SITE CONSTRUCTION PLANS FOR:

HARNETT COUNTY DRB NO. SITE2506-0001

I, LUIS ACEVEDO TIRADO, AS THE OWNER OF RECORD, I HEREBY FORMALLY CONSENT TO THE PROPOSED DEVELOPMENT SHOWN ON THIS SITE PLAN AND ALL REGULATIONS AND REQUIREMENTS OF THE HARNETT COUNTY ORDINANCES.

SIGNATURE 12/11/25 DATE

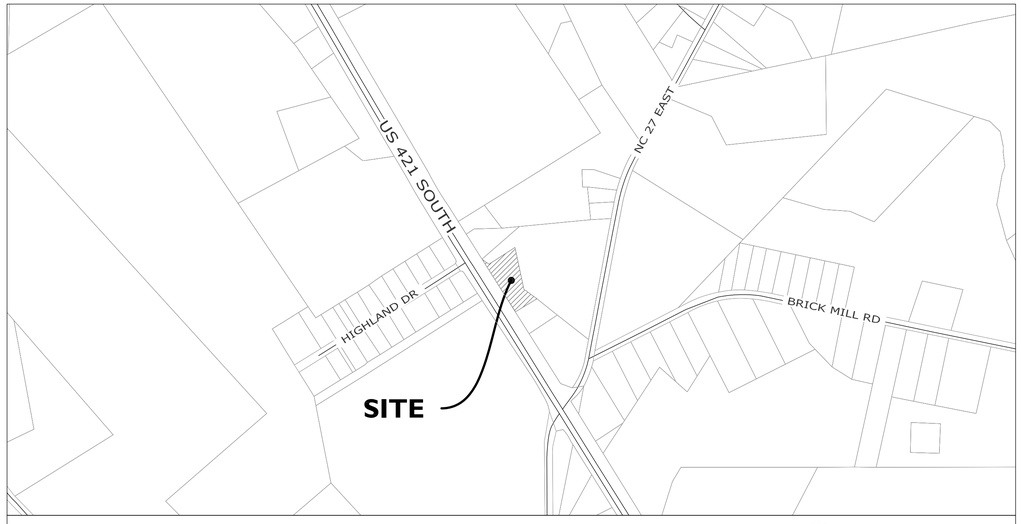
Harnett COUNTY NORTH CAROLINA

I hereby certify that the Harnett County Development Review Board has approved this Site Plan pursuant to the regulations set forth by E-911 Addressing, Environmental Health, Fire Marshal, Planning, and Harnett Regional Water. This project is subject to all federal, state, and local government regulations and applicable expiration periods.

12/17/25

TIRADO TRUCK REPAIR

US 421 SOUTH
HARNETT COUNTY, NORTH CAROLINA
PIN NO. 0589-17-0727



LOCATION MAP
SCALE: 1 INCH = 500 FT

NORTH

OWNER INFORMATION

LUIS ACEVEDO TIRADO
3577 OLD US 421
LILLINGTON, NC 27546
EMAIL: L.ACEVEDO95@GMAIL.COM
TEL: 919-648-3999

SHEET INDEX (12 SHEETS TOTAL)

C1 COVER SHEET
C2 EXISTING CONDITIONS AND DEMOLITION
C3 SITE LAYOUT
C4 GRADING AND STORM DRAINAGE
C5 SITE UTILITY
C6 TEMP. EROSION CONTROL
C7 SANITARY SEWER PLAN / PROFILE
HARNETT REGIONAL WATER STANDARD NOTES
C8 CONSTRUCTION DETAILS
C9 STANDARD DRAWINGS - HARNETT REGIONAL WATER
C10 STANDARD DRAWINGS - NCDOT / NCDEQ
C11 STANDARD DRAWINGS - NCDEQ
L-1 LANDSCAPE PLAN

CALL BEFORE YOU DIG
North Carolina 811 www.nc811.org

LEGEND OF ABBREVIATIONS

BC	BACK OF CURB	LP	LIGHT POLE
CB	CATCH BASIN	N/F	NOW OR FORMERLY
CO	CLEAN OUT	P.E.	PERMANENT EASEMENT
CPP	CORRUGATED PLASTIC PIPE	PVC	POLYVINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE	PP	POWER POLE
C & G	CURB & GUTTER	RCP	REINFORCED CONCRETE PIPE
DI	DROP INLET	RRX	RAILROAD CROSSING
DIP	DUCTILE IRON PIPE	R / W	RIGHT OF WAY
EG	EDGE OF GRAVEL	SS OR SAN	SANITARY SEWER
EP	EDGE OF PAVEMENT	SSMH	SANITARY SEWER MANHOLE
EB	ELECTRICAL BOX	T.C.E.	TEMPORARY CONSTRUCTION EASEMENT
EV	ELECTRICAL VAULT	TMH	TELECOMMUNICATION MANHOLE
EL	ELEVATION	TF	TRANSFORMER
ECM	EXISTING CONCRETE MONUMENT	TP	TELEPHONE PEDESTAL
EIP	EXISTING IRON PIN	TS	TOP OF SIDEWALK
EPK	EXISTING PK NAIL	TSP	TRAFFIC SIGNAL POLE
FO	FIBER OPTIC	TW	TOP OF WALL
FOM	FIBER OPTIC MARKER	UC	UNDERGROUND COMMUNICATIONS
FOB	FIBER OPTIC BOX	VB	VALVE BOX
FH	FIRE HYDRANT	WM	WATER METER
GUY	GUY WIRE	WV	WATER VALVE
HP	HIGH POINT	WCR	WHEELCHAIR RAMP
INV	INVERT	YI	YARD INLET
JB	JUNCTION BOX (STORM)		
IPS	IRON PIN SET		

LEGEND OF SYMBOLS AND LINES

PROPERTY CORNER		RIGHT OF WAY	
UTILITY POLE		PROPERTY LINE	
LIGHT POLE		UTILITY EASEMENT	
TELEPHONE PEDESTAL		CENTER LINE	
GATE VALVE		LIMIT OF DISTURBANCE	
WATER METER	WM	UNDERGROUND ELECTRIC LINE	UE
FIRE HYDRANT		OVERHEAD ELECTRIC LINE	OHE
SEWER MANHOLE		SANITARY SEWER (GRAVITY)	SAN
SEWER CLEANOUT		SANITARY SEWER (FORCEMAIN)	FM
CATCH BASIN		STORM DRAIN PIPE	
YARD INLET / DROP INLET		WATER LINE	W
STORM JUNCTION BOX / MH		GAS LINE	GAS
HANDICAP		COMMUNICATIONS LINE	T
SPOT ELEVATION	100.00	FIBER OPTIC LINE	FO
SIGN		FENCE LINE	
ALIGNMENT CHANGE		TREE LINE	
PVI		DRAINAGE FLOW	
DELTA		CURB AND GUTTER	
		CURB AND GUTTER (SPILL)	
		CONCRETE PAVEMENT	
		ASPHALT PAVEMENT	
		GRAVEL SURFACE	

NOTE:
EXISTING FEATURES ARE SHOWN SHADED.

JUNE 24, 2025

ISSUED FOR CONSTRUCTION 1-12-26

J THOMAS ENGINEERING, INC.
CIVIL ENGINEERING & PLANNING
143 Charlotte Avenue, Suite 104
Sanford, North Carolina 27330
(919) 777-6010 phone
www.jthomasengineering.com
license no. C-3389

SEAL 027472 ENGINEER

6.24.25

ISSUED FOR CONSTRUCTION

JTE Project No. 25-009

File: C:\Users\jthom\OneDrive\Documents\PROJECTS\25-009 TIRADO TRUCK REPAIR\DRAWINGS\SITE - TIRADO TRUCK REPAIR.dwg Print Date: 1/12/2026

NOTES

1. THE PROPERTY IS CURRENTLY ZONED COMMERCIAL (HARNETT COUNTY).
2. PROPOSED LIMIT OF DISTURBANCE IS LESS THAN ONE ACRE. A NCDEQ EROSION CONTROL PERMIT IS NOT REQUIRED FOR THIS PROJECT.
3. SURVEYS USED TO PREPARE THESE SITE PLANS WERE PROVIDED BY THE OWNER (FIELDS SURVEYING). THE HORIZONTAL DATUM IS NAD83. THE VERTICAL DATUM IS NAVD 88. JTE DID NOT MAKE ANY ADDITIONAL SURVEYS.
4. ACCORDING TO THE HARNETT COUNTY GIS, THERE ARE NO APPARENT JURISDICTIONAL WATERS PRESENT ON THE SUBJECT PROPERTY.
5. ACCORDING TO THE NCDEQ WATER SUPPLY WATERSHED MAP, THE SUBJECT PROPERTY IS LOCATED IN THE CAPE FEAR WSIV WATER SUPPLY WATERSHED.
6. DEMOLITIONED ITEMS TO BE DISPOSED IN ACCORDANCE WITH LOCAL REQUIREMENTS.
7. CONTRACTOR SHALL NOT REMOVE EXISTING VEGETATION / LANDSCAPING OUTSIDE THE LIMIT OF DISTURBANCE.
8. OWNER RESPONSIBLE FOR OBTAINING TEMPORARY CONSTRUCTION EASEMENT (OR AGREEMENT) FROM ADJACENT PROPERTY OWNER(S) FOR ANY WORK THAT MAY BE REQUIRED ON PRIVATE / PUBLIC PROPERTY(S).
9. THE OWNER MUST OBTAIN APPROPRIATE APPROVALS FOR ANY OFF-SITE WORK, INCLUDING THE NCDOT FOR WORK IN THE R/W OF US 421. CONTRACTOR TO FOLLOW THE SPECIFIC REQUIREMENTS PROVIDED IN THE NCDOT ENCROACHMENT AGREEMENT AND DRIVEWAY PERMIT.
10. UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL BE CONSIDERED APPROXIMATE. ADDITIONAL UTILITIES MAY BE PRESENT WITHIN THE WORK AREA. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO BEGINNING WORK.
11. CONTRACTOR TO REVIEW SITE ACCESS, MATERIAL STORAGE, AND STAGING AREAS WITH OWNER PRIOR TO BEGINNING WORK.
12. CONTRACTOR TO COORDINATE PROPOSED WORK WITH THE APPROPRIATE UTILITY OWNER PRIOR TO BEGINNING THE WORK. REMOVAL/RELOCATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, OR OTHERWISE, MAY BE NECESSARY TO COMPLETE THE PROPOSED WORK.

N/F
ZONED RA-40
BARBARA C. TURLINGTON
DEED BOOK 3466, PAGE 8
MAP NUMBER 2016-326
PIN 0589-17-5918

N/F
ZONED RA-40
DOUGLAS LAPAN
DEED BOOK 3497, PAGE 527
PIN 0589-17-1680

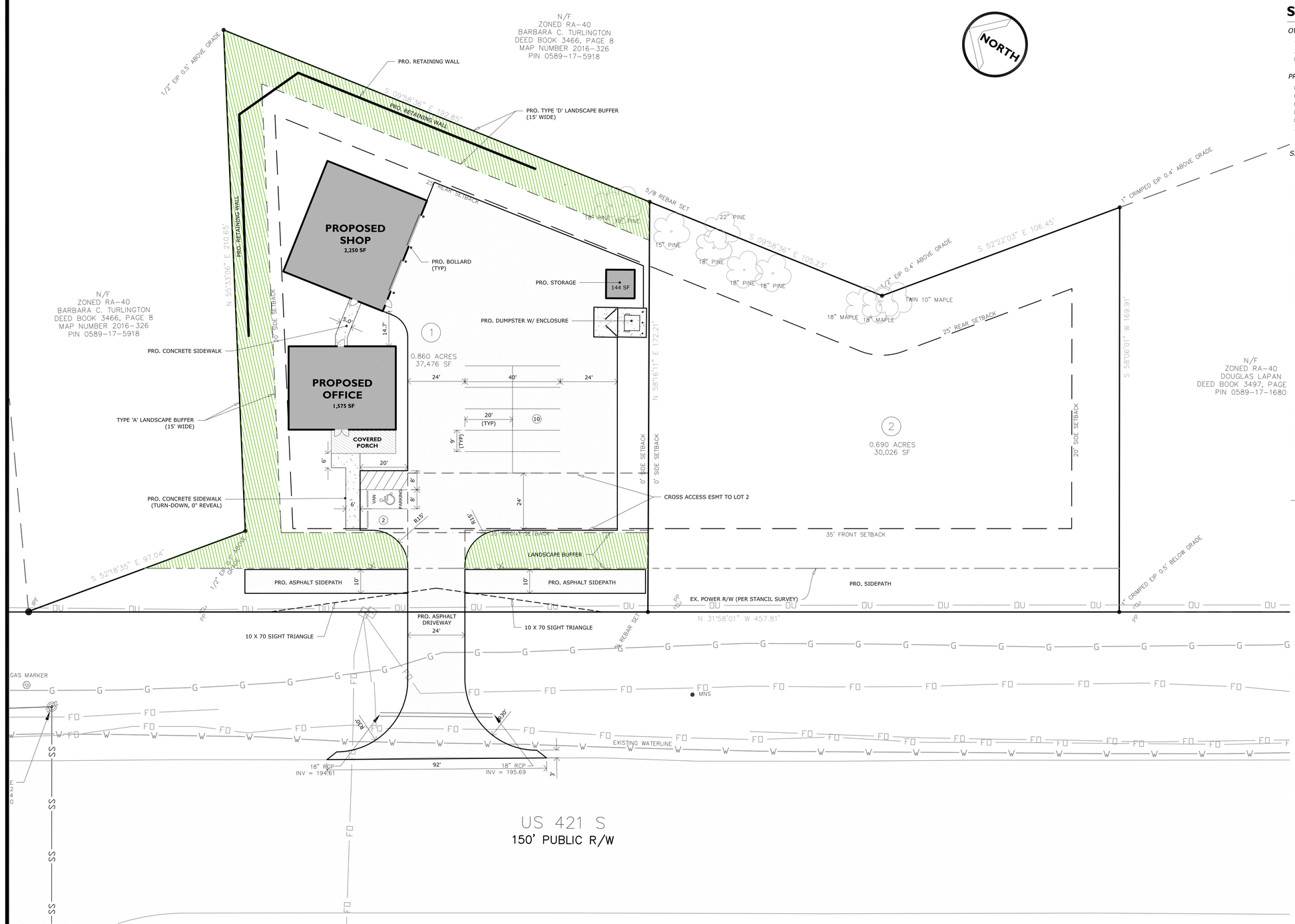
1/2" EIP 0.5' ABOVE GRADE
S 09°58'36" E 192.84'
24" PINE
18" PINE
22" PINE
5/8 REBAR SET
25' REAR SETBACK
REMOVE EX. TREE (TYP)
PRO. LIMIT OF DISTURBANCE (TYP)
20' SIDE SETBACK
S 09°58'36" E 105.24'
1/2" EIP 0.4' ABOVE GRADE
1" CRIMPED EIP 0.4' ABOVE GRADE
S 52°22'03" E 106.45'
TWIN 10" MAPLE
18" MAPLE
S 58°06'01" W 169.91'
S 25°53'08" E 210.66'
N 58°16'11" E 172.21'
1
0.860 ACRES
37,476 SF
2
0.690 ACRES
30,026 SF
PRO. SUBDIVISION LINE (BY OTHERS)
0' SIDE SETBACK
35' FRONT SETBACK
1/2" EIP 0.7' ABOVE GRADE
S 52°18'35" E 97.04'
N 31°58'01" W 457.81'
1" CRIMPED EIP 0.5' BELOW GRADE
GAS MARKER
EXISTING 8" SEWER
MNS
EXISTING WATERLINE
EXISTING FIRE HYDRANT
18" RCP
INV = 194.61
18" RCP
INV = 195.69
SANITARY SEWER MANHOLE
RIM ELEV = 195.32
INV IN = 186.04
INV OUT = 185.70
CRIMPED EIP
N=697,749.777' SFT
E=2,081,137.304' SFT
US 421 S
150' PUBLIC R/W

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC		Date: 24 JUN 2025	Drawn by: JRT	Scale: 20 0 10 20 40 SCALE: 1" = 20'	**REVISIONS** 12 JAN 2026: ISSUED FOR CONSTRUCTION
Sheet: **EXISTING CONDITIONS AND DEMOLITION**	ISSUED FOR CONSTRUCTION	JTE Project No. 25-009	Designed by: JRT		
		Sheet No.: **C2 of 12**	Reviewed by: JRT		

PROFESSIONAL ENGINEER'S SEAL — SEAL 027472 ENGINEER — 6.24.25

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File: C:\Users\jthom\OneDrive\Documents\PROJECTS\25-009 TIRADO TRUCK REPAIR\DRAWINGS\SITE - TIRADO TRUCK REPAIR.dwg Print Date: 1/12/2026



SITE DATA

OWNER:

TIRADO, LUIS ANTONIO ACEVEDO
3577 OLD US 421
LILLINGTON, NC 27546

PROPERTY ID:

HARNETT COUNTY, NORTH CAROLINA
DEED REFERENCE: 4182 / 1264
PLAT REFERENCE: 2023 / 130
HARNETT COUNTY PIN NO.: 0589-17-0727.000
PID: 110589 0009 01
ADDRESS: US 421 S.
LILLINGTON, NC 27546

SITE INFO:

JURISDICTION:	HARNETT COUNTY
TOWNSHIP:	NEILLS CREEK
ZONING CLASSIFICATION, EXISTING:	COMMERCIAL
ZONING CLASSIFICATION, PROPOSED:	COMMERCIAL
PROPERTY ACREAGE:	1.55 AC +/- 0.86 AC (PRO. LOT 1) 0.69 AC (PRO. LOT 2)
USE, EXISTING:	UNIMPROVED LAND
USE, PROPOSED:	COMMERCIAL
BUILDING GSF, EXISTING:	0 SF
BUILDING GSF NEW:	3,825 SF +/-
BUILDING GSF, PROPOSED (EX TO REMAIN + NEW):	3,825 SF +/-
BUILDING HEIGHT, MAX ALLOWED:	35 FT
BUILDING HEIGHT, PROPOSED:	34 FT +/-
PARKING SPACES, REQUIRED:	11 (3 PER BAY (2 BAYS)+ 1 PER EMPLOYEE (5 EMPLOYEES))
PARKING SPACES, EXISTING:	0
PARKING SPACES, PROPOSED (EX + NEW):	12 (INCLUDES 1 ADA SPACES)
IMPERVIOUS AREA, MAX ALLOWED:	70% (WATERSHED - MUST BE APPROVED BY HARNETT CO.)
IMPERVIOUS AREA, EXISTING:	0 SF (0%)
IMPERVIOUS AREA, PROPOSED (EX TO REMAIN + NEW):	19,145 SF +/- (51% OF LOT 1)
DISTURBED AREA, PROPOSED:	0.98 AC
STREET YARD, REQUIRED (US 421):	15 FT
BUFFER YARD, REQUIRED (SIDE, NORTH):	15 FT
BUFFER YARD, REQUIRED (SIDE, SOUTH):	0 FT
BUFFER YARD, REQUIRED (REAR):	15 FT
SETBACK, REQUIRED (FRONT):	35 FT
SETBACK, REQUIRED (SIDE, NORTH):	20 FT
SETBACK, REQUIED (SIDE, SOUTH):	0 FT
SETBACK, REQUIRED (REAR):	25 FT
FRONTAGE STREET:	PUBLIC (NCDOT)
WATER SUPPLY:	PUBLIC (HRW)
SANITARY SEWER:	PUBLIC (HRW)

NOTES

1. REVIEW AND APPROVAL OF THE PLANS DOES NOT RELIEVE THE OWNER OR CONTRACTOR FROM MEETING ALL THE REQUIREMENTS OF THE HARNETT COUNTY DEVELOPMENT ORDINANCE, AND ANY OTHER LOCAL, STATE, AND FEDERAL REGULATIONS AND APPROVALS.
2. ALL IMPROVEMENTS OR EXTENSIONS OF PUBLIC INFRASTRUCTURE UNDER THE JURISDICTION OF HARNETT REGIONAL WATER (HRW) SHALL BE IN STRICT ACCORDANCE WITH THE REGULATIONS, SPECIFICATIONS, AND POLICIES OF TRIRIVER WATER.
3. THE PROPOSED SITE AREA IS NOT LOCATED WITHIN THE 100 YEAR FLOOD HAZARD BOUNDARY AREAS AS DELINEATED ON THE HARNETT COUNTY FLOOD INSURANCE MAP (FIRM) MAP NUMBER: 3720058900J DATED 10/03/2006.
4. THIS PROPERTY IS LOCATED WITHIN ONE (1) MILE OF A VOLUNTARY AGRICULTURAL DISTRICT.
5. OWNER HAS NOT IDENTIFIED JURISDICTIONAL WATERS ON THE SUBJECT PROPERTY. ACCORDING TO THE HARNETT COUNTY GIS, NO WETLANDS ARE PRESENT ON THE SUBJECT PROPERTY.
6. THE PROPOSED SITE AREA IS LOCATED IN A DESIGNATED WATER SUPPLY WATERSHED: CAPE FEAR WSIV.
7. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY CORRIDOR OVERLAY.
8. CONTRACTOR TO VERIFY QUANTITIES SHOWN ON THESE PLANS WITH ACTUAL FIELD CONDITIONS.
9. ALL HANDICAP ACCESSIBLE AREAS ON THE SITE SHALL CONFORM TO THE REQUIREMENTS OF VOLUME 1-C OF THE NC STATE BUILDING CODE.
10. DETAILED DESIGN OF ANY PROPOSED RETAINING WALLS SHOWN SHALL BE BY THE OWNER/CONTRACTOR. THE FINAL LAYOUT AND LENGTH MAY NEED TO BE ADJUSTED PER THE FINAL DESIGN AND ACTUAL FIELD CONDITIONS. COORDINATE FENCE INSTALLATION WHERE SPECIFIED ALONG TOP OF RETAINING WALL.
11. CONTACT DUKE ENERGY PROGRESS WHEN WORKING WITHIN 15' OF THEIR POLES.
12. OWNER IS RESPONSIBLE FOR SECURING NECESSARY EASEMENTS FOR WORKING ON ADJACENT PROPERTIES INCLUDING ANY WORK WITHIN THE PUBLIC R/W.
13. NO MONUMENT SIGN PROPOSED WITH THESE SITE PLANS. A SIGN PERMIT MUST BE OBTAINED FROM HARNETT COUNTY PRIOR TO INSTALLATION. SEE SECTION 10.0 AND 12.5.5 OF THE HARNETT COUNTY UDO.
14. 10' X 70' SIGHT TRIANGLES SHOWN ON THE PROPOSED DRIVEWAY.
15. CONTRACTOR RESPONSIBLE FOR ADEQUATE TRAFFIC CONTROL MEASURES DURING CONSTRUCTION. CONTRACTOR MAY BE REQUIRED TO SUBMIT M.O.T. PLAN TO NCDOT PRIOR TO BEGINNING WORK.
16. AN ENCLOSED DUMPSTER AREA IS PROPOSED FOR TRASH COLLECTION AT THE FUTURE BUSINESS.
17. THE PROPERTY OWNER WILL BE SOLELY RESPONSIBLE FOR MAINTAINING THE DRIVEWAY, PARKING LOT, SIDEPATH, SIDEWALK, DUMPSTER ENCLOSURE, AND LANDSCAPING.
18. ANTICIPATED PERMITS/APPROVALS REQUIRED FOR THE SITE WORK AS PROPOSED:
    - -HARNETT COUNTY DRB
    - -HARNETT REGIONAL WATER
    - -NCDEQ WASTEWATER EXTENSION PERMIT
    - -NCDEQ EROSION CONTROL PERMIT
    - -NCDOT DRIVEWAY PERMIT (PREVIOUSLY OBTAINED)
    - -NCDOT ENCROACHMENT AGREEMENT

Project: **TIRADO TRUCK REPAIR**
US 421 SOUTH
HARNETT COUNTY, NC

Sheet: **SITE LAYOUT**

ISSUED FOR CONSTRUCTION

Date: 24 JUN 2025
JTE Project No. 25-009
Sheet No.: **C3** of **12**
Drawn by: JRT
Designed by: JRT
Reviewed by: JRT

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

REVISIONS

15 SEP 2025: REVISIONS PER DRB COMMENTS ON SUBMITTAL 1

12 JAN 2026: ISSUED FOR CONSTRUCTION

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027472 ENGINEER
6.24.25

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NOTES

1. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES WHILE WORKING. EXISTING UNDERGROUND UTILITIES SHOWN HERE SHALL BE CONSIDERED APPROXIMATE. OTHER UTILITIES MAY BE PRESENT. CONTRACTOR SHALL CALL 'ONE CALL MARKED BY 811 ONE CALL PRIOR TO BEGINNING WORK.
2. CONTRACTOR SHALL KEEP WORK WITHIN THE LIMITS OF DISTURBANCE. THE LIMITS OF DISTURBANCE IS 0.98 AC. AN NCDEQ EROSION CONTROL PERMIT IS NOT REQUIRED. CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN TEMP. EROSION CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PROCESS. SEE SHEET C6 FOR THE TEMP. EROSION CONTROL PLAN.
3. OFF-SITE FILL MATERIAL MAY BE REQUIRED TO MEET THE PROPOSED GRADE. IF BORROW / DISPOSAL SITES ARE NECESSARY THEY MUST COMPLY WITH NCDEQ RULES FOR LAND DISTURBANCE.
4. CONTRACTOR TO SECURE TEMPORARY CONSTRUCTION EASEMENT (OR AGREEMENT) FOR WORK ON ADJACENT PROPERTY(S) PRIOR TO ANY OFF-SITE WORK.
5. CONTRACTOR TO COORDINATE WITH POWER COMPANY (DUKE ENERGY) PRIOR TO GRADING WITH THEIR EASEMENT OR WITHIN 15' OF THEIR POWER POLES AND EQUIPMENT.
6. CONTRACTOR TO VERIFY FINAL ELEVATIONS WITH ACTUAL FIELD CONDITIONS.
7. THE DETAILED DESIGN OF THE RETAINING WALLS SHOWN ON THESE PLANS SHALL BE PERFORMED BY OTHERS. THE LENGTHS AND ELEVATIONS SHOWN FOR THE WALLS ON THESE PLANS MAY BE ADJUSTED AS NECESSARY BY THE OWNER'S STRUCTURAL ENGINEER. A BUILDING PERMIT MAY BE REQUIRED TO CONSTRUCT RETAINING WALLS.
8. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM BUILDING WALLS AT ALL TIMES DURING CONSTRUCTION.
9. FINAL GRADE ON THE HANDICAP PARKING SPACES SHALL BE 2% MAX IN ANY DIRECTION.
10. CONTRACTOR TO DIRECT ROOF LEADERS INTO ENCLOSED STORM DRAIN SYSTEM USING HDPE UNDERGROUND PIPING, WHERE PRACTICAL. TIE THE BUILDING DOWNSPOUTS (ROOF LEADERS) TO PROPOSED HDPE COLLECTOR PIPE WITH APPROPRIATE HDPE FITTINGS OR TIE DIRECTLY INTO STORM INLETS. ALL PIPING SHOULD HAVE 1% MIN. SLOPE AND SHOULD BE LOCATED OUTSIDE TRAFFIC AREAS WHERE POSSIBLE. VERIFY EXACT LOCATIONS OF DOWNSPOUTS PER ARCHITECTURAL PLANS.
11. ELEVATIONS BASED ON NAVD 88. PROPOSED AND EXISTING CONTOUR LINES ARE SHOWN AT 1' INCREMENTS.
12. CONTRACTOR TO NOTIFY NCDOT PRIOR TO PERFORMING GRADING WORK IN THEIR R/W. A MOT PLAN MAY BE REQUIRED TO BE SUBMITTED TO NCDOT FOR THEIR APPROVAL. SEE ENCROACHMENT AGREEMENT AND DRIVEWAY PERMIT OBTAINED FOR THIS PROJECT.

N/F
ZONED RA-40
BARBARA C. TURLINGTON
DEED BOOK 3466, PAGE 8
MAP NUMBER 2016-326
PIN 0589-17-5918

N/F
ZONED RA-40
DOUGLAS LAPAN
DEED BOOK 3497, PAGE 527
PIN 0589-17-1680

PROPOSED SHOP
FFE: 198.5

PROPOSED OFFICE
FFE: 198.5

1
0.860 ACRES
37,476 SF

2
0.690 ACRES
30,026 SF

PRO. STORM STR 05
STD DI
GRATE EL = 196.5
INV EL = 193.7

PRO. STORM STR 04
STD DI
GRATE EL = 196.5
INV EL = 194.0

PRO. STORM STR 03
STD JB
RIM EL = 196.0
INV EL = 192.8

PRO. STORM STR 02
STD DI
GRATE EL = 197.0
INV EL = 193.5

PRO. STORM STR 01
STD DI
GRATE EL = 197.0
INV EL = 194.0

ROCK OUTLET PROTECTION

PRO. 15" STORM
INV OUT EL = 192.5

10 LF - 15" STORM
@ 3.0%

18 LF - 15" STORM
@ 3.9%

40 LF - 15" STORM
@ 1.3%

30 LF - 15" STORM
@ 1.0%

113 LF - 15" STORM @ 0.8%

PRO. RETAINING WALL

PRO. ROCK OUTLET PROTECTION

18" RCP
INV = 194.61

18" RCP
INV = 195.69

EXTEND 18" CULVERT WITH
8' JOINT - EACH SIDE

SANITARY SEWER MANHOLE
RIM ELEV = 195.32
INV IN = 186.04
INV OUT = 185.70

GAS MARKER

EXISTING 8"SEWER

EXISTING WATERLINE

EXISTING FIRE HYDRANT

MNS

1/2" EIP 0.5' ABOVE GRADE

1/2" EIP 0.7' ABOVE GRADE

1/2" EIP 0.4' ABOVE GRADE

1" CRIMPED EIP

1" CRIMPED EIP 0.5' BELOW GRADE

CRIMPED EIP
N=597,491.177 SFT
E=2,087,137.304 SFT

5/8" REBAR SET

N 31°58'01" W 457.81'

S 52°22'03" E 106.45'

S 09°58'36" E 105.23'

S 09°58'36" E 199.85'

N 55°35'39" E 210.65'

S 58°06'01" W 169.91'

N 59°16'11" E 199.85'

S 52°18'35" E 97.04'

18" PINE

22" PINE

18" MAPLE

TWIN 10" MAPLE

35' FRONT SETBACK

25' REAR SETBACK

20' SIDE SETBACK

0' SIDE SETBACK

15 VAN ACCESSIBLE PARKING SPACE

US 421 S
150' PUBLIC R/W

SCALE: 1" = 20'

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC	Date: 24 JUN 2025	Drawn by: JRT	Scale:
	JTE Project No. 25-009	Designed by: JRT	
Sheet: **SITE GRADING AND STORM DRAINAGE** — ISSUED FOR CONSTRUCTION	Sheet No.: **C4** of **12**	Reviewed by: JRT	

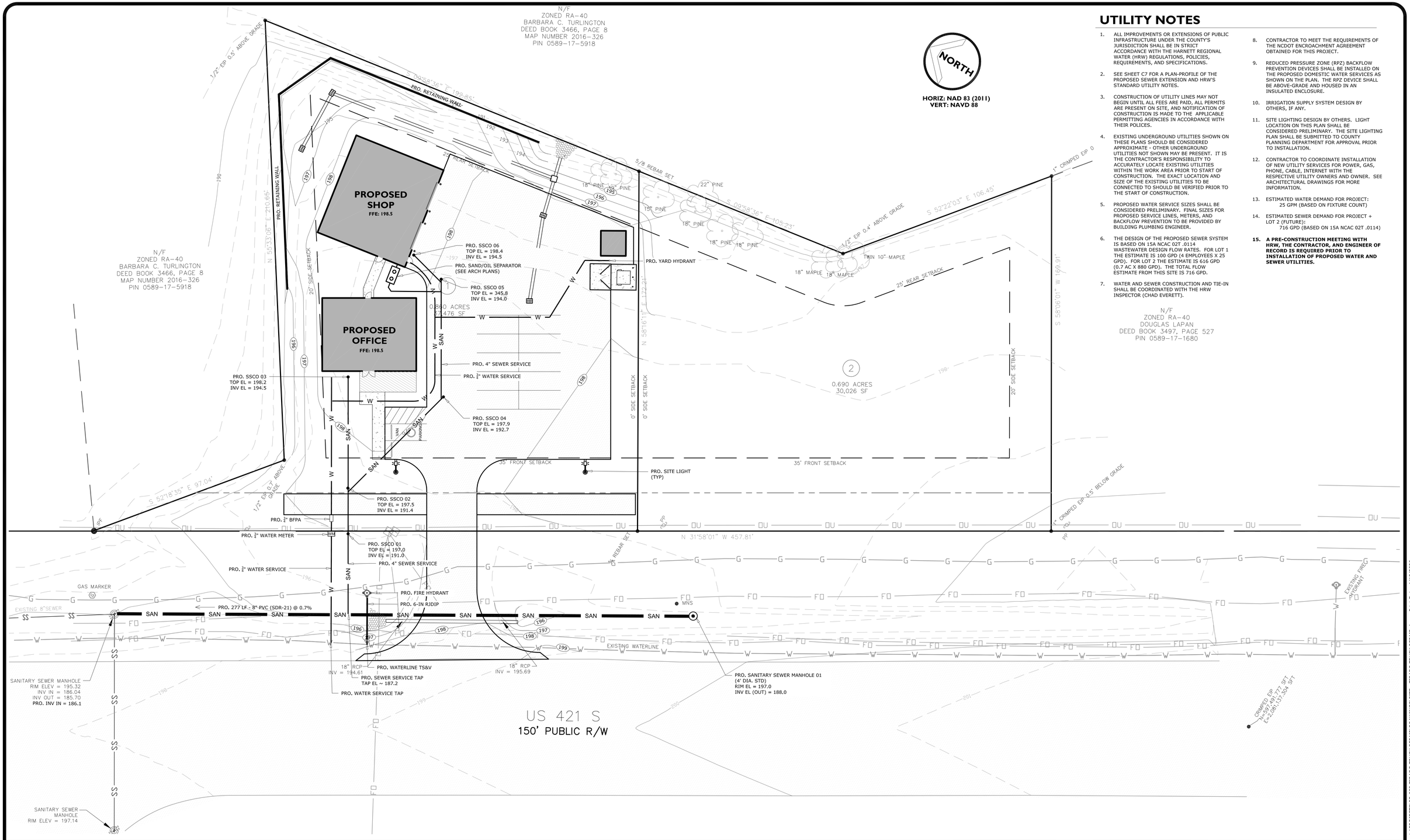
REVISIONS

12 JAN 2026: ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER'S SEAL
SEAL 027472 ENGINEER
6.24.25

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UTILITY NOTES

1. ALL IMPROVEMENTS OR EXTENSIONS OF PUBLIC INFRASTRUCTURE UNDER THE COUNTY'S JURISDICTION SHALL BE IN STRICT ACCORDANCE WITH THE HARNETT REGIONAL WATER (HRW) REGULATIONS, POLICIES, REQUIREMENTS, AND SPECIFICATIONS.
2. SEE SHEET C7 FOR A PLAN-PROFILE OF THE PROPOSED SEWER EXTENSION AND HRW'S STANDARD UTILITY NOTES.
3. CONSTRUCTION OF UTILITY LINES MAY NOT BEGIN UNTIL ALL FEES ARE PAID, ALL PERMITS ARE PRESENT ON SITE, AND NOTIFICATION OF CONSTRUCTION IS MADE TO THE APPLICABLE PERMITTING AGENCIES IN ACCORDANCE WITH THEIR POLICES.
4. EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHOULD BE CONSIDERED APPROXIMATE - OTHER UNDERGROUND UTILITIES NOT SHOWN MAY BE PRESENT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCURATELY LOCATE EXISTING UTILITIES WITHIN THE WORK AREA PRIOR TO START OF CONSTRUCTION. THE EXACT LOCATION AND SIZE OF THE EXISTING UTILITIES TO BE CONNECTED TO SHOULD BE VERIFIED PRIOR TO THE START OF CONSTRUCTION.
5. PROPOSED WATER SERVICE SIZES SHALL BE CONSIDERED PRELIMINARY. FINAL SIZES FOR PROPOSED SERVICE LINES, METERS, AND BACKFLOW PREVENTION TO BE PROVIDED BY BUILDING PLUMBING ENGINEER.
6. THE DESIGN OF THE PROPOSED SEWER SYSTEM IS BASED ON 15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATES. FOR LOT 1 THE ESTIMATE IS 100 GPD (4 EMPLOYEES X 25 GPD). FOR LOT 2 THE ESTIMATE IS 616 GPD (0.7 AC X 880 GPD). THE TOTAL FLOW ESTIMATE FROM THIS SITE IS 716 GPD.
7. WATER AND SEWER CONSTRUCTION AND TIE-IN SHALL BE COORDINATED WITH THE HRW INSPECTOR (CHAD EVERETT).
8. CONTRACTOR TO MEET THE REQUIREMENTS OF THE NCDOT ENCROACHMENT AGREEMENT OBTAINED FOR THIS PROJECT.
9. REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED ON THE PROPOSED DOMESTIC WATER SERVICES AS SHOWN ON THE PLAN. THE RPZ DEVICE SHALL BE ABOVE-GRADE AND HOUSED IN AN INSULATED ENCLOSURE.
10. IRRIGATION SUPPLY SYSTEM DESIGN BY OTHERS, IF ANY.
11. SITE LIGHTING DESIGN BY OTHERS. LIGHT LOCATION ON THIS PLAN SHALL BE CONSIDERED PRELIMINARY. THE SITE LIGHTING PLAN SHALL BE SUBMITTED TO COUNTY PLANNING DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION.
12. CONTRACTOR TO COORDINATE INSTALLATION OF NEW UTILITY SERVICES FOR POWER, GAS, PHONE, CABLE, INTERNET WITH THE RESPECTIVE UTILITY OWNERS AND OWNER. SEE ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.
13. ESTIMATED WATER DEMAND FOR PROJECT:
    25 GPM (BASED ON FIXTURE COUNT)
14. ESTIMATED SEWER DEMAND FOR PROJECT + LOT 2 (FUTURE):
    716 GPD (BASED ON 15A NCAC 02T .0114)
15. **A PRE-CONSTRUCTION MEETING WITH HRW, THE CONTRACTOR, AND ENGINEER OF RECORD IS REQUIRED PRIOR TO INSTALLATION OF PROPOSED WATER AND SEWER UTILITIES.**

N/F
ZONED RA-40
DOUGLAS LAPAN
DEED BOOK 3497, PAGE 527
PIN 0589-17-1680

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC		Date: 24 JUN 2025	Drawn by: JRT
		JTE Project No. 25-009	Designed by: JRT
Sheet: **SITE UTILITY**	ISSUED FOR CONSTRUCTION	Sheet No.: **C5** of **12**	Reviewed by: JRT

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

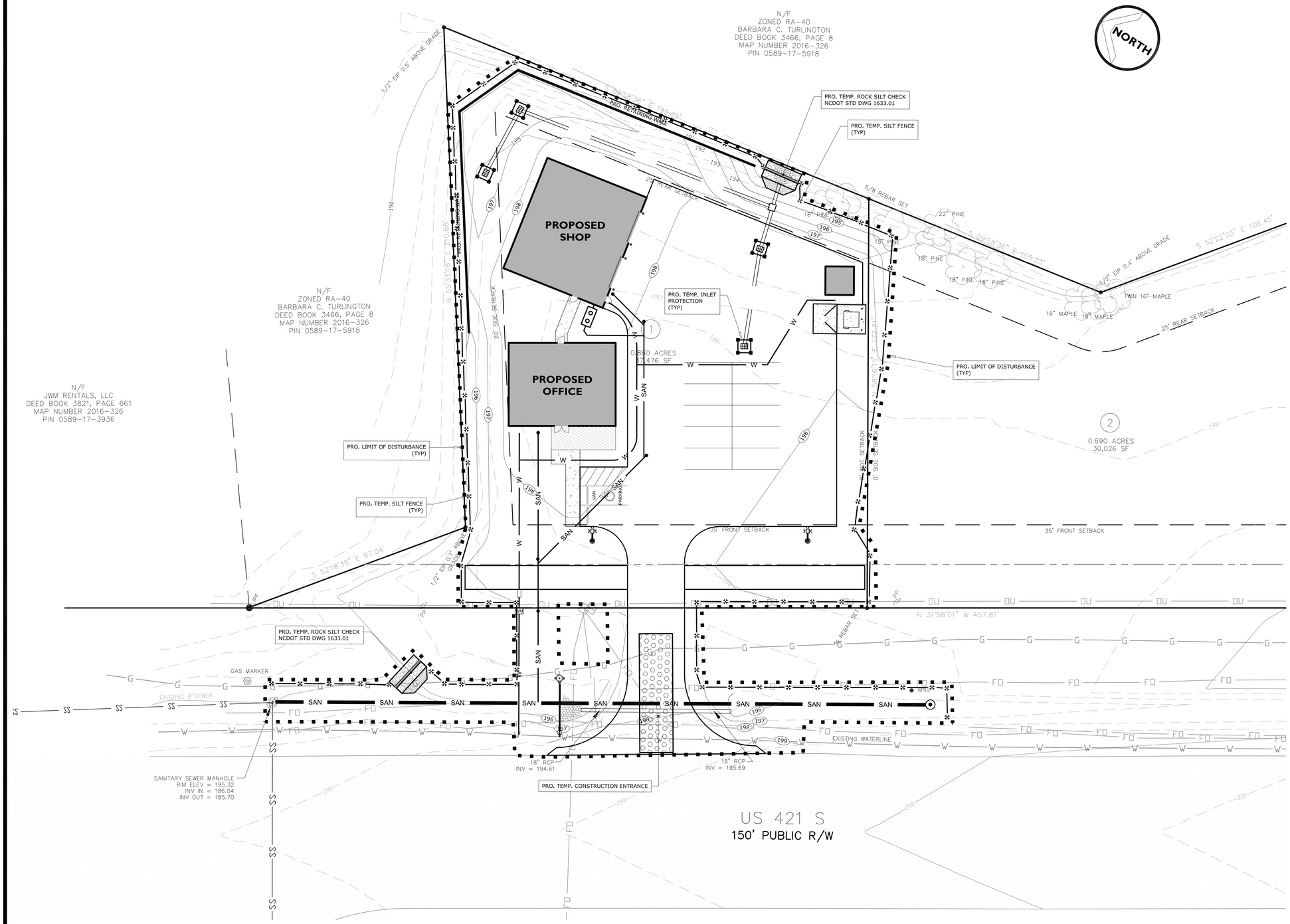
REVISIONS

14 AUG 2025: REVISIONS PER HRW COMMENTS ON SUBMITTAL 1
05 SEP 2025: REVISIONS PER HRW COMMENTS ON SUBMITTAL 2
12 JAN 2026: ISSUED FOR CONSTRUCTION

SEAL 027472 ENGINEER 6.24.25
PROFESSIONAL ENGINEER'S SEAL

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File: C:\Users\jthom\OneDrive\Documents\PROJECTS\25-009 TIRADO TRUCK REPAIR\DRAWINGS\SITE - TIRADO TRUCK REPAIR.dwg Print Date: 1/12/2026



NOTES

1. THIS PLAN SHOWS THE TEMP. EROSION CONTROL MEASURES FOR ONE PHASE OF CONSTRUCTION.
2. LIMIT OF DISTURBANCE = 0.98 AC +/-. NCDEQ EROSION CONTROL PERMIT IS NOT REQUIRED.
3. SEE SHEETS C10 AND C11 FOR THE CONSTRUCTION SEQUENCE AND STANDARD DETAILS FOR TEMP. EROSION CONTROL MEASURES.
4. OFF-SITE BORROW / WASTE SITES MUST COMPLY WITH NCDEQ RULES AND REGULATIONS FOR LAND DISTURBANCE.
5. CONTRACTOR MAY NEED TO FIELD ADJUST PROPOSED EROSION CONTROL MEASURES TO FIT ACTUAL FIELD CONDITIONS.
6. CONTRACTOR TO KEEP ALL CONSTRUCTION/STORAGE OPERATIONS WITHIN LIMIT OF DISTURBANCE. ANY DISTURBANCE OUTSIDE THE LIMIT OF DISTURBANCE WILL REQUIRE A MODIFICATION TO THE NCDEQ EROSION CONTROL PERMIT.
7. CUT/FILL SLOPES SHALL BE 2:1 MAXIMUM.
8. THIS PROPERTY IS LOCATED IN THE CAPE FEAR RIVER BASIN. SITE DRAINS TO EAST BUIES CREEK, A CLASS 'WSIV' WATERS, STREAM INDEX 18-18-1.
9. THE MAJORITY SOIL TYPE (ACCORDING TO THE NRCS MAP) WITHIN THE SITE AREA IS NoB (NORFOLK LOAMY SAND), HYDROLOGIC GROUP 'A'.

EROSION CONTROL LEGEND

- TEMP. SILT FENCE
- TEMP. SILT FENCE OUTLET
- TEMP. DIVERSION DITCH (TD)
- LIMIT OF DISTURBANCE
- TEMP. INLET PROTECTION
- TEMP. INLET PROTECTION - GUTTERBUDDY
- TEMP. ROCK SILT CHECK TYPE 'A' (NCDOT STD DWG 1633.01)
- TEMP. ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' (NCDOT STD DWG 1635.02)
- TEMP. COIR FIBER WATTLE
- RECP / DITCH LINER / MATTING
- ROCK LINER / PROTECTION
- TEMP. CONSTRUCTION ENTRANCE
- TEMP. DEWATERING PUMP AND SEDIMENT FILTER BAG ON ROCK BED
- TEMP. SKIMMER DEVICE
- TEMP. BAFFLE (FOR SKIMMER BASIN)

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC	Date: 24 JUN 2025	Drawn by: JRT	Scale: 20 0 10 20 40 SCALE: 1" = 20'
	JTE Project No. 25-009	Designed by: JRT	
Sheet: **TEMP. EROSION CONTROL** ISSUED FOR CONSTRUCTION	Sheet No.: **C6** of **12**	Reviewed by: JRT	

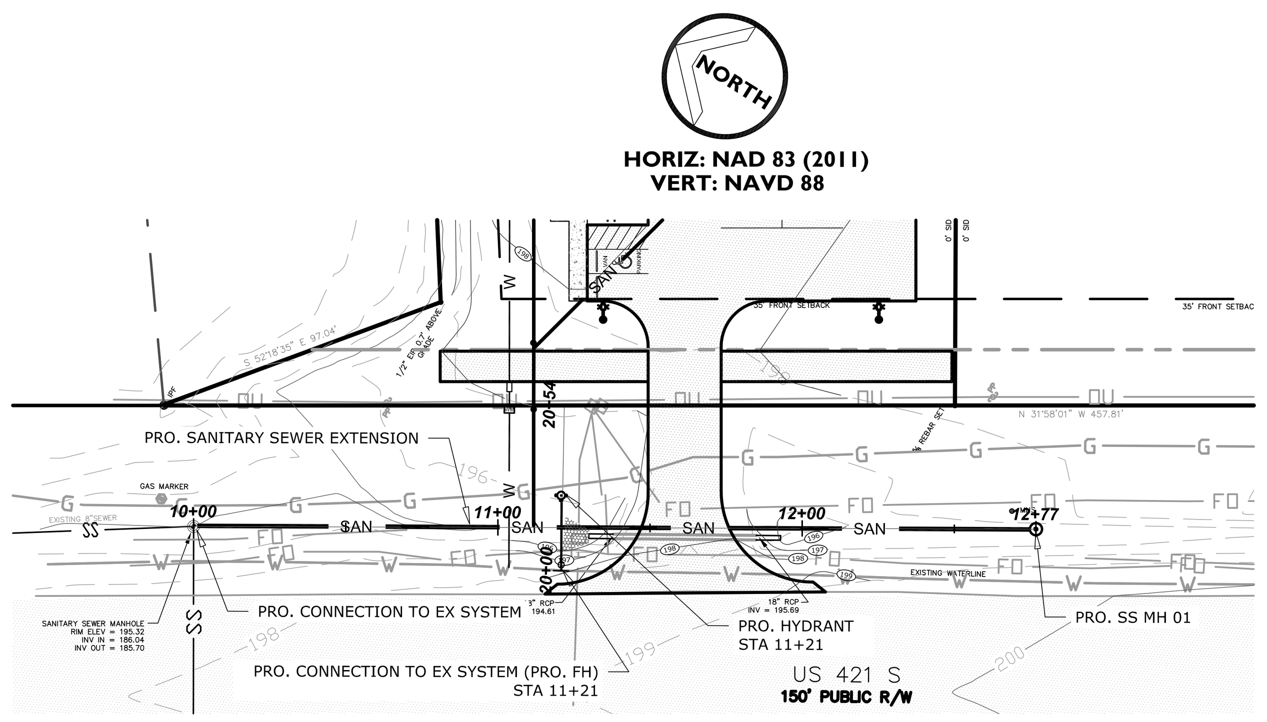
REVISIONS

12 JAN 2026: ISSUED FOR CONSTRUCTION

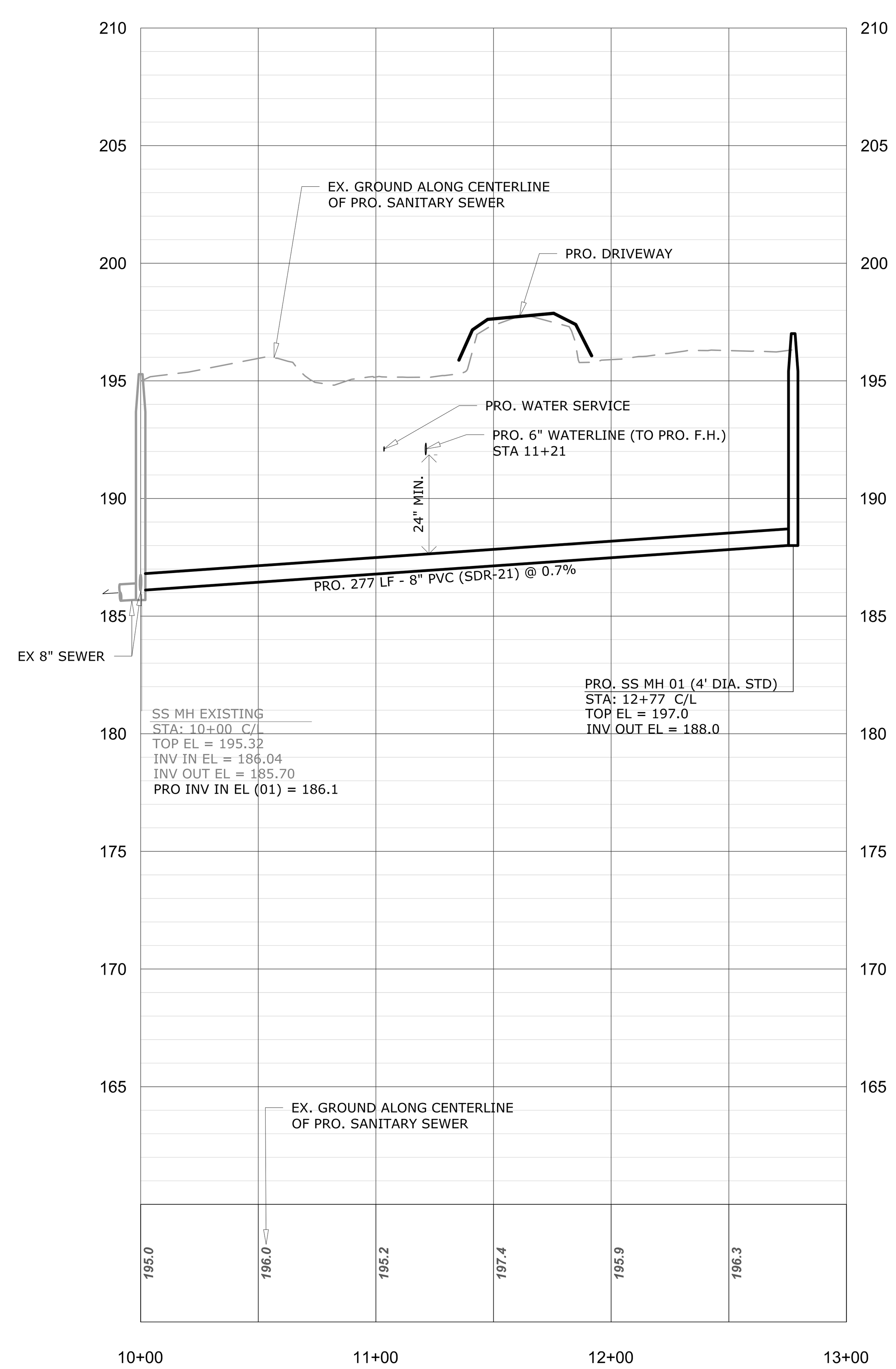
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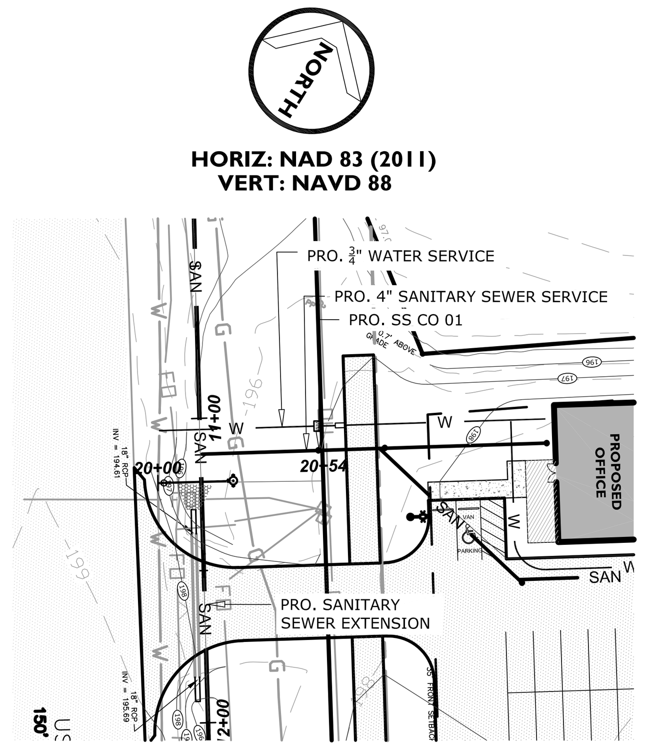
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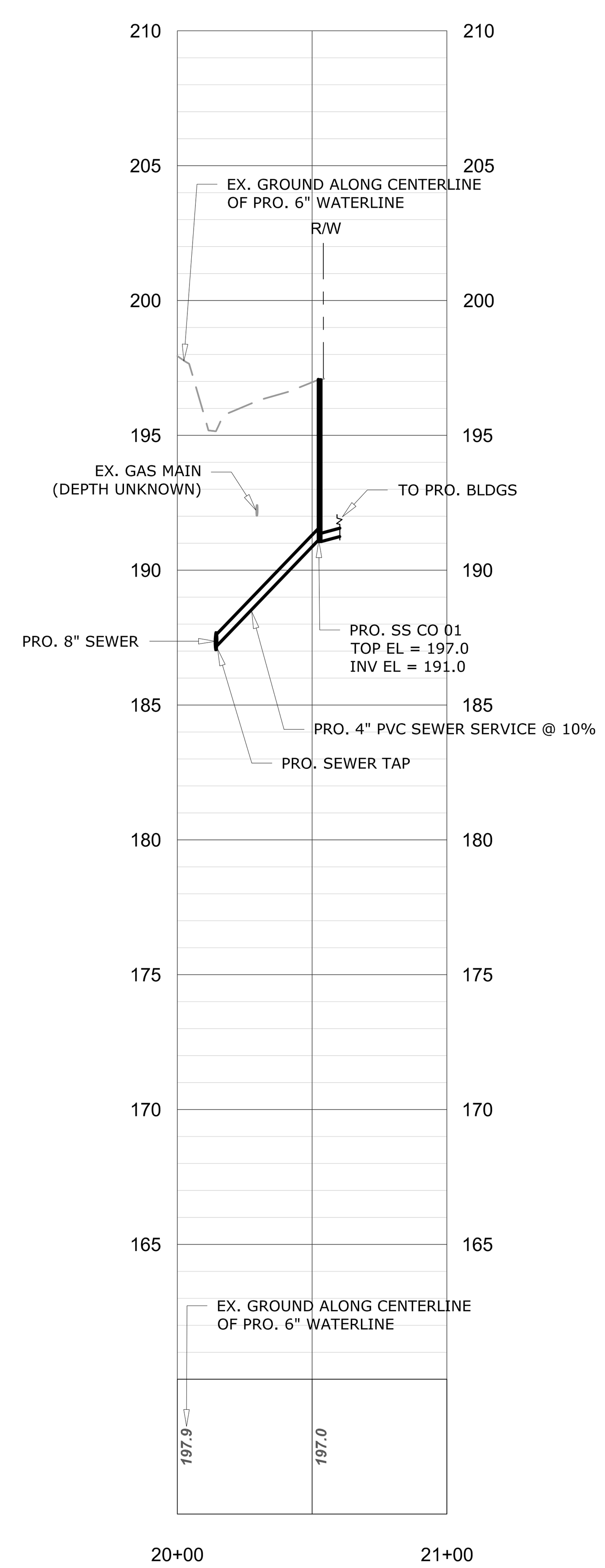


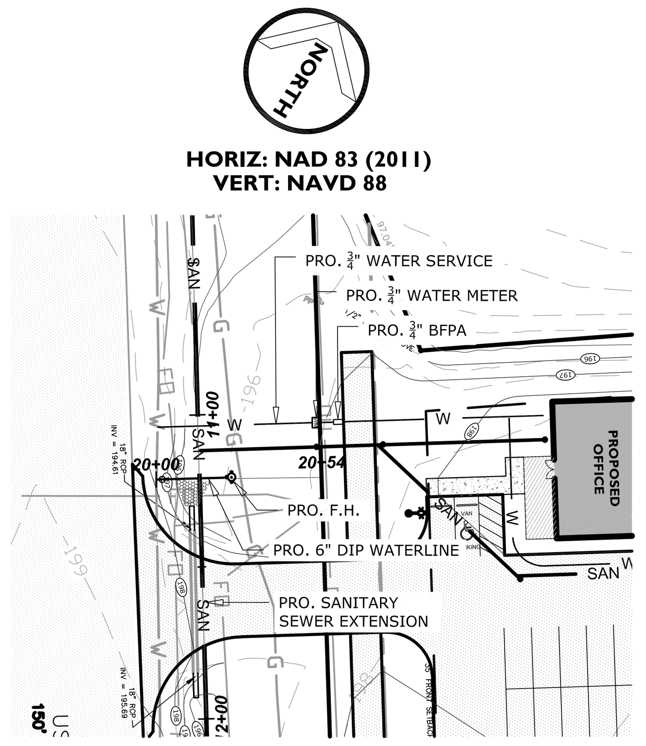
PROPOSED PUBLIC SANITARY SEWER EXTENSION



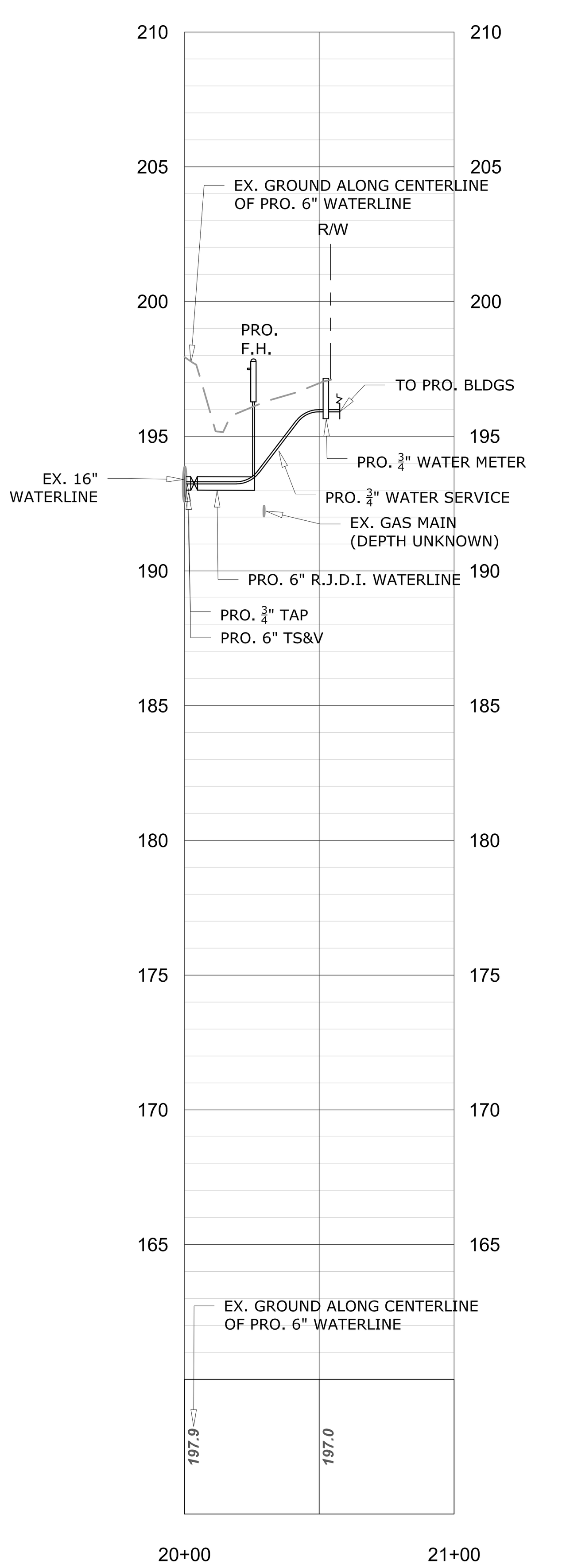


PROPOSED SEWER SERVICE





PROPOSED WATERLINE AND SERVICE



2022 HRW REQUIRED UTILITY NOTES

(REVISION 10- APRIL 19, 2022)

WATER

A. THE FIRE MARSHAL'S OFFICE SHALL APPROVE ALL HYDRANT TYPES AND LOCATIONS IN NEW SUBDIVISIONS. HOWEVER, HARNETT REGIONAL WATER (HRW) PREFERS THE CONTRACTORS TO INSTALL ONE OF THE FOLLOWING FIRE HYDRANTS:
1. MUELLER - SUPER CENTURION 250 A-423 MODEL WITH A 5¼" MAIN VALVE OPENING THREE WAY (TWO HOSE NOZZLES AND ONE PUMPER NOZZLE);
2. AMERICAN DARLING - MARK B-84-B MODEL WITH A 5¼" MAIN VALVE OPENING THREE WAY (TWO HOSE NOZZLES AND ONE PUMPER NOZZLE);
3. WATEROUS - PACER B-67-250 MODEL WITH A 5¼" MAIN VALVE OPENING THREE WAY (TWO HOSE NOZZLES AND ONE PUMPER NOZZLE) OR APPROVED EQUAL FOR STANDARDIZATION.

*ALL FIRE HYDRANTS LISTED ABOVE MUST HAVE "AMERICAN NATIONAL FIRE HOSE CONNECTION SCREW THREADS" NST/NH HOSE THREADS.

B. FIRE HYDRANTS ARE INSTALLED AT CERTAIN ELEVATIONS. ANY GRADE CHANGE NEAR ANY FIRE HYDRANT, WHICH IMPEDES ITS OPERATION, SHALL BECOME THE RESPONSIBILITY OF THE UTILITY CONTRACTOR FOR CORRECTION. CORRECTIONS WILL BE MONITORED BY THE HRW UTILITY CONSTRUCTION INSPECTOR AND THE HARNETT COUNTY FIRE MARSHAL.

C. THE PROFESSIONAL ENGINEER (PE) SHALL OBTAIN AND PROVIDE THE NCDEQ "AUTHORIZATION TO CONSTRUCT" PERMIT TO THE UTILITY CONTRACTOR BEFORE THE CONSTRUCTION OF THE WATER LINE SHALL BEGIN. THE UTILITY CONTRACTOR MUST POST A COPY OF THE NCDEQ "AUTHORIZATION TO CONSTRUCT" PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) ON SITE PRIOR TO THE START OF CONSTRUCTION. THE PERMIT MUST BE MAINTAINED ON SITE THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS OF THE PROPOSED WATER LINES THAT WILL SERVE THIS PROJECT.

D. THE UTILITY CONTRACTOR SHALL NOTIFY HARNETT REGIONAL WATER (HRW) AND THE PROFESSIONAL ENGINEER (PE) AT LEAST TWO DAYS PRIOR TO CONSTRUCTION COMMENCING. THE UTILITY CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH MR. CHAD EVERETTE, HRW UTILITY CONSTRUCTION INSPECTOR AT LEAST TWO (2) DAYS BEFORE CONSTRUCTION WILL BEGIN AND THE UTILITY CONTRACTOR MUST COORDINATE WITH HRW FOR REGULAR INSPECTION VISITATIONS AND ACCEPTANCE OF THE WATER SYSTEM(S). CONSTRUCTION WORK SHALL BE PERFORMED ONLY DURING THE NORMAL WORKING HOURS OF HRW WHICH IS 8:00 AM - 5:00 PM MONDAY THROUGH FRIDAY. HOLIDAY AND WEEKEND WORK IS NOT PERMITTED BY HRW.

E. THE PROFESSIONAL ENGINEER (PE) SHALL PROVIDE HRW AND THE UTILITY CONTRACTOR WITH A SET OF NCDEQ APPROVED PLANS MARKED "RELEASED FOR CONSTRUCTION" AT LEAST TWO DAYS PRIOR TO CONSTRUCTION COMMENCING. THE REGISTERED LAND SURVEYOR (RLS) SHOULD STAKE OUT ALL LOT CORNERS AND THE GRADE STAKES FOR THE PROPOSED FINISH GRADE FOR EACH STREET BEFORE THE UTILITY CONTRACTOR BEGINS CONSTRUCTION OF THE WATER LINE(S). THE GRADE STAKES SHOULD BE SET WITH A CONSISTENT OFFSET FROM THE STREET CENTERLINE SO AS NOT TO INTERFERE WITH THE STREET GRADING AND UTILITY CONSTRUCTION.

F. THE UTILITY CONTRACTOR SHALL PROVIDE THE HRW UTILITY CONSTRUCTION INSPECTOR WITH MATERIAL SUBMITTALS AND SHOP DRAWINGS FOR ALL PROJECT MATERIALS PRIOR TO THE CONSTRUCTION OF ANY WATER LINE EXTENSION(S), AND ASSOCIATED WATER SERVICES IN HARNETT COUNTY. THE MATERIALS TO BE USED ON THE PROJECT MUST MEET THE ESTABLISHED SPECIFICATIONS OF HRW AND BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION. ALL SUBSTANDARD MATERIALS OR MATERIALS NOT APPROVED FOR USE IN HARNETT COUNTY FOUND ON THE PROJECT SITE MUST BE REMOVED IMMEDIATELY WHEN NOTIFIED BY THE HRW UTILITY CONSTRUCTION INSPECTOR.

G. THE WATER MAIN(S), FIRE HYDRANTS, SERVICE LINES, METER SETTERS AND ALL ASSOCIATED APPURTENANCES SHALL BE CONSTRUCTED IN STRICT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE HARNETT REGIONAL WATER (HRW). THE UTILITY CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE THE NEWLY INSTALLED WATER MAIN(S), WATER SERVICE LINES AND ALL ASSOCIATED METER SETTERS AND METER BOXES FOR OTHER UTILITY COMPANIES AND THEIR CONTRACTORS UNTIL THE NEW WATER MAIN(S) HAVE BEEN APPROVED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF ENVIRONMENTAL HEALTH, PUBLIC WATER SUPPLY SECTION (NCDEQ, DEH, PWS) AND ACCEPTED BY HRW.

H. PRIOR TO ACCEPTANCE, ALL SERVICES WILL BE INSPECTED TO ENSURE THAT THEY ARE INSTALLED AT THE PROPER DEPTH. ALL METER BOXES MUST BE FLUSH WITH THE GROUND LEVEL AT FINISH GRADE AND THE METER SETTERS MUST BE A MINIMUM OF 8" BELOW THE METER BOX LID. METER SETTERS SHALL BE CENTERED IN THE METER BOX AND SUPPORTED BY BRICK, BLOCK OR STONE.

I. THE UTILITY CONTRACTOR SHALL PROVIDE THE PROFESSIONAL ENGINEER (PE) AND HRW UTILITY CONSTRUCTION INSPECTOR WITH A SET OF RED LINE DRAWINGS IDENTIFYING THE COMPLETE WATER SYSTEM INSTALLED FOR EACH PROJECT. THE RED LINE DRAWINGS SHOULD IDENTIFY THE MATERIALS, PIPE SIZES AND APPROXIMATE DEPTHS OF THE WATER LINES AS WELL AS THE GATE VALVES, FIRE HYDRANTS, METER SETTERS, BLOW OFF ASSEMBLIES AND ALL ASSOCIATED APPURTENANCES FOR ALL WATER LINE(S) CONSTRUCTED IN HARNETT COUNTY. THE RED LINE DRAWINGS SHOULD CLEARLY IDENTIFY ANY DEVIATIONS FROM THE NCDEQ APPROVED PLANS. ALL CHANGE ORDERS MUST BE APPROVED BY HRW AND THE PROFESSIONAL ENGINEER (PE) IN WRITING AND PROPERLY DOCUMENTED IN THE RED LINE FIELD DRAWINGS.

J. POTABLE WATER MAINS CROSSING OTHER UTILITIES AND NON-POTABLE WATER LINES (SANITARY SEWER, STORM SEWER, RCP, ETC.) SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF TWENTY-FOUR (24") INCHES BETWEEN THE POTABLE WATER MAIN AND ALL OTHER UTILITIES. NCDOT REQUIRES THE NEW WATER MAINS TO BE INSTALLED UNDER THE STORM WATER LINES. THE POTABLE WATER MAIN SHALL BE INSTALLED WITH TWENTY-FOUR (24") INCHES OF VERTICAL SEPARATION AND WITH DUCTILE IRON PIPE WHEN DESIGNED TO BE PLACED UNDER A NON- POTABLE WATER LINE SUCH AS SANITARY SEWER OR STORM SEWER LINES. IF THESE SEPARATIONS CANNOT BE MAINTAINED THEN THE WATER MAIN SHALL BE INSTALLED WITH DUCTILE IRON PIPE. BOTH THE POTABLE WATER MAIN AND THE NON-POTABLE WATER LINE MUST BE CAST IRON OR DUCTILE IRON PIPE (DIP) IF THE STATE MINIMUM SEPARATIONS CANNOT BE MAINTAINED. THE DUCTILE IRON PIPE MUST BE LAID SO THE MECHANICAL JOINTS ARE AT LEAST (10') FEET FROM THE POINT WHERE THE POTABLE WATER MAIN CROSSES THE NON-POTABLE WATER LINE.

K. POTABLE WATER MAINS INSTALLED PARALLEL TO NON-POTABLE WATER LINES (SANITARY SEWER, STORM SEWER, RCP, ETC.) SHALL BE LAID TO PROVIDE A MINIMUM HORIZONTAL DISTANCE OF TEN (10') FEET BETWEEN THE POTABLE WATER MAIN AND SANITARY SEWER MAINS, SEWER LATERALS AND SERVICES. THE HORIZONTAL SEPARATION BETWEEN THE POTABLE WATER MAIN AND ANY OTHER UTILITY OR STORM SEWER SHALL NOT BE LESS THAN FIVE (5') FEET. THE POTABLE WATER MAIN MUST BE DUCTILE IRON PIPE IF THIS HORIZONTAL SEPARATION OF TEN (10') FEET CANNOT BE MAINTAINED. THE DUCTILE IRON PIPE SHALL EXTEND AT LEAST TEN (10') FEET BEYOND THE POINT WHERE THE MINIMUM REQUIRED HORIZONTAL SEPARATION OF TEN (10') FEET CAN BE RE-ESTABLISHED.

L. METER SETTERS SHALL BE INSTALLED IN PAIRS ON EVERY OTHER LOT LINE WHERE POSSIBLE TO LEAVE ADEQUATE SPACE FOR OTHER UTILITIES TO BE INSTALLED AT A LATER TIME. THE METER SETTERS SHALL BE INSTALLED AT LEAST ONE (1') FOOT INSIDE THE RIGHT-OF-WAY AND AT LEAST THREE (3') TO FIVE (5') FEET FROM THE PROPERTY LINE BETWEEN THE LOTS.

M. HRW REQUIRES THAT METER BOXES FOR ¾" SERVICES SHALL BE 12" WIDE X 17" LONG ABS PLASTIC BOXES AT LEAST 18" IN HEIGHT WITH CAST IRON LIDS/COVERS. METER BOXES FOR 1" SERVICES SHALL BE 17" WIDE X 21" LONG ABS PLASTIC BOXES AT LEAST 18" IN HEIGHT WITH PLASTIC LIDS AND CAST IRON FLIP COVERS IN THE CENTER OF THE LIDS. METER BOXES FOR 2" SERVICES SHALL BE 20" WIDE X 32" LONG ABS PLASTIC BOXES AT LEAST 20" IN HEIGHT WITH PLASTIC LIDS AND CAST IRON FLIP COVERS IN THE CENTER OF THE LIDS.

N. MASTER METERS MUST BE INSTALLED IN CONCRETE VAULTS SIZED FOR THE METER ASSEMBLY AND ASSOCIATED APPURTENANCES SO AS TO PROVIDE AT LEAST EIGHTEEN (18") INCHES OF CLEARANCE BETWEEN THE BOTTOM OF THE CONCRETE VAULT AND THE BOTTOM OF THE METER SETTER. THE MASTER METER MUST BE PROVIDED TEST PORTS IF THE METER IS NOT EQUIPPED WITH TEST PORTS FROM THE MANUFACTURER IN ACCORDANCE WITH THE HRW ESTABLISHED STANDARD SPECIFICATIONS AND DETAILS. DUCTILE IRON PIPE MUST BE USED FOR THE MASTER METER VAULT PIPING AND VALVE VAULT PIPING. THE UTILITY CONTRACTOR MUST PROVIDE SHOP DRAWINGS FOR THE METER VAULTS TO HRW PRIOR TO ORDERING THE CONCRETE VAULTS.

O. THE UTILITY CONTRACTOR WILL INSTALL POLYETHYLENE SDR-9 WATER SERVICE LINES THAT CROSS UNDER THE PAVEMENT INSIDE A SCHEDULE 40 PVC CONDUIT TO ALLOW FOR REMOVAL AND REPLACEMENT IN THE FUTURE. TWO (2) INDEPENDENT ¾" WATER SERVICE LINES MAY BE INSTALLED INSIDE ONE (1) - TWO (2") INCH SCHEDULE 40 PVC CONDUIT OR TWO (2) INDEPENDENT 1" WATER SERVICE LINES MAY BE INSTALLED INSIDE ONE- THREE (3") INCH SCHEDULE 40 PVC CONDUIT, BUT EACH WATER SERVICE SHALL BE TAPPED DIRECTLY TO THE WATER MAIN. SPLIT SERVICES ARE NOT ALLOWED BY HRW. IF SIDEWALKS ARE PROPOSED, THE CONDUIT MUST EXTEND PAST THE SIDEWALK.

P. THE WATER MAIN(S), FIRE HYDRANTS, GATE VALVES, SERVICE LINES, METER SETTERS AND ASSOCIATED APPURTENANCES MUST BE RATED FOR 200 PSI AND HYDROSTATICALLY PRESSURE TESTED TO 200 PSI. THE HYDROSTATIC PRESSURE TEST(S) MUST BE WITNESSED BY THE HRW UTILITY CONSTRUCTION INSPECTOR. THE UTILITY CONTRACTOR MUST NOTIFY HRW WHEN THEY ARE READY TO BEGIN FILLING IN LINES AND COORDINATE WITH HARNETT REGIONAL WATER TO WITNESS ALL PRESSURE TESTING.

Q. THE UTILITY CONTRACTOR SHALL CONDUCT A PNEUMATIC PRESSURE TEST USING COMPRESSED AIR OR OTHER INERT GAS ON THE STAINLESS STEEL TAPPING SLEEVE(S) PRIOR TO MAKING THE TAP ON THE EXISTING WATER MAIN. THIS PNEUMATIC PRESSURE TEST MUST BE WITNESSED BY THE HRW UTILITY CONSTRUCTION INSPECTOR. THE UTILITY CONTRACTOR SHALL USE ROMAC BRAND STAINLESS STEEL TAPPING SLEEVE(S) OR APPROVED EQUAL FOR ALL TAPS MADE IN HARNETT COUNTY. ALL NEW WATER LINE EXTENSIONS MUST BEGIN WITH A RESILIENT WEDGE TYPE GATE VALVE SIZED EQUAL TO THE DIAMETER OF THE NEW WATER LINE EXTENSION IN ORDER TO PROVIDE A MEANS OF ISOLATION BETWEEN HARNETT REGIONAL WATER'S EXISTING WATER MAINS AND THE NEW WATER LINE EXTENSIONS UNDER CONSTRUCTION.

R. ALL WATER MAINS WILL BE CONSTRUCTED WITH SDR-21 PVC PIPE OR CLASS 50 DUCTILE IRON PIPE RATED FOR AT LEAST 200 PSI OR GREATER. ALL PIPES MUST BE PROTECTED DURING LOADING, TRANSPORT, UNLOADING, STAGING, AND INSTALLATION. PVC PIPE MUST BE PROTECTED FROM EXTENDED EXPOSURE TO SUNLIGHT PRIOR TO INSTALLATION.

S. ALL WATER MAINS WILL BE FLUSHED AND DISINFECTED IN STRICT ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE HARNETT REGIONAL WATER. ALL WATER SAMPLES COLLECTED FOR BACTERIA TESTING WILL BE COLLECTED BY THE HRW UTILITY CONSTRUCTION INSPECTOR AND TESTED IN THE HRW LABORATORY.

T. ALL FITTINGS LARGER THAN TWO (2") INCHES DIAMETER SHALL BE DUCTILE IRON. HRW REQUIRES THAT MECHANICAL JOINTS BE ASSEMBLED WITH GRIP RINGS AS "MEGALUG" FITTINGS ARE NOT APPROVED BY HARNETT REGIONAL WATER FOR PIPE SIZES SMALLER THAN TWELVE INCHES (12") DIAMETER. PVC PIPE USED FOR WATER MAINS SHALL BE CONNECTED BY SLIP JOINT OR MECHANICAL JOINT WITH GRIP RINGS. GLUED PIPE JOINTS ARE NOT ALLOWED ON PVC PIPE USED FOR WATER MAINS IN HARNETT COUNTY.

U. HRW REQUIRES THAT THE UTILITY CONTRACTOR INSTALL TRACER WIRE IN THE TRENCH WITH ALL WATER LINES. THE TRACER WIRE SHALL BE 12 GA. INSULATED, SOLID COPPER CONDUCTOR AND IT SHALL BE TERMINATED AT THE TOP OF THE VALVE BOXES OR MANHOLES. NO SPLICED WIRE CONNECTIONS SHALL BE MADE UNDERGROUND ON TRACER WIRE INSTALLED IN HARNETT COUNTY. THE TRACER WIRE MAY BE SECURED WITH DUCT TAPE TO THE TOP OF THE PIPE BEFORE BACKFILLING.

V. THE UTILITY CONTRACTOR WILL PROVIDE PROFESSIONAL ENGINEER (PE) AND THE HRW UTILITY CONSTRUCTION INSPECTOR WITH A SET OF RED LINE FIELD DRAWINGS TO IDENTIFY THE INSTALLED LOCATIONS OF THE WATER LINE(S) AND ALL ASSOCIATED SERVICES. ALL CHANGE ORDERS MUST BE PRE-APPROVED BY HRW AND THE PROFESSIONAL ENGINEER (PE) IN WRITING AND PROPERLY DOCUMENTED IN THE RED LINE FIELD DRAWINGS.

W. THE UTILITY CONTRACTOR SHALL SPOT DIG TO EXPOSE EACH UTILITY PIPE OR LINE WHICH MAY CONFLICT WITH CONSTRUCTION OF PROPOSED WATER LINE EXTENSIONS WELL IN ADVANCE TO VERIFY LOCATIONS OF THE EXISTING UTILITIES. THE UTILITY CONTRACTOR SHALL PROVIDE BOTH HORIZONTAL AND VERTICAL CLEARANCES TO THE PROFESSIONAL ENGINEER (PE) TO ALLOW THE PE TO ADJUST THE WATER LINE DESIGN IN ORDER TO AVOID CONFLICTS WITH EXISTING UNDERGROUND UTILITIES. THE UTILITY CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER AND BE RESPONSIBLE FOR TEMPORARY RELOCATION AND/OR SECURING EXISTING UTILITY POLES, PIPES, WIRES, CABLES, SIGNS AND/OR UTILITIES INCLUDING SERVICES IN ACCORDANCE WITH THE UTILITY OWNER REQUIREMENTS DURING WATER LINE INSTALLATION, GRADING AND STREET CONSTRUCTION.

X. PRIOR TO THE COMMENCEMENT OF ANY WORK WITHIN ESTABLISHED UTILITY EASEMENTS OR NCDOT RIGHT-OF-WAYS THE UTILITY CONTRACTOR IS REQUIRED TO HAVE A SIGNED NCDOT ENCROACHMENT AGREEMENT POSTED ON SITE AND NOTIFY ALL CONCERNED UTILITY COMPANIES IN ACCORDANCE WITH G.S. 87-102. THE UTILITY CONTRACTOR MUST CALL THE NC ONE CALL CENTER AT 811 OR (800) 632-4949 TO VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION. EXISTING UTILITIES SHOWN IN THESE PLANS ARE TAKEN FROM MAPS FURNISHED BY VARIOUS UTILITY COMPANIES AND HAVE NOT BEEN PHYSICALLY LOCATED OR VERIFIED BY THE P.E. (I.E. TELEPHONE, CABLE, WATER, SEWER, ELECTRICAL POWER, FIBER OPTIC, NATURAL GAS, ETC.). THE UTILITY CONTRACTOR WILL BE RESPONSIBLE TO REPAIR ANY AND ALL DAMAGES TO THE SATISFACTION OF THE RELATED UTILITY COMPANY.

Y. THE UTILITY CONTRACTOR SHALL PROVIDE HRW WITH AT LEAST ONE (1) FIRE HYDRANT WRENCH AND ONE (1) BREAK-AWAY FLANGE KIT FOR EVERY SUBDIVISION WITH FIRE HYDRANTS DEVELOPED IN HARNETT COUNTY. THESE ITEMS MUST BE PROVIDED TO HRW BEFORE THE FINAL INSPECTION WILL BE SCHEDULED BY THE HRW UTILITY CONSTRUCTION INSPECTOR. IN ADDITION, THE UTILITY CONTRACTOR SHALL INSTALL A 4" X 4" CONCRETE VALVE MARKER AT THE EDGE OF THE RIGHT-OF-WAY TO IDENTIFY THE LOCATION OF EACH GATE VALVE INSTALLED IN THE NEW WATER SYSTEM WITH THE EXCEPTION OF THE FIRE HYDRANT ISOLATION VALVES. THE CONTRACTOR SHALL MEASURE THE DISTANCE FROM THE CENTER OF THE CONCRETE MARKER TO THE CENTER OF THE VALVE BOX. THIS DISTANCE (IN LINEAR FEET) SHALL BE STAMPED ON THE BRASS PLATE LOCATED ON THE TOP OF THE CONCRETE VALVE MARKER. IN LIEU OF INSTALLING THE CONCRETE VALVE MARKERS, THE UTILITY CONTRACTOR MAY PROVIDE AT LEAST TWO MEASUREMENTS FROM TWO INDEPENDENT PERMANENT ABOVE GROUND STRUCTURES TO THE PROFESSIONAL ENGINEER (PE) IN THE RED LINE DRAWINGS TO IDENTIFY THE VALVE LOCATIONS. THE PROFESSIONAL ENGINEER (PE) MUST INCLUDE THESE MEASUREMENTS IN THE AS-BUILT RECORD DRAWINGS SUBMITTED TO HRW.

Z. THE UTILITY CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL REPAIRS DUE TO LEAKAGE DAMAGE FROM POOR WORKMANSHIP DURING THE ONE YEAR WARRANTY PERIOD ONCE THE WATER SYSTEM IMPROVEMENTS HAVE BEEN ACCEPTED BY HARNETT REGIONAL WATER. HARNETT REGIONAL WATER WILL PROVIDE MAINTENANCE AND REPAIRS WHEN REQUESTED AND BILL THE DEVELOPER AND/OR UTILITY CONTRACTOR IF NECESSARY DUE TO LACK OF RESPONSE WITHIN 48 HOURS OF NOTIFICATION OF WARRANTY WORK. THE UTILITY CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL REPAIRS DUE TO DAMAGES RESULTING FROM FAILURE TO LOCATE THE NEW WATER LINES AND ASSOCIATED APPURTENANCES FOR OTHER UTILITIES AND THEIR CONTRACTORS UNTIL THE WATER LINES HAVE BEEN APPROVED BY NCDEQ AND ACCEPTED BY HRW. THE FINAL INSPECTION OF WATER SYSTEM IMPROVEMENTS CANNOT BE SCHEDULED WITH HRW UNTIL THE STREETS HAVE BEEN PAVED; THE RIGHTS-OF-WAY AND UTILITY EASEMENTS HAVE BEEN SEEDED AND STABILIZED WITH AN ADEQUATE STAND OF GRASS IN PLACE TO PREVENT EROSION ISSUES ON SITE.

AA THE ENGINEER OF RECORD IS RESPONSIBLE TO ENSURE THAT CONSTRUCTION IS, AT ALL TIMES, IN COMPLIANCE WITH ACCEPTED SANITARY ENGINEERING PRACTICES AND APPROVED PLANS AND SPECIFICATIONS. NO FIELD CHANGES TO THE APPROVED PLANS ARE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL BY HRW. A COPY OF EACH ENGINEER'S FIELD REPORT IS TO BE SUBMITTED TO HRW AS EACH SUCH INSPECTION IS MADE ON SYSTEM IMPROVEMENTS OR TESTING IS PERFORMED BY THE CONTRACTOR. WATER AND SEWER INFRASTRUCTURE MUST PASS ALL TESTS REQUIRED BY HRW SPECIFICATIONS AND THOSE OF ALL APPLICABLE REGULATORY AGENCIES. THESE TESTS INCLUDE, BUT ARE NOT LIMITED TO: AIR TEST, VACUUM TEST, MANDREL TEST, VISUAL TEST, PRESSURE TEST, BACTERIOLOGICAL TEST, ETC. A HRW INSPECTOR MUST BE PRESENT DURING TESTING AND ALL TEST RESULTS SHALL BE SUBMITTED TO HRW. ALL TESTS MUST BE SATISFIED BEFORE THE FINAL INSPECTION WILL BE SCHEDULED WITH THE HRW INSPECTOR. THE ENGINEER OF RECORD MUST REQUEST IN WRITING TO SCHEDULE THE FINAL INSPECTION ONCE ALL CONSTRUCTION IS COMPLETE. THE DEVELOPER'S ENGINEER OF RECORD AND THE HRW UTILITY CONSTRUCTION INSPECTOR SHALL PREPARE A WRITTEN PUNCH LIST OF ANY DEFECTS OR DEFICIENCIES NOTED DURING THE FINAL INSPECTION, SHOULD ANY EXIST. UPON COMPLETION OF THE PUNCH LIST, THE DEVELOPER'S ENGINEER OF RECORD WILL SCHEDULE ANOTHER INSPECTION. IN THE EVENT THE NUMBER OF INSPECTIONS PERFORMED BY THE HRW EXCEEDS TWO, ADDITIONAL FEES MAY BE ASSESSED TO THE DEVELOPER.

SANITARY SEWER

A. THE PROFESSIONAL ENGINEER (PE) SHALL OBTAIN AND SUPPLY A COPY OF THE SEWER PERMIT FOR THE CONSTRUCTION AND OPERATION OF THE WASTEWATER COLLECTION SYSTEM TO THE UTILITY CONTRACTOR BEFORE THE CONSTRUCTION OF THE SANITARY SEWER LINE, SEWER LIFT STATION AND ASSOCIATED FORCE MAIN SHALL BEGIN. THE UTILITY CONTRACTOR MUST POST A COPY OF THE SEWER PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) ON SITE PRIOR TO THE START OF CONSTRUCTION. THE PERMIT MUST BE MAINTAINED ON SITE DURING THE CONSTRUCTION OF THE SEWER SYSTEM IMPROVEMENTS.

B. THE UTILITY CONTRACTOR SHALL NOTIFY HARNETT REGIONAL WATER (HRW) AND THE PROFESSIONAL ENGINEER (PE) AT LEAST TWO DAYS PRIOR TO CONSTRUCTION COMMENCING. THE UTILITY CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH MR. CHAD EVERETTE, HRW UTILITY CONSTRUCTION INSPECTOR AT LEAST TWO (2) DAYS BEFORE CONSTRUCTION WILL BEGIN AND THE UTILITY CONTRACTOR MUST COORDINATE WITH HRW FOR REGULAR INSPECTION VISITATIONS AND ACCEPTANCE OF THE WASTEWATER SYSTEM(S). CONSTRUCTION WORK SHALL BE PERFORMED ONLY DURING THE NORMAL WORKING HOURS OF HRW WHICH IS 8:00 AM - 5:00 PM MONDAY THROUGH FRIDAY. HOLIDAY AND WEEKEND WORK IS NOT PERMITTED BY HRW.

C. THE PROFESSIONAL ENGINEER (PE) SHALL PROVIDE HRW WITH A SET OF NCDEQ APPROVED PLANS MARKED "RELEASED FOR CONSTRUCTION" AT LEAST TWO DAYS PRIOR TO CONSTRUCTION COMMENCING. HRW WILL STAMP THE APPROVED PLANS AS "RELEASED FOR CONSTRUCTION" AND PROVIDE COPIES TO THE UTILITY CONTRACTOR. THE REGISTERED LAND SURVEYOR (RLS) SHALL STAKE OUT ALL LOT CORNERS AND ESTABLISH GRADE STAKES FOR THE PROPOSED FINISH GRADE FOR EACH STREET AND SEWER LINE BEFORE THE UTILITY CONTRACTOR BEGINS CONSTRUCTION ORINSTALLATION OF THE MANHOLES, SANITARY SEWER GRAVITY LINE(S), SEWER LIFT STATIONS AND/OR SANITARY SEWER FORCE MAIN(S). THE GRADE STAKES SHOULD BE SET WITH A CONSISTENT OFFSET FROM THE STREET CENTERLINE SO AS NOT TO INTERFERE WITH THE STREET GRADING OR UTILITY CONSTRUCTION.

D. THE UTILITY CONTRACTOR SHALL PROVIDE THE HRW UTILITY CONSTRUCTION INSPECTOR WITH MATERIAL SUBMITTALS AND SHOP DRAWINGS FOR ALL PROJECT MATERIALS PRIOR TO THE CONSTRUCTION OF ANY GRAVITY SEWER LINE(S), MANHOLE(S), SEWER LIFT STATION(S) AND ASSOCIATED FORCE MAIN(S) IN HARNETT COUNTY. THE MATERIALS TO BE USED ON THE PROJECT MUST MEET THE ESTABLISHED SPECIFICATIONS OF HRW AND BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION. ALL SUBSTANDARD MATERIALS OR MATERIALS NOT APPROVED FOR USE IN HARNETT COUNTY FOUND ON THE PROJECT SITE MUST BE REMOVED IMMEDIATELY WHEN NOTIFIED BY THE HRW UTILITY CONSTRUCTION INSPECTOR.

E. THE SANITARY SEWER LATERAL CONNECTIONS SHOULD BE INSTALLED 90° (PERPENDICULAR) TO THE SANITARY SEWER GRAVITY LINES WITH SCHEDULE 40 PVC PIPE. HRW REQUIRES THE UTILITY CONTRACTOR TO PROVIDE THE PROFESSIONAL ENGINEER (PE) WITH ACCURATE MEASUREMENTS FOR LOCATING SANITARY SEWER SERVICE LATERAL AND ASSOCIATED EACH SANITARY SEWER CLEAN-OUT. THESE MEASUREMENTS SHOULD BE TAKEN FROM THE NEAREST DOWNSTREAM MANHOLE UP ALONG THE SANITARY SEWER MAIN TO THE IN-LINE WYE FITTING (OR TAPPING SADDLE) AND THEN ANOTHER MEASUREMENT FROM THE IN-LINE WYE FITTING (OR TAPPING TO THE 4" X 4" LONG SWEEP COMBINATION WYE FITTING AT THE BOTTOM OF THE SEWER CLEAN-OUT STACK. THESE FIELD MEASUREMENTS MUST BE PROVIDED TO THE PROFESSIONAL ENGINEER (PE) IN THE RED LINE DRAWINGS FROM THE UTILITY CONTRACTOR FOR PROPER DOCUMENTATION IN THE AS-BUILT RECORD DRAWINGS SUBMITTED TO HRW.

F. THE UTILITY CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE THE NEWLY INSTALLED SANITARY SEWER GRAVITY LINE(S), SANITARY SEWER FORCE MAIN(S), SANITARY SEWER SERVICE LATERAL(S) AND ALL ASSOCIATED SEWER CLEAN-OUT(S) IN THE PROPOSED SANITARY SEWER SYSTEM FOR OTHER UTILITY COMPANIES AND THEIR CONTRACTORS UNTIL THE NEW SANITARY SEWER LINE(S) AND ASSOCIATED APPURTENANCES HAVE BEEN APPROVED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND ACCEPTED BY HRW. ALL NEW SANITARY SEWER LINES MUST HAVE AT LEAST THREE (3 FT.) FEET OF COVER AND EXTEND UNDER ALL EXISTING WATER MAIN AND STORM WATER LINES WITH A LEAST 24" OF VERTICAL CLEARANCE BELOW THE BOTTOM OF THE EXISTING WATER MAIN AND STORM WATER LINES. ALL DUCTILE IRON SEWER PIPING MUST BE 401 EPOXY COATED OR APPROVED EQUAL.

G. THE SANITARY SEWER GRAVITY LINE(S), MANHOLE(S), SANITARY SEWER SERVICE LATERAL(S) AND ASSOCIATED CLEAN-OUT(S) SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE HARNETT REGIONAL WATER. THE SANITARY SEWER GRAVITY LINE(S) MUST PNEUMATICALLY PRESSURE TESTED WITH COMPRESSED AIR AT 5 PSI AND THE SANITARY SEWER FORCE MAIN(S) MUST HYDROSTATICALLY PRESSURE TESTED WITH WATER OR AIR AT 200 PSI. SANITARY SEWER MANHOLES MUST BE VACUUM TESTED TO 10 INCHES OF MERCURY AND CANNOT DROP BELOW 9 INCHES IN 60 SECONDS FOR 4 FT. DIAMETER MANHOLES, 75 SECONDS FOR 5 FT. DIAMETER MANHOLES. THE TEST MUST BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS: FOR DUCTILE IRON PIPELINES TEST IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF ASTM C924. FOR PVC PIPELINES TEST IN ACCORDANCE WITH ASTM F1417-98 AND UBPPA UNI-B-6. VACUUM TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM C1244. THE HRW UTILITY CONSTRUCTION INSPECTOR AND ENGINEER MUST WITNESS ALL TESTS MENTIONED ABOVE.

H. PRIOR TO ACCEPTANCE, ALL SEWER SERVICE LATERALS WILL BE INSPECTED TO ENSURE THAT THEY ARE INSTALLED AT THE PROPER DEPTH. ALL SEWER CLEAN-OUTS MUST BE INSTALLED SO THE 4" X 4" LONG SWEEP COMBINATION WYE IS AT LEAST THREE (3') FEET BUT NO MORE THAN FOUR (4') FEET BELOW THE FINISH GRADE UNLESS OTHERWISE APPROVED IN WRITING BY HRW. THE SEWER CLEANOUTS SHALL HAVE A FOUR (4") SCHEDULE 40 PVC PIPE STUBBED UP FROM BOTH ENDS OF THE 4" X 4" LONG SWEEP COMBINATION WYE TO BE AT LEAST TWO (2') FEET ABOVE THE FINISH GRADE AND COVER EACH END WITH A FOUR (4") INCH TEMPORARY CAP TO KEEP OUT DIRT, SAND, ROCKS, WATER AND CONSTRUCTION DEBRIS. THE VERTICAL STACK ON EACH CLEAN-OUT MUST BE PROVIDED WITH A CONCRETE DONUT FOR PROTECTION.

I. ONCE THE SANITARY SEWER GRAVITY LINE(S) HAVE BEEN INSTALLED, PNEUMATICALLY PRESSURE TESTED AND IN PLACE FOR AT LEAST 30 DAYS, THE UTILITY CONTRACTOR MUST CONTACT THE HRW UTILITY CONSTRUCTION INSPECTOR TO WITNESS THE MANDREL TEST ON EACH PVC SANITARY SEWER GRAVITY LINE. THE UTILITY CONTRACTOR WILL NOTIFY HRW TO SCHEDULE THE MANDREL TESTING. THE MANDREL AND PROVING RING MUST BE SUPPLIED BY THE UTILITY CONTRACTOR. CLOSED CIRCUIT VIDEO CAMERA INSPECTIONS (AT THE UTILITY CONTRACTOR'S EXPENSE) MAY BE REQUIRED BY THE HRW UTILITY CONSTRUCTION INSPECTOR IF THE MANDREL AND MIRROR TAMPING TESTING CANNOT BE COMPLETED WITH SATISFACTORY RESULTS. THE SANITARY SEWER LINES SHOULD BE FLUSHED CLEAN USING A SEWER BALL OF THE PROPER DIAMETER BEFORE ANY MANDREL TESTING CAN BE PERFORMED. THE UTILITY CONTRACTOR IS RESPONSIBLE TO REMOVE ALL DIRT, SAND, SILT, GRAVEL, MUD AND DEBRIS FROM THE NEWLY CONSTRUCTED SEWER LINES EXERCISING CARE TO KEEP THE HARNETT REGIONAL WATER'S EXISTING SANITARY SEWER SYSTEMS CLEAN. SANITARY SEWER FORCE MAIN(S) SHALL BE PRESSURE TESTED TO 200 PSI FOR AT LEAST 2 HOURS LIKE WATER LINES.

J. THE UTILITY CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE THE NEWLY INSTALLED SANITARY SEWER SYSTEM(S) FOR OTHER UTILITY COMPANIES AND THEIR CONTRACTORS UNTIL THE NEW SANITARY SEWER SYSTEM(S) HAVE BEEN APPROVED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND ACCEPTED BY HRW.

K. HRW REQUIRES THAT THE UTILITY CONTRACTOR INSTALL TRACER WIRE IN THE TRENCH WITH ALL SANITARY SEWER FORCE MAINS. THE TRACER WIRE SHALL BE 12 GA. INSULATED, SOLID COPPER CONDUCTOR AND IT SHALL BE TERMINATED AT THE TOP OF THE VALVE BOXES OR MANHOLES. NO SPLICED WIRE CONNECTIONS SHALL BE MADE UNDERGROUND ON TRACER WIRE INSTALLED IN HARNETT COUNTY. THE TRACER WIRE MAY BE SECURED WITH DUCT TAPE TO THE TOP OF THE PIPE BEFORE BACKFILLING. THE TRACER WIRE IS NOT REQUIRED FOR THE GRAVITY SEWER LINE(S) BETWEEN MANHOLES.

L. THE UTILITY CONTRACTOR SHALL PROVIDE THE PROFESSIONAL ENGINEER (PE) AND HRW UTILITY CONSTRUCTION INSPECTOR WITH A SET OF RED LINE DRAWINGS IDENTIFYING THE COMPLETE SEWER SYSTEM INSTALLED FOR EACH PROJECT. THE RED LINE DRAWINGS SHOULD IDENTIFY THE MATERIALS, PIPE SIZES AND APPROXIMATE DEPTHS OF THE SEWER LINES AS WELL AS THE INSTALLED LOCATIONS OF THE MANHOLE(S), SANITARY SEWER GRAVITY LINE(S), SANITARY SEWER SERVICE LATERALS, CLEAN-OUTS, SEWER LIFT STATION(S) AND ASSOCIATED FORCE MAIN(S). THE RED LINE DRAWINGS SHOULD CLEARLY IDENTIFY ANY DEVIATIONS FROM THE NCDEQ APPROVED PLANS. ALL CHANGE ORDERS MUST BE APPROVED BY HRW AND THE PROFESSIONAL ENGINEER (PE) IN WRITING AND PROPERLY DOCUMENTED IN THE RED LINE FIELD DRAWINGS.

M. PRIOR TO THE COMMENCEMENT OF ANY WORK WITHIN ESTABLISHED UTILITY EASEMENTS OR NCDOT RIGHT-OF-WAYS THE UTILITY CONTRACTOR IS REQUIRED TO NOTIFY ALL CONCERNED UTILITY COMPANIES IN ACCORDANCE WITH G.S. 87-102. THE UTILITY CONTRACTOR MUST CALL THE NC ONE CALL CENTER AT 811 OR (800) 632-4949 TO VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION. EXISTING UTILITIES SHOWN IN THESE PLANS ARE TAKEN FROM MAPS FURNISHED BY VARIOUS UTILITY COMPANIES AND HAVE NOT BEEN PHYSICALLY LOCATED BY THE P.E. (I.E. TELEPHONE, CABLE, WATER, SEWER, ELECTRICAL POWER, FIBER OPTIC, NATURAL GAS, ETC.).

N. THE UTILITY CONTRACTOR SHALL SPOT DIG TO EXPOSE EACH EXISTING UTILITY PIPE OR LINE WHICH MAY CONFLICT WITH CONSTRUCTION OF PROPOSED SANITARY SEWER LINE EXTENSIONS WELL IN ADVANCE TO VERIFY LOCATIONS OF THE EXISTING UTILITIES. THE UTILITY CONTRACTOR SHALL PROVIDE BOTH HORIZONTAL AND VERTICAL CLEARANCES TO THE PROFESSIONAL ENGINEER (PE) TO ALLOW THE PE TO ADJUST THE SANITARY SEWER LINE DESIGN IN ORDER TO AVOID CONFLICTS WITH EXISTING UNDERGROUND UTILITIES. THE UTILITY CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER AND BE RESPONSIBLE FOR TEMPORARY RELOCATION OF EXISTING UTILITIES AND/OR SECURING EXISTING UTILITY POLES, PIPES, WIRES, CABLES, SIGNS AND/OR UTILITIES INCLUDING SERVICES IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS DURING SANITARY SEWER LINE INSTALLATION, GRADING AND STREET CONSTRUCTION.

O. WHEN MAKING A TAP ON AN EXISTING SEWER FORCE MAIN, THE UTILITY CONTRACTOR MUST HAVE A PERMIT FROM THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) PRIOR TO BEGIN THE TAP WORK. THE UTILITY CONTRACTOR SHALL CONDUCT A PNEUMATIC PRESSURE TEST USING COMPRESSED AIR OR OTHER INERT GAS ON THE STAINLESS STEEL TAPPING SLEEVE AND GATE VALVE PRIOR TO MAKING THE TAP ON AN EXISTING SANITARY SEWER FORCE MAIN. THIS PNEUMATIC PRESSURE TEST MUST BE WITNESSED BY THE HRW UTILITY CONSTRUCTION INSPECTOR. THE UTILITY CONTRACTOR SHALL USE ROMAC BRAND STAINLESS STEEL TAPPING SLEEVE(S) OR APPROVED EQUAL FOR ALL TAPS MADE ON SANITARY SEWER FORCE MAINS IN HARNETT COUNTY. THE UTILITY CONTRACTOR SHALL USE ROMAC BRAND STYLE "CB" SEWER SADDLES WITH STAINLESS STEEL BANDS OR APPROVED EQUAL FOR ALL TAPS MADE ON EXISTING SANITARY SEWER GRAVITY LINES IN HARNETT COUNTY.

P. THE UTILITY CONTRACTOR SHALL PROVIDE A GREASE TRAP FOR EACH SANITARY SEWER SERVICE LATERAL THAT WILL BE CONNECTED TO A RESTAURANT, FOOD PROCESSING FACILITY AND ANY OTHER COMMERCIAL OR INDUSTRIAL FACILITY AS REQUIRED BY THE HARNETT COUNTY FAT, OIL & GREASE ORDINANCE. THE GREASE TRAP MUST BE RATED FOR A MINIMUM CAPACITY OF AT LEAST 1,000 GALLONS UNLESS OTHERWISE APPROVED IN WRITING BY THE HRW PRE-TREATMENT COORDINATOR. GARBAGE DISPOSALS SHOULD NOT BE INSTALLED IN HOMES AND BUSINESSES THAT DISCHARGE WASTEWATER TO THE HARNETT REGIONAL WATER'S SANITARY SEWER SYSTEM AS THEY ARE NOT APPROVED BY HRW.

Q. EACH SEWER LIFT STATION MUST BE PROVIDED WITH THREE PHASE POWER (AT LEAST 480 VOLTS) AND CONSTRUCTED TO MEET THE MINIMUM REQUIREMENTS OF THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE (NEC) AND HARNETT REGIONAL WATER STANDARD SPECIFICATIONS AND DETAILS. IF THREE PHASE POWER IS NOT AVAILABLE FROM THE POWER COMPANY OTHER ARRANGEMENTS MUST BE APPROVED BY HRW ENGINEERING PRIOR TO THE START OF CONSTRUCTION.

R. WHERE A NEW SANITARY SEWER FORCE MAIN IS CONNECTED TO AN EXISTING MANHOLE IN THE HARNETT REGIONAL WATER SEWER COLLECTIONS SYSTEM, THE UTILITY CONTRACTOR MUST PROVIDE A PROTECTIVE COATING (EPOXY) FOR THE INTERIOR SURFACES OF THE MANHOLE TO PROTECT IT AGAINST CORROSION, EROSION AND DETERIORATION FROM THE RELEASE OF SEWER GASES SUCH AS METHANE AND HYDROGEN SULFIDE.

S. THE SEWER LIFT STATION DESIGN AND ASSOCIATED EQUIPMENT MUST MEET OR EXCEED THE MINIMUM REQUIREMENTS FOR HARNETT COUNTY SEWER LIFT STATIONS. EACH SANITARY SEWER LIFT STATION MUST BE CONSTRUCTED WITH AN ALL-WEATHER ACCESS ROAD THAT IS AT LEAST 20 FEET WIDE. THE LIFT STATION SITE MUST BE COVERED WITH WEED BLOCKING MATERIAL AND AT LEAST SIX (6") INCHES OF ABC STONE (CRUSH AND RUN).

T. ONCE A SEWER LIFT STATION HAS BEEN INSTALLED, THE UTILITY CONTRACTOR IS RESPONSIBLE TO SCHEDULE A DRAW DOWN TEST WITH HRW ENGINEERING AND COLLECTIONS STAFF, THE PROFESSIONAL ENGINEER (PE), THE ELECTRICIAN, THE ORIGINAL EQUIPMENT MANUFACTURERS (OEM) REPRESENTATIVES [FOR BOTH THE PUMPS AND THE GENERATOR]. THIS DRAW DOWN TEST MUST BE COMPLETED WITH POWER SUPPLIED FROM THE ELECTRICAL UTILITY COMPANY AND WITH POWER SUPPLIED BY THE EMERGENCY GENERATOR WITH SATISFACTORY RESULTS BEFORE FINAL INSPECTIONS ARE CONDUCTED BY THE HRW UTILITY CONSTRUCTION INSPECTOR.

U. ONCE THE UTILITY CONTRACTOR COMPLETES THE INSTALLATION OF A SEWER LIFT STATION, THE PROFESSIONAL ENGINEER (PE) MUST SUBMIT THE SEWER PERMIT CERTIFICATION AND AS-BUILT RECORD DRAWINGS TO THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND HRW FOR FINAL APPROVAL. THE UTILITY CONTRACTOR MUST SUPPLY HRW ENGINEERING STAFF WITH THREE ORIGINAL OPERATION & MAINTENANCE (O&M) MANUALS ALONG WITH THE ASSOCIATED PUMP CURVES AND ELECTRICAL SCHEMATICS FOR THE ASSOCIATED SEWER LIFT STATION EQUIPMENT INCLUDING ALL WARRANTY INFORMATION AND DOCUMENTATION.

V. ONCE THE UTILITY CONTRACTOR COMPLETES THE INSTALLATION OF A SEWER LIFT STATION, THE DEVELOPER MUST PAY HRW THE ESTABLISHED SYSTEM CONTROL AND DATA ACQUISITION (SCADA) FEES BEFORE THE SCADA SYSTEM WILL BE INSTALLED AT THE NEW SEWER LIFT STATION. THE SCADA SYSTEM MUST BE INSTALLED AND OPERATIONAL BEFORE THE UTILITIES MAY BE ACCEPTED BY HRW AND PLACED INTO OPERATION.

W. HRW REQUIRES THE UTILITY CONTRACTOR TO PROVIDE ALL NECESSARY EQUIPMENT AND DEVICES FOR THE TESTING AND INSPECTION OF THE SANITARY SEWER SYSTEM. THE EQUIPMENT AND DEVICES MAY INCLUDE BUT NOT LIMITED TO LAMPING WITH MIRRORS, MANDRELS, SEWER BALLS, PLUGS, AIR COMPRESSORS AND ASSOCIATED COMPRESSED AIR LINES. IF THE HRW UTILITY CONSTRUCTION INSPECTOR DEEMS THAT A CLOSED CIRCUIT VIDEO CAMERA INSPECTION OF THE NEWLY CONSTRUCTED SEWER SYSTEM IS NECESSARY, THEN ALL COSTS FOR THE CLOSED CIRCUIT CAMERA INSPECTION WILL BE THE RESPONSIBILITY OF THE UTILITY CONTRACTOR. ALL CLOSED CIRCUIT VIDEO CAMERA INSPECTIONS MUST BE RECORDED ON VHS TAPES THAT WILL RELEASED TO HRW FOR RECORD KEEPING, REVIEW AND APPROVAL OF THE SEWER SYSTEM.

X. ANY USE OF SEWER PLUGS TO TEMPORARILY BLOCK HARNETT REGIONAL WATER'S EXISTING SANITARY SEWER LINES MUST BE COORDINATED WITH THE HRW COLLECTIONS SUPERVISOR AT LEAST TWO (2) DAYS IN ADVANCE OF INSTALLING THE PLUGS. THE SEWER PLUGS MUST BE REMOVED AS SOON AS POSSIBLE ONCE THE NEW SANITARY SEWER LINES HAVE BEEN INSPECTED, PRESSURE TESTED, MANDREL TESTED, APPROVED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND ACCEPTED BY HRW TO ALLOW THE SEWER TO FLOW AS DESIGNED IN HARNETT REGIONAL WATER'S EXISTING SANITARY SEWER LINES OR WHEN SO ORDERED BY THE HRW COLLECTIONS SUPERVISOR TO LIMIT INTERRUPTIONS TO THE NORMAL FLOW OF THE SANITARY SEWER COLLECTION SYSTEM(S). THE UTILITY CONTRACTOR MUST PROVIDE THE PUMPS HOSES AND NECESSARY CONNECTORS FOR A TEMPORARY PUMP AROUND SETUP IF REQUIRED BY THE HRW COLLECTIONS SUPERVISOR. MR. RANDOLPH CLEGG, HRW COLLECTIONS SUPERVISOR MAY BE CONTACTED BETWEEN 8:00 AM AND 5:00 PM MONDAY THROUGH FRIDAY AT (910) 893-7575EXTENSION 3241.

Y. THE UTILITY CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL REPAIRS DUE TO LEAKAGE OR DAMAGE RESULTING FROM POOR WORKMANSHIP DURING THE ONE (1) YEAR WARRANTY PERIOD ONCE THE SEWER SYSTEM IMPROVEMENTS HAVE BEEN APPROVED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND ACCEPTED BY HRW. THE UTILITY CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL REPAIRS DUE TO DAMAGES RESULTING FROM FAILURE TO LOCATE THE NEW SANITARY SEWER LINES AND ASSOCIATED APPURTENANCES FOR OTHER UTILITIES AND THEIR CONTRACTORS UNTIL THE SANITARY SEWER LINES HAVE BEEN APPROVED BY NCDEQ AND ACCEPTED BY HRW. HRW WILL PROVIDE MAINTENANCE AND WARRANTY REPAIRS IF NECESSARY DUE TO LACK OF RESPONSE WITHIN 48 HOURS OF NOTIFICATION OF WARRANTY WORK. HRW WILL INVOICE THE DEVELOPER AND/OR UTILITY CONTRACTOR FOR MATERIALS AND LABOR IN SUCH CASES.

Z. IN DEVELOPMENTS AND PROJECTS THAT REQUIRE UTILITY EASEMENTS TO BE ESTABLISHED FOR FUTURE HRW RIGHT-OF-WAY, THE REGISTERED LAND SURVEYOR (RLS) MUST PROVIDE THE HRW RIGHT-OF-WAY AGENT WITH AN OFFICIAL COPY OF THE RECORDED PLAT AND LEGAL DESCRIPTION OF THE SAID EASEMENT AS RECORDED WITH THE HARNETT COUNTY REGISTER OF DEEDS. THE RECORDED DOCUMENTS MUST BE PROVIDED TO THE HRW RIGHT-OF-WAY AGENT BEFORE THE UTILITY IMPROVEMENTS WITHIN THE SAID EASEMENT CAN BE PLACED INTO OPERATION. ANY AND ALL EASEMENTS THAT MUST BE OBTAINED FROM ADJOINING PROPERTY OWNERS MUST BE PROVIDED TO HRW BY THE DEVELOPER AT NO COST TO HARNETT COUNTY. THE FINAL INSPECTION OF ALL SANITARY SEWER SYSTEM IMPROVEMENTS CANNOT BE SCHEDULED WITH HRW UNTIL THE STREETS HAVE BEEN PAVED; THE RIGHTS-OF-WAY AND UTILITY EASEMENTS HAVE BEEN SEEDED AND STABILIZED WITH AN ADEQUATE STAND OF GRASS IN PLACE TO PREVENT EROSION ISSUES ON SITE.

AA. THE ENGINEER OF RECORD IS RESPONSIBLE TO ENSURE THAT CONSTRUCTION IS, AT ALL TIMES, IN COMPLIANCE WITH ACCEPTED SANITARY ENGINEERING PRACTICES AND APPROVED PLANS AND SPECIFICATIONS. NO FIELD CHANGES TO THE APPROVED PLANS ARE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL BY HRW. A COPY OF EACH ENGINEER'S FIELD REPORT IS TO BE SUBMITTED TO HRW AS EACH SUCH INSPECTION IS MADE ON SYSTEM IMPROVEMENTS OR TESTING IS PERFORMED BY THE CONTRACTOR. WATER AND SEWER INFRASTRUCTURE MUST PASS ALL TESTS REQUIRED BY HRW SPECIFICATIONS AND THOSE OF ALL APPLICABLE REGULATORY AGENCIES. THESE TESTS INCLUDE, BUT ARE NOT LIMITED TO: AIR TEST, VACUUM TEST, MANDREL TEST, VISUAL TEST, PRESSURE TEST, BACTERIOLOGICAL TEST, ETC. A HRW INSPECTOR MUST BE PRESENT DURING TESTING AND ALL TEST RESULTS SHALL BE SUBMITTED TO HRW. ALL TESTS MUST BE SATISFIED BEFORE THE FINAL INSPECTION WILL BE SCHEDULED WITH THE HRW INSPECTOR. THE ENGINEER OF RECORD MUST REQUEST IN WRITING TO SCHEDULE THE FINAL INSPECTION ONCE ALL CONSTRUCTION IS COMPLETE. THE DEVELOPER'S ENGINEER OF RECORD AND THE HRW UTILITY CONSTRUCTION INSPECTOR SHALL PREPARE A WRITTEN PUNCH LIST OF ANY DEFECTS OR DEFICIENCIES NOTED DURING THE FINAL INSPECTION, SHOULD ANY EXIST. UPON COMPLETION OF THE PUNCH LIST, THE DEVELOPER'S ENGINEER OF RECORD WILL SCHEDULE ANOTHER INSPECTION. IN THE EVENT THE NUMBER OF INSPECTIONS PERFORMED BY THE HRW EXCEEDS TWO, ADDITIONAL FEES MAY BE ASSESSED TO THE DEVELOPER

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC		Date: 24 JUN 2025	Drawn by: JRT	Scale: VERTICAL SCALE: 1" = 5' (0, 5)
		JTE Project No. 25-009	Designed by: JRT	
Sheet: **SANITARY SEWER PLAN - PROFILE WATERLINE PLAN - PROFILE HRW STANDARD NOTES**	ISSUED FOR CONSTRUCTION	Sheet No.: **C7 of 12**	Reviewed by: JRT	50 0 25 50 100 HORIZONTAL SCALE: 1" = 50'

REVISIONS

14 AUG 2025: REVISIONS PER HRW COMMENTS ON SUBMITTAL 1

05 SEP 2025: REVISIONS PER HRW COMMENTS ON SUBMITTAL 2

07 JAN 2026: REVISIONS PER NCDOT COMMENTS (ADDED WATERLINE AND SERVICES PROFILES)

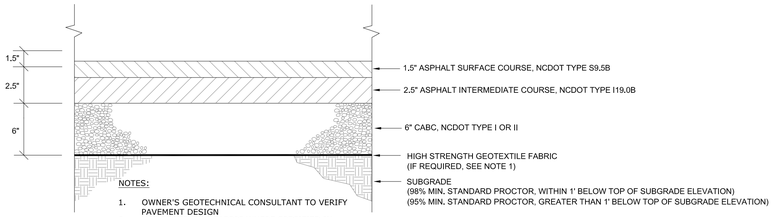
12 JAN 2026: ISSUED FOR CONSTRUCTION

SEAL 027472 ENGINEER JEREMY R. THOMAS 6·24·25

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File: C:\Users\jthom\OneDrive\Documents\PROJECTS\25-009 TIRADO TRUCK REPAIR\DRAWINGS\SITE - TIRADO TRUCK REPAIR.dwg Print Date: 1/12/2026

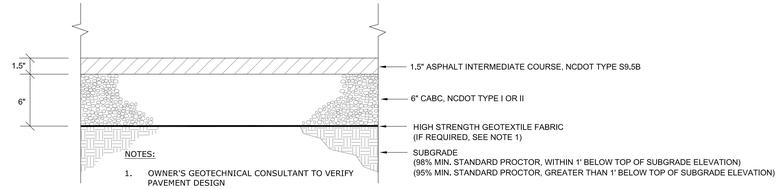


NOTES:

1. OWNER'S GEOTECHNICAL CONSULTANT TO VERIFY PAVEMENT DESIGN
2. USE GEOTEXTILE FABRIC WHERE SPECIFIED IN FIELD BY OWNER'S GEOTECHNICAL CONSULTANT.
3. SEE OWNER'S GEOTECHNICAL REPORT FOR MORE INFORMATION ON CONSTRUCTION SPECIFICATIONS.

A-8 ASPHALT PAVEMENT (DRIVES AND PARKING)

NTS

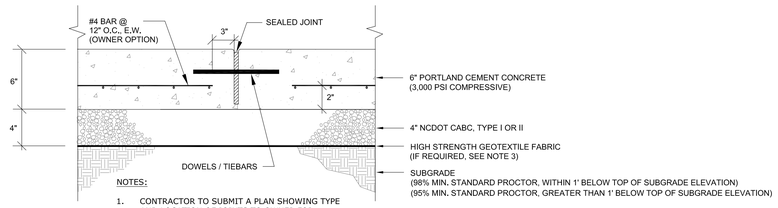


NOTES:

1. OWNER'S GEOTECHNICAL CONSULTANT TO VERIFY PAVEMENT DESIGN
2. USE GEOTEXTILE FABRIC WHERE SPECIFIED IN FIELD BY OWNER'S GEOTECHNICAL CONSULTANT.
3. SEE OWNER'S GEOTECHNICAL REPORT FOR MORE INFORMATION ON CONSTRUCTION SPECIFICATIONS.

B-8 ASPHALT PAVED PATH

NTS

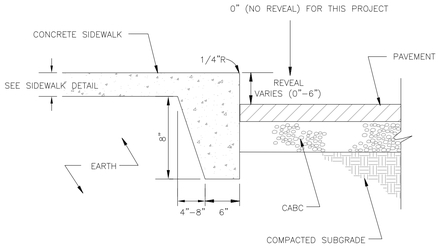


NOTES:

1. CONTRACTOR TO SUBMIT A PLAN SHOWING TYPE AND LOCATION OF JOINTS TO OWNER FOR APPROVAL.
2. SEAL JOINTS WITH A MONOELASTIC MATERIAL.
3. USE GEOTEXTILE FABRIC WHERE SPECIFIED IN FIELD BY OWNER'S GEOTECHNICAL CONSULTANT.
4. SEE OWNER'S GEOTECHNICAL REPORT FOR MORE INFORMATION ON CONSTRUCTION SPECIFICATIONS.

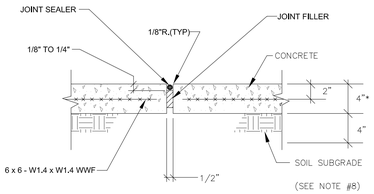
C-8 CONCRETE PAVEMENT

NTS



D-8 SIDEWALK W/ 'TURN DOWN' EDGE

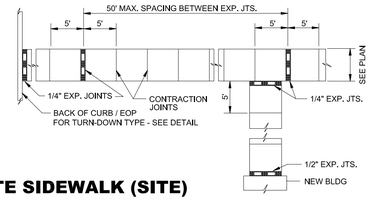
NTS



* INCREASE CONCRETE THICKNESS TO 6" WHERE DRIVEWAY CROSSES OR OTHERWISE WHERE VEHICLES ARE EXPECTED TO CROSS OVER.

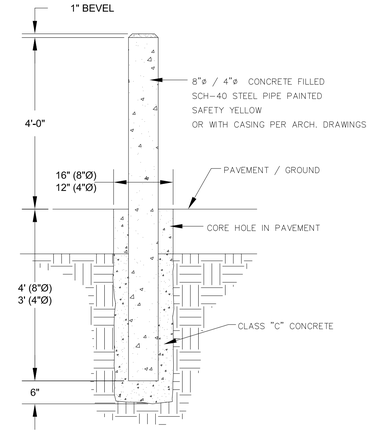
NOTES:

1. CONCRETE SHOULD HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 PSI.
2. ALL SIDEWALKS SHALL BE 4" THICK EXCEPT AT TURN DOWN.
3. CONTRACTION JOINTS SHALL BE SPACED AT 5'-0" INTERVALS.
4. CONTRACTION JOINTS SHALL BE FORMED 1" DEEP AND EDGED WITH 1/8" RADIUS, OR MAY BE SAWCUT 1" DEEP.
5. SIDEWALK CROSS SLOPE SHOULD BE 2% MIN. TO AND SLOPE TOWARD PAVED AREAS
6. 1/2" EXP. JT. MATERIAL REQUIRED WHERE CONC. SIDEWALK ABUTS ANY RIGID STRUCTURE.
7. A LAYER OF 15# BLDG. FELT IS REQUIRED BETWEEN WALK AND ADJACENT PARALLELING CONC. CURB.
8. ADD 4" LAYER OF CABC BETWEEN CONCRETE AND SOIL SUBGRADE IN AREAS OF POOR SOILS AND WHERE DIRECTED BY OWNER'S GEOTECHNICAL CONSULTANT.



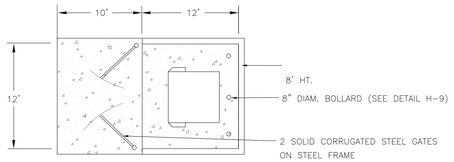
E-8 CONCRETE SIDEWALK (SITE)

NTS

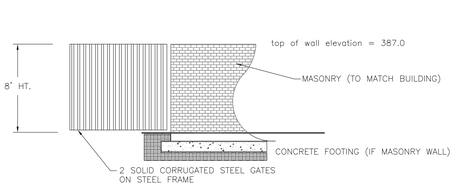


G-8 BOLLARD

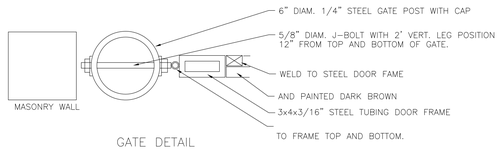
NTS



SINGLE DUMPSTER PAD



MASONRY SCREEN

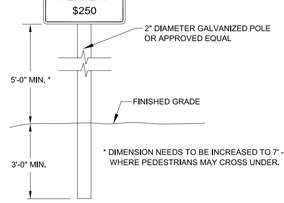


GATE DETAIL

F-8 DUMPSTER AREA

NTS

STANDARD HANDICAP ACCESSIBLE PARKING SIGN



H-8 HANDICAP ACCESSIBLE PARKING SIGN

NTS

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC	Date: 24 JUN 2025	Drawn by: JRT	Scale: NTS
	JTE Project No. 25-009	Designed by: JRT	
Sheet: **CONSTRUCTION DETAILS**	Sheet No.: **C8** of **12**	Reviewed by: JRT	
ISSUED FOR CONSTRUCTION			

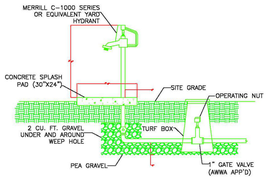
REVISIONS

12 JAN 2026: ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER'S SEAL

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YARD HYDRANT DETAIL

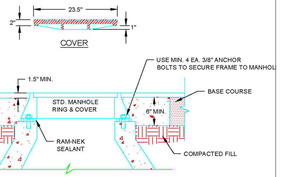
NOTES:
1. APPROVED RPZ ASSEMBLY MUST BE INSTALLED BETWEEN THE GATE VALVE AND METER.

TYPICAL YARD HYDRANT INSTALLATION DETAIL S-6

NO SCALE



FRAME & COVER



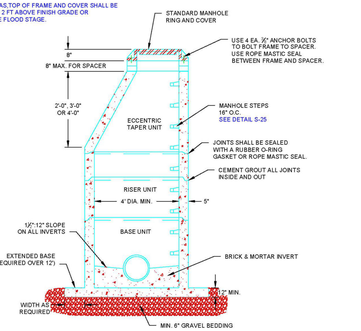
FRAME

NOTE:
CONCRETE ENCASEMENT SHALL ONLY BE USED IN AREAS WHERE COVER IS TO BE FLUSH WITH PAVEMENT OR CONCRETE. CONCRETE ENCASEMENT SHALL NOT BE USED IN NON-TRAFFIC AREAS AND ABOVE GRADE INSTALLATIONS.

TYPICAL STANDARD MANHOLE FRAME & COVER DETAIL S-21

NO SCALE

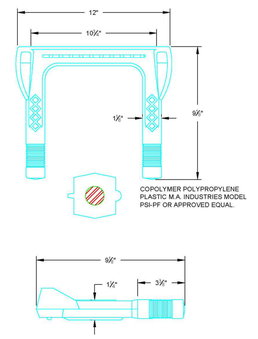
NOTE:
IN NON-TRAFFIC AREAS,TOP OF FRAME AND COVER SHALL BE INSTALLED AT LEAST 2 FT ABOVE FINISH GRADE OR AT LEAST 1 FT ABOVE FLOOD STAGE.



TYPICAL STANDARD PRECAST CONCRETE MANHOLE DETAIL S-24

NO SCALE

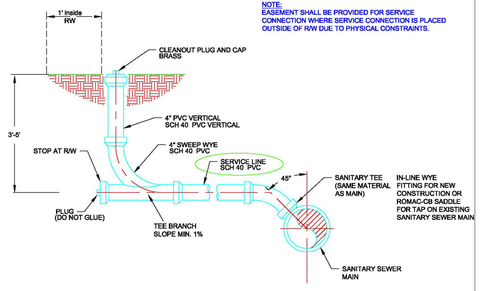
NOTES:
1. SEE DETAIL S-28 FOR TYPICAL INVERT.



TYPICAL POLYPROPYLENE PLASTIC STEP DETAIL S-27

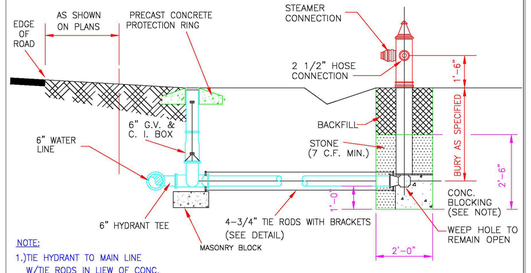
NO SCALE

NOTE:
EASEMENT SHALL BE PROVIDED FOR SERVICE CONNECTION WHERE SERVICE CONNECTION IS PLACED OUTSIDE OF R/W DUE TO PHYSICAL CONSTRAINTS.



TYPICAL SEWER SERVICE CONNECTION DETAIL S-29

NO SCALE

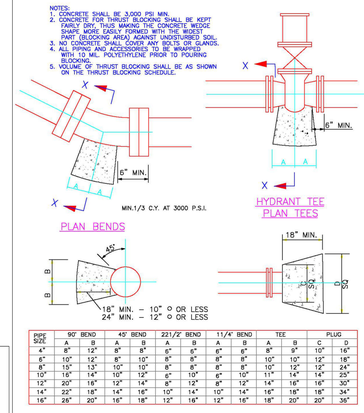


NOTE:
1.)TIE HYDRANT TO MAIN LINE W/TIE RODS IN LIEW OF CONC. BLOCKING IN SANDY SOIL.
2.)MECHANICAL JOINTS USED WITH GRIP RINGS

TYPICAL FIRE HYDRANT INSTALLATION DETAIL W-6

NO SCALE

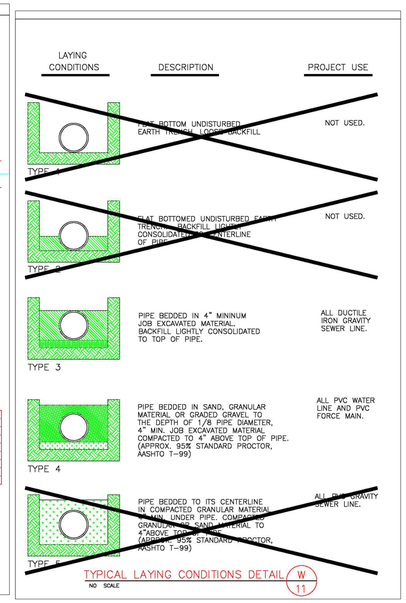
NOTES:
1. CONCRETE SHALL BE 3,000 PSI MIN.
2. CONCRETE FOR THRUST BLOCKING SHALL BE KEPT FAIRLY DRY, THUS MAKING THE CONCRETE WEDGE SHAPE MORE EASILY FORMED WITH THE WIDEST POSSIBLE BEARING AREA AGAINST UNDISTURBED SOIL.
3. NO CONCRETE SHALL COVER ANY BOLTS OR GLANDS.
4. ALL PIPING AND ACCESSORIES TO BE WRAPPED WITH 10 MIL POLYETHYLENE PRIOR TO POURING BLOCKING.
5. VOLUME OF THRUST BLOCKING SHALL BE AS SHOWN ON THE THRUST BLOCKING SCHEDULE.



PIPE SIZE	90° BEND		45° BEND		22½° BEND		11¼° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	8"	8"	10"	16"
6"	10"	12"	8"	10"	8"	8"	8"	8"	10"	10"	12"	18"
8"	15"	13"	10"	10"	8"	8"	8"	8"	10"	12"	12"	24"
10"	16"	14"	10"	12"	6"	10"	6"	10"	11"	14"	14"	29"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
14"	22"	18"	14"	16"	10"	14"	10"	14"	16"	18"	18"	34"
16"	26"	20"	16"	18"	12"	16"	12"	16"	18"	20"	20"	36"

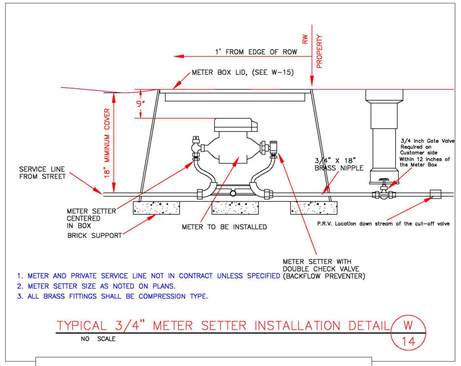
TYPICAL THRUST BLOCK DETAIL W-7

NO SCALE



TYPICAL LAYING CONDITIONS DETAIL W-11

NO SCALE



1. METER AND PRIVATE SERVICE LINE NOT IN CONTRACT UNLESS SPECIFIED (BACKFLOW PREVENTER)
2. METER SETTER SIZE AS NOTED ON PLANS.
3. ALL BRASS FITTINGS SHALL BE COMPRESSION TYPE.

TYPICAL 3/4" METER SETTER INSTALLATION DETAIL W-14

NO SCALE

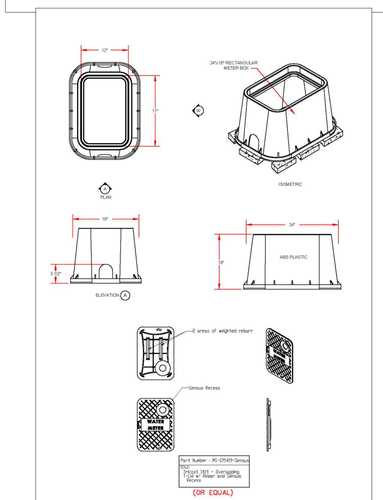
NOTE:
1. "SERVICE CONNECTION" IN PROPOSAL TO INCLUDE SERVICE SADDLE, 45° BEND, CORPORATION COCK AND ALL LABOR INVOLVED IN MAKING A COMPLETE SERVICE CONNECTION.
2. SERVICE PIPING TO BE 3/4" SDR-9 PE TUBING
3. ALL BRASS FITTINGS SHALL BE COMPRESSION TYPE

TYPICAL WATER SERVICE CONNECTION USING TAPPING SADDLE DETAIL W-13

NO SCALE

TYPICAL VALVE BOX DETAIL W-2

NO SCALE



TYPICAL METER BOX DETAIL FOR 3/4" SERVICE W-15

NO SCALE

Project: **TIRADO TRUCK REPAIR** US 421 SOUTH HARNETT COUNTY, NC	Date: 24 JUN 2025	Drawn by: JRT	Scale: NTS
	JTE Project No. 25-009	Designed by: JRT	
Sheet: **STANDARD DRAWINGS - HARNETT REGIONAL WATER**	Sheet No.: **C9** of **12**	Reviewed by: JRT	
ISSUED FOR CONSTRUCTION			

REVISIONS

14 AUG 2025: REVISIONS PER HRW COMMENTS ON SUBMITTAL 1

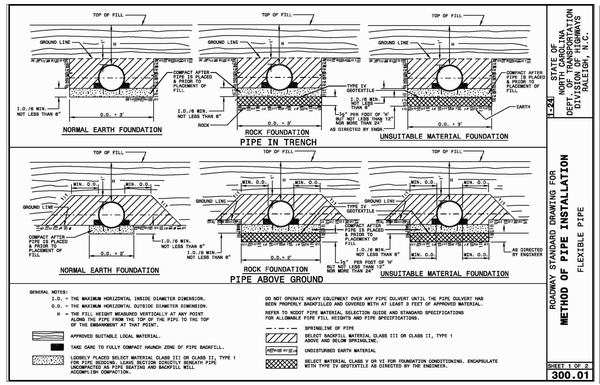
12 JAN 2026: ISSUED FOR CONSTRUCTION

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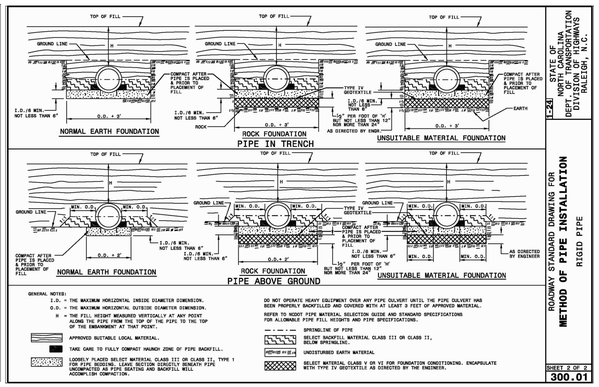


GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE BOTTOM DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.
SPRINGLINE OF PIPE
SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE
UNDISTURBED EARTH MATERIAL
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE
SHEET 1 OF 2
300.01

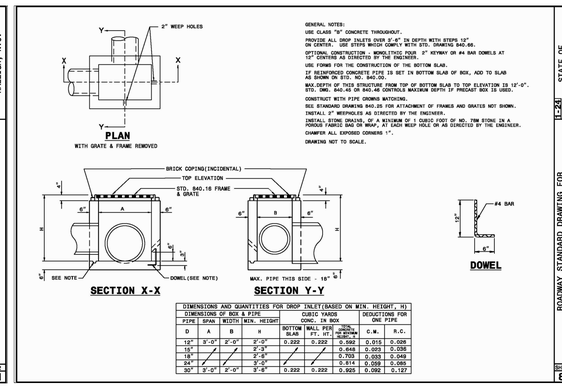


GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE BOTTOM DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.
SPRINGLINE OF PIPE
SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE
UNDISTURBED EARTH MATERIAL
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

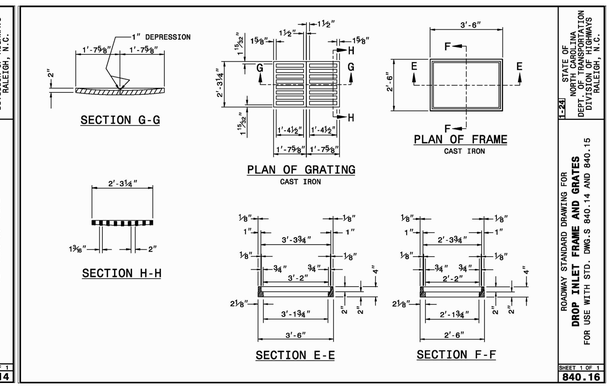
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE
SHEET 2 OF 2
300.01



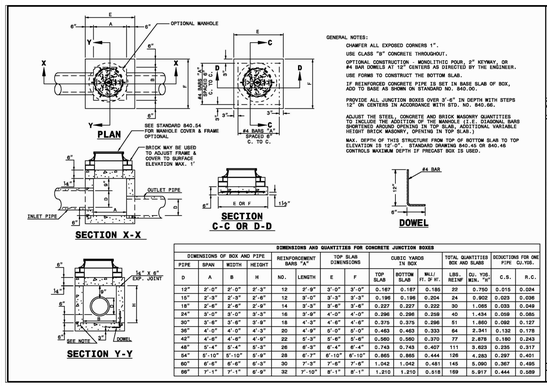
GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL DROP INLETS OVER 5'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR. 3" KEYWAY ON #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION 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.
MAX.DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 19'-0". STD. DWG. 840.45 OR 840.46 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.
CONSTRUCT WITH PIPE GROMS MATCHING.
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
INSTALL 3" WEEPHOLES AS DIRECTED BY THE ENGINEER.
INSTALL RIPRAP GRATING, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)								
DIMENSIONS OF BOX & PIPE				CUBIC YARDS CONC. IN BOX		DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	WALL PER FT. OF HEIGHT	C.Y.	R.C.
D	A	B	H				
12"	3'-0"	2'-0"	2'-0"	0.222	0.592	0.015	0.026
15"	3'-0"	2'-0"	2'-3"		0.666	0.023	0.036
18"	3'-0"	2'-0"	2'-6"		0.703	0.033	0.046
24"	3'-0"	2'-0"	3'-0"		0.814	0.059	0.069
30"	3'-0"	2'-0"	3'-6"	0.222	0.222	0.925	0.092	0.127

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
CONCRETE DROP INLET
12" THRU 30" PIPE
SHEET 1 OF 1
840.14



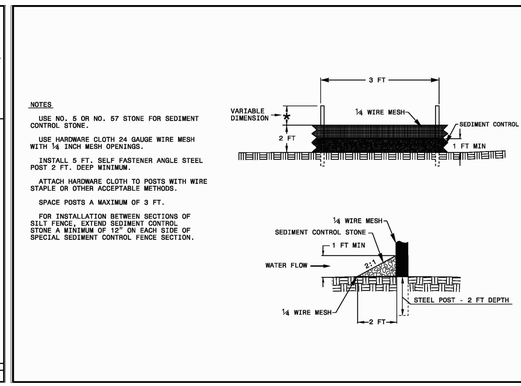
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
DROP INLET FRAME AND GRATIES
FOR USE WITH STD. DWG.S 840.14 AND 840.15
SHEET 1 OF 1
840.16



GENERAL NOTES:
CHAMFER ALL EXPOSED CORNERS 1".
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 3" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
PROVIDE ALL JUNCTION BOXES OVER 5'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E. STANDARD BARS SHORTENING AROUND OPENING IN TOP SLAB, ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.)
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 19'-0". STANDARD DRAWING 840.45 OR 840.46 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.

DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS "A"		TOP SLAB DIMENSIONS		CUBIC YARDS IN BOX			TOTAL QUANTITIES BOX AND SLABS		DEDUCTIONS FOR ONE PIPE CU.YDS.	
D	A	B	H	NO.	LENGTH	E	F	TOP SLAB	BOTTOM SLAB	WALL/ FT. OF H.	LBS. REINF	CU. YDS. CONC. MIN.	C.Y.	R.C.
12"	2'-3"	2'-3"	2'-3"	12	2'-9"	3'-0"	3'-0"	0.167	0.187	0.185	20	0.750	0.015	0.024
15"	2'-3"	2'-3"	2'-6"	12	3'-0"	3'-3"	3'-3"	0.186	0.196	0.204	24	0.902	0.023	0.036
18"	2'-6"	2'-6"	2'-6"	14	3'-3"	3'-6"	3'-6"	0.227	0.237	0.222	30	1.068	0.033	0.046
24"	3'-0"	3'-0"	3'-3"	16	3'-9"	4'-0"	4'-0"	0.296	0.296	0.259	40	1.454	0.059	0.065
30"	3'-6"	3'-6"	3'-9"	18	4'-3"	4'-6"	4'-6"	0.375	0.375	0.296	51	1.860	0.092	0.127
36"	4'-0"	4'-0"	4'-3"	20	4'-9"	5'-0"	5'-0"	0.463	0.463	0.333	64	2.341	0.132	0.176
42"	4'-6"	4'-6"	4'-9"	22	5'-3"	5'-6"	5'-6"	0.560	0.560	0.370	77	2.878	0.180	0.243
48"	5'-0"	5'-0"	5'-3"	26	5'-3"	6'-0"	6'-0"	0.743	0.743	0.407	111	3.555	0.235	0.317
54"	5'-10"	5'-10"	5'-9"	28	6'-3"	6'-10"	6'-10"	0.865	0.865	0.444	126	4.283	0.297	0.401
60"	6'-6"	6'-6"	6'-3"	30	7'-3"	7'-6"	7'-6"	1.042	1.042	0.481	145	5.090	0.367	0.495
66"	7'-1"	7'-1"	6'-9"	32	7'-10"	8'-1"	8'-1"	1.210	1.210	0.518	169	5.917	0.444	0.589

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
CONCRETE JUNCTION BOX
12" THRU 66" PIPE
SHEET 1 OF 1
840.31



NOTES

USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH ¼ INCH MESH OPENINGS.

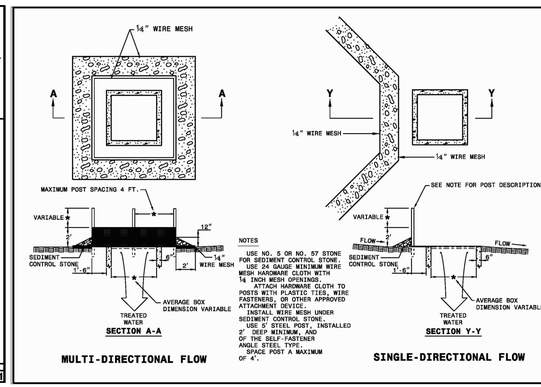
INSTALL 5 FT. SELF FASTENER ANGLE STEEL POST 2 FT. DEEP MINIMUM.

ATTACH HARDWARE CLOTH TO POSTS WITH WIRE STAPLE OR OTHER ACCEPTABLE METHODS.

SPACE POSTS A MAXIMUM OF 3 FT.

FOR INSTALLATION BETWEEN SECTIONS OF SILT FENCE, EXTEND SEDIMENT CONTROL STONE A MINIMUM OF 12" ON EACH SIDE OF SPECIAL SEDIMENT CONTROL FENCE SECTION.

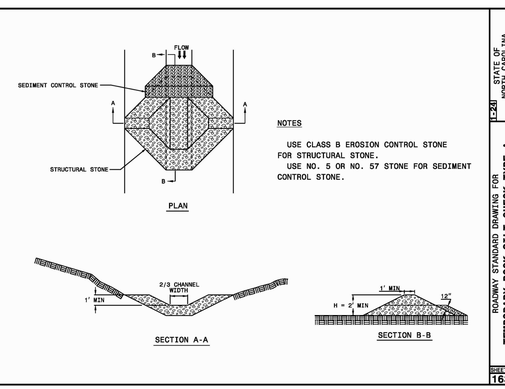
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
SPECIAL SEDIMENT CONTROL FENCE
SHEET 1 OF 1
1606.01



NOTES

USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
USE 24 GAUGE MINIMUM WIRE MESH HARDWARE CLOTH WITH ¼ INCH MESH OPENINGS.
ATTACH HARDWARE CLOTH TO POSTS WITH PLASTIC TIES, WIRE FASTENERS OR OTHER APPROVED ATTACHMENT DEVICES.
INSTALL WIRE MESH UNDER SEDIMENT CONTROL STONE.
USE 5' STEEL POST, INSTALLED 2' DEEP MINIMUM, AND OF THE SELF-FASTENER ANGLE STEEL TYPE.
SPACE POST A MAXIMUM OF 4'.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
ROCK INLET SEDIMENT TRAP TYPE C
SHEET 1 OF 1
1632.03



NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
1-24
ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE A
SHEET 1 OF 1
1633.01

MAINTENANCE FOR NCDOT STD DWG 1606.01:

1. INSPECT ALL MEASURES AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. REMOVE SEDIMENT DEPOSITS BEHIND SEDIMENT CONTROL STONE TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN EVENT. TAKE CARE TO AVOID TAKING UP STONE WHEN CLEANING. REPLACE STONE AS NEEDED.
3. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING AREA TO GRADE AND STABILIZE IT AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERTY STABILIZED.

MAINTENANCE FOR NCDOT STD DWG 1632.03:

1. INSPECT ALL MEASURES AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER, MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. REMOVE SEDIMENT DEPOSITS BEHIND SEDIMENT CONTROL STONE TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN EVENT. TAKE CARE TO AVOID TAKING UP STONE WHEN CLEANING. REPLACE STONE AS NEEDED.
3. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING AREA TO GRADE AND STABILIZE IT AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERTY STABILIZED. ENSURE POSITIVE DRAINAGE TOWARD THE INLET.

MAINTENANCE FOR NCDOT STD DWG 1633.01:

1. INSPECT ALL MEASURES AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER, MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. REMOVE SEDIMENT DEPOSITS BEHIND SEDIMENT CONTROL STONE TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN EVENT. TAKE CARE TO AVOID TAKING UP STONE WHEN CLEANING. REPLACE STONE AS NEEDED.
3. REMOVE ALL STONE AND UNSTABLE SEDIMENT DEPOSITS AND BRING AREA TO GRADE AND STABILIZE IT AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERTY STABILIZED. ENSURE POSITIVE DRAINAGE IN THE DRAINAGE CONVEYANCE.

DATE: PAGE:

CONSIDERATIONS FOR CONSTRUCTION SCHEDULING

CONSTRUCTION ACTIVITY	SCHEDULE CONSIDERATION
CONSTRUCTION ACCESS: Construction entrance, construction routes, equipment parking areas.	First land-disturbing activity- Stabilize bare areas immediately with gravel and temporary vegetation as construction takes place.
SEDIMENT TRAPS AND BARRIERS: Basin traps, sediment fences, and outlet protection.	Install principal basins after construction site is accessed. Install additional traps and barriers as needed during grading.
RUNOFF CONTROL: Diversions, perimeter dikes, water bars, and outlet protection.	Install key practices after principal sediment traps and before land grading. Install additional runoff-control measures during grading.
RUNOFF CONVEYANCE SYSTEM: Stabilize streambanks, storm drains, channels, inlet and outlet protection, and slope drains.	Where necessary, stabilize streambanks as early as possible. Install principal runoff conveyance system with runoff-control measures. Install remainder of system after grading.
LANDING CLEARING AND GRADING: Site preparation- cutting, filling and grading, sediment traps, barriers, diversions, drains, and surface roughening.	Begin major clearing and grading **AFTER** principal sediment and key runoff-control measures are installed. Clear borrow and disposal areas only as needed. Install additional control measures as grading progresses. Mark trees and buffer areas for preservation.
SURFACE STABILIZATION: Temporary and permanent seeding, mulching, sodding and riprap.	Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or complete.
BUILDING CONSTRUCTION: Buildings, utilities, and paving.	Install necessary additional erosion and sedimentation control practices as work takes place.
LANDSCAPE AND FINAL STABILIZATION: Topsoiling, trees and shrubs, permanent seeding, mulching, sodding, and riprap.	Last construction phase: Stabilize all open areas, including borrow and spoil areas. Remove and stabilize all temporary control areas.

NOTE: The above are the main aspects of a typical construction sequence in general terms. A detailed Construction Sequence should be site specific based on your project and site needs. As a minimum, the construction sequence schedule should show the following:

- The erosion and sedimentation control practices to be installed,
- Principal development activities,
- What measures should be in place before other activities are begun, and
- Compatibility with the general construction schedule of the contract.

Many timely construction techniques can reduce the erosion potential of a site, such as (1) shaping earthen fills daily to prevent overflows and (2) constructing temporary diversions ahead of anticipated storms. These types of activities cannot be put on the construction sequence schedule, but should be used whenever possible.

DEQ — **CONSTRUCTION SEQUENCING** — Effective Date: 9/1/2023 In accordance with the 2013 Design Manual Updates

DATE: PAGE:

SPACING GUIDE FOR SLOPE BREAKS		
	SLOPE	SPACING (FT)
Steep Slopes	2:1	20
	3:1	35
	4:1	45
Long Slopes	15-25%	50
	10-15%	80
	6-10%	125
	3-6%	200
	<3%	300

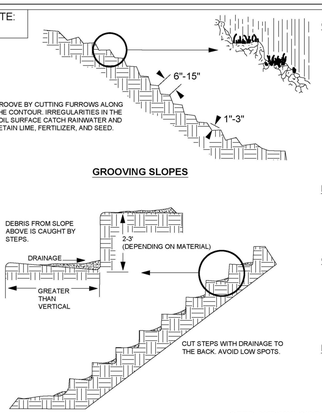
Use slope breaks, such as diversions, wattles, or benches, as appropriate, to reduce the length of cut-and-fill slope to limit sheet and rill erosion and prevent gullying.

MAINTENANCE:
1. Periodically check all graded areas and the supporting erosion and sedimentation control practices, especially after heavy rainfalls.
2. Promptly remove all sediment from diversions and other water-disposal practices.
3. If washouts or breaks occur, repair immediately.
4. Prompt maintenance of small eroded areas before they become significant gullies is an essential part of an effective erosion and sedimentation control plan.

NOTES:
1. Construct and maintain all erosion and sediment control practices and measures in accordance with the approved sedimentation control plan and construction schedule.
2. Remove good topsoil from areas to be graded and filled, and preserve it for use in finishing the grading of all critical areas.
3. Scarify areas to be topsoiled to a minimum depth of 2 inches before placing topsoil.
4. Clear and grub areas to be filled by removing trees, vegetation, roots, or other objectionable material that would affect the planned stability of the fill.
5. Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.
6. Place all fill in layers not to exceed 9 inches in thickness, and compact the layers as required to reduce erosion, slippage, settlement, or other related problems.
7. Do not incorporate frozen, soft, mucky, or highly compressible materials into fill slopes.
8. Do not place fill on a frozen foundation, due to possible subsidence and slippage.
9. Keep diversions and other water conveyance measures free of sediment during all phases of development.
10. Handle seeps or springs encountered during construction in accordance with approved methods (subsurface drain).
11. Permanently stabilize all graded areas immediately after final grading is completed on each area in the grading plan. Apply temporary stabilization measures on all graded areas when work is to be interrupted or delayed for 30 days or longer.
12. Show topsoil, stockpiles, borrow areas, and spoil areas on the plans, and make sure they are adequately protected from erosion. Include final stabilization of these areas in the plan.

DEQ — **LAND GRADING** — Effective Date: 9/1/2023 In accordance with the 2013 Design Manual Updates

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CUT SLOPE ROUGHENING FOR AREAS NOT TO BE MOWED:
1. Stair-step grade or groove cut slopes with a gradient steeper than 3:1.
2. Use stair-step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-stepping.
3. Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the "step" in toward the vertical wall.
4. Do not make individual vertical cuts more than 2 feet in soft materials or more than 3 feet in rocky materials.
5. Grooving uses machinery to create a series of ridges and depressions that run across the slope (on the contour).
6. Groove using any appropriate implement that can be safely operated on the slope. Such as disks, tillers, spring harrows, or the teeth on a front-end loader bucket. Do not make such grooves less than 3 inches deep nor more than 15 inches apart.

FILL SLOPE ROUGHENING FOR AREAS NOT TO BE MOWED:
1. Place fill slopes with a gradient steeper than 3:1 in lifts not to exceed 9 inches, and make sure each lift is properly compacted. Ensure that the face of the slope consists of loose, uncompacted fill 4 to 6 inches deep. Use grooving, as described above, to roughen the face of the slopes, if necessary.
2. Do not blade or scrape the final slope face.

CUTS, FILLS, AND GRADED AREAS THAT WILL BE MOWED:
1. Make mowed slopes **no steeper than 3:1**
2. Roughen these areas to shallow grooves by normal tilling, disking, harrowing, or use of a cultipacker-seeder. Make the final pass of any such tillage implement on the contour.
3. Make grooves, formed by such implements, close together (less than 10 inches) and not less than 1 inch deep.
4. Excessive roughness is undesirable where mowing is planned.

ROUGHENING WITH TRACKED MACHINERY:
1. Limit roughening with tracked machinery to sandy soils to avoid undue compaction of the soil surface. Tracking is generally not as effective as the other roughening methods described.
2. Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back-blade during the final grading operation.

SEED AND MULCH ROUGHENED AREAS IMMEDIATELY TO OBTAIN OPTIMUM SEED GERMINATION AND GROWTH.

DEQ — **SURFACE ROUGHENING** — Effective Date: 9/1/2023 In accordance with the 2013 Design Manual Updates

Project: **TIRADO TRUCK REPAIR**
US 421 SOUTH
HARNETT COUNTY, NC

Sheet: **STANDARD DRAWINGS - NCDOT / NCDEQ**

ISSUED FOR CONSTRUCTION

Date: 24 JUN 2025
JTE Project No. 25-009
Sheet No.: **C10** of **12**

Drawn by: JRT
Designed by: JRT
Reviewed by: JRT

Scale: NTS

REVISIONS

12 JAN 2026: ISSUED FOR CONSTRUCTION



PROFESSIONAL ENGINEER'S SEAL

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File: C:\Users\jthom\OneDrive\Documents\PROJECTS\25-009 TIRADO TRUCK REPAIR\DRAWINGS\STTE - TIRADO TRUCK REPAIR.dwg Print Date: 1/12/2026

DATE: PAGE:

TEMPORARY SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120
Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains)	50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

Seeding Dates
Mountains—Above 2500 feet: Feb. 15 - May 15
Below 2500 feet: Feb. 1- May 1
Piedmont—Jan. 1 - May 1
Coastal Plain—Dec. 1 - Apr. 15

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER

Seeding Mixture

Species	Rate (lb/acre)
German millet	40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

Seeding Dates
Mountains — May 15 - Aug. 15
Piedmont — May 1 - Aug. 15
Coastal Plain — Apr. 15 - Aug. 15

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR FALL

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120

Seeding Dates
Mountains — Aug. 15 - Dec. 15
Coastal Plain and Piedmont — Aug. 15 - Dec. 31

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

SEED BED PREPARATION:

LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1-1½ tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.

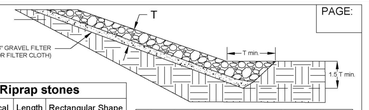
FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700 - 1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes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

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

TEMPORARY SEEDING

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

DATE: PAGE:



Size of Riprap stones

Weight (lb)	Mean Spherical Diameter (ft)	Length (ft)	Rectangular Shape Width/Height (ft)
50	0.8	1.4	0.5
100	1.1	1.8	0.6
150	1.3	2.0	0.7
300	1.6	2.6	0.9
500	1.9	3.0	1.0
1000	2.2	3.7	1.3
1500	2.6	4.7	1.5
2000	2.8	5.4	1.8
4000	3.6	6.0	2.0
6000	4.0	6.9	2.3
8000	4.5	7.6	2.5
20,000	6.1	10.0	3.3

Sizes for Riprap and Erosion Control Stone Specified by NCDOT

Riprap		Erosion Control	
Class 1	Class 2	Class A	Class B
5-200 lb	25-250 lb	2"-6"	5"-15"
30% shall weigh a minimum of 60 lbs each	60% shall weigh a minimum of 100 lbs each		
No more than 10% shall weigh less than 15 lbs each	No more than 5% shall weigh less than 50 lbs each	10% tolerance top and bottom sizes	
		Equally distributed, no gradation specified	Equally distributed, no gradation specified

Riprap should be a well-graded mixture with 50% by weight larger than the specified design size.
Diameter of the largest stone size in the mix should be 1.5 times the d_{50} size with smaller sizes grading down to 1 inch.

Subgrade Preparation:
1. Prepare the subgrade for riprap and filter to the required lines and grades shown on the plans.
2. Compact any fill required in the subgrade to a density approximating that of the surrounding undisturbed material or overfill depressions with riprap.
3. Remove brush, trees, stumps, and other objectionable material.

Sand and Gravel Filter Blanket:
1. Place the filter blanket immediately after the ground foundation is prepared.
2. When using gravel, spread filter stone in a uniform layer to the specified depth.
3. When more than one layer of filter material is used, spread the layers with minimal mixing.

Synthetic Filter Fabric:
1. Place the cloth filter directly on the prepared foundation.
2. Overlap the edges by at least 12 inches, and space anchor pins every 3 feet along the overlap.
3. Bury the upstream end of the cloth a minimum of 12 inches below ground and bury the lower end of the cloth or over lap with the next section as required.
4. If damage occurs while placing riprap, remove the riprap, and repair the sheet by adding another layer of filter material with a minimum overlap of 12 inches around the damaged area. If damage is extensive, remove and replace the entire sheet.
5. If placing large stones or machine placing is difficult, a 4 inch layer of fine gravel or sand may be needed to protect the filter cloth.

Maintenance:
In general, once a riprap installation has been properly designed and installed it requires very little maintenance. Riprap should be inspected periodically for scour or dislodged stones. Control of weed and brush growth may be needed in some locations.

Stone Placement:
1. Placement of riprap should follow immediately after placement of the filter.
2. Place so that riprap forms a dense, well-graded mass of stone with a minimum of voids.
3. Place to its full thickness in one operation.
4. Do not place by dumping through chutes or other methods that cause segregation of stone sizes.
5. Take care not to dislodge underlying base or filter when placing stone.
6. The toe of the riprap slope should be keyed to a stable foundation at its base.
7. The toe should be excavated to a depth about 1.5 times the design thickness of the riprap and extend horizontally from the slope, as shown above.
8. Hand placing may be necessary to achieve the proper distribution of stone sizes to produce a relatively smooth, uniform surface.

RIP RAP

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

DATE: PAGE:

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

SEEDING MIXTURE

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

*Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual.

Seeding Dates
Coastal or Eastern Piedmont for Centipede- Sept. 1 - May 1
Coastal and Piedmont for Indian Woodoats and Virginia Wild Rye- Feb 15 - April 1
Mountains for Indian Woodoats and Virginia Wild Rye- March 1 - May 15

Maintenance:
Significant maintenance may be required to obtain desired cover.

NON-INVASIVE PERMANENT SEEDING RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE

Species	Rate
Indian Woodoats	1.5-2.5 lbs/acre*
Virginia Wild Rye	4-6 lbs/acre*

*Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual.

Seeding Dates
Mountains - July 15- Aug 15
Piedmont - Aug 15 - Oct 15

Maintenance:
Indian Woodoats and Virginia Wild Rye are both sun and shade tolerant.

NON-INVASIVE PERMANENT SEEDING RECOMMENDATIONS FOR FALL

SEEDING MIXTURE

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

*Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual.

Seeding Dates
Mountains - Hard Fescue- Aug 1 - June 1
Mountains- Switchgrass, Indian Grass, Big Bluestem- Dec 1 - April 15
Piedmont and Coastal- Switchgrass, Indian Grass, Big Bluestem- Dec 1 - April 1
Coastal- Indian Woodoats and Virginia Wild Rye- Sept 1 - Nov 1

Maintenance:
Hard Fescue is not recommended for slopes > 5%. Prefers shade.

SEED BED PREPARATION:

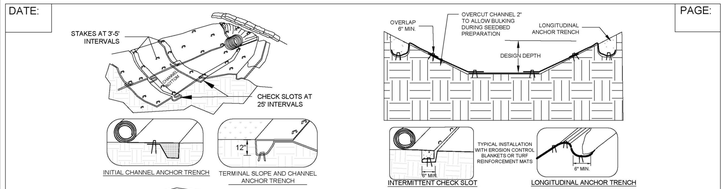
LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1 to 1 ½ tons/acre on coarse6textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.
FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.
SURFACE ROUGHENING- If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. the finished grade shall be a smooth even soil surface with a loosen uniformly fine texture. all ridges and depressions shall be removed and filled to provide the approved surface drainage . Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed.

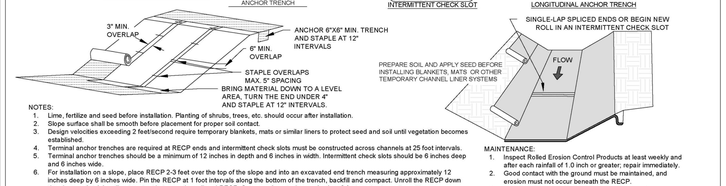
NOTES:
1. Permanent seeding, sodding or other means of stabilization are required when all construction work is completed according to the NPDES timeframes table.
2. A North Carolina Department of Agriculture soils test (or equal) is highly recommended to be obtained for all areas to be seeded, sprigged, sodded or planted.
3. Use a seeding mix that will produce fastGrowing nurse crops and includes non-invasive species that will eventually provide a permanent groundcover. Soil blankets may be used in lieu of nurse crops. Mat, tack or crimp mulch, as needed to stabilize seeded areas until root establishment. Mulch must cover at leaset 80% of the soil surface.
4. Ground cover shall be maintained until permanent vegetation is established and stable against accelerated erosion.

PERMANENT SEEDING

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

DATE: PAGE:





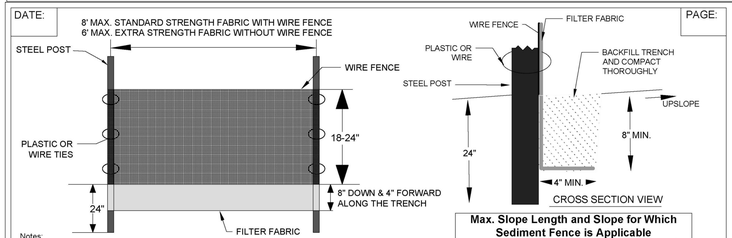
NOTES:
1. Lime, fertilize and seed before installation. Planting of shrubs, trees, etc. should occur after installation.
2. Slope surface shall be smooth before placement for proper soil contact.
3. Design velocities exceeding 2 feet/second require temporary blankets, mats or similar liners to protect seed and soil until vegetation becomes established.
4. Terminal anchor trenches are required at RECP ends and intermittent check slots must be constructed across channels at 25 foot intervals.
5. Terminal anchor trenches should be a minimum of 12 inches in depth and 6 inches in width. Intermittent check slots should be 6 inches deep and 6 inches wide.
6. For installation on a slope, place RECP 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the RECP at 1 foot intervals along the bottom of the trench, backfill and compact. Unroll the RECP down the slope maintaining direct contact between the soil and RECP. Secure using staples or pins in a 3 foot center-to-center pattern.
7. 11 gauge, at least 6 inch by 1 inch staples or 12 inch minimum length wooden stakes are recommended for anchoring.
8. Grass-lined channels with design velocities exceeding 6 feetsecond should include turf reinforcement mats
9. Check slots to be constructed per manufacturers specifications.
10. Staking or stapling layout per manufacturers specification.
11. If there is a berm at the top of slope, anchor up-slope of the berm.
12. Do not stretch blankets/matting tight, allow the rolls to conform to any irregularities.
13. For slopes less than 3H:1V, rolls may be placed in horizontal strips.

MAINTENANCE:
1. Inspect Rolled Erosion Control Products at least weekly and after each rainfall of 1.0 inch or greater; 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.

ROLLED EROSION CONTROL PRODUCTS

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Notes:
1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabrics.
2. Ensure that the height of the sediment fence does not exceed 24 inches above the ground. (Higher fences may impound volumes of water sufficient to cause failure of the structure)
3. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with 4 feet minimum overlap to the next post.
4. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts. Extend the wire mesh support to the bottom of the trench. Fasten the wire reinforcement, then fabric on the upslope side of the fence post. Wire or plastic zip ties should have a minimum 50 pound tensile strength.
5. When a wire mesh support fence is used, space posts a maximum of 8 feet apart. Supports should be driven securely into the ground a minimum of 24 inches. Wire mesh should be a minimum 14-gauge with 6 inch mesh spacing.
6. Extra strength filter fabric with 6 foot post spacing does not require a wire mesh support fence. Securely fasten the filter fabric directly to posts. Wire or plastic zip ties should have a minimum of 50 pound tensile strength.
7. Excavate the trench approximately 4 inches wide and 8 inches deep along the proposed line of the posts and upslope from the barrier.
8. Place 12 inches of fabric along the bottom and side of the trench.
9. Backfill the trench with soil placed over the filter fabric and compact. Thorough compaction of the backfill is critical to silt fence performance.
10. Do not attach filter fabric to existing trees.
11. Do not place across ditches, streams, or any other areas of concentrated flow.

Max. Slope Length and Slope for Which Sediment Fence is Applicable

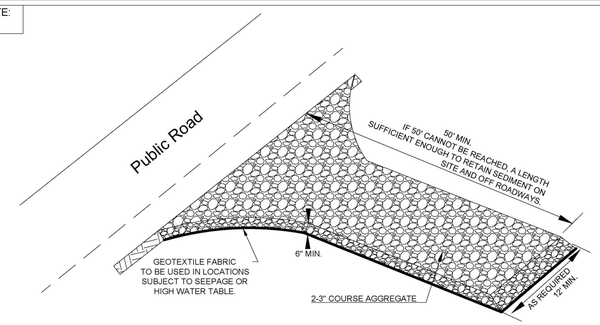
Slope	Slope Length (ft)	Max. Area (ft²)
<2%	100	10,000
2 to 5%	75	7,500
5 to 10%	50	5,000
10 to 20%	25	2,500
>20%	15	1,500

Maintenance:
1. Inspect all measures at least weekly and after each rainfall of 1.0 inch or greater. Make any required repairs immediately.
2. Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and reduce pressure on the fence. Take care to avoid undermining the fence during cleanouts.
4. Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

SEDIMENT FENCE

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

Maintenance:
1. Inspect all measures at least weekly and after each rainfall of 1.0 inch or greater. Make any required repairs immediately.
2. Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone.
3. Sediment on roadways is to be removed immediately by broom and shovel, either by manual or mechanical means, and not to be washed off where it has the potential to enter a stream, drainage way or storm drain system.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

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Mulching Materials and Application Rates

Material Organic Mulches	Rate Per Acre	Quality	Notes
Straw	1-2 tons	Dry, unchopped, unweathered; avoid weeds.	Should come from wheat or oats; spread by hand or machine; must be tacked down.
Wood Chips	5-6 tons	Air dry	Treat with 12 lbs nitrogen/ton. Apply with mulch blower, chip handle, or by hand. Not for use in fine turf.
Wood Fiber	0.5-1 tons		Also referred to as wood cellulose. May be hydroseeded. Do not use in hot, dry weather.
Bark	35 cubic yards	Air dry, shredded or hammer-milled, or chips.	Apply with mulch blower, chip handler, or by hand. Do not use asphalt tack.
Corn Stalks	4-6 tons	Cut or shredded in 4-6 inch lengths.	Apply with mulch blower or by hand. Not for use in fine turf.
Sericea Lespedeza seed-bearing stems	1-3 tons	Green or dry; should contain mature seed.	
Nets and Mats*			
Jute net	Cover area	Heavy, uniform; woven of single jute yarn.	Withstands waterflow. Best when used with organic mulch
Fiberglass net	Cover area		Withstands waterflow. Best when used with organic mulch
Excelsior (wood fiber net)	Cover area		Withstands waterflow.
Fiberglass roving	0.5-1 tons	Continuous fibers of drawn glass bound together with a non-toxic agent.	Apply with a compressed air ejector. Tack with emulsified asphalt at a rate of 25-35 gal/1,000 sq. ft.
Chemical Stabilizers**			
Aquatain Aerospray Curasol AK Pertroset SB Terra Tack Crust 500 Genaqua 743 M-145	Follow Manufacturer's specifications		Not beneficial to plant growth

*Refer to Practice No. 6.30, Grass Lined Channels in the NC DEQ E&SC Planning and Design Manual
**Use of trade names does not imply endorsement of product.

NOTES:
1. Select material based on site and practice requirements, availability of material, labor and equipment.
2. Before mulching, complete grading, install sediment control practices, and prepare the seedbed. Apply seed before mulching except when seed is applied as part of a hydroseeder slurry containing wood fiber mulch or a hydroseeder slurry is applied over straw.

APPLICATION OF ORGANIC MULCH
1. Spread mulch uniformly by hand, or with a mulch blower.
2. When spreading straw mulch by hand, divide the area to be mulched into sections of approximately 1,000 ft², and place 70-90 lb. of straw(1 1/2 to 2 bales) in each section to facilitate uniform distribution.
3. After Spreading, no more than 25% of the ground surface should be visible.
4. In hydroseeding operations a green dye, added to the slurry, assures a uniform application.

ANCHORING ORGANIC MULCH
1. Straw mulch must be anchored immediately after spreading.
2. A tractor-drawn implement designed to punch mulch into the soil or a mulch anchoring tool provides maximum erosion control with straw. A regular farm disk, weighted and set nearly straight, may substitute, but will not do a job comparable to the mulch anchoring tool. The disk should not be sharp enough to cut the straw. These methods are limited to slopes no steeper than 3:1, when equipment can operate safely.
3. Application of liquid mulch binders and tackifiers should be heaviest at the edges of areas and at crests of ridges and banks, to resist winds. Binder should be applied uniformly to the rest of the area. Binders may be applied after mulch is spread, or may be sprayed into the mulch as it is being blown onto the soil. Applying straw and binder together is the most effective method.
4. Emulsified asphalt should be applied at 0.10 gallons per square yard (10 gal/1,000 ft²). Heavier applications cause straw to "perch" over rills. Use Rapid setting (RS or CRS) designated asphalt in traffic areas to prevent uncured asphalt from being picked up on shoes and causing damage to rugs, clothes, etc.
5. Synthetic binders may be used as recommended by the manufacturer.
6. Lightweight plastic, cotton, jute, vete or paper nets may be stapled over the mulch according to the manufacturer's recommendations.
7. For small areas where other methods cannot be used, peg and twine anchoring can be used. Drive 8-10 inch wooden pegs to within 3 inches of the soil surface, every 4 feet in all directions. Stakes can be driven before or after straw is spread. Secure mulch by stretching twine between pegs in a criss-cross-within-a-square pattern. Turn twine two or more times around each peg.
8. Rye Grain may be used to anchor mulch in fall plantings, and German Millet in spring. Broadcast at 15 lb/acre before applying mulch.

CHEMICAL MULCHES
1. May be effective for soil stabilization if used between May 1 and June 15, or Sept. 15 and Oct. 15, provided that they are used on slopes no steeper than 4:1, and that proper seedbed preparation has been accomplished, including surface roughening where required.
2. Chemical mulches cannot be used to bind other mulches, or with wood fiber in a hydroseeded slurry at any time. Follow the manufacturer's recommendations for application.

FIBERGLASS ROVING
1. Spread roving uniformly over the area at a rate of 0.25 to 0.35 lb/yd². Anchor with asphalt immediately after application, at a rate of 0.25-0.35 gal/yd²
2. As a channel lining, and at other sites of concentrated flow, the roving mat must be further anchored to prevent undermining.
3. It may be secured with stakes placed at intervals no greater than 10 feet along the drainageway, and randomly throughout its width, but not more than 10 feet apart.
4. As an option to staking, the roving can be buried to a depth of 5 inches at the upgrade end and at intervals of 50 feet along the length of the channel.

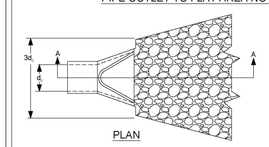
NETS AND MATS
1. Nests alone generally provide little moisture conservation benefits and only limited erosion protection. Therefore, typically use in conjunction with an organic mulch such as straw.
2. Except when wood fiber slurry is used, netting should always be installed over the mulch. Wood fiber may be sprayed on top of an installed net.
3. Mats, including "excelsior" (wood fiber) blankets, are considered protective mulches and may be used alone.
4. Place the matting in firm contact with the soil, and staple securely.

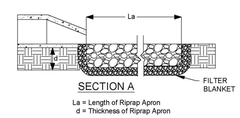
MULCHING

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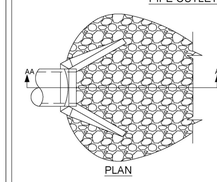
PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL

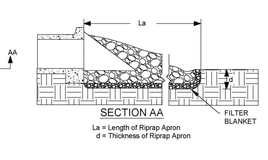




La = Length of Riprap Apron
d = Thickness of Riprap Apron

PIPE OUTLET TO WELL-DEFINED CHANNEL





La = Length of Riprap Apron
d = Thickness of Riprap Apron

NOTES:
1. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
2. The riprap and gravel filter must conform to the specified grading limits shown on the plans.
3. Filter cloth, when used, must meet design requirements, and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece over the damaged area. If the damage is extensive, replace the entire filter cloth.
4. All connecting joints should overlap so the top layer is above the downstream layer a minimum of 1 foot.
5. The minimum thickness of the riprap should be 1.5 times the maximum stone diameter but not less than 6".
6. Riprap may be field stone or rough quarry stone. It should be hard, angular highly weather-resistant and well graded.
7. Construct the apron on zero grade with no overfill at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
8. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed, place in the upper section of the apron.

MAINTENANCE:
1. Inspect outlet structures at least weekly and after each rainfall of 1.0 inch or greater.
2. Check outlets for erosion around or below riprap and for if stones have been dislodged. Make repairs immediately to prevent further damage.

OUTLET STABILIZATION STRUCTURE

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

Project: **TIRADO TRUCK REPAIR**
US 421 SOUTH
HARNETT COUNTY, NC

Sheet: **STANDARD DRAWINGS - NCDEQ**

ISSUED FOR CONSTRUCTION

Date: 24 JUN 2025
JTE Project No. 25-009
Sheet No.: C11 of 12

Drawn by: JRT
Designed by: JRT
Reviewed by: JRT

Scale: NTS

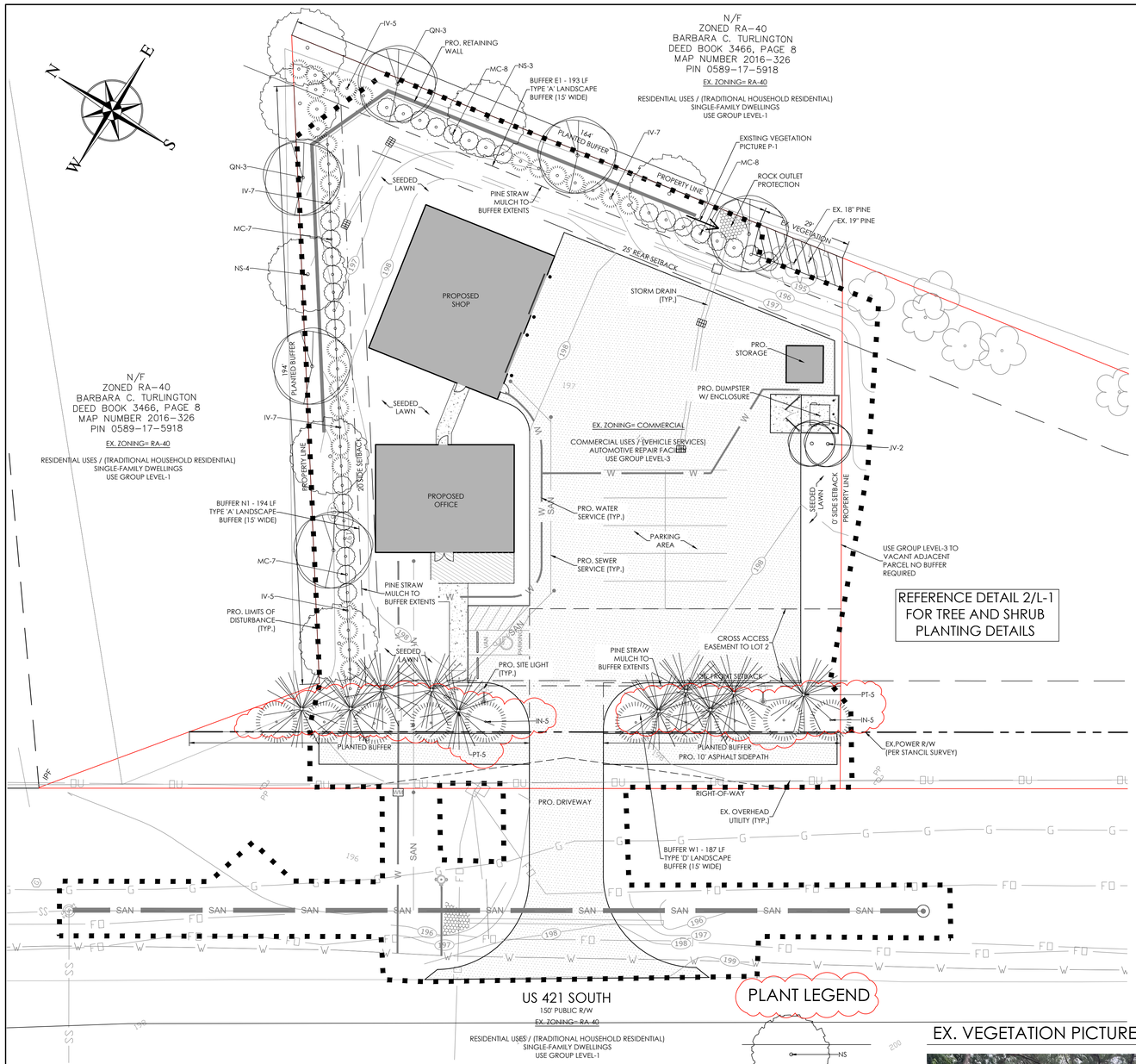
REVISIONS

12 JAN 2026: ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER'S SEAL
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ENGINEER
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File: C:\Users\jthom\OneDrive\Documents\PROJECTS\25-009 TIRADO TRUCK REPAIR\DRAWINGS\STTE - TIRADO TRUCK REPAIR.dwg Print Date: 1/12/2026

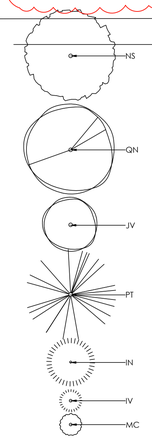


1 L-1 LANDSCAPE PLAN
SCALE: 1"=20'

PLANT SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	HEIGHT	ROOT	COMMENTS
DECIDUOUS CANOPY TREE							
NS	7	Nyssa sylvatica 'Wildfire'	Wildfire Blackgum	2"	8-10'	B&B	Full, Straight, Single Leader
QN	6	Quercus nuttallii	Nuttall Oak	2"	8-10'	B&B	Full, Straight, Single Leader
EVERGREEN TREE							
JV	2	Juniperus Virginiana	Eastern Red Cedar	-	6' Min.	Cont.	Full, Straight, Single Leader
PT	10	Pinus taeda	Loblolly Pine	-	8' Min.	Cont.	Full, Straight, Single Leader
EVERGREEN UNDERSTORY							
IN	10	Ilex 'Nellie R. Stevens"	Nellie Stevens Holly		6' Min.	Cont.	Full, Straight, Single Leader
EVERGREEN SHRUBS							
IV	31	Ilex vomitoria	Yaupon Holly	-	24" Min.	Cont.	Full, Match
MC	30	Myrica cerifera	Wax Myrtle	-	24" Min.	Cont.	Full, Match

PLANT LEGEND



EX. VEGETATION PICTURE P1



LANDSCAPE CALCULATIONS

UDO SEC. 9.1.8 - REQUIRED BUFFER & SCREENING TYPES

UDO SEC. 9.1.8 .A
ALL BUFFER TYPES SHALL INCLUDE:
1. A STAGGERED ROW OF LARGE MATURING TREES, SPACED NOT MORE THAN 30 FEET APART; AND
2. LOW-GROWING EVERGREEN SHRUBS, EVERGREEN GROUND COVER, OR MULCH COVERING THE BALANCE OF THE BUFFER AREA.

BUFFER N1 - 194 LF, TYPE 'A' LANDSCAPE BUFFER (15' WIDE)
EXISTING BUFFER VEGETATION = 0 LF
PLANTED BUFFER = 194 LF

STAGGERED ROW OF LARGE MATURING TREES, SPACED NOT MORE THAN 30 FEET APART
194 LF / 30' = 6.4 (7) LARGE MATURING TREES REQUIRED/PROVIDED

ROW OF EVERGREEN SHRUBS PLACED NOT MORE THAN FOUR TO SIX FEET APART WHICH WILL GROW TO FORM A CONTINUOUS HEDGE OF AT LEAST SIX FEET IN HEIGHT WITHIN TWO YEARS OF PLANTING
194 LF / 6' = 32.3 (33) EVERGREEN SHRUBS REQUIRED/PROVIDED

PINE STRAW MULCH COVERING THE BALANCE OF THE BUFFER AREA

BUFFER E1 - 193 LF, TYPE 'A' LANDSCAPE BUFFER (15' WIDE)
EXISTING BUFFER VEGETATION = 29' LF
PLANTED BUFFER = 164 LF

STAGGERED ROW OF LARGE MATURING TREES, SPACED NOT MORE THAN 30 FEET APART
164 LF / 30' = 5.4 (6) LARGE MATURING TREES REQUIRED/PROVIDED

ROW OF EVERGREEN SHRUBS PLACED NOT MORE THAN FOUR TO SIX FEET APART WHICH WILL GROW TO FORM A CONTINUOUS HEDGE OF AT LEAST SIX FEET IN HEIGHT WITHIN TWO YEARS OF PLANTING
164 LF / 6' = 27.3 (28) EVERGREEN SHRUBS REQUIRED/PROVIDED

PINE STRAW MULCH COVERING THE BALANCE OF THE BUFFER AREA

BUFFER W1 - 187 LF, TYPE 'D' LANDSCAPE BUFFER (15' WIDE)
EXISTING BUFFER VEGETATION = 0 LF
PLANTED BUFFER = 187 LF

BUFFER W1 TO BE VEGETATED PER UDO SEC. 12.6.10.D OUTDOOR STORAGE SCREENING REQUIREMENTS FROM ADJACENT RIGHT-OF-WAY. DOUBLE ROW OF EVERGREEN PINE TREES AT 40' O.C. AND EVERGREEN UNDERSTORY TREES 20' O.C.

187 LF / 40' = 4.6 (5) EVERGREEN PINE TREES, 2-ROWS, 10 TOTAL EVERGREEN PINE TREES REQUIRED/PROVIDED

187 LF / 20' = 9.35 (10) EVERGREEN UNDERSTORY TREES REQUIRED/PROVIDED

PINE STRAW MULCH COVERING THE BALANCE OF THE BUFFER AREA

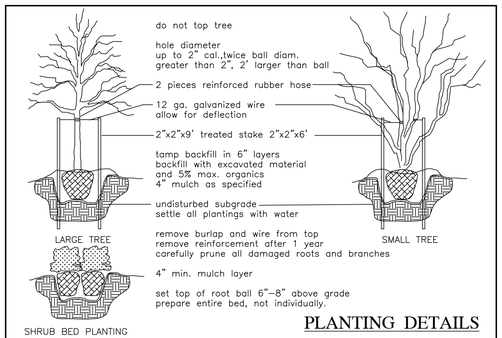
UDO SEC. 9.2.3 - TRASH CONTAINMENT AREAS SCREENING
ALL TRASH CONTAINMENT DEVICES, INCLUDING COMPACTORS AND DUMPSTERS, SHALL BE LOCATED AND DESIGNED SO AS NOT TO BE VISIBLE FROM THE VIEW OF ADJACENT RIGHT(S)-OF-WAY AND PROPERTIES. THE TYPE OF SCREENING USED SHALL BE A CONTINUOUS ROW OF LARGE MATURING EVERGREEN TREES.
2 LARGE MATURING EVERGREEN TREES PROVIDED

LANDSCAPE SCOPE OF WORK

1. FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED OR INDICATED BY THE DRAWINGS AND SPECIFICATIONS TO COMPLETE THE WORK INCLUDING INSTALLATION OF ALL TREES, SHRUBS, SEED AND MULCH.
2. MATERIALS AND WORK:
THE SELECTION OF ALL MATERIALS AND THE EXECUTION OF ALL WORK REQUIRED UNDER THE CONTRACT SHALL BE SUBJECT TO APPROVAL BY THE OWNER. THE OWNER SHALL HAVE THE RIGHT TO REJECT ANY AND ALL MATERIALS AND ANY AND ALL WORK, WHICH IN HIS OPINION, DOES NOT MEET THE REQUIREMENTS OF THE CONTRACT.
3. PLANT MATERIALS:
ALL PLANT MATERIALS SHALL BE NURSERY GROWN, FRESHLY DUG IN THE FIELD, NATURALLY SHAPED, WELL BRANCHED, FULLY FOLIATED WHEN IN LEAF WITH FULLY DEVELOPED ROOT SYSTEMS. TREES MUST BE SELF-SUPPORTING, WITH STRAIGHT TRUNKS AND LEADERS INTACT. ALL PLANTS MUST BE FREE OF DISEASE, INSECT INFESTATION OR THEIR EGGS AND SHALL HAVE BEEN GROWN IN CLIMATIC CONDITIONS SIMILAR TO THOSE OF THE PROJECT SITE
4. PLANT SIZE:
SPECIFIED SIZES INDICATES THE MINIMUM ALLOWABLE SIZE AT PLANTING, WHERE CONTAINER AND HEIGHT/SPREADS ARE INDICATED FOR A SINGLE SPECIES, BOTH SIZE REQUIREMENTS SHALL BE MET WHEN ONLY PLANT HEIGHT OR SPREAD ARE INDICATED, CONTAINER SIZE SHALL BE BASED ON "AMERICAN STANDARDS FOR NURSERY STOCK" STANDARDS.
5. ORGANIC MATTER:
AGED MANURE, COMPOST OR PINE BARK FINES, AT THE OPTION OF THE CONTRACTOR. MATERIAL SHALL BE AIR DRIED, FINELY SHREDDED AND SUITABLE FOR HORTICULTURAL PURPOSES AND SHALL CONTAIN NO MORE THAN 35% MOISTURE CONTENT BY WEIGHT.
6. PINE BARK MULCH:
ALL PINE BARK MULCH SHALL BE CLEAN, DOUBLE GROUND, FINE TEXTURED MULCH WITH MINIMAL AMOUNTS OF SAPWOOD CONTENT.
7. TURF AREAS:
PRIOR TO ANY SEEDING, VERIFY THAT ALL TRENCHING AND LAND DISTURBING ACTIVITIES HAVE BEEN COMPLETED. ENSURE ALL AREAS ARE FREE OF STONES, LARGE SOIL CLODS AND ANY OTHER CONSTRUCTION DEBRIS.

LANDSCAPE PLAN NOTES

1. ALL PLANT MATERIAL ON THIS SITE MUST MEET MINIMUM HARNETT COUNTY UDO REQUIREMENTS FOR SIZE, HEIGHT, AND SPACING. PLANT MATERIAL SHALL BE INSTALLED ACCORDING TO SOUND NURSERY PRACTICES AND IN CONFORMANCE WITH THE GENERAL PLANTING NOTES AND DETAILS WITHIN THIS PLAN SET.
2. PLANTING STOCK SHALL MEET ALL STANDARDS WITHIN THE LATEST EDITION OF "AMERICAN STANDARDS FOR NURSERY STOCK." ALL PLANTS SHALL BE VIGOROUS, HEALTHY MATERIAL FREE FROM PESTS AND DISEASE.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE PROJECT SITE AND FAMILIARIZE WITH ACTUAL FIELD CONDITIONS PRIOR TO BIDDING AND COMMENCING WORK. THE CONTRACTOR SHALL ACCEPT ACTUAL CONDITIONS AT THE SITE AND PERFORM THE WORK SPECIFIED INCLUDING THE FINE GRADING AND INCORPORATION OF TOPSOIL INTO PLANTING AREAS, WITHOUT ADDITIONAL COMPENSATION FOR POSSIBLE VARIATIONS FROM GRADES AND CONDITIONS SHOWN WEATHER SURFACE OR SUBSURFACE. IF FIELD CONDITIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THE CONTRACTOR SHALL NOTIFY THE PROJECT LANDSCAPE ARCHITECT OR ENGINEER IMMEDIATELY AND PRIOR TO ORDERING MATERIALS.
4. CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED PERMITS TO PERFORM THE WORK.
5. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES ABOVE AND BELOW GROUND AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THEIR ACTIVITIES. CONTRACTOR SHALL NOTIFY NORTH CAROLINA ONE CALL (1-800-632-4949) AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR TO CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF NORTH CAROLINA ONE CALL. THE CONTRACTOR MAY ALSO NEED TO ENGAGE A PRIVATE UTILITY LOCATING FIRM AT THEIR OWN COST TO EFFICIENTLY HAVE ALL UTILITIES LOCATED.
6. ANY DAMAGE TO EXISTING IMPROVEMENTS OUTSIDE OF THE PROJECT LIMITS, INCLUDING CURB AND GUTTER, SIDEWALKS, PAVED OR TURF AREAS SHALL BE REPAIRED TO ORIGINAL CONDITIONS BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE DEVELOPER.
7. PLANT QUANTITIES TO BE VERIFIED BY LANDSCAPE CONTRACTOR. IN THE EVENT OF A DISCREPANCY BETWEEN THE QUANTITY OF PLANTS SHOWN ON THE PLANS AS COMPARED TO THE PLANT LIST THE CONTRACTOR SHALL PROVIDE THE QUANTITY SHOWN ON THE PLANS.
8. CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE LANDSCAPE ARCHITECT FOR ANY PLANT SUBSTITUTIONS OR MODIFICATIONS TO THE LANDSCAPE PLANS. THIS MAY REQUIRE A MODIFICATION TO THE APPROVED PLANS. NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES ON THE PLANS.
9. ALL ABOVE GROUND MECHANICAL EQUIPMENT, ELECTRICAL TRANSFORMERS, DUMPSTERS, BACKFLOW PREVENTERS, AND VALVE BOXES SHALL BE SCREENED FROM VIEW OF ADJACENT PROPERTIES AND RIGHT-OF-WAY WHILE MAINTAINING REQUIRED ACCESS TO LOCAL CODE STANDARDS AND REQUIREMENTS.
10. WITHIN THE SIGHT TRIANGLES SHOWN ON THIS PLAN, NO OBSTRUCTIONS BETWEEN TWO FEET AND EIGHT FEET IN HEIGHT ABOVE THE NEAREST VEHICLE SURFACE OR ADJACENT CURB LINE SHALL BE ALLOWED.
11. ALL UNPAVED AREAS SHALL BE TOPSOILED AND SEEDED OR MULCHED TO THE LIMITS OF CONSTRUCTION BASED ON ACTUAL FIELD CONDITIONS BEYOND THE APPROVED PLANS.
12. ALL SEED TO BE REBEL FESCUE IV, TURF GEM, LESCO OR EQUAL @ 6 LBS. PER 1000 S.F. IN LAWN AREAS 3" TOPSOIL SHALL BE TILLED INTO THE TOP 6" OF GROUND PRIOR TO SEEDING.
13. SLOPES GREATER THAN 3:1 SHALL REQUIRE HYDRO-SEEDING. SLOPES GREATER THAN 2:1 SHALL BE SODDED WITH CENTIPEDE GRASS. ADDITIONAL STABILIZATION MEASURES MAY BE REQUIRED FOR SLOPES GREATER THAN 3:1 TO ENSURE SOIL STABILIZATION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
14. INTERIOR MULCH SHALL BE DOUBLE GROUND PINE BARK TO A DEPTH OF 4". PERIMETER LANDSCAPE BUFFERS SHALL BE MULCHED WITH 4" PINE STRAW TO BUFFER LIMITS.
15. PINE STRAW SHALL NOT BE USED AS MULCH OR GROUNDCOVER WITHIN TEN FEET OF ANY STRUCTURES CONSISTING OF EXTERIOR COMBUSTIBLE CONSTRUCTION.
16. CONTRACTOR SHALL LEVEL AND SMOOTH ALL DISTURBED AREAS AND REMOVE ALL ROCKS AND CONSTRUCTION DEBRIS PRIOR TO SEEDING, SOD OR PLANT INSTALLATION.
17. OWNER SHALL MAINTAIN ALL PLANT BEDS AND PLANT MATERIAL IN GOOD HEALTH, AND ANY DEAD, UNHEALTHY OR MISSING PLANTS SHALL BE REPLACED WITH THE SAME PLANT MATERIAL ORIGINALLY SPECIFIED ON THIS PLAN.
18. TREE PLANTING AND SITE LIGHTING SHALL BE SEPARATED BY AT LEAST 10 FEET.



PLANTING DETAILS

GENERAL PLANTING NOTES

1. VERIFICATION OF TOTAL QUANITIES AS SHOWN ON THE PLANT LIST SHALL BE THE RESPONSIBILITY OF THE PLANTING CONTRACTOR, AND THE TOTAL QUANITIES SHALL BE REQUIRED ON THE PLANTING PLAN.
2. ALL TREES, SHRUBS, AND BEDDING PLANTS SHALL CONFORM TO THE ACCEPTED STANDARDS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
3. ALL SAUCERS SHALL BE SOAKED WITH WATER AND MULCHED IMMEDIATELY FOLLOWING PLANTING.
4. SET TOP OF ROOT BALL 6"-8" ABOVE GRADE, PREPARE ENTIRE BED, NOT INDIVIDUALLY.
5. THE SIZE OF ALL ROOT BALLS SHALL CONFORM TO AAN STANDARDS.
6. FERTILIZE ALL PLANTS WITH AGRIFORM FERTILIZER TABLETS OR EQUAL TO BE APPLIED AT MANUFACTURERS RECCOMENDED RATE.
7. GUYING, IF NECESSARY, SHALL BE REMOVED AFTER ONE GROWING SEASON.
8. ALL ROOT BALLS REMOVED FROM CONTAINERS SHALL BE SCARIFIED PRIOR TO BACKFILLING.
9. ALL TREES HAVE BEEN LOCATED WITH RESPECT TO PROPOSED OR EXISTING FACILITIES OR STRUCTURES.
10. OWNERS SHALL MAINTAIN ALL PLANT BEDS AND PLANT MATERIAL IN GOOD HEALTH, AND ANY DEAD, UNHEALTHY OR MISSING PLANTS SHALL BE REPLACED WITH LOCALLY ADAPTED VEGETATION WHICH CONFORMS TO THE INITIAL PLANTING STANDARDS OF THE LANDSCAPE ORDINANCE.
11. REPORT ANY DESCREPANCIES TO THE PROJECT LANDSCAPE ARCHITECT.
12. SUBSTITUTIONS OR ALTERATIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN NOTIFICATION OF THE PROJECT LANDSCAPE ARCHITECT.
13. ALL PLANT MATERIAL SHALL BE OF SPECIMEN QUALITY.

2 L-1 TREE & SHRUB PLANTING DETAIL
NTS

TMTLA ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECTURAL CORPORATION No. C-551
DBA: TMTLA ASSOCIATES

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1826 ANDREW J. PORTER
2025-12-11

PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS:
1. REVISED PER REVIEW COMMENTS 2025-12-11

LANDSCAPE PLAN
TIRADO TRUCK REPAIR
US 421 SOUTH
HARNETT COUNTY, NC

SCALE: AS NOTED
DRAWN BY: AJP
PROJECT # 25093
DATE: 6-24-2025
SHEET L-1
OF