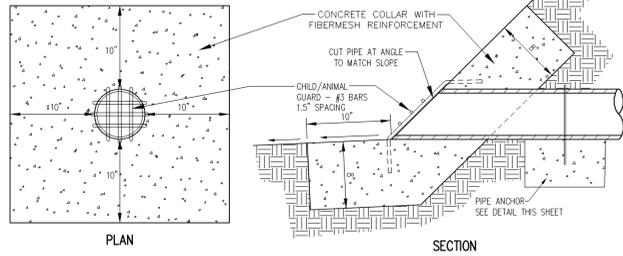


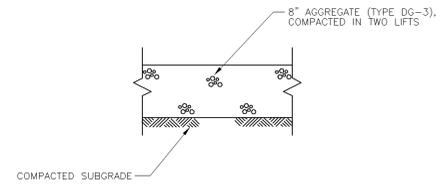
PIPE ANCHOR STORM OUTLET DETAIL

NTS

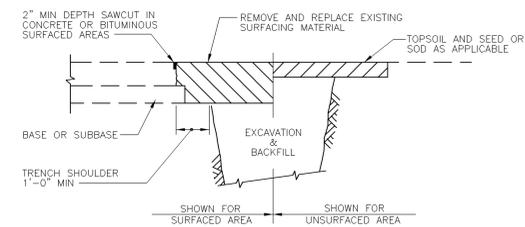


SLOPE WALL STORM OUTLET DETAIL

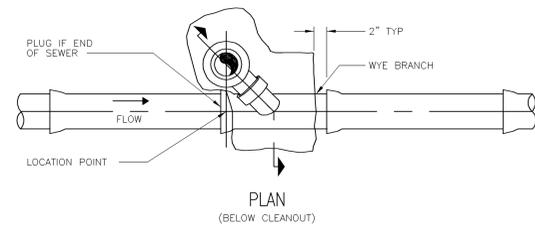
NTS



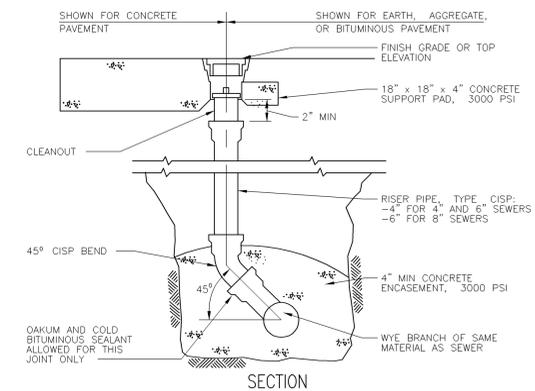
AGGREGATE SURFACE



SURFACE RESTORATION



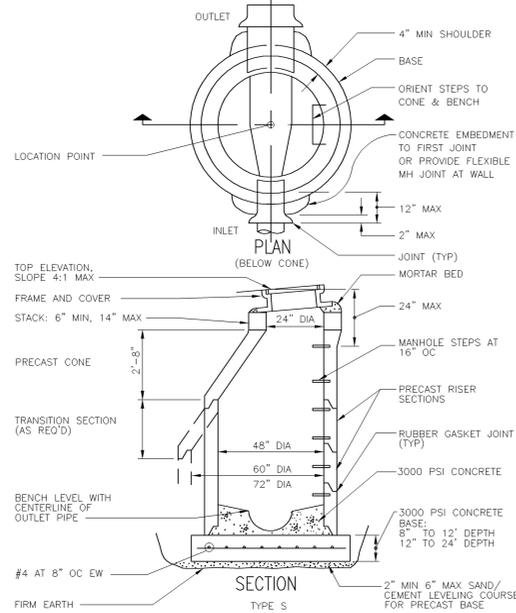
PLAN (BELOW CLEANOUT)



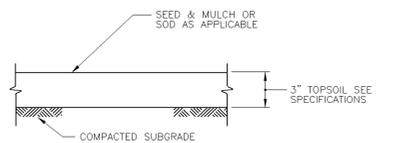
CLEANOUT ASSEMBLY

GRAVITY

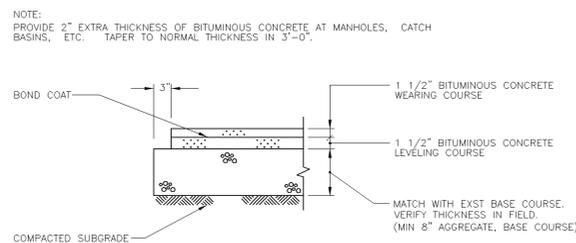
- NOTES:
1. PROVIDE SEWER DROP CONNECTION FOR ALL INLET SANITARY PIPES WITH INVERT 18" OR MORE ABOVE OUTLET INVERT, SEE DETAIL.
 2. PROVIDE TRANSITION SECTIONS FOR MANHOLES LARGER THAN 48" DIA.



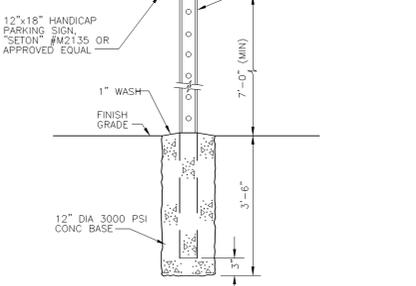
STANDARD MANHOLE



GRADED AREA

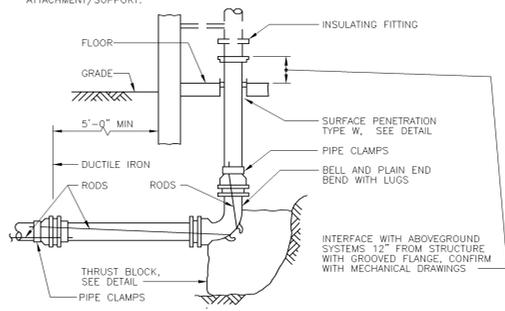


BITUMINOUS PAVEMENT



HANDICAPPED PARKING SIGN

- NOTES:
1. THIS DRAWING IS SCHEMATIC. SEE MECHANICAL/STRUCTURAL/ARCHITECTURAL DRAWINGS FOR STRUCTURE, LOCATION DIMENSIONS, FOUNDATIONS, WATERPROOFING, ETC.
 2. ELECTRICAL ISOLATION: PLACE INSULATING FITTING UPSTREAM OF BUILDING ATTACHMENT/SUPPORT.

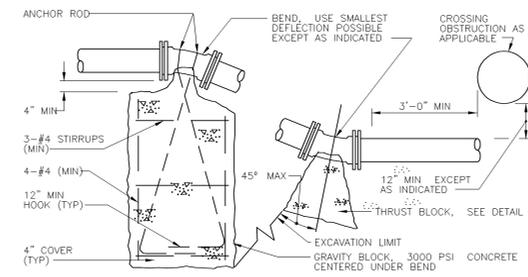


THRU FLOOR WATER/FIRE RISER

- NOTES:
1. GRAVITY BLOCK VOLUMES ARE BASED ON 225 PSIG PRESSURE AND DRY TRENCH CONDITIONS. PROVIDE ADDITIONAL RESTRAINT DURING TEST AS NECESSARY.
 2. JOINTS ARE SHOWN SCHEMATICALLY.
 3. INSTEAD OF THIS DETAIL, WHERE SPACE PERMITS, PIPE JOINTS MAY BE DEFLECTED UP TO 50% OF THE MANUFACTURER'S RECOMMENDED MAXIMUM.
 4. PROVIDE CLEARANCE FOR BOLT REMOVAL.
 5. INSTEAD OF THIS DETAIL, PROVIDE RESTRAINED JOINTS FOR CHILLED WATER RETURN, CHILLED WATER SUPPLY, WATER RETURN AND COOLING WATER SUPPLY. FOR RESTRAINED JOINTS LOCATION, SEE CE-05.

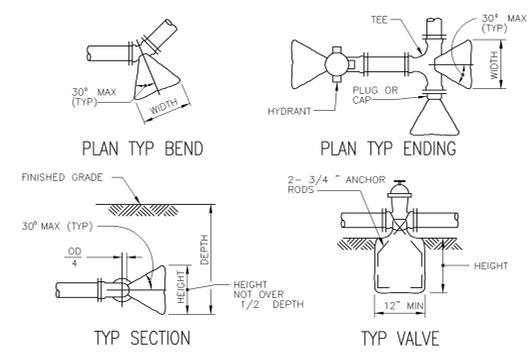
PIPE SIZE (IN)	ANCHOR ROD DIA (IN)	GRAVITY BLOCK VOLUME (CUBIC YARDS)	
		11 1/4" BEND	22 1/2" BEND
3	1/2	0.2	0.3
4	1/2	0.3	0.5
6	1/2	0.6	1.0
8	5/8	1.0	1.7
10	3/4	1.7	2.8
12	3/4	2.4	NOT ALLOWED

SIZE SCHEDULE



ANCHORED DEFLECTION

- NOTES:
1. THIS DRAWING IS SCHEMATIC.
 2. PROVIDE CLEARANCE FOR BOLT REMOVAL.
 3. THRUST BLOCKS: 3000 PSI CONCRETE, POUR AGAINST FIRM EARTH.
 4. BEARING AREAS: BASED ON 225 PSIG PRESSURE AND SOIL RESISTANCE OF 2000 PSF FOR SOIL EQUIVALENT TO SAND AND GRAVEL CEMENTED WITH CLAY. FOR OTHER SOILS MULTIPLY BY THE FOLLOWING OR LARGER FACTORS AS NECESSARY TO PREVENT MOVEMENT UNDER TEST PRESSURE:
SOFT CLAY = 4.0 SAND = 2.0 SAND AND GRAVEL = 1.33

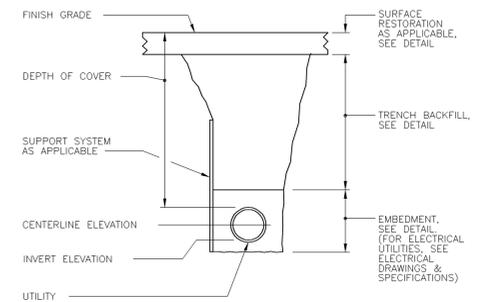


PIPE SIZE	MIN BEARING AREA (SQ FT)				HYDRANT, TEE VALVE, PLUG, CAP
	90° BEND	45° BEND	22 1/2" BEND	11 1/4" BEND	
3"	2.1	1.2	0.7	0.5	1.4
4"	3.1	2.0	1.0	0.6	2.1
6"	6.3	3.6	2.0	1.2	4.3
8"	10.9	6.3	3.5	2.1	7.4
10"	17.8	10.2	5.7	3.4	12.1
12"	25.4	14.6	8.2	4.9	17.2

SIZE SCHEDULE

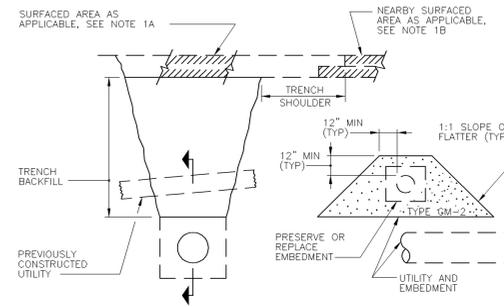
SINGLE-PIPE THRUST BLOCKS

- NOTES:
1. "UTILITY" INCLUDES WATER MAINS, CULVERTS, SEWERS, OTHER SITE UNDERGROUND PIPING, AND ELECTRICAL CONDUITS, CONCRETE ENCASED DUCTS, AND DIRECT BURIAL CABLES.
 2. SUPPORT SYSTEM: PROVIDE AS REQUIRED FOR EXCAVATION PROTECTION, AS INDICATED, AND TO ALLOW REQUIRED COMPACTION. MAINTAIN COMPACTION DURING REMOVAL.



UTILITY/TRENCH

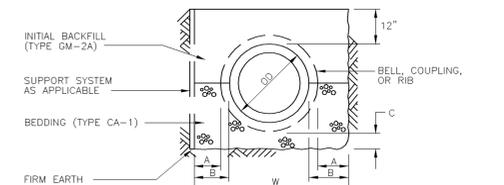
- NOTES:
1. TRENCH BACKFILL TYPE GM-2:
 - A. UNDER PORTLAND CEMENT OR BITUMINOUS CONCRETE, OR AGGREGATE SURFACED AREAS, SUCH AS ROADS, WALKS, PARKING LOTS, OR SHOULDERS, INCLUDING TRENCHES IN EXISTING OR FUTURE LOCATIONS.
 - B. WHERE TRENCH SHOULDER IS 2'-0" OR LESS.
 - C. UNDER PREVIOUSLY-CONSTRUCTED UTILITIES, SEE SECTION.
 - D. WITHIN BUILDING WALL LINES.
 2. TRENCH BACKFILL TYPE E: ALLOWED FOR OTHER EXTERIOR AREAS IF OTHER TYPES ARE NOT INDICATED. TYPE GM-2 MAY BE SUBSTITUTED.



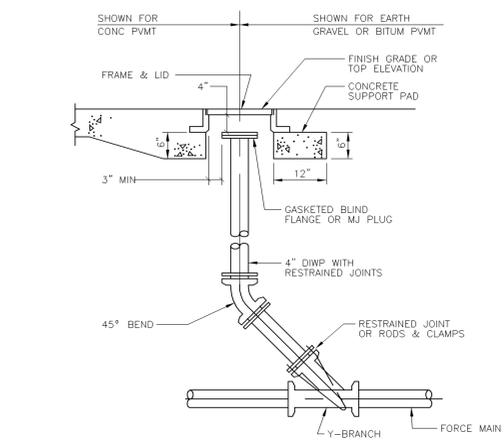
SCHEMATIC TRENCH SECTION

TRENCH BACKFILL

- NOTES:
1. DIMENSIONS: A = 6" MIN B = 8" MIN W = 1 1/4 OD MIN IN ROCK, 1 1/4 OD, 4" MIN IN EARTH, 6" MIN IN ROCK.
 - PIPE 18" AND SMALLER, C = 1/4 OD, 4" MIN IN EARTH, 6" MIN IN ROCK.
 - PIPE LARGER THAN 18", C = 1/8 OD, 6" MIN 12" MAX
 - COMPACT BACKFILL TO TOP OF PIPE (APPROXIMATELY 80% STANDARD PROCTOR, AASHTO T-99)



CLASS 1.9 EMBEDMENT



CLEANOUT ASSEMBLY

Giffels, Partnership
 25200 Telegraph Road, Suite 200
 Southfield, Michigan 48033 USA
 Tel: 248-336-8000
 Fax: 248-336-8111

Approved By: W. KUSSRO
 Project Manager: G. KAPLAN
 Project Engineer/Architect: S. KATHLON
 Project No.: SF070003

This drawing has been prepared solely for the use of Brookhaven National Laboratory and there are no representations of any kind made by Giffels, Partnership to any party with whom Giffels, Partnership has not entered into a contract.

This drawing shall not be used for construction purposes until the seal and signature of the responsible registrant appears on this drawing, and proper permit forms and related fees are transmitted by the Owner, Owner's Agent or Contractor to the Authority Having Jurisdiction.

JOB NO. SHEET NO. REVISION		DATE	CHK.	APPD.	DA.
BROOKHAVEN NATIONAL LABORATORY					
UNDER CONTRACT WITH UNITED STATES DEPARTMENT OF ENERGY PLANT ENGINEERING DIVISION UPTON, NEW YORK 11973					
JOB TITLE: CENTRAL CHILLED WATER FACILITY PHASE II			DWG. TITLE: SITE DETAILS		
DESIGNED BY: W. KUSSRO	DATE:	ACCT. NO.:	SHEET OF:		
SCALE:	CHKD. BY: SSK	REV'D BY: XX	JOB NO.:	11705	
ESQ. RISK LEVEL:	APP'D. BY:	BLDG. NO.:	600		
PATH:			CE-04		