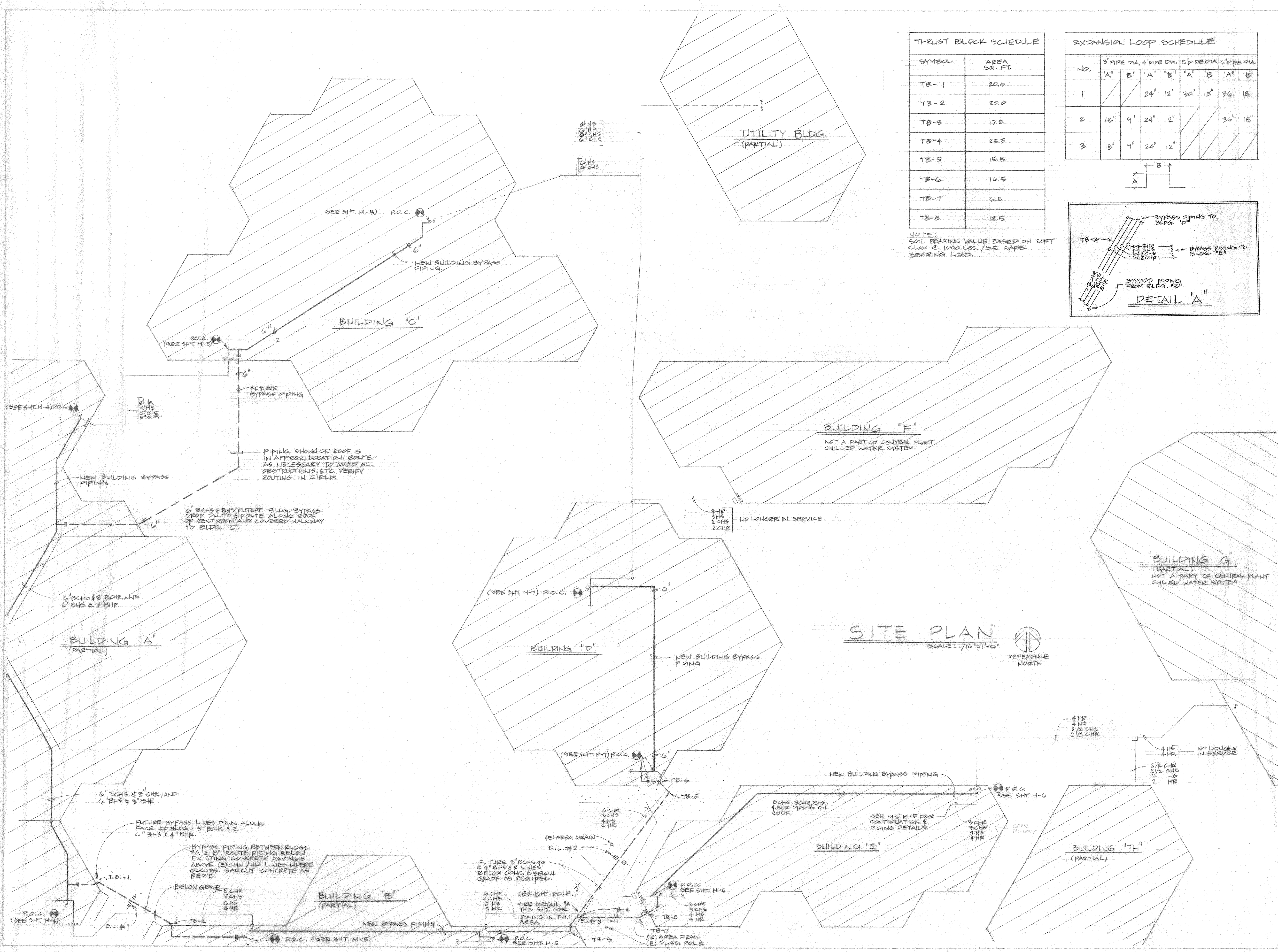
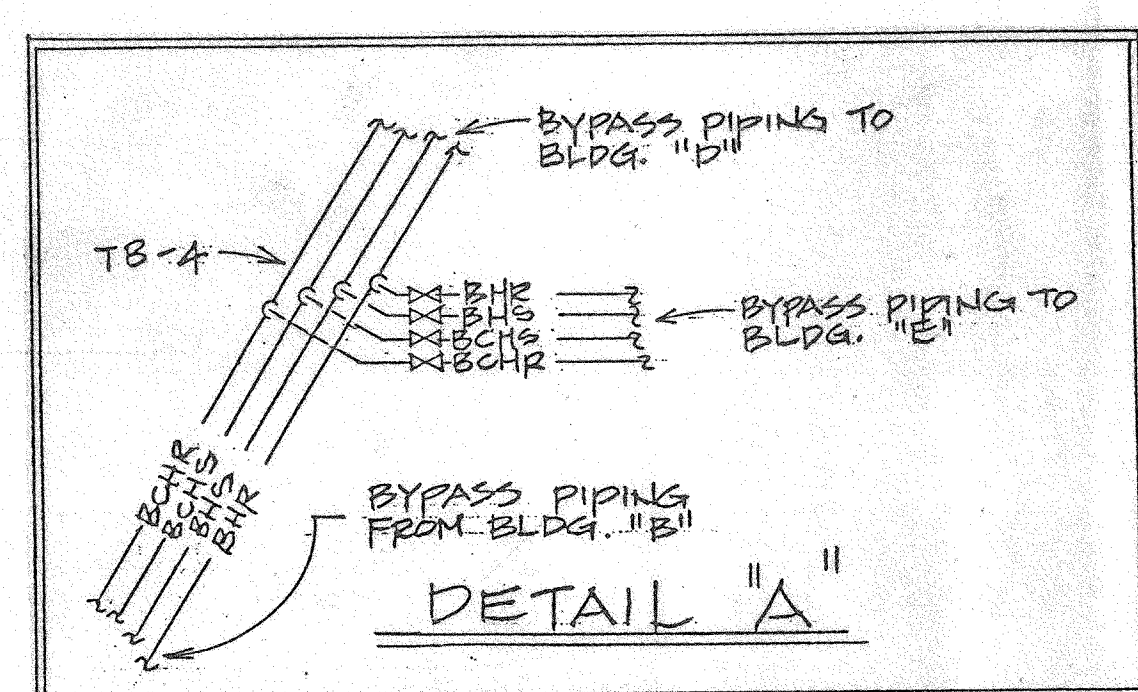


THRUST BLOCK SCHEDULE	
SYMBOL	AREA SQ. FT.
TB-1	20.0
TB-2	20.0
TB-3	17.5
TB-4	23.5
TB-5	15.5
TB-6	16.5
TB-7	6.5
TB-8	12.5

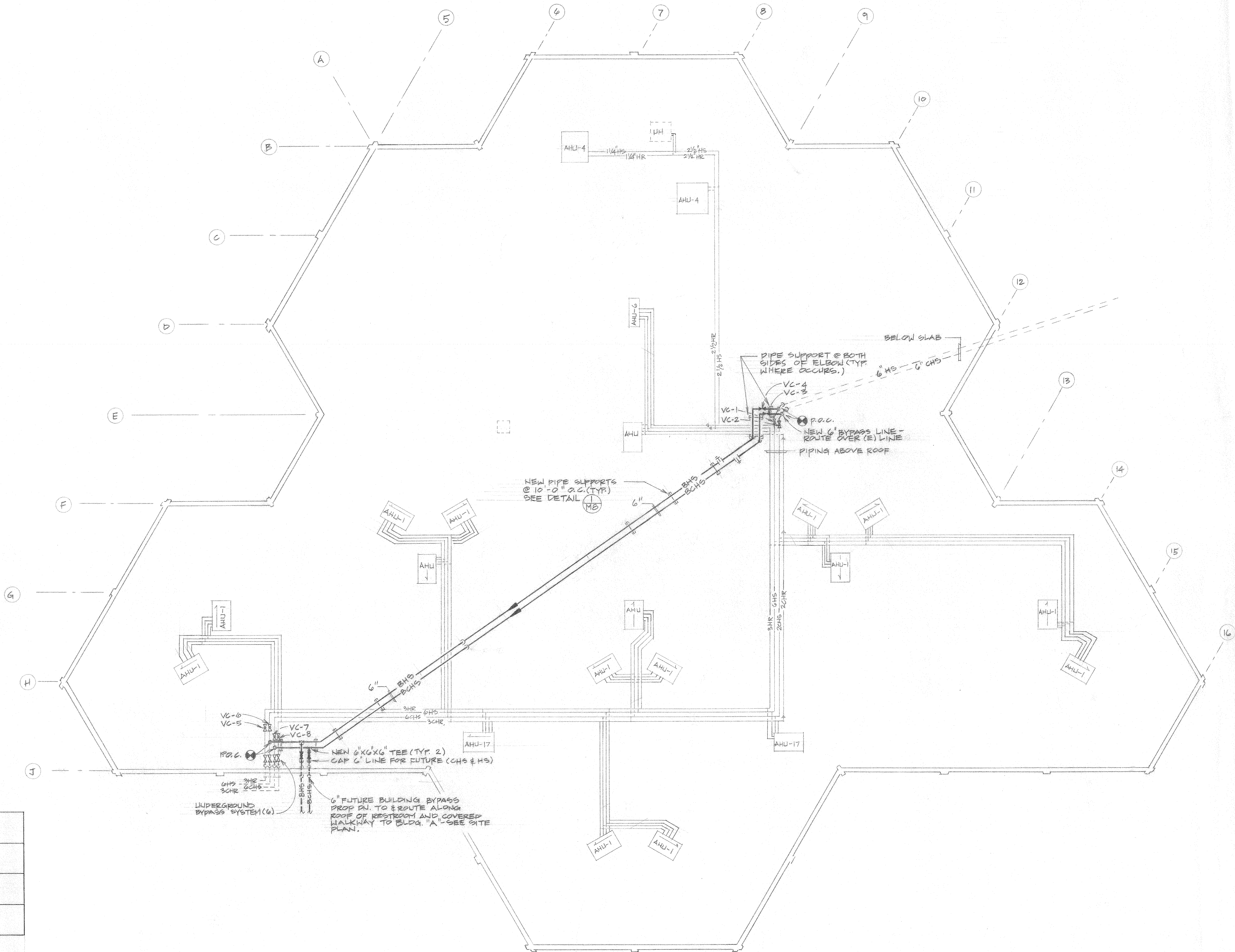
EXPANSION LOOP SCHEDULE								
NO.	3" PIPE DIA.		4" PIPE DIA.		5" PIPE DIA.		6" PIPE DIA.	
	"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"
1	/	/	24"	12"	30"	15"	36"	18"
2	18"	9"	24"	12"	/	/	36"	18"
3	18"	9"	24"	12"	/	/	/	/

NOTE: SOIL BEARING VALUE BASED ON SOFT CLAY @ 1000 LBS./SQ. SAFE BEARING LOAD.



SITE PLAN
SCALE: 1/16" = 1'-0"
REFERENCE NORTH

IRVINE HIGH SCHOOL
BYPASS PIPING SYSTEM
4371 WALNUT AVE.
IRVINE, CA.



VALVE SCHEDULE

CHILLED WATER					
MODE	VC2	VC3	VC7	VC8	
HVAC	0	0	0	0	
BYPASS	C	0	C	0	
HOT WATER					
MODE	VC1	VC4	VC5	VC6	
HVAC	0	C	0	0	
BYPASS	C	0	0	C	

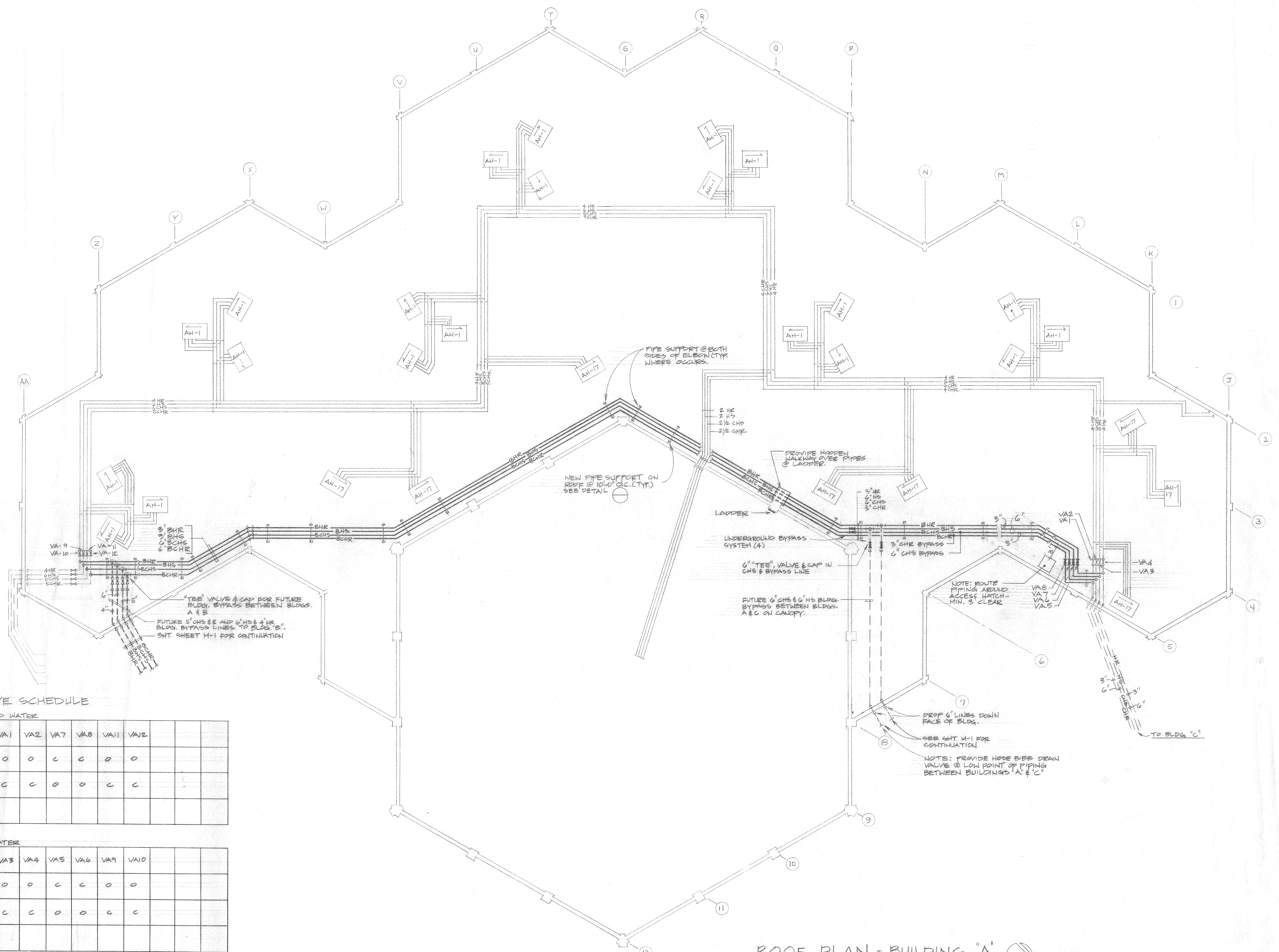
BUILDING "C" ROOF PLAN
SCALE: 1/8"=1'-0"

IRVINE HIGH SCHOOL
BYPASS PIPING SYSTEM
4571 WALNUT AVE. IRVINE, CA.

BURKE MECHANICAL ENGINEERS
10000
SANTA ANA BLVD
SANTA ANA, CALIFORNIA 92705
(714) 455-5000 (213) 510-2340
FAX (714) 455-5467

DATE R-19-89
SCALE
DRAWN
JOB 89-15
SHEET
M-3

NO.	REVISIONS



VALVE SCHEDULE

CHILLED WATER						
MODE	VA1	VA2	VA7	VA8	VA11	VA12
HVAC	0	0	C	C	0	0
BYPASS	C	C	0	0	C	C

HOT WATER						
MODE	VA3	VA4	VA5	VA6	VA9	VA10
HVAC	0	0	C	C	0	0
BYPASS	C	C	0	0	C	C

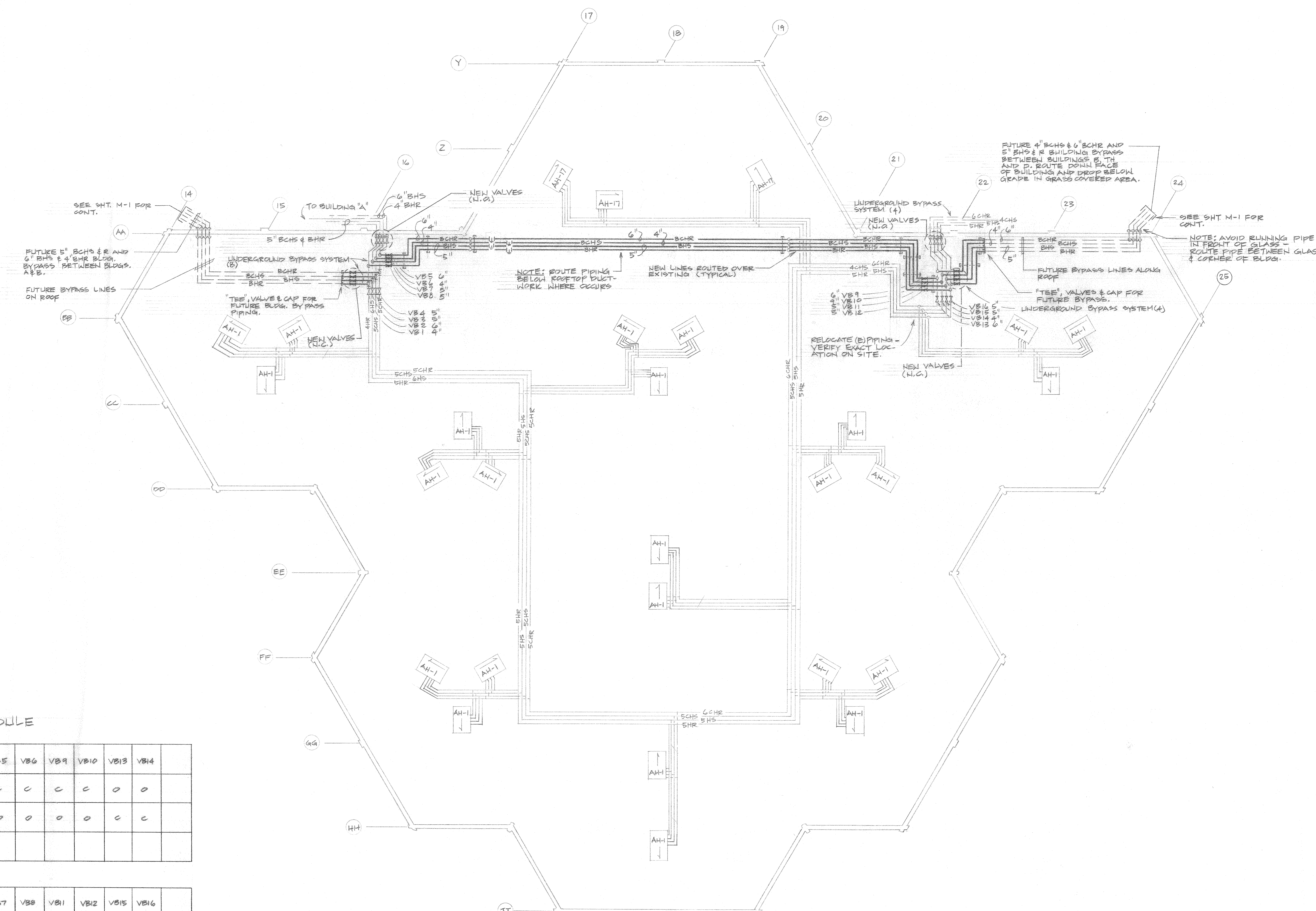
ROOF PLAN - BUILDING "A"
SCALE: 1/8" = 1'-0" REFERENCE NORTH

IRVINE HIGH SCHOOL
BYPASS PIPING SYSTEM
4371 WALNUT AVE. IRVINE, CA.

BURKE MECHANICAL ENGINEERING
10000 Irvine Blvd., Ste. 200
Irvine, California, CA 92618
(714) 450-0000 (FAX) 562-250-0000
FAX (714) 565-5460

DATE 12-19-84
SCALE
DRAWN
JOB 01-45
SHEET **M-4**

REVISION	NO.



VALVE SCHEDULE

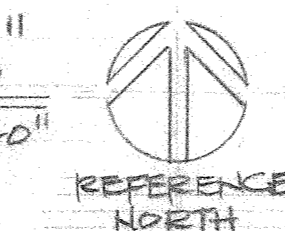
CHILLED WATER

MODE	VB3	VB4	VB5	VB6	VB9	VB10	VB13	VB14
HVAC	0	0	C	C	C	C	0	0
BYPASS	C	C	0	0	0	0	0	C

HOT WATER

MODE	VB1	VB2	VB7	VB8	VB11	VB12	VB15	VB16
HVAC	0	0	C	C	C	C	0	0
BYPASS	C	C	0	0	0	0	C	C

ROOF PLAN - BUILDING "B"
SCALE: 1/8" = 1'-0"

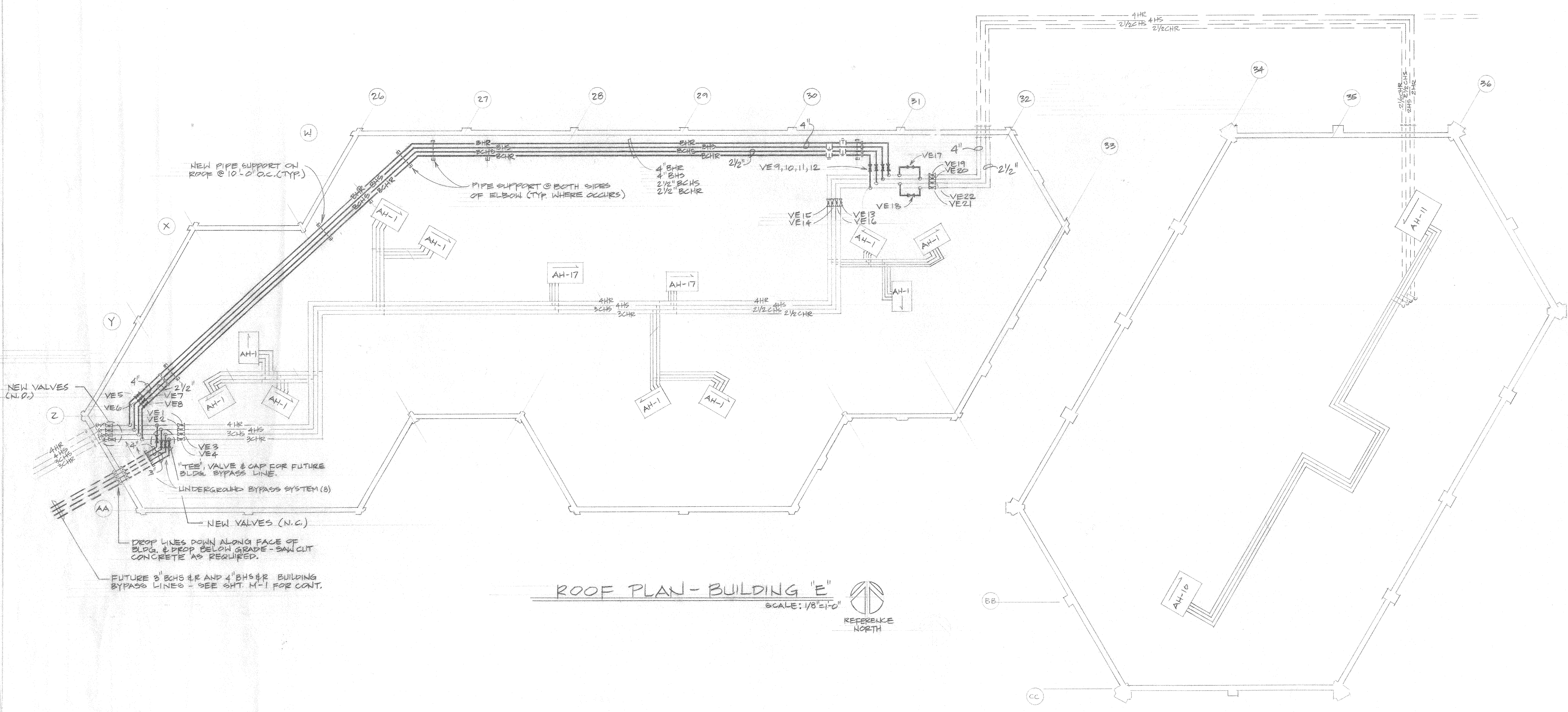


IRVINE HIGH SCHOOL
BYPASS PIPING SYSTEM
4571 WALNUT AVE.
IRVINE, CA.

BURKE MECHANICAL ENGINEERING
9796a Phoebe Place, Suite 204
San Juan Capistrano, CA 92675
TEL: 949.262.6665 FAX: 949.262.6665

DATE: 12-11-01
SCALE:
DRAWN:
JOB: 01-46
SHEET:
M-5

REVISIONS	NO.



ROOF PLAN - BUILDING "E"
SCALE: 1/8"=1'-0"
REFERENCE NORTH

ROOF PLAN - BUILDING "TH"
SCALE: 1/8"=1'-0"
REFERENCE NORTH

VALVE SCHEDULES

CHILLED WATER

BUILDING "E"

MODE	VE3	VE4	VE7	VE8	VE9	VE10	VE13	VE16
HVAC	0	0	0	0	0	0	0	0
BYPASS	0	0	0	0	0	0	0	0

BUILDING "TH"

MODE	VTH18	VTH21	VTH22
HVAC	0	0	0
BYPASS	0	0	0

HOT WATER

BUILDING "E"

MODE	VE1	VE2	VE5	VE6	VE11	VE12	VE14	VE15
HVAC	0	0	0	0	0	0	0	0
BYPASS	0	0	0	0	0	0	0	0

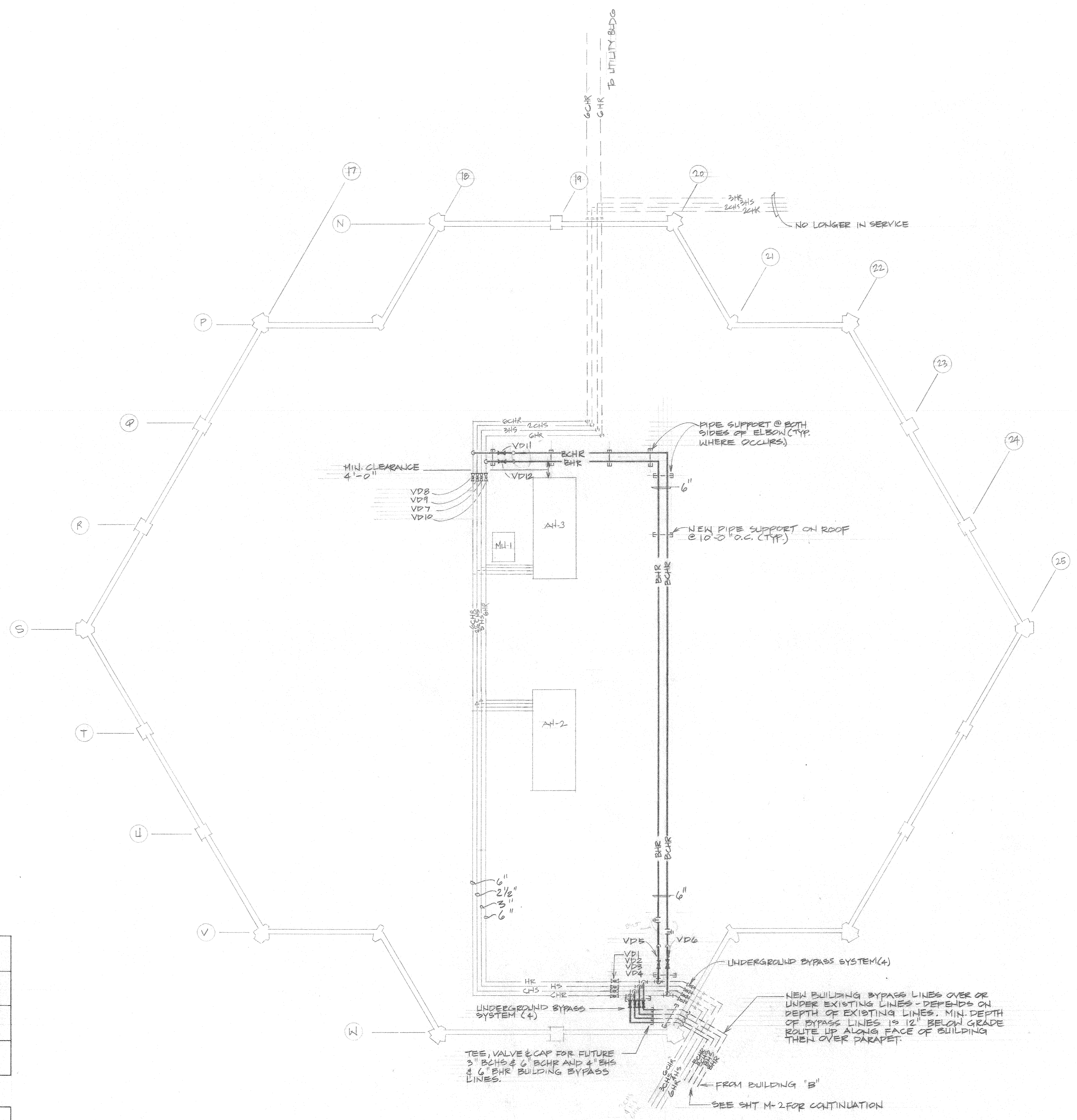
BUILDING "TH"

MODE	VTH17	VTH19	VTH20
HVAC	0	0	0
BYPASS	0	0	0

IRVINE HIGH SCHOOL
BYPASS PIPING SYSTEM
4371 WALNUT AVE.
IRVINE, CA.

BURKE
MECHANICAL
ENGINEERING
27554 Pomeroy Road, Suite 104
San Juan Capistrano, CA 92675
TEL (714) 953-5200
FAX (714) 953-5467

DATE 12-19-89
SCALE
DRAWN
JOB 89-105
SHEET
M-6



VALVE SCHEDULE

CHILLED WATER

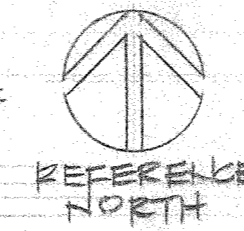
MODE	VD3	VD4	VD6	VD8	VD9	VD11		
HVAC	0	0	0	0	0	0		
BYPASS	C	C	0	0	C	0		

HOT WATER

MODE	VD1	VD2	VDS	VD7	VD10	VD12		
HVAC	0	0	C	0	0	C		
BYPASS	C	C	0	C	C	0		

ROOF PLAN - BUILDING "D"

SCALE: 1/8"=1'-0"

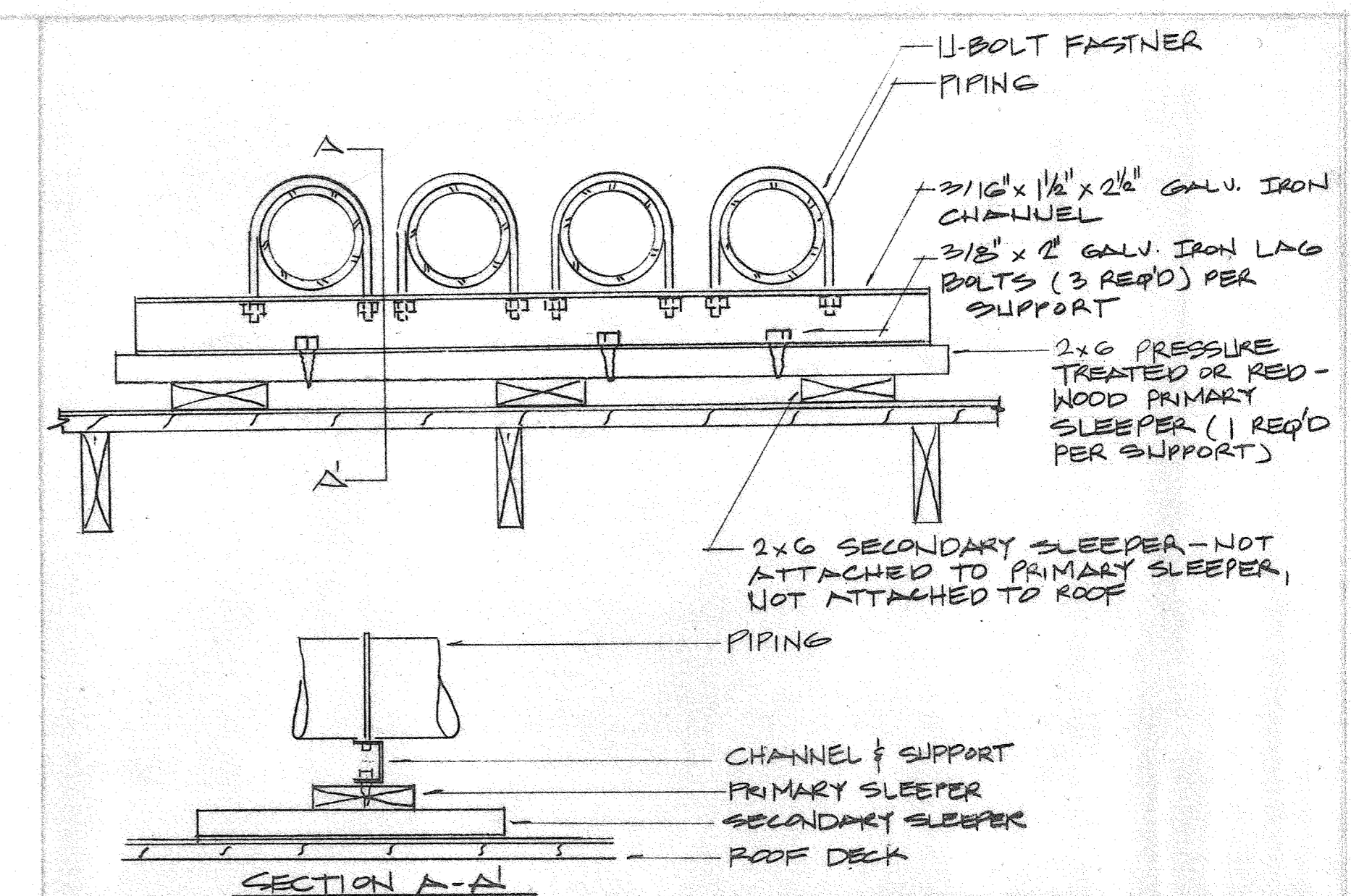


IRVINE HIGH SCHOOL
 BYPASS PIPING SYSTEM
 4571 WALNUT AVE. IRVINE, CA.

BURKE MECHANICAL ENGINEERING
 27500 Calle Arroyo, Suite 100, San Juan Capistrano, CA 92675
 (714) 453-5000 FAX (714) 500-2460

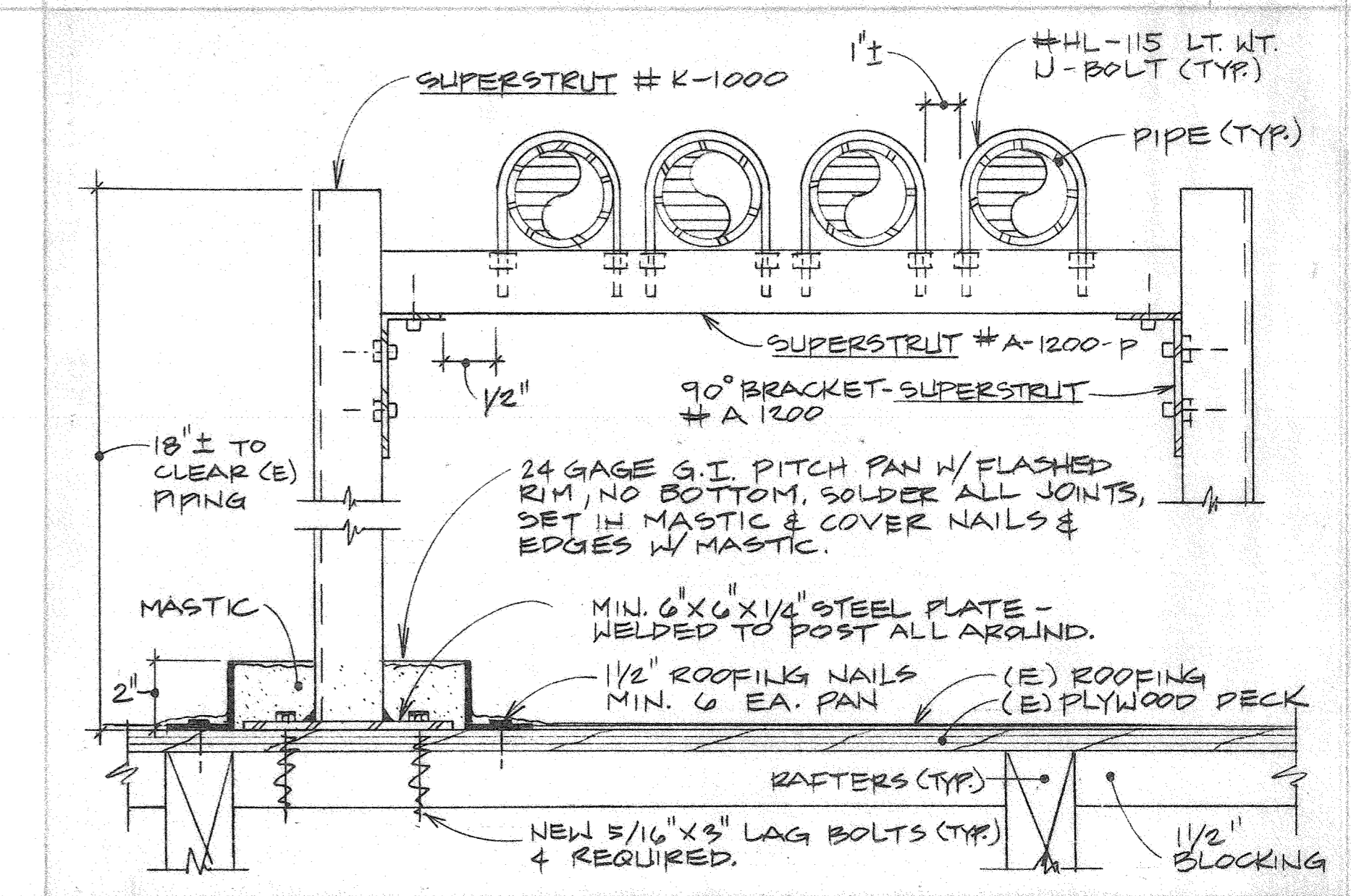
DATE: 12-19-01
 SCALE:
 DRAWN:
 JOB: 01-15
 SHEET: **M-7**

REVISIONS	NO.

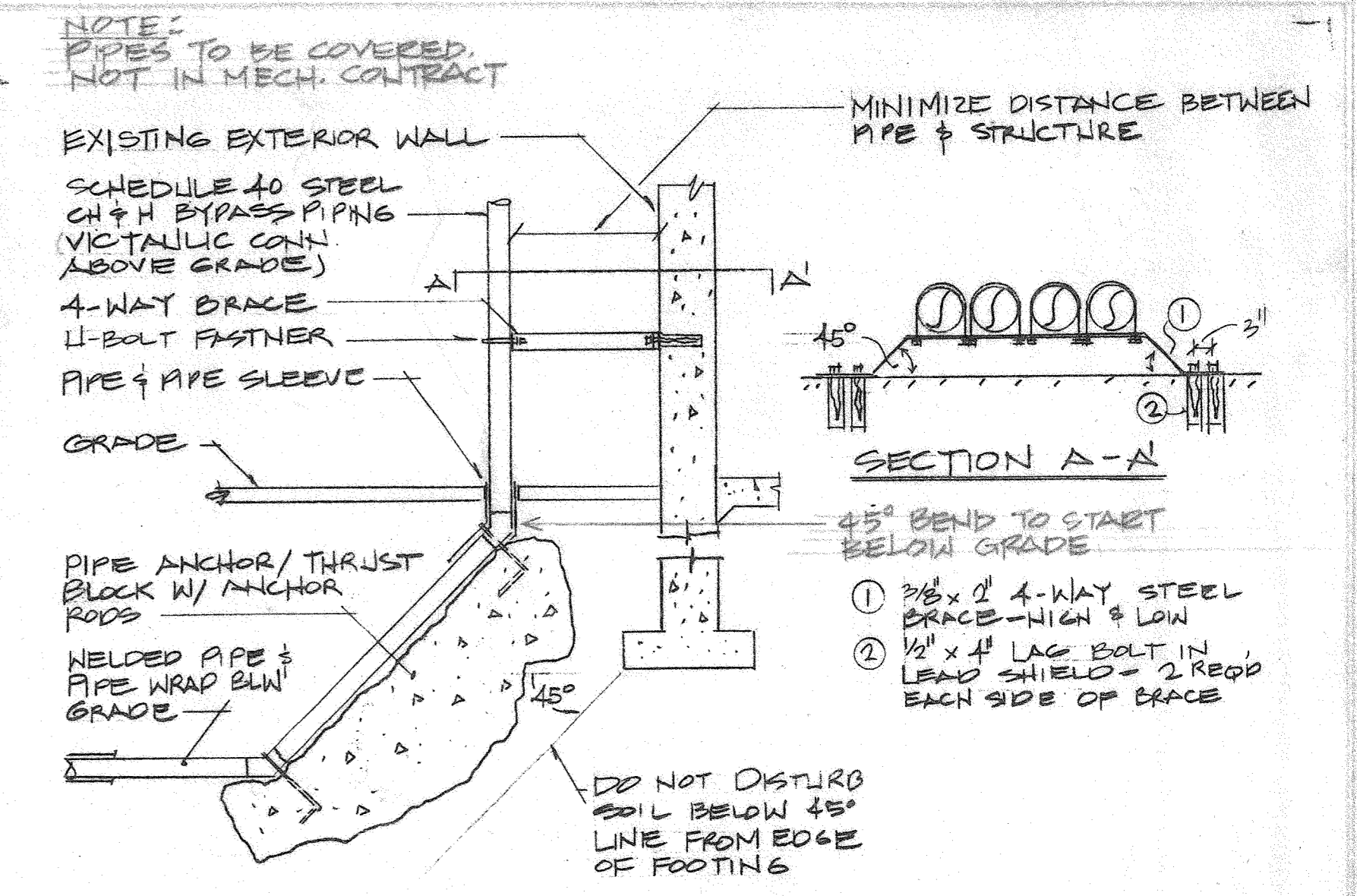


FLOATING PIPE SUPPORT SYSTEM

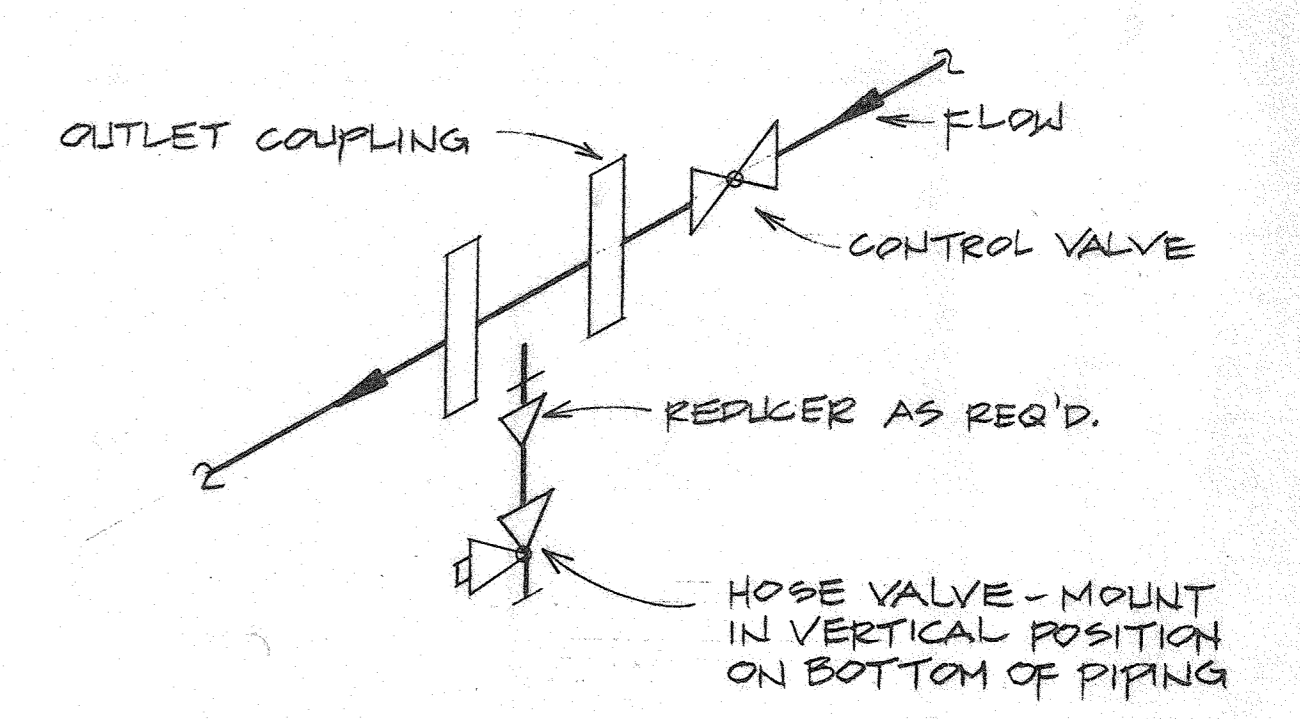
3" = 1'-0"



FASTENED PIPE SUPPORT SYSTEM



PIPING THROUGH GRADE DETAIL



HOSE VALVE CONNECTION DETAIL

IRVINE HIGH SCHOOL
 BYPASS PIPING SYSTEM
 4371 WALNUT AVE.
 IRVINE, CA.

BURKE
 MECHANICAL
 ENGINEERING
 27254 Paseo Escondido, Suite 104
 San Juan Capistrano, CA 92675
 (714) 953-5460
 FAX (714) 953-5467

DATE 12-19-04
 SCALE
 DRAWN
 VOP BA-45
 SHEET M-8

2.15.9 Pre-Heating: No pre-heating will be allowed.

2.15.10 Heat-Treatments: The heat-treating or stress relieving of completed welds, when required, shall be performed in accordance with requirements of the specific construction code under which the work is conducted.

2.15.11 Welded pipe to be pressure tested with air before filling with water. Any sweating of weld under hydrostatic test shall be cause for its rejection and complete removal, and such removal shall be accomplished so that final scarfing of the weld after removal of the weld metal is approximately the same as the scarfing of the pipe before welding. ~~WELD ALL PIPING WITH (2) LAYERS OF "ORANGEBURG".~~

2.15.12 Outlets, fittings, and joints shall be specially designed for welded piping.

2.15.13 All offsets or bends shall be made with butt welding fittings.

2.15.14 Connections to mains shall be Schedule 40 welding fittings.

2.16 INSULATION, PIPING

2.16.1 All chilled and hot water bypass lines to be insulated within 10' of the connection to the existing piping system. Insulation is to cover valves and fittings as well as piping. Insulation to be a minimum of 1 1/2" thick and sealed weathertight with an aluminum jacket. Provide a weathertight collar at the end of the 10' insulation run.

2.17 PRESSURE RELIEF VALVES

2.17.1 Install pressure relief valves at a high point of each rooftop building bypass system. One relief valve is required for each BHS, BHR, BHS and BHR pipeline (total of 4 valves per building). Relief valve to be Bell and Gossett # 790-125 or equal. Relief set point to be 125 psi. Provide brass nipple at the connection to Victaulic outlet coupling and a 3/4" isolation ball valve (Stockham # S-216) down stream of the relief valve. Close couple piping. Gang relief piping from all four discharge lines and spill to a piping support above the roof deck.

2.18 CLEANING PIPING SYSTEMS

2.18.1 After completion of piping and pressure testing and before any system is put into operation, chilled, and hot water circulation systems shall be cleaned and flushed by water treatment engineers. After systems have been cleaned, flushed, and certified clean by water treatment engineers, water circulating systems are to be charged with corrosion inhibitor.

2.18.2 The servicemen and the cleaning company represented will be held responsible for the safe application of cleaning compounds and safe operation of equipment during the cleaning, flushing and recharging of the above system and shall inform the proper representative if any unsafe conditions arise while the systems are being cleaned.

JM [Signature]

2.4.2 Gaskets to be standard type, Grade E, EPDM compound for -30°F to +230°F water temperature range.

2.5 BELOW GRADE

2.5.1 Welded Black steel, schedule 40 conforming to ASTM A-120. Provide expansion loops as shown on the plan sheets. Verify exact location of existing underground utilities and hot and chilled water piping before installing new welded pipe. Backfill with clean sand a minimum of 6' around new piping before applying soil cover or new concrete or asphalt surface. Compact soil so that no settling occurs.

2.6 VALVES

2.6.1 Valves unless otherwise noted or specified are butterfly type. Valves of the same type shall be of the same manufacturer. The valves listed below are approved.

Stockham	# LG-812
Body Type	Grey Iron
Type Operation	Lever
Pressure Class	200 psi
Disc Material	Aluminum/Bronze
Stem Material	Type 410 SS
Sleeve Material	EPDM

2.6.2 Valves to be designed for use with grooved end black steel schedule 40 piping. Valves shall also be of the type which may be field modified at a later date. Field modification will include the installation of an electric actuator for automatic open/closed control. Future actuator to be by Robertshaw or equal. Contractor to verify in writing that future actuators may be added to the valves supplied and installed without removing the valves from the pipe lines.

2.6.3 Label all valves with brass 1 inch diameter tags chained to valves with brass chains with stamped or etched letters filled with black paint.

2.7 AIR VENTS

2.7.1 Automatic air vents are to be provided at all piping system high points including points where pipe runs elbow over parapets. Air vents are to be Bell and Gossett # 107 or equal by Amtrol.

2.8 HOSE BIBBS

2.8.1 Watts # SC-6 or equal, cast brass.

2.9 PIPE HANGERS AND SUPPORTS

2.10 HORIZONTAL SUPPORTS

2.10.1 Unless otherwise indicated, hold horizontal pipe runs firmly in place by approved iron hangers. Install and support pipe runs so that they may expand or contract freely without strain to pipe or equipment.

2.11 VERTICAL SUPPORTS

2.11.1 All riser piping between the parapet roof structure and the ground to be supported vertically and braced laterally.

2.11.2 The base of the riser (below grade level) is to be supported with a concrete anchor.

2.11.3 The riser pipe to be secured to the building structure with a four way brace support. Piping to be secured to the brace support with "U-bolts". The brace is to be secured to the structure with lead sleeved lag bolts or another approved method. Angle between the brace support member and face of the building to be 45°. Contractor to submit shop drawing for approval.

2.12 ABOVE ROOF

2.12.1 Fabricate and secure piping in a manner shown schematically on the plan sheets. Contractor to submit shop drawings for approval. Materials to be similar or equal to Superstrut Framing Channel system as shown on the plan sheets. A minimum design load of 1500 lbs. per support to be used. Pipe supports to be secured through the roof deck. Existing roof deck alone is not to be used to anchor the piping support system. Provide lateral and longitudinal bracing as shown on the plan sheets and to the degree to meet the requirements set forth in Title 24 Part 2, Sections 2-2312 (g) and (h).

2.13 PIPE SLEEVES

2.13.1 Provide pipe sleeves of 20-gage steel for pipes to pass through concrete walls, sidewalks, floors and roofs. Diameter of sleeve to be 1-inch larger than the outside diameter of passing pipe. Galvanized steel telescoping type sleeves as manufactured by "Adjust-to-Crete" or "Paramount Manufacturing Company", or Sperzel polyethylene "Crate-Sleeve", may be used. Where seepage may occur, use steel pipe sleeves.

2.13.2 All pipe sleeves through floors, concrete walkways, soil or asphalt shall extend 1-inch above finished floor or grade and shall be sealed around the top of the sleeve and the pipe. The sealing is to prevent foreign materials from being deposited between the pipe and sleeve. Provide collar where polyethylene sleeve is used.

2.14 PIPE JOINTS

2.14.1 Make-up joints with inside smooth and unobstructed. Thoroughly ream out pipe ends to remove all burrs. Carefully inspect each length of pipe and each fitting and remove obstructions prior to fabrication.

2.14.2 Make screwed joints tight with tongs and wrenches. Remake leaky connections with new materials. The use of thread cement or caulking to make joints tight is prohibited.

2.14.3 Make-up flanged joints with ring gaskets.

2.15 WELDED STEEL PIPE

2.15.1 All welding shall conform to the procedures for metallic arc welding of steel pipe set forth in the AWS (American Welding Society) Structural Welding Code.

2.15.2 Process: All welding shall be done by the metallic arc process.

2.15.3 Position: The welding shall be done with the axis of the pipe in the horizontal rolled, horizontal fixed or vertical fixed positions.

2.15.4 Preparation of Base Material: The edges or surfaces of the parts to be joined by welding shall be prepared by machining, flame cutting, chipping or grinding, or a combination of these and shall be cleaned of all slag, oil, grease, and excessive amounts of scale or rust. Use of back-up ring shall be optional.

2.15.5 Nature of Electric Current: The welding current used shall be direct current. The base material shall be on the negative side of line.

2.15.6 Welding Technique: The welding technique, number of beads and sequence, the diameter of electrodes for each bead and the mean amperage and voltage values during welding for each bead shall be in accordance with the specific construction code under which the work is done. Weaving layers in horizontal pipe welds shall be limited to approximately 3/4" thick.

2.15.7 Cleaning: All slag or flux shall be removed from each crater by means of a light cleaning hammer before proceeding with the next electrode. Each completed bead or layer shall be thoroughly cleaned with hammer and wire brush, removing all weld splatter from pipe ends or surface of weld before laying down next successive bead or layer.

2.15.8 Defects: Any cracks or blowholes that appear on the surface of any bead of welding shall be removed by chipping, grinding or flame gouging before depositing the next successive bead.

SPECIFICATIONS

PART 1 - GENERAL

1.1 SCOPE

1.1.1 The work covered by this section consists of furnishing all labor, materials, equipment, and performing all operations required for complete and operable piping systems as indicated on the drawings.

1.1.2 These drawings and specifications do not include necessary components for construction safety.

1.1.3 These drawings are a diagrammatic presentation of the design concept. The drawings do not necessarily indicate any and all offsets and configurations required for installation. The Contractor shall examine all mechanical, architectural, structural, electrical and other drawings and accept such conditions and make allowances for them in preparing the bid.

1.2 VISITING THE PREMISES

1.2.1 The Contractor, before submitting his bid on the work must visit the site and familiarize himself with all existing conditions. As a result of having visited the premises, the Contractor shall be responsible for the installation of the work as it relates to such visible existing conditions.

1.2.2 The submission of a bid will be considered an acknowledgement on the part of the bidder of his visitation to the site.

1.3 SUBMITTING THE BID

1.3.1 The Contractor and his Subcontractors are skilled and experienced in the use and interpretation of plans and specifications such as those included in the bid documents for this contract. They have carefully reviewed the plans and specifications and have found them free of ambiguities and sufficient for bid purposes. Further they have based their bid solely on those documents not relying in any way on any explanation or interpretation oral or written, from any other source.

1.4 CODES AND STANDARDS

1.4.1 The installation shall conform to requirements of local and/or State Codes and the Uniform Building Codes.

1.5 PERMITS AND LICENSES

1.5.1 Permits and licenses necessary for prosecution of work shall be secured and paid for by CONTRACTOR, unless otherwise specified.

1.6 SUBMITTALS

1.6.1 Submission of six (6) brochures containing material lists, certified manufacturer's drawings, performance data, rough-in dimensions and cuts of all equipment and fixtures within thirty-five (35) days after contract is signed. Submittals shall be in a neat brochure form and shall contain a complete list, in index form, of the manufacturer's names, cuts of equipment, performance data, catalog numbers and trade names as required to properly identify the materials and equipment to be furnished under these specifications.

1.7 FURNISHING ITEMS

1.7.1 For any equipment or materials indicated but not described as to model or quality, obtain information from Architect prior to bidding. Failure to do so will not relieve Contractor from furnishing items of the quality desired by Architect before final acceptance, and at no additional cost to the Owner.

1.8 RECORD DRAWINGS

1.8.1 Provide a complete set of "AS-BUILT" drawings showing locations of all exposed and concealed pipe and equipment, and depths of all buried pipe. Master copy shall be kept in the custody of the resident inspector, and shall be updated daily.

1.9 PROTECTION OF WORK

1.9.1 Protect all work, materials and equipment from damage during progress of work. Replace all damaged or defective work, materials and equipment without additional cost to Owner, and before requesting final acceptance.

1.10 SEISMIC RESTRAINT

1.10.1 All piping to be restrained from excessive movement laterally, longitudinally and vertically against forces resulting from seismic activity. Anchorage and supports to be per Title 24, Part 2, Section 2-2312 (g) and (h) and per the guidelines set forth in the SMACNA Guidelines For Seismic Restraints of Mechanical Systems and Plumbing Piping Systems.

1.11 HYDROSTATIC AND HYDRAULIC TESTS

1.11.1 After the installation is complete, but before insulation is applied, test all piping and equipment and prove tight. Pressure tests shall run for a period of not less than four (4) hours and all tests made with water. The pressure shall not drop more than five (5) pounds during the test period. Furnish all necessary equipment. Test pressures:

- 1. Chilled water piping - 115 psi.
- 2. Heating water piping - 115 psi.

1.12 CLEAN-UP

1.12.1 Thoroughly clean all materials, equipment and appliances. Clean and prepare all surfaces to be painted. Clean the entire premises of unused materials, debris, spots and marks to the satisfaction of the Architect.

1.13 GUARANTEE

1.13.1 All materials and equipment provided and/or installed under this Specification shall be guaranteed for a period of one (1) year from the date of final acceptance of the work by the Owner. Should any trouble develop during this period due to defective materials of faulty workmanship, furnish all necessary labor and materials to correct the trouble without any cost to the Owner. Any defective materials or inferior workmanship noticed at time of installation and/or during guarantee period shall be corrected immediately to the entire satisfaction of the Owner.

1.13.2 This shall not supersede product warranties of longer duration when herein specified or when provided as a condition of product sale.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Use only new materials, and unless prefabricated, deliver to the site in standard sizes. Use the standard product of one manufacturer for each article of its type. Materials and workmanship not otherwise specified to conform to latest applicable Federal, A.N.S.I., N.F.P.A., A.S.M.E. or A.S.T.M. specifications.

2.2 PIPE AND FITTINGS

2.2.1 Schedule 40 Black Steel pipe conforming to ASTM A-120. Pipe 2" and smaller, screwed; pipe 2 1/2" and larger, grooved end prepared for victaulic fittings.

2.3 ABOVE GRADE

2.3.1 Schedule 40 Black Steel pipe conforming to ASTM A-120. Pipe 2" and smaller, screwed; pipe 2 1/2" and larger, grooved end prepared for victaulic fittings.

2.4 VICTAULIC FITTINGS

2.4.1 Pipe fittings to be as follows:

- Style #75 Standard Couplings
- Style #07 Zero Flex Rigid Coupling
- Style #150 Nover Expansion Joint
- Style 72 Outlet Coupling

Grooved end fittings for elbows, tees, etc.

PLUMBING GENERAL NOTES

1. Entire installation shall conform to the requirements of the Uniform Plumbing Code, Uniform Building Code, State Mechanical and Plumbing Codes, Title 24, Parts 4 and 5 and the City of Irvine Building Code Requirements.
2. Coordinate all locations, sizes and elevations of all sleeves through walls, beams, slabs and footings with the Mechanical drawings and the Irvine School District Maintenance and Operations Department. All pipes sleeving through footings shall have a sleeve diameter of two pipe sizes over the pipe passing through the footing.
3. Coordinate and verify exact location, size, points of connection and invert elevations of existing utility service and drainage piping before installation of new work.
4. The location and elevation of all plumbing piping shall be verified and coordinated with all other trades, structural conditions the Maintenance and Operations Department prior to the start of installation.
5. Piping supports. All piping to be supported with hangers and brackets which provide isolation from structure.
6. All floor and wall penetrations must be sealed watertight and vermin-proof.
7. All valves shall be located to be readily accessible. Where valves are installed within, or behind walls, partitions or ceilings, an access panel shall be installed. Below grade installations require a concrete vault and rated cover.
8. The drawings were prepared with the best structural and architectural information available. It is understood that equipment locations and routing of piping may vary from that shown on the plans as construction proceeds. It is the contractor's responsibility to:

 1. Notify the mechanical engineer of construction restraints which make variations from the plans necessary.
 2. Complete all work including the variations without charging extras to the bid contract. Completion of work means the job is working and meets all City, County and State Building Code requirements.
 3. Guarantee. Furnish a guarantee that all equipment furnished and installed will remain in trouble-free operation for a period of one (1) year. Provide building owner with equipment O & M manuals.

BCHS	BCHS	BYPASS CHILLED WATER SUPPLY
BCHR	BCHR	BYPASS CHILLED WATER RETURN
BHS	BHS	BYPASS HOT WATER SUPPLY
BHR	BHR	BYPASS HOT WATER RETURN
CHS	CHS	CHILLED WATER SUPPLY
CHR	CHR	CHILLED WATER RETURN
HS	HS	HOT WATER SUPPLY
HR	HR	HOT WATER RETURN
HB	HB	HOSE BIBB VALVE
HBC	HBC	HOSE BIBB VALVE W/ COUPLING
X-X-X-X	NP	WELDED PIPE
- -	SC	STANDARD COUPLING
- _ -	EU	SLIDING EXPANSION JOINT
- -	RC	RIGID COUPLING
- _ -	OC	OUTLET COUPLING
-X-	NO	NORMALLY OPEN
-X-	NC	NORMALLY CLOSED
-X-	BV	BUTTERFLY VALVE

IRVINE HIGH SCHOOL
BYPASS PIPING SYSTEM
4371 WALNUT AVE.
IRVINE, CA.

BURKE MECHANICAL ENGINEERING
25000 Paseo Camino
San Juan Capistrano, CA 92675
(714) 953-2000 (714) 950-2240
FAX (714) 953-6865

DATE 10-19-89
SCALE
DRAWN
JOB 89-45
SHEET