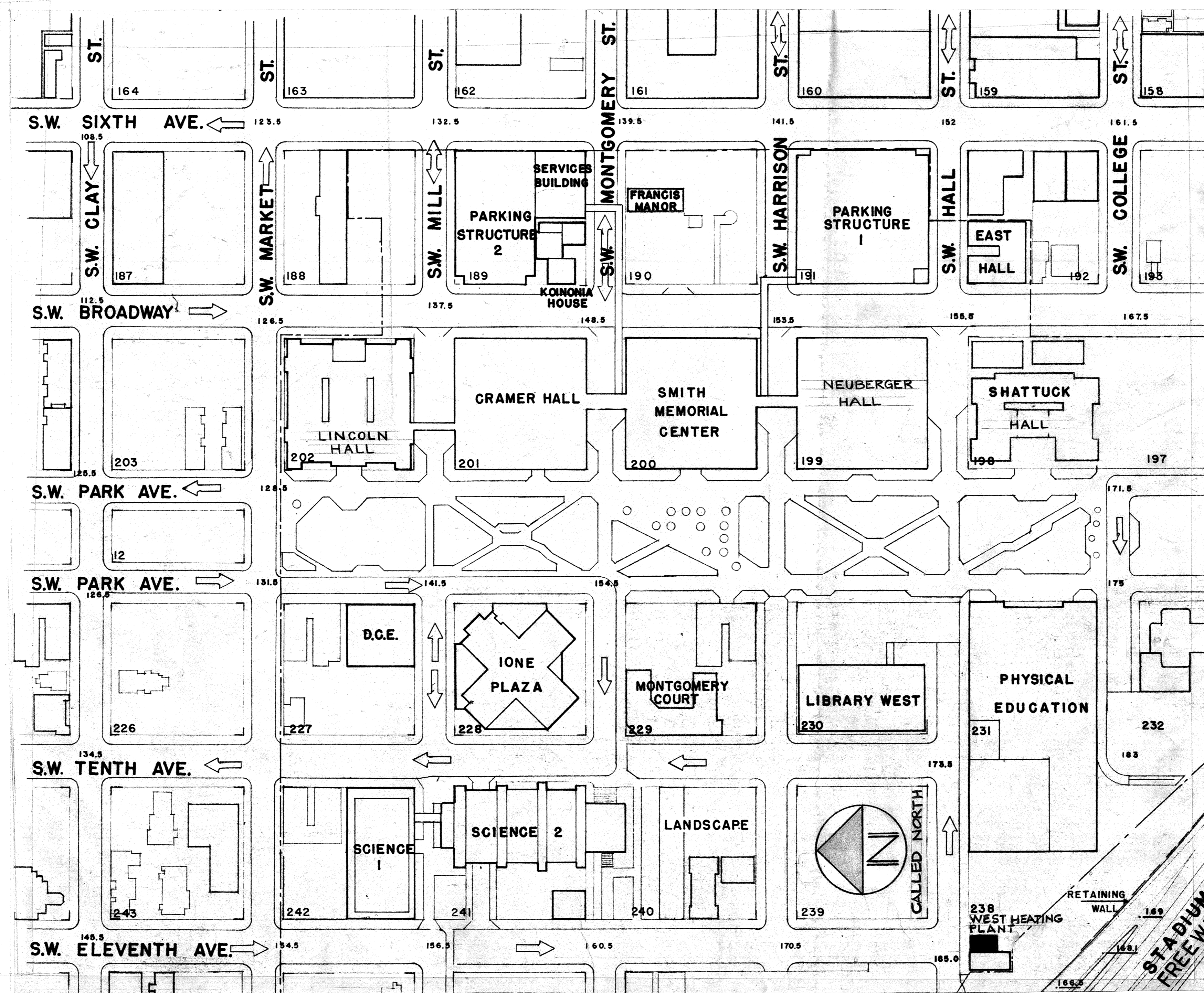


Appendix 5.04
1979 As-Built Drawings, West Heating Plant

WEST HEATING PLANT UTILITIES ADDITION

PORTLAND STATE UNIVERSITY



DRAWING INDEX

ARCHITECTURAL

- A-1 HEATING PLANT PLANS AND ELEVATIONS
- A-2 HEATING PLANT DETAILS
- AS-1 HEATING PLANT-STRUCTURAL PLANS
- AS-2 HEATING PLANT STRUCTURAL DETAILS

MECHANICAL

- M-1 SITE PLAN, SCHEDULES AND DETAILS
- M-2 HEATING PLANT-PLANS AND DETAILS
- M-3 DIAGRAMS AND DETAILS
- M-4 SCIENCE II, PART PLAN BASEMENT
- M-5 UTILITIES PLAN AND PROFILE - 11TH AVE.
- M-6 UTILITIES PLAN, PROFILE AND DETAILS
- M-7 DETAILS AND DIAGRAMS

ELECTRICAL

- E-1 PLANS, SCHEDULES AND DETAILS

AS REPORTED AS-BUILT
8-16-76

SET NO. _____

DRAWING NUMBER
0

DRAWING NUMBER
DRAWING INDEX

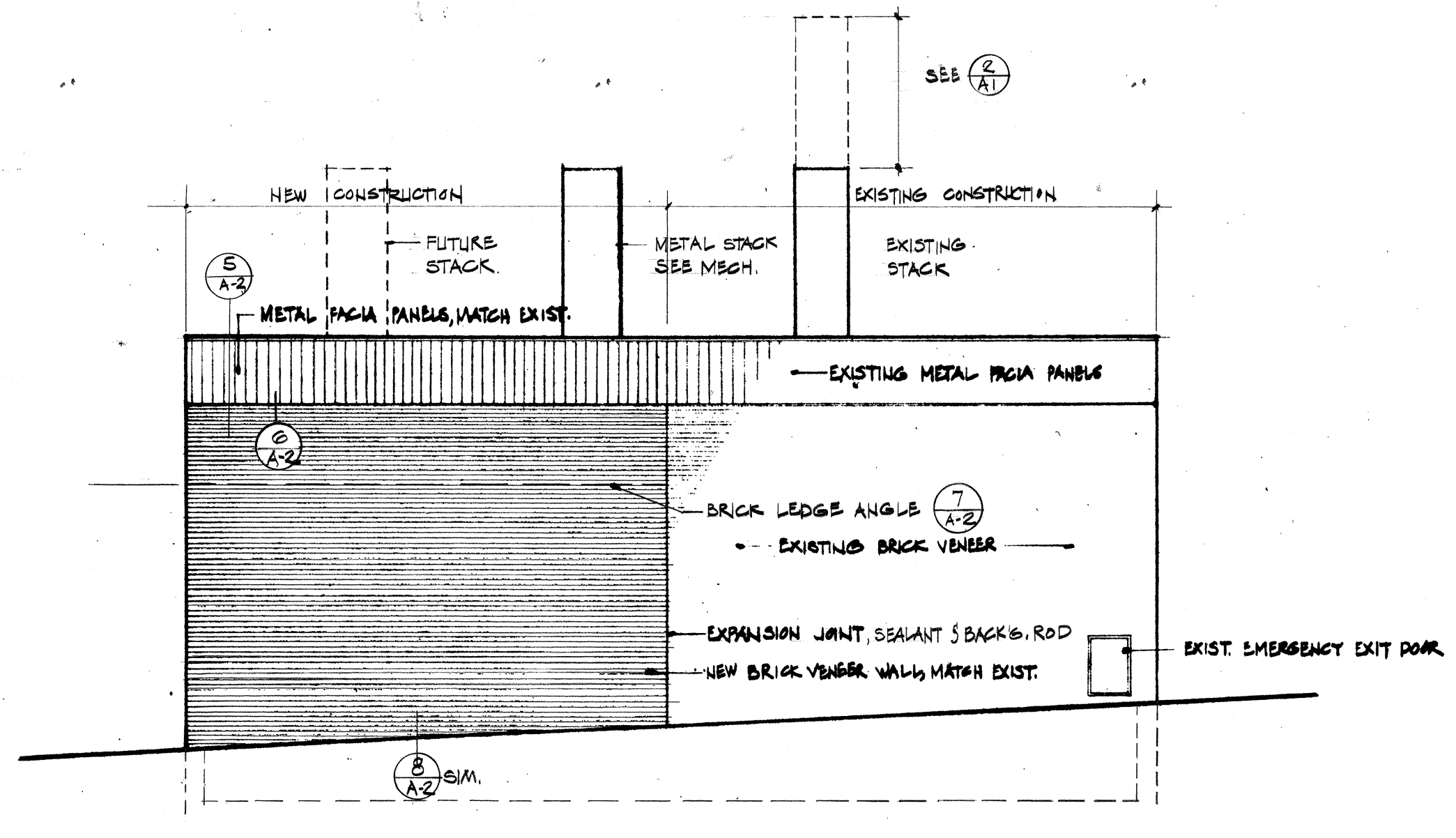
WEST HEATING PLANT UTILITIES ADDITION

DRAWING NUMBER
238 - WHP

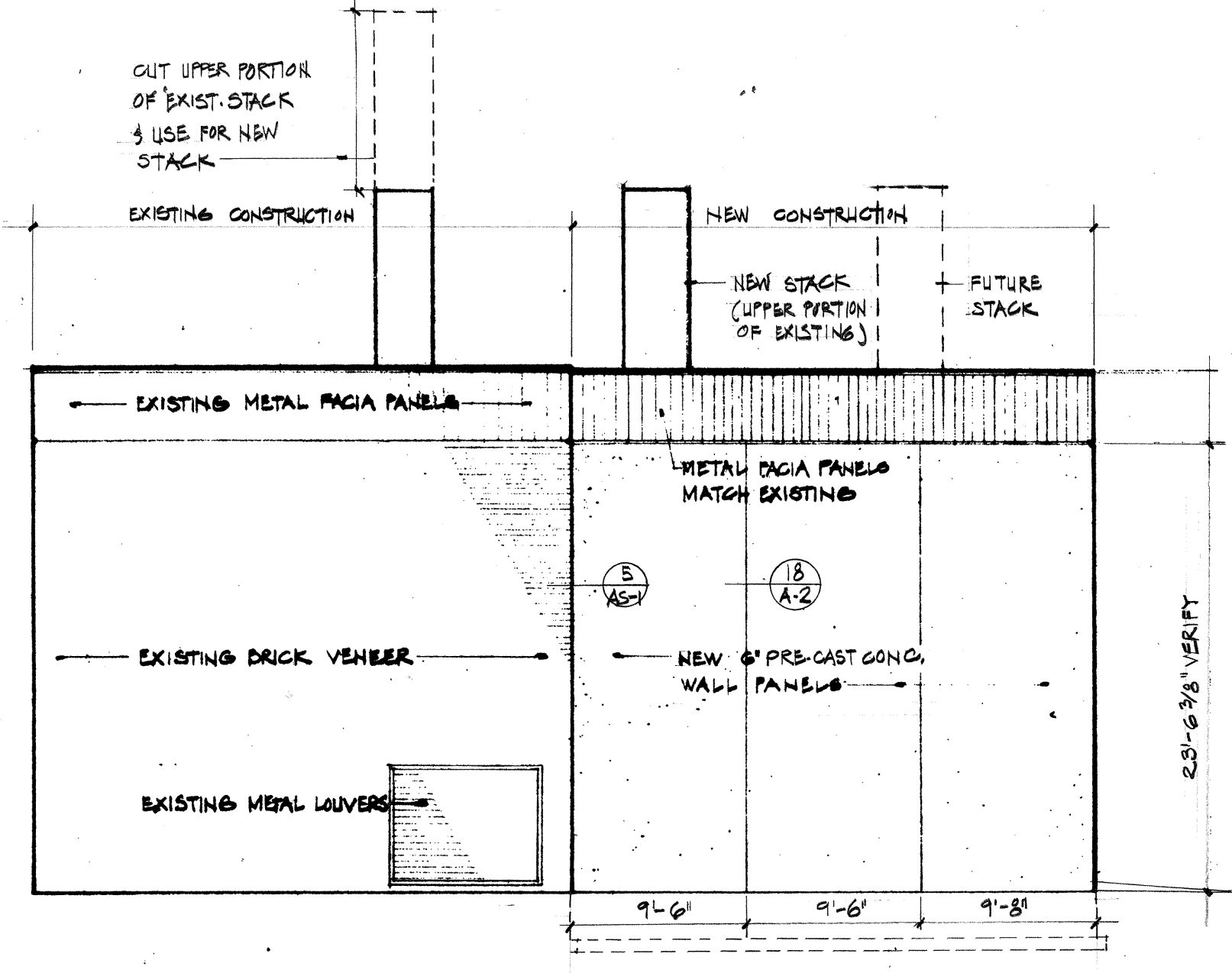
DRAWING NUMBER
A-1

ZIMMER GUNSUL FRASCA 8-16-76
DRAWING NUMBER
HEATING PLANT PLANS & ELEVATIONS
WEST HEATING PLANT UTILITIES ADDITION

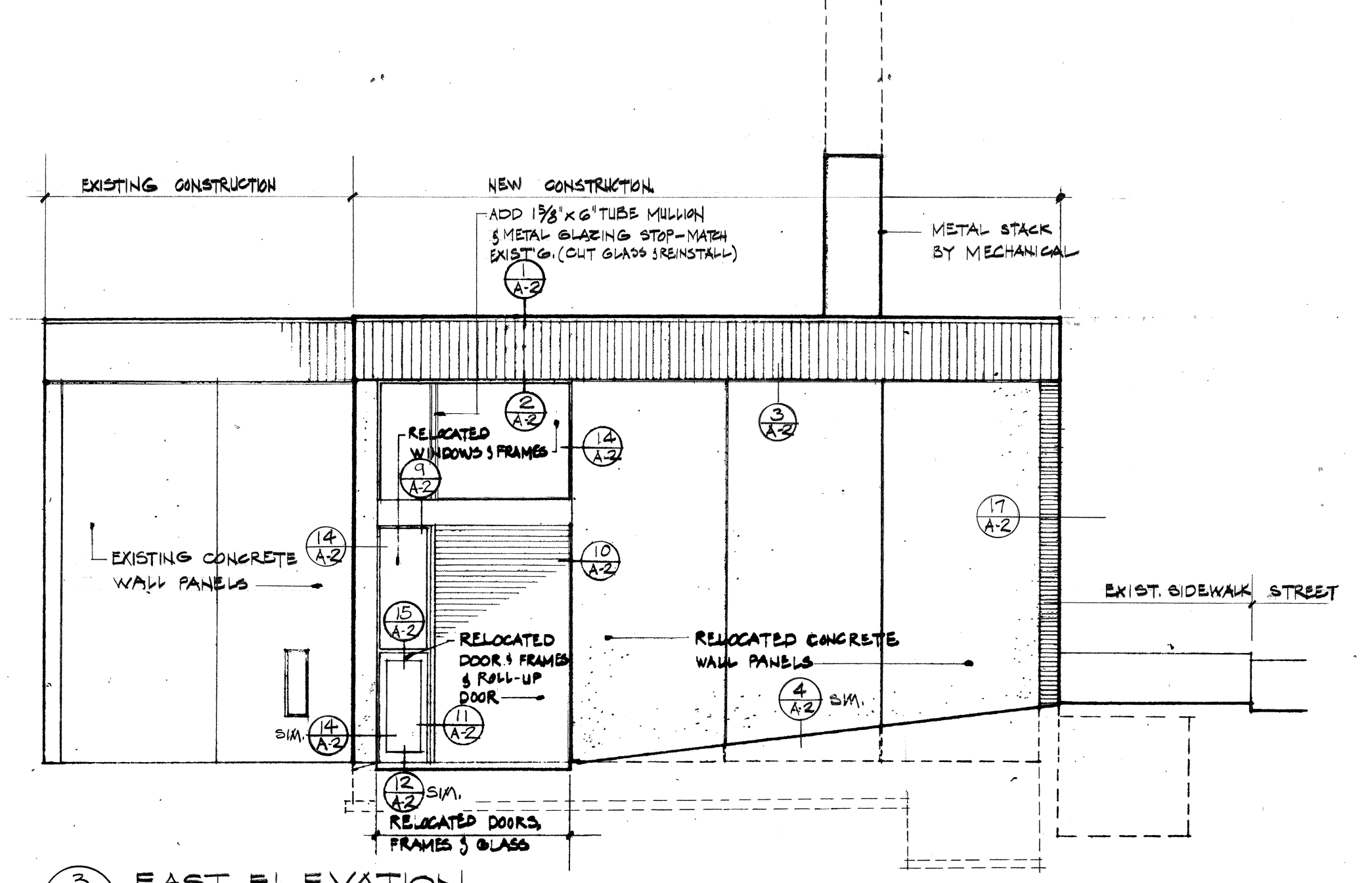
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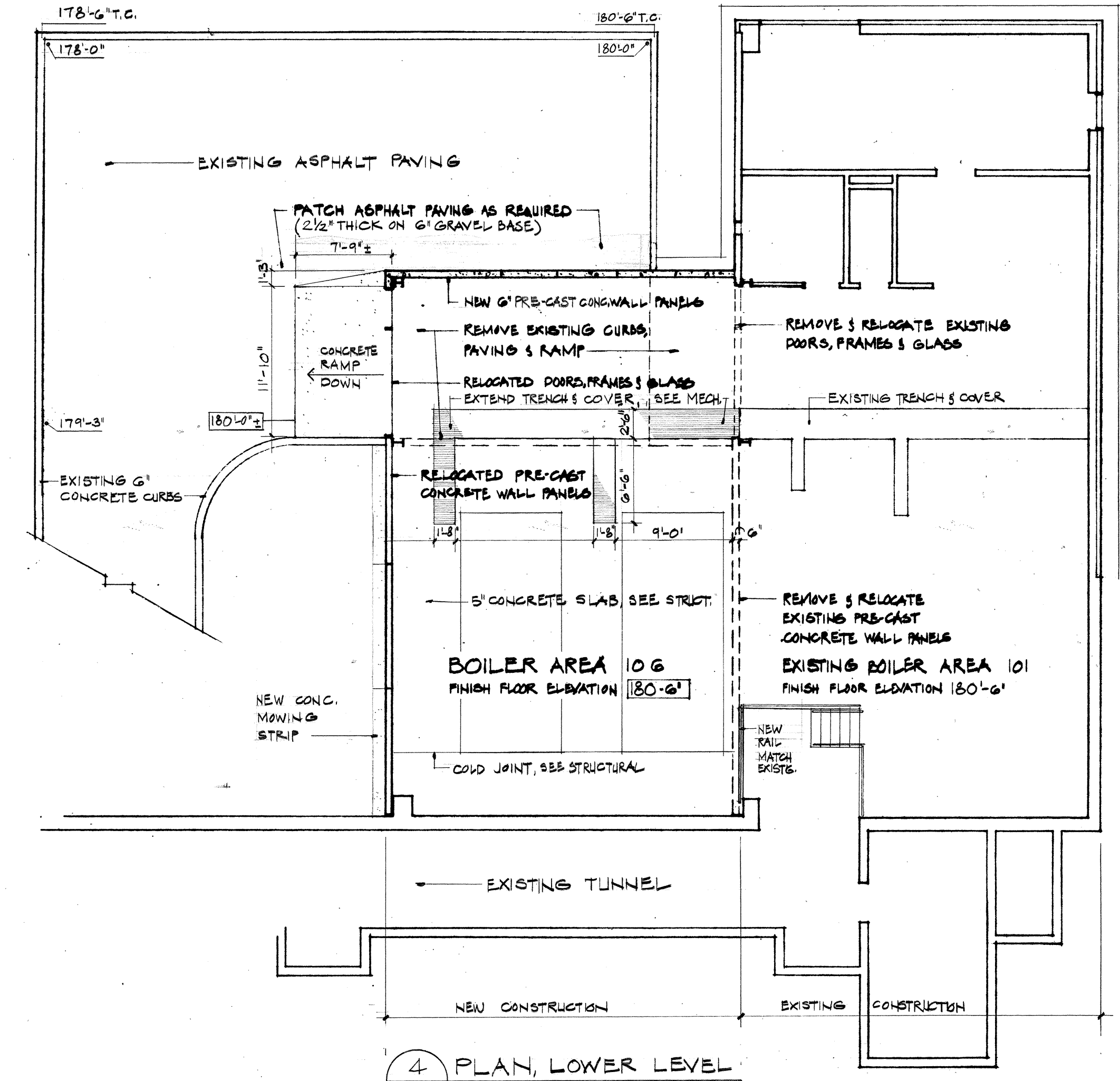
1 NORTH ELEVATION
A-1 1/8" = 1'-0"



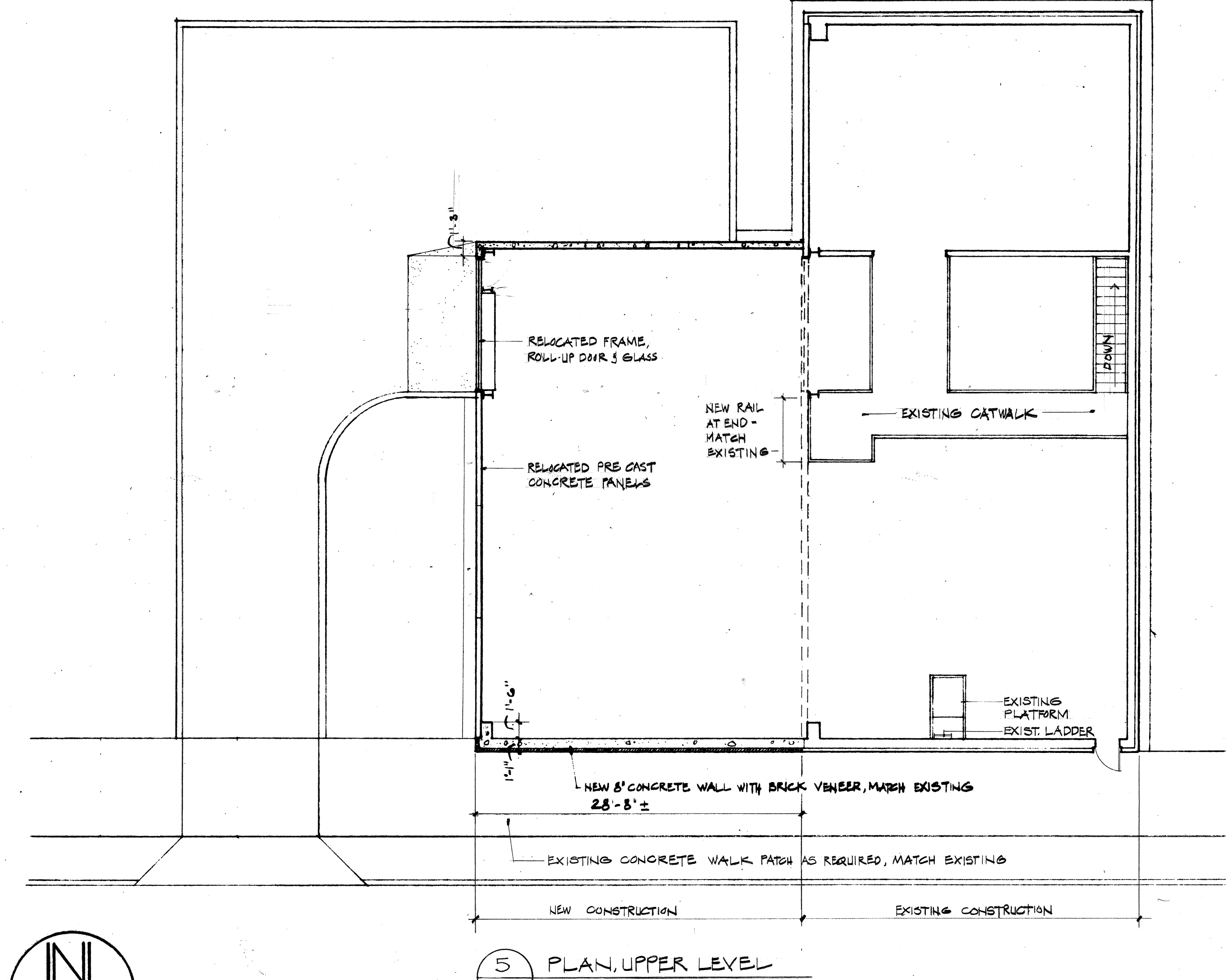
2 SOUTH ELEVATION
A-1 1/8" = 1'-0"



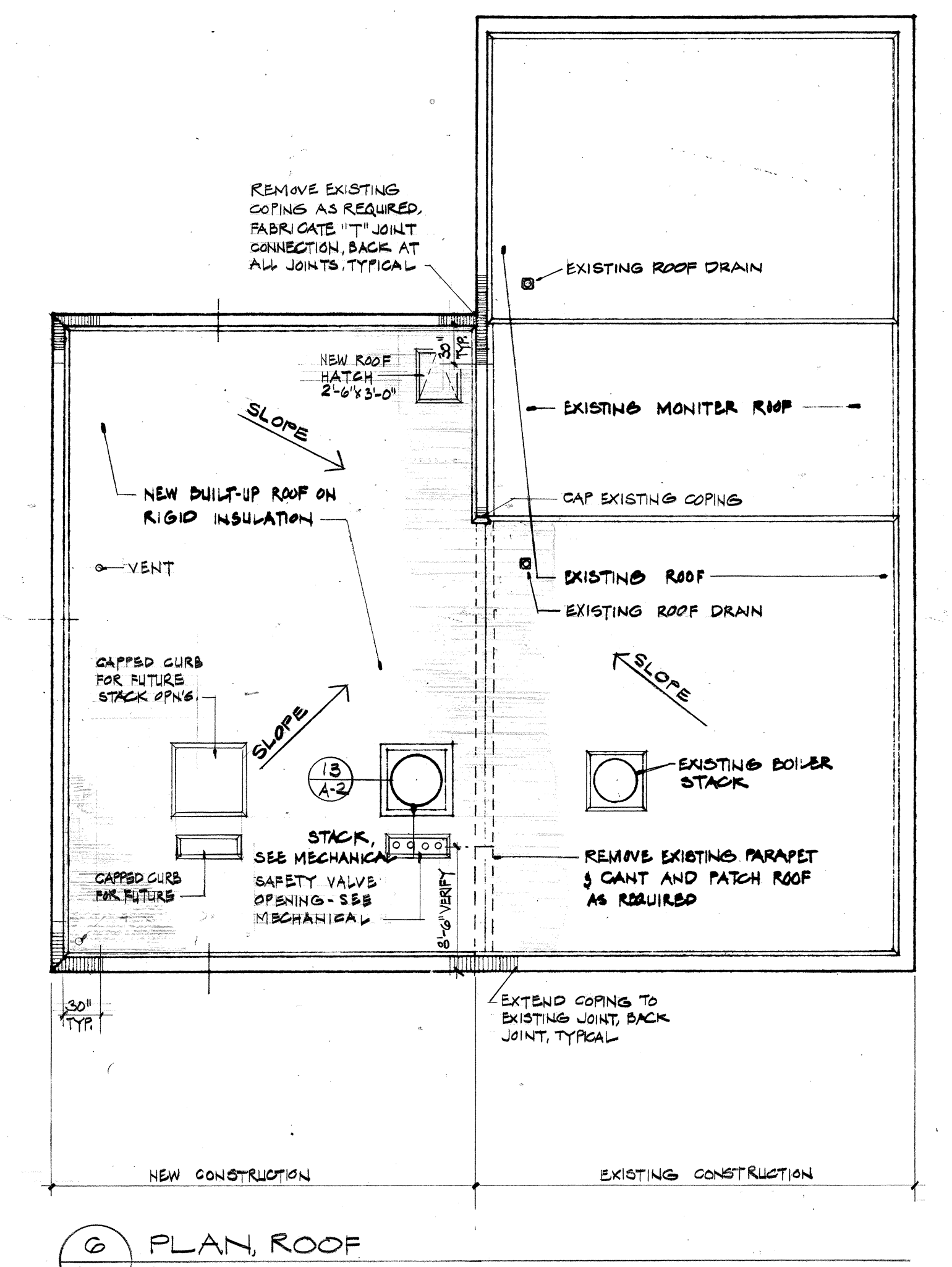
3 EAST ELEVATION
A-1 1/8" = 1'-0"



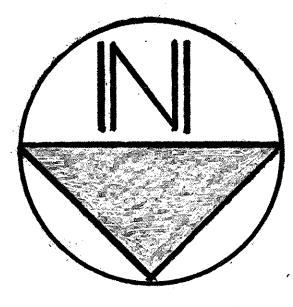
4 PLAN, LOWER LEVEL
A-1 1/8" = 1'-0"



5 PLAN, UPPER LEVEL
A-1 1/8" = 1'-0"



6 PLAN, ROOF
A-1 1/8" = 1'-0"



▲ 8-16-76 AS-BUILT REVISIONS REVISIONS

HEATING PLANT PLANS AND ELEVATIONS		Project No.	1049
WEST HEATING PLANT UTILITIES ADDITION		Date	6-13-74
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Scale	SHOWN
C. W. Timmer Associates Inc.		Dwg. No.	A-1
Consulting Engineers / Beaverton, Oregon		Sht.	1 of 12



DRAWING NUMBER
A-2

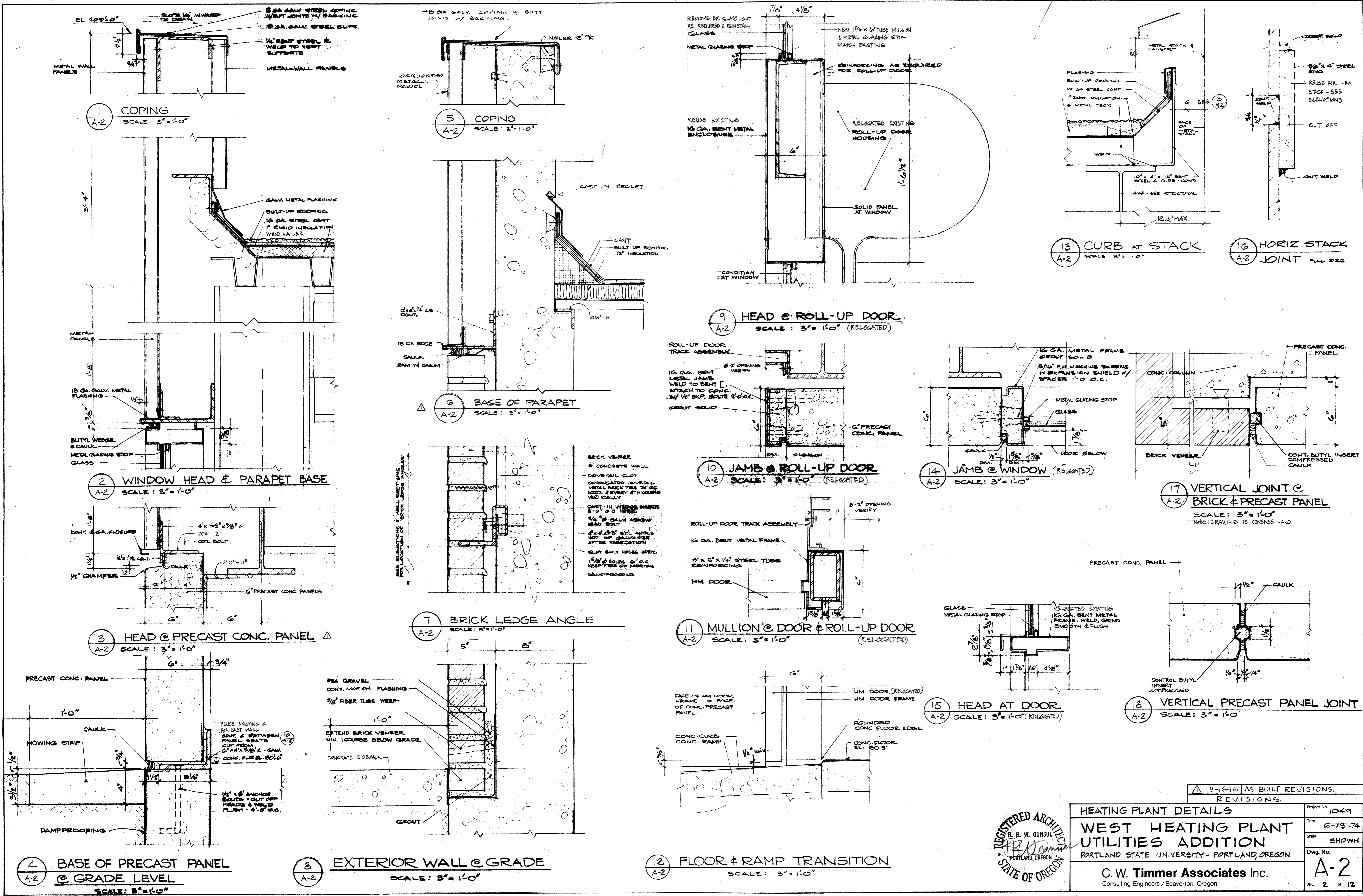
ZIMMER
GUNSEL
FRASCA
3-16-76

DRAWING NUMBER
HEATING PLANT
DETAILS

WEST HEATING
PLANT
UTILITIES
ADDITION

DRAWING NUMBER
238-WHP

PLAN HOLD CORPORATION
IRVINE, CALIFORNIA
REGISTERED BY NUMBER 02049
POSITION: USE OF PRINT OR THIS LINE



8-16-76 AS-BUILT REVISIONS.
REVISIONS.

REGISTERED ARCHITECT
B. R. W. GUNSEL
PORTLAND, OREGON
STATE OF OREGON

HEATING PLANT DETAILS
**WEST HEATING PLANT
UTILITIES ADDITION**
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON
C. W. Timmer Associates Inc.
Consulting Engineers / Beaverton, Oregon

Project No. 1049
Date 6-13-74
Scale SHOWN
Dwg. No. **A-2**
Sht. 2 of 12

DRAWING NUMBER
AS-1

ZIMMER
GUNSUL
FRASCA
B-16-76

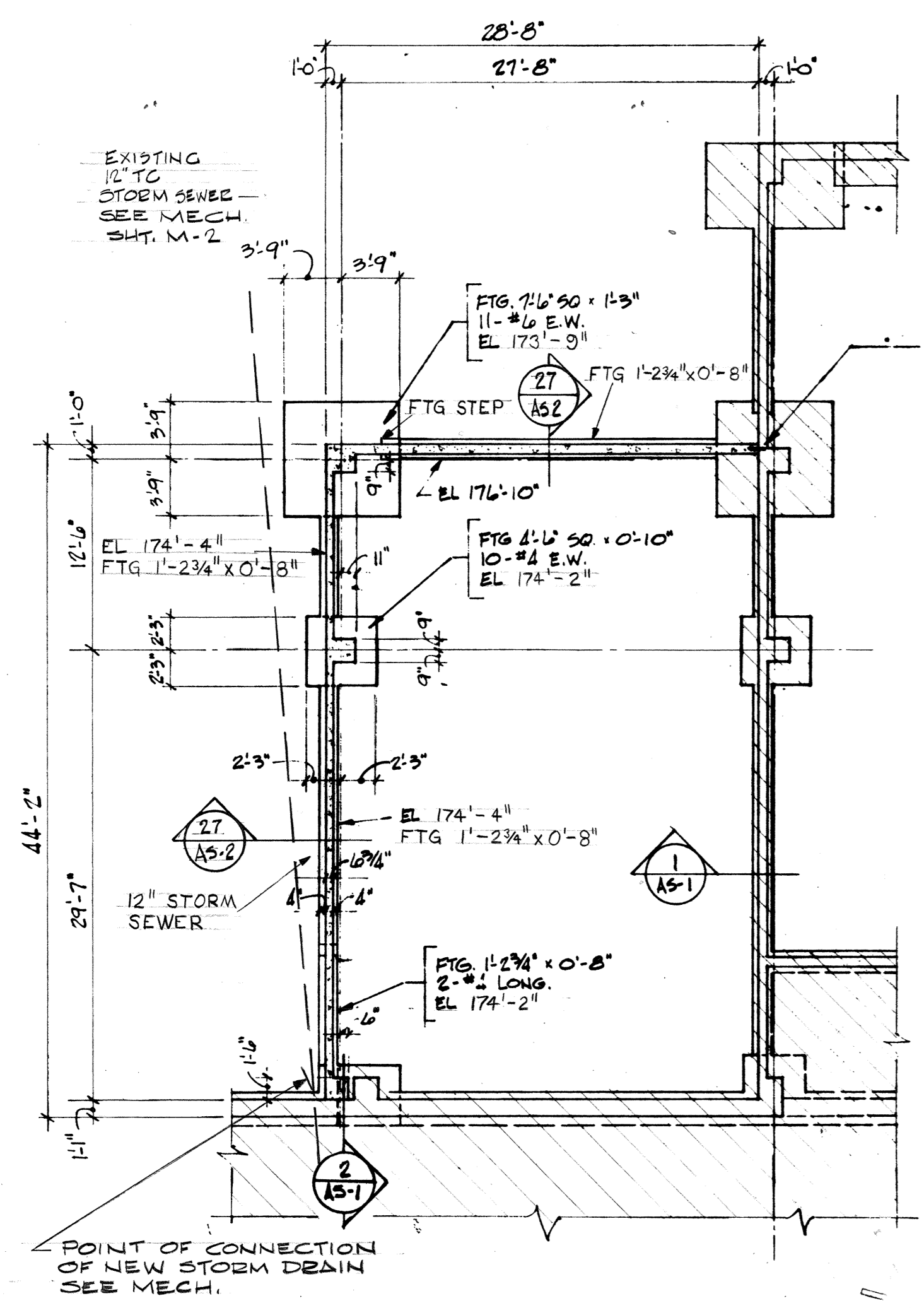
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STRUCTURAL PLANS

WEST
HEATING
PLANT
UTILITIES
ADDITION

DRAWING NUMBER
238-WHP

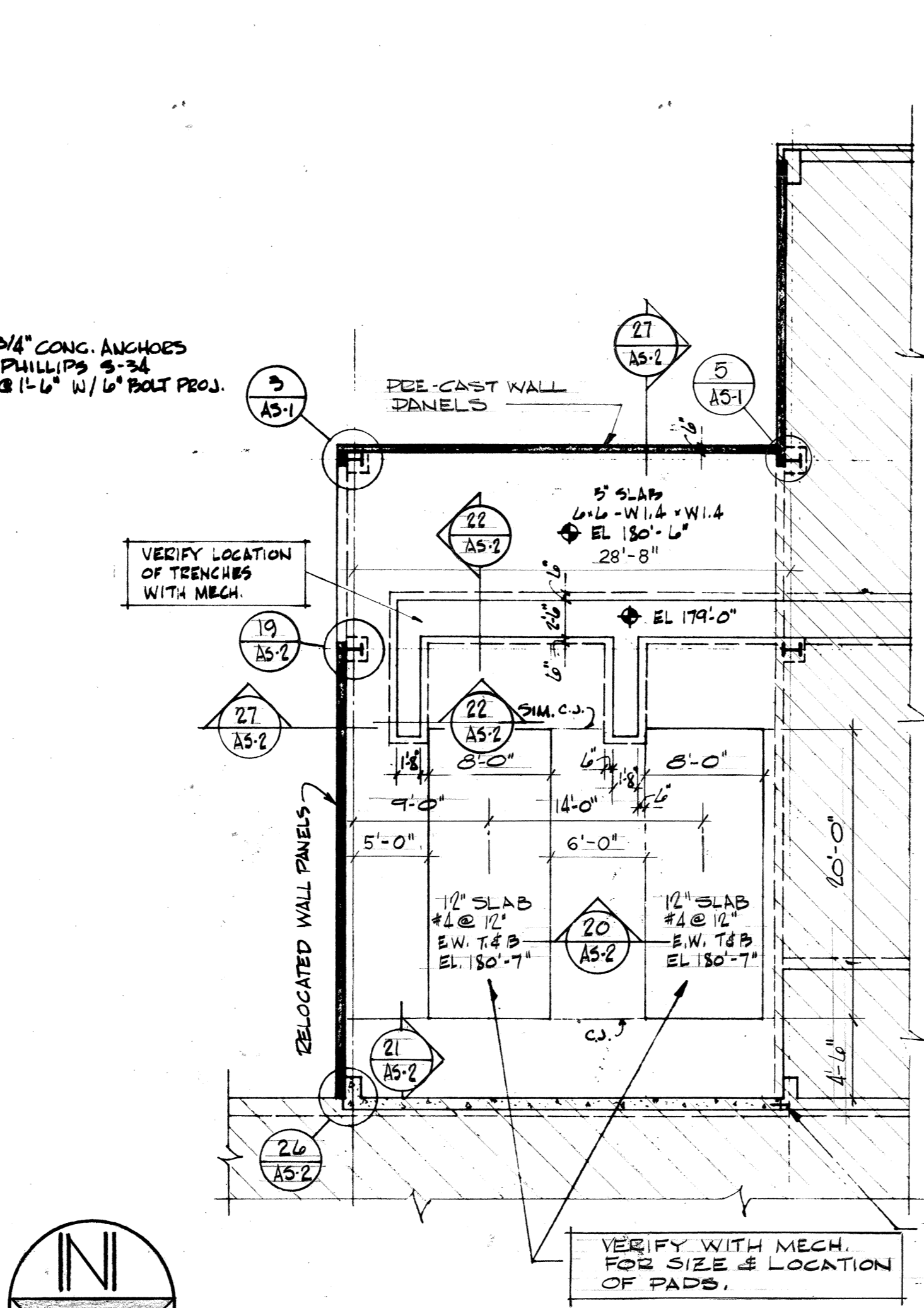
WEST
HEATING
PLANT
UTILITIES
ADDITION

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REGISTERED BY NUMBER 07049
PROFESSIONAL SEAL OF STATE OF OREGON



FOUNDATION PLAN
1/8" = 1'-0"

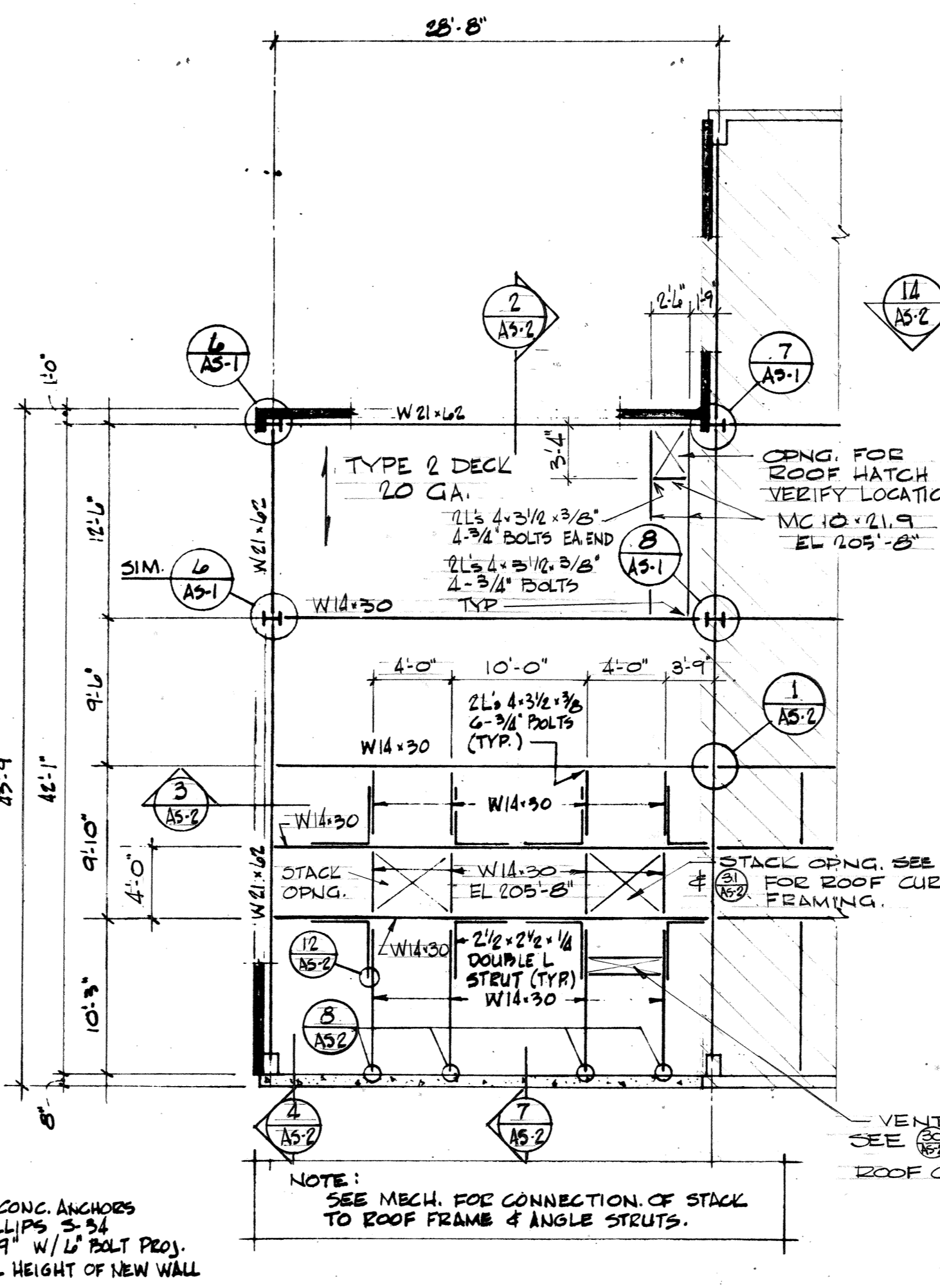
NOTE: ELEVATIONS SHOWN ARE TO BOTTOM OF FTG.



PLAN LOWER LEVEL
1/8" = 1'-0"

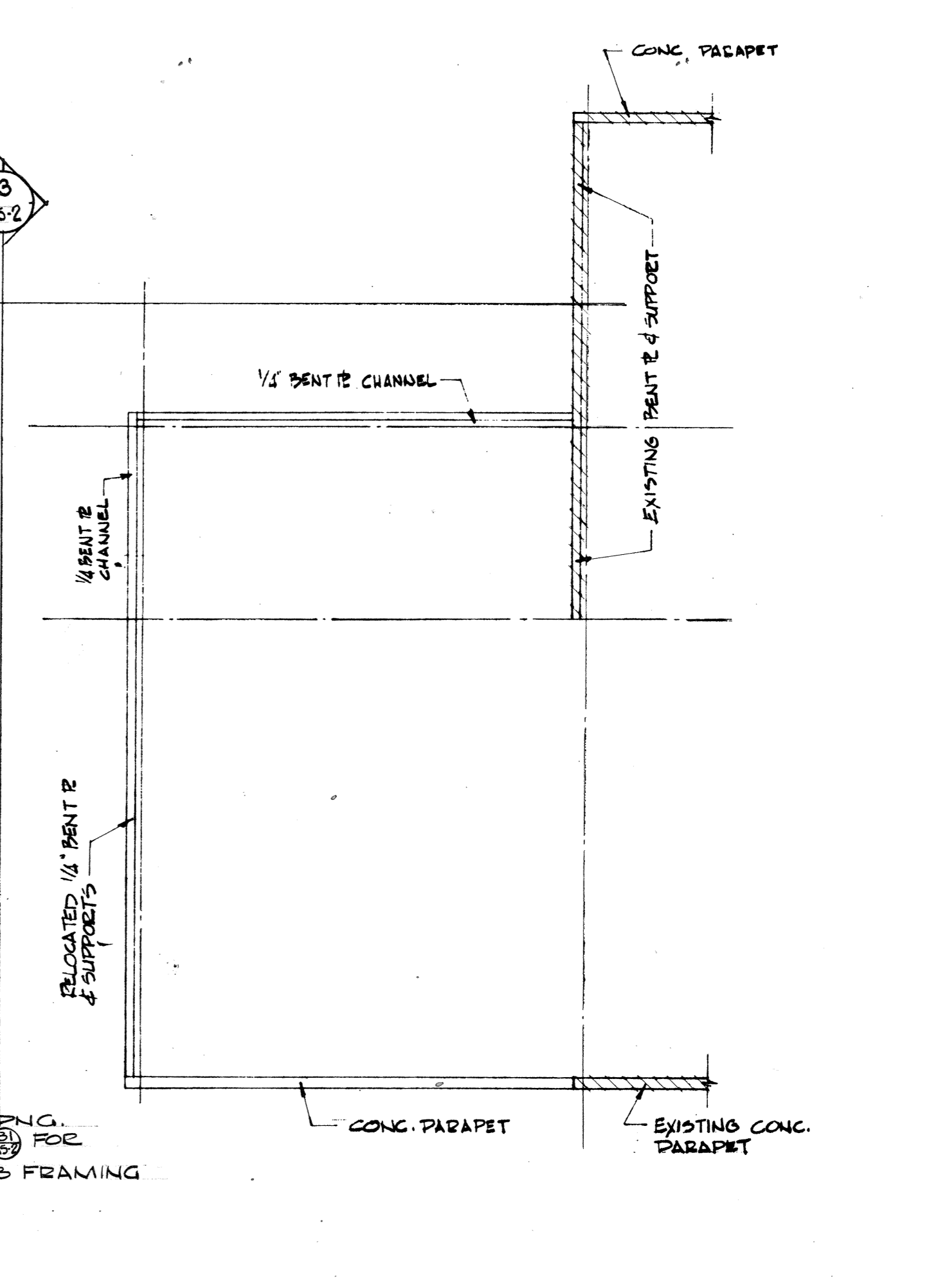
VERIFY WITH MECH. FOR SIZE & LOCATION OF PADS.

3/4" CONG. ANCHORS PHILLIPS 3-34 @ 1'-0" W/L BOLT PROJ. FULL HEIGHT OF NEW WALL

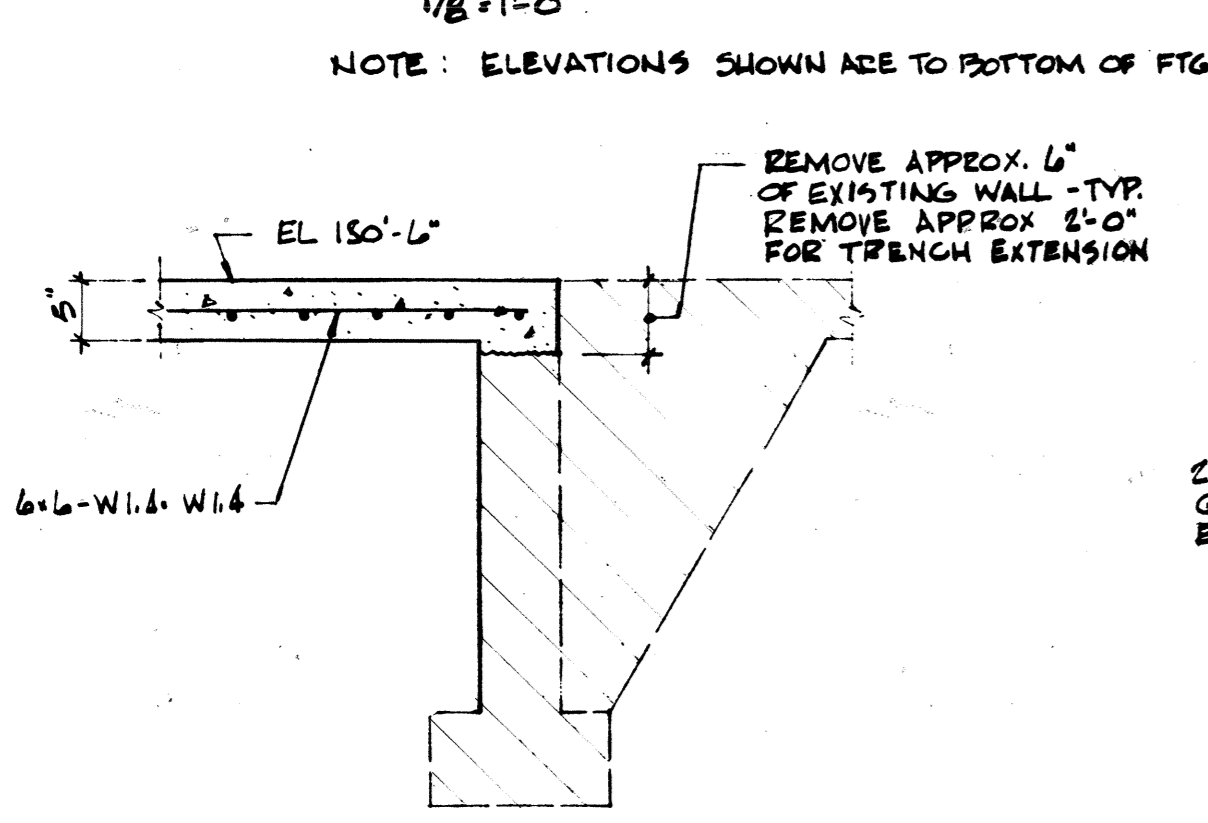


ROOF PLAN
1/8" = 1'-0"

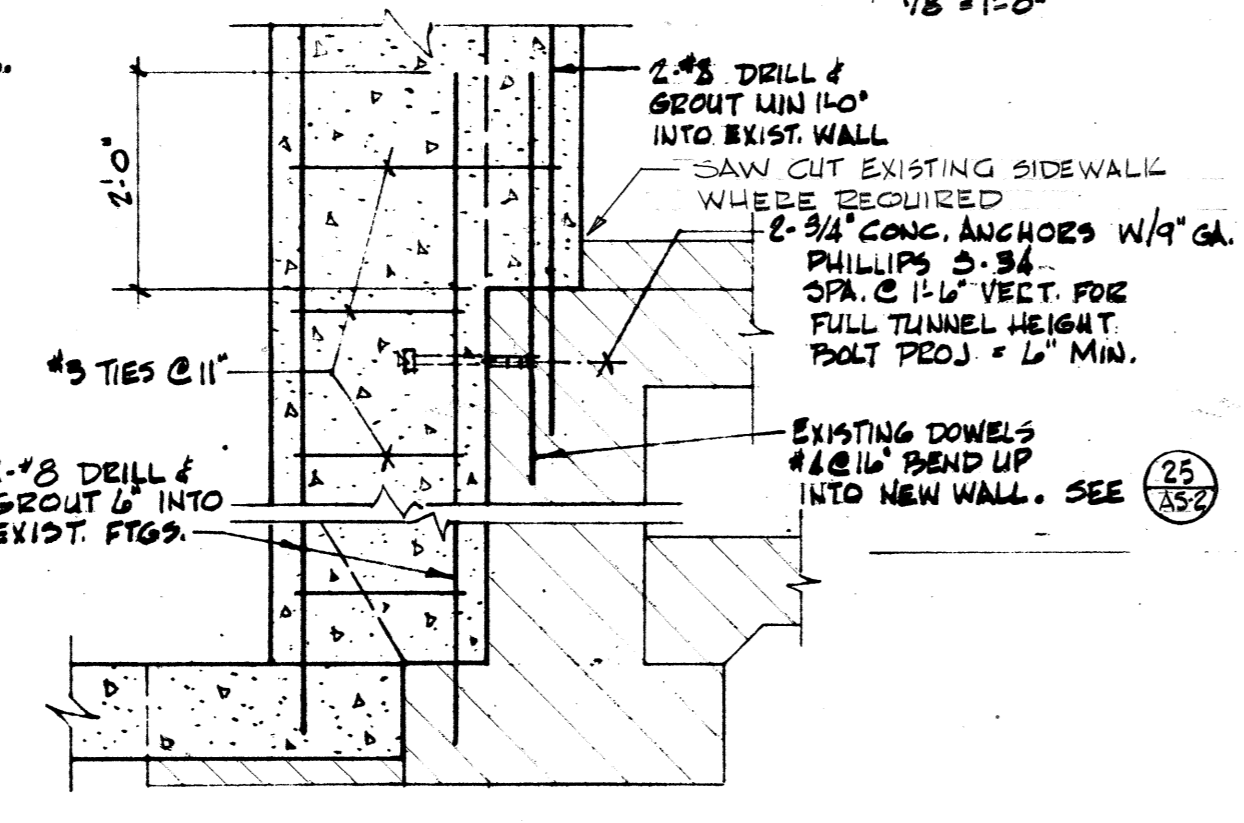
NOTE: ELEVATIONS SHOWN ARE TO TOP OF FLG.



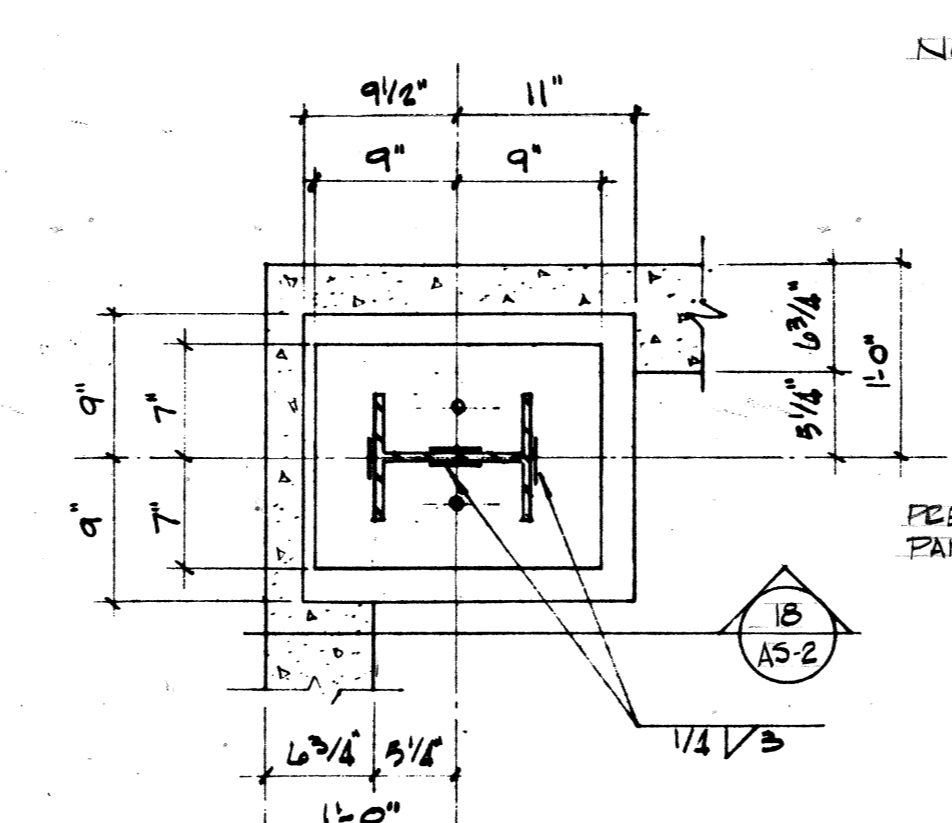
PARAPET FRAMING
1/8" = 1'-0"



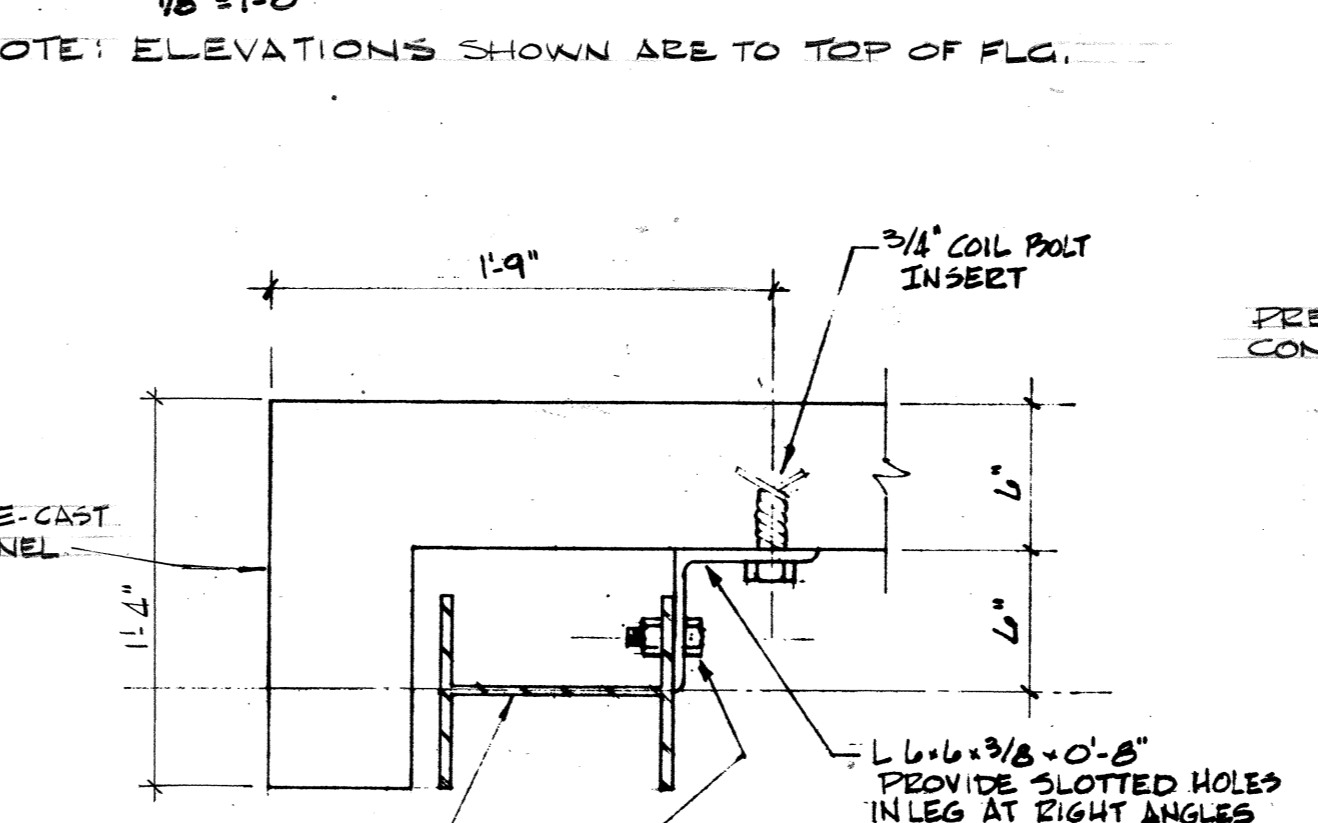
SECTION 1
AS-1 3/4" = 1'-0"



SECTION 2
AS-1 3/4" = 1'-0"

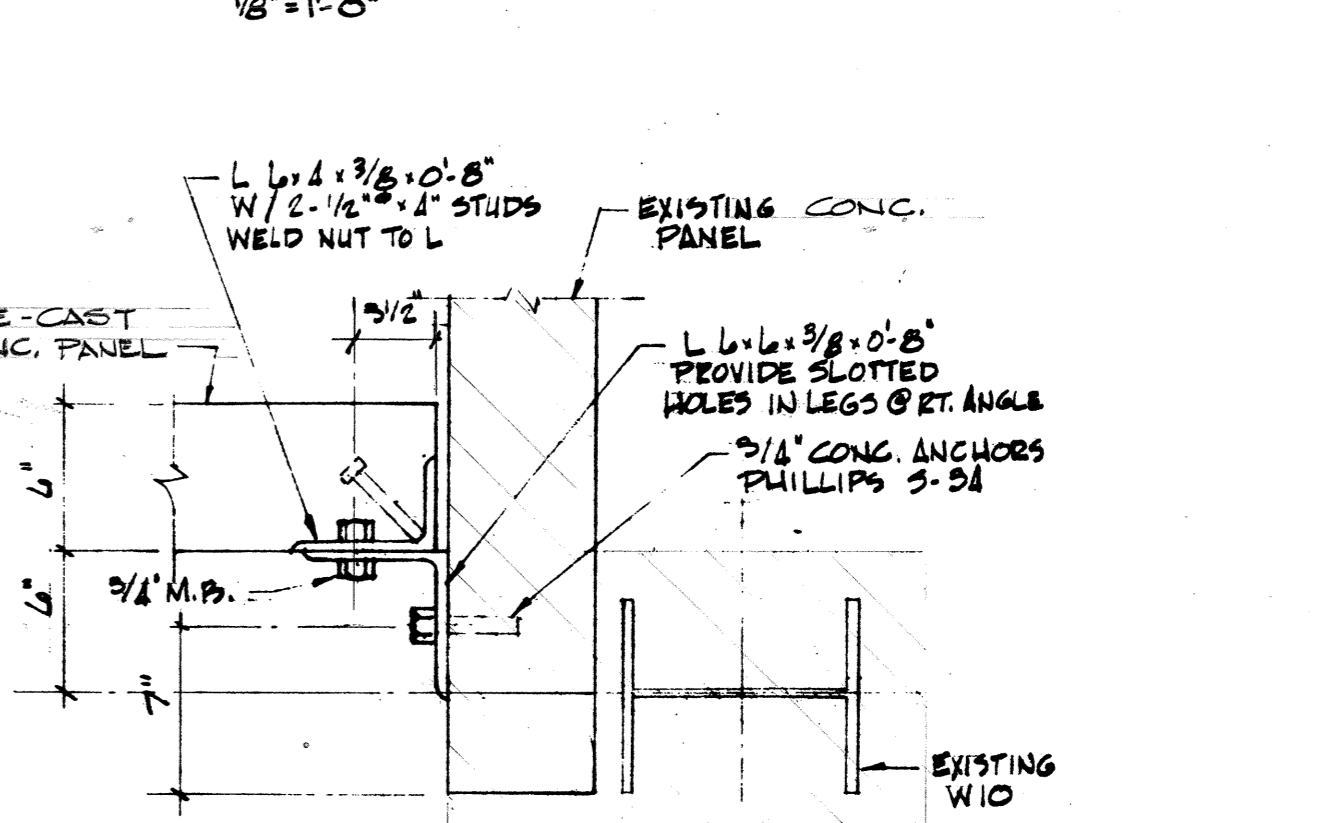


SECTION 3
AS-1 1 1/2" = 1'-0"



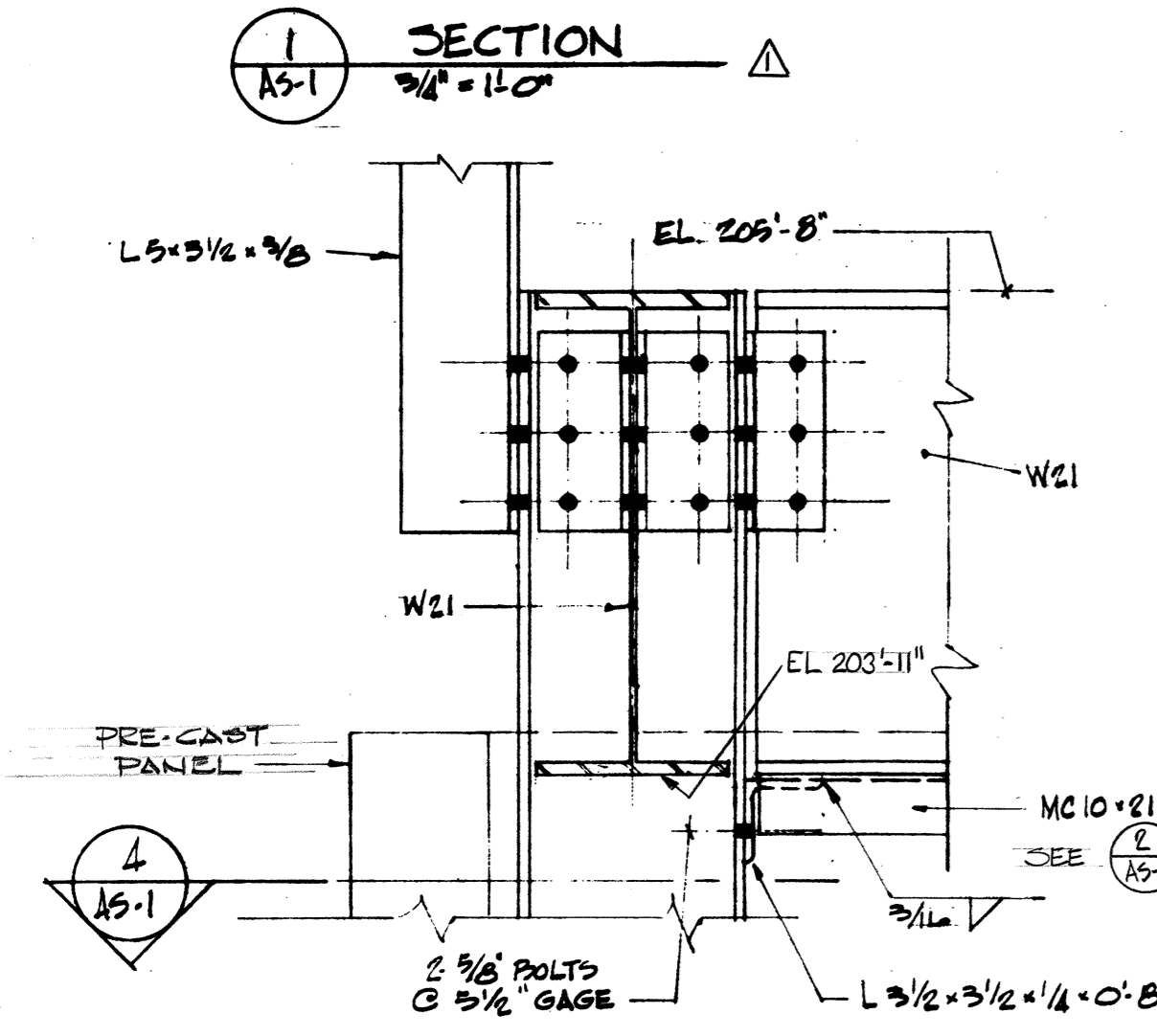
DETAIL 4
AS-1 1/2" = 1'-0"

DETAIL OCCURS 2x ALONG PANEL

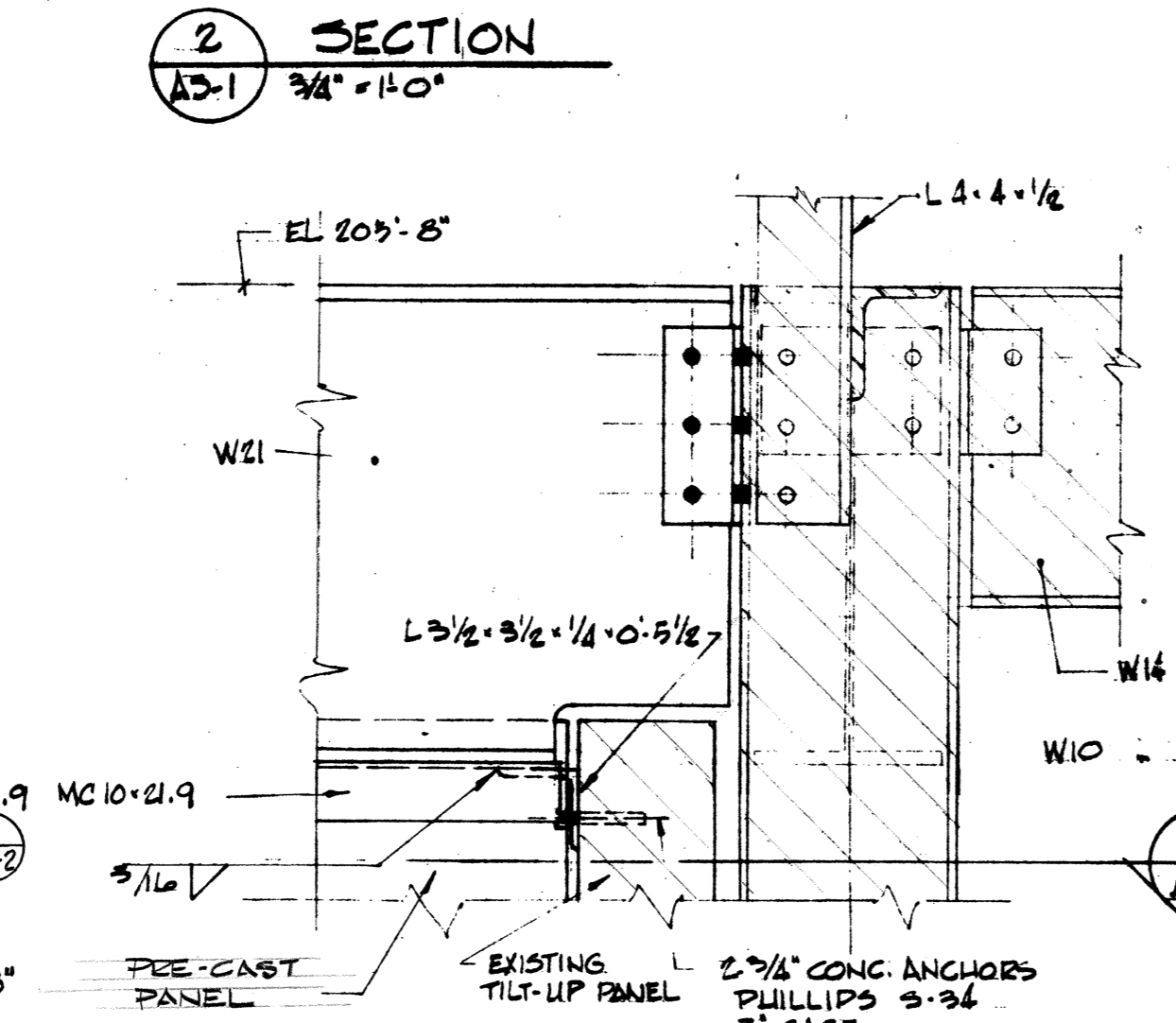


DETAIL 5
AS-1 1/2" = 1'-0"

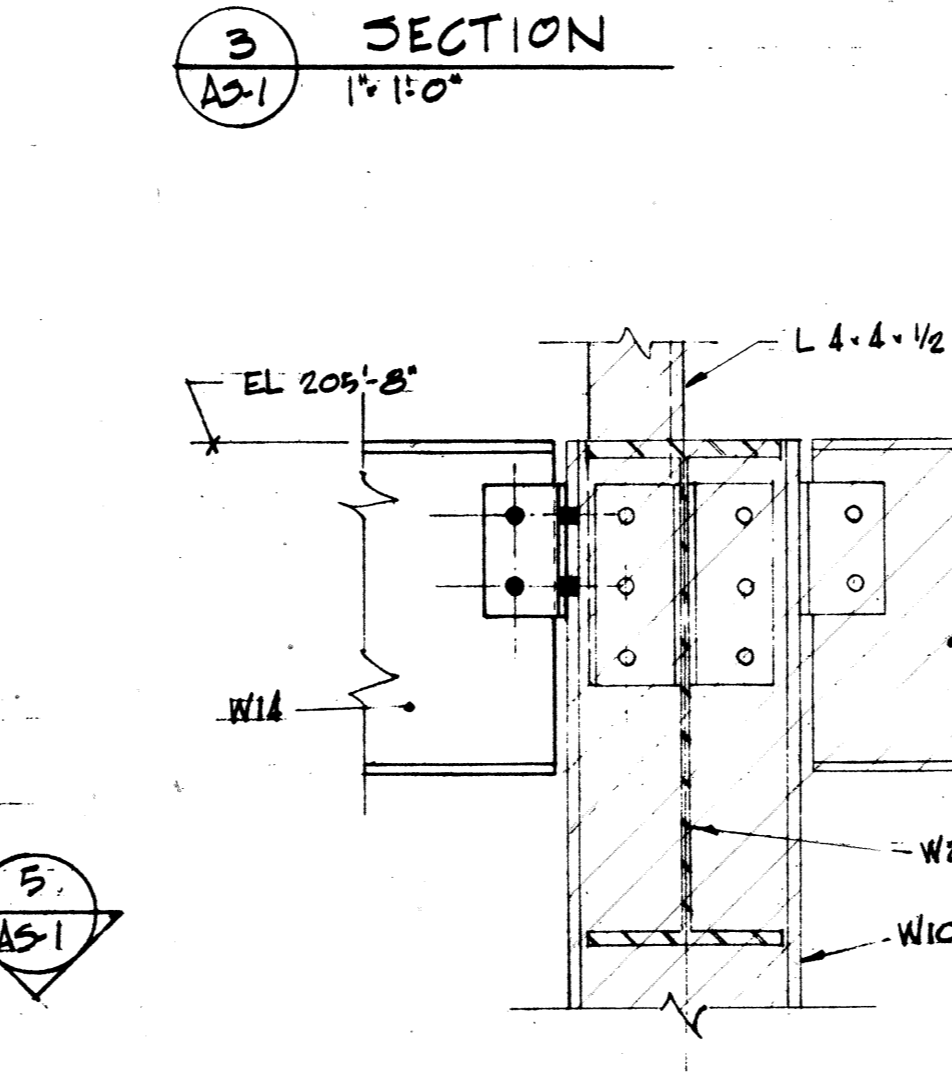
DETAIL OCCURS 2x ALONG PANEL



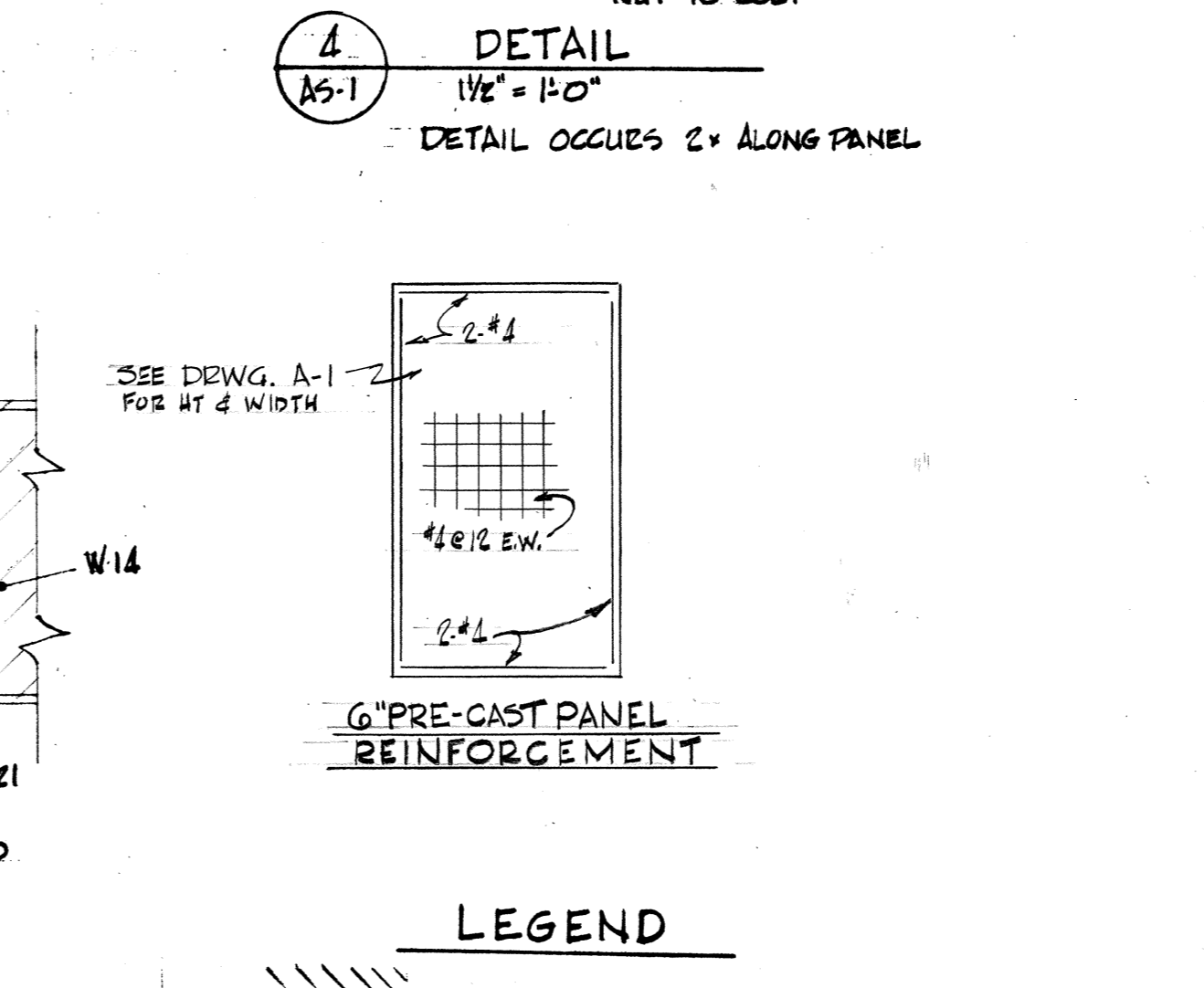
DETAIL 6
AS-1 1 1/2" = 1'-0"



DETAIL 7
AS-1 1 1/2" = 1'-0"

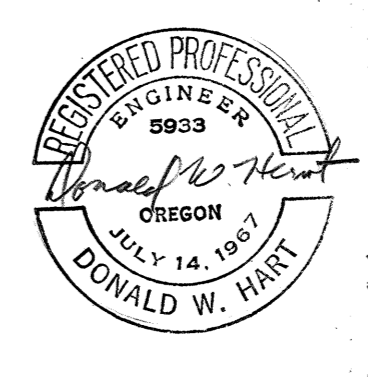


DETAIL 8
AS-1 1 1/2" = 1'-0"



LEGEND

EXISTING STRUCTURE



HEATING PLANT - STRUCTURAL PLANS		Project No. 1049
WEST HEATING PLANT UTILITIES ADDITION		Date 6-13-74
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Scale SHOWN
C. W. Timmer Associates Inc.		Dwg. No. AS-1
Consulting Engineers / Beaverton, Oregon		Sht. 3 of 12

8-16-76 AS-BUILT REVISIONS.

DRAWING NUMBER
AS-2

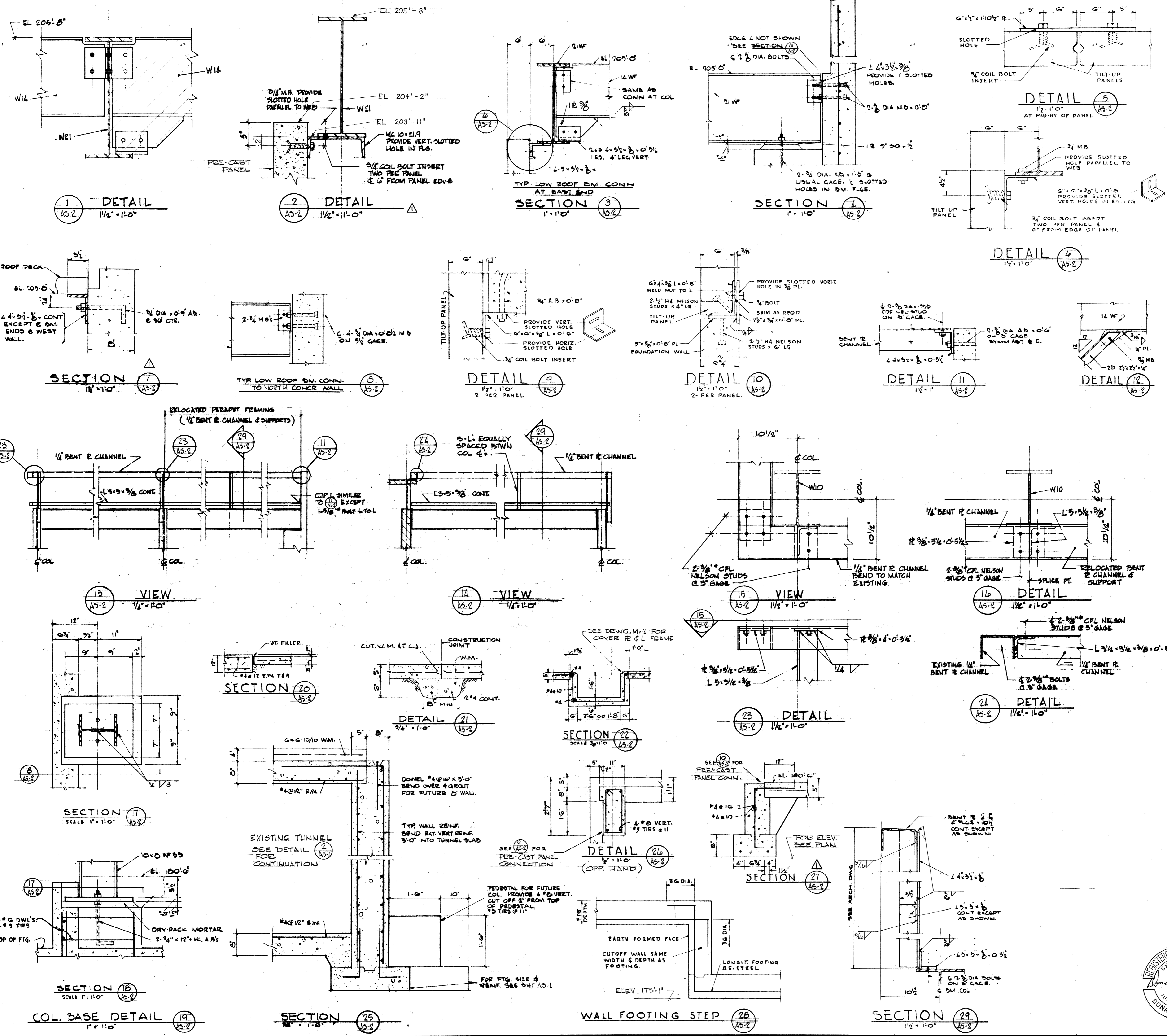
ZIMMER
GUNSUL
FRASCA
8-16-76

DRAWING NUMBER
STRUCTURAL DETAILS

WEST
HEATING
PLANT
UTILITIES
ADDITION

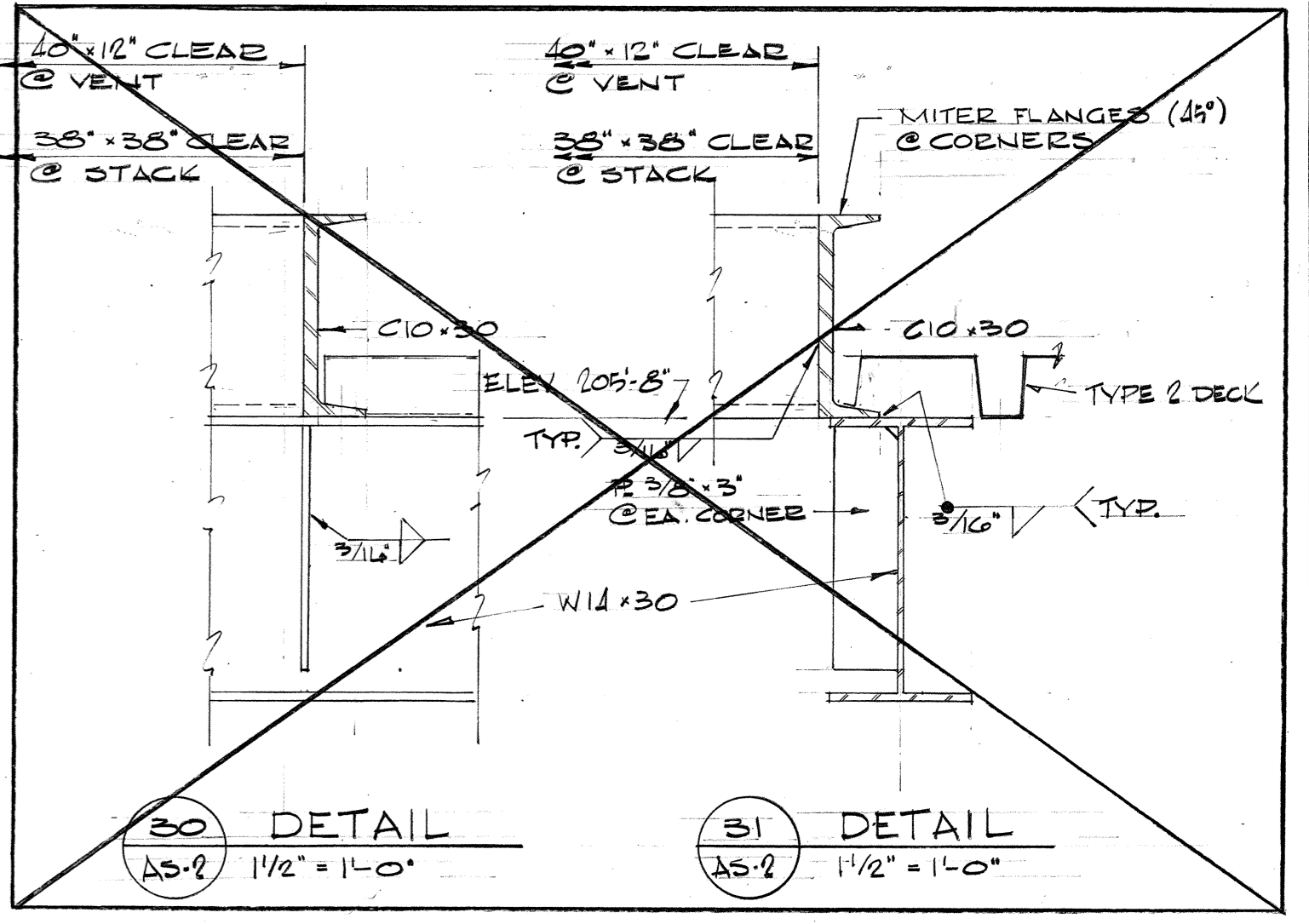
DRAWING NUMBER
238-WHP

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER
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STRUCTURAL NOTES

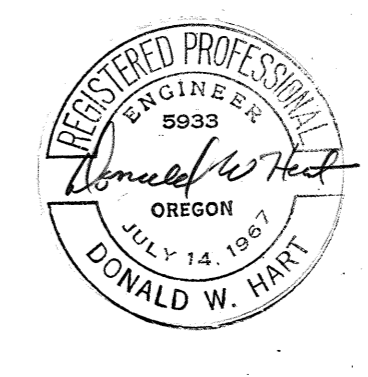
- FOUNDATION DESIGN**
FOUNDATION DESIGN IS BASED ON AN INVESTIGATION BY DAMES & MOORE DATED JULY 15, 1964.
GENERALLY, FOOTING DESIGN PRESSURES ARE 2000 PSF FOR CONTINUOUS FOOTINGS AND 2500 PSF FOR ISOLATED FOOTINGS. DESIGN PRESSURES ARE BASED ON DEAD LOADS. LATERAL LOAD PRESSURE TO WALLS = 10 PSF EQUIV. HYDROSTATIC.
- DESIGN LIVE LOADS**
ROOFS - 25 PSF
STRUCTURAL FLOORS - 100 PSF
SEISMIC - UBC CODE 2
- CONCRETE**
FOOTINGS - 2500 PSI @ 28 DAYS.
ALL OTHERS - 3000 PSI @ 28 DAYS.
- REINFORCING STEEL**
MINIMUM CONCRETE COVERAGE:
POURED AGAINST EARTH FORMED AND BAG FILLED WALLS, BEAMS AND COLUMNS 3"
SLABS 2"
REINFORCED CONCRETE WALLS:
UNLESS DETAILED OTHERWISE ALL CONCRETE WALLS SHALL BE REINFORCED AS FOLLOWS:
WALL THICKNESS REINFORCING VERTICAL
5" #4 @ 12" #4 @ 12" #4 @ 12"
10" #5 @ 10" #5 @ 10" #5 @ 10"
12" AND THICKER #6 @ 12" EA FACE #6 @ 12" EA FACE
ALL SPLICES IN WALL REINFORCING SHALL BE STAGGERED IN ADJACENT ROWS AND LAPPED 24 DIA. OR 12" MIN. PROVIDE CORNER BARS SAME SIZE AND SPACING AS HOOD. REINFORCEMENT FRAME ALL OPENINGS WITH 2 #3 @ HEAD, JAMBS AND SILLS, EXTENDING 24" PAST OPENING CORNERS.
- STEEL DECKING**
TYPE 2 ROBERTSON SEC 21 - 20 GAGE
WELDING REQUIREMENTS:
AT PANEL ENDS: 1/2" PLUG WELDS IN EACH FLUTE ALONG PERIMETER; 1/2" PLUG WELDS @ 3'-0" SIDE LAPS; WELD SIDE SEAM 1/2" @ 18"
- SLABS ON GRADE**
UNLESS SHOWN OTHERWISE, ALL SLABS ON GRADE SHALL BE 5" THICK & REINFORCED WITH W10F @ 16" - W14 @ 18" SLAB CONTROL JOINTS SHALL BE AS SHOWN OR AT 600 SQ. FT. MAX. OR 30 LIN. FT. WHERE NOT SHOWN.
- CORNER CHAMFERS**
ALL EXPOSED CONCRETE WORK SHALL HAVE 1/8" RAD. HALF ROUND CORNER CHAMFERS WHETHER SHOWN IN DETAIL OR NOT.
- RELOCATED PRECAST PANELS**
AFTER PANELS HAVE BEEN RE-ERECTED & ALIGNED, WELD BOLT HEAD (OR NUT) TO ANGLE WITH 1/2" OF 3/16" FILLET WELD. SEE 14/AS-2 & 9/AS-2.
- CONNECTIONS**
UNLESS OTHERWISE SHOWN OR NOTED ALL CLIP L'S 1/2" DIA. @ 5' E.S. UNLESS NOTED ALL BOLTS ASTM A507 - 3/8" DIA.

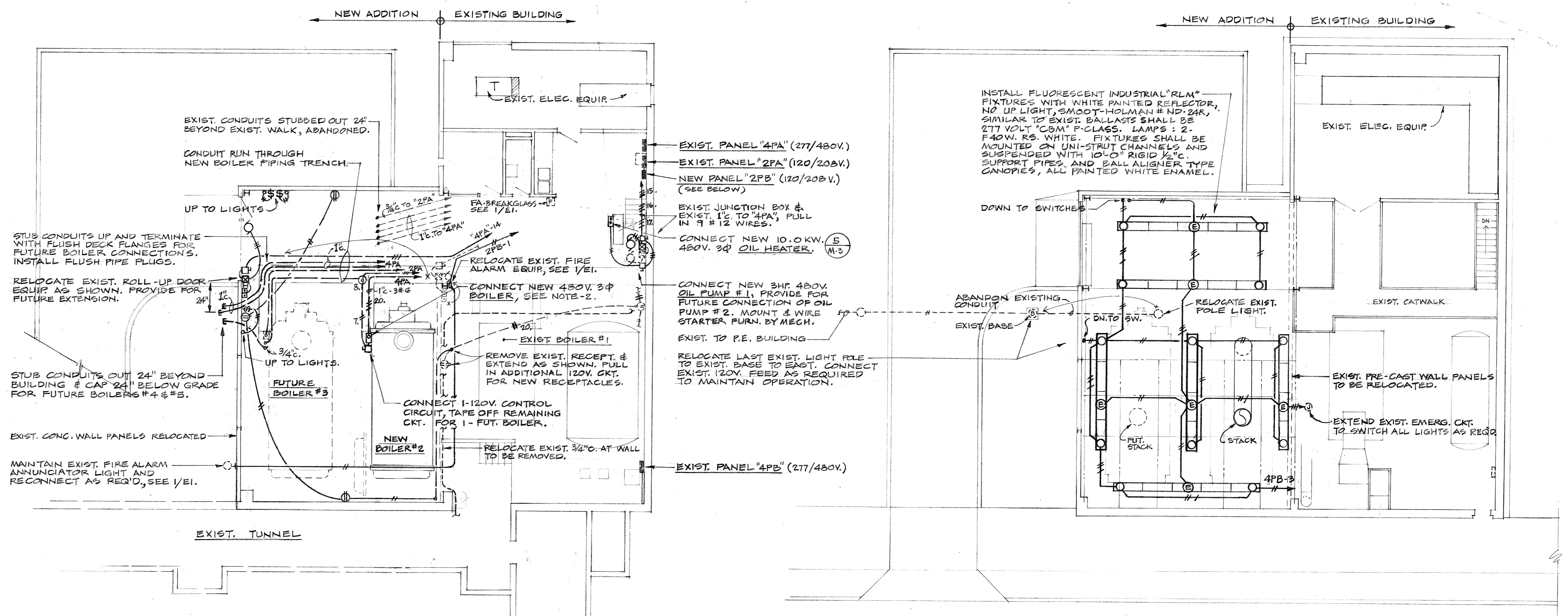


DELETED SEE 13 A-2

8-16-76 AS-BUILT REVISIONS.
REVISIONS.

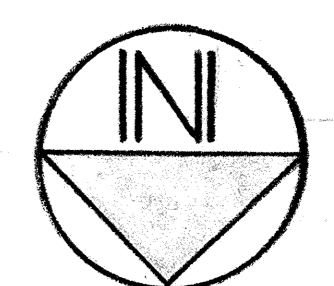
HEATING PLANT-STRUCTURAL DETAILS		Project No.	1049
WEST HEATING PLANT UTILITIES ADDITION		Date	6-13-74
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Scale	SHOWN
C. W. Timmer Associates Inc.		Dwg. No.	AS-2
Consulting Engineers / Beaverton, Oregon		Sh.	4 of 12





PLAN, LOWER LEVEL
1/8" = 1'-0"

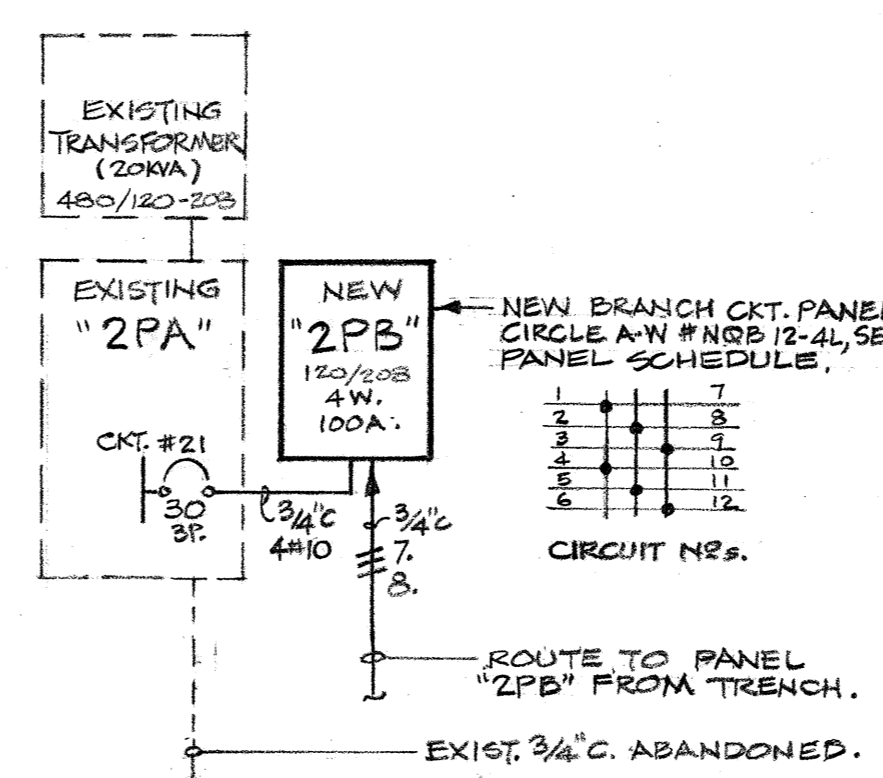
PLAN, UPPER LEVEL
1/8" = 1'-0"



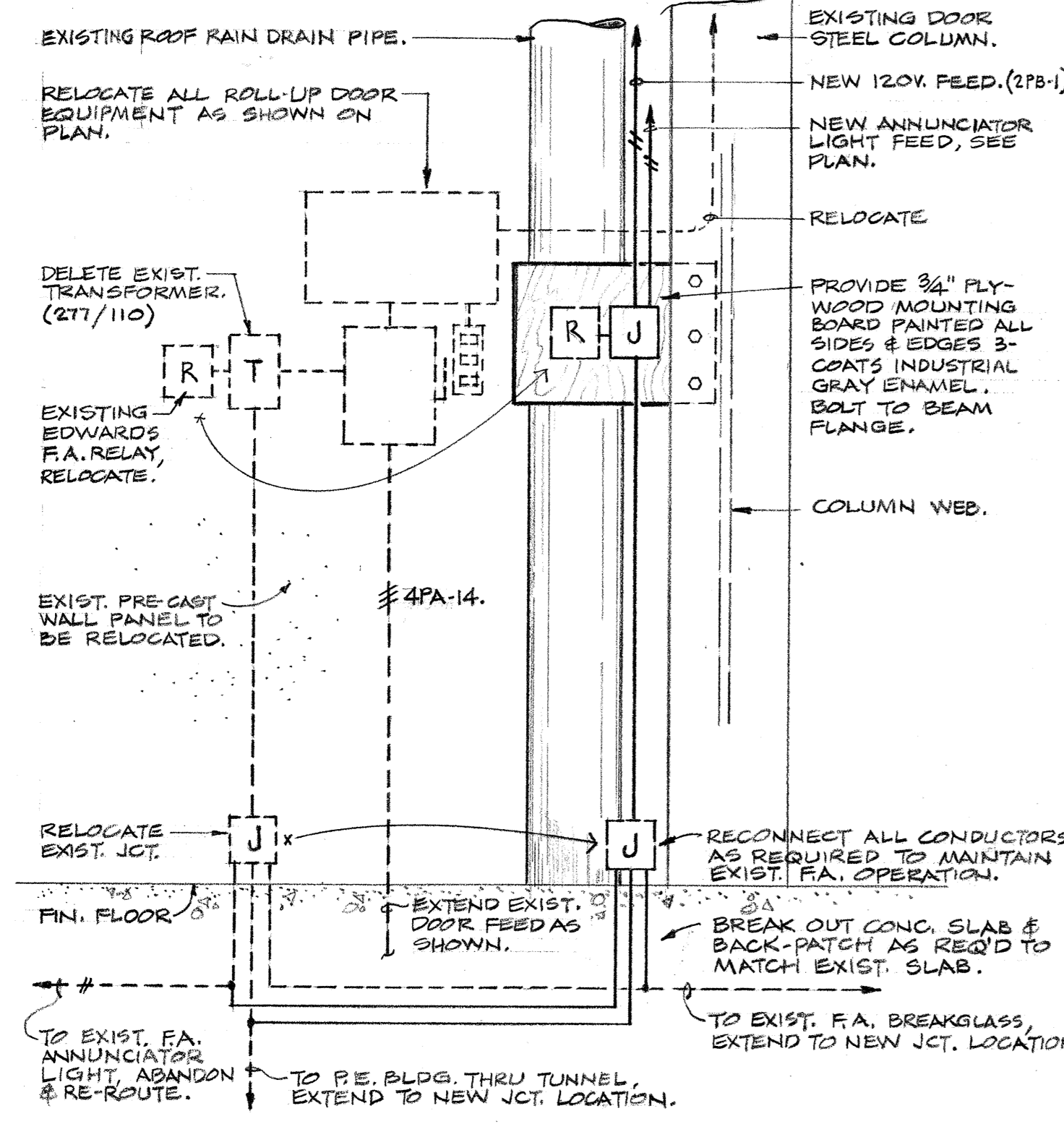
- NOTES:**
1. VERIFY LOCATIONS PRIOR TO ROUGH-IN OF ALL MECHANICAL EQUIPMENT.
 2. PACKAGE BOILER WITH CONTROL PANEL, CONSISTING OF 1-20HR BLOWER, 1-1HR OIL PUMP, 1-10KW OIL HEATER AND 1-5HR AIR COMPRESSOR, ALL 480V. 3Ø. CONNECT LINE LEADS AND CONTROL CIRCUITS, VERIFY.
 3. RETURN ALL USABLE ELECTRICAL EQUIPMENT TO UNIVERSITY AS DIRECTED.
 4. DISCONNECT EXIST. DUPLEX 1/2 HR. PUMP MOTORS & RECONNECT NEW DUPLEX 2 HR PUMP MOTORS IN EXIST. DIVISION OF CONTINUING EDUCATION MECH. RM. SEE SHT. 'M1' AND SPECS.

ADDITIONS TO EXISTING PANELS				
PANEL	CIRCUIT #	BREAKER AMP POLE	ITEM	
4PA 277/480V.	15	20 3	OIL PUMP #1, 3HR	EXIST. BRKR.
	16	20 3	SPARE ONLY FOR FUTURE OIL PUMP #2	EXIST. BRKR.
	17	20 3	OIL HEATER, 10.0 KW.	EXIST. BRKR.
	20	90 3	BOILER #2, (25HR-1/2HR-5HR-24 KW.)	NEW BRKR.
	10	90 3	SPACE ONLY FOR FUTURE BOILER #3.	
(LEAVE REMAINING SPARE BREAKERS IN PLACE)				
4PB 277/480V.	3	20 1	LIGHTING CIRCUIT	EXIST. BRKR.
2PA 120/208V.	21	30 3	SUB-FEED FOR NEW PANEL "2PB"	
NEW PANEL				
2PB 120/208V. 60A. SURFACE	1	20 1	FIRE ALARM CIRCUIT.	
	2	20 1	SPARE	
	7-8	20 1	CONTROL CIRCUITS, BOILER #2, #3.	
	3-4-9-10	20 1	SPARES (FUTURE BOILER #4, #5 CONTROL CKTS.)	
	5-6-11-12	- 1	SPACE	

2 PARTIAL ONE-LINE DIAGRAM
NO SCALE

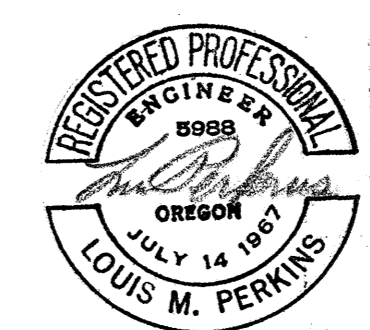


SYMBOL SCHEDULE	
	FLUORESCENT LIGHT FIXTURE.
	FLUORESCENT LIGHT FIXTURE ON EMERGENCY SYSTEM.
	INCANDESCENT WALL MOUNTED LIGHT FIXTURE
	SWITCH-1P, 2TV.
	JUNCTION BOX.
	DUPLEX RECEPTACLE.
	DISCONNECT SWITCH.
	MOTOR STARTER.
	RAISE-LOWER PUSHBUTTON STATION.
	MOTOR OUTLET.
	CONDUIT AT WALL OR OVERHEAD, #12 WIRE UNLESS NOTED.
	CONDUIT UNDERFLOOR.
	BRANCH CIRCUIT PANEL.
	CONTROL CABINET OR JUNCTION BOX ON UNIT (N.I.E.) VERIFY LOCATION.
	DENOTES EXISTING WIRING AS INDICATED.



1 FIRE ALARM REVISIONS
APPROX. 1'-0"

REVISED AS REPORTED "AS BUILT" 7-6-76



PLANS, SCHEDULES AND DETAILS
WEST HEATING PLANT UTILITIES ADDITION
 PORTLAND STATE UNIVERSITY - PORTLAND, OREGON

C. W. Timmer Associates Inc.
 Consulting Engineers / Beaverton, Oregon

Project No. 1049
 Date 6-13-74
 Scale SHOWN
 Dwg. No. **E-1**
 Sht. 12 of 12

DRAWING NUMBER

M-1

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REORDER BY NUMBER 0204R

ZIMMER

GUNSQL
FRASCA
8-16-76

DRAWING NUMBER

WEST HEATING PLANT UTILITIES ADDITION

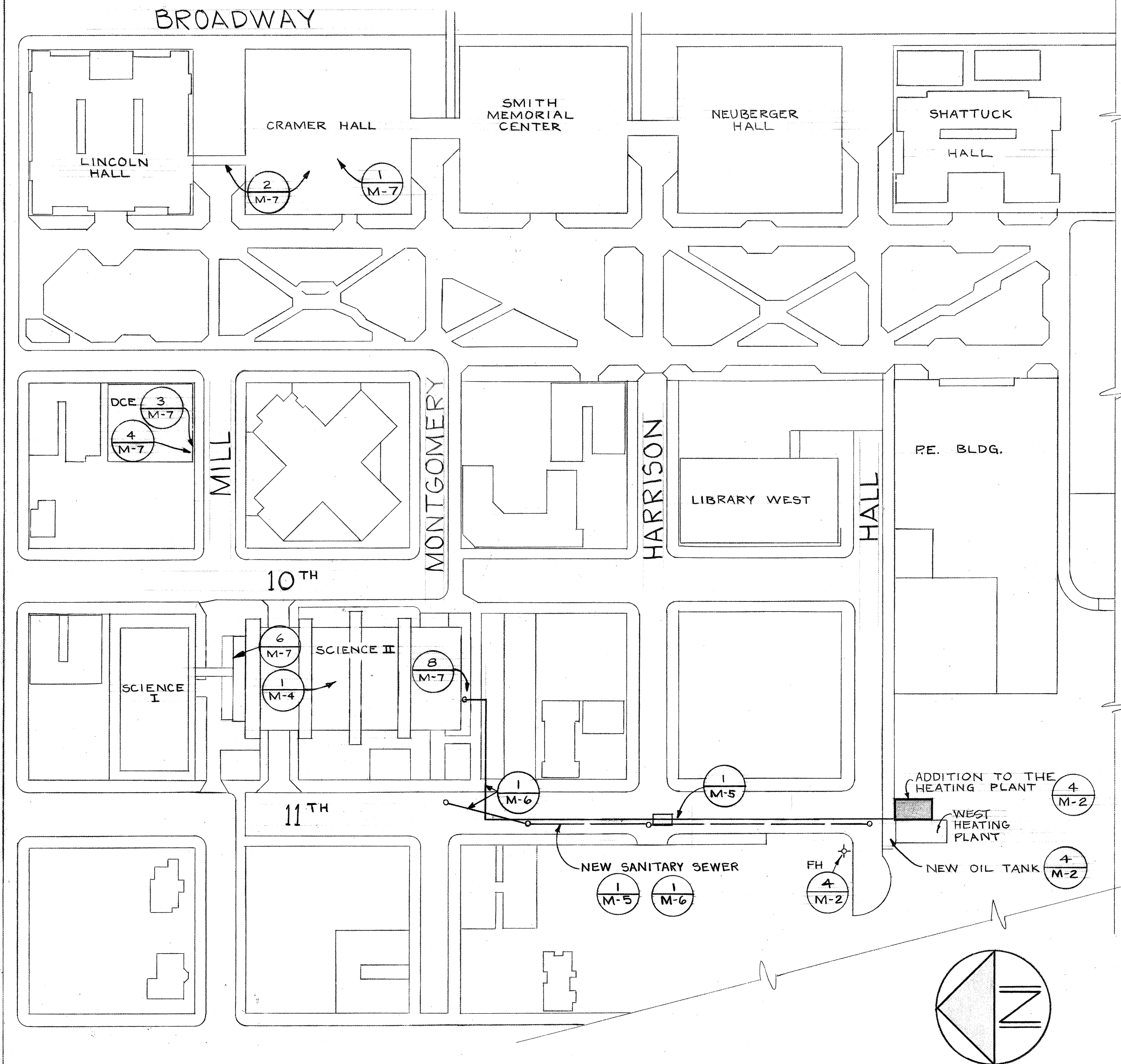
PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REORDER BY NUMBER 0204R

WEST HEATING PLANT UTILITIES ADDITION

DRAWING NUMBER

238-WHP

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REORDER BY NUMBER 0204R



1 SITE PLAN
M-1 1" = 100'-0"

CONTROL VALVE SCHEDULE (2) M-1

ITEM	DESCRIPTION	INLET PRESSURE (MAX)	MEDIUM	MIN CV	SIZE (IN)
MV 1A	BLR-1 BOILER FEED	30 PSI	WATER	50*	2 1/2
MV 1B	BLR-1 BLOWDOWN	15 PSI	WATER	1	1/2
MV 2A	BLR-2 BOILER FEED	30 PSI	WATER	50*	2 1/2
MV 2B	BLR-2 BLOWDOWN	15 PSI	WATER	1	1/2
MV 3	OIL HEATER	15 PSI	STEAM	5.5*	3/4

*MODULATING VALVE WITH CHARACTERIZED PLUG.

PUMP MODIFICATION SCHEDULE (3) M-1

LOCATION	PUMP	MODIFICATION
DCE BASEMENT MECH ROOM	MAIN CONDENSATE PUMP (DUPLX) PACIFIC MODEL GRD 410 8D5P 1/2 HP	REPLACE THE PRESENT PACIFIC CENTRIFUGAL PUMPS AND MOTORS TO OBTAIN 12 GPM CAPACITY AT 37 PSI DISCHARGE. INCREASE THE MOTOR SIZE TO 2 HP. MAX. MOTOR SPEED 3600 RPM. VERIFY VOLTAGE AND STARTER SIZE.

EQUIPMENT SCHEDULE (4) M-1

ITEM	DESCRIPTION
BOILER-2	15 PSI STEAM, 20085 MCH OUTPUT, 600 BOILER HORSEPOWER, 48 X 14 INCH STACK CONNECTION. SINGLE POWER SOURCE FOR 460 VOLT 30 FOR 3 BLOWER MOTOR, 25 HP; OIL PUMP, 1 HP; OIL HEATER, 24 KW; AIR COMPRESSOR, 5 HP. CONTROLS TO INCLUDE MAN-RESET LWCO, AUTO-RESET LWCO, 2 STAGE BOILER-FEED SWITCH, 1 STAGE HIGH LEVEL BLOWDOWN SWITCH. FUEL SYSTEM: PS 400 OIL/NATURAL GAS, KEWANECE INSTALLED.
BOILER-SEQUENCE CONTROL	FOR TWO 15 PSI STEAM BOILERS WITH MOD. FIRE CONTROLS FOR LEAD-LAG START-STOP AND LEAD-LAG MODULATION. LEAD-LAG CONTROL SWITCH MOUNTED ON BOILER-2. DESIGN BASIS: CLEAVER-BROOKS.
GRS BURNER PRV	CAPACITY, 26000 CFH OF 1000 BTU NATURAL GAS AT 9 PSI INLET AND 20 INCHES WATER COLUMN OUTLET. MINIMUM CASE PRESSURE 60 PSI. DESIGN BASIS: ROCKWELL 121-12-2.
PILOT	CAPACITY, 200 CFH OF 1000 BTU NATURAL GAS. INLET PRESSURE 6-IN. W.C., OUTLET 2-IN. W.C.
OIL-PUMP	CAPACITY: 2 1/2 IN. IPS, 1025 GPH, NO 6 OIL AT 5000 PSU, 15" SUCTION AND 10 PSI DISCHARGE, BELT DRIVE FOR 360 RPM. INTEGRAL OR SEPARATE RELIEF VALVE. 3 HORSEPOWER MOTOR FOR 460 VOLT, 30 POWER, NOMINAL 1800 RPM. DESIGN BASIS: VIKING.
STEAM TO WATER TO OIL HEATER	U-TUBE WITH OIL IN SHELL TO HEAT 17.1 GPM OF NO 6 FUEL OIL FROM 92°F TO 130°F WITH STEAM AT 10 PSI. MAX. PRESSURE DROP OIL 5 PSI. DESIGN BASIS: ALSTROM.
ELECTRIC OIL-HEATER	TO HEAT 17.1 GPM OF NO 6 FUEL OIL FROM 92°F TO 100°F. HEATER CONNECTION 4-IN. IPS. INTEGRAL CONTROL THERMOSTAT, MANUAL RESET HIGH LIMIT THERMOSTAT. CHARACTERISTICS: 10 KW, 20, 460 VOLT, 1 STEP. DESIGN BASIS: CHROMALOX.
FUEL-OIL TANK	10,000 GALLON, 8 FT. DIA. X 20 FT. LONG. TAPPINGS: 6-IN. FILL, 2 1/2-IN. VENT, 2-IN. SUCTION AND 6-IN. RETURN IN 20-IN. RAISED AND FLANGED MANHOLE. SUCTION, RETURN, AND OIL TANK GAGE IN MANWELL. U.L. LABELED. 2-22 IN MANHOLES, LADDER IN TANK.
EXPANSION JOINTS	FLANGED END, 14-IN. IPS, 125 PSI. DESIGN FOR 15 PSI WORKING PRESSURE. EJ-1 AND EJ-2 FOR 4 1/2" DEFLECTION.

LEGEND

- LPS --- LPS LOW PRESSURE STEAM
- LPR --- LPR LOW PRESSURE CONDENSATE RETURN
- PCR --- PCR PUMPED CONDENSATE RETURN
- BFW --- BFW BOILER FEED WATER
- CWS --- CWS CHILLED WATER SUPPLY
- CWR --- CWR CHILLED WATER RETURN
- W --- W SANITARY WASTE
- V --- V VENT
- S --- S SEWER
- SD --- SD STORM DRAIN
- SS --- SS STORM SEWER
- CW --- CW COLD WATER
- HW --- HW HOT WATER
- RHW --- RHW RECIRCULATED HOT WATER
- G --- G NATURAL GAS
- CW --- CW WATER MAIN
- I --- I IRRIGATION
- E --- E ELECTRICAL DUCT
- FOS --- FOS FUEL OIL SUPPLY
- FOR --- FOR FUEL OIL RETURN
- BUTTERFLY VALVE
- GATE VALVE
- LEVER OPERATED COCK, 2-WAY
- LEVER OPERATED COCK, 3-WAY
- MV --- MV TWO WAY MOTORIZED VALVE
- GLOBE VALVE
- CHECK VALVE
- SV --- SV SAFETY VALVE
- DV --- DV HOSE END DRAIN VALVE
- STRAINER
- PIPE ANCHOR
- UNION OR FLANGE
- PIPE REDUCER
- PRESSURE GAGE WITH GAGE COCK
- GAGE COCK
- THERMOMETER
- FS --- FS FLOW SWITCH
- IMMERSION THERMOSTAT
- PITCHED DOWN
- COV --- COV CHAIN OPERATED VALVE
- OSBY --- OSBY OUTSIDE SCREW & YOKE
- CB --- CB CATCH BASIN
- VB --- VB VACUUM BREAKER
- FD --- FD FLOOR DRAIN
- RD --- RD ROOF DRAIN
- VTR --- VTR VENT THROUGH ROOF
- FCO --- FCO FLOOR CLEAN-OUT
- WCO --- WCO WALL CLEAN-OUT
- MH --- MH MANHOLE
- INV --- INV INVERT ELEVATION
- TE --- TE TOP ELEVATION
- CTG --- CTG CLEAN-OUT TO GRADE
- FH --- FH FIRE HYDRANT
- CI --- CI CAST IRON
- CSP --- CSP CONCRETE SEWER PIPE
- TB --- TB THRUST BLOCK
- EPB --- EPB ELECTRICAL PULL BOX
- CONNECT TO EXISTING
- EXISTING
- CAP FOR FUTURE EXTENSION
- BELOW FLOOR
- FRP --- FRP FIBERGLASS REINFORCED PLASTIC



8-16-76 AS-BUILT REVISIONS.
REVISIONS.

SITE PLAN, SCHEDULES AND DETAILS Project No. 1049
Date 6-13-74
Scale SHOWN
Dwg. No. M-1
C. W. Timmer Associates Inc.
Consulting Engineers / Beaverton, Oregon
Sht. 5 of 12

DRAWING NUMBER
M-2

ZIMMER
GUNSUL
FRASCA

DRAWING NUMBER
HEATING PLANT -
PLANS & DETAILS

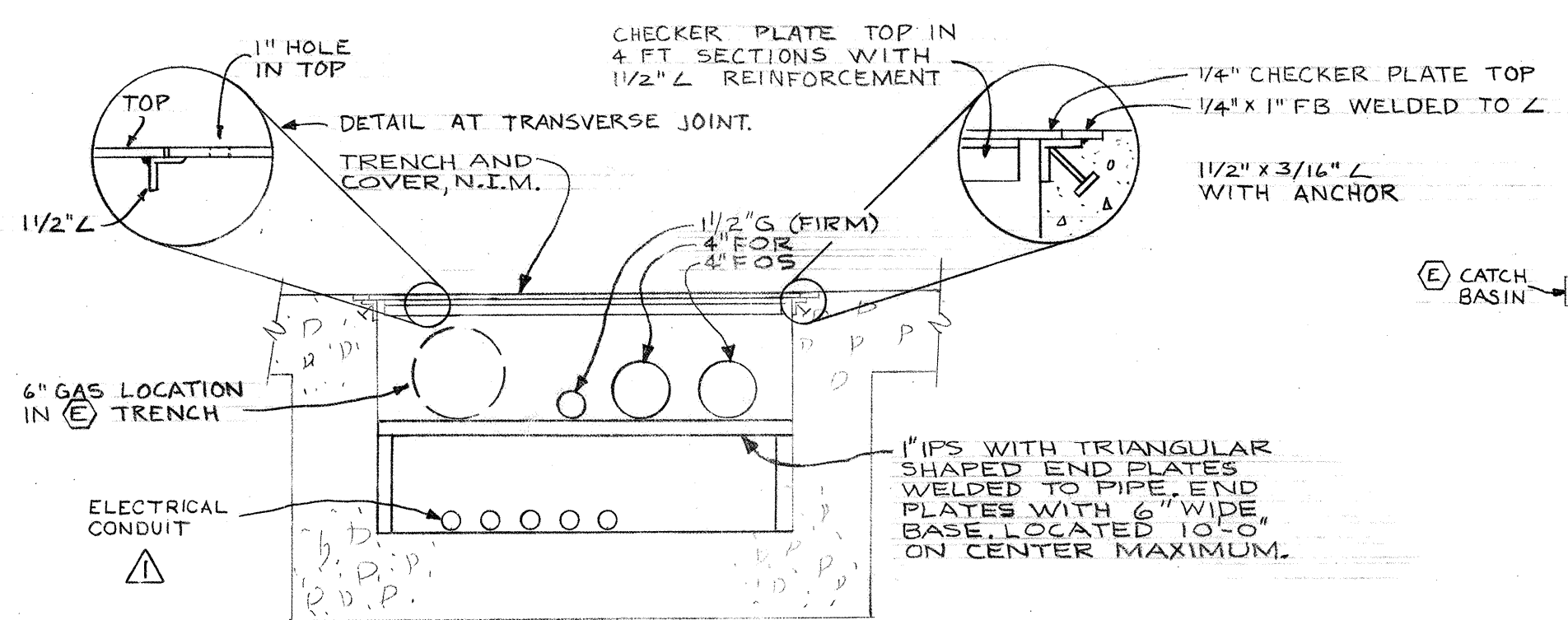
WEST
HEATING
PLANT
UTILITIES
ADDITION

DRAWING NUMBER
238-WHP

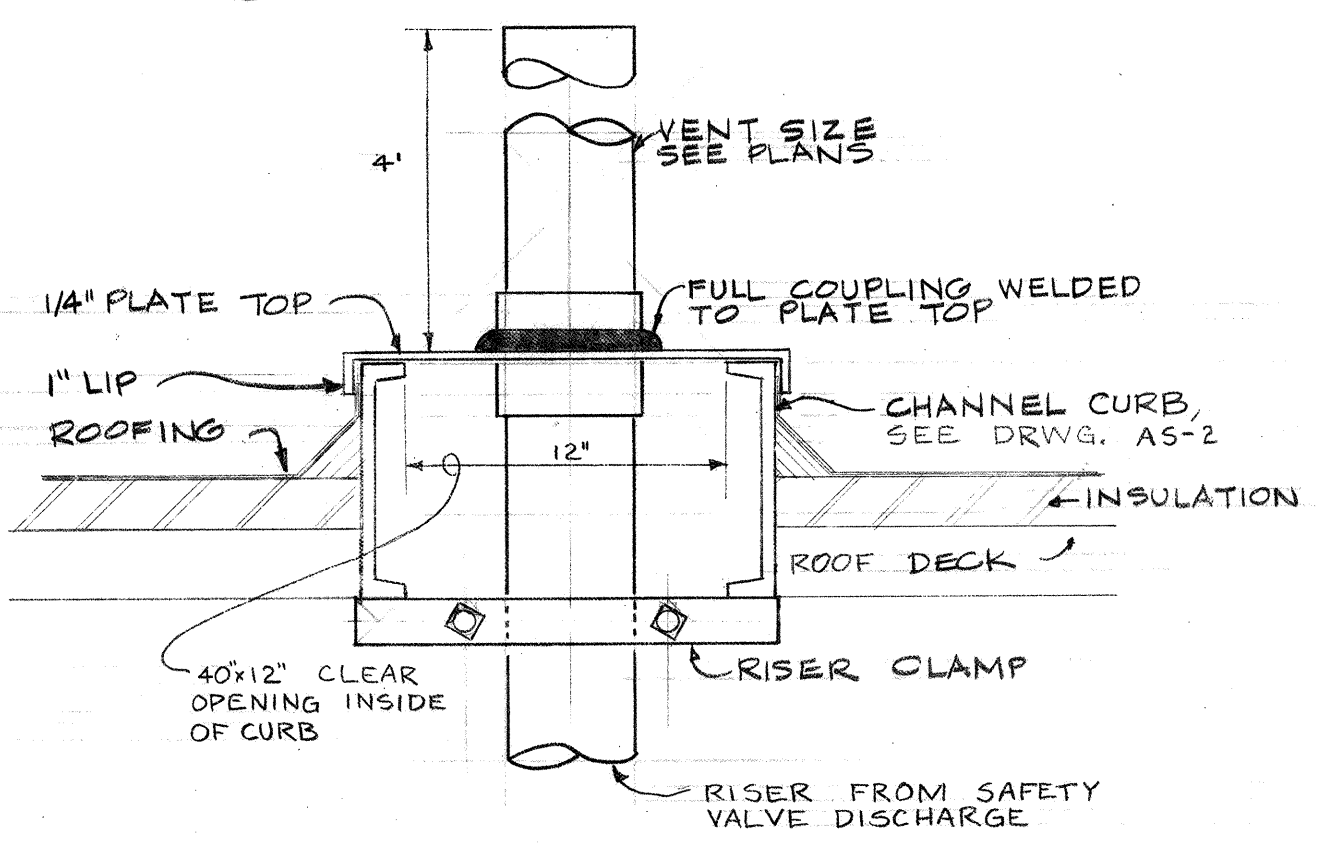
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GUNSUL
FRASCA

DRAWING NUMBER
HEATING PLANT -
PLANS & DETAILS

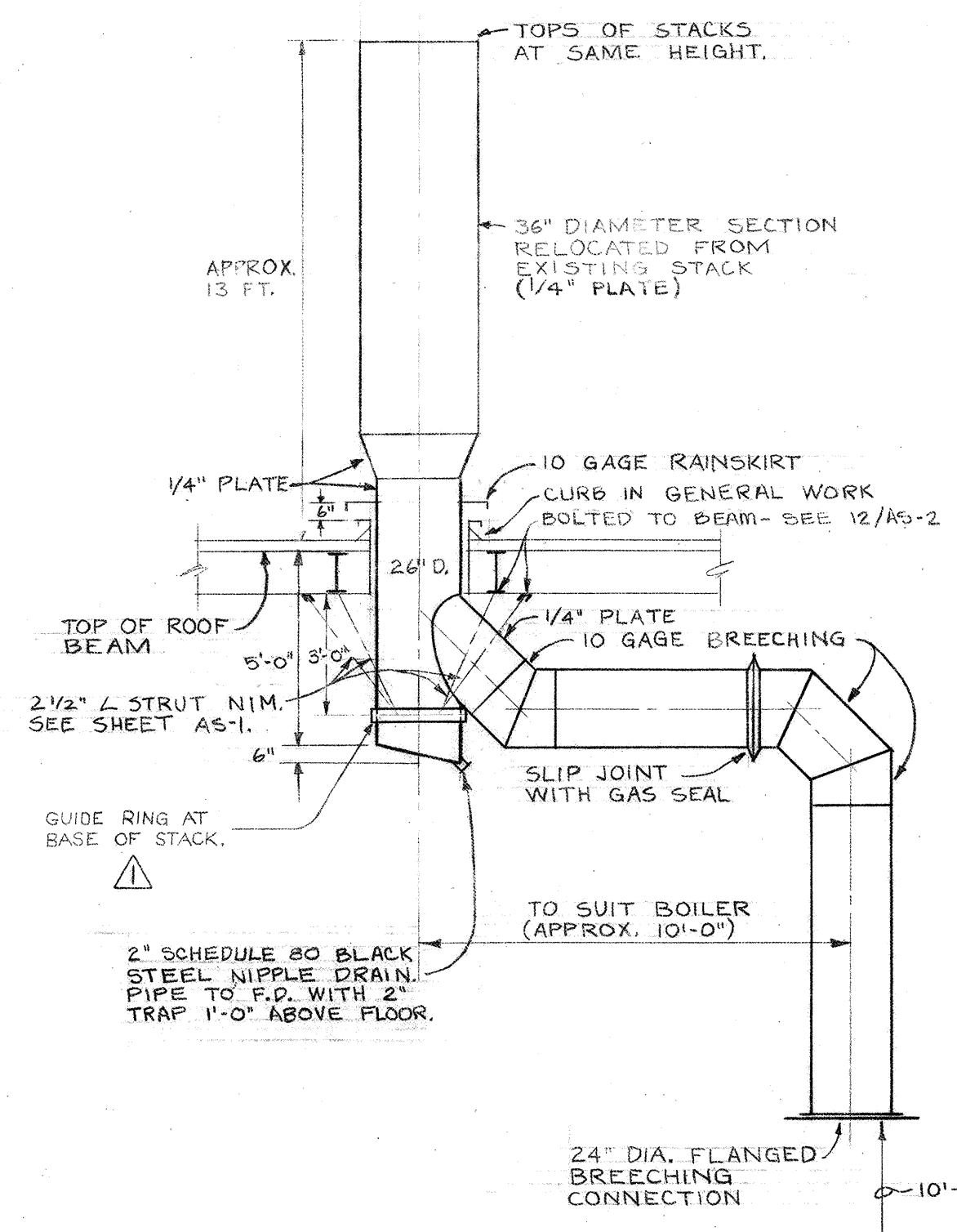
WEST
HEATING
PLANT
UTILITIES
ADDITION



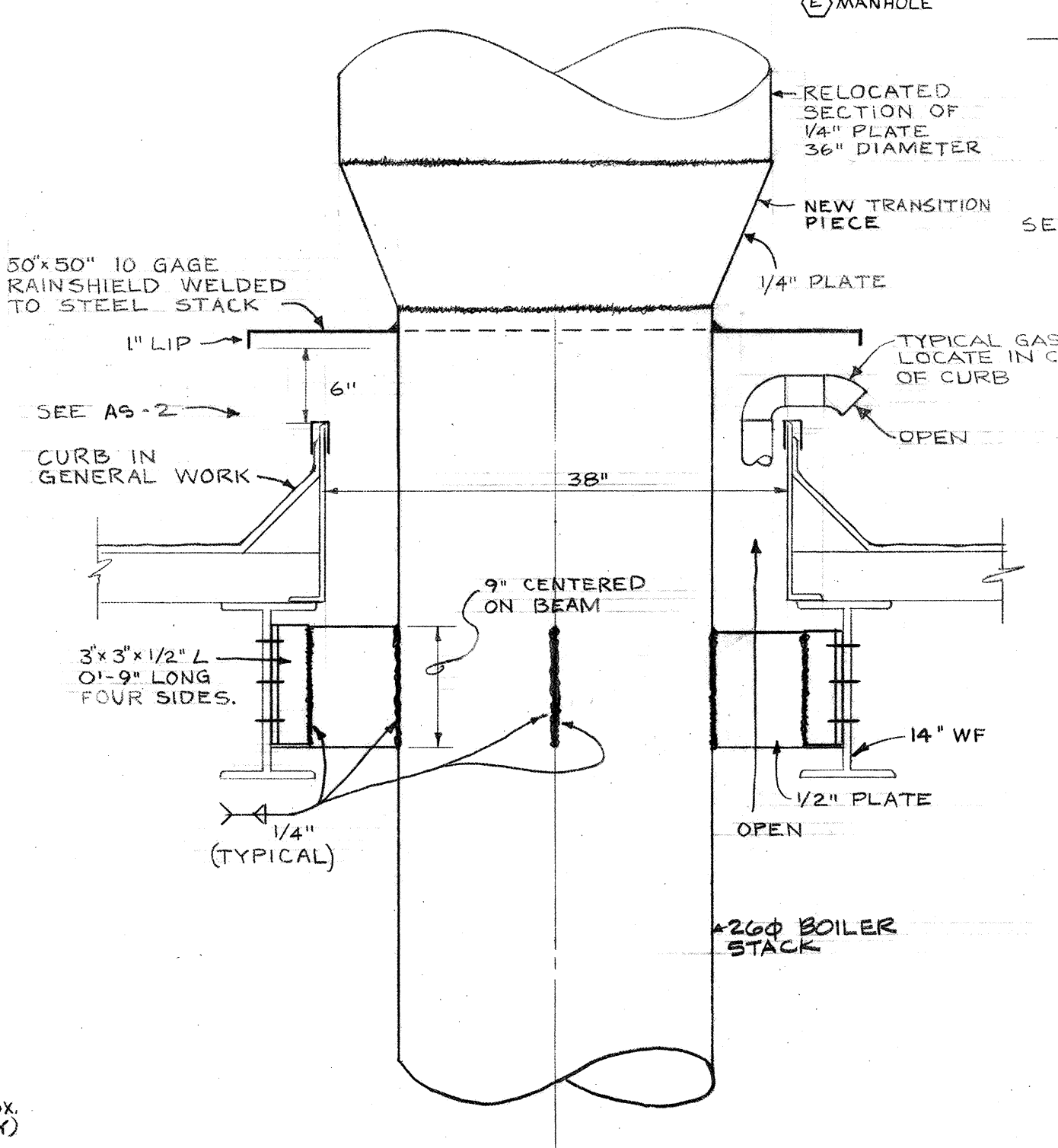
7 OIL TRENCH SECTION
M-2 1/2" = 1'-0"



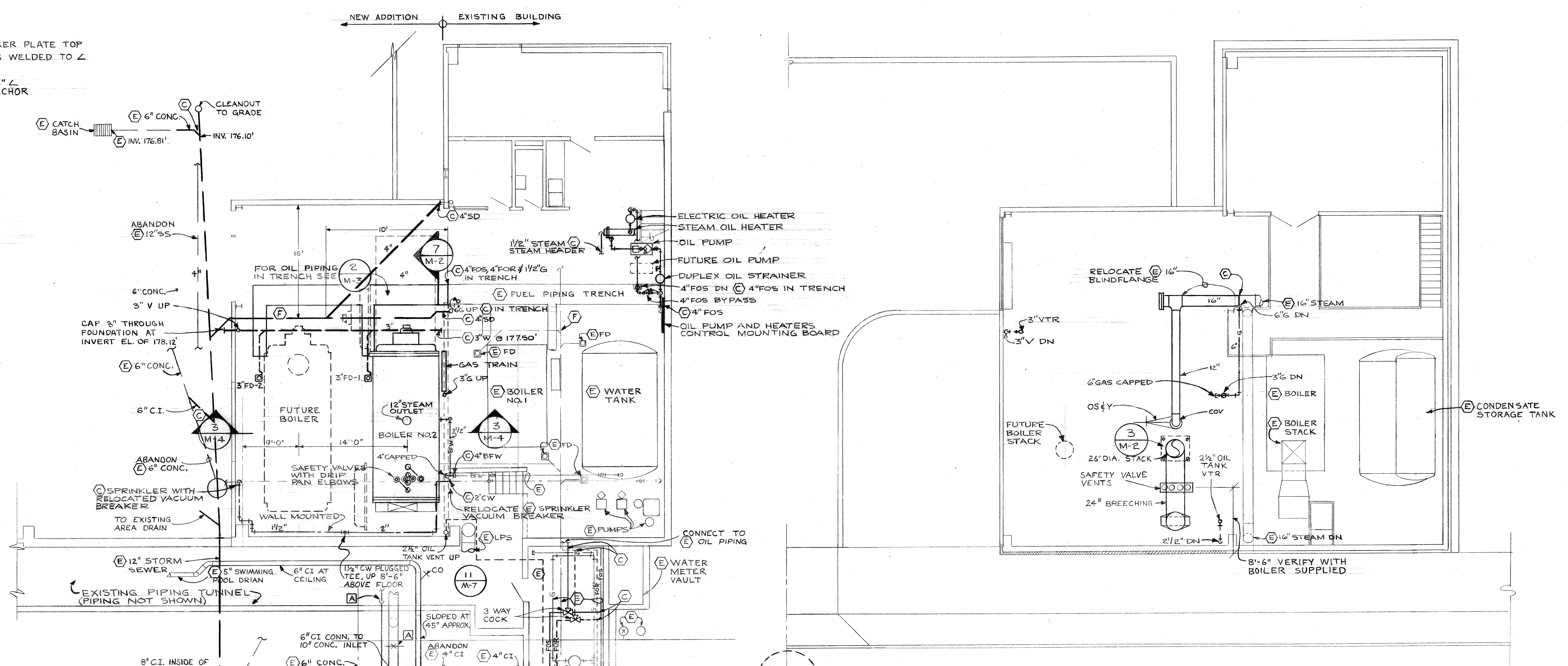
1 VENT THROUGH ROOF DETAIL
M-2 NO SCALE



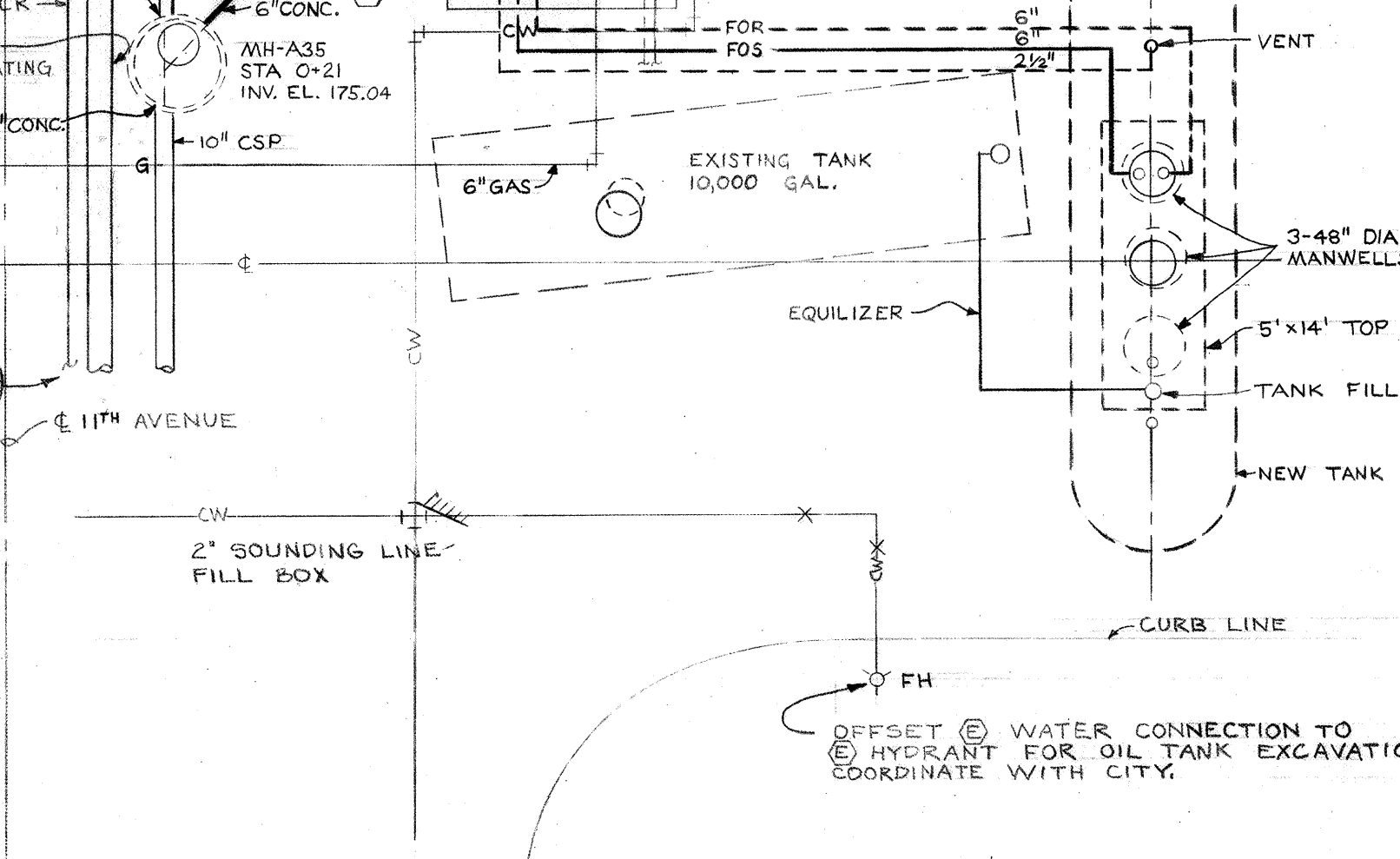
2 DETAIL OF BOILER
BREACHING AND STACK
M-2 1/4" = 1'-0"



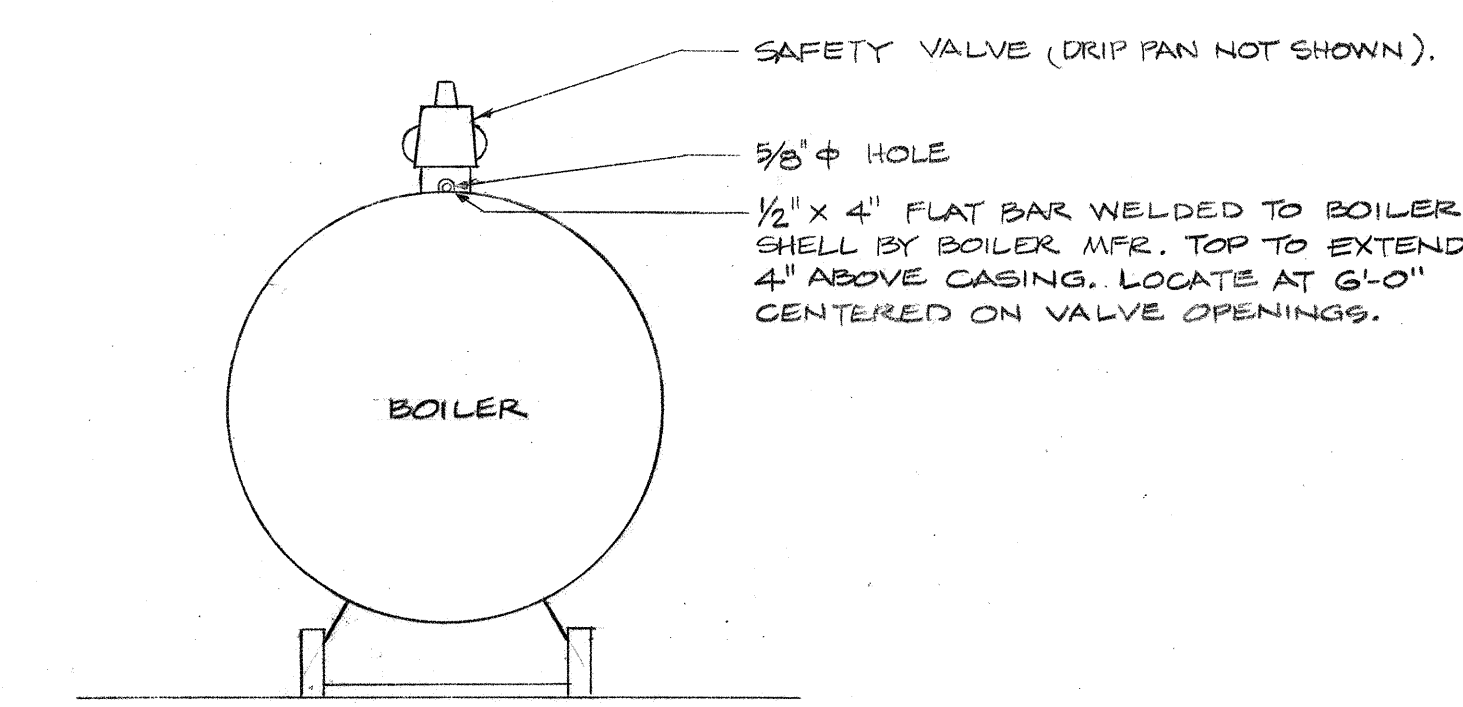
3 DETAIL AT STACK
THROUGH ROOF
M-2 1" = 1'-0"



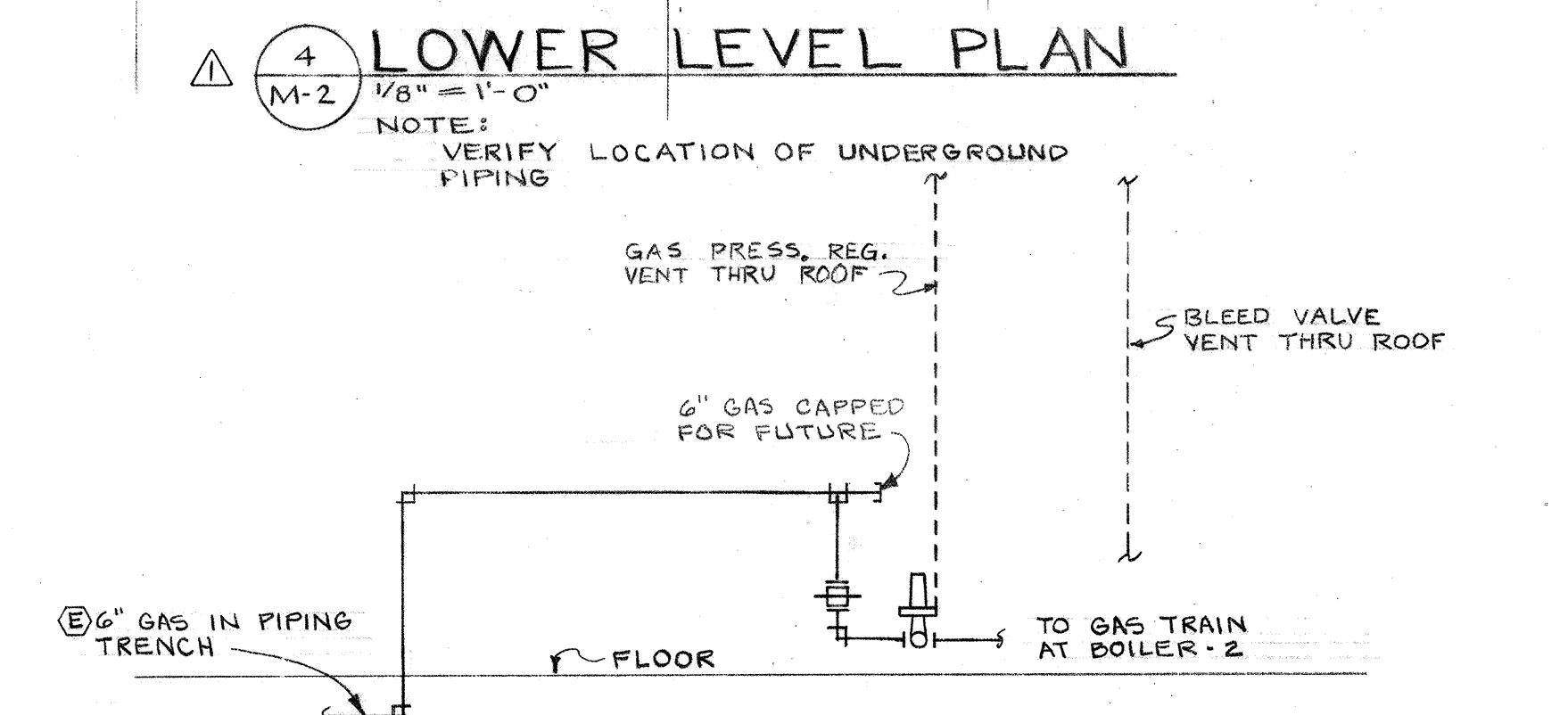
6 UPPER LEVEL PLAN
M-2 1/8" = 1'-0"



4 LOWER LEVEL PLAN
M-2 1/8" = 1'-0"



8 VALVE ACCESS PLATFORM DETAIL
M-2 NO SCALE



5 GAS PIPING DIAGRAM
M-2 NO SCALE

8-1676 AS-BUILT REVISIONS.

HEATING PLANT PLANS AND DETAILS		Project No.
WEST HEATING PLANT UTILITIES ADDITION		104-9
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Date 6-13-74
C. W. Timmer Associates Inc.		Scale SHOWN
Consulting Engineers / Beaverton, Oregon		Dwg. No. M-2
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DRAWING NUMBER
M-3

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REGISTERED BY NUMBER 07049

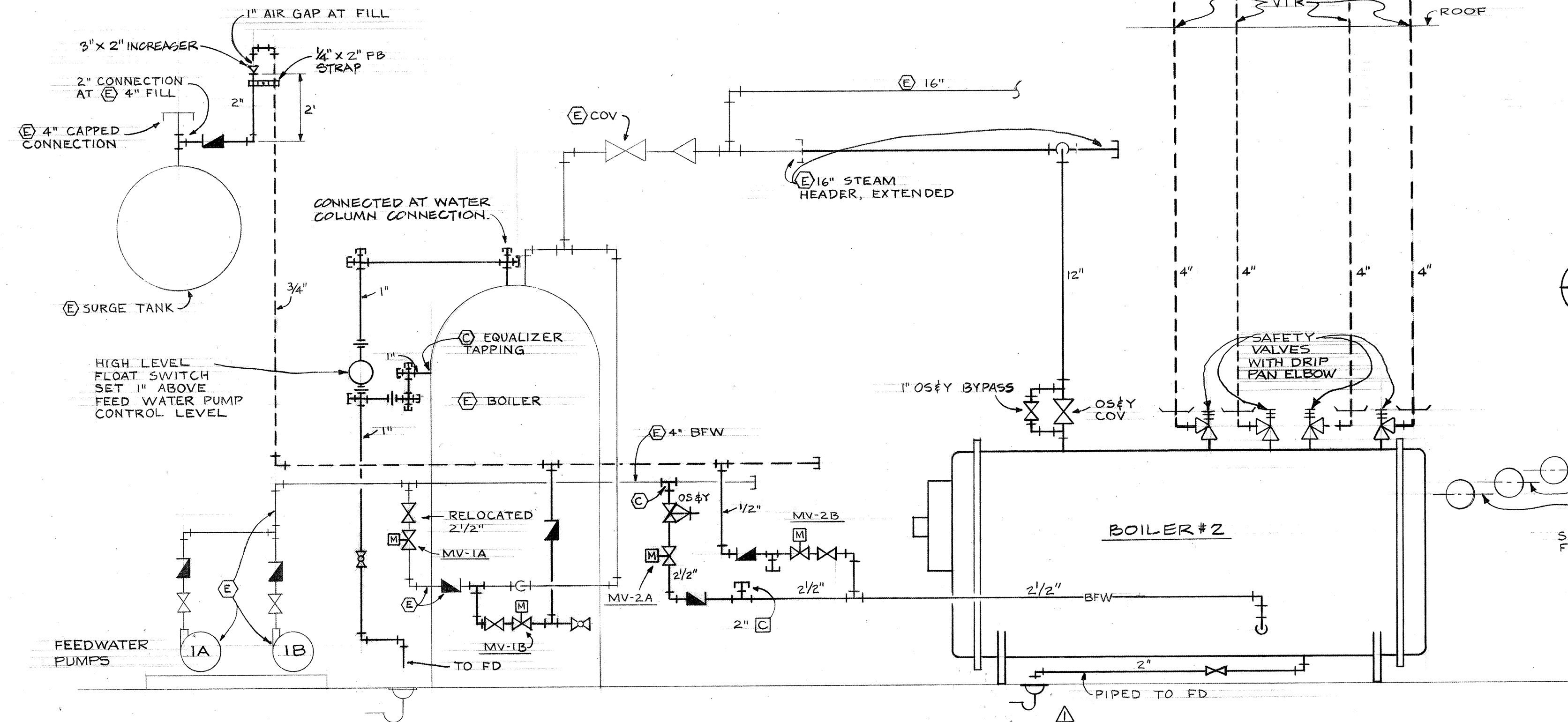
ZIMMER
GUNSUL
FRASCA
8-16-76

DRAWING NUMBER
DIAGRAMS & DETAILS

WEST HEATING
PLANT UTILITIES
ADDITION

DRAWING NUMBER
238-WHP

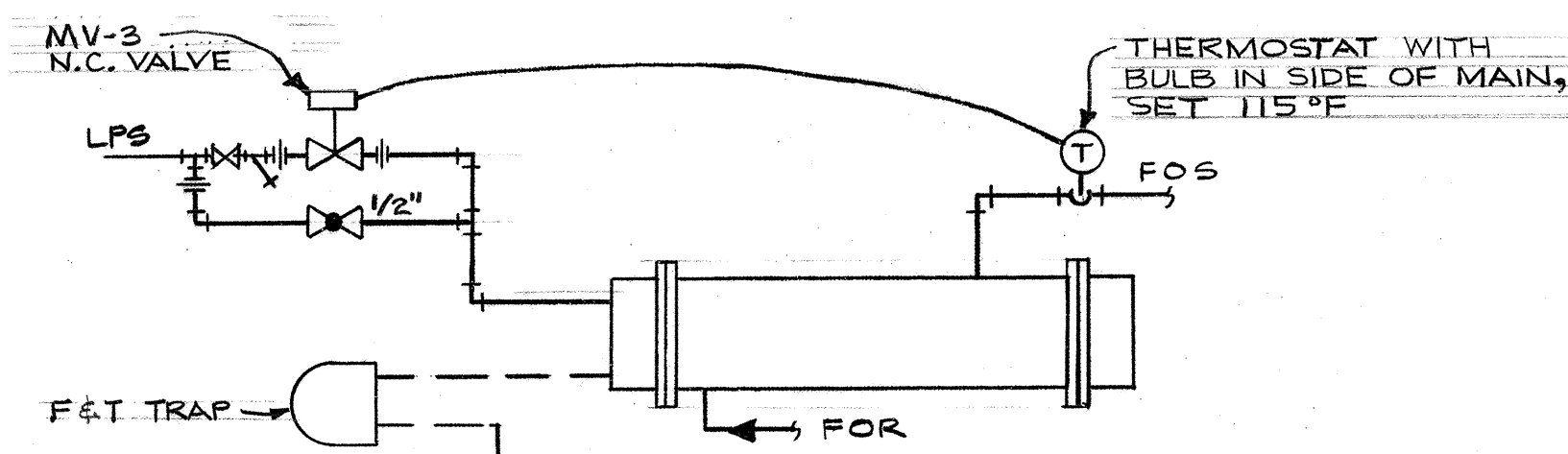
PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REGISTERED BY NUMBER 07049



1 BOILER STEAM AND FEEDWATER PIPING DIAGRAM

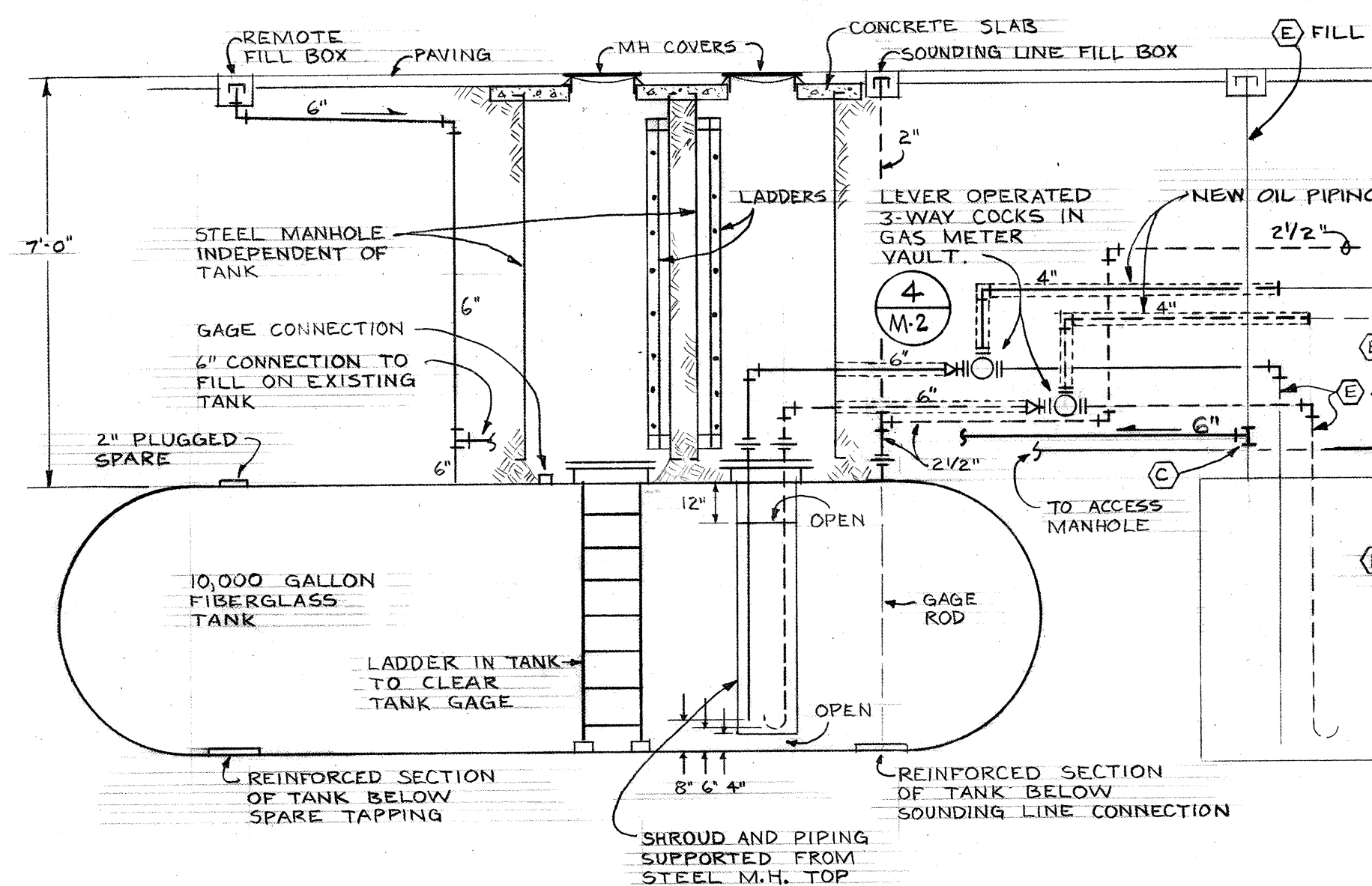
M-3 NO SCALE

NOTE:
BOILER DRAIN AND BLOWDOWNS FROM WATER COL. AND LEVEL CONTROLS PIPED TO FLOOR DRAINS.



3 STEAM OIL HEATER CONTROL DIAGRAM

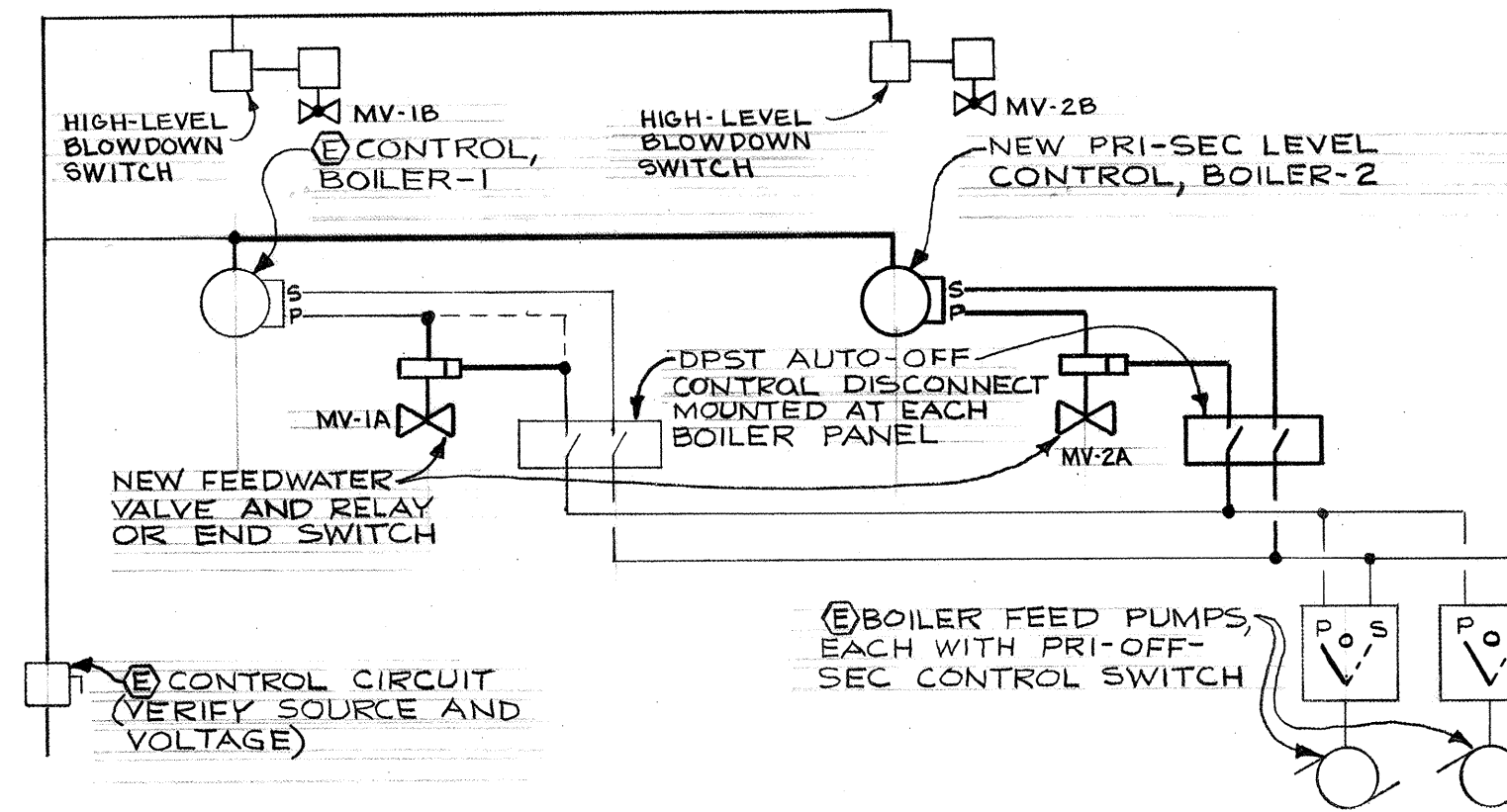
M-3 NO SCALE



2 OIL PIPING DIAGRAM

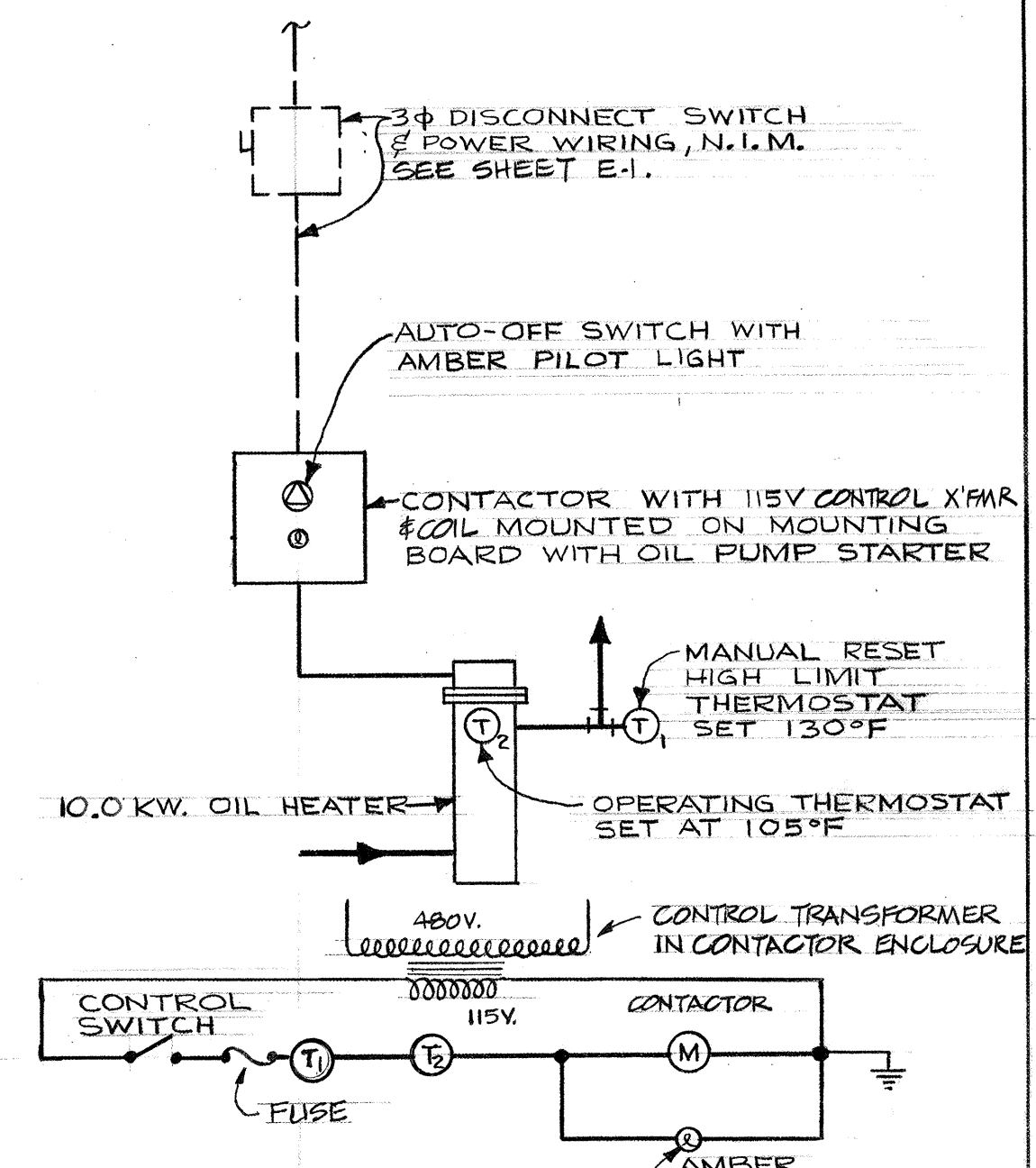
M-3 NO SCALE

NOTE:
SEE **4** FOR APPROXIMATE TAPPING LOCATIONS AT TANK.



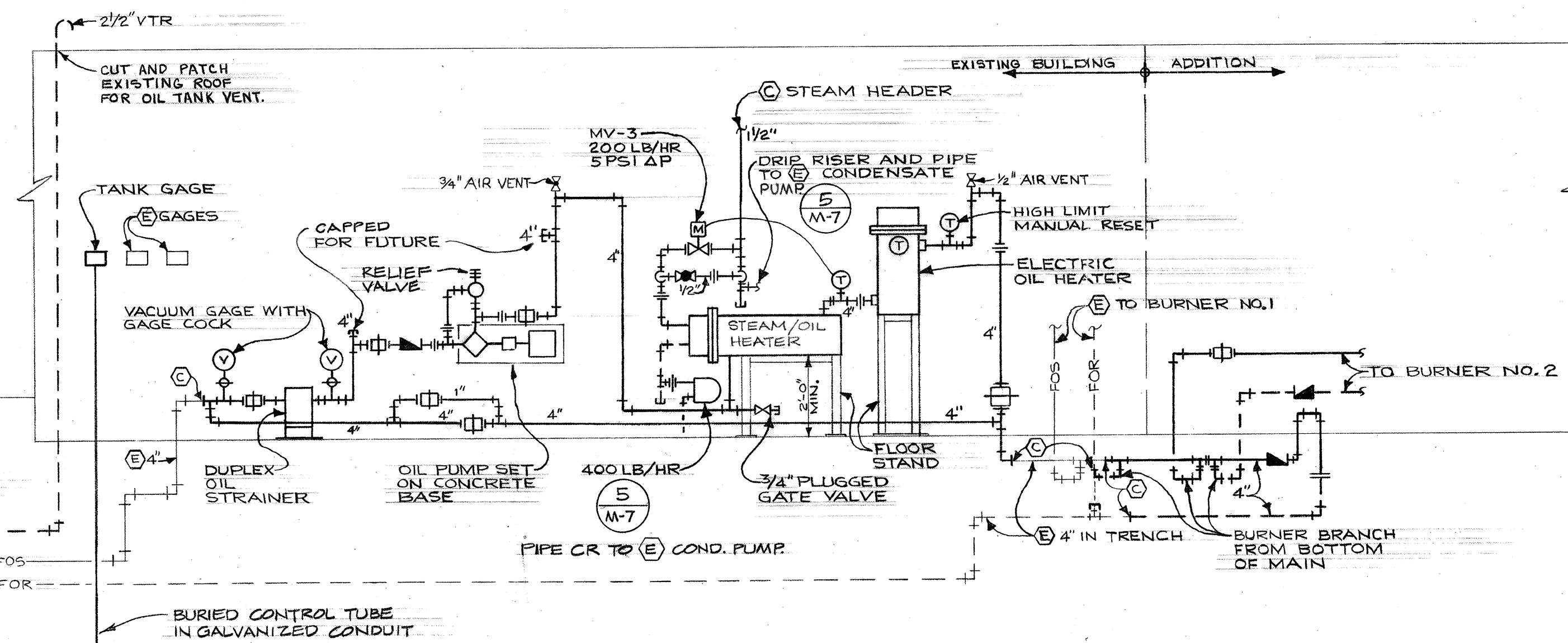
4 SCHEMATIC BOILER-FEED CONTROL DIAGRAM

M-3 NO SCALE



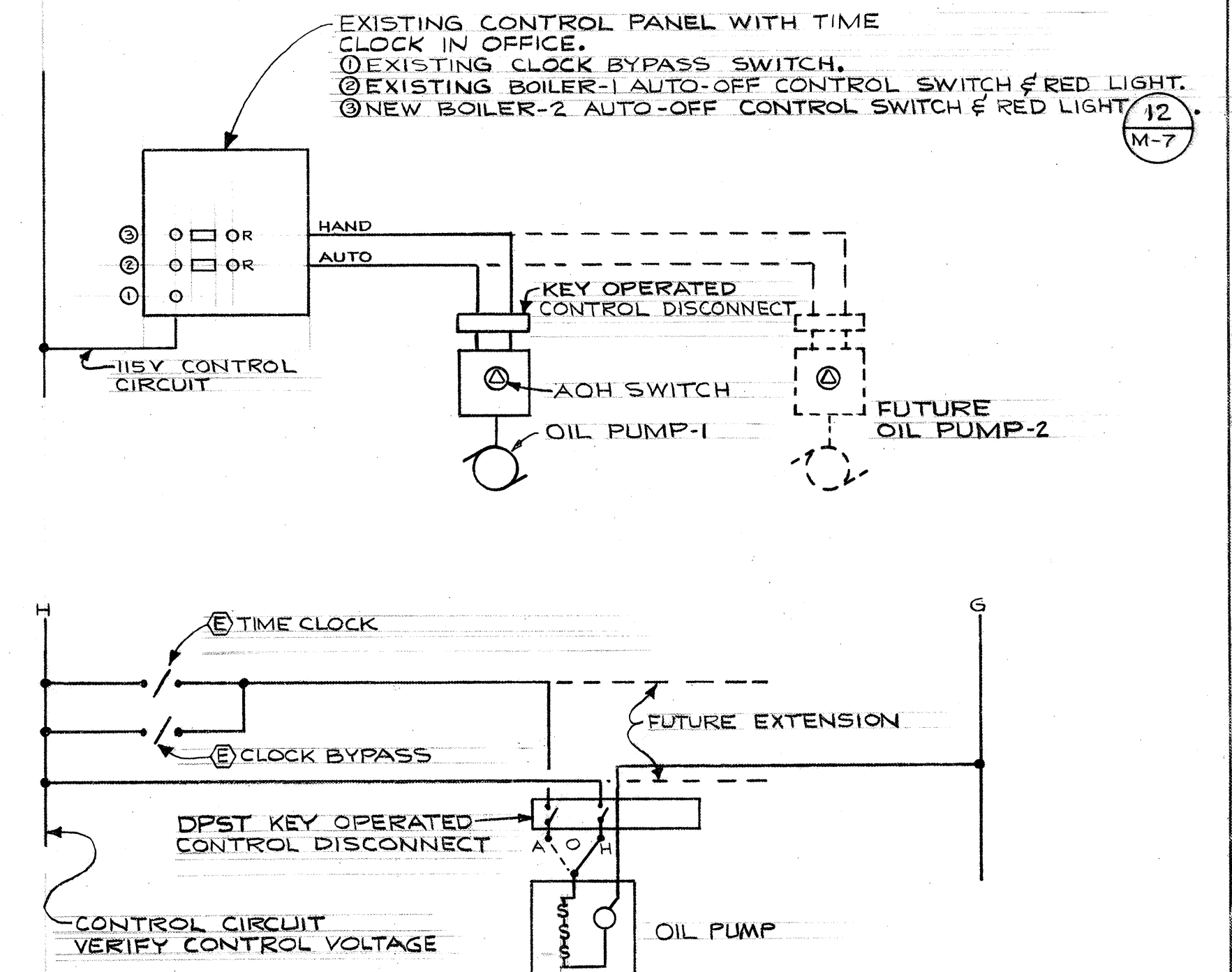
5 ELECTRIC OIL HEATER CONTROL DIAGRAM

M-3 NO SCALE



6 SCHEMATIC OIL PUMP CONTROL DIAGRAM

M-3 NO SCALE



6 SCHEMATIC OIL PUMP CONTROL DIAGRAM

M-3 NO SCALE

8-16-76 AS-BUILT REVISIONS.
REVISIONS

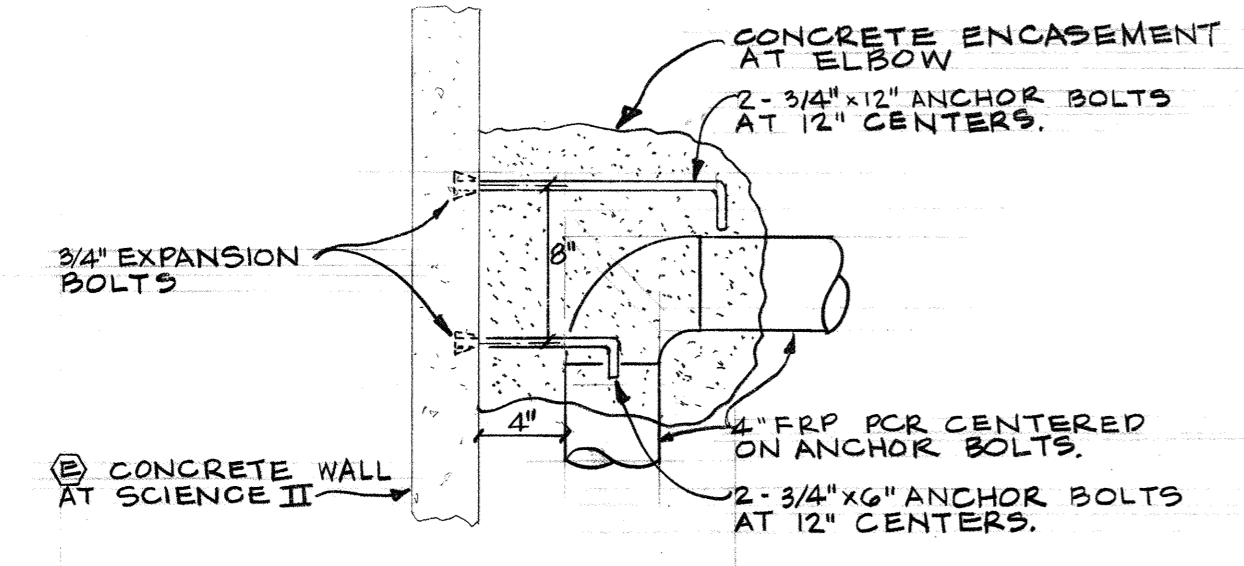
DIAGRAMS AND DETAILS		Project No.
WEST HEATING PLANT UTILITIES ADDITION		1049
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Date 6-13-74
C. W. Timmer Associates Inc.		Scale SHOWN
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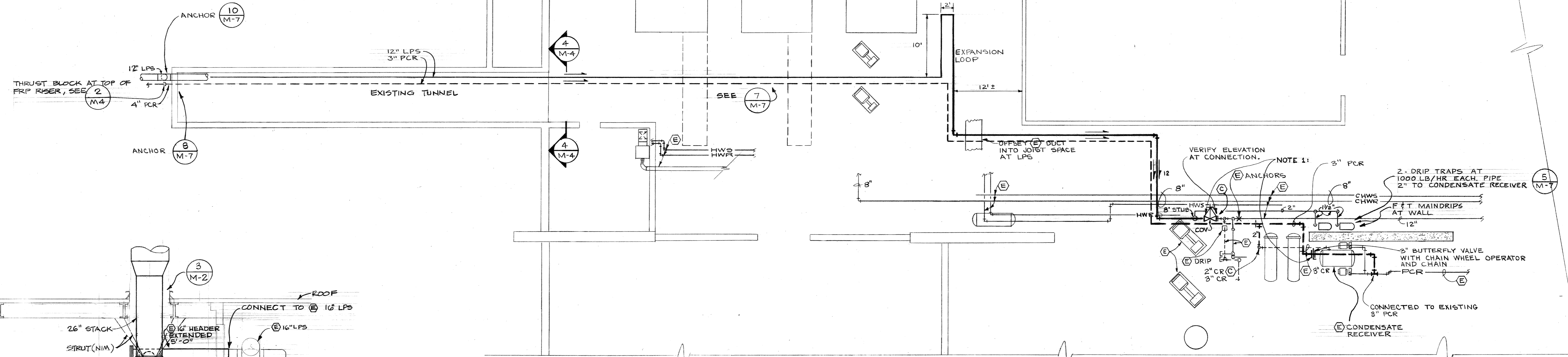
DRAWING NUMBER
M-4

ZIMMER GUNSUL FRASCA
WEST HEATING PLANT UTILITIES ADDITION

DRAWING NUMBER
238-WHP

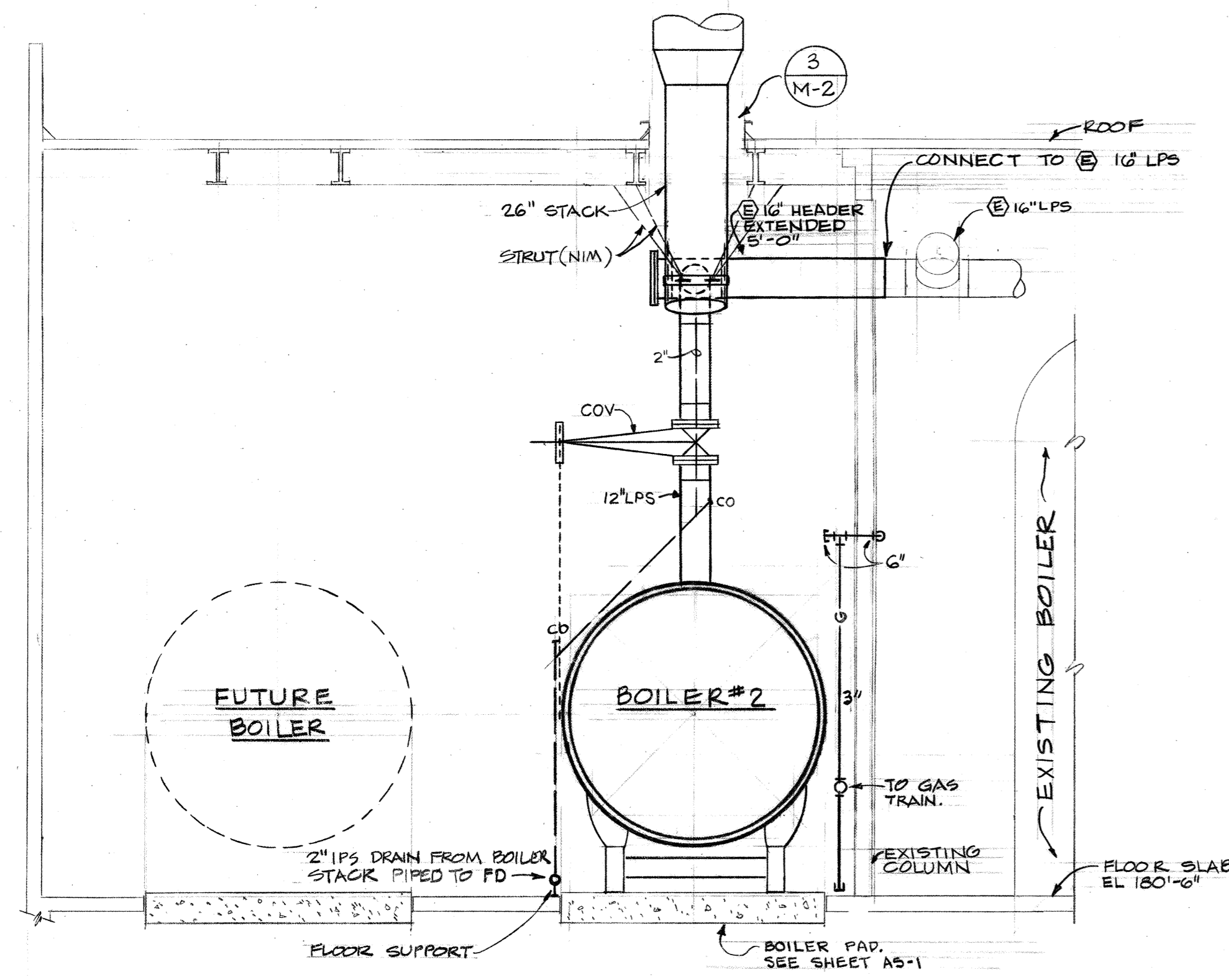
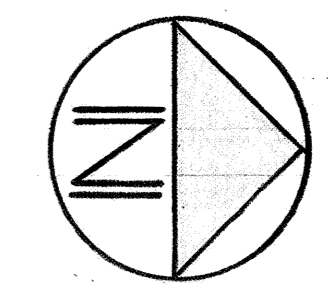


2 THRUST BLOCK DETAIL
M-4 NO SCALE

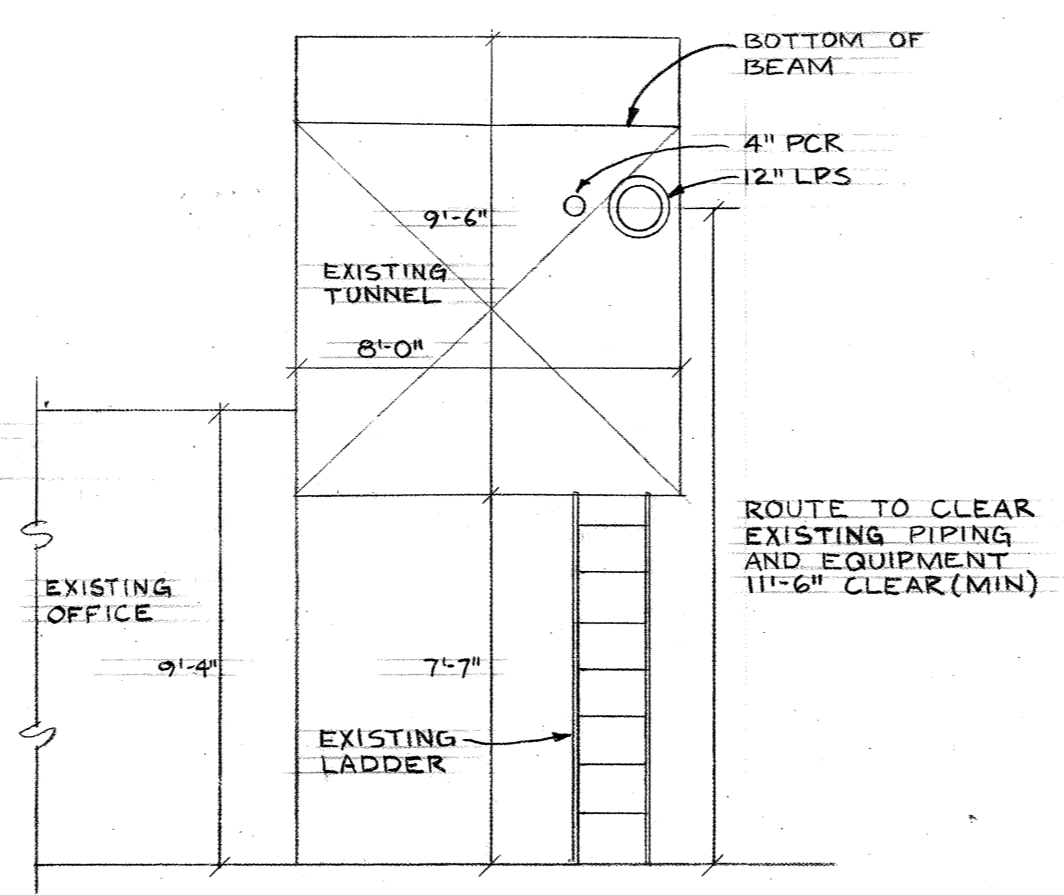


1 PART PLAN BASEMENT SCIENCE II
M-4 1/8" = 1'-0"

NOTE 1: VALVE OPEN WHEN SCIENCE II FED FROM WEST PLANT OR WHEN GYM IS FED FROM EAST PLANT, OTHERWISE VALVE SHOULD BE CLOSED.



3 BOILER RM. SECTION
M-4 1/4" = 1'-0"



4 SECTION
M-4 1/4" = 1'-0"

AS-BUILT REVISIONS.

SCIENCE II, PART PLAN, BASEMENT		Project No.	1049
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PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Scale	SHOWN
C. W. Timmer Associates Inc.		Dwg. No.	M-4
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DRAWING NUMBER
M-5

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REORDER BY NUMBER 070241

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GUNSUL
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8-15-76

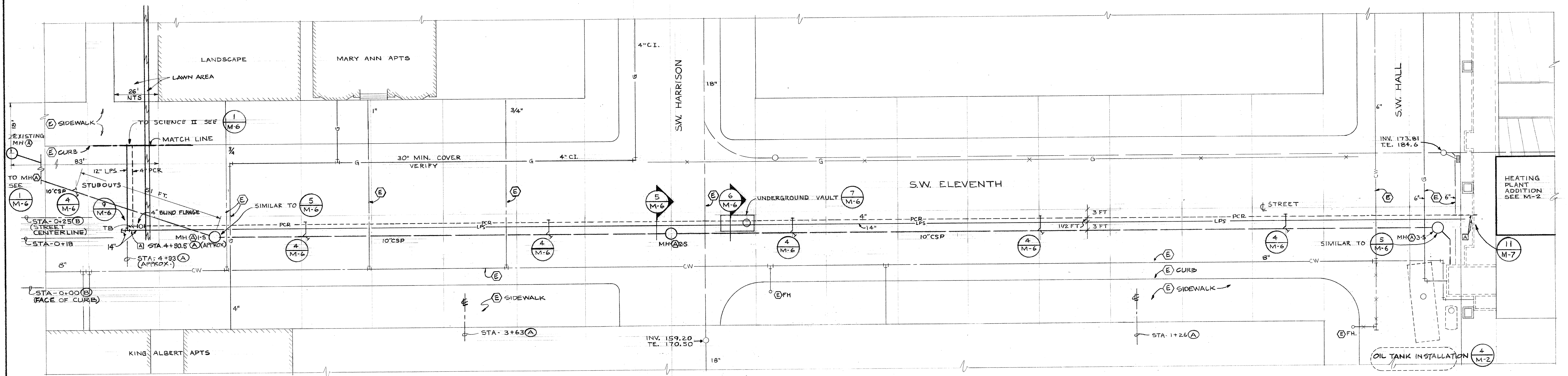
DRAWING NUMBER
UTILITIES PLAN &
PROFILE - 11TH AVENUE

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REORDER BY NUMBER 070241

WEST
HEATING
PLANT
UTILITIES
ADDITION

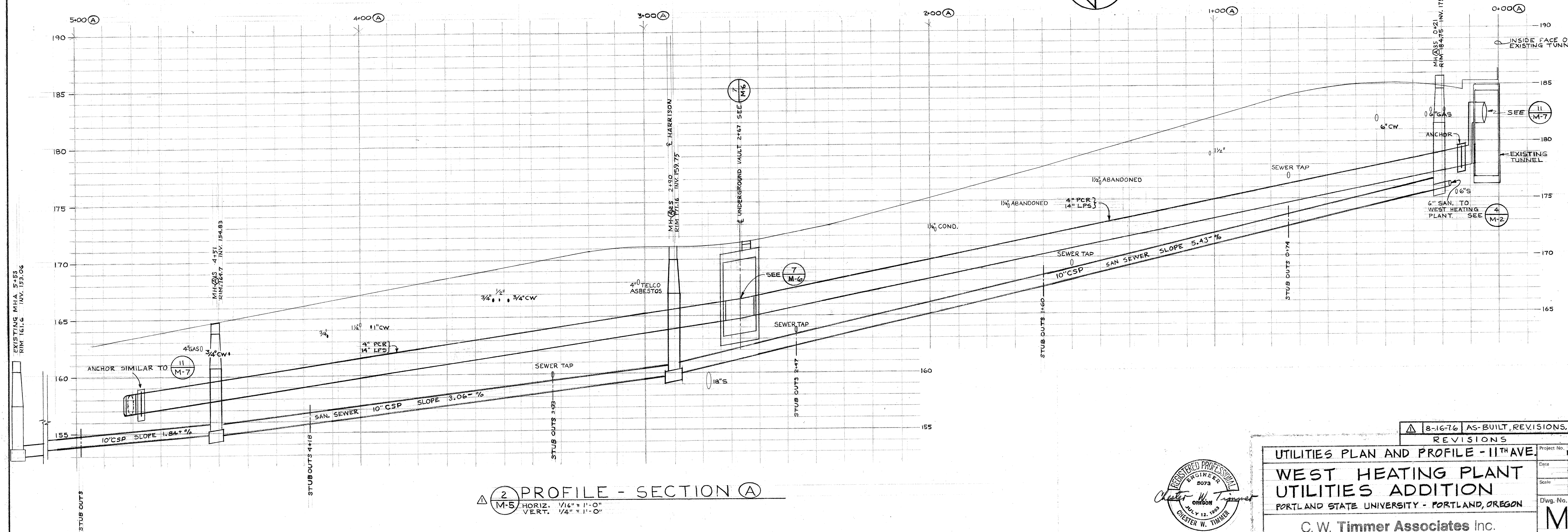
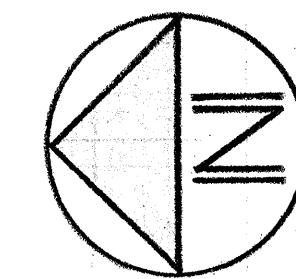
DRAWING NUMBER
238 - WHP

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REORDER BY NUMBER 070241



GENERAL NOTES:
1. CUT STREET AND WALKS FOR INSTALLATION
OF ALL UTILITIES.

1 PARTIAL PLAN - UTILITIES - 11TH AVE. - SECTION (A)
M-5 1/16" = 1'-0"



2 PROFILE - SECTION (A)
M-5 HORIZ. 1/16" = 1'-0"
VERT. 1/4" = 1'-0"

8-16-76 AS-BUILT REVISIONS.

REVISIONS

UTILITIES PLAN AND PROFILE - 11TH AVE.
WEST HEATING PLANT
UTILITIES ADDITION
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON

Project No. 1049

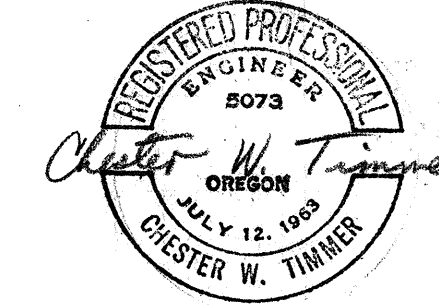
Date 6-13-74

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C. W. Timmer Associates Inc.
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DRAWING NUMBER
M-6

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REPRODUCED BY NUMBER 07049

ZIMMER
GUNSLER
FRASCA
8-16-76

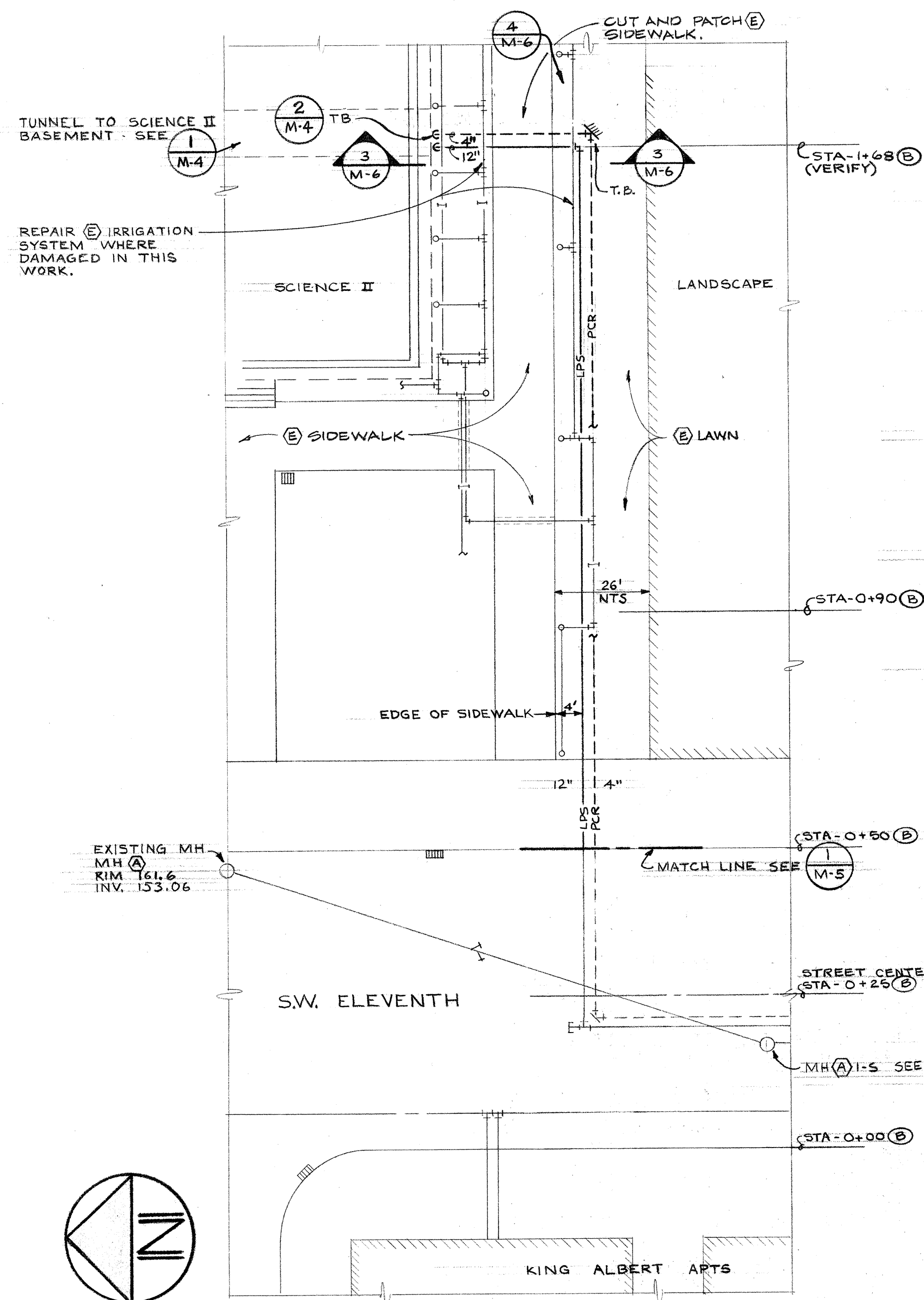
DRAWING NUMBER
UTILITIES PLAN,
PROFILE, & DETAILS

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REPRODUCED BY NUMBER 07049

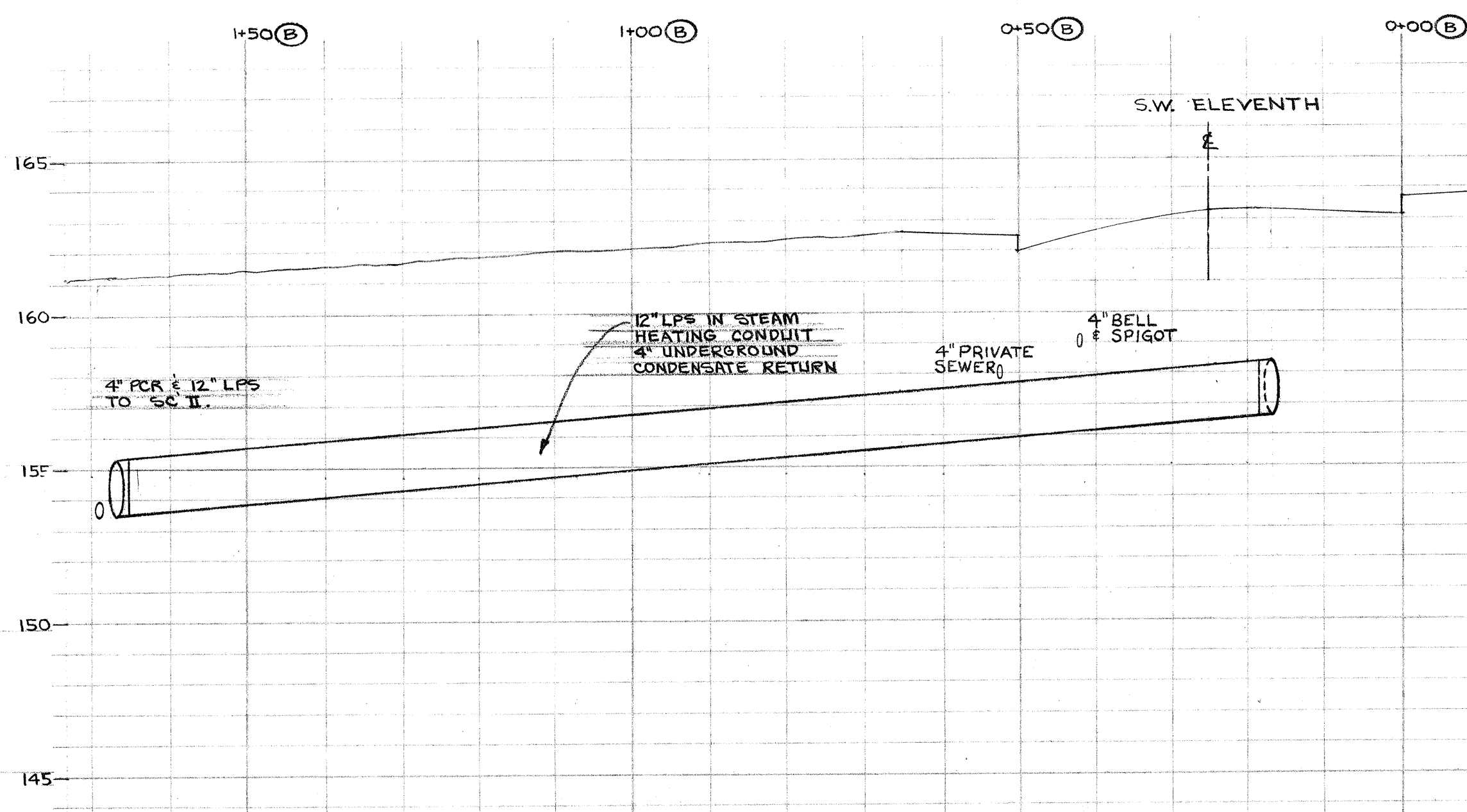
WEST
HEATING
PLANT
UTILITIES
ADDITION

DRAWING NUMBER
238-WHP

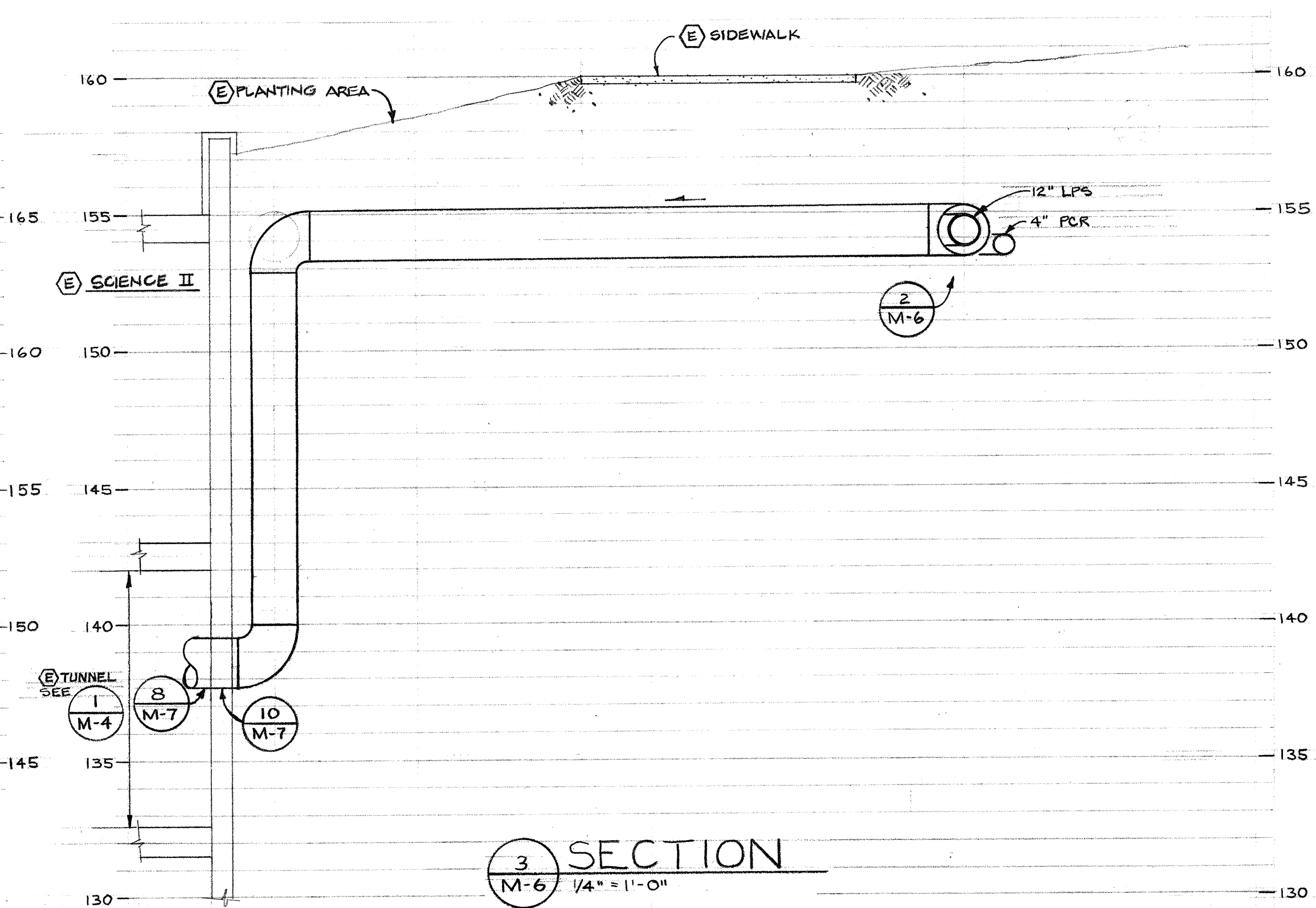
PLAN HOLD CORPORATION • IRVINE, CALIFORNIA
REPRODUCED BY NUMBER 07049



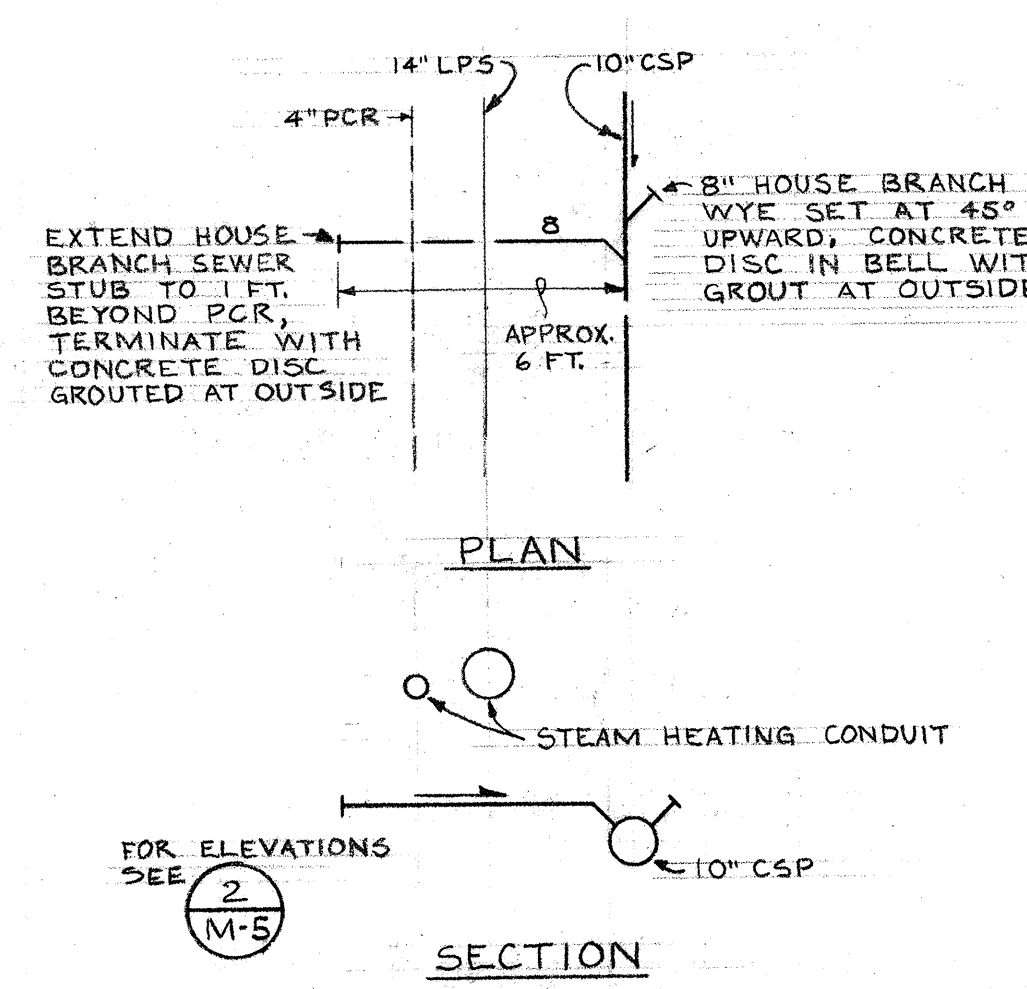
1 PART. PLAN UTILITIES - SCIENCE II
M-6 1/16" = 1'-0"



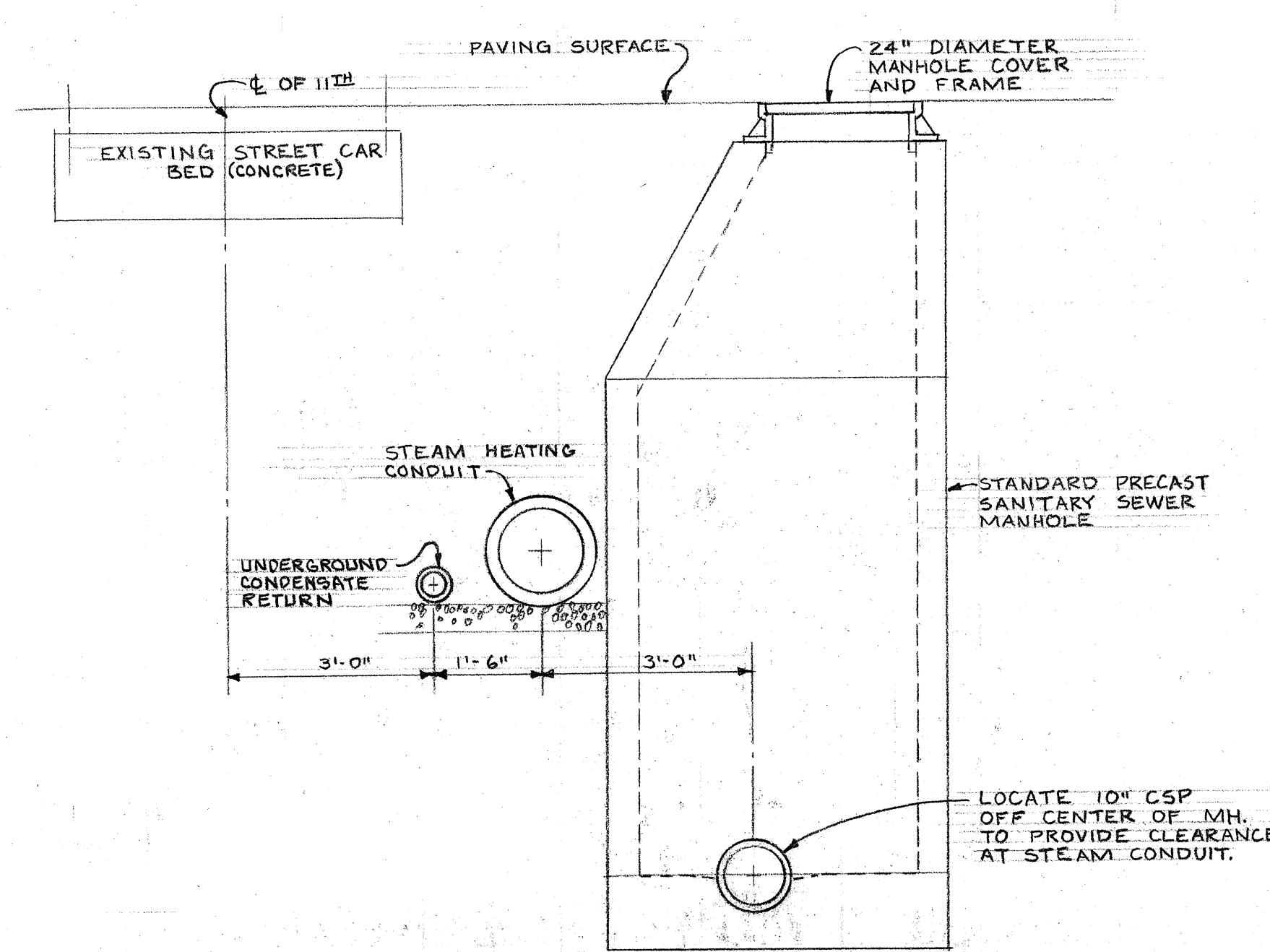
2 PROFILE - SECTION B
M-6 HORIZ. 1/16" = 1'-0"
VERT. 1/4" = 1'-0"



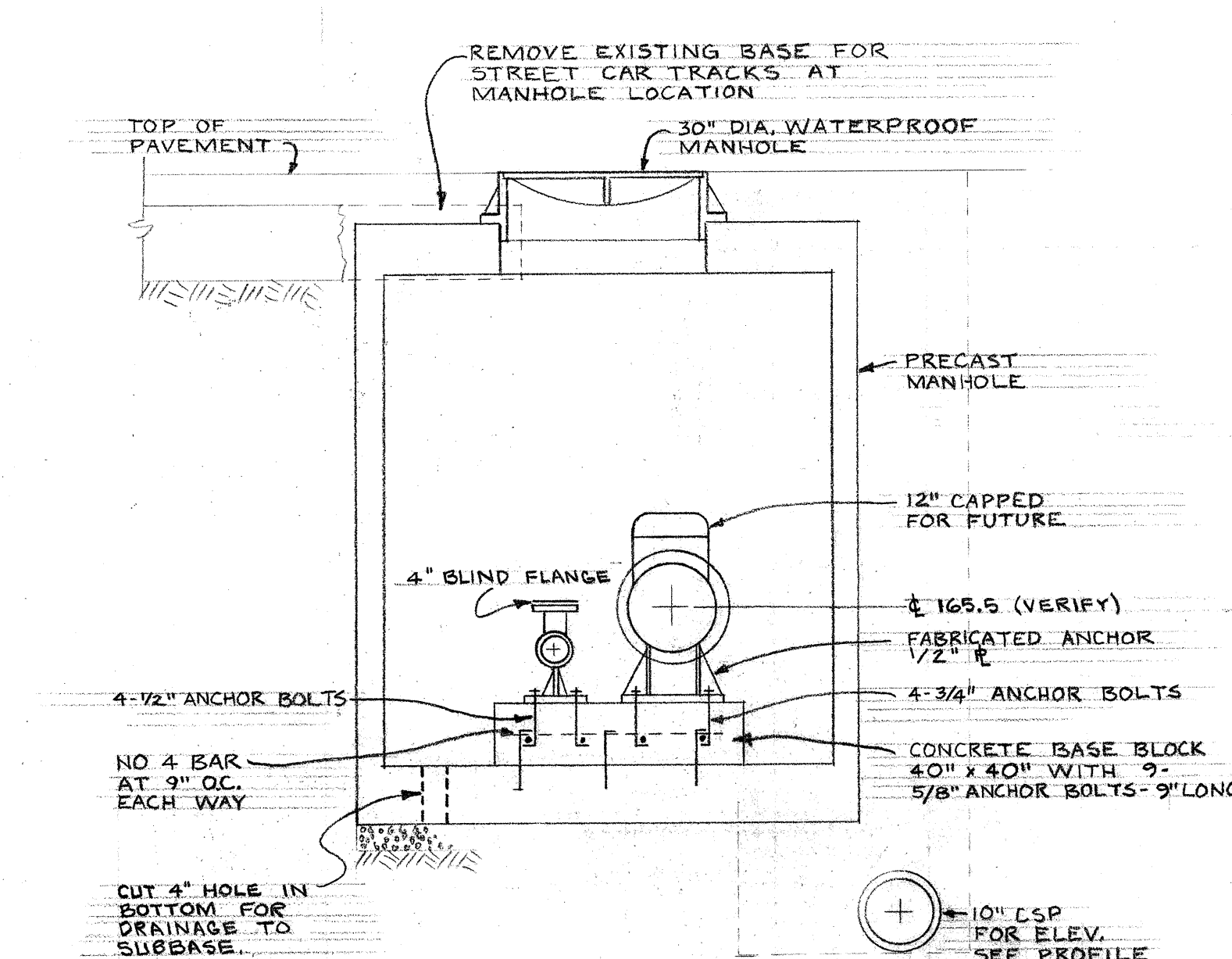
3 SECTION
M-6 1/4" = 1'-0"



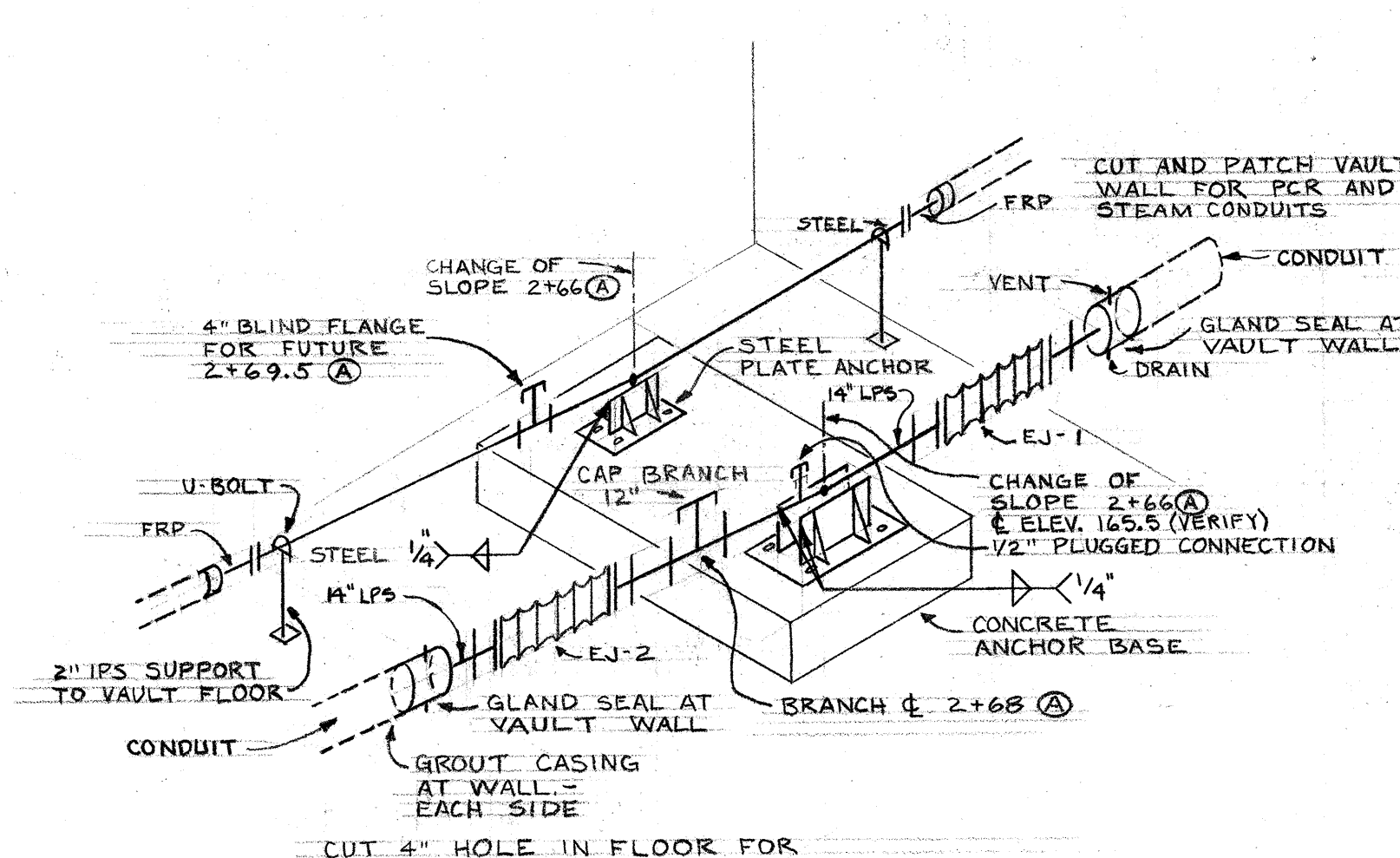
4 DETAIL AT BRANCH STUB
M-6 NO SCALE



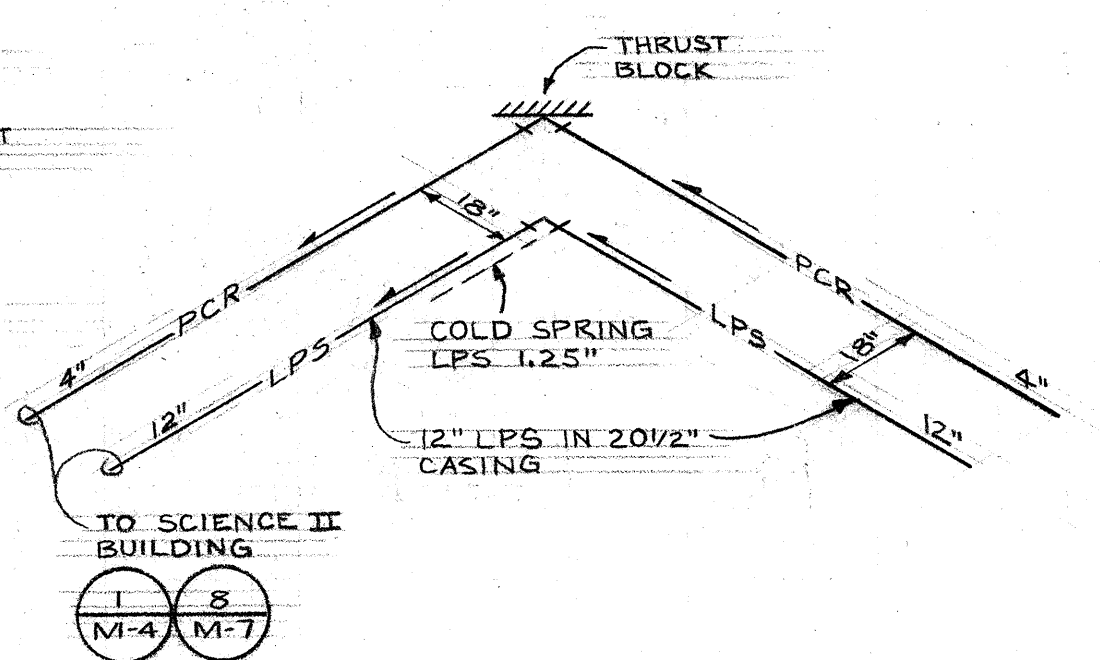
5 SECTION 2+93
M-6 1/2" = 1'-0"



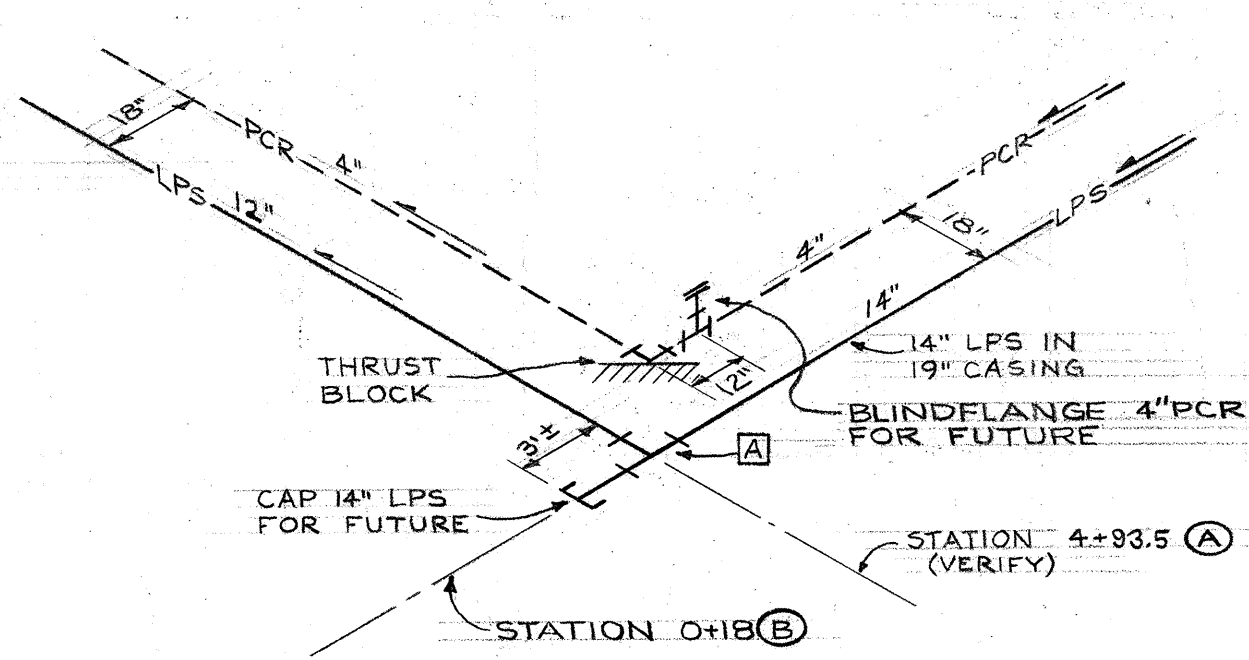
6 SECTION 2+66
M-6 1/2" = 1'-0"



7 DIAGRAM AT UNDERGROUND VAULT
M-6 NO SCALE



8 DETAIL
M-6 NO SCALE



9 DETAIL
M-6 NO SCALE

REVISIONS
AS-BUILT REVISIONS.

NO.	DESCRIPTION	DATE
1	AS-BUILT REVISIONS.	

UTILITIES PLAN, PROFILE AND DETAILS
WEST HEATING PLANT
UTILITIES ADDITION
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON

C. W. Timmer Associates Inc.
Consulting Engineers / Beaverton, Oregon

Project No. 1049
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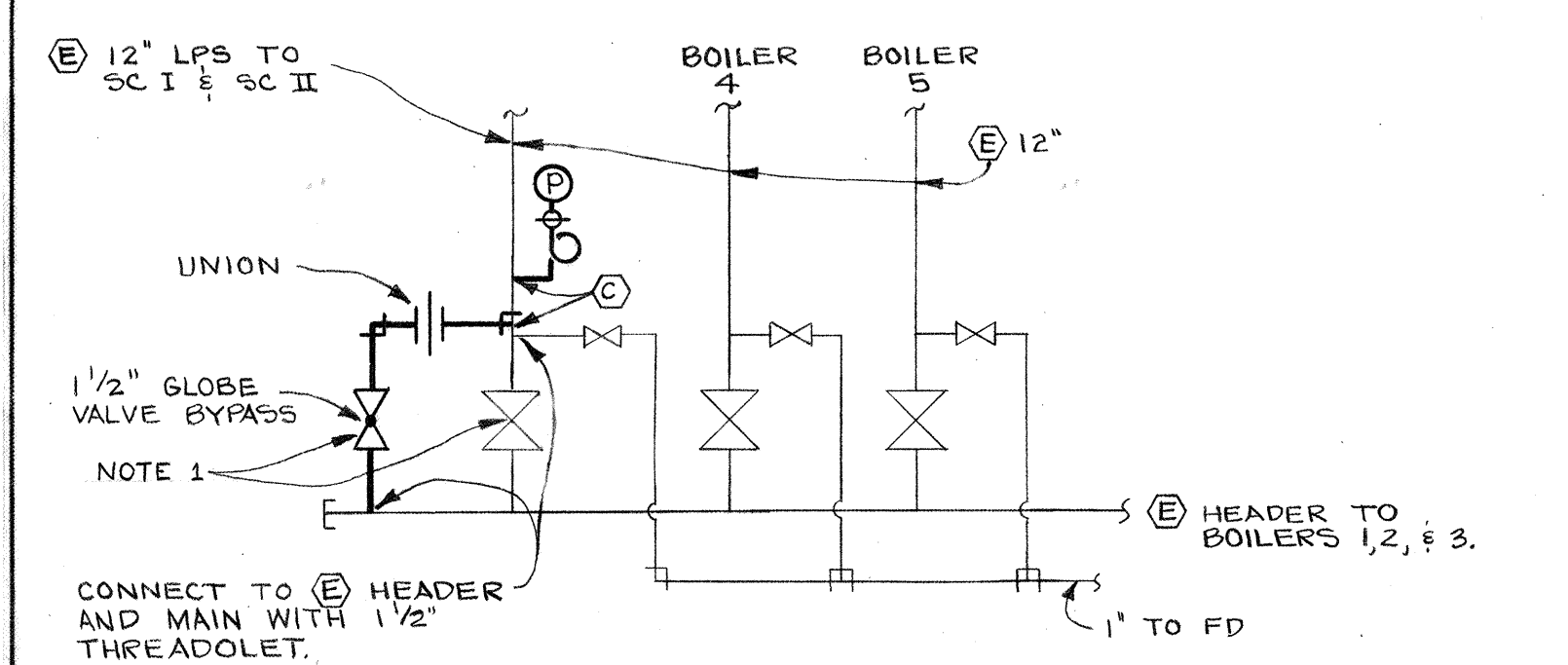
DRAWING NUMBER
M-7

DRAWING NUMBER
ZIMMER
GUNSUL
FRASCA
8-16-76

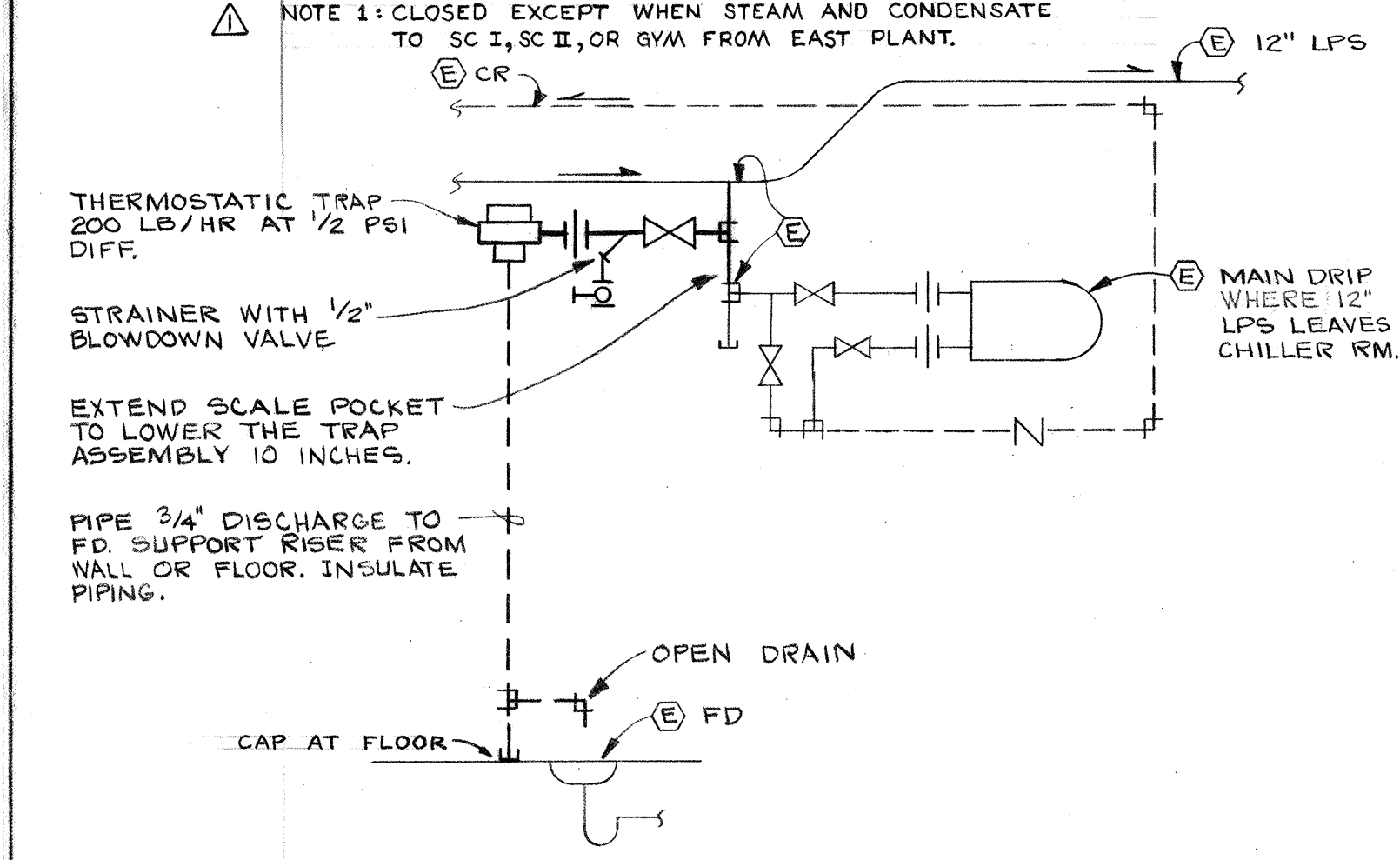
WEST
HEATING
PLANT
UTILITIES
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DRAWING NUMBER
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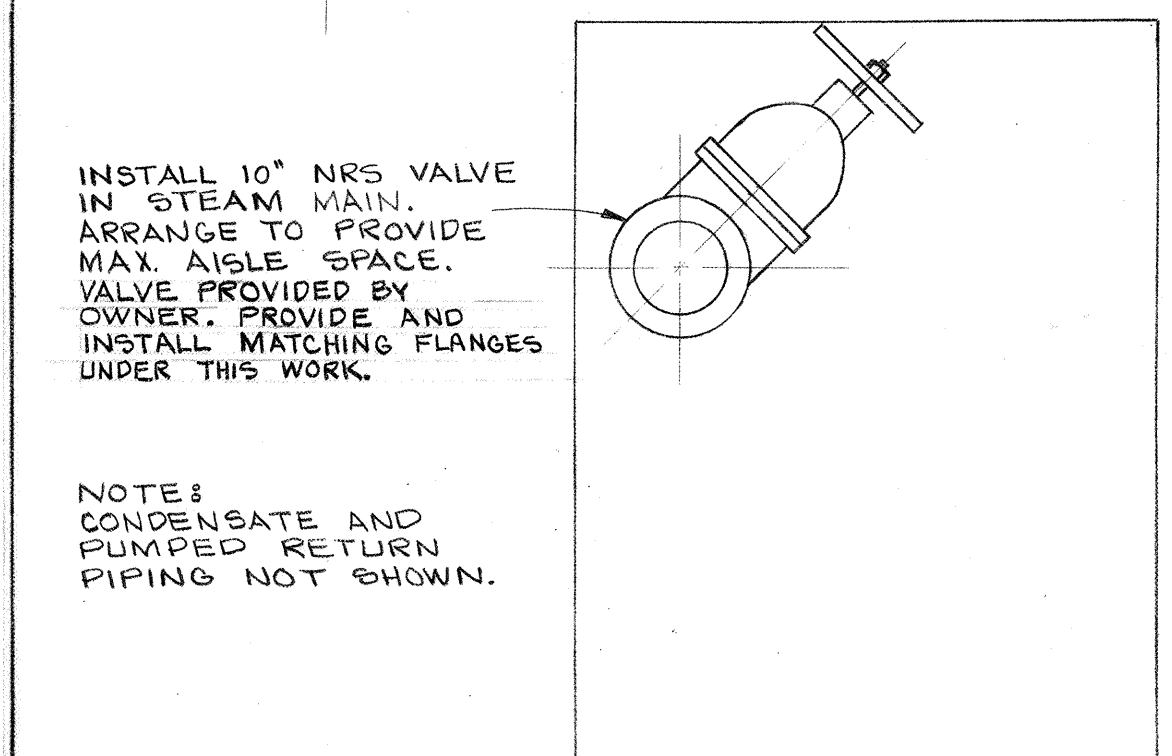
WEST HEATING PLANT UTILITIES ADDITION



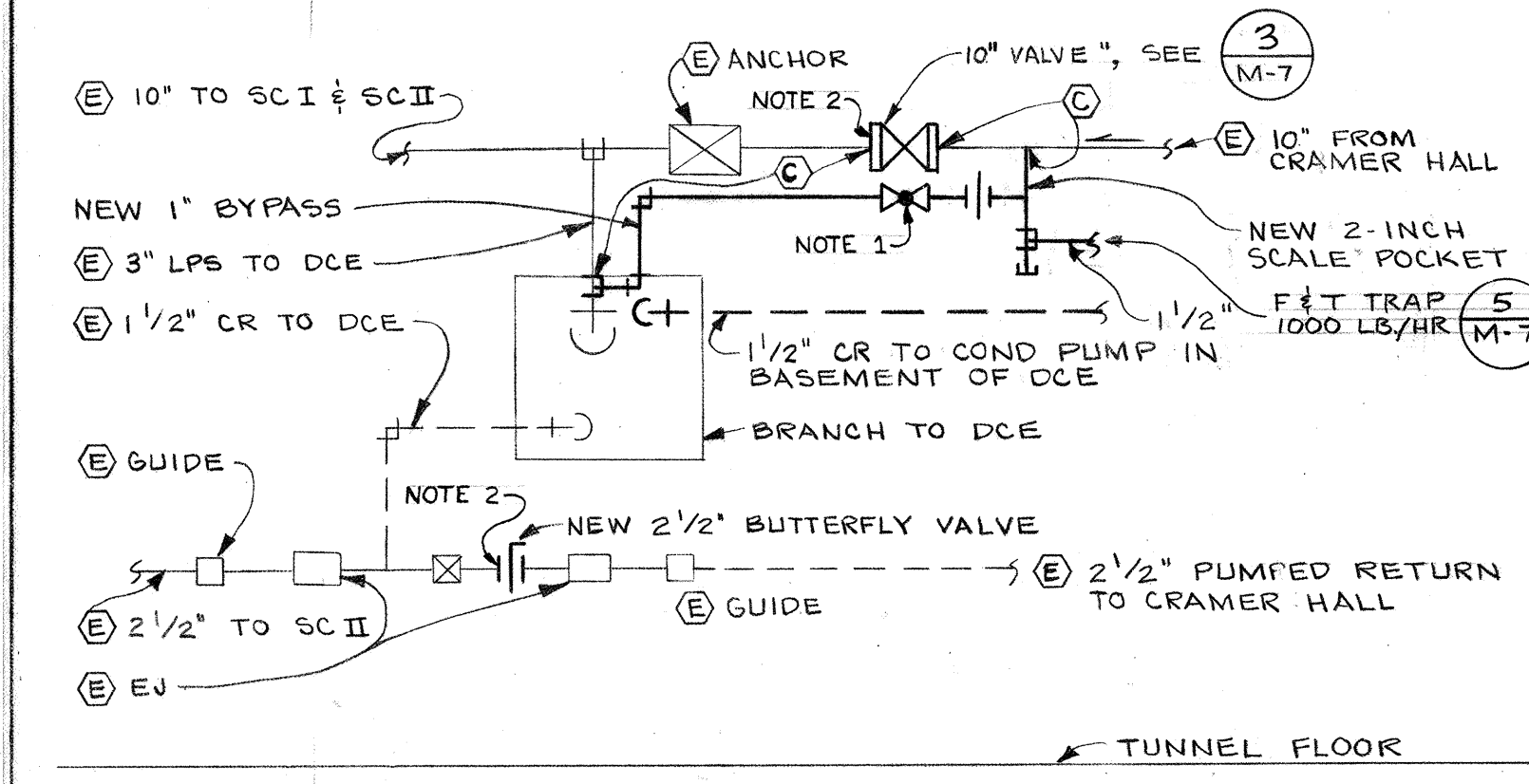
1 M-7
HEADER BYPASS DIAGRAM AT CRAMER HALL
NO SCALE



2 M-7
WARMUP TRAP DIAGRAM AT CRAMER HALL
NO SCALE

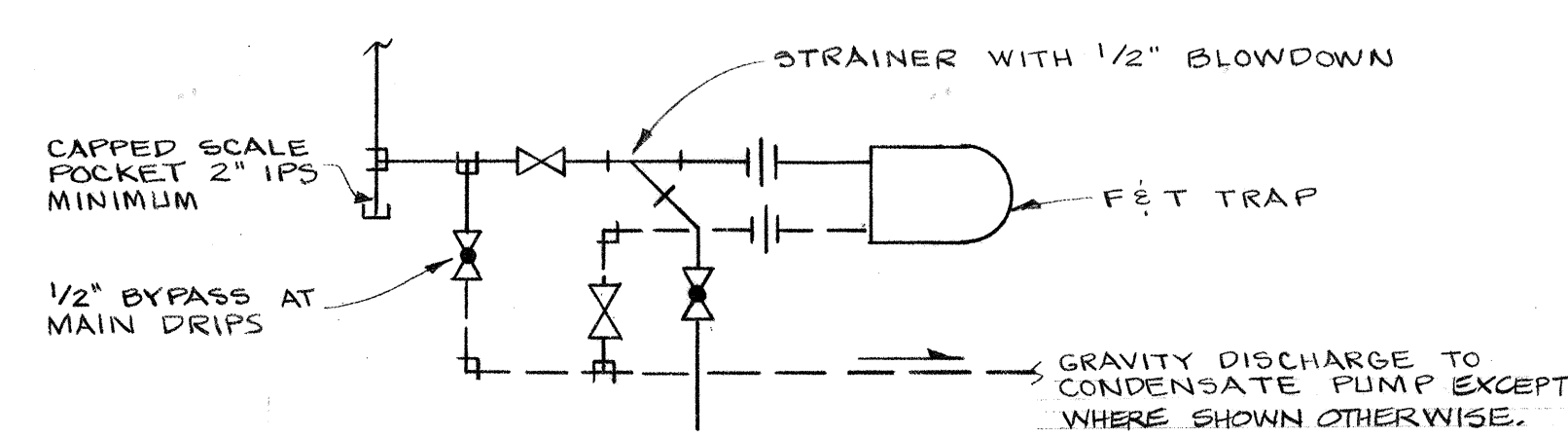


3 M-7
SECTION IN MILL ST. TUNNEL AT DCE
1/2" = 1'-0"

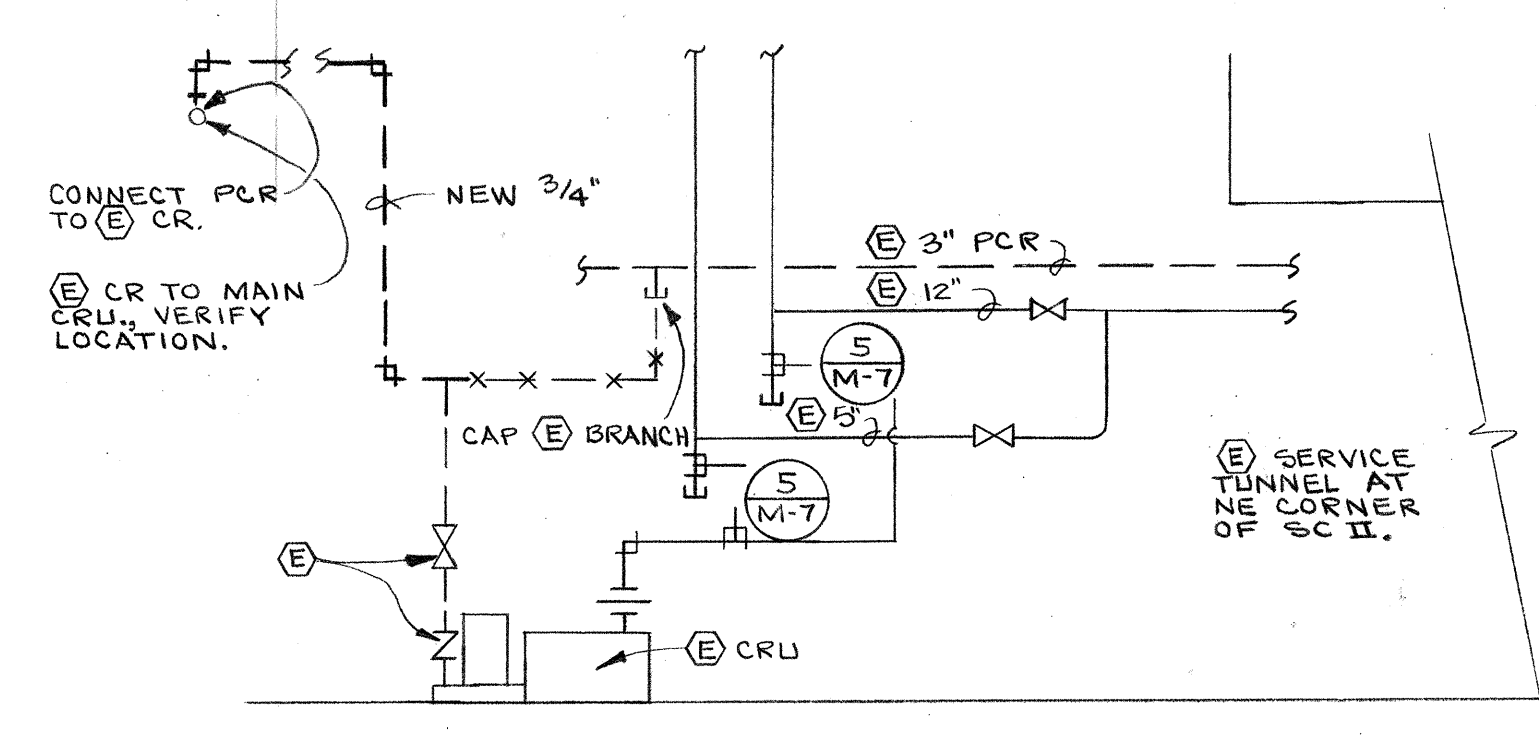


4 M-7
DIAGRAM OF LPS AND CR PIPING ALTERATIONS AT DCE BUILDING BRANCH
NO SCALE

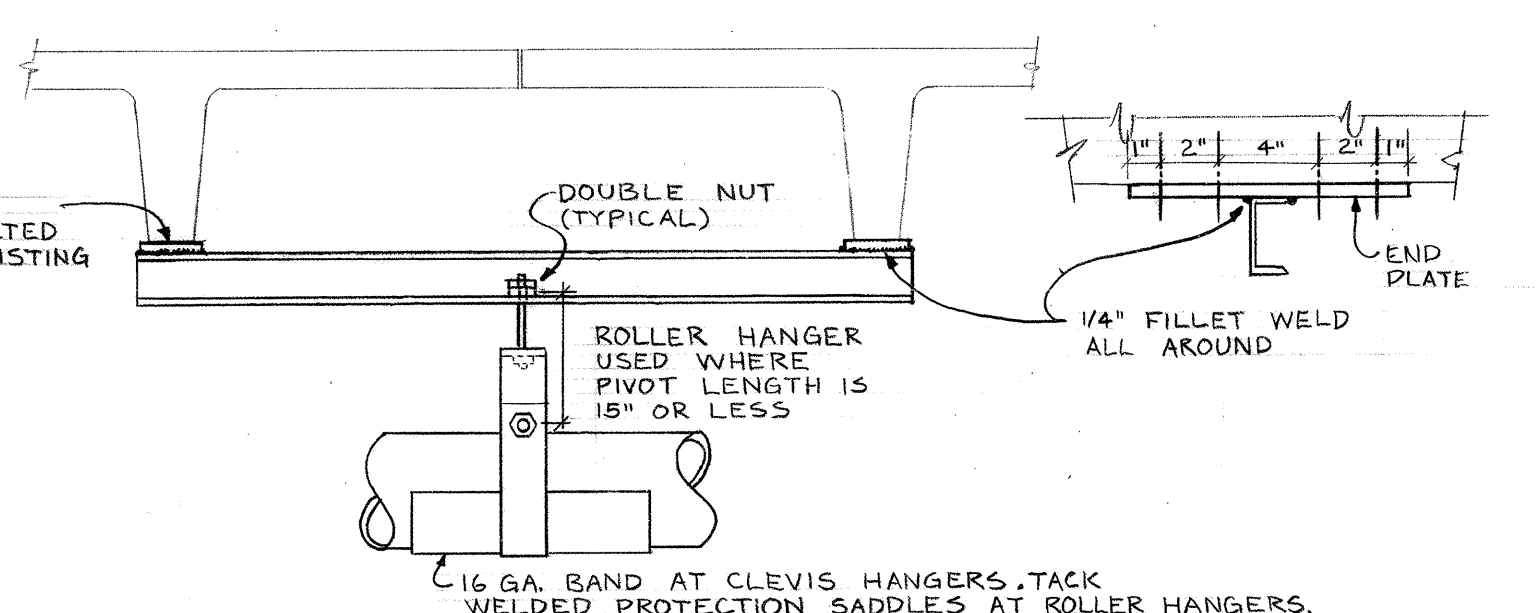
NOTES: 1. OPEN ON WARM UP BEFORE OPENING 10" GATE VALVE. CLOSE WHEN 10" GATE IS CLOSED.
2. CLOSED EXCEPT WHEN STEAM AND CONDENSATE TO SC I, SC II, OR GYM FROM EAST PLANT.



5 M-7
TYPICAL FLOAT AND THERMO-STATIC TRAP DETAIL



6 M-7
DIAGRAM OF MAIN DRIP ALTERATIONS - SC II
NO SCALE

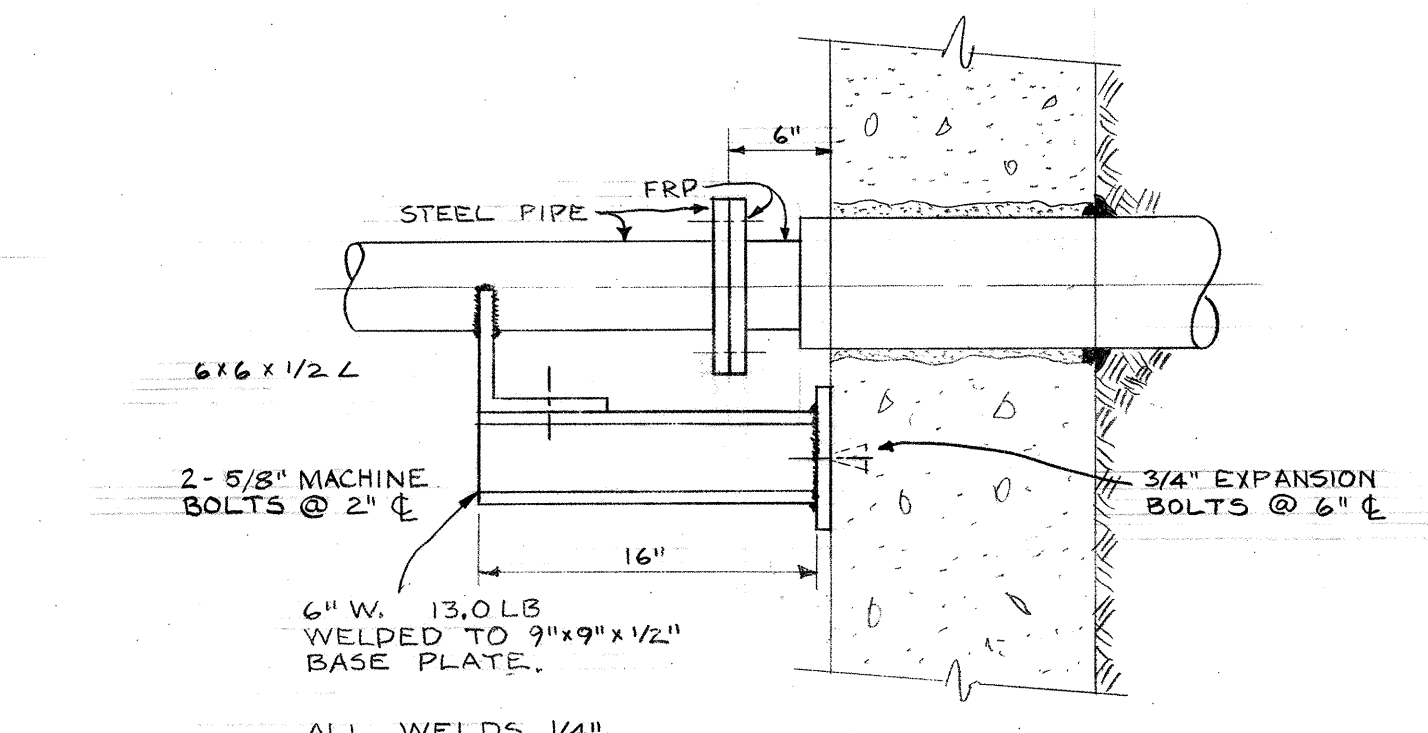


7 M-7
SCIENCE II PIPE SUPPORT DETAIL
NO SCALE

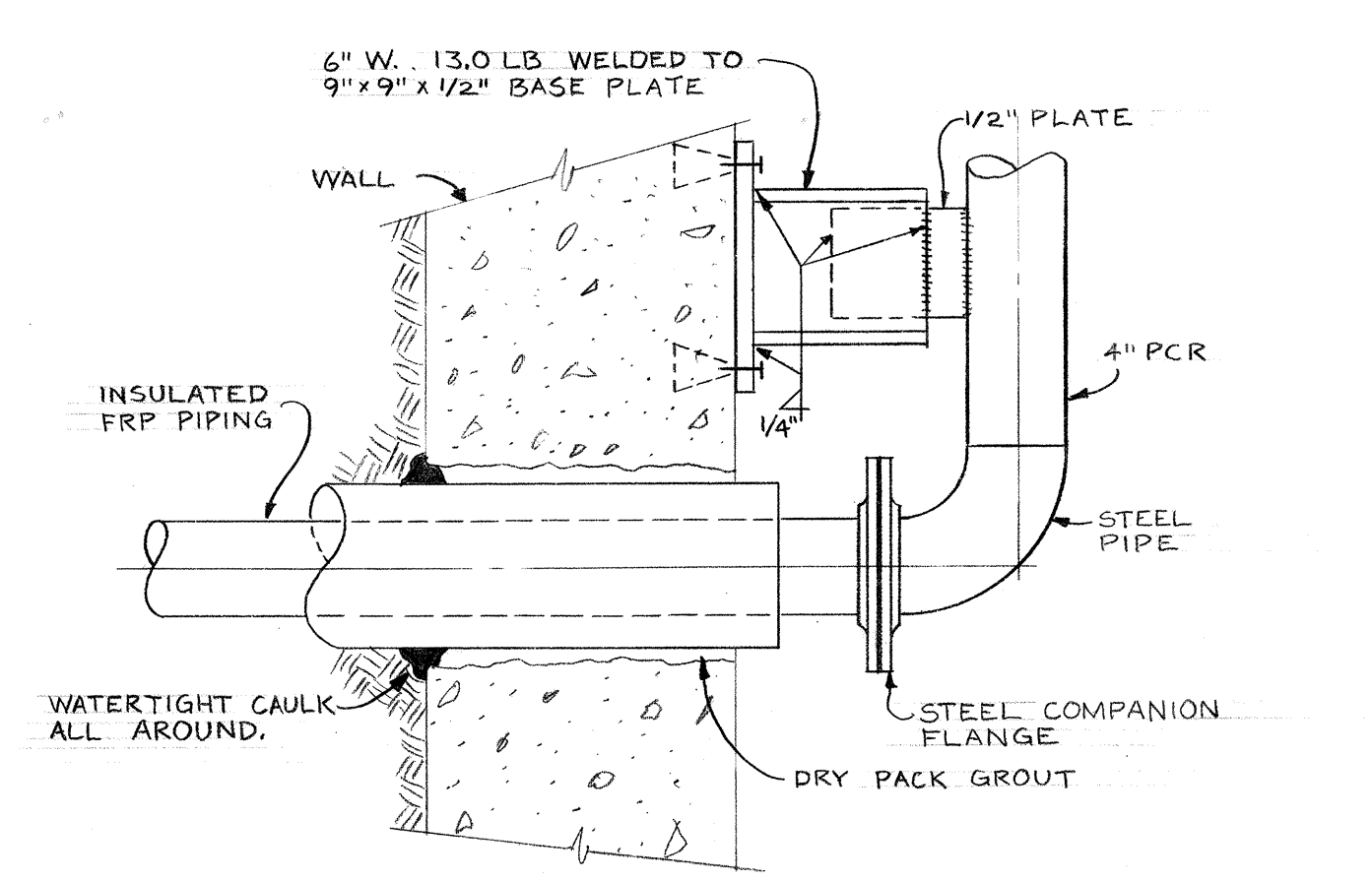
IPS	CHANNEL	BOLTS
4 INCH AND SMALLER	4" 7.25 LB	2 - 1/2"
5 INCH THROUGH 12 INCH	6" 10.5 LB	4 - 1/2"

① SUPPORT FROM SIDE WALL SIMILAR WITH WELDED ANGLE IRON BRACKET. THROUGH BOLTS USED AT BLOCK WALLS.
② BOLTING INTO TEE SECTIONS NOT ALLOWED EXCEPT AT EXISTING SLOTS

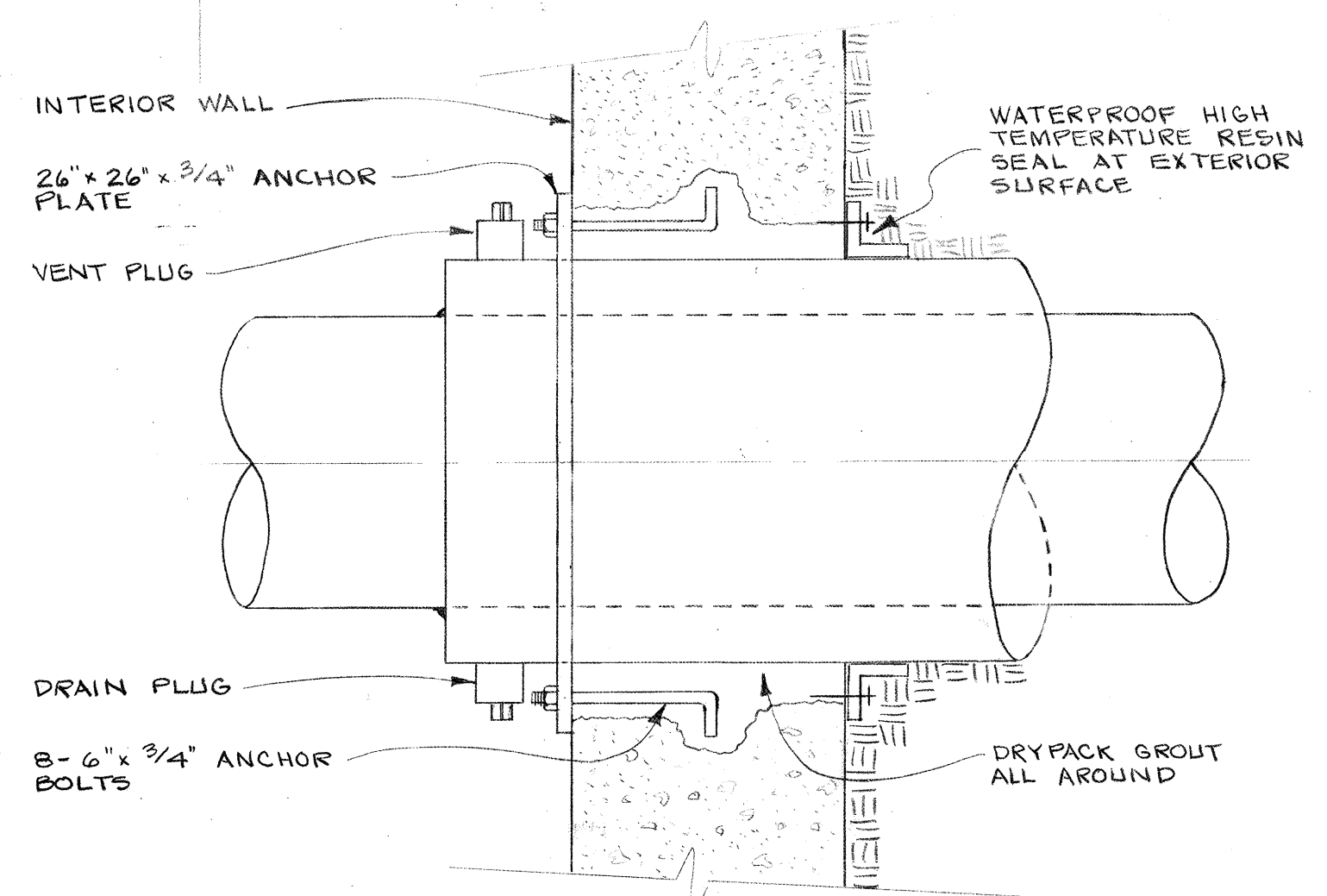
7 M-7
SCIENCE II PIPE SUPPORT DETAIL
NO SCALE



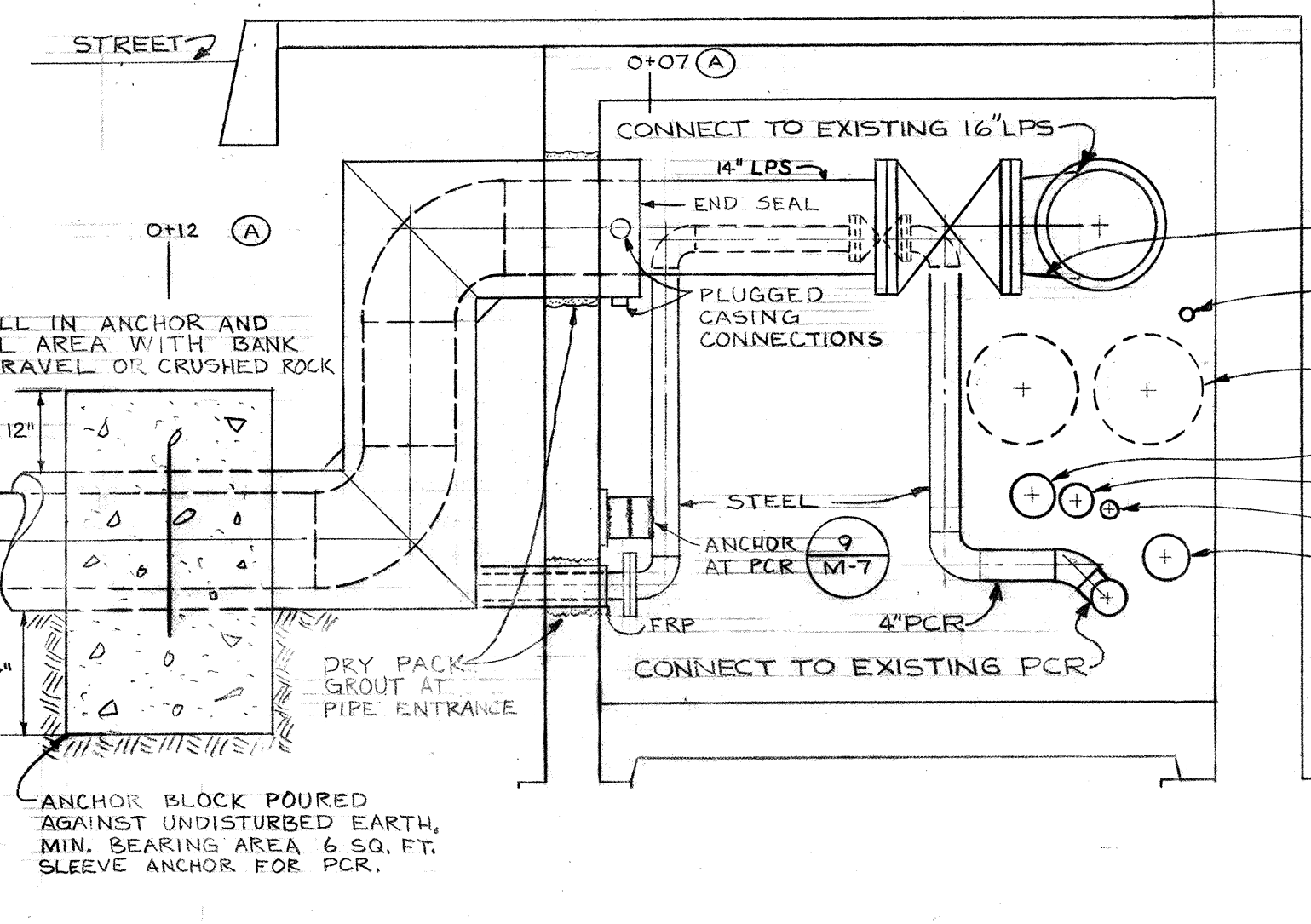
8 M-7
FRP ANCHOR DETAIL AT SC II
NO SCALE



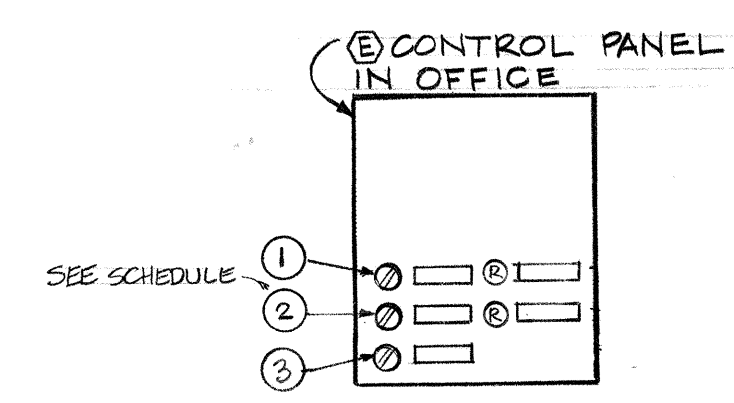
9 M-7
FRP ANCHOR ASSEMBLY AT O+07 A
1/2" = 1'-0"



10 M-7
SC II CONDUIT STEEL PIPE ANCHOR ASSEMBLY
1/2" = 1'-0"

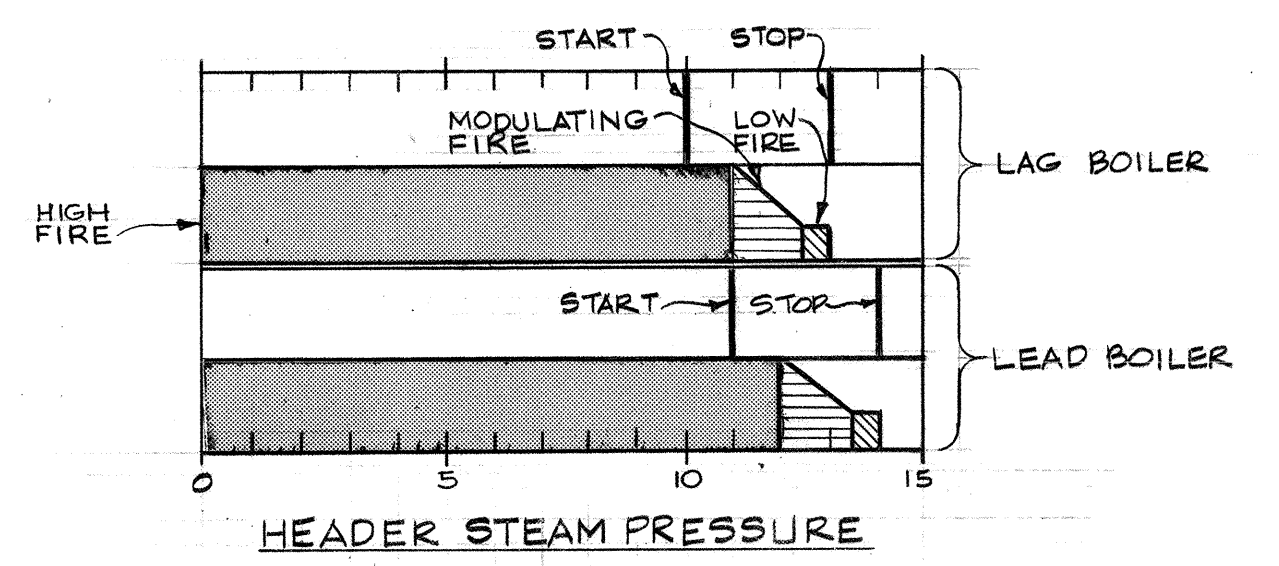


11 M-7
SECTION A-A
1/2" = 1'-0"



12 M-7
BOILER CONTROL DIAGRAM
NO SCALE

- NOTES:
- AUTO-OFF BOILER-2 CONTROL SWITCH IN EXISTING CONTROL PANEL IN POSITION OF CONTROL SWITCH.
 - RED INDICATING LIGHT FOR BOILER-2 LIGHTS ON FLAME FAILURE AT BOILER-2.

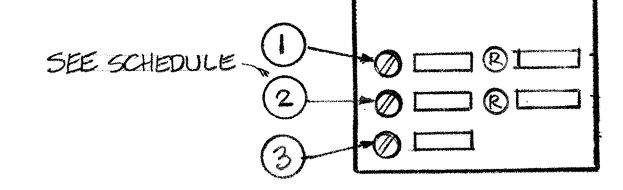


13 M-7
BOILER SEQUENCE DIAGRAM
NO SCALE

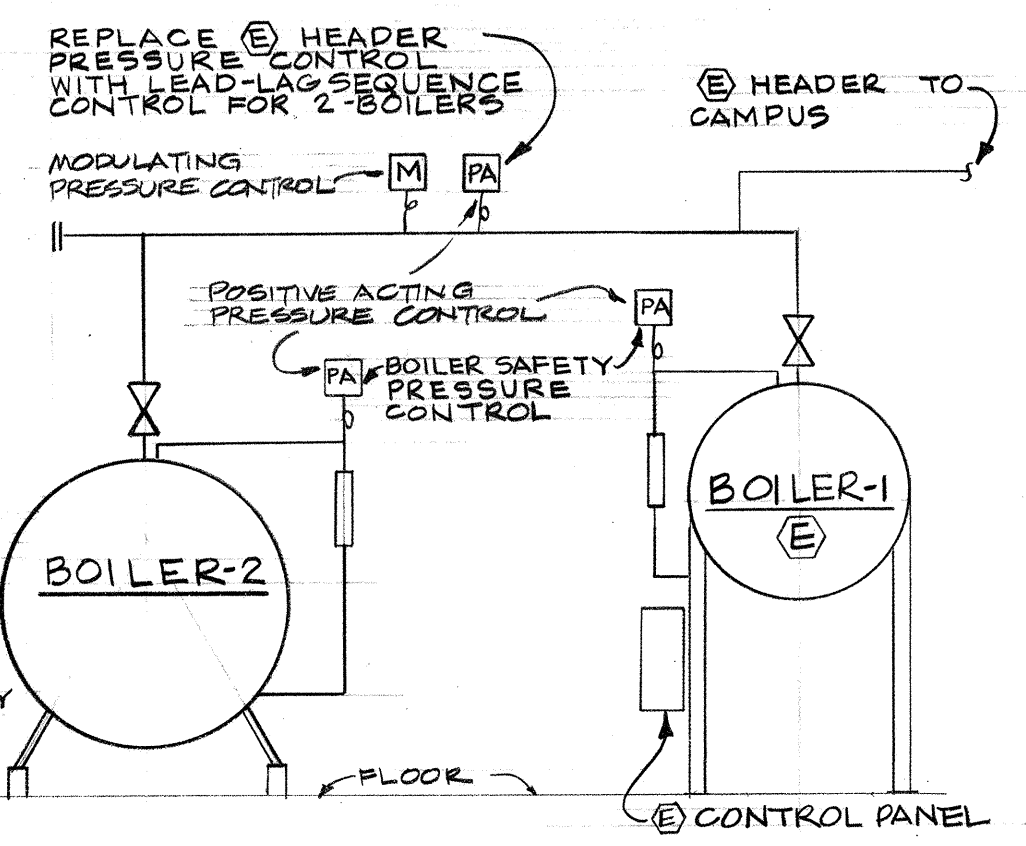
- NOTE:
- HIGH LIMIT PRESSURE CONTROL SET AT 14.7+ PSI. BOTH BOILERS.

PANEL SCHEDULE				
ITEM	SWITCH	NAMEPLATE	LIGHT	NAMEPLATE
1	A-O	BOILER-2	RED	FLAME FAILURE
2	A-O*	BOILER-1*	RED*	FLAME FAILURE
3	A-H*	PROGRAM CONTROL*	-	-

* DENOTES EXISTING
NEW ITEMS SHALL MATCH EXISTING CONTROLS AND NAMEPLATES.



SEE SCHEDULE



AS-BUILT REVISIONS.

DETAILS AND DIAGRAMS		Project No. 1049
WEST HEATING PLANT UTILITIES ADDITION		Date 6-13-74
PORTLAND STATE UNIVERSITY - PORTLAND, OREGON		Scale SHOWN
C. W. Timmer Associates Inc.		Dwg. No. M-7
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