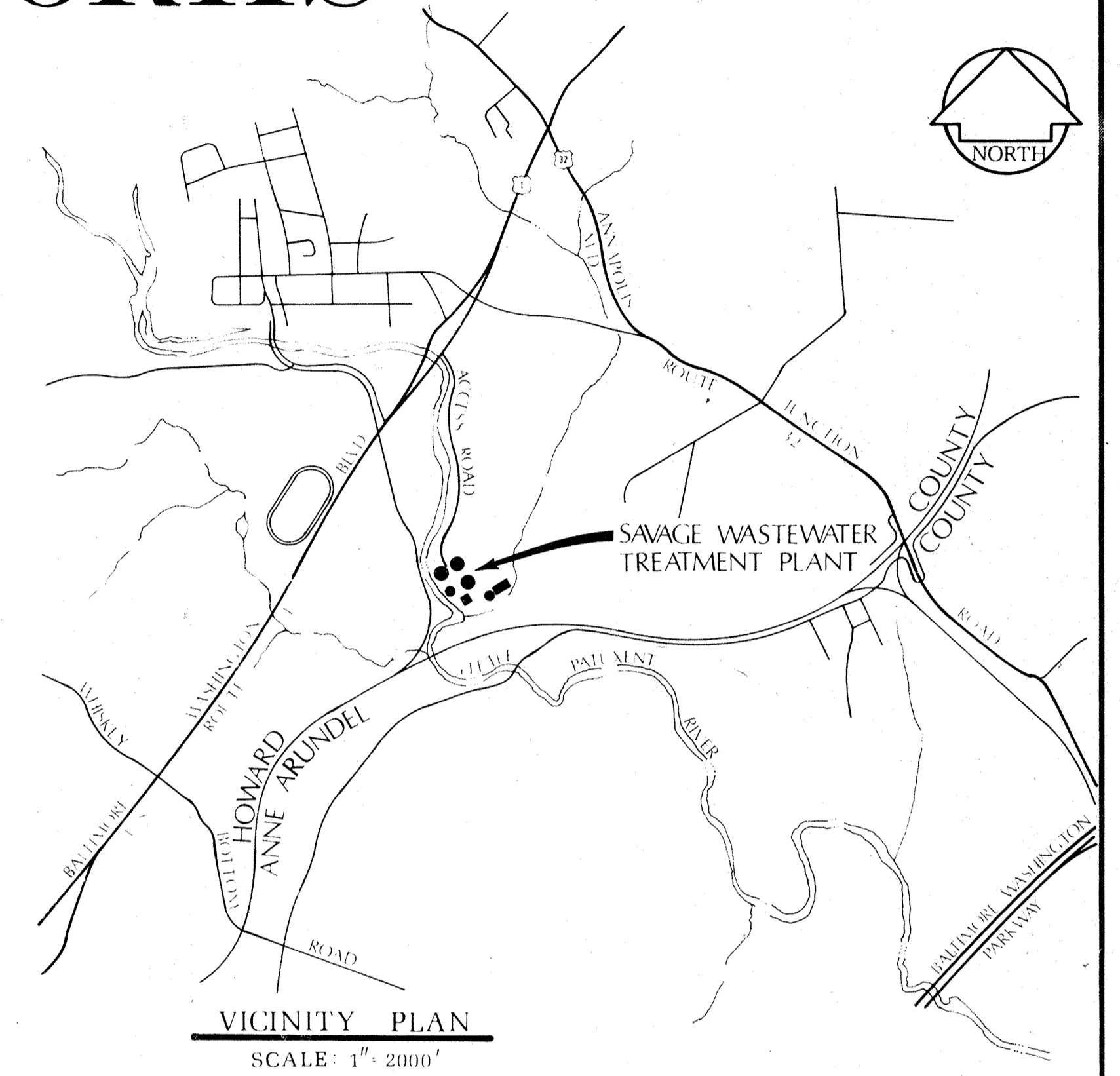
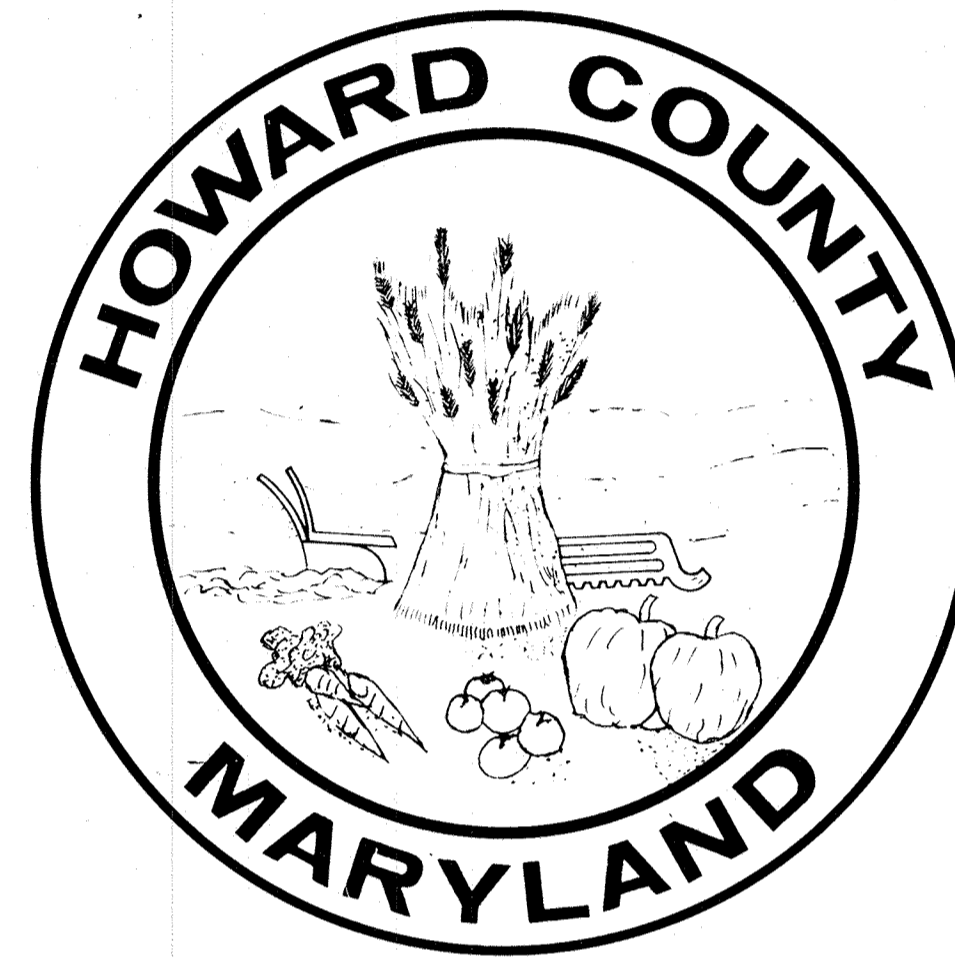
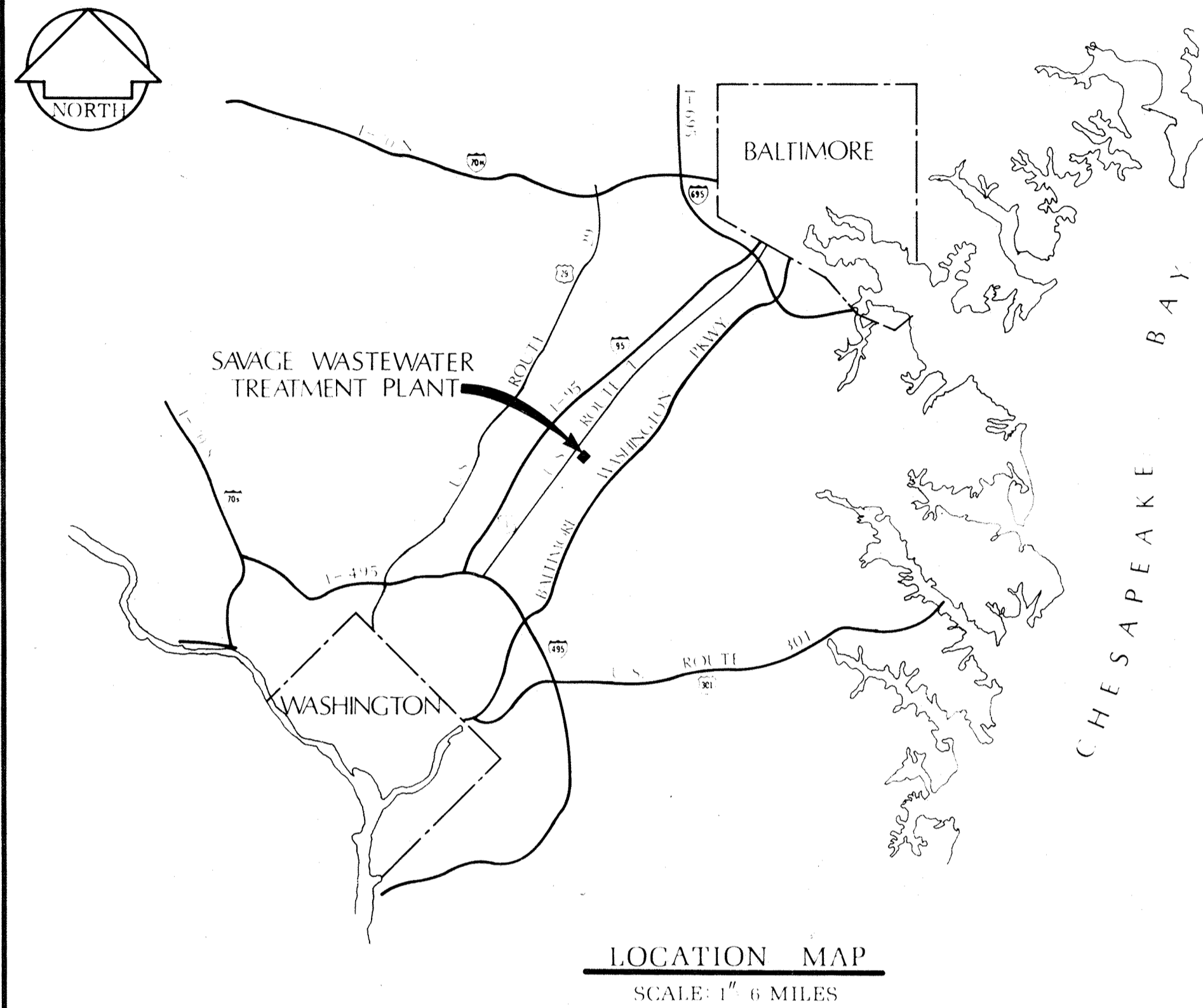


HOWARD COUNTY, MARYLAND


DEPARTMENT OF PUBLIC WORKS



SAVAGE WASTEWATER TREATMENT PLANT

ADDITION NO. 4
CONTRACT 760-S

HOWARD COUNTY


THOMAS J. REGAN JR., DIRECTOR-DEPARTMENT OF PUBLIC WORKS


RICHARD FREUDENBERGER - CHIEF - BUREAU OF ENVIRONMENTAL SERVICES

WHITMAN, REQUARDT & ASSOCIATES - ENGINEERS


KENNETH A. MCGORD

- LEGEND
- △ Denotes Changes By Addendum
 - △ Denotes Changes By Change Order
 - Dimension shown for visible features only.
See sheets C-1, C-2 & C-3

SAVAGE WASTEWATER TREATMENT PLANT

DESIGN CRITERIA

DESIGN YEAR - 1985
 AVERAGE DAILY SEWAGE FLOW: JUNE 1974 - 4.0 MGD
 -MID 1978 - 10.0 MGD (EXISTING CAPACITY)
 -MID 1985 - 15.0 MGD (DESIGN CAPACITY - 4th ADDITION)
 -YR. 2,000 - 25.0 MGD (ULTIMATE CAPACITY)

PHOSPHORUS CONCENTRATION, TOTAL P

RAW INFLUENT	10mg/l (1350 PPD)
ACTIVATED SLUDGE SYSTEM INFLUENT	8.6mg/l (1075 PPD)
ACTIVATED SLUDGE SYSTEM EFFLUENT	1.0mg/l (SOLUBLE)
FILTRATION SYSTEM EFFLUENT	0.3 mg/l

PHOSPHORUS REMOVAL PROCESS, DESIGN TEMPERATURE 10°C

PHOSPHORUS STRIPPER TANKS:

NUMBER	2
SIZE	90' DIA.
INFLUENT SLUDGE FLOW	5.0 MGD
INFLUENT SLUDGE PH	7.0
HYDRAULIC RETENTION TIME	10.7 HOURS
SLUDGE RETENTION TIME	8.6 HOURS
OVERFLOW RATE	400 GPD/SF
EFFLUENT SLUDGE FLOW	4.7 MGD

REACTOR CLARIFIERS:

NUMBER	2
SIZE	50' DIA.
INFLUENT FLOW (SLUDGE + SLUDGE PROCESS OVERFLOW RETURN)	5.9 MGD
HYDRAULIC RETENTION TIME	1.5 HOURS
OVERFLOW RATE	1850 GPD/SF
OVERFLOW PH	9.0
WASTE CHEMICAL SLUDGE	7,500 PPD

ABBREVIATIONS

<u>PIPELINE</u>		<u>MISCELLANEOUS</u>	
A	AIR	B	BASELINE
CCBI	CHLORINE CONTACT BASIN INFLUENT	C	CENTERLINE
CW	COLD WATER	EX	EXISTING
D	DRAIN	FF	FIRST FLOOR
DB	DUCTBANK	MH	MANHOLE
FW	FLUSHING WATER	INV. ELEV.	INVERT ELEVATION
LSTP	LIME SOLUTION TRANSFER PIPE	PC	POINT OF CURVATURE
Pr	PROFILE	PI	POINT OF INTERSECTION
NABI	NITRIFICATION AERATION BASIN INFLUENT	PT	POINT OF TANGENCY
PSIS	PHOSPHORUS STRIPPER INFLUENT SLUDGE	R	RADIUS
PSS	PHOSPHORUS STRIPPED SLUDGE	N	NORTH
S	SEWER OR INTERCEPTOR	No.	NUMBER
SCI	SECONDARY CLARIFIER INFLUENT	E	EAST
SES	STRIPPER ELUTRIANT SUPPLY	S	SOUTH
SO	STRIPPER OVERFLOW	W	WEST
SPOR	SLUDGE PROCESS OVERFLOW RETURN		
TD	TANK DRAIN		
UD	UNDERDRAIN		
W	WATER		
WAS	WASTE ACTIVATED SLUDGE		
WCS	WASTE CHEMICAL SLUDGE		
WE	WASTE ELUTRIANT		

APPURTENANCES

C	CROSS	P	PLUG
T	TEE	VB	VERTICAL BEND
V	VALVE	R	REDUCER / INCREASER (CONCENTRIC)
Y	WYE	ER	REDUCER / INCREASER (ECCENTRIC)
HB	HORIZONTAL BEND	CO	CLEANOUT

PLAN LEGEND (EXTERIOR)

	EXISTING	CONSTRUCTION THIS CONTRACT	EXISTING	CONSTRUCTION THIS CONTRACT
PROPERTY LINE				
RAILROAD				
EMBANKMENT or CHANNEL				
SURVEY TRAVERSE or CONSTRUCTION				
WOODS				
STREAM				
DITCH				
CONTOURS				
GRADE CONTROL ELEVATION				
BUILDINGS or STRUCTURES				
ROADWAYS				
CURB				
SIDEWALK				
STAIRWAY				
FENCE & GATE				
TELEPHONE W/ GUY				
PIPELINE (6" & SMALLER)				
(8" & LARGER)				
MANHOLES & CLEANOUT				
VALVES				
BEND, WYE, TEE, REDUCER / INCREASER				
CAP or PLUG				
HYDRANT (STANDARD FIRE) (SIAMESE)				
FLARED END SECTION				
ELECTRICAL DUCTBANK				
CONDUIT				

(CONSTRUCTION BY OTHERS - SO NOTED & IDENTIFIED)

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 1304 ST. PAUL ST.
 BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

CONTRACT NO. 760-S

DESIGN CRITERIA,
 ABBREVIATIONS AND LEGEND

SAVAGE WASTEWATER
 TREATMENT PLANT ADDITION NO. 4

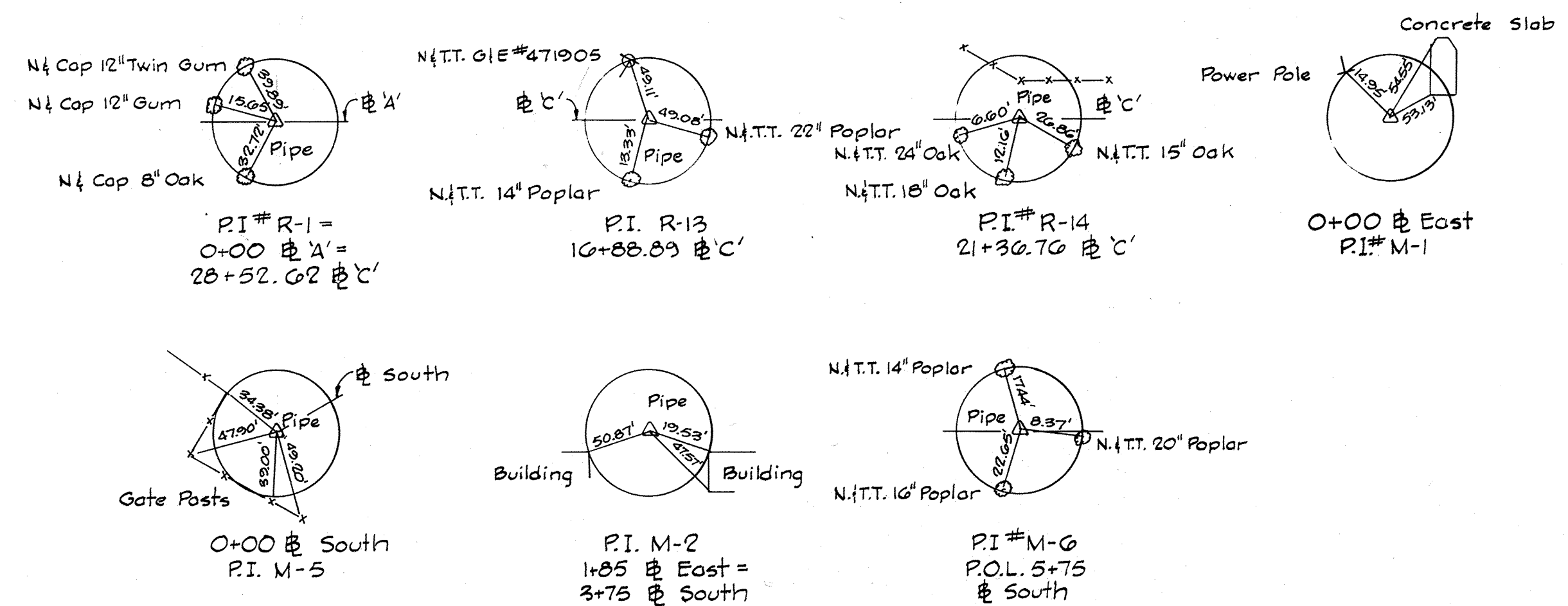
DRAWING
 NO. 3
 OF 50
 SCALE
 NONE

SHEET G-3

GENERAL NOTES

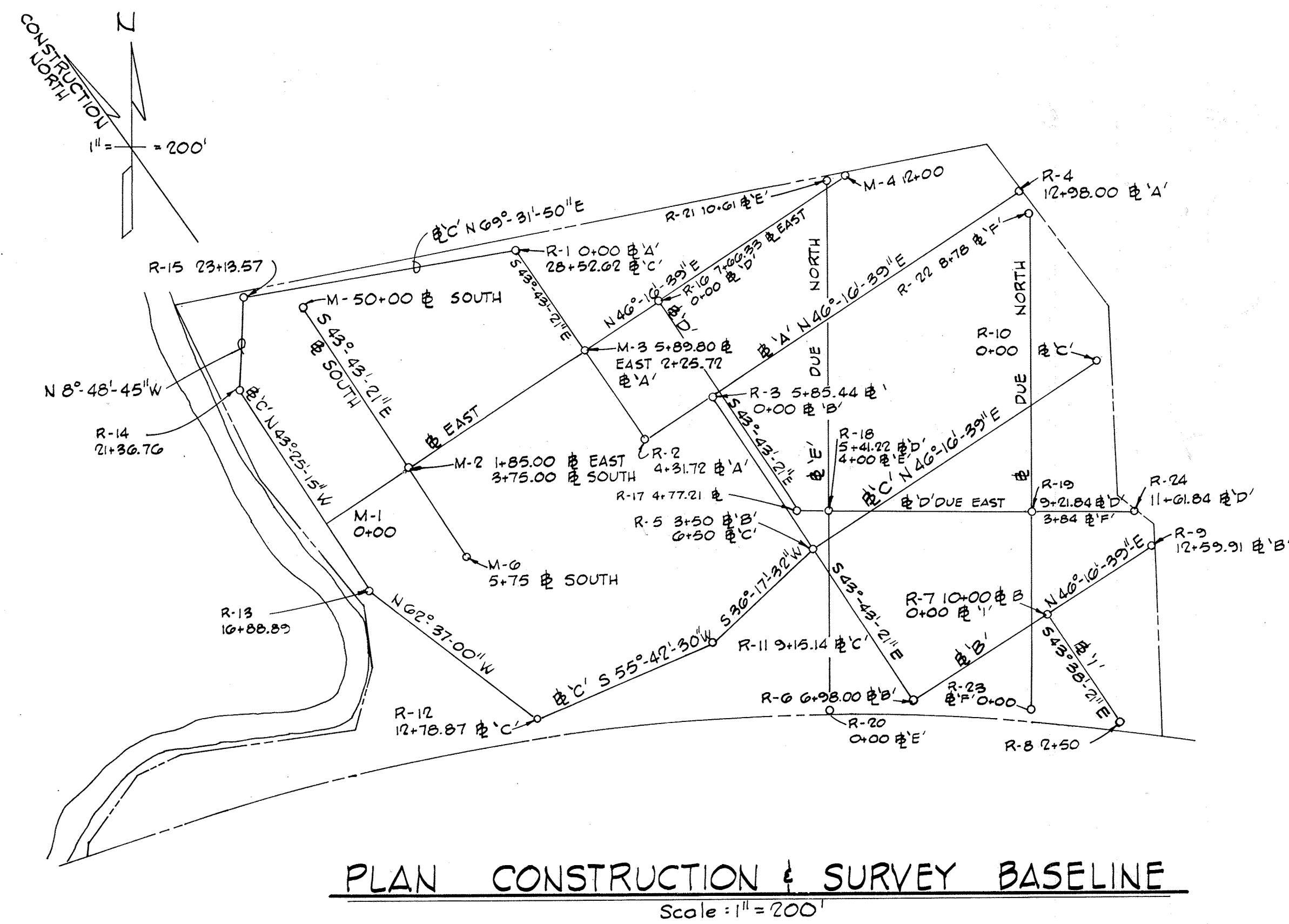
1. The location of existing pipelines and structures are approximate. The Contractor shall take all necessary precautions to protect existing lines and structures and maintain uninterrupted supply. Any damage incurred shall be repaired immediately.
2. The Contractor shall locate existing utilities by test pits a minimum of two weeks in advance of construction operations in the vicinity of the utilities.
3. All pipeline profile elevations are invert elevations.
4. The location of all valves, fittings, etc, shall be located where shown on the drawings unless otherwise directed by the Engineer.
5. For standard details - see Specifications.
6. All fittings shall be buttressed or anchored with concrete or restrained with special approved devices - see Specifications.
7. Pipelines shall be of the material listed in the specifications. All pipelines shall have a minimum cover of 2 feet, except sewer and water lines shall have a minimum cover of 3 feet, unless otherwise shown by profiles or elevations on the plans.
8. Clear all utilities by a minimum of 6 inches vertically. All parallel pipe system shall have 1.5 feet minimum horizontal clearance unless otherwise directed by the Engineer.
9. The Contractor shall provide a joint in all exterior loose jointed pipe systems within 2 feet of exterior walls.
10. All existing valve boxes, manhole frames and covers and similar appurtenances shall be adjusted to finished grade.
11. All outside valves in sewer lines up to and including 12 inch diameter, shall be plug valves. All valves larger than 12 inches shall be gate valves and shall be horizontal or vertical as indicated on profile drawings. All outside valves in water lines (potable and flushing), shall be gate valves. All buried valves shall have roadway boxes with concrete slabs in all areas other than paved areas. All valves shall be the same size as the pipeline unless otherwise indicated.
12. Elevations and grid coordinates are based on the Maryland State System. All structures, buildings, roadway, pipe, centerlines etc. are located by construction coordinates. Zero base for the construction coordinated system is as noted on Sheet C-1@ the intersection of survey baselines. All building corner coordinates are front face of monolithic concrete.
13. For location of utilities entering buildings, see Mechanical & Electrical Drawings.
14. Connections to existing pipelines may be made by tapping existing pipelines under pressure or by use of sleeves and spacers with shut down of system. Attention is directed to the specifications for plant operational requirements while making connections.
15. All pipelines that are capped or plugged shall be flagged with striped 2x4's set 3 feet into ground and 2 feet above grade, identified with all weather markings.
16. All existing walkways & paved areas that require removal for construction purposes, or that are disturbed or damaged by construction activities, shall be replaced.
17. All pipelines, conduits and utility systems, including structures that are designated to be abandoned, shall be removed by the Contractor to the degree necessary to complete construction as determined by the Engineer. Voids left by systems removed, shall be backfilled with select material and compacted as per the Specifications. Systems that are designated to be abandoned and allowed by the Engineer to be left in place, shall be permanently capped or sealed watertight at each end. Materials and appurtenances removed, shall be salvaged and become the property of the County unless otherwise directed by the Engineer, then they shall become the property of the Contractor and removed from the site.

P. I. REFERENCES



BENCH MARKS

- | | | |
|---|---|--|
| W.R. & A. B.M. Blaine Elev. 137.77
X-Cut on flange bolt of fire hydrant
40'± Rt. of sta. 2+25± E South. | W.R. & A. B.M. #Rolly-3 Elev. 132.162
R.R. Spike in 15" Pine at foot of R.R.
35'± East of PI # R-6. | |
| W.R. & A. B.M. #Rolly-1 Elev. 130.388
R.R. Spike in 12" Oak 25'± Lt of
sta. 12+50 E East (not shown on Plan). | W.R. & A. B.M. #Rolly-4 Elev. 137.222
R.R. Spike in 18" Oak 25'± Rt. of
PI # R-9 (not shown on Plan). | |
| W.R. & A. B.M. #Rolly-2 Elev. 147.087
R.R. Spike in 8" Locust 4'± from
PI # R-4 (not shown on Plan). | W.R. & A. B.M. #Rolly-5 Elev. 132.996
R.R. Spike in 30" Poplar 30' Lt of
PI # R-12. | |



PLAN CONSTRUCTION & SURVEY BASELINE

Scale: 1" = 200'

WHITMAN, REQUARDT & ASSOCIATES
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BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Robert S. Frederick
DATE: _____ CHIEF BUREAU OF ENVIRONMENTAL SERVICES

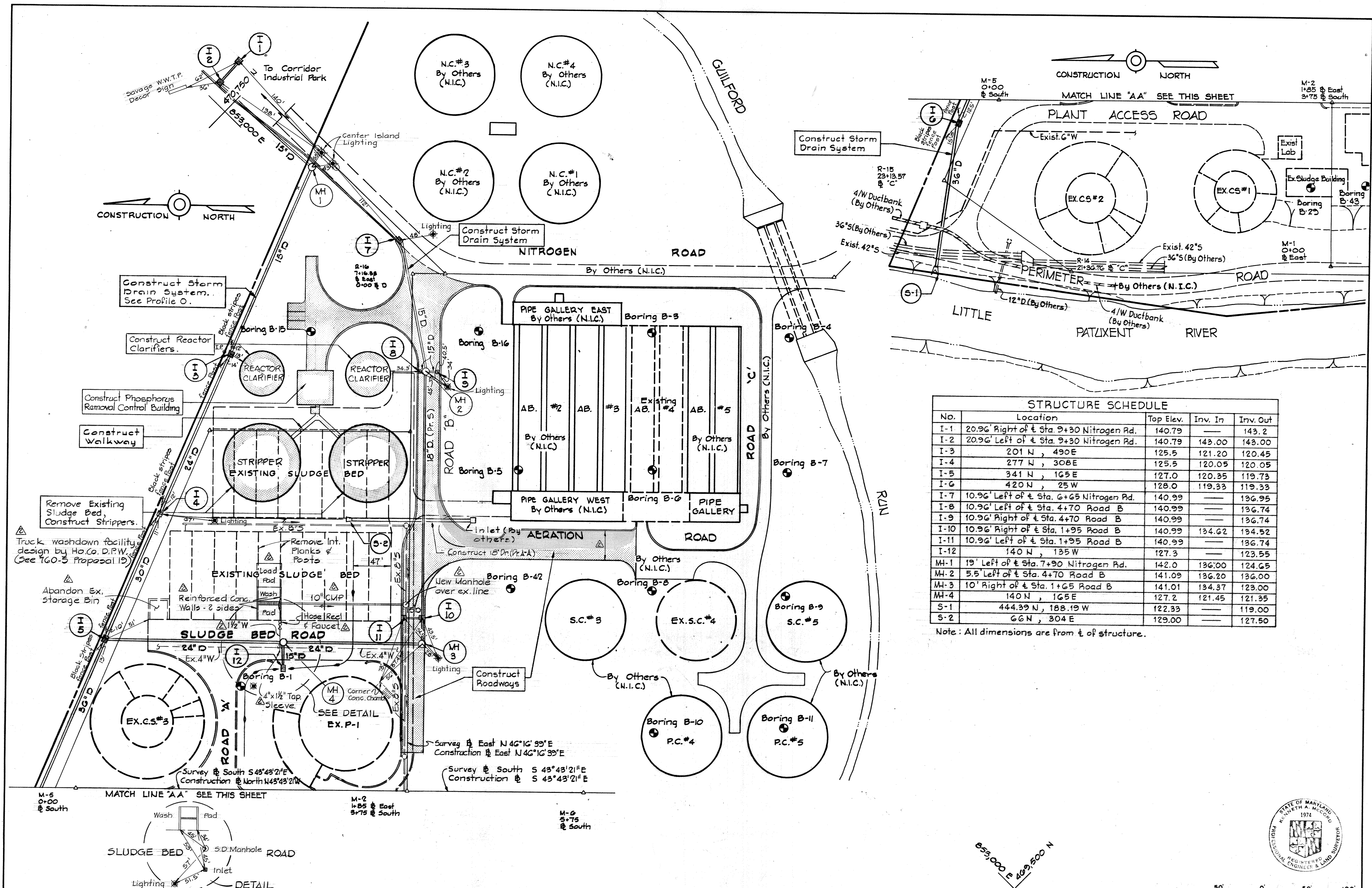
CONTRACT NO. 760-S

GENERAL NOTES, REFERENCES
& BASELINE PLAN

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING
NO. 4
OF 50

SCALE



STRUCTURE SCHEDULE

No.	Location	Top Elev.	Inv. In	Inv. Out
I-1	20.96' Right of & Sta. 9+30 Nitrogen Rd.	140.79	—	143.2
I-2	20.96' Left of & Sta. 9+30 Nitrogen Rd.	140.79	143.00	143.00
I-3	201 N, 490 E	125.5	121.20	120.45
I-4	277 N, 308 E	125.5	120.05	120.05
I-5	341 N, 165 E	127.0	120.35	119.73
I-6	420 N, 25 W	128.0	119.33	119.33
I-7	10.96' Left of & Sta. 6+65 Nitrogen Rd.	140.99	—	136.95
I-8	10.96' Left of & Sta. 4+70 Road B	140.99	—	136.74
I-9	10.96' Right of & Sta. 4+70 Road B	140.99	—	136.74
I-10	10.96' Right of & Sta. 1+95 Road B	140.99	134.62	134.52
I-11	10.96' Left of & Sta. 1+95 Road B	140.99	—	136.74
I-12	140 N, 135 W	127.3	—	123.55
MH-1	19' Left of & Sta. 7+90 Nitrogen Rd.	142.0	136.00	124.65
MH-2	5.5' Left of & Sta. 4+70 Road B	141.09	136.20	136.00
MH-3	10' Right of & Sta. 1+65 Road B	141.01	134.37	123.00
MH-4	140 N, 165 E	127.2	121.45	121.35
S-1	444.39 N, 188.19 W	122.33	—	119.00
S-2	66 N, 304 E	129.00	—	127.50

Note: All dimensions are from & of structure.

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Richard E. Freudenberg
 CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

LOCATION PLAN

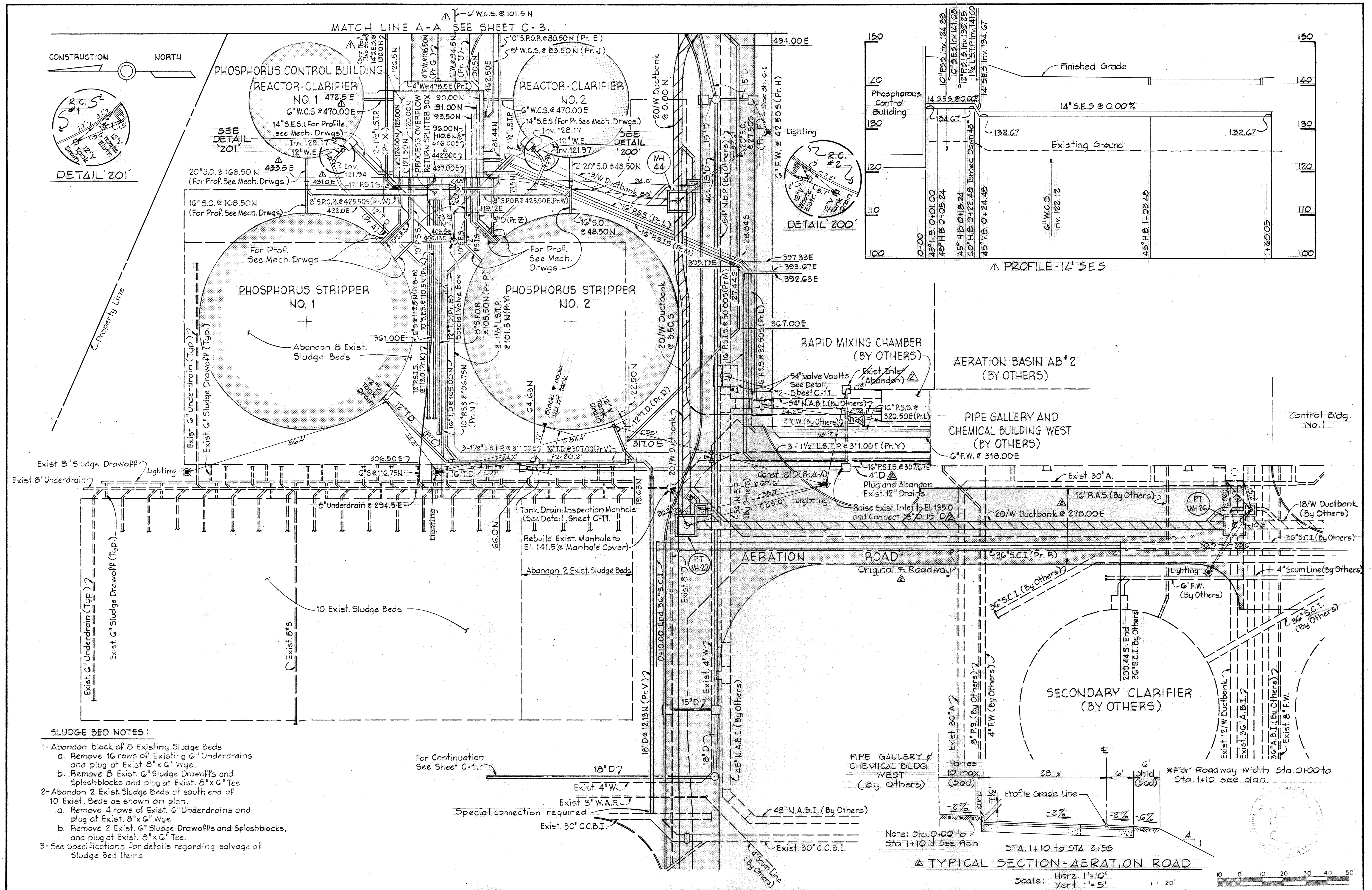
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 5
 OF 50
 SCALE 1"=50'

W. O. 7275-2B

SHEET C-1
 MODIFIED DRAWING-APRIL 15, 1982

BRUNING 44-510 18392



SLUDGE BED NOTES:

- 1- Abandon block of 8 Existing Sludge Beds
 - a. Remove 16 rows of Existing 6" Underdrains and plug at Exist 8" x 6" Wye.
 - b. Remove 8 Exist 6" Sludge Drawoffs and Splashblocks and plug at Exist 8" x 6" Tee.
- 2- Abandon 2 Exist. Sludge Beds at south end of 10 Exist. Beds as shown on plan.
 - a. Remove 4 rows of Exist. 6" Underdrains and plug at Exist 8" x 6" Wye.
 - b. Remove 2 Exist. 6" Sludge Drawoffs and Splashblocks, and plug at Exist 8" x 6" Tee.
- 3- See Specifications for details regarding salvage of Sludge Bed Items.

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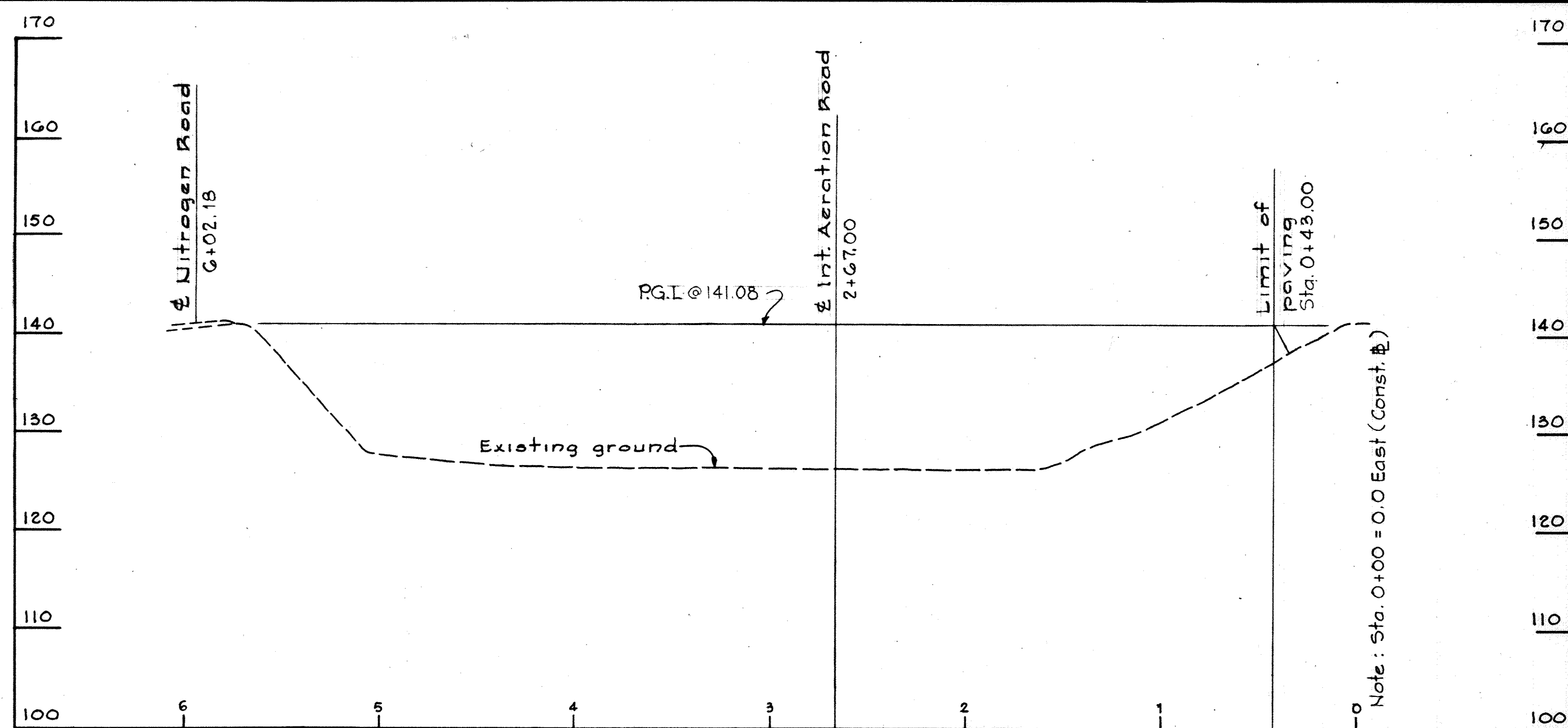
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Richard E. Freudenberger
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CONTRACT NO. 760-S

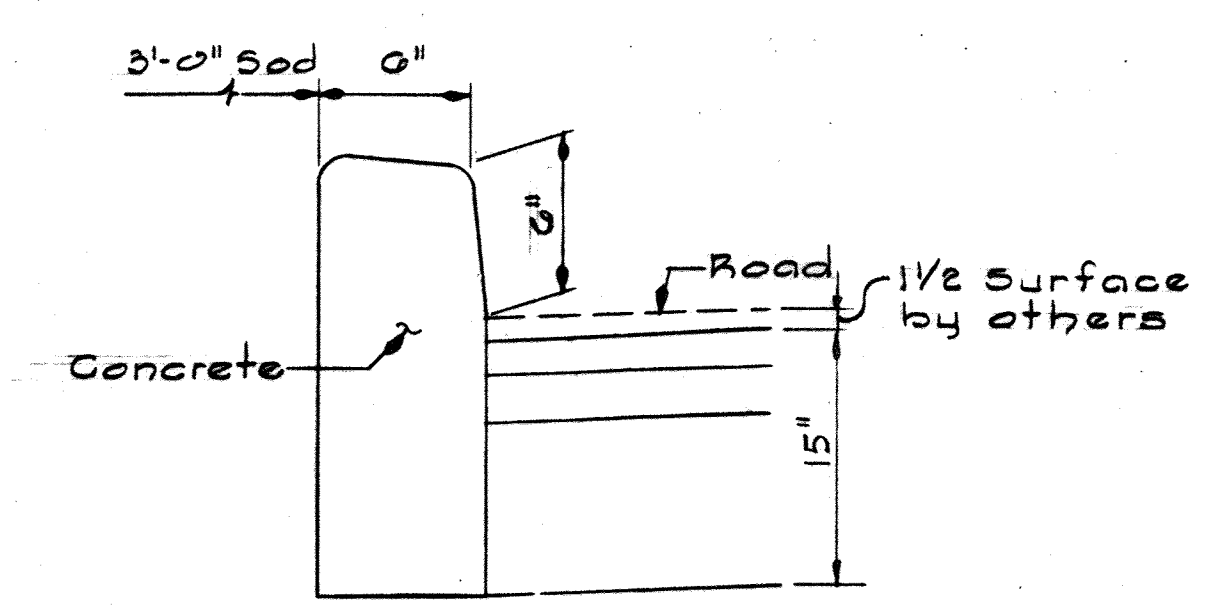
SITE & UTILITY PLAN

SAVAGE WASTEWATER
 TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 6 OF 50
 SCALE 1" = 20'

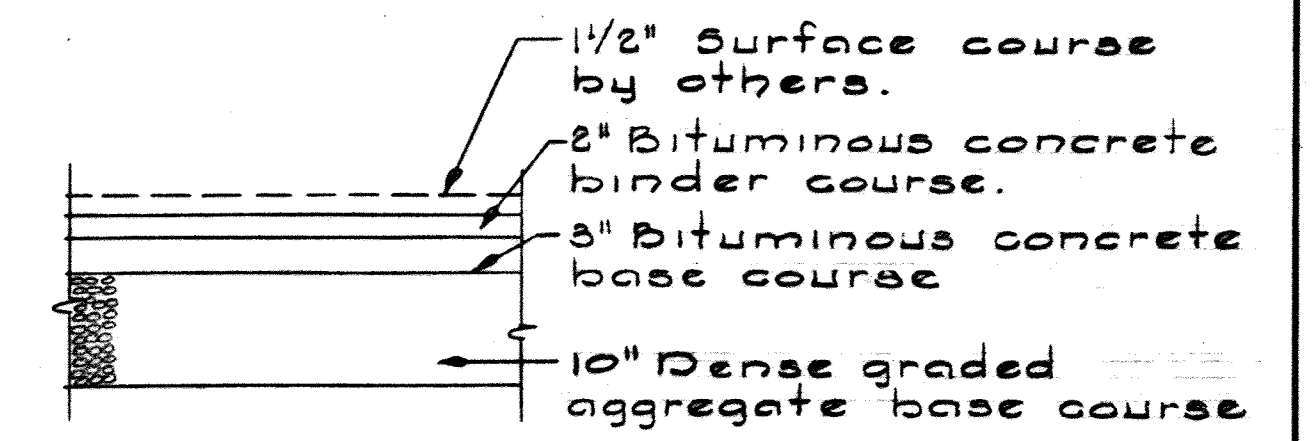


ROAD "B" PROFILE
 Scales: Horiz. 1"=50'
 Vert. 1"=10'

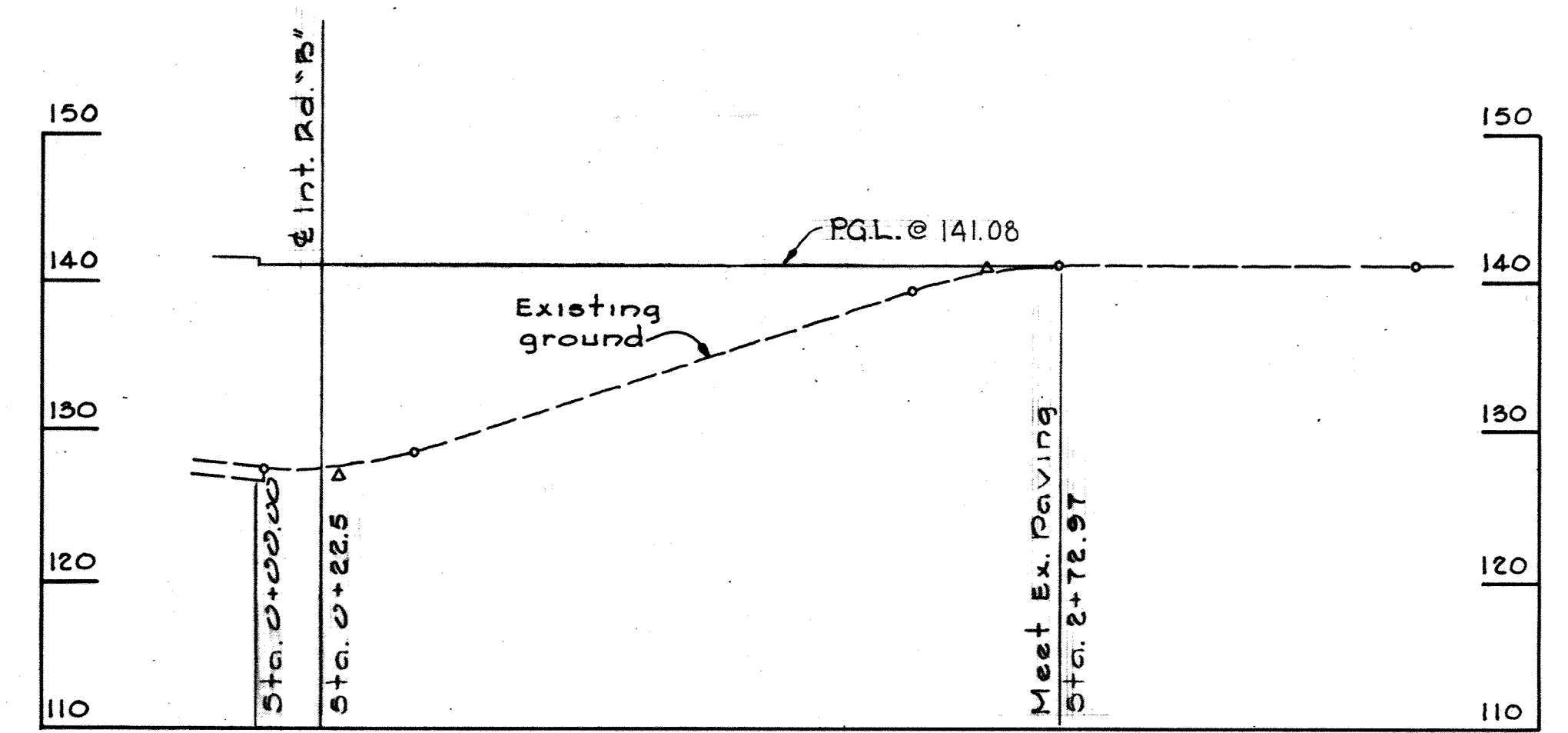


Note:
 At termination of curb round curb with 4" radius to 2" height above grade.

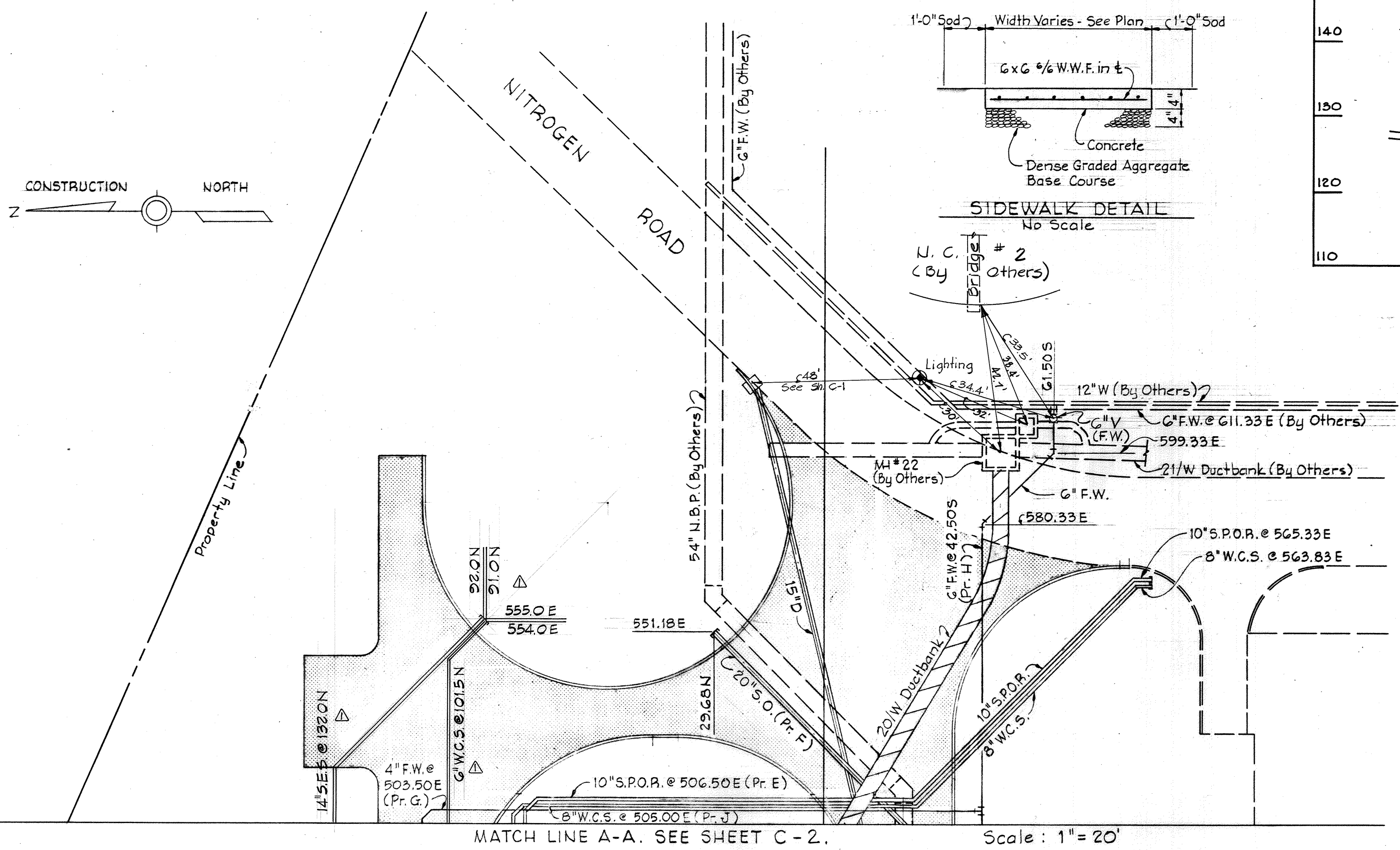
CURB AND PAVING DETAIL
 No Scale



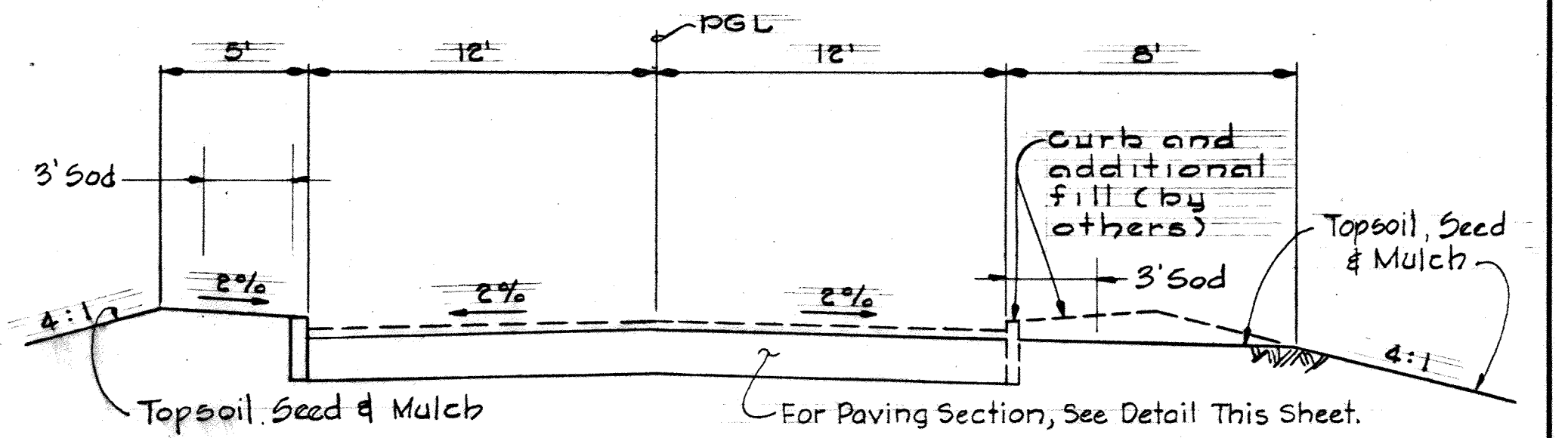
TYPICAL PAVING SECTION
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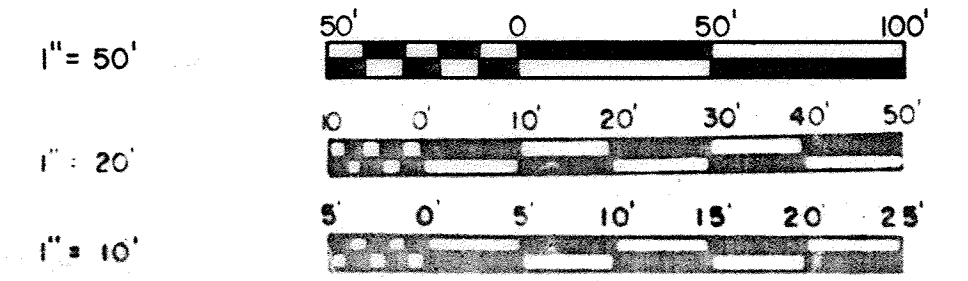
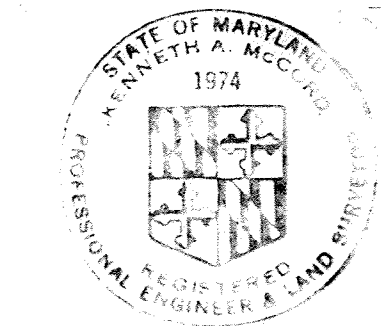
AERATION ROAD PROFILE
 Scales: Horiz. 1"=50'
 Vert. 1"=10'



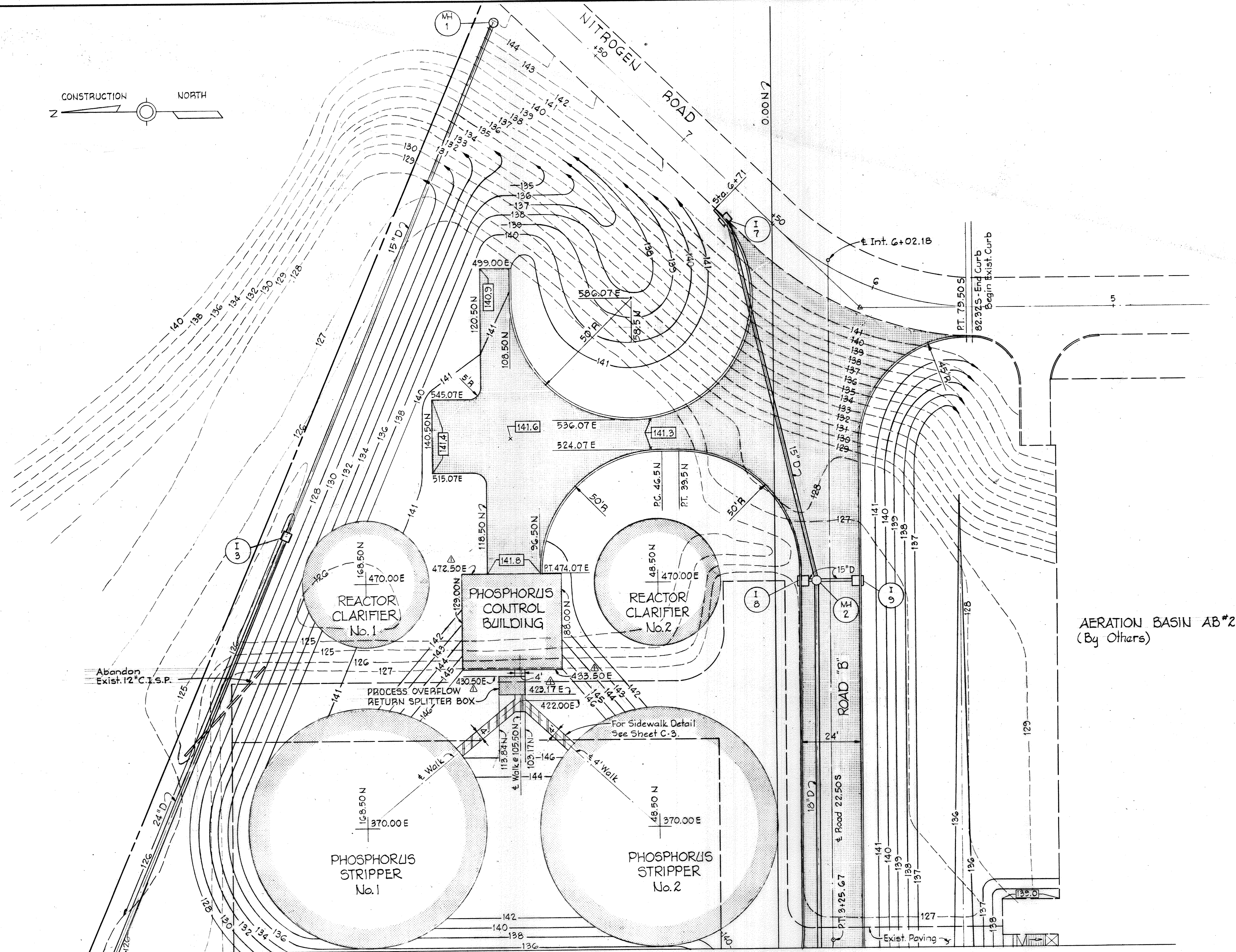
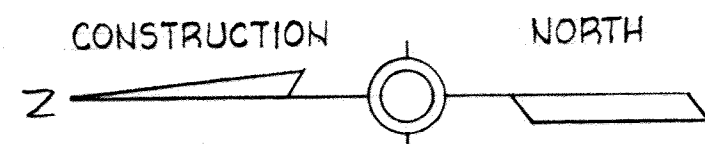
MATCH LINE A-A. SEE SHEET C-2. Scale: 1"=20'



TYPICAL ROAD SECTION ROAD "B"
 No Scale

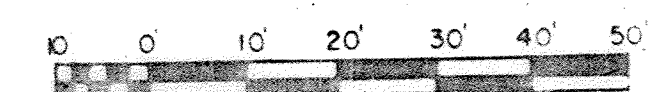


WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 1/12/78 Richard E. Trudenberg CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	SITE & UTILITY PLAN ROAD PROFILES & DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 7 OF 50 SCALE AS NOTED
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AERATION BASIN AB#2
(By Others)

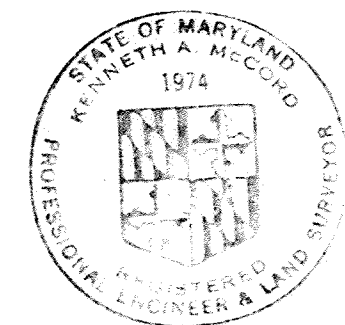
MATCH LINE B-B. SEE SHEET C-5



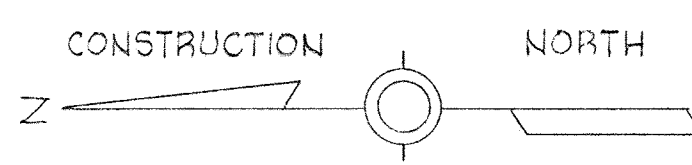
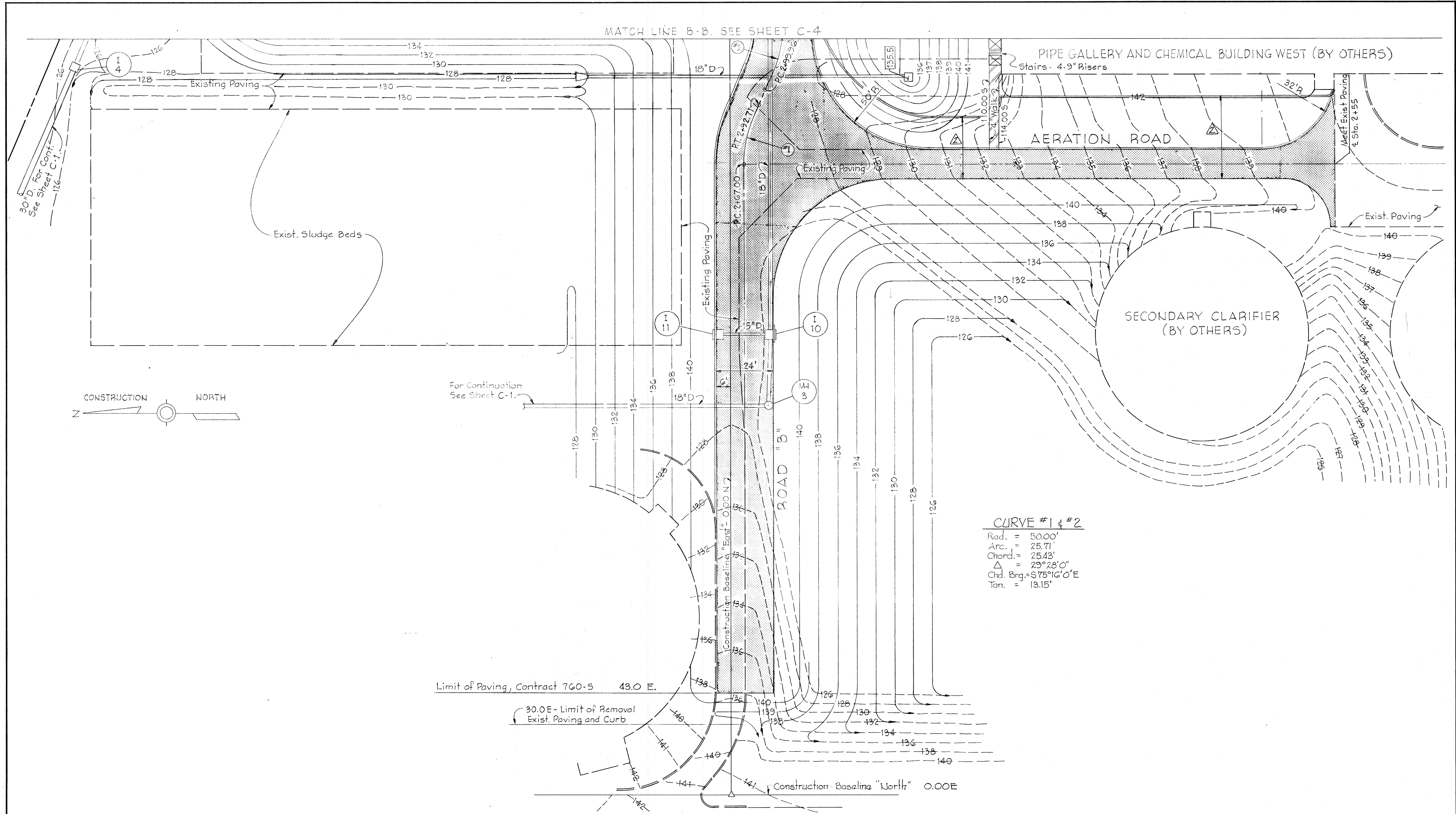
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 <i>Richard E. Sneed</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	GRADING PLAN	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 8	SCALE 1"=20'
					OF 50	SHEET C-4

W.O. 7275-2B

MODIFIED DRAWING-APRIL 15, 1982



MATCH LINE B-B. SEE SHEET C-4



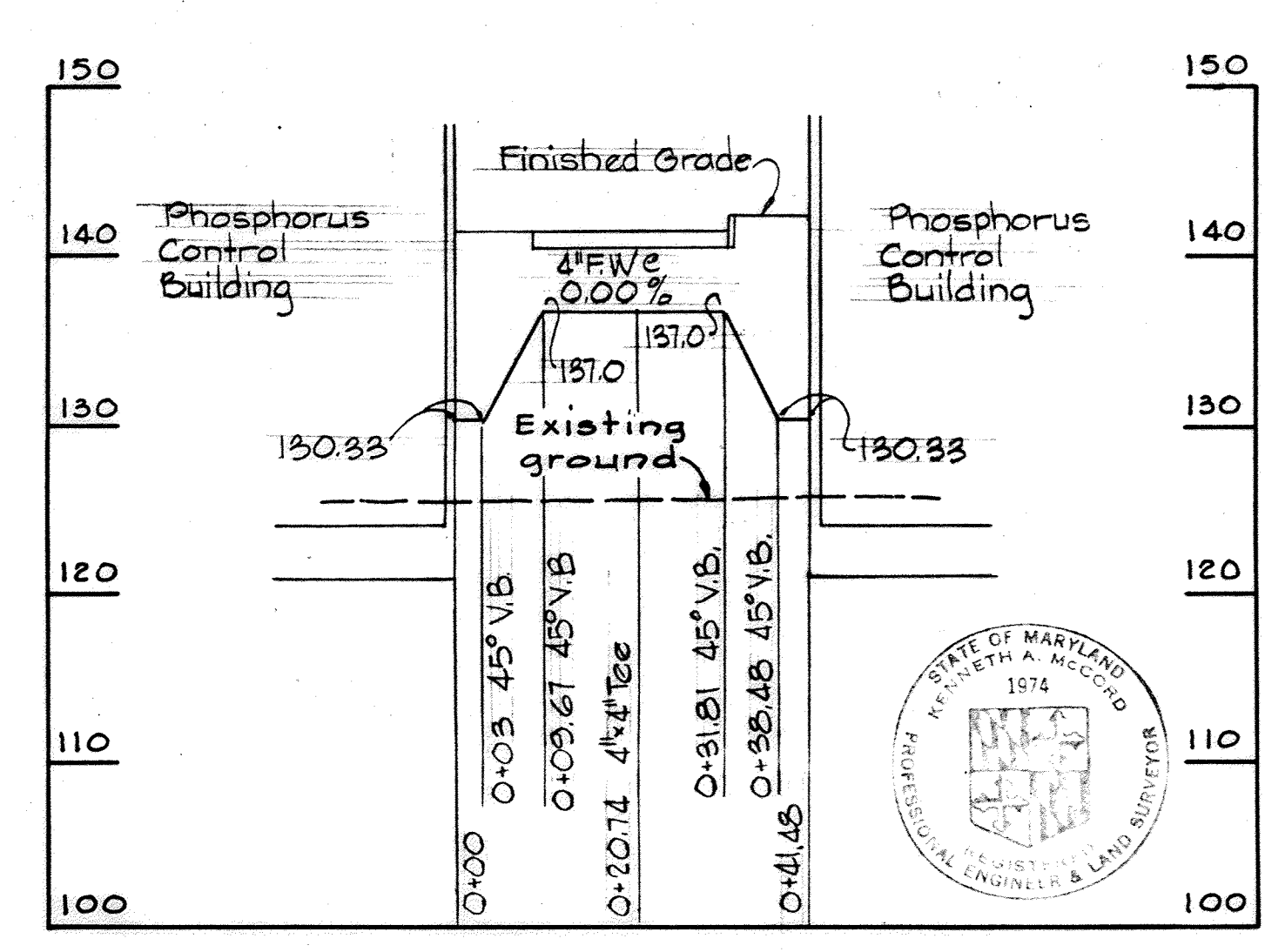
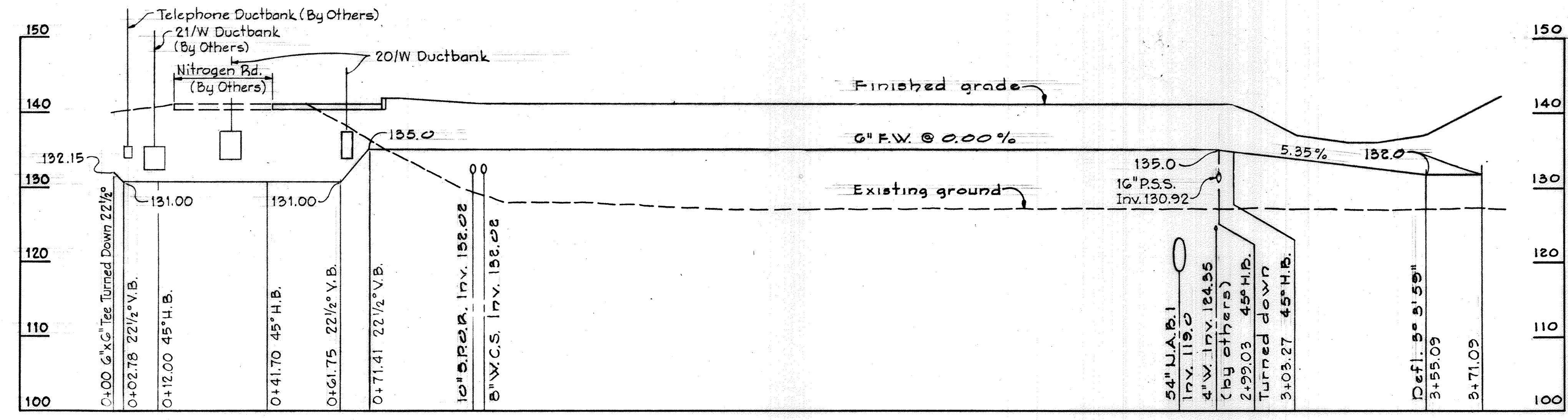
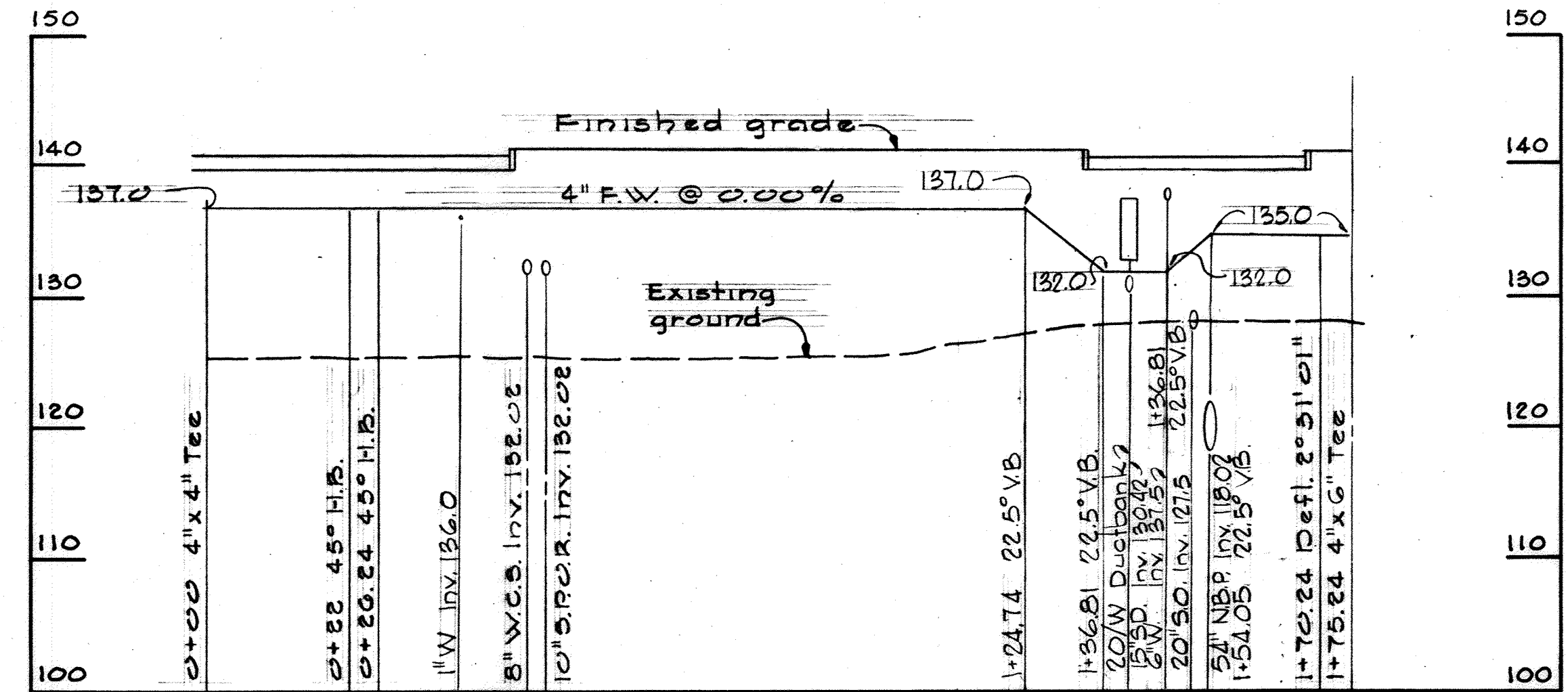
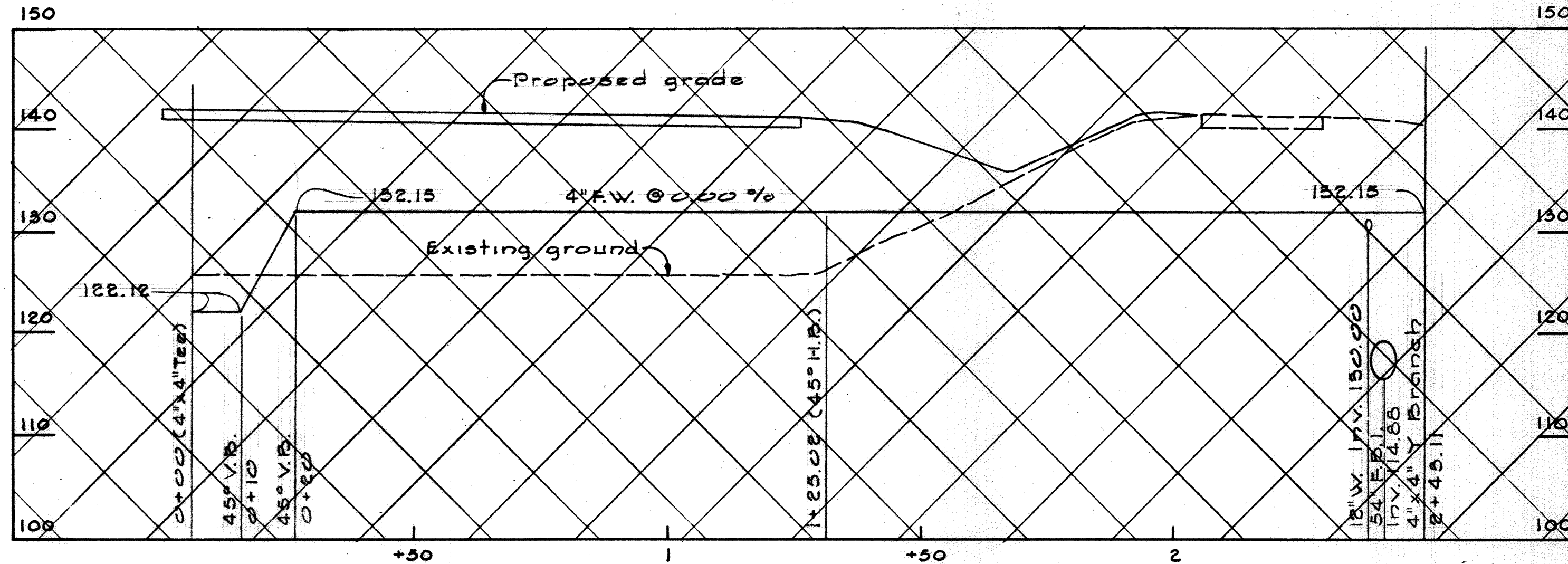
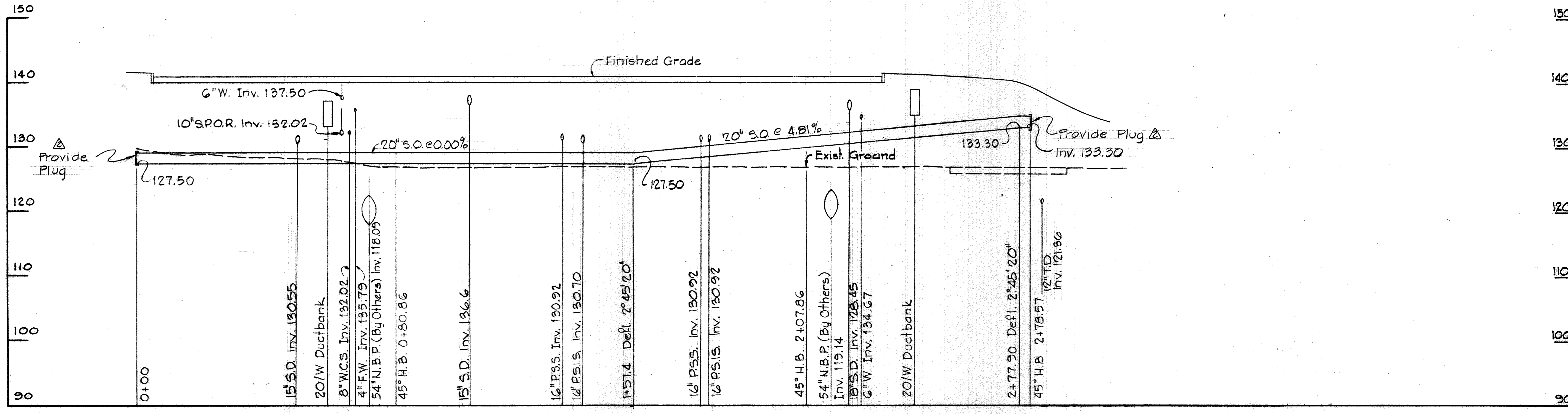
CURVE #1 & #2
 Rad. = 50.00'
 Arc. = 25.71'
 Chord = 25.43'
 Δ = 29°28'0"
 Chd. Brg. = S75°16'0"E
 Tan. = 13.15'



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W.O. 7275-2B

SHEET C-5
MODIFIED DRAWING-APRIL 15, 1982



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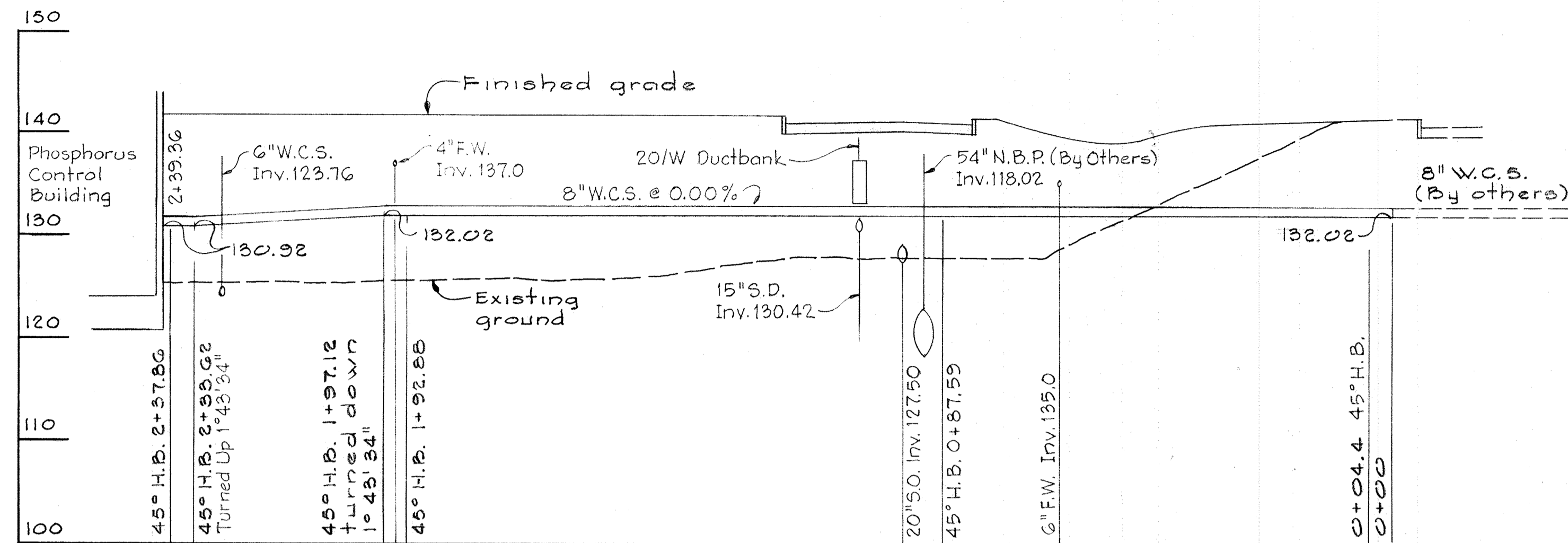
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Scudlark
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

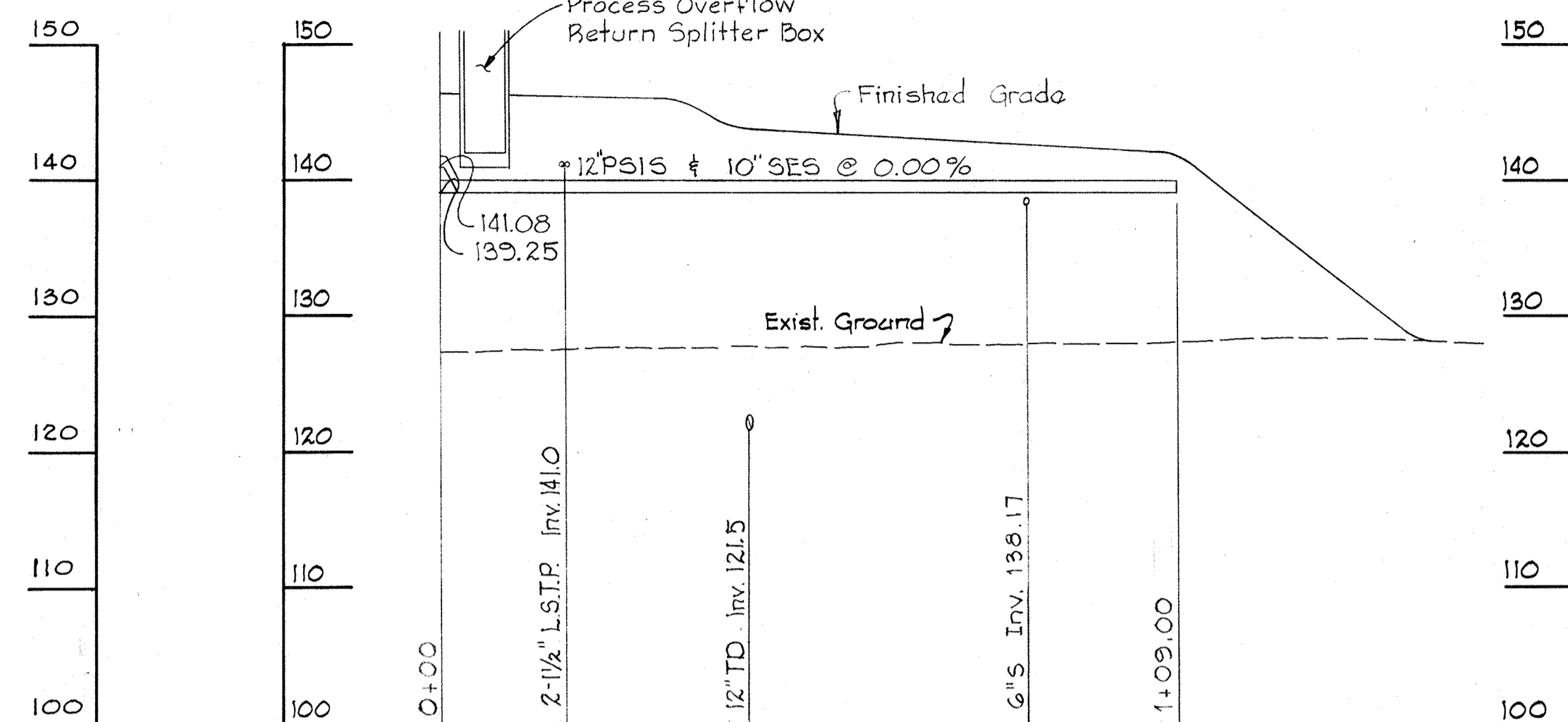
PIPE PROFILES

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

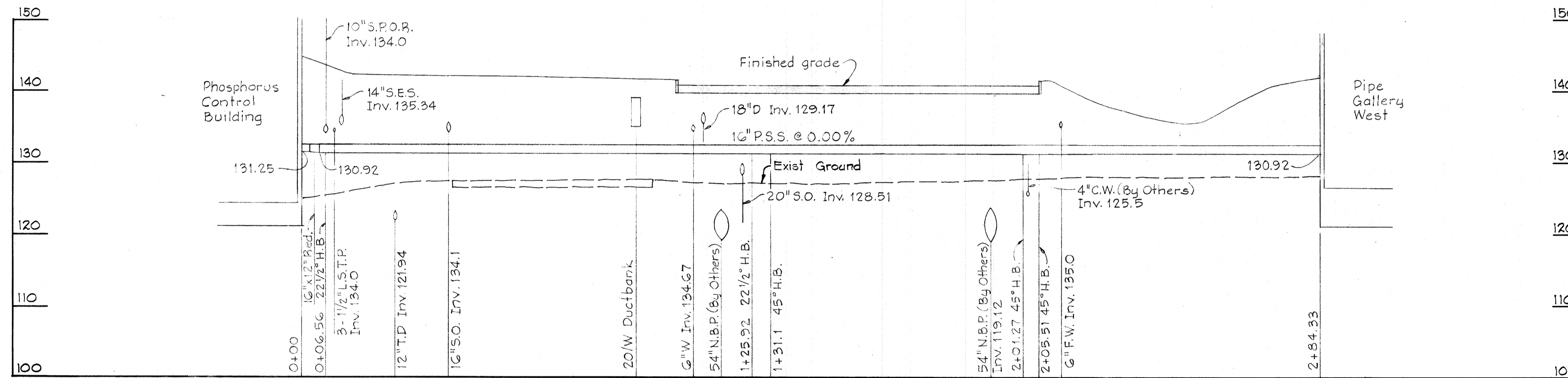
DRAWING NO. 11 OF 50
SCALE H: 1" = 20'
V: 1" = 10'



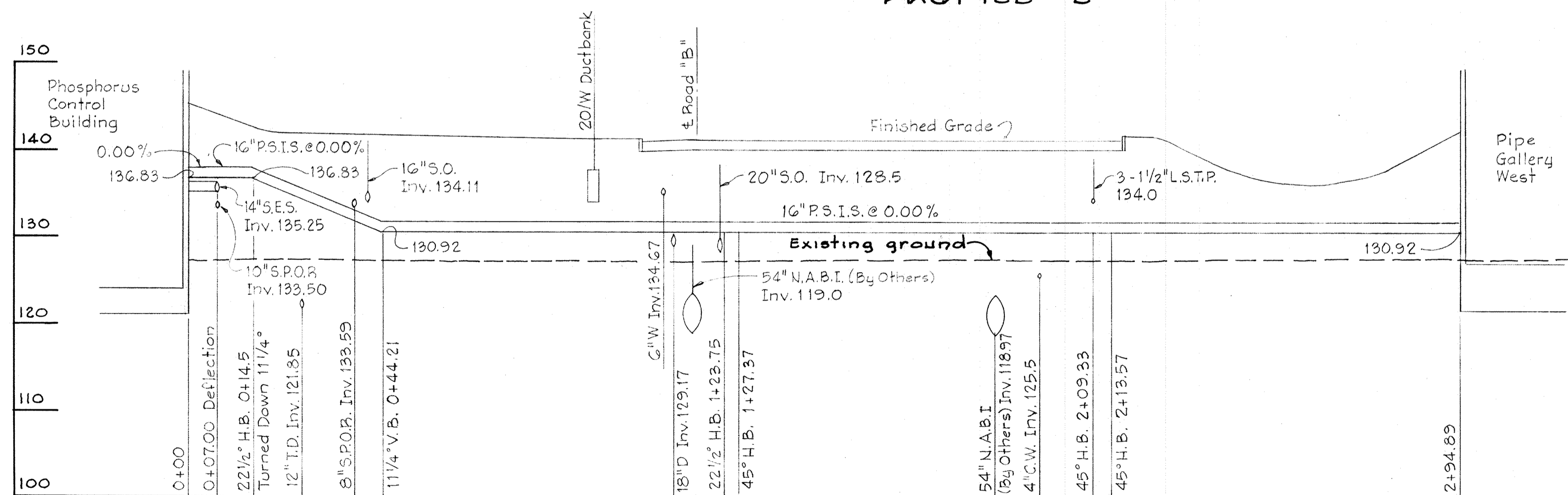
PROFILE 'J'



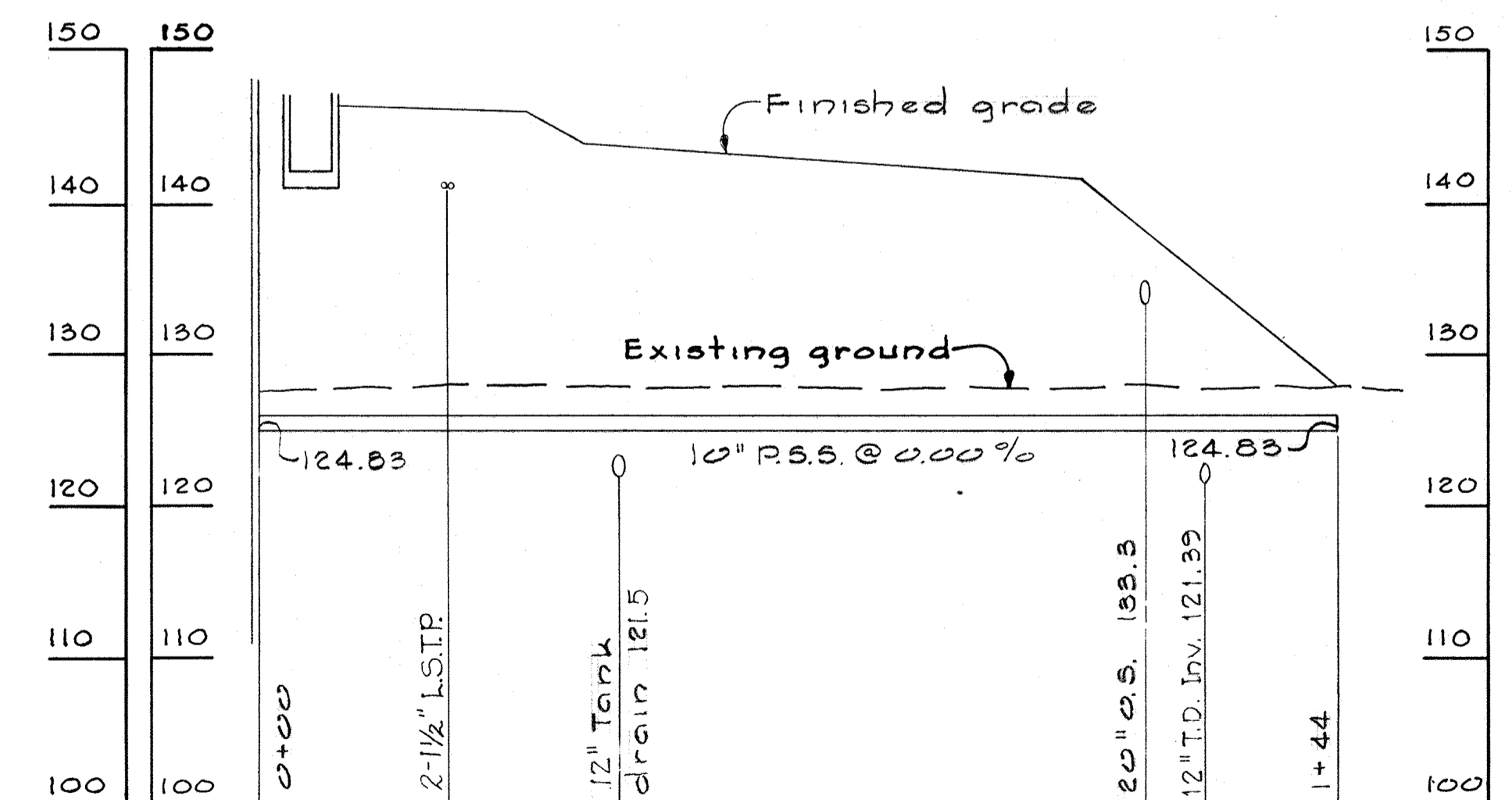
PROFILE 'K'



PROFILE 'L'



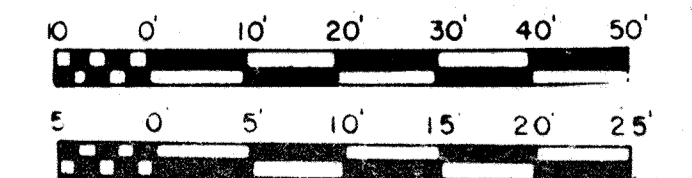
PROFILE 'M'



PROFILE 'N'



1" = 20'
1" = 10'



WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

1/12/78
DATE

Richard J. Reilly
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

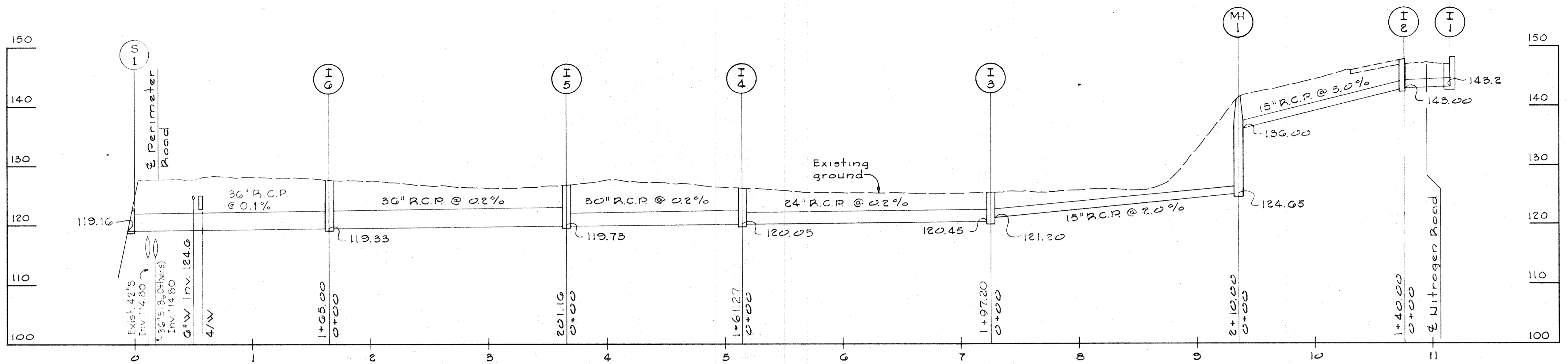
CONTRACT NO. 760-S

PIPE PROFILES

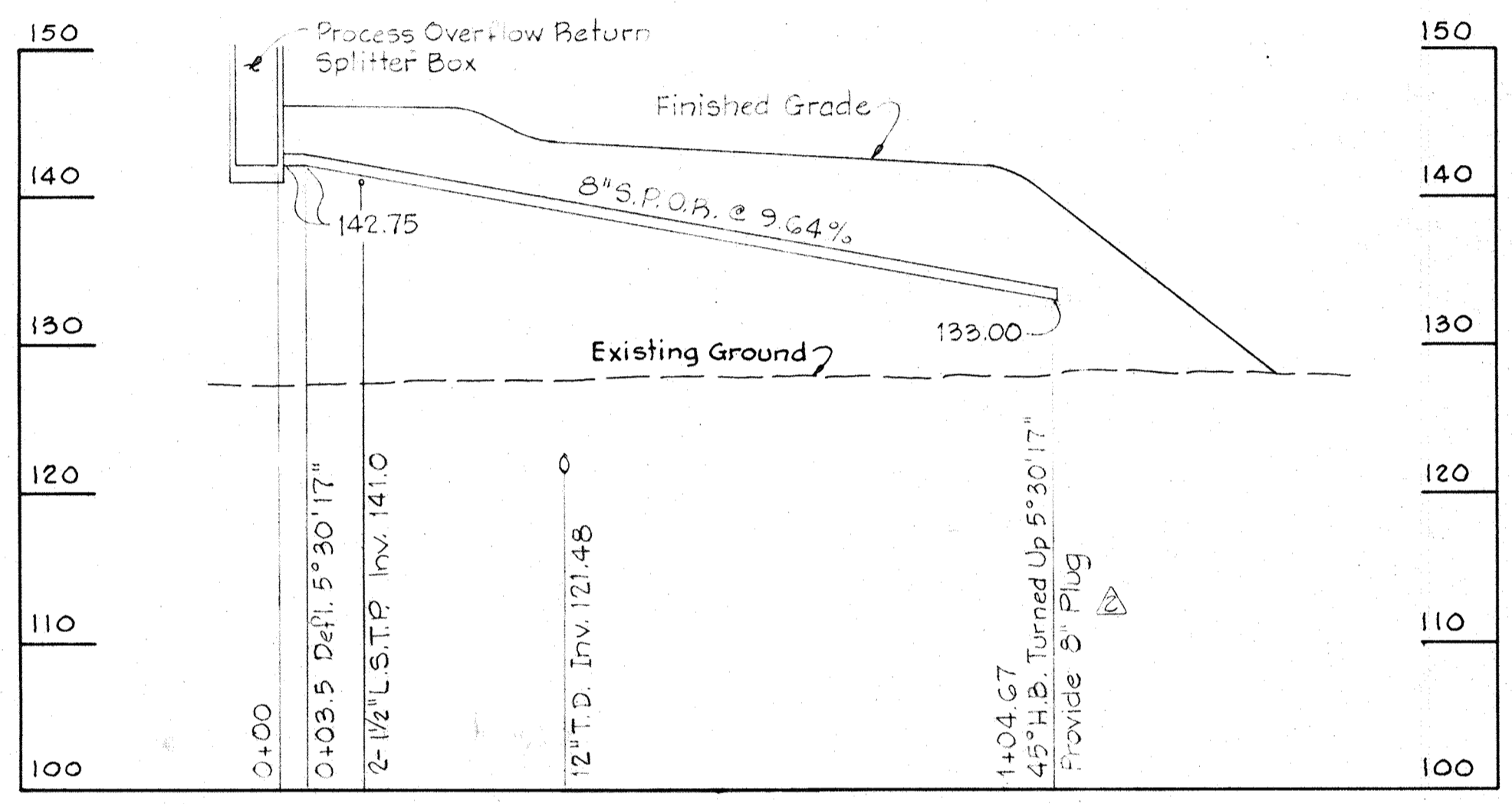
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING
NO. 12
OF 50

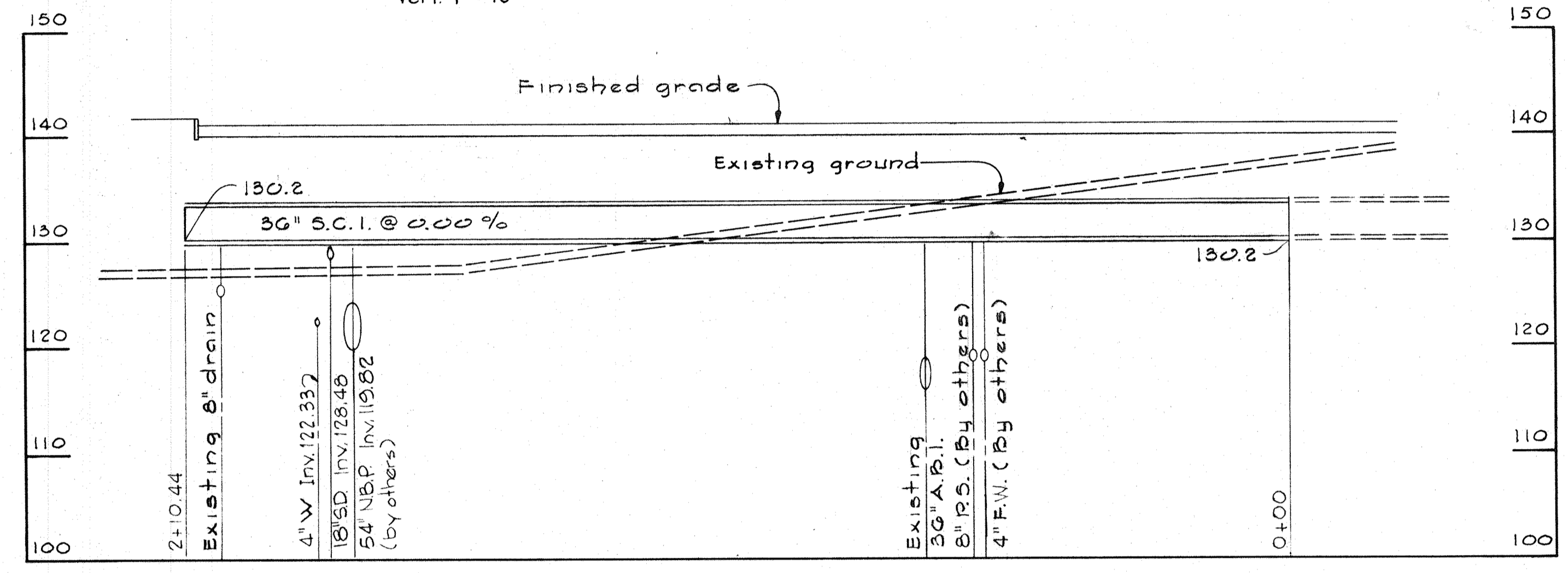
SCALE
H: 1" = 20'
V: 1" = 10'



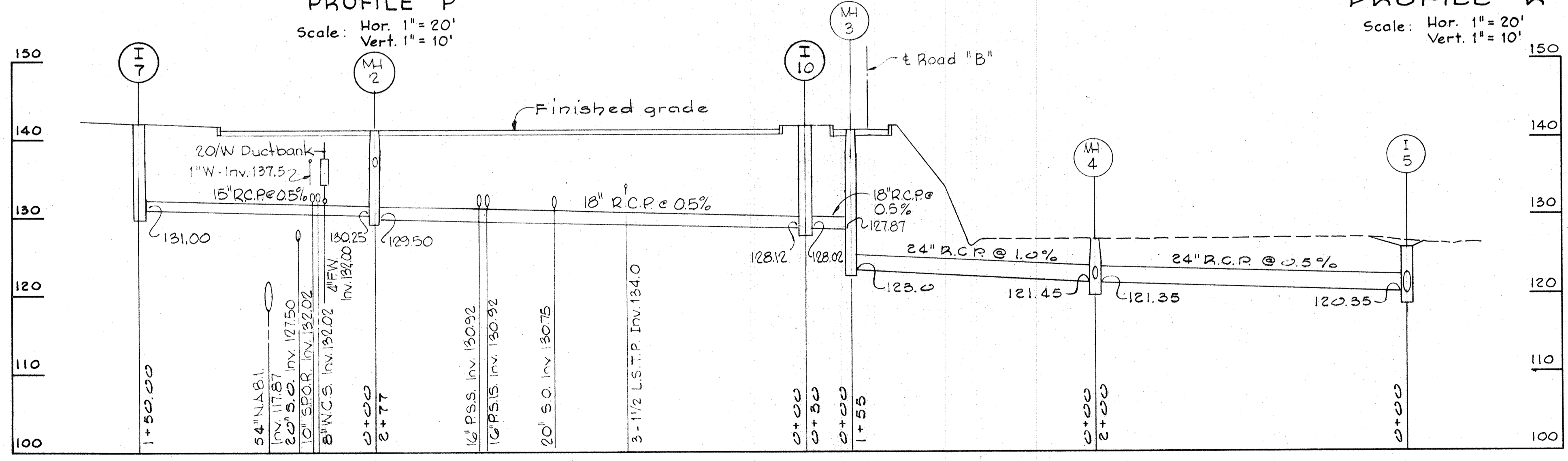
PROFILE O Scale: Hor. 1" = 50' Vert. 1" = 10'



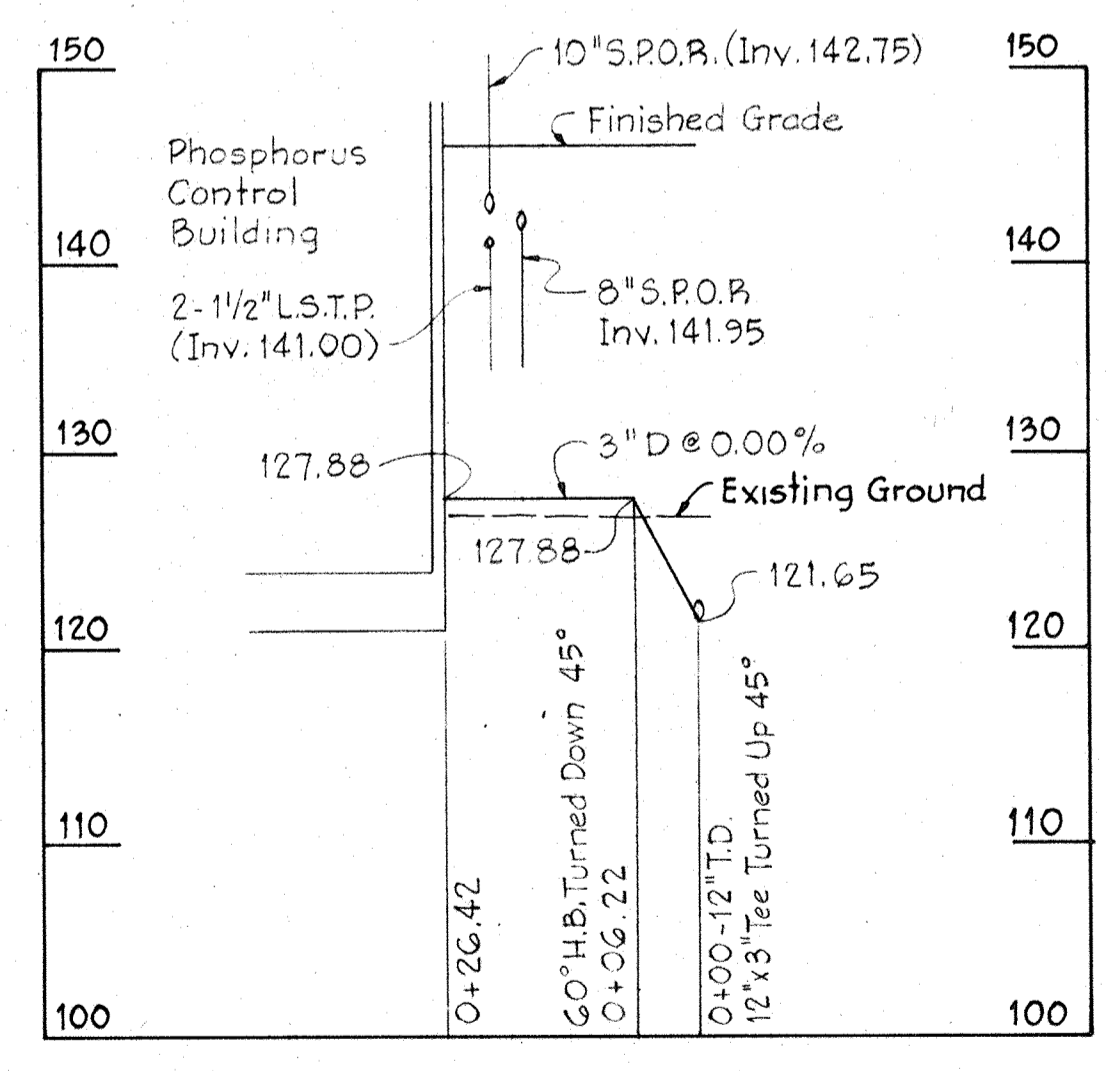
PROFILE P Scale: Hor. 1" = 20' Vert. 1" = 10'



PROFILE R Scale: Hor. 1" = 20' Vert. 1" = 10'



PROFILE S Scale: Hor. 1" = 50' Vert. 1" = 10'



PROFILE Z Scale: Hor. 1" = 20' Vert. 1" = 10'

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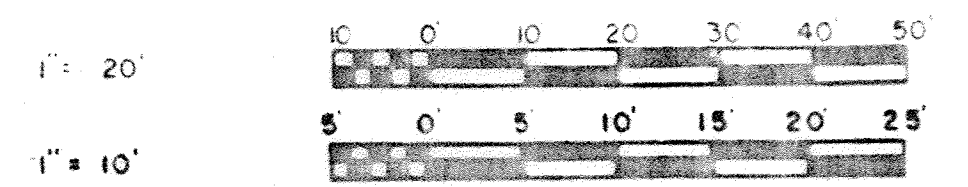
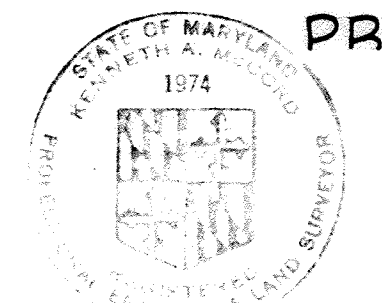
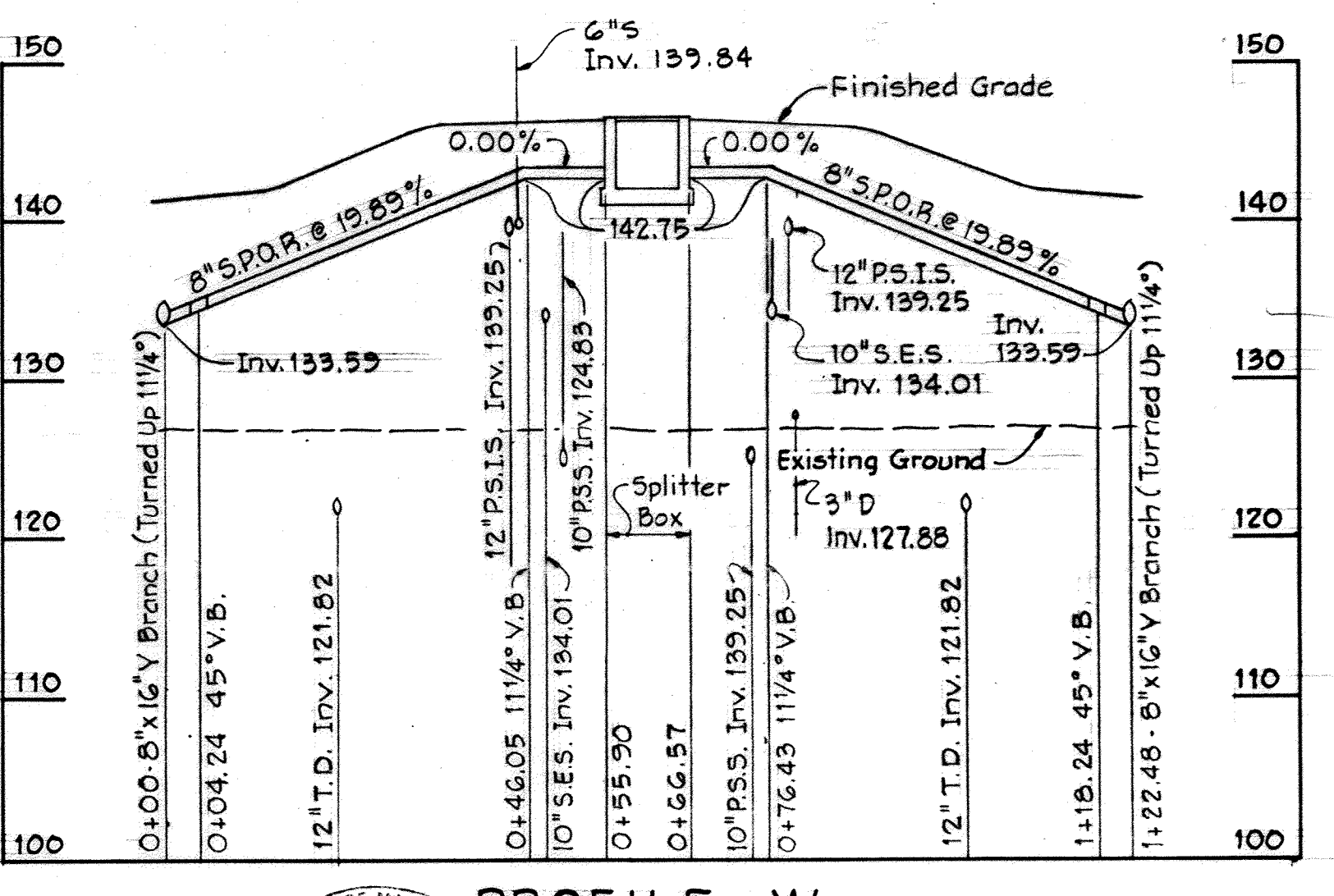
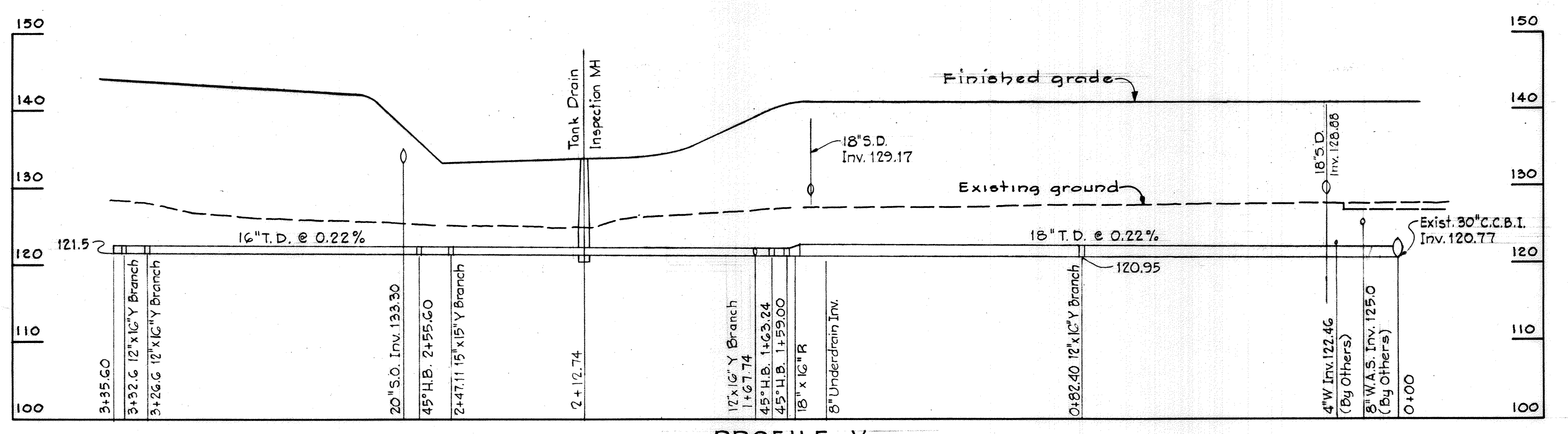
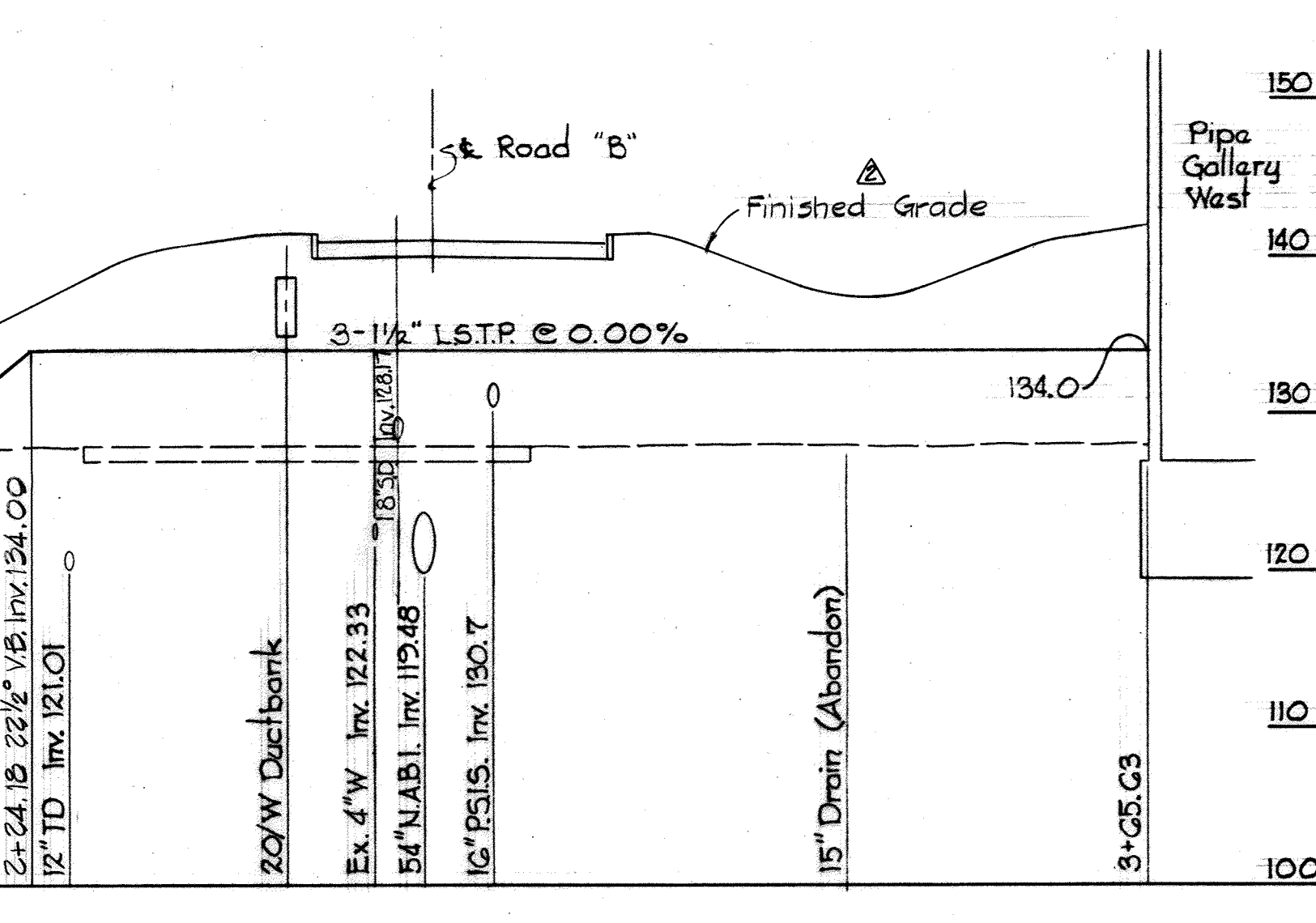
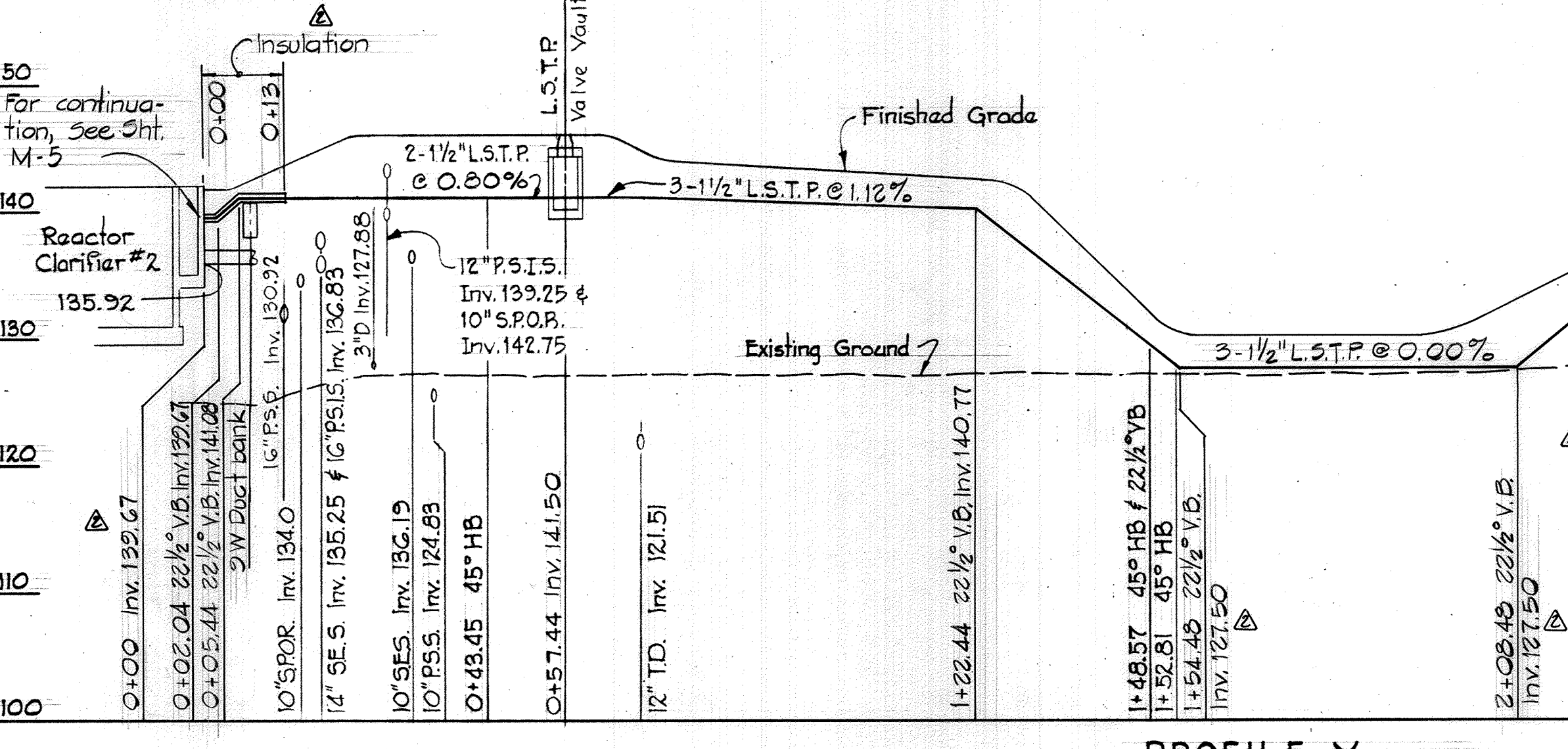
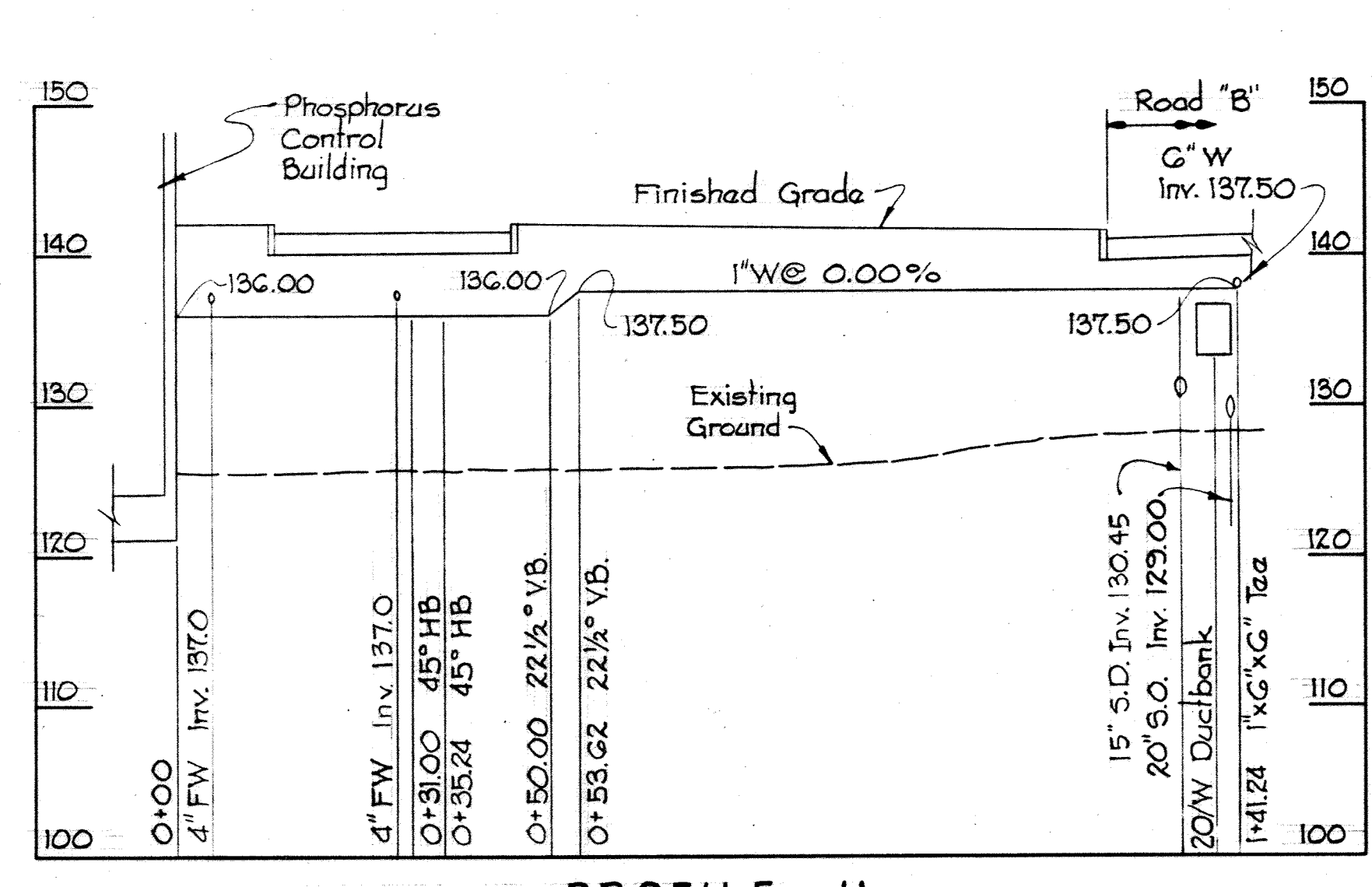
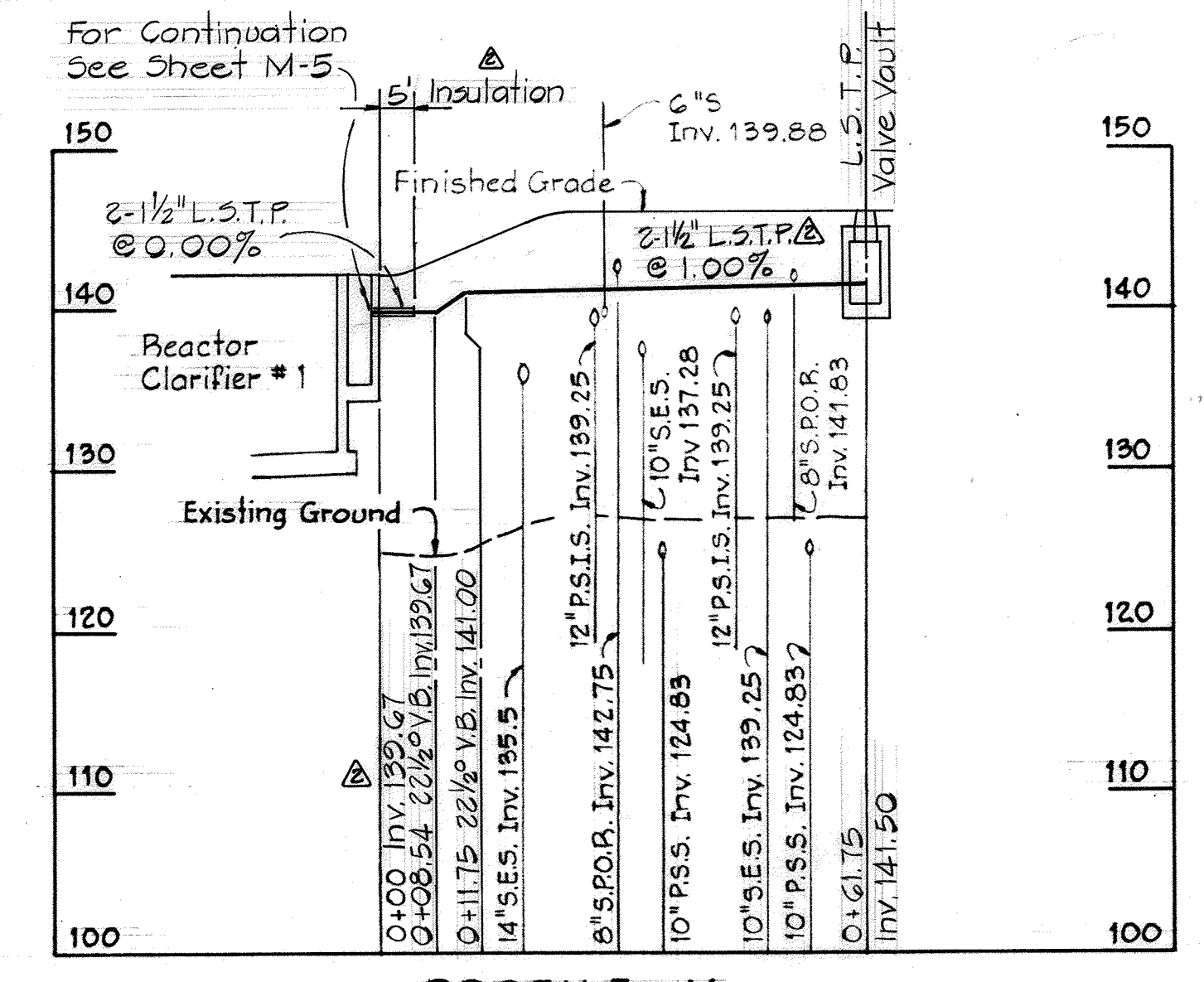
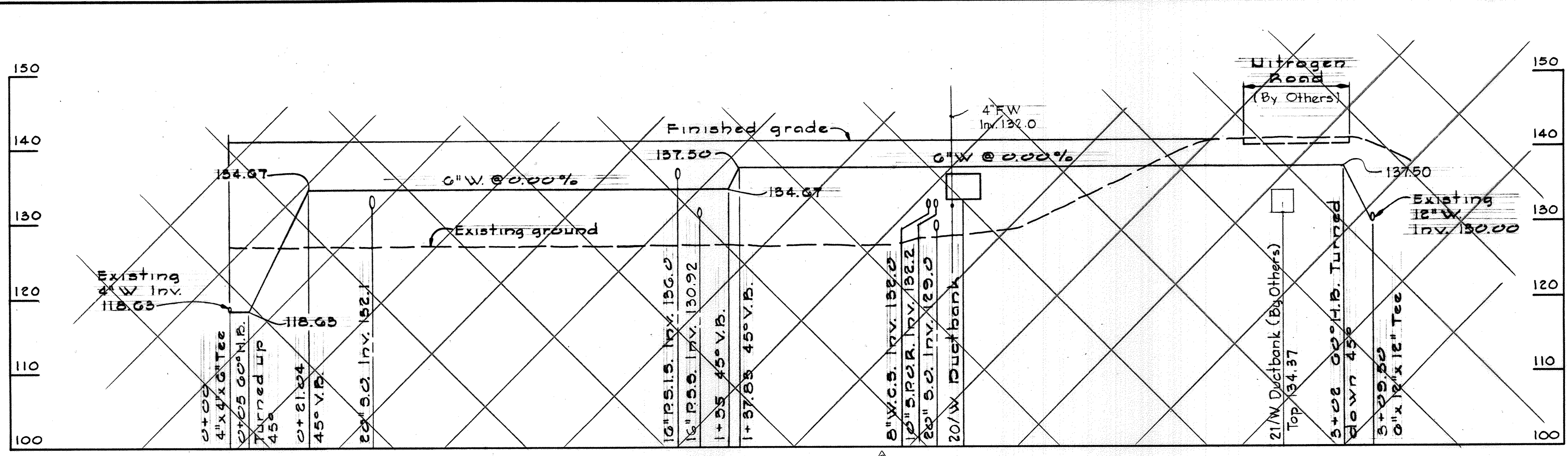
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Freudenberger
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

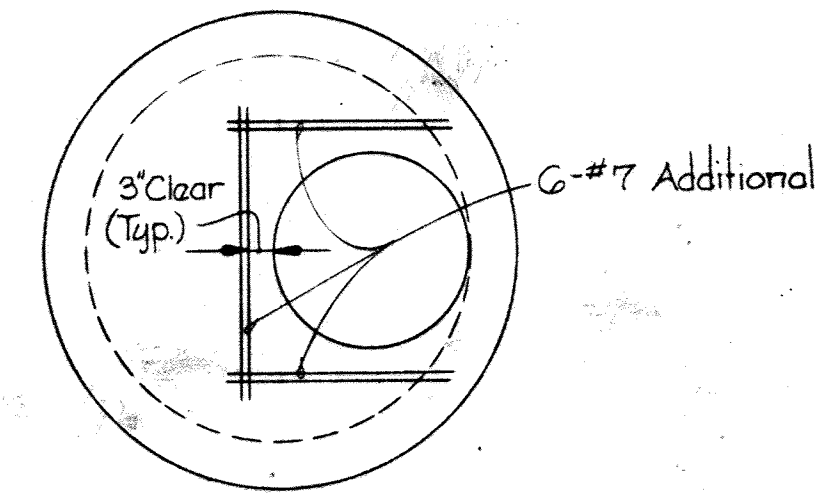
PIPE PROFILES

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

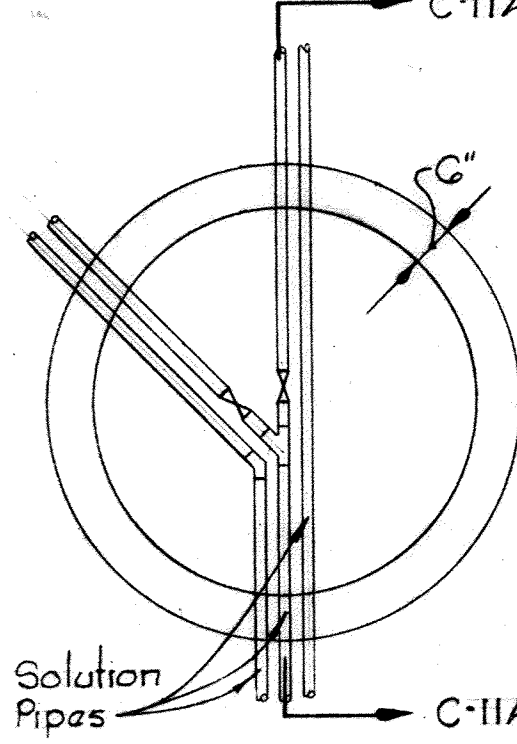
DRAWING NO. 13 OF 50
SCALE AS SHOWN



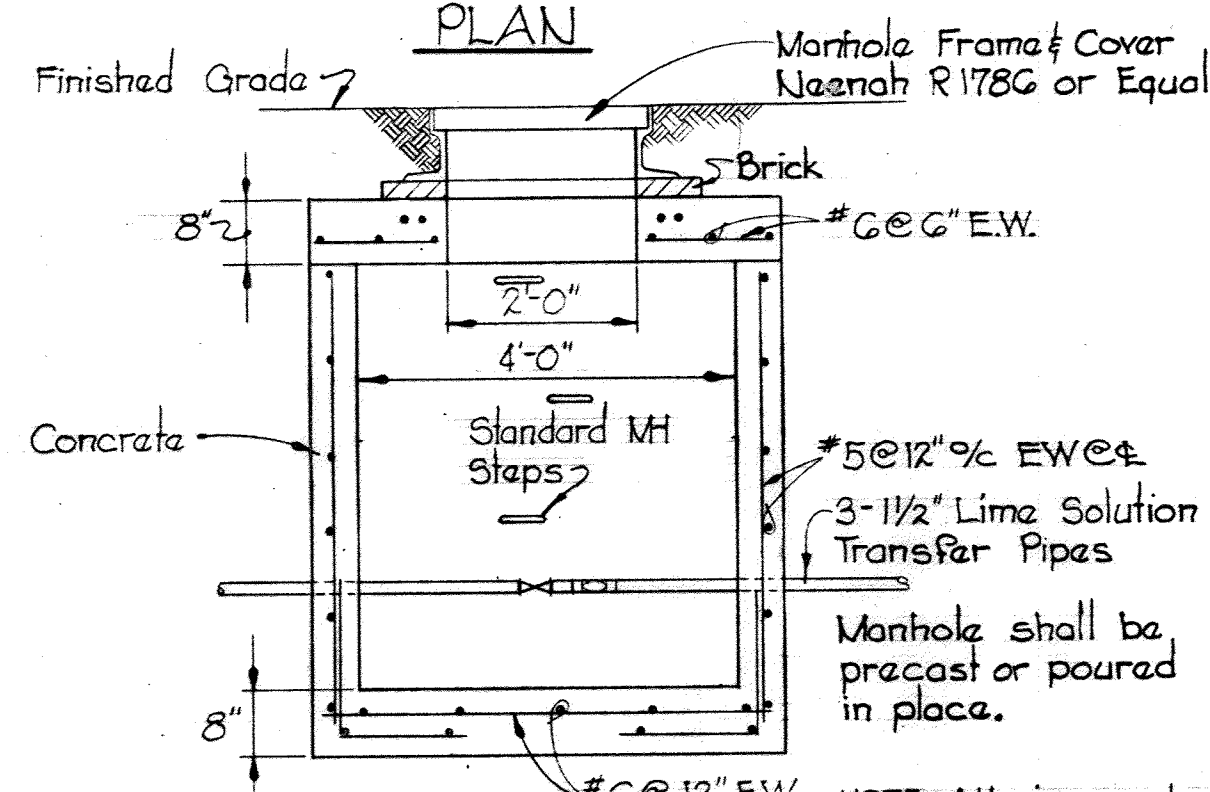
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 1/12/78 Chief: Richard E. Freudenberger CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PIPE PROFILES	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 14 OF 50 SCALE: H: 1" = 20', V: 1" = 10'
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PLAN - TOP SLAB

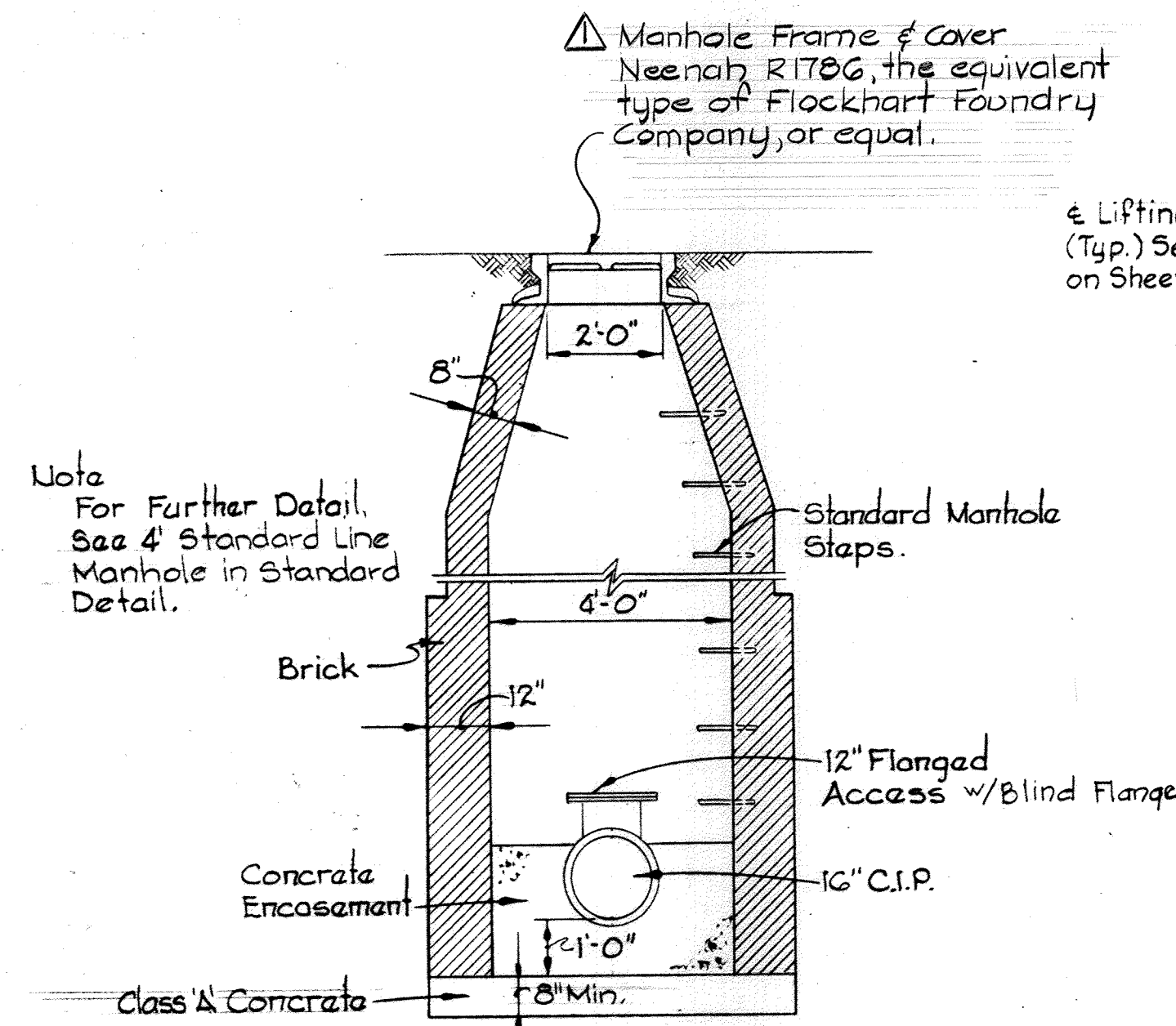


PLAN



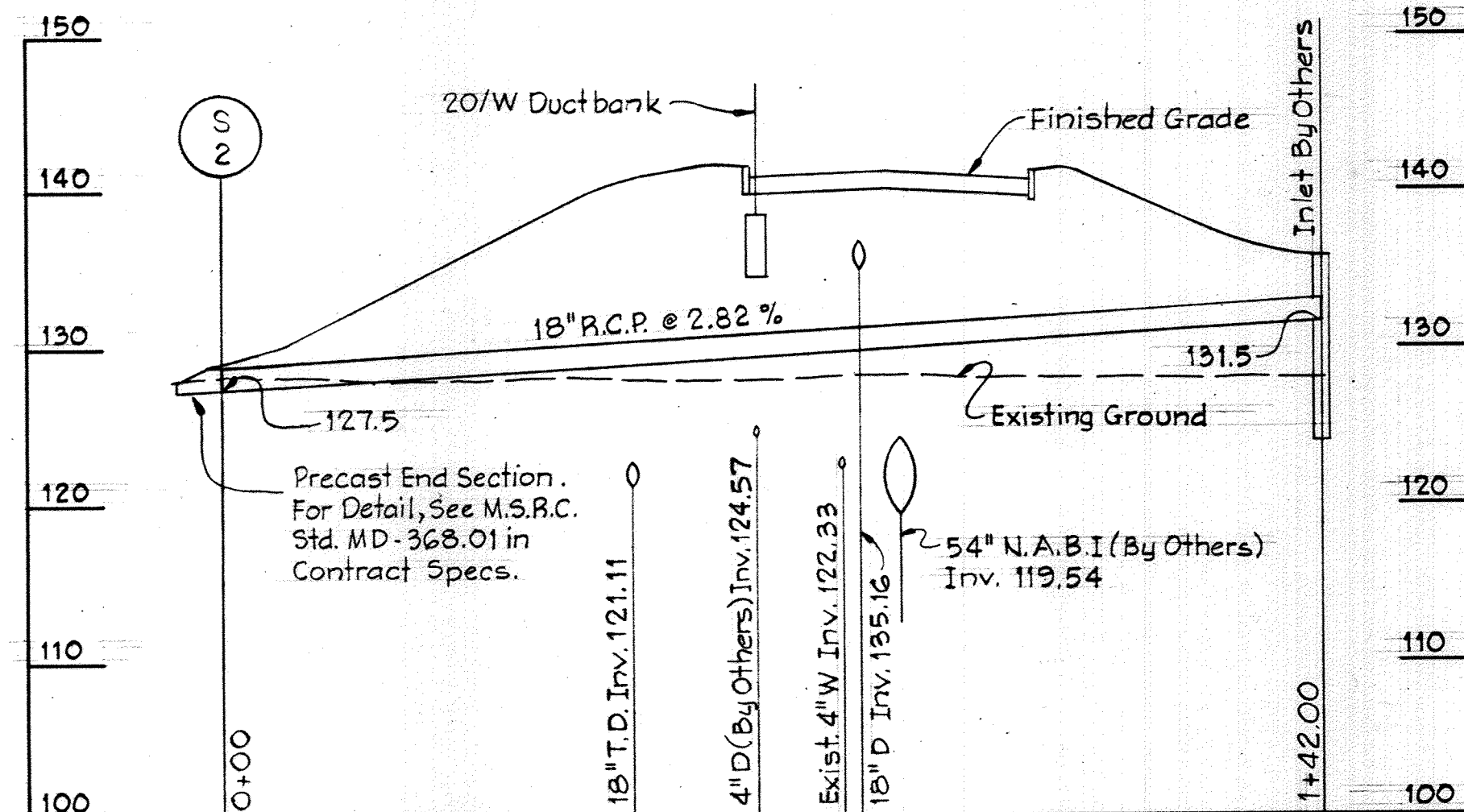
SECTION C-11A/C-11

SPECIAL VALVE BOX
Scale: 1/2" = 1'-0"

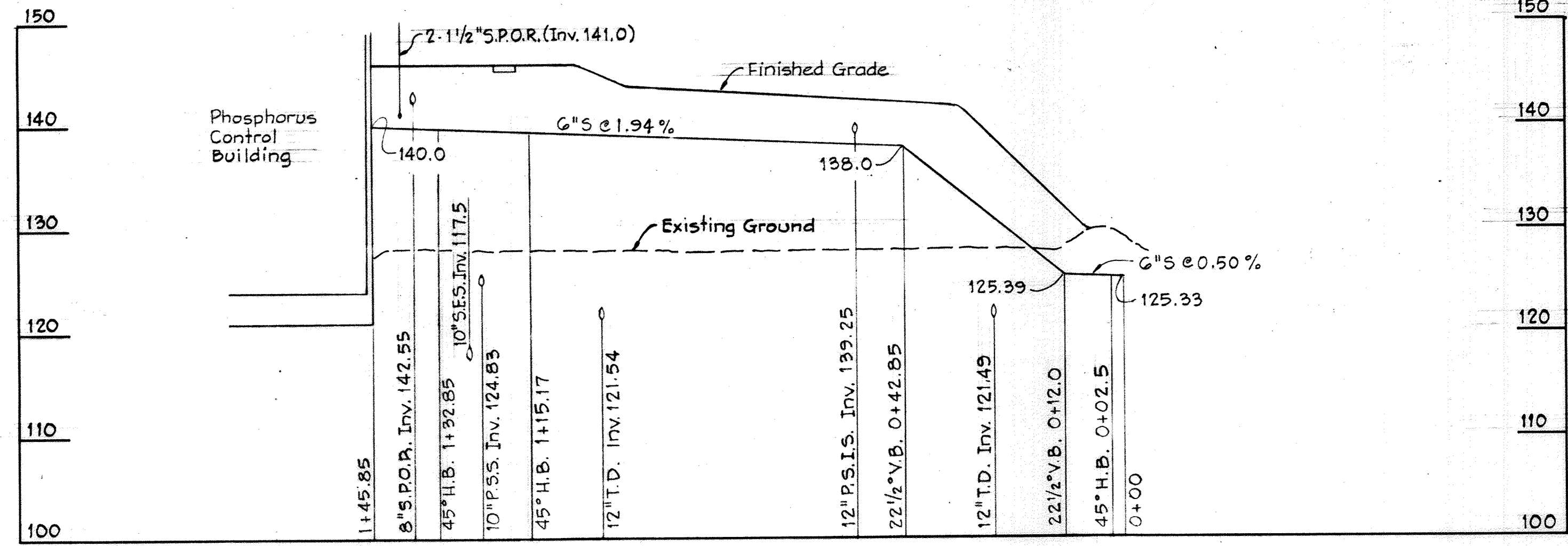


TANK DRAIN INSPECTION MANHOLE
Not to Scale

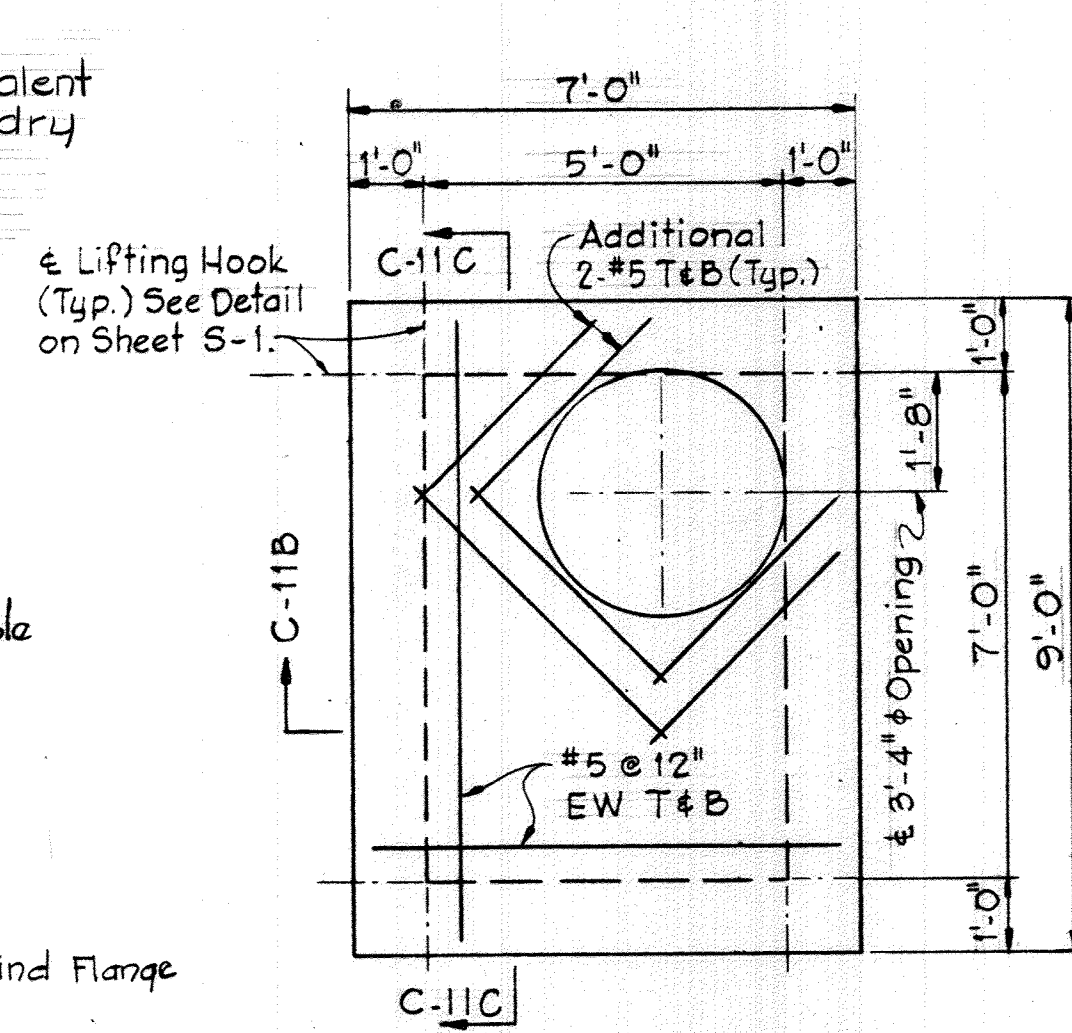
Note:
For Further Detail,
See 4' Standard Line
Manhole in Standard
Detail.



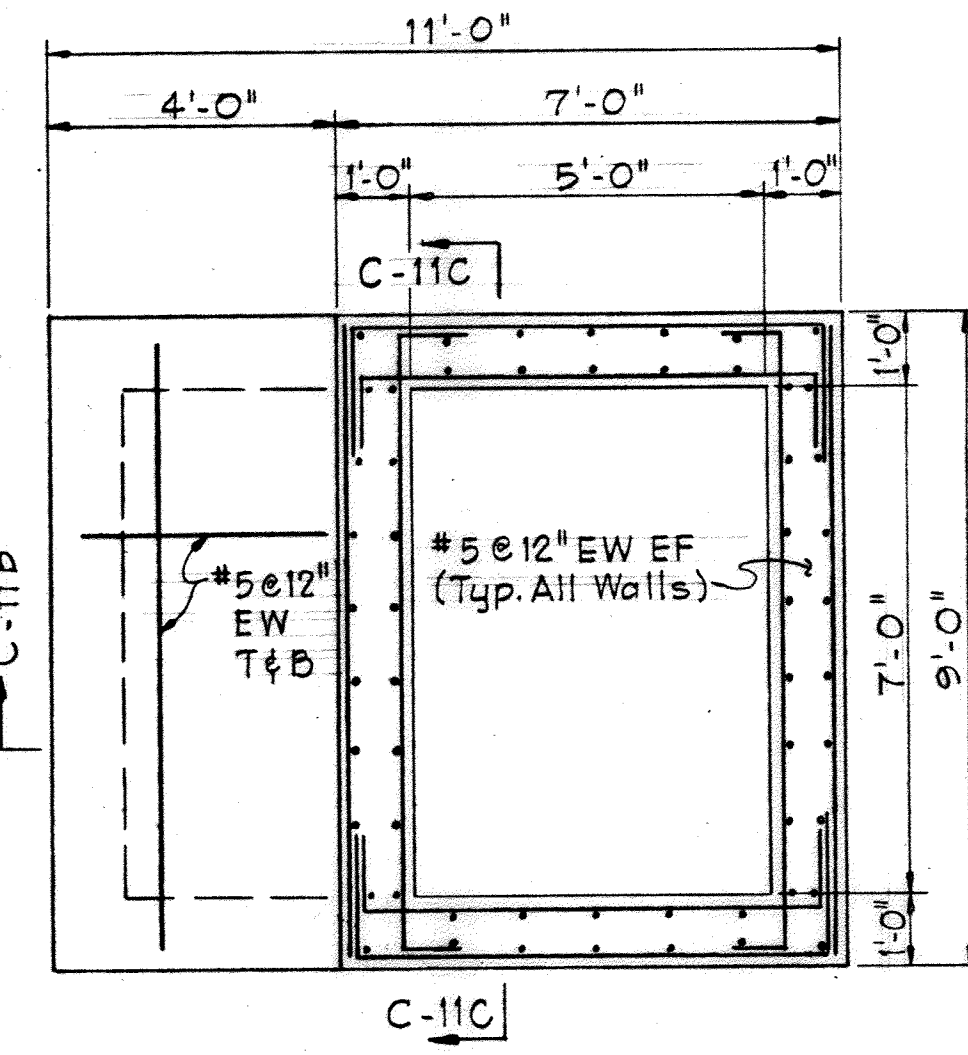
PROFILE A-A



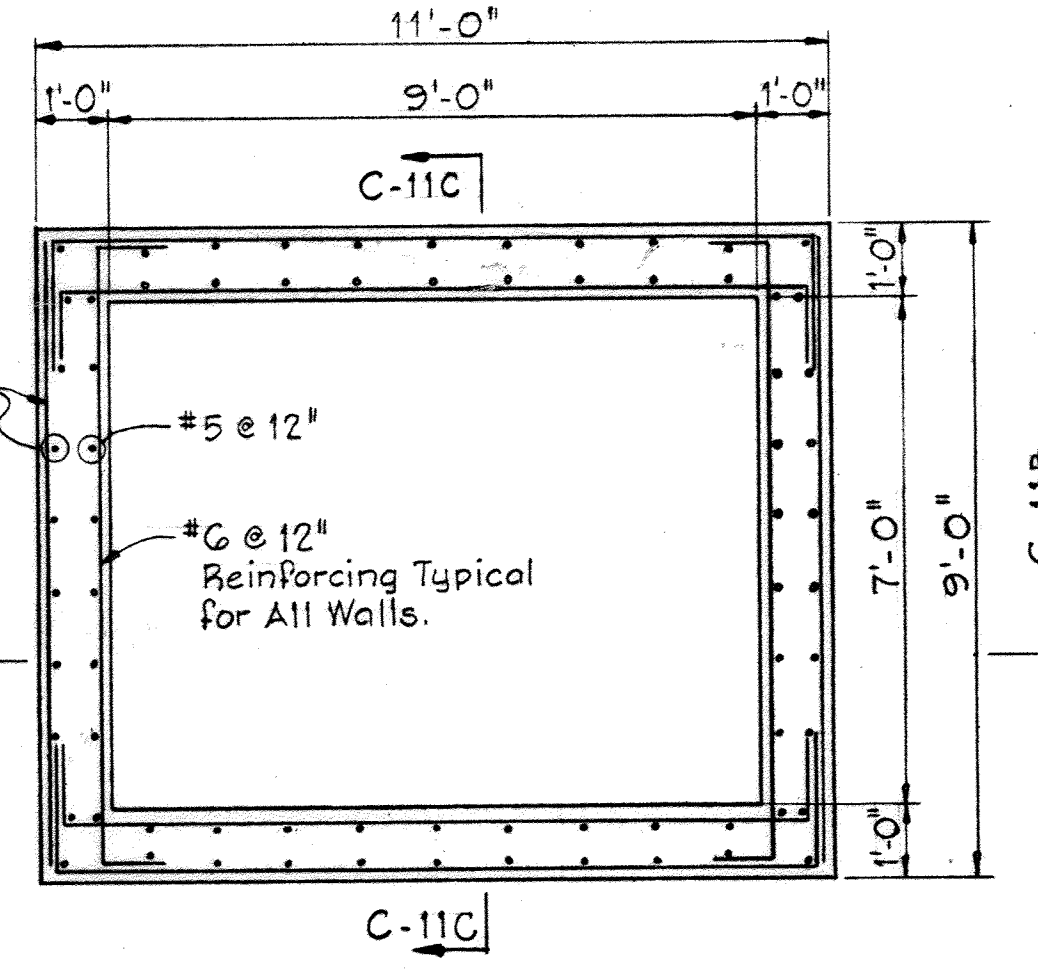
PROFILE B-B



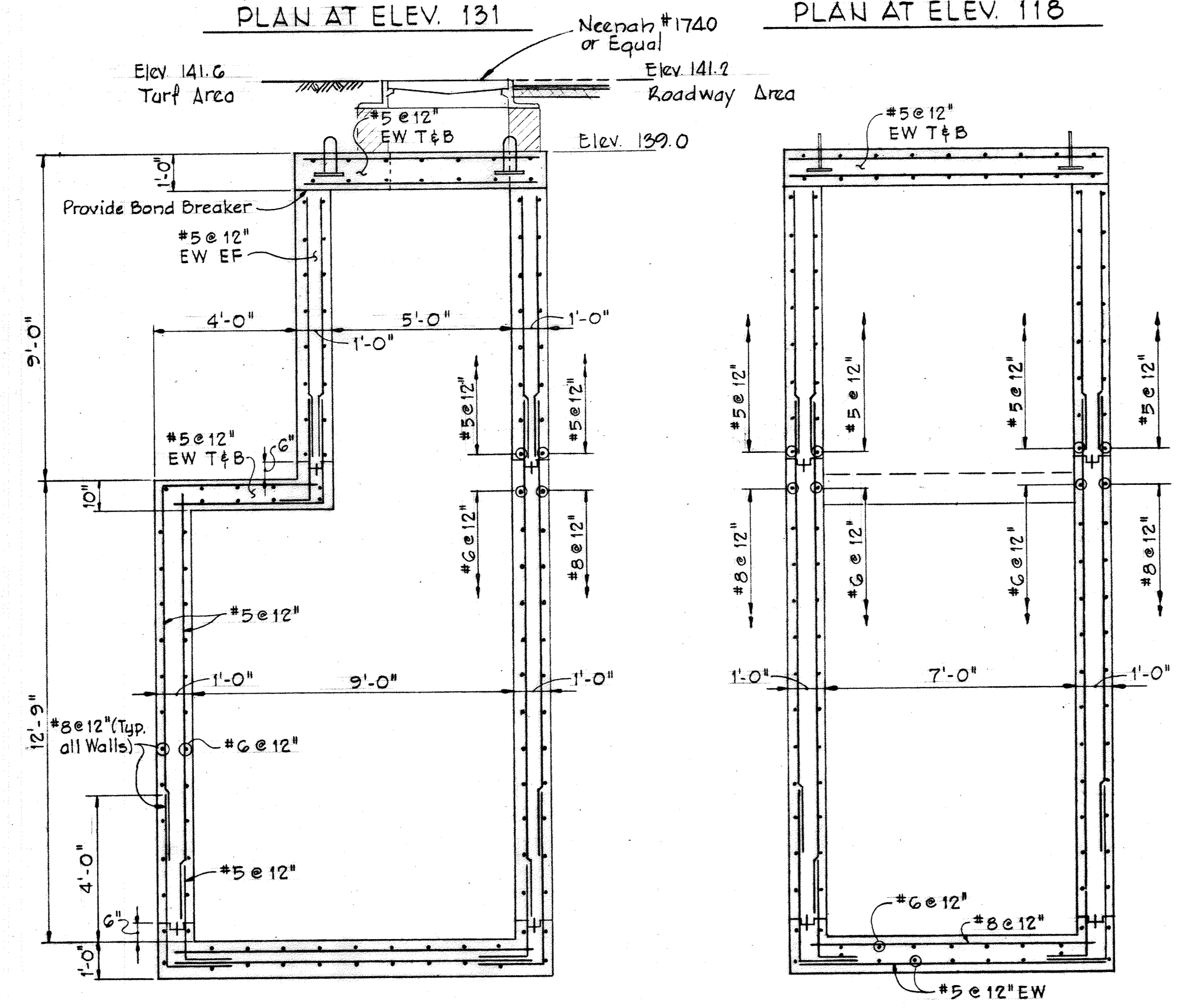
SLAB PLAN



PLAN AT ELEV. 131



PLAN AT ELEV. 118



SECTION C-11B/C-11

SECTION C-11C/C-11

Notes: Valve Vaults
1/ Place 3/4\"/>

54" VALVE VAULT DETAILS
Scale: 3/8" = 1'-0"

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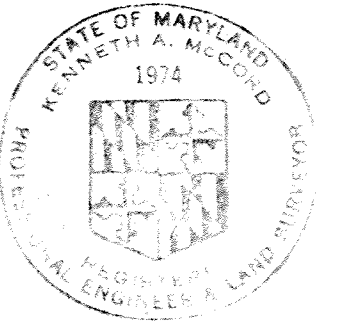
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
2/22/78
DATE
Richard E. Freudenberger
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

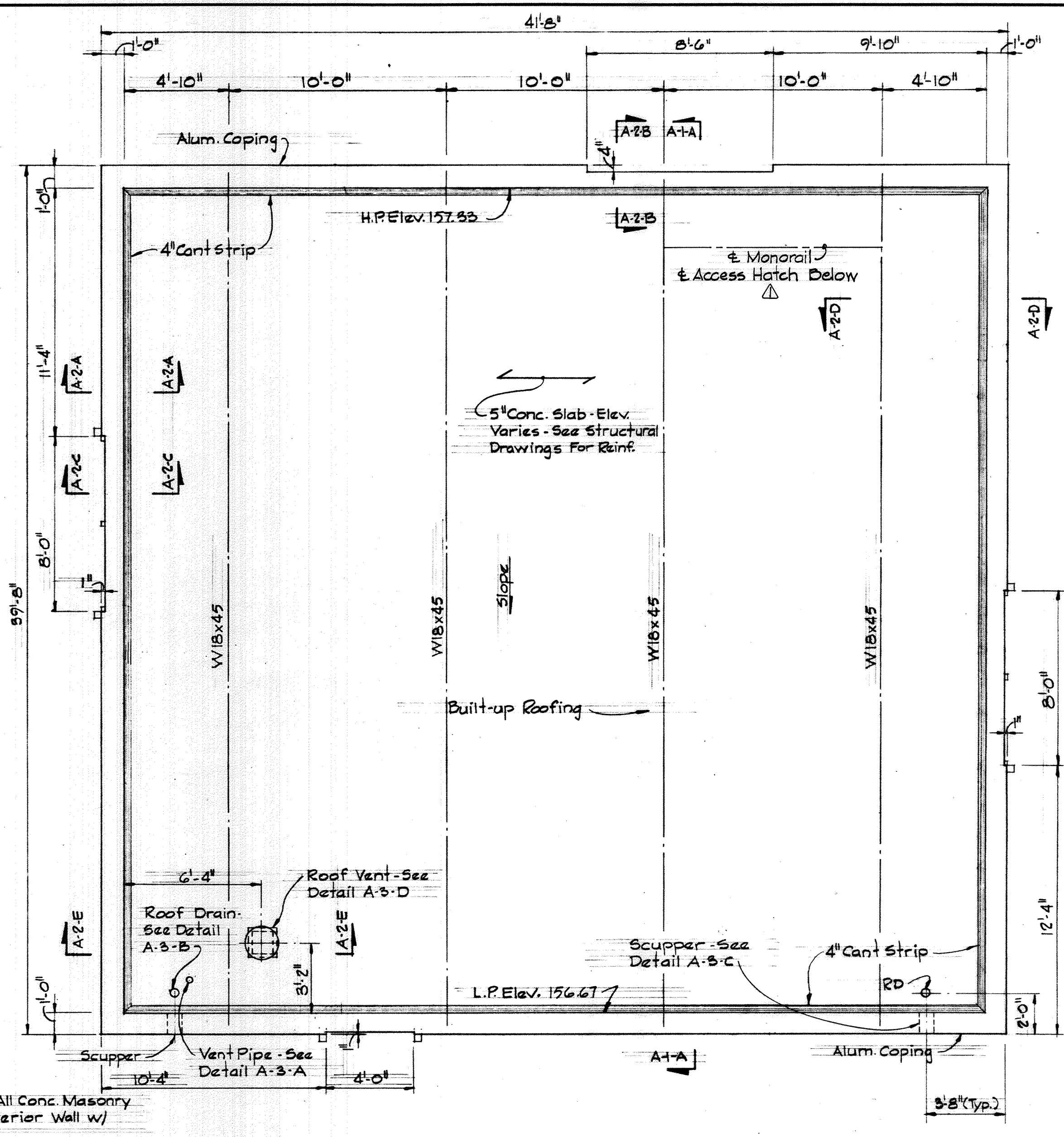
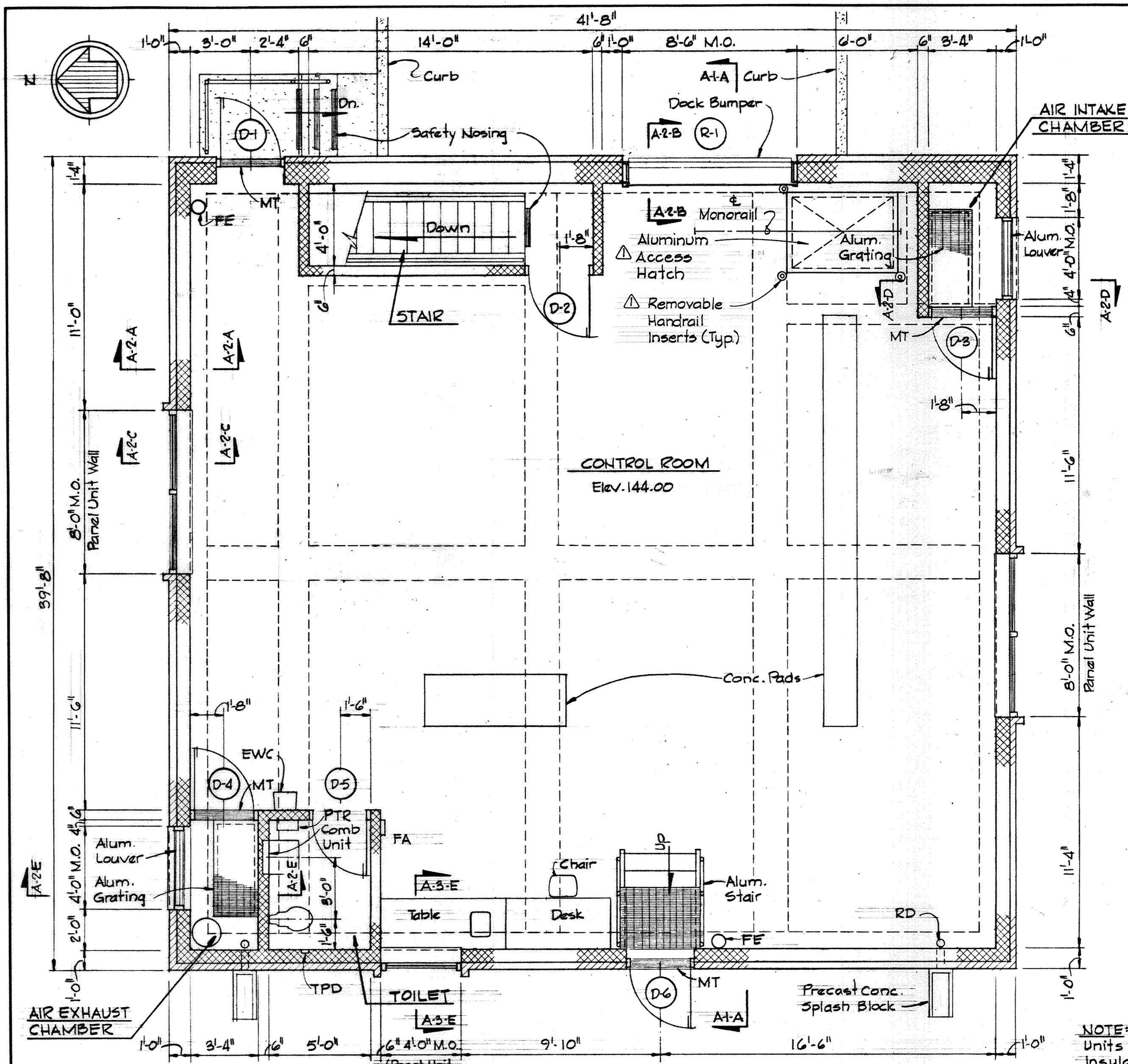
CONTRACT NO. 760-S

DETAILS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 14A
OF 50
SCALE AS NOTED





- MOUNTING NOTES:**
1. Top of Combination Unit - 6'-0" above floor on sink &
 2. Bottom of Paper Towel Receptacle - 8" Min. above floor.
 3. Top of Toilet Paper Dispenser - 3'-0" above floor.
 4. Top of Fire Extinguisher - 5'-4" Max. above floor.
 5. Top of First Aid Kit - 5'-0" above floor.

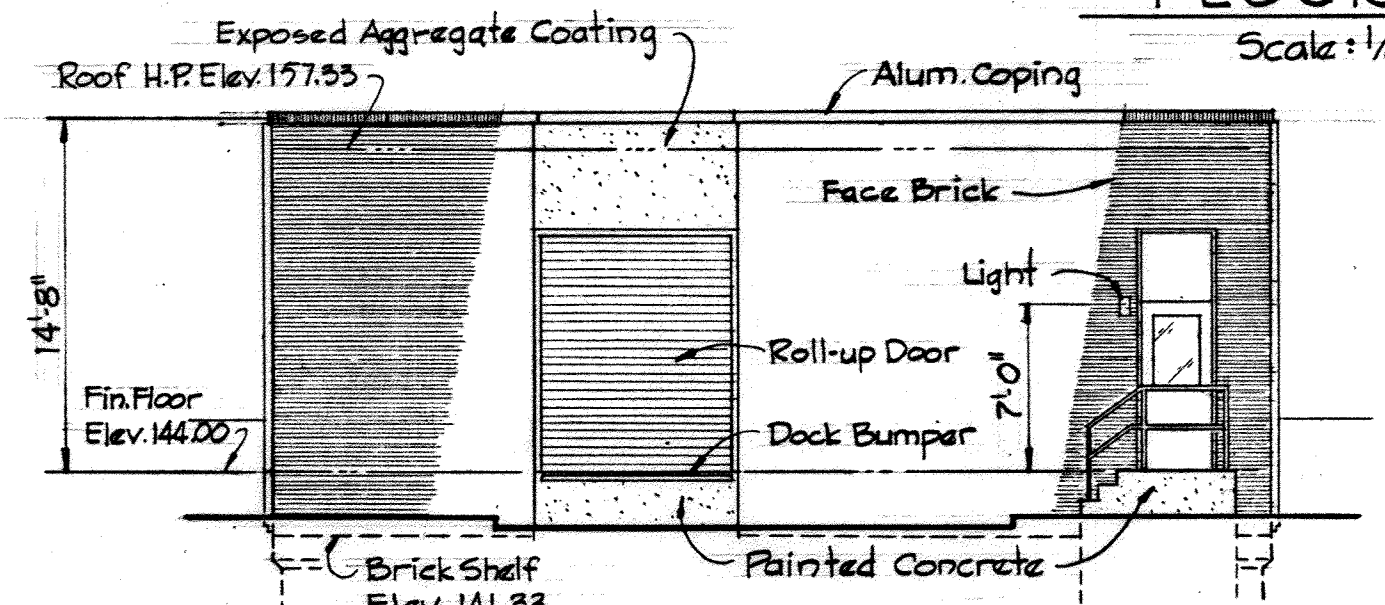
THERMAL VALUES

MATERIAL	U VALUE
Uo- Gross Exterior Wall	0.247
Uo- Roof/Ceiling	0.082
Panel Unit Walls (Opaque & Translucent Panels)	0.24
3/8" Insulating Glass	0.58
12" Insulating Masonry Wall	0.16
16" Insulating Masonry Wall	0.10
Exposed Aggregate Panel	0.12
Alum. Doors	0.24
Roll-up Door & Louvers	1.15
Roof Insulation	R=10.00

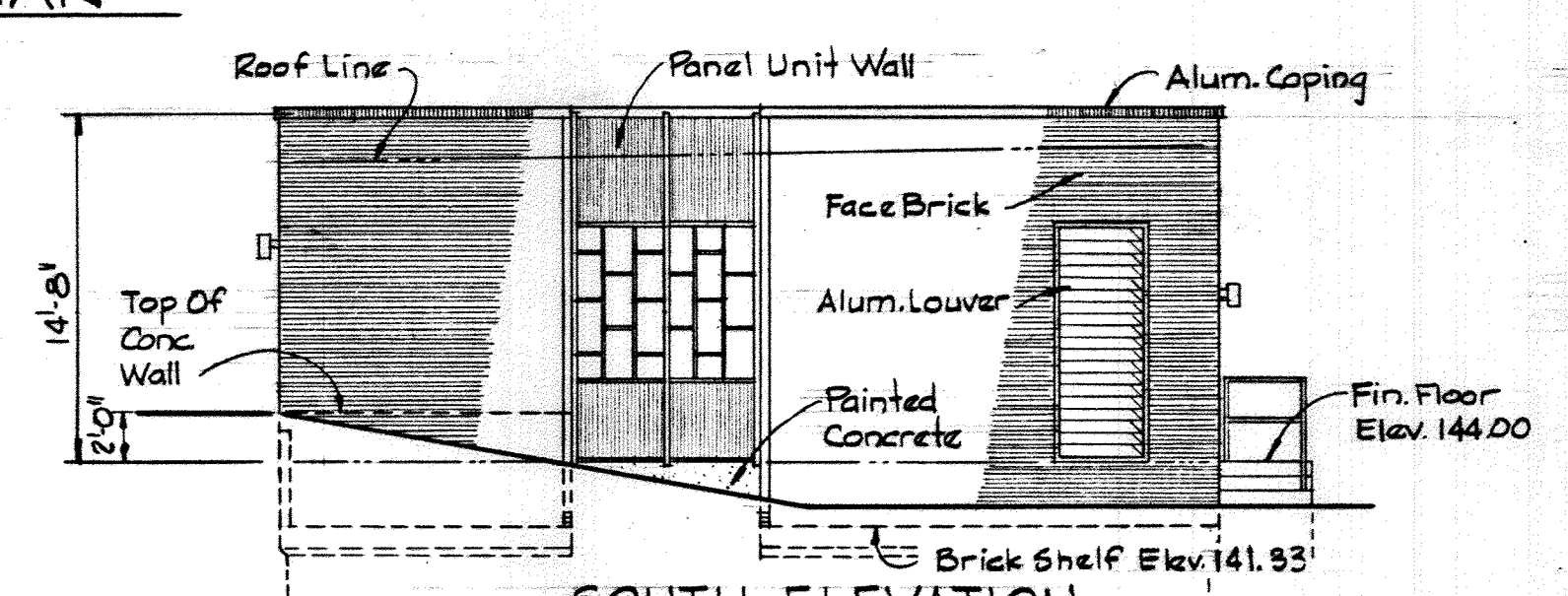
NOTE: Fill All Conc. Masonry Units in Exterior Wall w/ Insulation.

FLOOR PLAN
Scale: 1/4" = 1'-0"

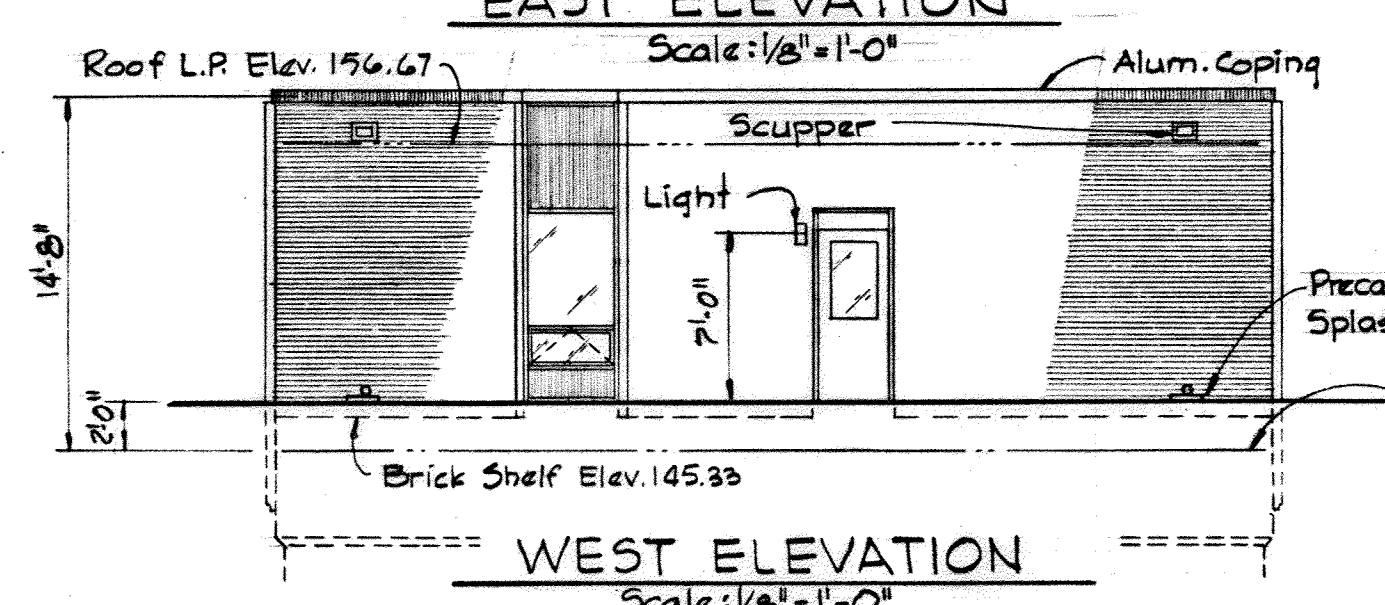
ROOF PLAN
Scale: 1/4" = 1'-0"



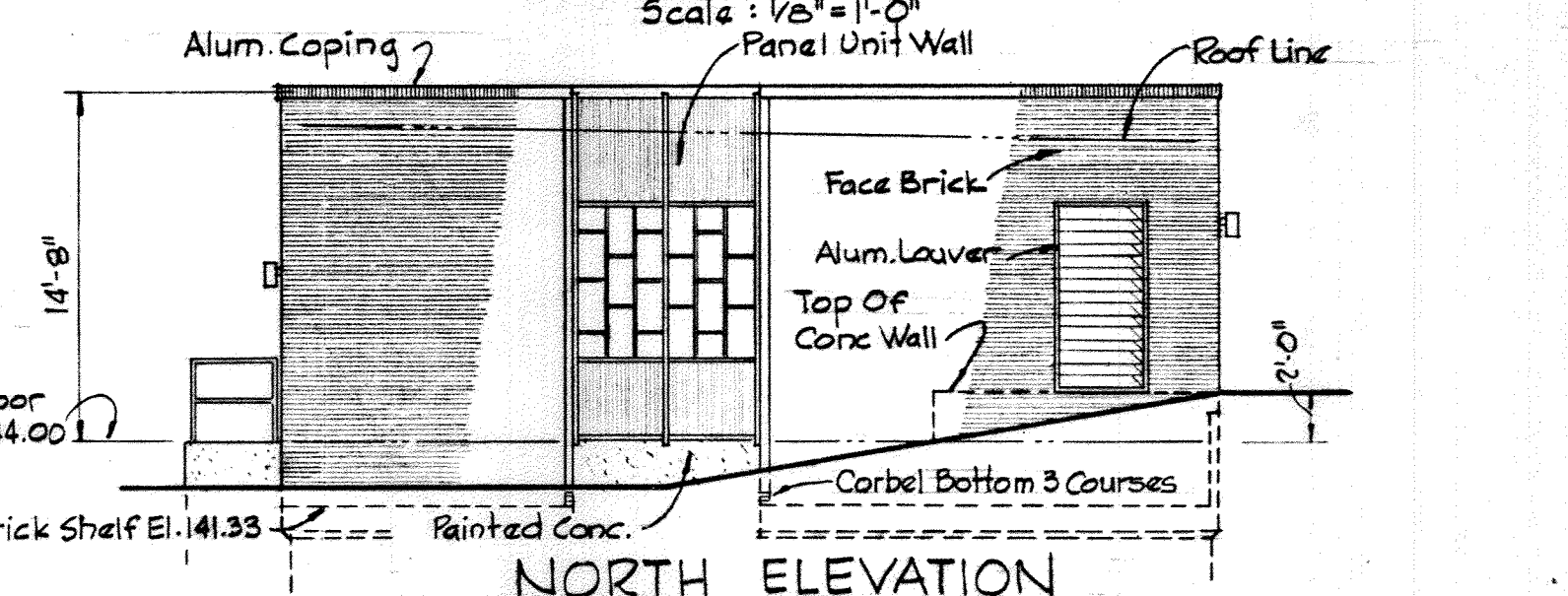
EAST ELEVATION
Scale: 1/8" = 1'-0"



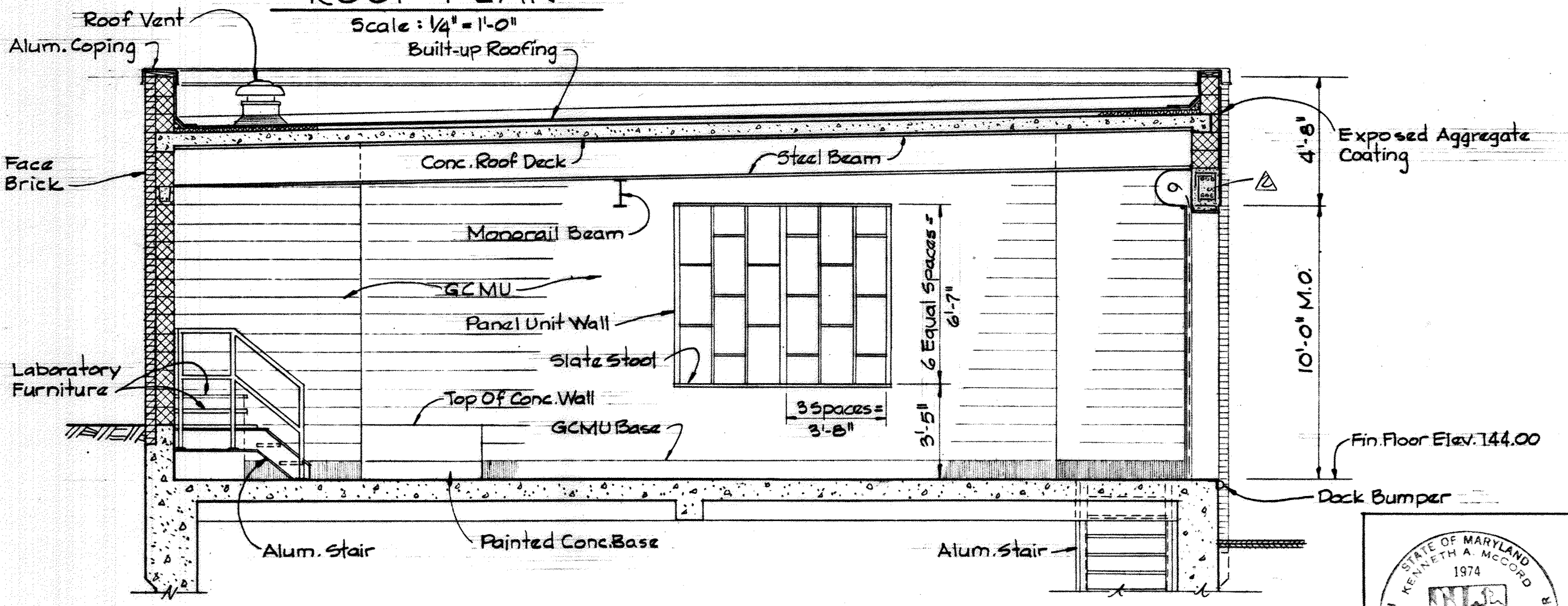
SOUTH ELEVATION
Scale: 1/8" = 1'-0"



WEST ELEVATION
Scale: 1/8" = 1'-0"



NORTH ELEVATION
Scale: 1/8" = 1'-0"



SECTION A-1-A/A-1
Scale: 1/8" = 1'-0"

WHITMAN, REQUARDT & ASSOCIATES
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BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Richard E. Treuberg
DATE: 1/12/78
CHIEF - BUREAU OF ENVIRONMENTAL SERVICES

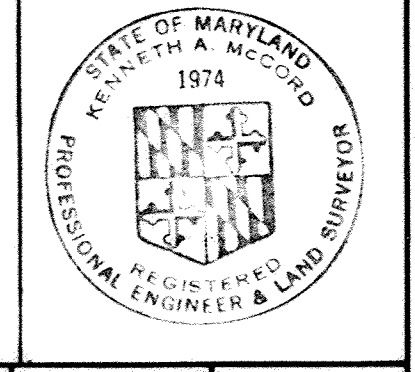
CONTRACT NO. 760-S

PLANS, ELEVATIONS & SECTION

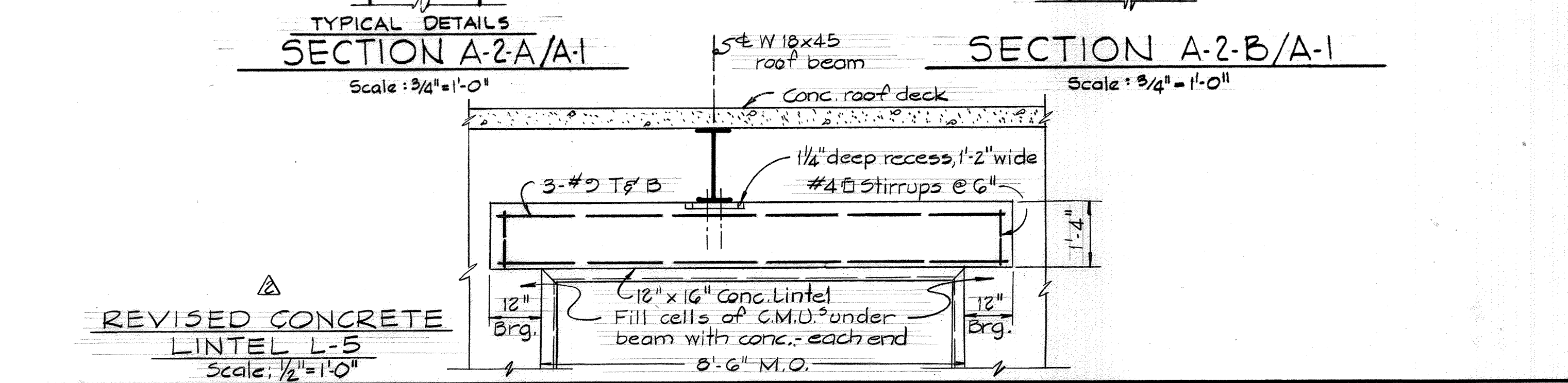
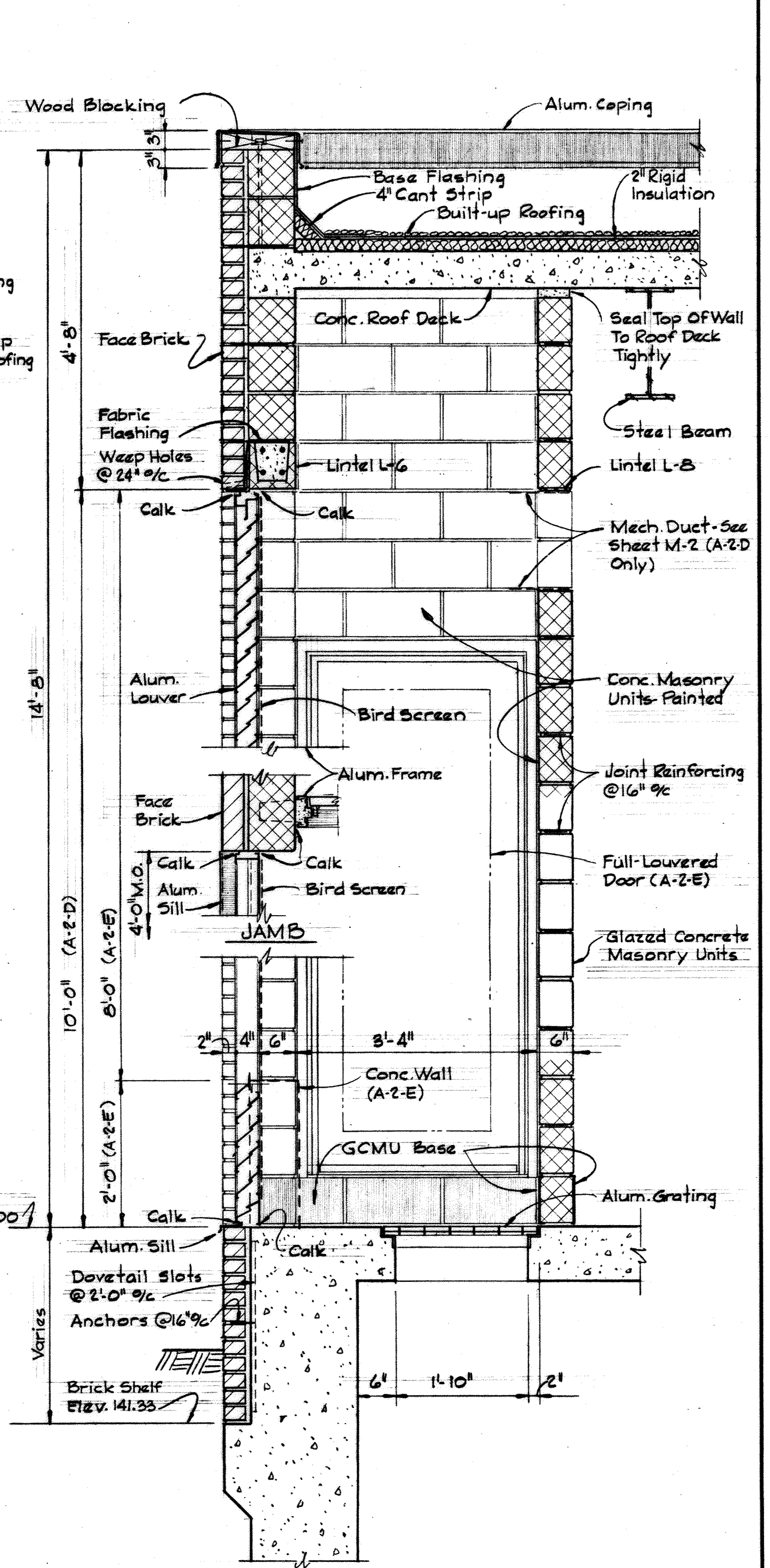
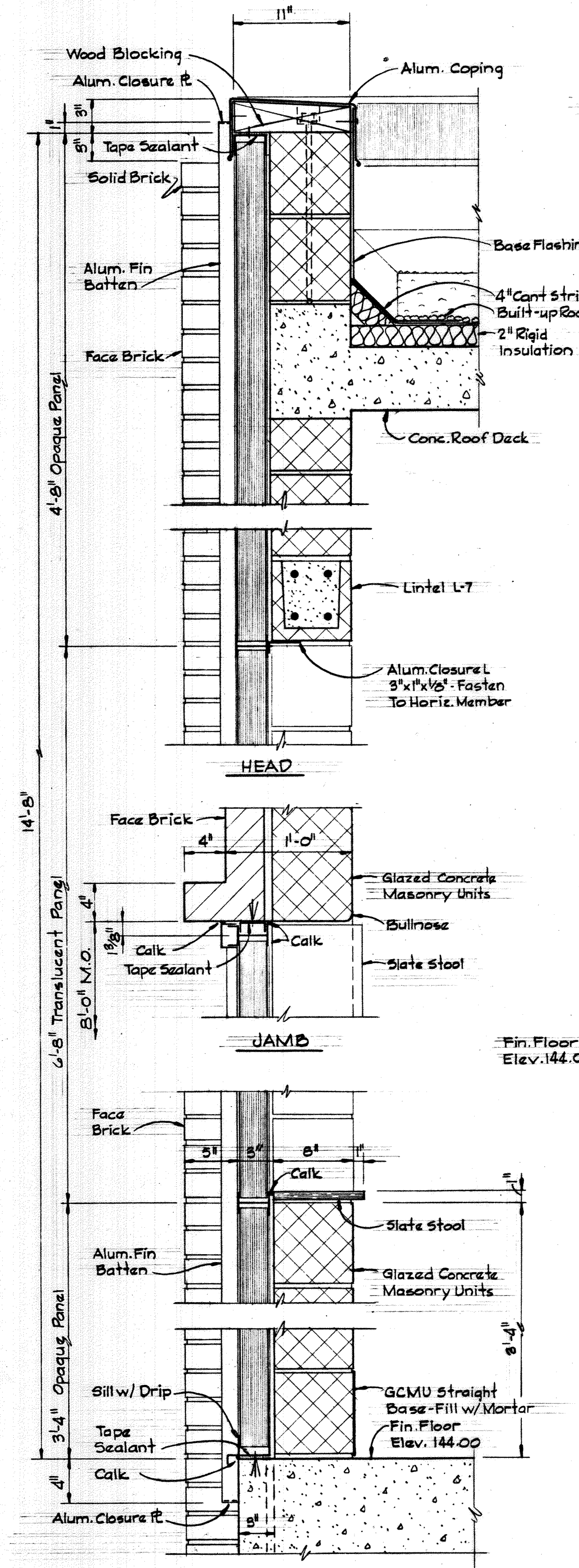
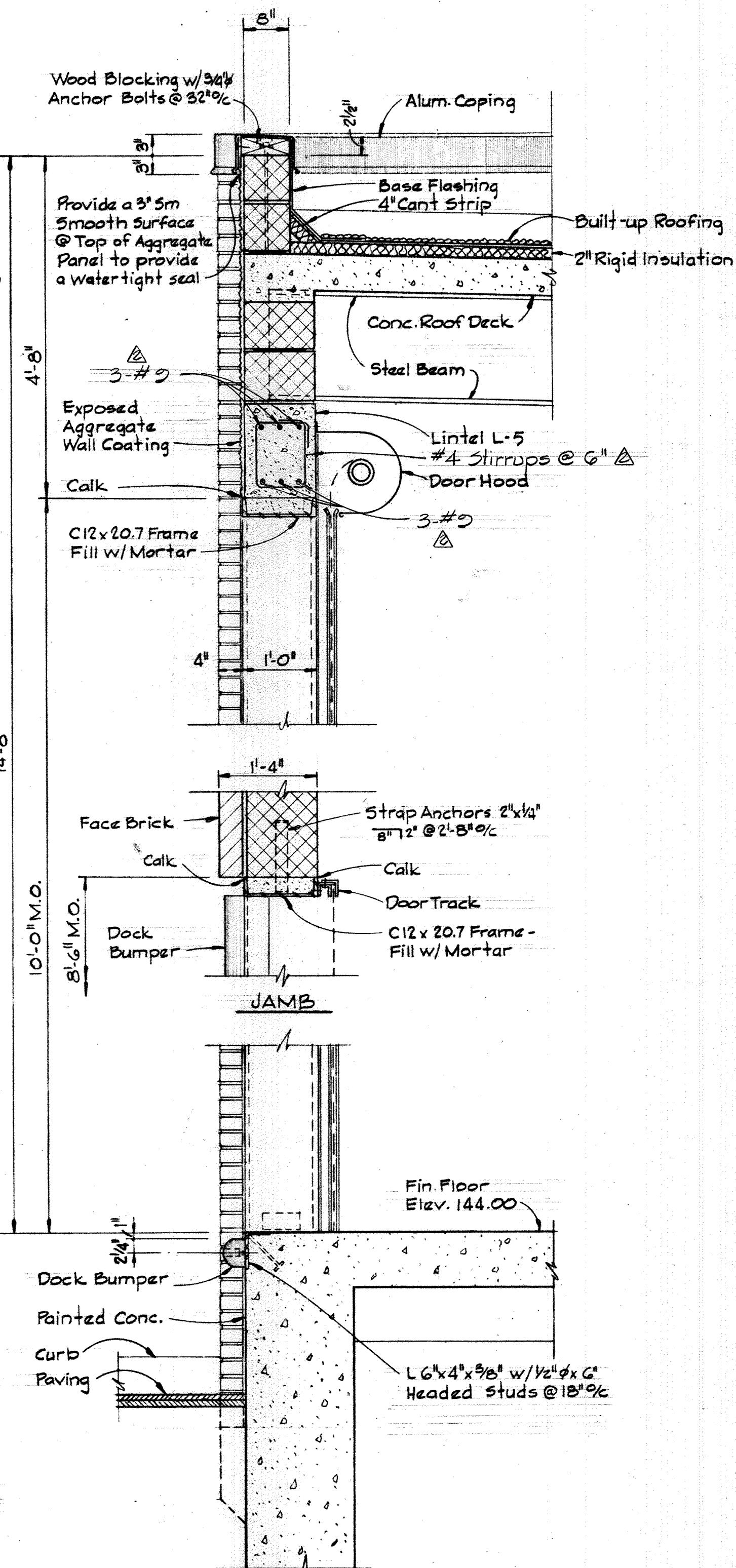
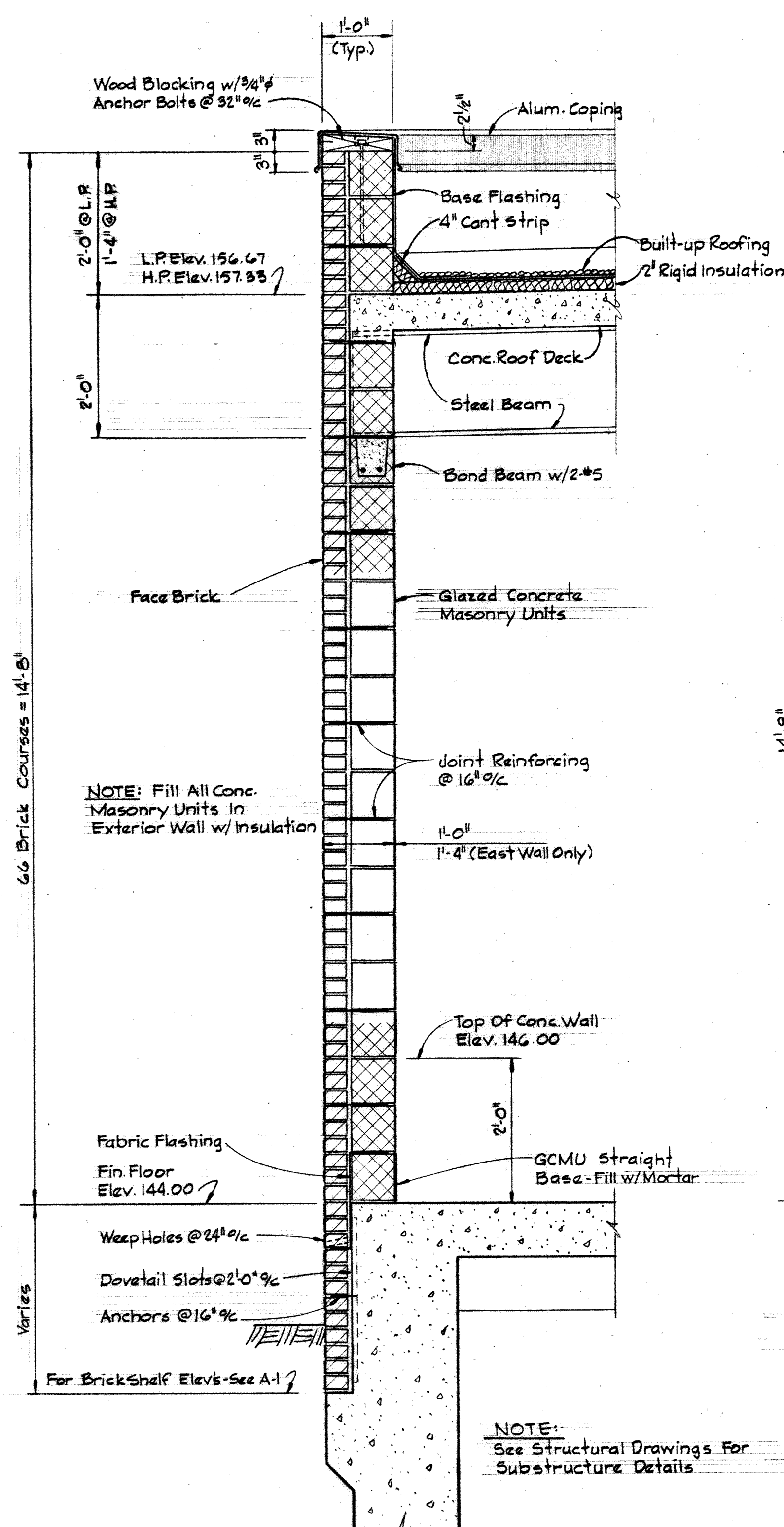
SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 15 OF 50

SCALE AS NOTED



BRUNING 44-510-3282Z



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HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Brudenbary
CHIEF - BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

WALL SECTIONS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 16 OF 50
SCALE AS NOTED

FINISH SCHEDULE

ABBREVIATIONS USED IN FINISH SCHEDULE AND DRAWINGS

ACT	ACOUSTICAL TILE	HM	HOLLOW METAL	SF	SEAMLESS FLOORING
ALUM	ALUMINUM	HT	HEIGHT	FA	FIRST AID KIT
CARP	CARPETING	KCPL	KEENE'S CEMENT PLASTER		
CFH	CONCRETE FLOOR HARDENER	MT	METAL THRESHOLD		
CJT	CONTROL JOINT	PLAS-P	PLASTER (P-PAINTED)		
CMU-P	CONCRETE MASONRY UNITS-(P-PAINTED)	PTD	PAPER TOWEL DISPENSER		
CONC	CONCRETE	PTR	PAPER TOWEL RECEPTOR		
ES-P	EXPOSED STRUCTURE-(P-PAINTED)	RD	ROOF DRAIN		
EXP.JT.	EXPANSION JOINT	SAT	SUSPENDED ACOUSTICAL TILE		
FD	FLOOR DRAIN	SST	STAINLESS STEEL		
GA	GAUGE	TPD	TOILET PAPER DISPENSER		
GCMU	GLAZED CONCRETE MASONRY UNITS	VAT	VINYL ASBESTOS TILE		
GPDW-P	GYPSON DRY WALL-(P-PAINTED)	VCB	VINYL COVE BASE		
HDW	HARDWARE	VCGB	VINYL COVERED GYPSUM BOARD		

ROOM OR AREA	FLOOR		BASE		WALL		CEILING		REMARKS
	MAT'L	COLOR	MAT'L	COLOR	MAT'L	COLOR	MAT'L	COLOR	
PUMP ROOM @ ELEV. 124.00	CFH		CONC-P		CONC-P		CONC-P		
PUMP ROOM @ ELEV. 134.00	CFH		CONC-P		CONC-P		CONC-P		
STAIR	CFH		GCMU		GCMU		CONC-P		
CONTROL ROOM	CFH		GCMU		GCMU		CONC-P		
AIR INTAKE CHAMBER	CFH		GCMU		CMU-P		CONC-P		
AIR EXHAUST CHAMBER	CFH		GCMU		CMU-P		CONC-P		
TOILET	SF		SF		GCMU		CONC-P		

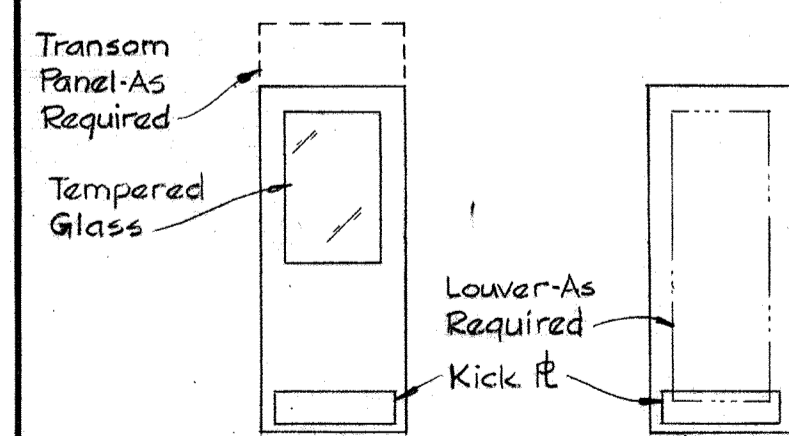
DOOR SCHEDULE

NO.	SIZE	MAT'L	TYPE	HEAD	JAMB	LINTEL	LOUVER	KICK PL.	HDW.	REMARKS
D-1	3'-0" x 7'-2" x 1 3/4"	ALUM.	A	H-1	J-1	L-1		8" x 30"	HW-1	2'-B Fixed Transom Panel
D-2	3'-0" x 7'-2" x 1 3/4"	ALUM.	A	H-2	J-2	L-2		8" x 30"	HW-2	
D-3	3'-0" x 7'-2" x 1 3/4"	ALUM.	B	H-3	J-3	L-2			HW-3	8" GCMU Sill - Thld #2
D-4	3'-0" x 7'-2" x 1 3/4"	ALUM.	B	H-2	J-2	L-2	2'-0" x 6'-0"		HW-4	8" GCMU Sill - Thld #2
D-5	2'-8" x 7'-2" x 1 3/4"	ALUM.	B	H-2	J-2	L-3		8" x 30"	HW-5	
D-6	3'-0" x 7'-2" x 1 3/4"	ALUM.	A	H-4	J-4	L-4		8" x 30"	HW-1	
R-1	5'-0" x 9'-0"	STEEL		See Section A-2-B						Manually Operated

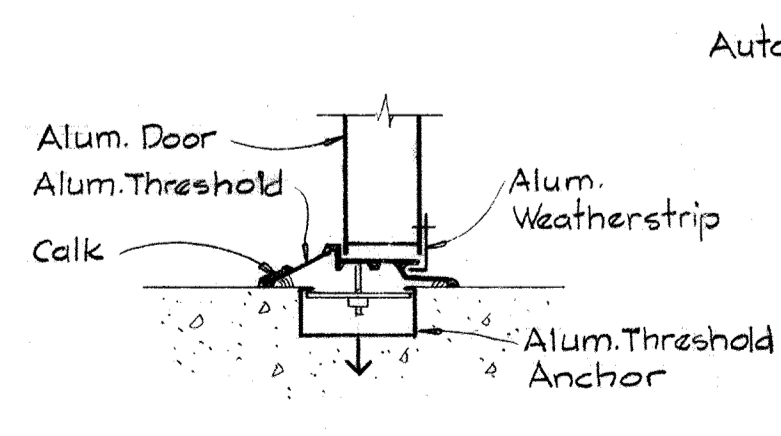
LINTEL SCHEDULE

NO.	TYPE	M.O.	REINFORCING	MISC. STEEL	LOCATION
L-1	A-D	3'-4"	2-#5 (T&B)	L5 x 3/2 x 5/16 LLV	D-1
L-2	E	3'-4"		R 5/16 x 5	D-2, D-3, D-4
L-3	E	3'-0"		R 5/16 x 5	D-5
L-4	B-D	3'-4"	2-#5 (T&B)	L5 x 3/2 x 5/16 LLV	D-6
L-5	C	10'-0"	2-#5 (T&B)		R-1
L-6	B-D	4'-0"	2-#5 (T&B)	L5 x 3/2 x 5/16 LLV	Louvers
L-7	B	8'-0"	2-#5 (T&B)		Panel Unit Wall - Sect. A-2-C
L-8	E	2'-0"		R 5/16 x 5	Duct - Sect. A-2-D
L-9	B	4'-0"	2-#5 (T&B)		Panel Unit Wall - Sect. A-3-E

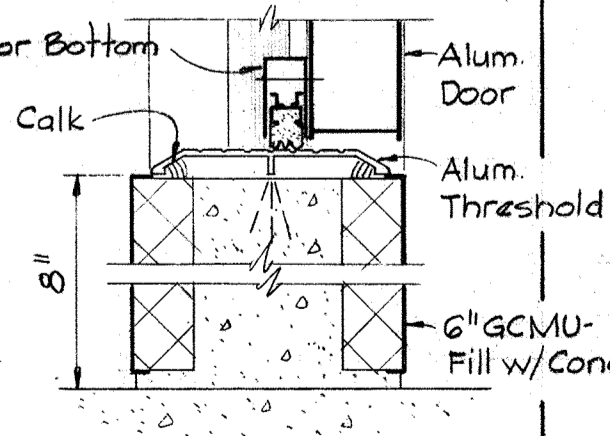
- NOTES:
- Provide Jamb Anchors @ 2'-8" o/c for Doors over 7'-4" M.O. high.
 - Kick plates shall be installed on inside face of exterior doors and outside of doors swinging into rooms.
 - All Aluminum Hardware on doors except thresholds and threshold anchors shall be Duranodic - Dark Bronze 313.
 - All Lintels shall have 8" Min. bearing on each end unless otherwise noted.
 - Additional masonry or steel Lintels as required for mechanical and electrical services shall match reinforcing and bearing requirements indicated on Lintel Schedule.



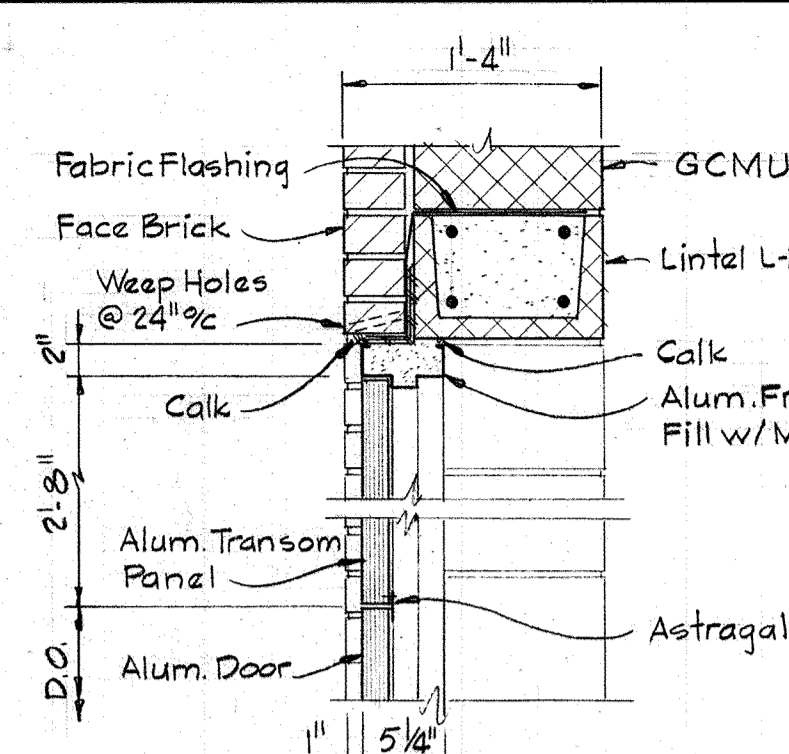
DOOR TYPES



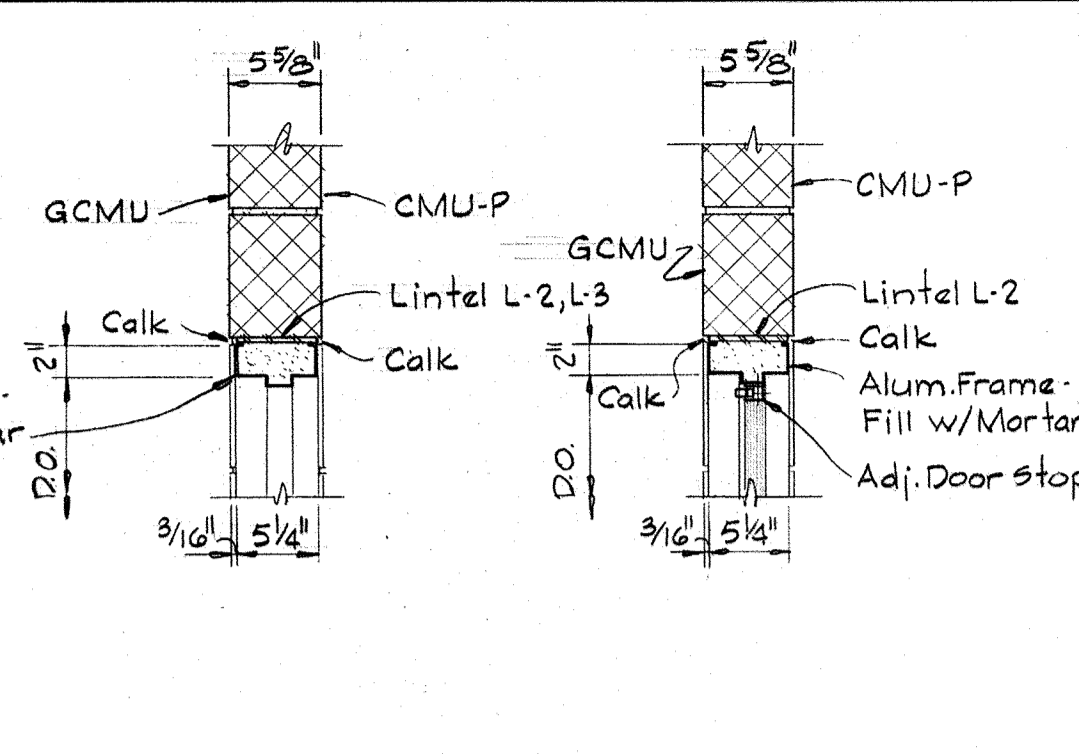
THRESHOLD TYPES



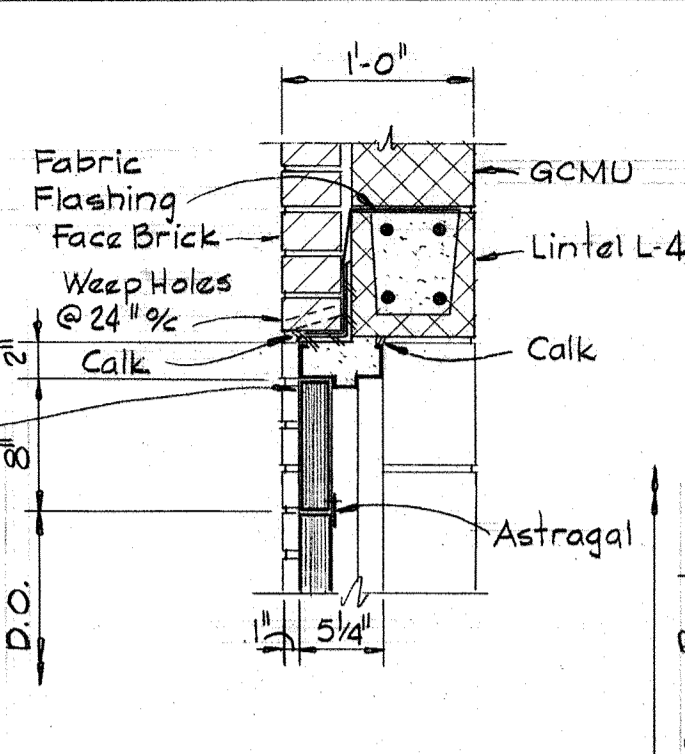
Doors D-3 & D-4



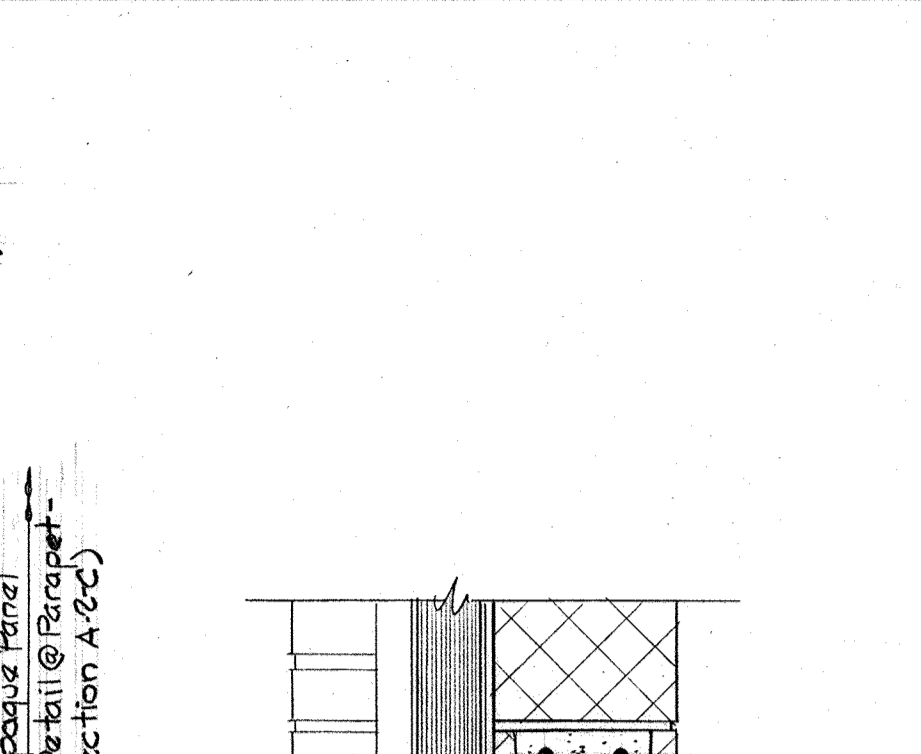
H-1



H-2



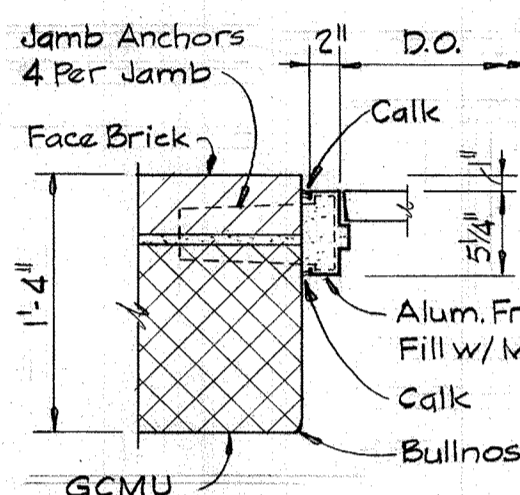
H-3



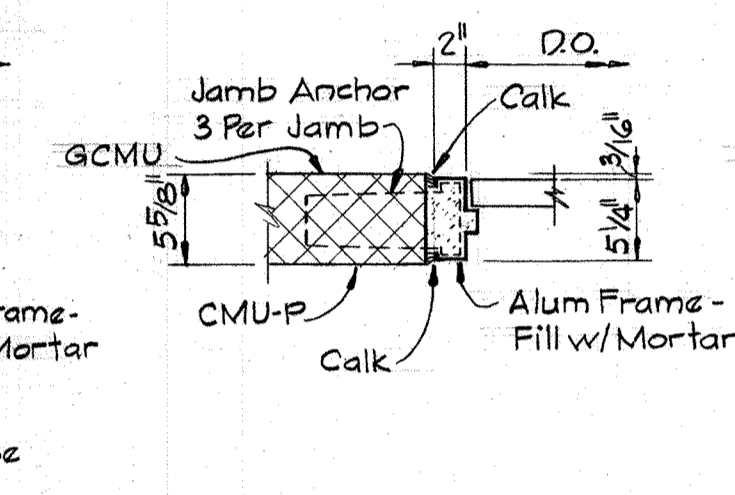
H-4

HEAD DETAILS

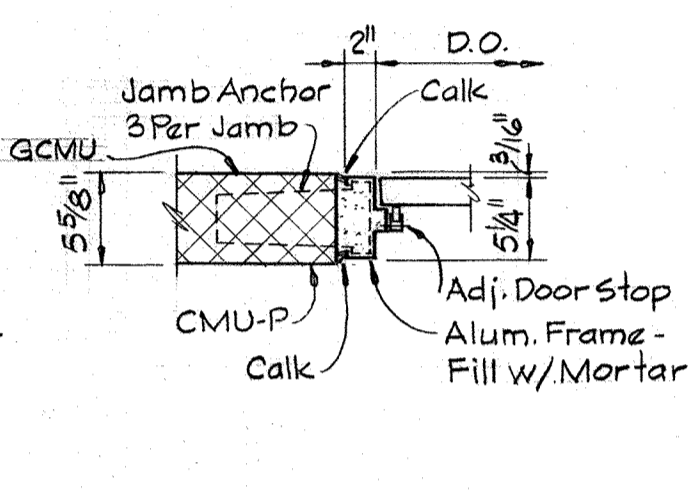
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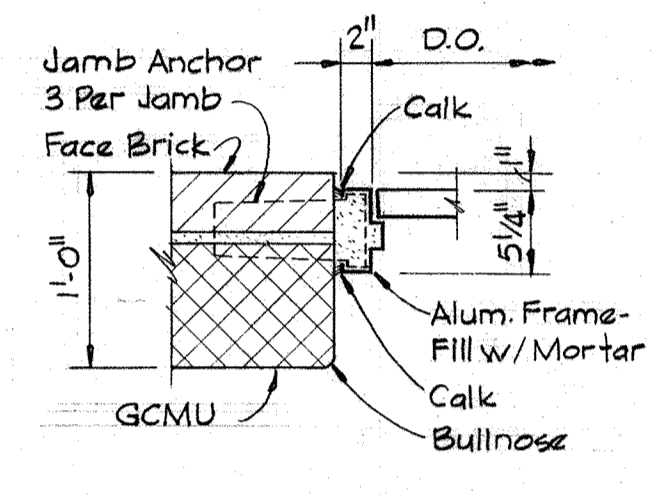
J-1



J-2



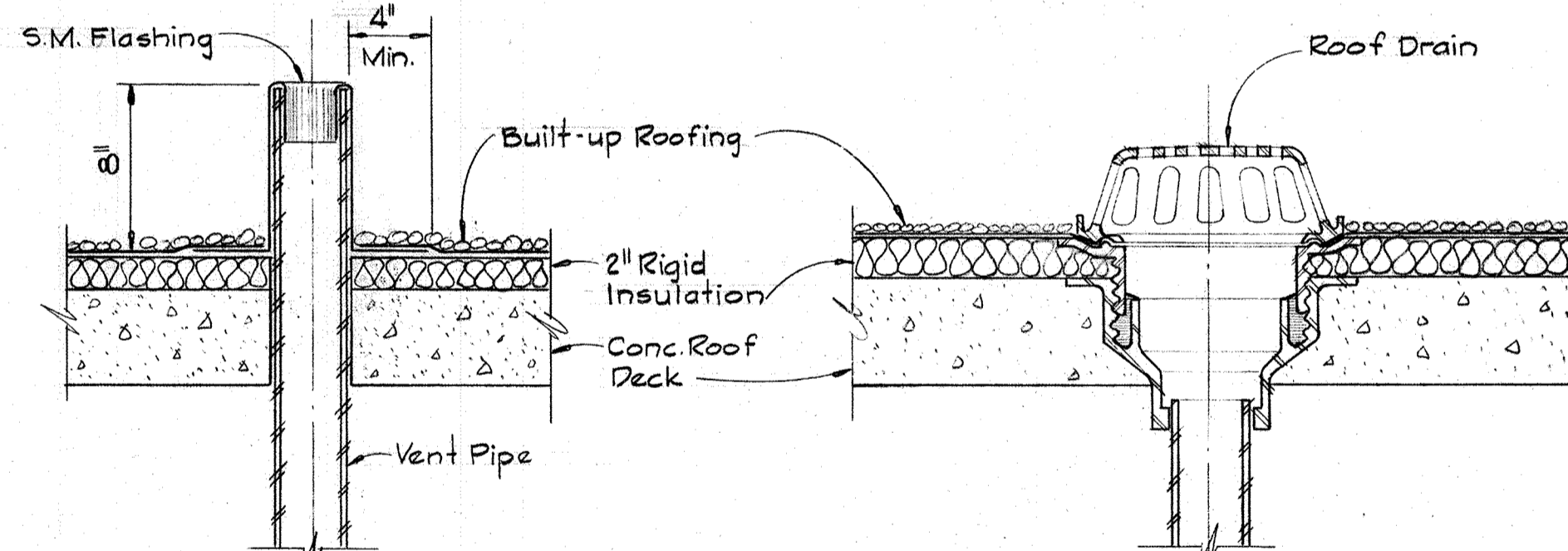
J-3



J-4

JAMB DETAILS

Scale: 1/2" = 1'-0"



TYPICAL VENT PIPE

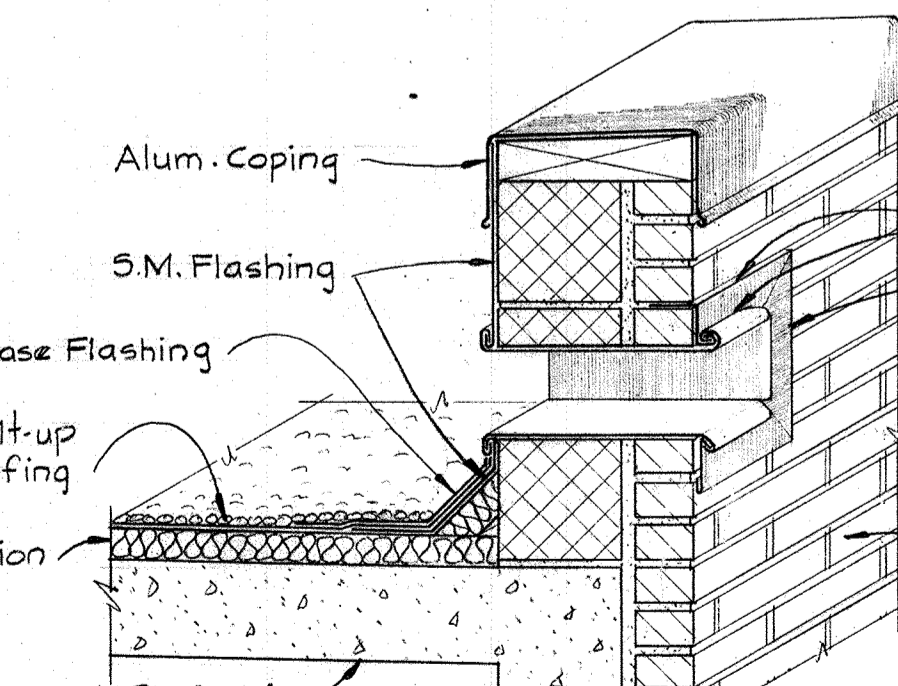
DETAIL A-3-A/A-1

Scale: 1/2" = 1'-0"

TYPICAL ROOF DRAIN

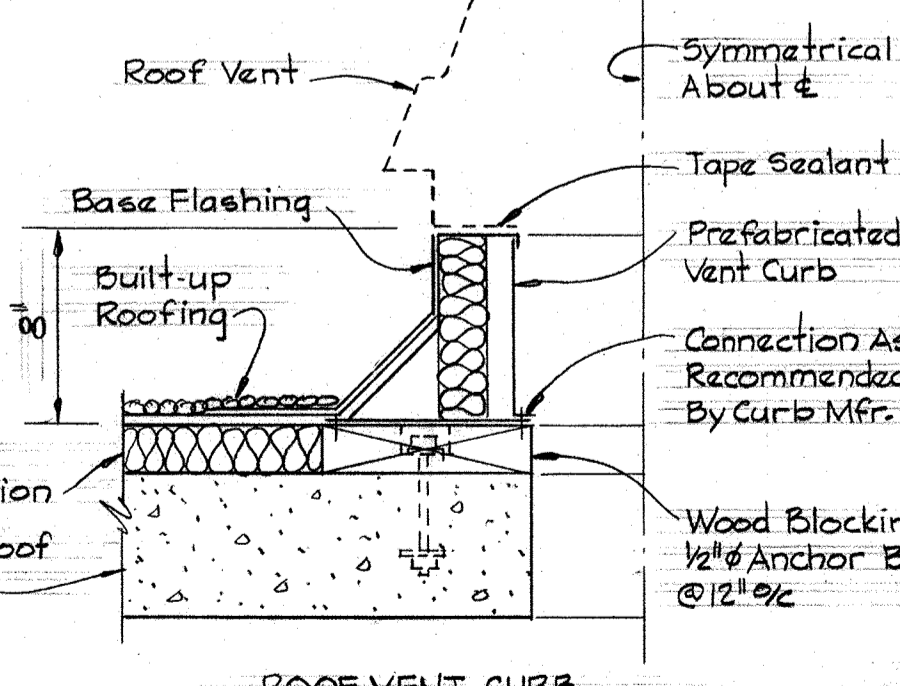
DETAIL A-3-B/A-1

Scale: 1/2" = 1'-0"



SCUPPER DETAIL A-3-C/A-1

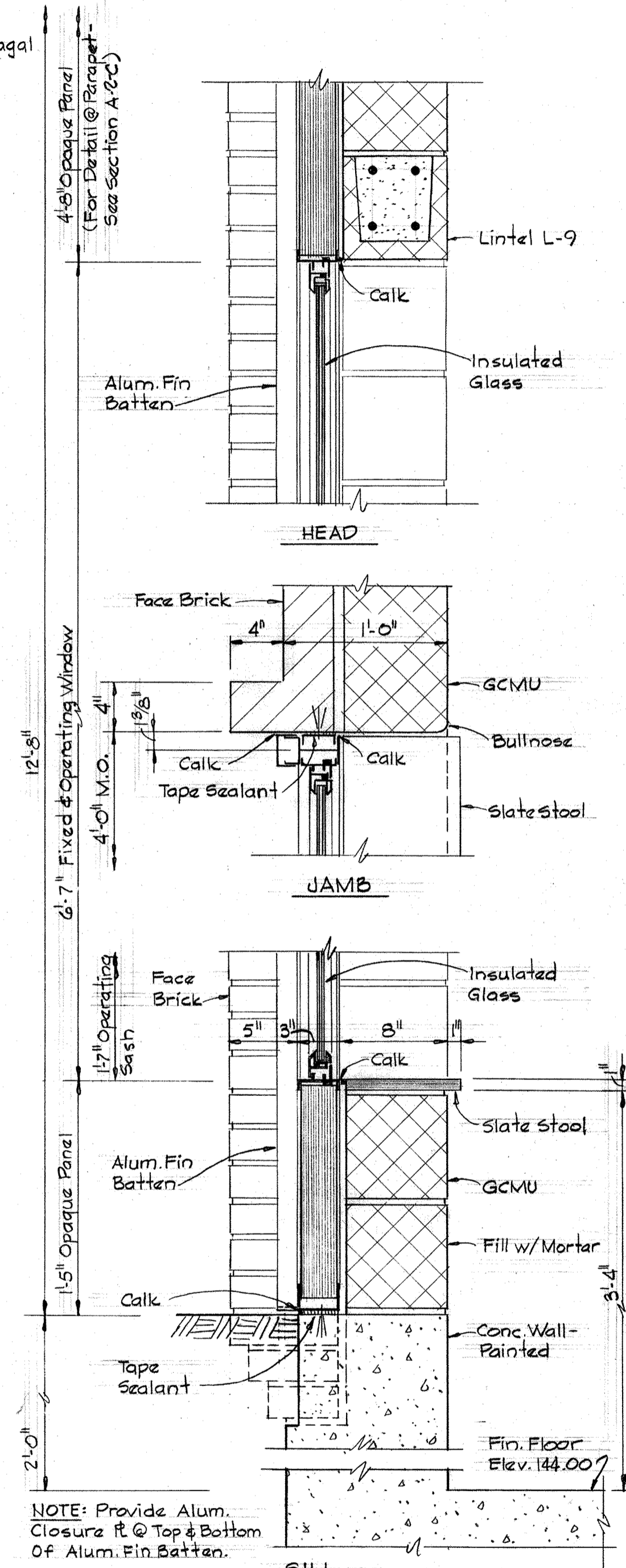
Scale: 1" = 1'-0"



ROOF VENT CURB

DETAIL A-3-D/A-1

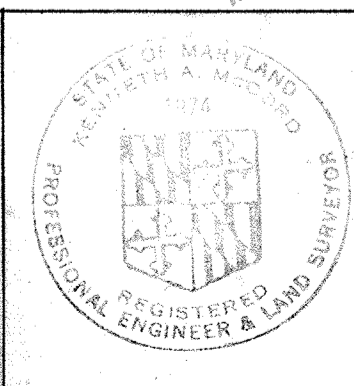
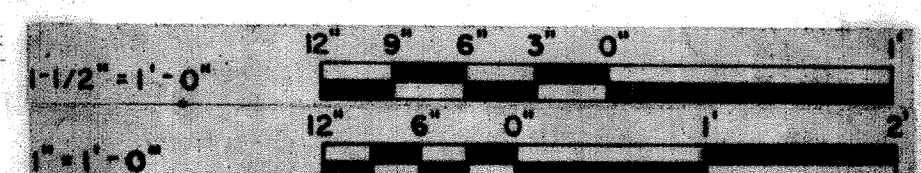
Scale: 1/2" = 1'-0"



PANEL UNIT WALL
SECTION A-3-E/A-1

Scale: 1/2" = 1'-0"

NOTE: Provide Alum. Closure @ Top & Bottom Of Alum. Fin Batten.



WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DATE: 11/2/78
Richard C. Freudenberger
CHIEF-BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

SCHEDULES & DETAILS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING
NO. 17
OF 50

SCALE
AS
NOTED

CONCRETE NOTES

- All concrete shall have a minimum compressive strength of 3,500 p.s.i. at 28 days.
- Reinforced concrete has been designed and shall be constructed in accordance with the current A.C.I. Specification 318-71 and all supplements to the code. All structures have been designed using the alternate design method.
- All reinforcing steel shall conform to A.S.T.M. A615-76a Grade 40.
- Concrete cover for reinforcing shall be as follows, unless noted otherwise on the drawings:

	Minimum Cover, in.
a. Bottom bars in unformed concrete cast against and permanently exposed to earth, rock, gravel or crushed stone.	3
b. Beams, columns, walls, slabs, or piers exposed to earth, weather or process liquid after removal of forms.	2
c. Beams, columns, walls, or piers not exposed to earth, weather or process liquid.	1 1/2
d. Slabs not exposed to earth, weather or process liquid.	3/4
- Exposed concrete edges shall be chamfered 3/4" unless noted otherwise.
- Slabs and walls shall be poured between indicated joints, allowing a minimum period of 3 days to elapse between adjacent pours.
- Construction joints shall be as shown on the drawings and no additional joints shall be used nor any omitted except by the written authorization of the Engineer.
- Splices in reinforcement shall be class C splice lengths as per A.C.I. 318-71 unless noted otherwise on the drawings.
- Embedment length shall be equal to the development length in accordance with A.C.I. 318-71 unless shown otherwise on the drawings.
- Horizontal bars in walls shall be considered top bars.
- See Civil, Architectural, Mechanical and Electrical drawings for all embedded items such as pipe sleeves, anchors, electrical conduit openings, chases, etc. which interfere with concrete construction.
- Reinforcing bars shall be detailed in accordance with A.C.I. 315-74, "Manual of Standard Practice for Detailing Reinforced Concrete".

FOUNDATION NOTES

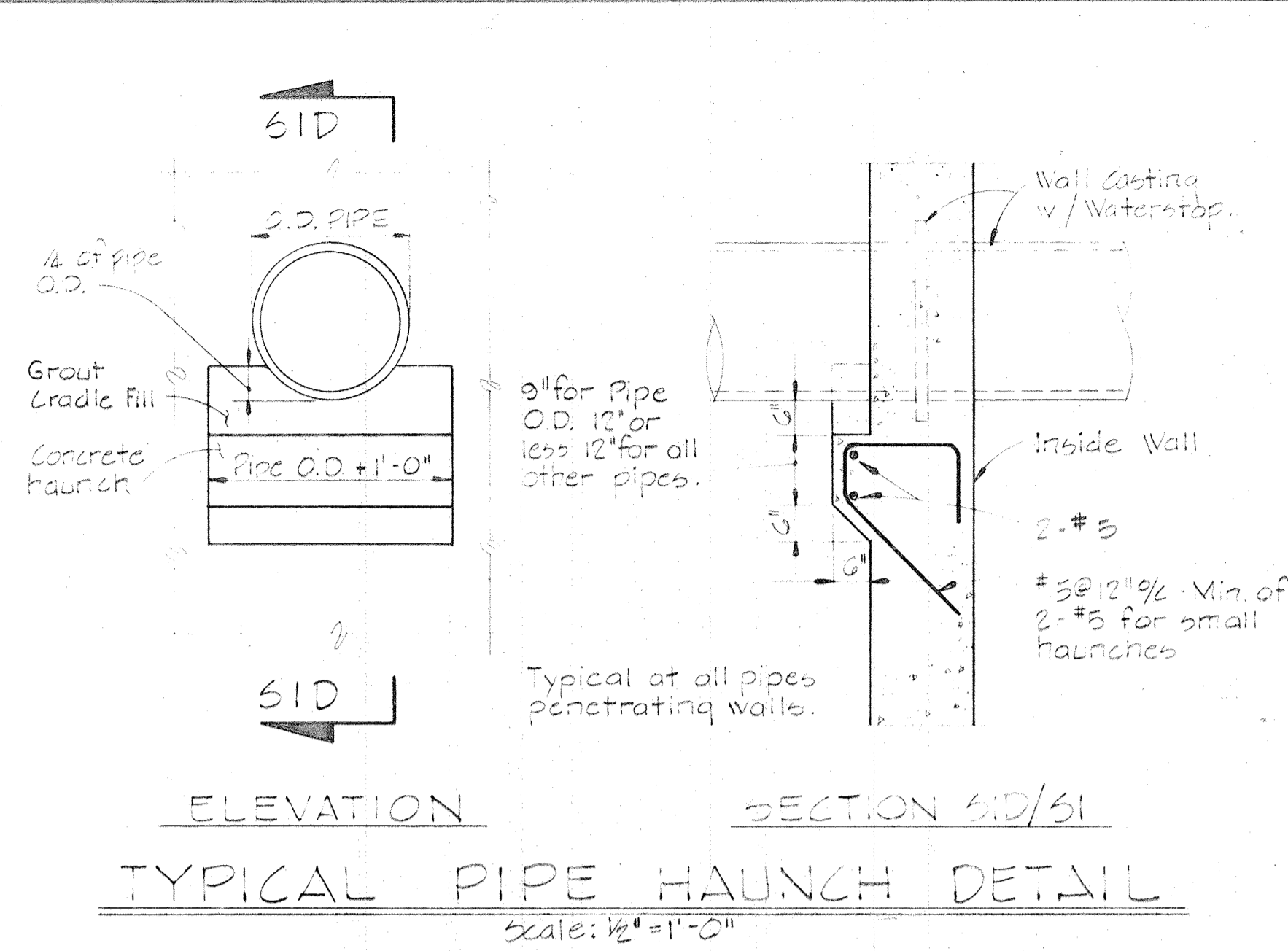
- All backfill shall be compacted to 90% of maximum density in maximum increments of 6", except the top 12" shall be compacted to 95% of maximum density.
- Maximum density and optimum moisture shall be in accordance with AASTHO test designation "TT180-74 method D".
- All foundations have been designed for a maximum allowable soil bearing pressure of 3,000 p.s.f.

STRUCTURAL ALUMINUM NOTES

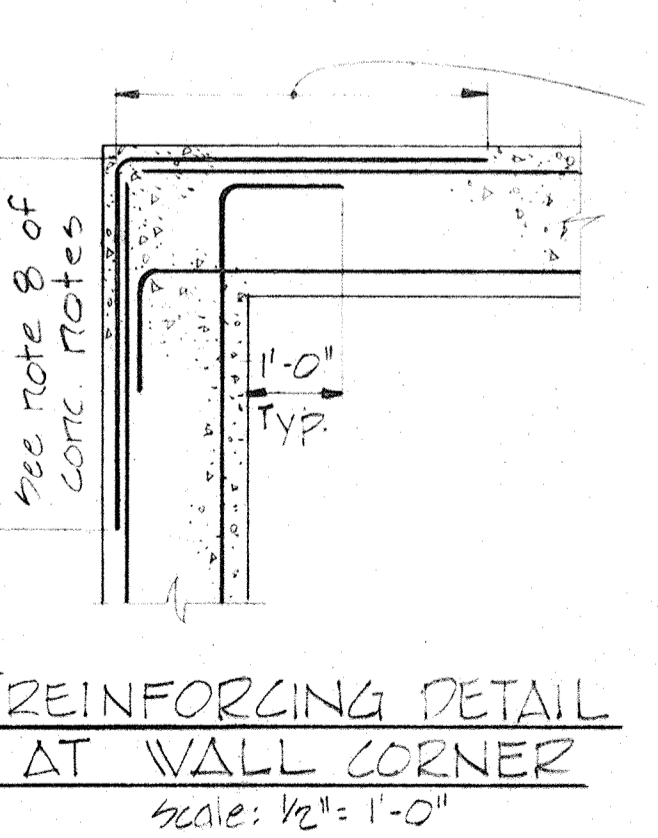
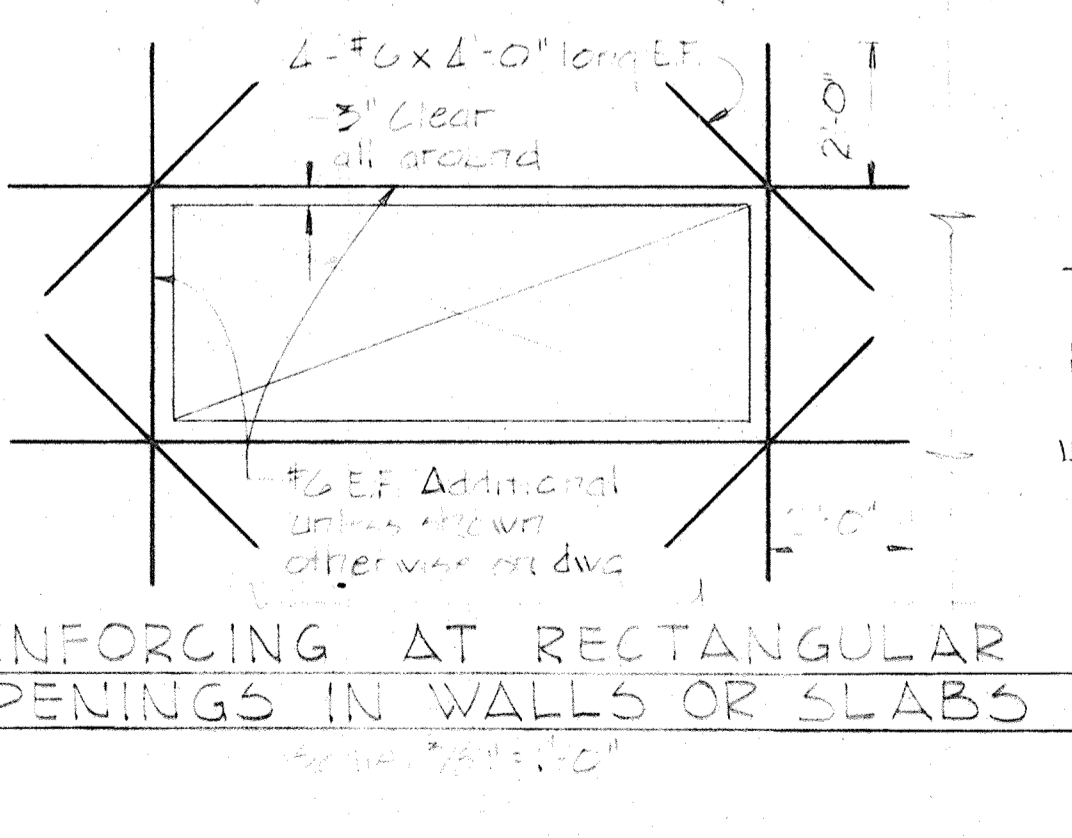
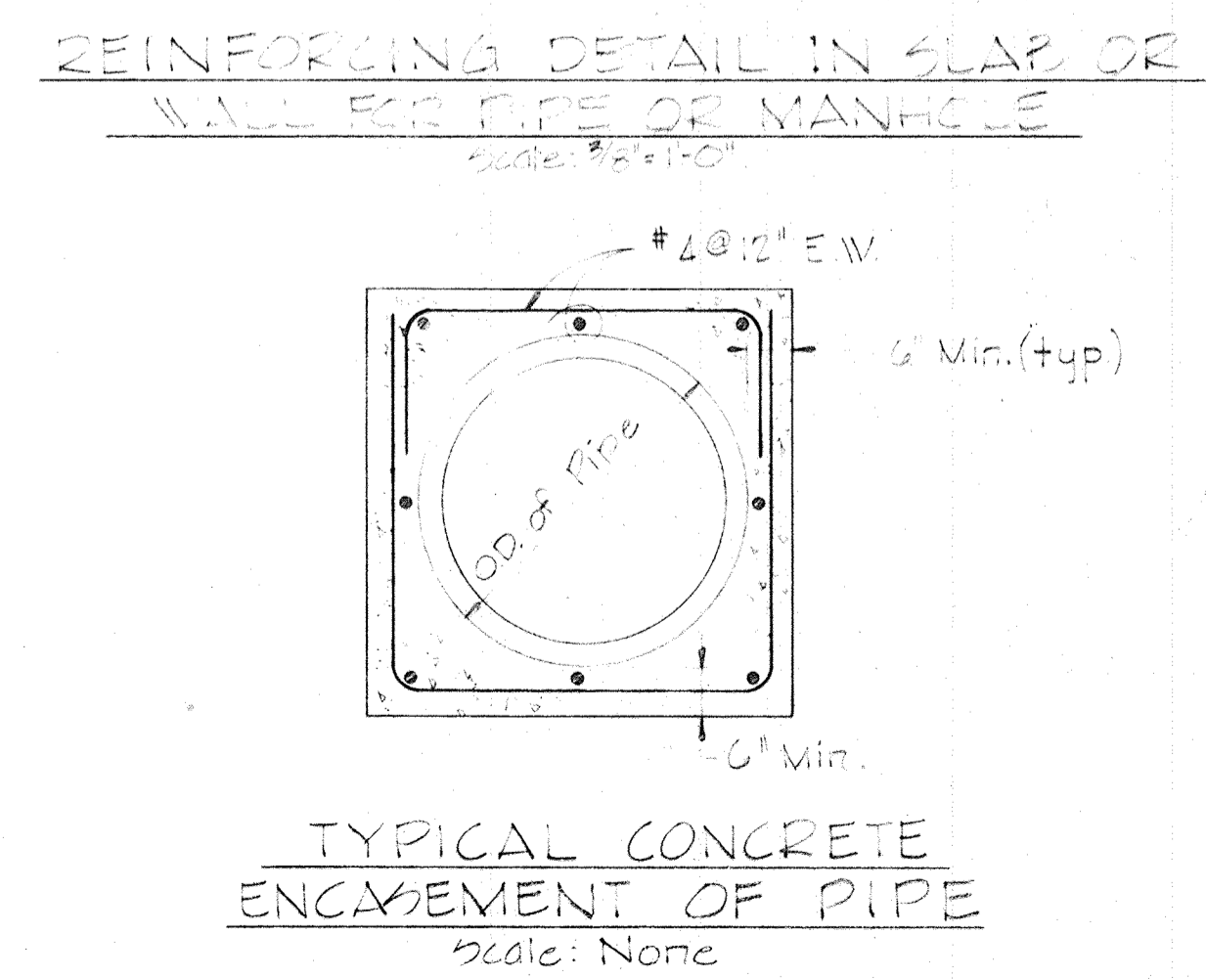
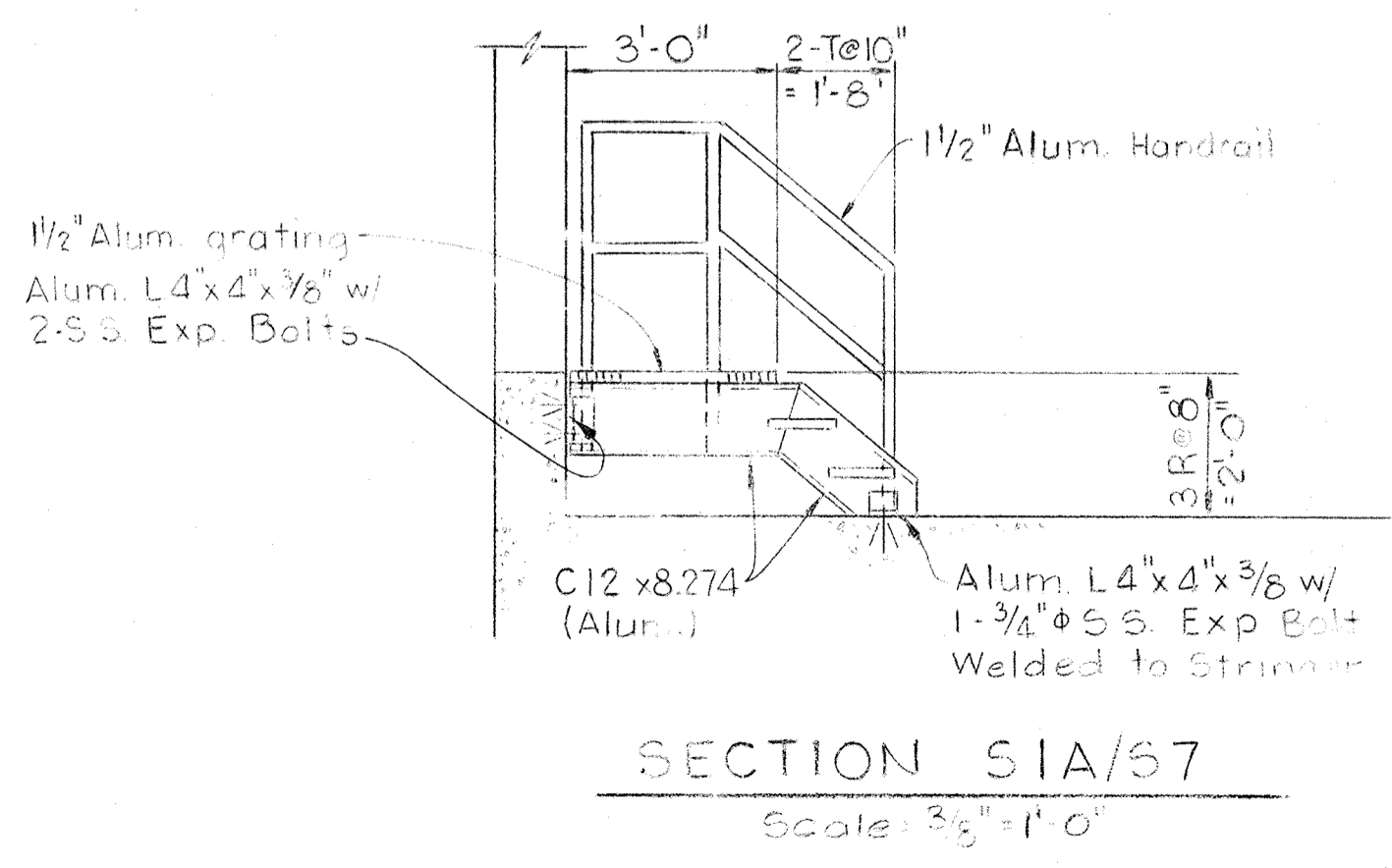
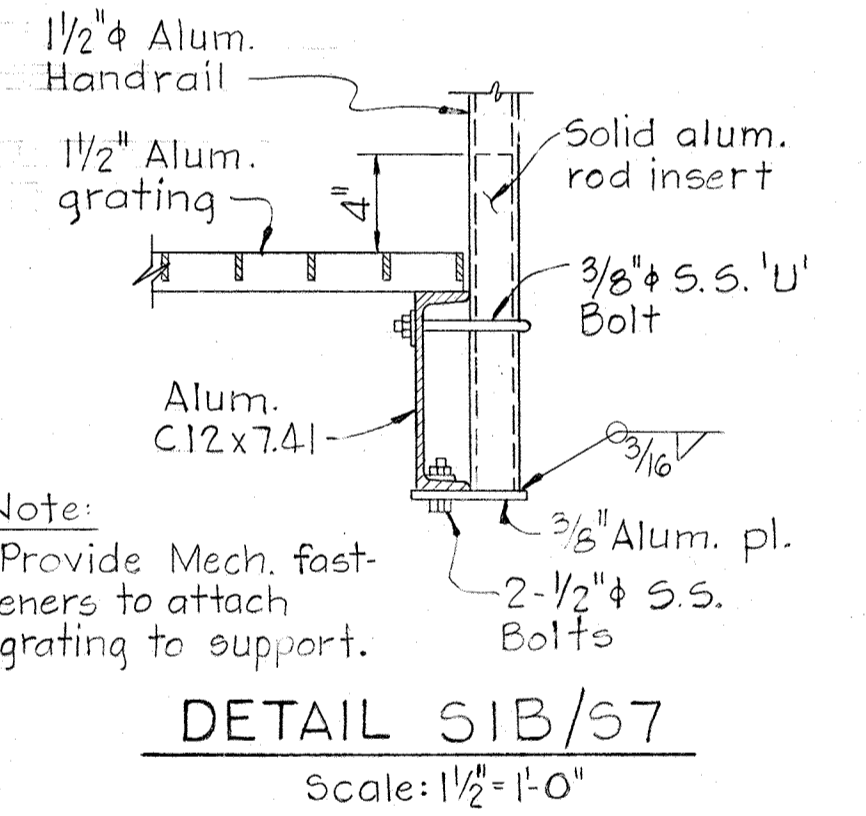
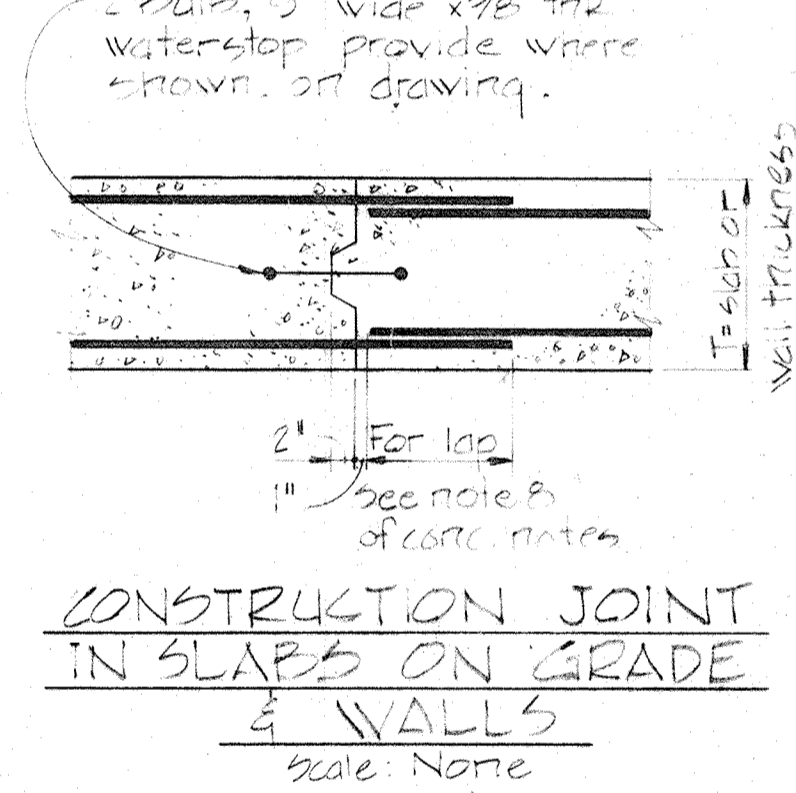
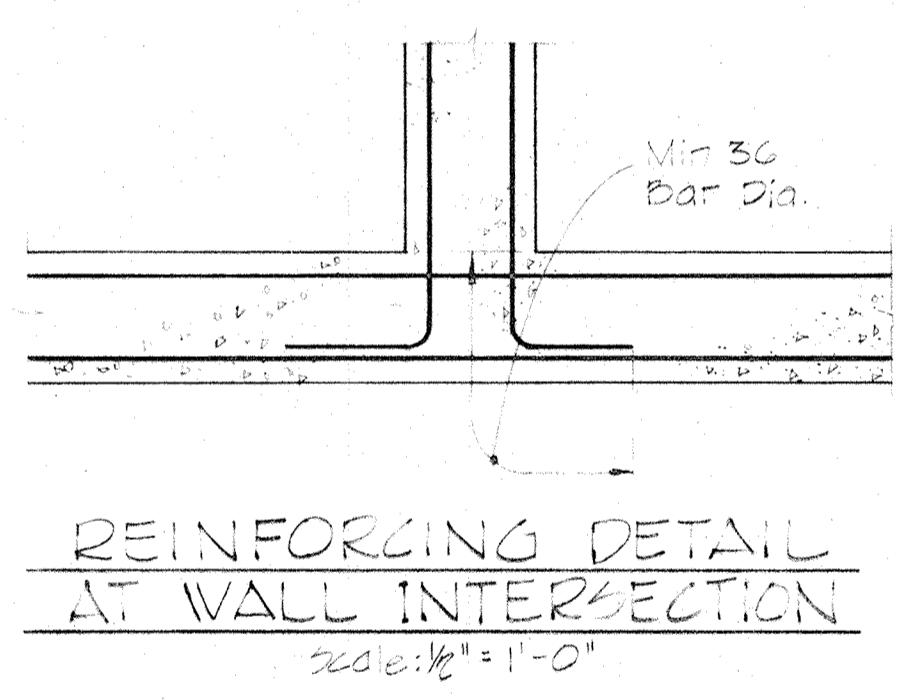
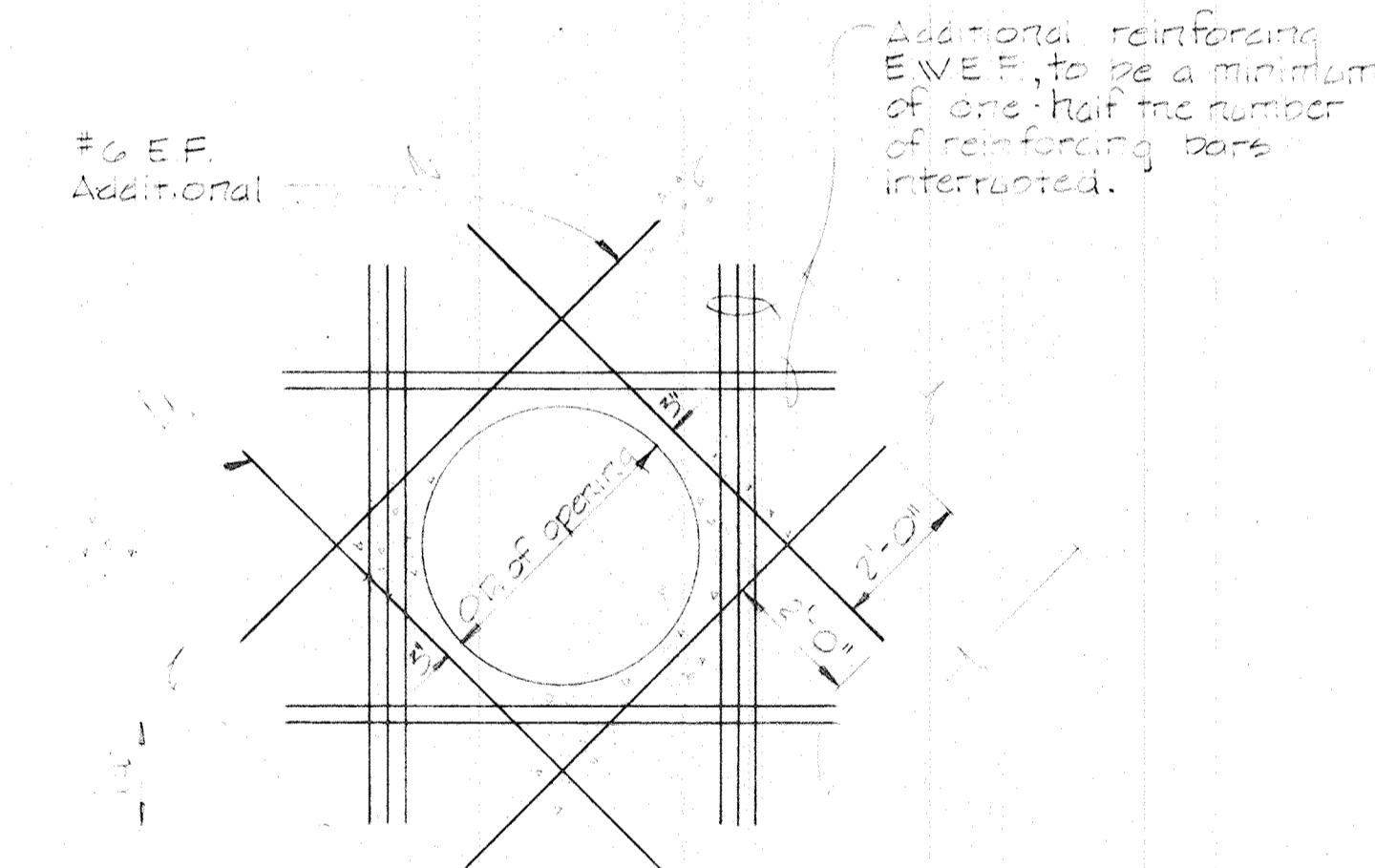
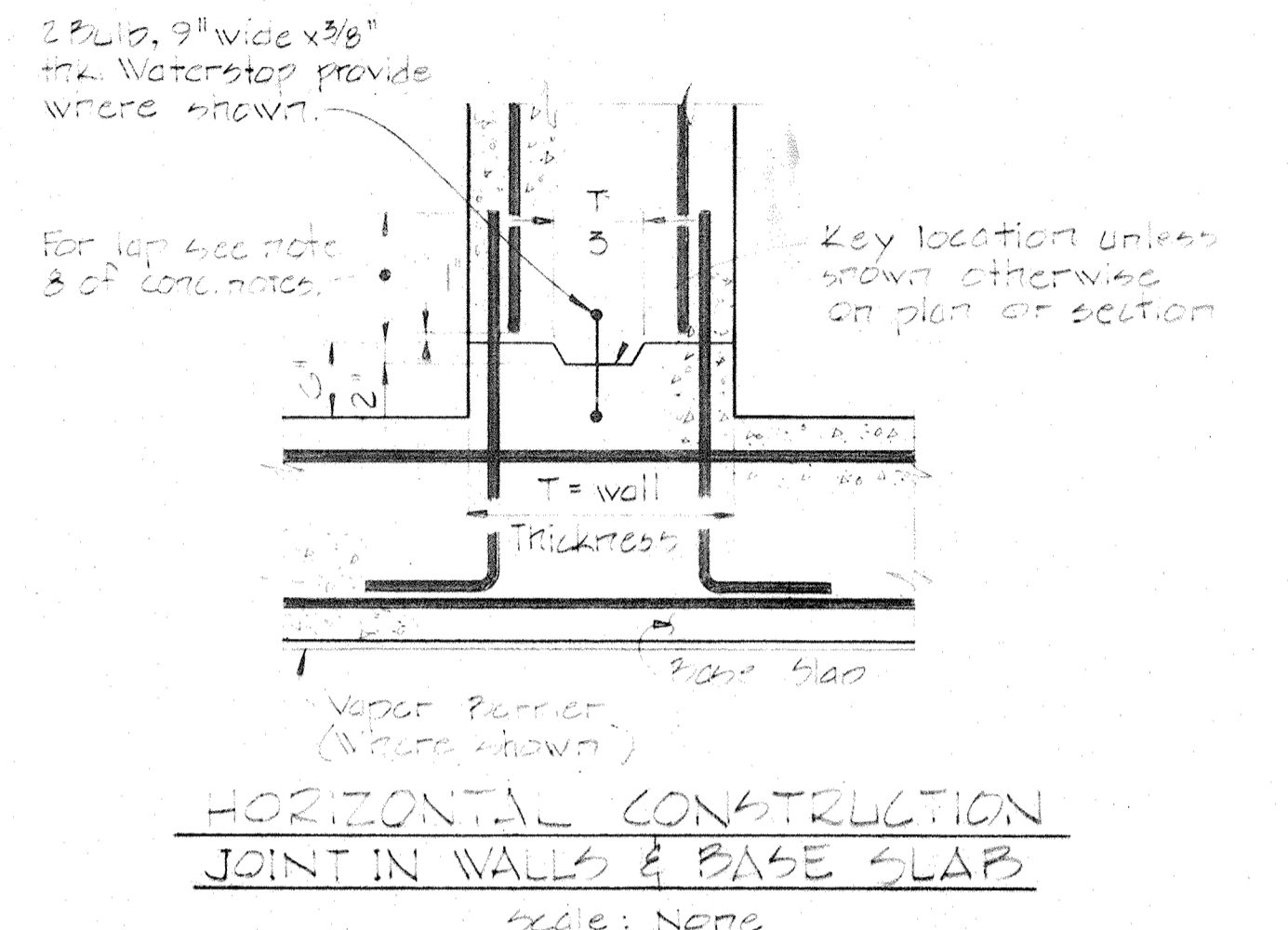
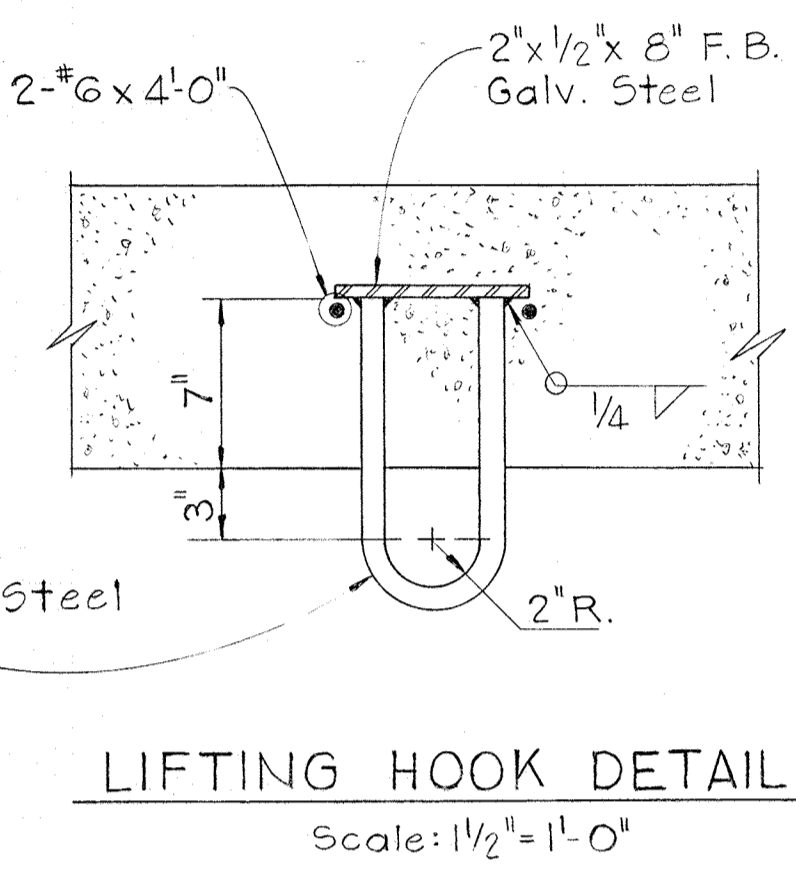
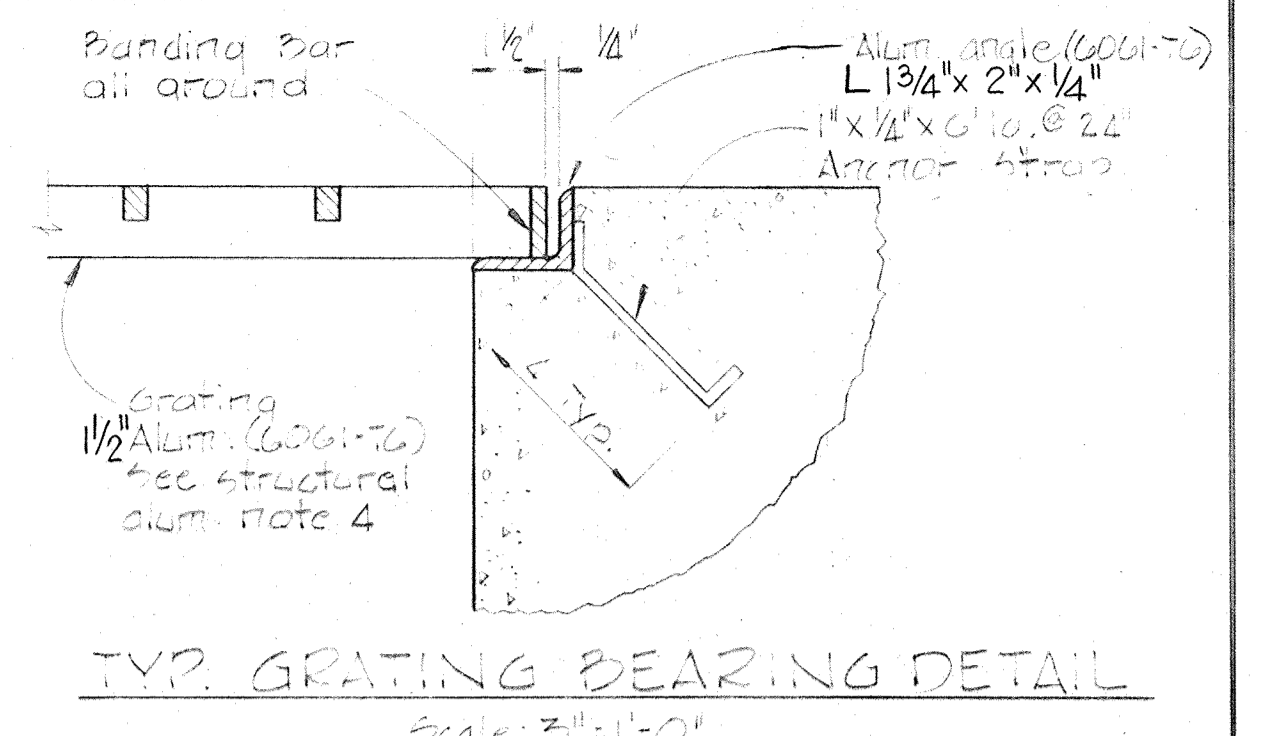
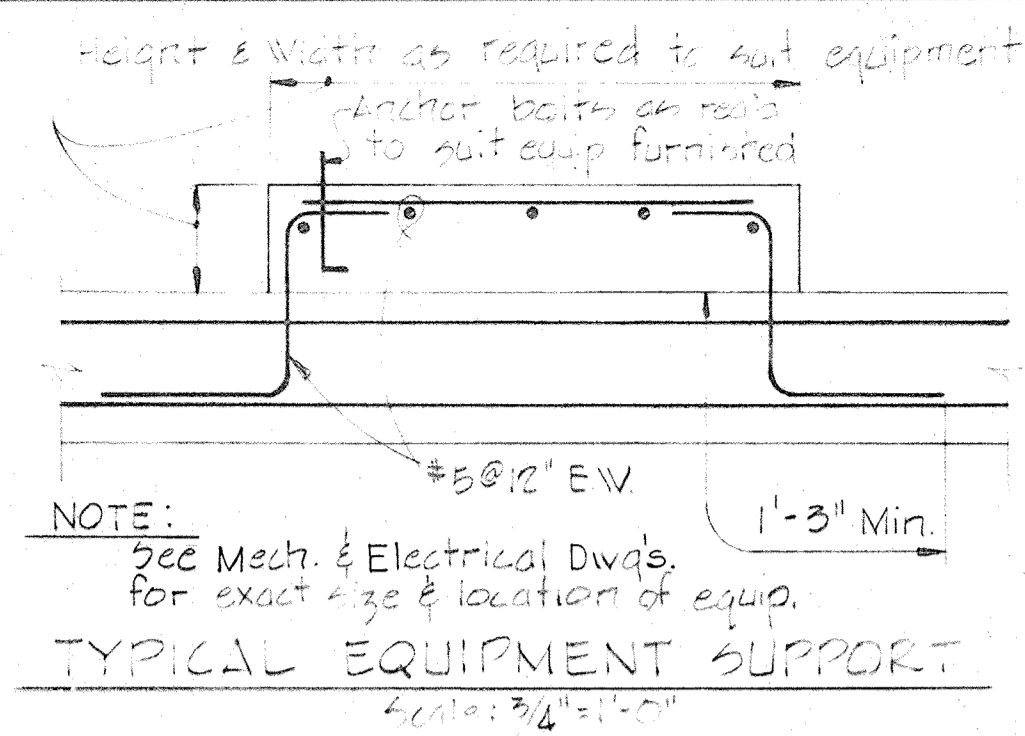
- All structural aluminum is designed and shall be fabricated in accordance with the current specification of the Aluminum Association.
- All structural aluminum shall be alloy 6061-T6.
- All aluminum in contact with concrete or a dissimilar metal shall, before erection, be heavily coated as specified.
- All aluminum grating shall be capable of supporting a live load of 150 p.s.f. with a maximum deflection of 1/4" at 100 p.s.f.

DESIGN LIVE LOADS

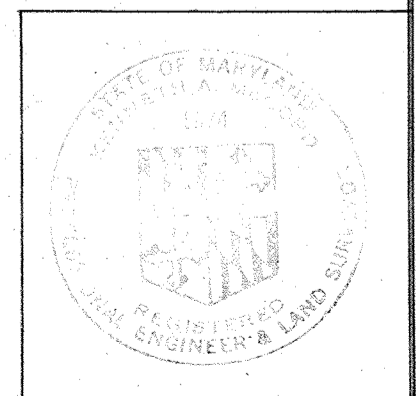
Roof	35 p.s.f.
Floors	150 p.s.f.
Platforms	150 p.s.f.

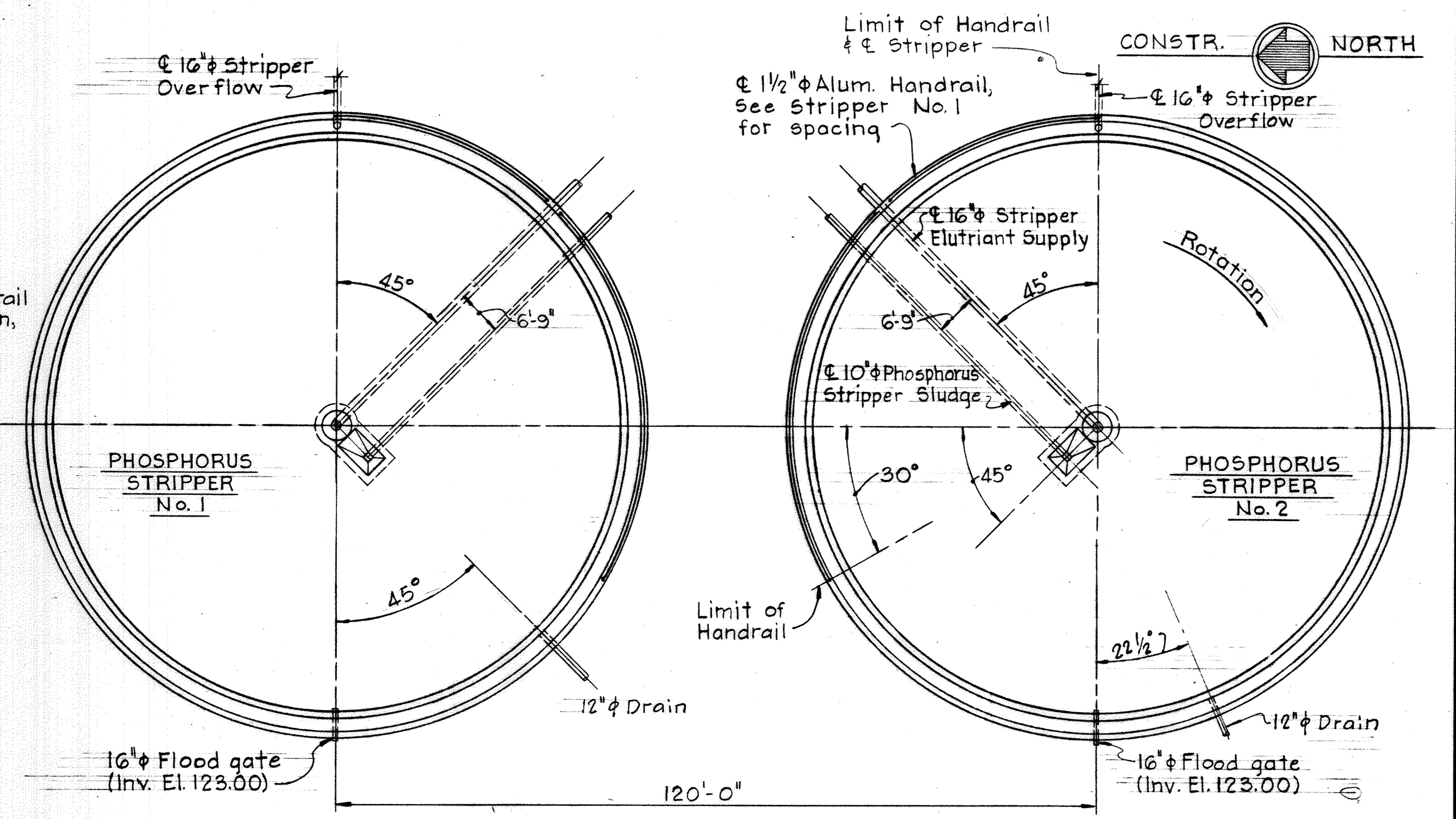
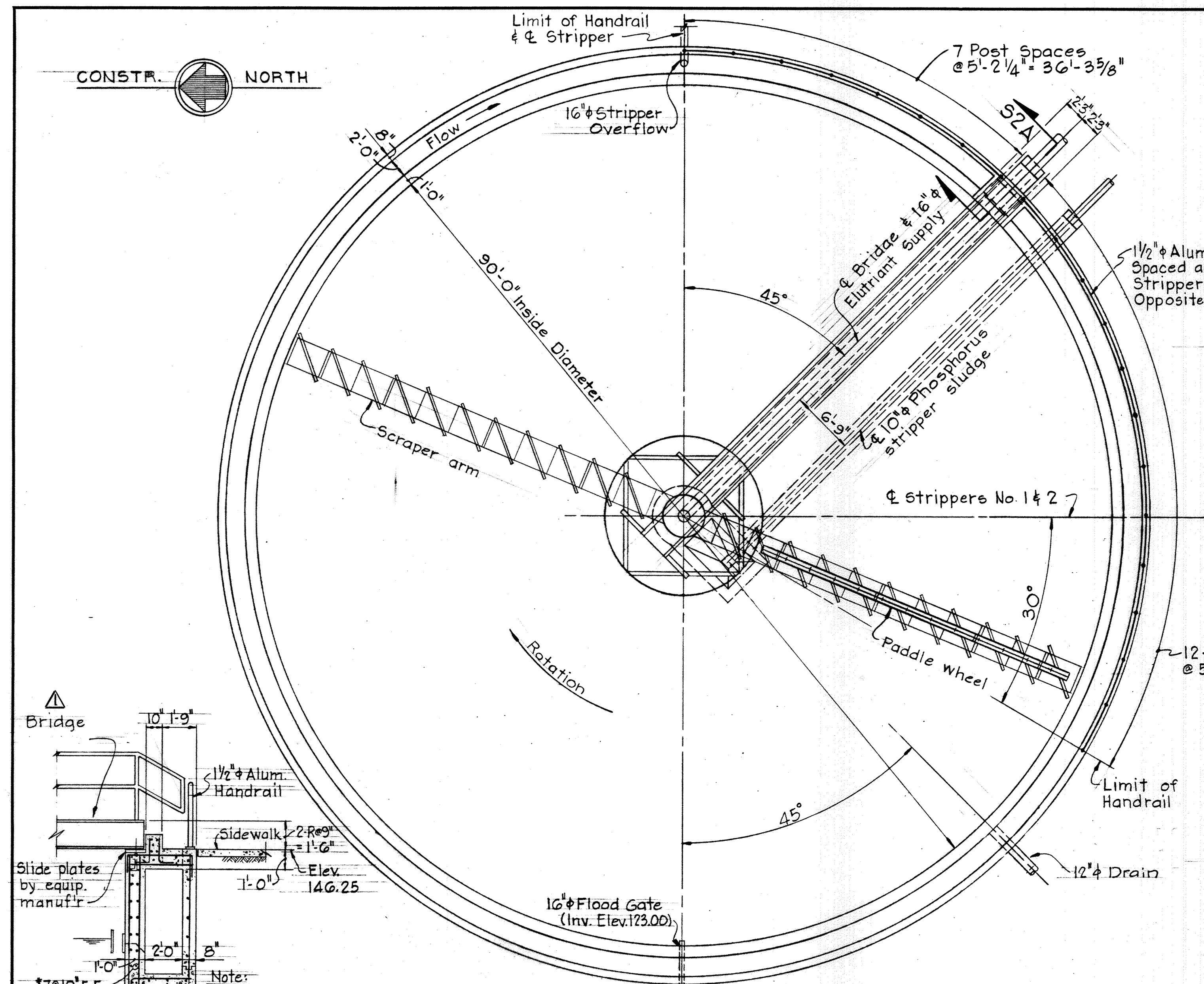


NOTES:
 1. Where invert of pipe is 2'-0" or less above footing, omit haunch and pipe cradle on extension of footing.

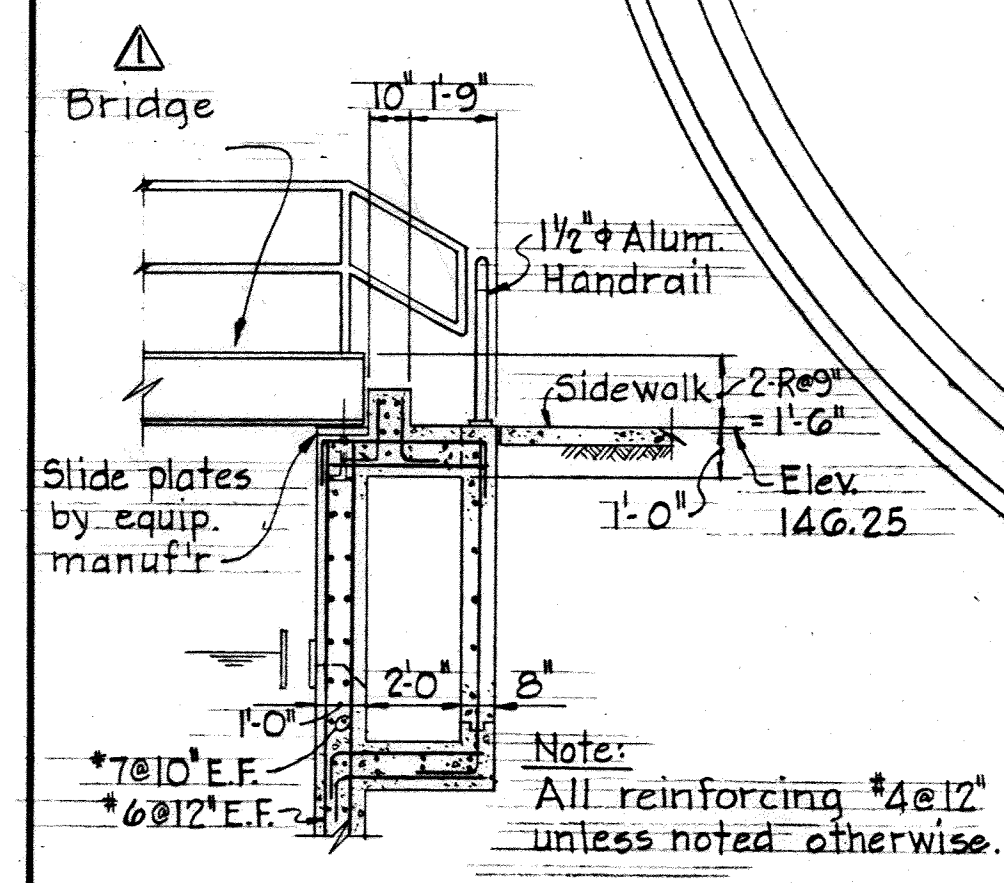


3/8" x 1'-0"	12" 0" 1' 2' 3' 4' 5' 6' 7'
3/4" x 1'-0"	12" 6" 0" 1' 2' 3'
1/2" x 1'-0"	12" 0" 1' 2' 3' 4' 5'
3" x 1'-0"	0" 3" 6" 9" 12"



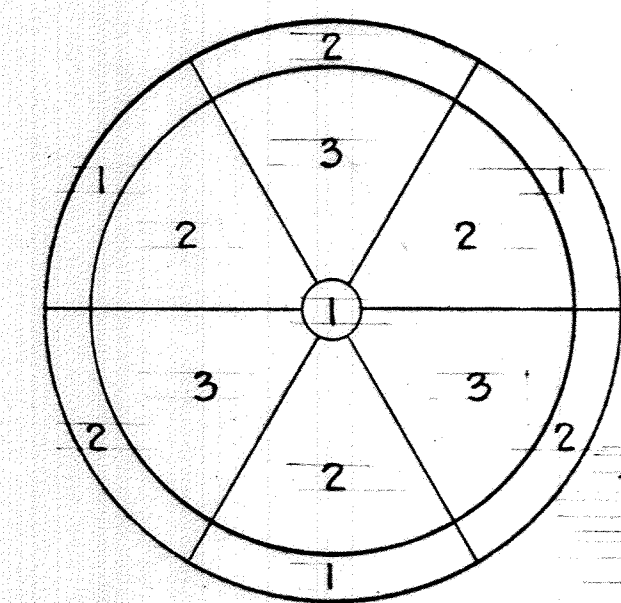


GENERAL ARRANGEMENT PLAN
Scale: 1/16" = 1'-0"



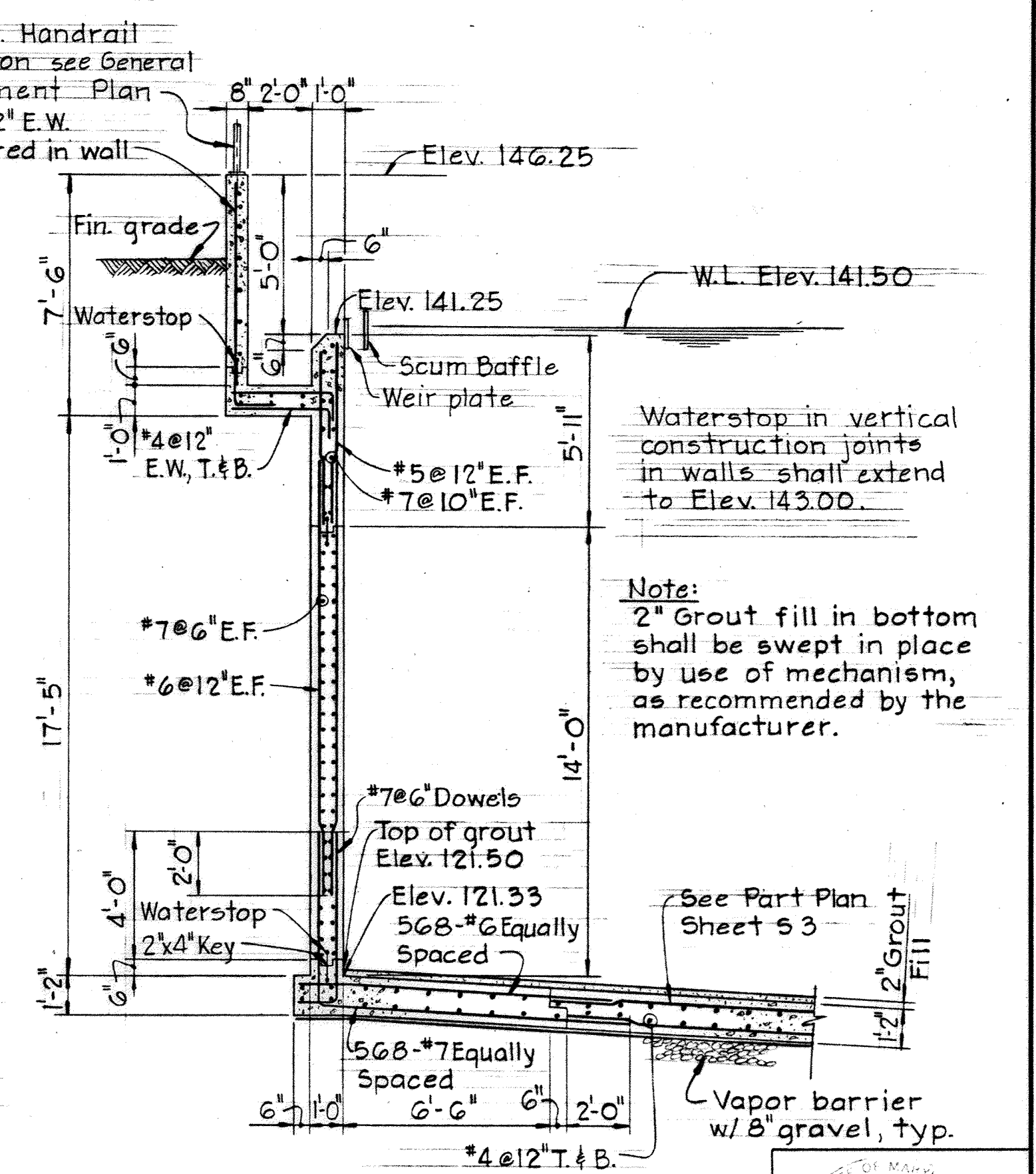
SECTION S2A/52
Scale: 1/4" = 1'-0"

(PHOSPHORUS STRIPPER No. 2 SIMILAR)
PLAN OF PHOSPHORUS STRIPPER No. 1
Scale: 1/8" = 1'-0"

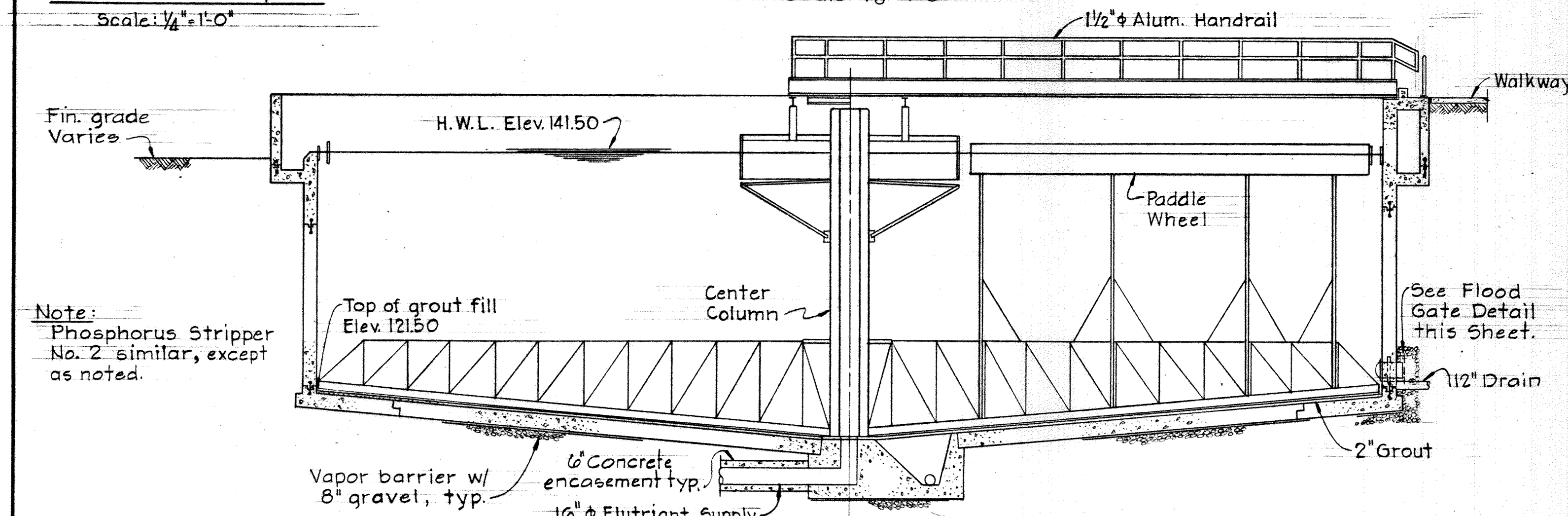


POURING SEQUENCE PLAN
No Scale

Note:
Wall construction joints shall correspond to slab construction joints.

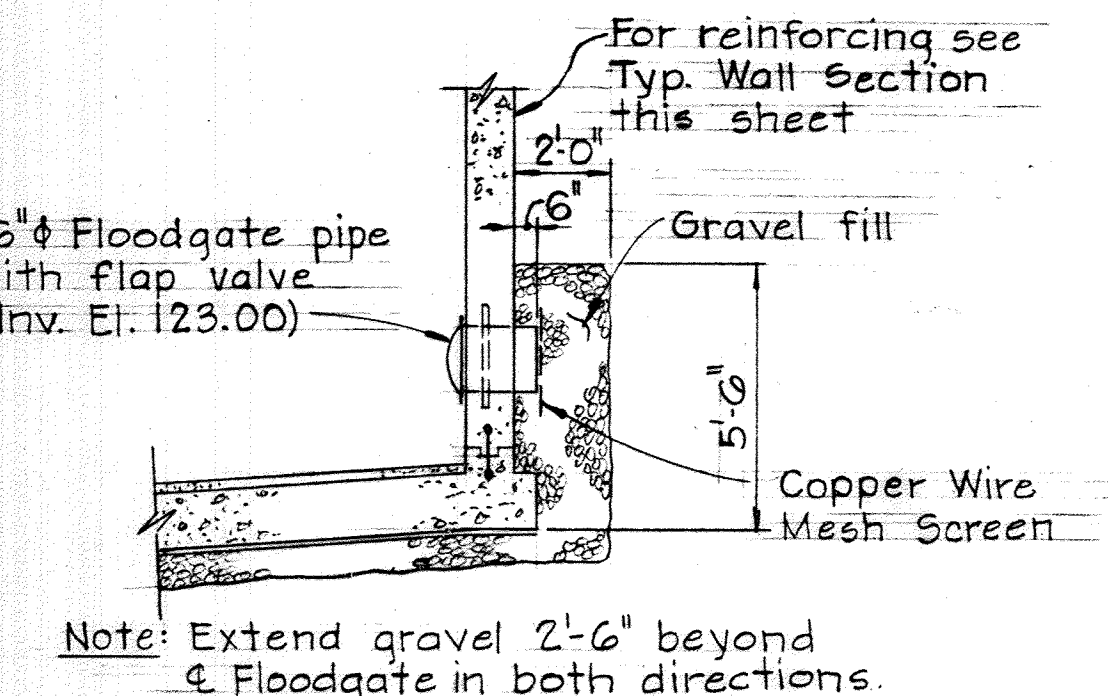


TYP. WALL SECTION
Scale: 1/4" = 1'-0"



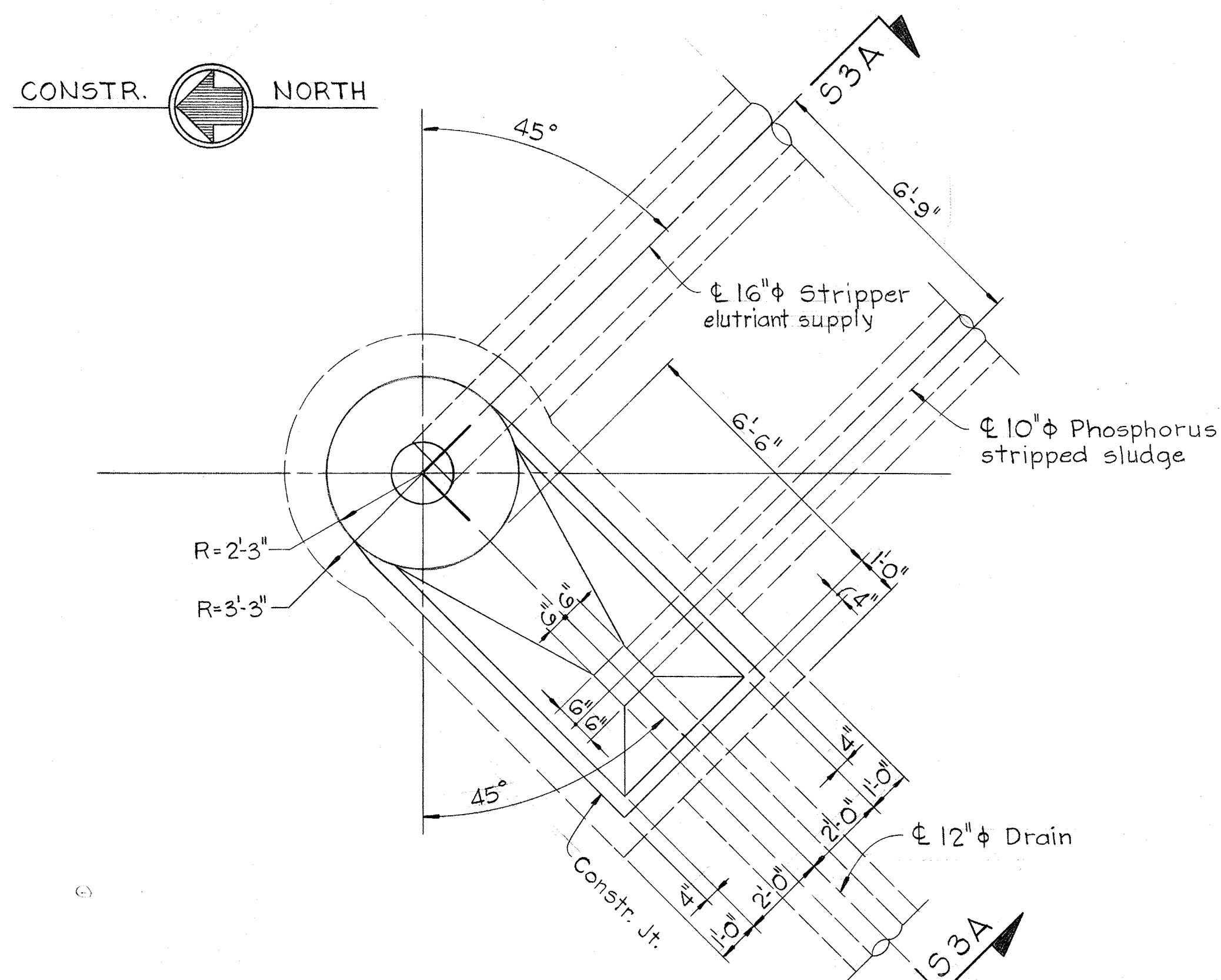
TYP. SECTION OF PHOSPHORUS STRIPPER No. 1
Scale: 1/8" = 1'-0"

Note:
Phosphorus Stripper No. 2 similar, except as noted.



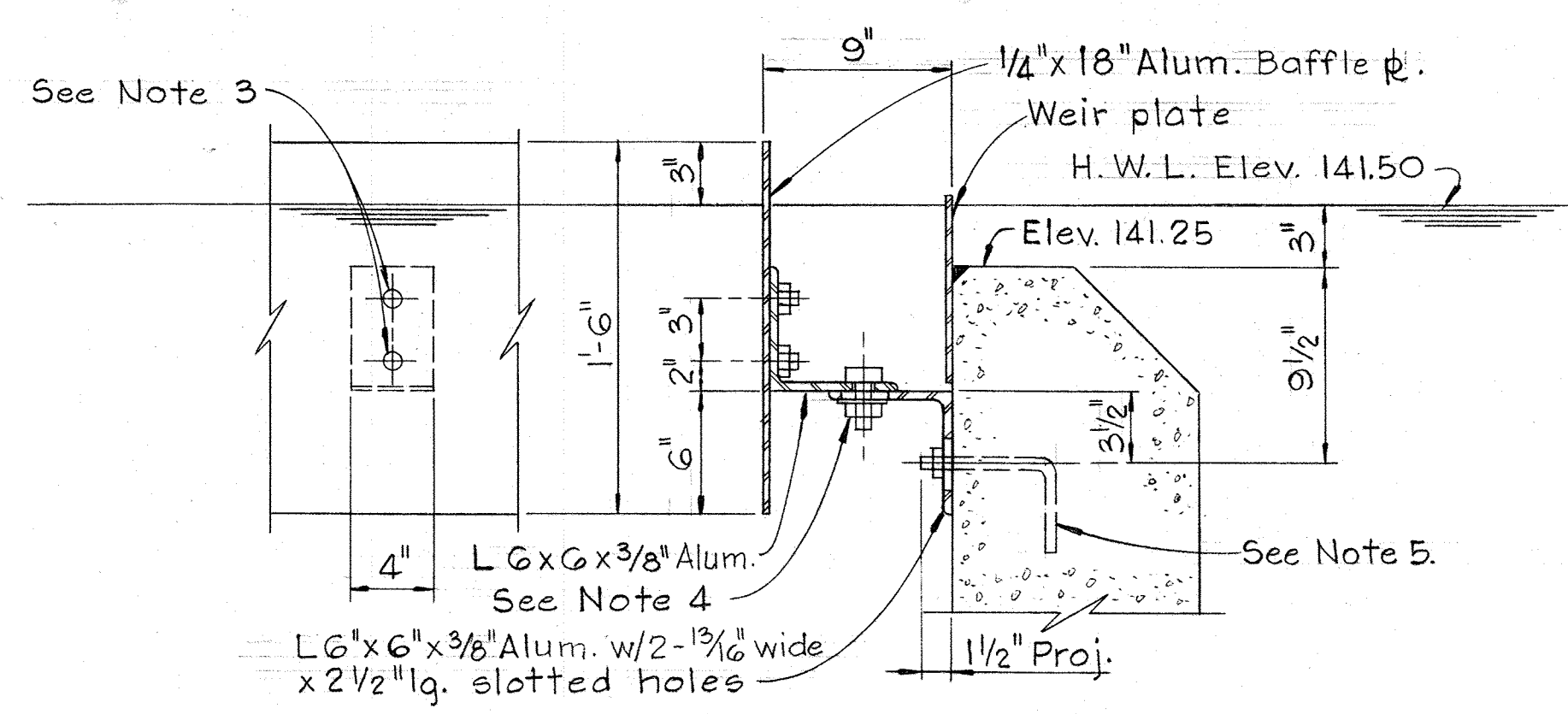
FLOOD GATE DETAIL
Scale: 1/4" = 1'-0"

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 <i>Richard S. Freedman</i> CHIEF - BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS STRIPPERS PLANS & SECTIONS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 19 OF 50 SCALE AS NOTED
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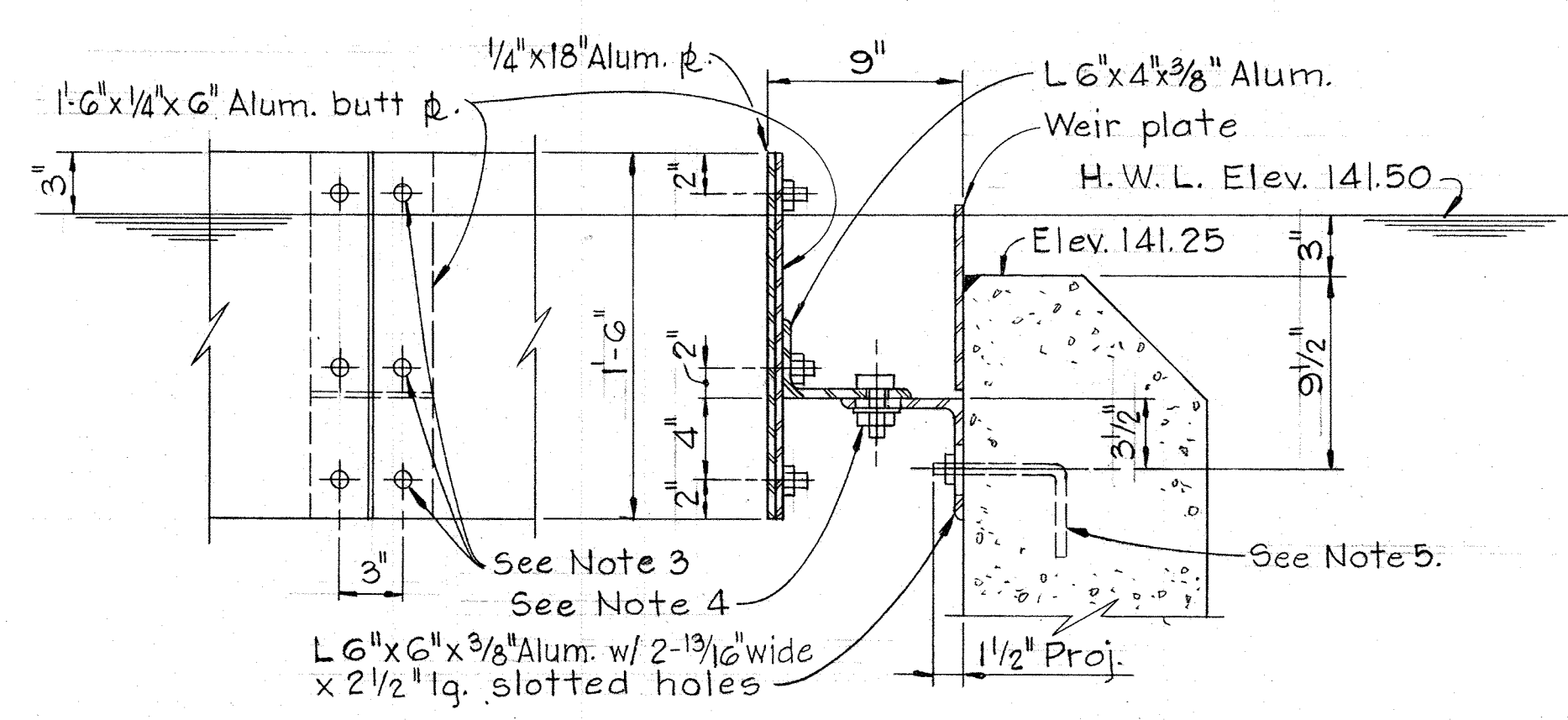


Note:
See General Arrangement Plan for pipe locations of Phosphorus Stripper No. 2.

**PART PLAN - CENTER PIER
PHOSPHORUS STRIPPER No. 1**
Scale: 3/8" = 1'-0"

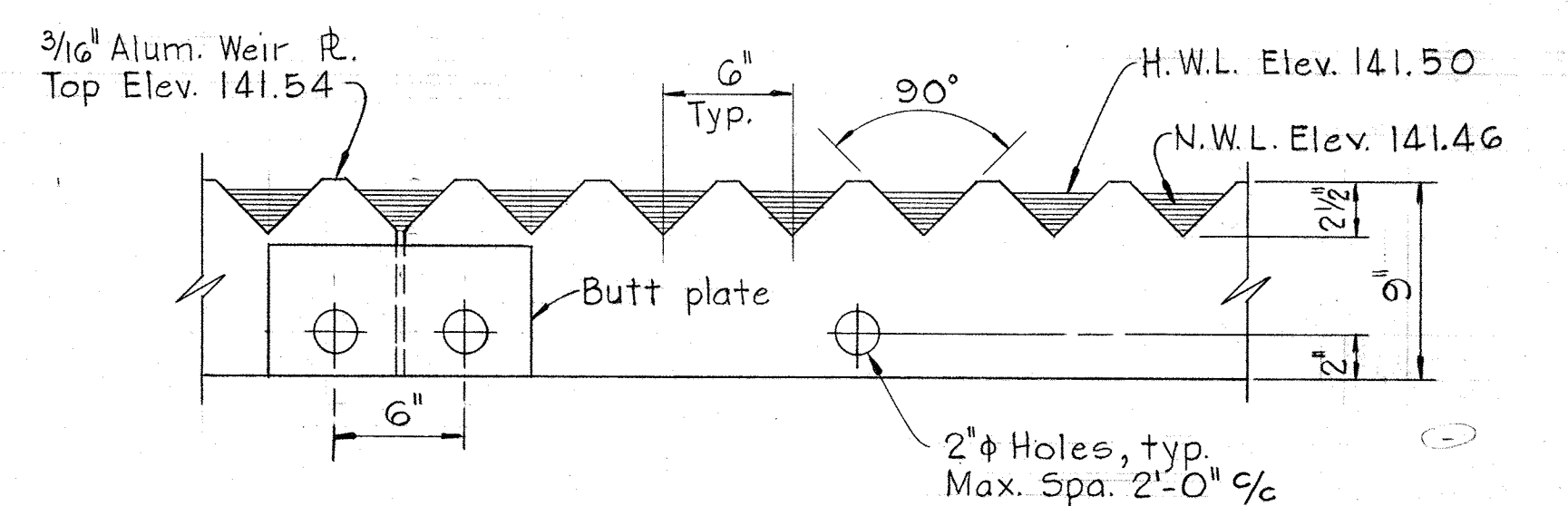


SCUM BAFFLE DETAILS
Scale: 1 1/2" = 1'-0"

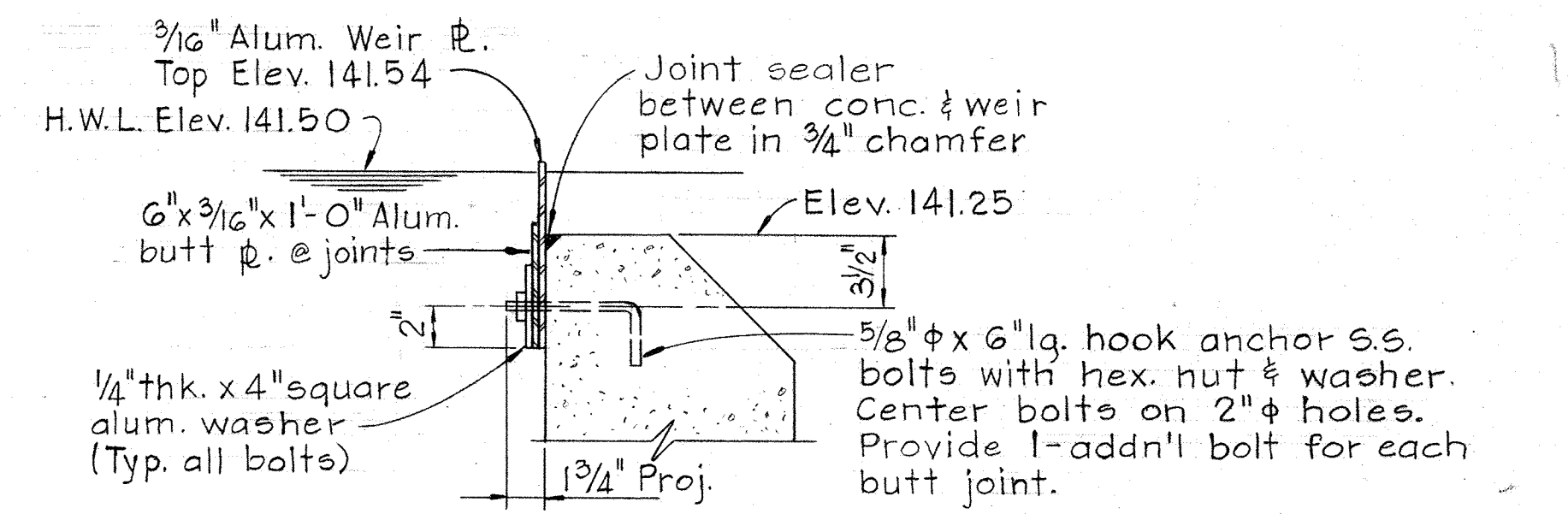


BAFFLE JOINT DETAILS
Scale: 1 1/2" = 1'-0"

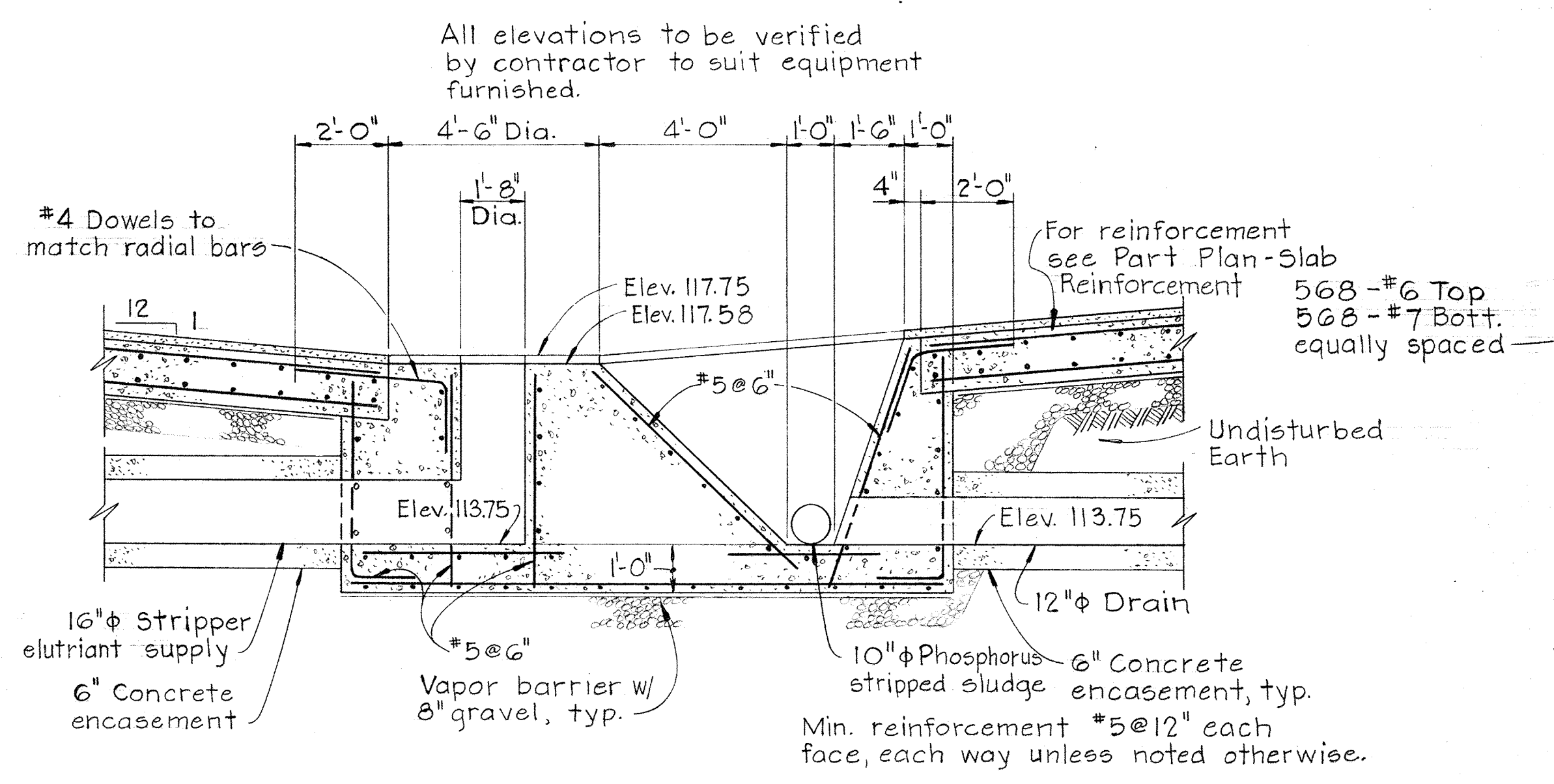
- NOTES FOR BAFFLE & WEIR**
- Scum baffle angles, plates and weir plates shall be aluminum alloy 6061-T6.
 - Setting of anchor bolts to be exact with bolts fixed firmly in place to eliminate movement during concrete pour. All anchor bolts shall be stainless steel.
 - 1/2" φ x 1 3/4" lg. cts'k flathead stainless steel bolts with hex. nut and round flat washer.
 - 3/4" φ x 2 1/2" lg. stainless steel machine bolts with hex. nut and washer for 1 3/16" wide x 2 1/2" lg. slot.
 - 5/8" φ x 6" lg. hook anchor bolts S.S. with hex. nut and square flat washer @ 4'-0" max. Provide 1 additional bolt for each butt joint.
 - Max. length of weir & baffle plate sections shall be 20'-0".



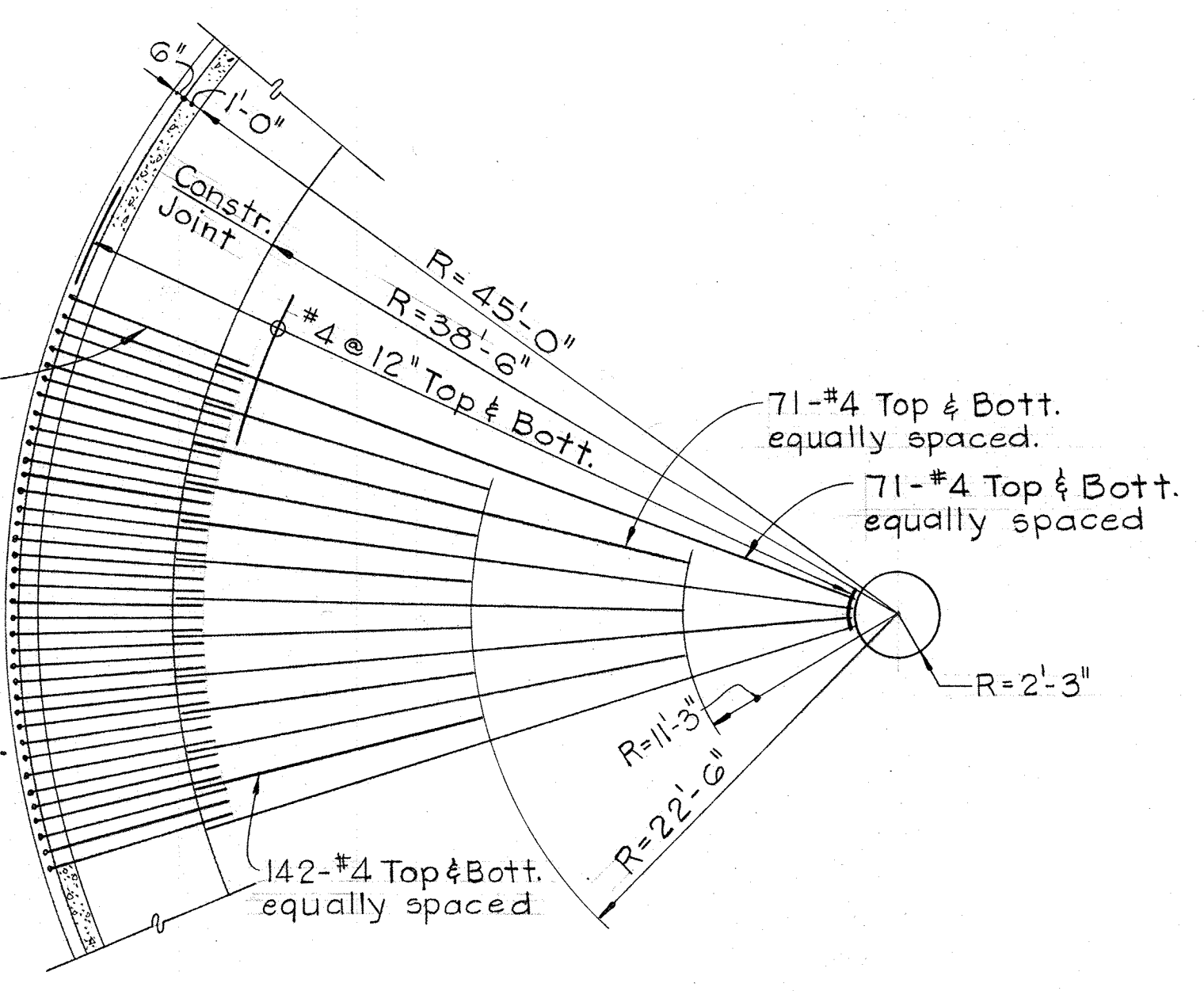
WEIR PLATE ELEVATION



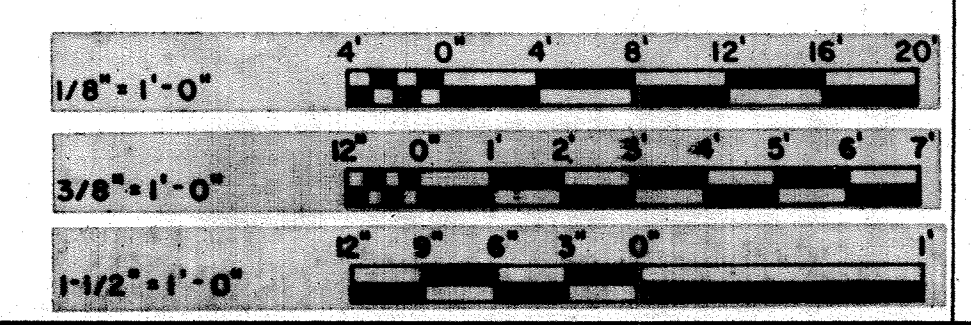
SECTION
DETAILS FOR EFFLUENT WEIR
Scale: 1 1/2" = 1'-0"



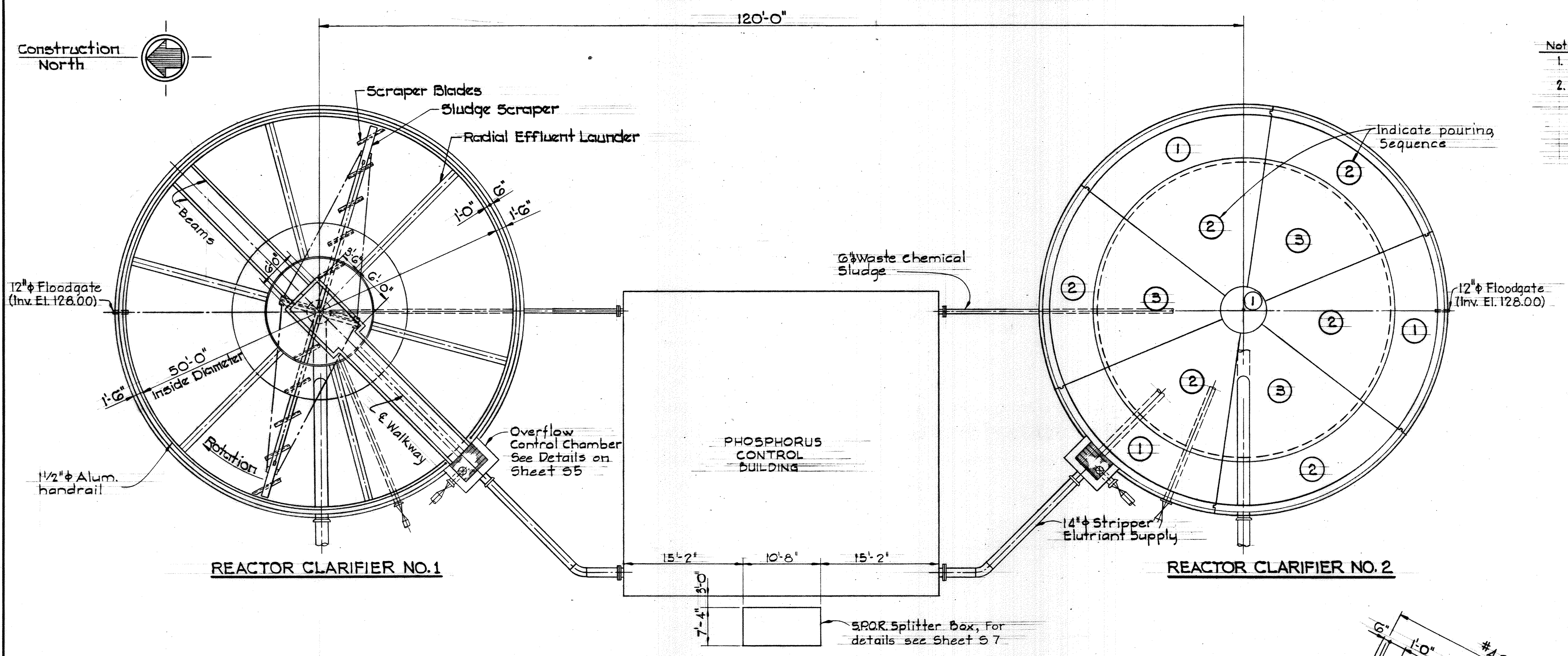
SECTION S3A/S3
Scale: 3/8" = 1'-0"



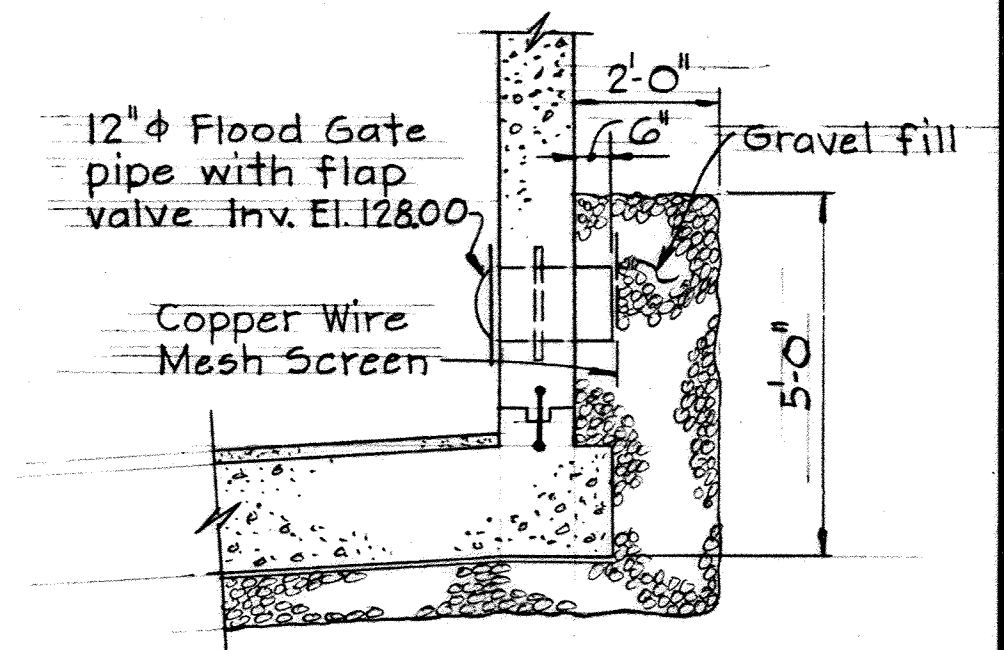
**PART PLAN
SLAB REINFORCEMENT**
Scale: 1/8" = 1'-0"



WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Richard E. Breidenberger</i> CHIEF-BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS STRIPPERS SECTIONS & DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 20 OF 50	SCALE AS NOTED
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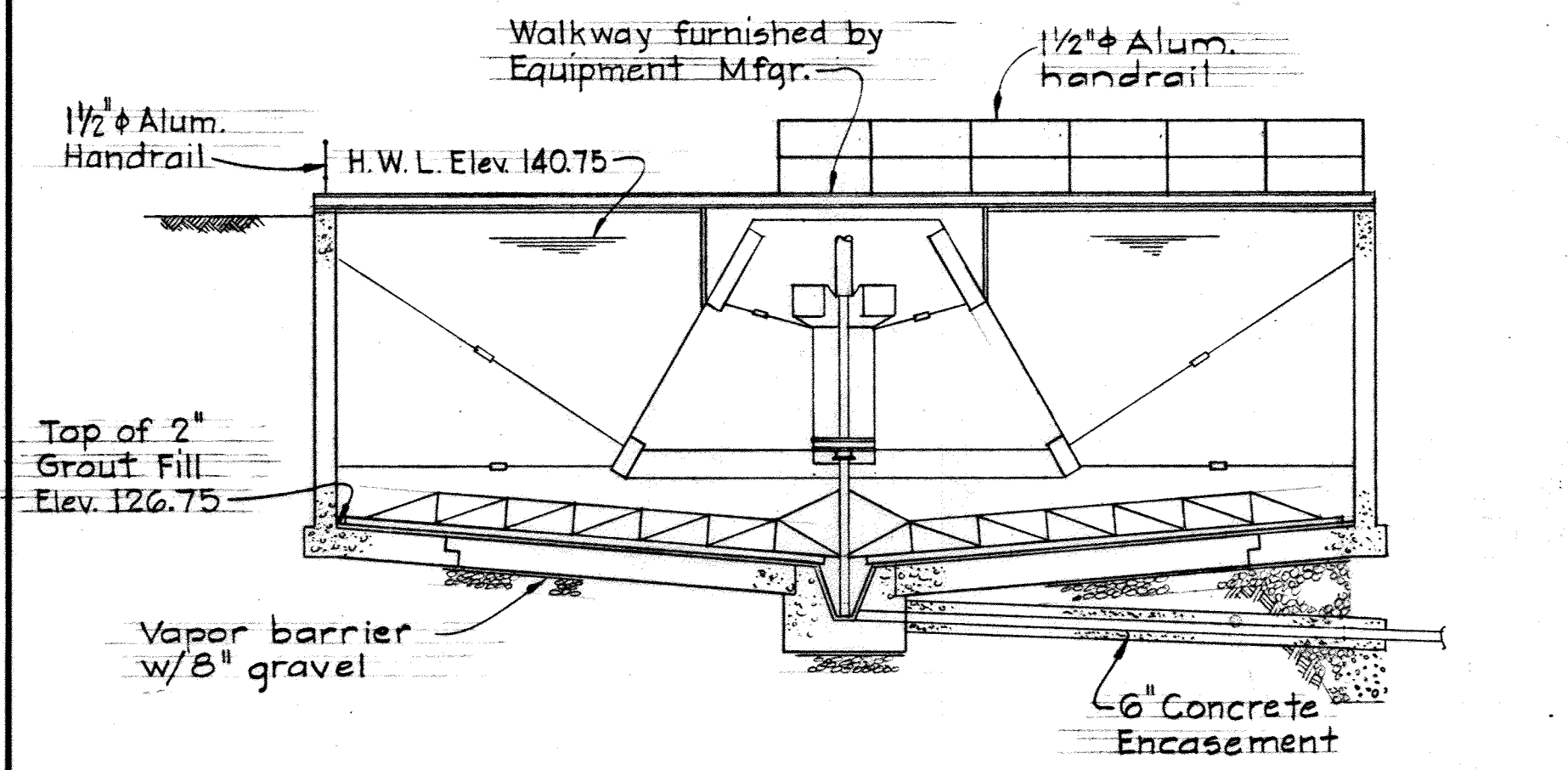


Notes:
 1. Pouring sequence to be as shown on General Arrangement Plan of Reactor Clarifier No. 2.
 2. Wall construction joints shall correspond to slab construction joints.

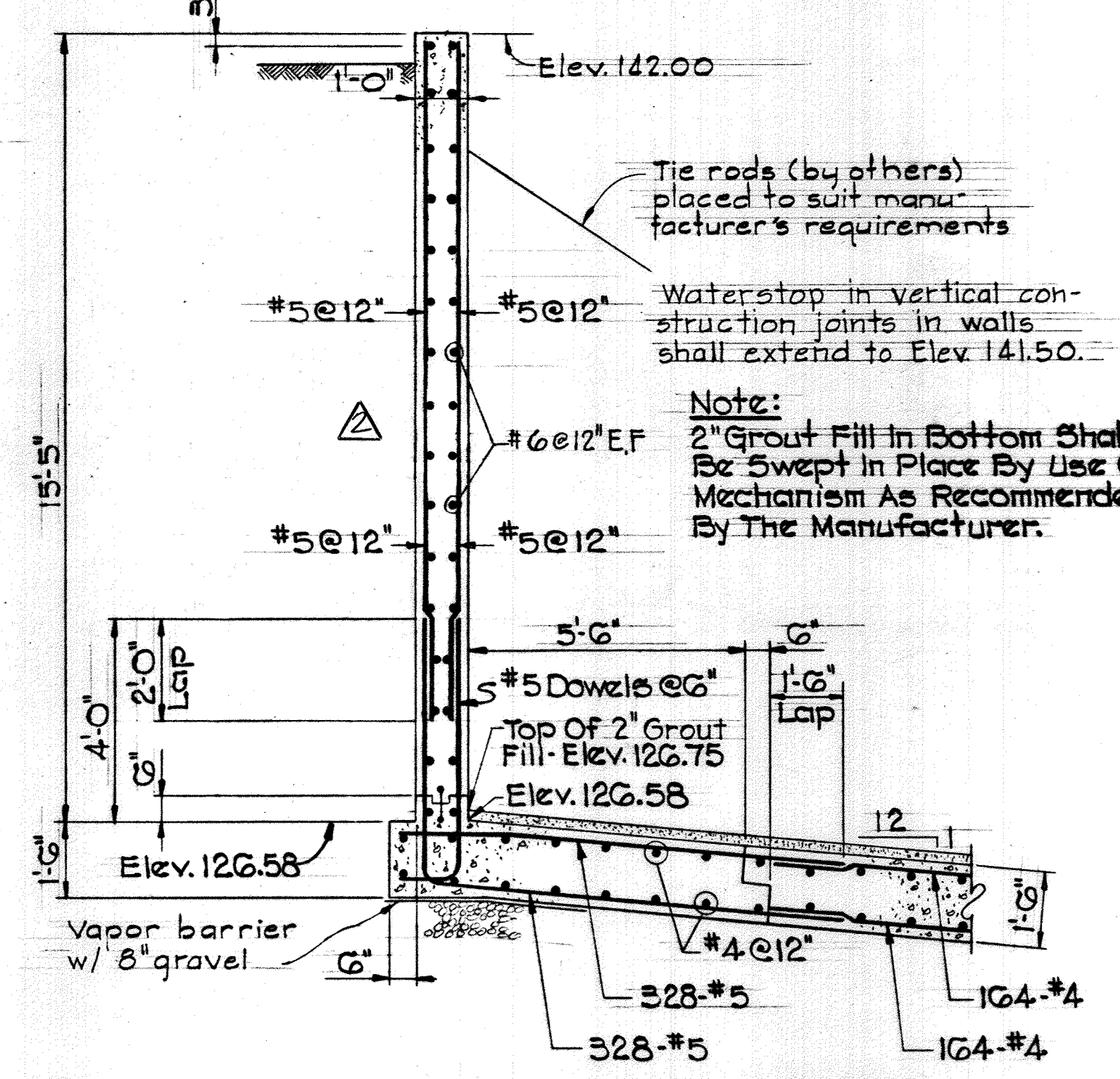


Note:
 Extend gravel 2'-6" beyond & Flood Gate in both directions.

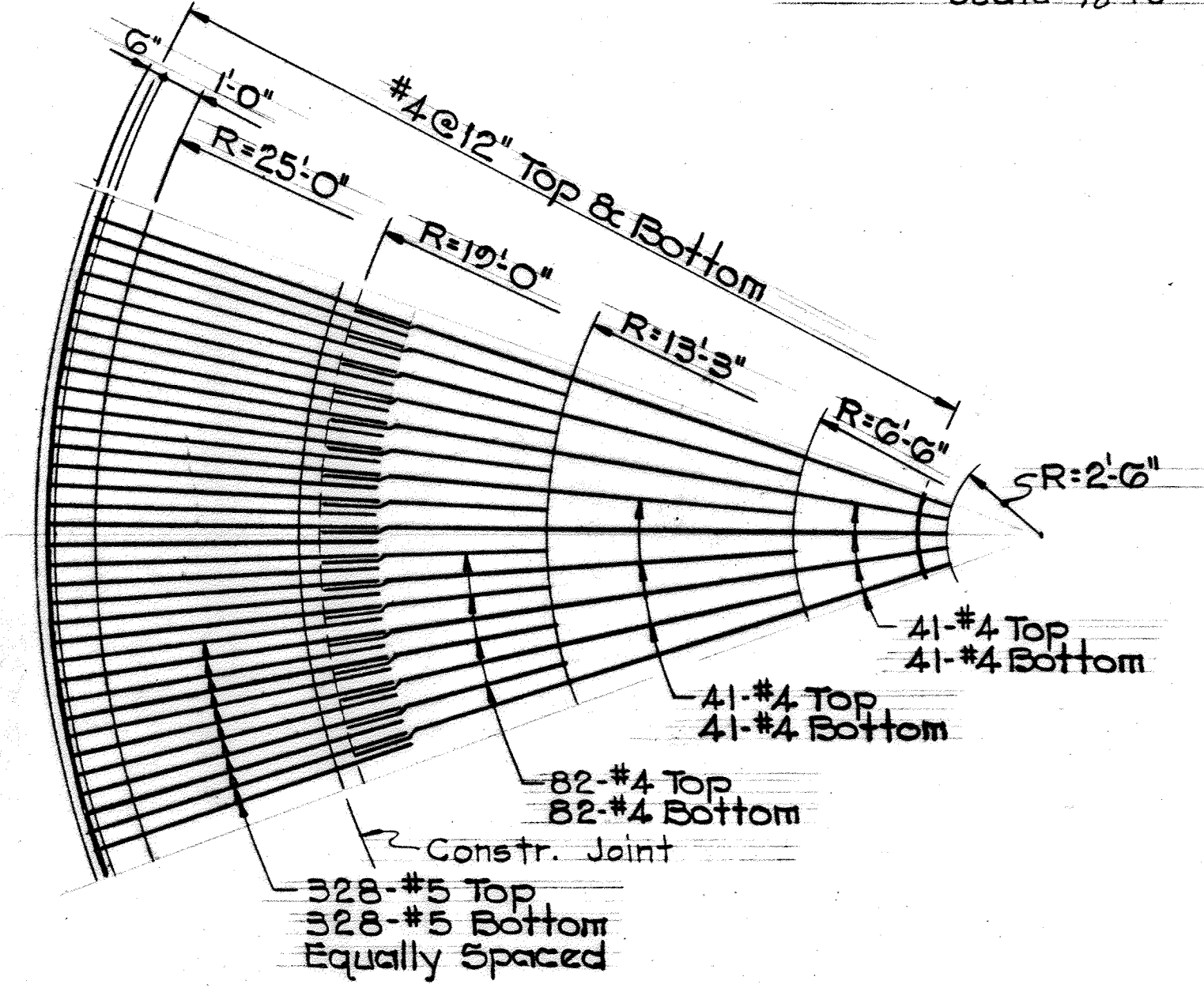
FLOOD GATE DETAIL
 Scale: 3/8"=1'-0"



TYP. SECTION OF REACTOR CLARIFIERS
 Scale: 1/8"=1'-0"



TYPICAL WALL SECTION
 Scale: 3/8"=1'-0"



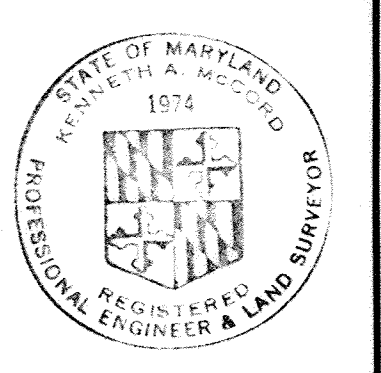
PART PLAN OF SLAB REINFORCEMENT
 Scale: 1/4"=1'-0"

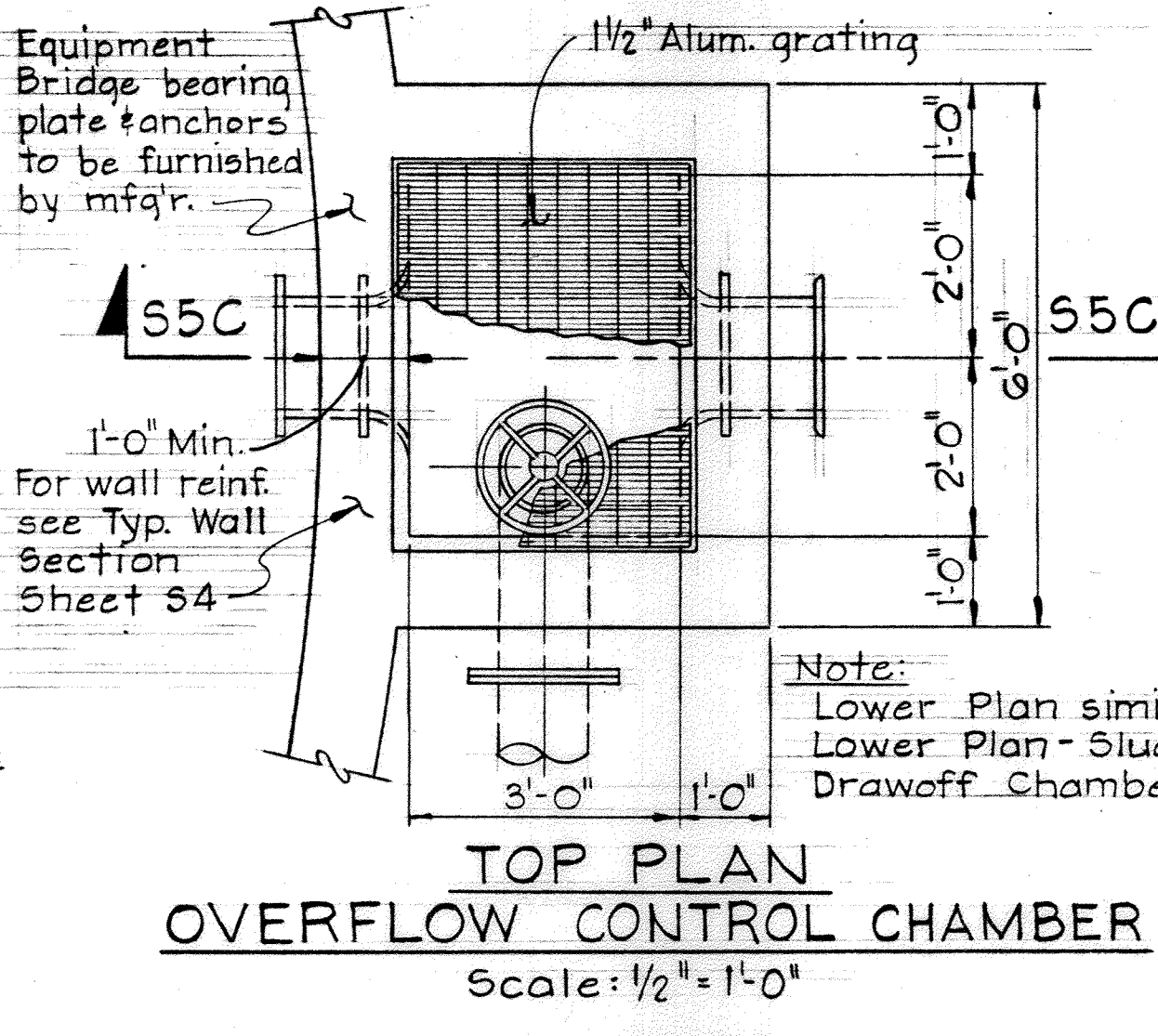
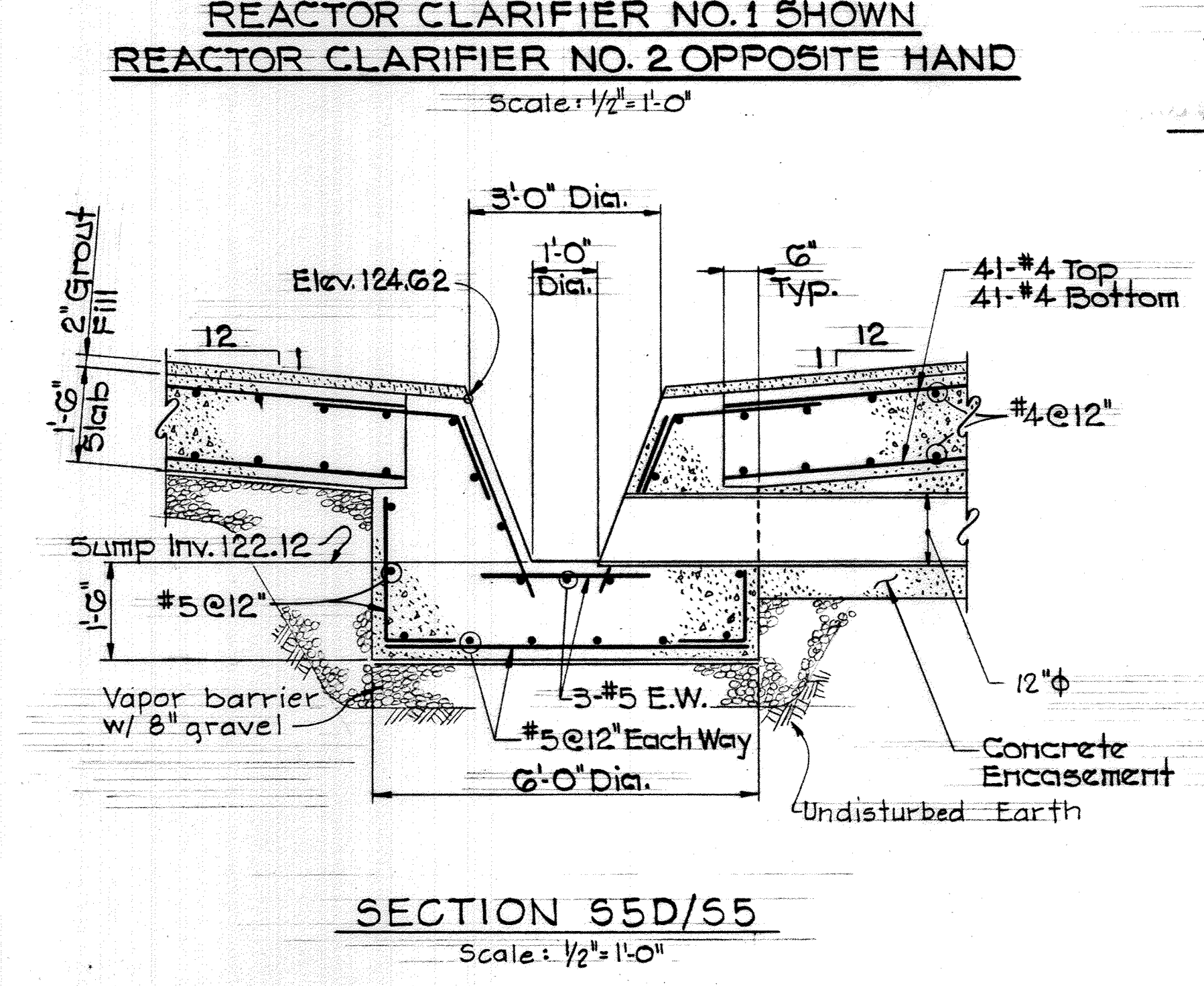
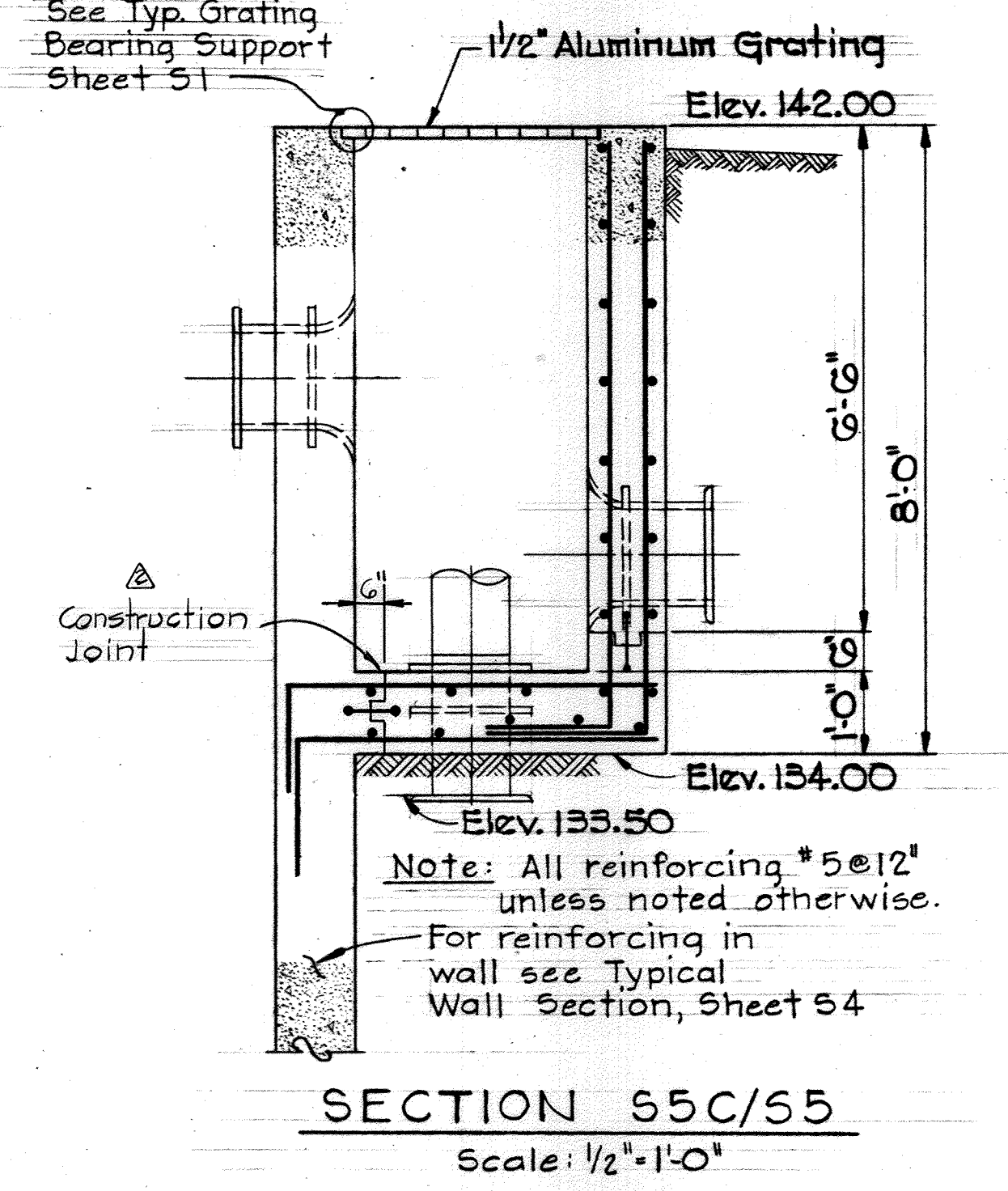
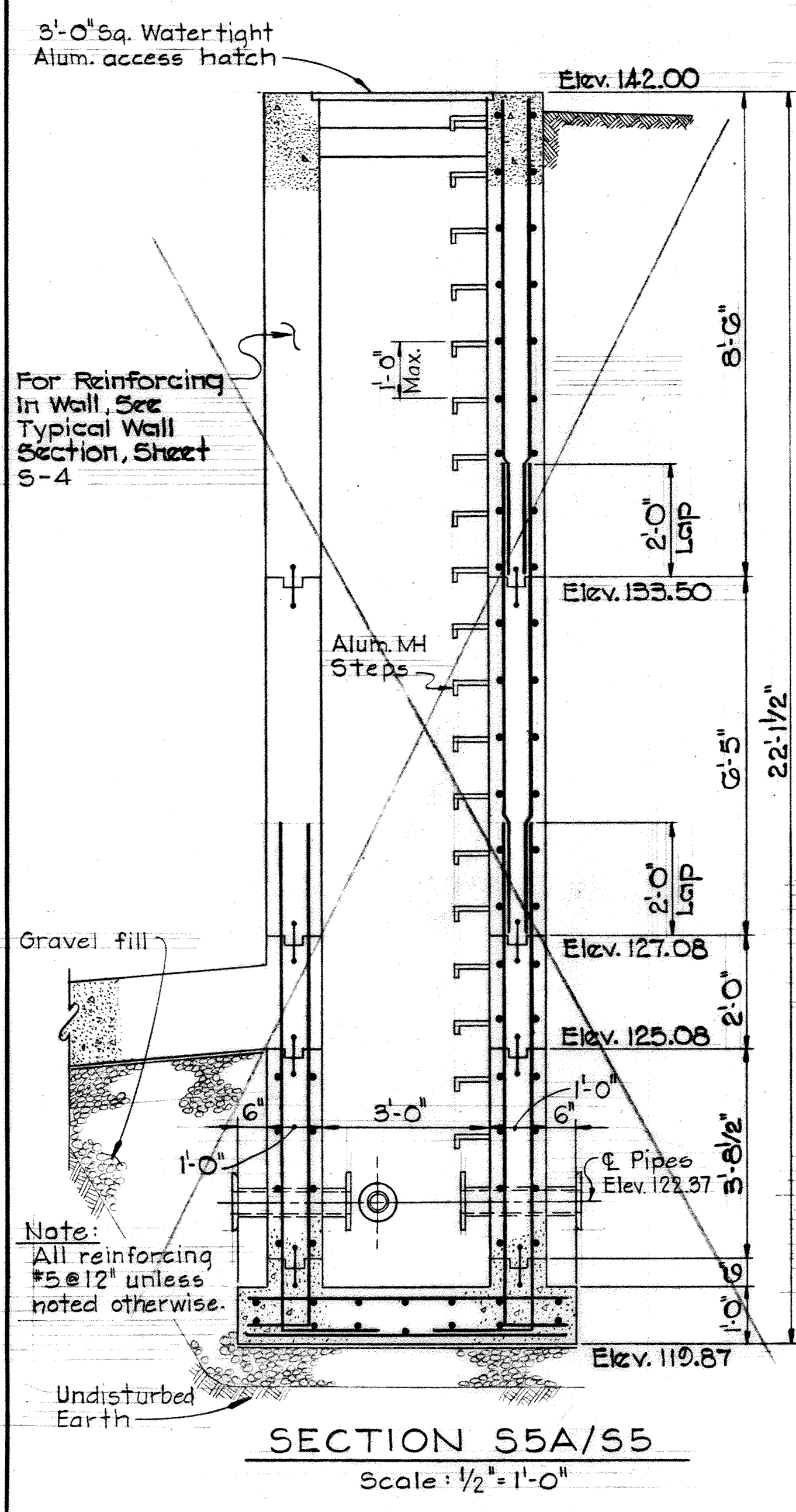
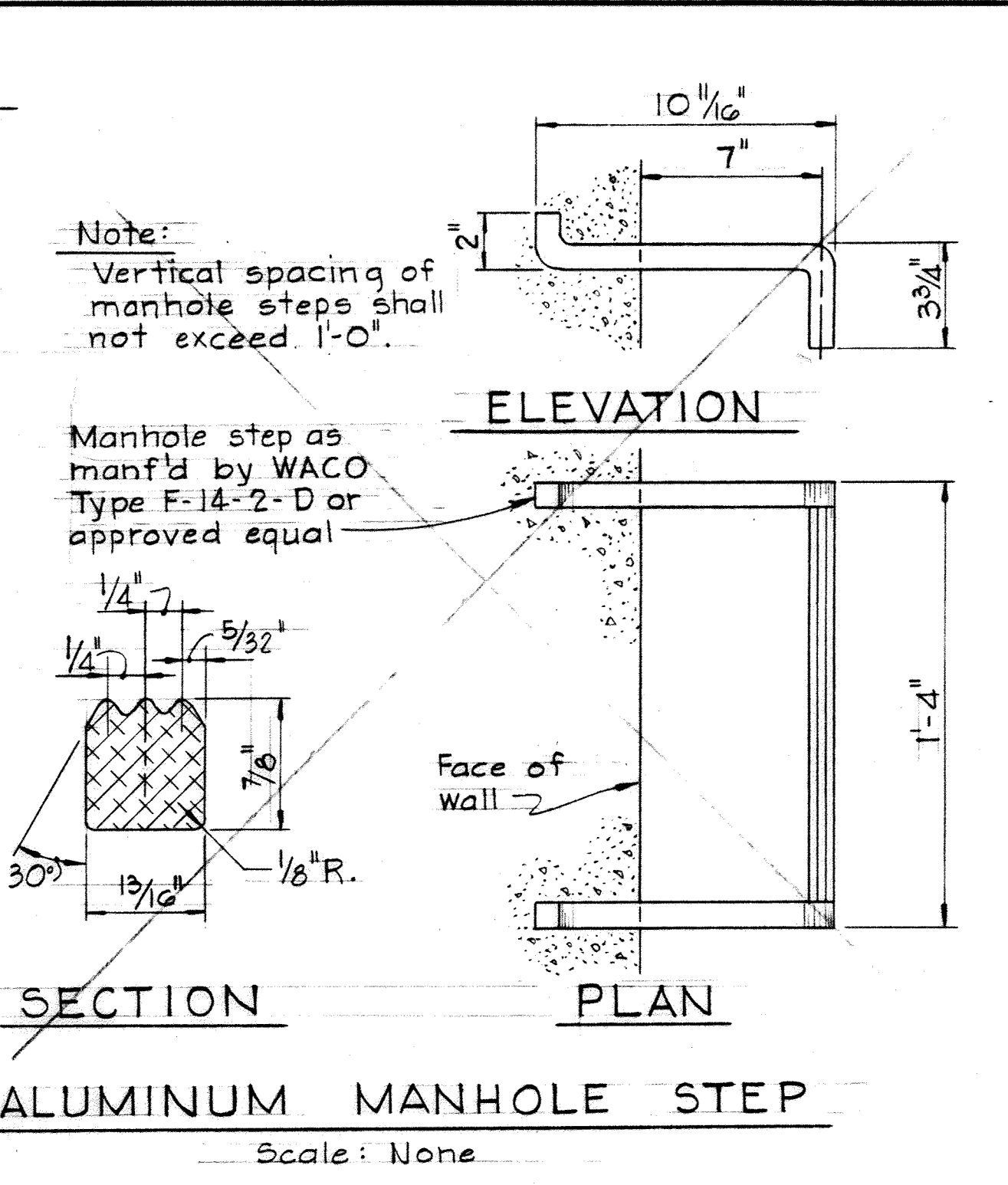
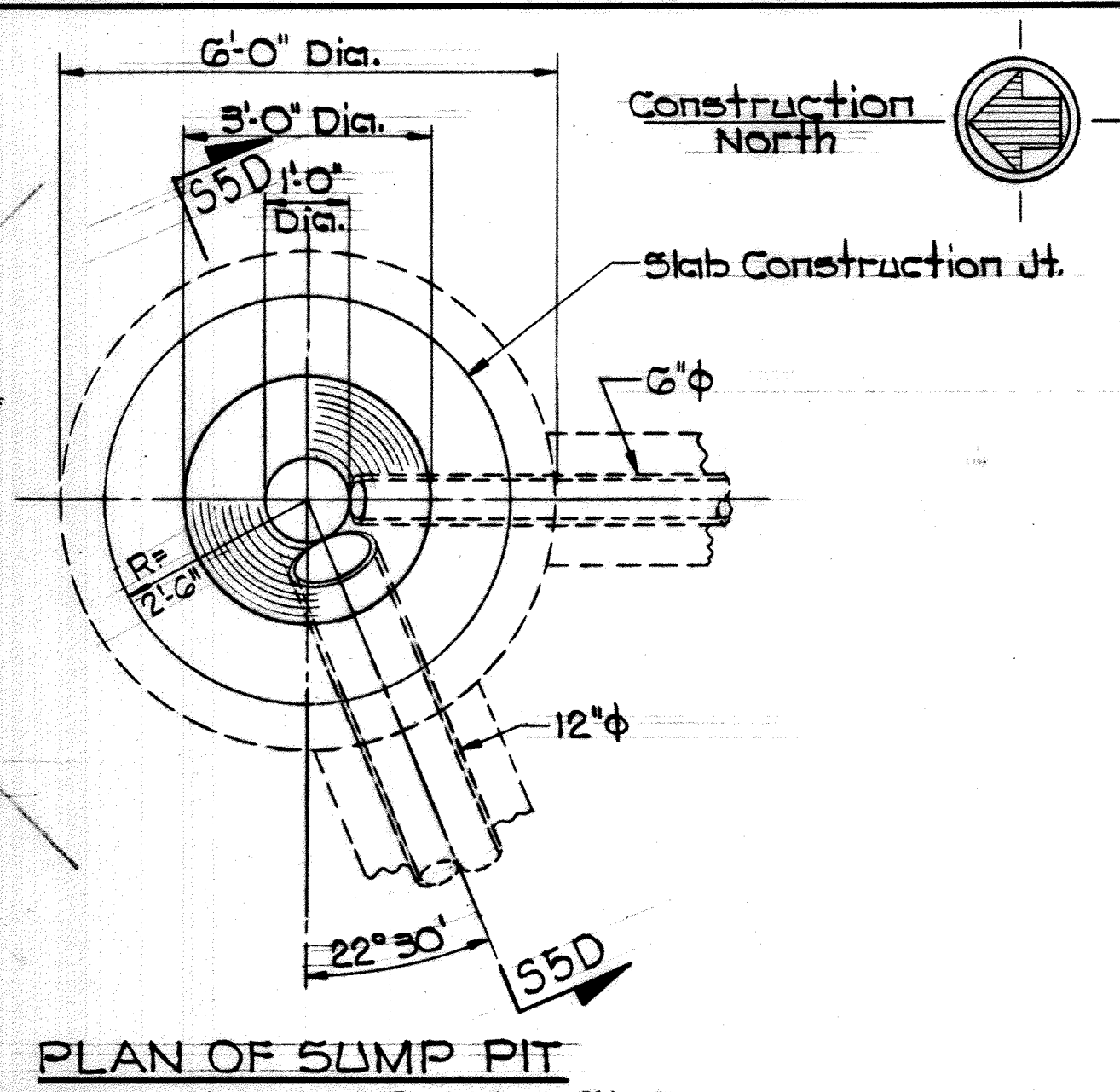
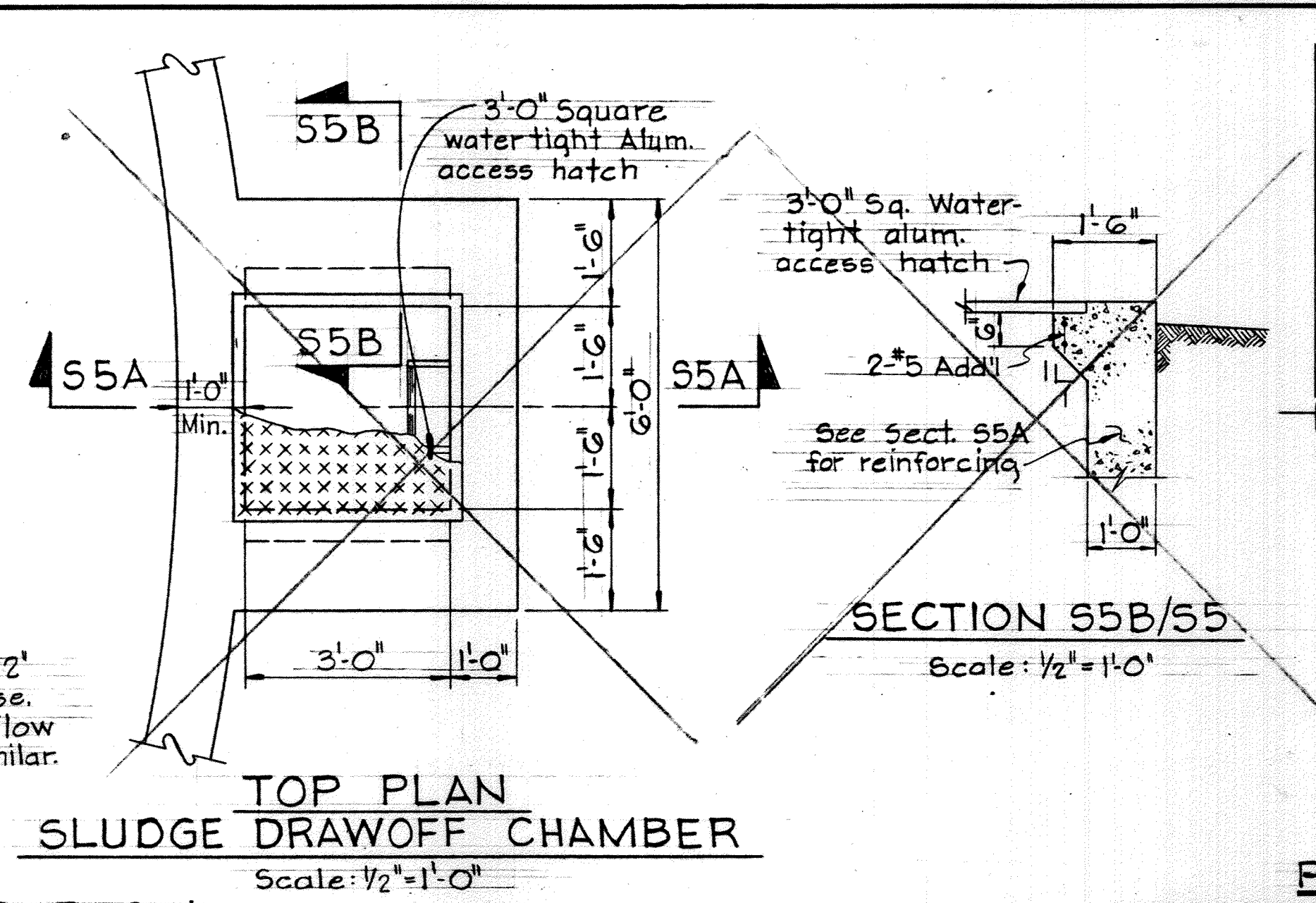
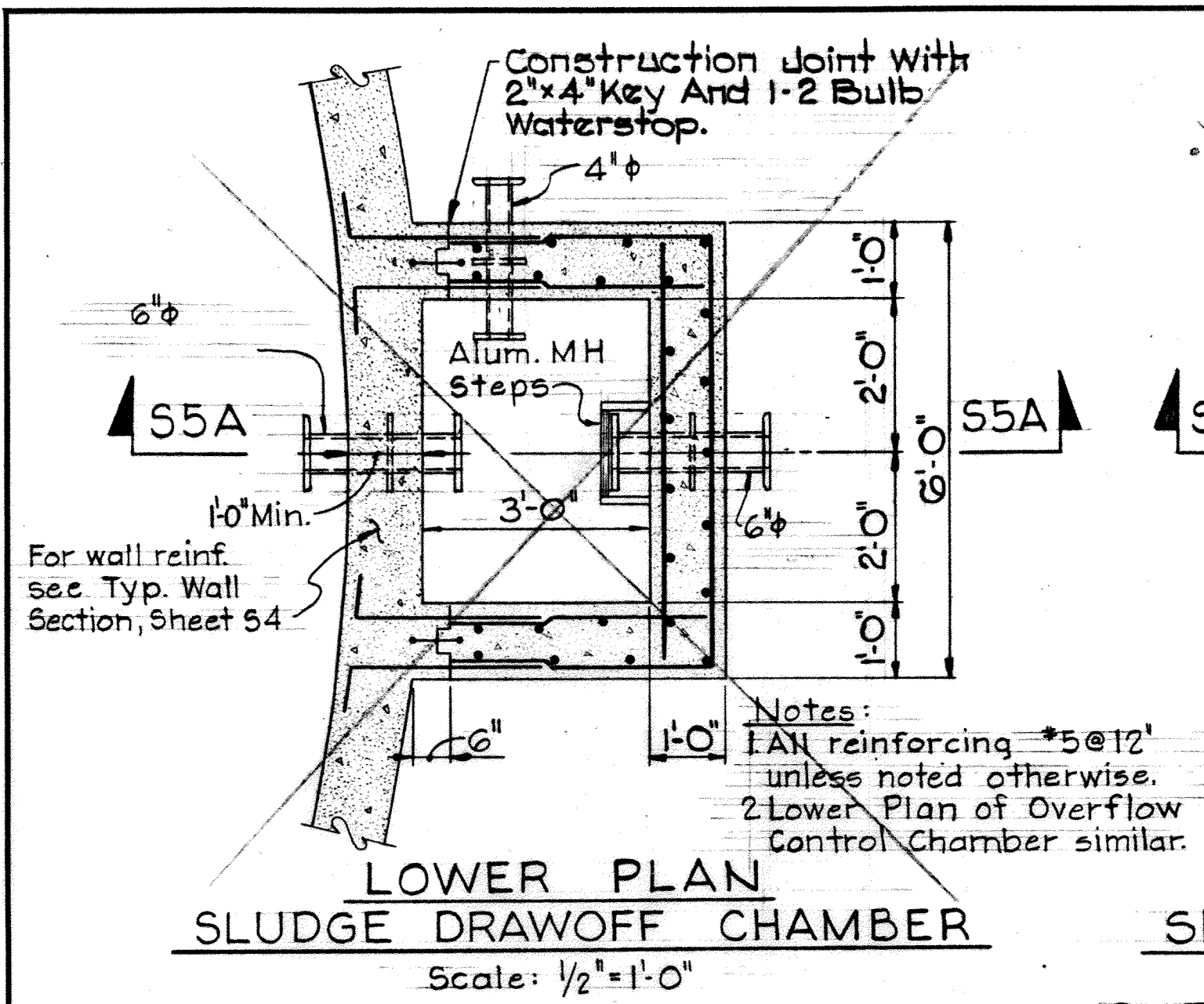
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Richard E. Brundage</i> CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	REACTOR CLARIFIERS PLANS & SECTIONS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 21 OF 50 SCALE AS NOTED
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W. O. 7275-2B

SHEET S-4

MODIFIED DRAWING-APRIL 15, 1982





WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

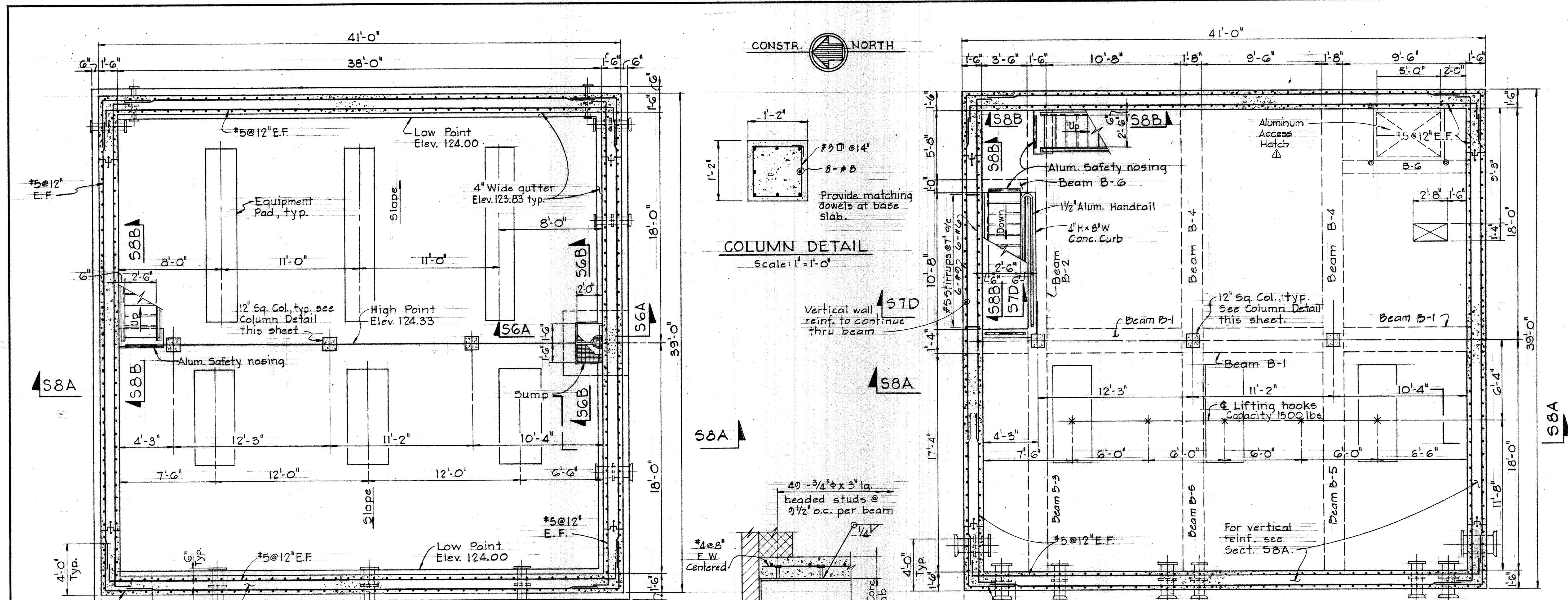
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/2/78
Richard L. Brudenbury
CHIEF-BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

REACTOR CLARIFIERS
SECTIONS & DETAILS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 22 OF 50
SCALE AS NOTED



Notes:
 For size & location of wall castings see Mech. Dwg's.
 For vertical reinf. in walls see Sect. S8A.
 For vertical reinf. see Sect. S8A.
 All reinforcing #5@12" unless otherwise noted.
 All reinforcing #5@12" unless noted otherwise.

Notes:
 For size & location of wall castings see Mech. Dwg's.
 For vertical reinf. see Sect. S8A.

Notes:
 All reinforcing #4@12"

Notes:
 All reinforcing #5@12" unless otherwise noted.

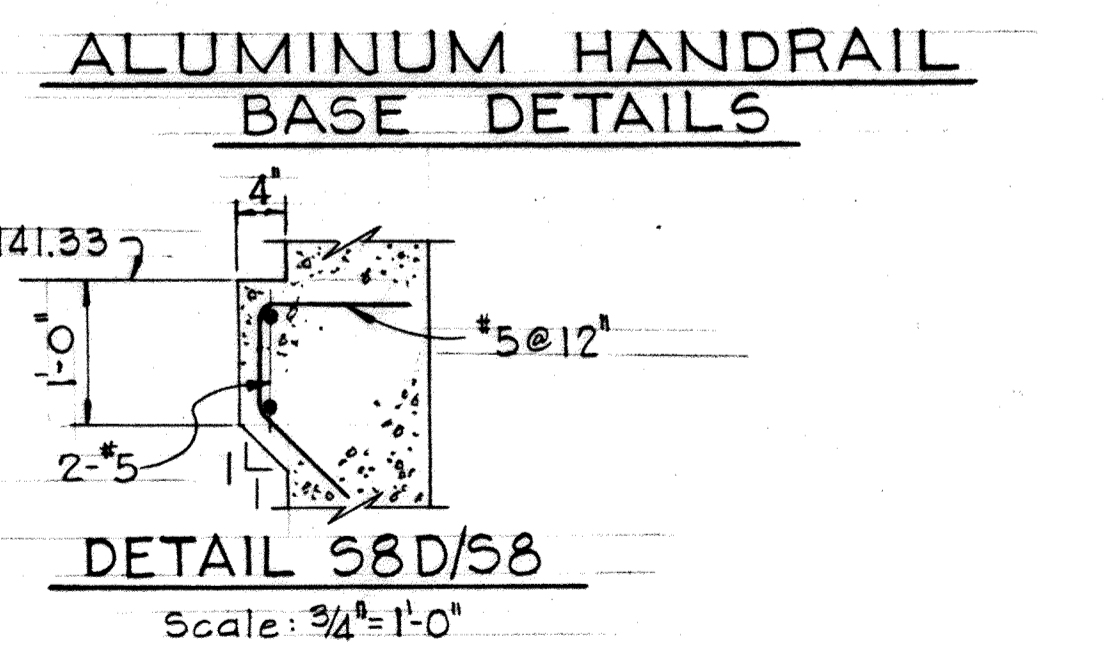
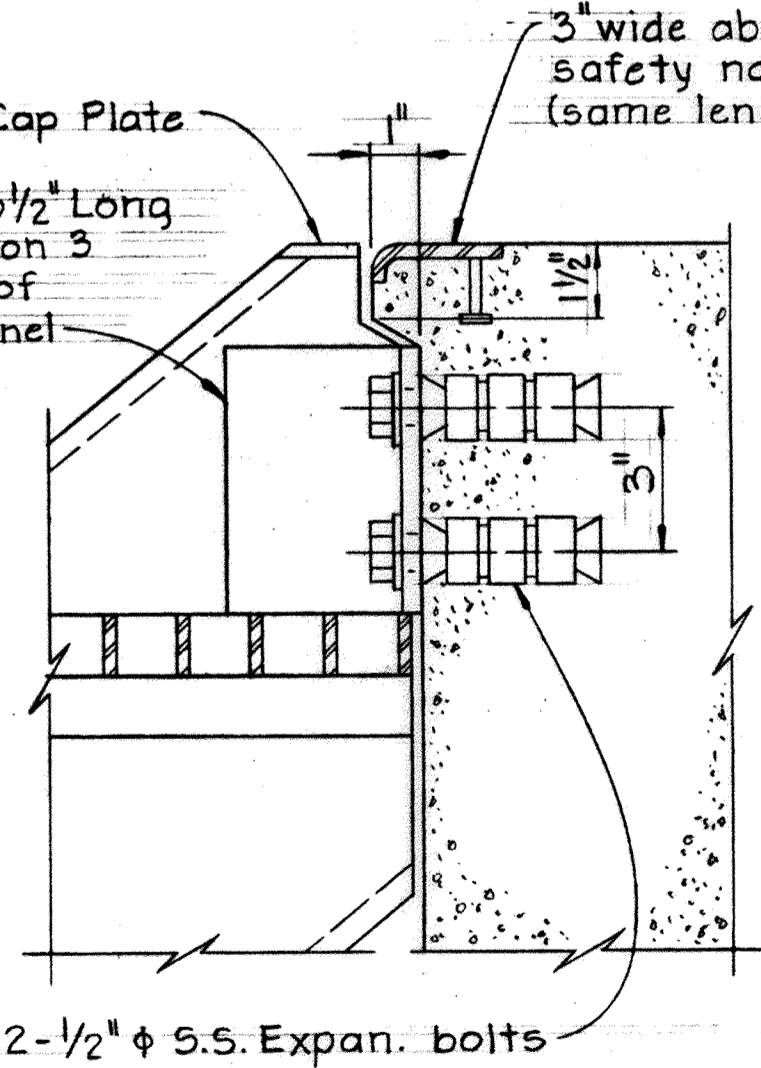
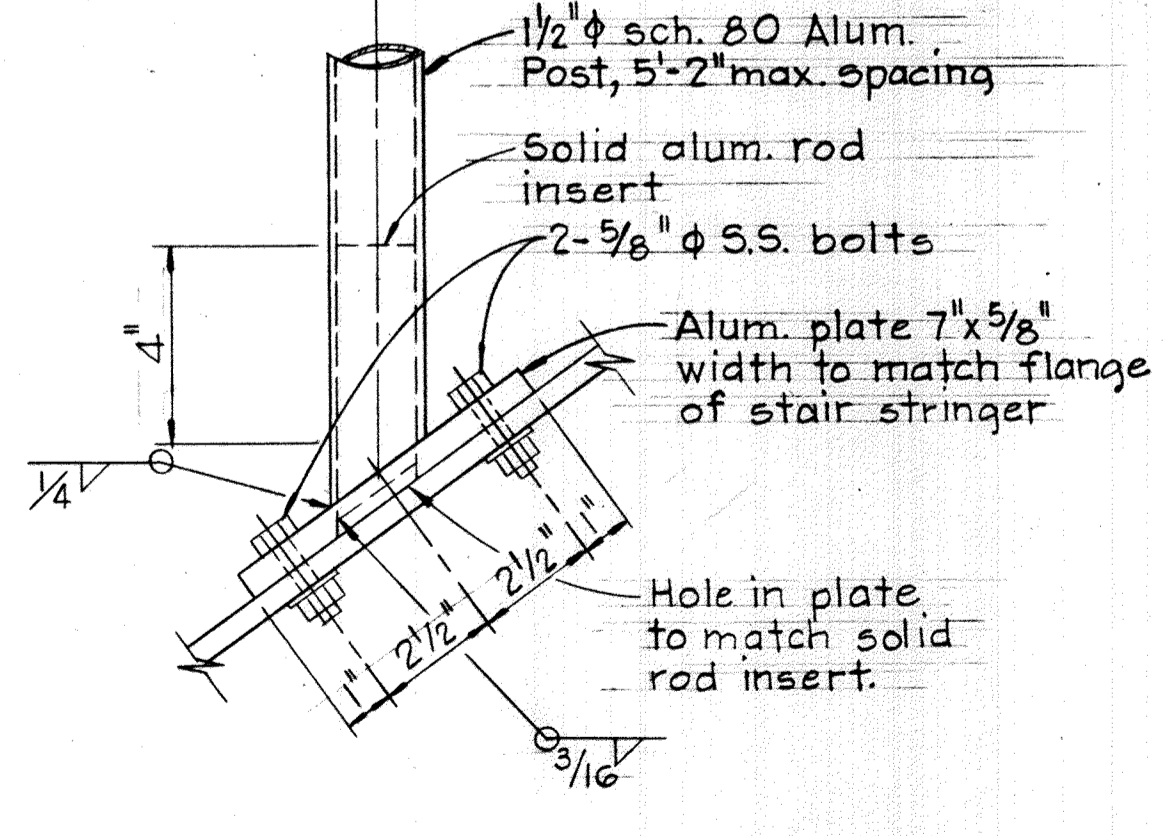
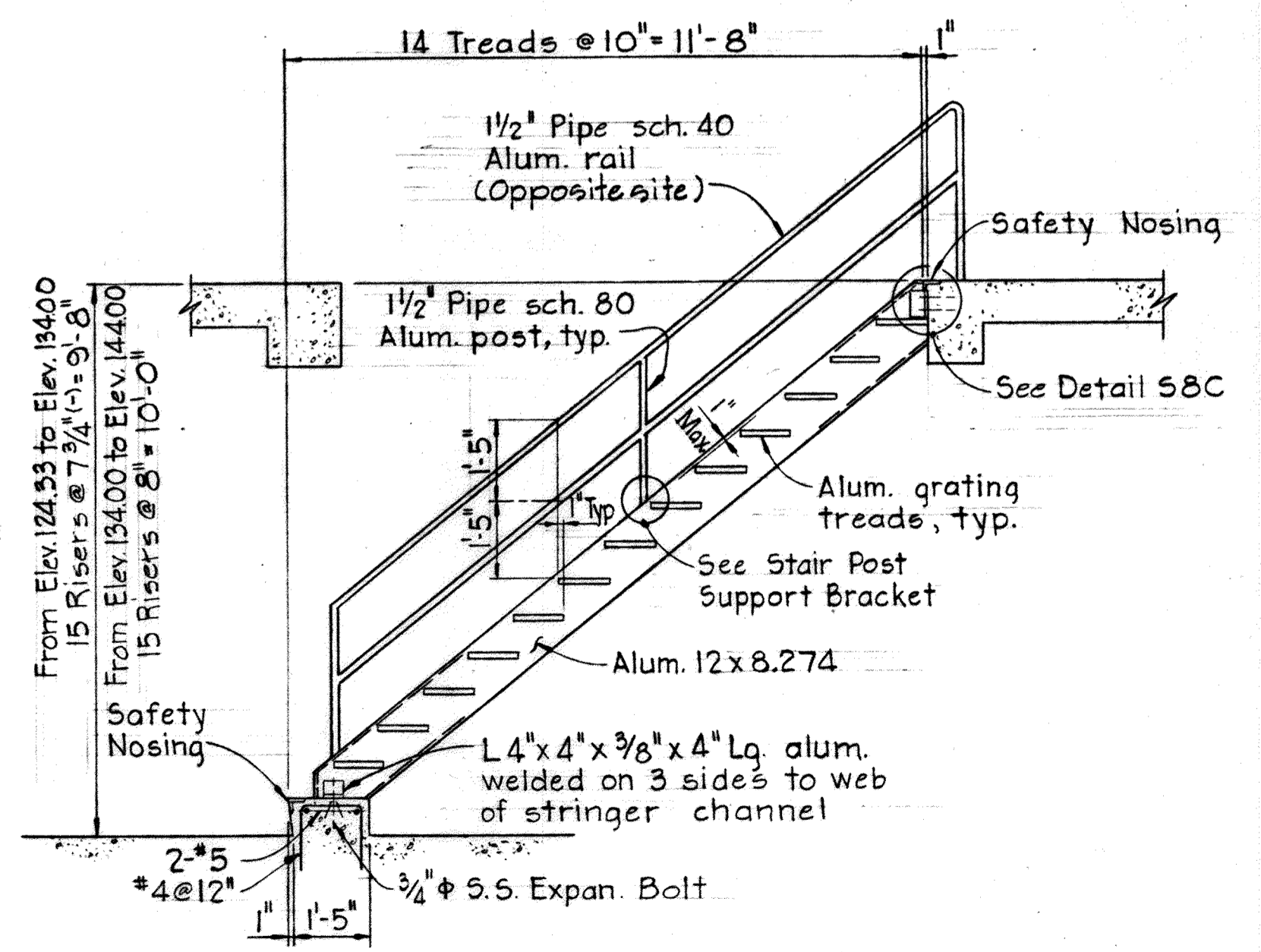
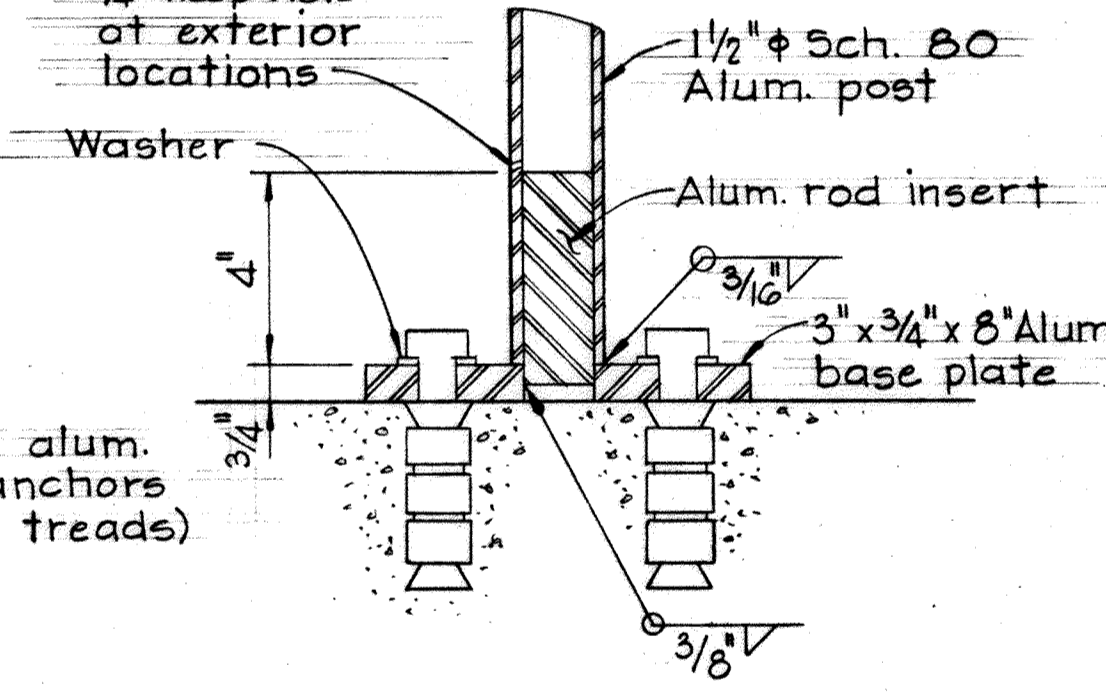
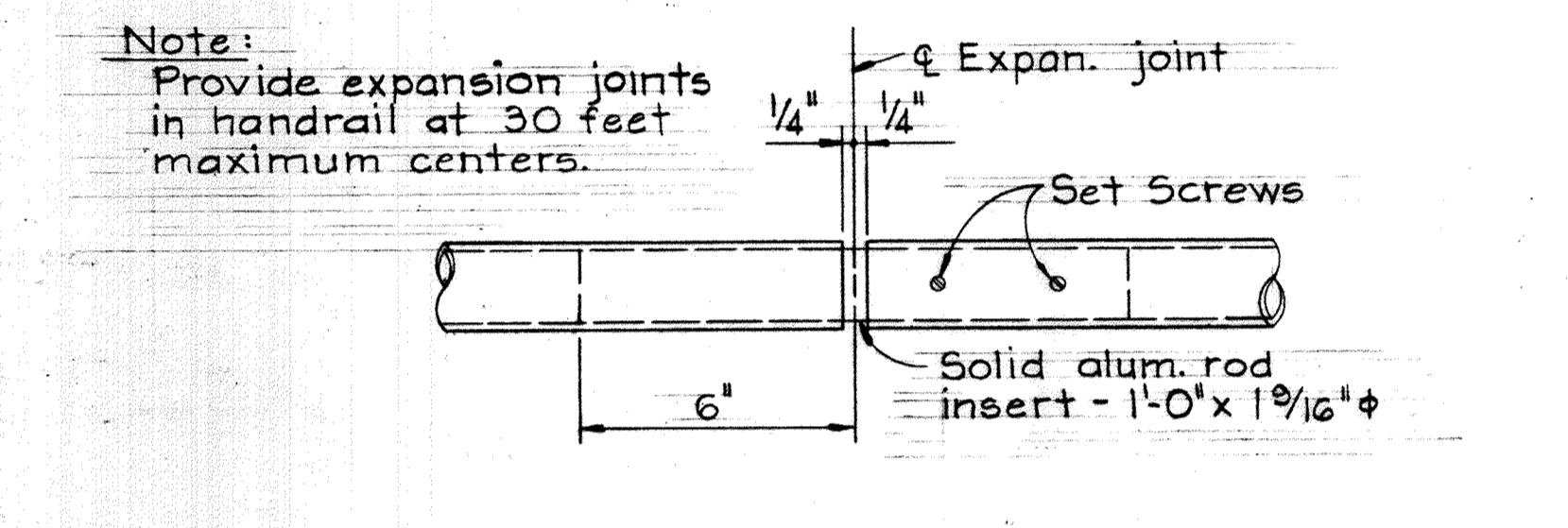
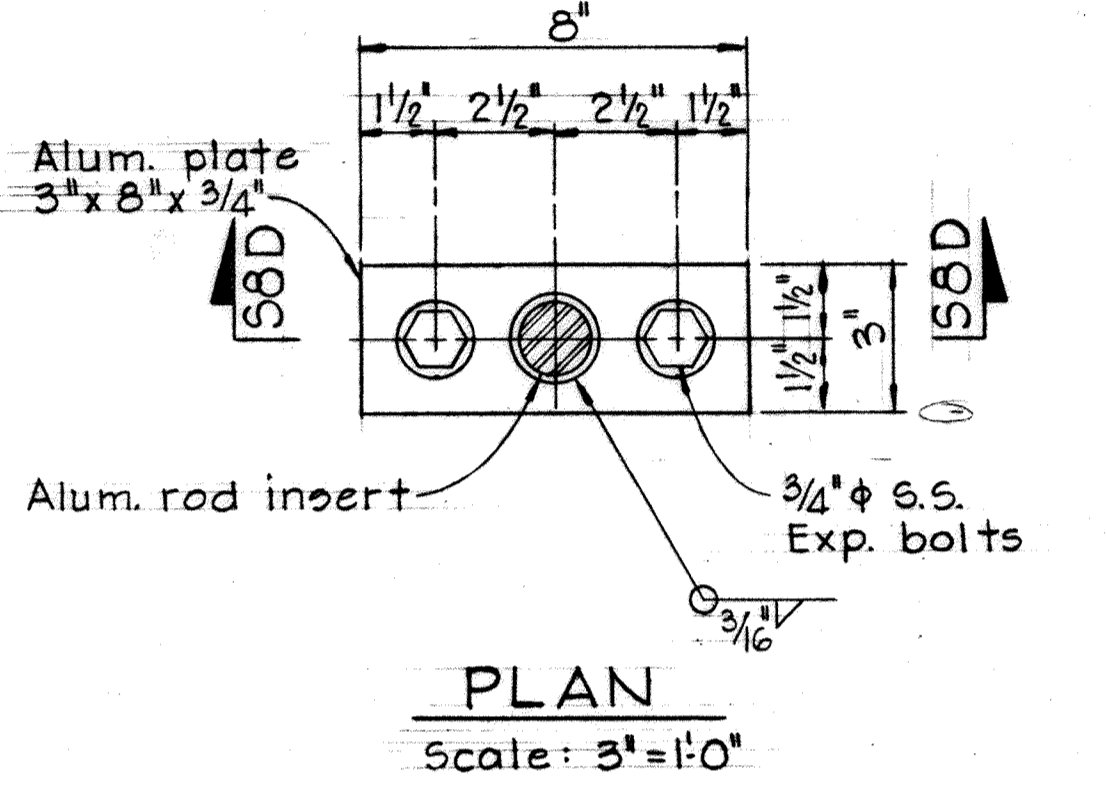
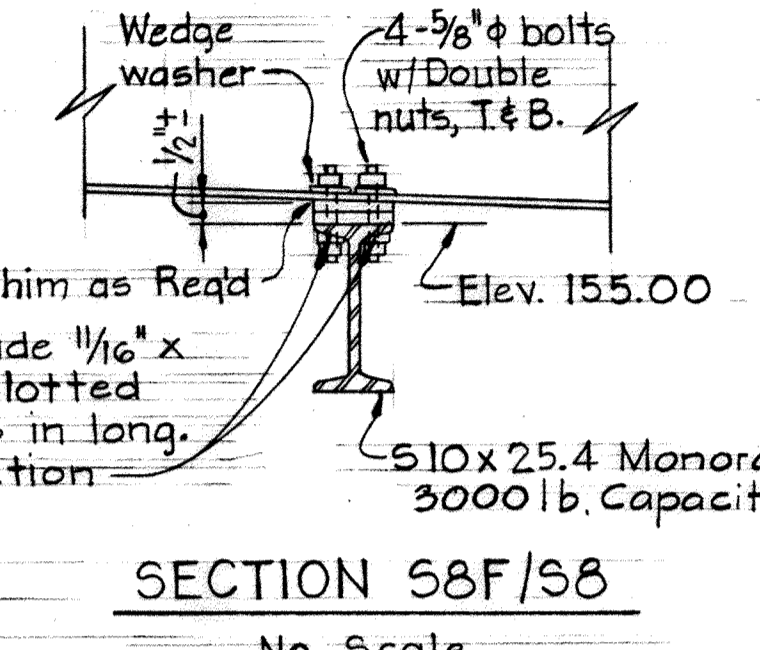
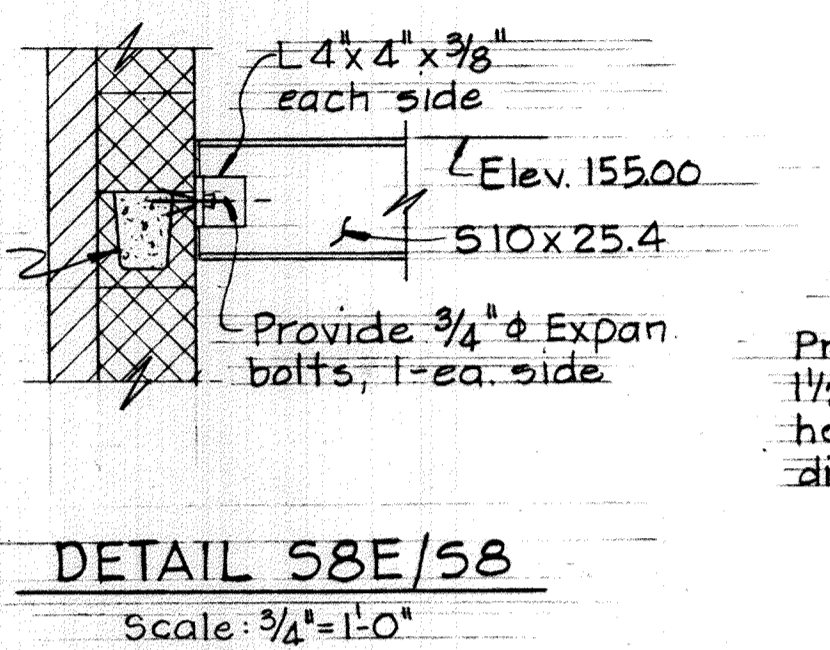
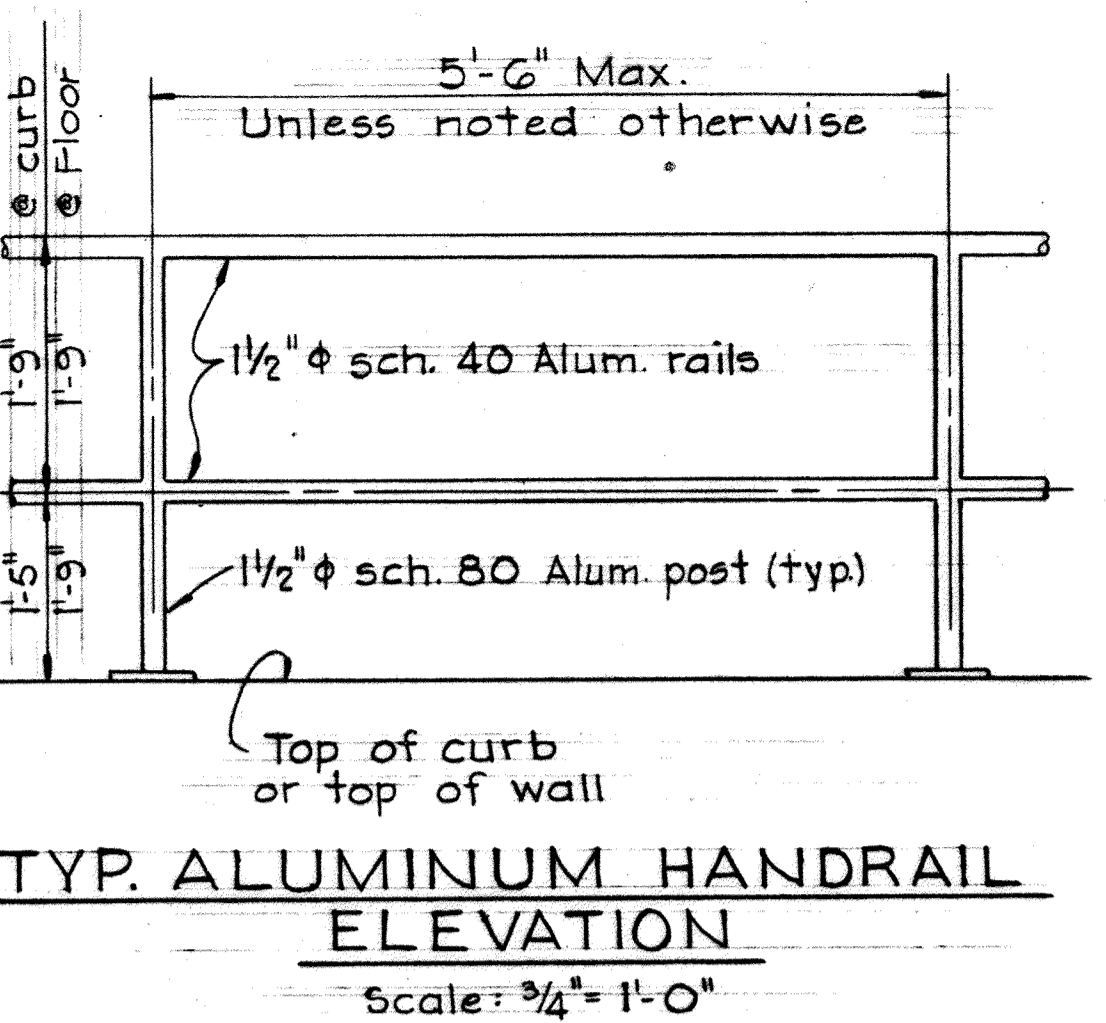
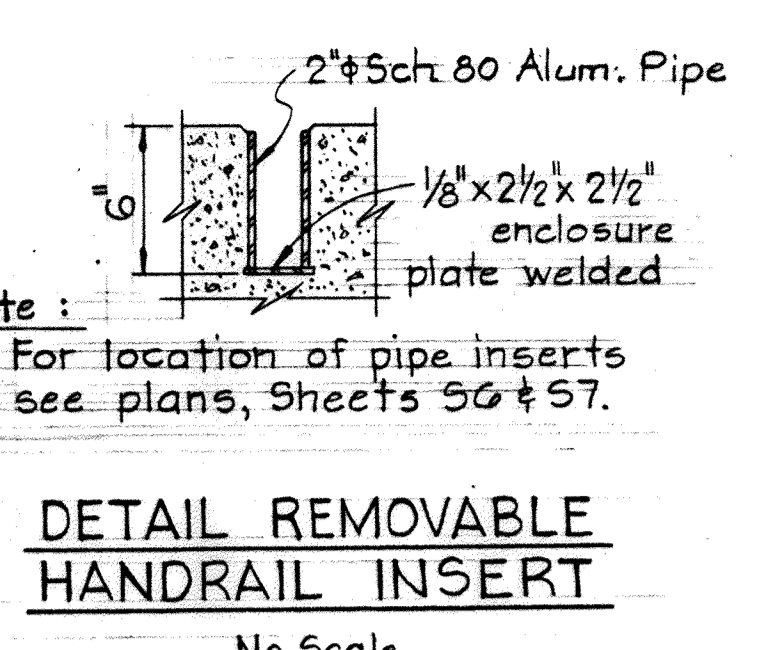
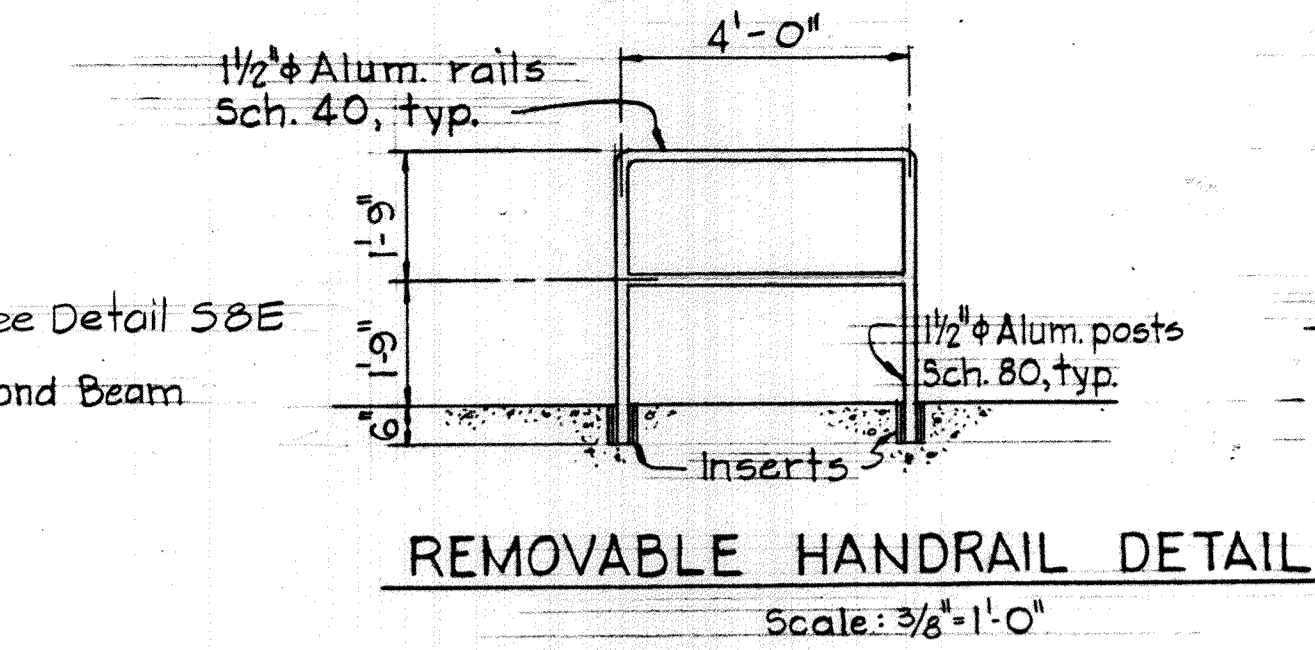
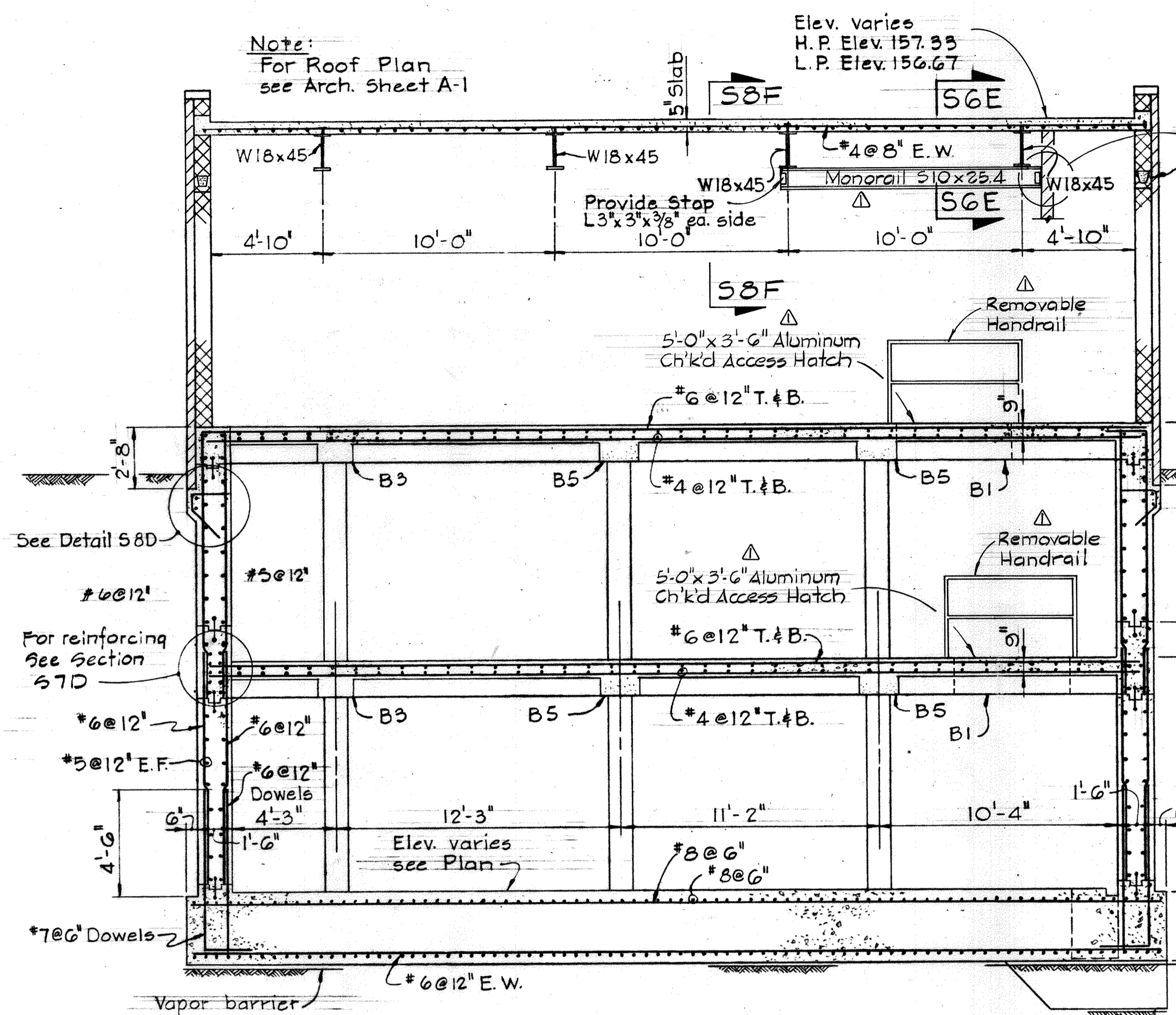
Notes:
 All reinforcing #5@12" unless otherwise noted.

Notes:
 All reinforcing #5@12" unless otherwise noted.

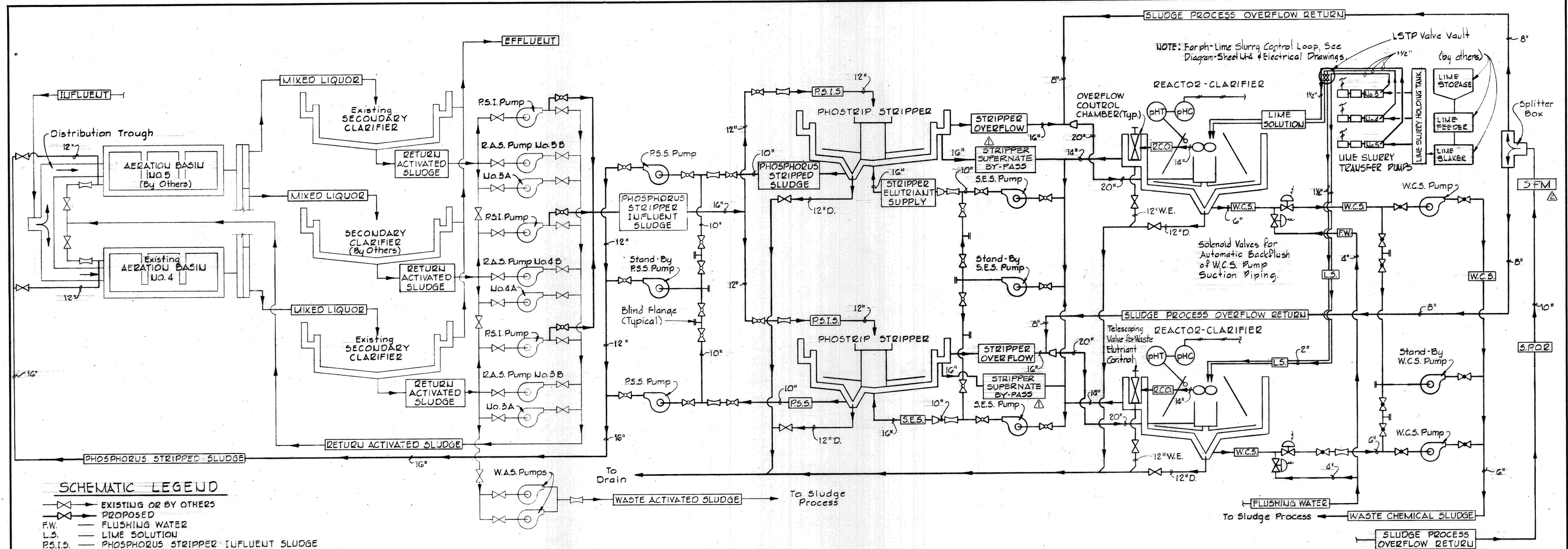
Notes:
 All reinforcing #5@12" unless otherwise noted.

Notes:
 All reinforcing #5@12" unless otherwise noted.

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Richard E. Brendenberger</i> CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS CONTROL BUILDING PLANS & DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 23 OF 50 SCALE AS NOTED
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WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Richard E. ...</i> CHIEF-BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS CONTROL BUILDING SECTIONS & DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 25 OF 50 SCALE AS NOTED
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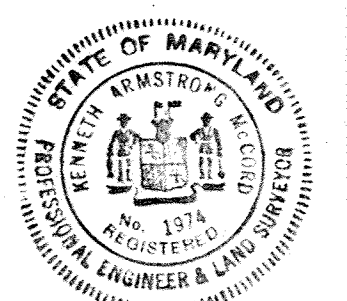


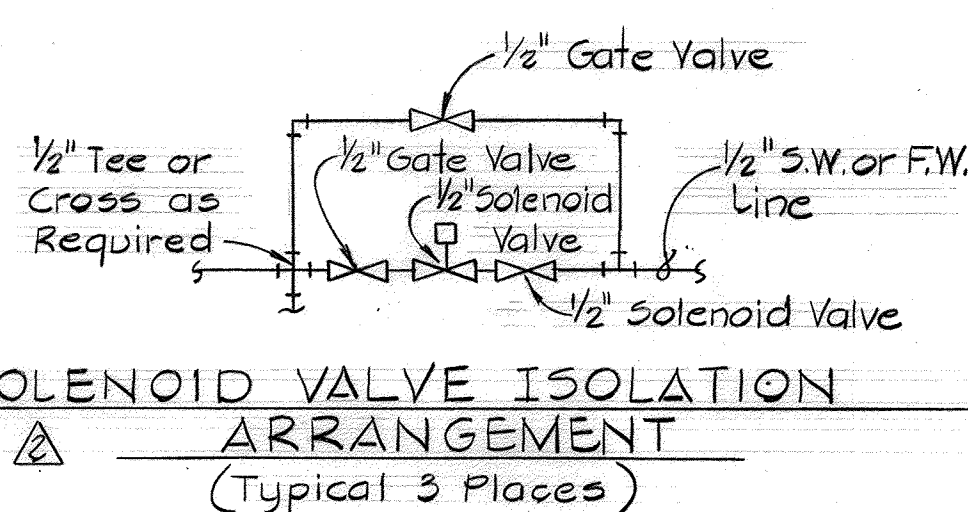
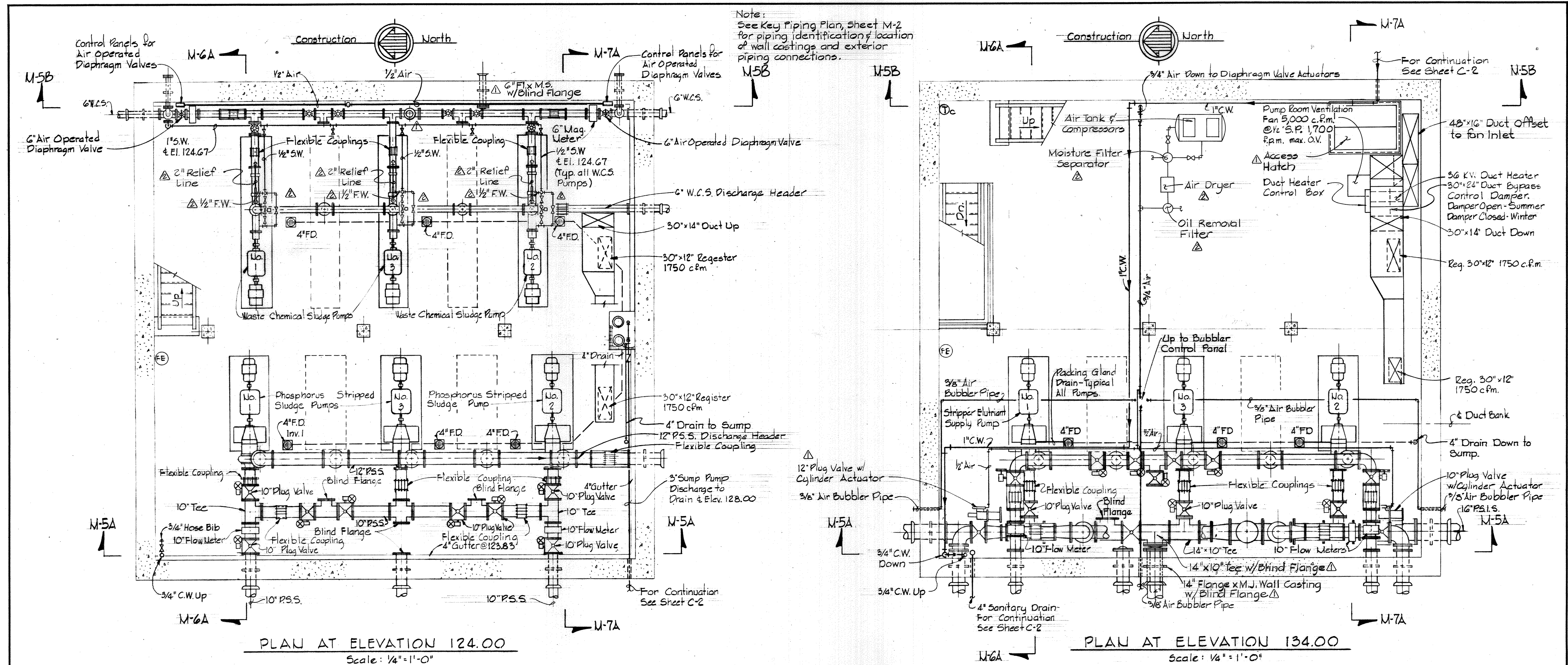
- SCHEMATIC LEGEND**
- X— EXISTING OR BY OTHERS
 - X— PROPOSED
 - FW — FLUSHING WATER
 - L.S. — LIME SOLUTION
 - P.S.I.S. — PHOSPHORUS STRIPPER INFLUENT SLUDGE
 - P.S.S. — PHOSPHORUS STRIPPED SLUDGE
 - R.A.S. — RETURN ACTIVATED SLUDGE
 - R.C.O. — REACTOR-CLARIFIER OVERFLOW
 - S.E.S. — STRIPPED ELUTRIANT SUPPLY
 - S.O. — STRIPPED OVERFLOW
 - S.P.O.2. — SLUDGE PROCESS OVERFLOW RETURN
 - W.A.S. — WASTE ACTIVATED SLUDGE
 - W.C.S. — WASTE CHEMICAL SLUDGE
 - W.E. — WASTE ELUTRIANT

- GENERAL LEGEND**
- H.W. — HOT WATER
 - C.W. — COLD WATER
 - W.L. — WATER LEVEL
 - F.W. — FLUSHING WATER
 - S.W. — SAMPLING WATER
 - A — CONTROL AIR
 - X— GATE VALVE
 - X— PLUG VALVE
 - X— RESILIANT WEDGE GATE VALVE
 - O— PRESSURE GAUGE
 - X— DIAPHRAGM VALVE

PHOSPHORUS REMOVAL SYSTEM SCHEMATIC
No Scale

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Robert E. Freudenberger</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS REMOVAL SYSTEM SCHEMATIC	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 26 OF 50 SCALE AS NOTED
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1304 ST. PAUL ST.
BALTIMORE, MARYLAND

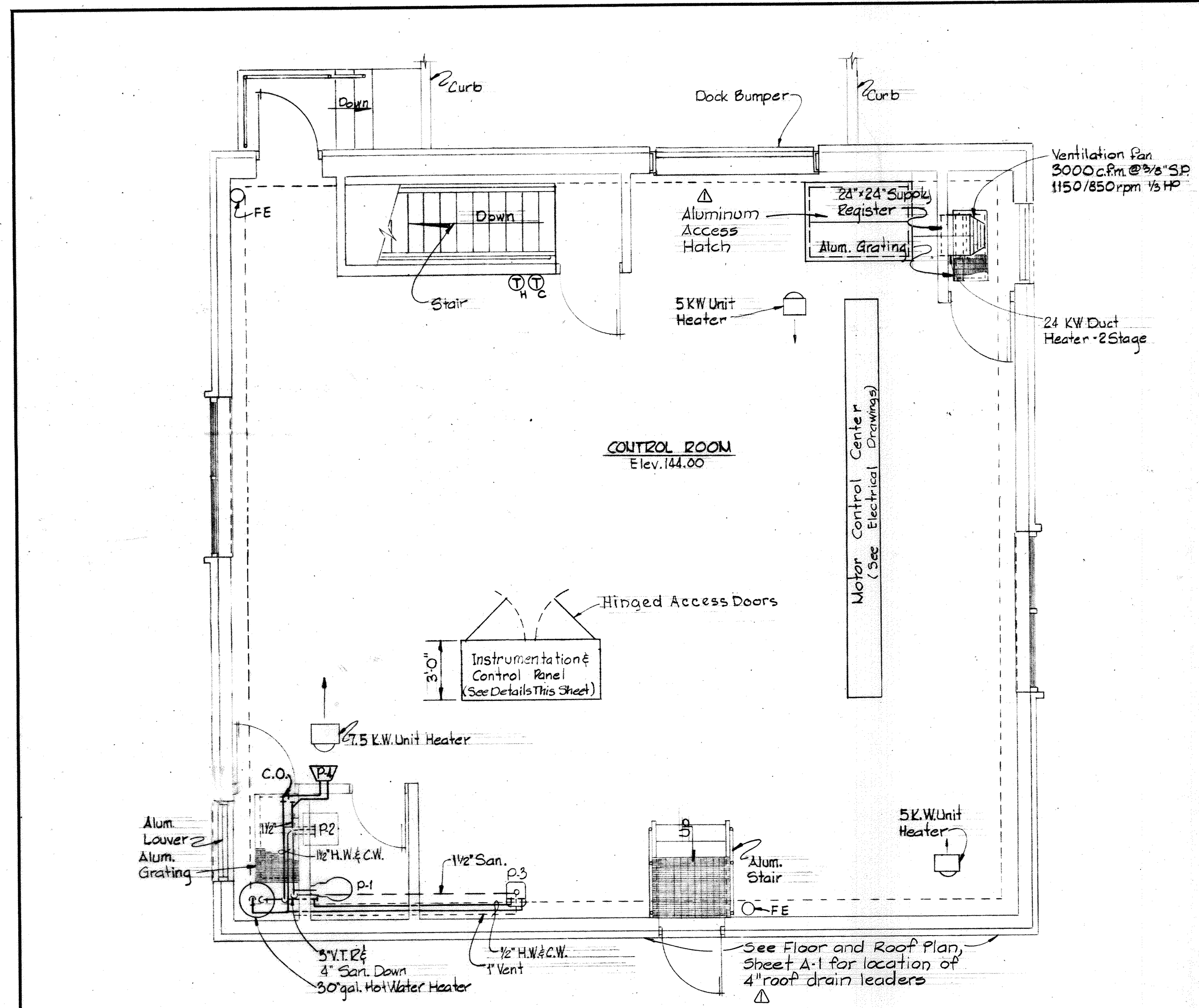
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/27/78
Richard E. Treubenberg
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

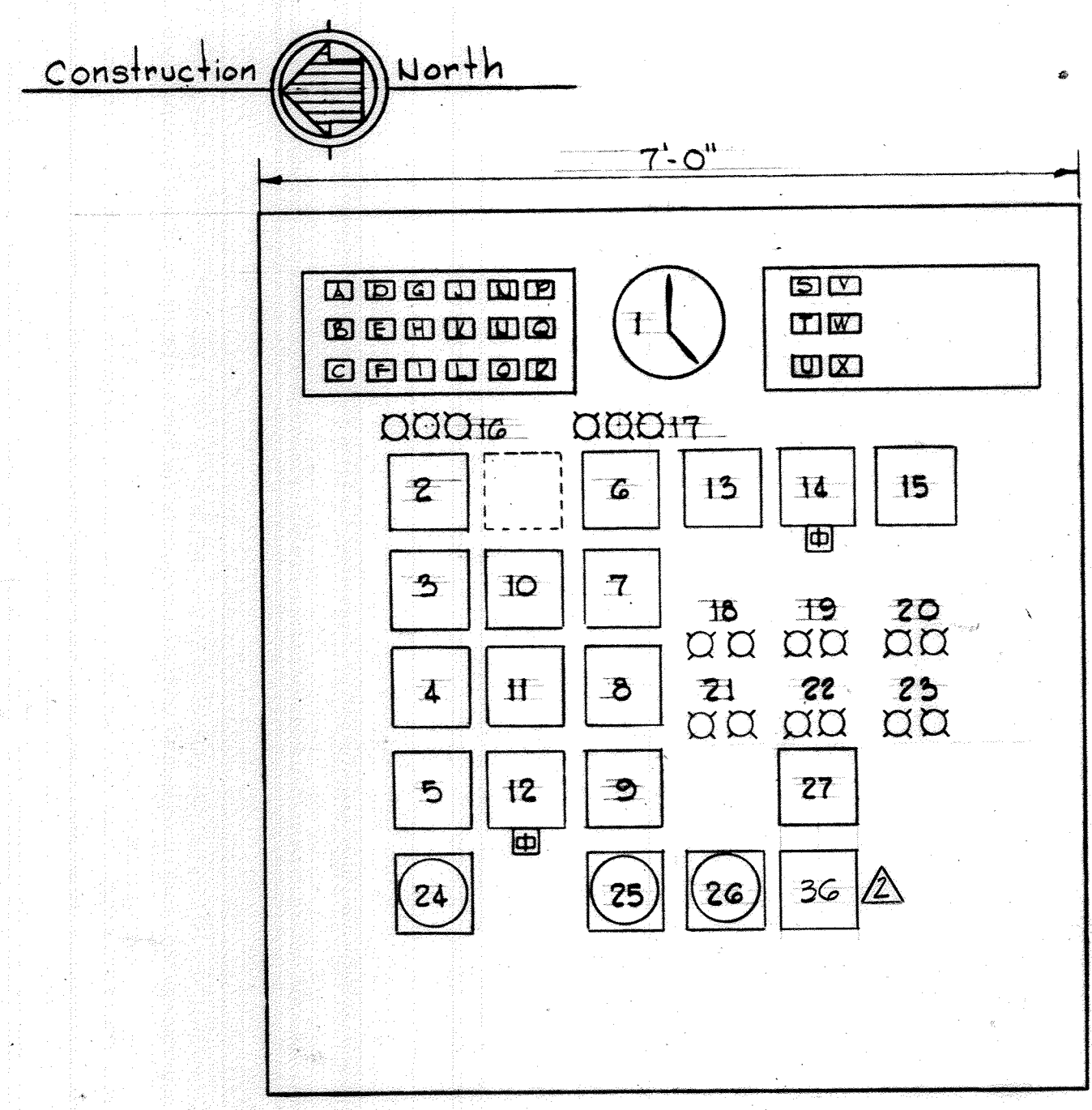
PHOSPHORUS CONTROL BUILDING
PLAN AT ELEV. 124.0 & 134.0

Savage Wastewater
TREATMENT PLANT ADDITION NO. 4

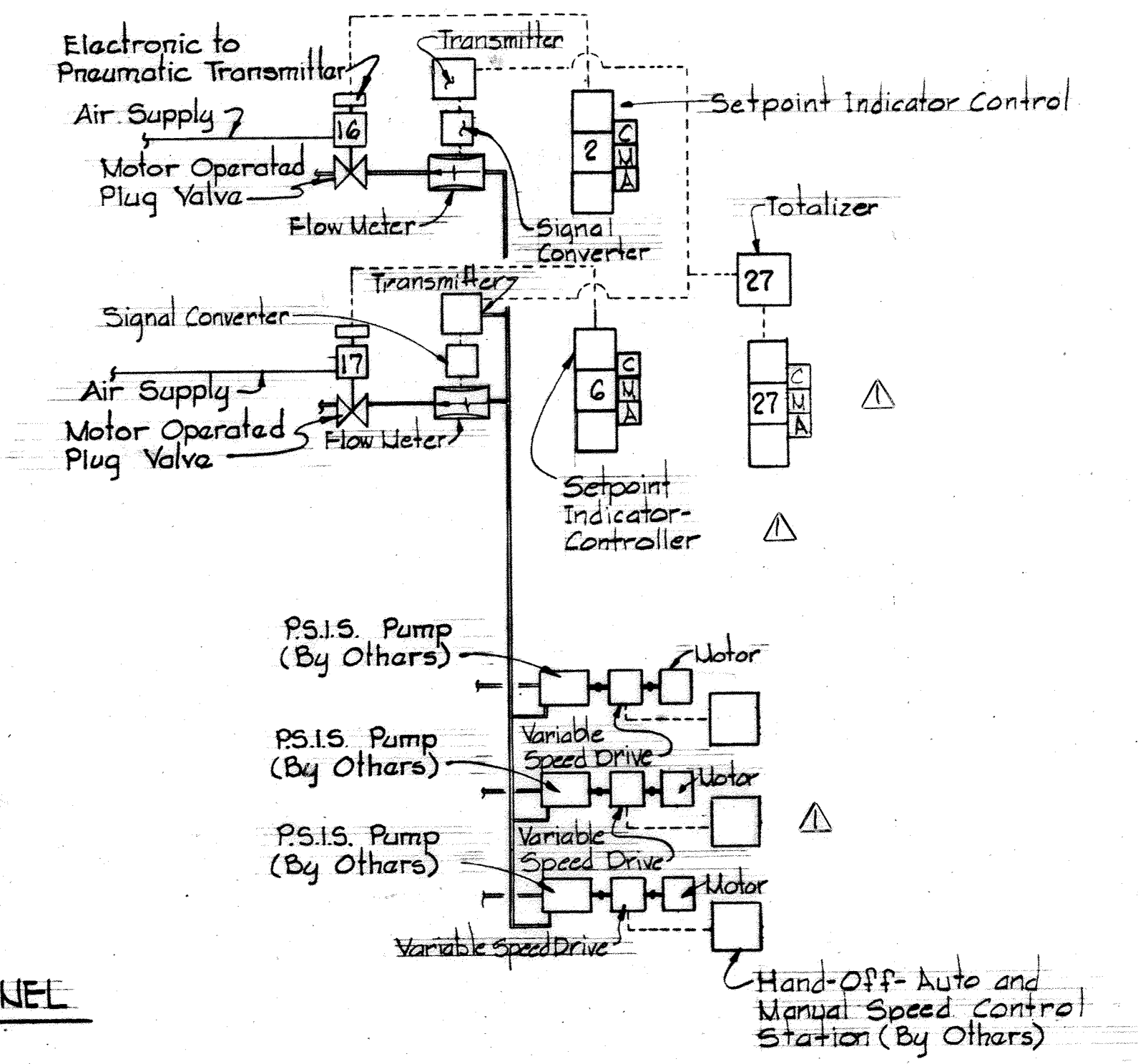
DRAWING NO. 28 OF 50
SCALE AS NOTED



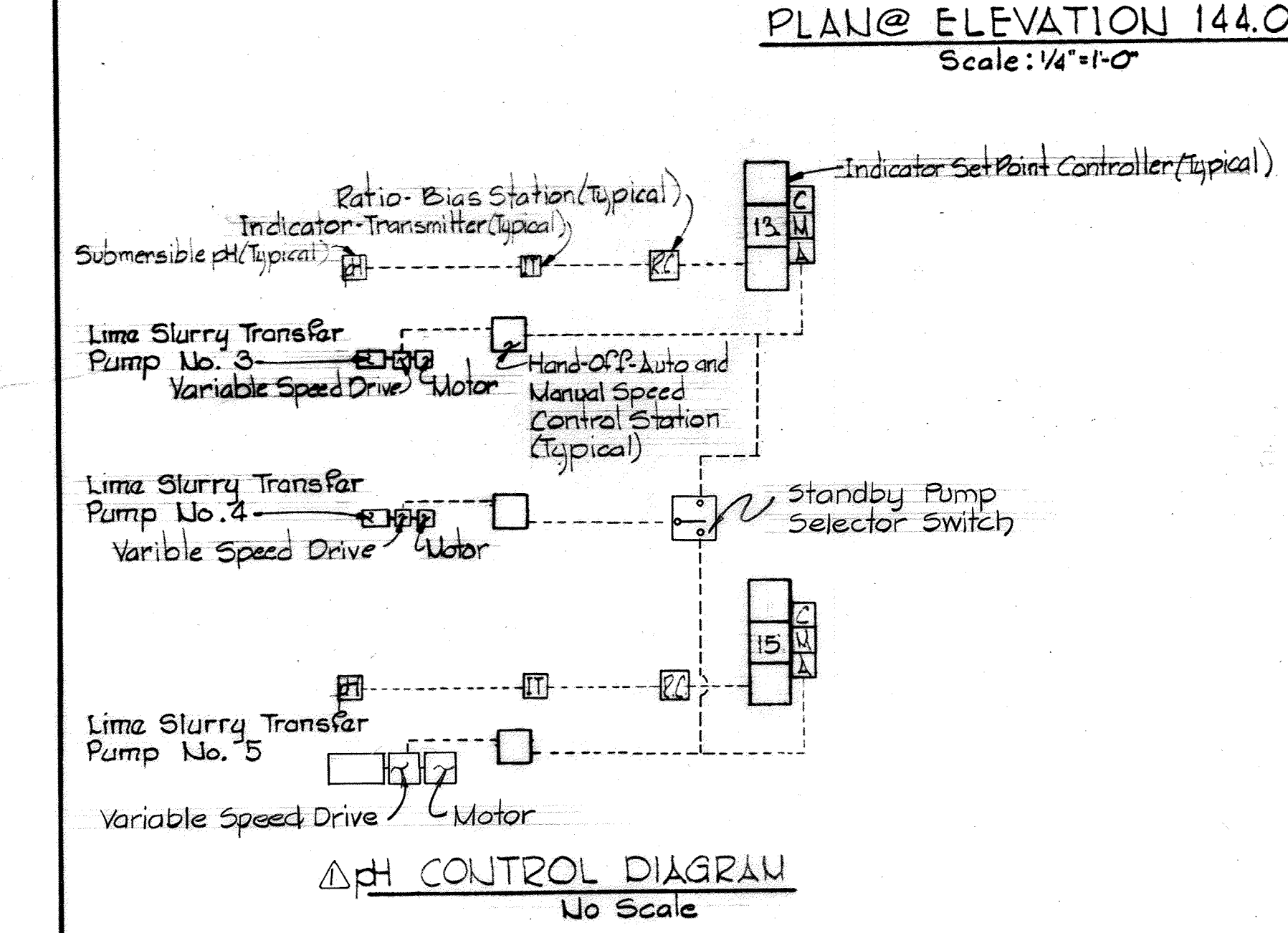
PLAN @ ELEVATION 144.00
Scale: 1/4" = 1'-0"



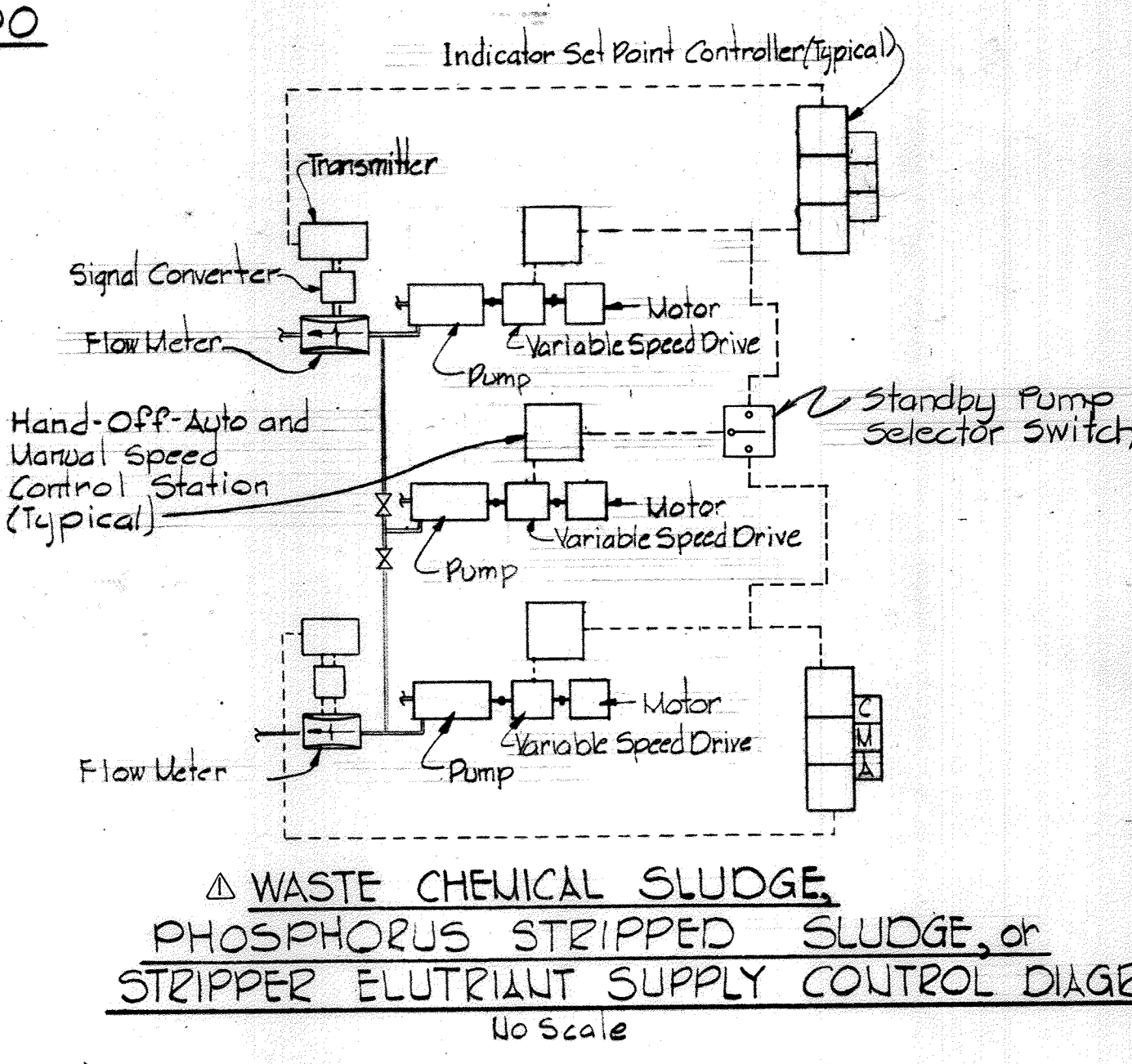
ELEVATION-INSTRUMENT AND CONTROL PANEL
Scale: 3/4" = 1'-0"



PHOSPHORUS STRIPPER INFLUENT SLUDGE CONTROL DIAGRAM
No Scale



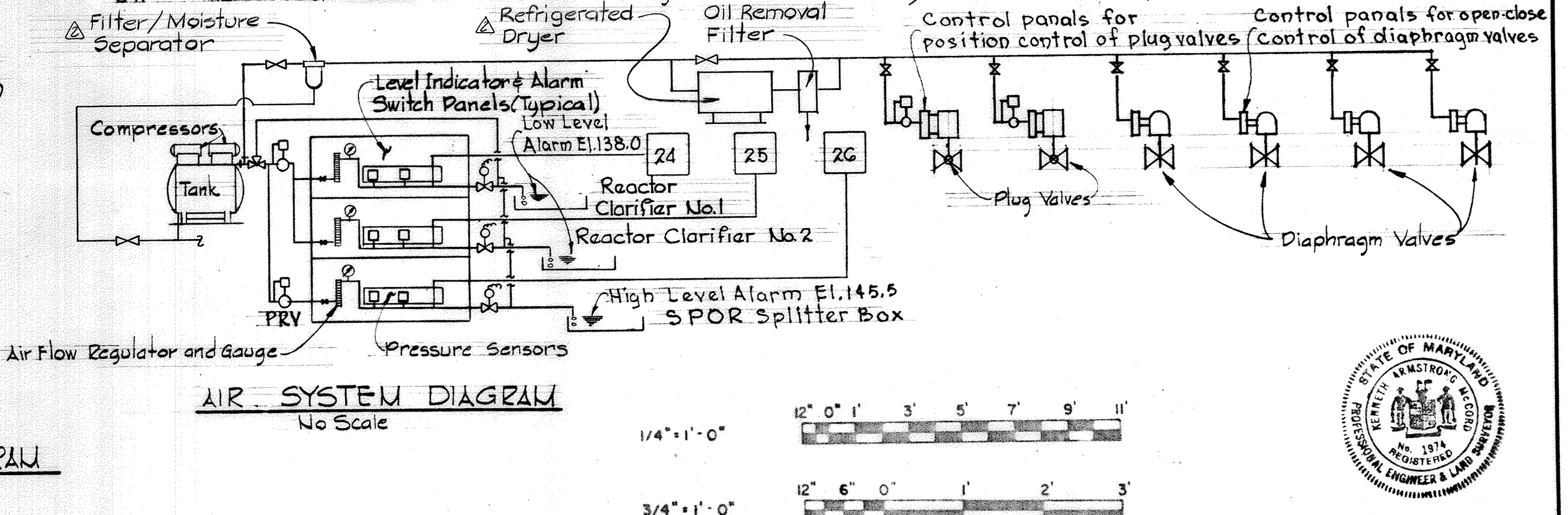
pH CONTROL DIAGRAM
No Scale



WASTE CHEMICAL SLUDGE, PHOSPHORUS STRIPPED SLUDGE, or STRIPPER ELUTRIANT SUPPLY CONTROL DIAGRAM
No Scale

LEGEND

INDEX NO.	DESCRIPTION	FUNCTION	RANGE
1.	Converter-Transmitter-Indicator	Flow I.	0.50-1.50 m.g.d. Δ
2.	Phosphorus Stripper No.1 Influent Sludge	Flow I.C.M.A.T.	0-1750 gpm. Δ
3.	Phosphorus Stripped Sludge-Stripper No.1	Flow I.C.M.A.T.	0-1650 gpm. Δ
4.	Stripper Elutriant Supply-Stripper No.1	Flow I.C.M.A.T.	0-1650 gpm. Δ
5.	Waste Chemical Sludge-Reactor Clarifier No.1	Flow I.C.M.A.T.	0-25 gpm. Δ
6.	Phosphorus Stripper No.2 Influent Sludge	Flow I.C.M.A.T.	0-1750 gpm. Δ
7.	Phosphorus Stripped Sludge-Stripper No.2	Flow I.C.M.A.T.	0-1650 gpm. Δ
8.	Stripper Elutriant Supply-Stripper No.2	Flow I.C.M.A.T.	0-1650 gpm. Δ
9.	Waste Chemical Sludge-Reactor Clarifier No.2	Flow I.C.M.A.T.	0-25 gpm. Δ
10.	Phosphorus Stripped Sludge-Standby Pump	Selector Switch	- - Δ
11.	Stripper Elutriant Supply-Standby Pump	Selector Switch	- - Δ
12.	Waste Chemical Sludge-Standby Pump	Selector Switch	- - Δ
13.	pH-Reactor Clarifier No.1	I.C. C.M.A.T.	6-10 Δ
14.	pH-Reactor Clarifier Standby Slurry Pump	Selector Switch	- - Δ
15.	pH-Reactor Clarifier No.2	I.C. C.M.A.T.	6-10 Δ
16.	Phosphorus Stripper No.1 Influent Sludge Valve	Position Ind Lights	- - Δ
17.	Phosphorus Stripper No.2 Influent Sludge Valve	Position Ind Lights	- - Δ
18.	Lime Slurry Transfer Pump No.3	Running Lights	- - Δ
19.	Lime Slurry Transfer Pump No.4	Running Lights	- - Δ
20.	Lime Slurry Transfer Pump No.5	Running Lights	- - Δ
21.	Phosphorus Stripper Influent Sludge Pump No.1	Running Lights	- - Δ
22.	Phosphorus Stripper Influent Sludge Pump No.2	Running Lights	- - Δ
23.	Phosphorus Stripper Influent Sludge Pump No.3	Running Lights	- - Δ
24.	Reactor Clarifier No.1 OverFlow Chamber	Level I.	0-7 Feet
25.	Reactor Clarifier No.2 OverFlow Chamber	Level I.	0-7 Feet
26.	Sludge Process OverFlow Return Splitter Box	Level I.	0-4.5 Feet
27.	Total Phosphorus Stripper Influent Sludge	Flow I.C.M.A.T.	0-3,500 g.p.m. Δ



AIR SYSTEM DIAGRAM
No Scale

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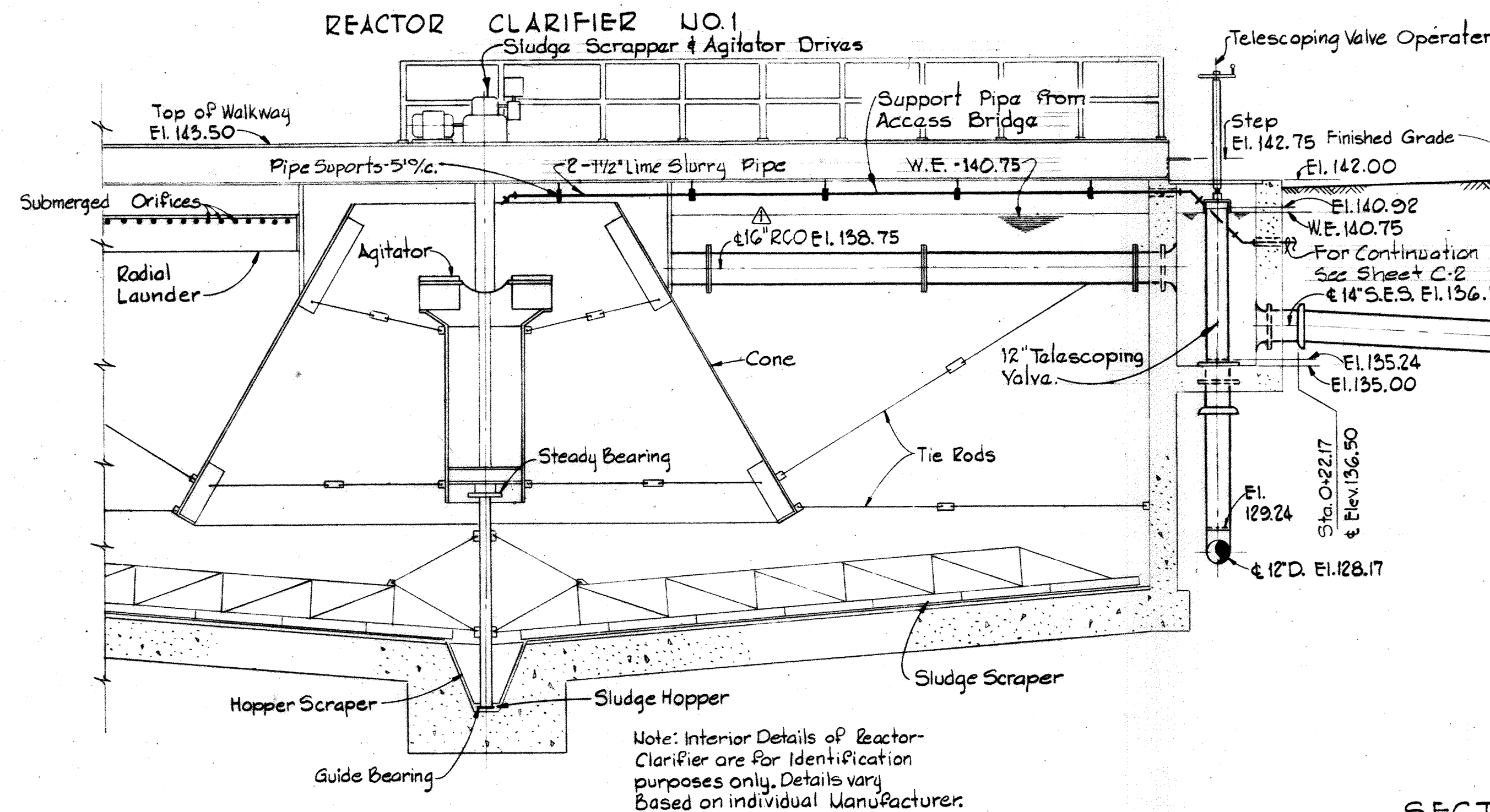
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Truedelberger
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

PHOSPHORUS CONTROL BUILDING
PLAN AT ELEV. 144.0
& INSTRUMENTATION

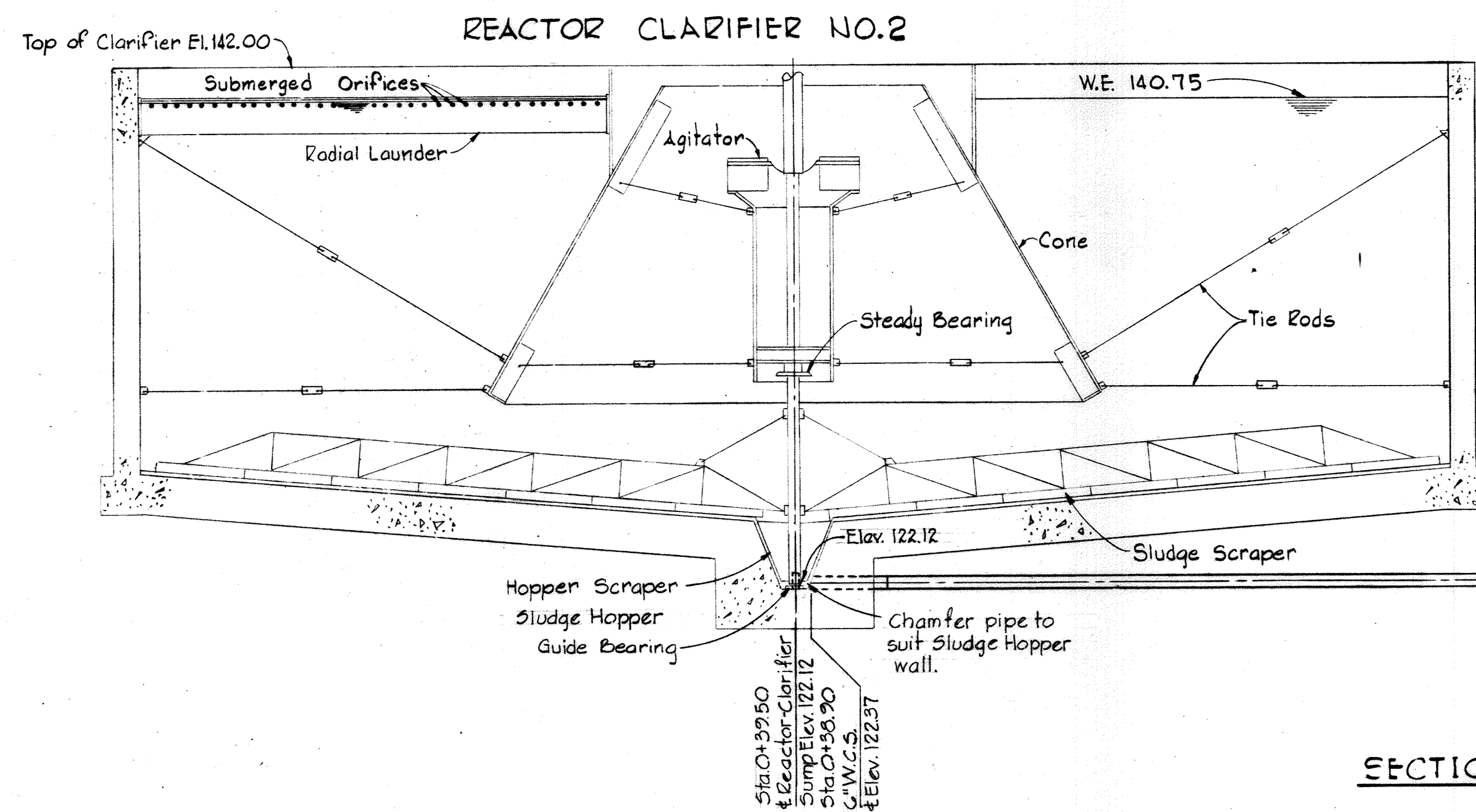
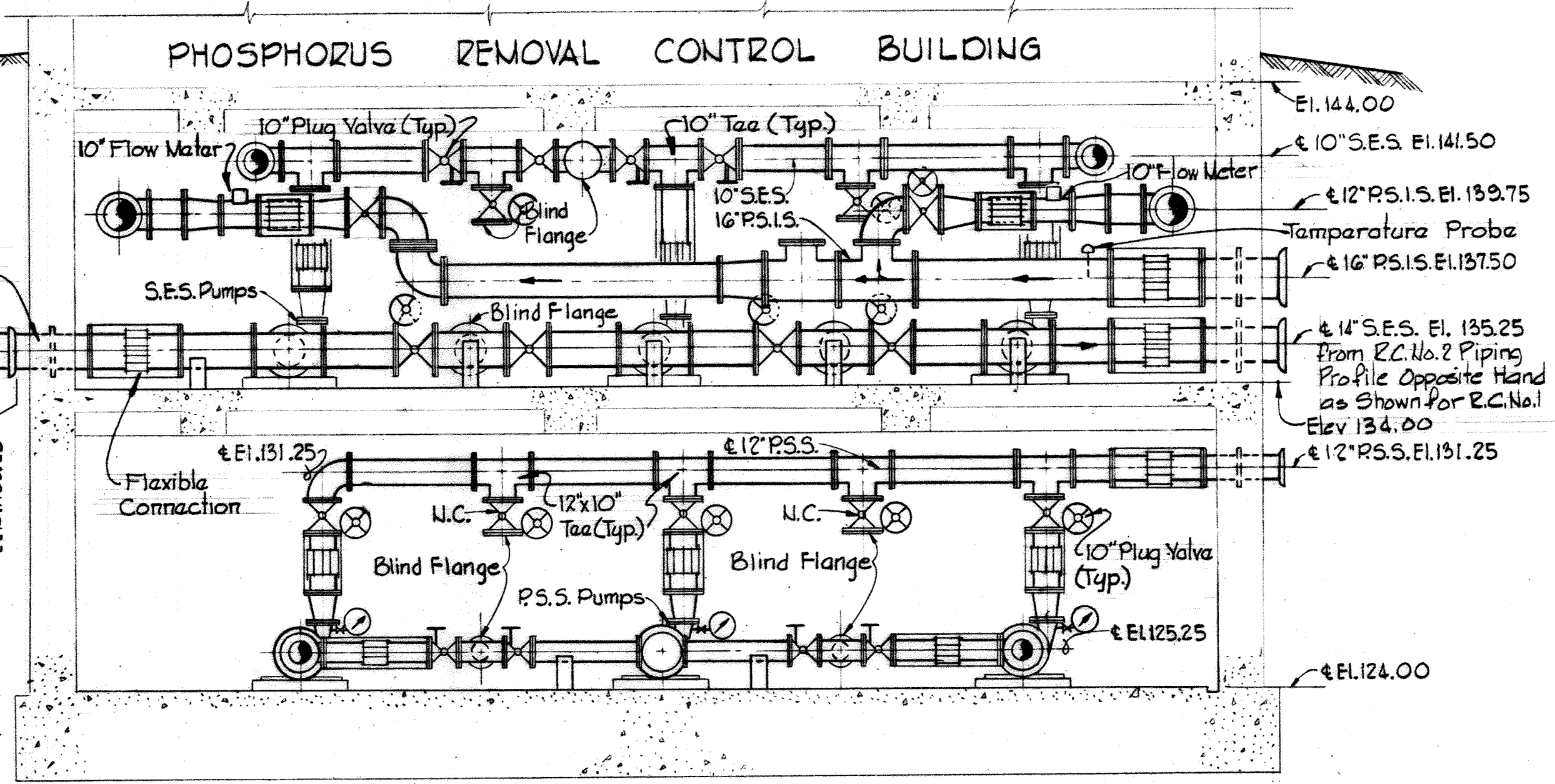
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 29 OF 50
SCALE AS NOTED

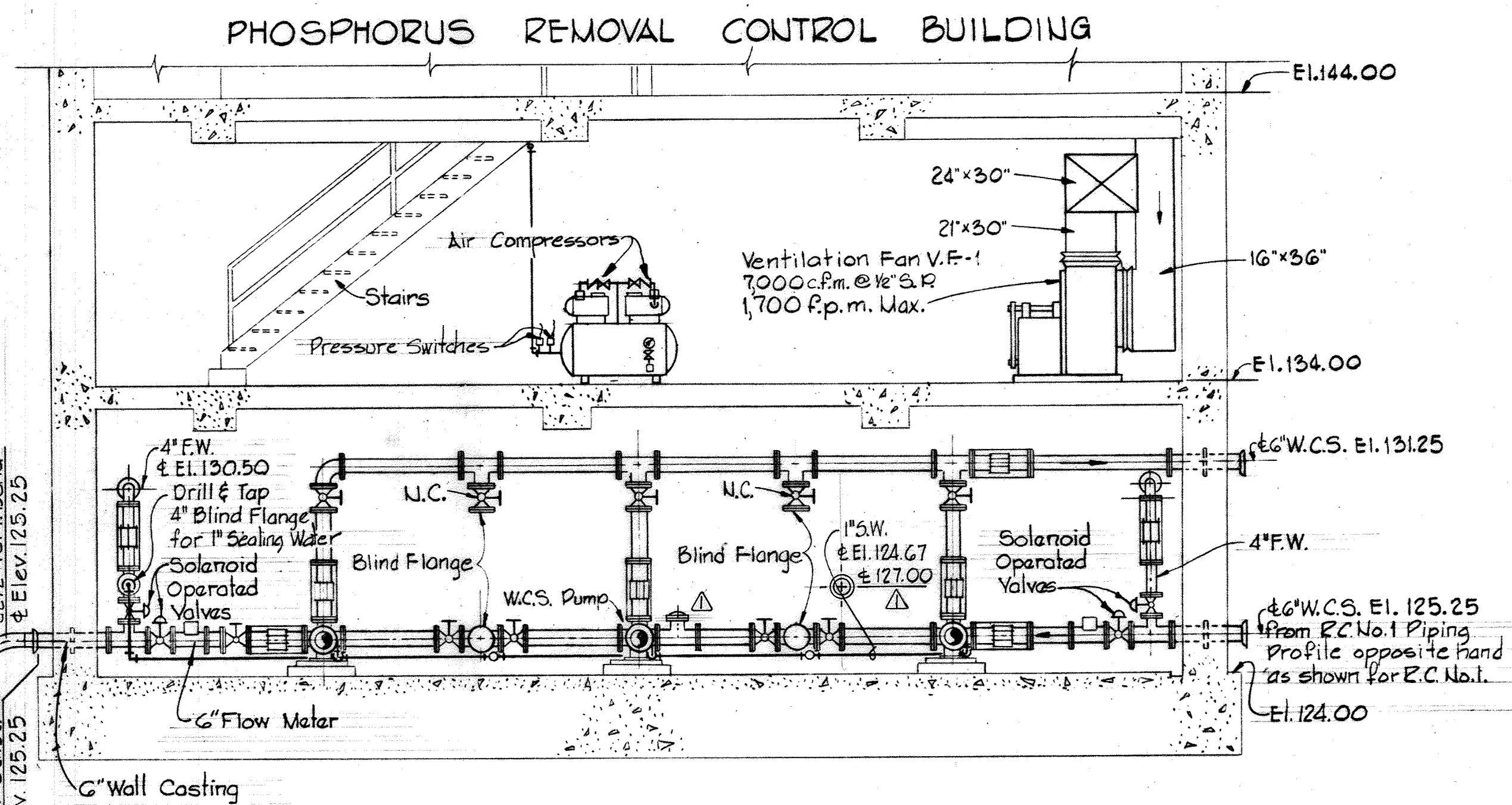


SECTION M-5A/M-2,U-3
Scale: 1/4"=1'-0"

W.E. 140.75



SECTION M-5B/M-2,U-3
Scale: 1/4"=1'-0"



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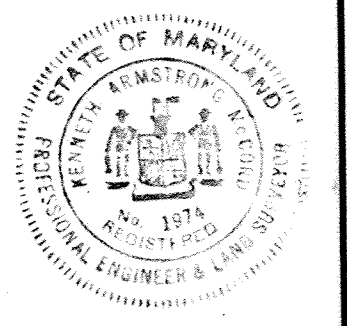
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
Richard L. Freudenberger
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

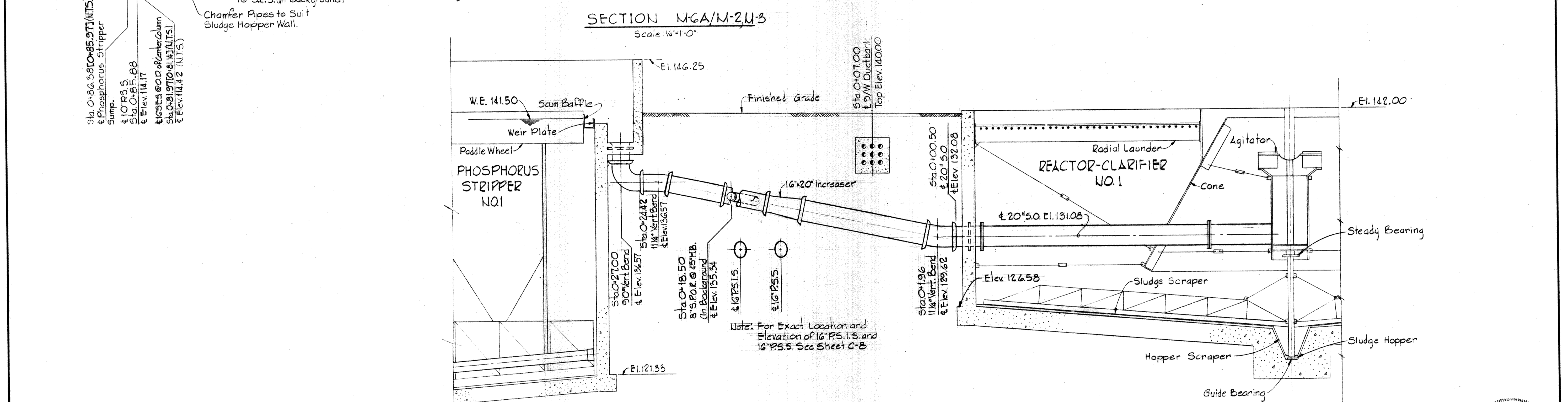
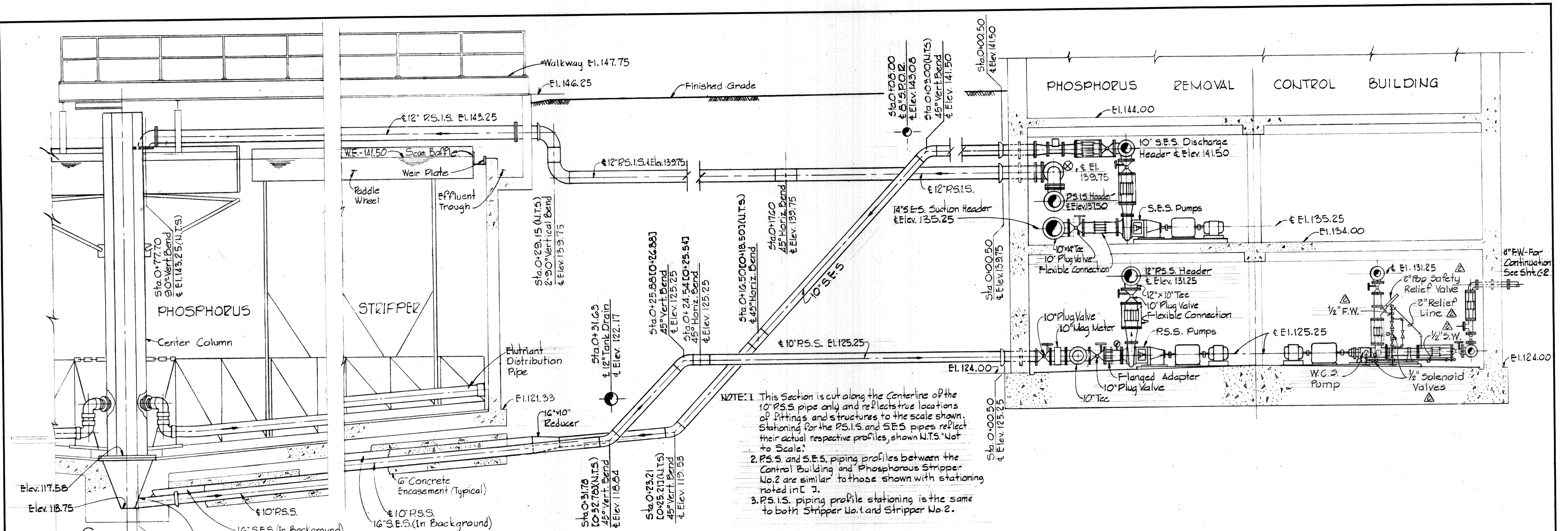
CONTRACT NO. 760-S

PHOSPHORUS CONTROL BUILDING
SECTIONS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 30 OF 50
SCALE AS NOTED





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ENGINEERS
1304 ST. PAUL ST.
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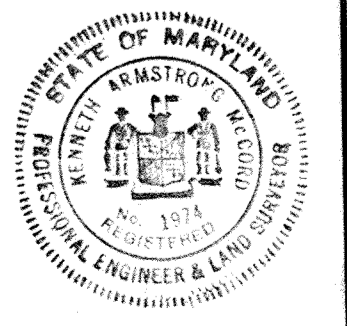
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Greenberg
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

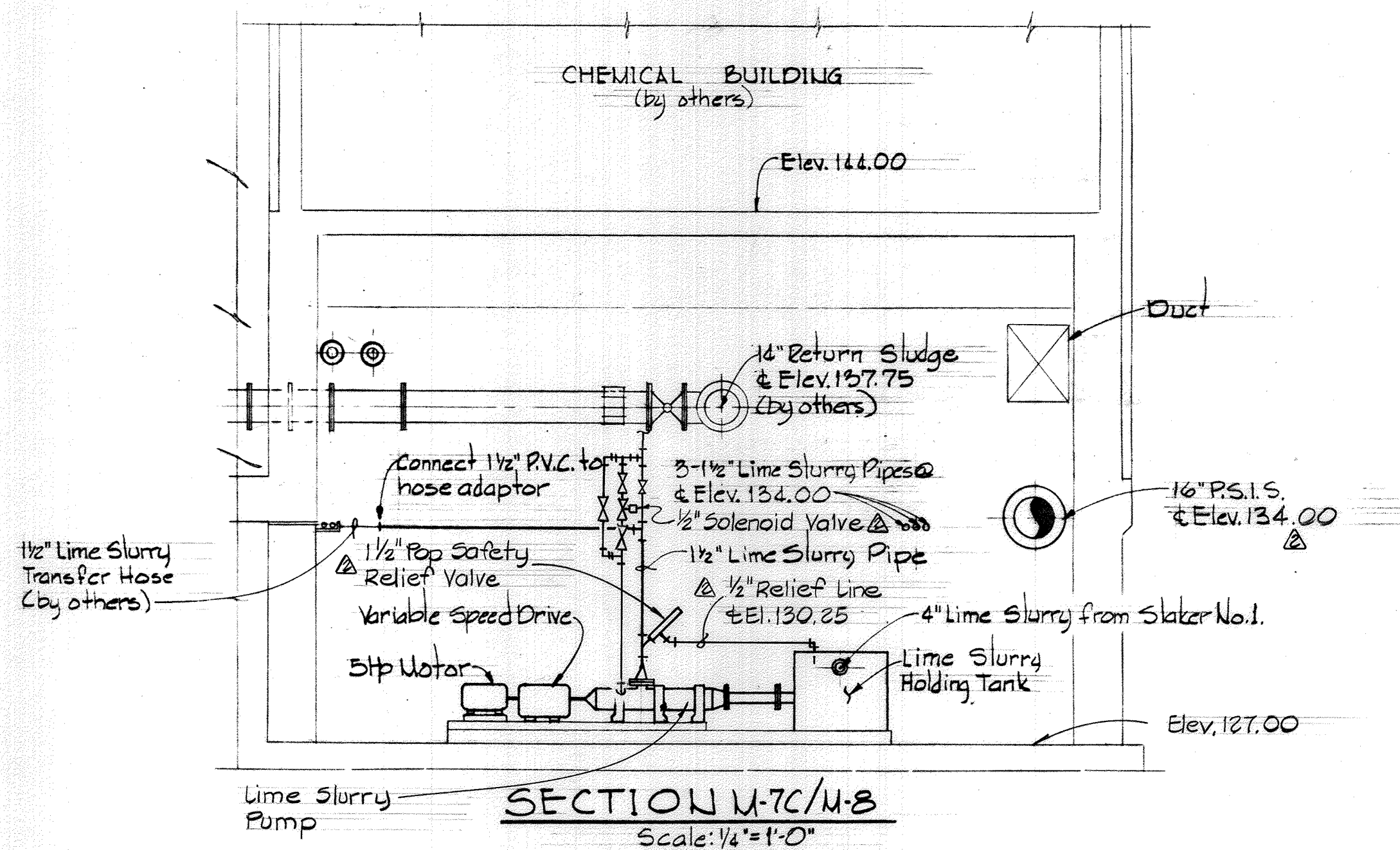
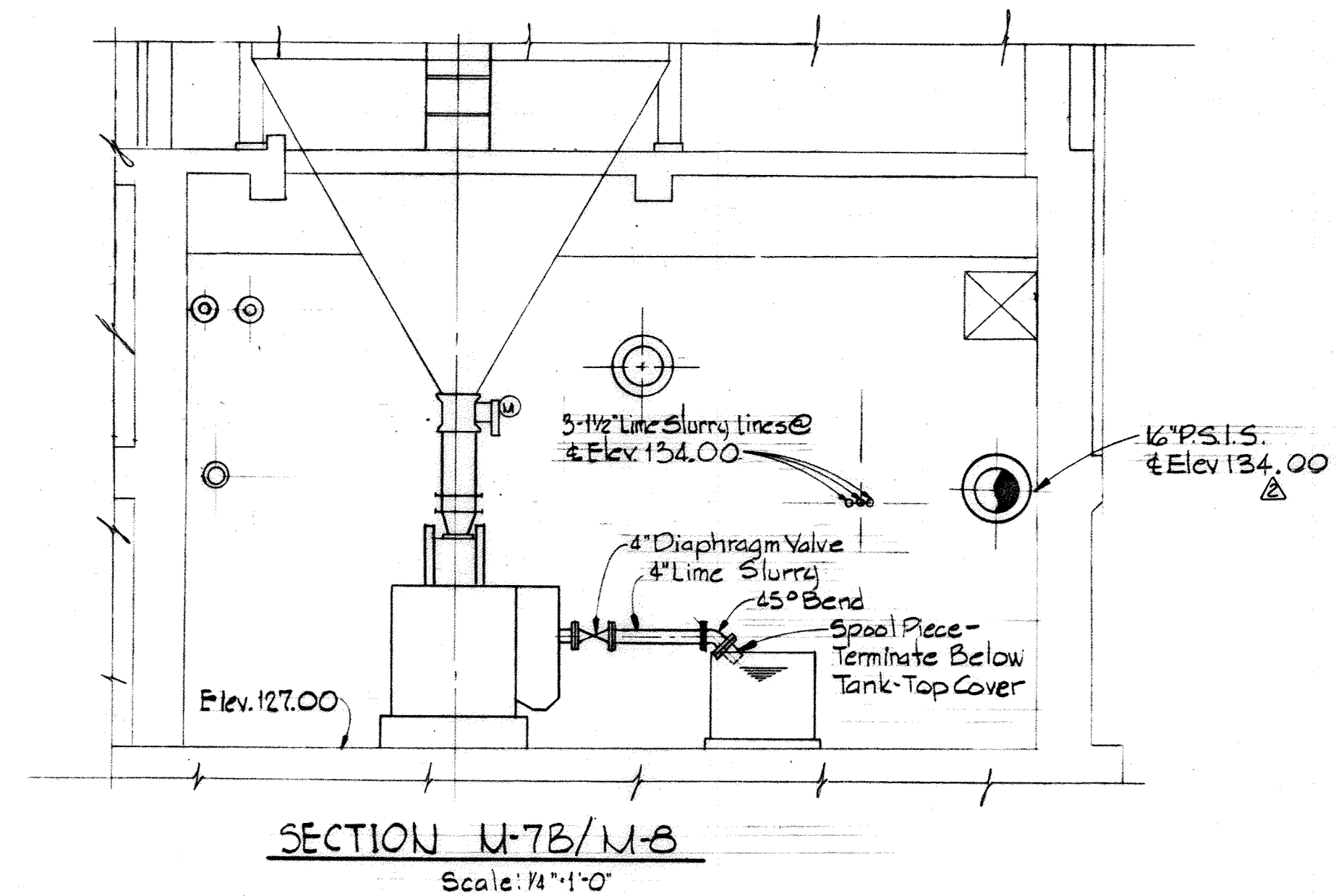
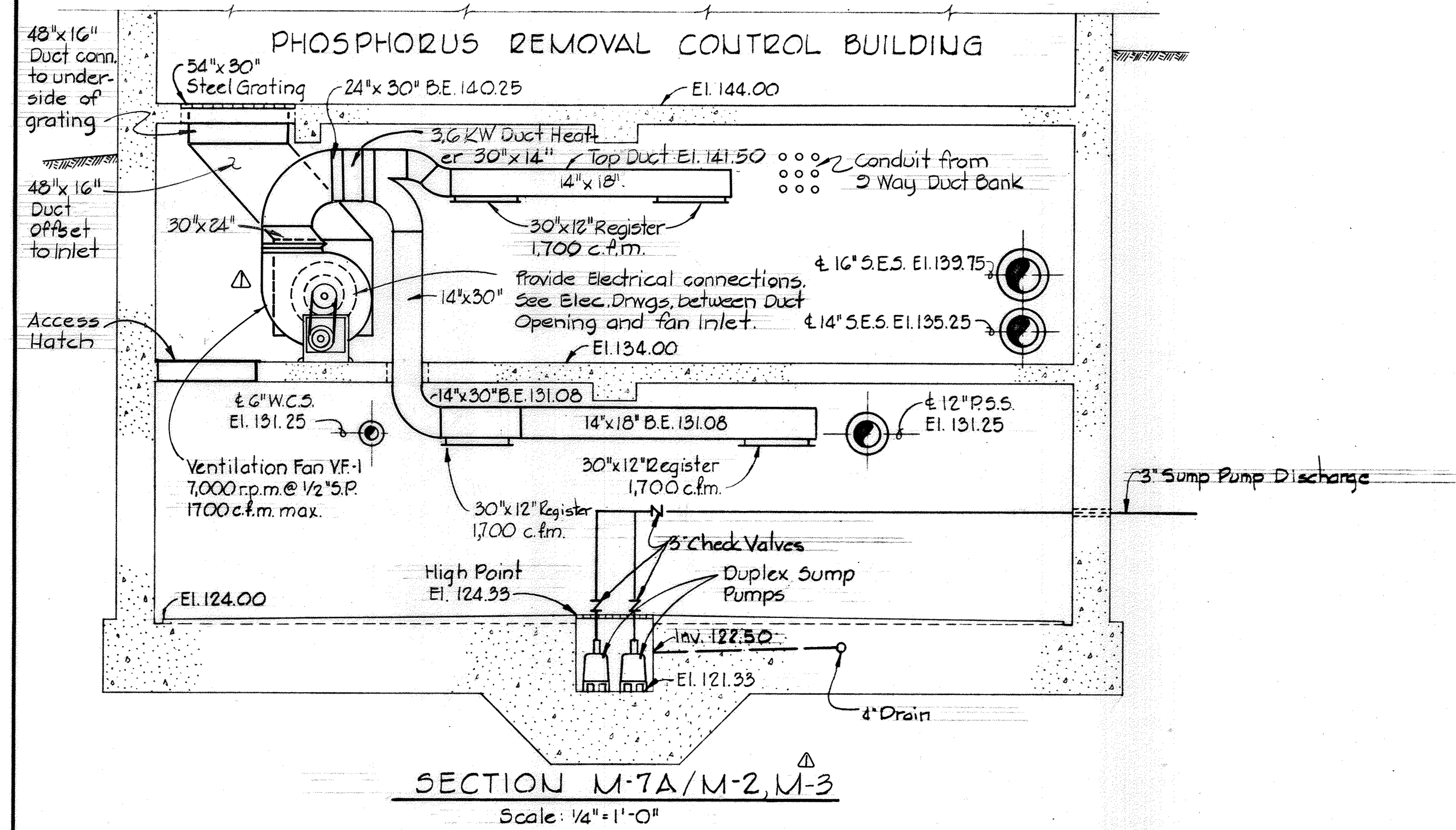
CONTRACT NO. 760-S

PHOSPHORUS CONTROL BUILDING
SECTIONS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO 4

DRAWING NO. 31 OF 50	SCALE AS NOTED
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ENGINEERS
1304 ST. PAUL ST.
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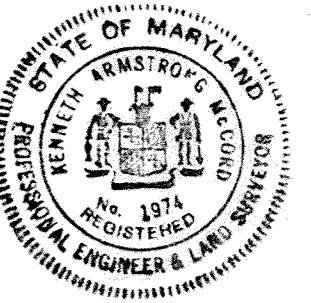
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Trendelenburg
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

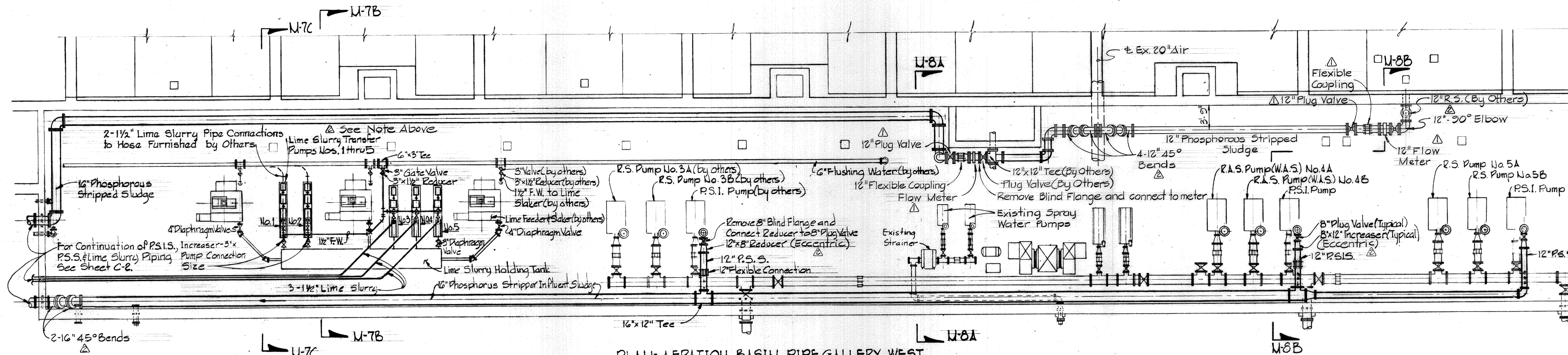
PHOSPHORUS CONTROL BUILDING
SECTIONS & DETAILS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 32 OF 50
SCALE AS NOTED



△ Note:
Lime Slurry Transfer Pumps with
1/2" pop safety relief valve in
discharge line and 1/2" sealing
water line and 1/2" solenoid valve.

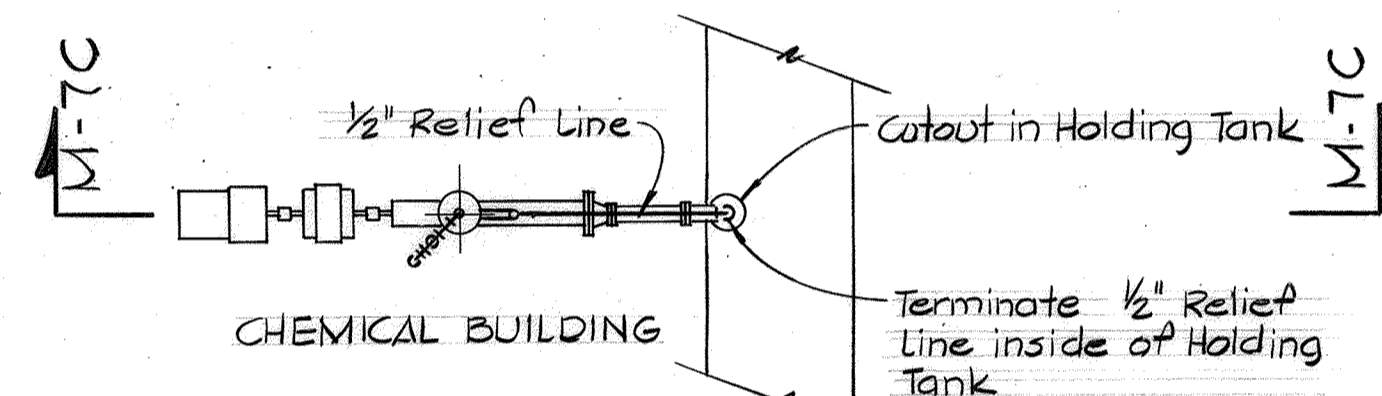


PLAN - AERATION BASIN PIPE GALLERY WEST

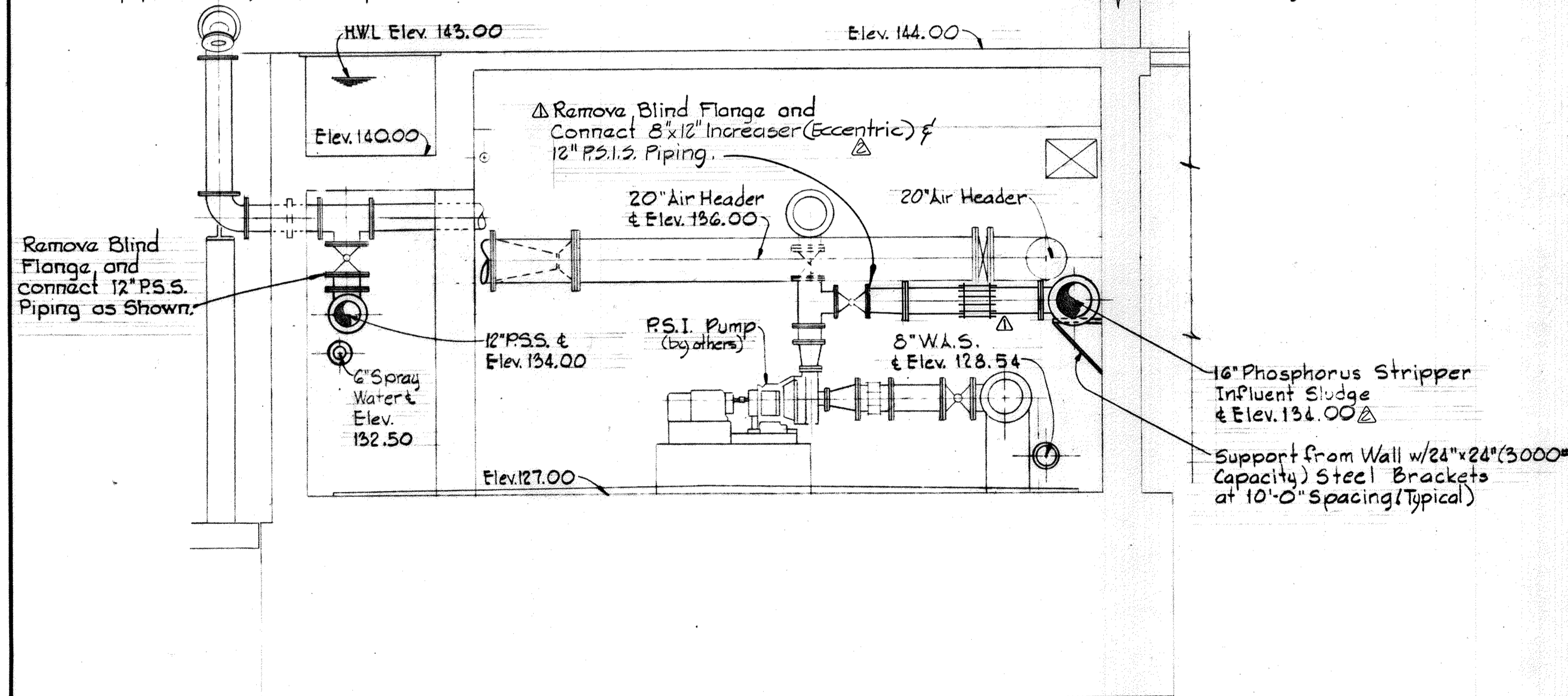
Scale: 1/8" = 1'-0"
Instrumentation panel annunciator. Both the lime feeder
control stations and the alarm annunciator are being
furnished and installed by others.

△ Notes - Lime Slurry Holding Tank;

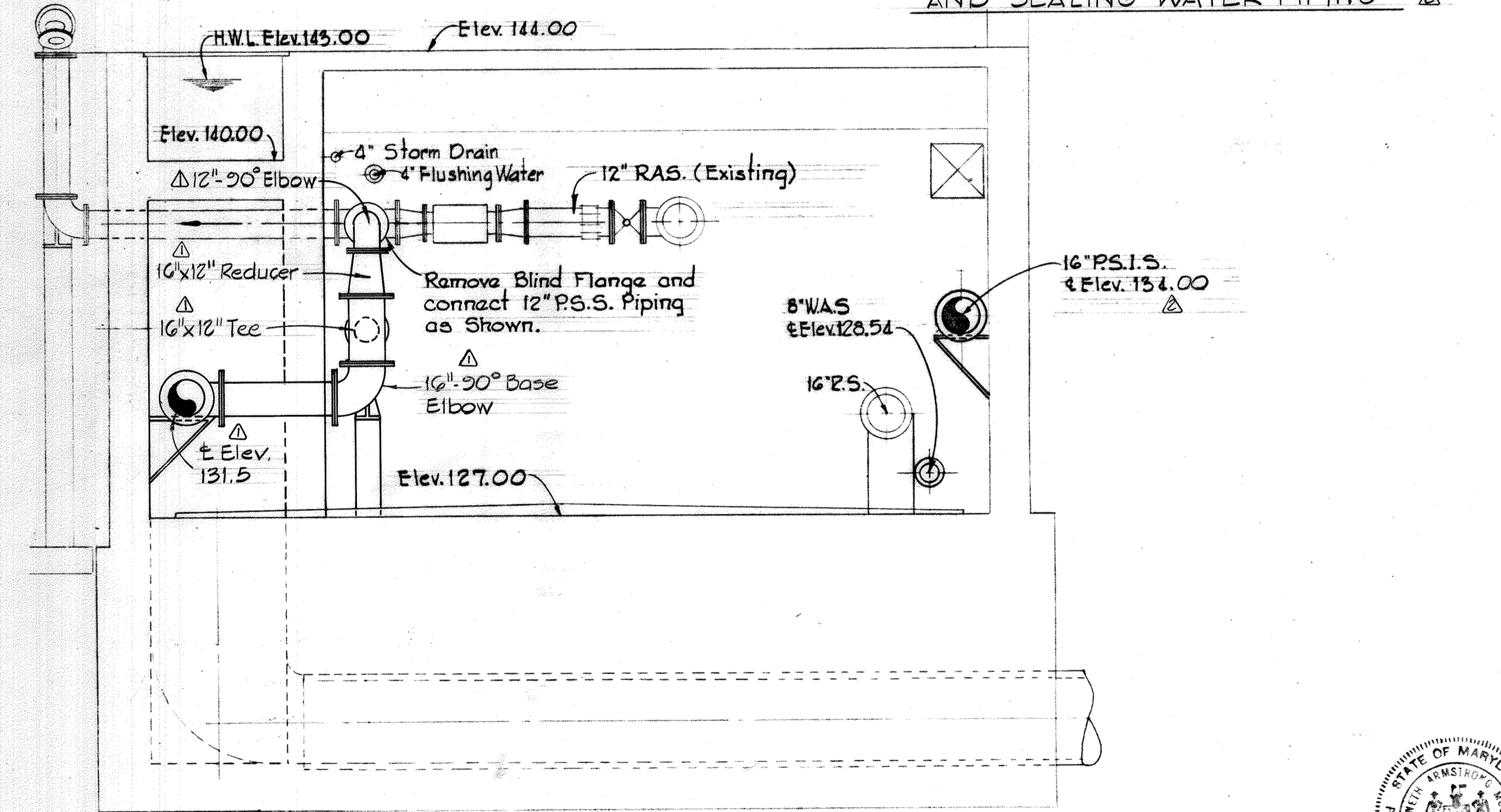
- 1- The Tank shall be 24'-0" long x 3'-0" wide x 2'-6" deep with access openings for mixers and two (2) - 2'-6" x 2'-6" minged inspection lids in the top cover. The tanks shall be constructed of 1/4" steel plate with all seams welded and all corners and edges reinforced as required. All surfaces shall be epoxy coated as specified in spec. section 9 B, PAINTING.
- 2- Three 1/4 horsepower clamp mounted mixers shall be furnished and installed to the tank as shown on Addendum No. 3, sketches 3 & 4. The mixers shall be Philadelphia Mixer Corp. Gearline Model G-14, Model NC-4 or Mixing Equipment Co., Inc., or equal.
- 3- The Contractor shall furnish and install a ultrasonic level monitor and controller to indicate level and start and stop the lime slakers and feeders as shown on the enclosed sketches and specified herein. The level monitor and controller shall be Rexnord Instrument Products Model 2020, the comparable model of Enviro Tech, or equal. The unit shall be complete with NEMA 4 housing for mounting as shown on sketch # 4 and shall include an automatic transfer plug board for selection of the lead-lag lime feeder-slaker level control signals enclosed within the housing. The control signals shall be transmitted to the local lime feeder control stations. The alarm signals shall be transmitted to the existing Control Building No. 1,



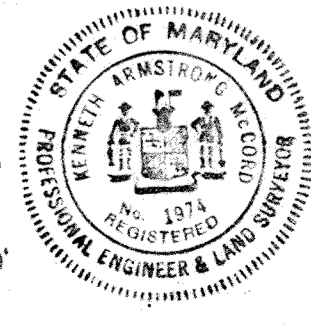
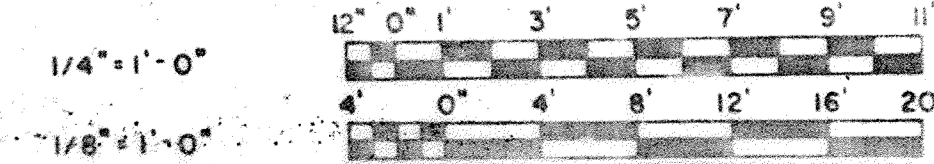
LIME SLURRY PUMP RELIEF VALVING AND SEALING WATER PIPING



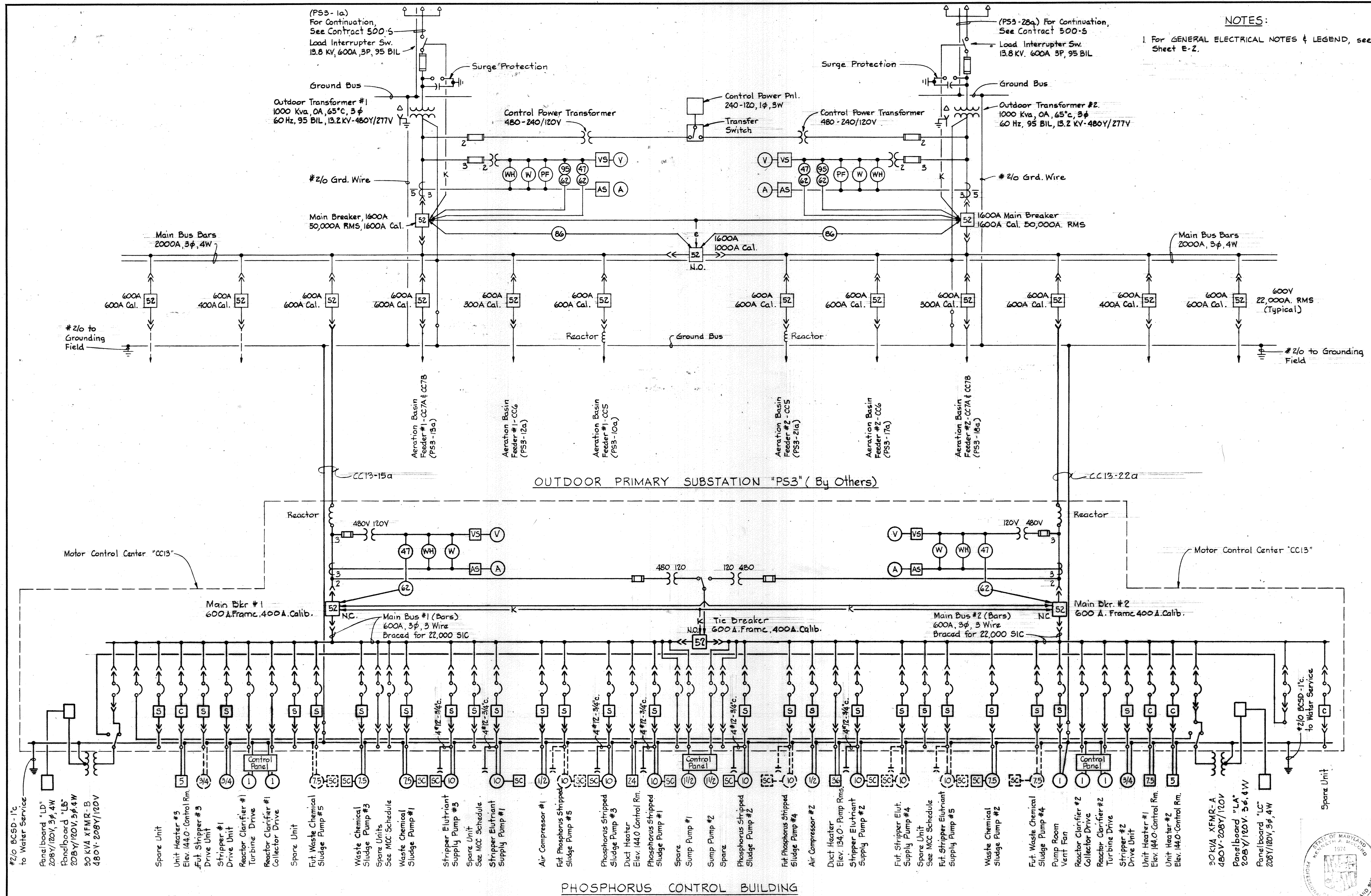
SECTION U-8B/M-8
Scale: 1/4" = 1'-0"



SECTION U-8A/M-8
Scale: 1/4" = 1'-0"



WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 Richard E. Mendenhall CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760 - S	AERATION GALLERY WEST PIPING CONNECTIONS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 33 OF 50 SCALE AS NOTED
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NOTES:
 1 For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.

<p>WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 1/12/78 <i>Richard E. Lundenberg</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>CONTRACT NO. 760-S</p>	<p>POWER ONE LINE DIAGRAM</p>	<p>SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4</p>	<p>DRAWING NO. 34 OF 50 SCALE AS SHOWN</p>
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INTERIOR

<p>○ □ ○ Outlet Incandescent - Ceiling, Recessed, Wall</p> <p>⊕ ⊖ Outlet Incandescent - Emergency - Ceiling, Wall</p> <p>⊙ ⊙ Outlet - Clock - Single Face - Ceiling, Wall</p> <p>⊙ ⊕ ⊖ Outlet - Clock - Double Face - Ceiling, Wall</p> <p>□ □ Outlet - Fluorescent - 4 Foot</p> <p>□ □ Outlet - Fluorescent - 4 Foot with Kindorf Wiring Channel</p> <p>□ □ Outlet - Fluorescent - 4 Foot with Kindorf support & Conduit</p> <p>□ □ Outlet - Fluorescent - 2 Foot</p> <p>⊙ ⊕ ⊖ Outlet - Exit Light - Ceiling, Wall - with or without Directional Arrows</p> <p>⊕ ⊖ Outlet - Mercury - Ceiling, Wall</p> <p>⊕ ⊖ Outlet - Duplex Convenience</p> <p>⊕ ⊖ Outlet - Special Purpose, Floor</p> <p>⊕ ⊖ Outlet - 20A 250V Receptacle - Polarized</p> <p>⊕ ⊖ Outlet - 30A 250V Receptacle & Plug - Polarized</p> <p>⊕ ⊖ Outlet - 50A 250V Receptacle - Polarized</p> <p>⊕ ⊖ Outlet - Telephone - Wall, Desk, Extension</p> <p>⊕ ⊖ Outlet - Intercommunication</p> <p>⊕ ⊖ Junction Box</p> <p>EXP WP Explosion-proof, Weatherproof - where indicated</p> <p>S S₂ S_P Switch - Single Pole, Double Pole, with Pilot Light</p> <p>S₃ S₄ Switch - Three Way, Four Way</p> <p>S_X S_D Switch - Key Operated, Door Operated</p> <p>SMC S_{RC} Switch - Momentary Contact, Remote Control</p> <p>C-1 Contactor - Number as Indicated</p> <p>Th Tc Tf Thermostat - Heating, Cooling, Freeze-stat</p> <p>A ⊕ Aquastat - Generator</p> <p>Unit Heater</p> <p>Unit Heater</p> <p>Motor - Constant Speed, Variable Speed</p> <p>Starter - Manual, Combination</p> <p>Starter - Magnetic (FVNR), Magnetic (FVR)</p> <p>Starter - Magnetic [FVNR - 2S (Two Speed)]</p> <p>Disconnect Switch - Fused, Unfused</p> <p>Selector Switch - Two Position</p> <p>Secondary Motor Controls</p> <p>Pull Box - Size as Indicated</p> <p>Telemetry Transmitter - Number as Noted</p> <p>Lighting Panel - Power Panel</p> <p>Telephone or Control Wiring Cabinet - as Noted</p> <p>Contactor Cabinet</p> <p>Home run to Panelboard - Number of arrows indicates number of circuits, number of cross lines indicates number of wires. Where no cross lines appear, two conductors are implied</p>	<p>Conduit - On Ceiling or Wall</p> <p>Conduit - Under Floor</p> <p>Conduit - Telephone</p> <p>PT Conduit - Private Telephone</p> <p>FA Conduit - Fire Alarm</p> <p>C Conduit - Communication</p> <p>Conduit - In Wall, Slab or Ceiling</p> <p>Conduit - Stub Up, Stub Down</p> <p>Conduit - Seal</p> <p>Disconnect - Circuit Breaker</p> <p>Outlet - Incandescent - Floodlight</p> <p>Pushbutton Station - One, Two & Three Pushbutton</p> <p>Horn - Bell</p> <p>Motor Control Center Wire & Cable Run Number</p> <p>SI-1 Switchgear Wire & Cable Run Number</p> <p>SS1-1 Unit Substation Wire & Cable Run Number</p> <p>CS Control Cable Wire & Cable Run Number</p> <p>Fire Detector</p> <p>Fire Alarm Striking Station</p> <p>Fire Alarm Bell</p> <p>End of line Resistor</p> <p>Pressure Switch</p> <p>Hydraulic Valve & Limit Switches</p> <p>Dimmer - type as specified</p> <p>GFP Ground Fault Protected</p>
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ONE LINE/ELEMENTARY

<p>Molded Case Circuit Breaker</p> <p>Oil Circuit Breaker</p> <p>Selector Switch</p> <p>Disconnecting Switch</p> <p>Interrupter Switch</p> <p>Selector Interrupter Switch</p> <p>Knife Switch</p> <p>Contacts - Normally Open</p> <p>Contacts - Normally Closed</p> <p>Current Transformer</p> <p>Potential Transformer</p> <p>Power Transformer</p> <p>Ground Resistor</p> <p>Fuse</p> <p>Pothead</p> <p>Pushbutton</p> <p>Pressure Switch</p> <p>Float Switch</p> <p>Flow Switch</p> <p>Limit Switch</p> <p>Thermostat</p> <p>Disconnect Link</p> <p>Lightning Arrester</p> <p>Incoming Line</p> <p>Outgoing Line</p> <p>Tie Line</p> <p>Capacitor</p> <p>Rectifier</p> <p>Mechanical Interlock</p> <p>Electrical Interlock</p> <p>Key Interlock</p> <p>Overcurrent Trip Thermal Type</p> <p>Relay - Instantaneous Overcurrent, Time Overcurrent</p> <p>A.C. Power Circuit Breaker</p> <p>Motor (three phase) - Constant Speed, Variable Speed</p> <p>Starter - Magnetic (FVNR); Magnetic (FVR), Magnetic [FVNR - 2S (Two Speed)]</p> <p>Running Time Meter</p> <p>Indicating Light - color as indicated by letter</p> <p>Solenoid - Motor (single phase)</p> <p>Pull Type Fuse Box</p>	<p>Contactor Coil - Starter Coil (number as indicated)</p> <p>Ammeter - Ammeter Switch</p> <p>Voltmeter - Voltmeter Switch</p> <p>Watt-hour meter - Kilowatt meter</p> <p>Test Block - Test Switch</p> <p>Recording - Recording Demand Meter</p> <p>Relay & Timer - Number as indicated</p> <p>Instrument Switch - Control Switch</p> <p>Ground Lamps - Power Factor Meter</p> <p>Phase Sequence Voltage Relay</p> <p>Tripping Relay lock out Type - Differential Relay</p> <p>Automatic Transfer Switch</p> <p>Electric Radiant Heaters</p> <p>Contactor - Demand Meter</p> <p>Relay - Time Overcurrent w/ Instantaneous Trip</p> <p>Ground Overcurrent Relay - Tripping Relay</p> <p>Frequency Meter</p> <p>Position Indicator - Ground Sensing Relay</p> <p>A.C. Power Circuit Breaker with Solid State Trip & Ground Device</p> <p>Receptacle & Plug - Polarized</p> <p>Horsepower Meter</p> <p>Reverse Phase or Phase Balance Current Relay</p> <p>Permissive Control Switch - Time Delay Relay</p> <p>Voltage Unbalance Relay</p> <p>Liquid or Gas Pressure Relay</p> <p>Reverse Phase & Undervoltage Relay with Time Delay</p> <p>Motor Controller - Variable Frequency</p> <p>Pushbutton - Maintain Type</p>
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GENERAL ELECTRICAL NOTES

1. For PANELBOARD SCHEDULES, see Specifications: DETAILED ELECTRICAL REQUIREMENTS.
2. For explanation of Lighting Fixture Types shown on Dwgs, see Specifications: DETAILED ELECTRICAL REQUIREMENTS.
3. Mounting heights for interior lighting fixtures shall be from finished floor to bottom of fixture unless otherwise noted.
4. Mounting heights for lighting fixtures mounted on exterior walls of buildings shall be from finished floor to centerline of recessed junction box unless otherwise noted.
5. Verify all door swings before installing switch boxes.
6. Receptacles shall be mounted 2'-0" above finished floor unless otherwise noted.
7. All Elementary Control Diagrams are shown de-energized.

LOCATION SYMBOLS FOR ELEMENTARY CONTROL DIAGRAMS

● PCB	Device located in respective Motor Control Center
■	Device located at respective unit
▲	Device located at respective motor
●	Device located in Starter
⊕	Device located in Switchgear
⊕	Device located in Switchboard "SWBD"
⊕ PCB	Device located in Instr Panel Phosphorus Control Bldg.
○ PCB	Device located in Substation "PS"
□	Device located in Substation "SS"
△ IAC	Device located in Instrumentation and Control Panel
■	Device located in Control Panel for V.S. Pumping Units

MOTOR CONTROL CENTERS, POWER CENTERS & UNIT SUBSTATIONS AUXILIARY DESCRIPTION

a	Red & Green indicating Lights
b	Third Overload Relay
c	Running Time Meter
d	Hand-Off - Automatic Selector Switch
e	Start - Stop Pushbutton Station
f	Key Interlock
g	480-120 Volt Control Transformer
h	Slow - Fast - Stop Pushbutton Station
j	Forward - Reverse - Stop Pushbutton Station
k	Open - Close Control Switch
△	Dry contact - Normally Open

UNDERGROUND

4/W	Ductbank - number of ducts as indicated
2-C	Existing Conduit - size as indicated
DB 2#4	Existing Direct Buried Cable - number and size as indicated.
DB 2#4	Direct Buried Cable - number and size as indicated
C	Conduit - size as indicated
○	Shade duct in ductbank sections denoted existing cables

EXTERIOR

⊕	Mercury Area Light
⊕	Incandescent Area Light
⊕	Existing Pole
35-2	Pole - Length & Class as indicated
35-2-20	Pole with Down Guy & Anchor - length, class & Lead as indicated
35-2	Pole with Street Light - length & class as indicated
4#10	Primary Distribution Line - KV - number & size of wires as indicated
4#2	Secondary Distribution Line - 3φ - number & size of wires as indicated
4#	Service Prop - number & size of wires as indicated
⊕	Weatherhead & Rack

CIRCUIT BREAKER S.I.C. LEGEND

10	10,000 Amperes at Operating Voltage
14	14,000 Amperes at Operating Voltage
22	22,000 Amperes at Operating Voltage
30	30,000 Amperes at Operating Voltage
50	50,000 Amperes at Operating Voltage
60	60,000 Amperes at Operating Voltage
65	65,000 Amperes at Operating Voltage

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST
BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Chief Bureau of Environmental Services

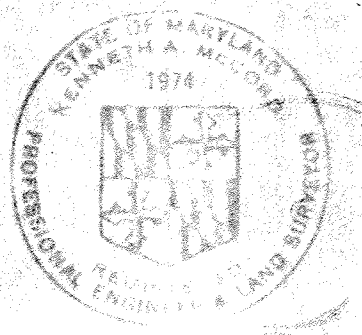
CONTRACT NO. 760-S

GENERAL ELECTRICAL
NOTES AND LEGEND

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO.4

DRAWING
NO. 35
OF 50

SCALE
AS
SHOWN



A	D	G	J	M	P
B	E	H	K	N	Q
C	F	I	L	O	R

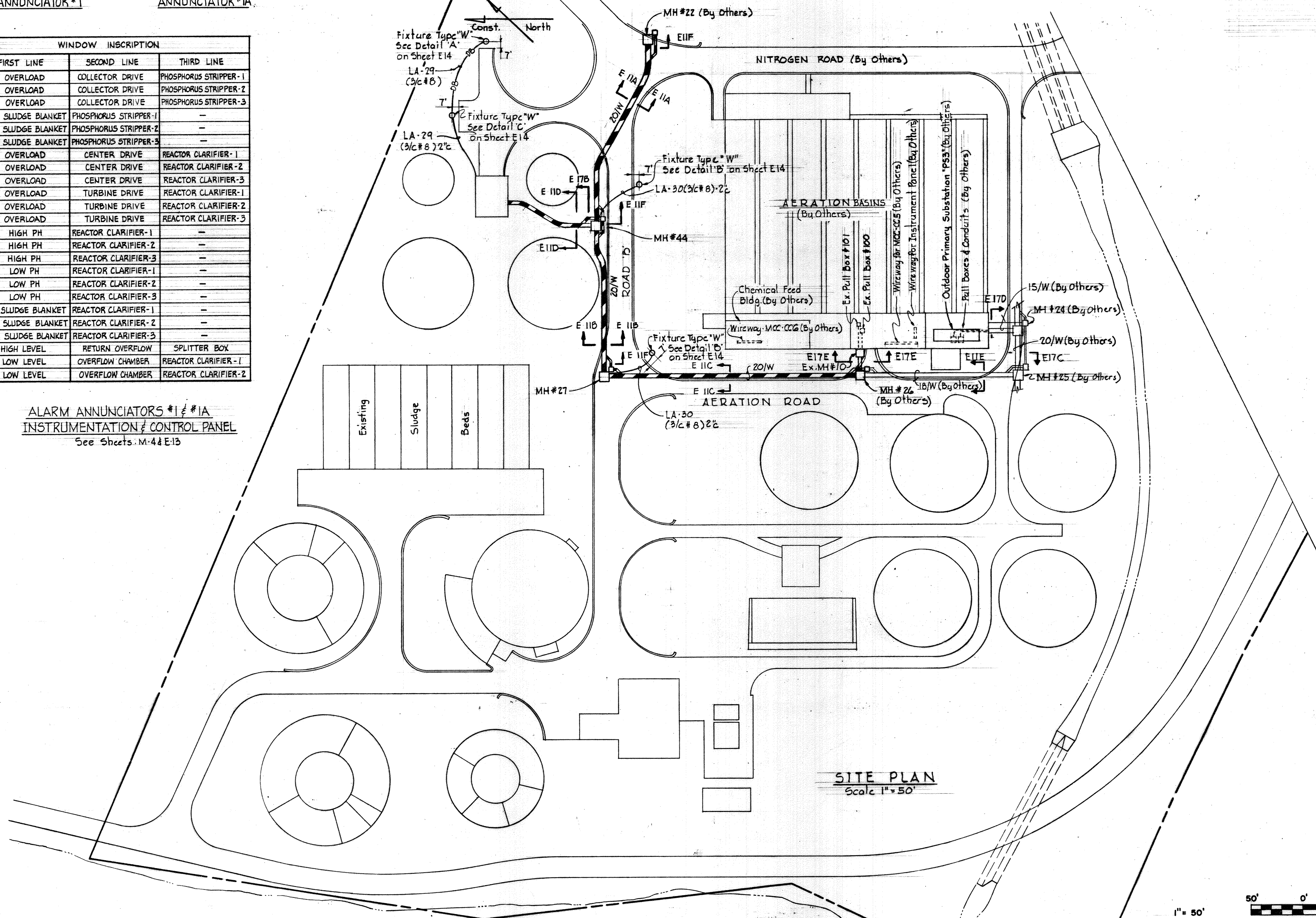
WINDOW LAYOUT
ANNUNCIATOR #1

S	Y		
T	W		
U	X		

WINDOW LAYOUT
ANNUNCIATOR #1A

POINT NO.	WINDOW INSCRIPTION		
	FIRST LINE	SECOND LINE	THIRD LINE
A	OVERLOAD	COLLECTOR DRIVE	PHOSPHORUS STRIPPER-1
B	OVERLOAD	COLLECTOR DRIVE	PHOSPHORUS STRIPPER-2
C	OVERLOAD	COLLECTOR DRIVE	PHOSPHORUS STRIPPER-3
D	HIGH SLUDGE BLANKET	PHOSPHORUS STRIPPER-1	-
E	HIGH SLUDGE BLANKET	PHOSPHORUS STRIPPER-2	-
F	HIGH SLUDGE BLANKET	PHOSPHORUS STRIPPER-3	-
G	OVERLOAD	CENTER DRIVE	REACTOR CLARIFIER-1
H	OVERLOAD	CENTER DRIVE	REACTOR CLARIFIER-2
I	OVERLOAD	CENTER DRIVE	REACTOR CLARIFIER-3
J	OVERLOAD	TURBINE DRIVE	REACTOR CLARIFIER-1
K	OVERLOAD	TURBINE DRIVE	REACTOR CLARIFIER-2
L	OVERLOAD	TURBINE DRIVE	REACTOR CLARIFIER-3
M	HIGH PH	REACTOR CLARIFIER-1	-
N	HIGH PH	REACTOR CLARIFIER-2	-
O	HIGH PH	REACTOR CLARIFIER-3	-
P	LOW PH	REACTOR CLARIFIER-1	-
Q	LOW PH	REACTOR CLARIFIER-2	-
R	LOW PH	REACTOR CLARIFIER-3	-
S	HIGH SLUDGE BLANKET	REACTOR CLARIFIER-1	-
T	HIGH SLUDGE BLANKET	REACTOR CLARIFIER-2	-
U	HIGH SLUDGE BLANKET	REACTOR CLARIFIER-3	-
V	HIGH LEVEL	RETURN OVERFLOW	SPLITTER BOX
W	LOW LEVEL	OVERFLOW CHAMBER	REACTOR CLARIFIER-1
X	LOW LEVEL	OVERFLOW CHAMBER	REACTOR CLARIFIER-2

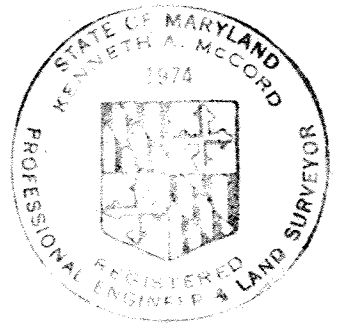
ALARM ANNUNCIATORS #1 & #1A
INSTRUMENTATION & CONTROL PANEL
See Sheets M-4 & E-13



SITE PLAN
Scale 1" = 50'

NOTES:

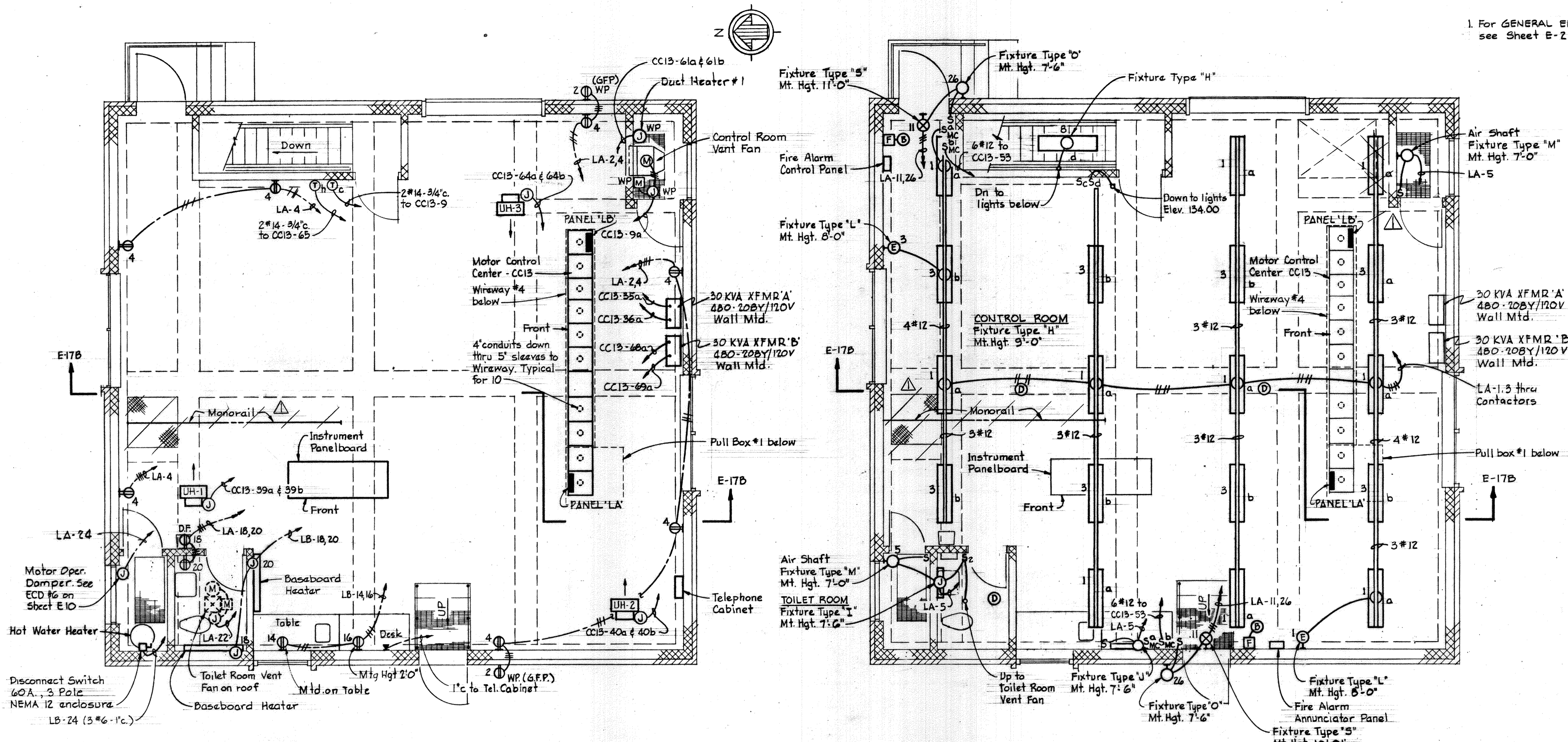
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.
2. For Ductbank Profile & Sections, see Sheet E-11 & E-17.
3. For Foundation Details of Fixture Type 'W' See Sheet E-14.



WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Richard E. Gruendberg</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	SITE PLAN AND DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 36	SCALE AS SHOWN
					OF 50	

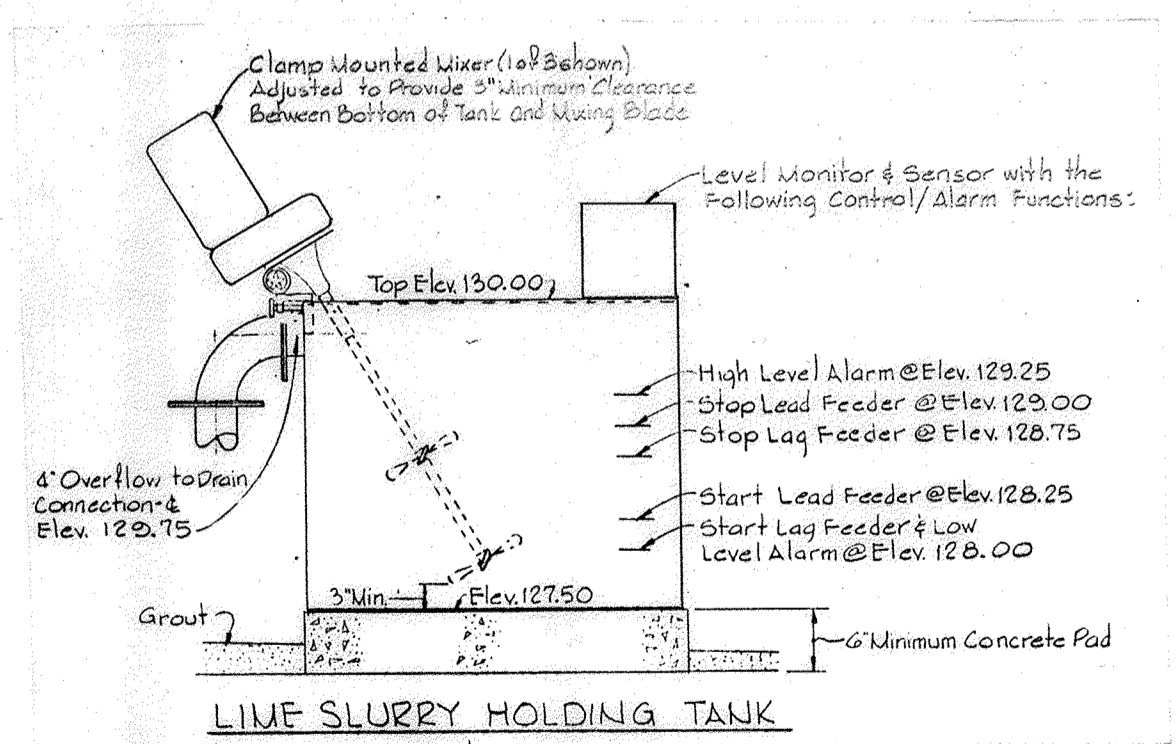
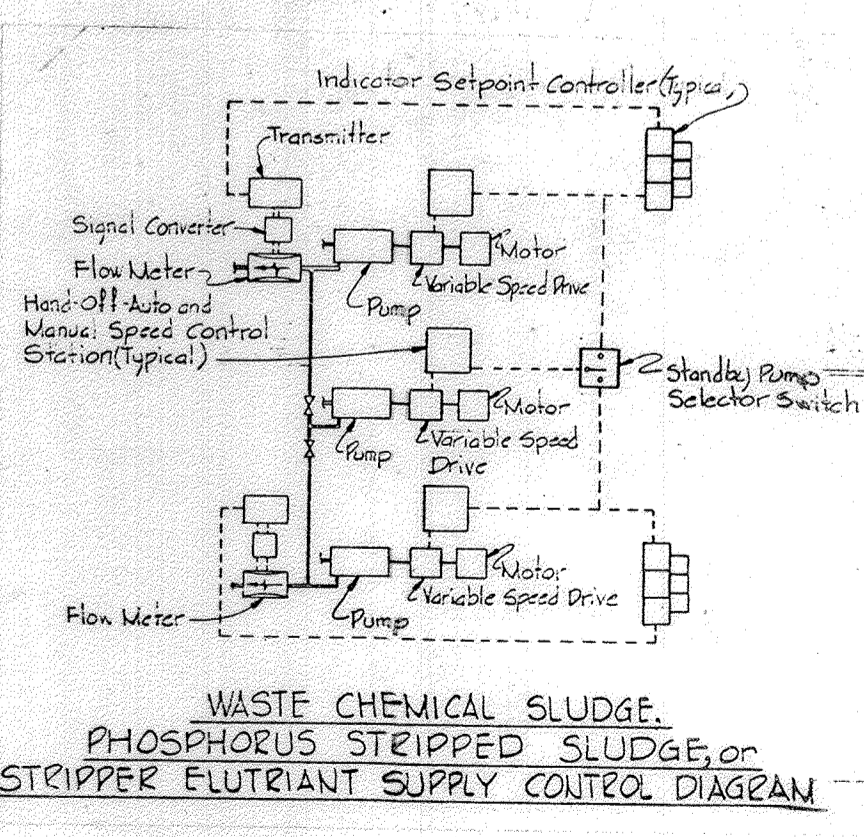
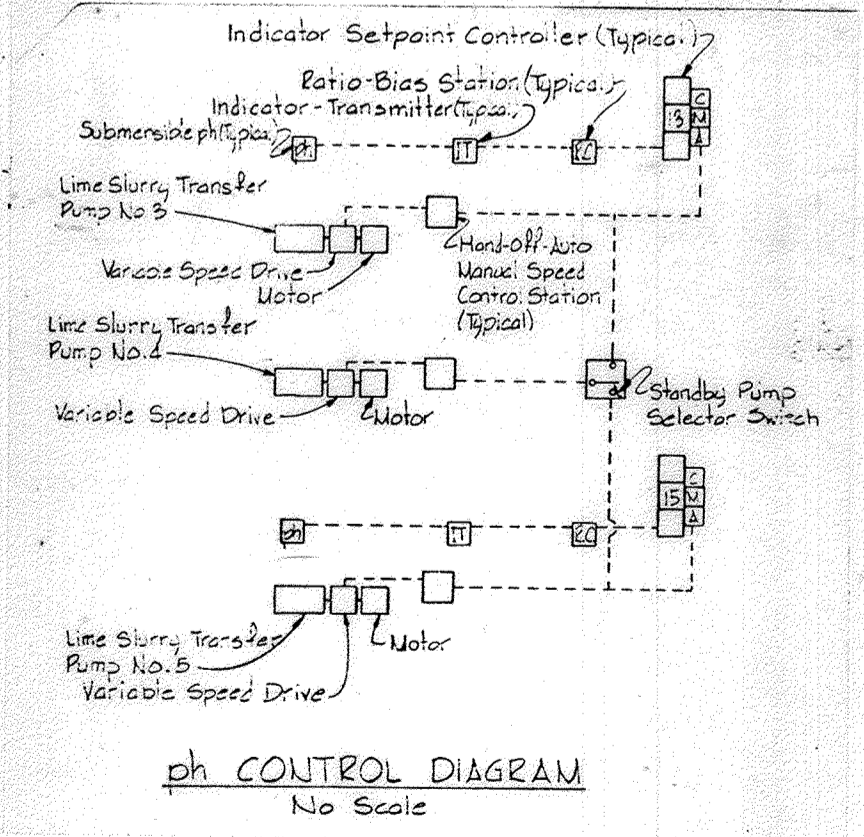
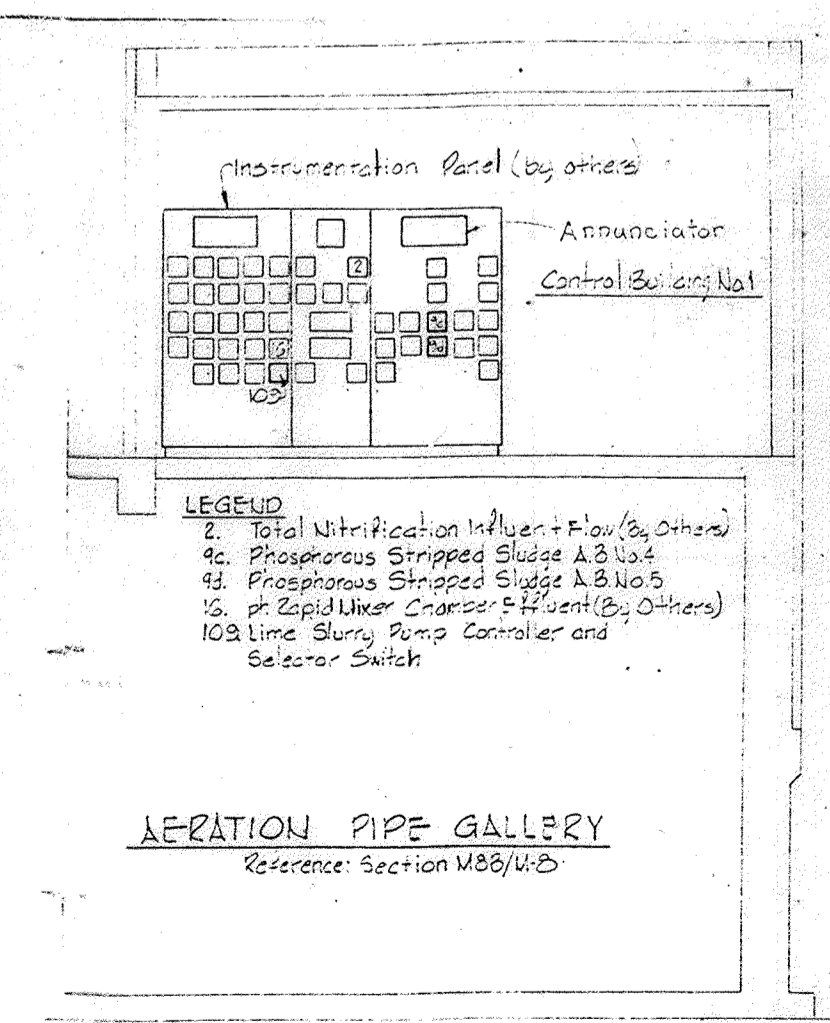
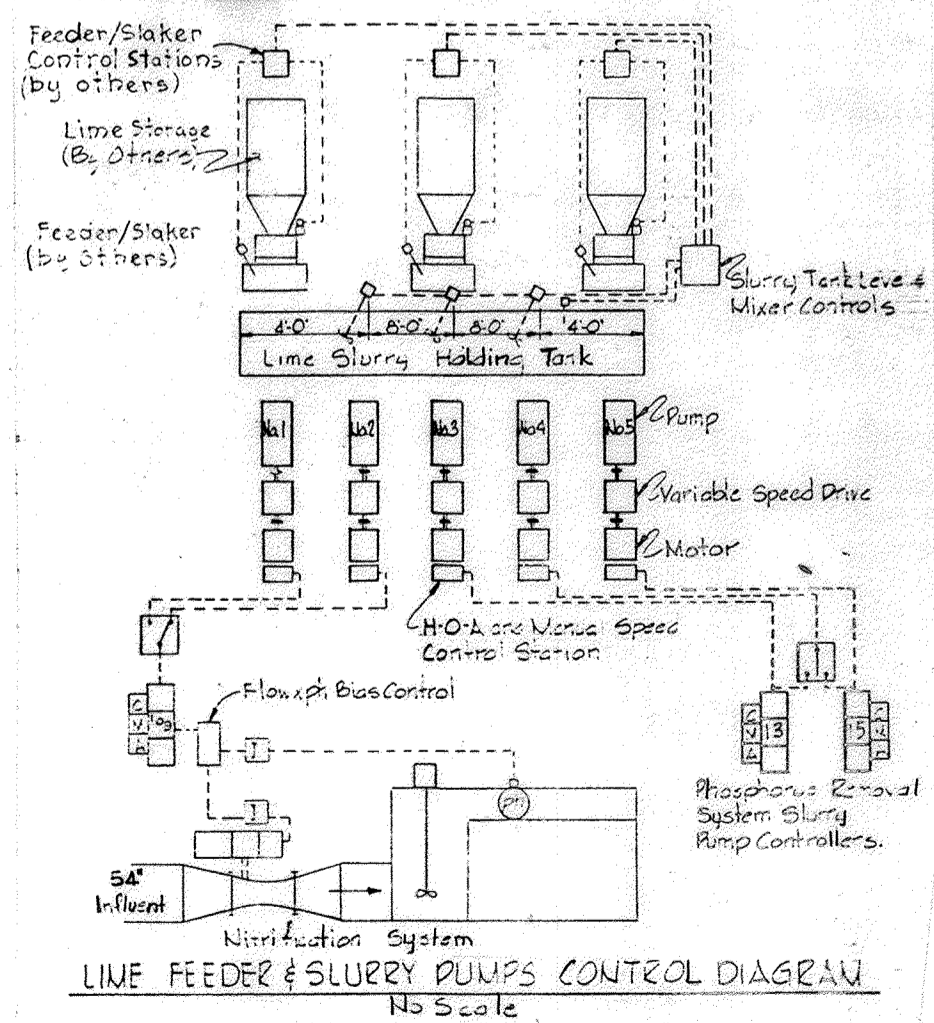
NOTES:

1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2



POWER PLAN - ELEV. 144.00
Scale: 1/4" = 1'-0"

LIGHTING PLAN - ELEV. 144.00
Scale: 1/4" = 1'-0"



SKETCHES - REFERENCE TO SH. E-18

<p>WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 Richard E. Freudenberg CHIEF BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>CONTRACT NO. 760-S</p>	<p>PHOSPHORUS CONTROL BLDG. PLANS AND DETAILS</p>	<p>SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4</p>	<p>DRAWING NO. 37 OF 50 SCALE AS SHOWN</p>
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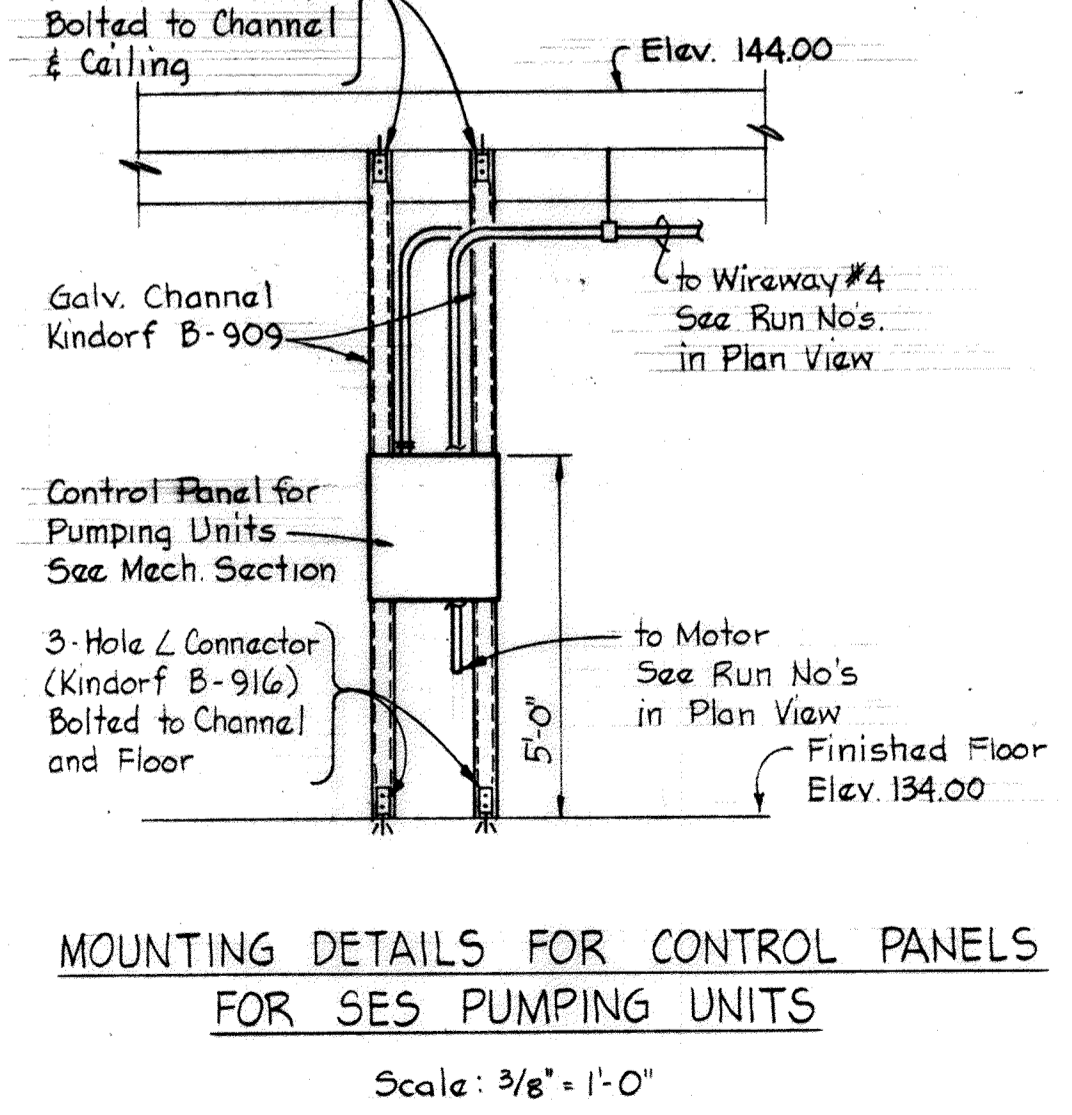
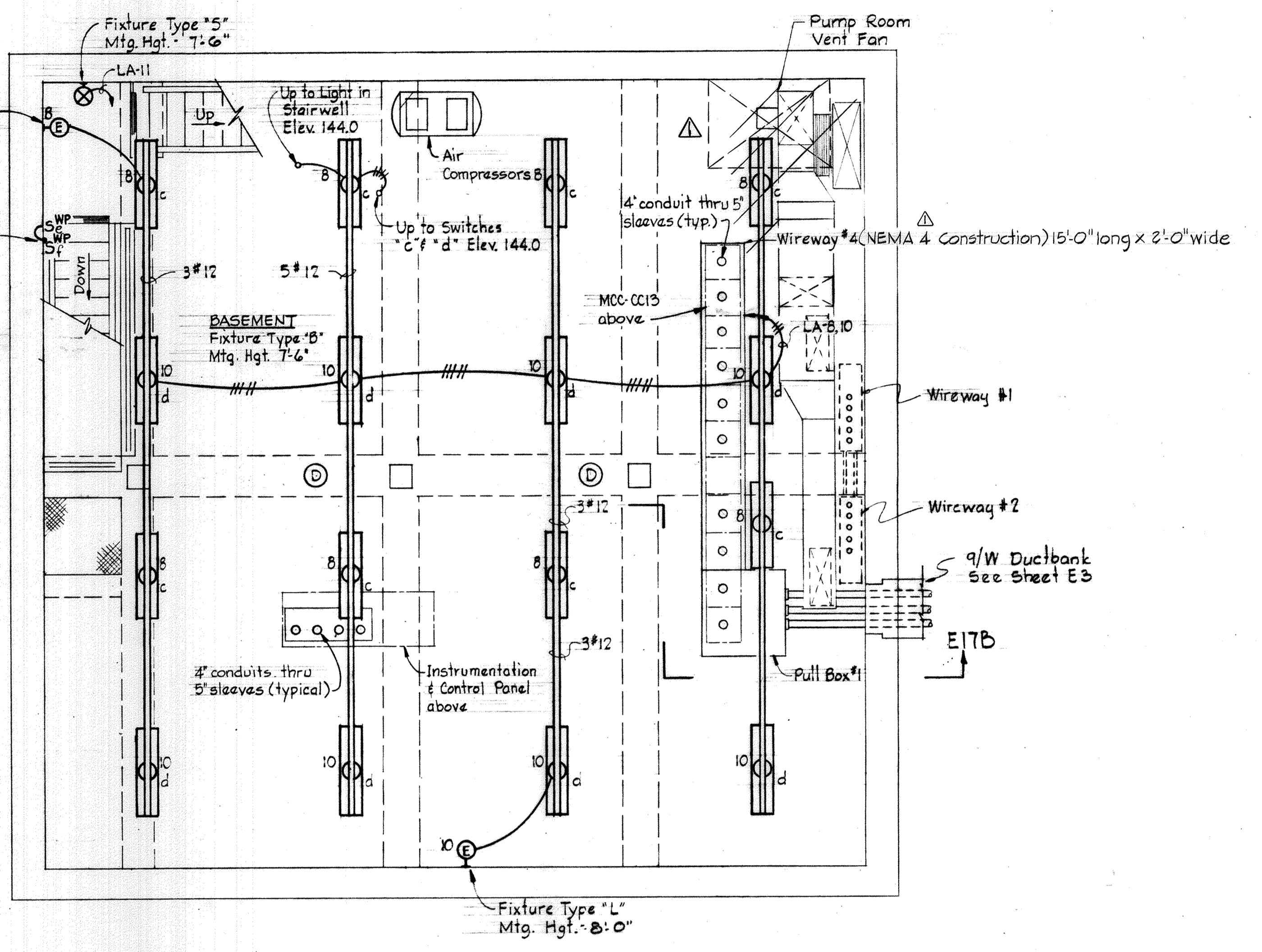
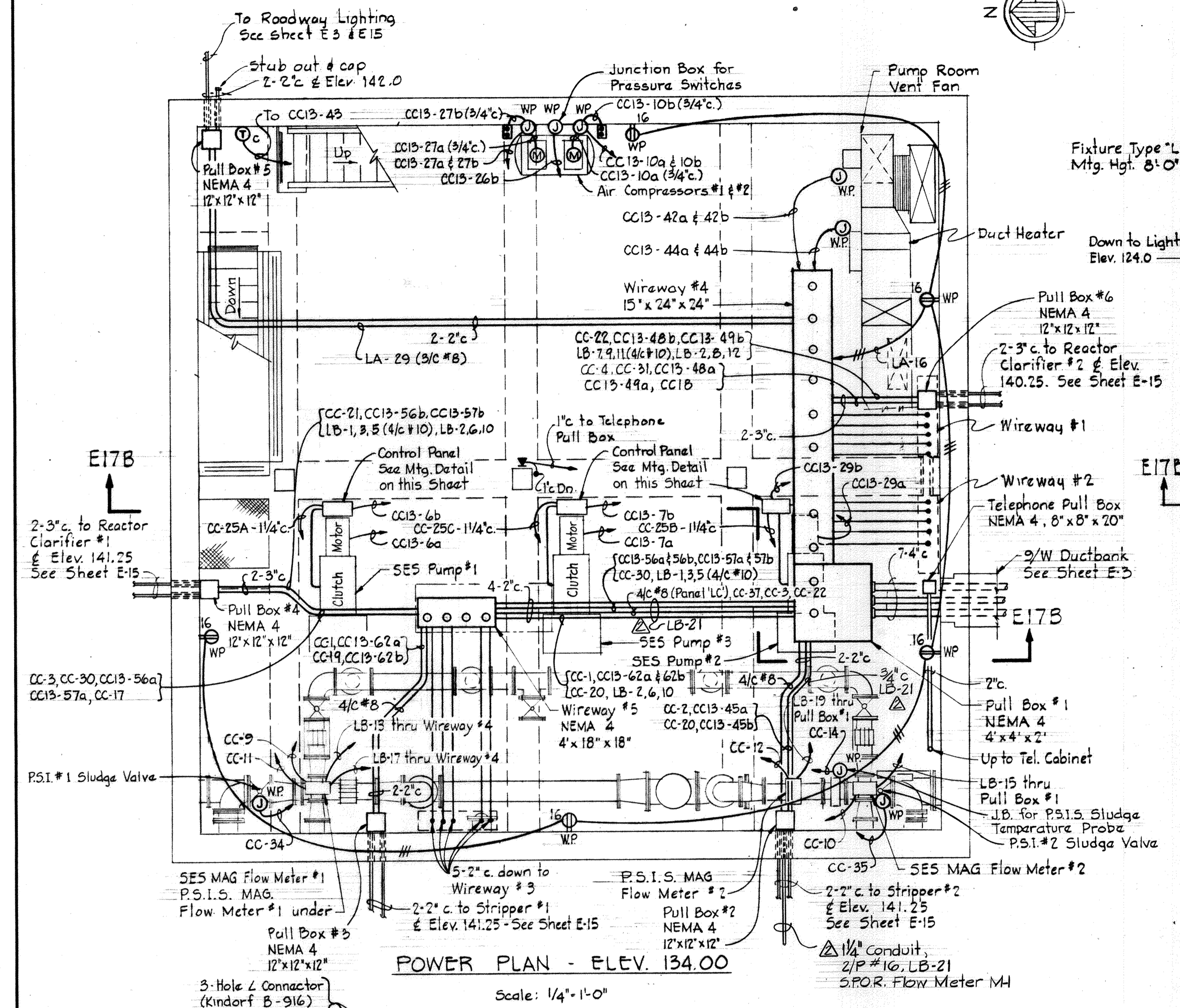
W.O. 7275-2B

SHEET E-4

MODIFIED DRAWING - APRIL 15, 1982

NOTES:

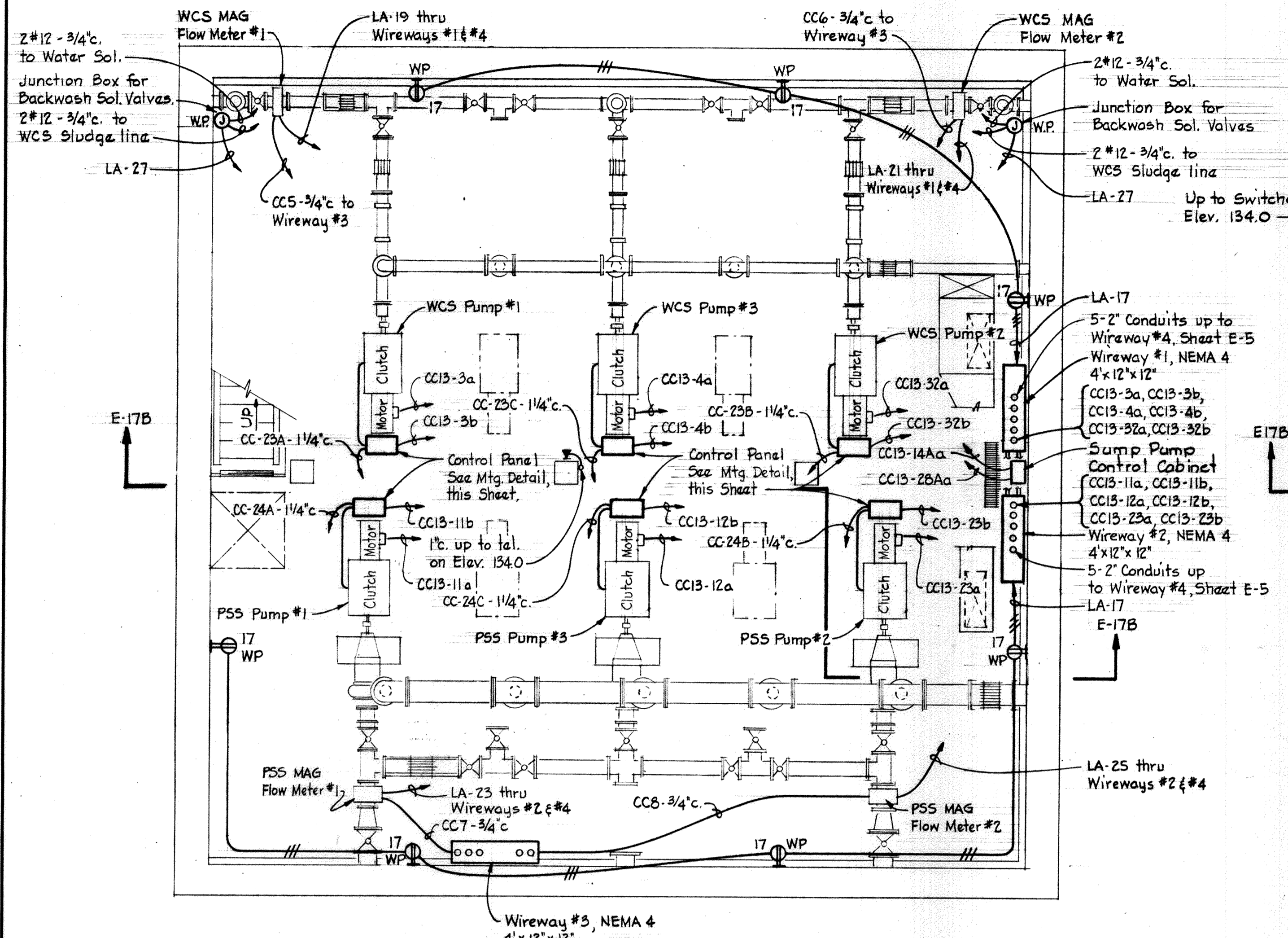
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.



WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Robert E. Brudenberg</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS CONTROL BLDG. PLANS AND DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 38 OF 50 SCALE AS SHOWN
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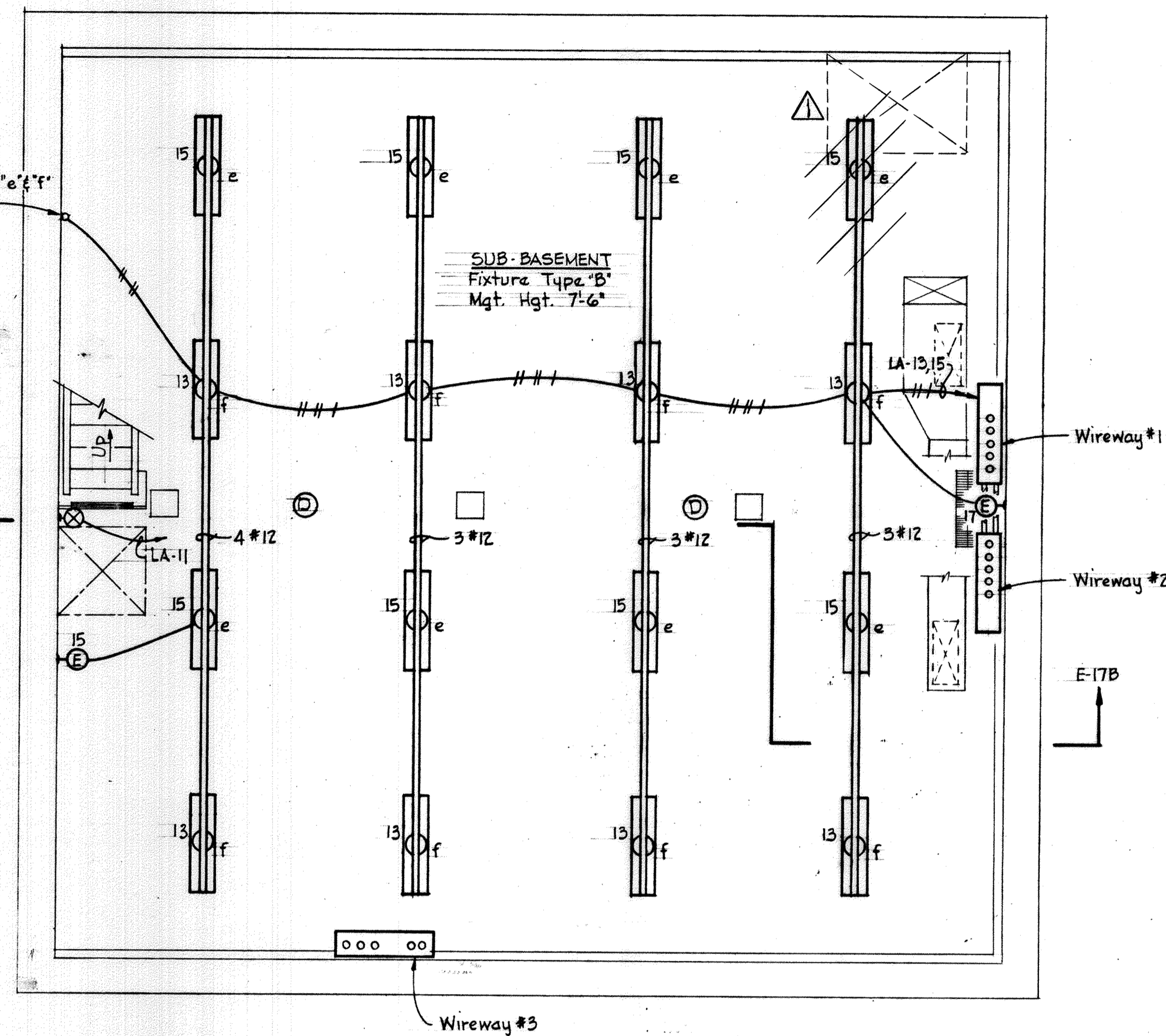
NOTES:

1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.



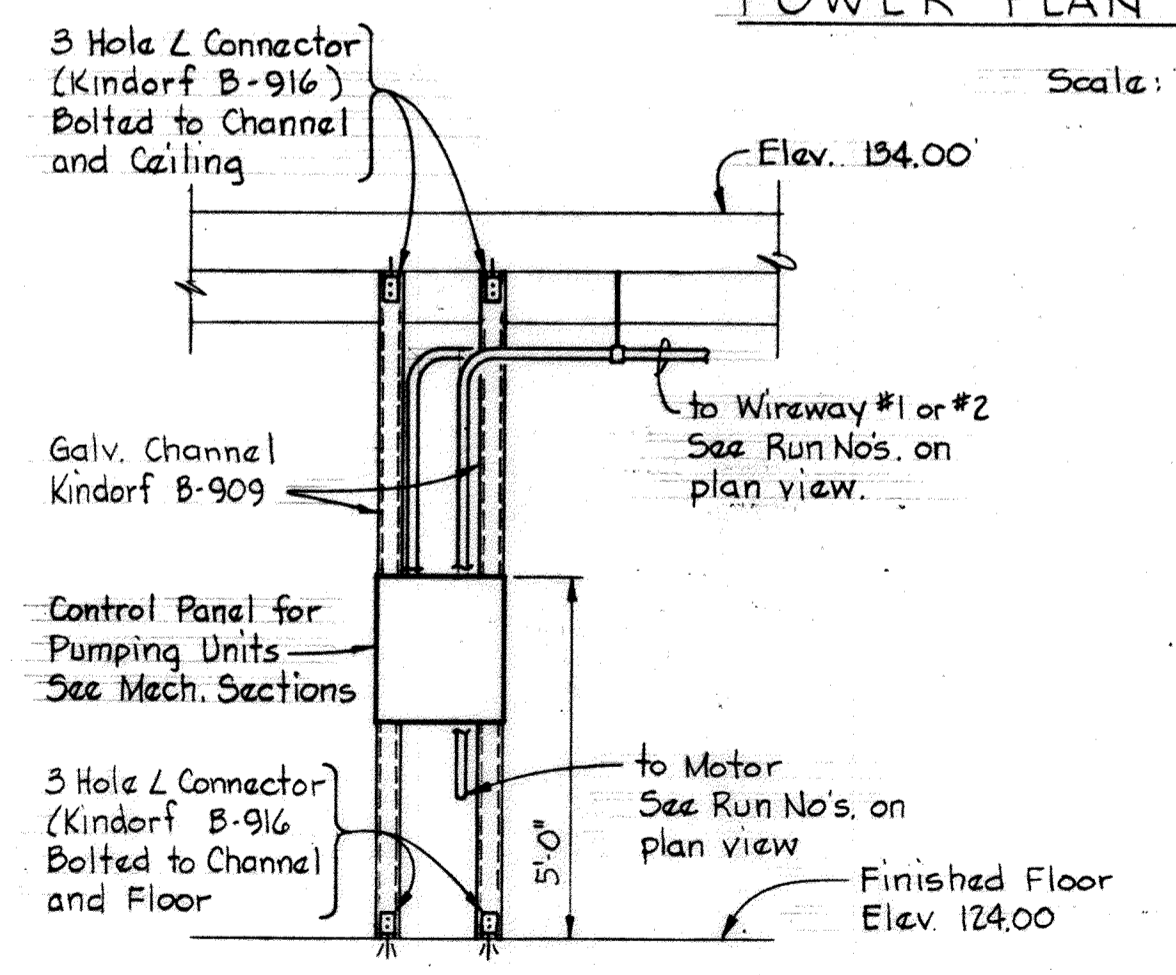
POWER PLAN - ELEV. 124.00

Scale: 1/4" = 1'-0"



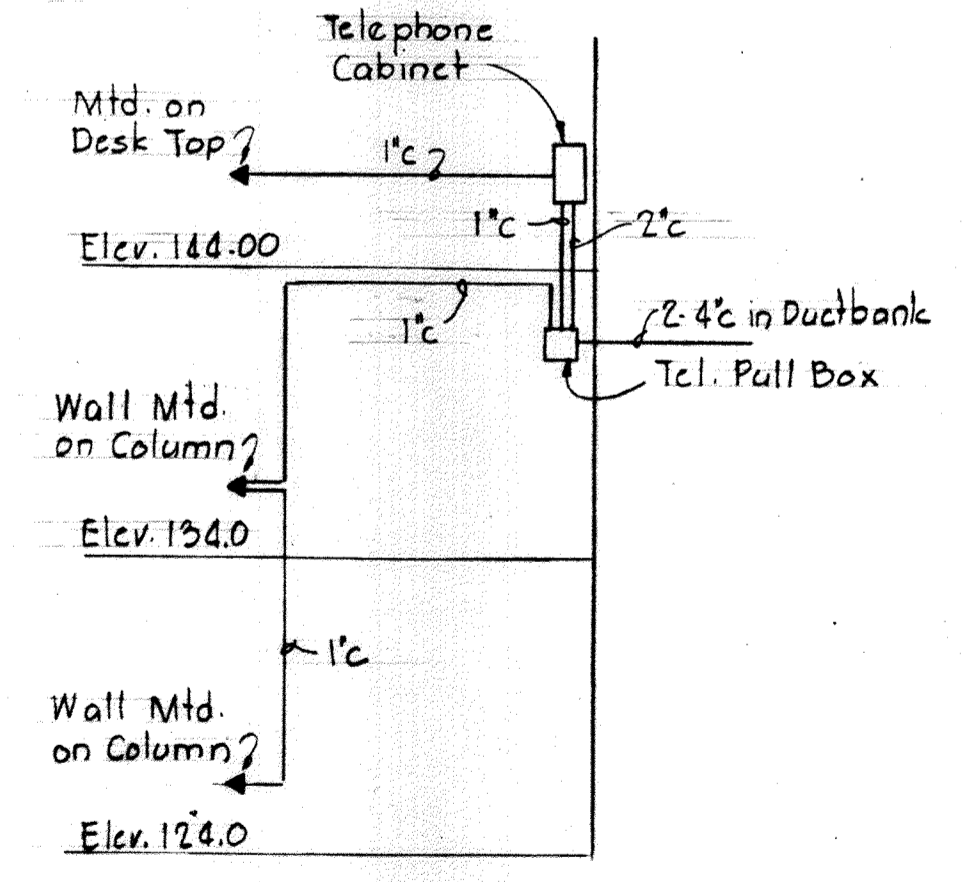
LIGHTING PLAN - ELEV. 124.00

Scale: 1/4" = 1'-0"



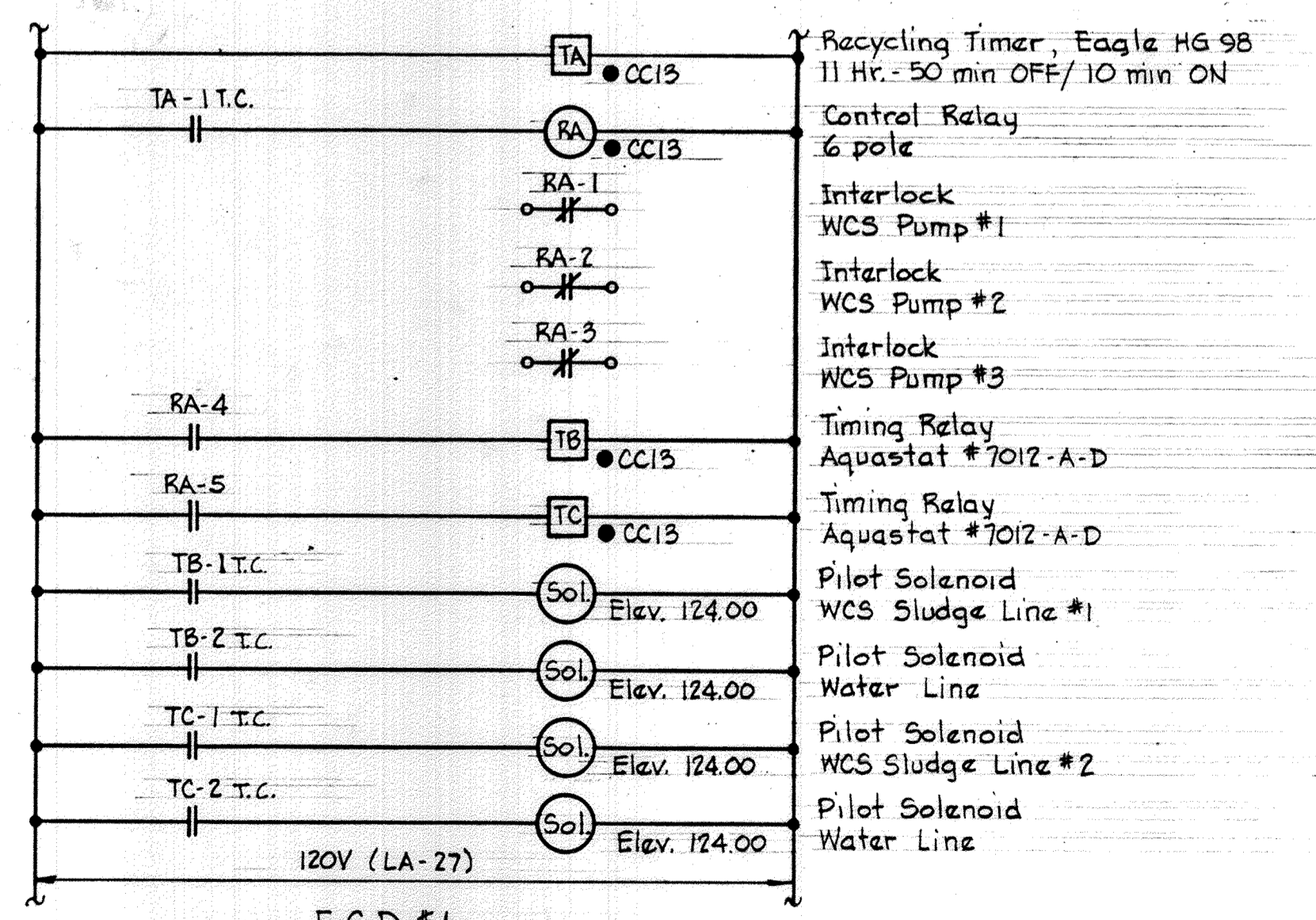
MOUNTING DETAILS FOR CONTROL PANELS FOR WCS & PSS PUMPING UNITS

Scale: 3/8" = 1'-0"



TELEPHONE ONE LINE RISER DIAGRAM

No Scale



**E.C.D #1
BACKWASH CONTROL SYSTEM FOR WCS
SLUDGE LINES FROM REACTOR CLARIFIERS #1 & #2**

<p>WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Richard E. Sredulsky</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>CONTRACT NO. 760-S</p>	<p>PHOSPHORUS CONTROL BLDG. PLANS AND DETAILS</p>	<p>SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4</p>	<p>DRAWING NO. 39 OF 50 SCALE AS SHOWN</p>
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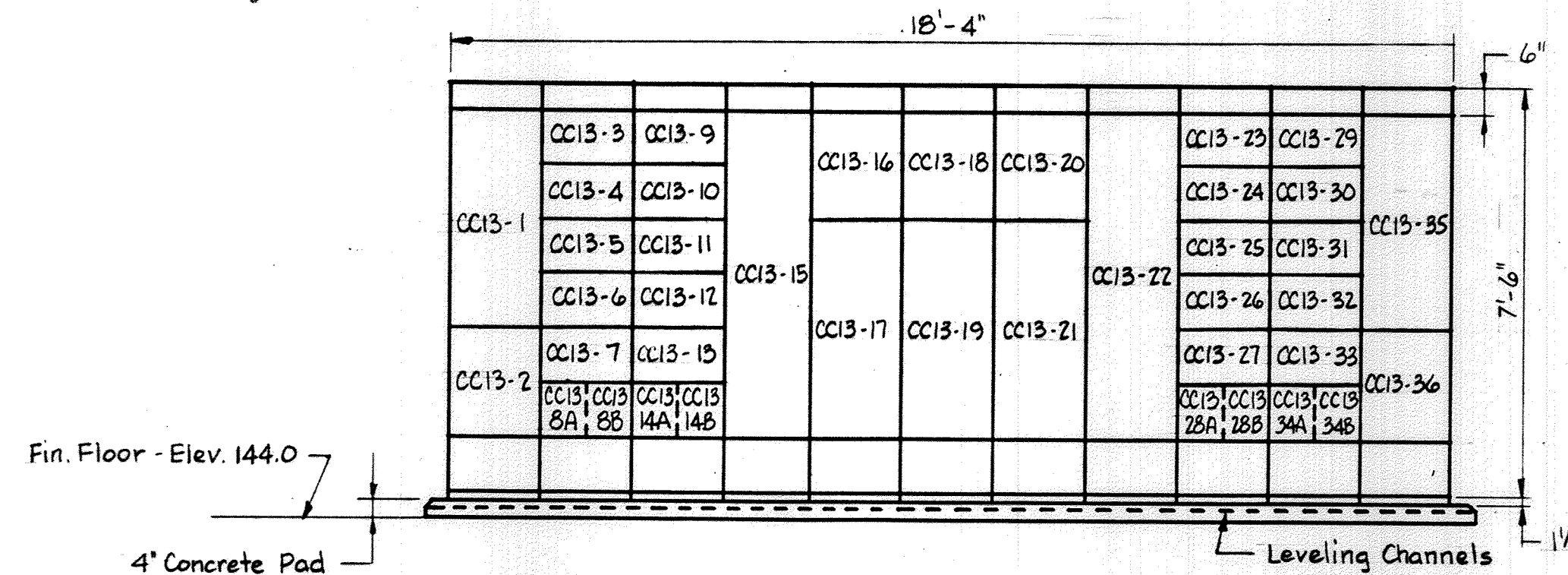
W. O. 7275-2B

SHEET E-6

MODIFIED DRAWING - APRIL 15, 1982

NOTES

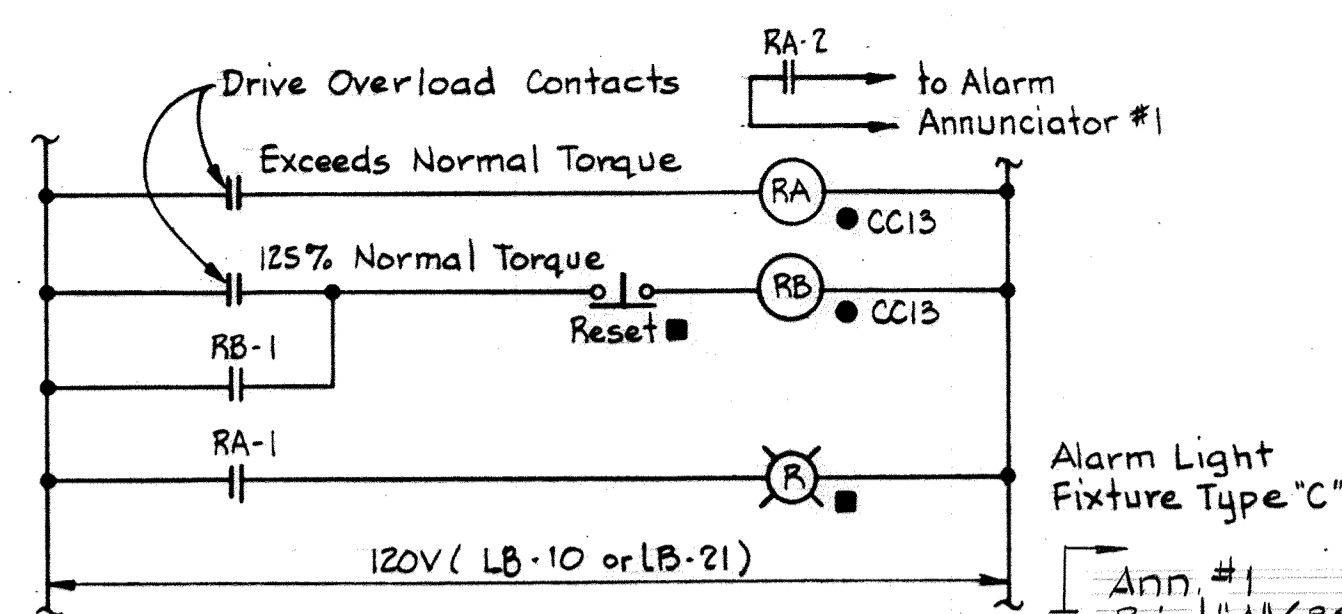
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.



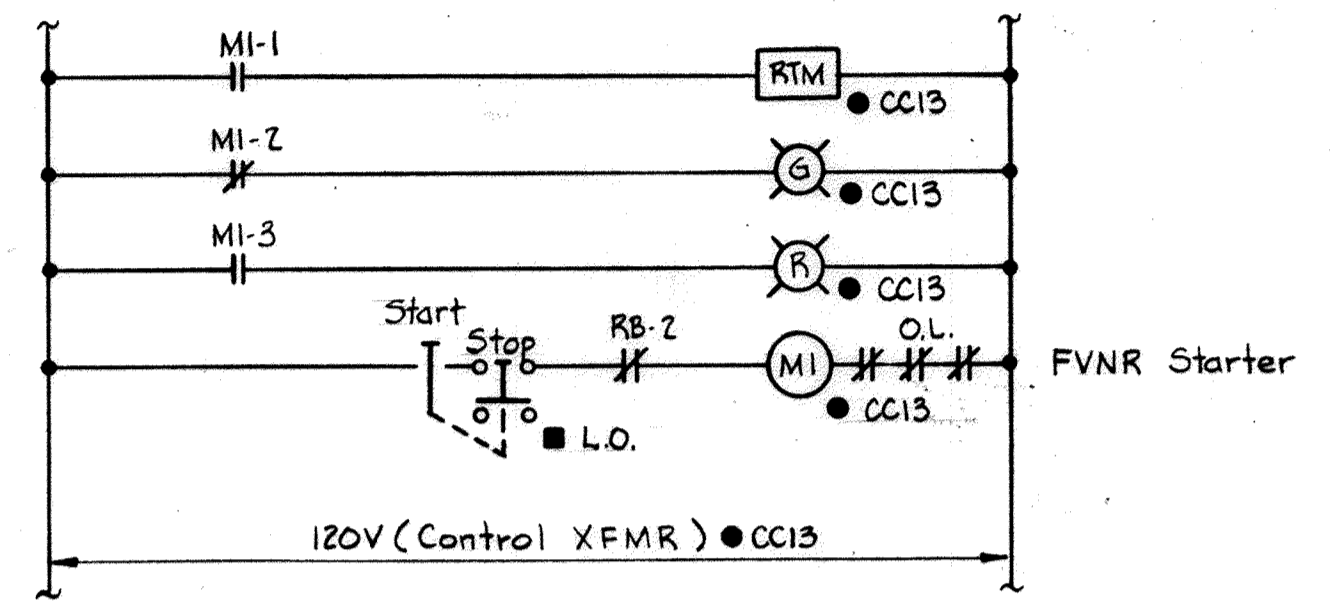
FRONT ELEVATION
MOTOR CONTROL CENTER "CC13"
Scale: 3/8" = 1'-0"

MOTOR CONTROL CENTER SCHEDULE "CC13" 480V-3φ-3W-60 Hz.															MOTOR CONTROL CENTER SCHEDULE "CC13" 480V-3φ-3W-60 Hz.																								
UNIT NUMBER	NAMEPLATE DATA	DEVICE DESCRIPTION	HP or KVA	AUX. DESCR.	BREAKER or MCP				RUN NUMBER	WIRE-POWER			WIRE-CONTROL			GRD. WIRE	COND. SIZE	E.C.D. NO. & SHEET NO.	UNIT NUMBER	NAMEPLATE DATA	DEVICE DESCRIPTION	HP or KVA	AUX. DESCR.	BREAKER or MCP				RUN NUMBER	WIRE-POWER			WIRE-CONTROL			GRD. WIRE	COND. SIZE	E.C.D. NO. & SHEET NO.		
					FRAME	POLE	CALIB.	S.I.C.		NO.	SIZE	TYPE	NO.	SIZE	TYPE									NO.	SIZE	TYPE	FRAME		POLE	CALIB.	S.I.C.	NO.	SIZE	TYPE				NO.	SIZE
CC13-1	-	Back of Panel "LB"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CC13-27	AIR COMPRESSOR NO. 2	Combination Starter NEMA Size 1 - FVNR	1/2	a,b,c, d,g,l	100	3	10X	22	CC13-27a	4/C	12	See Spec.	-	-	See Spec.	12	1/4"	6/E-9			
CC13-2	-	Back of Transfer SW. 'B'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CC13-28A	FDR #2 SUMP PUMPS	Circuit Breaker	1.5	-	100	3	20	22	CC13-28a	4/C	12	See Spec.	-	-	See Spec.	12	3/4"	-			
CC13-3	WASTE CHEMICAL SLUDGE PUMP NO. 1	Combination Starter NEMA SIZE 1 - FVNR	7.5	a,b,c, g,l	100	3	10X	22	CC13-3a	4/C	12	See Spec.	12/C	14	See Spec.	12	1"	3/E-9	CC13-28B	SPARE (Blank)	Circuit Breaker	-	-	100	3	20	22	CC13-28b	-	-	-	-	-	-	-	-	-		
CC13-4	WASTE CHEMICAL SLUDGE PUMP NO. 3	Combination Starter NEMA SIZE 1 - FVNR	7.5	a,b,c, g,l	100	3	10X	22	CC13-4a	4/C	12	See Spec.	12/C	14	See Spec.	12	1"	3/E-9	CC13-29	STRIPPER ELUTRIANT SUPPLY PUMP NO. 2	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	CC13-29a	4/C	12	See Spec.	-	-	See Spec.	12	1"	1/E-9		
CC13-5	WASTE CHEMICAL SLUDGE PUMP NO. 5	Combination Starter NEMA SIZE 1 - FVNR	7.5	a,b,c, g,l	100	3	10X	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CC13-6	STRIPPER ELUTRIANT SUPPLY PUMP NO. 1	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	CC13-6a	4/C	12	See Spec.	12/C	14	See Spec.	12	1"	3/E-9	CC13-30	STRIPPER ELUTRIANT SUPPLY PUMP NO. 4	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	-	-	-	-	-	-	-	-	-	-	-	-
CC13-7	STRIPPER ELUTRIANT SUPPLY PUMP NO. 3	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	CC13-7a	4/C	12	See Spec.	12/C	14	See Spec.	12	1"	3/E-9	CC13-31	STRIPPER ELUTRIANT SUPPLY PUMP NO. 5	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	-	-	-	-	-	-	-	-	-	-	-	-
CC13-8A	SPARE (Blank)	Circuit Breaker	-	-	100	3	30	22	CC13-7b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-8B	SPARE (Blank)	Circuit Breaker	-	-	100	3	30	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-9	CONTROL ROOM VENT FAN	Timer, Relays, Switch, Indicating Lights	1/3	-	-	-	-	-	CC13-9a	6/C	12	See Spec.	-	-	See Spec.	-	1"	5/E-10	CC13-32	WASTE CHEMICAL SLUDGE PUMP NO. 2	Combination Starter NEMA Size 1 - FVNR	7.5	a,b,c, g,l	100	3	10X	22	CC13-32a	4/C	12	See Spec.	-	-	See Spec.	12	1"	3/E-9		
CC13-10	AIR COMPRESSOR NO. 1	Combination Starter NEMA SIZE 1 - FVNR	1/2	a,b,c, d,g,l	100	3	10X	22	CC13-10a	4/C	12	See Spec.	-	-	See Spec.	12	1/4"	5/E-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CC13-11	PHOSPHORUS STRIPPED SLUDGE PUMP NO. 1	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	CC13-11a	4/C	12	See Spec.	12/C	14	See Spec.	12	1"	3/E-9	CC13-33	WASTE CHEMICAL SLUDGE PUMP NO. 4	Combination Starter NEMA Size 1 - FVNR	7.5	a,b,c, g,l	100	3	10X	22	-	-	-	-	-	-	-	-	-	-	-	-
CC13-12	PHOSPHORUS STRIPPED SLUDGE PUMP NO. 3	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	CC13-12a	4/C	12	See Spec.	12/C	14	See Spec.	12	1"	3/E-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-13	PHOSPHORUS STRIPPED SLUDGE PUMP NO. 5	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, g,l	100	3	10X	22	CC13-12b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-14A	FDR #1 - SUMP PUMPS	Circuit Breaker	-	-	100	3	20	22	CC13-14a	4/C	12	See Spec.	-	-	-	12	3/4"	-	CC13-34A	XFMR 'A' FDR 2	Circuit Breaker	30	-	100	3	50	22	-	-	-	-	-	-	-	-	-	-	-	
CC13-14B	SPARE (Blank)	Circuit Breaker	-	-	100	3	20	22	-	-	-	-	-	-	-	-	-	-	CC13-34B	XFMR 'B' FDR 1	Circuit Breaker	30	-	100	3	50	22	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CC13-35	PANELBOARD "LA"	Circuit Breaker Panelboard	-	See Spec.	-	-	-	-	CC13-35a	4/C	2	See Spec.	-	-	-	2#6	2'	-		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CC13-36	TRANSFER SWITCH FOR PANEL "LA"	Automatic Transfer Sw. 50A, 3P, 480V	-	-	-	-	-	CC13-36a	3/C	8	See Spec.	-	-	-	3#16	1/4"	-			
CC13-15	INCOMING LINE SER. FDR NO. 1	Reactor (See Spec.)	-	-	-	-	-	-	CC13-15a	3/C	500 MCM	See Spec.	-	-	-	3#1	See Spec.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-16	Standard Nameplates	Ammeter, Voltmeter, Sws, Watt-hour, Ct's, Pt's, etc.	-	See Spec.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-17	MAIN BREAKER NO. 1	Power Circuit Breaker Drawout Mounting	-	See Spec.	600	3	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-18	ANNUNCIATOR NO.	Solid State Alarm Annunciator #2	-	See Spec.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-19	TIE BREAKER	Power Circuit Breaker Drawout Mounting	-	See Spec.	600	3	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-20	Standard Nameplates	Ammeter, Voltmeter, Sws, Watt-hour, Ct's, Pt's, etc.	-	See Spec.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-21	MAIN BREAKER NO. 2	Power Circuit Breaker Drawout Mounting	-	See Spec.	600	3	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-22	INCOMING LINE SER. FDR NO. 2	Reactor (See Spec.)	-	-	-	-	-	-	CC13-22a	3/C	500 MCM	See Spec.	-	-	-	3#1	See Spec.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-23	PHOSPHORUS STRIPPED SLUDGE PUMP NO. 2	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, e,g,l	100	3	10X	22	CC13-23a	4/C	12	See Spec.	-	-	See Spec.	12	1"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-24	SPARE (Blank)	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, e,g,l	100	3	10X	22	CC13-23b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-25	PHOSPHORUS STRIPPED SLUDGE PUMP NO. 4	Combination Starter NEMA SIZE 2 - FVNR	10	a,b,c, e,g,l	100	3	10X	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CC13-26	ALTERNATOR FOR AIR COMPRESSORS	Two Circuit Alternator	-	See Spec.	-	-	-	-	CC13-26b	-	-	-	4/C	14	See Spec.	-	3/4"	4/E-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

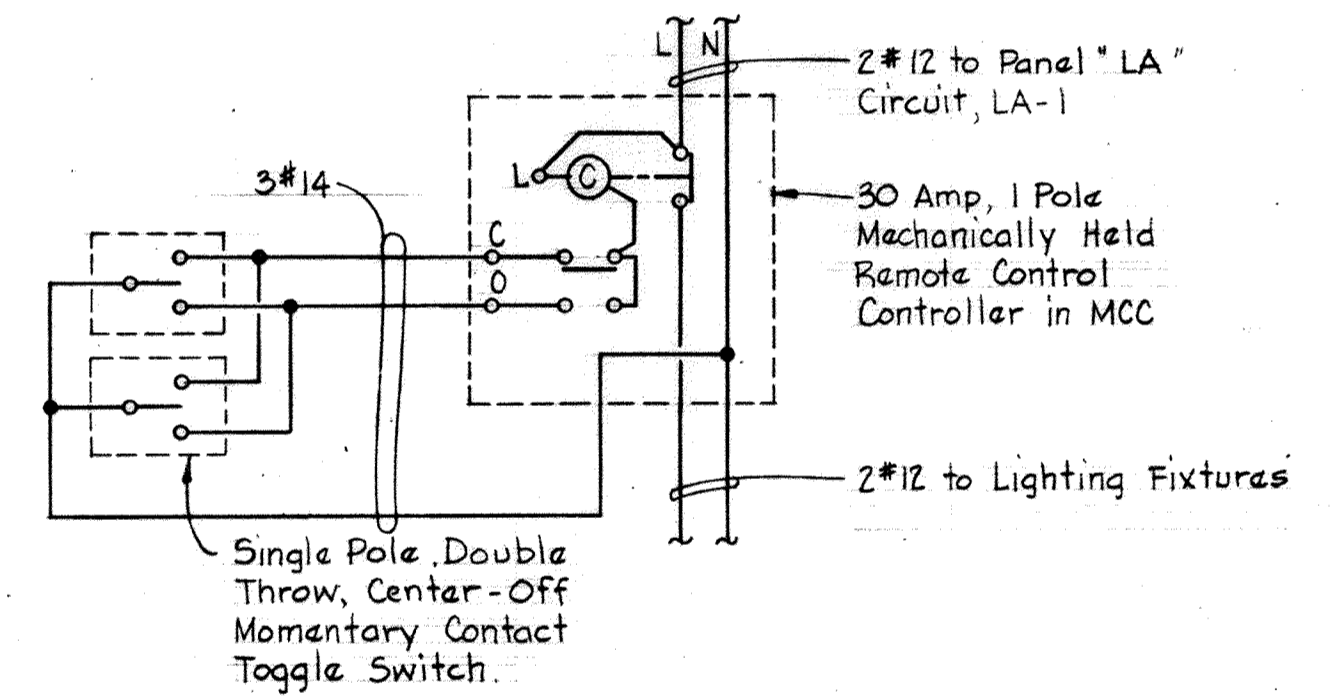
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE Richard E. Grendelberg CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	MOTOR CONTROL CENTER DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 40	SCALE AS SHOWN
					OF 50	SHEET E-7



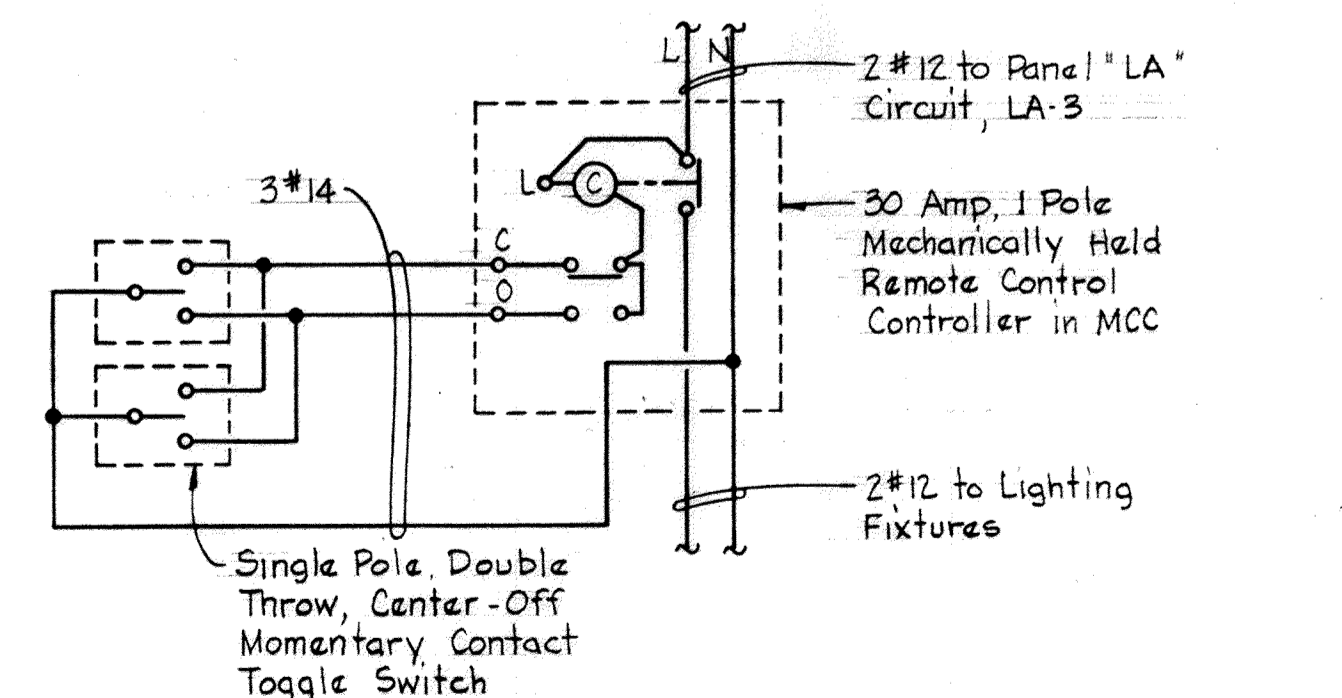
E.C.D.#9
OVERLOAD - DRIVE UNITS
Typical for the following Units:
1. Stripper #1 & #2



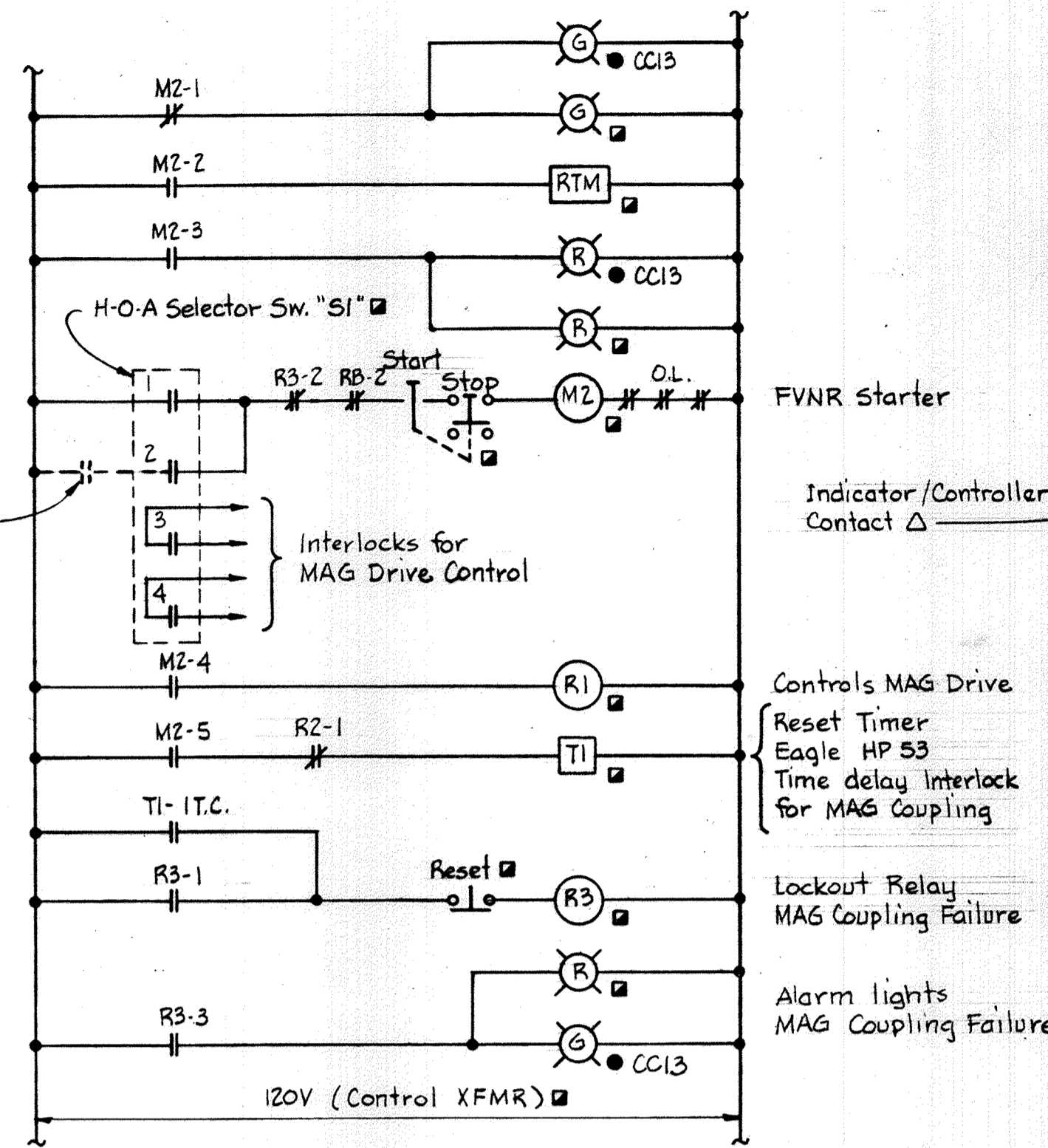
E.C.D.#1
STRIPPER #1, DRIVE UNIT
Typical for the following Units:
1. Stripper #2, Drive Unit



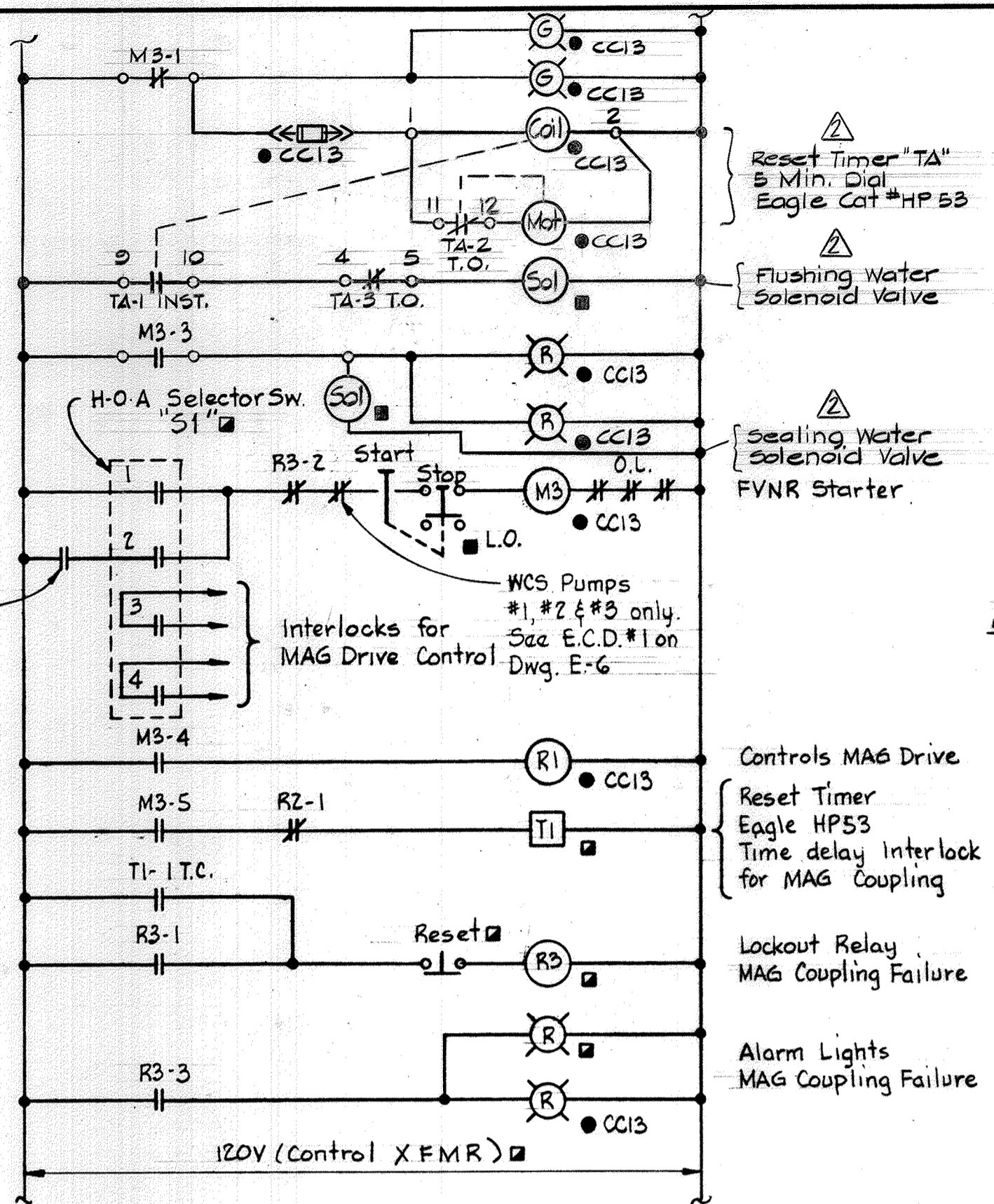
E.C.D.#7
LIGHTING FIXTURES - CONTROL ROOM



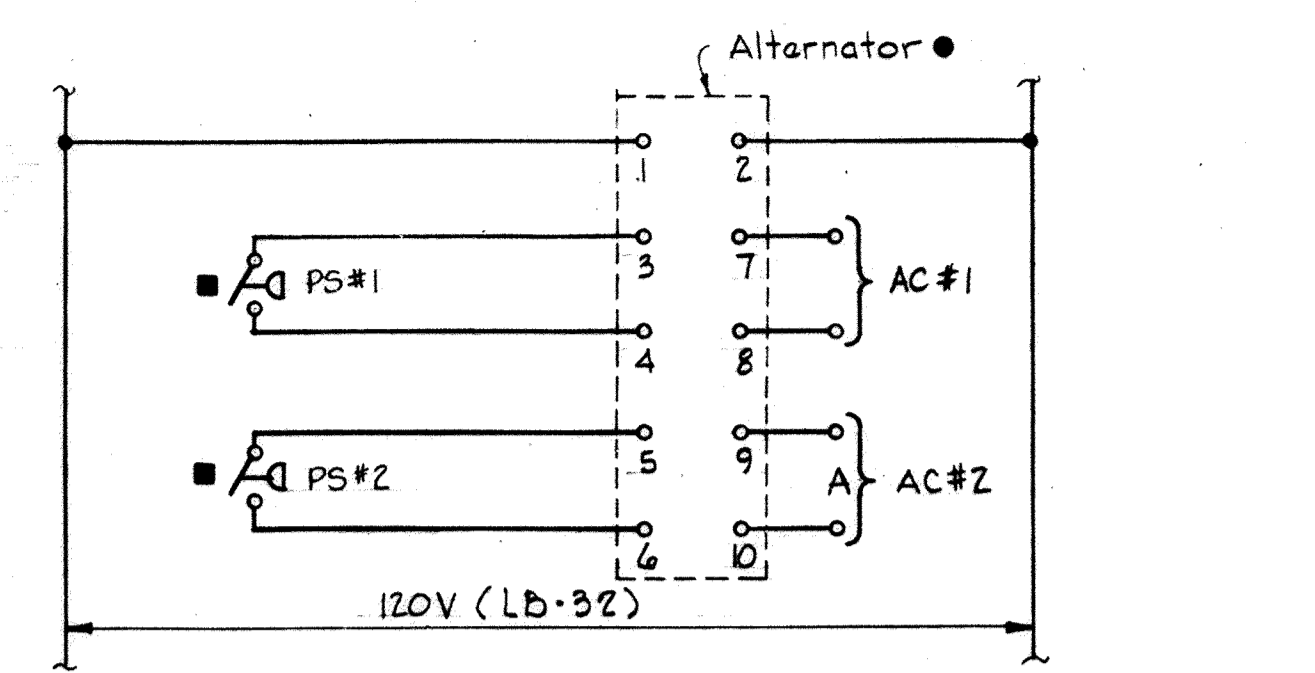
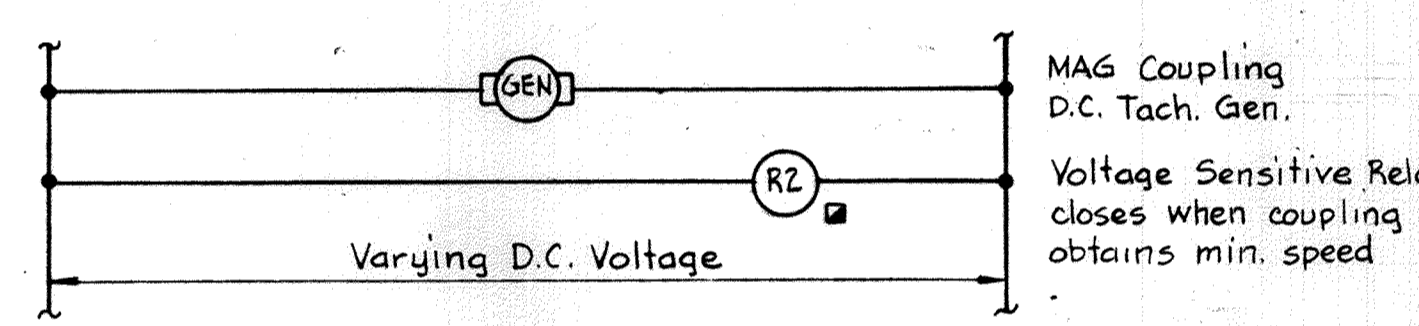
E.C.D.#8
LIGHTING FIXTURES - CONTROL ROOM



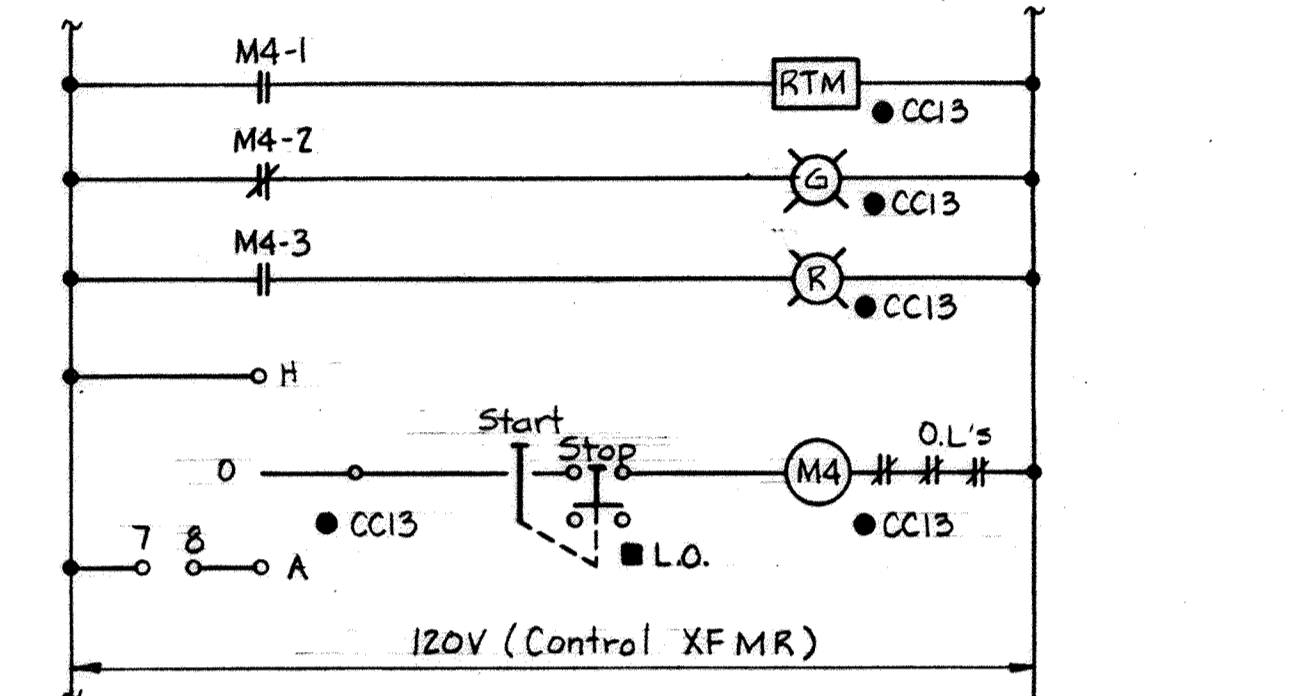
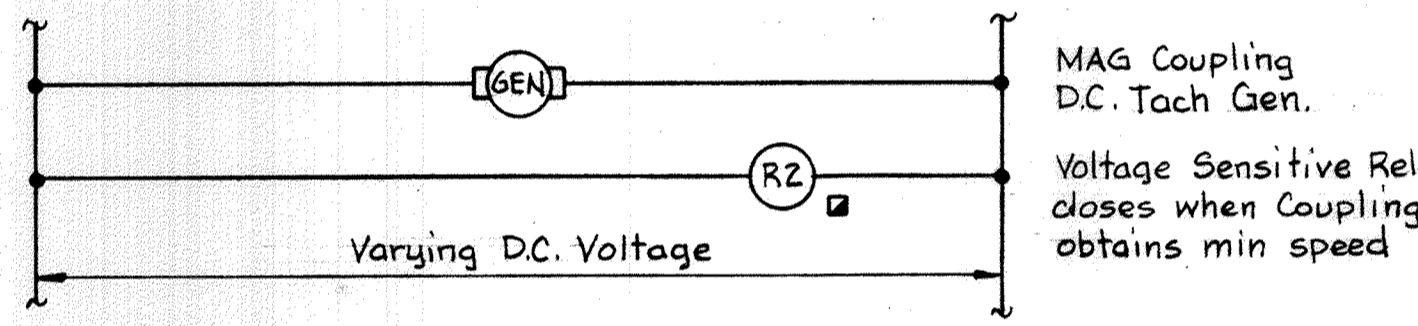
E.C.D.#2
REACTOR CLARIFIER COLLECTOR DRIVE #1
Typical for the following Units:
1. Reactor Clarifier Turbine Drive #1
2. Reactor Clarifier Collector Drive #2
3. Reactor Clarifier Turbine Drive #2



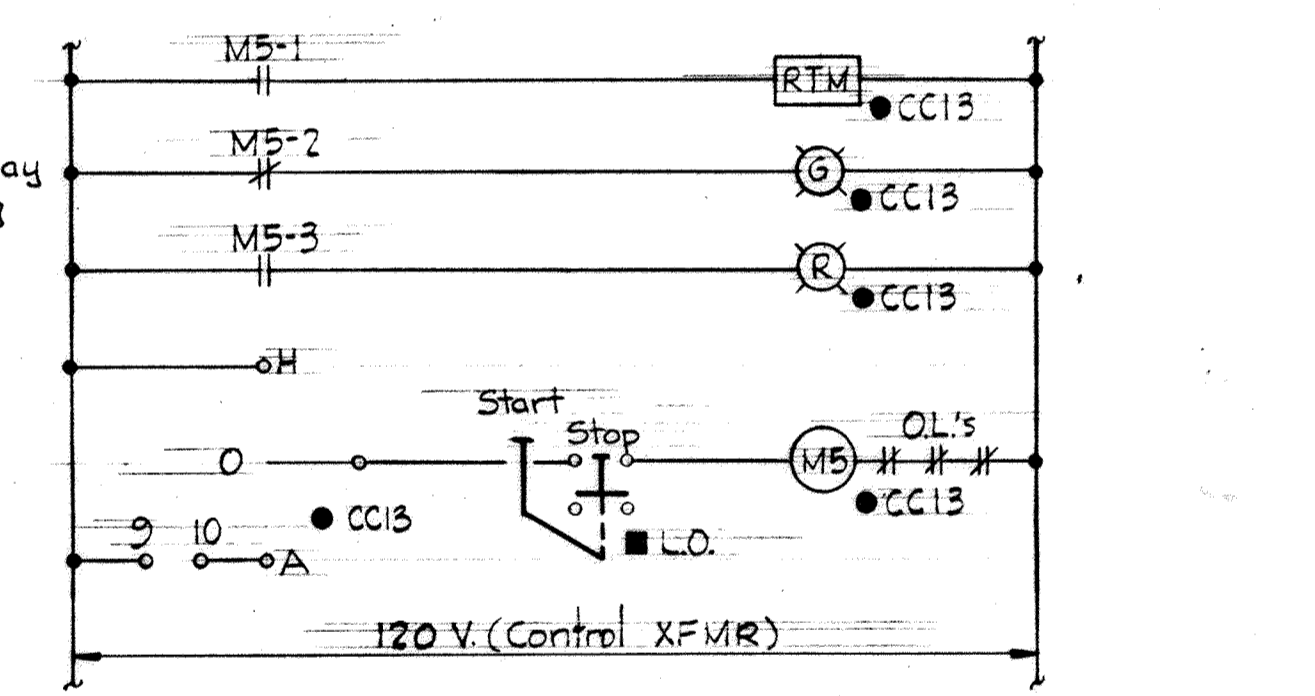
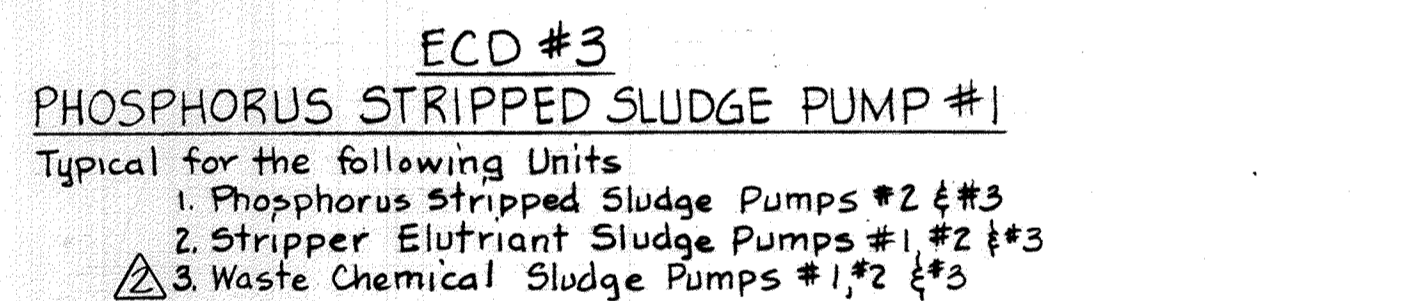
E.C.D.#3
PHOSPHORUS STRIPPED SLUDGE PUMP #1
Typical for the following Units:
1. Phosphorus Stripped Sludge Pumps #2 & #3
2. Stripper Elutriant Sludge Pumps #1, #2 & #3
3. Waste Chemical Sludge Pumps #1, #2 & #3



E.C.D.#4
ALTERNATOR FOR AIR COMPRESSOR #1 & #2

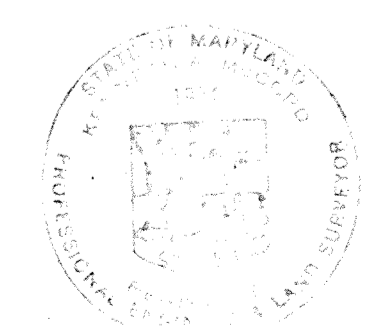


E.C.D.#5
AIR COMPRESSOR #1



E.C.D.#6
AIR COMPRESSOR #2

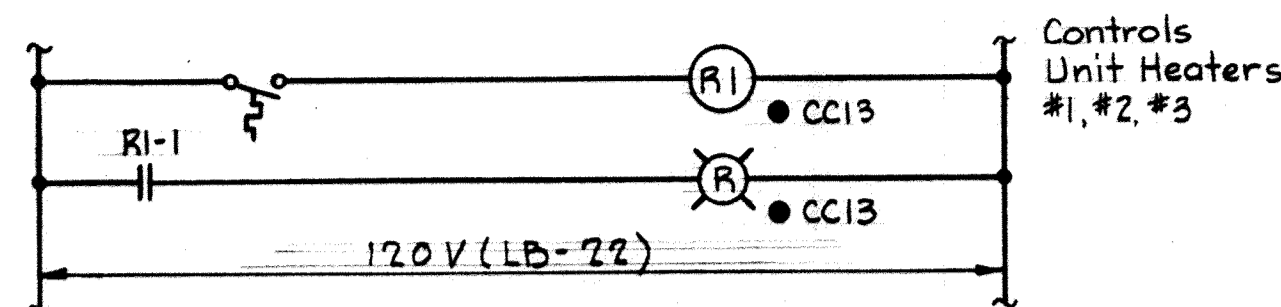
NOTES:
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2



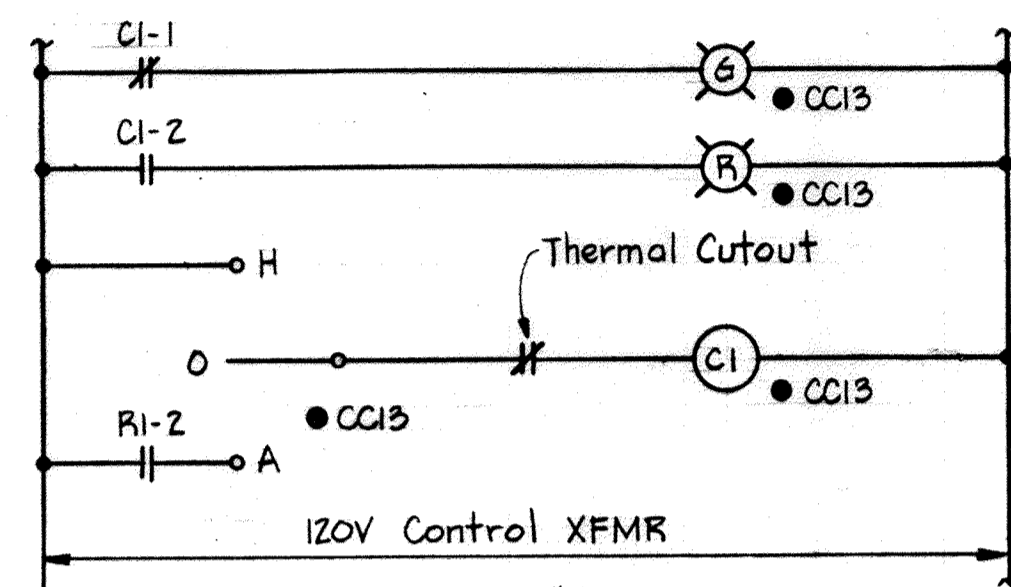
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 1/12/78 Richard E. Freudenberg CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	MOTOR CONTROL CENTER WIRING DIAGRAMS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 42	SCALE AS SHOWN
					OF 50	SHEET E-9

W.O. 7275-2B

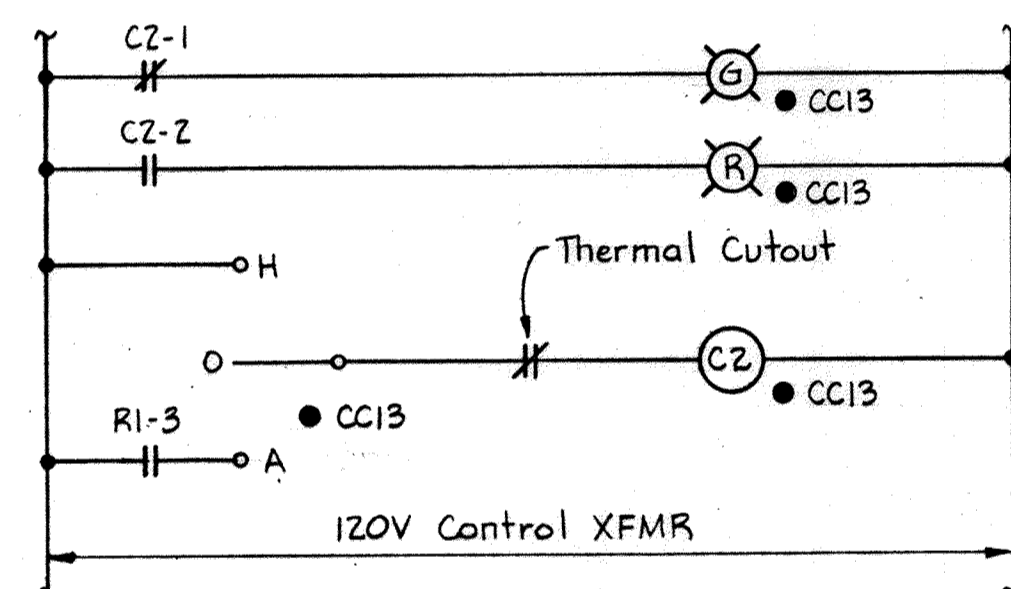
MODIFIED DRAWING-APRIL 15, 1982



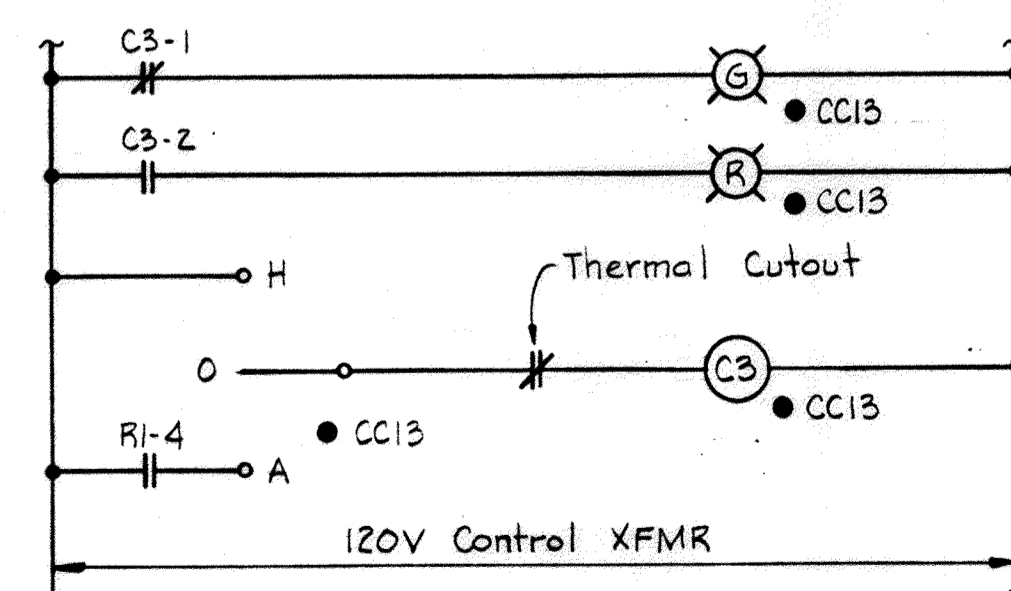
E.C.D.#1
ELEMENTARY CONTROL DIAGRAM
FOR UNIT HEATERS #1, #2, #3



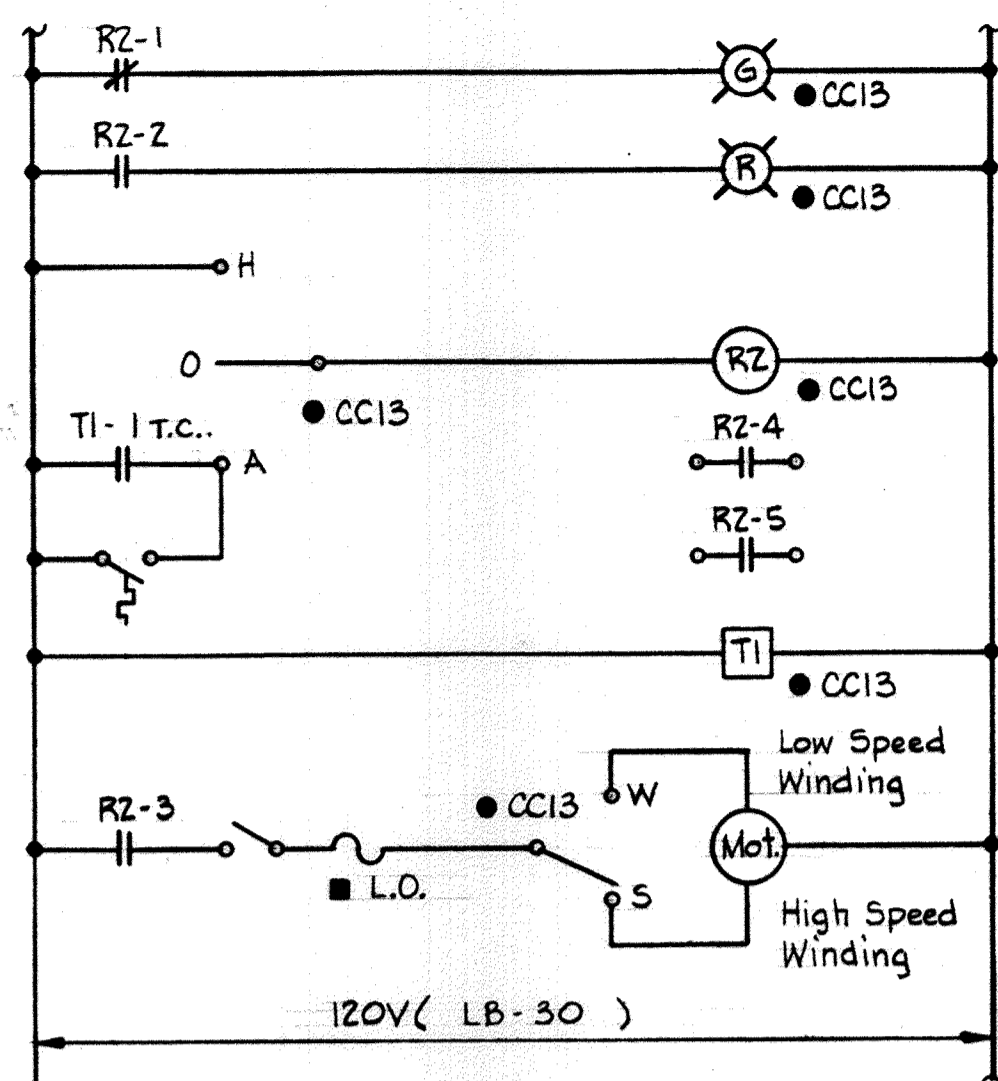
E.C.D.#2
ELEMENTARY CONTROL DIAGRAM
UNIT HEATER N° 1
CONTROL ROOM



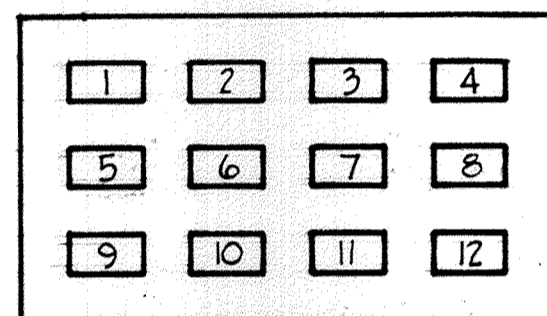
E.C.D.#3
ELEMENTARY CONTROL DIAGRAM
UNIT HEATER N° 2
CONTROL ROOM



E.C.D.#4
ELEMENTARY CONTROL DIAGRAM
UNIT HEATER N° 3
CONTROL ROOM



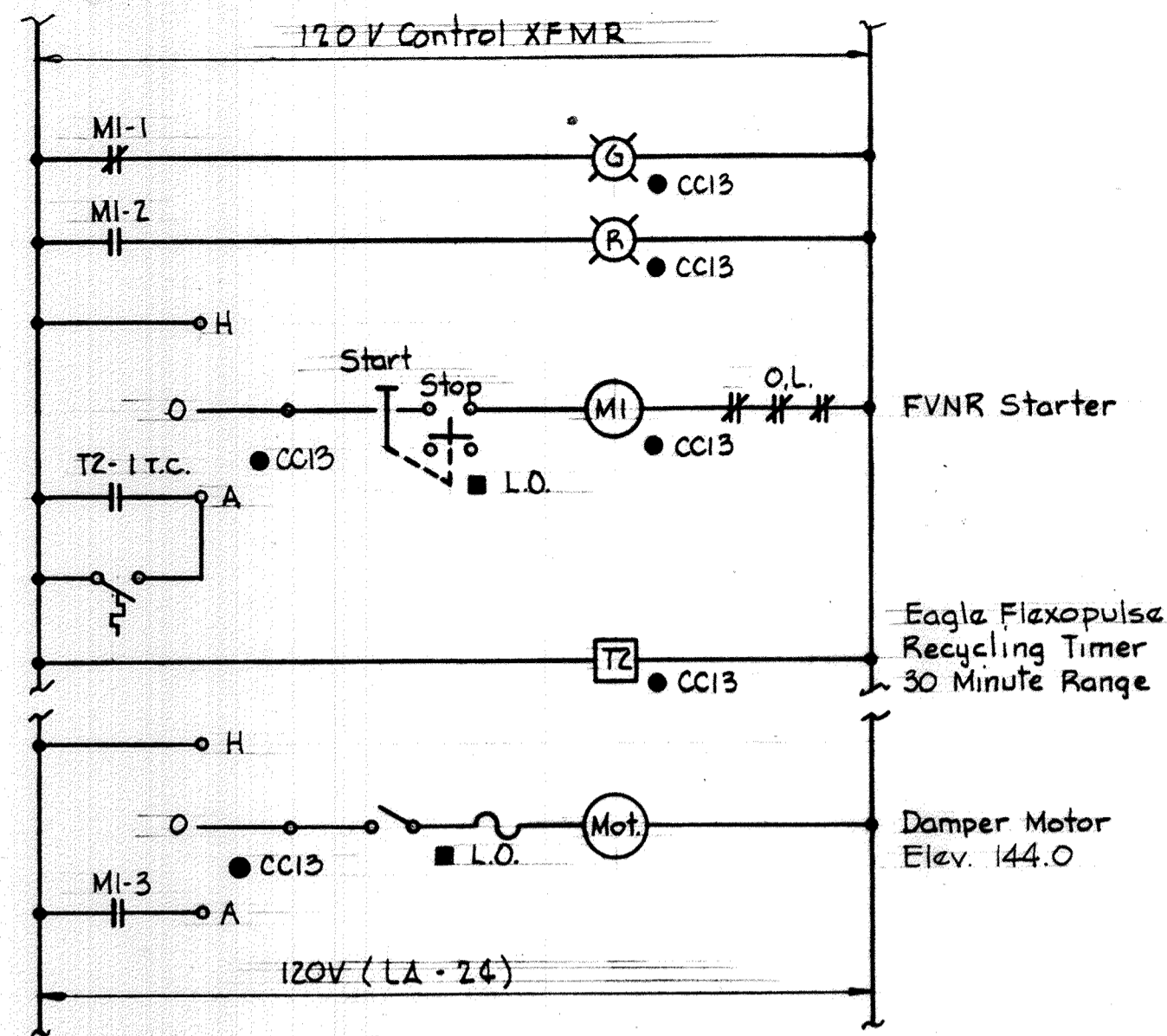
E.C.D.#5
ELEMENTARY CONTROL DIAGRAM
CONTROL ROOM VENT FAN



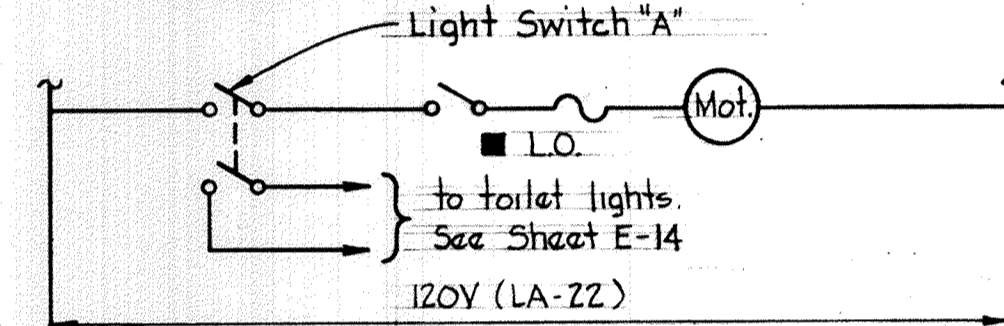
WINDOW LAYOUT
No Scale

POINT NO.	WINDOW INSCRIPTION	E.C.D. NO. SHEET NO.
1	MAIN BREAKER N° 1 - OPEN 480V - MCC - CC13 PHOSPHORUS CONTROL BLDG.	10/E-10
2	MAIN BREAKER N° 2 - OPEN 480V - MCC - CC13 PHOSPHORUS CONTROL BLDG.	10/E-10
3	TIE BREAKER - CLOSED 480V - MCC - CC13 PHOSPHORUS CONTROL BLDG.	9/E-10
4	NO VOLTAGE - SER. FDR#1 480V - MCC - CC13 PHOSPHORUS CONTROL BLDG.	8/E-10
5	NO VOLTAGE - SER. FDR#2 480V - MCC - CC13 PHOSPHORUS CONTROL BLDG.	8/E-10
6	SPARE (BLANK)	
7	SPARE (BLANK)	
8	SPARE (BLANK)	
9	SPARE (BLANK)	
10	SPARE (BLANK)	
11	SPARE (BLANK)	
12	SPARE (BLANK)	

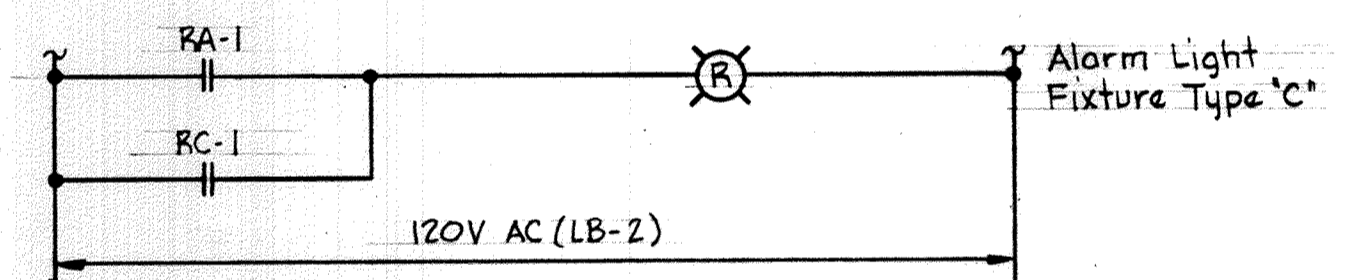
ALARM ANNUNCIATOR N° 2
MOTOR CONTROL CENTER - CC13



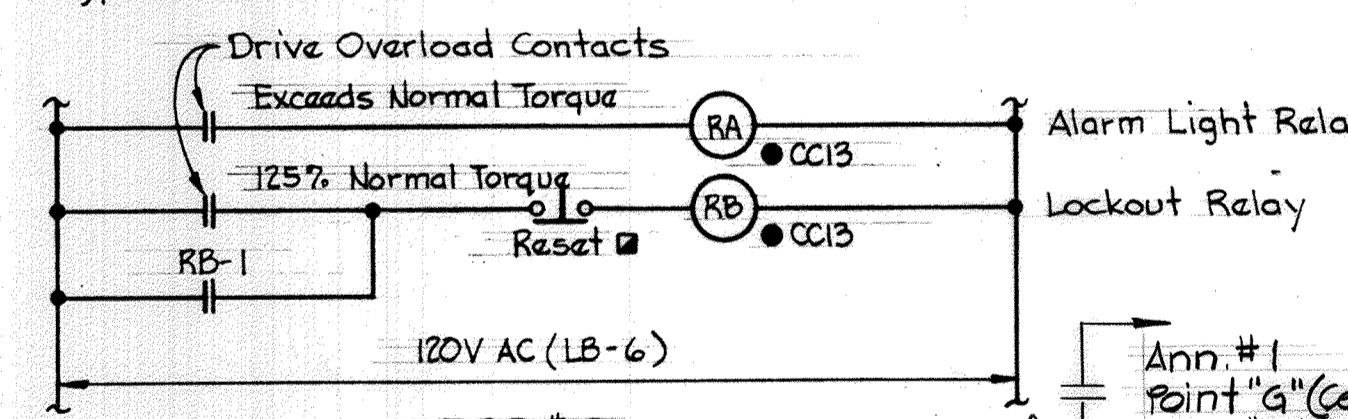
E.C.D.#6
ELEMENTARY CONTROL DIAGRAM
PUMP ROOM VENT FAN



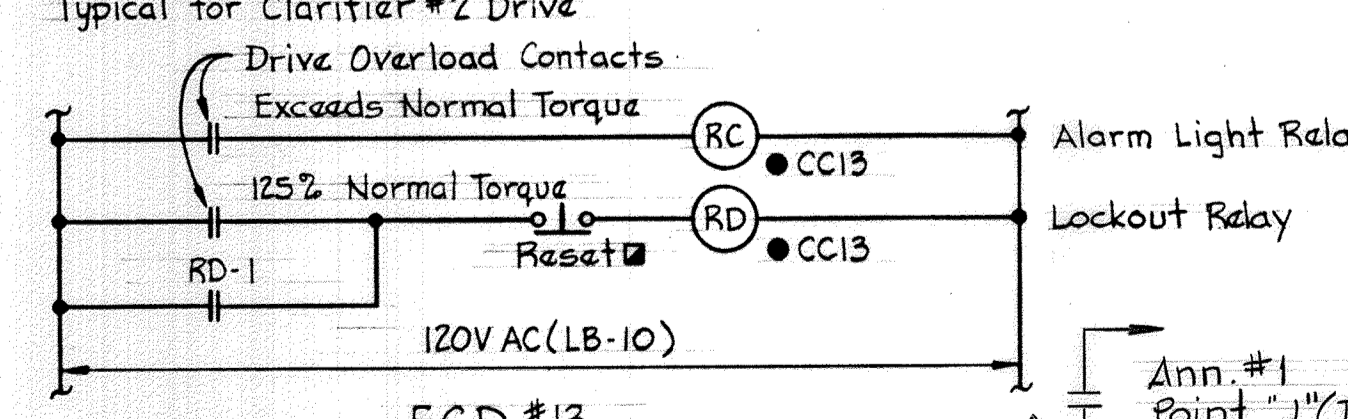
E.C.D.#7
ELEMENTARY CONTROL DIAGRAM
TOILET ROOM EXHAUST FAN



E.C.D.#11
ELEMENTARY CONTROL DIAGRAM
ALARM LIGHT - REACTOR CLARIFIER #1
Typical for Reactor Clarifier #2

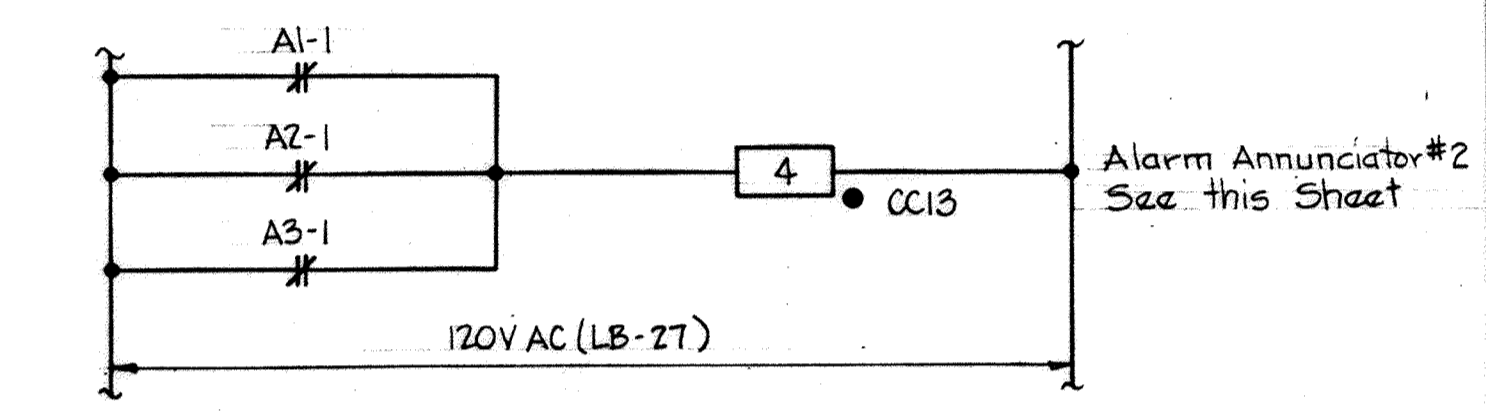
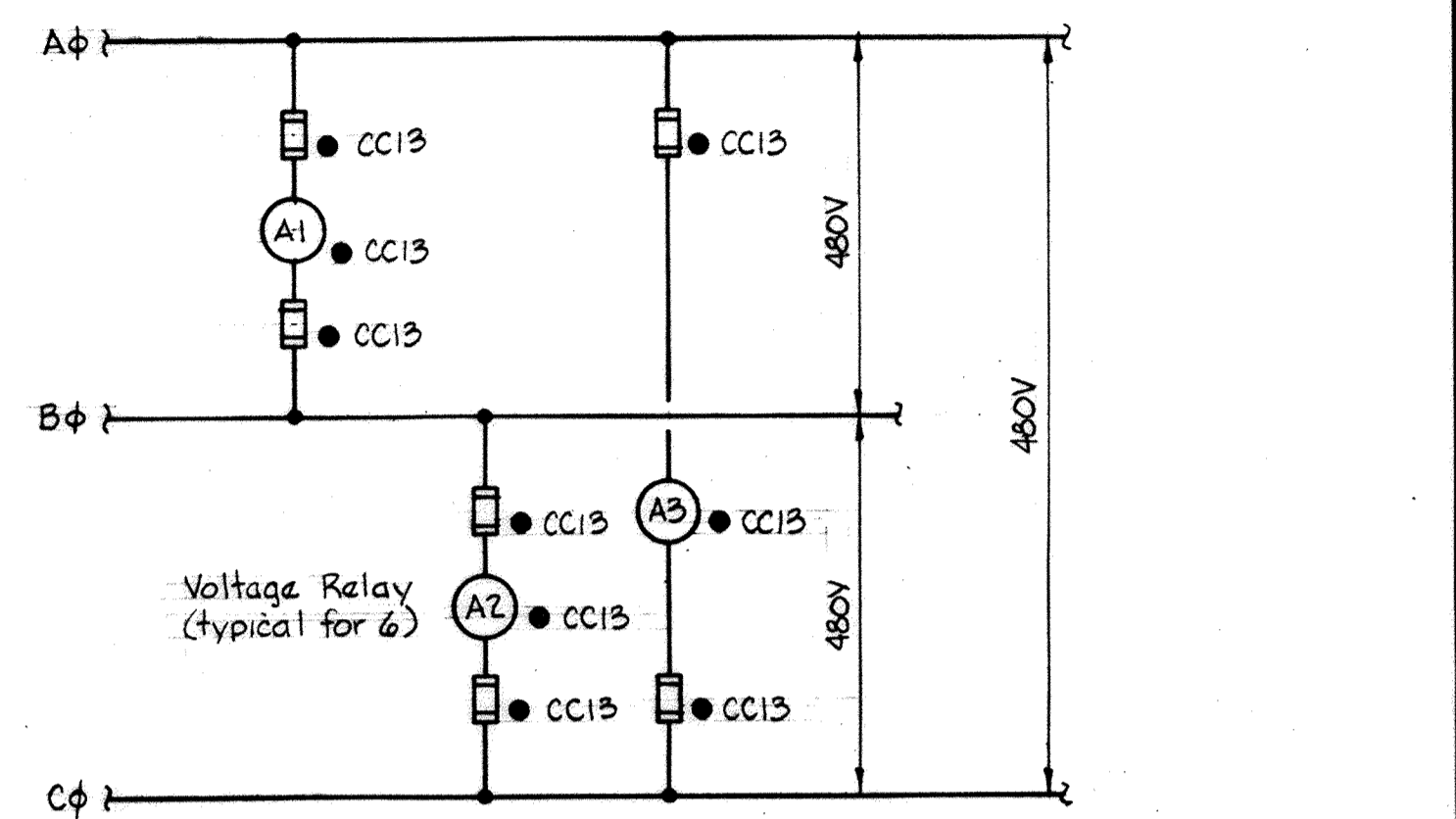


E.C.D.#12
ELEMENTARY CONTROL DIAGRAM
OVERLOAD - CLARIFIER #1 DRIVE
Typical for Clarifier #2 Drive

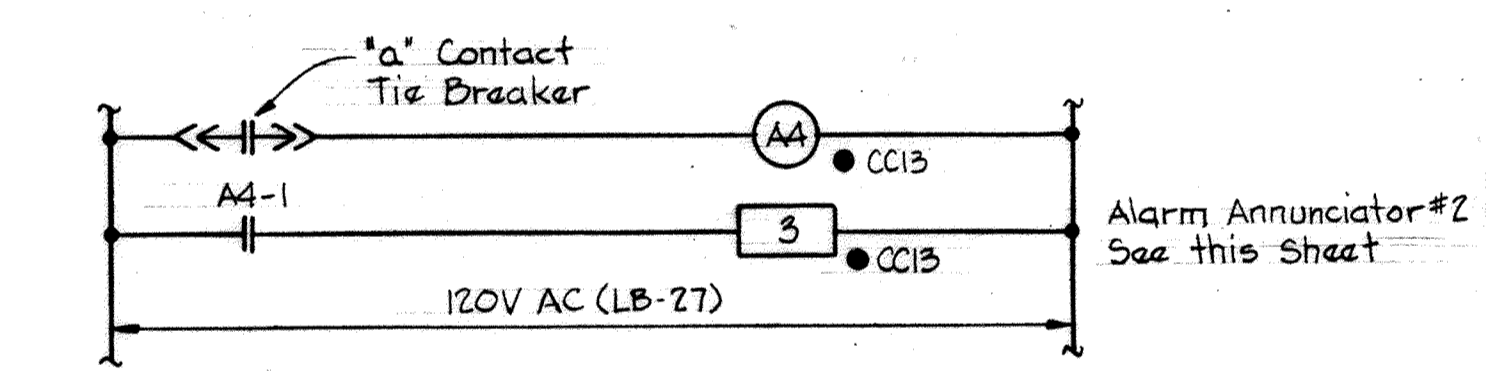


E.C.D.#13
ELEMENTARY CONTROL DIAGRAM
OVERLOAD - TURBINE #1 DRIVE
Typical for Turbine #2 Drive

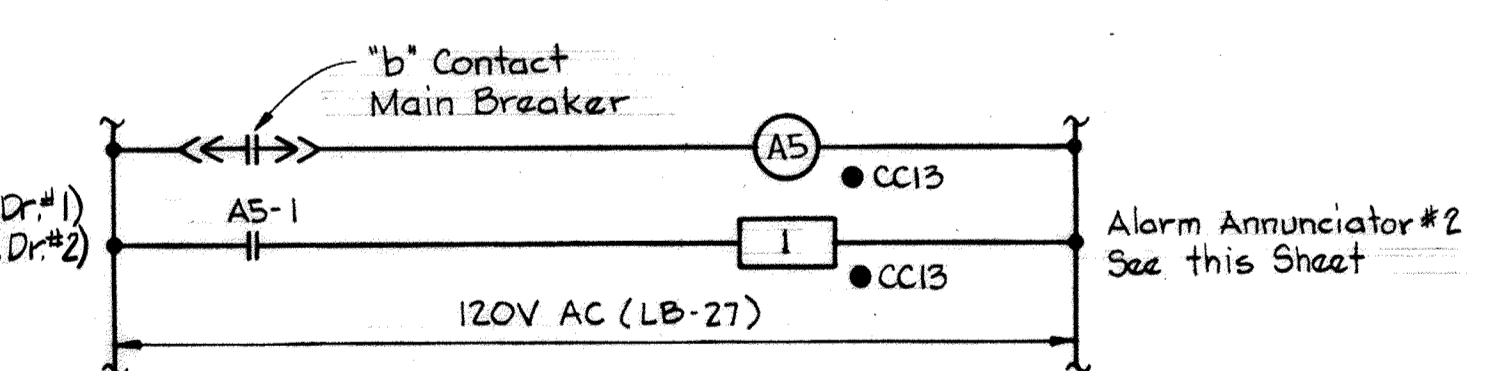
NOTES:
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.



E.C.D.#8
ELEMENTARY CONTROL DIAGRAM
NO VOLTAGE SERVICE FDR N° 1
Typical for No Voltage Service FDR N° 2



E.C.D.#9
ELEMENTARY CONTROL DIAGRAM
TIE BREAKER - CLOSED



E.C.D.#10
ELEMENTARY CONTROL DIAGRAM
MAIN BREAKER N° 1 - OPEN
Typical for Main Breaker No. 2 - Open

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DATE
Richard E. Freudenberger
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

MOTOR CONTROL CENTER
WIRING DIAGRAMS

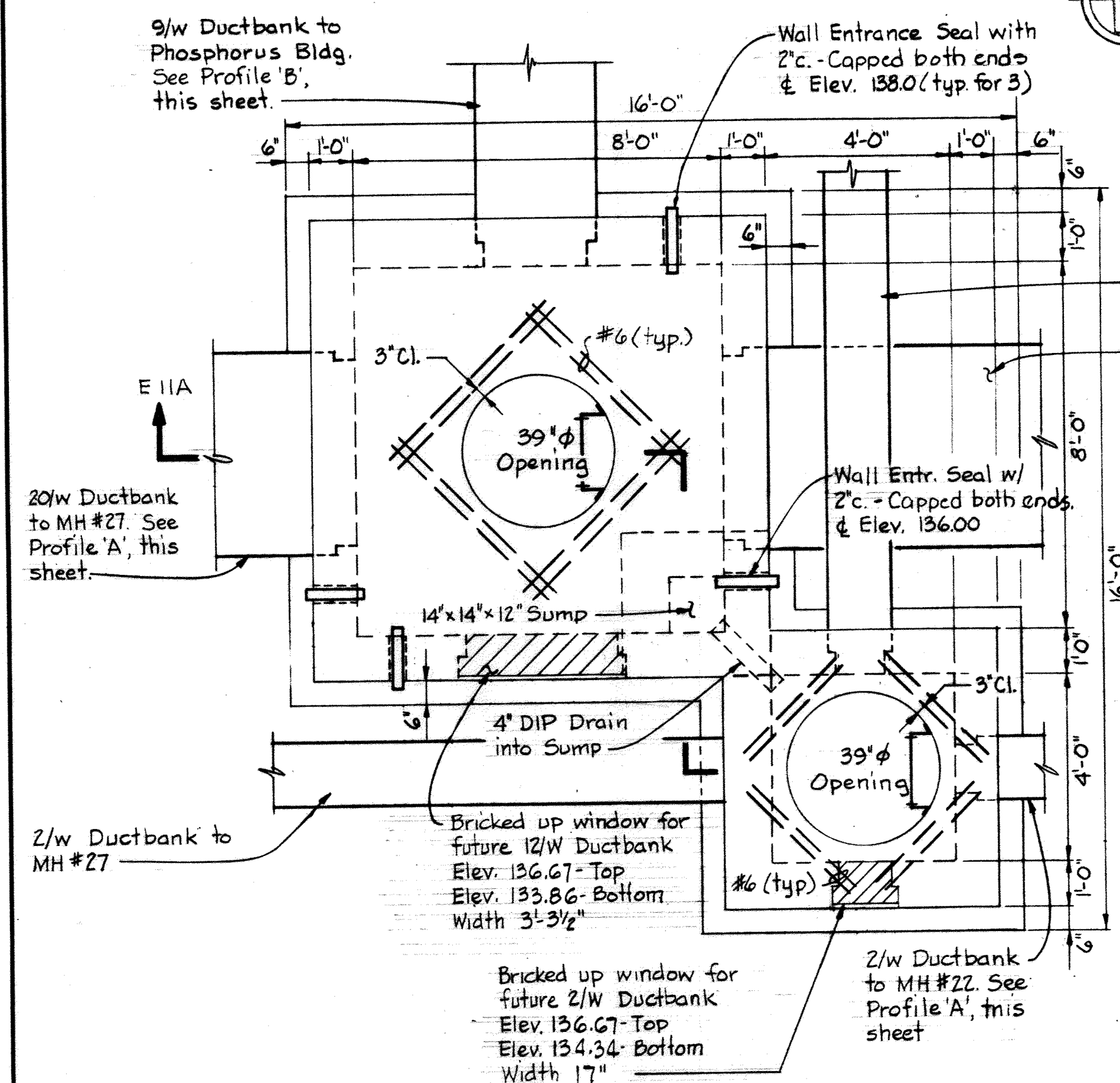
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING
NO. 43
OF 50

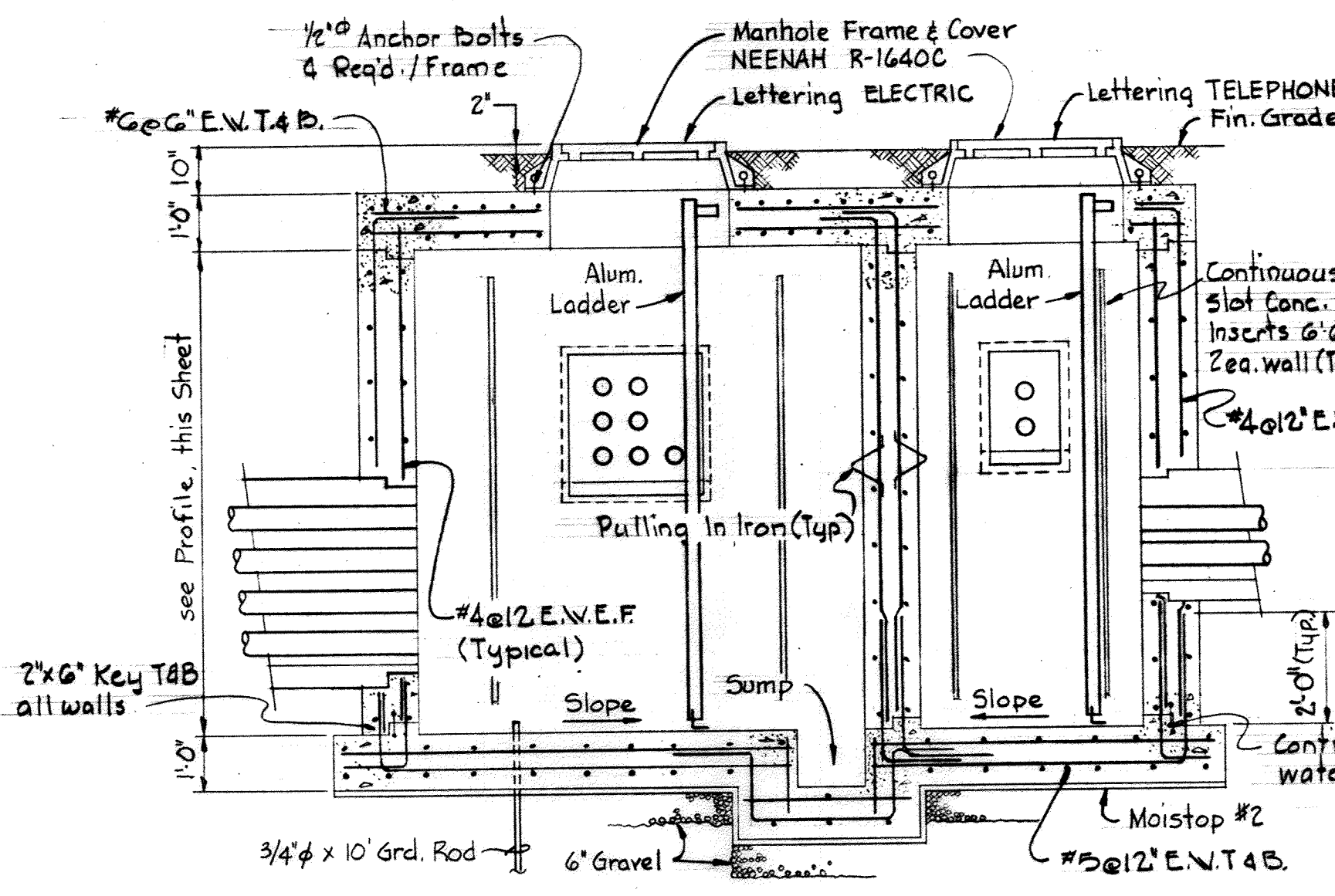
SCALE
AS
SHOWN

NOTES

1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.
2. In Ductbank SECTION E-11B/E-3 the duct spacers, the ties to prevent floating of ducts, the method of concrete pours & reinforcing steel are typical for all ductbank sections unless otherwise noted.

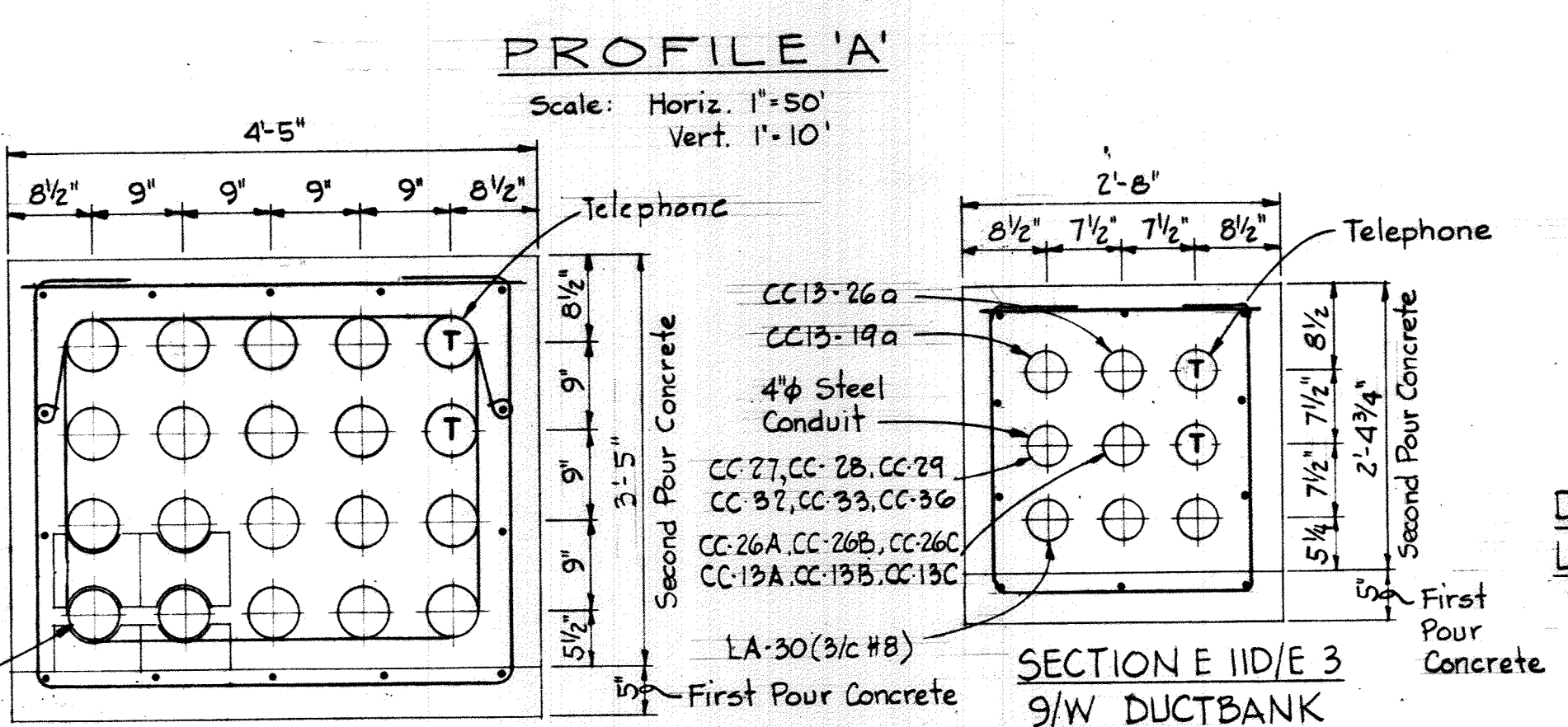
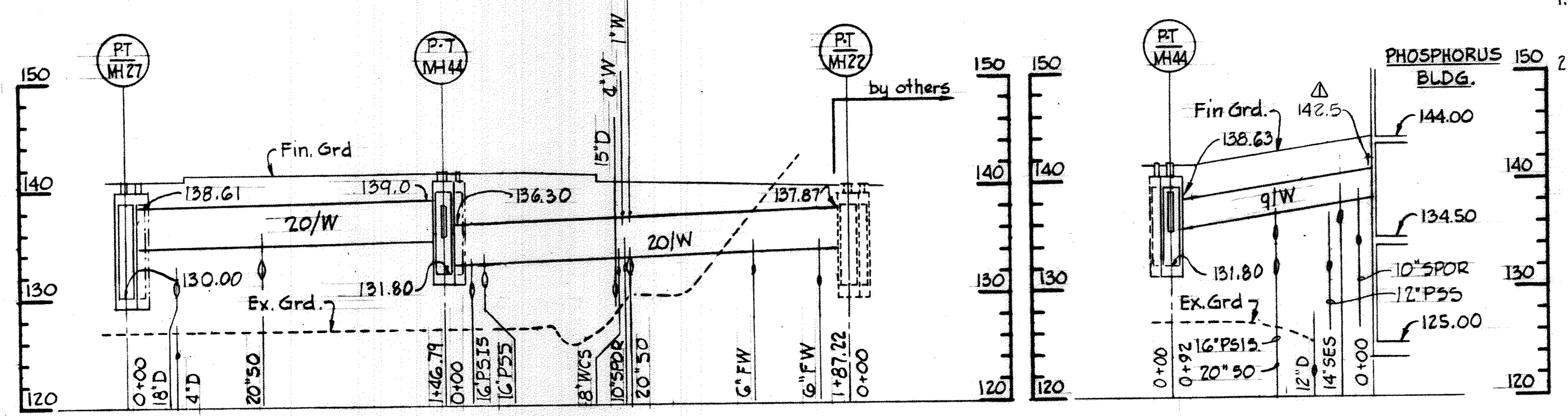


PLAN - MANHOLE #44
Scale: 3/8" = 1'-0"

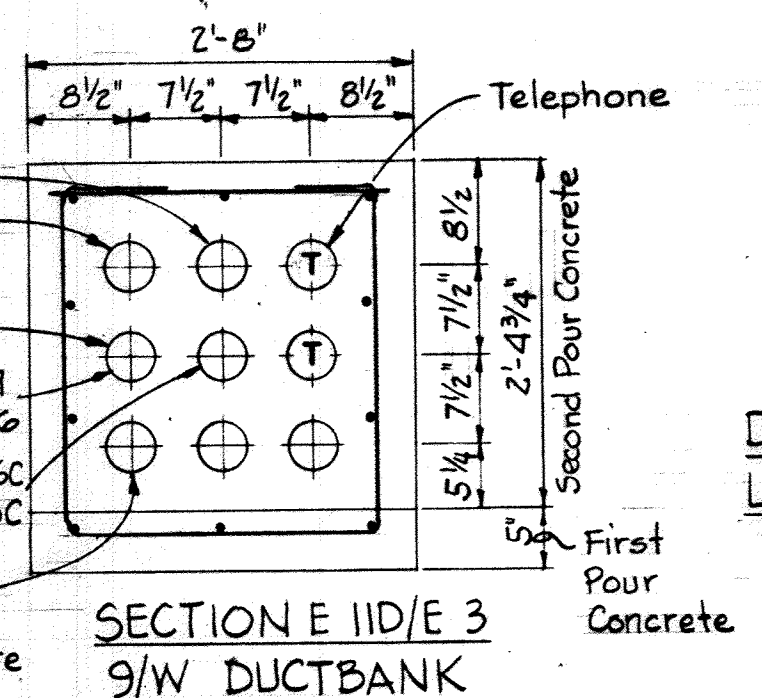


SECTION E IIIA/E II
Scale: 3/8" = 1'-0"

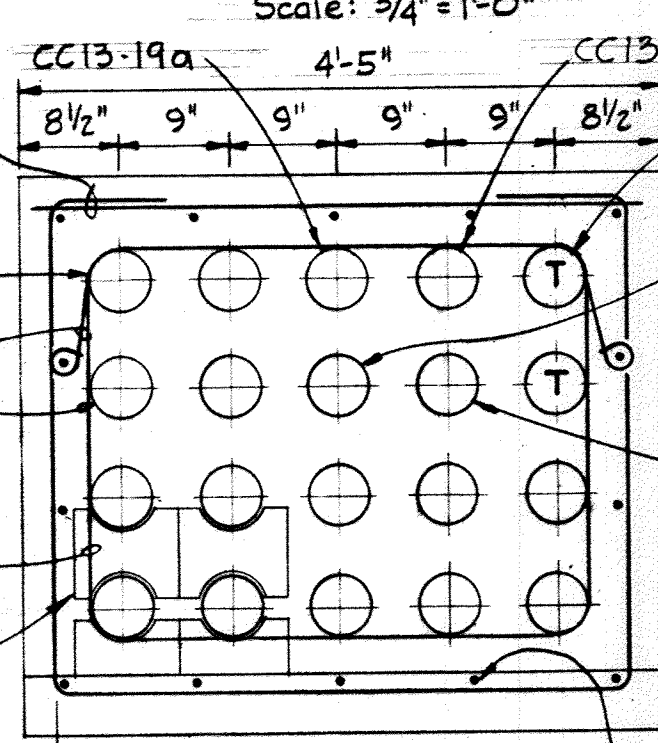
NOTE:
See Sheet S-1 for additional reinforcing at openings in walls and slabs.



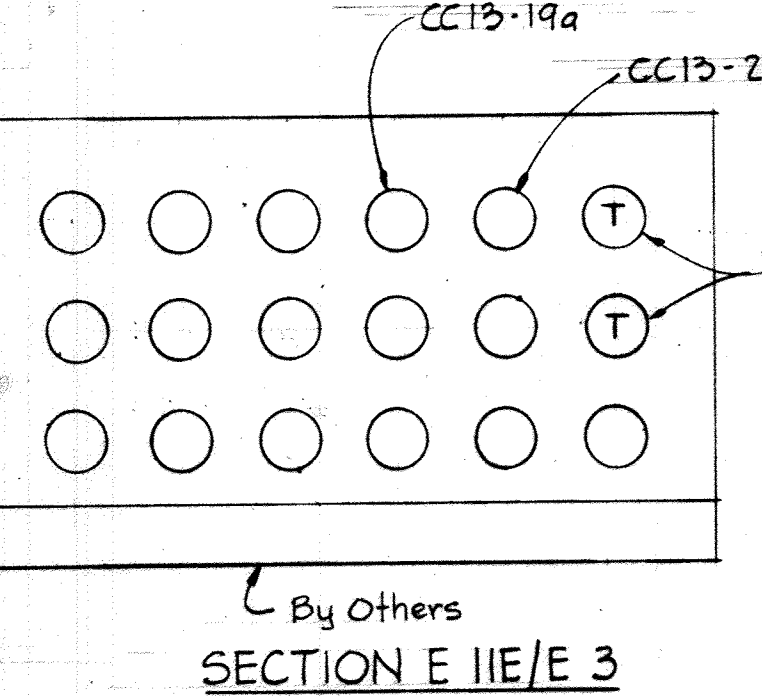
SECTION E IIA/E 3
20/W DUCTBANK
Scale: 3/4" = 1'-0"



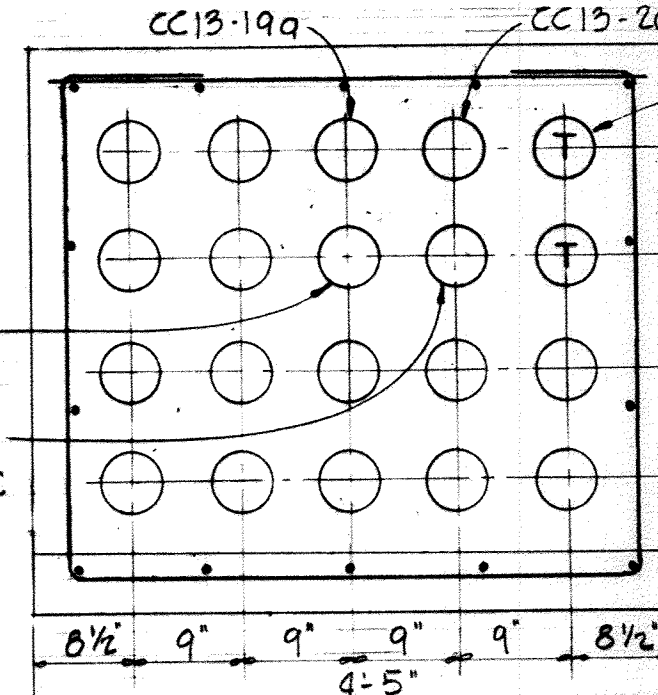
SECTION E IIE/E 3
9/W DUCTBANK
Scale: 3/4" = 1'-0"
See Note #2



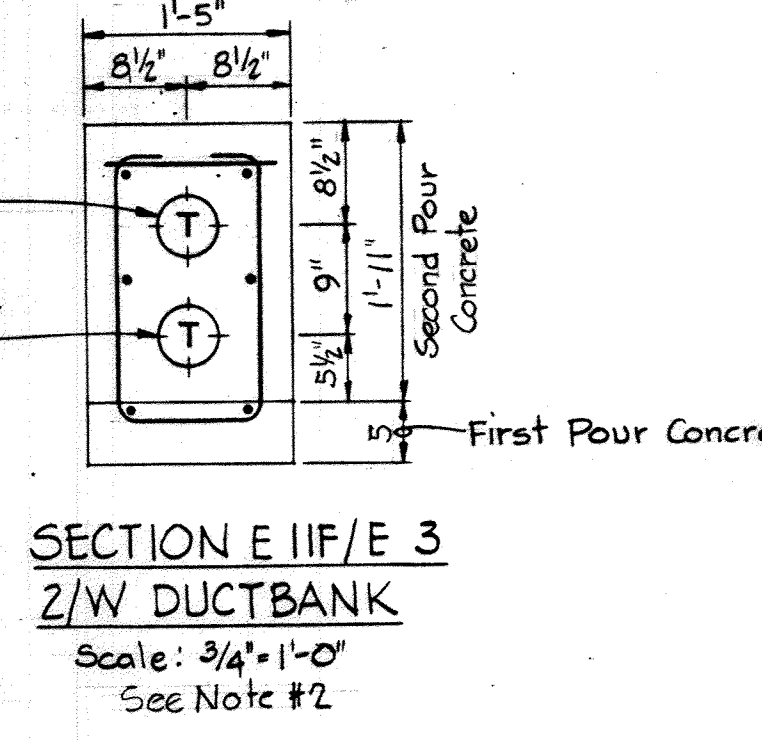
SECTION E IIB/E 3
20/W DUCTBANK
Scale: 3/4" = 1'-0"



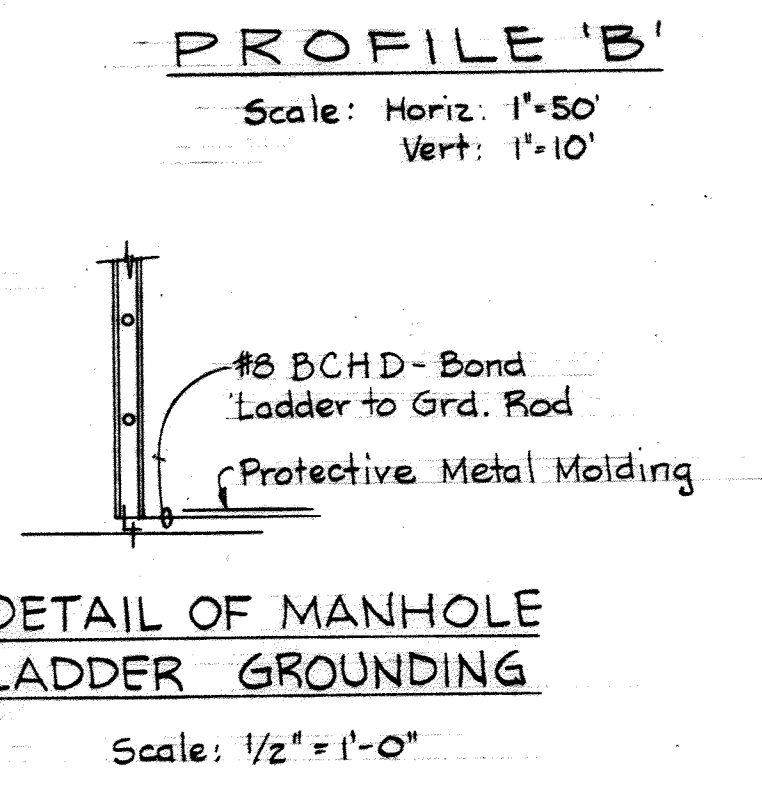
SECTION E IIE/E 3
18/W DUCTBANK
Scale: 3/4" = 1'-0"



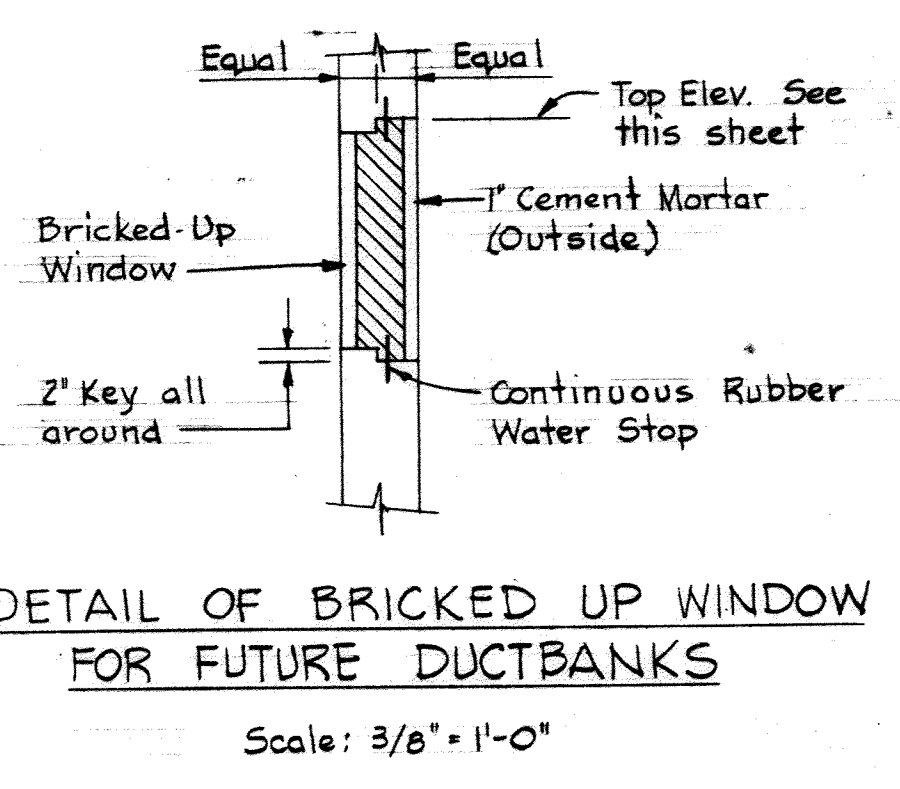
SECTION E IIC/E 3
20/W DUCTBANK
Scale: 3/4" = 1'-0"
See Note #2



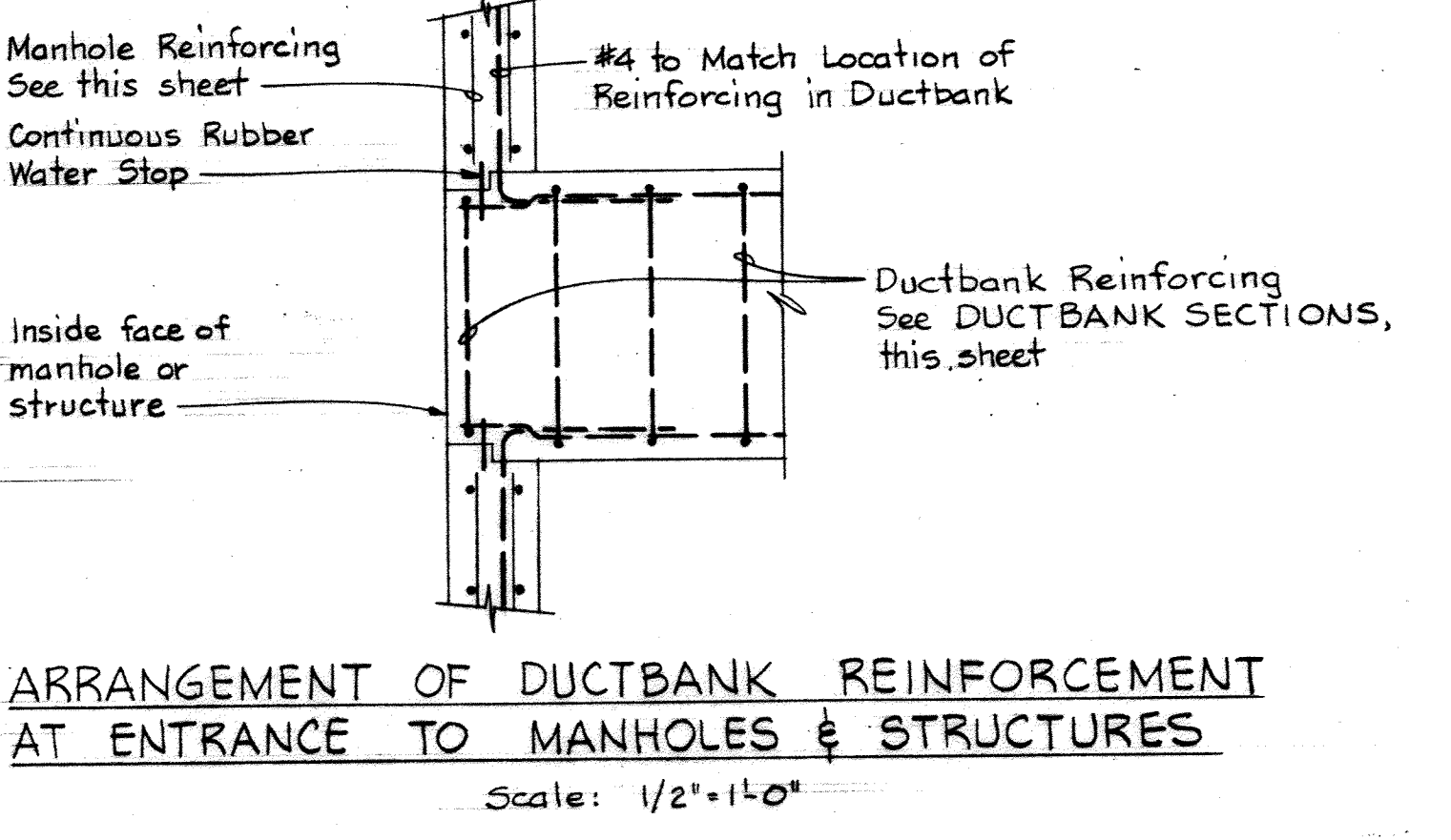
SECTION E IIF/E 3
2/W DUCTBANK
Scale: 3/4" = 1'-0"
See Note #2



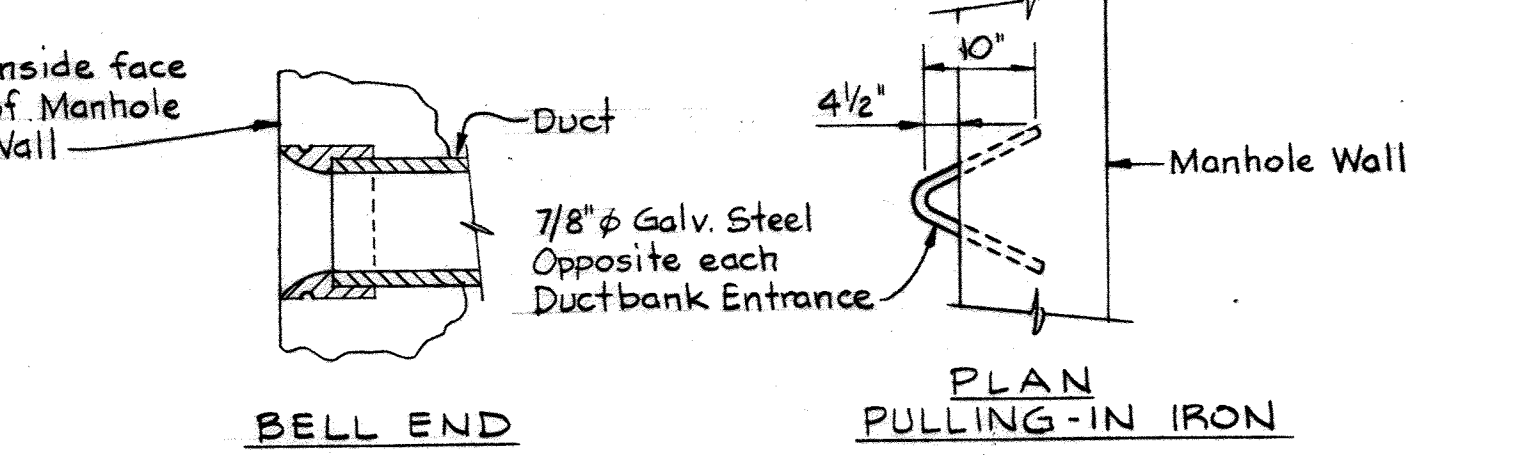
DETAIL OF MANHOLE LADDER GROUNDING
Scale: 1/2" = 1'-0"



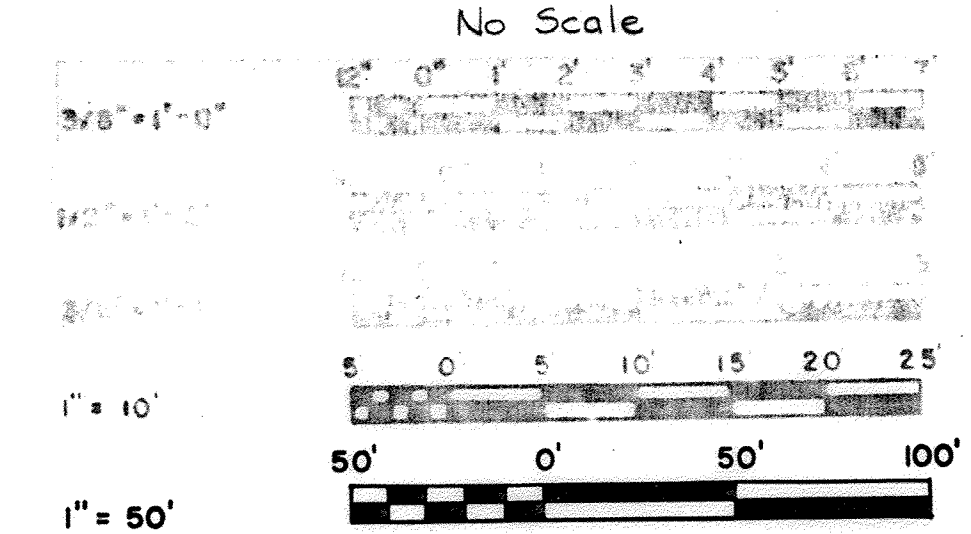
DETAIL OF BRICKED UP WINDOW FOR FUTURE DUCTBANKS
Scale: 3/8" = 1'-0"



ARRANGEMENT OF DUCTBANK REINFORCEMENT AT ENTRANCE TO MANHOLES & STRUCTURES
Scale: 1/2" = 1'-0"



MISCELLANEOUS MANHOLE DETAILS



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CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

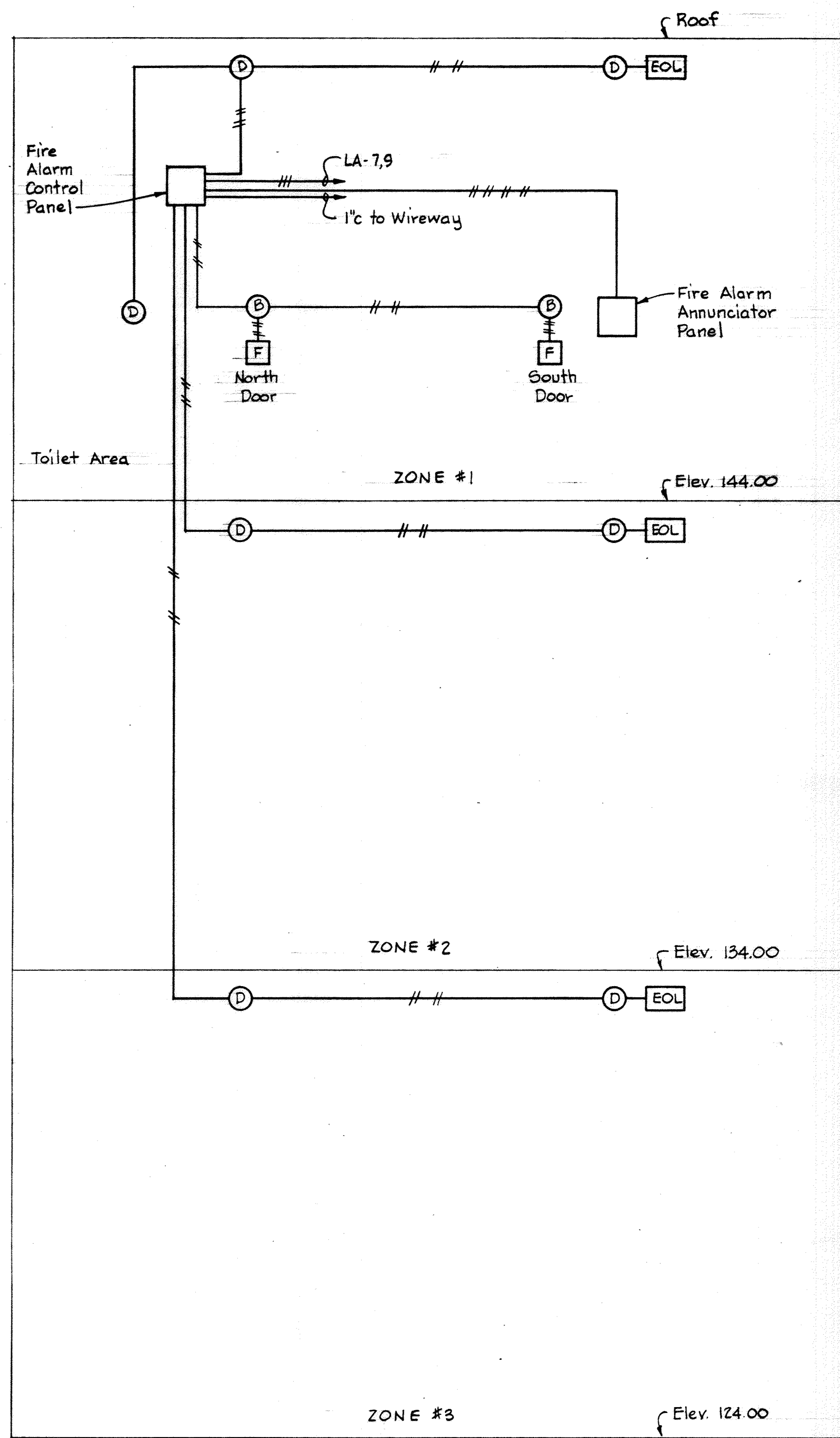
UNDERGROUND DETAILS

SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

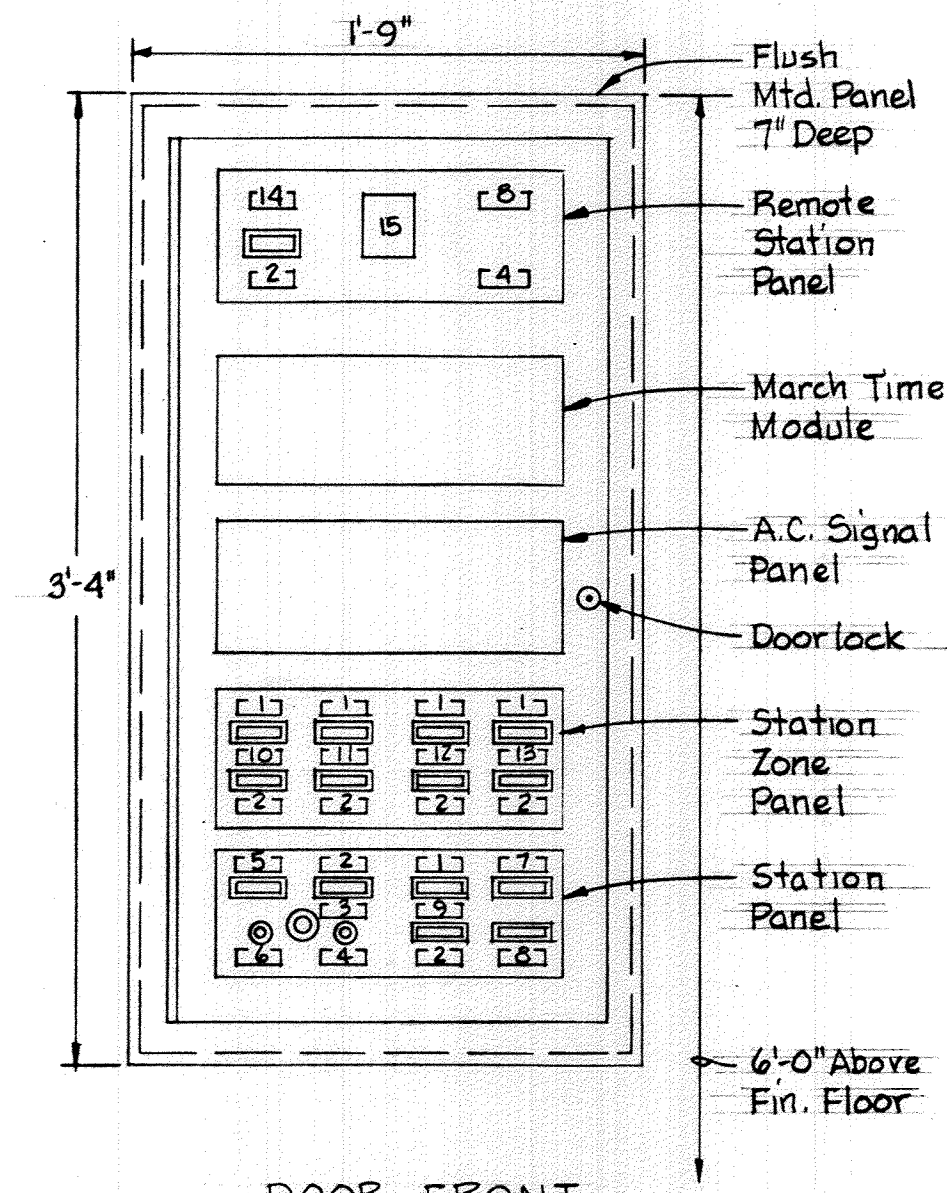
DRAWING NO. 44 OF 50
SCALE AS SHOWN

NOTES:

- For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2
- All wiring for Fire Alarm Systems shall be #14 AWG in 3/4" c unless otherwise noted.

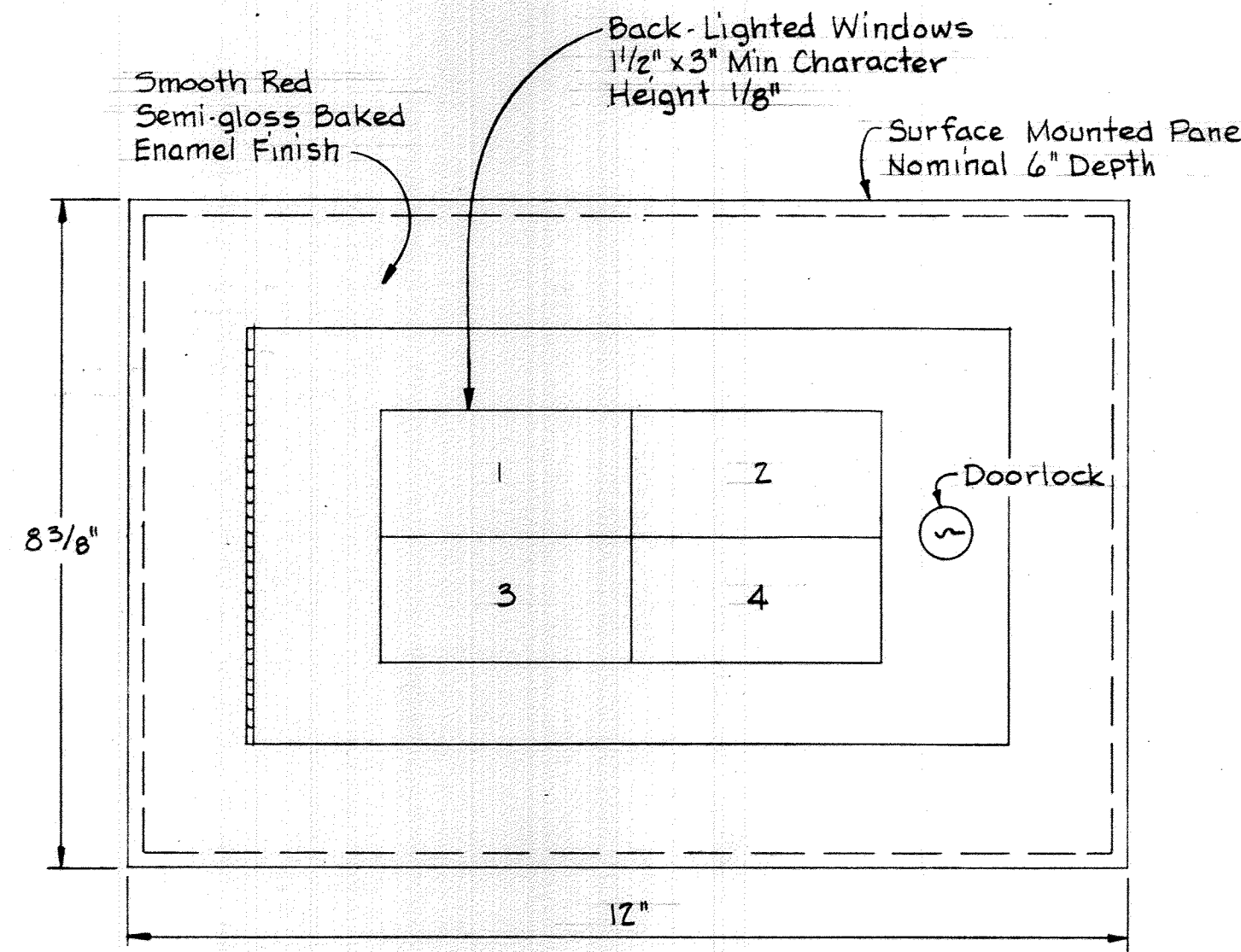


ONE LINE RISER DIAGRAM FOR FIRE ALARM SYSTEM
No Scale



DOOR FRONT
FIRE ALARM CONTROL PANEL
Scale: 1/2" = 1'-0"

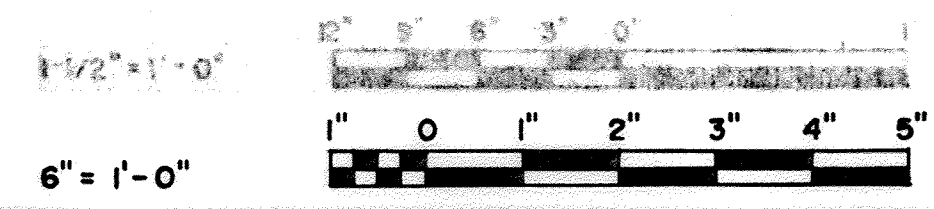
- LEGEND**
- I-14 Nameplates
 - 15 Milliammeter
 - Indicating Light
 - Switch
- NAMEPLATES**
- 1 ALARM
 - 2 TROUBLE
 - 3 NORMAL
 - 4 SILENCE
 - 5 NORMAL POWER
 - 6 RESET
 - 7 SUPVY. POWER TROUBLE
 - 8 OPER. POWER TROUBLE
 - 9 SPARE (Blank Nameplate)
 - 10 PHOSPHORUS CONTROL BLDG. ELEVATION 144.00
 - 11 PHOSPHORUS CONTROL BLDG. ELEVATION 134.00
 - 12 PHOSPHORUS CONTROL BLDG. ELEVATION 124.00
 - 13 SPARE (Blank Nameplate)
 - 14. REMOTE LINE



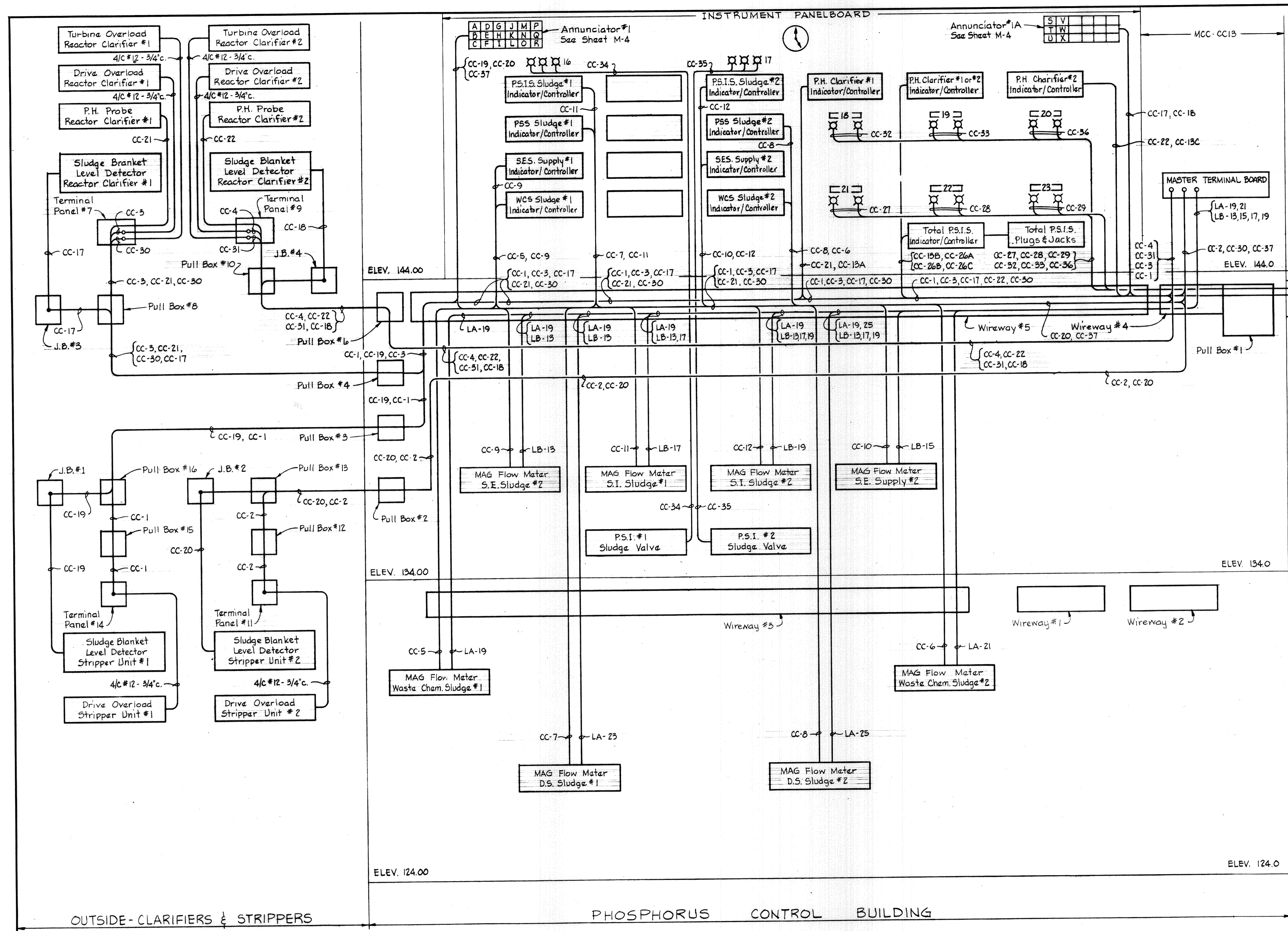
DOOR FRONT
FIRE ALARM ANNUNCIATOR PANEL
Scale: 6" = 1'-0"

Point No.	Window Inscription	Remarks
1	PHOSPHORUS CONTROL BLDG. ELEV. 144.00	
2	PHOSPHORUS CONTROL BLDG. ELEV. 134.00	
3	PHOSPHORUS CONTROL BLDG. ELEV. 124.00	
4	BLANK	

FIRE ALARM ANNUNCIATOR SCHEDULE



WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 1/12/78 Richard E. Freudenberger CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	PHOSPHORUS CONTROL BLDG FIRE ALARM SYSTEM DIAGRAMS AND DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 45 OF 50	SCALE AS SHOWN
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NOTES:
 1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.

CC-32, CC-33, CC-36
 CC-27, CC-28, CC-29
 CC-19A, CC-19B, CC-19C,
 CC-26A, CC-26B, CC-26C
 Ductbank to MH#44
 See Sheet E-3

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 1304 ST. PAUL ST.
 BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 1/12/78
Richard E. Brudenbury
 CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

**INSTRUMENTATION
 DETAILS**

**SAVAGE WASTEWATER
 TREATMENT PLANT ADDITION NO. 4**

DRAWING
 NO. 46
 OF 50

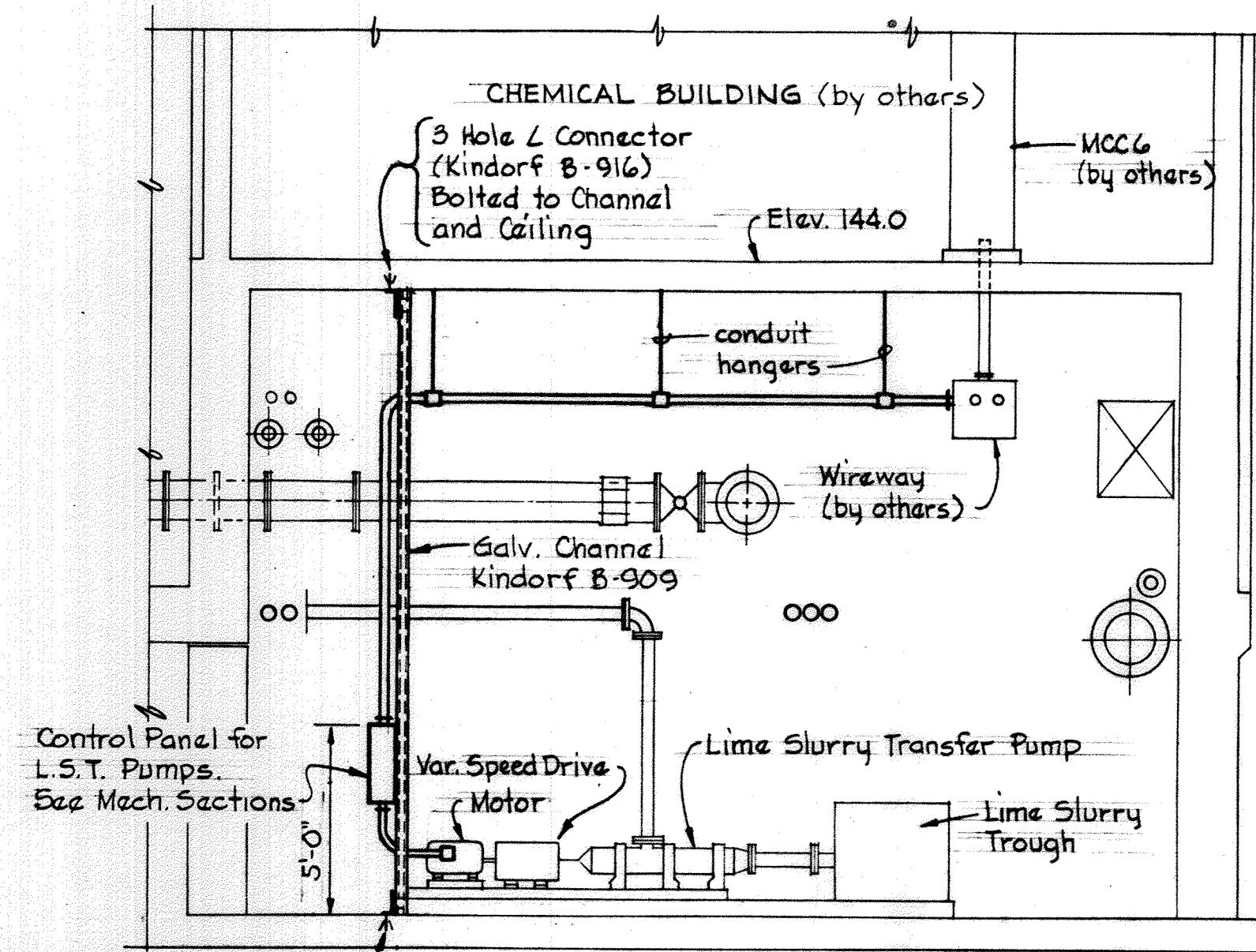
SCALE
 AS
 SHOWN



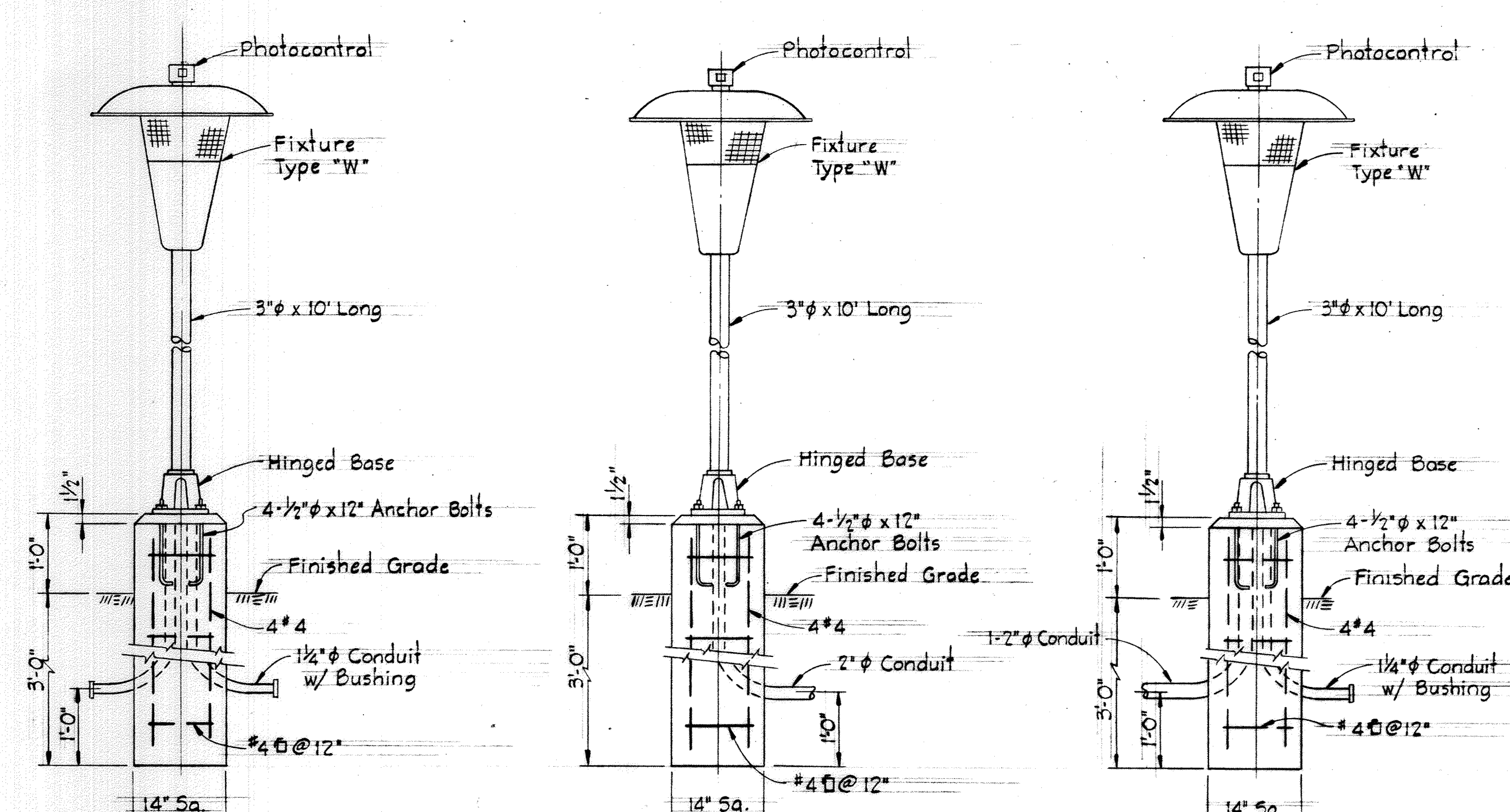
CONTROL CABLE SCHEDULE								
RUN NO	FROM	TO	FOR	WIRE			CONDUIT RACEWAY	REMARKS
				No	Size	Type		
CC-1	Overload Device Stripper Drive #1	MCC - CC15 Phosphorus Control Bldg.	Alarm & Cutoff	6/c	12	See Spec.	See Dwgs	See Sheet E-15
CC-2	Overload Device Stripper Drive #2	MCC - CC15 Phosphorus Control Bldg.	Alarm & Cutoff	6/c	12	See Spec.	See Dwgs	See Sheet E-15
CC-3	Overload Device Clarifier Drive #1	MCC - CC15 Phosphorus Control Bldg.	Alarm & Cutoff	6/c	12	See Spec.	See Dwgs	See Sheet E-15
CC-4	Overload Device Clarifier Drive #2	MCC - CC15 Phosphorus Control Bldg.	Alarm & Cutoff	6/c	12	See Spec.	See Dwgs	See Sheet E-15
CC-5	Mag Flow Meter Waste Chem. Sludge #1	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-6
CC-6	Mag Flow Meter Waste Chem. Sludge #2	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-6
CC-7	Mag. Flow Meter Phosph. Stripped Slud. #1	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-6
CC-8	Mag. Flow Meter Phosph. Stripped Slud. #2	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-6
CC-9	Mag. Flow Meter Stripper Elut. Supply #1	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-5
CC-10	Mag. Flow Meter Stripper Elut. Supply #2	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-5
CC-11	Mag. Flow Meter Stripper Infl. Sludge #1	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-5
CC-12	Mag. Flow Meter Stripper Infl. Sludge #2	Instrument Panel Phosphorus Control Bldg.	Flow Signal	2/P	16	Shielded	See Dwgs	See Sheet E-5
CC-13A	Control Panel - Chem. Fed. Bldg. L.S.T. Pump #3	Instrument Panel Phosphorus Control Bldg.	Variable Speed Signal Start-Stop Signal	2/P 3/C	16 14	See Spec.	See Dwgs.	Typical for: CC-13B (L.S.T. Pump #4) & CC-13C (L.S.T. Pump #5)
CC-14	Temperature Probe for P.S.I.S. Sludge	Instrument Panel Phosphorus Control Bldg.	PSIS Sludge Temperature	2/P	16	Shielded	See Dwgs	See Sheet E-5
CC-15	Fut. Mag Flow Meter Stripper Infl. Sludge #3	Instrument Panel Phosphorus Control Bldg.	Fut. Flow Signal	-	-	-	-	-
CC-16	Fut. Mag Flow Meter Stripper Elut. Supply #3	Instrument Panel Phosphorus Control Bldg.	Fut. Flow Signal	-	-	-	-	-
CC-17	Sludge Blanket Level Detect. Reactor Clarifier #1	Instrument Panel Phosphorus Control Bldg.	Alarm Annunciator #1	14		See Spec.	See Dwgs	See Sheet E-15
CC-18	Sludge Blanket Level Detect. Reactor Clarifier #2	Instrument Panel Phosphorus Control Bldg.	Alarm Annunciator #1	3/c	14	See Spec.	See Dwgs	See Sheet E-15
CC-19	Sludge Blanket Level Detect. Stripper #1	Instrument Panel Phosphorus Control Bldg.	Alarm Annunciator #1	3/c	14	See Spec.	See Dwgs	See Sheet E-15
CC-20	Sludge Blanket Level Detect. Stripper #2	Instrument Panel Phosphorus Control Bldg.	Alarm Annunciator #1	3/c	14	See Spec.	See Dwgs	See Sheet E-15
CC-21	P.H. Probe Reactor Clarifier #1	Instrument Panel Phosphorus Control Bldg.	P.H. Indication & Recording	6/c	16	See Spec.	See Dwgs	See Sheet E-15
CC-22	P.H. Probe Reactor Clarifier #2	Instrument Panel Phosphorus Control Bldg.	P.H. Indication & Recording	6/c	16	See Spec.	See Dwgs	See Sheet E-15
CC-23A	Control Panel WCS Pump #1	Instrument Panel Phosphorus Control Bldg.	Variable Speed Signal Stop-Start Signal	2/P 3/C	16 14	See Spec.	See Dwgs.	Typical for: CC-23B (WCS Pump #2) & CC-23C (WCS Pump #3)
CC-24A	Control Panel PS5 Pump #1	Instrument Panel Phosphorus Control Bldg.	Variable Speed Signal Stop-Start Signal	2/P 3/C	16 14	See Spec.	See Dwgs.	Typical for: CC-24B (PS5 Pump #2) & CC-24C (PS5 Pump #3)
CC-25A	Control Panel SES Pump #1	Instrument Panel Phosphorus Control Bldg.	Variable Speed Signal Stop-Start Signal	2/P 3/C	16 14	See Spec.	See Dwgs.	Typical for: CC-25B (SES Pump #2) & CC-25C (SES Pump #3)
CC-26A	Control Panel - Chem. Fed. Bldg. PS15 Pump #1	Instrument Panel Phosphorus Control Bldg.	Variable Speed Signal Stop-Start Signal	2/P 3/C	16 14	See Spec.	See Dwgs.	Typical for: CC-26B (PS15 Pump #2) & CC-26C (PS15 Pump #3)
CC-27	MCC, CC6, Chem. Feed. Bldg. P.S.I.S. Pump #1	Instrument Panel Phosphorus Control Bldg.	Running Lights	4/c	14	See Spec.	See Dwgs.	MCC, CC6 (by others)
CC-28	MCC, CC5, Aeration Basin #4 P.S.I.S. Pump #2	Instrument Panel Phosphorus Control Bldg.	Running Lights	4/c	14	See Spec.	See Dwgs.	MCC, CC5 (by others)
CC-29	MCC, CC5, Aeration Basin #4 P.S.I.S. Pump #3	Instrument Panel Phosphorus Control Bldg.	Running Lights	4/c	14	See Spec.	See Dwgs.	MCC, CC5 (by others)
CC-30	Overload Device Turbine Drive #1	MCC - CC15 Phosphorus Control Bldg.	Alarm & Cutoff	6/c	12	See Spec.	See Dwgs.	See Sheet E-15
CC-31	Overload Device Turbine Drive #2	MCC - CC15 Phosphorus Control Bldg.	Alarm & Cutoff	6/c	12	See Spec.	See Dwgs.	See Sheet E-15
CC-32	MCC - CC6 Chem. Feed Bldg. L.S. Transfer Pump #3	Instrument Panel Phosphorus Control Bldg.	Running Lights	4/c	14	See Spec.	See Dwgs.	See Sheet E-18
CC-33	MCC - CC6 Chem. Feed Bldg. L.S. Transfer Pump #4	Instrument Panel Phosphorus Control Bldg.	Running Lights	4/c	14	See Spec.	See Dwgs.	See Sheet E-18
CC-34	P.S.I. #1 Sludge Valve	Instrument Panel Phosphorus Control Bldg.	Valve Indication	4/c	14	See Spec.	See Dwgs.	See Sheet E-5
CC-35	P.S.I. #2 Sludge Valve	Instrument Panel Phosphorus Control Bldg.	Valve Indication	4/c	14	See Spec.	See Dwgs.	See Sheet E-5
CC-36	MCC - CC6 Chem. Feed Bldg. L.S. Transfer Pump #5	Instrument Panel Phosphorus Control Bldg.	Running Lights	4/c	14	See Spec.	See Dwgs.	See Sheet E-18
CC-37	MCC - CC15 Phosphorus Control Bldg.	Instrument Panel Phosphorus Control Bldg.	Alarm Annunciator	12/c	14	See Spec.	See Dwgs.	See Sheet E-13

NOTES:

1 For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.



SECTION E14A/E18
(TYPICAL FOR FIVE UNITS)
Scale: 1/4"=1'-0"

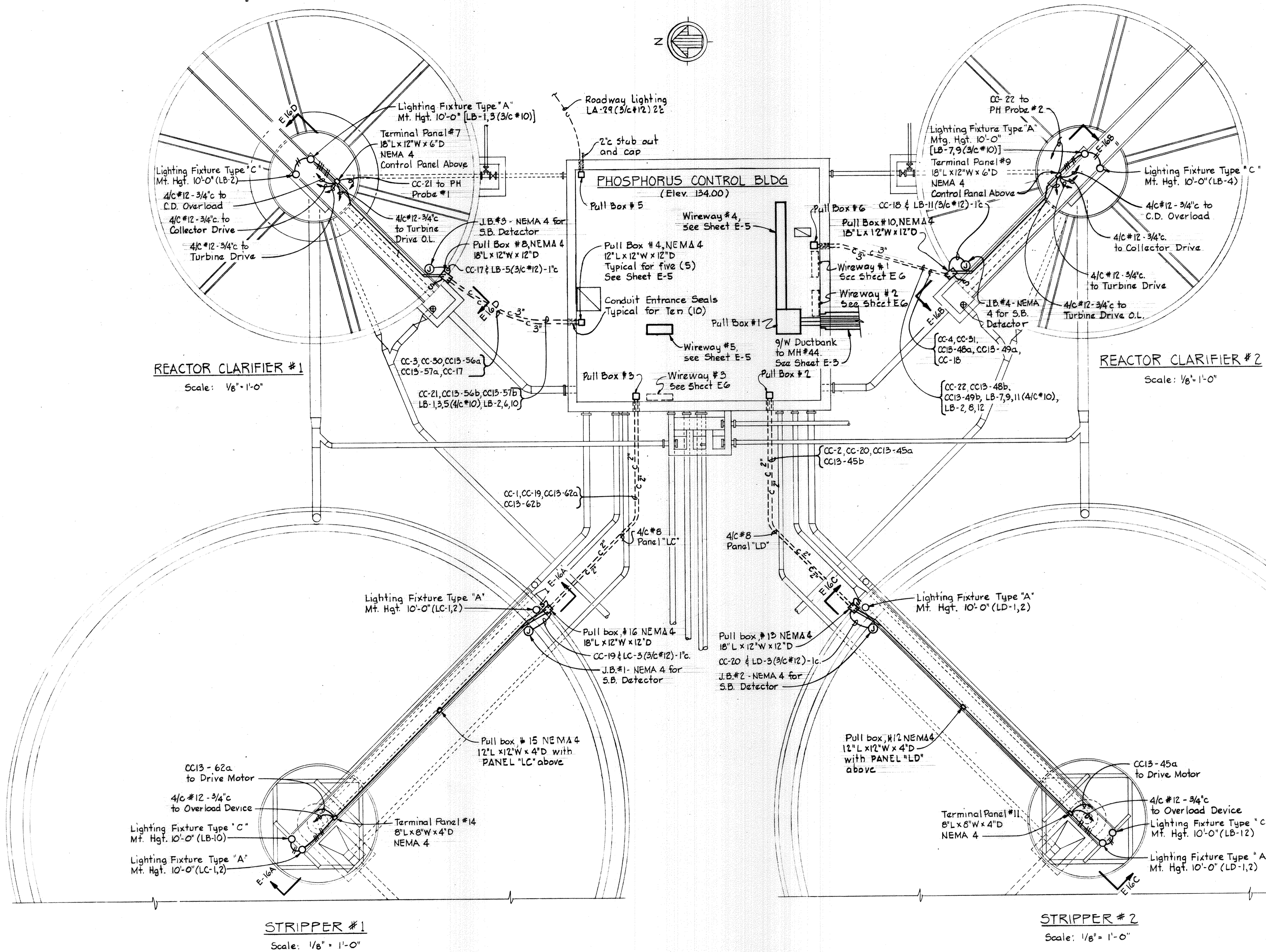


DETAIL 'A' DETAIL 'B' DETAIL 'C'
FOUNDATION DETAILS FOR TYPE 'W' LIGHTING FIXTURES
Scale: 3/4"=1'-0"

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE <i>Richard E. Brundage</i> CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	MISCELLANEOUS DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 47	SCALE AS SHOWN
					OF 50	

W. O. 7275-2B

NOTES:
1 For GENERAL ELECTRICAL NOTES &
LEGEND, see Sheet E-2.



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1304 ST. PAUL ST.
BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/12/78
DATE

Richard E. Sreudenberg
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

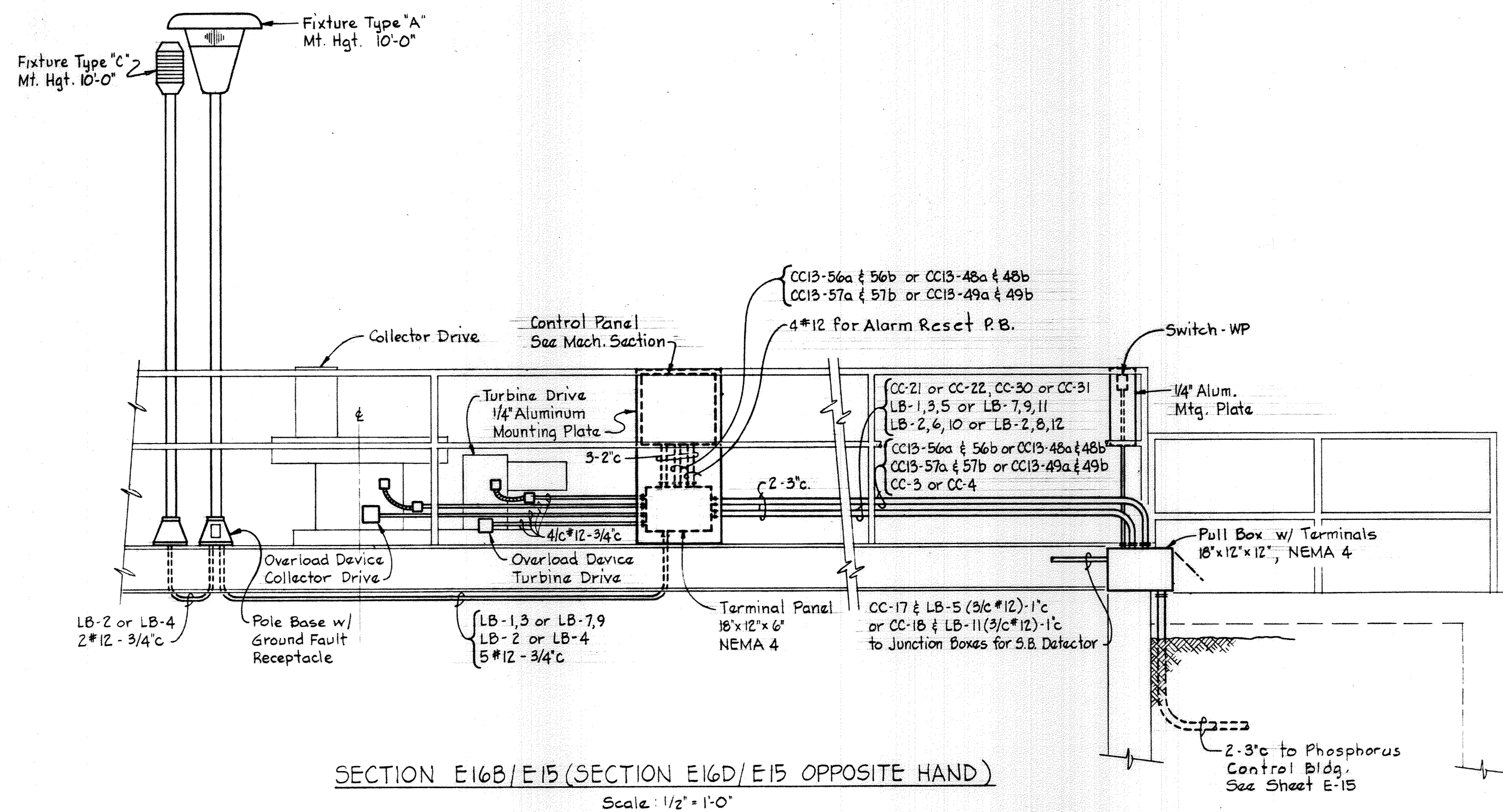
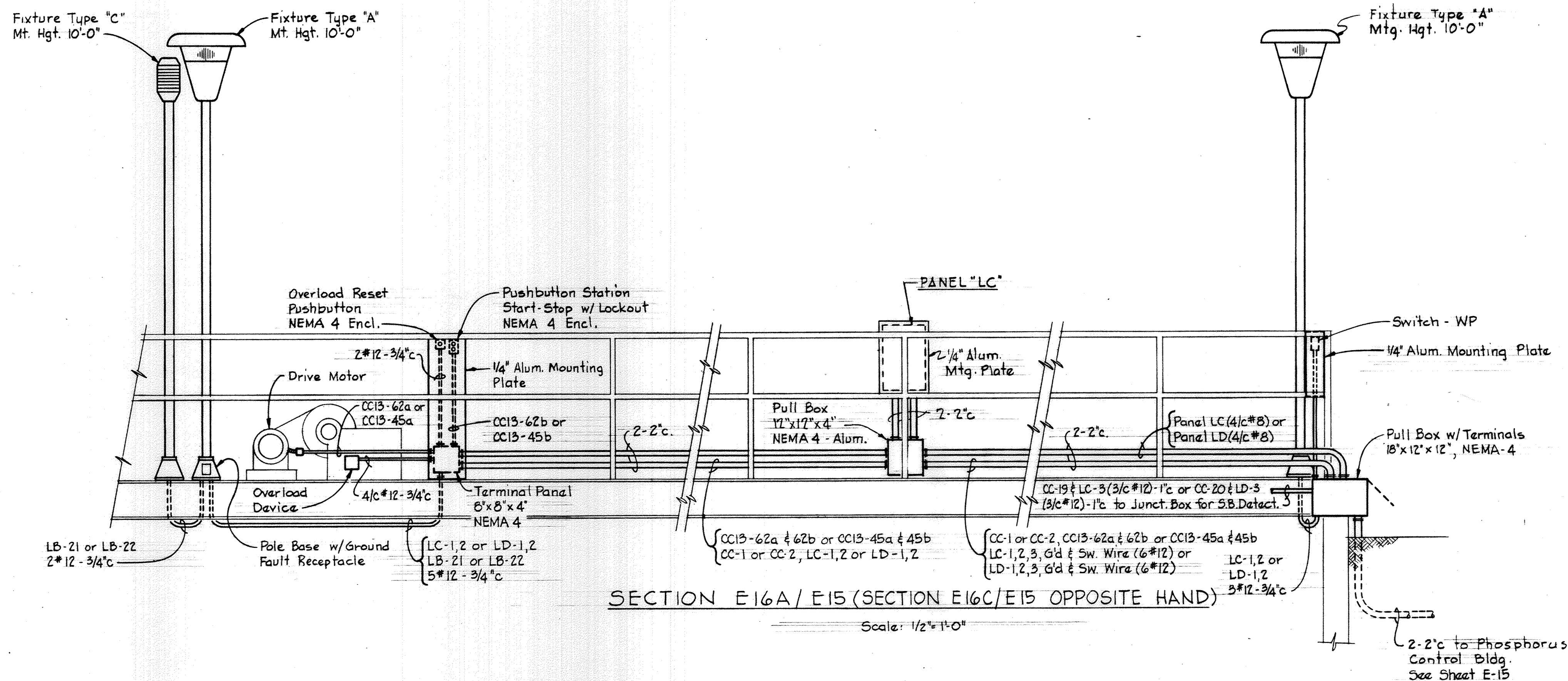
CONTRACT NO. 760-S

CLARIFIERS & STRIPPERS
PLANS & DETAILS

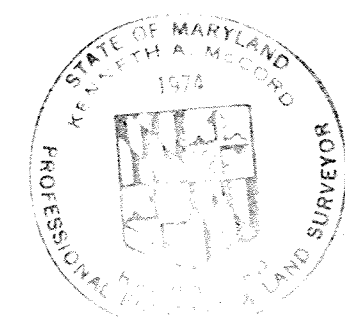
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING
NO. 48
OF 50

SCALE
AS
SHOWN

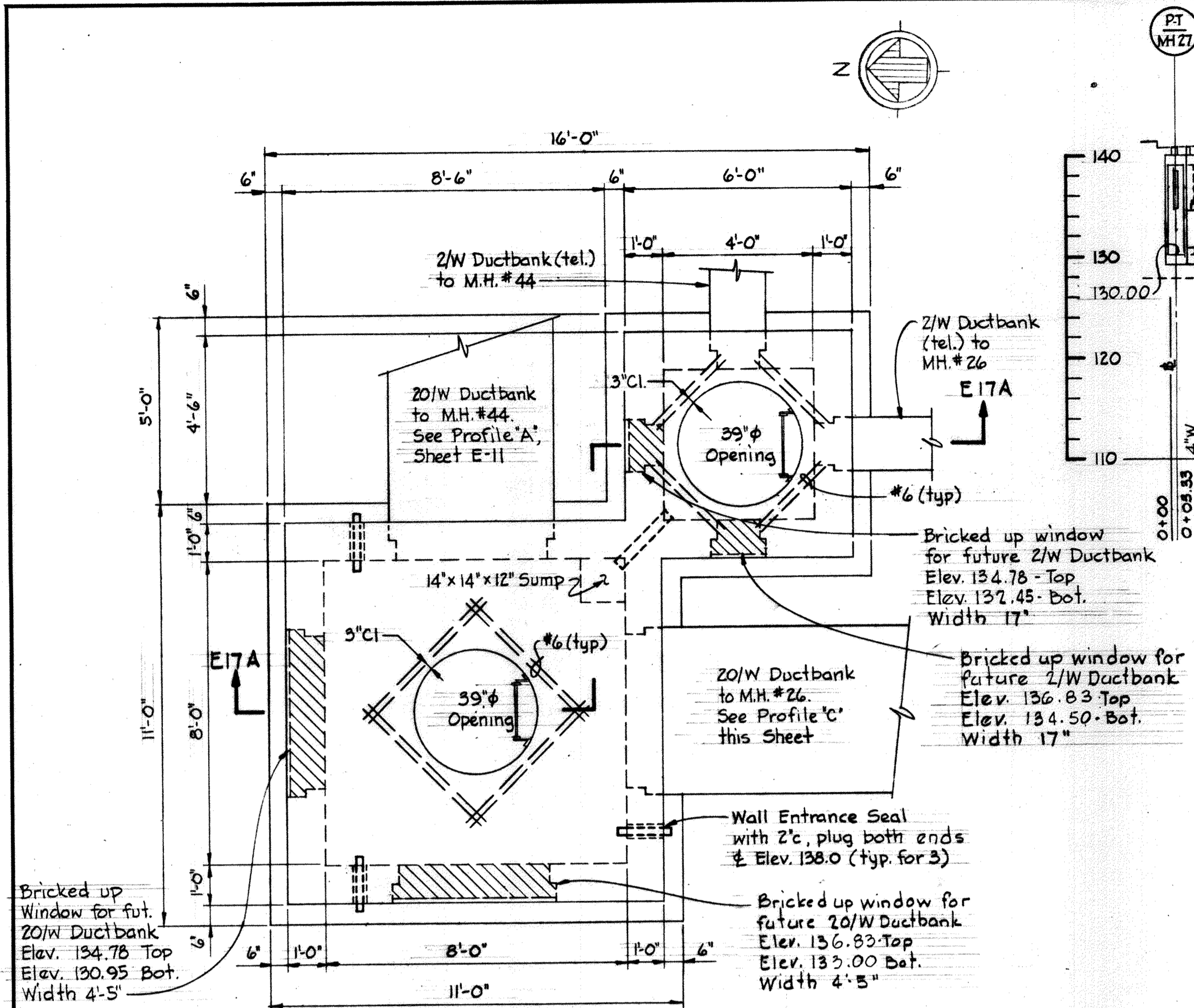


NOTES:
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.

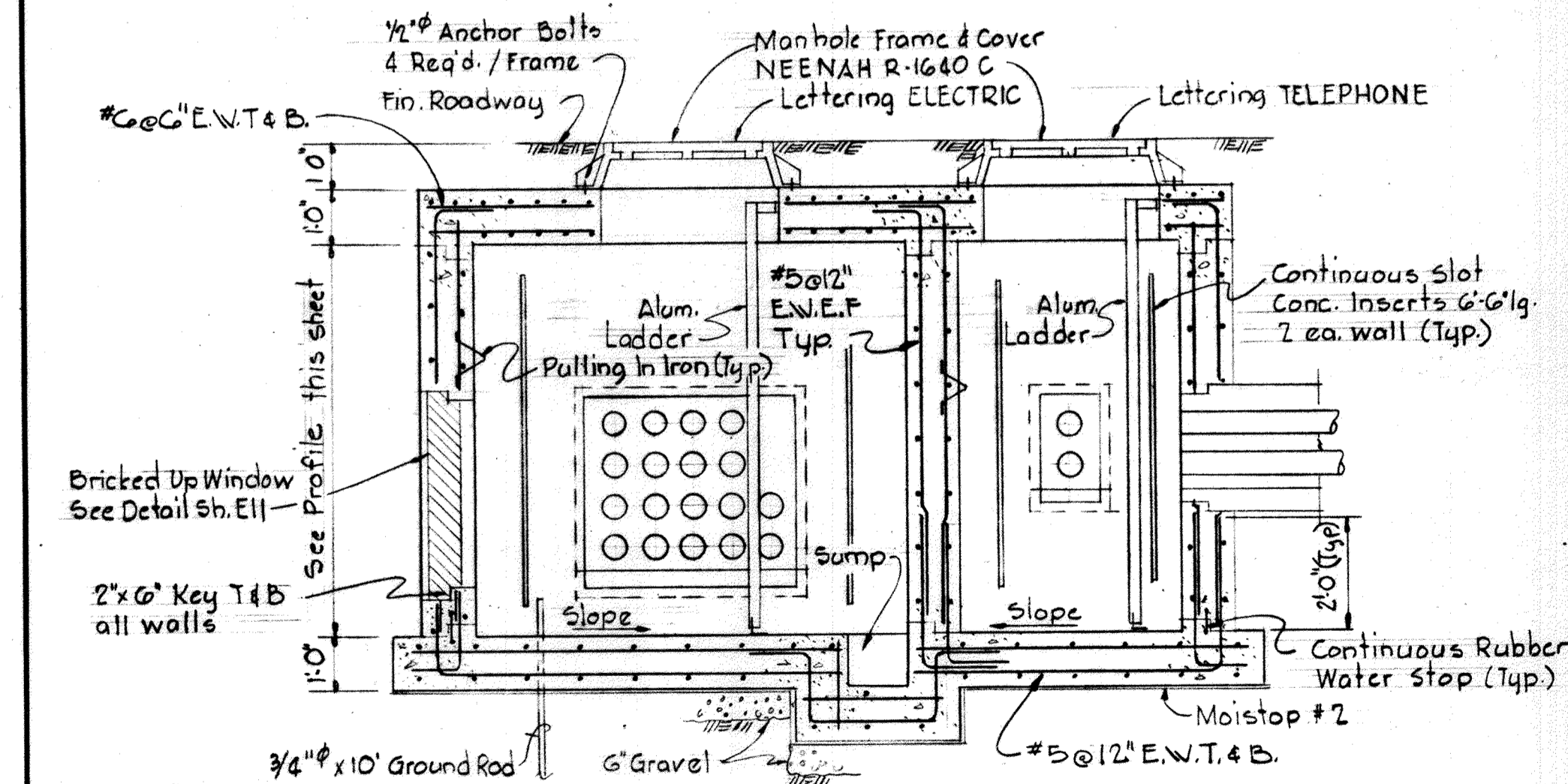


WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 1/12/78 DATE Richard E. Freudenberger CHIEF BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 760-S	CLARIFIERS & STRIPPERS DETAILS	SAVAGE WASTEWATER TREATMENT PLANT ADDITION NO. 4	DRAWING NO. 49 OF 50	SCALE AS SHOWN
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NOTES:
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.

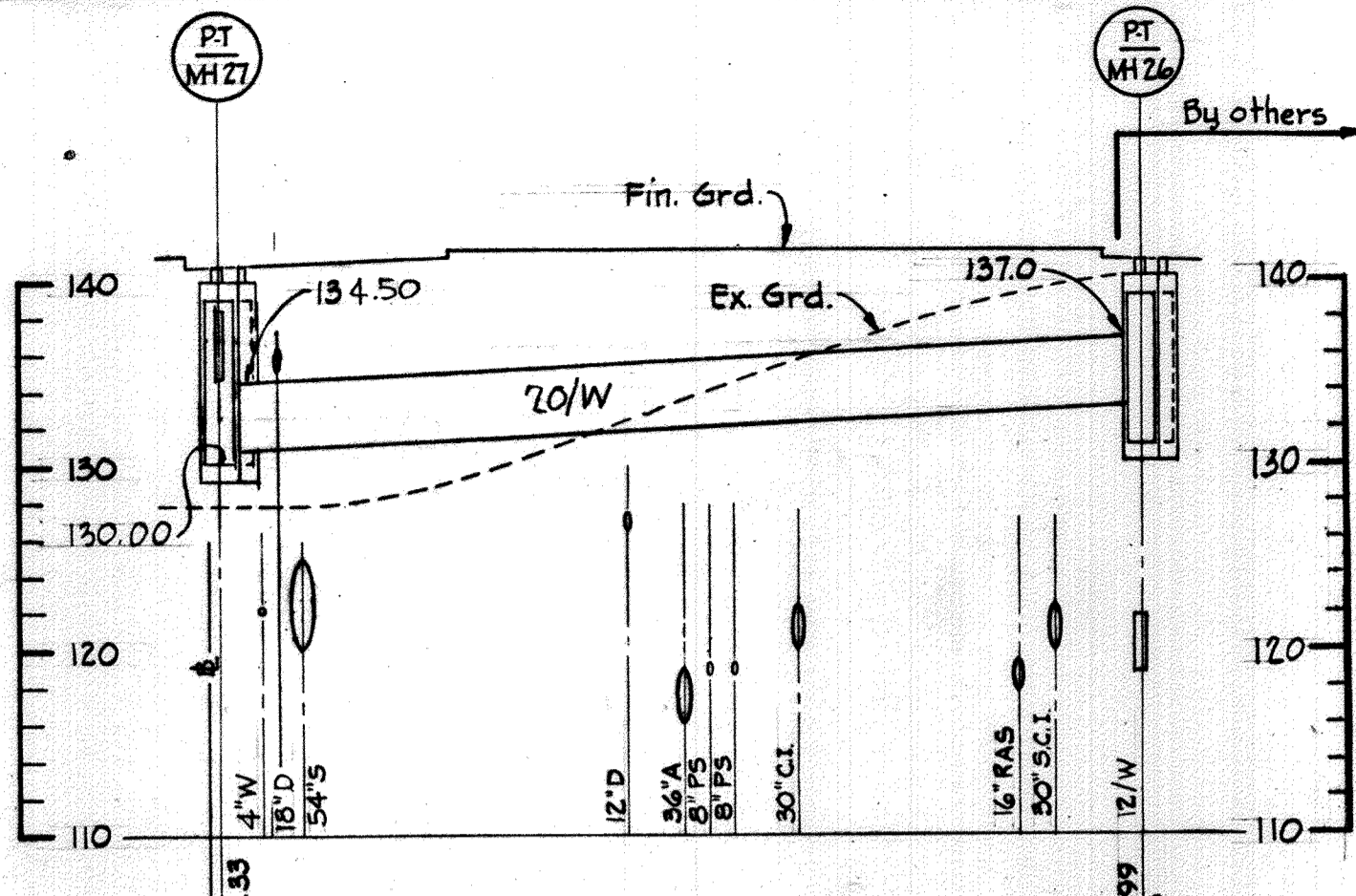


PLAN - MANHOLE # 27
Scale: 3/8"=1'-0"

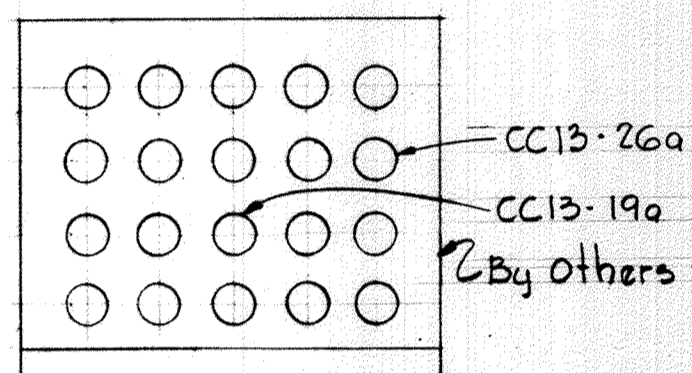


SECTION E17A/E17
Scale: 3/8"=1'-0"

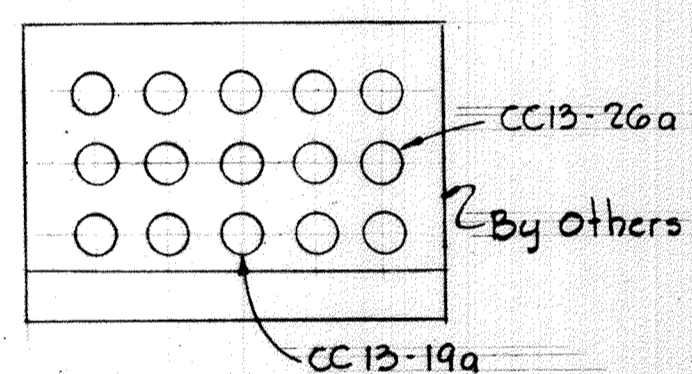
NOTE:
For additional reinforcing required at openings in walls & slabs, see Sheets E-1



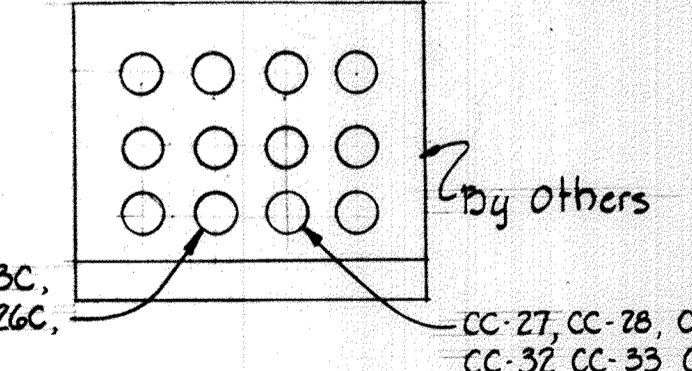
PROFILE 'C'
Scale: Horiz. 1"=50'-0"
Vert. 1"=10'-0"



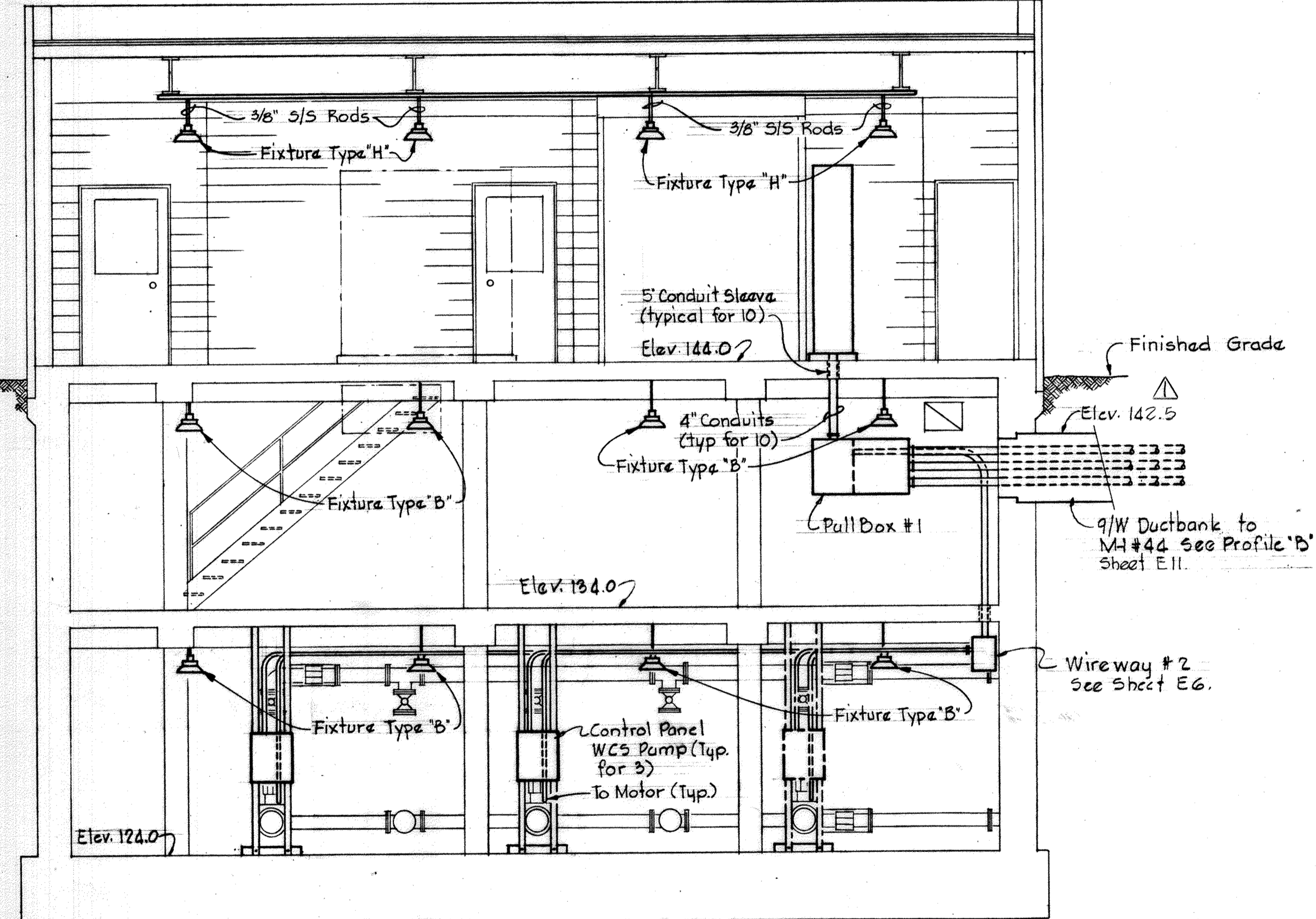
SECTION E17C/E3
20/W DUCTBANK
Scale: 1/2"=1'-0"



SECTION E17D/E3
15/W DUCTBANK
Scale: 1/2"=1'-0"



SECTION E17E/E3
12/W DUCTBANK
Scale: 1/2"=1'-0"



SECTION E17B/E4, E5 & E6
Scale: 1/4"=1'-0"

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HOWARD COUNTY, MARYLAND
1/12/78
Richard E. Stendenburg
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

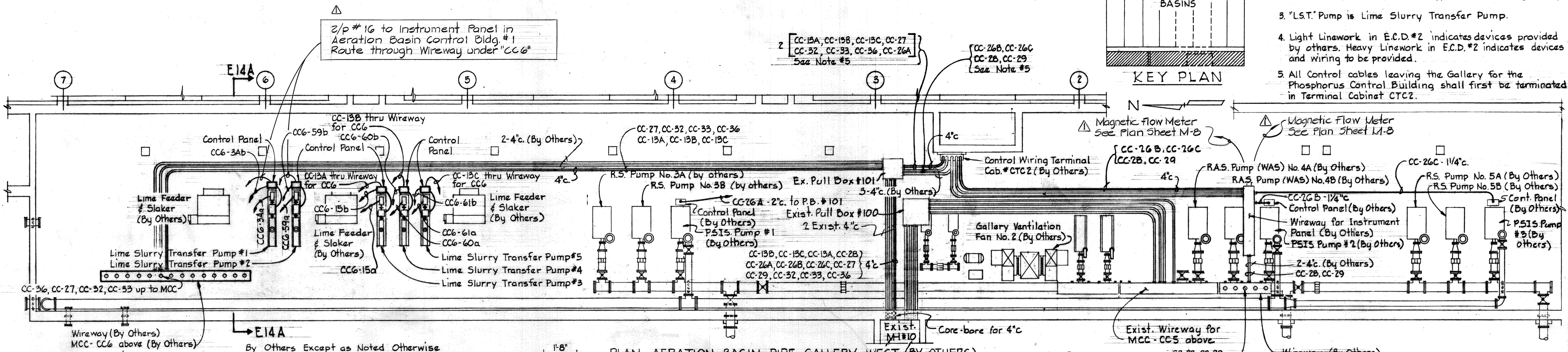
CONTRACT NO. 760-S

UNDERGROUND AND
MISCELLANEOUS DETAILS

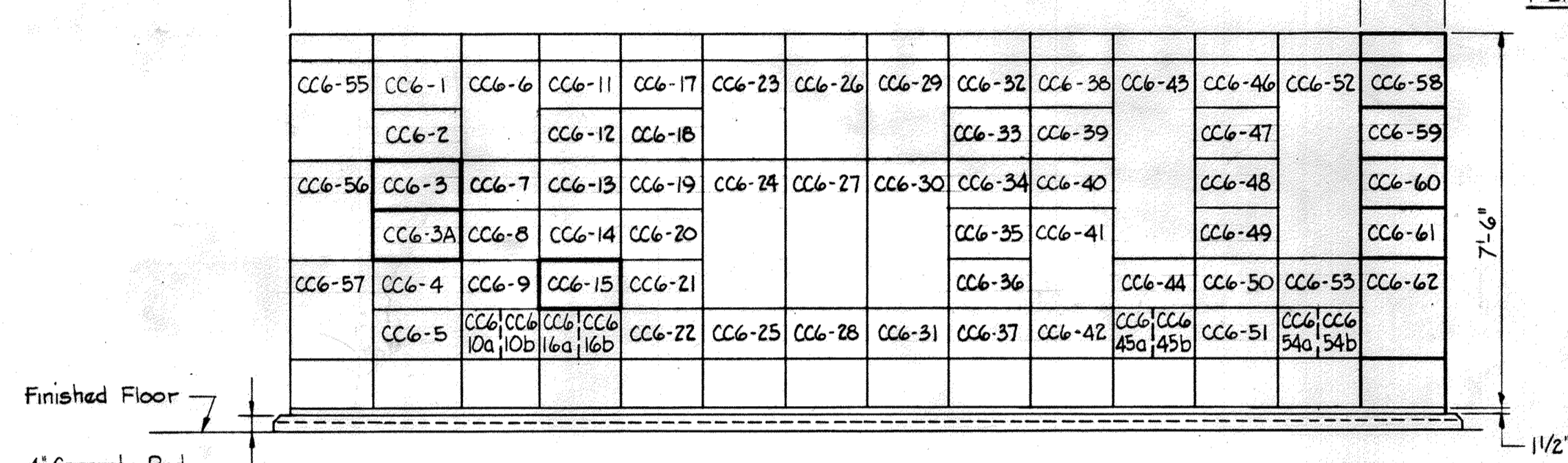
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 50
OF 50
SCALE AS SHOWN

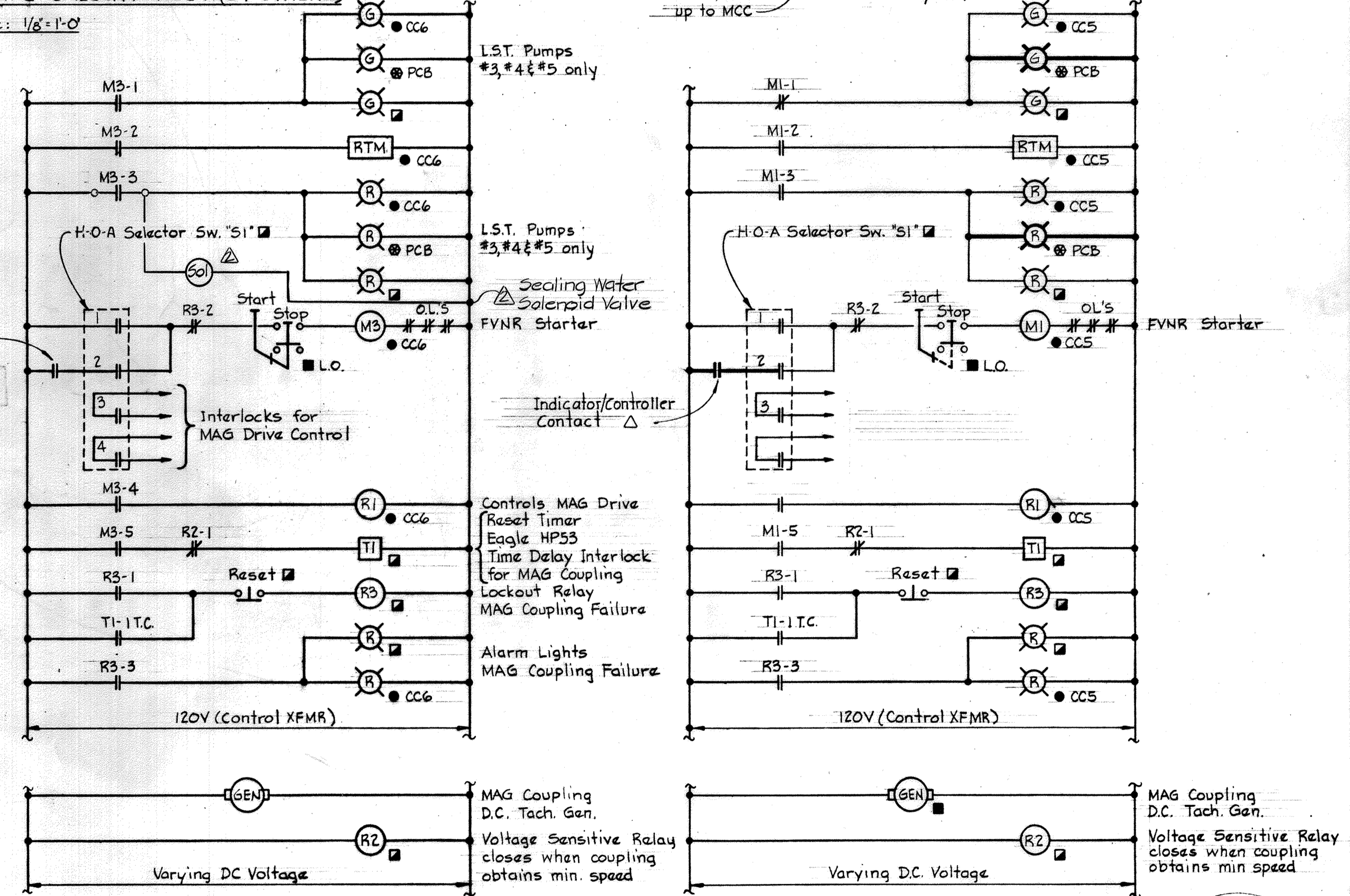
SEE ADDITIONAL SKETCHES
ADDENDUM NO. 3 - SHEET E-4



- NOTES:**
1. For GENERAL ELECTRICAL NOTES & LEGEND, see Sheet E-2.
 2. "P.S.I.S." Pump is Phosphorus Stripper Influent Sludge Pump.
 3. "L.S.T." Pump is Lime Slurry Transfer Pump.
 4. Light Linework in E.C.D.#2 indicates devices provided by others. Heavy Linework in E.C.D.#2 indicates devices and wiring to be provided.
 5. All Control cables leaving the Gallery for the Phosphorus Control Building shall first be terminated in Terminal Cabinet CTC2.



PLAN - AERATION BASIN PIPE GALLERY WEST (BY OTHERS)



MOTOR CONTROL CENTER SCHEDULE (PART) 'CC6' 480-3φ-3W-60 HZ

UNIT NUMBER	NAMEPLATE DATA	DEVICE DESCRIPTION	HP or KVA	AUX. DESC.	BREAKER			RUN NUMBER	WIRE - POWER		WIRE - CONTROL		GRD. SIZE	COND. SIZE	REMARKS
					FRAME	POLE	TRIP		NO	SIZE	NO	SIZE			
CC6-3	SPARE (BLANK)	Combination Starter NEMA SIZE 2 - FVNR	10	a, b, c, g	100	3	10X	22	-	-	-	-	-	-	Provide Comb. Star.
CC6-3A	LIME SLURRY TRANSFER PUMP #1	Combination Starter NEMA SIZE 1 - FVNR	5	a, b, c, g	100	3	10X	22	CC6-3Aa, CC6-3Ab	4/c	12	See Spec. 12/c	14	See Spec.	1" Provide Comb Star.
CC6-15	LIME SLURRY TRANSFER PUMP #3	Combination Starter NEMA SIZE 1 - FVNR	3	a, b, c, g	100	3	10X	22	CC6-15a, CC6-15b	4/c	12	See Spec. 12/c	14	See Spec.	1" Comb. Star. by others
CC6-58	SPARE (BLANK)	Combination Starter NEMA SIZE 1 - FVNR	5	a, b, c, d, g	100	3	10X	22	-	-	-	-	-	-	See MCC ELEVATION
CC6-59	LIME SLURRY TRANSFER PUMP #2	Combination Starter NEMA SIZE 1 - FVNR	5	a, b, c, g	100	3	10X	22	CC6-59a, CC6-59b	4/c	12	See Spec. 12/c	14	See Spec.	1" See MCC ELEVATION
CC6-60	LIME SLURRY TRANSFER PUMP #4	Combination Starter NEMA SIZE 1 - FVNR	3	a, b, c, g	100	3	10X	22	CC6-60a, CC6-60b	4/c	12	See Spec. 12/c	14	See Spec.	1" See MCC ELEVATION
CC6-61	LIME SLURRY TRANSFER PUMP #5	Combination Starter NEMA SIZE 1 - FVNR	3	a, b, c, g	100	3	10X	22	CC6-61a, CC6-61b	4/c	12	See Spec. 12/c	14	See Spec.	1" See MCC ELEVATION
CC6-62	BLANK (SPARE)	Combination Starter NEMA SIZE 2 - FVNR	5	a, b, c, e, g	100	3	10X	22	-	-	-	-	-	-	See MCC ELEVATION

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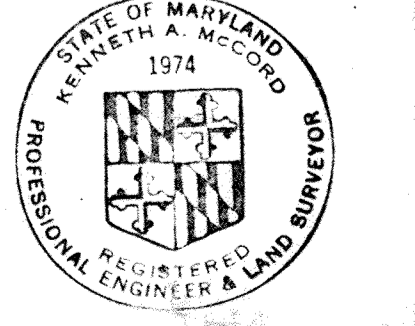
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
2/22/78
DATE
Richard E. Sanderberg
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 760-S

AERATION GALLERY WEST
PIPING CONNECTIONS

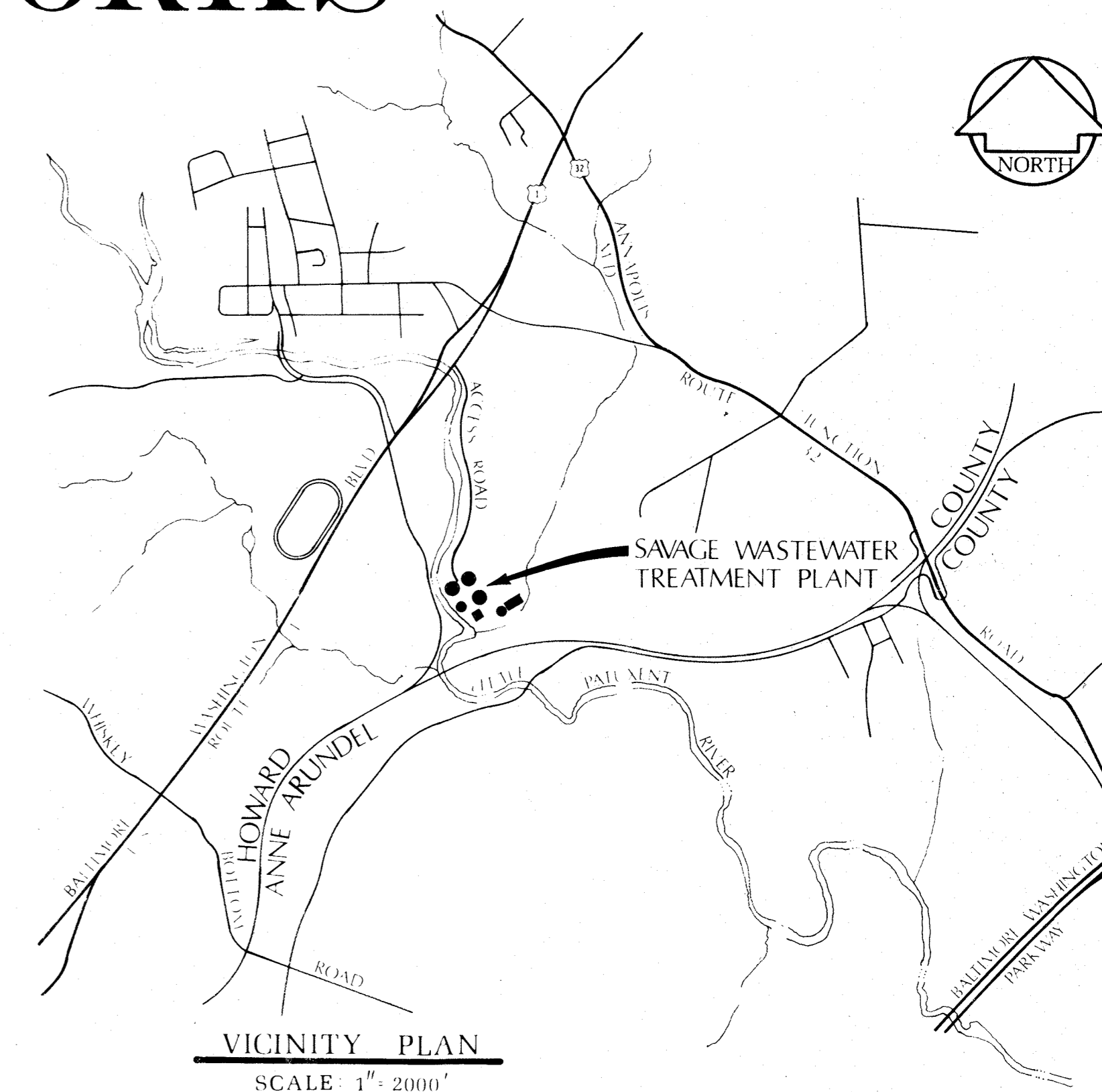
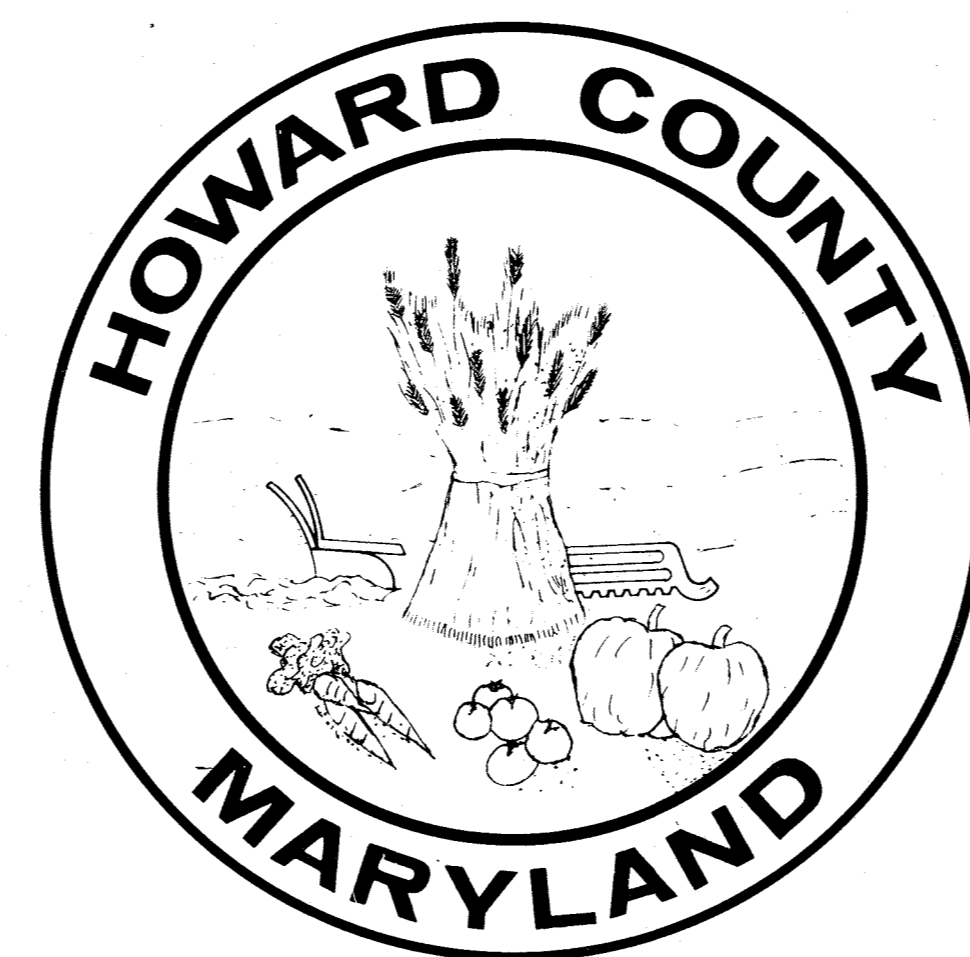
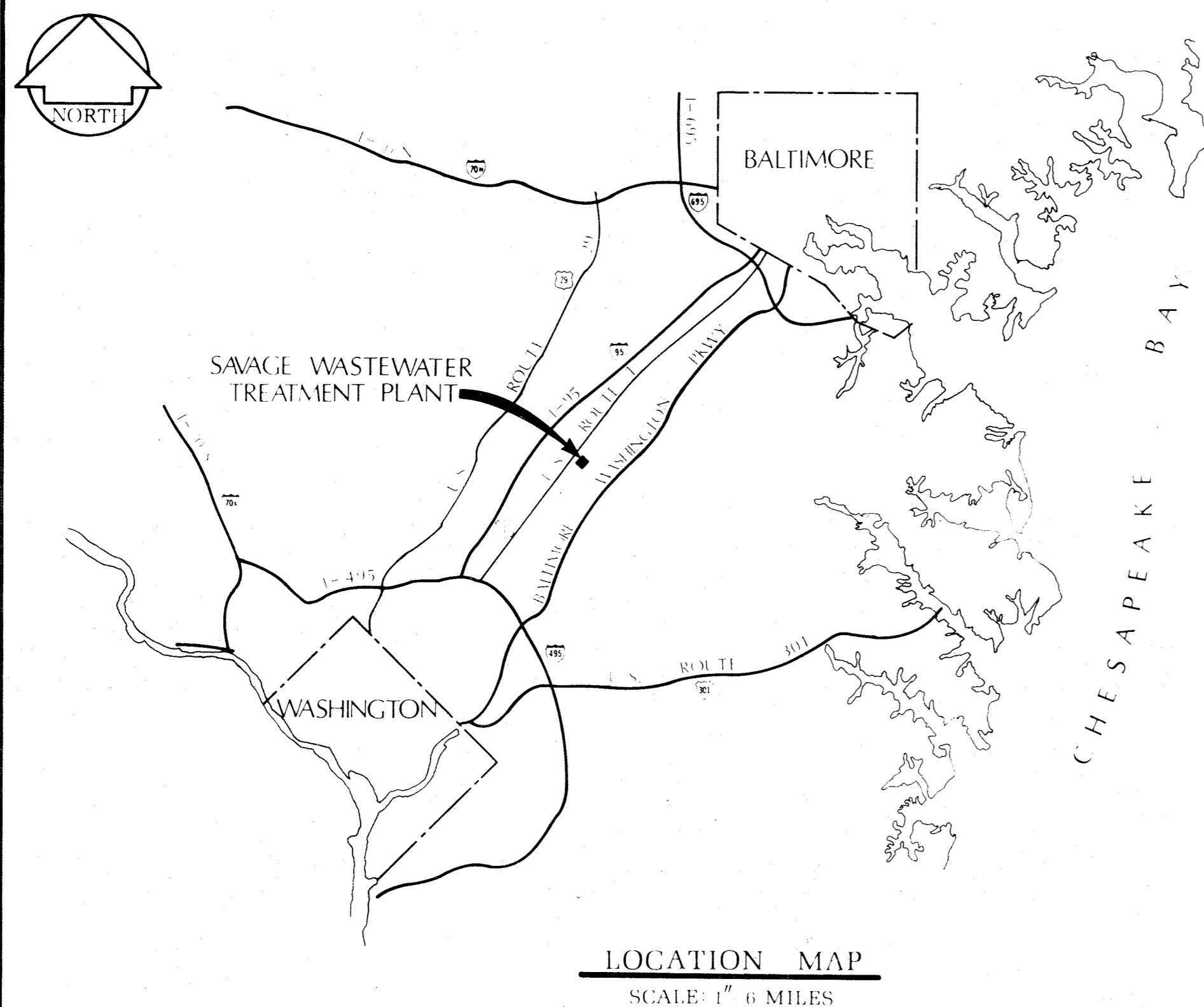
SAVAGE WASTEWATER
TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 50-A
OF 50
SCALE AS SHOWN



HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS



SAVAGE WASTEWATER TREATMENT PLANT

ADDITION NO. 4
CONTRACT 760-S

HOWARD COUNTY

Thomas J. Regan Jr.
THOMAS J. REGAN JR. DIRECTOR - DEPARTMENT OF PUBLIC WORKS

Richard Freudenberger
RICHARD FREUDENBERGER - CHIEF - BUREAU OF ENVIRONMENTAL SERVICES

WHITMAN, REQUARDT & ASSOCIATES - ENGINEERS

Kenneth A. McCord
KENNETH A. McCORD

- LEGEND
- △ Denotes Changes By Addendum
 - ◻ Denotes Changes By Change Order
 - Dimension shown for visible features only. See sheets C-1, C-2 & C-3

SAVAGE WASTEWATER TREATMENT PLANT

DESIGN CRITERIA

DESIGN YEAR - 1985
 AVERAGE DAILY SEWAGE FLOW: JUNE 1974 - 4.0 MGD
 - MID 1978 - 10.0 MGD (EXISTING CAPACITY)
 - MID 1985 - 15.0 MGD (DESIGN CAPACITY - 4th ADDITION)
 - YR. 2,000 - 25.0 MGD (ULTIMATE CAPACITY)

PHOSPHORUS CONCENTRATION, TOTAL P

RAW INFLUENT	10mg/l (1350 PPD)
ACTIVATED SLUDGE SYSTEM INFLUENT	8.6mg/l (1075 PPD)
ACTIVATED SLUDGE SYSTEM EFFLUENT	1.0mg/l (SOLUBLE)
FILTRATION SYSTEM EFFLUENT	0.3 mg/l

PHOSPHORUS REMOVAL PROCESS, DESIGN TEMPERATURE

10°C

PHOSPHORUS STRIPPER TANKS:

NUMBER	2
SIZE	90' DIA.
INFLUENT SLUDGE FLOW	5.0 MGD
INFLUENT SLUDGE PH	7.0
HYDRAULIC RETENTION TIME	10.7 HOURS
SLUDGE RETENTION TIME	8.6 HOURS
OVERFLOW RATE	400 GPD/SF
EFFLUENT SLUDGE FLOW	4.7 MGD

REACTOR CLARIFIERS:

NUMBER	2
SIZE	50' DIA.
INFLUENT FLOW (SLUDGE + SLUDGE PROCESS OVERFLOW RETURN)	5.9 MGD
HYDRAULIC RETENTION TIME	1.5 HOURS
OVERFLOW RATE	1850 GPD/SF
OVERFLOW PH	9.0
WASTE CHEMICAL SLUDGE	7,500 PPD

PIPELINE

A	AIR
CCBI	CHLORINE CONTACT BASIN INFLUENT
CW	COLD WATER
D	DRAIN
DB	DUCTBANK
FW	FLUSHING WATER
LSTP	LIME SOLUTION TRANSFER PIPE
Pr	PROFILE
NABI	NITRIFICATION AERATION BASIN INFLUENT
PSIS	PHOSPHORUS STRIPPER INFLUENT SLUDGE
PSS	PHOSPHORUS STRIPPED SLUDGE
S	SEWER OR INTERCEPTOR
SCI	SECONDARY CLARIFIER INFLUENT
SES	STRIPPER ELUTRIANT SUPPLY
SO	STRIPPER OVERFLOW
SPOR	SLUDGE PROCESS OVERFLOW RETURN
TD	TANK DRAIN
UD	UNDERDRAIN
W	WATER
WAS	WASTE ACTIVATED SLUDGE
WCS	WASTE CHEMICAL SLUDGE
WE	WASTE ELUTRIANT

ABBREVIATIONS

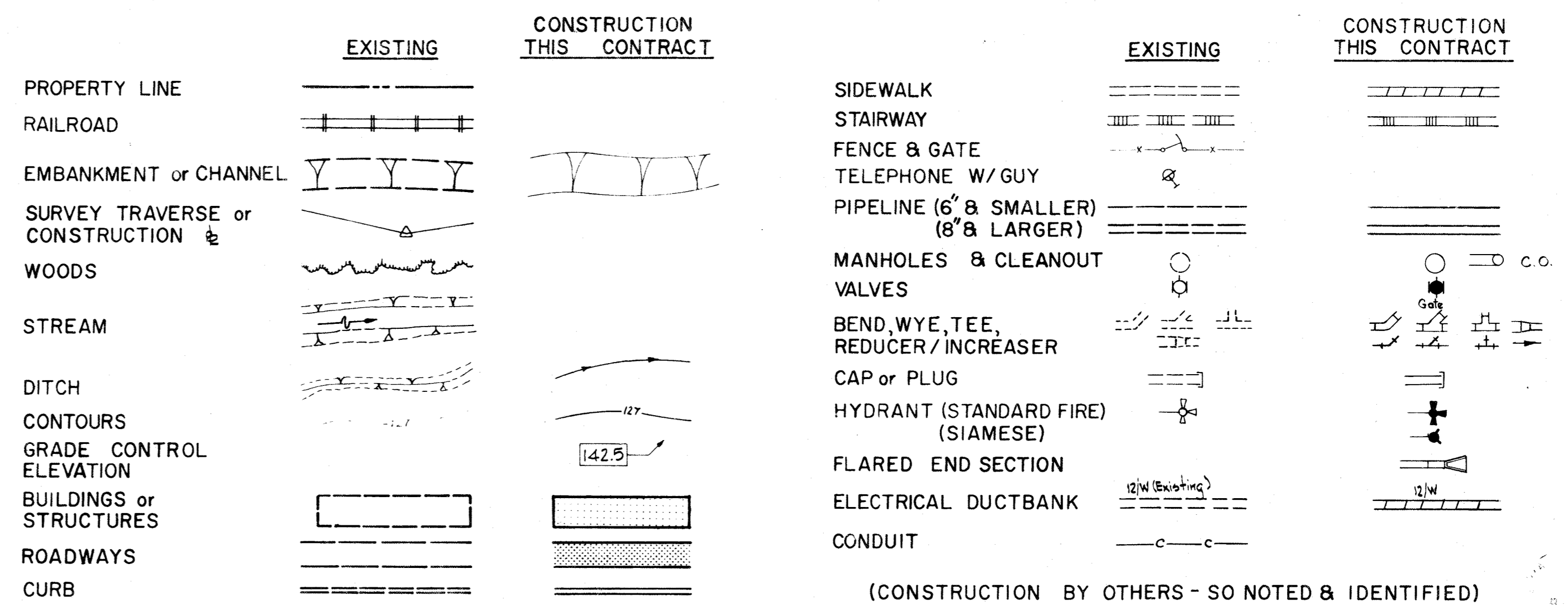
MISCELLANEOUS

B	BASELINE
C	CENTERLINE
EX	EXISTING
FF	FIRST FLOOR
MH	MANHOLE
INV. ELEV.	INVERT ELEVATION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
R	RADIUS
N	NORTH
No.	NUMBER
E	EAST
S	SOUTH
W	WEST

APPURTENANCES

C	CROSS	P	PLUG
T	TEE	VB	VERTICAL BEND
V	VALVE	R	REDUCER / INCREASER (CONCENTRIC)
Y	WYE	ER	REDUCER / INCREASER (ECCENTRIC)
HB	HORIZONTAL BEND	CO	CLEANOUT

PLAN LEGEND (EXTERIOR)



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 BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

CONTRACT NO. 760-S

DESIGN CRITERIA,
 ABBREVIATIONS AND LEGEND

SAVAGE WASTEWATER
 TREATMENT PLANT ADDITION NO. 4

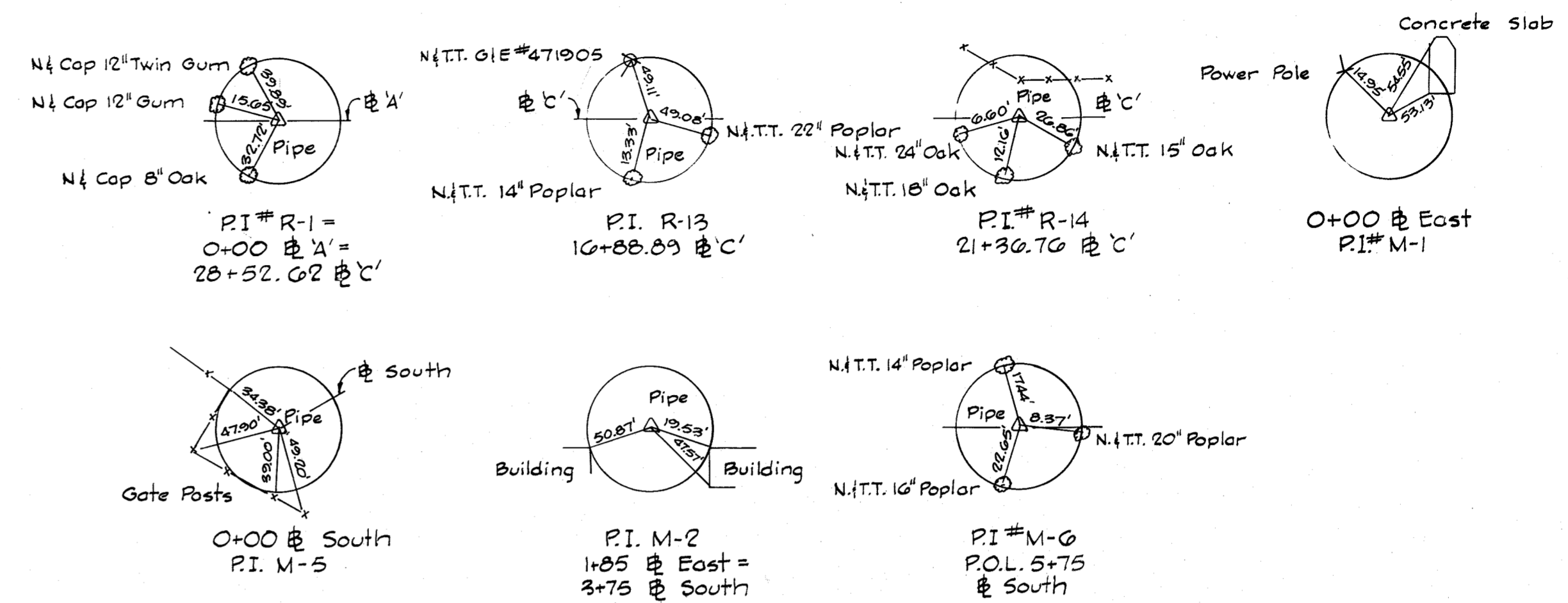
DRAWING NO. 3
 OF 50

SCALE
 NONE

GENERAL NOTES

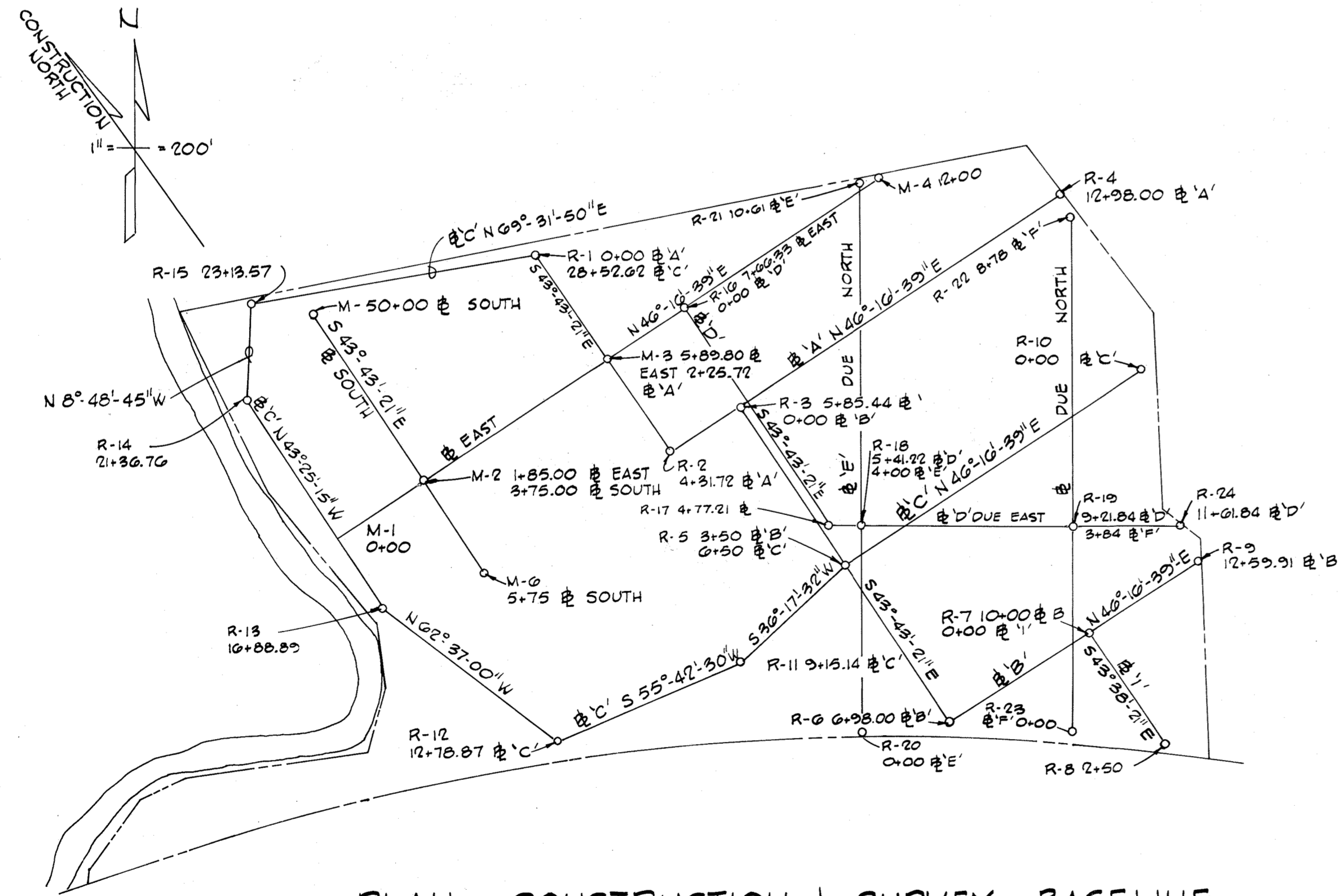
1. The location of existing pipelines and structures are approximate. The Contractor shall take all necessary precautions to protect existing lines and structures and maintain uninterrupted supply. Any damage incurred shall be repaired immediately.
2. The Contractor shall locate existing utilities by test pits a minimum of two weeks in advance of construction operations in the vicinity of the utilities.
3. All pipeline profile elevations are invert elevations.
4. The location of all valves, fittings, etc. shall be located where shown on the drawings unless otherwise directed by the Engineer.
5. For standard details - see Specifications.
6. All fittings shall be buttressed or anchored with concrete or restrained with special approved devices - see Specifications.
7. Pipelines shall be of the material listed in the specifications. All pipelines shall have a minimum cover of 2 feet, except sewer and water lines shall have a minimum cover of 3 feet, unless otherwise shown by profiles or elevations on the plans.
8. Clear all utilities by a minimum of 6 inches vertically. All parallel pipe system shall have 1.5 feet minimum horizontal clearance unless otherwise directed by the Engineer.
9. The Contractor shall provide a joint in all exterior loose jointed pipe systems within 2 feet of exterior walls.
10. All existing valve boxes, manhole frames and covers and similar appurtenances shall be adjusted to finished grade.
11. All outside valves in sewer lines up to and including 12 inch diameter, shall be plug valves. All valves larger than 12 inches shall be gate valves and shall be horizontal or vertical as indicated on profile drawings. All outside valves in water lines (potable and flushing), shall be gate valves. All buried valves shall have roadway boxes with concrete slabs in all areas other than paved areas. All valves shall be the same size as the pipeline unless otherwise indicated.
12. Elevations and grid coordinates are based on the Maryland State System. All structures, buildings, roadway, pipe, centerlines etc. are located by construction coordinates. Zero base for the construction coordinated system is as noted on Sheet C-1 at the intersection of survey baselines. All building corner coordinates are front face of monolithic concrete.
13. For location of utilities entering buildings, see Mechanical & Electrical Drawings.
14. Connections to existing pipelines may be made by tapping existing pipelines under pressure or by use of sleeves and spacers with shut down of system. Attention is directed to the specifications for plant operational requirements while making connections.
15. All pipelines that are capped or plugged shall be flagged with striped 2x4's set 3 feet into ground and 2 feet above grade, identified with all weather markings.
16. All existing walkways & paved areas that require removal for construction purposes, or that are disturbed or damaged by construction activities, shall be replaced.
17. All pipelines, conduits and utility systems, including structures that are designated to be abandoned, shall be removed by the Contractor to the degree necessary to complete construction as determined by the Engineer. Voids left by systems removed, shall be backfilled with select material and compacted as per the specifications. Systems that are designated to be abandoned and allowed by the Engineer to be left in place, shall be permanently capped or sealed watertight at each end. Materials and appurtenances removed, shall be salvaged and become the property of the County unless otherwise directed by the Engineer, then they shall become the property of the Contractor and removed from the site.

P. I. REFERENCES



BENCH MARKS

- | | | |
|---|--|---|
| W.R. & A. B.M. Blaine Elev. 137.77
X-Cut on flange bolt of fire hydrant
40' Rt. of sta 2+25 12" South. | W.R. & A. B.M. #Rolly-3 Elev. 132.162
R.R. Spike in 15" Pine at foot of R.R.
Fill 35' East of P.I.# R-6. | W.R. & A. B.M. #Rolly-4 Elev. 137.222
R.R. Spike in 18" Oak 25' Rt. of
P.I.# R-9 (not shown on Plan). |
| W.R. & A. B.M. #Rolly-1 Elev. 130.388
R.R. Spike in 12" Oak 25' Lt. of
sta. 12+50 12" East (not shown on Plan). | W.R. & A. B.M. #Rolly-2 Elev. 147.087
R.R. Spike in 8" Locust 4' from
P.I.# R-4 (not shown on Plan). | W.R. & A. B.M. #Rolly-5 Elev. 132.996
R.R. Spike in 36" Poplar 30' Lt. of
P.I.# R-12. |



PLAN CONSTRUCTION & SURVEY BASELINE

Scale: 1" = 200'

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
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 BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

CONTRACT NO. 760 - S

GENERAL NOTES, REFERENCES
 & BASELINE PLAN

SAVAGE WASTEWATER
 TREATMENT PLANT ADDITION NO. 4

DRAWING NO. 4
 OF 50

SHEET G-4