

West Energy Sanitary Sewer  
in Columbia, SC  
State Project # H27-Z185-CP  
Prepared For



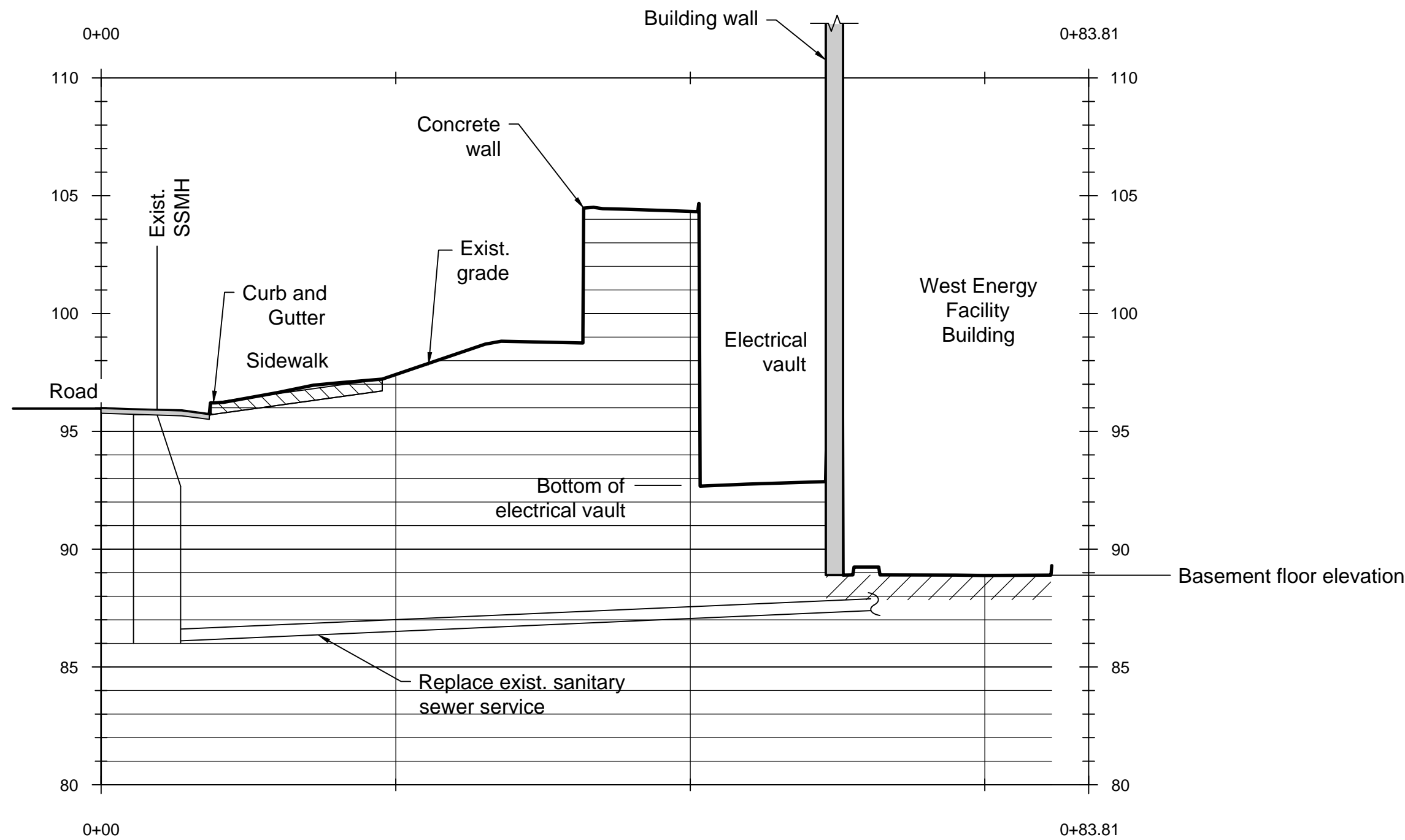
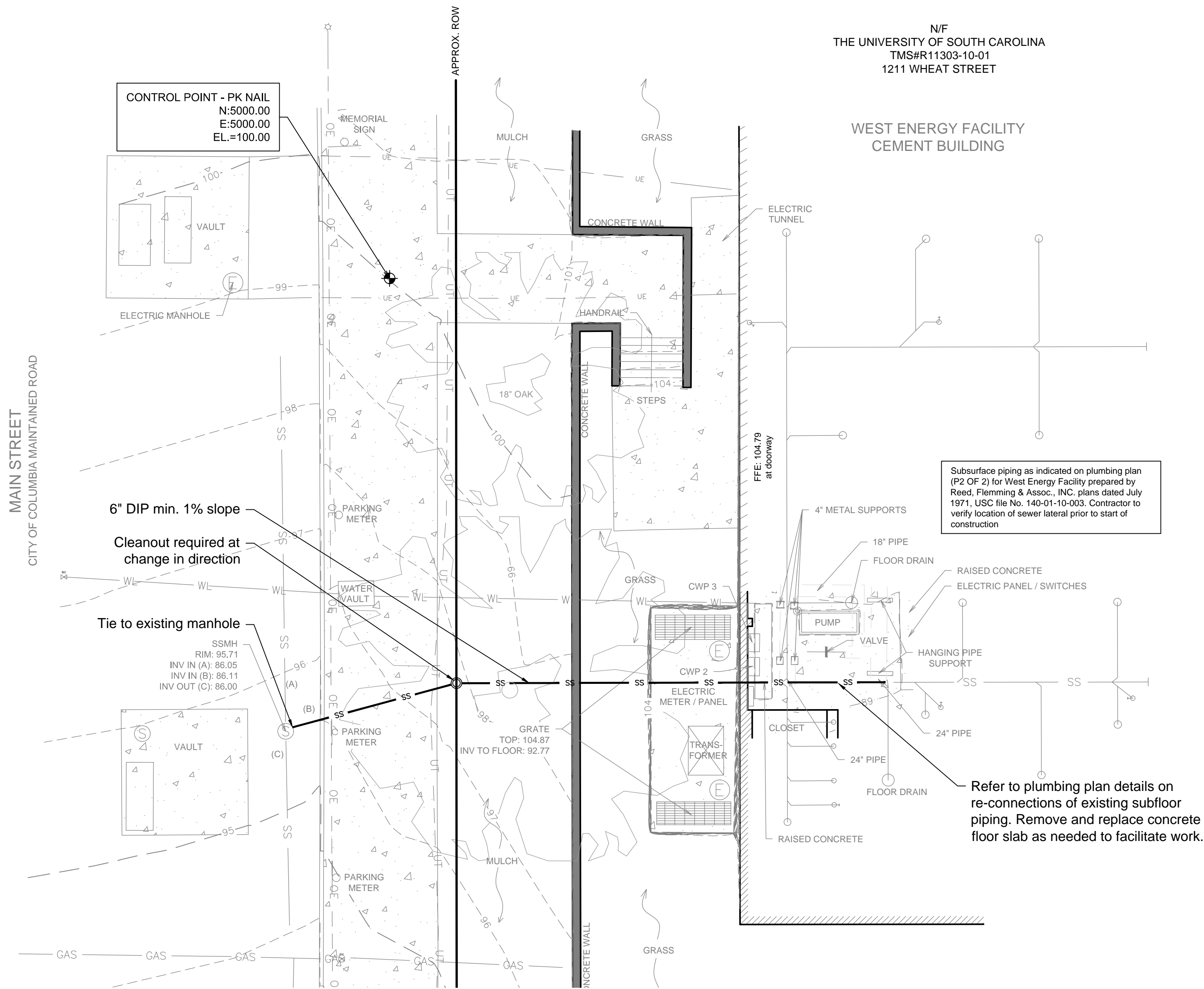
by:  
**Chao & Associates, Inc.**  
CA#: 398108-16  
June 26, 2016



<div>The Owner Is: University of South Carolina 743 Greene Street Columbia, SC 29208</div> <div>Project Manager Civil and Surveying Chao &amp; Associates, Inc. 7 Clusters Court Columbia, SC 29210</div> <div>Plumbing Engineer Swygert &amp; Associates Ltd 1315 State Street Cayce, SC 29033</div>	DRAWING INDEX	LOCATION MAP	
	<div>Civil c1.0 - Existing Conditions c2.0 - Utility Plan c3.0 - Construction Details</div> <div>Plumbing p1.0 -</div>	COUNTY OF RICHLAND SCALE: NOT TO SCALE	STATE OF SOUTH CAROLINA SCALE: 1" = 30 MILES
		A detailed street map of Richland County, South Carolina, showing the project site location relative to major roads like Greene St, Blossom St, Wheat St, Assembly St, and Whaley St.	A map of the state of South Carolina showing major interstate highways (I-26, I-85, I-95, I-77, I-20) and the location of Richland County and the project site.



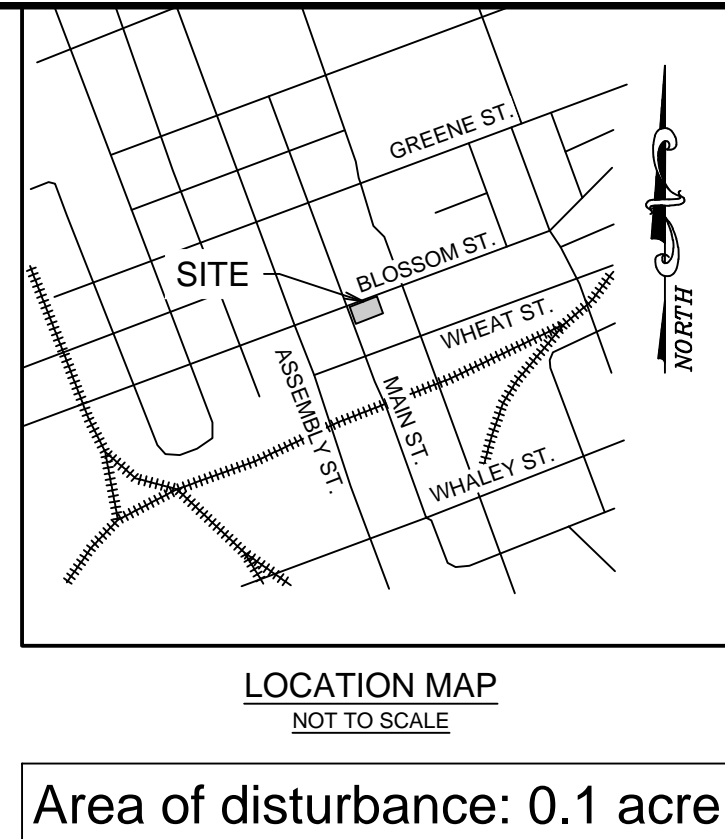
LEGEND			
	FIRE HYDRANT		CONC. CURB & GUTTER
	WATER VALVE		YARD INLET (YI)
	WATER METER		JUNCTION BOX (JB)
	GAS VALVE		DROP INLET (DI)
	SANITARY SEWER MANHOLE		CURB INLET (CI)
	CLEANOUT (CO)		STORM DRAIN PIPE
	NATURAL GAS LINE		CONCRETE SIDEWALK
	SANITARY SEWER LINE (MATERIAL UNKNOWN)		POWER POLE & GUY
	WATER LINE		LIGHT POLE
	FENCE		ELEC BOX
	OVERHEAD ELECTRIC		TELEPHONE PED
	UNDERGROUND TELEPHONE		A/C 2 X 2 PAD
	UNDERGROUND FIBER OPTIC LINE		
	UNDERGROUND CABLE TV		



Ground Level to Basement  
Scale: 1" = 10' horiz.  
1" = 5' vert.

3 DAYS BEFORE DIGGING IN  
SOUTH CAROLINA  
**CALL 811**  
Palmetto Utility Protection Service

- Notes:
- Existing conditions survey performed by Chao and Associates.
  - Street Right-of-Way and property information taken from Richland County GIS.
  - Benchmark is based on assumed datum.



Area of disturbance: 0.1 acre

Utility Plan  
West Energy Sanitary Sewer - State Project # H27-Z185-CP  
Prepared for:  
University of South Carolina  
Columbia, Richland County, SC

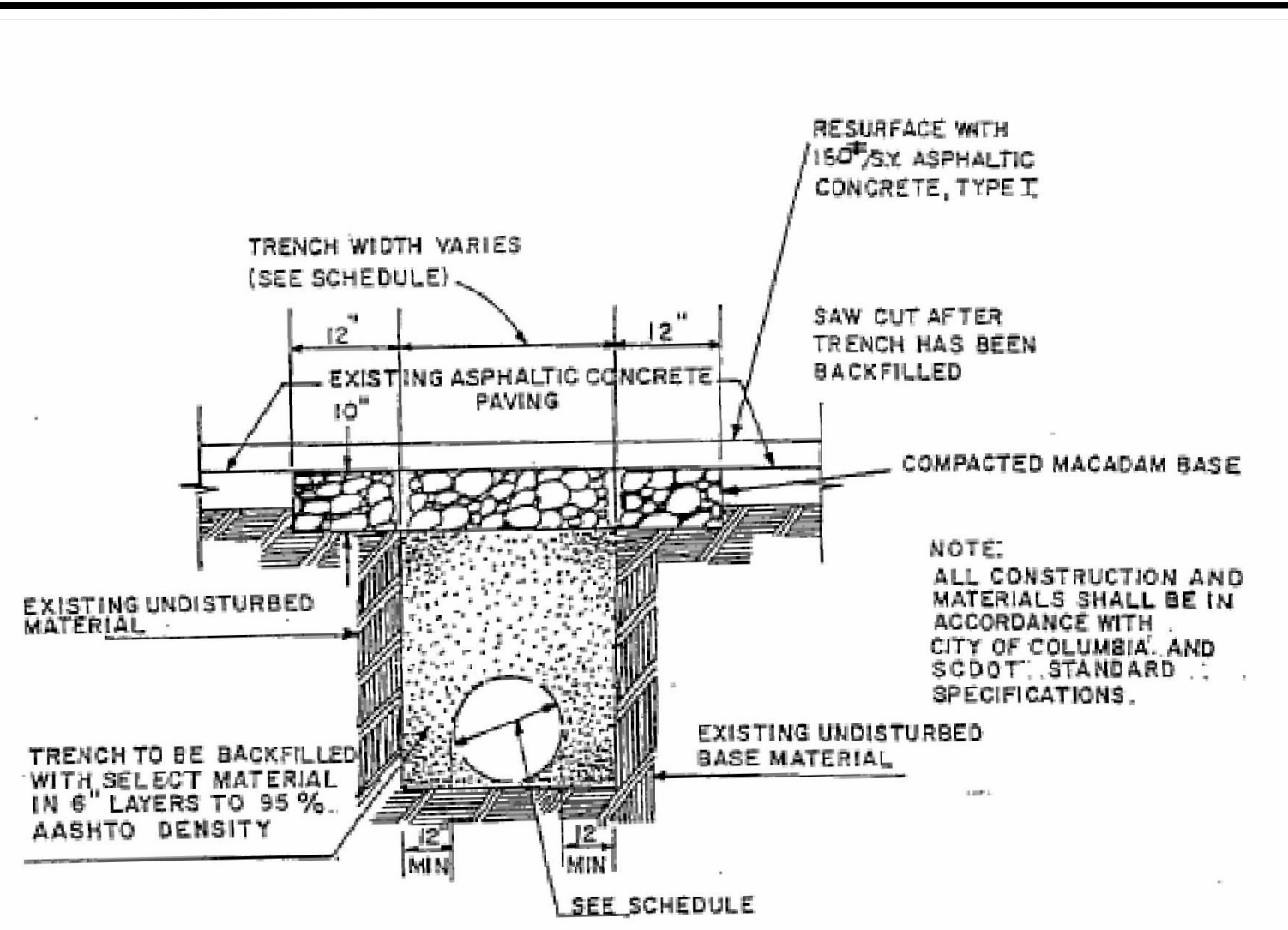
Chao & Associates, Inc.  
Civil - Structural - Survey  
7 Clusters Court  
Columbia, SC 29210  
Voice: (803) 772-8420  
Fax: (803) 772-9120  
Email: consult@chaoinc.com



Drawn: HMC	Checked: GAL
Revised:	
File: 398108C-R2.dwg	Project No.: 398108

**c2.0**  
Sheet Number  
June 26, 2016  
Date



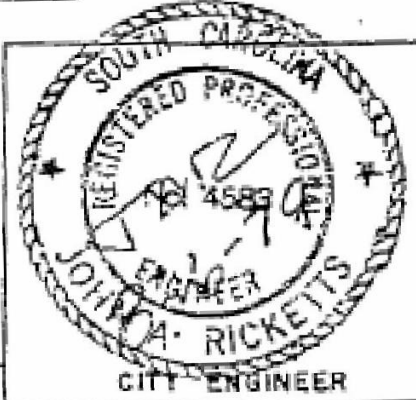


**TYPICAL PERMANENT REPAIR SECTION ROAD PAVEMENT**  
NOT TO SCALE  
FOR USE ONLY ON SECONDARY ROADS WITH LOW VOLUME OF TRAFFIC WHERE CONSTRUCTION IS GENERALLY PARALLELING THE CENTERLINE OF THE PAVING AND EXISTING STREET DOES NOT HAVE CURB AND GUTTER

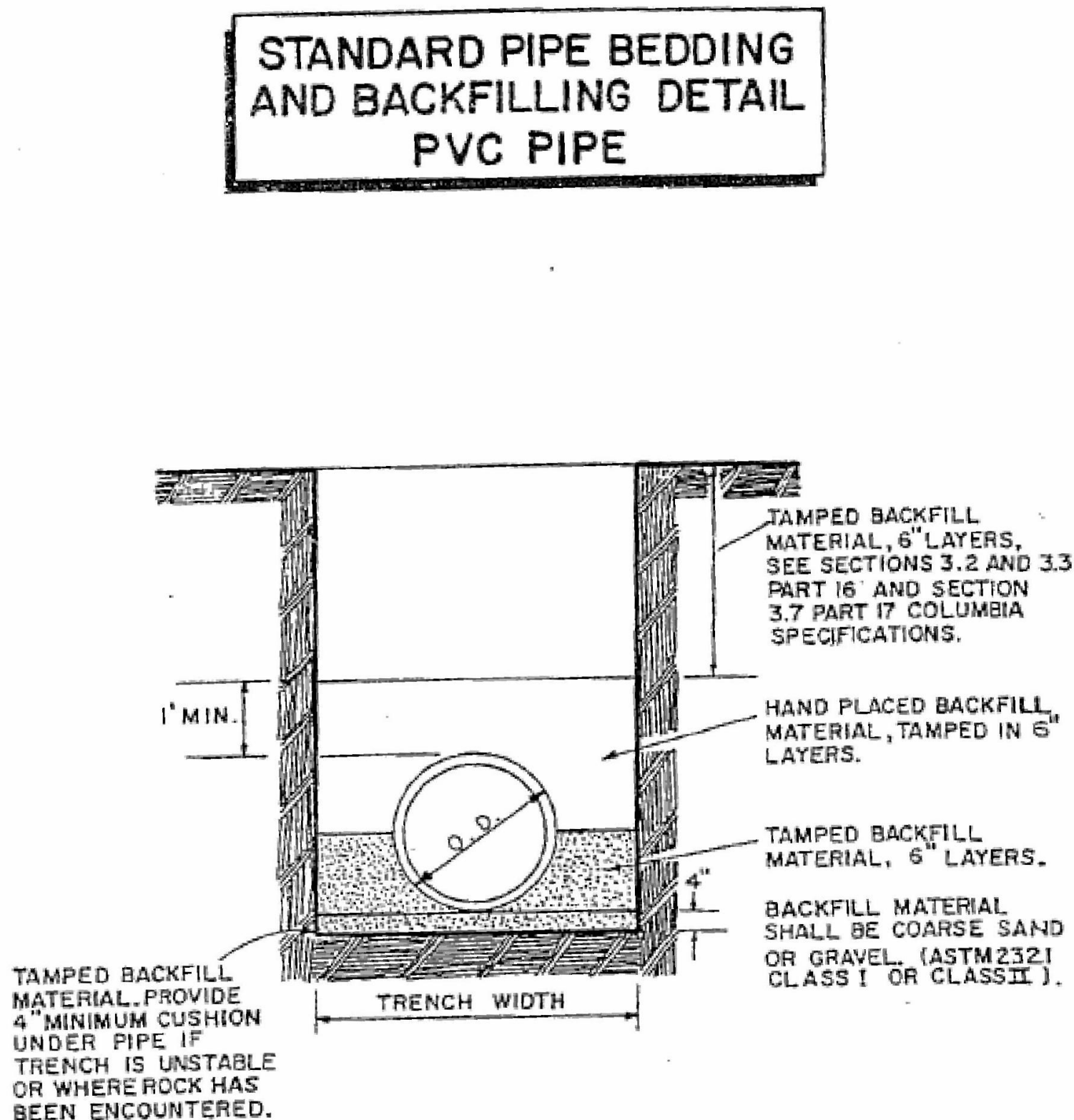
MIN. TRENCH WIDTH SCHEDULE					
PIPE SIZE I.D.	12" & LESS	15" TO 24"	24" TO 30"	33" TO 54"	60" & OVER
TRENCH WIDTH (W/O SHORING)	36"	1.0 + 24"	1.0 + 30"	O.D. + 30"	O.D. + 36"
TRENCH WIDTH (W/SHORING)	48"	1.0 + 36"	1.0 + 42"	O.D. + 42"	O.D. + 48"

**TYPICAL REPAIR SECTIONS**

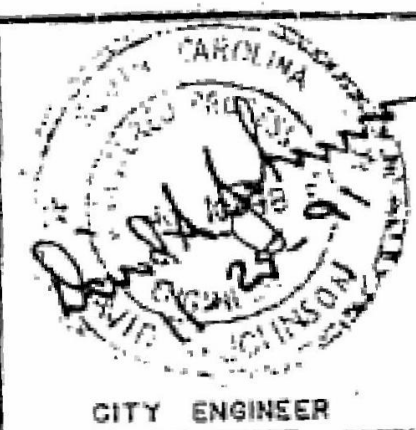
REVISED: 2-21-94  
REVISED: 9-10-93  
REVISED: 8-20-79  
DATE: 8-16-79



DEPARTMENT OF UTILITIES & ENGINEERING

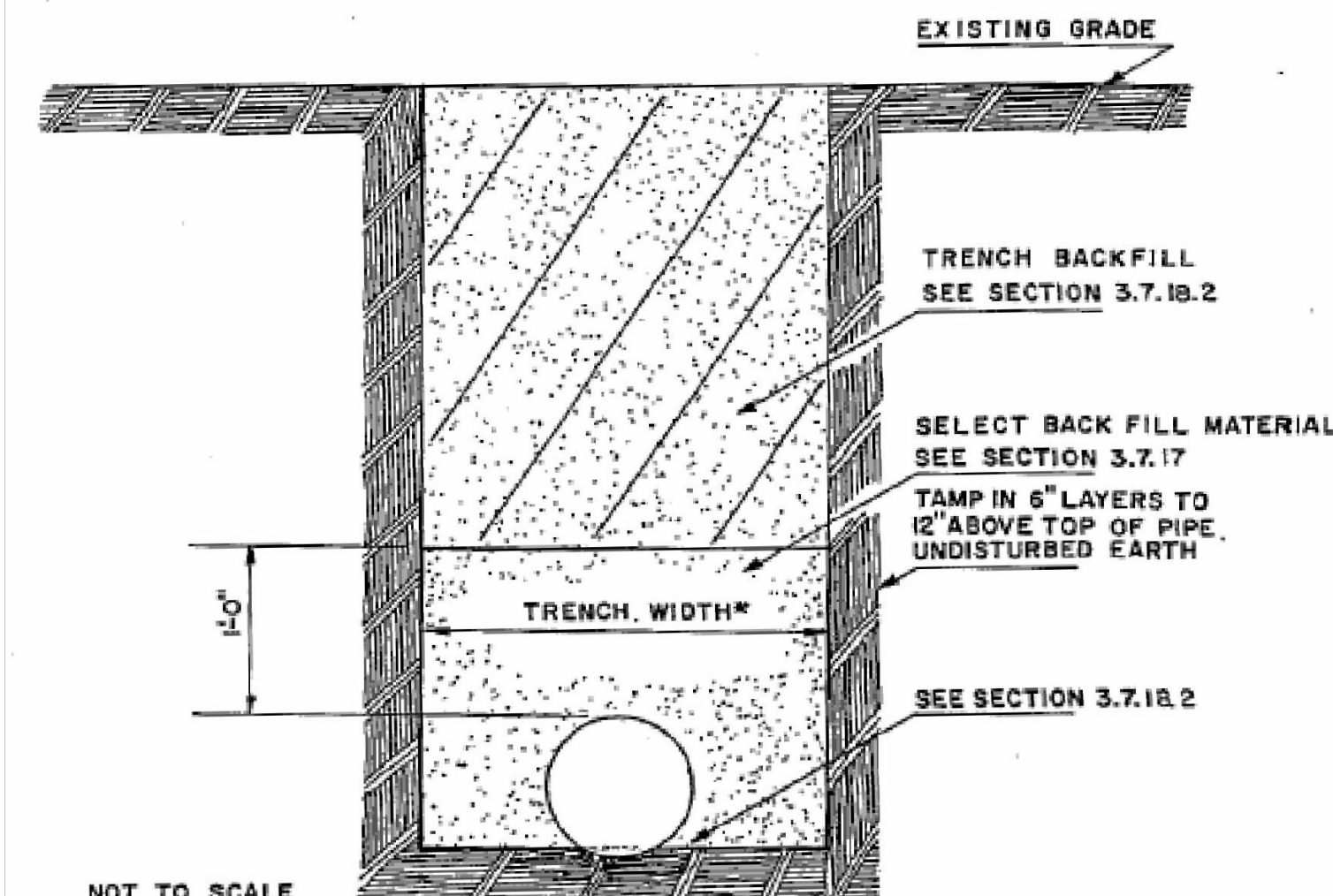


THE PIPE IS TO BE BEDDED IN COMPACTED 6" LAYERS TO THE SPRINGING LINE FIRST, THEN BACK-FILLED WITH HAND PLACED MATERIAL COMPACTED IN 6" LAYERS TO A DEPTH OF 1' MINIMUM ABOVE THE PIPE. SEE SECTIONS 3.2 AND 3.3 (PART 16) AND SECTION 3.7 (PART 17) COLUMBIA SPECIFICATIONS FOR REMAINDER OF THE BACKFILL.



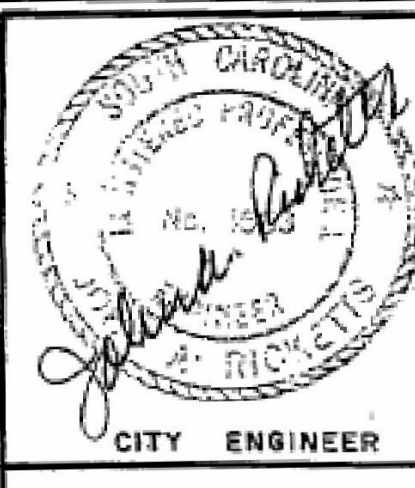
DEPARTMENT OF UTILITIES AND ENGINEERING

**STANDARD DITCH BACKFILL DETAIL**

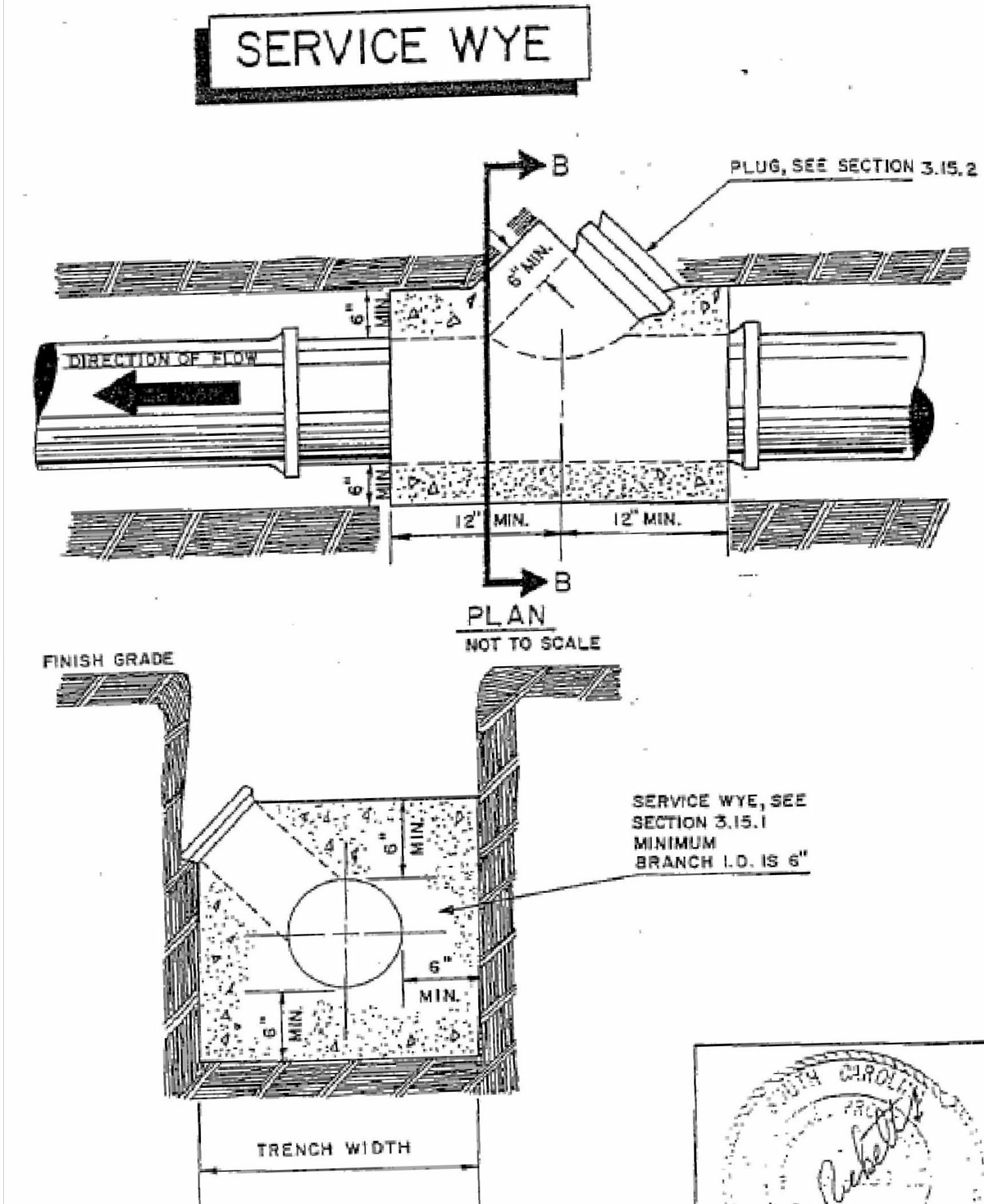


MIN. TRENCH WIDTH						
PIPE SIZE I.D.	6" THRU 10"	12"	15"	18"	21"	24"
TRENCH WIDTH*	2'-6"	2'-8"	2'-10"	3'-2"	3'-8"	4'-0"
TRENCH WIDTH WITH BRACING	3'-2"	3'-4"	3'-6"	3'-10"	4'-4"	4'-8"

TRENCH WIDTH DIMENSIONS ARE FROM THE INSIDE OF THE SHEETING AND BRACING AND AT AND BELOW THE TOP OF THE PIPE.  
SEE SECT. 3.7.3 FOR PIPE OVER 24" DIA.

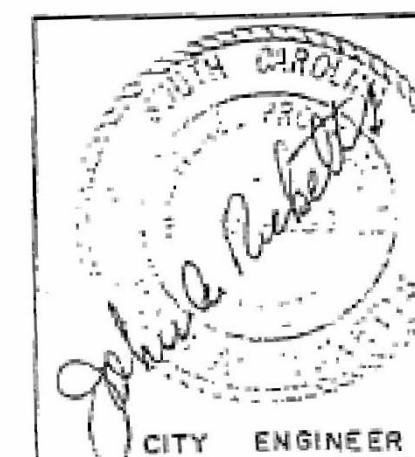


COLUMBIA ENGINEERING DEPARTMENT



**SECTION "B-B"**

NOT TO SCALE  
CL.B. CONCRETE PER SCDHPT SECT. 701



COLUMBIA ENGINEERING DEPARTMENT

**STANDARD NOTES**

- If necessary, slopes, which exceed eight (8) vertical feet should be stabilized with synthetic or vegetative mats, in addition to hydroseeding. It may be necessary to install temporary slope drains during construction. Temporary berms may be needed until the slope is brought to grade.
- Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than fourteen (14) days after work has ceased, except as stated below.
  - Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions stabilization measures must be initiated as soon as practicable.
  - Where construction activity on a portion of the Site is temporarily ceased, and earth-disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the Site.
- All sediment and erosion control devices shall be inspected once every calendar week. If periodic inspection or other information indicates that a BMP has been inappropriately or incorrectly installed, the Permittee must address the necessary replacement or modification required to correct the BMP within 48 hours of identification.
- Provide silt fence and/or other control devices, as may be required, to control soil erosion during utility construction. All disturbed areas shall be cleaned, graded, and stabilized with grassing immediately after the utility installation. Fill, cover, and temporary seeding at the end of each day are recommended. If water is encountered while trenching, the water should be filtered to remove any sediments before being pumped back into any waters of the State.
- All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control devices may be required during construction in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is stabilized.
- The contractor must take necessary action to minimize the tracking of mud onto paved roadway(s) from construction areas and the generation of dust. The contractor shall daily remove mud/soil from pavement, as may be required.
- Residential subdivisions require erosion control features for infrastructure as well as for individual lot construction. Individual property owners shall follow these plans during construction or obtain approval of an individual plan in accordance with S.C. Reg. 72-300 et seq. and SCR100000.
- Temporary diversion berms and/or ditches will be provided as needed during construction to protect work areas from upslope runoff and/or to divert sediment-laden water to appropriate traps or stable outlets.
- All waters of the State (WoS), including wetlands, are to be flagged or otherwise clearly marked in the field. A double row of silt fence is to be installed in all areas where a 50-foot buffer can't be maintained between the disturbed area and all WoS. A 10-foot buffer should be maintained between the last row of silt fence and all WoS.
- Litter, construction debris, oils, fuels, and building products with significant potential for impact (such as stockpiles of freshly treated lumber) and construction chemicals that could be exposed to storm water must be prevented from becoming a pollutant source in storm water discharges.
- A copy of the SWPPP, inspections records, and rainfall data must be retained at the construction site or a nearby location easily accessible during normal business hours, from the date of commencement of construction activities to the date that final stabilization is reached.
- Initiate stabilization measures on any exposed steep slope (3H:1V or greater) where land-disturbing activities have permanently or temporarily ceased, and will not resume for a period of 7 calendar days.
- Minimize soil compaction and, unless infeasible, preserve topsoil.
- Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
- Minimize the discharge of pollutants from dewatering of trenches and excavated areas. These discharges are to be routed through appropriate BMPs (sediment basin, filter bag, etc.).
- The following discharges from sites are prohibited:
  - Wastewater from washout of concrete, unless managed by an appropriate control;
  - Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
  - Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
  - Soaps or solvents used in vehicle and equipment washing.
- After construction activities begin, inspections must be conducted at a minimum of at least once every calendar week and must be conducted until final stabilization is reached on all areas of the construction site.
- If existing BMPs need to be modified or if additional BMPs are necessary to comply with the requirements of this permit and/or SC's Water Quality Standards, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as reasonably possible.
- A Pre-Construction Conference must be held for each construction site with an approved On-Site SWPPP prior to the implementation of construction activities. For non-linear projects that disturb 10 acres or more this conference must be held on-site unless the Department has approved otherwise.

**Permanent Seeding**

Species	Lbs/Ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bahiagrass (Alone)	40												
Bahiagrass (Mix)	30												
Bermuda Grass (Hulled) (Alone)	8-12												
Bermuda Grass (Hulled) (Mix)	46												
Fescue, Tall (KY31) Alone	40												
Fescue, Tall (KY31) mix	20												
Sericea Lespedeza (Scarified) Alone or Mix (inoculate with EL Inoculant)	40												
Ladino Clover (mix only)	2												
Innoculate with AB Inoculant													

**For Steep Slopes / Cut Slopes**

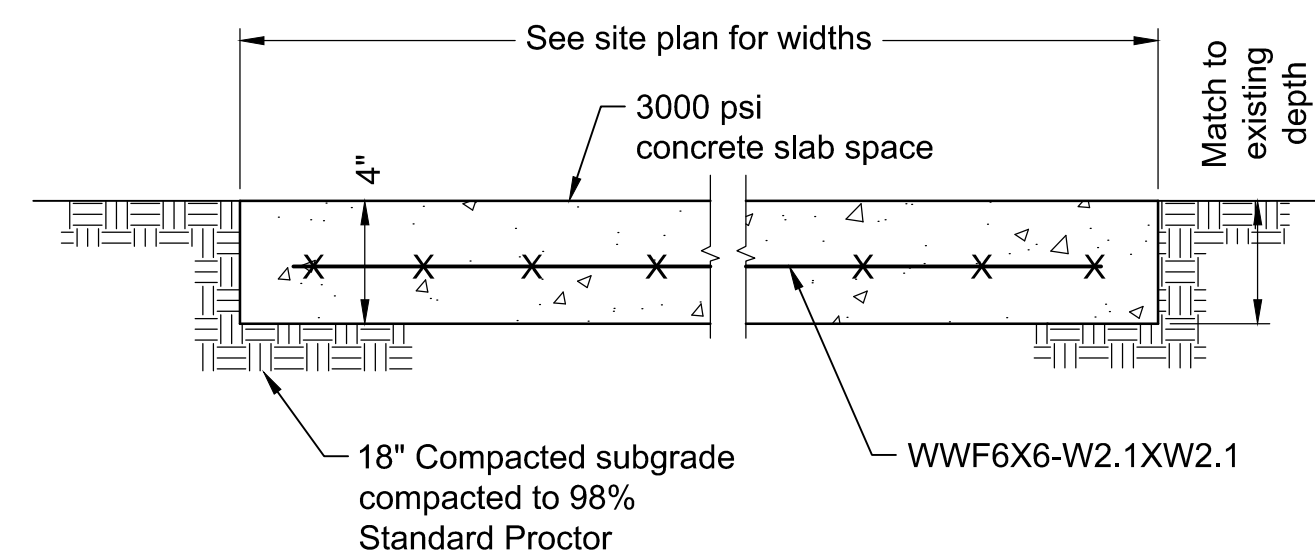
Weeping Lovegrass (Alone)	4												
Weeping Lovegrass (Mix)	2												
Crownvetch (Mix) (Inoculate with Type M Inoculant)	8-10												

**Temporary Seeding**

Species	lbs./ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Browntop Millet (Alone)	40												
Browntop Millet (Mix)	10												
Rye Grain (Alone)	56												
Rye Grain (Mix)	10												
Rye Grain (Alone)	50												
Rye Grain (Mix)	8												

**For Steep Slopes / Cut Slopes**

Weeping Lovegrass (Alone)	4												
Weeping Lovegrass (Mix)	2												

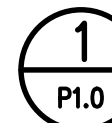
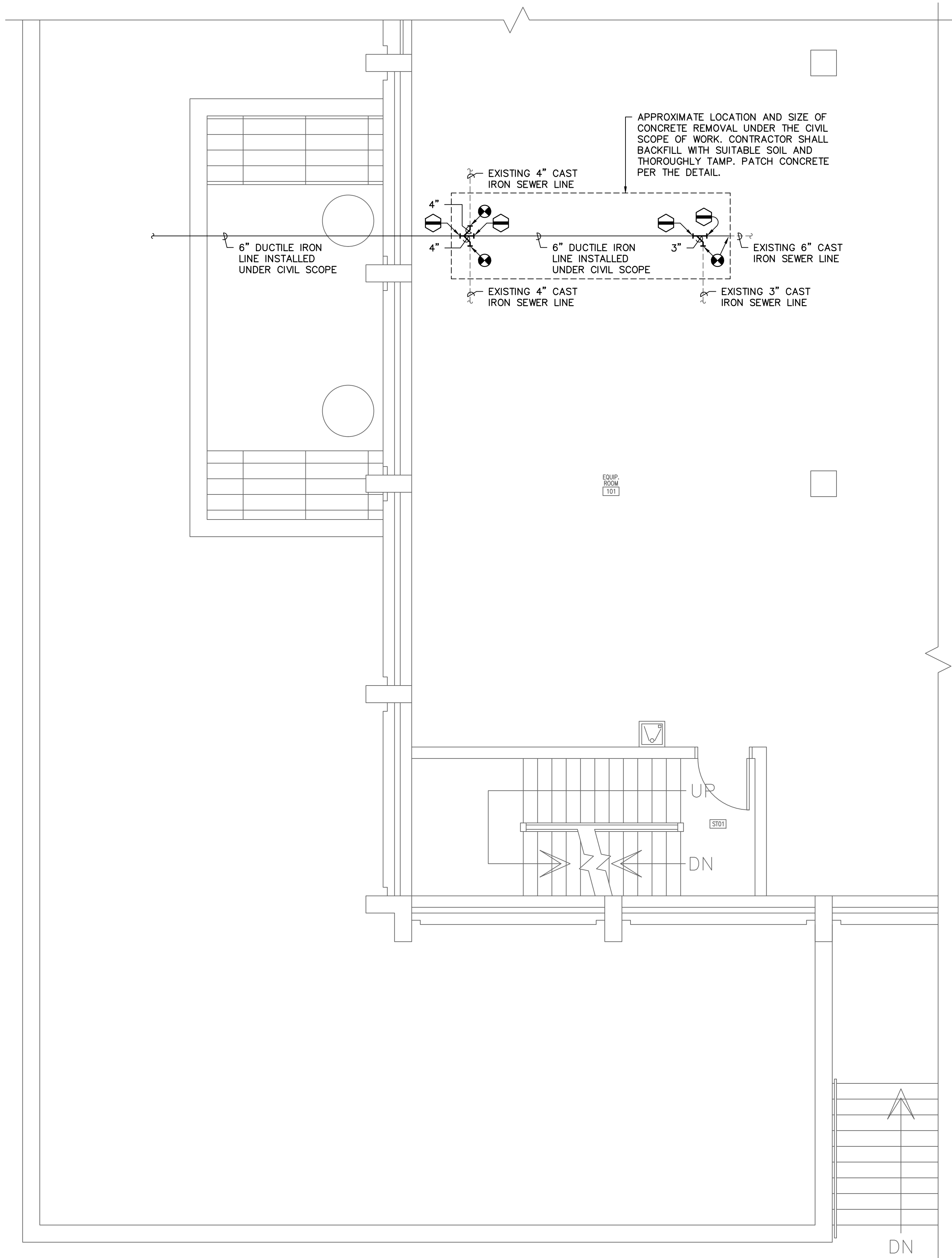


**Typical Concrete Sidewalk Section**

Not to scale



N:\PROJECTS\16245\DRAWINGS\PLUM\16245-P1\_0.dwg





# FIRST FLOOR PLAN

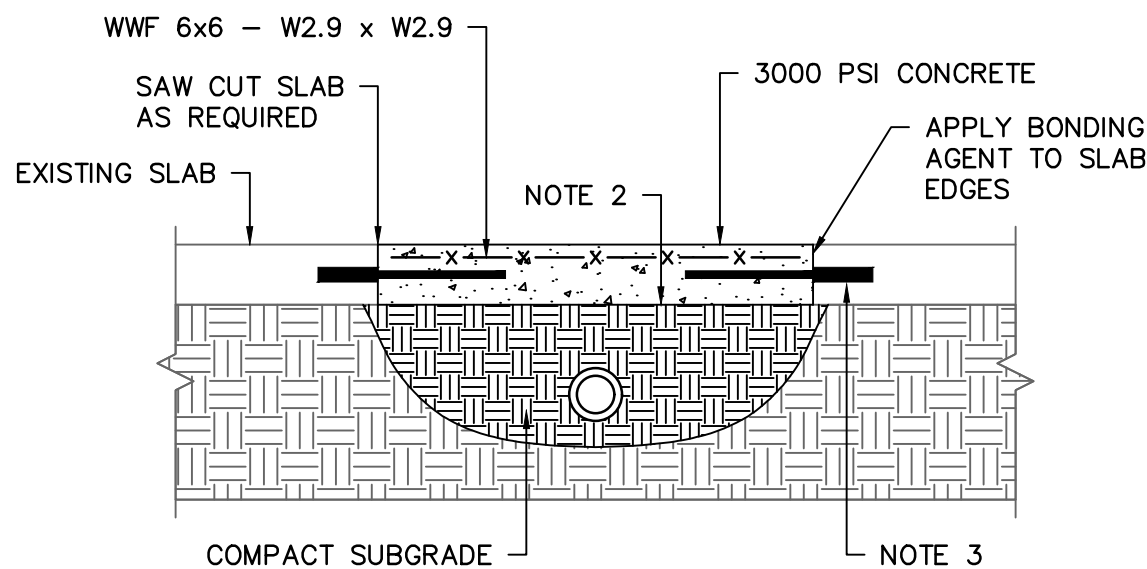
SCALE: 1/4" = 1'-0"

## GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED ACCORDING TO ALL LOCAL, STATE, NATIONAL CODES, AND THE 2015 INTERNATIONAL PLUMBING CODE.
2. THIS CONTRACTOR SHALL, PRIOR TO BIDDING, VISIT SITE AND DETERMINE SCOPE OF WORK AND POINTS OF CONNECTION FOR NEW WORK. VERIFY EXISTING INVERT ELEVATIONS.
3. COORDINATE CLOSELY WITH ALL WORK DONE UNDER OTHER DIVISIONS OF THE PROJECT SCOPE TO AVOID INTERFERENCE AND CONFLICT.
4. DURING CONSTRUCTION, CONTRACTOR SHALL ARRANGE FOR TEMPORARY REMOVAL OF WASTE FROM PIPING SYSTEM THROUGH THE USE OF A TEMPORARY SUMP BASIN AND SUMP PUMP. DISCHARGE TO AN ACCEPTABLE LOCATION.
5. ALL NEW PIPING SHALL BE STANDARD DUCTILE IRON PIPE TO MATCH THAT INSTALLED UNDER THE CIVIL SCOPE OF WORK.
6. EXISTING INFORMATION TAKEN FROM OWNERS RECORD SET OF DRAWINGS DATED JULY 1971. ALL LOCATIONS ARE APPROXIMATE.

## NOTES TO SHEET

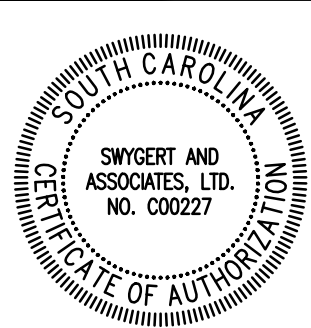
-  CUT DUCTILE IRON PIPE INSTALLED UNDER CIVIL SCOPE OF WORK FOR NEW FITTINGS REQUIRED TO CONNECT TO EXISTING SEWER LINES. RECONNECT DUCTILE IRON FITTINGS TO DUCTILE IRON PIPE WITH MECHANICAL JOINTS.
-  CONNECTION POINT OF NEW TO EXISTING BETWEEN DUCTILE IRON AND CAST IRON PIPE. UTILIZE TRANSITION GASKET WITH MECHANICAL JOINT FITTINGS AT JOINTS. PROVIDE CHANGE IN ELEVATION AS REQUIRED.



- NOTES:
1. SEE THE DRAWINGS OF ALL OTHER DISCIPLINES FOR AREAS WHERE EXISTING SLABS MUST BE CUT. REPAIR CUT AREAS AS SHOWN ABOVE.
  2. PROVIDE NEW VAPOR RETARDER OVER COMPACTED SUBGRADE AND LAP AND SEAL TO EXISTING WATERPROOFING.
  3. AT SIDES OF SLAB REPAIRS WIDER THAN 2'-0", PROVIDE 12" LONG #4 DOWELS @ 24" O.C. DRILL AND EPOXY GROUT 4" INTO EXISTING SLAB.

## SLAB PATCH DETAIL

NO SCALE



Swygert & Associates  
CONSULTING ENGINEERS

DBA Swygert & Assoc., Ltd. Telephone: (803) 791-9300  
Post Office Box 11686 Facsimile: (803) 791-0830  
Columbia, S.C. 29211 mol@swygert-associates.com

Floor Plan, Notes, & Detail  
West Energy Sewer Service - State Project # H27-Z185-CP  
Prepared for:  
University of South Carolina  
Columbia, Richland County, SC

Drawn: DEM Checked: TFS  
Revised:

File: 16245-P1\_0.dwg Project No.: 398108

p1.0  
Sheet Number  
June 26, 2016  
Date