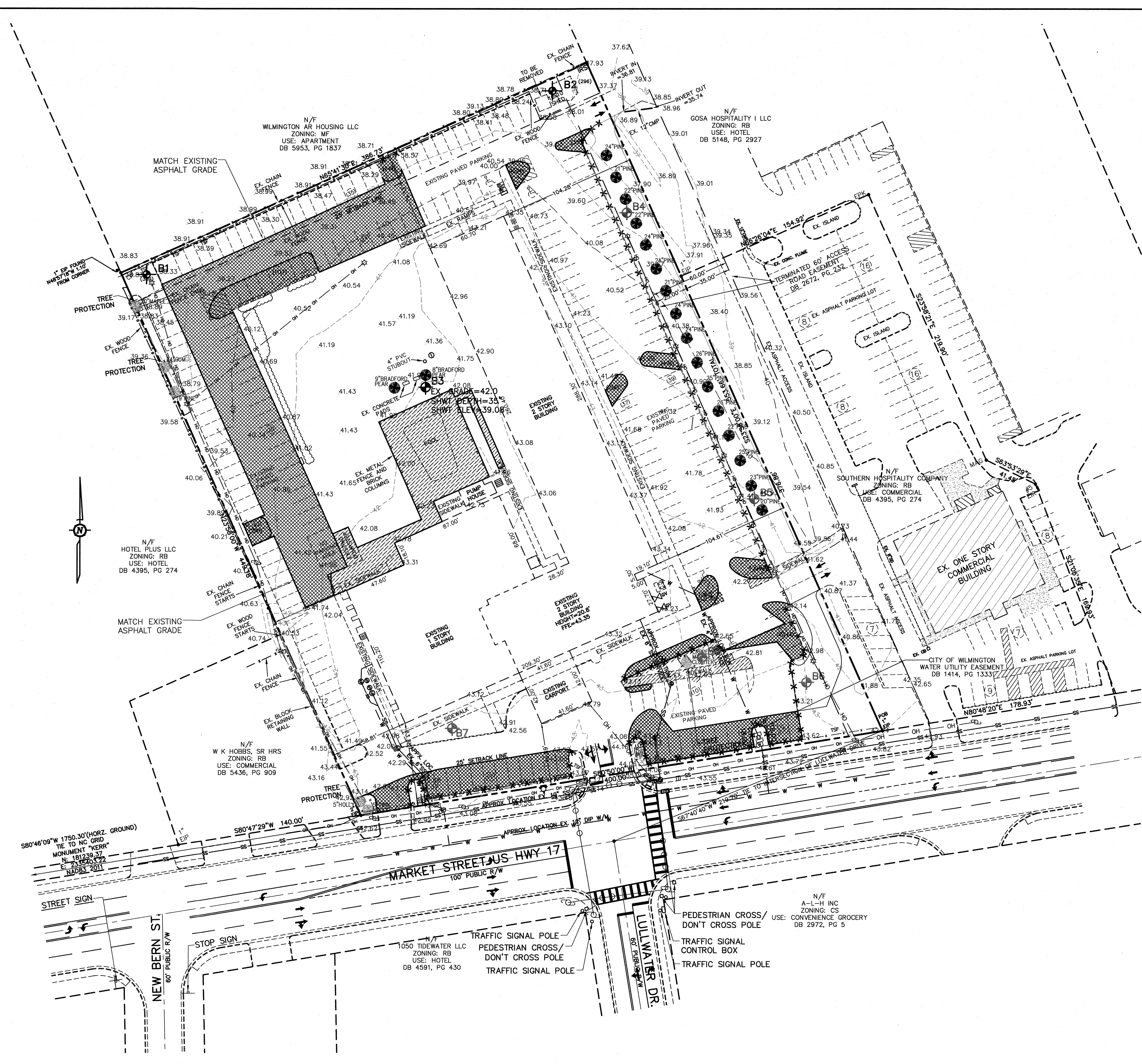


**REVISIONS**

No.	Date	Description	By
1	4/05/19	RESPONSE LETTER REV	JET
2	4/15/19	REMOVE TREES, DEMO	JET
3	6/3/19	REMOVE DEMO ISLANDS	JET

**LOCATION MAP**  
NTS

- SITE INVENTORY NOTES:**
- PREPARER OF THE PLAN: TRIPP ENGINEERING, P.C.
  - APPLICANT NAME: SERAI ENTERPRISES, INC.
  - SITE ADDRESS OF THE DEVELOPMENT: 5001 MARKET STREET
  - PROPERTY OWNER: SERAI ENTERPRISES, INC.
  - DEVELOPER: SERAI ENTERPRISES, INC.
  - PROPERTY BOUNDARY: SEE PLAN  
TAX PARCEL INFORMATION: R04915-001-010-000
  - PROPERTY ZONING: RB; REGIONAL BUSINESS DISTRICT
  - ADJACENT PROPERTY OWNER INFORMATION: SEE PLAN
  - VICINITY MAP: SEE PLAN
  - TOPOGRAPHY: SEE PLAN
  - 100-YEAR FLOOD BOUNDARY: N/A
  - EXISTING DITCHES, CREEKS AND STREAMS: NONE
  - SOIL: Ur; URBAN LAND AND Se; SEAGATE FINE SAND
  - CAMA AEC: N/A
  - CAMA LAND CLASSIFICATION: URBAN
  - CONSERVATION RESOURCES: NONE  
ASSOCIATED SETBACKS: N/A
  - HISTORIC OR ARCHAEOLOGICAL SITE: N/A
  - CEMETERIES, BURIAL SITES/GROUNDS: N/A
  - FORESTED AREAS, HABITAT AND DOMINANT SPECIES: N/A
  - WETLANDS: NONE
  - PROTECTED SPECIES OR HABITAT: N/A
  - EXISTING OR PROPOSED THOROUGHFARES, BIKE ROUTES, PEDESTRIAN SIDEWALKS OR TRAILS AND TRANSIT FACILITIES: SEE SITE PLAN
  - EXISTING TREES: SEE PLAN



**LEGEND**

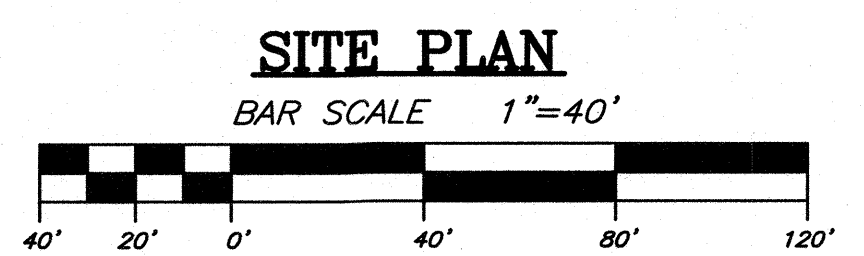
	PROPERTY BOUNDARY
	LIGHT POLE
	CURB INLET
	UTILITY POLE
	OVERHEAD WIRE
	GAS ASSEMBLY
	TRAFFIC BOX
	WATER METER
	DROP INLET
	GUY WIRE
	SANITARY SEWER MANHOLE
	SEPTIC CLEANOUT
	BACKFLOW PREVENTER
	FIRE HYDRANT
	SIGN
	LARGE SIGN
	ELECTRIC APPARATUS
	UTILITY BOX
	IRRIGATION CONTROL VALVE
	ASPHALT/DEMO TO BE REMOVED
	DEMO

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**Approved Construction Plan**

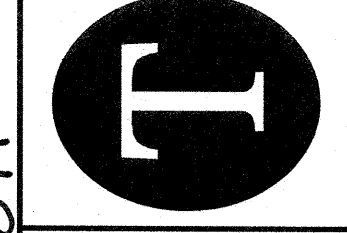
Name	Date
Planning	
Traffic	
Fire	

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.



**TRIPP ENGINEERING, P.C.**  
419 Chestnut Street  
Wilmington, North Carolina 28401  
Phone 910-763-5100  
Fax 910-763-5631  
© 2014 TRIPP ENGINEERING, P.C.

**TRIPP ENGINEERING, P.C.**  
419 Chestnut Street  
Wilmington, North Carolina 28401  
Phone 910-763-5100  
Fax 910-763-5631  
© 2014 TRIPP ENGINEERING, P.C.



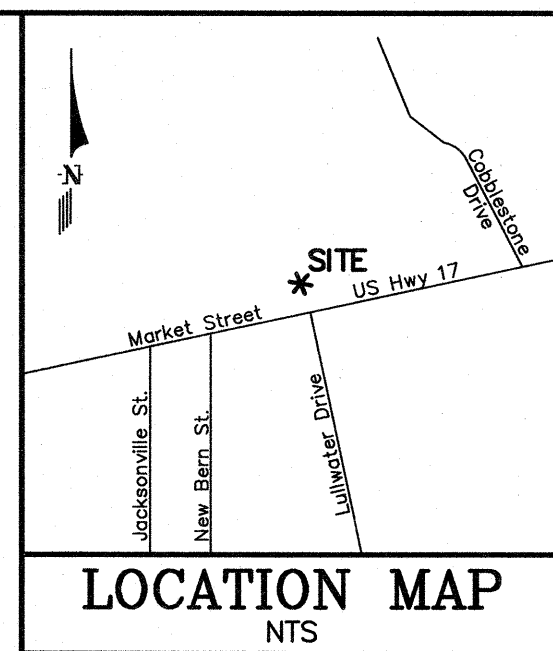
**PROGRESS DRAWING**  
DO NOT USE FOR CONSTRUCTION

DATE 02-08-19  
DESIGN PGT  
DRAWN JET

**C1**  
SHEET 1 OF 7  
17068



REVISIONS		
No./Date	Description	By
4/05/19	RESPONSE LETTER REV	JET
4/15/19	RESPONSE LETTER REV	JET
6/3/19	FLIP ANGLE PARKING	JET



**SITE DATA:**

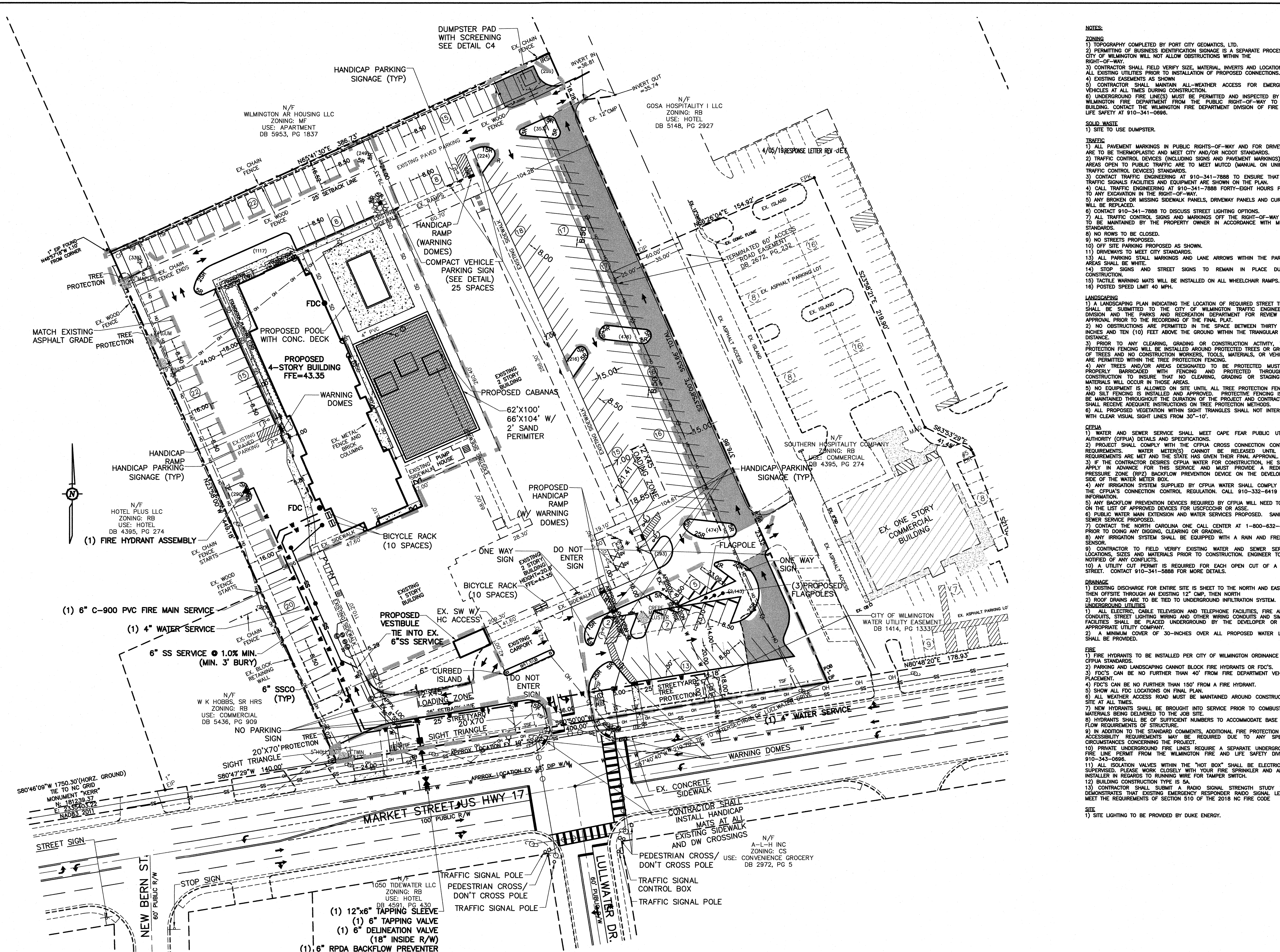
PROPERTY OWNER	SERAJ ENTERPRISES, INC.
PROJECT ADDRESS	5001 MARKET STREET
PIN NUMBERS	R04915-001-010-000
AREA NOT IN A FEMA 100-YEAR FLOOD ZONE	
TRACT AREA	193,914 SF (4.45 AC)
DISTURBED AREA	2.18 AC
ZONING DISTRICT	RB: REGIONAL BUSINESS
SETBACKS REQUIRED	FRONT: 25' REAR: 15' SIDE: 0'
PROPOSED BUILDING SETBACK (VESTIBULE)	FRONT: 66.7' REAR: 66.6' SIDE: 124.8'
PROPOSED BUILDING SETBACK (HOTEL)	FRONT: 66.9' REAR: 66.9' SIDE: 124.8'
CAMA LAND USE	URBAN
BUILDING USE	HOTEL
PROPOSED BUILDING AREA	58,277 SF
BUILDING LOT COVERAGE (53,483/193,914)	27.58%
NUMBER OF BUILDINGS	2
EXISTING UNITS	100
PROPOSED UNITS	107
TOTAL UNITS	207
BUILDING HEIGHT (HOTEL/VESTIBULE)	40' / 20'
NUMBER OF STORIES (HOTEL/VESTIBULE)	4 / 1
GROSS SF PER FLOOR (HOTEL)	
GROUND FLOOR	13,469 SF
2ND, 3RD & 4TH FLOORS	13,201 SF
GROSS SF PER FLOOR (VESTIBULE)	3,969 SF
ASPHALT TO BE REMOVED AND RE GRADED	15,734 SF
EXISTING IMPERVIOUS AREAS:	
EXISTING BUILDING	38,893 SF
EXISTING ASPHALT	83,976 SF
EXISTING CONCRETE	10,838 SF
EXISTING POOL (TO BE REMOVED)	4,336 SF
EXISTING IMPERVIOUS AREA	138,043 SF
EXISTING IMPERVIOUS TO BE REMOVED	-18,615 SF
EXISTING IMPERVIOUS AREA:	119,428 SF
PROPOSED ONSITE IMPERVIOUS AREAS:	
PROPOSED BUILDING (+CABANA/CANOPY/VEST.)	15,020 SF
PROPOSED POOL AREA AND DECK	2,700 SF
PROPOSED CONCRETE	2,196 SF
PROPOSED ASPHALT & CURBING	12,713 SF
TOTAL ONSITE IMPERVIOUS AREA	152,057 SF (78.41%)
TOTAL ONSITE IMPERVIOUS SIDEWALK AREA	247 SF

**PARKING REQUIRED:**

1/GUEST ROOM PLUS 50% OF THE REQUIRED SPACES FOR ANY ACCESSORY USES	207
1/GUEST ROOM (207 ROOMS)	207
RESTAURANT	
(1/80 SF MIN x 50% & 1/65 SF MAX x 50%)	
(2000 SF/80x50% & 2000 SF/65x50%)	13-15
BANQUET HALL	
(1/80 SF MIN x 50% & 1/65 SF MAX x 50%)	
(2575 SF/80x50% & 2575 SF/65x50%)	16-20
TOTAL PARKING REQUIRED	236-242
PARKING PROVIDED	211
COMPACT PARKING	25
TOTAL PARKING PROVIDED	236
HANDICAP SPACES REQUIRED	7
HANDICAP SPACES PROVIDED	7
BICYCLE PARKING REQUIRED	15
BICYCLE PARKING PROVIDED	20
PUBLIC WATER AND SEWER BY CFPWA	
EXISTING WATER FLOW:	13,200 GPD
EXISTING SEWER FLOW:	12,000 GPD
PROPOSED WATER FLOW:	
(120 GPD PER ROOM x 207 ROOMS x 110%)	27,324 GPD
PROPOSED SEWER FLOW:	
(120 GPD PER ROOM x 207 ROOMS)	24,840 GPD
FOUNDATION PLANTING REQUIRED NORTH	274
FOUNDATION PLANTING PROVIDED NORTH	306
FOUNDATION PLANTING REQUIRED WEST	591
FOUNDATION PLANTING PROVIDED WEST	730

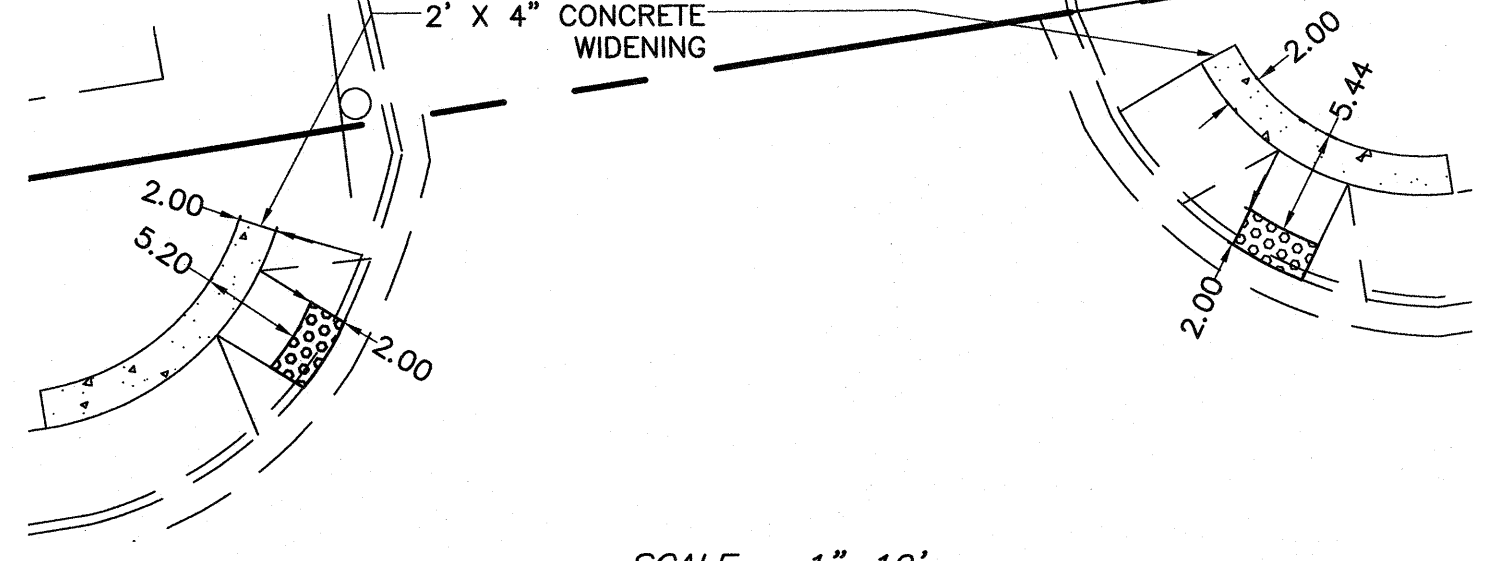
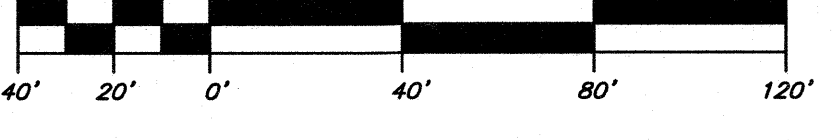
**LEGEND**

- PROPERTY BOUNDARY
- LIGHT POLE
- CURB INLET
- UTILITY POLE
- OVERHEAD WIRE
- GAS ASSEMBLY
- TRAFFIC BOX
- WATER METER
- DROP INLET
- GUY WIRE
- SANITARY SEWER MANHOLE
- SEPTIC CLEANOUT
- BACKFLOW PREVENTER
- FIRE HYDRANT
- SIGN
- LARGE SIGN
- ELECTRIC APPARATUS
- UTILITY BOX
- IRRIGATION CONTROL VALVE
- SS --- PROPOSED SEWER
- W --- PROPOSED WATER
- SD --- PROPOSED STORM WATER



**SITE PLAN**

BAR SCALE 1"=40'



SCALE 1"=10'

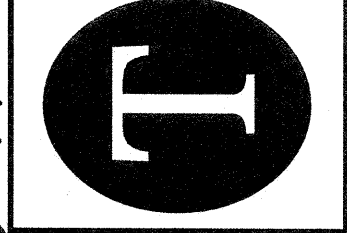
**CITY OF WILMINGTON**  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**Approved Construction Plan**

Name	Date
Planning	
Traffic	
Fire	

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

**TRIPP ENGINEERING, P.C.**  
419 Chestnut Street  
Wilmington, North Carolina 28401  
Phone 910-763-5100  
Fax 910-763-5631  
© TRIPP ENGINEERING, P.C.



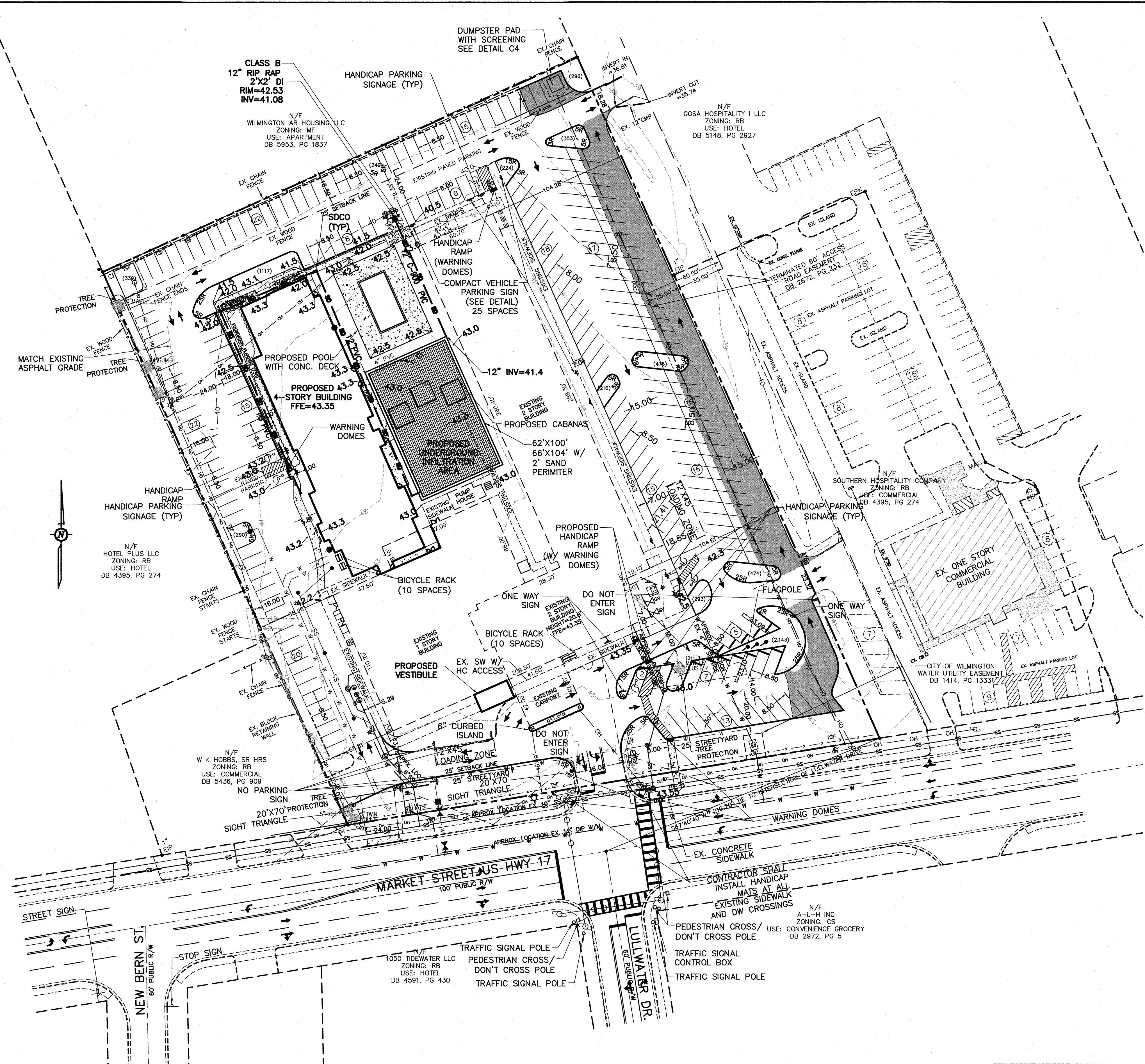
**PROGRESS DRAWING**  
DO NOT USE FOR CONSTRUCTION

DATE 02-08-19  
DESIGN PGT  
DRAWN JET

**C2**

SHEET 2 OF 7  
17068





**NOTES:**

- 1) TOPOGRAPHY COMPLETED BY PORT CITY GEOMATICS, LTD.
- 2) PERMITTING OF BUSINESS IDENTIFICATION SIGNAGE IS A SEPARATE PROCESS. CITY OF WILMINGTON WILL NOT ALLOW OBSTRUCTIONS WITHIN THE RIGHT-OF-WAY.
- 3) CONTRACTOR SHALL FIELD VERIFY SIZE, MATERIAL, INVERTS AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO INSTALLATION OF PROPOSED CONNECTIONS.
- 4) EXISTING EASEMENTS AS SHOWN.
- 5) CONTRACTOR SHALL MAINTAIN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
- 6) UNDERGROUND FIRE LINE(S) MUST BE PERMITTED AND INSPECTED BY THE WILMINGTON FIRE DEPARTMENT FROM THE PUBLIC RIGHT-OF-WAY TO THE BUILDING. CONTACT THE WILMINGTON FIRE DEPARTMENT DIVISION OF FIRE AND LIFE SAFETY AT 910-341-0668.

**SOLID WASTE:**

- 1) SITE TO USE DUMPSTER.

**TRAFFIC:**

- 1) ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
- 2) TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
- 3) CONTACT TRAFFIC ENGINEERING AT 910-341-7888 TO ENSURE THAT ALL TRAFFIC SIGNALS, FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
- 4) CALL TRAFFIC ENGINEERING AT 910-341-7888 FORTY-EIGHT HOURS PRIOR TO ANY OCCUPATION IN THE RIGHT-OF-WAY.
- 5) ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS AND CURBING WILL BE REPLACED.
- 6) CONTACT 910-341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
- 7) ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- 8) NO ROWS TO BE CLOSED.
- 9) NO STREETS PROPOSED AS SHOWN.
- 10) OFF SITE PARKING PROPOSED AS SHOWN.
- 11) DRIVEWAYS TO MEET CITY STANDARDS.
- 12) ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- 13) STOP SIGNS AND STREET SIGNS TO REMAIN IN PLACE DURING CONSTRUCTION.
- 14) TACTILE WARNING MATS WILL BE INSTALLED ON ALL WHEELCHAIR RAMPS.
- 15) POSTED SPEED LIMIT 40 MPH.

**LANDSCAPING:**

- 1) A LANDSCAPING PLAN INDICATING THE LOCATION OF REQUIRED STREET TREES SHALL BE SUBMITTED TO THE CITY OF WILMINGTON TRAFFIC ENGINEERING PRIOR TO THE PERMITS AND RECORDATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAN.
- 2) NO OBSTRUCTIONS ARE PERMITTED IN THE SPACE BETWEEN THIRTY (30) INCHES AND TEN (10) FEET ABOVE THE GROUND WITHIN THE TRIANGULAR SITE DISTANCE.
- 3) PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND THE PERMS AND RECORDATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAN.
- 4) ANY TREE AND/OR AREAS DESIGNATED TO BE PROTECTED MUST BE PROTECTED THROUGHOUT THE DURATION OF THE PROJECT AND CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTIONS ON TREE PROTECTION METHODS.
- 5) ALL PROPOSED VEGETATION WITHIN SIGHT TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30'-10'.

**CEPWA:**

- 1) WATER AND SEWER SERVICE SHALL MEET CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) DETAILS AND SPECIFICATIONS.
- 2) PROJECT SHALL COMPLY WITH THE CFPUA CROSS CONNECTION CONTROL REQUIREMENTS. WATER METERS(C) CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL.
- 3) IF THE CONTRACTOR DESIRES CFPUA WATER FOR CONSTRUCTION, HE SHALL APPLY IN ADVANCE FOR THIS SERVICE AND MUST PROVIDE A REDUCED PRESSURE BACKFLOW PREVENTION DEVICE ON THE DEVELOPER'S SIDE OF THE WATER METER BOX.
- 4) ANY IRRIGATION SUPPLIED BY CFPUA WATER SHALL COMPLY WITH THE CFPUA'S CONNECTION CONTROL REGULATION. CALL 910-332-6419 FOR INFORMATION.
- 5) ANY FLOW PREVENTION DEVICES REQUIRED BY CFPUA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES FOR USCOCOR OR ASSC.
- 6) PUBLIC WATER MAIN EXTENSION AND WATER SERVICES PROPOSED. SANITARY SEWER SERVICE PROPOSED.
- 7) CONTACT THE NORTH CAROLINA ONE CALL CENTER AT 1-800-632-4949 PRIOR TO DOING ANY DIGGING, CLEARING OR GRADING.
- 8) ANY IRRIGATION SYSTEM SHALL BE EQUIPPED WITH A RAIN AND FREEZER SENSOR.
- 9) CONTRACTOR TO FIELD VERIFY EXISTING WATER AND SEWER SERVICE LOCATIONS, SIZES AND MATERIALS PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED OF ANY CONFLICTS.
- 10) A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET. CONTACT 910-341-5888 FOR MORE DETAILS.

**DRAINAGE:**

- 1) EXISTING DISCHARGE FOR ENTIRE SITE IS SHEET TO THE NORTH AND EAST THEN OFFSITE THROUGH AN EXISTING 12" CMP, THEN NORTH.
- 2) ROOF DRAINS ARE TO BE TIED TO UNDERGROUND INFILTRATION SYSTEM.
- 3) ALL UNDERGROUND UTILITIES.
- 4) ALL ELECTRIC, CABLE TELEVISION AND TELEPHONE FACILITIES, FIRE ALARM CONDUITS, STREET LIGHTING WIRING AND OTHER WIRING CONDUITS AND OTHER FACILITIES SHALL BE PLACED UNDERGROUND BY THE DEVELOPER OR THE APPROPRIATE UTILITY COMPANY.
- 5) A MINIMUM COVER OF 30-INCHES OVER ALL PROPOSED WATER LINES SHALL BE PROVIDED.

**FIRE:**

- 1) FIRE HYDRANTS TO BE INSTALLED PER CITY OF WILMINGTON ORDINANCE AND CFPUA STANDARDS.
- 2) PARKING AND LANDSCAPING CANNOT BLOCK FIRE HYDRANTS OR FDC'S.
- 3) FDC'S CAN BE NO FURTHER THAN 40' FROM FIRE DEPARTMENT VEHICLE PLACEMENT.
- 4) FDC'S CAN BE NO FURTHER THAN 180' FROM A FIRE HYDRANT.
- 5) SHOW ALL FDC LOCATIONS ON FINAL PLAN.
- 6) ALL WEATHER ACCESS ROAD MUST BE MAINTAINED AROUND CONSTRUCTION SITE AT ALL TIMES.
- 7) NEW HYDRANTS SHALL BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS BEING DELIVERED TO THE JOB SITE.
- 8) HYDRANTS SHALL BE SUFFICIENT NUMBERS TO ACCOMMODATE BASE FIRE FLOW REQUIREMENTS OF STRUCTURE.
- 9) IN ADDITION TO STANDARD COMMENTS, ADDITIONAL FIRE PROTECTION AND ACCESSIBILITY REQUIREMENTS MAY BE REQUIRED DUE TO ANY SPECIAL CIRCUMSTANCES CONCERNING THE PROJECT.
- 10) PRIVATE UNDERGROUND FIRE LINES REQUIRE A SEPARATE UNDERGROUND FIRE LINE PERMIT FROM THE WILMINGTON FIRE AND LIFE SAFETY DIVISION 910-341-0668.
- 11) ALL ISOLATION VALVES WITHIN THE "HOT BOX" SHALL BE ELECTRICALLY SUPERVISED. PLEASE WORK CLOSELY WITH YOUR FIRE SPRINKLER AND ALARM INSTALLER IN REGARDS TO RUNNING WIRE FOR TAMPER SWITCH.
- 12) BUILDING CONSTRUCTION TYPE IS SA.
- 13) CONTRACTOR SHALL SUBMIT A RADIO SIGNAL STRENGTH STUDY THAT DEMONSTRATES THAT EXISTING EMERGENCY RESPONDER RADIO SIGNAL LEVELS MEET THE REQUIREMENTS OF SECTION 510 OF THE 2018 NC FIRE CODE.

**SITE:**

- 1) SITE LIGHTING TO BE PROVIDED BY DUKE ENERGY.

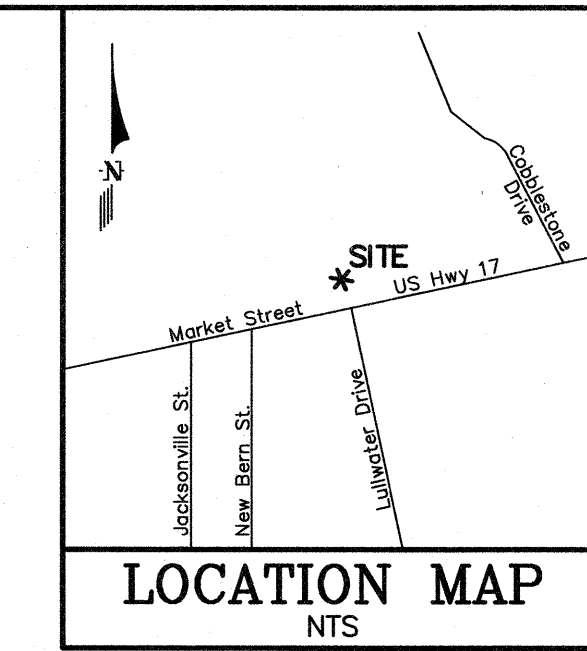
**SITE DATA:**

PROPERTY OWNER: SERAJ ENTERPRISES, INC.  
 PROJECT ADDRESS: 5001 MARKET STREET  
 PIN NUMBERS: R04915-001-010-000  
 AREA NOT IN A FEMA 100-YEAR FLOOD ZONE  
 TRACT AREA: 193,914 SF (4.45 AC)  
 DISTURBED AREA: 2.18 AC  
 ZONING DISTRICT: RB: REGIONAL BUSINESS  
 SETBACKS REQUIRED: FRONT: 25', REAR: 15', SIDE: 0'

PROPOSED BUILDING SETBACK (VESTIBULE): FRONT: 66.7', REAR: 124.8', SIDE: 124.8'  
 PROPOSED BUILDING SETBACK (HOTEL): FRONT: 66.5', REAR: 66.8', SIDE: 66.8'

CAMA LAND USE BUILDING USE: HOTEL  
 BUILDING LOT COVERAGE (53,483/193,914): 27.58%  
 NUMBER OF BUILDINGS: 2  
 EXISTING UNITS: 100  
 PROPOSED UNITS: 207  
 TOTAL UNITS: 207  
 BUILDING HEIGHT (HOTEL/VESTIBULE): 40'/20'  
 NUMBER OF STORIES (HOTEL/VESTIBULE): 4/1  
 GROSS SF PER FLOOR (HOTEL):  
 GROUND FLOOR: 13,469 SF  
 2ND, 3RD & 4TH FLOORS: 13,201 SF  
 GROSS SF PER FLOOR (VESTIBULE): 15,734 SF  
 ASPHALT TO BE REMOVED AND RE GRADED: 10,838 SF  
 EXISTING IMPERVIOUS AREAS:  
 EXISTING BUILDING: 38,893 SF  
 EXISTING ASPHALT: 83,976 SF  
 EXISTING CONCRETE: 10,838 SF  
 EXISTING POOL (TO BE REMOVED): 4,336 SF  
 EXISTING IMPERVIOUS AREA: 138,043 SF  
 EXISTING IMPERVIOUS TO BE REMOVED: -18,615 SF  
 EXISTING IMPERVIOUS AREA: 119,428 SF  
 PROPOSED ONSITE IMPERVIOUS AREAS:  
 PROPOSED BUILDING (+CABANA/CANOPY/VEST.): 15,020 SF  
 PROPOSED POOL AREA AND DECK: 2,706 SF  
 PROPOSED CONCRETE: 10,838 SF  
 PROPOSED ASPHALT & CURBING: 12,713 SF  
 TOTAL ONSITE IMPERVIOUS AREA: 152,057 SF (78.41%)  
 TOTAL ONSITE SIDEWALK AREA: 247 SF

PARKING REQUIRED:  
 1/GUEST ROOM PLUS 50% OF THE REQUIRED SPACES FOR ANY ACCESSORY USES: 207  
 RESTAURANT (1/80 SF MIN x 50% & 1/65 SF MAX x 50%): 13-15  
 BANQUET HALL (1/80 SF MIN x 50% & 1/65 SF MAX x 50%): 16-20  
 TOTAL PARKING REQUIRED: 236-242  
 PARKING PROVIDED: 211  
 COMPACT PARKING: 25  
 TOTAL PARKING PROVIDED: 236  
 HANDICAP SPACES REQUIRED: 7  
 HANDICAP SPACES PROVIDED: 7  
 BICYCLE PARKING REQUIRED: 15  
 BICYCLE PARKING PROVIDED: 20  
 PUBLIC WATER AND SEWER BY CFPUA: 13,200 GPD  
 EXISTING SEWER FLOW: 12,000 GPD  
 PROPOSED WATER FLOW: 27,324 GPD  
 PROPOSED SEWER FLOW: 24,840 GPD  
 (120 GPD PER ROOM x 207 ROOMS x 110%)  
 FOUNDATION PLANTING PROVIDED NORTH: 306  
 FOUNDATION PLANTING PROVIDED WEST: 291  
 FOUNDATION PLANTING PROVIDED WEST: 730



**REVISIONS**

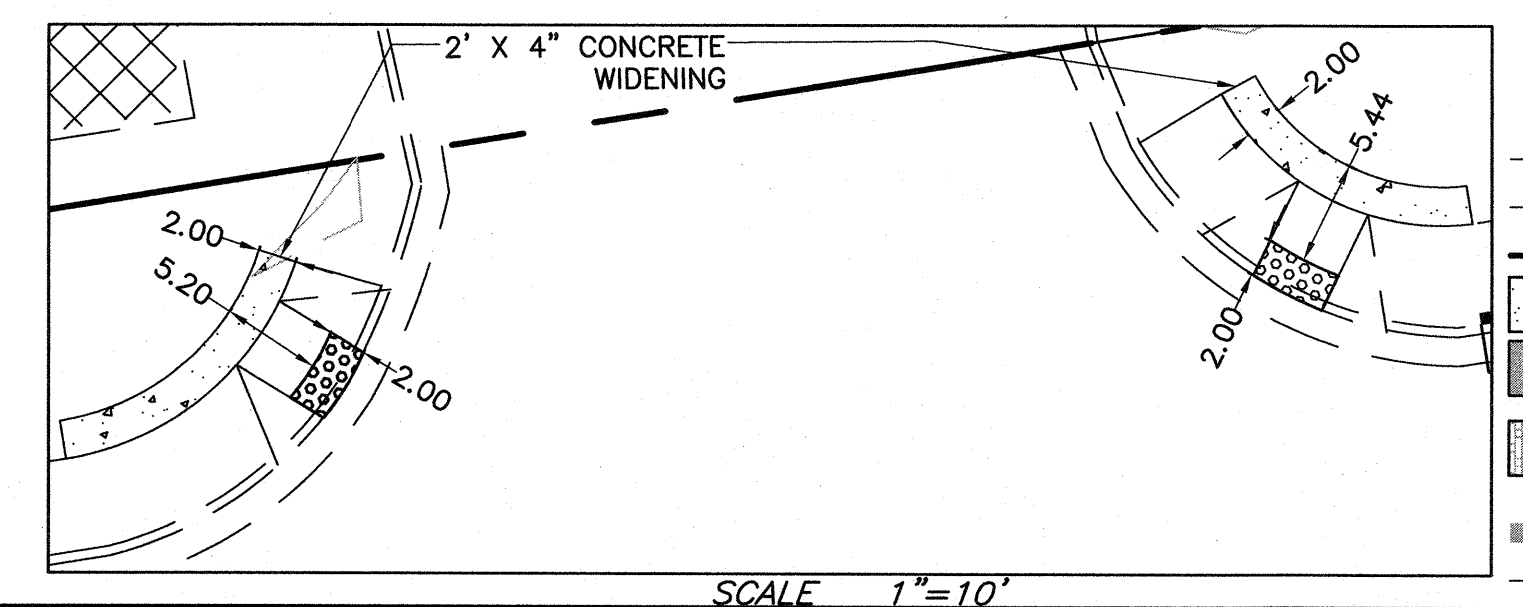
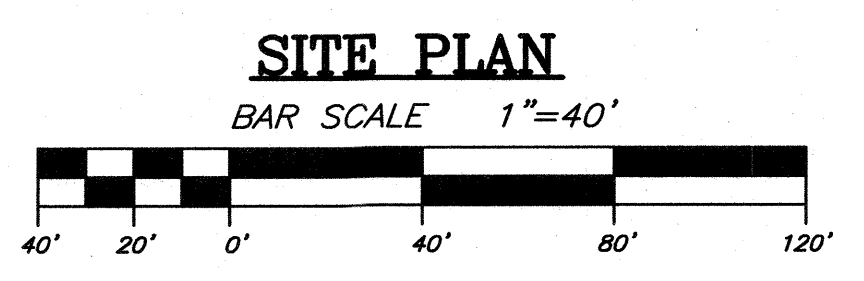
No./Date	Description	By
4/05/19	RESPONSE LETTER REV	JET
4/15/19	REVISION PARKING	JET
6/3/19	FLIP ANGLE PARKING	JET

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

**Approved Construction Plan**

Name	Date
Planning	
Traffic	
Fire	

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.



**LEGEND**

- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED STORM WATER
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED TRUE GRID
- LIMITS OF DISTURBANCE
- TEMPORARY SILT FENCE

**TRIPP ENGINEERING, P.C. AND STORMWATER MANAGEMENT PLAN**  
 419 Chestnut Street  
 Wilmington, North Carolina 28401  
 Phone 910-763-5100  
 Fax 910-763-5631  
 © 2014 TRIPP ENGINEERING, P.C.

**TRU & TAPESTRY HOTEL**  
 5001 MARKET STREET  
 WILMINGTON, NORTH CAROLINA

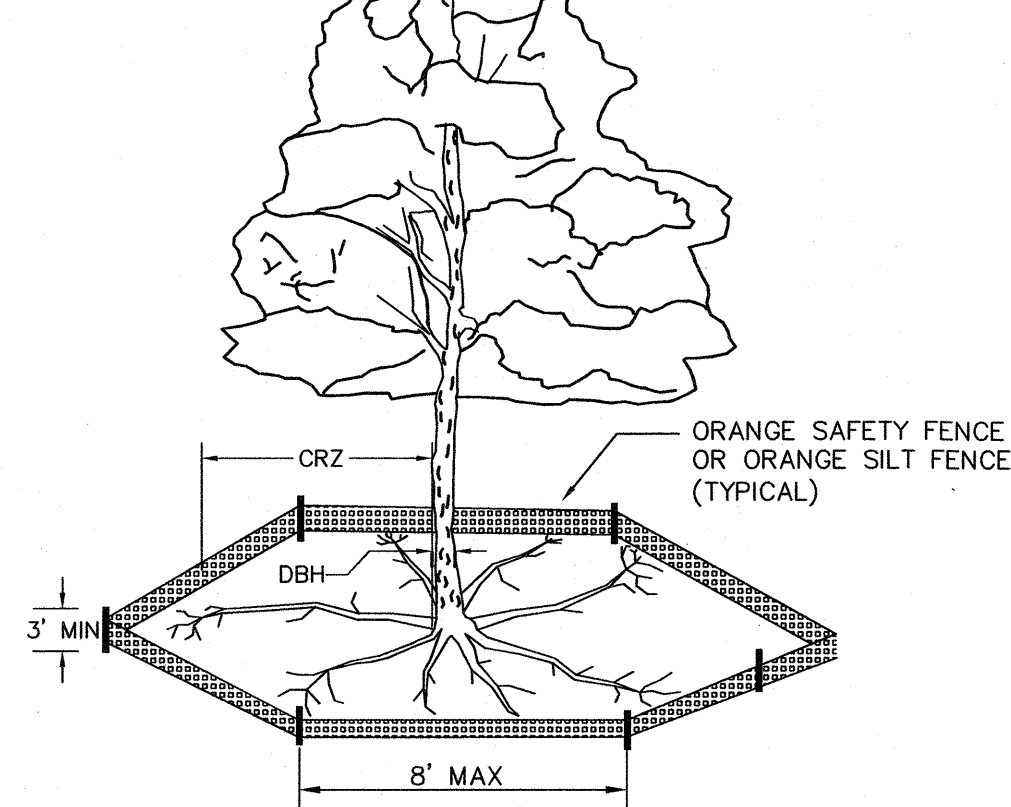
**PROGRESS DRAWING**  
 DO NOT USE FOR CONSTRUCTION

DATE 02-08-19  
 DESIGN PGT  
 DRAWN JET

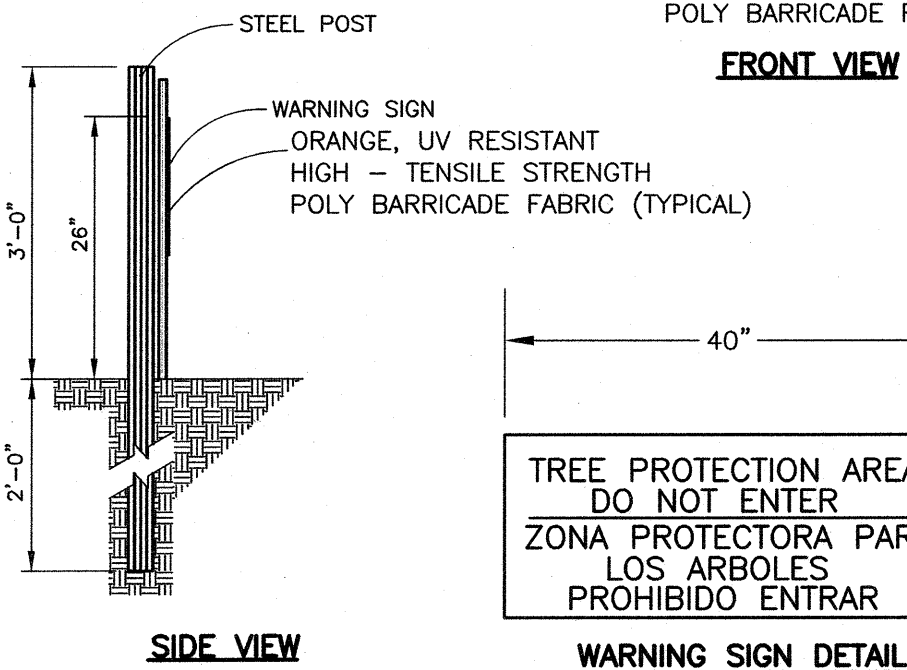
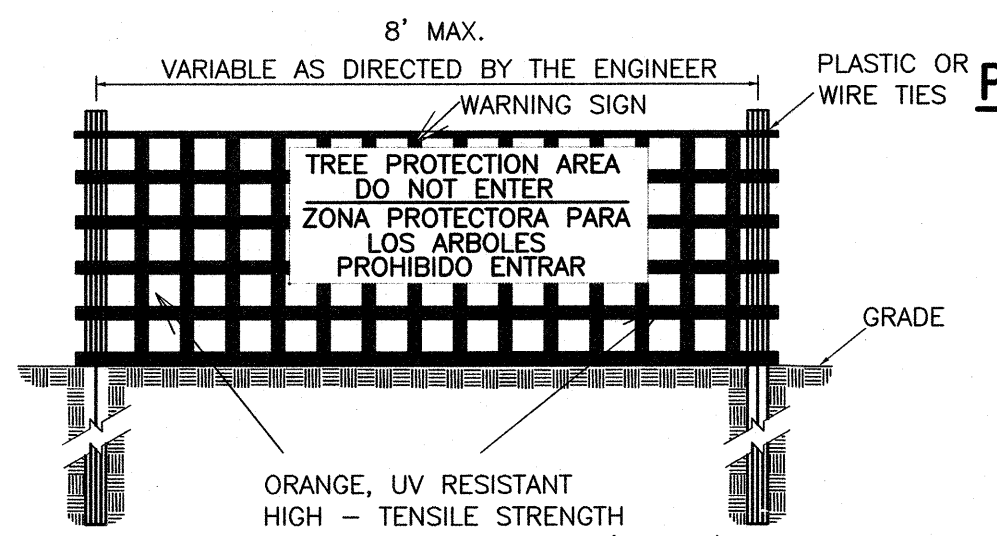
**C3**  
 SHEET 3 OF 7  
 17068



NOTE: THE CRITICAL ROOT ZONE (CRZ) OF A TREE IS WHERE THE MAJORITY OF A TREE'S ROOTS LAY. 85% OF MOST TREE ROOTS ARE FOUND IN THE TOP 24" OF THE SOIL AND SUPPLY THE MAJORITY OF NUTRIENTS AND WATER. GENERALLY, ROOTS SPREAD OUT 2-3X THE HEIGHT OF THE TREE

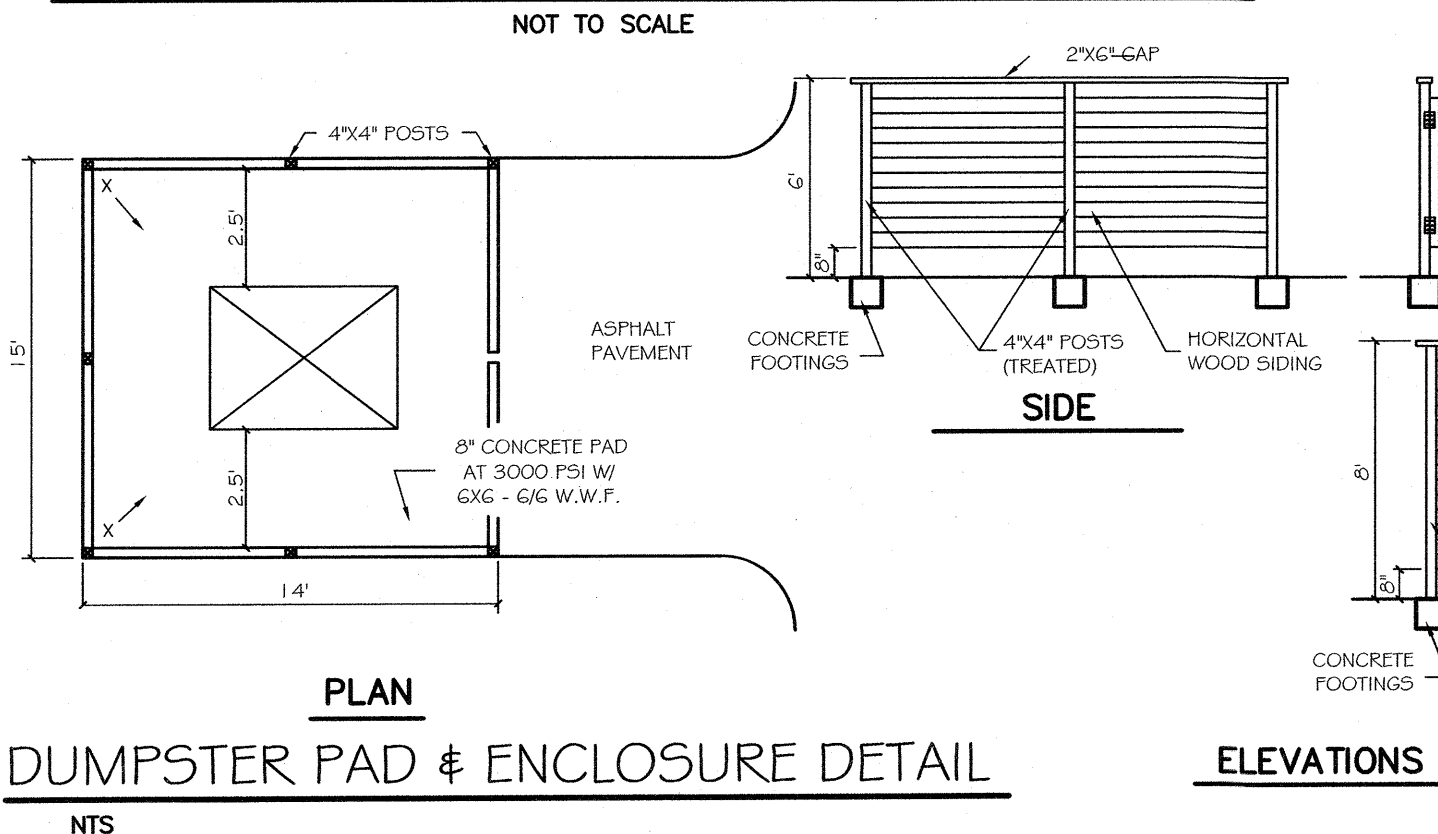


- NOTES:
- PROTECT CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
  - CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
  - IF CONSTRUCTION OCCURS WITHIN THE CRZ, AT LEAST 12" OF MULCH AND/OR LOGGING MATS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.
  - WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS, SUCH AS A REINFORCED SIDEWALK, SHALL BE IMPLEMENTED AS NECESSARY.
  - FOR ALL TREES, CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO MATERIALS OR EQUIPMENT SHALL BE STORED BENEATH TREES. DAMAGING THE BARK WITH LAWNMOWERS, CONSTRUCTION EQUIPMENT, OR ANYTHING ELSE IS PROHIBITED. CONTRACTOR SHALL REPAIR DAMAGE TO TREES.
  - FAILING TO INSTALL OR MAINTAIN PROTECTION MEASURES SHALL RESULT IN A STOP WORK ORDER AND FINE OF \$500/DAY. DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN WILL REQUIRE OWNER TO POST A LETTER OF CREDIT FOR 3 YRS FOR TREE MITIGATION.

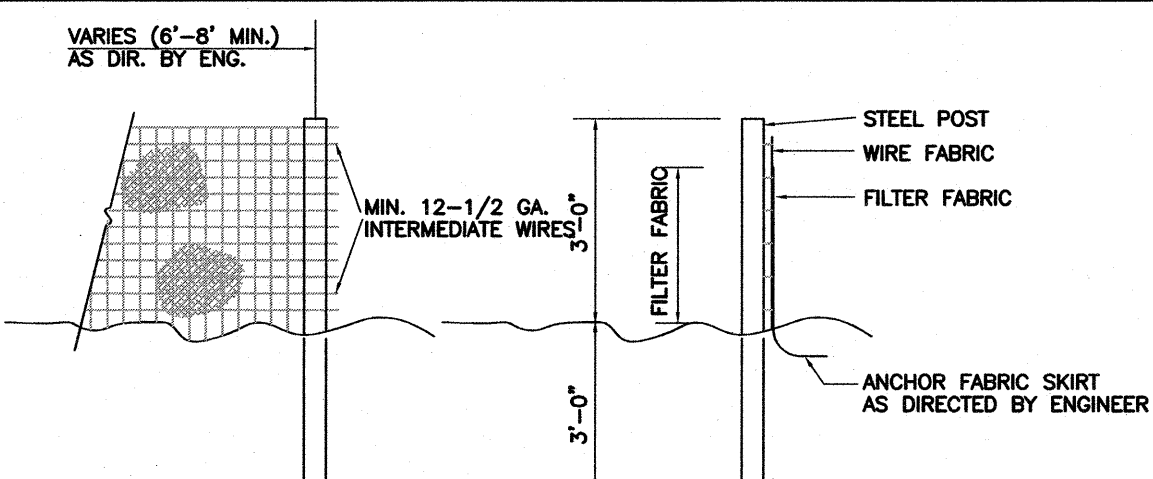


- NOTES:
- THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
  - WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM. CLEARLY LEGIBLE AND SPACED AS DETAILED.
  - SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 100' IN PERIMETER, PROVIDE NO LESS THAN TWO SIGNS PER PROTECTION AREA.
  - ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE AND SIGNS THROUGHOUT DURATION OF PROJECT.
  - TREE PROTECTION FENCING AND SIGNAGE SHALL BE REMOVED AFTER CONSTRUCTION.
  - ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF WILMINGTON, BASED ON ACTUAL FIELD CONDITIONS.

**TREE PROTECTION DURING CONSTRUCTION SD 15-09**

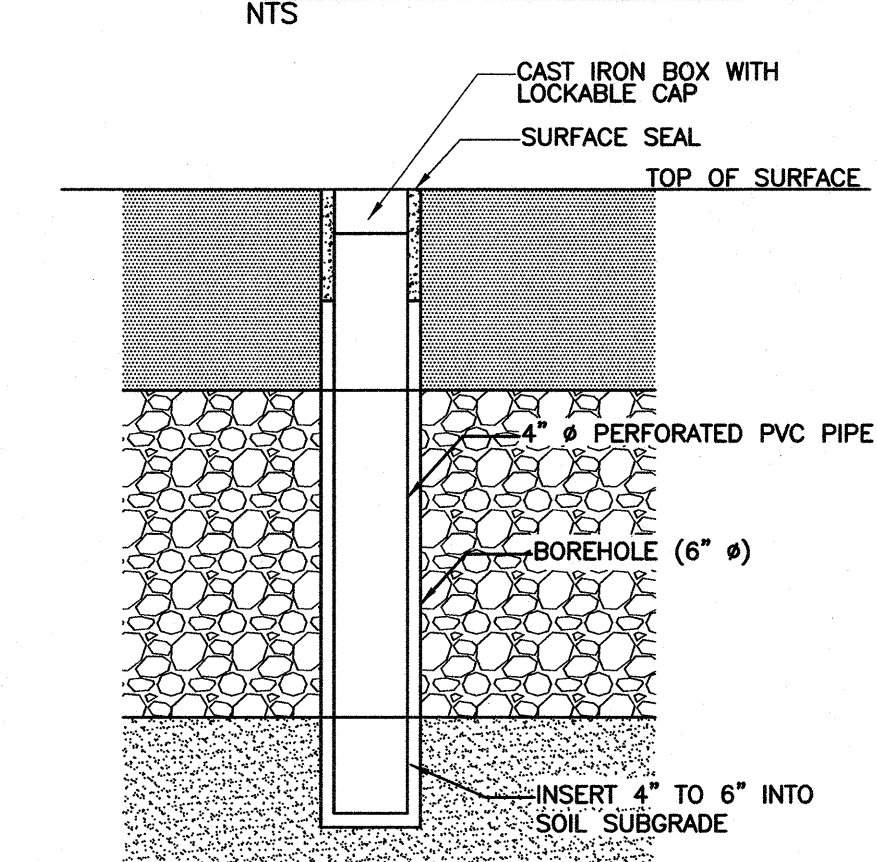


**DUMPSTER PAD & ENCLOSURE DETAIL**

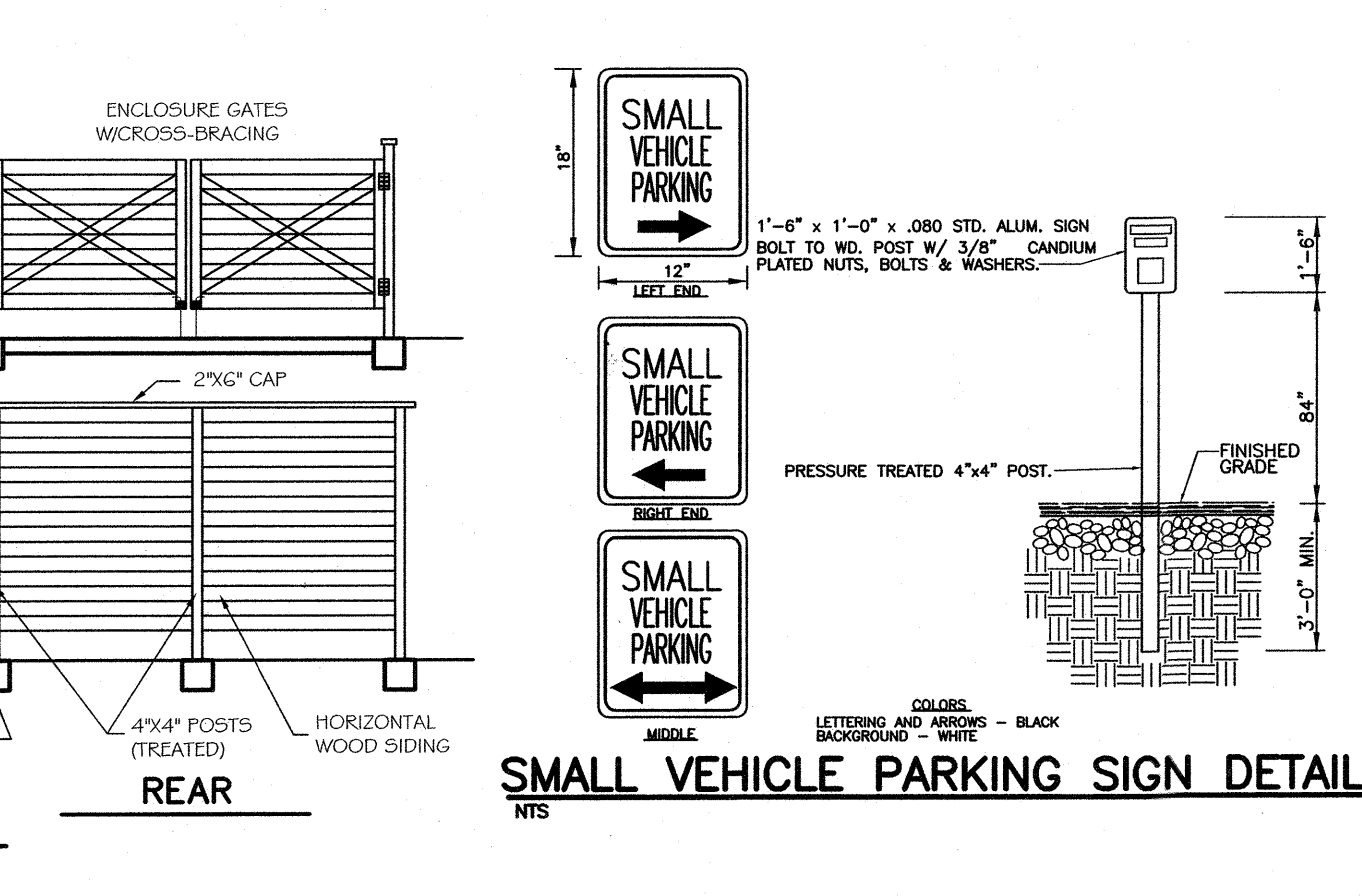
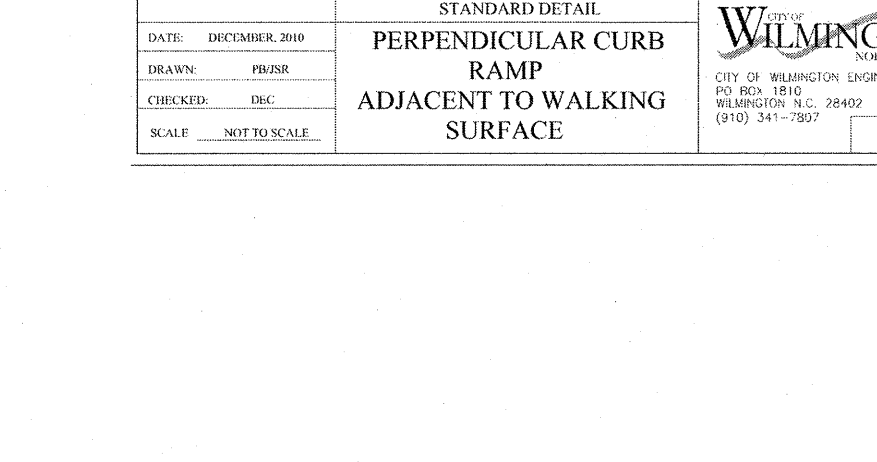
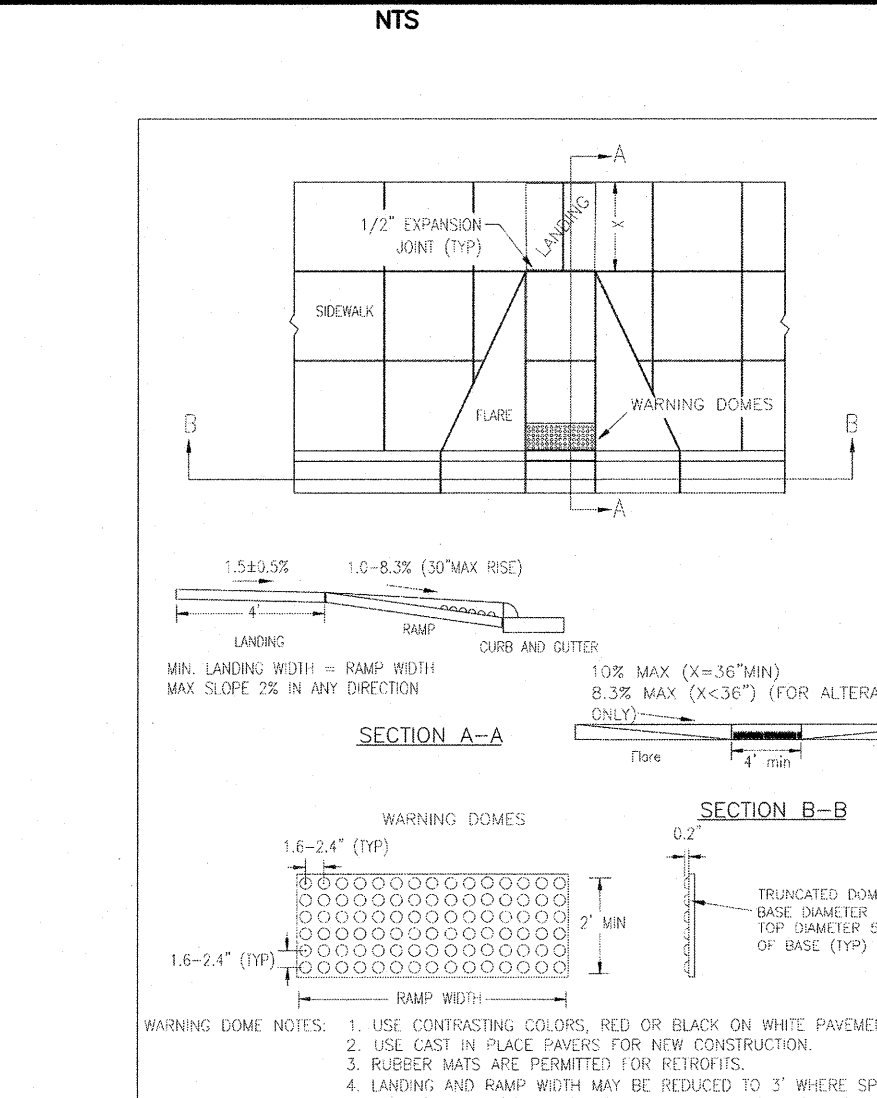


- NOTES:
- FENCE FABRIC SHALL BE A MIN. OF 32" IN WIDTH AND SHALL HAVE A MIN. OF SIX LINE WIRES WITH 12" STAY SPACING.
  - FABRIC SHALL BE FOR EROSION CONTROL AND MIN. OF 36" IN WIDTH. FABRIC SHALL BE FASTENED ADEQUATELY TO THE WIRE FABRIC AS DIRECTED BY THE ENGINEER.
  - STEEL POST SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER STEEL ANGLE TYPE.

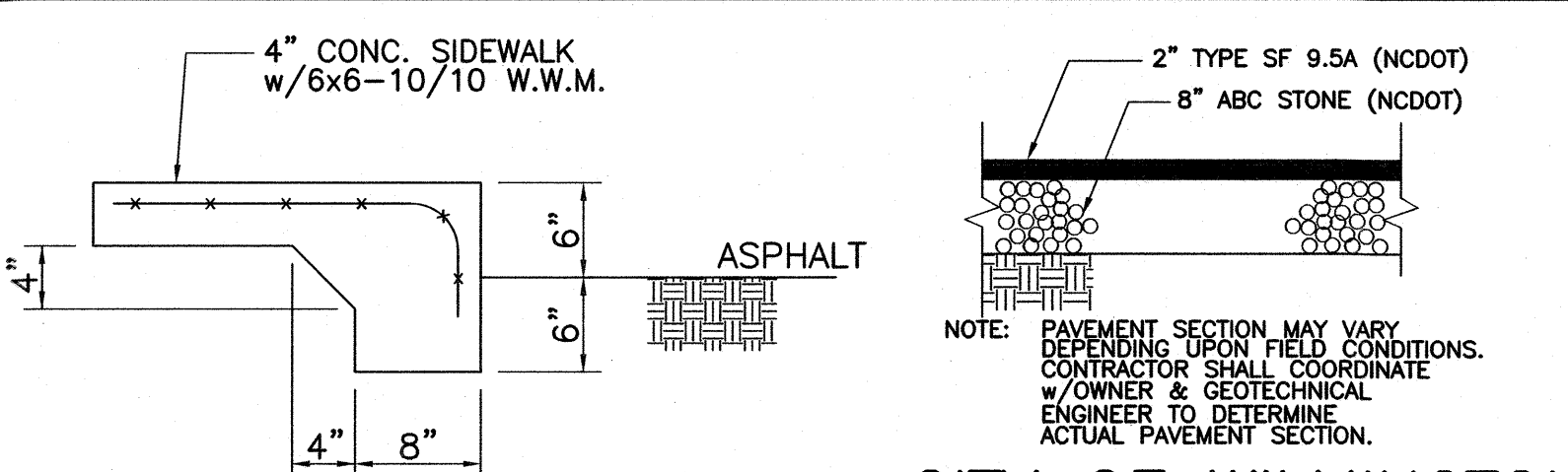
**TEMPORARY SILT FENCE**



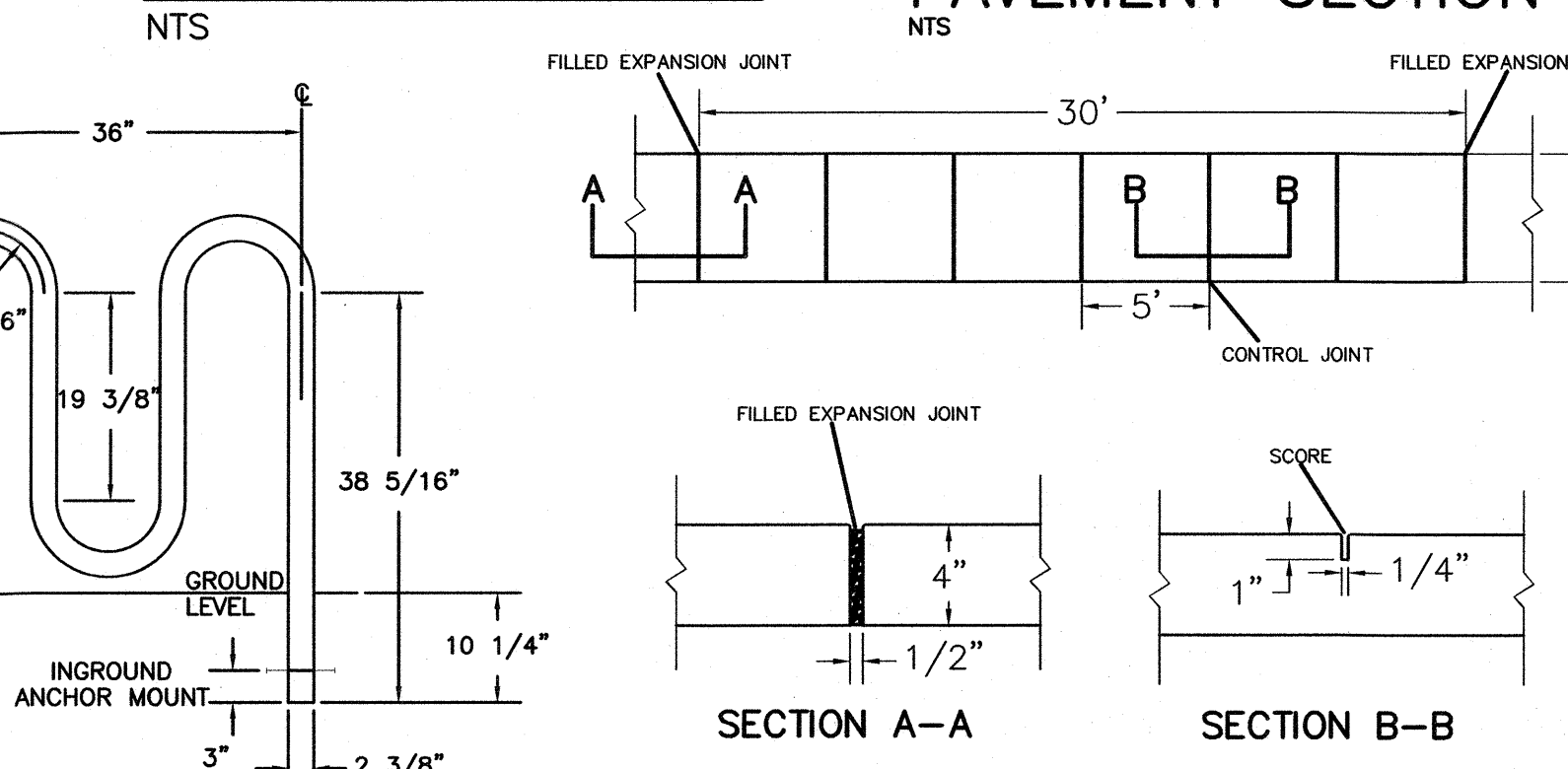
**PERVIOUS PAVEMENT OBSERVATION WELL DETAIL**



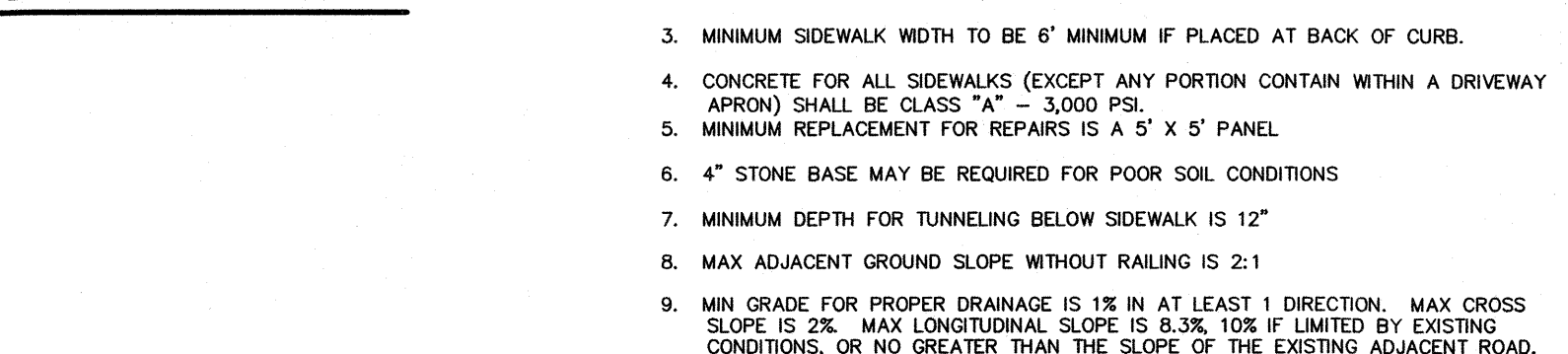
**SMALL VEHICLE PARKING SIGN DETAIL**



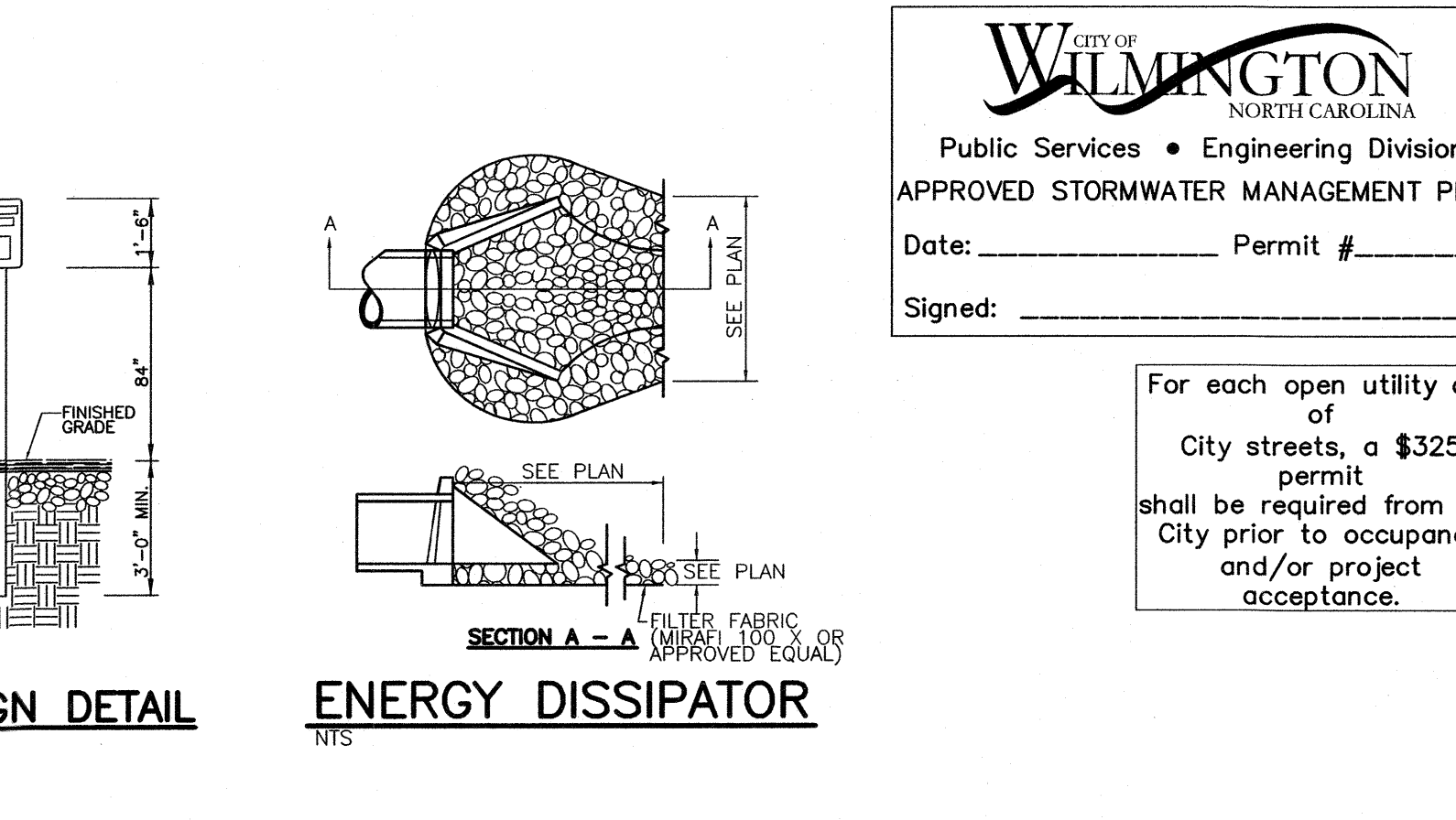
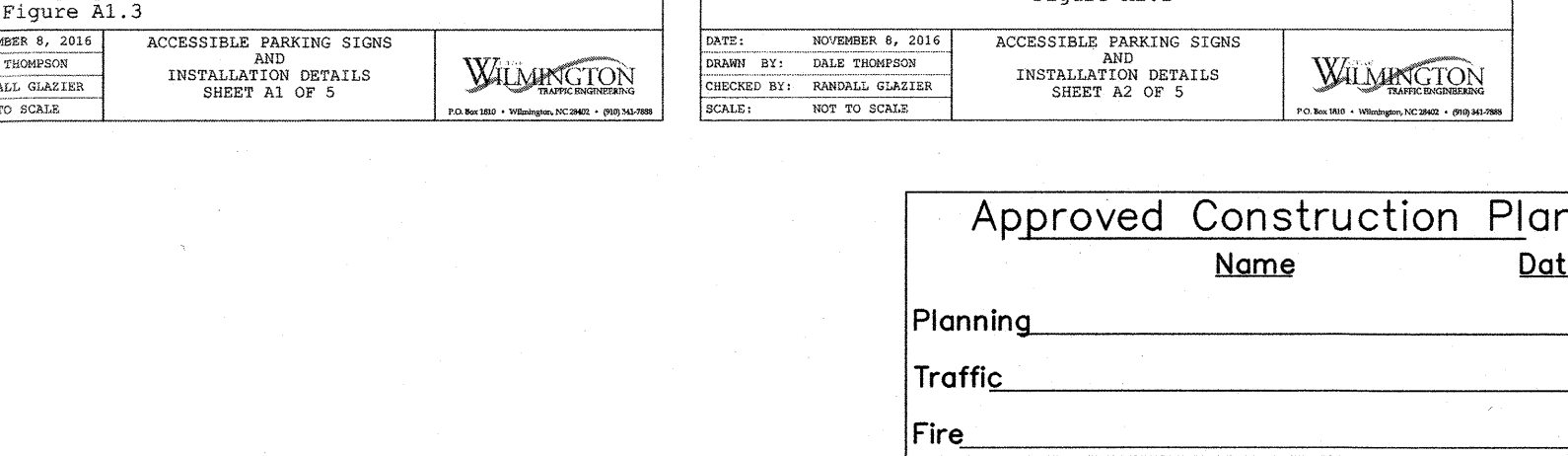
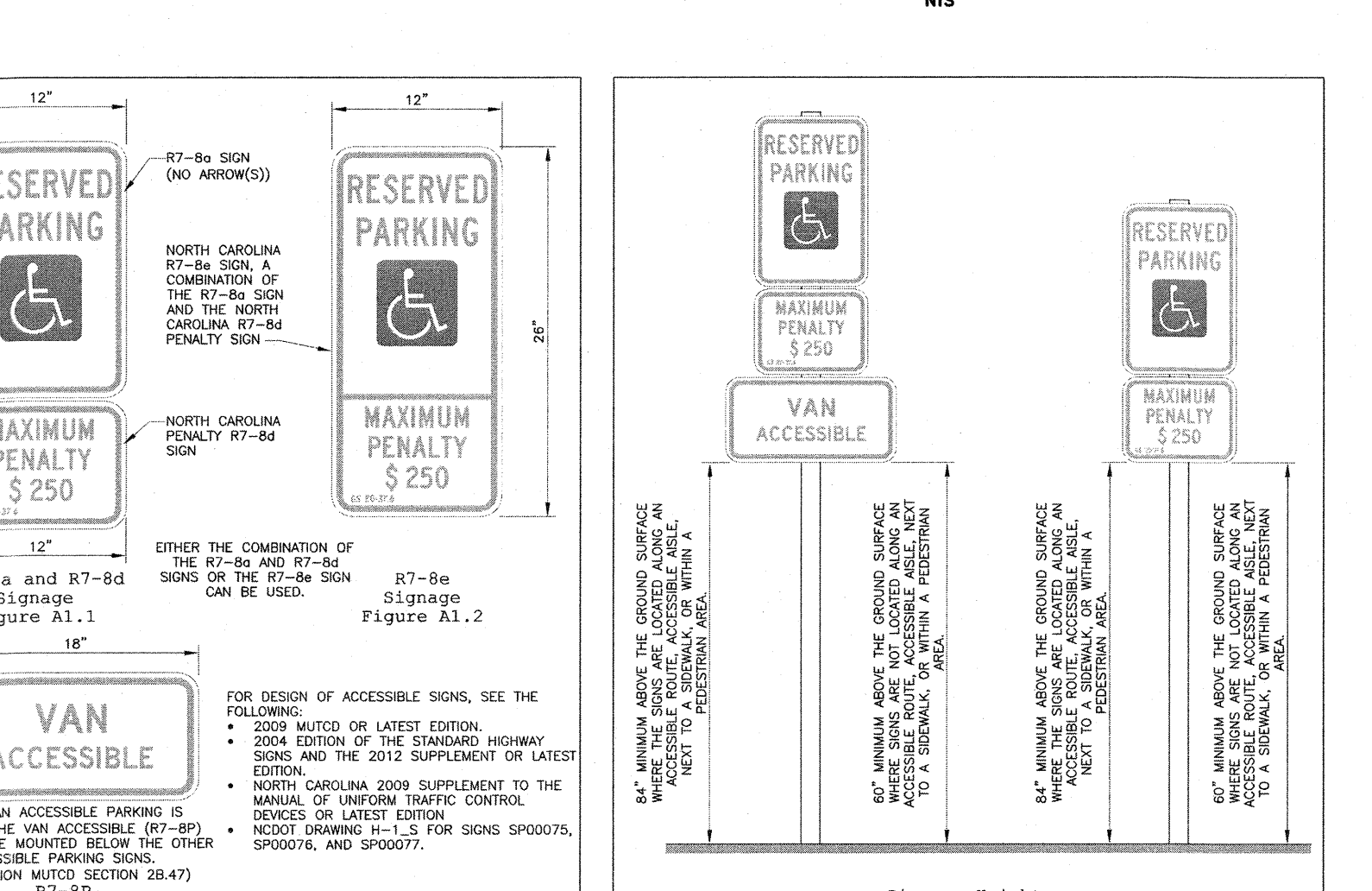
**TURN DOWN SIDEWALK**



**5 CAPACITY BIKE RACK**



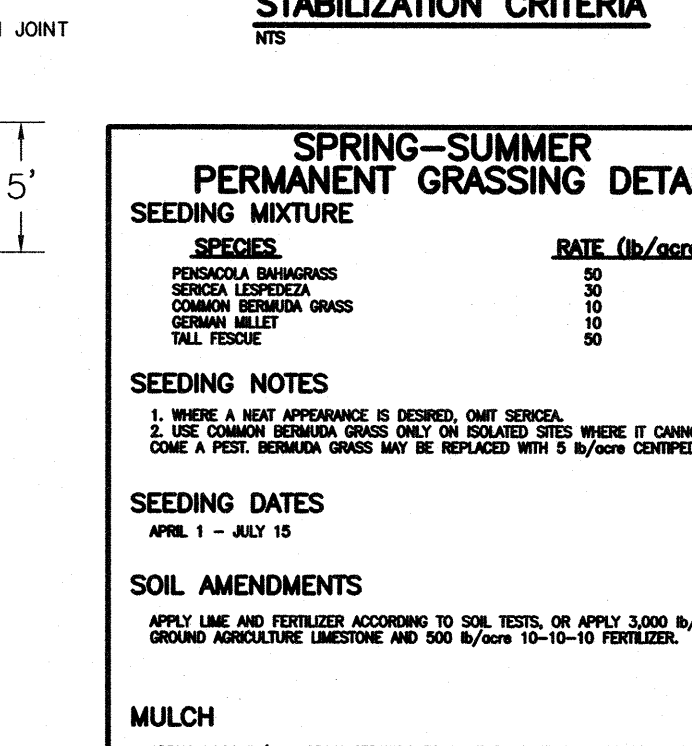
**CITY OF WILMINGTON SIDEWALK SD 3-10**



**ENERGY DISSIPATOR**

SITE AREA DESCRIPTION	STABILIZATION TIMEFRAME	STABILIZATION TIMEFRAME DEVIATIONS
PERIMETER DITCHES, SWALES, DITCHES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HOW ZONES)

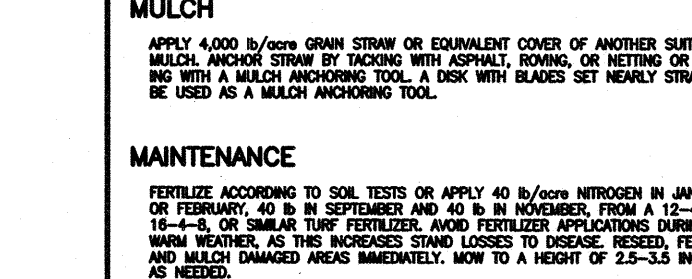
**NPDES GROUND STABILIZATION CRITERIA**



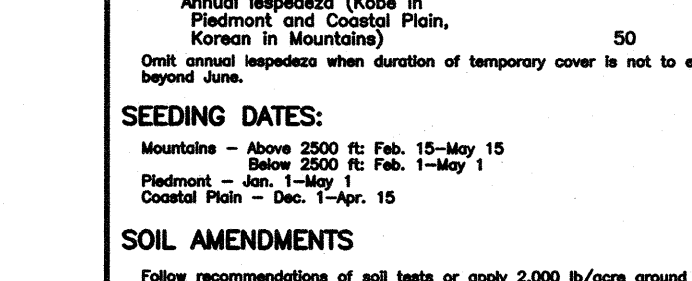
**FALL-WINTER PERMANENT GRASSING DETAIL**



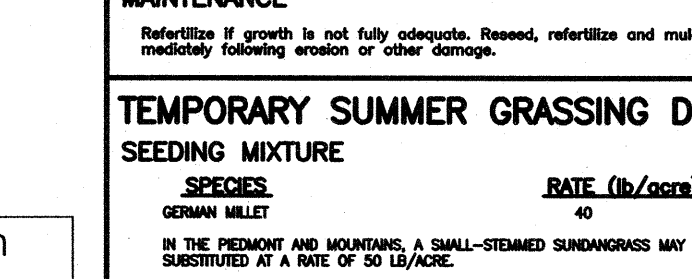
**LATE WINTER & EARLY SPRING TEMPORARY GRASSING DETAIL**



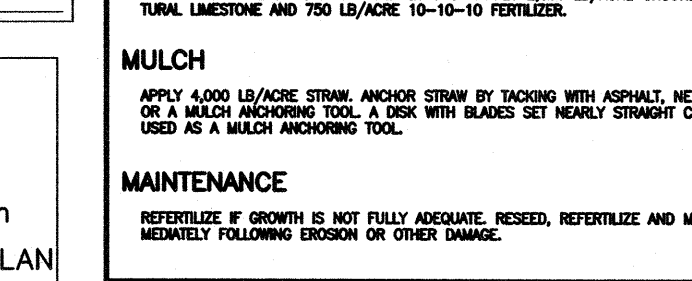
**TEMPORARY SUMMER GRASSING DETAIL**



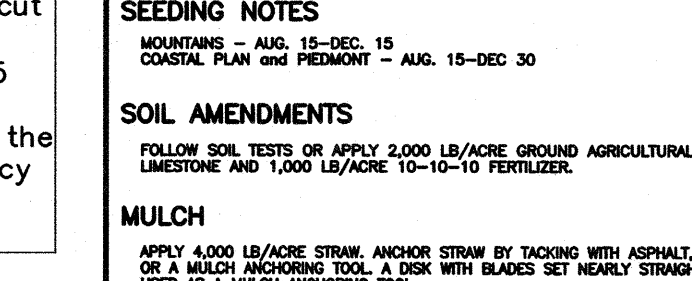
**TEMPORARY FALL GRASSING DETAIL**



**APPROVED CONSTRUCTION PLAN**



**APPROVED STORMWATER MANAGEMENT PLAN**



**APPROVED STORMWATER MANAGEMENT PLAN**

REVISIONS

No.	Date	Description	By
4/05/19		RESPONSE LETTER REL	JET
4/15/19		ADD COMPACT DET	JET
4/25/19		ADD DETAIL	JET

- NOTES:
- THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS BOTH ON AND IMMEDIATELY ADJACENT TO THE SITE.
  - CLEARING: CONTRACTOR SHALL REMOVE ALL TREES AND VEGETATION WITHIN LIMITS OF CONSTRUCTION UNLESS OTHERWISE DIRECTED BY OWNER.
  - GRUBBING AND STRIPPING: CONTRACTOR SHALL RAKE AND REMOVE ROOTS, STUMPS, VEGETATION, DEBRIS, EXISTING STRUCTURES ABOVE AND BELOW GRADE, ORGANIC MATERIAL OR ANY OTHER UNSUITABLE MATERIAL WITHIN LIMITS OF CONSTRUCTION.
  - MUCKING: CONTRACTOR SHALL COORDINATE WITH OWNER AND THE GEOTECHNICAL REPRESENTATIVE TO COORDINATE REMOVAL OF ANY SOFT AREAS.
  - DISPOSAL: CLEARED, GRUBBED, STRIPPED OR OTHER WASTE MATERIAL SHALL BE PROPERLY PERMITTED SITE AND DISPOSED OF IN A PROPERLY PERMITTED FACILITY.
  - FILL AND COMPACTION SHOULD COMPLY WITH GEOTECHNICAL REPORT.
  - THE CONTRACTOR SHALL NOTE THAT THE GRADING PLAN MAY NOT REPRESENT A BALANCED EASEMENT. THE CONTRACTOR SHALL NOTIFY APPROPRIATE PERSONNEL OF THEIR INTENT TO EXCAVATE, IN WRITING, NOT LESS THAN 10 DAYS PRIOR TO EXCAVATING.
  - THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE DISCONNECTION/ RECONNECTION AND/OR THE RELOCATION OF ALL EXISTING UTILITIES WITH APPROPRIATE PERSONNEL.
  - EXISTING SURVEYING PROVIDED BY PORT CITY GEOMATICS & SUPPLIED BY OWNER.
  - THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AT THE SITE. FURTHERMORE THE CONTRACTOR SHALL REPORT ALL DISCREPANCIES OR QUESTIONS TO THE ENGINEER PRIOR TO INSTALLATION.
  - THE CONTRACTOR SHALL PROVIDE ANY AND ALL LAYOUT REQUIRED TO CONSTRUCT HIS WORK UNLESS OTHERWISE DIRECTED BY OWNER.
  - ALL PAVEMENT, BASE AND SUBGRADE SHALL CONFORM TO NCDOT STANDARDS INCLUDING WORKMANSHIP, MATERIALS AND EQUIPMENT. APPROPRIATE SIGNAGE, LIGHTS OR OTHER TRAFFIC CONTROL DEVICES SHALL BE PROVIDED IN ACCORDANCE WITH NCDOT TO MAINTAIN SAFETY AND TWO WAY TRAFFIC.
  - ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO INSTALLATION. ALL AREAS SHALL BE SLOPED TO DRAIN AWAY FROM BUILDINGS AT ALL TIMES.
  - CONCRETE STORM DRAINAGE PIPE SHALL BE CLASS III WITH RUBBER GASKETED JOINTS AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
  - USE WHITE LANE MARKING PAINT FOR ALL PAVEMENT MARKINGS. PAINT SHALL BE A CHLORINATED RUBBER ALKYL, FS TT-P-115, TYPE III, FACTORY MIXED, QUICK DRYING, NON BLEEDING, REFLECTIVE MATERIAL MAY BE ADDED AT OWNER'S OPTION FOR NIGHT REFLECTING.
  - DUCTILE IRON SHALL BE CLASS 50.
  - CONCRETE FOR WALKS, CURBS AND DRIVES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS - AIR ENTRAINED.
  - FIELD TESTING SHALL BE DONE BY AN INDEPENDENT TESTING LABORATORY PAID FOR BY THE OWNER. FURTHER TESTING REQUIRED DUE TO A FAILED TEST WILL BE PAID FOR BY THE CONTRACTOR.
  - SEE GEOTECHNICAL REPORT NO. \_\_\_\_\_ DATED \_\_\_\_\_ BY \_\_\_\_\_ FOR ADDITIONAL REQUIREMENTS.

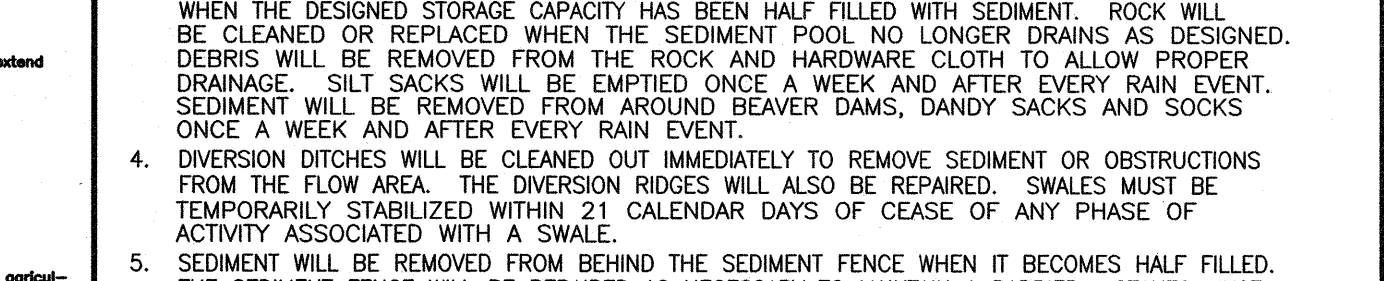
**CONSTRUCTION SEQUENCE**

- NO CUT SLOPE OR FILL SLOPE SHALL EXCEED A RISE OR FALL OF ONE FOOT FOR EVERY RUN OF 3 FEET (1 VERTICAL TO 3 HORIZONTAL).
- NO SEDIMENT WILL BE ALLOWED TO EXIT THE SITE. ALL EROSION SHALL BE CONTROLLED INCLUDING SIDE SLOPES DURING AND AFTER CONSTRUCTION.
- INSTALL PRIMARY EROSION CONTROL MEASURES BEFORE BEGINNING CONSTRUCTION, BUT NOT LIMITED TO GRAVELED CONSTRUCTION ENTRANCE, SILT FENCE, CHECK DAMS, ETC. INSTALL ALL SECONDARY EROSION CONTROL MEASURES AS SOON AS POSSIBLE AFTER BEGINNING CONSTRUCTION.
- ALL EROSION CONTROL MEASURES TO BE INSPECTED AFTER EACH RAIN. SILT FENCE AND INLET PROTECTION AREA TO BE CLEANED WHEN 0.5 FEET OF SEDIMENT HAVE ACCUMULATED IN FRONT OF THE DEVICE OR WHEN THEY LEAK OR FAIL. SEDIMENT TRAPS ARE CLEANED WHEN FULLY STATED OR WHEN HALF FULL.
- IF APPLICABLE, CONSTRUCT PROPOSED RETENTION POND TO ACT AS A SEDIMENT BASIN DURING CONSTRUCTION. REMOVE ACCUMULATION OF SILT AS REQUIRED TO ALLOW PROPER FUNCTIONING. RESTORE POND TO DESIGN LEVELS AT THE COMPLETION OF CONSTRUCTION.
- IF APPLICABLE, INSTALL DROP INLETS WITH INLET PROTECTION TO ACT AS SILT TRAPS DURING CONSTRUCTION. REMOVE ACCUMULATED SILT AS NEEDED TO PREVENT SILT FROM ENTERING STORM DRAIN PIPING.
- A 4" LAYER OF TOPSOIL SHALL BE APPLIED TO ALL NEW AREAS TO BE GRASSED.
- MAINTAIN ALL EROSION CONTROL MEASURES UNTIL PROJECT IS COMPLETE.
- MORE STRINGENT MEASURES MAY BE REQUIRED TO HALT EROSION IF THOSE ON THIS PLAN PROVE TO BE LESS EFFECTIVE.
- REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF CONSTRUCTION. ALL PERMANENT MEASURES SHALL BE WELL ESTABLISHED PRIOR TO PROJECT COMPLETION.

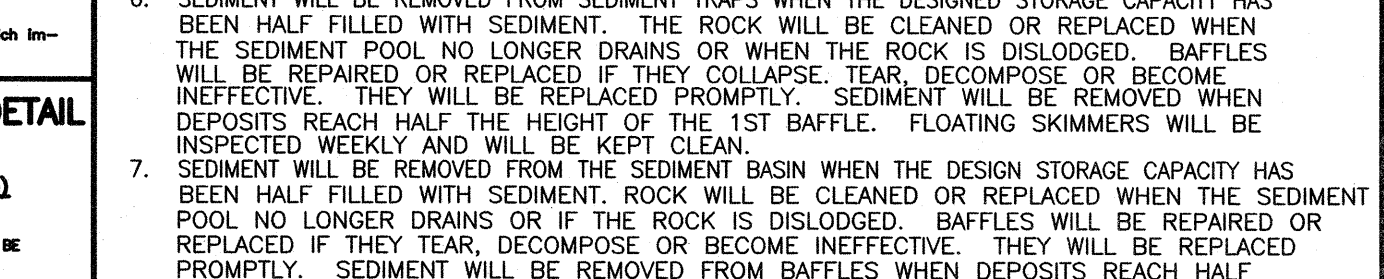
**MAINTENANCE PLAN**

- ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE, LESS THAN ONCE EVERY WEEK AND WITHIN 24 HOURS OF EVERY HALF INCH RAINFALL.
- ALL POINTS OF EGRESS WILL HAVE CONSTRUCTION ENTRANCES THAT WILL BE PERIODICALLY TOP-DRESSED WITH AN ADDITIONAL 2 INCHES OF #4 STONE TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. IMMEDIATELY REMOVE OBJECTIONABLE MATERIAL SPILLED, WASHED OR TRACKED ONTO THE CONSTRUCTION ENTRANCE OR ROADWAYS.
- SEDIMENT WILL BE REMOVED FROM HARDWARE CLOTH AND GRAVEL INLET PROTECTION, BLOCK AND GRAVEL INLET, ROCK DOUGHNUT INLET PROTECTION AND ROCK PIPE INLET PROTECTION WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS AS DESIGNED. DEBRIS WILL BE REMOVED FROM THE ROCK AND HARDWARE CLOTH TO ALLOW PROPER DRAINAGE. SILT SACKS WILL BE EMPTIED ONCE A WEEK AND AFTER EVERY RAIN EVENT. SEDIMENT WILL BE REMOVED FROM AROUND BEAVER DAMS, DANDY SACKS AND SOCKS ONCE A WEEK AND AFTER EVERY RAIN EVENT.
- DIVERSION DITCHES WILL BE CLEANED OUT IMMEDIATELY TO REMOVE SEDIMENT OR OBSTRUCTIONS FROM THE FLOW AREA. THE DIVERSION RIDGES WILL ALSO BE REPAIRED. SWALES MUST BE TEMPORARILY STABILIZED WITHIN 21 CALENDAR DAYS OF CEASE OF ANY PHASE OF ACTIVITY ASSOCIATED WITH SWALES.
- SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES HALF FILLED. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER. STAKES MUST BE STEEL. STAKE SPACING WILL BE 6 FEET MAX. WITH THE USE OF EXTRA STRENGTH FABRIC, WITHOUT WIRE BACKING OR WIRE BAKING ARE USED, WHEN STANDARD STRENGTH FABRIC AND WIRE BAKING ARE USED. IF ROCK FILTERS ARE DESIGNED AT LOW POINTS IN THE SEDIMENT FENCE THE ROCK WILL BE REPAIRED OR REPLACED IF IT BECOMES HALF FULL OF SEDIMENT, NO LONGER DRAINS AS DESIGNED OR IS DAMAGED.
- SEDIMENT WILL BE REMOVED FROM SEDIMENT TRAPS WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR WHEN THE SEDIMENT POOL REACHES HALF HEIGHT. BATTERIES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BATTLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.
- ALL SEEDED AREAS SHALL BE FERTILIZED, RESEED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VIGOROUS, DENSE, VEGETATIVE COVER. ALL SLOPES WILL BE STABILIZED WITHIN 15 CALENDAR DAYS. ALL OTHER AREAS WILL BE STABILIZED WITHIN 15 WORKING DAYS.
- FLOCCULANTS WILL BE USED TO ADDRESS TURBIDITY ISSUES. TANKS, HOSES AND INJECTION SYSTEMS WILL BE CHECKED FOR PROBLEMS OR PUMPS DISCHARGES DAILY.

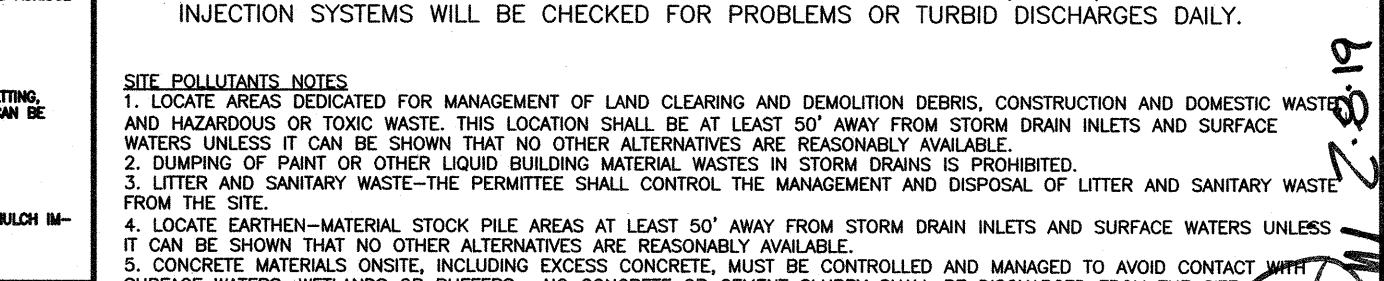
**TEMPORARY SUMMER GRASSING DETAIL**



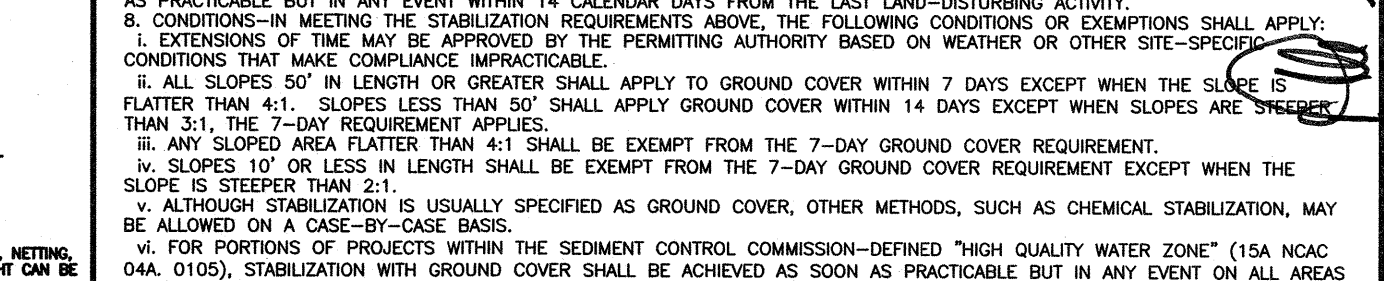
**TEMPORARY FALL GRASSING DETAIL**



**APPROVED CONSTRUCTION PLAN**



**APPROVED STORMWATER MANAGEMENT PLAN**



**APPROVED STORMWATER MANAGEMENT PLAN**

TRIPP ENGINEERING, P.C.  
419 Chestnut Street  
Wilmington, North Carolina 28401  
Phone 910-763-5100  
Email: trippeng@ec.rr.com  
© 2019 TRIPP ENGINEERING, P.C.

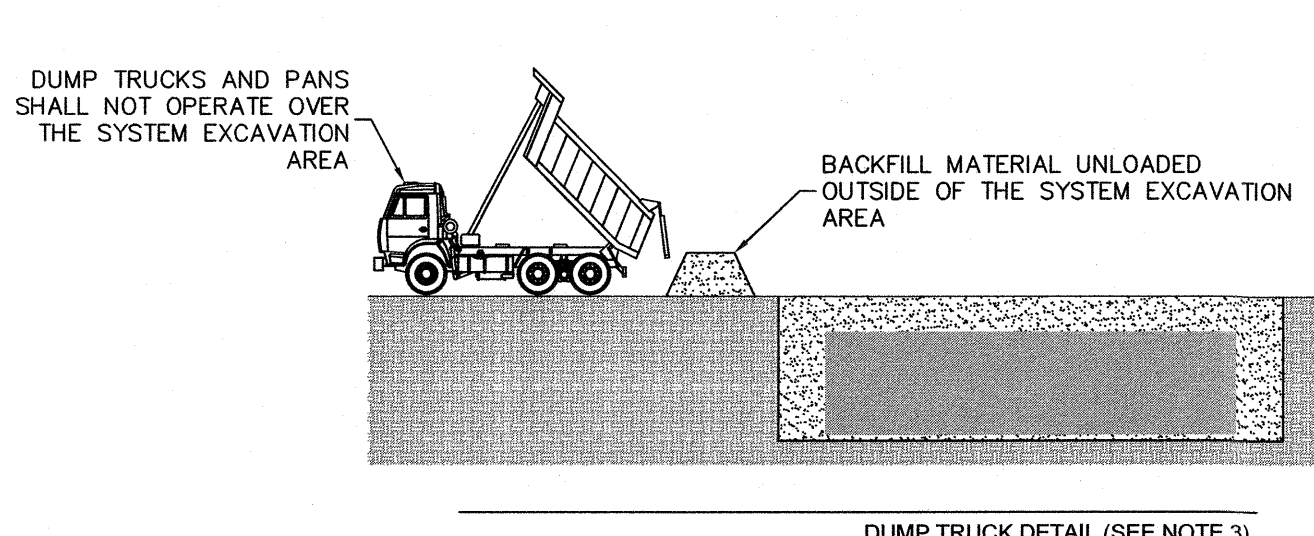
DETAILS AND NOTES

TRU & TAPESTRY HOTEL  
5001 MARKET STREET  
WILMINGTON, NORTH CAROLINA

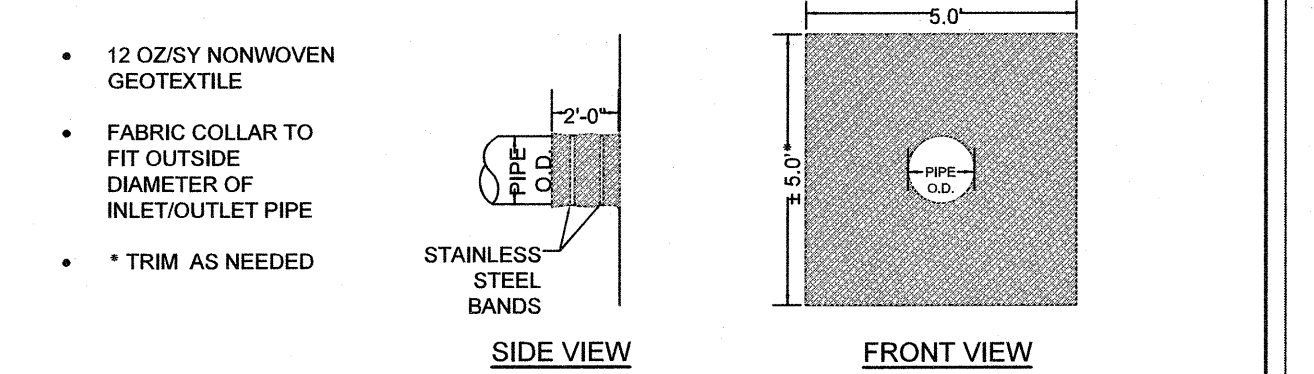
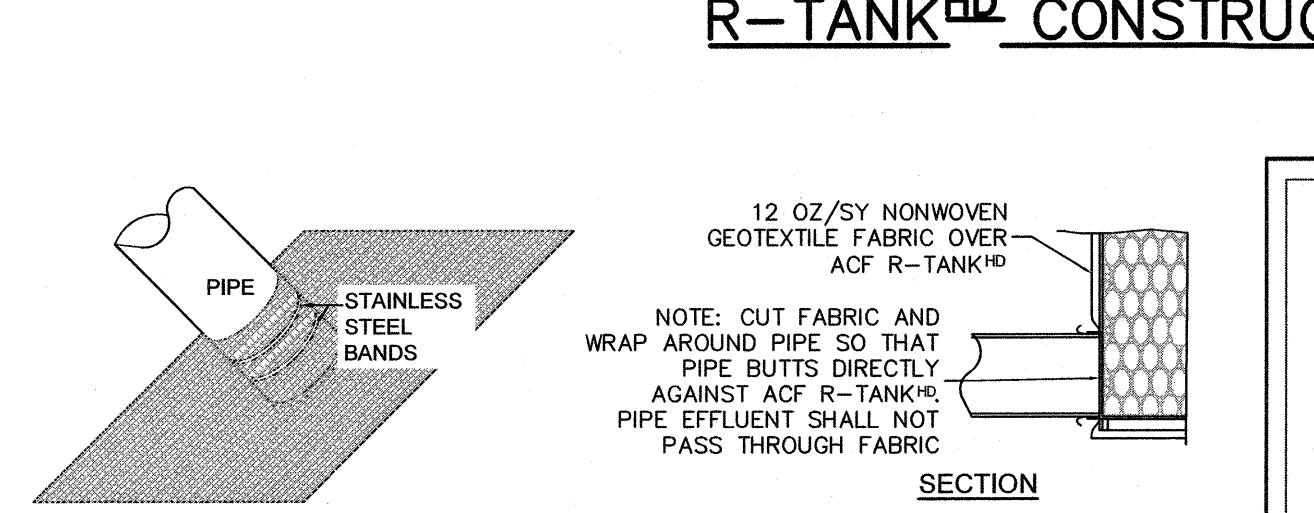
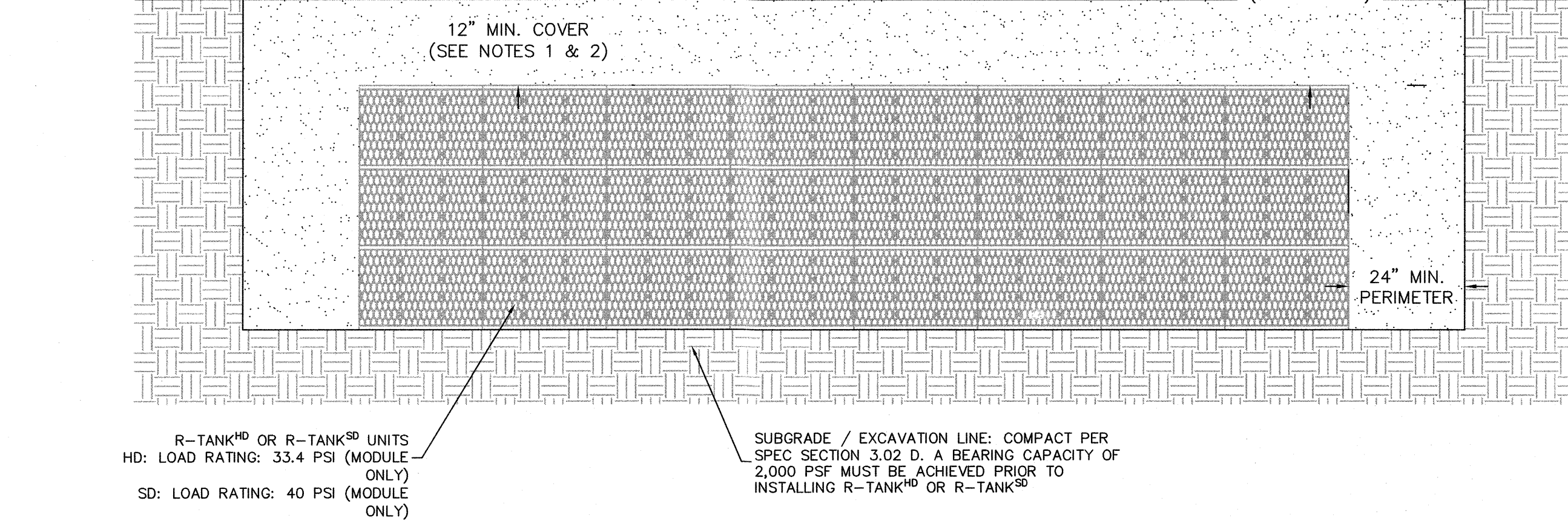
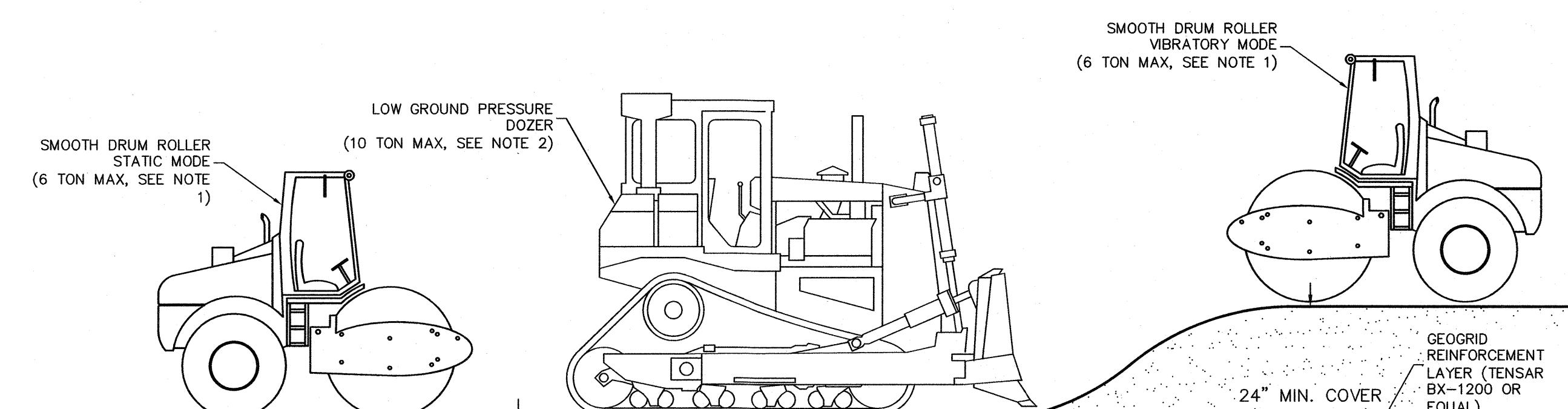
DATE 02-08-19  
DESIGN PGT  
DRAWN JET

C4  
SHEET 4 OF 7  
17068

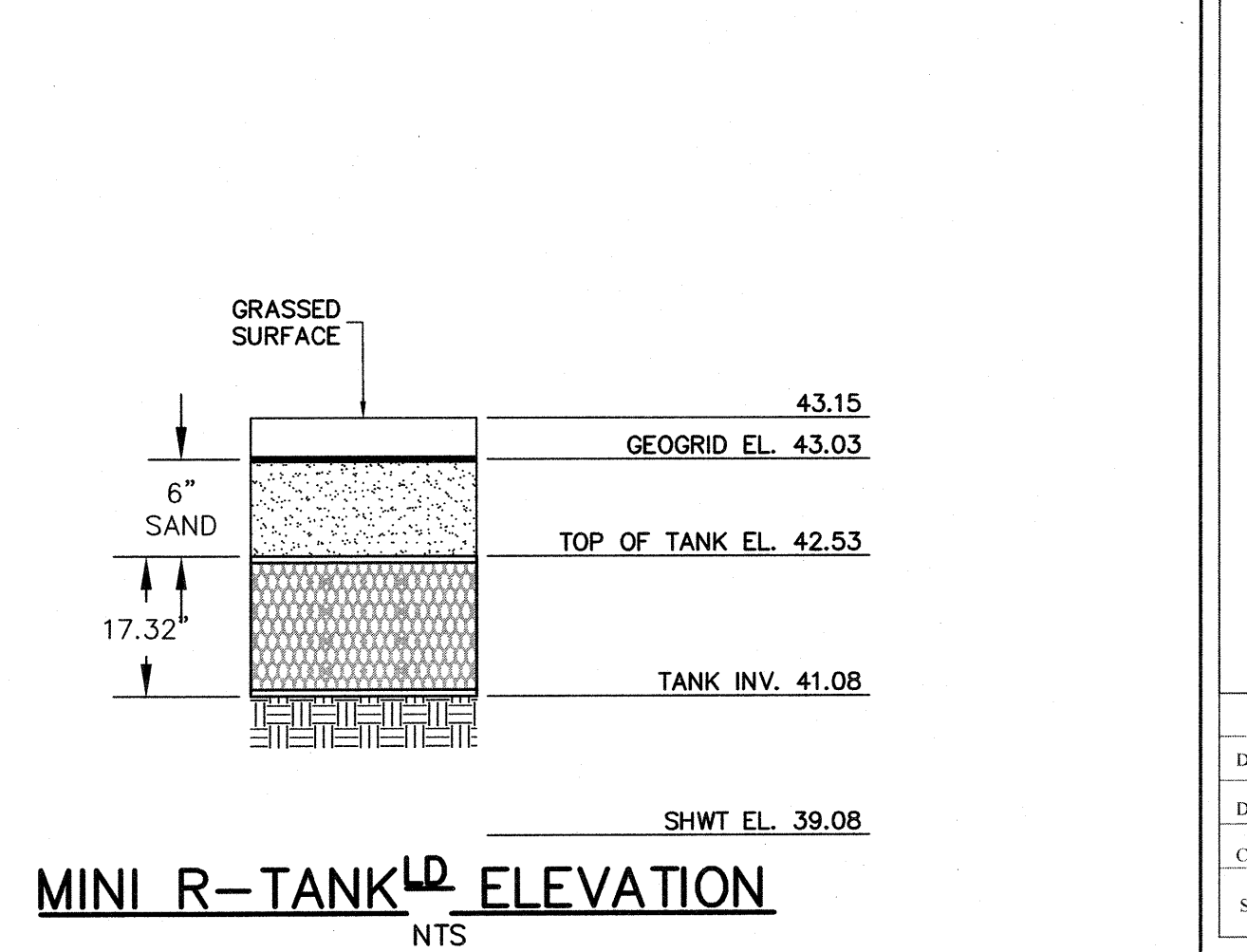




NOTES:  
 1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODES UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. SPEC SECTION 3.05 A.  
 2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. SPEC SECTION 3.05 B.  
 3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. SPEC SECTION 3.05 B.  
 4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). SPEC SECTION 3.05 C. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL ACF REPRESENTATIVE FOR ADDITIONAL INFORMATION.



**GEOTEXTILE BOOT FOR R-TANK HD DETAIL**



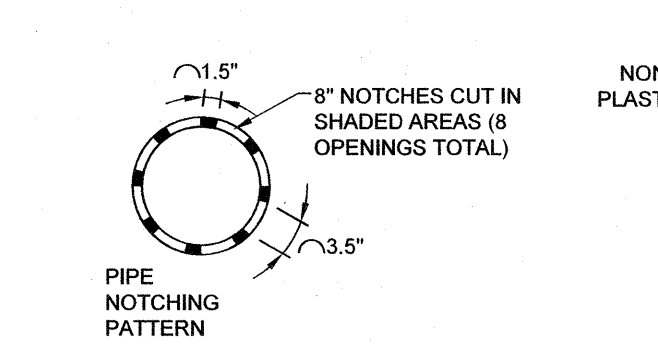
**MINI R-TANK HD ELEVATION**

GEOTEXTILE (TENSAR BX-1200 OR EQUAL) PLACED 12" ABOVE THE R-TANK SYSTEM. OVERLAP ADJACENT PANELS BY 16" MIN. GEOTEXTILE SHOULD EXTEND 3' BEYOND THE EXCAVATION FOOTPRINT.

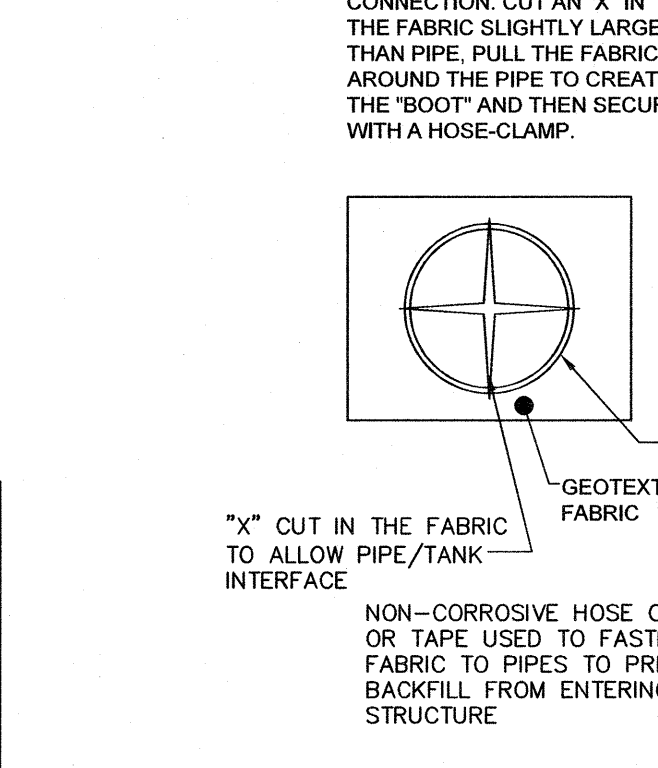
NOTES:  
 • THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.  
 • MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER, FLUSH AS NEEDED.  
 • ONLY R-TANK HD AND R-TANK SD MAY BE USED IN TRAFFIC APPLICATIONS.

**DEPTH SUMMARY**

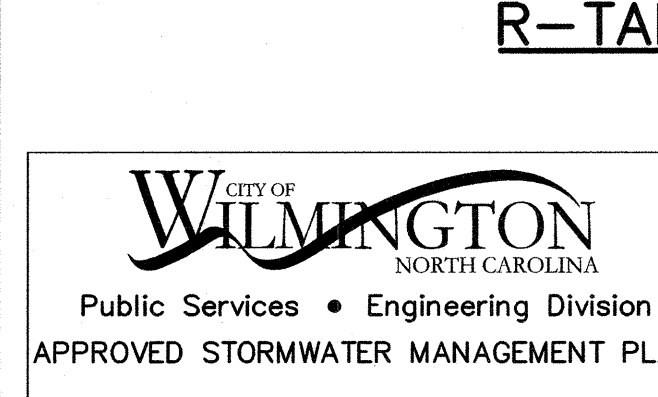
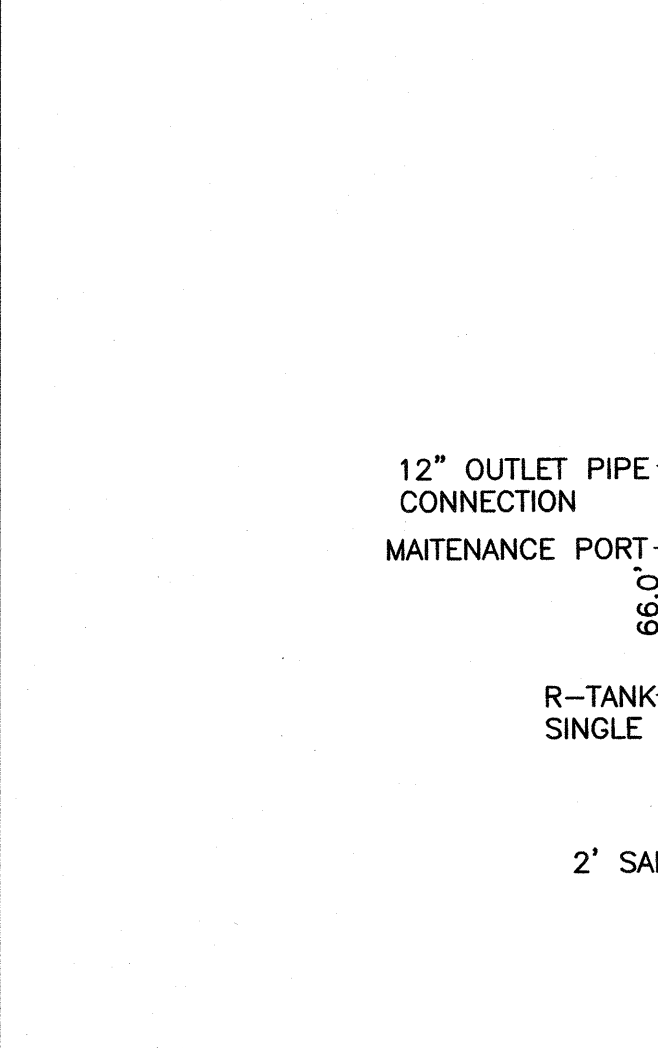
TYPE	A	B
R-TANK	12" MIN - 36" MAX	AS SHOWN ON PLANS
R-TANK HD	20" MIN - 6.99" MAX	12"
R-TANK SD	18" MIN - 9.99" MAX	12"



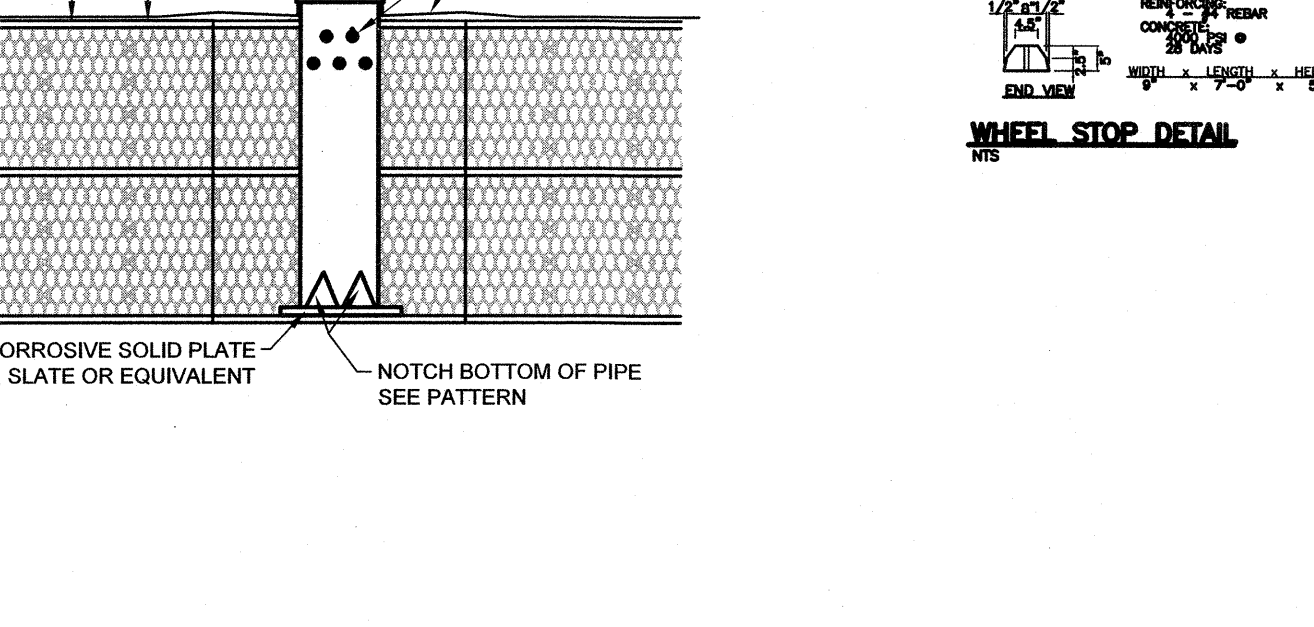
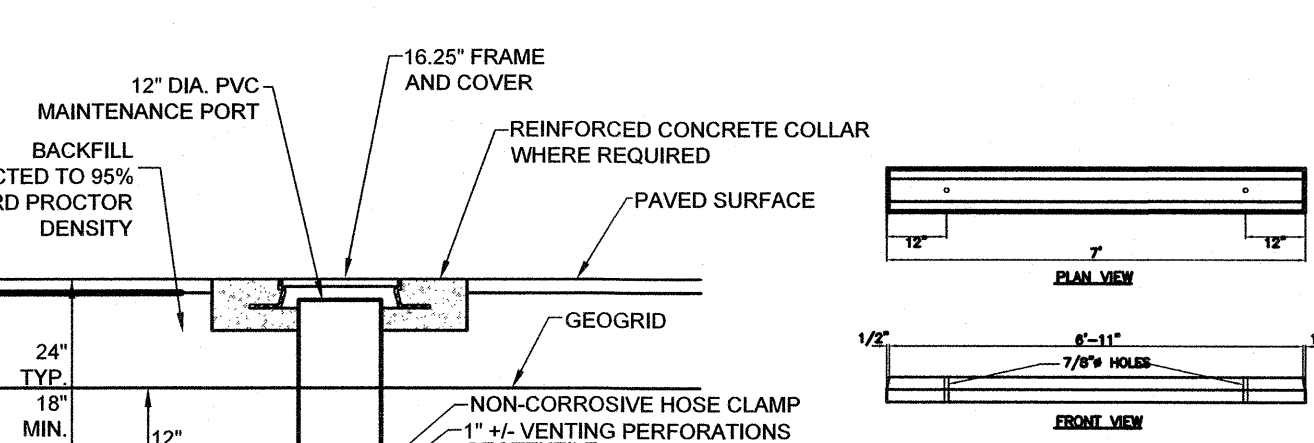
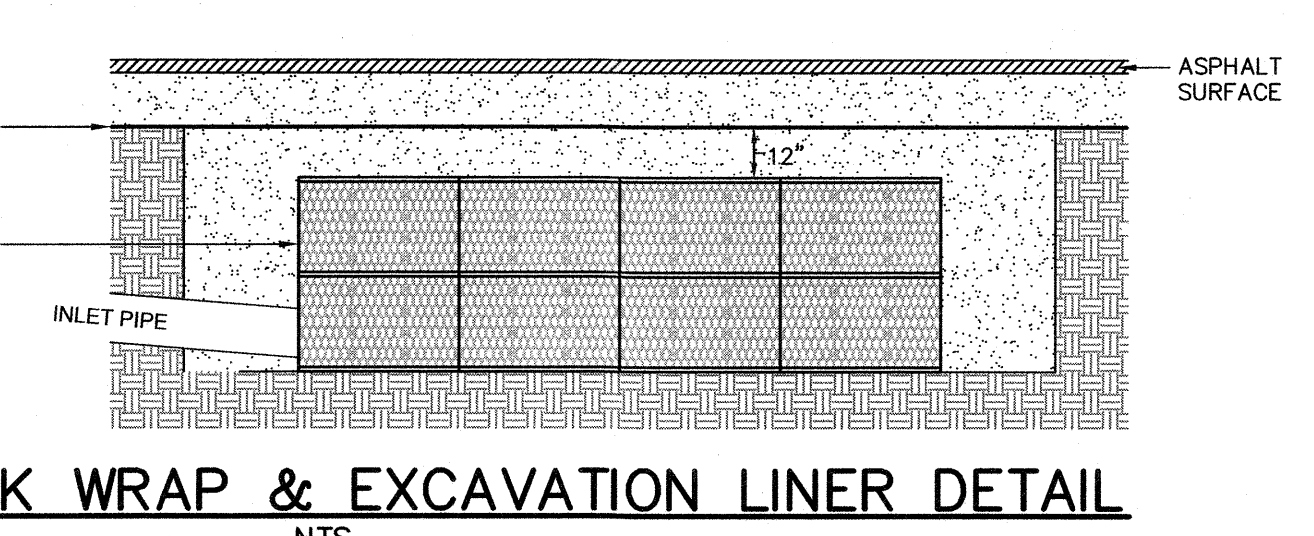
**R-TANK HD TYPICAL MAINTENANCE PORT DETAIL**



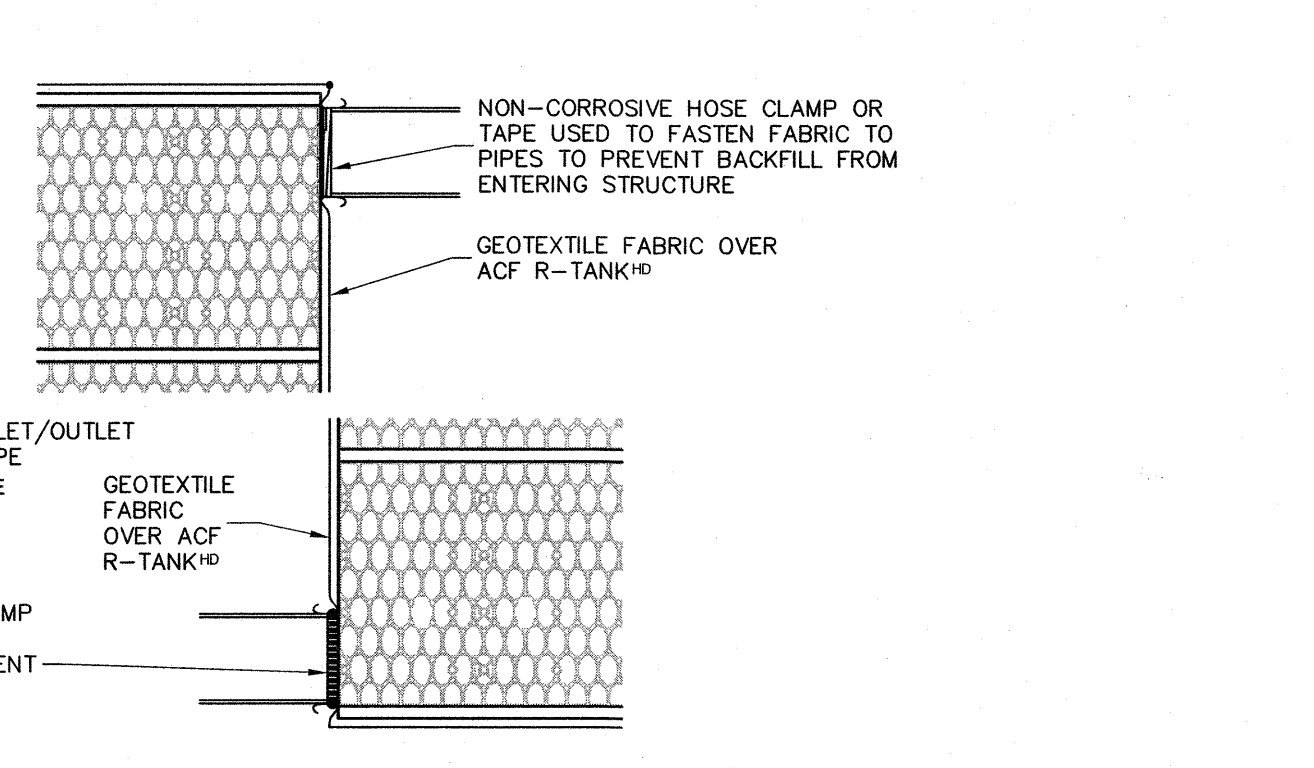
**R-TANK HD TYPICAL TANK INLET/OUTLET DETAIL**



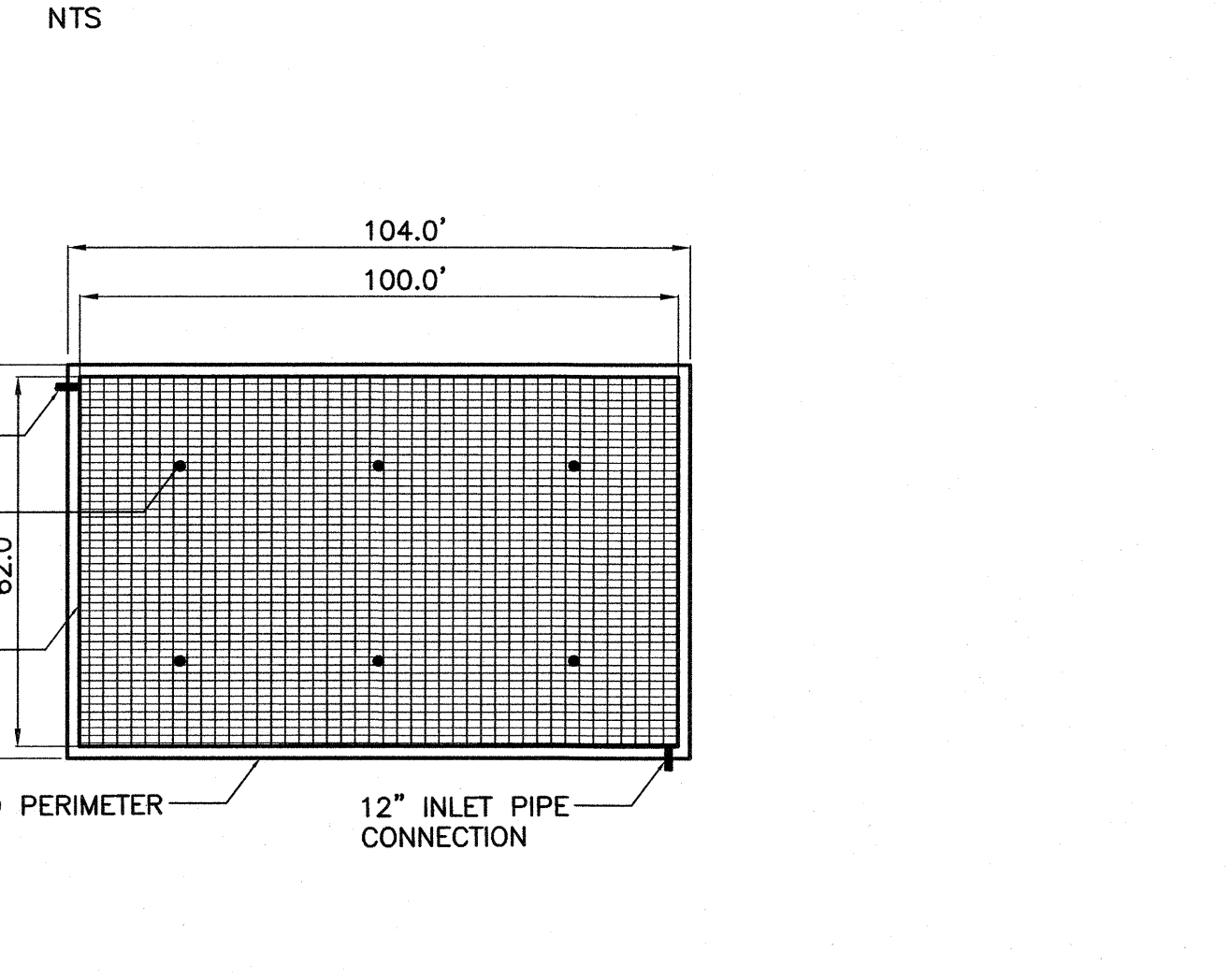
**R-TANK HD SYSTEM LAYOUT**



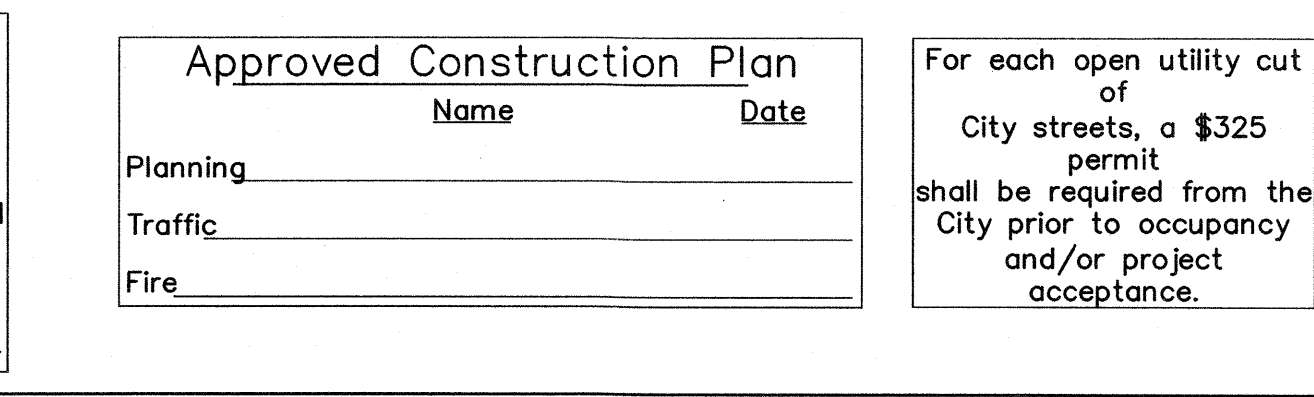
**R-TANK HD TYPICAL TANK INLET/OUTLET DETAIL**



**R-TANK HD TYPICAL TANK INLET/OUTLET DETAIL**



**R-TANK HD SYSTEM LAYOUT**



**PART 1 - GENERAL**  
 1.01 Related Documents  
 A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.  
 1.02 Description of Work Included  
 A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design and safety from adjacent small collapse. Excavations shall be in accordance with the owner's and IDMA requirements.  
 B. Provide and install R-Tank, R-Tank HD, or R-Tank SD system over prepared R-Tank and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.  
 C. Provide and construct the cover of the R-Tank system including stone backfill, structural fill cover, and pavement section as specified.  
 D. Protect R-Tank system from construction traffic of later installation until completion of construction activity in the installation area.  
 1.03 Quality Control  
 A. All materials shall be manufactured in ISO certified facilities.  
 B. Installation Contractor shall demonstrate the following experience:  
 1. A minimum of three R-Tank or equivalent projects completed within 2 years and.  
 2. A minimum of three R-Tank or equivalent projects completed within 2 years.  
 C. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.  
 D. Installation Personnel Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/flood construction projects of comparable size and quality.  
 E. Contractor must have manufacturer's representative available for site review if requested by Owner.  
 1.04 Submittals  
 A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.  
 B. Submit manufacturer's product data, including compressive strength and unit weight.  
 C. Submit manufacturer's installation instructions.  
 D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.  
 E. Submit material certificates for geotextile, geogrid, base course and backfill materials.  
 F. Submit required experience as specified in Section 1.03.  
 G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.08 B.  
 1.05 Delivery, Storage, and Handling  
 A. Protect R-Tank and other materials from damage during delivery, and store in UV sensitive materials under tarp to protect from sunlight when the time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.  
 B. Handling to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.  
 C. Cold weather:  
 1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.  
 2. Do not use frozen materials or materials stored or coated with ice or frost.  
 3. Do not build on frozen ground or wet, saturated or muddy subgrade.  
 1.06 Preinstallation Conference  
 A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.  
 1.07 Project Conditions  
 A. Protect R-Tank and other materials from damage during delivery, and store in UV sensitive materials under tarp to protect from sunlight when the time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.  
 B. Handling to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.  
 C. Cold weather:  
 1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.  
 2. Do not use frozen materials or materials stored or coated with ice or frost.  
 3. Do not build on frozen ground or wet, saturated or muddy subgrade.  
 1.08 Preinstallation Conference  
 A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

**PART 2 - PRODUCTS**  
 2.01 R-Tank Units  
 A. R-Tank - Injection molded plastic tank plates assembled to form a 95% void nodular structure of preassigned height (custom for each project).  
 B. R-Tank units shall meet the following Physical & Chemical Characteristics:  

PROPERTY	DESCRIPTION	VALUE	R-Tank VALUE	R-Tank HD VALUE	R-Tank SD VALUE
Void Area	Volume available for water storage	90%	90%	90%	90%
Surface Void Area	Percentage of exterior available for infiltration	90%	90%	90%	90%
Compressive Strength	ASTM D2412 (ASTM D 2412)	300 PSI	300 PSI	300 PSI	300 PSI
HD-20 Minimum Cover	Cover required to support HD-20 loads	N/A	20"	18"	18"
SD-20 Minimum Cover	Cover required to support SD-20 loads	N/A	18"	18"	18"
Minimum Cover	Minimum allowable cover depth	3 feet	< 7 feet	< 10 feet	< 10 feet
Min. Strength	Weight of stone per cubic foot of tank	130 lbs/cu ft	130 lbs/cu ft	130 lbs/cu ft	130 lbs/cu ft
Min. Strength	Thickness of tank bottom members	0.18 inches	0.18 inches	0.18 inches	0.18 inches
Service Temperature	Safe temperature range for use	-14 - 167°F	-14 - 167°F	-14 - 167°F	-14 - 167°F

 2.02 Backfill & Cover Materials  
 A. Bedding Material Stone (smaller than 1 1/2" in diameter) or soil (GV, GP, SV, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system. (2) Minimum Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the line of installation. For geotextile bedding material, stone shall be free draining.  
 B. Side and Top Backfill Free draining stone (smaller than 1 1/2" in diameter) or soil (GV, GP, SV, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank and above (for the first 12" of the R-Tank system) Material bedding material shall be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the line of installation.  
 C. Additional Cover Material Structural Fill shall consist of granular materials meeting the gradation requirements of 3N, SP, GP, GV, or G as classified by the Unified Soil Classification System. Stone shall have a minimum clay content of 10 percent and a maximum plasticity index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the line of installation.  
 2.04 Other Materials  
 A. Utility Markers Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

**PART 3 - EXECUTION**  
 3.01 Assembly of R-Tank Units  
 A. On-site assembly of tanks shall be performed in accordance with the R-Tank Installation Manual, Section 2.  
 3.02 Layout and Excavation  
 A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile fabric, R-Tank nodules, and free draining backfill materials.  
 B. All excavations must be prepared with IDMA approved excavated sides and sufficient working space.  
 C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.  
 D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or unpaved subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.  
 E. Standard Applications Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.  
 F. Infiltration Applications Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications. (Infiltration Applications) Subgrade shall be prepared in accordance with the contract documents. Infiltration Applications shall determine the required bearing capacity of the R-Tank subgrade however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.  
 G. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.  
 H. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.  
 3.03 Preparation of Base  
 A. Place a thin layer (2" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank nodules. Level to within 1/4" (1/8" or less) or as shown on the site plan. Subgrade may be used if determined to meet the requirements of 2.03 A and is accepted by the owner's engineer.  
 B. Standard Applications Static roll or otherwise compact bedding materials until they are firm and unyielding.  
 C. Infiltration Applications Bedding materials shall be prepared in accordance with the contract documents.  
 D. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the R-Tank system for proper installation and connection of backfill.  
 3.04 Installation of the R-Tank  
 A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer.  
 B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed according with Section 2.04A.  
 C. Install R-Tank nodules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The R-Tank units shall be placed on the perimeter of the system. This will typically require that the two ends of the tank area will have a row of tanks placed perpendicular to all other tanks. If not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to R-Tank Installation Guide for more details.  
 D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, incorporating the entire system to prevent soil entry into the system. Geotextile shall be 12" or as recommended by manufacturer. Take special care to avoid damage if specified, impervious liner during placement.  
 E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush outside of the R-Tank and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile. Impervious liner if specified or pipe connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.  
 F. Install Inspection Maintenance Ports in locations noted on plans. If a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a uniform spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.  
 G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with 12" bend or venting buried to inhibit the ingress of debris. A ground level concrete or steel cover can be used.  
 3.05 Backfilling of the R-Tank Units  
 A. Backfill and fill with recommended materials as follows:  
 1. Place freely draining backfill material (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.  
 2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.  
 3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the nodules due to the potential for damage to the geotextile and R-Tank units.  
 B. No compaction equipment is permissible to operate directly on the R-Tank nodules.  
 C. Following placement of side backfill, a uniform 12" lift of the freely draining material (Section 2.03 B) shall be placed over the R-Tank and lightly compacted using a walk-behind trench roller. Alternately, a roller (maximum gross weight of 6 tons) may be used. ROLLER MUST REMAIN IN STATIC MODES UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED.  
 D. Install a geotextile fabric (as required) over the backfill applications over the initial 12" lift of backfill. Geotextile shall extend a minimum of 3 feet beyond the limits of the excavation wall.  
 E. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.  
 F. Only low pressure tire or track vehicles shall be operated over the R-Tank system during construction. No machinery should drive on top of the tank until a minimum of 18" of backfill and compaction is achieved. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Where necessary the heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system with tracked equipment. SPEC SECTION 3.05 B.  
 G. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is complete and final surface materials are in place. No non-installation related loading should be allowed over the R-Tank system until the final design section has been constructed (including pavement). SPEC SECTION 3.05 C.  
 H. Place parking materials, such as gravel/crusher for large trucks, or paving materials over the structure with care to avoid displacement of cover fill and damage to the manufacturer's representative for assistance.  
 3.06 Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.08 B. If the total backfill depth does not comply with this table, contact engineer.

**PART 4 - USING THE SYSTEM**  
 4.01 Maintenance Requirements  
 A. Routine maintenance (MFR) is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Fire-treatment systems shall be inspected monthly, or as directed by the regulatory agency and the manufacturer (for proprietary systems). Routine as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).  
 B. Inspection and/or Maintenance Ports to the R-Tank system will need to be inspected for accumulation of sediments at least quarterly during the first year of operation and at least yearly thereafter. This is done by removing the cap of the port and using a measuring device long enough to reach the bottom of the R-Tank system and stiff enough to push through the loose sediments, allowing a depth measurement.  
 C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.  
 D. A flushing event consists of pumping water into the Maintenance Port and/or adjacent structure, allowing the turbulent flow through the R-Tank system to re-suspend the fire sediments. If multiple Maintenance Ports have been installed, water should be pumped into each port to maximize flushing efficiency. Sediment-laden water can be filtered through the filter bag or approved equivalent if permitted by the locality.

**REVISIONS**

No./Date	Description	By
4/05/19	ADD RAIN TANK DET	JET
6/6/19	REV. RAIN TANK DET	JET

**DETAILS AND NOTES**  
 TRIPP ENGINEERING, P.C.  
 419 Chestnut Street  
 Wilmington, North Carolina 28401  
 Phone 910-763-5100  
 Email: trippeng@ec.rr.com  
 © 2019 TRIPP ENGINEERING, P.C.

**PROGRESS DRAWING**  
 DO NOT USE FOR CONSTRUCTION

DATE: 02-08-19  
 DESIGN: PGT  
 DRAWN: JET

**C5**

SHEET 5 OF 7  
 17068

**TRIPP ENGINEERING, P.C.**  
 419 Chestnut Street  
 Wilmington, North Carolina 28401  
 Phone 910-763-5100  
 Email: trippeng@ec.rr.com  
 © 2019 TRIPP ENGINEERING, P.C.

**TRU & TAPESTRY HOTEL**  
 5001 MARKET STREET  
 WILMINGTON, NORTH CAROLINA

**APPROVED STORMWATER MANAGEMENT PLAN**

City of Wilmington  
 Public Services • Engineering Division  
 PO BOX 1810  
 WILMINGTON, N.C. 28402  
 (910) 341-7807

Approved Construction Plan  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Planning: \_\_\_\_\_  
 Traffic: \_\_\_\_\_  
 Fire: \_\_\_\_\_

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

DATE: 02-08-19  
 DESIGN: PGT  
 DRAWN: JET

**C5**

SHEET 5 OF 7  
 17068