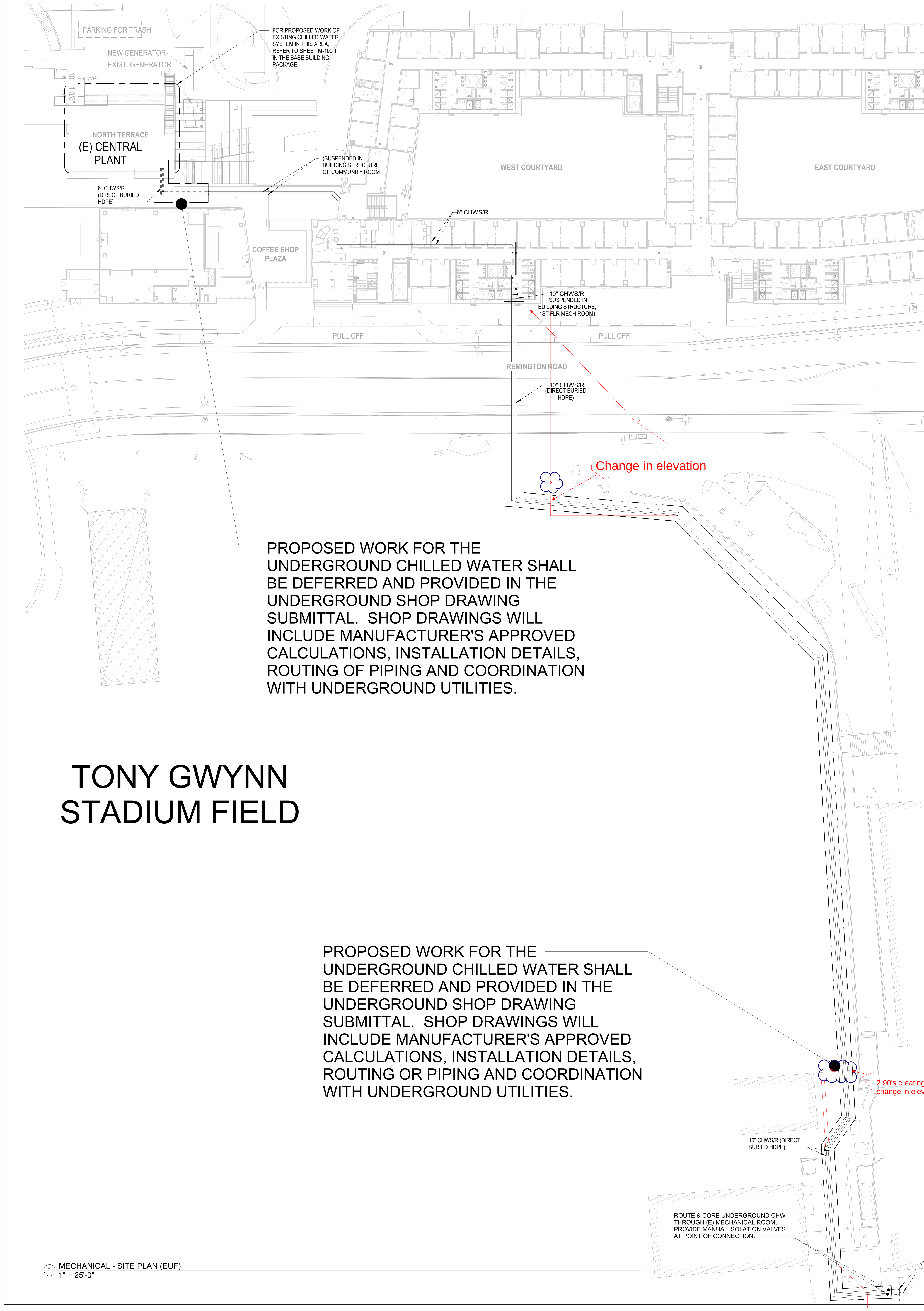


1 MECHANICAL - SITE PLAN (EUF)
1" = 25'-0"

SHOP DRAWING REQUIREMENTS & GUIDELINES

1. UNDERGROUND CHILLED WATER PIPING SYSTEM: FACTORY PRE-INSULATED PIPING. ALL PRE-INSULATED PIPE, FITTINGS, INSULATING MATERIALS, AND TECHNICAL SUPPORT SHALL BE PROVIDED BY THE PRE-INSULATED PIPING SYSTEM MANUFACTURER.

   A. MATERIAL:
   CARRIER PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE), CONFORMING TO ASTM D-3350. PIPE AND FITTINGS ARE MANUFACTURERED FROM EXTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOUND AND FABRICATED TO STANDARD DIMENSIONAL RATIO (SDR) WALL THICKNESS IN STANDARD IPS SIZES. PIPE THICKNESS SHALL BE A BETTER THAN SDR 11.

   B. INSULATION:
   SHALL BE POLYURETHANE FOAM EITHER SPRAY APPLIED OR INJECTED WITH ONE SHOT INTO THE ANNULAR SPACE BETWEEN CARRIER PIPE AND JACKET WITH A MINIMUM THICKNESS OF ONE INCH. INSULATION SHALL BE RIGID, 90-95% CLOSED CELL POLYURETHANE WITH A 2.0-3.0 POUNDS PER CUBIC FOTT DENSITY AND COEFFICIENT OF THERMAL CONDUCTIVITY (K-FACTOR) OF 0.16 AND SHALL CONFORM TO ASTM C-591. MAXIMUM OPERATION TEMPERATURE SHALL NOT EXCEED 250 DEG. F.

   C. JACKETING MATERIAL:
   SHALL BE EXTRUDED, BLACK, HIGH DENSITY POLYETHYLENE (HDPE), HAVING A MINIMUM WALL THICKNESS OF 100 MILS FOR JACKET SIZES LESS THAN OR EQUAL TO 12", 125 MILS FOR JACKET SIZES LARGER THAN 12" TO 24", AND 150 MILS FOR JACKET SIZES GREATER THAN 24". THE INNER SURFACE OF THE HDPE JACKET SHALL BE OXIDIZED BY MEANS OF CORONA TREATMENT, FLAME TREATMENT (PATENT PENDING), OR OTHER APPROVED METHODS. THIS WILL ENSURE A SECURE BOND BETWEEN THE JACKET AND FOAM INSULATION PREVENTING ANY INGRESSION OF WATER AT THE JACKET/ FOAM INTERFACE.

   D. STRAIGHT RUN JOINTS:
   STRAIGHT RUN JOINTS ARE BUTT FUSION WELDED AND FIELD INSULATED USING URETHANE FOAM TO THE THICKNESS SPECIFIED AND JACKETED WITH HEAT SHRINK TAPE. JOINTS CAN BE MADE BESIDE THE TRENCH OR INSIDE THE TRENCH.

   E. CARRIER PIPE FITTINGS:
   SHALL BE BUTT FUSION- WELDED TO ADJACENT PIPE SECTIONS. FITTINGS THAT ARE BUTT FUSION WELDED IN THE FIELD ARE NOT INSULATED. END SEALS AT UNINSULATED FITTINGS SHALL BE FIELD-APPLIED MASTIC MOISTURE BARRIERS. IF FITTINGS ARE FACTORY MANUFACTURED, FITTINGS ARE PRE-INSULATED USING FACTORY PE FITTING COVERS WELDED TO THE JACKETS.

   F. CARRIER PIPE JOINING:
   SHALL BE ACCOMPLISHED USING AN AUTHORIZED BUTT FUSION WELDING MACHINE PREHEATED TO THE CORRECT PIPE TEMPERATURE FOR FUSION WELDING. ALL HEATING SURFACES SHALL BE CLEAN AND FREE OF DIRT AND RESIDUE BEFORE APPLYING TO ENDS OF PIPE TO BE JOINED. AFTER HEATING, THE SOFTENED ENDS ARE PRESSED TOGETHER BY THE MACHINE AND HELD UNTIL THE JOINT HAS HARDENED. IMPROPERLY ACCOMPLISHED, UNEVEN, OR JOINTS WITH QUESTIONABLE APPEARANCE SHALL BE CUT OUT AND RE-ACCOMPLISHED. TRANSITIONS TO OTHER PIPING MATERIALS SHALL BE ACCOMPLISHED USING SUITABLE FLANGED OR MECHANICAL ADAPTERS.

   G. UNDERGROUND INSTALLATION:
   UNDERGROUND SYSTEMS SHALL BE BURIED IN A TRENCH OF NOT LESS THAN TWO FEET DEEPER THAN THE TOP OF THE PIPE AND NOT LESS THAN EIGHTEEN INCHES WIDER THAN THE COMBINED O.D. OF ALL PIPING SYSTEMS. A MINIMUM THICKNESS OF 24 INCHES OF COMPACTED BACKFILL OVER THE TOP OF THE PIPE WILL MEET H-20 HIGHWAY LOADING. TRENCH BOTTOM SHALL HAVE A MINIMUM OF 6" OF SAND, PEA GRAVEL, OR SPECIFIED BACKFILL MATERIAL AS A CUSHION FOR THE PIPING. ALL FIELD CUTTING OF THE PIPE SHALL BE PERFORMED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

   H. HYDROSTATIC TEST:
   SHALL BE PERFORMED BEFORE INSULATING THE FIELD JOINTS OR BURYING THE SYSTEM, AND SHALL BE PERFORMED PER THE ENGINEER'S SPECIFICATIONS. THE FACTORY RECOMMENDED PRESSURE TEST CONSISTS OF AN EXPANSION PHASE AND A TEST PHASE. CARE SHALL BE TAKEN TO INSURE ALL TRAPPED AIR IS REMOVED FROM THE SYSTEM PRIOR TO THE TEST. THE EXPANSION PHASE CONSISTS OF AN INITIAL PRESSURIZATION PERIOD OF THREE HOURS AT ONE AND ONE-HALF TIMES THE NORMAL SYSTEM OPERATING PRESSURE. MAKE-UP WATER SHALL BE ADDED TO THE SYSTEM DURING THIS PERIOD TO MAINTAIN THE DESIRED PRESSURE. THE TEST SHALL COMMENCE IMMEDIATELY AFTER THE EXPANSION PHASE. THE PRESSURE SHALL BE REDUCED BY 10 PSI AND THE TEST CLOCK STARTED. SYSTEM PRESSURE REMAINING WITHIN 5% OF THE TARGET TEST PRESSURE FOR ONE HOUR INDICATES NO LEAKAGE HAS OCCURRED. IF THE ENTIRE TEST PROCEDURE CANNOT BE COMPLETED WITHIN EIGHT HOURS OF THE INITIAL PRESSURIZATION, THE SYSTEM SHALL BE DEPRESSURIZED AND ALLOWED TO RELAX FOR A MINIMUM OF EIGHT HOURS BEFORE ANOTHER TEST IS ATTEMPTED. THE PIPING SYSTEM SHALL BE RESTRAINED FROM UNCONTROLLED MOVEMENT IN THE EVENT OF A FAILURE.

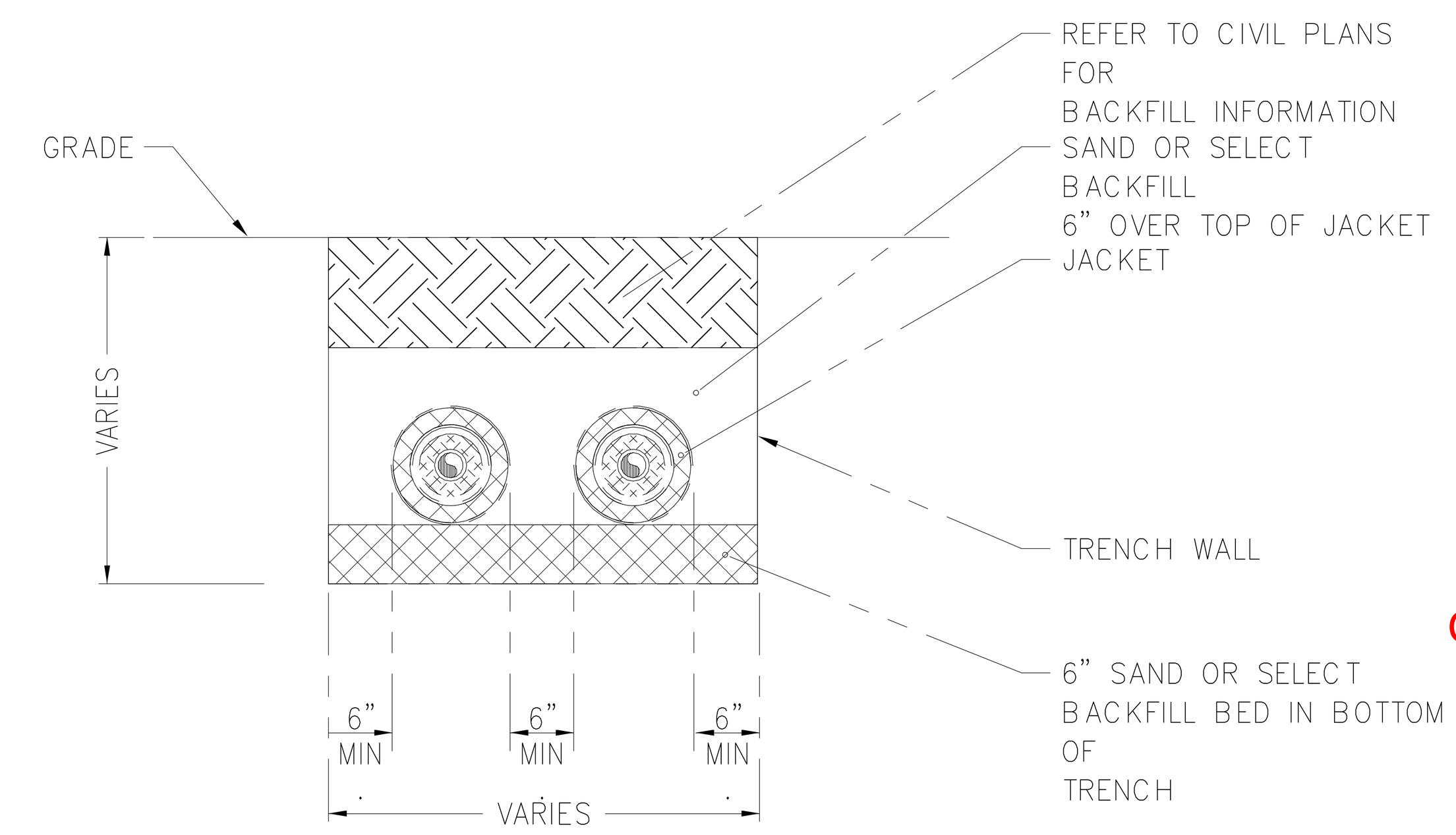
   I. DRAWINGS & COORDINATION:
   SHALL INCLUDE PIPE ROUTING, DEPTH, COVERAGE, AND COORDINATION WITH EXISTING UTILITIES AND CIVIL DRAWINGS. PRIOR TO SHOP DRAWINGS FIELD SURVEY (I.E. POTHOLING & X -RAYING) SHALL BE COMPLETED. ANY OBSTRUCTIONS FOUND SHALL BE BE COORDINATED AND RESOLVED PRIOR TO SHOP DRAWINGS.

New building

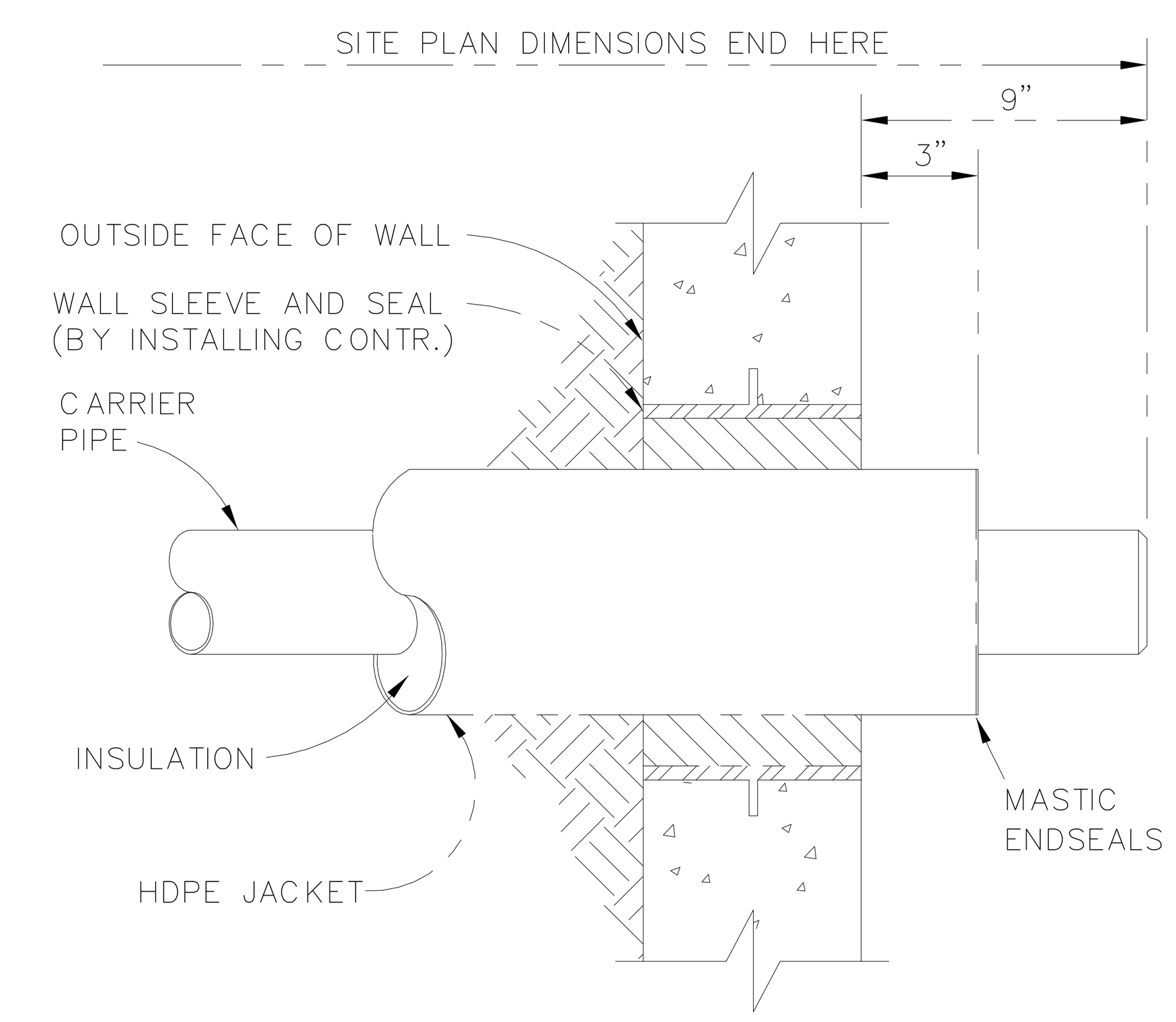
ISO
typical for both pipes

Chiller Plant

Total of 5 90's per line added to system.



TRENCH DETAIL



WALL PENETRATION DETAIL

PVC JACKET OD (INCHES)	HDPE JACKET OD (INCHES)	PAD HEIGHT (INCHES)
3	–	7
4	5.40	7
6	6.68	7
8	8.68	7
10	10.85	13
12	12.85	13
14	14.1	13
16	16.1	17
–	18.2	17
–	20.28	17
–	22.2	25
–	24.38	25
–	28.25	25

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444 South Flower Street, Ste 1200 Los Angeles CA 90071
t / 213 683 1900 f / 213 614 6002

SAN DIEGO STATE UNIVERSITY
Leadership Starts Here

consultant

project information
job number 2017301
project director J. FOX
project designer D. BARRY
project architect P. KIM
plan check submittal date
drawn by Author
checked by Checker
construction issue date

revision information
no. date revision by

sheet title
MECHANICAL - SITE PLAN (EUF) PACKAGE

project
NEW STUDENT RESIDENCE HALL
San Diego State University
5500 Campanile Drive
San Diego, CA 92182

PHASE III EXCAVATION UTILITIES FOUNDATION (EUF) PACKAGE- NOVEMBER 13, 2017

sheet number
M-0100

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