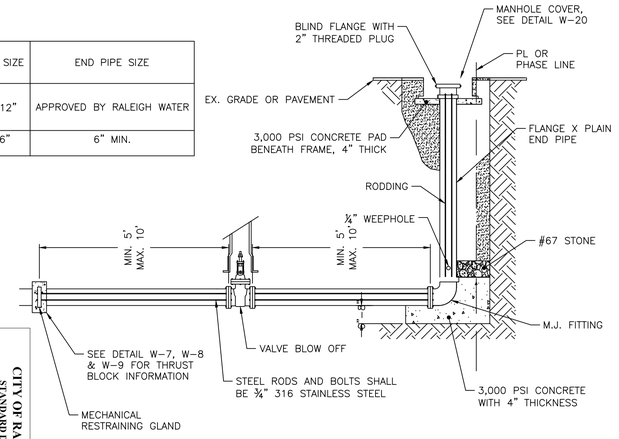
SHEET NO.:
CD7

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Workflow Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No CD5 Phase 4 Details.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 64

MAIN SIZE	END PIPE SIZE
6"–12"	APPROVED BY RALEIGH WATER
≥16"	6" MIN.



NOTE:
NO ROD COUPLINGS ALLOWED.

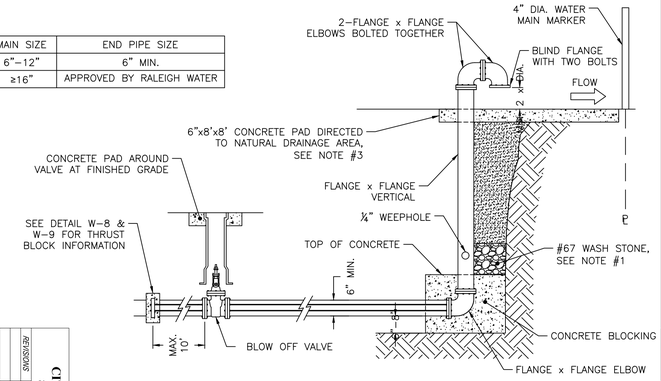
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE

TEMPORARY WATER MAIN BLOW OFF ASSEMBLY

W-21

MAIN SIZE	END PIPE SIZE
6"–12"	6" MIN.
≥16"	APPROVED BY RALEIGH WATER



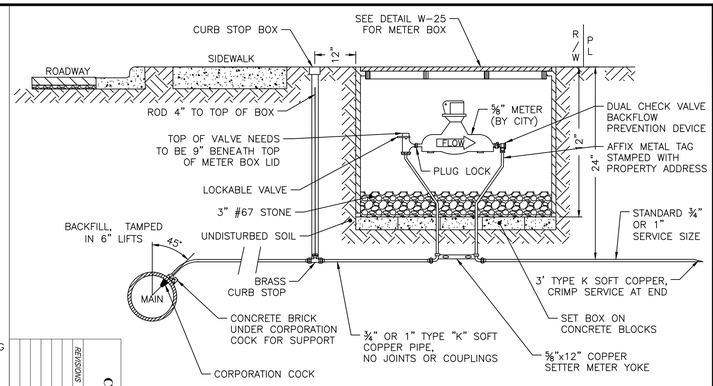
NOTES:
1. DRILL ¼" WEEP HOLE FOR STACK DRAINAGE INTO STONE.
2. DOUBLE ¾" BRIDLE RODS ON BOTH SIDES.
3. A RIP–RAP SWALE FROM FROM CONCRETE SPLASH PAD TO POSITIVE DRAINAGE AREA IS REQUIRED.
4. BOTTOM 90° ELBOW SHALL HAVE BLIND FLANGE ATTACHED WITH TWO BOLTS.
5. INSTALL WATER MAIN MARKER AT R/W OR P/L TO LOCATE MAIN.
6. BURIED ¾" RODS AND BOLTS TO BE 316 STAINLESS STEEL.
7. END PIPE SIZE 6" MIN. OR AS APPROVED BY PUBLIC UTILITIES.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE

PERMANENT WATER MAIN BLOW OFF ASSEMBLY

W-22



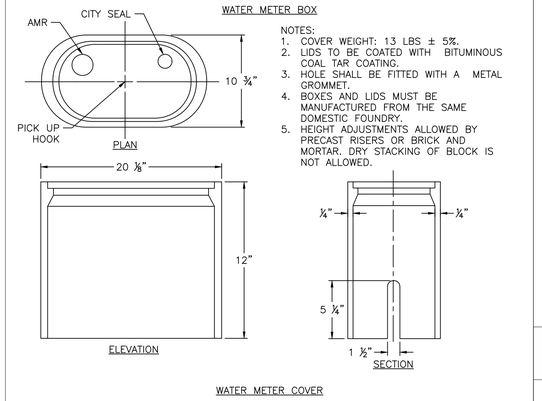
NOTES:
1. METER TO BE PROVIDED BY RALEIGH WATER.
2. DIRECT TAP ALLOWED ON MAINS NO LARGER THAN 16" LINE.
3. METER BOX TO BE LOCATED IN R/W ADJACENT TO PROPERTY OR IN APPROVED EASEMENT ADJACENT TO R/W.
4. WHEN THE GRADE CHANGES ON EXISTING SERVICES, A COPPER RESETTER CAN BE USED TO ADJUST TO GRADE. COPPER RESETTERS ARE PROHIBITED ON NEW SERVICES.
5. CURB STOP BOX SHALL HAVE PLUG STYLE LID WITH PENTAGON BOLT, 1–¼" STEEL UPPER SECTION, AND ARCH STYLE BASE. STEEL STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION.

CITY OF RALEIGH
STANDARD DETAIL

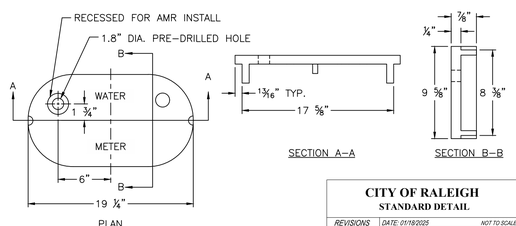
REVISIONS	DATE: 01/18/2025	NOT TO SCALE

STANDARD ¾" & 1" WATER SERVICE INSTALLATION

W-23



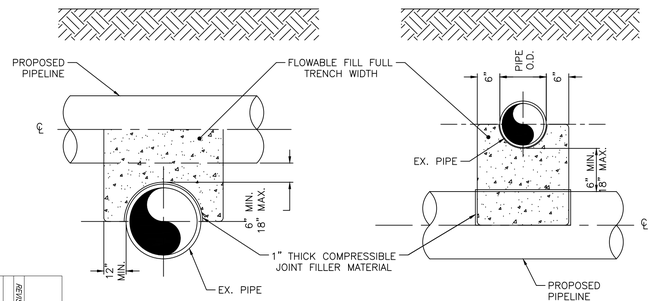
NOTES:
1. COVER WEIGHT: 13 LBS ± 5%.
2. LIDS TO BE COATED WITH BITUMINOUS COAL TAR COATING.
3. HOLE SHALL BE FITTED WITH A METAL GROMMET.
4. BOXES AND LIDS MUST BE MANUFACTURED FROM THE SAME DOMESTIC FOUNDRY.
5. HEIGHT ADJUSTMENTS ALLOWED BY PRECAST RISERS OR BRICK AND MORTAR. DRY STACKING OF BLOCK IS NOT ALLOWED.



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	WATER METER BOX	

W-25



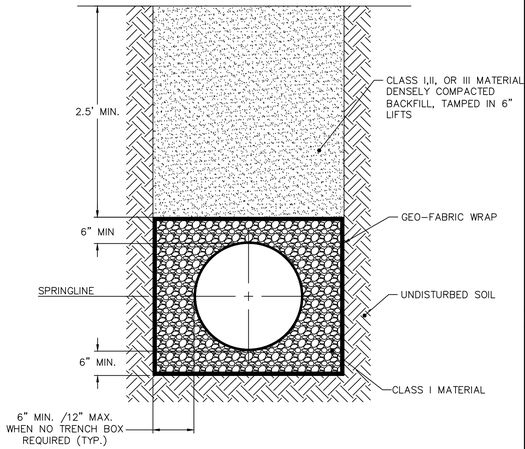
NOTE:
NO ENCASEMENT REQUIRED FOR SPACE GREATER THAN 18" FOR WATER LINES.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE

CONCRETE CRADLE PROTECTION FOR WATER LINE CROSSINGS

W-41



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD BEDDING DETAIL FOR CCFRPM PIPES	

S-1

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA — AMERICAN ENGINEERING ASSOCIATES SOUTHEAST — C–3881 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL — SEAL 062383 — ENGINEER — ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

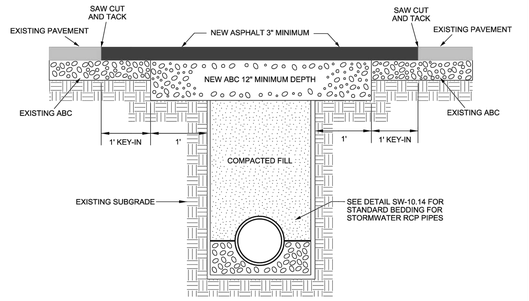
JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD8

North Carolina 811 — Know what's below. Call before you dig.
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Revit_Working Dwgs\Phase 4\Sheet Files\Sheet No CD1-CD19 Phase 4 Details.dwg

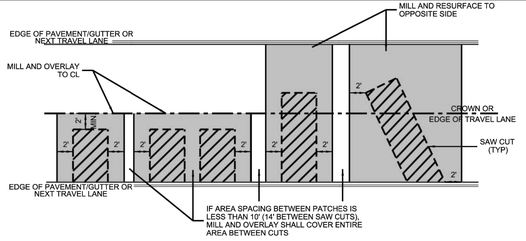


NOTES:

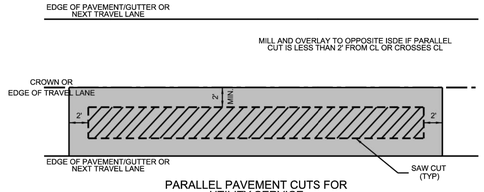
1. THE PAVEMENT EDGE SHALL BE DEFINED BY A STRAIGHT EDGE FORMED BY A MACHINED SAW CUT.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1' OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY NCDOT. BITUMINOUS BASE OR BINDER MAY BE SUBSTITUTED IF APPROVED BY TRANSPORTATION DIRECTOR OR DESIGNEE.
4. THE ENTIRE THICKNESS/VERTICAL EDGE OF THE CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY AND ROLLED WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH, LEVEL PATCH.

SHEET 1 OF 2

CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 8/2020	NOT TO SCALE
DATE: 08/2023	ASPHALT PAVEMENT PATCH AND RCP PIPE BACKFILL	
	T-10.05.1	



LATERAL PAVEMENT CUTS FOR UTILITY SERVICE



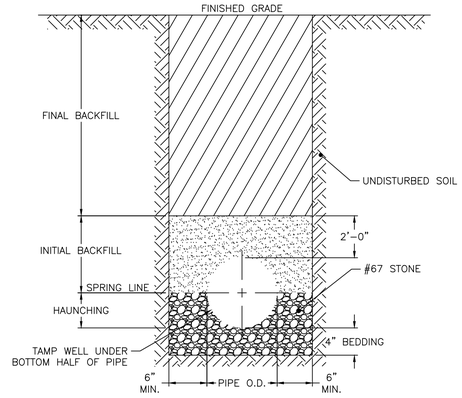
PARALLEL PAVEMENT CUTS FOR UTILITY SERVICE

NOTES:

1. THE PAVEMENT EDGES SHALL BE DEFINED BY A STRAIGHT EDGE FORMED BY A MACHINED SAW CUT OR MILLIING MACHINE
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT
3. THE FINAL 1" OF FILL SHALL CONSIST OF ABC MATERIAL COMPCATED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY NCDOT
4. THE ENTIRE THICKNESS/VERTICAL EDGE OF THE CUT SHALL BE TACKED
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED, COMPACTED THOROUGHLY AND ROLLED WITH A SMOOTH DRUM ROLLER TO LEVEL PATCH

SHEET 2 OF 2

CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 8/2023	NOT TO SCALE
	ASPHALT PAVEMENT PATCH AND RCP PIPE BACKFILL	
	T-10.05.2	

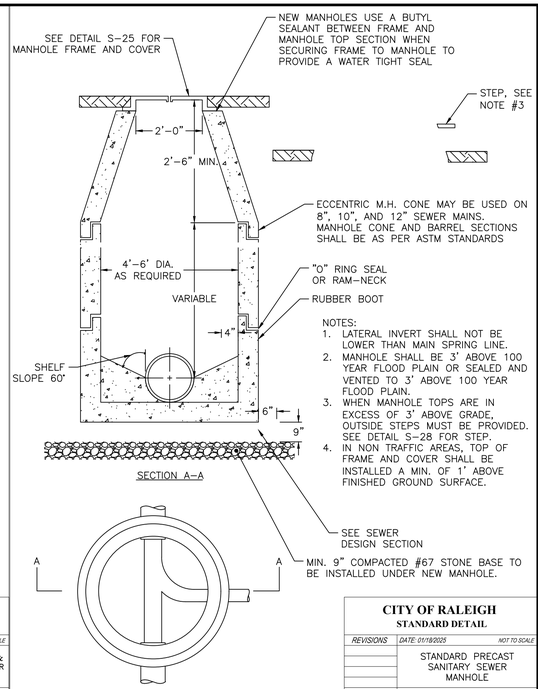


TYPICAL TRENCH BOTTOM DIMENSIONS FOR SDR 35 PVC GRAVITY PIPE

NOTES:

1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS, 4" OR LARGER, TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

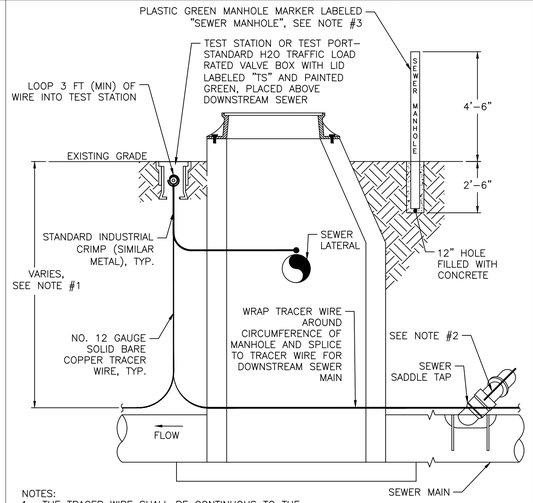
CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN	
	S-5	



NOTES:

1. LATERAL INVERT SHALL NOT BE LOWER THAN MAIN SPRING LINE.
2. MANHOLE SHALL BE 3' ABOVE 100 YEAR FLOOD PLAIN OR SEALED AND VENTED TO 3' ABOVE 100 YEAR FLOOD PLAIN.
3. WHEN MANHOLE TOPS ARE IN EXCESS OF 3' ABOVE GRADE, OUTSIDE STEPS MUST BE PROVIDED. SEE DETAIL S-28 FOR STEP.
4. IN NON TRAFFIC AREAS, TOP OF FRAME AND COVER SHALL BE INSTALLED A MIN. OF 1' ABOVE FINISHED GROUND SURFACE.

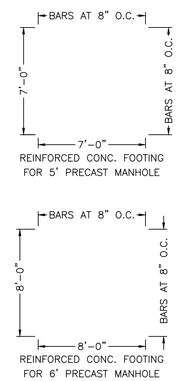
CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD PRECAST SANITARY SEWER MANHOLE	
	S-20	



NOTES:

1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

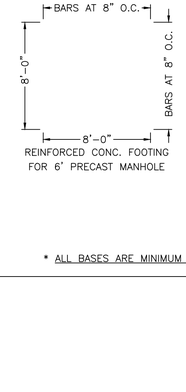
CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER	
	S-20A	



REINFORCED CONC. FOOTING FOR 4' PRECAST MANHOLE

BILL OF MATERIAL FOR 4' MANHOLE BASE

BAR SIZE	BAR LENGTH	NO. OF BARS	BAR WT. (LBS.)
#5	5'-6"	18	103
CL. "A" CONCRETE TOTAL CU. YDS.			1.0



REINFORCED CONC. FOOTING FOR 5' PRECAST MANHOLE

BILL OF MATERIAL FOR 5' MANHOLE BASE

BAR SIZE	BAR LENGTH	NO. OF BARS	BAR WT. (LBS.)
#5	6'-6"	20	136
CL. "A" CONCRETE TOTAL CU. YDS.			1.4

REINFORCED CONC. FOOTING FOR 6' PRECAST MANHOLE

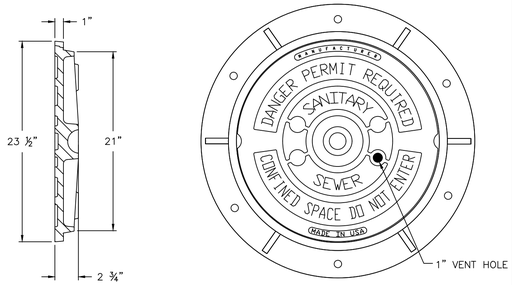
BILL OF MATERIAL FOR 6' MANHOLE BASE

BAR SIZE	BAR LENGTH	NO. OF BARS	BAR WT. (LBS.)
#5	7'-6"	24	165
CL. "A" CONCRETE TOTAL CU. YDS.			1.8

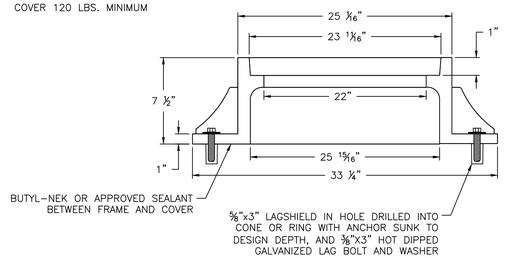
* ALL BASES ARE MINIMUM 9" THICK

CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	EXTENDED BASE OR CAST-IN-PLACE REINFORCED CONCRETE BASE	
	S-21	

MANHOLE FRAME AND COVER



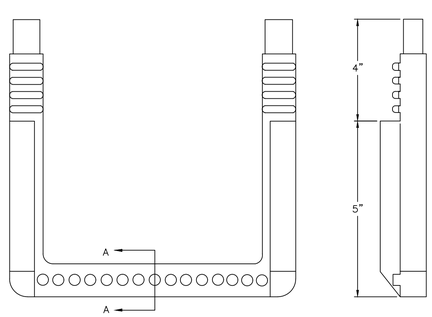
COVER 120 LBS. MINIMUM



NOTES:

1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 182 LBS. WITHIN PUBLIC ROW AND 160 LBS. WITHIN EASEMENTS.
3. COVER SHALL WEIGH A MIN. OF 120 LBS.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD MANHOLE COVER	
	S-25	



CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD SLIP RESISTANT MANHOLE STEP DETAIL	
	S-28	

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA AMERICAN ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:

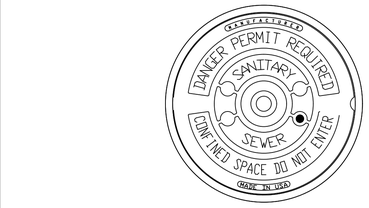
KALAS FALLS CIVIL DETAILS

SHEET NO.:

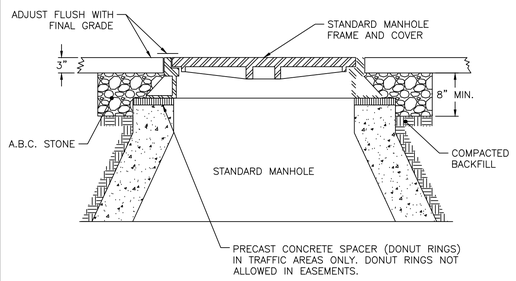
CD9

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas Property\Dwg_Working Dwg\Phase 4\Sheet Files\Sheet No CD1-CD19 Phase 4 Details.dwg



PLAN

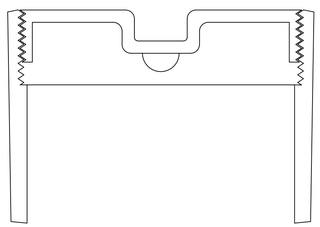


SECTION

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN FRAME SURFACE	
	S-29	

STANDARD 4" BRONZE CLEANOUT PLUG



CLEANOUT FERRULE WITH PLUG

STYLES ACCEPTED:
INVERTED NUT
RAISED NUT

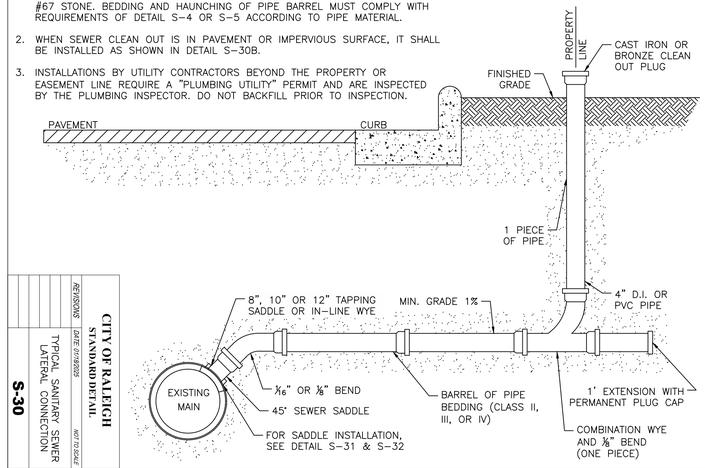
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	4" CLEANOUT PLUG	
	S-34	

NOTES:

1. THE FULL LENGTH OF THE SERVICE DITCH SHALL BE COMPACTED IN 6" LIFTS WITH MECHANICAL TAMP. ALL TAPS WILL BE MADE USING MECHANICAL TAPPING MACHINE. FOR PVC INSTALLATIONS, SADDLE AND BEND MUST BE BEDDED IN #67 STONE. BEDDING AND HAUNCHING OF PIPE BARREL MUST COMPLY WITH REQUIREMENTS OF DETAIL S-4 OR S-5 ACCORDING TO PIPE MATERIAL.
2. WHEN SEWER CLEAN OUT IS IN PAVEMENT OR IMPERVIOUS SURFACE, IT SHALL BE INSTALLED AS SHOWN IN DETAIL S-30B.
3. INSTALLATIONS BY UTILITY CONTRACTORS BEYOND THE PROPERTY OR EASEMENT LINE REQUIRE A "PLUMBING UTILITY" PERMIT AND ARE INSPECTED BY THE PLUMBING INSPECTOR. DO NOT BACKFILL PRIOR TO INSPECTION.

* SERVICE LATERAL MATERIAL AS REQUIRED



CITY OF RALEIGH
STANDARD DETAIL

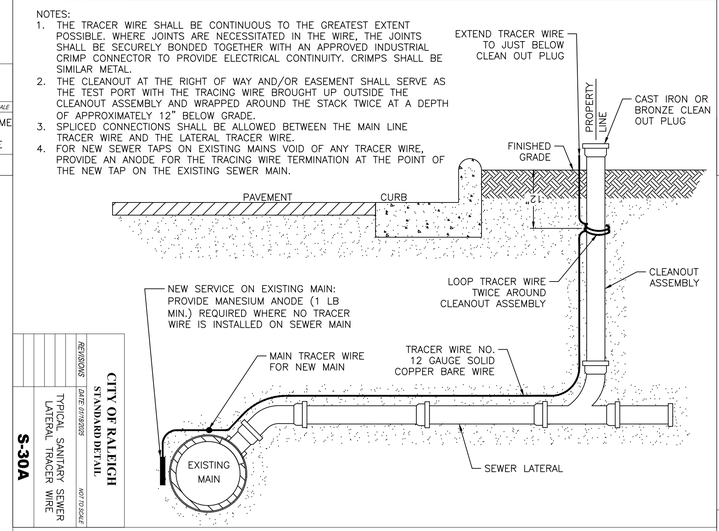
S-30

TYPICAL SANITARY SEWER LATERAL CONNECTION

REVISIONS	DATE: 01/18/2025	NOT TO SCALE

NOTES:

1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE JOINTS ARE NECESSITATED IN THE WIRE, THE JOINTS SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CRIMP CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CRIMPS SHALL BE SIMILAR METAL.
2. THE CLEANOUT AT THE RIGHT OF WAY AND/OR EASEMENT SHALL SERVE AS THE TEST PORT WITH THE TRACING WIRE BROUGHT UP OUTSIDE THE CLEANOUT ASSEMBLY AND WRAPPED AROUND THE STACK TWICE AT A DEPTH OF APPROXIMATELY 12" BELOW GRADE.
3. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
4. FOR NEW SEWER TAPS ON EXISTING MAINS VOID OF ANY TRACER WIRE, PROVIDE AN ANODE FOR THE TRACING WIRE TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER MAIN.

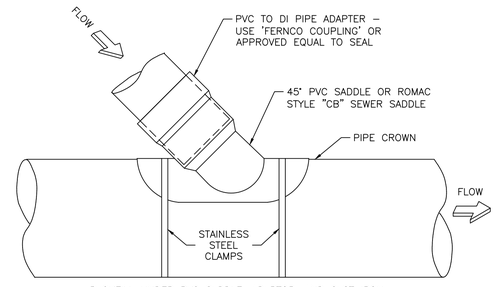


CITY OF RALEIGH
STANDARD DETAIL

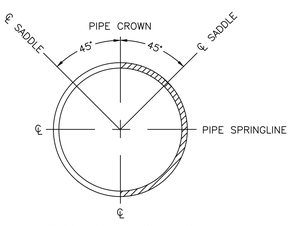
S-30A

TYPICAL SANITARY SEWER LATERAL TRACER WIRE

REVISIONS	DATE: 01/18/2025	NOT TO SCALE



BACKFILL UNDER PVC SADDLE, ADAPTOR, AND CAST IRON BEND WITH #67 STONE AS SHOWN ON DETAIL S-4.

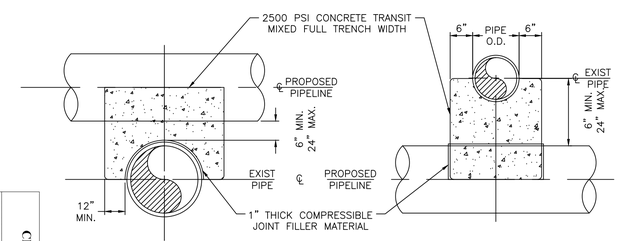


SADDLE INSTALLATION LIMITS

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE	
	S-31	

NOTE:
NO ENCASEMENT REQUIRED FOR SPACE GREATER THAN 24" FOR SEWER LINES.



PROPOSED PIPELINE OVER EXISTING PIPE

PROPOSED PIPELINE UNDER EXISTING PIPE

CITY OF RALEIGH
STANDARD DETAIL

S-49

CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

REVISIONS	DATE: 01/18/2025	NOT TO SCALE

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

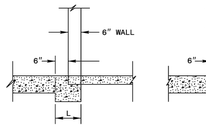
SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD10

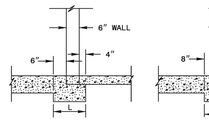
North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Working Property\Eng_Working Dwgs\Phase 4\Sheet Files\Sheet Nos\CD1-CD19 Phase 4 Details.dwg

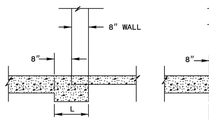
V1_CID-TBD_Kalas Phase 4.pdf · Page 67



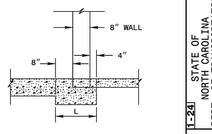
PART SECTION
6" WALL



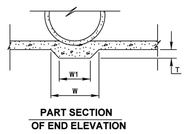
PART SECTION
6" WALL WITH 4" LIP



PART SECTION
8" WALL



PART SECTION
8" WALL WITH 4" LIP



PART SECTION
OF END ELEVATION

GENERAL NOTES:
USE THIS STANDARD WITH ALL DRAINAGE STRUCTURES USING REINFORCED CONCRETE PIPE SET IN BASE SLAB.

TABLES OF QUANTITIES FOR PIPE SET IN PAD

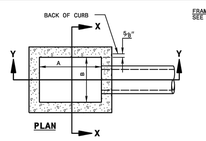
PIPE	"W"	"W1"	"T"	C.Y. QUANTITIES WHEN L IS		
D	DIM	DIM	DIM	12"	16"	20"
12"	1'-1 7/8"	0'-7 5/8"	0'-2"	0.005	0.007	0.008
15"	1'-3 5/8"	0'-9 1/8"	0'-2"	0.006	0.008	0.010
18"	1'-5 1/4"	0'-10 3/8"	0'-2"	0.007	0.010	0.012
24"	1'-8 3/4"	1'-0 1/8"	0'-3"	0.011	0.014	0.018
30"	2'-0 1/4"	1'-2 3/4"	0'-3 1/2"	0.014	0.018	0.023
36"	2'-3 3/4"	1'-5 1/8"	0'-4"	0.017	0.023	0.025
42"	2'-7 1/8"	1'-7"	0'-5 1/4"	0.025	0.030	0.038
48"	2'-10 5/8"	1'-8 3/4"	0'-5 3/4"	0.028	0.038	0.047
54"	3'-2 1/8"	1'-10 1/2"	0'-6 1/4"	0.035	0.047	0.058
60"	3'-5 5/8"	2'-0 1/4"	0'-6 3/4"	0.042	0.056	0.071
66"	3'-9"	2'-2 1/4"	0'-7 1/4"	0.050	0.067	0.084
72"	4'-0 1/2"	2'-3 3/4"	0'-7 3/4"	0.059	0.078	0.098

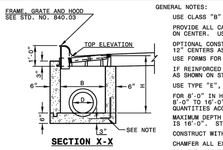
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

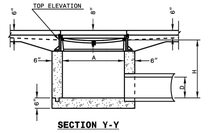
ROADWAY STANDARD DRAWING FOR
CONCRETE BASE PAD FOR DRAINAGE STRUCTURES

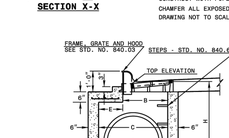
SHEET 1 OF 1
840.00

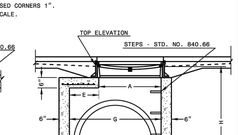


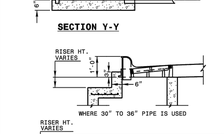


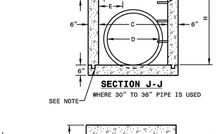
GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
MAXIMUM DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 16'-0". STD. NO. 840.45 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

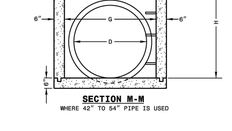










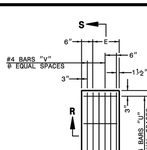


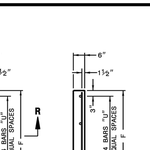
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

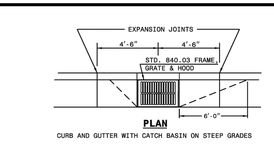
1-24

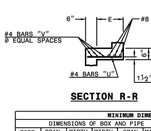
ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

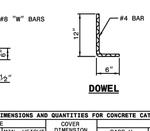
SHEET 1 OF 2
840.02

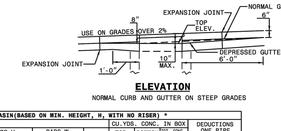












MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER)

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION		BARS-U		BARS-V		BARS-W		TOTAL LBS.	TOP SLAB	BOTTOM SLAB	CU. YDS. IN BOX EXCL. FLARE	DEDUCTIONS FOR ONE PIPE	
PIPE D	SPAN A	WIDTH B	WIDTH C	SPAN G	MIN. HEIGHT H	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH					C.M.	R.C.
12"	3'-0"	2'-2"	---	---	2'-9"	---	---	---	---	---	---	---	---	---	---	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"	---	---	3'-0"	---	---	---	---	---	---	---	---	---	---	0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"	---	---	3'-3"	---	---	---	---	---	---	---	---	---	---	0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"	---	---	3'-9"	---	---	---	---	---	---	---	---	---	---	0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	---	4'-3"	1'-2"	4'-0"	4	1'-5"	2	3'-9"	3	3'-9"	39	0.123	0.321	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	---	4'-9"	1'-8"	4'-0"	4	1'-11"	3	3'-9"	3	3'-9"	43	0.161	0.358	1.714	0.132	0.178
42"	3'-0"	2'-2"	---	4'-5"	5'-3"	1'-5"	3'-2"	4	1'-8"	2	2'-11"	3	2'-11"	32	0.112	0.318	1.738	0.180	0.243
48"	3'-0"	2'-2"	---	5'-0"	5'-9"	2'-0"	3'-2"	4	2'-3"	3	2'-11"	3	2'-11"	35	0.145	0.352	2.002	0.235	0.317
54"	3'-0"	2'-2"	---	5'-7"	6'-3"	2'-7"	3'-2"	4	2'-10"	5	2'-11"	3	2'-11"	41	0.180	0.386	2.387	0.297	0.401

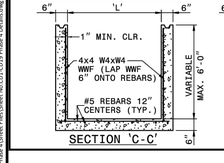
* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

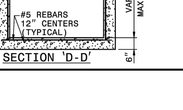
1-24

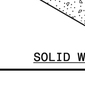
ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

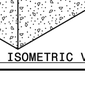
SHEET 2 OF 2
840.02



NOTE: USE TYPE "E", "F" AND "G" GRATE UNLESS OTHERWISE NOTED.





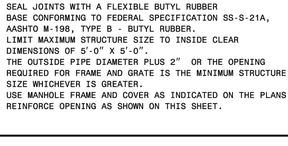


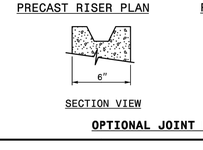
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
FRAME, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2
840.03





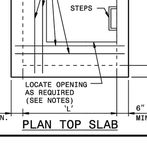
TYPE - E

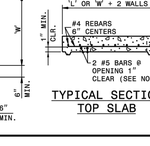
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

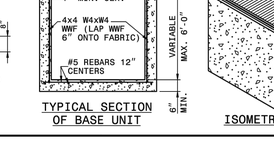
1-24

ROADWAY STANDARD DRAWING FOR
FRAME, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

SHEET 2 OF 2
840.03







GENERAL NOTES:
CHAMFER ALL EXPOSED CORNERS 1".
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E. DIAGONAL BARS SHORTENED AROUND OPENING IN TOP SLAB, ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.)
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12'-0". STANDARD DRAWING 840.45 OR 840.46 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.

DIMENSIONS AND QUANTITIES FOR CONCRETE JUNCTION BOXES

DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS "A"		TOP SLAB DIMENSIONS		CUBIC YARDS IN BOX			TOTAL QUANTITIES BOX AND SLABS		DEDUCTIONS FOR ONE PIPE CU.YDS.
PIPE D	SPAN A	WIDTH B	HEIGHT H	NO.	LENGTH	E	F	TOP SLAB	BOTTOM SLAB	WALL (AVG. FT. OF HT.	LBS. REINF	CU. YDS. MIN. "H"	C.S. R.C.
12"	2'-0"	2'-0"	2'-3"	12	2'-9"	3'-0"	3'-0"	0.167	0.167	0.185	22	0.750	0.015 0.024
15"	2'-3"	2'-3"	2'-6"	12	3'-0"	3'-3"	3'-3"	0.196	0.196	0.204	24	0.902	0.023 0.036
18"	2'-6"	2'-6"	2'-9"	14	3'-3"	3'-6"	3'-6"	0.227	0.227	0.222	30	1.065	0.033 0.049
24"	3'-0"	3'-0"	3'-3"	16	3'-9"	4'-0"	4'-0"	0.296	0.296	0.259	40	1.434	0.059 0.085
30"	3'-6"	3'-6"	3'-9"	18	4'-3"	4'-6"	4'-6"	0.375	0.375	0.296	51	1.860	0.092 0.127
36"	4'-0"	4'-0"	4'-3"	20	4'-9"	5'-0"	5'-0"	0.463	0.463	0.333	64	2.341	0.132 0.178
42"	4'-6"	4'-6"	4'-9"	22	5'-3"	5'-6"	5'-6"	0.560	0.560	0.370	77	2.878	0.180 0.243
48"	5'-4"	5'-4"	5'-3"	26	6'-3"	6'-4"	6'-4"	0.743	0.743	0.407	111	3.623	0.235 0.317
54"	5'-10"	5'-10"	5'-9"	28	6'-7"	6'-10"	6'-10"	0.865	0.865	0.444	128	4.283	0.297 0.401
60"	6'-6"	6'-6"	6'-3"	30	7'-3"	7'-6"	7'-6"	1.042	1.042	0.481	145	5.090	0.367 0.495
66"	7'-1"	7'-1"	6'-9"	32	7'-10"	8'-1"	8'-1"	1.210	1.210	0.518	169	5.917	0.444 0.589

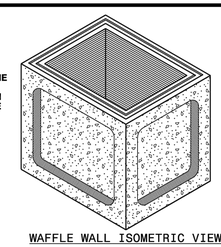
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

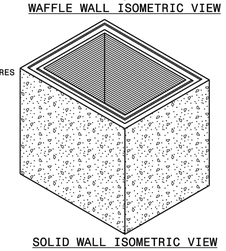
1-24

ROADWAY STANDARD DRAWING FOR
CONCRETE JUNCTION BOX
12" THRU 66" PIPE

SHEET 1 OF 1
840.31

THE PATTERN OF THE KNOCK-OUT PANELS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.





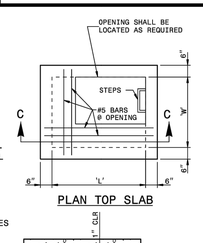
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

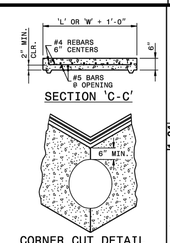
1-24

ROADWAY STANDARD DRAWING FOR
PRECAST DRAINAGE STRUCTURE
(SOLID AND WAFFLE WALL)

SHEET 1 OF 2
840.45

GENERAL NOTES:
* THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS: 840.01, 840.02, 840.04, 840.05, 840.13, 840.14, 840.15, 840.17, 840.18, 840.19, 840.26, 840.27, 840.28, 840.31, 840.32 AND 840.41.
* INSTALL PRECAST DRAINAGE STRUCTURES AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 840.
* DO NOT PLACE PRECAST DRAINAGE STRUCTURES UNDER TRAFFIC OR WHERE TRAFFIC WILL BE DETOURED.
* USE 4000 PSI CONCRETE.
* PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A1064.
* LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB FOR WAFFLE WALL STRUCTURE TO 10'-0"; LIMIT SOLID WALL STRUCTURE TO 15'-0".
* PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
* CUT OR FORM OPENINGS FOR PIPE TO PROVIDE REQUIRED SIZE AND LOCATION. ORIENT WAFFLE WALL STRUCTURES SO THAT PIPES ENTER THROUGH THE KNOCKOUT/WAFFLE PANELS ONLY. PIPES MAY ENTER THROUGH THE CORNERS OF SOLID WALL BUCKS IF A MINIMUM OF 6" OF WALL IS PROVIDED ABOVE THE HOLE.
* ALL ELEMENTS PRECAST TO MEET ASTM C913.
* FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840.25.
* PROVIDE PRECAST STRUCTURES OVER 3'-6" IN DEPTH WITH STEPS AS DIRECTED BY THE ENGINEER.
* WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
* SEAL JOINTS WITH A FLEXIBLE BUTYL RUBBER BASE CONFORMING TO FEDERAL SPECIFICATION SS-S-21A, AASHTO M-198, TYPE B - BUTYL RUBBER.
* LIMIT MAXIMUM STRUCTURE SIZE TO INSIDE CLEAR DIMENSIONS OF 5'-0" X 5'-0".
* THE OUTSIDE PIPE DIAMETER PLUS 2" OR THE OPENING REQUIRED FOR FRAME AND GRATE IS THE MINIMUM STRUCTURE SIZE WHICHEVER IS GREATER.
* USE MANHOLE FRAME AND COVER AS INDICATED ON THE PLANS. REINFORCE OPENING AS SHOWN ON THIS SHEET.





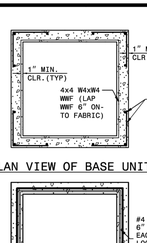
OPTIONAL JOINT DETAILS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
PRECAST DRAINAGE STRUCTURE
(GENERAL NOTES AND DETAILS)

SHEET 2 OF 2
840.45



GENERAL NOTES:
* THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS: 840.01, 840.02, 840.04, 840.05, 840.14, 840.15, 840.31, 840.32, 840.34, 840.35, 840.36 AND 840.41.
* INSTALL AND PAY FOR PRECAST DRAINAGE STRUCTURES IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATION SECTION 840.
* USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.
* USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A1064 WELDED WIRE FABRIC (WWF).
* LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB TO 15'-0".
* PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
* PRECAST ALL ELEMENTS TO MEET ASTM C913.
* FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840.25.
* PROVIDE PRECAST STRUCTURES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
* WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR IF THE SAME MIN. AREA OF STEEL IS PROVIDED.
* SEAL JOINTS WITH A FLEXIBLE BUTYL RUBBER BASE CONFORMING TO FEDERAL SPECIFICATIONS SS-S-21A, AASHTO M-198, TYPE B - BUTYL RUBBER.
* LIMIT MAXIMUM STRUCTURE SIZE INSIDE CLEAR DIMENSIONS TO 6'-0" X 6'-0".
* THE OUTSIDE PIPE DIAMETER PLUS 2" IS THE MINIMUM STRUCTURE SIZE OR THE OPENING REQUIRED FOR GRATE AND FRAME WHICHEVER IS GREATER.
* ROUND MANHOLE MAY BE USED IN LIEU OF SQUARE PROVIDED 2 EXTRA #5'S ARE PLACED ON EVERY SIDE NOT ADJACENT TO A WALL. SEE STD. DWG. 840.34 FOR MANHOLE INSTALLATION.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE

SHEET 1 OF 1
840.46

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA
AMERICAN ENGINEERING ASSOCIATES SOUTHEAST
C-3881
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

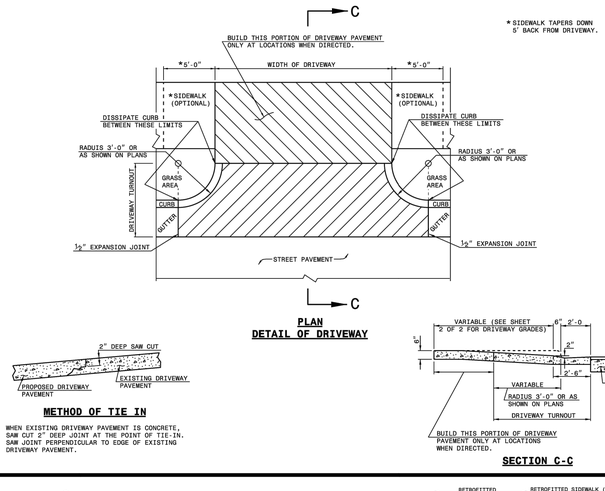
KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD11

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

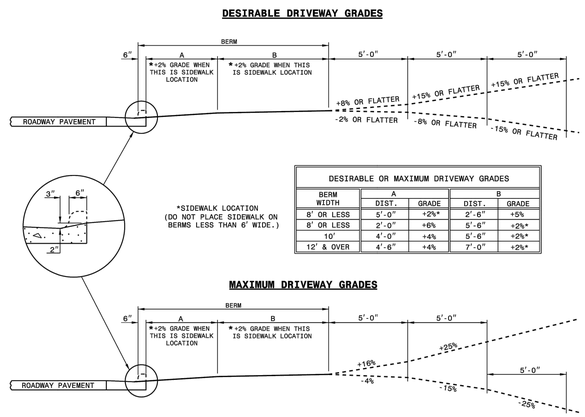
ROADWAY STANDARD DRAWING FOR

DRIVEWAY TURNOUT

RADIUS TYPE

SHEET 1 OF 2

848.02



DESIRABLE OR MAXIMUM DRIVEWAY GRADES				
BERM WIDTH	A		B	
	DIST.	GRADE	DIST.	GRADE
8' OR LESS	5'-0"	+2%*	2'-6"	+5%
8' OR LESS	2'-0"	+6%	5'-6"	+2%*
10'	4'-0"	+4%	5'-6"	+2%*
12' & OVER	4'-6"	+4%	7'-0"	+2%*

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

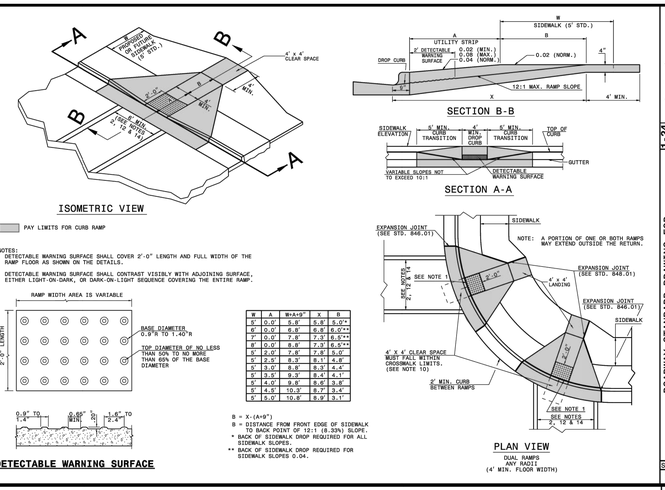
ROADWAY STANDARD DRAWING FOR

DRIVEWAY TURNOUT

DRIVEWAY GRADES

SHEET 2 OF 2

848.02



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR

CURB RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 13

848.06

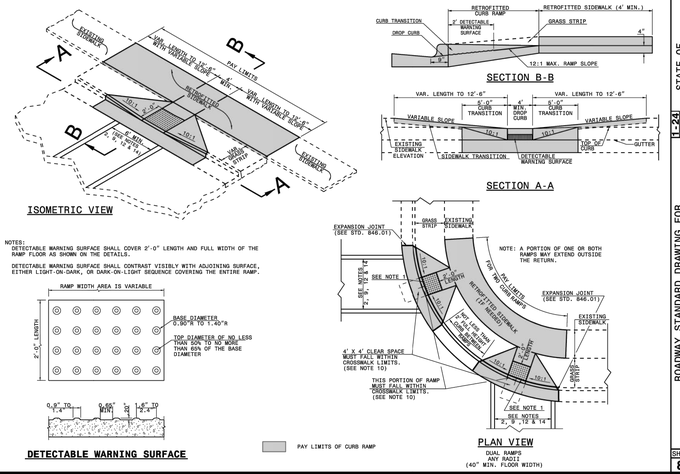
AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA PROFESSIONAL ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

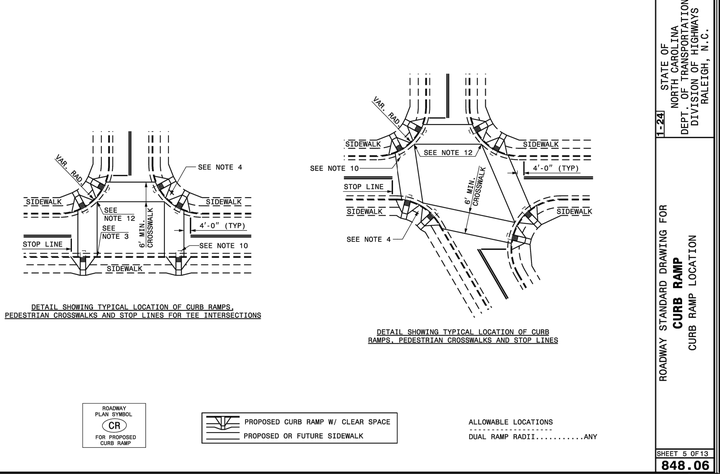
ROADWAY STANDARD DRAWING FOR

CURB RAMP

CURB RAMP AND EXISTING SIDEWALK WITH GRASS STRIP

SHEET 2 OF 13

848.06



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR

CURB RAMP

CURB RAMP LOCATION

SHEET 5 OF 13

848.06

NOTES:

1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' FROM THE BACK OF PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER ON STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT CLEAR SPACES FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT CLEAR SPACES FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. IF CONSTRAINED ON TWO OR MORE SIDES, THE THE CLEAR SPACE SHALL BE 4' MINIMUM X 5' MINIMUM, WITH 5' PROVIDED IN THE DIRECTION OF THE PEDESTRIAN STREET CROSSING.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' CLEAR SPACE AT THE TOP OF RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP, WHERE THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE, OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01.
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. DETECTABLE WARNING SURFACES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
19. DETECTABLE WARNING SURFACES WILL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR

CURB RAMP

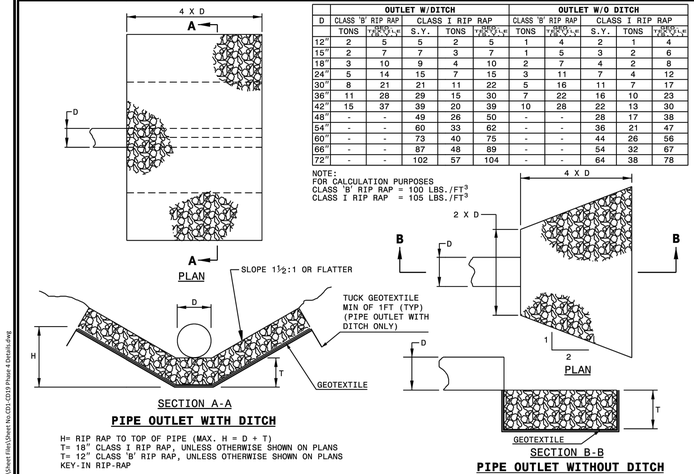
NOTES

SHEET 13 OF 13

848.06

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.



D	OUTLET W/DITCH					OUTLET W/O DITCH				
	CLASS 'B' RIP RAP		CLASS I RIP RAP			CLASS 'B' RIP RAP		CLASS I RIP RAP		
	TONS	*SPEC. *CY	S.Y.	TONS	*SPEC. *CY	TONS	*SPEC. *CY	S.Y.	TONS	*SPEC. *CY
12"	2	5	5	2	5	1	4	2	1	4
15"	2	7	7	3	7	1	5	3	2	6
18"	3	10	9	4	10	2	7	4	2	8
24"	5	14	15	7	15	3	11	7	4	12
30"	8	21	21	11	22	5	16	11	7	17
36"	11	28	29	15	30	7	22	16	10	23
42"	15	37	39	20	39	10	28	22	13	30
48"	-	-	49	26	50	-	-	28	17	38
54"	-	-	60	33	62	-	-	36	21	47
60"	-	-	73	40	75	-	-	44	26	56
66"	-	-	87	48	89	-	-	54	32	67
72"	-	-	102	57	104	-	-	64	38	78

NOTE:
FOR CALCULATION PURPOSES
CLASS 'B' RIP RAP = 100 LBS./FT³
CLASS I RIP RAP = 105 LBS./FT³

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

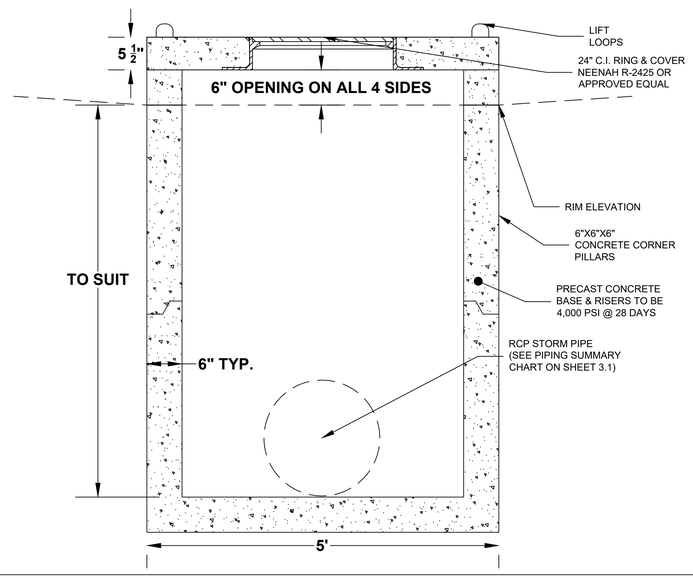
1-24

ROADWAY STANDARD DRAWING FOR

GUIDE FOR RIP RAP AT PIPE OUTLETS

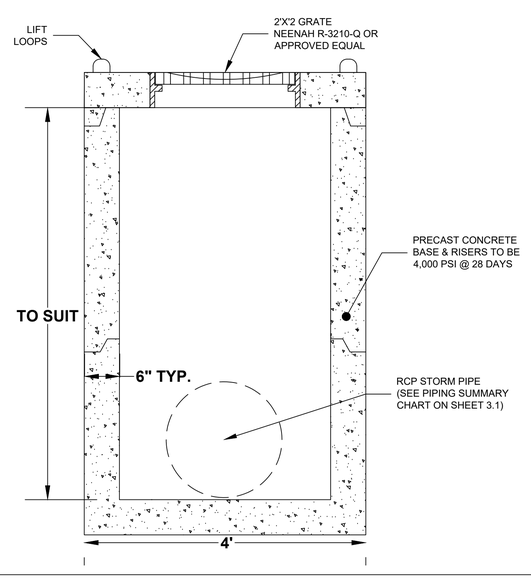
SHEET 1 OF 1

876.02



4' X 4' YARD INLET

SCALE: 1" = 1'



3' X 3' DROP INLET

SCALE: 1" = 1'

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:

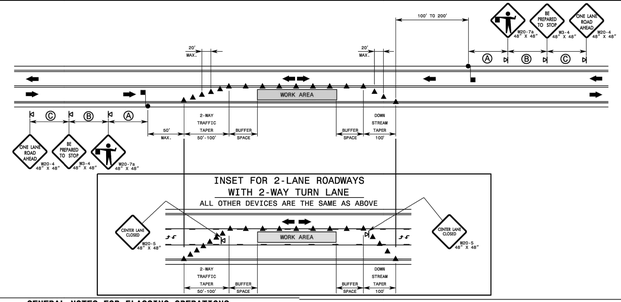
KALAS FALLS CIVIL DETAILS

SHEET NO.:

CD12

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Workflow Property\Dwg_Working Dwgs\Phase 4\Sheet Files\Sheet No CD1-CD19 Phase 4 Details.dwg



GENERAL NOTES FOR FLAGGING OPERATIONS

1- REFER TO RSD. 1101.11, SHEETS 1 & 4, FOR "L" DISTANCE AND SIGN SPACING.

2- INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC.

3- REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.

4- FOR POSTED SPEED LIMITS BELOW 45 MPH, CHANNELIZING DEVICE SPACING SHALL BE 20 FEET ON-CENTER IN TAPERS AND SHIFTS AND 40 FEET ON-CENTER IN TANGENTS. FOR POSTED SPEED LIMITS OF 45 MPH OR ABOVE, CHANNELIZING DEVICE SPACING SHALL BE 40 FEET IN THE TAPERS AND THE SHIFTS AND 80 FEET IN THE TANGENTS.

5- EXTEND LANE CLOSURES AT THE BUFFER SPACE SUCH THAT STOPPING SIGHT DISTANCE IS PROVIDED TO THE FLAGGER (REFER TO RSD. 1101.11, SHEET 2).

6- DO NOT STOP ALL DIRECTIONS OF TRAFFIC FOR MORE THAN 5 MINUTES AT A TIME.

7- DRUMS OR SKINNY DRUMS MAY BE USED IN LIEU OF CONES. REFER TO RSD. 1180.01 FOR SKINNY DRUM REQUIREMENTS.

8- USE FLAGGERS TO CONTROL TRAFFIC AT INTERSECTIONS AFFECTED BY THE LANE CLOSURE. PLACE FLAGGER STATIONS SO AS TO PROVIDE ALL APPROACHES WITH ADEQUATE (MUTCD-7A) PLACED APPROXIMATELY 100 FEET IN ADVANCE OF THE INTERSECTION FOR SIGNALIZED INTERSECTIONS PLACE SIGNALS IN THE FLASH MODE AND USE LAW ENFORCEMENT.

9- REFER TO THE CURRENT MUTCD FOR FLAGGER CONTROL, REQUIREMENTS, AND PROCEDURES.

10- DO NOT EXCEED A 1 MILE LANE CLOSURE LENGTH UNLESS OTHERWISE SHOWN IN THE TMP OR AS DIRECTED BY THE ENGINEER.

11- IF VEHICLE QUEUES WILL REACH WITHIN 100' OF EITHER SIDE OF ACTIVE RAILROAD TRACKS, REMOVE LANE CLOSURES AS NECESSARY TO KEEP QUEUES 100' OR GREATER FROM THE TRACKS. STOPPING WITHIN THE GRADE CROSSING. PROVIDE OFFICER OR FLAGGER EVEN IF AUTOMATIC WARNING MEASURES ALREADY EXIST.

12- THIS DETAIL IS APPLICABLE FOR OPERATIONS IN PLACE FOR 72 HOURS OR LESS. FOR LONGER DURATION OPERATIONS, SIGNING AND PAVEMENT MARKINGS MAY NEED TO BE ALTERED.

GENERAL NOTES FOR PILOT CAR OPERATIONS

1- USE PILOT CARS **WHEN** DIRECTED BY THE ENGINEER.

2- IF ROADWAY WIDTH IS LESS THAN 22 FEET (TOP TO TOP), CONES MAY NOT BE REQUIRED ALONG WORK AREA, AND AT THE DISCRETION OF THE ENGINEER, CONES MAY BE OMITTED ALONG THE WORK AREA IF USING A PILOT CAR.

3- CONES ARE ALWAYS REQUIRED IN THE UPSTREAM AND DOWNSTREAM TAPERS.

4- MOUNT SIGN G20-4 "PILOT CAR FOLLOW ME" AT A CONSPICUOUS POSITION ON THE REAR OF THE PILOT VEHICLE.

5- UNLESS APPROVED BY THE ENGINEER, DO NOT INSTALL MORE THAN ONE 1.1 MILE OF LANE CLOSURE, MEASURED FROM THE BEGINNING OF THE MERGE TAPER TO THE END OF THE LANE CLOSURE.

6- ADVISE RESIDENTS AND BUSINESSES WITHIN THE LANE CLOSURE LIMITS ABOUT METHODS OF SAFE EGRESS AND INGRESS FROM DRIVEWAYS DURING FLAGGING AND PILOT CAR OPERATIONS.

LEGEND

- FLAGGER
- CONE
- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

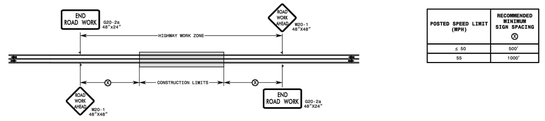
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
TEMPORARY LANE CLOSURES
2-LANE, 2-WAY ROADWAY-1 LANE CLOSED

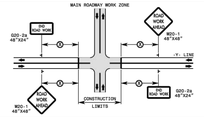
SHEET 1 OF 19
1101.02

TWO-WAY UNDIVIDED (L-LINES)



POSTED SPEED LIMIT (MPH)	RECOMMENDED ADVANCE SIGN SPACING (X)
≤ 50	500'
55	1000'

ROADWAYS INTERSECTING ALONG TWO-WAY UNDIVIDED WORK ZONE (Y-LINES)



NO STATIONARY -Y- LINE ADVANCE WARNING SIGNAGE IS REQUIRED UNLESS THERE IS MORE THAN 1000' OF CONSTRUCTION ALONG THE -Y- LINE.

GENERAL NOTES

1- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK UNLESS COVERED.

2- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT LONGER THAN 72 CONSECUTIVE HOURS.

3- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.

4- ERECT SIGNS PER RSD 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATIONS FOR WORK ZONE SIGNS.

5- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH RSD. 1110.01.

6- DO NOT BACK BRACE SIGN SUPPORTS.

LEGEND

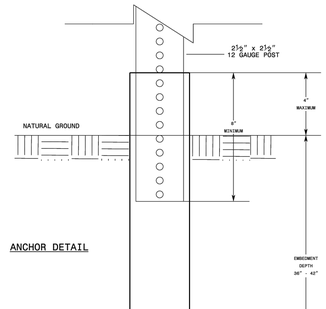
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW

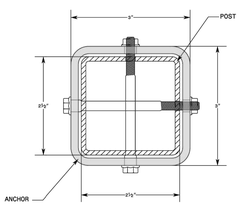
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
WORK ZONE ADVANCE WARNING SIGNS FOR TWO-WAY UNDIVIDED FACILITIES

SHEET 3 OF 3
1101.01





GENERAL NOTES

1- POSTS SHALL BE 2½" x 2½" 12 GAUGE STEEL.

2- ANCHORS SHALL BE 3" X 3" 7 GAUGE STEEL.

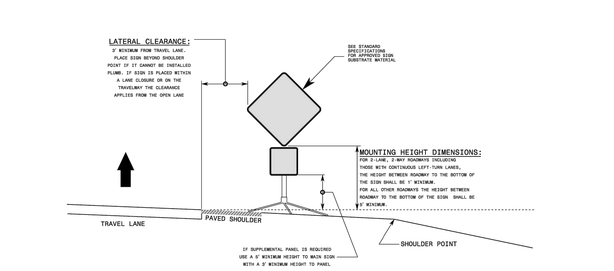
3- CONNECTIONS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
STATIONARY WORK ZONE SIGNS
PERFORATED SQUARE STEEL TUBING

SHEET 3 OF 3
1110.01



GENERAL NOTES

1- DIMENSIONS SHOWN ARE MINIMUM VALUES. MOUNT SIGNS SO THEY WILL BE CLEARLY VISIBLE TO APPROACHING TRAFFIC EVEN WHEN SIGNS ARE MOUNTED BEHIND TRAFFIC CONTROL DEVICES SUCH AS DRUMS, BARRIER, OR OTHER OBJECTS.

2- USE PORTABLE WORK ZONE SIGNS AND STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER.

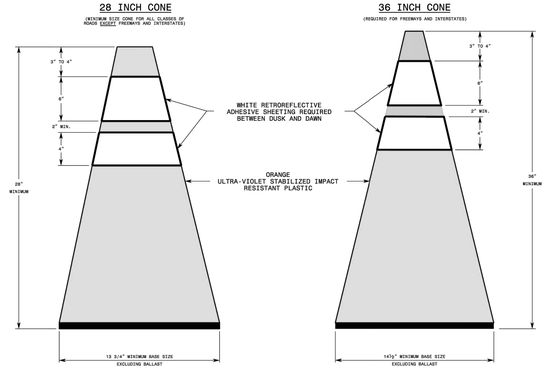
3- ALL PORTABLE WORK ZONE SIGNS AND STANDS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
PORTABLE WORK ZONE SIGNS
MOUNTING HEIGHT & LATERAL CLEARANCE

SHEET 1 OF 1
1110.02



GENERAL NOTES

1- ACHIEVE BALLASTING BY USING SPECIAL WEIGHTED BASES SUCH AS SAND BAG RINGS, DOUBLING CONES, OR BASES THAT CAN BE FILLED WITH BALLAST. SEVENTY PERCENT OF THE WEIGHT OF THE CONE MUST BE IN THE BASE. USE BALLASTS THAT DO NOT PRESENT A HAZARD WHEN STRUCK.

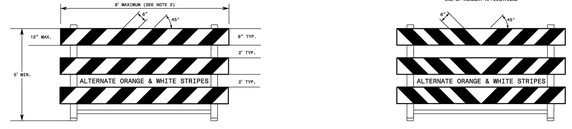
2- ALL CONES MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
CONES

SHEET 1 OF 1
1135.01



GENERAL NOTES

1- HORIZONTAL RAILS FOR BARRICADES MAY BE CONSTRUCTED OF APPROVED COMPOSITE, HOLLOW/ CORRUGATED EXTRUDED RIGID POLYOLEFIN, HIGH DENSITY POLYETHYLENE, OR OTHER NCDOT APPROVED MATERIAL.

2- BARRICADE SHALL BE LIMITED TO A MAXIMUM LENGTH OF 8 FT UNLESS NCDOT APPROVED.

3- ONLY NCDOT APPROVED COMPOSITE AND ROLL-UP SIGNS MAY BE MOUNTED ON THE BARRICADE RAILS. MOUNT SIGNS TO BARRICADE RAILS TO ENSURE SIGN WILL NOT BECOME DETACHED UNDER NORMAL WIND AND TRAFFIC CONDITIONS.

4- SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FOOT FROM THE GROUND TO THE BOTTOM OF THE SIGN UNLESS SIGN R11-3 IS REQUIRED BY THE PLANS OR DIRECTED BY THE ENGINEER.

5- ASSEMBLY OF THE GENERIC BARRICADES MUST BE SELF CERTIFIED BY THE ASSEMBLER.

6- BARRICADES USED TO CLOSE A ROADWAY SHALL EXTEND ACROSS THE ENTIRE ROADWAY. WHERE LOCAL TRAFFIC MUST BE MAINTAINED, THEY MAY BE PLACED IN A STAGGERED PATTERN.

7- STRIPES ON WORK ZONE BARRICADE RAILS SHALL BE ALTERNATE ORANGE AND WHITE RETROREFLECTIVE STRIPES, SLOPED DOWNWARD TOWARDS THE SIDE WHICH TRAFFIC IS TO PASS OR TURN IN DETOURING. WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.

8- USE RED AND WHITE STRIPES FOR PERMANENT BARRICADES.

9- ALL BARRICADES MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

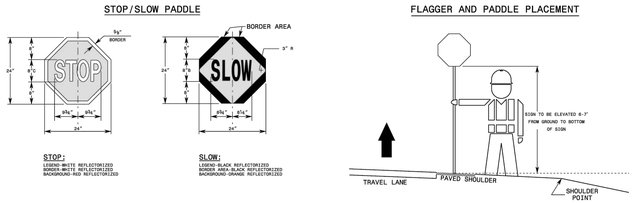
10- PLACE SANDBAGS OR OTHER APPROVED BALLASTING METHODS ON THE FEET OF THE FRAME. DO NOT PLACE SANDBAGS ON TOP OF A STRIPED RAIL OR STABILIZER BAR. DO NOT BALLAST BARRICADES BY HEAVY OBJECTS SUCH AS ROCKS, CHUNKS OF CONCRETE OR OTHER ITEMS THAT WOULD CAUSE DAMAGE IF THE BARRICADE IS STRUCK BY A VEHICLE.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
BARRICADES
TYPE-III

SHEET 1 OF 1
1145.01



GENERAL NOTES

1- USE HAND SIGNALING DEVICES SUCH AS STOP-SLOW PADDLES, FLASHLIGHTS TO CONTROL TRAFFIC. USE STOP-SLOW PADDLES AS THE PRIMARY DEVICE.

2- FABRICATE STOP-SLOW PADDLES FROM SHEET METAL OR OTHER LIGHT SEMI RIGID MATERIAL. PROVIDE A RIGID HANDLE OF SUFFICIENT LENGTH SO THE PADDLE IS HELD AT 6-7' ABOVE GROUND LEVEL.

3- PROVIDE STOPPING SIGHT DISTANCE TO EACH FLAGGER STATION. REFER TO RSD. 1101.11, SHEET 2.

4- ILLUMINATE FLAGGER STATIONS DURING NIGHT OPERATIONS.

5- FOLLOW FLAGGER QUALIFICATIONS AND METHODS OF HAND-SIGNALING PROCEDURES IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

6- ALL FLAGGERS MUST BE CERTIFIED BY AN NCDOT APPROVED TRAINING RESOURCE.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
FLAGGERS

SHEET 1 OF 1
1150.01

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. COOK

DETAIL SELECTION ONLY

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER: 9900
CHECKED BY: RC
DRAWN BY: DH, BG, GE, LL
DATE: MAY 1, 2026

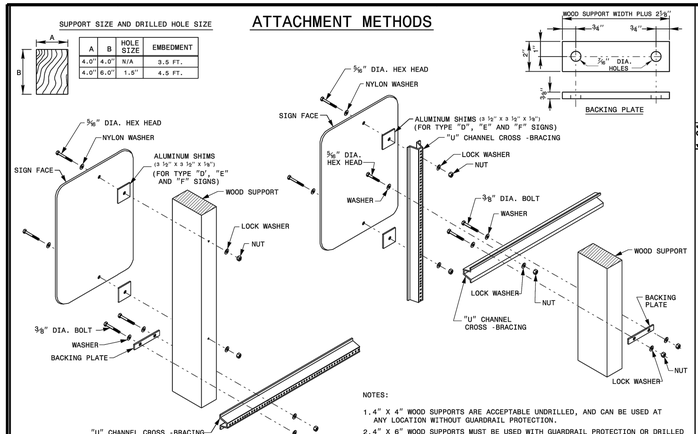
SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD13

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

J:\Jobs\9900\Work\Project\Civil_Working Dwgs\Phase 4\Sheet Files\Sheet file CD1-CD13 Phase 4 Details.dwg

ATTACHMENT METHODS



NOTES:

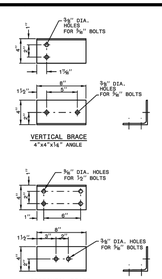
1. 4" X 4" WOOD SUPPORTS ARE ACCEPTABLE UNDRILLED, AND CAN BE USED AT ANY LOCATION WITHOUT GUARDRAIL PROTECTION.
2. 4" X 6" WOOD SUPPORTS MUST BE USED WITH GUARDRAIL PROTECTION OR DRILLED TO MAKE THEM BREAKAWAY, (DRILLED WITH 1½" HOLES, PERPENDICULAR TO THE DIRECTION OF TRAVEL, LOCATED 4" AND 18" ABOVE THE GROUND)
3. USE "U" CHANNEL SUPPORTS FOR CROSS -BRACING SIGNS SUPPORTED BY DUAL WOOD SUPPORTS.

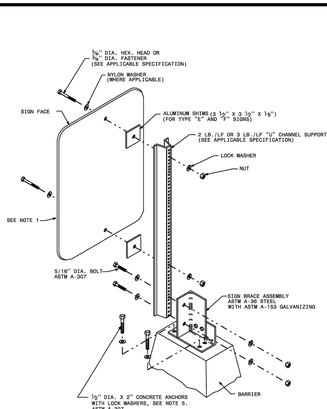
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
MOUNTING OF TYPE 'D', 'E', AND 'F' SIGNS ON WOOD SUPPORTS

SHEET 2 OF 2
903.20





NOTES:

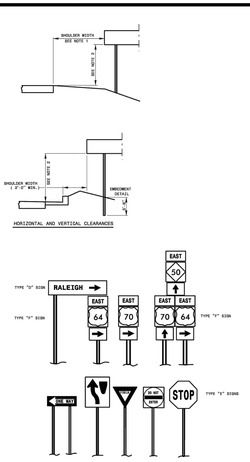
1. MAXIMUM SIGN SIZE IS 9.0 SQUARE FEET IN MAXIMUM WIND VELOCITY OF 80 MPH.
2. ERECT TYPE "E" AND "F" SIGNS WITH THE SAME SPECIFICATIONS AS TYPICAL INSTALLATION OF SIGNS MOUNTED ON "U" CHANNEL SUPPORTS.
3. ERECT MILE MARKERS WITH THE SAME SPECIFICATIONS AS MILEPOST DETAILS AND PLACEMENT". SEE ROADWAY STANDARD NUMBER 904.40.
4. APPLICABLE SECTIONS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SHALL BE IN EFFECT.
5. ATTACH THE BRACE TO THE BARRIER BY MEANS OF ½" DIAMETER, 2" LONG CONCRETE ANCHORS WITH LOCK WASHERS. USE CONCRETE ANCHORS THAT ARE STAINLESS STEEL OR GALVANIZED IN ACCORDANCE WITH ASTM A-152. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

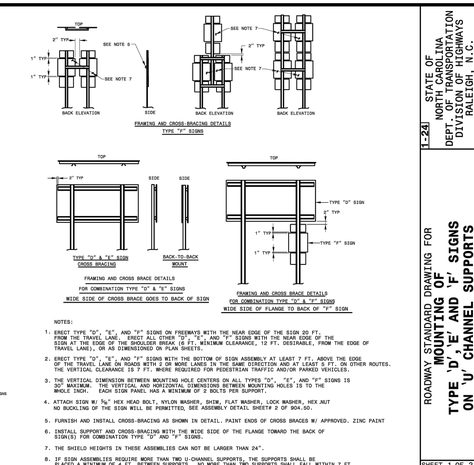
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
BARRIER SIGN SUPPORT ASSEMBLY

SHEET 1 OF 1
903.30





NOTES:

1. ERECT TYPE "D", "E", AND "F" SIGNS ON FREEWAYS WITH THE NEAR EDGE OF THE SIGN 20 FT. FROM THE TRAVEL LANE. ERECT ALL OTHER TYPE "D", "E", AND "F" SIGNS WITH THE NEAR EDGE OF THE SIGN AT THE EDGE OF THE SHOULDER BREAK (6 FT.) MINIMUM CLEARANCE, 12 FT. DESIRABLE, FROM THE EDGE OF TRAVEL LANE, OR AS DIMENSIONED ON PLAN SHEETS.
2. ERECT TYPE "D", "E", AND "F" SIGNS WITH THE BOTTOM OF SIGN ASSEMBLY AT LEAST 7 FT. ABOVE THE EDGE OF THE TRAVEL LANE. THE VERTICAL CLEARANCE IS 14 FT. 6 IN. OVER THE TRAVEL LANE ON INTERSTATE AND OTHER ROUTES. THE VERTICAL CLEARANCE IS 7 FT. WHERE REQUIRED FOR PEDESTRIAN TRAFFIC AND/OR PARKED VEHICLES.
3. THE VERTICAL DIMENSION BETWEEN MOUNTING HOLE CENTERS ON ALL TYPES "D", "E", AND "F" SIGNS IS 30" MAXIMUM. THE VERTICAL AND HORIZONTAL DIMENSIONS BETWEEN MOUNTING HOLES IS TO THE WHOLE INCH. EACH SIGN PANEL HAS A MINIMUM OF 2 BOLTS PER SUPPORT.
4. ATTACH SIGN W/ ⅝" HEX HEAD BOLT, NYLON WASHER, SHIM, FLAT WASHER, LOCK WASHER, HEX NUT NO BUCKLING OF THE SIGN WILL BE PERMITTED, SEE ASSEMBLY DETAIL SHEETS# 2 OF 904.50.
5. FURNISH AND INSTALL CROSS-BRACING AS SHOWN IN DETAIL. PAINT ENDS OF CROSS BRACES W/ APPROVED. ZINC PAINT
6. INSTALL SUPPORT AND CROSS-BRACING WITH THE WIDE SIDE OF THE FLANGE TOWARD THE BACK OF SIGN(S) FOR COMBINATION TYPE "D" AND "F" SIGNS.
7. THE SHIELD HEIGHTS IN THESE ASSEMBLIES CAN NOT BE LARGER THAN 24".
8. IF SIGN ASSEMBLIES REQUIRE MORE THAN TWO U-CHANNEL SUPPORTS, THE SUPPORTS SHALL BE PLACED A MINIMUM OF 4 FT. BETWEEN SUPPORTS. NO MORE THAN TWO SUPPORTS SHALL FALL WITHIN 7 FT. PATH, OR THE SIGN ASSEMBLY MUST BE PLACED BEHIND BARRIER PROTECTION.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
MOUNTING OF TYPE 'D','E' AND 'F' SIGNS ON 'U' CHANNEL SUPPORTS

SHEET 1 OF 2
904.50

AMERICAN Engineering
American Engineering Associates - Southeast, P.A.
4020 Westchase Boulevard, Suite 450
Raleigh, NC 27607
919-469-1101

NORTH CAROLINA ENGINEERING ASSOCIATES SOUTHEAST C-3881 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 062383 ENGINEER ROMAN S. CHOK

DETAIL SELECTION ONLY

	NO. SUPPORTS		
	2	3*	4*
P	.207W	.143W	.107W
R	.586W	.355W	.262W

*MINIMUM 4 FT. BETWEEN CHANNEL SUPPORTS

HOLE PUNCHING DETAIL

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
MOUNTING OF TYPE 'D','E', AND 'F' SIGNS ON 'U' CHANNEL SUPPORTS

SHEET 2 OF 2
904.50

NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.

TRANSVERSE EXPANSION JOINT IN SIDEWALK

DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
CONCRETE SIDEWALK

SHEET 1 OF 1
848.01

PLAN VIEW

TYPICAL SECTION

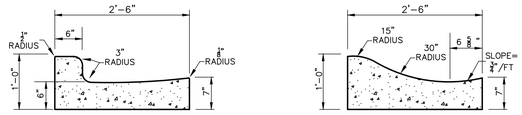
TRANSVERSE EXPANSION JOINT

NOTES:

1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET.
2. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.
3. A 6 INCH DEPTH IS REQUIRED AT LOCATIONS OF DRIVEWAY CROSSINGS, AT STREET INTERSECTIONS (ALONG THE LENGTH OF RADIUS CURB RETURNS), AND IN THE HANDICAP RAMPS.

STANDARD CONCRETE SIDEWALK

DETAIL No. 03000.07
SHEET 1 OF 2



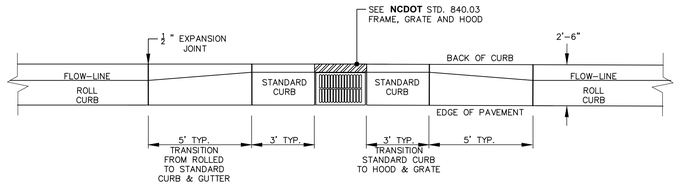
30" STANDARD CURB & GUTTER

30" ROLLED CURB

NOTES:

1. CONCRETE SHALL BE 3000 PSI.
2. CONTRACTION JOINTS SHALL BE SPACED AT 10' INTERVALS OR 15' INTERVALS WHEN A MACHINE IS USED.
3. EXPANSION JOINTS SHALL BE SPACED AT 50' INTERVALS.
4. FINISH ALL CONCRETE WITH CURING COMPOUND.
5. FOLLOW ALL APPLICABLE ACI REQUIRMENTS.
6. ROLLED CURB SHALL ONLY BE USED FOR APPROVED APPLICATIONS.

CURB & GUTTER DETAIL
NTS



CONCRETE CURB AND GUTTER TRANSITION
(ROLLED CURB TO STANDARD CURB)

NO.	DATE	REVISION:

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS PHASE 4
CONSTRUCTION INFRASTRUCTURE
DRAWINGS
CID-26-TBD
1832 ROLESVILLE ROAD
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	RC
DRAWN BY:	DH, BG, GE, LL
DATE:	MAY 1, 2026

SHEET TITLE:
KALAS FALLS CIVIL DETAILS

SHEET NO.:
CD14

North Carolina 811
*** 3 Days Before Digging ***
North Carolina 811
811 or 1-800-632-4949
Remote Ticket Entry
http://nc811.org/remoteticketentry.htm

Z:\Jobs\9900\Kalas\In Property\Eng_Working Dwgs\Phase 4\Sheet Files\Sheet No CD1-CD19 Phase 4 Details.dwg

V1_CID-TBD_Kalas Phase 4.pdf · Page 71

Outdoor Lighting

MICRO LED ROADWAY
(Meets Dark Sky Criteria)

LED (Light-emitting diode)	50 watts
Mounting height	20', 25', 35'
Color	Gray | Black
Pole	Fiberglass Metal Wood
Applications	Neighborhoods Parks Streets

Light source: LED (white)
Wattage: 50 watts, 70 watts
Lumens: 5,232 – 8,170
Light pattern: IESNA Type II, III, V
IESNA cutoff classification: Full-cutoff
BUG rating: Type II = B1U0G2 (50w)
B2U0G2 (70w)
Type III = B1U0G1
Type V = B3U0G1 (50w only)
Color temperature: 3,000K **4,000K**

light distribution patterns

POLE AVAILABLE	MOUNTING HEIGHT	COLOR
Fiberglass	25', 30', 35'	Gray, Black (additional cost)
Wood	25', 30', 35'	Standard
Metal (Special conditions)	25', 30', 35'	Galvanized

FEATURES	BENEFITS
Turnkey operation	Provides hassle-free installation and service
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance, electricity & warranty included	Eliminates high and unexpected repair bills
One low monthly cost on your electric bill	Convenience and savings for you

For additional information, contact
us at **OOLCarolinas@duke-energy.com.**

DUKE ENERGY. PROGRESS

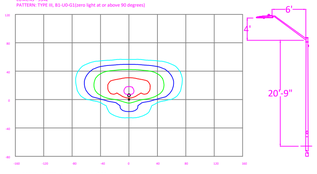
BUILDING A SMARTER ENERGY FUTURE™

©2020 Duke Energy Corporation 222356 0521 5/22

ISOFOOTCANDLE CURVES

FIXTURE: LED 50W ROADWAY
MOUNTING HEIGHT: 25 FT
LIGHT SOURCE: LED, 3000K, 70 CRI
LUMENS: 5342
PATTERN: TYPE III, B3 U0-G1(zero light at or above 90 degrees)

AS01W LF30-RW-LED-50-GRAY-III-3000K_____-P
POLE AS01W (POLE-DB-FG-25FT-GRAY_____-P (GRAY)



LEGEND (OUTER to INNER): 0.10 , 0.25 , 0.50 , 1.00 , 1.25

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Street	+	0.5 fc	1.1 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	QTY	Description	Number Lamps	Lamp Output	LLF
	A	26	LED 50w Roadway - Type III - 3000K	1	5312	0.85

NO.	DATE	REVISION	BY

DISTANCE CALIBRATION (INCHES)
0 0.5 1.0 2.0 3.0 4.0

LIGHTING DESIGN TOLERANCE

The calculated footcandle light levels in this lighting design are predicted values and are based on specific information that has been supplied to Duke Energy. Any inaccuracies in the supplied information, differences in luminaire installation, lighted area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions (foliage or otherwise) in the lighted area, or lighting from sources other than listed in this design may produce different results from the predicted values. Normal tolerances of voltage, lamp output, and ballast and luminaire manufacture will also affect results.

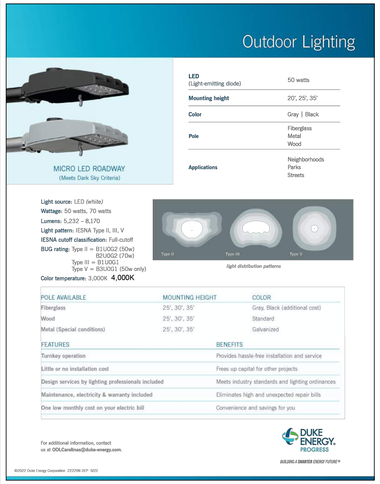
DUKE ENERGY® PROGRESS

PROPRIETARY & CONFIDENTIAL

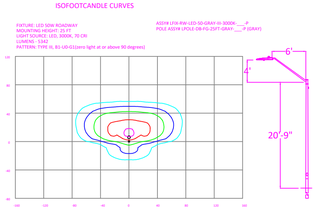
This document together with the concepts and designs presented herein, presented as an instrument of service, is the sole property of Duke Energy, and is intended only for the specific purpose and prospective client as stated in the title block of this drawing. Any use, copying, reproduction or disclosure of the drawing, design or any information contained herein by the prospective customer or other entities, including without limitation, architects, engineers, or equipment manufacturers is hereby expressly prohibited and shall not be permitted absent prior written consent from, and payment of compensation to Duke Energy. Duke Energy disclaims any liability or responsibility for any unauthorized use of or reliance on this document.

KALAS FALLS IV
WAKE FOREST, NC
STREET LIGHTING ARRANGEMENT

Designed by DUKE ENERGY PROGRESS LIGHTING SOLUTIONS
Reviewed by N. Johnson Scale 1" = 60'
Date 03/31/2026 Size Drawing size "D"
Description LED ROADWAY
Drawing No. 26-0111A Sht. 1 OF 1



ISOFOOTCANDLE CURVES

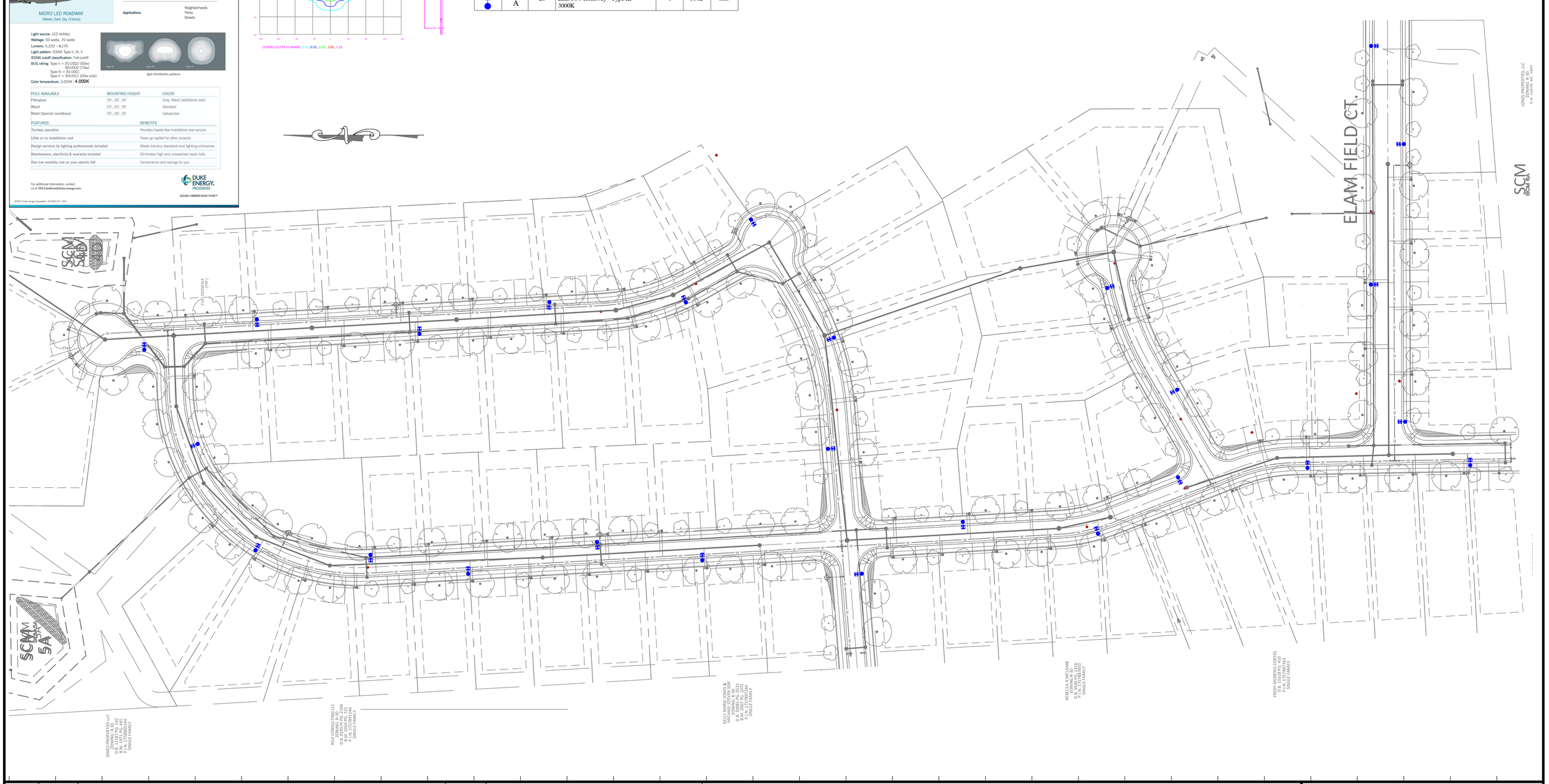


Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Street	+	0.5 fc	1.1 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	QTY	Description	Number Lamps	Lamp Output	LLF
	A	26	LED 50w Roadway - Type III - 3000K	1	5312	0.85



NO.	DATE	REVISION	BY

DISTANCE CALIBRATION (INCHES)
0 0.5 1.0 2.0 3.0 4.0

LIGHTING DESIGN TOLERANCE

The calculated footcandle light levels in this lighting design are predicted values and are based on specific information that has been supplied to Duke Energy. Any inaccuracies in the supplied information, differences in luminaire installation, lighted area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions (foliage or otherwise) in the lighted area, or lighting from sources other than listed in this design may produce different results from the predicted values. Normal tolerances of voltage, lamp output, and ballast and luminaire manufacture will also affect results.

DUKE ENERGY® PROGRESS

PROPRIETARY & CONFIDENTIAL

This document together with the concepts and designs presented herein, presented as an instrument of service, is the sole property of Duke Energy, and is intended only for the specific purpose and prospective client as stated in the title block of this drawing. Any use, copying, reproduction or disclosure of the drawing, design or any information contained herein by the prospective customer or other entities, including without limitation, architects, engineers, or equipment manufacturers is hereby expressly prohibited and shall not be permitted absent prior written consent from, and payment of compensation to Duke Energy. Duke Energy disclaims any liability or responsibility for any unauthorized use of or reliance on this document.

KALAS FALLS IV
WAKE FOREST, NC
STREET LIGHTING ARRANGEMENT

Designed by DUKE ENERGY PROGRESS LIGHTING SOLUTIONS
Reviewed by N. Johnson Scale 1" = 60'
Date 03/31/2026 Size Drawing size "D"
Description LED ROADWAY
Drawing No. 26-0111A Sht. 1 OF 1