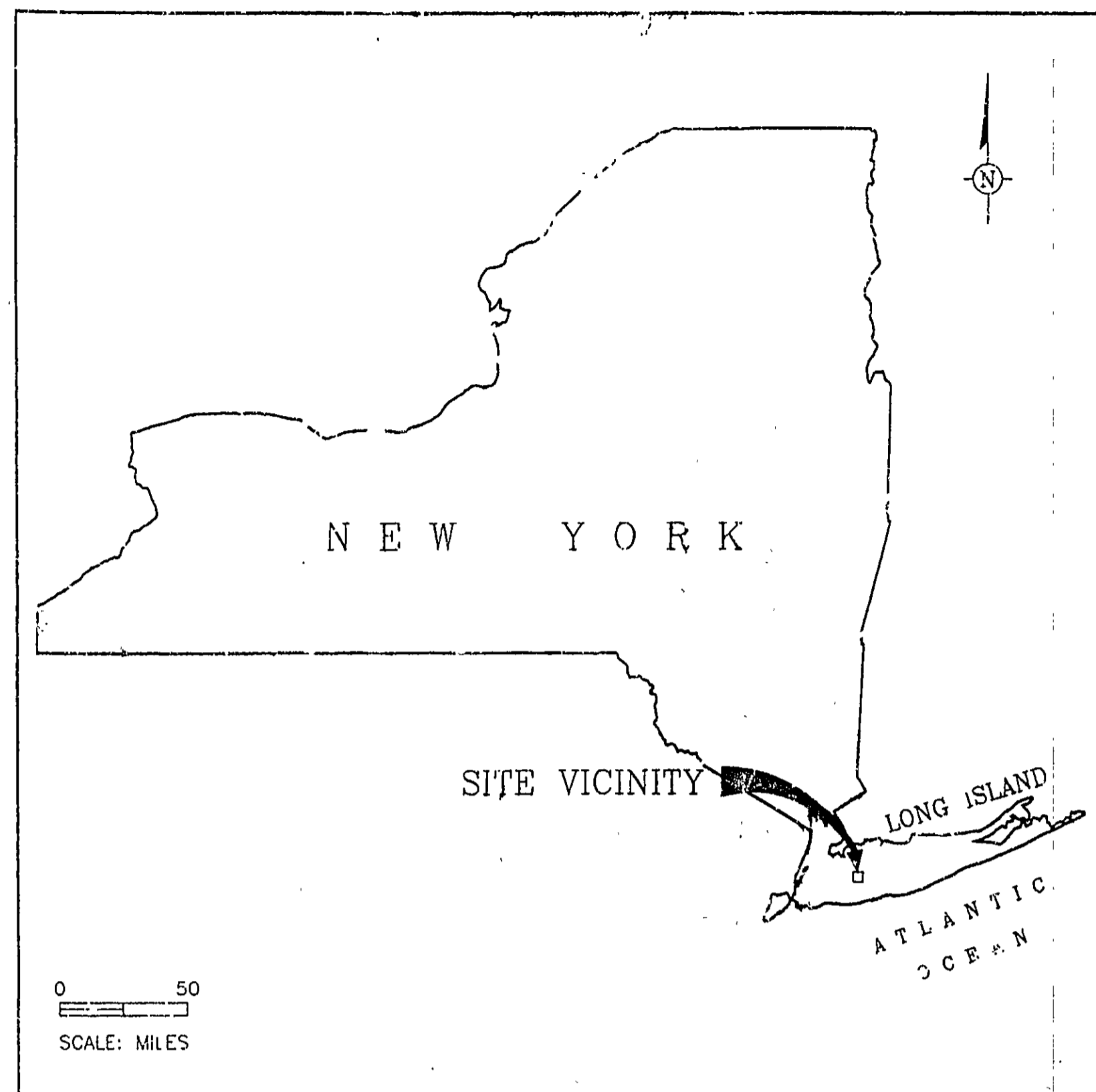


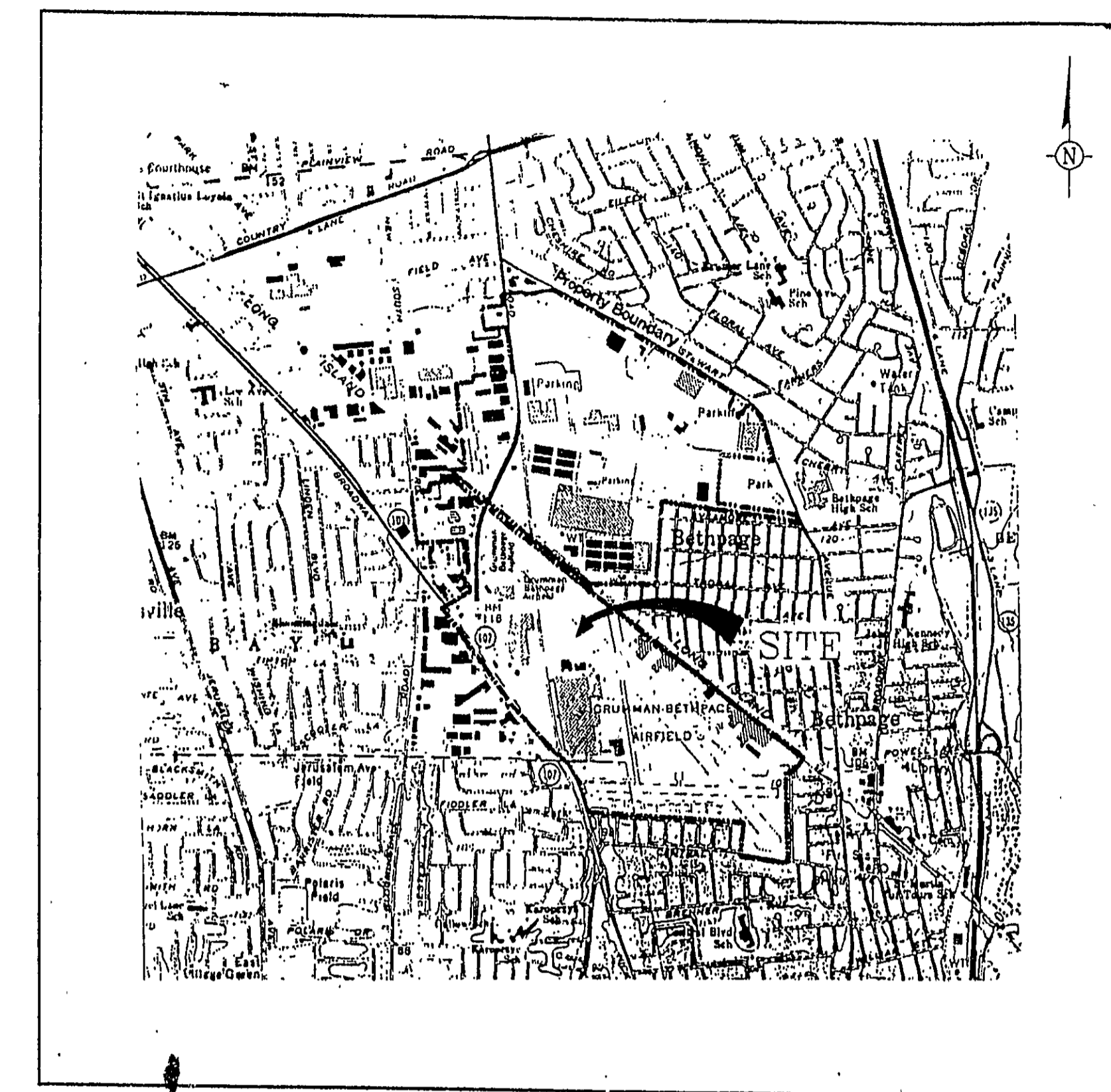
AS BUILT DWGS.



SOURCE: U.S.G.S INDEX TO TOPOGRAPHIC MAPS OF NEW YORK, JANUARY 1981.

STATE MAP

LIST OF DRAWINGS		LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE
GENERAL		PROCESS	
G1	TITLE DRAWING	P1	PROCESS FLOW DIAGRAM
G2	GENERAL NOTES AND LEGEND	P2	PROCESS AND INSTRUMENTATION DIAGRAM
CIVIL		P3	EQUIPMENT ARRANGEMENT AND PROCESS PIPING PLAN
C1	SITE PLAN	P4	MISCELLANEOUS PIPING DETAILS
C2	TREATMENT BUILDING SITE PLAN	P5	MISCELLANEOUS PIPING DETAILS
C3	SEDIMENT AND EROSION CONTROL PLAN AND DETAILS	P6	WELL HOUSE PLAN AND DETAILS
BUILDING		P7	AIR STRIPPER DETAILS
B1	TREATMENT BUILDING FOUNDATION PLAN AND SECTIONS	P8	MISCELLANEOUS MECHANICAL DETAILS
B2	STORAGE BASIN SECTIONS AND DETAILS	P9	EQUIPMENT AND PROCESS PIPING ELEVATIONS
B3	TREATMENT BUILDING ELEVATIONS	ELECTRICAL	
		E1	SITE PLAN AND SYMBOLS
		E2	SITE PLAN AND DETAIL C
		E3	ONE LINE DIAGRAM
		E4	MCC LAYOUT AND MISCELLANEOUS DETAILS
		E5	POWER AND LIGHTING PLANS AND DETAILS
		E6	SYSTEM CONTROL LOGIC 1 OF 3
		E7	SYSTEM CONTROL LOGIC 2 OF 3
		E8	SYSTEM CONTROL LOGIC 3 OF 3



SOURCE: FROM AMITYVILLE, FREEPORT, HICKSVILLE, HUNTINGTON, NEW YORK U.S.G.S. QUADRANGLES, 1979.

SITE VICINITY MAP

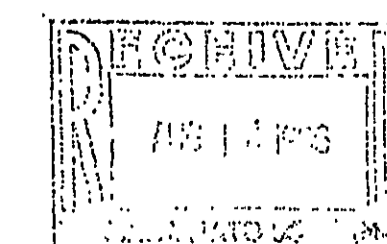
Do not REMOVE FROM OFFICE

CONSTRUCTION DRAWINGS

GROUNDWATER INTERIM REMEDIAL MEASURE

PREPARED FOR:

**GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK**



NORTHROP GRUMMAN

ENGINEERING DESIGN:
ALL PROFESSIONAL ENGINEERING SERVICES
DEPICTED ON THIS DRAWING HAVE BEEN
PERFORMED FOR GERAGHTY & MILLER, INC.
BY CH CONSULTING ENGINEERS, P.C., A
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SCALE VERIFICATION
THIS DRAWING REPRESENTS
ONE INCH ON THE
ORIGINAL DRAWING.
1/8" = 1' FIGURE
REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT #/2: HYS971-0-1	ARG FILE: 250-4
DRAWING: GRU-4	SLOT SIZE: 1-1
DRAFTED BY: A. KHOSIAN	DATE: 7/2/96
CHECKED BY: CS	DATE: 9/23/96
APPROVED BY: USY	DATE: 7/22/96

TITLE DRAWING
GROUNDWATER INTERIM REMEDIAL MEASURE
AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. G1

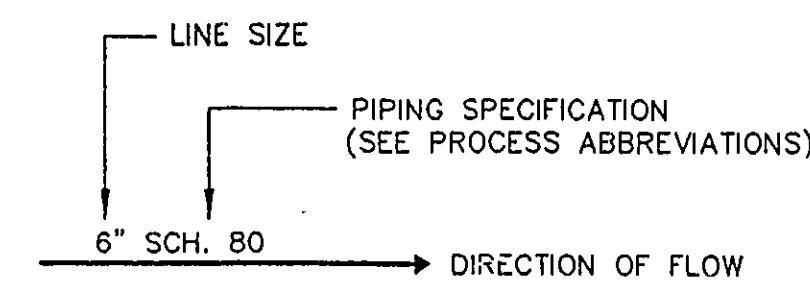
PROCESS EQUIPMENT LEGEND

- EQUIPMENT ENCLOSURE LIMITS
- EQUIPMENT SKID LIMITS
- LOGIC CONNECTION
- ELECTRICAL SIGNAL
- PROCESS
- PROCESS BYPASS
- VAPOR
- STEAM
- AMBIENT AIR
- WATER LEVEL
- FLOW DIRECTION
- AIR RELEASE VALVE
- BUTTERFLY VALVE
- CLA-VAL VALVE
- CHECK VALVE
- PRESSURE RELIEF VALVE
- GATE VALVE NORMALLY OPEN
- GATE VALVE NORMALLY CLOSED
- PRESSURE REGULATING VALVE
- Y-TYPE STRAINER
- SAMPLE POINT
- POINT OF LIQUID COLLECTION
- STREAM ROUTE
- BALL VALVE (NORMALLY OPEN)
- BALL VALVE (NORMALLY CLOSED)
- PRESSURE SAFETY (RELIEF) VALVE
- LOUVER

EQUIPMENT LEGEND

- MOTOR WITH LOCAL DISCONNECT
- BLOWER
- PUMP
- VERTICAL TURBINE PUMP

PIPE IDENTIFICATION



INSTRUMENT LEGEND

- INLINE INSTRUMENT
- ISOLATED INSTRUMENT CONNECTED TO PROCESS LINE
- INSTRUMENT CONNECTED TO PROCESS LINE
- INSTRUMENT FIELD MOUNTED
- INSTRUMENT LOCAL PANEL MOUNTED
- INSTRUMENT MAIN CONTROL PANEL MOUNTED
- INSTRUMENT PANEL MOUNTED AT STEAM PLANT
- PLC INTERLOCK
- CONTROL INTERLOCK
- HAND SWITCH } 1-0-1 = (ON/OFF/AUTO)/3 POSITION
- PUSH BUTTON } 0-1 = (OFF/ON)/2 POSITION
- INDICATOR LIGHT
- LEVEL SWITCH ie. LSL (LEVEL SWITCH LOW)
- RED FAILURE LIGHT

PROCESS ABBREVIATIONS

- ACFM ACTUAL CUBIC FEET PER MINUTE
- ACP ASBESTOS CEMENT PIPE
- ARV AIR RELEASE VALVE
- ASP AIR SAMPLE POINT
- BITUM BITUMINOUS
- CIP CAST IRON PIPE
- CMUs CONCRETE MASONRY UNITS
- CONC CONCENTRATION
- COND CONDENSATE
- CS CARBON STEEL
- DIP DUCTILE IRON PIPE
- ELL ELBOW
- FC FAIL CLOSE
- FL FAILURE LIGHT
- FNFTN FOUNDATION
- FO FAIL OPEN
- FP FLOW PATH
- FRP FIBERGLASS REINFORCED PLASTIC
- FOI FLOW QUANTITY INDICATOR
- GAC GRANULAR ACTIVATED CARBON
- GALV GALVANIZED
- GSP GALVANIZED STEEL PIPE
- HPC HIGH PRESSURE CONDENSATE
- HPR HIGH PRESSURE RETURN
- HPS HIGH PRESSURE STEAM
- HX HEAT EXCHANGER
- IC INDICATOR CONTROLLER
- INV INVERT
- LPC LOW PRESSURE CONDENSATE
- LPS LOW PRESSURE STEAM
- MCC MOTOR CONTROL CENTER
- MFR's MANUFACTURER'S
- ND NOT DETECTED
- NPT NATIONAL PIPE THREAD
- NYSOT NEW YORK STATE DEPARTMENT OF TRANSPORTATION
- OSHA OCCUPATIONAL & SAFETY HEALTH ADMINISTRATION
- PLC PROGRAMMABLE LOGIC CONTROLLER
- PROD PRODUCT
- PRV PRESSURE REDUCING VALVE
- PSV PRESSURE SAFETY (RELIEF) VALVE
- PVC POLYVINYL CHLORIDE PIPE
- RCP REINFORCED CONCRETE PIPE
- SCH SCHEDULE
- SP SAMPLE POINT
- SS STAINLESS STEEL
- STA STATION
- TVOCs TOTAL VOLATILE ORGANIC COMPOUNDS
- VIV VARIABLE INLET VANES
- VOC VOLATILE ORGANIC COMPOUND
- VPAC VAPOR PHASE GRANULAR ACTIVATED CARBON
- WC WATER COLUMN
- YST Y-TYPE STRAINER

GENERAL ABBREVIATIONS

- " INCHES
- ' FEET
- Ø DIAMETER
- °F DEGREES FAHRENHEIT
- > GREATER THAN
- < LESS THAN
- >= GREATER THAN OR EQUAL TO
- <= LESS THAN OR EQUAL TO
- BLS BELOW LAND SURFACE
- B.O.W. BOTTOM OF WALL
- CB CATCH BASIN
- CFM CUBIC FEET PER MINUTE
- DIA DIAMETER
- EL. ELEV. ELEVATION
- F.F. EL. FINISHED FLOOR ELEVATION
- FFL FROM FINISHED FLOOR
- FT FEET
- F.G. FINISHED GRADE
- GPH GALLONS PER HOUR
- GPM GALLONS PER MINUTE
- I.D. INSIDE DIAMETER
- IN INCHES
- IN. Hg INCHES OF MERCURY
- IN. WC INCHES OF WATER COLUMN
- INV. EL. INVERT ELEVATION
- lb/hr POUNDS PER HOUR
- MH MANHOLE
- MM MILLIMETER
- N.T.S. NOT TO SCALE
- O.D. OUTSIDE DIAMETER
- PPM PARTS PER MILLION
- PPMV PARTS PER MILLION BY VOLUME
- PSI POUNDS PER SQUARE INCH
- P.S.I. REQ'D POUNDS PER SQUARE INCH GAUGE REQUIRED
- SCFM STANDARD CUBIC FEET PER MINUTE TO BE DETERMINED
- TBD TO BE DETERMINED
- T.O.C. TOP OF CONCRETE
- T.O.T. TOP OF TANK
- T.O.W. TOP OF WALL
- ug/L MICROGRAMS PER LITER
- VAC. VACUUM
- VERT VERTICAL

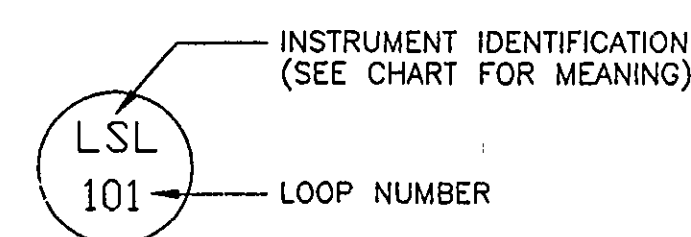
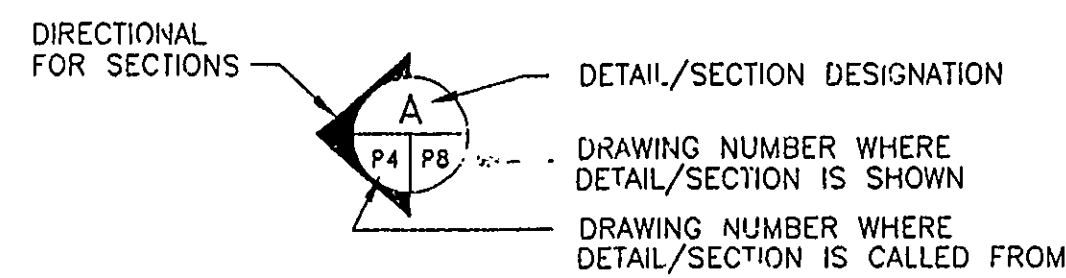
GENERAL NOTES

1. BASE MAP IS AS SUPPLIED BY GRUMMAN AIRCRAFT ENGINEERING CORPORATION.
2. NORTH ARROW DIRECTION SHOWN IS BASED ON MAGNETIC NORTH AND COORDINATE ELEVATIONS REFER TO U.S.G.S. NATIONAL GEODETIC DATUM OF 1929.
3. THE INFORMATION SHOWN ON THE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
4. THE LOCATIONS OF THE ELECTRIC AND WATER UTILITY LINES WERE OBTAINED FROM INFORMATION SUPPLIED BY "NORTHROP-GRUMMAN"
5. GM CONSULTING ENGINEERS, P.C. HAS RELIED UPON THE PLANIMETRIC AND TOPOGRAPHIC MAPS SUPPLIED BY "NORTHROP-GRUMMAN" AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.
6. ADJACENT PROPERTY BOUNDARIES, EASEMENT MAPS AND NAMES AND ADDRESSES OF PROPERTY OWNERS ADJACENT TO THIS PROJECT ARE NOT INCLUDED IN THESE DRAWINGS.
7. OTHER CONSTRUCTION ACTIVITIES MAY BE TAKING PLACE CONCURRENTLY WITH THIS PROJECT. THE CONTRACTOR SHALL CONSULT WITH THE VARIOUS PARTIES AND PLANT PERSONNEL AND SHALL COORDINATE HIS SCHEDULE WITH THEIRS.
8. THE CONTRACTOR SHALL BE REQUIRED TO CONFORM TO THE REQUIREMENTS FOR TEMPORARY SOIL EROSION AND SEDIMENT CONTROL AS SPECIFIED AND AS SHOWN ON DWG. NO. 03. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING THE MASSAU COUNTY SOIL CONSERVATION SERVICE PRIOR TO CONSTRUCTION START-UP.
9. THE CONTRACTOR SHALL FURNISH AND INSTALL THE REQUIRED EQUIPMENT, PIPING AND APPURTENANCES IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
10. THE CONTRACTOR SHALL SUBMIT TO NORTHROP GRUMMAN DETAILED SHOP DRAWINGS IN ACCORDANCE WITH SPECIFICATIONS FOR THIS PROJECT.
11. ANY MATERIAL DEEMED UNUSABLE BY THE ENGINEER SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR.
12. WHEN SAW CUTTING IS REQUIRED, THE DEPTH OF THE CUT SHALL BE EQUAL TO THE DEPTH OF EXISTING PAVEMENT UNLESS OTHERWISE NOTED BY THE ENGINEER.
13. ASPHALT SHALL BE REMOVED TO A NEAT LINE FROM THE AREAS TO BE RESTORED BY THE CONTRACTOR, AND SHALL BE PROPERLY DISPOSED OF.
14. THE CONTRACTOR SHALL SURVEY AND STAKE OUT THE PROPOSED BUILDING FOUNDATION, STRIPPING TOWER, WELL HOUSE FOUNDATIONS AND PIPING LOCATIONS, DURING THE INITIAL STAGES OF THE PROJECT.
15. PRIOR TO BIDDING AND/OR CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND EXISTING FIELD CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
16. THE CONTRACTOR SHALL PROTECT ALL BUILDINGS, STRUCTURES AND UTILITIES WITHIN THE VICINITY OF THE AREA TO BE DISTURBED. ALL BUILDINGS, STRUCTURES, EQUIPMENT, PAVING AND LANDSCAPING LOCATED OUTSIDE THE AREA TO BE DISTURBED SHALL ALSO BE PROTECTED FROM DAMAGE. ANY BUILDINGS, STRUCTURES, EQUIPMENT, PAVING, LANDSCAPING AND UTILITIES WHICH ARE DISTURBED OR DAMAGED DURING THE CONTRACTOR'S PERFORMANCE OF THE WORK DESCRIBED HERE SHALL BE RESTORED TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE ENGINEER AND NORTHROP-GRUMMAN CORPORATION AT NO ADDITIONAL COST.

GENERAL LEGEND

- E — ELECTRIC LINE
- BW — BETHPAGE WATER LINE
- D — DRAIN LINE
- G — GAS LINE
- GW — GRUMMAN WATER LINE
- S — SEWER LINE
- SP — SPRINKLER LINE
- ST — STEAM LINE
- T — TELEPHONE LINE
- X — FENCE LINE
- O — GUARDRAIL LINE
- MANHOLE
- × 11:4 ELEVATION
- ▲ THRUST BLOCK

INSTRUMENT NUMBERING SYSTEM



INSTRUMENT IDENTIFICATION CHART

FIRST LETTER	SUCCEEDING LETTERS			
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	ANALYSIS		ALARM	
B	BURNER COMBUSTION		USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL(LER)
D	USER'S CHOICE	DIFFERENTIAL		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)	
F	FLOW	RATIO (FRACTION)		
G	USER'S CHOICE		CLASS. VIEWING DEVICE	
H	HAND CURRENT (ELECTRICAL)			HIGH
I	POWER	SCAN		
K	TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION
L	LEVEL		LIGHT	LOW
M	USER'S CHOICE	MOMENTARY		MIDDLE INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE RESTRICTION POINT (TEST) CONNECTION	USER'S CHOICE
P	PRESSURE, VACUUM			
Q	QUANTITY	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD(ER)	
S	SPEED, FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE			TRANSMIT(TER)
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION MECHANICAL ANALYSIS			VALVE DAMPER LOUVER
W	WEIGHT, FORCE		WELL	
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

NORTHROP GRUMMAN

ENGINEERING DESIGN:
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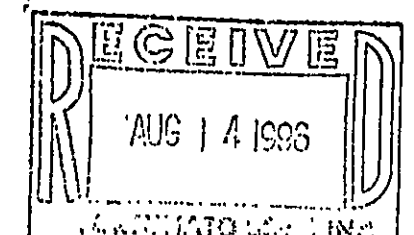
SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: NY0277.001	HARD FILE: GRU-10
DRAWING: GRU-10	PLOT SIZE: 11x17
DRAFTED BY: A. WINDHAM	DATE: 2/23/96
CHECKED BY: JCS	DATE: 2/23/96
APPROVED BY: JCS	DATE: 2/23/96

GENERAL NOTES AND LEGEND
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. G2



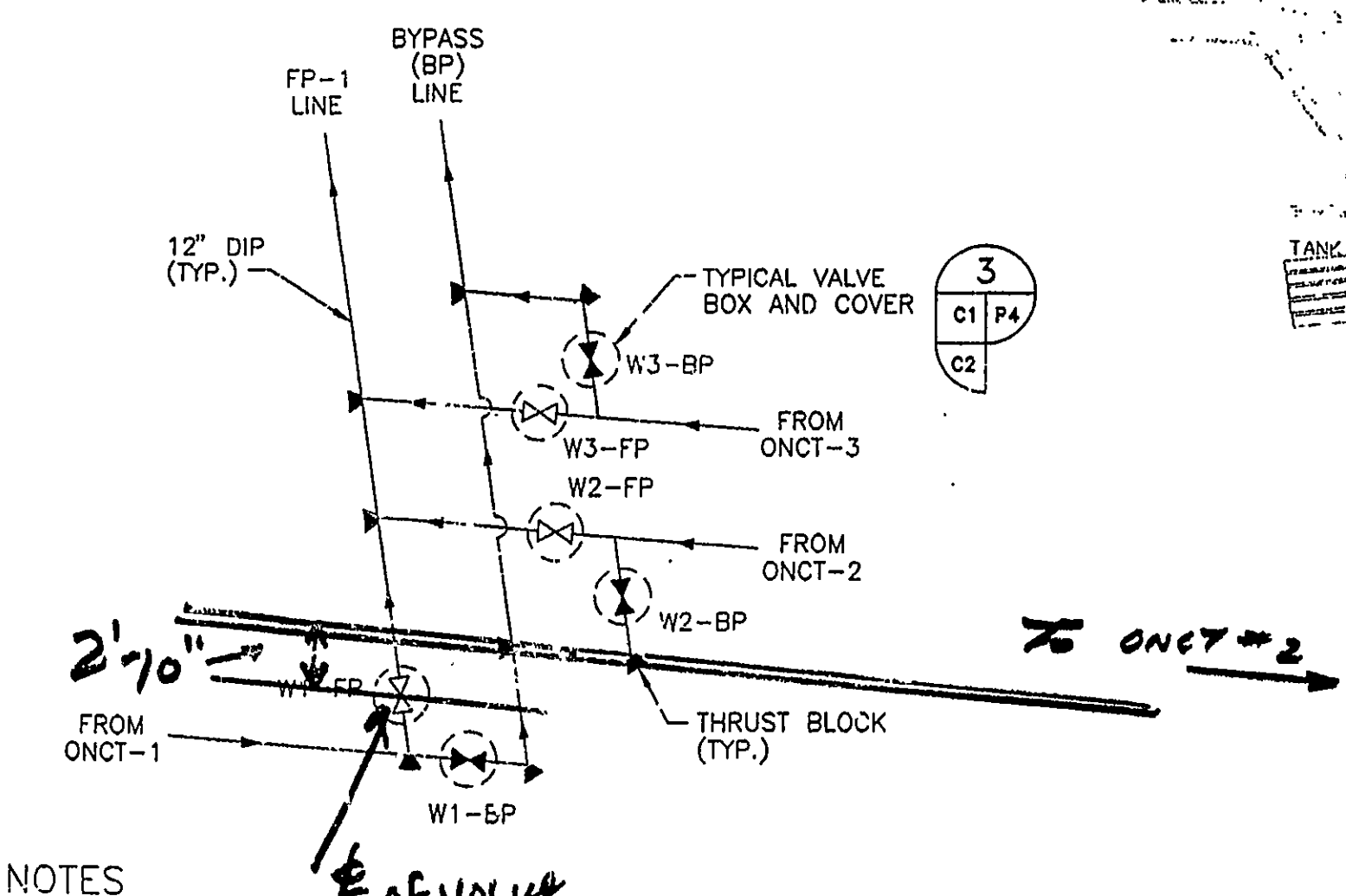
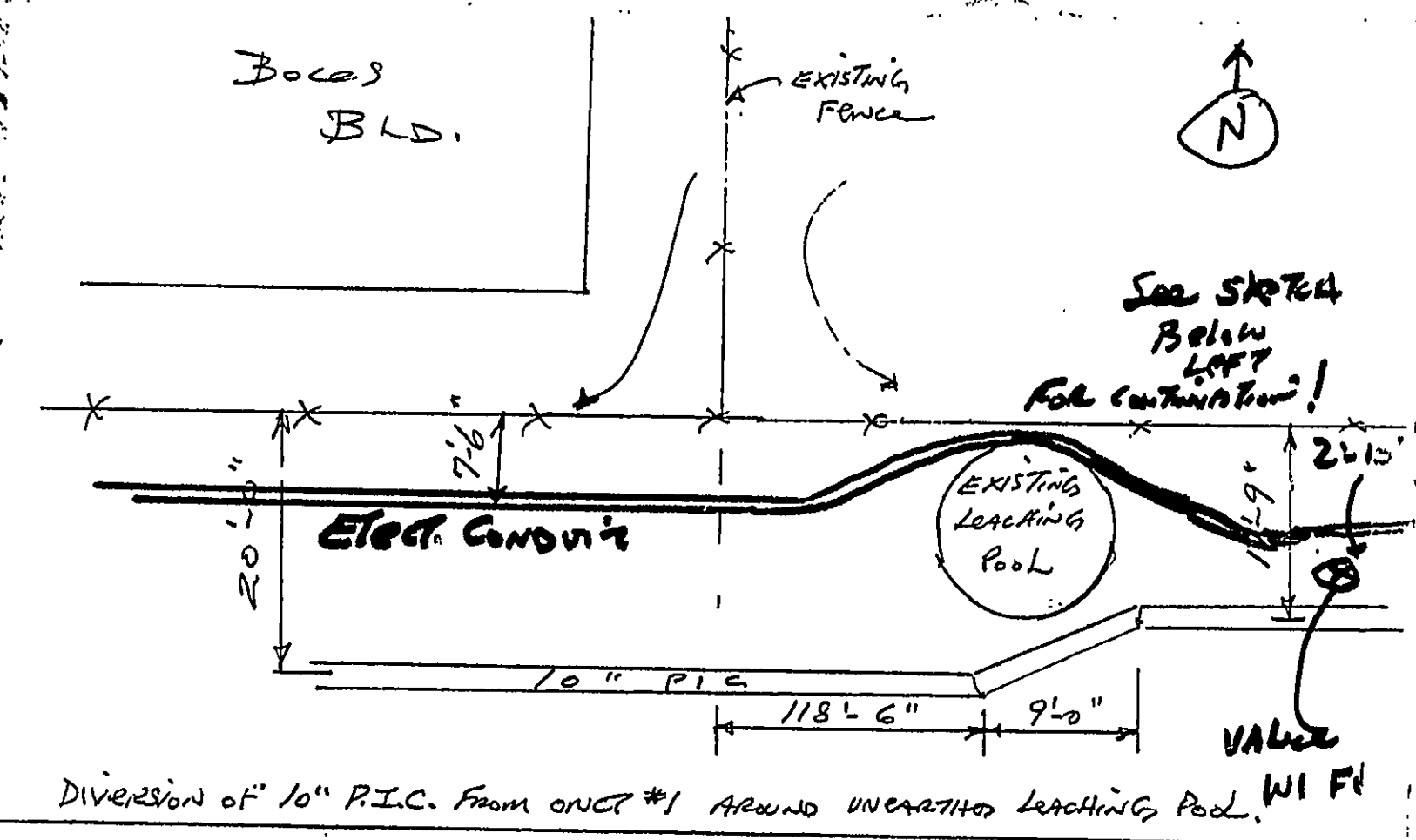
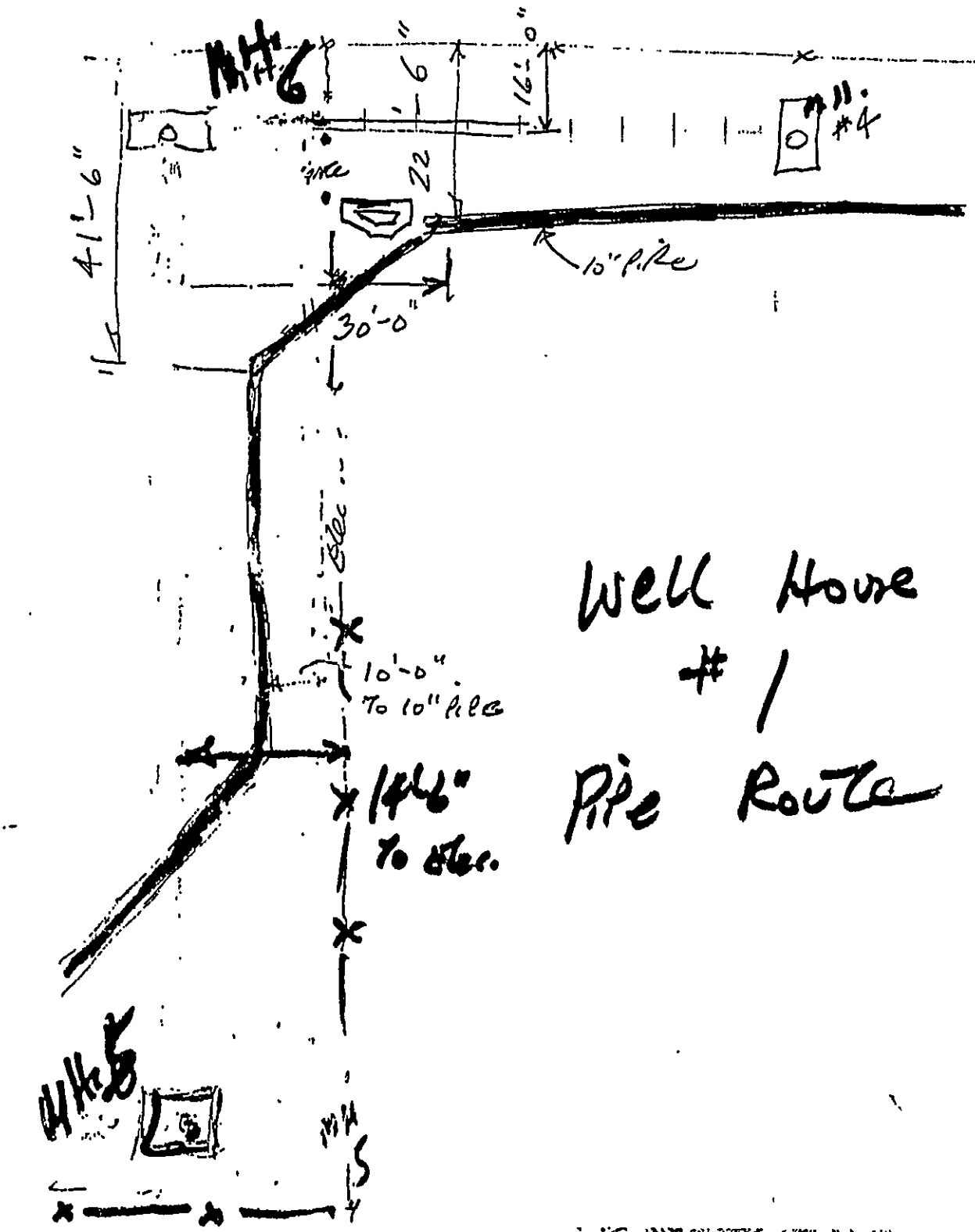
Arnold S. Verelick
P.E. Lic. No. 39333

LEGEND

- PROPERTY LINE
- - - - - POTENTIAL FUTURE PROPERTY LINE
- - - - - PROPOSED LOCATION OF GRUMMAN ROAD
- PROPOSED PIPELINE
- 50-FOOT LIMIT OF DISTURBANCE
- S SEWER LINE
- GR GRUMMAN WATER LINE
- 1-1/2" ABANDONED LINE
- T TELEPHONE LINE
- D DRAIN LINE
- BW BETHPAGE WATER LINE
- SP SPRINKLER LINE
- E ELECTRICAL LINE
- G GUARD RAIL
- M MANHOLE
- ONCT-3 PROPOSED LOCATION FOR EXTRACTION WELL
- BP BY-PASS
- CIP CAST IRON PIPE
- DIP DUCTILE IRON PIPE
- EFF EFFLUENT
- FP-1 FLOW PATH-1
- RB RECHARGE BASIN
- RCP REINFORCED CONCRETE PIPE

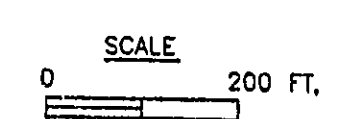
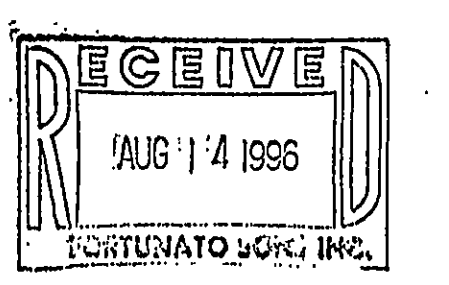
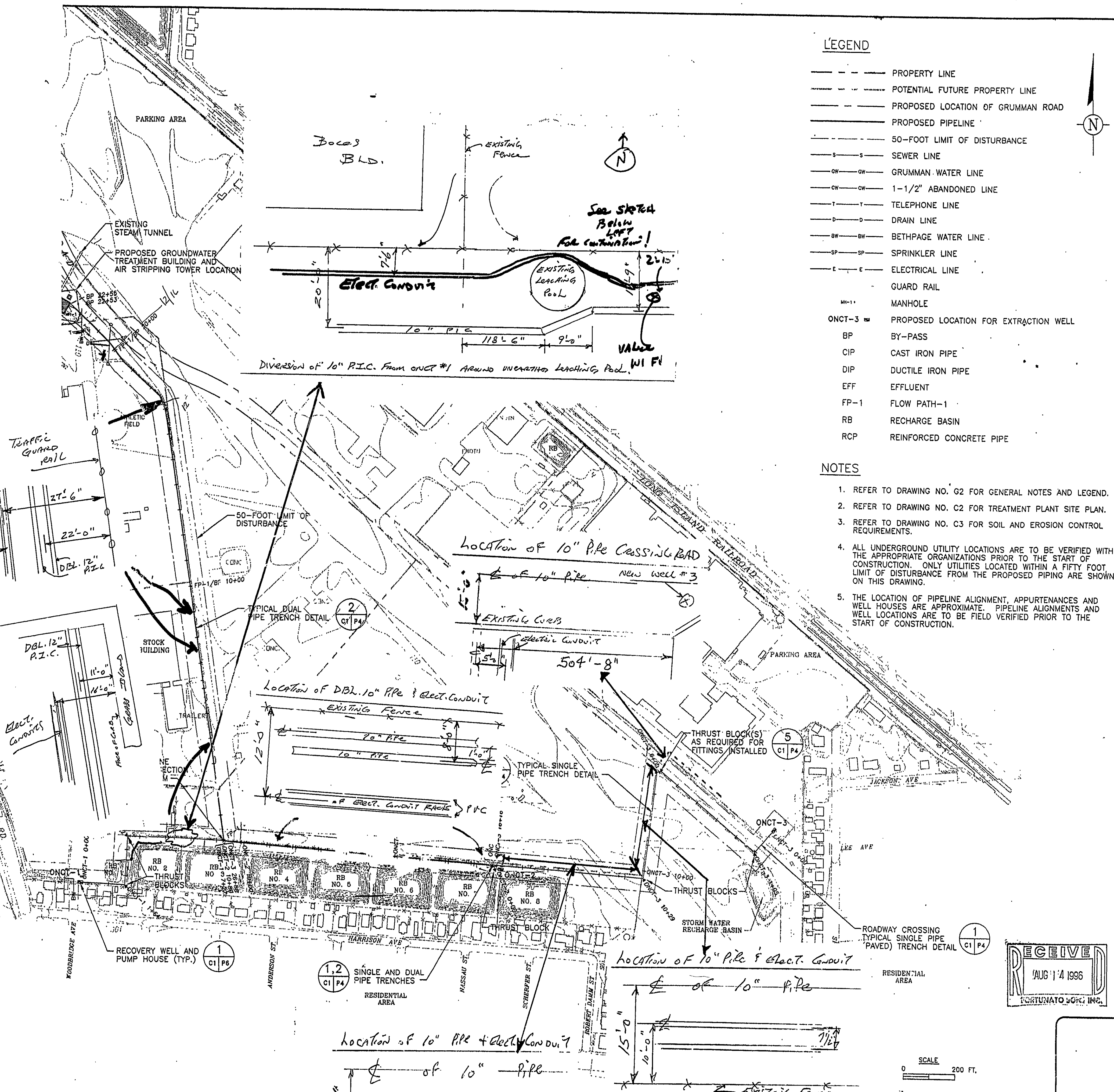
NOTES

1. REFER TO DRAWING NO. G2 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING NO. C2 FOR TREATMENT PLANT SITE PLAN.
3. REFER TO DRAWING NO. C3 FOR SOIL AND EROSION CONTROL REQUIREMENTS.
4. ALL UNDERGROUND UTILITY LOCATIONS ARE TO BE VERIFIED WITH THE APPROPRIATE ORGANIZATIONS PRIOR TO THE START OF CONSTRUCTION. ONLY UTILITIES LOCATED WITHIN A FIFTY FOOT LIMIT OF DISTURBANCE FROM THE PROPOSED PIPING ARE SHOWN ON THIS DRAWING.
5. THE LOCATION OF PIPELINE ALIGNMENT, APPURTENANCES AND WELL HOUSES ARE APPROXIMATE. PIPELINE ALIGNMENTS AND WELL LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO THE START OF CONSTRUCTION.

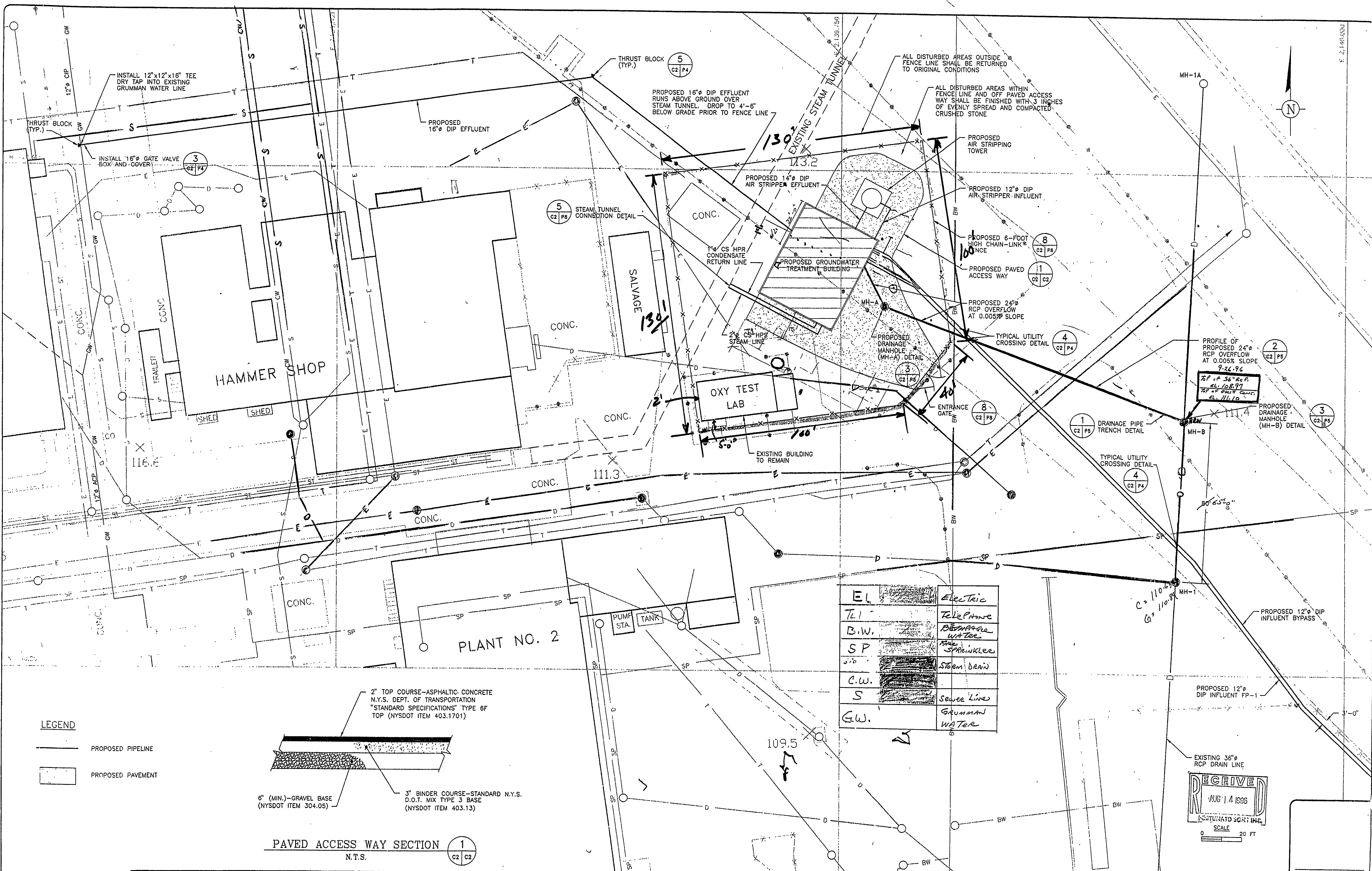


NOTES

1. VALVES SHALL BE LOCATED, ALIGNED AND PERMANENTLY LABELLED FOR EASE OF IDENTIFICATION AND ACCESS. CONTRACTOR SHALL MINIMIZE EXCAVATION TO THE GREATEST EXTENT POSSIBLE AROUND VALVE NEST AT PIPELINE INTERSECTION.
2. VALVE NUMBERS ARE INDICATED NEXT TO EACH VALVE AND SHOULD APPEAR PERMANENTLY ON EACH VALVE BOX COVER



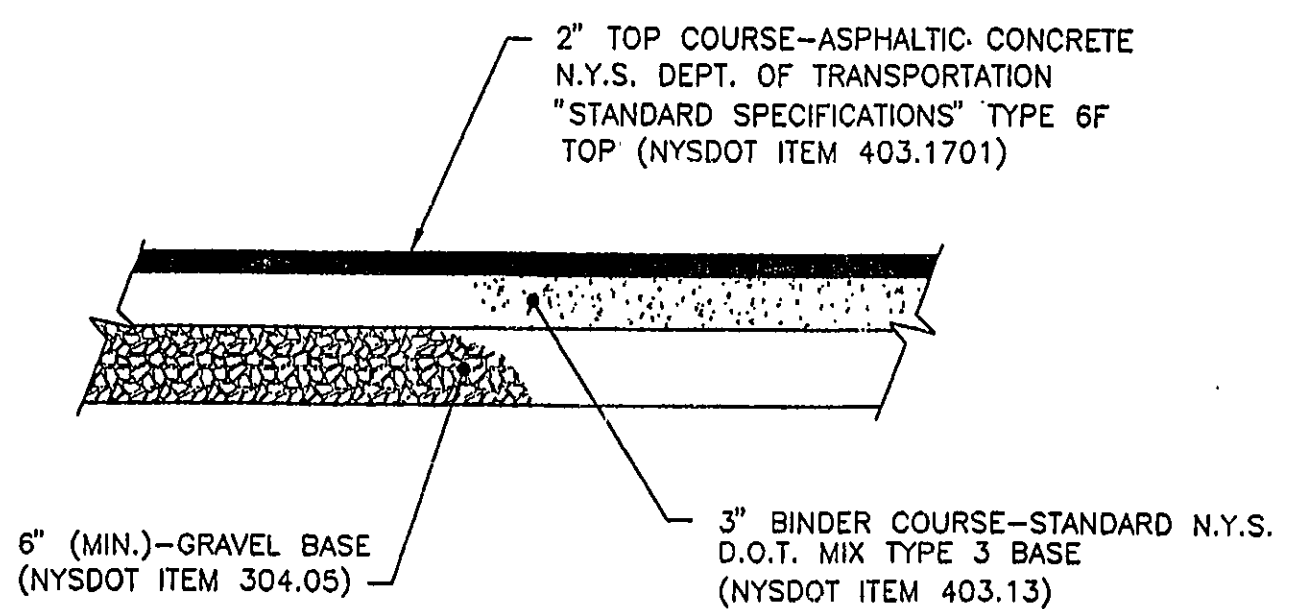
 GERAGHTY & MILLER, INC. Environmental Services A Heidemij Company	 NORTHROP GRUMMAN	ENGINEERING DESIGN: ALL PROFESSIONAL ENGINEERING SERVICES DEPICTED ON THIS DRAWING HAVE BEEN PERFORMED FOR GERAGHTY & MILLER, INC. BY OM CONSULTING ENGINEERS, P.C. A PROFESSIONAL CORPORATION QUALIFIED TO PERFORM SUCH SERVICES IN THE STATE OF NEW YORK.	DRAWING CONFIDENTIAL: THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF GERAGHTY & MILLER, INC. AS AN INSTRUMENT OF PROFESSIONAL SERVICE. THIS INFORMATION SHALL NOT BE USED IN WHOLE OR IN PART WITHOUT THE FULL KNOWLEDGE AND PRIOR WRITTEN CONSENT OF GERAGHTY & MILLER, INC.	SCALE VERIFICATION THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE	REV. NO. 1	APPR. _____ PROJECT NO: NY0971.001 DRAWING: GRU-6 DRAFTED BY: D. LORENZ CHECKED BY: JCS APPROVED BY: LSV	HARD FILE: GRU-6 PLOT SIZE: 11x20" DATE: 2/22/96 DATE: 3/22/96 DATE: 2/22/96	SITE PLAN GROUNDWATER INTERIM REMEDIAL MEASURE GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK	DRAWING NO. C1
		<div style="text-align: right; font-size: small;"> Arnold S. Vernick P.E. Lic. No. 39333 </div>							



LEGEND

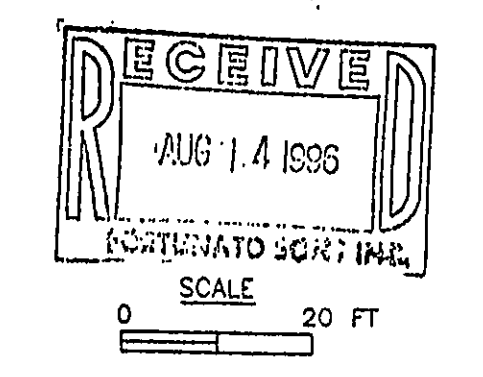
— PROPOSED PIPELINE

▭ PROPOSED PAVEMENT



PAVED ACCESS WAY SECTION 1
N.T.S.

EL	Electric
TL	Telephone
B.W.	BOTHAWA WATER
SP	SPRINKLER
S/D	STEAM DRAIN
C.W.	CONDENSATE
S	SEWER LINE
G.W.	GRUMMAN WATER



GERAGHTY & MILLER, INC.
Environmental Services
A Healdemij Company

NORTHROP GRUMMAN

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SCALE VERIFICATION
THIS BAR REPRESENTS
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ORIGINAL DRAWING:
USE TO VERIFY FIGURE
REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

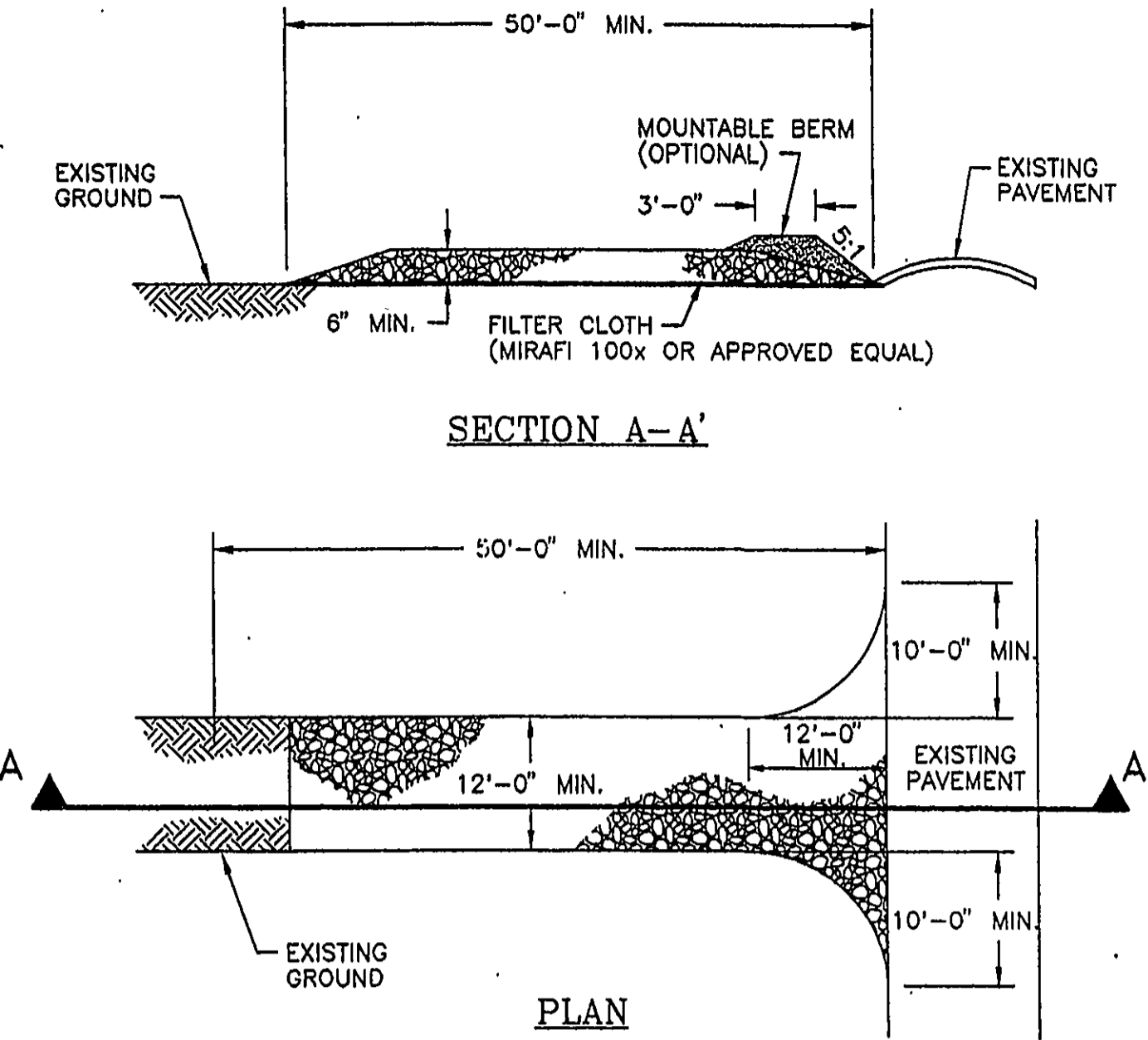
PROJECT NO.: N70977.001	HARD FILE: GRU-7
DRAWING: GRU-7	PLOT SIZE: 11x20
DRAFTED BY: G. KENZ	DATE: 2/23/96
CHECKED BY: [Signature]	DATE: 2/23/96
APPROVED BY: [Signature]	DATE: 2/23/96

**TREATMENT BUILDING
SITE PLAN**
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. C2

SEDIMENT AND EROSION CONTROL NOTES

- SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE USED AS DIRECTED BY THE ENGINEER. ALL WORK SHALL BE IN ACCORDANCE WITH THE NEW YORK STANDARDS FOR EROSION AND SEDIMENT CONTROL.
- AT A MINIMUM, EROSION CONTROL MEASURES AROUND AND DOWNGRADIENT OF DISTURBED AND SOIL STOCKPILING AREAS MUST BE INSTALLED AND MAINTAINED.
- ALL SOIL AND EROSION CONTROL MEASURES ARE TO BE INSPECTED AND, IF NECESSARY, REPAIRED AFTER EVERY MAJOR STORM EVENT, AND AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN AND KEEP FUNCTIONAL ALL DRAINAGE STRUCTURES IN THE VICINITY OF THE AREA OF DISTURBANCE OR DOWNGRADIENT OF THE AREA OF DISTURBANCE AND THOSE STRUCTURES WHERE CONTRACTOR HAS INSTALLED SEDIMENT & EROSION CONTROL MEASURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE SEDIMENT AND EROSION CONTROL PLAN AND THE PLAN NARRATIVE. ALL SEDIMENT AND EROSION CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- THE CONTRACTOR SHALL SUBMIT WRITTEN NOTIFICATION TO THE NASSAU COUNTY SOIL CONSERVATION SERVICE AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE START OF CONSTRUCTION.
- ALL TOPSOIL NOT TO BE USED FOR FINAL GRADING SHALL BE REMOVED FROM THE SITE IMMEDIATELY. ALL TOPSOIL REQUIRED FOR FINAL GRADING AND STORED ON SITE SHALL BE LIMED, FERTILIZED, TEMPORARILY SEED, AND MULCHED (IF SEASON AND CLIMATE LOGICAL CONDITIONS WARRANT MULCHING) WITHIN FIVE (5) DAYS IN ACCORDANCE WITH THE NEW YORK STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.
- DURING CONSTRUCTION, EXCAVATED MATERIAL SHALL BE PILED ON THE UPHILL SIDE OF THE EXCAVATIONS AWAY FROM ANY STREAMS OR DRAINAGE DITCHES. UNLESS OTHERWISE SPECIFIED OR DIRECTED, ALL EXCAVATIONS SHALL BE BACKFILLED IMMEDIATELY AFTER THE CONSTRUCTION HAS BEEN COMPLETED. EXCAVATIONS IN EARTH SHALL THEN RECEIVE TEMPORARY SEEDING AND MULCH AS PER THE REQUIREMENTS SPECIFIED. EXCAVATIONS IN PAVED AREAS SHALL IMMEDIATELY RECEIVE A TEMPORARY SURFACING OF STONE TO PREVENT THE ERODING OF THE EARTH AND WASHING OF THE EARTH INTO ANY DRAINS OR DRAINAGE DITCHES. ALL TOPSOIL NOT TO BE USED FOR BACKFILL AND NOT REMOVED FROM THE SITE WITHIN FIVE (5) DAYS SHALL BE LIMED, FERTILIZED, SEED, AND MULCHED AS SPECIFIED.
- CONTRACTOR PARKING AND TRAFFIC SHALL BE LIMITED TO THE ROADWAY AREAS. WHERE CONSTRUCTION VEHICLES LEAVE PAVED AREAS, STABILIZED CONSTRUCTION ENTRANCES ARE TO BE CONSTRUCTED. CARE SHALL BE TAKEN TO MINIMIZE SEDIMENT TRANSPORT RESULTING FROM VEHICLE TRAFFIC.
- AFTER THE PROJECT HAS BEEN COMPLETED, THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY FOR INSURING THAT ALL PERMANENT SOIL EROSION AND SEDIMENT CONTROL MEASURES ARE IN PROPER WORKING CONDITION AND THAT ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN REMOVED OR REPLACED BY PERMANENT CONTROLS (REVEGETATION).
- MAINTENANCE OF ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES ON THE PROJECT SITE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL WORK UNDER THIS CONTRACT IS COMPLETE, THROUGH AND INCLUDING ALL GUARANTEE AND BOND PERIODS, AND HENCE FORTH THE RESPONSIBILITY OF THE OWNER.
- ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FIVE (5) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING OR MULCH. MULCH SHALL BE USED IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER.
- PERMANENT VEGETATION SHALL BE SEED OR SODDED ON ALL EXPOSED AREAS WITHIN FIVE (5) DAYS AFTER FINAL GRADING. CONTRACTOR SHALL REPLACE AND MAINTAIN PERMANENT VEGETATION UNTIL SUCH TIME AS IT IS ACCEPTED BY THE ENGINEER. MULCH AS NECESSARY FOR SEED PROTECTION AND ESTABLISHMENT.
- THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS TO MINIMIZE EROSION OF SOILS AND TO MINIMIZE SILTING AND MUDDING IRRIGATION SYSTEMS, IMPOUNDMENTS, AND LANDS ADJACENT TO OR AFFECTED BY THE WORK. THE AREA OF BARE SOIL EXPOSED AT ANY ONE TIME BY CONSTRUCTION OPERATIONS SHALL BE KEPT TO A MINIMUM. REVEGETATION OF THE AREAS WILL PROCEED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION IN THE AREA.
- WASTE OR DISPOSAL AREAS AND CONSTRUCTION ROADS SHALL BE LOCATED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE SEDIMENT ENTERING STREAMS.
- WHEN TRENCH EXCAVATION IS LOCATED ADJACENT TO AN IMPOUNDMENT OR MANMADE CHANNEL, EXCAVATED MATERIAL SHALL BE STOCKPILED ON THE SIDE OF THE TRENCH OPPOSITE THE WATER COURSE, IN ORDER TO MINIMIZE SILTING. IN ADDITION TO STOCKPILE LOCATION REQUIREMENTS FOR THESE AFOREMENTIONED WORK AREAS, A METHOD OF SILTING CONTROL (SILT FENCING) SHALL ALSO BE EMPLOYED.
- DITCHES WHICH ARE FILLED, OR PARTLY INOPERATIVE SHALL BE CLEANED AND MADE OPERATIVE BEFORE THE CONTRACTOR STOPS WORK FOR ANY DAY, AND SHALL BE MAINTAINED IN A CONDITION SATISFACTORY TO THE OWNER FOR THE DURATION OF THE CONTRACT.
- WATER FROM AGGREGATE WASHINGS, DEWATERING OPERATIONS, OR OTHER OPERATIONS CONTAINING SEDIMENT SHALL BE TREATED BY APPROVED FILTRATION TECHNIQUES, SETTLING BASIN OR OTHER MEANS SUFFICIENT TO REDUCE THE TURBIDITY SO AS NOT TO CAUSE A SUBSTANTIAL VISIBLE CONTRAST TO NATURAL CONDITIONS.
- POLLUTANTS SUCH AS FUELS, LUBRICANTS, BITUMENS, RAW SEWAGE, AND OTHER HARMFUL MATERIALS SHALL NOT BE DISCHARGED INTO OR NEAR IMPOUNDMENTS OR INTO NATURAL OR MANMADE CHANNELS. WASH WATER OR WASTE FROM CONCRETE MIXING OPERATIONS SHALL NOT BE ALLOWED TO ENTER ANY DRAINAGE STRUCTURES.
- ALL APPLICABLE REGULATIONS OF FISH AND WILDLIFE AGENCIES AND STATUTES RELATING TO THE PREVENTION AND ABATEMENT OF POLLUTION SHALL BE COMPLIED WITH IN THE PERFORMANCE OF THE CONTRACT.
- ANY MATERIAL GENERATED BY ANY ACTIVITY FOR THE DEVELOPMENT, MODIFICATION, AND CONSTRUCTION OF THE FACILITY SHALL NOT BE BURNED ON OR OFF THE CONTRACT SITE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, LAND CLEARING MATERIAL AND DEMOLITION MATERIAL. SUCH MATERIAL SHALL HEREAFTER BE REFERRED TO AS DISPOSABLE MATERIAL IN THE CLEARING AND GRUBBING OPERATION.
- WHEN IT BECOMES NECESSARY, THE ENGINEER WILL INFORM THE CONTRACTOR OF UNSATISFACTORY CONSTRUCTION PROCEDURES AND OPERATIONS INsofar AS EROSION CONTROL, WATER, AND AIR POLLUTION ARE CONCERNED. IF THE UNSATISFACTORY CONSTRUCTION PROCEDURES AND OPERATIONS ARE NOT CORRECTED PROMPTLY, THE ENGINEER MAY SUSPEND THE PERFORMANCE OF ANY OR ALL OF OTHER CONSTRUCTION UNTIL THE UNSATISFACTORY CONDITION HAS BEEN CORRECTED.



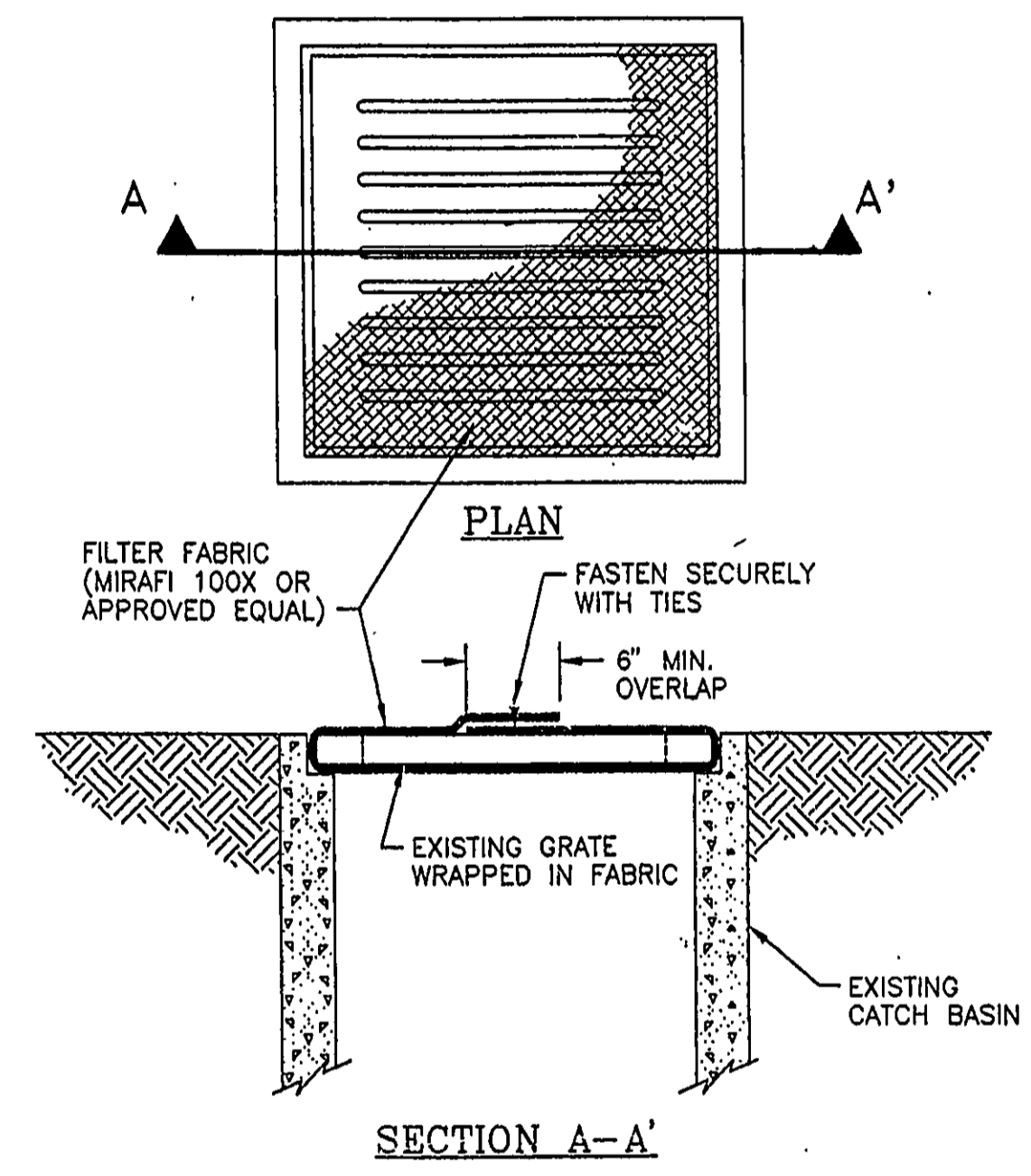
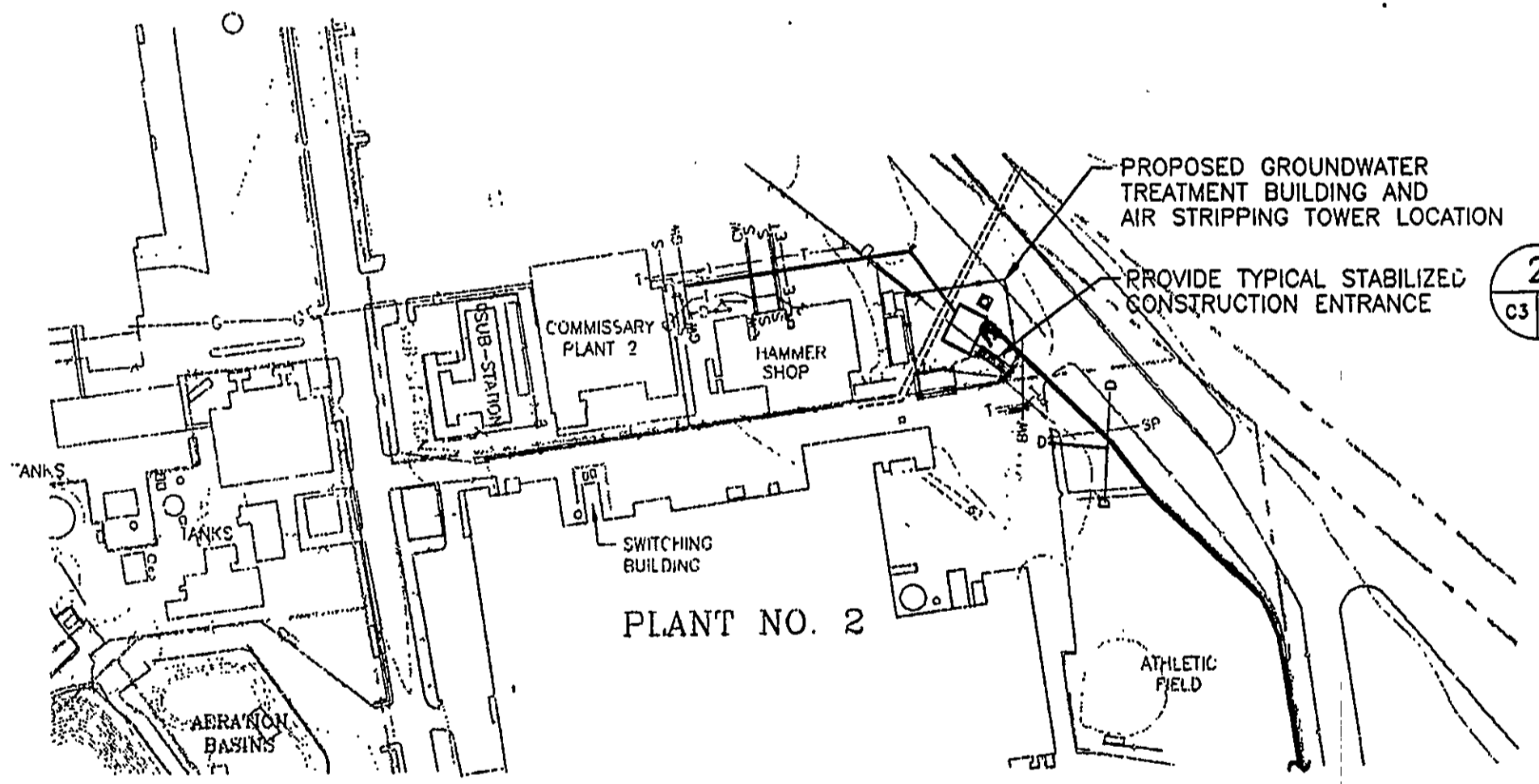
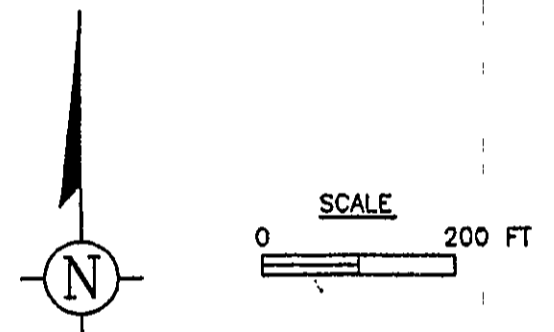
CONSTRUCTION ENTRANCE NOTES (ALSO REFER TO SEDIMENT AND EROSION CONTROL NOTES)

- STONE SIZE - USE 2-INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- LENGTH - NOT LESS THAN 50 FEET.
- THICKNESS - NOT LESS THAN SIX (6) INCHES.
- WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
- FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
- SURFACE WATER - ALL SURFACE WATER FLOWING OR OVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
- MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

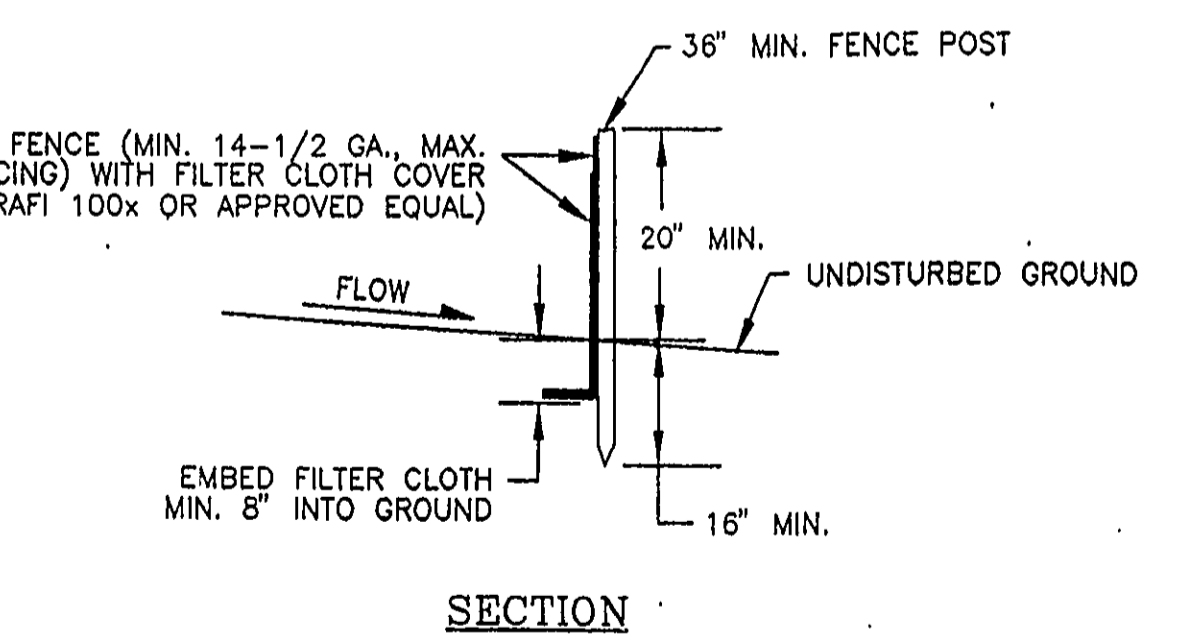
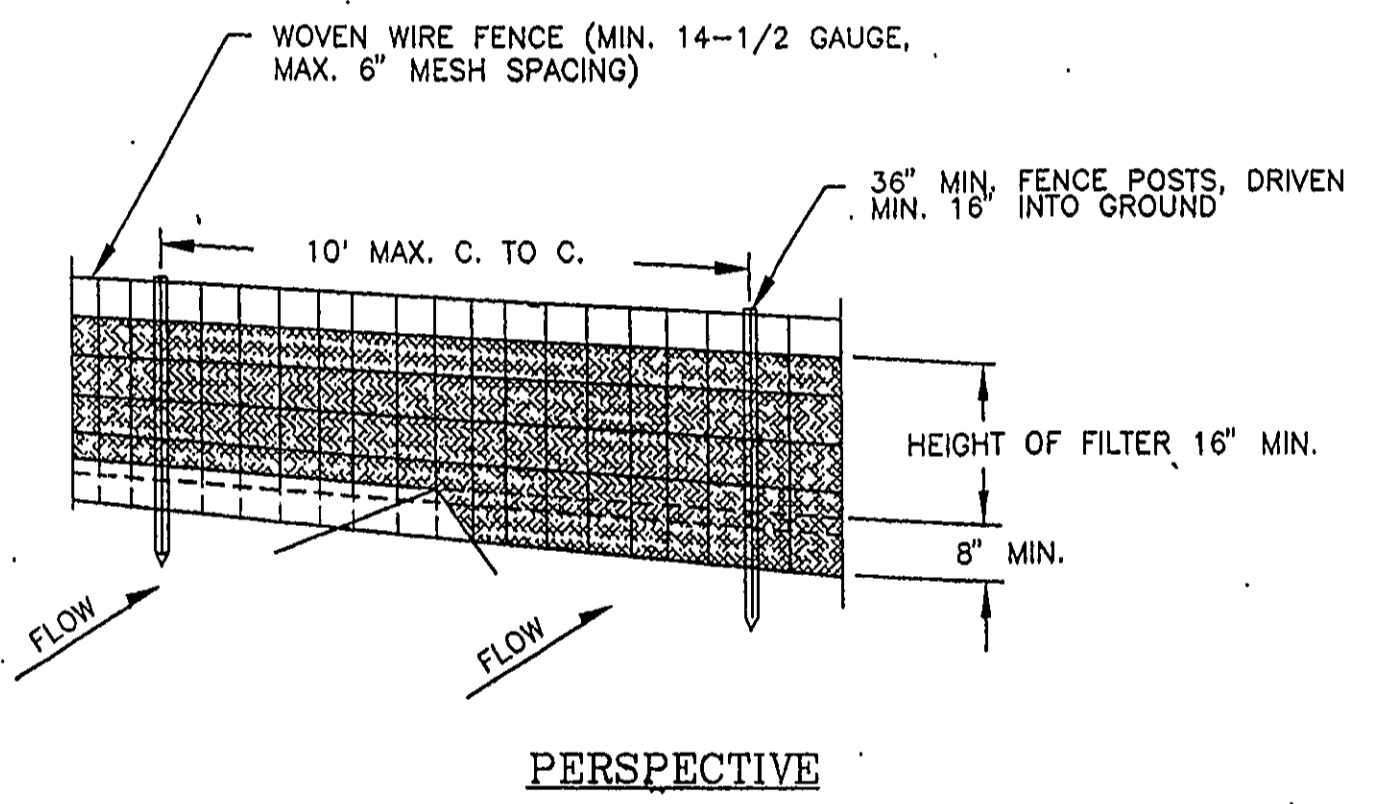
STABILIZED CONSTRUCTION ENTRANCE AND ACCESS ROAD DETAIL
N.T.S.

LEGEND

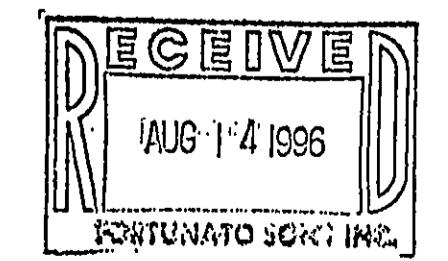
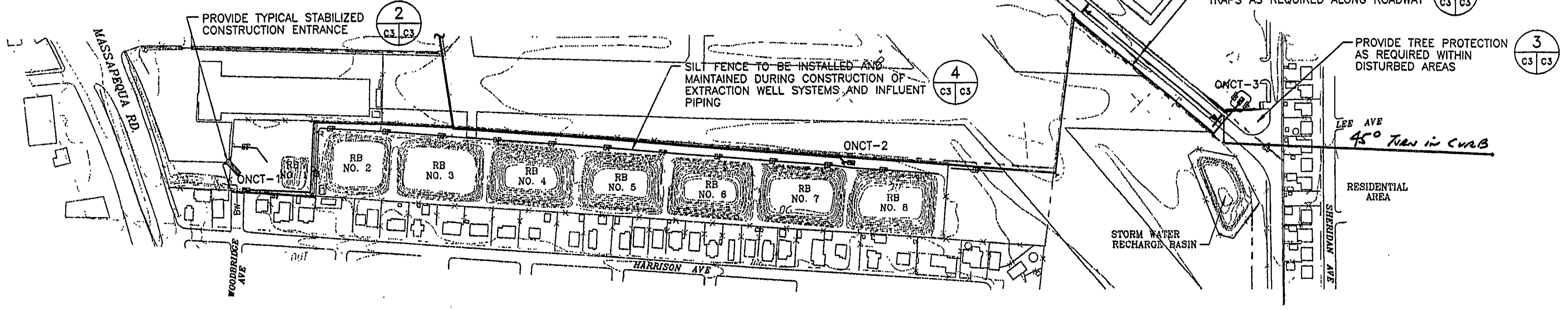
- PROPERTY LINE
- POTENTIAL FUTURE PROPERTY LINE
- PROPOSED PIPELINE
- SILT FENCE PLACEMENT
- ONCT-3 PROPOSED LOCATION FOR EXTRACTION WELL



TYPICAL CATCH BASIN SEDIMENT TRAP DETAIL
N.T.S.



TYPICAL SILT FENCE DETAIL
N.T.S.



GERAGHTY & MILLER, INC.
Environmental Services
A Haldemil Company

NORTHROP GRUMMAN

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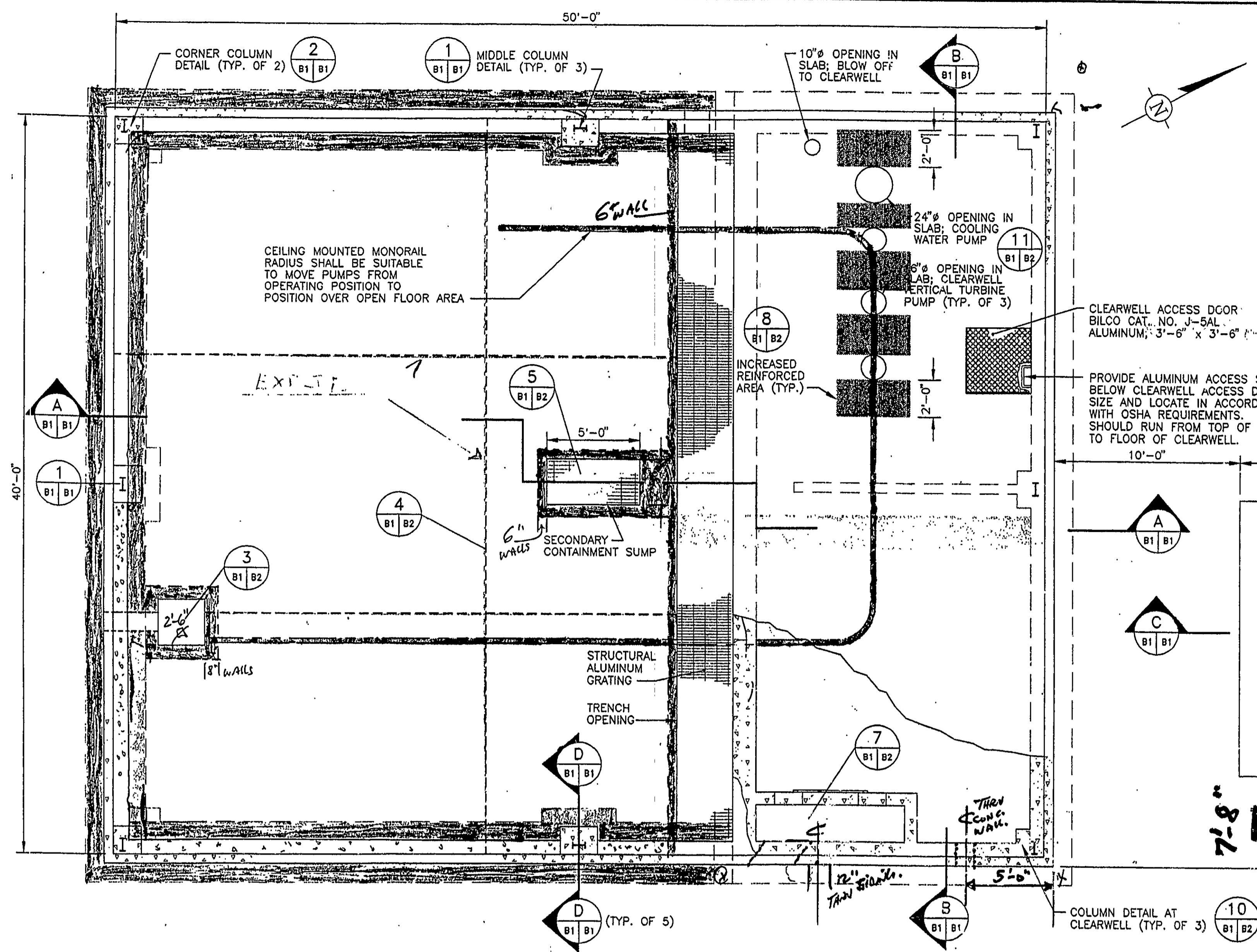
SCALE VERIFICATION
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USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

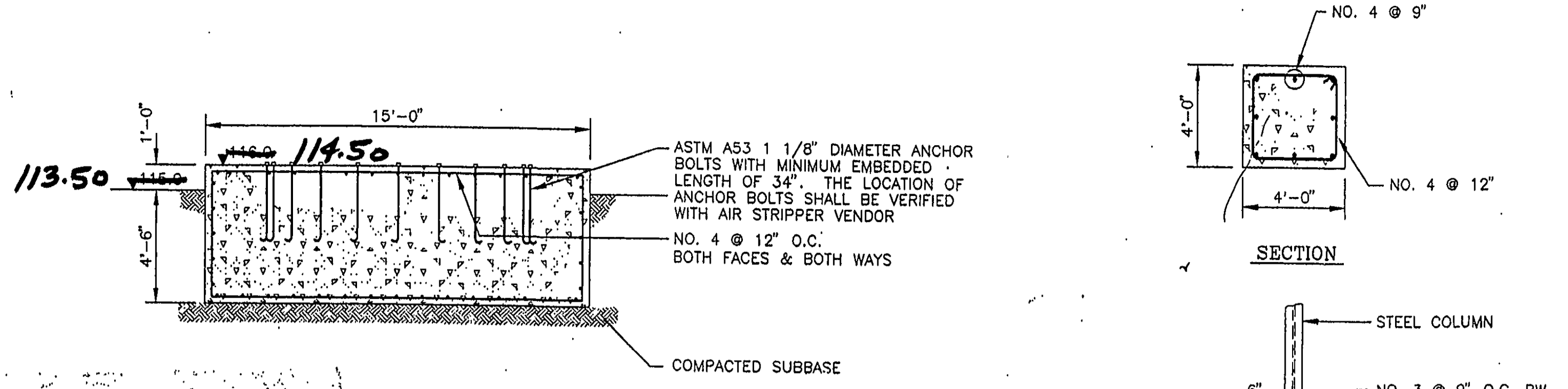
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DRAWING: GRU-19	PLOT SIZE: 11x20"
DRAFTED BY: D. LORENZ	DATE: 2/22/96
CHECKED BY: [Signature]	DATE: 2/22/96
APPROVED BY: [Signature]	DATE: 2/22/96

SEDIMENT AND EROSION CONTROL PLAN AND DETAILS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

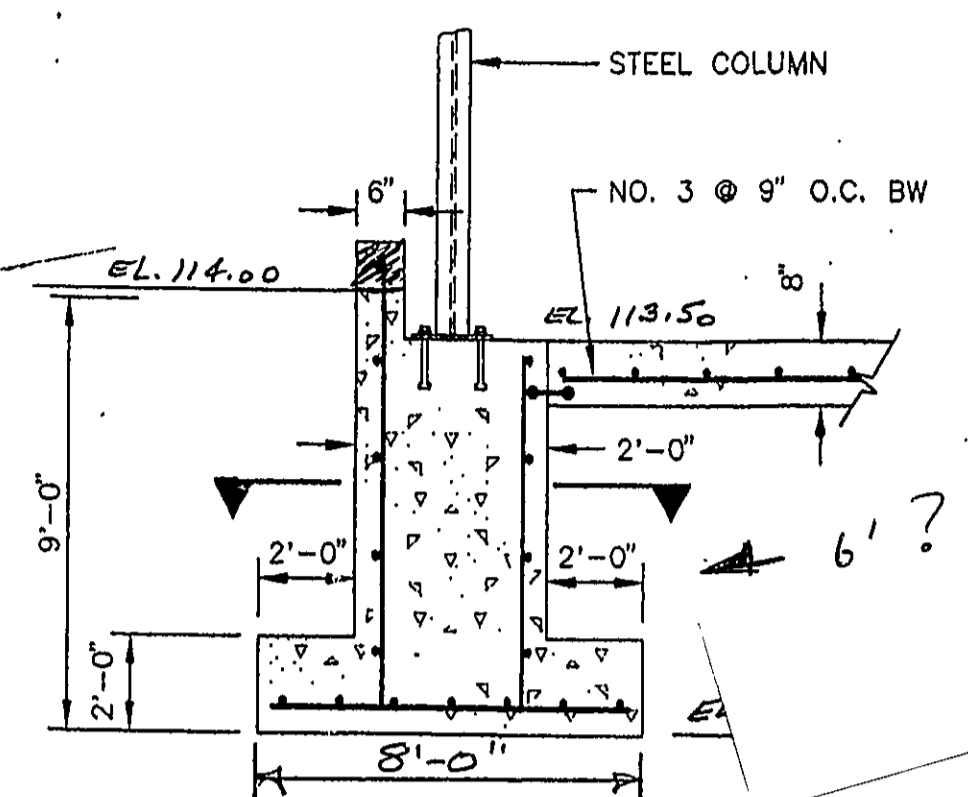
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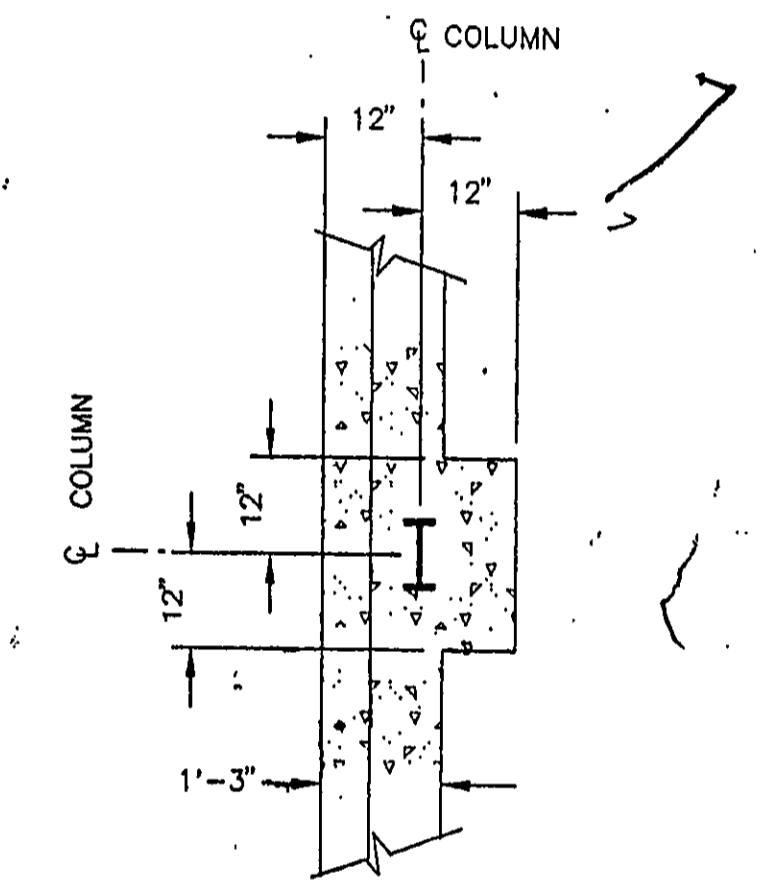
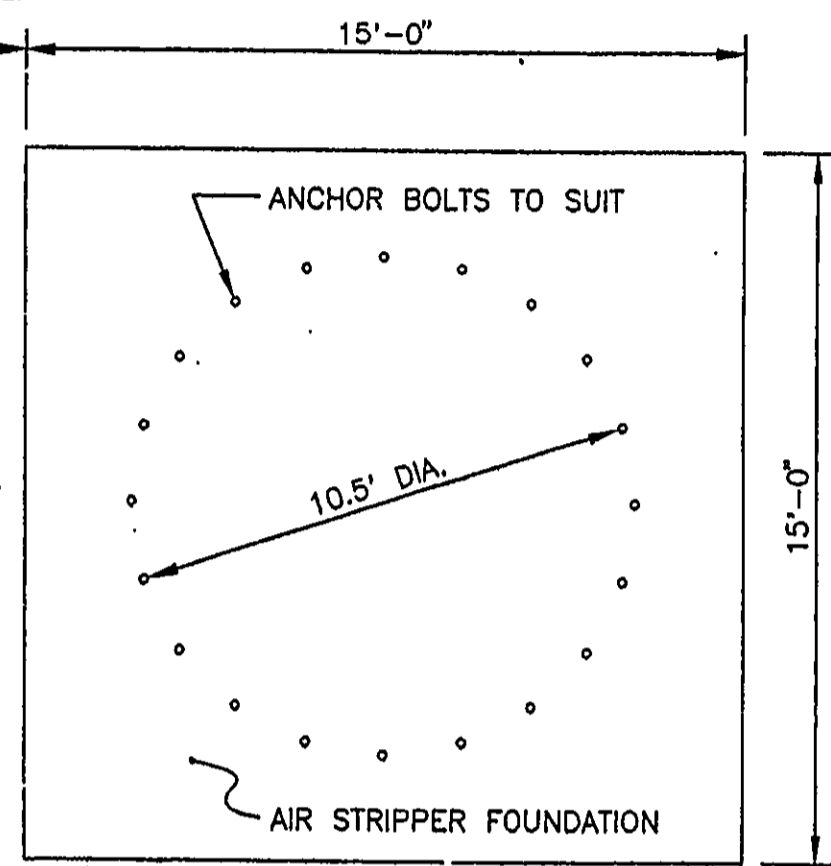
PLAN
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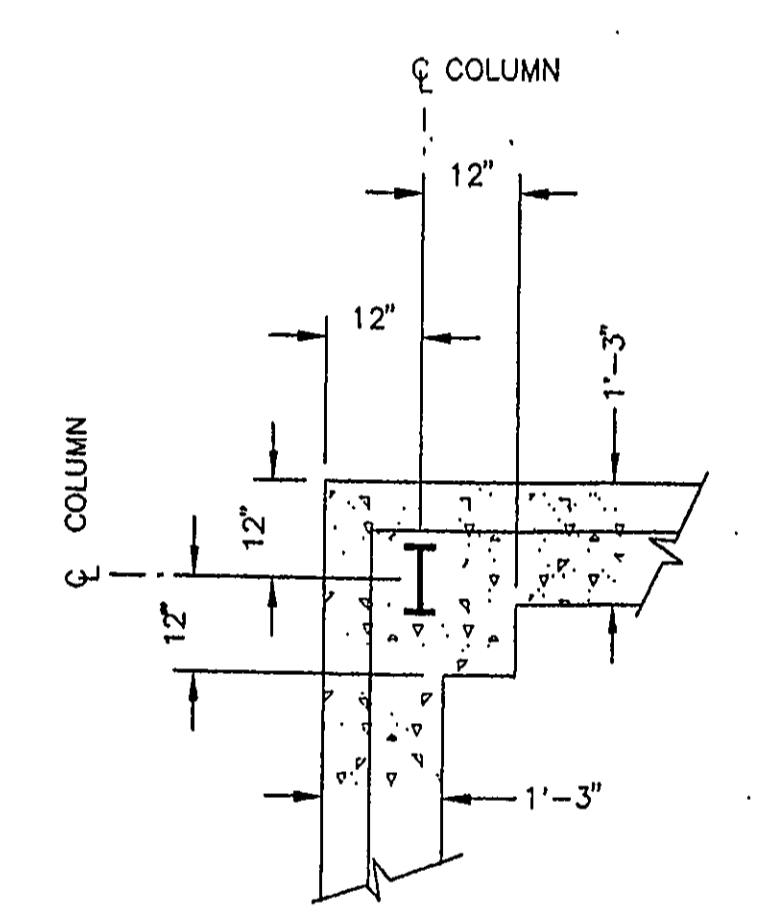
SECTION C
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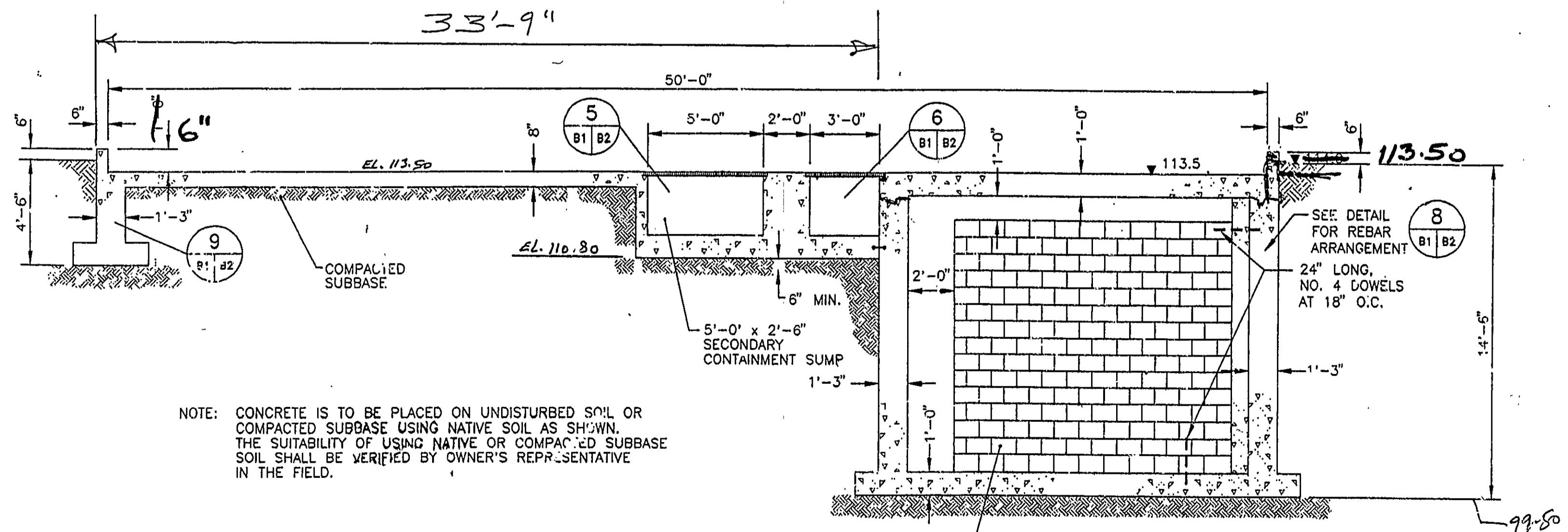
TYPICAL COLUMN SECTION D
SCALE: 1/2" = 1'-0"



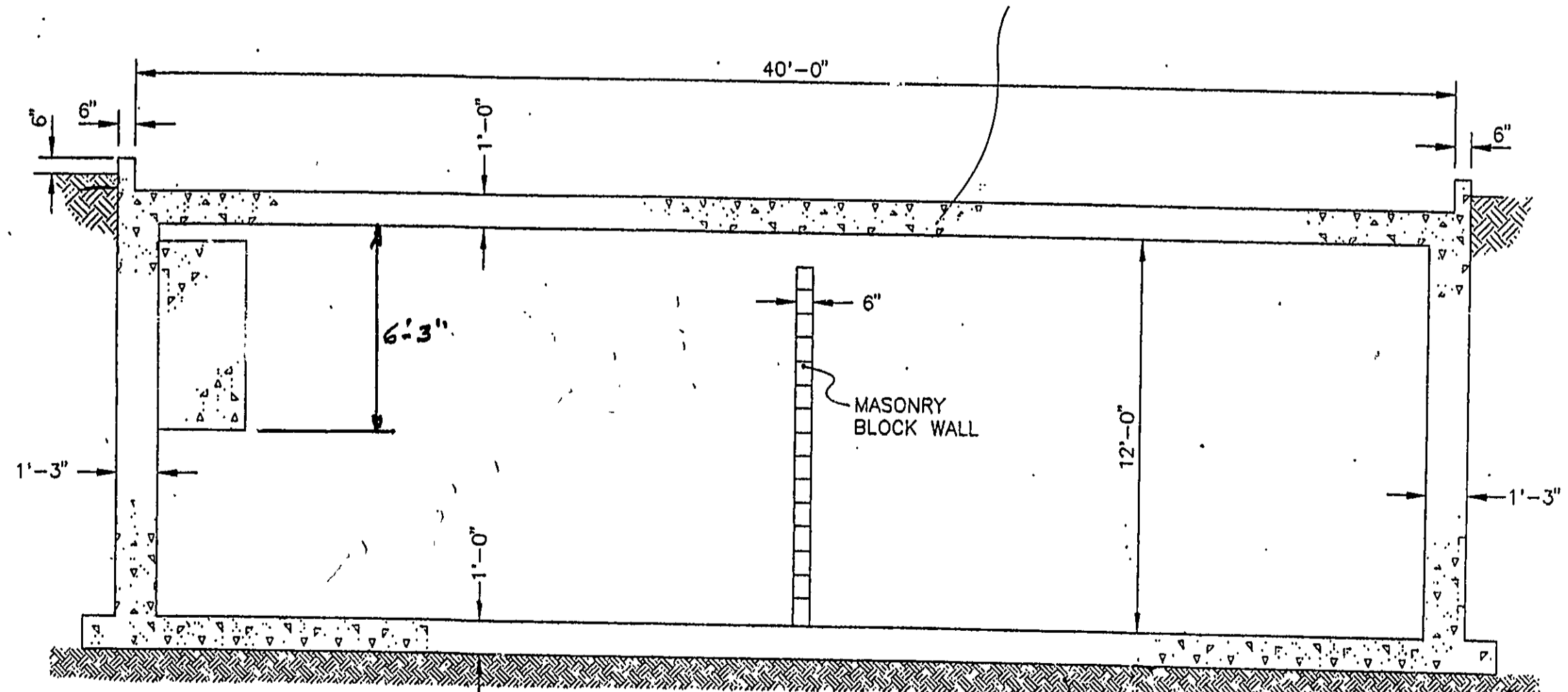
TYPICAL MIDDLE COLUMN DETAIL 1
SCALE: 1/2" = 1'-0"



TYPICAL CORNER COLUMN DETAIL 2
SCALE: 1/2" = 1'-0"



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



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

NOTE: CONCRETE IS TO BE PLACED ON UNDISTURBED SOIL OR COMPACTED SUBBASE USING NATIVE SOIL AS SHOWN. THE SUITABILITY OF USING NATIVE OR COMPACTED SUBBASE SOIL SHALL BE VERIFIED BY OWNER'S REPRESENTATIVE IN THE FIELD.

TYPICAL 12" x 8" x 6" CMUs REINFORCE EVERY 3RD COURSE WITH 3/16" SIDE RODS WITH 9MM GAUGE CROSS TIES FROM DURE-O-WALL, INC. OR EQUAL AND FILLED WITH MASONRY GROUT

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

NORTHROP GRUMMAN

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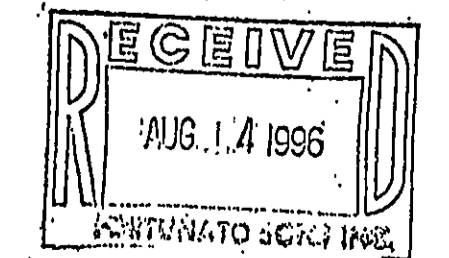
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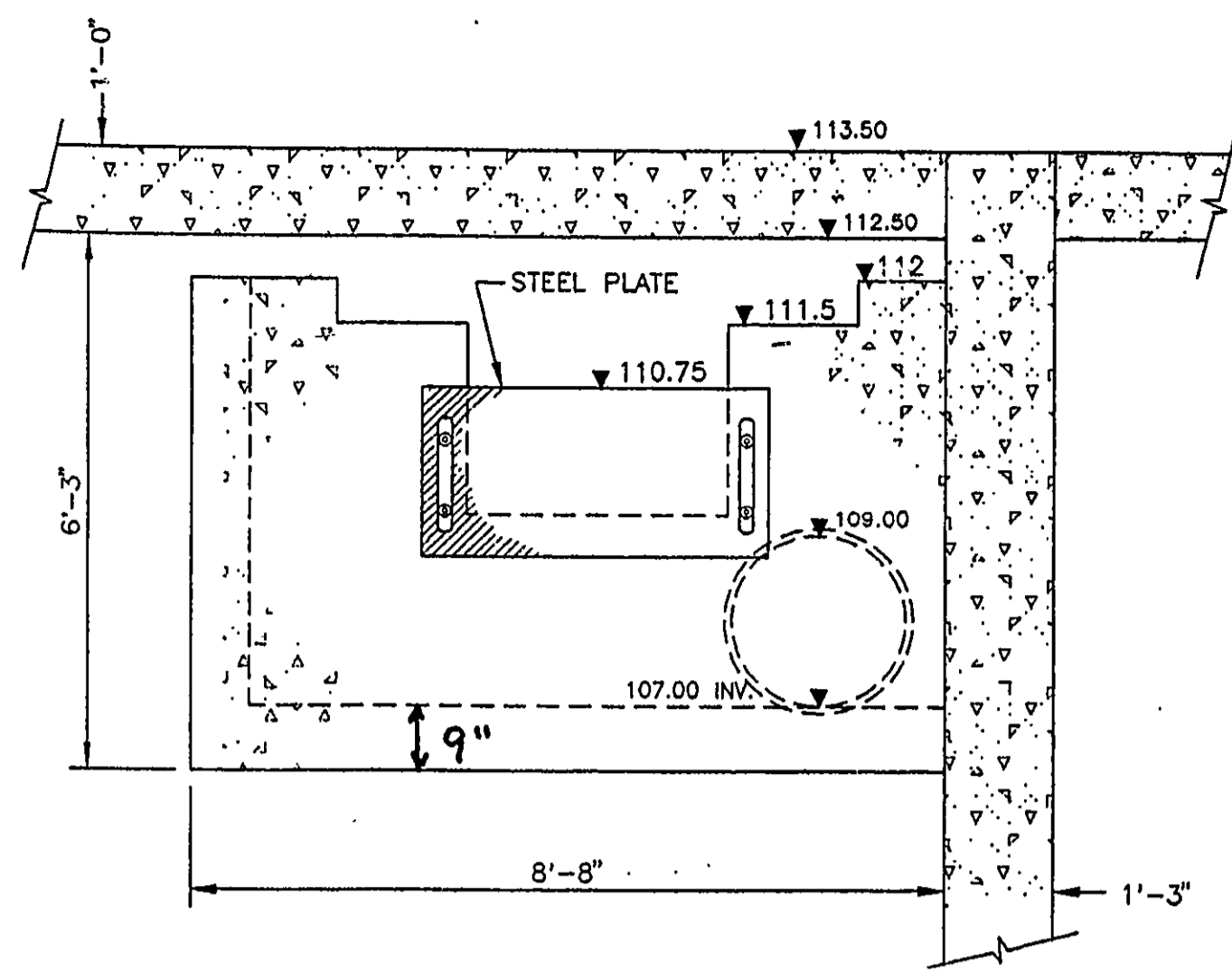
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: NY0277.001	DATE: 8/1/96
DRAWING: GRU-11	DATE: 8/1/96
DRAWN BY: E. HIGGINS	DATE: 8/1/96
CHECKED BY: C. J. ...	DATE: 8/1/96
APPROVED BY: C. J. ...	DATE: 8/1/96

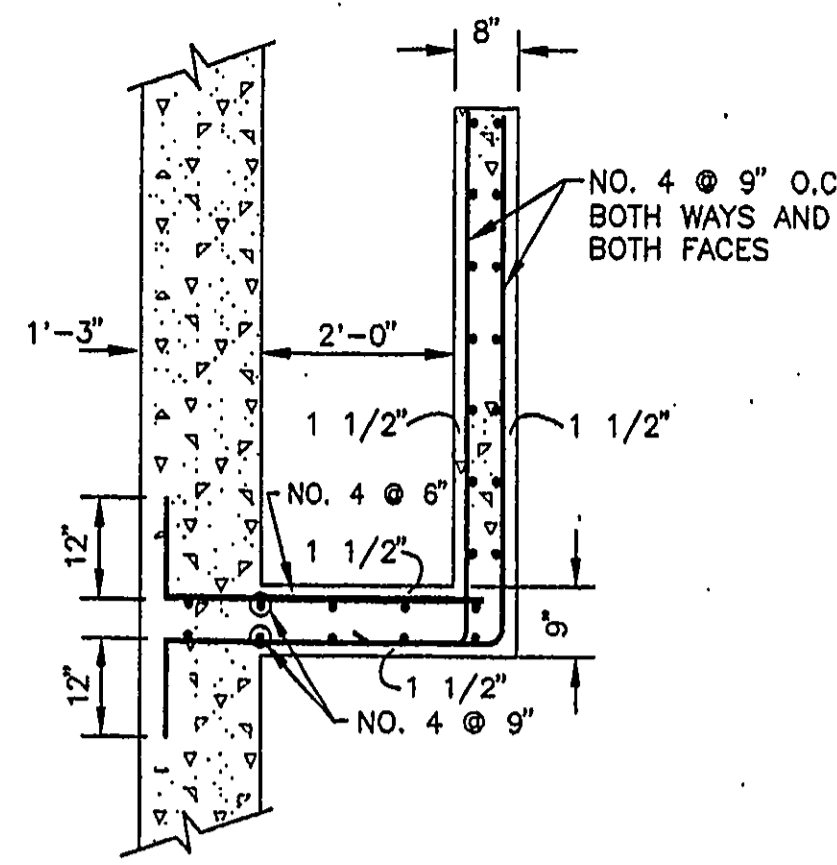
TREATMENT BUILDING FOUNDATION PLAN AND SECTIONS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK



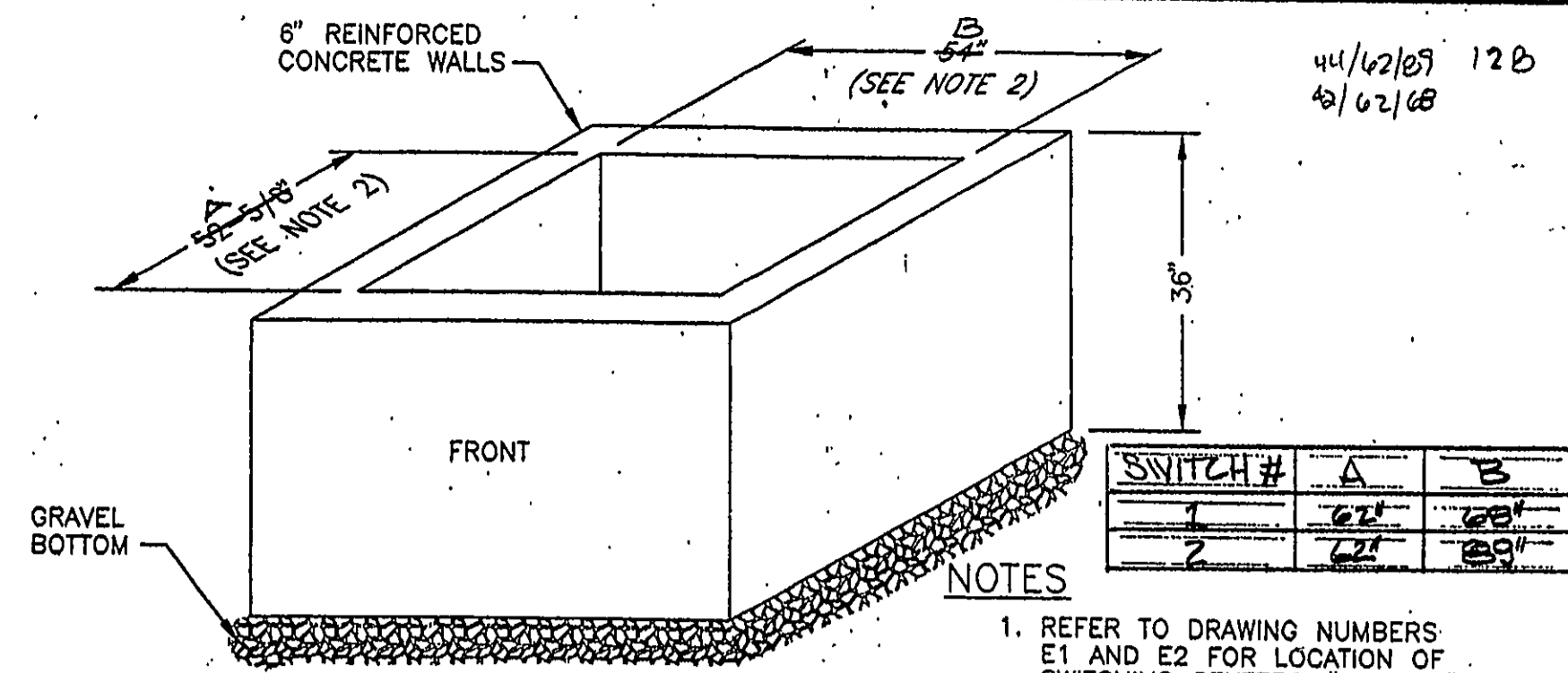
Arnold S. Verneck
P.E. Lic. No. 3933



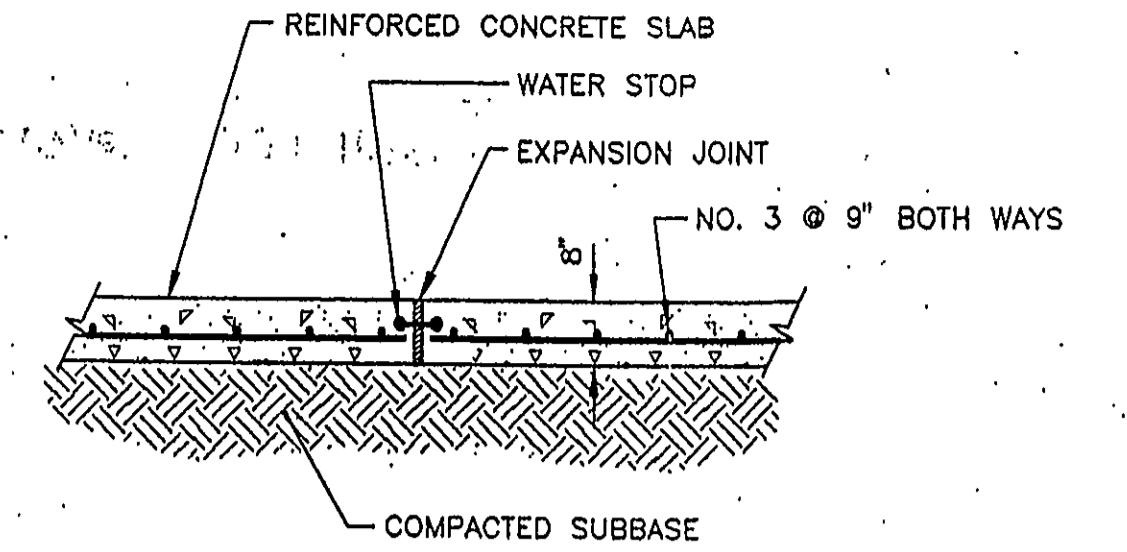
SECTION A
SCALE: 1/2" = 1'-0" B2 | B2



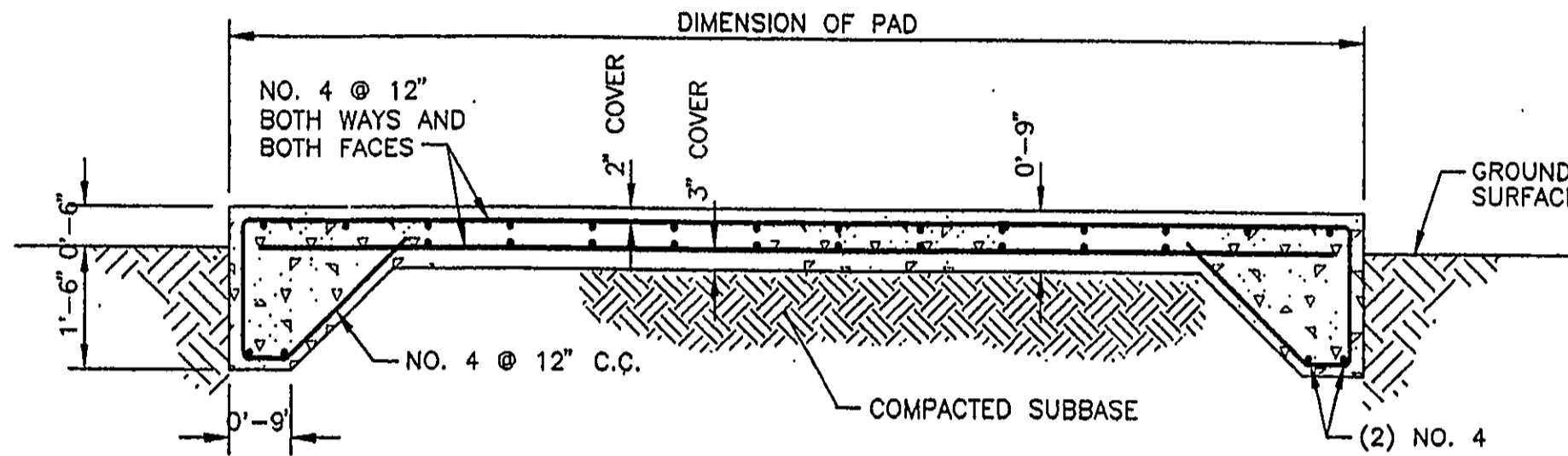
SECTION B
SCALE: 1/2" = 1'-0" B2 | B2



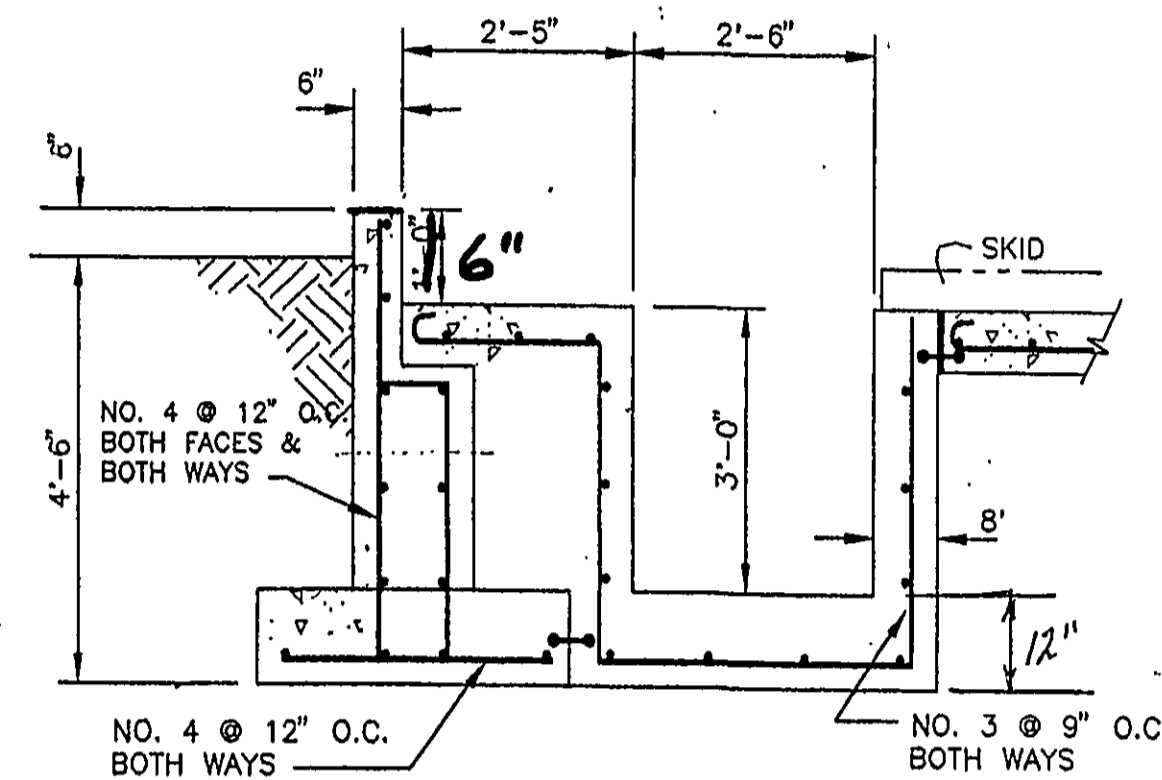
PIT FOR SWITCHING CENTERS
N.T.S.



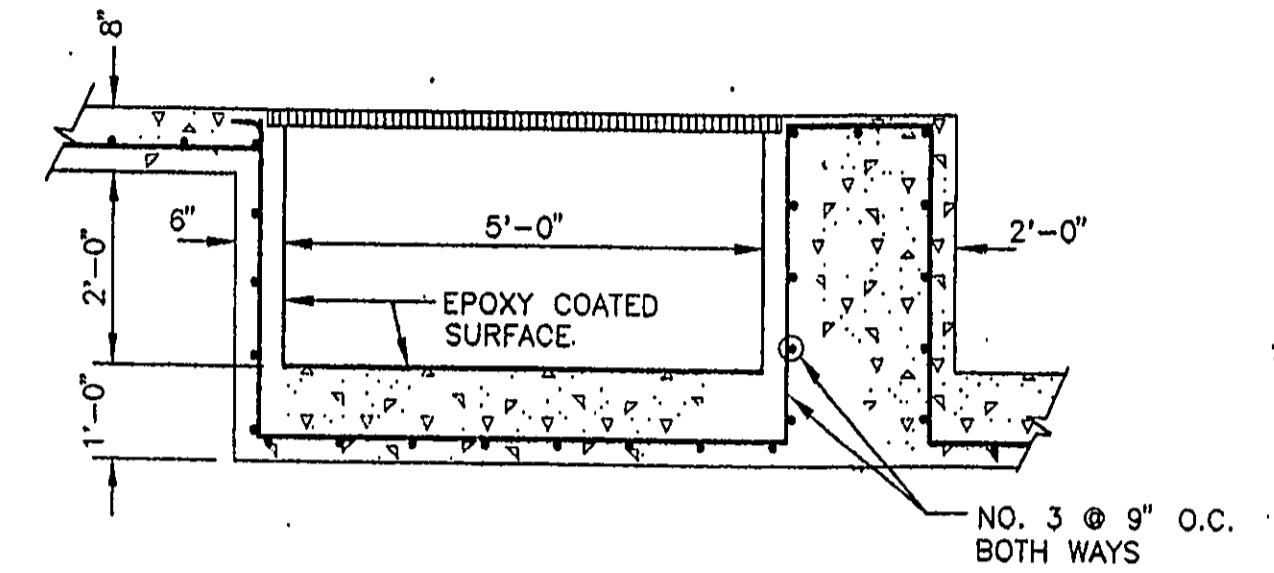
TYPICAL EXPANSION JOINT 4
SCALE: 1/2" = 1'-0" B1 | B2



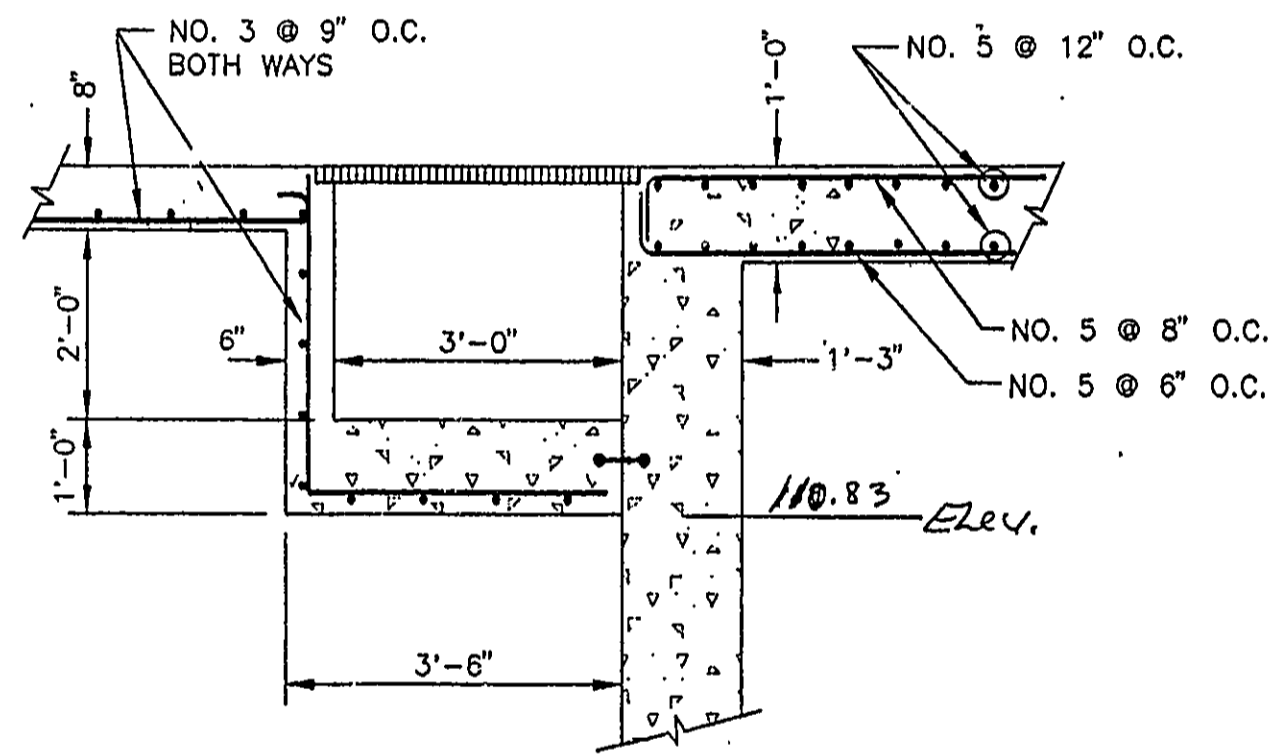
TRANSFORMER PAD DETAIL
SCALE: 1/2" = 1'-0" B2 | B2



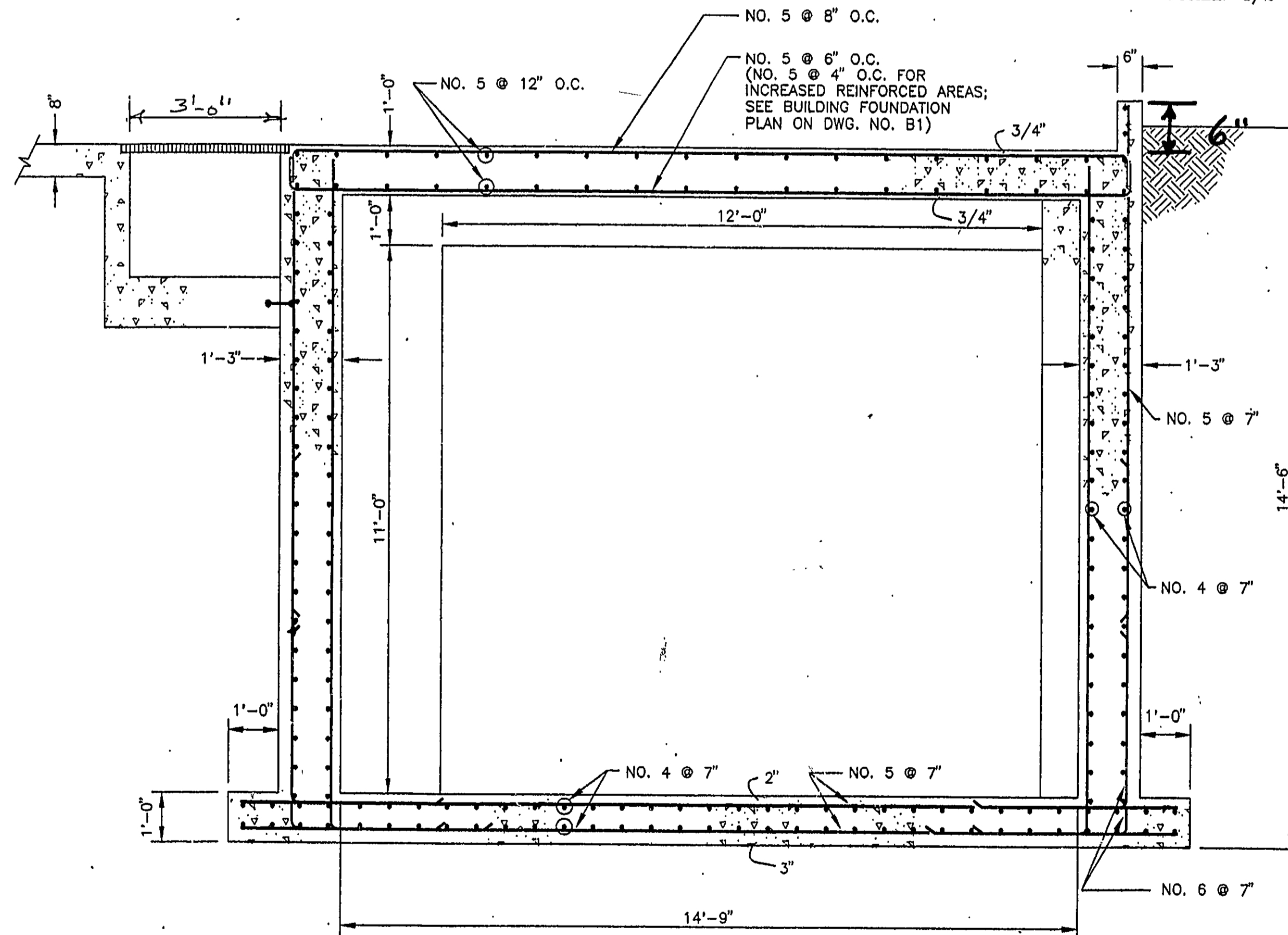
ENTRANCE PIT DETAIL 3
SCALE: 1/2" = 1'-0" B1 | B2



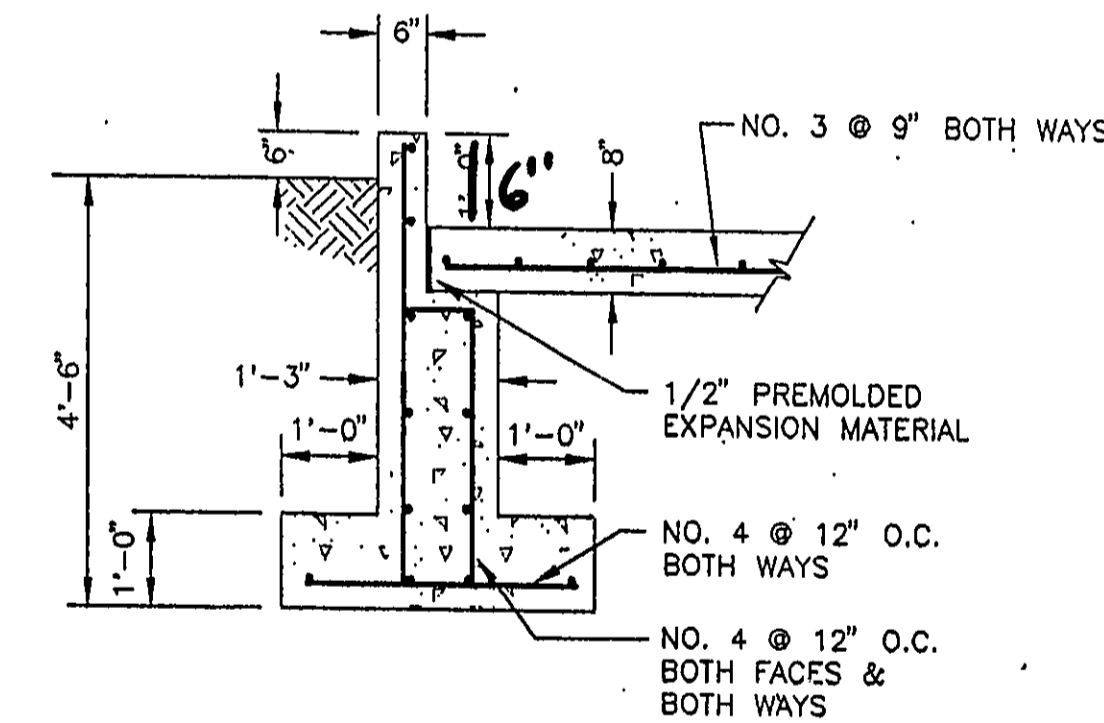
SECONDARY CONTAINMENT SUMP DETAIL 5
SCALE: 1/2" = 1'-0" B1 | B2



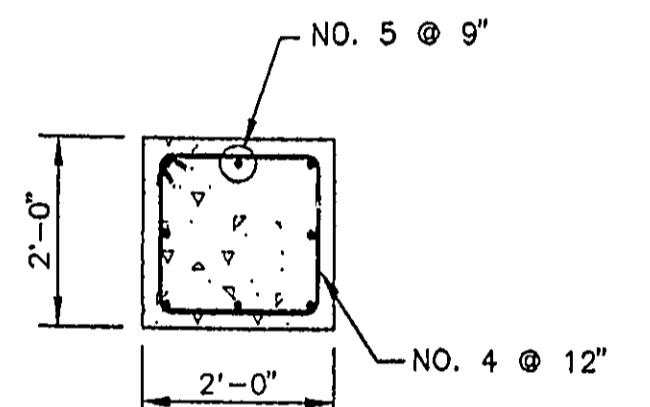
TRENCH DETAIL 6
SCALE: 1/2" = 1'-0" B1 | B2



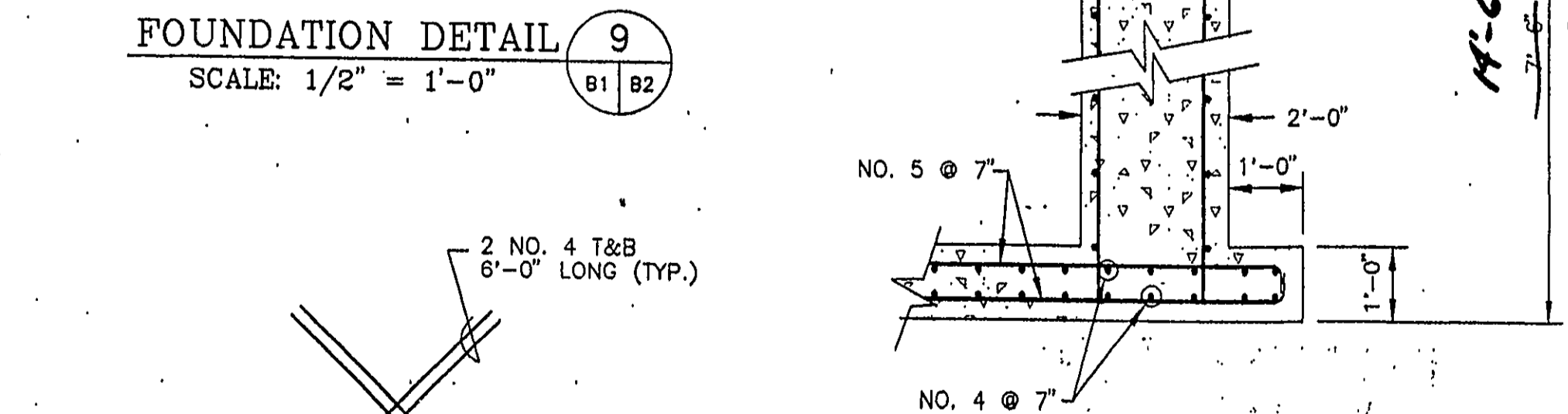
CLEARWELL DETAIL 8
SCALE: 1/2" = 1'-0" B1 | B2



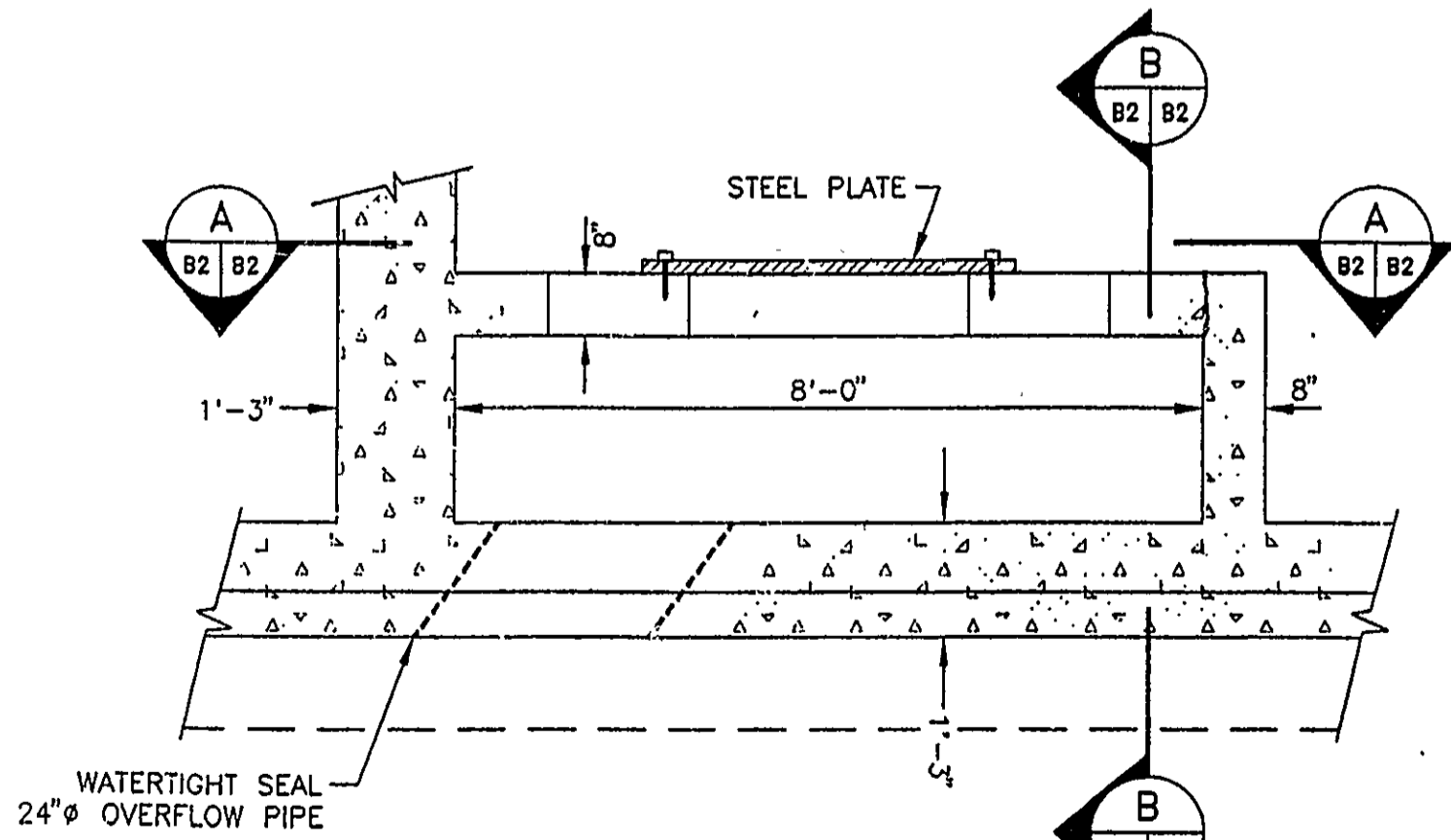
FOUNDATION DETAIL 9
SCALE: 1/2" = 1'-0" B1 | B2



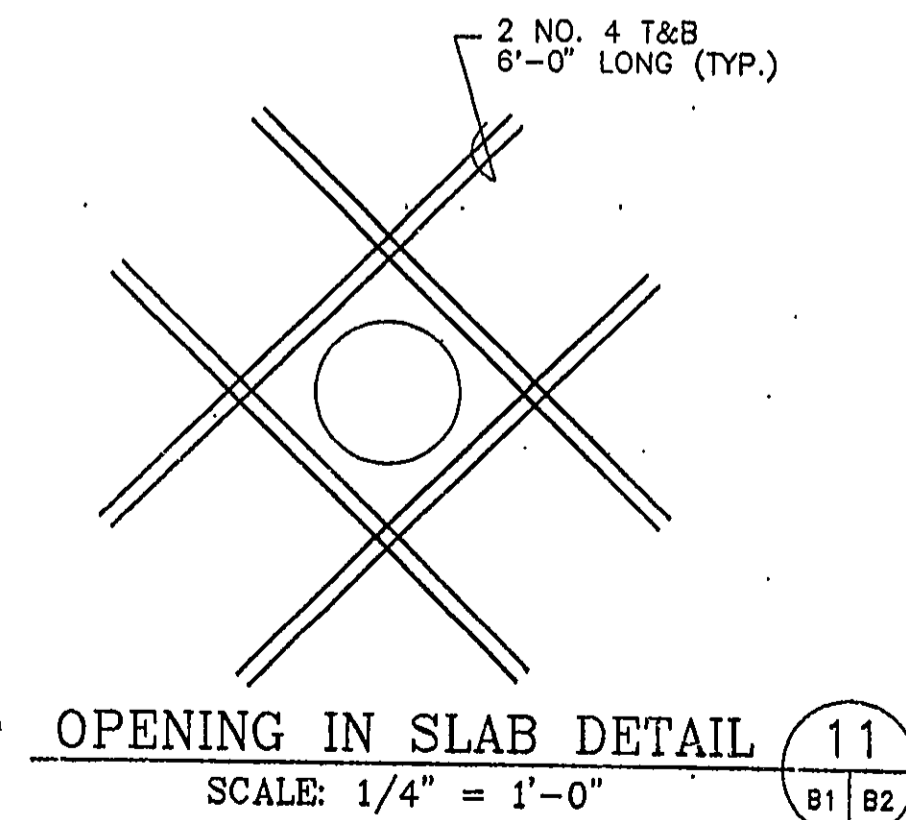
SECTION



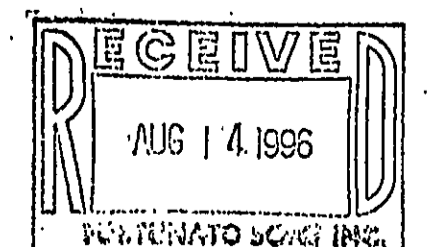
COLUMN DETAIL AT CLEARWELL 10
SCALE: 1/2" = 1'-0" B1 | B2

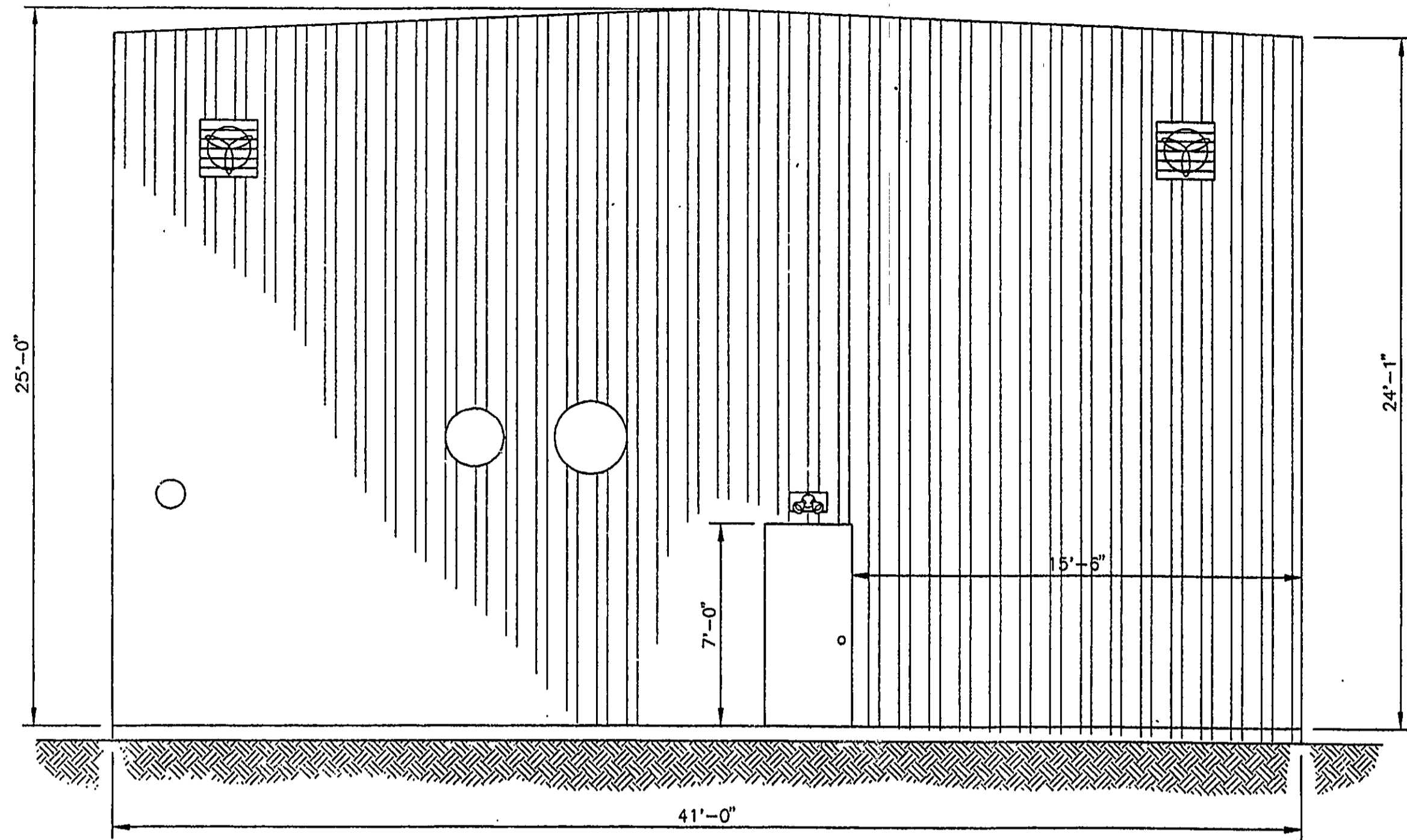


OVERFLOW WEIR CHAMBER 7
SCALE: 1/2" = 1'-0" B1 | B2

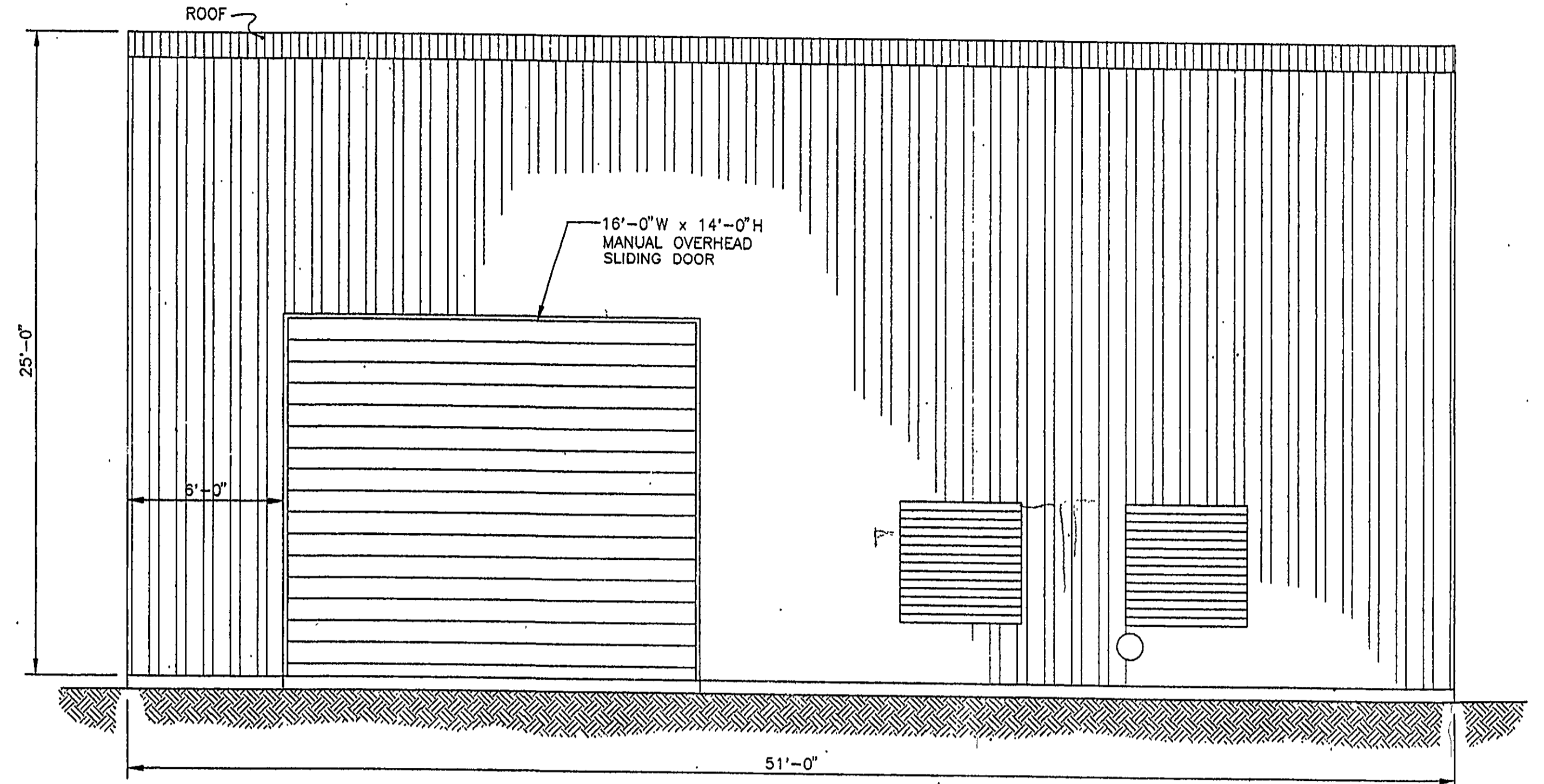


OPENING IN SLAB DETAIL 11
SCALE: 1/4" = 1'-0" B1 | B2

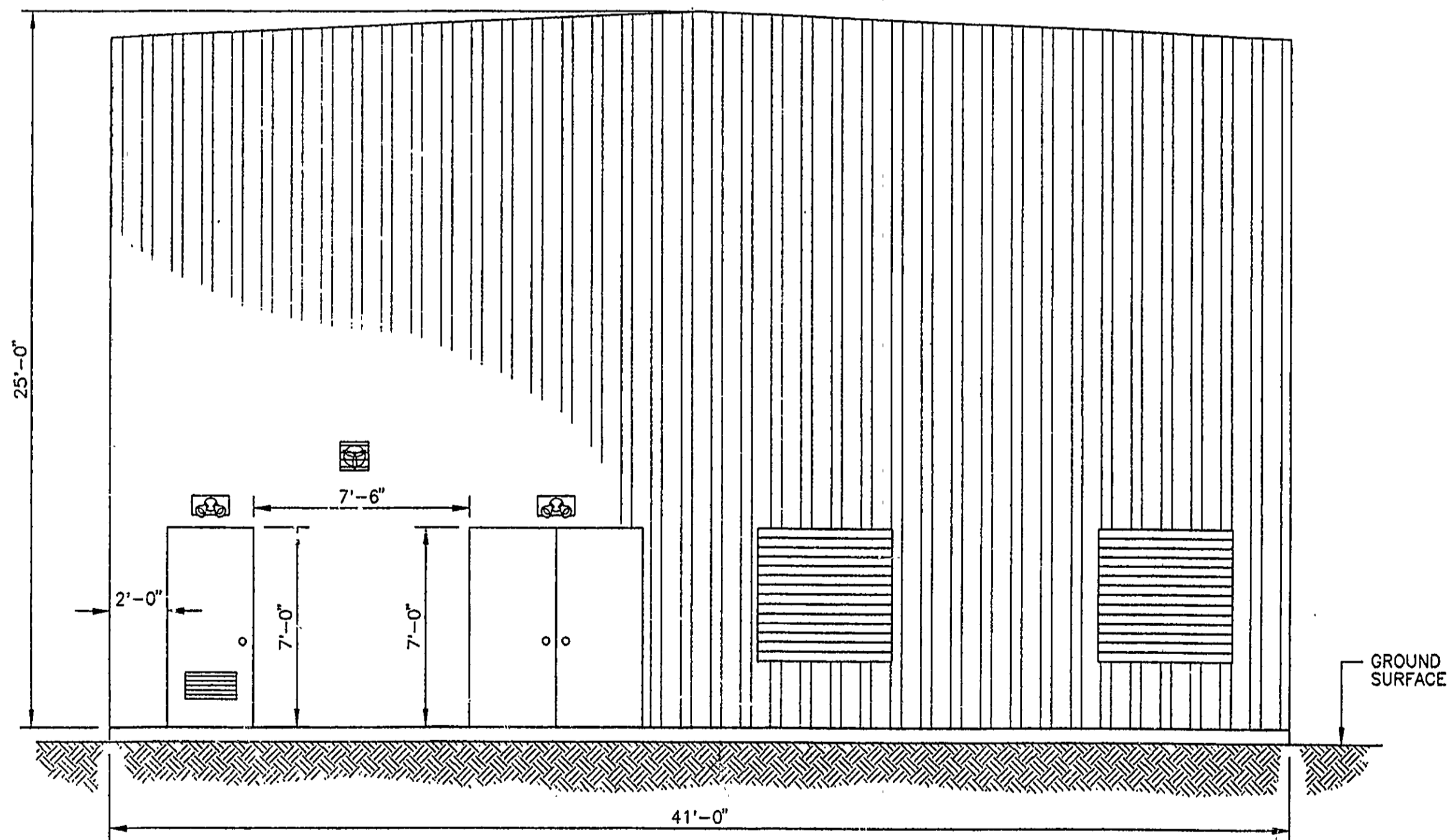




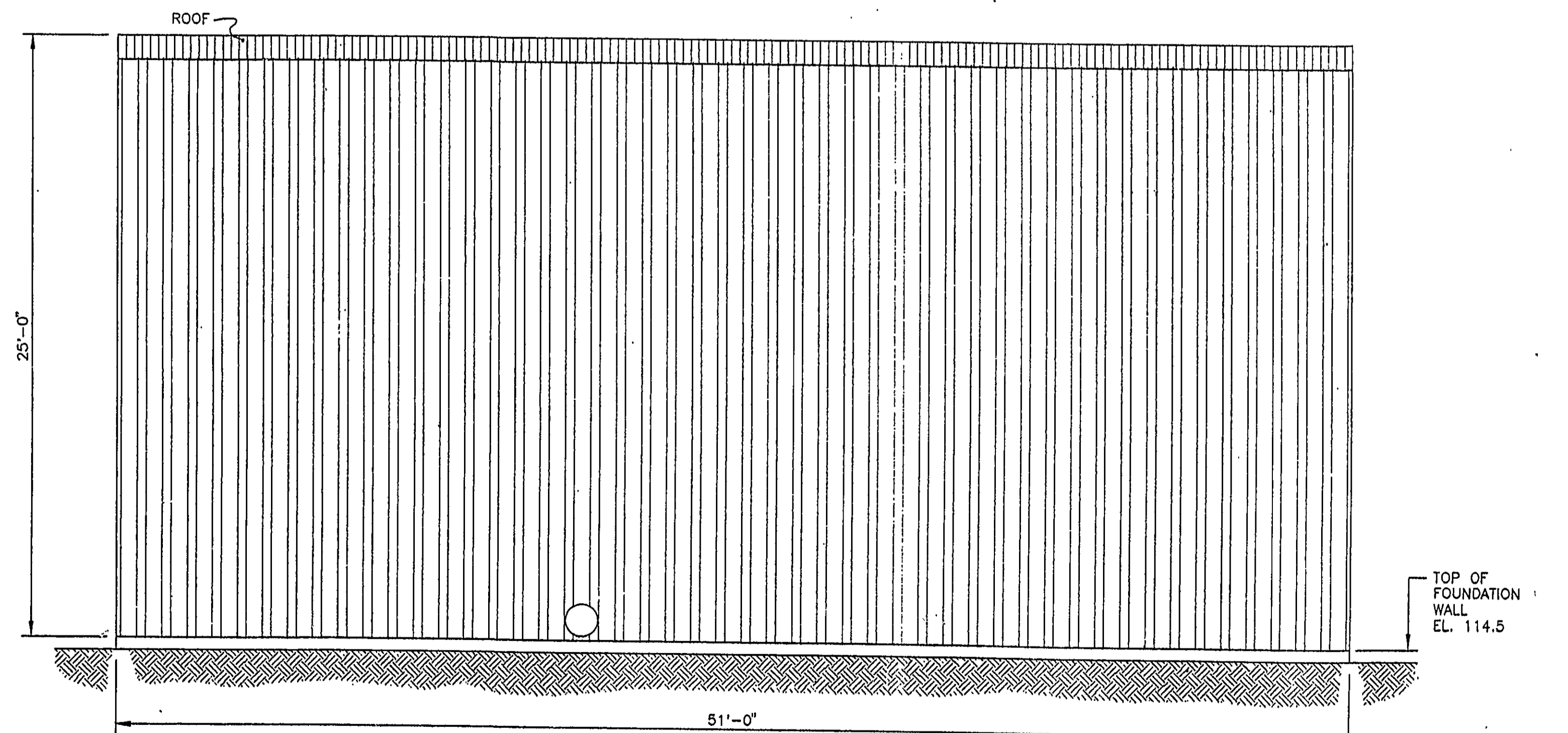
NORTH ELEVATION
SCALE: 1/4" = 1'-0"



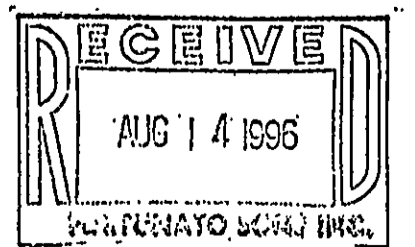
EAST ELEVATION
SCALE: 1/4" = 1'-0"



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



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



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REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: NY0977.001	HARD FILE: GRU-24
DRAWING: GRU-24	PLOT SIZE: 11x8
DRAFTED BY: E. EAGLESTON	DATE: 2/22/96
CHECKED BY: M. LAPPIN	DATE: 2/22/96
APPROVED BY: CUSV	DATE: 2/22/96

TREATMENT BUILDING ELEVATIONS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO.
B3

ORGANIC PROCESS MASS BALANCE TABLE

Location Shown on dwg. no. P1	Flow Rate	Pressure	Organic Load (TVOC's)	Temp. (°F)
A	1000 gpm	95 psig	18000 ug/L	55
B	600 gpm	90 psig	2200 ug/L	55
C	700 gpm	94 psig	2200 ug/L	55
D	2300 gpm	55 psig	9070 ug/L	55
E	0.5 gpm	55 psig	1.13E7 ug/L	65
F	2300.5 gpm	1 psig	11525 ug/L	55
G	2300.5 gpm	1.0 psig	<2.5 ug/L*	55
H	2300.5 gpm	70 psig	<2.5 ug/L*	55
I	922 [†] cfm	0 psig	ND	55
J	9225 cfm	-0.33 psig	80.8 ppmv	55
K	9225 cfm	+0.7 psig	80.8 ppmv	75
L	9225 cfm	+0.1 psig	4 ppmv	75
M	2300 lb/hr	150 psig	0	>230
N	2300 lb/hr	30 psig	0	≈274
O	300 lb/hr	PER VENDOR	0	<274
P	2000 lb/hr	PER VENDOR	12.6 lb/hr**	212
Q	≈165 gpm	30 psig	<2.5 ug/L*	55
R***	0 gpm	50 psig	<2.5 ug/L*	55
S†	≈1 gal/hr	<20 psig	9.8 lb/hr**	65
T	≈165 gpm	<5 psig	<2.5 ug/L*	≈82
U†	(ON LINE ONLY DURING MANUAL TRANSFER OF PRODUCT FROM STORAGE)			
V	1200 lb/hr	30 psig	0	230

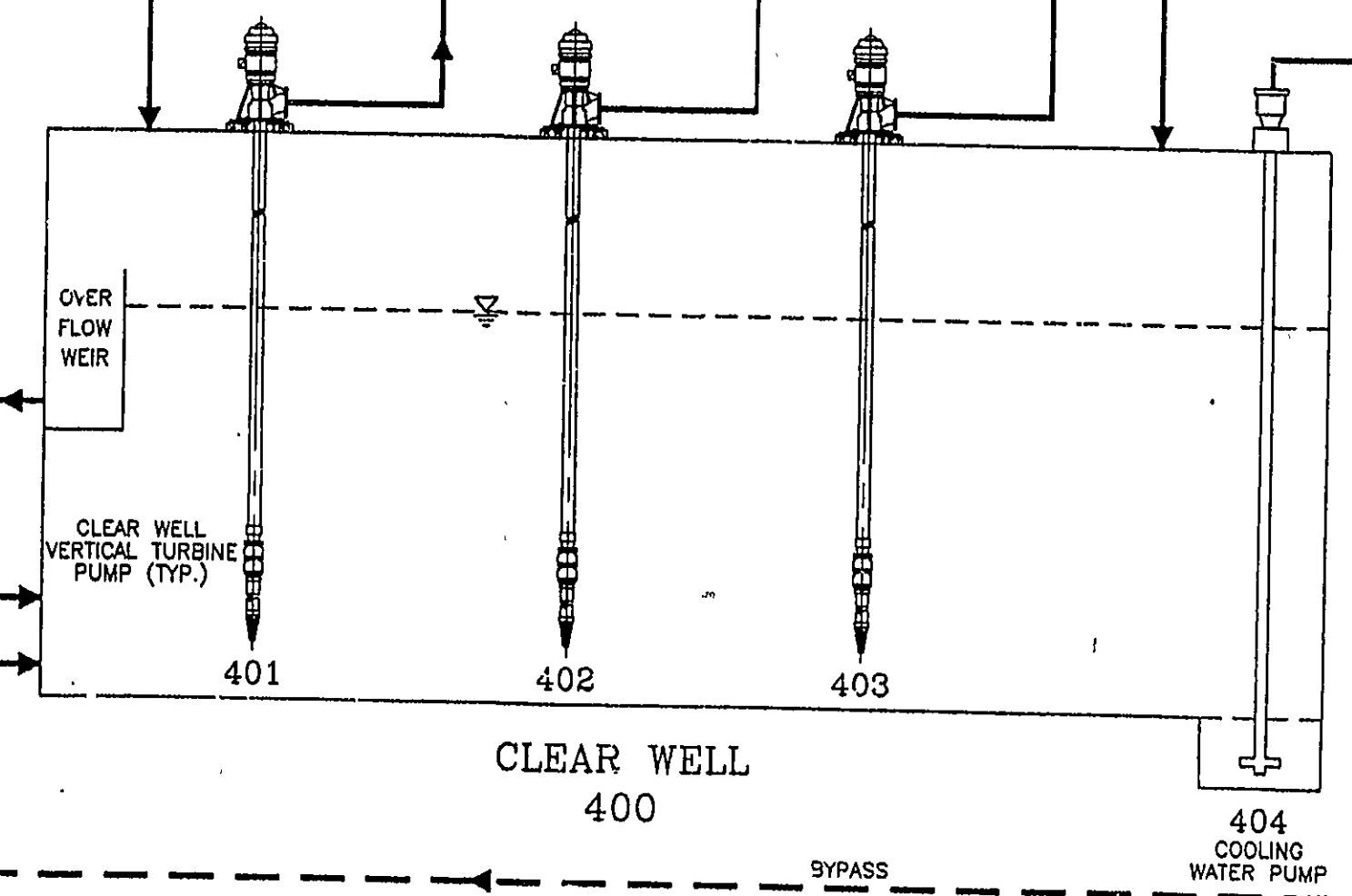
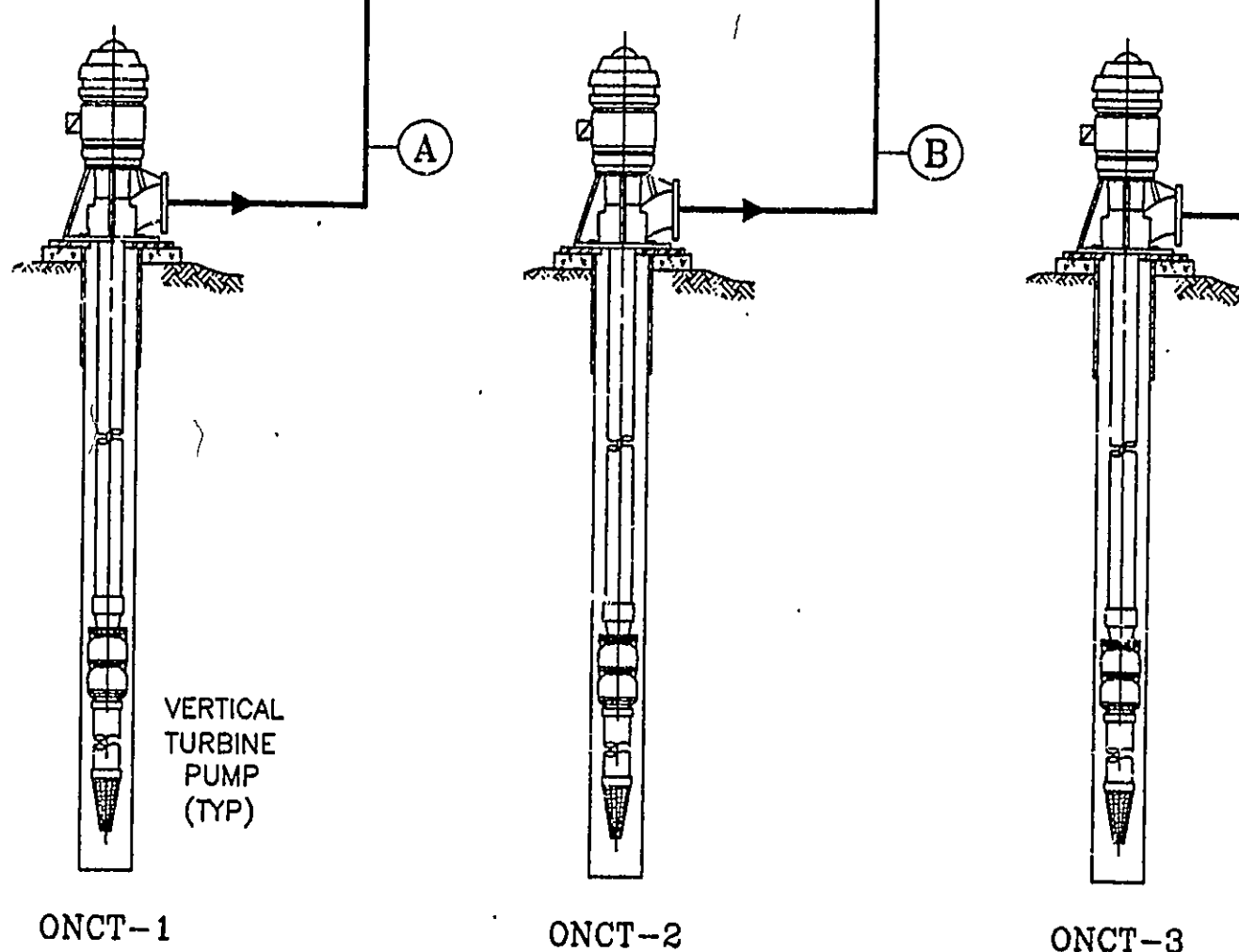
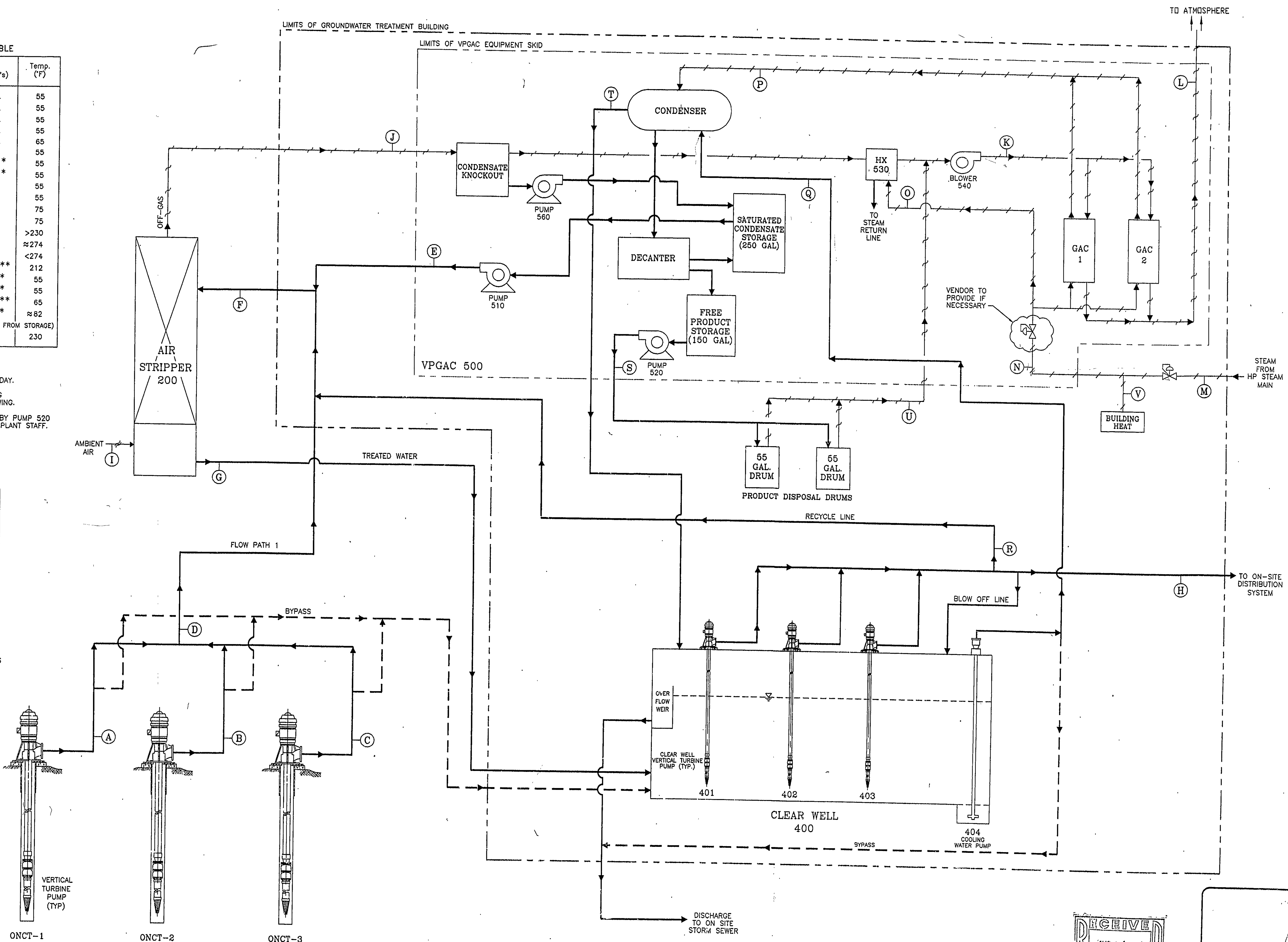
* LESS THAN 2.5 ug/L OF EACH COMPOUND.
 ** AVERAGE BASED ON 3 DESORPTION CYCLES PER DAY.
 *** STREAM R FLOWS ONLY DURING SYSTEM CLEANING EVENTS; 0 gpm WHEN OTHER STREAMS ARE FLOWING.
 † PRODUCT WILL BE TRANSFERRED FROM STORAGE BY PUMP 520 TO 55 GALLON DRUMS ON A REGULAR BASIS BY PLANT STAFF.

ESTIMATED CONCENTRATION IN SATURATED CONDENSATE STREAM E

Constituents	Concentration (ug/L)
Trichloroethene	1.1E6
Tetrachloroethene	1.5E5
1,2-Dichloroethene	6.3E6
1,1-Dichloroethene	2.25E6
1,1,1-Trichloroethene	1.5E6
(TVOC's)	1.13E7

NOTES

1. DETAILS OF VPGAC SKID ARE FOR INFORMATIONAL PURPOSES. THE SKID SUPPLIER SHALL DESIGN AND DEFINE ALL COMPONENTS WITHIN THE SKID LIMITS SUBJECT TO REVISION AND APPROVAL BY OWNER'S REPRESENTATIVE.
2. REFER TO DRAWING NO. G2 FOR GENERAL LEGEND AND ABBREVIATIONS.
3. FLOW RATES AND ORGANIC LOADS ARE BASED ON WORST CASE DESIGN CONDITIONS.
4. FLOW RATES FOR LOCATIONS E, N, O, P, Q & T ARE MAXIMUM VALUES. VPGAC VENDOR SHALL DEFINE PRECISE REQUIREMENTS BASED ON SYSTEM CONFIGURATION.
5. PRESSURE PROVIDED FOR LOCATION K IS ESTIMATED. VPGAC VENDOR SHALL DEFINE TO SUIT EQUIPMENT CONFIGURATION AND REQUIREMENTS OF LOCATION L.



GERAGHTY & MILLER, INC.
 Environmental Services
 A Heldemij Company

NORTHROP GRUMMAN

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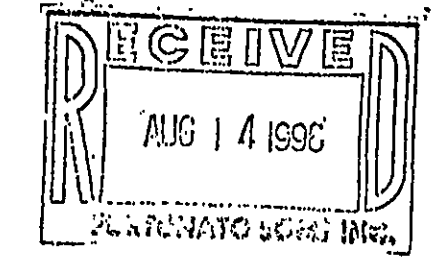
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SCALE VERIFICATION
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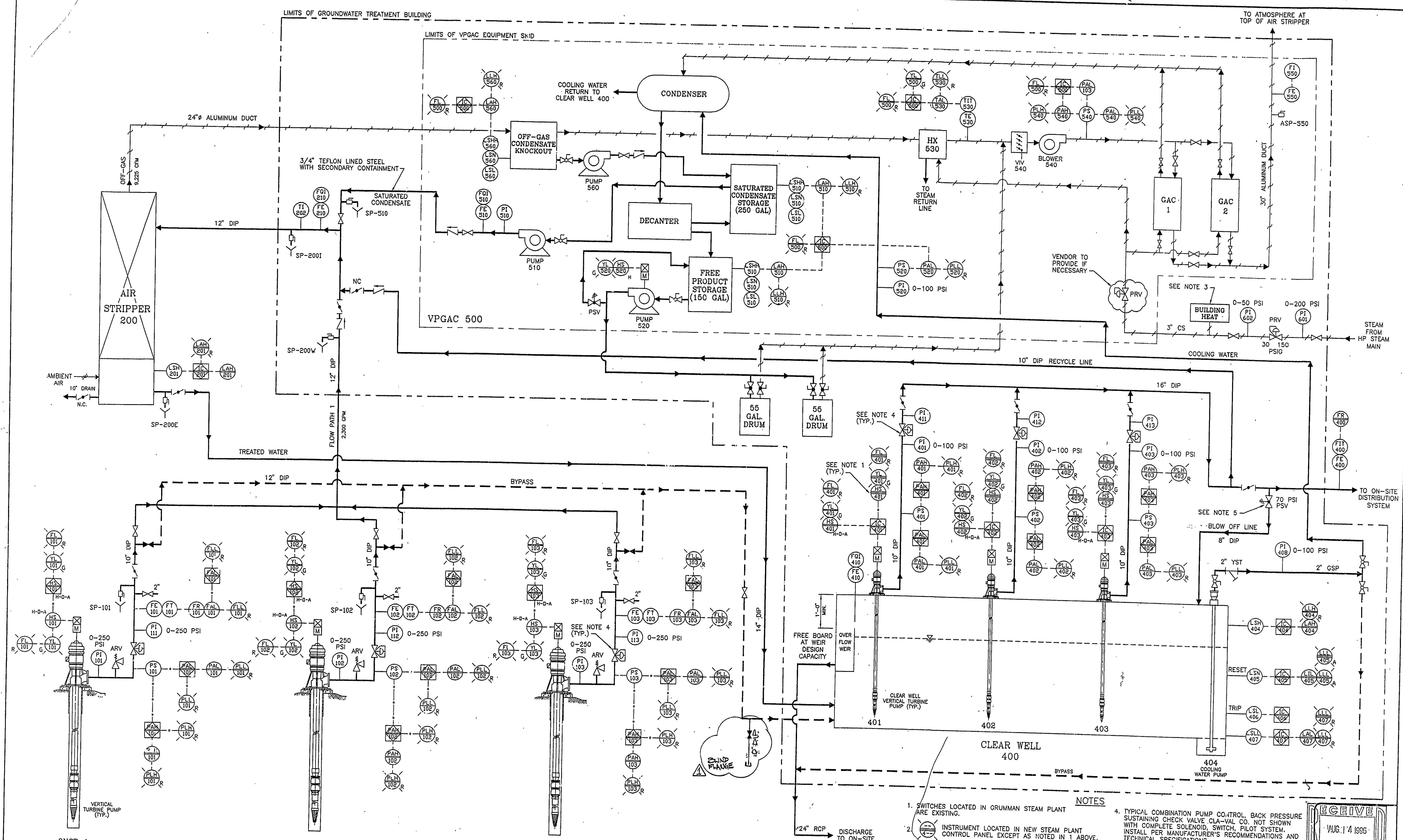
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: NY0977.001	MANU FILE: GR-5
DRAWING: GRU-5	FILE: GR-1
DRAFTED BY: D. LORENZ	DATE: 2/21/96
CHECKED BY: [Signature]	DATE: 2/27/96
APPROVED BY: [Signature]	DATE: 2/27/96

PROCESS FLOW DIAGRAM
 T102
 GROUNDWATER INTERIM REMEDIAL MEASURES
 GRUMMAN AEROSPACE CORPORATION
 BETHPAGE, NEW YORK



Arnold S. Verbeck
 P.E. Lic. No. 39333
 DRAW NO. P1



- NOTES**
1. SWITCHES LOCATED IN GRUMMAN STEAM PLANT ARE EXISTING.
 2. INSTRUMENT LOCATED IN NEW STEAM PLANT CONTROL PANEL EXCEPT AS NOTED IN 1 ABOVE.
 3. BUILDING HEAT STEAM LINE PIPING/INSTRUMENTATION SHOWN ON DRAWING NO. P8.
 4. TYPICAL COMBINATION PUMP CONTROL, BACK PRESSURE SUSTAINING CHECK VALVE CLA-VAL CO. NOT SHOWN WITH COMPLETE SOLENOID, SWITCH, PILOT SYSTEM. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND TECHNICAL SPECIFICATIONS.
 5. ANTICIPATING SURGE RELIEF CONTROL VALVE CLA-VAL CO. NOT SHOWN WITH COMPLETE SOLENOID PILOT SYSTEM. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND TECHNICAL SPECIFICATIONS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

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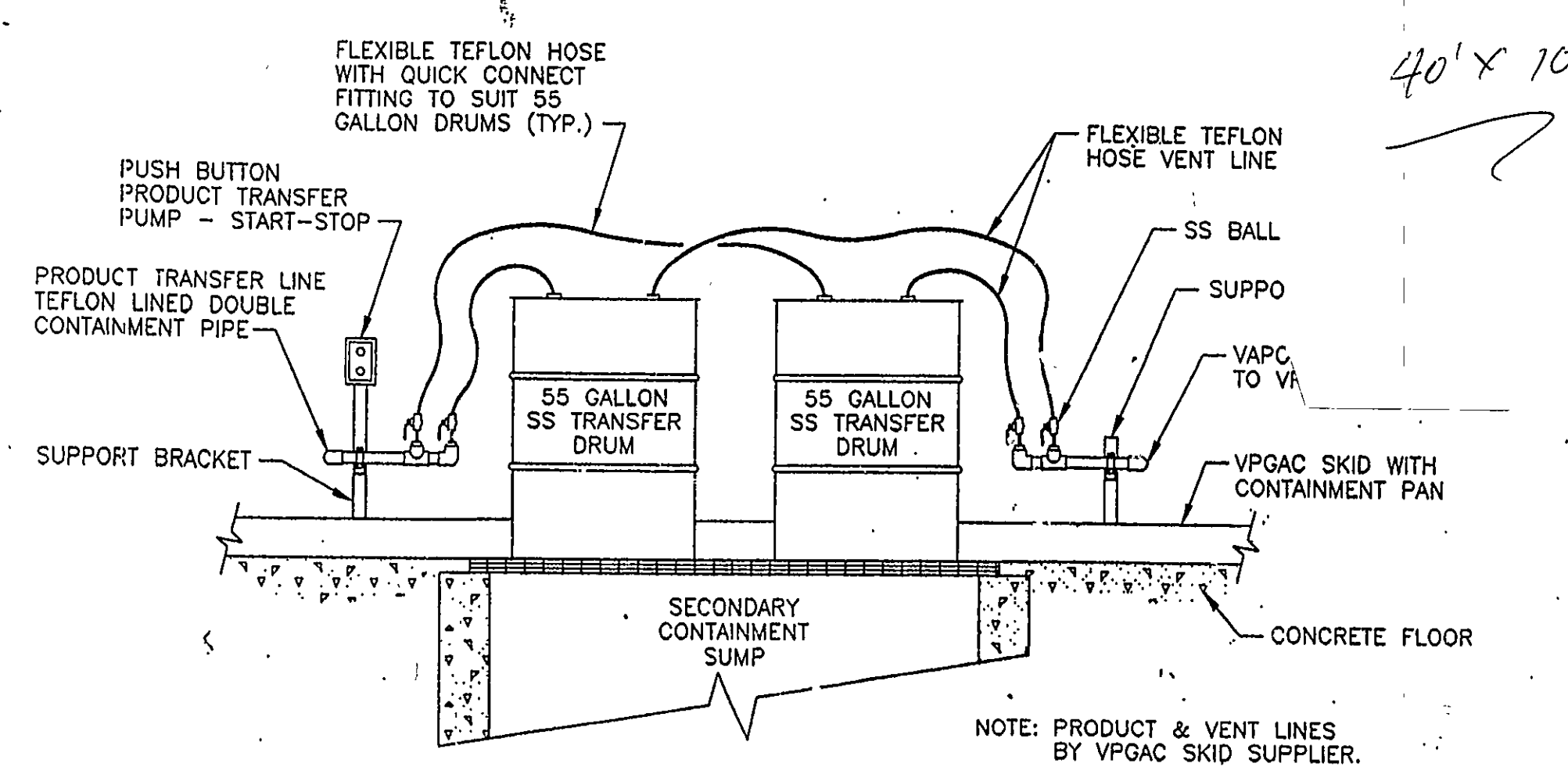
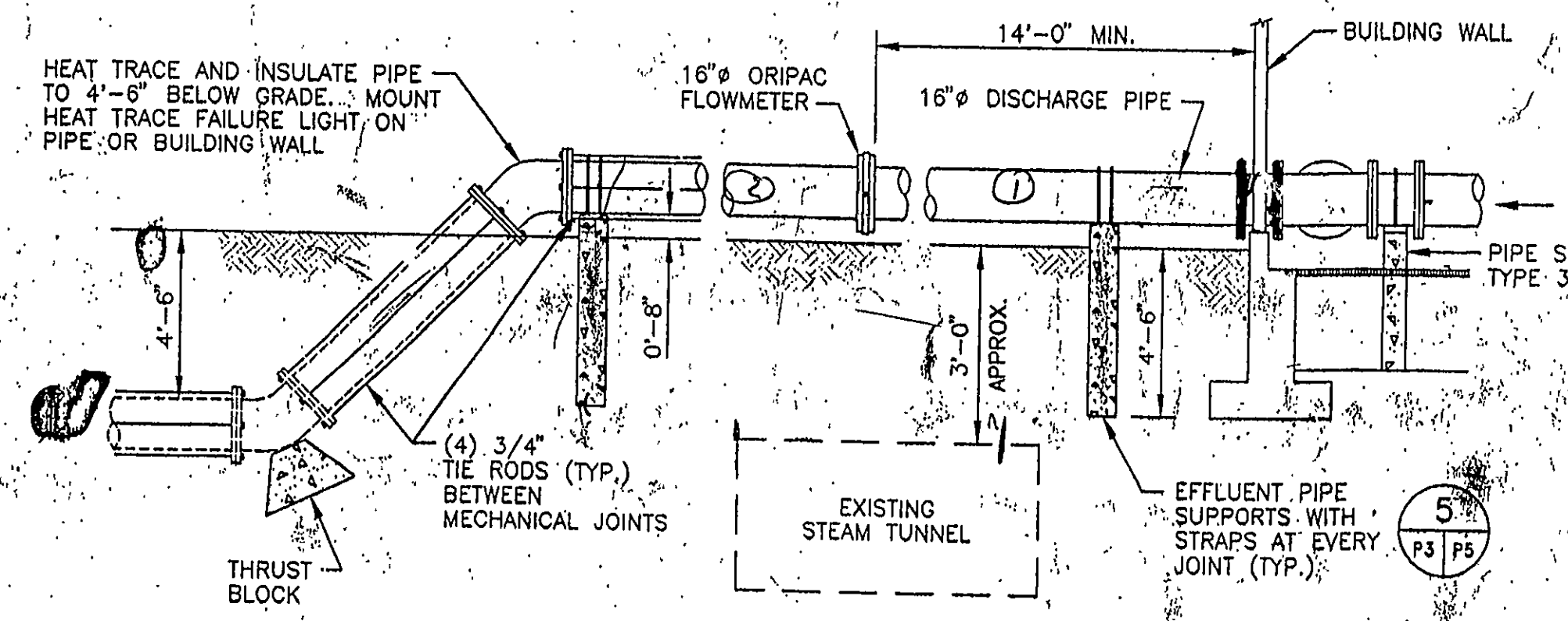
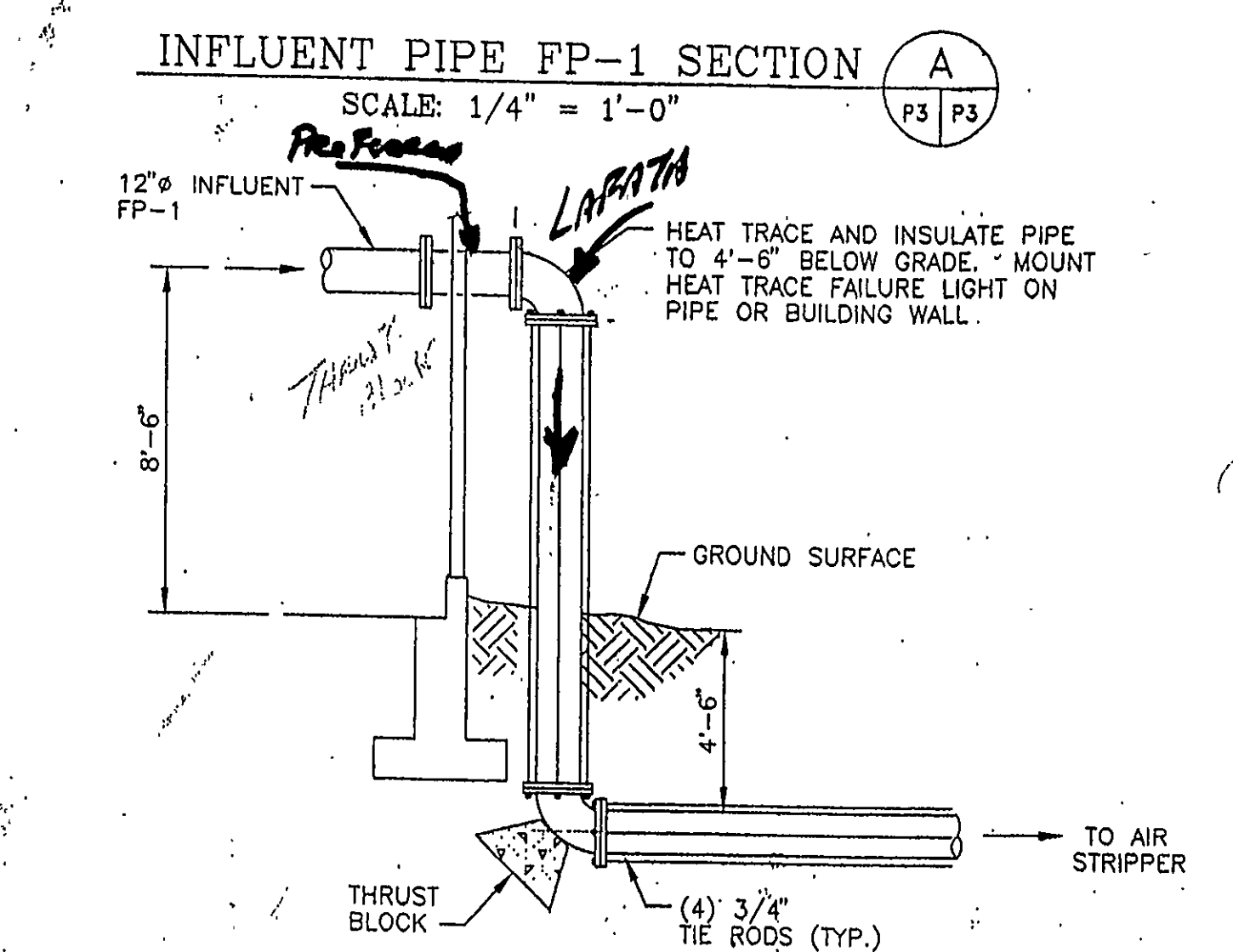
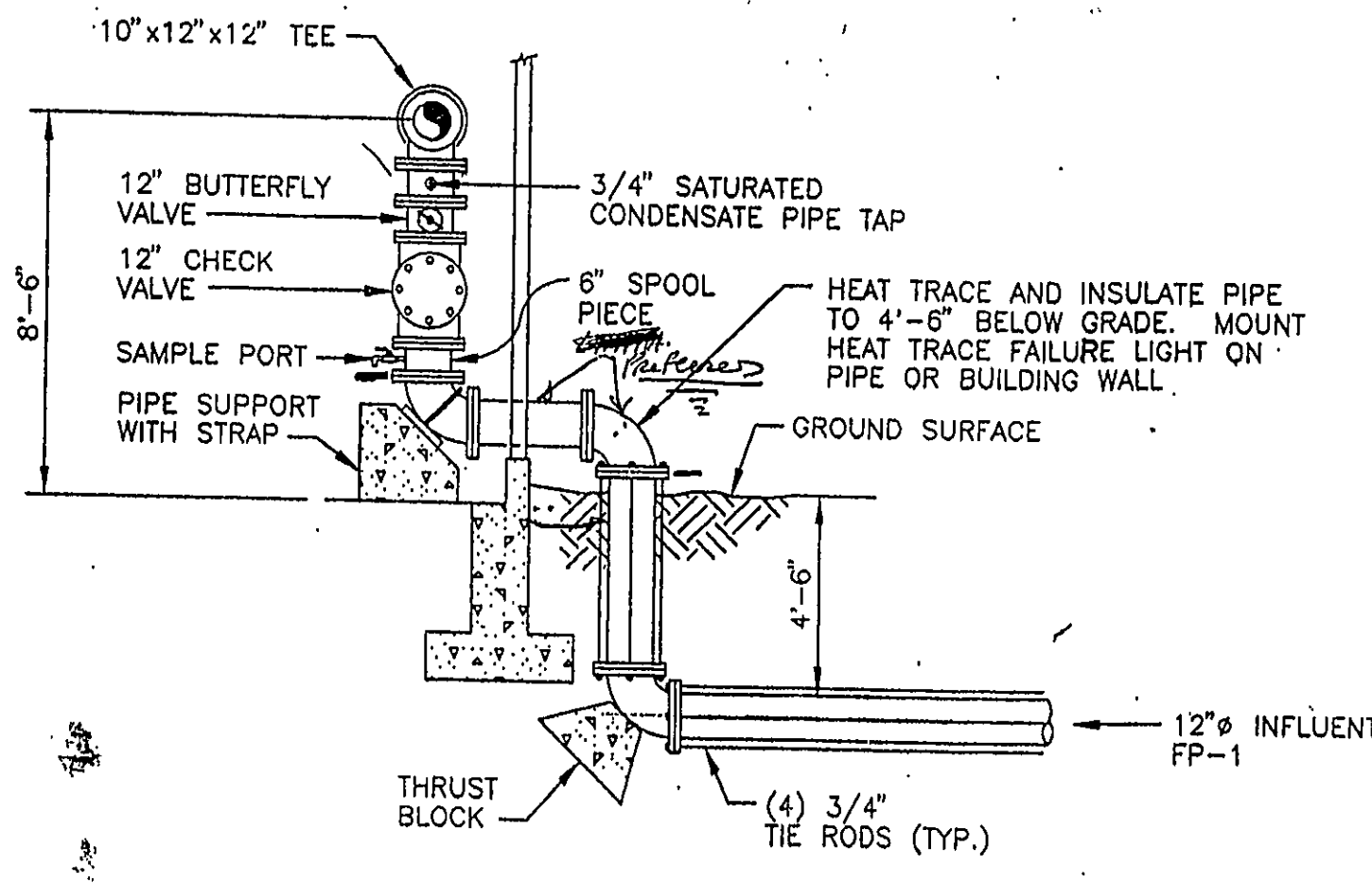
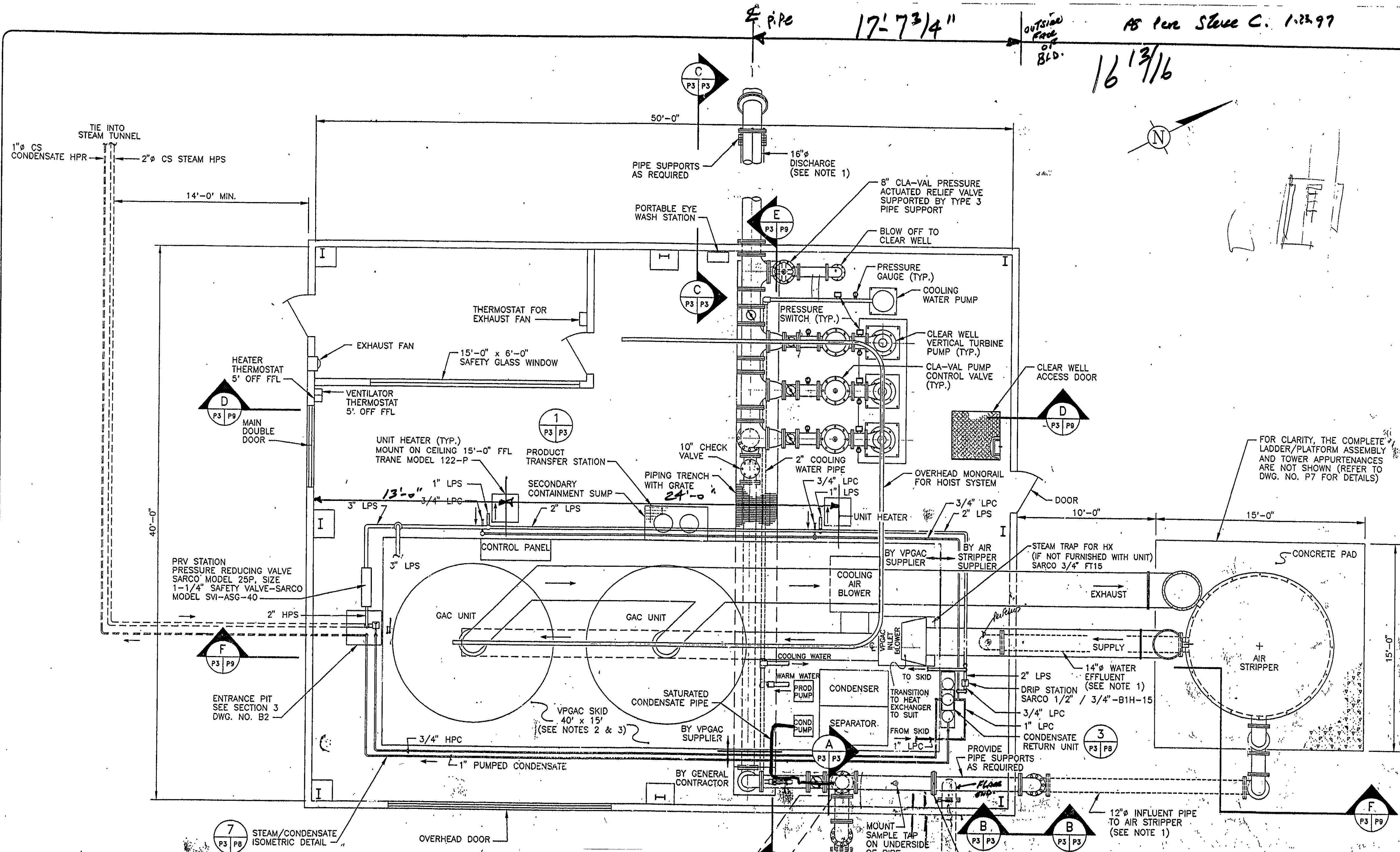
REV. NO.	DATE	DESCRIPTION	BY	APPR.
1	12/22/92	ADD TEE WITH GATE VALVE, PIPE SUB AND BLIND FLANGE	EJZ	OSV

PROJECT NO. NY0277.001	HARD FILE: GRU-8
DRAWING: GRU-8	PLOT SIZE: 11x17
DRAWN BY: D. J. BRENNAN	DATE: 2/22/96
CHECKED BY: E. J. Z...	DATE: 2/27/96
APPROVED BY: OSV	DATE: 3/23/96

PROCESS AND INSTRUMENTATION DIAGRAM
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

RECEIVED
AUG 14 1996
RECORDED & INDEXED

DRAWING NO. P2



- NOTES**
- HEAT TRACE AND INSULATE ALL EXPOSED PIPING TO 4'-6" BELOW GRADE. HEAT TRACE AND INSULATE ALL OUTDOOR SAMPLE TAPS.
 - THE ENTIRE VPGAC SKID SHALL BE PROVIDED WITH A CONTAINMENT PAN. ANY PENETRATIONS THROUGH THE PAN SHALL BE PROVIDED WITH A SEALED SLEEVE.
 - VPGAC SKID DETAILS TO BE FINALIZED BY VPGAC SYSTEM SUPPLIER. INTERFACES TO OFF-SKID PIPING SHALL BE ADHERED TO AS CLOSELY AS POSSIBLE. FINAL LOCATIONS OF EQUIPMENT ON SKID TO BE DETERMINED BY VENDOR AND APPROVED BY OWNER'S REPRESENTATIVE.

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

DISCHARGE PIPE SECTION C
SCALE: 1/4" = 1'-0"

PRODUCT TRANSFER STATION DETAIL
N.T.S.

RECEIVED
AUG 14 1996
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GERAGHTY & MILLER, INC.
Environmental Services
A Haldemill Company

NORTHROP GRUMMAN

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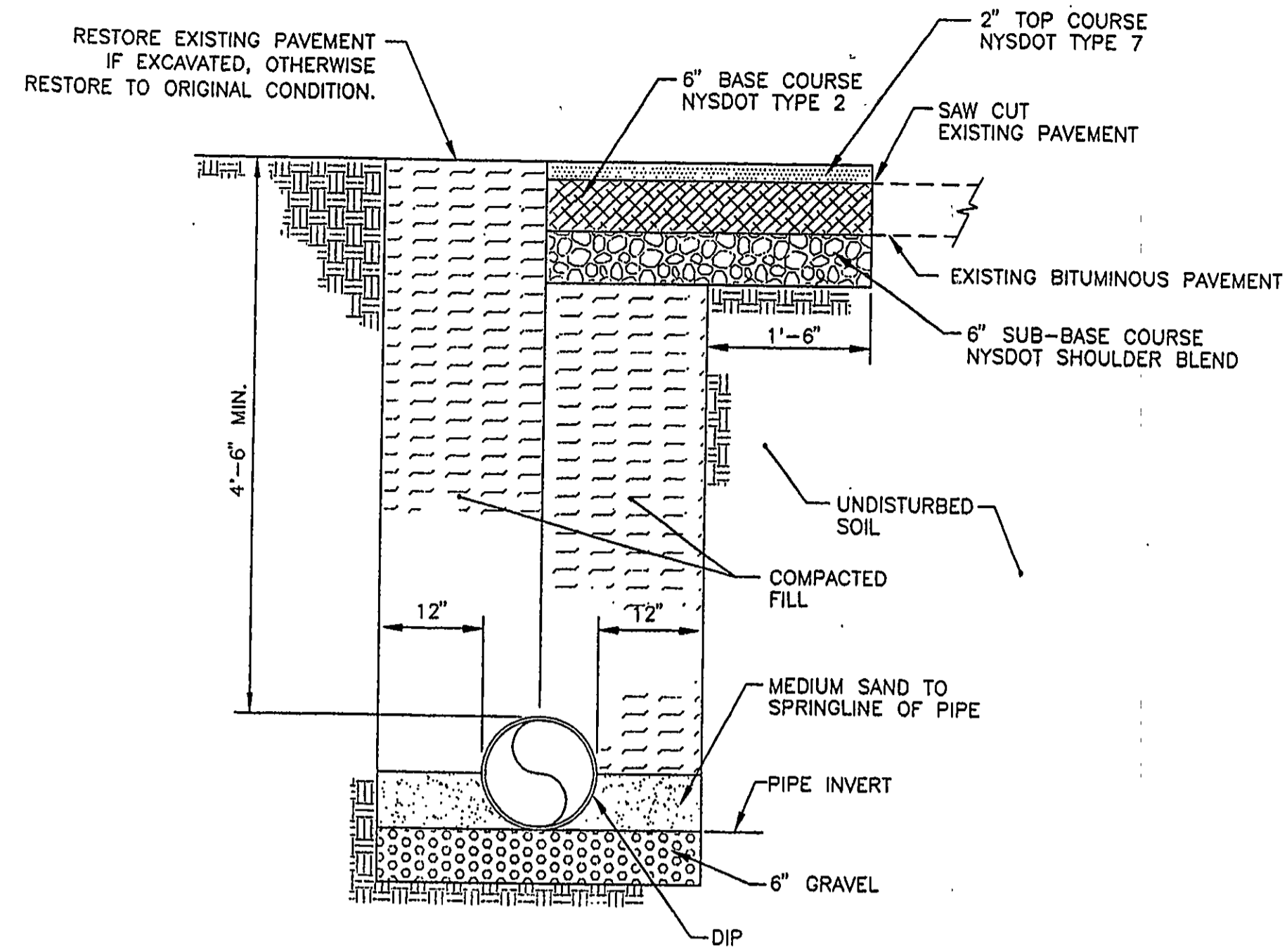
SCALE VERIFICATION
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USE TO REPRO. FIGURE SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

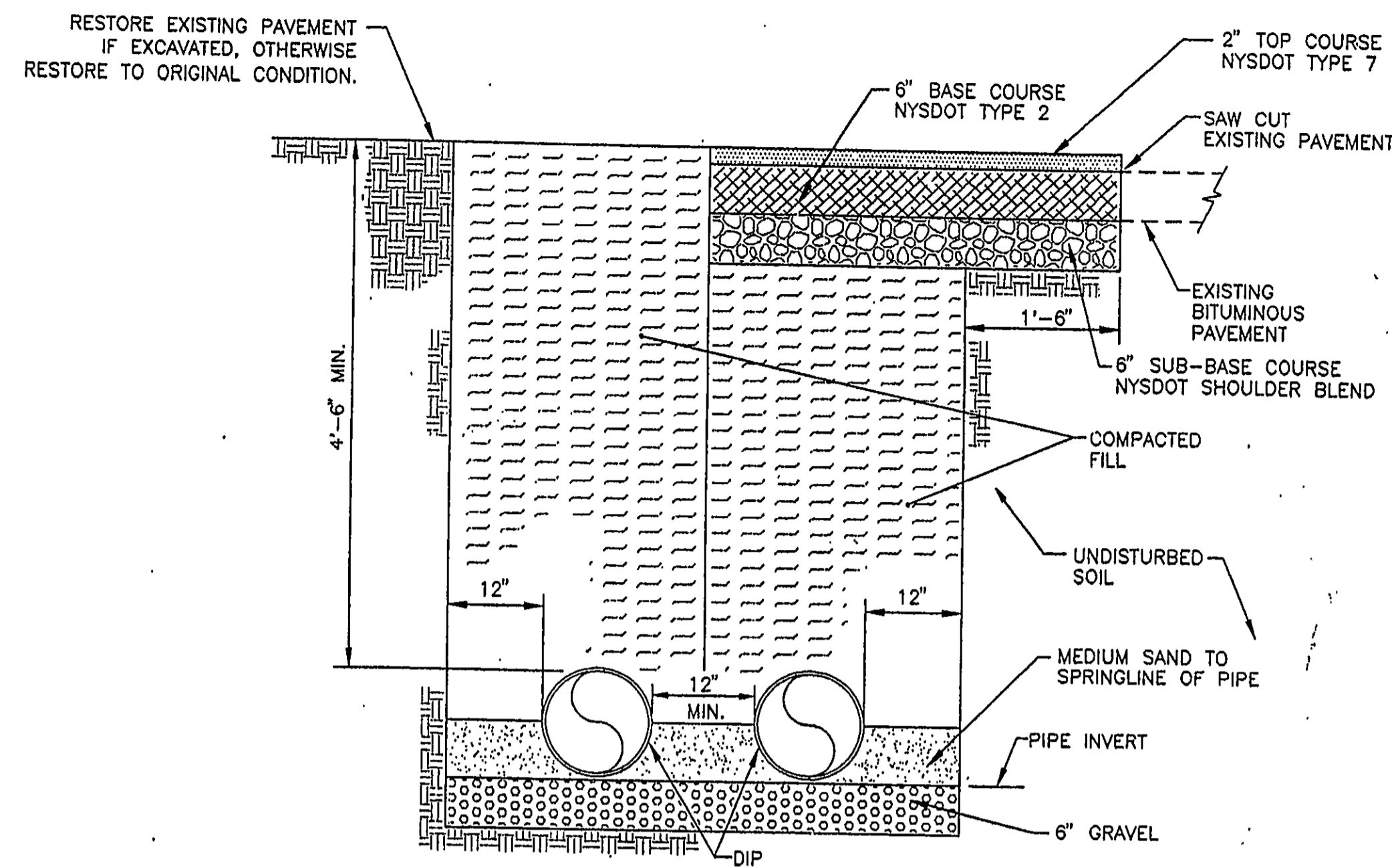
PROJECT NO. 110277.001	DATE 2/22/96
DRAWING NO. GRU-1C	DATE 2/22/96
DRAFTED BY: E. EAGLESTON	DATE 2/22/96
CHECKED BY: [Signature]	DATE 2/22/96
APPROVED BY: [Signature]	DATE 2/22/96

EQUIPMENT ARRANGEMENT AND PROCESS PIPING PLAN
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. P3

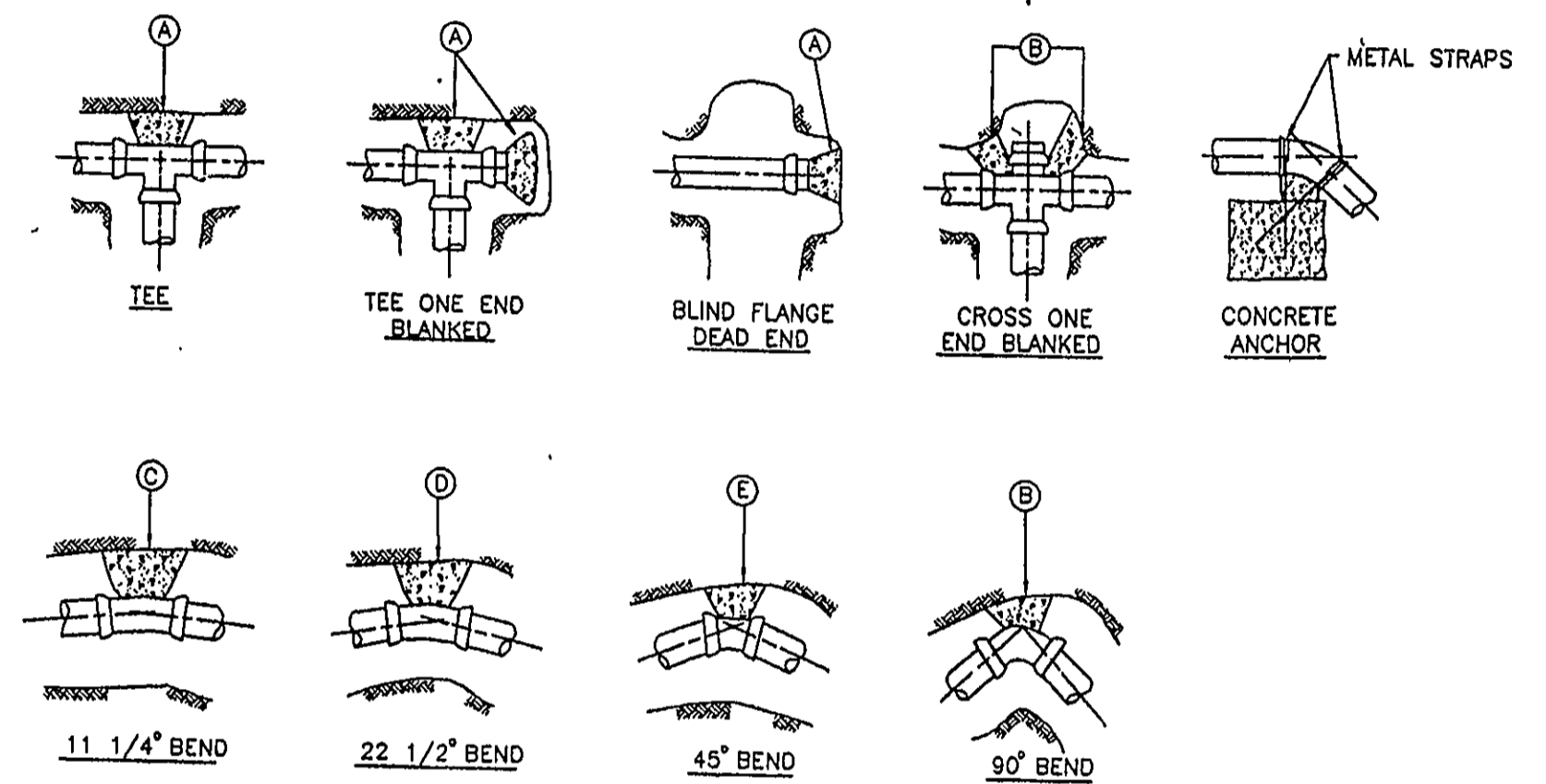


TYPICAL SINGLE PIPE TRENCH DETAIL 1
N.T.S. C1 P4



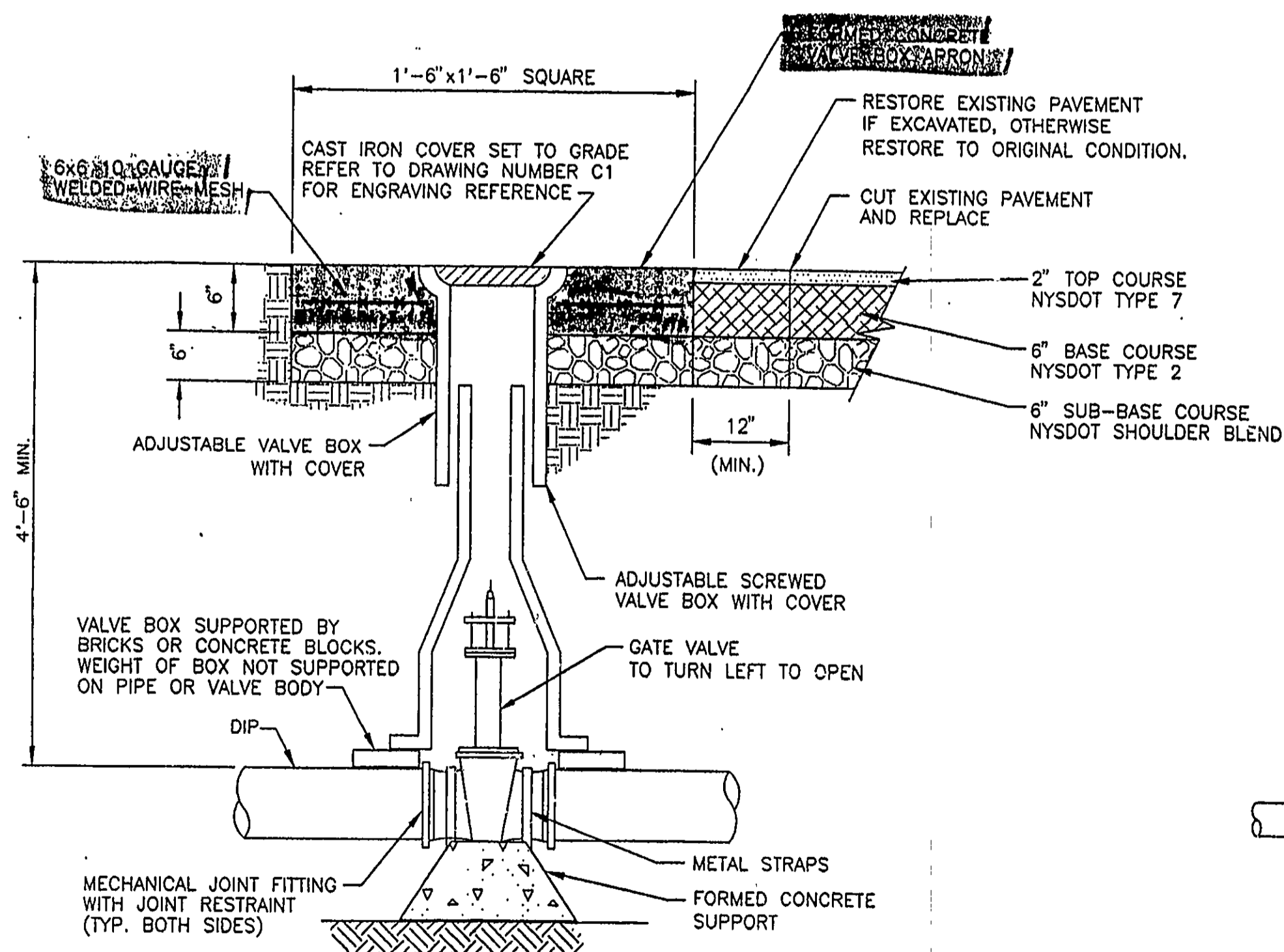
TYPICAL DUAL PIPE TRENCH DETAIL 2
N.T.S. C1 P4

MINIMUM SQ. FT. BEARING AREA FOR FITTINGS					
Q = 1200 gpm/2300 gpm					
FIT. SIZE	AREA A	AREA B	AREA C	AREA D	AREA E
2"	0.6/0.51	0.5/0.36	0.06/0.05	0.12/0.1	0.25/0.2
10"	14.8/12.8	10.5/9.0	1.5/1.3	2.9/2.5	5.7/4.9
12"	21.1/18.2	14.9/12.9	2.1/1.8	4.2/3.6	8.1/7.0
16"	37.6/32.5	26.5/23.0	3.7/3.2	7.4/6.4	14.5/12.4

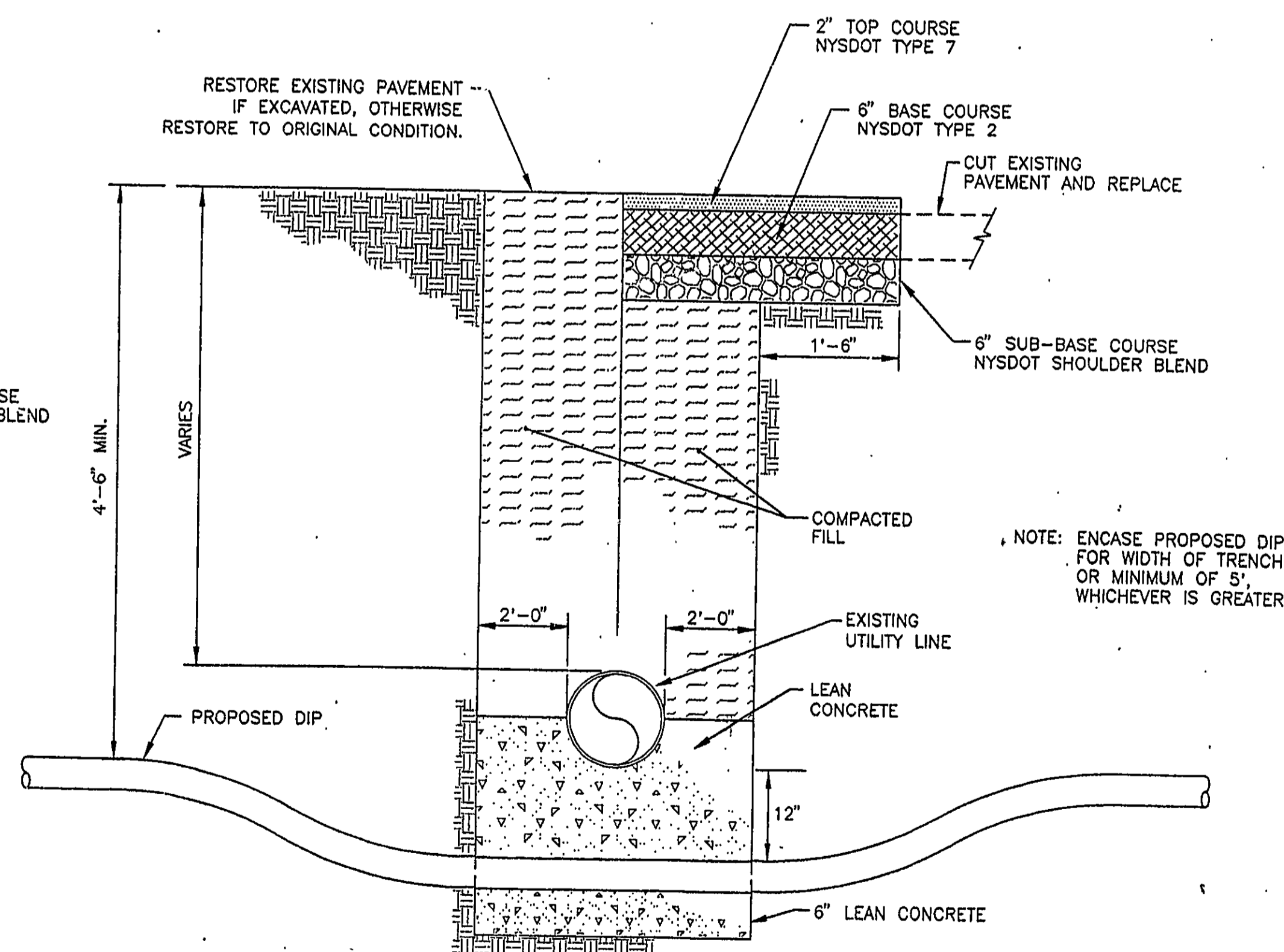


NOTES

- BEARING AREA FOR FITTINGS IS BASED ON WORKING PRESSURE OF 100 PSI.
- ALL CONCRETE THRUST BLOCKS ARE TO BE OF FORMED CONCRETE. CARE SHALL BE TAKEN TO ENSURE THAT PIPE AND PIPE JOINTS ARE NOT ENCASED DURING THRUST BLOCK CONSTRUCTION.
- THRUST BLOCKS SHALL BEAR ON UNDISTURBED SOIL. THEY SHALL NOT BEAR UPON FILL MATERIAL OR EXISTING UTILITIES AND/OR STRUCTURES. IN CASES WHERE THERE IS A CONDITION WHICH PREVENTS THIS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.

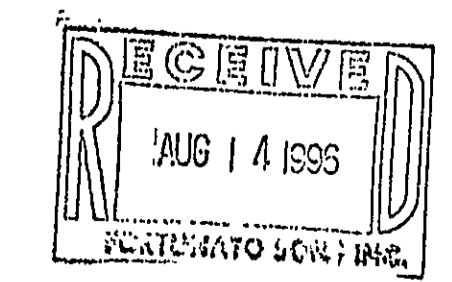


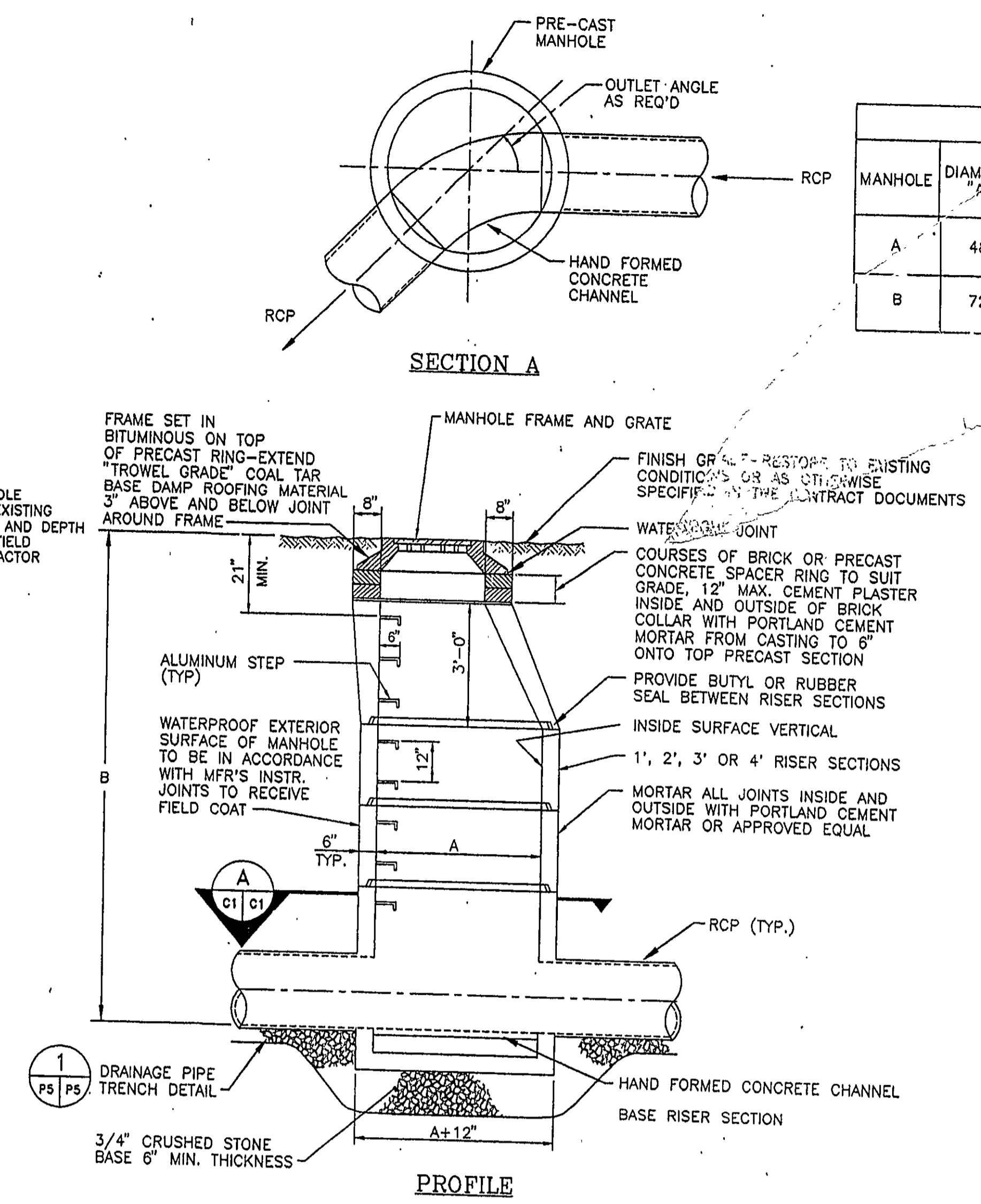
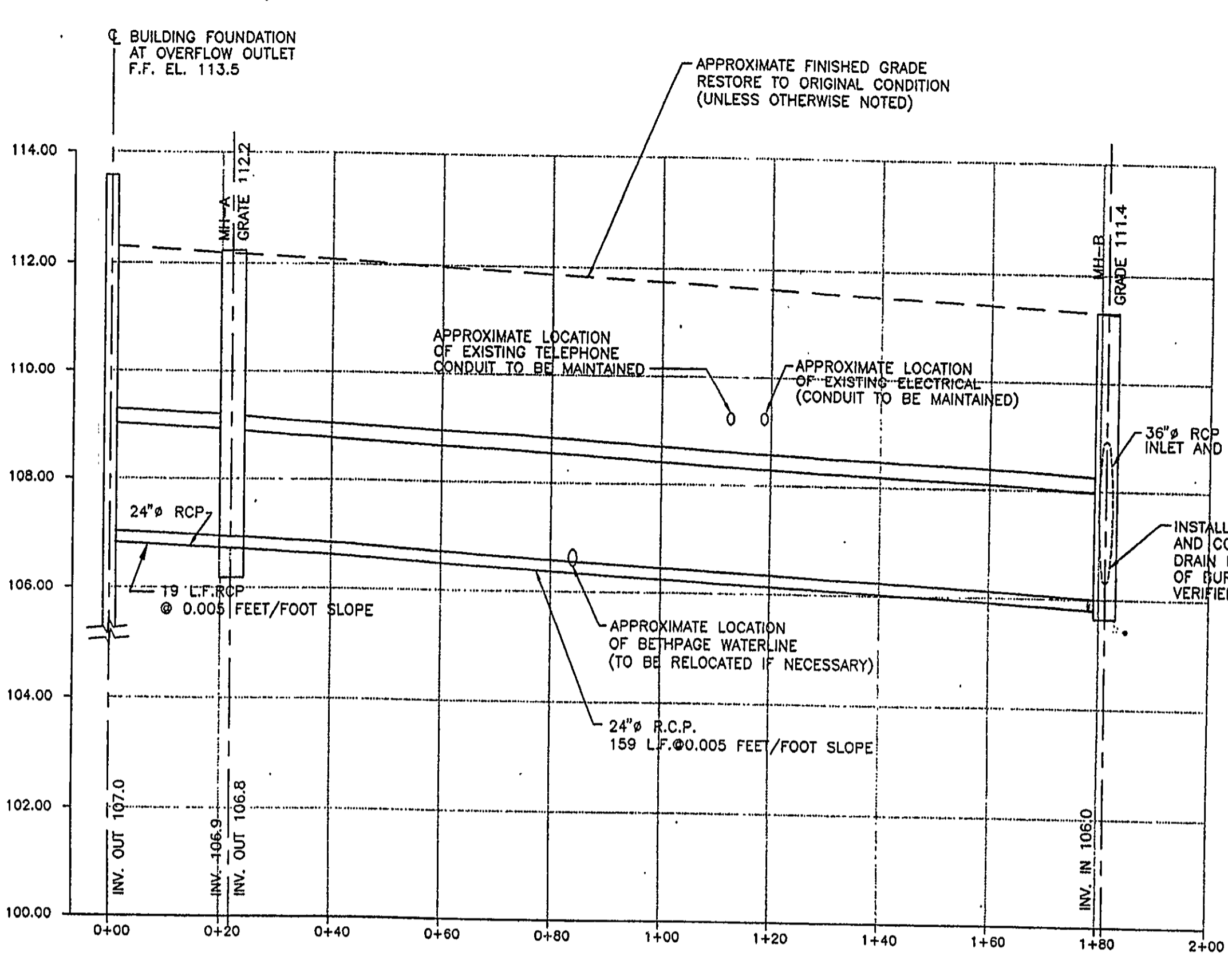
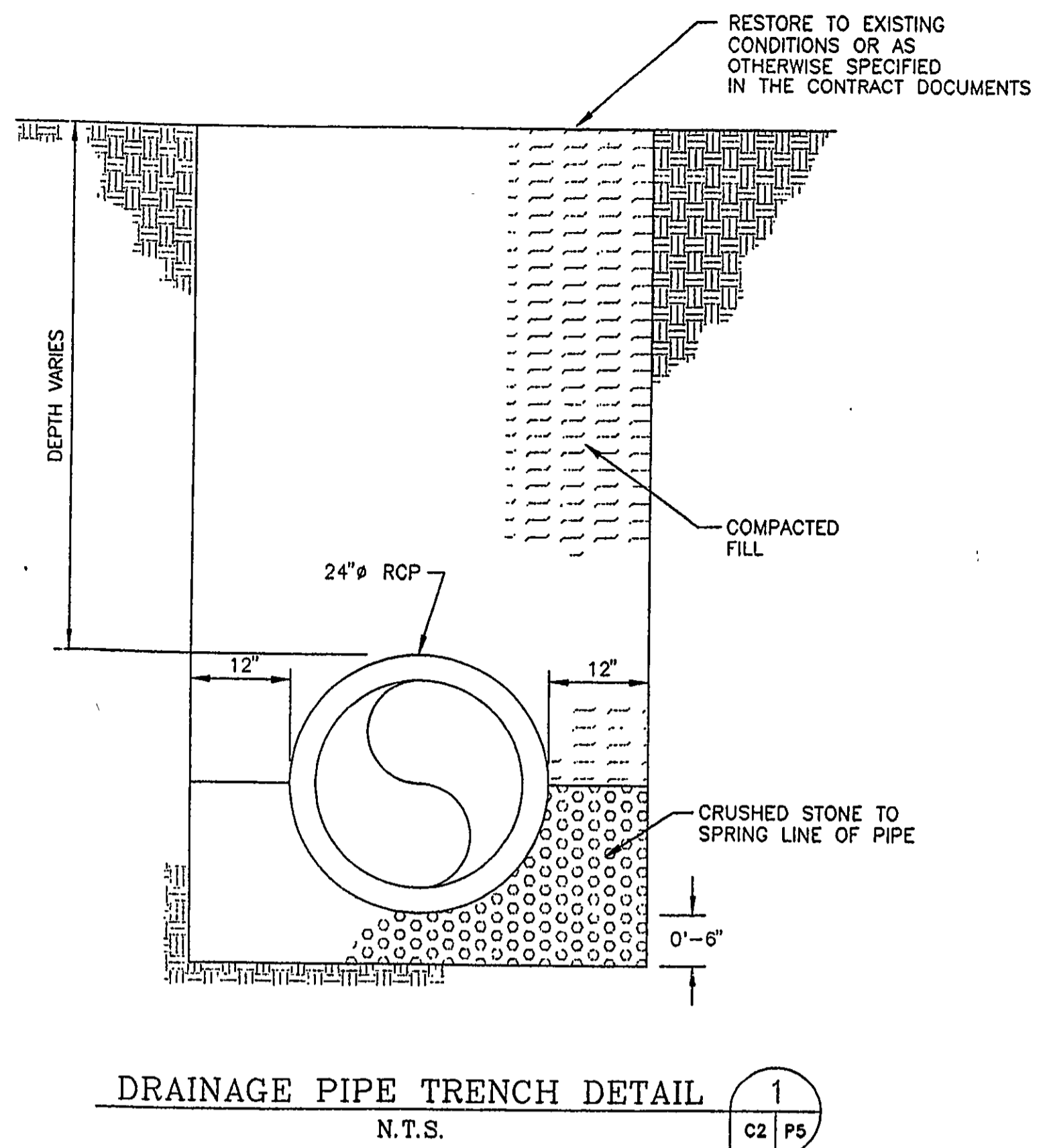
TYPICAL VALVE BOX AND COVER 3
N.T.S. C1 P4 C2



TYPICAL UTILITY CROSSING DETAIL 4
N.T.S. C2 P4

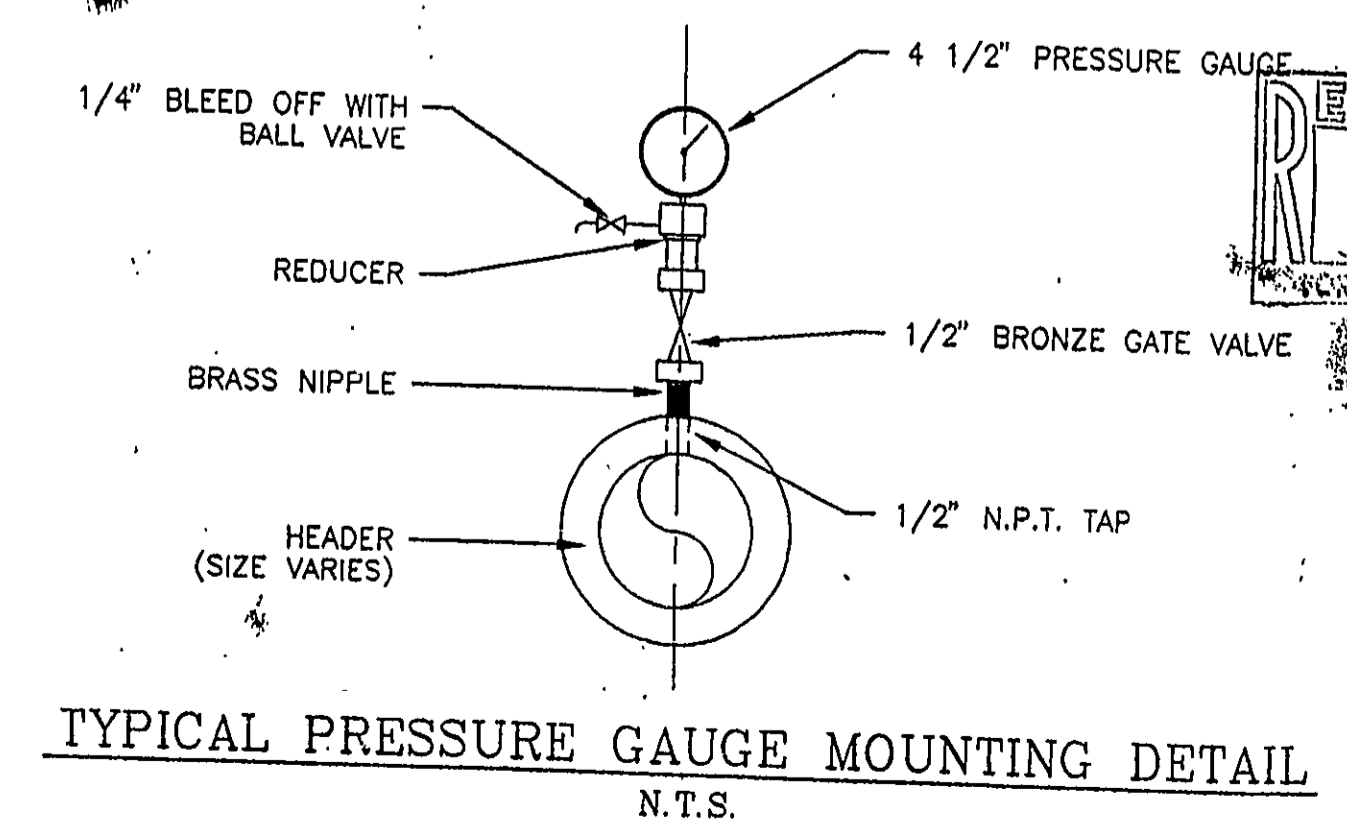
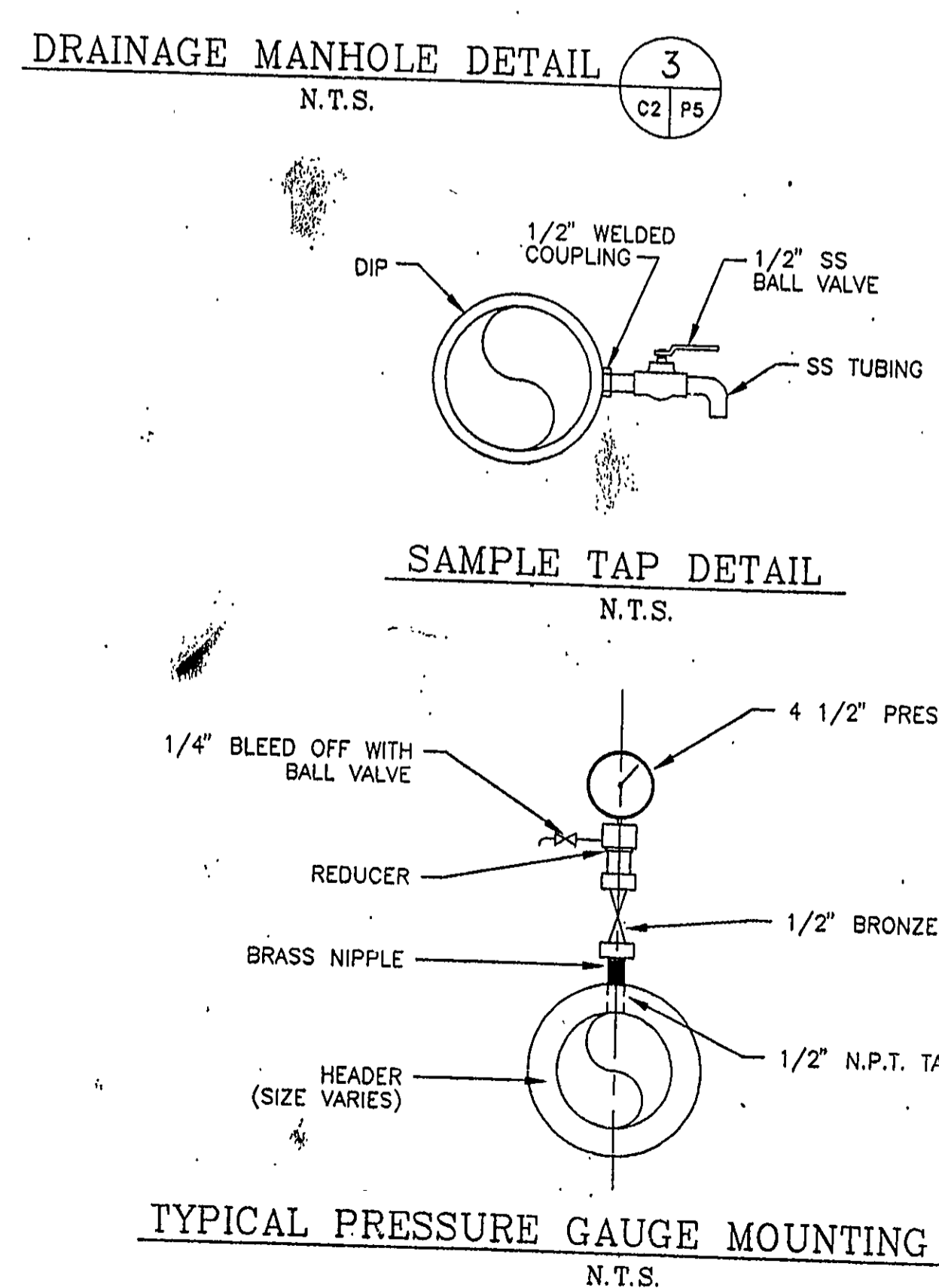
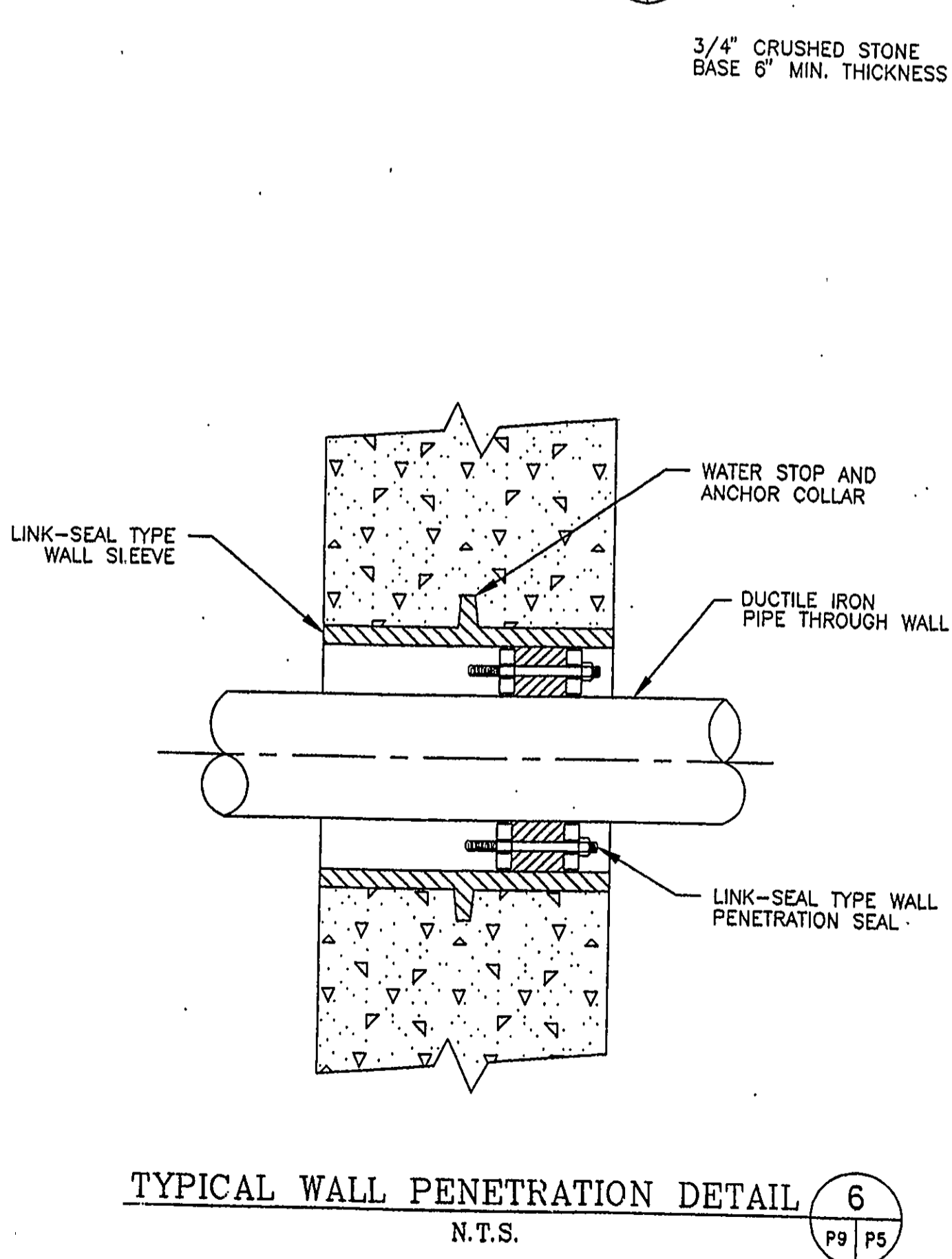
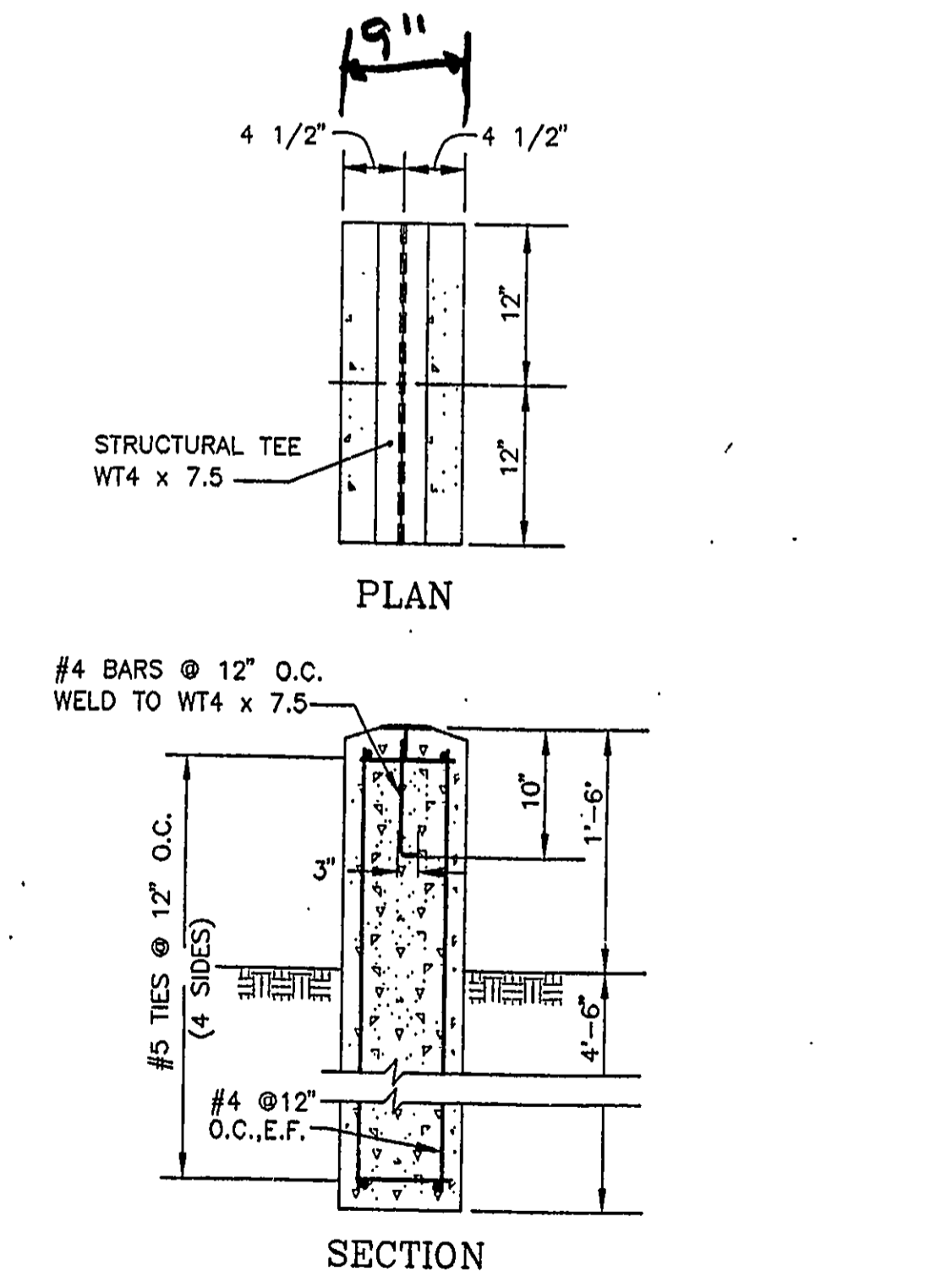
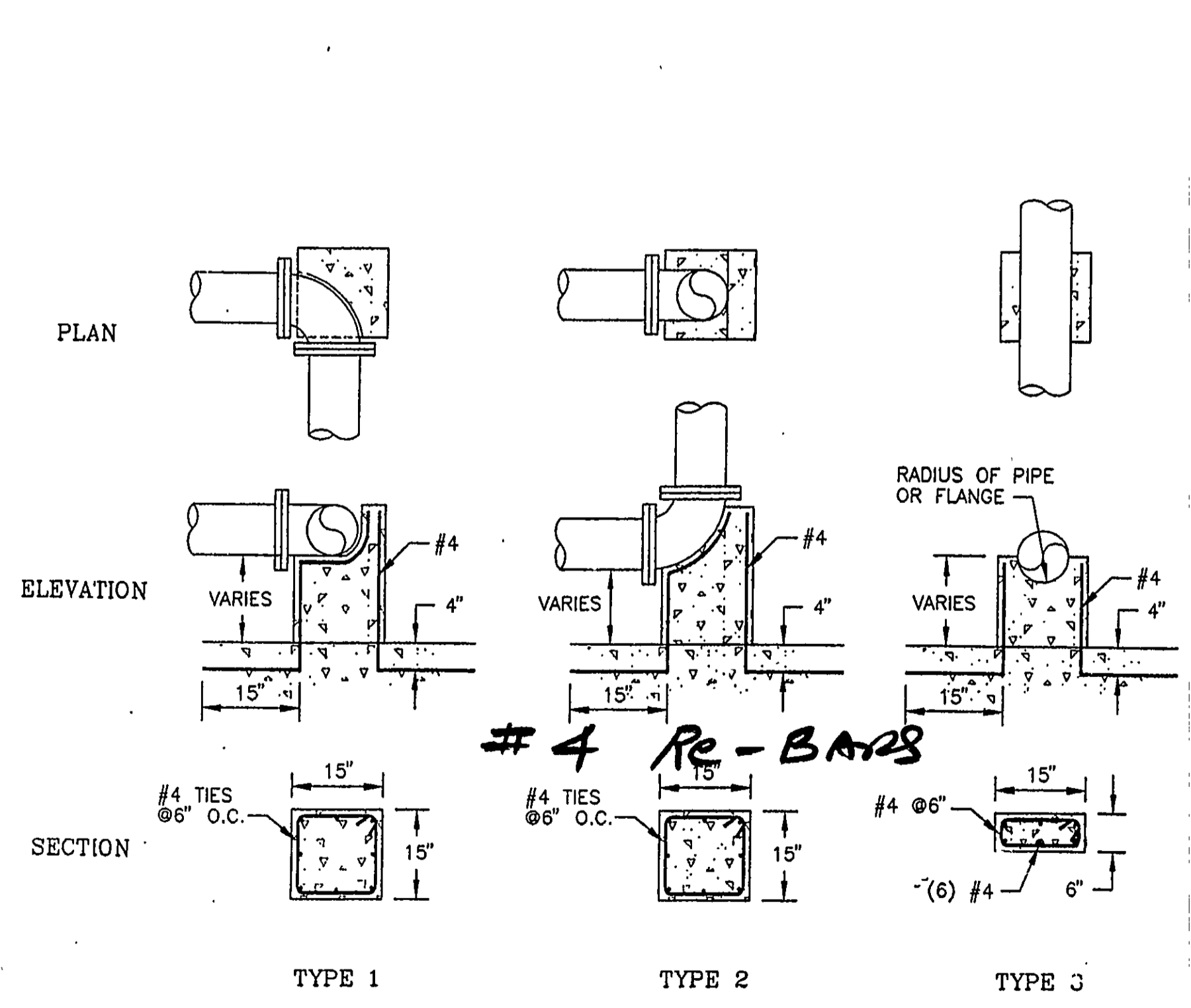
THRUST BLOCK DETAILS 5
N.T.S. C1 P4 C2





MANHOLE SCHEDULE						
MANHOLE	DIAMETER "A"	INLETS		OUTLETS		DEPTH TO INVERT "B"
		NUMBER	SIZE	NUMBER	SIZE	
A	48"	1	24"	1	24"	5'-4"
B	72"	2	24"	1	36"	5'-2"

- NOTES**
- CONSTRUCT MANHOLES PER LATEST REVISION OF A.S.T.M. C478.
 - ALL PIPE PROTRUSIONS SHALL EXTEND A MINIMUM OF 1-INCH AND A MAXIMUM OF 6-INCHES AS MEASURED ALONG CENTERLINE OF PIPE FROM INSIDE WALL OF MANHOLE.



GERAGHTY & MILLER, INC.
Environmental Services
A Healdemill Company

NORTHROP GRUMMAN

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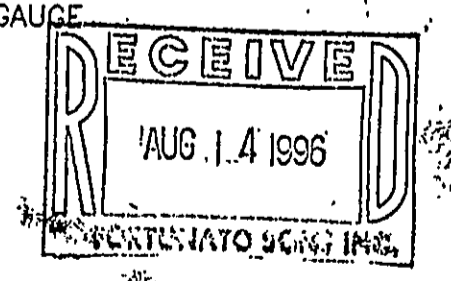
SCALE VERIFICATION
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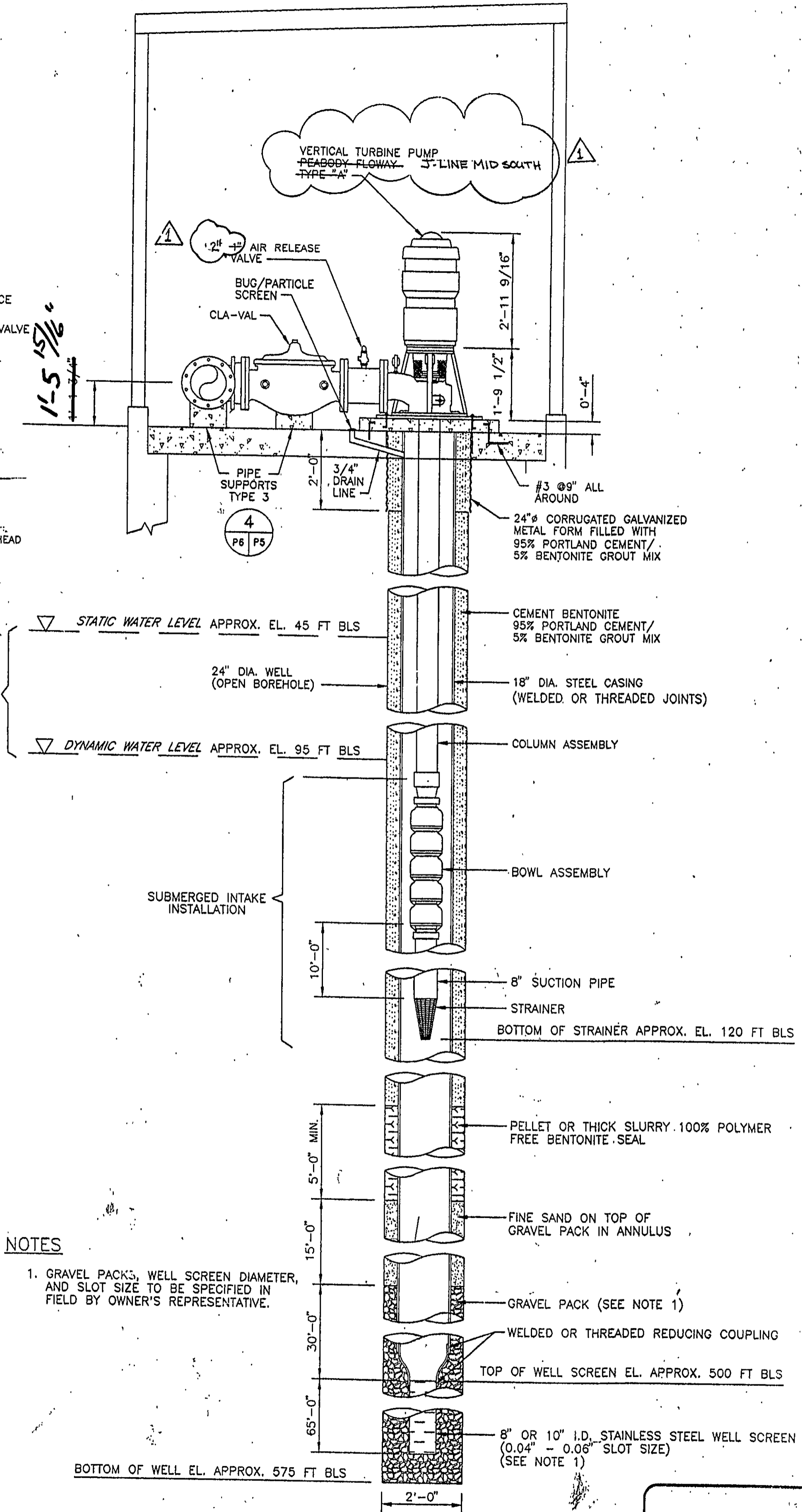
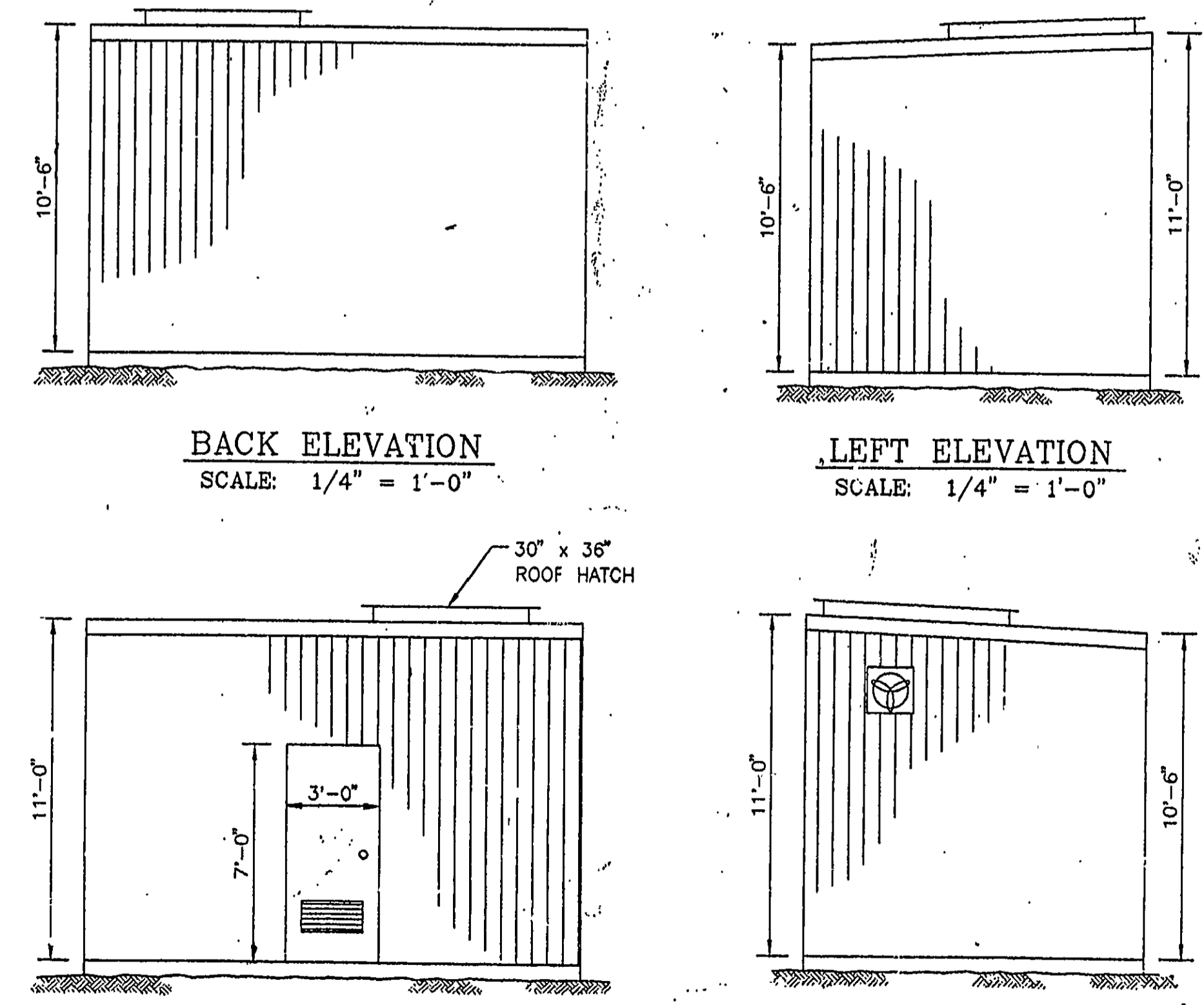
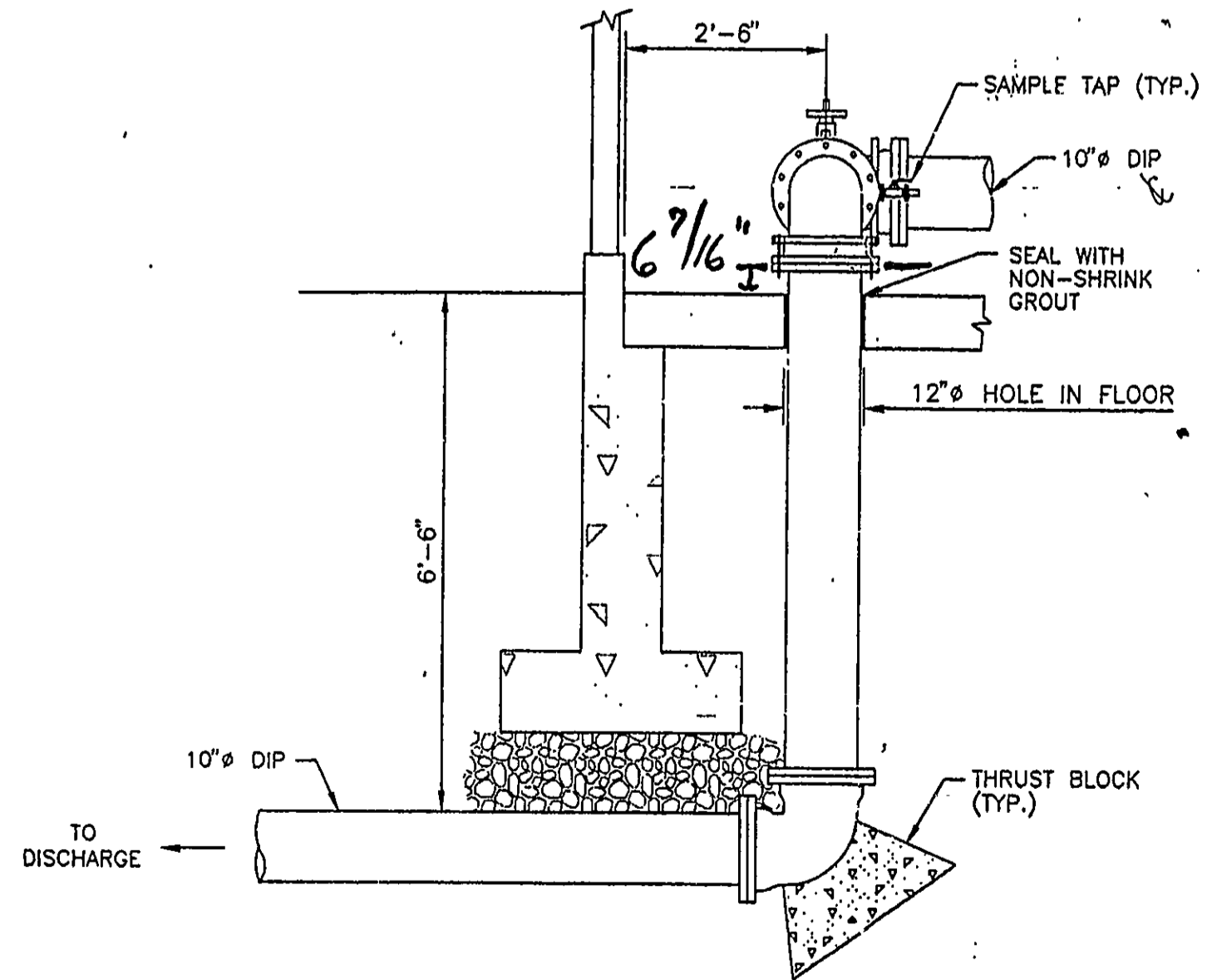
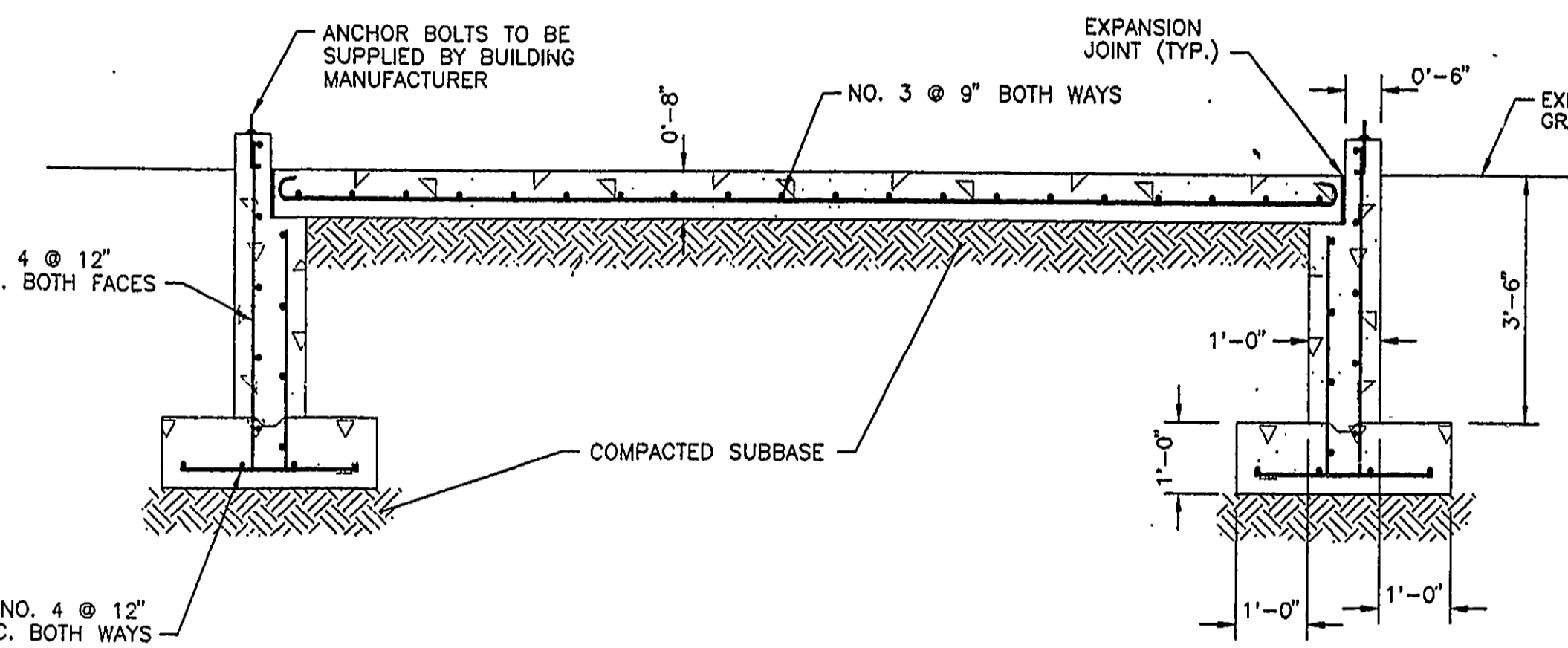
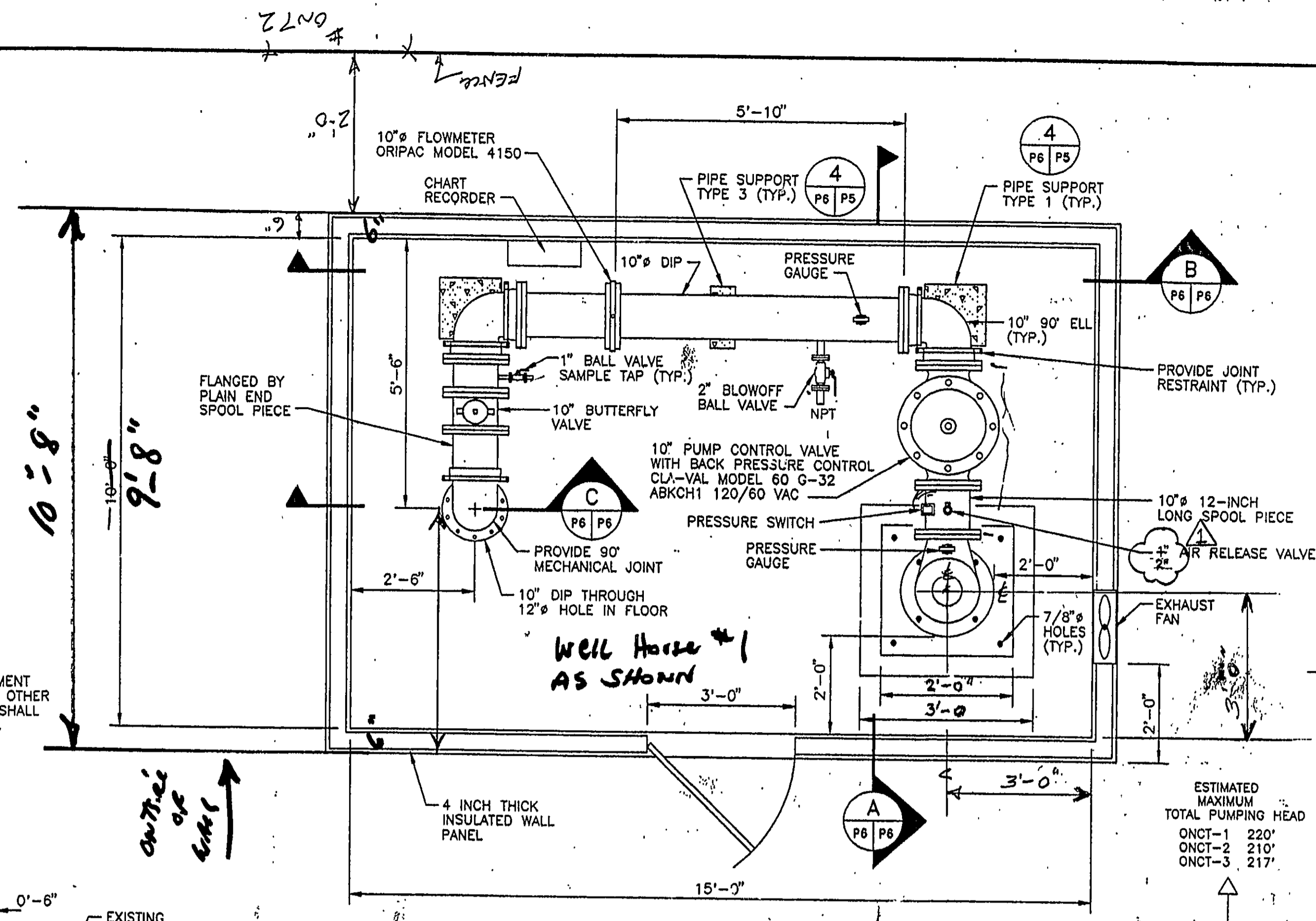
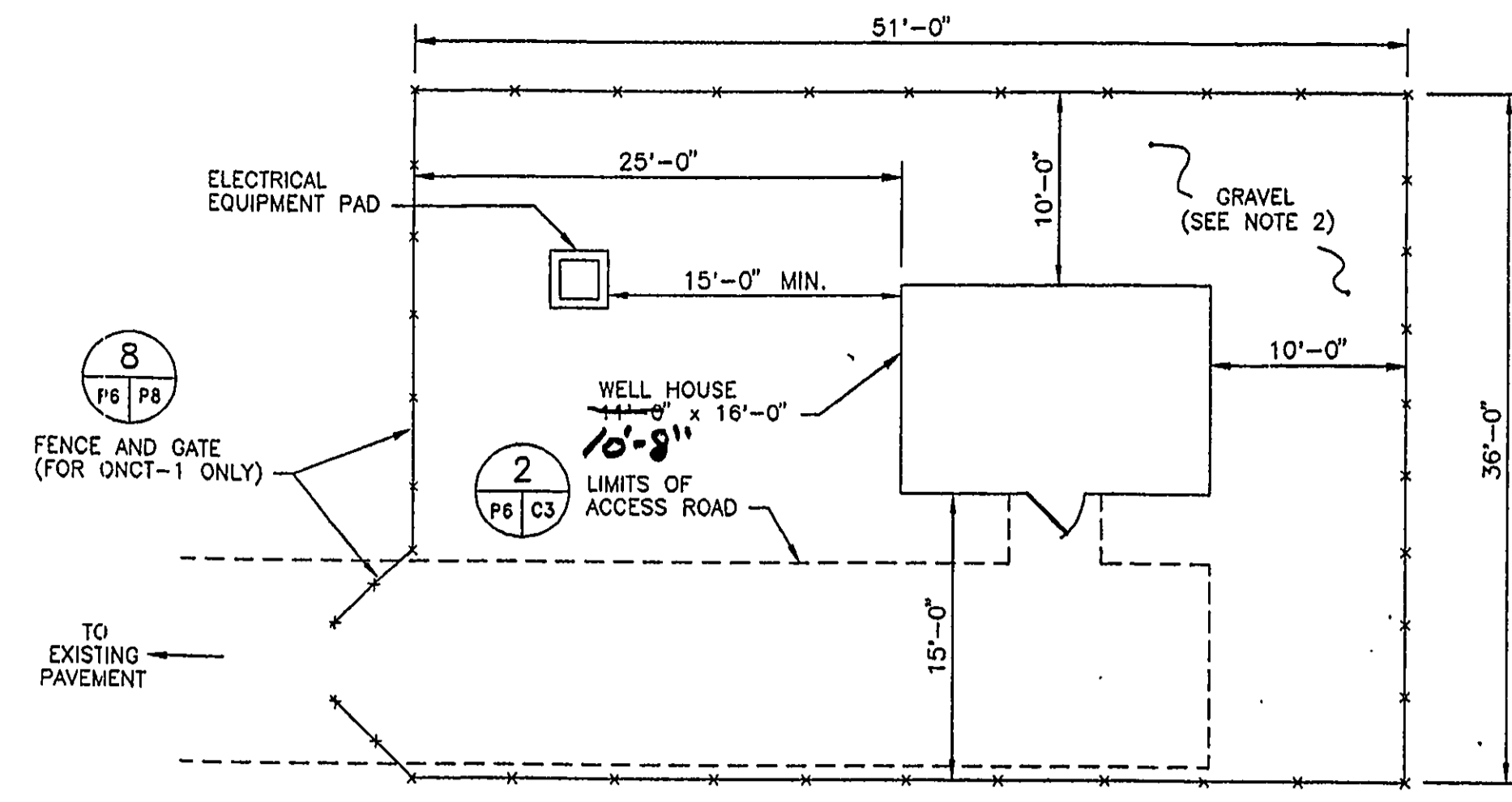
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: NY0977.001	WARD FILE: GRU-28
DRAWING: GRU-28	PLOT SIZE: 1-12
DRAFTED BY: M. MORNBACH	DATE: 2/29/00
CHECKED BY: [Signature]	DATE: 2/29/00
APPROVED BY: [Signature]	DATE: 2/23/00

MISCELLANEOUS PIPING DETAILS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

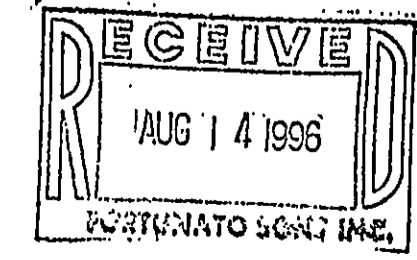
Arnold S. Verneck
P.E. Lic. No. 39333
DRAWING NO. P5





NOTES

- 1. GRAVEL PACKS, WELL SCREEN DIAMETER, AND SLOT SIZE TO BE SPECIFIED IN FIELD BY OWNER'S REPRESENTATIVE.



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Environmental Services
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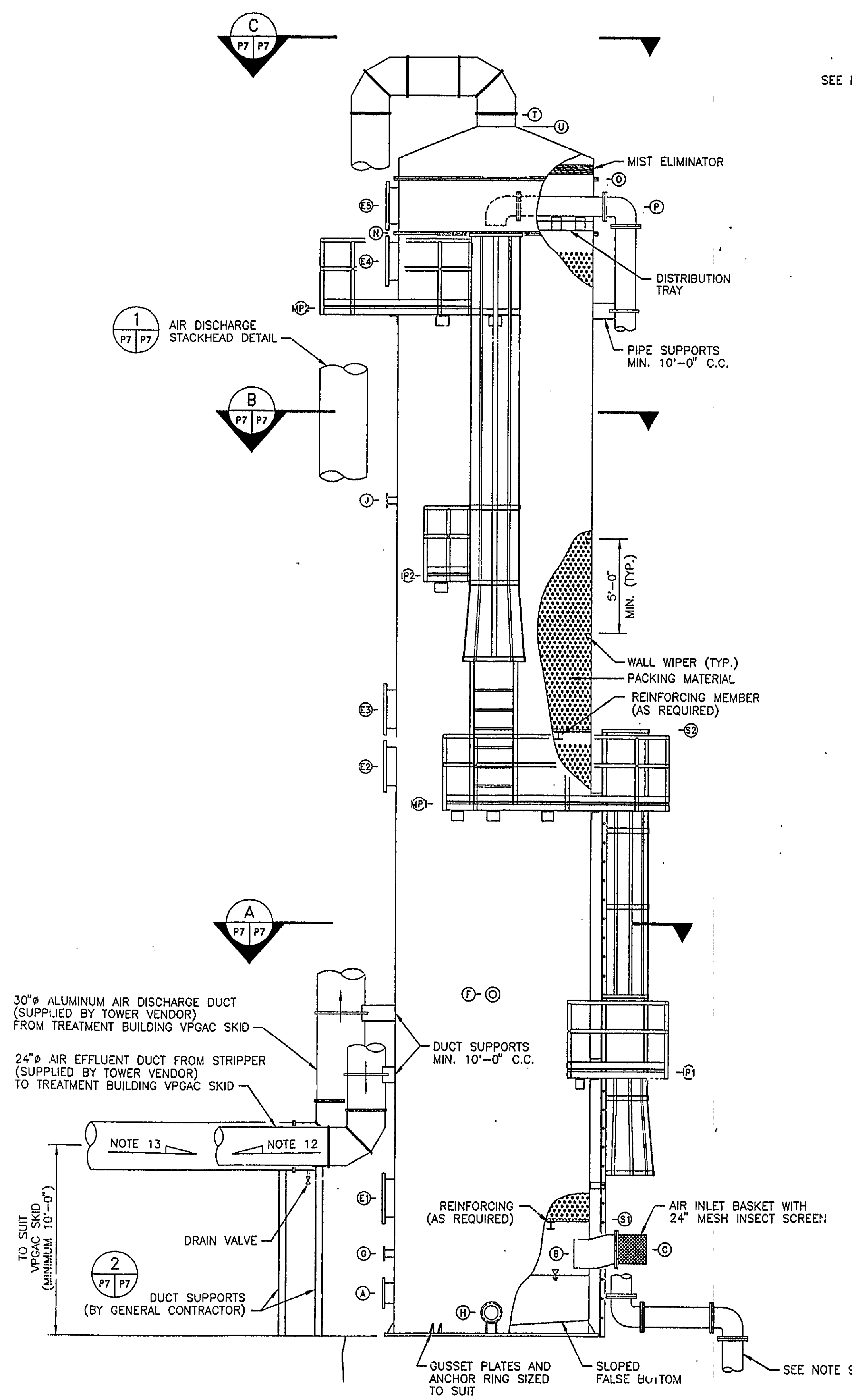
SCALE VERIFICATION: THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION.

REV. NO.	DATE	DESCRIPTION	BY	APPR.
1	6-28-96	PUMP TYPE AND R.V. SIZE	BOY	OSV

PROJECT NO.	HARD FILE
NY027.001	GRU-9
DRAWING	PLOT SIZE
GRU-9	11-24
DRAWN BY	DATE
D. LORENZ	2/29/96
CHECKED BY	DATE
OSV	2/29/96
APPROVED BY	DATE
OSV	2/29/96

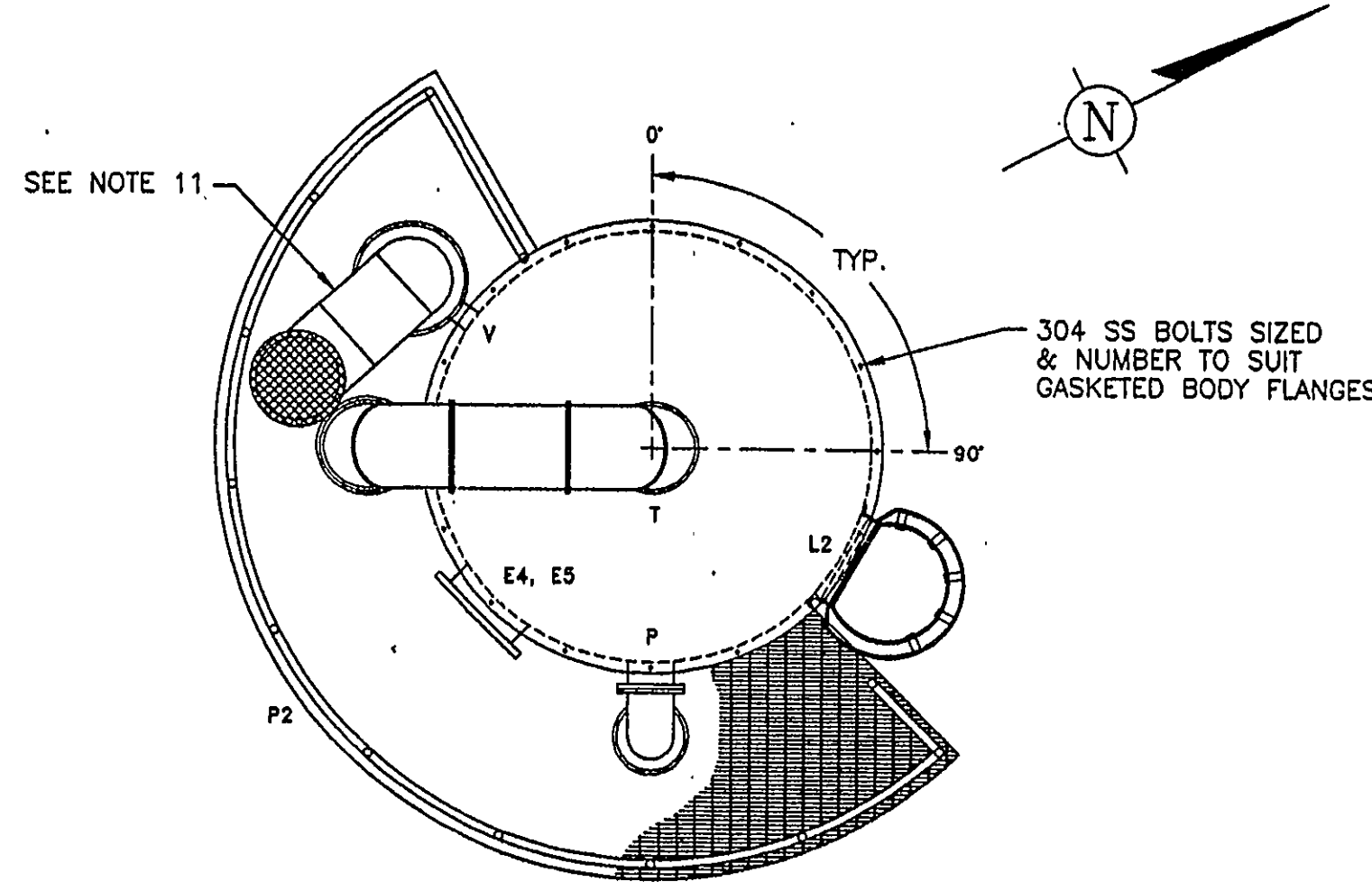
WELL HOUSE PLAN AND DETAILS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. **P6**

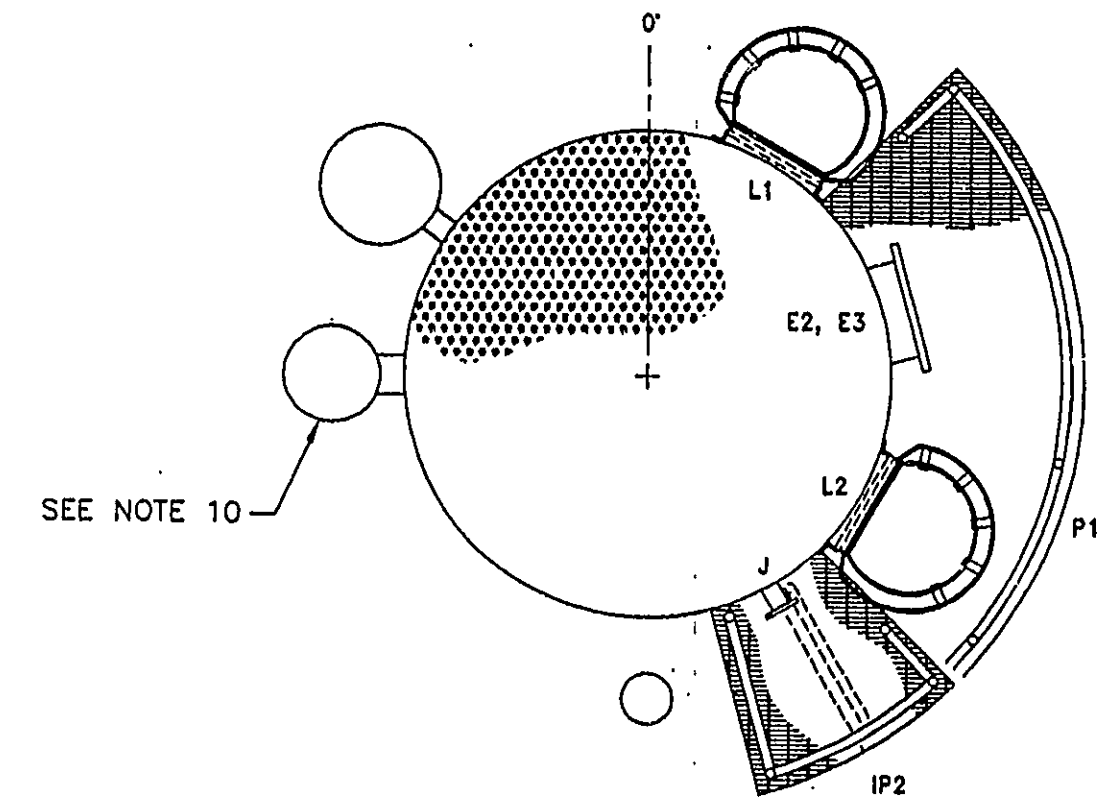


AIR STRIPPER ELEVATION
N.T.S.

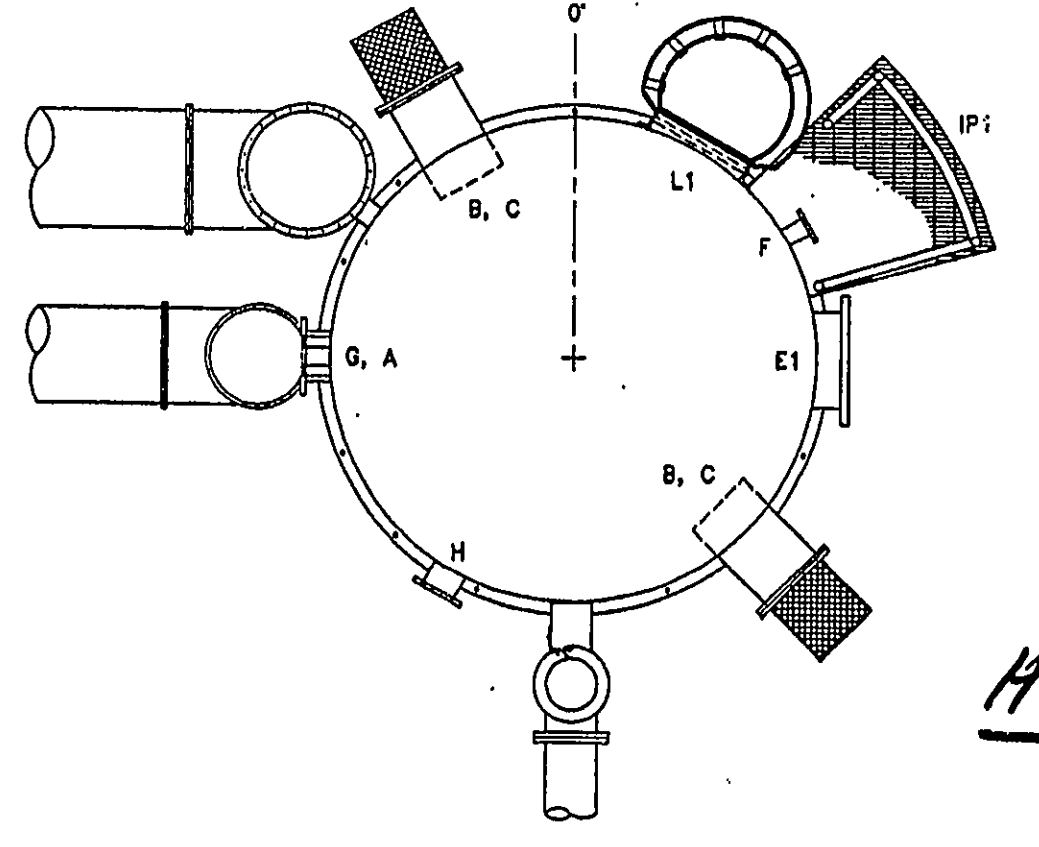
(SEE COMPONENT SCHEDULE AND AIR STRIPPER SECTIONS FOR TRUE ORIENTATIONS)



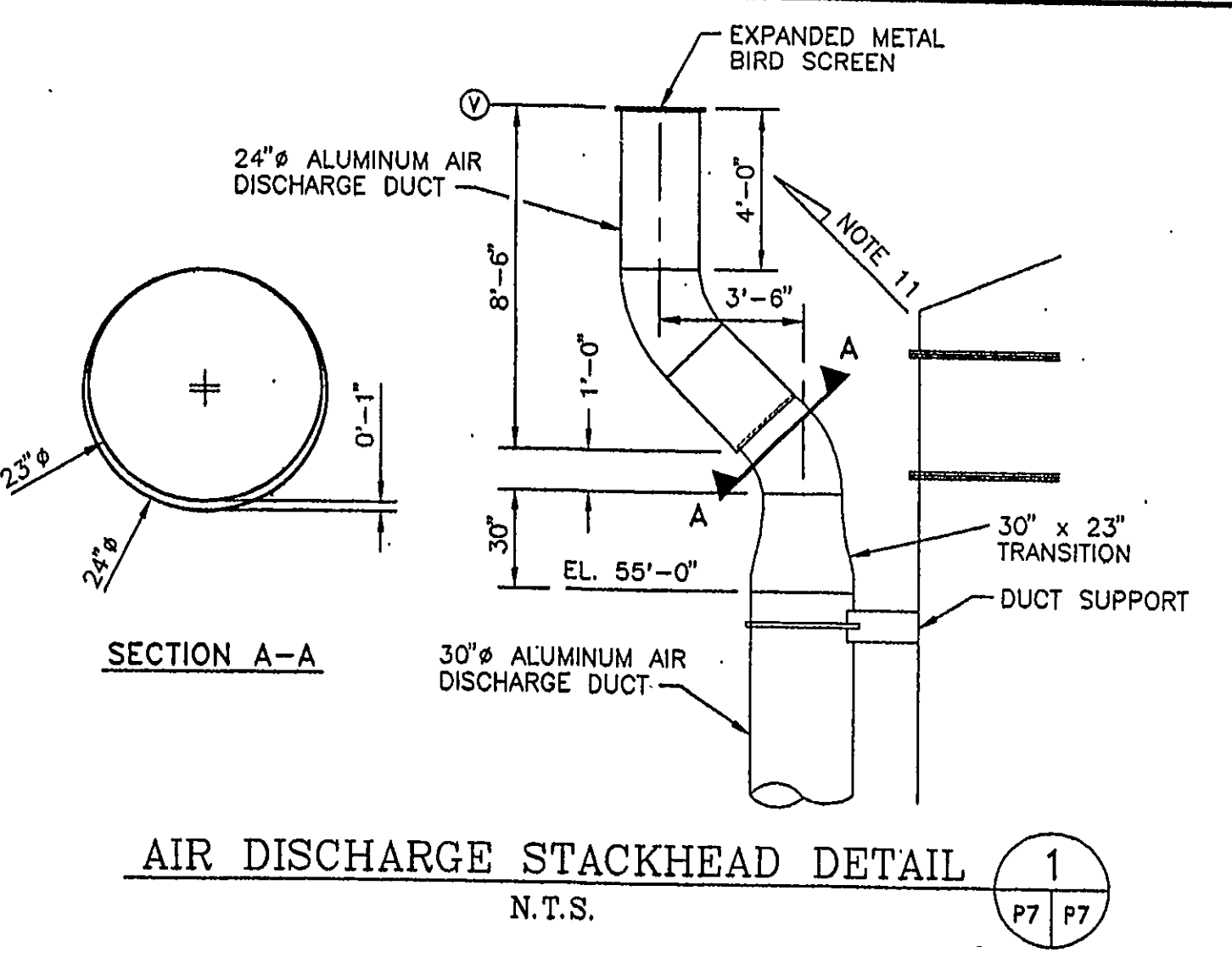
AIR STRIPPER SECTION C
N.T.S.



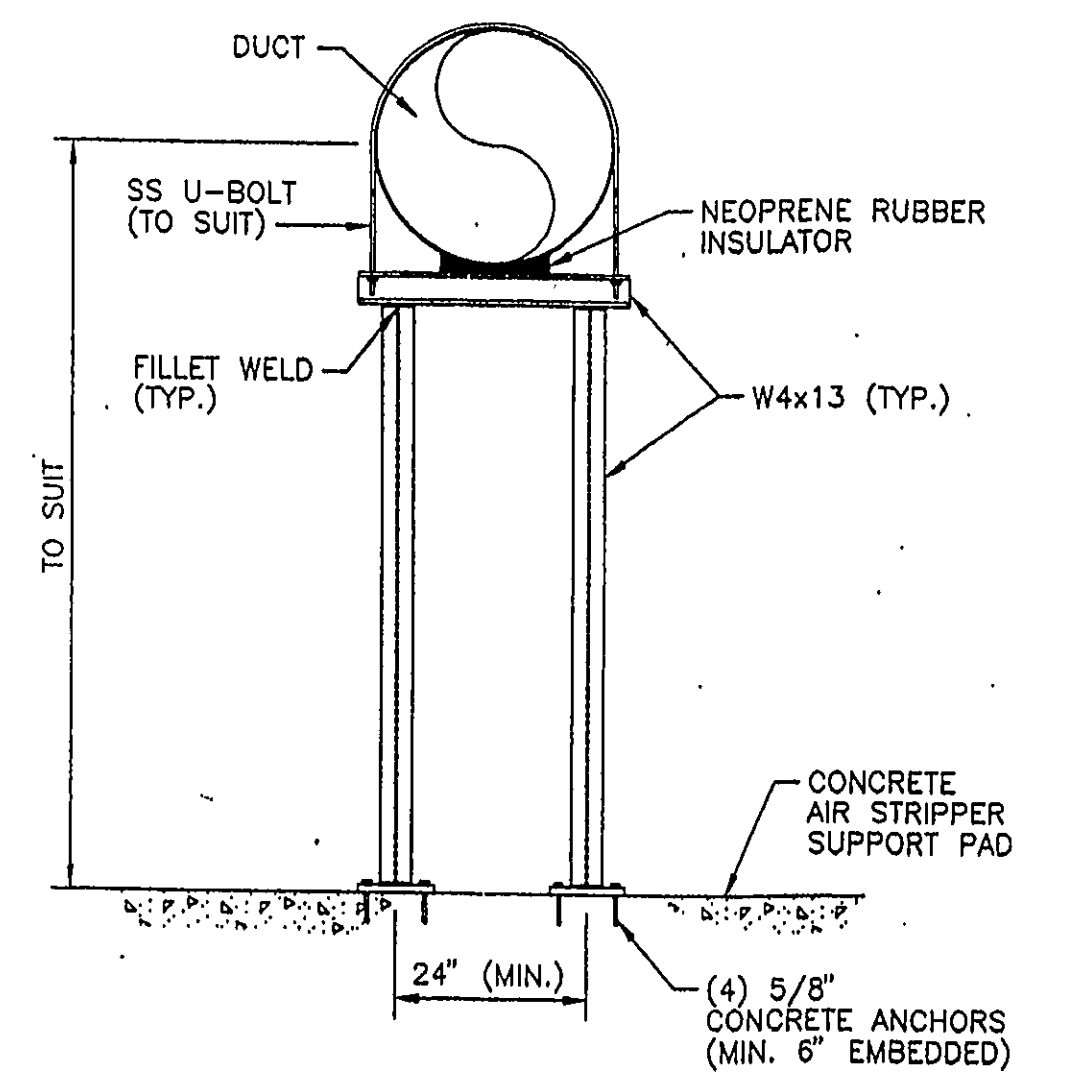
AIR STRIPPER SECTION B
N.T.S.



AIR STRIPPER SECTION A
N.T.S.



AIR DISCHARGE STACKHEAD DETAIL
N.T.S.



DUCT SUPPORT DETAIL
N.T.S.

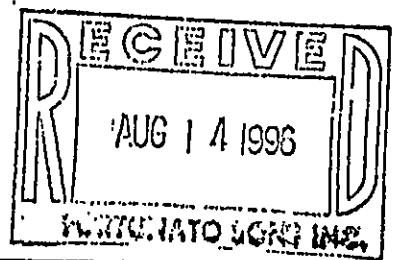
ITEM	DESCRIPTION	SIZE	QTY	ORIENTATION	ELEVATION *
A	WATER EFFLUENT	14"	1	270°	1'-3"
B	AIR INLET (INTERIOR NOZZLE)	18"H x 33"W	2	135°, 330°	4'-4"
C	AIR INLET (EXTERIOR NOZZLE)	18"H x 33"W	2	135°, 330°	4'-7"
E1 THRU E5	MANWAYS	24"	5	90°, 75°, 75°, 225°, 225°	7'-3", 30'-0", 33'-0", 56'-6", 59'-6"
F, J	PACKING SAMPLERS	4"	2	60°, 150°	18'-0", 44'-0"
G	LEVEL CONTROLS	4"	1	270°	4'-4"
H	DRAIN LINE	10"	1	210°	1'-3"
IP1, IP2	INTERMEDIATE PLATFORMS	--	2	45°-75°, 135°-165°	14'-0", 40'-0"
L1, L2	LADDERS	--	2	30°, 120°	0 TO 31', 28' TO 57'
N, O	MAIN BODY FLANGES	10'-8" O.D.	2	--	58'-0", 60'-6"
P	WATER INLET PIPING	12"	1	180°	59'-6"
MP1, MP2	MAIN PLATFORMS	--	2	45°-150°, 135°-330°	28'-0", 54'-0"
S1, S2	PACKING SUPPORT TRAYS	--	2	--	6'-2", 32'-0"
T	AIR EFFLUENT NOZZLE	24"	1	TOP CENTER	64'-3"
U	TOP OF TOWER	--	--	--	63'-9"
V	TOP OF STACKHEAD	30"	1	305°	67'-0"

* MEASUREMENTS TAKEN FROM TOP OF CONCRETE PAD.

NOTES

- LOCATIONS AND SIZES OF FITTINGS, NOZZLES AND APPURTENANCES SHOWN ON THIS DRAWING SHALL BE ADHERED TO AS CLOSELY AS POSSIBLE. AIR STRIPPER SUPPLIER IS RESPONSIBLE FOR FINAL SIZING AND LOCATION OF ALL TOWER CONNECTIONS.
- ANCHOR BOLTS SHALL BE 304 SS DESIGNED AND SUPPLIED BY EQUIPMENT VENDOR. MINIMUM SIZING AND NUMBER SHOWN ON DRAWING NO. B-2.
- VENDOR SHALL INDICATE NUMBER AND LOCATION OF LIFTING LUGS.
- ALL HARDWARE/BOLTS SHALL BE 304 SS.
- MANWAYS IN PACKING BED SHALL HAVE INTERNAL, REMOVABLE PACKING RETAINING SCREEN MADE OF STAINLESS STEEL EXPANDED METAL OR FRP GRATE.
- VENDOR SHALL SIZE ALL DUCT SUPPORT BRACKETS TO SUIT AND MAINTAIN A MINIMUM OF 10'-0" CC SPACING.
- LADDER PLATFORM ASSEMBLIES SHALL BE DESIGNED AND MANUFACTURED TO MEET OSHA REQUIREMENTS. PLATFORM ASSEMBLIES SHALL BE FULLY SUPPORTED BY TOWER SHELL AND REINFORCING.
- FLOOD LIGHTS AND 110V OUTLET BOX TO BE FIELD INSTALLED AT EACH PLATFORM ON TOWER.
- CONSTITUENT CONCENTRATIONS SHALL BE FIELD MONITORED FROM 4' BELOW WATER SURFACE. VENDOR SHALL SUPPLY BIRDS FROM 45' TO 10' ABOVE GRADE TERMINATING AT 22' PLANNED END PIPE.
- AIR EFFLUENT DUCT FROM AIR STRIPPER TO VPGAC TO BE FIELD INSULATED.
- STACKHEAD SHALL BEND TOWARD AND BE STRAPPED TO AIR EFFLUENT DUCT.
- THE AIR EFFLUENT DUCT TO THE TREATMENT BUILDING SHALL BE PITCHED TOWARD THE BUILDING TO ALLOW DRAINAGE OF CONDENSED WATER VAPOR INTO THE VPGAC KNOCKOUT DRUM.
- THE AIR DISCHARGE DUCT SHALL BE PITCHED TOWARD THE STRIPPER TO ALLOW DRAINAGE OF WATER AT THE BOTTOM OF THE DUCT.
- VENDOR TO BE RESPONSIBLE FOR STRUCTURAL DESIGN AND STRUCTURAL INTEGRITY OF STRIPPER TOWER.

- DESIGN DATA**
- EQUIPMENT NO. AS-200 NO REQ'D: 1
 - SERVICE: GROUNDWATER, VOC STRIPPING
 - SPECIFIC GRAVITY: 1.0
 - DESIGN PRESSURE: -21 TO +21 INCHES OF H2O
 - DESIGN TEMP. (°F): 50 MINIMUM
 - TOWER DIAMETER: 10'-2" I.D.
 - NUMBER OF PACKED BEDS: 2
 - ANCHOR BOLTS: 304 SS
 - NOZZLE HARDWARE: 304 SS
 - GASKET MATERIAL: BODY FLANGES: CLOSED CELL NEOPRENE SPONGE MANWAYS: CLOSED CELL NEOPRENE SPONGE LOW PRESSURE DUCTWORK: CLOSED CELL NEOPRENE SPONGE PIPING: RED RUBBER
 - TOTAL PACKING HEIGHT (FT): 50
 - PACKING/BED (FT): 25
 - OVERALL TOWER HEIGHT (FT): 63.75'
 - STACK EXHAUST DIAMETER (IN): 30
 - PACKING SUPPORT: REINFORCED FRP GRID W/SUPPORT CHANNELS
 - PACKING MEDIA: 3.5" POLYPROPYLENE JAEGER TRI-PACK
 - INLET DISTRIBUTOR: 304 SS ORIFICE PLATE
 - REDISTRIBUTION: WELL WIPER RINGS MINIMUM EVERY 5 FEET
 - MIST ELIMINATOR: POLYPROPYLENE MESH W/SS GRID SUPPORT
 - WIND LOADING (MPH): 100
 - SEISMIC FACTOR: SEISMIC ZONE 2A
 - HYDRO. TEST: @ DESIGN PRESSURE (SEE 4 ABOVE)
 - INSULATION: YES; DUCTWORK AND EXPOSED PIPE
 - CORROSION ALLOWANCE: N/A
 - GUY WIRES: NOT ALLOWED. TOWER SHALL BE FREE STANDING
- PERFORMANCE CRITERIA**
- INLET WATER FLOW (GPM): 2300 gpm
 - A/W RATIO: 30:1
 - MAX. ALLOWABLE TOWER INTERNAL PRESSURE DROP: 3" WC
 - MAX. AVAILABLE SYSTEM PRESSURE DROP (AIR INLET TO VPGAC DUCT): 9" WC
 - CONSTITUENT CONCENTRATIONS:
- | CONSTITUENT | INFLUENT (ug/L) | EFFLUENT MAX. (ug/L) |
|-----------------------|-----------------|----------------------|
| 1,1-DICHLOROETHENE | 770 | ≤ 2.5 |
| 1,2-DICHLOROETHENE | 1700 | ≤ 2.5 |
| TETRACHLOROETHYLENE | 650 | ≤ 2.5 |
| 1,1,1 TRICHLOROETHANE | 660 | ≤ 2.5 |
| TRICHLOROETHYLENE | 7760 | ≤ 2.5 |
- MATERIALS OF CONSTRUCTION**
- SHELL: 5052-H32 STRUCTURAL GRADE ALUMINUM
 - SUMP: 5052-H32 ALUMINUM W/INTERNAL 3 TO 10 MIL EPOXY COATING
 - NOZZLE NECKS: 5052-H32 TO EXTEND 6" FROM SHELL
 - PIPE FLANGES: 5052-H32 150 PSI RATED
 - AIR DUCTWORK: 5052-H32 ALUMINUM (MIN. 10 GAUGE)
 - PRESS BOLTING: 150 LB BOLT CIRCLE
 - EXTERIOR FINISH: EVEN, NATURAL OXIDIZED GRAY MILL FINISH
 - WEIGHTS: EMPTY: 10,800 lbs WITH PACKING AND INTERNALS: 24,200 lbs DESIGN MAX.: 89,000 lbs



ENGINEERING DESIGN:
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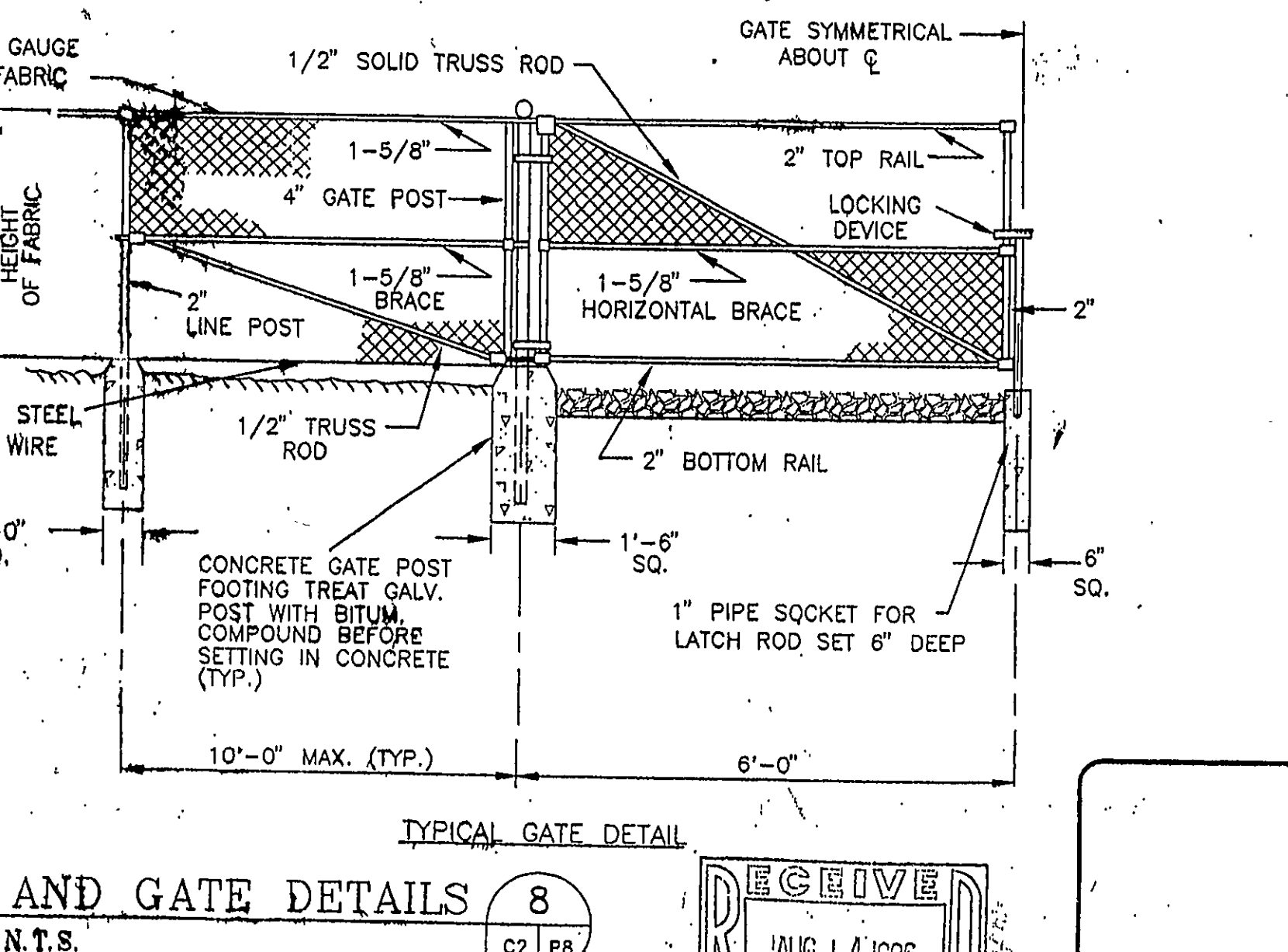
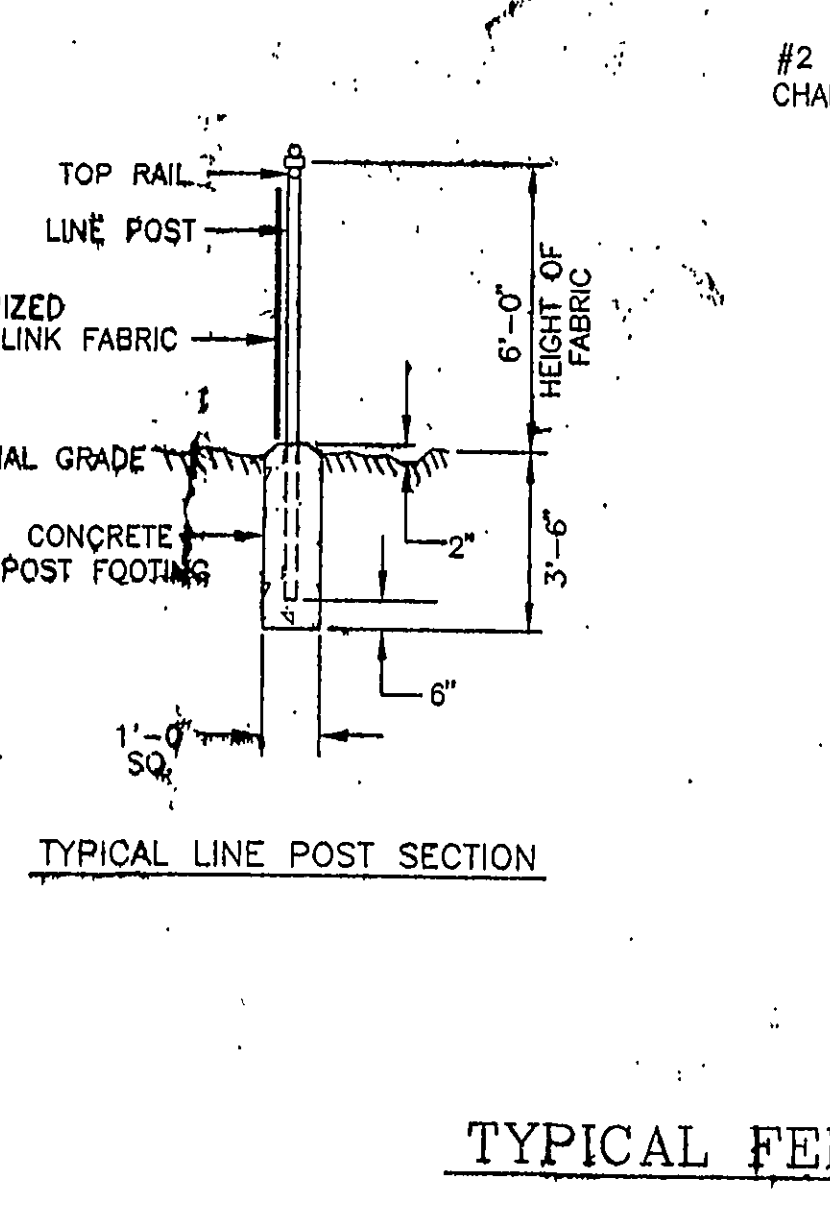
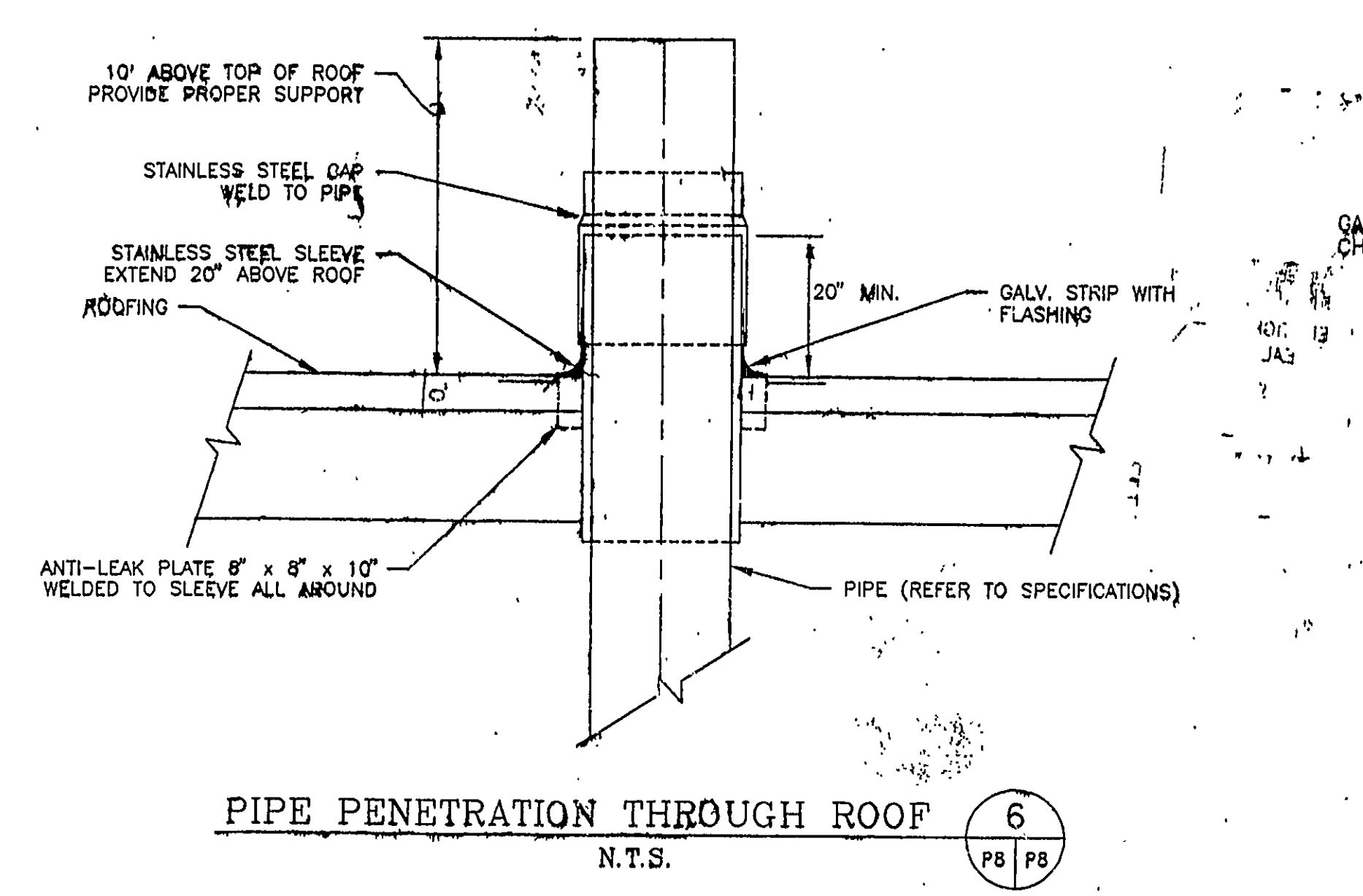
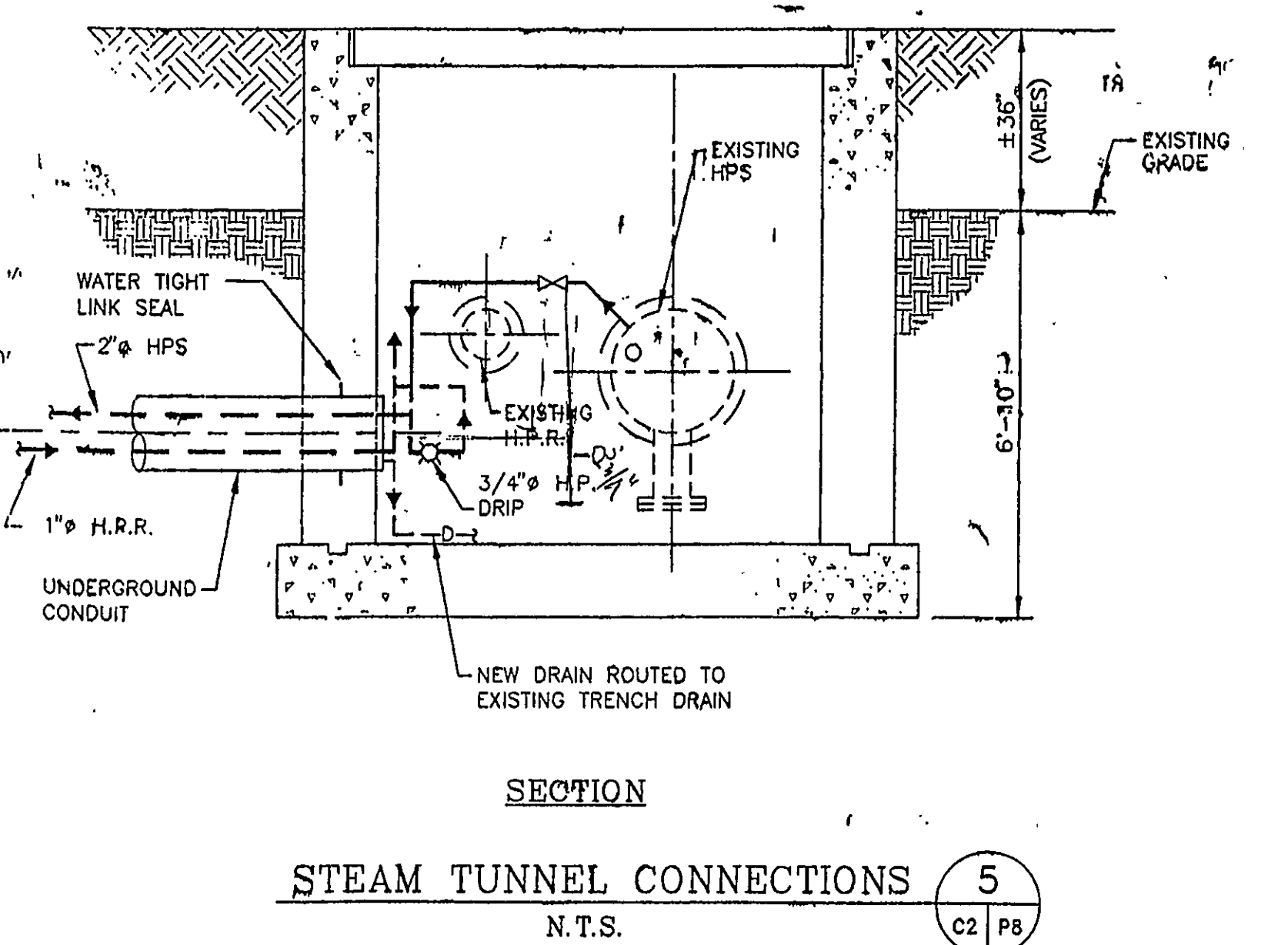
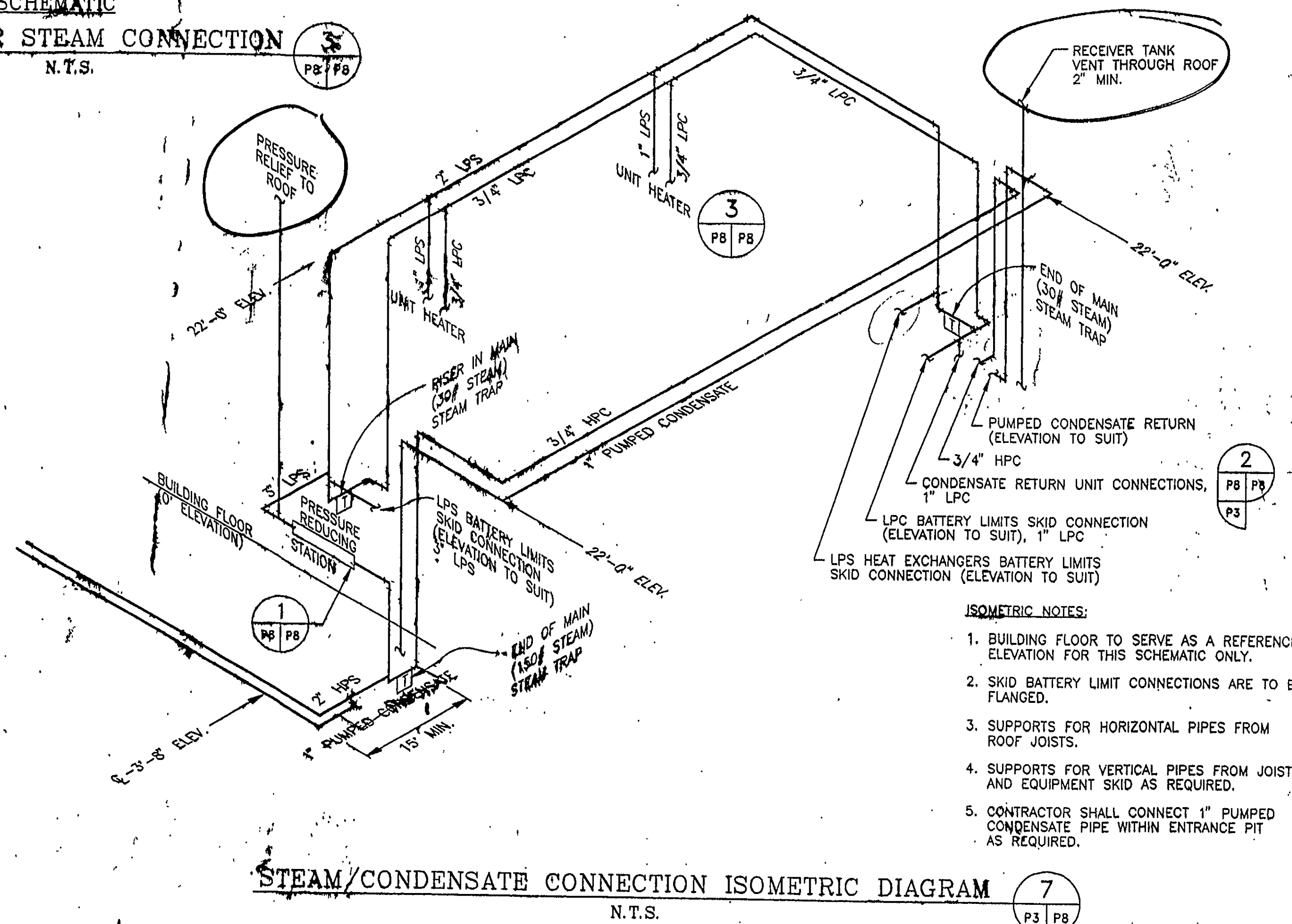
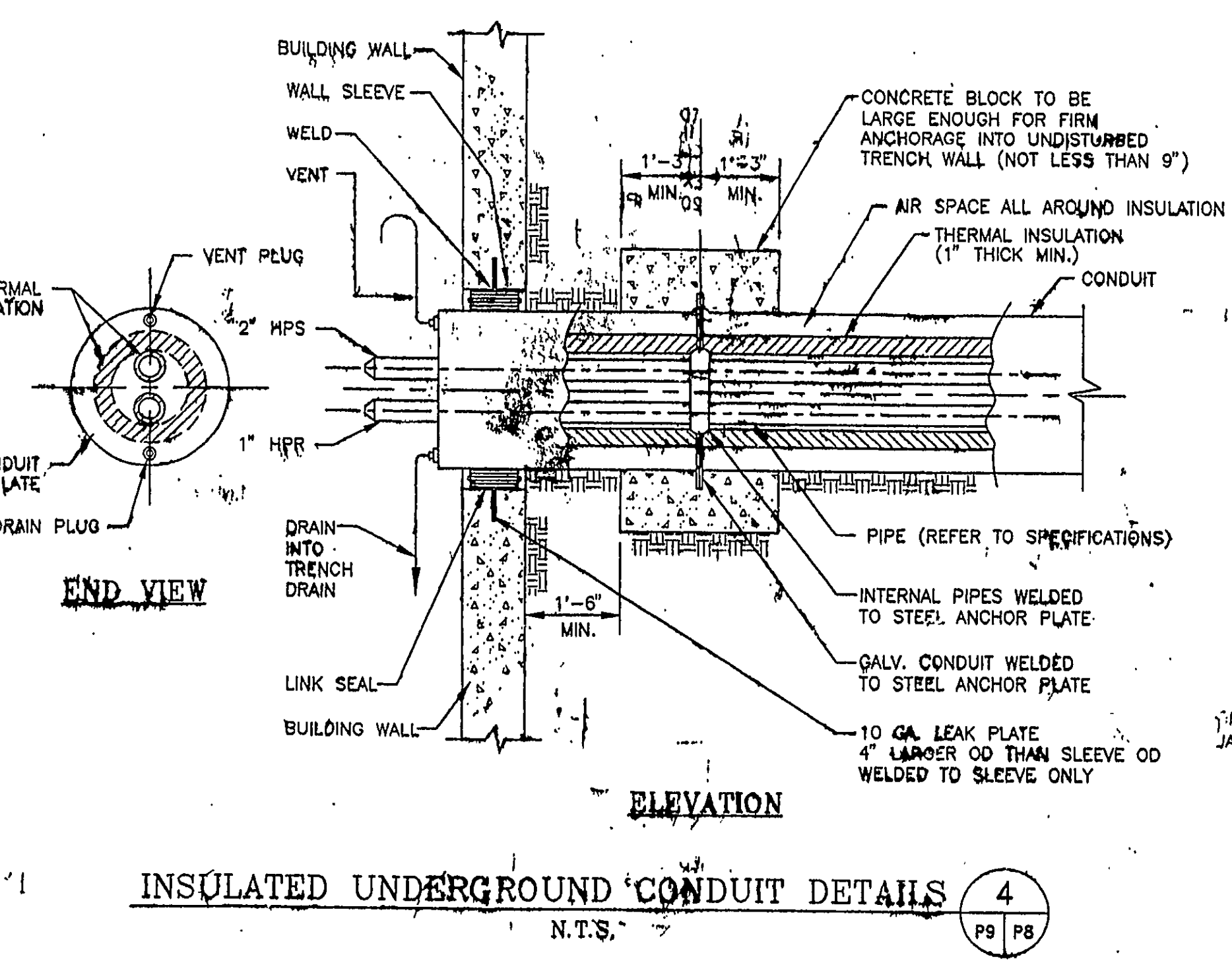
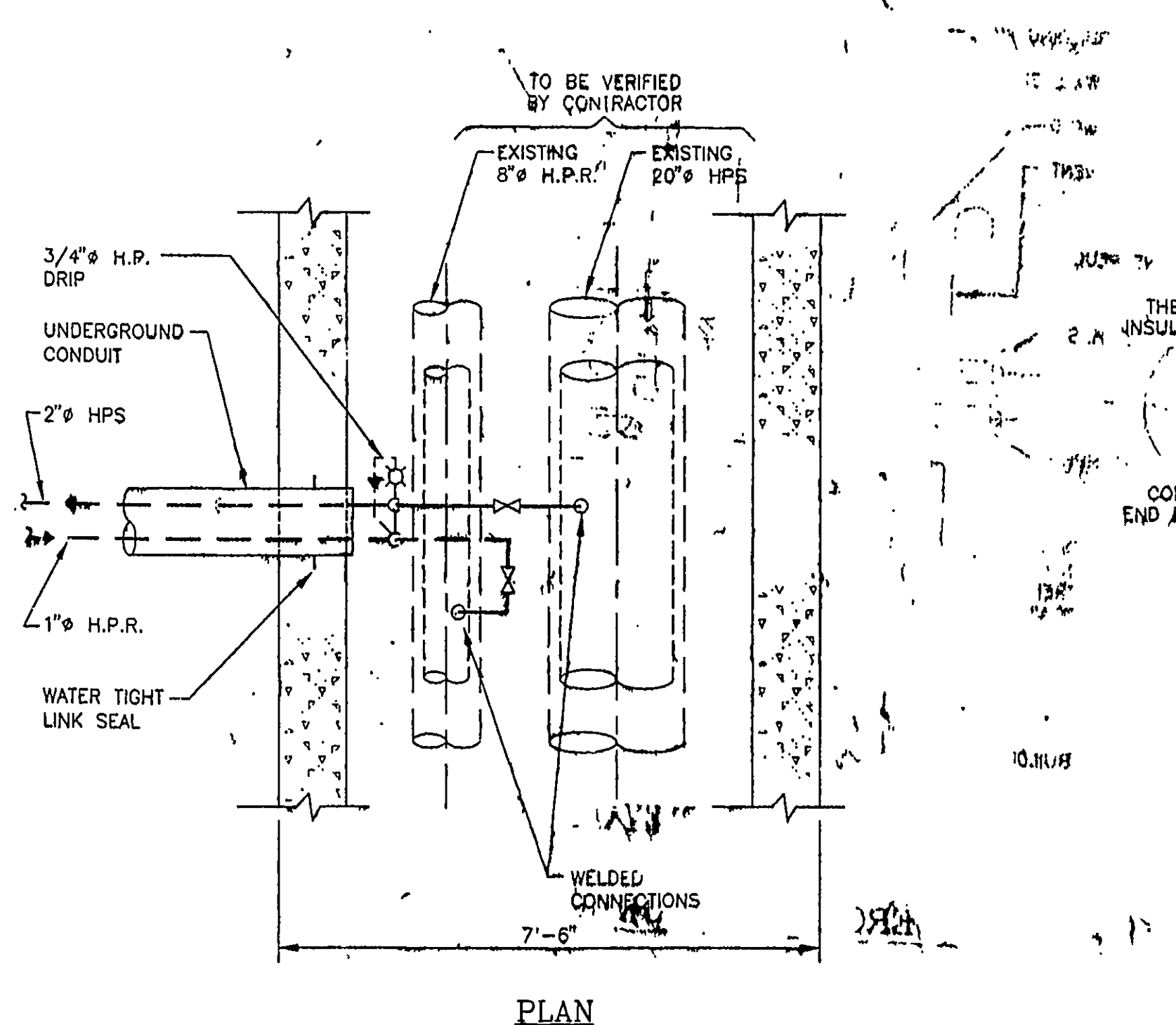
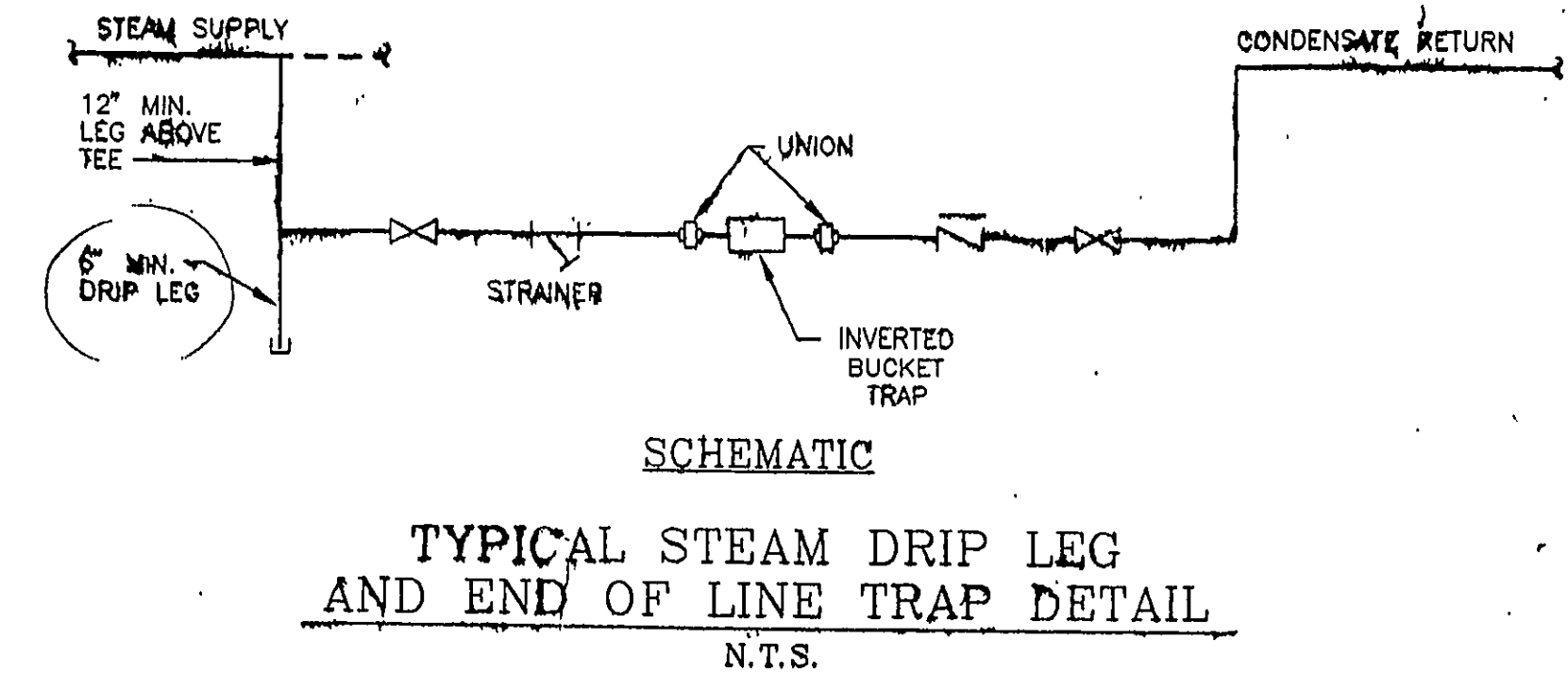
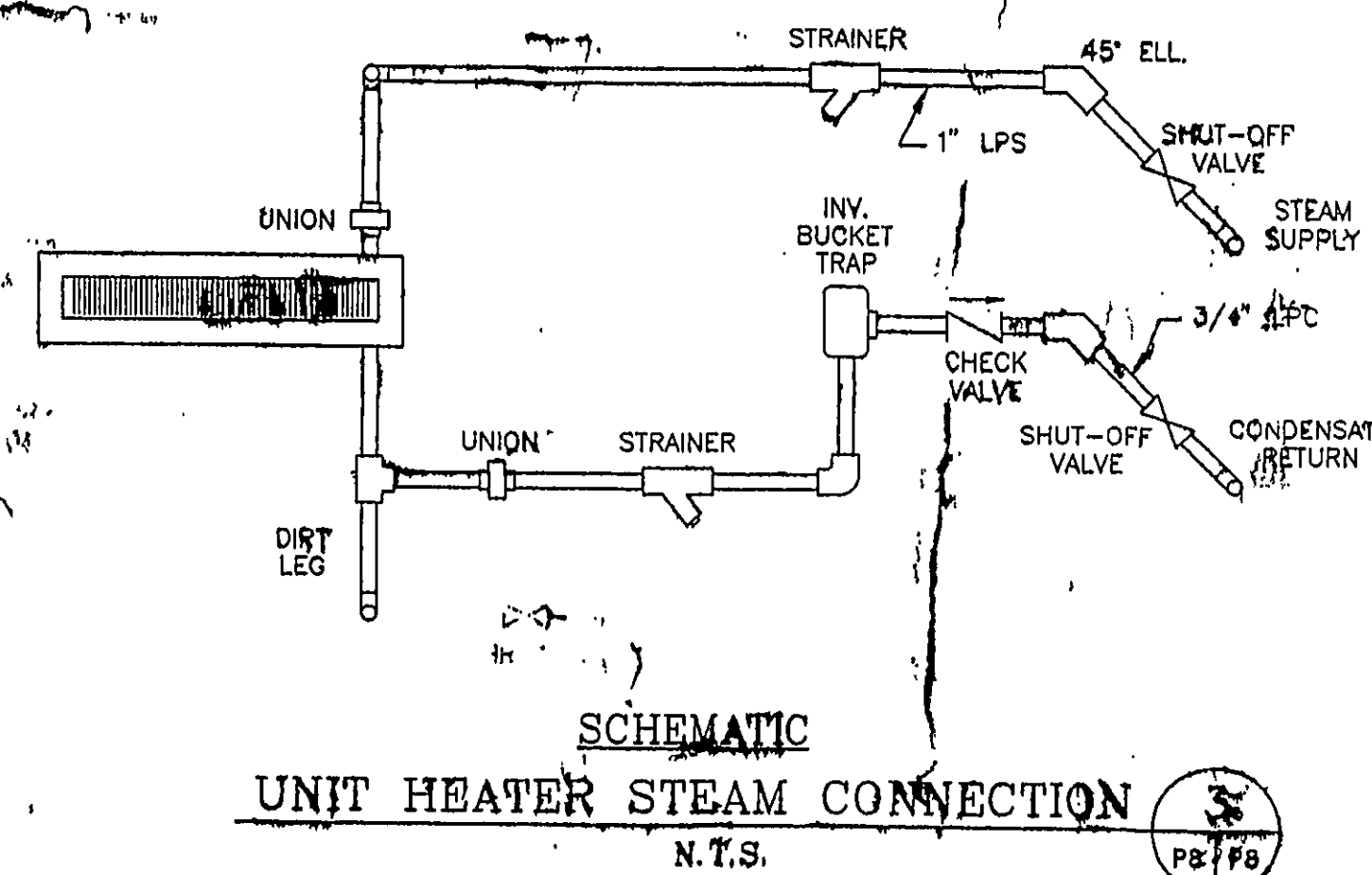
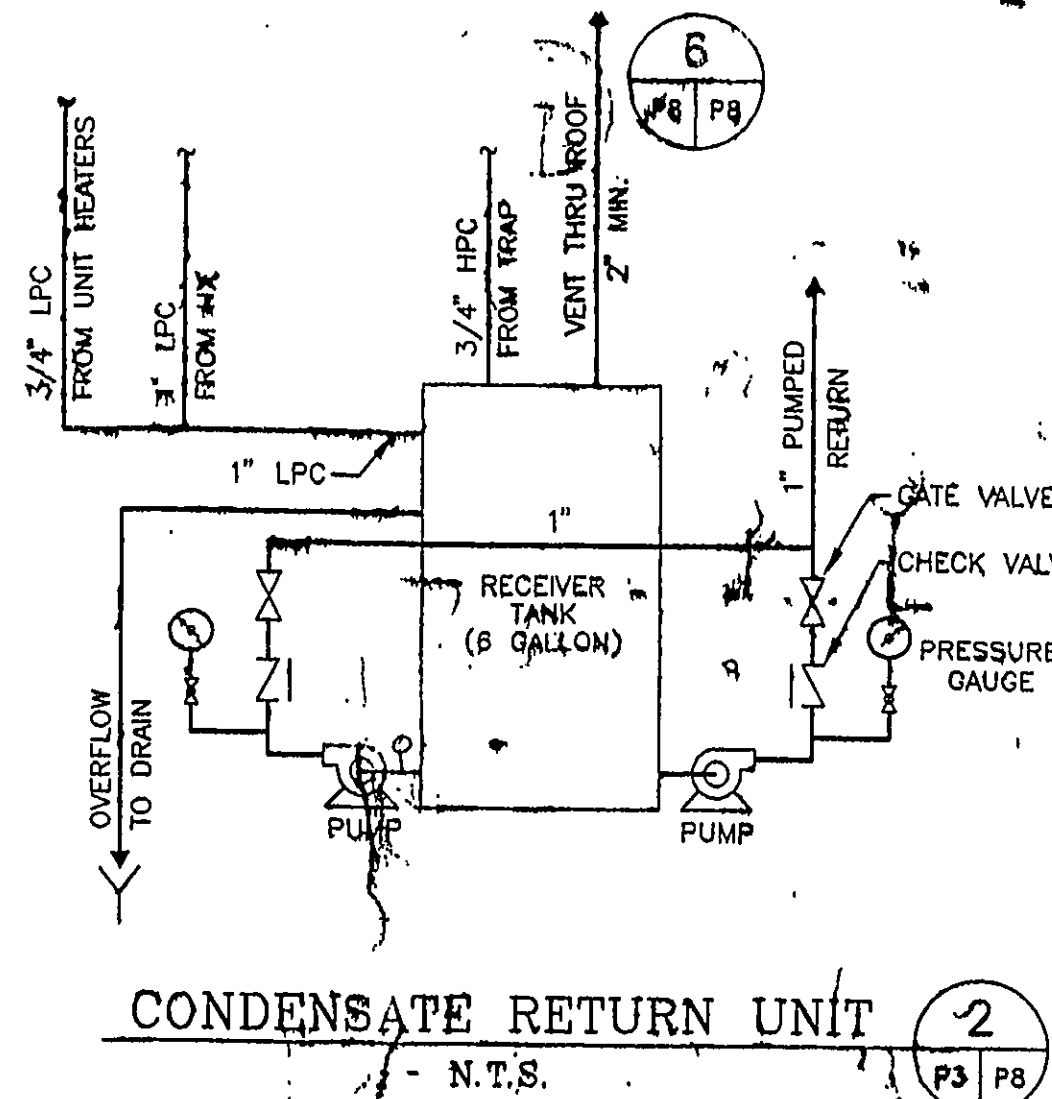
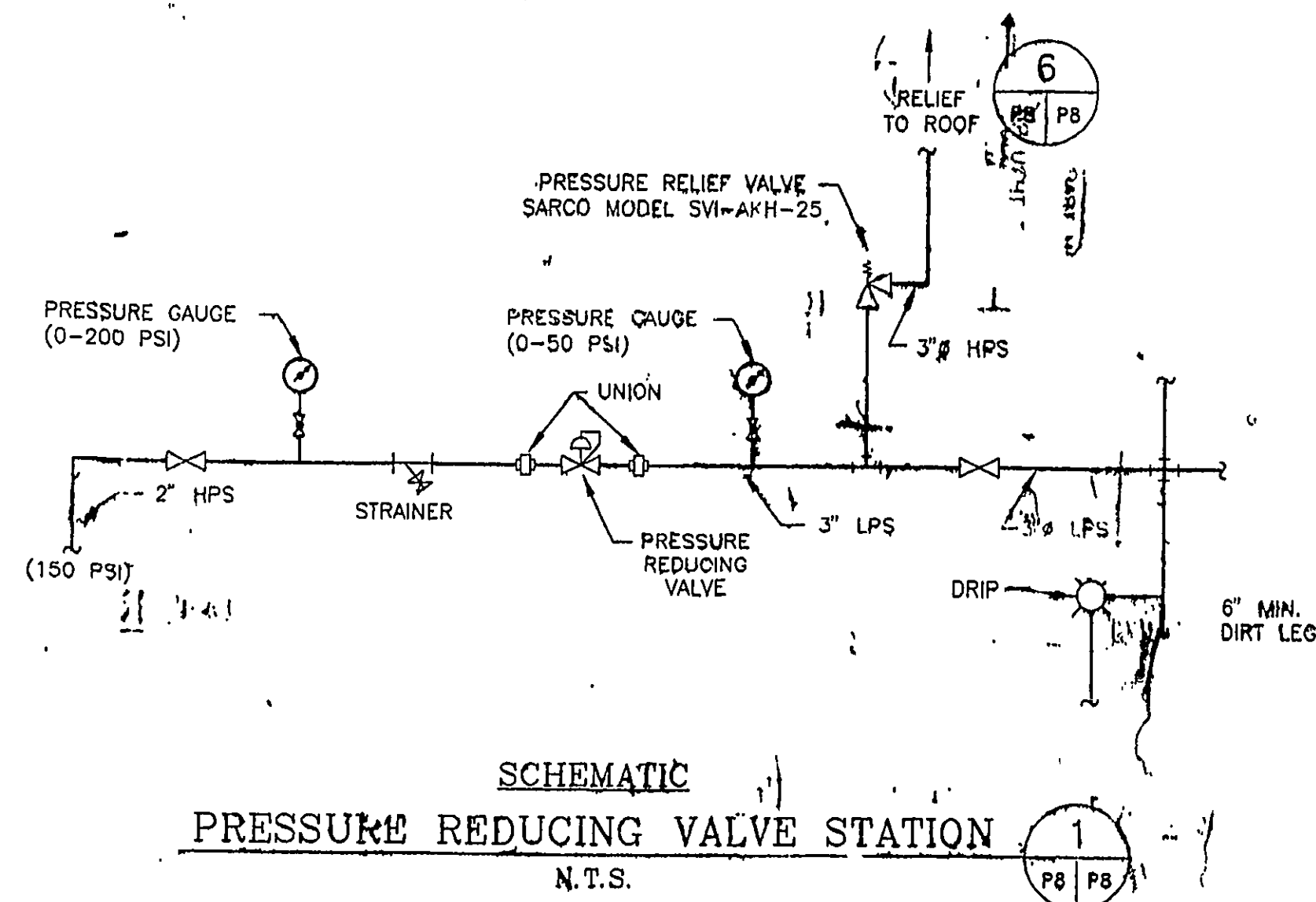
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USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.:	HARD FILE:
NY0977.001	GRU-37
DRAWING:	PLOT SIZE:
GRU-27	1-48
DRAFTED BY:	DATE:
D. JORDAN	2/1/96
CHECKED BY:	DATE:
	2/22/96
APPROVED BY:	DATE:
	2/22/96

AIR STRIPPER DETAILS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. **P7**



STEAM TUNNEL CONNECTIONS
N.T.S.

PIPE PENETRATION THROUGH ROOF
N.T.S.

TYPICAL FENCE AND GATE DETAILS
N.T.S.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidmijl Company

NORTHROP GRUMMAN

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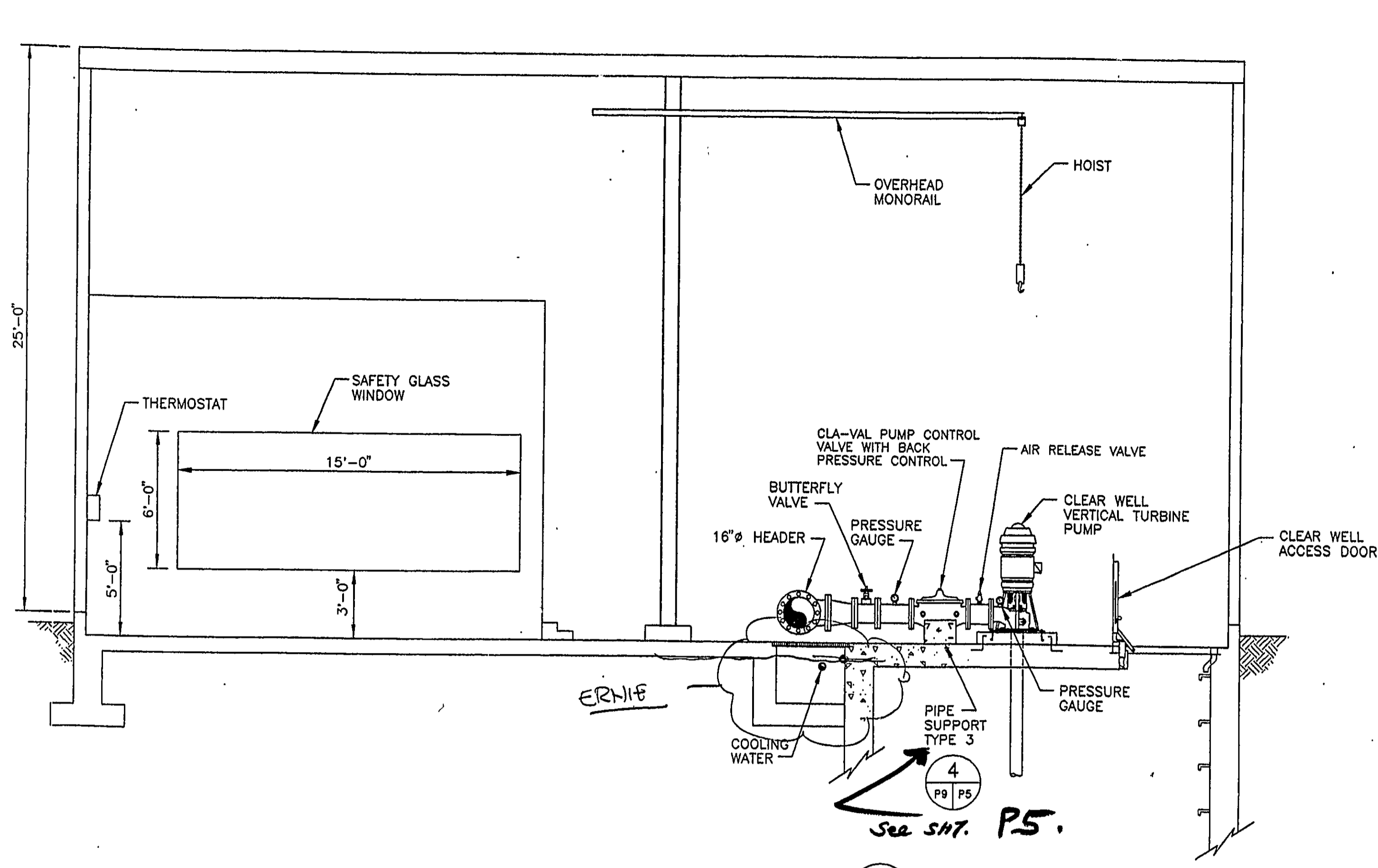
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DRAWING: G-1-28	PLN SIZE: 1=2=1
CHECKED BY: [Signature]	DATE: 2/22/96
APPROVED BY: [Signature]	DATE: 2/22/96

**MISCELLANEOUS
MECHANICAL DETAILS**
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHESDA, NEW YORK

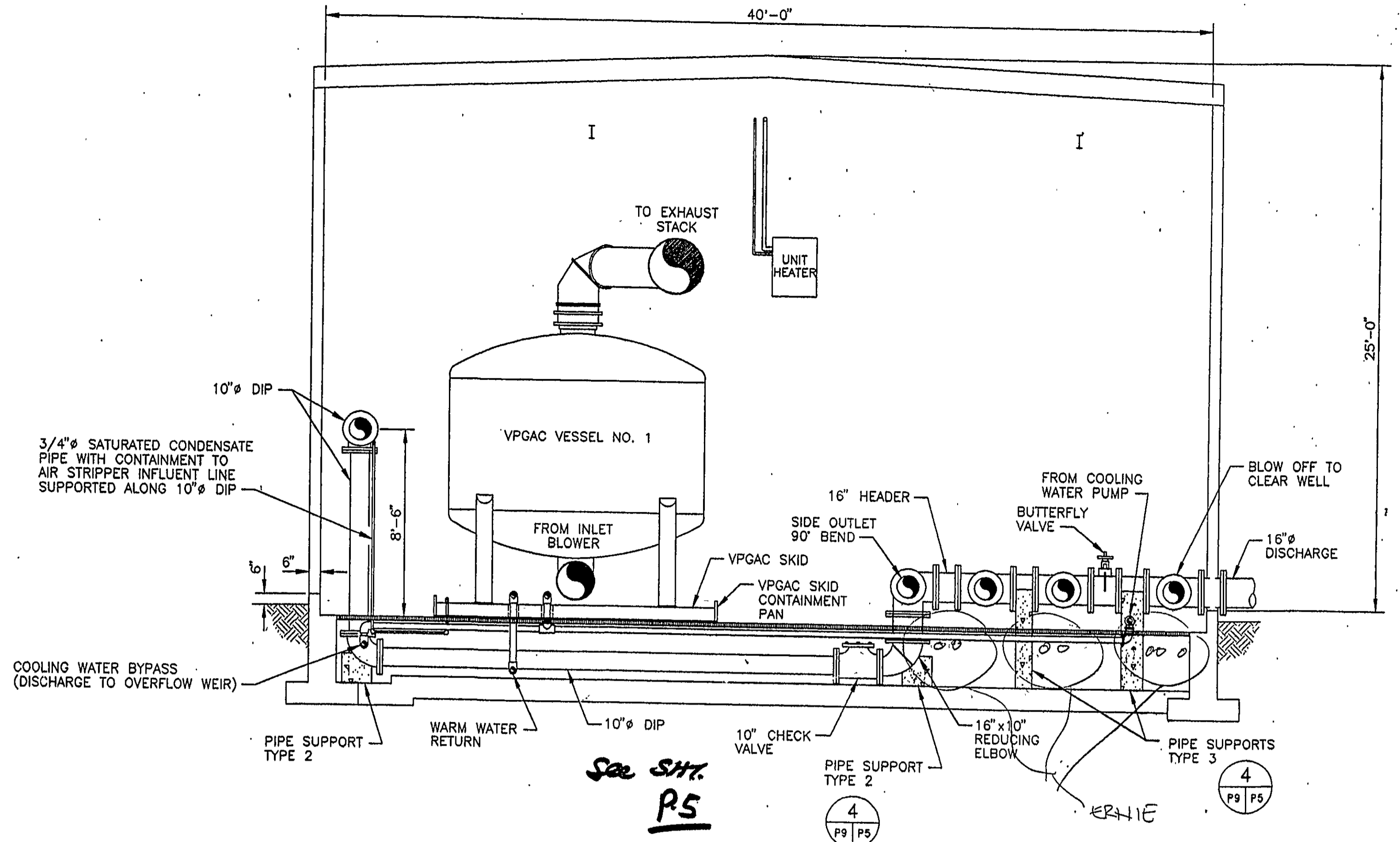
RECEIVED
AUG 14 1995

Arnold S. Verrick
P.E. Lic. No. 39333

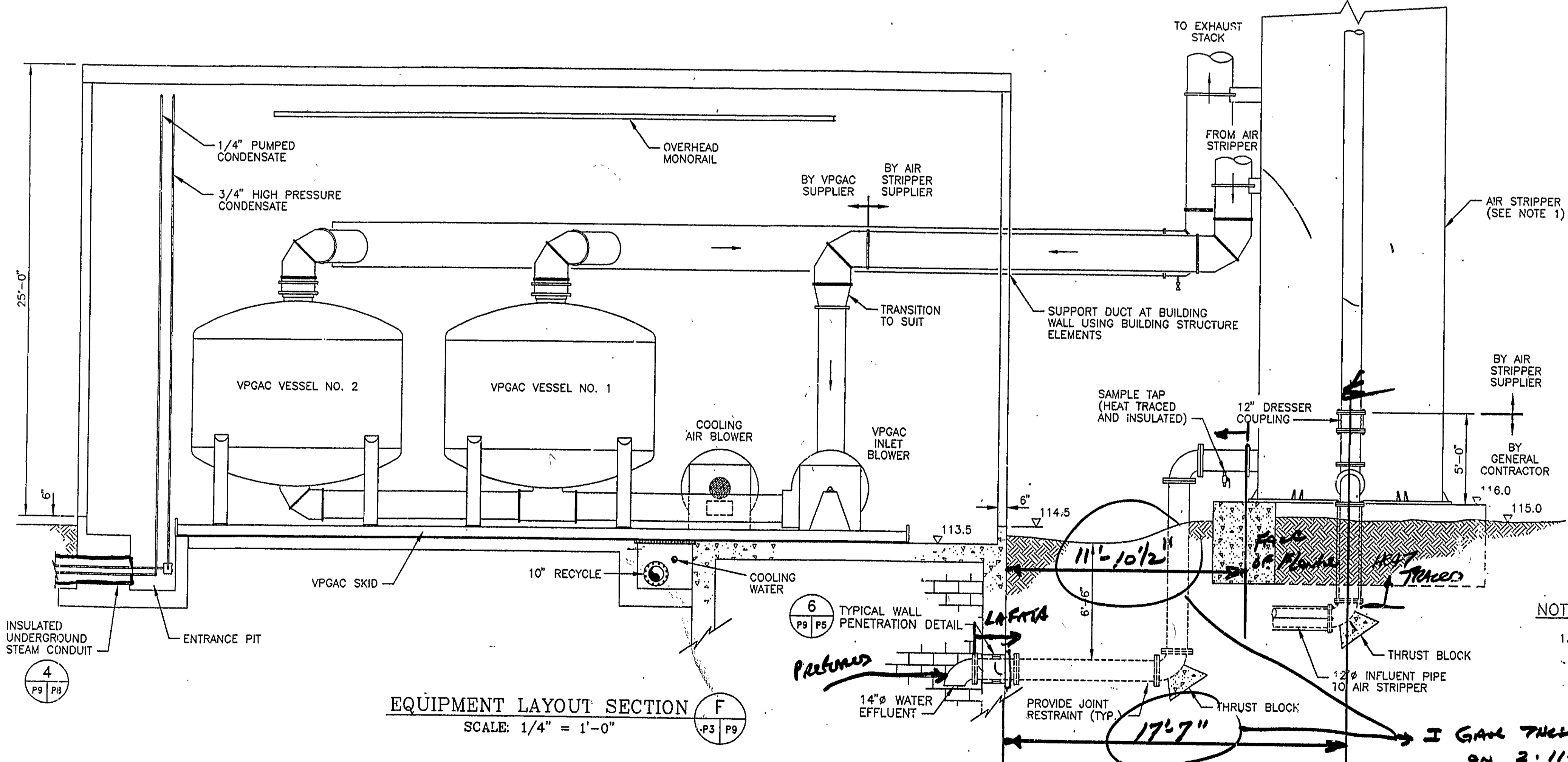
DRAWING NO. **P8**



EQUIPMENT LAYOUT SECTION D
SCALE: 1/4" = 1'-0"
P3 P9



EQUIPMENT LAYOUT SECTION E
SCALE: 1/4" = 1'-0"
P3 P9



EQUIPMENT LAYOUT SECTION F
SCALE: 1/4" = 1'-0"
P3 P9

- NOTES
- DUCT AND PIPING SHOWN MAY NOT REFLECT ACTUAL ORIENTATION AT AIR STRIPPER. REFER TO DRAWING NO. P7 FOR ACTUAL ORIENTATIONS.



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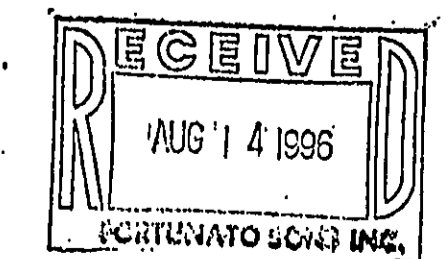
SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO: N10077.001	HARD FILE: GRU-30
DRAWING: GRU-39	PLOT SIZE: 11x48
DRAFTED BY: D. LORENZ	DATE: 2/22/96
CHECKED BY: [Signature]	DATE: 2/22/96
APPROVED BY: [Signature]	DATE: 2/22/96

EQUIPMENT AND PROCESS PIPING ELEVATIONS
GROUNDWATER INTERIM REMEDIAL MEASURES
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

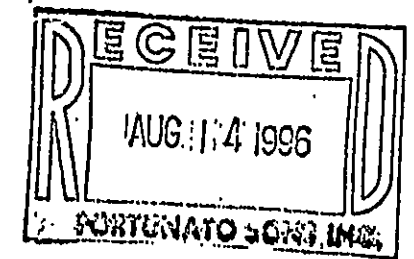
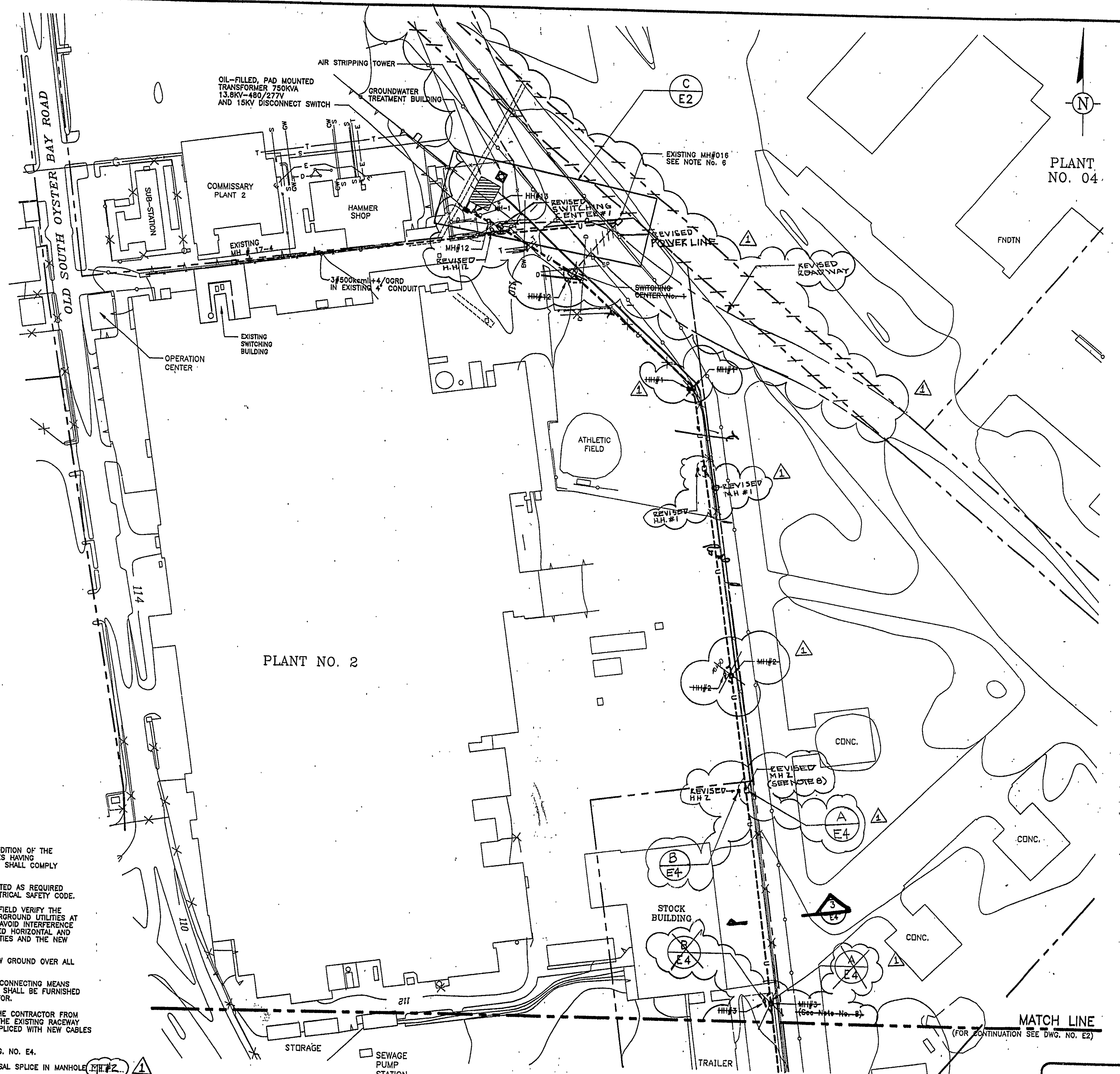
DRAWING NO. P9



SYMBOL	DESCRIPTION
— U —	UNDERGROUND CONDUIT
— G —	GROUND BUS OR WIRE, TYPE AND SIZE AS NOTED, CONCEALED UNLESS OTHERWISE NOTED
— O —	CONDUIT RUN TURNING UP OR TOWARD VIEWER
— D —	CONDUIT RUN TURNING DOWN OR AWAY FROM VIEWER
— E —	CONDUIT RUN EXPOSED
— C —	CONDUIT RUN CONCEALED FROM VIEW
— J —	JOINING OF CONDUCTORS
— S —	SEAL TIGHT FLEXIBLE CONDUIT AS DESCRIBED IN SPECIFICATIONS
— H —	HOME RUN TO DESIGNATED PANEL, CROSS AND HATCH LINES INDICATE NUMBER OF CONDUCTORS. EACH HALF ARROW INDICATES ONE CIRCUIT. FURNISH #12 CONDUCTORS IN 3/4" GALVANIZED RIGID STEEL CONDUIT, UNLESS OTHERWISE NOTED.
— L —	LIGHTNING AIR TERMINAL
— R —	GROUND ROD
— G —	GROUND CONNECTION
— U —	UNFUSED SWITCH
— F —	FUSE, AMPERE RATING AS REQUIRED
— LA —	LIGHTNING ARRESTERS
— () —	BOLTED TYPE, MOLDED CASE AIR CIRCUIT BREAKER
— CT —	CURRENT TRANSFORMER, 600/5 DENOTES RATIO. QUANTITY AS SHOWN IN PARENTHESES ()
— P —	POWER TRANSFORMER
— W —	3 PHASE WYE, GROUNDED
— D —	3 PHASE DELTA
— T —	TRANSFORMER, RATING AND VOLTAGE AS INDICATED ON SINGLE LINE DIAGRAM OR ON FLOOR PLAN. FLOOR MOUNTED UNLESS OTHERWISE NOTED.
— M —	MOTOR THERMAL PROTECTIVE DEVICE
— A —	LOW VOLTAGE DISTRIBUTION PANEL A DENOTES 480/277V PANEL; B DENOTES 208/120V PANEL
— F —	FLUORESCENT LIGHTING FIXTURE A-1 DENOTES PANEL AND CIRCUIT NUMBER; B DENOTES FIXTURE TYPE, A DENOTES SWITCH IDENTIFICATION. CONNECT TO THE PANEL WITH #12 WIRING INSTALLED IN 3/4" CONDUIT, EXCEPT WHERE OTHERWISE NOTED.
— H —	HIGH INTENSITY DISCHARGE LIGHTING FIXTURES, CEILING MOUNTED
— E —	BATTERY OPERATED EMERGENCY LIGHTING FIXTURES, WALL MOUNTED WITH TWO HEADS
— J —	JUNCTION BOX
— G —	125V, 2P, 3W GROUNDING DUPLEX RECEPTACLE, CONNECTED TO PANEL B, CIRCUIT NO. 4 WITH 2#12+1#12 GRD. WIRES INSTALLED IN 3/4" CONDUIT, EXCEPT WHERE OTHERWISE NOTED.
— M —	INDUCTION MOTOR, SINGLE PHASE NUMBER IN CIRCLE INDICATES MOTOR HORSEPOWER. THE MOTOR VOLTAGE SHALL BE DETERMINED BY THE VOLTAGE OF THE SYSTEM SERVING THE MOTOR.
— M —	INDUCTION MOTOR, 3 PHASE
— T —	THERMOSTAT
— H —	HEATER
— E —	ELECTRICAL UNIT HEATER NO. 1, OR AS NOTED
— O —	OVERLOAD RELAY
— C —	COMBINATION CIRCUIT BREAKER AND STARTER, FULL VOLTAGE, NON-REVERSING NEMA SIZE 1 OR AS NOTED.
— C —	COMBINATION CIRCUIT BREAKER AND SOLID STATE STARTER, NEMA SIZE 4 OR AS NOTED.
— S —	SAFETY SWITCH RATED AT 30 AMPERES, UNFUSED OR AS NOTED
— M —	MANUAL STARTER OR MANUAL SWITCH
— S —	START-STOP PUSH BUTTON STATION WITH LOCK-OUT STOP ELEMENT
— C —	CONTROL POWER TRANSFORMER
— CT —	CURRENT TRANSFORMER; QUANTITY AND CURRENT RATIO AS SHOWN
— F —	SEAL TIGHT FLEXIBLE CONDUIT AS DESCRIBED IN SPECIFICATION
— GRD —	GROUNDING CONDUCTOR
— MCC —	MOTOR CONTROL CENTER
— P —	CONDUIT NUMBER, NO. REFERS TO IDENTIFICATION NUMBER IN CONDUIT SCHEDULE. P INDICATES POWER, I INDICATES CONTROL AND SIGNAL, T INDICATES TELEPHONE
— PT —	POTENTIAL TRANSFORMERS; QUANTITY AND VOLTAGE RATIO AS SHOWN
— R —	RIGID HOT DIPPED GALVANIZED STEEL
— PVC —	POLYVINYL CHLORIDE
— SP —	SPARE WIRE OR CONDUIT
— WP —	WEATHERPROOF ARRANGEMENT.
— HH —	HAND HOLE
— MH —	MANHOLE
— B —	SEE DETAIL B ON DWG. NO. E4
— S —	SEE SECTION 5 ON DWG. NO. E4

NOTES:

- ALL WORK AND MATERIALS SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND THE LOCAL AUTHORITIES HAVING JURISDICTION. IN CASE OF DISCREPANCIES, THE INSTALLATION SHALL COMPLY WITH THE MORE STRINGENT REQUIREMENTS.
- UNDERGROUND ELECTRICAL DUCT BANKS SHALL BE CONSTRUCTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND FIELD VERIFY THE EXACT LOCATION OF ALL EXISTING AND NEW INSTALLED UNDERGROUND UTILITIES AT THE VICINITY OF ELECTRICAL UNDERGROUND STRUCTURES TO AVOID INTERFERENCE WITH PIPING. THE CONTRACTOR SHALL PROVIDE THE REQUIRED HORIZONTAL AND VERTICAL CLEARANCES BETWEEN THE EXISTING AND NEW UTILITIES AND THE NEW ELECTRICAL DUCT BANK, INSTALLED WITHIN WATER TRENCH.
- METALLIC MARKER TAPE 6" WIDE SHALL BE BURIED 10" BELOW GROUND OVER ALL ELECTRICAL DUCT BANKS.
- SWITCHING CENTER NOS. 1, 2; TRANSFORMER NO. T1 AND DISCONNECTING MEANS FOR THE PRIMARY SIDE OF TRANSFORMER NOS. 1, 2, 3 & 4 SHALL BE FURNISHED BY THE OWNER AND INSTALLED AND WIRED BY THE CONTRACTOR.
- ONE NEW 15KV POWER LINE FURNISHED AND INSTALLED BY THE CONTRACTOR FROM THE SWITCHING BUILDING TO EXISTING MANHOLE MH-016 IN THE EXISTING RACEWAY AND ONE EXISTING 15KV POWER LINE SHALL BE PROPERLY SPLICED WITH NEW CABLES P2 AND P1 ACCORDINGLY IN MANHOLE MH-016.
- FOR MANHOLE AND HANDHOLE SCHEDULE AND NOTES SEE DWG. NO. E4.
- THE CONTRACTOR SHALL FURNISH AND INSTALL 3-WAY UNIVERSAL SPLICE IN MANHOLE MH#2 FOR FUTURE USE.
- CONTROL SYSTEM FOR CLEAR WELL PUMP NOS. P401, P402, P403 IS CAPABLE FOR BEING REMOTELY CONTROLLED AND MONITORED. FOR THE CLEAR WELL PUMP REMOTE CONTROL AND MONITORING INSTALL INTERCONNECTING WIRING TO THE STEAM PLANT AS DIRECTED BY THE OWNER AND APPROVED BY THE ENGINEER.



SCALE 100 FT

BS&J
BUCK, SEIFERT & JOST, INC.
Consulting Engineers

GERAGHTY & MILLER, INC.
Environmental Services
A Healdemij Company

NORTHROP GRUMMAN

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USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.
1	6-28-96	REVISED ROAD & MH, HH, SWITCHING CENTER #1 LOCATIONS	BOB	WZ

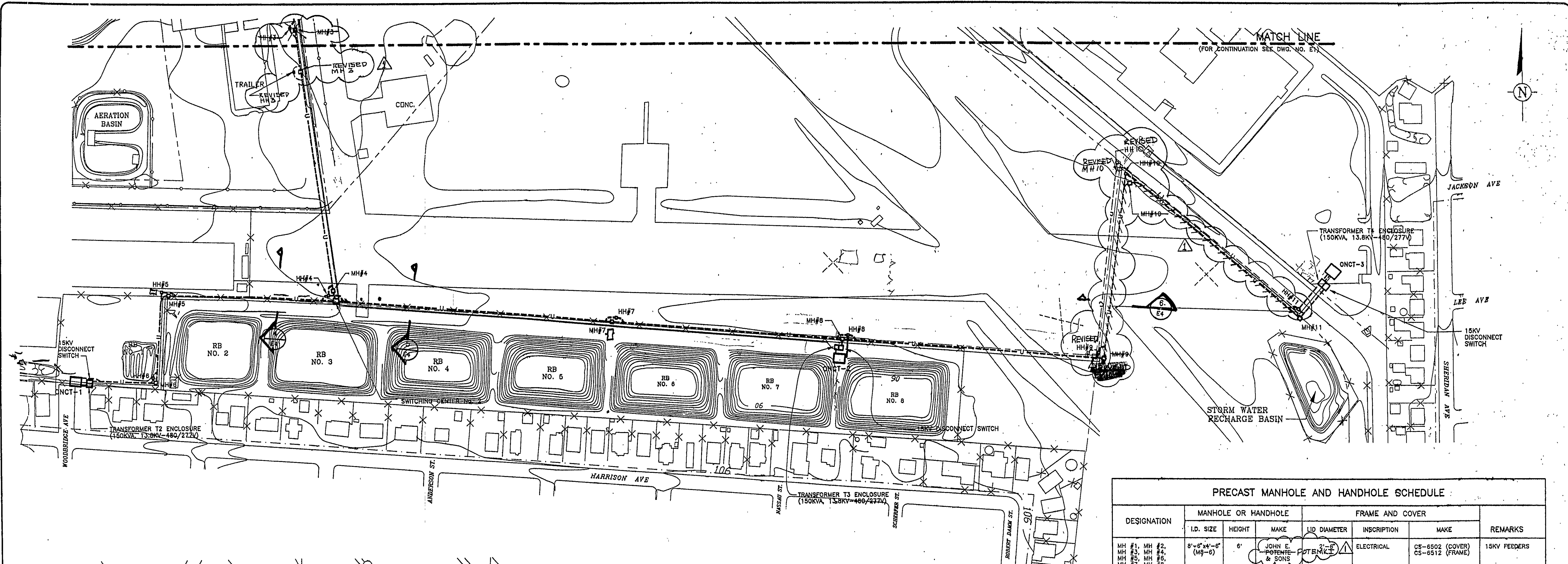
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DRAWING	PLOT SIZE
65861-01	11x17
DRAFTED BY	DATE
D. LORENZ/RA	02-14-96
CHECKED BY	DATE
AL	
APPROVED BY	DATE
RVA	

SITE PLAN AND SYMBOLS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

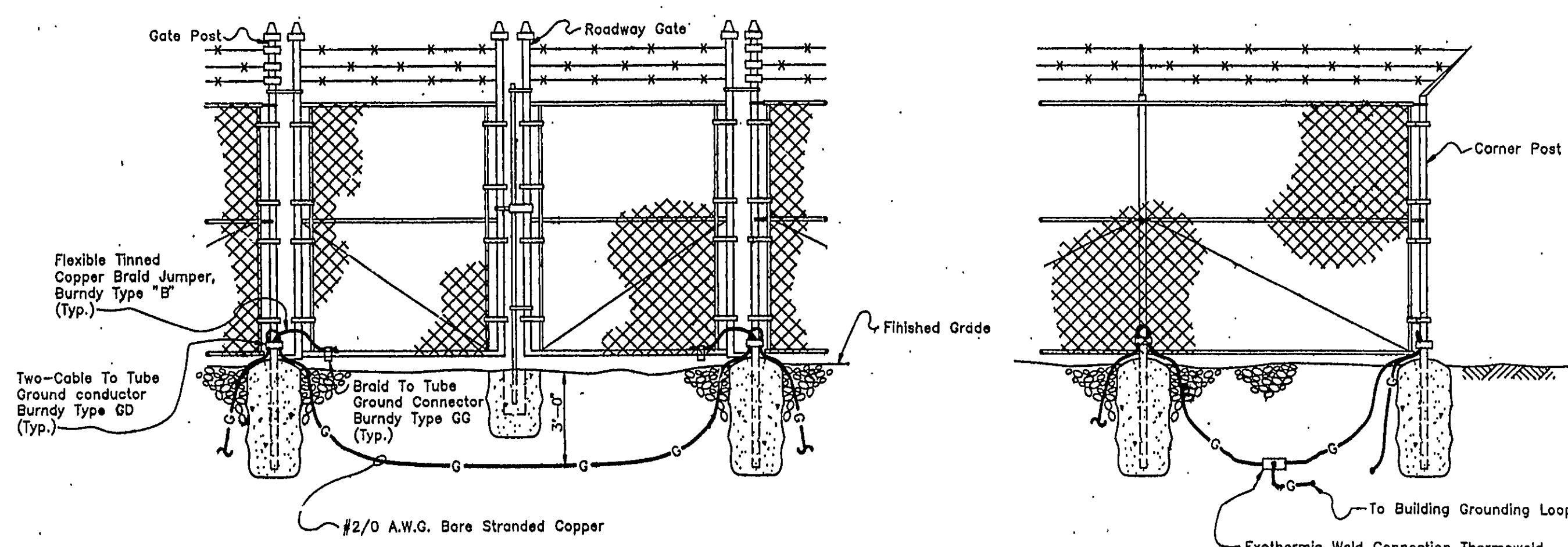
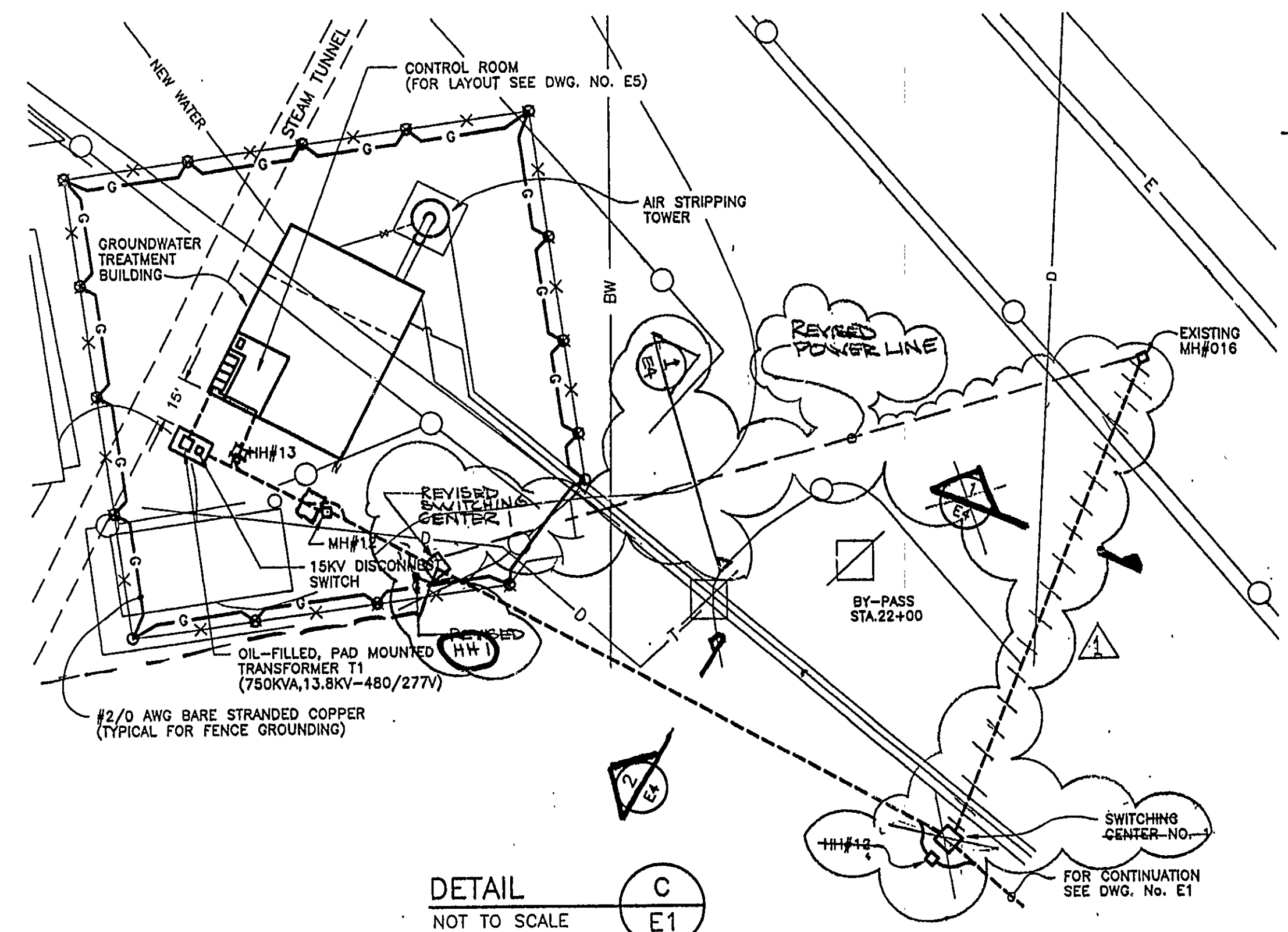
Ronald von Ardenne
Professional Engineer
License No. 09231-1

DRAWING NO. E1

65861 CAD DRAINING NAME: 65861-01.dwg 02/14/96 SYSTEM #20 RA

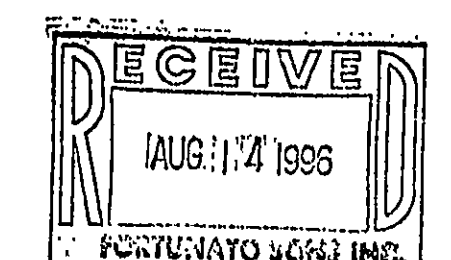


PRECAST MANHOLE AND HANDHOLE SCHEDULE							
DESIGNATION	MANHOLE OR HANDHOLE		FRAME AND COVER			REMARKS	
	I.D. SIZE	HEIGHT	MAKE	LID DIAMETER	INSCRIPTION		
MH #1, MH #2, MH #3, MH #4, MH #5, MH #6, MH #7, MH #8, MH #9, MH #10, MH #11, MH #12	8'-6" x 4'-6" (M9-6)	6'	JOHN E. POTEMKI & SONS	3'-6"	ELECTRICAL	CS-6502 (COVER) CS-6512 (FRAME)	15KV FEEDERS
HH #1, HH #2, HH #3, HH #4, HH #5, HH #6, HH #7, HH #8, HH #9, HH #10, HH #11, HH #12, HH #13	3'-6" x 2'-0" (B3-6)	2'	JOHN E. POTEMKI & SONS	3'-6"	ELECTRICAL	CS-6502 (COVER) CS-6512 (FRAME)	INSTRUMENTATION AND CONTROL



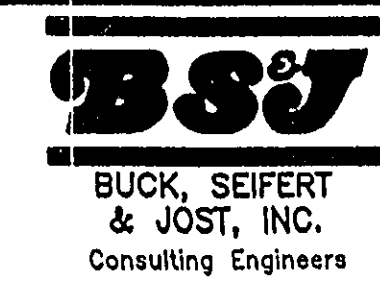
FENCE GROUNDING DETAIL
(TYPICAL FOR ALL LOCATIONS)
NOT TO SCALE

NOTE:
1. FOR GENERAL NOTES, SYMBOLS AND LEGEND SEE DWG. NO. E1.



SCALE
0 100 FT

BS&J CAD DRAWING NAME: 65801-02.dwg 02/14/96 SYSTEM #20 RA



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Environmental Services
A Heidemij Company

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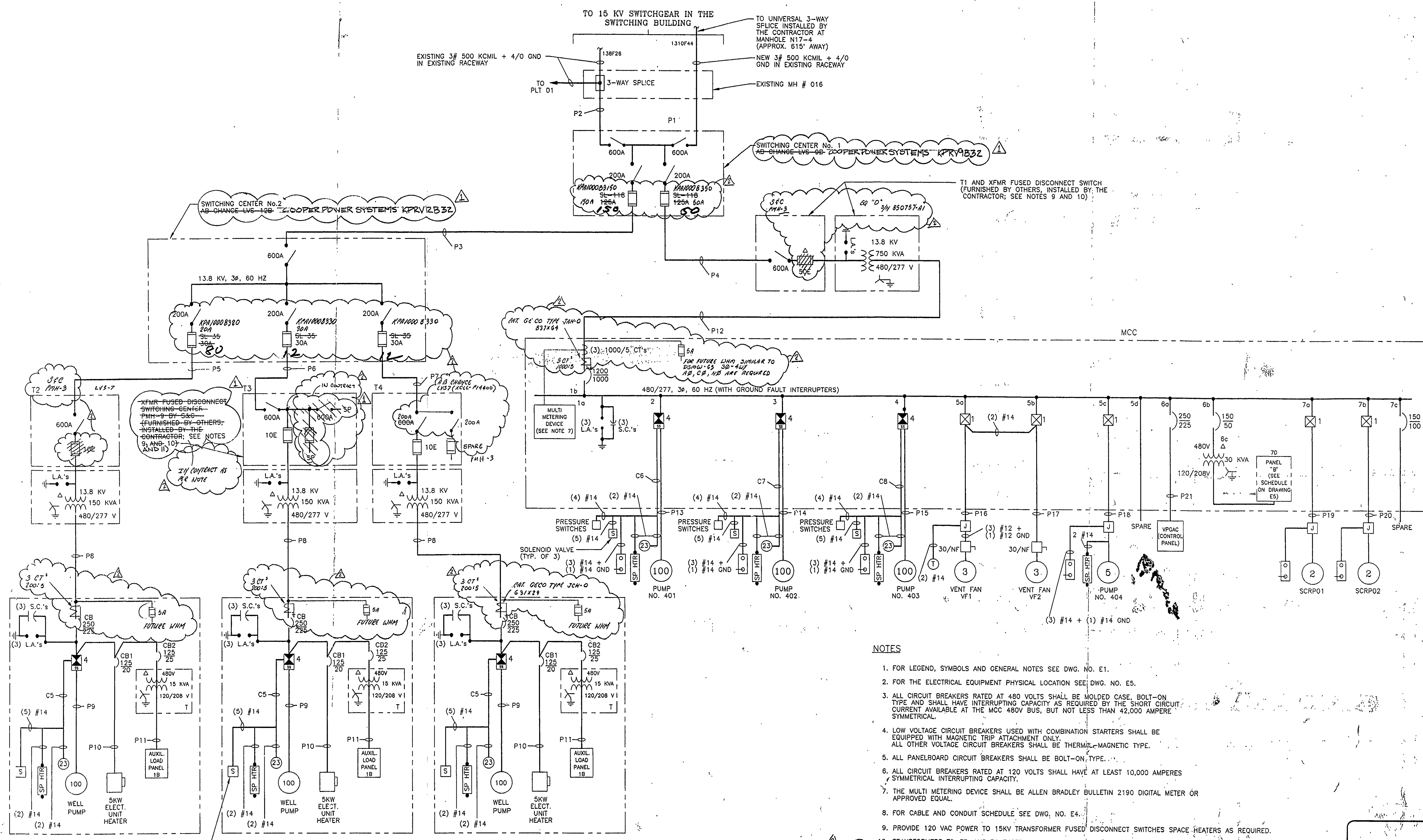
REV. NO.	DATE	DESCRIPTION	BY	APPR.
1	7-1-96	REVISE DETAIL C, MH, HH B ICD, POTEMKI	BOV	OSV

PROJECT NO.	HARD FILE	DRAWING	PLOT SIZE
NY0977.001	658.01	65801-02	11x17

SITE PLAN AND DETAIL C
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO.
E2

ES&M CADD DRAWING NAME: GRU-3.dwg 2/22/96 SYSTEM #20 RA

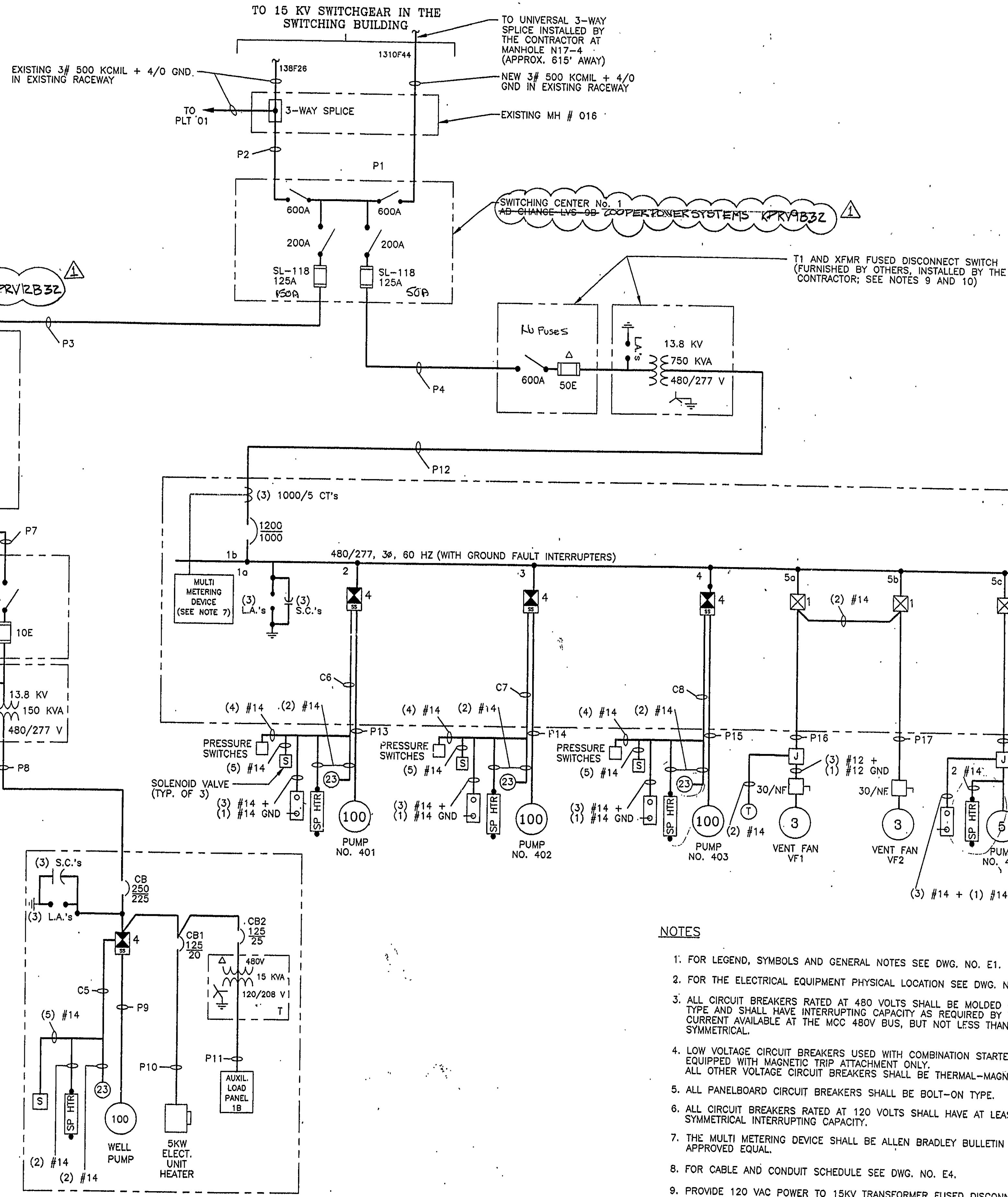


- NOTES**
- FOR LEGEND, SYMBOLS AND GENERAL NOTES SEE DWG. NO. E1.
 - FOR THE ELECTRICAL EQUIPMENT PHYSICAL LOCATION SEE DWG. NO. E5.
 - ALL CIRCUIT BREAKERS RATED AT 480 VOLTS SHALL BE MOLDED CASE, BOLT-ON TYPE AND SHALL HAVE INTERRUPTING CAPACITY AS REQUIRED BY THE SHORT CIRCUIT CURRENT AVAILABLE AT THE MCC 480V BUS, BUT NOT LESS THAN 42,000 AMPERE SYMMETRICAL.
 - LOW VOLTAGE CIRCUIT BREAKERS USED WITH COMBINATION STARTERS SHALL BE EQUIPPED WITH MAGNETIC TRIP ATTACHMENT ONLY. ALL OTHER VOLTAGE CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC TYPE.
 - ALL PANELBOARD CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.
 - ALL CIRCUIT BREAKERS RATED AT 120 VOLTS SHALL HAVE AT LEAST 10,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY.
 - THE MULTI METERING DEVICE SHALL BE ALLEN BRADLEY BULLETIN 2190 DIGITAL METER OR APPROVED EQUAL.
 - FOR CABLE AND CONDUIT SCHEDULE SEE DWG. NO. E4.
 - PROVIDE 120 VAC POWER TO 15KV TRANSFORMER FUSED DISCONNECT SWITCHES SPACE HEATERS AS REQUIRED.
 - TRANSFORMERS T2, T3, AND T4 FUSED DISCONNECT SWITCHES SHALL BE EQUIPPED WITH 10E MEDIUM VOLTAGE FUSES, FURNISHED AND INSTALLED BY THE CONTRACTOR.
 - TRANSFORMERS T2, T3 AND T4 SHALL BE EQUAL IN CONFIGURATION AND ALL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.
 - SWITCHING CENTERS #2 SHALL BE IN COMPLIANCE WITH SPECIFICATION REQUIREMENTS.

Revised

<p>GERAGHTY & MILLER, INC. Environmental Services A Heidemij Company</p>	<p>NORTHROP GRUMMAN</p>	<p>ENGINEERING DESIGN: ALL PROFESSIONAL ENGINEERING SERVICES DEPICTED ON THIS DRAWING HAVE BEEN PERFORMED FOR GERAGHTY & MILLER, INC. BY GM CONSULTING ENGINEERS, P.C. A PROFESSIONAL CORPORATION QUALIFIED TO PERFORM SUCH SERVICES IN THE STATE OF NEW YORK.</p>	<p>DRAWING CONFIDENTIAL: THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS AND SHALL REMAIN THE PROPERTY OF GERAGHTY & MILLER, INC. AS AN INSTRUMENT OF PROFESSIONAL SERVICE. THIS INFORMATION SHALL NOT BE USED IN WHOLE OR IN PART WITHOUT THE FULL KNOWLEDGE AND PRIOR WRITTEN CONSENT OF GERAGHTY & MILLER, INC.</p>	<p>SCALE VERIFICATION THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV. NO.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> <th>APPR.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>9.1.96</td> <td>REVISE T3, MAKE EQUAL TO T2, T4 ADD NOTE #1, REVISE SWITCHING CNTRS #2, ADD NOTE #1.</td> <td>BOUD</td> <td>FCL</td> </tr> <tr> <td>2</td> <td>8-27-96</td> <td>ADDED ELECT DATA</td> <td></td> <td></td> </tr> </tbody> </table>	REV. NO.	DATE	DESCRIPTION	BY	APPR.	1	9.1.96	REVISE T3, MAKE EQUAL TO T2, T4 ADD NOTE #1, REVISE SWITCHING CNTRS #2, ADD NOTE #1.	BOUD	FCL	2	8-27-96	ADDED ELECT DATA			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PROJECT NO.</th> <th>HARD FILE</th> </tr> </thead> <tbody> <tr> <td>NY0897.001</td> <td>GRU-3</td> </tr> <tr> <th>DRAWING:</th> <th>PLOT SIZE:</th> </tr> <tr> <td>GRU-3</td> <td>11x17</td> </tr> <tr> <th>DRAFTED BY:</th> <th>DATE:</th> </tr> <tr> <td>M. HORNBAUGH</td> <td>2/22/96</td> </tr> <tr> <th>CHECKED BY:</th> <th>DATE:</th> </tr> <tr> <td>AL</td> <td>2/22/96</td> </tr> <tr> <th>APPROVED BY:</th> <th>DATE:</th> </tr> <tr> <td>RVA</td> <td>2/22/96</td> </tr> </tbody> </table>	PROJECT NO.	HARD FILE	NY0897.001	GRU-3	DRAWING:	PLOT SIZE:	GRU-3	11x17	DRAFTED BY:	DATE:	M. HORNBAUGH	2/22/96	CHECKED BY:	DATE:	AL	2/22/96	APPROVED BY:	DATE:	RVA	2/22/96	<p>ONE LINE DIAGRAM</p> <p>GROUNDWATER INTERIM REMEDIAL MEASURE</p> <p>GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK</p>	<p>DRAWING NO. E3</p>
REV. NO.	DATE	DESCRIPTION	BY	APPR.																																							
1	9.1.96	REVISE T3, MAKE EQUAL TO T2, T4 ADD NOTE #1, REVISE SWITCHING CNTRS #2, ADD NOTE #1.	BOUD	FCL																																							
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RVA	2/22/96																																										

GSD CADD DRAWING NAME: GRU-3.dwg 2/22/96 SYSTEM #20 BA



- NOTES**
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 - FOR THE ELECTRICAL EQUIPMENT PHYSICAL LOCATION SEE DWG. NO. E5.
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 - FOR CABLE AND CONDUIT SCHEDULE SEE DWG. NO. E4.
 - PROVIDE 120 VAC POWER TO 15KV TRANSFORMER FUSED DISCONNECT SWITCHES SPACE HEATERS AS REQUIRED.
 - TRANSFORMERS T2, T3, AND T4 FUSED DISCONNECT SWITCHES SHALL BE EQUIPPED WITH 10E MEDIUM VOLTAGE, FUSES, FURNISHED AND INSTALLED BY THE CONTRACTOR.
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 - SWITCHING CENTERS 1 & 2 SHALL BE IN COMPLIANCE WITH SPECIFICATION REQUIREMENTS.

RECEIVED
AUG 14 1995
FLYNNATO SC&E INC.

GERAGHTY & MILLER, INC.
Environmental Services
A Heldem| Company

NORTHROP GRUMMAN

ENGINEERING DESIGN:
ALL PROFESSIONAL ENGINEERING SERVICES DEPICTED ON THIS DRAWING HAVE BEEN PERFORMED FOR GERAGHTY & MILLER, INC. BY GM CONSULTING ENGINEERS, P.C. A PROFESSIONAL CORPORATION QUALIFIED TO PERFORM SUCH SERVICES IN THE STATE OF NEW YORK.

DRAWING CONFIDENTIAL: THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS AND SHALL REMAIN THE PROPERTY OF GERAGHTY & MILLER, INC. AS AN INSTRUMENT OF PROFESSIONAL SERVICE. THIS INFORMATION SHALL NOT BE USED IN WHOLE OR IN PART WITHOUT THE FULL KNOWLEDGE AND PRIOR WRITTEN CONSENT OF GERAGHTY & MILLER, INC.

SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.
USE TO VERIFY FIGURE REPRODUCTION SCALE

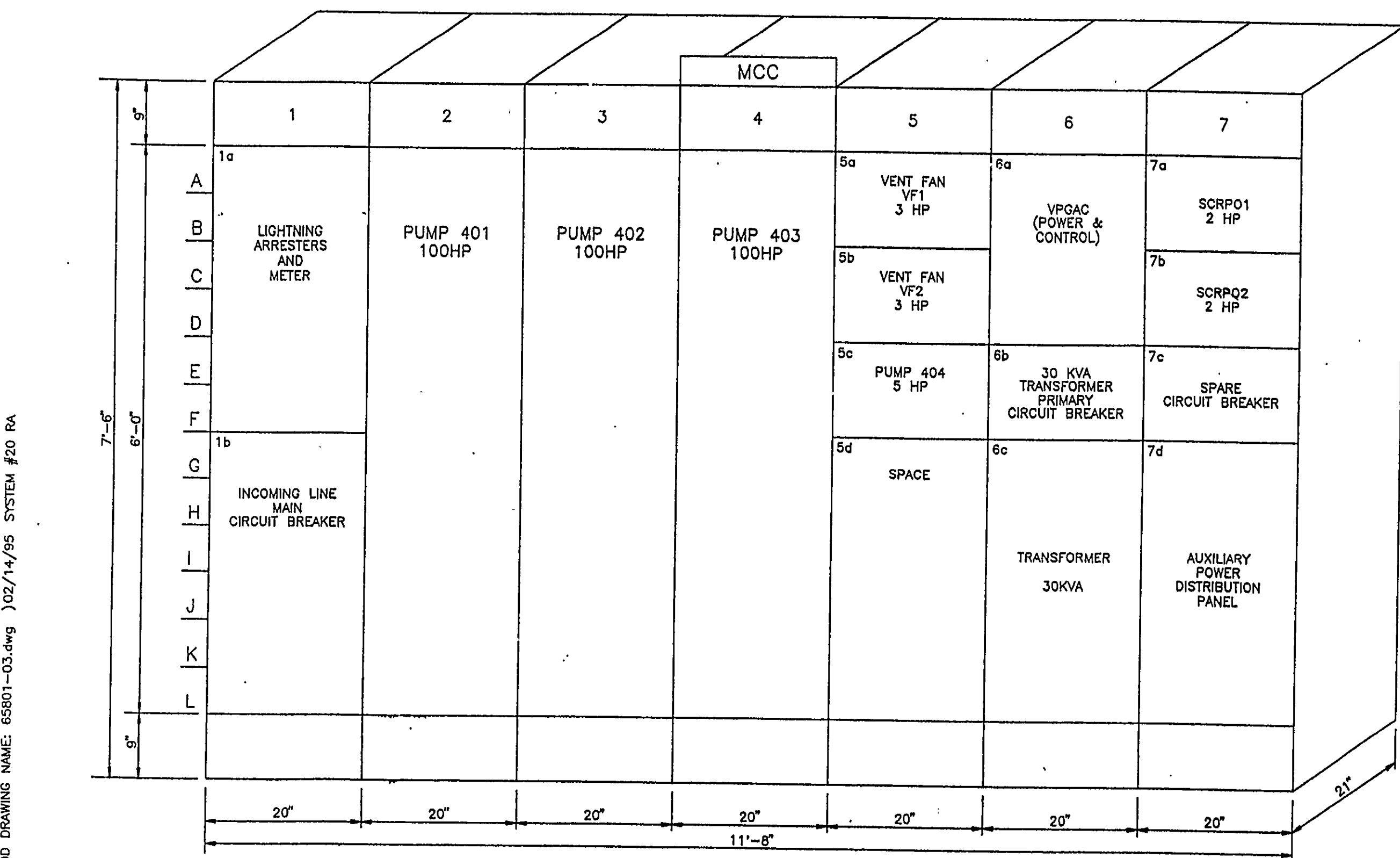
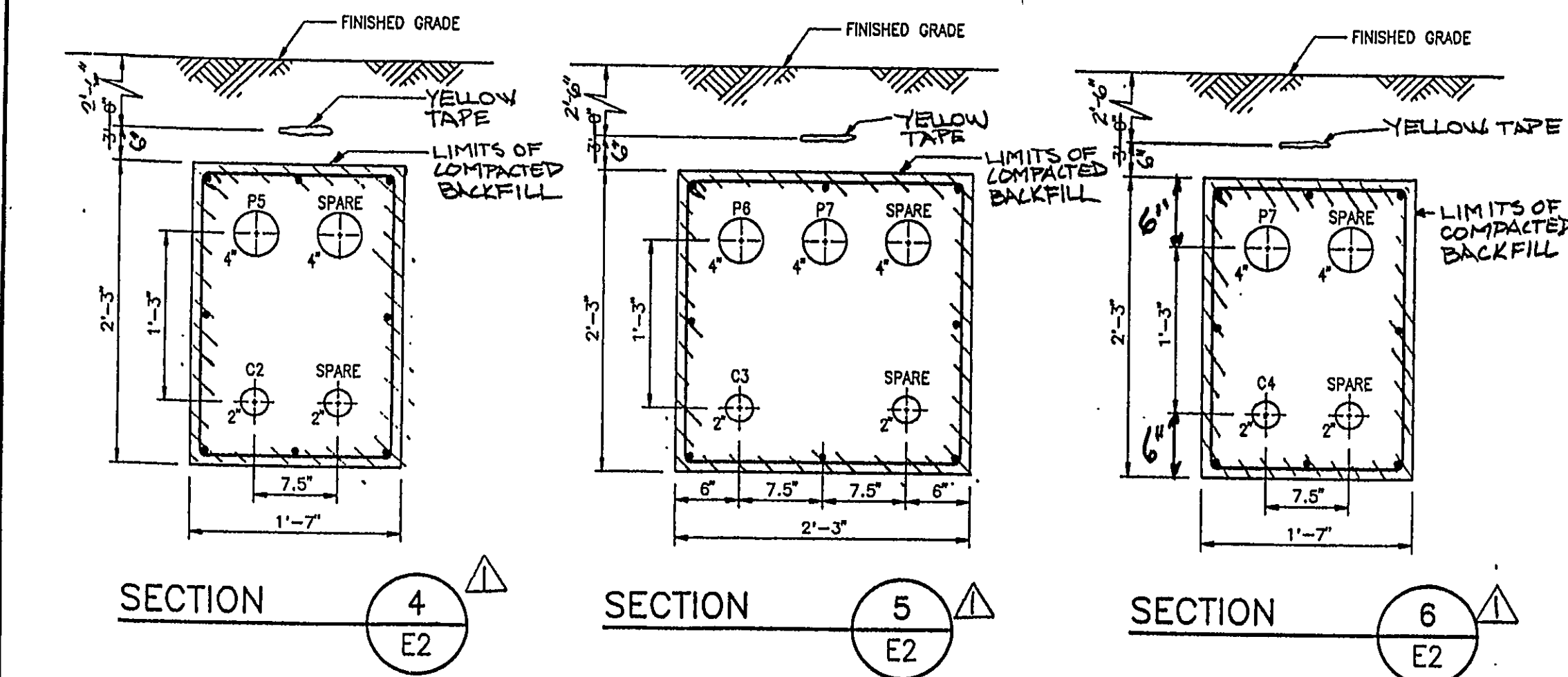
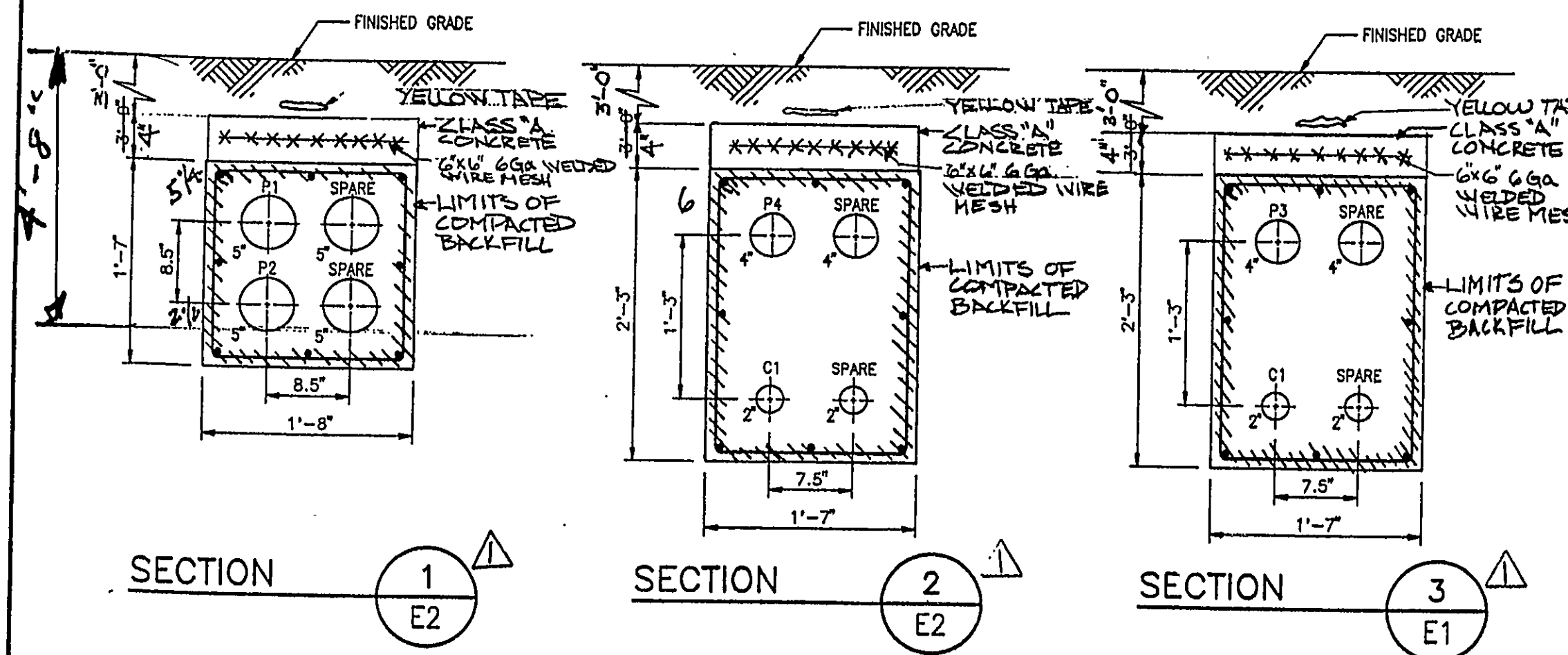
REV. NO.	DATE	DESCRIPTION	BY	APPR.
1	9.1.96	REVISE T3, MAKE EQUAL TO T2, T4 ADD NOTE 11, REVISE SWITCHING CENTERS 1 & 2, ADD NOTE 12.	BOID	FCL

PROJECT NO.	DATE	HARD FILE: GRU-3
NY0277.001	2/22/96	
DRAWING:	DATE:	DATE:
GRU-3	2/22/96	2/22/96
CHECKED BY:	DATE:	DATE:
AL	2/22/96	2/22/96
APPROVED BY:	DATE:	DATE:
RVA	2/22/96	2/22/96

ONE LINE DIAGRAM

GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

DRAWING NO. **E3**



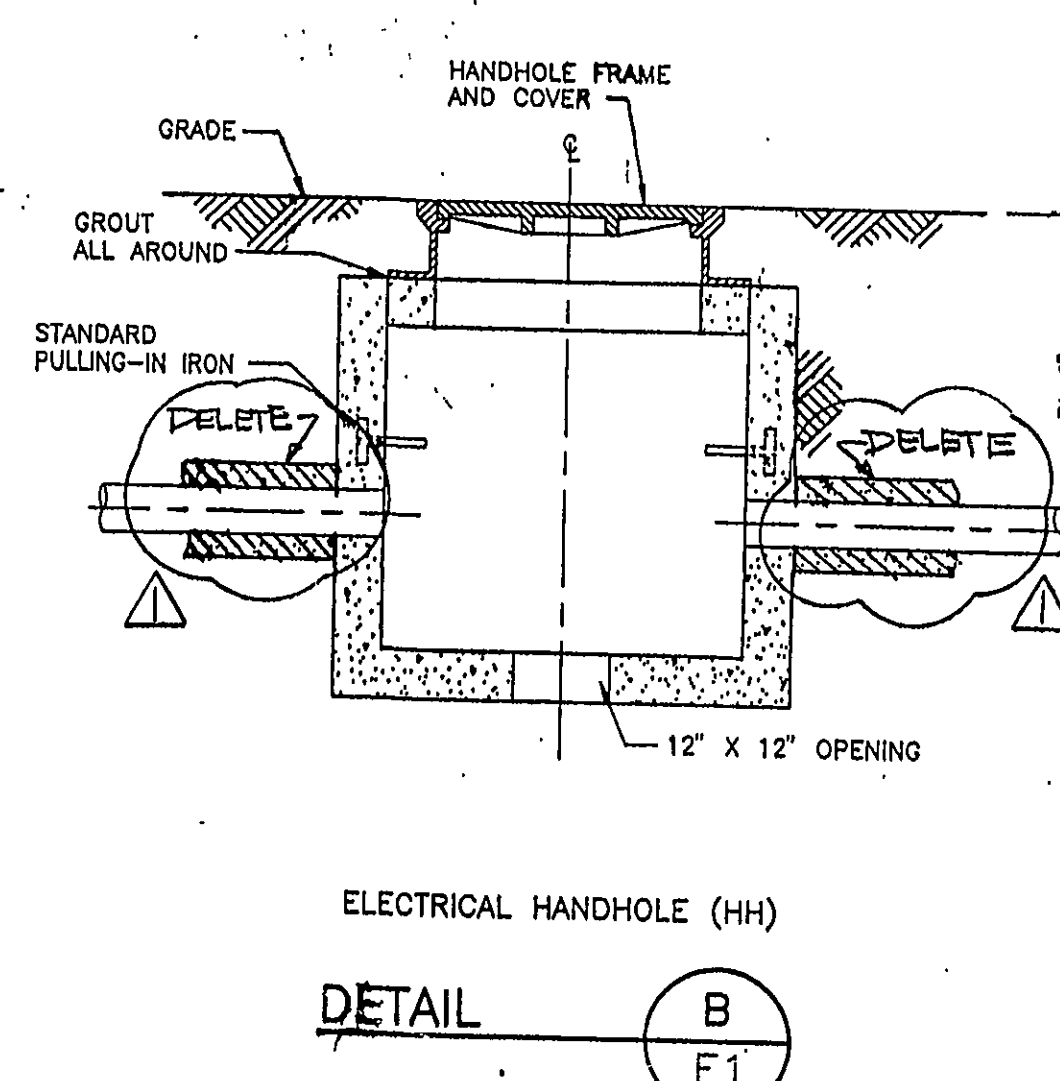
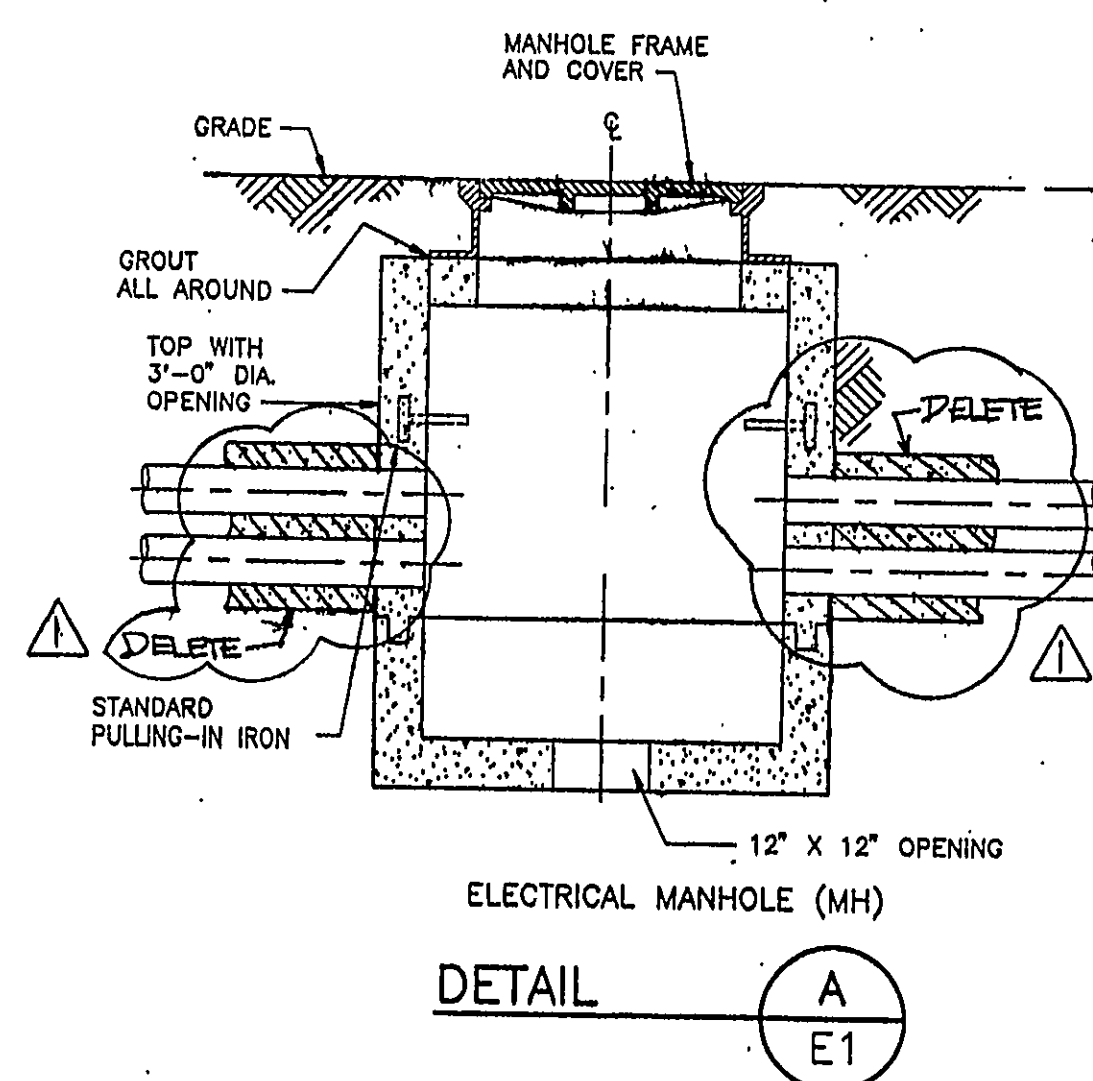
480V MOTOR CONTROL CENTER ISOMETRIC VIEW

CABLE AND CONDUIT SCHEDULE

COND. NO.	SERVICE	FROM	TO	CABLES		REMARKS
				NO. OF CONDUCTORS	SIZE	
C1	Wells ONCT-1, ONCT-2 & ONCT-3 Control And Monitoring	Control Panel In Treatment Bldg. Elect. Rm.	Handhole HH #4	1STSP	#18 2"	PVC Via HH Nos. 13,12,1,2,3 4,5,6,7
C2	Wells ONCT-1, ONCT-2 & ONCT-3 Control And Monitoring	Well ONCT-1 Control Module	Handhole HH #4	2STSP	#18 2"	PVC Via HH Nos. 5,6 - Wire Splice To Treatment Bldg in Cond C1, To ONCT-2, ONCT-3 in Cond C3
C3	Wells ONCT-2 and ONCT-3 Control And Monitoring	Handhole HH #4	Well ONCT2 Control Module	1STSP	#18 2"	PVC Via HH Nos. 7,8
C4	Well ONCT-3 Control And Monitoring	Well ONCT-3 Control Module	Well ONCT2 Control Module	1STSP	#18 2"	PVC Via HH Nos. 8,9,10,11
C5	Well Pump Space Heater, Thermal Relays And Solenoid Valves	Motor Starter	Pump Motor	12	#14 3/4"	RGS
C6	Pump No. 401 Control And Protection	MCC, Cubicle No. 2	Junction Box At Motor No. 401	(3 SPARE) (4 SPARE)	#14 3/4"	RGS
C7	Pump No. 402 Control And Protection	MCC, Cubicle No. 3	Junction Box At Motor No. 402	(4 SPARE)	#14 3/4"	RGS
C8	Pump No. 403 Control And Protection	MCC, Cubicle No. 4	Junction Box At Motor No. 403	(4 SPARE)	#14 3/4"	RGS
C9	GAC Unit Control And Monitoring	Control Panel CP	GAC Control Panel	6	#14 3/4"	RGS
C10	Well Remote Control And Monitoring	Pump Motor Starter	Control System Remote I/O	15 (3 SPARE)	#14 3/4"	RGS
C11	Air Stripper Level Switch High	Level Switch LSH201	Control Panel	2	#14 3/4"	RGS
C12	Clear Well Level Switches (LSH, LSN, LSL, LSL)	Clear Well	Control Panel	8	#14 3/4"	RGS
C13	Clear Well Pump P401, P402, P403 Control & Monitoring	MCC	Control Panel	50 (8 SPARE)	#14 1/2"	RGS
C14	Well Pump Low Flow, High & Low Pressure Alarms	Well Pump, Flow & Level Switches	Control System Remote I/O	6	#14 3/4"	RGS Typical For 3 Wells
C15	Treated Water Flow Recorder	Flow Indicator And Transmitter FIT400	Control Panel	1 STSP	#18 3/4"	RGS

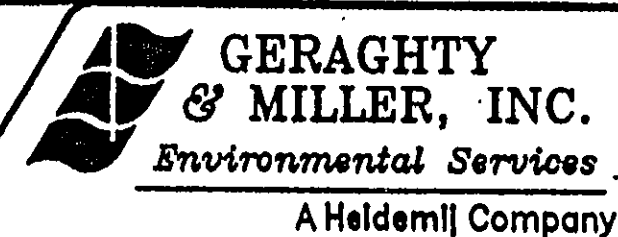
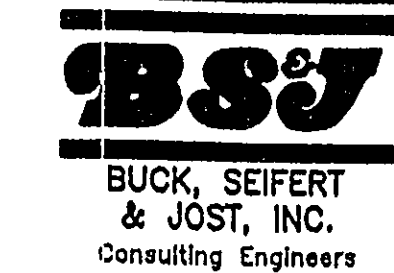
CABLE AND CONDUIT SCHEDULE

COND. NO.	SERVICE	FROM	TO	CABLES		REMARKS
				NO. OF CONDUCTORS	SIZE	
P1	Switching Center No. 1	3 Way Universal Splice In Existing MH #17-4	Switching Center No. 1	3 &	#500 kcmil 5"	15KV Via Existing Ductbank
P2	Switching Center No. 1	3-Way Universal Splice In Existing MH-016	Switching Center No. 1	3 &	#500 kcmil 5"	600V And Manhole MH-016
P3	Switching Center No. 2	Switching Center No. 1	Switching Center No. 2	3 &	#2/0 4"	15KV Via MH Nos. 1,2,3,4
P4	Transformer T1 (750KVA)	Switching Center No. 1	Transformer T1 (Via Disconnect Switch)	3 &	#2/0 4"	15KV Via MH No. 12
P5	Transformer T2 (150KVA)	Switching Center No. 2	Transformer T2 (Via Disconnect Switch)	3 &	#2/0 4"	15KV Via MH Nos. 5,6
P6	Transformer T3 (150KVA)	Switching Center No. 2	Transformer T3 (Via Disconnect Switch)	3 &	#2/0 4"	15KV Via MH Nos. 7,8
P7	Transformer T4 (150KVA)	Switching Center No. 2	Transformer T4 (Via Disconnect Switch)	3 &	#2/0 4"	15KV Via MH Nos. 7,8,9,10,11
P8	Well House Service (Typical)	150KVA Transformer	Main Circuit	4 &	#4/0 3"	RGS Typical For 3 Wells
P9	Well Pump Motor	Secondary	Breaker CB	1-GRD	#8	600V
P10	Well House Electrical Unit Heater	Circuit Breaker CB1	Electrical Unit Heater	4 &	#12 3/4"	RGS Typical For 3 Wells
P11	Well House Panel B1	15 KVA Transformer T Secondary	Panel B1	3 &	#8 3/4"	RGS Typical For 3 Wells
P12	Treatment Building Service	750 KVA Transformer Secondary	Motor Control Center MCC	3 &	#10 (3 & 1-GRD)	RGS
P13	Pump No. 401	MCC, Cubicle No. 2	Pump No. 401 Motor Terminal Box	3 &	#2/0 2"	RGS
P14	Pump No. 402	MCC, Cubicle No. 3	Pump No. 402 Motor Terminal Box	3 &	#2/0 2"	RGS
P15	Pump No. 403	MCC, Cubicle No. 4	Pump No. 403 Motor Terminal Box	3 &	#2/0 2"	RGS
P16	Vent Fan No. 1	MCC, Cubicle No. 5	Junction Box J1	3&1-GRD	#12 3/4"	RGS
P17	Vent Fan No. 2	MCC, Cubicle No. 5	Vent Fan No. 2 Disconnect Switch & Motor	2	#14 1-GRD	RGS
P18	Pump No. 404 Motor Power And Control	MCC, Cubicle No. 5	Junction Box At Pump No. 404 Motor	5	#14 3&1-GRD	RGS
P19	Pump SCRPO1 Power And Control	MCC, Cubicle No. 7	Junction Box At Pump SCRPO1 Motor	3	#14 3&1-GRD	RGS
P20	Pump SCRPO2 Power And Control	MCC, Cubicle No. 7	Junction Box At Pump SCRPO2 Motor	3	#14 3&1-GRD	RGS
P21	VPGAC Unit Power	MCC, Cubicle No. 6	GAC Control Panel	4 &	#4/0 3"	RGS
P22	Transformer T1 15KV Disconnect Switch Space Heater	MCC, Cubicle No. 7	15KV Disconnect Switch Enclosure	2 &	#12 3/4"	RGS
P23	150KVA Transformer 15KV Disconnect Switch Space Heater	Panel 18	15KV Disconnect Switch Enclosure	2 &	#12 3/4"	RGS Typical For 3 Wells



- NOTES:
- FOR SYMBOLS AND LEGEND SEE DWG. NO. E1.
 - FOR THE ELECTRICAL EQUIPMENT PHYSICAL LOCATION SEE DWG. NO. E5.
 - FOR ONE LINE DIAGRAM SEE DWG. NO. E3.
 - ELECTRICAL MANHOLES AND HANDHOLES SHALL BE EQUIPPED WITH ALL ACCESSORIES INCLUDING CABLE RACK, PULLING-IN IRONS AND STEPS AS REQUIRED.
 - PULLING-IN IRONS SHALL BE PLACED OPPOSITE ALL DUCT ENTRANCES.
 - ALL MANHOLES AND HANDHOLES SHALL BE GROUNDED, THE MANHOLES HAVING SPLICES SHALL HAVE GROUND RODS (1" DIA., 10'-0" LONG) INSTALLED IN THE BASE.

ALL CONDUIT FOR OUTDOOR INSTALLATION SHALL BE PVC SCHEDULE 40 CONDUIT, UNLESS OTHERWISE NOTED IN THE CABLE AND CONDUIT SCHEDULE OR OTHER NOTES IN THE DRAWING. ALL MANHOLES SHALL BE 12' X 12' LONG.



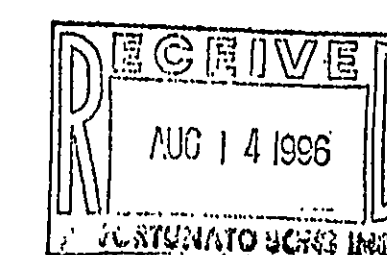
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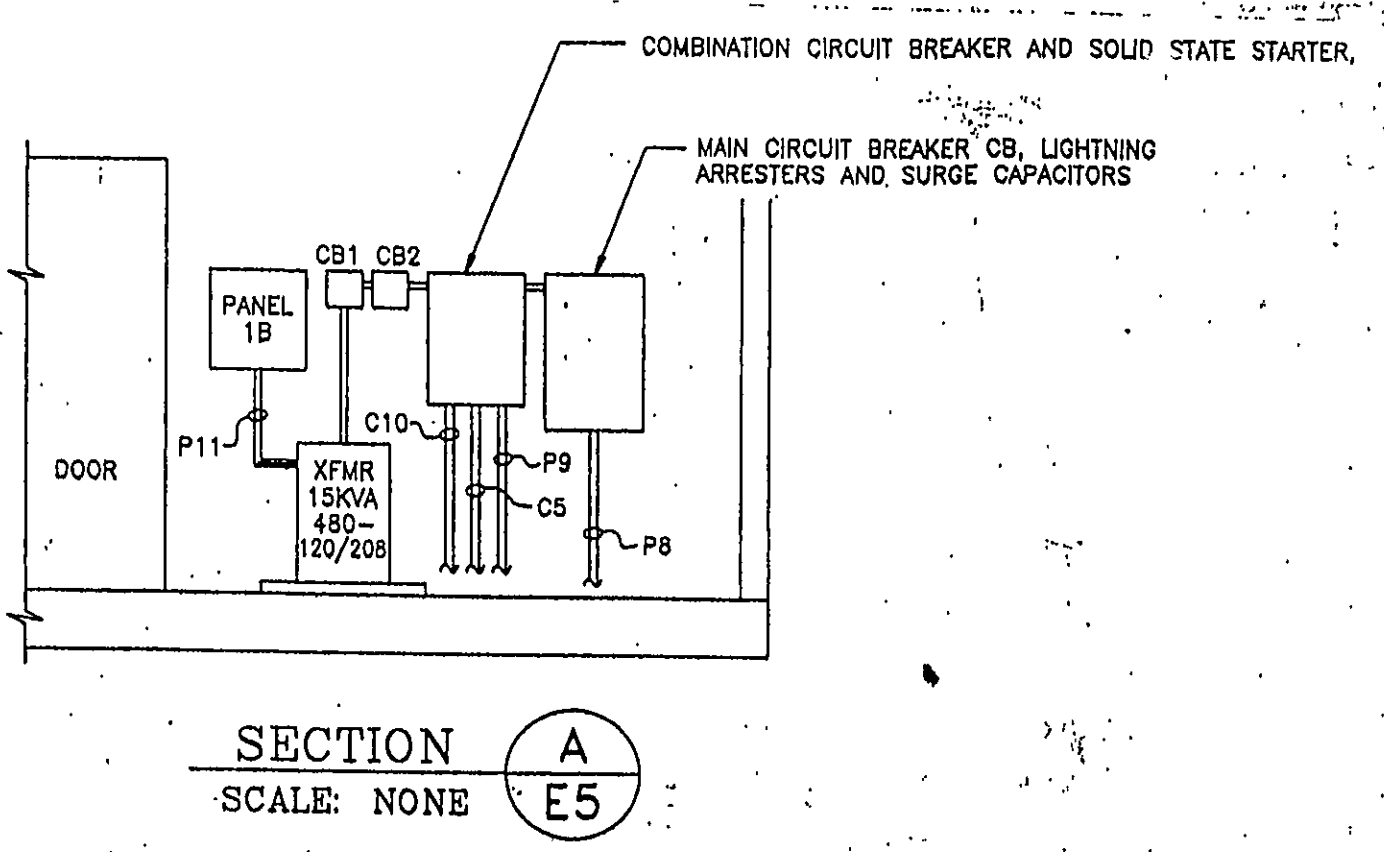
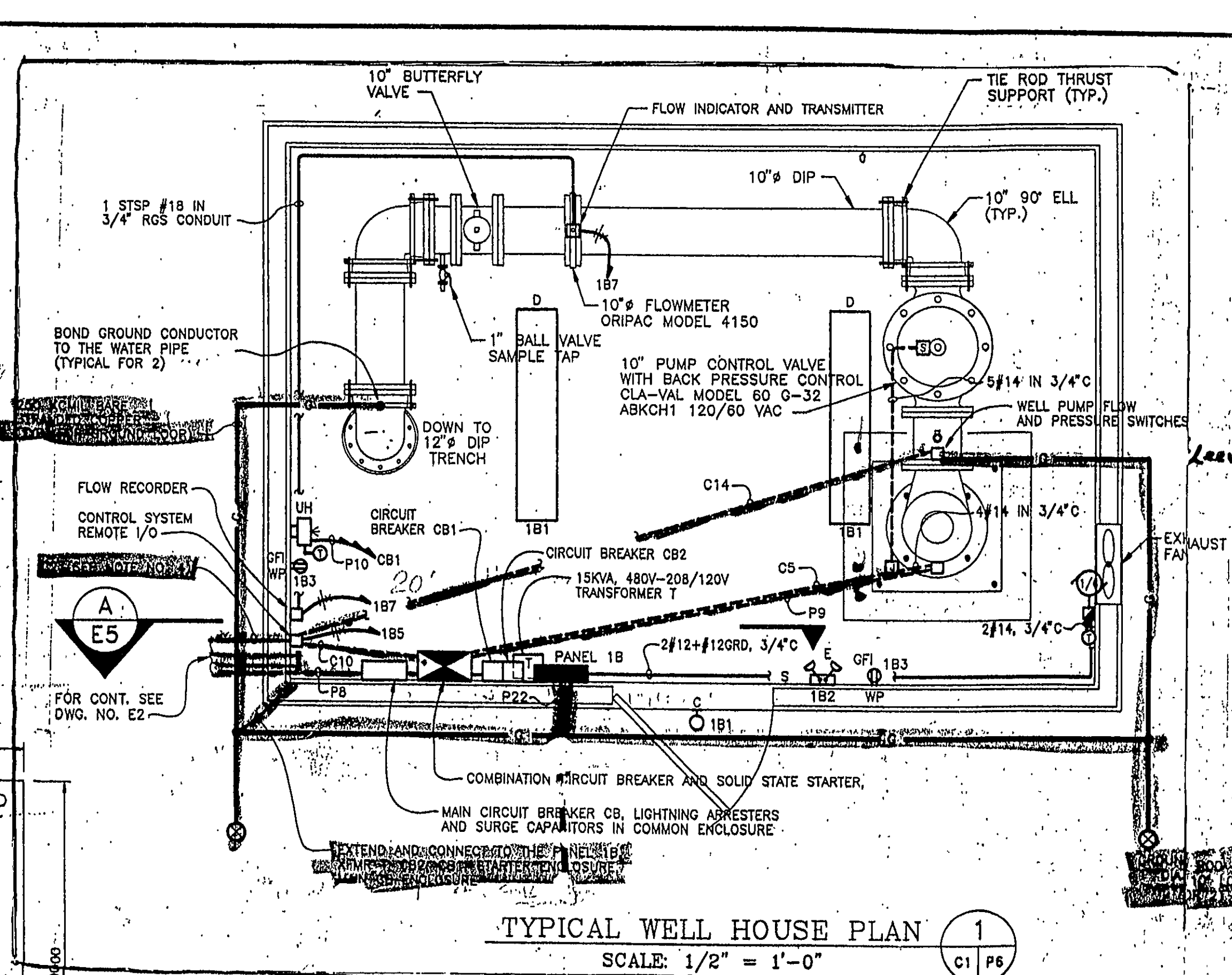
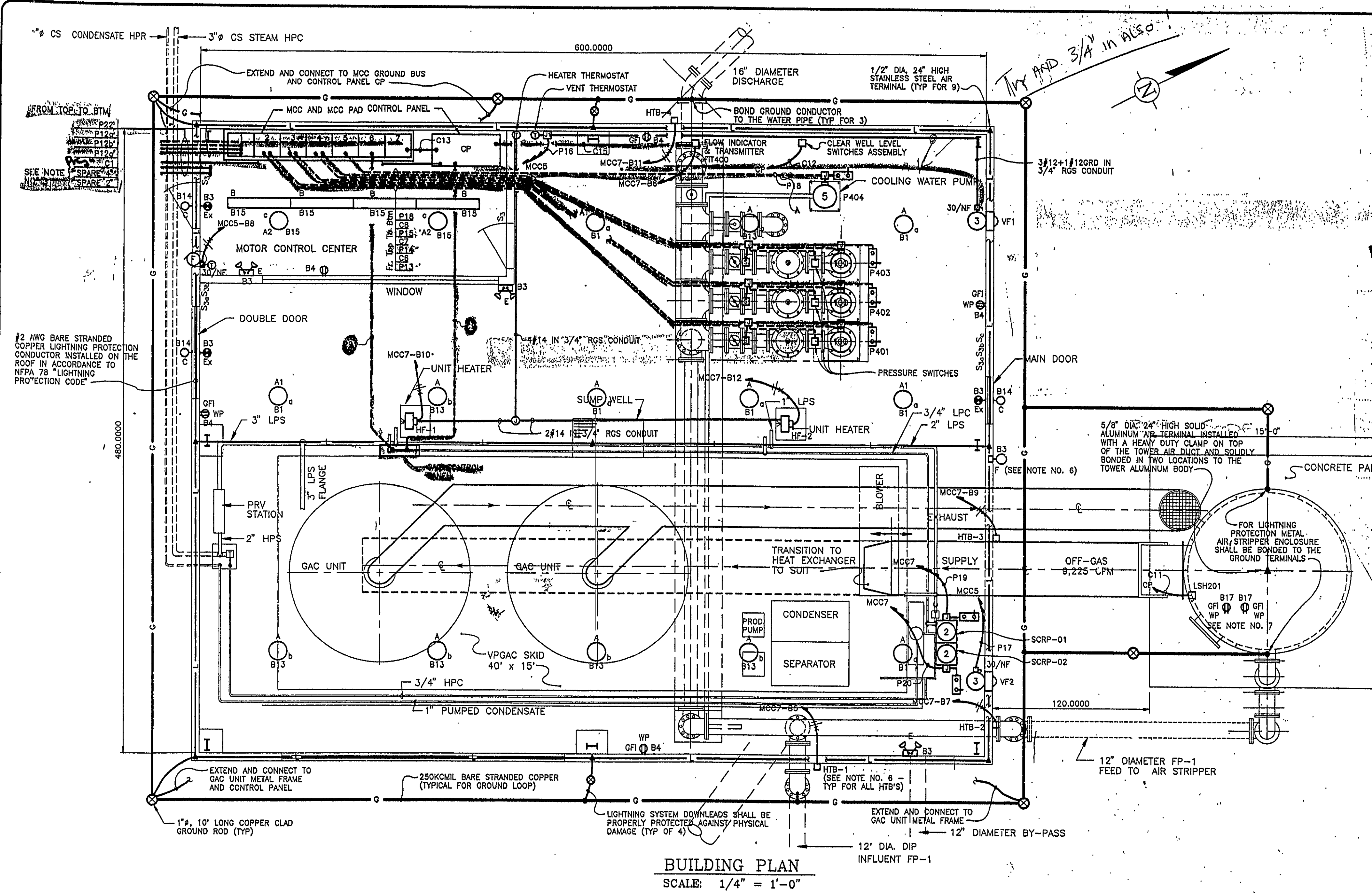
REV. NO.	DATE	DESCRIPTION	BY	APPR.	PROJECT NO.	HARD FILE:
1	7-2-96	DELETE CONCRETE ENC. EMT CONDUIT TYPE P1, P2 AND P3. ADD NOTE 7.	BOB	OSV	NY0277.001	NY0277.001

MCC LAYOUT AND MISCELLANEOUS DETAILS
GROUNDWATER INTERIM REMEDIAL MEASURE
GRUMMAN CONSULTING CORPORATION
BETHANY, NEW YORK



Ronald von Ardenne
Professional Engineer
License No. 042231-1

DRAWING NO. E4



LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MOUNTING	MANUFACTURER CAT. No.	LAMPS		REMARKS
				No.	TYPE	
A	Metal Halide, 250W With Globe, Enclosed And Gasketed, With 16" Polyester Reflector	Ceiling	APPLETON KPCH2575MT	1	MVR250/U	KP2ST Reflector
A1	Similar To Type A Except With Automatically Switched Quartz Lamp	Ceiling; Above The MCC Room	APPLETON KPCH2575MTE	1	MVR250/U Q150SL	KP2ST Reflector With Relay Switch
A2	Similar To Type A Except Low Profile, With 100W Lamp	Ceiling	APPLETON MLCH102G1NMT	1	MXR100/U	KP2ST Reflector
B	1'x4' Fluorescent, With Aluminum Door With Acrylic Pattern 12 Prismatic Lens	Ceiling	COLUMBIA #6112-52-142-120V	2	F32T8	Electronic Ballast
C	Vandal-Resistant Polycarbonate Construction, Suitable For Wet Locations, With Photoelectric Control And Proximity Sensor Operation	Wall Mounted Above Doors	GE OFL 13 FPE	2	PL 13W	Install RAB #LA1000 Proximity Sensor 2" Above Each Type C Fixture And Interconnect
D	Fluorescent, Fiberglass Gasketed Enclosure, One Piece Molded Acrylic Diffuser	Ceiling	COLUMBIA LUN240-WL-120	2	F32T8	Electronic Ballast
E	Compact Sealed And Gasketed Dust-Tight Oil And Moisture Resistant Construction Emergency Lighting Unit (Two Heads)	Wall Mounted At 10'-0" AFF	PRESCOLITE #EDP4-NB (120V)		Included With Fixture	
EX	PL Fluorescent, Suitable For Wet And Hostile Environment Exit Sign With Self Contained Sealed Nickel-Cadmium Battery	Wall Mounted Above Doors	PRESCOLITE #NEX-1-1-EN	2	PL	
F	Incandescent, Heavy Duty Steel Body, Red Tempered Glass Lens Vis-Alarm Flasher	Wall Mounted	THOMAS INDUSTRY BENJAMIN DIVISION KL-3011-120	1	Included With Fixture	Heat Tracing Alarm Light (See Note No. 6)

PANEL 1B SCHEDULE

CKT. No.	DESCRIPTION	CB (A)	CB (A)	DESCRIPTION	CKT. No.
1	Lighting	20	20	Emergency Light	2
3	Receptacles	20	20	Exhaust Fan	4
5	Control System Remote I/O	20	20	Transformer 15KV Disconnect Switch Space Heater	6
7	Field Instruments	20	20	Spare	8
9	Spare	20	20	Spare	10
11	Spare	20	20	Spare	12

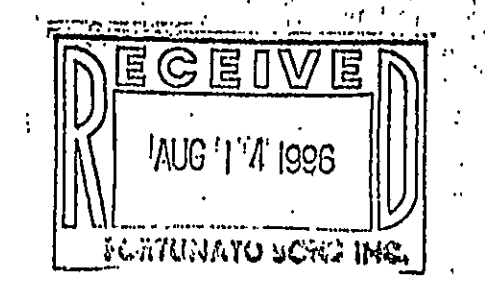
Connected Load: Phase A 0.4 KVA, Phase B 0.5 KVA, Phase C 0.4 KVA, Total 1.3 KVA. Ratings: 208/120 Volts, 3 Phase, 4 Wire, 10 kA, Interrupting Current, RMS. #8 AWG Feeder Size, 125A Main Breaker.

PANEL B SCHEDULE

CKT. No.	DESCRIPTION	CB (A)	CB (A)	DESCRIPTION	CKT. No.
1	Indoor Lighting	20	20	Control Panel CP	2
3	Emergency Lighting	20	20	Receptacles	4
5	Heat Trace Box HTB-1	20	20	Field Instrumentation	6
7	Heat Trace Box HTB-2	20	20	Exhaust Fan EF	8
9	Heat Trace Box HTB-3	20	20	Heat Fan HF-1	10
11	Heat Trace Box HTB-4	20	20	Heat Fan HF-2	12
13	Indoor Lighting	20	20	Outdoor Lighting	14
15	Indoor Lighting	20	20	Transformer 15KV Disconnect Switch Space Heater	16
17	Air Stripper Receptacles	20	20	Spare	18
19	Spare	20	20	Spare	20
21	Spare	20	20	Spare	22
23	Spare	20	20	Spare	24

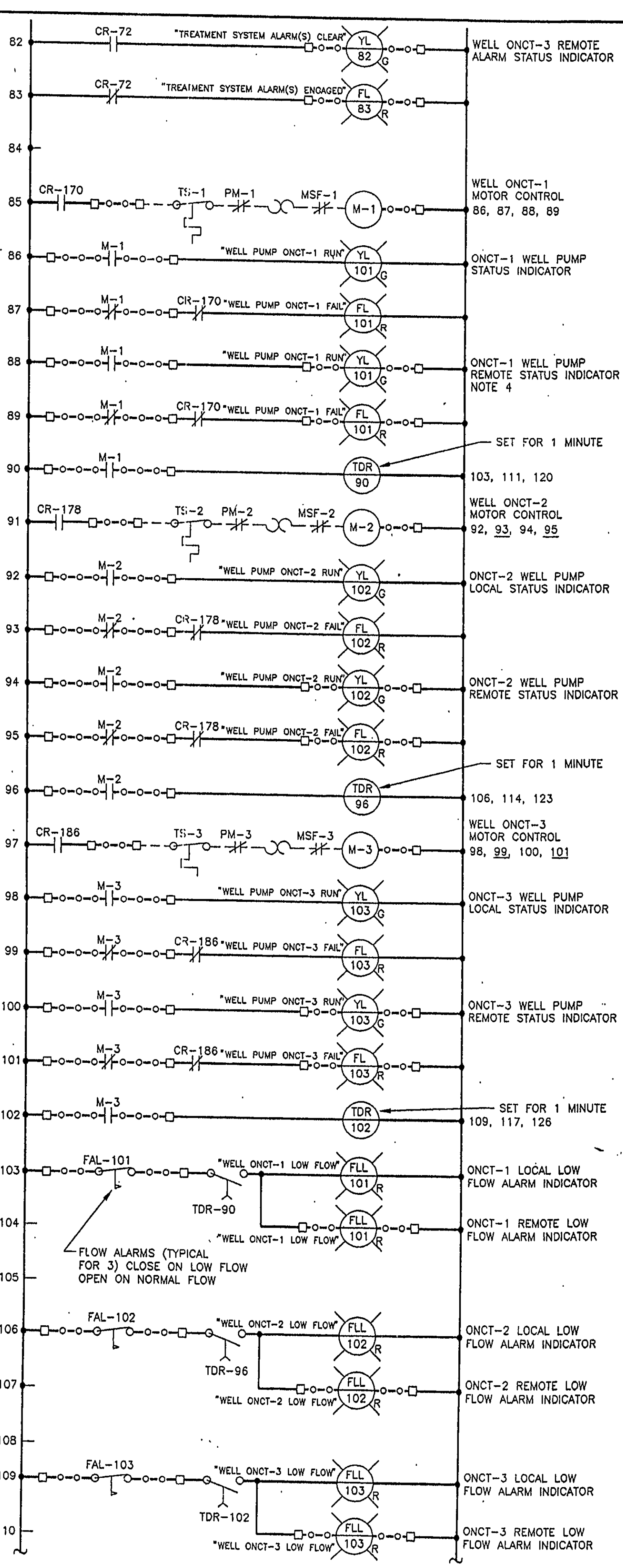
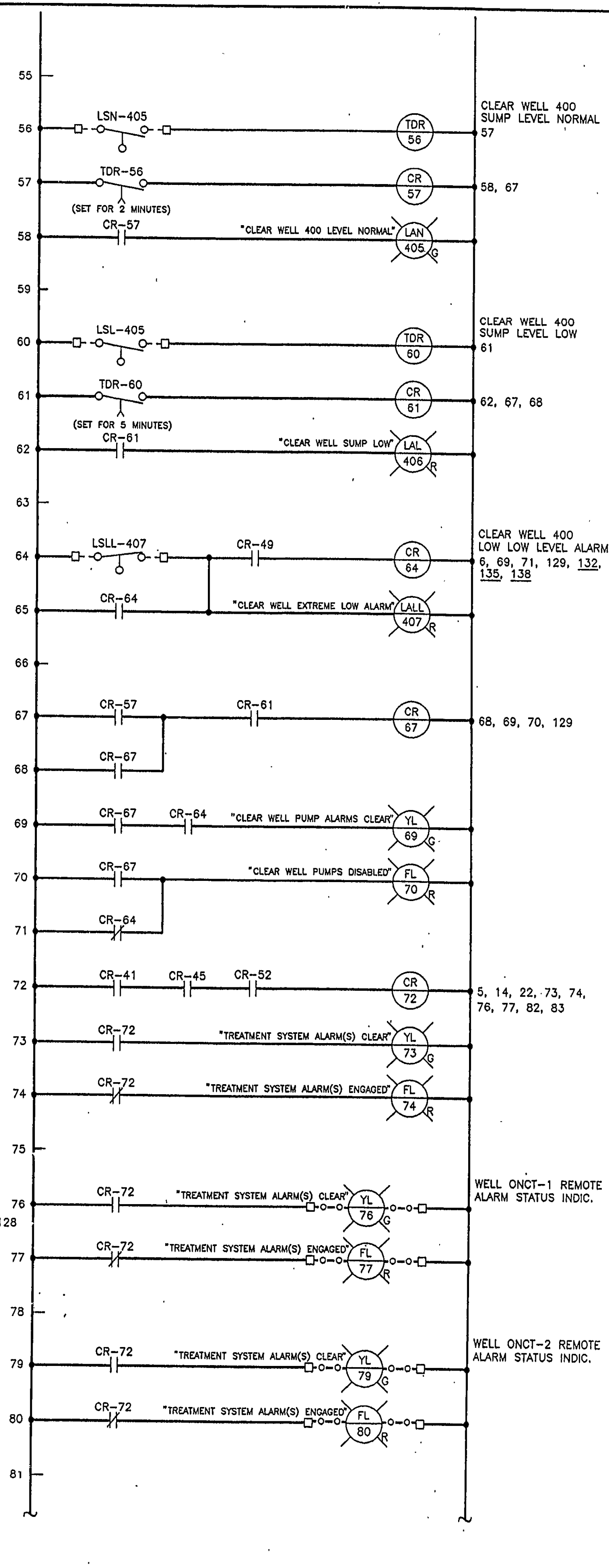
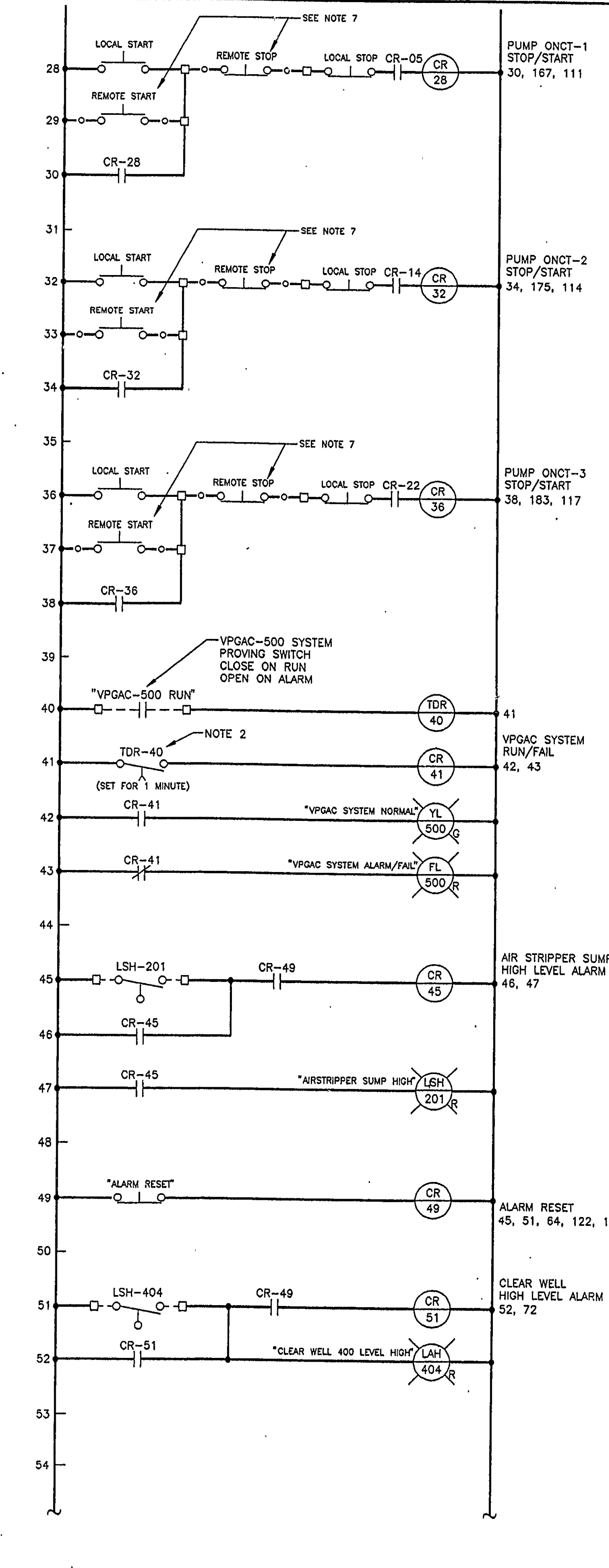
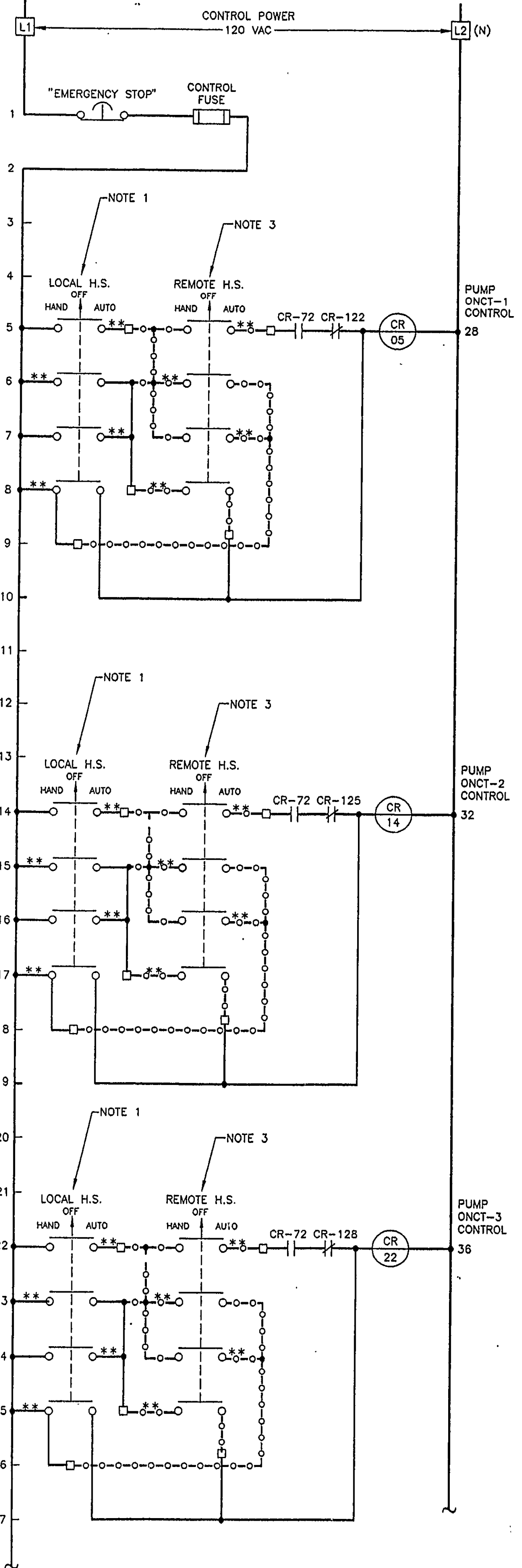
Connected Load: Phase A 4.3 KVA, Phase B 4.2 KVA, Phase C 3.5 KVA, Total 12.0 KVA. Ratings: 208/120 Volts, 3 Phase, 4 Wire, 10 kA, Interrupting Current, RMS. #4 AWG Feeder Size, 125A Main Breaker.

- NOTES:
- FOR SYMBOLS, LEGEND AND GENERAL NOTES SEE DWG. NO. E1.
 - THERE SHALL NOT BE MORE THAN EQUIVALENT OF 3 QUARTER BENDS (270 DEGREES TOTAL) IN ONE CONDUIT RUN BETWEEN TERMINAL POINTS; ADDITIONAL PULL BOXES SHALL BE INSTALLED OTHERWISE.
 - SPARE CONDUITS SHALL BE PROPERLY CAPPED AT 12" ABOVE FLOOR LEVEL.
 - CONTROL CONDUIT DESIGNATION C2 IS APPLICABLE TO WELL ONCT1 ONLY. DESIGNATIONS FOR WELLS ONCT2 AND ONCT3 ARE C3 AND C4 ACCORDINGLY.
 - EXCEPT WHERE OTHERWISE NOTED, ALL ELECTRICAL EQUIPMENT INSTALLED IN THE TREATMENT AREA SHALL BE HOUSED IN NEMA 4 ENCLOSURES. EQUIPMENT INSTALLED IN THE WELL HOUSES SHALL BE HOUSED IN NEMA 12 ENCLOSURES.
 - HEAT TRACING FAILURE ALARM SHALL BE INITIATED BY TEMPERATURE SENSOR INSTALLED IN HEAT TRACE BOXES HTB-1 THRU HTB-4. THE CONTRACTOR SHALL INSTALL AUXILIARY RELAYS IN AN EMPTY COMPARTMENT OF MCC AND INTERCONNECT.
 - INSTALL TWO RECEPTACLES (ONE ON EACH MAIN PLATFORM OF THE AIR STRIPPER) AND INTERCONNECT WITH 2#12+1#12GRD WIRE INSTALLED IN 3/4" RGS CONDUIT.



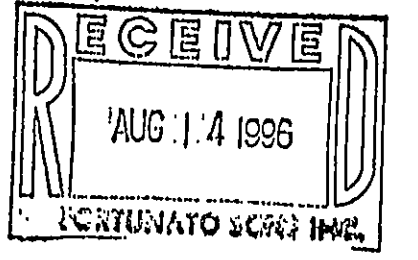
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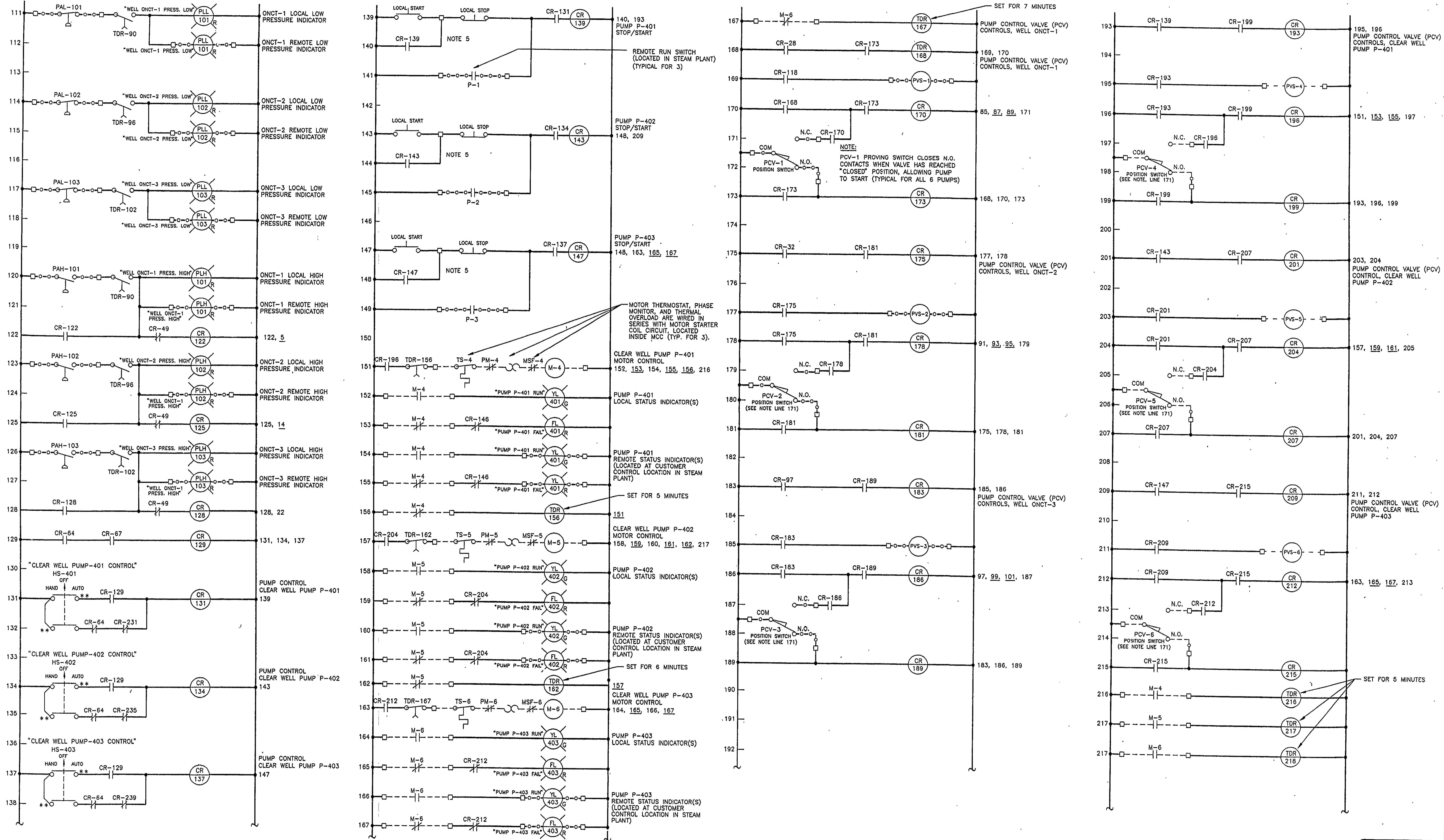
<p>BUCK, SEIFERT & JOST, INC. Consulting Engineers</p>	<p>Environmental Services A Heidemij Company</p>		<p>ENGINEERING DESIGN: ALL PROFESSIONAL ENGINEERING SERVICES DEPICTED ON THIS DRAWING HAVE BEEN PERFORMED FOR GERAGHTY & MILLER, INC. BY OUR CONSULTING ENGINEERS, P.E. A PROFESSIONAL CORPORATION QUALIFIED TO PERFORM SUCH SERVICES IN THE STATE OF NEW YORK.</p>	<p>DRAWING CONFIDENTIAL: THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS AND SHALL REMAIN THE PROPERTY OF GERAGHTY & MILLER, INC. AS AN INSTRUMENT OF PROFESSIONAL SERVICE. THIS INFORMATION SHALL NOT BE USED IN WHOLE OR IN PART WITHOUT THE FULL KNOWLEDGE AND PRIOR WRITTEN CONSENT OF GERAGHTY & MILLER, INC.</p>	<p>SCALE VERIFICATION THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FOUR REPRODUCTION SCALE</p>	<table border="1"> <tr> <th>REV. NO.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> <th>APPR.</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	REV. NO.	DATE	DESCRIPTION	BY	APPR.						<table border="1"> <tr> <td>PROJECT NO.:</td> <td>NY0977-001</td> <td>HARD FILE:</td> <td>685.01</td> </tr> <tr> <td>DRAWING:</td> <td>68564-04</td> <td>PLOT SIZE:</td> <td>1/4"=1'</td> </tr> <tr> <td>DRAWN BY:</td> <td>RA</td> <td>DATE:</td> <td>02/14/95</td> </tr> <tr> <td>CHECKED BY:</td> <td>AL</td> <td>DATE:</td> <td> </td> </tr> <tr> <td>APPROVED BY:</td> <td>RA</td> <td>DATE:</td> <td> </td> </tr> </table>	PROJECT NO.:	NY0977-001	HARD FILE:	685.01	DRAWING:	68564-04	PLOT SIZE:	1/4"=1'	DRAWN BY:	RA	DATE:	02/14/95	CHECKED BY:	AL	DATE:		APPROVED BY:	RA	DATE:		<p>POWER AND LIGHTING PLANS AND DETAILS</p> <p>GROUNDWATER INTERIM REMEDIAL MEASURE</p> <p>GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK</p>	<p>DRAWING NO. E5</p>
			REV. NO.	DATE	DESCRIPTION	BY	APPR.																																
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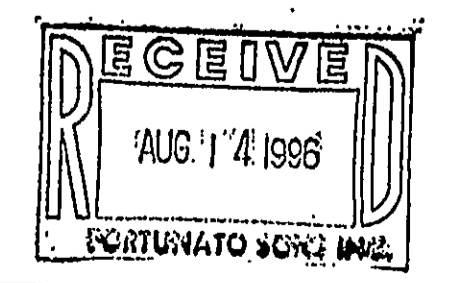
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CHECKED BY: [Signature]	DATE: 2/27/96
APPROVED BY: [Signature]	DATE: 2/27/96

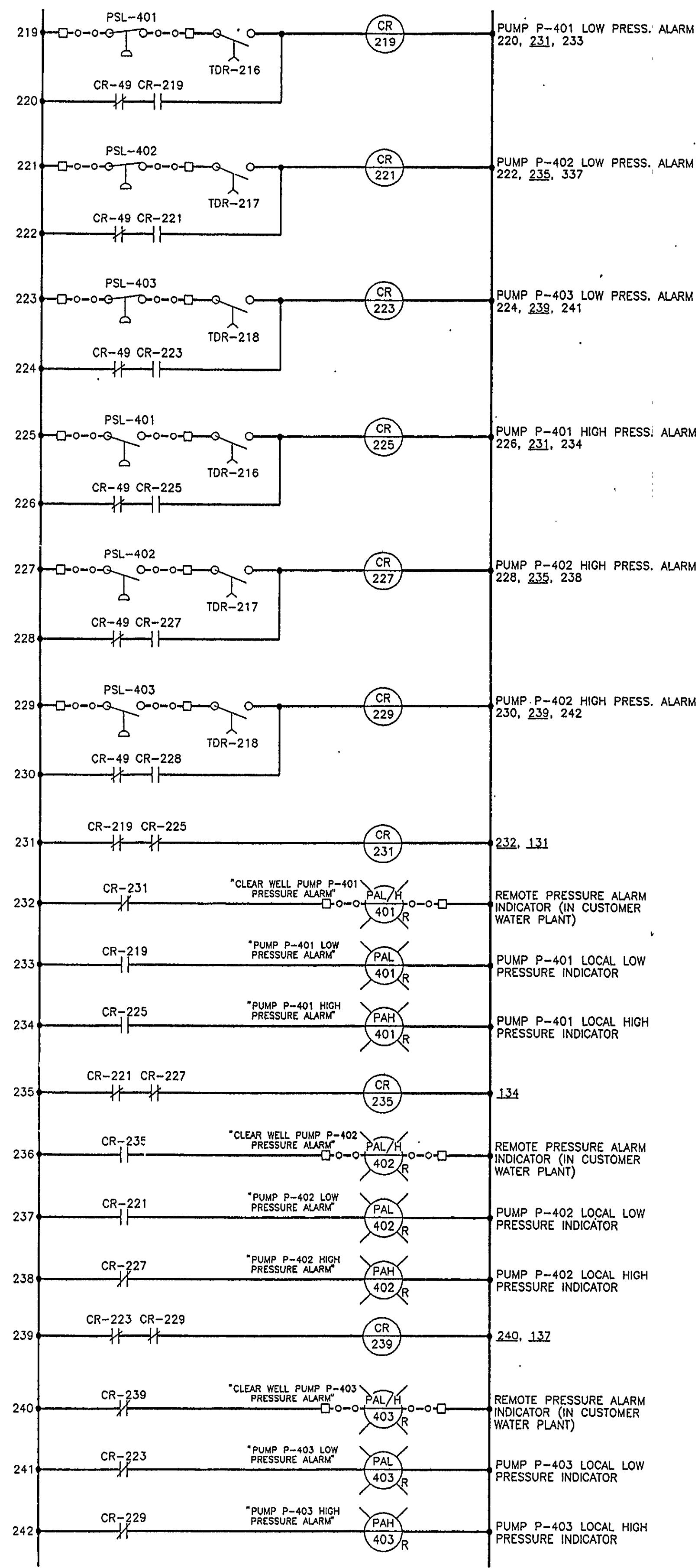




REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: H10977.001	HARD FILE: GRU-23
DRAWING: GRU-23	PLOT SIZE: 11-1
DRAFTED BY: A. JOHNSON	DATE: 2/22/96
CHECKED BY: [Signature]	DATE: 2/23/96
APPROVED BY: G.S.V.	DATE: 2/23/96





LEGEND SYMBOLS

- CONTROL RELAY (PANEL INTERNAL CONTROL DEVICE)
- MOTOR STARTER, STARTER TYPE IS INDICATED ON DRAWING E-3 (SEE NOTES 8,9)
- PILOT VALVE SOLENOID (PUMP CONTROL VALVE ACTUATOR)
- INDICATOR LIGHT, LETTER INDICATES COLOR
- COIL, TIME DELAY RELAY
- CONTACT, NORMALLY OPEN
- CONTACT, NORMALLY CLOSED
- SWITCH, LIMIT (PROVING SWITCH)
- CONNECTION POINT
- NO CONNECTION
- FUSE, CONTROL (AMPACITY INDICATED)
- PUSHBUTTON, NORMALLY CLOSED
- PUSHBUTTON, NORMALLY OPEN
- LIQUID LEVEL SWITCH, NORMALLY OPEN
- TIME DELAY RELAY CONTACT (NOTC)
- MUSHROOM HEAD SWITCH (EMERGENCY STOP)
- PRESSURE SWITCH (SHOWN NORMALLY OPEN)
- FLOW SWITCH (SHOWN NORMALLY CLOSED)
- TEMPERATURE/THERMOSTATIC SWITCH, FIXED (SHOWN NORMALLY CLOSED)
- PHASE MONITORING DEVICE, AUTOMATICALLY RESETTING
- MOTOR EXTERNAL THERMAL OVERLOAD DEVICE
- AUXILIARY FAULT CONTACT, REDUCED VOLTAGE MOTOR CONTROLLERS
- THERMAL OVERLOAD CONTACT (EXTERNAL)
- PANEL WIRING
- FIELD WIRING
- INDICATES CONTROL LOGIC COMMUNICATED VIA DATA BUS TO REMOTE I/O TERMINALS

NOTES:

1. "LOCAL" SWITCHES ARE LOCATED AT MAIN CONTROL PANEL (MCP). "REMOTE" SWITCHES ARE LOCATED ON REMOTE CONTROL PANEL(S) (RCP-X) LOCATED AT WELLHEAD. ALL WELLHEAD LOCATIONS ARE IDENTIFIED AT DEVICES ON DIAGRAM.
2. CARBON SYSTEM RESTART REQUIRES 1 MIN. FOR FAIL ALARM TO CLEAR.
3. ALL HAND-OFF-AUTO (H-O-A) SWITCHES WILL HAVE CAPABILITY OF BEING SET AND HELD IN BOTH HAND AND AUTO POSITIONS (NON-SPRING RETURN ON "HAND" SETTING).
4. REMOTE WELL PUMP STATUS INDICATORS LOCATED AT SAME LOCATION AS EACH SPECIFIC MOTOR CONTROLLER.
5. REMOTE STOP, START AND INDICATORS FOR CLEAR WELL PUMPS ARE LOCATED IN CUSTOMER WATER/STEAM PLANT.
6. ALL CONTROLS AND INDICATORS LABELLED "LOCAL" ARE LOCATED ON MAIN CONTROL PANEL (MCP) IN TREATMENT BUILDING CONTROL ROOM.
7. ALL WELL HEAD LOCATED (ONCT-1,2,3) MOTOR CONTROL INTERFACE PANELS SHALL BE EQUIPPED WITH A KEYPAD SWITCH OVERRIDE, AND THE ABILITY TO UTILIZE "START" AND "STOP" CONTROLS TO EXECUTE COMPLETE OVERRIDE OF SYSTEM CONTROLS.
8. ALL MOTOR STARTERS FOR ONCT AND CLEAR WELL PUMPS ARE REDUCED VOLTAGE TYPE, EITHER AUTOTRANSFORMER OR SOLID STATE (SCR-TYPE) MODELS.
9. REFERENCE DRAWING E-3 FOR TYPE AND SIZE OF MOTOR CONTROL DEVICES.



ENGINEERING DESIGN:
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SCALE VERIFICATION
 THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.
 USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: N10977.001.001	WADD FILE: GRU-29
DRAWING: GRU-29	PLOT SIZE: 1-1
DRAFTED BY: H. HUBBARD	DATE: 2/22/96
CHECKED BY: [Signature]	DATE: 2/22/96
APPROVED BY: [Signature]	DATE: 2/23/96

SYSTEM CONTROL LOGIC
 3 OF 3
 GROUNDWATER INTERIM REMEDIAL MEASURE
 GRUMMAN AEROSPACE CORPORATION
 BETHPAGE, NEW YORK

RECEIVED
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