Town of Montreat
Board of Commissioners Meeting – Public Forum
August 12, 2021 – 6:30 p.m.
Town Hall & Zoom Software

I. Call to Order

- Welcome
- Moment of Silence

II. Agenda Adoption

III. Public Comments

IV. Adjournment

Town of Montreat
Board of Commissioners
Town Council Meeting
August 12, 2021 – 7:00 p.m.
In person and Zoom software

I. Call to Order

- Pledge of Allegiance
- Moment of Silence

II. Agenda Adoption

III. Mayor's Communications

IV. Consent Agenda

A. Meeting Minutes Adoption

- July 8th Town Council Public Forum Meeting Minutes
- July 8th Town Council Meeting Minutes
- July 30th Town Council Special Meeting Minutes

All items on the Consent Agenda are considered routine, to be enacted by one motion with the adoption of the agenda and without discussion. If a member of the governing body requests discussion of an item, it will be removed from the Consent Agenda and considered separately.

V. Town Administrator's Communications

- Consent Agenda Review
- Other Items

VI. Administrative Reports

- Administration
- Finance
- Planning and Zoning
- Police
- Public Works and Water
- Sanitation
- Streets

VII. Public Comment

Public comments will be heard during this period for <u>any and all items.</u>

VIII. Old Business

IX. New Business

A. Proclamation Designating September 4th as Arbor Day in Montreat

- **Suggested Motion: Move to approve/deny Proclamation #21-08-0001 as presented.**

B. Texas Road Wall Repair

- **Discussion with possible action**

C. Annual Renewal Contract for Zoning Administration

- **Suggested Motion: Move to approve/deny the renewal contract with Land-of-Sky Regional Council in the amount of $58,656 and to authorize the Town Administrator to sign.**

D. Well A (Texas Road) Repair Contract

- **Suggested Motion: Move to approve/deny the contract with Reuben Caldwell Drilling Inc. in the amount of $15,834.93.**

X. Public Comment

Public comments will be heard during this period for <u>any and all items.</u>

XI. Commissioner Communications

XII. Dates to Remember

- **Montreat Tree Board August 24, 2021 9:30 a.m. by Zoom Software and in person attendance at Montreat Town Hall**
- **Board of Adjustment Training Meeting August 24, 2021 7:00 p.m. by Zoom Software and in person attendance at Montreat Town Hall**
- **Montreat Landcare September 1, 2021 10:30 a.m. in the Allen Building**
- **Planning & Zoning Commission September 1, 2021 10:30 a.m. by Zoom Software and in person attendance at Montreat Town Hall**

- **Montreat Arbor Day Celebration September 4, 2021 10:00 a.m. – 2:00 p.m. at Montreat Town Hall**
- **Town Hall Closed for Labor Day. No sanitation services. Will resume on Tuesday, September 7th.**
- **Planning & Zoning Commission September 9, 2021 10:30 a.m. by Zoom Software and in person attendance at Montreat Town Hall**
- **Town Council Meeting September 9, 2021 7:00 p.m. by Zoom Software and in person attendance. Public Forum begins at 6:30 p.m.**
- **Board of Adjustment TENTATIVE September 23, 2021 7:00 p.m. by Zoom Software and in person attendance**
- **Montreat Tree Board September 28, 2021 9:30 a.m. by Zoom Software and in person attendance**

XIII. Closed Session

- **Suggested Motion: "To enter into Closed Session in accordance with NCGS §143-318.11(6) for discussion of a personnel matter"**

XIV. Adjournment

Town of Montreat
Board of Commissioners
Public Forum Meeting Minutes
July 8, 2021 – 6:30 p.m.
Town Hall & Zoom

Board members present: Mayor Tim Helms
Mayor Pro Tem Tom Widmer
Commissioner Kitty Fouche
Commissioner Alice Lentz
Commissioner Kent Otto
Commissioner Jane Alexander

Board members absent: None

Town staff present: Alex Carmichael, Town Administrator
Angie Murphy, Town Clerk

Approximately 13 members of the public were present. Mayor Helms called the meeting to order at 6:30 p.m., and led the group in a moment of silence.

Agenda Approval

Commissioner Kitty Fouche moved to adopt the agenda as presented. Commissioner Jane Alexander seconded and the motion carried 5/0.

Public Forum

Bill Scheu of 146 Eastminster Terrace spoke in the capacity of Chairman of the Planning & Zoning Commission. A local realtor had a prospective sale of a home in the ETJ and he wanted to advise the prospective purchaser that there were no tie-on requirements to the sewer system. The Planning & Zoning Commission did eliminate these requirements from the Montreat Zoning Ordinance with the recent ordinance changes but apparently there are three other references to this subject in the General Code of Ordinances. Mr. Scheu respectfully asked the Council to request that Planning & Zoning review the sanitary sewer provisions in Chapter E Section 6 Article 1 and Chapter M Section 6 and 7 of the General Code of Ordinances so there is no further confusion.

Priscilla Hayner of 319 Assembly Drive stated her concerns about the intended hotel/lodge that the MRA will soon be submitting a permit to build. Ms. Hayner stated that tomorrow a number of citizens will be meeting with the MRA in order to have a frank, open productive exchange to arrive at a place that does not involve a legal battle. Ms. Hayner understands that the Council has no official role in the decision process but is interested in their opinions, ideas, and suggestions about how she and others might approach the next steps to avoid further contention in Montreat. Mayor Tim Helms feels the newly erected sign across from Town Hall is contentious but feels that the red ribbons tied around trees are fine. Mayor Helms advised that if it is taken to court in will affect

every taxpayer in Montreat. Mayor Helms also wished them luck in working things out between themselves and the MRA. Commissioner Kitty Fouche mentioned that the signs were noticed by her grandchildren and that she's ready for the fight to be over. Fights like these lead to divided groups and lost friendships. Commissioner Kent Otto reflected on the 2008 Comprehensive Plan and how important conversations are in the community.

Wade Burns of 232 North Carolina Terrace mentioned that there are a couple of other items that overlap in the general ordinances and suggested that all of the overlapping items that have to do with ETJ be included in the overall referral to Planning & Zoning.

Harry T. Jones of 314 North Carolina Terrace thanked the Council for their service and also reflected on the spirit of service that is shown by Staff. Mr. Jones asked how the 2008 Comprehensive Plan was being utilized and implemented. Mr. Jones also asked how the Board of Commissioners could lead the managed growth of this Community and how could the additional infrastructure expenses caused by new developments be charged to users of those developments and not be a burden of the Town. Mr. Jones also asked how the Board of Commissioners will facilitate a bridge building process. Mayor Tim Helms advised that the 2008 Comprehensive Plan had been used sparingly thus far but money had been included in this year's budget for a Comprehensive Plan Update. Mayor Helms stated that managing growth will continue to be a struggle because a lot of the entities are non-profits and do not pay taxes. Mayor Helms also advised that it's not the Town Council's responsibility to bring unity to the Town. The Town's goal is to take care of business- such as the hiring of staff, maintaining infrastructure like roads, the water system and stormwater. Mayor Helms also stated that the MRA gives a voluntary gift based on the number of bed nights they have in their hotels and lodges. This money offsets police and fire services as well as the cost of maintaining roads.

Adjournment

Commissioner Jane Alexander moved to adjourn the meeting. Mayor Pro Tem Widmer seconded and the motion carried 5/0. The meeting was adjourned at 6:59 p.m.

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Tim Helms, Mayor Angie Murphy, Town Clerk

Town of Montreat
Board of Commissioners
Meeting Minutes
July 8 2021 – 7:00 p.m.
Zoom Meeting with in person attendance

Board members present:	Mayor Tim Helms Mayor Pro Tem Tom Widmer Commissioner Jane Alexander Commissioner Kent Otto Commissioner Alice Lentz Commissioner Kitty Fouche
Board members present via Zoom:	None
Board members absent:	None
Town staff present:	Alex Carmichael, Town Administrator Angie Murphy, Town Clerk David Arrant, Chief of Police Barry Creasman, Public Works Director
Town staff present via Zoom:	None

Approximately 11 members of the public were present at Town Hall and several more were watching via Zoom. Mayor Helms called the meeting to order at 7:00 p.m., and led the group in the pledge of allegiance and a moment of silence.

Agenda Approval

Mayor Helms reminded Council that an addition to the agenda was needed with regards to aligning the ordinances more thoroughly. Mayor Pro Tem Tom Widmer moved to adopt the agenda as amended. Commissioner Alice Lentz seconded and the motion carried 5/0.

Mayor's Communications

Mayor Helms thanked the Town staff for their extra efforts during the July 4th celebration festivities. Mayor Helms also thanked Commissioner Kent Otto and Matt Ashley who organized the 5K Gate Gait. Mayor Helms reminded everyone that there will be 700 youth in Town next week and to be careful out on the roadways.

Meeting Minutes Adoption

- June 10th Town Council Public Forum Meeting Minutes
- June 10th Town Council Meeting Minutes

Town Administrator's Communications

Mr. Carmichael shared that the Town has not received any ARPA funds to cover lost revenue due to the COVID crisis. Staff has attended many conference calls and webinars covering the stipulations of the funds. Mr. Carmichael is confident that the estimate of $250,000 will be received as expected.

Administrative Reports

- Administration – This report was given in written format.
- Finance – This report was given in written format.
- Planning & Zoning – This report was given in written format.
- Police – This report was given in written format.
- Public Works and Water – This report was given in written format.
- Sanitation – This report was given in written format.
- Streets – This report was given in written format.

Commissioner Kitty Fouche questioned why there weren't any 2020 numbers for comparison for July. Mr. Carmichael advised that a July monthly meeting was not held in 2020 and that's why there were no comparison numbers.

Commissioner Kent Otto asked Public Works Director Barry Creasman about the Texas Road Culvert Repair Project. Mr. Creasman is still awaiting drawings from Civil Design Concepts. Commissioner Otto asked if we could put a time frame on the project and get the project moving and Mr. Creasman said he would get the plans before the Council very soon. Otto also thanked Police Chief Arrant and Public Works Director Barry Creasman for both their crews' hard work during the 4th of July.

Mayor Pro Tem Tom Widmer thanked staff for the more complete financial reports.

Public Comment

There was no public comment at this time.

Old Business

There was no old business.

New Business

A. Buncombe Madison Regional Hazard Mitigation Plan Resolution: Mr. Carmichael stated that in order to qualify for state disaster funds the Town of Montreat has to be a part of a hazard mitigation plan. The plan has to be updated roughly every 5 years. The plan is 484 pages and is very detailed. The plan is a guidepost. The old plan went out of date on July 6th. The resolution before the Commission tonight would in effect adopt the plan. Commissioner Kent Otto moved to approve Resolution #21-07-0001 as presented. Commissioner Alice Lentz seconded and the motion carried 4/1 with Mayor Pro Tem voting against the motion.

B. Referral to Planning & Zoning Commission regarding General Ordinances: Commissioner Kitty Fouche moved to refer the General Ordinances regarding water and septic to the Planning & Zoning Commission. Commissioner Jane Alexander seconded and the motion carried 5/0.

Public Comment

Mr. Tom Frist of 98 Frist Road asked about the status of the Texas Road Bridge renovation plans. Mayor Helms stated that monies had been included in this year's budget to complete phase 1 of the repairs.

Commissioner Communications

There were no Commissioner Communications.

Dates to Remember

- Montreat Tree Board July 27, 2021 9:30 a.m. by Zoom Software and in person attendance
- Montreat Landcare August 4, 2021 9:00 a.m. by Zoom Software and in person attendance
- Town Council Meeting August 12, 2021 7:00 p.m. by Zoom Software and in person attendance. Public Forum begins at 6:30 p.m.
- Montreat Tree Board August 24, 2021 9:30 a.m. by Zoom Software and in person attendance

Adjournment

Mayor Pro Tem Widmer moved to adjourn the meeting. Commissioner Alice Lentz seconded and the motion carried 5/0. The meeting was adjourned at 7:20 p.m.

_____ _____

Tim Helms , Mayor Angie Murphy, Town Clerk

Town of Montreat
Board of Commissioners
Special Meeting Minutes
July 30, 2021 – 3:00 p.m.
In person attendance only

Board members present:	Mayor Tim Helms Mayor Pro Tem Tom Widmer Commissioner Jane Alexander Commissioner Alice Lentz
Board members present via Zoom:	None
Board members absent:	Commissioner Kent Otto Commissioner Kitty Fouche
Town staff present:	Alex Carmichael, Town Administrator Angie Murphy, Town Clerk David Arrant, Chief of Police
Town staff present via Zoom:	None

There were zero members of the public present at Town Hall. Mayor Helms called the meeting to order at 3:00 p.m., and led the group in the pledge of allegiance and a moment of silence.

Agenda Approval

Mayor Pro Tem Tom Widmer moved to adopt the agenda as presented. Commissioner Jane Alexander seconded and the motion carried 3/0.

Public Comment

There was no public comment at this time.

Old Business

There was no old business.

New Business

There was no New Business.

Closed Session

Commissioner Jane Alexander moved to enter into Closed Session in accordance with NCGS §143-318.11(6) for discussion of a personnel matter. Commissioner Alice Lentz seconded and the motion carried 3/0.

After returning to Open Session, Commissioner Jane Alexander moved to hire Kaytlyn Pressley for the position of Patrol Officer for the Town of Montreat with a salary of $38,604 per year beginning on or after August 9, 2021. Mayor Pro Tem Tom Widmer seconded and the motion carried 3/0.

Adjournment

Commissioner Alice Lentz moved to adjourn the meeting. Commissioner Jane Alexander seconded and the motion carried 3/0. The meeting was adjourned at 3:20 p.m.

_____ _____

Tim Helms , Mayor Angie Murphy, Town Clerk

TOWN OF MONTREAT
P. O. Box 423, Montreat, NC 28757
Tel: (828) 669-8002 | Fax: (828) 669-3810
www.townofmontreat.org

ADMINISTRATIVE REPORTS:
ADMINISTRATION

Town Administration report for the month of July 2021

Monthly Statistics	2020	2021
Public Meetings	2	4
Inter-Organizational /Intergovernmental Meetings	3	0
Agendas Prepared	6	3
Minutes Transcribed	2	5
Resolutions Drafted	0	0
Public Records Requests Processed	0	7
Water Bills Processed	674	674
Leak Adjustments	8	2
New Water Accounts Established	2	2
Purchase Orders	144	79
Professional Development Hours	0	3
Sunshine List Messages		10
Website Posts	10	10
Social Media Posts	0	0
Code Red Alerts	0	0
Workers Compensation Claims	0	0

Upcoming Events and Schedule Changes
0

Comments
N/A

Staff Communications
N/A

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ADMINISTRATIVE REPORTS:
BUILDINGS AND INSPECTIONS

Buildings and Inspections report for the month of July 2021

Monthly Statistics

	2020	2021
Building Permits Issued	18	5
Pending Building Permits	0	2
Building Inspections Performed	26	24
Stop Work Orders Issued	0	0
Defective Building Posted	0	0
Denied Building Permits	0	0
Fire Inspections Performed	0	0
Fire Re-Inspections Performed	0	0
Fire Permits Issued	0	0

Comments
='Buildings '!A15:E16

Staff Communications
0

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ADMINISTRATIVE REPORTS:
STREETS

Streets Department report for the month of July , 2021

Monthly Statistics	2020	2021
Miles of Road Maintained	17.12	17.12
Miles of New Road Constructed	0	0
Public Trees Removed	5	3
Sand Applied to Roads (tons)	0	0
Ice Melt Applied to Roads (pounds)	0	0
Monthly Fuel Costs	199.39	319.05
Contracted Employee Staff Hours	0	0
Road Closures	2	0

Comments

Mowing continues . We will be side dressing roads around town. We will also be working on some trees on Assembly Drive. Please be mindful of crews in the roadways.

Staff Communications

0

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ADMINISTRATIVE REPORTS:
POLICE DEPARTMENT

Police Department report for the month of July , 2021

Monthly Statistics	2020	2021
Mileage	2,553	2,638
Dispatched Calls	55	52
Officer-Initiated Calls	419	545
Fire Assistance Calls	1	3
EMS Assistance Calls	0	1
Motorist/Other Assistance Calls	22	39
Traffic Stops	16	45
Parking Issues	2	4
Burglar Alarm Responses	5	0
Fire Alarm Responses	1	3
Residential/Building Checks	341	425
Ordinance Violations	19	1
Law Enforcement Agency Assistance Calls	26	9
Animal Control Calls	3	0
Larcenies	1	2
Breaking & Entering Calls	0	1
Suspicious Person Investigations	13	11
Suspicious Vehicle Investigations	7	9
Disturbance Calls	18	14
Accident Responses	0	1
Auxiliary Hours Worked (Regular)	32	0
Auxiliary Hours Worked (Addittional)	72	192
Truck Turns at Gate	4	18
MPD Fuel Cost	$ -	$0.00
Professional Development Hours	0	8
Town Service	407	541
MRA Service	158	316
College Service	5	5

Comments

The big event of July was the Independence Day Parade. I am happy to report that there were no negative instances. While the crowd was smaller than normal, estimates still put it at around 3500-4000 people in attendance. This year was the first time we utilized aerial surveillance, courtesy of Broad River Fire Department. We appreciate their assistance. Also, a big "Thank You" to Montreat Public Works and all the MRA staff that made this celebration possible.

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ADMINISTRATIVE REPORTS:
WATER AND PUBLIC WORKS

Water and Public Works report for the month of July , 2021

Monthly Statistics	2020	2021
Calls for Service	56	72
Water Leaks Repaired	2	3
New Water Lines Installed	0	0
Water Meters Read	674	674
Water Meter Replacements	0	0
Gallons of Water Produced	4361885	4,939,263
Monthly Fuel Cost	214.3	$ 284.63
Hours Pumped (11 wells combined)	2238	2,606

Comments

We have a well that is down .We are awaiting a test pump and for it to be installed so we can run a draw down test on the well . When we complete this test we will be able to install the correct pump for the amount of water yielded from the well thus cutting down on the amount of air pumped into the system.

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ADMINISTRATIVE REPORTS:
SANITATION

Sanitation Department report for the month of July , 2021

Monthly Statistics	2020	2021
Tons of Curbside Trash Collected	Data Unavailable	46.07
Pay-As-You-Throw Trash Bags Collected	Data Unavailable	127
Tons of Curbside Recycling Collected	Data Unavailable	8.31
Pay-As-You-Throw Recycling Bags Collected	Data Unavailable	108
Cardboard Recycling Collected	Data Unavailable	0.83
Unique Curbside Sanitation Stops	Data Unavailable	1,683
Bagged Leaf Pickup	Data Unavailable	98.00
Brush Pickup (cubic yards)	Data Unavailable	4 Loads
Hauling Fees	Data Unavailable	$2,847.28
Tipping Fees	Data Unavailable	$938.77
Dumpster Rental Fees	Data Unavailable	$203.92
Sanitation Fuel	Data Unavailable	$ 213.23

Comments:

1683 stops/ We would like to remind everyone to please tie trash bags and to also be sure and break down

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ADMINISTRATIVE REPORTS:
ZONING ADMINISTRATION

Zonning Administration report for the month of July , 2021

Monthly Statistics	2020	2021
Approved Zoning Permits	4	1
Denied Zoning Permits	0	0
Pending Zoning Permits	2	3
Variance/Interpretation Granted	0	0
Conditional Use Permits Granted	0	0
Permit Extensions Granted	0	0
Sign Permits Issued	0	0
Notices of Violation	0	0

Comments

TOWN OF MONTREAT

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PROCLAMATION #21-08-001 DESIGNATING SEPTEMBER 4, 2021 AS ARBOR DAY IN THE TOWN OF MONTREAT

WHEREAS, in 1872, J. Sterling Morton proposed to the Nebraska Board of Agriculture that a special day be set aside for the planting of trees; and

WHEREAS, this holiday, called Arbor Day, was first observed with the planting of more than a million trees in Nebraska; and

WHEREAS, Arbor Day is now celebrated throughout the nation and the world; and

WHEREAS, the American chestnut tree was a major source of beauty and an important resource of food and lumber at the time of Montreat's inception at the end of the 19th century; and

WHEREAS, during the first four decades of the 20th century approximately 90% of the species was destroyed by a blight; and

WHEREAS, The American Chestnut Foundation has been working to develop a blight-resistant variety of the American chestnut; and

WHEREAS, the Town of Montreat Tree Board is working with The American Chestnut Foundation in its efforts to re-introduce this iconic species to Montreat and Western North Carolina;

NOW, THEREFORE, BE IT RESOLVED that the Town of Montreat Board of Commissioners hereby designates September 4, 2021 as Arbor Day in the Town of Montreat, and urges all citizens to celebrate Arbor Day and The American Chestnut Foundation to re-introduce the American Chestnut to Montreat, and to continue to protect our trees and woodlands.

READ, APPROVED AND ADOPTED, this the 12th day of August , 2021.

[SEAL]

_____

Tim Helms, Mayor

ATTEST:

I hereby certify that this is a true and correct copy of this Resolution, duly adopted by the Town of Montreat on the 12th day of August, 2021 as it appears of record in the official minutes.

_____

Angie Murphy
Town Clerk

TEXAS ROAD

TOWN OF MONTREAT, NORTH CAROLINA

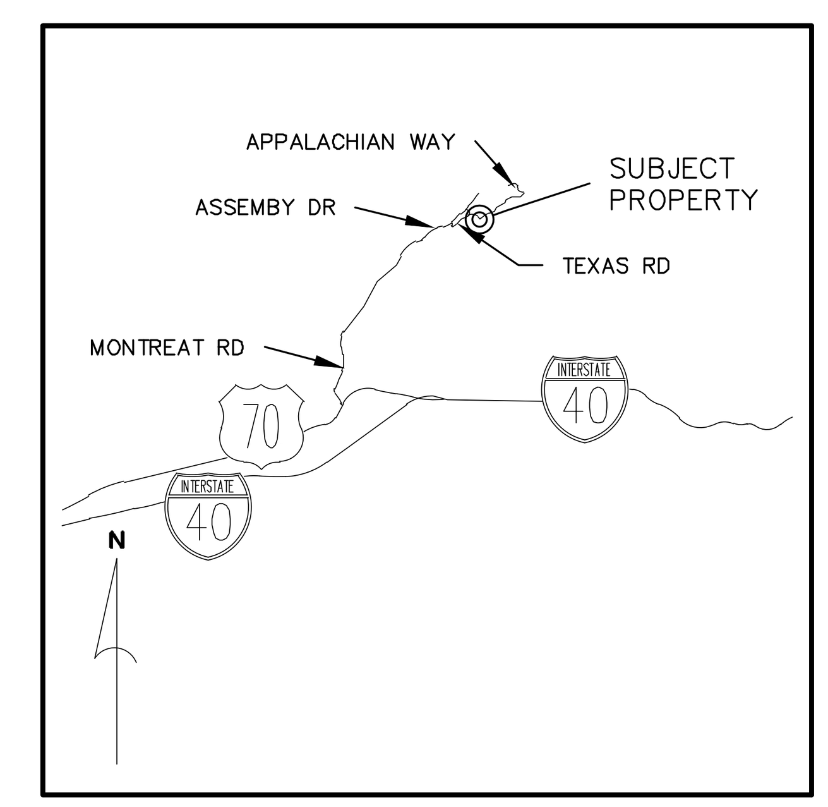
PREPARED FOR:

TOWN OF MONTREAT
PO BOX 423
MONTREAT, NC 28757
ALEX CARMICHAEL
(828) 669-8002 EXT. 305

INDEX OF SHEETS	
Sheet No.	**Title**
C000	COVER
--	SURVEY
C101	EXISTING CONDITIONS & DEMOLITION PLAN
C201	SITE PLAN
C301	GRADING & EROSION CONTROL PLAN
C501	STORM DRAINAGE PLAN
C601	SEWER PLAN
C931	EROSION CONTROL DETAILS
C932	EROSION CONTROL DETAILS
C951	STORM DRAINAGE DETAILS
C961	SEWER DETAILS
C998	NCG01
00	COVER SHEET
01A-01B	GENERAL NOTES
02	EXISTING CONDITIONS
03-04	PLAN AND ELEVATION VIEWS
05	CROSS SECTION
06	DETAILS

DEVELOPMENT DATA

OWNER/DEVELOPER:	TOWN OF MONTREAT PO BOX 423 MONTREAT, NC 28757
CONTACT:	ALEX CARMICHAEL (828) 669-8002 EXT. 305
CIVIL ENGINEER:	CIVIL DESIGN CONCEPTS, P.A. 168 PATTON AVENUE ASHEVILLE, NC 28801
CONTACT:	MICHAEL J. CAIN, P.E. (828) 252-5388



VICINITY MAP
(NOT TO SCALE)

Know what's **below.**
Call before you dig.

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-5365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-5455

Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN 7/26/21

COVER FOR:

TEXAS ROAD

TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET

C000

NOTES:

1) THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD HAZARD AREA AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY PER D.F.I.R.M.#3710072000J EFFECTIVE 1/6/2010.

2) PROPERTY SUBJECT TO ALL RIGHTS-OF-WAY AND EASEMENTS OF RECORD, INCLUDING, BUT NOT LIMITED TO, THOSE SHOWN HEREON.

3) SURVEYOR WAS NOT PROVIDED WITH A LEGAL TITLE SEARCH. THERE MAY EXIST EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE, OR ANY OTHER FACTS PERTINENT TO THIS PROPERTY THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE THAT ARE NOT SHOWN ON THIS PROPERTY.

4) BUILDINGS, SURFACE AND SUBSURFACE IMPROVEMENTS ADJACENT TO THE SITE ARE NOT NECESSARILY SHOWN. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT SURVEYED OR CONSIDERED AS PART OF THIS SURVEY. NO EVIDENCE OR STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND CONDITIONS, CONTAINERS, OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS PROPERTY.

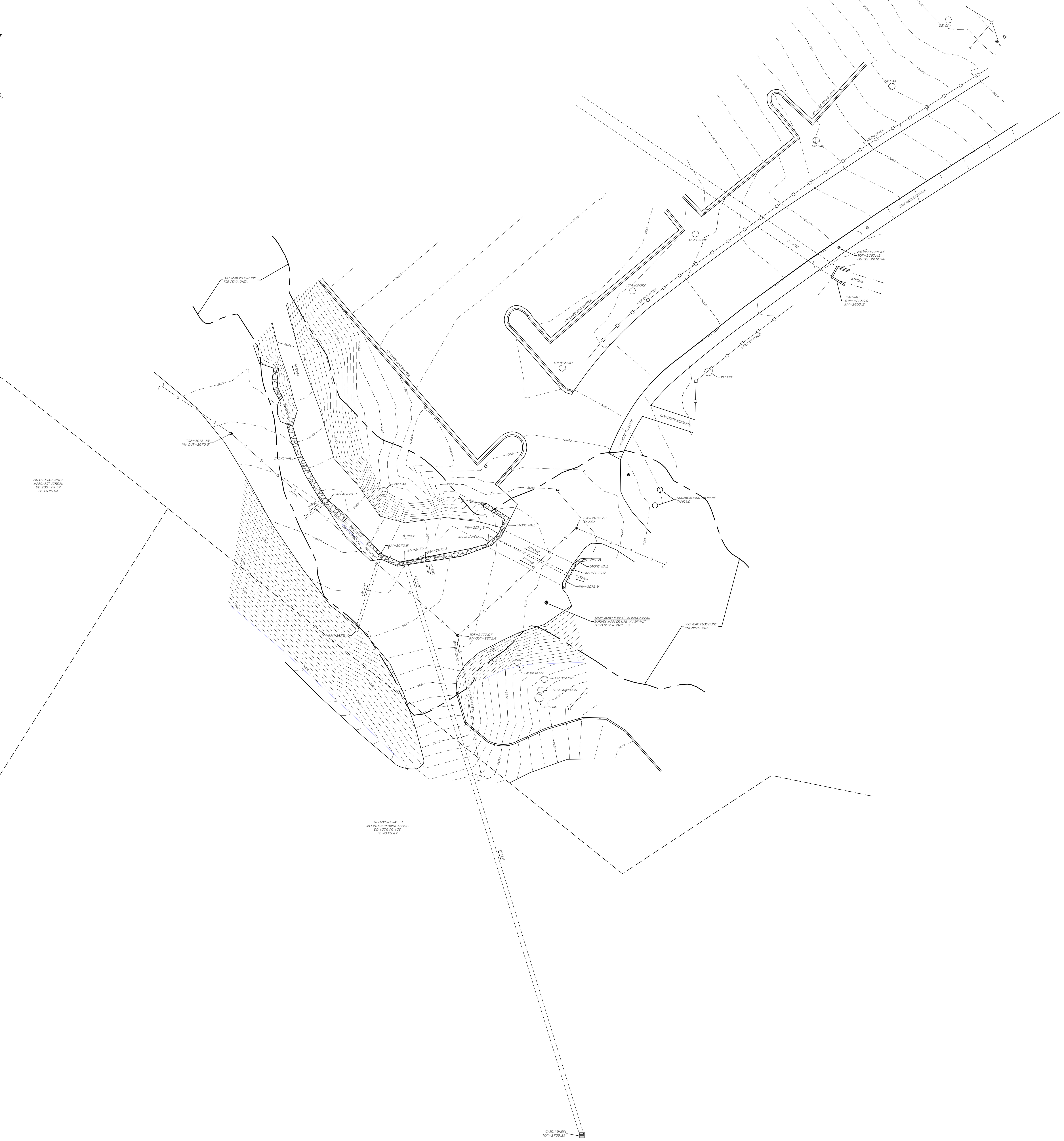
5) AREA BY COORDINATE COMPUTATION.

6) ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES.

7) NO NCGS CONTROL MONUMENTS WERE RECOVERED WITHIN 2000' OF THE SUBJECT PROPERTY.

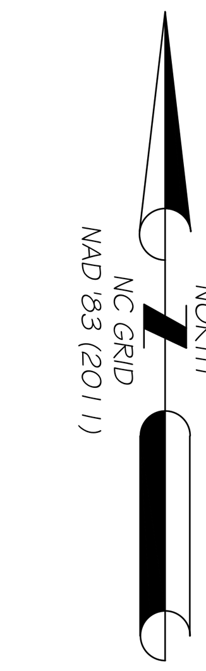
8) SUBJECT PROPERTY IS ZONED PER THE TOWN OF MONTREAT ZONING ORDINANCE. REFER TO THIS ORDINANCE FOR REGULATIONS APPLICABLE TO THE SUBJECT PROPERTY.

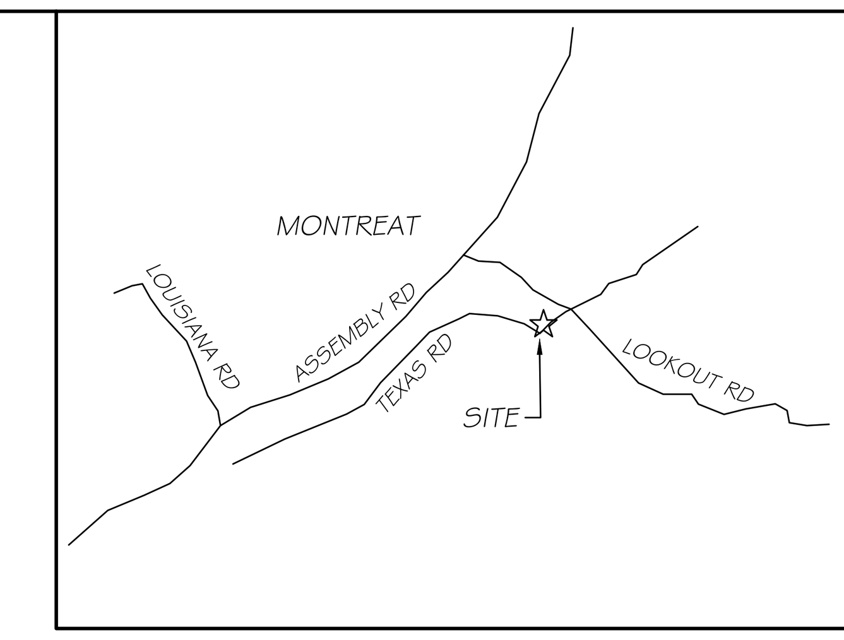
9) THE ELEVATION DATUM OF THIS SURVEY IS NAVD '88. THE CONTOUR INTERVAL IS ONE FOOT.



LEGEND & ABBREVIATIONS :

PB= PLAT BOOK
DB= DEED BOOK
PG= PAGE
R/W= RIGHT OF WAY
PIN= PARCEL IDENTIFICATION NUMBER
AREA LIGHT
CMP = CORRUGATED METAL PIPE
ELECTRICAL PEDESTAL
FIRE HYDRANT
GUY ANCHOR
HDPE = HIGH DENSITY POLYETHYLENE PIPE
INV = INVERT ELEVATION
PVC = POLYVINYL CHLORIDE PIPE
SEWER CLEANOUT
SEWER MANHOLE
UTILITY POLE
WATER METER
WATER VALVE





VICINITY MAP
NOT TO SCALE

DATE:	7-19-21
PROJECT #:	13465
DRAWING #:	G-21-5493
DRAWN BY:	AMW
SCALE:	1"=20'

PARTIAL TOPOGRAPHICAL SURVEY FOR:

MONTREAT RETREAT ASSOCIATION

BEING A PORTION OF TEXAS ROAD

PIN: 0721-00-5981

BLACK MOUNTAIN TOWNSHIP
BUNCOMBE COUNTY, N.C.

NO.	DATE	DESCRIPTION	BY

I, ERIC S. MCABEE, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY SUPERVISION FROM AN ACTUAL TOPOGRAPHICAL GROUND SURVEY PERFORMED UNDER MY SUPERVISION; THAT THIS TOPOGRAPHICAL GROUND SURVEY WAS PERFORMED TO MEET NATIONAL MAP ACCURACY STANDARDS AS APPLICABLE; THAT THE ORIGINAL DATA WAS OBTAINED FROM 2-5-21 THRU 5-10-21; AND THAT ALL COORDINATES ARE LOCALIZED GROUND COORDINATES BASED ON THE NORTH AMERICAN DATUM (NAD83-2011). WITNESS MY ORIGINAL SIGNATURE AND SEAL THIS THE 19TH DAY OF JULY, 2021.

Eric S McAbee L-4095

NORTH CAROLINA PROFESSIONAL SEAL L-4095 LAND SURVEYOR ERIC S. McABEE

GLOBAL POSITIONING SYSTEM CERTIFICATION

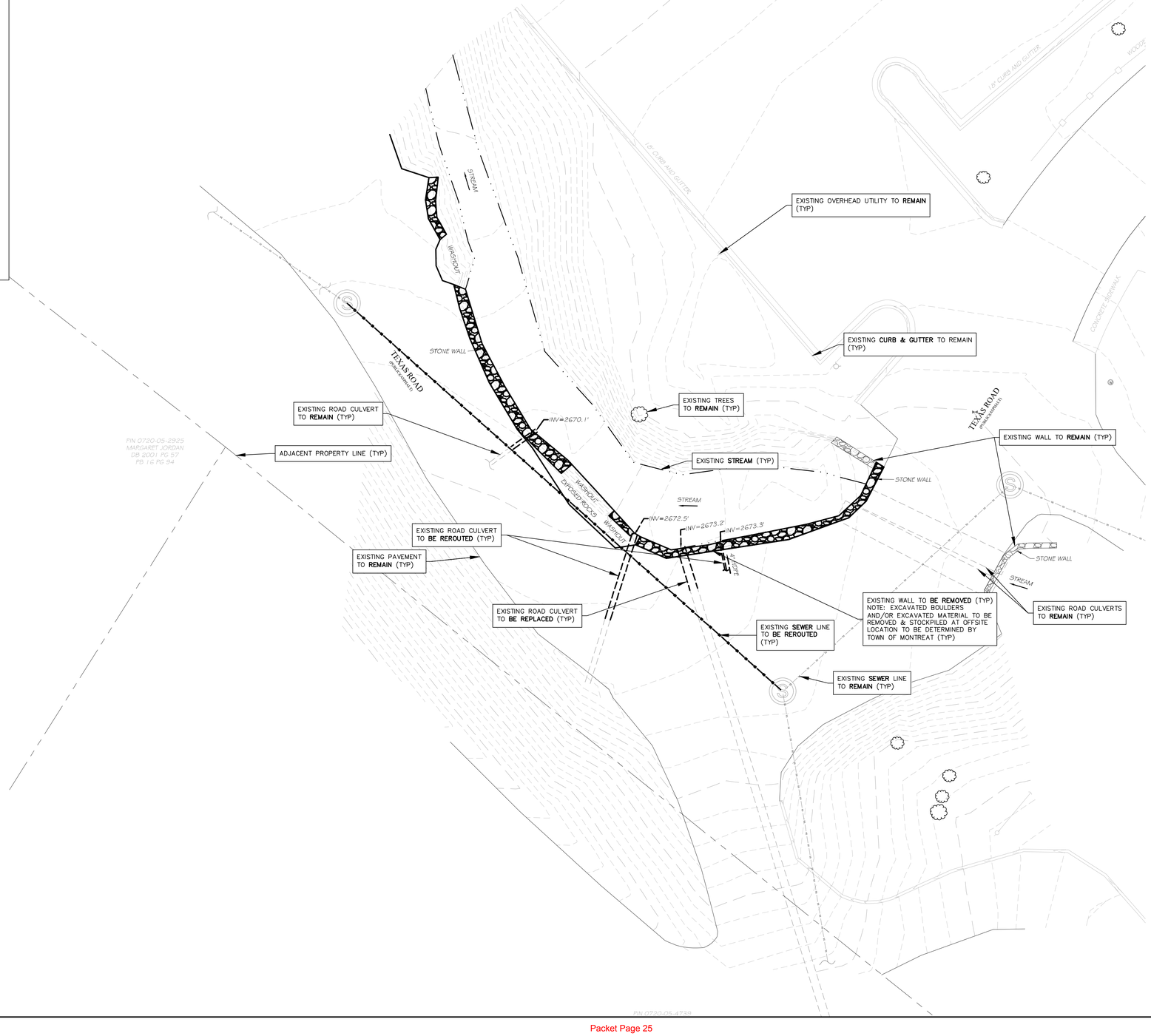
I, ERIC S. MCABEE, CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:
1) CLASS OF SURVEY: CLASS A SURVEY
2) POSITIONAL ACCURACY (95% CONFIDENCE): 0.04' HORIZONTAL
0.08' VERTICAL
3) TYPE OF GPS FIELD PROCEDURE: RTK NETWORK SOLUTIONS
USING A SPECTRA PROMARK 700
DUAL FREQUENCY RECEIVER
4) DATE OF SURVEY: 3/29/2021
5) DATUM / EPOCH: NAD83 / EPOCH 2011
6) PUBLISHED / FIXED CONTROL USED: N/A - VRS RTN
7) GEOID MODEL: 2012A
8) COMBINED GRID FACTOR: 0.99977171
9) UNITS: US SURVEY FEET

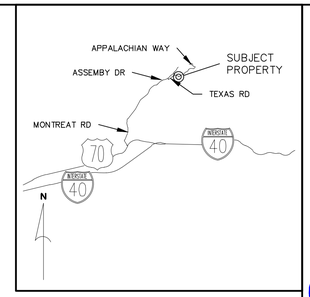
SCALE: 1" = 20'
20' 10' 0' 20' 40' 60'

McABEE & ASSOCIATES, P.A.
PROFESSIONAL LAND SURVEYING
Eric S. McAbee, PLS Fax (828) 628-1294
J. Barry West, PLS Telephone (828) 628-1295
Wallace S. McAbee, PLS (Emeritus)
3 McAbee Trail Fairview North Carolina, 28730
www. mcabeesurvey.com Firm License Number: C-694

NOTES

1. ALL SITEWORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL REGULATORY STANDARDS AND ALL REQUIREMENTS IN THE PROJECT TECHNICAL SPECIFICATIONS.
2. CONTRACTOR TO VERIFY WITH ENGINEER THAT THE REQUIRED **GRADING/LAND DISTURBANCE AND DRIVEWAY** PERMITS HAVE BEEN OBTAINED PRIOR TO BEGINNING CONSTRUCTION.
3. ALL WORK MUST BE PERFORMED BY A **NORTH CAROLINA** LICENSED CONTRACTOR.
4. TO SCHEDULE THE REQUIRED INSPECTIONS ON ALL WORK, CALL THE CIVIL DESIGN CONCEPTS INSPECTIONS HOTLINE AT 828-771-4755, OR EMAIL AT INSPECTIONS@CDCGO.COM. FAILURE TO SCHEDULE INSPECTIONS MAY RESULT IN UNCOVERING OR REDOING WORK
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING THE EXACT LOCATION AND ELEVATION FOR ALL UTILITIES PRIOR TO CONSTRUCTION; AND TO NOTIFY ENGINEER OF ANY CONFLICTS OR DISCREPANCIES. THE LOCATION OF SOME UTILITIES SHOWN ON THE PLANS HAVE BEEN APPROXIMATED. ALL BURIED UTILITIES HAVE NOT BEEN SHOWN ON THE PLANS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR LOCATION PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL PROTECT EXISTING SITE FEATURES CALLED OUT TO REMAIN DURING CONSTRUCTION. ANY DAMAGE INCURRED DURING OR RESULTING FROM CONSTRUCTION ACTIVITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE REPAIRED IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS BEFORE CONSTRUCTION ACTIVITY IS TO BEGIN. THE CONTRACTOR SHALL NOTIFY ULOCO AT 1-800-632-4949 OR 811, 72 HOURS BEFORE CONSTRUCTION BEGINS.
8. EROSION CONTROL IS FIELD PERFORMANCE BASED AND CONTRACTOR SHALL INSTALL AND MAINTAIN ANY EROSION CONTROL MEASURES NECESSARY TO ASSURE MAXIMUM PROTECTION OF THE SITE DURING DEMOLITION AND CLEARING.
9. CONTRACTOR TO COORDINATE TIMING OF DEMOLITION AND CONSTRUCTION WITH OWNER TO ENSURE EXISTING FACILITIES REMAIN ACCESSIBLE.
10. ALL DEBRIS, STRUCTURES AND UTILITIES TO BE DEMOLISHED AND REMOVED FROM THE PROJECT SITE ARE NOT SHOWN ON THIS PLAN. ANY ADDITIONAL DEBRIS, STRUCTURES AND UTILITIES ENCOUNTERED DURING CONSTRUCTION, WHICH IN THE OPINION OF THE ENGINEER SHOULD BE DEMOLISHED AND REMOVED, SHALL BE DISPOSED OF OFF-SITE AT THE CONTRACTORS EXPENSE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY REQUIRED PERMITS.





VICINITY MAP

(NOT TO SCALE)

DEVELOPMENT DATA

OWNER/DEVELOPER:	TOWN OF MONTREAT PO BOX 423 MONTREAT, NC 28757
CONTACT:	ALEX CARMICHAEL (828) 669-8002 EXT. 305
CIVIL ENGINEER:	CIVIL DESIGN CONCEPTS, P.A. 168 PATTON AVENUE ASHEVILLE, NC 28801
CONTACT:	MICHAEL J. CAIN, P.E. (828) 252-5388
SURVEYOR:	MCABEE & ASSOCIATES, P.A. 3 MCABEE TRAIL FAIRVIEW, NC 28730
CONTACT:	ERIS S. MCABEE (828) 628-1294

PROJECT DATA

PIN:	0710-96-8414
ADDRESS:	TEXAS RD., MONTREAT, NC
DEED BOOK/PAGE:	1285/0648
SITE ACREAGE:	26.92 ACRES
ZONING:	I

DISTURBED AREA: 0.20 AC

STREAM INFORMATION

STREAM INDEX:	6-78-6-6
STREAM NAME:	PUNCHEON BRANCH
DESCRIPTION:	FROM SOURCE TO FLAT CREEK
CLASSIFICATION:	C
DATE OF CLASS:	JUNE 30, 1973
RIVER BASIN:	FRENCH BROAD

CDC INSPECTIONS HOTLINE:
828-771-4755 OR INSPECTION@CDCGO.COM

811 Know what's **below.** **Call** before you dig.

NORTH

EXISTING CONDITIONS & DEMOLITION PLAN

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-3865

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-5455

CDC Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN

7/26/21

EXISTING CONDITIONS & DEMOLITION PLAN FOR:

TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION – TOWN OF MONTREAT, NORTH CAROLINA

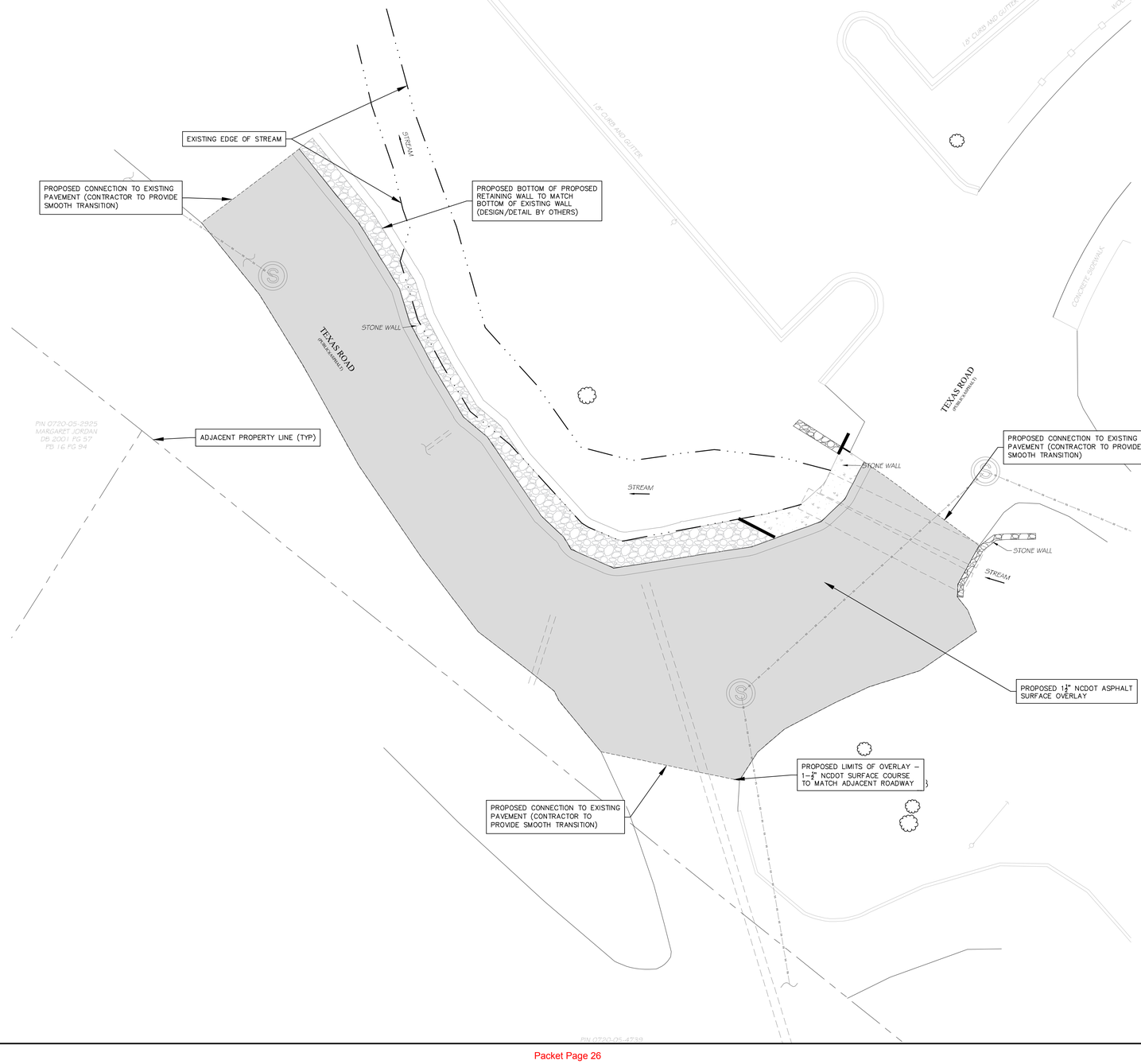
DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

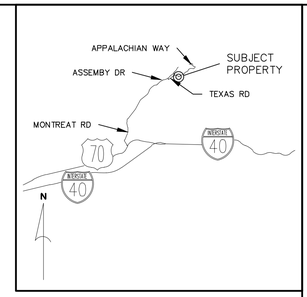
SHEET

C101

SITE LEGEND

- PROPOSED OVERLAY ASPHALT
- PROPOSED GABION RETAINING WALL
- PROPOSED CONCRETE RETAINING WALL
- STREAM





VICINITY MAP

(NOT TO SCALE)

DEVELOPMENT DATA

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CONTACT:	ALEX CARMICHAEL (828) 669-8002 EXT. 305
CIVIL ENGINEER:	CIVIL DESIGN CONCEPTS, P.A. 168 PATTON AVENUE ASHEVILLE, NC 28801
CONTACT:	MICHAEL J. CAIN, P.E. (828) 252-5388
SURVEYOR:	MCABEE & ASSOCIATES, P.A. 3 MCABEE TRAIL FAIRVIEW, NC 28730
CONTACT:	ERIS S. MCABEE (828) 628-1294

PROJECT DATA

PIN:	0710-96-8414
ADDRESS:	TEXAS RD., MONTREAT, NC
DEED BOOK/PAGE:	1285/0648
SITE ACREAGE:	26.92 ACRES
ZONING:	I

DISTURBED AREA: 0.20 AC

STREAM INFORMATION

STREAM INDEX:	6-78-6-6
STREAM NAME:	PUNCHEON BRANCH
DESCRIPTION:	FROM SOURCE TO FLAT CREEK
CLASSIFICATION:	C
DATE OF CLASS:	JUNE 30, 1973
RIVER BASIN:	FRENCH BROAD

NOTES:

1. ALL SITEWORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL REGULATORY STANDARDS AND ALL REQUIREMENTS IN THE PROJECT TECHNICAL SPECIFICATIONS.
2. SINGLE-PHASE CONSTRUCTION.
3. ALL WORK MUST BE PERFORMED BY A **NORTH CAROLINA** LICENSED CONTRACTOR.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING THE EXACT LOCATION AND ELEVATION FOR ALL UTILITIES PRIOR TO CONSTRUCTION; AND TO NOTIFY ENGINEER OF ANY CONFLICTS OR DISCREPANCIES. THE LOCATION OF SOME UTILITIES SHOWN ON THE PLANS HAVE BEEN APPROXIMATED. ALL BURIED UTILITIES HAVE NOT BEEN SHOWN ON THE PLANS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR LOCATION PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL PROTECT EXISTING SITE FEATURES (SHOWN TO REMAIN) AND NEWLY COMPLETED WORK DURING CONSTRUCTION. ANY DAMAGE INCURRED DURING OR RESULTING FROM CONSTRUCTION ACTIVITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE REPAIRED IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS BEFORE CONSTRUCTION ACTIVITY IS TO BEGIN. THE CONTRACTOR SHALL NOTIFY ULOCO AT 1-800-632-4949 OR 811, 72 HOURS BEFORE CONSTRUCTION BEGINS.
7. ALL ROAD/PARKING LOT IMPROVEMENTS, STRIPING AND SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE (MUTCD). CONTRACTOR MAY USE A PAINT SUITABLE FOR ASPHALT APPLICATION IN LIEU OF THERMOPLASTIC WITH PRIOR APPROVAL FROM THE ENGINEER.

CDC INSPECTIONS HOTLINE:
828-771-4755 OR INSPECTION@CDCGO.COM

811 Know what's **below.** **Call** before you dig.

NORTH

SITE PLAN

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-3365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-5455

Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN

7/26/21

SITE PLAN FOR:

TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION – TOWN OF MONTREAT, NORTH CAROLINA

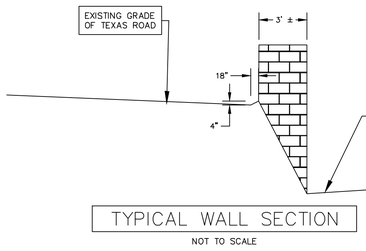
DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET

C201

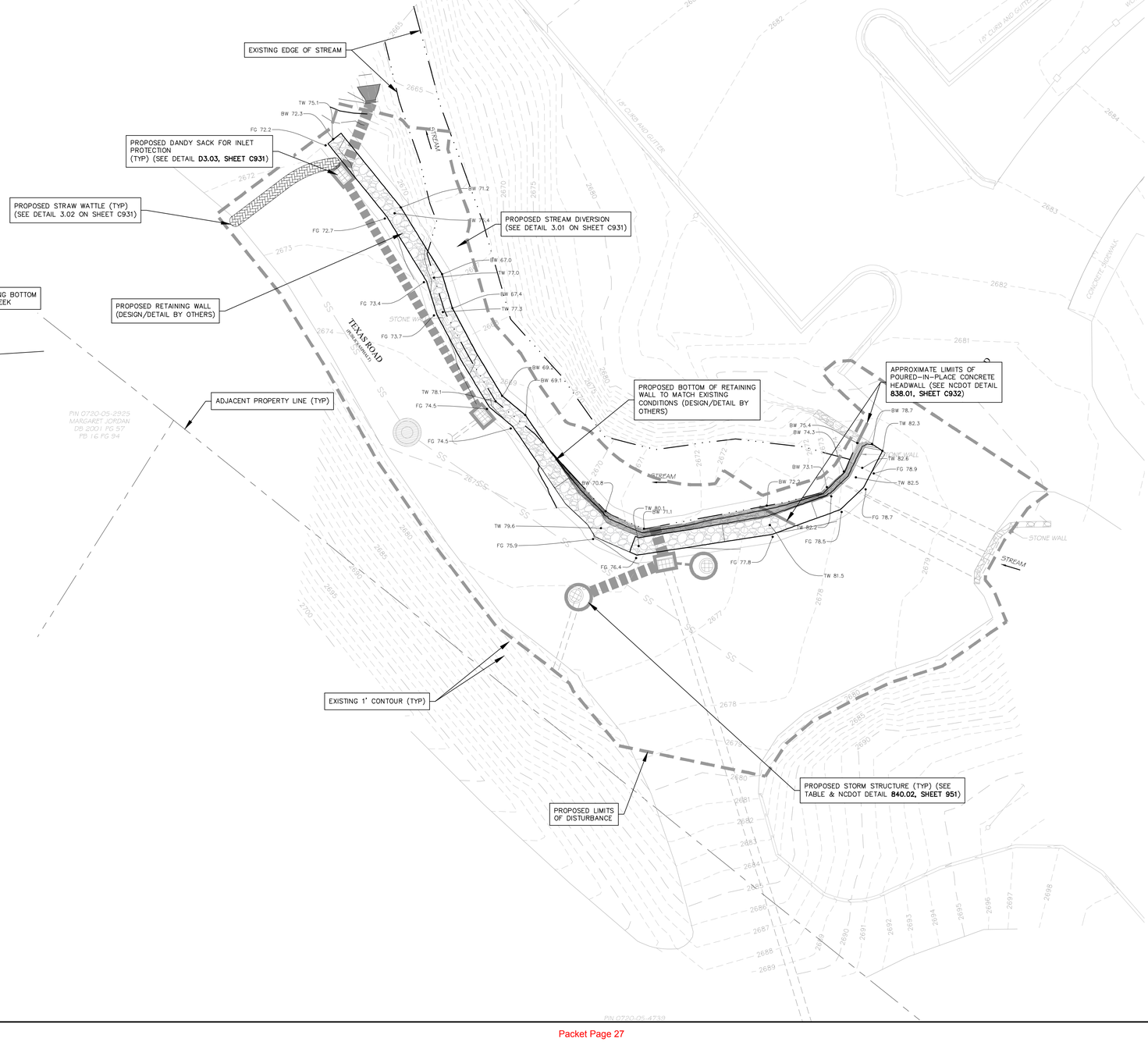
ROUGH GRADING & EROSION CONTROL LEGEND

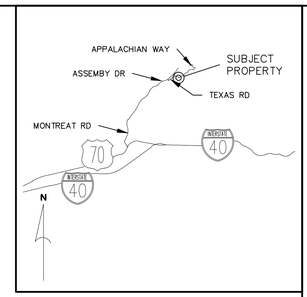
- LIMITS OF DISTURBANCE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- STRAW WATTLE
- STONE INLET PROTECTION



TYPICAL WALL SECTION

NOT TO SCALE





VICINITY MAP

(NOT TO SCALE)

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CONTACT:	ERIS S. MCABEE (828) 628-1294

PROJECT DATA

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SITE ACREAGE:	26.92 ACRES
ZONING:	I

DISTURBED AREA: 0.20 AC

STREAM INFORMATION

STREAM INDEX:	6-78-6-6
STREAM NAME:	PUNCHEON BRANCH
DESCRIPTION:	FROM SOURCE TO FLAT CREEK
CLASSIFICATION:	C
DATE OF CLASS:	JUNE 30, 1973
RIVER BASIN:	FRENCH BROAD

NOTES

1. SEE GRADING, EROSION CONTROL, AND STORM DRAINAGE DETAIL SHEETS FOR ALL GENERAL NOTES. CONTRACTOR RESPONSIBLE FOR INCLUSION OF DETAILS SHEETS WITH ALL PLANS.
2. A PORTION OF THIS PROJECT LIES WITHIN THE 100-YR FEMA FLOODPLAIN.
3. **SOIL TYPE TpD, UhE, Ux.**
4. RETAINING WALLS:

   ALL RETAINING WALL ELEVATIONS SHOWN ARE FROM TOP OF WALL TO FINISH GRADE ELEVATION. CONTRACTOR TO ACCOUNT FOR FOOTER/COVER OVER FOOTER. REFER TO WALL DESIGN FOR FOOTER DESIGN. WALL DESIGN TO ALSO ACCOMMODATE STORM PIPE PENETRATIONS PER PLANS.

   WALL DESIGN TO INCLUDE FOOTING DRAIN WITH #57 WASHED STONE BEHIND WALL IN THE ENTIRE GEOGRID ZONE, OR 12" WIDTH IF NO GEOGRID, FROM BOTTOM TO TOP OF WALL.

   ALL RETAINING WALLS PROVIDING A CHANGE OF GRADE OF 30" OR MORE SHALL BE PROTECTED WITH A GUARDRAIL. THE GUARDRAIL SHALL BE 42" MINIMUM IN HEIGHT, AND PREVENT THE PASSAGE OF A 21" SPHERE UNLESS ADJACENT TO A WALKING SURFACE. COORDINATE BARRIER STYLE AND COLOR WITH ARCHITECT AND ENGINEER. SEE SITE PLAN FOR APPROXIMATE LOCATION OF FENCING/BARRIERS.

   CONTRACTOR TO SUBMIT TO OWNER AND ENGINEER FOR REVIEW PRIOR TO ORDERING MATERIALS. CONTRACTOR TO COORDINATE WALL STYLE AND COLOR WITH ARCHITECT AND ENGINEER.

   RETAINING WALL DESIGN IS CONSIDERED DELEGATED DESIGN. CONTRACTOR RESPONSIBLE FOR OBTAINING APPROVAL FOR ALL RETAINING WALLS FROM STATE CONSTRUCTION OFFICE PRIOR TO ORDERING MATERIALS OR CONSTRUCTION. CONTRACTOR RESPONSIBLE FOR CONSTRUCTING RETAINING WALLS IN ACCORDANCE WITH ALL WALL MANUFACTURERS STANDARDS AND SPECIFICATIONS.

   ALL RETAINING WALLS 4' OR GREATER TO BE SUBMITTED TO **BUNCOMBE COUNTY** BUILDING SAFETY DIVISION FOR REVIEW AND APPROVAL AND CERTIFIED BY THE WALL ENGINEER UPON COMPLETION. RETAINING WALLS SUBJECT TO ADDITIONAL LANDSCAPING DEPENDING ON HEIGHT AND MATERIAL.

CDC INSPECTIONS HOTLINE:
828-771-4755 OR INSPECTION@CDCGO.COM

811 Know what's **below.** **Call** before you dig.

NORTH

GRADING & EROSION CONTROL PLAN

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-3865

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
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Civil Design Concepts, PA
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NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN

GRADING & EROSION CONTROL PLAN FOR:

TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION - TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET

C301

STORM LEGEND

EXISTING STORM PIPE

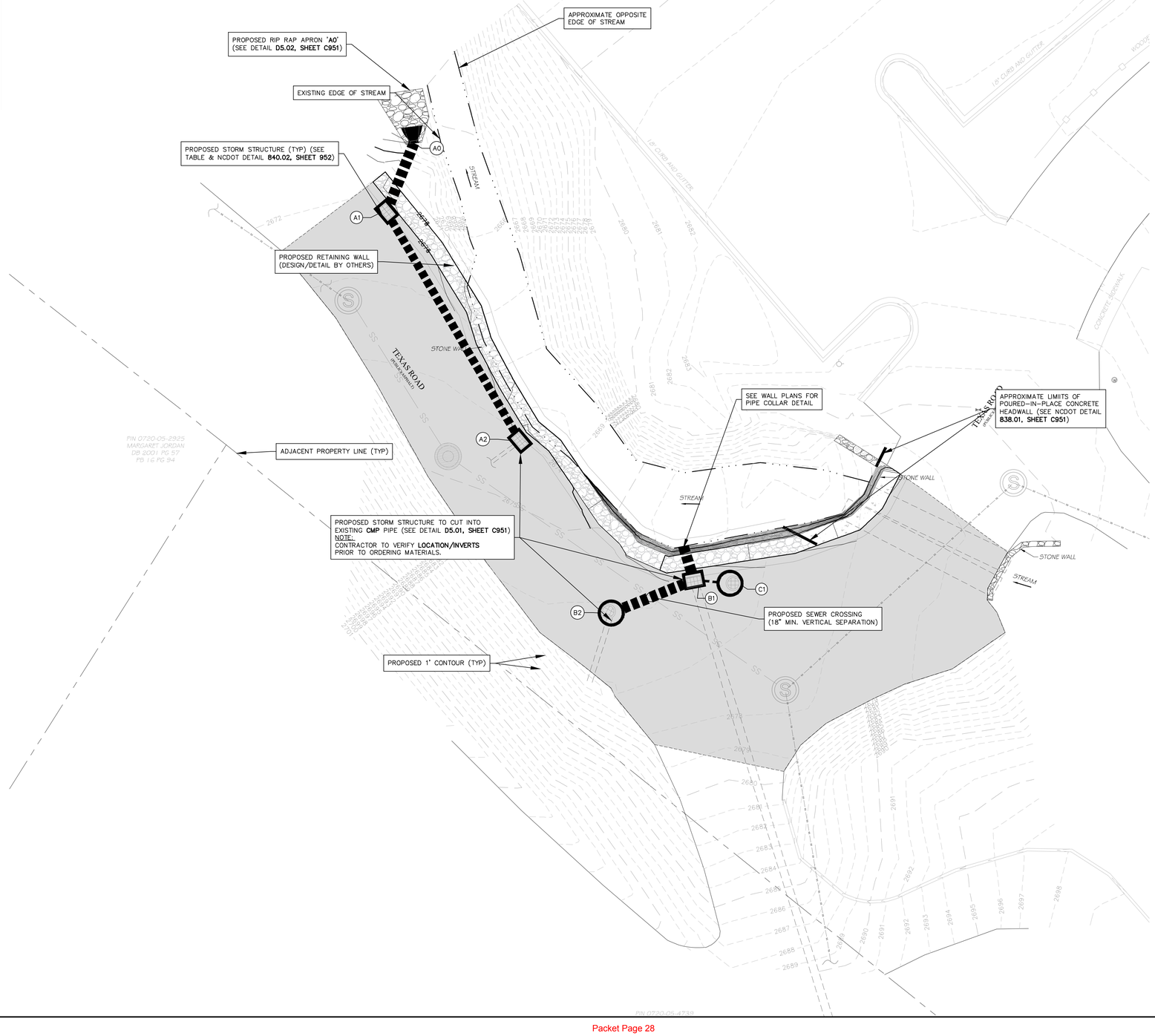
PROPOSED STORM PIPE

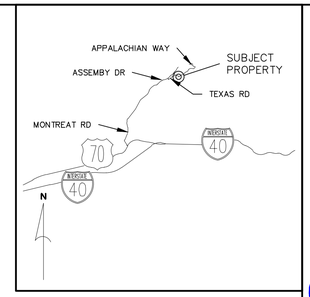
PROPOSED CURB INLET STRUCTURE

STRUCTURE TABLE (INVERTS BASED ON 2D LENGTH TO INSIDE EDGES)				
STRUCTURE	STATION	STRUCTURE DETAILS	DEPTH	DESCRIPTION
A1	10+18	RIM 2672.0 INV. IN 2667.3 (A2–A1) INV. OUT 2667.1 (A1–A0)	5.0'±	GRATE INLET
A2	10+68	RIM 2674.1 INV. OUT 2670.1 (A2–A1)	4.0'±	GRATE INLET
B1	10+07	RIM 2676.2 INV. IN 2671.4 (B2–B1) INV. IN 2671.4 (C1–B1) INV. OUT 2671.4 (B1–B0)	4.9'±	GRATE INLET
B2	10+23	RIM 2676.1 INV. OUT 2671.4 (B2–B1)	4.6'±	MANHOLE
C1	10+07	RIM 2676.6 INV. OUT 2671.6 (C1–B1)	5.1'±	MANHOLE

INLET/OUTLET TABLE (INVERTS BASED ON 2D LENGTH TO INSIDE EDGES)			
STRUCTURE	STATION	STRUCTURE DETAILS	DESCRIPTION
A0	10+05	INV. IN 2667.0 (A1–A0)	FLARED END

PIPE TABLE (SLOPES BASED ON 2D LENGTH TO INSIDE EDGES)				
PIPE NAME	SIZE	LENGTH	SLOPE	MATERIAL
A1–A0	24"	11'	0.6%	CMP
A2–A1	18"	47'	6.0%	CMP
B1–B0	24"	5'	0.5%	CMP
B2–B1	24"	14'	0.5%	CMP
C1–B1	4"	4'	5.0%	HDPE





VICINITY MAP

(NOT TO SCALE)

DEVELOPMENT DATA

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CONTACT:	ERIS S. MCABEE (828) 628-1294

PROJECT DATA

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DEED BOOK/PAGE:	1285/0648
SITE ACREAGE:	26.92 ACRES
ZONING:	I

DISTURBED AREA: 0.20 AC

STREAM INFORMATION

STREAM INDEX:	6-78-6-6
STREAM NAME:	PUNCHEON BRANCH
DESCRIPTION:	FROM SOURCE TO FLAT CREEK
CLASSIFICATION:	C
DATE OF CLASS:	JUNE 30, 1973
RIVER BASIN:	FRENCH BROAD

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811 Know what's **below.** **Call** before you dig.

NORTH

STORM DRAINAGE PLAN

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-5365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
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NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN

7/26/21

STORM DRAINAGE PLAN FOR:

TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION – TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET

C501

NOTES

1. ALL PUBLIC SANITARY SEWER WORK ASSOCIATED WITH THIS PROJECT TO BE PERFORMED BY A NC LICENSED UTILITY CONTRACTOR.
2. SEE SEWER DETAIL SHEETS FOR ALL GENERAL SEWER NOTES. CONTRACTOR RESPONSIBLE FOR INCLUSION OF DETAILS SHEETS WITH ALL SEWER PLANS.
3. CROSSINGS TO MAINTAIN MSD REQUIRED VERTICAL SEPARATION. CONTRACTOR TO CONTACT ENGINEER ON ANY CROSSING THAT DOES NOT MEET THIS SEPARATION, OR SEPARATION IS CLOSER THAN 1'. REFER TO GENERAL NOTES ON SEWER DETAIL SHEET FOR SEPARATION REQUIREMENTS BETWEEN UTILITIES.
4. TO SCHEDULE THE REQUIRED INSPECTIONS ON ALL WORK, CALL THE CIVIL DESIGN CONCEPTS INSPECTIONS HOTLINE AT 828-771-4755, OR EMAIL AT INSPECTIONS@CDCGO.COM. FAILURE TO SCHEDULE INSPECTIONS MAY RESULT IN UNCOVERING OR REDOING WORK
5. TYPICAL EASEMENTS FOR SEWER LINES LOCATED OUTSIDE ESTABLISHED UTILITY EASEMENTS OR ROAD RIGHT-OF-WAYS SHALL BE AS SHOWN. THE ENTIRE SEWER EASEMENT MUST BE CLEAR AND REMAINED CLEARED OF TREE PLANTINGS, EXISTING TREES, AND ANY PERMANENT STRUCTURES.
6. **NO** PORTION OF THIS PROJECT LIES WITHIN THE 100-YR FEMA FLOODPLAIN.

SEWER LEGEND

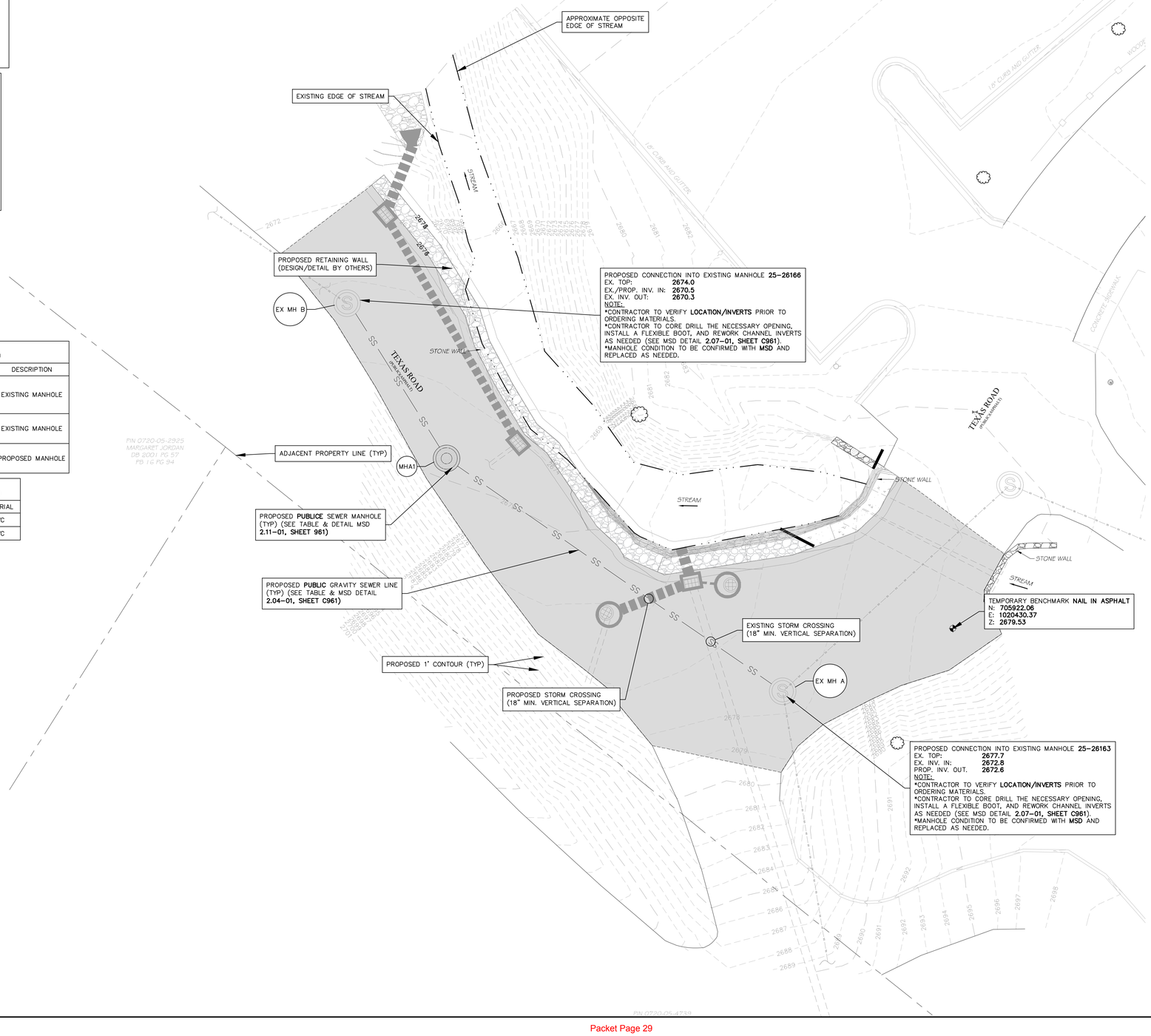
- EXISTING SEWER LINE — SS —
- EXISTING SEWER CLEANOUT ○
- EXISTING SEWER MANHOLE Ⓢ
- PROPOSED SEWER LINE — SS —
- PROPOSED SEWER SERVICE — SS — SS — SS —
- PROPOSED SEWER MANHOLE Ⓢ
- PROPOSED SEWER CLEANOUT ○

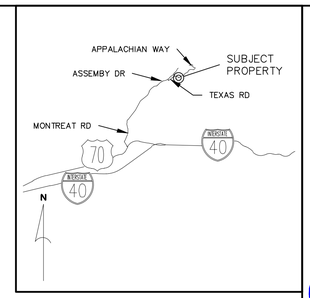
STRUCTURE TABLE
(INVERTS BASED ON 2D LENGTH TO INSIDE EDGES)

STRUCTURE	STATION	STRUCTURE DETAILS	DEPTH	DESCRIPTION
EX MH A	11+12	RIM 2677.7 INV. IN 2672.8 (EX SS PIPE B) INV. IN 2672.8 (EX SS PIPE C) INV. OUT 2672.6 (EX MH B-MHA1)	5.1'±	EXISTING MANHOLE
EX MH B	10+00	RIM 2674.0 INV. IN 2670.5 (MHA1-EX MH B) INV. OUT 2670.3 (EX MH PIPE D)	3.7'±	EXISTING MANHOLE
MHA1	10+35	RIM 2674.7 INV. IN 2671.2 (EX MH B-MHA1) INV. OUT 2671.0 (MHA1-EX MH B)	3.8'±	PROPOSED MANHOLE

PIPE TABLE
(SLOPES BASED ON 2D LENGTH TO INSIDE EDGES)

PIPE NAME	SIZE	LENGTH	SLOPE	MATERIAL
EX MH B-MHA1	8"	73'	2.0%	PVC
MHA1-EX MH B	8"	31'	1.5%	PVC





VICINITY MAP
(NOT TO SCALE)

DEVELOPMENT DATA

OWNER/DEVELOPER:	TOWN OF MONTREAT PO BOX 423 MONTREAT, NC 28757
CONTACT:	ALEX CARMICHAEL (828) 669-8002 EXT. 305
CIVIL ENGINEER:	CIVIL DESIGN CONCEPTS, P.A. 158 PATTON AVENUE ASHEVILLE, NC 28801
CONTACT:	MICHAEL J. CAIN, P.E. (828) 252-5388
SURVEYOR:	MCABEE & ASSOCIATES, P.A. 3 MCABEE TRAIL FAIRVIEW, NC 28730
CONTACT:	ERIS S. MCABEE (828) 628-1294

PROJECT DATA

PIN:	0710-96-8414
ADDRESS:	TEXAS RD., MONTREAT, NC
DEED BOOK/PAGE:	1285/0648
SITE ACREAGE:	26.92 ACRES
ZONING:	I

DISTURBED AREA: 0.20 AC

STREAM INFORMATION

STREAM INDEX:	6-78-6-6
STREAM NAME:	PUNCHEON BRANCH
DESCRIPTION:	FROM SOURCE TO FLAT CREEK
CLASSIFICATION:	C
DATE OF CLASS:	JUNE 30, 1973
RIVER BASIN:	FRENCH BROAD

CDC INSPECTIONS HOTLINE:
828-771-4755 OR INSPECTION@CDCGO.COM

811 Know what's **below.** **Call** before you dig.

NORTH

SEWER PLAN

GRAPHIC SCALE

10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

158 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-3865

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-5455

CDC Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

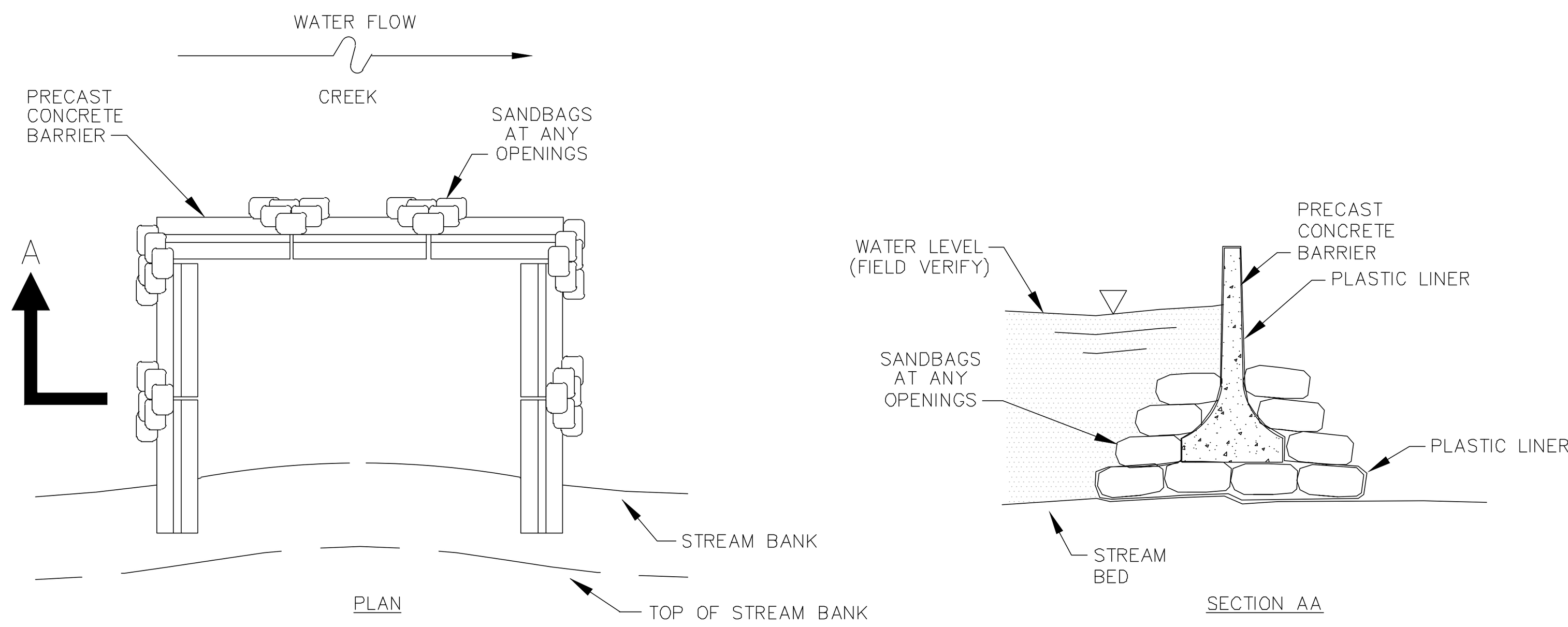
NO.	DATE	DESCRIPTION	BY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN
7/26/21

SEWER PLAN FOR:
TEXAS ROAD
MOUNTAIN RETREAT ASSOCIATION - TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET
C601

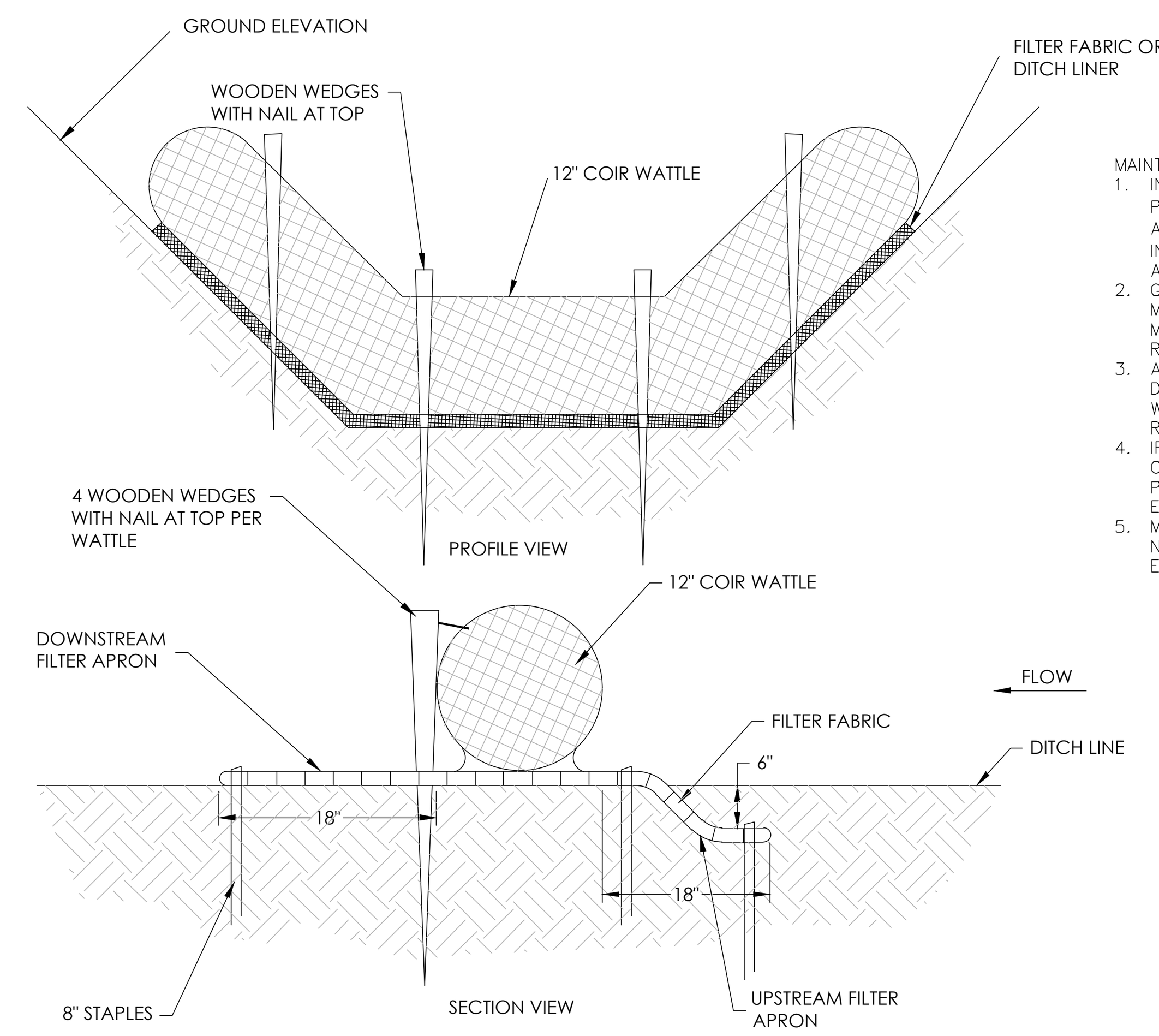


NOTES:

1. COFFER DAM WILL BE BUILT SO THAT APPROXIMATELY ONE–HALF (1/2) OF THE STREAM CHANNEL IS OPEN AT ALL TIMES.
2. MATERIAL FROM THE STREAM BED SHALL NOT BE USED FOR COFFER DAM.
3. NO EARTHEN MATERIAL SHALL BE USED FOR COFFER DAM OR PLACED IN STREAM FOR ANY REASON.
4. STREAM BED SHALL BE DISTURBED THE MINIMUM REQUIRED FOR CONSTRUCTION OF GABION WALL AND WILL BE RESTORED TO ORIGINAL CONTOURS WHEN WORK IS COMPLETE.
5. ALTERNATIVE COFFER DAM MATERIAL IS ACCEPTABLE BUT SHALL BE APPROVED BY THE ENGINEER.

D3.01 STREAM DIVERSION DETAIL

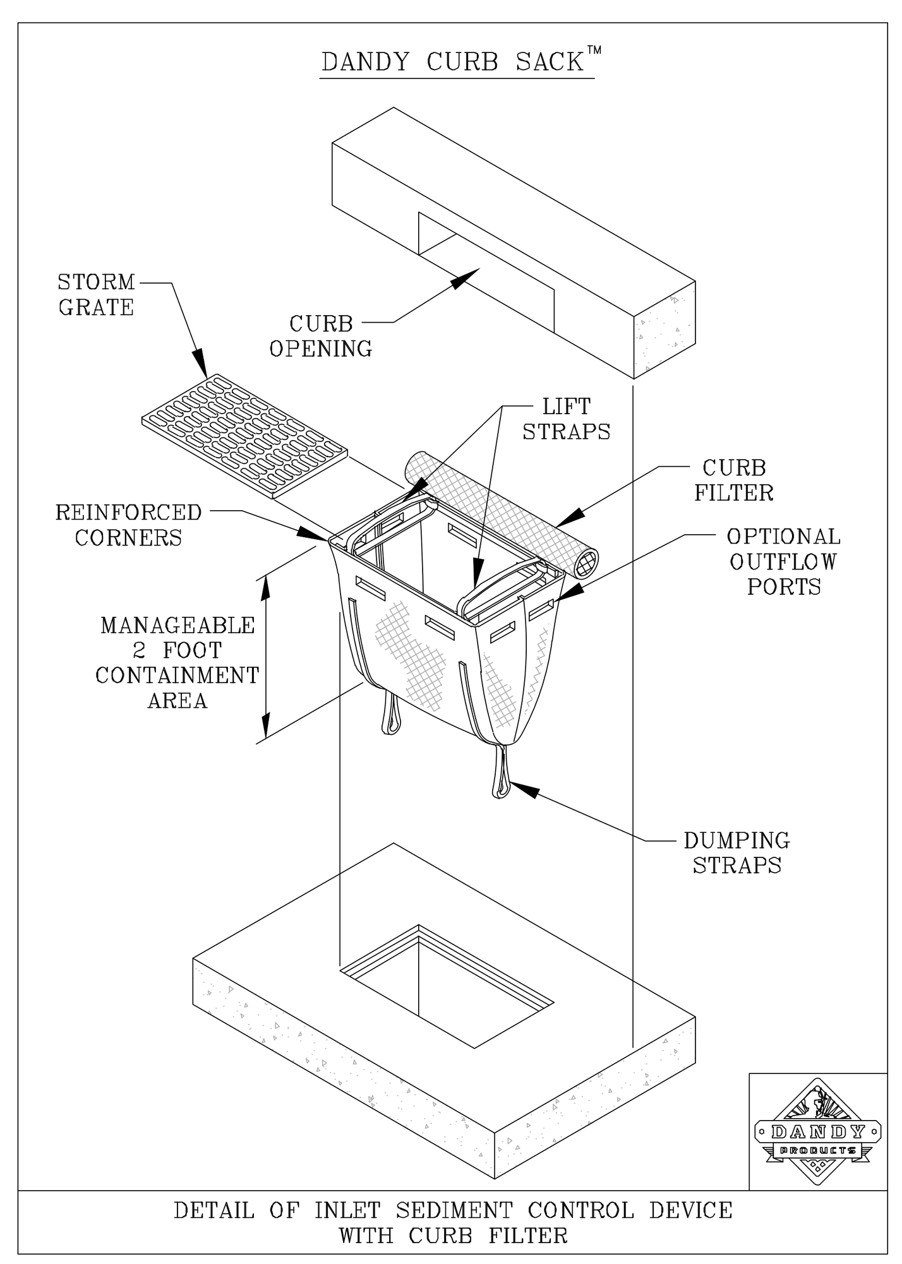
NOT TO SCALE



MAINTENANCE NOTES:
1. INSPECT ROLLED EROSION CONTROL PRODUCTS (RECP) AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY.
2. GOOD CONTACT WITH THE GROUND MUST BE MAINTAINED, AND EROSION MUST NOT OCCUR BENEATH THE RECP.
3. ANY AREAS OF THE RECP THAT ARE DAMAGED OR NOT IN CLOSE CONTACT WITH THE GROUND SHALL BE REPAIRED AND STAPLED.
4. IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREA PROTECTED.
5. MONITOR AND REPAIR THE RECP AS NECESSARY UNTIL GROUND COVER IS ESTABLISHED.

D3.02 WATTLE DETAIL

NOT TO SCALE



DETAIL OF INLET SEDIMENT CONTROL DEVICE WITH CURB FILTER

MAINTENANCE NOTES:

1. REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT.
2. AFTER STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE DANDY CURB SACK. IF THE CONTAINMENT AREA IS MORE THAN $\frac{1}{3}$ FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED.
3. TO EMPTY UNIT, SIMPLY LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE.
4. IF USING OPTIONAL ABSORBENTS, REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION.

D3.03 DANDY SACK FOR INLET PROTECTION

NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1. ALL GRADING, STORM INSTALLATION, AND SOIL EROSION CONTROL MEASURES ON THIS SITE MUST BE AUTHORIZED BY PERMITS ISSUED BY **BUNCOMBE COUNTY**. ALL SITE WORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL REGULATORY STANDARDS AND ALL REQUIREMENTS IN THE PROJECT TECHNICAL SPECIFICATIONS.
2. CONTRACTOR TO VERIFY WITH ENGINEER THAT THE REQUIRED GRADING, EROSION CONTROL, STORM WATER, LAND DISTURBANCE, AND ASSOCIATED NON–GRADING PERMITS HAVE BEEN OBTAINED PRIOR TO BEGINNING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL BE UNDER THE INSPECTION OF THE ENGINEER, THE OWNER, **AND BUNCOMBE COUNTY**. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS PRIOR TO BEGINNING WORK. ANY WORK COVERED PRIOR TO ENGINEER'S INSPECTION IS SUBJECT TO UNCOVERING AND BACKFILLING AT THE CONTRACTOR'S EXPENSE.
4. ALL WORK MUST BE PERFORMED BY A **NORTH CAROLINA** LICENSED CONTRACTOR.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING THE EXACT LOCATION AND ELEVATION FOR ALL UTILITIES PRIOR TO CONSTRUCTION; AND TO NOTIFY ENGINEER OF ANY CONFLICTS OR DISCREPANCIES. THE LOCATION OF SOME UTILITIES SHOWN ON THE PLANS HAVE BEEN APPROXIMATED. ALL BURIED UTILITIES HAVE NOT BEEN SHOWN ON THE PLANS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR LOCATION PRIOR TO CONSTRUCTION.
6. PROTECT EXISTING SITE FEATURES (SHOWN TO REMAIN) AND NEWLY COMPLETED WORK DURING CONSTRUCTION. ANY DAMAGE INCURRED DURING OR RESULTING FROM CONSTRUCTION ACTIVITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE REPAIRED IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES, AS WELL AS THE PROJECT PLANS AND SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS BEFORE CONSTRUCTION ACTIVITY IS TO BEGIN. THE CONTRACTOR SHALL NOTIFY NC ONE CALL AT **811**, 48 HOURS BEFORE CONSTRUCTION BEGINS. NOTIFY THE ENGINEER AT LEAST 72 HOURS BEFORE STARTING CONSTRUCTION ACTIVITIES.
8. EROSION CONTROL IS A FIELD PERFORMANCE BASED ACTIVITY; AND ADDITIONAL SILT FENCES, TEMPORARY SEDIMENT BASINS, AND ALL OTHER MEASURES MAY NEED TO BE ADDED IN ADDITION TO THE APPROVED PLAN AS NECESSARY. MEASURES SHOWN CAN AND SHOULD BE ADJUSTED TO ASSURE MAXIMUM PROTECTION ON SITE. CONTRACTOR SHALL ADD ADDITIONAL MEASURES AS NEEDED IN ENVIRONMENTALLY SENSITIVE AREAS.
9. CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MAINTAINING, AND REMOVING ALL NECESSARY EROSION AND SEDIMENTATION CONTROL MEASURES.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ADJUSTMENT OF ALL UTILITY SURFACE ACCESSES WHETHER THE CONTRACTOR PERFORMS THE WORK OR A UTILITY COMPANY PERFORMS THE WORK.
11. ALL AREAS WHERE THERE IS EXPOSED DIRT SHALL BE SEEDED, FERTILIZED AND MULCHED ACCORDING TO THE SPECIFICATIONS NOTES IN THE PLANS. SITE STABILIZATION IS A PERFORMANCE BASED REQUIREMENT, AND THE SITE WILL NOT BE ACCEPTED UNTIL PERMANENT VEGETATION IS ESTABLISHED TO THE SATISFACTION OF THE ENGINEER.
12. ALL CORRUGATED METEL (CMP) STORM SEWER DETENTION PIPE SHALL BE TYPE "S" HANCOR SURELOK ADSN12 OR APPROVED EQUIVALENT WITH WATER TIGHT JOINTS MEETING AASHTO M252, M294 OR MP7. ALL CMP PIPE IS TO BE INSTALLED ACCORDINGLY TO MANUFACTURERS SPECIFICATIONS AND IN ACCORDANCE WITH ASTM D2321 WITH THE EXCEPTION THAT MINIMUM COVER IN TRAFFIC LOAD AREA SHALL BE 24" FOR 4"–48" AND 18" FOR 60". PIPE MATERIAL SHALL MEET THE PRODUCT SPECIFICATIONS OF ASTM F667 AND SHALL HAVE A SMOOTH WALL INTERIOR. FOR ALL STORM SYSTEMS, WORK MUST BEGIN AT THE LOW POINT OF THE SYSTEMS. NOTIFY THE ENGINEER IMMEDIATELY OF ANY VARIANCES FROM EXPECTED CONDITIONS.
13. CURB INLET FRAME, GRATE AND HOOD SHALL CONFORM TO NCDOT 840.03E. DROP INLET FRAME AND GRATE SHALL CONFORM TO NCDOT 840.16. FIELD INLET COVER SHALL CONFORM TO NCDOT STANDARD DETAIL 840.03, OPENING FACING UPSTREAM. MANHOLE RING AND LID TO CONFORM TO NCDOT 840.54. OPEN THROAT INLETS TO CONFORM TO NCDOT 840.04 WITH A MANHOLE RING AND LID INSTALLED IN THE TOP FOR ACCESS TO THE STRUCTURE. SET ACCESS POINT ADJACENT TO A STRUCTURE WALL AS TO ALLOW ACCESS TO STEPS.
14. CONCRETE AND MASONRY SHALL MEET THE REQUIREMENTS OF APPROPRIATE SECTION OF NCDOT STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES (LATEST EDITION). CONCRETE SHALL BE CLASS A OR B, 4000 PSI MINIMUM, MEETING THE REQUIREMENTS OF SECTION 900, CONSTRUCTED IN ACCORDANCE WITH SECTION 825. MASONRY SHALL MEET THE REQUIREMENTS OF SECTION 940, CONSTRUCTED IN ACCORDANCE WITH SECTION 830 AND/OR 834.
15. TRENCH BACKFILL AND COMPACTION TESTING SHALL BE PERFORMED BY A CERTIFIED SOILS LABORATORY UNDER ALL PAVED AREAS.
16. CONTRACTOR RESPONSIBLE FOR KEEPING ACCURATE LOG OF SITE CONDITIONS IN ACCORDANCE WITH NPDES PERMIT. MAINTENANCE INSPECTIONS SHALL BE PERFORMED WEEKLY AND AFTER EACH RAINFALL. ALL REPAIRS NECESSARY SHOULD BE MADE IMMEDIATELY AND IN STRICT ACCORDANCE WITH **BUNCOMBE COUNTY STANDARDS** AND NPDES PERMIT. CONTRACTOR SHALL SUPPLY THE ENGINEER WITH RECORD OF DEVIATIONS FROM PLANS FOR PREPARATION OF FINAL RECORD DRAWINGS.
17. ALL SLOPES GREATER THAN 2:1 SLOPE AND OVER 5' IN HEIGHT SHALL BE CERTIFIED BY A LICENSED PROFESSIONAL AS REQUIRED BY **BUNCOMBE COUNTY**.
18. CONTRACTOR IS REQUIRED TO OBTAIN AND PROVIDE A COPY OF THE EROSION CONTROL PERMIT FOR ANY OFFSITE BORROW/ SPOIL AREA. CONTRACTOR MUST PROVIDE COPY OF PERMIT TO **BUNCOMBE COUNTY** INSPECTOR PRIOR TO CONSTRUCTION.
19. IF BORROWED OR WASTE FILL MATERIAL IS GENERATED, AN APPROVED GRADING PERMIT MUST BE SECURED FOR THE BORROW OR WASTE MATERIAL SITE PRIOR TO INITIATION OF ANY LAND DISTURBING ACTIVITY
20. ALL FILL SLOPES SHALL BE COMPACTED FULL DEPTH TO NOT LESS THAN 95% MAXIMUM DENSITY (STANDARD PROCTOR), SHALL BE PLACED ON A SURFACE CLEARED OF GROWTH AND DEBRIS, AND BE PROPERLY BENCHED AND DRAINED.
21. COMPACTION REPORTS MUST BE PROVIDED TO **BUNCOMBE COUNTY** STORMWATER SERVICES DIVISION INDICATING THAT FILL HAS BEEN COMPACTED TO NOT LESS THAN 95% MAXIMUM DENSITY (STANDARD PROCTOR).
22. ALL FILL MATERIAL, UNLESS A PERMIT FROM NCDEQ DIVISION OF WASTE MANAGEMENT TO OPERATE A LANDFILL IS ON FILE FOR THE OFFICAL SITE, SHALL BE FREE OF ORGANIC OR OTHER DEGRADABLE MATERIALS, MASONRY, CONCRETE AND BRICK SIZES EXCEEDING 12 INCHES, AND ANY MATERIALS WHICH COULD CAUSE THE SITE TO BE REGULATED AS A LANDFILL BY THE STATE OF NORTH CAROLINA.

CONSTRUCTION SEQUENCE

1. HOLD PRE–CONSTRUCTION MEETING WITH OWNER, ENGINEER, NCDEQ, AND GEOTECHNICAL ENGINEER.
2. INSTALL TRAFFIC AND PEDESTRIAN CONTROLS. INSTALL PERIMETER EROSION CONTROLS.
3. CONTRACTOR TO INSPECT PAVED SURFACES AT THE END OF EACH DAY AND SWEEP SOILS TO PREVENT TRACKING. CONTRACTOR TO COMPLETE AND MAINTAIN A DAILY INSPECTION REPORT FOR ALL EROSION CONTROLS. REPAIRS/ADJUSTMENTS TO EROSION CONTROLS TO BE MADE IMMEDIATELY UPON NOTING DEFICIENCY.
4. INSTALL STREAM DIVERSION. DO NOT START STEP 4 UNTIL ALL NECESSARY MATERIALS ASSOCIATED WITH THE DIVERSION AND WALL CONSTRUCTION AREA ON SITE.
5. WALL TO BE INSTALLED STARTING AT EXISTING PIPE CROSSING AND WORK DOWNSTREAM.
6. CONSTRUCT NEW STORM INLETS/PIPES AND INSTALL WALL COLLARS AS WALL CONSTRUCTION PROGRESSES. CARE SHOULD BE TAKEN TO PREVENT ANY SOIL MIGRATION INTO THE PIPING DURING INSTALLATION. INSTALL INLET PROTECTION.
7. ALL STOCKPILES TO BE AT LEAST 50 FEET FROM THE STREAM AND STORMWATER INLETS. PILES TO BE PROTECTED BY SILT FENCE/WATTLES ON THE DOWNHILL SIDE OF THE PILE.
8. INSTALL SEWER PIPING.
9. REMOVE/GRADE/REINSTALL PAVEMENT.
10. PROJECT TO REQUEST FINAL NCDEQ INSPECTION ONCE THE SITE IS STABILIZED. UPON APPROVAL BY NCDEQ, THE PROJECT SHALL SUBMIT NOTICE OF TERMINATION.

EROSION CONTROL MAINTENANCE NOTES:

1. INSPECT EROSION CONTROL MEASURES ONCE A WEEK AND AFTER EVERY SIGNIFICANT RAINFALL. CONTRACTOR TO INSPECT MEASURES FOR COMPLIANCE WITH PLANS AND DETAILS; INCLUDING SEDIMENT ACCUMULATION BEYOND DETAIL ALLOWANCE, AND ALSO DAMAGE OR FAILURE OF MEASURES.
2. WHEN SEDIMENT ACCUMULATION EXCEEDS DETAIL ALLOWANCE, CONTRACTOR TO REMOVE SEDIMENT AND/OR DEBRIS, AND RELOCATE TO ANOTHER AREA WITH SEDIMENT CONTROLS.
3. WHEN MEASURES ARE FOUND TO BE DAMAGED, CONTRACTOR TO REPAIR IMMEDIATELY TO BRING MEASURE BACK INTO COMPLIANCE WITH PLANS AND DETAILS.
4. IF MEASURES ARE FOUND TO BE INSUFFICIENT, CONTRACTOR TO INSTALL ADDITIONAL MEASURES AS NEEDED TO ENSURE SEDIMENT REMAINS CONTROLLED ONSITE AS REQUIRED.
5. CONTRACTOR TO REMOVE MEASURES AND BRING AREA TO GRADE ONCE CONFORMATION OF SITE STABILIZATION HAS BEEN REQUESTED AND RECEIVED FROM PROJECT ENGINEER.

EROSION CONTROL DETAILS

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-5365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-5455

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NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN
7/26/21

EROSION CONTROL DETAILS FOR:

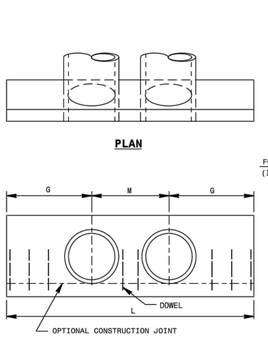
TEXAS ROAD

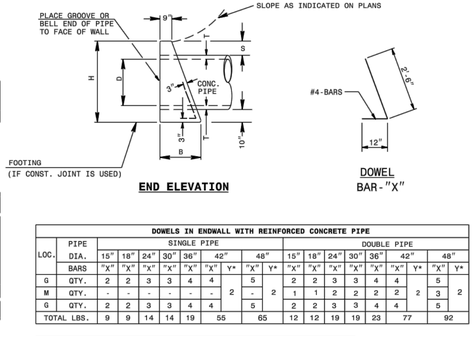
MOUNTAIN RETREAT ASSOCIATION – TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET

C931





DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE

LOC.	PIPE	SINGLE PIPE								DOUBLE PIPE								
	DIA.	15"	18"	24"	30"	36"	42"		48"	15"	18"	24"	30"	36"	42"		48"	
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*
G	QTY.	2	2	3	3	4	4		5	2	2	3	3	4	4		5	
M	QTY.	-	-	-	-	-	-	2	-	2	1	1	2	2	2	2	3	2
G	QTY.	2	2	3	3	4	4		5		2	2	3	4	4		5	
TOTAL LBS.		9	9	14	14	19	55		65		12	12	19	19	23	77		92

DIMENSIONS AND CONCRETE QUANTITIES

USING CONCRETE PIPE

	COMMON DIMENSIONS						SINGLE PIPE		DOUBLE PIPE		
D	H	B	G	T	S	L	YD^3	M	L	YD^3
15"	3'-3"	1'-8"	2'-9"	2¼"	9½"	5'-6"	0.7	2'-2"	7'-8"	1.0
18"	3'-7"	1'-10"	3'-2"	2½"	10"	6'-4"	1.0	2'-7"	8'-11"	1.3
24"	4'-2"	2'-1"	4'-0"	3"	10"	8'-0"	1.6	3'-5"	11'-5"	2.0
30"	5'-0"	2'-6"	4'-7"	4¼"	11½"	9'-2"	2.3	4'-3"	13'-5"	3.1
36"	5'-8"	2'-8"	5'-6"	4¾"	11½"	11'-0"	3.4	5'-0"	16'-0"	4.5
42"	6'-2"	3'-1"	6'-4"	5¼"	11½"	12'-8"	4.5	5'-10"	18'-6"	6.0
48"	6'-9"	3'-5"	7'-2"	5¾"	11½"	14'-4"	6.0	6'-8"	21'-0"	8.0

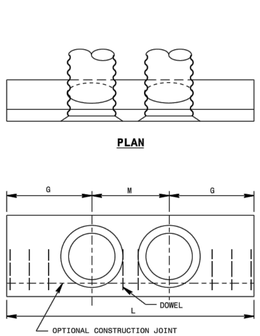
*SEE SHEET 3

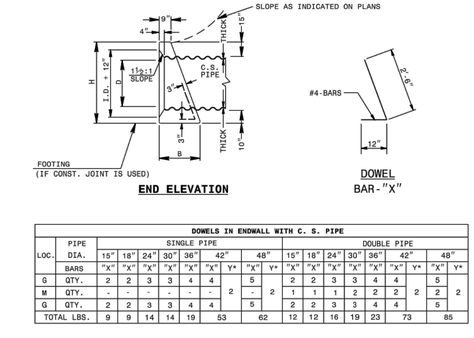
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

SHEET 1 OF 3
838.01





DOWELS IN ENDWALL WITH C. S. PIPE

LOC.	PIPE	SINGLE PIPE								DOUBLE PIPE								
	DIA.	15"	18"	24"	30"	36"	42"		48"	15"	18"	24"	30"	36"	42"		48"	
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*
G	QTY.	2	2	3	3	4	4		5	2	2	3	3	4	4		5	
M	QTY.	-	-	-	-	-	-	2	-	2	1	1	2	2	2	2	2	2
G	QTY.	2	2	3	3	4	4		5		2	2	3	4	4		5	
TOTAL LBS.		9	9	14	14	19	53		62		12	12	16	19	23	73		85

DIMENSIONS AND CONCRETE QUANTITIES

USING CORRUGATED STEEL PIPE

	COMMON			SINGLE PIPE		DOUBLE PIPE		
D	H	B	G	L	YD^3	M	L	YD^3
15"	3'-4"	1'-8"	2'-8"	5'-0"	0.7	1'-11"	6'-11"	1.0
18"	3'-7"	1'-10"	2'-11"	5'-10"	1.0	2'-3"	8'-1"	1.2
24"	4'-1"	2'-1"	3'-8"	7'-4"	1.4	3'-0"	10'-4"	1.9
30"	4'-7"	2'-4"	4'-5"	8'-10"	2.0	3'-9"	12'-7"	2.7
36"	5'-1"	2'-7"	5'-2"	10'-4"	2.8	4'-6"	14'-10"	3.8
42"	5'-7"	2'-10"	5'-11"	11'-10"	3.8	5'-3"	17'-1"	5.0
48"	6'-1"	3'-1"	6'-8"	13'-4"	4.9	6'-0"	19'-4"	7.5

*SEE SHEET 3

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

SHEET 2 OF 3
838.01

GENERAL NOTES:

CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

PLACE 2 #6 "Y" BARS IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL LENGTH.

CONSTRUCT BOTTOM SLAB WITH FORMS.

DO NOT INTERPRET WALL THICKNESS (T) SHOWN FOR THE THICKNESS ACCEPTABLE, BUT IS USED IN COMPUTING ENDWALL QUANTITIES.

WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE, PLACE BAR "X" DOWELS IN THE BASE AS SHOWN ON PLANS. SPACE BARS APPROXIMATELY ON 12" CENTERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE AND POUR THE BASE SEPARATELY LEAVE THE POUR ROUGH.

USE CLASS "B" CONCRETE.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

SHEET 3 OF 3
838.01

EROSION CONTROL DETAILS

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-8388
FAX (828) 252-3365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-3455

CDC Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

NO.	DESCRIPTION	DATE	BY
1	BID SET	07/26/2021	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL F. KOCH

EROSION CONTROL DETAILS FOR:

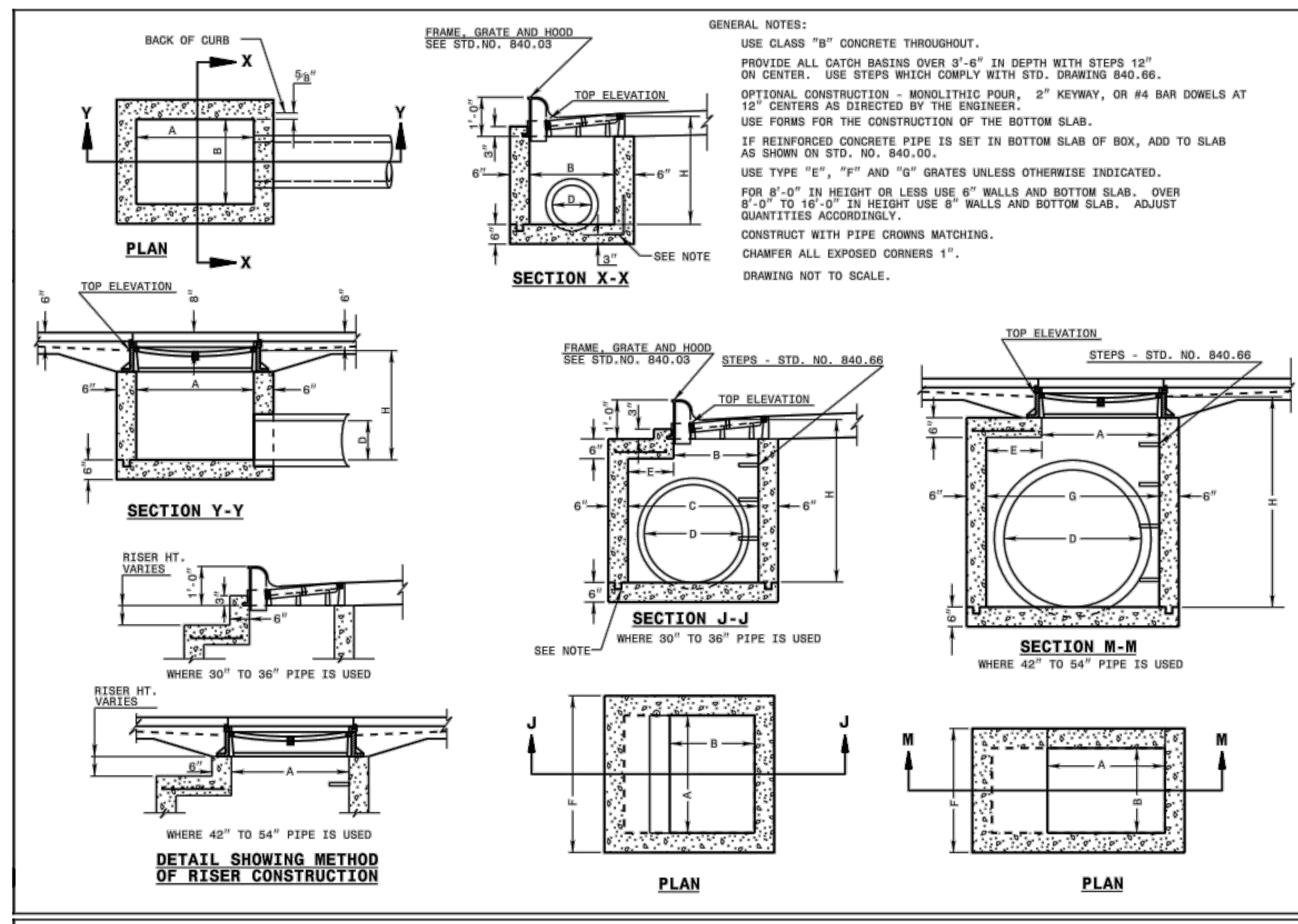
TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION — TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 2207.3
XXX PERMIT NO. xxx

SHEET

C932



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.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

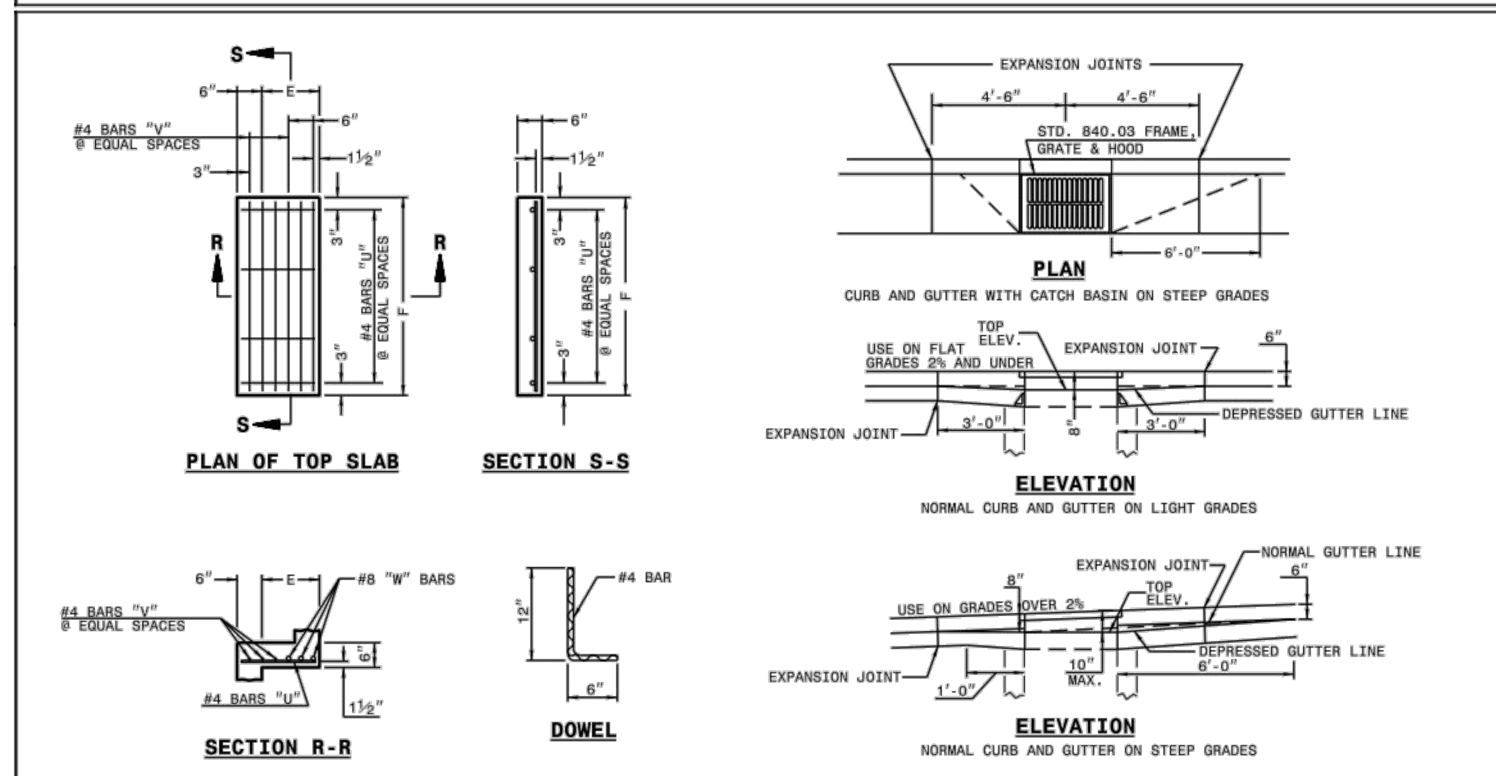
DRAWING NOT TO SCALE.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

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) *

PIPE D	SPAN A	WIDTH B	WIDTH C	SPAN G	MIN. HEIGHT H	COVER DIMENSION E	COVER DIMENSION F	BARS-U NO.	BARS-U LENGTH	BARS-V NO.	BARS-V LENGTH	BARS-W NO.	BARS-W LENGTH	TOTAL LBS.	CU.YDS. CONC. IN BOX TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H	DEDUCTIONS ONE PIPE 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	2.052	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

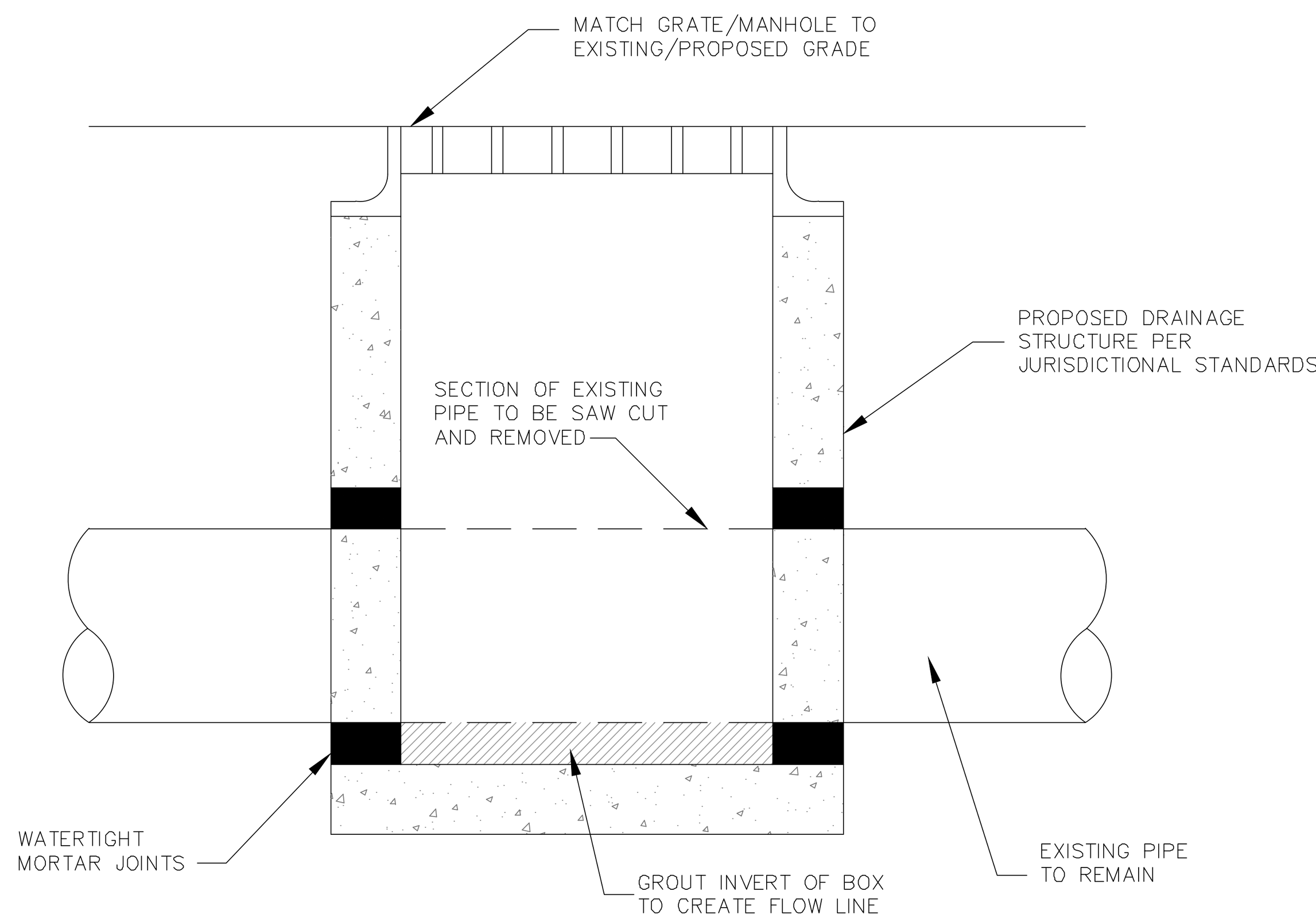
* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

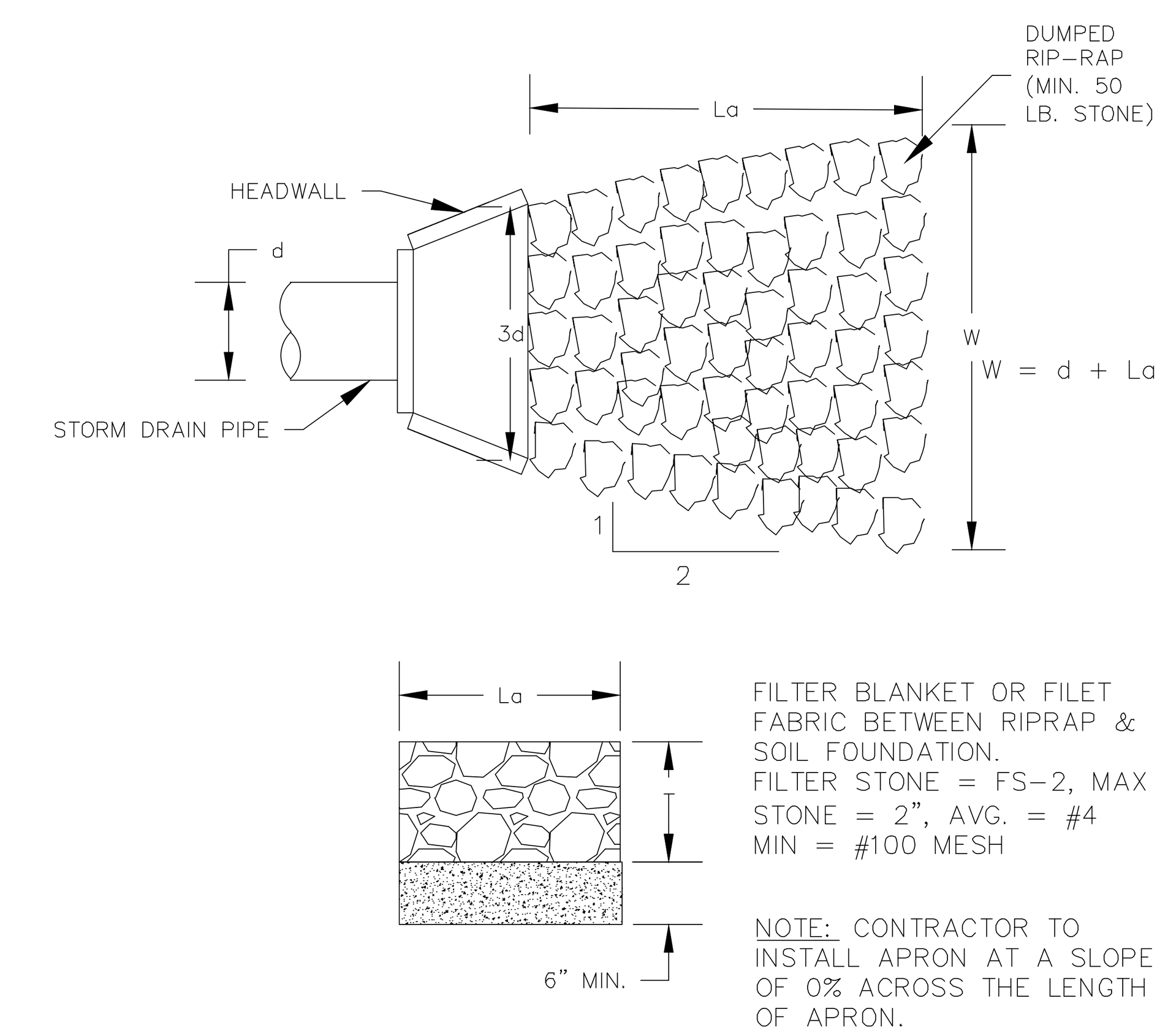
SHEET 2 OF 2
840.02



NOTE:
CONTRACTOR TO VERIFY ALL ELEVATIONS AND EXISTING PIPE SIZES AND DEPTHS PRIOR TO CONSTRUCTION. REVIEW ALL INFORMATION AND DATA WITH ENGINEER FOR APPROVAL BEFORE ORDERING OR INSTALLING PROPOSED STRUCTURES OR PIPE.

D5.01 INSTALLATION OF DRAINAGE STRUCTURE OVER EXISTING PIPE

NOT TO SCALE



FILTER BLANKET OR FILET FABRIC BETWEEN RIPRAP & SOIL FOUNDATION. FILTER STONE = FS-2, MAX STONE = 2", AVG. = #4 MIN = #100 MESH

NOTE: CONTRACTOR TO INSTALL APRON AT A SLOPE OF 0% ACROSS THE LENGTH OF APRON.

NOTES:

1. La IS THE LENGTH OF THE RIP RAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (MINIMUM IS 24" DEEP IF STONE IS CLASS II)
3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION.
5. COMPACT ANY REQUIRED FILL TO DENSITY OF SURROUNDING UNDISTURBED MATERIAL.
6. RIP RAP MAY BE FIELDSTONE OR ROUGH QUARRY STONE AND SHALL BE HARD. ANGULAR AND WELL-GRADED.
7. CONSTRUCT APRON AT ZERO GRADE. TOP OF RIP RAP SHALL BE LEVEL WITH THE RECEIVING CHANNEL OR SLIGHTLY LOWER.
8. ALIGN APRON WITH RECEIVING CHANNEL OR STREAM. ASSURE APRON IS STRAIGHT THROUGHOUT ITS LENGTH.
9. END WIDTH OF APRON TO BE EQUAL TO WIDTH OF RECEIVING CHANNEL.
10. STONE APRON SHALL BE GRADED FLAT (0% SLOPE).

RIP RAP APRONS

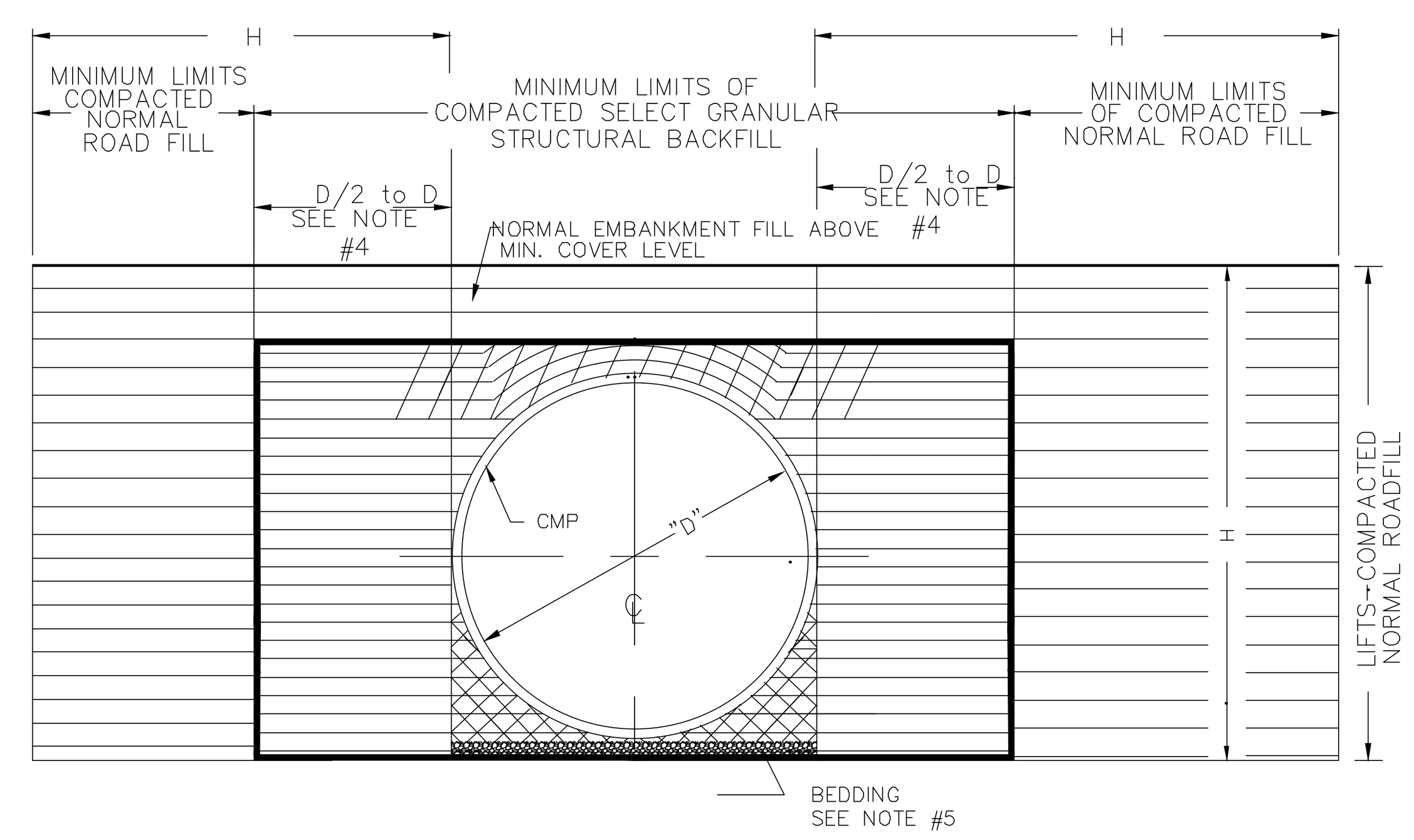
RIP-RAP ID	FLOW (cfs)	d (IN)	La (FT)	W (FT)	d50 (FT)	T (FT)	STONE CLASS
A	17.18	24	10	12	0.5	1.5	B

D5.02 RIP RAP PLACEMENT

NOT TO SCALE

GENERAL NOTES FOR STORM

1. ALL STORM INSTALLATION ON THIS SITE MUST BE AUTHORIZED BY PERMITS ISSUED BY **BUNCOMBE COUNTY. ALL** SITEWORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL REGULATORY STANDARDS AND ALL REQUIREMENTS IN THE PROJECT TECHNICAL SPECIFICATIONS.
2. CONTRACTOR TO VERIFY WITH ENGINEER THAT THE REQUIRED STORMWATER, AND ASSOCIATED NON-GRADING PERMITS HAVE BEEN OBTAINED PRIOR TO BEGINNING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL BE UNDER THE INSPECTION OF THE ENGINEER, THE OWNER, **AND BUNCOMBE COUNTY.** THE CONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS PRIOR TO BEGINNING WORK. ANY WORK COVERED PRIOR TO ENGINEER'S INSPECTION IS SUBJECT TO UNCOVERING AND BACKFILLING AT THE CONTRACTOR'S EXPENSE.
4. ALL WORK MUST BE PERFORMED BY A **NORTH CAROLINA** LICENSED CONTRACTOR.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING THE EXACT LOCATION AND ELEVATION FOR ALL UTILITIES PRIOR TO CONSTRUCTION; AND TO NOTIFY ENGINEER OF ANY CONFLICTS OR DISCREPANCIES. THE LOCATION OF SOME UTILITIES SHOWN ON THE PLANS HAVE BEEN APPROXIMATED. ALL BURIED UTILITIES HAVE NOT BEEN SHOWN ON THE PLANS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR LOCATION PRIOR TO CONSTRUCTION.
6. PROTECT EXISTING SITE FEATURES (SHOWN TO REMAIN) AND NEWLY COMPLETED WORK DURING CONSTRUCTION. ANY DAMAGE INCURRED DURING OR RESULTING FROM CONSTRUCTION ACTIVITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE REPAIRED IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES, AS WELL AS THE PROJECT PLANS AND SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS BEFORE CONSTRUCTION ACTIVITY IS TO BEGIN. THE CONTRACTOR SHALL NOTIFY NC ONE CALL AT **811**, 48 HOURS BEFORE CONSTRUCTION BEGINS. NOTIFY THE ENGINEER AT LEAST 72 HOURS BEFORE STARTING CONSTRUCTION ACTIVITIES.
8. EROSION CONTROL IS FIELD PERFORMANCE BASED AND CONTRACTOR SHALL INSTALL AND MAINTAIN ANY EROSION CONTROL MEASURES NECESSARY TO ASSURE MAXIMUM PROTECTION OF THE SITE. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL MEASURES REQUIRED TO CONTROL SEDIMENT DURING INSTALLATION ALL STORM PIPES AND APPURTENANCES..
9. CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MAINTAINING, AND REMOVING ALL NECESSARY EROSION AND SEDIMENTATION CONTROL MEASURES.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ADJUSTMENT OF ALL UTILITY SURFACE ACCESSES WHETHER THE CONTRACTOR PERFORMS THE WORK OR A UTILITY COMPANY PERFORMS THE WORK.
11. ALL HIGH DENSITY POLYETHYLENE (HDPE) CORRUGATED STORM SEWER DETENTION PIPE SHALL BE TYPE "S" HANCOR SURELOK ADSN12 OR APPROVED EQUIVALENT WITH WATER TIGHT JOINTS MEETING AASHTO M252, M294 OR MP7. ALL HDPE PIPE IS TO BE INSTALLED ACCORDINGLY TO MANUFACTURERS SPECIFICATIONS AND IN ACCORDANCE WITH ASTM D2321 WITH THE EXCEPTION THAT MINIMUM COVER IN TRAFFIC LOAD AREA SHALL BE 24" FOR 4"-48" AND 18" FOR 60". PIPE MATERIAL SHALL MEET THE PRODUCT SPECIFICATIONS OF ASTM F667 AND SHALL HAVE A SMOOTH WALL INTERIOR. FOR ALL STORM SYSTEMS, WORK MUST BEGIN AT THE LOW POINT OF THE SYSTEMS. NOTIFY THE ENGINEER IMMEDIATELY OF ANY VARIANCES FROM EXPECTED CONDITIONS.
12. CURB INLET FRAME, GRATE AND HOOD SHALL CONFORM TO NCDOT 840.03E. DROP INLET FRAME AND GRATE SHALL CONFORM TO NCDOT 840.16. FIELD INLET COVER SHALL CONFORM TO NCDOT STANDARD DETAIL 840.03, OPENING FACING UPSTREAM. MANHOLE RING AND LID TO CONFORM TO NCDOT 840.54. OPEN THROAT INLETS TO CONFORM TO NCDOT 840.04 WITH A MANHOLE RING AND LID INSTALLED IN THE TOP FOR ACCESS TO THE STRUCTURE. SET ACCESS POINT ADJACENT TO A STRUCTURE WALL AS TO ALLOW ACCESS TO STEPS.
13. CONCRETE AND MASONRY SHALL MEET THE REQUIREMENTS OF APPROPRIATE SECTION OF NCDOT STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES (LATEST EDITION). CONCRETE SHALL BE CLASS A OR B, 4000 PSI MINIMUM, MEETING THE REQUIREMENTS OF SECTION 900, CONSTRUCTED IN ACCORDANCE WITH SECTION 825. MASONRY SHALL MEET THE REQUIREMENTS OF SECTION 940, CONSTRUCTED IN ACCORDANCE WITH SECTION 830 AND/OR 834.
14. TRENCH BACKFILL AND COMPACTION TESTING SHALL BE PERFORMED BY A CERTIFIED SOILS LABORATORY UNDER ALL PAVED AREAS.
15. COMPACTION REPORTS MUST BE PROVIDED TO **BUNCOMBE COUNTY STOR**MWATER SERVICES DIVISION INDICATING THAT FILL HAS BEEN COMPACTED TO NOT LESS THAN 95% MAXIMUM DENSITY (STANDARD PROCTOR).



CRITICAL BACKFILL ZONE, PROPER COMPACTION MUST BE ACHIEVED

INITIAL LIFTS OVER CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH SMALL TRACTOR (D-4 OR SMALLER) DRAWN EQUIPMENT.

SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

NOTES:

1. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (6"-8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
2. COMPLETE AND REGULAR MONITORING OF THE CSP SHAPE IS NECESSARY DURING ALL BACKFILLING OF THE STRUCTURE.
3. PREVENT EXCESSIVE DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
4. THIS WIDTH SHOULD BE EQUAL TO 1/2 DIA. TO ONE DIA. WIDTH TYPICALLY. GREATER OR LESSER DISTANCE MAY BE REQUIRED. DISTANCE DEPENDS ON BEARING LOAD FOR ANY GIVEN LOADING, STRUCTURE SHAPE AND BACKFILL MATERIAL. THIS MUST BE EVALUATED BY THE PROJECT ENGINEER FOR EACH SPECIFIC SITUATION.
5. BEDDING ZONE SHOULD BE FREE OF DEBRIS. PLACE BEDDING MATERIAL AT MIN. THICKNESS EQUAL TO TWICE THE CORRUGATION DEPTH.
6. EMBANKMENT WIDTH H TO BE SUCH THAT A STABLE EMBANKMENT CAPABLE OF RESISTING SIDE PRESSURES FROM CSP PIPE-ARCH SHAPE WILL BE MAINTAINED THROUGHOUT THE LIFE OF INSTALLATION. THIS WIDTH TO BE DETERMINED BY THE PROJECT ENGINEER.

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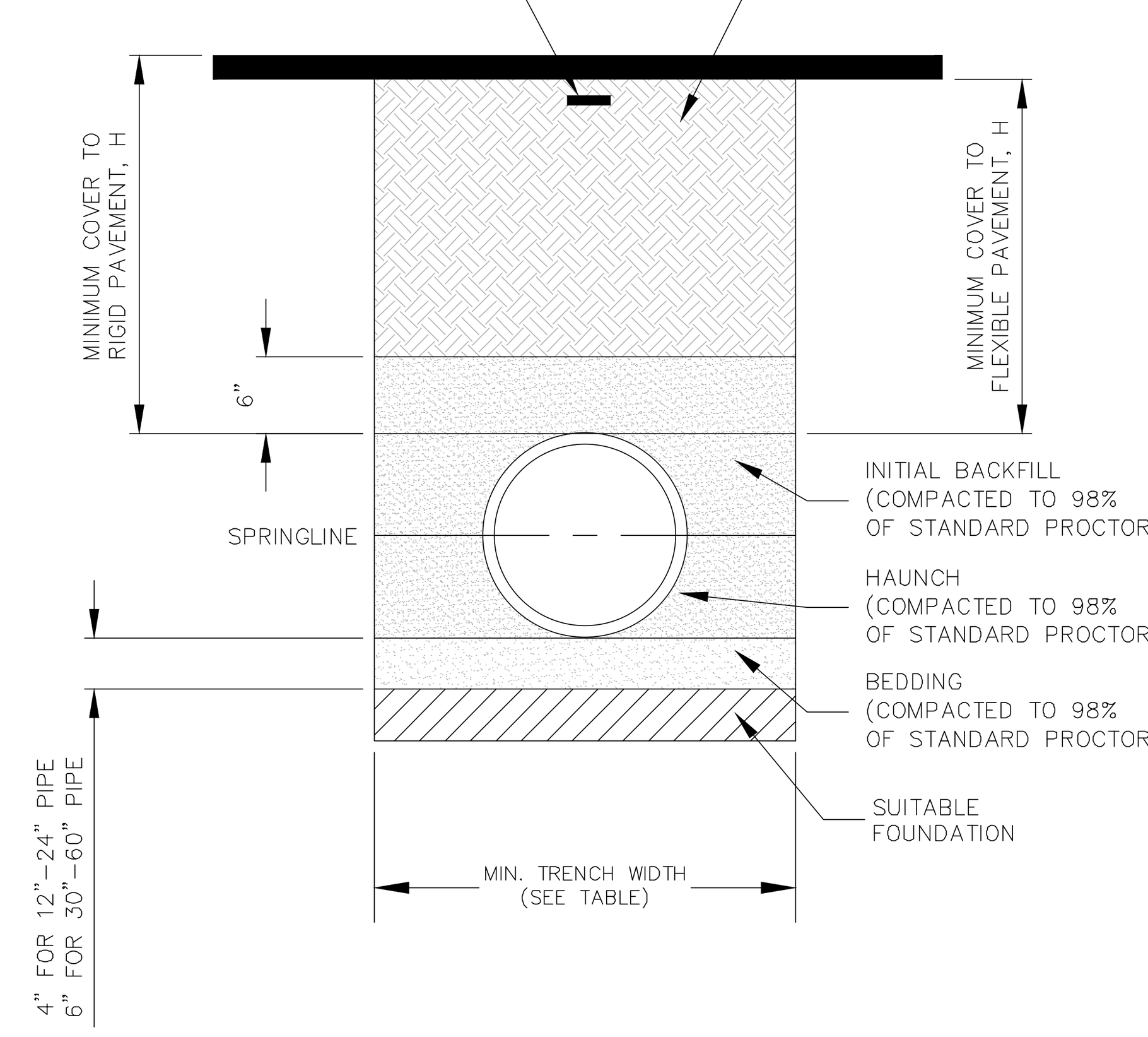
D5.03 CORRUGATED METAL PIPE TYPICAL BACKFILL SECTION

DRAWN BY: CMD	REV. BY: XX	SCALE: N/A
DATE: 12/04/03	DATE: XX	1



MINIMUM TRENCH WIDTHS

PIPE DIAMETER	MIN. TRENCH WIDTH
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MAXIMUM COVER

PIPE DIAMETER	CLASS I	CLASS II	CLASS III
12"	43'	28'	20'
15"	43'	28'	20'
18"	43'	28'	20'
24"	34'	23'	17'
30"	34'	23'	17'
36"	34'	23'	16'
42"	34'	23'	16'
48"	31'	21'	15'
54"	31'	21'	15'
60"	31'	21'	15'

*ASSUMED PIPE BACKFILL IS PLACED AND COMPACTED TO THE REQUIRED 98% OF THE STANDARD PROCTOR

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH LATEST EDITION OF ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", AND THE PROJECT SPECIFICATIONS.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, OR, III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4"(100 mm) FOR 12"-24" (100 mm - 600 mm); 6"(150 mm) FOR 30"-60" (750 mm - 900 mm).
5. HAUNCHING/INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. HEAVY CONSTRUCTION LOADS MAY REQUIRE ADDITIONAL COVER TO PROTECT THE PIPE. CONTRACTOR TO VERIFY THAT CONSTRUCTION LOADS WILL NOT DAMAGE INSTALLED PIPES AND PROTECT INSTALLED PIPES IF REQUIRED.
7. MAXIMUM COVER: MAXIMUM COVER SHALL BE MEASURED FROM THE FINISHED SURFACE OF THE GROUND TO THE TOP OF THE PIPE, AND SHALL BE LESS THAN THE MAXIMUM VALUES SHOWN IN THE CHART WITHIN THIS DETAIL.

D5.04 HDPE TRENCH INSTALLATION DETAIL

NOT TO SCALE

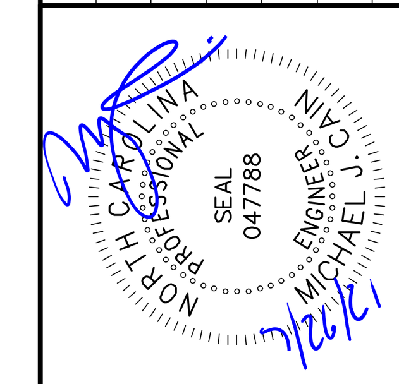
STORM DRAINAGE DETAILS

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-5365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-5455

CDC Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK



STORM DRAINAGE DETAILS FOR:

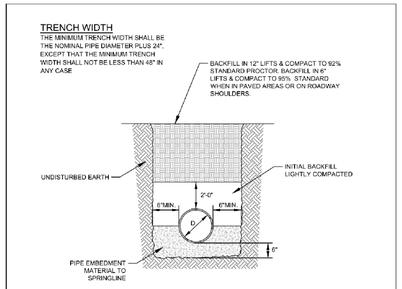
TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION - TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET

C951

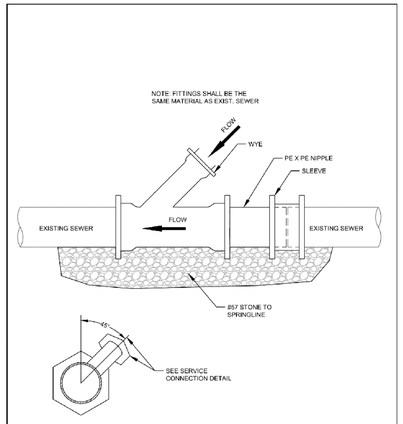


TRENCH FOR PVC PIPE (15" DIA. AND LESS)
N.T.S.

NOTES:

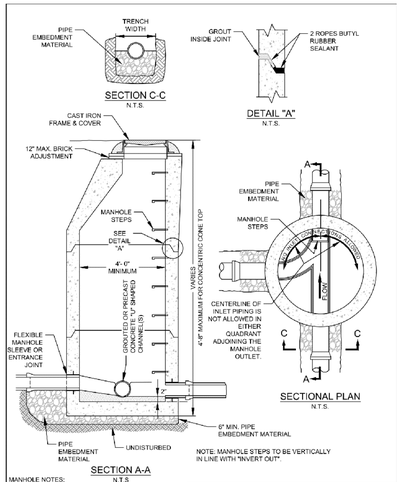
1. WALL THICKNESS SHALL BE SDR 35.
2. PVC PIPES REQUIRE #57 WASHED STONE PIPE EMBEDMENT MATERIALS.
3. THE SDT-1, IS VALID FOR PVC SEWER PIPE INSTALLED AT DEPTHS OF 10' TO 20 FEET.
4. PVC PIPE NOT ALLOWED WITH LESS THAN 3'-0" COVER.
5. NO BOULDERS OR STONES WILL BE USED IN INITIAL BACKFILL.
6. WHEN TRENCH IS SUBJECT TO INUNDATION, EMBEDMENT MATERIALS MUST EXTEND TO TOP OF PIPE.

STANDARD DETAIL	
Metropolitan Sewerage District of Buncombe County, North Carolina	
TRENCH FOR PVC PIPE	
DATE APPROVED: MARCH 2017	2.04 - 01



NOT FOR USE ON NEW CONSTRUCTION.

STANDARD DETAIL	
Metropolitan Sewerage District of Buncombe County, North Carolina	
SERVICE CONNECTION TO EXISTING SEWER	
DATE APPROVED: MARCH 2017	2.07 - 01



MANHOLE NOTES:

1. FOR MANHOLES LARGER THAN 4 FT. DIA., MAINTAIN FULL MANHOLE DIA. TO 6 FT. ABOVE INVERT BENCH.
2. FOR 5 FT. AND 6 FT. DIA. MANHOLES, USE A TRANSITION CONE TO REDUCE TO 4 FT. DIA. FOR 7 FT. TO 10 FT. DIA. MANHOLES, USE A TRANSITION TOP TO REDUCE TO 4 FT. DIA.

STANDARD DETAIL	
Metropolitan Sewerage District of Buncombe County, North Carolina	
STANDARD MANHOLE	
DATE APPROVED: MARCH 2017	2.11 - 01

GENERAL NOTES FOR SEWER

1. SEWER CONSTRUCTION ON THIS SITE MUST BE AUTHORIZED BY PERMITS ISSUED BY THE **METROPOLITAN SEWERAGE DISTRICT OF BUNCOMBE COUNTY (MSD).** ALL SITEWORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL REGULATORY STANDARDS; AND ALL REQUIREMENTS IN THE PROJECT TECHNICAL SPECIFICATIONS. REQUIREMENTS AND SPECIFICATIONS OF **MSD** STANDARDS SUPERSEDE ALL OTHERS IN THE INSTALLATION OF THE PROPOSED SEWER EXTENSION.
2. CONTRACTOR TO VERIFY WITH ENGINEER THAT THE REQUIRED SEWER PERMITS AND ASSOCIATED NON-SEWER PERMITS HAVE BEEN OBTAINED PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR TO PROVIDE COPY OF STREET CUT PERMIT TO **MSD** PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION SHALL BE UNDER THE OBSERVATION OF THE ENGINEER, THE OWNER, **THE METROPOLITAN SEWERAGE DISTRICT**. THE ENGINEER SHALL PERIODICALLY OBSERVE THE PROGRESS OF INSTALLATION AND SHALL COMPLETE A FINAL WATER AND SEWER INSPECTION. THE CONTRACTOR SHALL FURNISH, SECURE, AND PROVIDE ALL NECESSARY TESTING MATERIALS, EQUIPMENT, PROCEDURES, AND CERTIFIED LABORATORY TEST RESULTS FOR USE WITH ENGINEERS FINAL CERTIFICATION OF COMPLETION. ANY WORK COVERED PRIOR TO ENGINEER'S INSPECTION IS SUBJECT TO UNCOVERING AND BACKFILLING AT THE CONTRACTOR'S EXPENSE.
4. ALL WORK MUST BE PERFORMED BY A **NORTH CAROLINA** LICENSED UTILITY CONTRACTOR.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING THE EXACT LOCATION AND ELEVATION FOR ALL UTILITIES PRIOR TO CONSTRUCTION; AND TO NOTIFY ENGINEER OF ANY CONFLICTS OR DISCREPANCIES. THE LOCATION OF SOME UTILITIES SHOWN ON THE PLANS HAVE BEEN APPROXIMATED. ALL BURIED UTILITIES HAVE NOT BEEN SHOWN ON THE PLANS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR LOCATION PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL PROTECT EXISTING AND NEWLY BUILT UTILITIES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES INCURRED DURING OR RESULTING FROM CONSTRUCTION ACTIVITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE REPAIRED IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS BEFORE CONSTRUCTION ACTIVITY IS TO BEGIN. THE CONTRACTOR SHALL NOTIFY ULOCO AT **1-800-632-4949** OR **811**, 72 HOURS BEFORE CONSTRUCTION BEGINS. NOTIFY THE ENGINEER AT LEAST 72 HOURS BEFORE STARTING CONSTRUCTION ACTIVITIES.
8. CONTRACTOR SHALL PROVIDE **MSD** FIELD DENSITY REPORTS VERIFYING SEWER BUILT IN FILL AREAS ARE COMPACTED TO 95% STANDARD PROCTOR.
9. EROSION CONTROL IS FIELD PERFORMANCE BASED AND CONTRACTOR SHALL INSTALL AND MAINTAIN ANY EROSION CONTROL MEASURES NECESSARY TO ASSURE MAXIMUM PROTECTION OF THE SITE. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL MEASURES REQUIRED TO CONTROL SEDIMENT DURING INSTALLATION ALL SEWER PIPES AND APPURTENANCES.
10. SAFETY AND TRAFFIC ROUTING TO BE COORDINATED WITH **THE TOWN OF MONTREAT** AND IN STRICT ACCORDANCE WITH NCDOT GUIDELINES FOR CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATIONS.
11. ALL SEWER SERVICES SHALL BE CONSTRUCTED IN ACCORDANCE WITH NC PLUMBING CODES AND ANY REQUIREMENTS PER LOCAL AUTHORITIES. COORDINATE EXACT LOCATIONS OF SERVICE LINES WITH THE ARCHITECTURAL, PLUMBING, AND LANDSCAPING PLANS. SEWER CLEANOUT ASSEMBLY LOCATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO FINAL VERIFICATION.
12. ALL NON-FERROUS UNDERGROUND SERVICE LINES OUTSIDE BUILDING FOOTPRINT SHALL BE REQUIRED TO HAVE A MAGNETIC- TYPE WARNING TAPE INSTALLED IN THE BACKFILL AT LEAST 6" BELOW GRADE.
13. CONTRACTOR TO INSTALL D.I.P. WHERE THE MINIMUM OF 3' COVER OR AT UTILITY CROSSINGS WHERE MINIMUM VERTICAL SEPARATION REQUIREMENTS CANNOT BE MET. PIPE MATERIAL MUST TRANSITION TO D.I.P. 10' PRIOR TO CROSSING VIA A SOLID SLEEVE COUPLING AND EXTEND TO THE NEXT MANHOLE.
14. INSTALL FERROUS PIPING FOR BOTH WATER AND SEWER WITHIN 10' OF A CROSSING IF:
    A. SEWER LINE CROSSES OVER WATER, OR
    B. VERTICAL CLEARANCE BETWEEN WATER AND SEWER IS LESS THAN 18".

    MAINTAIN 10' HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS UNLESS LAID IN SEPARATE TRENCHES WITH THE BOTTOM OF THE WATER LINE AT LEAST 18" ABOVE THE TOP OF SEWER OR USE FERROUS MATERIAL FOR BOTH WATER AND SANITARY SEWER.
14. MAINTAIN 18" VERTICAL SEPARATION BETWEEN STORM DRAIN AND SANITARY SEWER, OR INSTALL FERROUS MATERIAL ON THE SANITARY SEWER WITHIN 10' EACH SIDE OF THE CROSSING.
15. CONTRACTOR RESPONSIBLE FOR ADJUSTING EXISTING WATER APPURTENANCES AS NECESSARY DUE TO ANY SITE CONSTRUCTION OR INSTALLATION.
16. TRENCH BACKFILL AND COMPACTION TESTING SHALL BE PERFORMED BY A CERTIFIED SOILS LABORATORY UNDER ALL PAVED AREAS.
17. THE ENTIRE SEWER EASEMENT MUST BE CLEAR AND REMAINED CLEARED OF TREE PLANTINGS, EXISTING TREES, AND ANY PERMANENT STRUCTURES.
18. CONTRACTOR SHALL SUPPLY THE ENGINEER WITH RECORD OF DEVIATIONS FROM PLANS FOR PREPARATION OF FINAL RECORD DRAWINGS.
19. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION BY THE ENGINEER OF THE SEWER SYSTEMS PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL BY **THE METROPOLITAN SEWERAGE DISTRICT**. SECURE FINAL OPERATIONAL APPROVAL FROM **MSD** PRIOR TO ACTIVATION OF THE SYSTEM.

SEWER DETAILS

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-3386
FAX (828) 252-3365

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 452-4410
FAX (828) 456-3455

CDC Civil Design Concepts, PA
www.civildesignconcepts.com
NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL SEAL 047788 ENGINEER MICHAEL F. CHIN
7/26/21

SEWER DETAILS FOR:

TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION - TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 2207.x
XXX PERMIT NO. xxx

SHEET

C961

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.

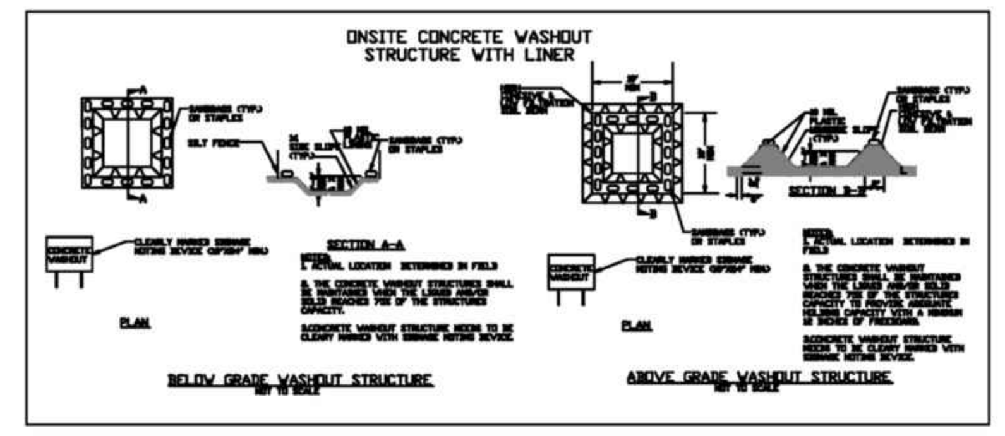
PORTABLE TOILETS

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.

NORTH CAROLINA *Environmental Quality*



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.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal 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 III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter 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(l)(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(l)(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.

NORTH CAROLINA *Environmental Quality*

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

NCG01

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NCBELS LICENSE #: C-2184

NO.	DATE	DESCRIPTION	BY
1	07/26/2021	BID SET	MFK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 MICHAEL J. CAIN
7/26/21

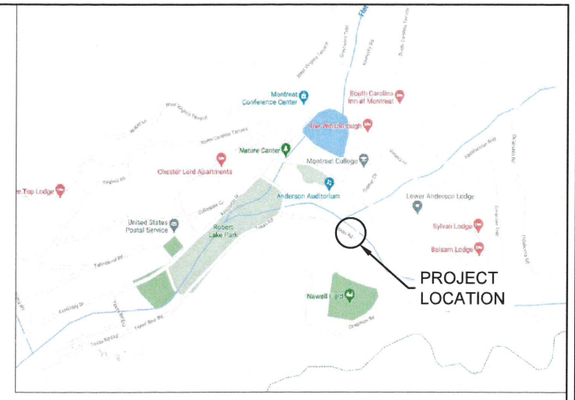
NCG01 FOR:

TEXAS ROAD

MOUNTAIN RETREAT ASSOCIATION – TOWN OF MONTREAT, NORTH CAROLINA

DRAWN BY: MFK
CDC PROJECT NO.: 22073
XXX PERMIT NO. xxx

SHEET
C998



SITE VICINITY MAP
SCALE: NTS

TEXAS ROAD WALL REPLACEMENT
MONTREAT, NC

PREPARED FOR:
CIVIL DESIGN CONCEPTS, PA

PREPARED BY:
BUNNELL-LAMMONS ENGINEERING, INC.
130 OVAL ROAD, SUITE 200
ARDEN, NORTH CAROLINA 29704

BUNNELL-LAMMONS ENGINEERING CONTACT:
JESSE R. JACOBSON, P.E.
828-277-0100 (OFFICE)

FIGURE INDEX

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NORTH CAROLINA PROFESSIONAL SEAL 020948 ENGINEER JESSE R. JACOBSON

BUNNELL LAMMONS ENGINEERING
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Phone: (828) 277-0100 **Fax:** (828) 277-0110

1	06-25-21	DESIGN REVIEW SUBMITTAL
2	07-27-21	FOR CONSTRUCTION

REVISIONS
JRJ
JRJ

JOB NUMBER: 15670-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FIRM # C-1538

COVER SHEET

TEXAS ROAD RETAINING WALL
MONTREAT,
NORTH CAROLINA

DATE: 07-27-21

00

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes furnishing all materials and labor required for the design and construction of a precast concrete modular block (PMB) retaining wall without geosynthetic reinforcement. Precast modular block retaining wall blocks under this section shall be cast utilizing a wet-cast concrete mix and exhibit a final handling weight in excess of 1,000 pounds (450 kg) per unit.

B. Scope of Work: The work shall consist of furnishing materials, labor, equipment and supervision for the construction of a precast modular block (PMB) retaining wall structure in accordance with the requirements of this section and in acceptable conformity with the lines, grades, design and dimensions shown in the project site plans.

1.02 REFERENCES

A. Where the specification and reference documents conflict, the Owner's designated representative will make the final determination of the applicable document.

B. Definitions:
1. Precast Modular Block (PMB) Unit – machine-placed, "wet cast" concrete modular block retaining wall facing unit.
2. Geotextile – a geosynthetic fabric manufactured for use as a separation and filtration medium between dissimilar soil materials.
3. Drainage Aggregate – clean, crushed stone placed within and immediately behind the precast modular block units to facilitate drainage and reduce compaction requirements immediately adjacent to and behind the precast modular block units.
4. Unit Core Fill – clean, crushed stone placed within the hollow vertical core of a precast modular block unit. Typically, the same material used for drainage aggregate as defined above.
5. Foundation Zone – soil zone immediately beneath the leveling pad.
6. Retained Zone – soil zone immediately behind the drainage aggregate and wall infill for wall sections designed as modular gravity structures.
7. Leveling Pad – hard, flat surface upon which the bottom course of precast modular blocks are placed. The leveling pad should be constructed with cast-in-place concrete. A leveling pad is not a structural footing.
8. Wall Infill – the fill material placed and compacted between the drainage aggregate and the excavated soil face in retaining wall sections designed as modular gravity structures.

C. Reference Standards
1. Design
   a. AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014.
   b. Minimum Design Loads for Buildings and Other Structures – ASCE/SEI 7-10.
   c. International Building Code, 2012 Edition.
   d. Design Manual for Segmental Retaining Walls, National Concrete Masonry Association, 3rd Edition, 2010
2. Precast Modular Block Units
   a. ACI 201 – Guide to Durable Concrete
   b. ACI 318 – Building Code Requirements for Structural Concrete
   c. ASTM C33 – Standard Specification for Concrete Aggregates
   d. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
   e. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
   f. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   g. ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete.
   h. ASTM C150 – Standard Specification for Portland Cement
   i. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
   j. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
   k. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.
   l. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
   m. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
   n. ASTM C666 – Standard Test Method for Concrete Resistance to Rapid Freezing and Thawing.
   o. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
   p. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
   q. ASTM C989 - Standard Specification for Slag Cement for Use in Concrete and Mortars.
   r. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete.
   s. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
   t. ASTM C1218 - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
   u. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
   v. ASTM C1611 – Standard Test Method for Slump Flow of Self-Consolidating Concrete.
   w. ASTM C1776 – Standard Specification for Wet-Cast Precast Modular Retaining Wall Units.
   x. ASTM D6638 – Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks).
   y. ASTM D6916 – Standard Test Method for Determining Shear Strength Between Segmental Concrete Units (Modular Concrete Blocks).
3. Geosynthetics
   a. AASHTO M 288 – Geotextile Specification for Highway Applications.
   b. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics Diaphragm Bursting Strength Tester Method.
   c. ASTM D4354 – Standard Practice for Sampling of Geosynthetics for Testing.
   d. ASTM D4355 – Standard Test Method for Deterioration of Geotextiles
   e. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
   f. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
   g. ASTM D4595 – Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
   h. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
   i. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.
   j. ASTM D4759 – Standard Practice for Determining Specification Conformance of Geosynthetics.
   k. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
   l. ASTM D4873 – Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
   m. ASTM D6241 – Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.
4. Soils
   a. AASHTO M 145 – AASHTO Soil Classification System.
   b. AASHTO T 104 – Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
   c. AASHTO T 267 – Standard Method of Test for Determination of Organic Content in Soils by Loss of Ignition.
   d. ASTM C33 – Standard Specification for Concrete Aggregates.
   e. ASTM D448 – Standard Classification for Sizes of Aggregates for Road and Bridge Construction.
   f. ASTM D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. (12,400 ft-lbf/ft (2,700 kN-m/m)).
   g. ASTM D1241 – Standard Specification for Materials for Soil-Aggregate Subbase, Base and Surface Courses.
   h. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
   i. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort. (56,000 ft-lbf/ft (2,700 kN-m/m)).
   j. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
   k. ASTM D2488 – Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).
   l. ASTM D3080 – Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions.
   m. ASTM D4254 – Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
   n. ASTM D4318 – Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
   o. ASTM D4767- Test Method for Consolidated-Undrained Triaxial Compression Test for Cohesive Soils.
   p. ASTM D4972 – Standard Test Method for pH of Soils.
   q. ASTM D6913 – Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
   r. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Aggregate by Nuclear Methods (Shallow Depth).
   s. ASTM G51 – Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing.
   t. ASTM G57 – Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method.
5. Drainage Pipe
   a. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   b. ASTM F2648 – Standard Specification for 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preconstruction Meeting. As directed by the Owner, the General Contractor shall schedule a preconstruction meeting at the project site prior to commencement of retaining wall construction. Participation in the preconstruction meeting shall be required of the General Contractor, Retaining Wall Design Engineer, Retaining Wall Installation Contractor, Grading Contractor and Inspection Engineer. The General Contractor shall provide notification to all parties at least 10 calendar days prior to the meeting.

1. Preconstruction Meeting Agenda:
   a. The Retaining Wall Design Engineer shall explain all aspects of the retaining wall construction drawings.
   b. The Retaining Wall Design Engineer shall explain the required bearing capacity of soil below the retaining wall structure and the shear strength of in-situ soils assumed in the retaining wall design to the Inspection Engineer.
   c. The Retaining Wall Design Engineer shall explain the required shear strength of fill soil in the retained and foundation zones of the retaining wall to the Inspection Engineer.
   d. The Retaining Wall Design Engineer shall explain any measures required for coordination of the installation of utilities or other obstructions in the retained fill zones of the retaining wall.
   e. The Retaining Wall Installation Contractor shall explain all excavation needs, site access and material staging area requirements to the General Contractor and Grading Contractor.

1.04 SUBMITTALS

A. Product Data. At least 14 days prior to construction, the General Contractor shall submit a minimum of three (3) copies of the retaining wall product submittal package to the Owner's Representative for review and approval. The submittal package shall include technical specifications and product data from the manufacturer for the following:
1. Precast Modular Block System brochure
2. Precast Modular Block concrete test results specified in paragraph 2.01, subparagraph B of this section as follows:
   a. 28-day compressive strength
   b. Air content
   c. Slump or Slump Flow (as applicable)
3. Drainage Pipe
4. Geotextile

1.05 QUALITY ASSURANCE

A. The Inspection Engineer shall perform the following duties:
1. Inspect the construction of the precast modular block structure for conformance with construction shop drawings and the requirements of this specification.
2. Observe that soil or aggregate fill placed and compacted in the retained and foundation zones of the retaining wall conforms with paragraphs 2.04 and 2.05 of this section and exhibits the shear strength parameters specified by the Retaining Wall Design Engineer.
3. Observe that the shear strength of the in-situ soil assumed by the Retaining Wall Design Engineer is appropriate.
4. Inspect and document soil compaction in accordance with these specifications:
   a. Required dry unit weight
   b. Actual dry unit weight
   c. Allowable moisture content
   d. Actual moisture content
   e. Pass/fail assessment
   f. Test location – wall station number
   g. Test elevation
   h. Distance of test location behind the wall face
5. Oberve that all excavated slopes in the vicinity of the retaining wall are bench-cut as directed by the project Geotechnical Engineer.
6. Notify the Retaining Wall Installation Contractor of any deficiencies in the retaining wall construction and provide the Retaining Wall Installation Contractor a reasonable opportunity to correct the deficiency.
7. Notify the General Contractor, Owner and Retaining Wall Design Engineer of any construction deficiencies that have not been corrected timely.
8. Document all inspection results.
9. Test compacted density and moisture content of the retained backfill with the following frequency:
   a. At least once every 1,000 square feet (90 square meters) (in plan) per 9-inch (230 mm) vertical lift, and
   b. At least once per every 18 inches (460 mm) of vertical wall construction.

B. The Owner's engagement of the Inspection Engineer does not relieve the Retaining Wall Installation Contractor of responsibility to construct the proposed retaining wall in accordance with the approved construction shop drawings and these specifications.

C. The Retaining Wall Installation Contractor shall inspect the on-site grades and excavations prior to construction and notify the Retaining Wall Design Engineer and General Contractor if on-site conditions differ from the elevations and grading conditions depicted in the retaining wall construction shop drawings.

1.06 DELIVERY, STORAGE AND HANDLING

A. The Retaining Wall Installation Contractor shall inspect the materials upon delivery to ensure that the proper type, grade and color of materials have been delivered.

B. The Retaining Wall Installation Contractor shall store and handle all materials in accordance with the manufacturer's recommendations as specified herein and in a manner that prevents deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, UV exposure or other causes. Damaged materials shall not be incorporated into the work.

C. Geosynthetics
1. All geosynthetic materials shall be handled in accordance with ASTM D4873. The materials should be stored off the ground and protected from precipitation, sunlight, dirt and physical damage.

D. Precast Modular Blocks
1. Precast modular blocks shall be stored in an area with positive drainage away from the blocks. Be careful to protect the block from mud and excessive chipping and breakage. Precast modular blocks shall not be stacked more than three (3) units high in the storage area.

E. Drainage Aggregate and Backfill Stockpiles
1. Drainage aggregate or backfill material shall not be piled over unstable slopes or areas of the project site with buried utilities.
2. Drainage aggregate material shall not be staged where it may become mixed with or contaminated by poor draining fine-grained soils such as clay or silt.

PART 2 – MATERIALS

2.01 PRECAST MODULAR BLOCK RETAINING WALL UNITS

A. All units shall be wet-cast precast modular retaining wall units conforming to ASTM C1776.

B. All units for the project shall be obtained from the same manufacturer. The manufacturer shall be licensed and authorized to produce the retaining wall units by the precast modular block system patent holder/licensor and shall document compliance with the published quality control standards of the proprietary precast modular block system licensor for the previous three (3) years, or the total time the manufacturer has been licensed, whichever is less.

C. Concrete used in the production of the precast modular block units shall be first-purpose, fresh concrete. It shall not consist of returned, reconstituted, surplus or waste concrete. It shall be an original production mix meeting the requirements of ASTM C94 and exhibit the properties as shown

Concrete Mix Properties

Freeze Thaw Exposure Class[1]	Minimum 28-Day Compressive Strength[2]	Maximum Water Cement Ratio	Nominal Maximum Aggregate Size	Aggregate Class Designation[3]	Air Content[4]
Moderate	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3M	4.5% +/- 1.5%
Severe	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3S	6.0% +/- 1.5%
Very Severe	4,500 psi (30.0 MPa)	0.40	1 inch (25 mm)	4S	6.0% +/- 1.5%
Maximum Water-Soluble Chloride Ion (Cl^-) Content in Concrete, Percent by Weight of Cement[5,6]					0.15
Maximum Chloride as Cl^- Concentration in Mixing Water, Parts Per Million					1000
Maximum Percentage of Total Cementitious Materials By Weight [7,8] (Very Severe Exposure Class Only):					
Fly Ash or Other Pozzolans Conforming to ASTM C618					25
Slag Conforming to ASTM C989					50
Silica Fume Conforming to ASTM C1240					10
Total of Fly Ash or Other Pozzolans, Slag, and Silica Fume[8]					50
Total of Fly Ash or Other Pozzolans and Silica Fume[8]					35
Alkali-Aggregate Reactivity Mitigation per ACI 201					
Slump (Conventional Concrete) per ASTM C143[10]				5 inches +/- 1½ inches (125 mm +/- 40 mm)	
Slump Flow (Self-Consolidating Concrete) per ASTM C1611				18 inches – 32 inches (450 mm – 800 mm)	

[1]Exposure class is as described in ACI 318. "Moderate" describes concrete that is exposed to freezing and thawing cycles and occasional exposure to moisture. "Severe" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture. "Very Severe" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture and exposed to deicing chemicals. Exposure class should be specified by owner/purchaser prior to order placement.
[2]Test method ASTM C39.
[3]Defined in ASTM C33 Table 3 *Limits for Deleterious Substances and Physical Property Requirements of Coarse Aggregates for Concrete.*
[4]Test method ASTM C231.
[5]Test method ASTM C1218 at age between 28 and 42 days.
[6]Where used in high sulfate environments or where alkali-silica reactivity is an issue, water soluble chloride shall be limited to no more than trace amounts (from impurities in concrete-making components, not intended constituents.)
[7]The total cementitious material also includes ASTM C150, C595, C845, C1157 cement. The maximum percentages shall include:
(a) Fly ash or other pozzolans in type IP, blended cement, ASTM C595, or ASTM C1157.
(b) Slag used in the manufacture of an IS blended cement, ASTM C595, or ASTM C1157.
(c) Silica fume, ASTM C1240, present in a blended cement.
[8]Fly ash or other pozzolans and silica fume shall constitute no more than 25 and 10 percent, respectively, of the total weight of the cementitious materials.
[9]Prescriptive limits shown may be waived for concrete mixes that demonstrate excellent freeze/thaw durability in a detailed and current testing program.
[10]Slump may be increased by a high-range water-reducing admixture.

D. Each concrete block shall be cast in a single continuous pour without cold joints. With the exception of half-block units, corner units and other special application units, the precast modular block units shall conform to the nominal dimensions listed in the table below and be produced to the dimensional tolerances shown.

Block Type	Dimension	Nominal Value	Tolerance
28" (710 mm) Block	Height	18" (457 mm)	+/- 3/16" (5 mm)
	Length	46-1/8" (1172 mm)	+/- 1/2" (13 mm)
	Width*	28" (710 mm)	+/- 1/2" (13 mm)
41" (1030 mm) Block	Height	18" (457 mm)	+/- 3/16" (5 mm)
	Length	46-1/8" (1172 mm)	+/- 1/2" (13 mm)
	Width*	40-1/2" (1030 mm)	+/- 1/2" (13 mm)
60" (1520 mm) Block	Height	18" (457 mm)	+/- 3/16" (5 mm)
	Length	46-1/8" (1172 mm)	+/- 1/2" (13 mm)
	Width*	60" (1520 mm)	+/- 1/2" (13 mm)

* Block tolerance measurements shall exclude variable face texture

E. Individual block units shall have a nominal height of 18 inches (457 mm).

F. With the exception of half-block units, corner units and other special application units, the precast modular block units shall have two (2), circular dome shear knobs that are 10 inches (254 mm), 7.5 inches (190 mm), or 6.75 inches (171 mm) in diameter and 4 inches (102 mm) or 2 inches (51 mm) in height. The shear knobs shall fully index into a continuous semi-cylindrical shear channel in the bottom of the block course above. The peak interlock shear between any two (2) vertically stacked precast modular block units, with 10 inch (254 mm) diameter shear knobs, measured in accordance with ASTM D6916 shall exceed 6,500 lb/ft (95 kN/m) at a minimum normal load of 500 lb/ft (7kN/m) as well as an ultimate peak interface shear capacity in excess of 11,000 lb/ft (160 kN/m). The peak interlock shear between any two (2) vertically stacked precast modular block units, with 7.5 inch (190 mm) or 6.75 inch (171 mm) diameter shear knobs, measured in accordance with ASTM D6916 shall exceed 1,850 lb/ft (27 kN/m) at a minimum normal load of 500 lb/ft (7kN/m) as well as an ultimate peak interface shear capacity in excess of 10,000 lb/ft (146 kN/m).Test specimen blocks tested under ASTM D6916 shall be actual, full-scale production blocks of known compressive strength. The interface shear capacity reported shall be corrected for a 4,000 psi (27.6 MPa) concrete compressive strength. Regardless of precast modular block configuration, interface shear testing shall be completed without the inclusion of unit core infill aggregate.

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REVISIONS			
1	06-25-21	DESIGN REVIEW SUBMITTAL	JRJ
2	07-27-21	FOR CONSTRUCTION	JRJ

JOB NUMBER: 15070-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FIRM # C-1538

GENERAL NOTES

TEXAS ROAD RETAINING WALL
MONTREAT,
NORTH CAROLINA

DATE: 07-27-21

01A

G. The 28" (710 mm) and 41" (1030 mm) precast modular block units may be cast with a 13" (330 mm) wide, continuous vertical core slot completely through the block, or solid concrete.

H. Without field cutting or special modification, the precast modular block units shall be capable of achieving a minimum radius of 14 ft 6 in (4.42 m).

I. The precast modular block units shall be manufactured with an integrally cast shear knobs that establishes a standard horizontal set-back for subsequent block courses. The precast modular block system shall be available in the four (4) standard horizontal set-back facing batter options listed below:

Horizontal Set-Back/Blk. Course	Max. Facing Batter
3/8" (10 mm)	1.2°
1-5/8" (41 mm)	5.2°
9-3/8" (238 mm)	27.5°
16-5/8" (422 mm)	42.7°

The precast modular block units shall be furnished with the required shear knobs that provide the facing batter required in the construction shop drawings.

J. The precast modular block unit face texture shall be selected by the owner from the available range of textures available from the precast modular block manufacturer. Each textured block facing unit shall be a minimum of 5.76 square feet (0.54 square meters) with a unique texture pattern that repeats with a maximum frequency of once in any 15 square feet (1.4 square meters) of wall face.

K. The block color shall be selected by the owner from the available range of colors available from the precast modular block manufacturer.

L. All precast modular block units shall be sound and free of cracks or other defects that would interfere with the proper installation of the unit, impair the strength or performance of the constructed wall. PMB units to be used in exposed wall construction shall not exhibit chips or cracks in the exposed face or faces of the unit that are not otherwise permitted. Chips smaller than 1.5" (38 mm) in its largest dimension and cracks not wider than 0.012" (0.3 mm) and not longer than 25% of the nominal height of the PMB unit shall be permitted. PMB units with bug holes in the exposed architectural face smaller than 0.75" (19 mm) in its largest dimension shall be permitted. Bug holes, water marks, and color variation on non-architectural faces are acceptable. PMB units that exhibit cracks that are continuous through any solid element of the PMB unit shall not be incorporated in the work regardless of the width or length of the crack.

M. Preapproved Manufacturers.
Manufacturers of Redi-Rock Retaining Wall Systems as licensed by Redi-Rock International, LLC; 05481 US 31 South, Charlevoix, MI 49720 USA; telephone (866) 222-8400; website www.redi-rock.com.

2.02 GEOTEXTILE

A. Nonwoven geotextile fabric shall be placed as indicated on the retaining wall construction shop drawings. Additionally, the nonwoven geotextile fabric shall be placed in the v-shaped joint between adjacent block units on the same course. The nonwoven geotextile fabric shall meet the requirements Class 3 construction survivability in accordance with AASHTO M 288.

B. Preapproved Nonwoven Geotextile Products
1. Mirafi 160N
2. Propex Geotex 451
3. Skaps GT-142
4. Thrace-Linq 140EX
5. Carthage Mills FX-40HS
6. Stratatex ST 142

2.03 DRAINAGE AGGREGATE AND WALL INFILL

A. Drainage aggregate (and wall infill for retaining walls designed as modular gravity structures) shall be a durable crushed stone conforming to No. 57 size per ASTM C33 with the following particle-size distribution requirements per ASTM D6913:

U.S. Standard Sieve Size	% Passing
1-½" (38 mm)	100
1" (25 mm)	95-100
½" (13 mm)	25-60
No. 4 (4.76 mm)	0-10
No. 8 (2.38 mm)	0-5

2.04 LEVELING PAD

A. The precast modular block units shall be placed on a leveling pad constructed from reinforced concrete. The leveling pad shall be constructed to the dimensions and limits shown on the retaining wall design drawings prepared by the Retaining Wall Design Engineer.

B. Concrete used for construction of an unreinforced concrete leveling pad shall satisfy the criteria for AASHTO Class B. The concrete should be cured a minimum of 12 hours prior to placement of the precast modular block wall retaining units and exhibit a minimum 28-day compressive strength of 2,500 psi (17.2 MPa).

2.05 DRAINAGE

A. Drainage Pipe
1. Drainage collection pipe shall be a 4" (100 mm) diameter, 3-hole perforated, HDPE pipe with a minimum pipe stiffness of 22 psi (152 kPa) per ASTM D2412.
2. The drainage pipe shall be manufactured in accordance with ASTM D1248 for HDPE pipe and fittings.

B. Preapproved Drainage Pipe Products
1. ADS 3000 Triple Wall pipe as manufactured by Advanced Drainage Systems.

PART 3 – EXECUTION

3.01 GENERAL

A. All work shall be performed in accordance with OSHA safety standards, state and local building codes and manufacturer's requirements.

B. The General Contractor is responsible for the location and protection of all existing underground utilities. Any new utilities proposed for installation in the vicinity of the retaining wall, shall be installed concurrent with retaining wall construction. The General Contractor shall coordinate the work of subcontractors affected by this requirement.

C. New utilities installed below the retaining wall shall be backfilled and compacted to a minimum of 98% maximum dry density per ASTM D698 standard proctor.

D. The General Contractor is responsible to ensure that safe excavations and embankments are maintained throughout the course of the project.

E. All work shall be inspected by the Inspection Engineer as directed by the Owner.

3.02 EXAMINATION

A. Prior to construction, the General Contractor, Grading Contractor, Retaining Wall Installation Contractor and Inspection Engineer shall examine the areas in which the retaining wall will be constructed to evaluate compliance with the requirements for installation tolerances, worker safety and any site conditions affecting performance of the completed structure. Installation shall proceed only after unsatisfactory conditions have been corrected.

3.03 PREPARATION

A. Fill Soil.
1. The Inspection Engineer shall verify that retained backfill material placed within a horizontal distance of one (1.0) times the wall height behind the wall blocks satisfies the criteria of this section.
2. The Inspection Engineer shall verify that any fill soil installed in the foundation and retained soil zones of the retaining wall satisfies the specification of the Retaining Wall Design Engineer as shown on the construction drawings.

B. Excavation.
1. The Grading Contractor shall excavate to the lines and grades required for construction of the precast modular block retaining wall as shown on the construction drawings. The Grading Contractor shall minimize over-excavation. Excavation support, if required, shall be the responsibility of the Grading Contractor.
2. Over-excavated soil shall be replaced with compacted fill in conformance with the specifications of the Retaining Wall Design Engineer.
3. Embankment excavations shall be bench cut as directed by the project Geotechnical Engineer and inspected by the Inspection Engineer for compliance.

C. Foundation Preparation.
1. Prior to construction of the precast modular block retaining wall, the leveling pad area and undercut zone (if applicable) shall be cleared and grubbed. All topsoil, brush, frozen soil and organic material shall be removed. Additional foundation soils found to be unsatisfactory beyond the specified undercut limits shall be undercut and replaced with approved fill as directed by the project Geotechnical Engineer. The Inspection Agency shall ensure that the undercut limits are consistent with the requirements of the project Geotechnical Engineer and that all soil fill material is properly compacted according project specifications. The Inspection Agency shall document the volume of undercut and replacement.
2. Following excavation for the leveling pad and undercut zone (if applicable), the Inspection Agency shall evaluate the in-situ soil in the foundation and retained soil zones.
   a. The Inspection Agency shall verify that the shear strength of the in-situ soil assumed by the Retaining Wall Design Engineer is appropriate. The Inspection Agency shall immediately stop work and notify the Owner if the in-situ shear strength is found to be inconsistent with the retaining wall design assumptions.
   b. The Inspection Agency shall verify that the foundation soil exhibits sufficient ultimate bearing capacity to satisfy the requirements indicated on the retaining wall construction shop drawings per paragraph 1.06 I of this section.
1. The leveling pad shall be constructed to provide a level, hard surface on which to place the first course of precast modular block units. The leveling pad shall be placed in the dimensions shown on the retaining wall construction drawings and extend to the limits indicated.

3.04 PRECAST MODULAR BLOCK WALL SYSTEM INSTALLATION

A. The precast modular block structure shall be constructed in accordance with the construction drawings, these specifications and the recommendations of the retaining wall system component manufacturers. Where conflicts exist between the manufacturer's recommendations and these specifications, these specifications shall prevail.

B. Drainage components. Pipe, geotextile and drainage aggregate shall be installed as shown on the construction shop drawings.

C. Precast Modular Block Installation
1. The first course of block units shall be placed with the front face edges tightly abutted together on adjacent blocks, on the prepared leveling pad at the locations and elevations shown on the construction drawings. The Retaining Wall Installation Contractor shall take special care to ensure that the bottom course of block units are in full contact with the leveling pad, are set level and true and are properly aligned according to the locations shown on the construction drawings.
2. Backfill shall be placed in front of the bottom course of blocks prior to placement of subsequent block courses. Nonwoven geotextile fabric shall be placed in the V-shaped joints between adjacent blocks. Drainage aggregate shall be placed in the V-shaped joints between adjacent blocks, and extend to a minimum distance of 12" (300 mm) behind the block unit.
3. Drainage aggregate shall be placed in 9 inch maximum lifts and compacted by a minimum of three (3) passes of a vibratory plate compactor capable exerting a minimum of 2,000 lb (8.9 kN) of centrifugal force.
4. Unit core fill shall be placed in the precast modular block unit vertical core slot. The core fill shall completely fill the slot to the level of the top of the block unit. The top of the block unit shall be broom-cleaned prior to placement of subsequent block courses. No additional courses of precast modular blocks may be stacked before the unit core fill is installed in the blocks on the course below.
5. Base course blocks for gravity wall designs (without geosynthetic soil reinforcement) may be furnished without vertical core slots. If so, disregard item 4 above, for the base course blocks in this application.
6. Nonwoven geotextile fabric shall be placed between the drainage aggregate and the retained soil (gravity wall design) if required on the retaining wall construction drawings.
7. Subsequent courses of block units shall be installed with a running bond (half block horizontal course-to-course offset). With the exception of 90 degree corner units, the shear channel of the upper block shall be fully engaged with the shear knobs of the block course below. The upper block course shall be pushed forward to fully engage the interface shear key between the blocks and to ensure consistent face batter and wall alignment. Drainage aggregate, unit core fill, geotextile and properly compacted backfill shall be complete and in-place for each course of block units before the next course of blocks is stacked.
8. The elevation of retained soil fill shall not be less than 1 block course (18" (457 mm)) below the elevation of the retained backfill throughout the construction of the retaining wall.
9. If included as part of the precast modular block wall design, cap units shall be secured with an adhesive in accordance with the precast modular block manufacturer's recommendation.

D. Construction Tolerance. Allowable construction tolerance of the retaining wall shall be as follows:
1. Deviation from the design batter and horizontal alignment, when measured along a 10' (3 m) straight wall section, shall not exceed 3/4" (19 mm).
2. Deviation from the overall design batter shall not exceed 1/2" (13 mm) per 10' (3 m) of wall height.
3. The maximum allowable offset (horizontal bulge) of the face in any precast modular block joint shall be 1/2" (13 mm).
4. The base of the precast modular block wall excavation shall be within 2" (50 mm) of the staked elevations, unless otherwise approved by the Inspection Engineer.
5. Differential vertical settlement of the face shall not exceed 1" (300 mm) along any 200' (61 m) of wall length.
6. The maximum allowable vertical displacement of the face in any precast modular block joint shall be 1/2" (13 mm).
7. The wall face shall be placed within 2" (50 mm) of the horizontal location staked.

3.05 WALL INFILL AND BACKFILL PLACEMENT

A. Backfill material placed immediately behind the drainage aggregate shall be compacted as follows:
1. 98% of maximum dry density at ± 3% optimum moisture content per ASTM D698 standard proctor or 85% relative density per ASTM D4254.

B. Compactive effort within 3' (0.9 m) of the back of the precast modular blocks should be accomplished with walk-behind compactors. Compaction in this zone shall be within 95% of maximum dry density as measured in accordance with ASTM D698 standard proctor or 80% relative density per ASTM D 4254. Heavy equipment should not be operated within 3' (0.9 m) of the back of the precast modular blocks.

C. Backfill material shall be installed in lifts that do not exceed a compacted thickness of 9" (230 mm).

D. At the end of each work day, the Retaining Wall Installation Contractor shall grade the surface of the last lift of the granular wall infill to a 3% ± 1% slope away from the precast modular block wall face and compact it.

E. The General Contractor shall direct the Grading Contractor to protect the precast modular block wall structure against surface water runoff at all times through the use of berms, diversion ditches, silt fence, temporary drains and/or any other necessary measures to prevent soil staining of the wall face, scour of the retaining wall foundation or erosion of the reinforced backfill or wall infill.

3.06 OBSTRUCTIONS IN THE INFILL ZONE

A. The Retaining Wall Installation Contractor shall make all required allowances for obstructions behind and through the wall face in accordance with the approved construction shop drawings.

B. Should unplanned obstructions become apparent for which the approved construction shop drawings do not account, the affected portion of the wall shall not be constructed until the Retaining Wall Design Engineer can appropriately address the required procedures for construction of the wall section in question.

3.07 COMPLETION

A. For walls supporting unpaved areas, a minimum of 12" (300 mm) of compacted, low-permeability fill shall be placed over the granular wall infill zone of the precast modular block retaining wall structure. The adjacent retained soil shall be graded to prevent ponding of water behind the completed retaining wall.

B. For retaining walls with crest slopes of 5H:1V or steeper, silt fence shall be installed along the wall crest immediately following construction. The silt fence shall be located 3' to 4' (0.9 m to 1.2 m) behind the uppermost precast modular block unit. The crest slope above the wall shall be immediately seeded to establish vegetation. The General Contractor shall ensure that the seeded slope receives adequate irrigation and erosion protection to support germination and growth.

C. The General Contractor shall confirm that the as-built precast modular block wall geometries conform to the requirements of this section. The General Contractor shall notify the Owner of any deviations.

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REVISIONS		
1	06-25-21	DESIGN REVIEW SUBMITTAL
2	07-27-21	FOR CONSTRUCTION

JRJ
JRJ

JOB NUMBER: 15670-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FRM # C-1538

GENERAL NOTES

TEXAS ROAD RETAINING WALL
MONTREAT,
NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030948 JESSE R. JACOBS

DATE: 07-27-21

01B

0 10 20 Feet

EXTENTS OF EXISTING RETAINING WALL

RETAINING WALL FAILURE

BACK OF 41-INCH BLOCK

FRONT OF NEW RETAINING WALL TO MATCH FRONT OF OLD WALL

BACK OF 60-INCH BLOCK

RETAINING WALL FAILURE

CONTINUE GUARDRAIL ALONG TOP OF HEADWALL

APPROXIMATE LIMITS OF CAST-IN-PLACE CONCRETE HEADWALL (BY OTHERS)

NEW GRAVITY RETAINING WALL TO START AT THE CAST-IN-PLACE CONCRETE HEADWALL

24" CMP

1+10
1+00
0+90
0+80
0+70
0+60
0+50
0+40
0+30
0+20
0+10
0+00

TEXAS ROAD (PUBLIC ASPHALT)

18" CURB AND GUTTER

10" HICKORY

26" OAK

STONE WALL

STREAM

WASHOUT

TEMPORARY ELEVATION B

NOTE: SURVEY DATA PROVIDED BY CIVIL DESIGN CONCEPTS, P.A.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030948 JESSE R. JACOBSON 07/27/21

BUNNELL LAMMONS ENGINEERING
130 Oval Road, Ste 200 | Arden, NC 28704
Phone: (828) 277-0100 Fax: (828) 277-0110

REVISIONS			
1	06-24-21	DESIGN REVIEW SUBMITTAL	JRJ
2	07-27-21	FOR CONSTRUCTION	JRJ

JOB NUMBER: 15670-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FIRM # C-1536

EXISTING CONDITIONS

TEXAS ROAD RETAINING WALL
MONTREAT,
NORTH CAROLINA

DATE: 07-27-21

02

WALL PLAN VIEW ZONE 1

0 5 10 Feet

NEW GRAVITY RETAINING WALL TO START AT THE CAST-IN-PLACE CONCRETE HEADWALL

0+00 0+10 0+20 0+30 0+40 0+50 0+60

APPROXIMATE LOCATION OF 24" CMP SEE PIPE PENETRATION DETAIL 2

BACK OF 41-INCH BLOCK

BACK OF 60-INCH BLOCK

TEXAS ROAD

STREAM

CONTINUE GUARDRAIL ALONG TOP OF HEADWALL

NOTE: SURVEY DATA PROVIDED BY CIVIL DESIGN CONCEPTS, P.A.

NOTE:
UNDERGROUND UTILITIES MAY EXIST THAT ARE NOT LOCATED ON THIS PLAN. CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT 811 PRIOR TO EXCAVATION ONSITE.

NORTH CAROLINA PROFESSIONAL SEAL 030948 ENGINEER JESSE R. JACOBSON

WALL ELEVATION VIEW ZONE 1

CONTINUE GUARDRAIL ALONG TOP OF HEADWALL

MINIMUM GUARDRAIL HEIGHT

GROUND SURFACE ON TEXAS ROAD

APPROXIMATE LIMITS OF CAST-IN-PLACE CONCRETE HEADWALL (BY OTHERS)

GROUND SURFACE AT TOE OF WALL

1 FOOT REINFORCED CONCRETE LEVELLING PAD. SEE DETAIL 5

EMBEDMENT TO BE AT LEAST ONE BLOCK (1.5 FEET) BELOW GRADE

APPROXIMATE LOCATION OF 24" CMP SEE PIPE PENETRATION DETAIL 2

A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-3SC																
F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	A-2SC	A-2SC	A-2SC	A-2SC	A-3SC											
F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC	A-2SC
F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC
60HM	60M	60M	60M	60M	60M	60M	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC
41M	41M	41M	41M	41M	41M	60M	60M		60M	60M	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC	F-HC
41HM	41M	41M	41M	41M	41M	41M	41M	41HM	41HM	41M	60M	60M	60M	60M	60M	60M	60M	60M	60M	60M	60M	60M	60M
41B	41B	41B	41B	41B	41B	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M
						41HB	41B	41B	41B	41B	41B	41HB	41HM	41M	41M	41M	41M	41M	41M	41M	41M	41M	41M
													41B	41B	41B	41B	41B	41B	41				

0+00 0+10 0+20 0+30 0+40 0+50 0+60 0-

0 5 10 Feet

NOTE:
- AT NO POINT SHOULD WALL SURCHARGE EXCEED 250 PSF. NO STOCKPILING OF MATERIALS WITHIN 10 FEET OF WALL FACE
- ALL SURFACE DRAINAGE MODIFICATIONS AND NEW DRAINAGE ROUTES TO BE DESIGNED BY OTHERS

BUNNELL LAMMONS ENGINEERING
130 Oval Road, Ste 200 | Arden, NC 28704
Phone: (828) 277-0100 Fax: (828) 277-0110

REVISIONS		
1	06-25-21	DESIGN REVIEW SUBMITTAL
2	07-27-21	FOR CONSTRUCTION

JRJ
JRJ

JOB NUMBER: 15070-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FIRM # C-1536

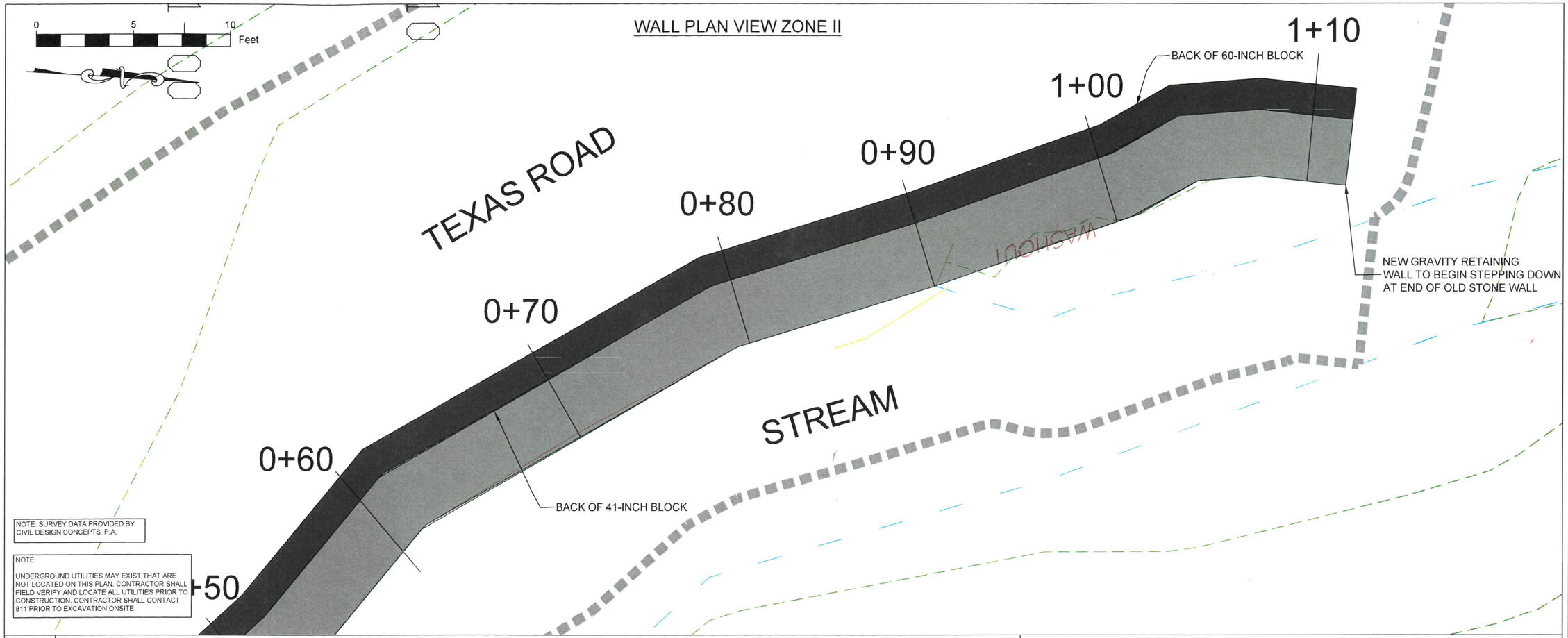
PLAN AND ELEVATION VIEW

TEXAS ROAD RETAINING WALL
RUTHERFORD COUNTY,
NORTH CAROLINA

DATE: 07-27-21

03

WALL PLAN VIEW ZONE II



NOTE: SURVEY DATA PROVIDED BY CIVIL DESIGN CONCEPTS, P.A.

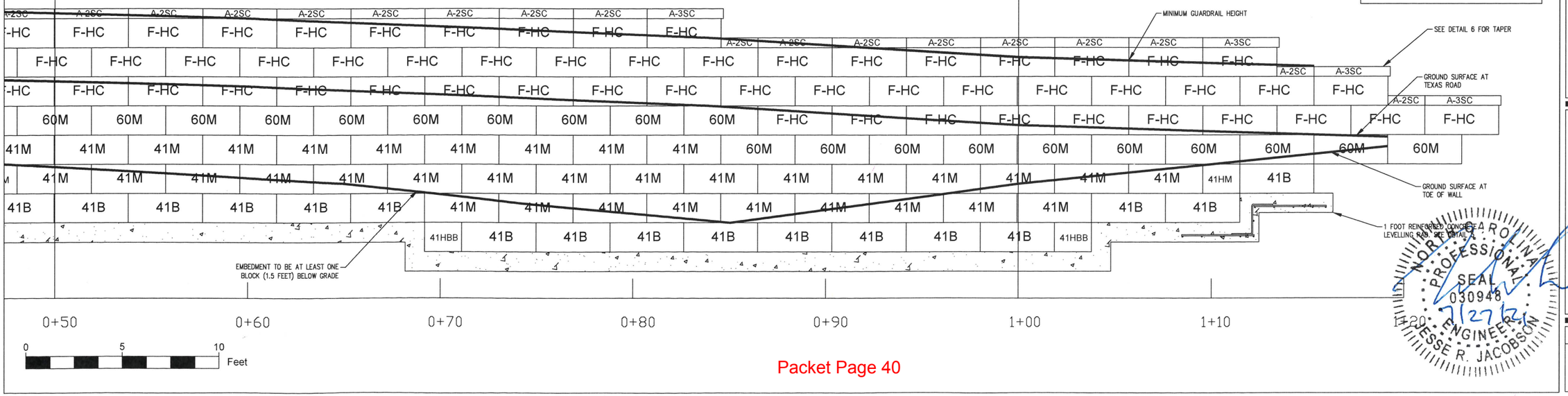
NOTE:

UNDERGROUND UTILITIES MAY EXIST THAT ARE NOT LOCATED ON THIS PLAN. CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT 811 PRIOR TO EXCAVATION ONSITE.

WALL ELEVATION VIEW ZONE II

NOTE:

- AT NO POINT SHOULD WALL SURCHARGE EXCEED 250 PSF. NO STOCKPILING OF MATERIALS WITHIN 10 FEET OF WALL FACE
- ALL SURFACE DRAINAGE MODIFICATIONS AND NEW DRAINAGE ROUTES TO BE DESIGNED BY OTHERS



NORTH CAROLINA PROFESSIONAL SEAL 030948 ENGINEER JESSE R. JACOBSON 7/27/21

BUNNELL LAMMONS ENGINEERING
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	REVISIONS	
1	06-25-21	DESIGN REVIEW SUBMITTAL 06-24-21 JRJ
2	07-27-21	FOR CONSTRUCTION JRJ

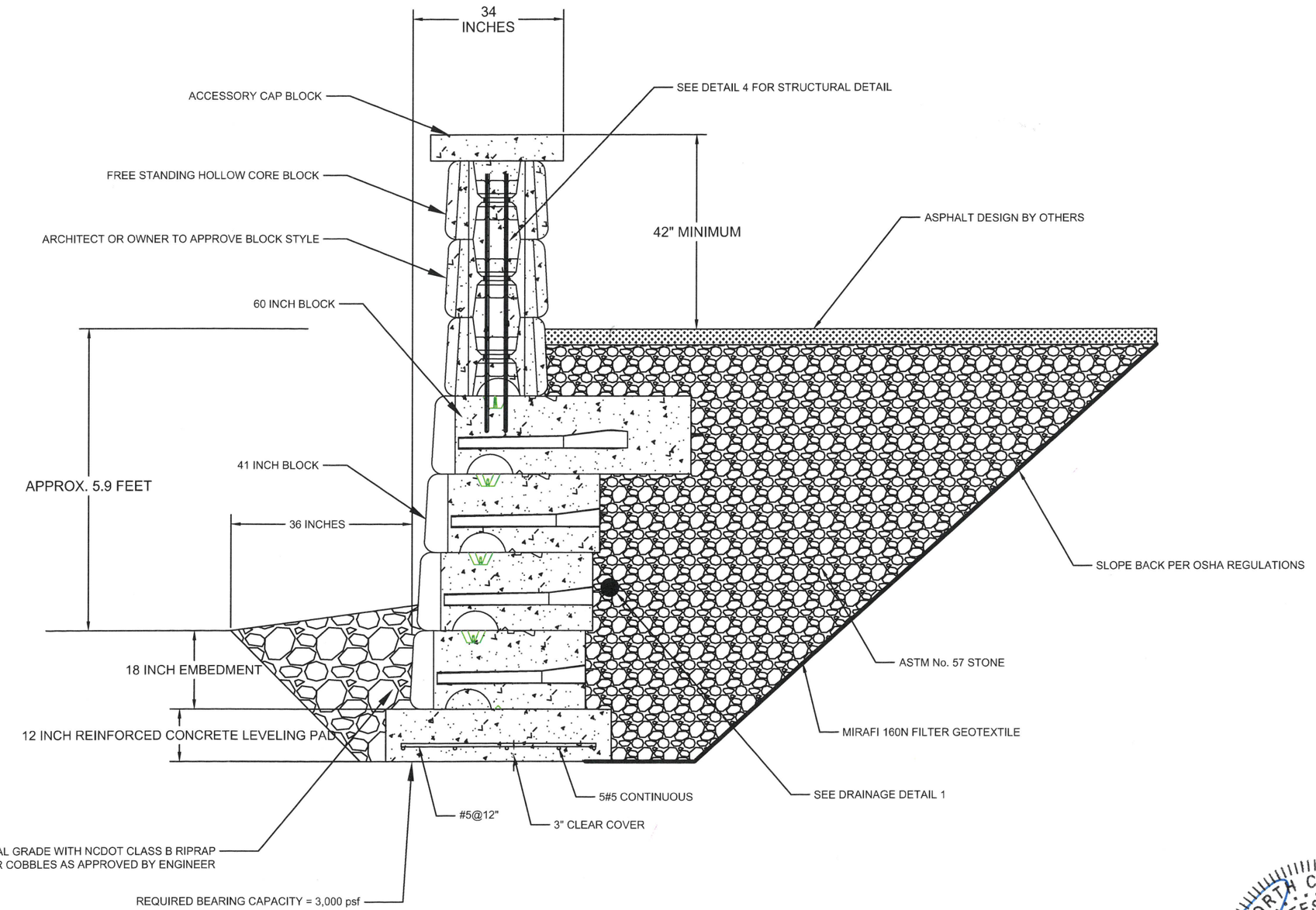
JOB NUMBER: 15670-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FIRM # C-1538

PLAN AND ELEVATION VIEWS

TEXAS ROAD RETAINING WALL
RUTHERFORD COUNTY,
NORTH CAROLINA

DATE: 07-27-21

04



0 2 4 Feet

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		REVISIONS	
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DETAILS

TEXAS ROAD RETAINING WALL
MONTREAT,
NORTH CAROLINA

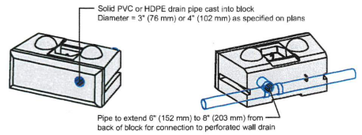
NORTH CAROLINA PROFESSIONAL SEAL 030948 ENGINEER JESSE R. JACOBSON
7/27/21

DATE: 07-27-21

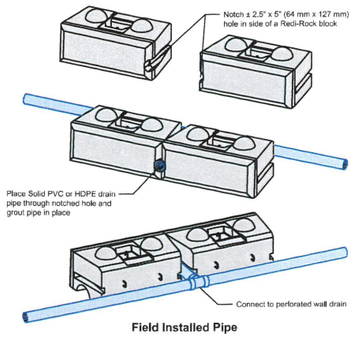
05

1

Wall Drain Weep Hole Options



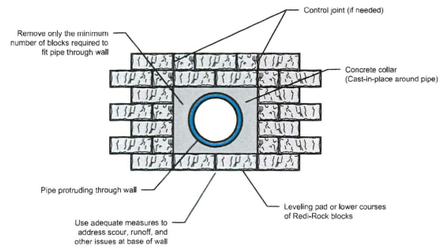
Custom Pipe Cast into Block



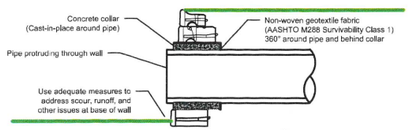
Field Installed Pipe

2

Pipes Installed Perpendicular Through Wall



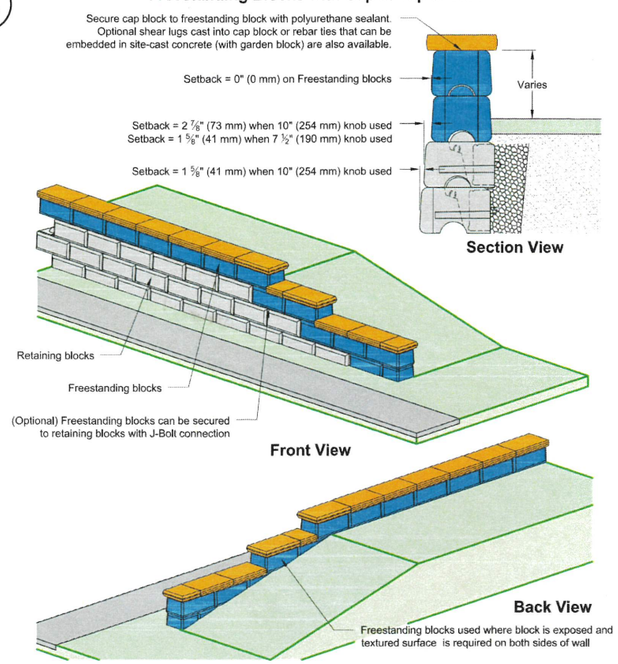
Plan View



Section View

3

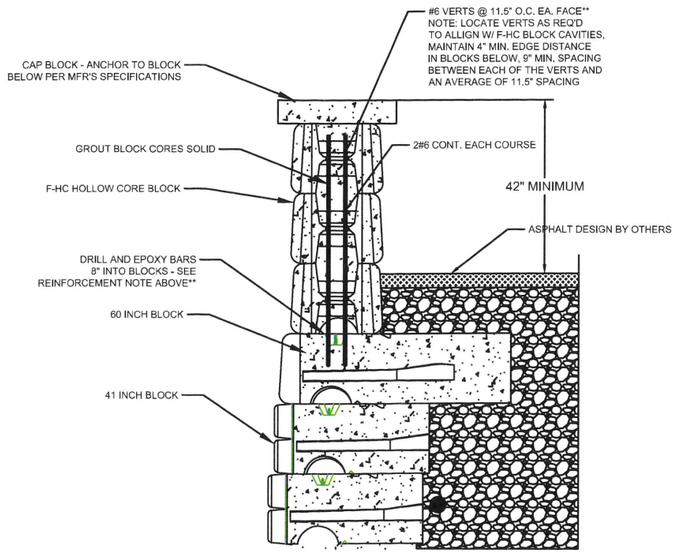
Freestanding Blocks with Cap at Top of Wall



One-component, highly flexible, non-priming, gun grade, high performance elastomeric polyurethane sealant shall have movement of plus or minus 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794. Apply sealant in one and one half-inch (1.5") (38 mm) diameter round "hersey kiss" shaped dollops located in two rows at the top of the Freestanding blocks at 8" (203 mm) on center.

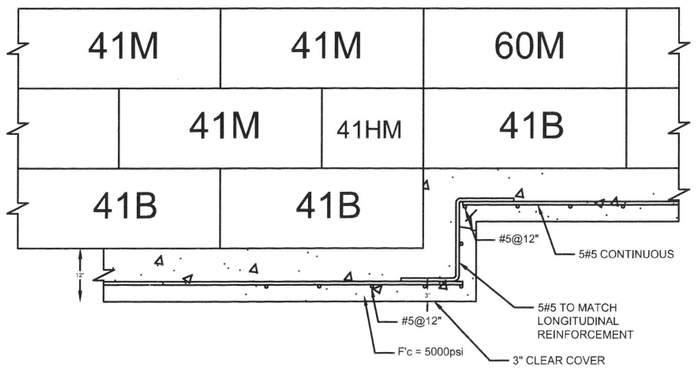
4

Guardrail Detail



5

Concrete Levelling Pad Detail



6

60" BOTTOM BLOCK	60" BOTTOM HALF BLOCK	60" MIDDLE BLOCK	60" MIDDLE HALF BLOCK
TOP VIEW / SIDE VIEW	TOP VIEW / SIDE VIEW	TOP VIEW / SIDE VIEW	TOP VIEW / SIDE VIEW

41" BOTTOM BLOCK	41" BOTTOM HALF BLOCK	41" MIDDLE BLOCK	41" MIDDLE HALF BLOCK
TOP VIEW / SIDE VIEW	TOP VIEW / SIDE VIEW	TOP VIEW / SIDE VIEW	TOP VIEW / SIDE VIEW

F-HC Freestanding Hollow-Core 'Magic Block'	A-2SC Two-Sided Top Cap
TOP VIEW / END VIEW	

NORTH CAROLINA PROFESSIONAL SEAL 030948 ENGINEER JESSE R. JACOBSON 7/27/21

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REVISIONS			
1	06-25-21	DESIGN REVIEW SUBMITTAL 06-25-21	JRJ
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JOB NUMBER: 15670-03
DRAWN BY: CO
DESIGNED BY: CO
REVIEWED BY: JRJ
FRM # C-1538

DETAILS

TEXAS ROAD RETAINING WALL
MONTREAT,
NORTH CAROLINA

DATE: 07-27-21

06

Contract No. _____

AGREEMENT BETWEEN
LAND OF SKY REGIONAL COUNCIL
and
TOWN OF MONTREAT
for the provision of
Technical Service Assistance

July 1, 2021 through June 30, 2022

This **AGREEMENT**, entered into on the _____ 2021 , by and between the Land of Sky Regional Council of Governments (hereinafter referred to as the "Council") and the Town of Montreat, North Carolina (hereinafter referred to as the "Local Government"); **WITNESSETH THAT:**

WHEREAS, the Council is empowered to provide technical assistance by the North Carolina General Statutes and by resolution passed by the Council on April 17, 1972. Technical assistance shall consist of the provisions of services as described in Attachment A, which is herein made part of this Contract;

WHEREAS, the Local Government has requested the Council to provide such technical assistance to the Local Government and;

WHEREAS, the Council desires to cooperate with the Local Government in every way possible to the end that the proposed activities are carried out in an efficient and professional manner;

NOW, **THEREFORE**, the parties hereto do mutually agree as follows:

1. **Personnel**
   That during the period of this Contract, the Council will furnish the necessary trained personnel to the Local Government for 24 hours per week.

2. **Compensation**
   That for the purpose of providing funds for carrying out this Contract, the Local Government will pay the Council a fee of no more than $58,656.00 annually (fifty-eight thousand, six hundred and fifty-six dollars). These fees will be billed in twelve equal monthly payments of $4,888 (four thousand, eight hundred and eighty-eight dollars) during the period noted in Section 5.

3. **Travel/Printing**
   The Local Government will pay for additional expenses related to conferences, conventions, seminars, local travel, etc. of the personnel when the Local Government requests or approves travel related to the Local Government's planning program, or if it is beneficial to both parties, the costs will be shared on an agreed-upon ratio. The Local Government will also pay for expenses related to printing of report(s), mailings to advisory boards, and other costs not related to normal staffing costs associated with personnel furnished by the Council. The contract budget does not include travel for conferences or other purposes that may arise.

Land of Sky Regional Council will pay for expenses related to training, certifications, and educational opportunities as approved and of benefit to the region, council and staff.

4. **Termination/Modifications**
The Local Government or Council may terminate the contract by giving a thirty-day written notice to the other entity. Furthermore, if there is a need to amend the proposal outlined in Attachment A, either party may do so with the written consent of the other.

5. **Time of Performance**
The Council shall ensure that all services required herein shall be completed and all required reports, maps, and documents submitted during the period beginning July 1, 2021 and ending June 30, 2022.

6. **Changes**
The Local Government may from time to time request changes in the scope of work or services to be performed by the Council hereunder. Such changes, including any increases or decreases in the Council's compensation, which are mutually agreed upon by and between the Local Government and Council, shall be incorporated as written amendments to the Contract.

7. **Interest of Members, Officers, or Employees of the Council, Members of the Local Government, or Other Public Officials**
No member, officer, or employee of the Council or its agents; no member of the governing body of the locality in which the program is situated; and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the program during his or her tenure or for one year thereafter, shall have any financial interests, either direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with the program assisted under this Agreement. Immediate family members of said members, officers, employees, and officials are similarly barred from having any financial interests in the program. The Council shall incorporate, or cause to be incorporated, in all such contracts or subcontracts, a provision prohibiting such interest pursuant to the purpose of this section.

8. **Nondiscrimination Clause**
No person in the United States shall on the grounds of race, color, national origin, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination with any program or activity funded in whole or in part with funds available under the Housing and Development Act of 1974, Section 109.

9. **Age Discrimination Act of 1975, as amended**
No qualified person shall on the basis age be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination under any program or activity which receives benefits from federal financial assistance.

10. **Section 504, Rehabilitation Act of 1973, as amended**
No qualified handicapped person shall, on the basis of handicap be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity which receives or benefits from federal financial assistance.

11. **E-Verify Provision**
    Pursuant to G.S. 143-48.5 and G.S. 147-33.95(g), the undersigned hereby certifies that the Contractor named below, and the Contractor's subcontractors, complies with the requirements of Article 2 of Chapter 64 of the NC General Statutes, including the requirement for each employer with more than 25 employees in North Carolina to verify the work authorization of its employees through the federal E-Verify system. E-Verify System Link: www.uscis.gov

Town of Montreat	**Land of Sky Regional Council**
By: _____	By: _____
Title: Town Administrator	Title: Executive Director
Date: _____	Date: _____

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

_____, Finance Officer Date _____

ATTACHMENT A

TOWN OF MONTREAT
TECHNICAL PLANNING ASSISTANCE

WORK PROGRAM / BUDGET

The following work program and budget are presented as descriptive of the work and dollar amounts called for in the agreement concerning planning activities by the Land of Sky Regional Council of Governments for the Town of Montreat. The product(s) of the planning activities shall be:

WORK PROGRAM

1. Code Administration

   Assistance in the administration of the Town's Code Enforcement, Zoning Ordinance and Subdivision Regulations will be provided. Planning advice and staff memoranda and recommendations will be provided to the Town Council, Town Administrator, Attorney, Planning Board, and Board of Adjustment. Some examples of duties include staff administration of zoning permits, rezoning applications and hearings, Board of Adjustment applications and hearings, site plan reviews, and subdivision reviews.

2. Other Duties as Directed by Town Administrator

   It is understood that priority changes and/or substitutions may be made by the Town Administrator as needed to include work in such areas as floodplains, extraterritorial zoning, or other planning-related topics, not to exceed the dollar/time/travel amount of this contract.

REUBEN CALDWELL DRILLING, Inc.
351 New Leicester Hwy.
Asheville, NC 28806
828-254-3581

August 3, 2021

This Construction Contract (the "Contract") is made as of this 3rd day of Aug, 2021, by and between Reuben Caldwell Drilling, Inc and Town of Montreat.

WITNESSETH:

1) Scope of Work:

Reuben Caldwell Drilling, Inc. will provide all materials, services, and labor for the installing of a new pump and motor, 10 hp-25 gpm, new 2 inch galvanized drop pipe (357' feet), and new wire (10-3 w/ground) in the well.

2) Contract Price:

The cost of the work provided is as follows:

New pump installation - $14,799.00

Tax - $1,035.93

Total $15,834.93

These are subject to any additions and/or subtractions made pursuant to authorized change orders.

3) Payments:

Upon completion of the work described above, the Town of Montreat will be billed and payment will be expected in a timely manner (30-60) days.

Signed this 3rd day of Aug, 2021.

Jeff Brackett, Manager
Reuben Caldwell Drilling, Inc.

_____
Town of Montreat Representative

[Type here]

JUNE 2020 - MONTH 12 OF FISCAL YEAR 2019-2020

REVENUES

Fund	Fund #	Budget	YTD Budget	YTD Collected	Difference
GENERAL FUND	10	2,423,561.29	2,423,561.29	2,006,019.77	(417,541.52)
WATER FUND	30	401,896.00	401,896.00	354,562.44	(47,333.56)
TOTAL REVENUES GENERAL & WATER FUNDS		**2,825,457.29**	**2,825,457.29**	**2,360,582.21**	**(464,875.08)**

EXPENSES

Dept Name	Fund #	Budget	YTD Budget	YTD Exp	Difference
GOVERNING BODY	10	152,240.17	152,240.17	111,695.15	40,545.02
ADMINISTRATION	10	430,103.35	430,103.35	409,599.83	20,503.52
PUBLIC BUILDINGS	10	413,391.53	413,391.53	31,641.47	381,750.06
POLICE	10	463,310.00	463,310.00	454,199.28	9,110.72
BUILDING AND ZONING	10	124,660.00	124,660.00	107,525.04	17,134.96
PUBLIC WORKS	10	160,481.79	160,481.79	160,297.80	183.99
STREET	10	533,508.14	533,508.14	534,910.33	(1,402.19)
SANITATION	10	115,462.21	115,462.21	112,600.85	2,861.36
ENVIRON,CONS,REC	10	30,404.10	30,404.10	26,700.23	3,703.87
TOTAL EXPENSES GENERAL FUND		**2,423,561.29**	**2,423,561.29**	**1,949,169.98**	**474,391.31**

Dept Name	Fund #	Budget	YTD Budget	YTD Exp	Difference
WATER	30	401,896.00	401,896.00	326,438.07	75,457.93
TOTAL EXPENSES WATER FUND		**401,896.00**	**401,896.00**	**326,438.07**	**75,457.93**

TOTAL EXPENSES GENERAL & WATER FUNDS	**$2,825,457.29**	**$2,825,457.29**	**$2,275,608.05**	**$549,849.24**

GENERAL FUND INCOME/LOSS - YTD	**$56,849.79**
WATER FUND INCOME/LOSS - YTD	**$28,124.37**
NET INCOME - YTD 2020	**$84,974.16**

SPECIAL PROJECTS

Project	Fund #	Budget	This Month Actual	Amount Spent To Date	% Spent
TOWN HALL	13	2,089,267.67	116,445.69	1,942,695.76	92.98%
PUBLIC WORKS BLDG	14	403,888.86	49,456.52	354,750.21	87.83%
FEMA-GREYBEARD	15	218,232.00	9,596.43	238,359.95	109.22%
FEMA-TEXAS ROAD	16	50,000.00	0.00	38,071.55	76.14%
FEMA-PROVIDENCE TERR	17	21,000.00	0.00	15,683.00	74.68%
FEMA-CALVIN TRAIL	20	30,000.00	0.00	13,490.57	44.97%
FEMA-CULVERT PROJECT	21	39,800.00	0.00	39,274.83	98.68%
FEMA-DEBRIS PROJECTS	22	3,200.00	0.00	0.00	0.00%
FEMA-URBAN FORESTRY 2018	23	10,000.00	0.00	841.28	8.41%
FEMA-URBAN FORESTRY 2019	24	10,114.00	0.00	2,352.41	23.26%
FEMA-MISC	25	15,360.00	0.00	11,290.00	73.50%
LANDCARE	26	750.00	0.00	49.95	6.66%
TOTAL SPECIAL PROJECTS	N/A	**$ 2,891,612.53**	**$ 175,498.64**	**$ 2,656,859.51**	**91.88%**

This Month Actual
204,651.91
56,507.07
261,158.98

This Month Actual
(27,380.50)
59,950.69
7,235.47
34,698.16
22,350.82
11,532.47
22,049.14
11,468.75
11,485.53
153,390.53

This Month Actual
15,163.88
15,163.88

168,554.41

JUNE 2021 - MONTH 12 OF FISCAL YEAR 2020-2021

REVENUES

Fund	Fund #	Budget	YTD Budget	YTD Collected	Difference
GENERAL FUND	10	1,917,820.92	1,917,820.92	1,934,204.14	16,383.22
WATER FUND	30	311,250.00	311,250.00	335,397.52	24,147.52
TOTAL REVENUES GENERAL & WATER FUNDS		**2,229,070.92**	**2,229,070.92**	**2,269,601.66**	**40,530.74**

EXPENSES

Dept Name	Fund #	Budget	YTD Budget	YTD Exp	Difference
GOVERNING BODY	10	53,562.00	53,562.00	28,542.89	25,019.11
ADMINISTRATION	10	451,465.00	451,465.00	415,759.08	35,705.92
PUBLIC BUILDINGS	10	250,985.10	250,985.10	222,915.95	28,069.15
POLICE	10	438,298.82	438,298.82	410,862.59	27,436.23
BUILDING AND ZONING	10	76,310.00	76,310.00	63,277.62	13,032.38
PUBLIC WORKS	10	249,157.00	249,157.00	241,261.38	7,895.62
STREET	10	252,346.00	252,346.00	224,777.86	27,568.14
SANITATION	10	123,597.00	123,597.00	118,622.71	4,974.29
ENVIRON,CONS,REC	10	22,100.00	22,100.00	9,583.78	12,516.22
TOTAL EXPENSES GENERAL FUND		**1,917,820.92**	**1,917,820.92**	**1,735,603.86**	**182,217.06**

Dept Name	Fund #	Budget	YTD Budget	YTD Exp	Difference
WATER	30	311,250.00	311,250.00	269,711.29	41,538.71
TOTAL EXPENSES WATER FUND		**311,250.00**	**311,250.00**	**269,711.29**	**41,538.71**
TOTAL EXPENSES GENERAL & WATER FUNDS		**$2,229,070.92**	**$2,229,070.92**	**$2,005,315.15**	**$223,755.77**

GENERAL FUND INCOME/LOSS - YTD	**$198,600.28**
WATER FUND INCOME/LOSS - YTD	**$65,686.23**
NET INCOME - YTD 2021	**$264,286.51**

SPECIAL PROJECTS

Project	Fund #	Budget	This Month Actual	Amount Spent To Date	% Spent
TOWN HALL	13	2,294,425.77	0.00	2,222,293.91	96.86%
PUBLIC WORKS BLDG	14	403,888.86	1,892.30	394,053.92	97.56%
FEMA-GREYBEARD	15	242,684.30	0.00	242,684.30	100.00%
FEMA-TEXAS ROAD	16	50,000.00	0.00	38,071.55	76.14%
FEMA-PROVIDENCE TERR	17	21,000.00	0.00	15,683.00	74.68%
FEMA-CALVIN TRAIL	20	30,000.00	0.00	13,490.57	44.97%
FEMA-CULVERT PROJECT	21	39,800.00	0.00	39,274.83	98.68%
FEMA-DEBRIS PROJECTS	22	3,200.00	0.00	0.00	0.00%
FEMA-URBAN FORESTRY 2018	23	10,000.00	0.00	841.28	8.41%
FEMA-URBAN FORESTRY 2019	24	10,114.00	0.00	2,352.41	23.26%
FEMA-MISC	25	183,943.00	7,705.90	43,510.61	23.65%
LANDCARE	26	750.00	0.00	49.95	6.66%
CARES ACT GRANT	27	9,697.06	0.00	3,962.04	40.86%
TOTAL SPECIAL PROJECTS		**$ 3,299,502.99**	**$ 9,598.20**	**$ 3,016,268.37**	**91.42%**

Date of Deposit	Jul-20	Jul-21	% +/-	Aug-20	Aug-21	% +/-	Sep-20	Sep-21	% +/-	Oct-20	Oct-21	% +/-	Nov-20	Nov-21
AdVal/RMV (Includes Sp Assess&Ded Fees)	1,392.91	2,920.94	**52%**											
Sales	28,659.10	40,374.75	**29%**											
Solid Waste (Quarterly)														
Utility Fran (Quarterly)														
Wine/Beer (Annual-May)														

NOTES:
AdVal Tax is received the month after the tax is collected
RMV Tax is received two months after the tax is collected
Sales Tax is received three months after the tax is collected

% +/-	Date of Deposit	Dec-20	Dec-21	% +/-	Jan-21	Jan-22	% +/-	Feb-21	Feb-22	% +/-	Mar-21	Mar-22

% +/-	Apr-21	Apr-22	% +/-	May-21	May-22	% +/-	Jun-21	Jun-22	% +/-