

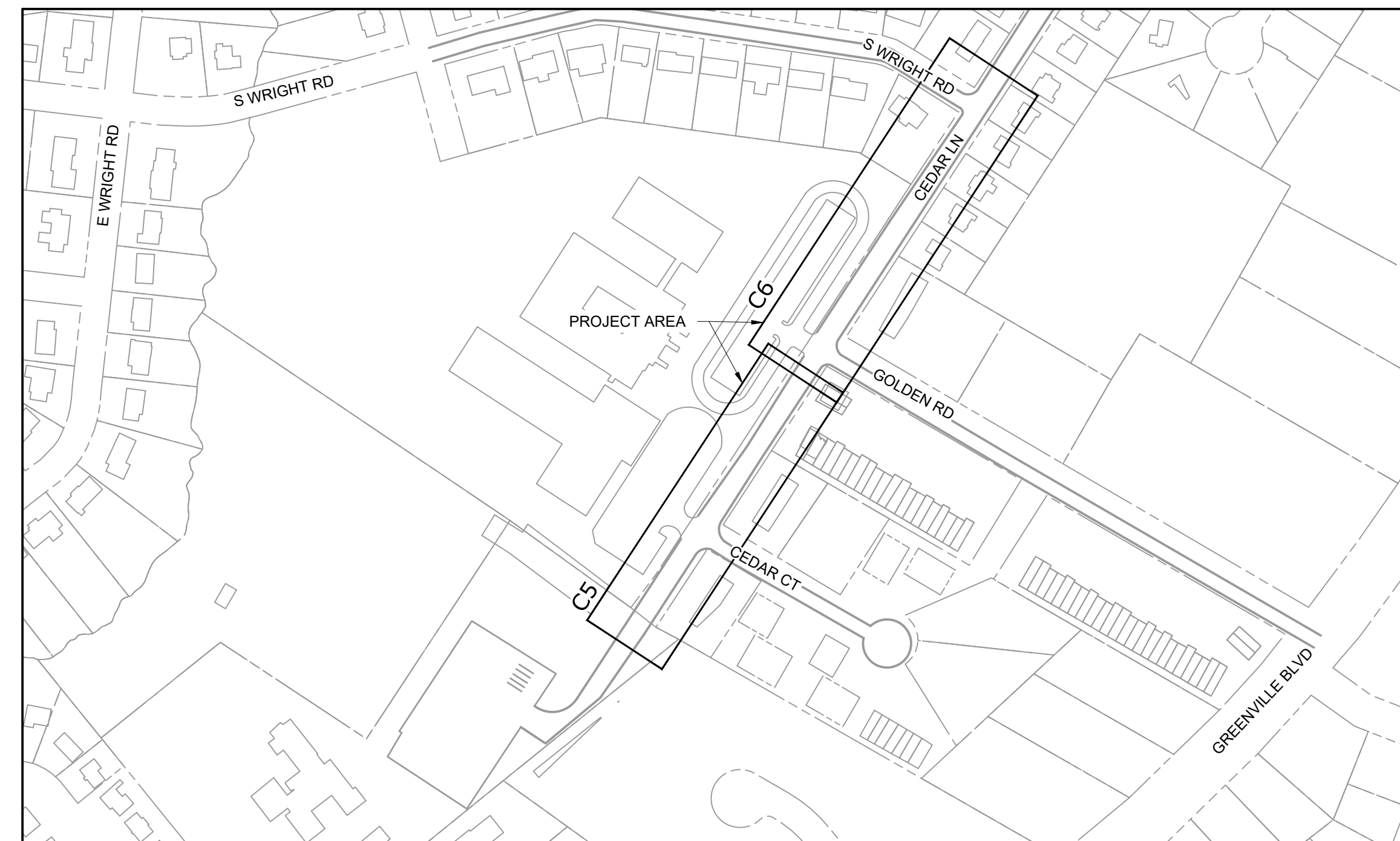
# CEDAR LANE DRAINAGE IMPROVEMENTS

FOR

## CITY OF GREENVILLE GREENVILLE, NORTH CAROLINA

HAZEN NO.: 31187-003

JANUARY 2022



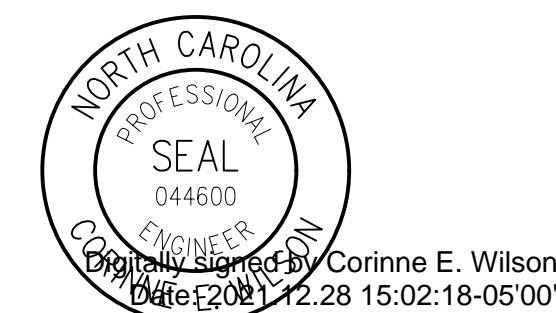
LOCATION MAP  
1" = 200'

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G2	ABBREVIATIONS & LEGEND
G3	GENERAL NOTES
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C2	EROSION AND SEDIMENT CONTROL PLAN
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PROJECT CONTACTS						
OWNER	CITY OF GREENVILLE		HAZEN AND SAWYER		SURVEYOR	COOPER AND ASSOCIATES SURVEYORS, P.A.
	LISA KIRBY, PE		CORINNE E. WILSON, PE			404 E. CHATHAM ST, SUITE E
	1500 BEATTY ST		4011 WESTCHASE BLVD, SUITE 500			CARY, NC 27511
	GREENVILLE, NC 27834		RALEIGH, NC 27607			(919) 469 - 1760
	(252) 329 - 4683		(919) 863 - 9257			
	LKIRBY@GREENVILLENC.GOV		CDWILSON@HAZENANDSAWYER.COM			

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381



FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

# ABBREVIATIONS

AC	ASBESTOS CONCRETE	N	NORTH
AL	ALUMINUM	NCDOT	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
APPROX	APPROXIMATELY	NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
ASPH	ASPHALT	NTS	NOT TO SCALE
BKF	BANKFULL	O.C.	ON CENTER
BLDG	BUILDING	OHE	OVERHEAD ELECTRIC
BOC	BACK OF CURB	OPNG	OPENING
BTW	BETWEEN	P	PAGE
C&G	CURB AND GUTTER	PL	PLACE
CB	CATCH BASIN	PP	POWER POLE
CI	CAST IRON / CURB INLET	PDE	PERMANENT DRAINAGE EASEMENT
CMP	CORRUGATED METAL PIPE	PR	PROPOSED
CO	CLEAN OUT	PROF	PROFILE
COMM	COMMUNICATION	PSI	POUNDS PER SQUARE INCH
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE PIPE
CONN	CONNECT / CONNECTION	PVMT	PAVEMENT
CONST	CONSTRUCTION	PWKY	PARKWAY
CONT	CONTINUOUS	R	RADIUS
COORD	COORDINATE	RCBC	REINFORCED CONCRETE BOX CULVERT
CR	CONSTRUCTED RIFFLE	RCP	REINFORCED CONCRETE PIPE
DB	DEED BOOK	RD	ROAD
DBL	DOUBLE	REINF	REINFORCING
DEMO	DEMOLISH	RELOC	RELOCATE
DET	DETAIL	REM	REMOVE
DI	DROP INLET	REQD	REQUIRED
DIP	DUCTILE IRON PIPE	RJH	ROCK J-HOOK
DW	DRIVEWAY	ROW	RIGHT-OF-WAY
DWG	DRAWING	RS	ROCK SILL
DWL	DOWEL	RTNG	RETAINING
E	EACH	S	SOUTH
EA	EACH	SCH	SCHEDULE
EG	EXISTING GRADE	SD	STORM DRAIN
EIP	EXISTING IRON PIPE	SDCB	STORM DRAIN CATCH BASIN
EL	ELEVATION	SDDI	STORM DRAIN DROP INLET
ENT	ENTRANCE	SDIN	STORM DRAIN INLET
EOG	EDGE OF GRAVEL	SDMH	STORM DRAIN MANHOLE
EOP	EDGE OF PAVEMENT	SDWW	STORM DRAIN WEIR WALL
EQ	EQUAL	SDYI	STORM DRAIN YARD INLET
EW	EACH WAY	SF	SQUARE FEET / SILT FENCE
EX	EXISTING	SRF	SPLIT RAIL FENCE
FC	FRONT OF CURB	SS	SANITARY SEWER
FDN	FOUNDATION	SSMH	SANITARY SEWER MANHOLE
FFT	FIBER FILTRATION TUBE	STA	STATION
FG	FINISHED GRADE	ST	STREET
FH	FIRE HYDRANT	STA	STATION
FOC	FIBER OPTIC CABLE	STD	STANDARD
FT	FEET	STL	STEEL
G	GAS	STRU	STRUCTURE
GV	GATE VALVE	SW	SIDEWALK
H	HEIGHT / HORIZONTAL	T&B	TOP AND BOTTOM
HDRL	HANDRAIL	TBM	TEMPORARY BENCHMARK
HH	HANDHOLE	TCE	TEMPORARY CONSTRUCTION EASEMENT
HW	HEADWALL	TEMP	TEMPORARY
INV	INVERT	TH	TEST HOLE
IP	IRON PIN SET	TOC	TOP OF CONCRETE / TOP OF CURB
JB	JUNCTION BOX	TOS	TOP OF SLAB
JT	JOINT	TOW	TOP OF WALL
L	LENGTH	TPF	TREE PROTECTION FENCE
LAT	LATERAL	TYP	TYPICAL
LB	POUND	UGE	UNDERGROUND ELECTRICAL
LF	LINEAR FEET	UTIL	UTILITY
LOD	LIMIT OF DISTURBANCE	VERT	VERTICAL
LONG	LONGITUDINAL	VCP	VITRIFIED CLAY PIPE
LP	LIGHT POLE	W	WEST / WIDTH
MATL	MATERIAL	W/	WITH
MAX	MAXIMUM	WCR	WHEEL CHAIR RAMP
MB	MAILBOX	WD	WOOD
MFR	MANUFACTURER	WL	WATERLINE
MH	MANHOLE	WM	WATER METER
MIN	MINIMUM	WSE	WATER SURFACE ELEVATION
MSD	METROPOLITAN SEWERAGE DISTRICT (OF BUNCOMBE COUNTY, NORTH CAROLINA)	WV	WATER VALVE
		WW	WEIR WALL
		YI	YARD INLET
		YR	YEAR

# LEGEND

## DEMOLITION ITEMS

	DEMOLITION HATCH
	MILL AND REMOVE 1.5" ASPHALT
	TREE REMOVAL
	STORM MANHOLE
	SANITARY SEWER MANHOLE
	WATER METER
	WATER VALVE
	SANITARY SEWER CLEANOUT
	CATCH BASIN
	DROP INLET
	CONCRETE CURB AND GUTTER
	STORM SEWER
	SANITARY SEWER
	WATER
	SIDEWALK
	WHEEL CHAIR RAMP
	SPEED BUMP

## EROSION AND SEDIMENT CONTROL ITEMS

	SILT FENCE
	SILT FILTER BAG
	DEWATERING PUMP
	IMPERVIOUS DIKE
	CURB/YARD INLET PROTECTION

## EXISTING ITEMS

	RIGHT-OF-WAY
	OVERHEAD ELECTRIC
	ELECTRIC
	FIBER OPTIC BURIED
	FENCE
	GAS
	WATER
	TELEPHONE CABLE
	CABLE TELEVISION
	SANITARY SEWER
	DRIVEWAY CULVERT
	SANITARY SEWER MANHOLE
	STORM MANHOLE
	TELEPHONE MANHOLE
	CATCH BASIN
	DROP INLET
	ELECTRICAL VAULT
	ELECTRICAL MANHOLE
	ELECTRICAL HAND HOLE
	WATER METER
	CONCRETE MONUMENT
	SURVEY CONTROL MARKER
	PROPERTY CORNER (EIR/ERBR/SIR/EIP)
	WATER VAULT
	FIBER OPTIC MARKER
	SANITARY SEWER CLEAN OUT
	TREE

## PROPOSED ITEMS

	RIGHT-OF-WAY
	TEMPORARY CONSTRUCTION EASEMENT
	LIMITS OF DISTURBANCE / PEDESTRIAN FENCING
	LIMITS OF DISTURBANCE AND TEMPORARY CONSTRUCTION EASEMENT
	GAS
	WATER
	SANITARY SEWER
	STORM SEWER
	TREE PROTECTION FENCE
	TEMPORARY CONSTRUCTION FENCE
	SANITARY SEWER MANHOLE
	STORM MANHOLE
	CATCH BASIN
	OPEN THROAT CATCH BASIN
	WATER VAULT
	TREE
	SHRUB
	CONCRETE CURB AND GUTTER
	CONCRETE SIDEWALK
	TEST HOLE
	ENDWALL
	SPOT ELEVATION
	FLOW DIRECTION ARROW
	ASPHALT PAVEMENT
	1.5" ASPHALT OVERLAY
	RIPRAP OUTLET PROTECTION
	PEDESTRIAN AND WHEEL CHAIR CURB RAMP
	PEDESTRIAN CROSS WALK
	TRAFFIC STOP LINE
	ROAD SIGN
	GATE VALVE - WATER
	WATER LINE CAP
	TRAFFIC-RATED GRATING

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 Plot Date: 12/28/2021 9:49 AM BY: BTTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by C. Wilson  
 Date: 2021.12.28 15:02:23-05'00'

**Hazen**

HAZEN AND SAWYER  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

GENERAL ABBREVIATIONS & LEGEND

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	G2

SITE GENERAL NOTES:

- 1. SITE INFORMATION HAS BEEN PROVIDED BY SITE SURVEY PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A., DATED JANUARY 2020.
2. HORIZONTAL CONTROL IS REFERENCED TO THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD 83). VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. FLOOD PLAIN ELEVATIONS FROM FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) PANEL 4697, MAP NUMBER 3720469700K, DATED JULY 7, 2014 100-YEAR FLOOD ELEVATION = 35.4
...
23. CONTRACTOR SHALL REPLACE ALL DISTURBED MAILBOXES, SIGNS, ETC. DISTURBED DURING CONSTRUCTION WITHIN 24 HOURS OF DISTURBANCE. PERMANENT ROAD SIGNAGE DISTURBED SHALL BE REPLACED IMMEDIATELY AND IF NECESSARY, ROADWAY SIGNS SHALL BE TEMPORARILY INSTALLED IN A LOCATION CONSISTENT WITH MUTCD TO PROVIDE CONTINUOUS TRAFFIC AWARENESS OF ROADWAY CONDITIONS. (NO SEPARATE PAYMENT UNLESS OTHERWISE INDICATED).

- 24. CONTRACTOR SHALL PROVIDE SECURITY FENCING, SECURITY GUARD, AND ANY AND ALL OTHER MEASURES CONTRACTOR DEEMS NECESSARY TO PROTECT EQUIPMENT AND MATERIALS STORED ON THE PROJECT. (NO SEPARATE PAYMENT UNLESS OTHERWISE INDICATED).
25. WHERE CONTRACTOR CEASES WORK OPERATION FOR A 72 HOUR PERIOD OR LONGER, SUCH AS HOLIDAYS, ETC., THE FOLLOWING SHALL BE ACCOMPLISHED PRIOR TO THE WORK STOPPAGE.
26. CONTRACTOR SHALL SCHEDULE WORK AND MATERIAL DELIVERIES SO THAT STORED MATERIAL QUANTITIES ON THE JOB SITE SHALL BE MINIMIZED.
...
34. ALL EXCAVATED MATERIALS THAT ARE NOT REQUIRED OR ARE UNSUITABLE FOR THE PROJECT SHALL BE CONSIDERED WASTE AND SHALL BE HAULED OFF SITE AND DISPOSED IN A SAFE AND LEGAL MANNER AT THE CONTRACTOR'S EXPENSE.

NOTES FOR PRIVATE PROPERTY OWNER RELATIONS:

- 1. IF THE PROPOSED WORK WILL BE CONSTRUCTED WITHIN A DEVELOPED RESIDENTIAL OR COMMERCIAL AREA, THE CONTRACTOR IS REQUIRED TO DEVELOP GOOD RELATIONS WITH THE RESIDENTS AND BUSINESSES WHICH INCLUDE THE FOLLOWING MANDATORY MINIMUM REQUIREMENTS:
- NO SPEEDING WITH EQUIPMENT AND/OR VEHICLES (25 MPH MAX.)
- DO NOT BLOCK DRIVEWAYS AT ANY TIME EXCEPT AS INDICATED
...
2. IF THE CONTRACTOR AND/OR SUBCONTRACTORS CANNOT ADEQUATELY PERFORM AND/OR COMPLY WITH THESE REQUIREMENTS, THE INDIVIDUAL, SUBCONTRACTOR, OR EMPLOYEES MAY BE DIRECTED TO LEAVE THE PROJECT PERMANENTLY.

ORDER OF PRECEDENCE GENERAL NOTES/TECHNICAL SPECIFICATIONS/PHOTOS:

- 1. THE NOTES CONTAINED HEREIN ARE INTENDED TO SUPPLEMENT TECHNICAL SPECIFICATIONS. IN NO CASE SHALL THESE NOTES VOID ANY PART, SECTION OR REQUIREMENT OUTLINED IN THE TECHNICAL SPECIFICATIONS CONTAINED IN THE CONTRACT DOCUMENTS.
2. PHOTOGRAPHS CONTAINED IN DRAWINGS, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND THE CONTRACTOR SHALL NOT RELY ON THE PHOTOGRAPHS AS BEING REPRESENTATIVE OF ACTUAL SITE CONDITIONS.

TRAFFIC CONTROL

- 1. CONTRACTOR SHALL COMPLY WITH THE TRAFFIC CONTROL PLAN AS SHOWN IN THE DRAWINGS. IF NO TRAFFIC CONTROL PLAN IS INCLUDED IN THE DRAWINGS, OR IF THE CONTRACTOR WISHES TO PROPOSE AN ALTERNATIVE TRAFFIC CONTROL PLAN, CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN TO THE ENGINEER/OWNER FOR APPROVAL.
2. CONTRACTOR SHALL ENSURE ACCESS TO ALL PROPERTIES BY PROPERTY OWNERS AT ALL TIMES.
3. CONTRACTOR SHALL NOTIFY THE OWNER ONE WEEK IN ADVANCE OF ANY ROAD CLOSING AND COORDINATE ALL ROAD CLOSINGS WITH AFFECTED PROPERTY OWNERS 48 HOURS PRIOR TO CLOSING.

UTILITIES:

- 1. CONTRACTOR SHALL REFERENCE AND MEET THE REQUIREMENTS OF THE GUC DESIGN AND SPECIFICATIONS MANUAL, REFERRED TO HEREFTER AS THE GUC MANUAL.
2. INTERRUPTION OF UTILITY SERVICE TO RESIDENCES OR BUSINESSES REQUIRES APPROVAL OF THE UTILITY OWNER.
3. WHEN CONSTRUCTION REQUIRES RELOCATION OF SANITARY SEWER SERVICE LATERALS, CONTRACTOR SHALL PROVIDE MEANS OF COLLECTING AND DISPOSING OF RESIDENTIAL/BUSINESS SANITARY SEWAGE.
...
11. STORM DRAINAGE REPAIRS BY CONTRACTOR DUE TO CONSTRUCTION DAMAGE AND JOINTS EXPOSED DURING CONSTRUCTION SHALL BE INSPECTED BY THE OWNER PRIOR TO BACKFILLING.

STORM DRAINAGE STRUCTURE, PIPE & GRADING NOTES:

- 1. PIPE INVERT ELEVATIONS HAVE PRECEDENCE OVER SLOPES. HOWEVER, SLOPES SHALL NOT BE DECREASED FROM THOSE SHOWN ON PLAN WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
2. ALL STORM DRAINAGE PIPE TO BE CLASS III REINFORCED CONCRETE UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING TO ROUTE ACTIVE DRAINAGE SYSTEM FLOWS AROUND PROPOSED CONSTRUCTION AREA.
...
8. ALL PROPOSED GRADES ARE FINISH GRADES. IN RIPRAP AREAS, CONTOURS INDICATE TOP GRADE OF RIPRAP.

NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM:

- 1. THE SEDIMENTATION POLLUTION CONTROL ACT WAS AMENDED IN 2008 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH PHASE OF THE PROJECT TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED.
2. THE SELF-INSPECTION PROGRAM IS SEPARATE FROM THE WEEKLY SELF-MONITORING PROGRAM OF THE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES.

SEEDING NOTES:

- SEEDING SHALL BE APPLIED PER CITY OF GREENVILLE EROSION CONTROL GUIDE, DETAIL 310.01 / CD1. ADDITIONALLY, THE FOLLOWING NOTES APPLY:
SEED BED PREPARATION
1. CONTRACTOR SHALL PREPARE ALL AREAS TO RECEIVE TEMPORARY OR PERMANENT SEEDING MEASURES PRIOR TO PLANTING.
2. TOPSOIL SHALL BE PLACED IN AREAS TO BE SEEDDED AND ROUGHENED WITH TRACKED EQUIPMENT OR OTHER SUITABLE MEASURES.
...
12. WHEN THE PROJECT IS COMPLETE, THE PERMITTEE SHALL CONTACT DEMLR TO CLOSE OUT THE E&SC PLAN.

EROSION & SEDIMENTATION CONTROL NOTES:

- IN ADDITION TO THE NOTES INCLUDED IN DETAIL 310.01/CD1, THE FOLLOWING NOTES APPLY:
1. THE CONTRACTOR SHALL PHASE CONSTRUCTION TO MINIMIZE EXPOSED SOIL AREAS. ALL ONSITE ACTIVITIES SHALL BE MANAGED TO ENSURE NO ADVERSE IMPACTS TO WATER QUALITY OCCUR DURING AND AFTER CONSTRUCTION.
2. THE NORTH CAROLINA SEDIMENTATION POLLUTION CONTROL ACT REQUIRES PEOPLE RESPONSIBLE FOR LAND DISTURBING ACTIVITIES TO INSPECT EROSION AND SEDIMENTATION CONTROL MEASURES AFTER EACH PHASE OF THE PROJECT.

EROSION & SEDIMENTATION CONTROL CONSTRUCTION SEQUENCING:

- 1. CONTRACTOR SHALL SIGN AND IMPLEMENT THE REQUIREMENTS OF THE STATE APPROVED EROSION CONTROL PLAN AND THE NORTH CAROLINA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.
2. EROSION AND SEDIMENT CONTROL (E&SC) PERMIT AND CERTIFICATE OF COVERAGE (COC) MUST BE OBTAINED BEFORE LAND DISTURBING ACTIVITIES OCCUR.
3. INSTALL ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES IN LOCATIONS AS SHOWN ON THE CONTRACT DRAWINGS.
...
12. WHEN THE PROJECT IS COMPLETE, THE PERMITTEE SHALL CONTACT DEMLR TO CLOSE OUT THE E&SC PLAN.

Table with columns: REV, ISSUED FOR, DATE, BY. Rows for PROJECT ENGINEER (K. BRAY), DESIGNED BY (C. WILSON), DRAWN BY (S. KANE), CHECKED BY (M. SANTOWASSO), and a scale bar.

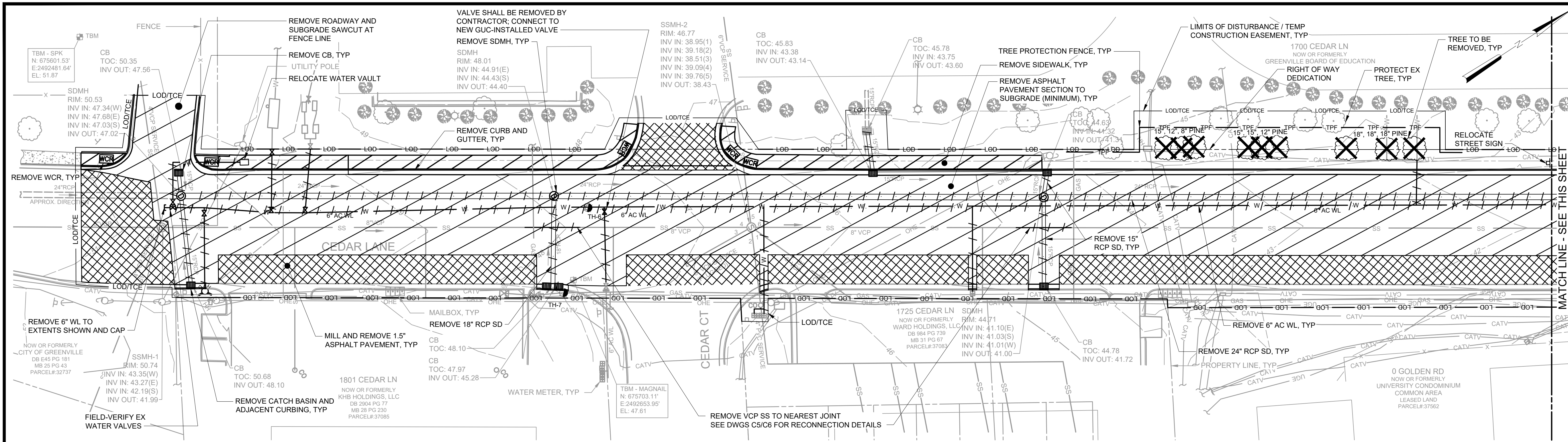
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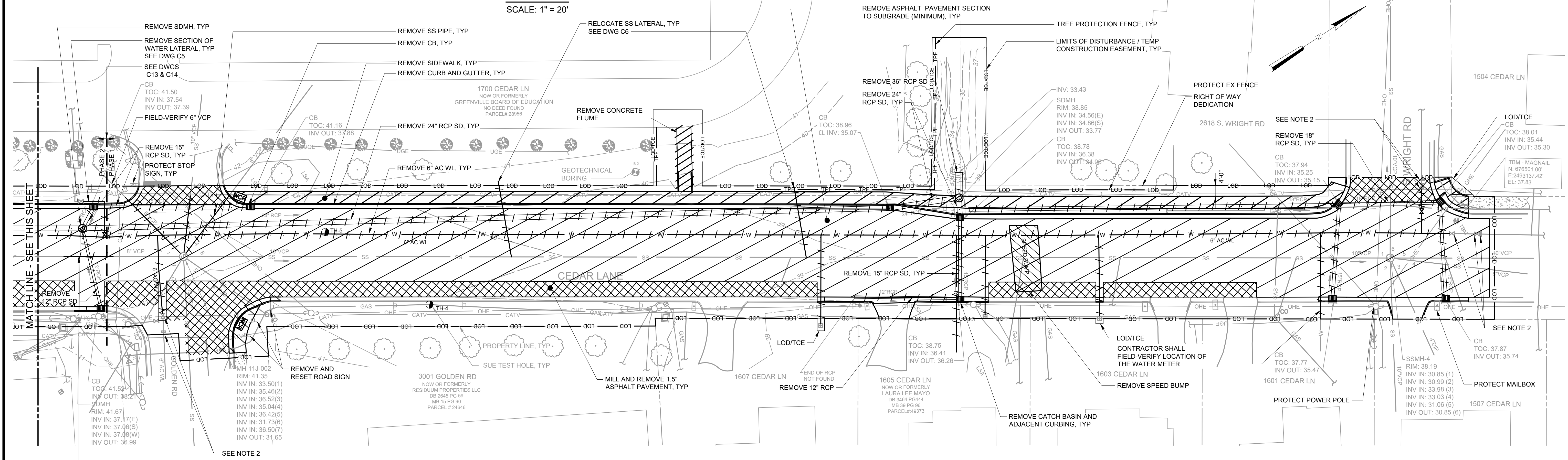
CITY OF GREENVILLE GREENVILLE, NORTH CAROLINA CEDAR LANE DRAINAGE IMPROVEMENTS

GENERAL GENERAL NOTES. DATE: JANUARY 2022. HAZEN NO.: 31187-003. CONTRACT NO.: DRAWING NUMBER: G3





PLAN  
SCALE: 1" = 20'



PLAN  
SCALE: 1" = 20'

- NOTES:**
- SEE SITE GENERAL NOTES DRAWING G3, FOR SURVEY, DATUM, AND FLOODPLAIN INFORMATION.
  - ISOLATION VALVES, 6" DIP, AND THRUST BLOCKING SHALL BE COMPLETED BY GUC PRIOR TO CONSTRUCTION. CONTRACTOR SHALL FIELD-VERIFY LOCATION OF VALVES AND CONNECT PER CONNECTION 5 DETAIL ON DWG C12.
  - CONTRACTOR SHALL ONLY REMOVE THE EXISTING WL WHERE NEEDED TO INSTALL NEW SD, SS, OR WL PIPING OR CONNECT TO THE EXISTING MAIN. ALL OTHER EXISTING AC WL SHALL BE ABANDONED IN PLACE. ASBESTOS CEMENT PIPE REMOVAL SHALL BE IN ACCORDANCE WITH OSHA 29 CFR 1926.1101 - ASBESTOS STANDARD FOR THE CONSTRUCTION INDUSTRY AND NCDHHS REGULATIONS.

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

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 Date: 2021.12.28 15:02:33-05'00'

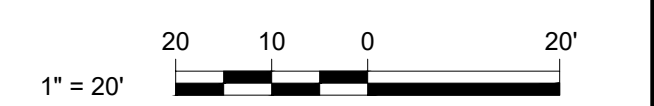


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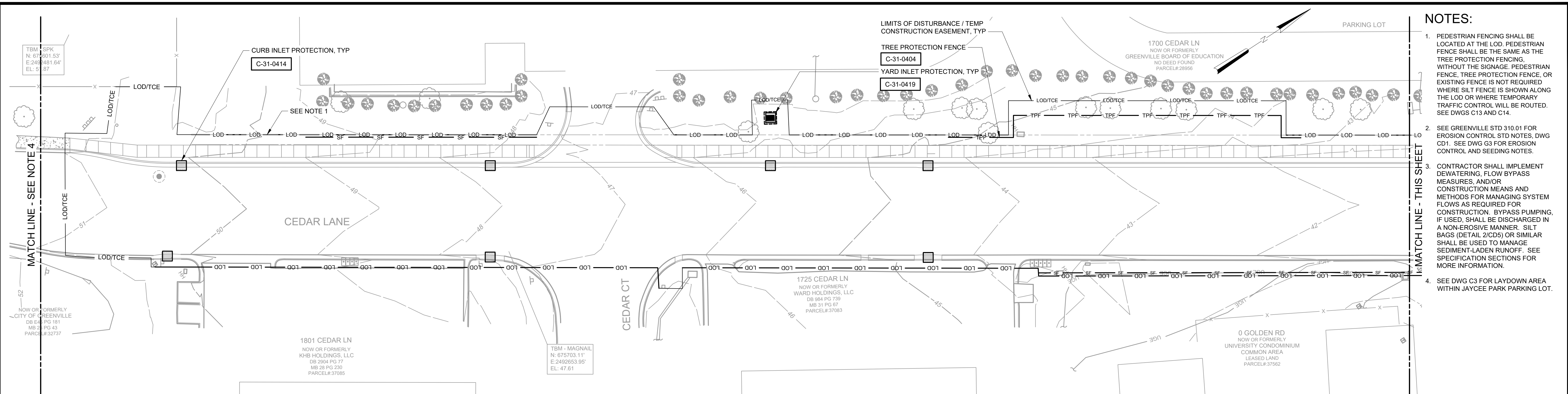
CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA  
 CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
 EXISTING CONDITIONS & DEMOLITION PLAN

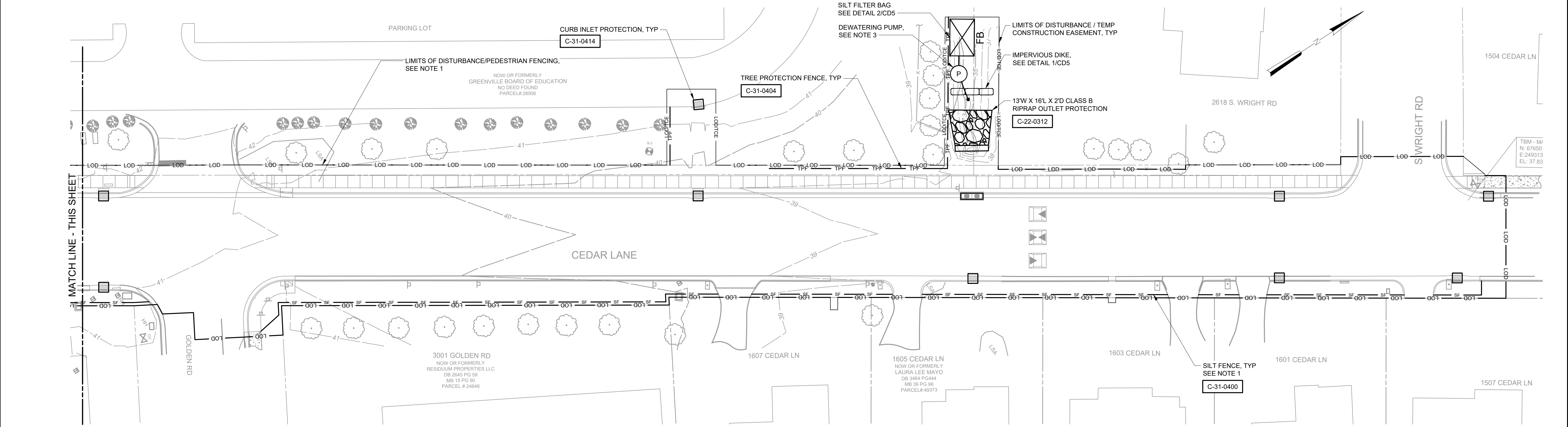
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CONTRACT NO.:	
DRAWING NUMBER:	C1







PLAN  
SCALE: 1" = 20'



PLAN  
SCALE: 1" = 20'

TOTAL DISTURBED AREA: 1.62 AC



NOTES:

1. PEDESTRIAN FENCING SHALL BE LOCATED AT THE LOD. PEDESTRIAN FENCE SHALL BE THE SAME AS THE TREE PROTECTION FENCING, WITHOUT THE SIGNAGE. PEDESTRIAN FENCE, TREE PROTECTION FENCE, OR EXISTING FENCE IS NOT REQUIRED WHERE SILT FENCE IS SHOWN ALONG THE LOD OR WHERE TEMPORARY TRAFFIC CONTROL WILL BE ROUTED. SEE DWGS C13 AND C14.
2. SEE GREENVILLE STD 310.01 FOR EROSION CONTROL STD NOTES, DWG CD1. SEE DWG G3 FOR EROSION CONTROL AND SEEDING NOTES.
3. CONTRACTOR SHALL IMPLEMENT DEWATERING, FLOW BYPASS MEASURES, AND/OR CONSTRUCTION MEANS AND METHODS FOR MANAGING SYSTEM FLOWS AS REQUIRED FOR CONSTRUCTION. BYPASS PUMPING, IF USED, SHALL BE DISCHARGED IN A NON-EROSIVE MANNER. SILT BAGS (DETAIL 2/CDS) OR SIMILAR SHALL BE USED TO MANAGE SEDIMENT-LADEN RUNOFF. SEE SPECIFICATION SECTIONS FOR MORE INFORMATION.
4. SEE DWG C3 FOR LAYDOWN AREA WITHIN JAYCEE PARK PARKING LOT.

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION



Digitally signed by C. Wilson  
Date: 2021.12.28 15:02:38-05'00'

**Hazen**  
HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
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CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA  
  
CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
EROSION AND SEDIMENT CONTROL PLAN

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C2

**GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT**

IMPLEMENTING THE DETAILS AND SPECIFICATIONS ON THIS PLAN SHEET WILL RESULT IN THE CONSTRUCTION ACTIVITY BEING CONSIDERED COMPLIANT WITH THE GROUND STABILIZATION AND MATERIALS HANDLING SECTIONS OF NCG01 CONSTRUCTION GENERAL PERMIT (SECTIONS E AND F, RESPECTIVELY). THE PERMITTEE SHALL COMPLY WITH THE EROSION AND SEDIMENT CONTROL PLAN APPROVED BY THE DELEGATED AUTHORITY HAVING JURISDICTION. ALL DETAILS AND SPECIFICATIONS SHOWN ON THIS SHEET MAY NOT APPLY DEPENDING ON SITE CONDITIONS AND THE DELEGATED AUTHORITY HAVING JURISDICTION.

**SECTION E: GROUND STABILIZATION**

REQUIRED GROUND STABILIZATION TIMEFRAMES		
SITE AREA DESCRIPTION	STABILIZE WITHIN THIS MANY CALENDAR DAYS AFTER CEASING LAND DISTURBANCE	TIME FRAME VARIATIONS
(A) PERIMETER DIKES, SWALES, DITCHES, AND PERIMETER SLOPES	7	NONE
(B) HIGH WATER QUALITY (HQW) ZONES	7	NONE
(C) SLOPES STEEPER THAN 3:1	7	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
(D) SLOPES 3:1 TO 4:1	14	-7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH AND WITH SLOPES STEEPER THAN 4:1 -7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND HQW ZONES -10 DAYS FOR FALLS LAKE WATERSHED
(E) AREAS WITH SLOPES FLATTER THAN 4:1	14	-7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND HQW ZONES -10 DAYS FOR FALLS LAKE WATERSHED UNLESS THERE IS ZERO SLOPE

**NOTE:** AFTER THE PERMANENT CESSATION OF CONSTRUCTION ACTIVITIES, ANY AREAS WITH TEMPORARY GROUND STABILIZATION SHALL BE CONVERTED TO PERMANENT GROUND STABILIZATION AS SOON AS PRACTICABLE BUT IN NO CASE LONGER THAN 90 CALENDAR DAYS AFTER THE LAST LAND DISTURBING ACTIVITY. TEMPORARY GROUND STABILIZATION SHALL BE MAINTAINED IN A MANNER TO RENDER THE SURFACE STABLE AGAINST ACCELERATED EROSION UNTIL PERMANENT GROUND STABILIZATION IS ACHIEVED.

**GROUND STABILIZATION SPECIFICATION**

STABILIZE THE GROUND SUFFICIENTLY SO THAT RAIN WILL NOT DISLODGE THE SOIL. USE ONE OF THE TECHNIQUES IN THE TABLE BELOW:

TEMPORARY STABILIZATION	PERMANENT STABILIZATION
<ul style="list-style-type: none"> <li>TEMPORARY GRASS SEED COVERED WITH STRAW OR OTHER MULCHES AND TACKIFIERS</li> <li>HYDROSEEDING</li> <li>ROLLED EROSION CONTROL PRODUCTS WITH OR WITHOUT TEMPORARY GRASS SEED</li> <li>APPROPRIATELY APPLIED STRAW OR OTHER MULCH</li> <li>PLASTIC SHEETING</li> </ul>	<ul style="list-style-type: none"> <li>PERMANENT GRASS SEED COVERED WITH STRAW OR OTHER MULCHES AND TACKIFIERS</li> <li>GEOTEXTILE FABRICS SUCH AS PERMANENT SOIL REINFORCEMENT MATTING</li> <li>HYDROSEEDING</li> <li>SHRUBS OR OTHER PERMANENT PLANTINGS COVERED WITH MULCH</li> <li>UNIFORM AND EVENLY DISTRIBUTED GROUND COVER SUFFICIENT TO RESTRAIN EROSION</li> <li>STRUCTURAL METHODS SUCH AS CONCRETE, ASPHALT OR RETAINING WALLS</li> <li>ROLLED EROSION CONTROL PRODUCTS WITH GRASS SEED</li> </ul>

**EQUIPMENT AND VEHICLE MAINTENANCE**

1. MAINTAIN VEHICLES AND EQUIPMENT TO PREVENT DISCHARGE OF FLUIDS.
2. PROVIDE DRIP PANS UNDER ANY STORED EQUIPMENT.
3. IDENTIFY LEAKS AND REPAIR AS SOON AS FEASIBLE, OR REMOVE LEAKING EQUIPMENT FROM THE PROJECT.
4. COLLECT ALL SPENT FLUIDS, STORE IN SEPARATE CONTAINERS AND PROPERLY DISPOSE AS HAZARDOUS WASTE (RECYCLE WHEN POSSIBLE).
5. REMOVE LEAKING VEHICLES AND CONSTRUCTION EQUIPMENT FROM SERVICE UNTIL THE PROBLEM HAS BEEN CORRECTED.
6. BRING USED FUELS, LUBRICANTS, COOLANTS, HYDRAULIC FLUIDS AND OTHER PETROLEUM PRODUCTS TO A RECYCLING OR DISPOSAL CENTER THAT HANDLES THESE MATERIALS.

**LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE**

1. NEVER BURY OR BURN WASTE. PLACE LITTER AND DEBRIS IN APPROVED WASTE CONTAINERS.
2. PROVIDE A SUFFICIENT NUMBER AND SIZE OF WASTE CONTAINERS (E.G. DUMPSTER, TRASH RECEPTACLE) ON SITE TO CONTAIN CONSTRUCTION AND DOMESTIC WASTES.
3. LOCATE WASTE CONTAINERS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
4. LOCATE WASTE CONTAINERS ON AREAS THAT DO NOT RECEIVE SUBSTANTIAL AMOUNTS OF RUNOFF FROM UPLAND AREAS AND DOES NOT DRAIN DIRECTLY TO A STORM DRAIN, STREAM OR WETLAND.
5. COVER WASTE CONTAINERS AT THE END OF EACH WORKDAY AND BEFORE STORM EVENTS OR PROVIDE SECONDARY CONTAINMENT. REPAIR OR REPLACE DAMAGED WASTE CONTAINERS.
6. ANCHOR ALL LIGHTWEIGHT ITEMS IN WASTE CONTAINERS DURING TIMES OF HIGH WINDS.
7. EMPTY WASTE CONTAINERS AS NEEDED TO PREVENT OVERFLOW. CLEAN UP IMMEDIATELY IF CONTAINERS OVERFLOW.
8. DISPOSE WASTE OFF-SITE AT AN APPROVED DISPOSAL FACILITY.
9. ON BUSINESS DAYS, CLEAN UP AND DISPOSE OF WASTE IN DESIGNATED WASTE CONTAINERS.

**PAINT AND OTHER LIQUID WASTE**

1. DO NOT DUMP PAINT AND OTHER LIQUID WASTE INTO STORM DRAINS, STREAMS OR WETLANDS.
2. LOCATE PAINT WASHOUTS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
3. CONTAIN LIQUID WASTES IN A CONTROLLED AREA.
4. CONTAINMENT MUST BE LABELED, SIZED AND PLACED APPROPRIATELY FOR THE NEEDS OF SITE.
5. PREVENT THE DISCHARGE OF SOAPS, SOLVENTS, DETERGENTS AND OTHER LIQUID WASTES FROM CONSTRUCTION SITES.

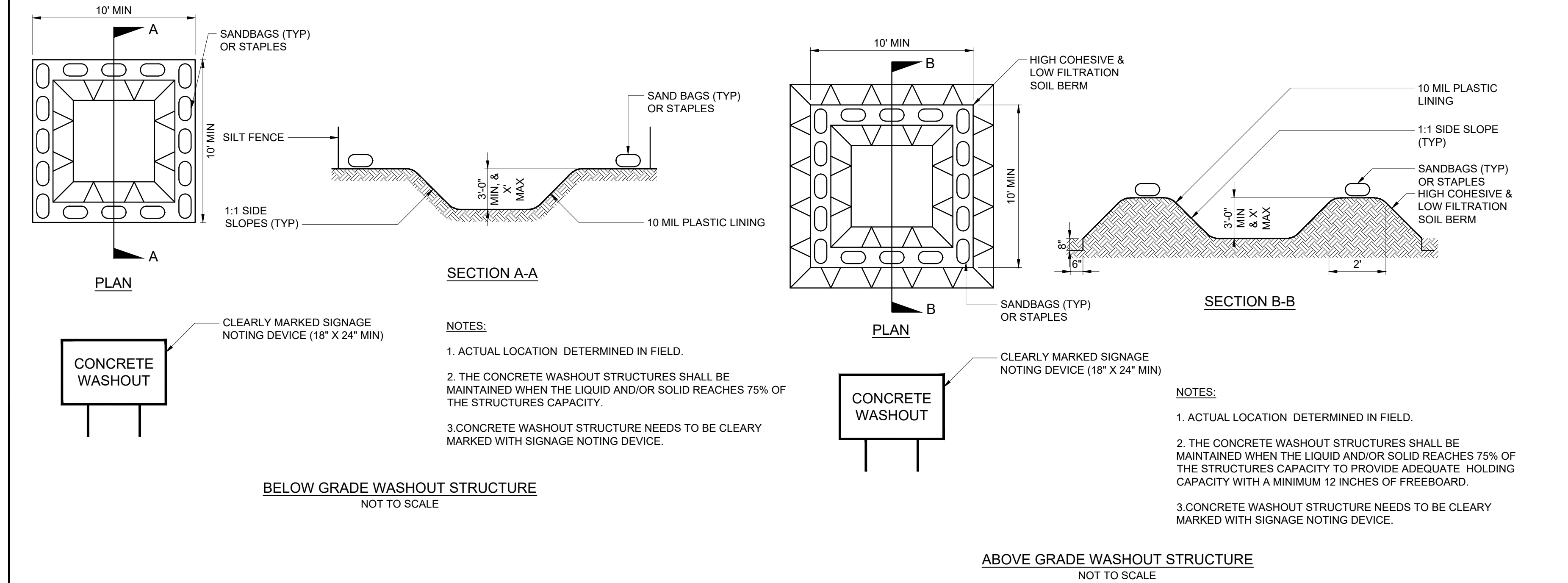
**PORTABLE TOILETS**

1. INSTALL PORTABLE TOILETS ON LEVEL GROUND, AT LEAST 50 FEET AWAY FROM STORM DRAINS, STREAMS OR WETLANDS UNLESS THERE IS NO ALTERNATIVE REASONABLY AVAILABLE. IF 50 FOOT OFFSET IS NOT ATTAINABLE, PROVIDE RELOCATION OF PORTABLE TOILET BEHIND SILT FENCE OR PLACE ON A GRAVEL PAD AND SURROUND WITH SAND BAGS.
2. PROVIDE STAKING OR ANCHORING OF PORTABLE TOILETS DURING PERIODS OF HIGH WINDS OR IN HIGH FOOT TRAFFIC AREAS.
3. MONITOR PORTABLE TOILETS FOR LEAKING AND PROPERLY DISPOSE OF ANY LEAKED MATERIAL. UTILIZE A LICENSED SANITARY WASTE HAULER TO REMOVE LEAKING PORTABLE TOILETS AND REPLACE WITH PROPERLY OPERATING UNIT.

**EARTHEN STOCKPILE MANAGEMENT**

1. SHOW STOCKPILE LOCATIONS ON PLANS. LOCATE EARTHEN-MATERIAL STOCKPILE AREAS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS, SEDIMENT BASINS, PERIMETER SEDIMENT CONTROLS AND SURFACE WATERS UNLESS IT CAN BE SHOWN NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
2. PROTECT STOCKPILE WITH SILT FENCE INSTALLED ALONG TOE OF SLOPE WITH A MINIMUM OFFSET OF FIVE FEET FROM THE TOE OF STOCKPILE.
3. PROVIDE STABLE STONE ACCESS POINT WHEN FEASIBLE.
4. STABILIZE STOCKPILE WITHIN THE TIMEFRAMES PROVIDED ON THIS SHEET AND IN ACCORDANCE WITH THE APPROVED PLAN AND ANY ADDITIONAL REQUIREMENTS. SOIL STABILIZATION IS DEFINED AS VEGETATIVE, PHYSICAL OR CHEMICAL COVERAGE TECHNIQUES THAT WILL RESTRAIN ACCELERATED EROSION ON DISTURBED SOILS FOR TEMPORARY OR PERMANENT CONTROL NEEDS.

**ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER**



**CONCRETE WASHOUTS**

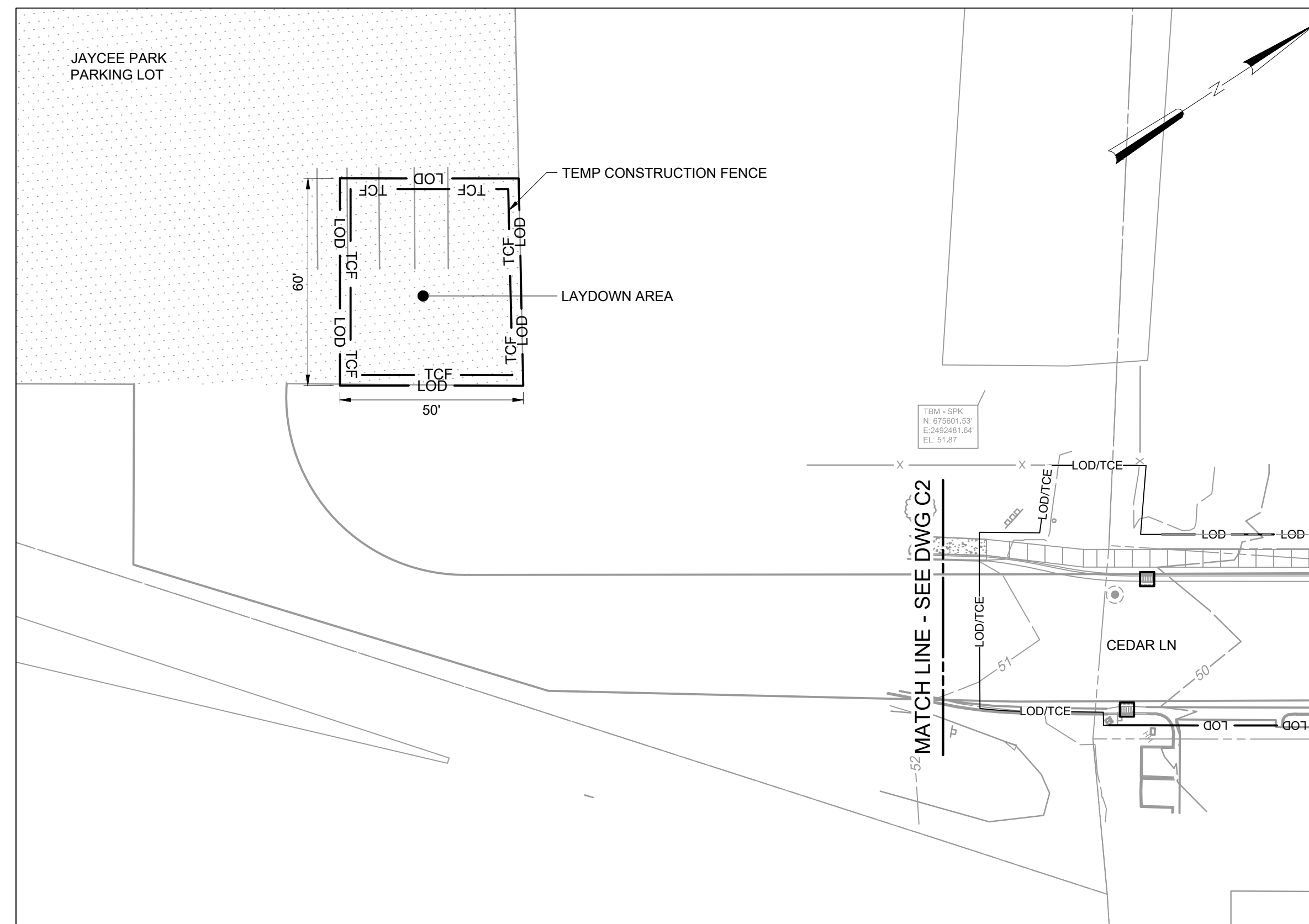
1. DO NOT DISCHARGE CONCRETE OR CEMENT SLURRY FROM THE SITE.
2. DISPOSE OF, OR RECYCLE SETTLED, HARDENED CONCRETE RESIDUE IN ACCORDANCE WITH LOCAL AND STATE SOLID WASTE REGULATIONS AND AT AN APPROVED FACILITY.
3. MANAGE WASHOUT FROM MORTAR MIXERS IN ACCORDANCE WITH THE ABOVE ITEM AND IN ADDITION PLACE THE MIXER AND ASSOCIATED MATERIALS ON IMPERVIOUS BARRIER AND WITHIN LOT PERIMETER SILT FENCE.
4. INSTALL TEMPORARY CONCRETE WASHOUTS PER LOCAL REQUIREMENTS, WHERE APPLICABLE. IF AN ALTERNATE METHOD OR PRODUCT IS TO BE USED, CONTACT YOUR APPROVAL AUTHORITY FOR REVIEW AND APPROVAL. IF LOCAL STANDARD DETAILS ARE NOT AVAILABLE, USE ONE OF THE TWO TYPES OF TEMPORARY CONCRETE WASHOUTS PROVIDED ON THIS DETAIL.
5. DO NOT USE CONCRETE WASHOUTS FOR DEWATERING OR STORING DEFECTIVE CURB OR SIDEWALK SECTIONS. STORMWATER ACCUMULATED WITHIN THE WASHOUT MAY NOT BE PUMPED INTO OR DISCHARGED TO THE STORM DRAIN SYSTEM OR RECEIVING SURFACE WATERS. LIQUID WASTE MUST BE PUMPED OUT AND REMOVED FROM PROJECT.
6. LOCATE WASHOUTS AT LEAST 50 FEET FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS IT CAN BE SHOWN THAT NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE. AT A MINIMUM, INSTALL PROTECTION OF STORM DRAIN INLET(S) CLOSEST TO THE WASHOUT WHICH COULD RECEIVE SPILLS OR OVERFLOW.
7. LOCATE WASHOUTS IN AN EASILY ACCESSIBLE AREA, ON LEVEL GROUND AND INSTALL A STONE ENTRANCE PAD IN FRONT OF THE WASHOUT. ADDITIONAL CONTROLS MAY BE REQUIRED BY THE APPROVING AUTHORITY.
8. INSTALL AT LEAST ONE SIGN DIRECTING CONCRETE TRUCKS TO THE WASHOUT WITHIN THE PROJECT LIMITS. POST SIGNAGE ON THE WASHOUT ITSELF TO IDENTIFY THIS LOCATION.
9. REMOVE LEAVINGS FROM THE WASHOUT WHEN AT APPROXIMATELY 75% CAPACITY TO LIMIT OVERFLOW EVENTS. REPLACE THE TARP, SAND BAGS OR OTHER TEMPORARY STRUCTURAL COMPONENTS WHEN NO LONGER FUNCTIONAL. WHEN UTILIZING ALTERNATIVE OR PROPRIETARY PRODUCTS, FOLLOW MANUFACTURER'S INSTRUCTIONS.
10. AT THE COMPLETION OF THE CONCRETE WORK, REMOVE REMAINING LEAVINGS AND DISPOSE OF IN AN APPROVED DISPOSAL FACILITY. FILL PIT, IF APPLICABLE, AND STABILIZE ANY DISTURBANCE CAUSED BY REMOVAL OF WASHOUT.

**HERBICIDES, PESTICIDES AND RODENTICIDES**

1. STORE AND APPLY HERBICIDES, PESTICIDES AND RODENTICIDES IN ACCORDANCE WITH LABEL RESTRICTIONS.
2. STORE HERBICIDES, PESTICIDES AND RODENTICIDES IN THEIR ORIGINAL CONTAINERS WITH THE LABEL, WHICH LISTS DIRECTIONS FOR USE, INGREDIENTS AND FIRST AID STEPS IN CASE OF ACCIDENTAL POISONING.
3. DO NOT STORE HERBICIDES, PESTICIDES AND RODENTICIDES IN AREAS WHERE FLOODING IS POSSIBLE OR WHERE THEY MAY SPILL OR LEAK INTO WELLS, STORMWATER DRAINS, GROUND WATER OR SURFACE WATER. IF A SPILL OCCURS, CLEAN AREA IMMEDIATELY.
4. DO NOT STOCKPILE THESE MATERIALS ONSITE.

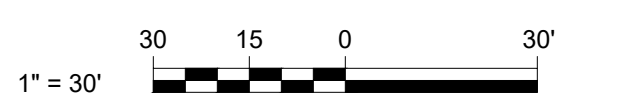
**HAZARDOUS AND TOXIC WASTE**

1. CREATE DESIGNATED HAZARDOUS WASTE COLLECTION AREAS ON-SITE.
2. PLACE HAZARDOUS WASTE CONTAINERS UNDER COVER OR IN SECONDARY CONTAINMENT.
3. DO NOT STORE HAZARDOUS CHEMICALS, DRUMS OR BAGGED MATERIALS DIRECTLY ON THE GROUND.



**LAYDOWN AREA PLAN**

SCALE: 1" = 30'



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PLOT DATE: 12/26/2021 10:03 AM BY: BTHARRINGTON

PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

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Date: 2021.12.28 15:02:43-05'00'

**Hazen**  
HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
GROUND STABILIZATION, MATERIALS HANDLING, AND LAYDOWN AREA

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C3



PART II, SECTION G, ITEM (4)  
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

SEDIMENT BASINS AND TRAPS THAT RECEIVE RUNOFF FROM DRAINAGE AREAS OF ONE ACRE OR MORE SHALL USE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE WHEN THESE DEVICES NEED TO BE DRAWN DOWN FOR MAINTENANCE OR CLOSE OUT UNLESS THIS IS INFEASIBLE. THE CIRCUMSTANCES IN WHICH IT IS NOT FEASIBLE TO WITHDRAW WATER FROM THE SURFACE SHALL BE RARE (FOR EXAMPLE, TIMES WITH EXTENDED COLD WEATHER). NON-SURFACE WITHDRAWALS FROM SEDIMENT BASINS SHALL BE ALLOWED ONLY WHEN ALL OF THE FOLLOWING CRITERIA HAVE BEEN MET:

- (A) THE E&SC PLAN AUTHORITY HAS BEEN PROVIDED WITH DOCUMENTATION OF THE NON-SURFACE WITHDRAWAL AND THE SPECIFIC TIME PERIODS OR CONDITIONS IN WHICH IT WILL OCCUR. THE NON-SURFACE WITHDRAWAL SHALL NOT COMMENCE UNTIL THE E&SC PLAN AUTHORITY HAS APPROVED THESE ITEMS.
(B) THE NON-SURFACE WITHDRAWAL HAS BEEN REPORTED AS AN ANTICIPATED BYPASS IN ACCORDANCE WITH PART III, SECTION C, ITEM (2)(C) AND (D) OF THIS PERMIT.
(C) DEWATERING DISCHARGES ARE TREATED WITH CONTROLS TO MINIMIZE DISCHARGES OF POLLUTANTS FROM STORMWATER THAT IS REMOVED FROM THE SEDIMENT BASIN.
(D) VEGETATED, UPLAND AREAS OF THE SITES OR A PROPERLY DESIGNED STONE PAD IS USED TO THE EXTENT FEASIBLE AT THE OUTLET OF THE DEWATERING TREATMENT DEVICES DESCRIBED IN ITEM (C) ABOVE.
(E) VELOCITY DISSIPATION DEVICES SUCH AS CHECK DAMS, SEDIMENT TRAPS, AND RIPRAP ARE PROVIDED AT THE DISCHARGE POINTS OF ALL DEWATERING DEVICES, AND
(F) SEDIMENT REMOVED FROM THE DEWATERING TREATMENT DEVICES DESCRIBED IN ITEM (C) ABOVE IS DISPOSED OF IN A MANNER THAT DOES NOT CAUSE DEPOSITION OF SEDIMENT INTO WATERS OF THE UNITED STATES.

PART III  
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. OCCURRENCES THAT MUST BE REPORTED

PERMITTEES SHALL REPORT THE FOLLOWING OCCURRENCES:

- (A) VISIBLE SEDIMENT DEPOSITION IN A STREAM OR WETLAND
(B) OIL SPILLS IF:
- THEY ARE 25 GALLONS OR MORE,
- THEY ARE LESS THAN 25 GALLONS BUT CANNOT BE CLEANED UP WITHIN 24 HOURS,
- THEY CAUSE SHEET ON WATERS (REGARDLESS OF VOLUME), OR
- THEY ARE WITHIN 100 FEET OF SURFACE WATERS (REGARDLESS OF VOLUME).
(C) RELEASES OF HAZARDOUS SUBSTANCES IN EXCESS OF REPORTABLE QUANTITIES UNDER SECTION 311 OF THE CLEAN WATER ACT...
(D) ANTICIPATED BYPASSES AND UNANTICIPATED BYPASS
(E) NONCOMPLIANCE WITH THE CONDITIONS OF THIS PERMIT THAT MAY ENDANGER HEALTH OR THE ENVIRONMENT.
2. REPORTING TIMEFRAMES AND OTHER REQUIREMENTS
AFTER A PERMITTEE BECOMES AWARE OF AN OCCURRENCE THAT MUST BE REPORTED, HE SHALL CONTACT THE APPROPRIATE DIVISION REGIONAL OFFICE WITHIN THE TIMEFRAMES AND IN ACCORDANCE WITH THE OTHER REQUIREMENTS LISTED BELOW.

Table with columns: OCCURENCE, REPORTING TIMEFRAME (AFTER DISCOVERY) AND OTHER REQUIREMENTS. Contains detailed reporting requirements for various incidents like sediment deposition, oil spills, and non-compliance.

PART III  
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

SELF-INSPECTIONS ARE REQUIRED DURING NORMAL BUSINESS HOURS IN ACCORDANCE WITH THE TABLE BELOW. WHEN ADVERSE WEATHER OR SITE CONDITIONS WOULD CAUSE THE SAFETY OF THE INSPECTION PERSONNEL TO BE IN JEOPARDY, THE INSPECTION MAY BE DELAYED UNTIL THE NEXT BUSINESS DAY...

Table titled 'REQUIRED GROUND STABILIZATION TIMEFRAMES' with columns: INSPECT, FREQUENCY (DURING NORMAL BUSINESS HOURS), INSPECTION RECORDS MUST INCLUDE:.

NOTE: THE RAIN INSPECTION RESETS THE REQUIRED 7 DAY CALENDAR DAY INSPECTION REQUIREMENT

PART III  
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC PLAN DOCUMENTATION

THE APPROVED E&SC PLAN AS WELL AS ANY APPROVED DEVIATION SHALL BE KEPT ON THE SITE. THE APPROVED E&SC PLAN MUST BE KEPT UP-TO-DATE THROUGHOUT THE COVERAGE UNDER THIS PERMIT.

Table with columns: ITEM TO DOCUMENT, INSPECTION RECORDS MUST INCLUDE:.

2. ADDITIONAL DOCUMENTATION TO BE KEPT ON SITE
IN ADDITION TO THE E&SC PLAN DOCUMENTS ABOVE, THE FOLLOWING ITEMS SHALL BE KEPT ON THE SITE AND AVAILABLE FOR INSPECTORS AT ALL TIMES DURING NORMAL BUSINESS HOURS...

- (A) THIS GENERAL PERMIT AS WELL AS THE CERTIFICATE OF COVERAGE, AFTER IT IS RECEIVED.
(B) RECORDS OF INSPECTIONS MADE DURING THE PREVIOUS TWELVE MONTHS.

3. DOCUMENTATION TO BE RETAINED FOR THREE YEARS
ALL DATA USED TO COMPLETE THE E-NOI AND ALL INSPECTION RECORDS SHALL BE MAINTAINED FOR A PERIOD OF THREE YEARS AFTER PROJECT COMPLETION...

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Table with columns: REV, ISSUED FOR, DATE, BY. Includes project details like PROJECT ENGINEER: K. BRAY, DESIGNED BY: C. WILSON, DRAWN BY: S. KANE, CHECKED BY: M. SANTOWASSO.

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

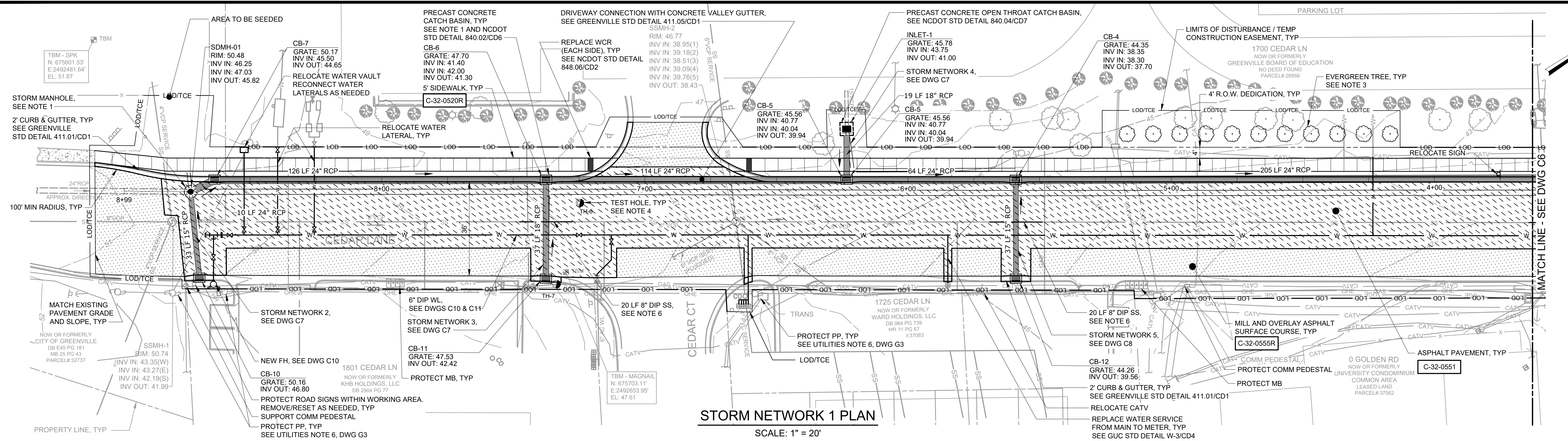


Hazen and Sawyer logo and address: 4011 WESTCHASE BOULEVARD, SUITE 500, RALEIGH, NORTH CAROLINA 27607, LICENSE NO.: C-0381

CITY OF GREENVILLE GREENVILLE, NORTH CAROLINA
CEDAR LANE DRAINAGE IMPROVEMENTS

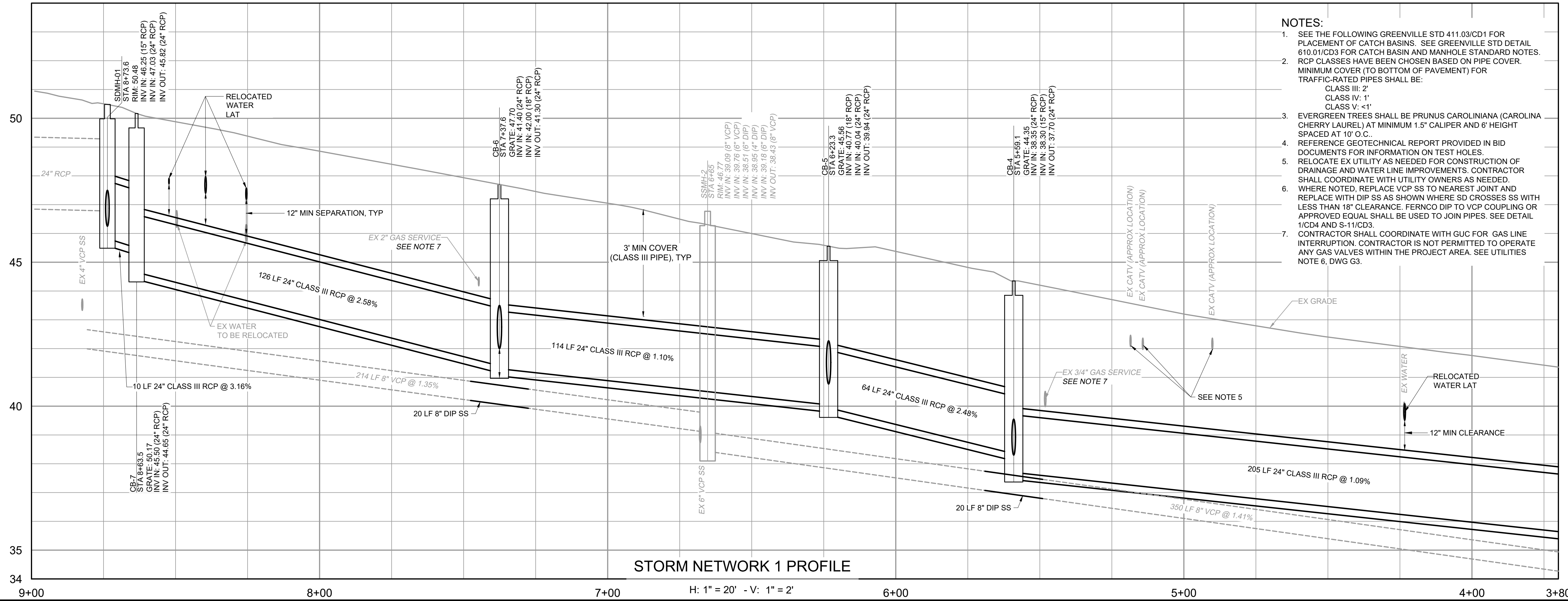
CIVIL INSPECTION, RECORDKEEPING AND REPORTING

Table with project details: DATE: JANUARY 2022, HAZEN NO.: 31187-003, CONTRACT NO.: , DRAWING NUMBER: C4



STORM NETWORK 1 PLAN

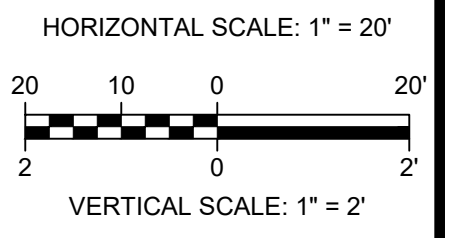
SCALE: 1" = 20'



STORM NETWORK 1 PROFILE

H: 1" = 20' - V: 1" = 2'

- NOTES:**
- SEE THE FOLLOWING GREENVILLE STD 411.03/CD1 FOR PLACEMENT OF CATCH BASINS. SEE GREENVILLE STD DETAIL 610.01/CD3 FOR CATCH BASIN AND MANHOLE STANDARD NOTES.
  - RCP CLASSES HAVE BEEN CHOSEN BASED ON PIPE COVER. MINIMUM COVER (TO BOTTOM OF PAVEMENT) FOR TRAFFIC-RATED PIPES SHALL BE:  
CLASS III: 2'  
CLASS III: 1'  
CLASS IV: -4"
  - EVERGREEN TREES SHALL BE PRUNUS CAROLINIANA (CAROLINA CHERRY LAUREL) AT MINIMUM 1.5" CALIPER AND 6' HEIGHT SPACED AT 10' O.C.
  - REFERENCE GEOTECHNICAL REPORT PROVIDED IN BID DOCUMENTS FOR INFORMATION ON TEST HOLES.
  - RELOCATE EX UTILITY AS NEEDED FOR CONSTRUCTION OF DRAINAGE AND WATER LINE IMPROVEMENTS. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNERS AS NEEDED.
  - WHERE NOTED, REPLACE VCP SS TO NEAREST JOINT AND REPLACE WITH DIP SS AS SHOWN WHERE SD CROSSES SS WITH LESS THAN 18" CLEARANCE. FERNCO DIP TO VCP COUPLING OR APPROVED EQUAL SHALL BE USED TO JOIN PIPES. SEE DETAIL 1/CD4 AND S-11/CD3.
  - CONTRACTOR SHALL COORDINATE WITH GUC FOR GAS LINE INTERRUPTION. CONTRACTOR IS NOT PERMITTED TO OPERATE ANY GAS VALVES WITHIN THE PROJECT AREA. SEE UTILITIES NOTE 6, DWG G3.



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 Plot Date: 12/26/2021 9:53 AM BY: BTHARRINGTON

PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

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Date: 2021.12.28 15:02:53-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

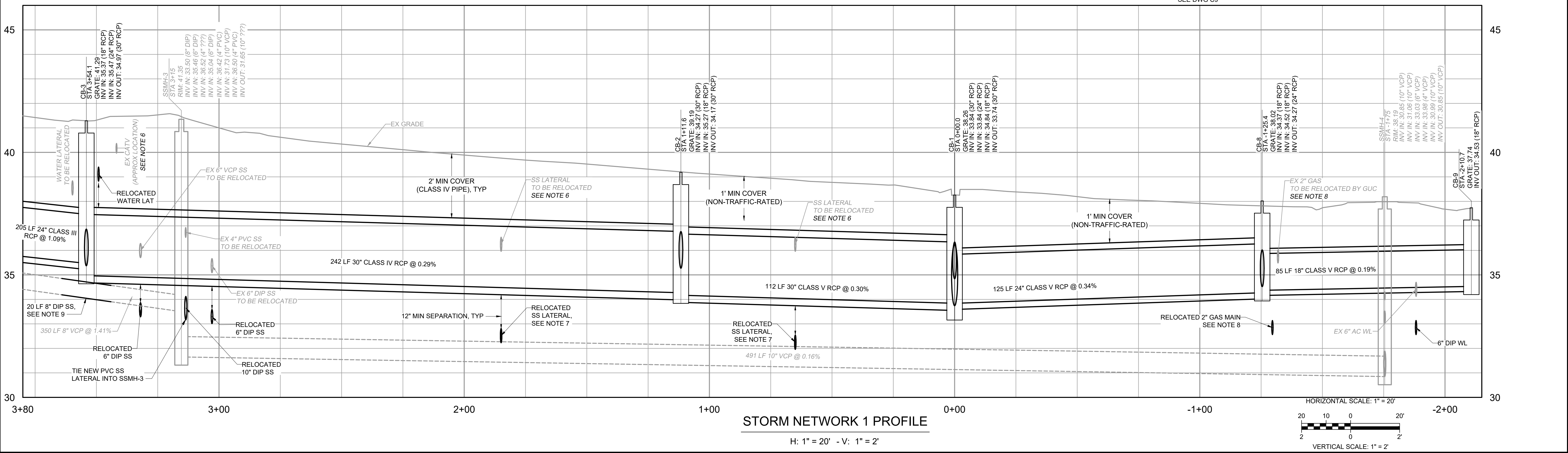
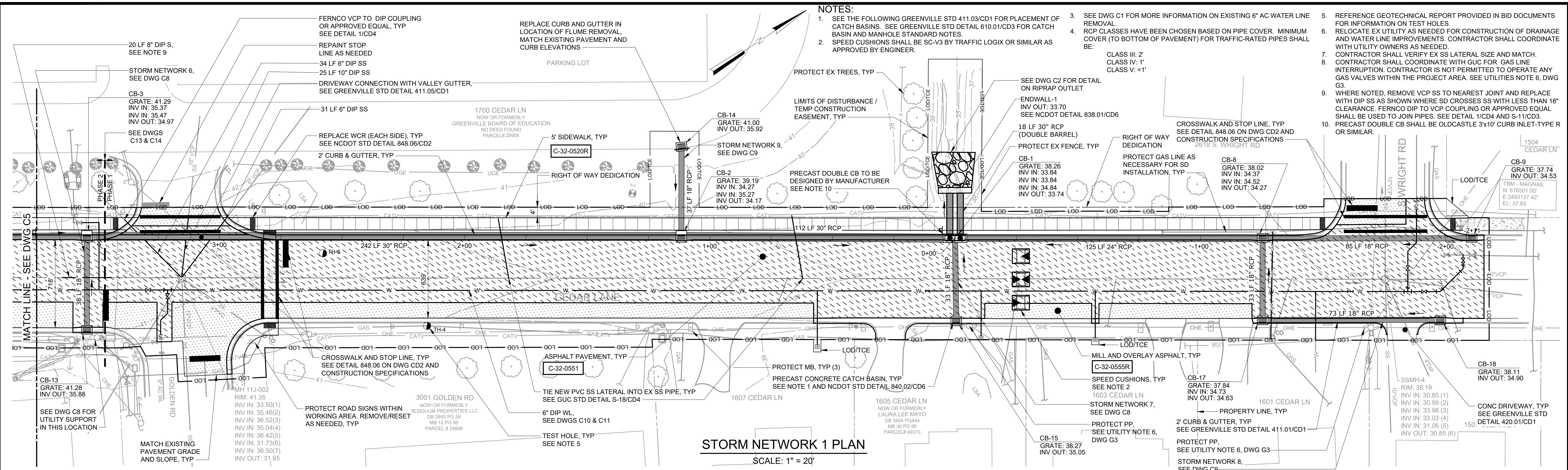
CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
STORM IMPROVEMENTS PLAN & PROFILE

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C5





PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1\"/>			
REV	ISSUED FOR	DATE	BY

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Digitally signed by Corinne E. Wilson

Date: 2021.12.28.15:02:58-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

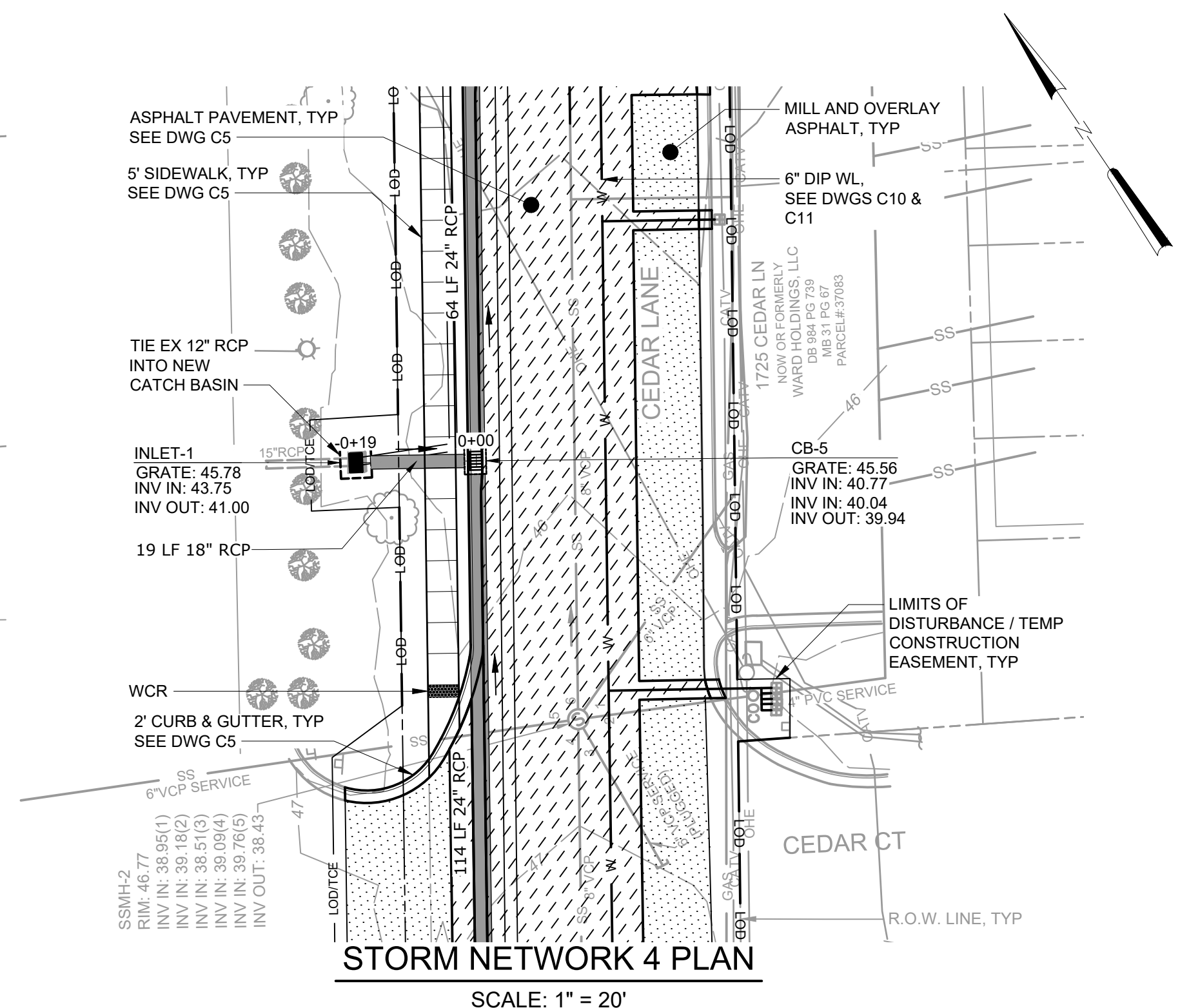
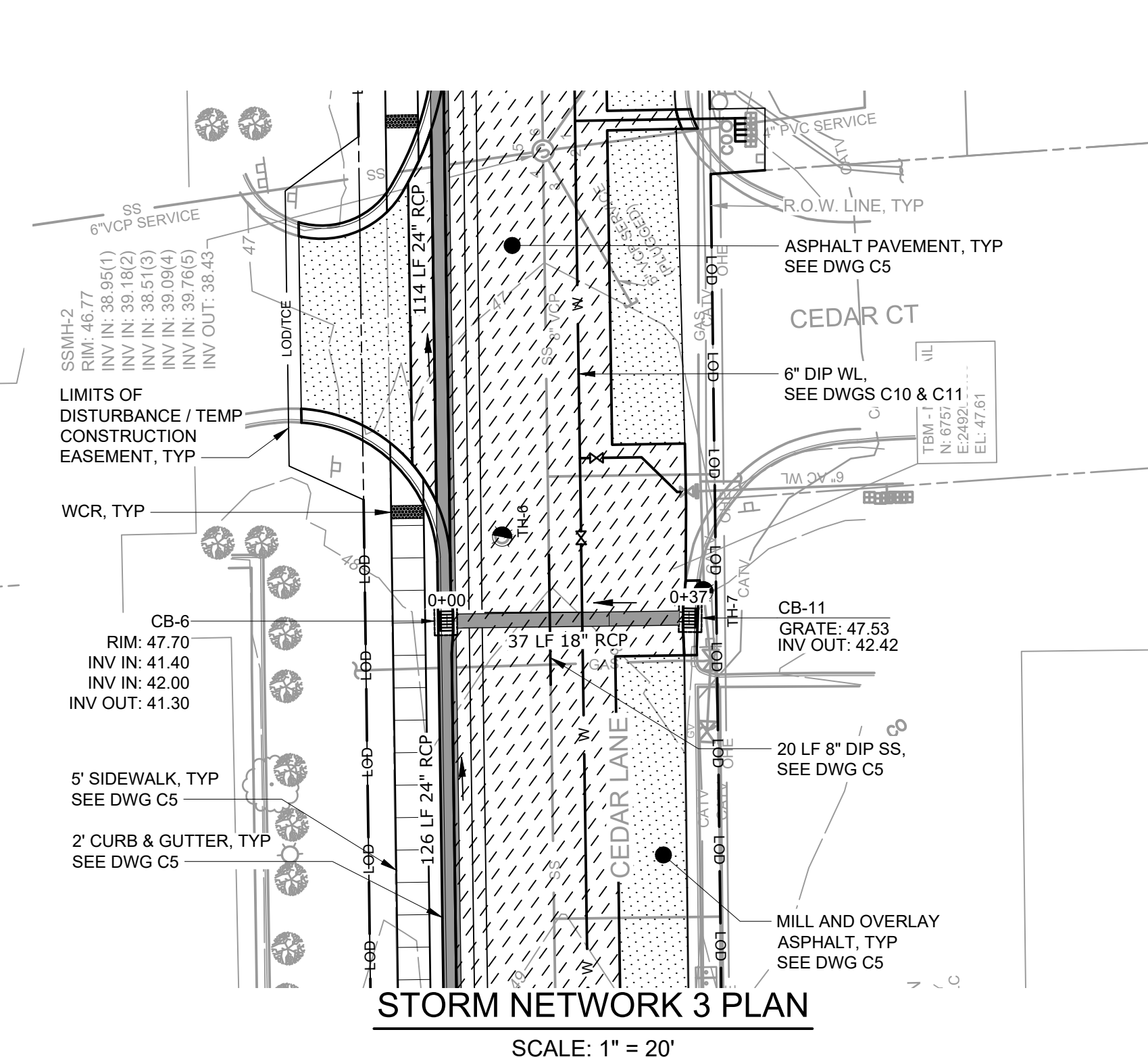
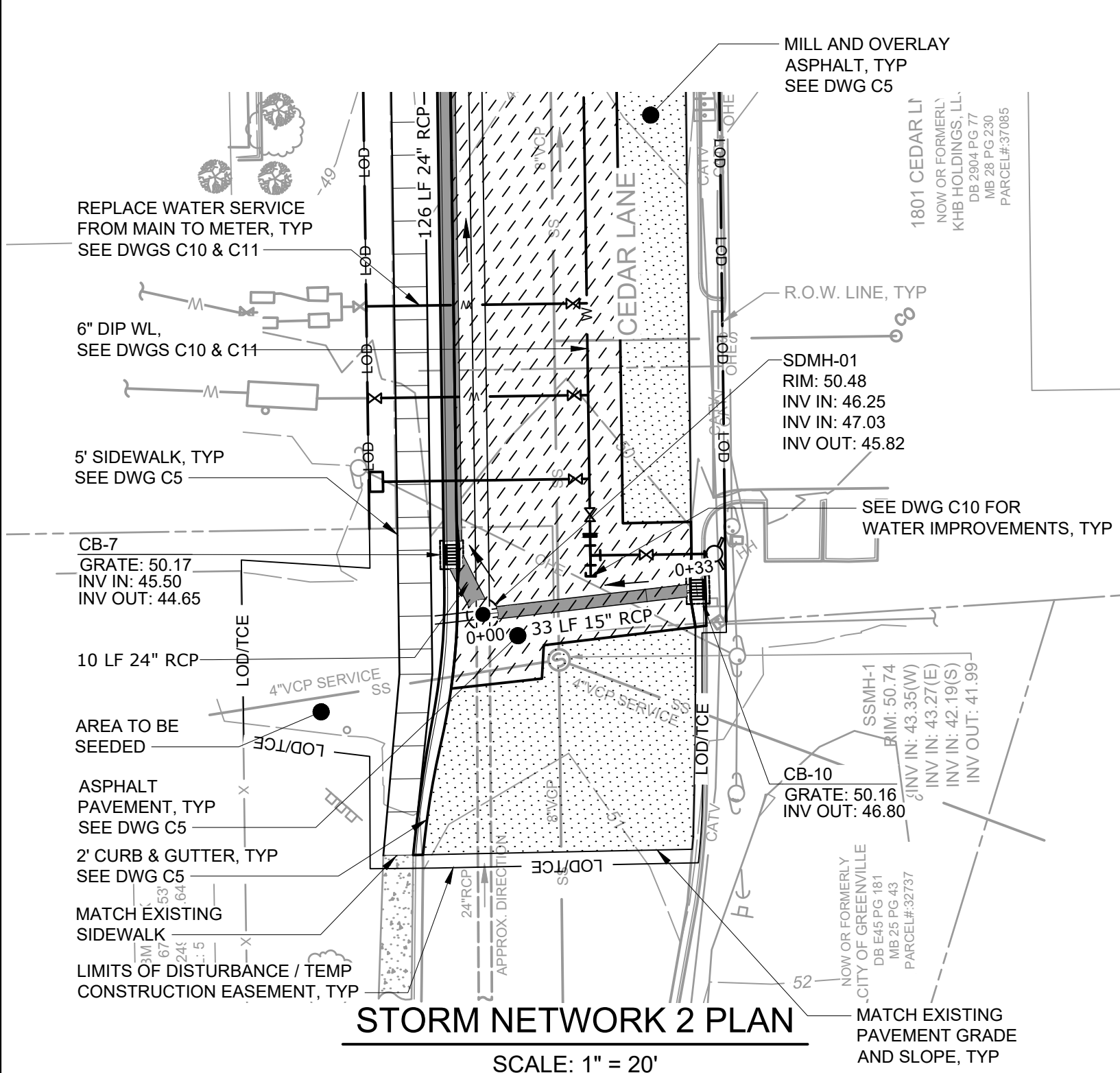
CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

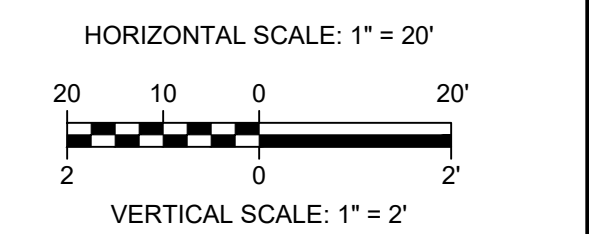
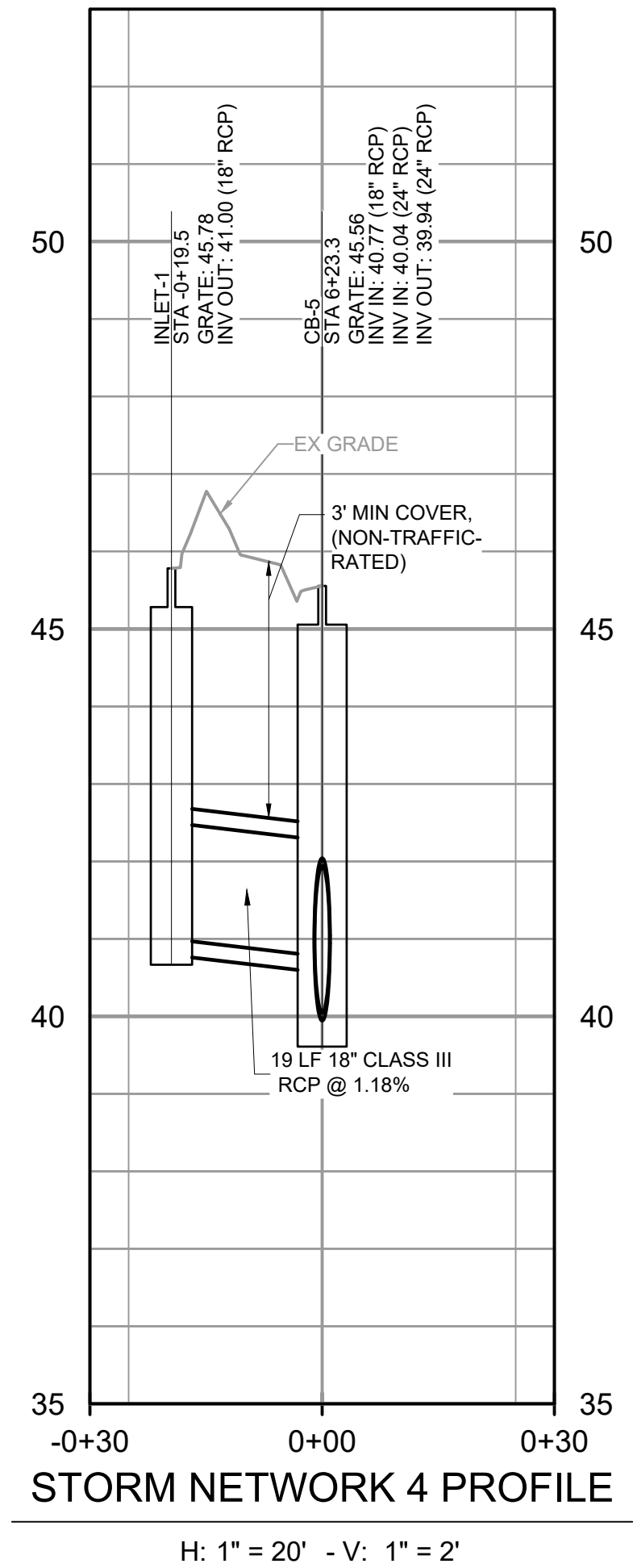
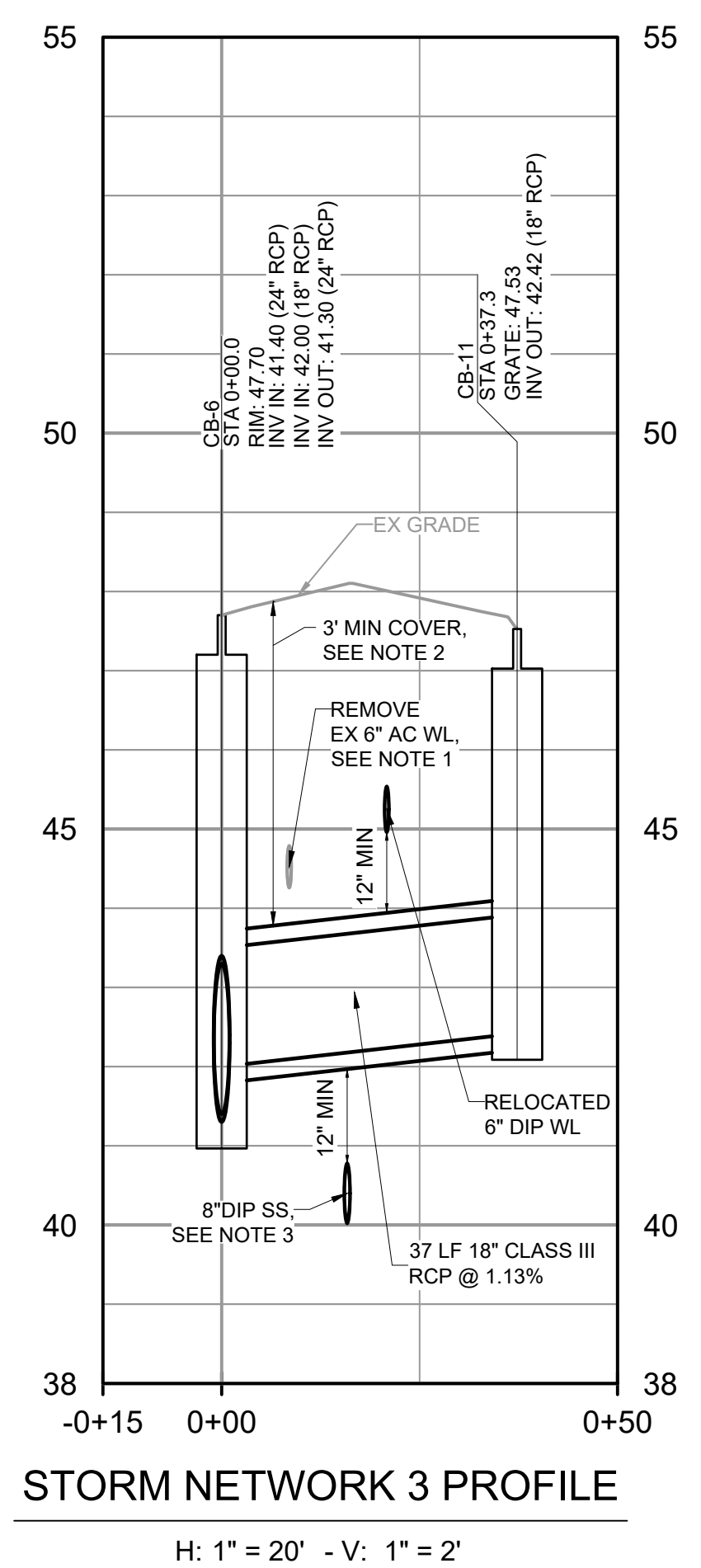
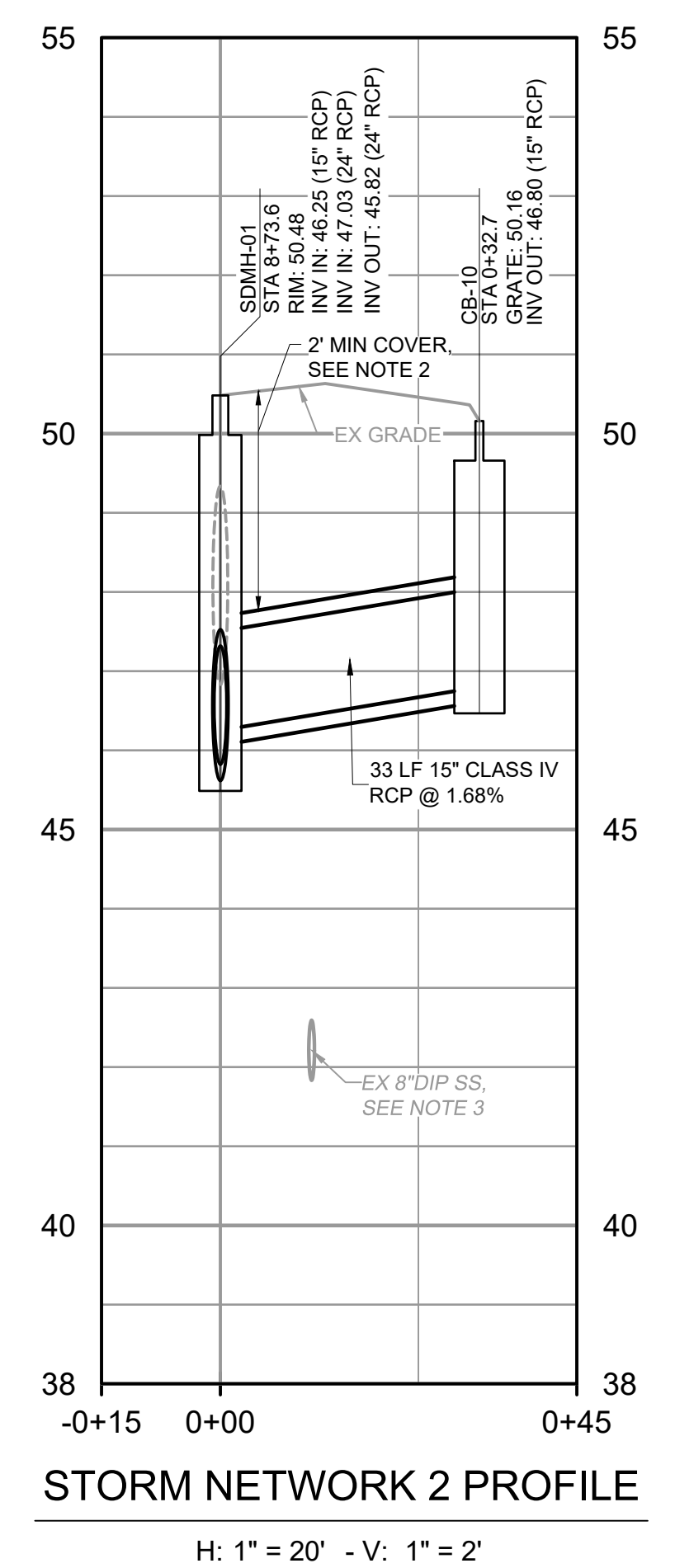
CIVIL  
STORM IMPROVEMENTS PLAN & PROFILE

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C6

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 PLOT DATE: 12/29/2021, 10:19 AM BY: BTHARRINGTON



- NOTES:**
- SEE DWG C1 FOR MORE INFORMATION ON EXISTING 6" AC WATER LINE REMOVAL.
  - RCP CLASSES HAVE BEEN CHOSEN BASED ON PIPE COVER. MINIMUM COVER (TO BOTTOM OF PAVEMENT) FOR TRAFFIC-RATED PIPES SHALL BE:  
CLASS III: 2'  
CLASS IV: 1'  
CLASS V: <1'
  - REPLACE VCP SS WITH DIP SS AS SHOWN WHERE SD CROSSES SS WITH LESS THAN 18" CLEARANCE. FERNCO DIP TO VCP COUPLING OR APPROVED EQUAL SHALL BE USED TO JOIN PIPES. SEE DETAIL 1/CD4 AND S-11/CD3.



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 PLOT DATE: 12/28/2021 9:44 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corina E. Wilson  
Date: 2021.12.28 15:03:03-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

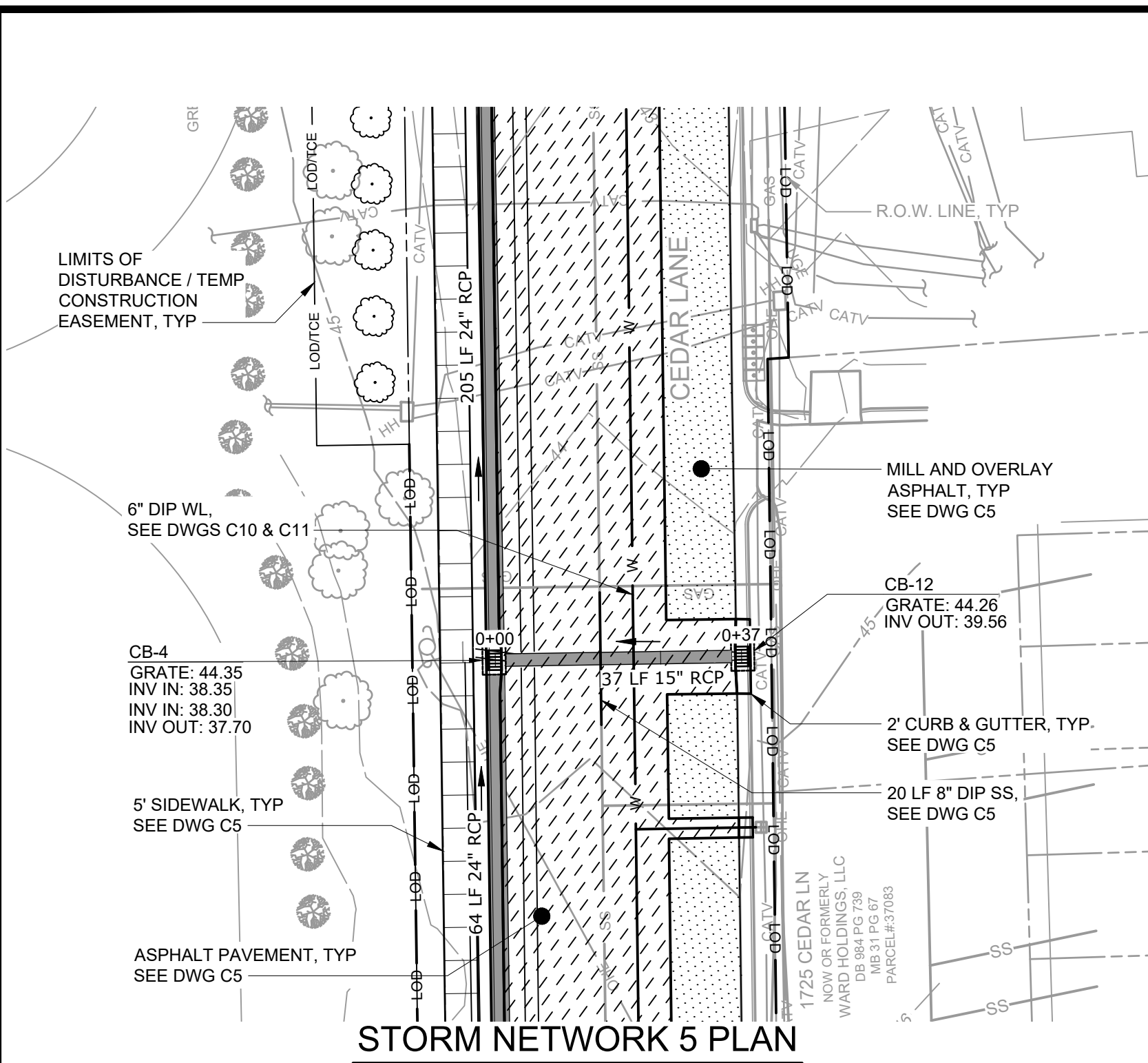
CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
STORM IMPROVEMENTS PLAN & PROFILE

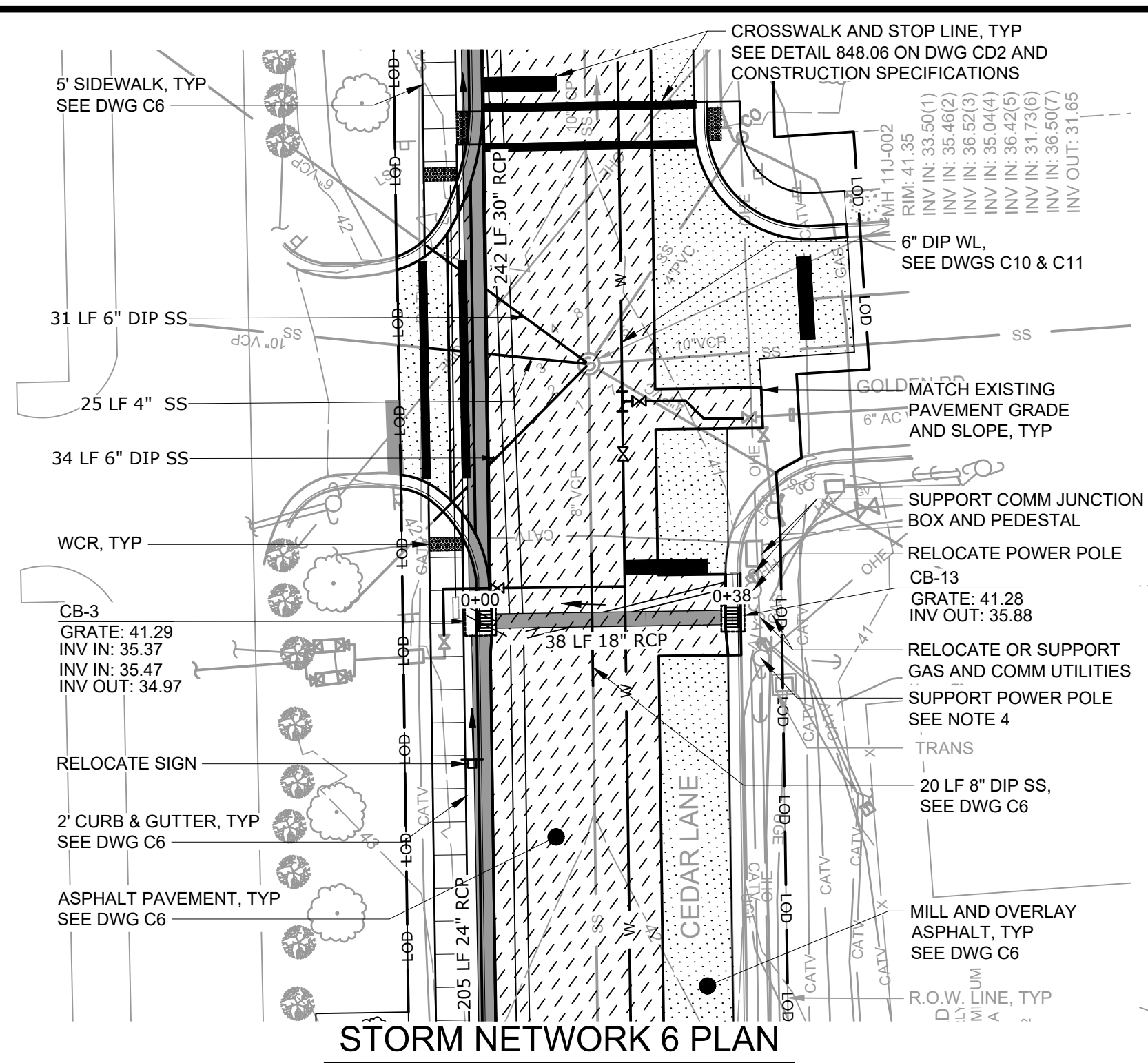
DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C7





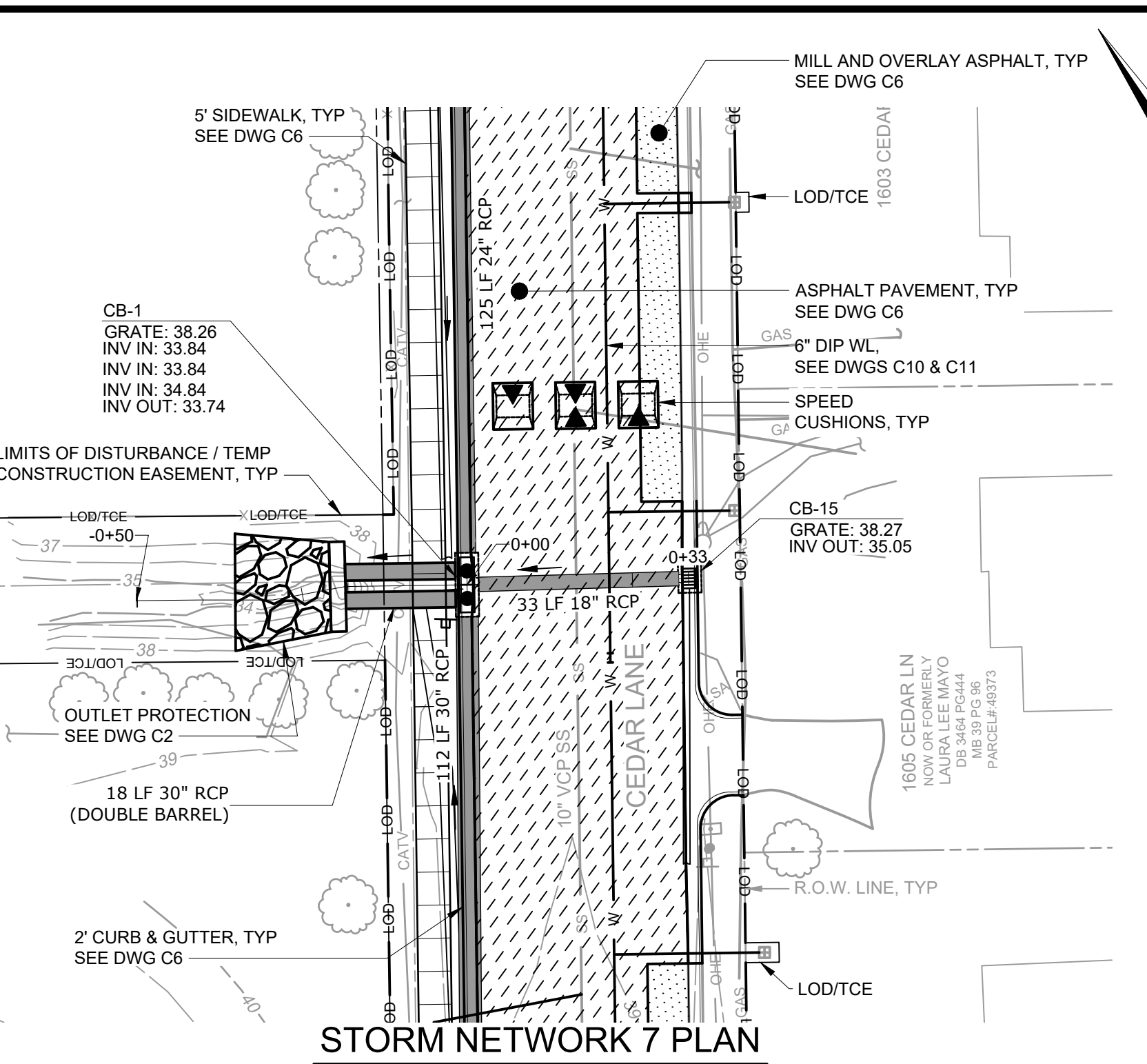
**STORM NETWORK 5 PLAN**

SCALE: 1" = 20'



**STORM NETWORK 6 PLAN**

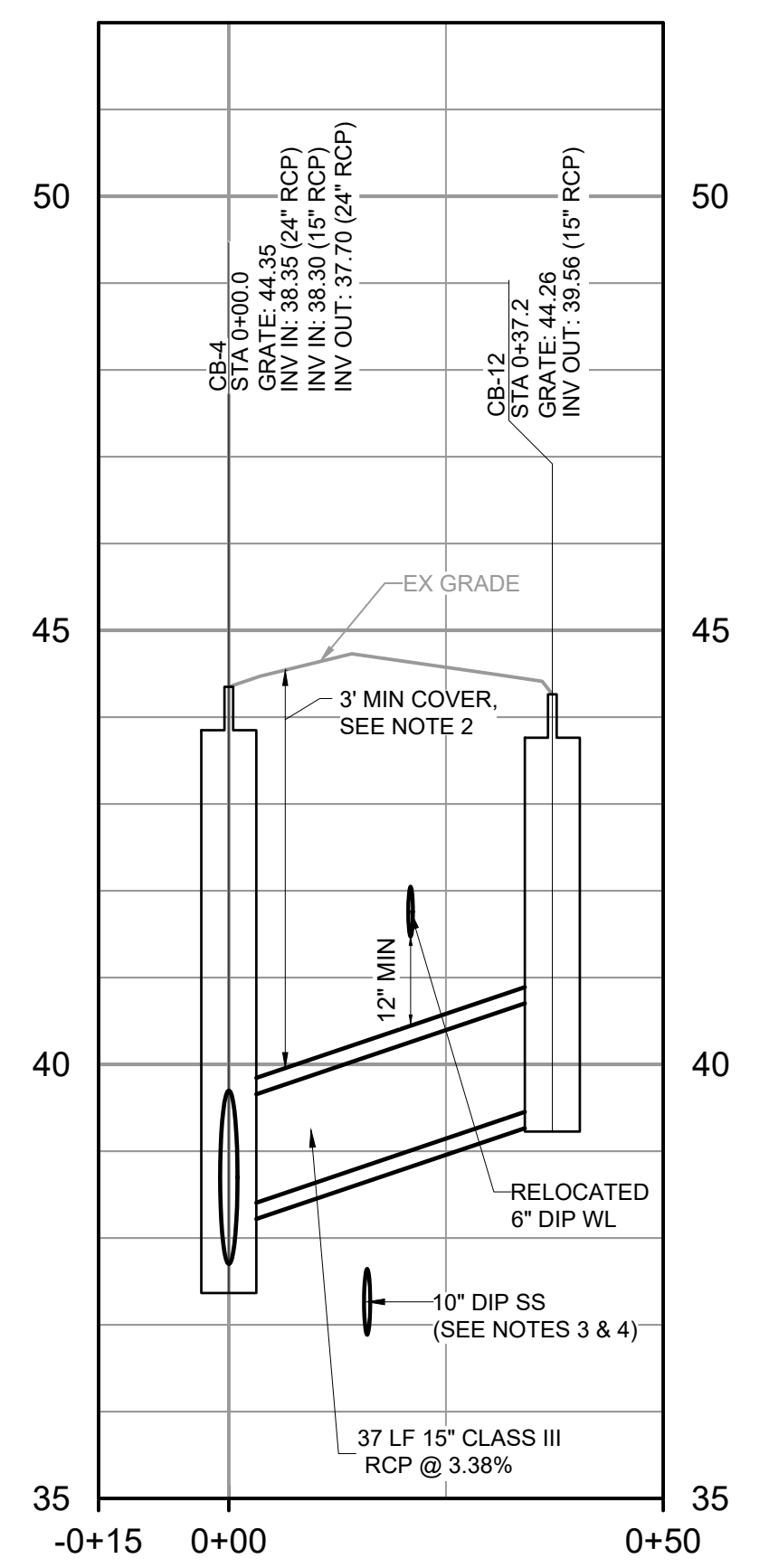
SCALE: 1" = 20'



**STORM NETWORK 7 PLAN**

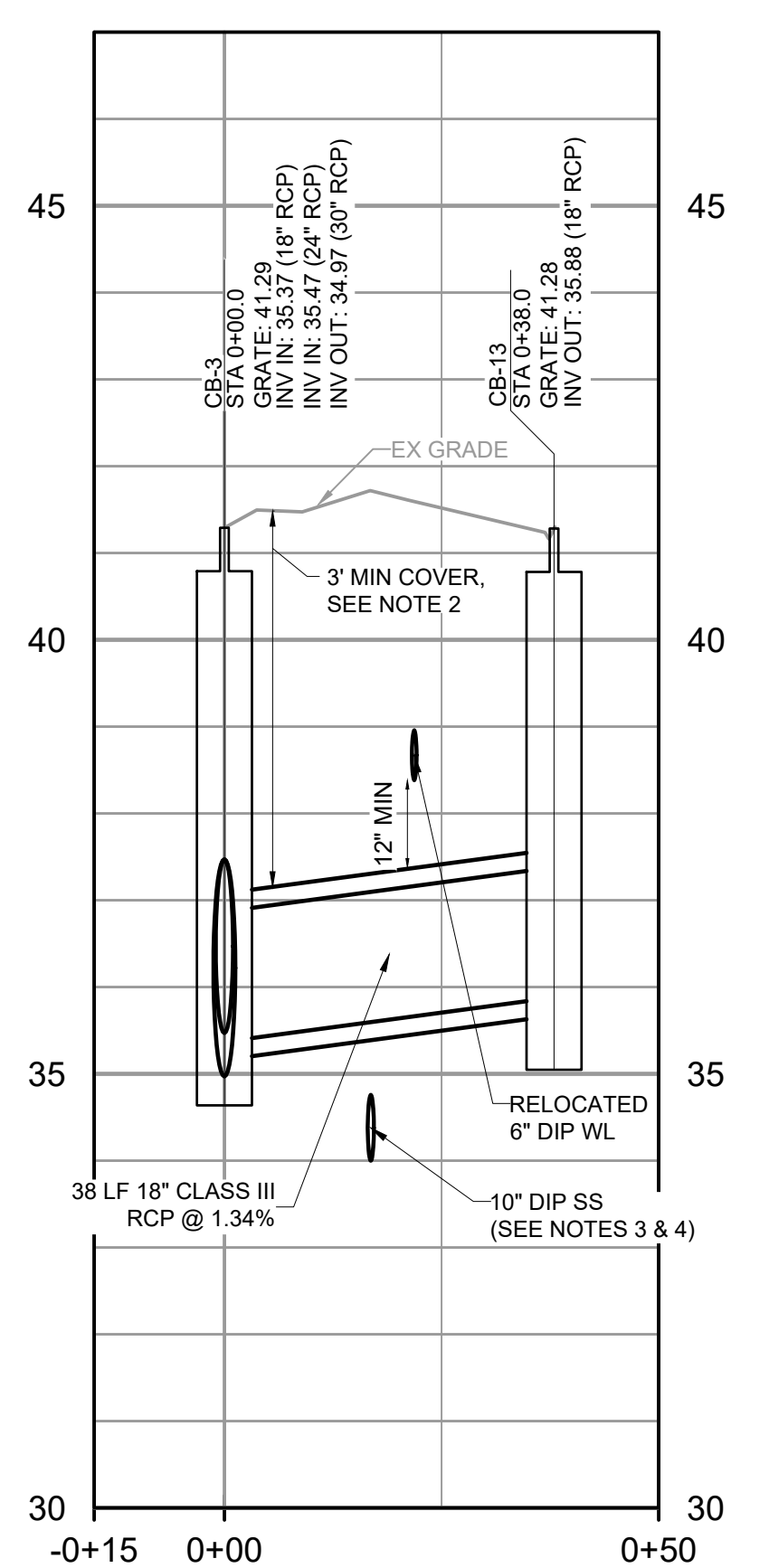
SCALE: 1" = 20'

- NOTES:**
- SEE DWG C1 FOR MORE INFORMATION ON EXISTING 6" AC WATER LINE REMOVAL.
  - RCP CLASSES HAVE BEEN CHOSEN BASED ON PIPE COVER. MINIMUM COVER (TO BOTTOM OF PAVEMENT) FOR TRAFFIC-RATED PIPES SHALL BE:  
CLASS III: 2'  
CLASS IV: 1'  
CLASS V: <1'
  - REPLACE VCP SS WITH DIP SS AS SHOWN WHERE SD CROSSES SS WITH LESS THAN 18" CLEARANCE. FERNCO DIP TO VCP COUPLING OR APPROVED EQUAL SHALL BE USED TO JOIN PIPES. SEE DETAIL 1/CD4 AND S-11/CD3.
  - CONTRACTOR SHALL COORDINATE WITH GUC FOR SUPPORT AND RELOCATION OF ELEC UTILITY DURING CONSTRUCTION. SEE UTILITIES NOTE 6, DWG G3.



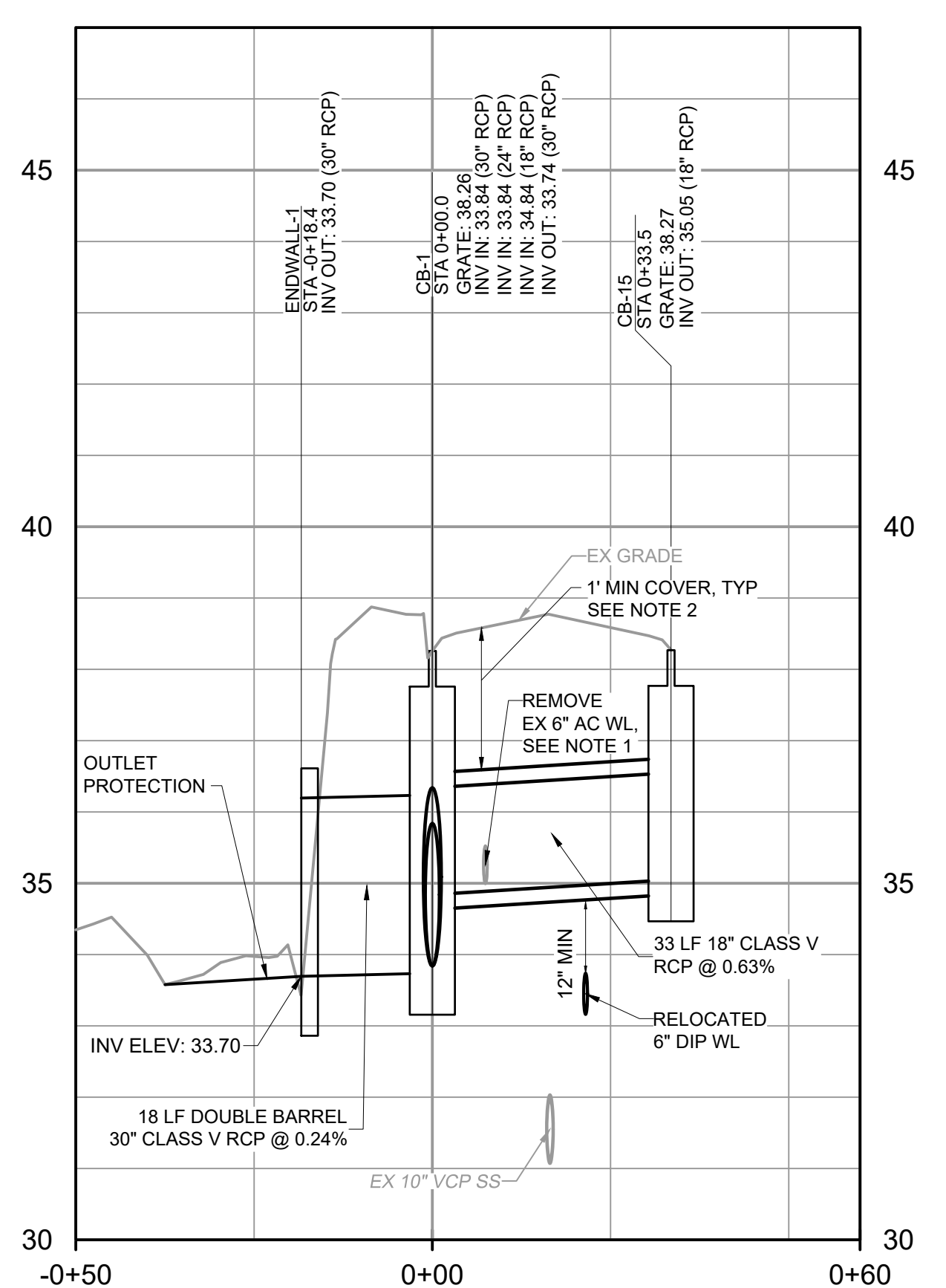
**STORM NETWORK 5 PROFILE**

H: 1" = 20' - V: 1" = 2'



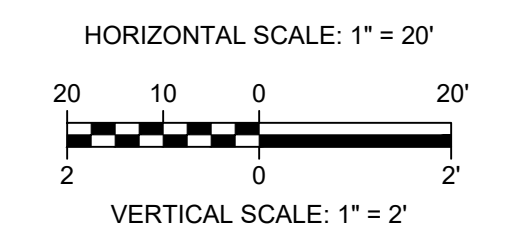
**STORM NETWORK 6 PROFILE**

H: 1" = 20' - V: 1" = 2'



**STORM NETWORK 7 PROFILE**

H: 1" = 20' - V: 1" = 2'



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 PLOT DATE: 1/28/2021 9:48 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION



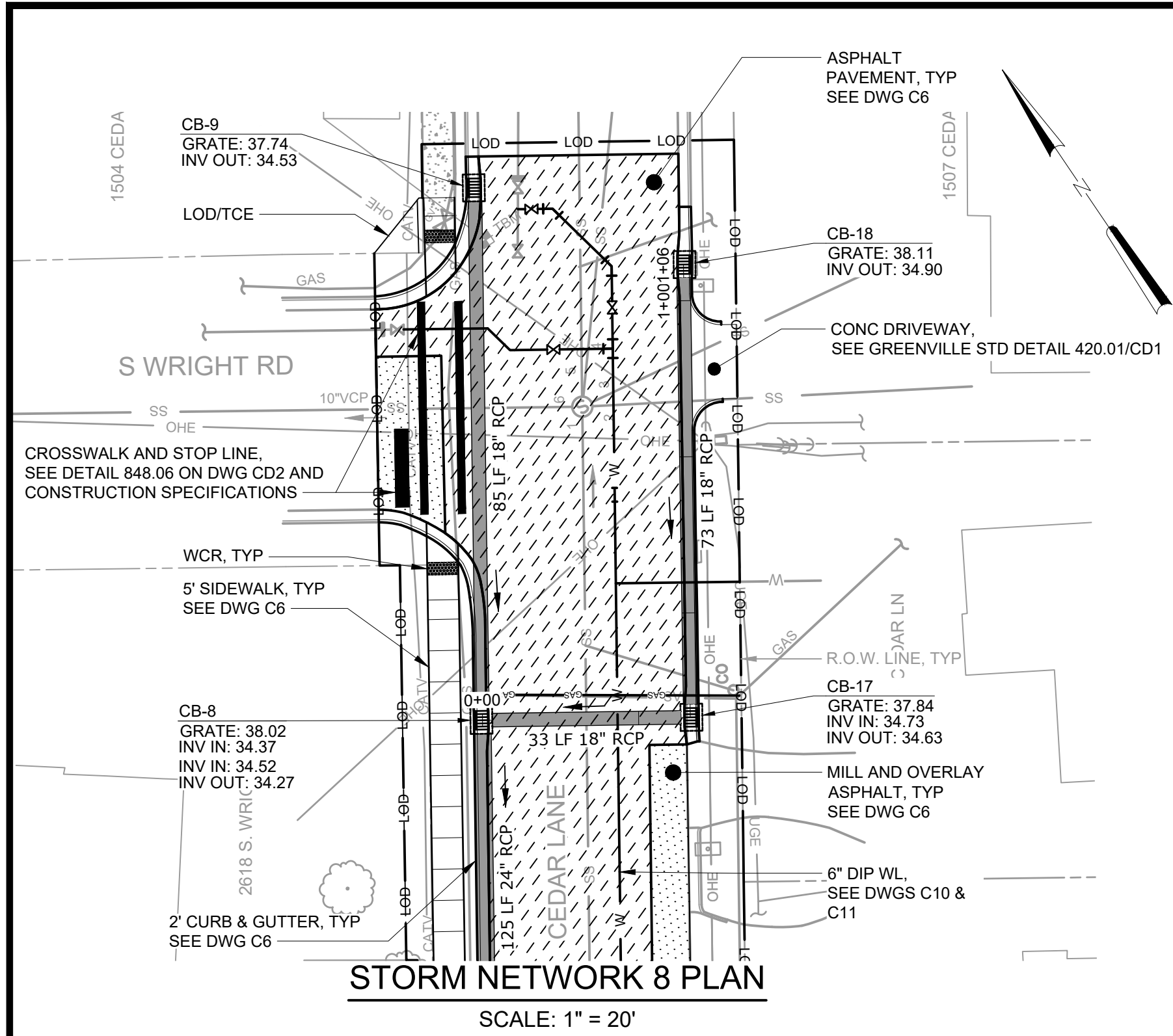
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Date: 2021.12.28 15:03:08-05'00'

**Hazen**  
HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA  
**CEDAR LANE DRAINAGE IMPROVEMENTS**

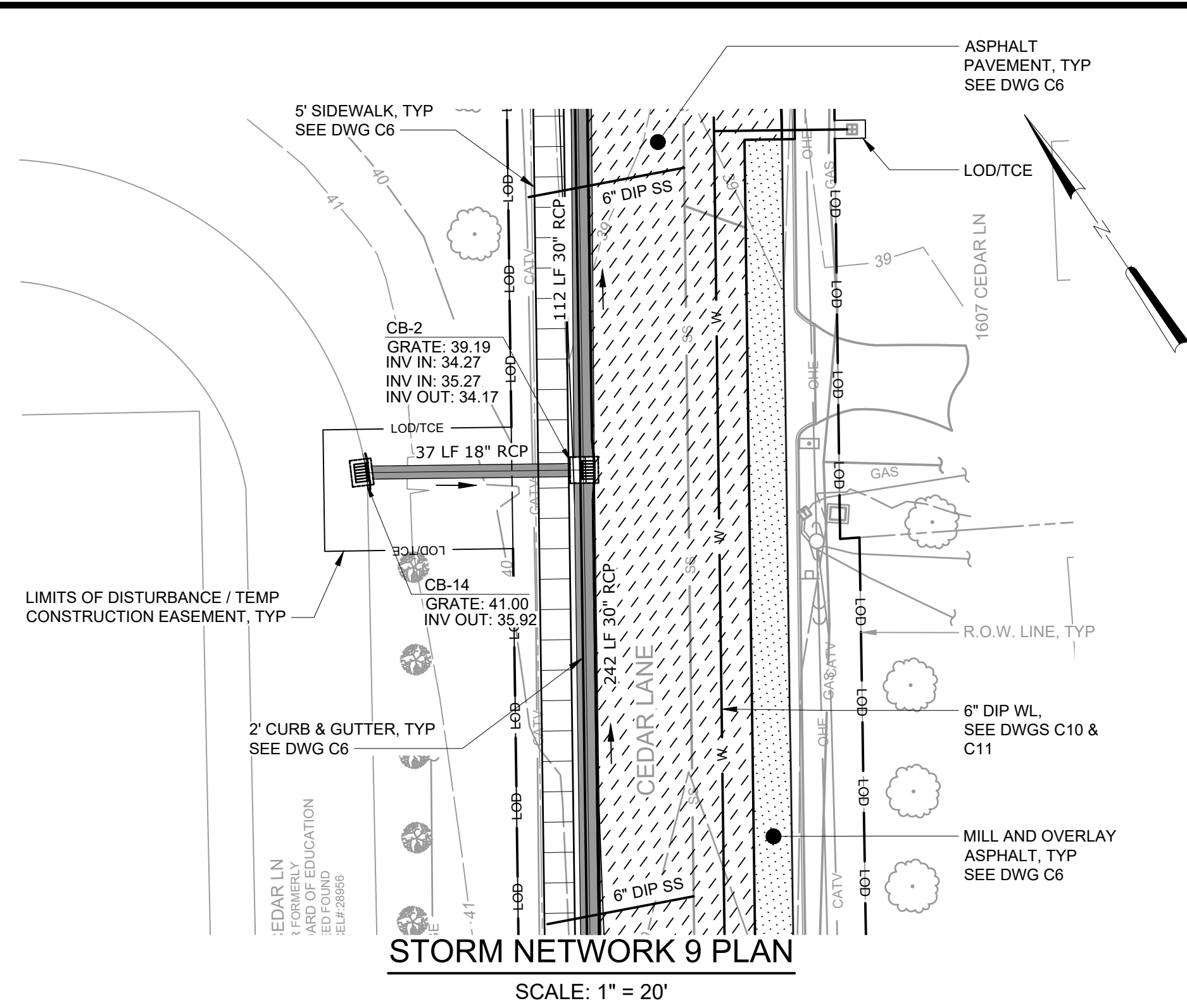
CIVIL  
**STORM IMPROVEMENTS PLAN & PROFILE**

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C8



**STORM NETWORK 8 PLAN**

SCALE: 1" = 20'

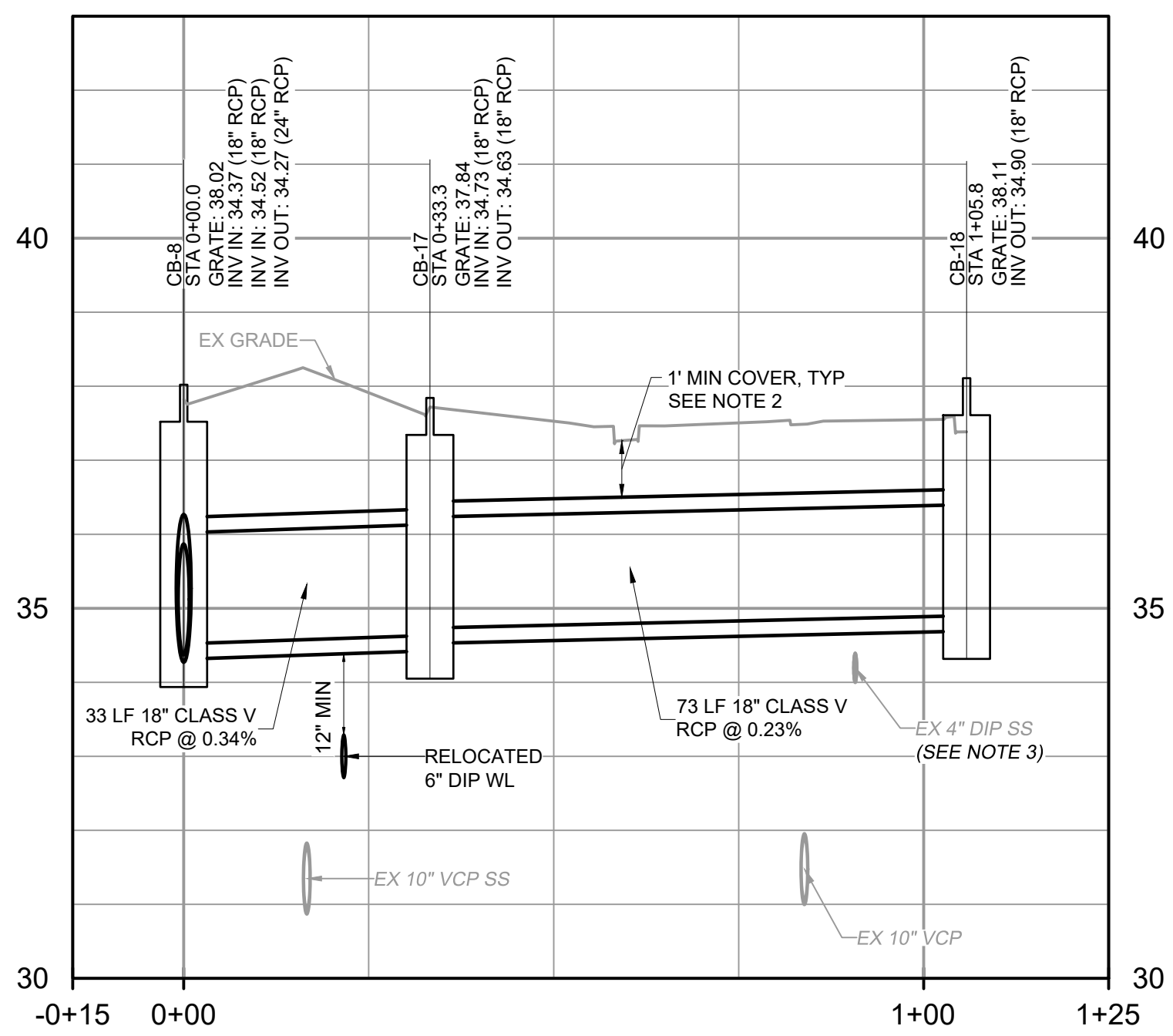


**STORM NETWORK 9 PLAN**

SCALE: 1" = 20'

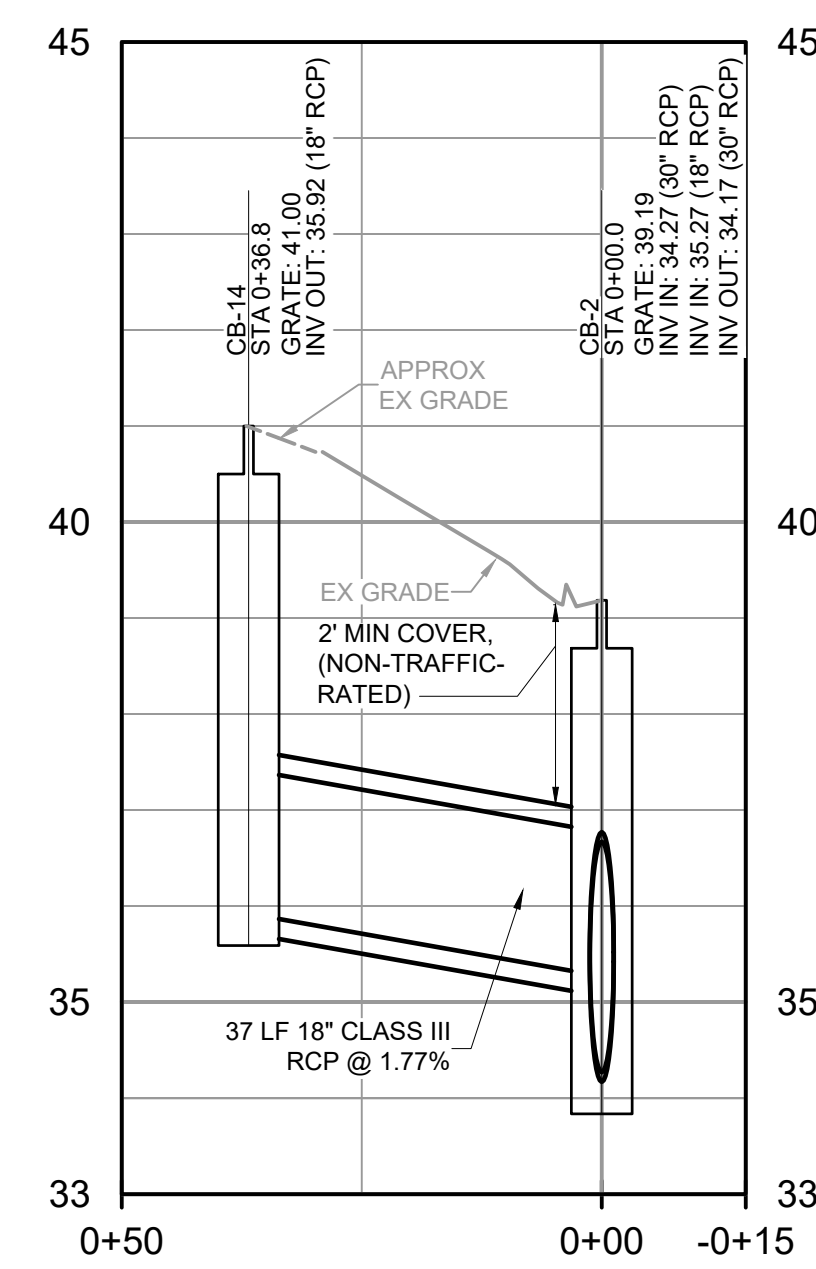
**NOTES:**

- SEE DWG C1 FOR MORE INFORMATION ON EXISTING 6" AC WATER LINE REMOVAL.
- RCP CLASSES HAVE BEEN CHOSEN BASED ON PIPE COVER. MINIMUM COVER (TO BOTTOM OF PAVEMENT) FOR TRAFFIC-RATED PIPES SHALL BE:  
 CLASS III: 2'  
 CLASS IV: 1'  
 CLASS V: <1'
- REPLACE VCP SS WITH DIP SS AS SHOWN WHERE SD CROSSES SS WITH LESS THAN 18" CLEARANCE. FERNCO DIP TO VCP COUPLING OR APPROVED EQUAL SHALL BE USED TO JOIN PIPES. SEE DETAIL 1/CD4 AND S-11/CD3.



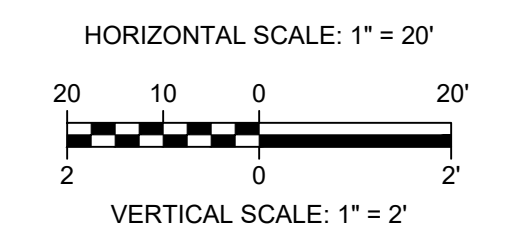
**STORM NETWORK 8 PROFILE**

H: 1" = 20' - V: 1" = 2'



**STORM NETWORK 9 PROFILE**

H: 1" = 20' - V: 1" = 2'



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 Plot Date: 12/28/2021 9:48 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION  
 Digitally signed by Corinne E. Wilson  
 Date: 2021.12.28 15:03:13-05'00'

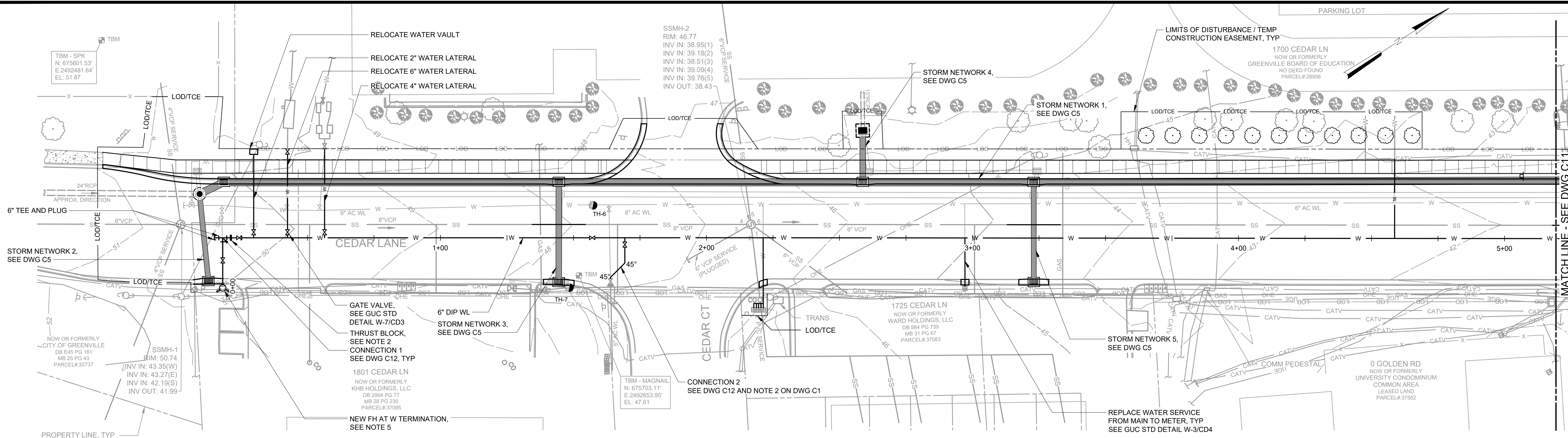
**Hazen**  
 HAZEN AND SAWYER  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA  
 CEDAR LANE DRAINAGE IMPROVEMENTS

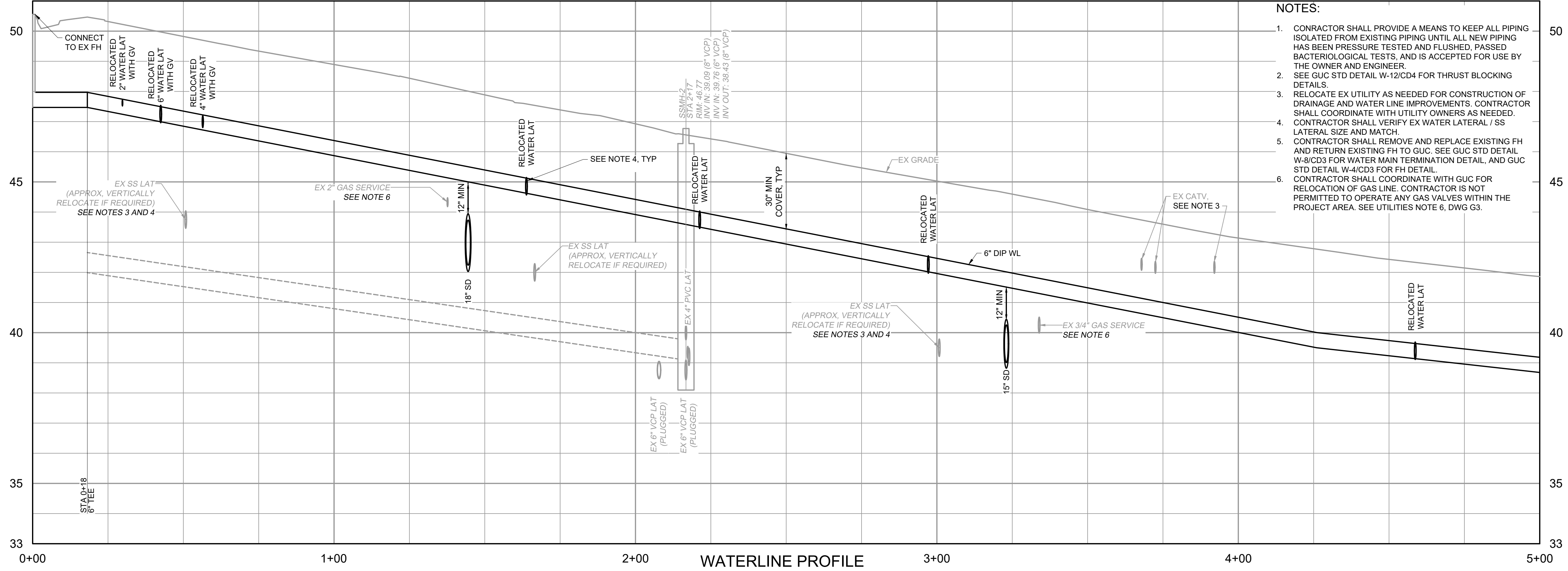
CIVIL  
 STORM IMPROVEMENTS PLAN & PROFILE

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C9



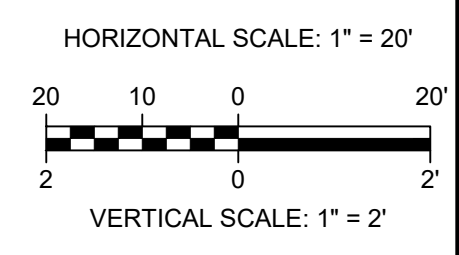


**WATERLINE PLAN**  
SCALE: 1" = 20'



**WATERLINE PROFILE**  
H: 1" = 20' - V: 1" = 2'

- NOTES:**
- CONTRACTOR SHALL PROVIDE A MEANS TO KEEP ALL PIPING ISOLATED FROM EXISTING PIPING UNTIL ALL NEW PIPING HAS BEEN PRESSURE TESTED AND FLUSHED, PASSED BACTERIOLOGICAL TESTS, AND IS ACCEPTED FOR USE BY THE OWNER AND ENGINEER.
  - SEE GUC STD DETAIL W-12/CD4 FOR THRUST BLOCKING DETAILS.
  - RELOCATE EX UTILITY AS NEEDED FOR CONSTRUCTION OF DRAINAGE AND WATER LINE IMPROVEMENTS. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNERS AS NEEDED.
  - CONTRACTOR SHALL VERIFY EX WATER LATERAL / SS LATERAL SIZE AND MATCH.
  - CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FH AND RETURN EXISTING FH TO GUC. SEE GUC STD DETAIL W-8/CD3 FOR WATER MAIN TERMINATION DETAIL, AND GUC STD DETAIL W-4/CD3 FOR FH DETAIL.
  - CONTRACTOR SHALL COORDINATE WITH GUC FOR RELOCATION OF GAS LINE. CONTRACTOR IS NOT PERMITTED TO OPERATE ANY GAS VALVES WITHIN THE PROJECT AREA. SEE UTILITIES NOTE 6, DWG G3.



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 Plot Date: 12/28/2021 9:48 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION



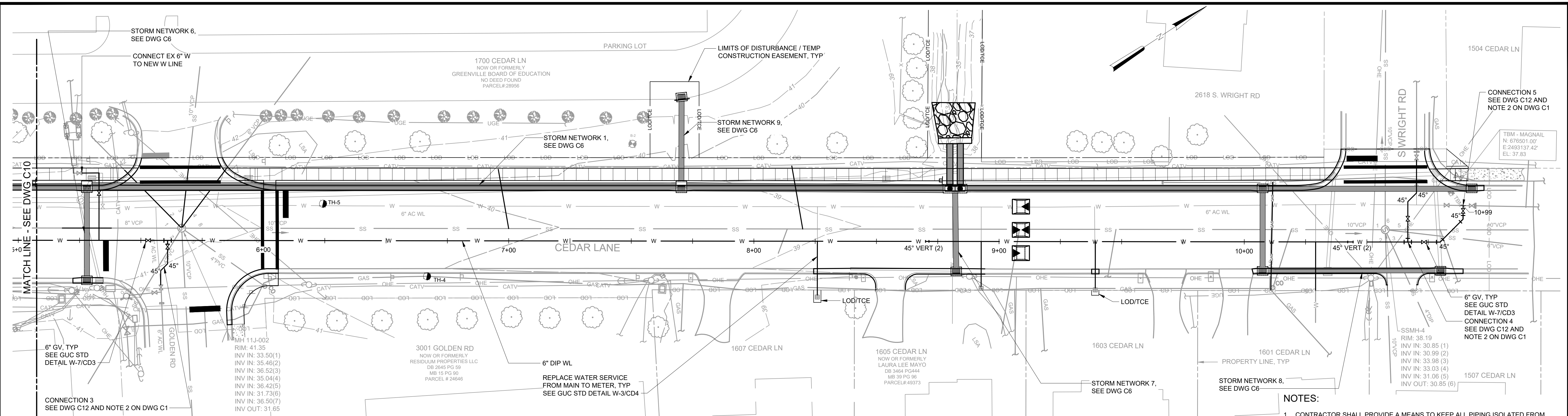
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Date: 2021.12.28 15:03:18-05'00'

**Hazen**  
HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA  
  
CEDAR LANE DRAINAGE IMPROVEMENTS

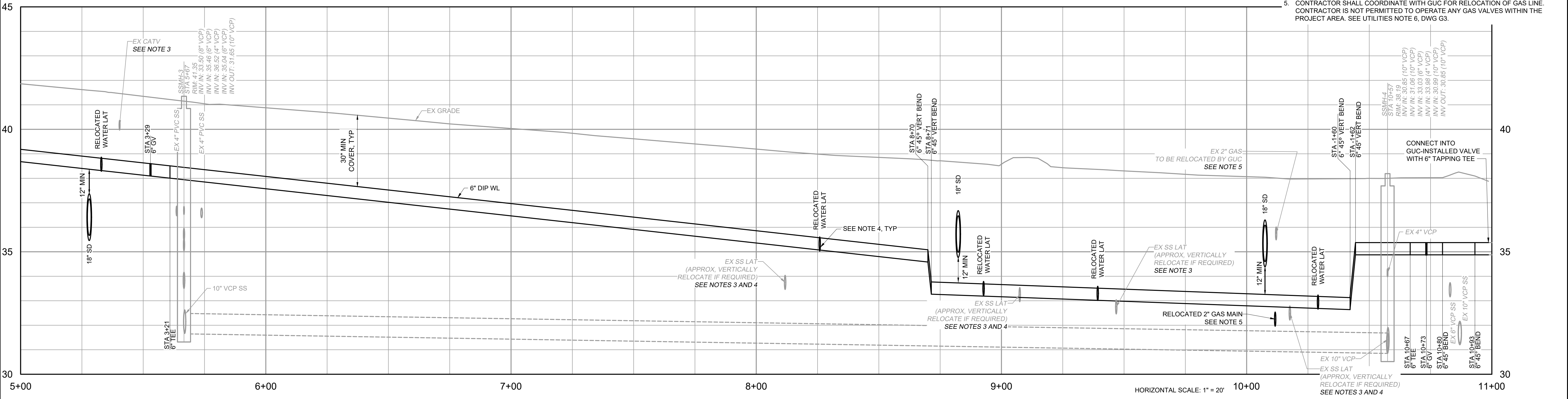
CIVIL  
WATER IMPROVEMENTS PLAN & PROFILE

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C10

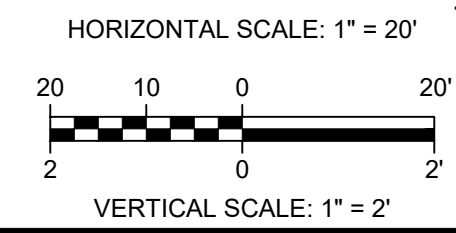


**WATERLINE PLAN**  
SCALE: 1" = 20'

- NOTES:**
- CONTRACTOR SHALL PROVIDE A MEANS TO KEEP ALL PIPING ISOLATED FROM EXISTING PIPING UNTIL ALL NEW PIPING HAS BEEN PRESSURE TESTED AND FLUSHED, PASSED BACTERIOLOGICAL TESTS, AND IS ACCEPTED FOR USE BY THE OWNER AND ENGINEER.
  - SEE GUC STD DETAIL W-12/CD4 FOR THRUST BLOCKING DETAILS.
  - RELOCATE EX UTILITY AS NEEDED FOR CONSTRUCTION OF DRAINAGE AND WATER LINE IMPROVEMENTS. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNERS AS NEEDED.
  - CONTRACTOR SHALL VERIFY EX WATER LATERAL / SS LATERAL SIZE AND MATCH. CONTRACTOR SHALL COORDINATE WITH GUC FOR RELOCATION OF GAS LINE. CONTRACTOR IS NOT PERMITTED TO OPERATE ANY GAS VALVES WITHIN THE PROJECT AREA. SEE UTILITIES NOTE 6, DWG G3.



**WATERLINE PROFILE**  
H: 1" = 20' - V: 1" = 2'



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 PLOT DATE: 12/28/2021 9:47 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corinne E. Wilson  
Date: 2021.12.28 15:03:23-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

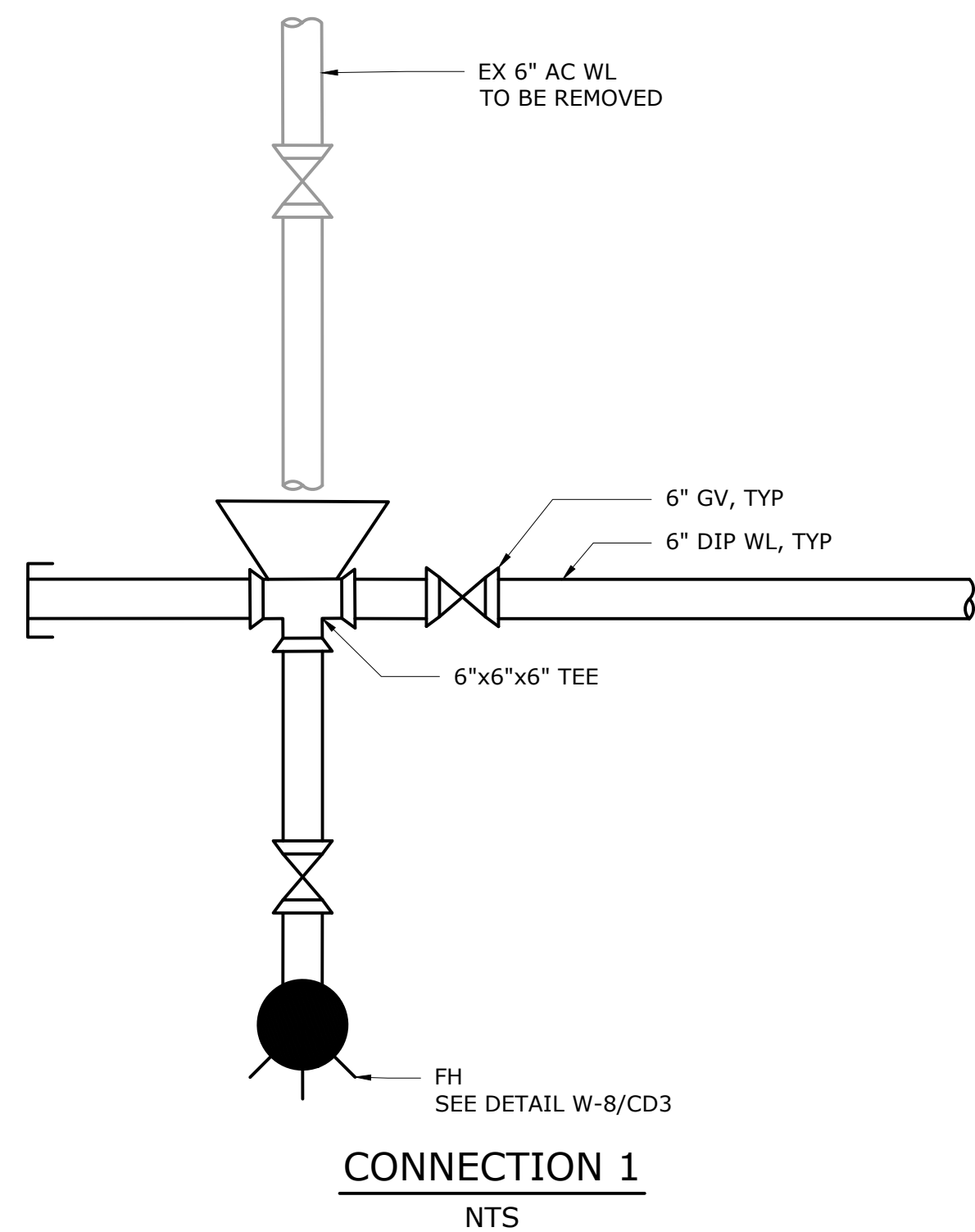
CIVIL  
WATER IMPROVEMENTS PLAN & PROFILE

DATE:	JANUARY 2022
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CONTRACT NO.:	
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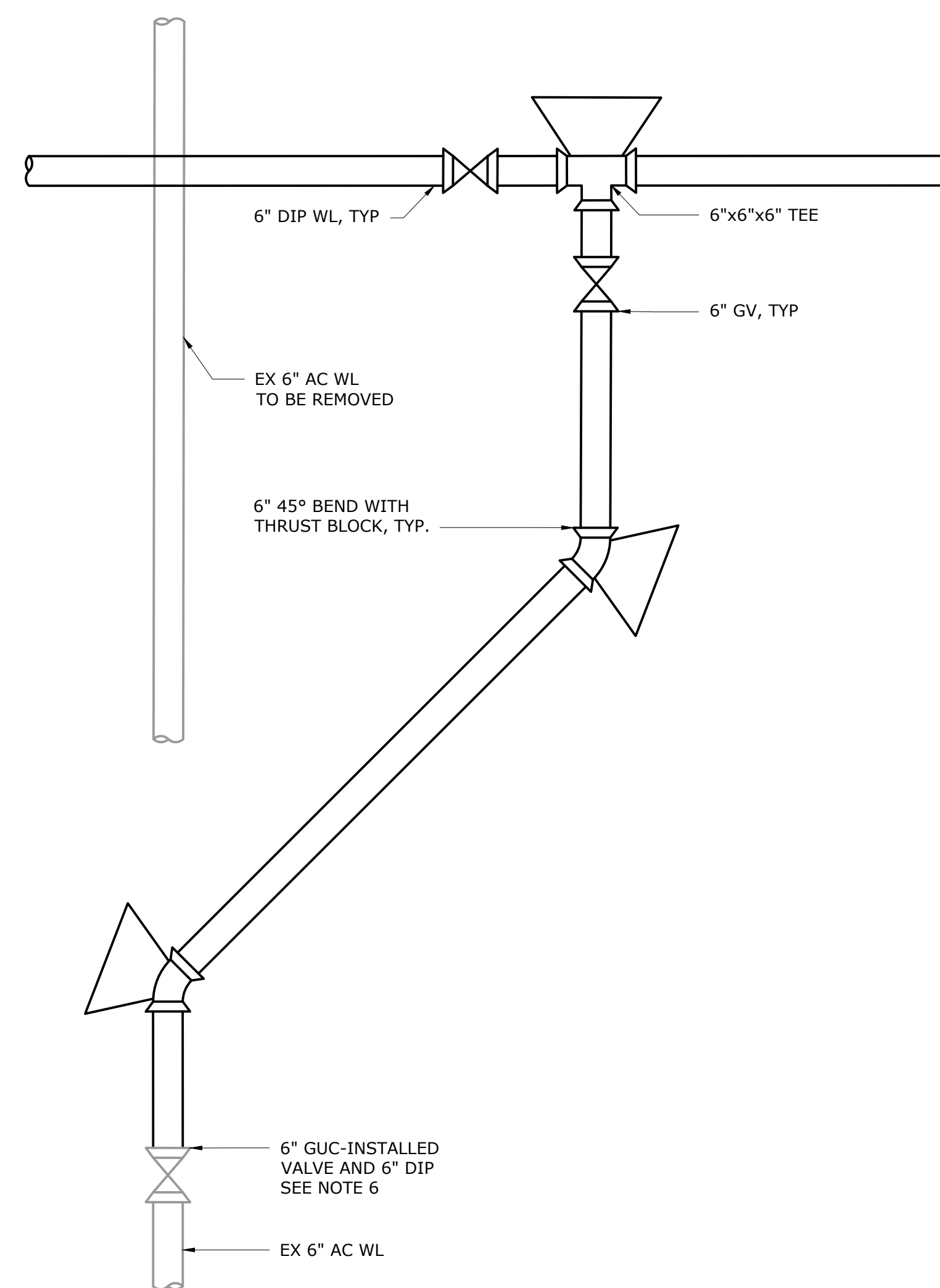


NOTES:

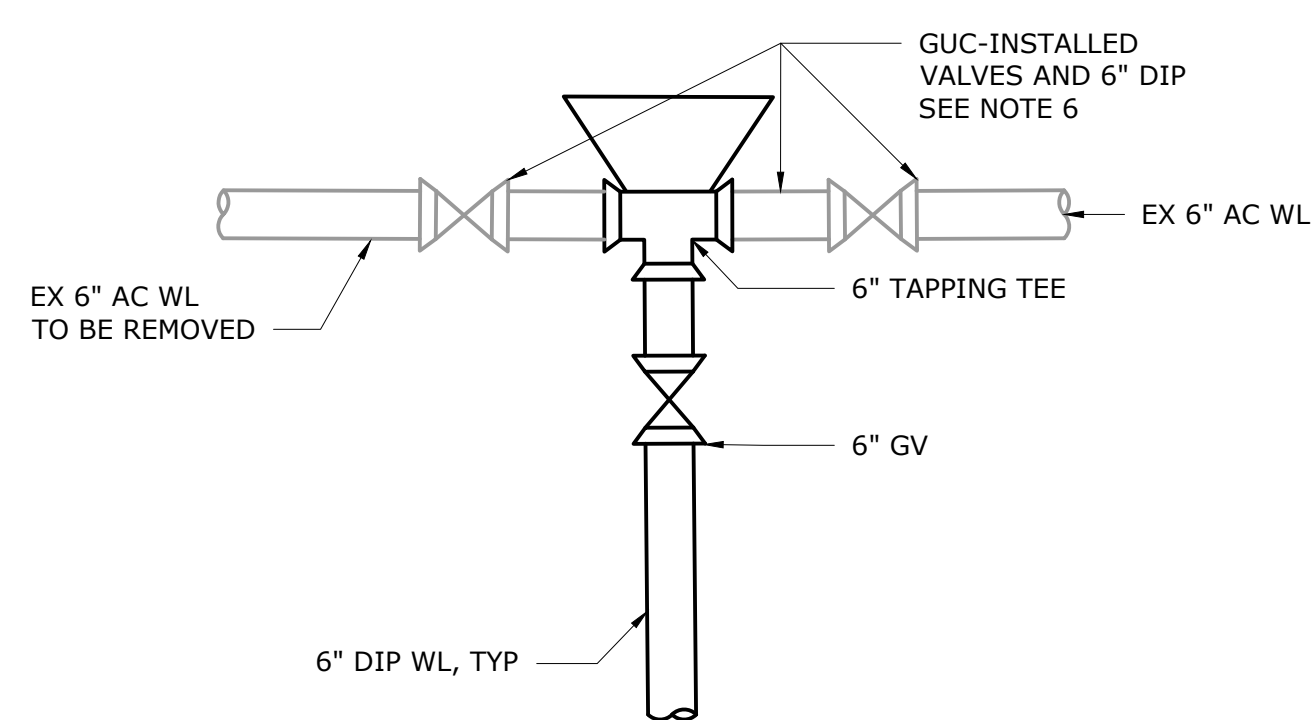
- FITTINGS SHALL BE MJ DI WITH MEGALUG, OR EQUAL, RESTRAINING GLANDS.
- EXISTING WATER LINES ARE ASBESTOS CEMENT.
- WHERE THE WATER LINE CROSSES OVER THE SEWER THE BOTTOM OF THE WATER LINE SHALL BE A MINIMUM OF 18" ABOVE THE TOP OF THE SEWER.
- PROPERLY DISPOSE OF ANY EXISTING WATER LINE TO BE REMOVED.
- ALL SERVICES SHALL BE RECONNECTED TO THE NEW WATER LINE PRIOR TO REMOVAL OF THE EXISTING CROSS.
- FOR CONNECTIONS TO GUC-INSTALLED VALVES, CONTRACTOR SHALL CONNECT TO DIP WITH A RESTRAINED MECHANICAL JOINT COUPLING ON THE DOWNSTREAM SIDE OF THE NEW VALVE INSTALLED BY GUC.



**CONNECTION 1**  
NTS



**CONNECTION 2, 3, 4**  
NTS



**CONNECTION 5**  
NTS

P:\03187\RA13187-003\CAD\_BIM\CIVIL\CEDAR\_LANE\DRNAGE\C13.dwg SHANE SHAW 12/17/2021 1:22 PM  
 PLOT DATE: 12/28/2021 9:47 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by C. Wilson  
Date: 2021.12.28 15:03:30-05'00'

**Hazen**  
HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

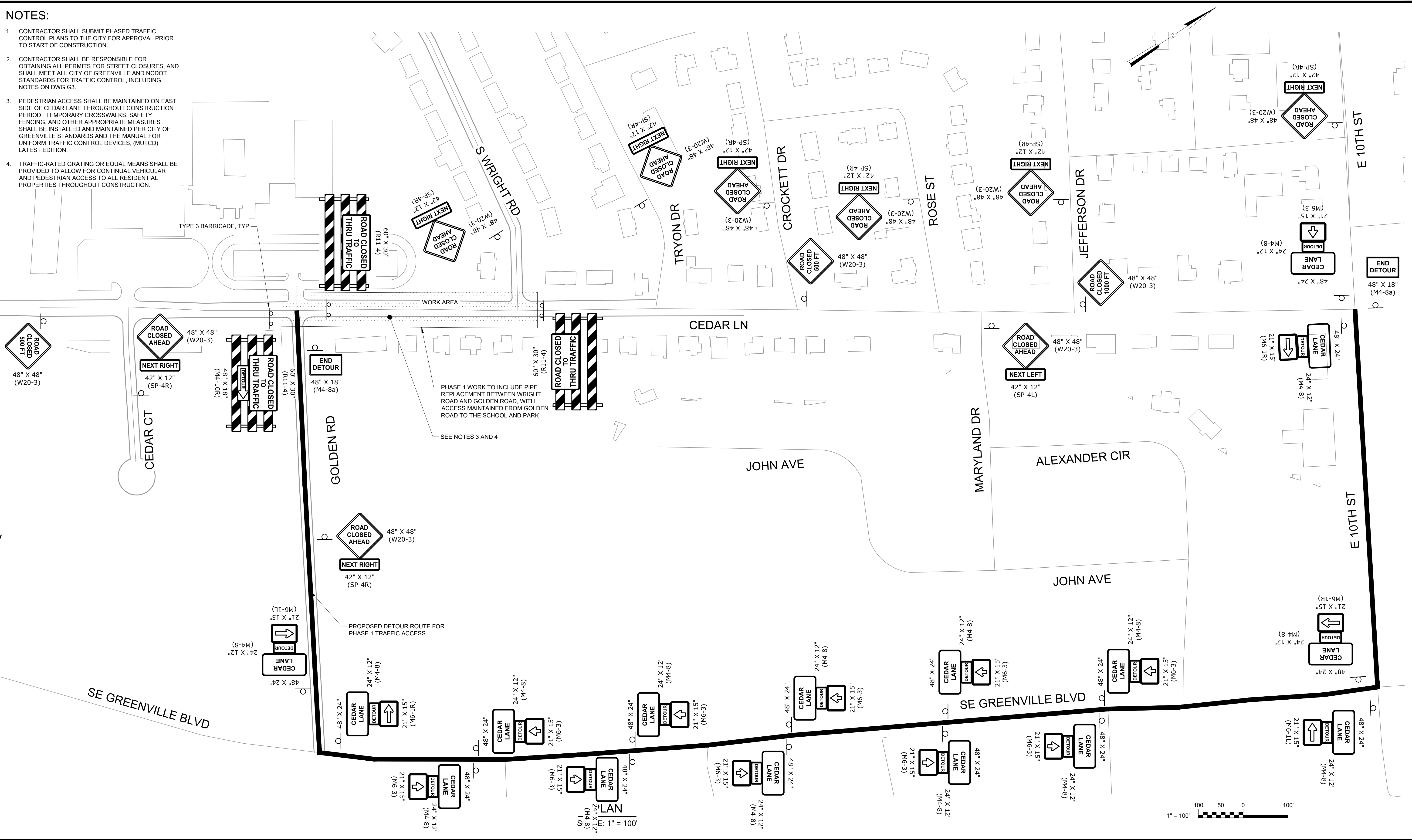
CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL WATER CONNECTION DETAILS

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C12

**NOTES:**

1. CONTRACTOR SHALL SUBMIT PHASED TRAFFIC CONTROL PLANS TO THE CITY FOR APPROVAL PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS FOR STREET CLOSURES, AND SHALL MEET ALL CITY OF GREENVILLE AND NCDOT STANDARDS FOR TRAFFIC CONTROL, INCLUDING NOTES ON DWG G3.
3. PEDESTRIAN ACCESS SHALL BE MAINTAINED ON EAST SIDE OF CEDAR LANE THROUGHOUT CONSTRUCTION PERIOD. TEMPORARY CROSSWALKS, SAFETY FENCING, AND OTHER APPROPRIATE MEASURES SHALL BE INSTALLED AND MAINTAINED PER CITY OF GREENVILLE STANDARDS AND THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION.
4. TRAFFIC-RATED GRATING OR EQUAL MEANS SHALL BE PROVIDED TO ALLOW FOR CONTINUAL VEHICULAR AND PEDESTRIAN ACCESS TO ALL RESIDENTIAL PROPERTIES THROUGHOUT CONSTRUCTION.



PHASE 1 WORK TO INCLUDE PIPE REPLACEMENT BETWEEN WRIGHT ROAD AND GOLDEN ROAD, WITH ACCESS MAINTAINED FROM GOLDEN ROAD TO THE SCHOOL AND PARK  
SEE NOTES 3 AND 4

PROPOSED DETOUR ROUTE FOR PHASE 1 TRAFFIC ACCESS

File: Q:\3187\RAIL\3187-000\CAD\_BM\CDVA-CEDAR\_DRAINAGE\CD13.dwg, 11/20/2021 3:17 PM  
 PLOT DATE: 12/28/2021 9:48 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corinne E. Wilson  
Date: 2021.12.28 15:03:35-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

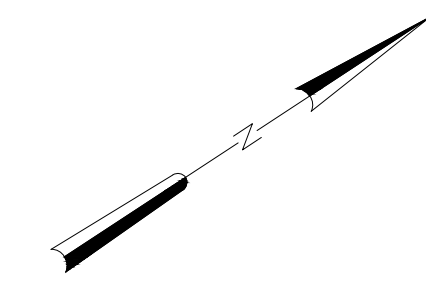
CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

**CEDAR LANE DRAINAGE IMPROVEMENTS**

CIVIL  
TRAFFIC CONTROL PLAN - PHASE 1

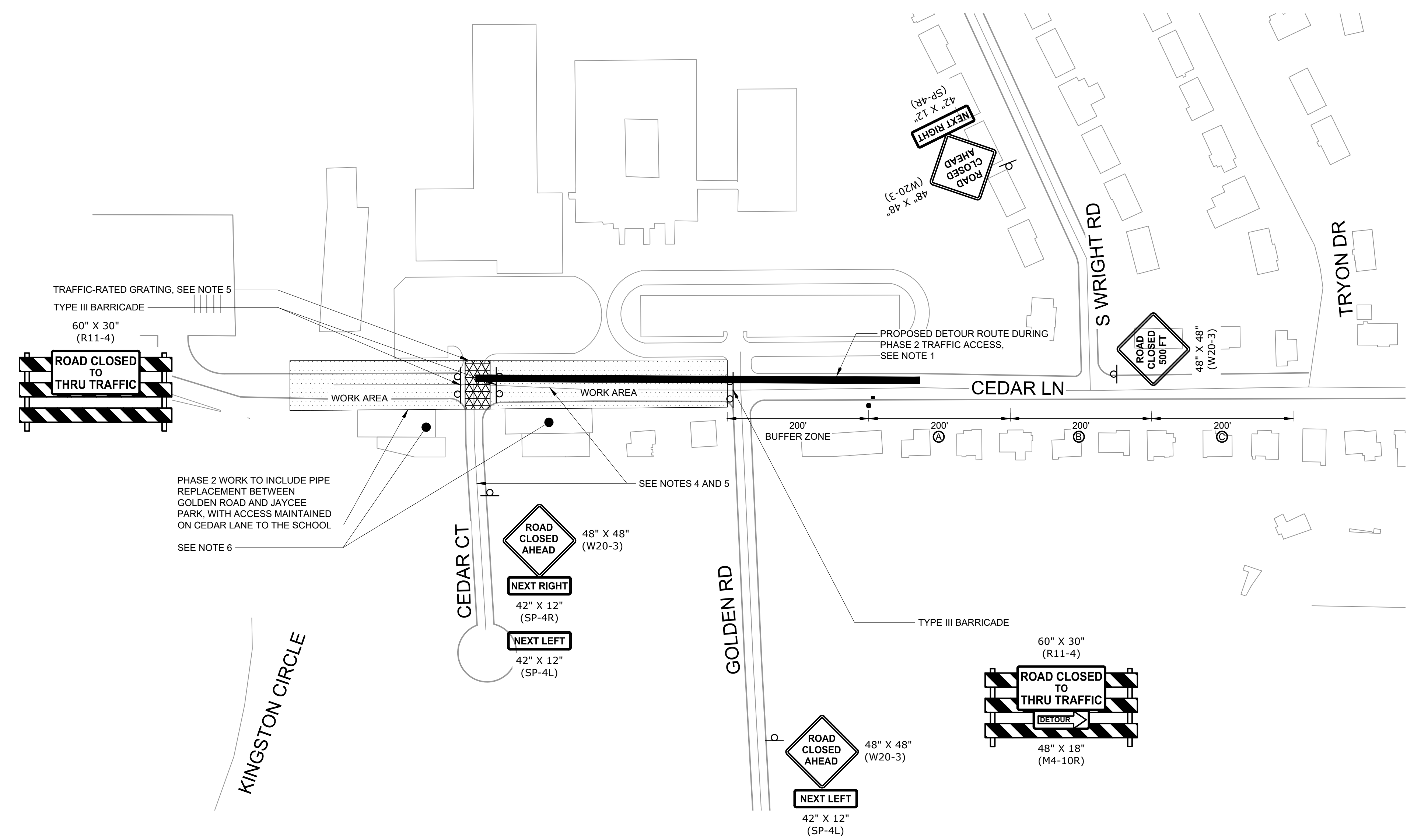
DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C13





**NOTES:**

- CONSTRUCTION SHALL BE PHASED TO ALLOW FOR ACCESS TO THE SCHOOL GROUNDS DURING SCHOOL HOURS. WORK IN THIS PHASE SHALL BE COMPLETED WHILE MAINTAINING ONE-WAY TRAFFIC DURING THE DAY WHILE CONSTRUCTION TASKS PROGRESS. FLAGMAN CONTROL IN WORK ZONE SHALL BE PROVIDED FOR ONE DIRECTIONAL TRAFFIC. NO AUTOMATIC FLAGGING IS ALLOWABLE. ROAD SHALL BE OPENED TO BI-DIRECTIONAL TRAFFIC AT THE CLOSE OF EACH WORK DAY. SEE NCDOT DETAIL 1150.01 ON DWG CD9 FOR FLAGGER REQUIREMENTS.
- CONTRACTOR SHALL SUBMIT PHASED TRAFFIC CONTROL PLANS TO THE CITY FOR APPROVAL PRIOR TO START OF CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS FOR STREET CLOSURES, AND SHALL MEET ALL CITY OF GREENVILLE AND NCDOT STANDARDS FOR TRAFFIC CONTROL, INCLUDING NOTES ON DWG G3.
- PEDESTRIAN ACCESS SHALL BE MAINTAINED ON EAST SIDE OF CEDAR LANE THROUGHOUT CONSTRUCTION PERIOD. TEMPORARY CROSSWALKS, SAFETY FENCING, AND OTHER APPROPRIATE MEASURES SHALL BE INSTALLED AND MAINTAINED PER CITY OF GREENVILLE STANDARDS AND THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION.
- TRAFFIC-RATED GRATING OR EQUAL MEANS SHALL BE PROVIDED TO ALLOW FOR CONTINUAL VEHICULAR AND PEDESTRIAN ACCESS TO ALL RESIDENTIAL PROPERTIES THROUGHOUT CONSTRUCTION.
- CITY TO COORDINATE WITH TENANTS AT 1725 AND 1801 CEDAR LN TO PARK AT SCHOOL PARKING LOT DURING PORTIONS OF PHASE 2 CONSTRUCTION WHERE ACCESS IS REMOVED FROM PARKING LOTS.



PLAN  
SCALE: 1" = 100'



File: Q:\3187\RAIL\3187-003\CAD\_BIM\CIVIL\CEDAR\_LANE\CEDAR\_LANE\DRNAGE\C14.dwg  
 PLOT DATE: 12/28/2021 9:48 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by **Caroline E. Wilson**  
Date: 2021.12.28 15:03:40-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
TRAFFIC CONTROL PLAN - PHASE 2

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	C14



**SEDIMENTATION AND EROSION CONTROL**  
**EROSION CONTROL GUIDE**

ANY EROSION CONTROL DEVICES OR METHODS SHALL BE IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES' EROSION AND SEDIMENTATION CONTROL PLANNING AND DESIGN MANUAL AND ALL AMENDMENTS. THE EROSION CONTROL DEVICES AND METHODS THAT FOLLOW ARE SUPPLEMENTAL TO THE STATE MANUAL. OTHER DEVICES & METHODS NOT INCLUDED IN THE STATE MANUAL, MAY BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

**EROSION CONTROL NOTES:**

- Scheduling of a preconstruction conference with the Engineering Division is required prior to initiating land disturbing activities. For scheduling please call (252) 328-4467. A 24-hour notice is required. No person may initiate a land disturbing activity before notifying the City of the date of the land disturbing activity.
- No land disturbing activity beyond that required to install appropriate erosion control may proceed until erosion control measures are inspected and approved by the City.
- Seeding and mulching or otherwise providing ground cover devices or structures sufficient to restrain erosion for all exposed slopes is required within 21 working days of completing any phase of grading.
- Contractor shall inspect and maintain all erosion control devices on a weekly basis and after each major storm event. Failure to maintain erosion control devices may result in an issuance of stop work order or civil penalties up to \$5,000 per day of violation. Sites utilizing sediment traps must also specify a maximum depth of sediment prior to clean out.
- The City Engineer reserves the right to require additional erosion control measures should the plan or its implementation prove to be inadequate.
- Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations and rules. In addition, local City and County ordinances or rules may also apply to this land disturbing activity. Approval by the City does not supersede any other permit or approval.
  - Please be advised of the rules to protect and maintain existing buffers along watercourses in the Neuse and Tar River basins. These rules are enforced by the Division of Water Quality (DWQ). Direct any questions about the applicability of these rules to your project to the regional water quality supervisor, Washington Regional Office at (252) 946-6481.

**CITY OF GREENVILLE, N.C.**  
 PUBLIC WORKS DEPARTMENT  
 1500 Beatty Street  
 Greenville, North Carolina 27834

USE WITH THE CITY OF GREENVILLE, N.C. STANDARD SPECIFICATIONS ONLY

**EROSION CONTROL GUIDE**

Scale: Not to Scale  
 Sheet # 1 of 3  
 Detail # 310.01

**SEEDING AND MULCHING.**

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

**All Roadway Areas**

<b>March 1 - August 31</b>	<b>September 1 - February 28</b>
50# Tail Fescue	50# Tail Fescue
10# Centipede	10# Centipede
25# Bermudagrass (hulled)	35# Bermudagrass (hulled)
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

**Water and Borrow Locations**

<b>March 1 - August 31</b>	<b>September 1 - February 28</b>
75# Tail Fescue	75# Tail Fescue
25# Bermudagrass (hulled)	35# Bermudagrass (hulled)
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

Note: 50# of Bahiagrass may be substituted for either Centipede or Bermudagrass only upon Engineer's request.

**Approved Tail Fescue Cultivars**

2nd Millennium	Chipper	Focus	Masterpiece	Quest	Titan Ltd.
Avenger	Coronado	Grande II	Matador	Rebel Exeda	Titanium
Bartexas	Coyote	Greenkeeper	Matador GT	Rebel Sentry	Tomahawk
Bartexas II	Davinci	Greystone	Millennium	Regiment II	Taser
Barrera	Dynasty	Inferno	Montauk	Rembrandt	Trooper
Barrington	Dominion	Justice	Mustang 3	Rendition	Turbo
Biltmore	Duster	Jaguar 3	Olympic God	Scorpion	Ultimate
Bingo	Endeavor	Kalahari	Padre	Shelby	Watchdog
Bravo	Escalade	Kentucky 31	Paraiso	Signia	Wolfpack
Cayenne	Falcon II, III, IV & V	Kitty Hawk	Picasso	Silverstar	
Chapel Hill	Fidelity	Kitty Hawk 2000	Piedmont	Southern Choice II	
Chesapeake	Finesse II	Lexington	Pure Gold	Stetson	
Constitution	Firebird	Magellan	Prospect	Tarheel	

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 1500 Beatty Street  
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**EROSION CONTROL GUIDE**

Scale: Not to Scale  
 Sheet # 2 of 3  
 Detail # 310.01

On cut and fill slopes 2:1 or steeper Centipede shall be applied at a rate of 5 pounds per acre and add 20# of Sericoa Lespedeza from January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

All areas seeded and mulched shall be tacked with asphalt. Crimping of straw in lieu of asphalt tack shall not be allowed on projects.

**CRIMPING STRAW MULCH:**

Crimping shall be required on projects adjacent to any section of roadway where traffic is to be maintained or allowed during construction. In areas within six feet of the edge of pavement, straw is to be applied and then crimped. After the crimping operation is complete, an additional application of straw shall be applied and immediately tacked with a sufficient amount of undiluted emulsified asphalt.

Straw mulch shall be sufficient length and quality to withstand the crimping operation.

Crimping equipment including power source shall be subject to the approval of the Engineer providing that maximum spacing of crimper blades shall not exceed 8".

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**EROSION CONTROL GUIDE**

Scale: Not to Scale  
 Sheet # 3 of 3  
 Detail # 310.01

**2'-6" CURB AND GUTTER**  
 30" CURB AND GUTTER SHALL BE PLACED IN NCDOT R/W.

**1'-6" CURB AND GUTTER**  
 (TO BE USED IN MEDIANS ONLY)

**2'-0" CURB AND GUTTER**  
 24" CURB AND GUTTER SHALL BE PLACED IN RESIDENTIAL DEVELOPMENTS OR AS PROVIDED IN SEC. 490 OF THIS MANUAL.

**TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER**

**NOTES:**

- Contraction joints shall be placed at 10' intervals, except that 15' spacing may be used when a machine is used or when satisfactory support for the face form can be obtained without the use of templates at 10' intervals. Joint spacing may be altered by the engineer to prevent uncontrolled cracking.
- Contraction joints may be installed by the use of templates or formed by other approved methods. Where such joints are not formed by templates, a minimum depth of 1 1/2" shall be obtained.
- All contraction joints shall be filled with joint filler.
- Expansion joints shall be spaced at 90' intervals, and adjacent to all rigid objects.
- All curb and gutters are to be poured with class "A" concrete (3,000 PSI).
- Flexible forms are to be used when radius is less than 200'.

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**STANDARD CURB & GUTTER**

Scale: Not to Scale  
 Sheet # 1 of 1  
 Detail # 411.01

**STANDARD CATCH BASIN FRAME 2'-0" IN CURB AND GUTTER**

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USE WITH THE CITY OF GREENVILLE, N.C. STANDARD SPECIFICATIONS ONLY

**STANDARD CATCH BASIN FRAME 2'-0" IN CURB AND GUTTER**

Scale: Not to Scale  
 Sheet # 1 of 1  
 Detail # 411.03

**CONCRETE VALLEY GUTTER**

**CITY OF GREENVILLE, N.C.**  
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**CONCRETE VALLEY GUTTER**

Scale: Not to Scale  
 Sheet # 1 of 1  
 Detail # 411.05

**TYP. CONC. DRIVEWAY (COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, MULTIFAMILY)**

**DRIVEWAY DIM'S.**

OPERATION	MIN.	MAX.
RADIUS	12'	18'
ONE WAY	12'	18'
TWO WAY	24'	36'

**NOTES:**

- All concrete to be 3,000 PSI compressive strength.
- All driveways, sidewalks to be removed to the nearest joint beyond new construction or cut with saw and removed. Saw cut or joint to be perpendicular to edge of existing pavement.
- All driveways must meet the current city driveway regulations and NCDOT requirements for spacing, sight distance, and offsets from property lines and intersections. Radii must be minimum 5 feet or the width of the planting strip, whichever is greater.
- Pavers used in driveway must have a thickness of 3 inches.
- Algebraic difference in grade ("A") between slopes shall be 8% or less.
- Special conditions may warrant exceptions to this detail. Subject to approval by City Engineer.

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**TYP. CONC. DRIVEWAY (COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, MULTIFAMILY)**

Scale: Not to Scale  
 Sheet # 1 of 1  
 Detail # 420.01

**CURB RAMP AND EXISTING SIDEWALK**

**NOTES:**

- CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
- LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
- COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
- REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
- TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
- CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
- CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
- ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
- CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
- CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
- CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
- TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
- SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'x5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
- CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
- PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
- PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
- CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

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USE WITH THE CITY OF GREENVILLE, N.C. STANDARD SPECIFICATIONS ONLY

**STANDARD CURB & GUTTER**

Scale: Not to Scale  
 Sheet # 1 of 1  
 Detail # 411.01

PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by **Christine Wilson**  
 Date: 2021.12.28 15:03:45-05'00'

**Hazen**

HAZEN AND SAWYER  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

DATE: JANUARY 2022

HAZEN NO.: 31187-003

CONTRACT NO.:

DRAWING NUMBER:

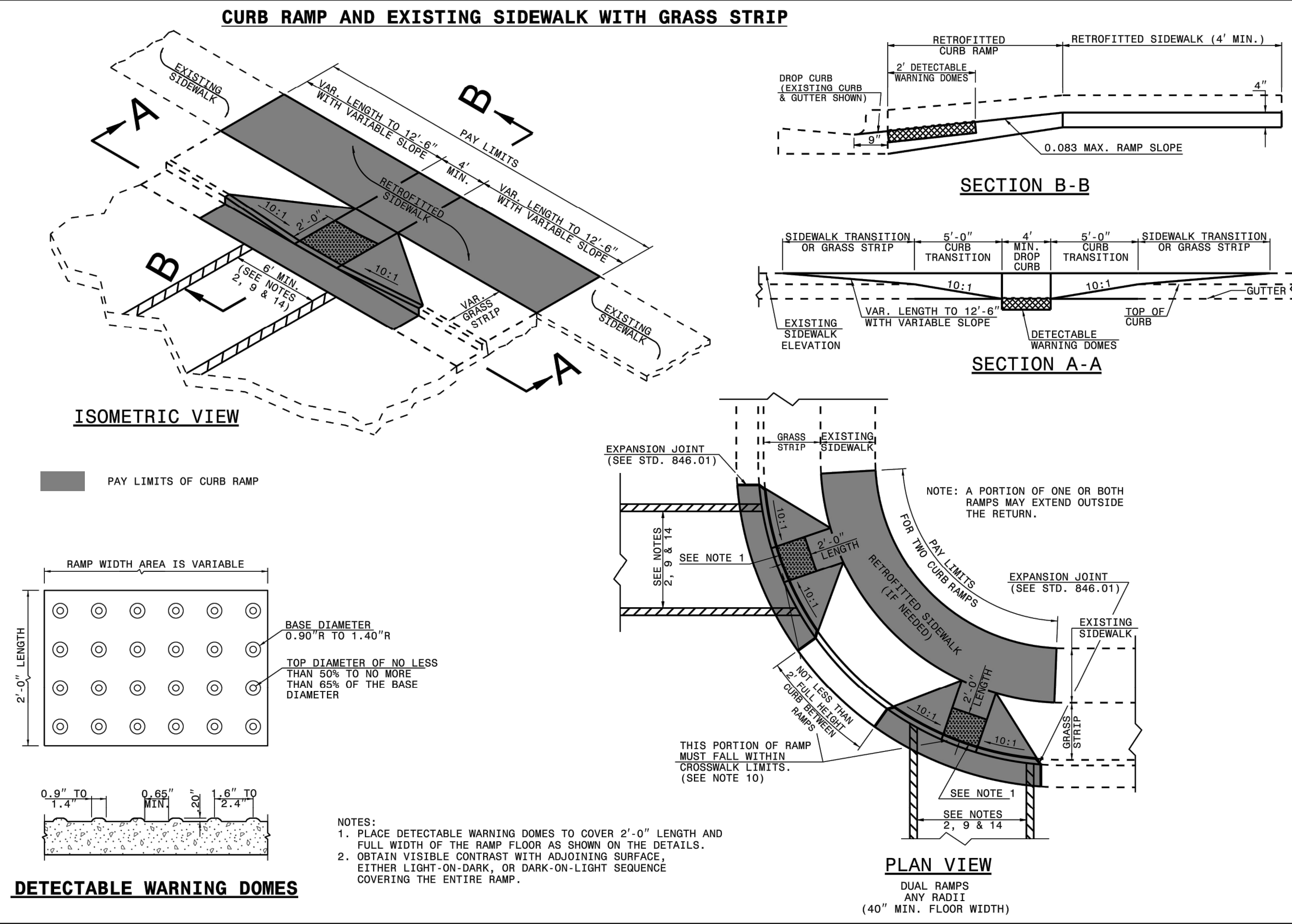
CIVIL  
 STANDARD DETAILS - SHEET 1

CD1

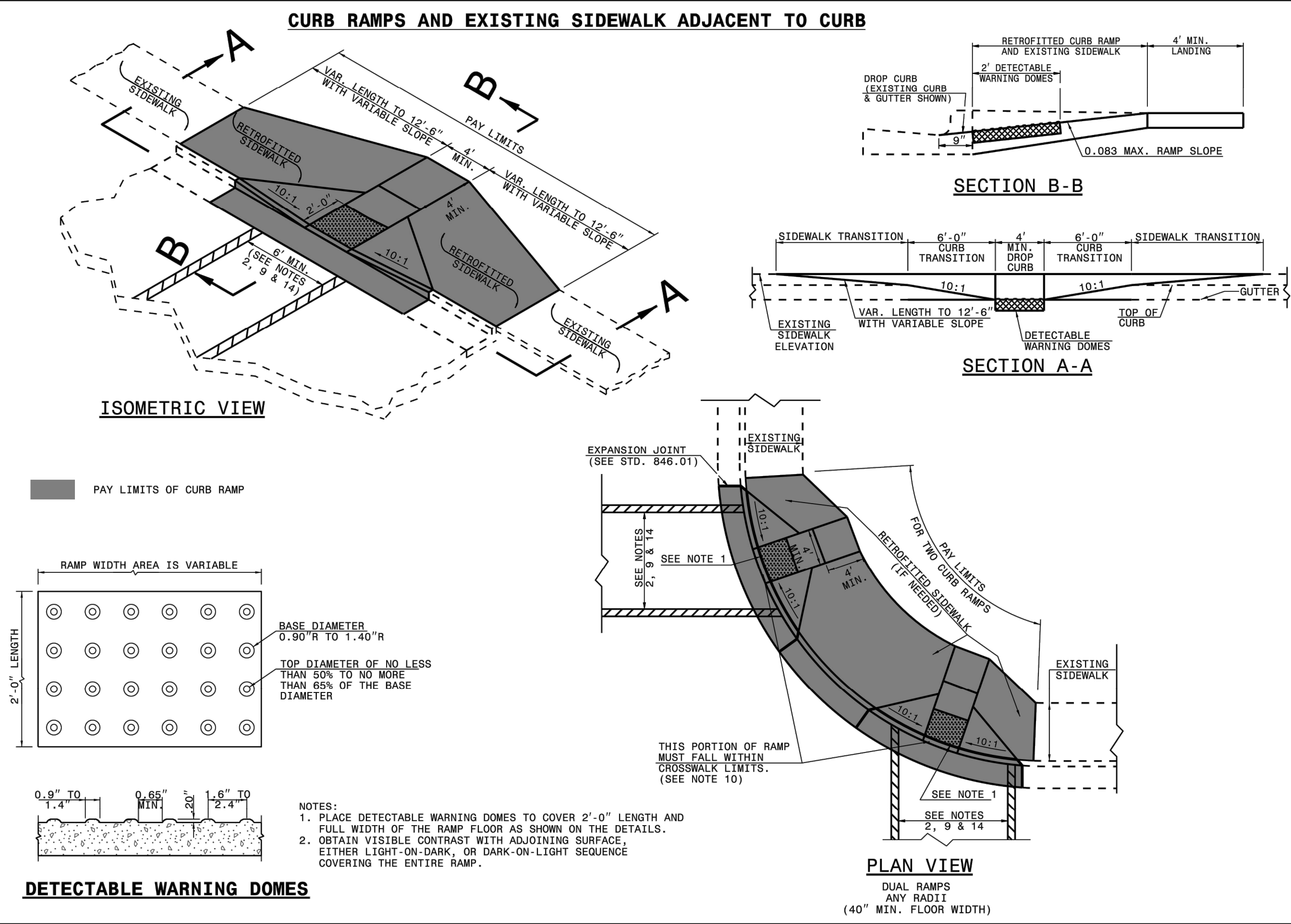
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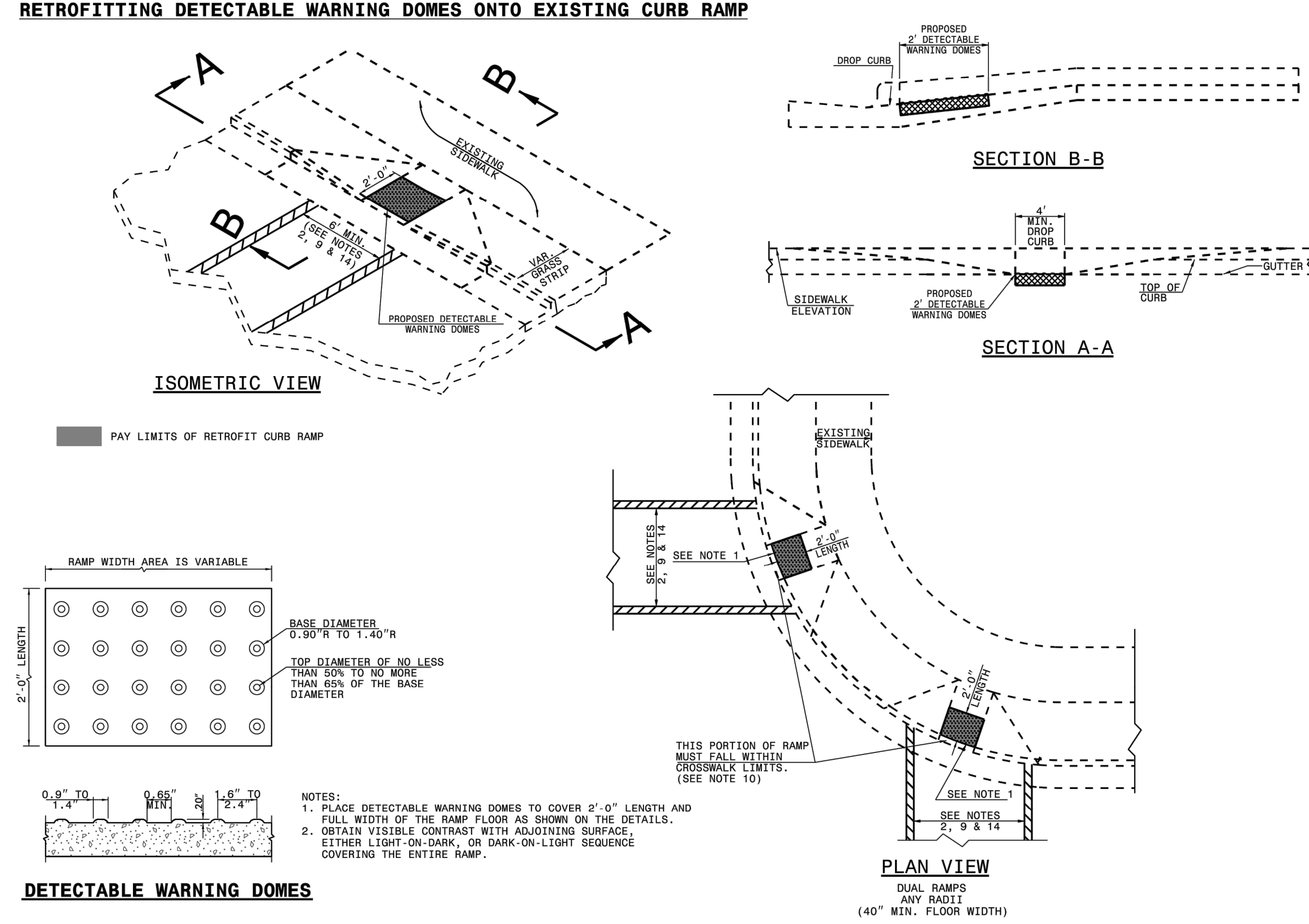
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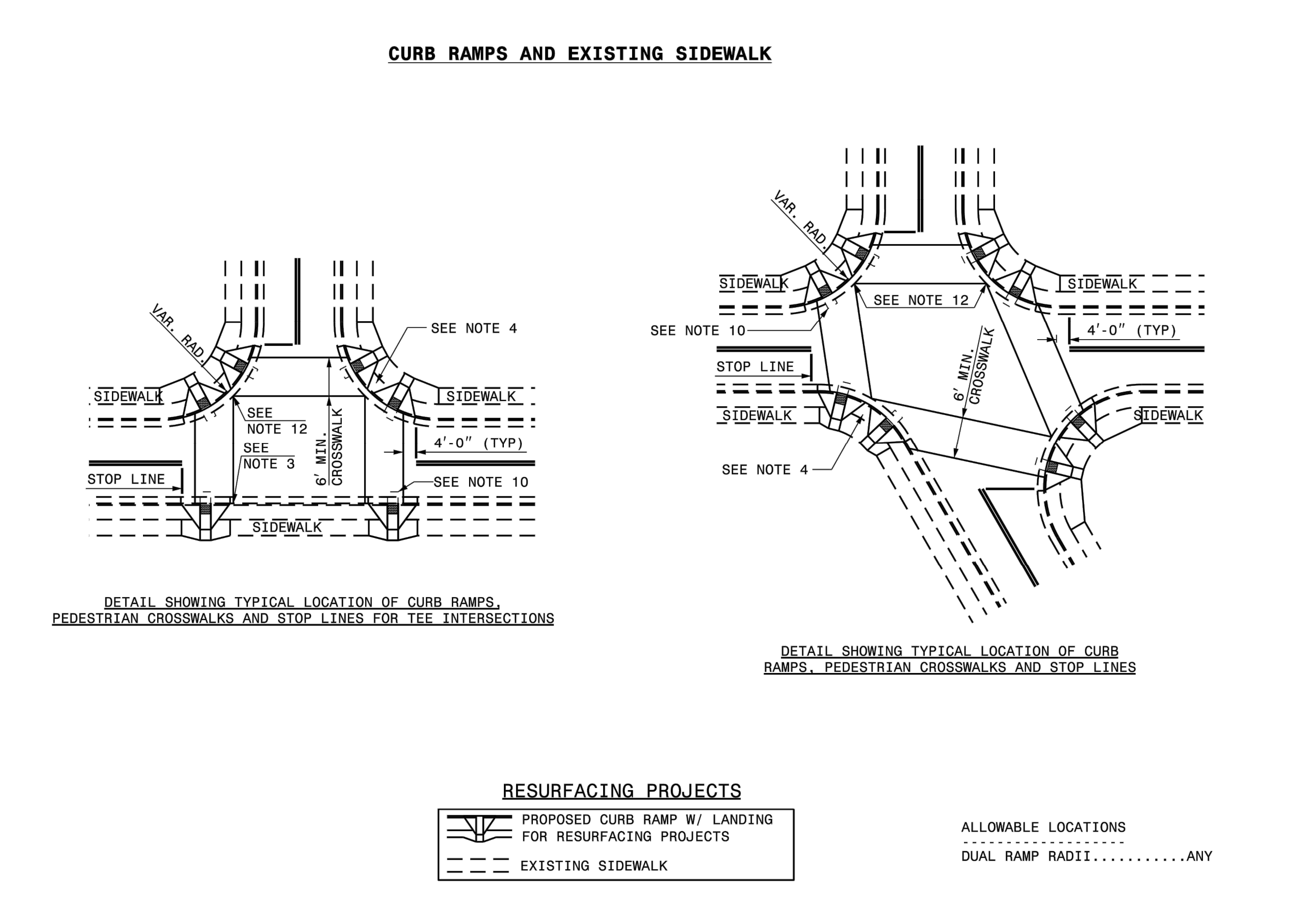
1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR CURB RAMP EXISTING CURB AND GUTTER  
 SHEET 1 OF 5  
**848.06**



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR CURB RAMP EXISTING CURB AND GUTTER  
 SHEET 2 OF 5  
**848.06**



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR CURB RAMP EXISTING CURB AND GUTTER  
 SHEET 3 OF 5  
**848.06**



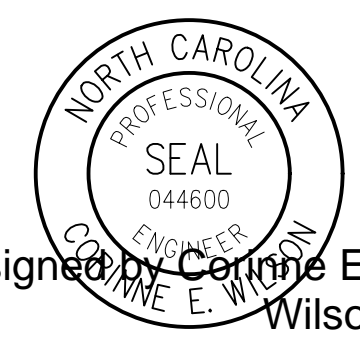
1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR CURB RAMP EXISTING CURB AND GUTTER  
 SHEET 4 OF 5  
**848.06**

NOTE:  
 SEE DWG CD1 FOR CONTINUATION  
 OF NCDOT STD DETAIL 848.06.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION  
 Digitally signed by Corinne E. Wilson  
 Date: 2021.12.28 15:03:51-05'00'



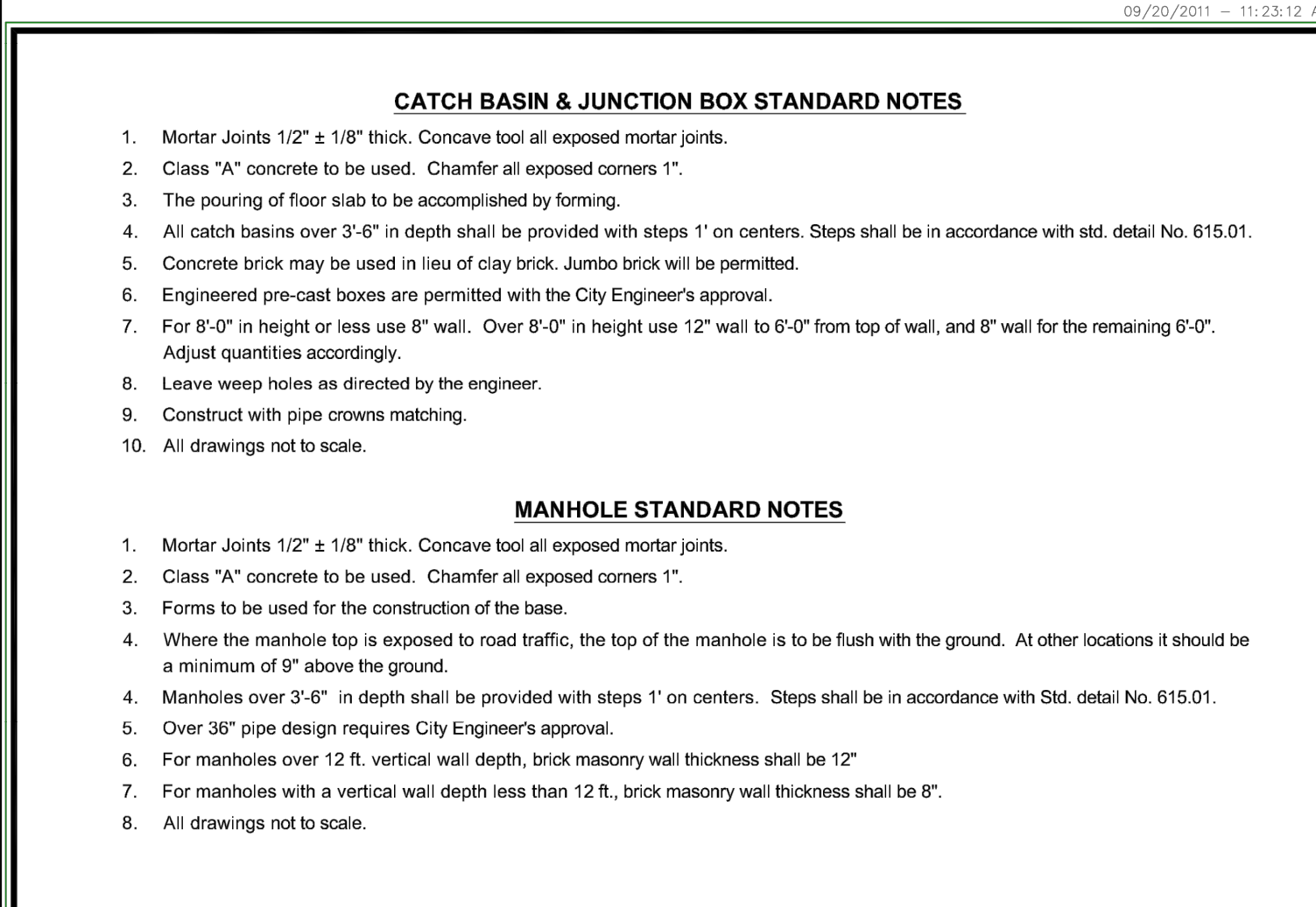
**Hazen**  
 HAZEN AND SAWYER  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA  
 CEDAR LANE DRAINAGE IMPROVEMENTS

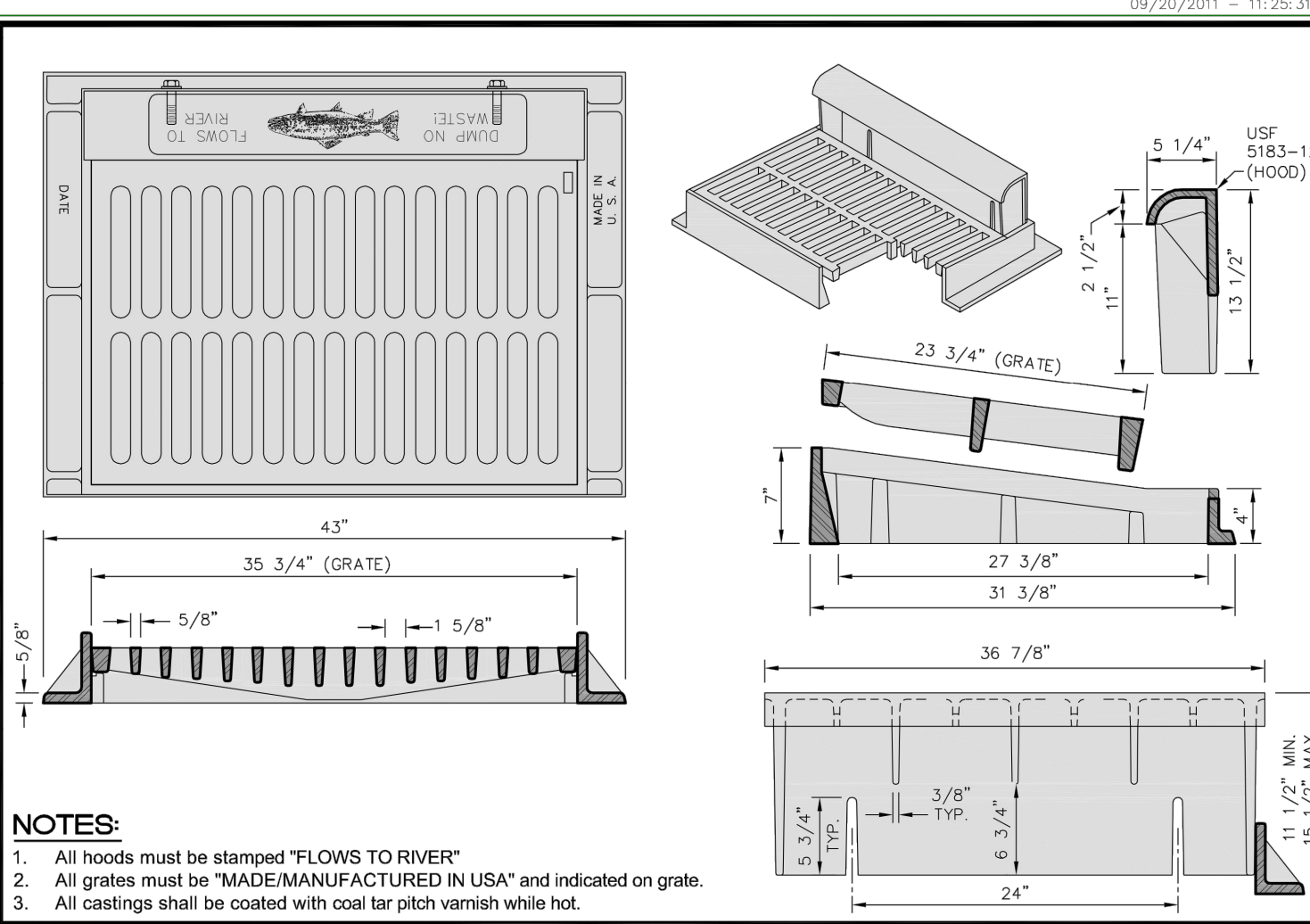
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DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	CD2

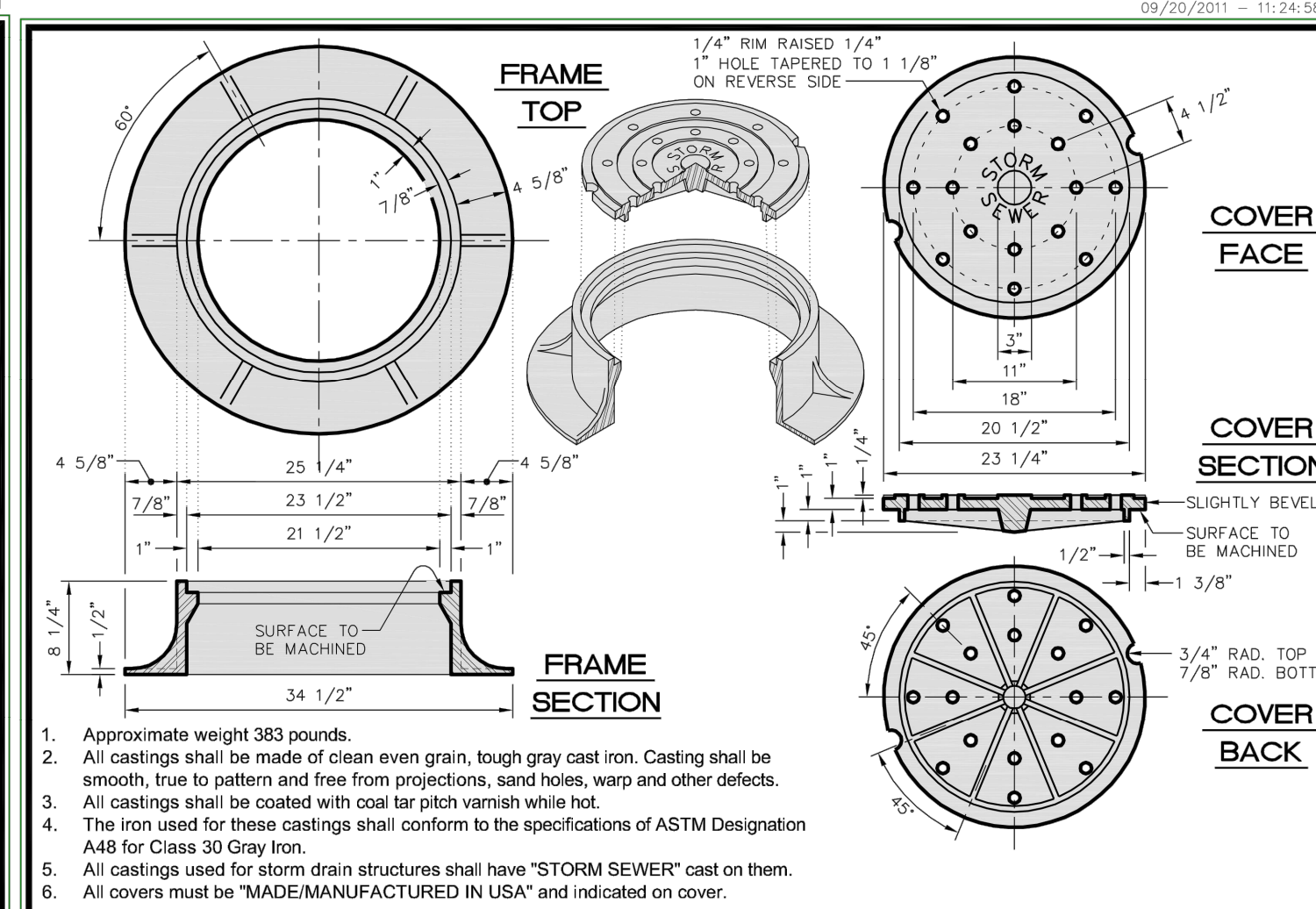




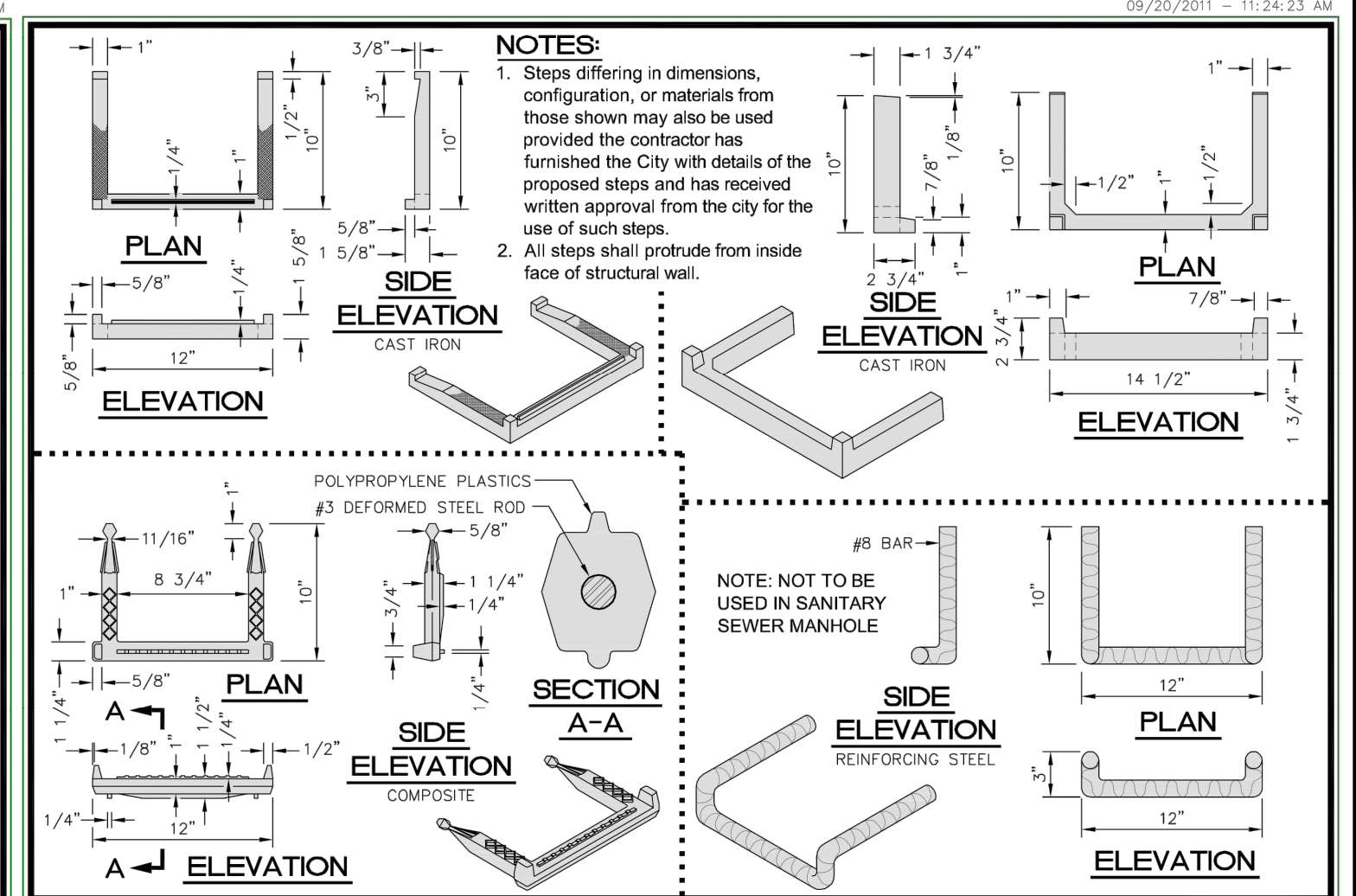
<b>CITY OF GREENVILLE, N.C.</b> PUBLIC WORKS DEPARTMENT 1500 Beatty Street Greenville, North Carolina 27834		No. 1 Date 9/16/11 Description APPROVAL
Scale: not to scale	Sheet # 1 of 1	Dwg. # 610.01



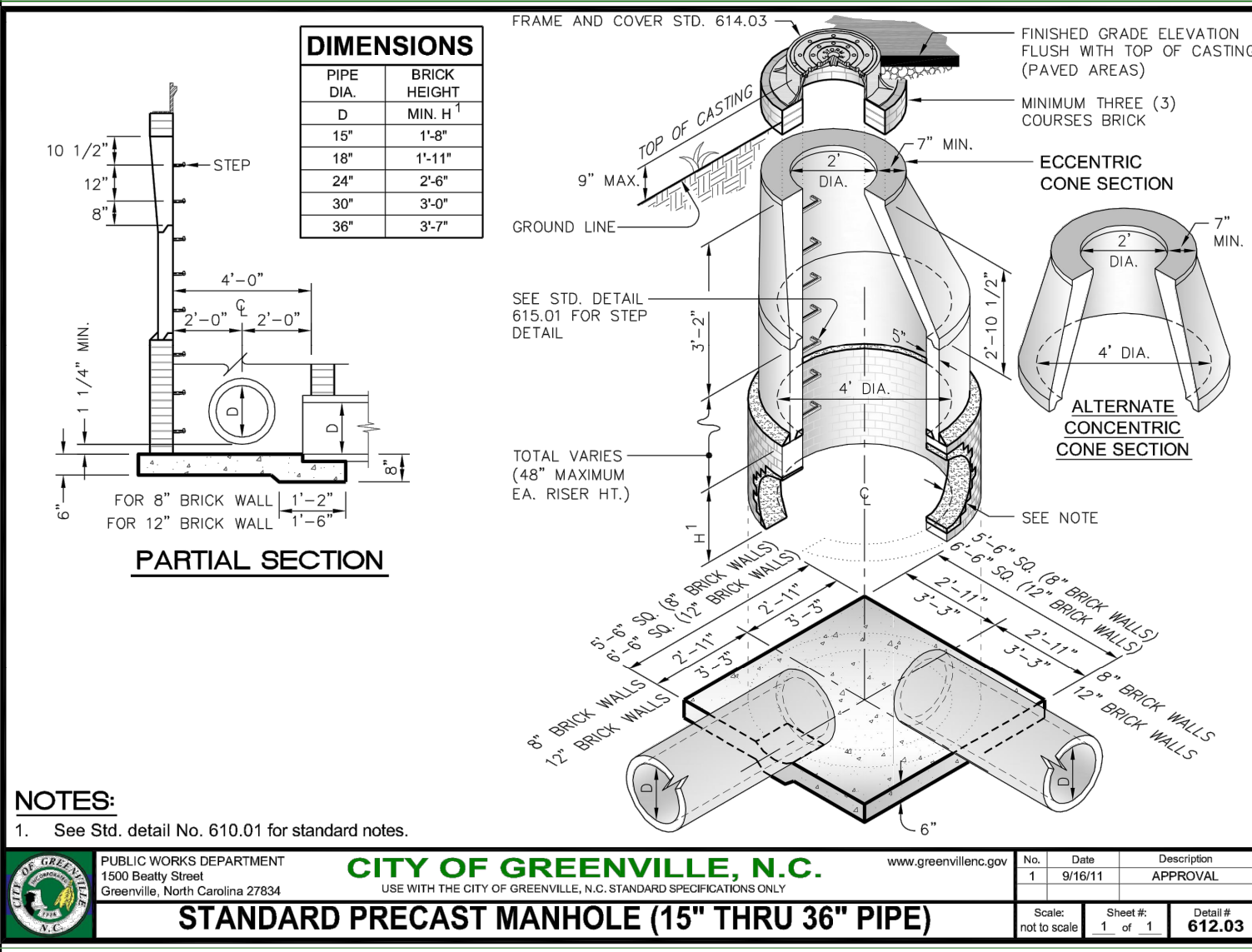
<b>CITY OF GREENVILLE, N.C.</b> PUBLIC WORKS DEPARTMENT 1500 Beatty Street Greenville, North Carolina 27834		No. 1 Date 9/16/11 Description APPROVAL
Scale: not to scale	Sheet # 1 of 1	Dwg. # 614.01



<b>CITY OF GREENVILLE, N.C.</b> PUBLIC WORKS DEPARTMENT 1500 Beatty Street Greenville, North Carolina 27834		No. 1 Date 9/16/11 Description APPROVAL
Scale: not to scale	Sheet # 1 of 1	Dwg. # 614.03



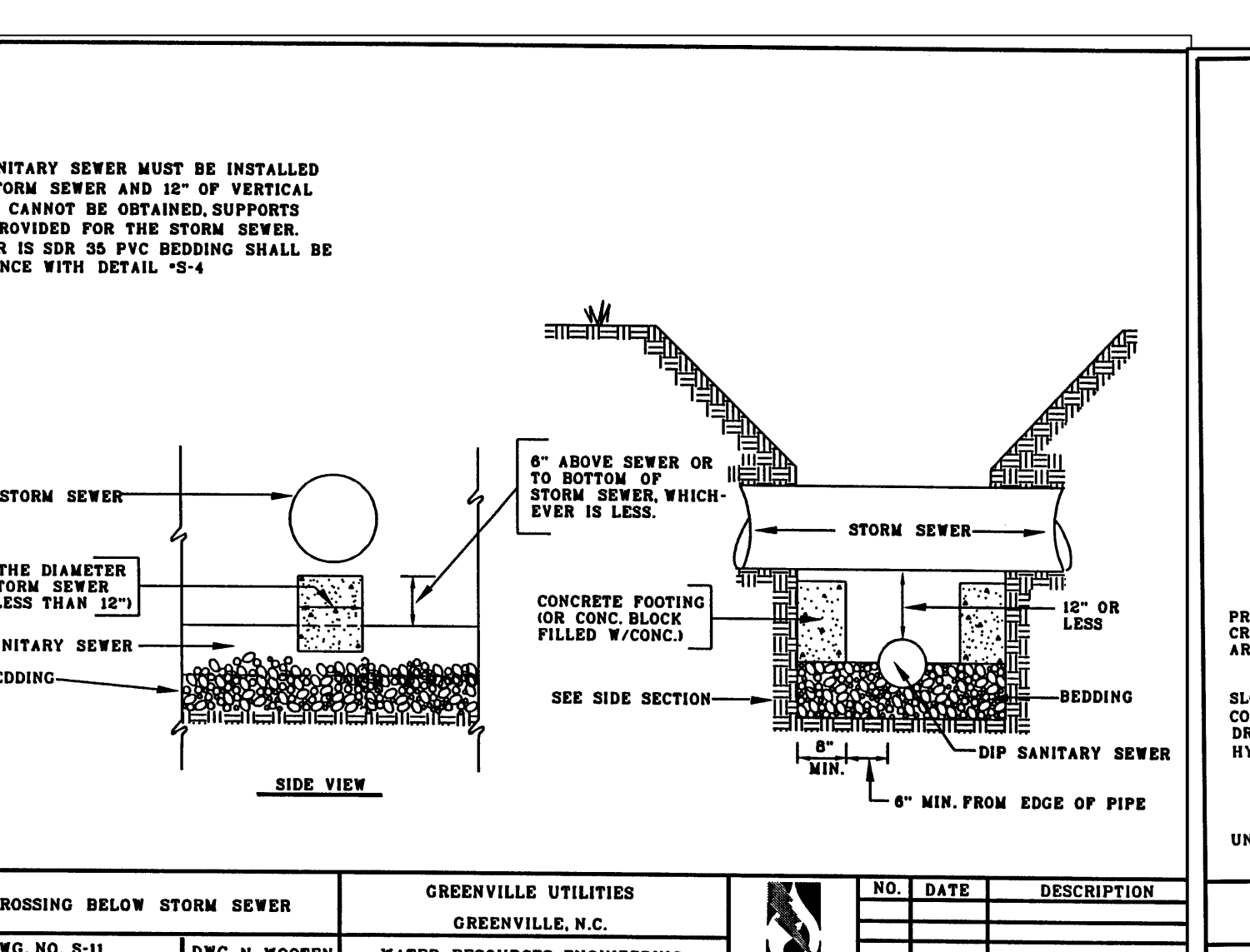
<b>CITY OF GREENVILLE, N.C.</b> PUBLIC WORKS DEPARTMENT 1500 Beatty Street Greenville, North Carolina 27834		No. 1 Date 9/16/11 Description APPROVAL
Scale: not to scale	Sheet # 1 of 1	Dwg. # 615.01



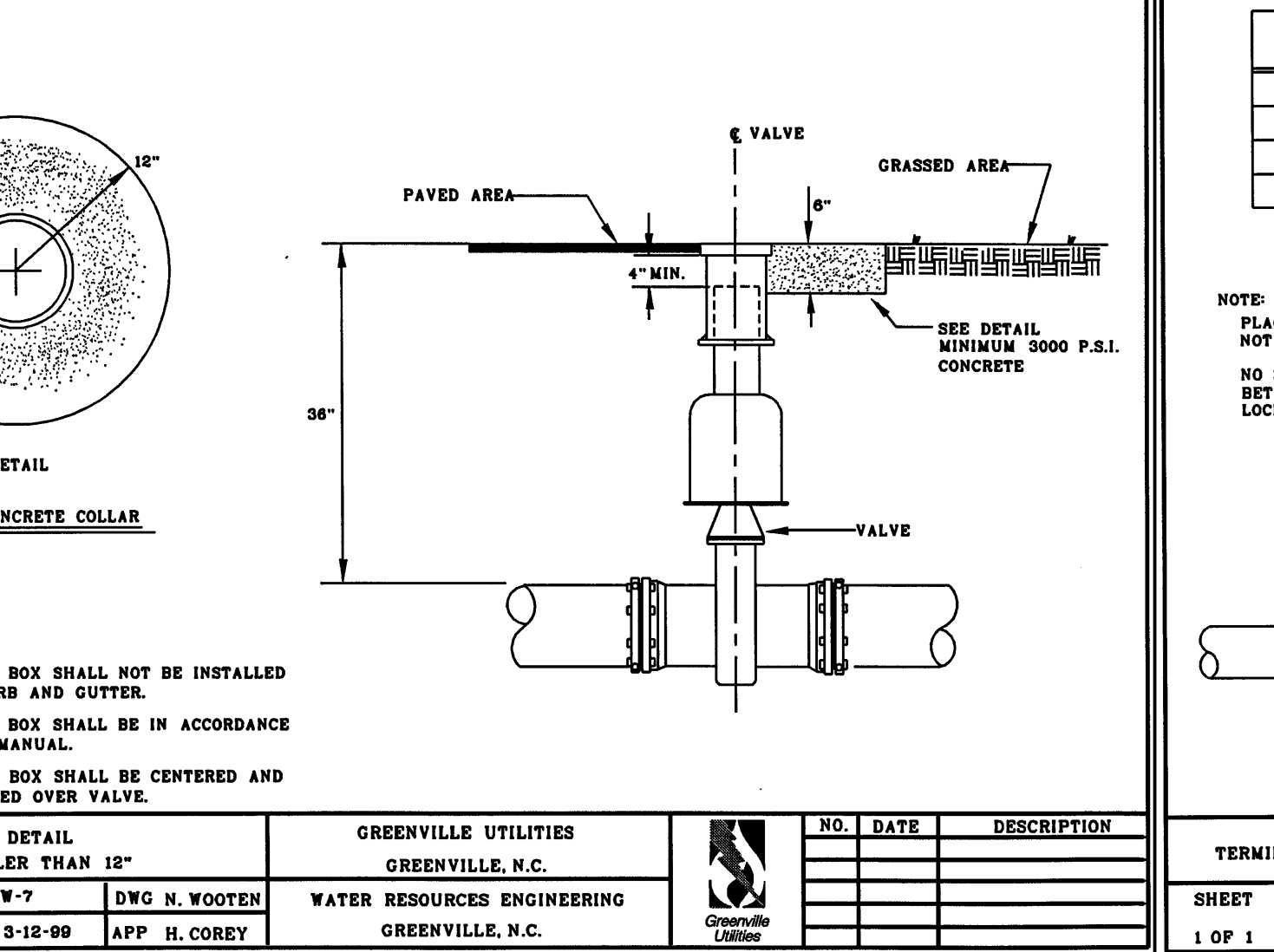
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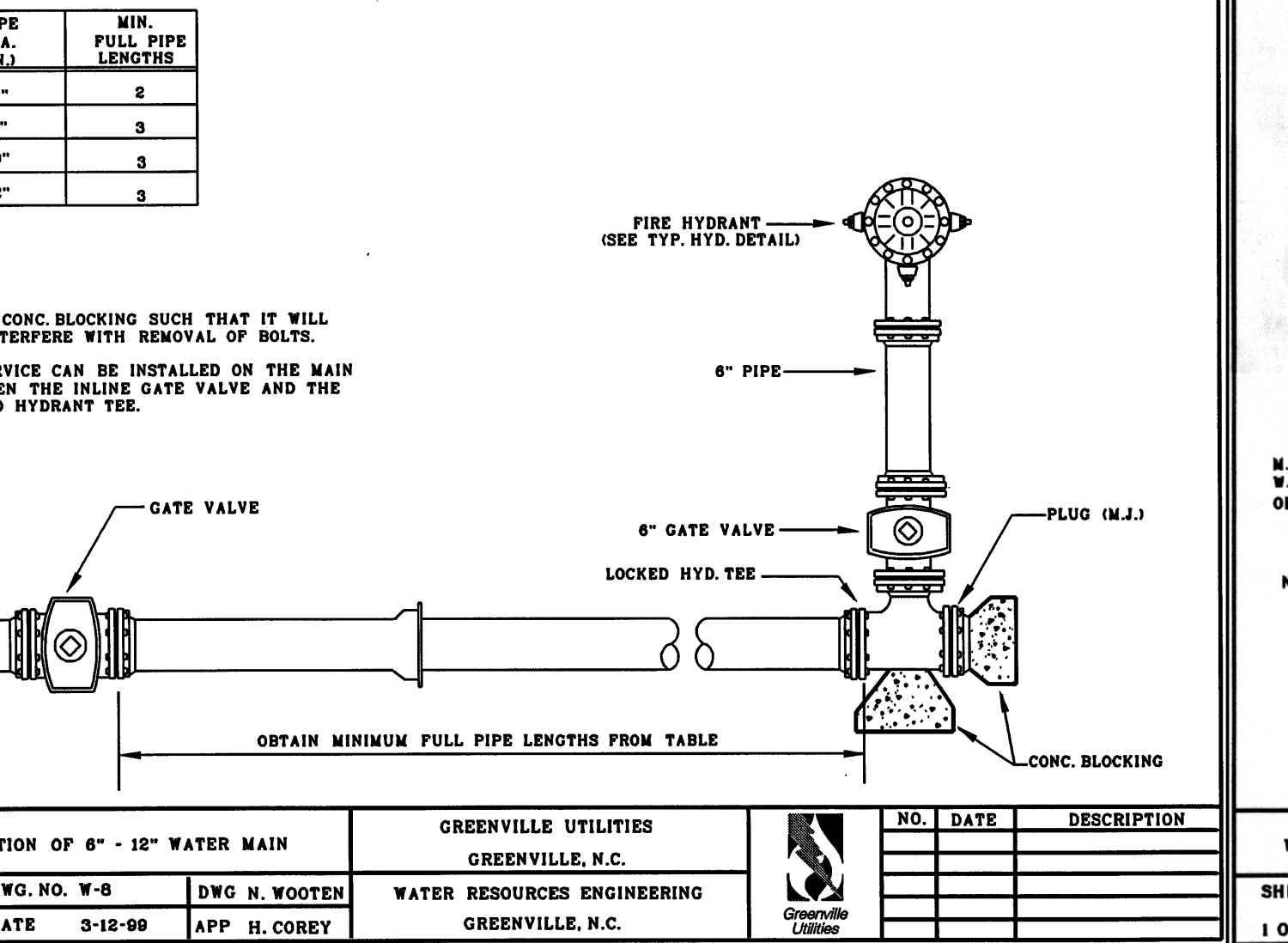
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SHEET DWG. NO. S-11	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.
1 OF 1	DATE 3-18-99	APP. H. COREY



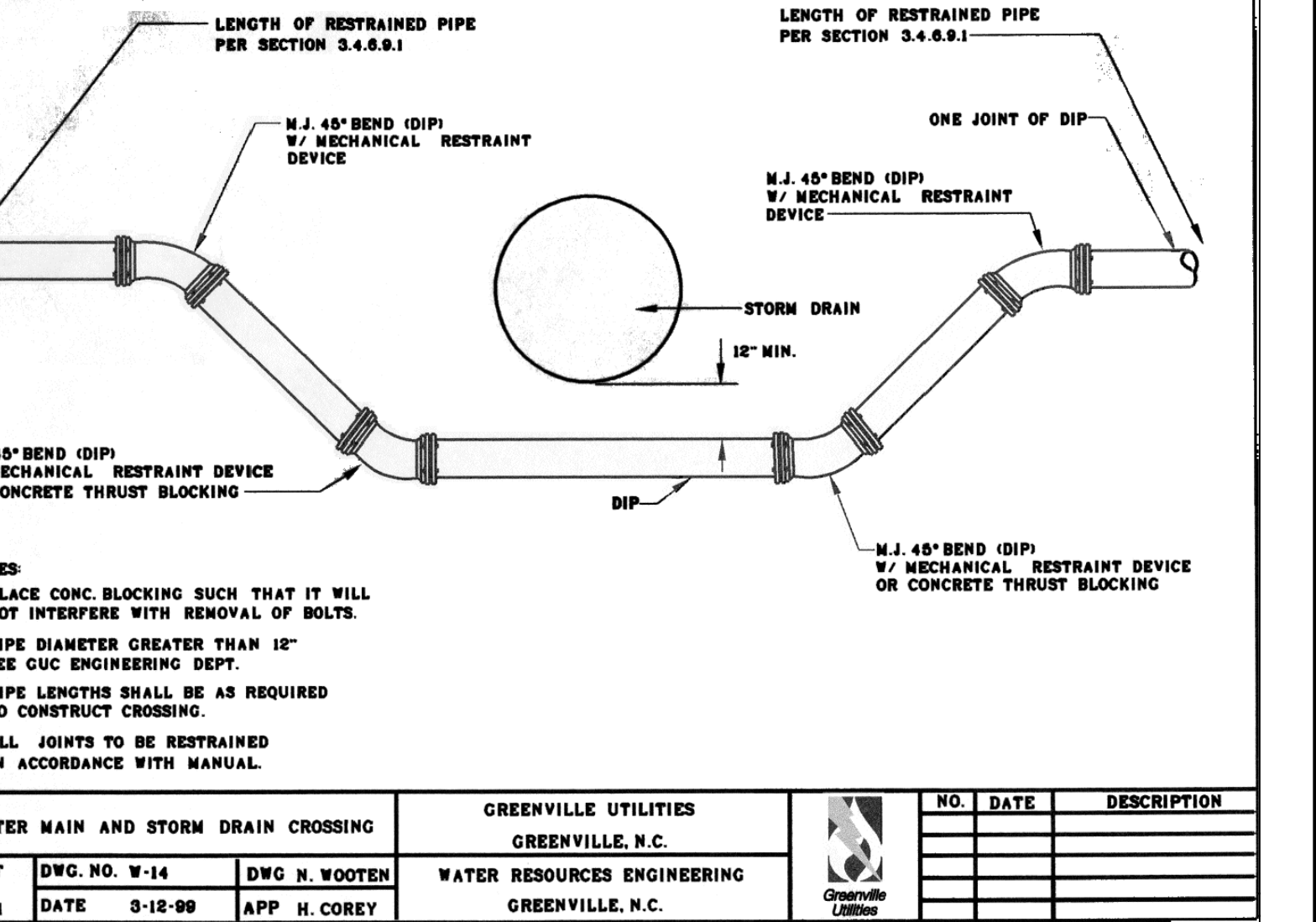
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SHEET DWG. NO. W-4	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.
1 OF 1	DATE 3-12-99	APP. H. COREY



<b>GREENVILLE UTILITIES</b> GREENVILLE, N.C.		NO. DATE DESCRIPTION
SHEET DWG. NO. W-7	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.
1 OF 1	DATE 3-12-99	APP. H. COREY



<b>GREENVILLE UTILITIES</b> GREENVILLE, N.C.		NO. DATE DESCRIPTION
SHEET DWG. NO. W-8	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.
1 OF 1	DATE 3-12-99	APP. H. COREY



<b>GREENVILLE UTILITIES</b> GREENVILLE, N.C.		NO. DATE DESCRIPTION
SHEET DWG. NO. W-14	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.
1 OF 1	DATE 3-12-99	APP. H. COREY

PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corinne E. Wilson  
 Date: 2021.12.28 15:03:56-05'00'

**Hazen**  
 HAZEN AND SAWYER  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

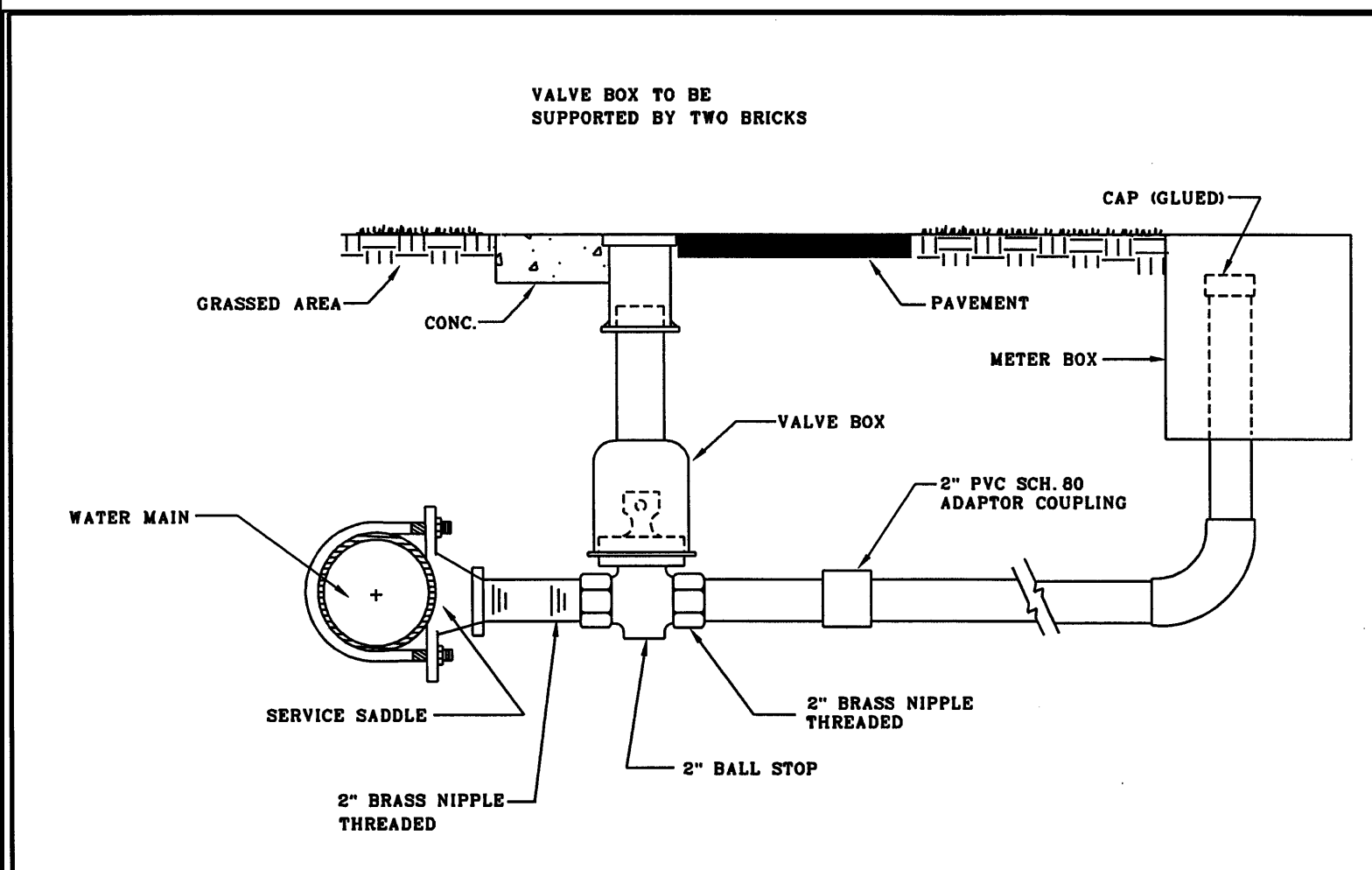
CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

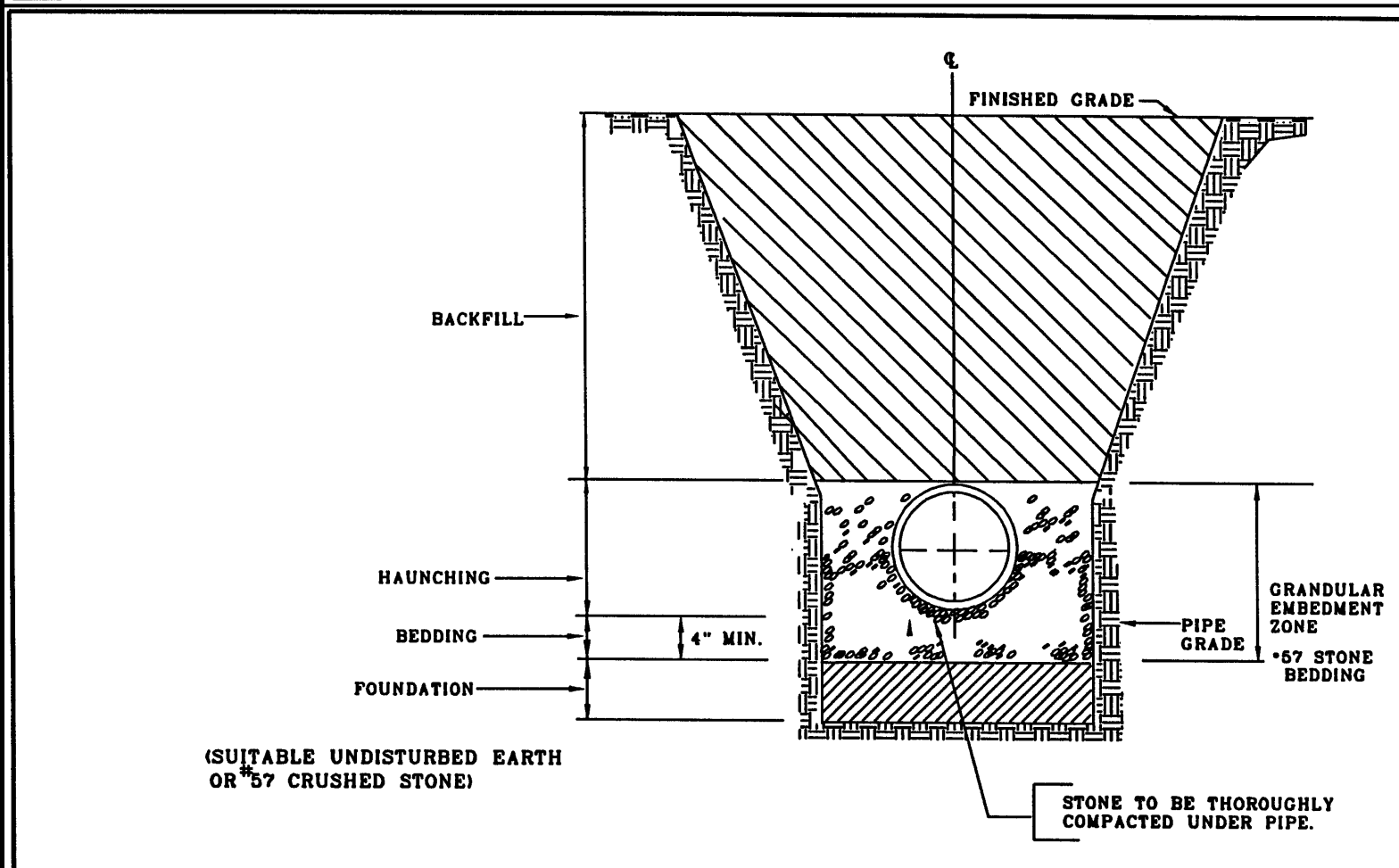
CIVIL  
 STANDARD DETAILS - SHEET 3

DATE: JANUARY 2022  
 HAZEN NO.: 31187-003  
 CONTRACT NO.:  
 DRAWING NUMBER:  
 CD3

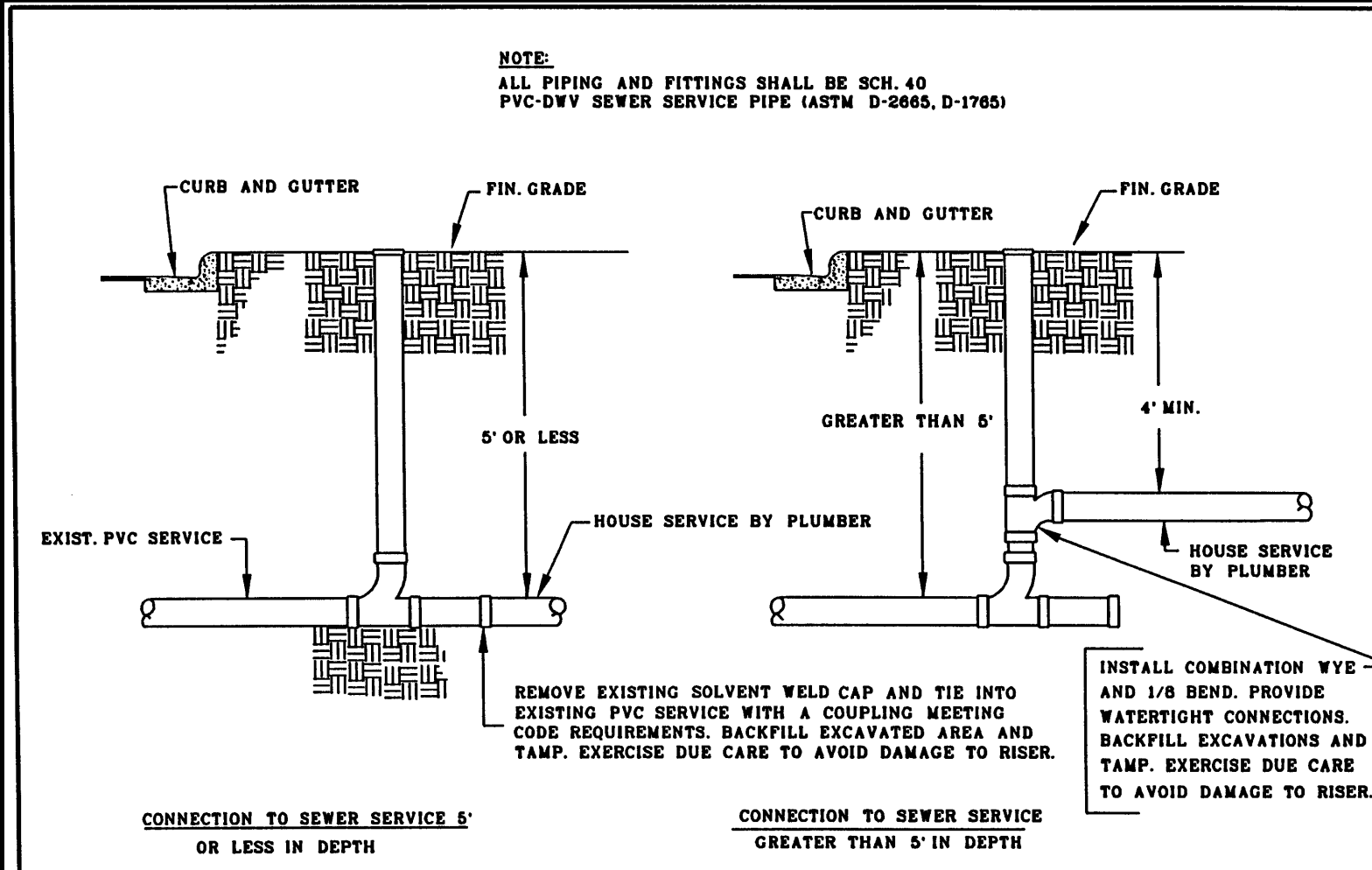




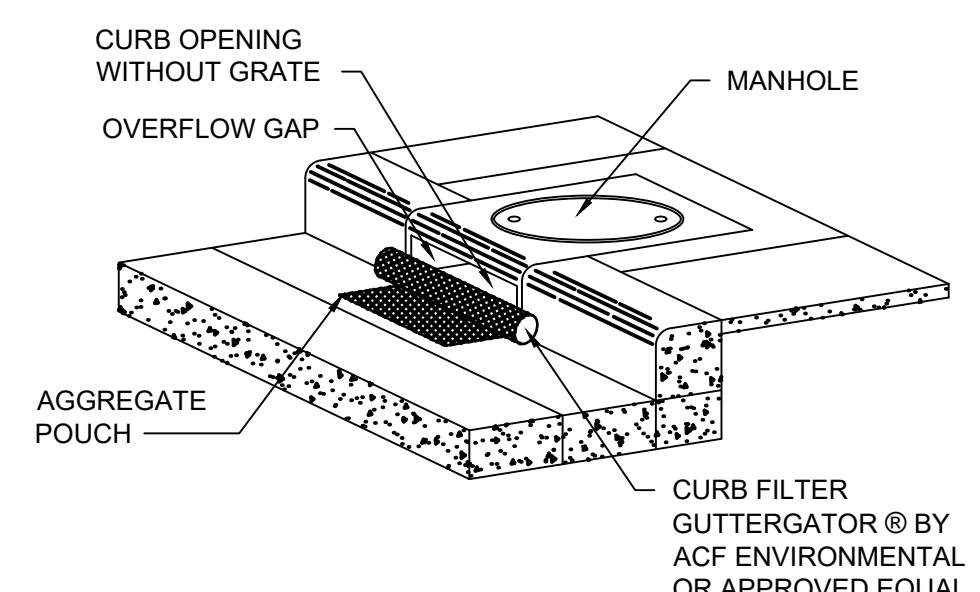
TYPICAL 1-1/2" AND 2" WATER SERVICE CONNECTION		GREENVILLE UTILITIES GREENVILLE, N.C.	NO. DATE DESCRIPTION
SHEET DWG. NO. W-3	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.	
1 OF 1 DATE 3-12-99	APP. H. COREY		



TRENCH SECTION DETAIL FOR THE INSTALLATION OF PVC SANITARY SEWER SERVICE PIPE - SCH40 DWV		GREENVILLE UTILITIES GREENVILLE, N.C.	NO. DATE DESCRIPTION
SHEET DWG. NO. S-10	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.	
1 OF 1 DATE 3-12-99	APP. H. COREY		



PVC SEWER SERVICE CONNECTION		GREENVILLE UTILITIES GREENVILLE, N.C.	NO. DATE DESCRIPTION
SHEET DWG. NO. S-16	DWG. N. WOOTEN	WATER RESOURCES ENGINEERING GREENVILLE, N.C.	
1 OF 1 DATE 3-12-99	APP. H. COREY		



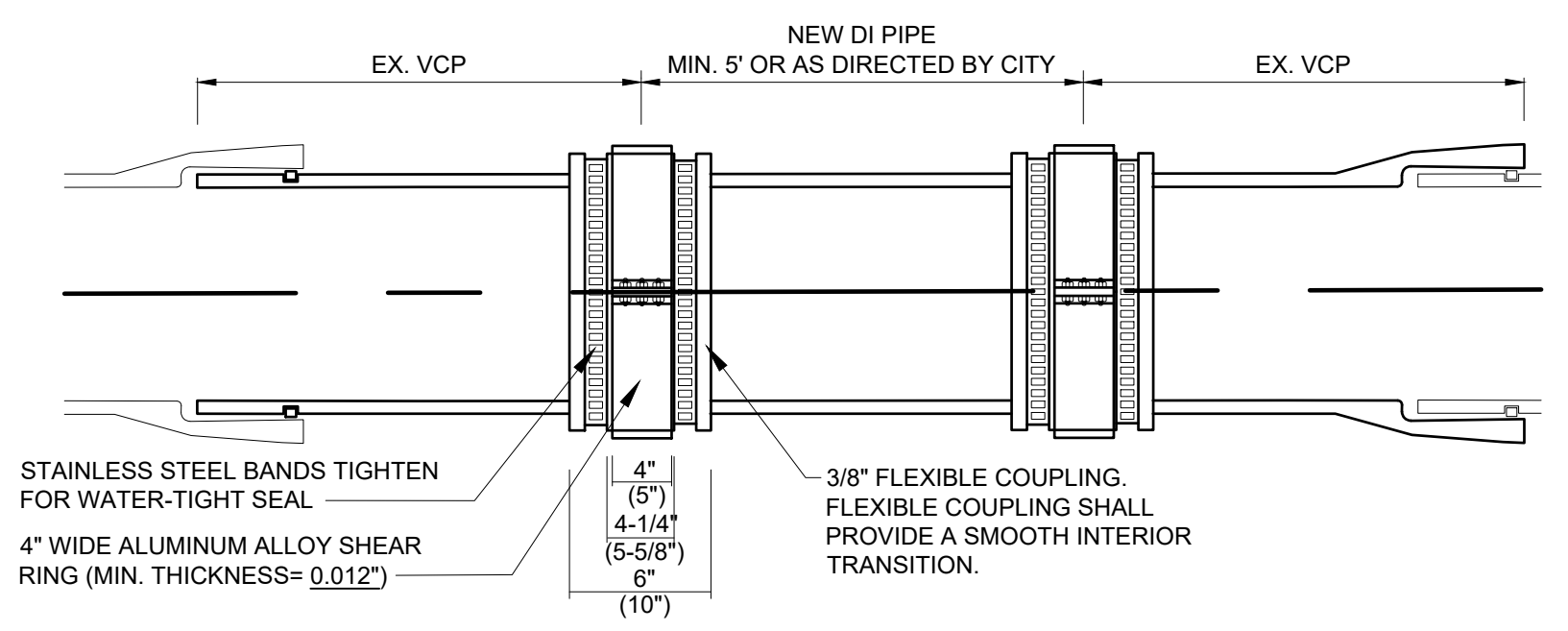
- NOTES:
- INSTALL CURB FILTERS AT ALL INLETS WITHOUT GRATES TO KEEP SILT, SEDIMENT AND CONSTRUCTION DEBRIS OUT OF THE STORM SYSTEM.
  - THE CURB FILTER SHALL BE DANDY CURB AS MANUFACTURED BY DANDY PRODUCTS INC., OR EQUAL. SUBMIT SHOP A DRAWING FOR THE CURB FILTERS.
  - THE CURB FILTER SHALL FORM OF A CYLINDRICAL TUBE PLACED IN FRONT OF AND EXTENDING BEYOND THE INLET OPENING ON BOTH SIDES.
  - THE CURB FILTER SHALL HAVE A POUCH ON THE STREET SIDE OF THE UNIT FOR STONE AGGREGATE TO HOLD THE FILTER IN PLACE.
  - THE CURB FILTER SHALL BE CONSTRUCTED OF A HIGH VISIBILITY ORANGE MONOFILAMENT FABRIC.
  - FILL POUCH WITH #57 STONE AGGREGATE TO A LEVEL (AT LEAST HALF-FULL) THAT WILL KEEP UNIT IN PLACE DURING A RAIN EVENT AND CREATE A SEAL BETWEEN THE CURB FILTER AND THE SURFACE OF THE STREET.
  - CENTER THE UNIT AGAINST CURB OR MEDIAN INLET OPENING SO THAT THE CURB SIDE OF THE UNIT CREATES A SEAL WITH THE CURB OR MEDIAN BARRIER AND INLET STRUCTURE. THERE WILL BE APPROXIMATELY TWELVE (12) INCHES OF THE INLET PROTECTION UNIT OVERHANGING ON EACH SIDE OF THE OPENING.
  - THE CONTRACTOR SHALL REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF UNIT AFTER EACH RAIN EVENT.

CURB INLET PROTECTION  
C-31-0414

RESULTANT THRUST AT FITTING AT 150 PSI WATER PRESSURE		TYPES OF THRUST BLOCKING			
NOM. PIPE DIA.	DEAD END	90° BEND	45° BEND	SE-1/2"	SE-1/4"
4"	2,700	3,800	2,100	1,100	650
6"	6,800	8,000	4,300	2,800	1,100
8"	9,700	12,800	7,400	3,800	1,800
10"	14,500	20,500	11,100	5,700	2,900
12"	20,500	29,000	15,700	8,000	4,000
14"	27,800	39,000	21,200	11,000	5,400
16"	36,700	50,400	27,300	14,000	7,000
18"	44,800	63,400	34,400	17,500	8,800
20"	55,000	77,000	42,100	21,000	10,800
24"	78,500	110,000	60,000	31,800	15,400
30"	120,000	170,000	92,300	47,100	23,600
36"	172,800	244,400	132,300	67,500	33,900
42"	233,300	330,000	178,800	91,200	45,700
48"	304,000	430,000	232,700	118,800	59,800
64"	384,100	543,800	294,000	149,000	75,300

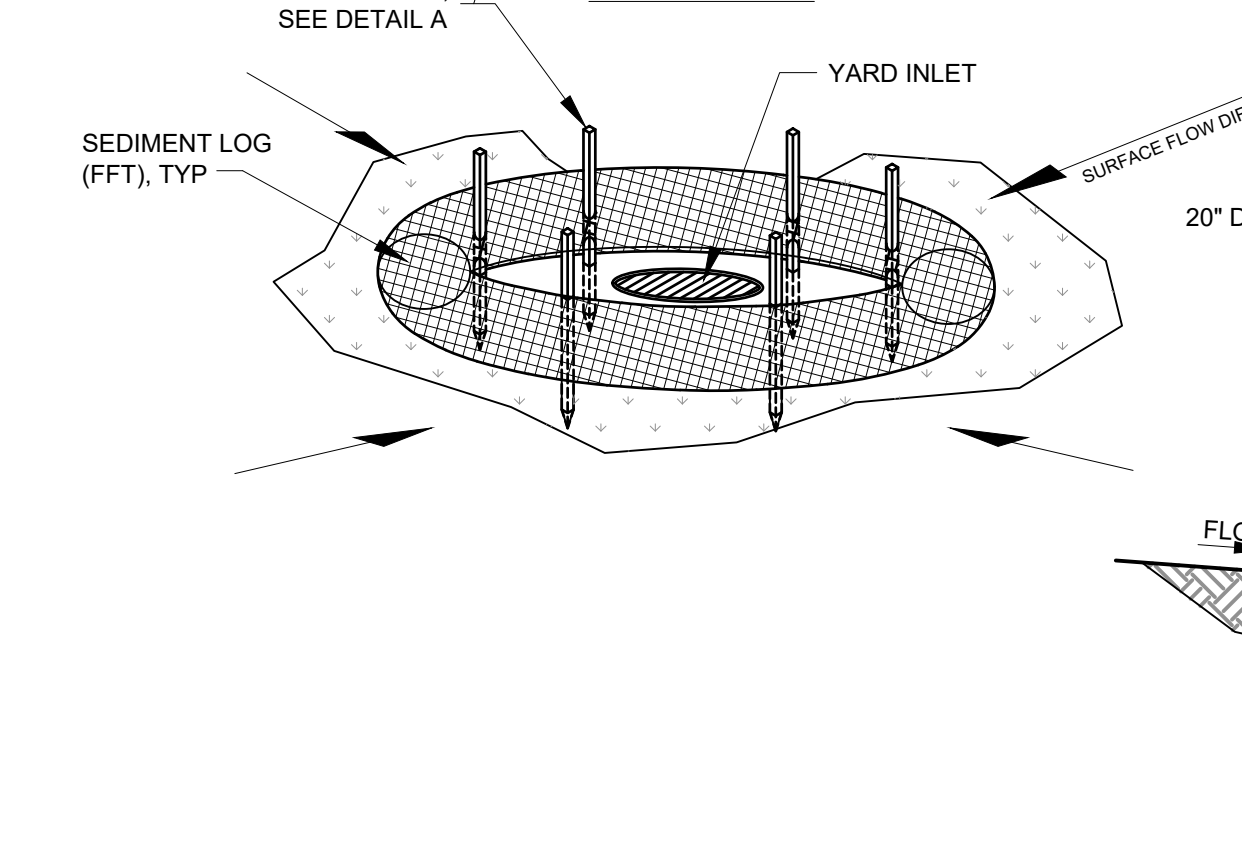
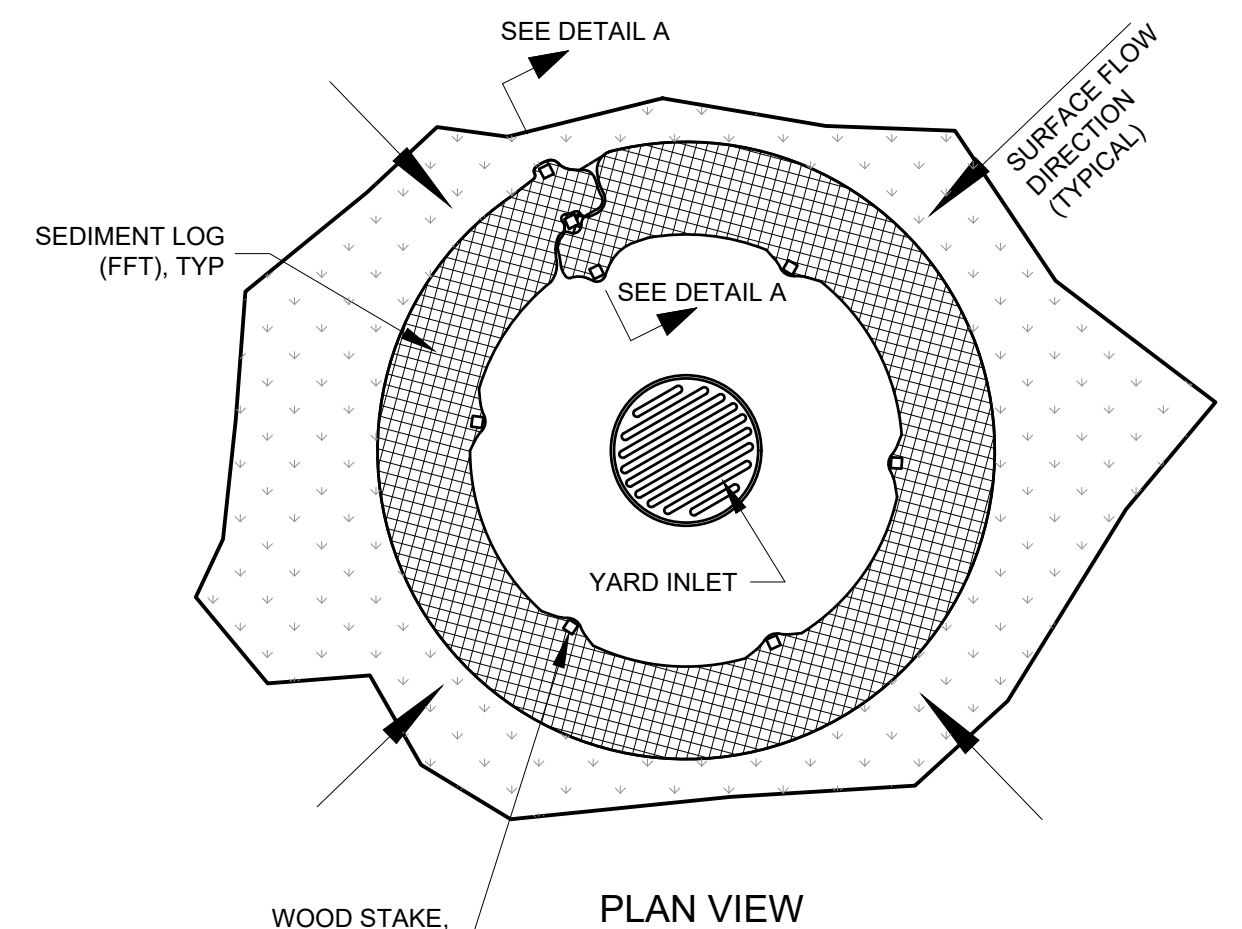
SOIL	BEARING LOAD (LB./SQ. FT.)
MUCK	0
SOFT CLAY	1,000
SILT	1,500
SANDY SILT	3,000
SAND	4,000
SANDY CLAY	6,000
HARD CLAY	9,000



- NOTES:
- ALL CONSTRUCTION MATERIALS SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
  - CONTRACTOR SHALL PROVIDE ALL NECESSARY PUMPS, HEADER PIPE, PUMPING EQUIPMENT, ETC. PRIOR TO BEGINNING CONSTRUCTION. DUPLICATE SEWAGE HANDLING PUMPS, PIPING, ETC. SHALL BE ON-SITE AND AVAILABLE FOR IMMEDIATE USE SHOULD PRIMARY PUMP OR FORCE MAIN FAIL. INSURE PUMPS, HEADER PIPING, ETC. ARE PROPERLY SIZED AND OPERATIONAL BEFORE BEGINNING WORK.
  - PIPE REPAIR SHALL EXHIBIT STRAIGHT HORIZONTAL ALIGNMENT AND INVERT SHALL BE THE SAME AS THE EXISTING PIPE SLOPE. DEFLECTIONS OF HORIZONTAL AND VERTICAL ALIGNMENT ARE NOT ACCEPTABLE.
  - PIPE SHALL BE BACKFILLED AND COMPACTED AND PROPERLY BEDDED IN ACCORDANCE WITH THE CONTRACT DRAWINGS.
  - THERE SHALL BE NO MORE THAN 1/4" SPACE BETWEEN THE EXISTING SEWER MAIN AND THE REPLACEMENT PIPE AT EACH END.
  - DAMAGED SECTION SHALL BE CUT OUT WITHOUT DAMAGING THE PIPE TO REMAIN.
  - DI SEWER PIPE AND FITTINGS SHALL HAVE AN INTERIOR COATING OF PROTECTO 401 OR APPROVED EQUAL.

VCP TO DIP PIPE CONNECTION

DETAIL	1
SCALE: NTS	CD4



YARD INLET PROTECTION  
C-31-0419R

- MAINTENANCE REQUIREMENTS:
- INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2 INCH OR MORE OF RAIN. REMOVE ANY ACCUMULATED SEDIMENT AND/OR WOODY DEBRIS.
  - FFTs SHALL BE ENTRENCHED AS SHOWN TO PREVENT UNDERCUTTING. ANY EVIDENCE OF UNDERCUTTING AND/OR EROSION SHALL BE REPAIRED IMMEDIATELY.
  - STAKES AND/OR STAPLES THAT HAVE BECOME LOOSE OR DISPLACED SHALL BE REPAIRED IMMEDIATELY.
  - WHEN SEDIMENT ACCUMULATION REACHES 1/2 THE DIAMETER OF THE FFT, IT SHALL BE REMOVED AND DISPOSED OFF-SITE BY THE CONTRACTOR IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.
  - ANY VISIBLE DAMAGE TO THE FFT SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

STAKE DETAIL (WITH TRENCH)  
NO SCALE

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 Plot Date: 12/28/2021 9:48 AM BY: BTTHARRINGTON

PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION  
Digitally signed by Corinne E. Wilson  
Date: 2021.12.28 15:04:01-05'00'

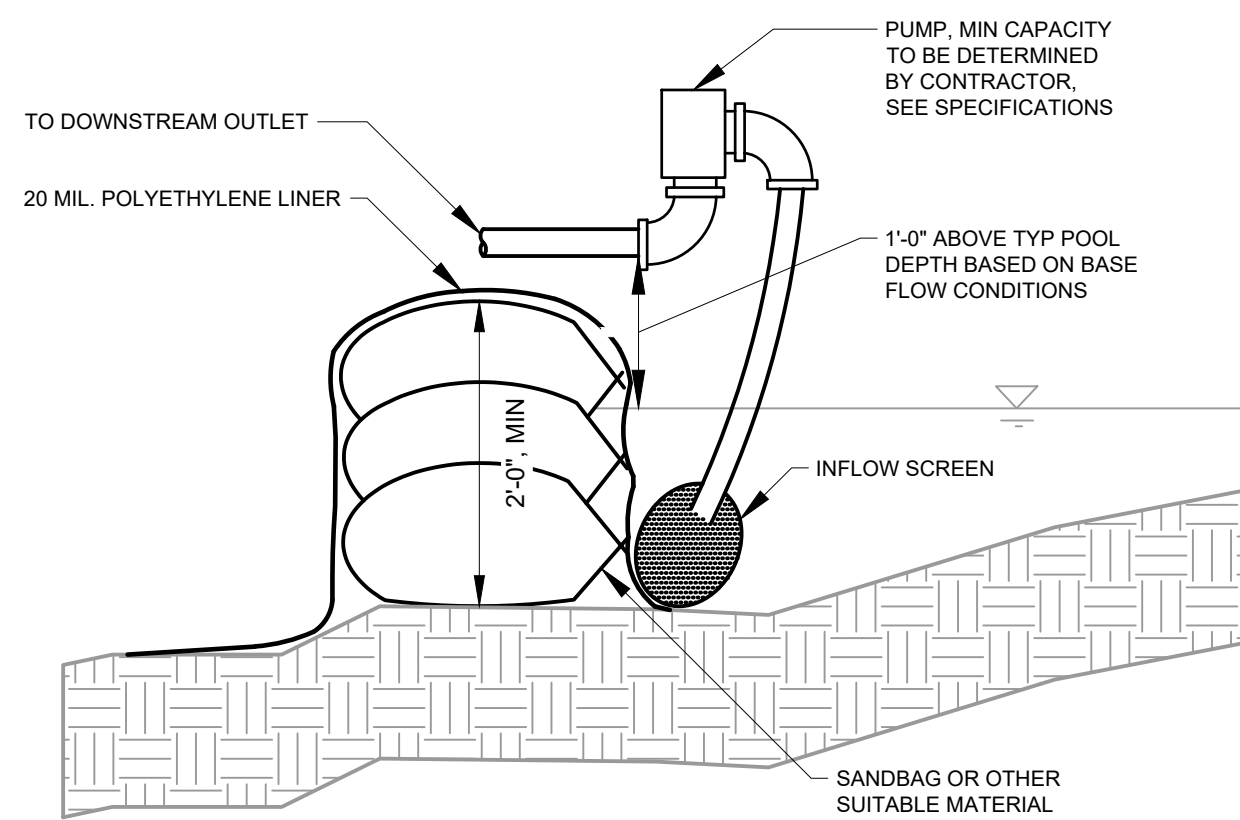


**Hazen**  
HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA  
CEDAR LANE DRAINAGE IMPROVEMENTS

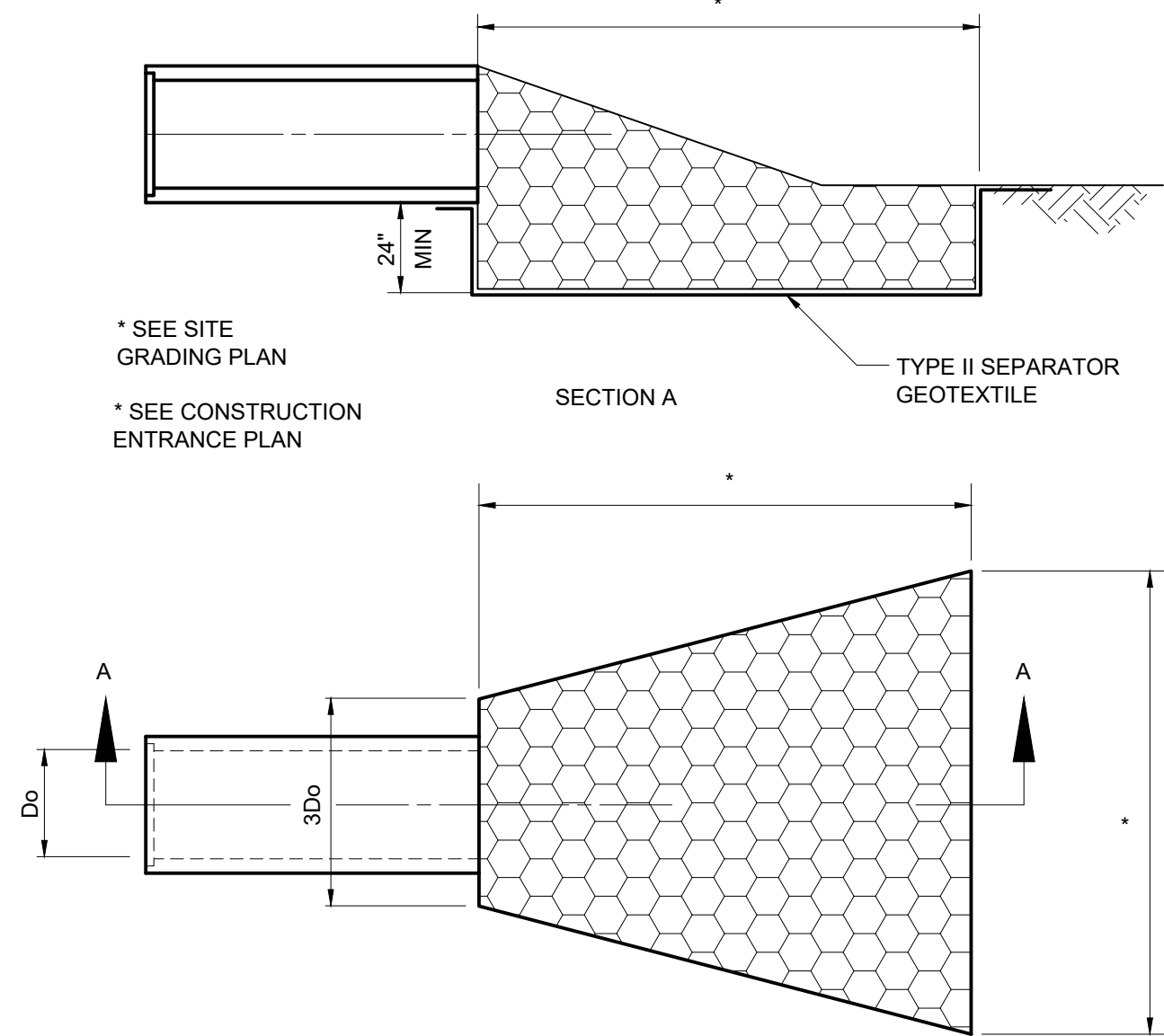
CIVIL  
STANDARD DETAILS - SHEET 4

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	CD4



**IMPERVIOUS DIKE**

DETAIL	1
NTS	CD5



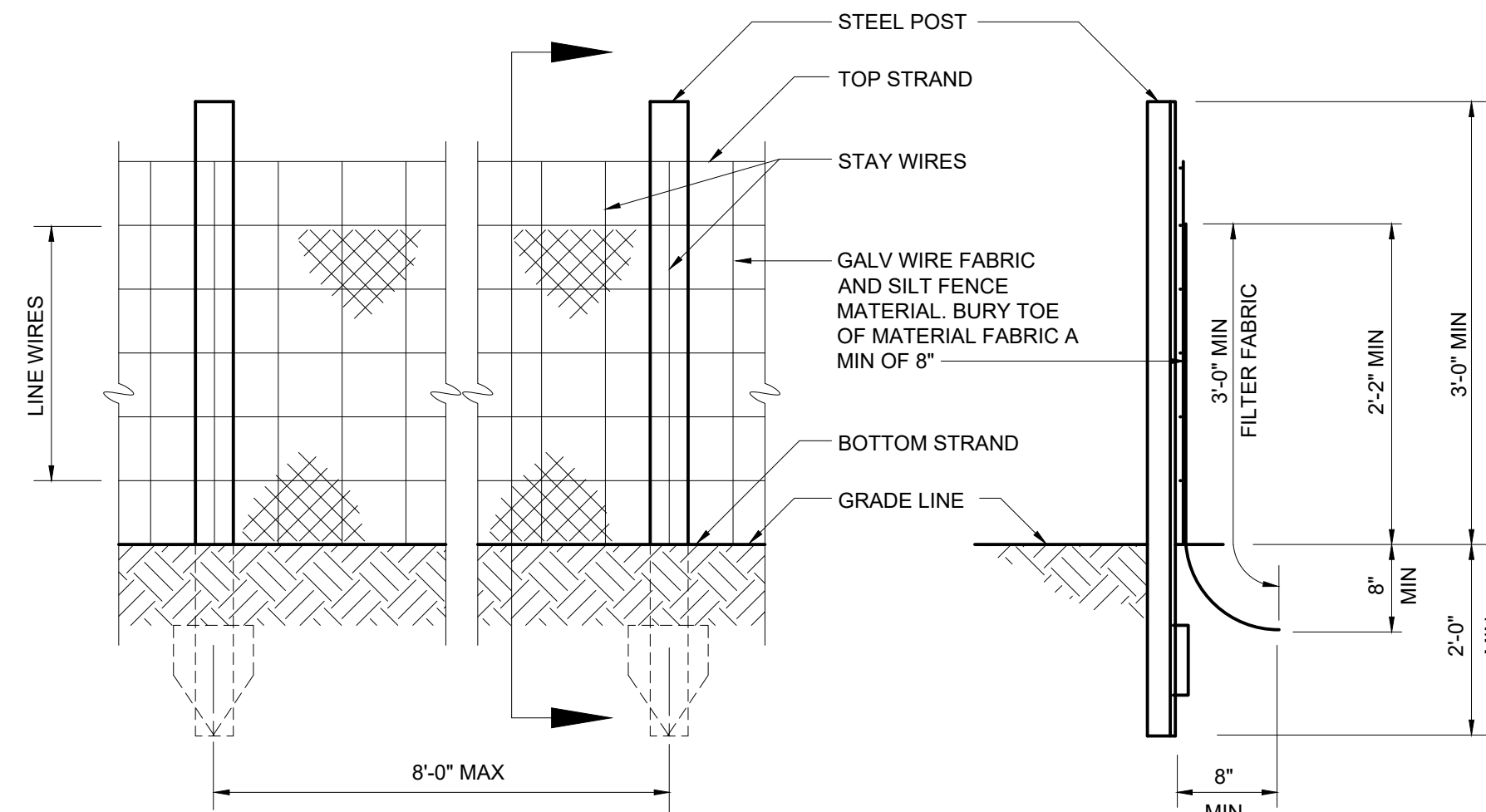
**OUTLET PIPE WITH RIP-RAP APRON**  
C-22-0312

**MAINTENANCE REQUIREMENTS:**

1. INSPECT RIPRAP OUTLET STRUCTURE WEEKLY AND AFTER SIGNIFICANT (1/2 OR GREATER) RAINFALL EVENT TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OF IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

**CONSTRUCTION SPECIFICATIONS:**

1. COMPACT ANY FILL REQUIRED FOR SUBGRADE TO DENSITY OF SURROUNDING MATERIAL. LOW AREAS IN SUBGRADE MAY BE FILLED BY INCREASING RIPRAP THICKNESS.
2. FILTER CLOTH CONNECTION JOINTS SHOULD OVERLAP SO THAT TOP LAYER IS ABOVE DOWNSTREAM LAYER A MINIMUM OF 1 FOOT. ANY DAMAGED FILTER CLOTH SHOULD BE REPLACED WITH NEW.
3. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT TAKE CARE TO AVOID DAMAGING THE FILTER CLOTH.
4. MAKE THE TOP OF RIPRAP AT DOWNSTREAM END LEVEL WITH RECEIVING AREA OR SLIGHTLY BELOW.
5. ENSURE APRON IS PROPERLY ALIGNED WITH RECEIVING PIPE AND PREFERABLY STRAIGHT THROUGHOUT LENGTH.
6. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION.



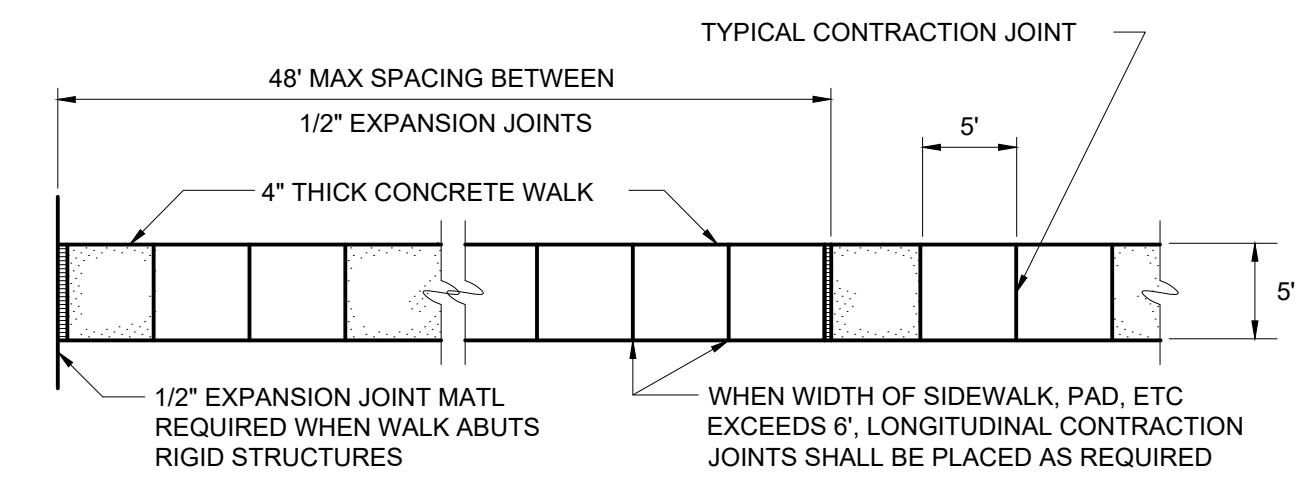
**ELEVATION SILT FENCE**

**SECTION SILT FENCE**

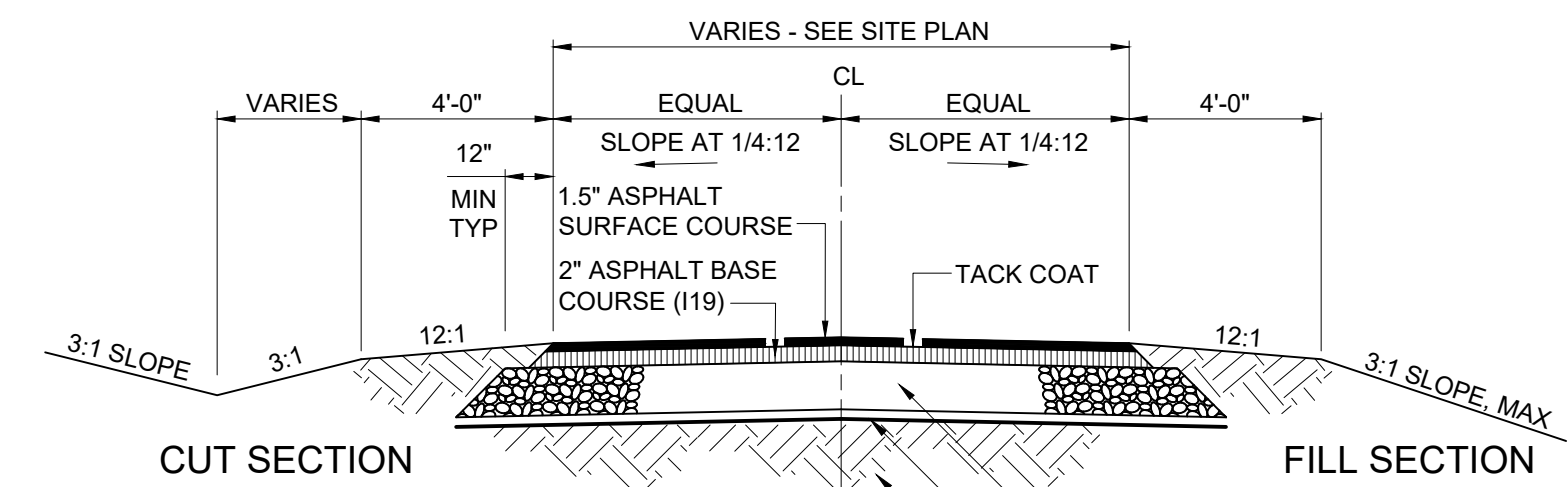
**SILT FENCE**  
C-31-0400

**NOTE:**

1. EXTRA STRENGTH SILT FENCE MATERIAL (AS APPROVED BY ENGINEER) WITH 6'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
2. SILT FENCE MATERIAL SHALL BE WIRED DIRECTLY TO POST.



**TYPICAL CONCRETE WALKWAY**  
C-32-0520R

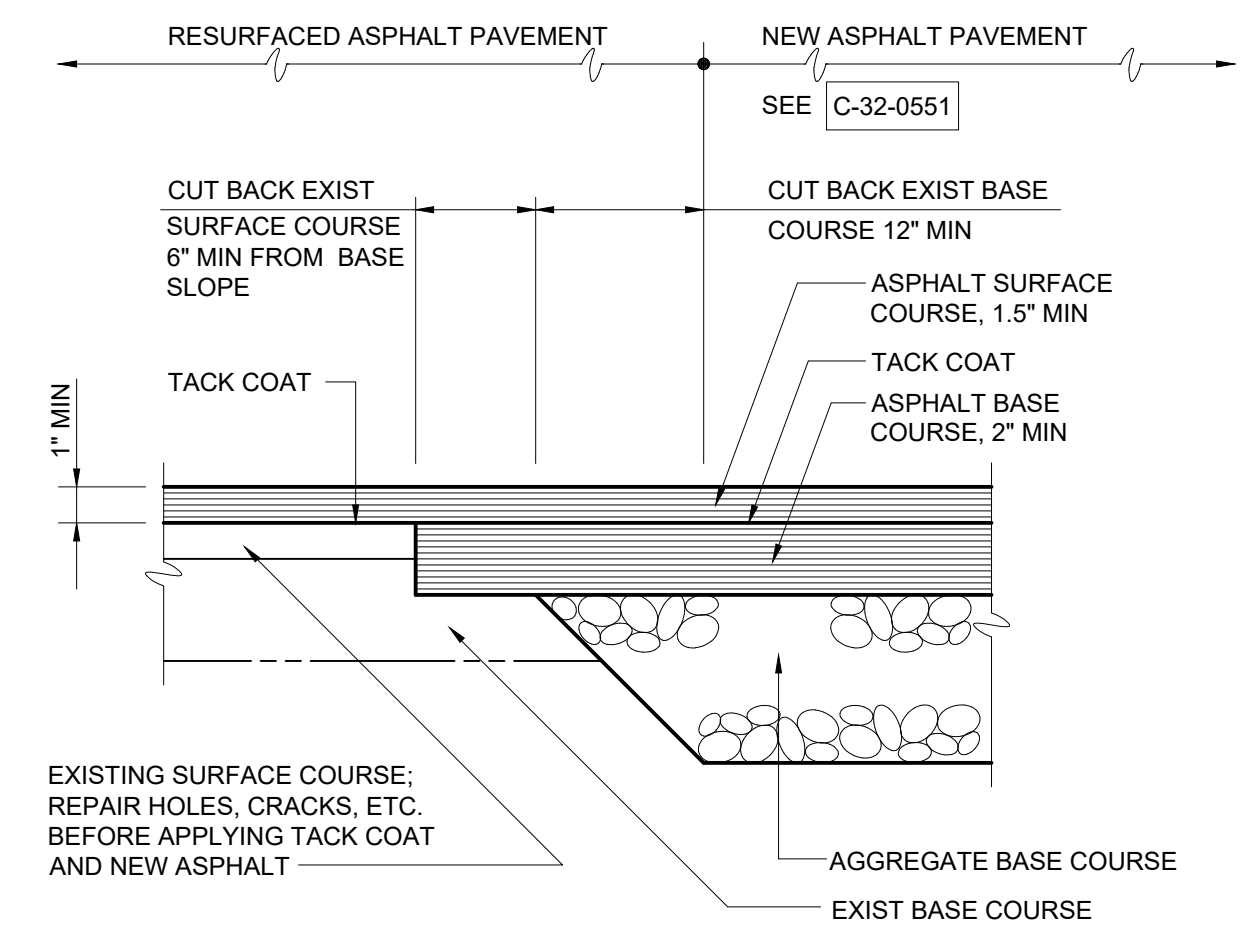


**CUT SECTION**

**FILL SECTION**

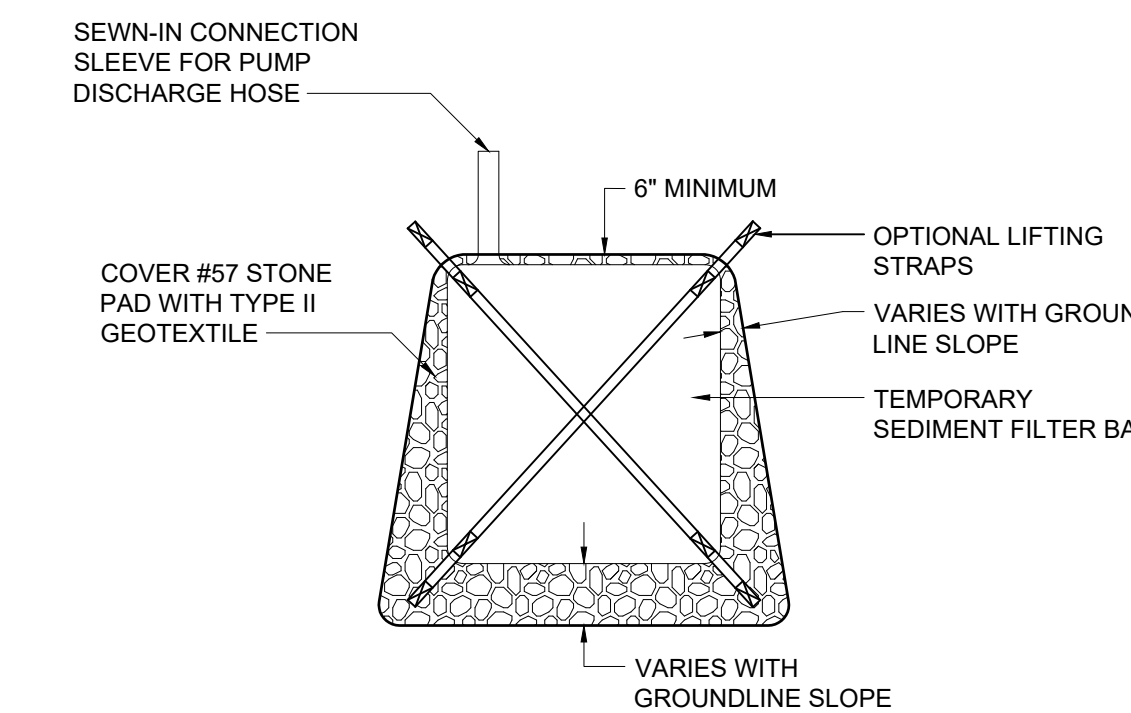
- NOTE:**  
THE 2" ASPHALT CONCRETE SURFACE COURSE AND THE TACK COAT SHALL NOT BE PLACED UNTIL COMPLETION OF ALL OTHER WORK IN CONTRACT.

**TYPICAL ROADWAY SECTION - MEDIUM DUTY**  
C-32-0551



**TYPICAL PAVEMENT JUNCTION WITH RESURFACING OF EXISTING PAVEMENT**

C-32-0555R



**TOP VIEW**

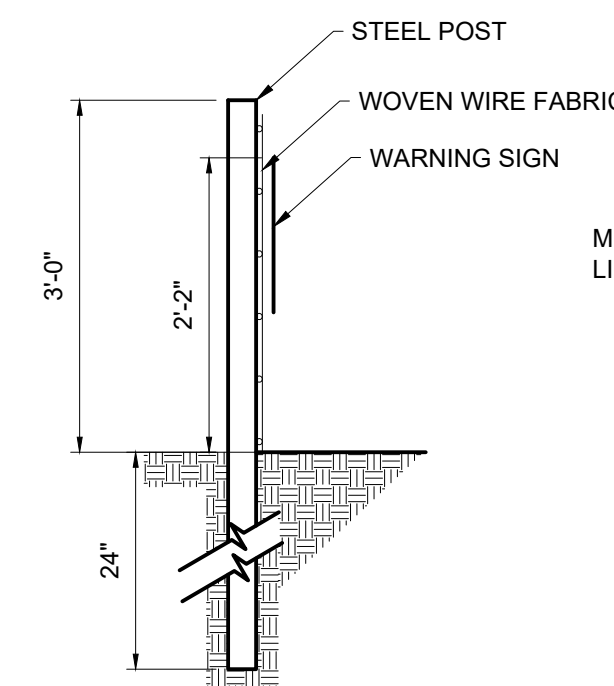
**SIDE VIEW**

**SEDIMENT FILTER BAG**

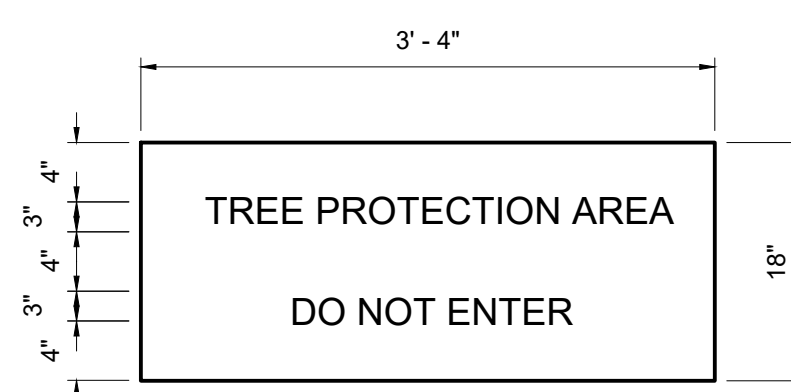
DETAIL	2
NTS	CD5

**NOTES:**

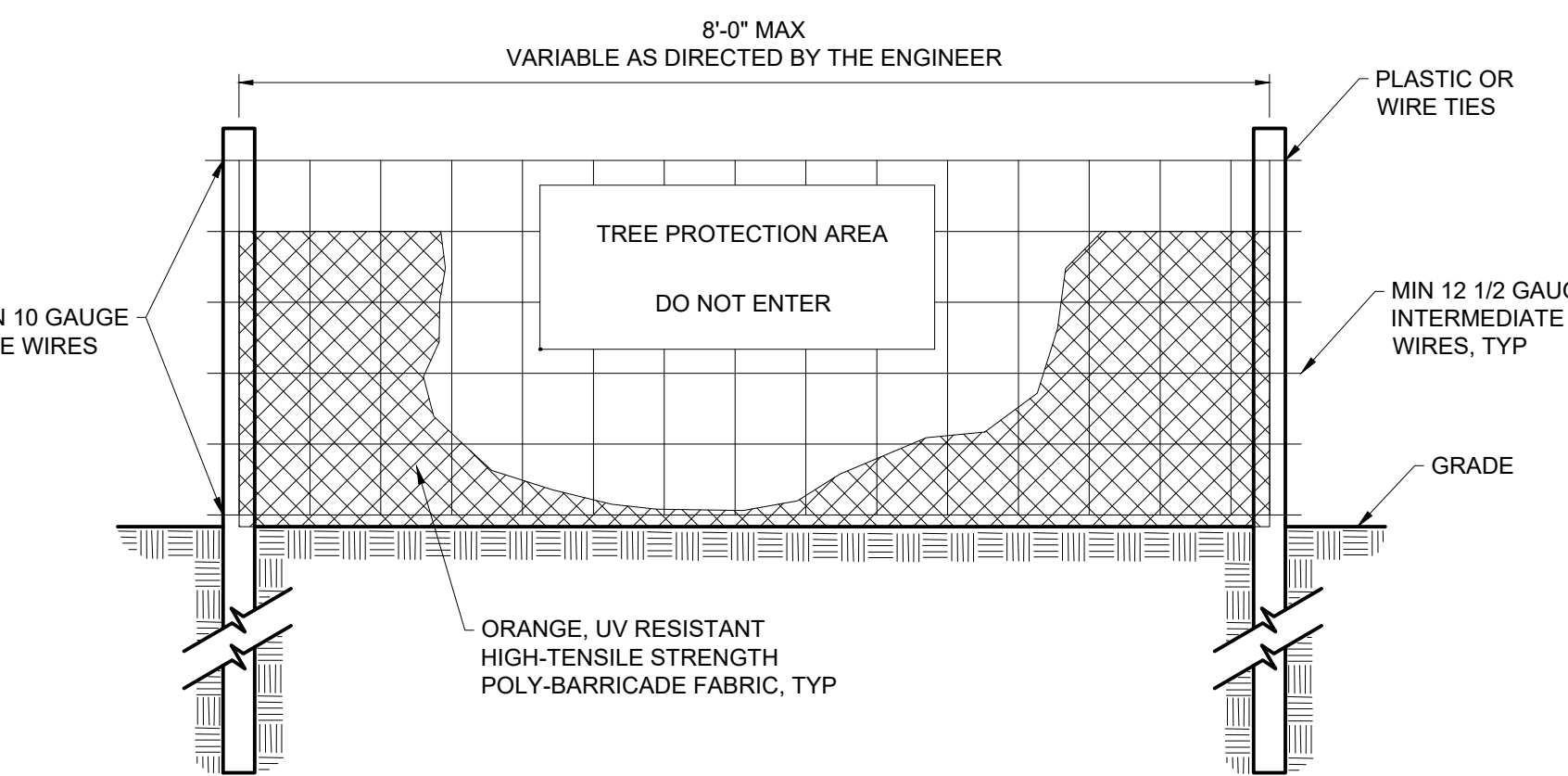
1. CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE TEMPORARY SEDIMENT FILTER BAG WHEN PUMPING.
2. BAG SHALL MEET THE REQUIREMENTS OF NCDOT SPECIFICATION 1639 - SPECIAL STILLING BASIN.
3. TEMPORARY SEDIMENT FILTER BAGS SHALL BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM FOUR-INCH DIAMETER PUMP DISCHARGE HOSE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF SIX INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE. HOSE CONNECTION THROUGH A SLIT IN THE BAG WILL NOT BE ACCEPTABLE.
4. THE PUMP DISCHARGE HOSE CONNECTION SLEEVE SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE TEMPORARY SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.
5. CONTRACTOR SHALL USE ADEQUATE SIZE EQUIPMENT TO DUMP/DISPOSE OF FILLED BAG.
6. PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE SEDIMENT FILTER BAG ABOVE NATURAL GROUND.



**SIDE VIEW**



**WARNING SIGN DETAIL**



**FRONT VIEW**

NOTE: FOR TREE PROTECTION ONLY

**NOTES:**

1. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
2. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE, AND SPACED AS DETAILED.
3. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
4. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
5. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
6. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.

**TREE PROTECTION FENCE**

C-31-0404

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corinne E. Wilson  
Date: 2021.12.28 15:04:06-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

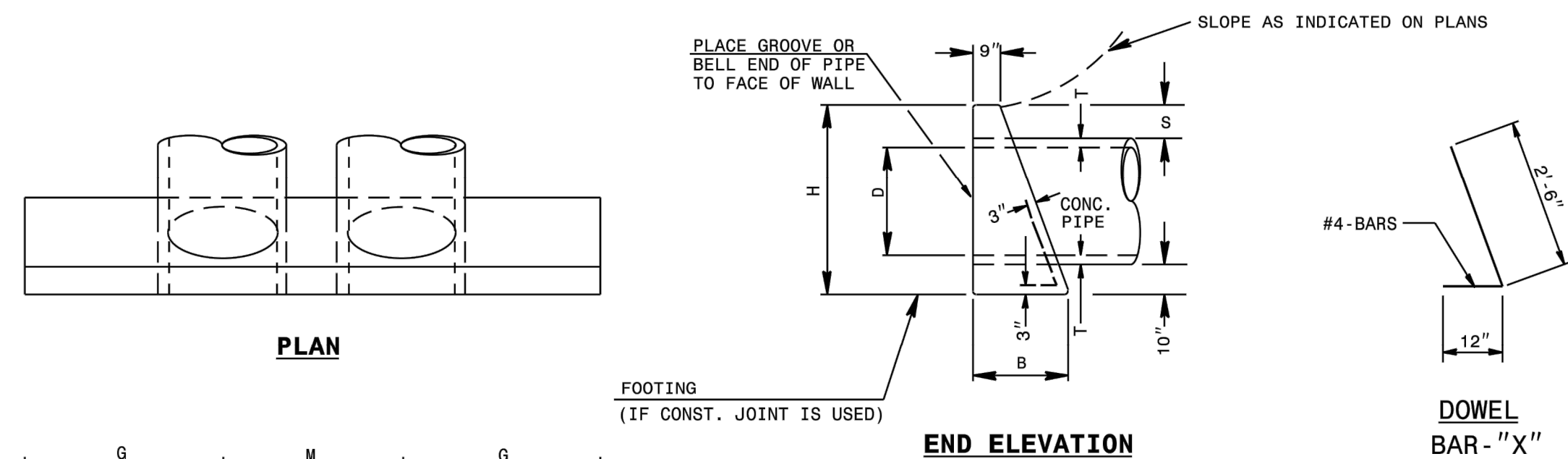
CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
STANDARD DETAILS - SHEET 5

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	CD5





LOC.	PIPE DIA.	SINGLE PIPE						DOUBLE PIPE								
		15"	18"	24"	30"	36"	42"	15"	18"	24"	30"	36"	42"			
BARS	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*	"X"	"X"	"X"	"X"	Y*	"X"	Y*
G QTY.	2	2	3	3	4	4	5	2	2	3	3	4	4	5	5	5
M QTY.	-	-	-	-	-	2	-	2	-	1	1	2	2	2	2	2
G QTY.	2	2	3	3	4	4	5	2	2	3	3	4	4	5	5	5
TOTAL LBS.	9	9	14	14	19	19	23	12	12	19	19	23	23	27	27	32

DIMENSIONS AND CONCRETE QUANTITIES USING CONCRETE PIPE							
COMMON DIMENSIONS				SINGLE PIPE		DOUBLE PIPE	
D	H	B	G	T	S	M	L
15"	3'-3"	1'-8"	2'-9"	2 1/4"	9 1/2"	5'-6"	0.7
18"	3'-7"	1'-10"	3'-2"	2 1/2"	10"	6'-4"	1.0
24"	4'-2"	2'-1"	4'-0"	3"	10"	8'-0"	1.5
30"	5'-0"	2'-6"	4'-7"	4 1/4"	11 1/2"	9'-2"	2.3
36"	5'-8"	2'-8"	5'-6"	4 3/4"	11 1/2"	11'-0"	3.4
42"	6'-2"	3'-1"	6'-4"	5 1/4"	11 1/2"	12'-8"	4.5
48"	6'-9"	3'-5"	7'-2"	5 3/4"	11 1/2"	14'-4"	6.0

\*SEE SHEET 3

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

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

SHEET 1 OF 3  
838.01

GENERAL NOTES:

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

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

CONSTRUCT BOTTOM SLAB WITH FORMS.

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

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

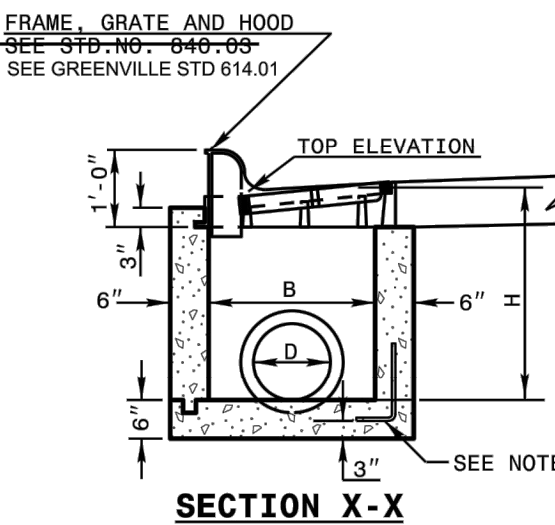
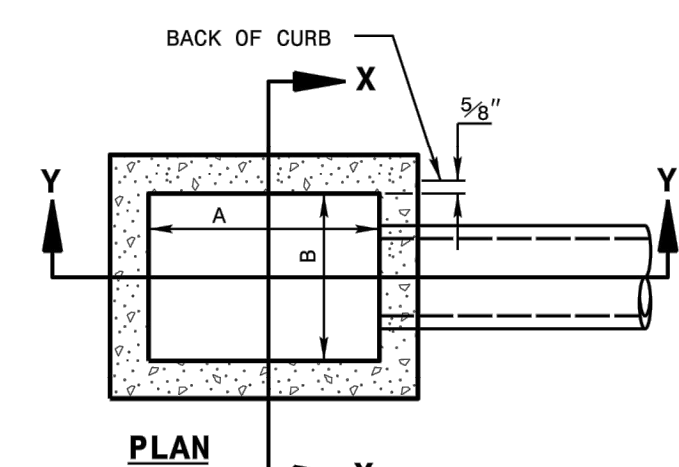
WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE AND POUR THE BASE SEPARATELY LEAVE THE POUR ROUGH.

USE CLASS "B" CONCRETE.

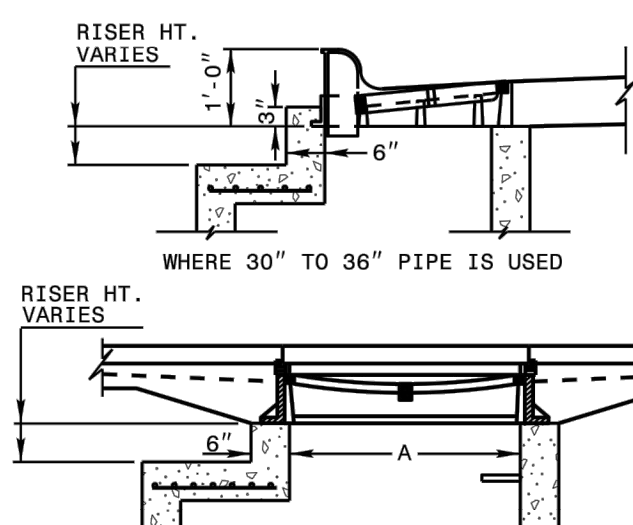
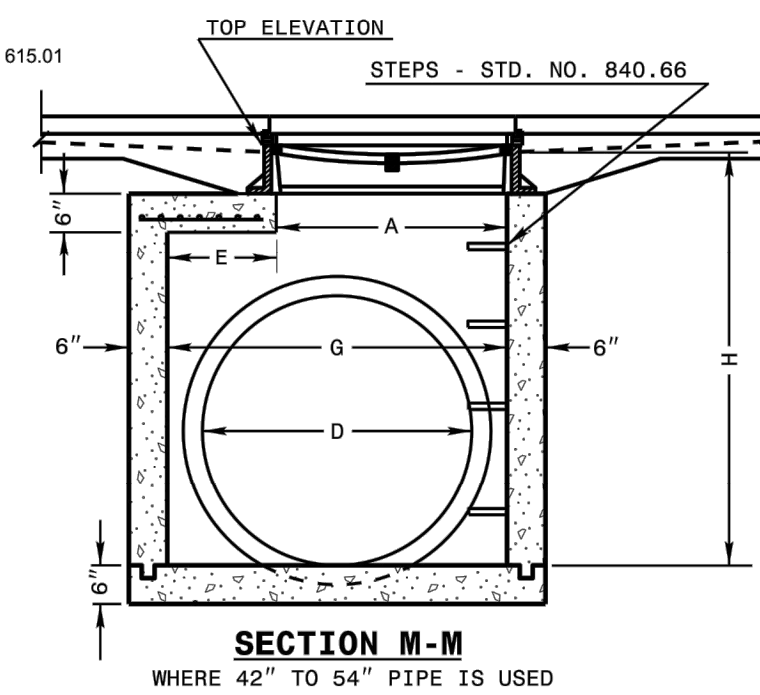
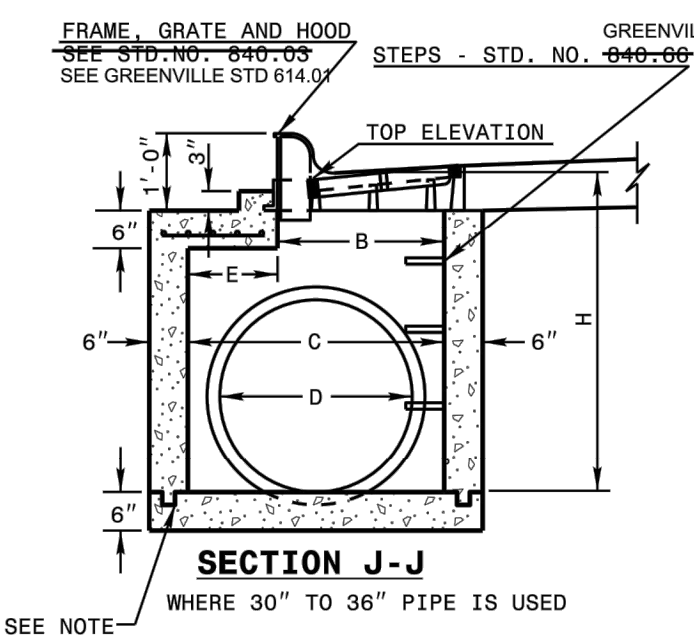
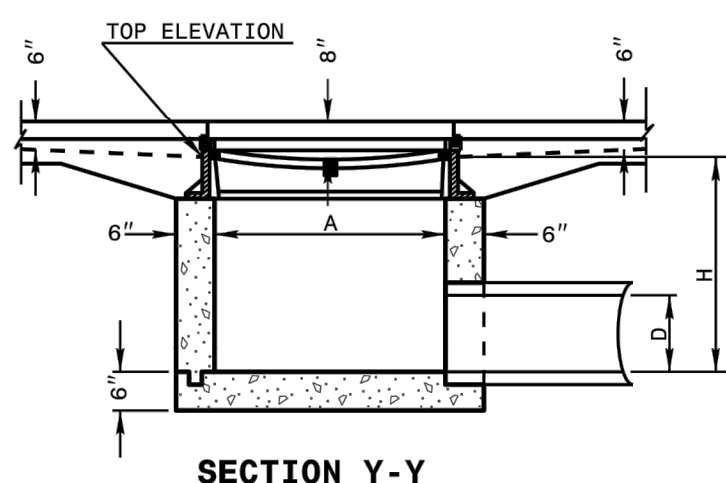
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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

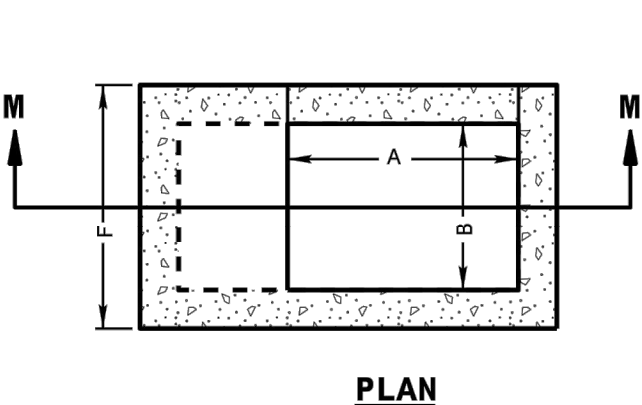
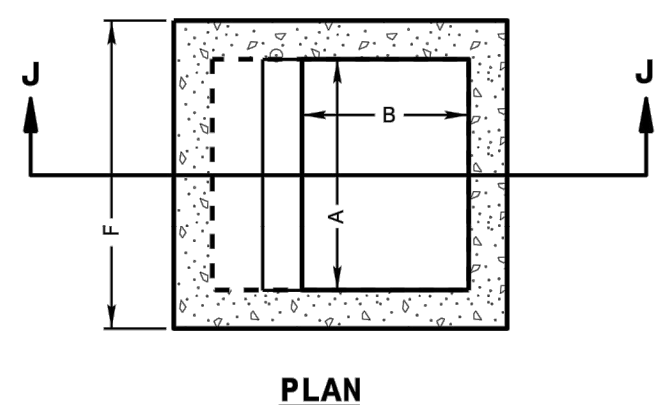
SHEET 3 OF 3  
838.01



GENERAL NOTES:  
 USE CLASS "B" CONCRETE THROUGHOUT.  
 PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.  
 USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.  
 FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.  
 CONSTRUCT WITH PIPE CROWNS MATCHING.  
 CHAMFER ALL EXPOSED CORNERS 1".  
 DRAWING NOT TO SCALE.



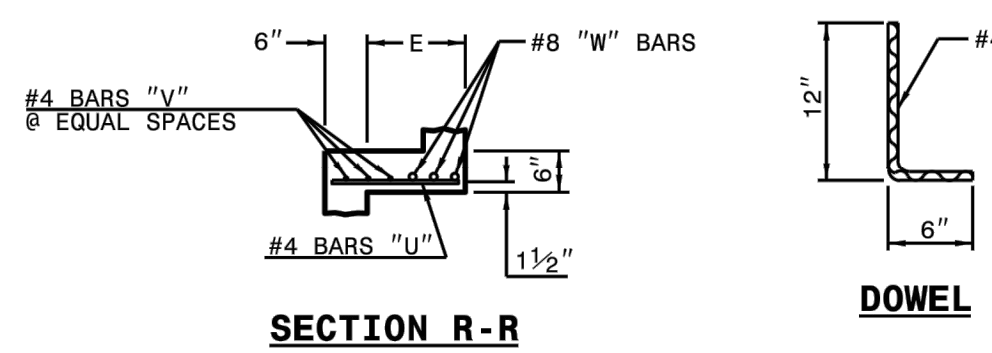
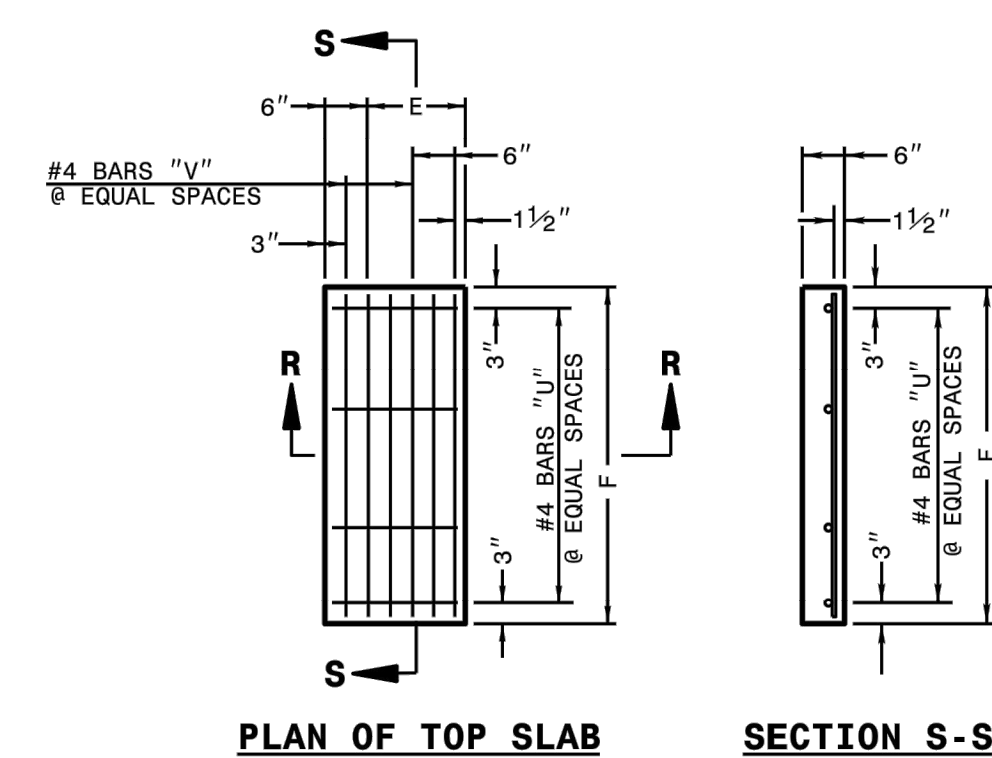
DETAIL SHOWING METHOD OF RISER CONSTRUCTION



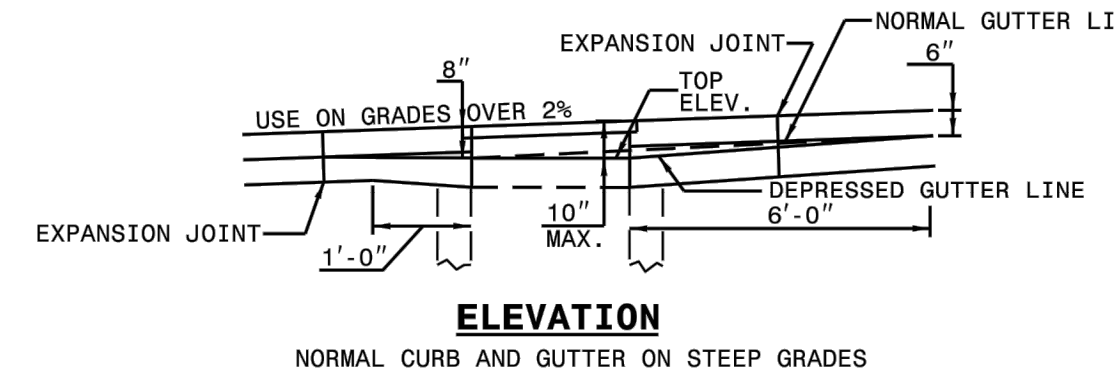
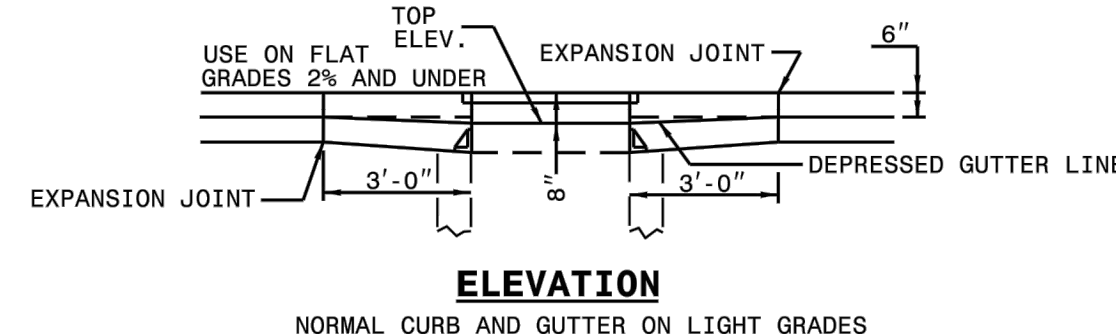
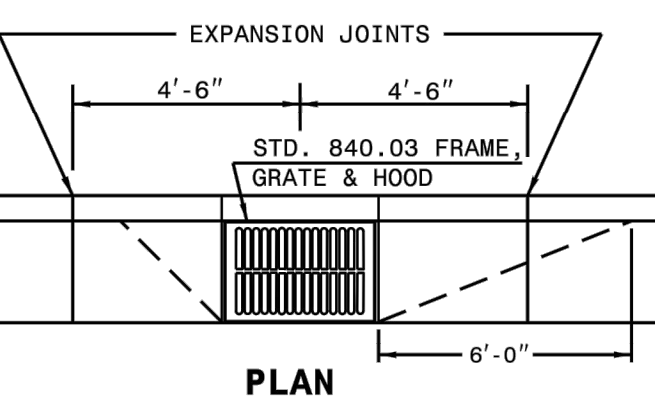
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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

SHEET 1 OF 2  
840.02



MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER) *																
PIPE DIA.	DIMENSIONS OF BOX AND PIPE			COVER DIMENSION	BARS-U			BARS-V			BARS-W			DEDUCTIONS ONE PIPE		
	SPAN	WIDTH	DEPTH		NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL LBS.	CONC. IN BOX	CONC. FOR MINIMUM HEIGHT, H		C.M.	R.C.
12"	3'-0"	2'-2"	2'-2"	2'-9"	4	1'-5"	2	3'-9"	3	3'-9"	39	0.123	0.321	1.433	0.092	0.127
15"	3'-0"	2'-2"	2'-2"	3'-0"	4	1'-11"	3	3'-9"	3	3'-9"	43	0.161	0.358	1.714	0.132	0.178
18"	3'-0"	2'-2"	2'-2"	3'-3"	4	1'-8"	2	2'-11"	3	2'-11"	32	0.112	0.318	1.738	0.180	0.243
24"	3'-0"	2'-2"	2'-2"	3'-3"	4	2'-3"	3	2'-11"	3	2'-11"	35	0.145	0.352	2.052	0.235	0.317
30"	3'-0"	2'-2"	3'-4"	4'-3"	4	2'-10"	5	2'-11"	3	2'-11"	41	0.180	0.386	2.387	0.297	0.401



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

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

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

SHEET 2 OF 2  
840.02

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION



Digitally signed by C. Wilson Date: 2021.12.28 15:04:12-05'00'



Hazen and Sawyer  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

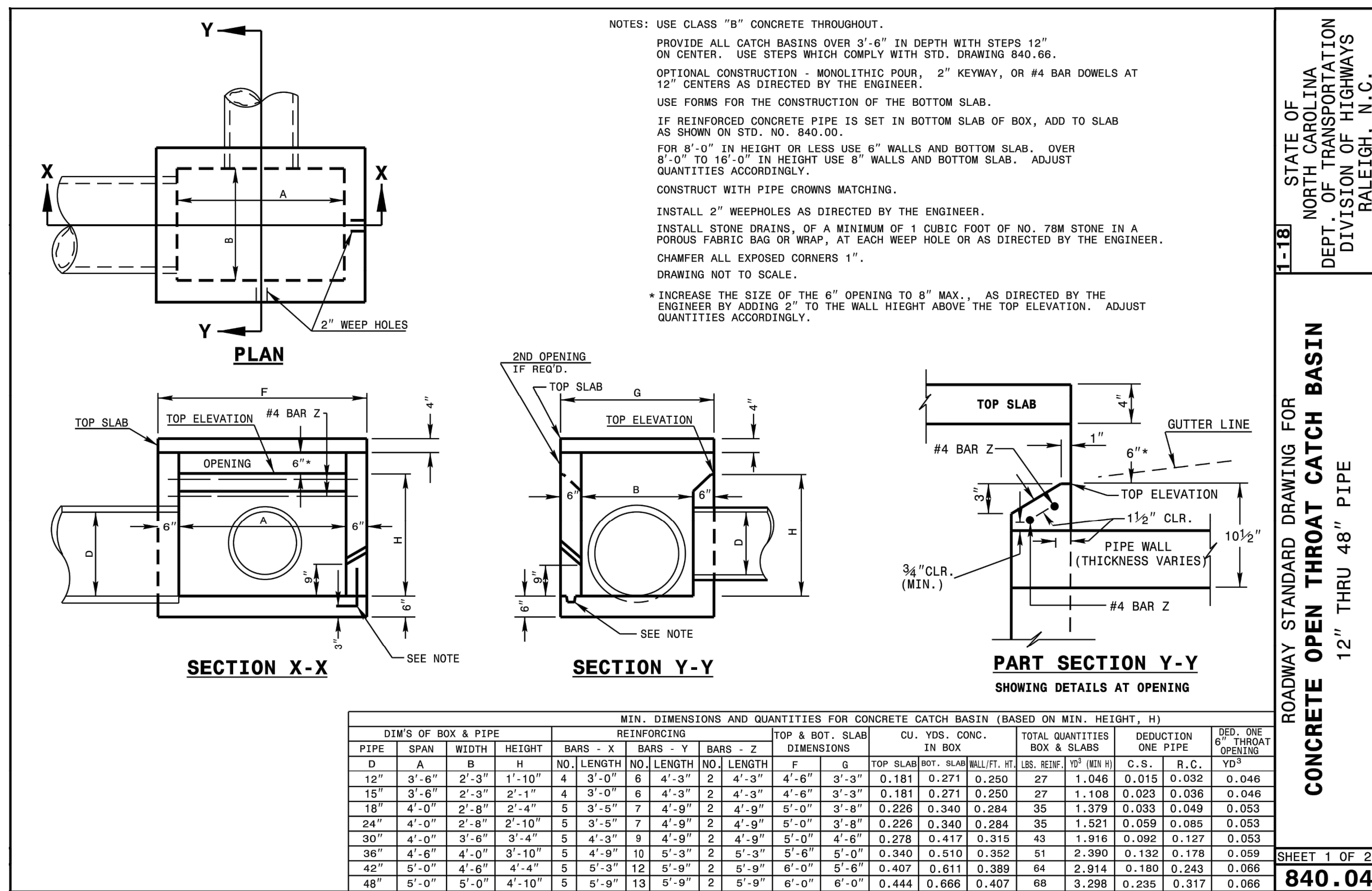
CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE  
 IMPROVEMENTS

CIVIL  
 NCDOT DRAINAGE STRUCTURES DETAILS - SHEET 1

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	

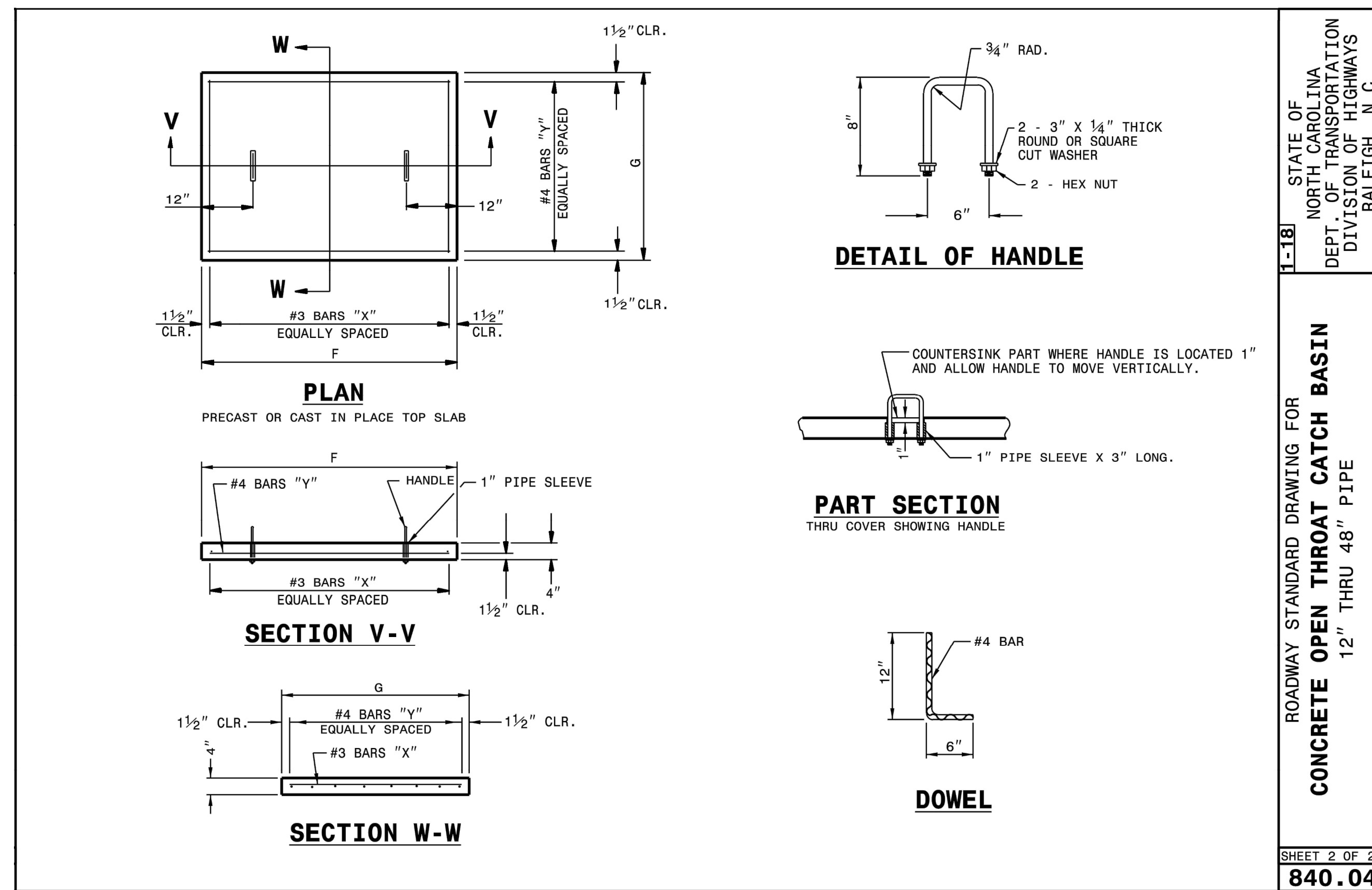
CD6



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

ROADWAY STANDARD DRAWING FOR  
 CONCRETE OPEN THROAT CATCH BASIN  
 12" THRU 48" PIPE

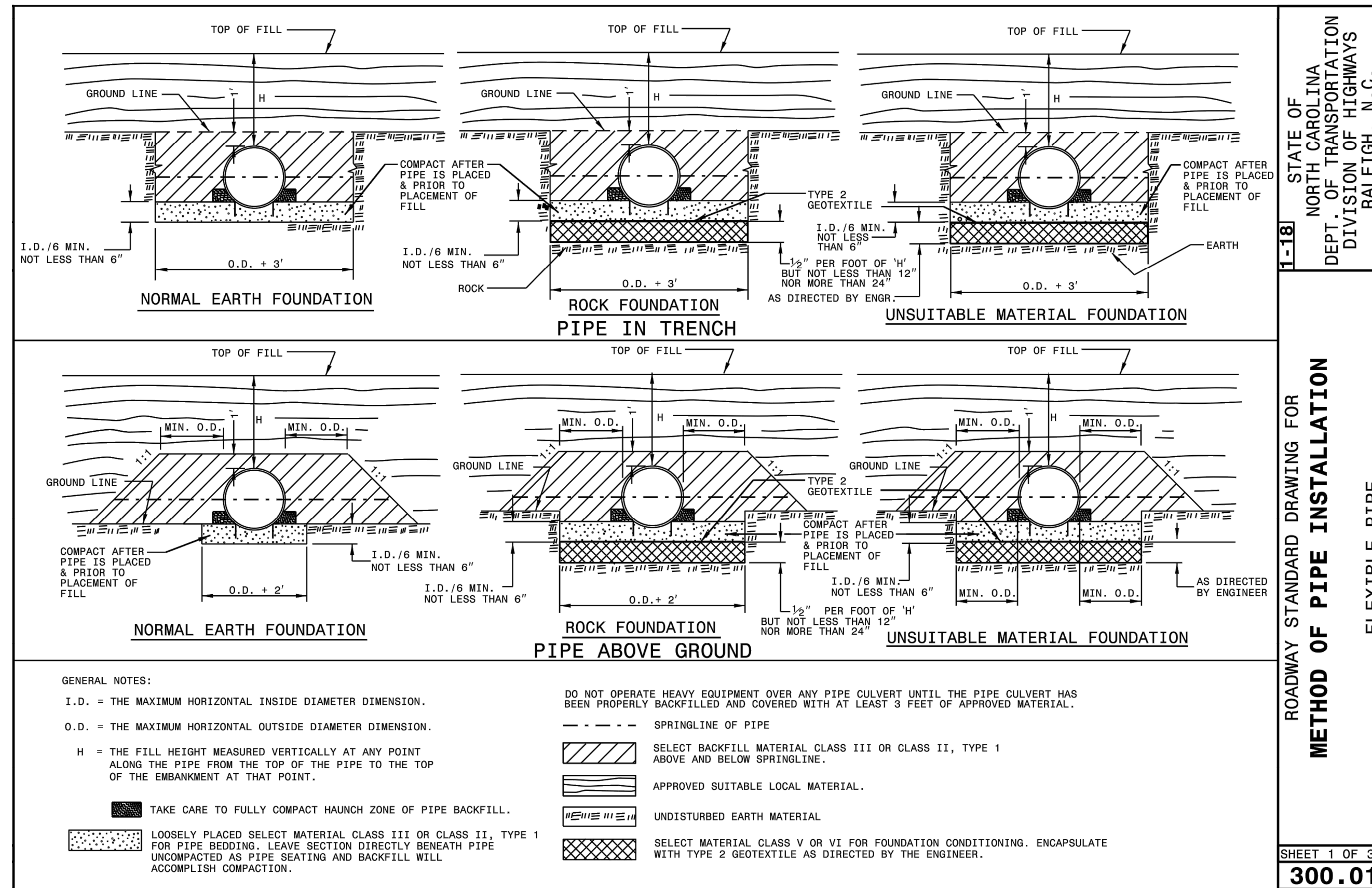
SHEET 1 OF 2  
 840.04



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

ROADWAY STANDARD DRAWING FOR  
 CONCRETE OPEN THROAT CATCH BASIN  
 12" THRU 48" PIPE

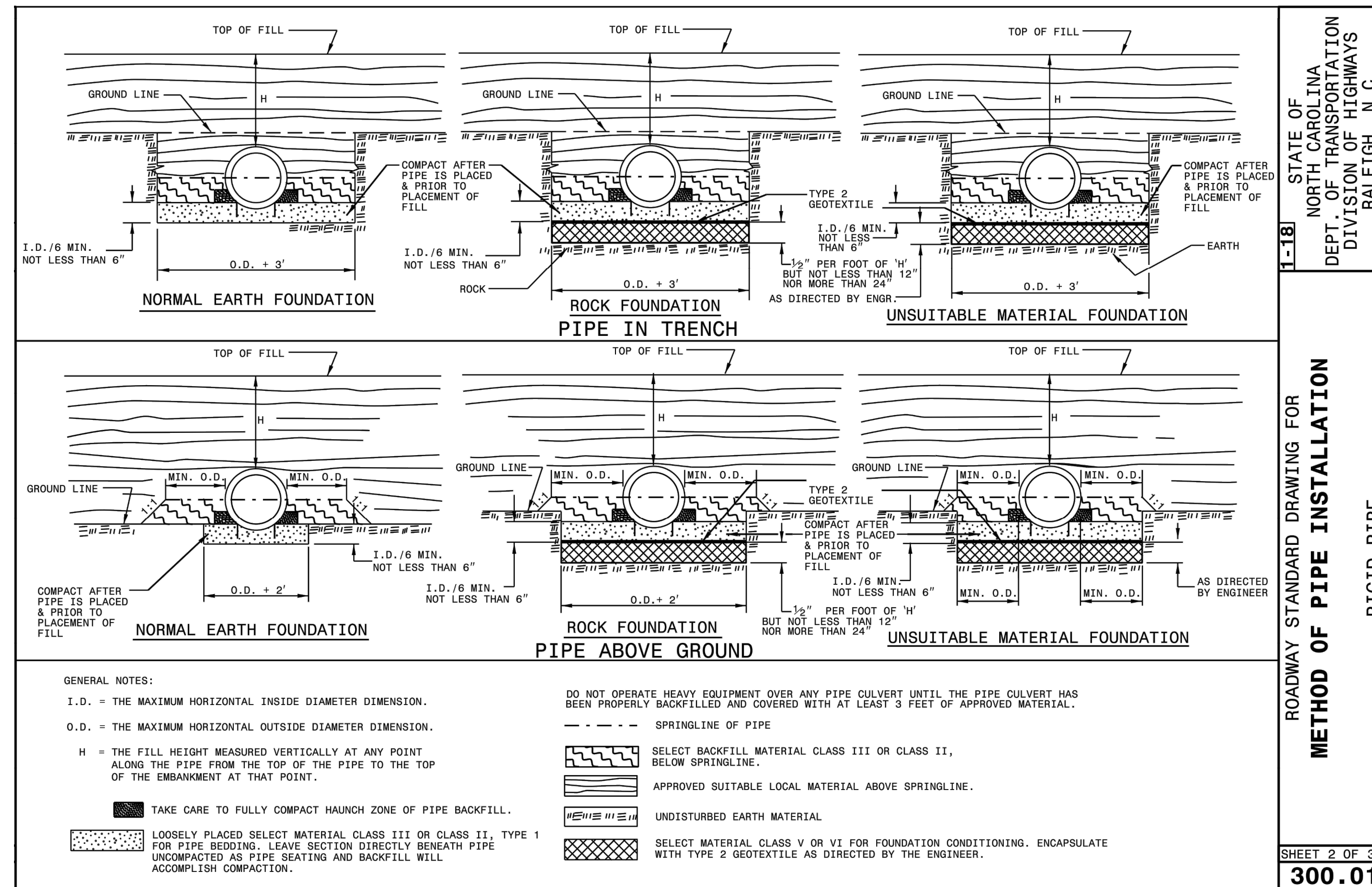
SHEET 2 OF 2  
 840.04



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

ROADWAY STANDARD DRAWING FOR  
 METHOD OF PIPE INSTALLATION  
 FLEXIBLE PIPE

SHEET 1 OF 3  
 300.01



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

ROADWAY STANDARD DRAWING FOR  
 METHOD OF PIPE INSTALLATION  
 RIGID PIPE

SHEET 2 OF 3  
 300.01

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 Plot Date: 12/28/2021 9:48 AM BY: BTHARRINGTON

PROJECT ENGINEER:	K. BRAY		
DESIGNED BY:	C. WILSON		
DRAWN BY:	S. KANE		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corinne E. Wilson  
 Date: 2021.12.28 15:04:17-05'00'

**Hazen**  
 HAZEN AND SAWYER  
 4011 WESTCHASE BOULEVARD, SUITE 500  
 RALEIGH, NORTH CAROLINA 27607  
 LICENSE NO.: C-0381

CITY OF GREENVILLE  
 GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
 NCDOT DRAINAGE STRUCTURES DETAILS - SHEET 2

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	CD7



FLEXIBLE PIPE

Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **					
Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)			
		(Ga) 16	14	12	10 8
12	12	204	256		
15	12	162	204		
18	12	135	169	239	
21	12	115	145	204	
24	12	100	126	178	
30	12	79	100	142	
36	12	65	83	117	152
42	12	55	70	100	130 160
48	12	48	61	87	113 139
54	12		54	77	100 123
60	12			69	90 111
66	12				81 100
72	12				74 91
78	12				81
84	12				69

Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **					
Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)			
		(Ga) 16	14	12	10 8
12	12	123	155	218	281 344
15	12	98	123	174	224 275
18	12	81	102	144	187 228
21	12	69	87	123	160 195
24	12	60	76	108	139 171
27	12		67	95	123 151
30	12		60	85	111 136
36	12		50	71	92 113
42	12			60	78 96
48	12			52	68 84
54	12			46	60 74
60	12				50 62
66	12				51
72	12				41

\*\* FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- CSP - AASHTO M36
- CAAP - AASHTO M196
- HDPE - AASHTO M294
- PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

- HDPE - \* (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
- \* (Maximum fill) 20' for pipe diameters ≤ 24"
- 17' for pipe diameters ≥ 30" and ≤ 60"
- PVC - \* (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
- \* (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

\* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

- RCP - \* (Minimum fill) 1' for Class IV & CLASS V
- 2' for Class III & Class II
- \* (Maximum fill) 10' - Class II pipe
- 20' - Class III pipe
- 30' - Class IV pipe
- 40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

\* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

SHEET 3 OF 3  
**300.01**

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


ROADWAY STANDARD DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
FILL HEIGHT TABLES

File: O:\187\RAIL\187-003\CD - BNC\CVL-CEDAR\_DRAINAGE\CD3\_Saved by SKANE Sheet date: 1/30/2021 8:15 AM  
PLOT DATE: 1/28/2021 9:59 AM BY: BTHARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION



Digitally signed by C. Wilson  
Date: 2021.12.28 15:04:23-05'00'



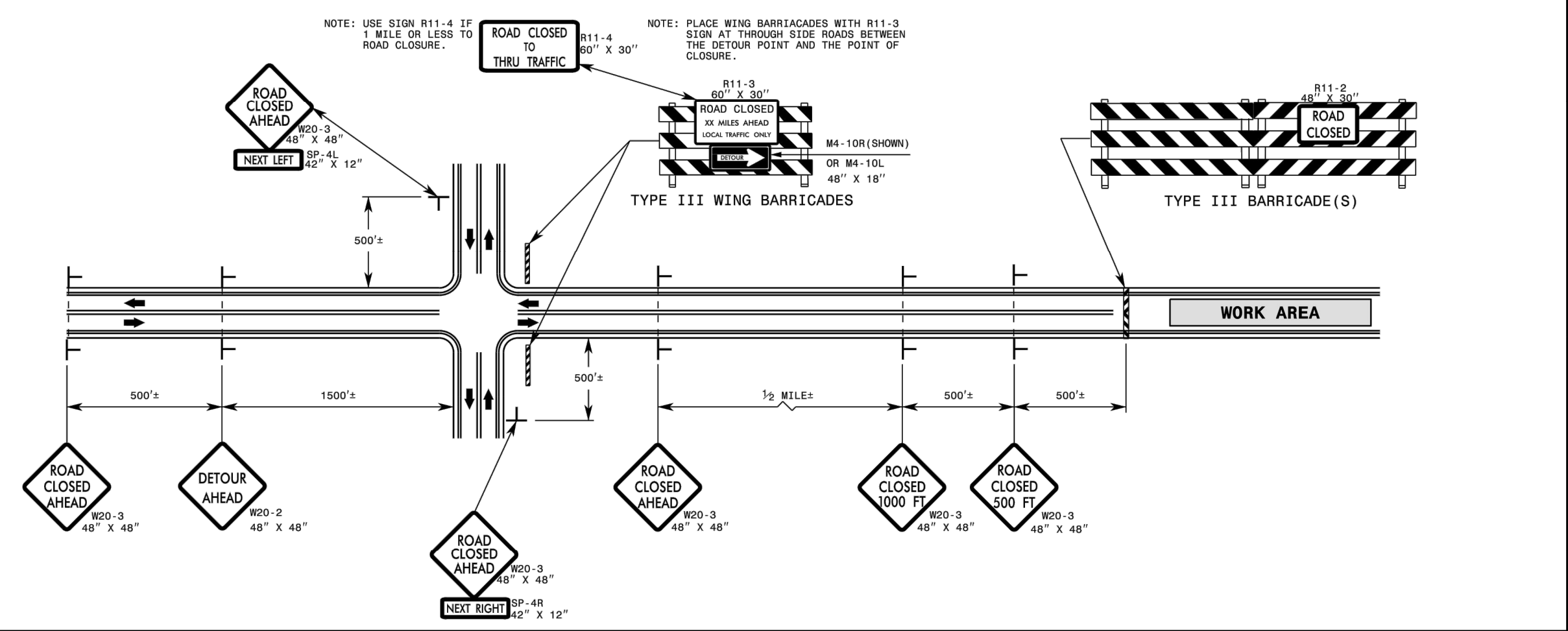
Hazen and Sawyer  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
NCDOT DRAINAGE STRUCTURES DETAILS - SHEET 3

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	CD8

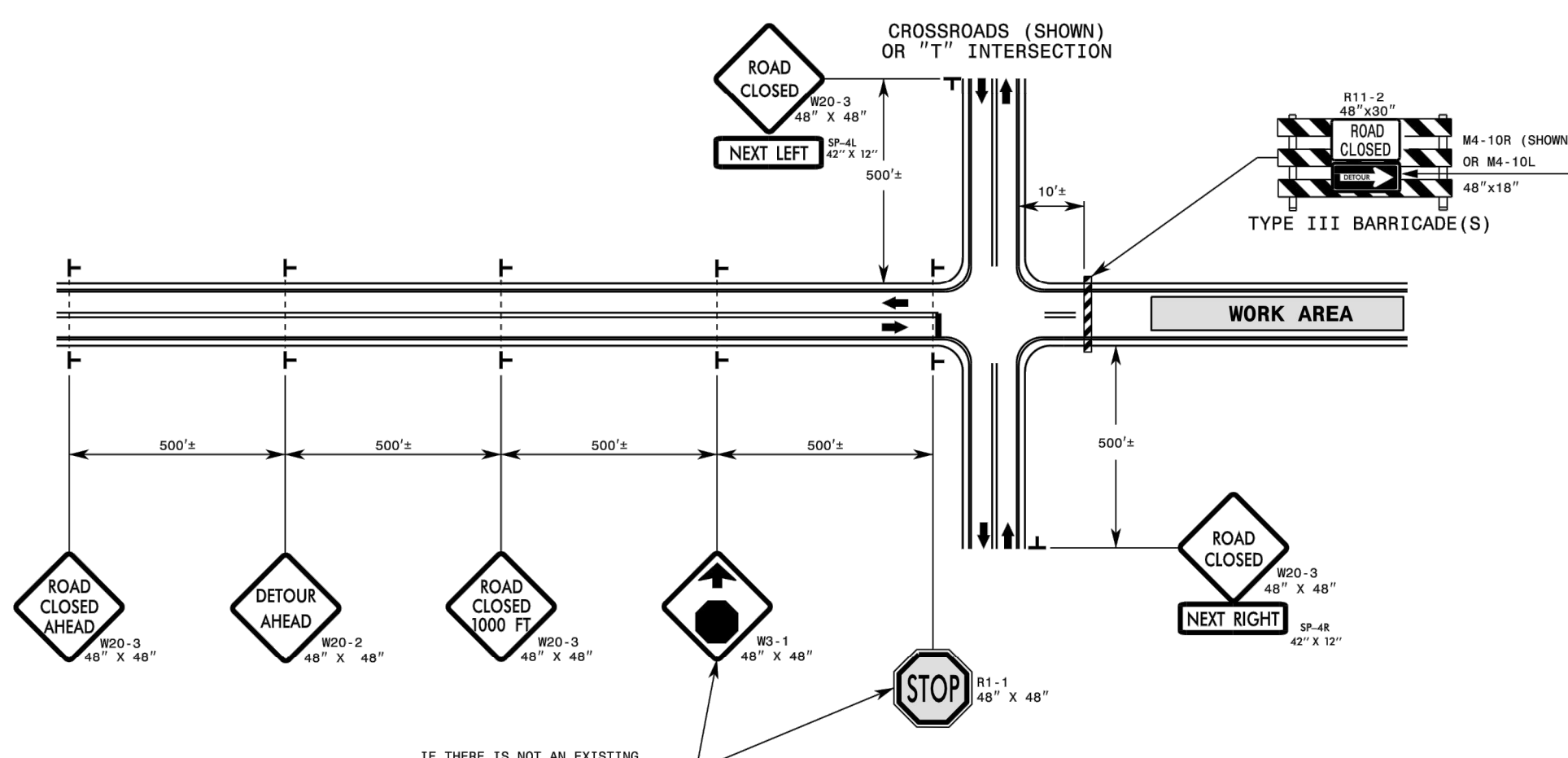


- GENERAL NOTES**
- 1- IF NECESSARY USE THIS RSD. FOR 2-LANE, 2-WAY, AND MULTILANE DIVIDED AND UNDIVIDED ROADWAYS.
  - 2- INSTALLATION OF DETOUR ROUTING PANELS, TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY OTHERS (STATE OR CITY FORCES) UNLESS OTHERWISE DESIGNATED IN THE PLANS. PROVIDE A MINIMUM 30 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INSTALL DETOUR ROUTE SIGNS, INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS, OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
  - 3- INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
  - 4- USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO THRU TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
  - 5- DO NOT DISPLAY FRACTIONS OR DECIMALS ON SIGN R11-3 "ROAD CLOSED XX MILES AHEAD".
  - 6- POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
  - 7- USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN THREE DAYS, OR FOR EMERGENCIES.
- LEGEND**
- STATIONARY SIGN
  - DIRECTION OF TRAFFIC FLOW

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

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY ROAD CLOSURES**  
CLOSURE BEYOND DETOUR POINT

SHEET 1 OF 9  
**1101.03**

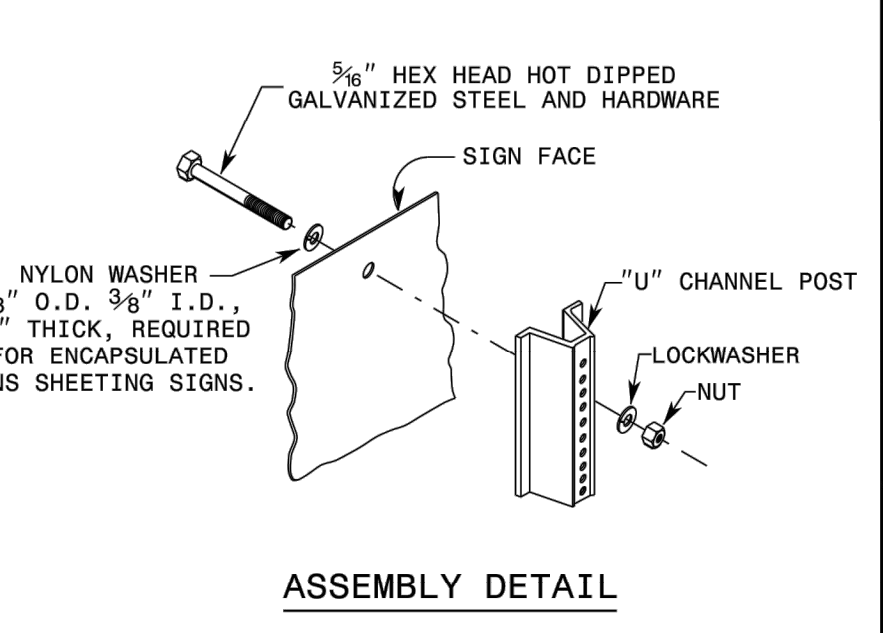
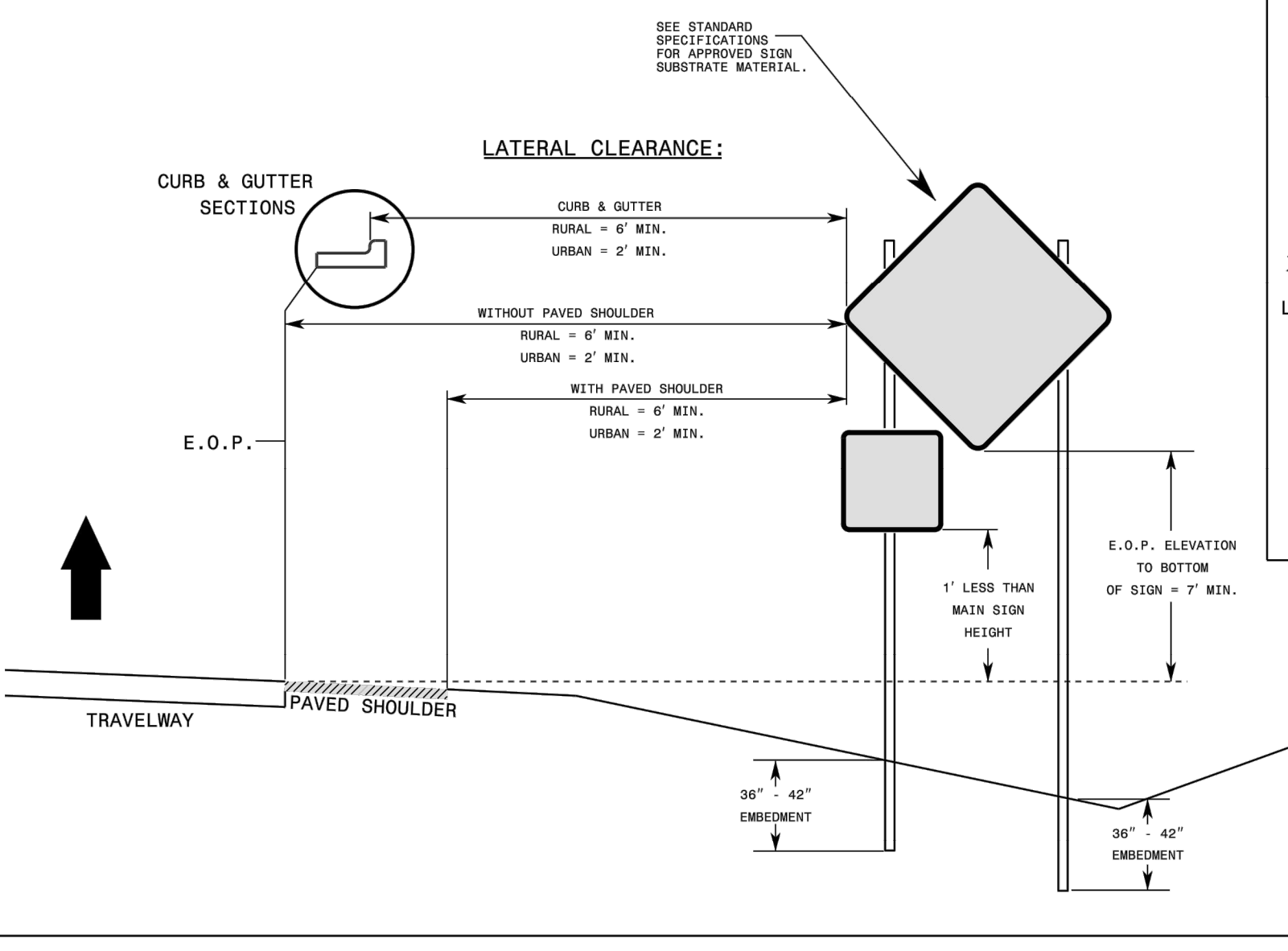


- GENERAL NOTES**
- 1- IF NECESSARY USE THIS RSD. FOR CROSS-ROADS AS SHOWN OR FOR "T" INTERSECTIONS ON 2-LANE, 2-WAY AND MULTILANE UNDIVIDED AND DIVIDED ROADWAYS.
  - 2- INSTALLATION OF DETOUR ROUTING PANELS, TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY OTHERS (STATE OR CITY FORCES) UNLESS OTHERWISE DESIGNATED IN THE PLANS. A MINIMUM 30 CALENDAR DAY NOTICE IS REQUIRED TO BE PROVIDED TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INSTALL DETOUR ROUTE SIGNS, AND TO INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS, OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
  - 3- INSTALL SIGNS BEFORE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
  - 4- POSITION BARRICADES SUCH THAT THE STRIPES ARE SLOPED DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
  - 5- USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN THREE DAYS, OR FOR EMERGENCIES. IN THIS CASE, NO STOP BAR IS NECESSARY.
- LEGEND**
- STATIONARY SIGN
  - DIRECTION OF TRAFFIC FLOW

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

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY ROAD CLOSURES**  
CLOSURE AT DETOUR POINT

SHEET 2 OF 9  
**1101.03**

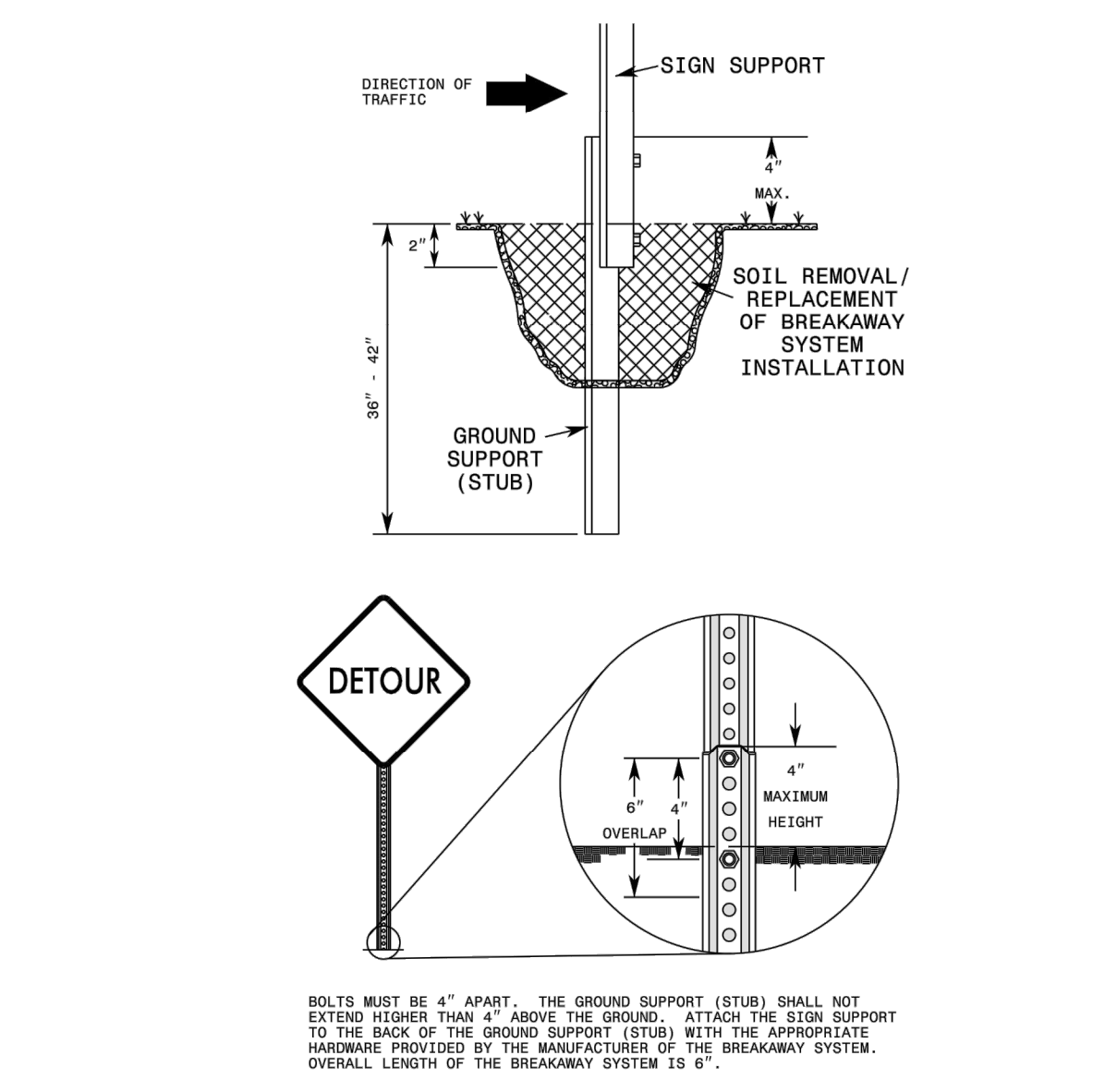
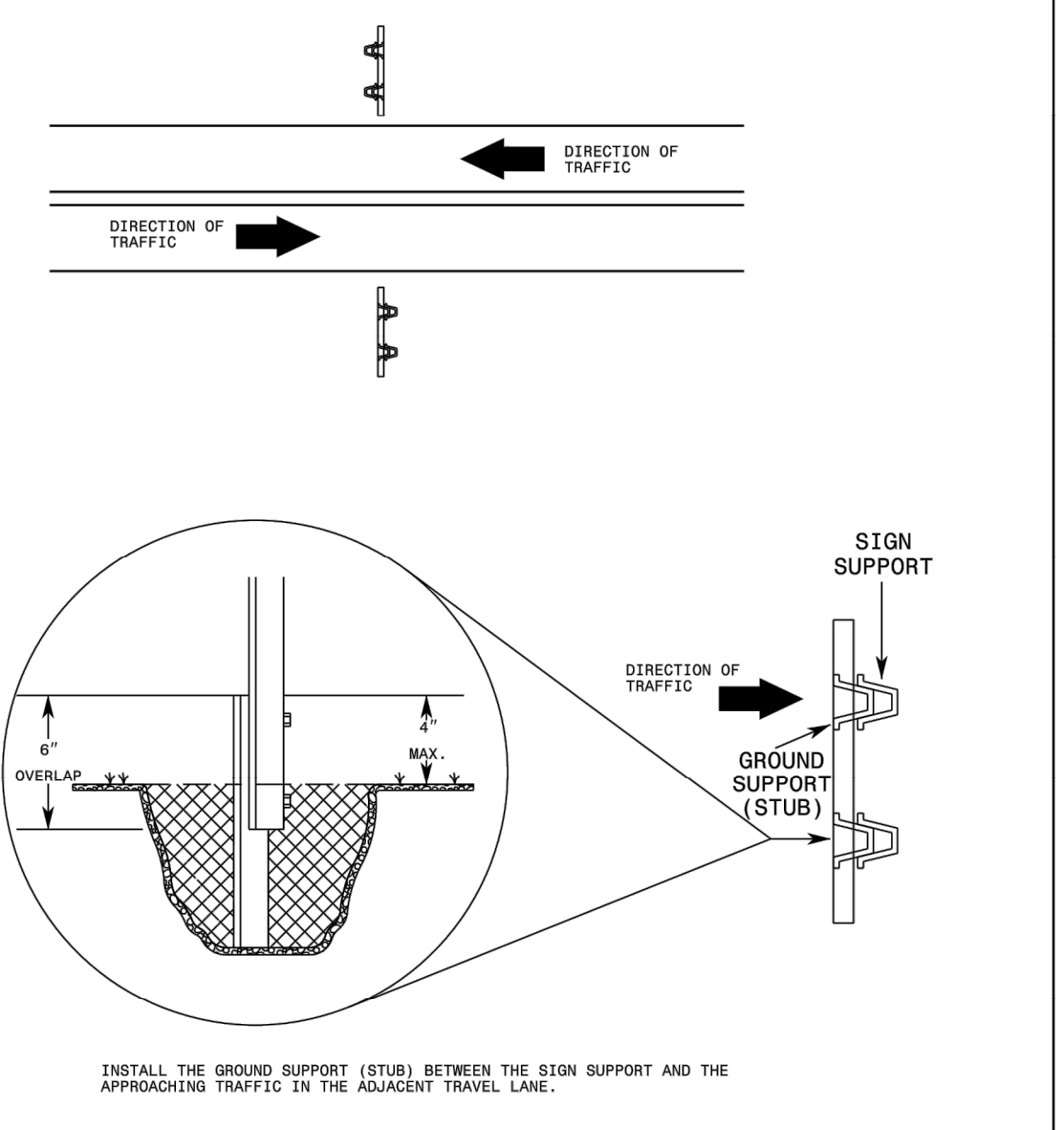


- GENERAL NOTES**
- 1- DIMENSIONS SHOWN ARE MINIMUM VALUES. WHEN SIGNS ARE MOUNTED BEHIND TRAFFIC CONTROL DEVICES SUCH AS DRUMS, BARRIER, OR OTHER OBJECTS THAT DETRACT FROM THEIR VISIBILITY, MOUNT THE SIGNS AT AN APPROPRIATE HEIGHT SUCH THAT THEY ARE CLEARLY VISIBLE TO APPROACHING TRAFFIC.
  - 2- MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
  - 3- REFER TO STANDARD SPECIFICATION 1089-1 FOR WORK ZONE SIGNS.
  - 4- REFER TO STANDARD SPECIFICATION 1089-2 FOR WORK ZONE SIGN SUPPORTS.
  - 5- REFER TO RSD. 903.20 FOR WOOD POSTS.
  - 6- REFER TO STANDARD SPECIFICATION 903-1 FOR WOOD SUPPORTS.

STATE OF NORTH CAROLINA  
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ROADWAY STANDARD DRAWING FOR  
**STATIONARY WORK ZONE SIGNS**  
MOUNTING HEIGHT & LATERAL CLEARANCE

SHEET 1 OF 3  
**1110.01**



- GENERAL NOTES**
- 1- ALL TRAFFIC CONTROL DEVICES, INCLUDING BREAKAWAY SYSTEMS FOR GROUND MOUNTED SIGN SUPPORTS, COMPLY WITH ALL NCHRP REPORT 350 REQUIREMENTS AND SHALL BE APPROVED BY THE DEPARTMENT.
  - 2- INSTALL THE BREAKAWAY SYSTEM TO FUNCTION PROPERLY IN ACCORDANCE WITH THE DIRECTION OF TRAFFIC ADJACENT TO THE SIGN.
  - 3- FOR PERFORATED SQUARE TUBING BREAKAWAY SYSTEMS, FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR ANCHOR EMBEDMENT DEPTHS AND POST ATTACHMENT REQUIREMENTS.
- 3 LB. U-CHANNEL SPLICING REQUIREMENTS**
- 1- WHEN SIGN IS REMOVED AT THE END OF PROJECT, REMOVE THE GROUND SUPPORT (STUB).
  - 2- WHEN SPLICING A U-CHANNEL SUPPORT, INSTALL THE GROUND SUPPORT (STUB) APPROXIMATELY 36" TO 42" INTO THE GROUND WHILE LEAVING NO MORE THAN 4" ABOVE THE EXISTING GROUND ELEVATION. REMOVE ENOUGH SOIL FROM AROUND THE GROUND SUPPORT (STUB) TO PERMIT ACCESS TO THE HOLES FOR THE BREAKAWAY SYSTEM. ONCE THE BREAKAWAY SYSTEM IS TIGHTENED, REPLACE THE SOIL AND TAMP.
  - 3- OVERALL LENGTH OF THE BREAKAWAY SYSTEM IS 6". BOLTS MUST BE 4" APART. ATTACH THE SIGN SUPPORT TO THE BACK OF THE GROUND SUPPORT (STUB) WITH THE APPROPRIATE HARDWARE SUPPLIED BY THE MANUFACTURER OF THE BREAKAWAY SYSTEM.
  - 4- INSTALL U-CHANNEL BREAKAWAY SYSTEMS SO THE GROUND SUPPORT (STUB) IS INSTALLED ON THE APPROACH SIDE OF TRAFFIC WHILE THE SIGN SUPPORT IS ATTACHED/SPLICED BEHIND THE GROUND SUPPORT (STUB).

STATE OF NORTH CAROLINA  
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RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**STATIONARY WORK ZONE SIGNS**  
SPLICING DETAIL

SHEET 2 OF 3  
**1110.01**

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 PLOT DATE: 12/28/2021 9:59 AM BY: E:\THARRINGTON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by **Caroline E. Wilson**

Date: 2021.12.28 15:04:28-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

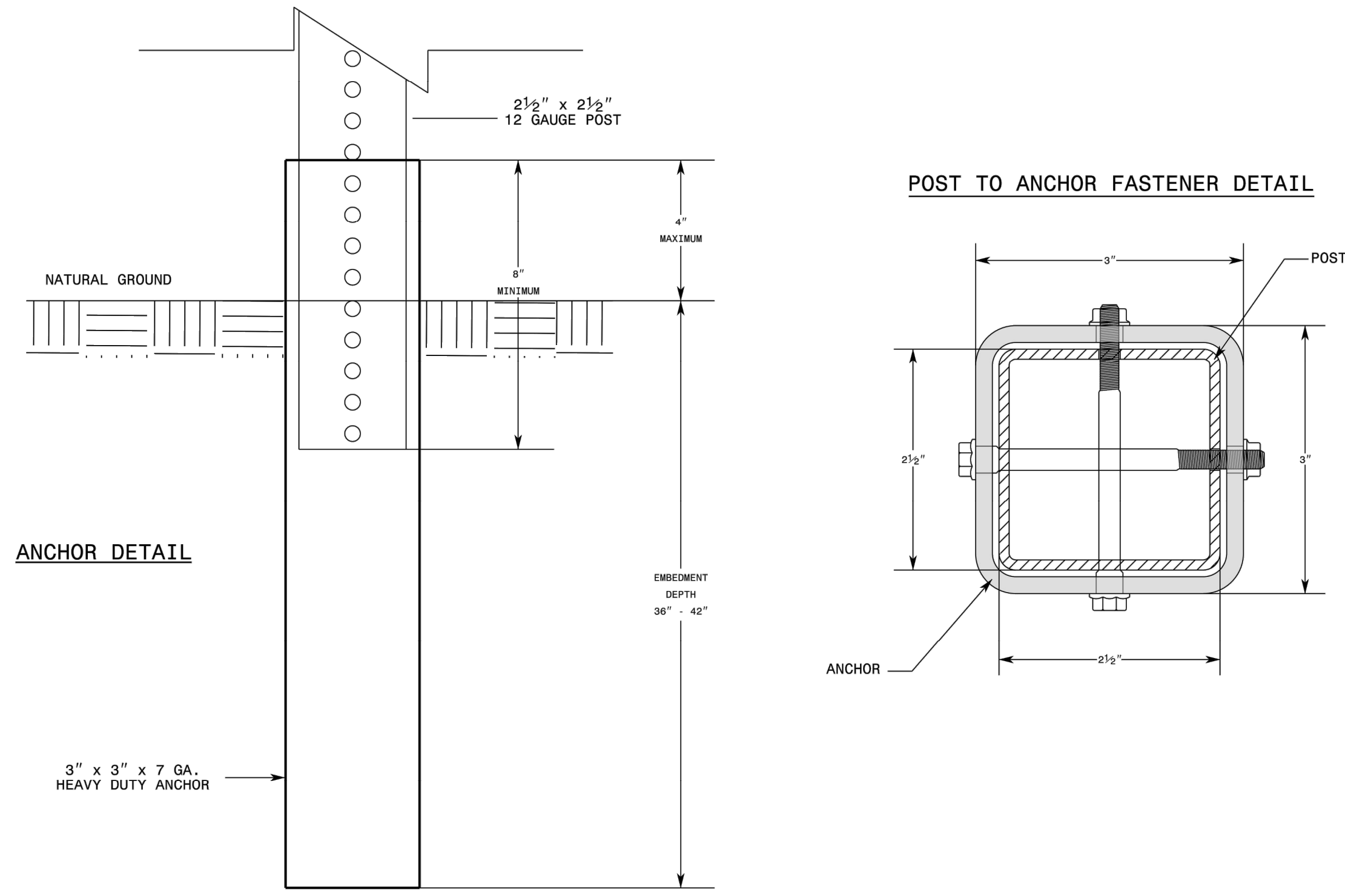
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NCDOT TRAFFIC CONTROL DETAILS - SHEET 1

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	

CD9





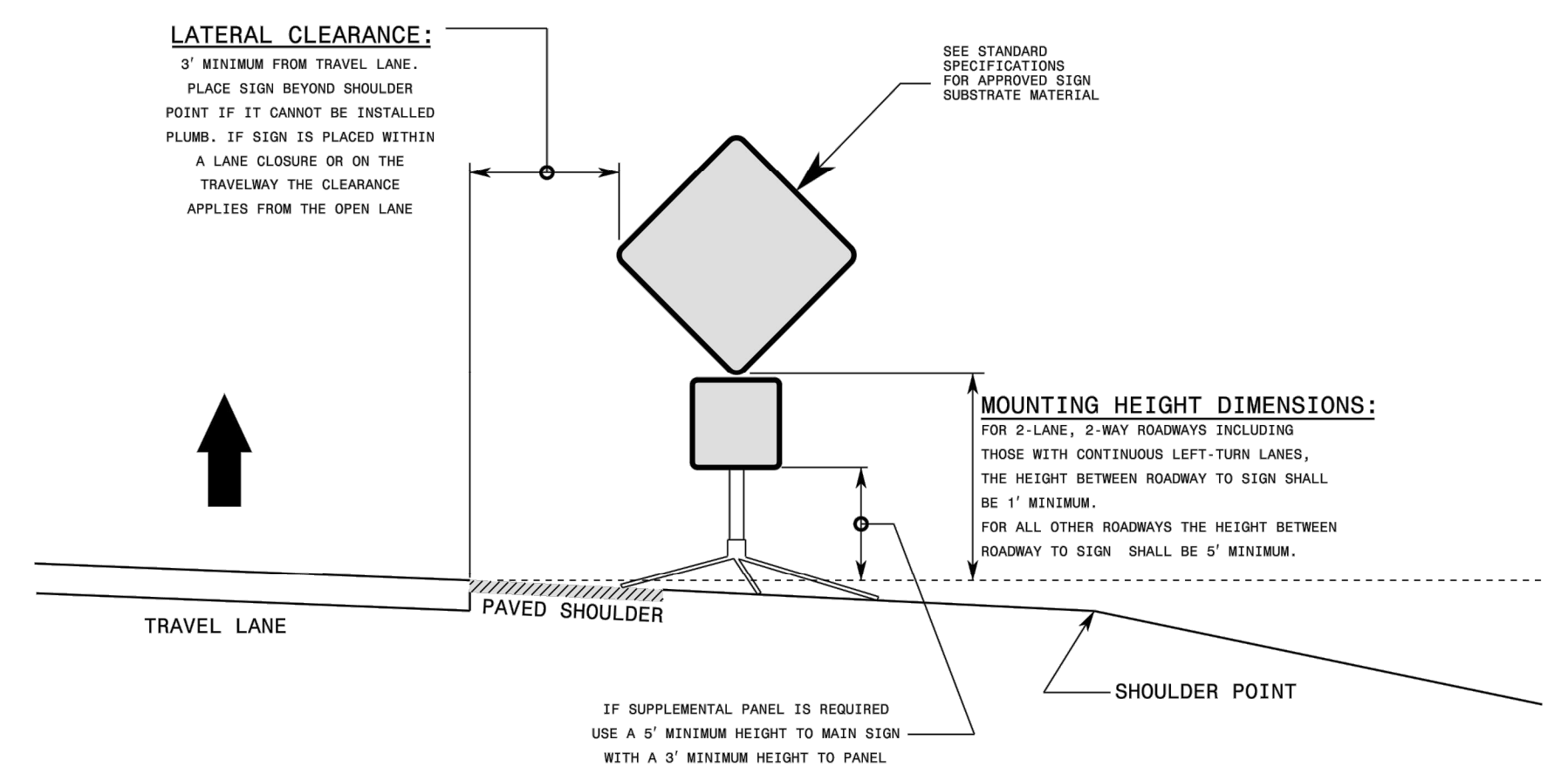
- GENERAL NOTES**
- 1- POSTS SHALL BE 2 1/2" X 2 1/2" 12 GAUGE STEEL.
  - 2- ANCHORS SHALL BE 3" X 3" 7 GAUGE STEEL.
  - 3- CONNECTIONS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR STATIONARY WORK ZONE SIGNS PERFORATED SQUARE STEEL TUBING

SHEET 3 OF 3

1110.01



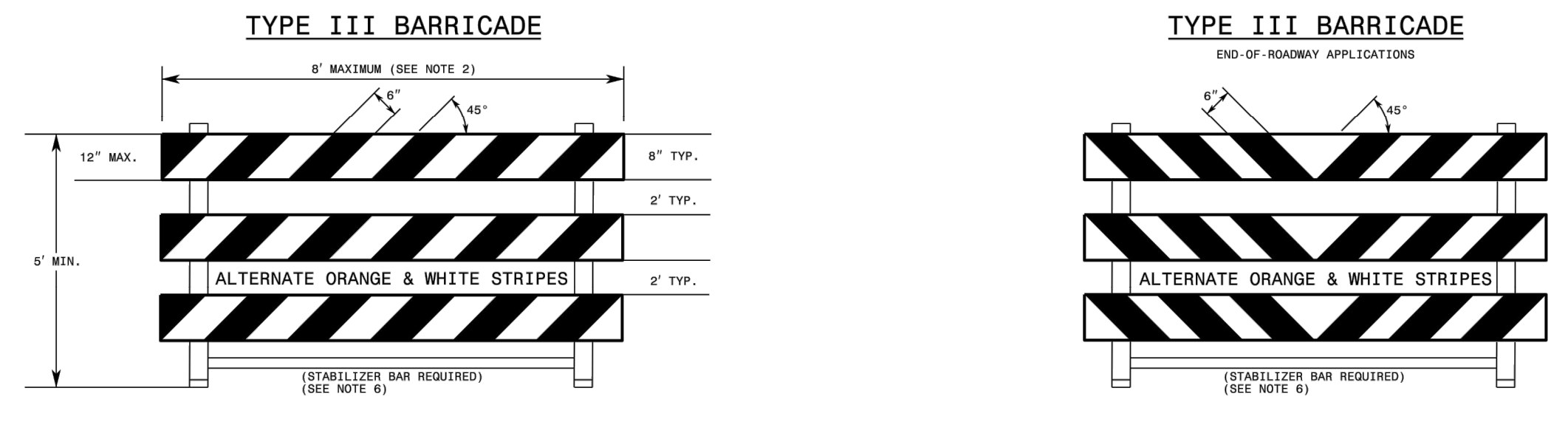
- GENERAL NOTES**
- 1- DIMENSIONS SHOWN ARE MINIMUM VALUES. MOUNT SIGNS SO THEY WILL BE CLEARLY VISIBLE TO APPROACHING TRAFFIC EVEN WHEN SIGNS ARE MOUNTED BEHIND TRAFFIC CONTROL DEVICES SUCH AS DRUMS, BARRIER, OR OTHER OBJECTS.
  - 2- ALL PORTABLE SIGNS AND STANDS MUST MEET OR EXCEED THE REQUIREMENTS OF NCHRP 350 FOR CATEGORY II DEVICES. USE PORTABLE WORK ZONE SIGNS AND STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER.
  - 3- ALL PORTABLE WORK ZONE SIGNS AND STANDS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR PORTABLE WORK ZONE SIGNS MOUNTING HEIGHT & LATERAL CLEARANCE

SHEET 1 OF 1

1110.02



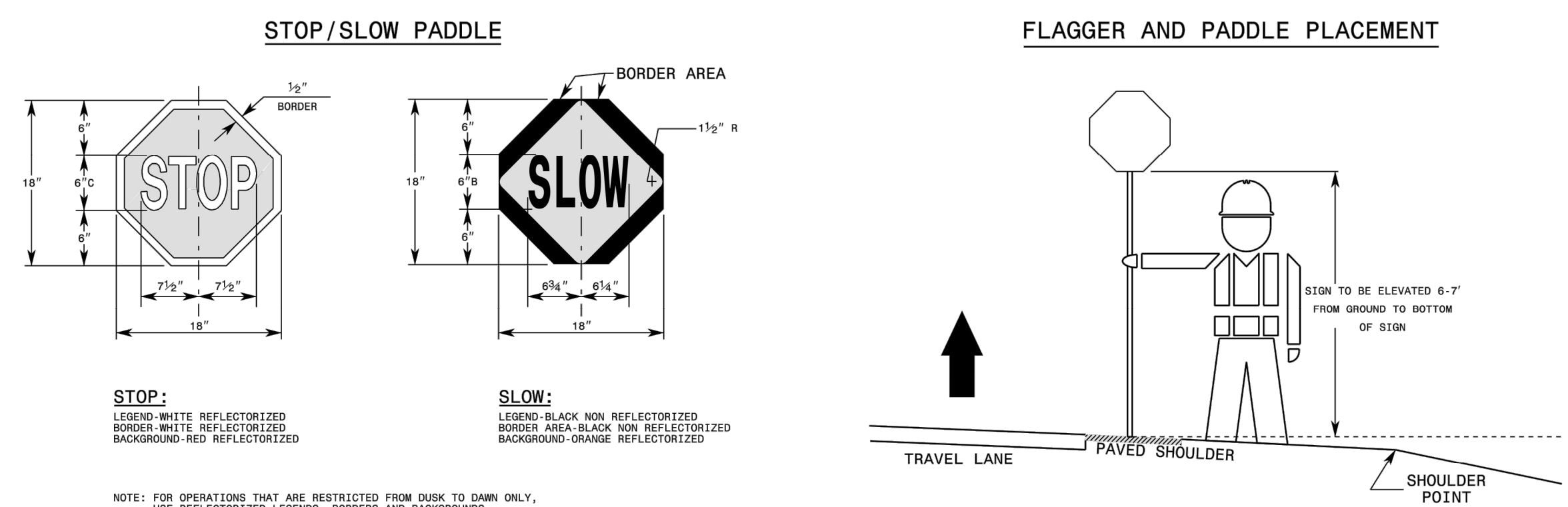
- GENERAL NOTES**
- 1- HORIZONTAL RAILS FOR MAY BE CONSTRUCTED OF APPROVED COMPOSITE, HOLLOW/CORRUGATED EXTRUDED RIGID POLYOLEFIN, HIGH DENSITY POLYETHYLENE, OR OTHER NCDOT APPROVED MATERIAL.
  - 2- BARRICADE SHALL BE LIMITED TO A MAXIMUM LENGTH OF 8 FT UNLESS NCHRP 350 CRASH TESTED FOR CATEGORY II DEVICES AND NCDOT APPROVED.
  - 3- ONLY NCDOT APPROVED COMPOSITE AND ROLL-UP SIGNS MAY BE MOUNTED ON THE BARRICADE RAILS. MOUNT SIGNS TO BARRICADE RAILS TO ENSURE SIGN WILL NOT BECOME DETACHED UNDER NORMAL WIND AND TRAFFIC CONDITIONS.
  - 4- SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FOOT FROM THE GROUND TO THE BOTTOM OF THE SIGN UNLESS SIGNS R11-3 OR R11-4 ARE REQUIRED BY THE PLANS OR DIRECTED BY THE ENGINEER.
  - 5- BARRICADE MUST BE NCHRP 350 FOR CATEGORY II DEVICES AND NCDOT APPROVED WITH STABILIZER BAR OR ADEQUATE LATERAL BRACING.
  - 6- ASSEMBLY OF THE GENERIC BARRICADES MUST BE SELF CERTIFIED BY THE ASSEMBLER.
  - 7- BARRICADES USED TO CLOSE A ROADWAY SHALL EXTEND ACROSS THE ENTIRE ROADWAY. WHERE LOCAL TRAFFIC MUST BE MAINTAINED, THEY MAY BE PLACED IN A STAGGERED PATTERN.
  - 8- STRIPES ON WORK ZONE BARRICADE RAILS SHALL BE ALTERNATE ORANGE AND WHITE RETROREFLECTIVE STRIPES, SLOPED DOWNWARD TOWARDS THE SIDE WHICH TRAFFIC IS TO PASS OR TURN IN DETOURING. WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.
  - 9- USE RED AND WHITE STRIPES FOR PERMANENT BARRICADES.
  - 10- ALL BARRICADES MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.
  - 11- PLACE MANUFACTURER'S NAME AND FEDERAL HIGHWAY ADMINISTRATION'S NCHRP 350 APPROVAL LETTER NUMBER ON BARRICADE FRAME.
  - 12- PLACE SANDBAGS OR OTHER APPROVED BALLASTING METHODS ON THE FEET OF THE FRAME. DO NOT PLACE SANDBAGS ON TOP OF A STRIPED RAIL OR STABILIZER BAR. DO NOT BALLAST BARRICADES BY HEAVY OBJECTS SUCH AS ROCKS, CHUNKS OF CONCRETE OR OTHER ITEMS THAT WOULD CAUSE DAMAGE IF THE BARRICADE IS STRUCK BY A VEHICLE.

1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR BARRICADES TYPE-III

SHEET 1 OF 1

1145.01



- GENERAL NOTES**
- 1- USE HAND SIGNALING DEVICES SUCH AS STOP-SLOW PADDLES, FLASHLIGHTS TO CONTROL TRAFFIC. USE STOP-SLOW PADDLES AS THE PRIMARY DEVICE.
  - 2- FABRICATE STOP-SLOW PADDLES FROM SHEET METAL OR OTHER LIGHT SEMI RIGID MATERIAL. PROVIDE A RIGID HANDLE OF SUFFICIENT LENGTH SO THE PADDLE IS HELD AT 6-7' ABOVE GROUND LEVEL.
  - 3- PROVIDE STOPPING SIGHT DISTANCE TO EACH FLAGGER STATION. REFER TO RSD. 1101.11, SHEET 2.
  - 4- ILLUMINATE FLAGGER STATIONS DURING NIGHT OPERATIONS.
  - 5- FOLLOW FLAGGER QUALIFICATIONS AND METHODS OF HAND-SIGNALING PROCEDURES IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
  - 6- ALL FLAGGERS MUST BE CERTIFIED BY AN NCDOT APPROVED TRAINING RESOURCE.

1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR FLAGGERS

SHEET 1 OF 1

1150.01

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	K. BRAY
DESIGNED BY:	C. WILSON
DRAWN BY:	S. KANE
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Digitally signed by Corrine E. Wilson  
Date: 2021.12.28 15:04:33-05'00'

**Hazen**

HAZEN AND SAWYER  
4011 WESTCHASE BOULEVARD, SUITE 500  
RALEIGH, NORTH CAROLINA 27607  
LICENSE NO.: C-0381

CITY OF GREENVILLE  
GREENVILLE, NORTH CAROLINA

CEDAR LANE DRAINAGE IMPROVEMENTS

CIVIL  
NCDOT TRAFFIC CONTROL DETAILS - SHEET 2

DATE:	JANUARY 2022
HAZEN NO.:	31187-003
CONTRACT NO.:	
DRAWING NUMBER:	CD10