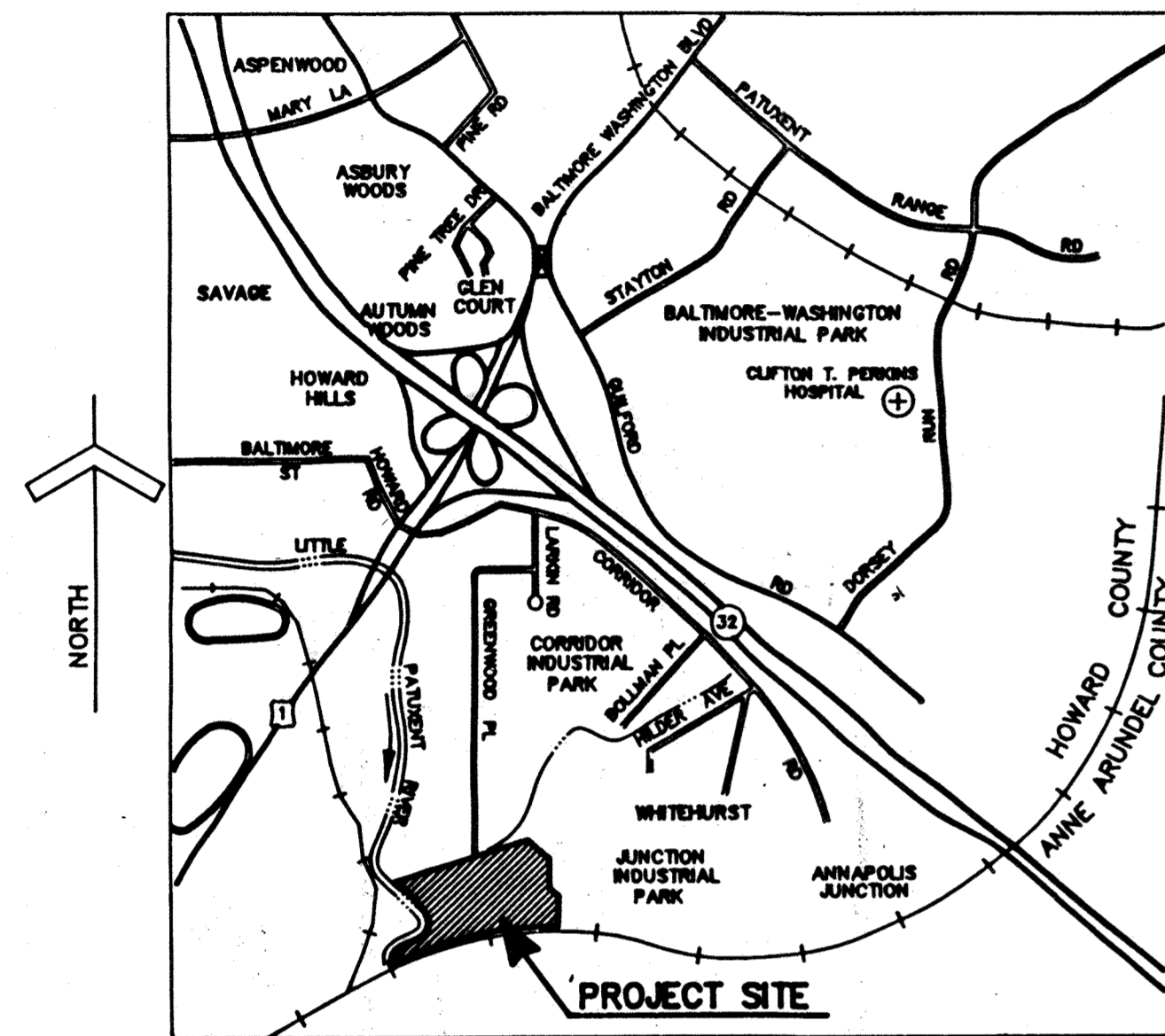


HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS



VICINITY MAP



LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION

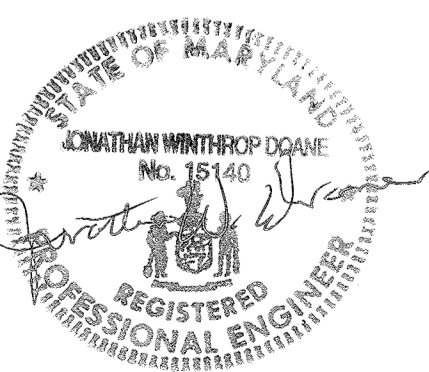
ADDITION No. 5
CAPITAL PROJECT No. S-6153
CONTRACT No. 20-3082

MDE GRANT NO.S:
NR 01.14
PG 01.04

Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

James H. ... 3/6/92 DATE
DIRECTOR OF PUBLIC WORKS
John J. O'Hara 3/6/92 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

M&E METCALF & EDDY
14502 GREENVIEW DRIVE
SUITE 500
LAUREL, MARYLAND 20708



SET No.

GENERAL

STRUCTURAL (CONTINUED)

MECHANICAL (CONTINUED)

Table with 2 columns: DRAWING NO., TITLE. Includes entries for COVER SHEET, INDEX, PROCESS SCHEMATIC, SOLIDS HANDLING SCHEMATIC, and HYDRAULIC PROFILE.

CIVIL

Table with 2 columns: DRAWING NO., TITLE. Lists various site development, erosion control, and yard piping drawings.

ARCHITECTURAL

Table with 2 columns: DRAWING NO., TITLE. Lists maintenance building plans and details.

STRUCTURAL

Table with 2 columns: DRAWING NO., TITLE. Lists structural drawings for process reactors, clarifiers, and pump stations.

Table with 2 columns: DRAWING NO., TITLE. Lists structural drawings for digesters, maintenance buildings, and concrete rehabilitation.

MECHANICAL

Table with 2 columns: DRAWING NO., TITLE. Lists mechanical drawings for pumps, process reactors, and clarifiers.

Table with 2 columns: DRAWING NO., TITLE. Lists mechanical drawings for valve schedules and pipe schedules.

HVAC

Table with 2 columns: DRAWING NO., TITLE. Lists HVAC drawings for maintenance building and pump station plans.

PLUMBING

Table with 2 columns: DRAWING NO., TITLE. Lists plumbing drawings for riser diagrams and maintenance building plans.

INSTRUMENTATION

Table with 2 columns: DRAWING NO., TITLE. Lists instrumentation drawings for loop diagrams and general notes.

ELECTRICAL

Table with 2 columns: DRAWING NO., TITLE. Lists electrical drawings for power plants, lighting, and riser diagrams.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

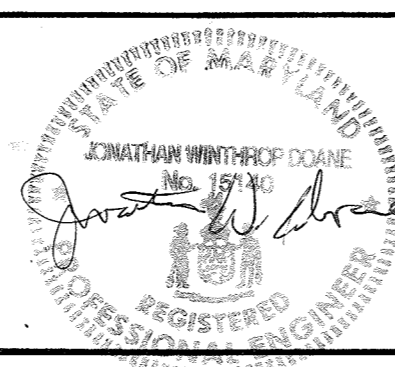


Table with 2 columns: DESIGNED BY, DRAWN BY, CHECKED BY, DATE. Includes revision notes: REVISED FOR BIDDING.

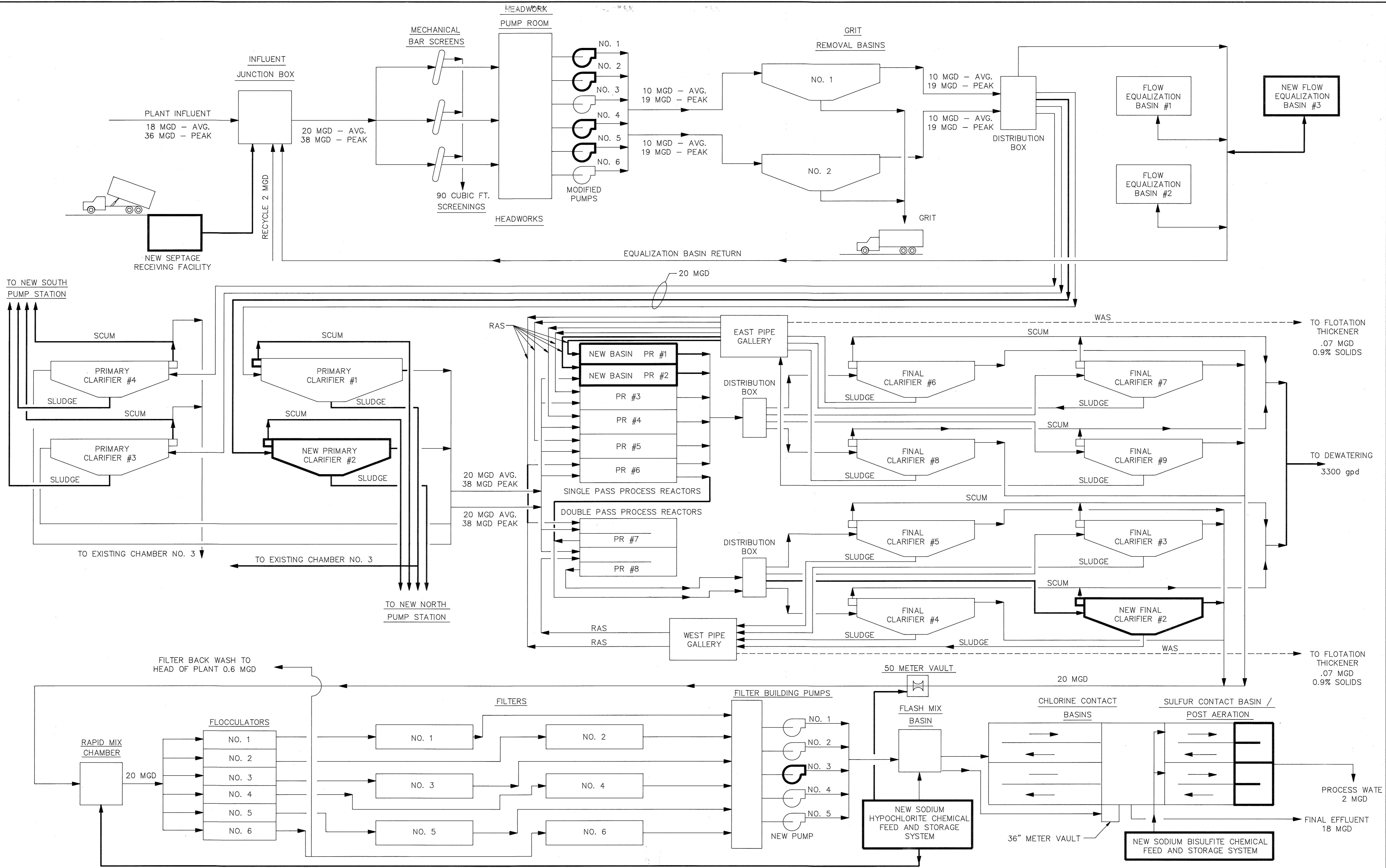
GENERAL

INDEX

LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S - 6153

CONTRACT NO. 20 - 3082 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN SHEET 2 OF 226 G-2

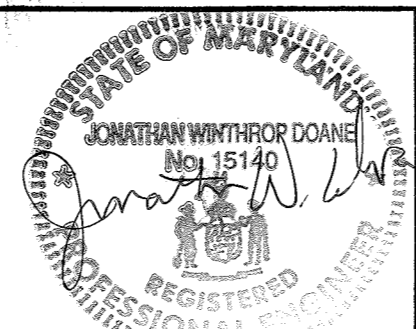


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 3-6-92
 Date: 3/6/92
 Chief, Bureau of Environmental Services: *[Signature]* 3-6-92
 Date: 3/6/92

M&E Metcalf & Eddy

Jonathan W. Dorne
 Reg. Prof. Engr. 3/6/92

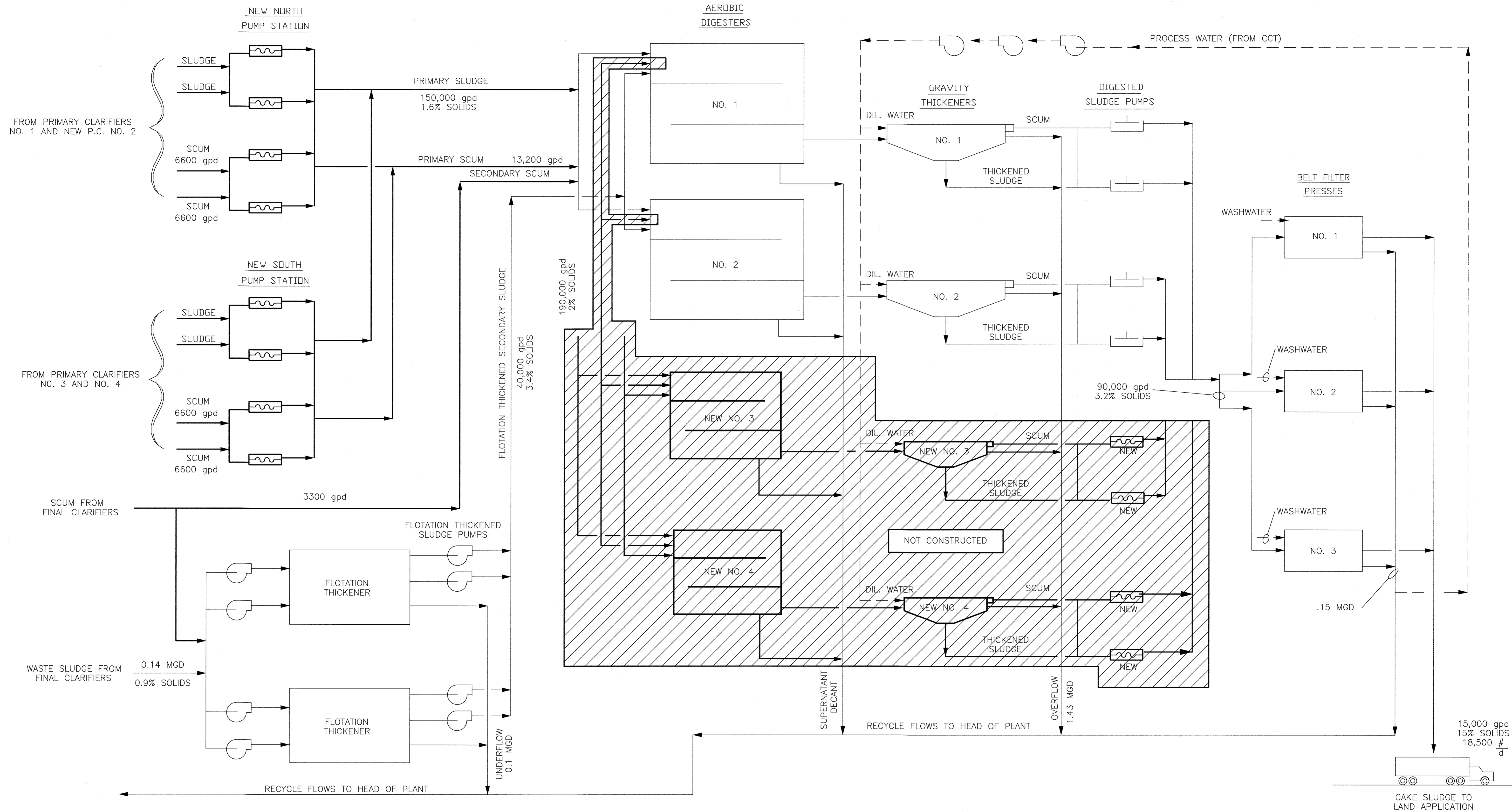


DES: S. KARAR				
DRN: E. BURNETT				
CHK: J. HARVEY				
DATE: 3/6/92	BY: NO.	REVISION	DATE	

GENERAL
PROCESS SCHEMATIC

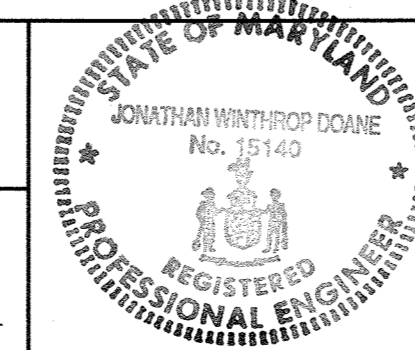
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 3 OF 226
 G-3



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
Jan 11 1996 5/1/96
 DIRECTOR OF PUBLIC WORKS DATE
John O'Hara 5/7/96
 CHIEF OF BUREAU OF ENVIRONMENTAL SERVICES DATE

M&E Metcalf & Eddy
Jonathan W. Dore 5-7-96
 REG. PROF. ENGR. DATE

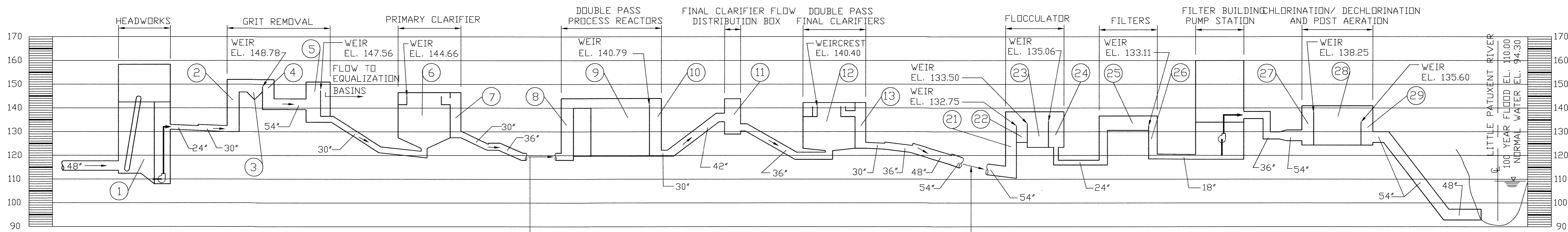


DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

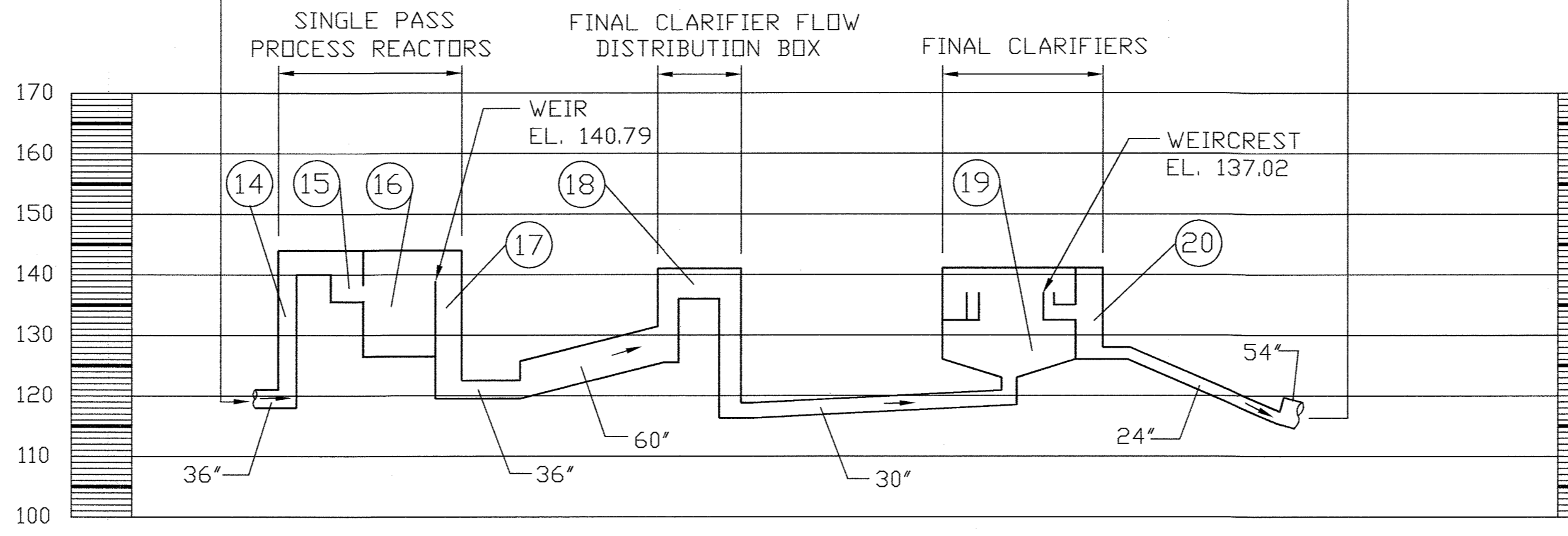
MECHANICAL
 SOLIDS HANDLING SCHEMATIC

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 4 OF 226
 G-4A



NOTE:
ELEVATIONS FOR LOCATIONS 4 THROUGH 19 ARE BASED ON POST CONSTRUCTION ELEVATIONS PROVIDED BY HOWARD COUNTY SURVEYING DEPARTMENT. OTHER ELEVATIONS BASED ON ELEVATIONS FROM PREVIOUS CONTRACTS WHICH MAY NOT AGREE.



Record Drawing Notes:
1. All elevations should be field verified before use.
2. Weir and water elevations based on post-construction survey by Howard County.

- NOTES:
1. WATER SURFACE PROFILE COMPUTED ALONG PATH OF MAXIMUM HEAD LOSS.
 2. ONE FOOT OF HEAD LOSS ASSUMED ACROSS FILTER BED.
 3. WEIR ELEVATIONS ARE BOTTOM AT NOTCH FOR V-NOTCH TYPE.
 4. SLUDGE RECYCLE RATE 75% OF ADF.
 5. A 2/0 RECYCLE 150%.
 6. ADF - 1 FILTER AND 2 DOUBLE PASS AERATION BASINS OUT OF SERVICE, 1 CCT PASS OUT OF SERVICE, 1 PC OUT OF SERVICE, 1 CLARIFIER OUT OF SERVICE.
 7. PEAK - FLOW EQUALIZATION BASINS OUT OF SERVICE, ALL OTHER UNITS IN SERVICE..
 8. DIURNAL PEAK = 34.68 MGD.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
WATER SURFACE ELEVATIONS	18 MGD ADF	149.46	149.11	148.01	147.93	144.84	142.46	142.11	141.81	140.81	140.58	140.51	135.61	142.11	141.83	141.80	137.51	137.32	137.14	135.67	135.31	135.25	135.23	135.08	134.37	132.62	139.20	137.11	128.83
36 MGD PEAK	VARIES	149.54	139.13	147.32	147.22	144.92	143.89	142.54	141.95	141.03	140.74	140.56	137.55	140.54	142.00	141.95	138.27	138.01	137.80	137.47	136.34	136.26	136.25	136.24	134.47	132.95	139.71	138.19	132.51

DESIGN CONDITIONS

* PLANT INFLUENT CHARACTERISTICS (INCLUDING 2 MGD RECYCLE FLOW)

AVERAGE DAILY FLOW	20 MGD
PEAK FLOW	38 MGD
SUSPENDED SOLIDS	204 mg/l
BOD	162 mg/l
TKN	29 mg/l
TP	8 mg/l

* SECONDARY INFLUENT CHARACTERISTICS (INCLUDING 2 MGD RECYCLE FLOW)

AVERAGE DAILY FLOW	20 MGD
SUSPENDED SOLIDS	80 mg/l
BOD	90 mg/l
TKN	24 mg/l
TP	6.5 mg/l

MECHANICAL BAR SCREENS

UNIT	EXISTING
NUMBER	3
MAX. CAPACITY / SCREEN	25 MGD
AVERAGE FLOW / SCREEN (2 ONLINE)	10 MGD

GRIT REMOVAL CHAMBERS

UNIT	EXISTING
NUMBER	2
UNIT DIMENSIONS	42'x42'x3' SWD
DESIGN FLOW/BASIN (100 MESH REMOVAL)	25 MGD
DESIGN FLOW/BASIN (65 MESH REMOVAL)	50 MGD

* FLOW EQUALIZATION

UNIT	EXISTING
NUMBER	2
UNIT VOLUME	1.1 MGD
UNIT	NEW
NUMBER	1
UNIT VOLUME	0.6 MG
TOTAL FLOW EQUALIZATION	2.8 MG

* PRIMARY CLARIFIERS

UNIT	EXISTING
NUMBER	2
DIAMETER	90 ft.
UNIT	EXISTING
NUMBER	1
DIAMETER	105 ft.
UNIT	NEW
NUMBER	1
DIAMETER	90 ft.
UNIT SIDEWALL WATER DEPTH	16.67 ft.
AVG. OVERFLOW RATE (3x90 FT. IN SERVICE)	1,050 gpd/sq. ft.
AVERAGE HYDRAULIC DETENTION TIME	2.85 hours
PEAK OVERFLOW RATE (ALL UNITS IN SERVICE)	1,370 gpd/sq. ft.
PEAK HYDRAULIC DETENTION TIME	2.2 hours

* PROCESS REACTORS

NUMBER OF EXISTING TWO PASS TANKS	2
NUMBER OF EXISTING ONE PASS TANKS	4
NEW ONE PASS TANKS	2
DIMENSIONS PER PASS	185'x30'x15' SWD
DESIGN FLOW PER ONE PASS TANK	2 MGD
DESIGN FLOW PER TWO PASS TANK	4 MGD
HYDRAULIC DETENTION TIME AT AVG. FLOW	7.5 HOURS
MLSS CONCENTRATION	2,000 TO 3,500 mg/l
MCRT	13 TO 20 DAYS
TOTAL ANAEROBIC VOLUME	126,000 cu. ft.
TOTAL ANOXIC VOLUME	186,750 cu. ft.
TOTAL SWITCH ZONE VOLUME	103,500 cu. ft.
TOTAL OXIC VOLUME	384,750 cu. ft.
TOTAL DEOXYGENATION ZONE VOLUME	31,500 cu. ft.
ANAEROBIC VOLUME (PERCENT OF TOTAL)	15%
ANOXIC VOLUME (PERCENT OF TOTAL)	35% OR 22%
OXIC VOLUME (PERCENT OF TOTAL)	46% OR 59%
DEOXYGENATION ZONE VOLUME (PERCENT OF TOTAL)	4%

* SECONDARY CLARIFIERS

UNIT	EXISTING
NUMBER	7
UNIT	NEW
NUMBER	1
WEIR LENGTH	440 l. ft.
DIAMETER	90 ft.
AVG. OVERFLOW RATE (ALL UNITS IN SERVICE)	400 gpd/sq. ft.
AVG. WEIR OVERFLOW RATE (ALL UNITS IN SERVICE)	5,700 gpd/l. ft.
PEAK OVERFLOW RATE (ALL UNITS IN SERVICE)	750 gpd/sq. ft.
PEAK WEIR OVERFLOW RATE (ALL UNITS IN SERVICE)	10,800 gpd/l. ft.

FLOCCULATORS

UNIT	EXISTING
NUMBER	6
DIMENSIONS	34.7'x27.6'x11' SWD
VOLUME (EA.)	10,535 cu. ft.

FILTERS

UNIT	EXISTING
NUMBER	6
UNIT AREA	1,760 sq. ft.
UNIT CAPACITY	15 MGD

* CHLORINE CONTACT TANK

UNIT	EXPANDED
NUMBER OF CHLORINE CONTACT CHAMBERS	3
ADDITIONAL TANKAGE	20'x48.75'
EXPANDED CHAMBER DIMENSIONS (2 PASSES)	200'x10'x13.67' SWD
DETENTION TIME AT AVG. FLOW (2 CHAMBERS)	>30 MINUTES
DETENTION TIME AT PEAK FLOW (3 CHAMBERS)	25 MINUTES

* CHLORINATION

UNIT	NEW NaOCl SYSTEM
AVG. NaOCl (15% SOLUTION) DOSAGE	30 gal/hr.
NaOCl (15% SOLUTION) DOSAGE AT PEAK FLOW	60 gal/hr.
AVAILABLE CHLORINE AT PEAK FLOW	5 mg/l

* DECHLORINATION/POST AERATION TANK

UNIT	EXPANDED CHAMBER 4
NUMBER	1
EXPANDED CHAMBER DIMENSIONS (2 PASSES)	20'x48.75'
DETENTION TIME	5 MINUTES

* DECHLORINATION

UNIT	NEW NaHSO3 SYSTEM
AVG. OBSERVED RESIDUAL CHLORINE	<0.5 mg/l
AVG. NaHSO3 (38% SOLUTION) DOSAGE	10 gal/hr.
NaHSO3 DOSAGE AT PEAK FLOW	20 gal/hr.
PEAK FLOW CHLORINE RESIDUAL REMOVAL CAPABILITY	5 mg/l

* AEROBIC DIGESTERS

UNIT	EXISTING
NUMBER	2
UNIT VOLUME	159,312 cu. ft.
UNIT	NEW
NUMBER	2
UNIT VOLUME	74,843 cu. ft.
TOTAL DIGESTER VOLUME	468,310 cu. ft.
DIGESTER INFLUENT SLUDGE SOLIDS CONCENTRATION	2%
WINTER DESIGN TEMPERATURE	15° C
WINTER MCRT	32 days
SUMMER DESIGN TEMPERATURE	30° C
SUMMER MCRT	16 days

FLOTATION THICKENERS

UNIT	EXISTING
NUMBER	2
UNIT DIMENSIONS	40'x12'x11' SWD
DESIGN SOLIDS LOADING	20 lb/sq. ft./day

* GRAVITY THICKENERS

UNIT	EXISTING
NUMBER	2
DIAMETER	40 ft.
UNIT	NEW
NUMBER	2
DIAMETER	30 ft.
TOTAL THICKENER SURFACE AREA	3,927 sq. ft.
AVERAGE SOLIDS LOADING RATE	6 lb/sq. ft./day

BELT FILTER PRESS

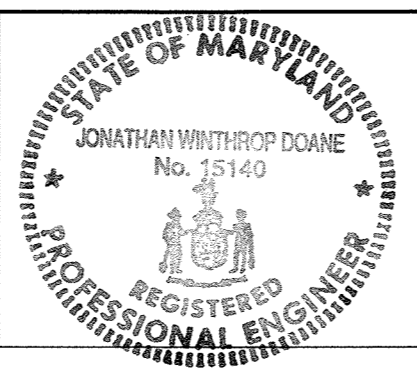
UNIT	EXISTING
NUMBER	3
PRESS WIDTH	2 meters
DESIGN SOLIDS LOADING RATE	500 lbs/m/hr.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Sam A. Lewis* 5/7/96
Chief, Bureau of Engineering: *Paul J. Span* 5/7/96
Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
Chief, Utility Design Division: *Debra J. ...* 5-7-96

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR.



DES	
DRN	
CHK	
DATE	11/2/94
M.J.C.	1
RECORD DRAWING	REVISION

MECHANICAL
HYDRAULIC PROFILE

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 5 OF 226
G-5A

NOTES:
 1. IN GENERAL, EXISTING STRUCTURES AND FACILITIES ARE NOTED AS "EXISTING" AND ARE SHOWN IN LIGHT LINE WEIGHTS, OR AS SCREENED BACKGROUND. NEW STRUCTURES ARE SHOWN IN HEAVY LINE WEIGHTS.

ABBREVIATIONS

PIPE LINE

- A - AIR
- CCBI - CHLORINE CONTACT BASIN INFLUENT
- CL₂ - CLORINE
- CMP - CORRUGATED METAL PIPE
- D - DRAIN
- DB - DUCTBANK
- FBI - FLOCCULATION BASIN INFLUENT
- FCI - FINAL CLARIFIER INFLUENT
- FCP - FLOOD CONTROL PIPE
- FEIE - FLOW EQUALIZATION INFLUENT/EFFLUENT
- FM - FORCE MAIN
- FW - FLUSHING WATER
- GBI - GRIT BASIN INFLUENT
- LSTP - LIME SOLUTION TRANSFER PIPE
- OCI - HYPOCHLORITE
- PCI - PRIMARY CLARIFIER INFLUENT
- POR - PROCESS OVERFLOW RETURN
- PRB - PROCESS REACTOR BYPASS
- PRI - PROCESS REACTOR INFLUENT
- PS - PRIMARY SLUDGE
- PSC - PRIMARY SCUM
- PSIS - PHOSPHOROUS STRIPPER INFLUENT SLUDGE
- PSS - PHOSPHOROUS STRIPPED SLUDGE
- RAS - RETURN ACTIVATED SLUDGE
- RCP - REINFORCED CONCRETE PIPE
- SC - SCUM
- S - SEWER OR INTERCEPTOR
- SD - STORM DRAIN
- SO₂ - SULFUR DIOXIDE
- SSC - SECONDARY SCUM
- SES - STRIPPER ELUTRIANT SUPPLY
- SO - STRIPPER OVERFLOW
- SPOR - SLUDGE PROCESS OVERFLOW RETURN
- TD - TANK DRAIN
- TSE - THICKENED SLUDGE EFFLUENT
- UD - UNDER DRAIN
- W - WATER
- WAS - WASTE ACTIVATED SLUDGE
- WE - WASTE ELUTRIANT
- WPS - WASTE PHOSPHOROUS SLUDGE
- WWD - WASTEWATER DRAIN
- SP - SHEET PILE

GENERAL NOTES

1. THE LOCATION OF EXISTING UTILITIES WHERE SHOWN 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 OPERATION IN THE VICINITY OF THE UTILITIES.
3. ALL PIPELINE PROFILE ELEVATIONS ARE INVERT ELEVATIONS, UNLESS OTHERWISE NOTED.
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 REFER TO HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS.
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 4 FEET UNLESS OTHERWISE SHOWN BY PROFILES OR ELEVATIONS ON PLANS.
8. CLEAR ALL UTILITIES BY A MINIMUM OF 6 INCHES VERTICALLY. ALL PARALLEL PIPE SYSTEMS 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 PRIOR TO RESURFACING.
11. 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. ALL DISTURBED AREAS NOT PAVED OR SODDED SHALL BE FINE GRADED AND SHALL HAVE TOPSOIL, SEED, FERTILIZER, LIME AND MULCH PLACED IN ACCORDANCE WITH THE SPECIFICATIONS.
13. ELEVATIONS AND GRID COORDINATES ARE BASED ON THE MARYLAND STATE SYSTEM. ALL STRUCTURES, BUILDINGS, ROADWAYS, PIPES, CENTERLINES ETC. ARE LOCATED BY CONSTRUCTION COORDINATES. ZERO BASE FOR THE CONSTRUCTION COORDINATED SYSTEM IS AS NOTED ON SHEET C-2, C-3 & THE INTERSECTION OF SURVEY BASELINES.
14. FOR LOCATION OF UTILITIES ENTERING BUILDINGS, SEE MECHANICAL & ELECTRICAL DRAWINGS.
15. 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.
16. ALL PIPELINES THAT ARE CAPPED OR PLUGGED SHALL BE FLAGGED WITH STRIPED 2 x 4'S SET 3 FEET INTO GROUND AND 2 FEET ABOVE GRADE IDENTIFIED WITH ALL WEATHER MARKINGS.
17. ALL EXISTING WALKWAYS & PAVED AREAS THAT REQUIRE REMOVAL FOR CONSTRUCTION PURPOSES OR THAT ARE DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED.
18. ALL PIPELINES, CONDUITS AND UTILITY SYSTEM 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 DESIGNED 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.
19. EXISTING SITE TOPOGRAPHY, EXISTING UTILITIES AND EXISTING GROUND PROFILES SHOWN ON THESE CONTRACT DRAWINGS ARE A COMPOSITE OF FIELD SURVEYS COMPLETED IN 1974 THRU 1990 AND DESIGN DRAWINGS OF VARIOUS CONSTRUCTION CONTRACTS. IN ADDITION, EXISTING UNDERGROUND UTILITIES THROUGHOUT THE PLANT ARE SIGNIFICANT IN NUMBER, HOWEVER, ONLY A VERY LIMITED AMOUNT HAVE BEEN SHOWN ON THESE DRAWINGS. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE CONTRACT CONDITIONS IN THIS REGARD.
20. MAINTENANCE STRIP REQUIRED AROUND ALL VESSELS, BUILDINGS AND OTHER STRUCTURES WHERE ADJACENT TO NON-PAVED AREAS. SEE SECTION B, SHEET C-32.
21. ALL TREES AND BUSHES DISTURBED BY OR IN THE WAY OF CONSTRUCTION SHALL BE RELOCATED TO AN ON SITE LOCATION TO BE DETERMINED IN THE FIELD. ALL TREES (4" DIA TRUNK AND LARGER) SHALL BE TRANSPLANTED UNDER THE SUPERVISION OF, AND TO THE REQUIREMENTS OF A CERTIFIED TREE EXPERT. TREES NOT SURVIVING 1 YEAR SHALL BE REPLACED WITH A TREE OF LIKE KIND AND SIZE.
22. WHEN CROSSING WATER LINES PROVIDE CONCRETE ENCASUREMENT 10' EACH SIDE OF LINE.

SITE LEGEND:

A. UTILITIES

- | | EXISTING | THIS CONTRACT |
|---------------------------------|----------|---------------|
| PIPELINE (6" AND SMALLER) | | |
| (8") | | |
| (10" AND LARGER) | | |
| SANITARY SEWER MANHOLE | | |
| SANITARY SEWER TERMINAL MANHOLE | | |
| STORM DRAIN MANHOLE | | |
| INLET, CURB TYPE | | |
| INLET, GRATING TYPE | | |
| INLET, CURB & GRATING TYPE | | |
| WATER MAIN VALVE VAULT | | |
| WATER METER BOX | | |
| GATE VALVE | | |
| VALVE, TEE, & CROSS | | |
| WATER REDUCER, Y-BRANCH & BEND | | |
| WATER BLOW-OFF, AIR RELEASE | | |
| WATER FIRE HYDRANT | | |
| FIRE CISTERN | | |
| CONDUITS (ELECTRIC & TELEPHONE) | | |
| GAS MAINS | | |
| GAS METER | | |
| GAS DRIP, STOP OR PLUG | | |
| YARD HYDRANT | | |

B. ROADS AND STREETS

- | | EXISTING | THIS CONTRACT |
|-------------------------------|----------|---------------|
| PLAN | | |
| CURB | | |
| WALKS (NOTE WIDTH AND TYPE) | | |
| CONCRETE VALLEY GUTTER | | |
| EDGE MACADAM OR CONCRETE ROAD | | |
| RIGHT-OF-WAY LINE (R/W) | | |
| PROPERTY LINE | | |
| CENTERLINE OF R/W OR ROAD | | |
| PARKING STRIPING | | |
| PARKING CHOCKS | | |

C. MISCELLANEOUS

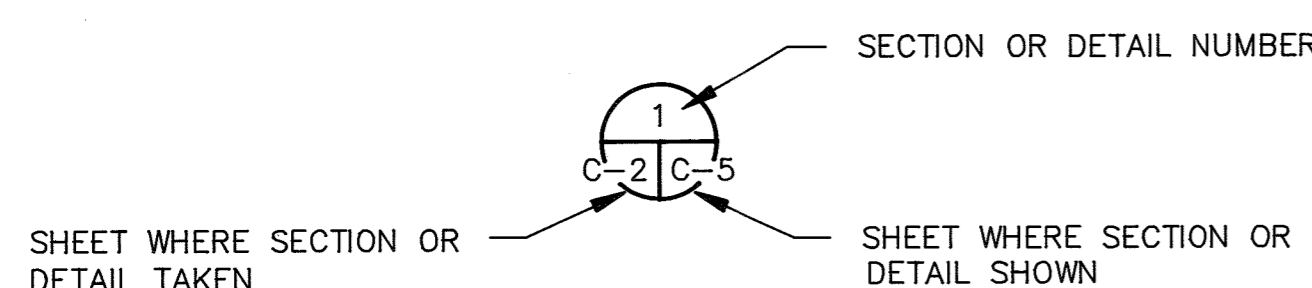
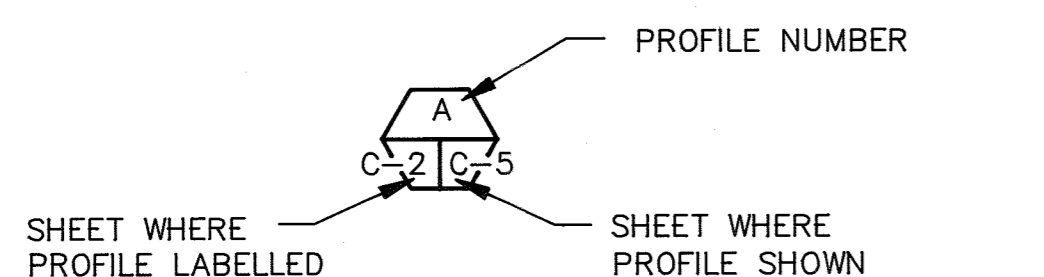
- | | EXISTING | THIS CONTRACT |
|-------------------------------------------------------------|----------|---------------|
| FENCE, WOOD | | |
| FENCE, IRON | | |
| FENCE, WIRE, BARBED OR SMOOTH | | |
| FENCE, HEDGE (SHADE GREEN) | | |
| FENCE, STONE, BRICK, CONCRETE WALLS | | |
| STAIR WAY | | |
| POLES IDENTIFY - G. & E. NO. OR C. & P. NO. OR STREET LIGHT | | |
| SIGN | | |
| EXCAVATION OR CUT | | |
| EMBANKMENT OR FILL | | |
| CONTOUR | | |
| SPOT ELEVATION | | |
| WOODS, UNDERGROWTH AND BRUSH | | |
| TREES | | |
| STREAMS (NOTE DIRECTION OF FLOW) | | |
| DITCHES (NOTE DIRECTION OF FLOW) | | |
| PLUG OR CAP | | |
| EXIST. STRUCTURE/PIPE TO BE REMOVED | | |
| TO BE ABANDONED IN PLACE | | |
| EXISTING TREE TO BE RELOCATED | | |
| TREE PROTECTION | | |
| BUILDING | | |
| PAVING | | |
| CONCRETE | | |
| METAL | | |
| STONE/RIPRAP | | |
| GRAVEL | | |
| SAND | | |
| EARTH | | |
| WOOD | | |
| BORING LOCATION, NUMBER | | |
| BASE LINE | | |
| MATCH LINE | | |
| SILT FENCE | | |
| LIMIT OF DISTURBED AREA | | |
| STABILIZED CONSTRUCTION ENTRANCE | | |
| INLET PROTECTION | | |

MISCELLANEOUS

- BL - BASE LINE
- BM - BENCH MARK
- DWG. - DRAWING
- EX. - EXISTING
- I - INLET
- INV. - INVERT ELEVATION
- R - RADIUS
- N - NORTH
- S - SOUTH
- E - EAST
- W - WEST
- C - CENTERLINE
- RD - ROAD
- FH - FIRE HYDRANT
- FT - FEET
- LP - LIGHT POLE
- YH - YARD HYDRANT
- T.O.W. - TOP OF WALL
- TC - TOP OF CURB
- MH - MANHOLE
- STD. - STANDARD
- TEMP. - TEMPORARY
- VERT - VERTICAL
- HOR. - HORIZONTAL

APPURTENANCES

- C - CROSS
- HB, HOR. BEND - HORIZONTAL BEND
- VB, VERT. BEND - VERTICAL BEND
- G.V. - GATE VALVE
- T - TEE
- V - VALVE
- Y - WYE

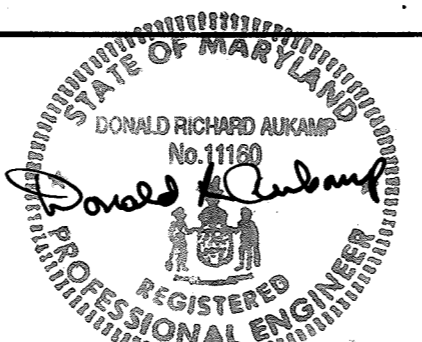


DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James M. Lewis 12/9/91
 DIRECTOR OF PUBLIC WORKS DATE
John A. Ottawa 12/9/91
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE
Richard E. Carey 12-9-91
 CHIEF, BUREAU OF ENGINEERING DATE
Debra L. Lewis 12-9-91
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland

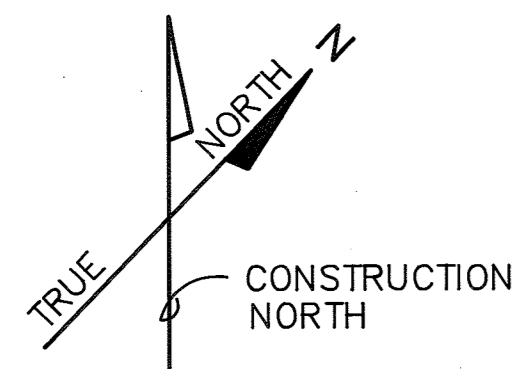
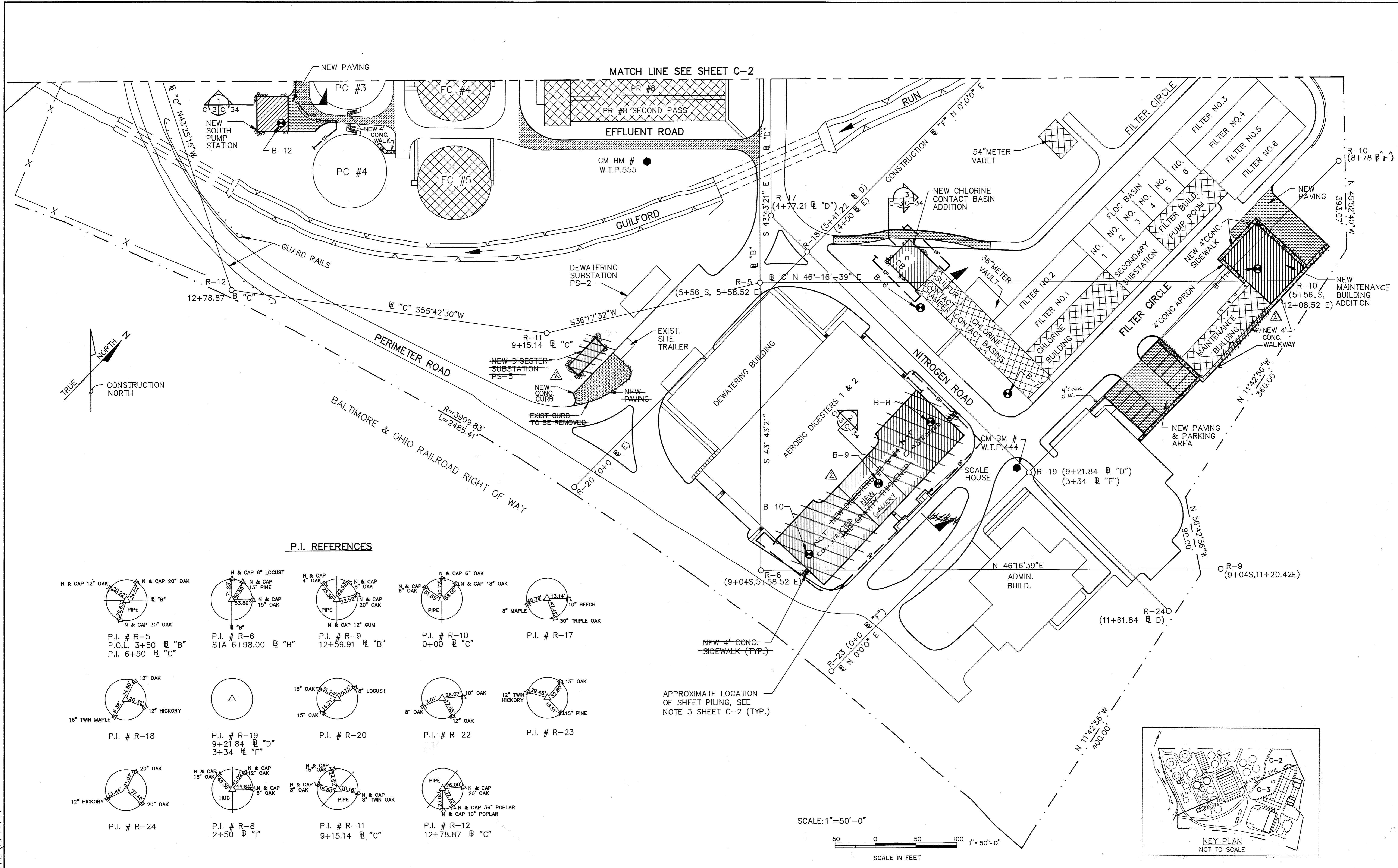


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DATE: 12/2/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

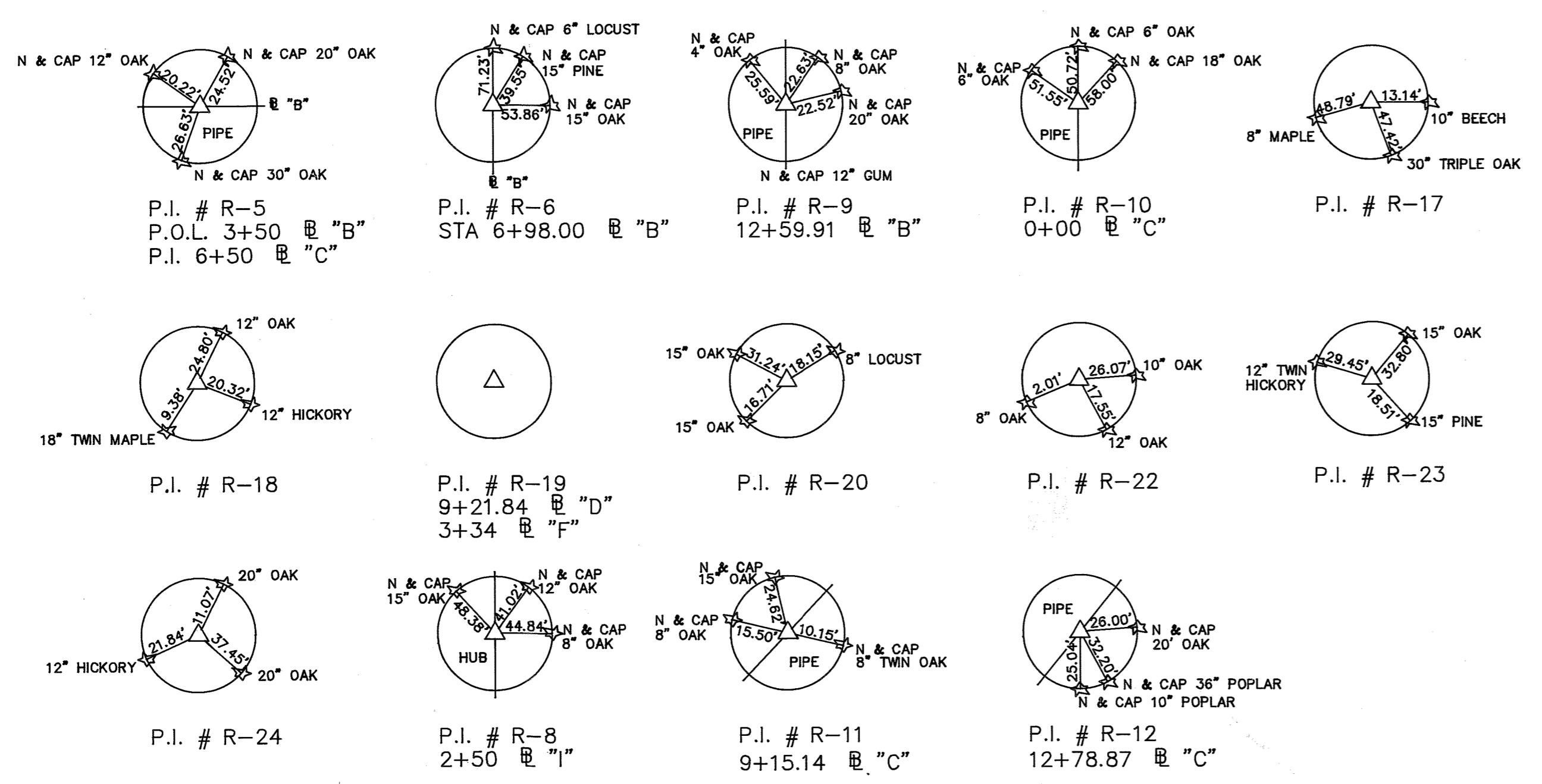
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 ABBREVIATIONS, LEGEND
 AND GENERAL NOTES

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

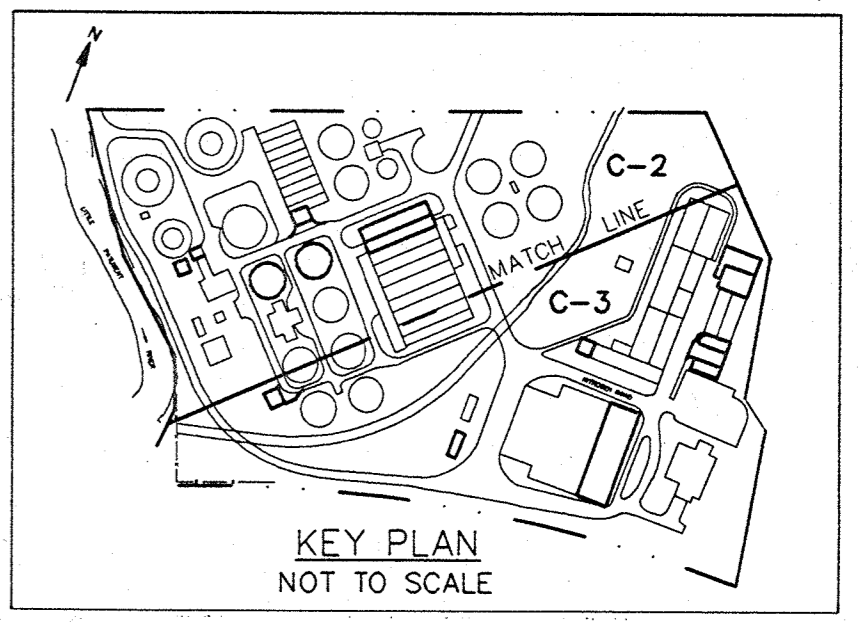
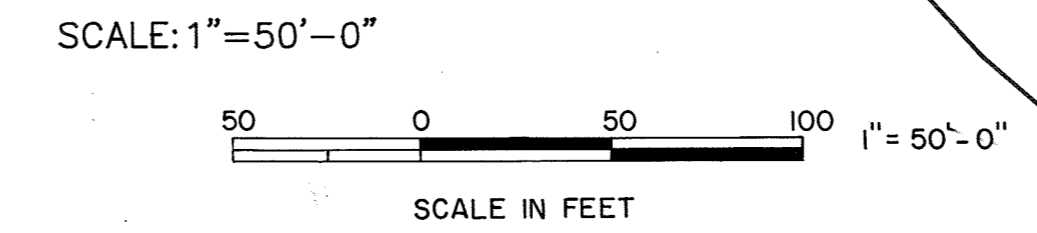
SCALE AS SHOWN
 SHEET 6 OF 226
 C-1



P.I. REFERENCES



APPROXIMATE LOCATION OF SHEET PILING, SEE NOTE 3 SHEET C-2 (TYP.)



FILE: C:\LTPAT2\LPAT11

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
Director of Public Works <i>James M. ...</i> 12/9/91	Chief, Bureau of Engineering <i>...</i> 12-9-91
Chief, Bureau of Environmental Services <i>...</i> 12-9-91	Chief, Utility Design Division <i>...</i> 12-9-91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



DES:	MCJ		
DRN:	LB		
CHK:	MCJ	2	RECORD DRAWING 11/14/91
		1	REVISED FOR BIDDING 3/5/92
DATE:	12/2/91	BY	NO.
			REVISION
			DATE

CIVIL

BORING PLAN II - SOUTH

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5

CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082

HOWARD COUNTY, MARYLAND

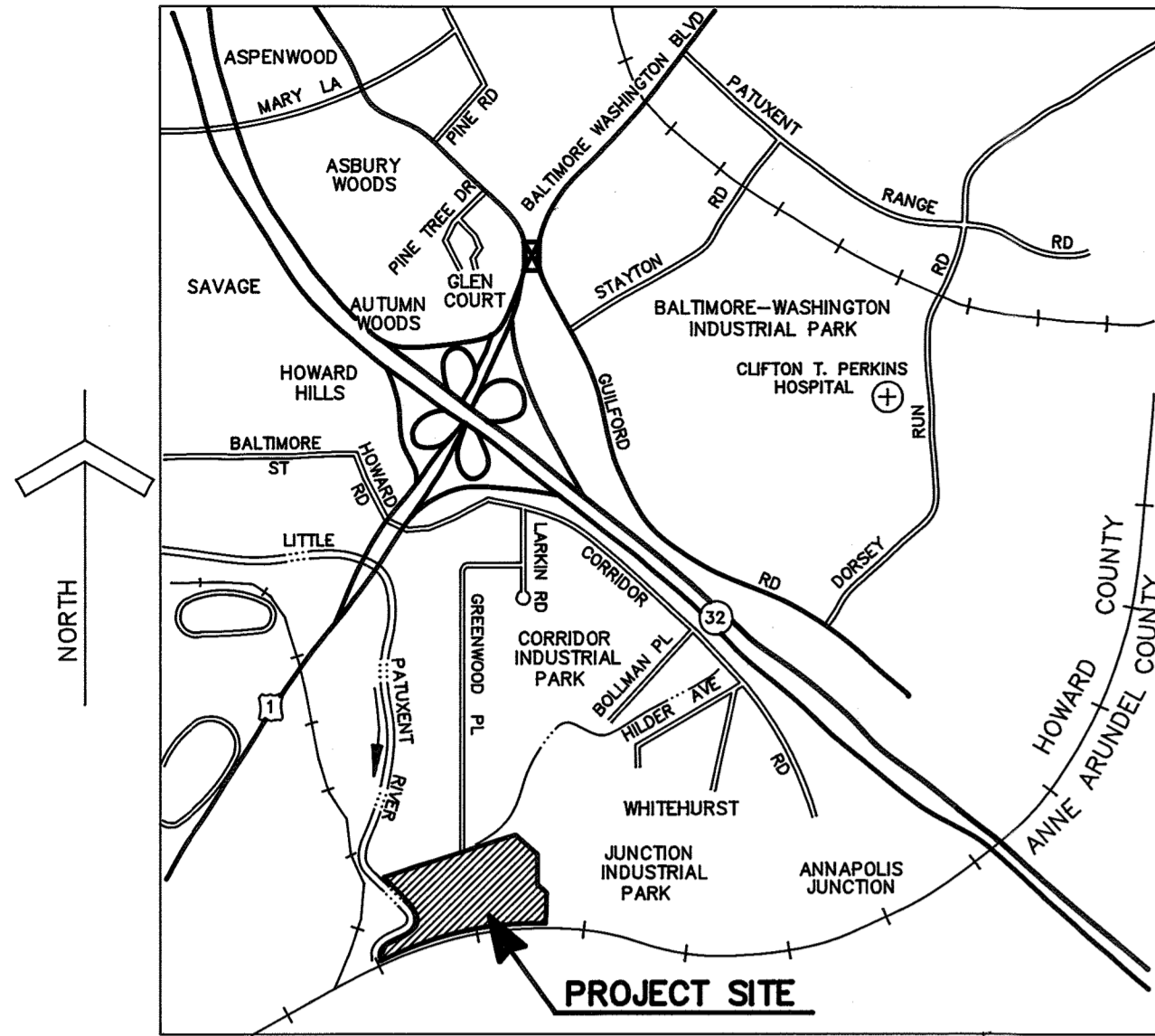
SCALE AS SHOWN

SHEET 8 OF 226

C-3

CONSTRUCTION SEQUENCE

1. OBTAIN GRADING PERMIT.
2. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES IN AREAS OF PROPOSED WORK PRIOR TO ANY CONSTRUCTION.
3. CONSTRUCT SEPTAGE FACILITY, NORTH & SOUTH PUMP STATIONS, PRIMARY CLARIFIER, SECONDARY CLARIFIER, PROCESS REACTORS NO.1 & NO.2, CHLORINE CONTACT BASIN, DIGESTERS NO.3, NO.4 AND GRAVITY THICKENERS NO.3, NO.4, MAINTENANCE BUILDING ADDITION AND PARKING ADDITION.
4. FINISH PROPOSED GRADES WITH PERMANENT SEEDING.
5. REPAVE DISTURBED ROADWAYS.
6. DURING CONSTRUCTION AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE OF THE SEDIMENT AND EROSION CONTROLS.



VICINITY MAP

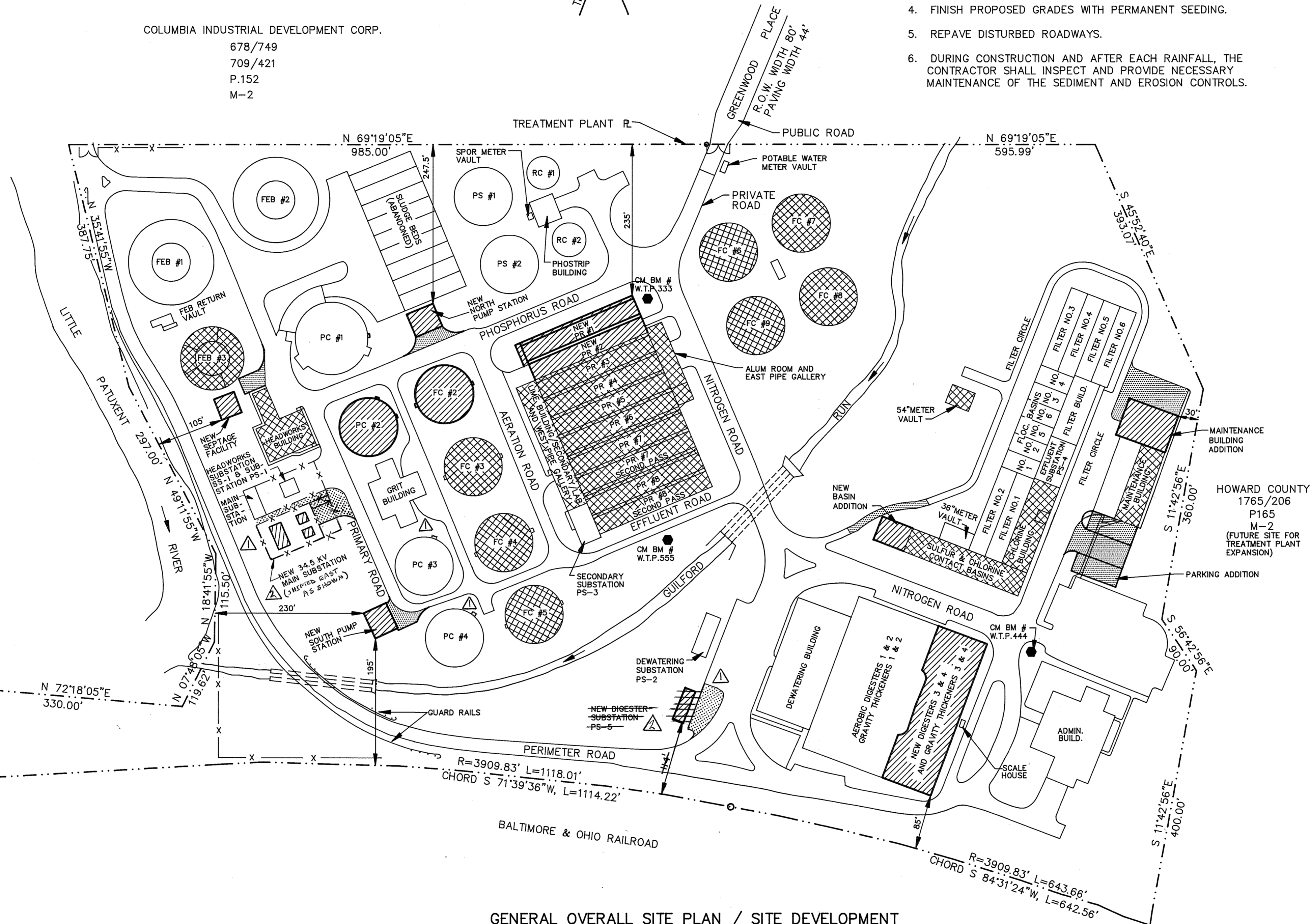
SCALE IN FEET 0 1000 2000 4000 6000
SCALE: 1" = 2000'

HOWARD COUNTY BENCH MARKS

- W.T.P. 333 - CONC.MON.EL.140.87
- W.T.P. 444 - CONC.MON.EL.142.14
- W.T.P. 555 - CONC.MON.EL.140.35

WATER SURFACE ELEVATION LITTLE PATUXENT RIVER - 100 YEAR FLOOD 143.00=FEET.

COLUMBIA INDUSTRIAL DEVELOPMENT CORP.
678/749
709/421
P.152
M-2



GENERAL OVERALL SITE PLAN / SITE DEVELOPMENT

SCALE IN FEET 0 50 100 200 300
SCALE: 1" = 100'

GENERAL NOTES:

1. DIMENSIONS TO NEW BUILDINGS ARE PERPENDICULAR TO PROPERTY LINE.
2. THE ENTIRE LITTLE PATUXENT WASTEWATER TREATMENT PLANT SITE IS LOCATED IN THE 100 YEAR FLOODPLAIN.
3. OFFSITE DISPOSAL OF EXCESS MATERIAL WILL BE TO AN APPROVED SITE.

SITE ANALYSIS

- A. AREA OF PARCEL/LOT = 38.01 ACRES
- B. PRESENT ZONING = M-2
- C. NUMBER OF PARKING SPACES ON SITE = 107
- D. OPEN SPACES REMAINING = 28.74 AC. 75.63 PERCENT
- E. EXISTING BUILDING COVERAGE 7.7 ACRES 20.26 PERCENT
- F. PROPOSED BUILDING COVERAGE 1.56 ACRES 4.10 PERCENT
- G. TOTAL BUILDING COVERAGE 9.26 ACRES 24.36 PERCENT
- H. NUMBER OF EMPLOYEES = 55
- I. MAINTENANCE BUILDING ADDITION = 4653 SF

LEGEND

- PR PROCESS REACTOR
- FEB FLOW EQUALIZATION BASIN
- FC FINAL CLARIFIER
- ℙ PROPERTY LINE
- PS PHOSPHORUS STRIPPER
- PC PRIMARY CLARIFIER
- RC REACTOR CLARIFIER
- CMBM # CONSTRUCTION MONUMENT BENCH MARK NUMBER
- PROPOSED STRUCTURES OR ADDITIONS
- PROPOSED NEW PAVING
- MODIFICATION TO EXIST. STRUCTURES

APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works
James J. ... 11/25/91
DIRECTOR DATE
... 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department
... 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
PARCEL A	8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning
... 12/9/91
DIRECTOR DATE
... 12/6/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.
... 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements
... 11/27/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.

Approved: *...* Date: 11/29/91

ENGINEER'S CERTIFICATION

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.
Donald R. ... Date: NOV 5 1991

SUBDIVISION NAME LITTLE PATUXENT WWTP		SECT./AREA	LOT/PARCEL #
PLAT # RO L/F BLOCK # ZONE	TAX/ZONE MAP	ELEC.DIST.	CENSUS TR.
818/537 24 M-2	47	6	6064
WATER CODE	SEWER CODE		
CO4	4020000		

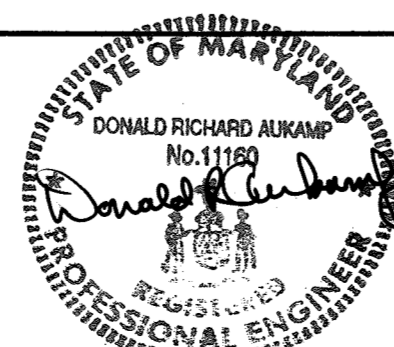
(F-91-72 recorded 12-5-91, Plat # 1014-B)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 11/25/91
DIRECTOR OF PUBLIC WORKS DATE
... 11/25/91
CHIEF, BUREAU OF ENGINEERING DATE
... 11-25-91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE
... 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE



ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

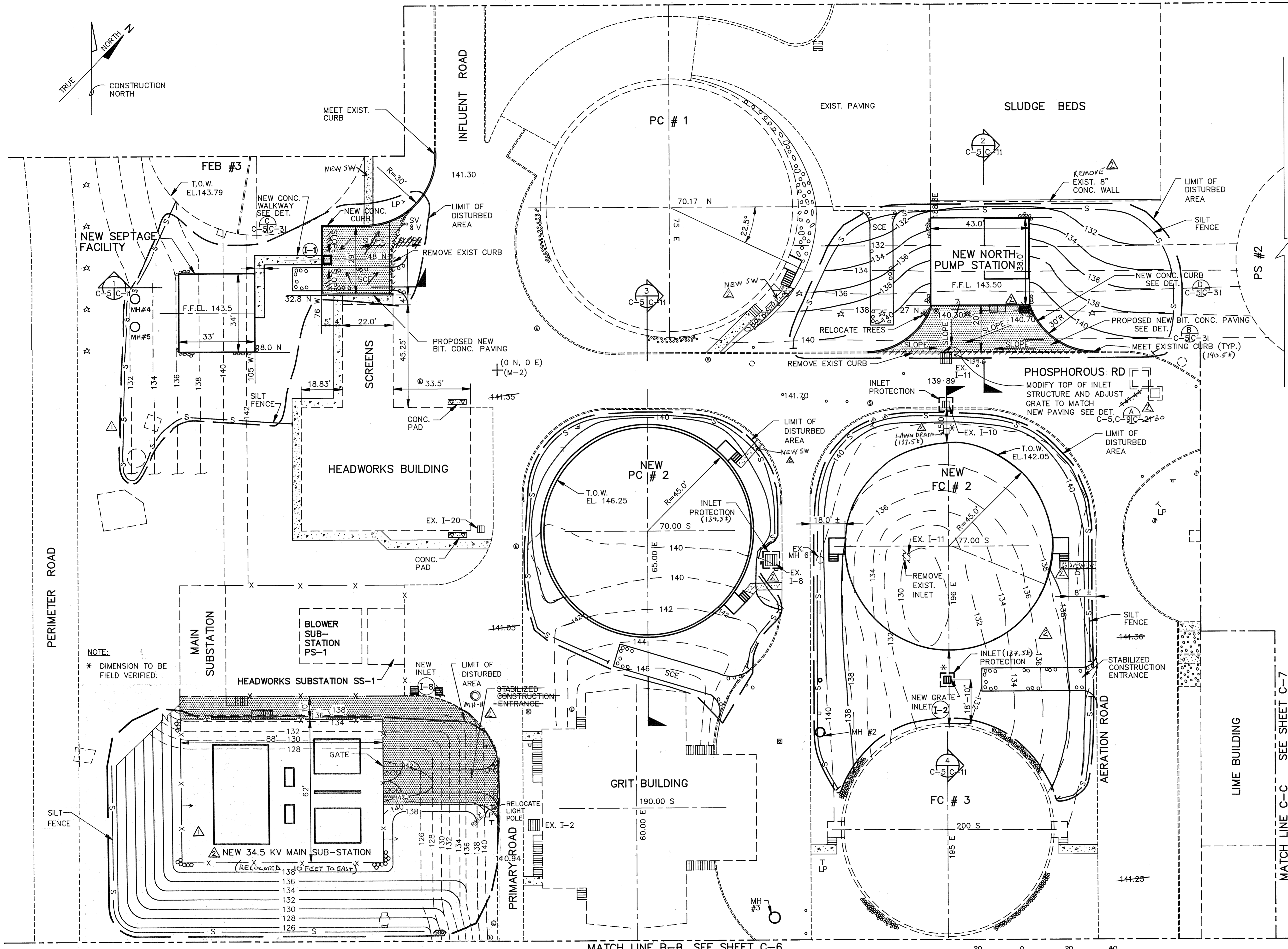
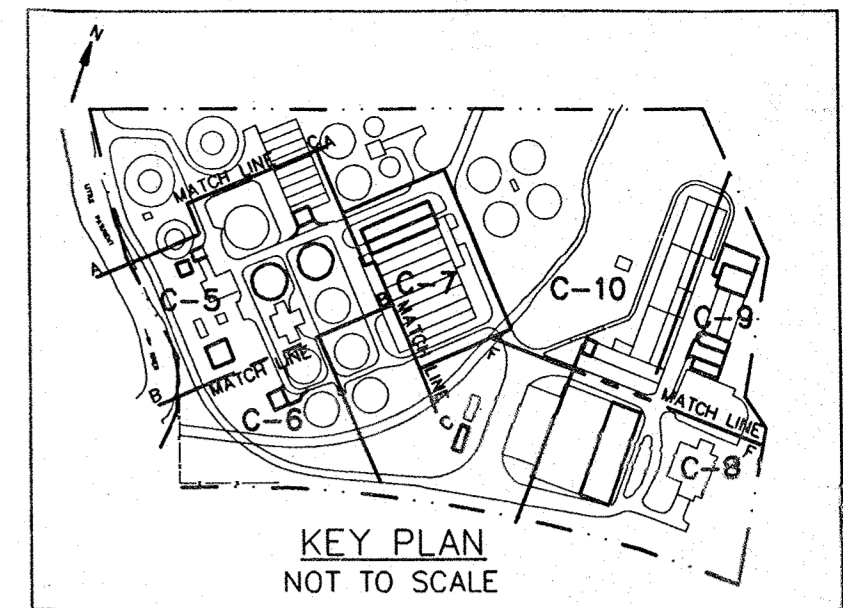
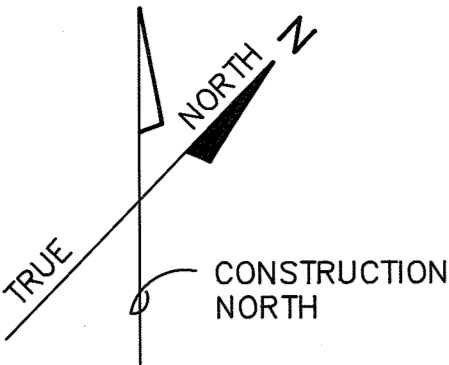


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DRN:	LB			
CHK:	MCJ	2	RECORD DRAWING	11/17/91
DATE:	11-5-91	BY	NO.	REVISION
				DATE
				2/28/92

CIVIL
REVISION TO SDP - 78-55 & 89-62
SITE DEVELOPMENT PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 9 OF 226
SD-1 OF 9
C-4



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works

James P. Blum 11-25-91
DIRECTOR DATE

William E. Ryan 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department

Josephine Boyden 11-27-91
HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
PARCEL A	8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning

James R. Kelly 12/9/91
DIRECTOR DATE

Emma Helman 12/9/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I authorize periodic on-site inspection by the Howard County Soil Conservation District."

James P. Blum 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements

James P. Blum 11/22/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.

Approved: *James P. Blum* Date: 11/27/91

ENGINEER'S CERTIFICATION

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.

Donald R. Conkamp Date: NOV 5 1991

SUBDIVISION NAME	LITTLE PATUXENT WWTP	SECT./AREA	-	LOT/PARCEL #	A
PLAT #	RO L/F BLOCK # ZONE	TAX/ZONE MAP ELEC.DIST.	CENSUS TR.		
423/816	24 M-2	47	6	6064	
618/837					
WATER CODE	C04		SEWER CODE	4020000	

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Blum 11/25/91
DIRECTOR OF PUBLIC WORKS DATE

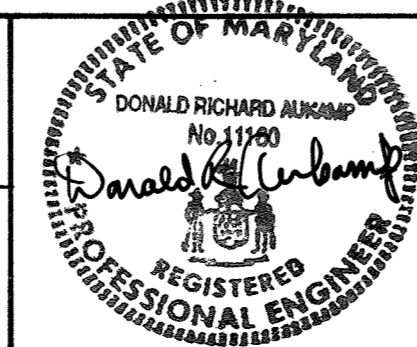
William E. Ryan 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE

John A. Oliver 11/25/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

William E. Ryan 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

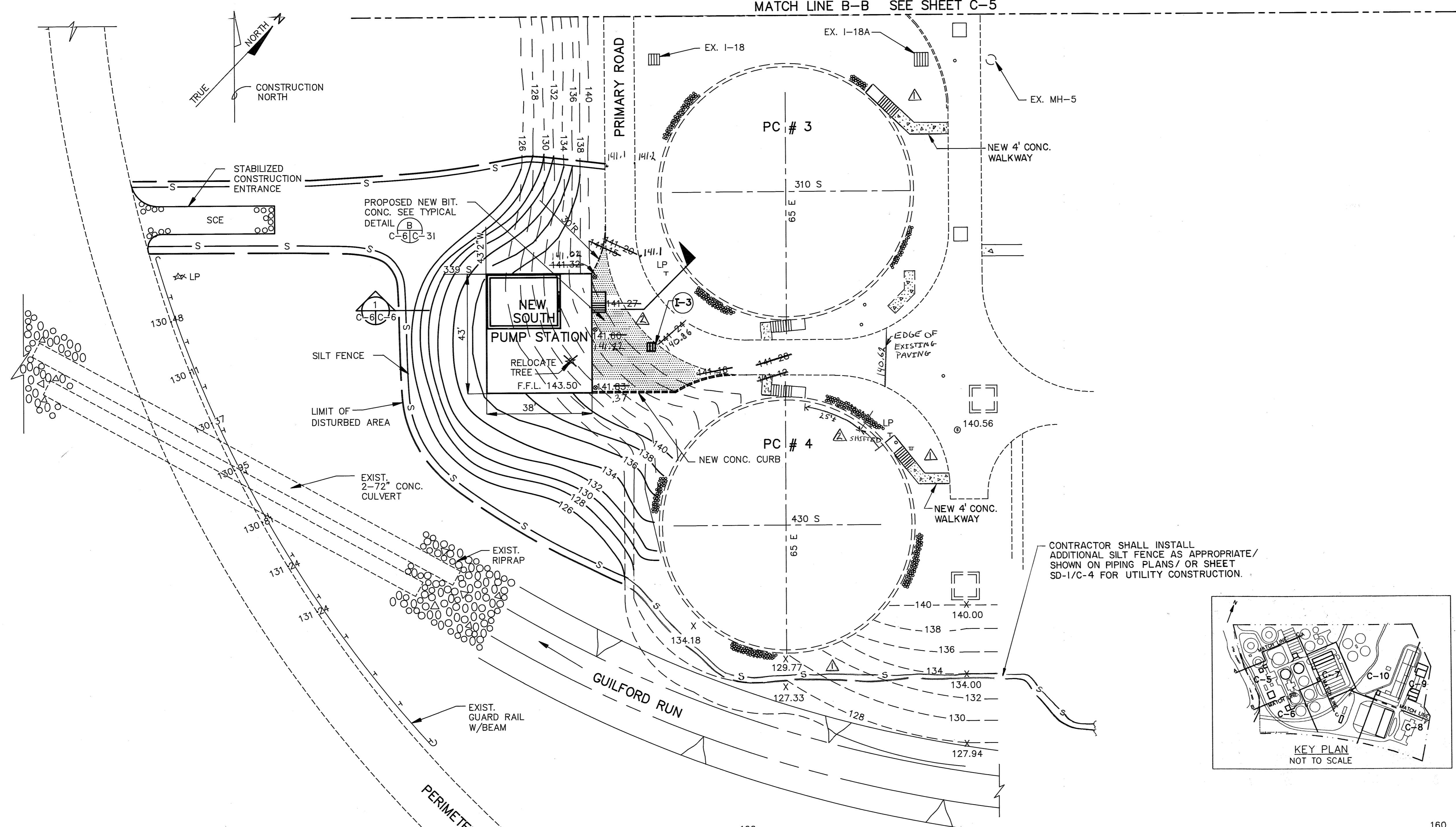


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DRN: LB				
CHK: MCJ	1	RECORD DRAWING		11/14/91
DATE: 11-5-91	MCJ	REVISIONS TO SD-1 TO SD-9 FOR BID		2/28/92
	BY	NO.	REVISION	DATE

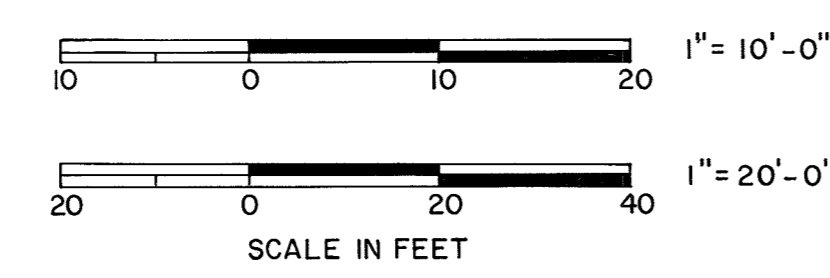
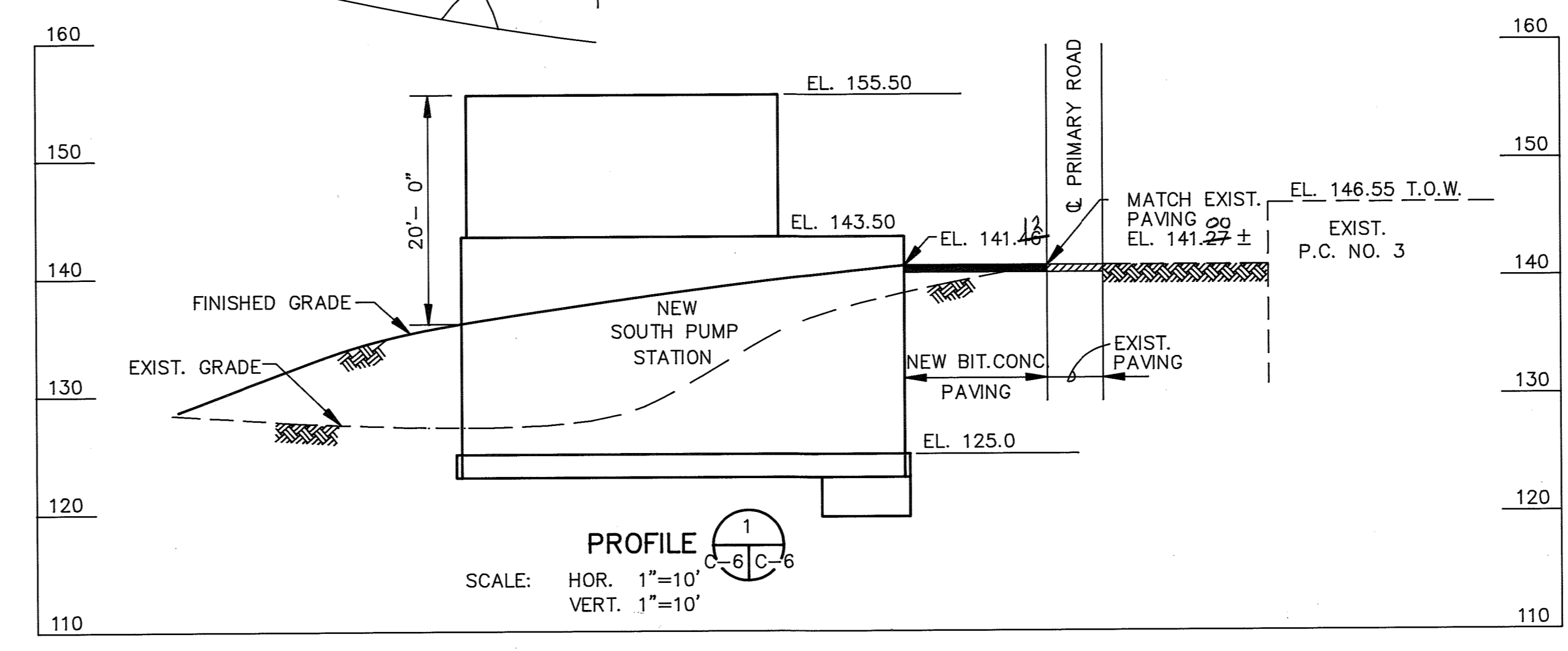
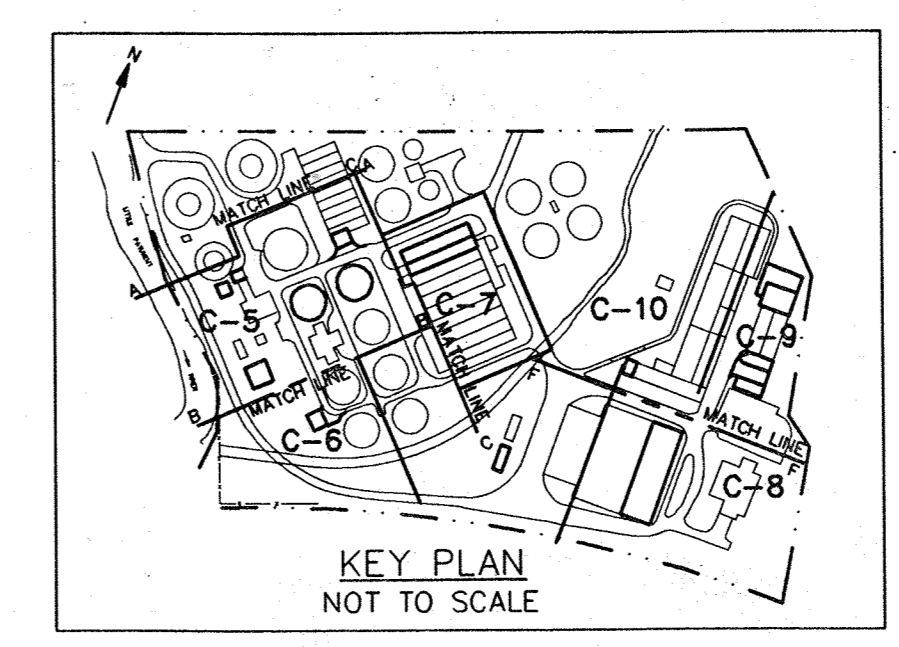
CIVIL
REVISION TO SDP-78-55 & 89-62
SITE DEVELOPMENT &
GRADING PLAN I

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 10 OF 226
SD-2 OF 9
C-5



CONTRACTOR SHALL INSTALL ADDITIONAL SILT FENCE AS APPROPRIATE/ SHOWN ON PIPING PLANS/ OR SHEET SD-1/C-4 FOR UTILITY CONSTRUCTION.



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works

[Signature] 11/25/91
DIRECTOR DATE

[Signature] 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department

[Signature] 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
PARCEL A	8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning

[Signature] 12/9/91
DIRECTOR DATE

[Signature] 12/6/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.

[Signature] 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements

[Signature] 11/27/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.

Approved: *[Signature]* Date: 11/27/91

ENGINEER'S CERTIFICATION

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.

[Signature] Date: NOV 5 1991

SUBDIVISION NAME LITTLE PATUXENT WWTP	SECT./AREA	LOT/PARCEL # A
PLAT # RD L/F BLOCK # ZONE 423/216 24 M-2	TAX./ZONE MAP 47	ELEC.DIST. CENSUS TR. 6 6064
WATER CODE C04	SEWER CODE 4020000	

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 11/25/91
DIRECTOR OF PUBLIC WORKS DATE

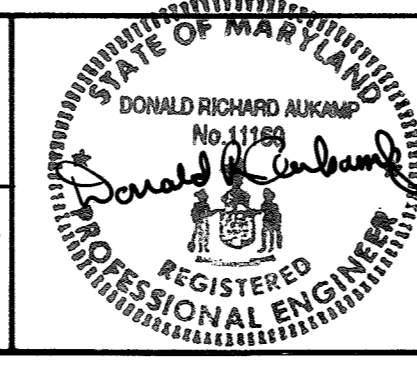
[Signature] 11-25-91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

[Signature] 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 11-23-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

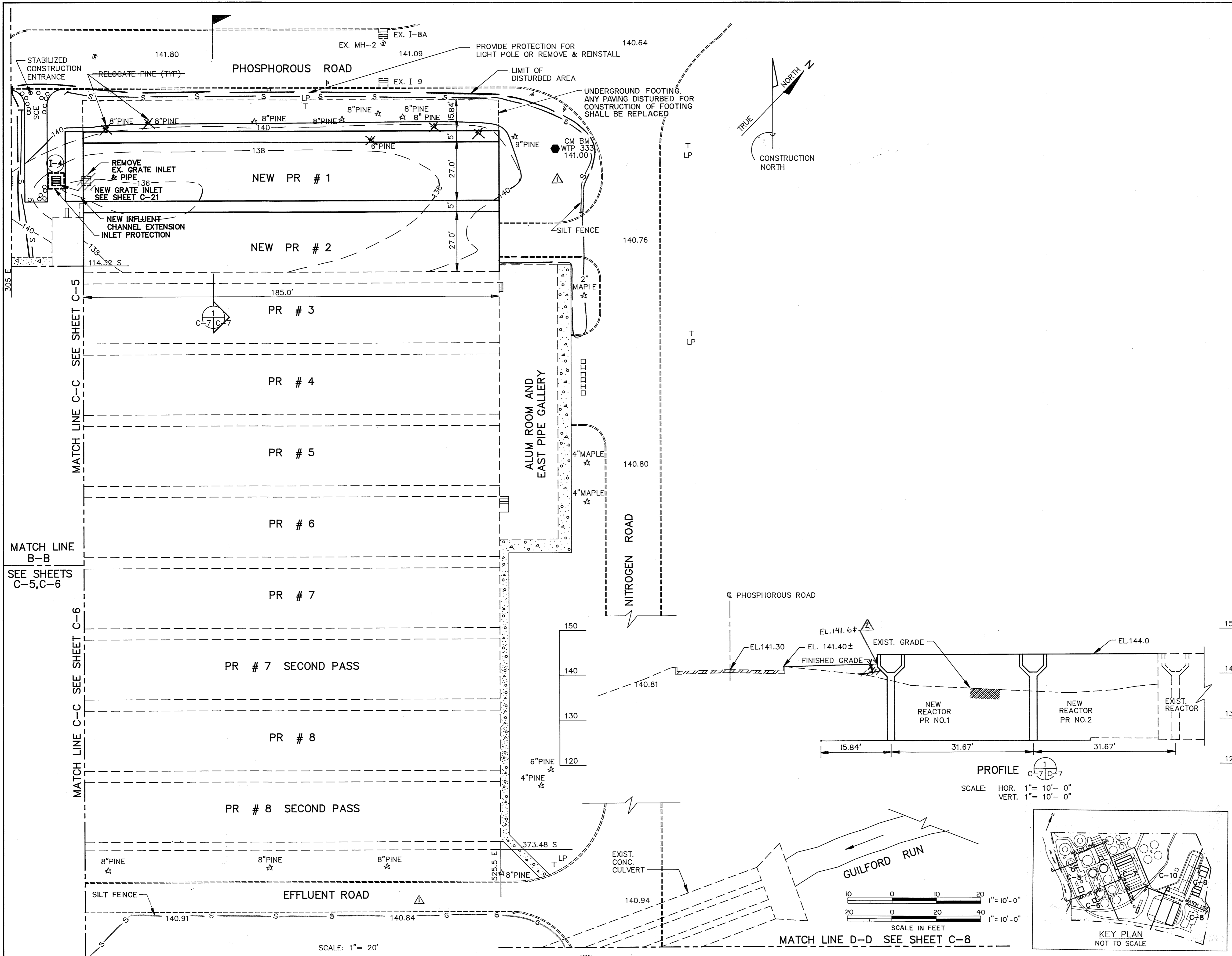


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DATE: 11-5-91	MCJ	REVISIONS TO SD-1 TO SD-9 FOR BID	2/28/92
BY	NO.	REVISION	DATE

CIVIL
REVISION TO SDP-78-55 & 89-62
SITE DEVELOPMENT & GRADING PLAN II

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 11 OF 226
SD-30F 9
C-6



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works

James P. Selman 11/25/91
DIRECTOR DATE

James P. Selman & Sons 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department

James P. Selman 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
PARCEL A	8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning

James P. Selman 12/3/91
DIRECTOR DATE

Bruna Halonant 12/6/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.

James P. Selman 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements

James P. Selman 11/27/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.

Approved: *James P. Selman* Date: 11/27/91

ENGINEER'S CERTIFICATION

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.

Donald R. Culberson Date: NOV 5 1991

SUBDIVISION NAME LITTLE PATUXENT WWTP		SECT./AREA -	LOT/PARCEL # A
PLAT # RO L/F/BLOCK # 423/216 618/237	ZONE M-2	TAX/ZONE MAP 47	ELEC.DIST. 6
WATER CODE C04		SEWER CODE 4020000	

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Selman 11/25/91
DIRECTOR OF PUBLIC WORKS DATE

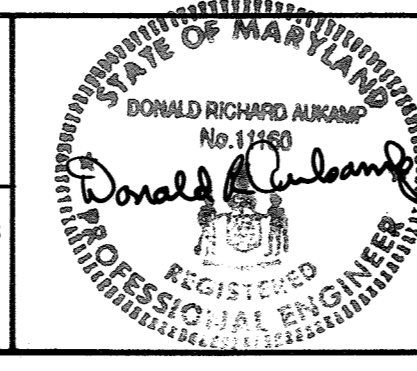
James P. Selman & Sons 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE

John A. O'Hara 11/25/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Orlando J. Jones 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



DES: MCJ			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/14/91
DATE: 11-5-91	MCJ	REVISION TO SD-1 TO SD-9 FOR BID	2/28/92
BY	NO.	REVISION	DATE

CIVIL

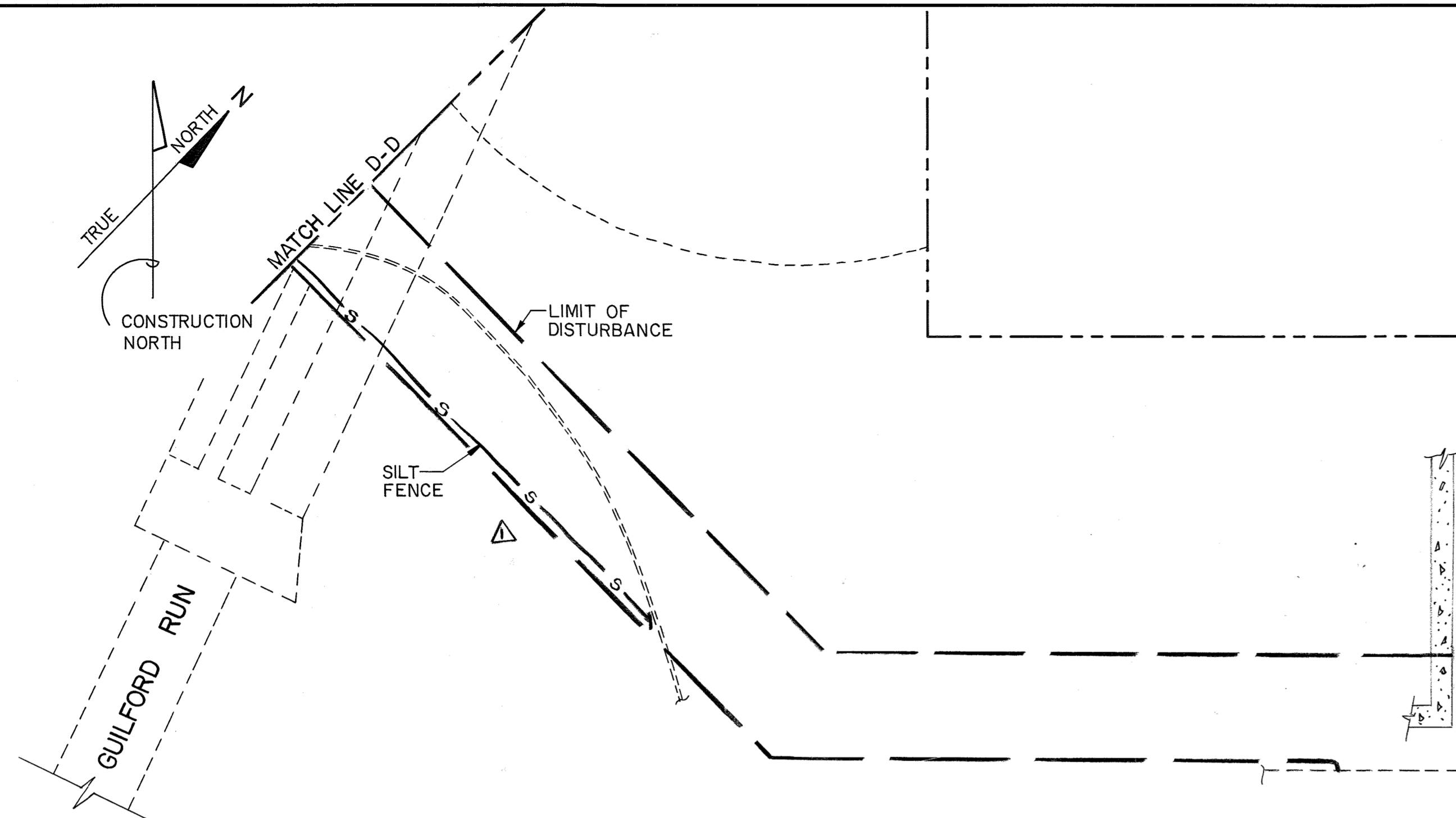
REVISION TO SDP-78-55 & 89-62
SITE DEVELOPMENT &
GRADING PLAN III

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

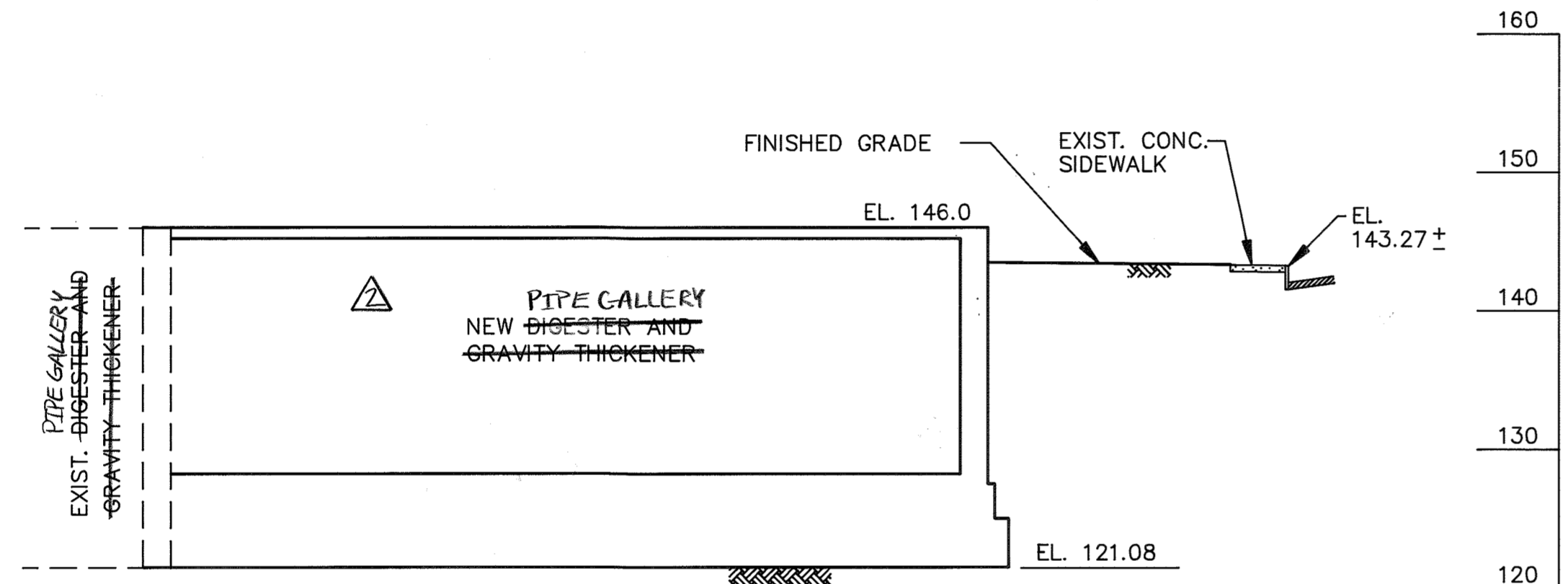
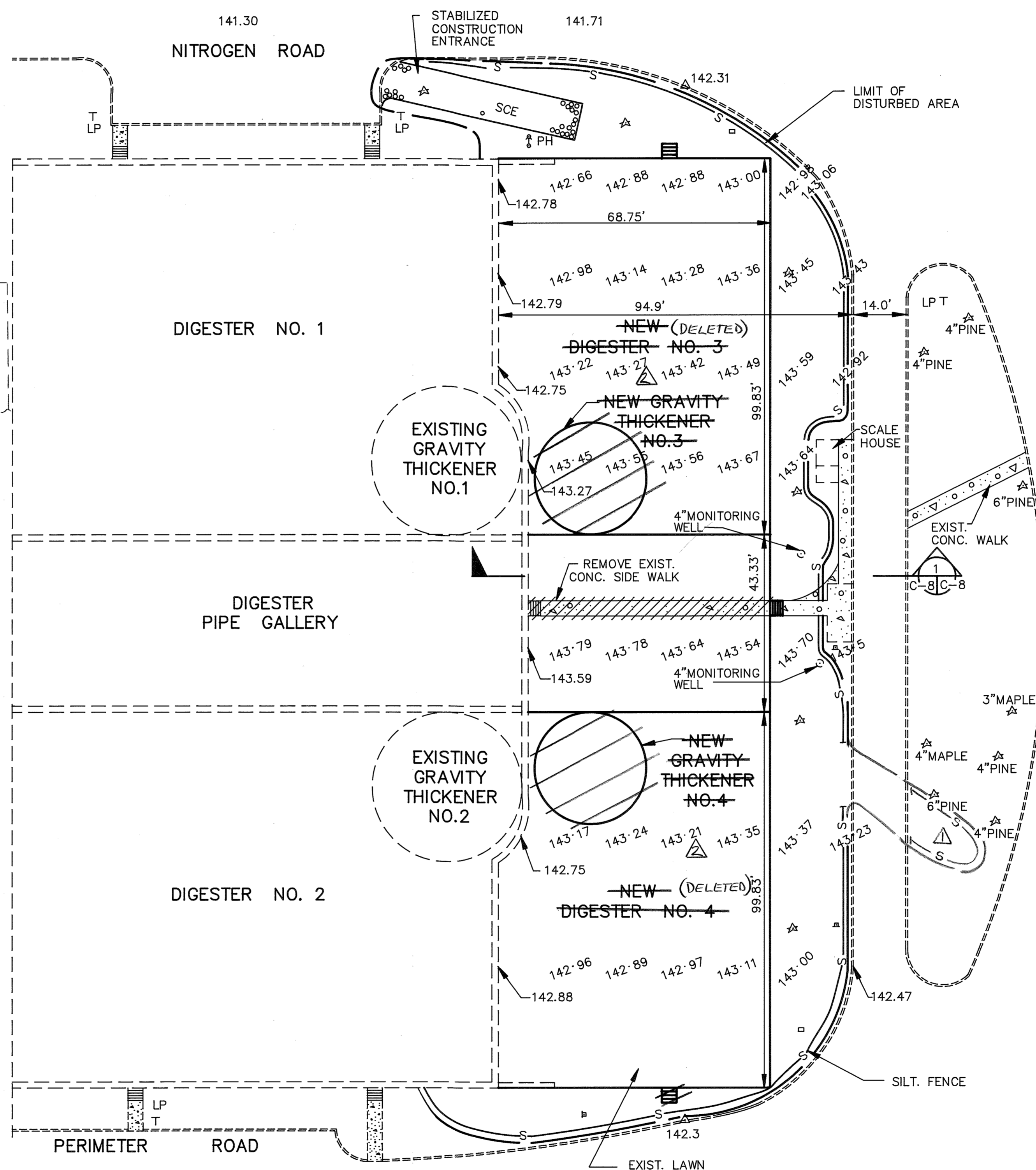
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 12 OF 226
SD-4 OF 9
C-7

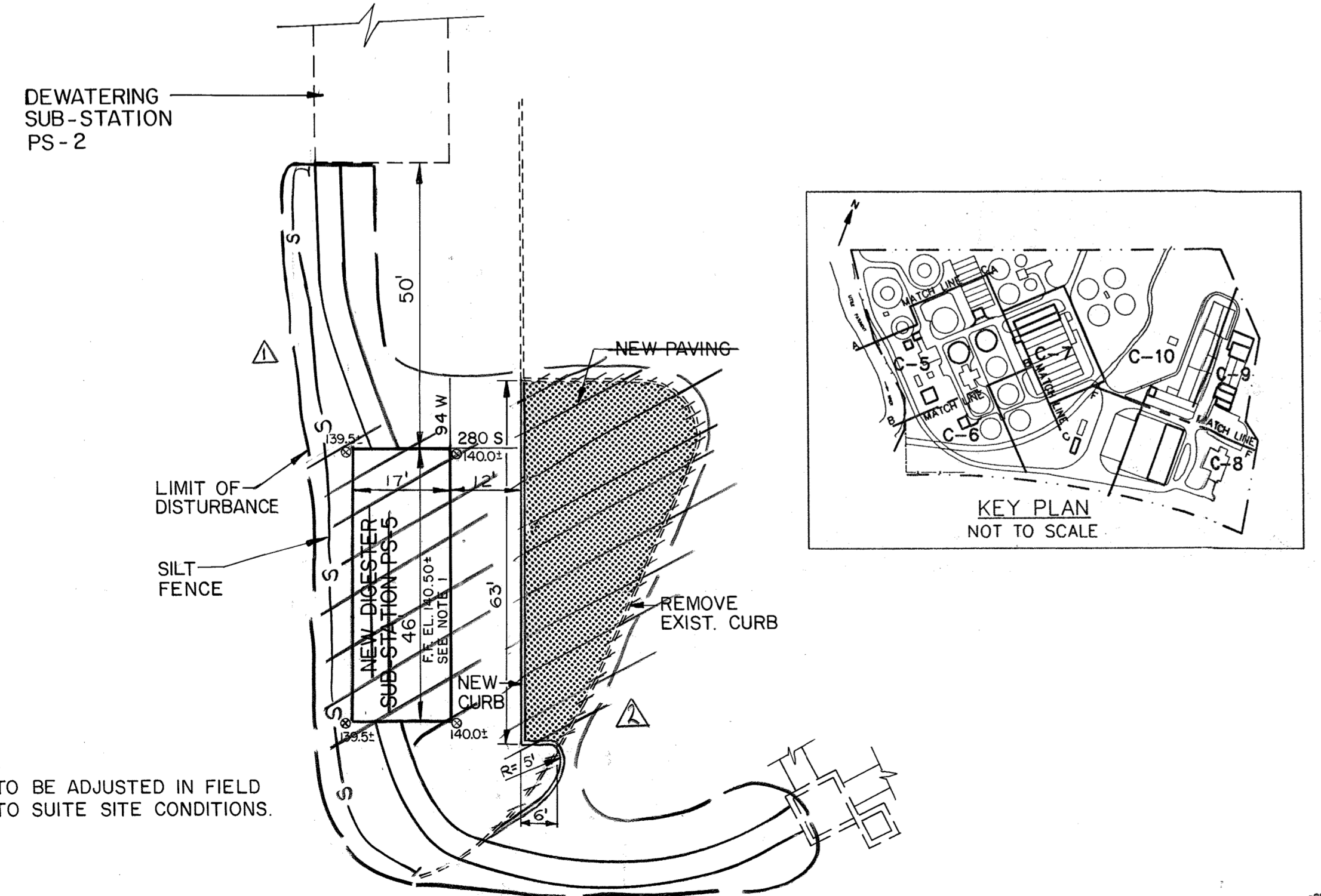
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MATCH LINE F-F SEE SHEETS C-9, C-10



PROFILE
SCALE: HOR. 1" = 10'-0"
VERT. 1" = 10'-0"



NOTE:
1. TO BE ADJUSTED IN FIELD TO SUITE SITE CONDITIONS.

APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works
James J. Chen 11/25/91
DIRECTOR DATE
William C. Ray 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department
James B. Ray 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART
LOT NUMBER STREET ADDRESS
PARCEL A 8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning
James B. Ray 12/9/91
DIRECTOR DATE
Anna Helman 11/6/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION
"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.
James J. Chen 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements
James J. Chen 11/27/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.
Approved: *Staff* Date: 11/27/91

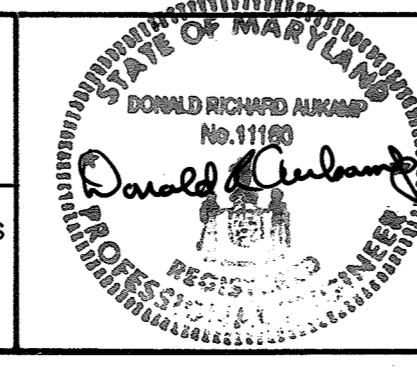
ENGINEER'S CERTIFICATION
I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.
Donald R. Anland Date: NOV 5 1991

SUBDIVISION NAME	SECT./AREA	LOT/PARCEL #
LITTLE PATUXENT WWTP	-	A
PLAT # RO L/F BLOCK # ZONE	TAX./ZONE MAP	ELEC.DIST. CENSUS TR.
423/916 24 M-2	47	6
618/537		6064
WATER CODE	SEWER CODE	
CO4	4020000	

FILE: C:\TPAT2\JPAT3

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
James J. Chen 11/25/91
DIRECTOR OF PUBLIC WORKS DATE
William C. Ray 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE
Anna Helman 11-25-91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE
Donald R. Anland 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy
CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

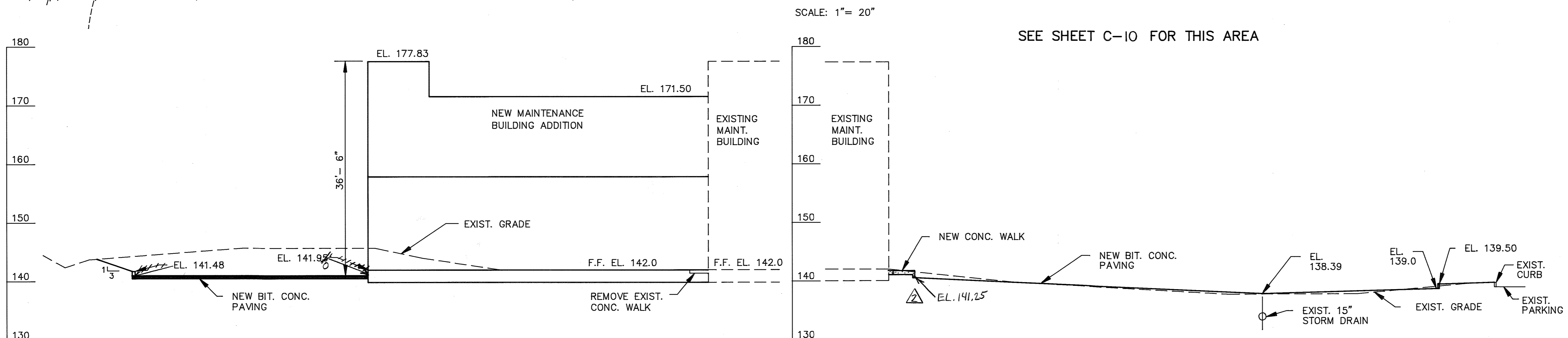
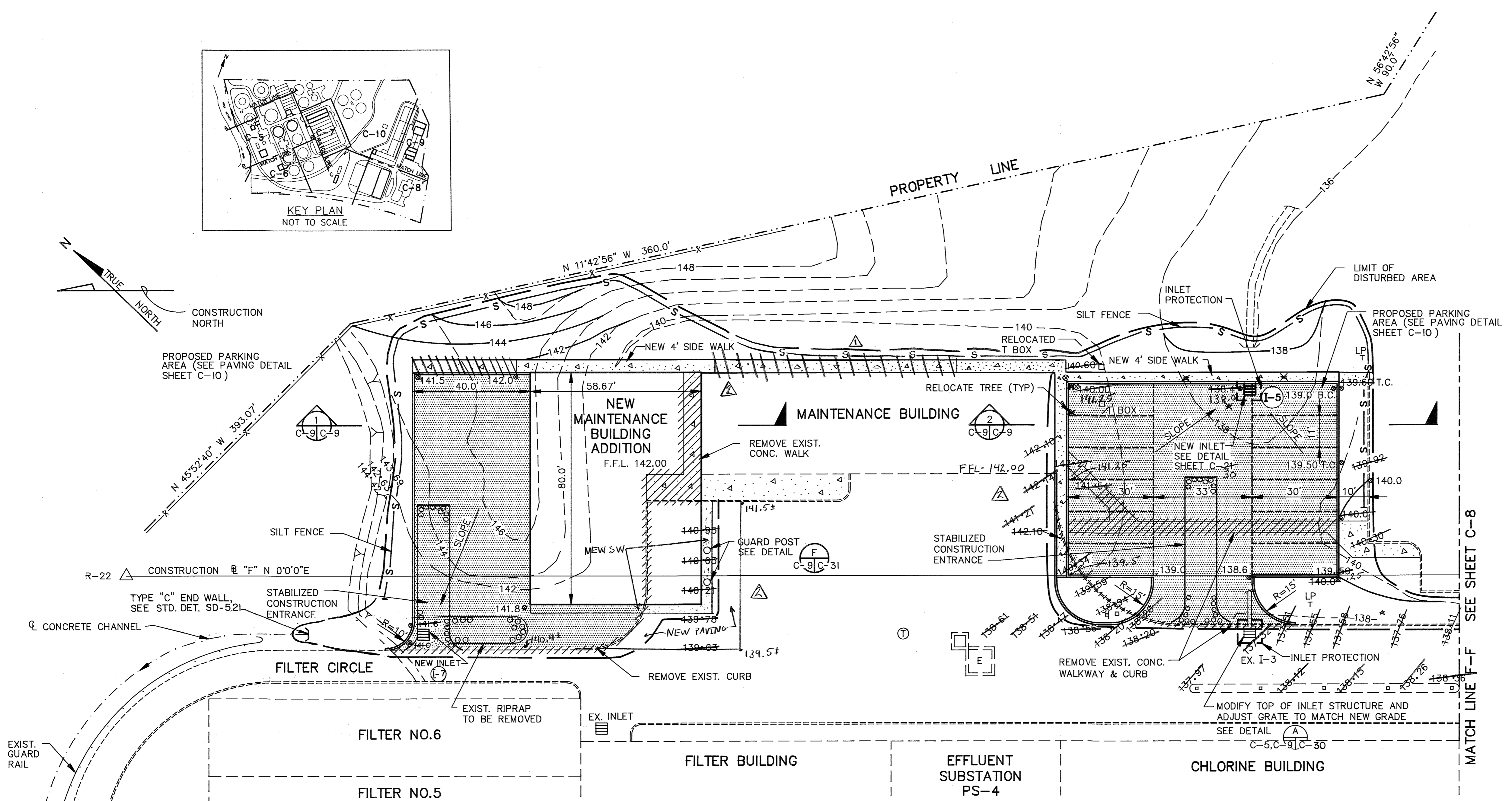
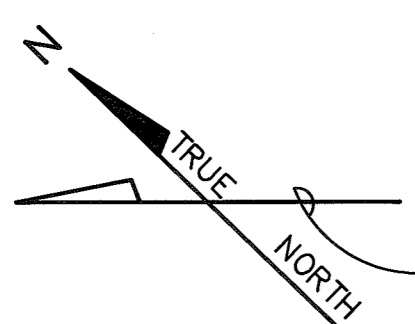
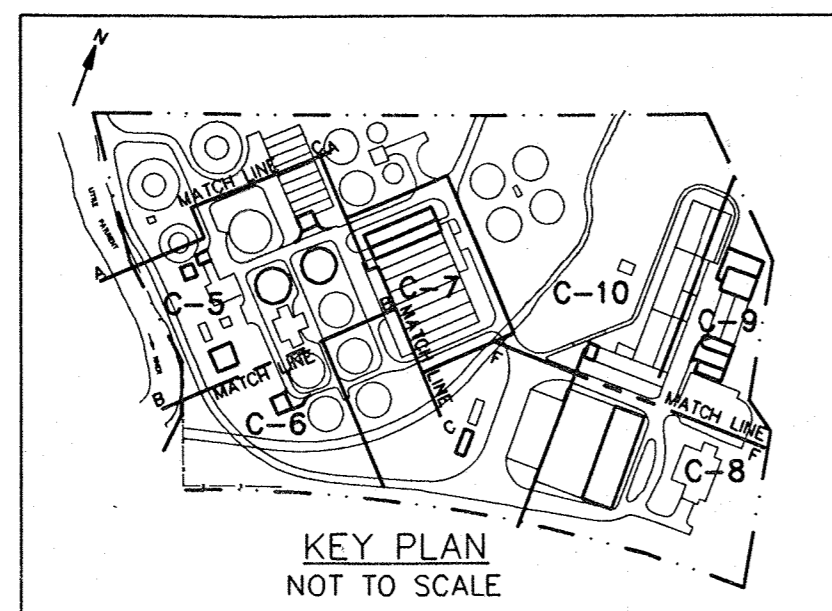


DES: MCJ			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/4/91
DATE: 11-5-91	MCJ	REVISION TO SD-1 TO SD-9 FOR BID	2/28/92
BY	NO.	REVISION	DATE

CIVIL
REVISION TO SDP-78-55 & 89-62
SITE DEVELOPMENT & GRADING PLAN IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 13 OF 226
SD-5 OF 9
C-8



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works

James P. Shan 11/25/91
DIRECTOR DATE

William S. Ryan 11/25/91
CHEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department

James P. Shan 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
PARCEL A	8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning

James P. Shan 12/9/91
DIRECTOR DATE

Anna H. H. H. H. 11/26/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.

James P. Shan 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements

James P. Shan 11/22/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.

Approved: *James P. Shan* Date: 11/27/91

ENGINEER'S CERTIFICATION

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.

Donald R. Ouband Date: NOV 5 1991

SUBDIVISION NAME	SECT./AREA	LOT/PARCEL #
LITTLE PATUXENT WWTP	-	A
PLAT # RO L/F/BLOCK #	ZONE	TAX/ZONE MAP ELEC.DIST.
423/516/819/537	M-2	6
WATER CODE	SEWER CODE	CENSUS TR.
C04	4020000	6064

FILE: D:\LTPAT\LPAT7A

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Shan 11/25/91
DIRECTOR OF PUBLIC WORKS DATE

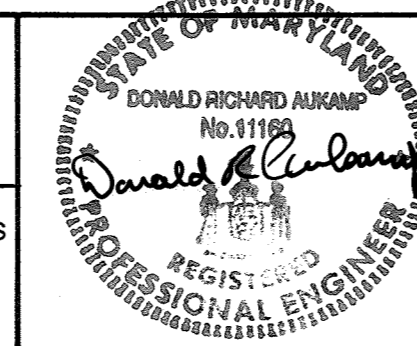
William S. Ryan 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE

John O'Hara 11/25/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Donald R. Ouband 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



DES: MCJ			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/19/91
DATE: 11-5-91	M.J.	REVISION TO SD-1 TO SD-9 FOR BID	2/28/92
BY	NO.	REVISION	DATE

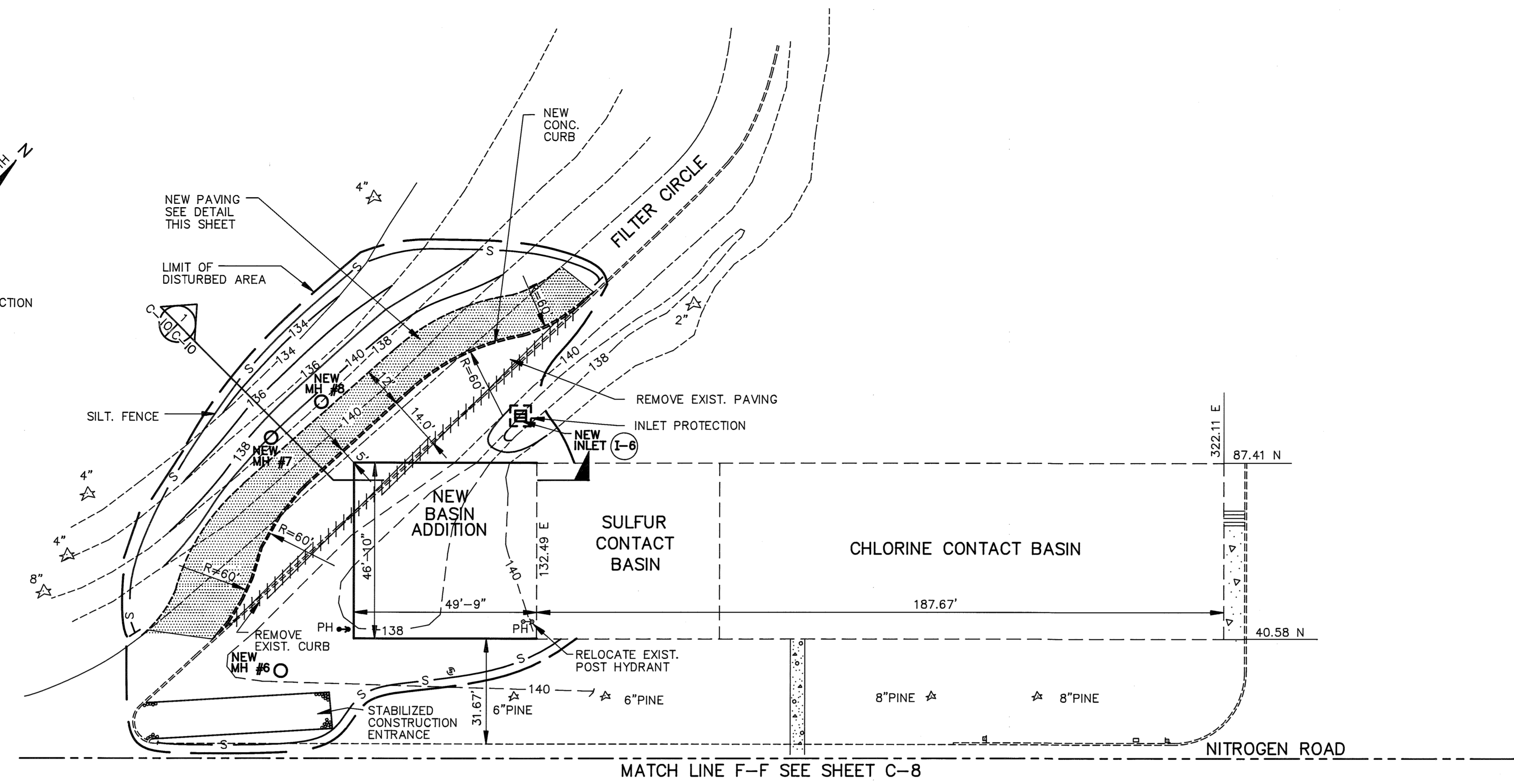
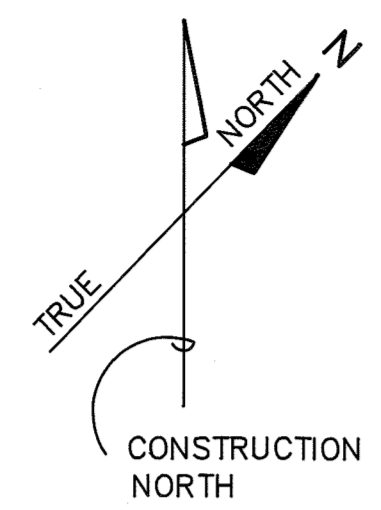
CIVIL

REVISION TO SDP-78-55 & 89-62
SITE DEVELOPMENT & GRADING
PLAN V

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

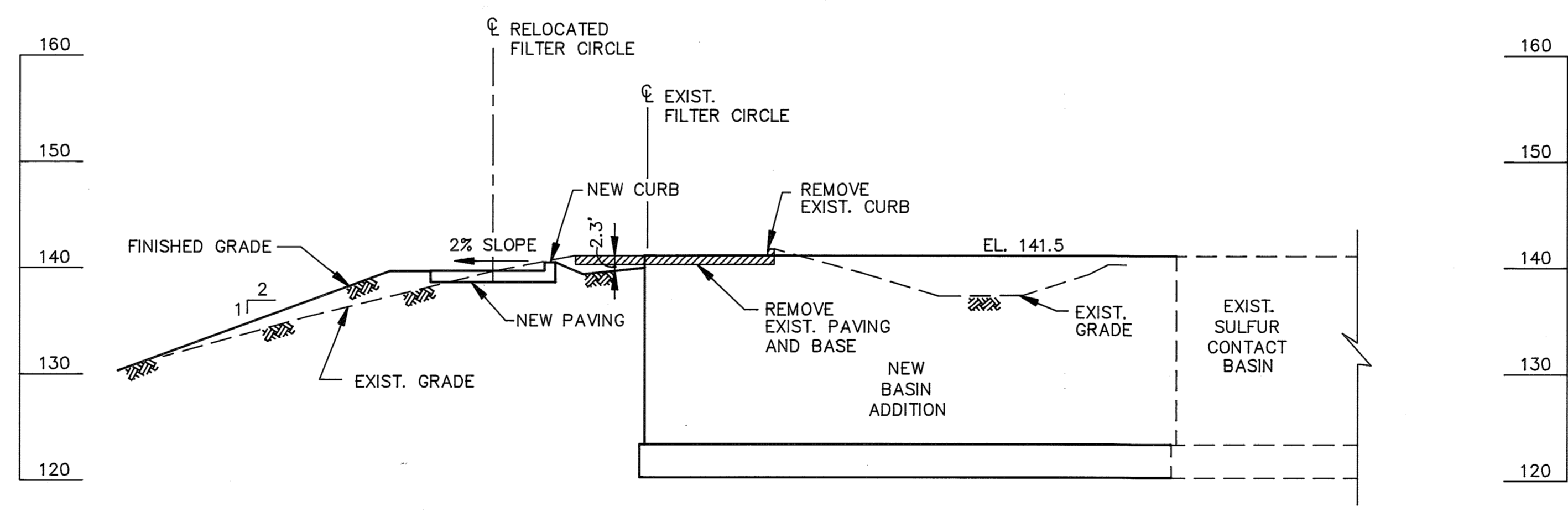
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 14 OF 226
SD-6 OF 9
C-9

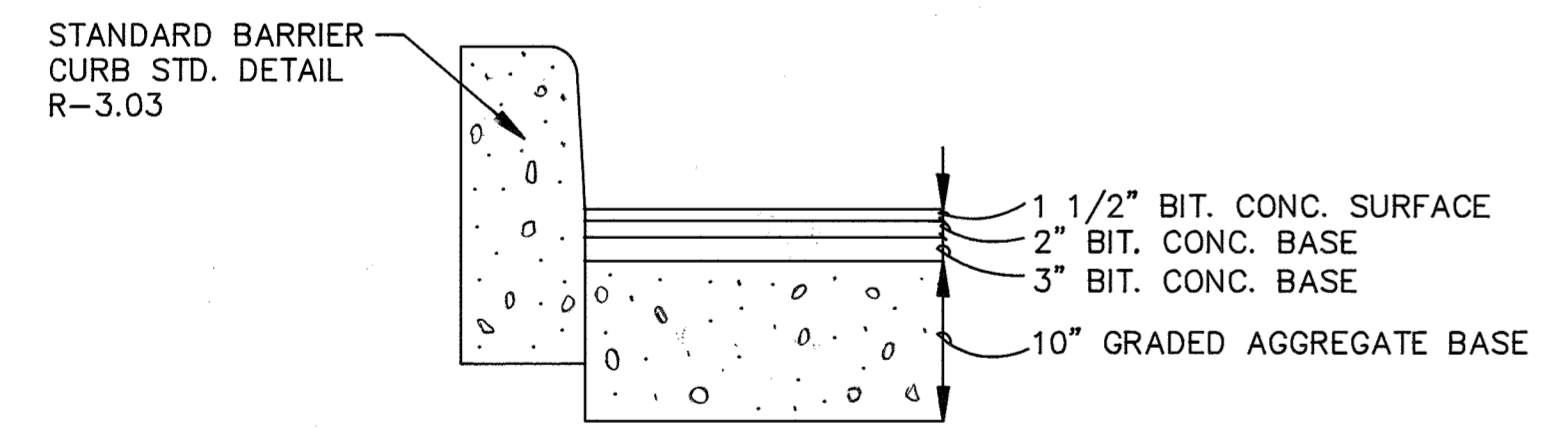


MATCH LINE F-F SEE SHEET C-8

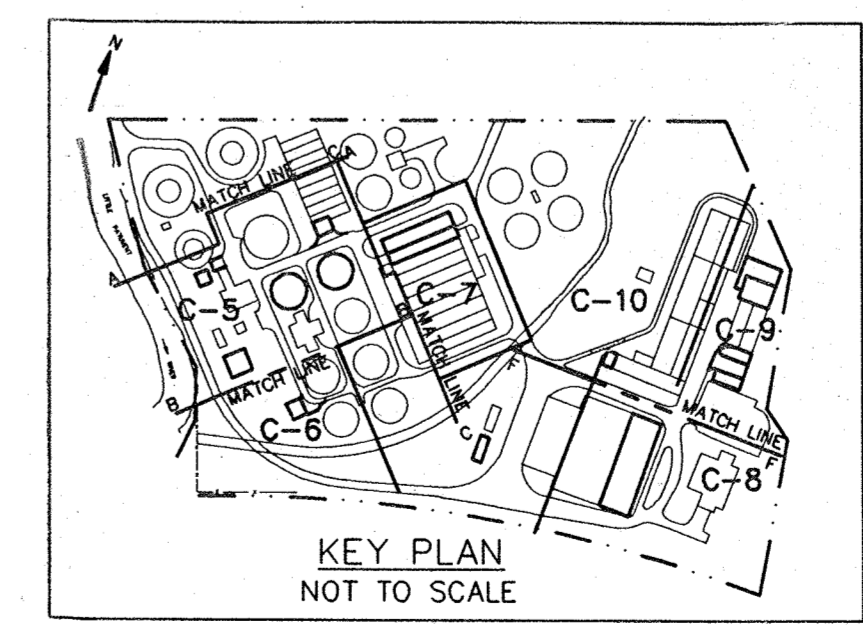
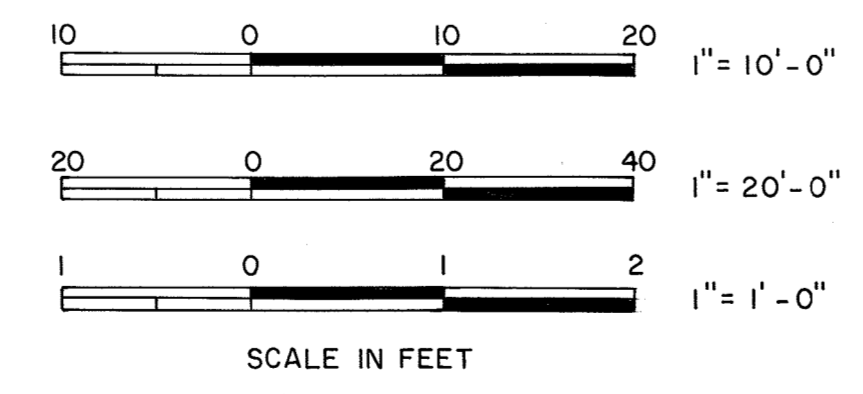
SCALE: 1" = 20' - 0"



PROFILE
SCALE: HOR. 1" = 10' - 0"
VERT. 1" = 10' - 0"



PAVING DETAIL
SCALE: 1" = 1' - 0"



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works
James J. Clark 11/25/91
DIRECTOR DATE
William B. Ray 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department
Joseph P. Ryan 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART
LOT NUMBER STREET ADDRESS
PARCEL A 8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning
James J. Clark 12/9/91
DIRECTOR DATE
Bluma H. Homan 11/6/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION
"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.
James J. Clark 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements
James J. Clark 11/27/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.
Approved: *Jeffrey W. Stig* Date: 11/27/91

ENGINEER'S CERTIFICATION
I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.
Donald R. Anderson Date: NOV 5 1991

SUBDIVISION NAME		SECT./AREA	LOT/PARCEL #
LITTLE PATUXENT WWTP		-	A
PLAT #	RD. L/F	BLOCK #	ZONE
423/216	24	M-2	47
815/257			
TAX/ZONE MAP		ELEC.DIST.	CENSUS TR.
6		6	6064
WATER CODE		SEWER CODE	
CO4		4020000	

07/11/11 FILE: C:/LTPAT2/J

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Clark 11/25/91
DIRECTOR OF PUBLIC WORKS DATE

William B. Ray 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 11-25-91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Oy O. Law 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

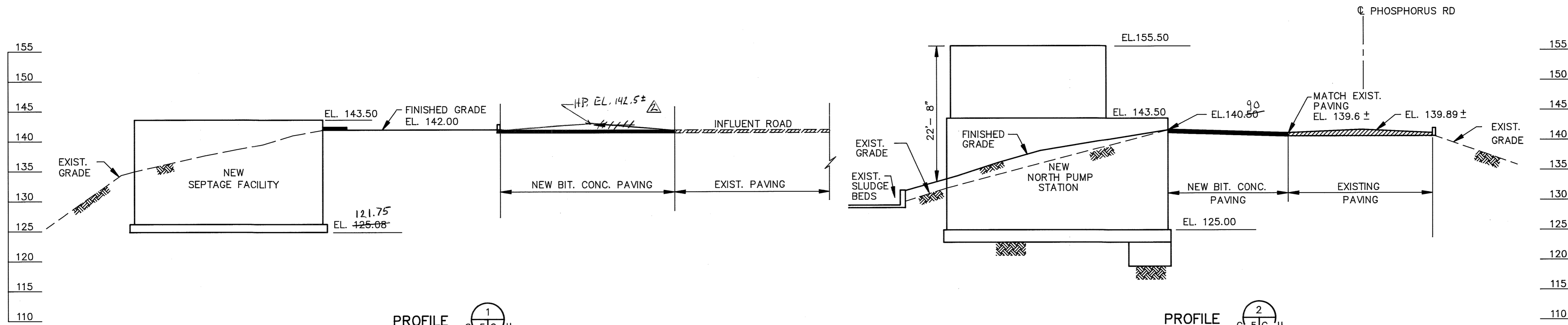


DES: MCJ			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/4/91
	1	REVISED FOR BIDDING	5/5/92
DATE: 11-5-91	BY	NO.	REVISION

CIVIL
REVISION TO SDP - 78-55 & 89-62
SITE DEVELOPMENT & GRADING PLAN VI

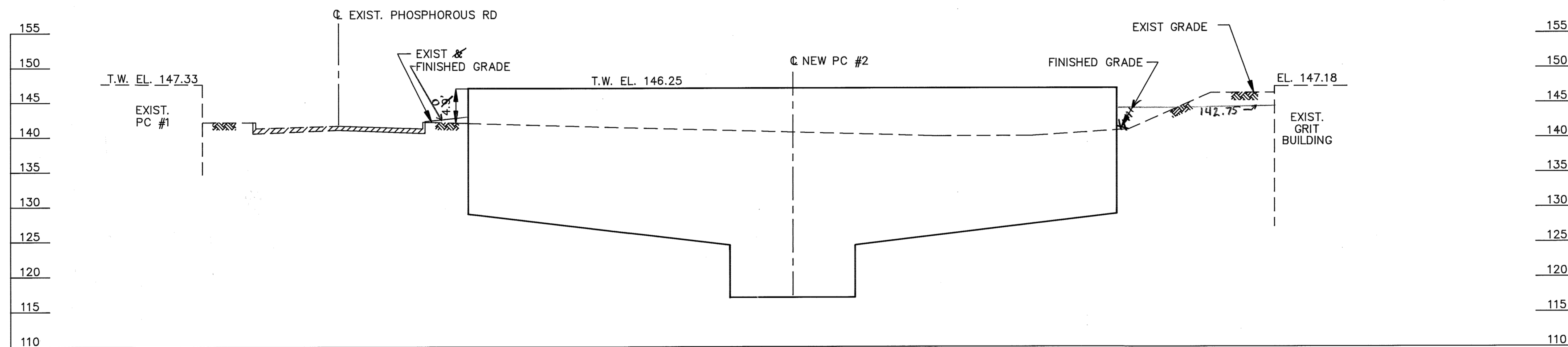
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S - 6153
CONTRACT NO. 20 - 3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 15 OF 226
SD-70F9
C-10

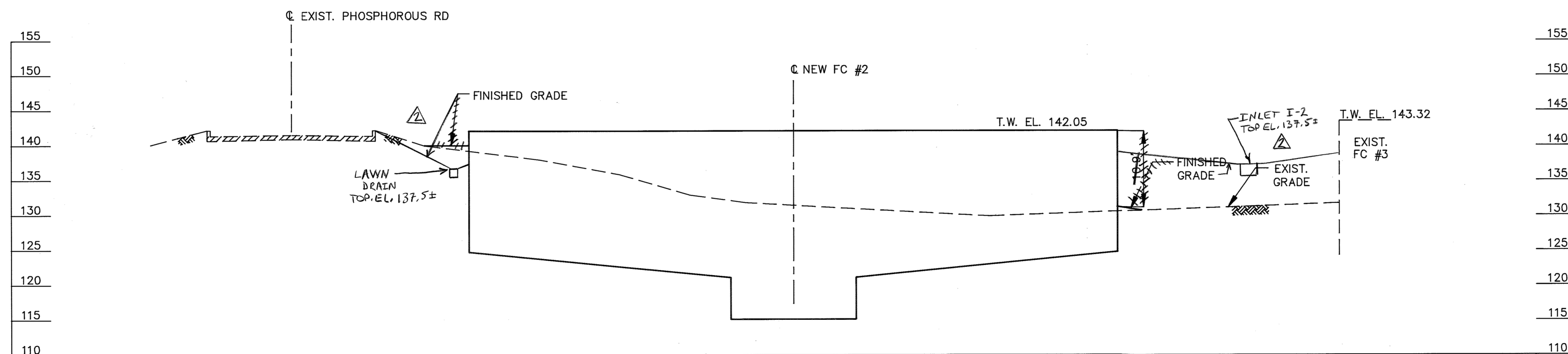


PROFILE 1
SCALE: HOR. 1"=10'-0"
VERT. 1"=10'-0"

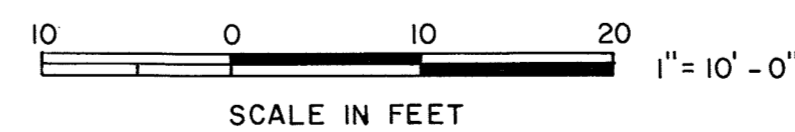
PROFILE 2
SCALE: HOR. 1"=10'-0"
VERT. 1"=10'-0"



PROFILE 3
SCALE: HOR. 1"=10'-0"
VERT. 1"=10'-0"



PROFILE 4
SCALE: HOR. 1"=10'-0"
VERT. 1"=10'-0"



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
Howard County Department of Public Works
James J. ... 11/25/91
DIRECTOR DATE
William B. Ray 11-25-91
CHIEF BUREAU OF ENGINEERING DATE

APPROVED: For Public Water and Public Sewerage Systems
Howard County Health Department
Joan ... 11-27-91
COUNTY HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
PARCEL A	8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning
James ... 12/9/91
DIRECTOR DATE
Anna ... 12/6/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

DEVELOPER'S CERTIFICATION
"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project."
I authorize periodic on-site inspection by the Howard County Soil Conservation District.
Robert ... 11-25-91
BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements
James ... 11/27/91
U.S. SOIL CONSERVATION SERVICE DATE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.
Approved: *John ...* Date: 11/27/91

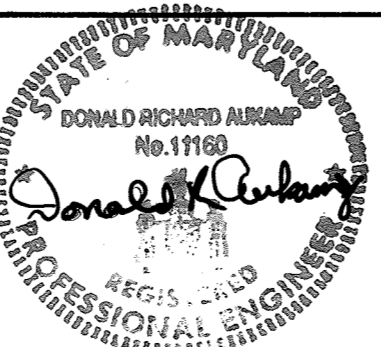
ENGINEER'S CERTIFICATION
I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.
Donald R. ... Date: NOV 5 1991

SUBDIVISION NAME LITTLE PATUXENT WWTP		SECT./AREA -	LOT/PARCEL # A
PLAT # RO L/F BLOCK # ZONE 423/516 24 M-2	TAX/ZONE MAP 47	ELEC.DIST. 6	CENSUS TR. 6064
WATER CODE C04		SEWER CODE 4020000	

01118 FILE: C:\LIPATZ\PROF1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
James ... 11/25/91
DIRECTOR OF PUBLIC WORKS DATE
John ... 11/25/91
CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE
William B. Ray 11-25-91
CHIEF, BUREAU OF ENGINEERING DATE
William B. Ray 11-25-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy
CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



DES: MCJ			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/4/91
	1	REVISED FOR BIDDING	3/5/92
DATE: 11-5-91	BY	NO.	REVISION
			DATE

CIVIL
REVISION TO SDP-78-55 & 89-62
SITE DEVELOPMENT PROFILES

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 16 OF 226
SD-8 OF 9
C-11

EROSION AND SEDIMENT CONTROL NOTES

- A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (992-2437)
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control substances are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:
 Total Area of Site 38.01 Acres
 Area Disturbed 2.72 Acres
 Area to be roofed or paved 9.26 Acres
 Area to be vegetatively stabilized 1.15 Acres
 Total Cut 42,000 Cu. yds.
 Total Fill 550 Cu. yds.
 Offsite waste/borrow area location to be determined during construction
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment controls must be provided, if deemed necessary by the Howard County DPW sediment control inspector.
- On all site with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seeded Preparation: Loosen upper three inches of soil by raking, disking, or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

- Preferred** - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq ft).
- Acceptable** - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding. Harrow or disk into upper three inches of soil.

Seeding - For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs per acre (.05 lbs/1000 sq ft) of weeping lovegrass. During the period October 16 thru February 28, protect site by: Option (1) 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redistributed where a short-term vegetative cover is needed.

Seeded Preparation: - Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

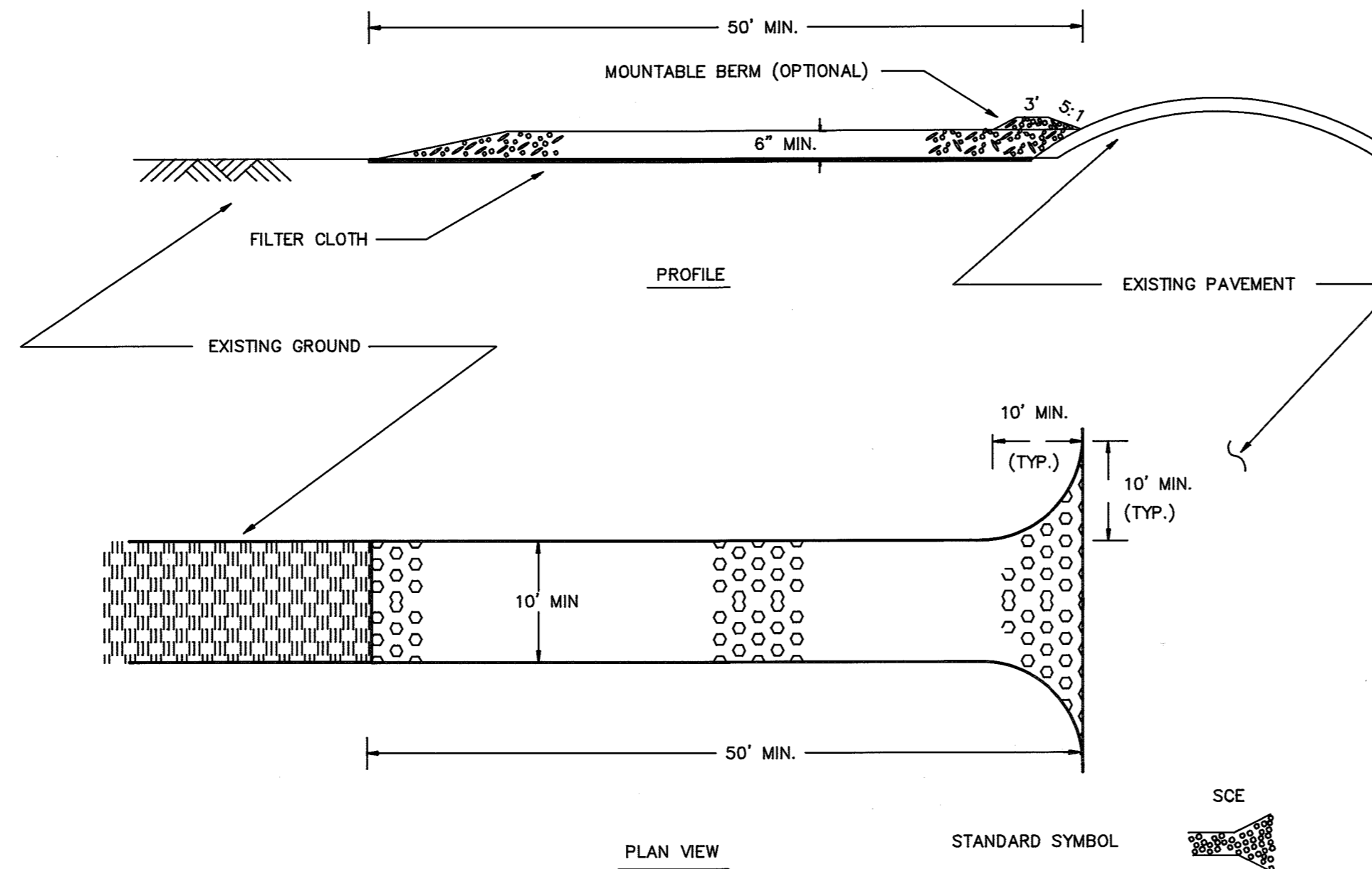
Soil Amendments: - Apply 60 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft).

Seeding - For periods March 1 thru April 30, and from August 15 thru October 15, seed with 2-1/2 bushel per acre of annual rye (3.2 lbs/1000 sq ft). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.07 lbs/1000sq ft). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL AND SEDIMENT CONTROL for rate and methods not covered.

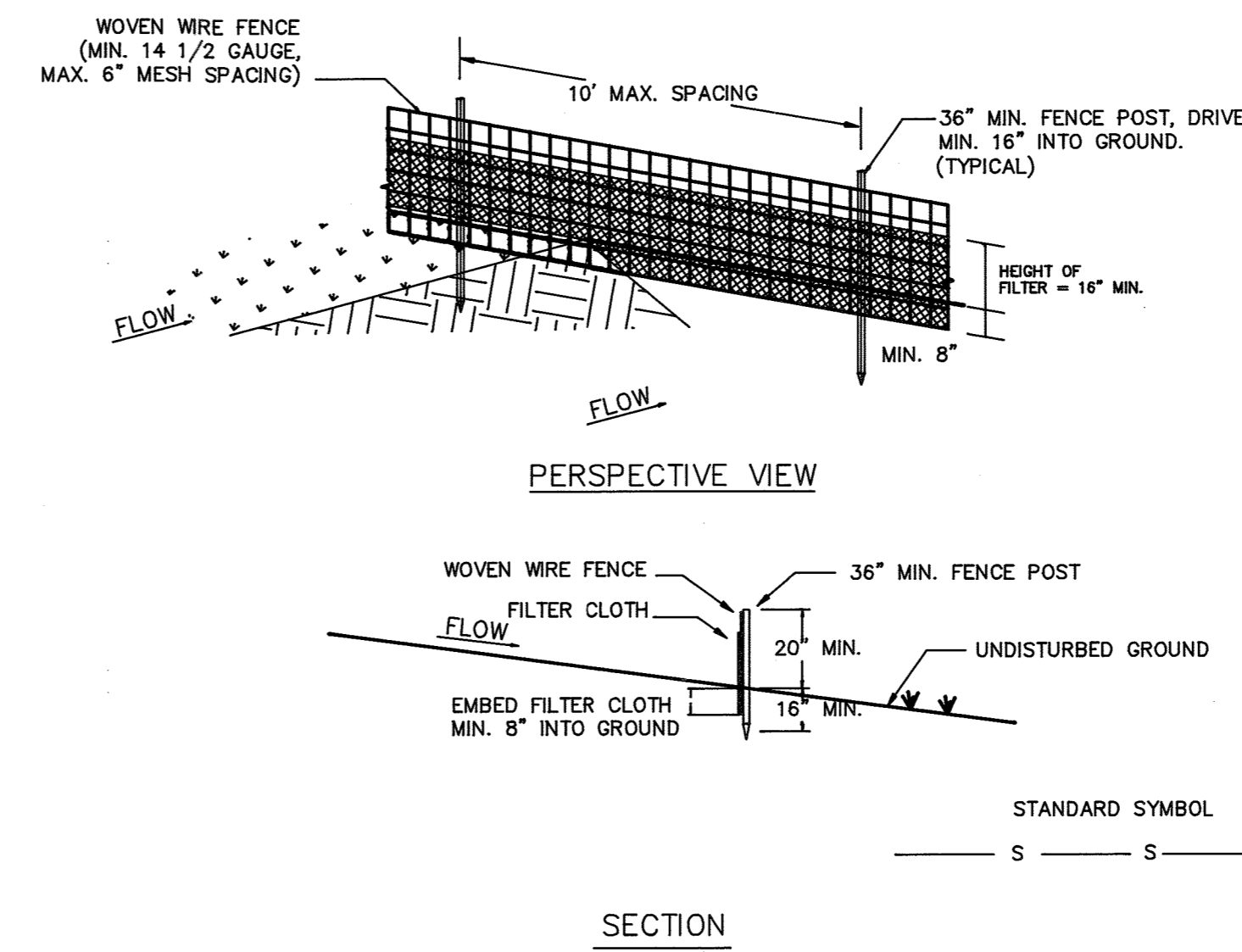
STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATIONS

- STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET.
- THICKNESS - NOT LESS THAN 6".
- WIDTH - TEN (10) FT. MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
- FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
- SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 3:1 SLOPE WILL BE PERMITTED.
- MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT DROPPED, SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
- WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

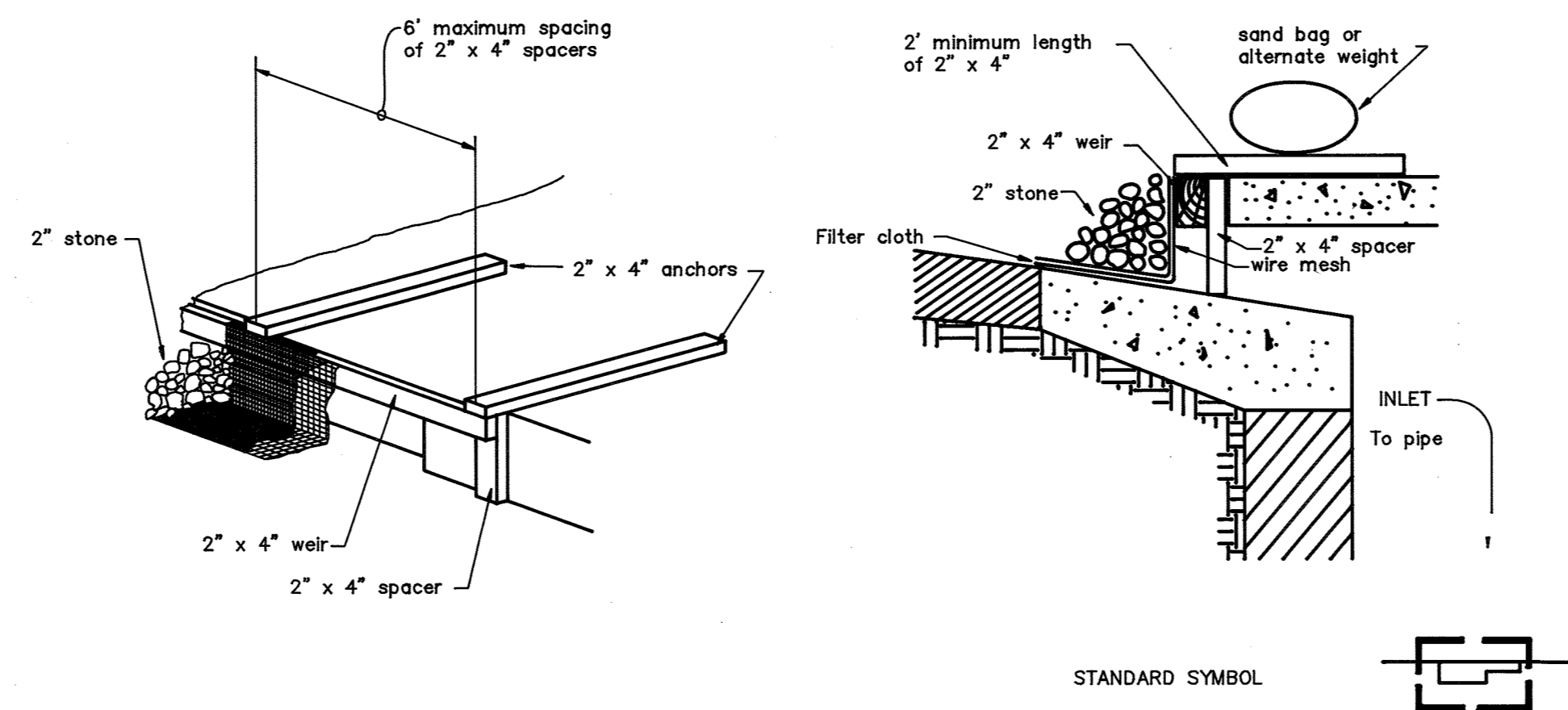
SILT FENCE



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

- WOVEN WIRE TO BE FASTENED SECURELY TO FENCE POST WITH TIES OR STAPLES. POST: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.
- FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MIDSECTION. FENCE: WOVEN WIRE, 14 1/2 Ga. 6" MAX MESH OPENING.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. FILTER CLOTH: FILTER X, MIRAFI 100X, STABILUNKA T140N OR APPROVED EQUAL. PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

CURB INLET PROTECTION DETAIL



APPROVED: For Public Water and Public Sewerage, Storm Drainage Systems and Public Roads
 Howard County Department of Public Works
 Director: James J. O'Hara DATE: 11/25/91
 Chief Bureau of Engineering: William E. Peden DATE: 11-25-91

APPROVED: For Public Water and Public Sewerage Systems
 Howard County Health Department
 County Health Officer: James J. O'Hara DATE: 11-27-91

ADDRESS CHART
 LOT NUMBER: PARCEL A STREET ADDRESS: 8900 GREENWOOD PLACE

APPROVED: Howard County Dept. of Planning and Zoning
 Director: James J. O'Hara DATE: 12/9/91
 Chief, Division of Community Planning and Land Development: Emma H. Homan DATE: 12/6/91

DEVELOPER'S CERTIFICATION
 "I/we certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project." I authorize periodic on-site inspection by the Howard County Soil Conservation District.
 Director: James J. O'Hara DATE: 11-25-91
 Bureau of Engineering: Department of Public Works

Reviewed for Howard County S.C.D. and meets technical requirements
 U.S. SOIL CONSERVATION SERVICE: James J. O'Hara DATE: 11/27/91

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.
 Approved: Cliff V. Allig DATE: 11/27/91

ENGINEER'S CERTIFICATION
 I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.
 Donald R. Anthony DATE: NOV 5 1991

SUBDIVISION NAME LITTLE PATUXENT WWTP		SECT./AREA -	LOT/PARCEL # A
PLAT # RO L/F 423/216 618/537	BLOCK # 24	ZONE M-2	TAX/ZONE MAP 47
WATER CODE CO4		SEWER CODE 4020000	ELEC.DIST. 6
		GENUS TR. 6084	

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director: James J. O'Hara DATE: 11/25/91
 Chief Bureau of Engineering: William E. Peden DATE: 11-25-91
 Chief Bureau of Environmental Services: John J. O'Hara DATE: 11-25-91
 Chief Utility Design Division: Oly DeLina DATE: 11-25-91

M&E Metcalf & Eddy
 ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland
 CCJM

STATE OF MARYLAND
 DONALD RICHARD AUKAMP
 No. 11520
 DONALD R. ANTHONY
 PROFESSIONAL ENGINEER
 No. 11520

DES: MCJ			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/19/91
	1	REVISED FOR BIDDING	3/5/92
DATE: 11-5-91	BY	NO.	REVISION

CIVIL
 REVISION TO SDP-78-55 & 89-62
 EROSION & SEDIMENT CONTROL NOTES
 AND DETAILS

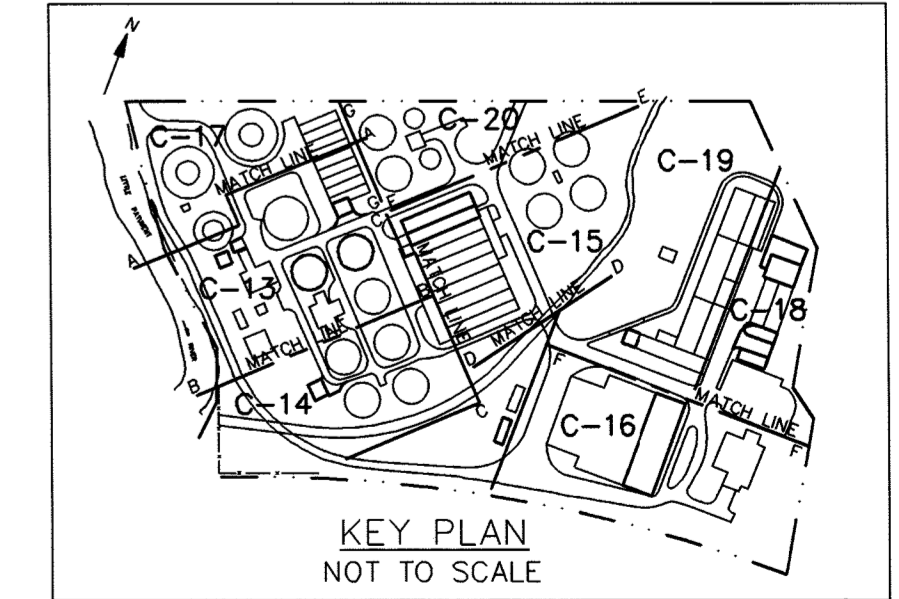
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 17 OF 226
 SD-9 OF 9
 C-12

FILE: E:\JLB\SEDICNTRL

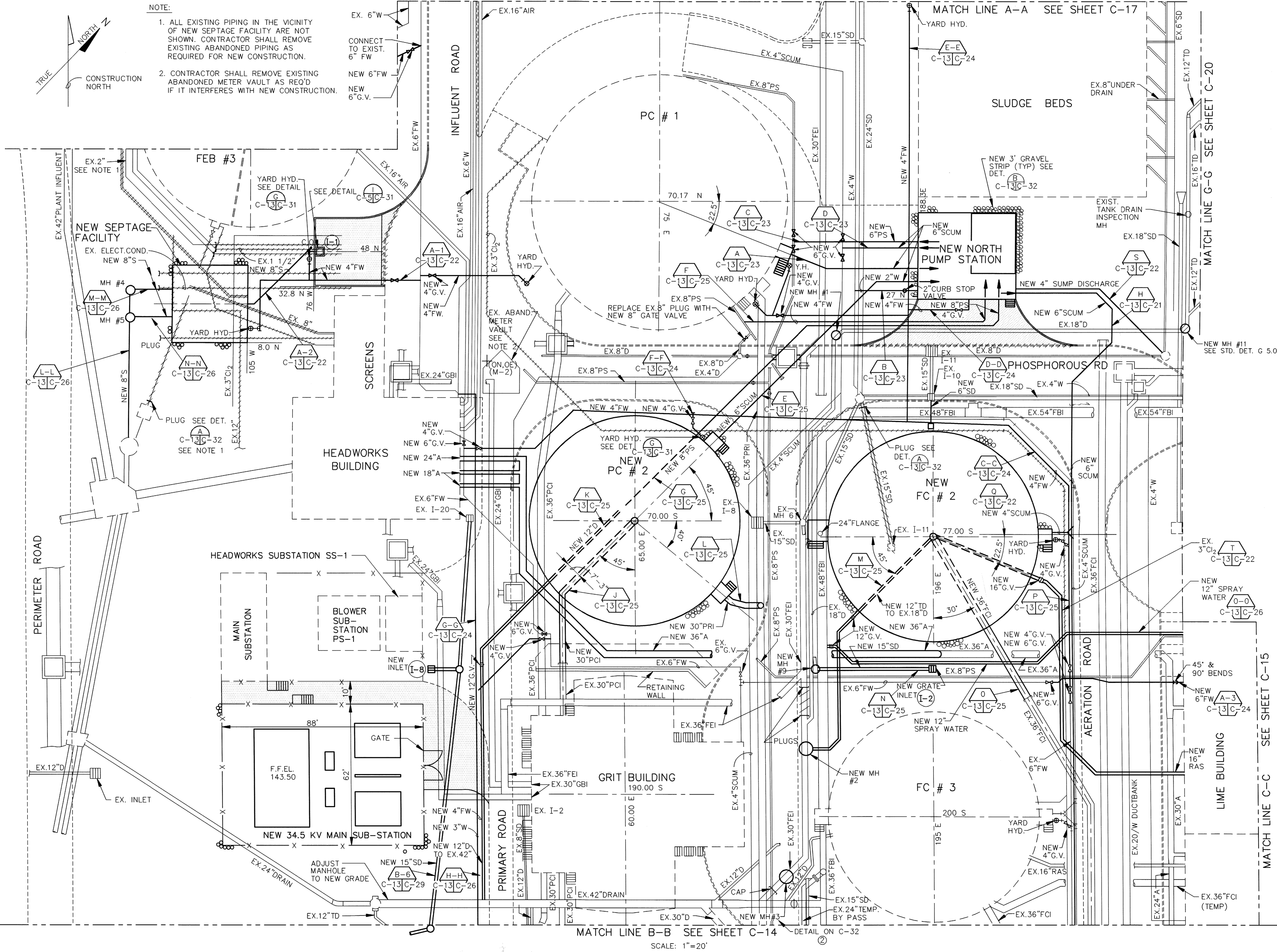
PIPING LOCATION SCHEDULE

PROFILE/DESIGNATION	STATION	EAST	WEST	NORTH	SOUTH
A					
45' BEND	0+05	143.00		70.17	
45' BEND	0+46	173.00		40.00	
B					
90' BEND	0+43	187.00		43.00	
E					
45' BEND	0+96	170.00		34.00	
F					
45' BEND	1+15	218.00		16.50	
45' BEND	1+17	219.00		17.50	
G					
45' BEND	1+12	140.50		15.00	
45' BEND	1+93	222.50		15.00	
45' BEND	1+96	225.00		17.00	
H					
45' BEND	0+35	267.00		29.00	
45' BEND	0+45	274.00		22.00	
J					
45' BEND	0+41	33.00		103.00	
K					
45' BEND	1+10		2.50	127.50	
P					
45' BEND	0+04	252.00		80.00	
"Y"	0+08	256.00		82.50	
R					
45' BEND	0+15	24.00		116.00	
45' BEND	0+29	14.00		106.00	
22.5' 11 1/4" BEND	0+97,1+04	14.00		38.00	
11 1/4' 22.5" BEND	1+20,1+27	30.00		14.00	
S					
45' BEND	0+37	269.00		31.00	
C-C					
45' BEND	0+06		5.00	17.00	
45' BEND	0+26	15.00		17.00	
45' BEND	0+31	18.50		13.00	
CROSS	1+03	91.00		13.00	
"T"	1+97	185.00		13.00	
"T"	2+23	211.00		13.00	
45' BEND	2+60	248.00		13.00	
45' BEND	2+70	255.50		21.00	
F-F					
45' BEND	0+06	91.00		30.00	
CROSS	0+22	91.00		13.00	
45' BEND	0+34	91.00		02.00	
G-G					
90' BEND	0+08	8.00	5.00	15.00	
H-H					
45' BEND	0+05		4.00	121.00	
P. O-O					
45' BEND	0+88	300.00		115.00	
A-1					
90' BEND	0+05		99.50	15.00	
90' BEND	0+27		99.50	35.50	
"T"	0+48		78.00	35.50	
A-2					
45' BEND	0+03	102.00	25.00		
"Y"	0+36	79.00	48.00		
I-I					
45' BEND	0+43.5	14.00		144.50	
J-J					
45' BEND	0+20	12.50		141.00	
T					
22.5' BEND	0+73	264.00		106.00	
45' BEND	0+87	278.00		106.00	
45' BEND	0+97	285.00		114.00	
45' BEND	1+60	285.00		176.50	
45' BEND	1+70	291.00		183.00	
M					
45' BEND	0+57	153.00		118.50	
45' BEND	0+93	153.00		154.50	
45' BEND	0+99	149.00		159.00	



20 0 20 40 1"=20'-0"
SCALE IN FEET

- NOTE:
1. ALL EXISTING PIPING IN THE VICINITY OF NEW SEPTAGE FACILITY ARE NOT SHOWN. CONTRACTOR SHALL REMOVE EXISTING ABANDONED PIPING AS REQUIRED FOR NEW CONSTRUCTION.
 2. CONTRACTOR SHALL REMOVE EXISTING ABANDONED METER VAULT AS REQ'D IF IT INTERFERES WITH NEW CONSTRUCTION.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Neil* DATE: 5/7/96
Chief, Bureau of Engineering: *Paul J. Brown* DATE: 5/7/96
Chief, Bureau of Environmental Services: *John J. O'Neil* DATE: 5/7/96
Chief, Utility Design Division: *Paul J. Brown* DATE: 5-7-96

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
SILVER SPRING, MARYLAND

STATE OF MARYLAND
JOHN W. WARREN, GOVERNOR
No. 15145
John W. Warren

DES:	NB				
DRN:	LB				
CHK:	MCJ				
DATE:	12/2/91				
BY:	NO.				
REVISION					
DATE					

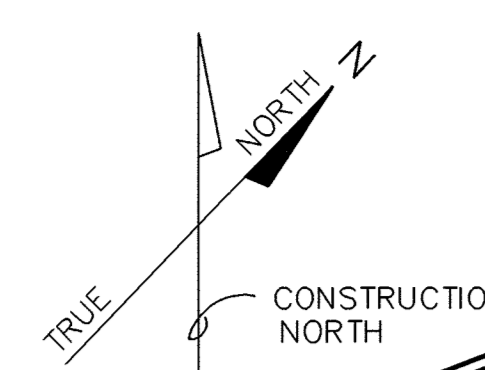
CIVIL

YARD PIPING & UNDERGROUND UTILITIES PLAN I

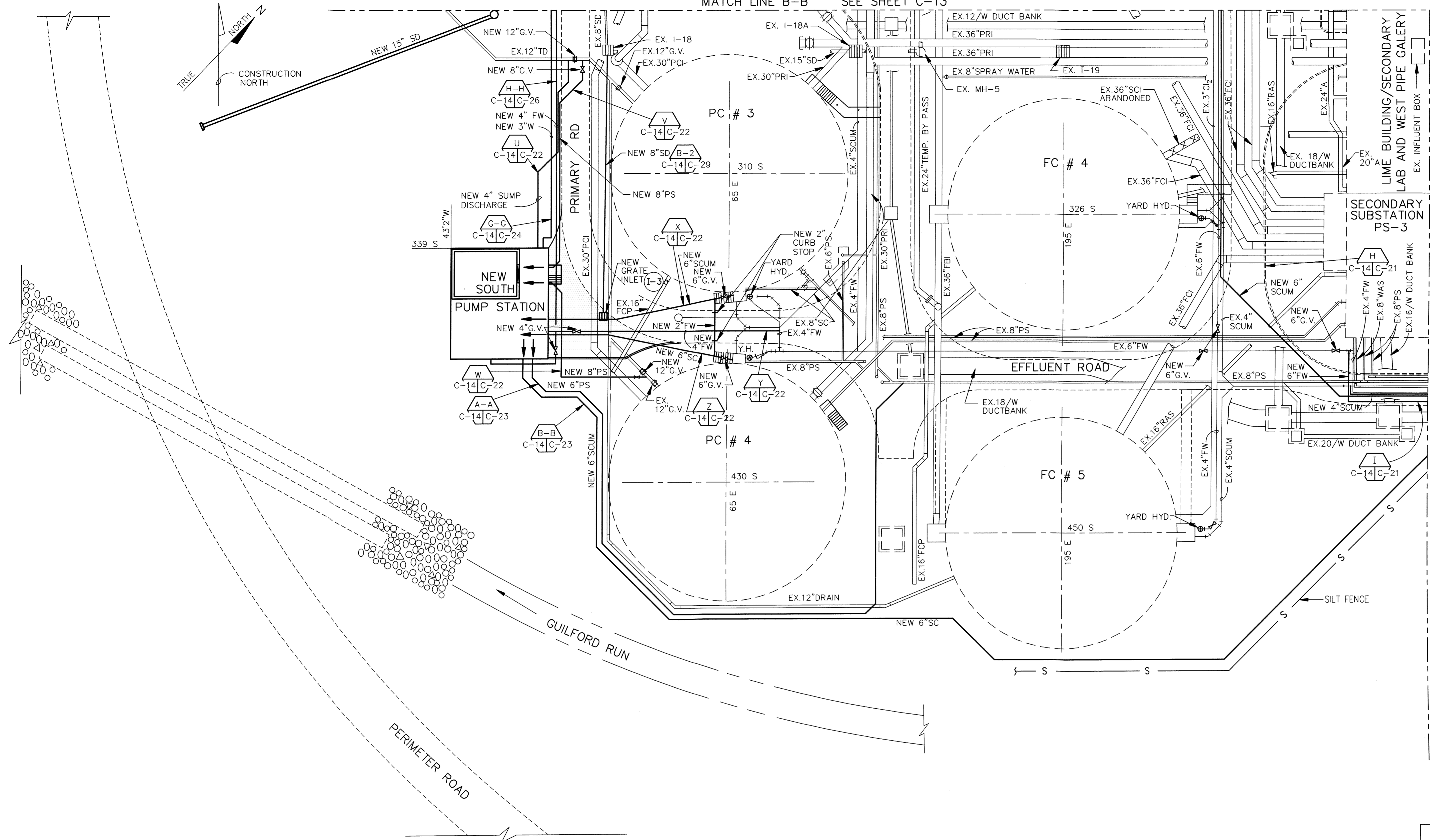
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO.5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 18 OF 226
C-13A

FILE: C:\PROJ\LPAT\LPBUILT\PC-13 SCALE: 1"=20'

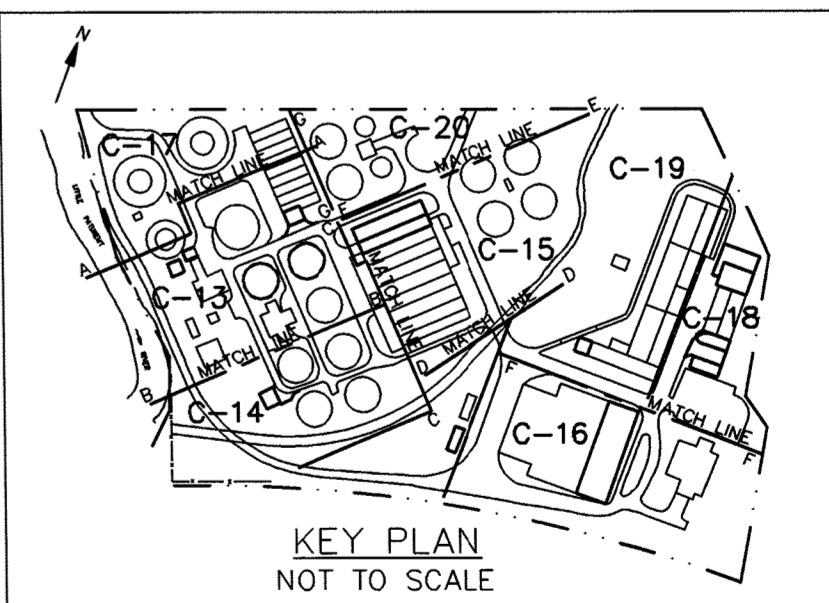


MATCH LINE B-B SEE SHEET C-13

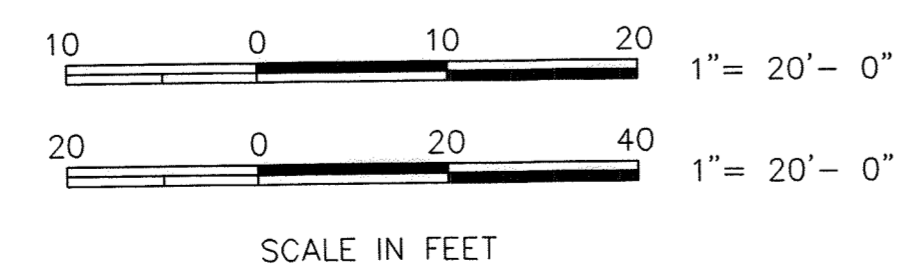


PIPING LOCATION SCHEDULE

PROFILE/DESIGNATION	STATION	EAST	WEST	NORTH	SOUTH
A-A					
45° BEND	0+07		10.50		390.00
45° BEND	0+14		5.00		395.00
45° BEND	0+24	8.00			395.00
45° BEND	0+37	17.00			404.00
45° BEND	0+87	17.00			455.00
45° BEND	1+26	44.50			482.50
45° BEND	2+01	119.00			482.50
45° BEND	2+06	123.00			479.00
45° BEND	3+04	123.00			402.50
P. B-B					
45° BEND	0+07		14.00		390.00
45° BEND	0+17		7.00		397.50
45° BEND	0+26	7.00			397.50
45° BEND	0+36	14.50			405.00
45° BEND	0+86	14.50			456.00
45° BEND	1+26	43.00			484.50
45° BEND	2+36	153.00			484.50
45° BEND	2+58	170.00			501.00
45° BEND	3+46.5	258.00			501.00
G-G					
90° BEND	3+30		3.50		335.00
90° BEND	3+34		6.50		335.00
H-H					
90° BEND	2+77		2.00		384.00
90° BEND	3+04		27.00		384.00
U					
45° BEND	0+29		9.00		310.00
V					
45° BEND	0+20		2.50		347.00
45° BEND	0+50		1.00		345.00
45° BEND	0+46		1.00		305.00
W					
45° BEND	0+20		4.00		353.00
45° BEND	0+70		1.00		356.00
90° BEND	0+38		1.00		390.00
H					
45° BEND	4+52	273.50			384.00
45° BEND	4+72	288.00			398.00
I					
45° BEND	0+70	301.00			396.00
45° BEND	0+12	305.00			400.00



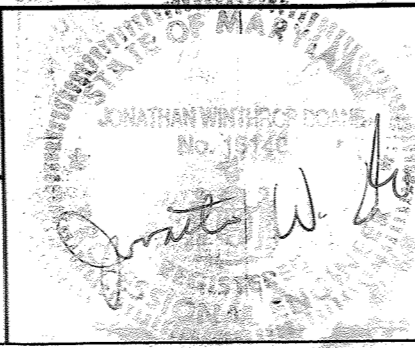
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C:\PROJECTS\BUILT\PC-14 SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

M&E Metcalf & Eddy
ENVIRONMENTAL ENGINEERS & SCIENTISTS
CCJM SILVER SPRING, MARYLAND

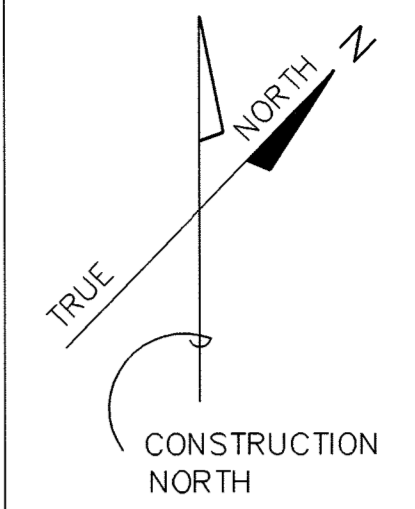
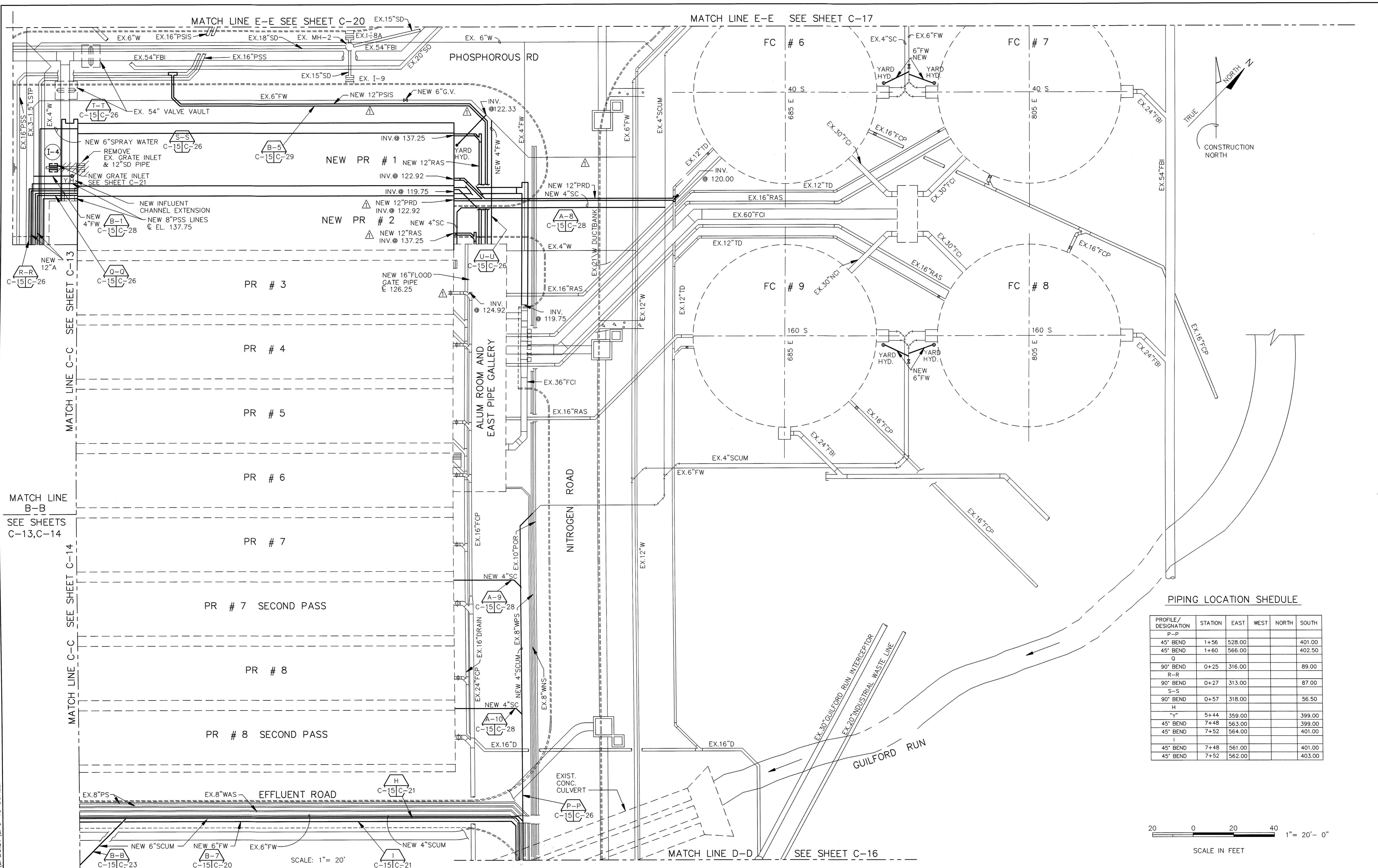


DES:	NB				
DRN:	LB				
CHK:	MCJ	CCJM	2	RECORD DRAWING	1/14/95
DATE:	12/2/91		1	REVISED FOR BIDDING	3/5/92
BY:	NO.			REVISION	DATE

CIVIL
YARD PIPING &
UNDERGROUND UTILITIES PLAN II

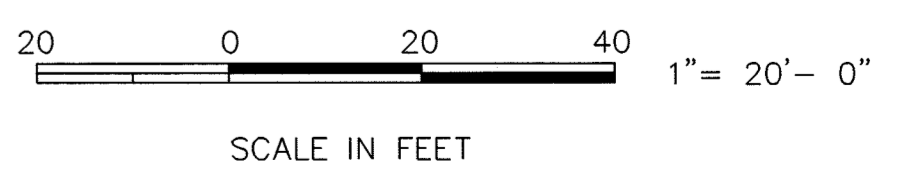
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 19 OF 226
C-14A



PIPING LOCATION SCHEDULE

PROFILE/DESIGNATION	STATION	EAST	WEST	NORTH	SOUTH
P-P					
45° BEND	1+56	528.00			401.00
45° BEND	1+60	566.00			402.50
Q					
90° BEND	0+25	316.00			89.00
R-R					
90° BEND	0+27	313.00			87.00
S-S					
90° BEND	0+57	318.00			56.50
H					
"Y"	5+44	359.00			399.00
45° BEND	7+48	563.00			399.00
45° BEND	7+52	564.00			401.00
I					
45° BEND	7+48	561.00			401.00
45° BEND	7+52	562.00			403.00



FILE: C:\PROJ\PLAT\BUILT\PC-15 SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 5/17/96
 Chief, Bureau of Engineering: *[Signature]* DATE: 5/7/96
 Chief, Bureau of Environmental Services: *[Signature]* DATE: 5/7/96

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
SILVER SPRING, MARYLAND

STATE OF MARYLAND
JONATHAN WHITFIELD GOVERNOR

DES: NB
 DRN: LB
 CHK: MCJ
 DATE: 12/2/91

BY	NO.	REVISION	DATE
CCJM	3	RECORD DRAWING	1/14/93
DZG	2	ADDENDUM #3	4/10/92
	1	REVISED FOR BIDDING	3/5/92

CIVIL

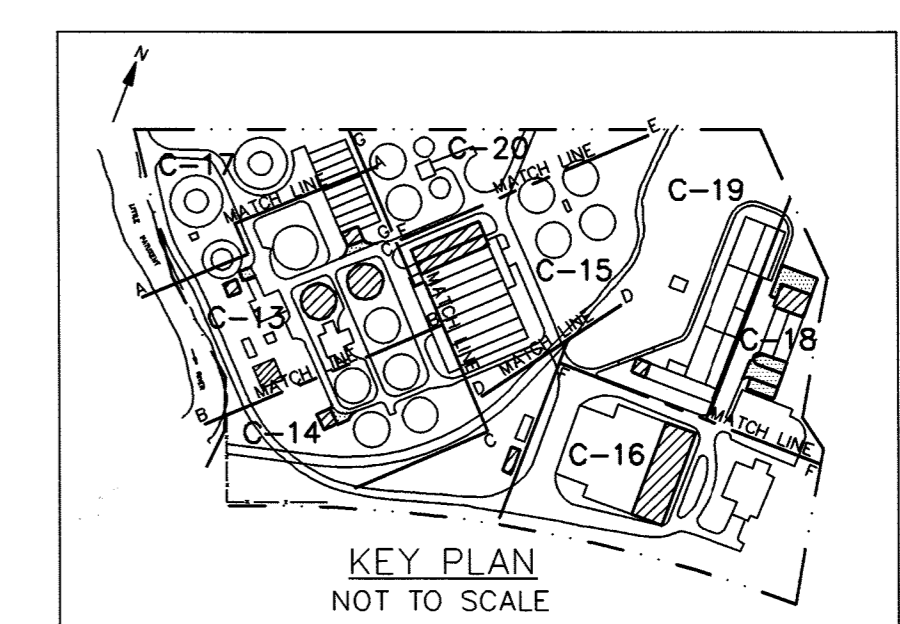
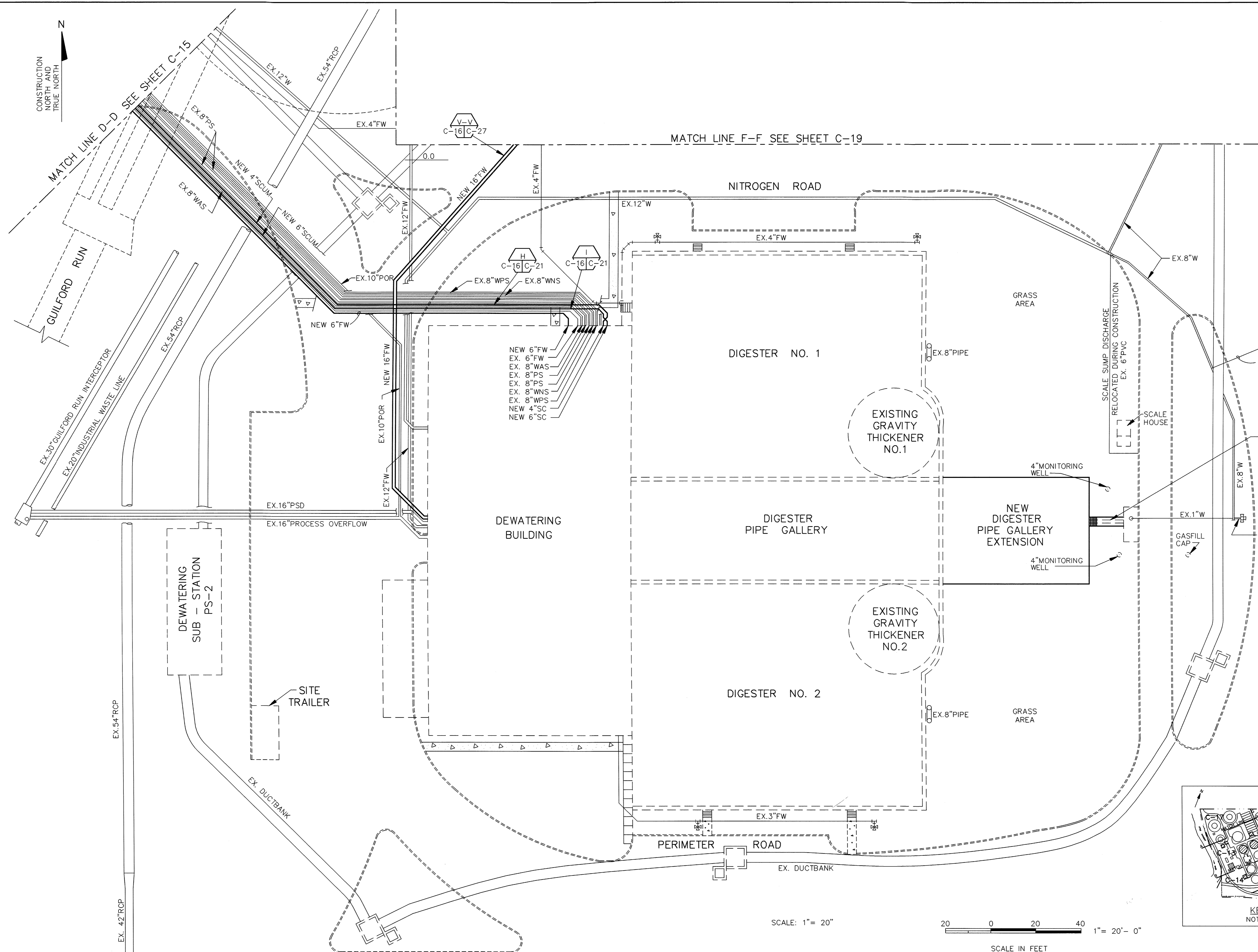
YARD PIPING & UNDERGROUND UTILITIES PLAN III

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO.5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 20 OF 226
 C-15A

PIPING LOCATION SCHEDULE

PROFILE/DESIGNATION	STATION	EAST	WEST	NORTH	SOUTH
V-V					
45° BEND	0+02	3.5			160.0
45° BEND	0+20		10.0		146.5
45° BEND	1+36		10.0		54.0
H					
45° BEND	8+95		30.0		56.0
45° BEND	10+03	82.0			56.0
45° BEND	10+08	84.0			56.0
I					
45° BEND	5+26	81.5			58.0
45° BEND	5+31	82.5			59.0
45° BEND	4+18		40.0		58.0



SCALE: 1" = 20"
 20 0 20 40
 SCALE IN FEET 1" = 20' - 0"

FILE: C:\LTPA\LPBUILT\LPC-16 SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James A. Lewis 5/1/96
 DIRECTOR OF PUBLIC WORKS DATE

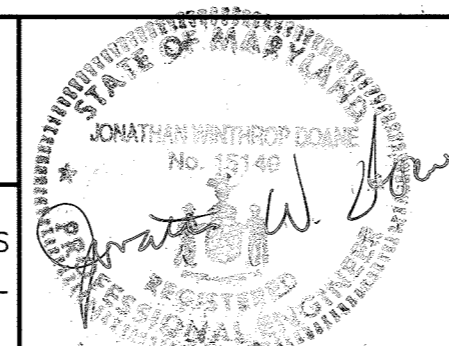
John J. O'Hara 5/1/96
 CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE

Richard J. Brown 5/2/96
 CHIEF, BUREAU OF ENGINEERING DATE

Chris D. ... 5-7-96
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 SILVER SPRING, MARYLAND



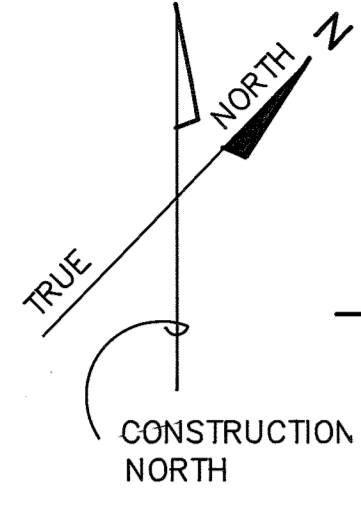
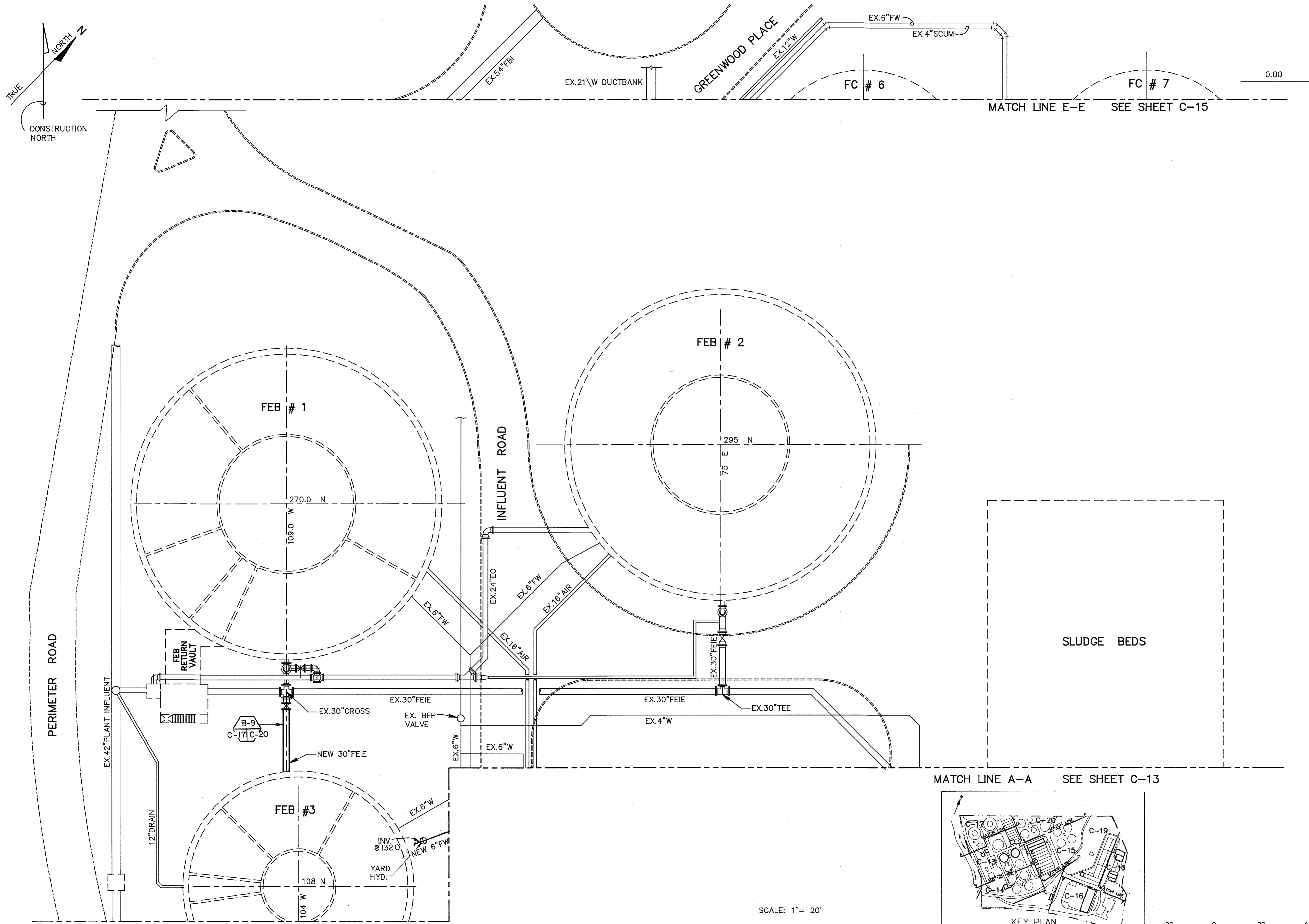
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DRN:	LB				
CHK:	MCJ	CCJM	2	RECORD DRAWING	1/14/99
DATE:	12/2/91	BY	NO.	1	REVISOR
					DATE
					3/5/92

CIVIL

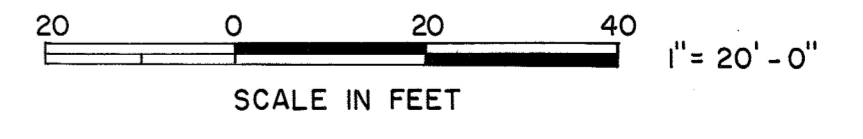
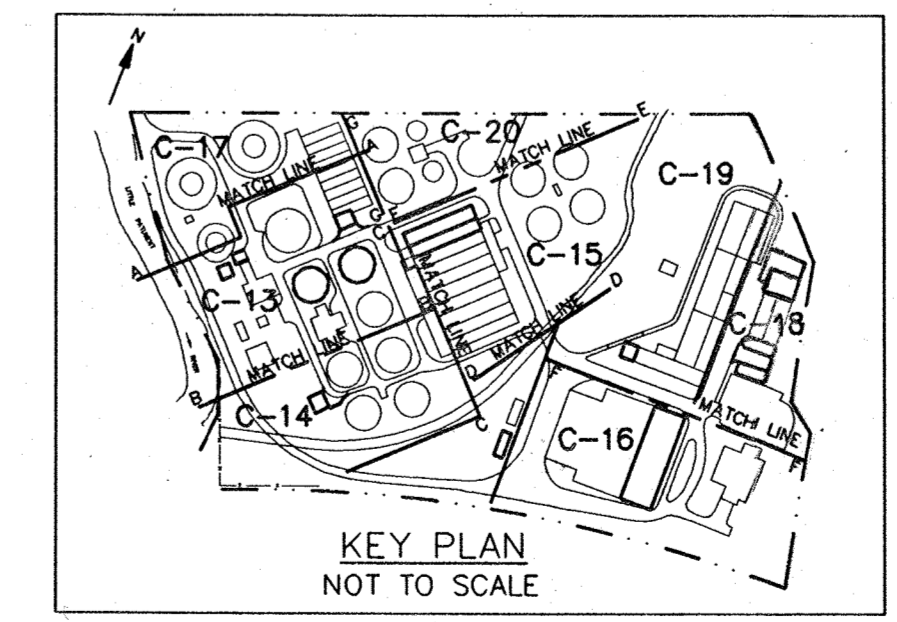
YARD PIPING & UNDERGROUND UTILITIES PLAN IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 21 OF 226
 C-16A



MATCH LINE A-A SEE SHEET C-13

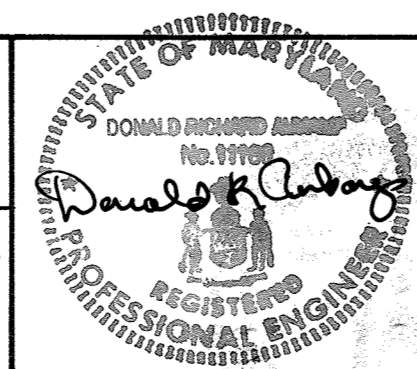


SCALE: 1" = 20'

FILE: C:\LTPATZ\LPAT1

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
DIRECTOR OF PUBLIC WORKS <i>[Signature]</i>	DATE: 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES <i>[Signature]</i>	DATE: 12/9/91
CHIEF, BUREAU OF ENGINEERING <i>[Signature]</i>	DATE: 12/9/91
CHIEF, UTILITY DESIGN DIVISION <i>[Signature]</i>	DATE: 12/9/91

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland

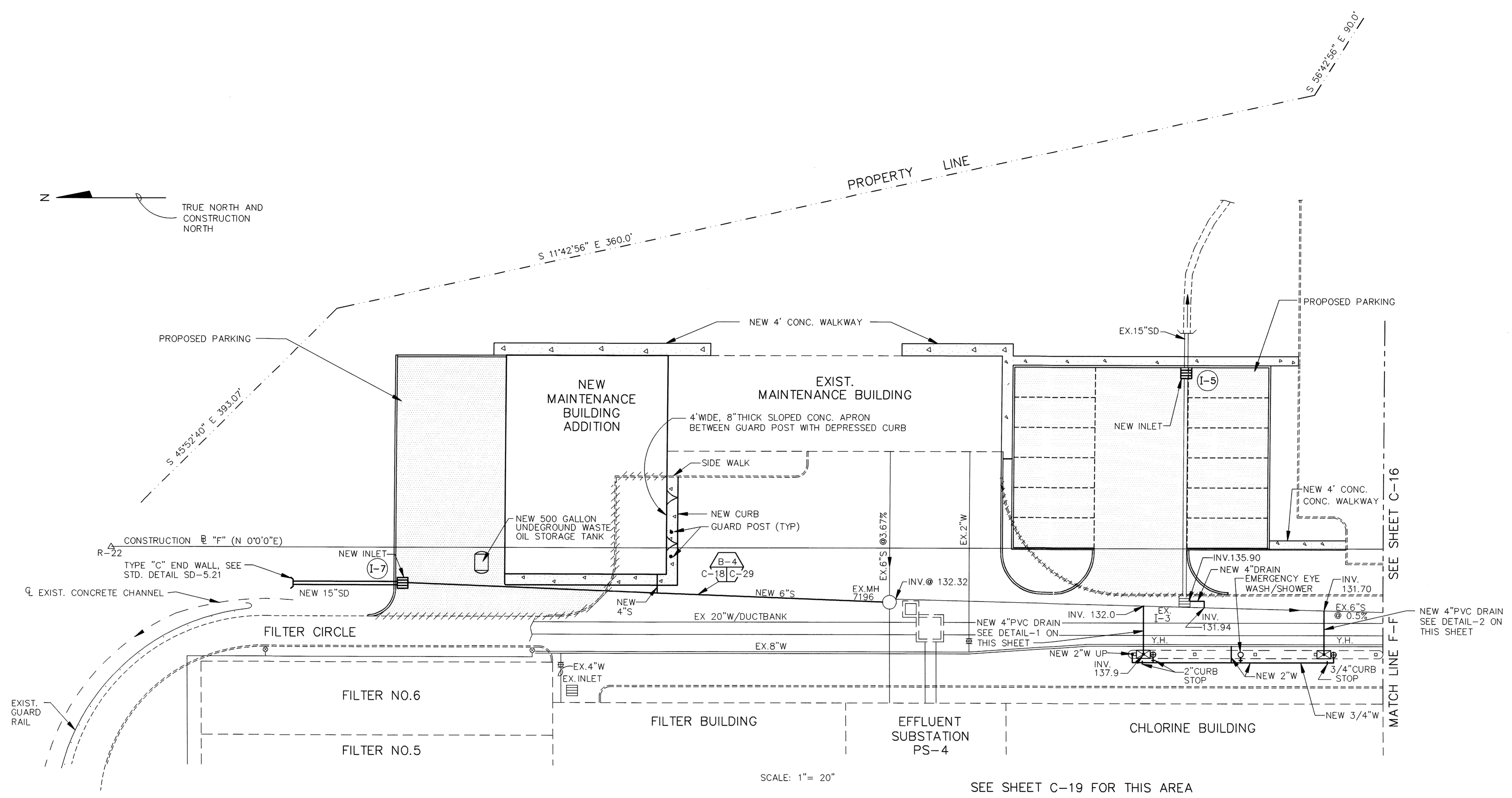
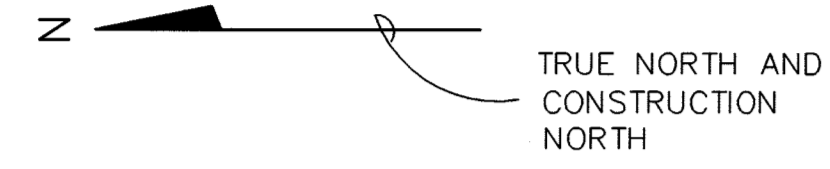


DES:	NB			
DRN:	LB			
CHK:	MCJ	CCJM	2	RECORD DRAWING
DATE:	12/2/91	BY	NO.	REVISION
				1
				REVISED FOR BIDDING
				3/5/92
				DATE

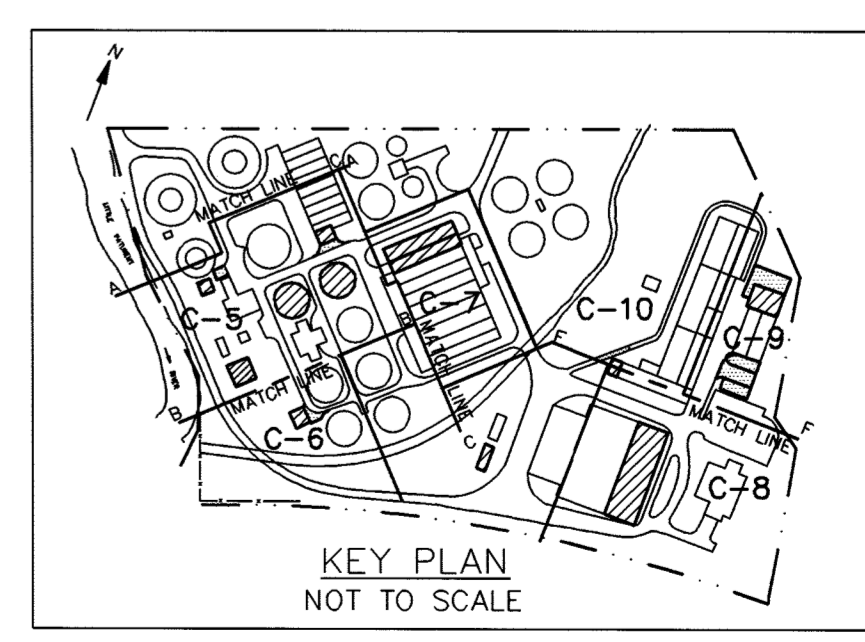
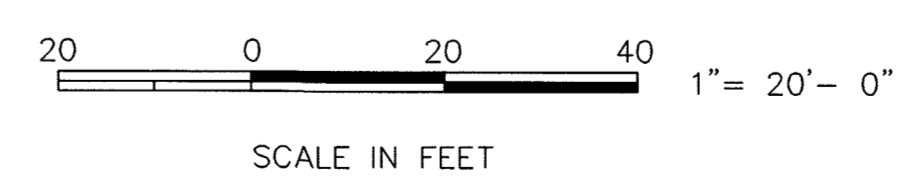
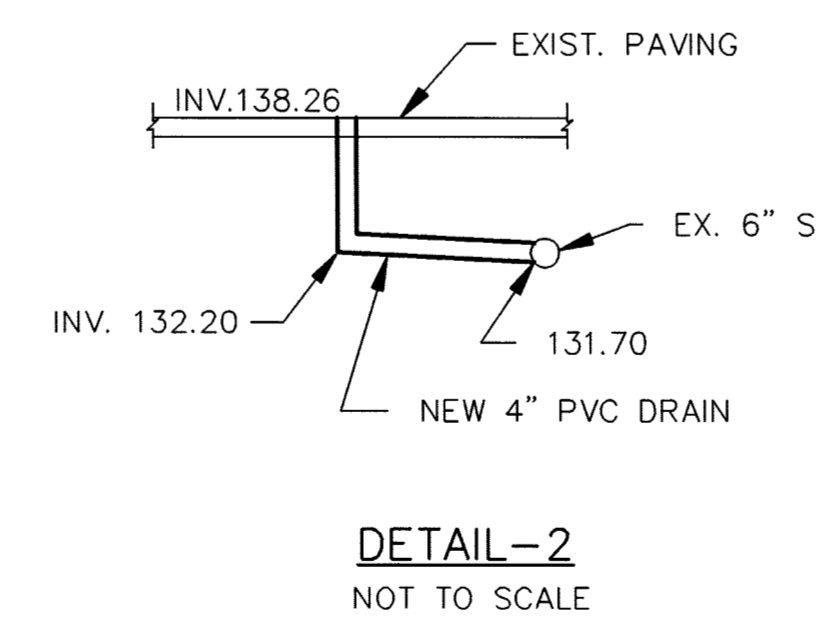
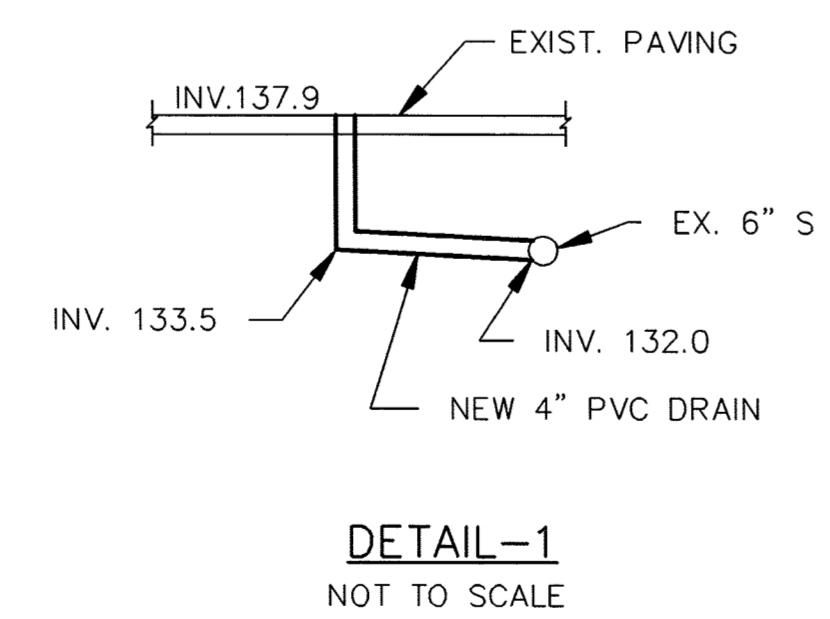
YARD PIPING & UNDERGROUND UTILITIES PLAN V

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 22 OF 226
C-17



SCALE: 1" = 20'
SEE SHEET C-19 FOR THIS AREA



FILE: C:\PROJ\UTPAT\BUILT\PC-18 SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. Lawrence
DIRECTOR OF PUBLIC WORKS
DATE: 5/1/96

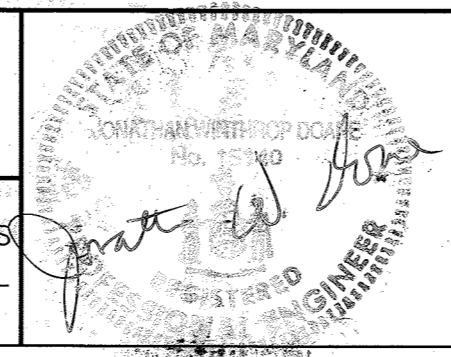
Paul J. Sporn
CHIEF, BUREAU OF ENGINEERING
DATE: 5/1/96

John J. Lawrence
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 5/1/96

John J. Lawrence
CHIEF, UTILITY DESIGN DIVISION
DATE: 5/1/96

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
SILVER SPRING, MARYLAND



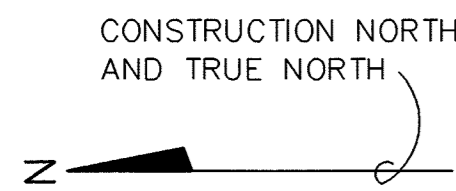
DES:	NB				
DRN:	LB				
CHK:	MCJ	CCJM	2	RECORD DRAWING	1/14/95
			1	REVISED FOR BIDDING	3/5/92
DATE:	12/2/91	BY	NO.	REVISION	DATE

CIVIL

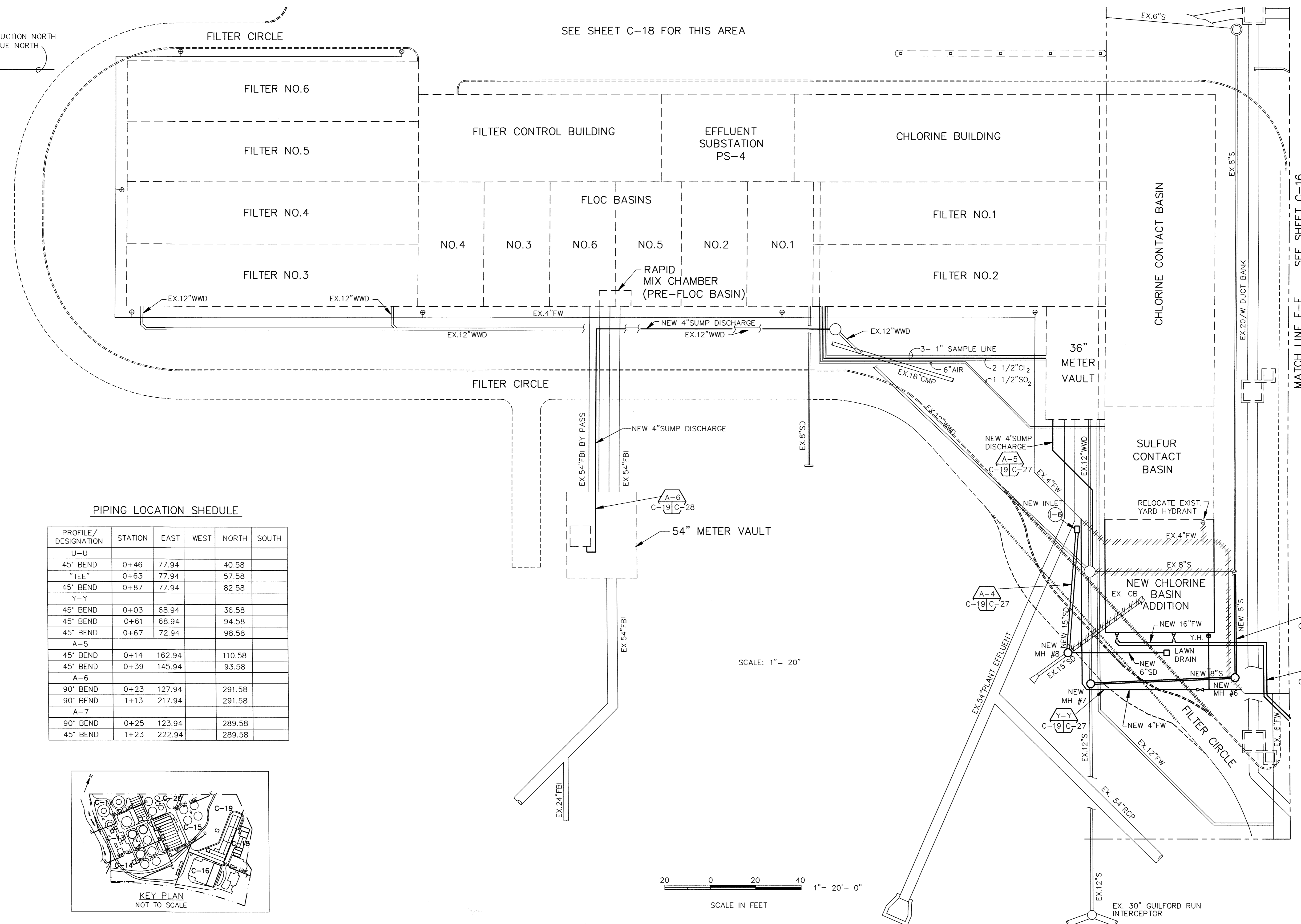
YARD PIPING & UNDERGROUND UTILITIES PLAN VI

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 23 OF 226
C-18A

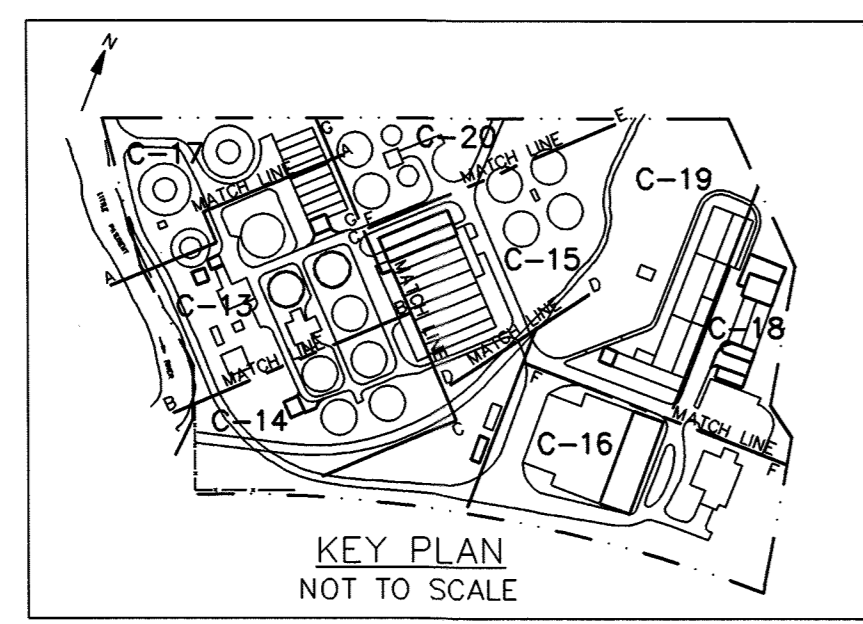


SEE SHEET C-18 FOR THIS AREA

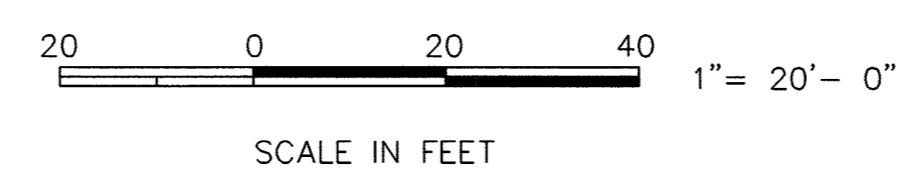


PIPING LOCATION SCHEDULE

PROFILE/DESIGNATION	STATION	EAST	WEST	NORTH	SOUTH
U-U					
45° BEND	0+46	77.94		40.58	
"TEE"	0+63	77.94		57.58	
45° BEND	0+87	77.94		82.58	
Y-Y					
45° BEND	0+03	68.94		36.58	
45° BEND	0+61	68.94		94.58	
45° BEND	0+67	72.94		98.58	
A-5					
45° BEND	0+14	162.94		110.58	
45° BEND	0+39	145.94		93.58	
A-6					
90° BEND	0+23	127.94		291.58	
90° BEND	1+13	217.94		291.58	
A-7					
90° BEND	0+25	123.94		289.58	
45° BEND	1+23	222.94		289.58	



SCALE: 1" = 20"



FILE: C:\PROJ\TRAT\LPBUIL\PC-19 SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hare 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

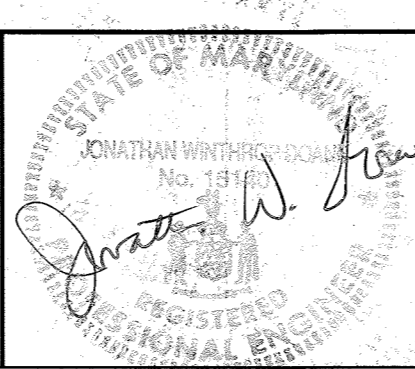
Paul H. Johnson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Debra 5-7-96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Debra 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
SILVER SPRING, MARYLAND



DES:	NB			
DRN:	LB			
CHK:	MCJ	CCJM	2	RECORD DRAWING
DATE:	12/2/91		1	REVISED FOR BIDDING
BY:	NO.			REVISION
				DATE

CIVIL

YARD PIPING &
UNDERGROUND UTILITIES PLAN VII

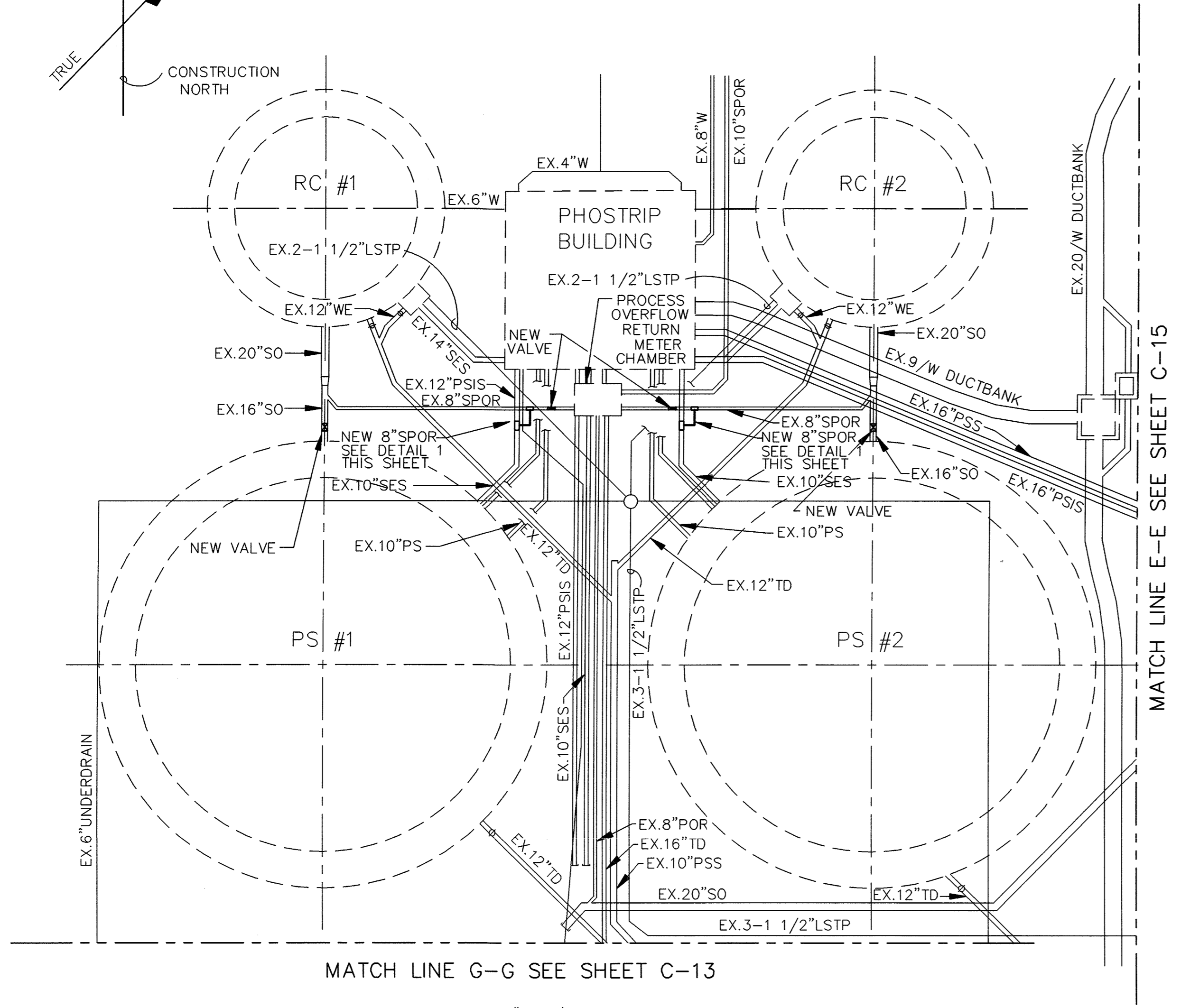
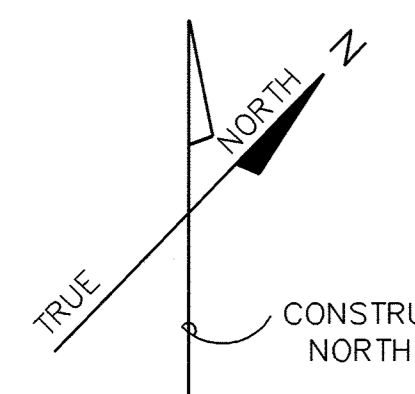
LITTLE PATUXENT WASTEWATER TREATMENT PLANT

LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

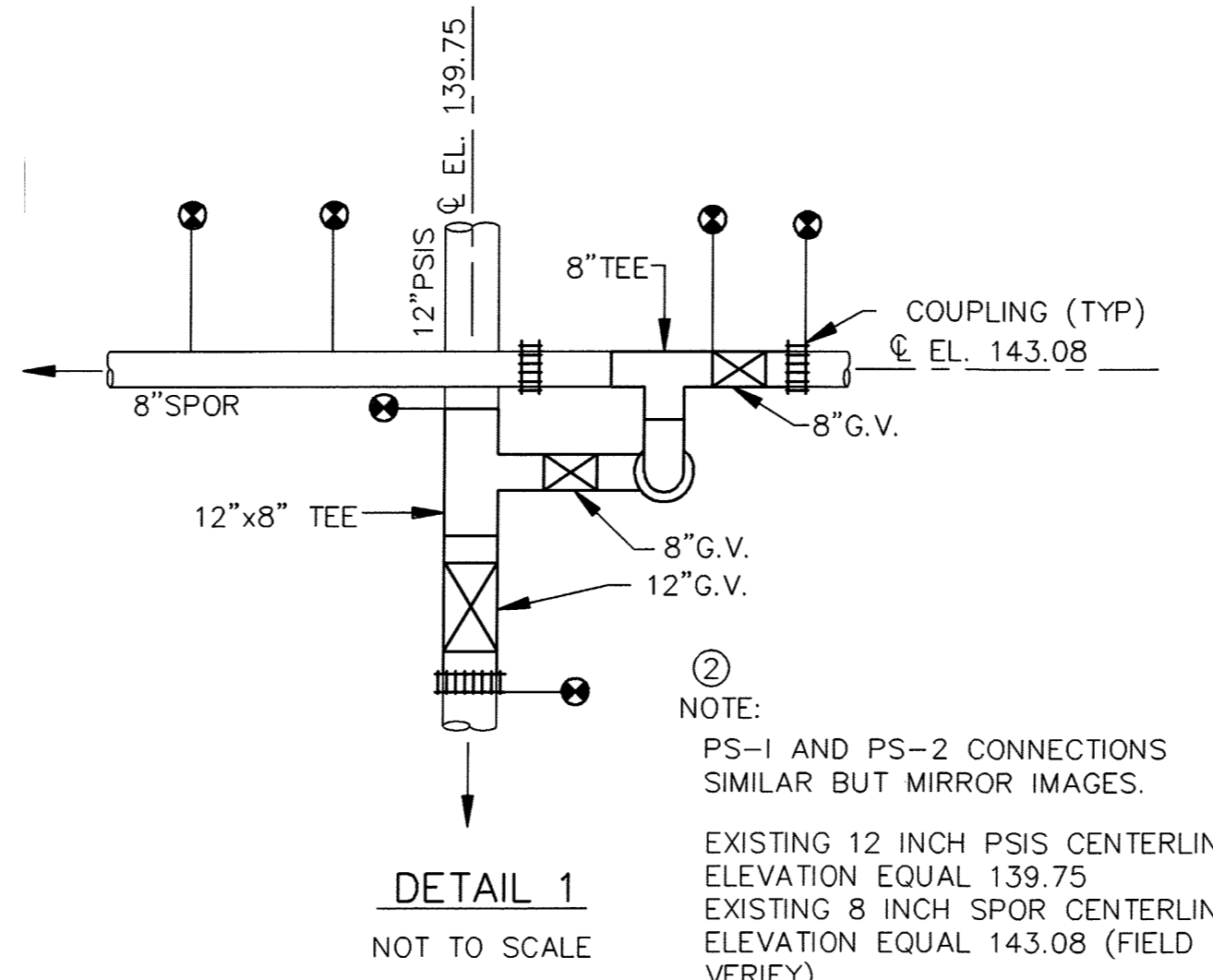
SHEET 24 OF 226

C-19A



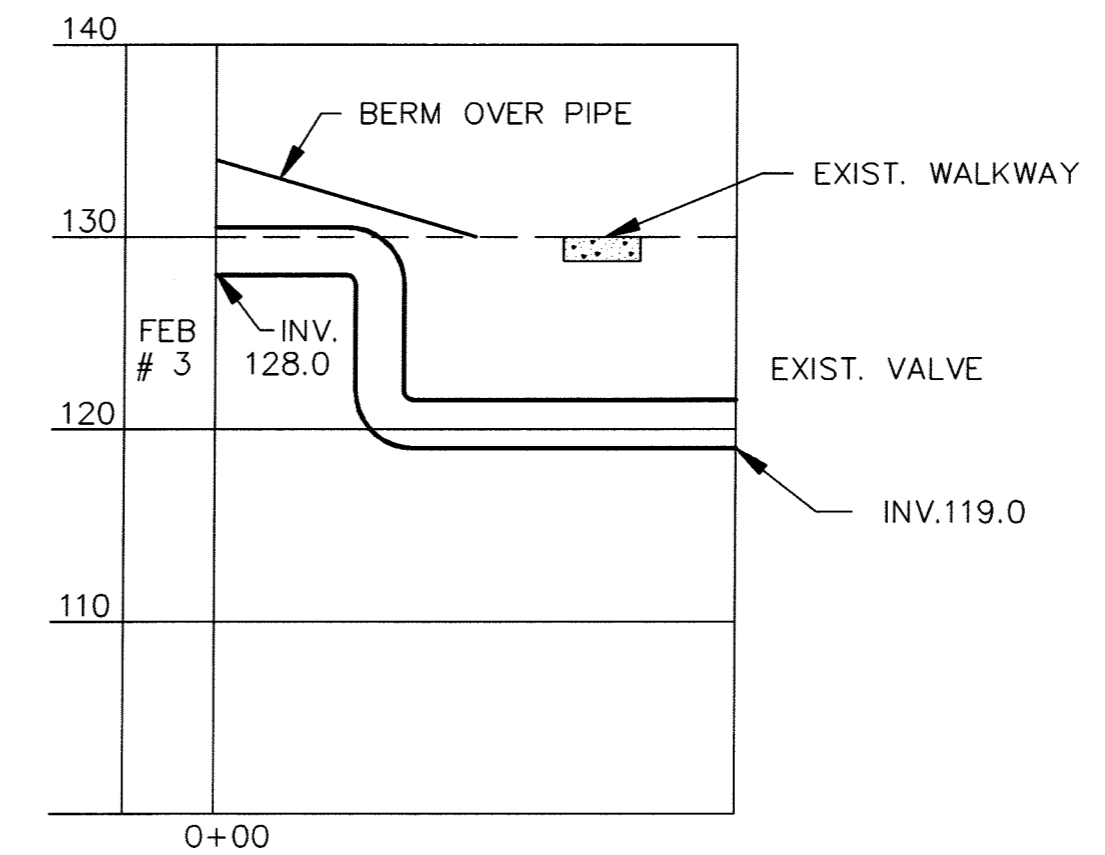
MATCH LINE G-G SEE SHEET C-13

SCALE: 1" = 20'

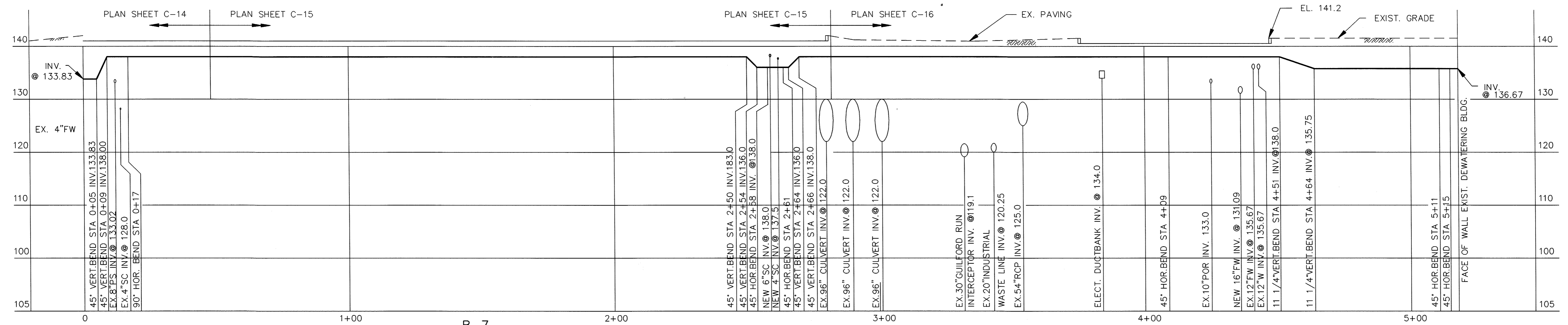
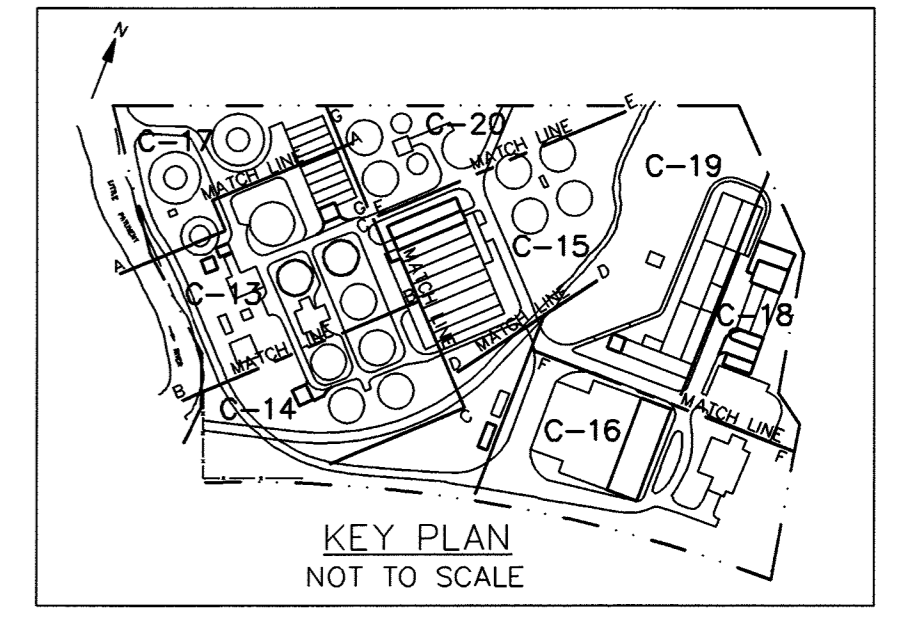


DETAIL 1
NOT TO SCALE

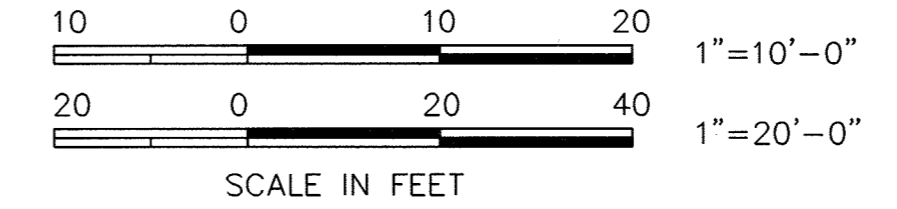
NOTE:
PS-1 AND PS-2 CONNECTIONS
SIMILAR BUT MIRROR IMAGES.
EXISTING 12 INCH PSIS CENTERLINE
ELEVATION EQUAL 139.75
EXISTING 8 INCH SPOR CENTERLINE
ELEVATION EQUAL 143.08 (FIELD
VERIFY).



30" FEIE B-9
C-17 | C-20
SCALE: HORIZ. 1"=10'-0"
VERT. 1"=10'-0"



6" FW B-7
C-14
C-15
C-16
SCALE: HORIZ. 1"=20'-0"
VERT. 1"=10'-0"



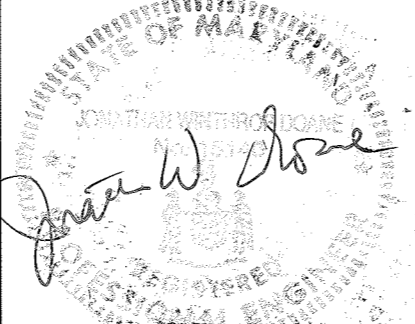
FILE: C:\PROJ\LPAT\BUILT\PC-20 SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John A. Owen 5/1/96
DIRECTOR OF PUBLIC WORKS DATE
John A. Owen 5/1/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Robert S. Sporn 5/2/96
CHIEF, BUREAU ENGINEERING DATE
Di. Dan Lewis 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy
CCJM ENVIRONMENTAL ENGINEERS
& SCIENTISTS
SILVER SPRING, MARYLAND

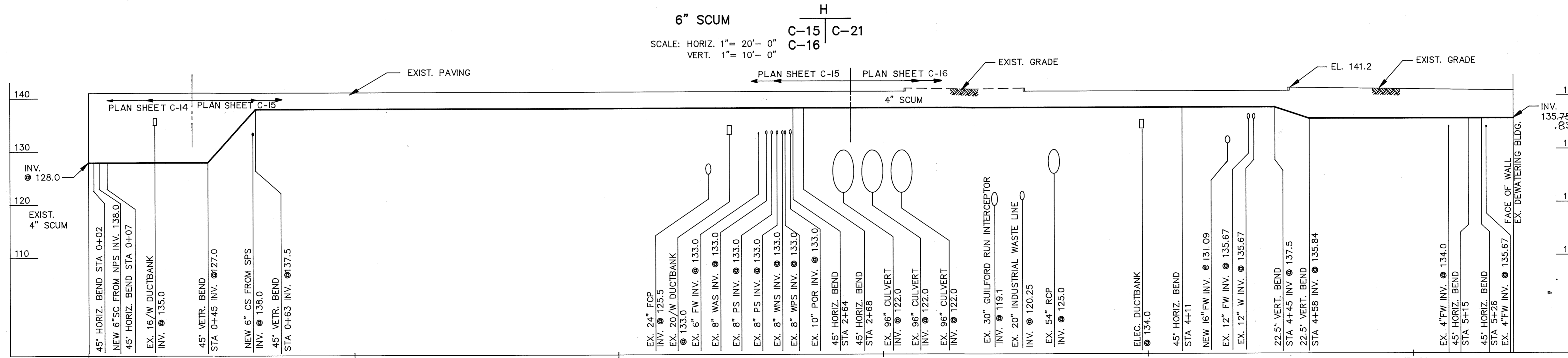
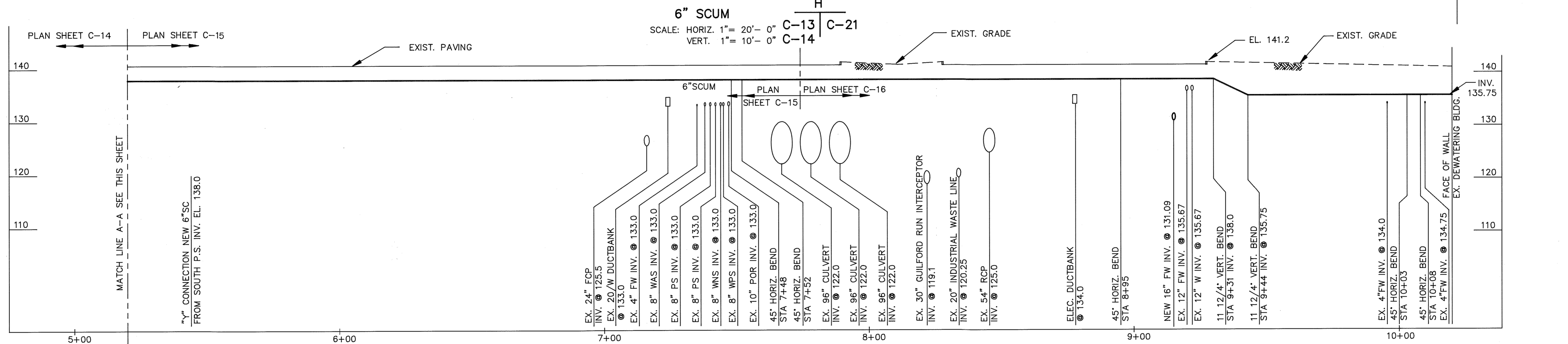
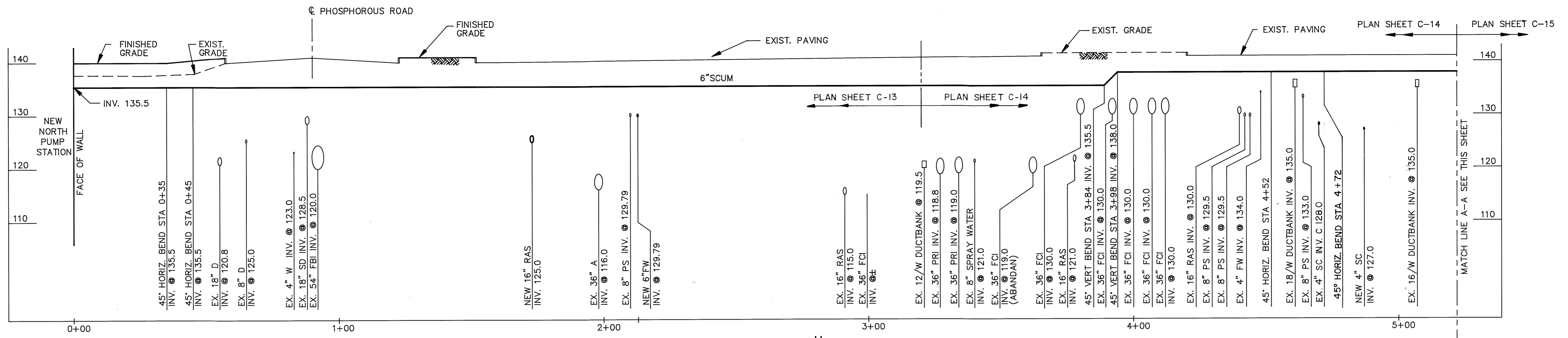


DES:	NB				
DRN:	LB	CCJM	4	RECORD DRAWING	1/14/95
		DZG	3	ADDENDUM #5	4/19/92
CHK:	MCJ	DZG	2	ADDENDUM #3	4/10/92
			1	REVISED FOR BIDDING	3/5/92
DATE:	12/2/91	BY	NO.	REVISION	DATE

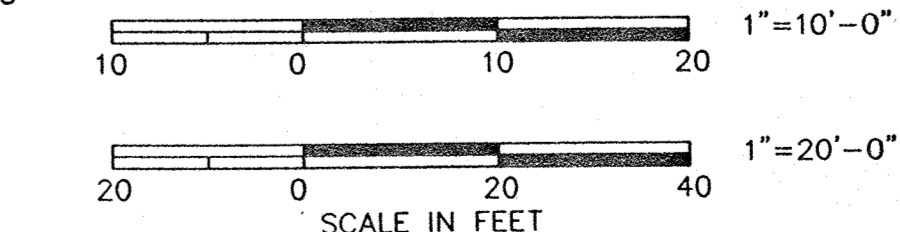
CIVIL
YARD PIPING &
UNDER GROUND UTILITIES PLAN VII

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN
SHEET
25 OF 226
C-20A



4" SCUM
 SCALE: HORIZ. 1" = 20'-0"
 VERT. 1" = 10'-0"

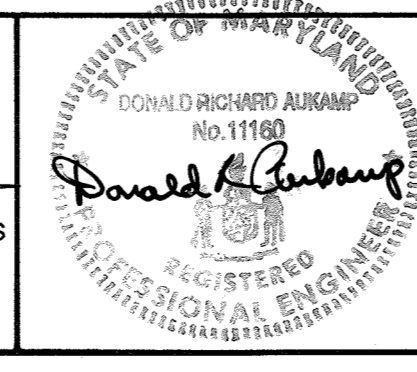


FILE: C:\LTPAT2\PROF2

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
Director of Public Works <i>[Signature]</i> DATE: 12/19/91	Chief, Bureau of Engineering <i>[Signature]</i> DATE: 12/22/91
Chief, Bureau of Environmental Services <i>[Signature]</i> DATE: 12/19/91	Chief, Utility Design Division <i>[Signature]</i> DATE: 12/22/91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland



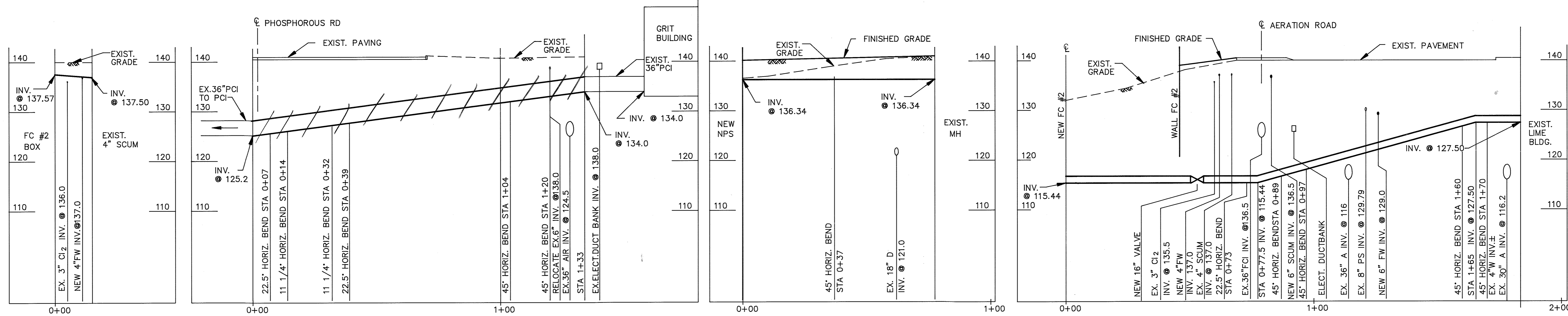
DES: NB			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	1/11/95
DATE: 12/2/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

CIVIL

YARD PIPING PROFILES I

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 26 OF 226
 C-21

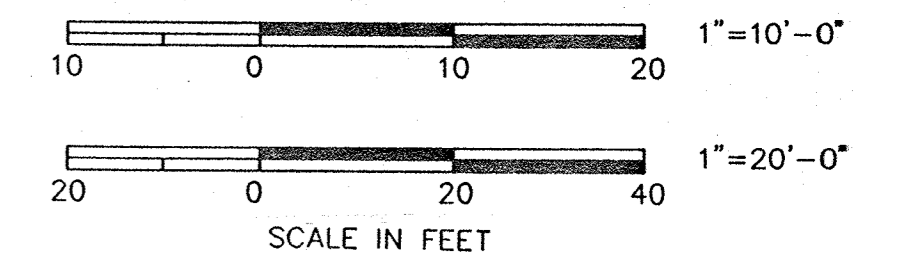
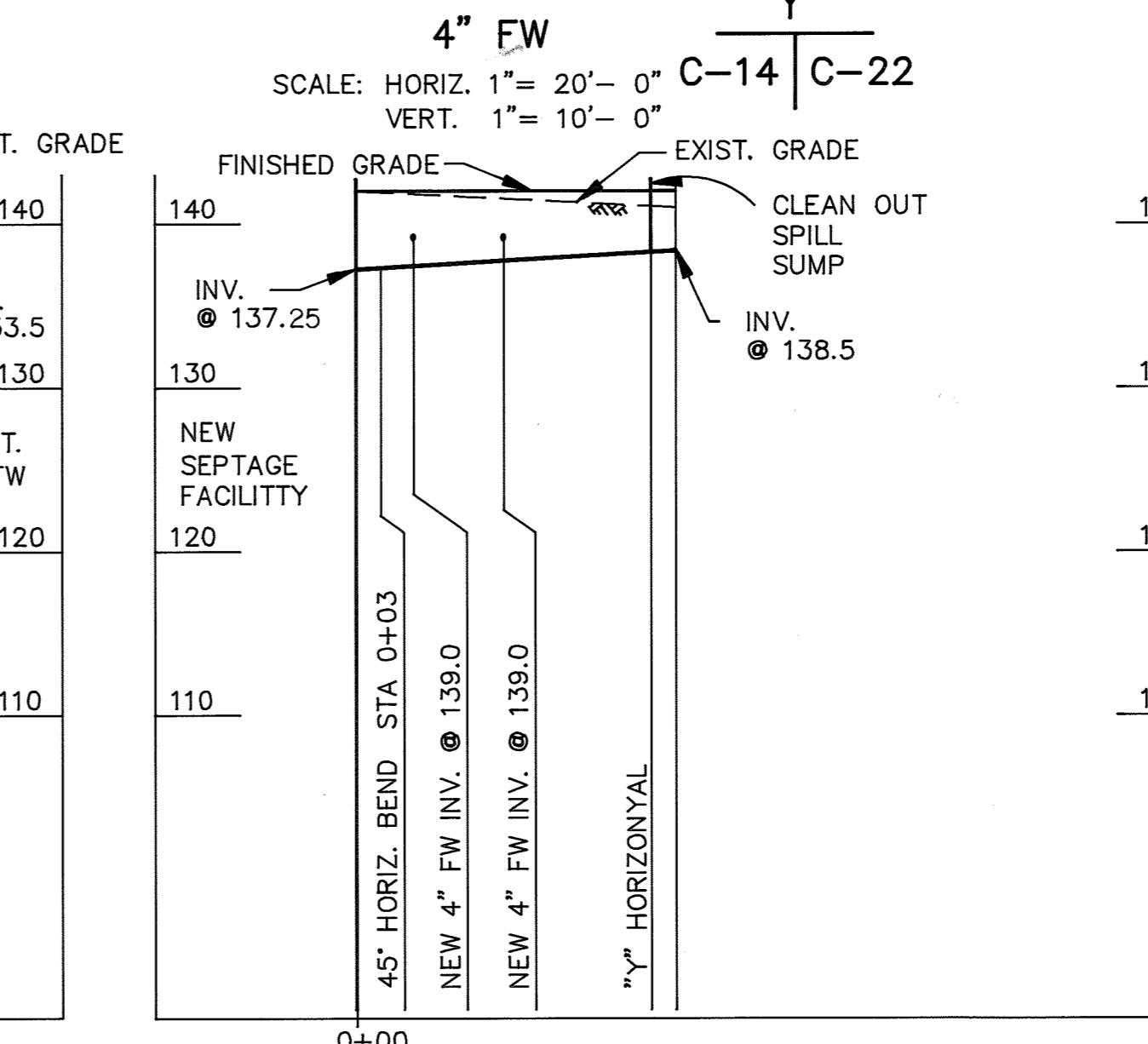
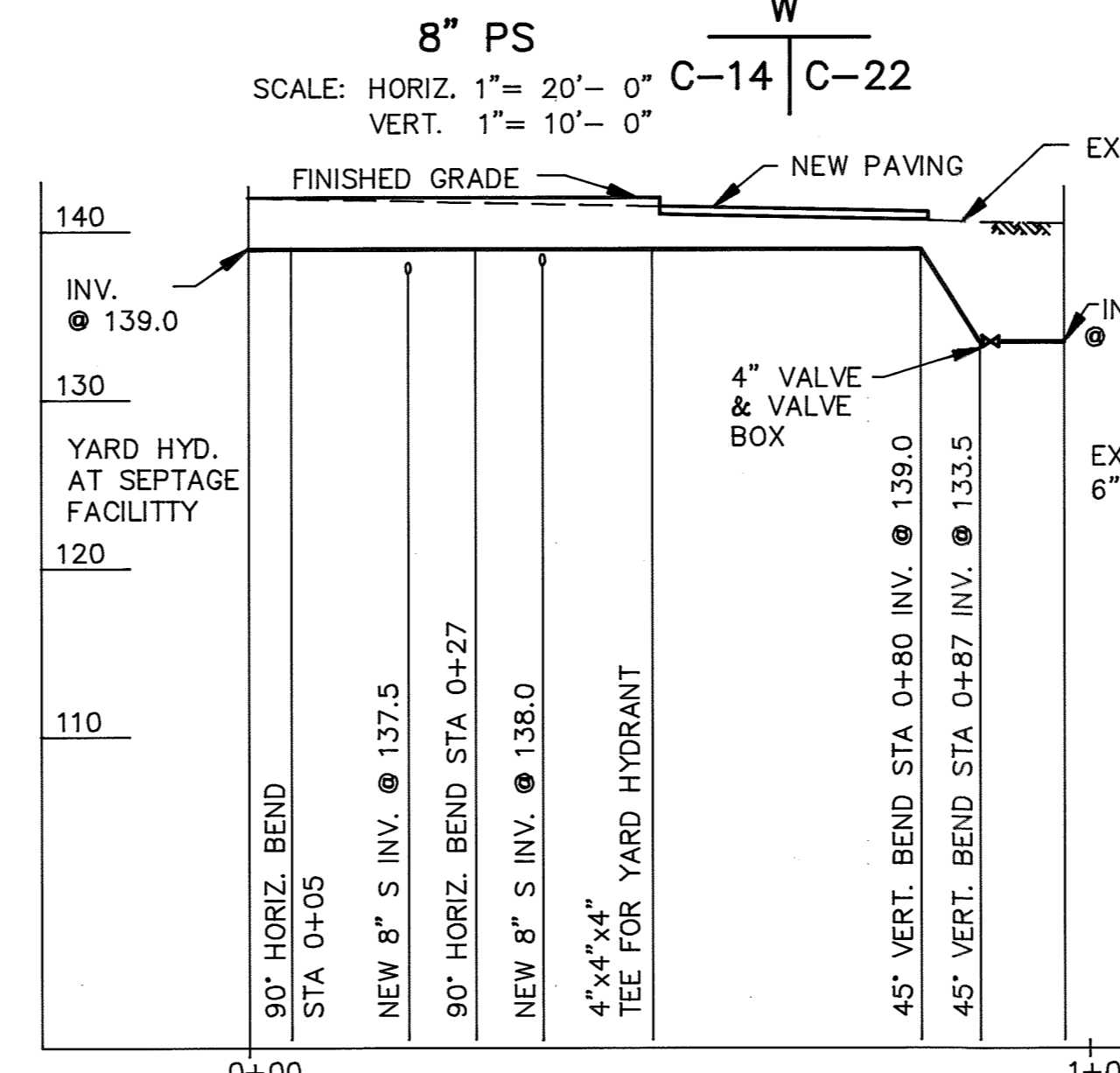
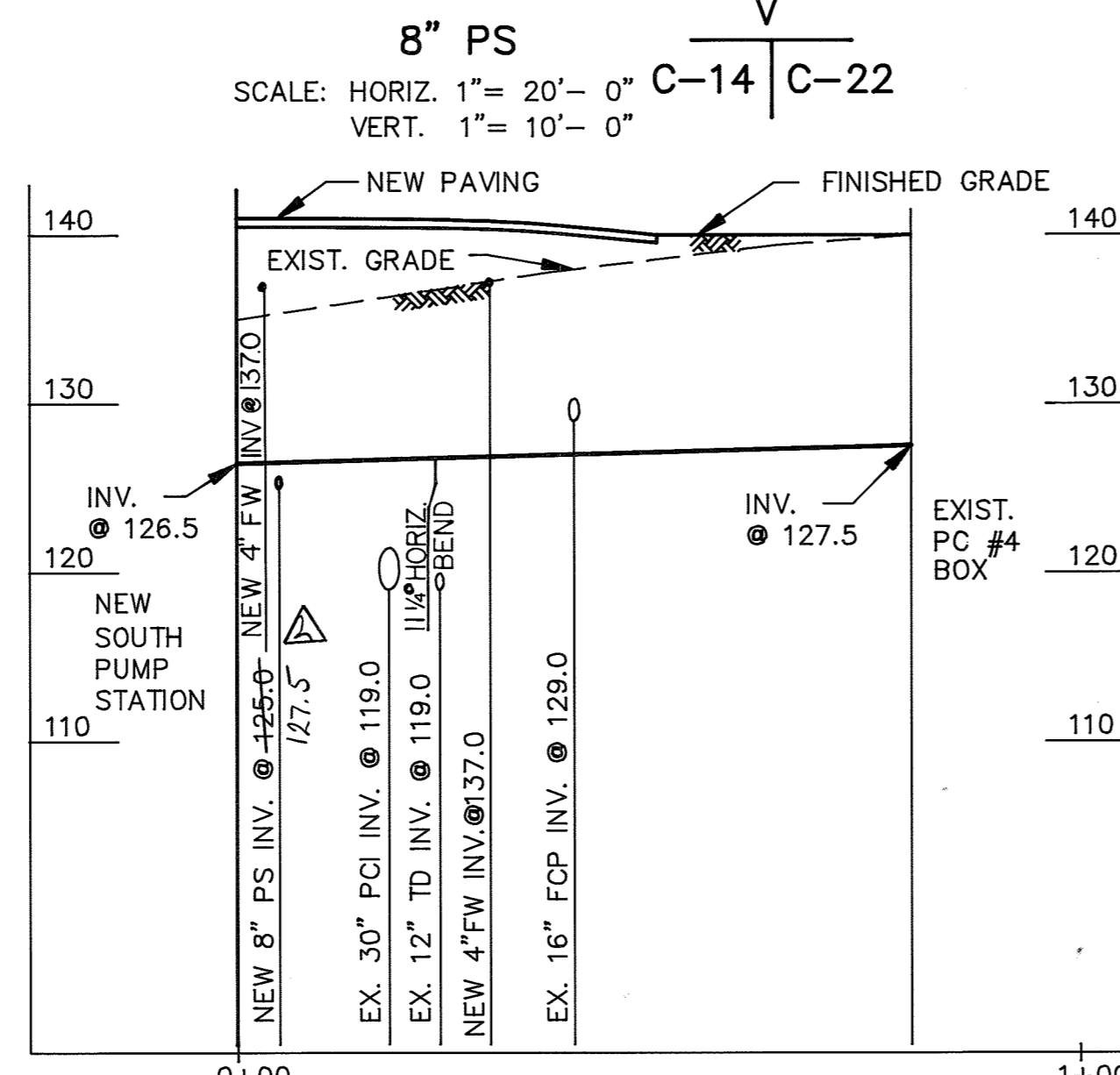
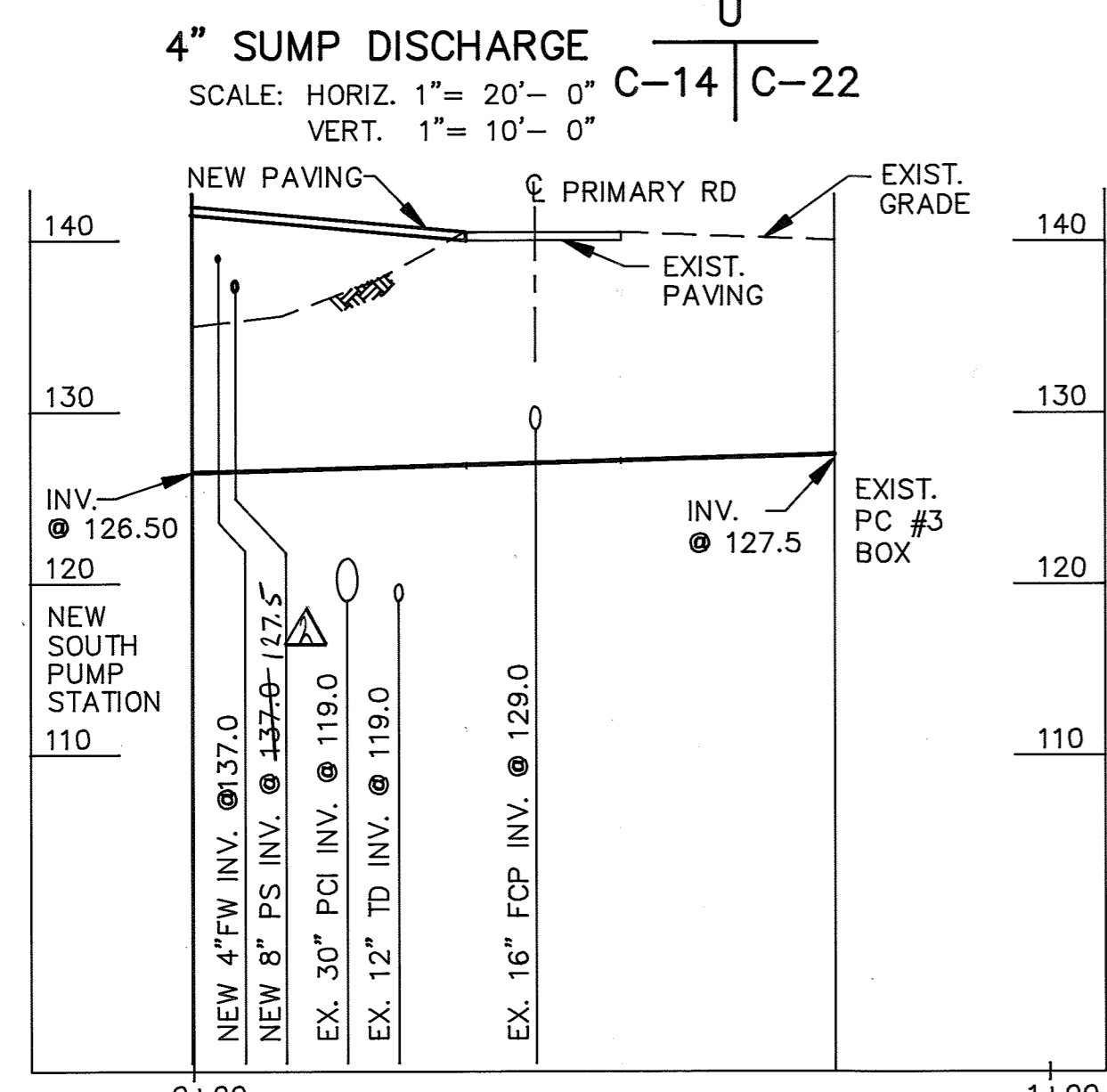
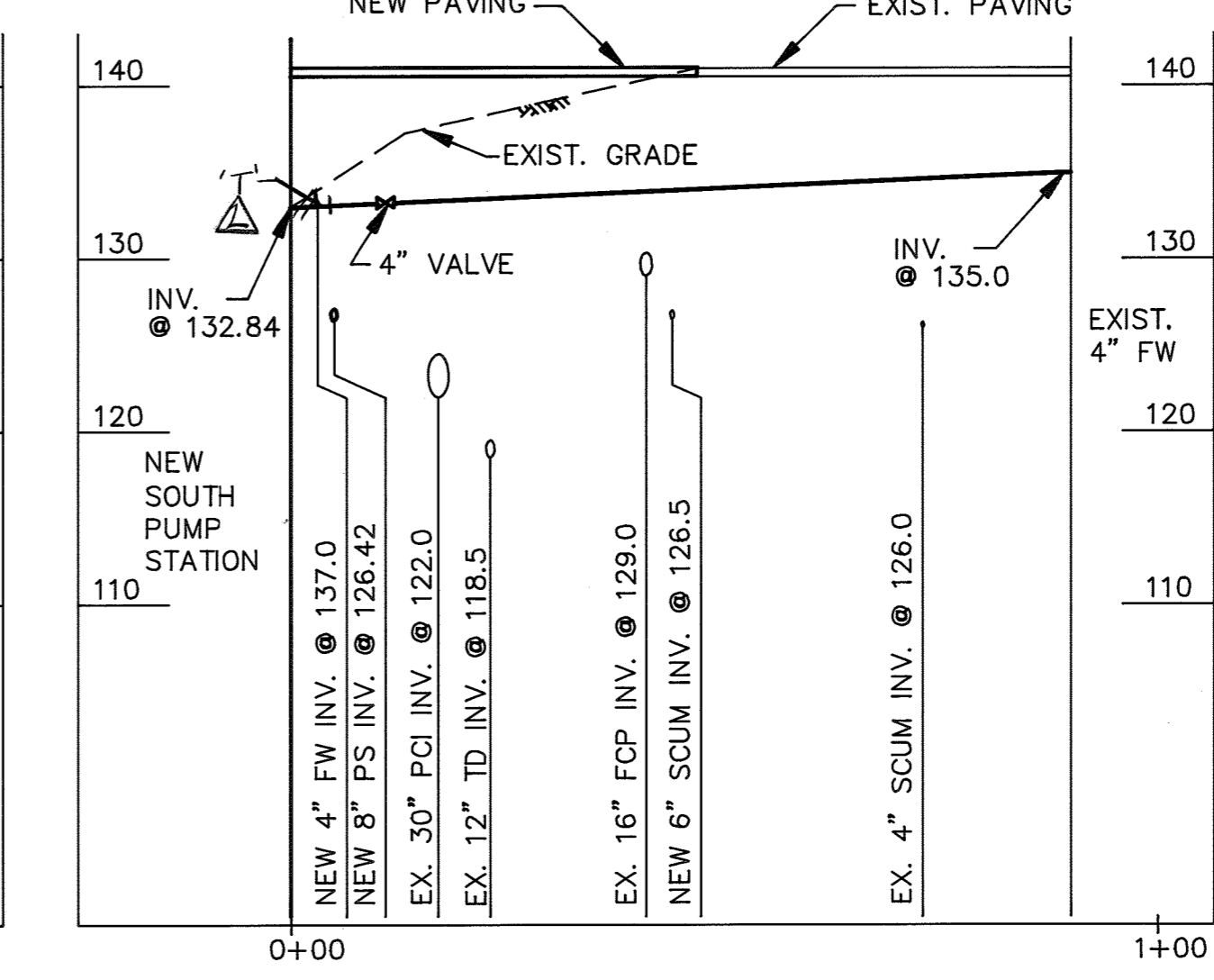
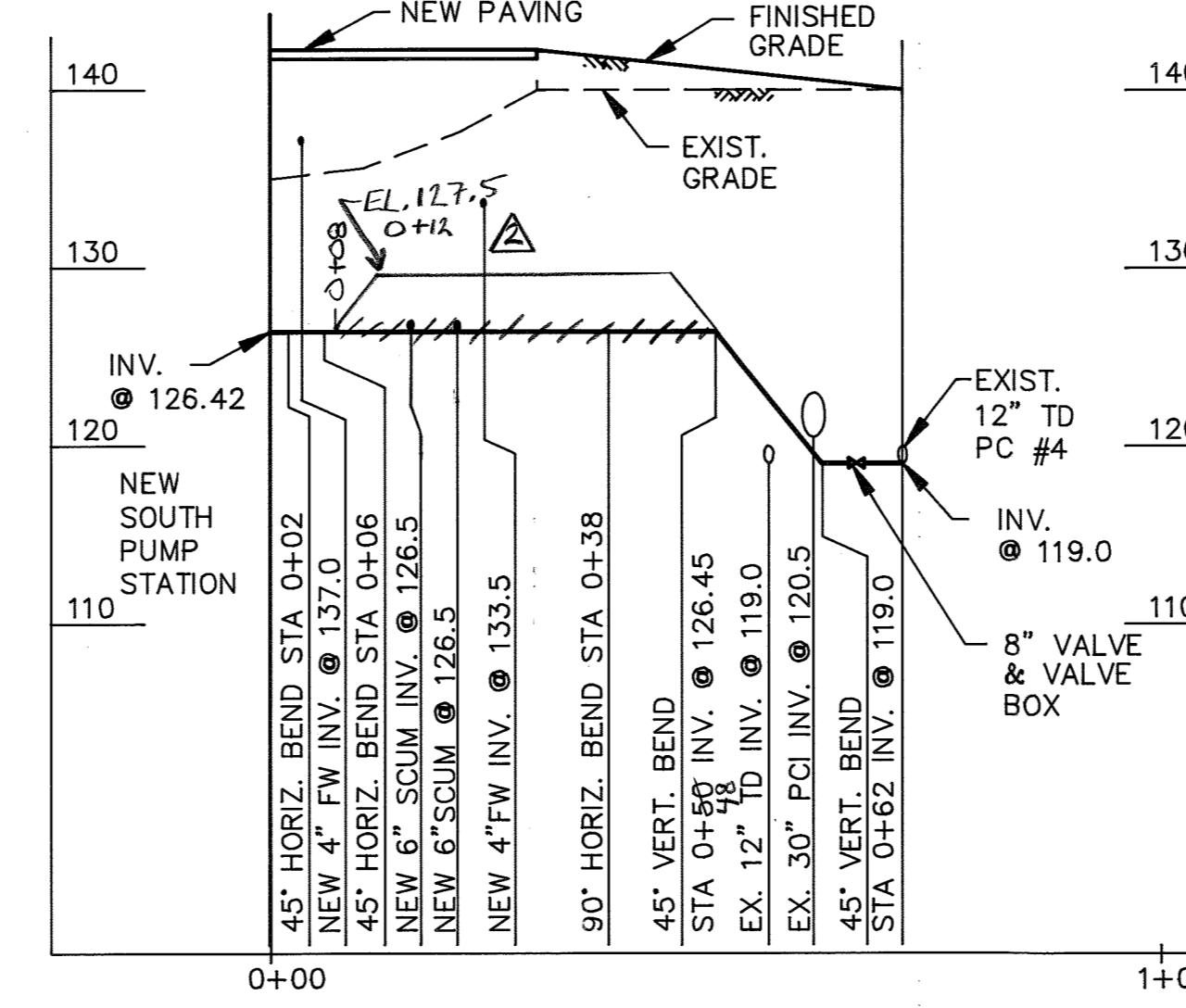
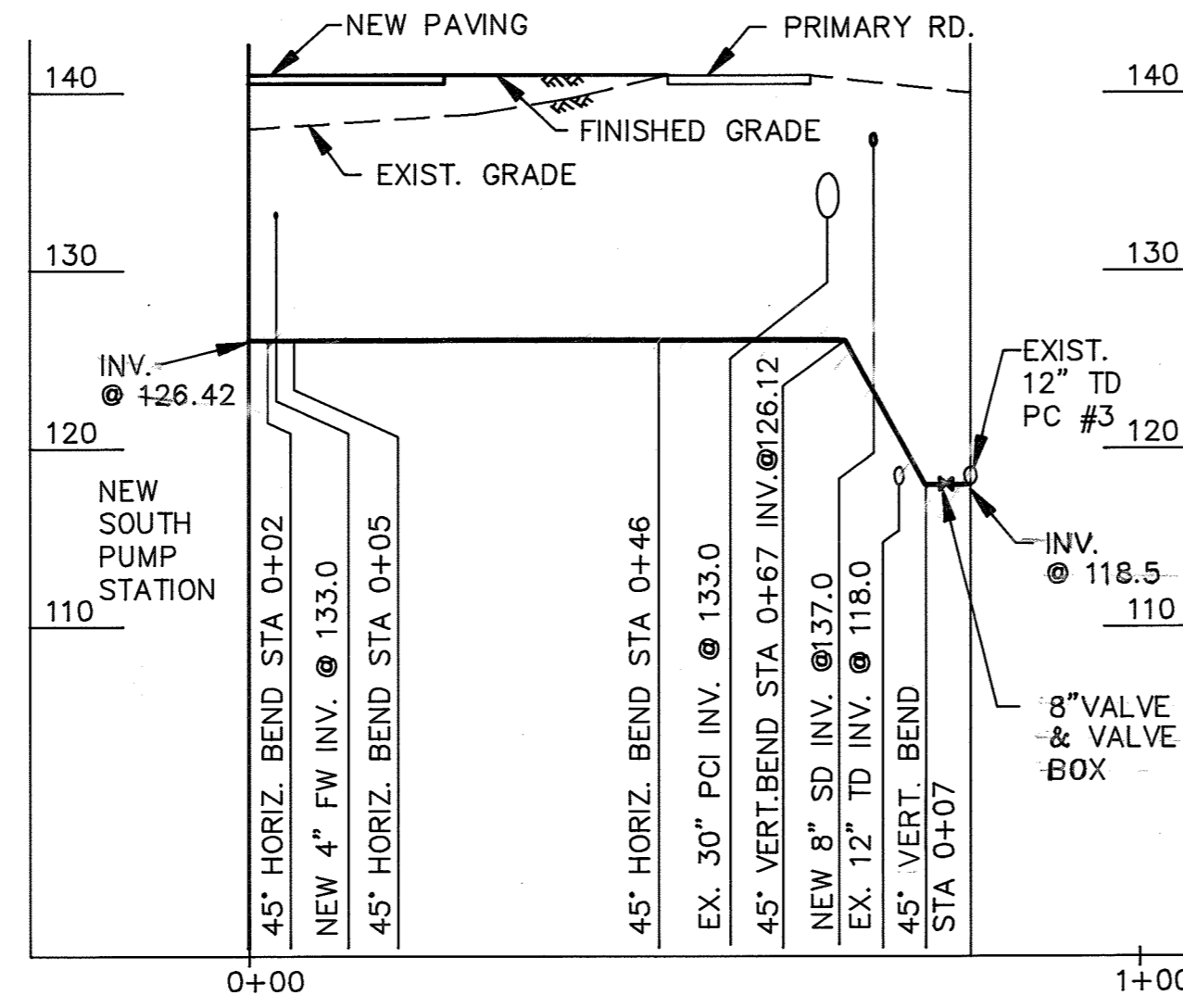
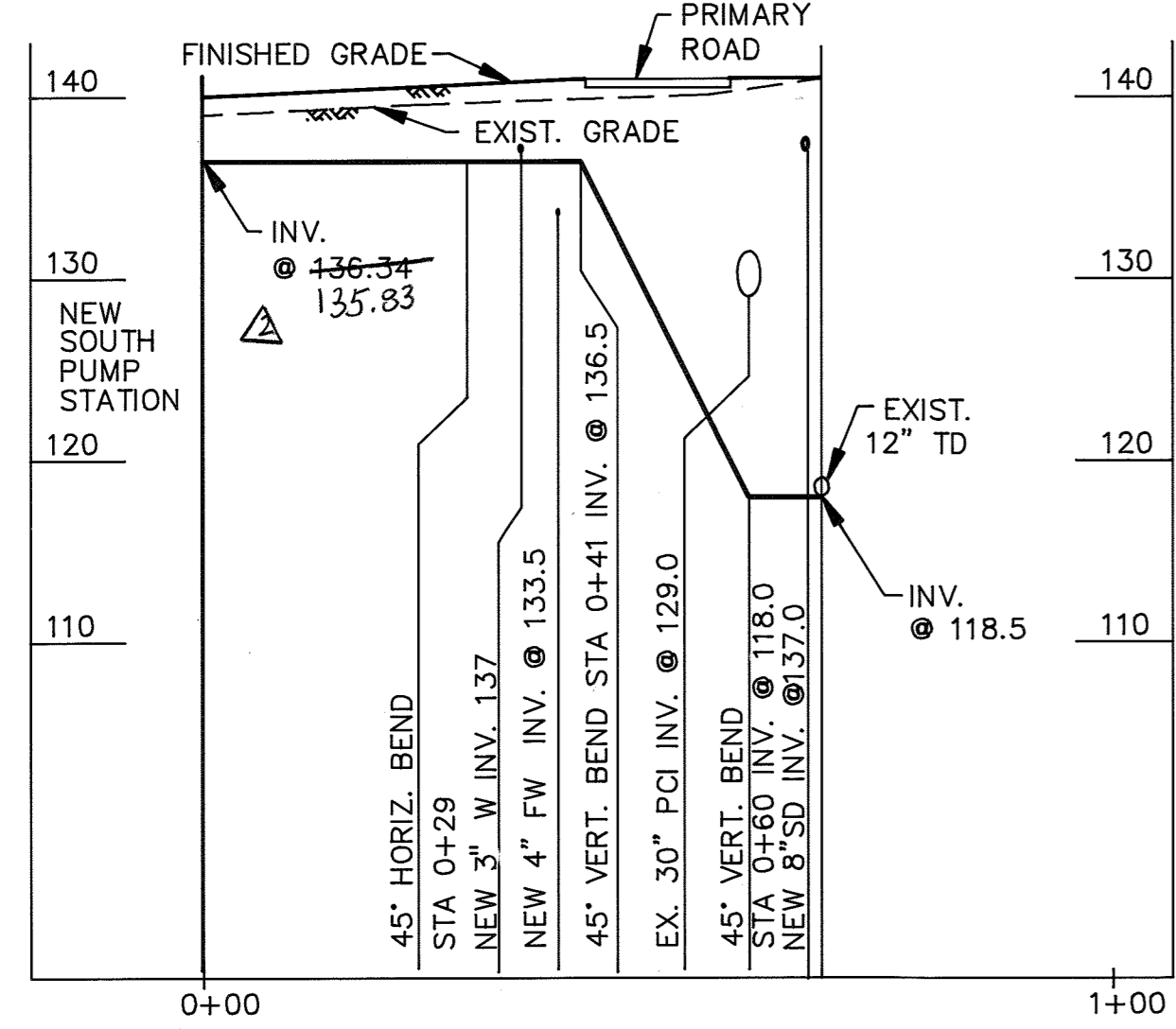


4" SCUM
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"

RELOCATED 36" PCI
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"

4" SUMP DISCHARGE
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"

16" RAS
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



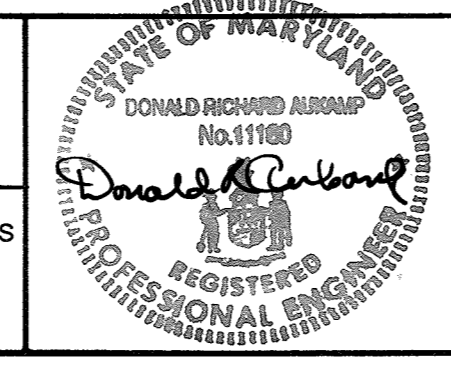
FILE: D:\LTPAT\PROFS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 12/9/91
 Chief, Bureau of Engineering: *John J. O'Hara* 12/9/91
 Chief, Bureau of Environmental Services: *John J. O'Hara* 12/9/91
 Chief, Utility Design Division: *John J. O'Hara* 12/9/91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



DES: NB			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/9/91
	1	REVISED FOR BIDDING	3/5/92
DATE: 12/2/91	BY	NO.	REVISION

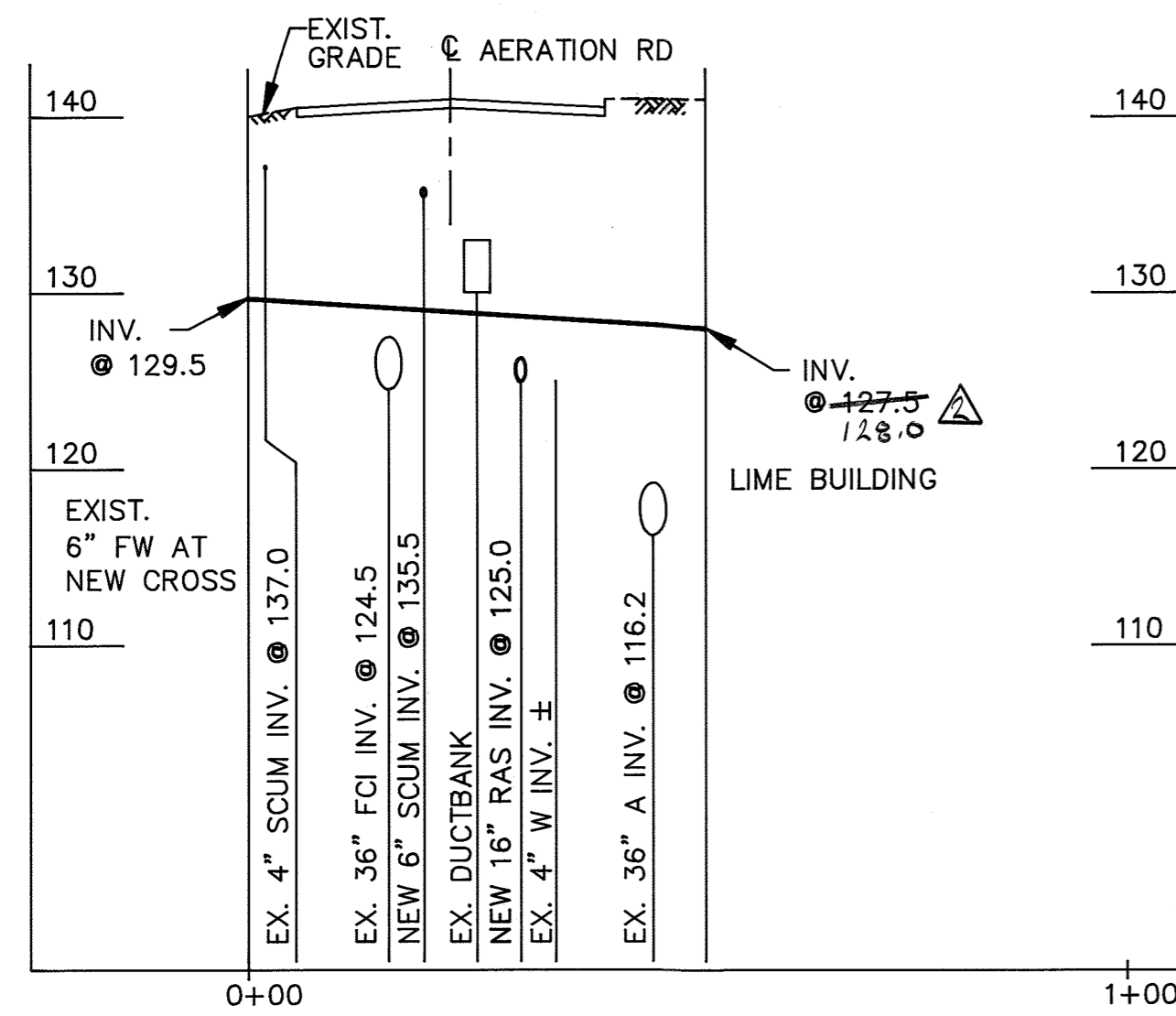
CIVIL

YARD PIPING PROFILES II

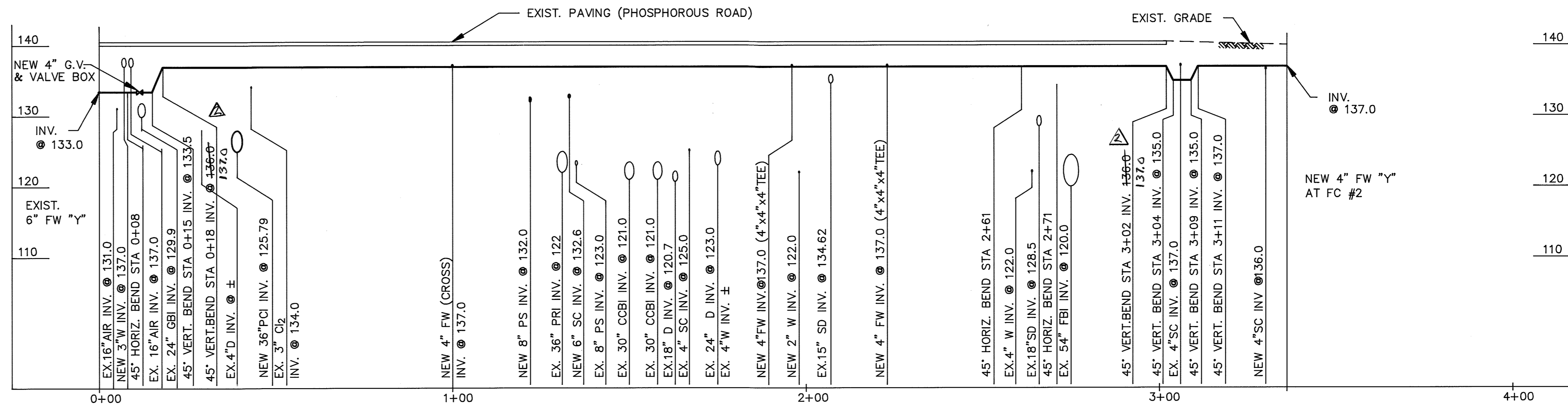
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S - 6153

CONTRACT NO. 20 - 3082
 HOWARD COUNTY, MARYLAND

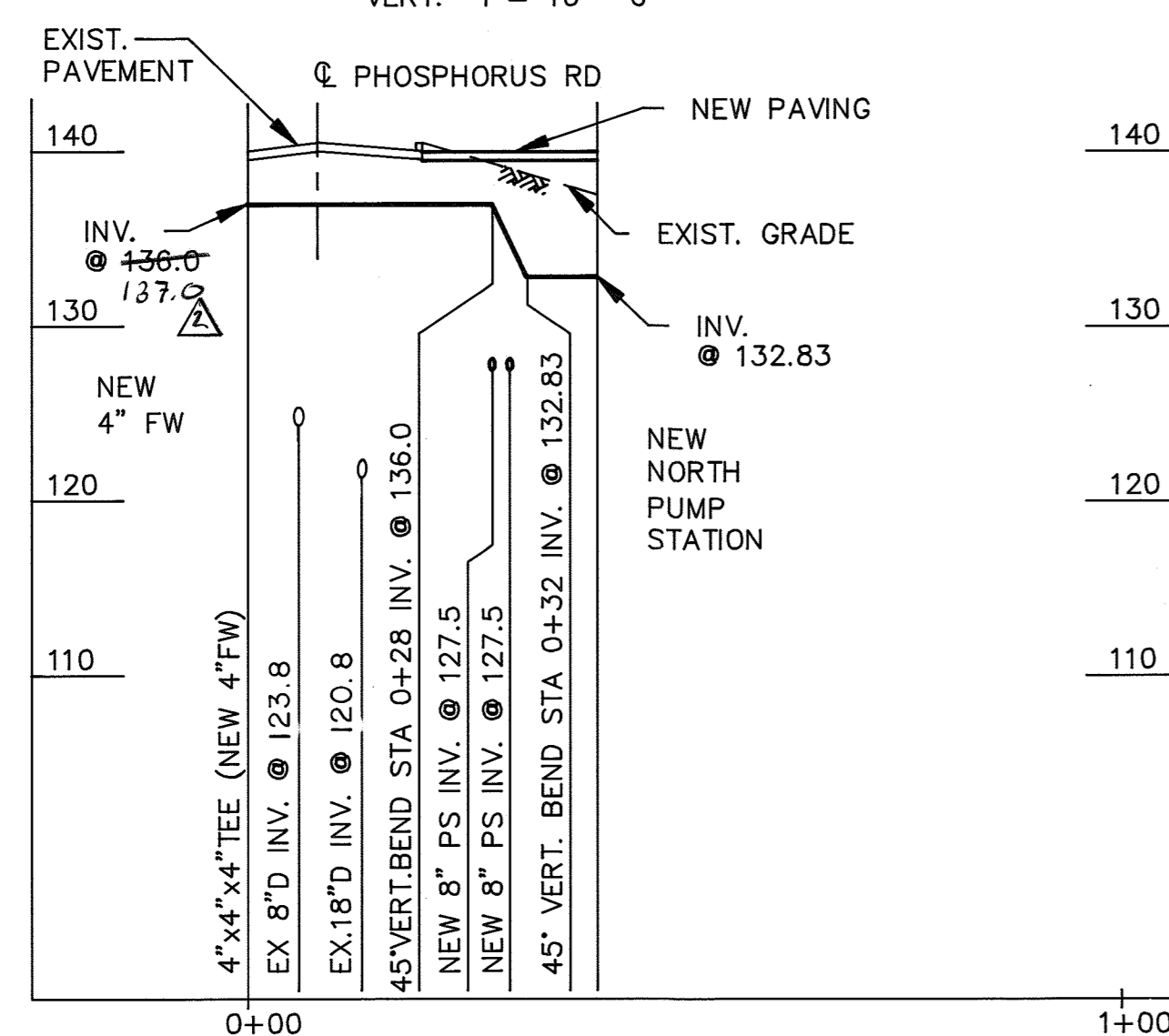
SCALE AS SHOWN
 SHEET 27 OF 228
 C-22



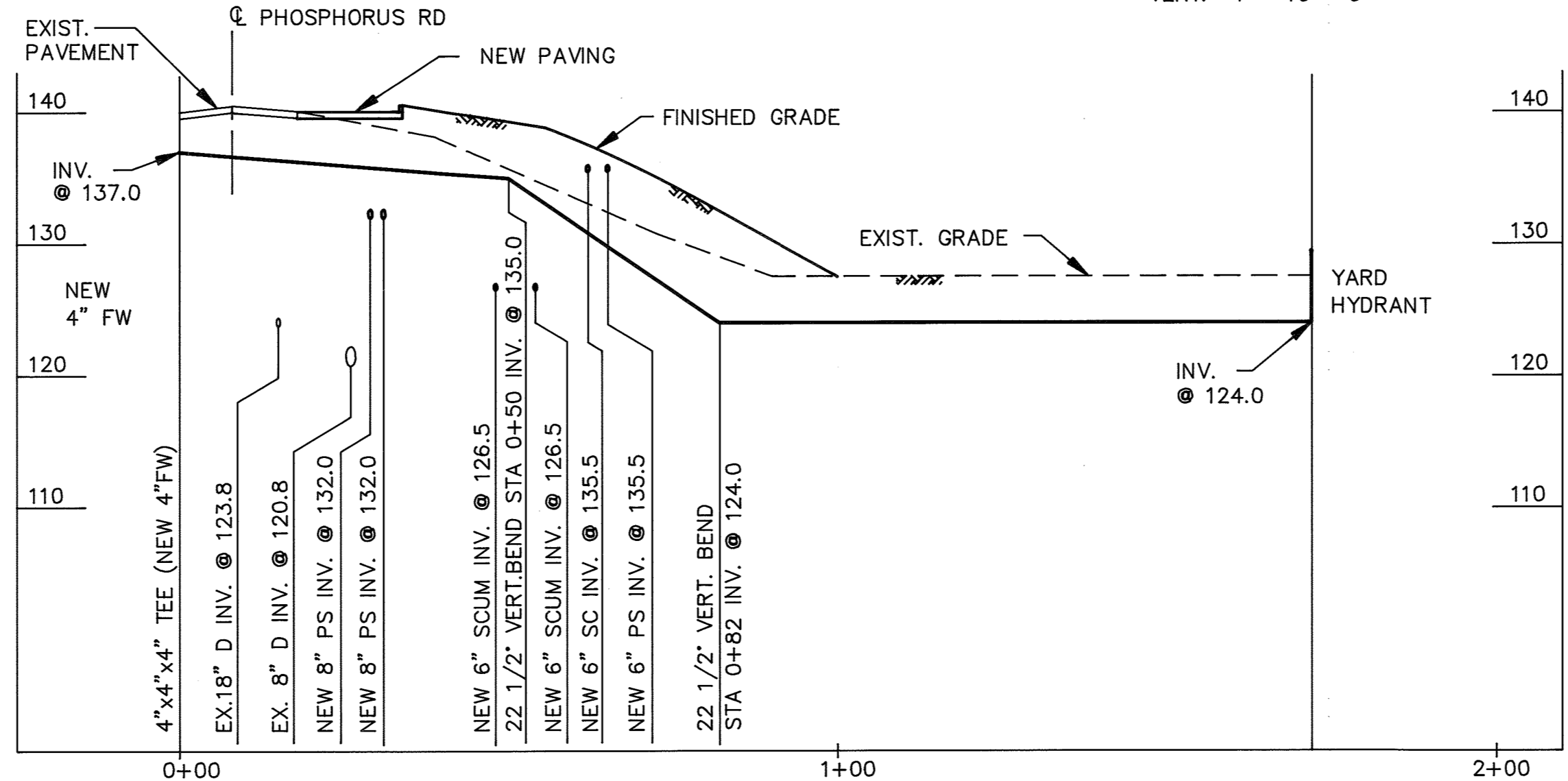
6" FW
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
C-13 C-24



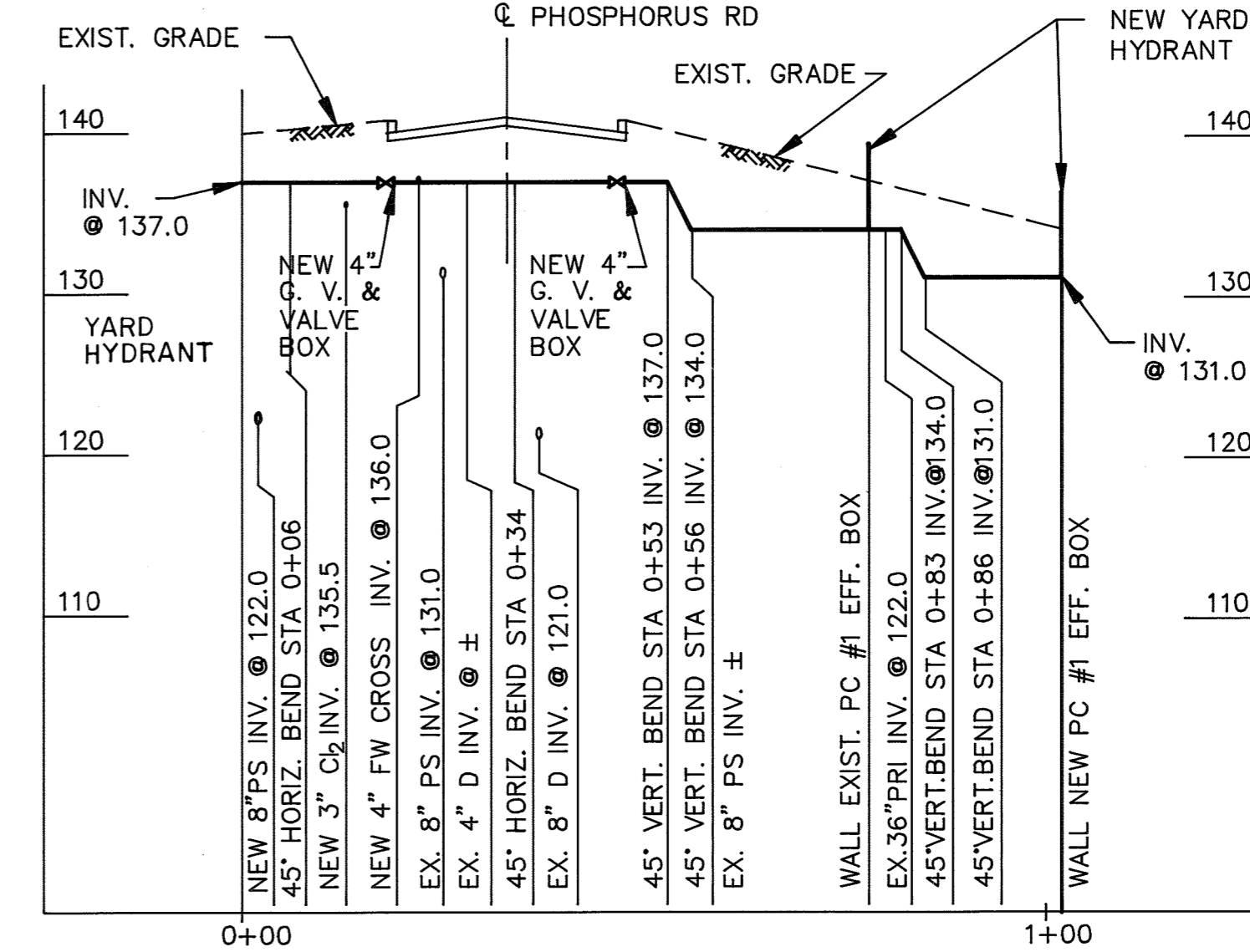
4" FW
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
C-13 C-24



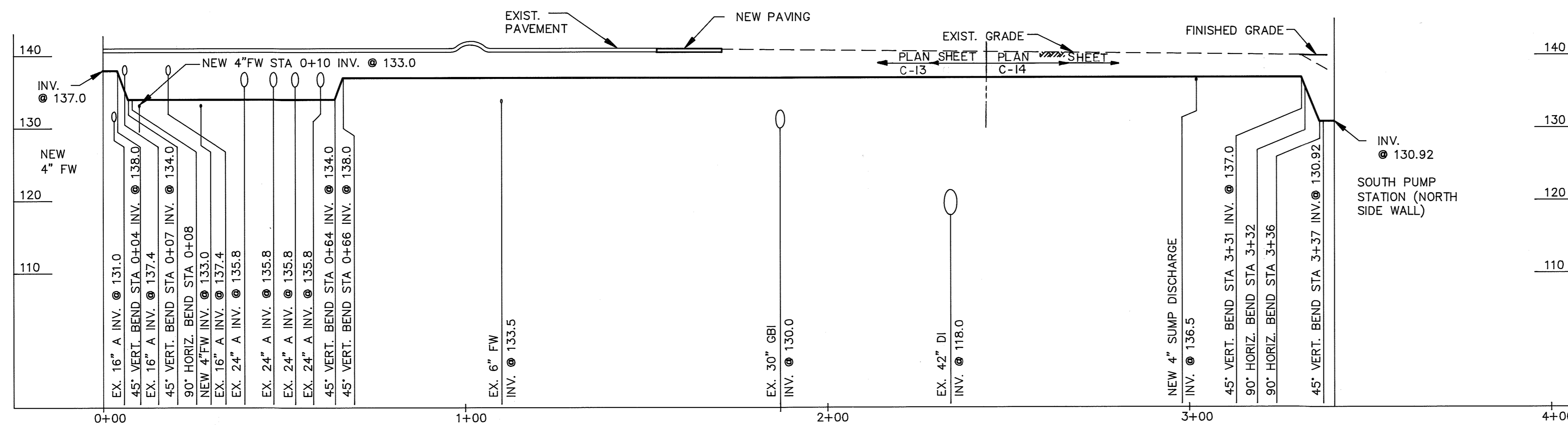
4" FW
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
C-13 C-24



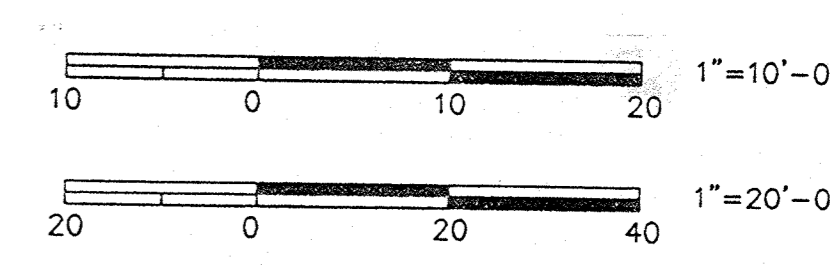
4" FW
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
C-13 C-24



4" FW
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
C-13 C-24



3" W
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
C-13 C-24



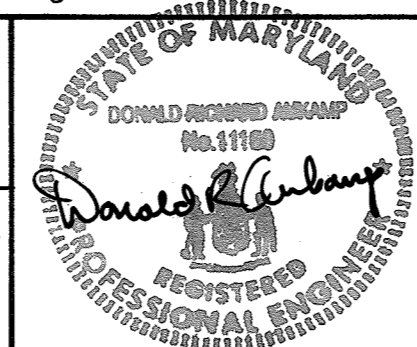
FILE: D:\LTPAT\PROF6

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John A. ...* DATE: 12/9/91
 Chief, Bureau of Engineering: *...* DATE: 12-9-91
 Chief, Bureau of Environmental Services: *...* DATE: 12/9/91
 Chief, Utility Design Division: *...* DATE: 12-9-91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



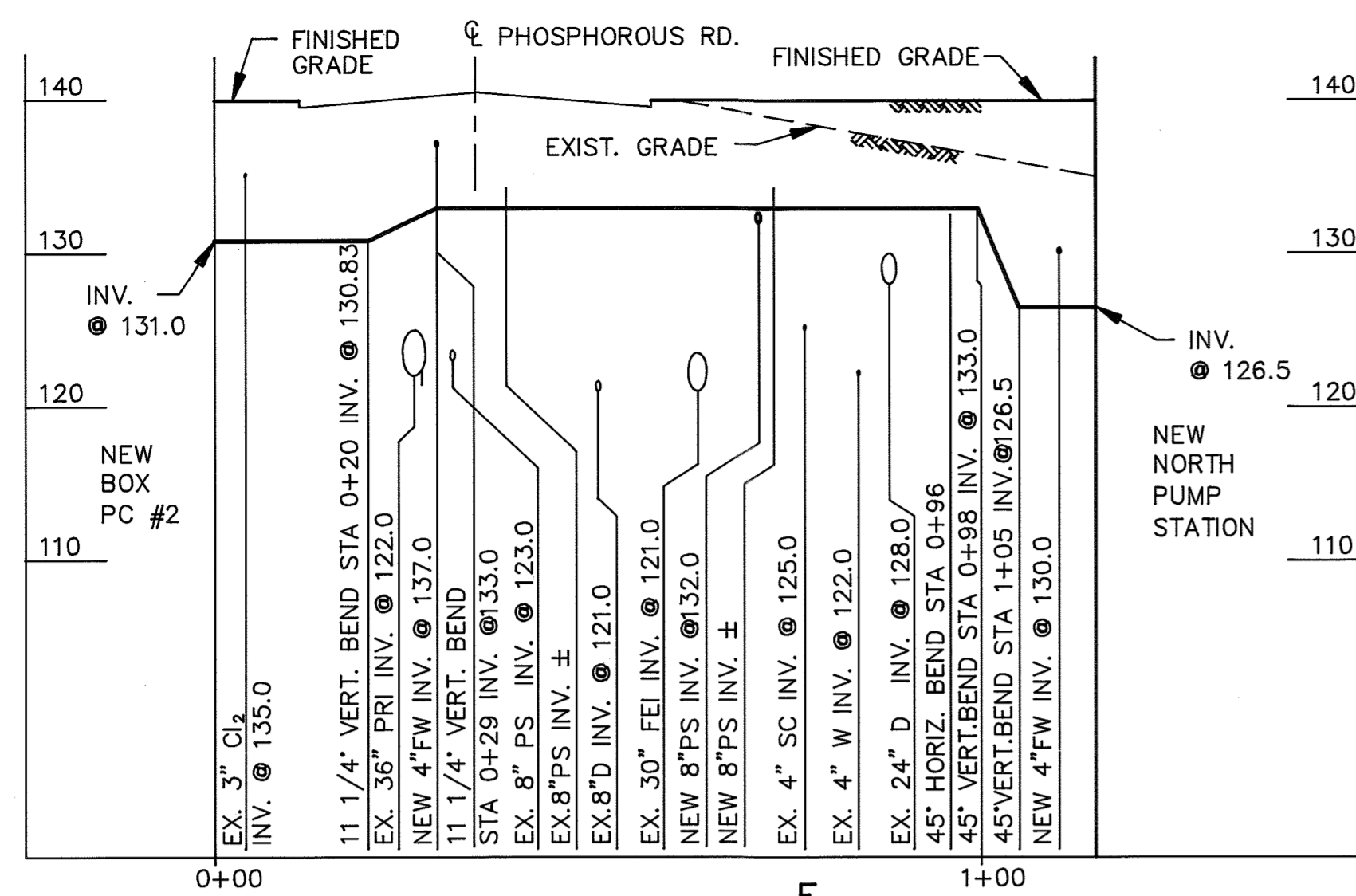
DES:NB			
DRN:LB			
CHK:MCJ	2	RECORD DRAWING	11/4/93
DATE:12/2/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

CIVIL

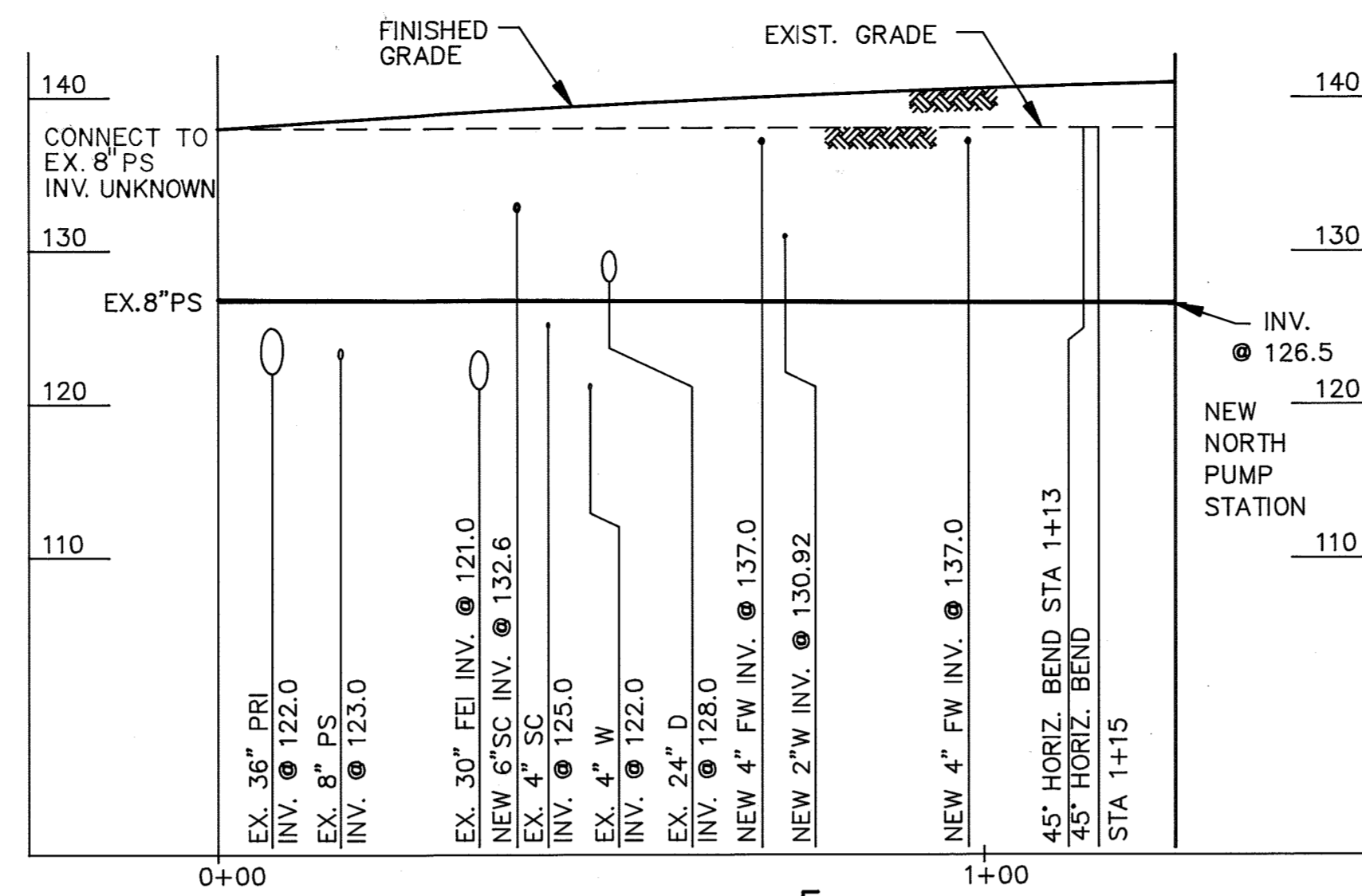
YARD PIPING PROFILES IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

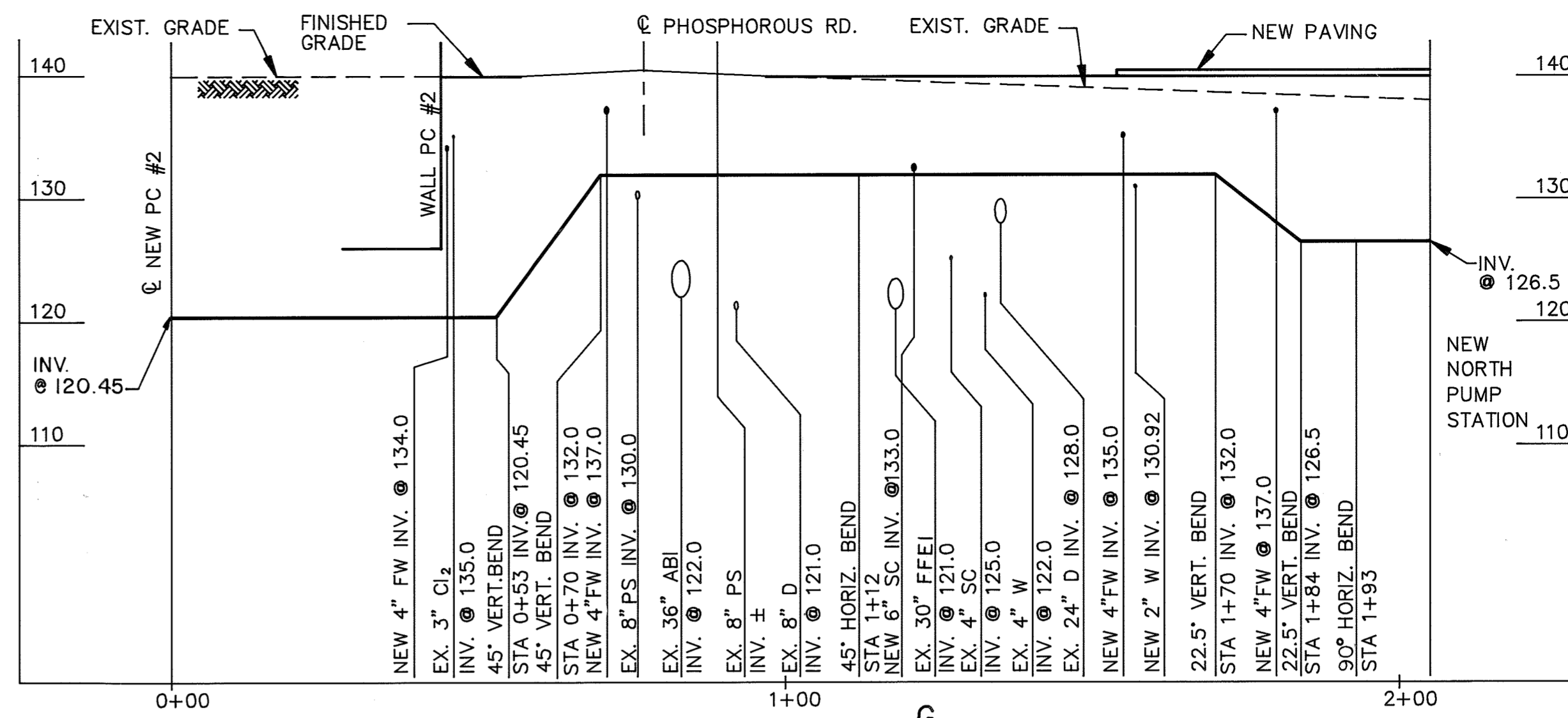
SCALE AS SHOWN
 SHEET 29 OF 226
 C-24



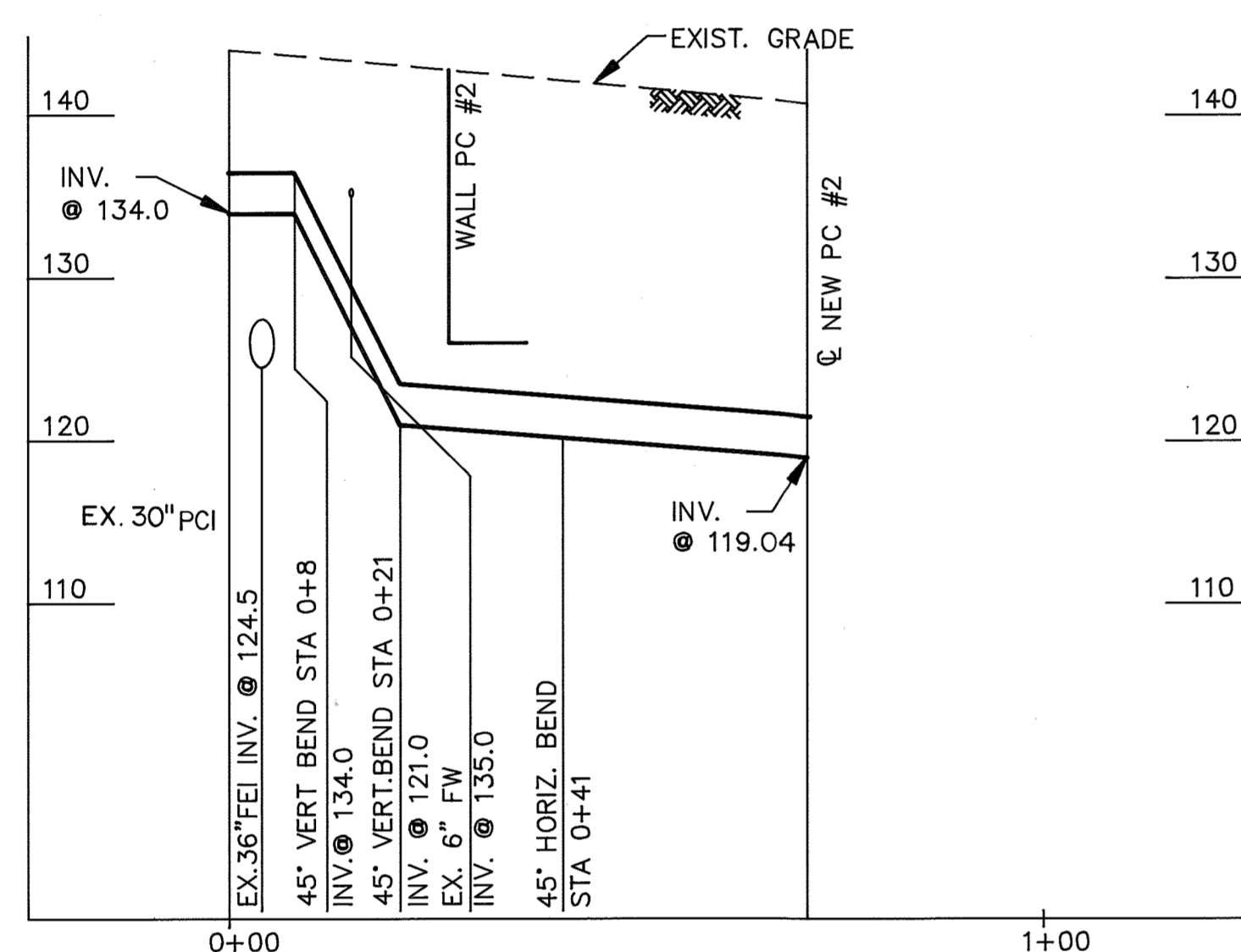
6" SC
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



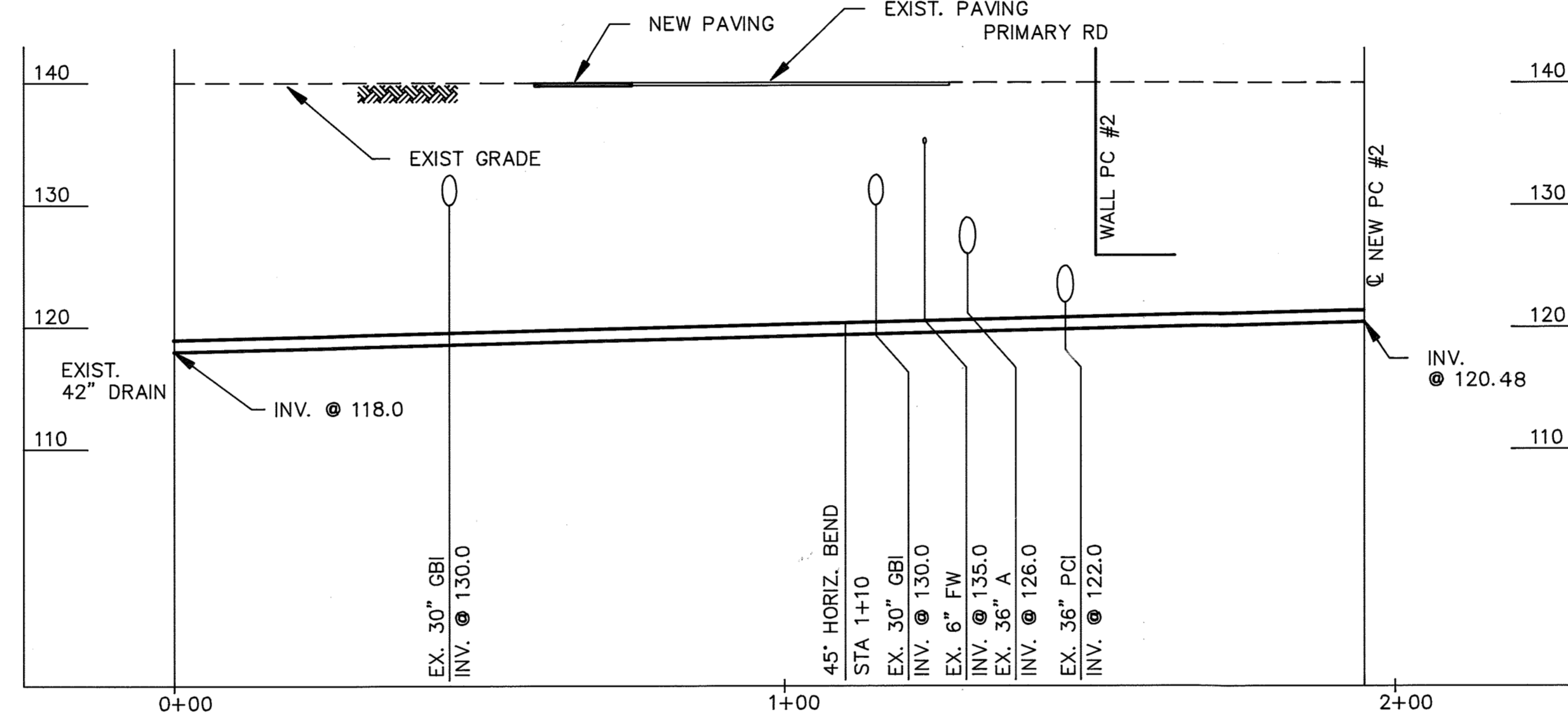
8" PS
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



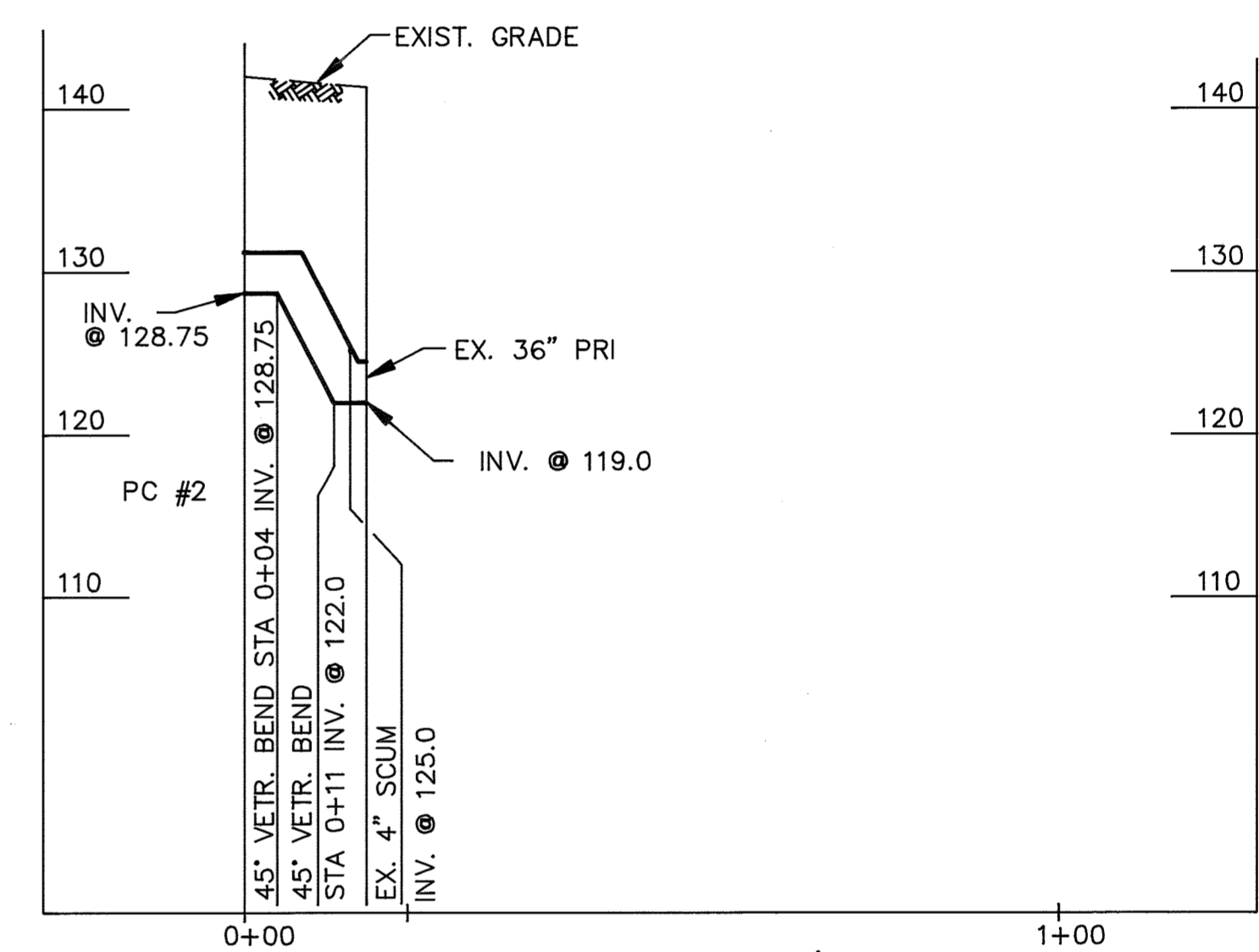
8" PS
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



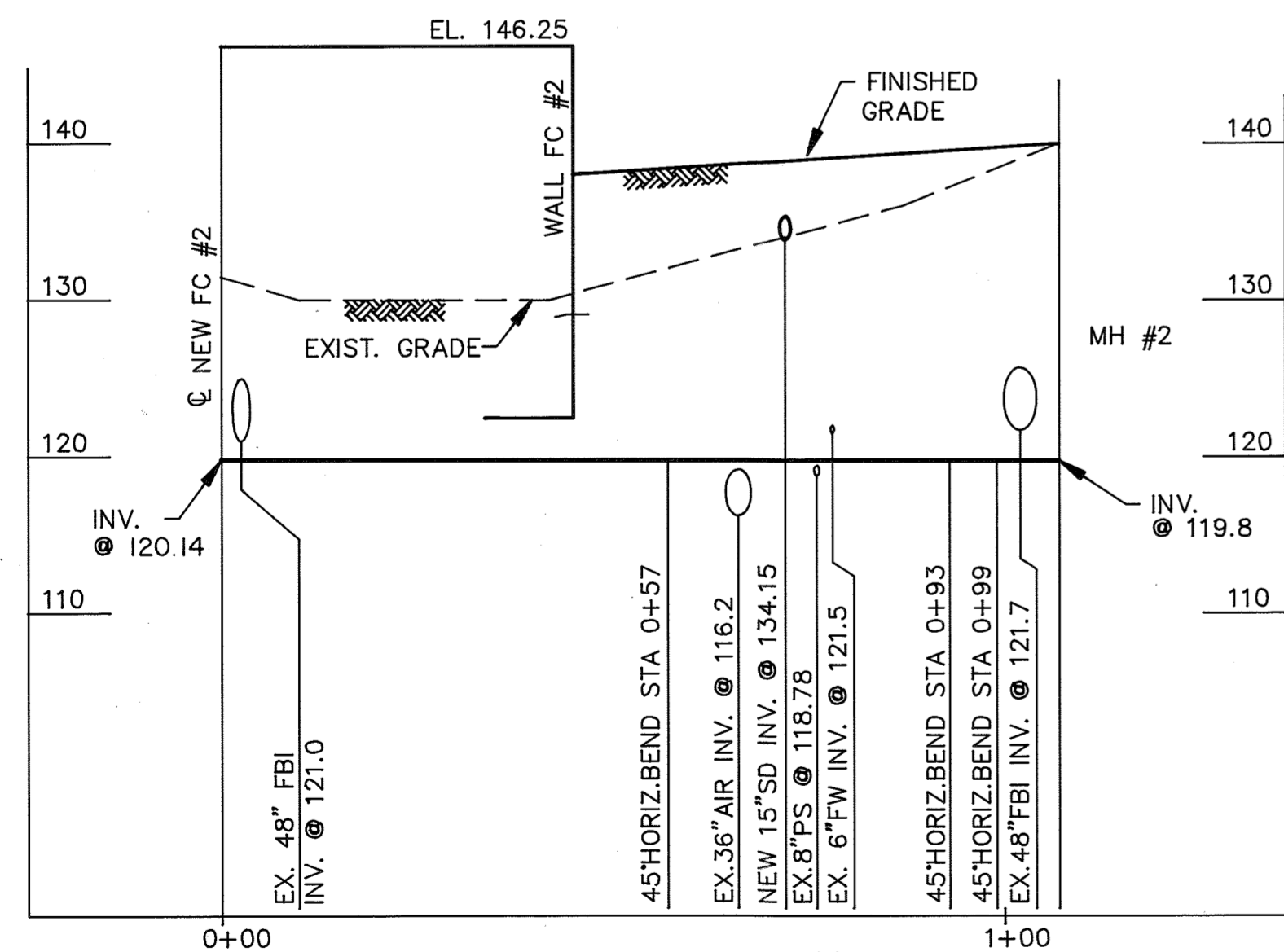
30" PCI
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



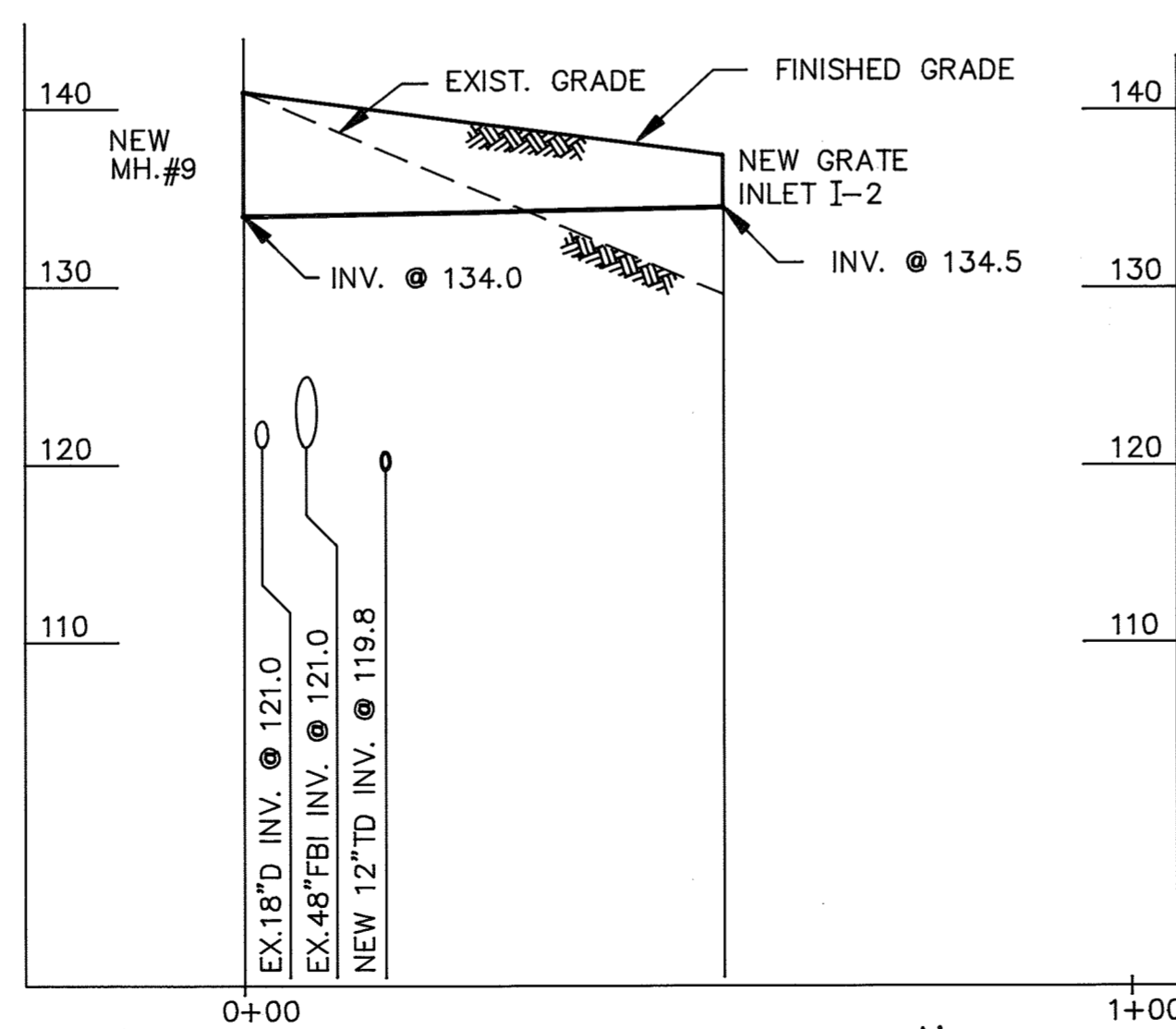
12" D
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



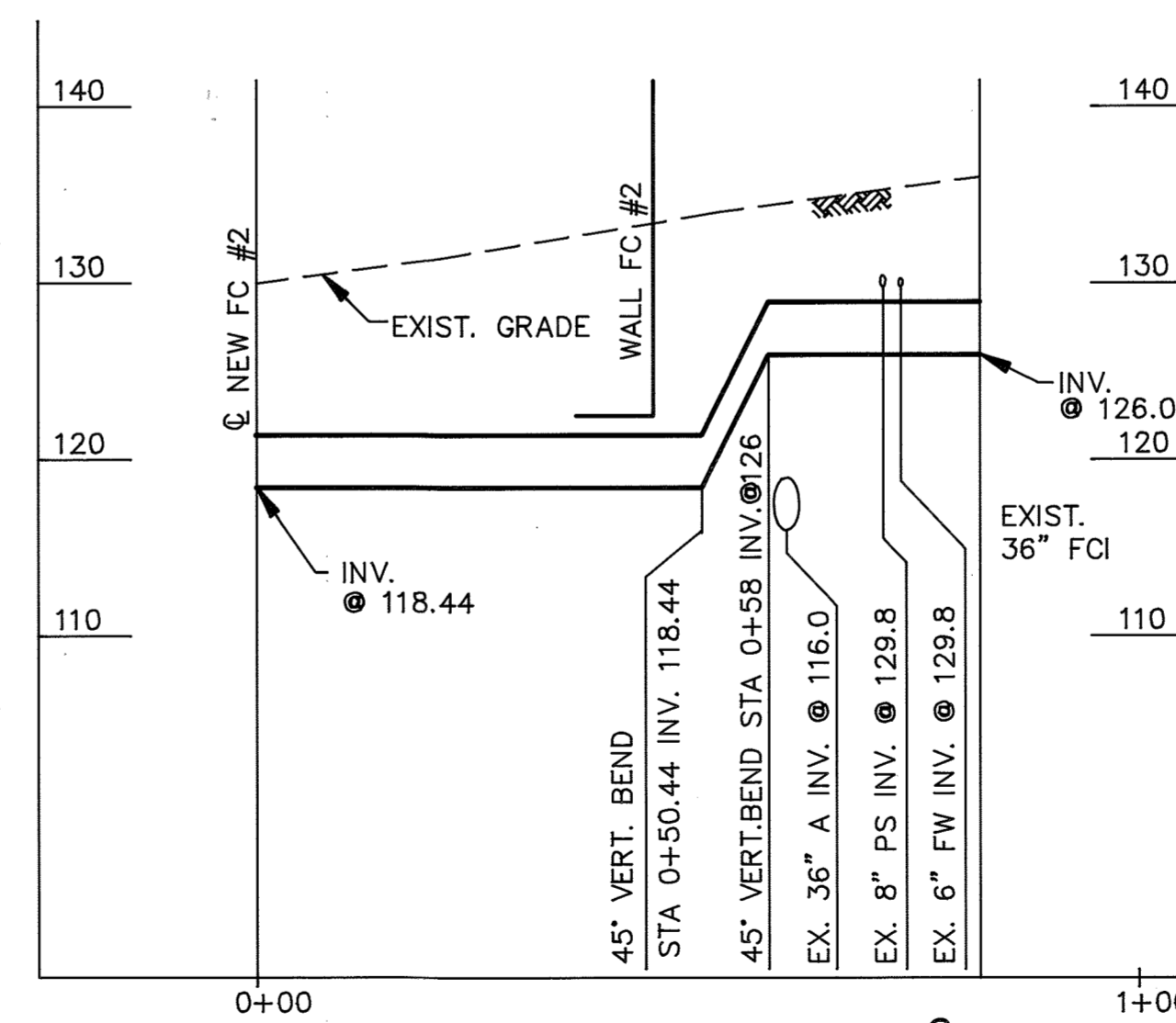
30" PRI
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



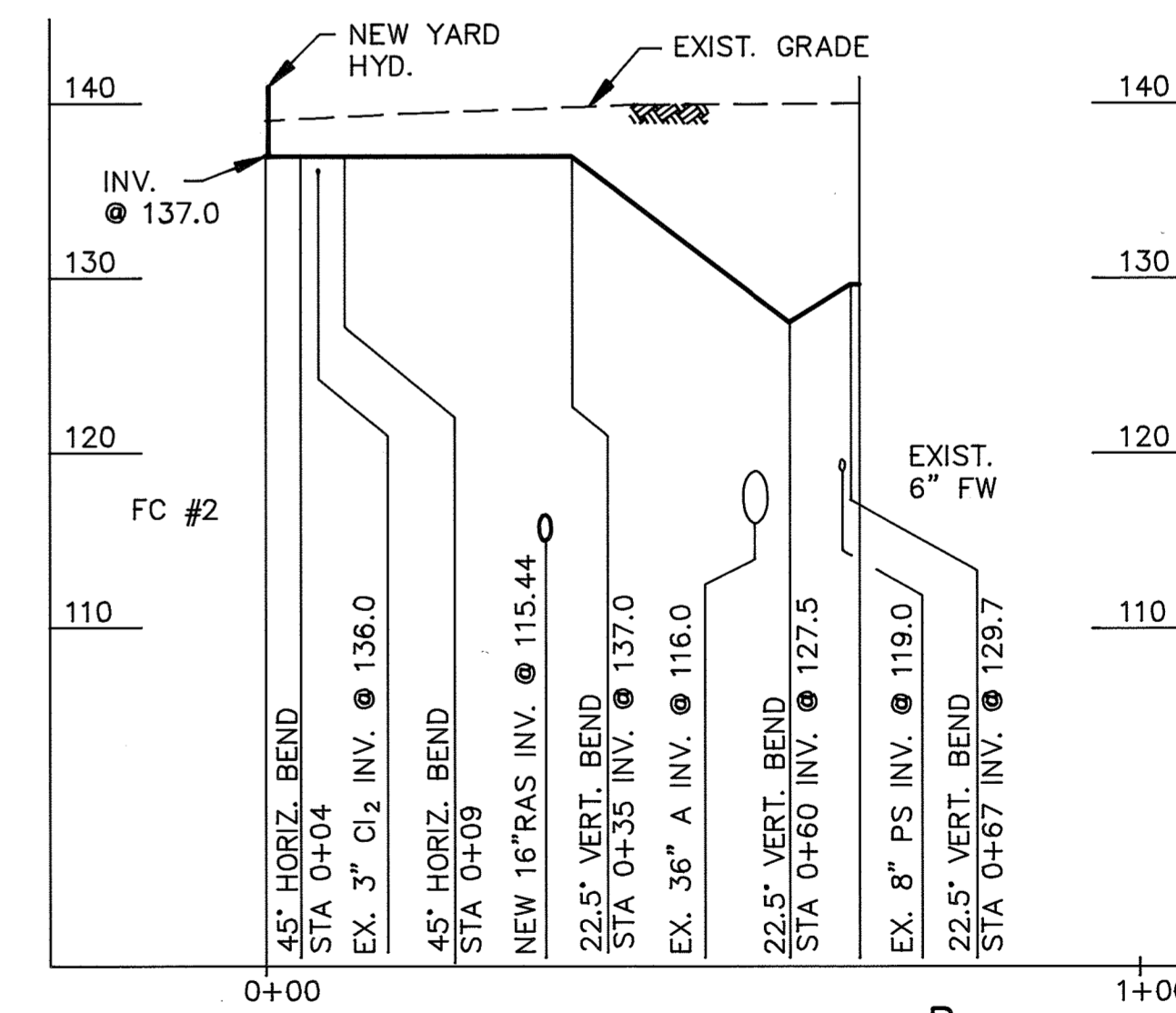
12" D
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



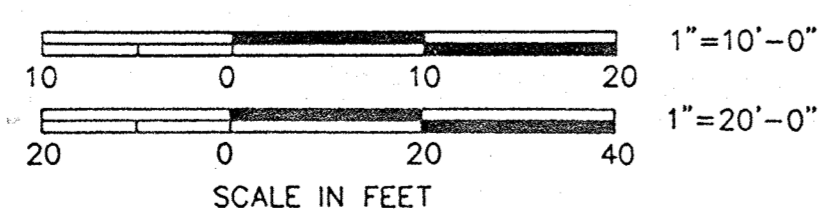
15" SD
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



36" FCI
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



4" FW
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"
C-13 | C-25



FILE: C:\LTPAT2\PROF4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS: *[Signature]* DATE: 12/6/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES: *[Signature]* DATE: 12/9/91

CHIEF, BUREAU OF ENGINEERING: *[Signature]* DATE: 12-9-91
CHIEF, UTILITY DESIGN DIVISION: *[Signature]* DATE: 12-9-91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

STATE OF MARYLAND
DONALD RICHARD AUKAMP
REGISTERED PROFESSIONAL ENGINEER

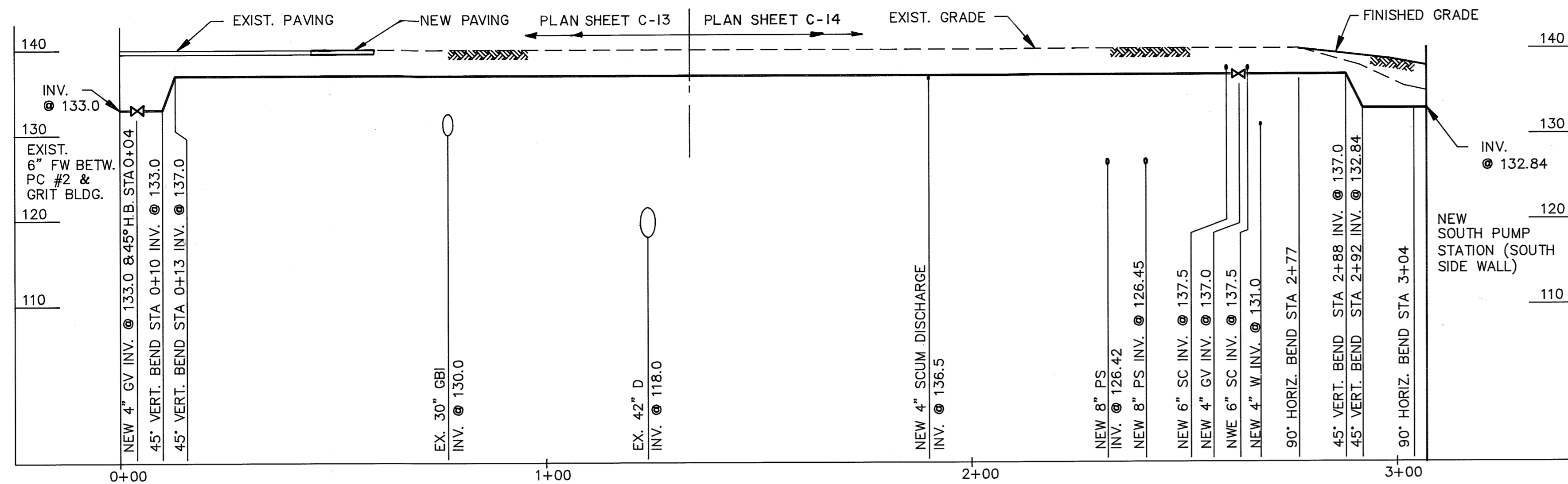
DES:NB			
DRN:LB			
CHK:MCJ	2	RECORD DRAWING	11/4/91
	1	REVISED FOR BIDDING	3/5/92
DATE:12/2/91	BY	NO.	REVISION

CIVIL

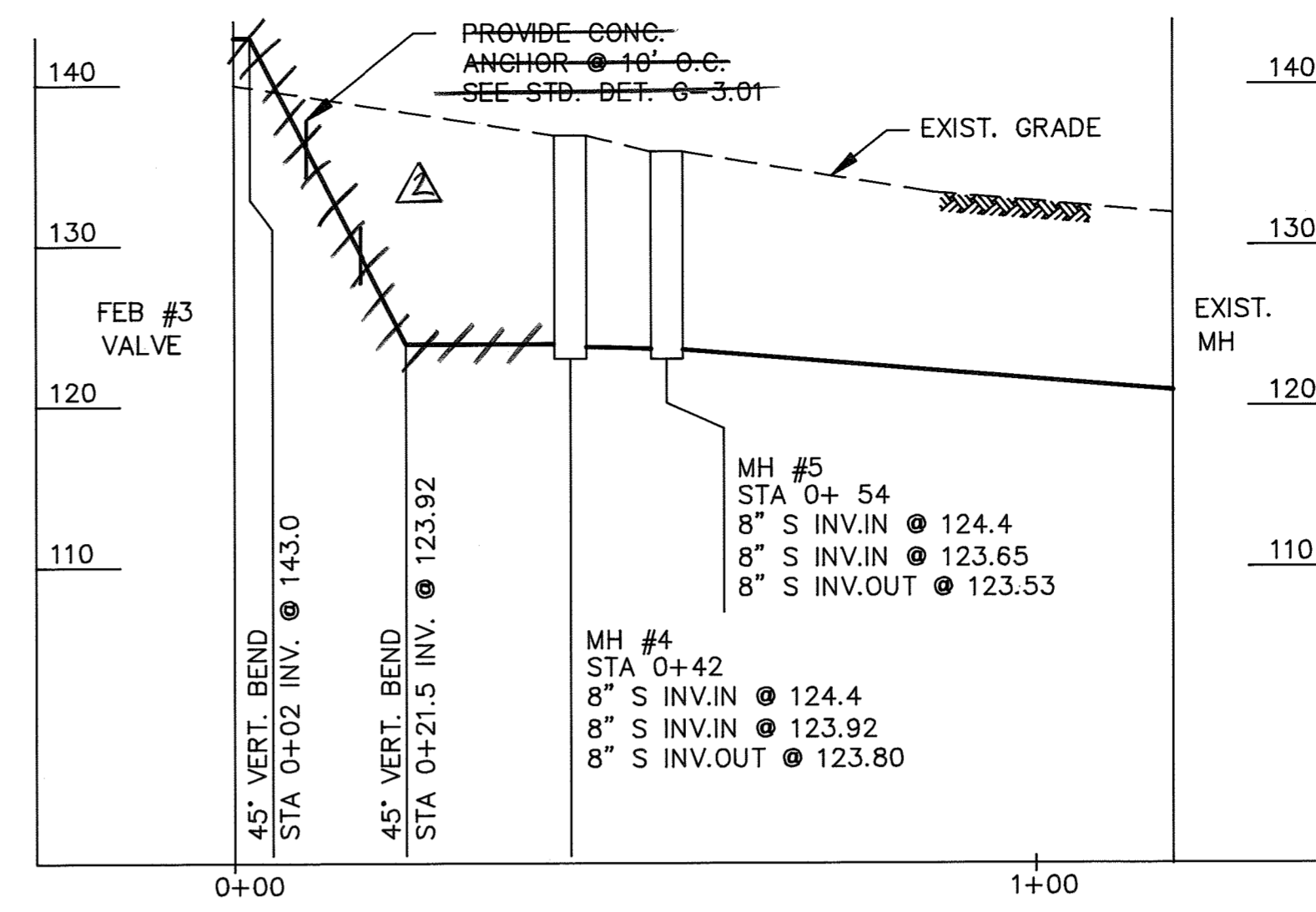
YARD PIPING PROFILES V

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

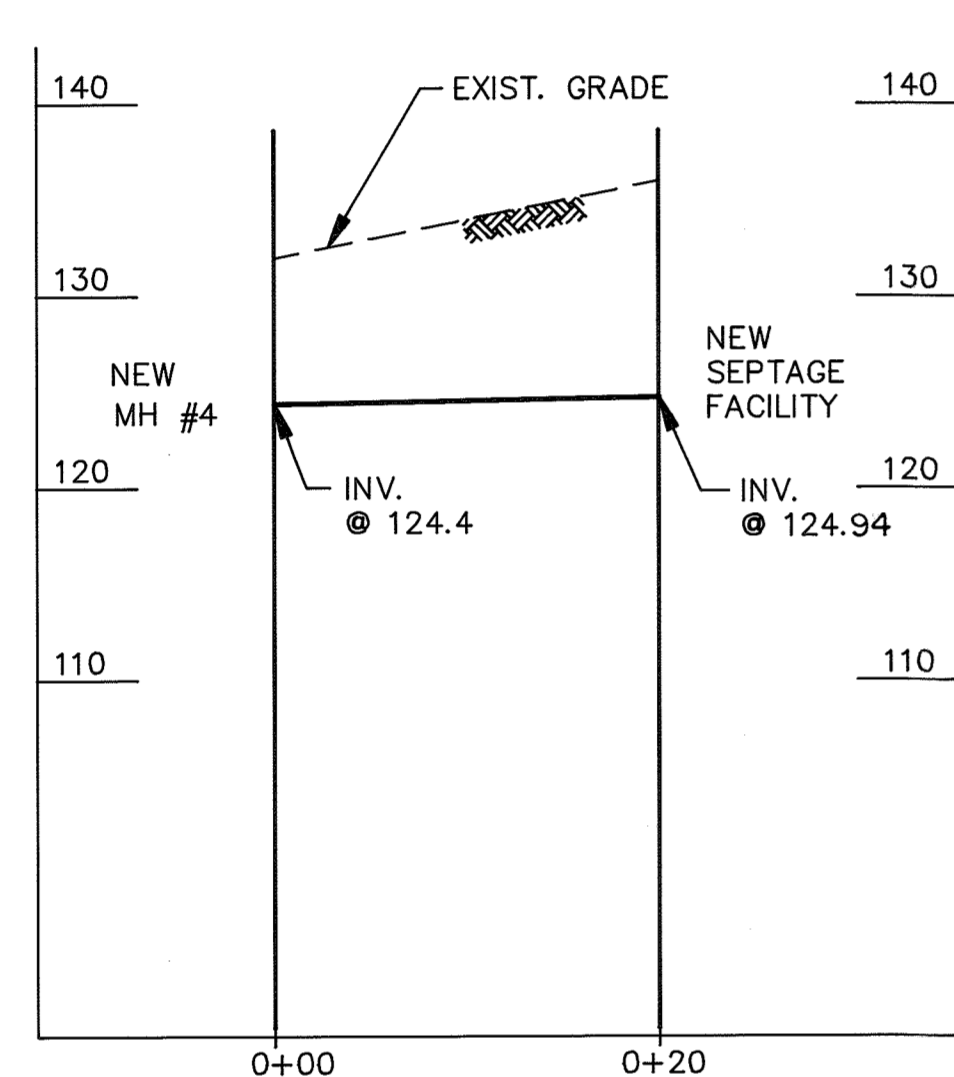
SCALE AS SHOWN
SHEET 30 OF 226
C-25



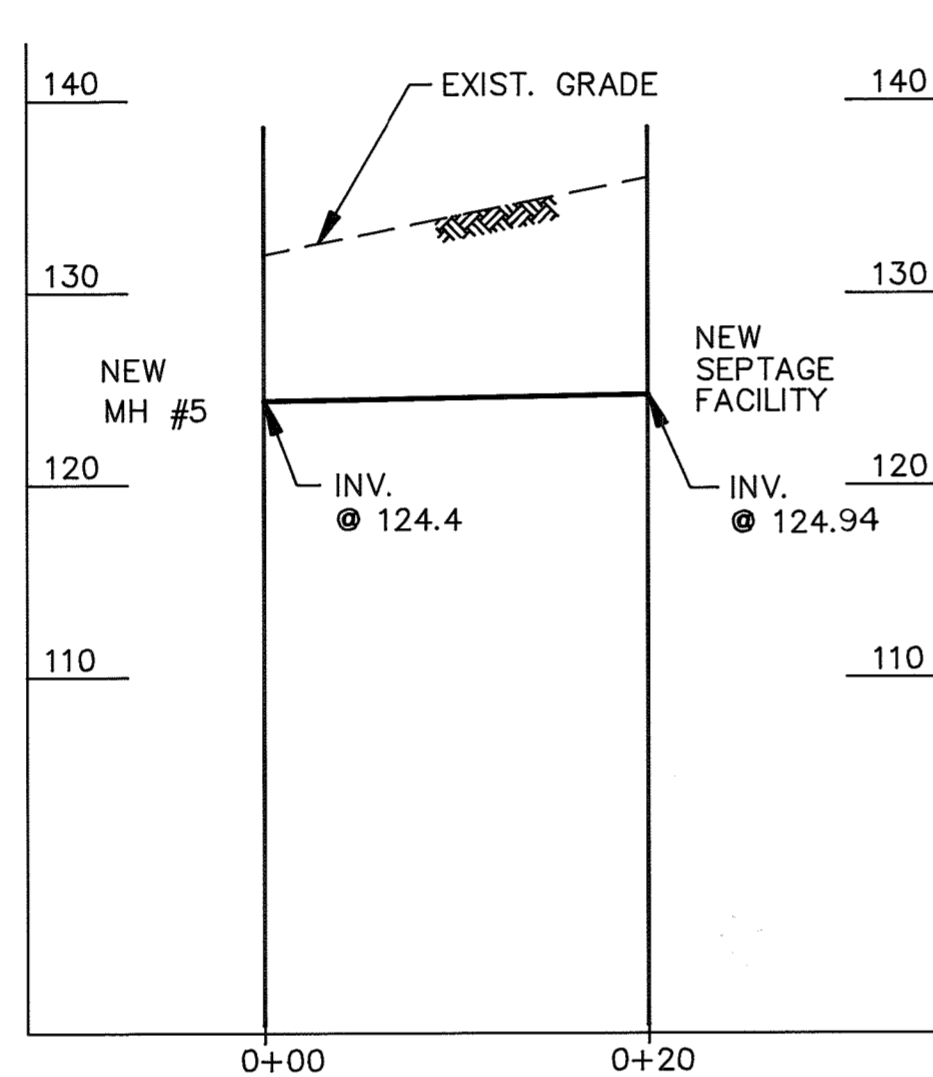
4" FW
 H-H
 SCALE: HORIZ. 1" = 20'-0" C-13 | C-26
 VERT. 1" = 10'-0" C-14



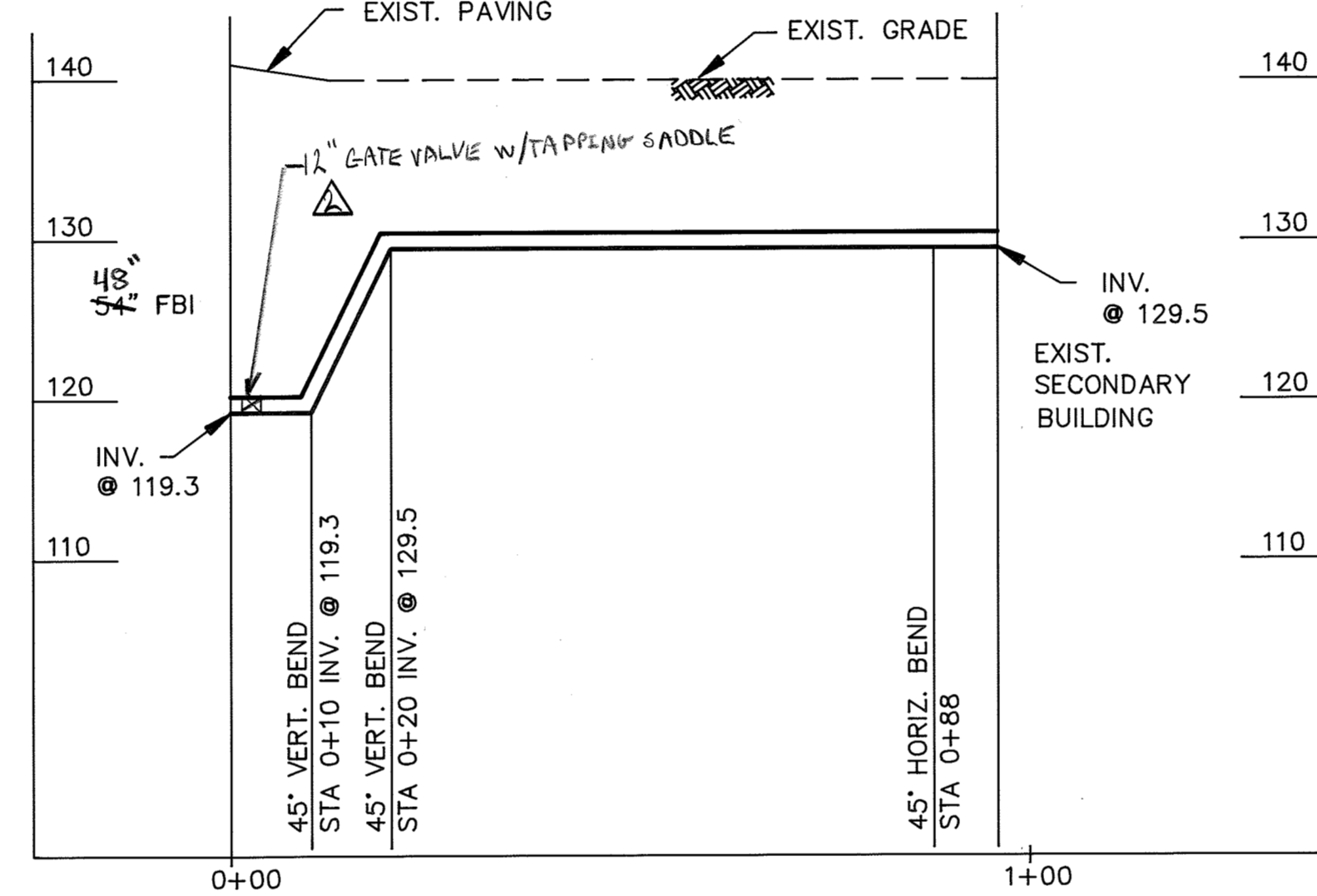
8" S
 L-L
 SCALE: HORIZ. 1" = 20'-0" C-13 | C-26
 VERT. 1" = 10'-0"



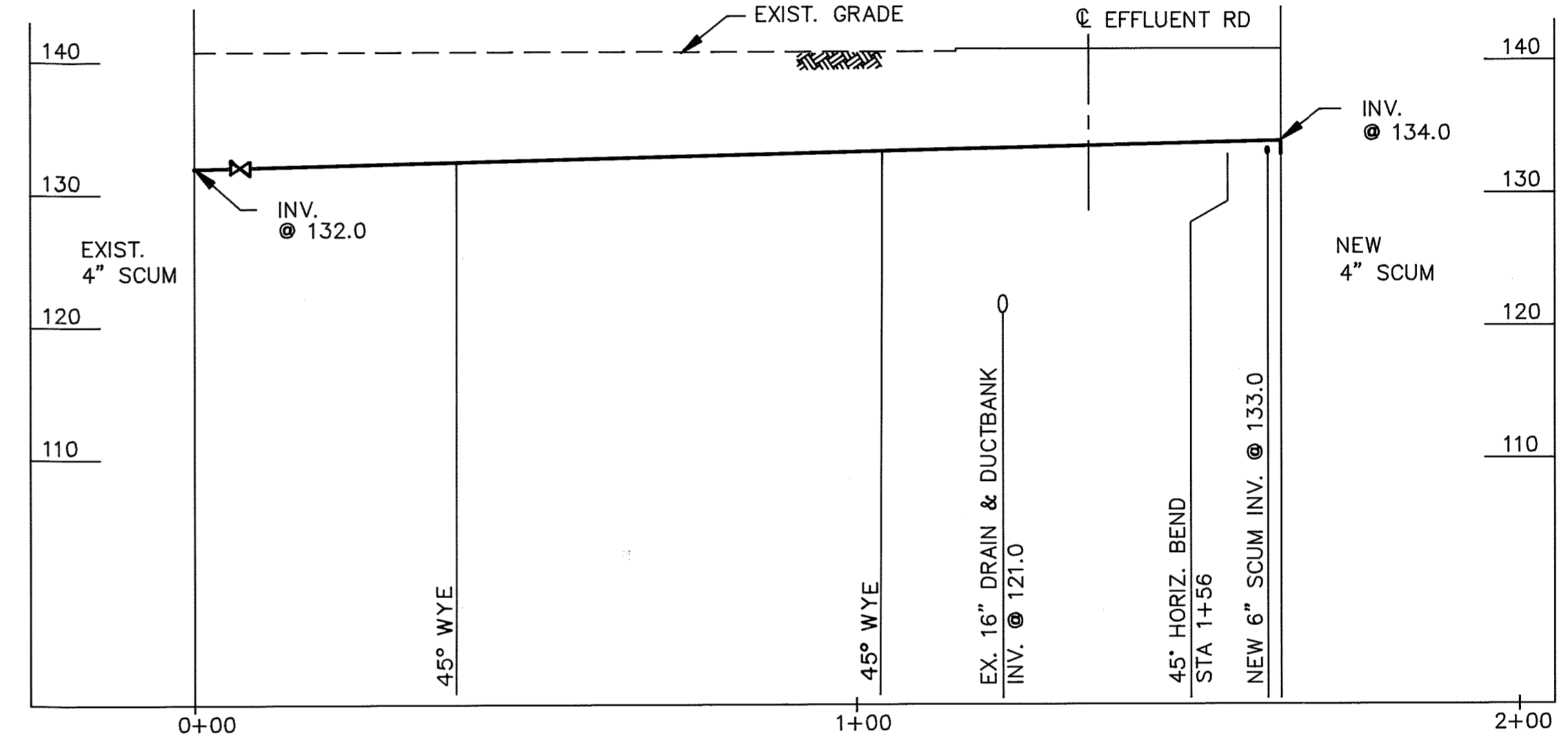
8" S
 M-M
 SCALE: HORIZ. 1" = 10'-0" C-13 | C-26
 VERT. 1" = 10'-0"



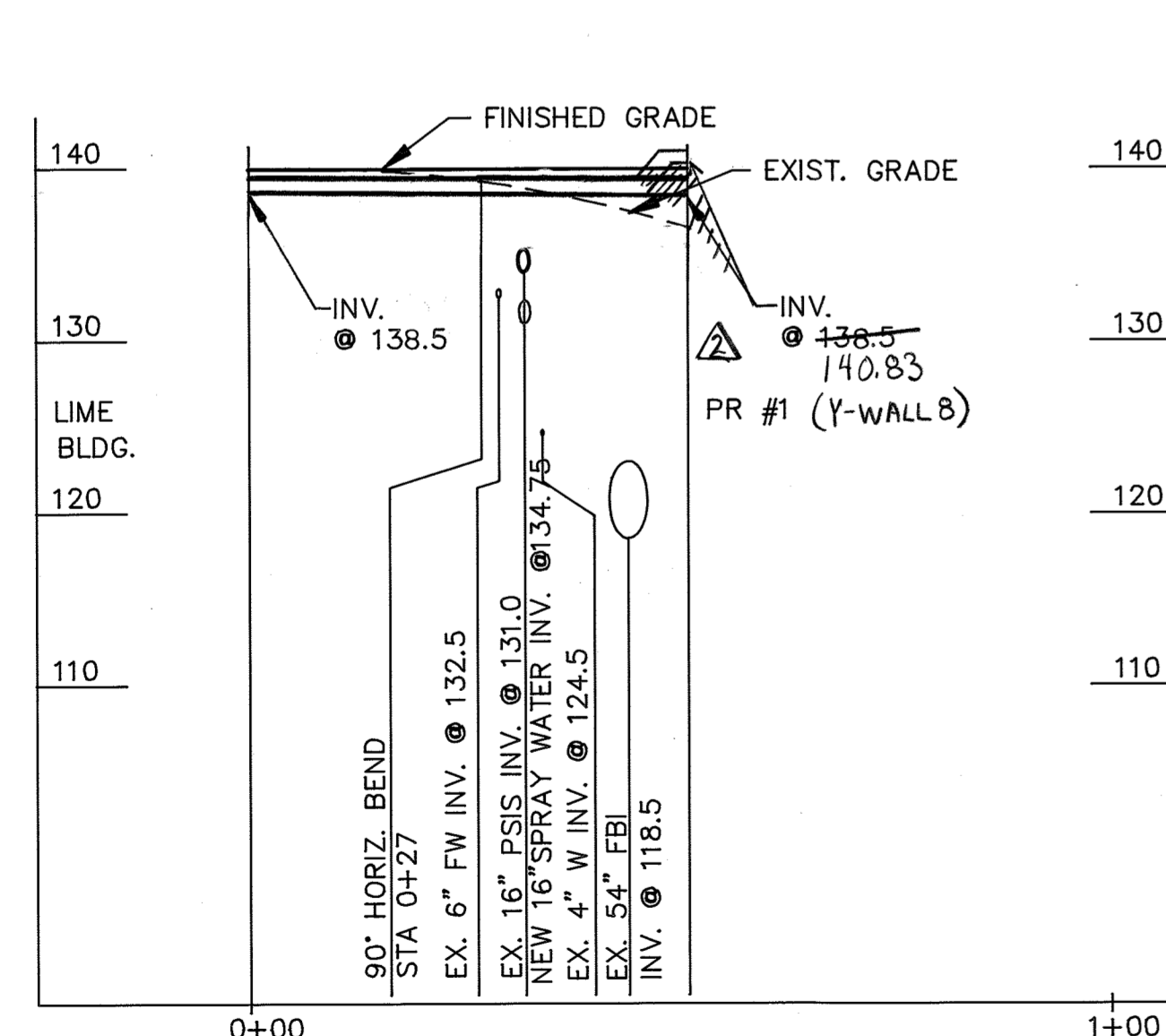
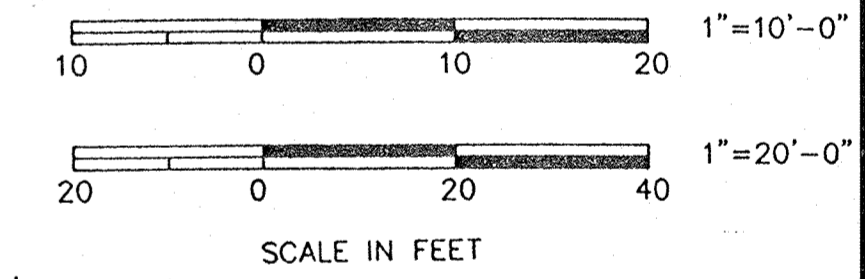
8" S
 N-N
 SCALE: HORIZ. 1" = 10'-0" C-13 | C-26
 VERT. 1" = 10'-0"



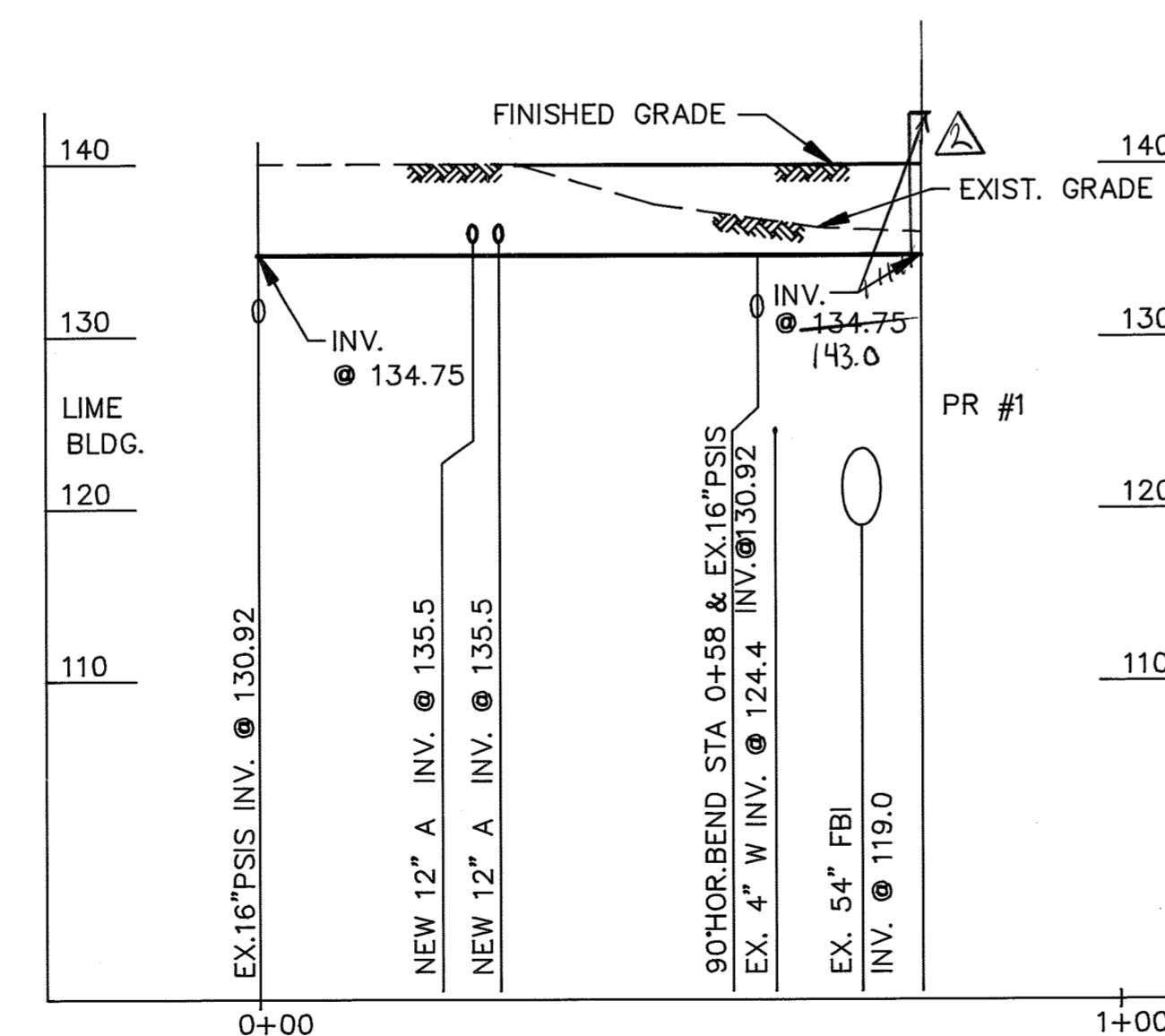
12" SPRAY WATER
 O-O
 SCALE: HORIZ. 1" = 20'-0" C-13 | C-26
 VERT. 1" = 10'-0"



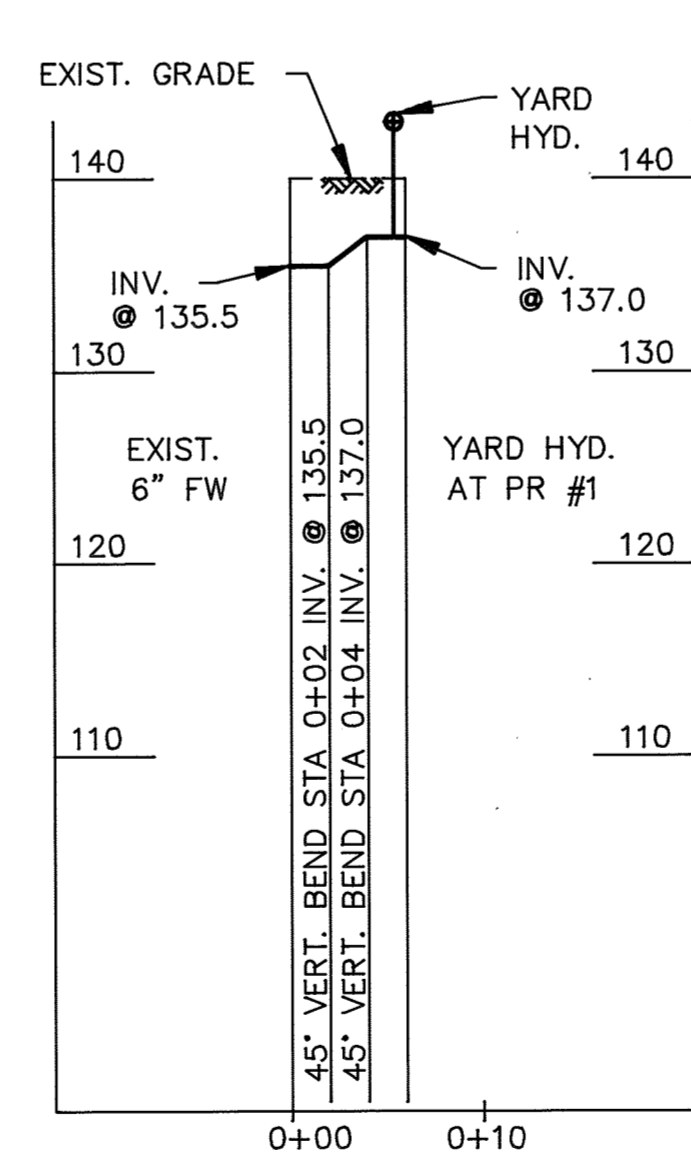
4" SCUM
 P-P
 SCALE: HORIZ. 1" = 20'-0" C-15 | C-26
 VERT. 1" = 10'-0"



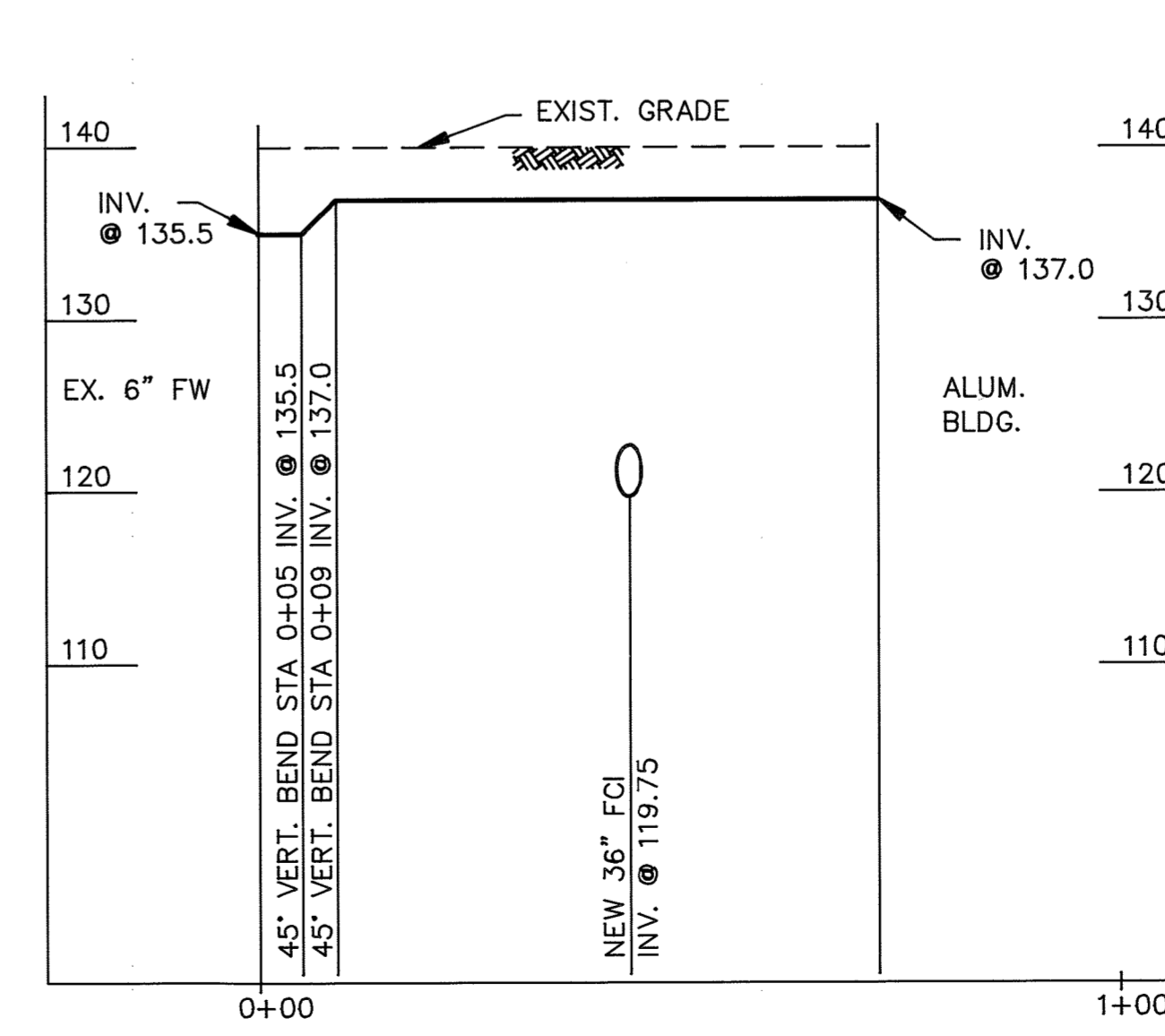
12" AIR
 R-R
 SCALE: HORIZ. 1" = 20'-0" C-15 | C-26
 VERT. 1" = 10'-0"



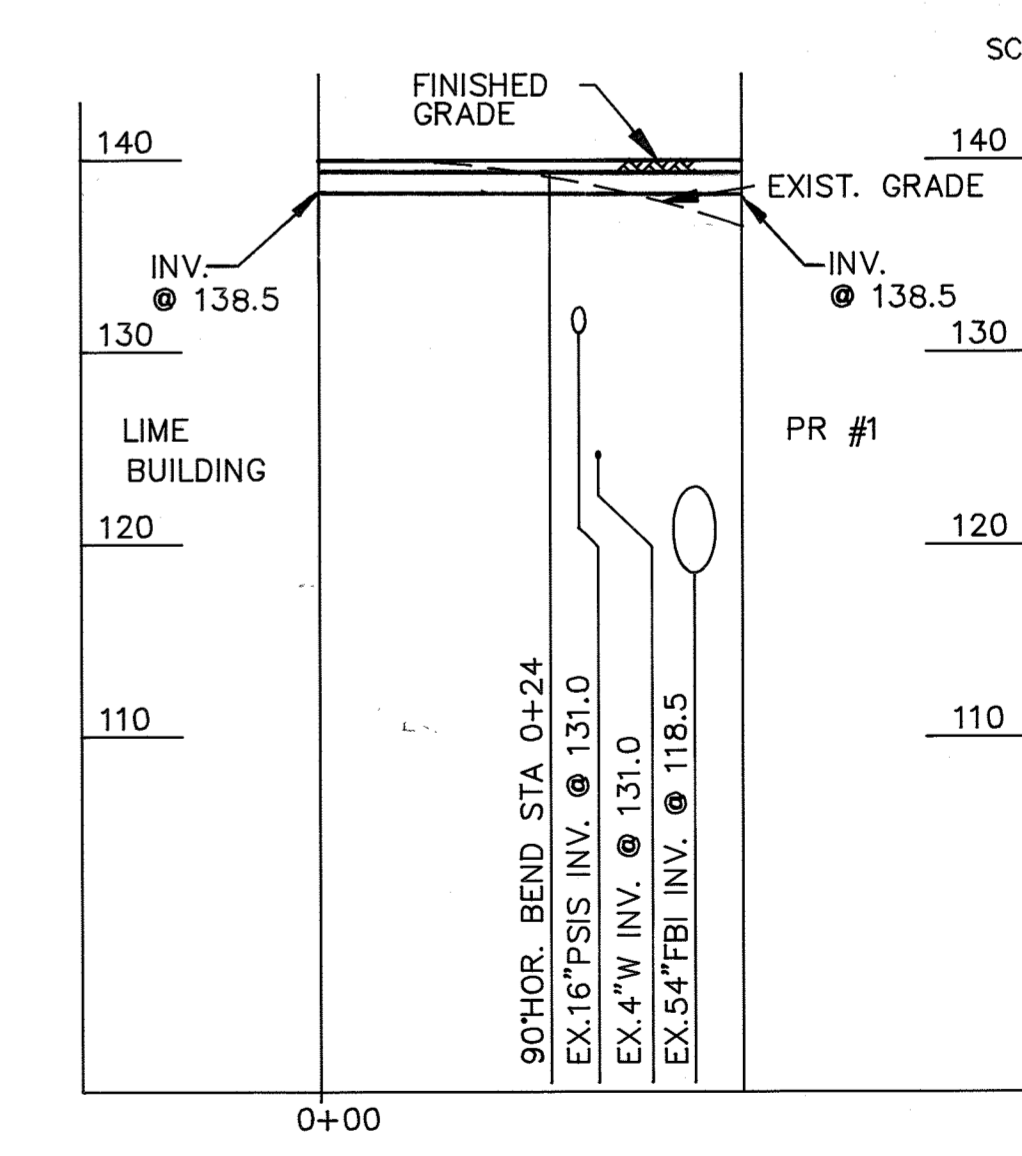
6" SPRAY WATER
 S-S
 SCALE: HORIZ. 1" = 20'-0" C-15 | C-26
 VERT. 1" = 10'-0"



4" FW
 T-T
 SCALE: HORIZ. 1" = 10'-0" C-15 | C-26
 VERT. 1" = 10'-0"



4" FW
 U-U
 SCALE: HORIZ. 1" = 20'-0" C-15 | C-26
 VERT. 1" = 10'-0"



12" AIR
 Q-Q
 SCALE: HORIZ. 1" = 20'-0" C-15 | C-26
 VERT. 1" = 10'-0"

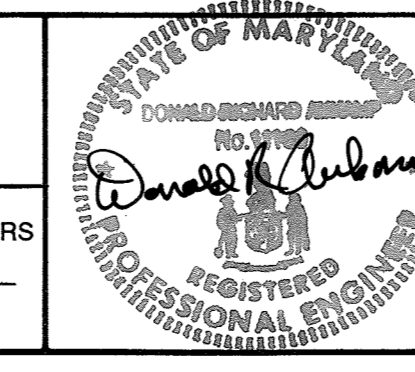
FILE D: / LTPAT / PROF7

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *John A. O'Hara* 12/9/91
 Chief, Bureau of Engineering: *James P. Kelly* 12-9-91
 Chief, Bureau of Environmental Services: *John A. O'Hara* 12/9/91
 Chief, Utility Design Division: *John A. O'Hara* 12-9-91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland



DES: NB			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/9/91
	1	REVISED FOR BIDDING	3/5/92
DATE: 12/2/91	BY	NO.	REVISION

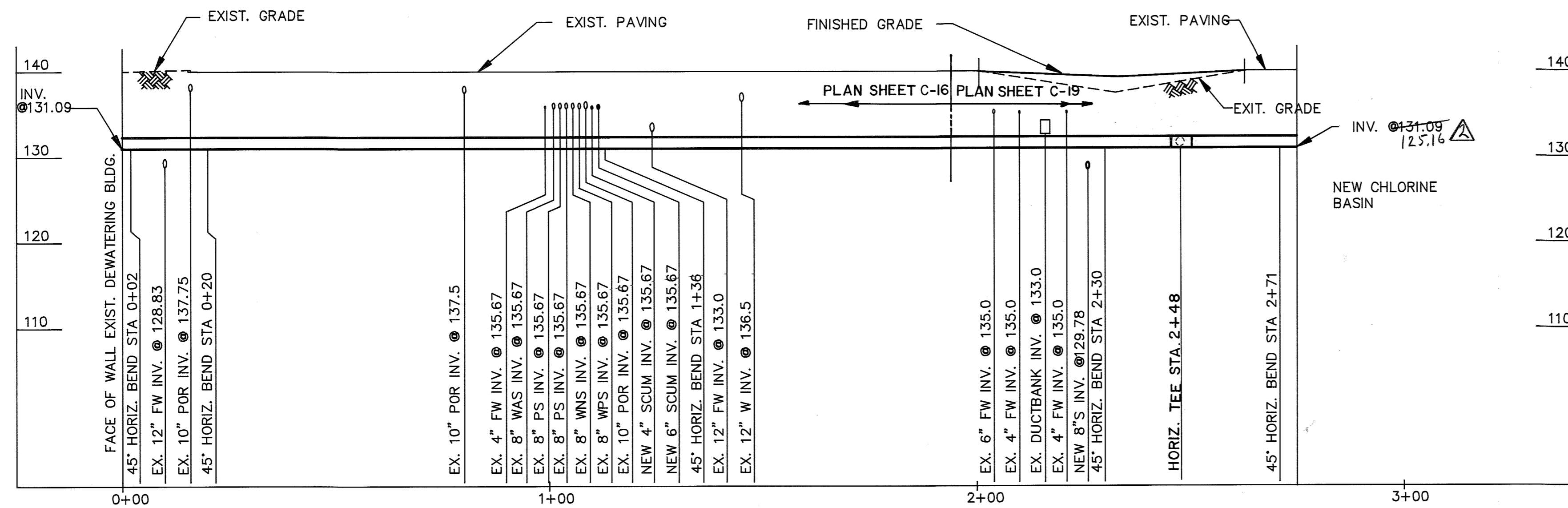
CIVIL

YARD PIPING PROFILES VI

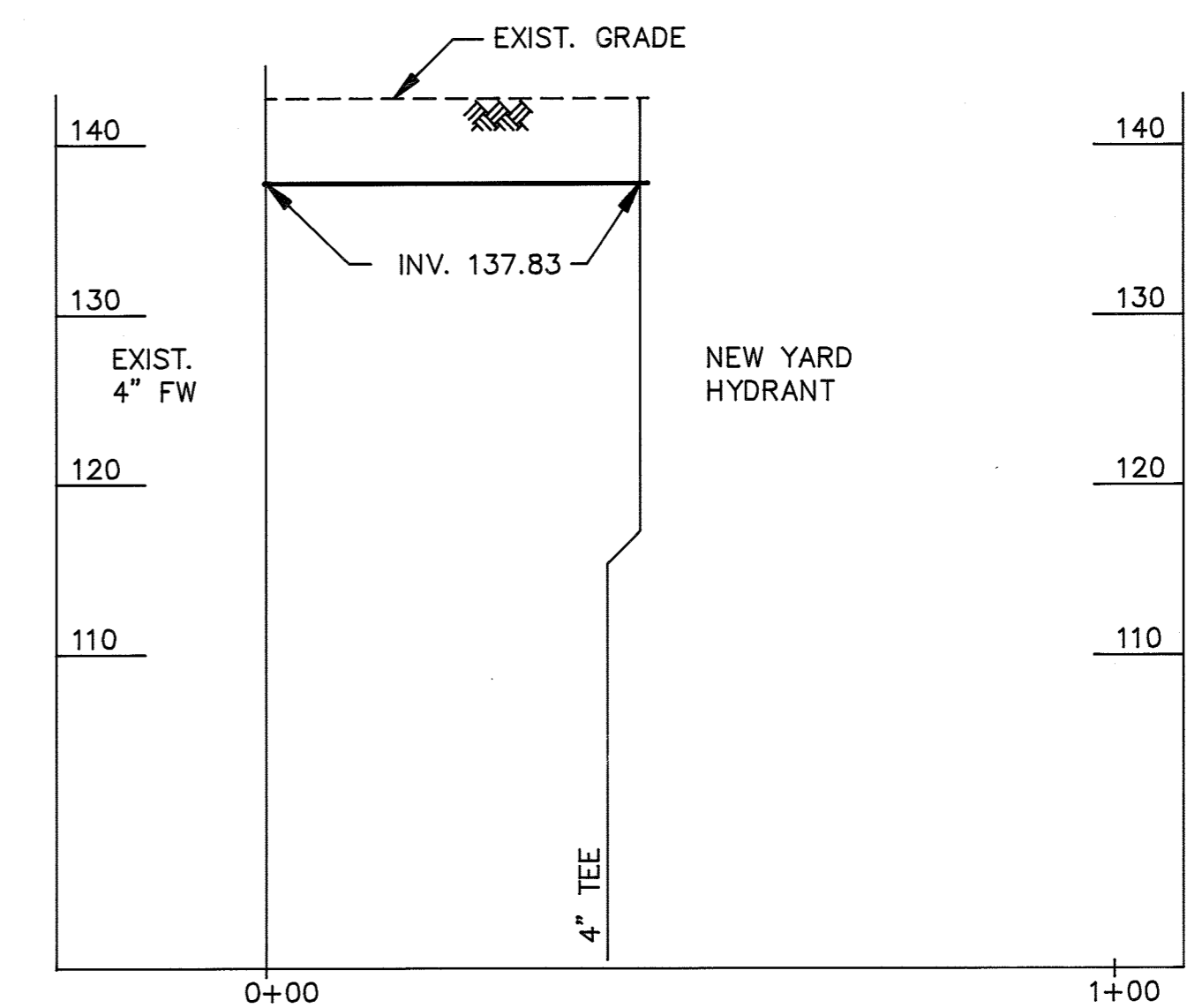
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

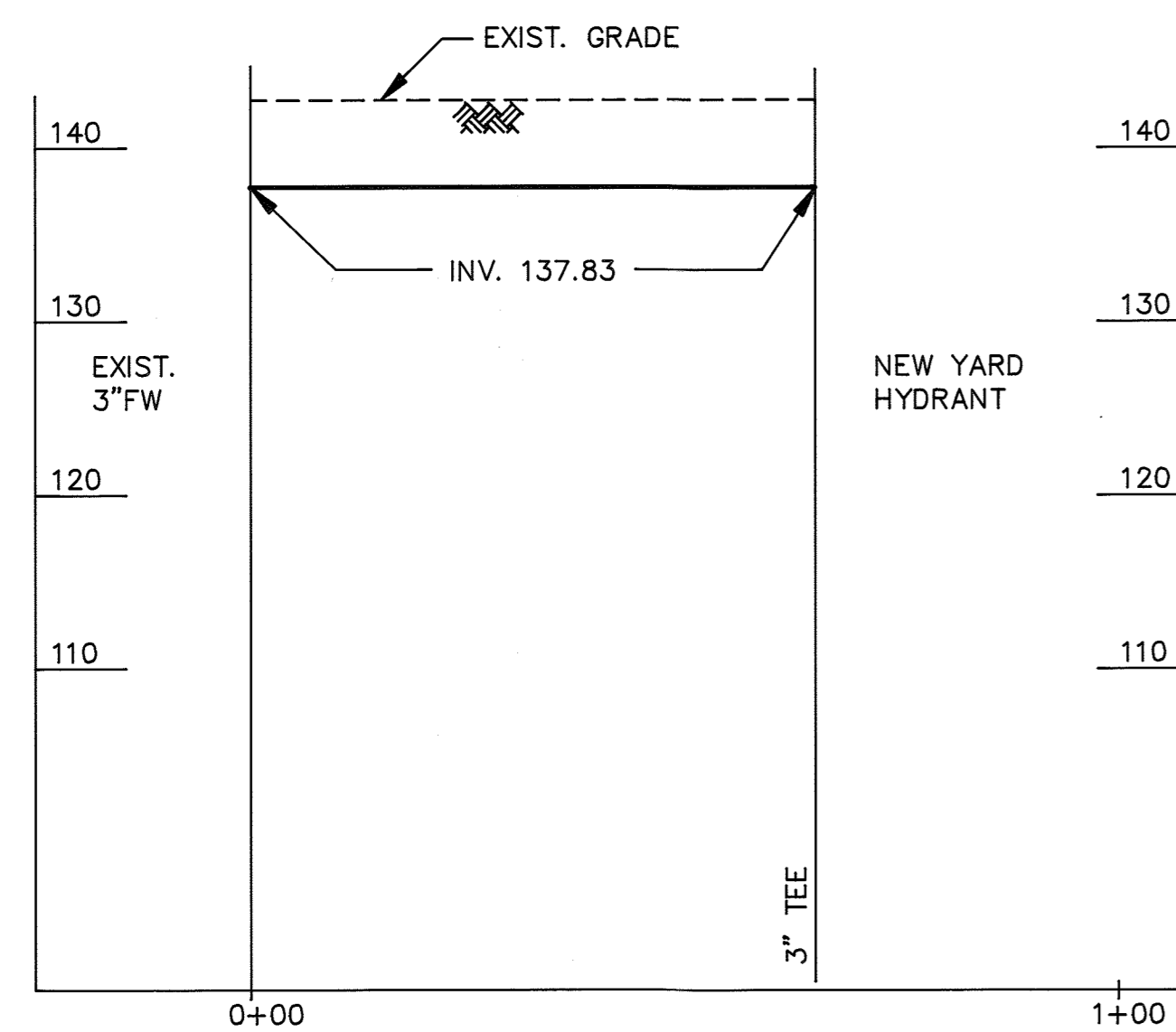
SCALE AS SHOWN
 SHEET 31 OF 226
 C-26



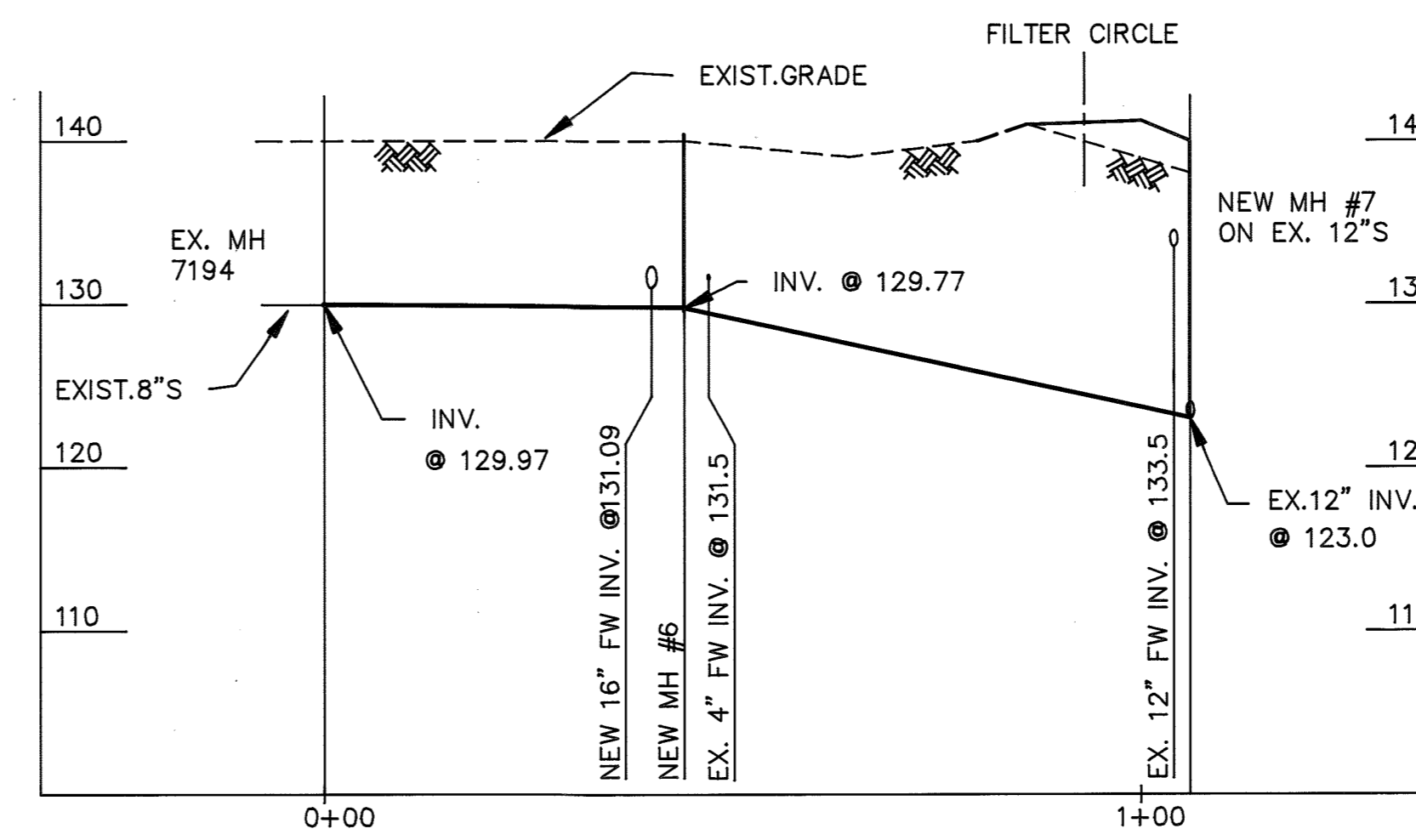
16" FW
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U-U
C-16 | C-27



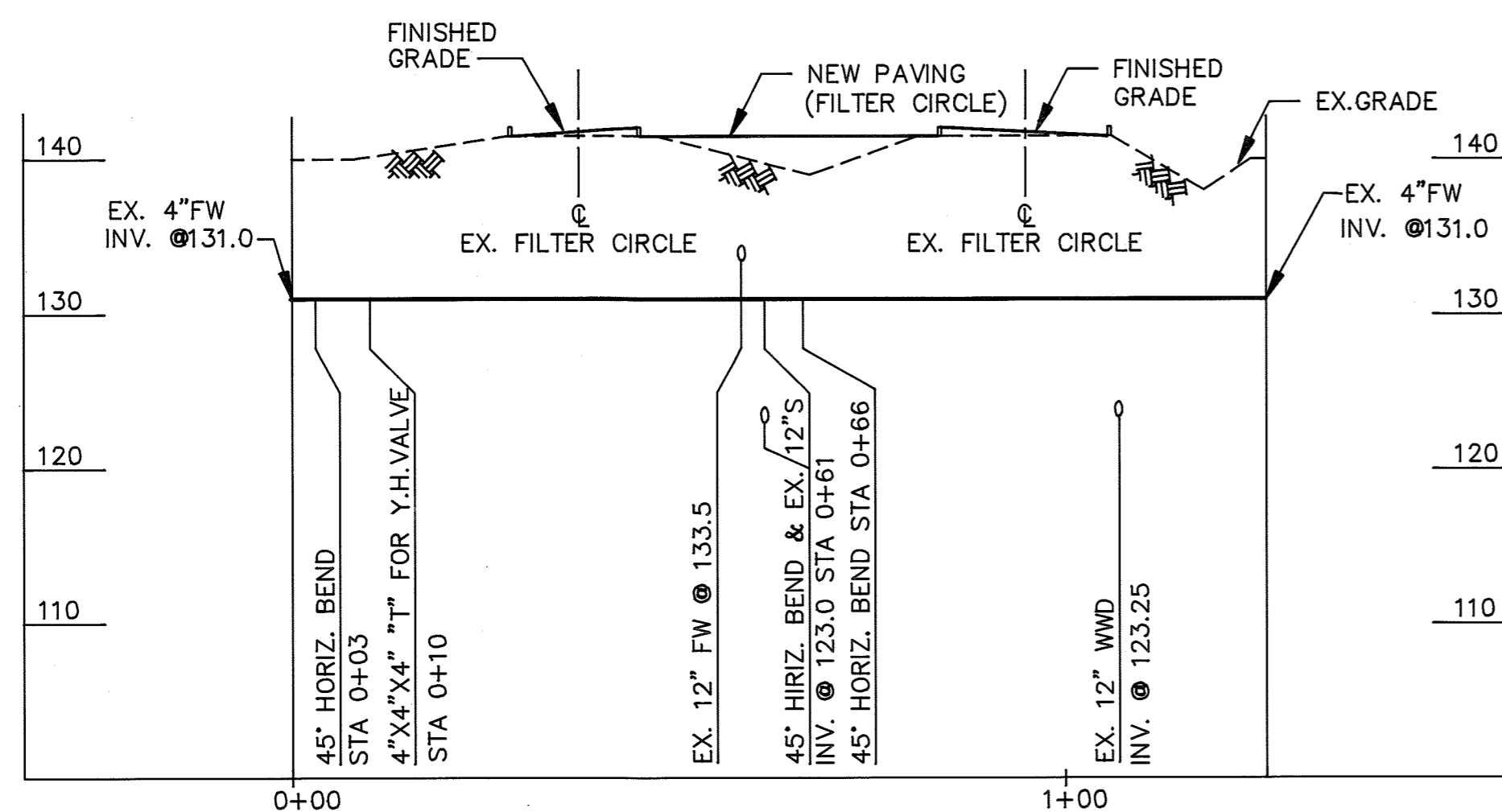
4" FW
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V-V
C-16 | C-27



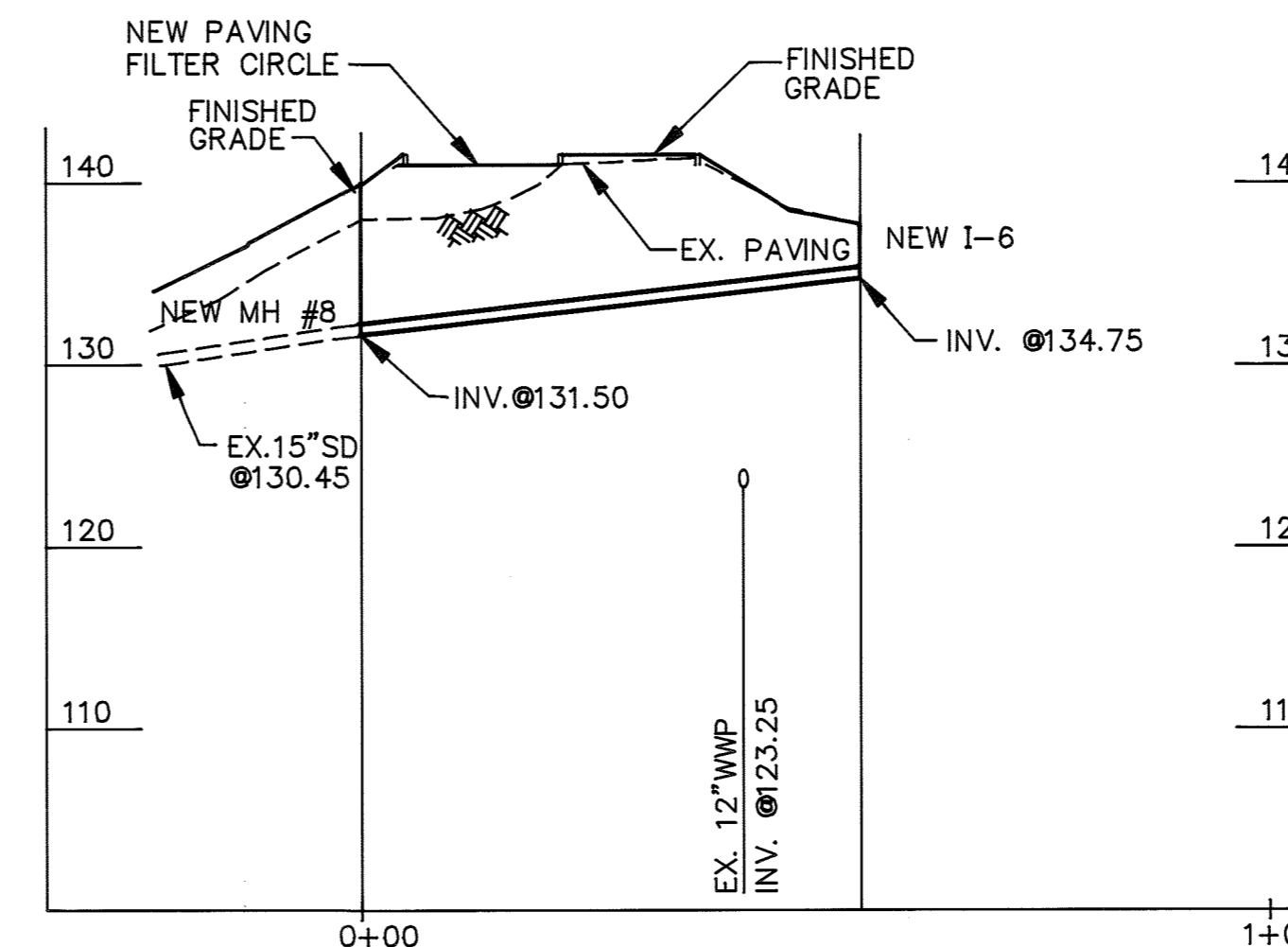
3" FW
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W-W
C-16 | C-27



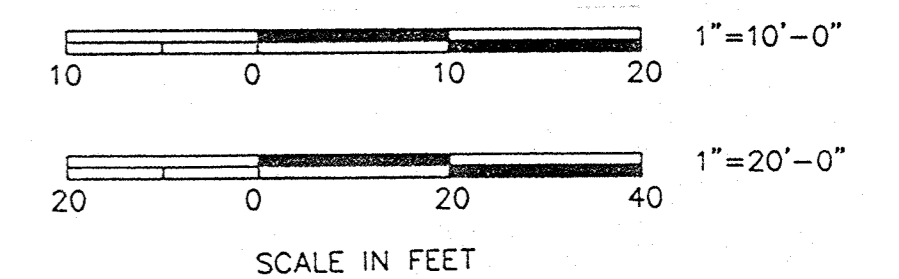
8" S (NEAR CCB)
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
X-X
C-19 | C-27



4" FW (NEAR CCB)
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
Y-Y
C-19 | C-27



15" D
SCALE: HORIZ. 1" = 20'-0" VERT. 1" = 10'-0"
A-4
C-19 | C-27



FILE D: / LTPAT / PROF8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 12/9/91
 Chief, Bureau of Engineering: *[Signature]* 12/9-91
 Chief, Bureau of Environmental Services: *[Signature]* 12/5/91
 Chief, Utility Design Division: *[Signature]* 12-9-91

M&E Metcalf & Eddy
CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland

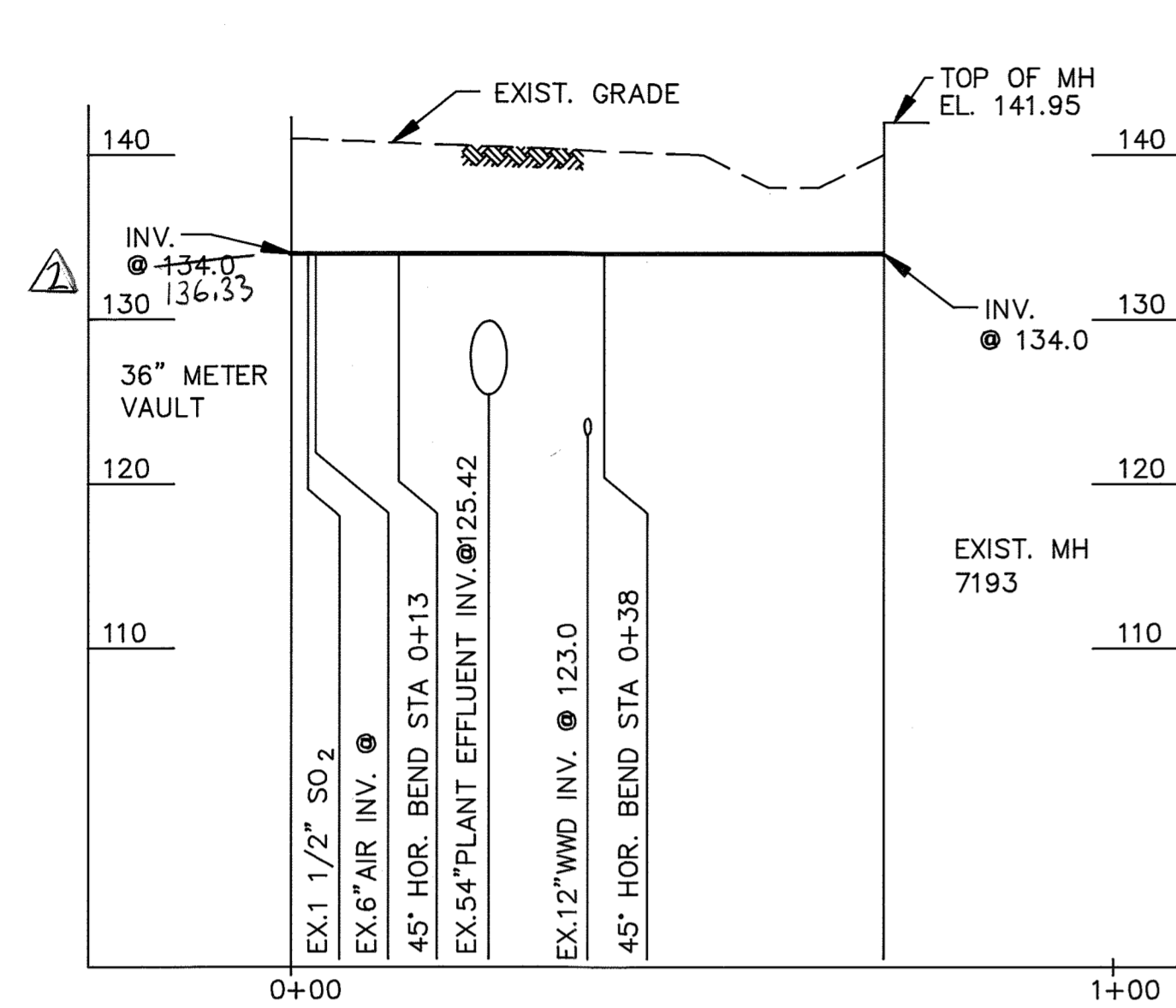
REGISTERED PROFESSIONAL ENGINEER
 STATE OF MARYLAND
 DONALD R. BARKER
 No. 14589

DES: NB			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/14/91
DATE: 12/2/91	1	REVISED FOR BIDDING	5/5/92
BY	NO.	REVISION	DATE

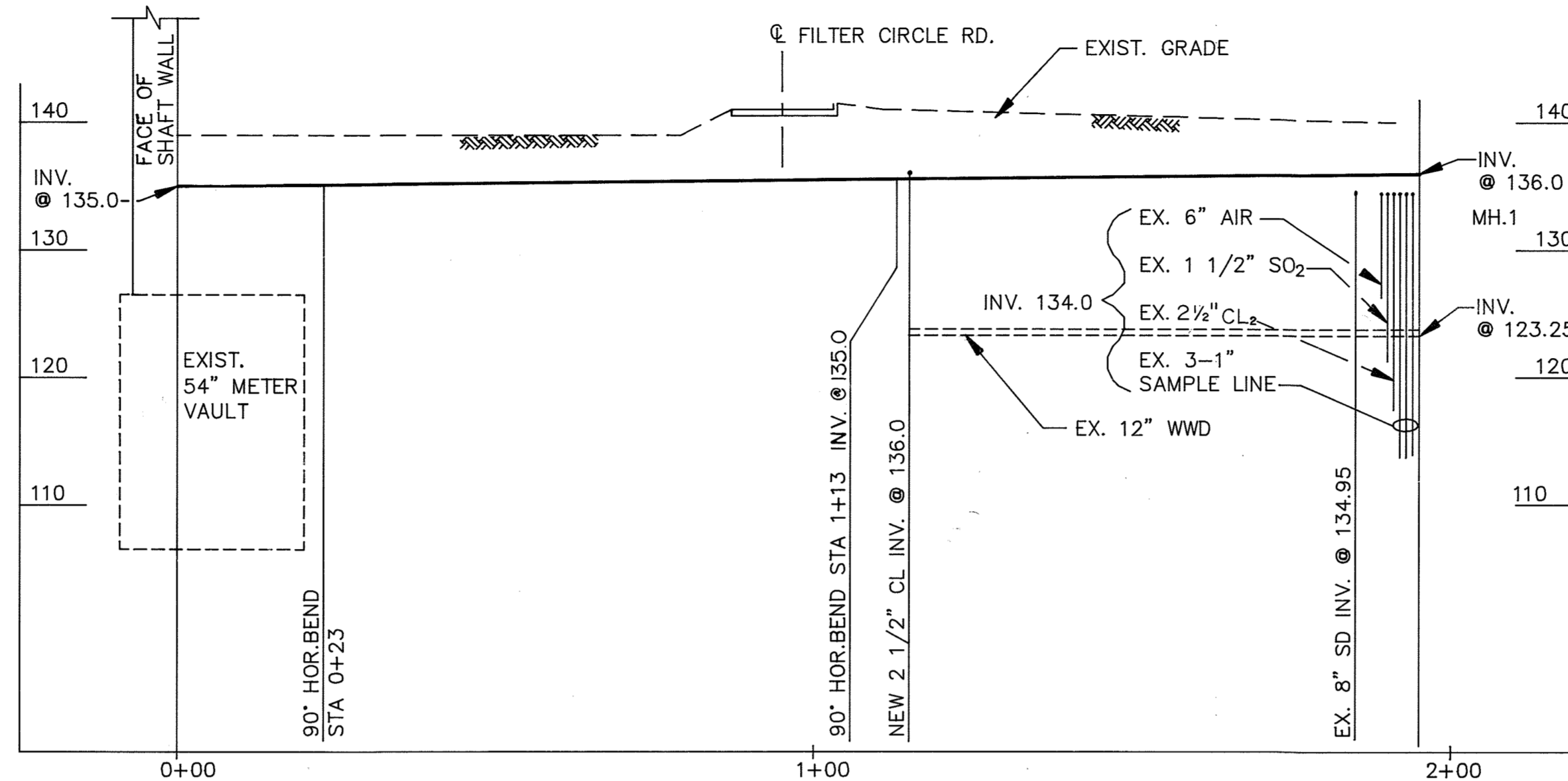
CIVIL
YARD PIPING PROFILES VII

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

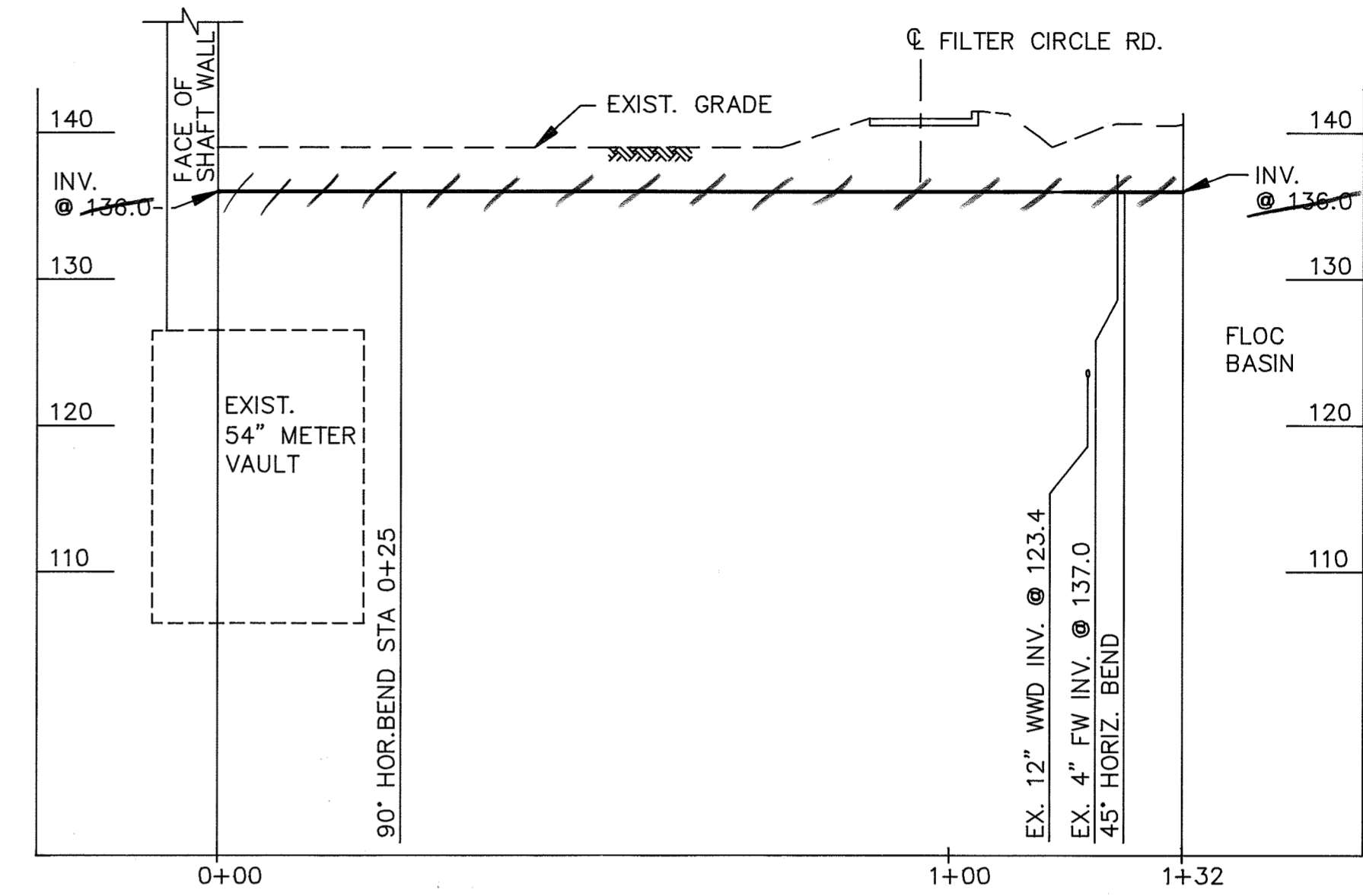
SCALE AS SHOWN
 SHEET 32 OF 226
 C-27



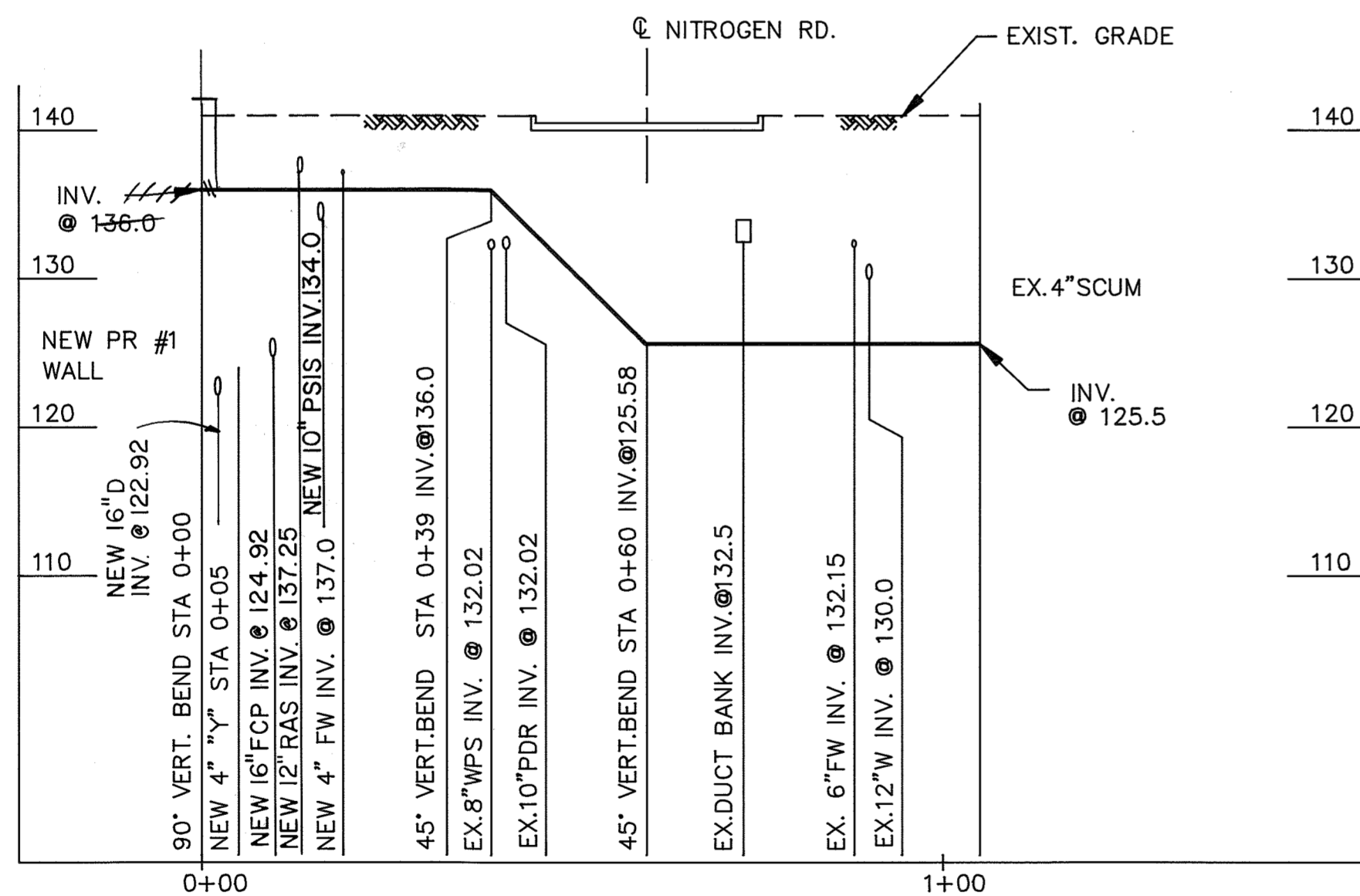
4" SUMP DISCHARGE A-5
C-19 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



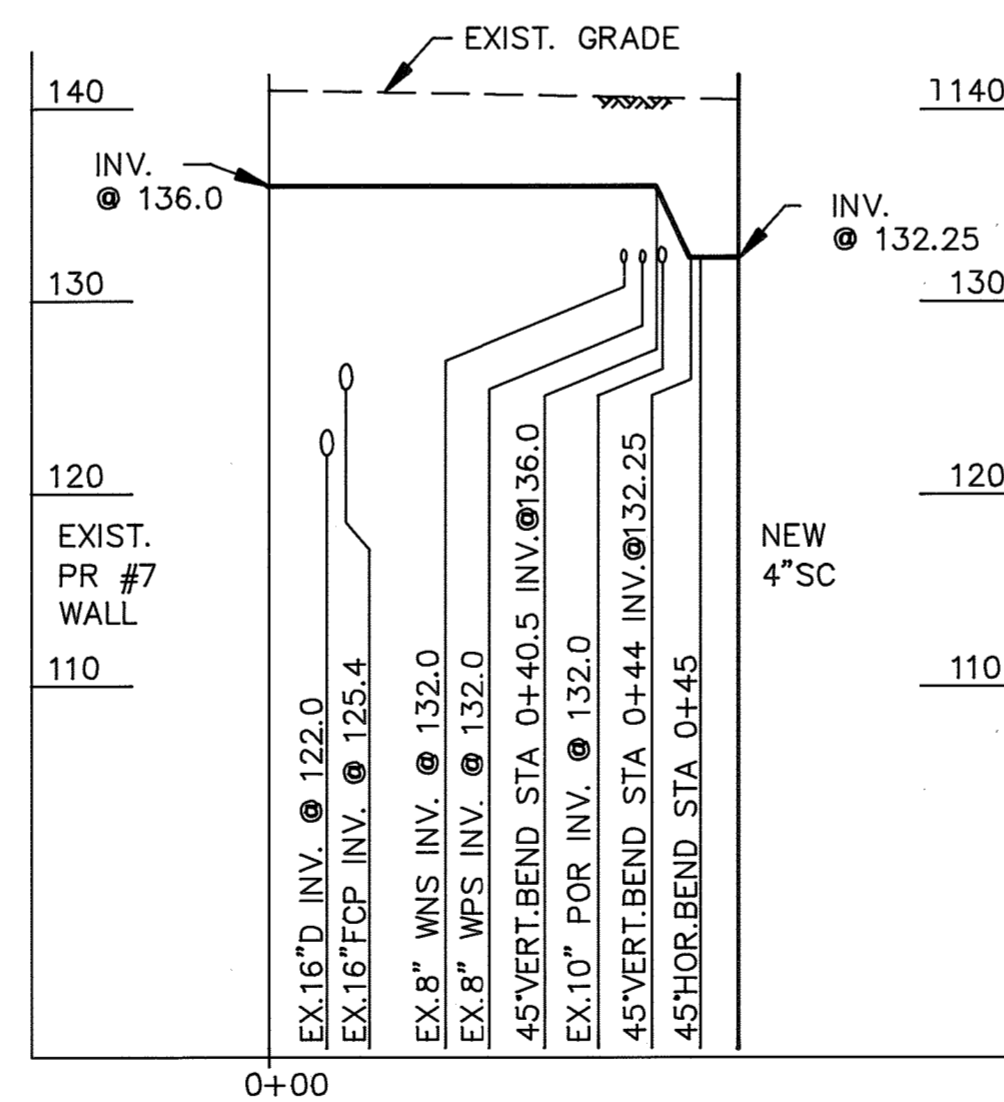
4" SUMP DISCHARGE A-6
C-19 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



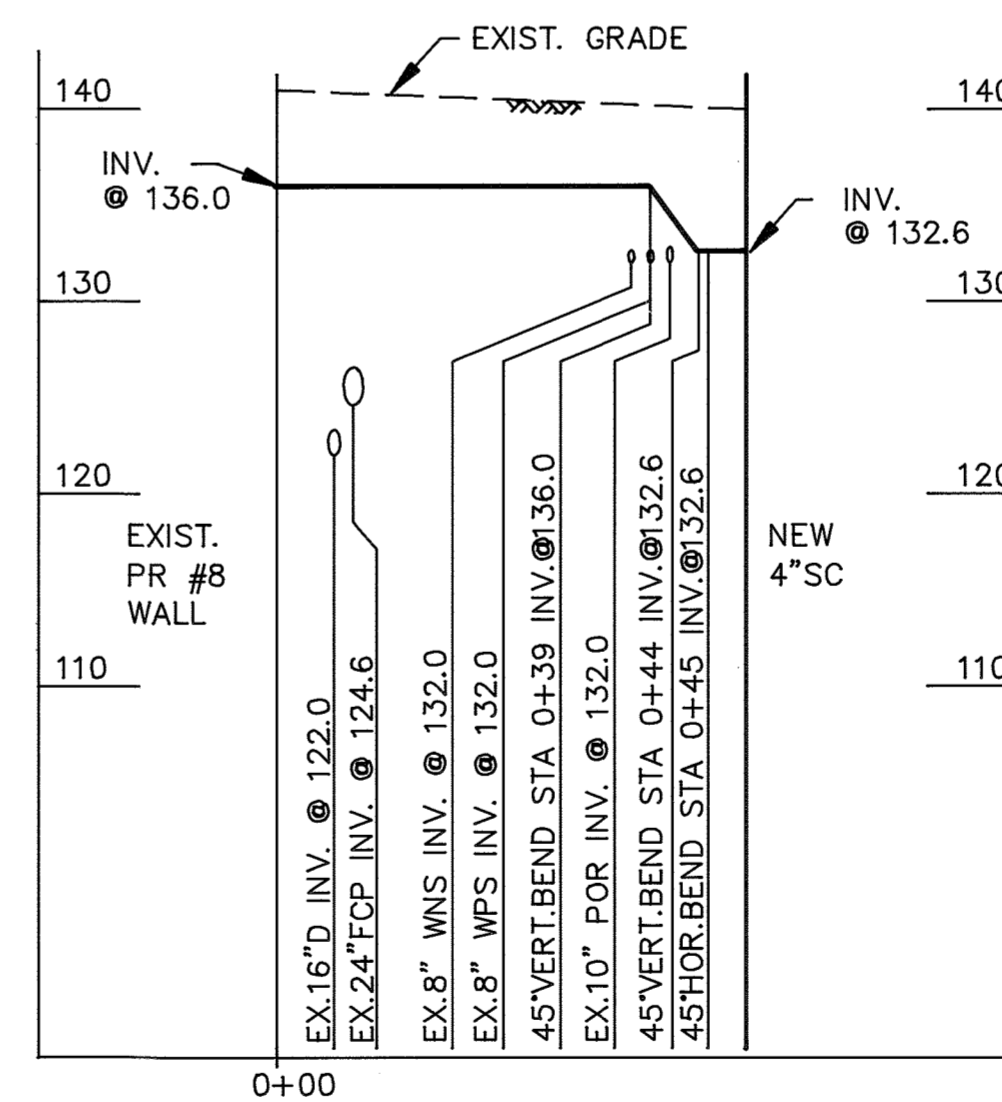
4" SUMP DISCHARGE A-7
C-19 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



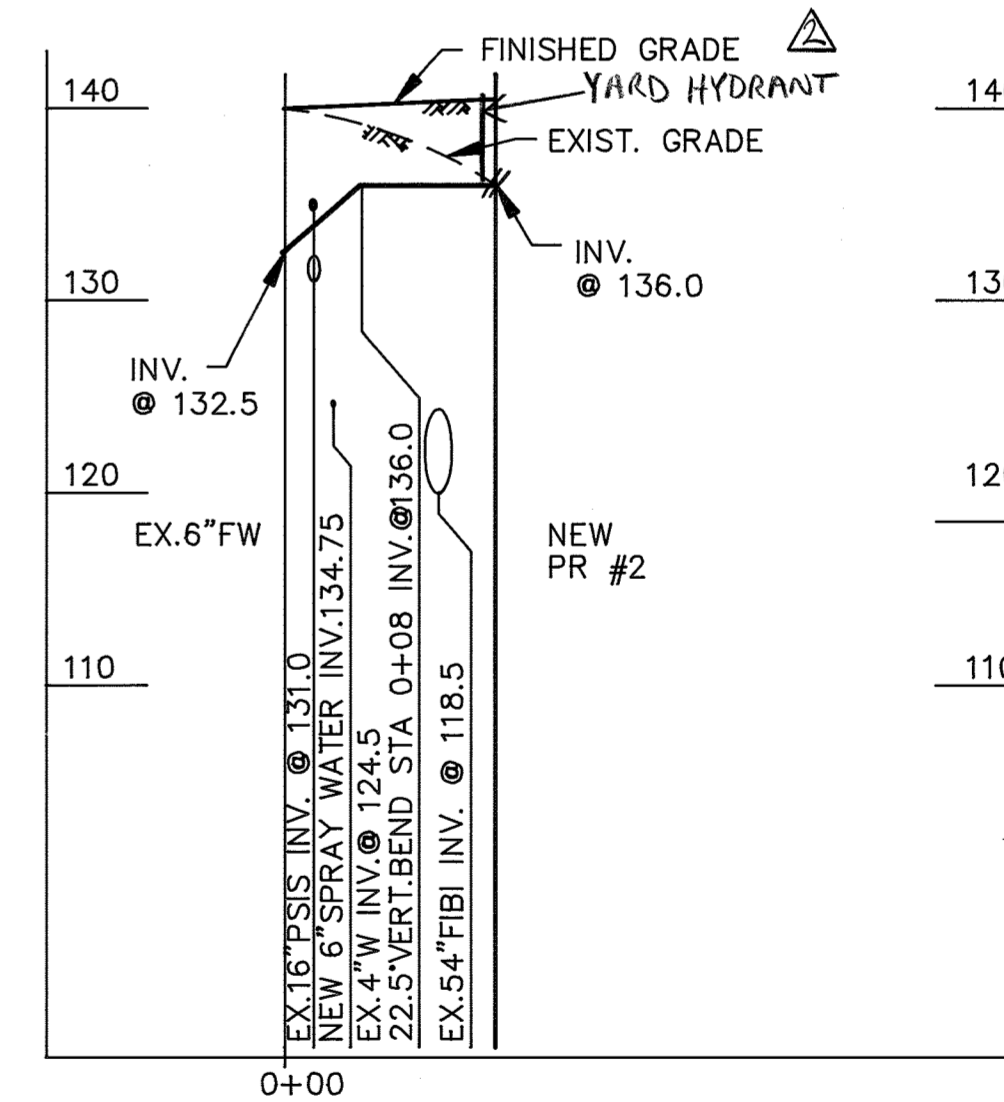
4" SC A-8
C-15 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



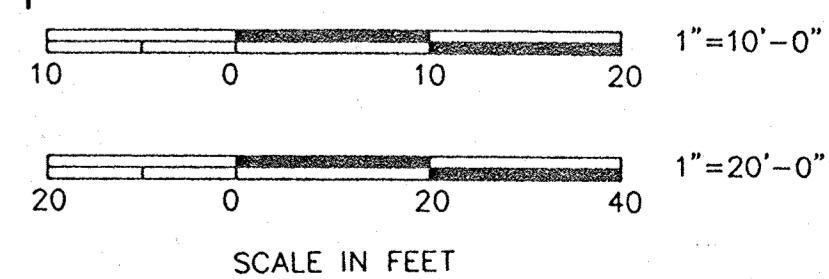
4" SC A-9
C-15 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



4" SC A-10
C-15 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



4" FW B-1
C-15 | C-28
SCALE: HORIZ. 1" = 20'-0"
VERT. 1" = 10'-0"



FILE: C:\PROJ\L/PAT/PROF9

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. ... 12/9/91
DIRECTOR OF PUBLIC WORKS DATE

... 12/9/91
CHIEF, BUREAU OF ENGINEERING DATE

... 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

... 12/9/91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

STATE OF MARYLAND
DONALD EDWARD BARRY
Professional Engineer

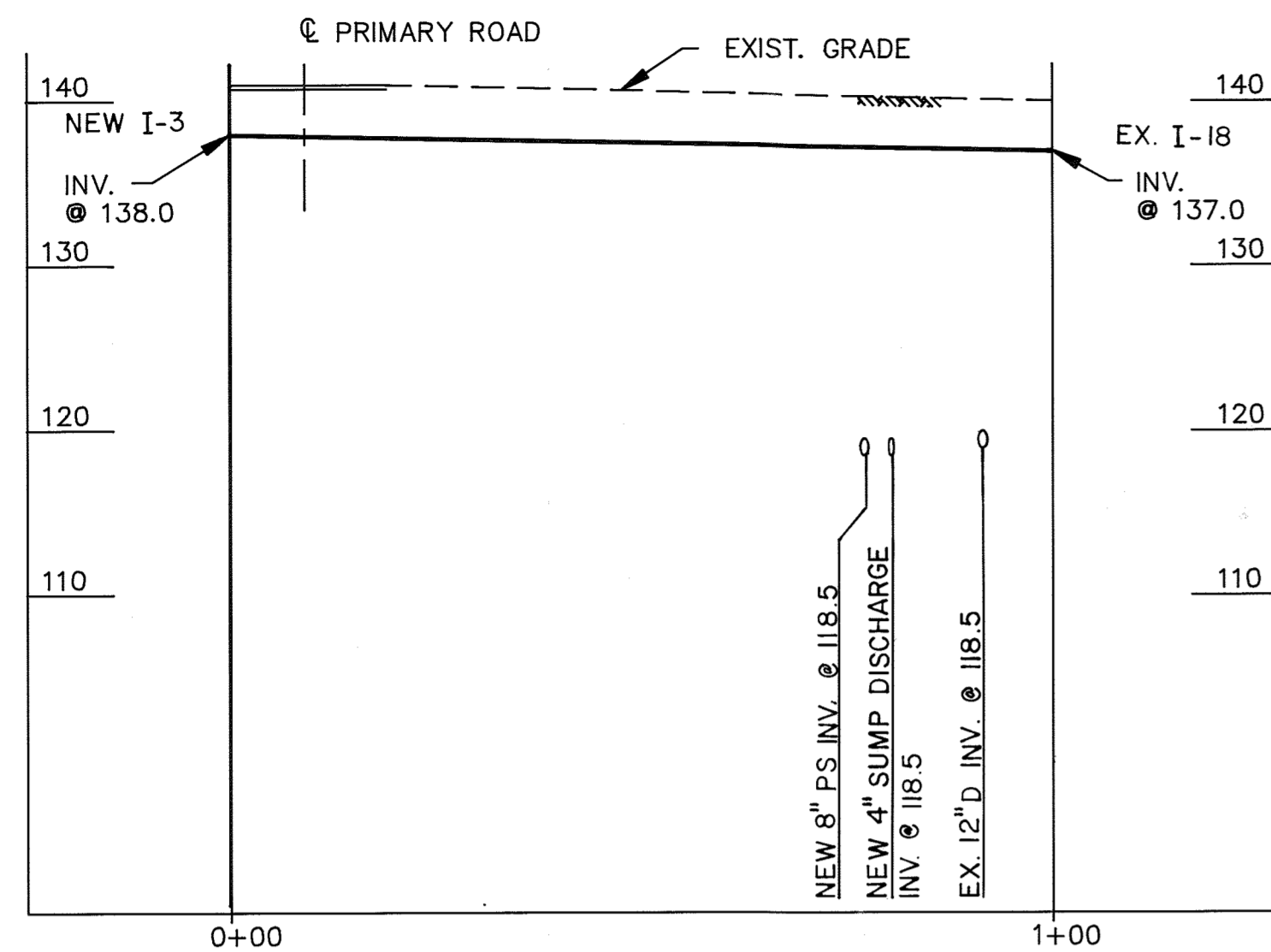
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CHK: MCJ	2	RECORD DRAWING	11/1/91
DATE: 12/2/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

CIVIL

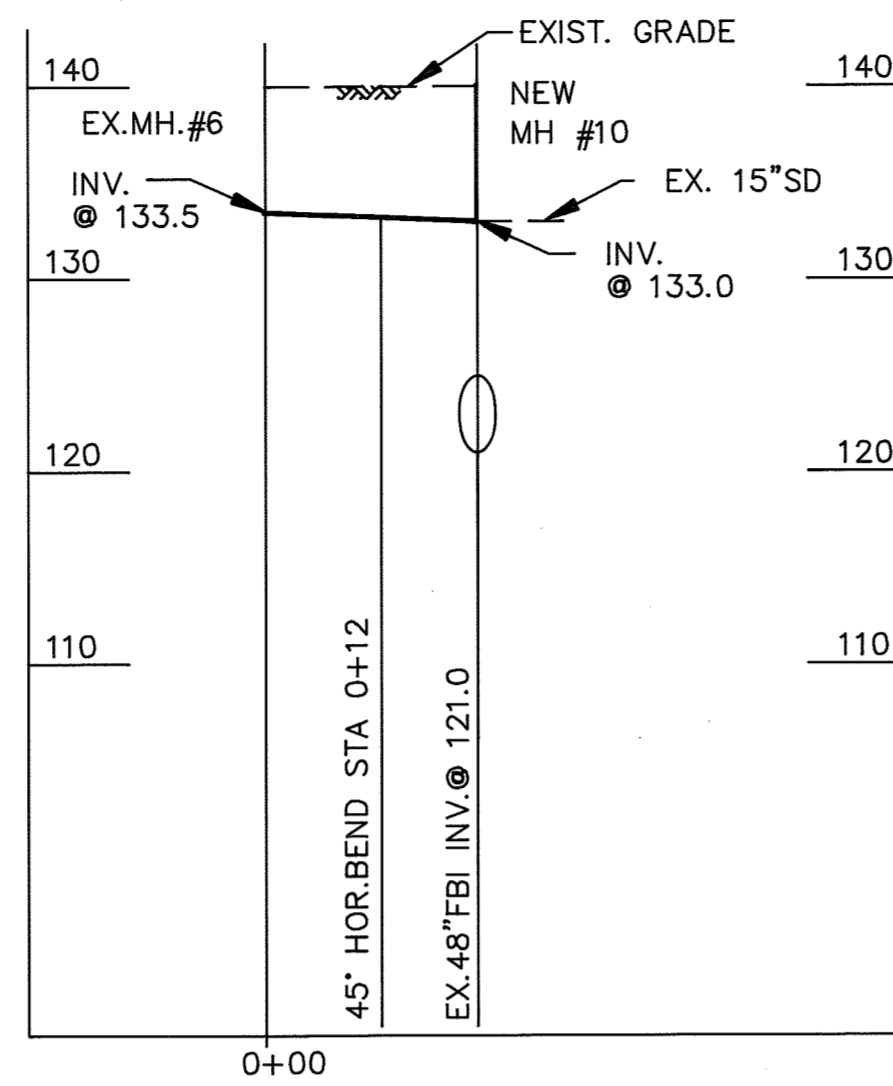
YARD PIPING PROFILES VIII

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

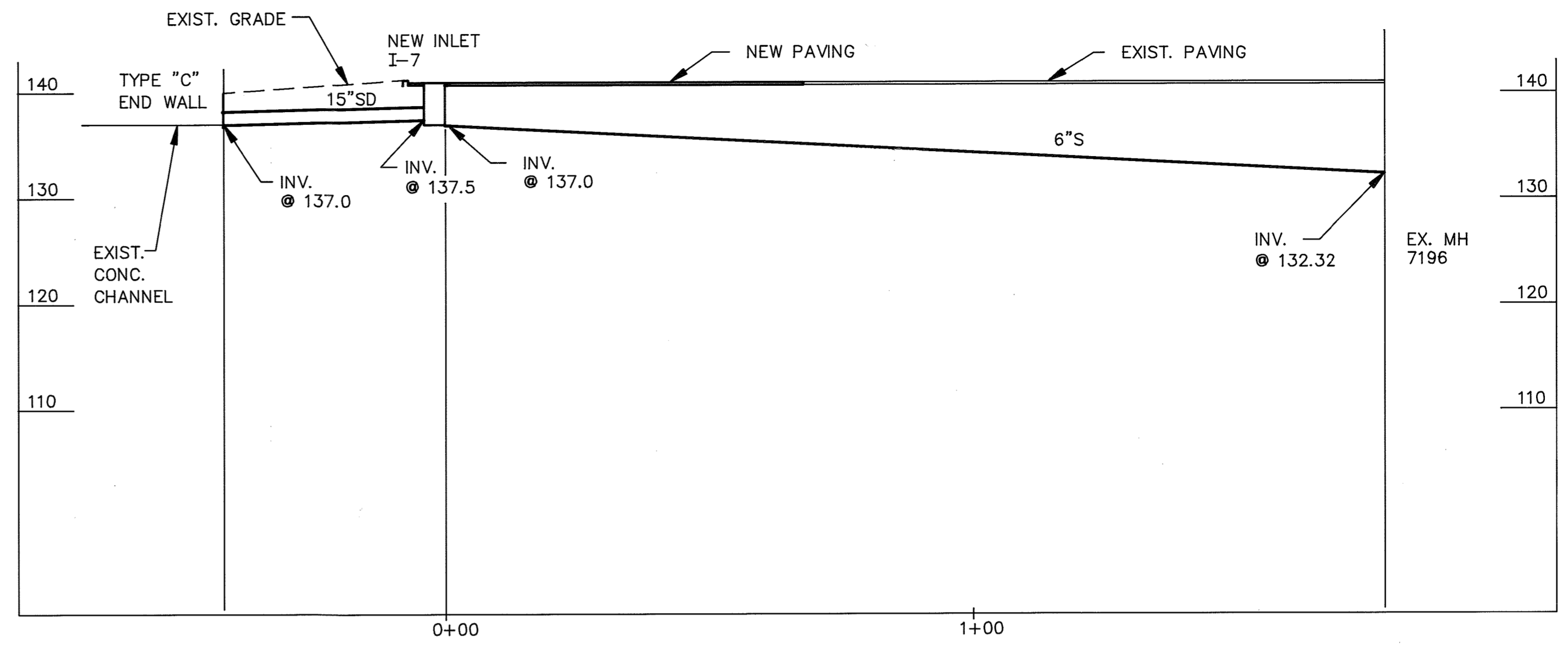
SCALE AS SHOWN
SHEET 33 OF 226
C-28



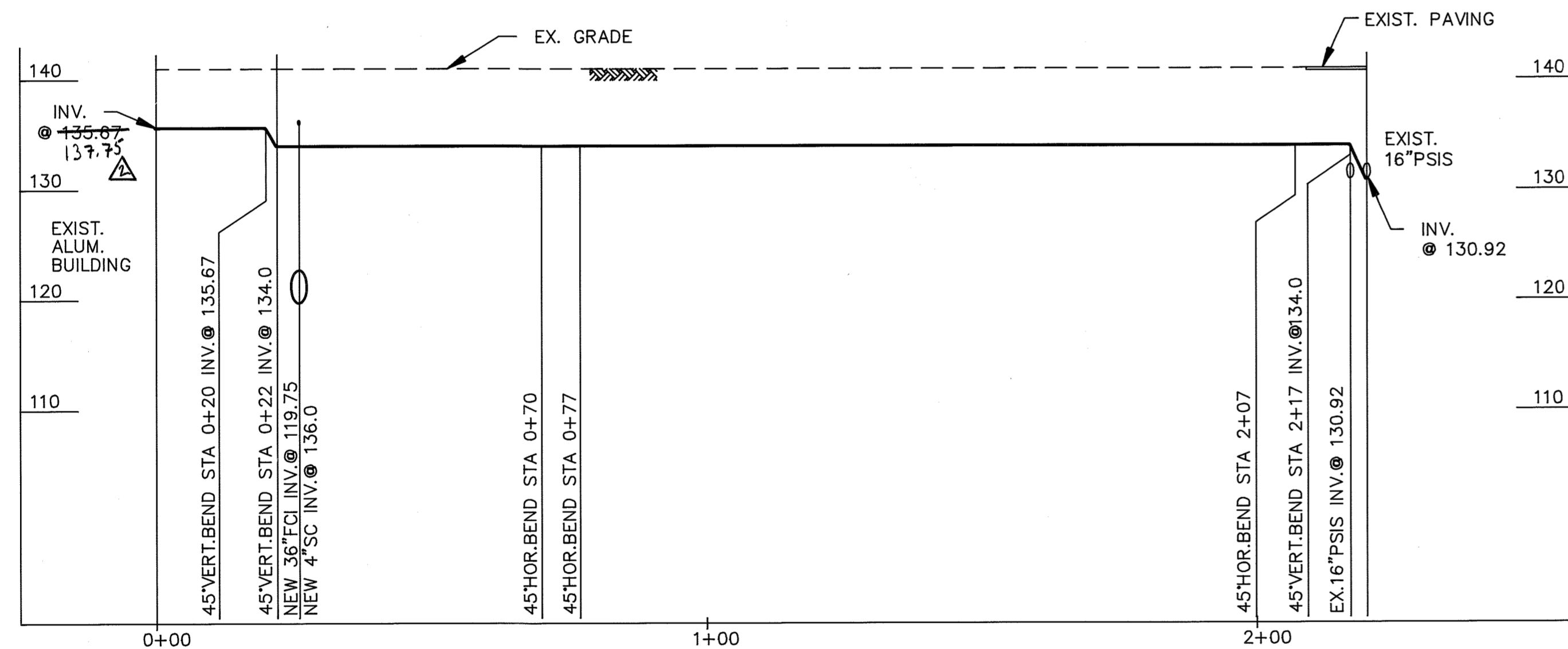
8" SD
 B-2
 C-14 | C-29
 SCALE: HORIZ. 1" = 20'-0"
 VERT. 1" = 10'-0"



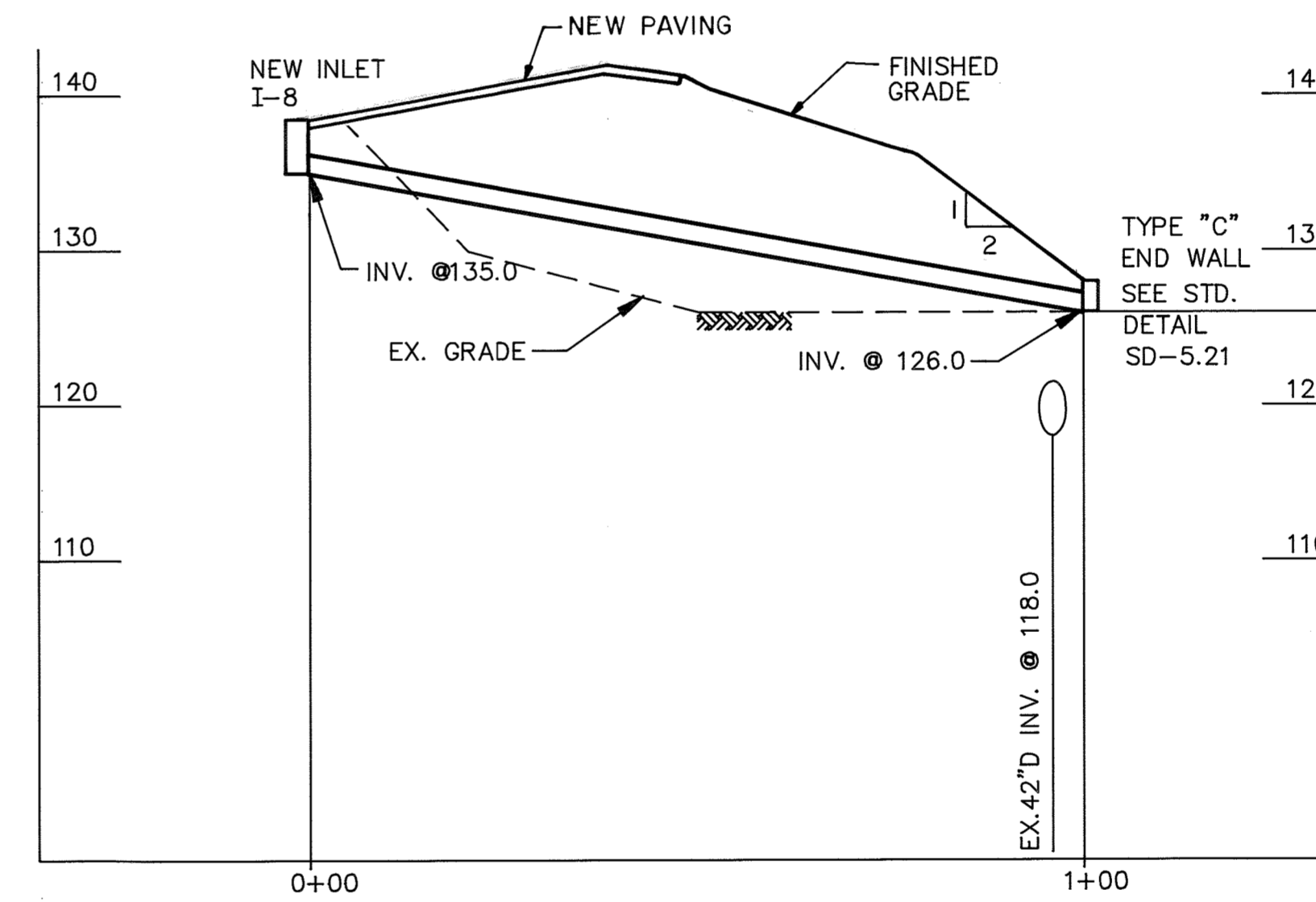
15" SD
 B-3
 C-13 | C-29
 SCALE: HORIZ. 1" = 20'-0"
 VERT. 1" = 10'-0"



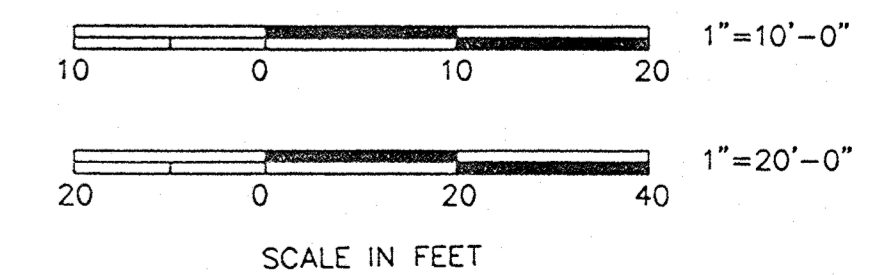
6"S & 15"SD
 B-4
 C-18 | C-29
 SCALE: HORIZ. 1" = 20'-0"
 VERT. 1" = 10'-0"



12" 16"PSIS
 B-5
 C-15 | C-29
 SCALE: HORIZ. 1" = 20'-0"
 VERT. 1" = 10'-0"



15"SD
 B-6
 C-13 | C-29
 SCALE: HORIZ. 1" = 20'-0"
 VERT. 1" = 10'-0"



FILE: C:\PROJ\TPAT\PROF10

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 12/19/91
 DIRECTOR OF PUBLIC WORKS DATE

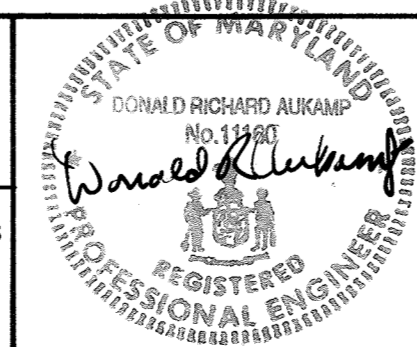
[Signature] 12/19/91
 CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/19/91
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

[Signature] 12-9-91
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland



DES: NB			
DRN: LB			
CHK: MCJ	2	RECORD DRAWING	11/4/91
DATE: 12/2/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

CIVIL

YARD PIPING PROFILES IX

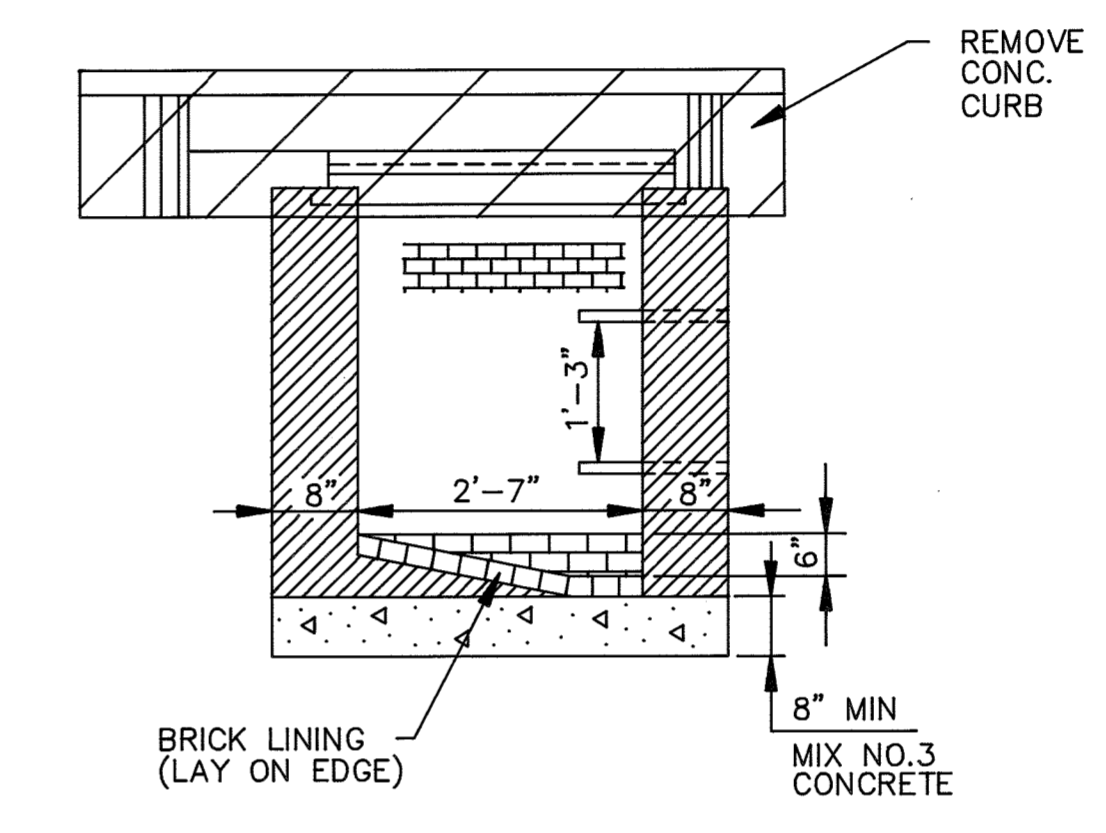
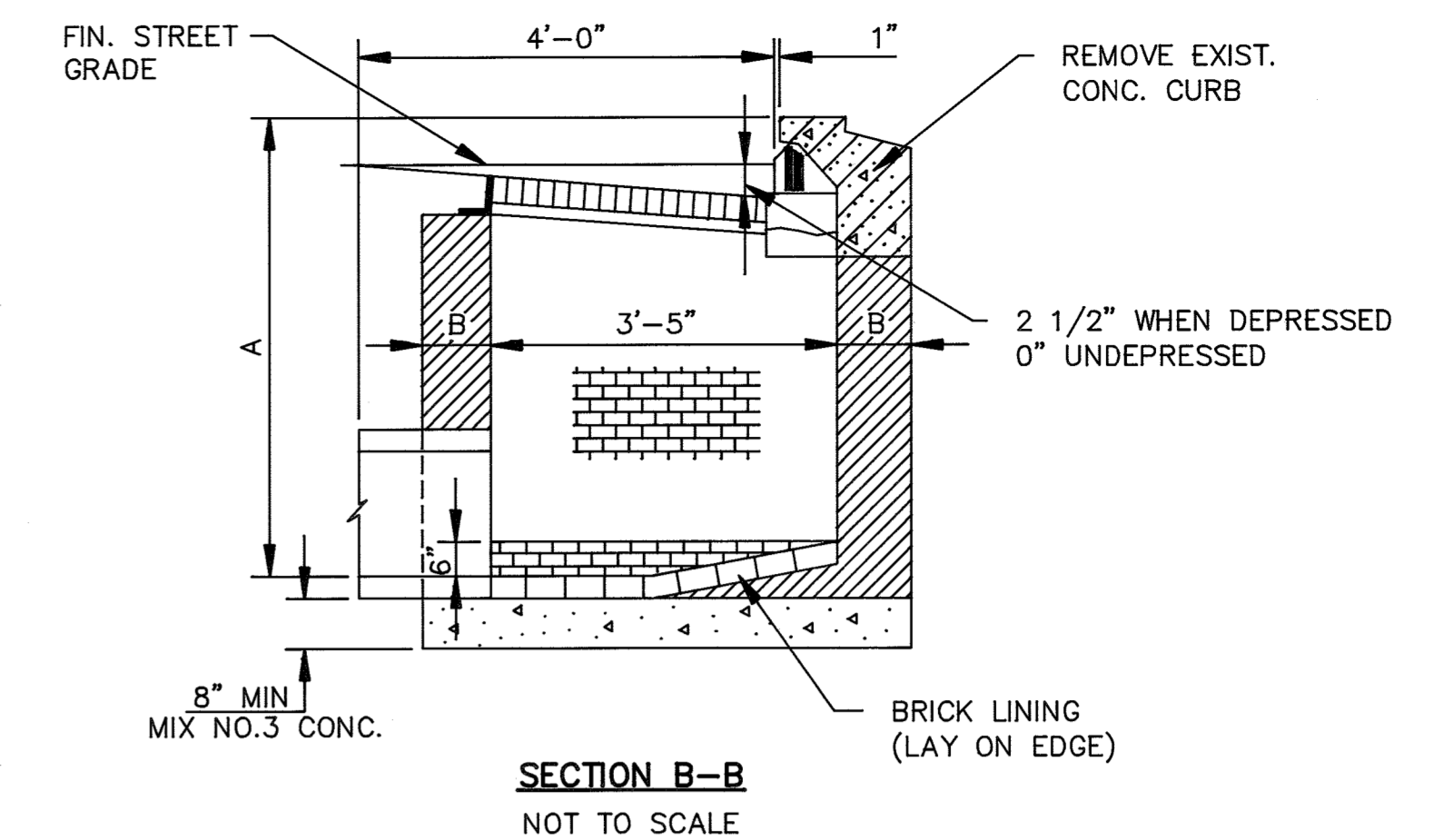
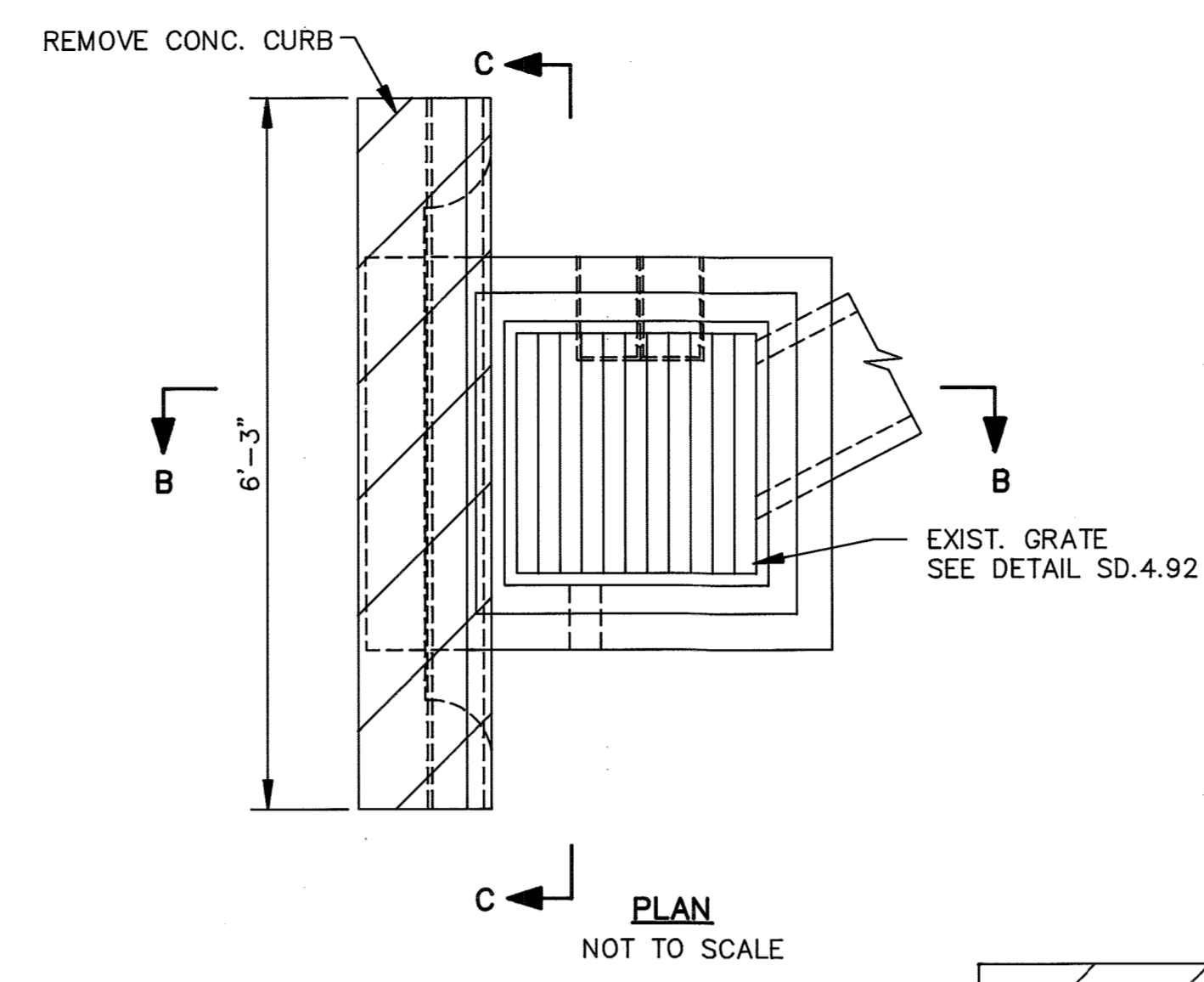
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 34 OF 226
 C-29

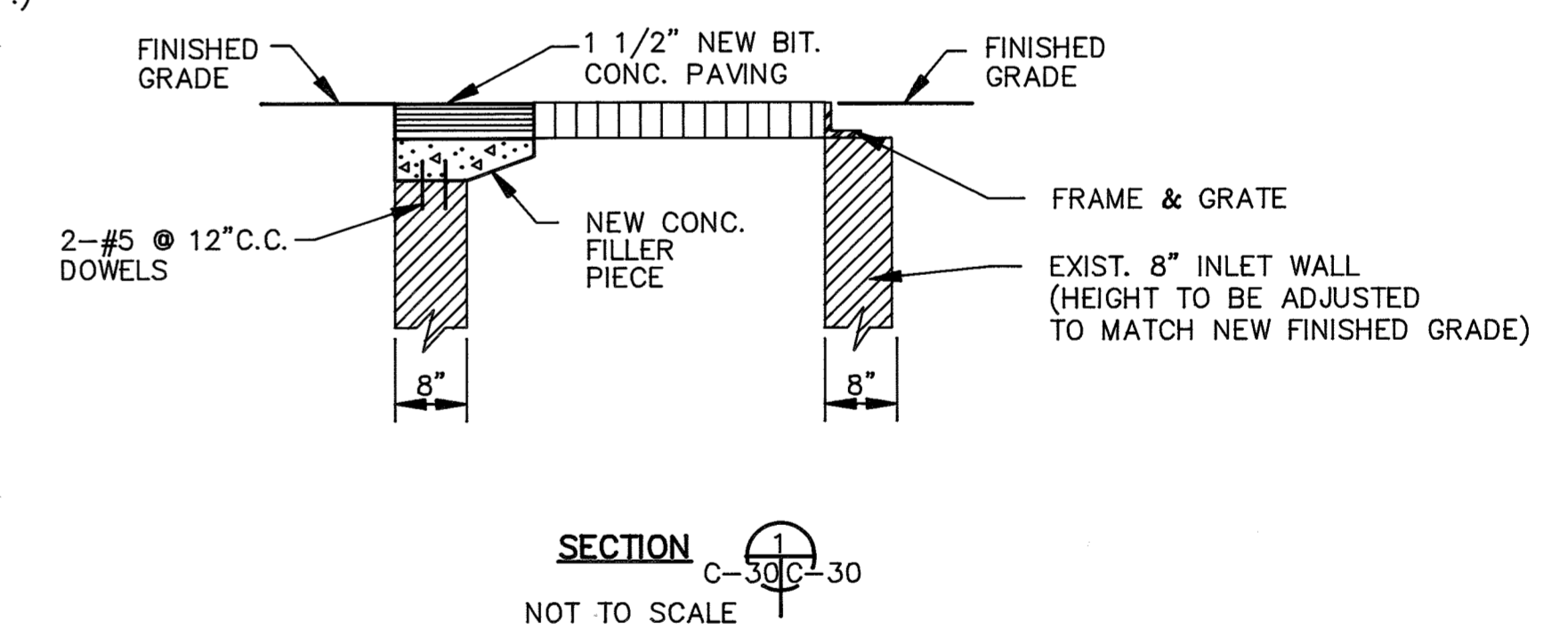
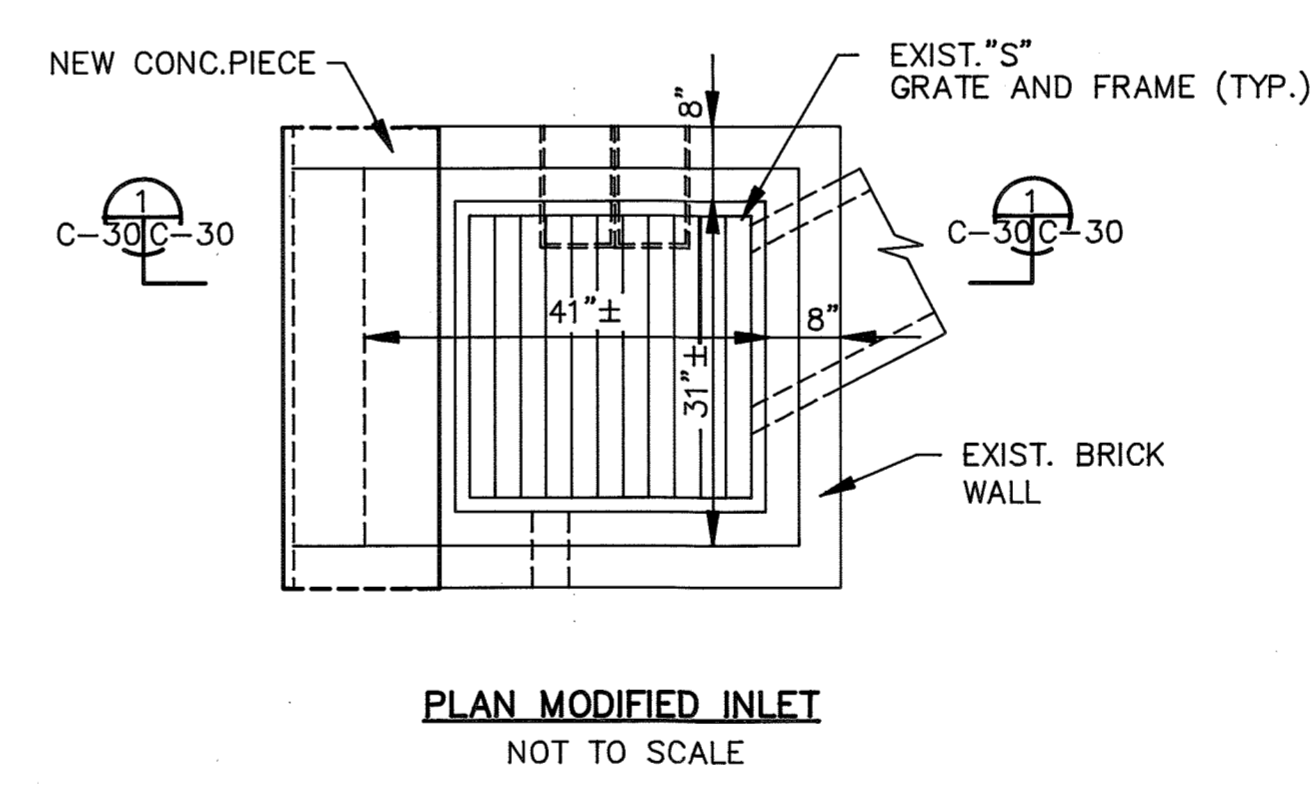
STRUCTURE SCHEDULE

NO.	LOCATION	TOP ELEV.	INV. IN	INV. OUT	COMMENT	CO-ORDINATES	
I-1	AT PAVED AREA, NEW SEPTAGE FACILITY	141.50	N.A.	138.25	SEE DETAIL "I" SHEET C-31	48.0 N	73.0 W
I-2	IN GRASS AREA BETWEEN NEW FC #2 & EXIST. FC #3	137.50	N.A.	134.50	TYPE S INLET SEE STD. DETAIL SD-4.22	135.55 N	195.60 E
I-3	PAVED AREA, NEW SOUTH PUMP STATION	140.86 141.20	N.A.	138.00	TYPE S INLET SEE STD. DETAIL SD-4.22	365.55 N	16.5 E
I-4	IN GRASS AREA, WEST SIDE NEW PR #1	137.80	N.A.	132.50 134.30	TYPE S INLET SEE STD. DETAIL SD-4.22	76.32 S	325.0 E
I-5	PAVED AREA, NEW PARKING ADDITION SOUTH OF EXIST. MAINTENANCE BLDG.	138.00 138.40	135.90	135.55	TYPE WR INLET SEE STD. DETAIL SD-4.37	366.0 S	16.0 E
I-6	IN GRASS AREA NORTH OF NEW CHLORINE CONTACT BASIN ADDITION	137.75	N.A.	134.75	TYPE D INLET W/2'-6"x6" THROAT ON NORTH & SOUTH SEE STD. DETAIL SD-4.11	100.0 N	128.5 E
I-7	PAVED AREA, NORTH OF MAINTENANCE BLDG.	141.0 140.1	-	137.0 6"S 137.5 15"SD	TYPE S INLET SEE STD. DET. SD-4.22	0.0 N 7+79 @ "F"	22.0 W FROM @ "F"
I-8	IN PAVED AREA, EAST OF EXIST. MAIN SUB-STATION	138.50 139.00	-	135.0	TYPE S INLET SEE STD. DETAIL SD-4.22	24.0 W	137.50 S
EX. I-11	PAVED AREA, PHOSPHOROUS ROAD, SOUTH OF NEW NORTH PUMP STATION	139.65	-	EXISTING	REMOVE CURB PORTION AND MODIFY EX. INLET TO MATCH NEW GRADE SEE DET.	4.0 N	195.0 E
EX. I-3	PAVED AREA, SOUTH OF EXIST. MAINTANANCE BLDG.	137.40	-	135.90 4"S 135.90	REMOVE CURB PORTION AND MODIFY EX. INLET TO MATCH NEW GRADE SEE DET.	116.5 N	360.0 E
NEW MH-1	18" DRAIN BETWEEN PC #1 & NEW NORTH PUMP STATION	140.50	120.79	120.79	4'Ø, SEE STD. DETAILS G-5.14, G-5.04	0+12 100.0 N	154.5 E
NEW MH-2	18" DRAIN AT CONNECTION OF 30" CCBI-NW CORNER OF FC #3	140.50	120.25(18"D) 119.80(CCBI)	119.80	4'Ø, SEE STD. DETAIL G-5.14	157.0 S	140.0 E
NEW MH-3	36" PRI NEAR SE CORNER OF GRIT BLDG.	140.00	118.00	118.00	5'Ø, SEE STD. DETAIL G-5.13	238.0 S	120.0 E
NEW MH-4	NEAR SEPTAGE FACILITY	136.00	124.40 123.92	123.80	4'Ø, SEE STD. DETAIL G-5.12	0+33 30.0 N	1+55 150.5 W
NEW MH-5	NEAR SEPTAGE FACILITY	136.00	124.40 123.65	123.53	4'Ø, SEE STD. DETAIL G-5.12	0+17 20.5 N	1+55 150.5 W
NEW MH-6	SW CORNER OF CHLORINE CONTACT BASIN	140.00	129.78	129.78	4'Ø, SEE STD. DETAIL G-5.12	31.58 N	76.0 E
NEW MH-7	NW CORNER OF CHLORINE CONTACT BASIN	140.00	125.00 (NEW 8"S) 123.25 EX. 12"S	123.25	4'Ø, SEE STD. DETAIL G-5.12	97.58 95.58 N	65.7 72.0 E
NEW MH-8	NW CORNER OF CHLORINE CONTACT BASIN	140.00	131.65	131.40 EX. 15"D	4'Ø, SEE STD. DETAIL G-5.12	111 113.58 N	71.7 74.0 E
NEW MH-9	BETWEEN FC#2 & FC#3 ON EXIST. SD	140.00	134.00	134.00	4'Ø, SEE STD. DETAIL G-5.12	134.0 S	141.0 E
NEW MH-10	NEAR FC#2 EFF. BOX ON EXIST. 15"SD	139.65 140.00	133.0	133.0	4'Ø, SEE STD. DETAIL G-5.12	62.0 S	148.0 E
NEW MH-11	18" DRAIN, EAST OF NEW NORTH PUMP STATION	140.0	121.15	121.10	4'Ø SEE STD. DET. G-5.14/S.04	304.3 E	16.0 N



DETAILS OF EXISTING "S" COMB

- NOTES:**
- FOR OTHER ADDITIONAL DETAILS SEE STD. DETAIL SD.4.32
 - CONTRACTOR CAN ELECT TO MODIFY EXISTING INLET BY REPLACING EXISTING FRAME AND GRATE WITH NEW LARGER FRAME AND GRATE IN LIEU OF NEW CONCRETE FILLER PIECE AT NO ADDITIONAL COST TO THE COUNTY.



INLET MODIFICATION DETAIL

NOTE:
ALL NEW MANHOLES SHALL BE PROVIDED WITH WATER TIGHT FRAME AND COVER AS PER STD. DETAIL G-5.52.

FILE D: \LTPAT\LPAT-E

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John A. O'Hara 12/9/91
DIRECTOR OF PUBLIC WORKS DATE

James E. Kelly 12-9-91
CHIEF, BUREAU OF ENGINEERING DATE

John A. O'Hara 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Debra L. Lewis 12-9-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland

STATE OF MARYLAND
DONALD RICHARD ALDRUP
No. 11908
Donald R. Aldrup
REGISTERED PROFESSIONAL ENGINEER

DES:	MCJ		
DRN:	LB		
CHK:	MCJ	2. RECORD DRAWING	11/14/91
DATE:	12/2/91	1. REVISED FOR BIDDING	3/5/92
BY:	NO.	REVISION	DATE

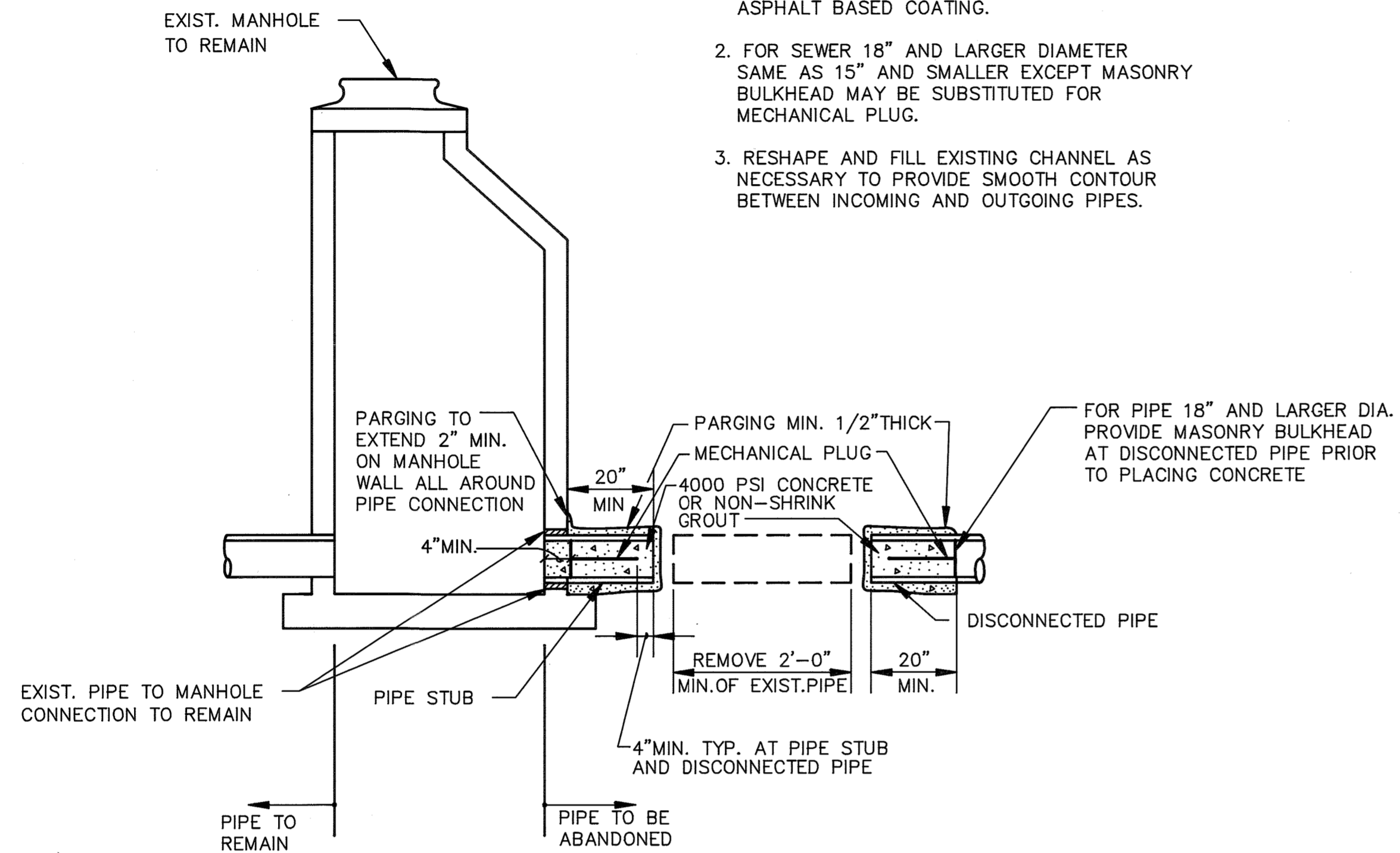
CIVIL
TYPICAL DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 35 OF 226
C-30

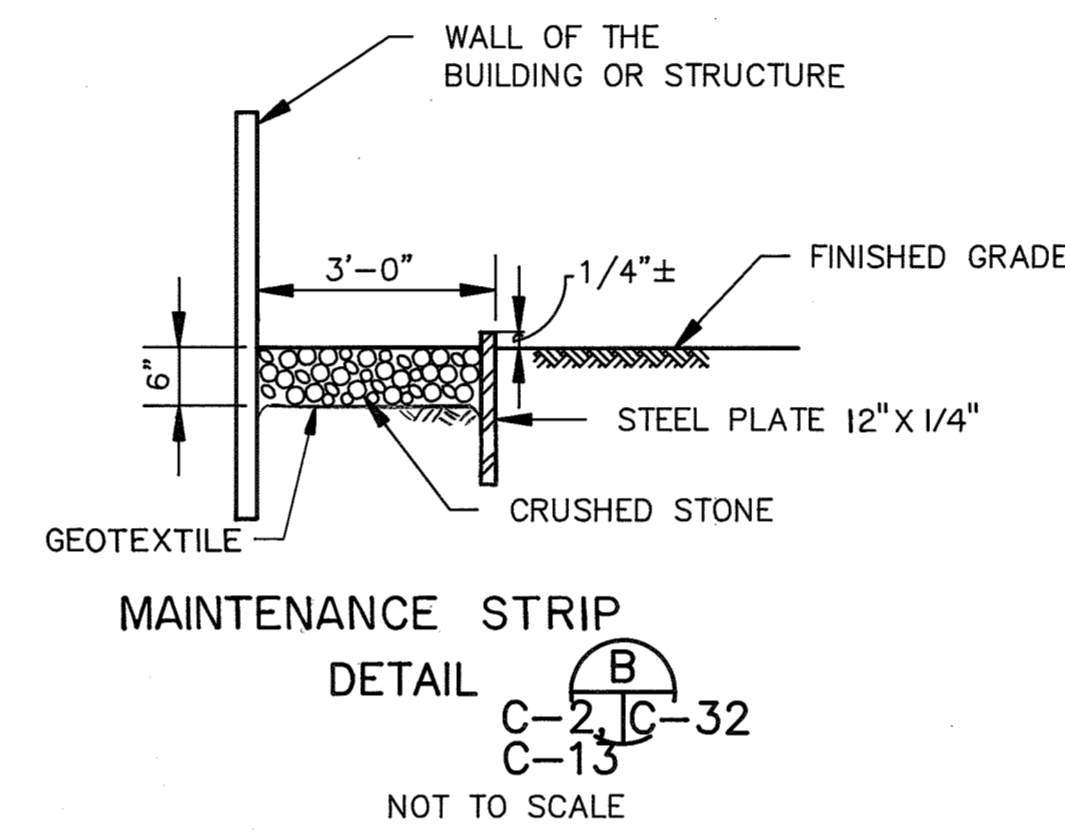
NOTES:

1. FOR SEWERS 15" AND SMALLER DIAMETER, DISCONNECT SEWER AS SHOWN, INSERT MECHANICAL PLUGS, PLACE CONCRETE, PARGING AND COAT WITH TWO COATS OF ASPHALT BASED COATING.
2. FOR SEWER 18" AND LARGER DIAMETER SAME AS 15" AND SMALLER EXCEPT MASONRY BULKHEAD MAY BE SUBSTITUTED FOR MECHANICAL PLUG.
3. RESHAPE AND FILL EXISTING CHANNEL AS NECESSARY TO PROVIDE SMOOTH CONTOUR BETWEEN INCOMING AND OUTGOING PIPES.



ABANDONMENT OF PIPE AT
MANHOLE—STORM & SANITARY SEWER

DETAIL **A**
C-13C-32
NOT TO SCALE



MAINTENANCE STRIP
DETAIL **B**
C-21C-32
C-13
NOT TO SCALE

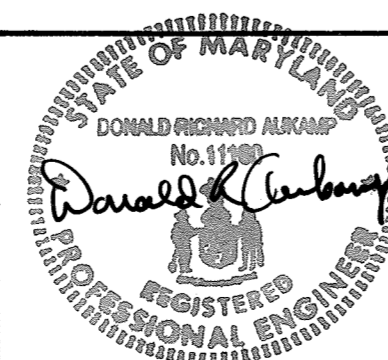
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS	12/9/91	<i>[Signature]</i> CHIEF, BUREAU OF ENGINEERING	12-9-91
<i>[Signature]</i> CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	12/9/91	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION	12-9-91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS
& SCIENTISTS
Silver Spring, Maryland

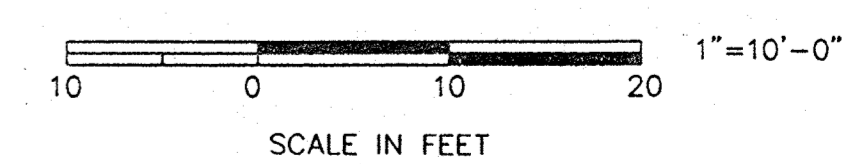
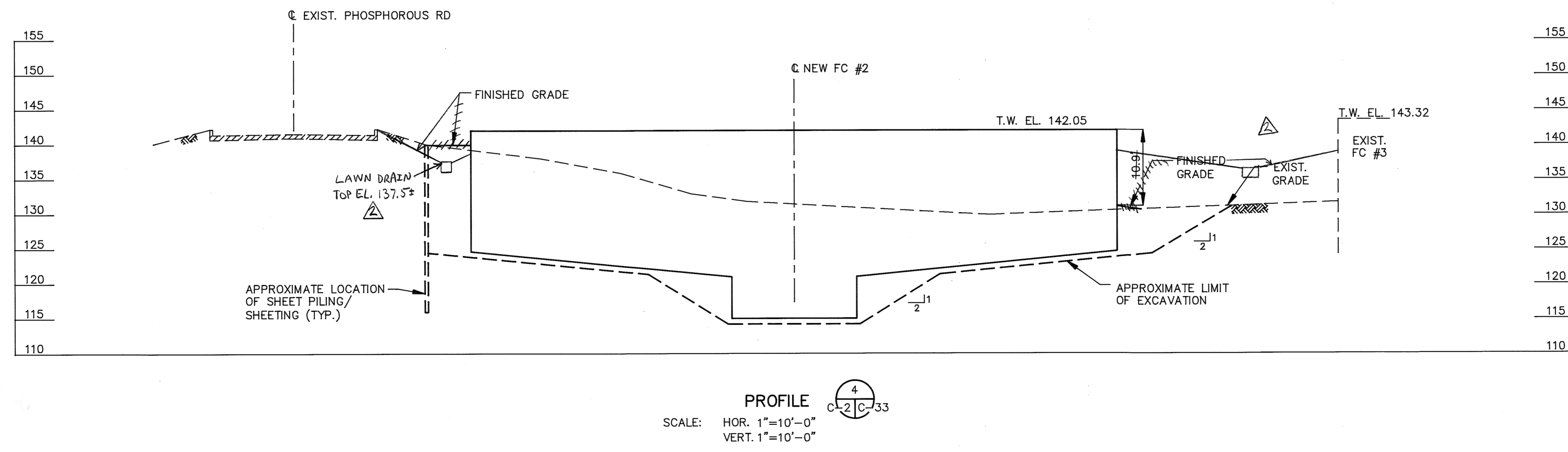
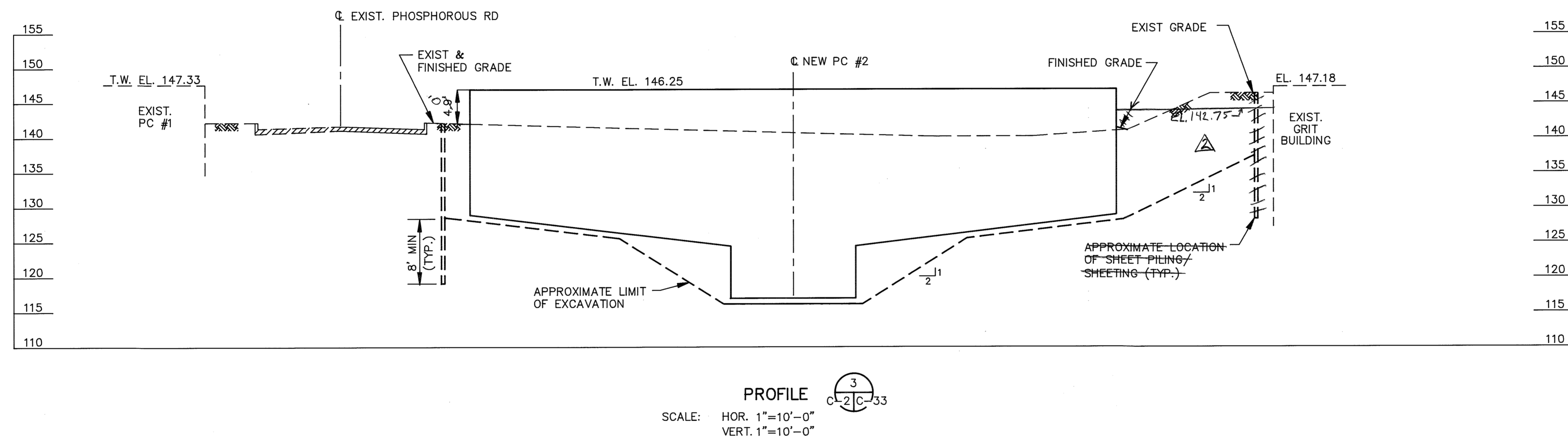
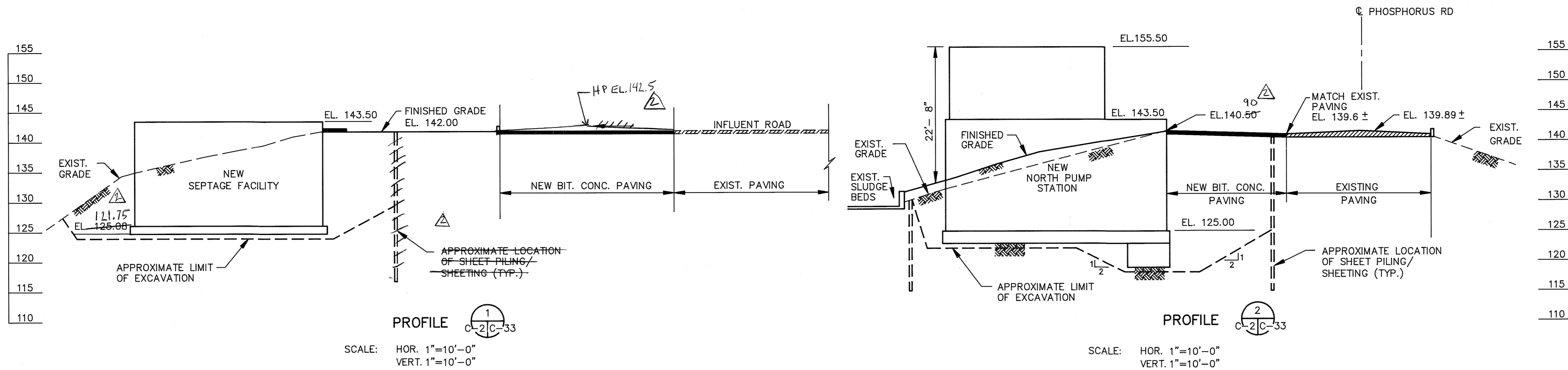


DES:	MCJ			
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CHK:	MCJ	2.	RECORD DRAWING	11/4/91
DATE:	12/2/91	1.	REVISED FOR BIDDING	3/5/92
BY:	NO.		REVISION	DATE

CIVIL
DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN
SHEET
37 OF 226
C-32



011111 FILE: C:\PROJ\LPAT\LPAT6

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

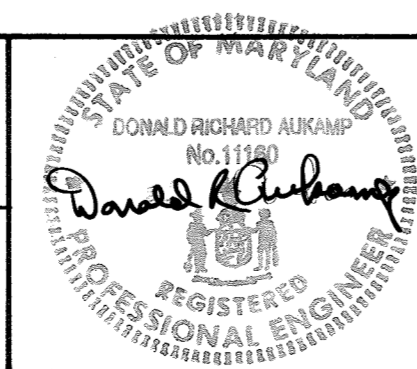
John A. Moore 12/6/91
 DIRECTOR OF PUBLIC WORKS DATE

Michael J. Kelly 12-9-91
 CHIEF, BUREAU OF ENGINEERING DATE

Op. Don Lim 12-9-91
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
 Silver Spring, Maryland



DES:	MCJ				
DRN:	LB				
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DATE:	12/2/91	1	REVISED FOR BIDDING	3/5/92	
BY:	NO.		REVISION	DATE	

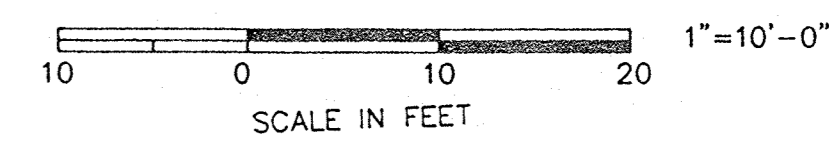
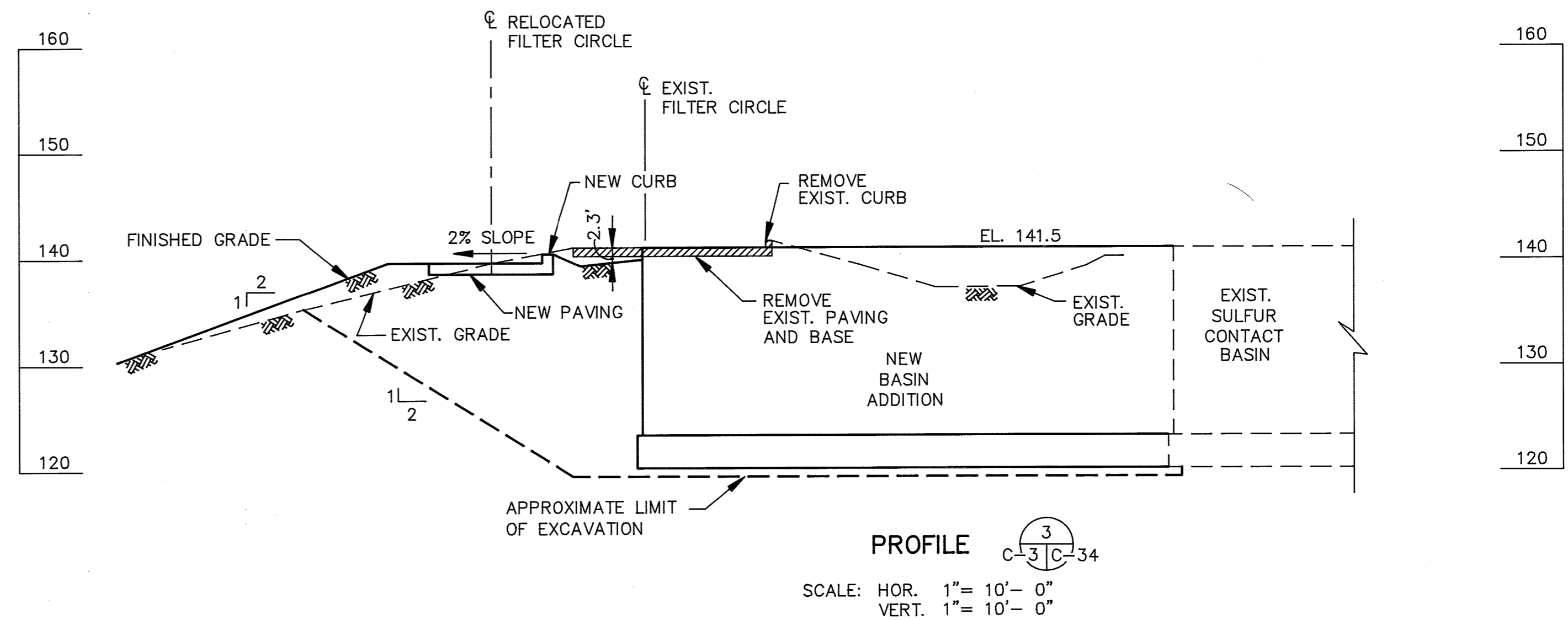
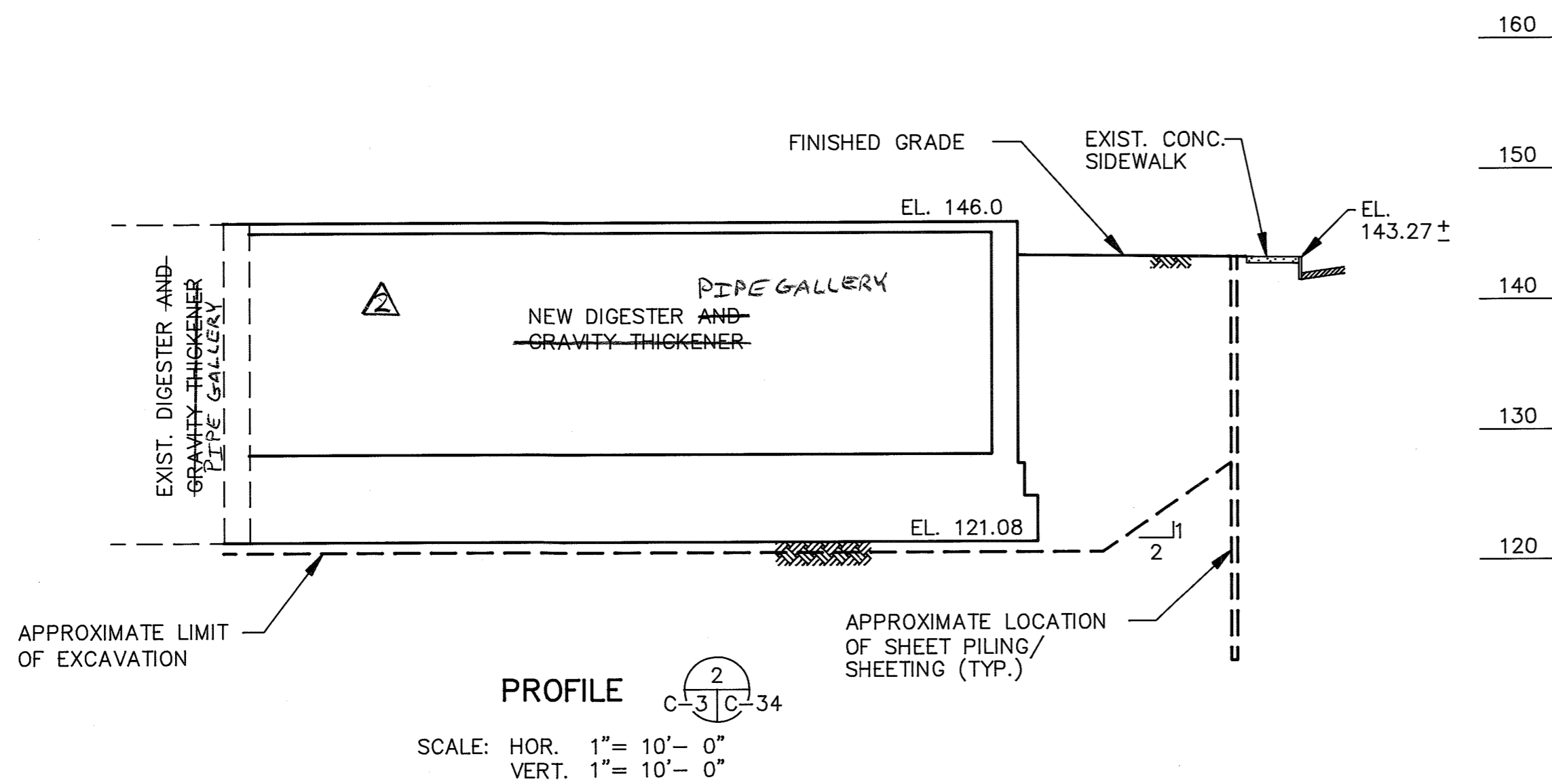
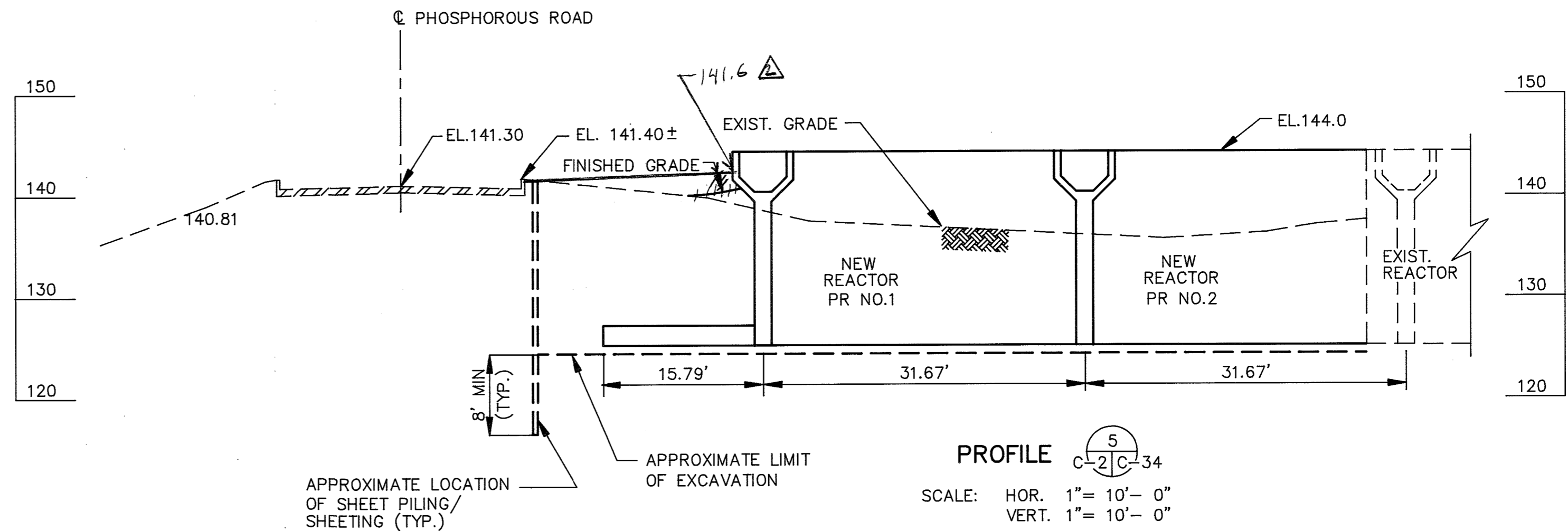
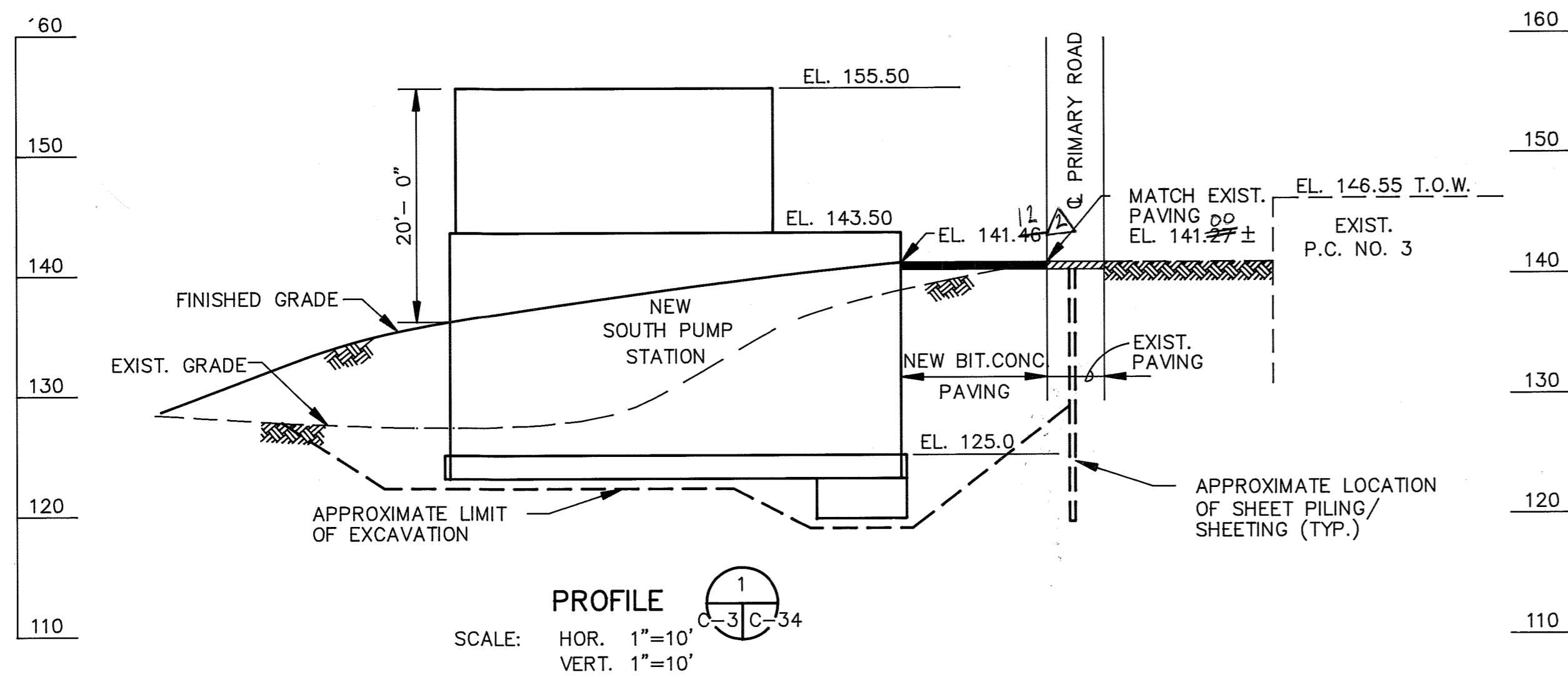
CIVIL

EXCAVATION LIMIT SECTIONS - 1

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S - 6153

CONTRACT NO. 20 - 3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 38 OF 226
 C-33



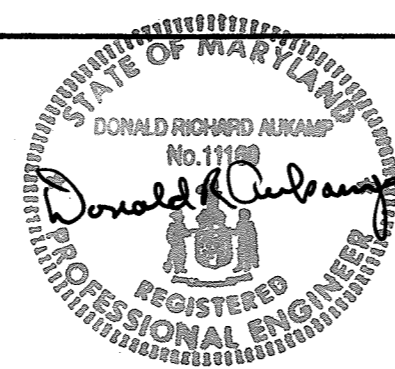
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *James H. Lee* 12/6/91
 Chief, Bureau of Engineering: *William E. Ray* 12/9/91
 Chief, Bureau of Environmental Services: *John O'Brien* 12/6/91
 Chief, Utility Design Division: *Clayton Lee* 12-9-91

M&E Metcalf & Eddy

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS
Silver Spring, Maryland



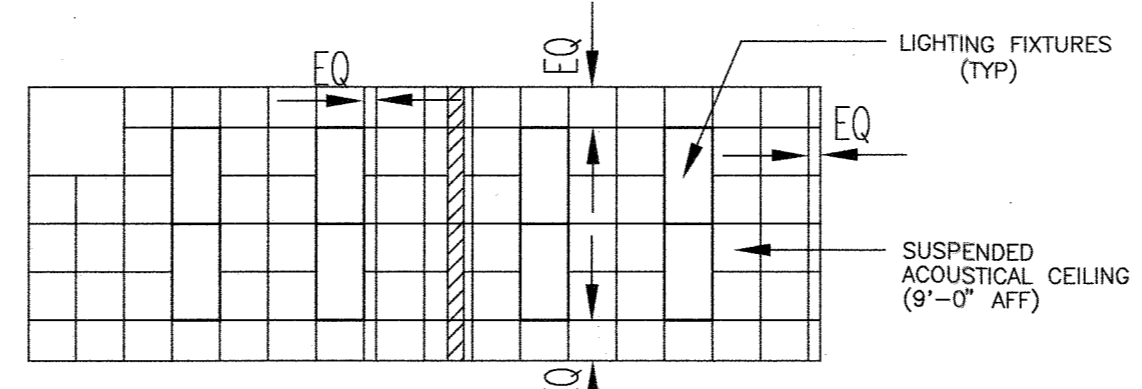
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	1	REVISED FOR BIDDING	3/5/92
DATE:12/2/91	BY	NO.	REVISION

CIVIL

EXCAVATION LIMIT SECTIONS II

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

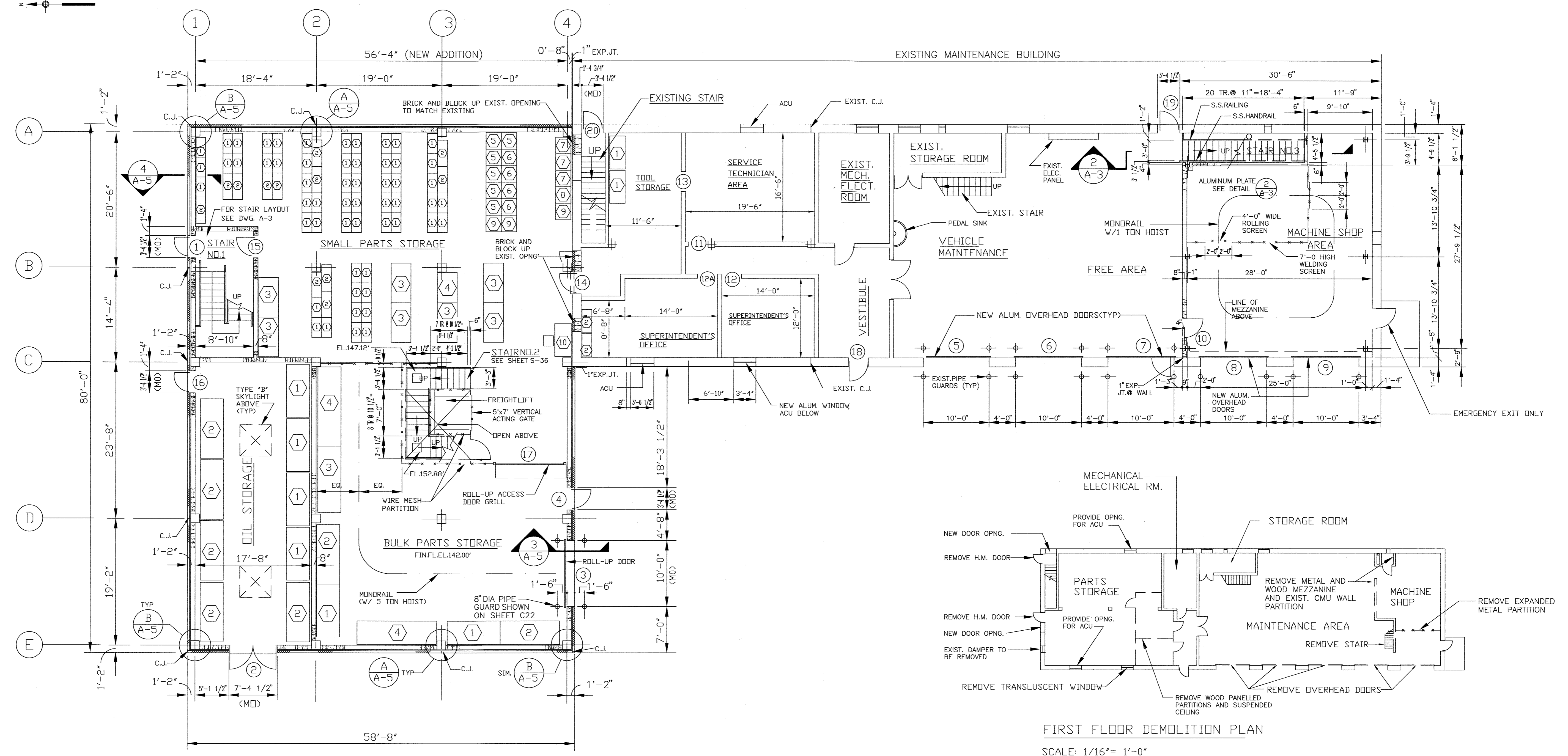
SCALE AS SHOWN
SHEET 39 OF 226
C-34



REFLECTED CEILING PLAN
MAINTENANCE SUPERINTENDENT'S OFFICE
SCALE 1/8" = 1'-0"

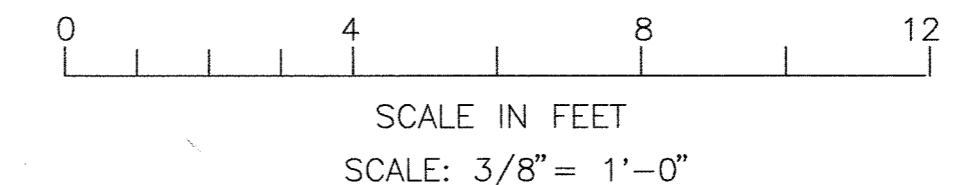
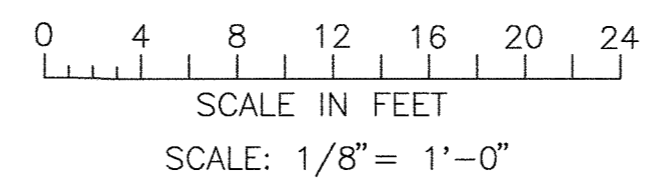
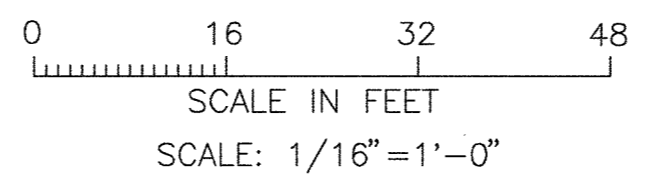
LEGEND

- FACE BRICK
- RIGID INSULATION
- CONCRETE MASONRY UNITS (CMU)
- CONCRETE MASONRY UNITS (CMU)
- DENOTES SHOP EQUIPMENT ITEM
SEE EQUIPMENT SCHEDULE ON
A-2 DWG.



FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

FIRST FLOOR DEMOLITION PLAN
SCALE: 1/16" = 1'-0"



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Lewis 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

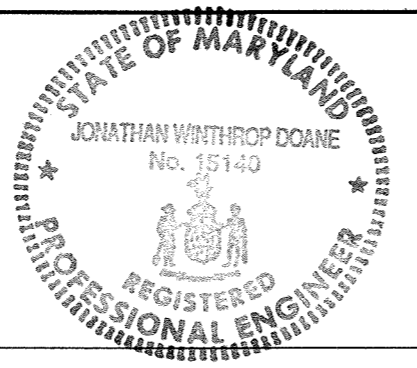
Paul J. Spang 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John W. Dore 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Winthrop Doane 5-7-96
REG. PROF. ENGR. DATE



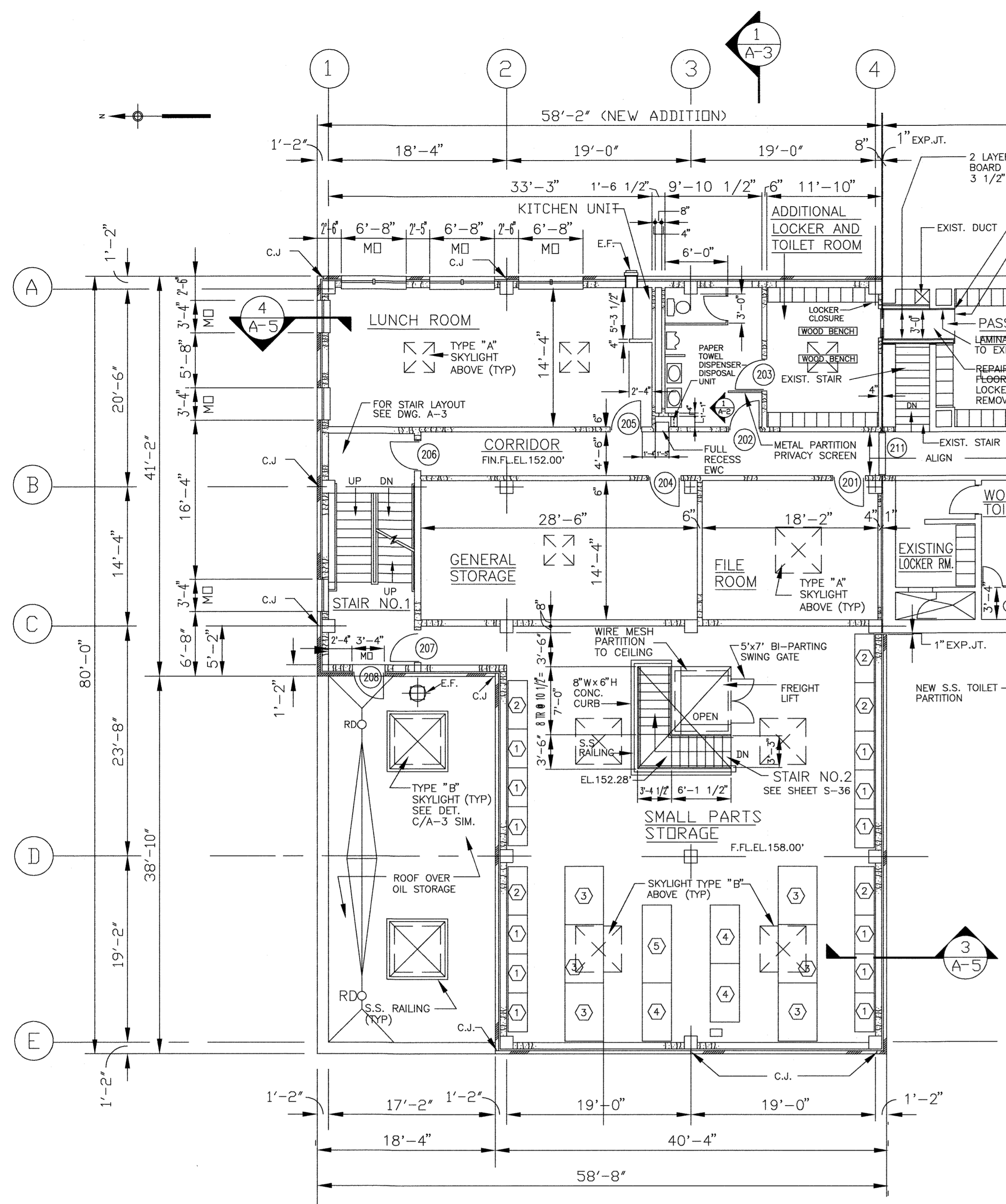
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DRN:			
CHK:			
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94
BY:	NO.	REVISION	DATE

ARCHITECTURAL
MAINTENANCE BUILDING
FIRST FLOOR PLAN
REFLECTED CEILING PLAN
DEMOLITION PLAN

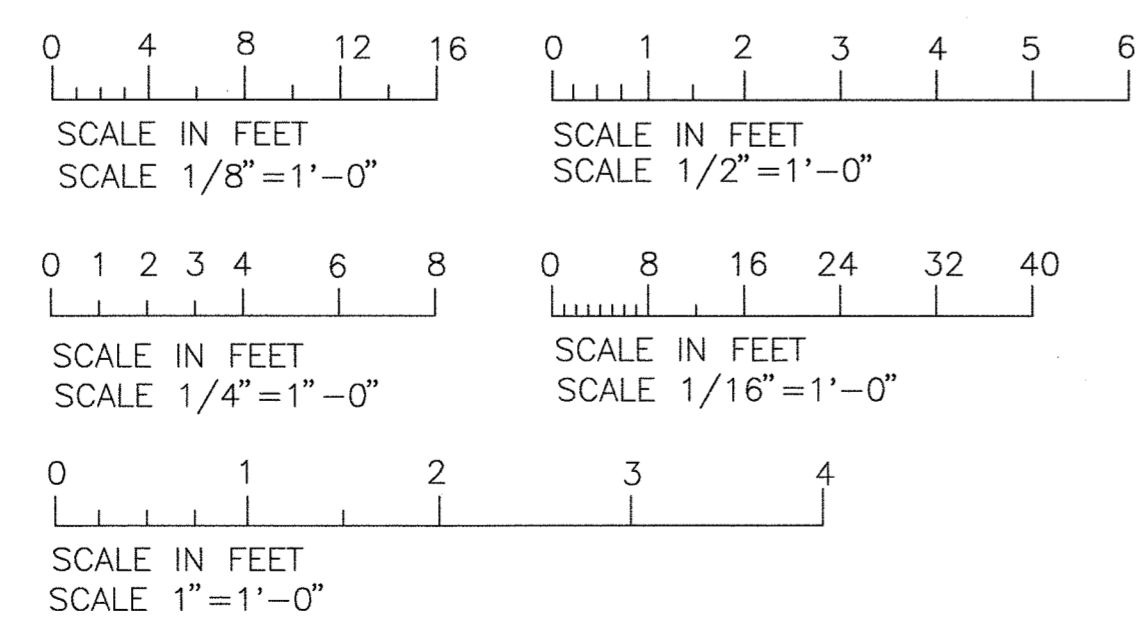
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

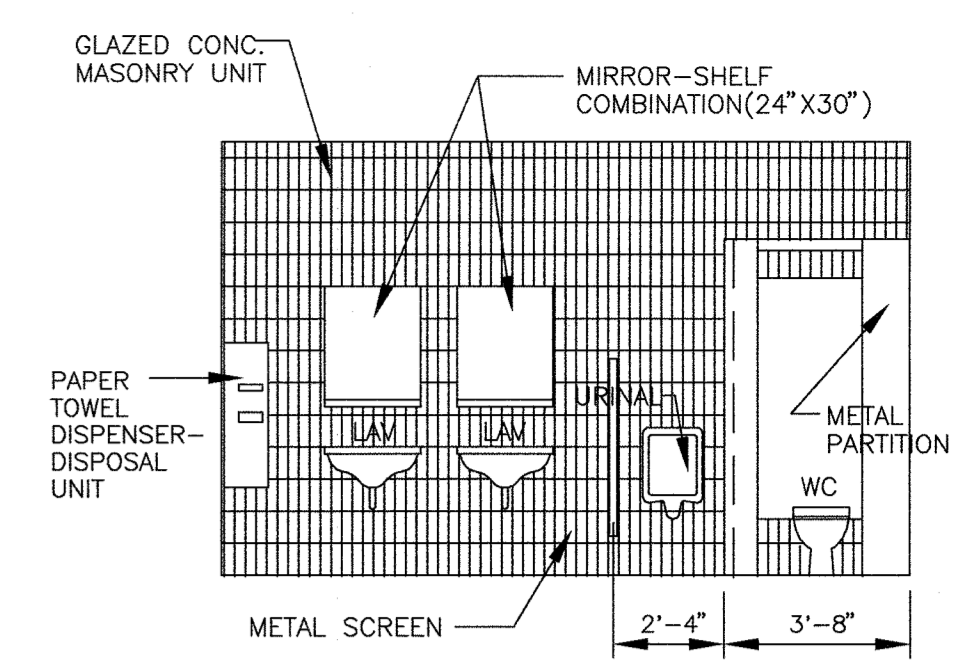
SCALE AS SHOWN
40 SHEET
108 OF 226
A-1A



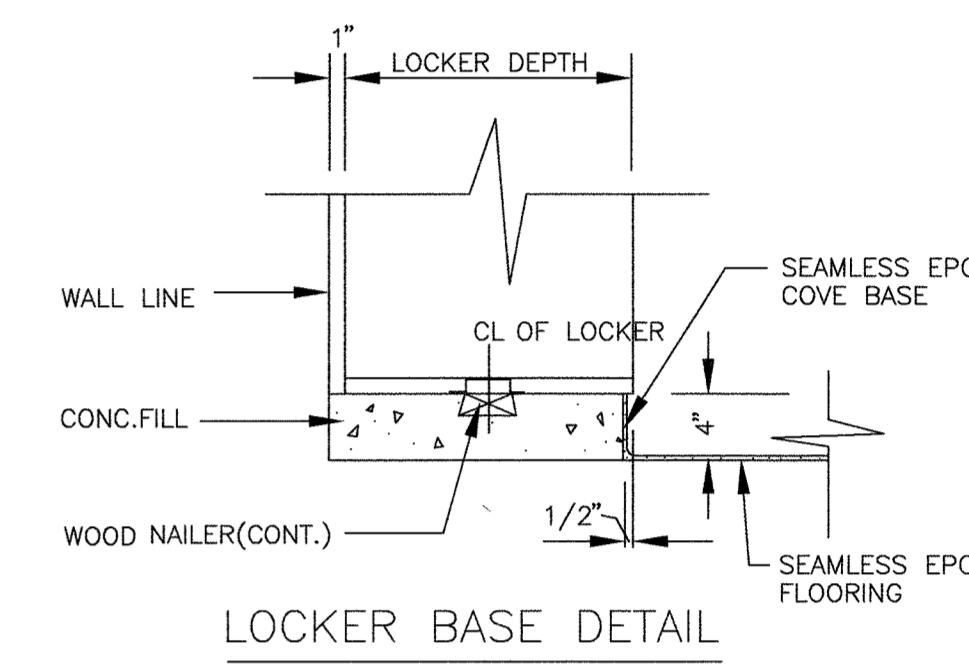
SECOND FLOOR PLAN
SCALE: 1/8"=1'-0"



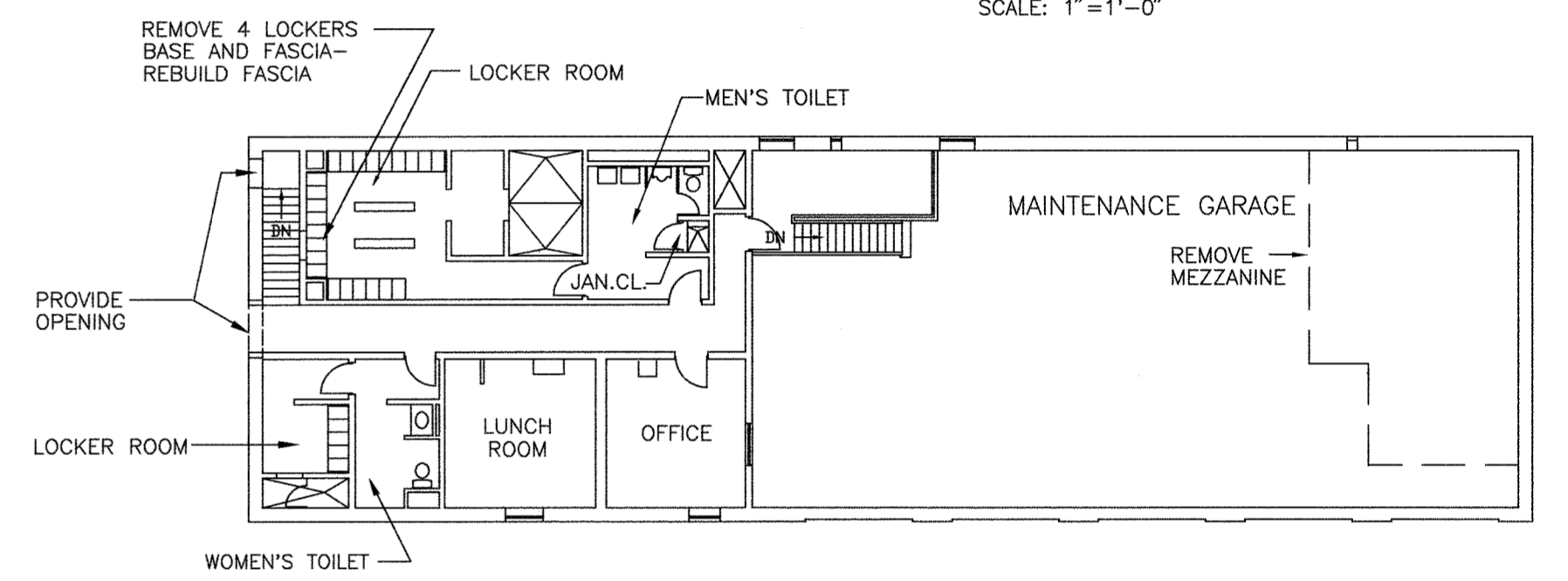
EQUIPMENT SCHEDULE					
AREA	ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	REMARKS
MACHINE SHOP	1	BENCHES	EQUIPTO	2333-6	2 REQ'D
		DRAWERS FOR BENCHES	EQUIPTO	220	8 REQ'D. REFER TO ITEM NO. 1
	2	DRAWER CABINET	EQUIPTO	4421 D	1 REQ'D. W/LOCK(CAT.NO.4101)
GENERAL SHOP AREA	1	BENCHES	EQUIPTO	2333-6	4 REQ'D
		DRAWERS FOR BENCHES	EQUIPTO	220	16 REQ'D REFER TO ITEM NO.1
BULK STORAGE FIRST FLOOR	1	PALLET RACKS	EQUIPTO	86625 L 5	2 REQ'D
	2	PALLET RACKS	EQUIPTO	86645 L 6	2 REQ'D
	3	PALLET RACKS	EQUIPTO	86665 L 6	1 REQ'D
	4	PALLET RACKS	EQUIPTO	86685 L 6	2 REQ'D
TOOL STORAGE	1	COUNTER UNIT	EQUIPTO	4493	2 REQ'D
	2	CABINET FOR FLAMMABLE LIQUIDS	EQUIPTO	1792 SC	2 REQ'D
SMALL PARTS STORAGE FIRST FLOOR	1	CLIP SHELVING	EQUIPTO	72-9 (8' H)	56 REQ'D
	2	CLIP SHELVING	EQUIPTO	72 W 9 (8' H)	12 REQ'D
	3	BULK RACKS	EQUIPTO	1028 D 64	7 REQ'D
	4	BULK RACKS	EQUIPTO	1028 D 43	1 REQ'D
	5	CABINETS	EQUIPTO	4421 D	6 REQ'D
	6	CABINETS	EQUIPTO	4420 D	5 REQ'D
	7	CABINETS	EQUIPTO	4423 D	2 REQ'D
	8	CABINETS	EQUIPTO	4424 D	1 REQ'D
	9	CABINETS	EQUIPTO	4411 D	3 REQ'D
	9A	TWO MODULAR SHELVING	EQUIPTO	4493	2 REQ'D, REFER TO ITEM NO.9
9B	EXTRA SHELF	EQUIPTO	16300	2 REQ'D, REFER TO ITEM NO.9A	
9C	MAPLE TOP FOR COUNTER TOP	EQUIPTO	12339	1 REQ'D, REFER TO ITEM NO.9	
		WORKBENCH	EQUIPTO	240-5	1 REQ'D
SMALL PARTS STORAGE SECOND FLOOR	1	BULK RACKS	EQUIPTO	1018 D 42	12 REQ'D
	2	BULK RACKS	EQUIPTO	1018 D 52	5 REQ'D
	3	BULK RACKS	EQUIPTO	1028 D 83	6 REQ'D
	4	BULK RACKS	EQUIPTO	1028 D 63	3 REQ'D
	5	BULK RACKS	EQUIPTO	1028 D 64	1 REQ'D
OIL STORAGE	1	CRADLE RACK	EQUIPTO	84260 J 2	4 REQ'D
	2	CRADLE RACK	EQUIPTO	84260 J 9	5 REQ'D



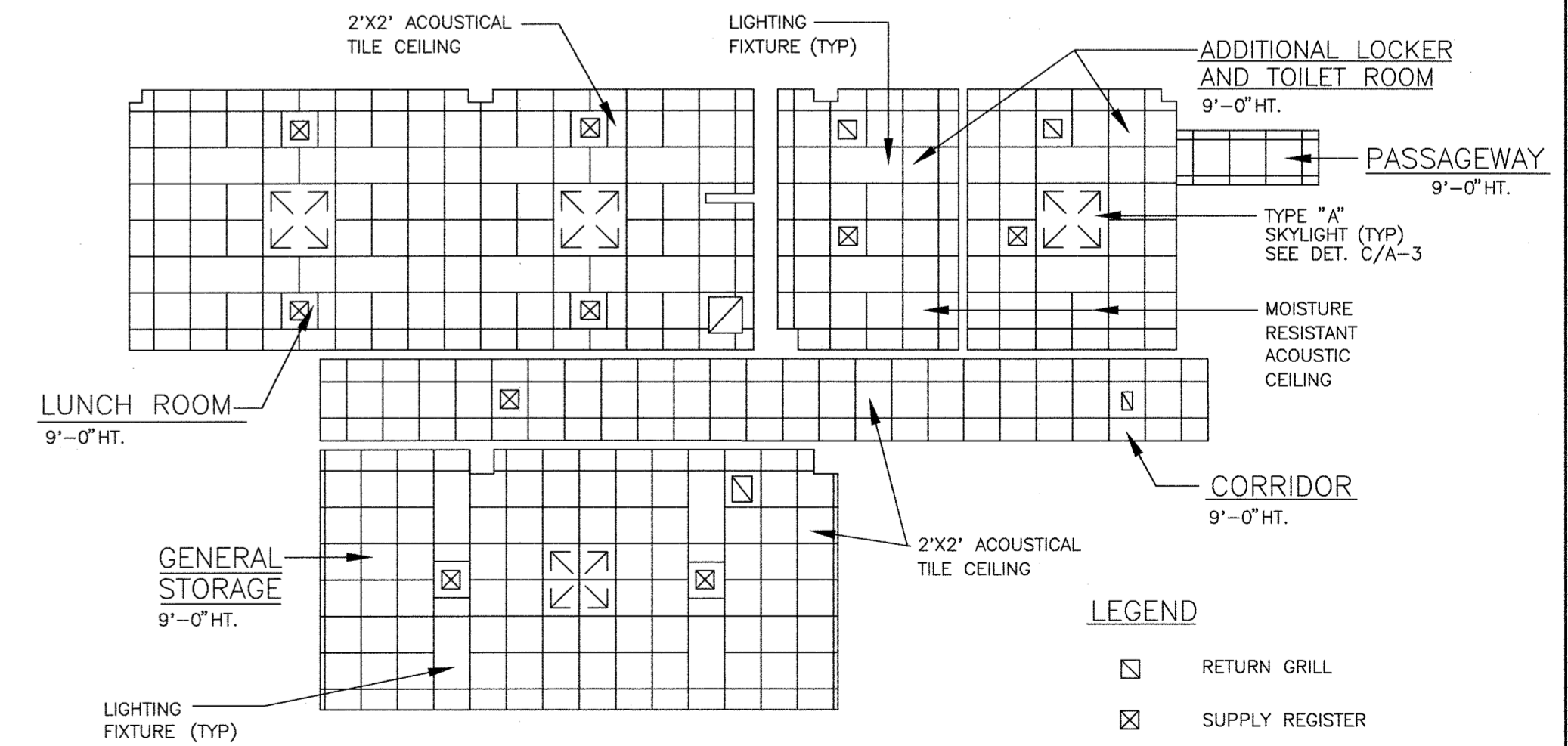
ELEVATION 1
SCALE: 1/4"=1'-0"



LOCKER BASE DETAIL
SCALE: 1"=1'-0"



SECOND FLOOR DEMOLITION PLAN
SCALE: 1/16"=1'-0"



SECOND FLOOR, REFLECTED CEILING PLAN
SCALE: 1/8"=1'-0"

- LEGEND
- ☐ RETURN GRILL
 - ☒ SUPPLY REGISTER
 - ☐ RECESSED LIGHT FIXTURE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. New 5/7/96
DIRECTOR OF PUBLIC WORKS

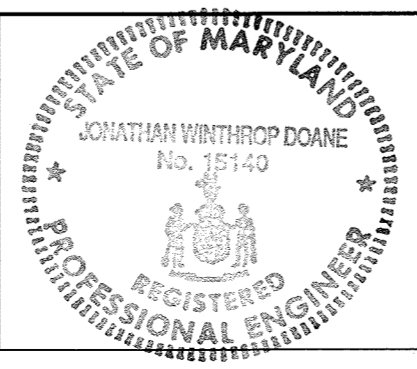
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

William J. Egan 5/7/96
CHIEF, BUREAU OF ENGINEERING

John W. Egan 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan Winthrop Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER



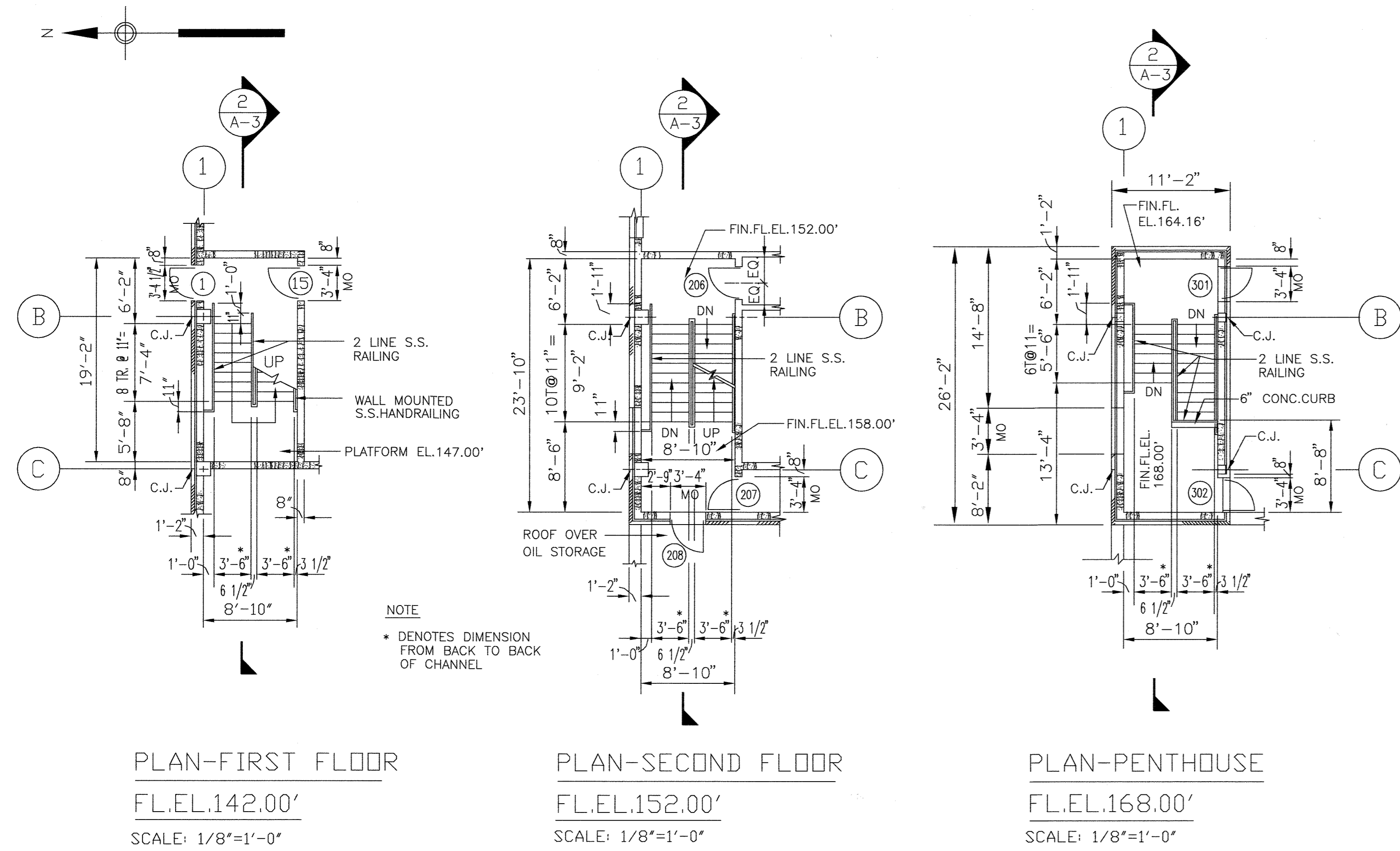
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DRN				
CHK				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94
	BY NO.	REVISION		DATE

ARCHITECTURAL
MAINTENANCE BUILDING
SECOND FLOOR PLAN
REFLECTED CEILING PLAN
AND DEMOLITION PLAN

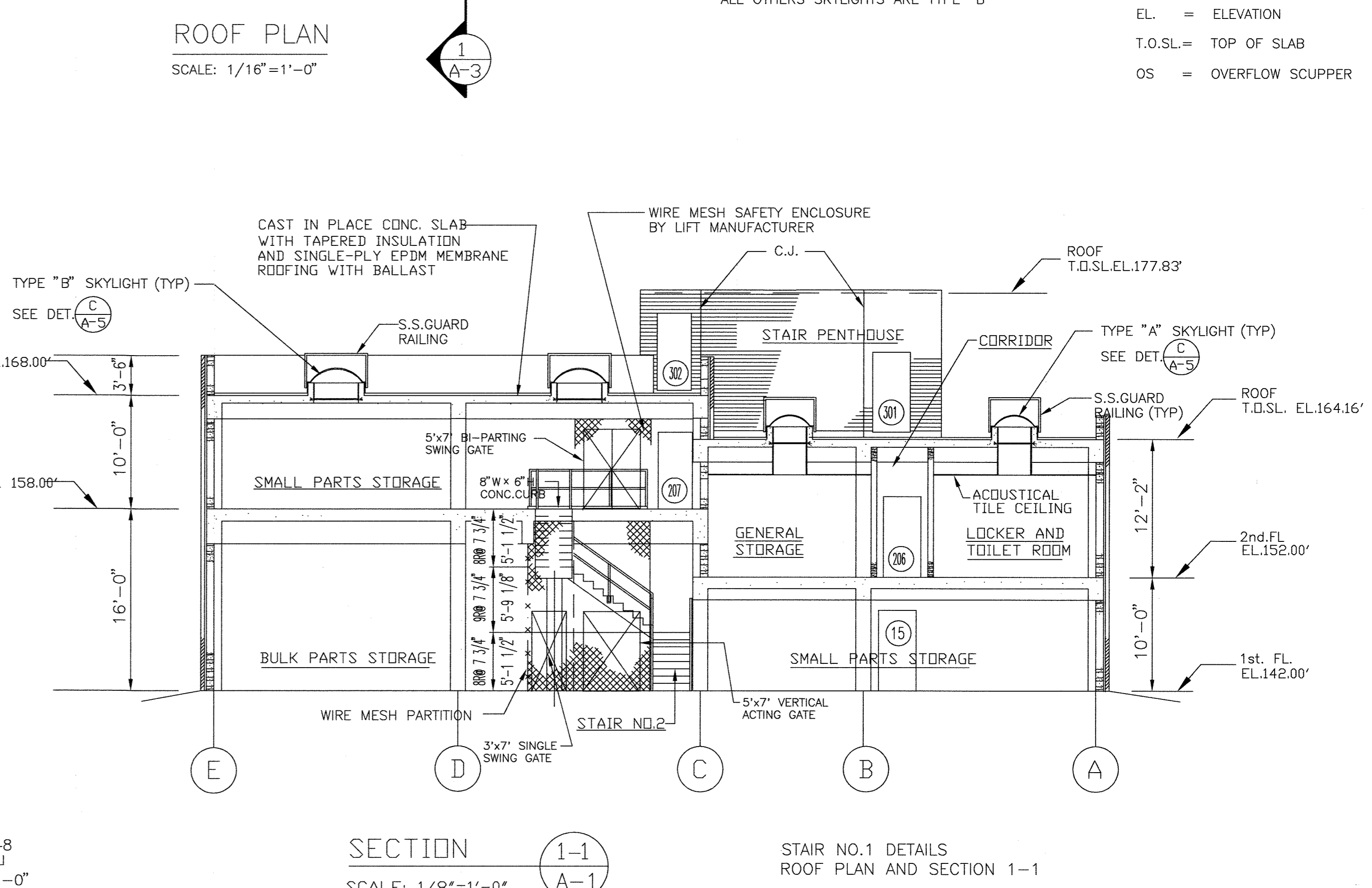
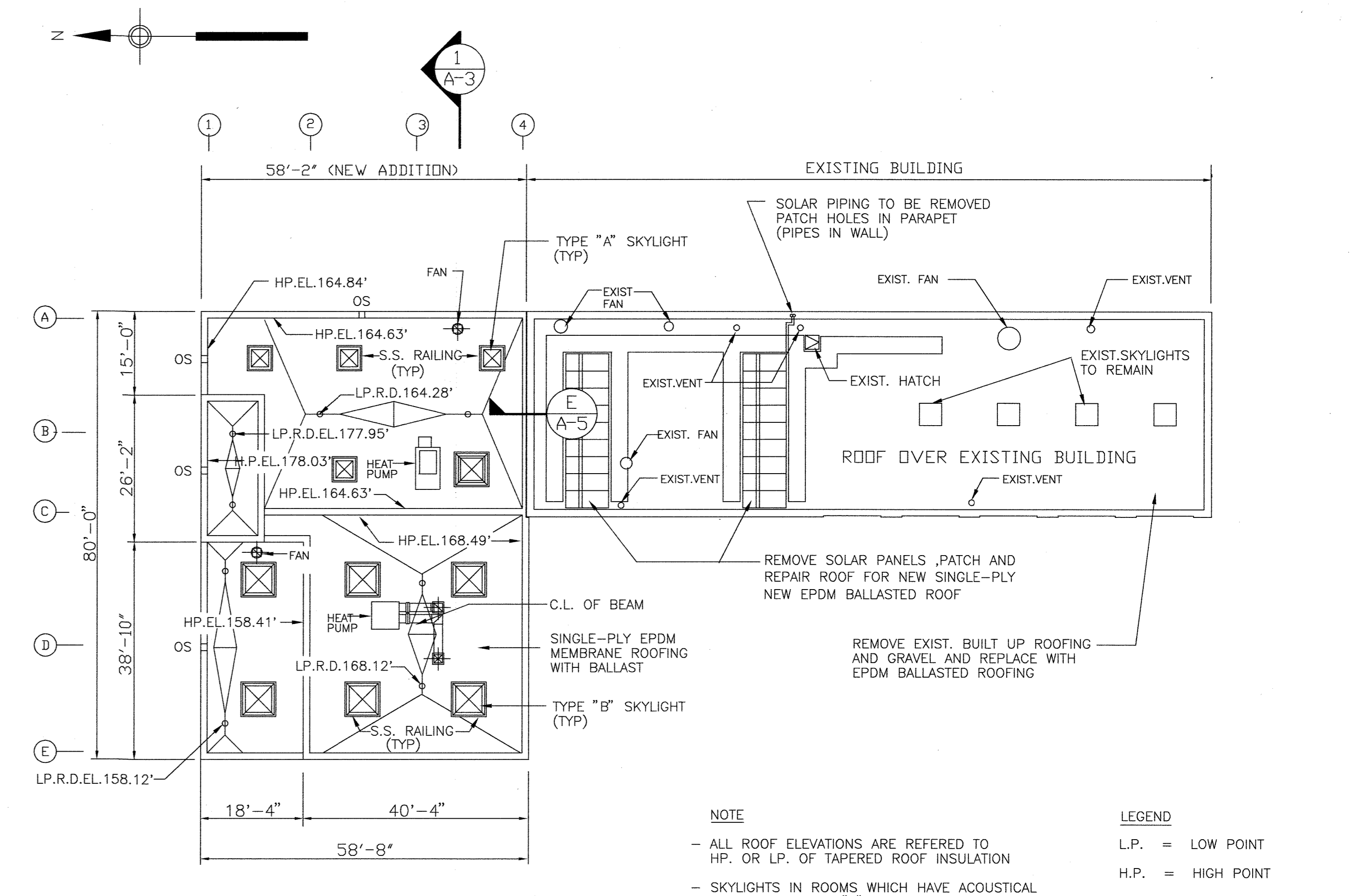
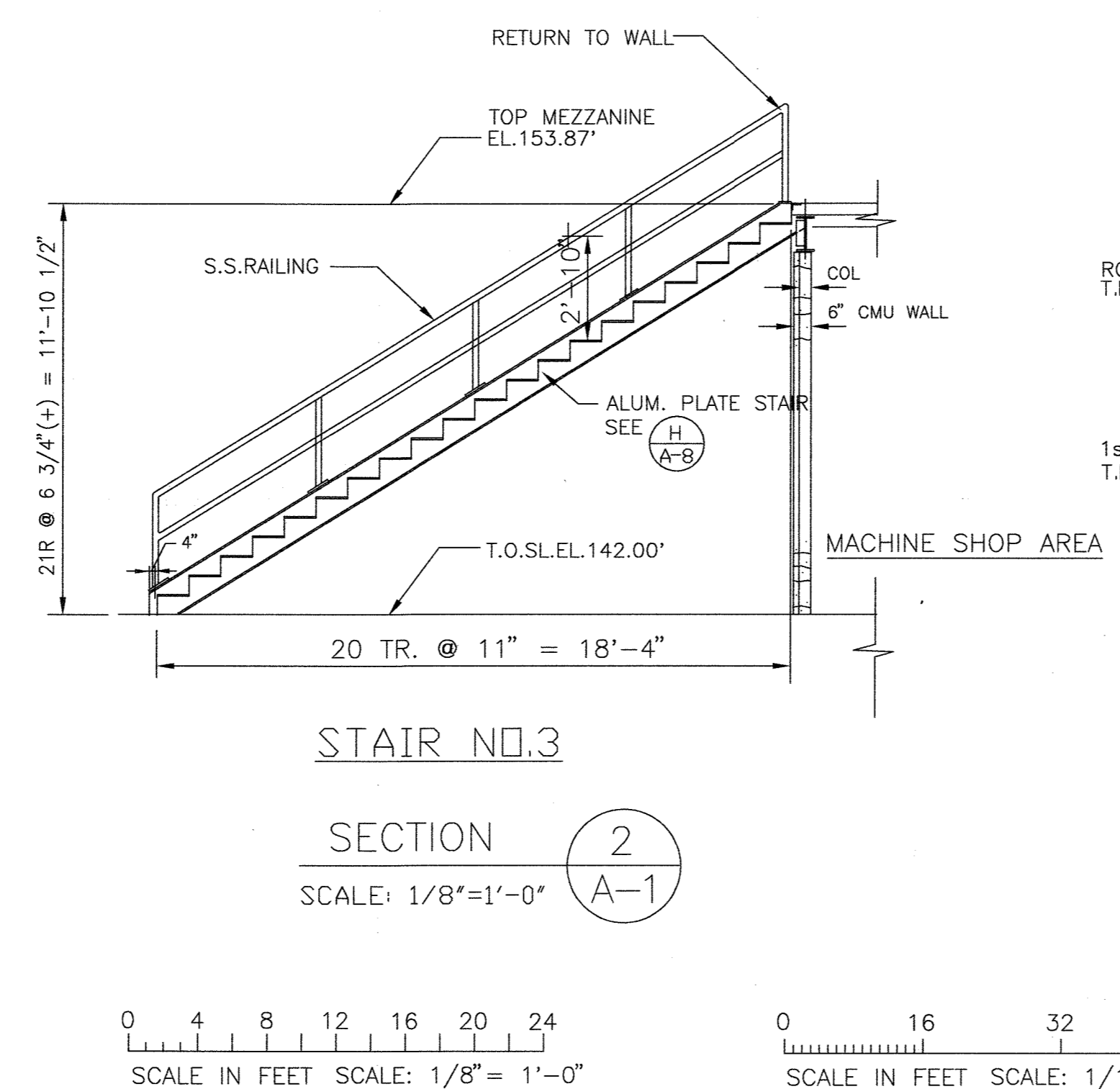
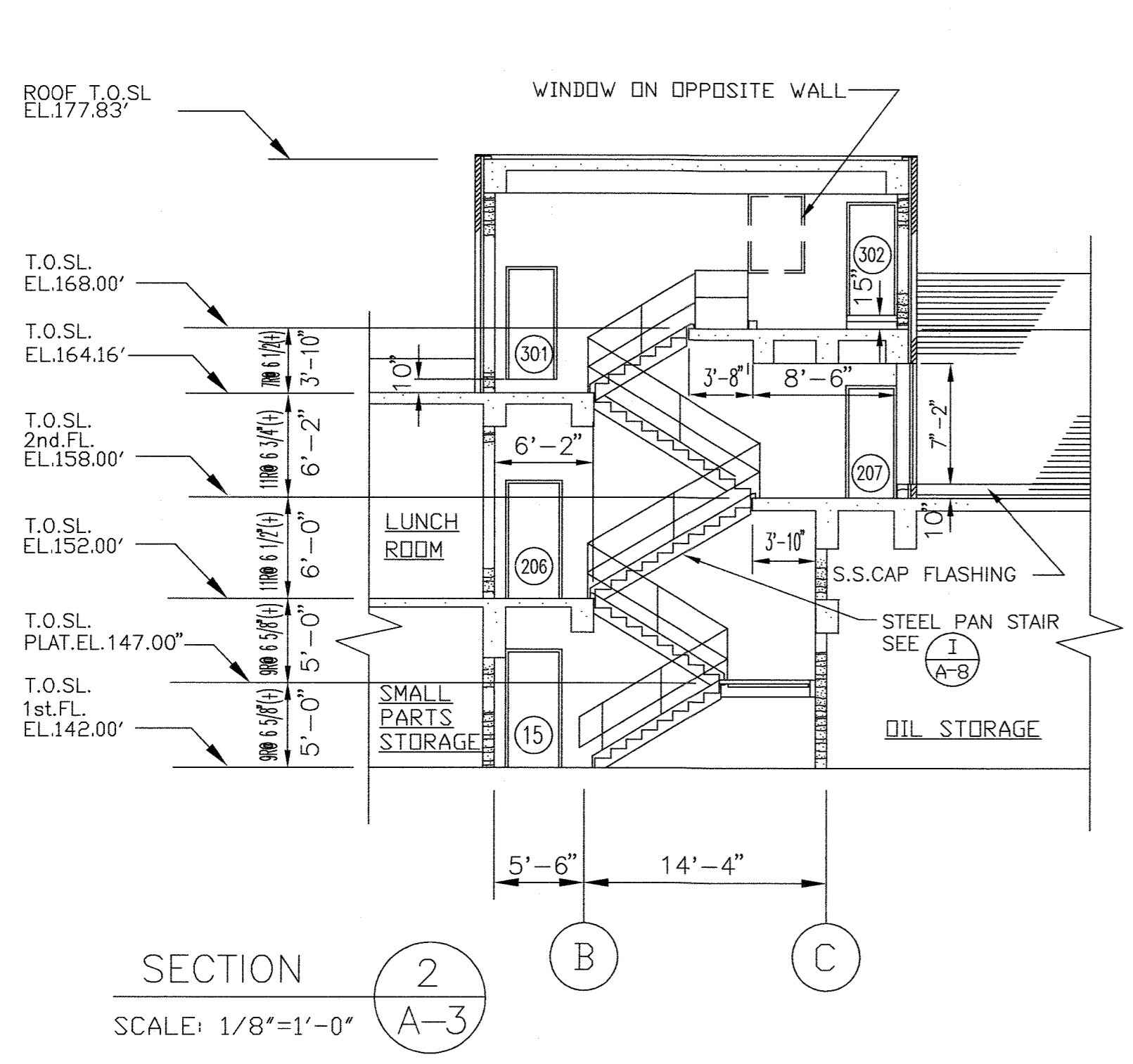
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

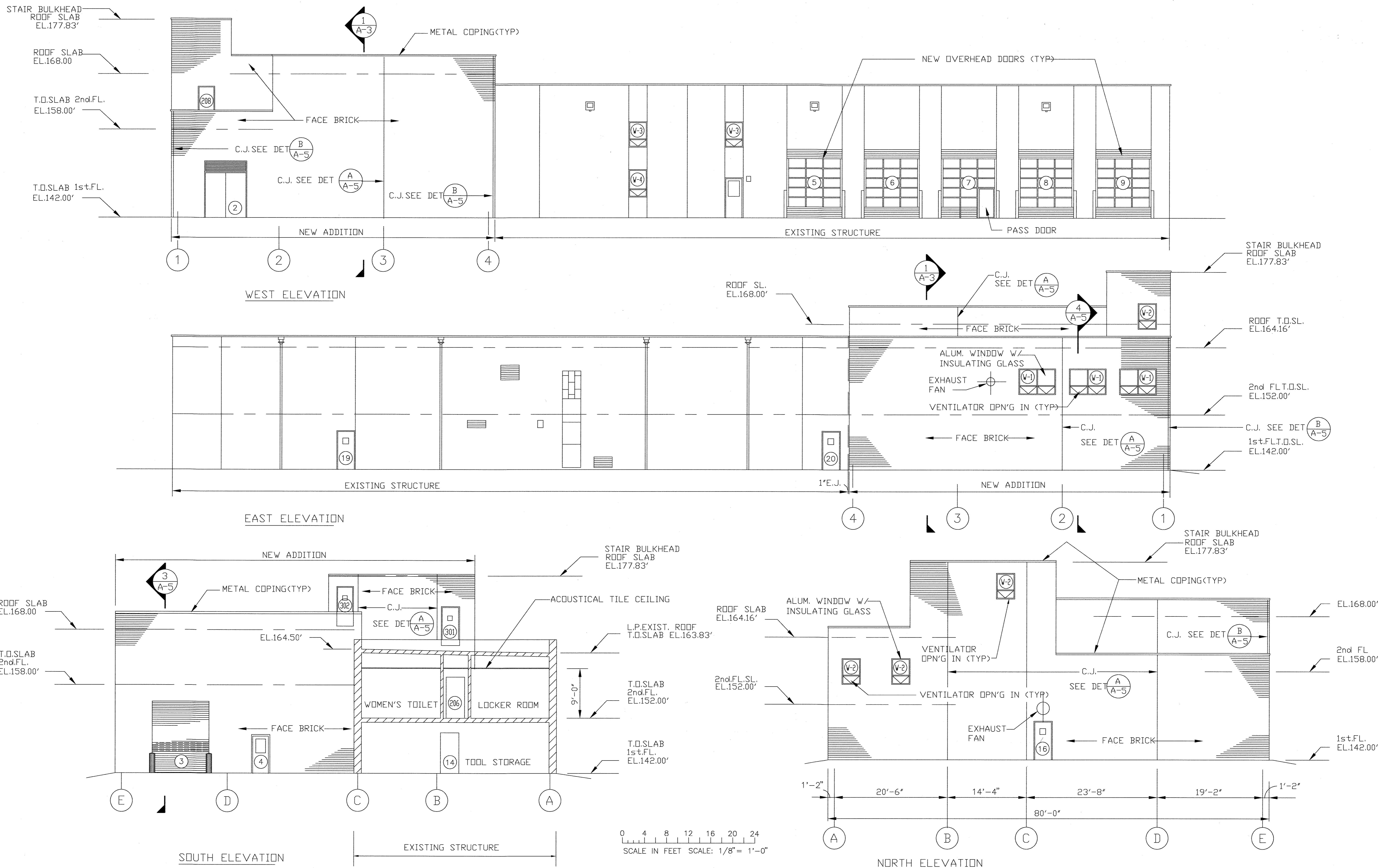
SCALE AS SHOWN
41 SHEET
108 OF 226
A-2A



STAIR NO.1

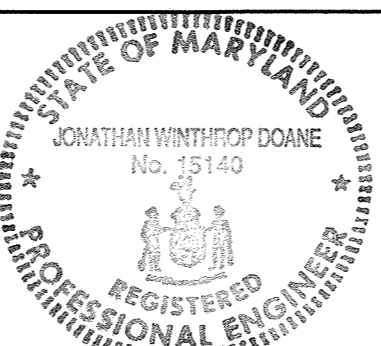


STAIR NO.1 DETAILS
ROOF PLAN AND SECTION 1-1



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *James P. ...* 5/1/96
 Chief, Bureau of Engineering: *John J. O'Hara* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *...* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. Winthrop Doane
 No. 25140
 REGISTERED PROFESSIONAL ENGINEER
 5-7-96

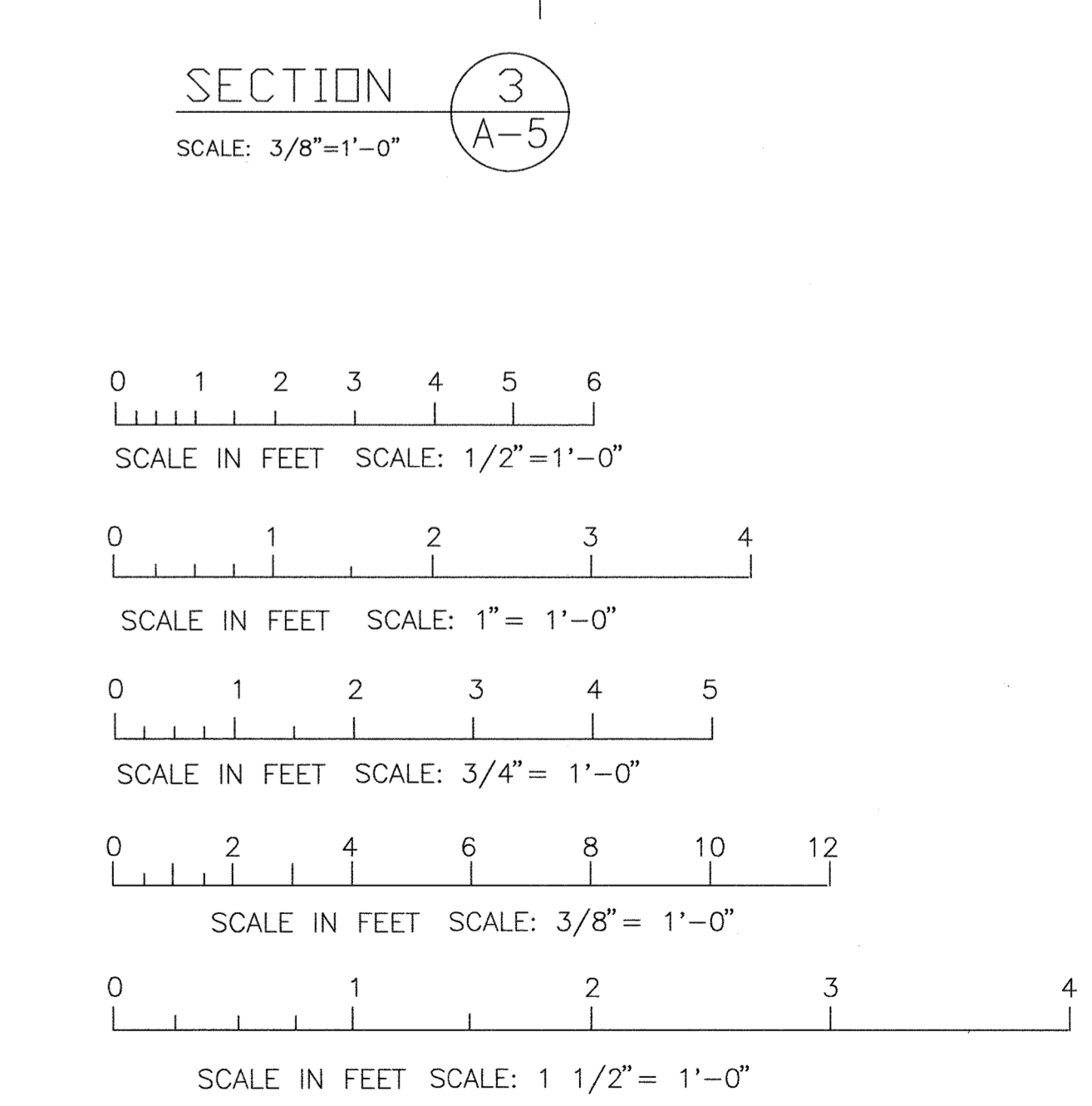
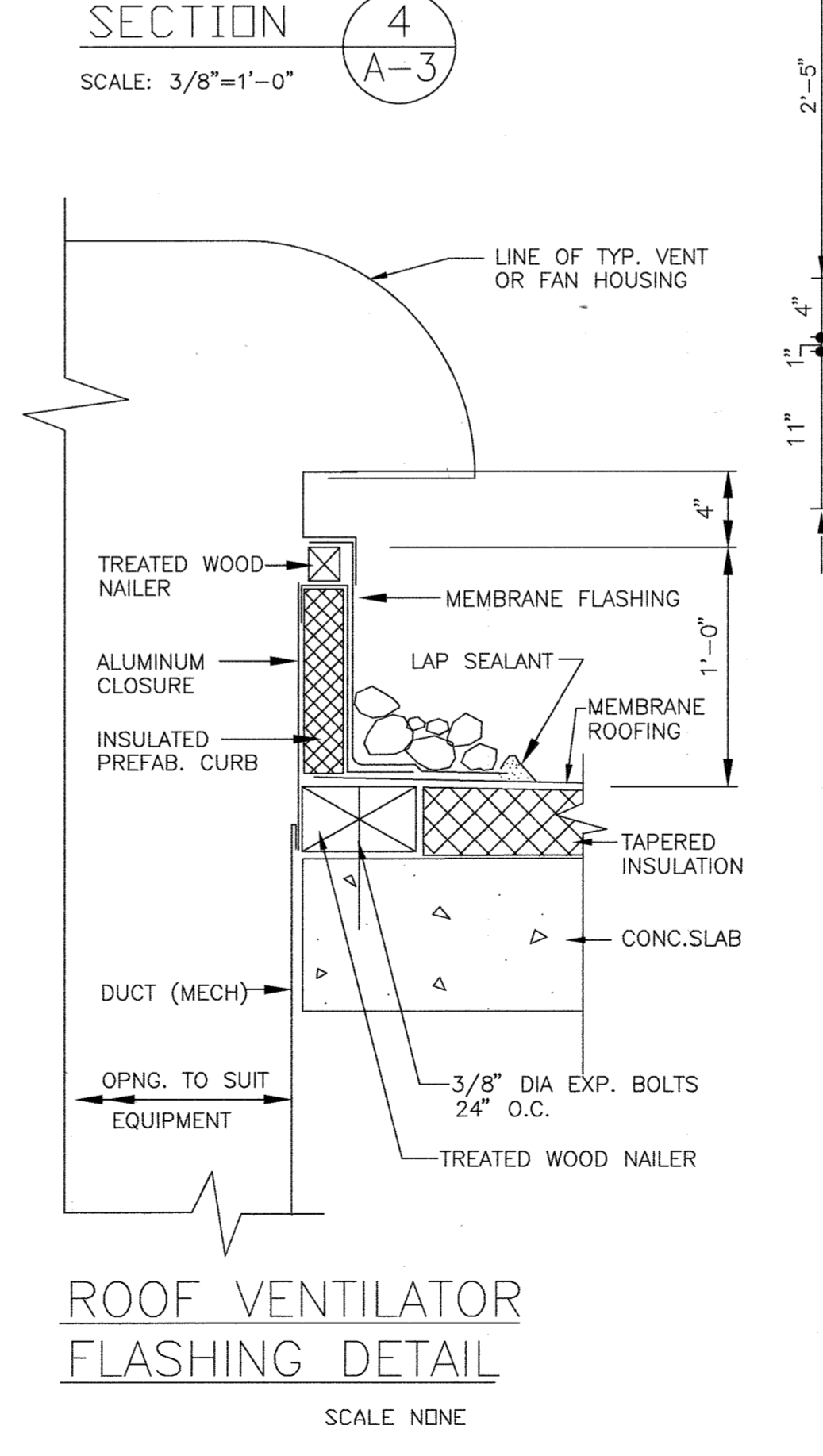
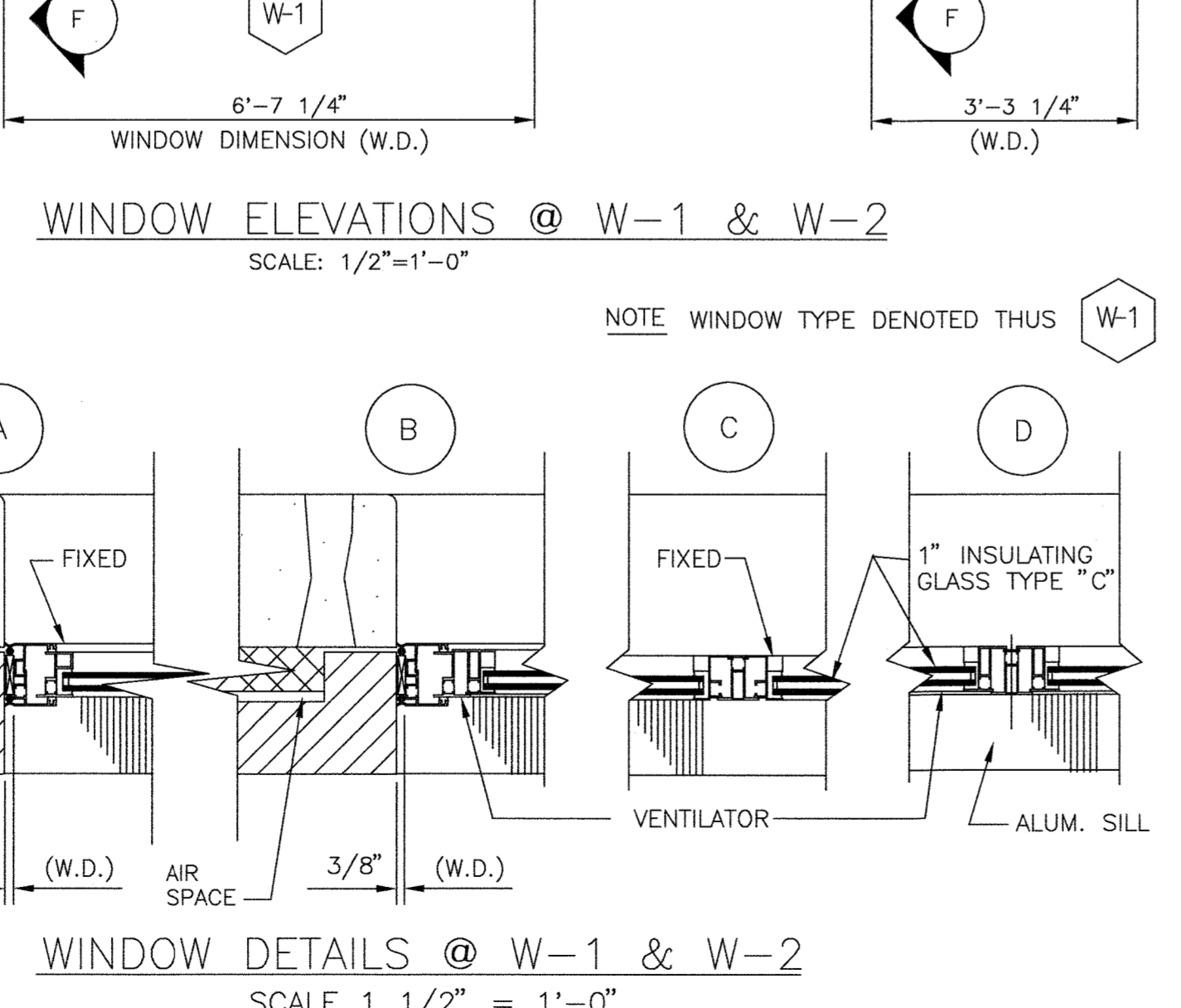
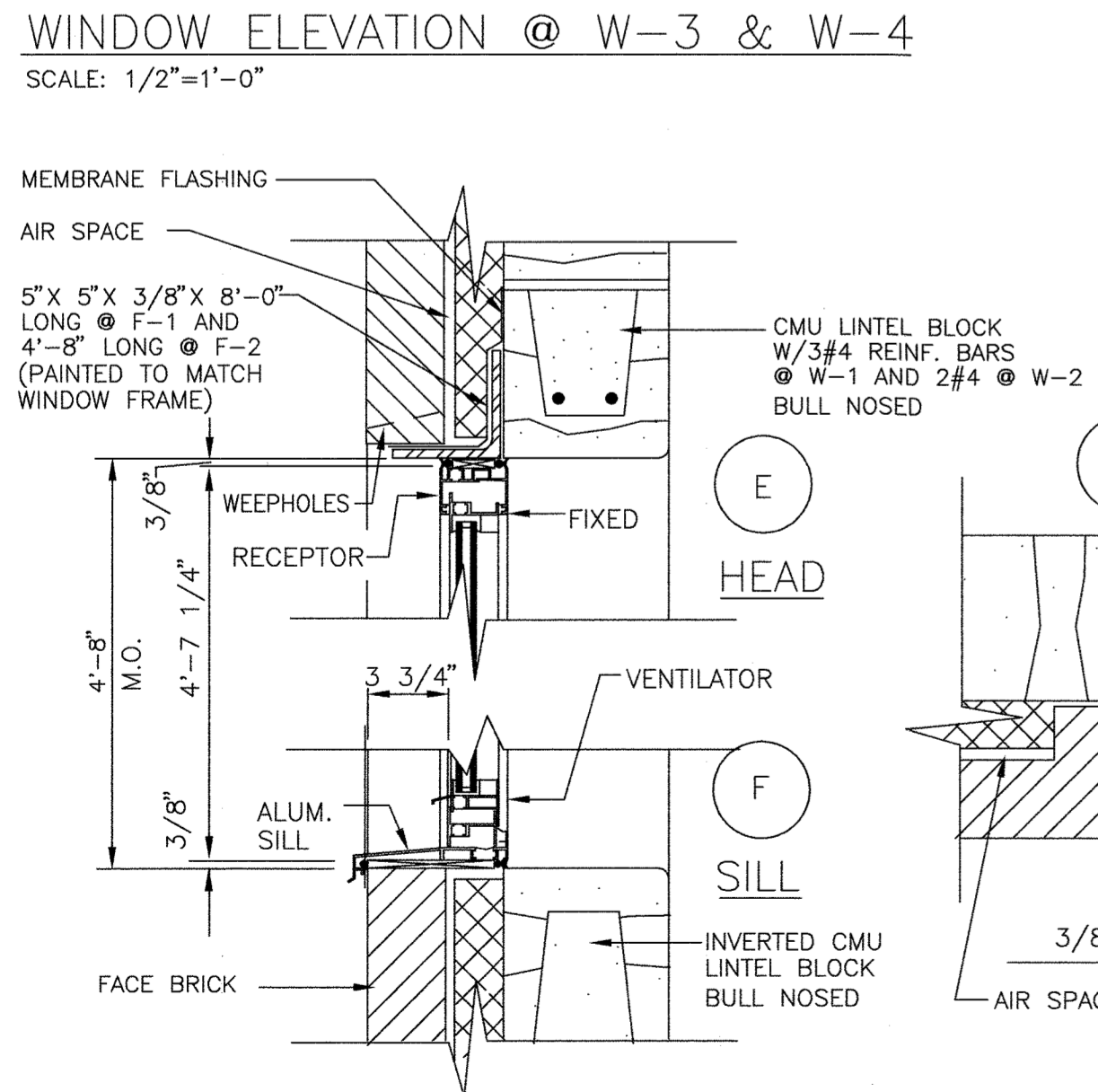
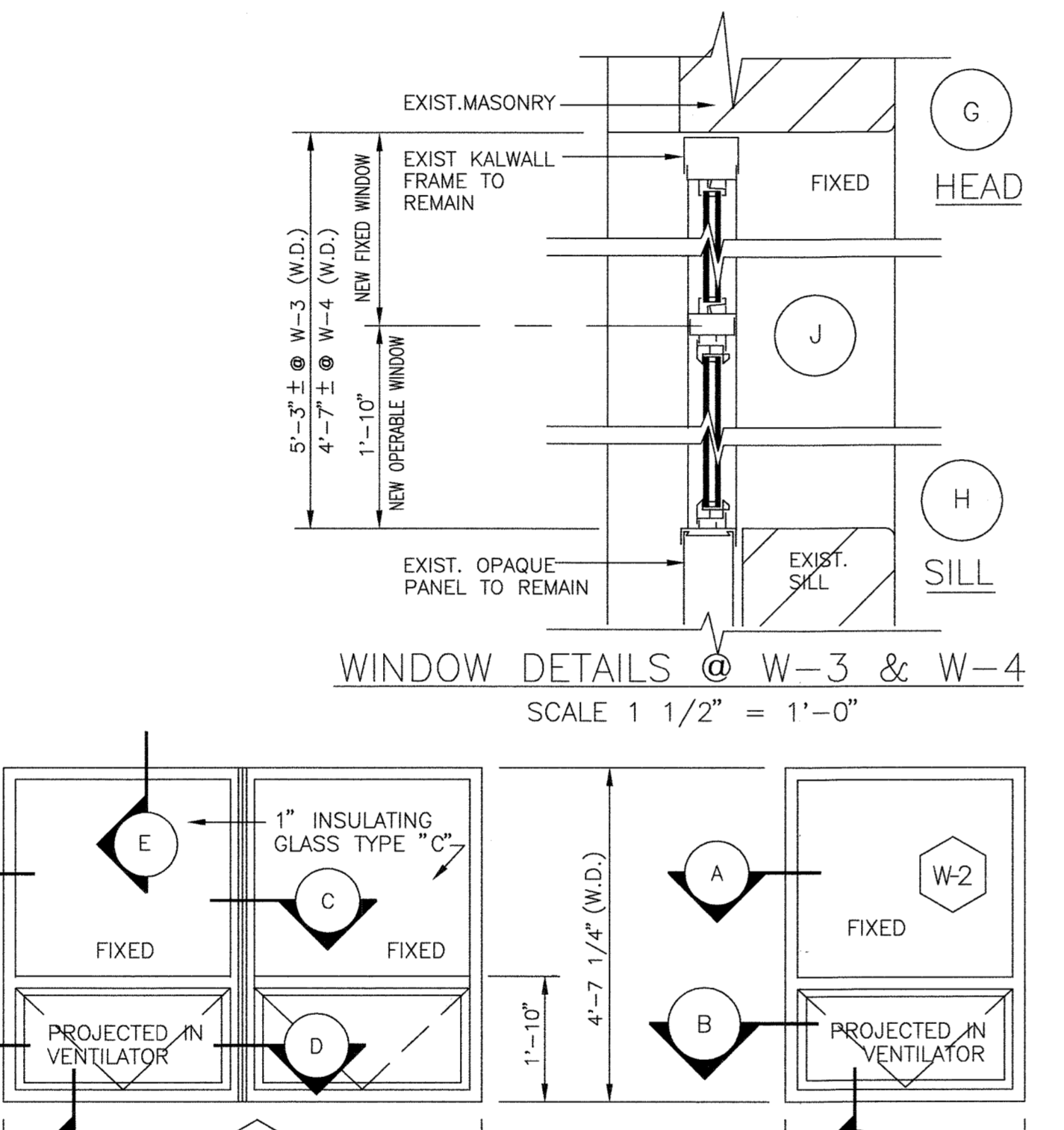
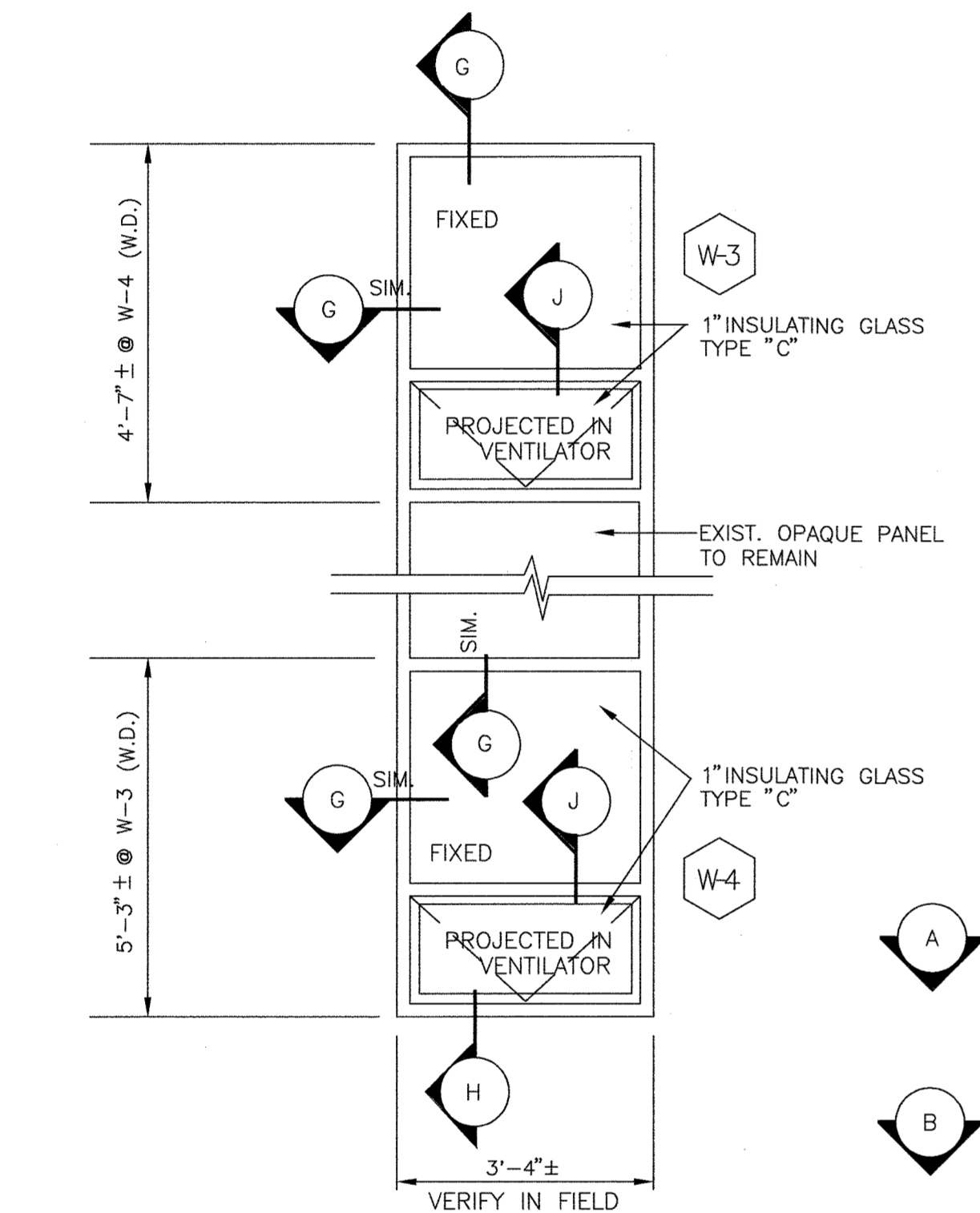
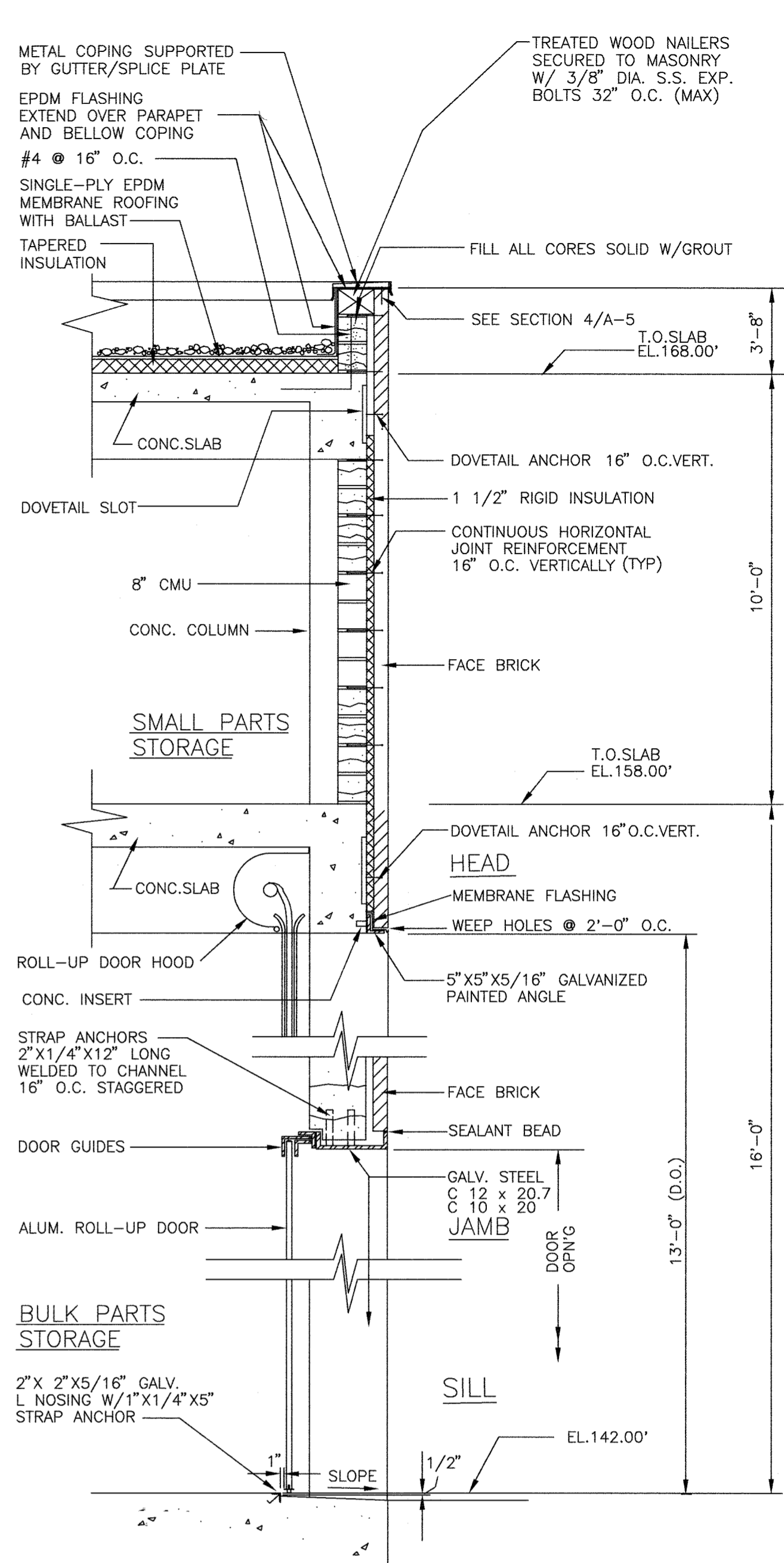
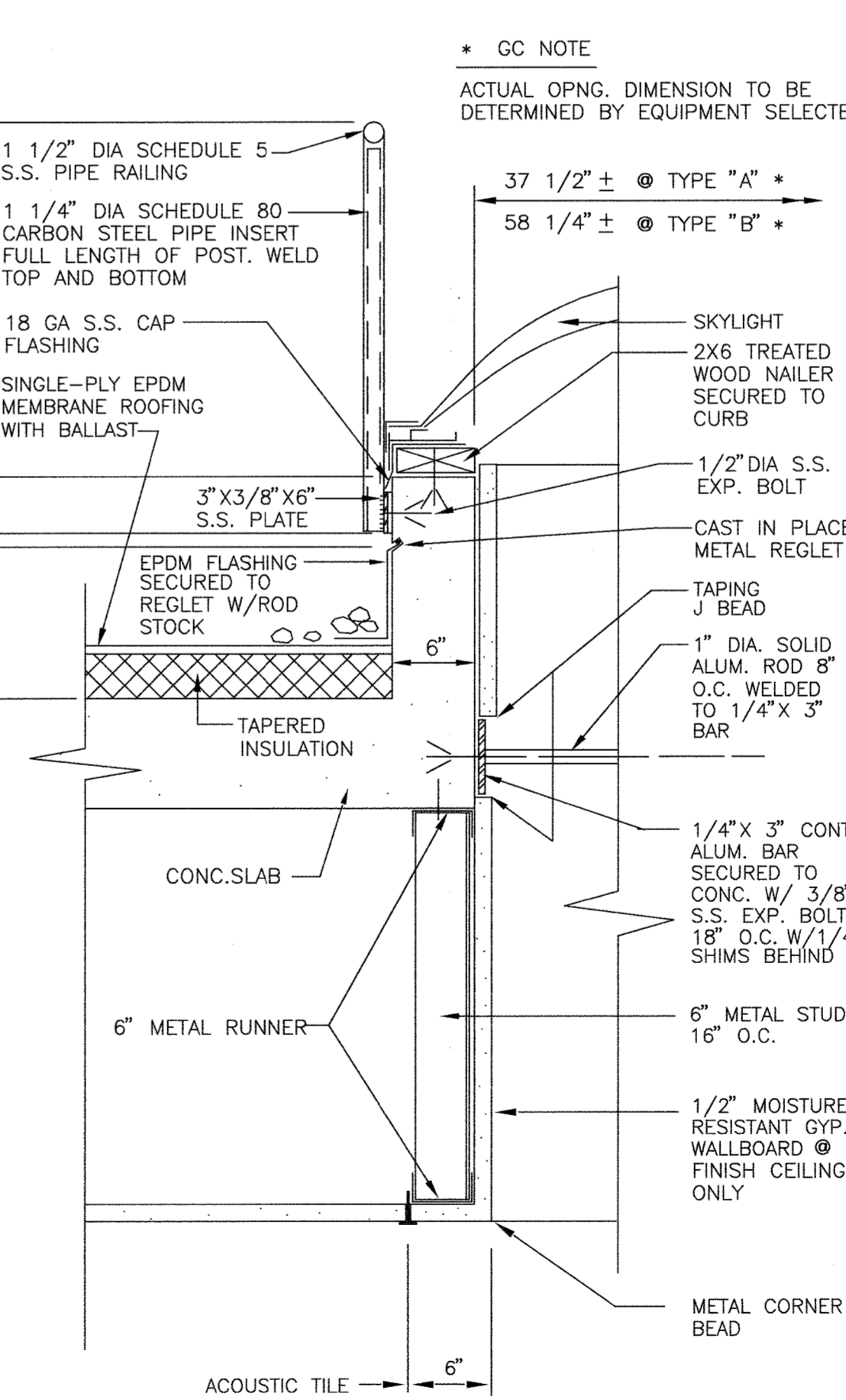
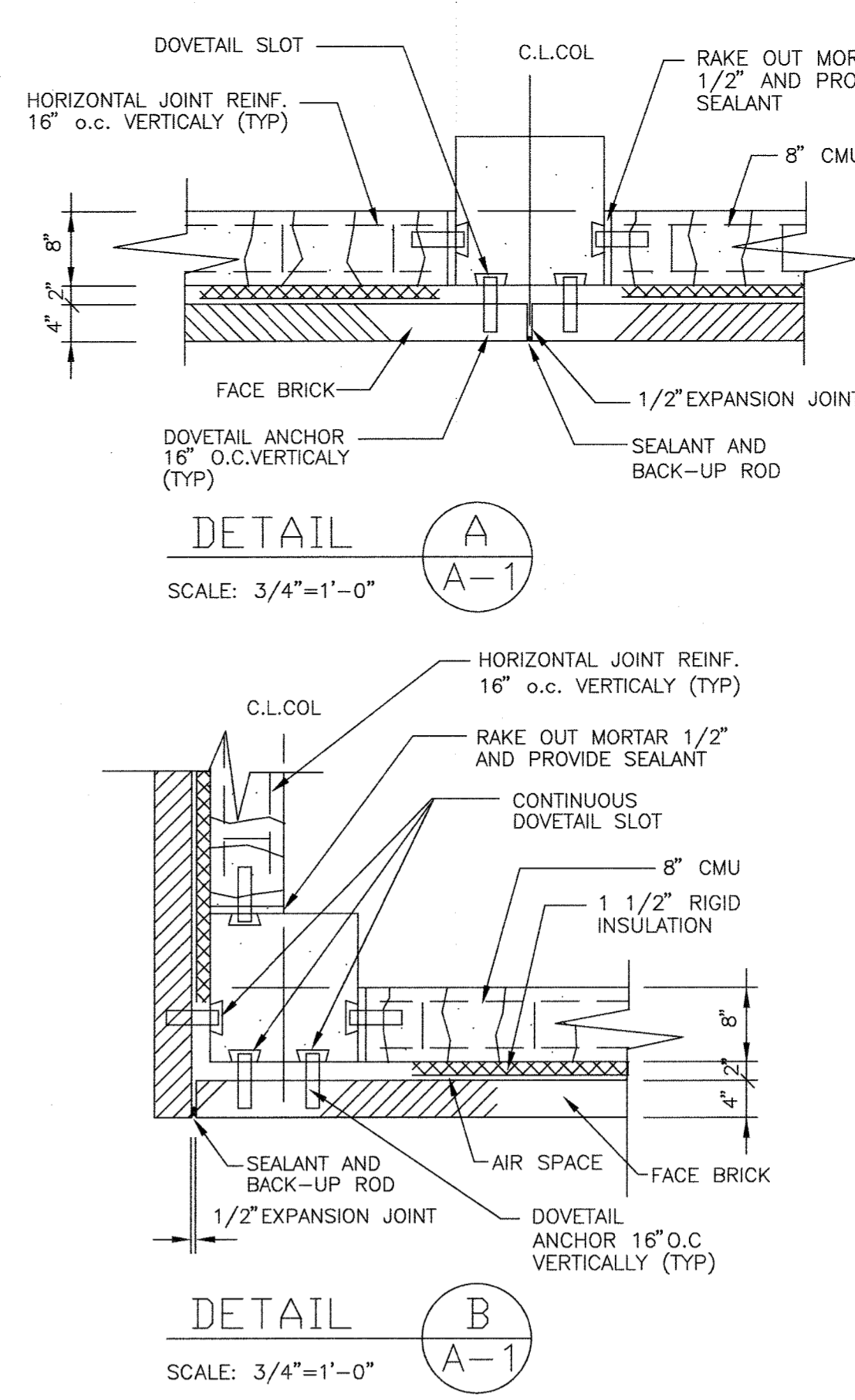
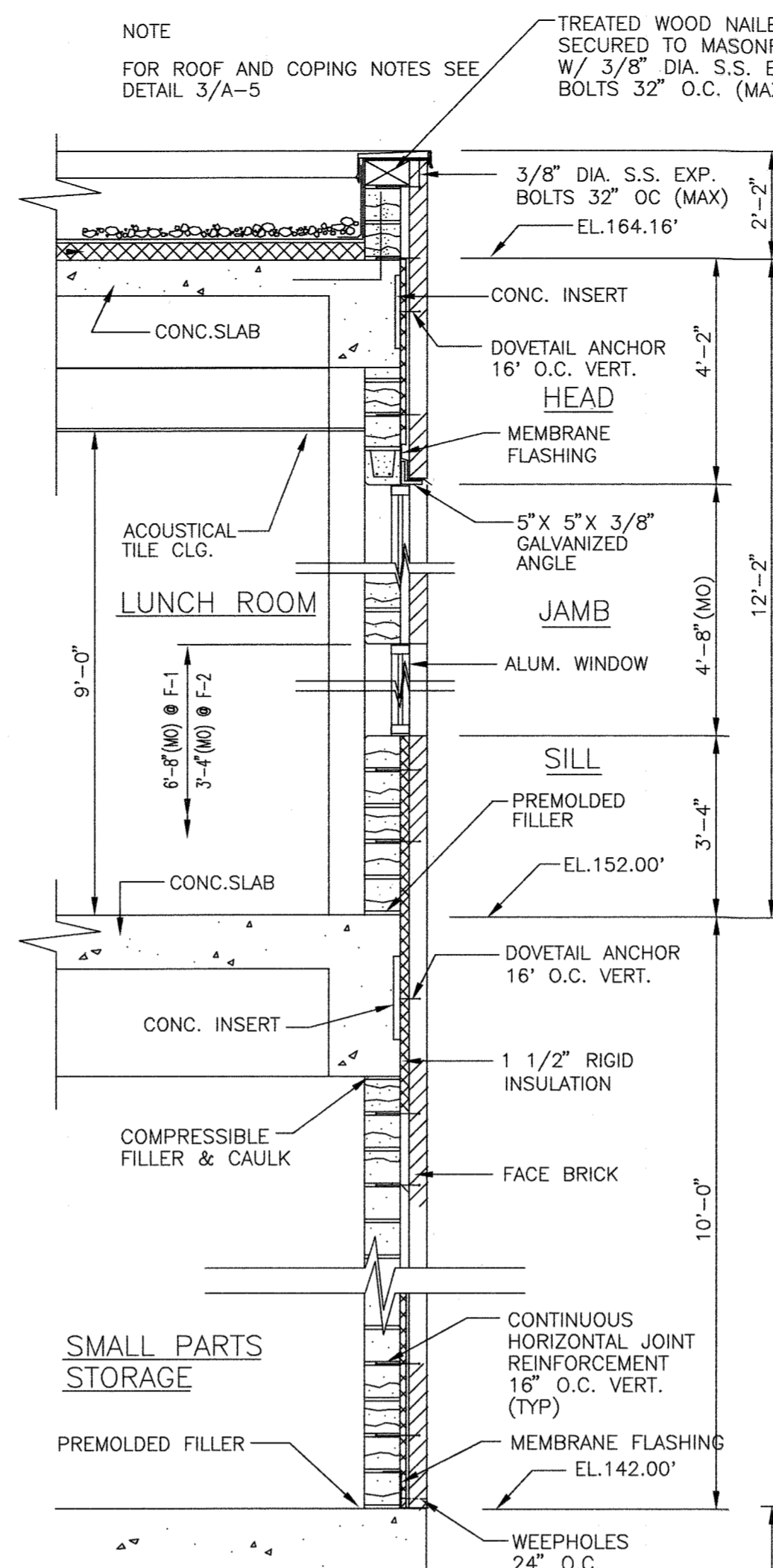
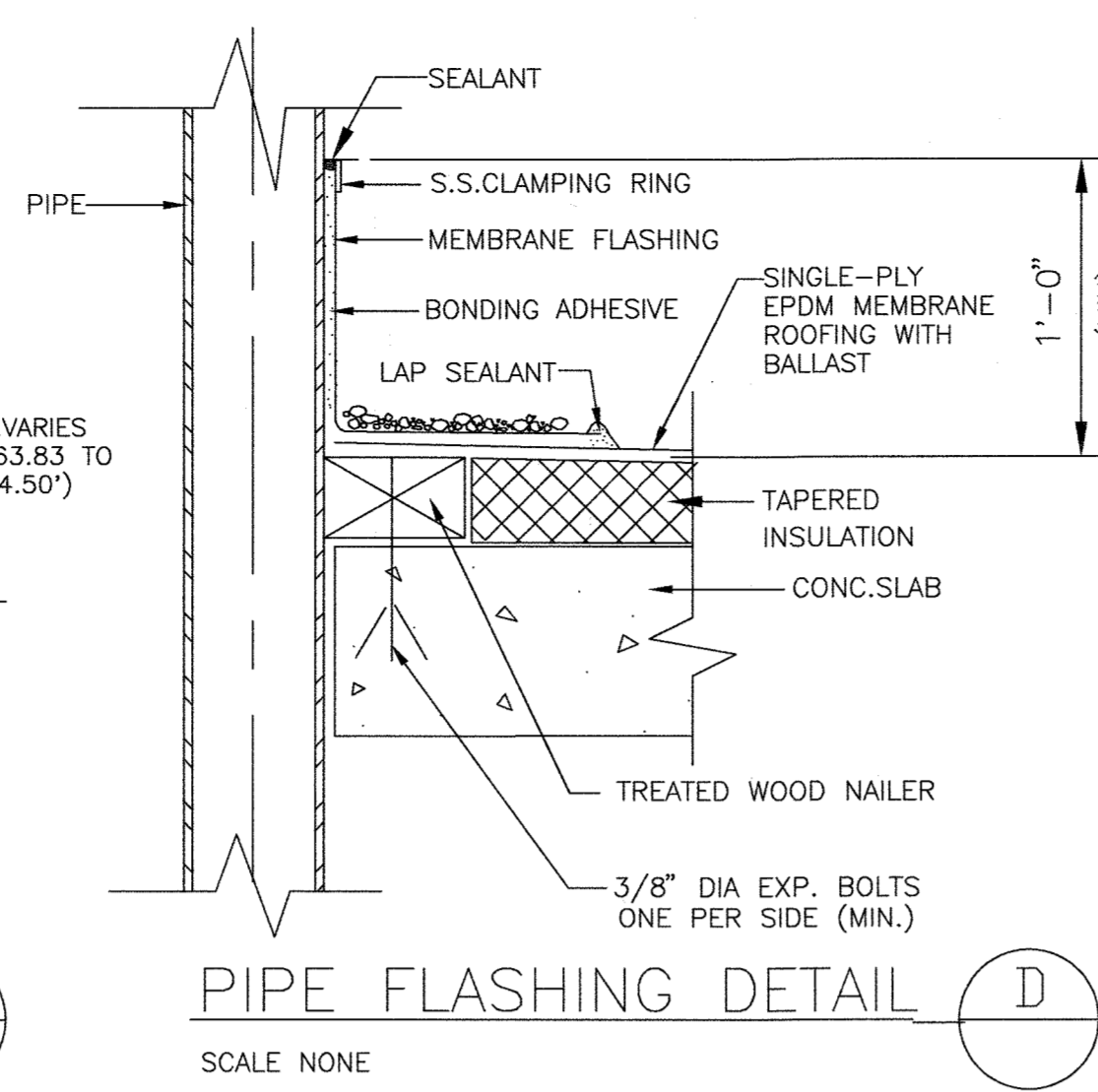
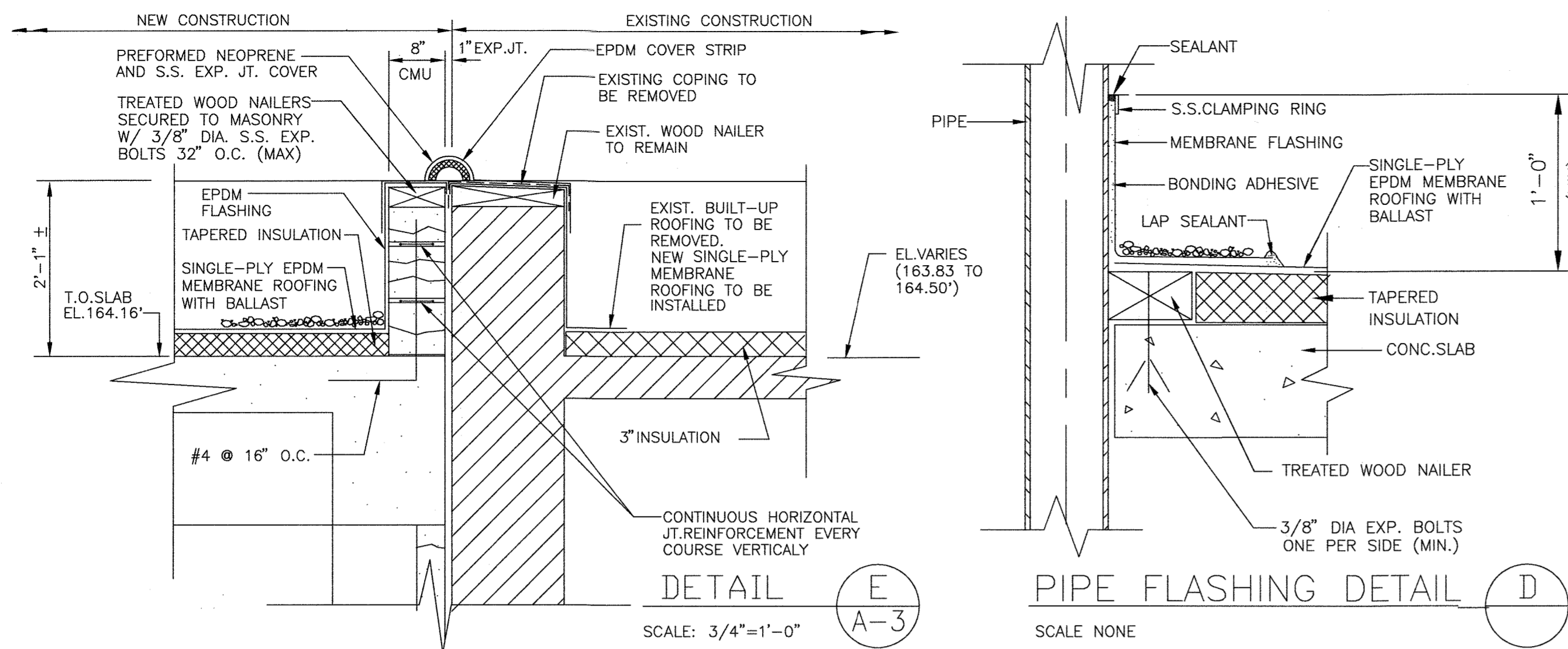


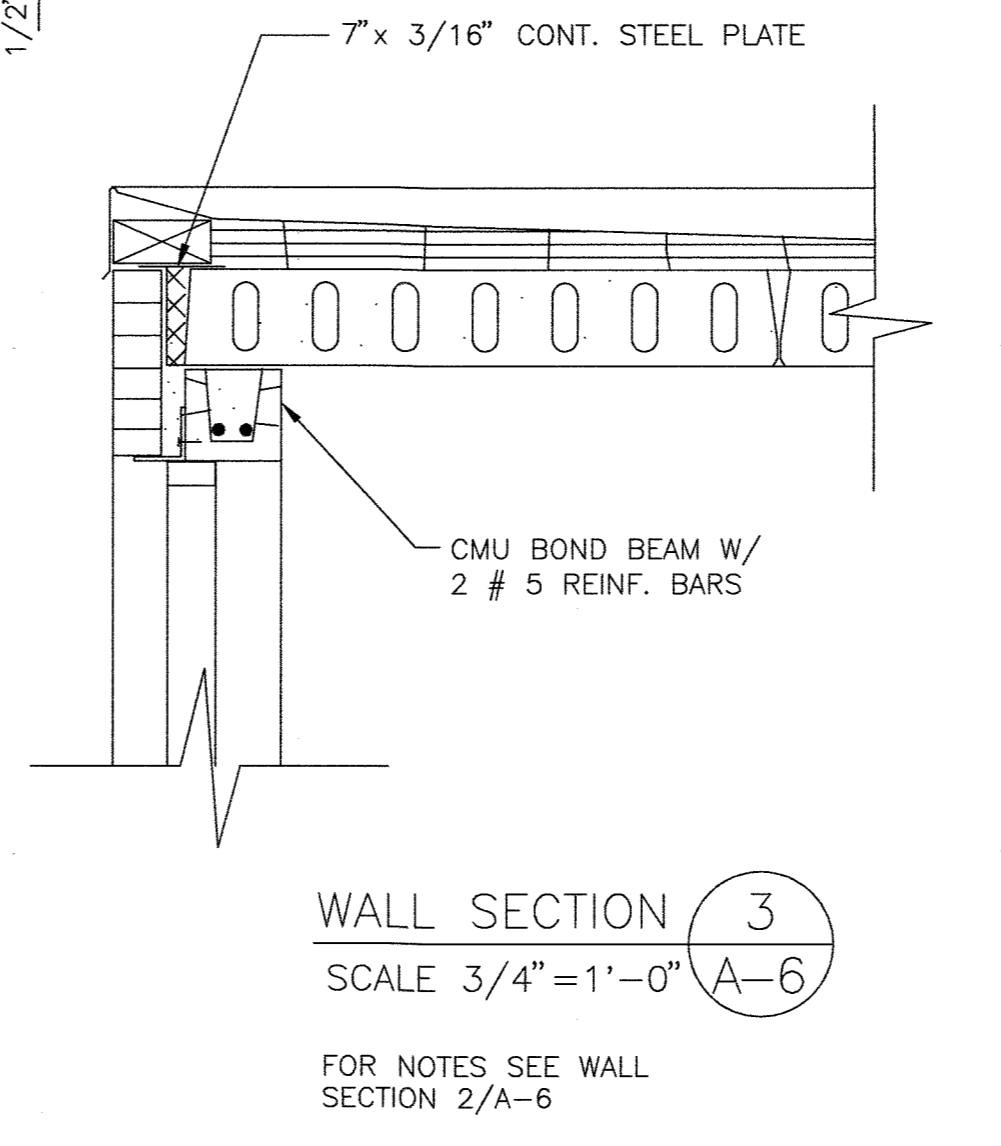
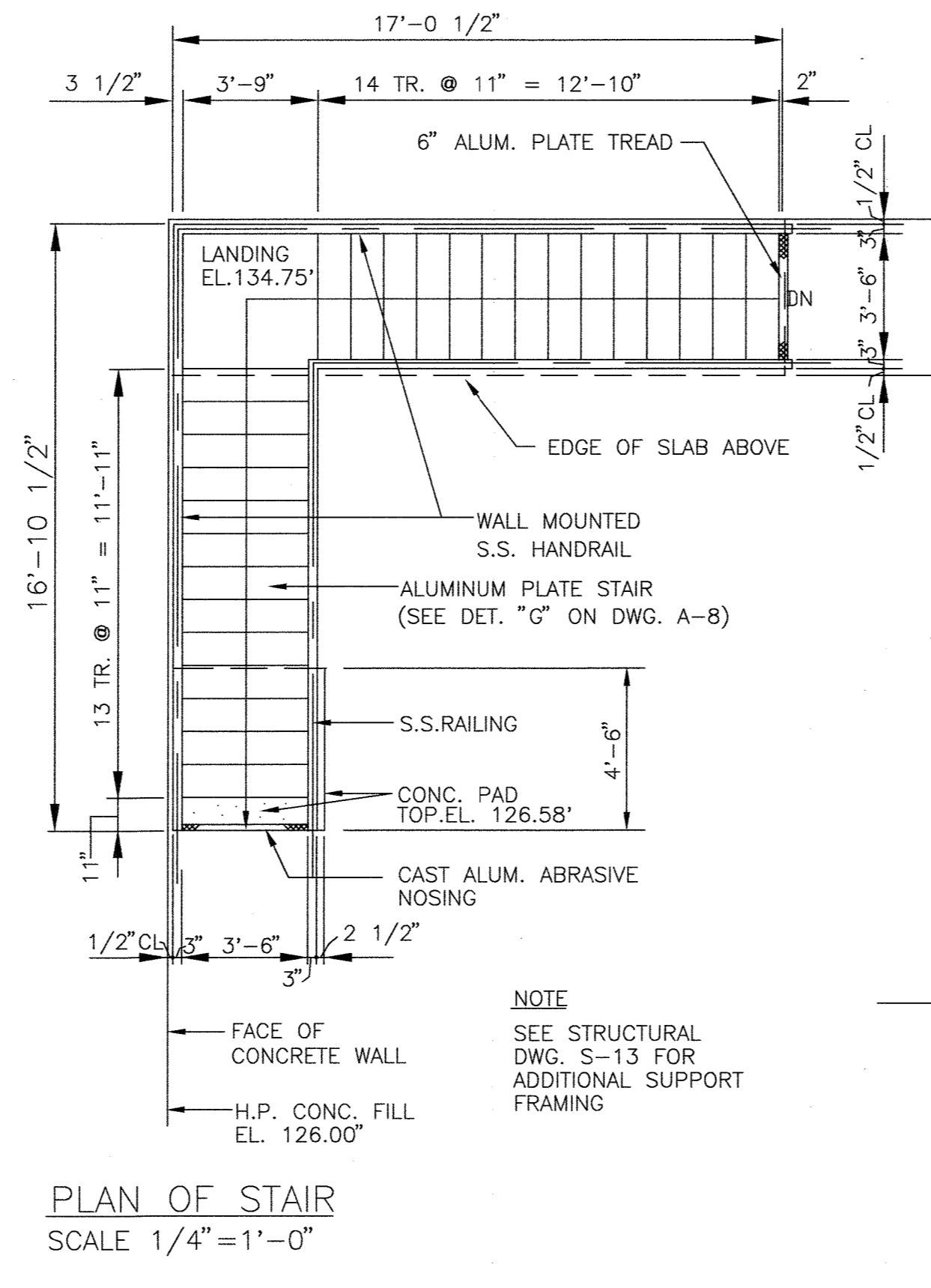
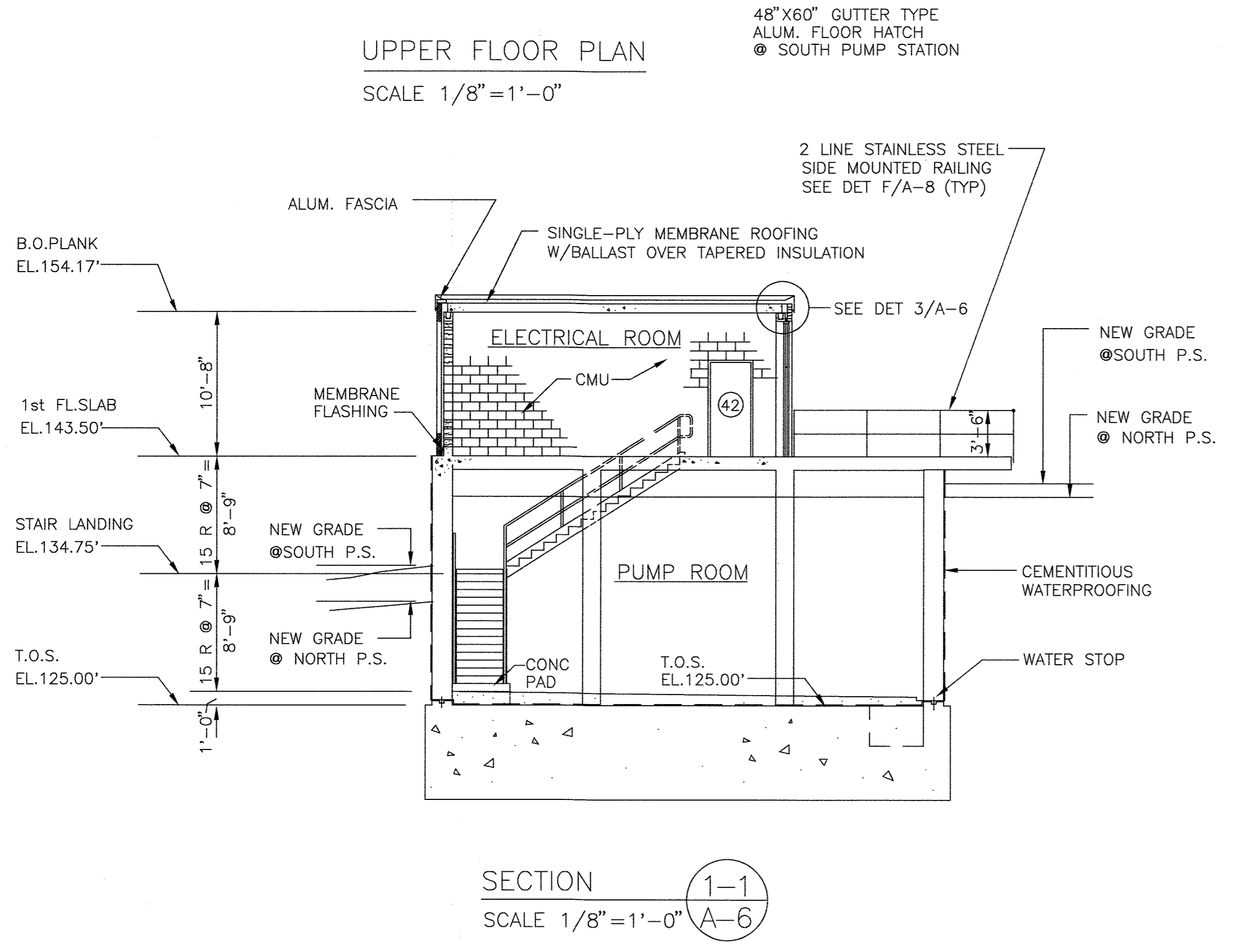
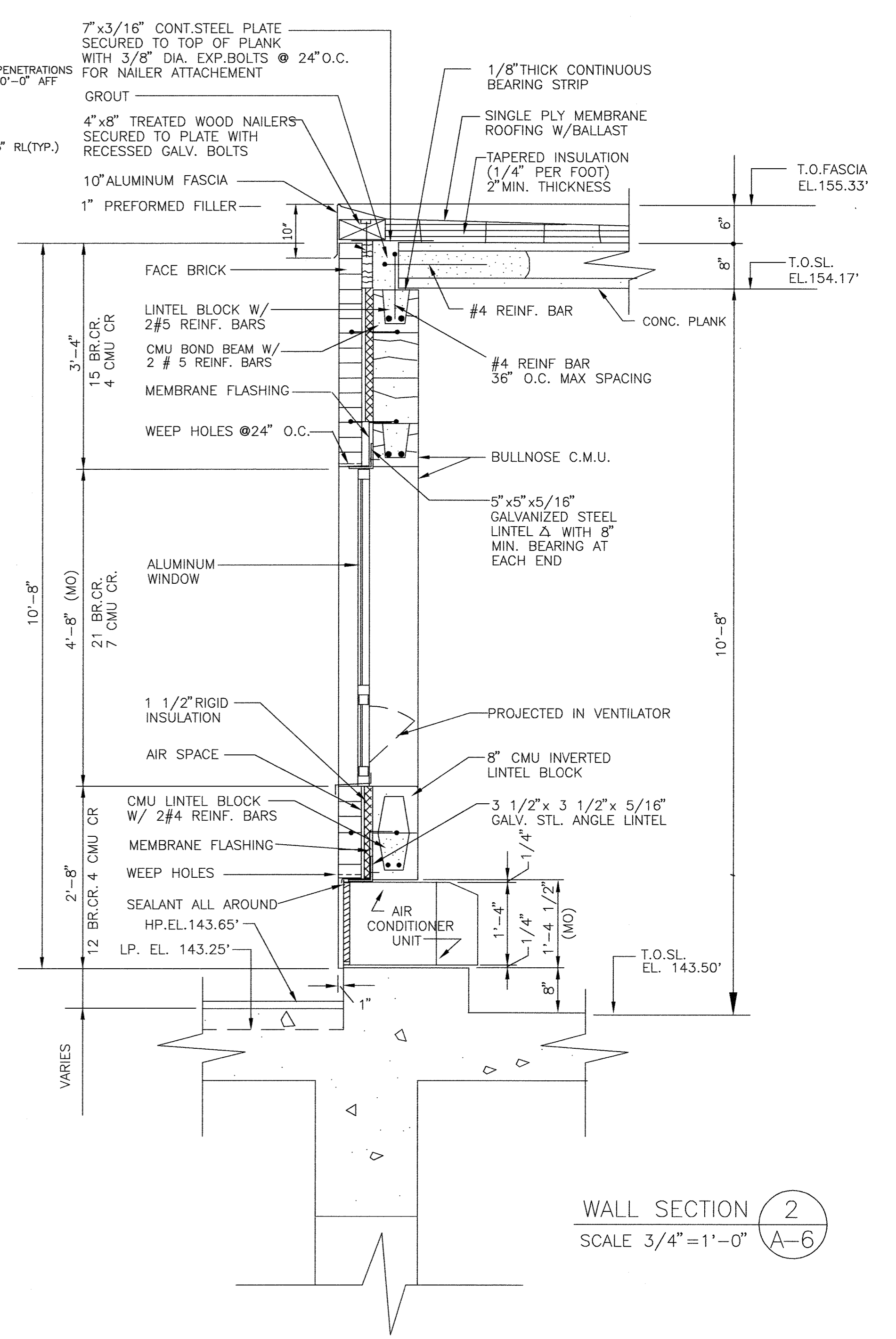
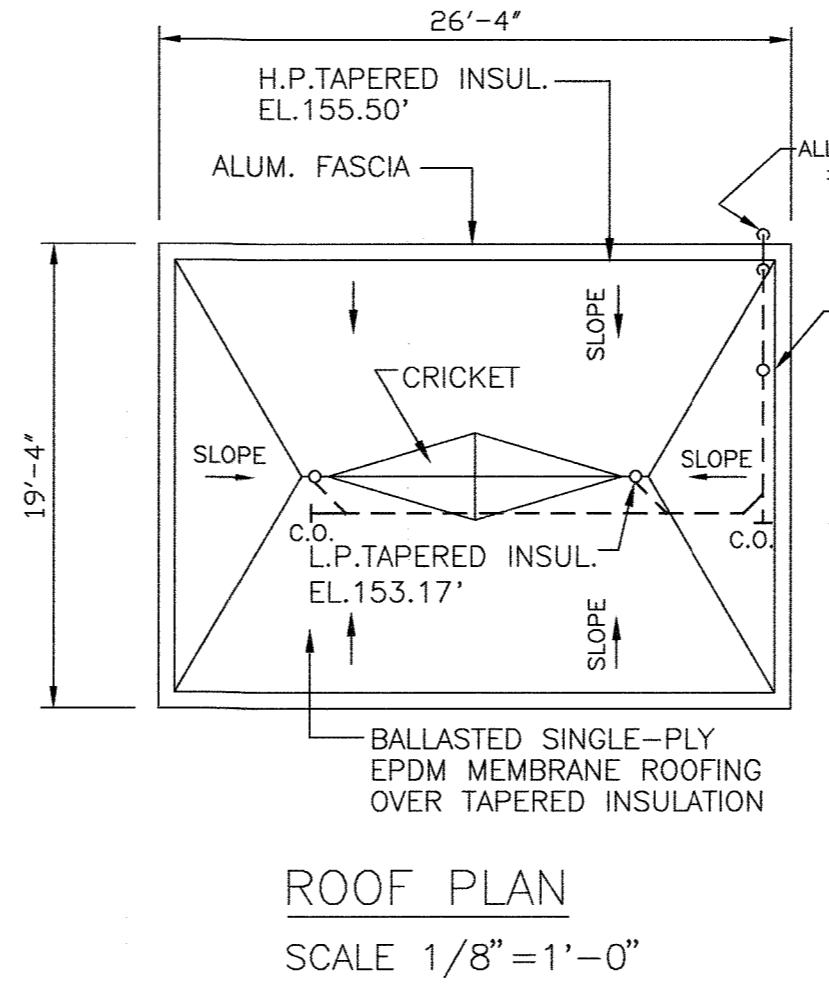
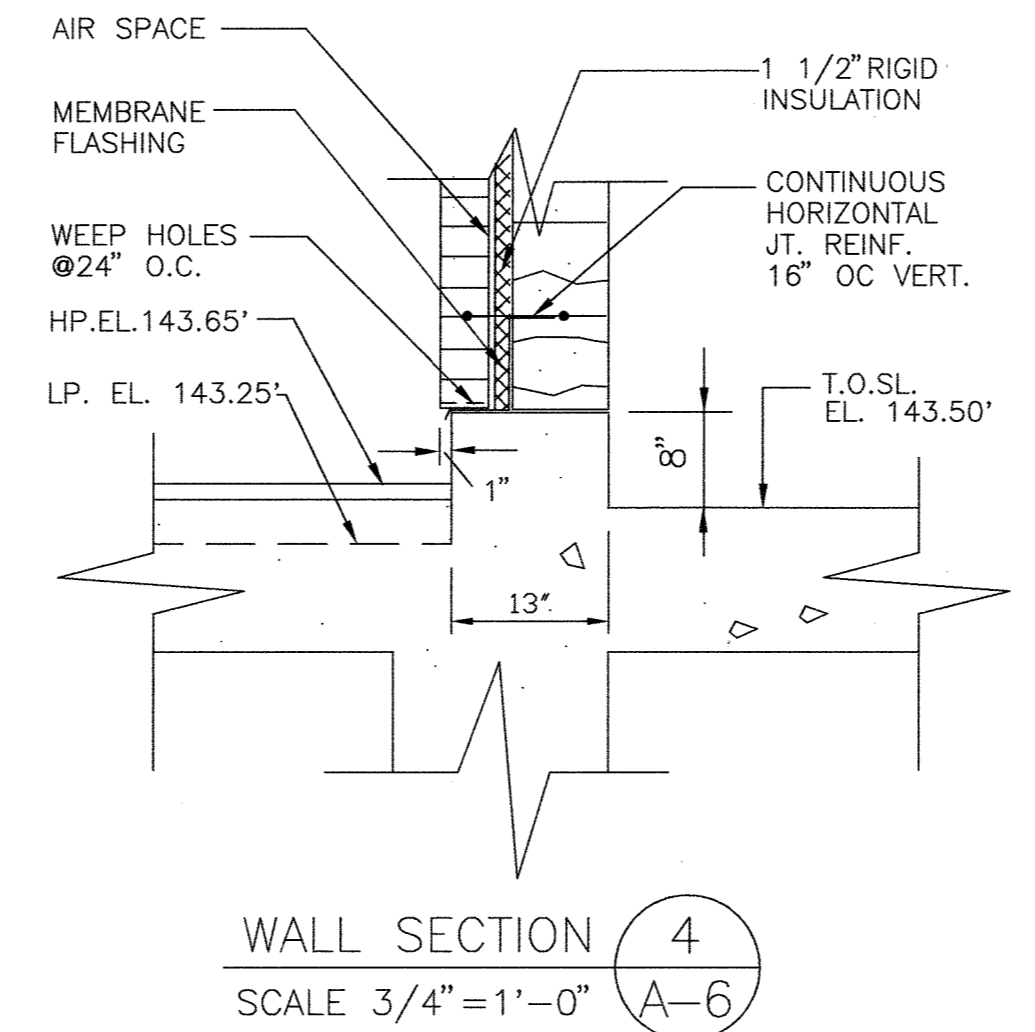
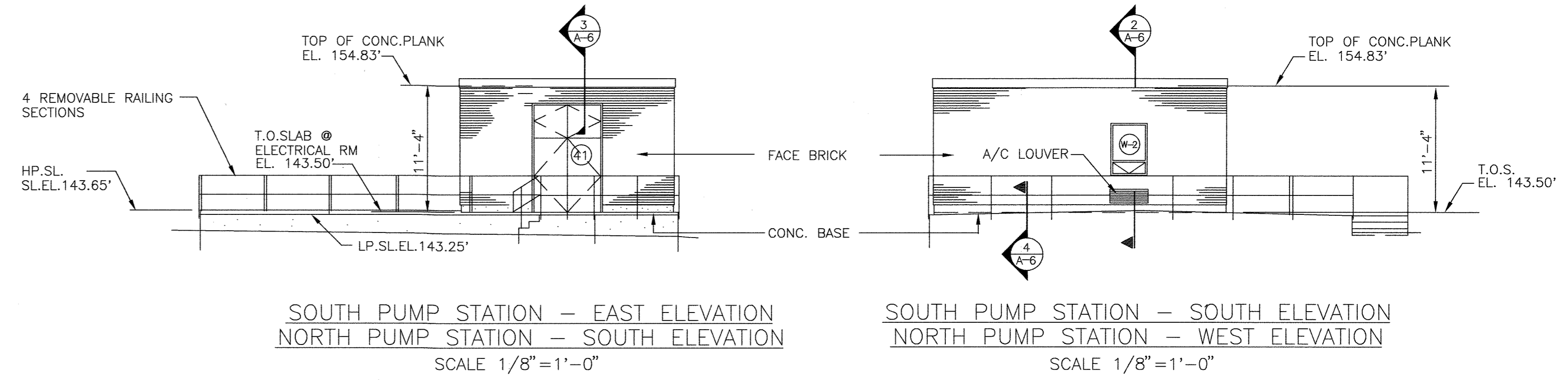
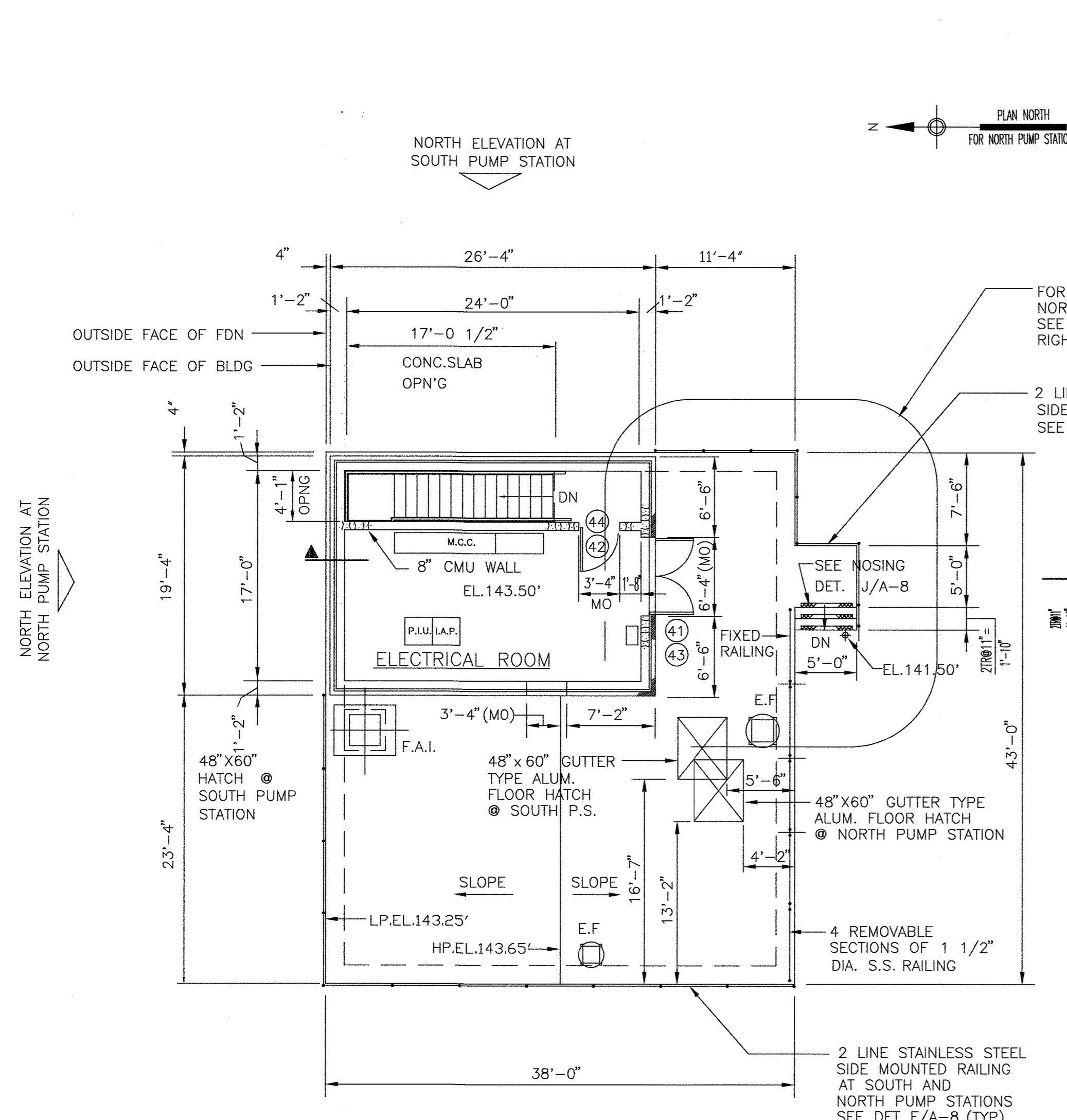
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	BY	NO.	REVISION	DATE

ARCHITECTURAL
 MAINTENANCE BUILDING
 ELEVATIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 43 SHEET
 188 OF 226
 A-4A



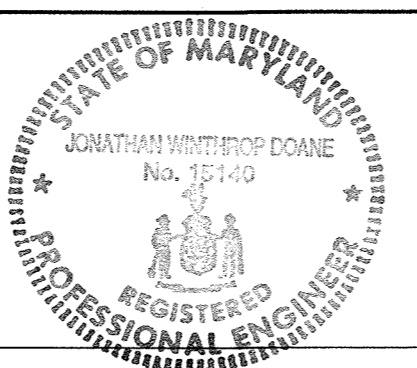


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/7/96
5/7/96

M&E Metcalf & Eddy

5-7-96



DES				
DRN				
CHK				
DATE	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY NO.	REVISION	DATE	

ARCHITECTURAL

NORTH AND SOUTH PUMP STATION
FLOOR PLANS, ROOF PLAN,
SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

45 SHEET
188 OF 226

A-6A

FINISH SCHEDULE

BLDG.	ELEV.	LOCATION	FLOOR		BASE		WALLS		CEILING		REMARKS
			FINISH	COLOR	FINISH	COLOR	FINISH	COLOR	HEIGHT	FINISH	
MAINTENANCE BUILDING	FIRST FLOOR	OIL STORAGE	LH	-	-	-	CMU-P	●	CONC.	●	
		STAIR NO.1	LH	-	-	-	CMU-P	●	CONC.	●	
		BULK PARTS STORAGE	LH	-	-	-	CMU-P	●	CONC.	●	
		SMALL PARTS STORAGE	LH	-	-	-	CMU-P	●	CONC.	●	
		TOOL STORAGE	LH	-	-	-	CMU-P	●	CONC.	●	
	SECOND FLOOR	SMALL PARTS STORAGE	LH	-	-	-	CMU-P	●	VARIES	CONC.	●
		FILE ROOM	VCT	-	VC	-	CMU-P	●	9'-0"	CONC.	●
		GENERAL STORAGE	VCT	-	VC	-	CMU-P	●	VARIES	MAT	●
		CORRIDOR	VCT	-	VC	-	CMU-P	●	9'-0"	MAT	-
		LUNCH ROOM	VCT	-	VC	-	CMU-P	●	9'-0"	MRAT	-
EXISTING BUILDING	ADDITIONAL LOCKER AND TOILET ROOM	SEF	-	4" SEF	-	GCMU	●	9'-0"	MRAT	-	
	PASSAGEWAY	SEF	-	VC	-	MRGDW	●	9'-0"	MRAT	-	
	OFFICE NO.1	EXIST. VCT	-	VC	-	8'-0"	EXIST. GYP. BOARD	8'-0"	EXIST. GYP. BOARD	●	
	OFFICE NO.2	EXIST. VCT	-	VC	-	8'-0"	EXIST. GYP. BOARD	8'-0"	EXIST. GYP. BOARD	●	
	MACHINE SHOP AREA	LH	-	-	-	CMU-P	●	11'-0"	METAL DECKING	●	
	SUPERINTENDENTS OFFICE	VCT	-	VC	-	CMU-P	●	9'-0"	MAT	-	
	MEZZANINE	LH	-	-	-	CMU-P	●	9'-0"	CONC.	●	
	SERVICE TECHNICIAN	VCT	-	VC	-	CMU-P	●	9'-0"	CONC.	●	
	PUMP ROOM	LH	-	-	-	CONC.	-	17'-6"	CONC.	-	
	ELECTRICAL ROOM	SEF	-	4" SEF	-	CMU-P	●	10'-8"	CONC.	●	

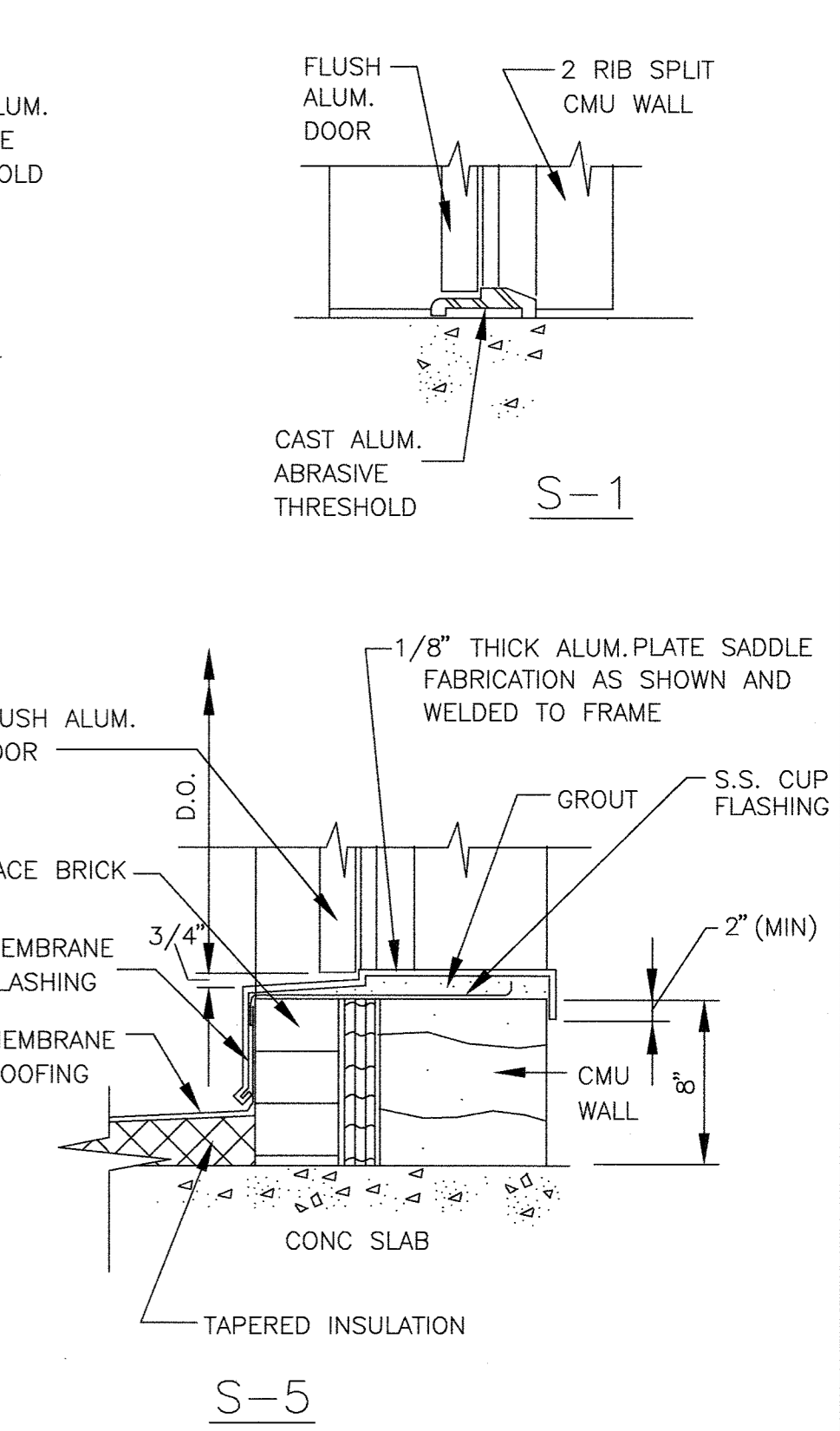
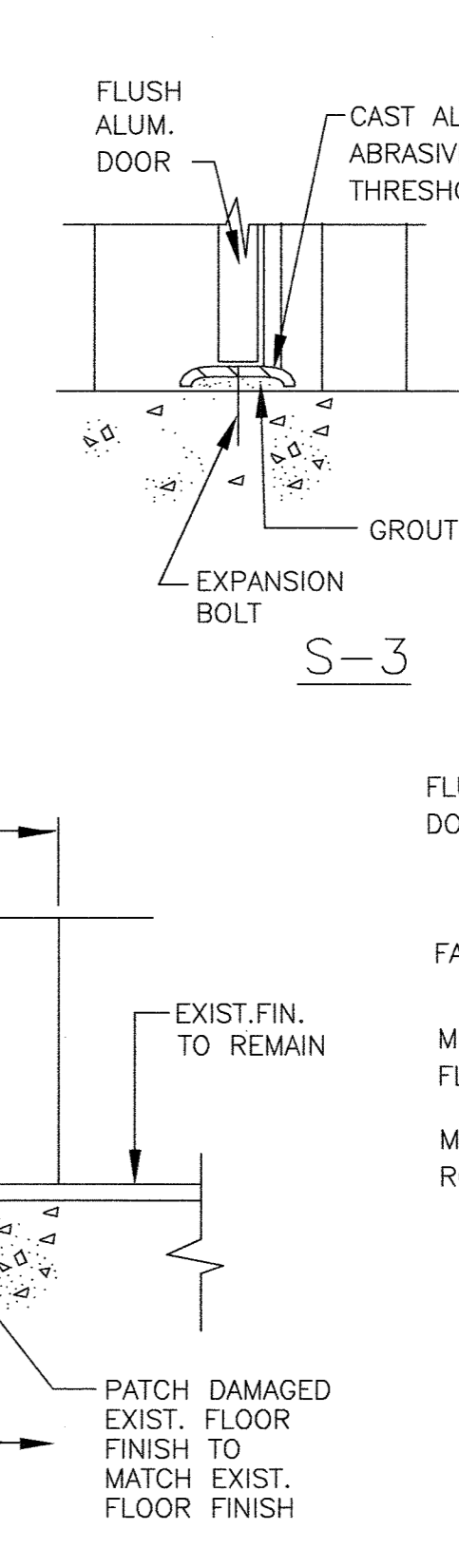
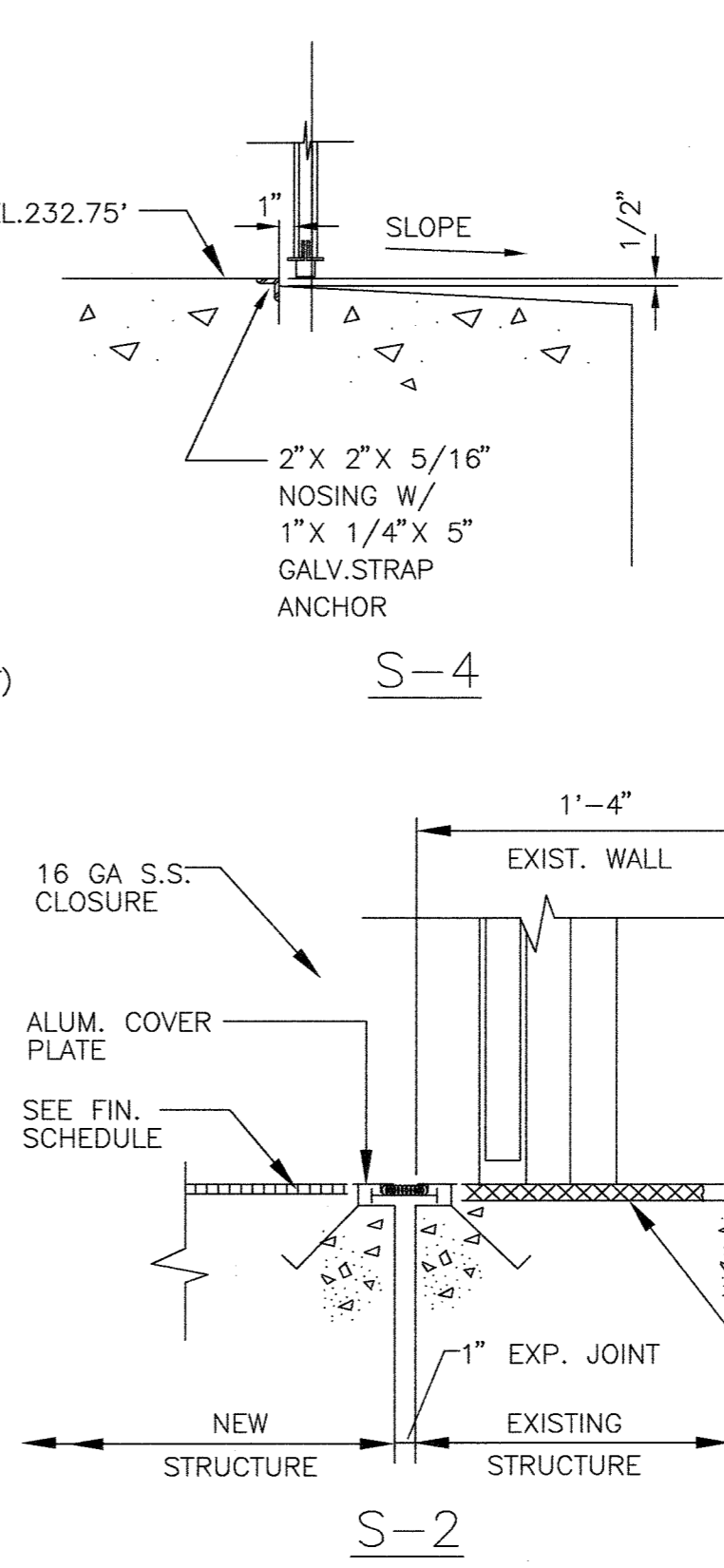
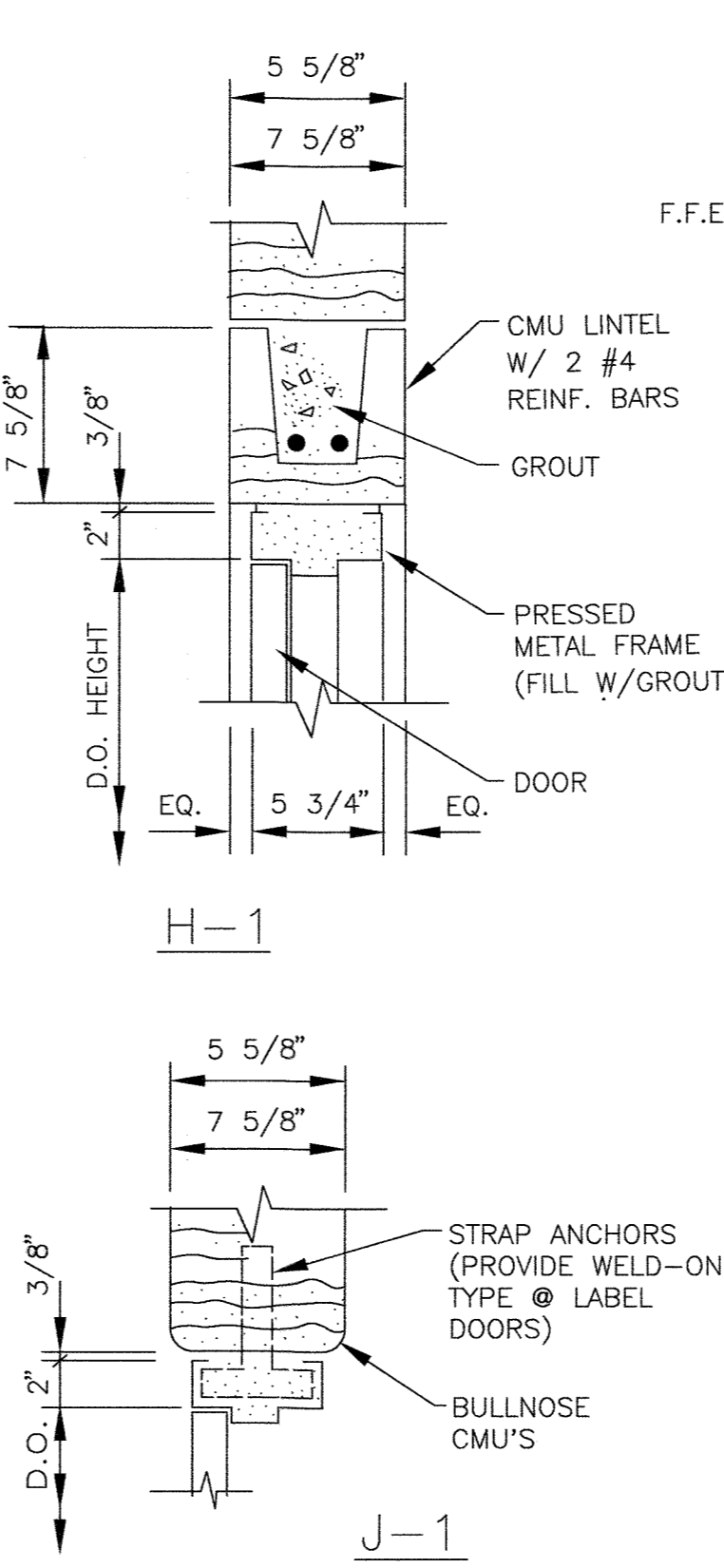
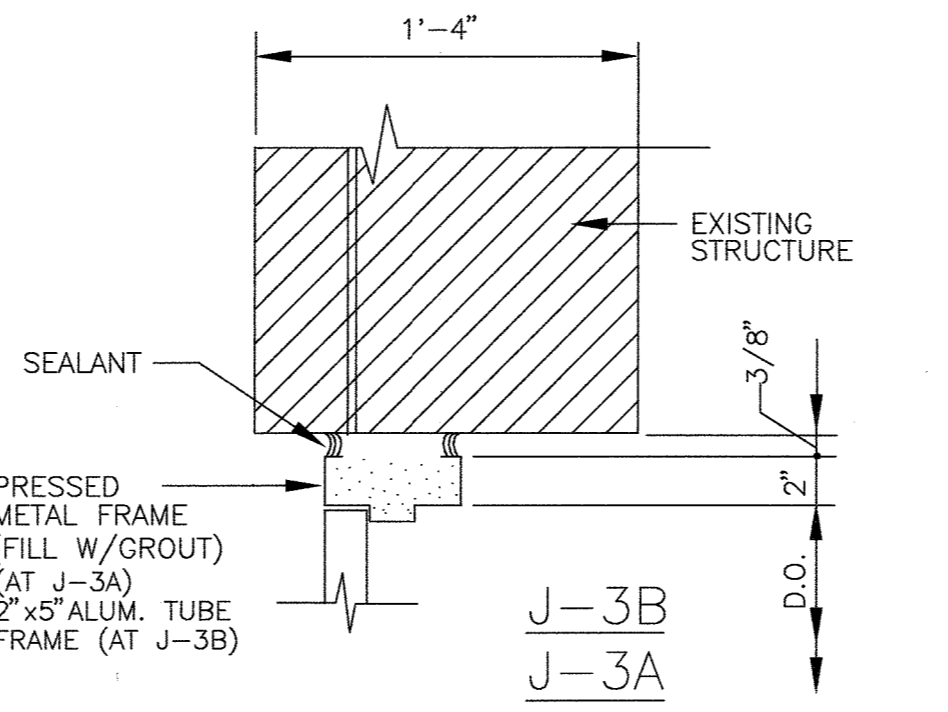
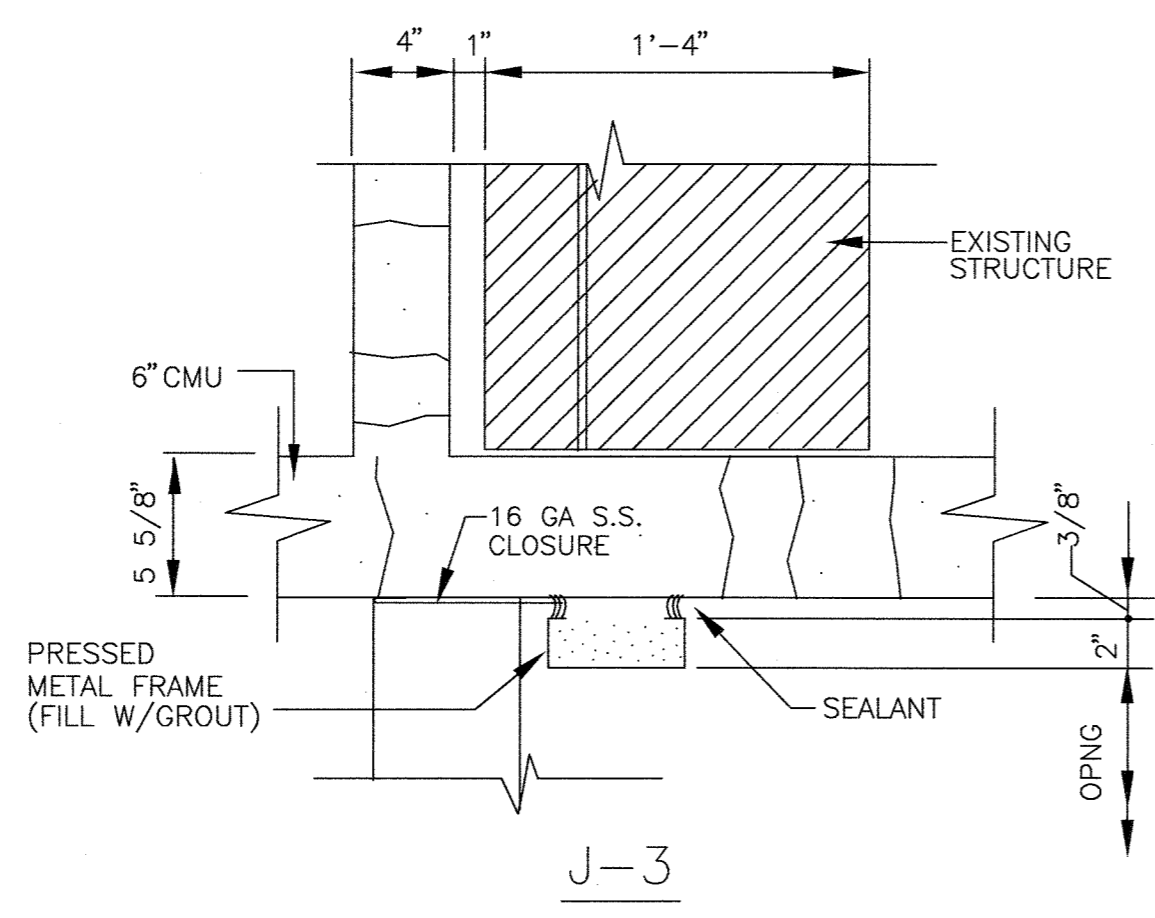
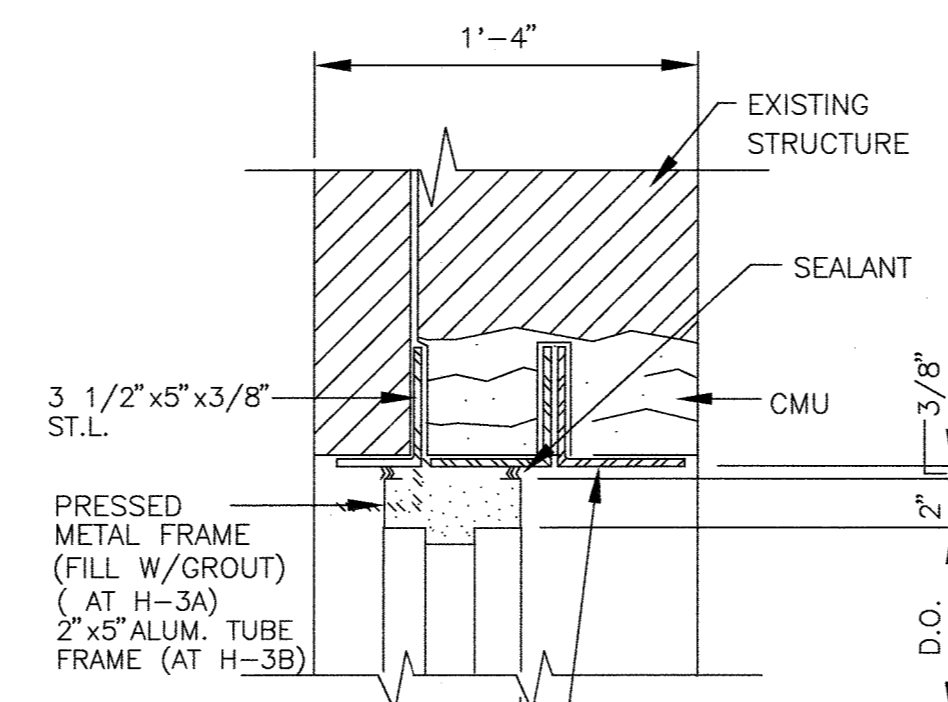
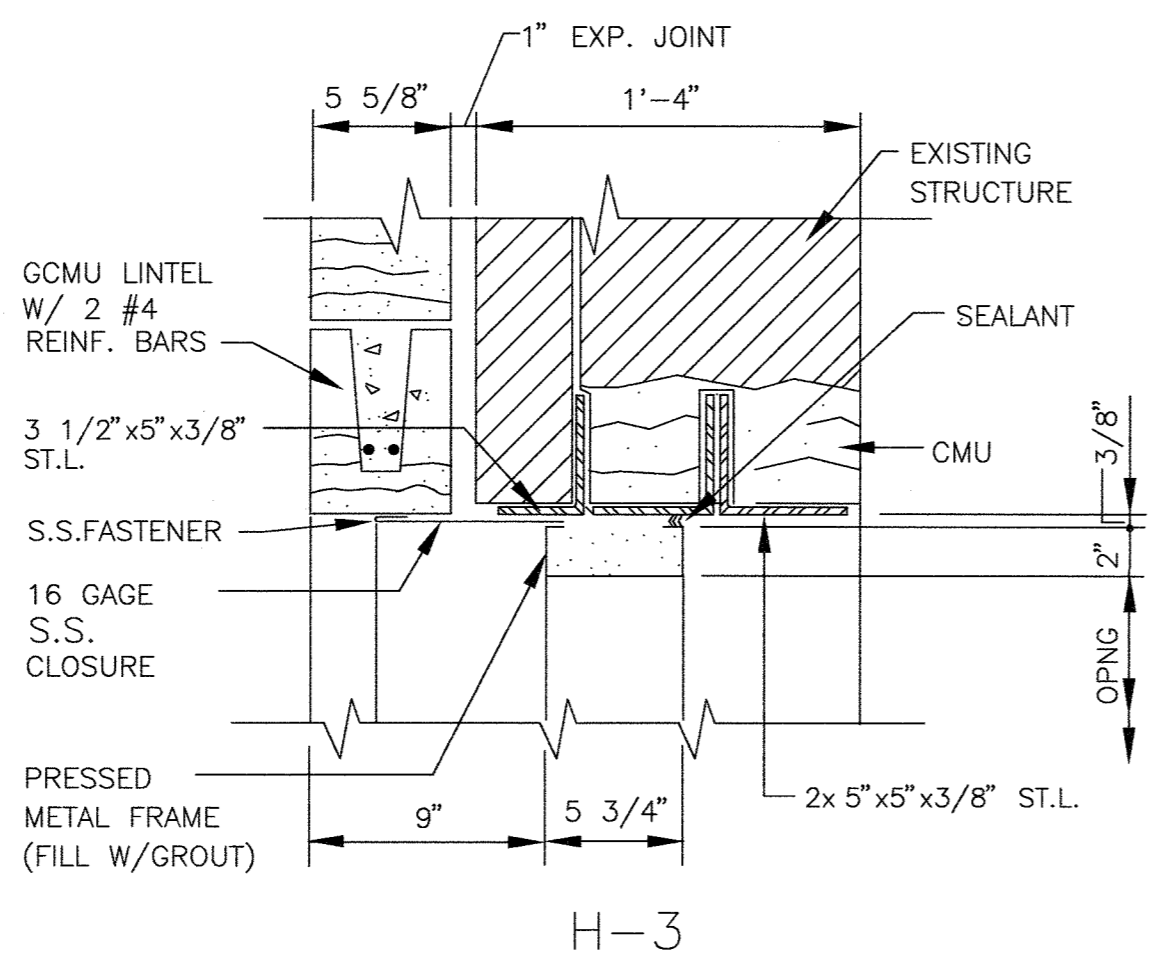
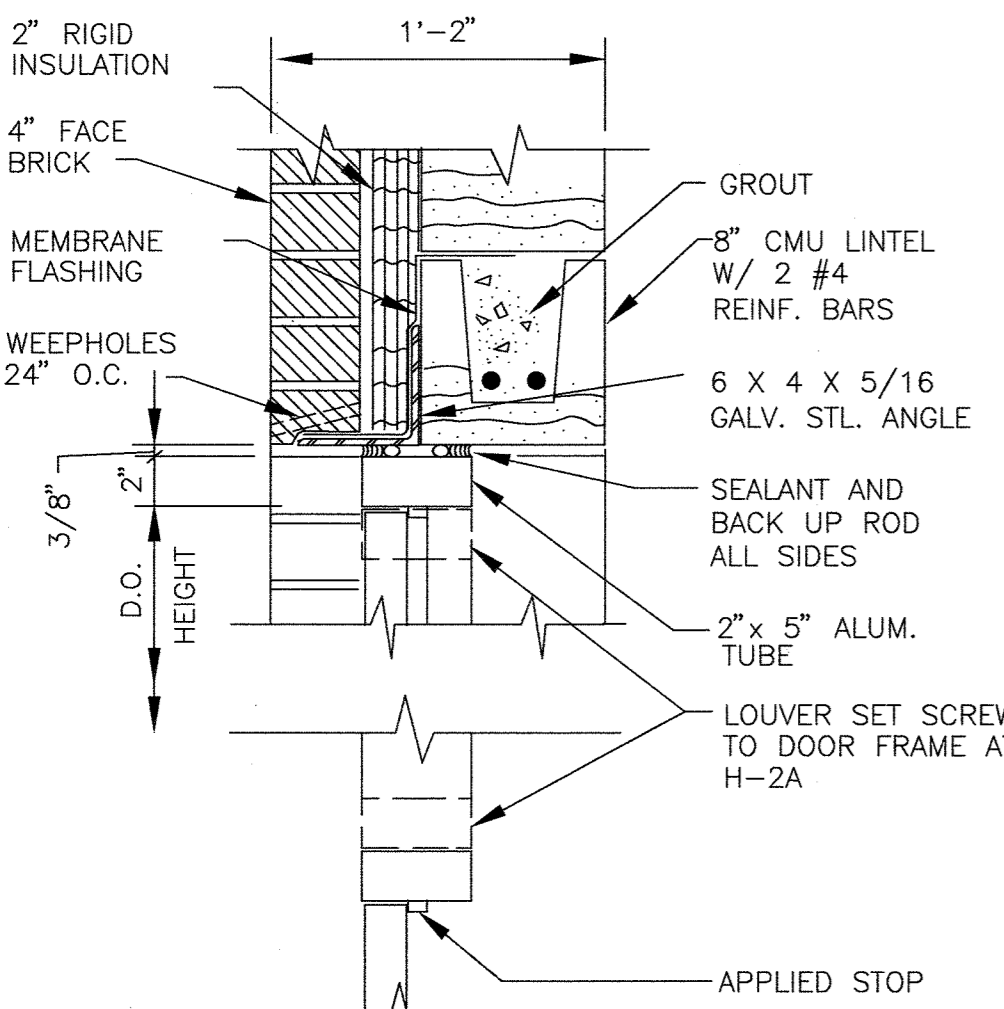
LEGEND:

LH - LIQUID FLOOR HARDENER ON TROWELED CONCRETE
 SEF - SEAMLESS EPOXY FLOOR
 CMU-P - CONCRETE MASONRY UNITS, PAINTED
 CONC. - CONCRETE, PAINTED
 GCMU - GLAZED CONCRETE MASONRY UNIT
 GYP.BD.-GYPSUM WALLBOARD

VCT - VINYL COMPOSITION TILE
 VC - VINYL COVE
 MAT - MINERAL ACOUSTICAL TILE
 MRAT - MOISTURE RESISTANT ACOUSTIC TILE
 WC - WALLCOVERING
 MRGDW - MOISTURE RESISTANT GYPSUM DRY-WALL
 ● - ITEM TO BE PAINTED (COLOR TO BE DETERMINED BY THE ENGINEER)

LEGEND:

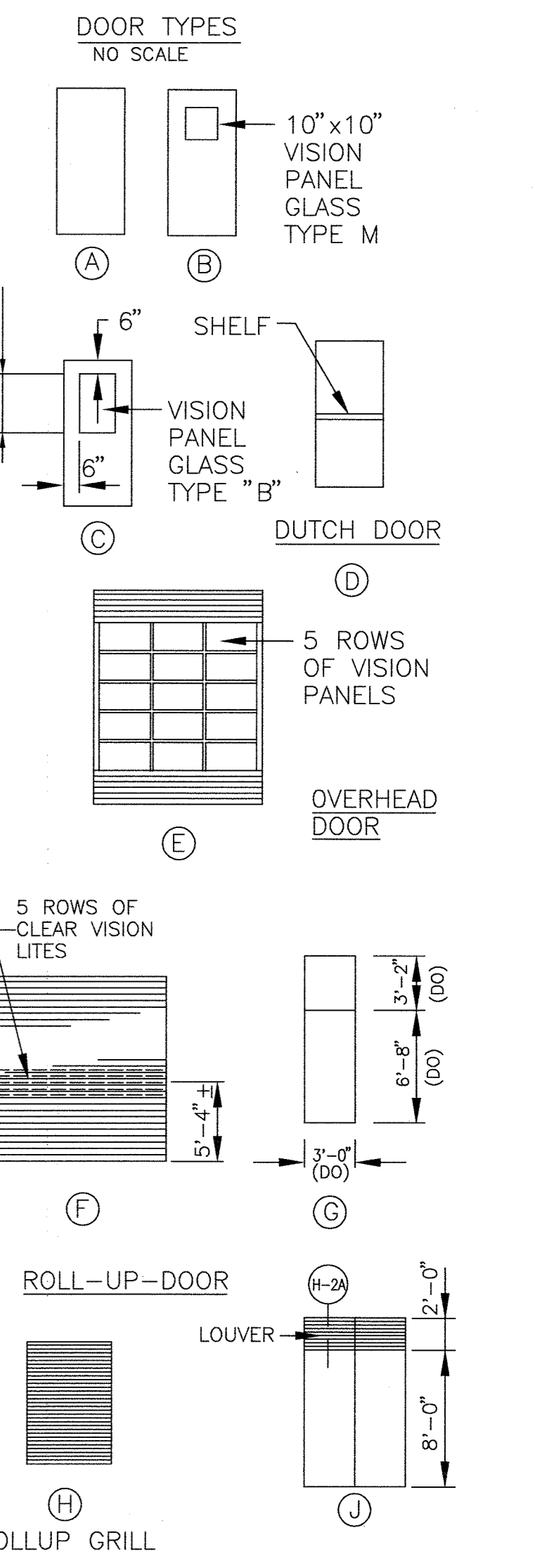
S.S. - STAINLESS STEEL
 ALUM - ALUMINUM
 HM - HOLLOW METAL
 PM - PRESSED METAL
 GALV - GALVANIZED STEEL
 RH - RIGHT HAND
 RHR - RIGHT HAND REVERSE
 LH - LEFT HAND
 LHR - LEFT HAND REVERSE



NOTE: FOR DOOR NO. 41, 42 INSTEAD OF CMU LINTEL THERE IS A CONC. BEAM (SEE SECTION 1-1 ON DWG. A-6)

DOOR SCHEDULE

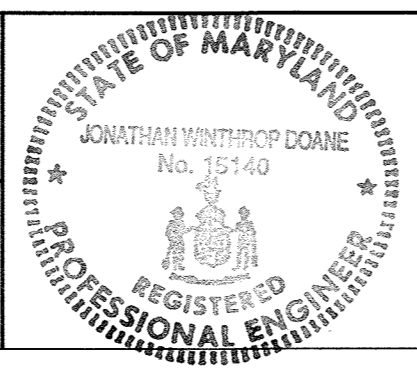
BLDG.	ELEV.	LOCATION	DOOR NO.	DOOR OPENING WxH	MATERIAL		DOOR TYPE	DETAILS			HARDWARE SET NO.	WEATHER STRIPPING	DOOR SWING	FIRE LABEL	PAINT		REMARKS
					DOOR	FRAME		HEAD	JAMB	SILL					DOOR	FRAME	
MAINTENANCE BUILDING ADDITION	FIRST FLOOR	STAIR NO.1	1	3'-0" x 7'-2"	ALUM	ALUM	B	H-2	J-2	S-1	16	●	LHR	-	-	-	
		OIL STORAGE	2	PR.3'-6" x 8'-0"	ALUM	ALUM	J	H-2A	J-2	S-1	18	●	LHR ACTIVE	-	-	-	
		BULK PARTS STORAGE	3	10'-0" x 12'-6"	ALUM	GALV.STL.	F	*	*	S-4	-	●	-	-	-	-	* SEE DET. 3 ON DWG.A-5
		BULK PARTS STORAGE	4	3'-0" x 7'-2"	ALUM	ALUM	C	H-2	J-2	S-1	16A	●	RHR	-	-	-	
		VEHICLE MAINTENANCE	5	10'-0" x 12'-6 1/2"	ALUM	GALV.STL.	E	*	*	S-4	-	●	-	-	-	-	* SEE DET. 3 ON DWG.A-5
		VEHICLE MAINTENANCE	6	10'-0" x 12'-6 1/2"	ALUM	GALV.STL.	E	*	*	S-4	-	●	-	-	-	-	* SEE DET. 3 ON DWG.A-5
		VEHICLE MAINTENANCE	7	10'-0" x 12'-6 1/2"	ALUM	GALV.STL.	E	*	*	S-4	-	●	-	-	-	-	* SEE DET. 3 ON DWG.A-5
		MACHINE SHOP AREA	8	10'-0" x 12'-6 1/2"	ALUM	GALV.STL.	E	*	*	S-4	-	●	-	-	-	-	* SEE DET. 3 ON DWG.A-5
		MACHINE SHOP AREA	9	10'-0" x 12'-6 1/2"	ALUM	GALV.STL.	E	*	*	S-4	-	●	-	-	-	-	* SEE DET. 3 ON DWG.A-5
		MACHINE SHOP AREA	10	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	-	20	-	LH	B	●	●	
	SERVICE TECHNICIAN AREA	11	3'-0" x 7'-2"	HM	PM	A	H-1	J-1	S-3	19	-	LH	B	●	●		
	SUPERINTENDENT OFFICE	12	3'-0" x 7'-2"	HM	PM	C	H-1	J-1	S-3	20A	-	RH	B	●	●	12A SIMILAR TO 12	
	SERVICE TECHNICIAN AREA	13	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	S-3	24	-	RH	B	●	●		
	SMALL PARTS STORAGE	14	3'-0" x 7'-2"	HM	PM	B	H-3A	J-3A	S-2	24	-	RH	B	●	●		
	STAIR NO.1	15	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	-	16	-	RH	B	●	●		
	OIL STORAGE	16	3'-0" x 7'-2"	ALUM	ALUM	B	H-2	J-2	S-1	16	●	LHR	-	-	-		
	BULK PARTS STORAGE	17	10'-0" x 11'-0"	ALUM	ALUM	H	*	*	-	-	●	-	-	-	-	* ROLL-UP DOOR GRILL	
	VESTIBULE	18	*	-	-	-	-	-	-	21	-	-	-	-	-	* SEE REMARKS @ DOOR #213	
	MAINTENANCE GARAGE	19	3'-0" x 7'-2"	ALUM	ALUM	B	H-3B	J-2	S-1	16	●	RHR	-	-	-		
	EXISTING STAIR	20	3'-0" x 7'-2"	ALUM	ALUM	B	H-3B	J-2	S-1	16	●	RHR	-	-	-		
SECOND FLOOR	FILE ROOM	201	3'-0" x 7'-2"	HM	PM	A	H-1	J-1	-	20	-	LH	B	●	●		
	ADDITIONAL TOILET AND LOCKER RM.	202	3'-0" x 7'-2"	HM	PM	A	H-1	J-1	S-3	27	-	RH	B	●	●		
	ADDITIONAL TOILET AND LOCKER RM.	203	3'-0" x 7'-2"	HM	PM	A	H-1	J-1	-	28	-	LH	B	●	●	PROVIDE FLOOR MOUNTED HOLD OPEN FEATURE	
	GENERAL STORAGE	204	3'-0" x 7'-2"	HM	PM	A	H-1	J-1	-	20	-	LH	B	●	●		
	LUNCH ROOM	205	3'-0" x 7'-2"	HM	PM	C	H-1	J-1	-	20	-	RH	B	●	●		
	STAIR NO.1	206	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	-	16	-	RH	B	●	●		
	STAIR NO.1	207	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	-	16	-	LH	B	●	●		
	ROOF OVER OIL STORAGE	208	3'-0" x 7'-2"	ALUM	ALUM	B	H-2	J-2	S-5	17	●	LH	B	-	-		
	OFFICE NO.1	209	EXISTING	STL.	-	-	*	*	-	-	-	-	-	-	-	BIFOLD DOORS * SEE DET 5/A-2	
	CORRIDOR (DELETED)	210	4'-2" x 7'-2"	-	-	-	H-3	J-3	S-2	-	-	-	-	-	-	NO DOOR FRAME ONLY, VERIFY EXIST.OPNG.IN FIELD	
OFFICE NO.2	212	2'-6" x 6'-8"	STL.	-	-	*	*	-	-	-	-	-	-	-	BIFOLD DOORS * SEE DET 5/A-2		
OFFICE NO.1	213	*	-	-	-	*	*	-	21	-	-	-	-	-	* EXIST. DOOR TO REMAIN REPLACE EXIST. STRIKE PLATE WITH HARDWARE SET NO.21		
OFFICE NO.2	214	*	-	-	-	*	*	-	21	-	-	-	-	-	* EXIST. DOOR TO REMAIN REPLACE EXIST. STRIKE PLATE WITH HARDWARE SET NO.21		
STAIR NO.1 (ROOF)	301	3'-0" x 7'-2"	ALUM	ALUM	B	H-2	J-2	S-5	17	●	LHR	B	-	-	GLASS TYPE B		
STAIR NO.1 (ROOF)	302	3'-0" x 6'-8"	ALUM	ALUM	B	H-2	J-2	S-5	17	●	RHR	B	-	-	GLASS TYPE B		
LOCKER ROOM PASSAGE	41	3'-0" x 7'-2"	-	-	-	H-4	-	S-2	-	-	-	-	-	-			
PUMP STATION	PUMP STATION NORTH	41	PR.3'-0" x 9'-10"	ALUM	ALUM	G	H-2	J-2	S-1	14	●	LHR ACTIVE	-	-	-		
	PUMP STATION NORTH	42	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	-	16	-	LHR	-	-	-		
	PUMP STATION SOUTH	43	PR.3'-0" x 9'-10"	ALUM	ALUM	G	H-2	J-2	S-1	14	●	LHR ACTIVE	-	-	-		
	PUMP STATION SOUTH	44	3'-0" x 7'-2"	HM	PM	B	H-1	J-1	-	16	-	LHR	-	-	-		



DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND
 Director of Public Works: *James A. Sloan* 5/7/96
 Chief, Bureau of Engineering: *Robert E. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *Orlando W. Jones* 5-7-96

M&E Metcalf & Eddy

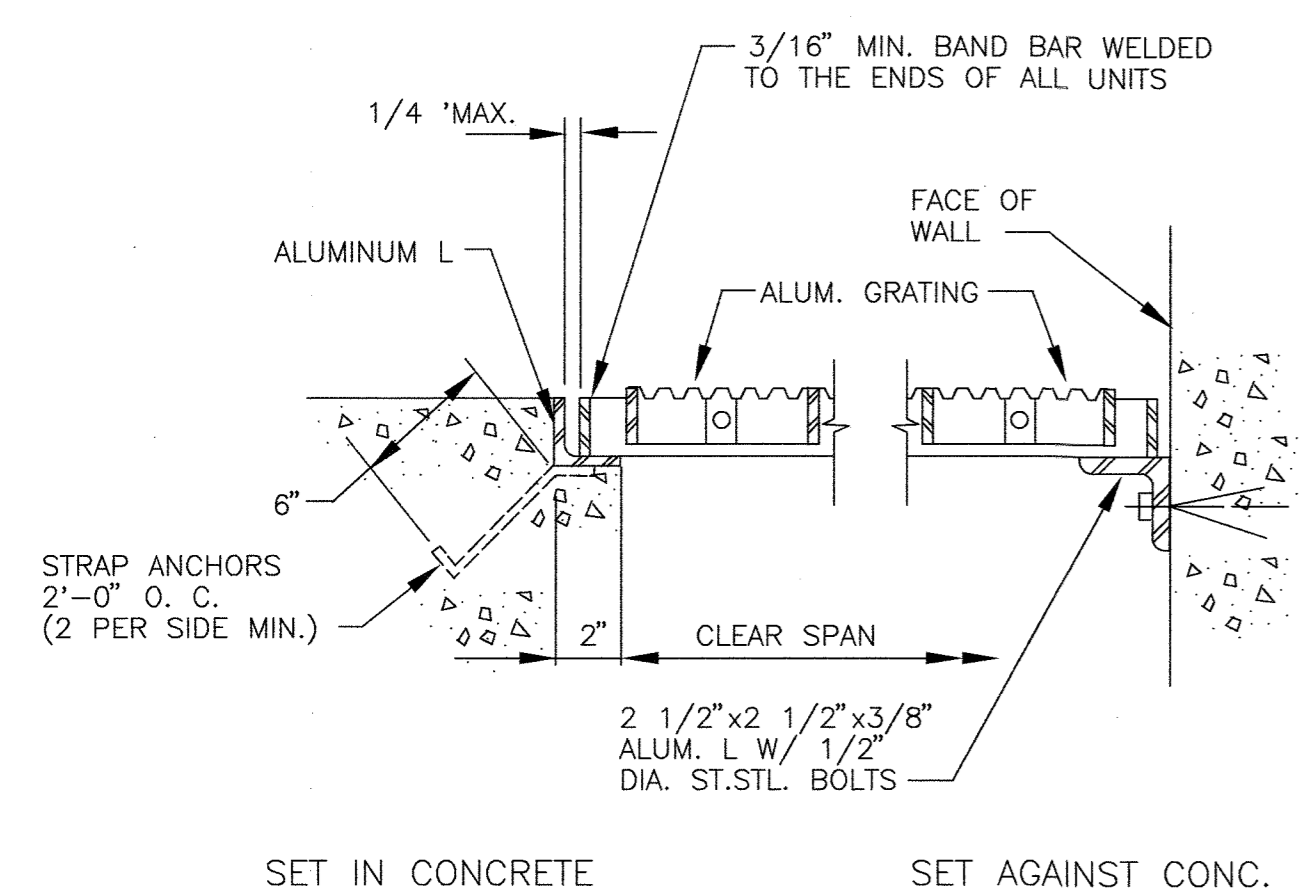


DES					
DRN					
CHK					
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION	DATE	

ARCHITECTURAL
 MAINTENANCE BUILDING
 NORTH AND SOUTH PUMP STATIONS
 FINISH DOOR SCHEDULES AND
 DOOR DETAILS

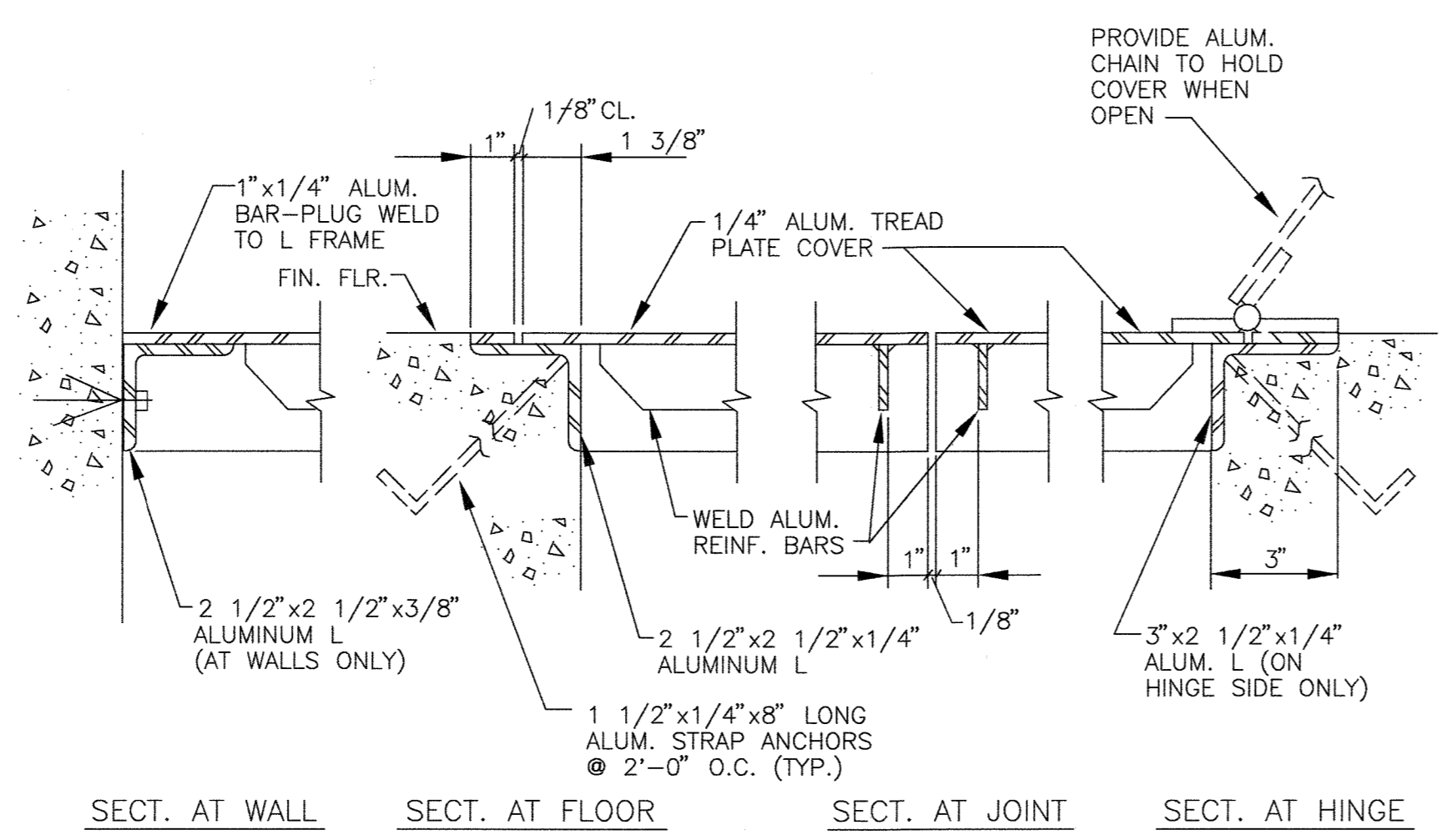
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 46 SHEET
 188 OF 226
 A-7A

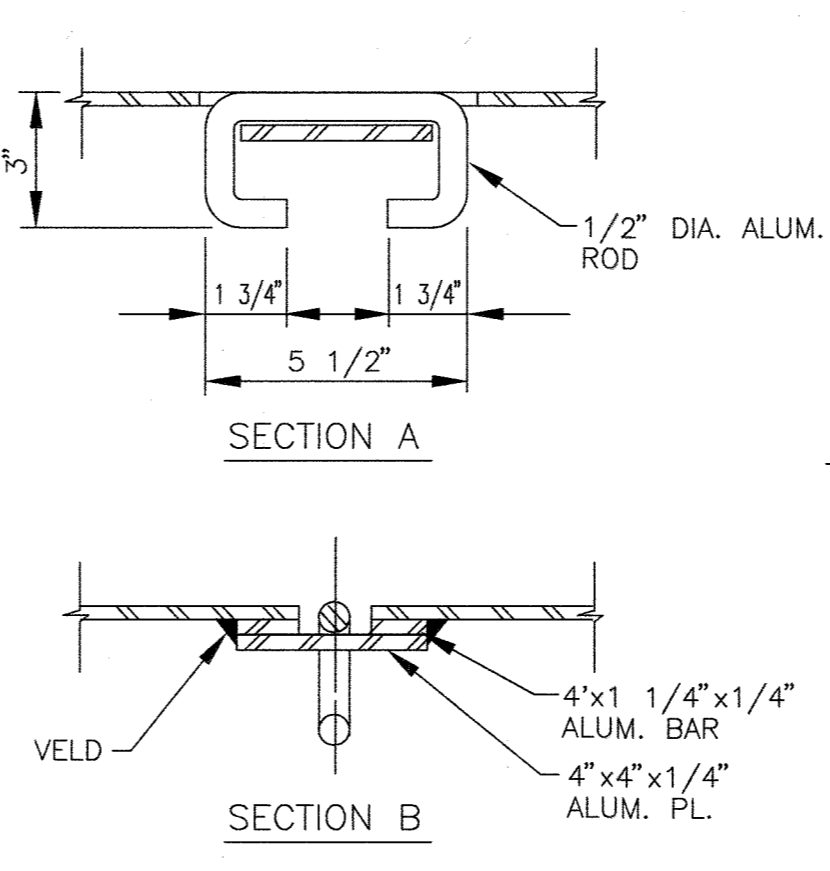
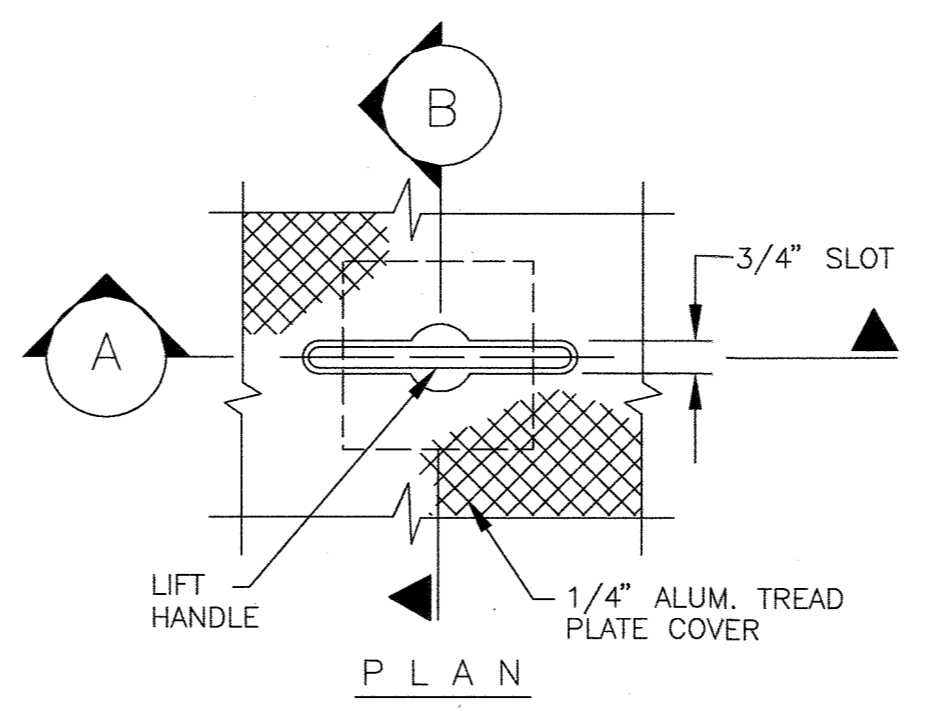


REQUIRED DEPTHS "D" FOR ALUMINUM GRATING							
CLEAR SPANS	UP TO 2'	2'-1" TO 3'	3'-1" TO 4'	4'-1" TO 5'	5'-1" TO 6'	6'-1" TO 6'-6"	6'-7" TO 7'
BEARING BAR	1"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"

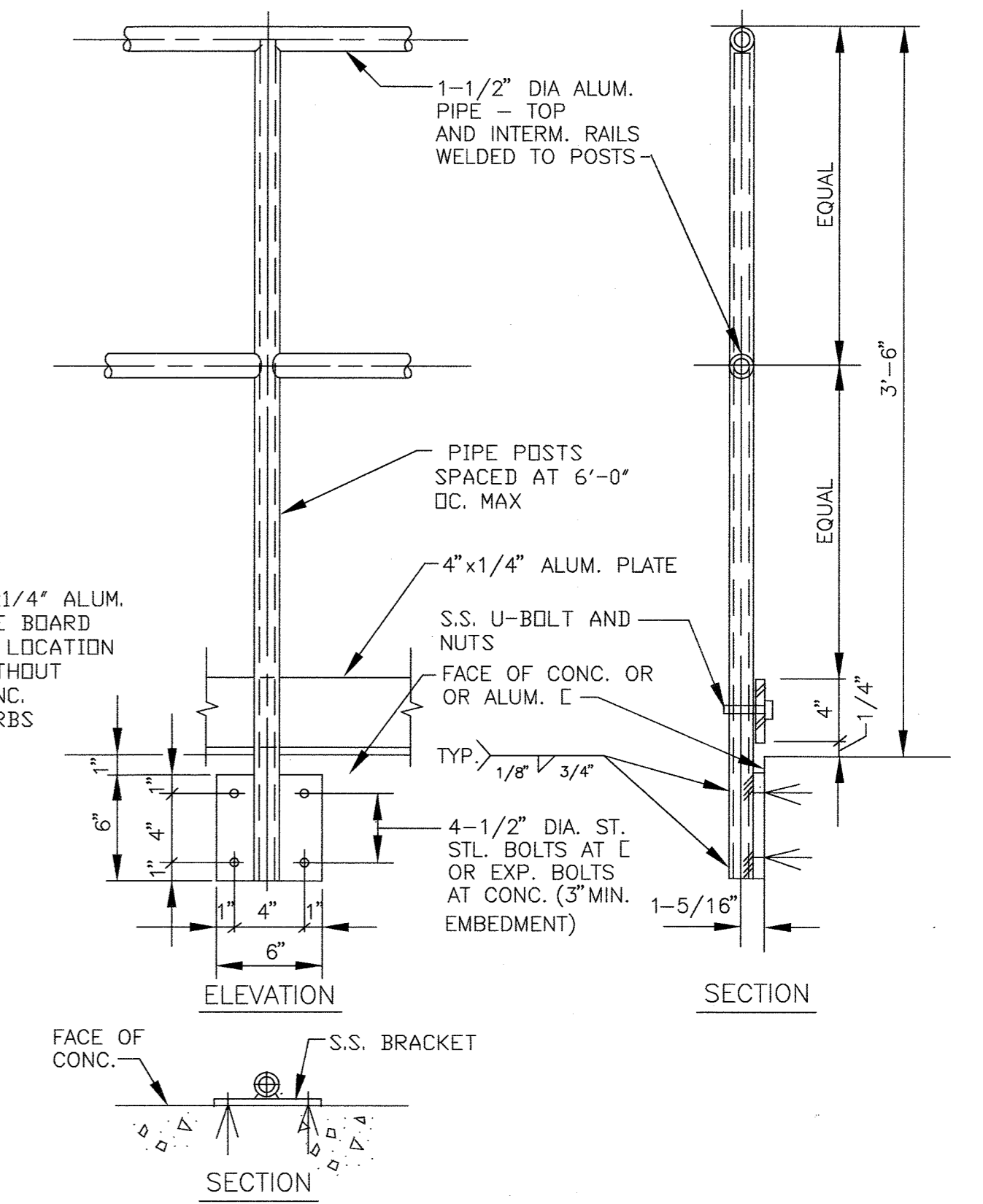
CONTINUOUS GRATINGS OVER CHANNELS OF VARIOUS WIDTH SHALL HAVE THE UNIFORM DEPTH OF BEARING BAR. IT SHALL BE BASED ON LARGEST SPAN.



NOTE: PROVIDE LIFT HANDLE AT HINGED COVERS.



NOTE: WHERE HANDRAIL IS NOT CALLED OUT AS BEING EITHER SURFACE MOUNTED OR CURB MOUNTED, IT SHALL BE INSTALLED EMBEDDED IN THE CONCRETE SIMILAR TO DETAIL E BUT WITH OUT THE CURB.



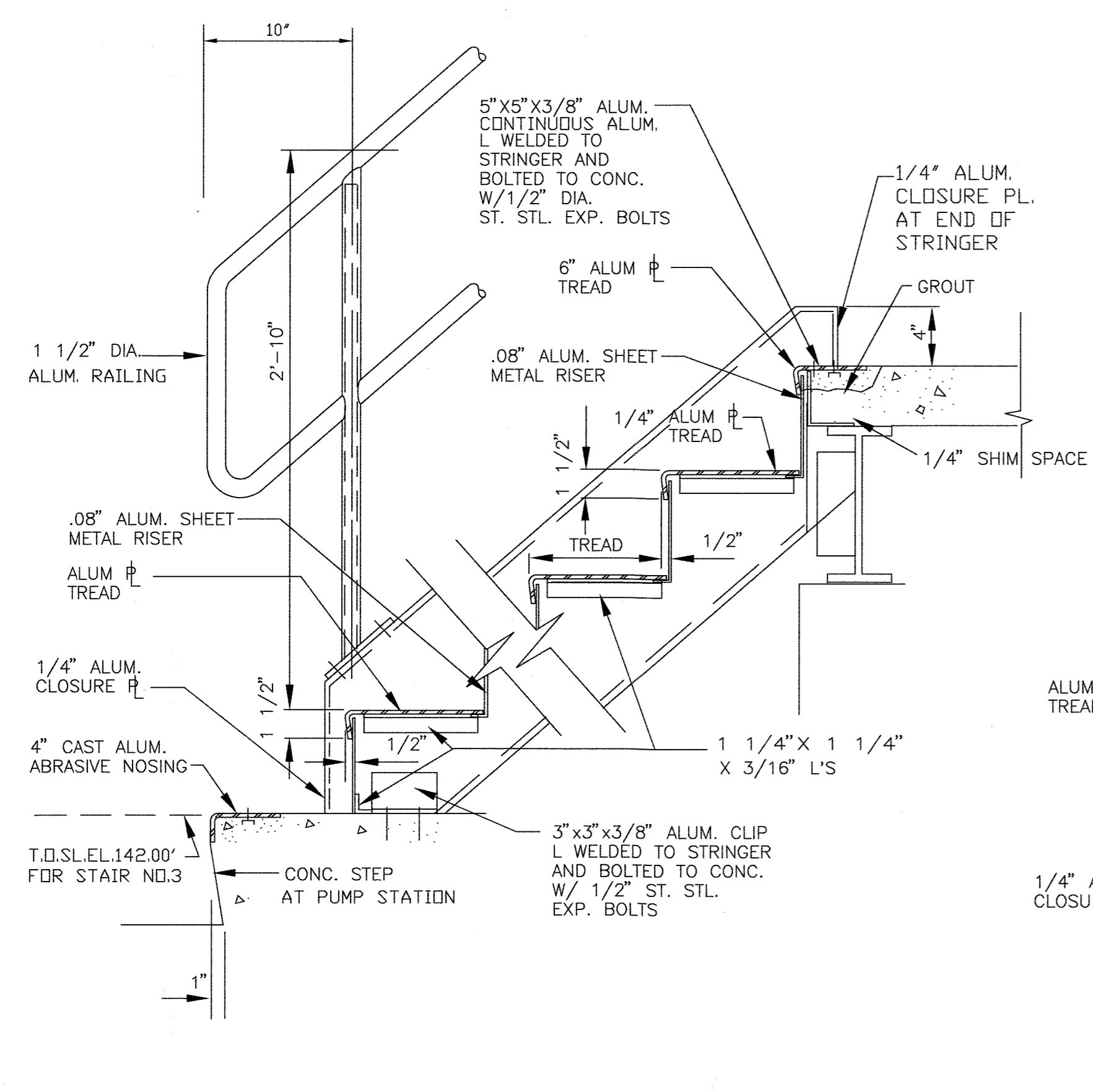
GRATING DETAIL (A) SCALE NONE

PLATE COVER DETAILS (B) SCALE NONE

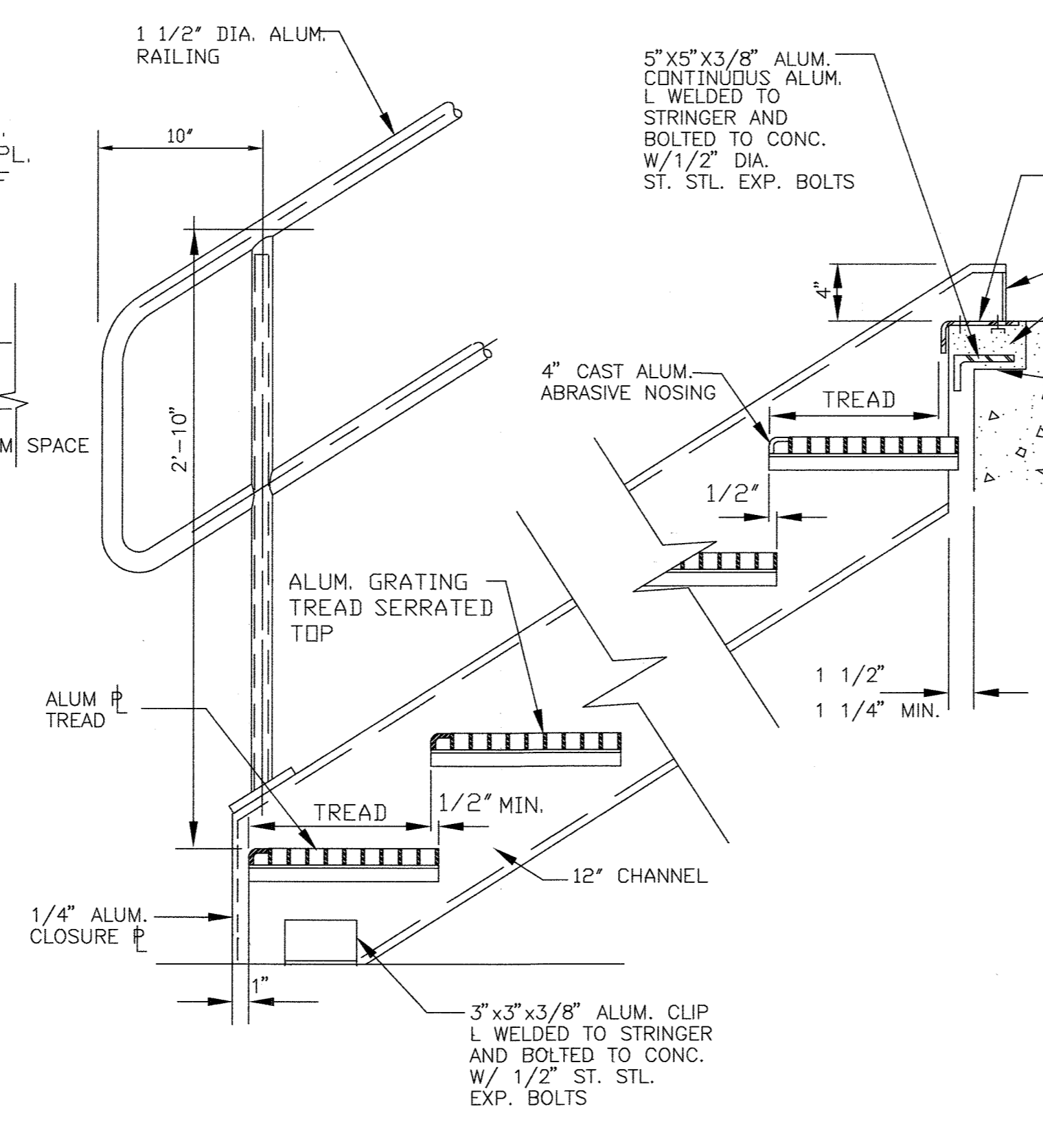
PLATE COVER LIFT HANDLE DETAILS (C) SCALE NONE

SLEEVE RAILING DETAIL (E) SCALE NONE

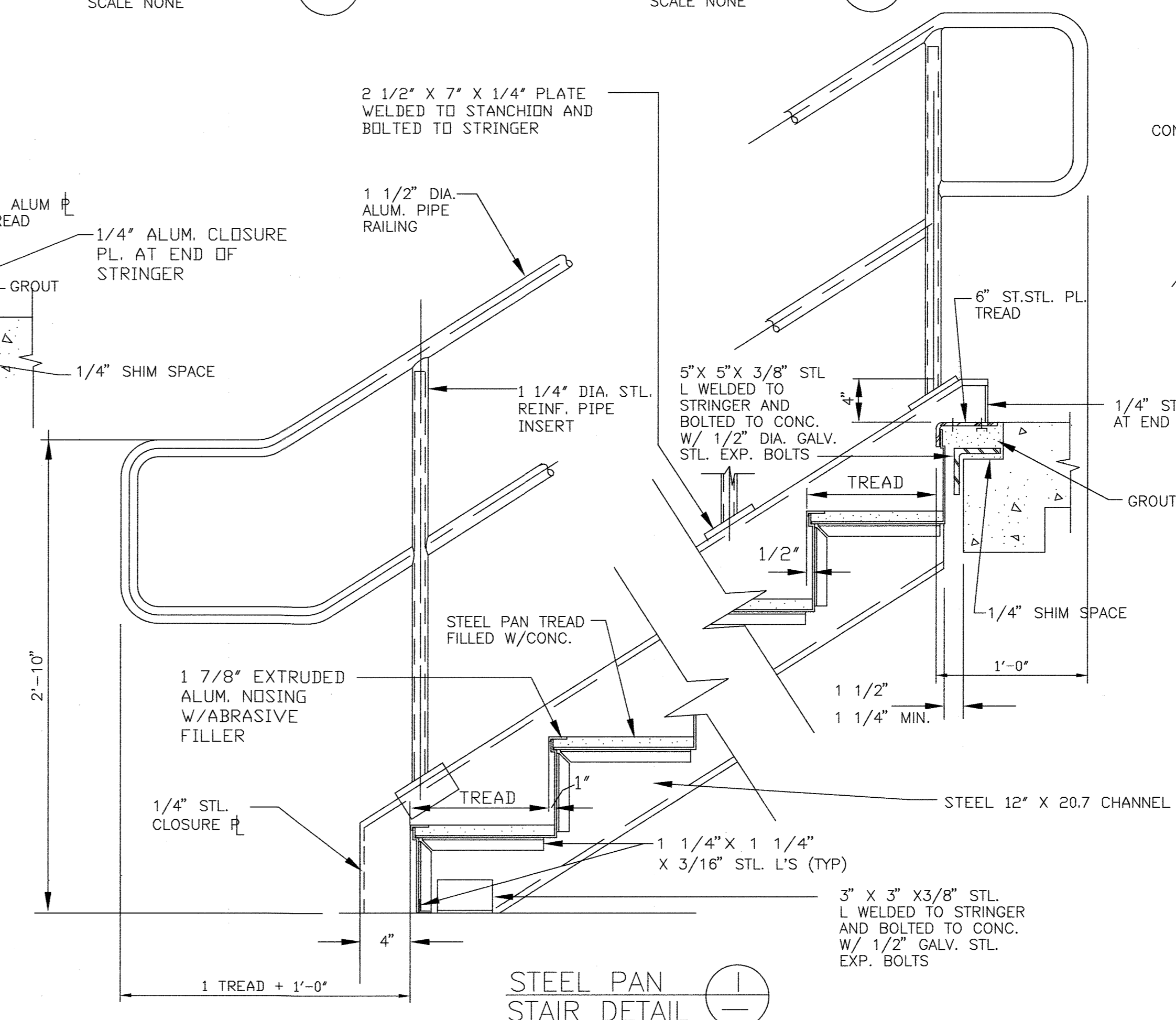
STAINLESS STEEL RAILING DETAILS (F) SCALE NONE



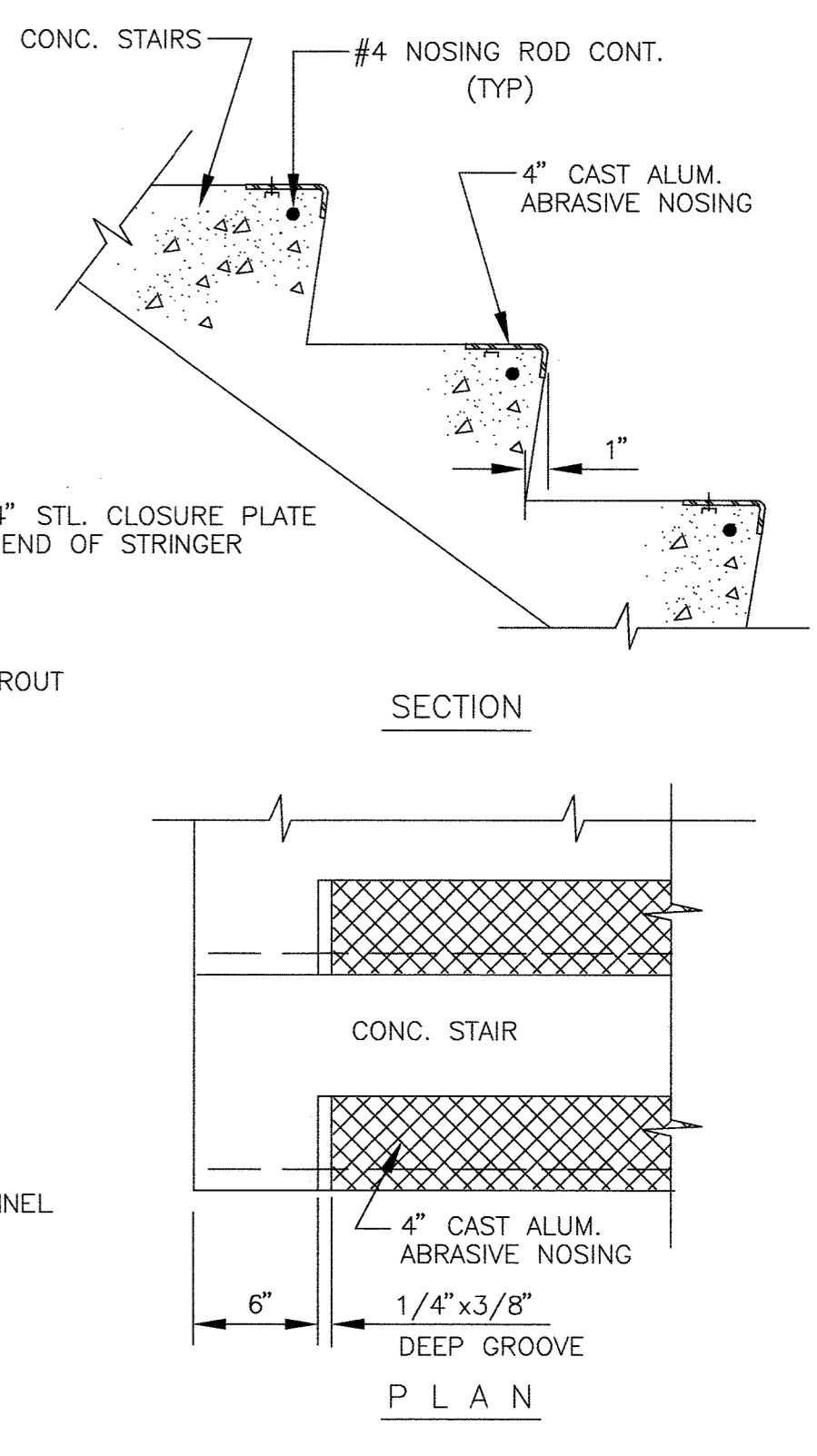
ALUMINUM PLATE STAIR DETAIL (A-6) SCALE NONE



ALUMINUM GRATING STAIR DETAIL (H) SCALE NONE



STEEL PAN STAIR DETAIL (I) SCALE NONE



STAIR NOSING DETAIL (J) SCALE NONE

STRUCTURAL NOTES

GENERAL:

- THE FOLLOWING GENERAL NOTES ARE SHOWN FOR CONVENIENCE AND ARE SUPPLEMENTAL TO THE SPECIFICATIONS.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO APPENDIX B OF THE SPECIFICATIONS, WHICH SHOW THE STANDARD STRUCTURAL DETAILS AND WHICH ARE PART OF THE CONTRACT DRAWINGS.
 - THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL STRUCTURES AGAINST FLOTATION DAMAGE DURING CONSTRUCTION.
 - REFER TO ARCHITECTURAL, MECHANICAL (PROCESS PIPING, PLUMBING, HEATING, VENTILATING, AND AIR CONDITIONING), AND ELECTRICAL DRAWINGS FOR LOCATION AND DIMENSIONS OF ALL CHASES, SLOTS INSERTS, CURBS, OPENINGS, SLEEVE, ANCHOR BOLTS, FLOOR PITCHES, ANGLE FRAMES, SLUICE GATE FRAMES, SLIDE GATE FRAMES, AND ALL OTHER PROJECT REQUIREMENTS.
 - THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ANCHOR BOLTS, GROUT, CONCRETE PADS AND REINFORCING STEEL REQUIRED FOR THE PROPER INSTALLATION OF ALL EQUIPMENT.
 - NINE-INCH P.V.C. WATER STOPS SHALL BE PROVIDED IN ALL CONSTRUCTION AND EXPANSION JOINTS WHERE SHOWN ON THE DRAWINGS. (REFER TO DETAIL 3-3.25.1 IN APPENDIX B OF THE SPECIFICATIONS)
 - DIMENSIONS AND ELEVATIONS SHOWN ON EXISTING STRUCTURES HAVE BEEN OBTAINED FROM CONTRACT DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING WITH FIELD MEASUREMENTS. ALL DIMENSIONS AND ELEVATIONS WHICH WILL RELATE TO FABRICATION AND INSTALLATION OF ADDITIONS TO EXISTING STRUCTURES BEING MADE UNDER THIS CONTRACT.

FOUNDATION CONSTRUCTION:

- FOUNDATION DESIGNS ARE BASED ON THE ALLOWABLE SOIL BEARING PRESSURES NOTED ON THE DRAWINGS.
- PERCENT COMPACTION SHALL BE DEFINED AS THE RATIO OF THE FIELD DRY DENSITY AS DETERMINED BY A.S.T.M. D-1556 TO THE MAXIMUM DRY DENSITY DETERMINED BY A.S.T.M. D-1557.
- ALL BACKFILL UNDER STRUCTURAL SLABS AND FOOTINGS SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY.
- ALL EMBANKMENTS AND BACKFILL SHALL BE COMPACTED TO 90 PERCENT UNLESS OTHERWISE STATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL NOT BACKFILL AGAINST WALLS TO BE LATERALLY SUPPORTED BY A FLOOR SLAB UNLESS TEMPORARY SUPPORT IS PROVIDED OR SLABS HAVE BEEN PLACED. BACKFILL AGAINST CANTILEVER WALLS SHALL NOT BE PLACED UNTIL THE CONCRETE HAS GAINED ITS 28 DAY STRENGTH.
- FOR DETAILS OF BASE PREPARATION FOR FOUNDATIONS AND BACKFILL, SEE APPENDIX B OF THE SPECIFICATIONS. (REFER TO DETAIL 2-9.1.1 IN APPENDIX B OF THE SPECIFICATIONS.) ALL CONC. FOOTINGS, MATS OR SLABS SHALL BE UNDERLAIN WITH A 9 INCH BED OF 3/4" COARSE AGGREGATE.
- ALL SUBGRADE STRUCTURAL ELEMENTS ARE DESIGNED FOR A LATERAL EARTH PRESSURE OF 90 PCF IN ADDITION, ALL SUBGRADE STRUCTURAL ELEMENTS ARE DESIGNED FOR A UNIFORM LATERAL PRESSURE OF 120 PSF TO APPROXIMATE LIVE LOAD SURCHARGE.
- ALL EXTERIOR CONCRETE STAIRS, PLATFORMS, ETC. SHALL REST ON 2'-0" OF WELL COMPACTED SCREENED GRAVEL. COMPACT TO 95% DENSITY.

CONCRETE:

- CONCRETE CONSTRUCTION AND REINFORCING BAR DETAILS SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED" (ACI-318-83).
- ALL STRUCTURAL CONCRETE (INCLUDING CONCRETE FILL) SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 LBS. PER SQ. INCH AT THE END OF 28 DAYS. CONCRETE UNDER FOUNDATIONS MAY BE 2,000 LBS. P.S.I. AT 28 DAYS.
- REINFORCING SHALL BE GRADE 60, CONFORMING TO A.S.T.M. A615.
- WELDED WIRE FABRIC SHALL CONFORM TO A.S.T.M. A185. LAP TWO SQUARES AT ALL SPLICES AND TIE AT 3-FOOT CENTERS.
- CONCRETE FILL 2-INCHES OR MORE THICK SHALL BE REINFORCED WITH WELDED WIRE FABRIC SIZED IN ACCORDANCE WITH APPENDIX B OF THE SPECIFICATIONS, DETAIL 3-3.33.1.
- UNLESS OTHERWISE INDICATED, ALL CONTINUOUS REINFORCEMENT SHALL HAVE CLASS "C" SPLICES AND SPLICES SHALL BE INCREASED AS REQUIRED FOR "TOP BAR" EFFECT. SEE REINFORCING-SPLICE TABLE ON SHEET S-43.

CONCRETE (CONT.):

- LAP CONTINUOUS BEAM TOP BARS AT THE CENTER OF A SPAN; LAP CONTINUOUS BEAM BOTTOM BARS AT THE SUPPORT.
- VERTICAL REINFORCEMENT IN COLUMN SPLICES SHALL BE LAPPED A MINIMUM OF 30 BAR DIAMETERS, UNLESS NOTED OTHERWISE.
- PROVIDE BAR SUPPORTS, SPACERS AND ACCESSORIES RECOMMENDED IN THE "ACI DETAILING MANUAL" (PUBLICATION SP-66). ALL REINFORCEMENT DETAILING, LAP SPLICE, EMBEDMENT, ETC. SHALL CONFORM TO THIS SAME MANUAL. ALL ACCESSORIES SUCH AS SLAB CHAIRS IN CONTACT WITH EXPOSED SURFACES SHALL BE PLASTIC COATED.
- FOR CONCRETE BEAMS AND GIRDERS DEEPER THAN 25-INCHES THE CONTRACTOR SHALL PROVIDE CONTINUOUS NO. 5 HORIZONTAL BARS AT NO MORE THAN 12-INCHES OF CENTERS ON EACH SIDE UNLESS OTHER DETAILS ARE INCLUDED IN THE BEAM SCHEDULE.
- UNLESS OTHERWISE INDICATED, MAIN REINFORCING STEEL SHALL BE PLACED AND MAINTAINED AT THE MINIMUM CLEAR DISTANCE FROM SURFACE OF CONCRETE AS SHOWN IN DETAIL 3-3.1 OF APPENDIX B.
- THE CONTRACTOR SHALL PROVIDE EXTRA BARS ALONG EACH SIDE OF OPENINGS AS SHOWN IN DETAIL 3-3.23.1 AND 3-3.23.2 OF APPENDIX B, OR AS SHOWN ON THE DRAWING.
 - ROUGHEN CONCRETE SURFACE AT CONSTRUCTION JOINTS WHERE TAPERED KEYS ARE NOT INDICATED.
 - ALL CONSTRUCTION JOINTS IN WALLS AND SLABS SHALL BE KEYS WHETHER INDICATED ON THE DRAWINGS OR NOT, SEE DETAIL 3-3.9.1 IN SPECIFICATIONS.
- CONSTRUCTION JOINTS IN ADDITION TO THOSE SHOWN ON THE DRAWING SHALL BE APPROVED IN WRITING BY THE ENGINEER. NO CONSTRUCTION OR EXPANSION JOINTS TO BE OMITTED.
- ALL REINFORCING SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
- NON-SHRINK GROUT AS INDICATED ON THE PLANS SHALL BE NON-SHRINK, NON-METALLIC HAVING A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT THE END OF 28 DAYS.
- VERTICAL CONSTRUCTION JOINTS IN WALLS SHALL BE LOCATED NO FURTHER APART THAN 24-FT., UNLESS SHOWN OTHERWISE ON PLANS.
- CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLABS, BEAMS AND GIRDERS. IF A BEAM INTERSECTS A GIRDER AT THIS POINT THE JOINT IN THE GIRDER SHALL BE OFFSET A DISTANCE EQUAL TO TWICE THE WIDTH OF THE BEAM. IN THIS CASE, PROVISION SHALL BE MADE FOR SHEAR BY THE USE OF INCLINED REINFORCEMENT (SEE DETAIL 3-3.20.1).
- CONCRETE SHALL NOT BE PLACED IN BEAMS, GIRDERS, OR SLABS UNTIL THE CONCRETE IN THE SUPPORTING COLUMNS OR WALLS HAS OBTAINED ITS INITIAL SET.
- SLABS AND BEAMS SHALL BE CAST MONOLITHICALLY UNLESS SHOWN OTHERWISE.
- EXPOSED EDGES OF CONCRETE ELEMENTS SUCH AS COLUMNS, PILASTERS, BEAMS, CURBS AND EQUIPMENT PADS SHALL HAVE 3/4-INCH CHAMFER. CHAMFER WEIR WALLS 1/2-INCH ON THE WEIR PLATE SIDE.
- CONCRETE FINISH: (SEE SPECIFICATIONS)
 - THE TOP OF ALL TANK WALLS, WEIR WALLS, LAUNDER WALLS, WALKWAYS, FLOORS, ROOFS AND CONCRETE FILL SHALL BE STEEL TROWELED UNLESS OTHERWISE NOTED.
 - TOP SURFACES RECEIVING ELASTOMERIC COATING SHALL BE WOOD FLOATED.
- WHERE CONCRETE FILL IS INDICATED IN STRUCTURES WITH SLUICE GATES, A POCKET SHALL BE LEFT FOR THE INSTALLATION OF THE SLUICE GATE FRAME. POCKET TO BE FILLED WITH BITUMINOUS CONCRETE AFTER INSTALLATION OF SLUICE GATE.
- CONSTRUCTION JOINTS IN FILL SHALL NOT BE SPACED MORE THAN 30 FEET APART. THEY SHALL BE LOCATED DIRECTLY OVER CONSTRUCTION JOINTS IN STRUCTURAL SLABS, BEAMS, ETC., UNLESS NOTED OTHERWISE.
- BEAM SOFFITS SHALL MAINTAIN A CONSTANT ELEVATION BELOW THE LOW POINTS NOTED EQUAL TO THE SCHEDULED BEAM DEPTHS. ACTUAL BEAM DEPTHS VARY WITH SLAB SURFACE SLOPES, TYPICAL UNLESS NOTED OTHERWISE.
- FOR ALL MAT FOUNDATION SLABS (BASE SLABS) LAP CONTINUOUS TOP BARS AT A SUPPORT; LAP CONTINUOUS BOTTOM BARS AT THE CENTER OF A SPAN UNLESS NOTED OTHERWISE.

ALUMINUM:

- STRUCTURAL ALUMINUM SHALL BE ALLOY 6061-T6 AND SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH THE LATEST "SPECIFICATION FOR STRUCTURES OF ALUMINUM ALLOY 6061-T6" PUBLISHED BY A.S.C.E..
- FIELD CONNECTION, UNLESS NOTED SPECIFICALLY, SHALL BE MADE WITH TYPE 316 STAINLESS STEEL BOLTS.
- ALUMINUM IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ASPHALTIC PAINT.
- PROVIDE DISSIMILAR METAL PROTECTION AT ALL BOLT LOCATION AND OTHER LOCATIONS WHERE THE CONDITION EXISTS. THE PROTECTION SHALL CONSIST OF A ZINC CHROMATE PRIMER ON THE ALUMINUM SURFACE. A COAT OF METAL PRIMING PAINT SHALL BE APPLIED TO THE DISSIMILAR METAL.

CONCRETE ANCHORS:

- ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASTM STANDARD TEST METHODS FOR STRENGTH OF ANCHORS IN CONCRETE AND MASONRY ELEMENTS, DESIGNATION E488-76. THEY SHALL BE INSTALLED SO AS TO DEVELOP THE MAXIMUM PROVEN CAPACITY FOR THEIR TYPE AND SIZE, OR THE CAPACITY SHOWN ON THE DRAWINGS WITH A MINIMUM FACTOR OF SAFETY OF FOUR. INSTALLATION SHALL BE MADE WITH STRICT ADHERENCE TO THE MANUFACTURER'S RECOMMENDATIONS. ALL ANCHORS HAVE STANDARD U.S. THREADS (UNC).
- STUD TYPE ANCHORS SHALL BE MADE OF TYPE 316 STAINLESS STEEL. EACH ANCHOR SHALL BE PROVIDED WITH A TYPE 316 STAINLESS STEEL NUT AND WASHER OF THE PROPER SIZE. ANCHORS SHALL BE PARABOLT MADE BY USM CORP., TEMPLE PA; KWIK-BOLT MADE BY HILTI FASTENING SYSTEMS, STAMFORD, CT; OR WEDGE TYPE STUD BOLT ANCHOR MADE BY STAR EXPANSION INDUSTRIES CORP., MOUNTAINVILLE, NY. OR APPROVED EQUAL.
 - INTERNALLY THREADED TYPE ANCHORS SHALL BE MADE FROM HIGH-STRENGTH STEEL WITH A RUST RESISTANT COATING. EACH ANCHOR SHALL BE PROVIDED WITH A TYPE 316 STAINLESS STEEL WASHER AND BOLT OF THE PROPER SIZE AND LENGTH UNLESS NOTED OTHERWISE ON THE DRAWINGS. ANCHORS MAY BE SELFDILLING OR DROP-IN TYPE; SELFDILLING SHIELD OR PLUG TYPE MADE BY STAR EXPANSION INDUSTRIES CORP., MOUNTAINVILLE, NY; HDI DROP-IN ANCHORS MADE BY HILTI FASTENING SYSTEM, STAMFORD, CT; MULTI-SET OR SELFDILLING ANCHORS MADE BY ITT PHILLIPS DRILL DIVISION, MICHIGAN CITY, IN. OR APPROVED EQUAL.

STRUCTURAL STEEL:



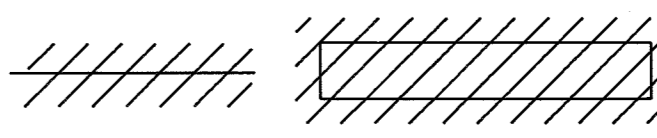

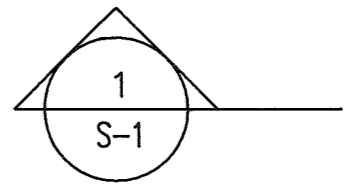

- ALL STRUCTURAL STEEL SHALL BE A.S.T.M. A36 AND SHALL BE DETAILED AND ERECTED IN ACCORDANCE WITH THE A.I.S.C. "SPECIFICATION FOR THE DESIGN FABRICATION AND ERECTION OF STEEL FOR BUILDINGS". DATED NOVEMBER 1, 1978 WITH COMMENTARY.
- SHOP AND FIELD WELDING SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE" OF THE AMERICAN WELDING SOCIETY. FIELD WELDING OF STRUCTURAL MEMBERS, NOT SHOWN ON THE DRAWINGS, SHALL BE ALLOWED ONLY UPON SPECIFIC WRITTEN PERMISSION OF THE ENGINEER.
- FIELD CONNECTIONS SHALL BE MADE WITH 3/4" DIA. A-325N HIGH-STRENGTH BOLTS UNLESS OTHERWISE NOTED. ONE HARDENED WASHER SHALL BE INSTALLED UNDER THE ELEMENT TURNED IN TIGHTENING. A MINIMUM OF TWO BOLTS SHALL BE USED AT ALL CONNECTIONS. MINIMUM CENTER TO CENTER BOLT SPACING SHALL BE 3" UNLESS NOTED OTHERWISE.
- SHOP CONNECTIONS SHALL BE WELDED UNLESS OTHERWISE NOTED. ALL WELDING ELECTRODES SHALL BE E70XX.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ONE WASHER AND ONE HEX NUT WITH ALL ANCHOR BOLTS, UNLESS OTHERWISE NOTED.
- PROVIDE TEMPORARY TIES AND BRACING WHERE NECESSARY DURING CONSTRUCTION TO RESIST ALL LATERAL AND VERTICAL LOADS.
- ELEVATIONS OF TOP OF STEEL NOTED ON THE DRAWINGS REFER TO TOP OF FLANGE.
- WELDING SHALL CONFORM TO AWS D1.1. ALL WELDMENTS SHALL BE MADE BY QUALIFIED WELDERS.

STRUCTURAL ABBREVIATIONS

AB	ANCHOR BOLT	LNTL	LINTEL
ANR	ANCHOR	LONG	LONGITUDINAL
AL	ALUMINUM	LP	LOW POINT
ALTN	ALTERNATE	MAX	MAXIMUM
APVD	APPROVED	MB	MACHINE BOLTS
BOT	BOTTOM	MFR	MANUFACTURER
BF	BOTTOM FACE	MIN	MINIMUM
BM	BEAM	NIC	NOT IN CONTRACT
BRG	BEARING	NTS	NOT TO SCALE
C TO C	CENTER TO CENTER	OC	ON CENTER
CJ	CONSTRUCTION JOINT	OF	OUTSIDE FACE
C, C	CENTERLINE	O TO O	OUT TO OUT
CIP	CAST-IN-PLACE	OPNG	OPENING
CLR	CLEARANCE	PJF	PREMOLDED JOINT FILLER
CMU	CONCRETE MASONRY UNIT	PL	PLATE
COL	COLUMN	PRCST	PRECAST
CONC	CONCRETE	PLYWD	PLYWOOD
CONN	CONNECTION	P	PILASTER
CONT	CONTINUOUS	RC	REINFORCED CONCRETE
CTR	CENTER	REINF	REINFORCED
DBA	DEFORMED BAR ANCHOR	RST	REINFORCING STEEL
DIA, DIAM	DIAMETER	SIM	SIMILAR
DIR	DIRECTION	SPECS	SPECIFICATIONS
DP	DEEP	SQ	SQUARE
DWG	DRAWING	STD	STANDARD
DWL	DOWEL	STIF	STIFFENER
EA	EACH	STL	STEEL
EF	EACH FACE	STR	STRAIGHT
EL	ELEVATION	STRUCT	STRUCTURES
EQL SP	EQUALLY SPACED	SYMM	SYMMETRICAL
EW	EACH WAY	T & B	TOP AND BOTTOM
EXP JT	EXPANSION JOINT	TOC	TOP OF CONCRETE
EXST	EXISTING	TF	TOP FACE
FD	FLOOR DRAIN	THK	THICK
FDN	FOUNDATION	THR	THREADED
FG	FINISH GRADE	TRANSV	TRANSVERSE
FTG	FOOTING	TOS	TOP OF STEEL
GALV	GALVANIZE (HOT DIP)	TW	TOP OF WALL
GVL	GRAVEL	TYP	TYPICAL
HAS	HEADED ANCHOR STUD	UNO	UNLESS NOTED OTHERWISE
HDR	HEADER	U/S	UNDERSIDE
HORIZ	HORIZONTAL	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
IF	INSIDE FACE	WS	WATER STOP OR WATER SURFACE

NOTE: FOR ABBREVIATIONS NOT LISTED, SEE "ABBREVIATIONS FOR USE ON DRAWINGS AND TEXT", PUBLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

GENERAL LEGEND:

	EXISTING FACILITIES
	NEW CONSTRUCTION
	CONCRETE AND OTHER ITEMS TO BE REMOVED OR DEMOLISHED
	DENOTES DIMENSIONS, ELEVATIONS AND LOCATIONS TO BE VERIFIED OR DETERMINED AFTER FINAL SELECTION OF EQUIPMENT.
	SECTION NO./SHEET NO. WHERE SHOWN
	SECTION NO./SHEET NO. WHERE TAKEN

SECTION

1
S-1

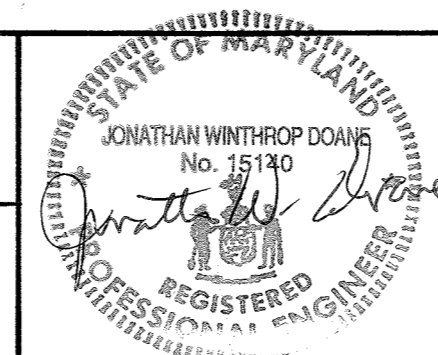
SECTION NO./SHEET NO. WHERE TAKEN

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 3/6/92
 Chief, Bureau of Environmental Services: *John J. O'Hara* 3/6/92
 Date: 3/6/92

M&E Metcalf & Eddy

Jonathan W. Deane 3/4/92
 (REG. PROF. ENGR.)



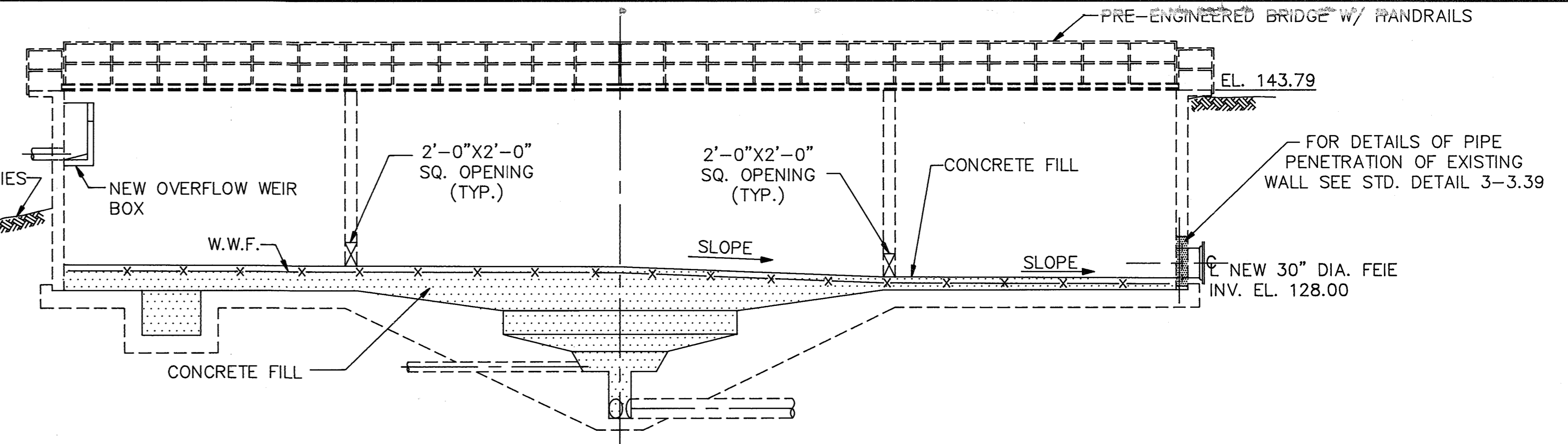
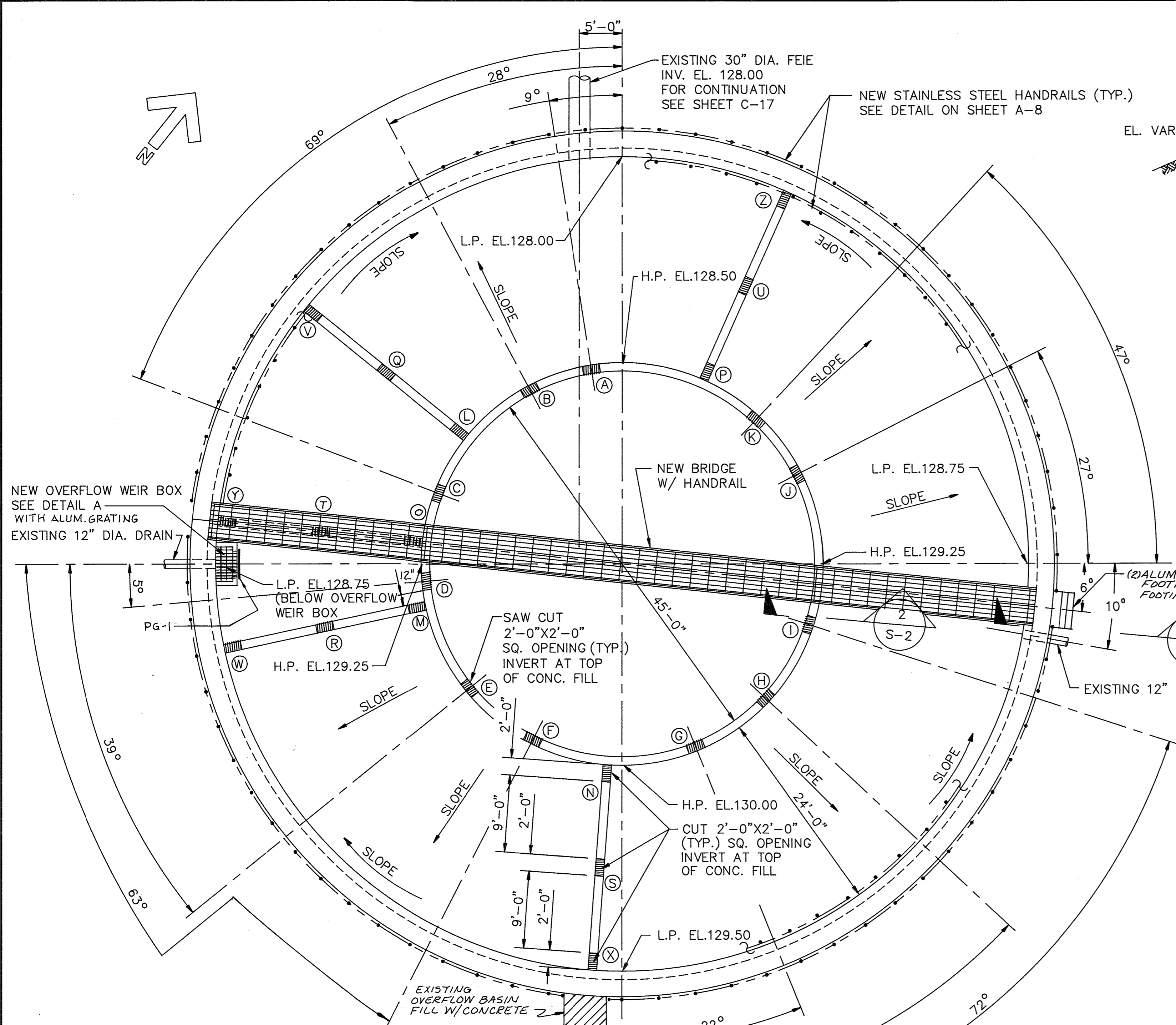
DES: M. Yu			
DRN: E. Burek			
CHK: M. Yu			
DATE: 12/7/91			
BY	NO.	REVISION	DATE
	2	RECORD DRAWING SEE SUPPLEMENTAL SHT. S-1A	1/1/92
	1	REVISED FOR BIDDING	3/5/92

STRUCTURAL

GENERAL NOTES, ABBREVIATIONS, AND LEGEND

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 42 OF 226
 S-1



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

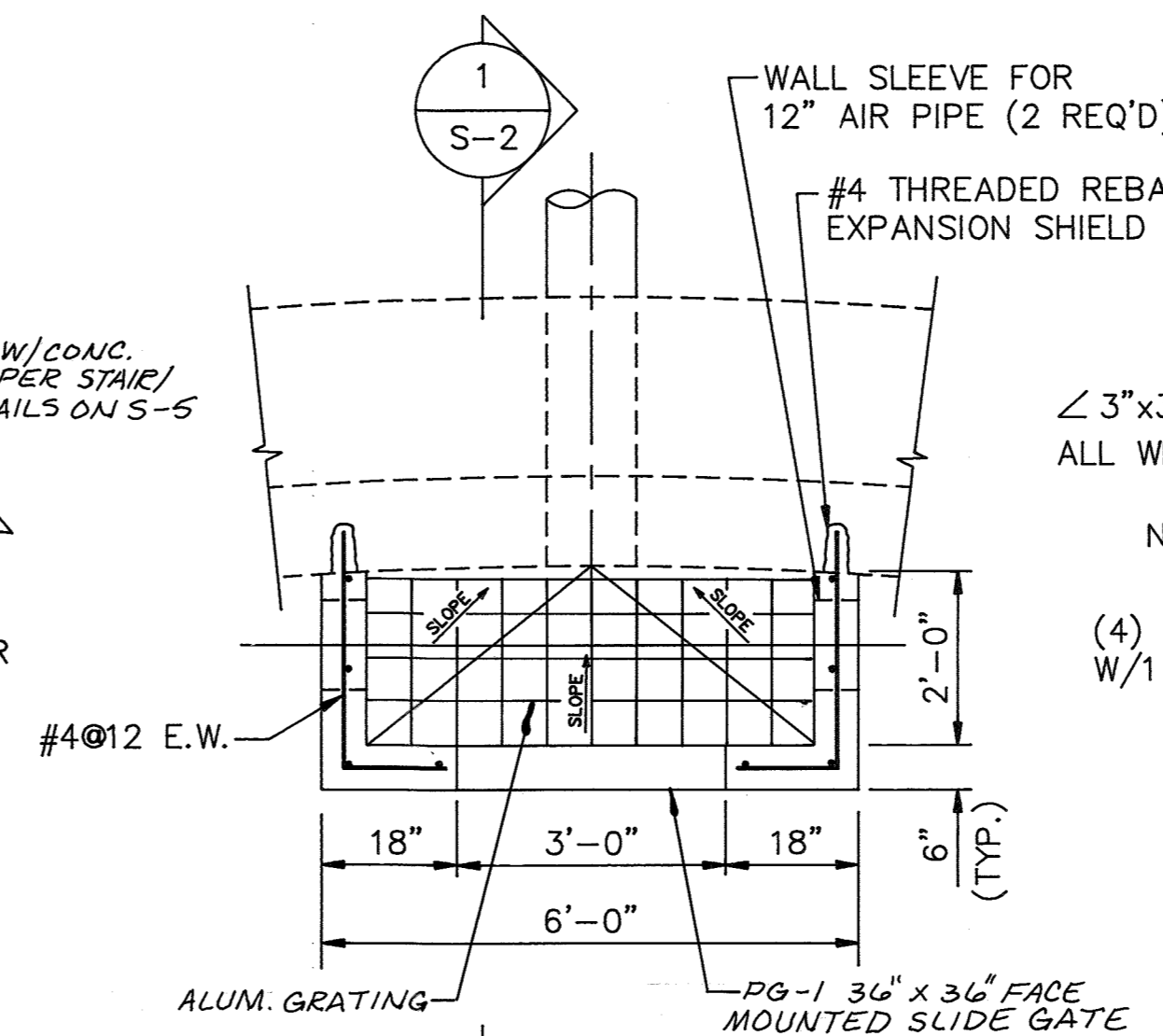
NOTES:

- CONTRACTOR TO REMOVE ALL VEGETATION & SOILS FROM INSIDE THE TANK PRIOR TO POURING CONCRETE FILL & CUTTING WALL OPENINGS.
- TYPICAL DETAILS TO BE FOUND IN SPECIFICATIONS APPENDIX "B".
- BRACE SUPPORT BASED ON INFORMATION SUPPLIED BY CONTINENTAL BRIDGE, ALEXANDRIA, MN. ALTERNATE DESIGNS TO BE SUBMITTED FOR APPROVAL BY ENGINEER.
- ALL EXISTING WALL OPENINGS REMAINING AFTER DEMOLITION SHALL HAVE EXPOSED METAL EPXDY COATED, BE FILLED WITH NON-SHRINK GROUT AS SPECIFIED IN GENERAL NOTE 15 ON DWG. S-1. THE NEW BRIDGE W/HANDRAIL SHALL BE 4'-0" WIDE WITH SUFFICIENT SPAN TO BRIDGE THE TANK FROM EXTERIOR WALL TO EXTERIOR WALL. BRIDGE MAY BE SEGMENTED INTO NO MORE THAN THREE SECTIONS CORRESPONDING TO THE EXISTING INTERNAL WALLS & SHALL BE DESIGNED FOR A MINIMUM UNIFORM LIVE LOAD OF 100 P.S.F. BRIDGE SHALL BE FLAT WITH ONLY ENOUGH CAMBER TO OFFSET THE FULL DEAD LOAD DEFLECTION. THE HANDRAIL SHALL BE 8" ABOVE THE DECK. CONSTRUCTION SHALL BE FABRICATED USING ASTM A-500 GRADE C (TY. EQUAL TO 50,000 P.S.I.) STRUCTURAL TUBING IN ACCORDANCE WITH (ANSI) AWS D1.1-B CHAPTER 10. BOLTS SHALL BE ASTM-A325, TYPE 3, HIGH STRENGTH BOLTS AT SPLICES. DECKING SHALL BE ALUMINUM GRATING AS SPECIFIED ELSEWHERE IN THE SPECIFICATIONS. PROVIDE CONTINUOUS TOE PLATE & CONTINUOUS LIFE SAFETY RAILS WITH MAXIMUM CLEAR OPENINGS OF 5". PREPARE ALL EXTERIOR SURFACES WITH NUMBER 6 COMMERCIAL BLAST CLEANING, SSPC-SP 13-1 COAT WITH PRIMER & TWO FINISH COATS. BRIDGE MANUFACTURER SHALL REVIEW & APPROVE FOUNDATION DESIGN PRIOR TO INSTALLATION. WRITTEN CERTIFICATION SHALL BE PROVIDED.

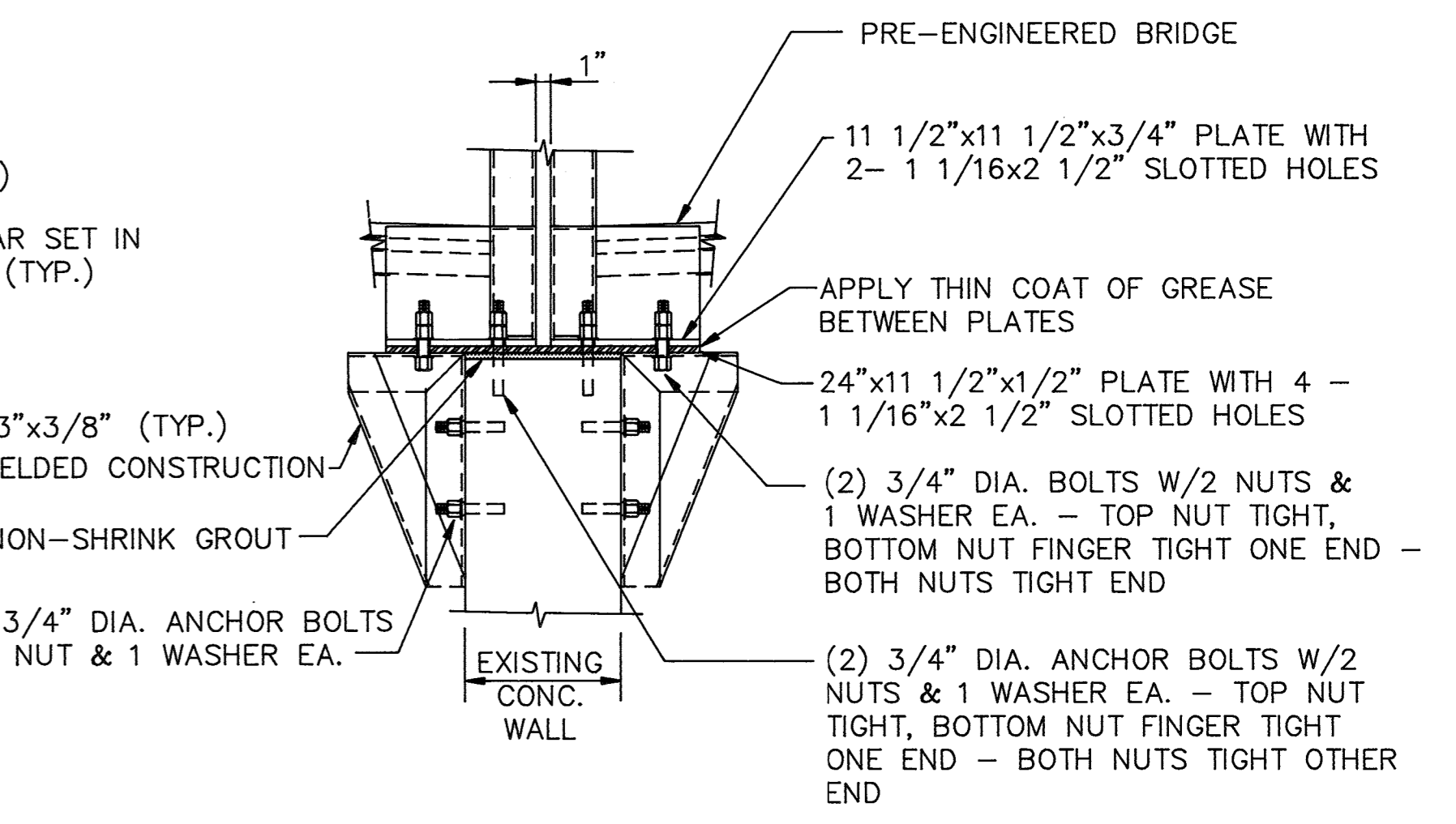
AS BUILT ELEVATIONS

PENETRATION	INV. EL.	PENETRATION	INV. EL.
A	128.37	O	128.88
B	128.43	P	128.52
C	128.84	Q	128.34
D	128.99	R	128.70
E	129.25	S	129.75
F	129.55	T	128.70
G	129.67	U	128.22
H	129.46	V	128.00
I	129.24	W	128.59
J	128.79	X	129.47
K	128.69	Y	128.50
L	128.71	Z	128.75
M	128.90		
N	130.00		

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

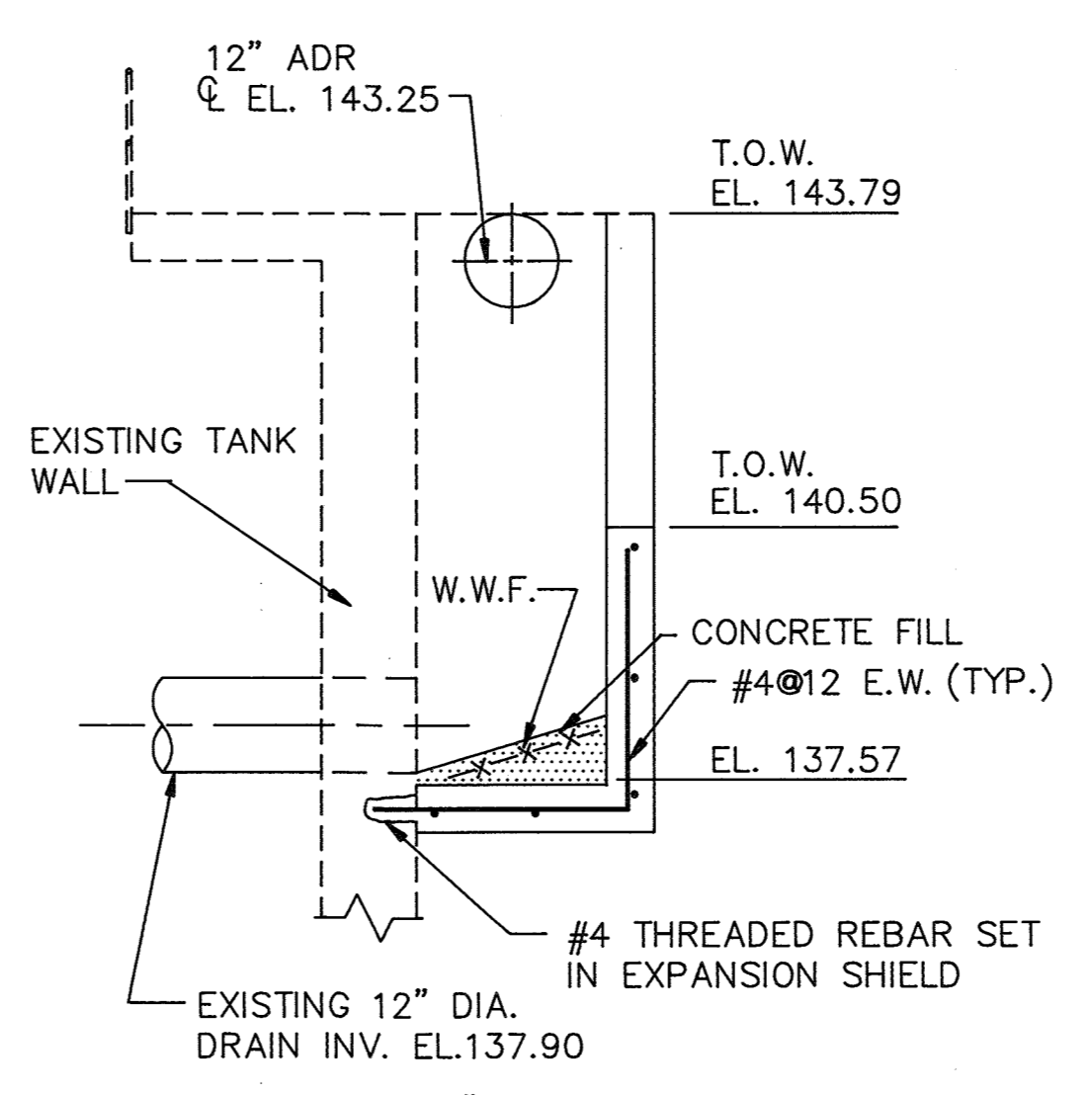


DETAIL A
NEW OVERFLOW WEIR BOX
SCALE: 1/2"=1'-0"



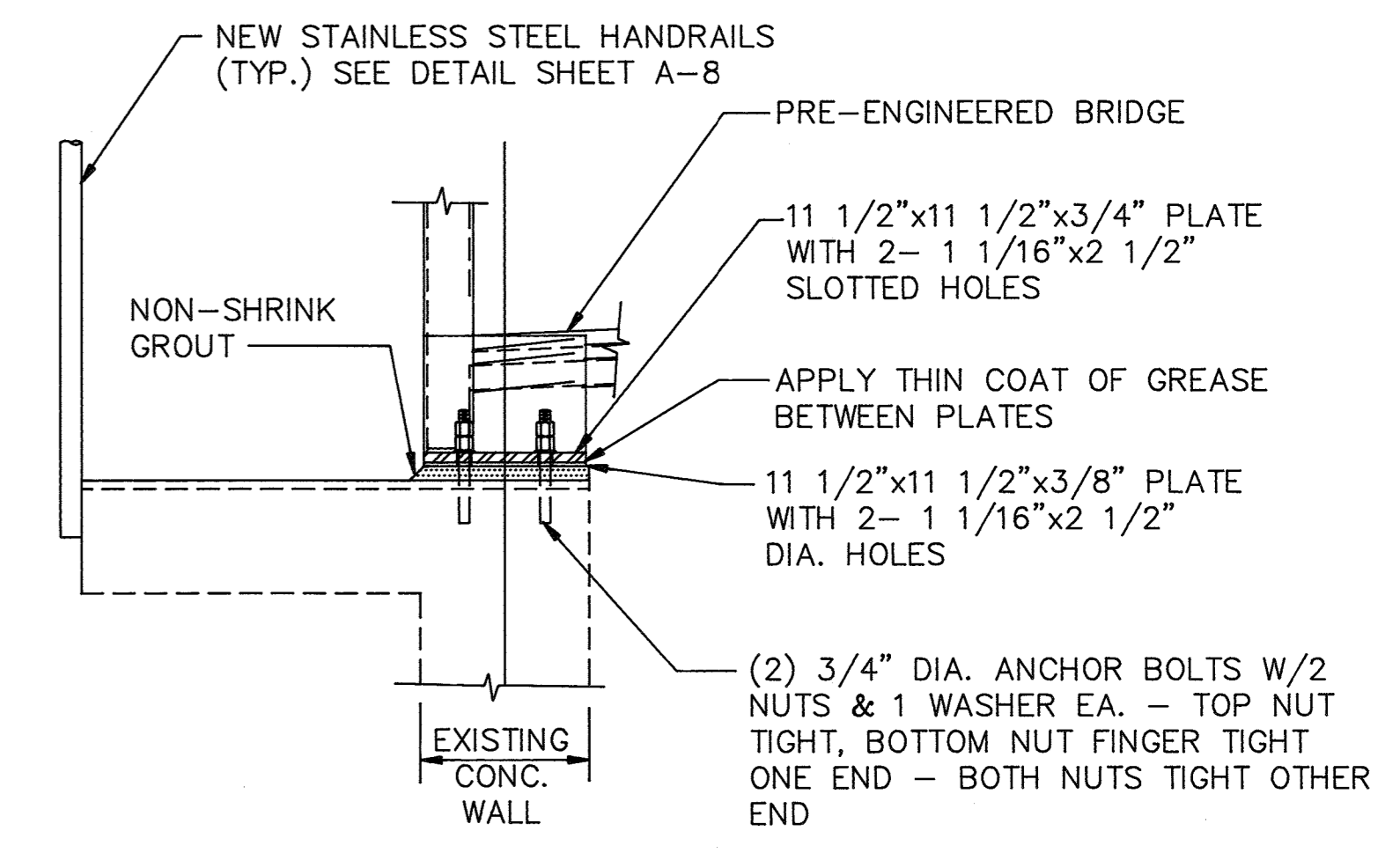
NOTE: SECTION TYPICAL FOR 4 LOCATIONS (SEE NOTE 3)

SECTION 2
SCALE: 1"=1'-0"
S-2



NOTE: OPENING FOR 12" DIA. AIR HEADER NOT SHOWN. SEE SHEET M-5

SECTION 1
SCALE: 1/2"=1'-0"
S-2



NOTE: SECTION TYPICAL FOR 4 LOCATIONS (SEE NOTE 3)

SECTION 3
SCALE: 1"=1'-0"
S-2

Record Drawing Notes:

- All elevations should be field verified before using
- Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 3/6/92
Act. Chief, Bureau of Engineering: *John J. O'Hara* 3-6-92

Chief, Bureau of Environmental Services: *John J. O'Hara* 3/6/92
Act. Chief, Utility Design Division: *John J. O'Hara* 3-6-92

M&E Metcalf & Eddy

REGISTERED PROFESSIONAL ENGINEERS

Jonathan Winthrop Donahue 3/6/92
REG. PROF. ENGR. DATE

STATE OF MARYLAND
No. 15140
REGISTERED PROFESSIONAL ENGINEER

DES.	DRN.	CHK.	DATE:	BY	NO.	REVISION	DATE
D. Colson			12/17/91				
	MC				4	RECORD DRAWING	
	DZG				3	ADDENDUM #5	4/1/92
	DZG				2	ADDENDUM #2	1/10/92
					1	REVISED FOR BIDDING	3/5/92

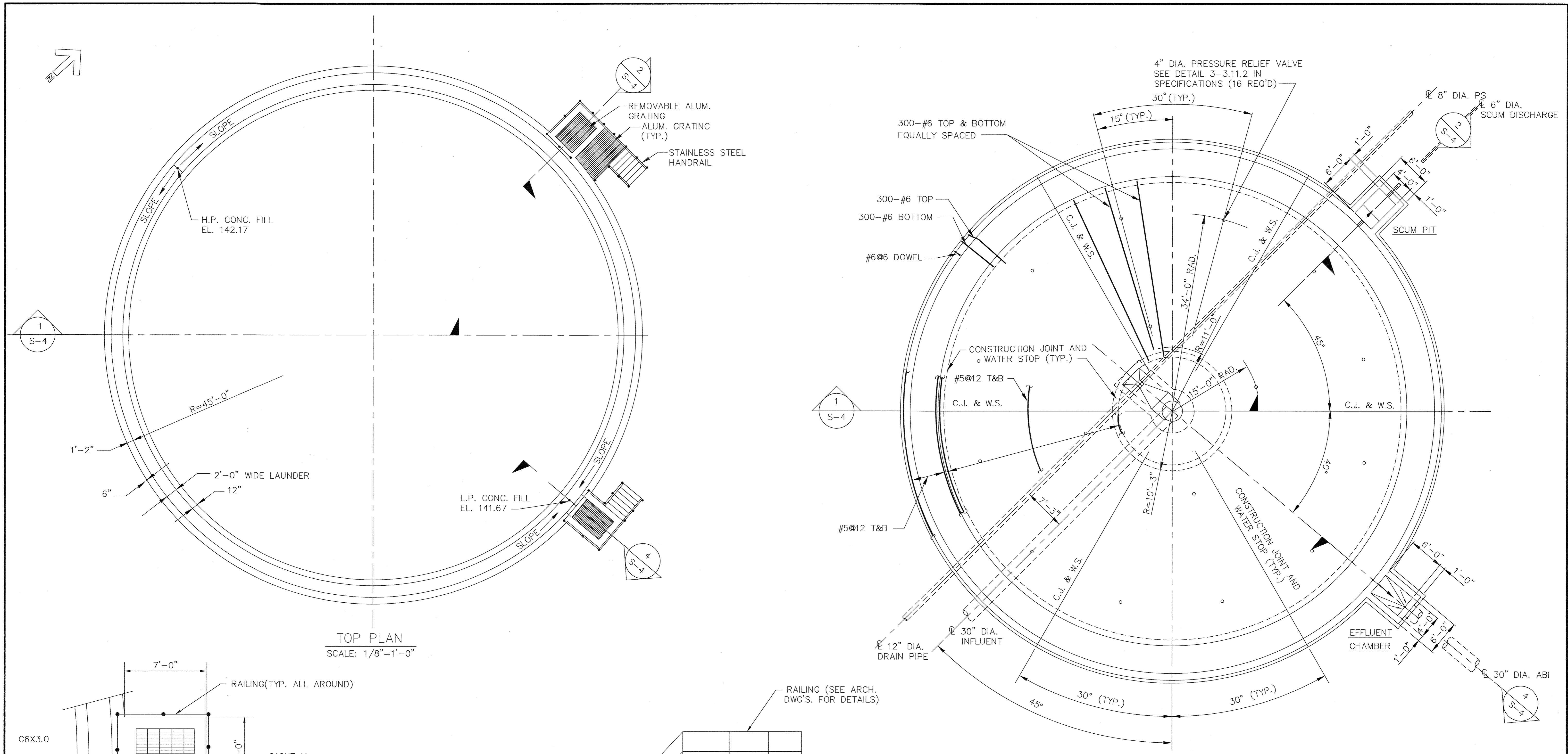
STRUCTURAL

FLOW EQUALIZATION BASIN NO.3
MODIFICATIONS
PLAN, SECTIONS & DETAIL

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

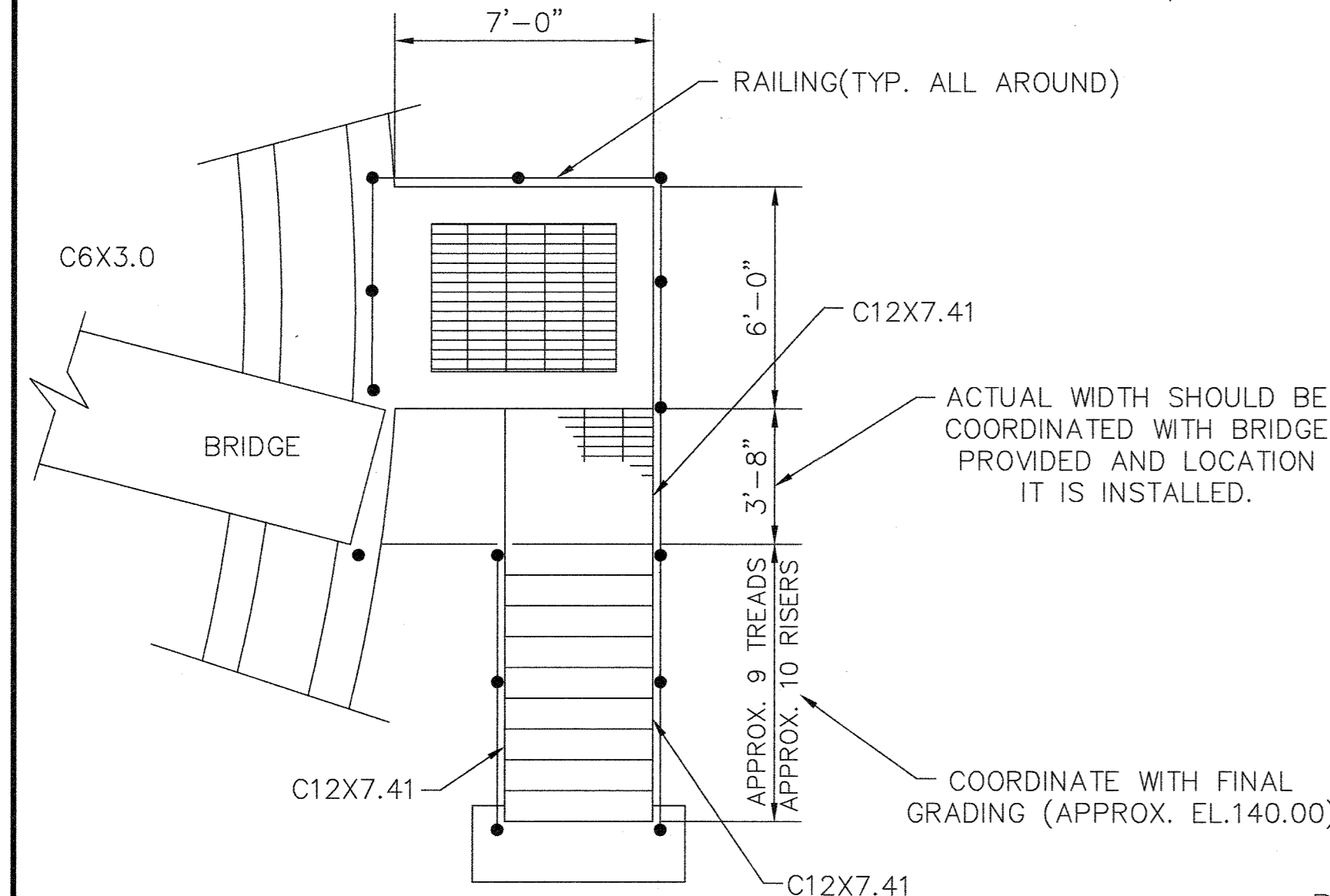
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 49 OF 236
S-2

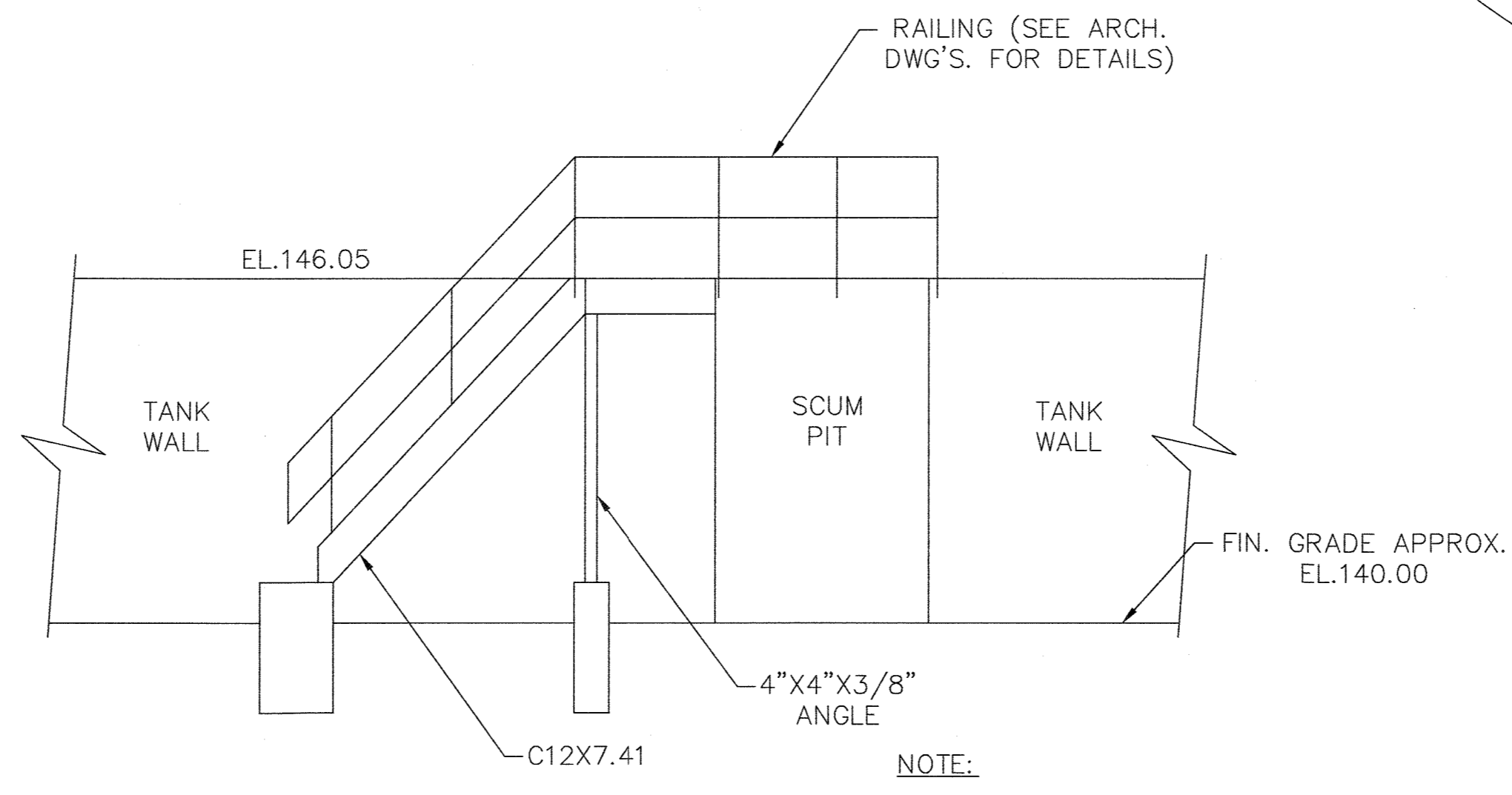


TOP PLAN
SCALE: 1/8"=1'-0"

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



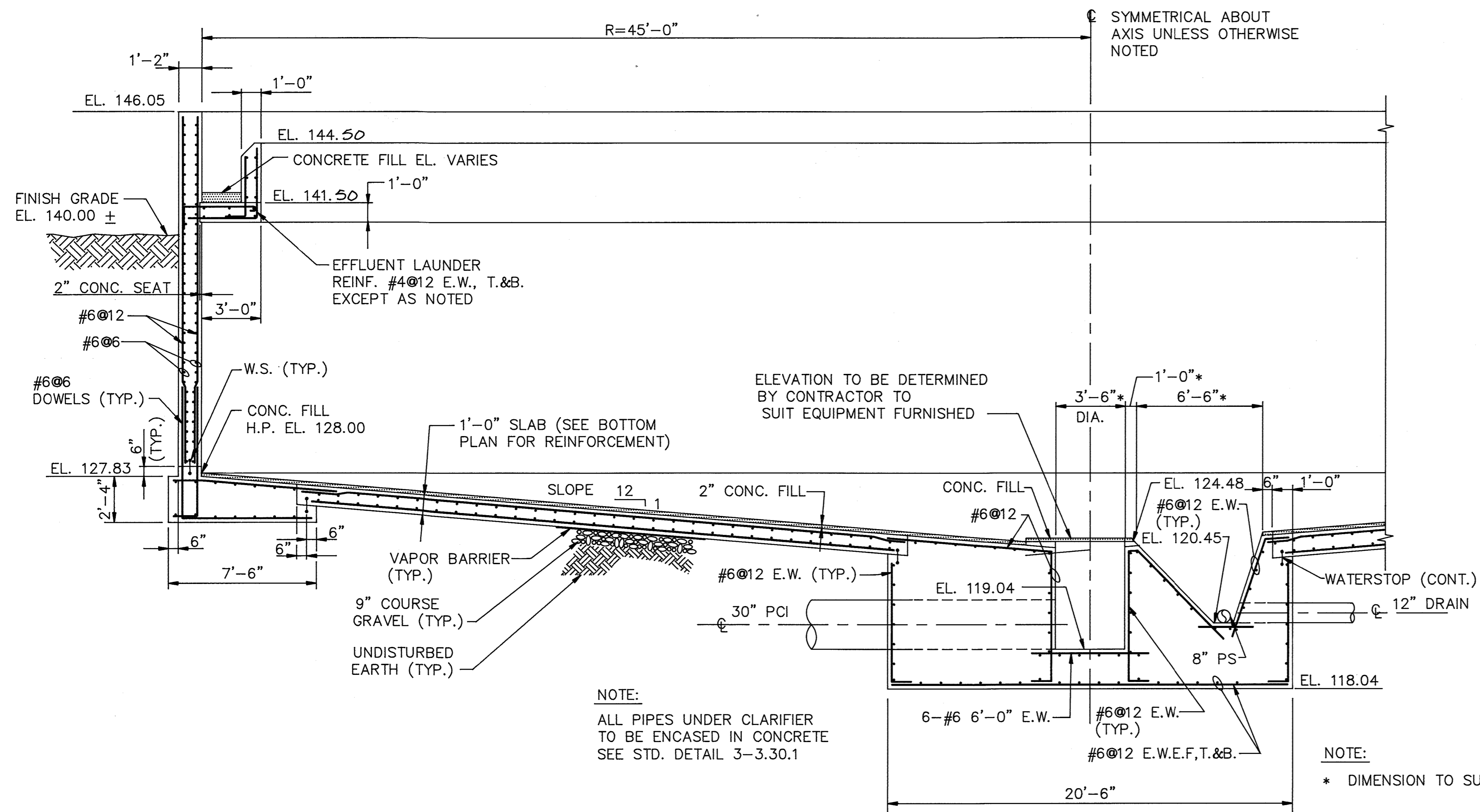
DETAIL "A"
SCALE: NONE



NOTE:
SEE ATTACHMENTS K-1 THRU K-3 OF
ADDENDUM NO. 3 FOR CONNECTION
DETAILS AND FOOTING DETAILS.

- NOTES:
1. TYPICAL DETAILS TO BE FOUND IN SPECIFICATIONS APPENDIX "B".
 2. FOUNDATIONS BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF 2,000 LBS. PER SQ. FOOT.
 3. DESIGN LIVE LOADS:
a.) ALUMINUM GRATING: 100 PSF
b.) WASTEWATER: 63 PCF
 4. CENTER COLUMN ATTACHMENT PER EQUIPMENT SHOP DRAWINGS.
 5. THE HALF SPAN WALKWAY AND HANDRAIL THAT IS TO BE PROVIDED FOR CLARIFIER NO. 2 IS NOT SHOWN ON THE PLAN VIEW. PROVIDE AS SHOWN ON SHEET M-7 AND AS SPECIFIED.

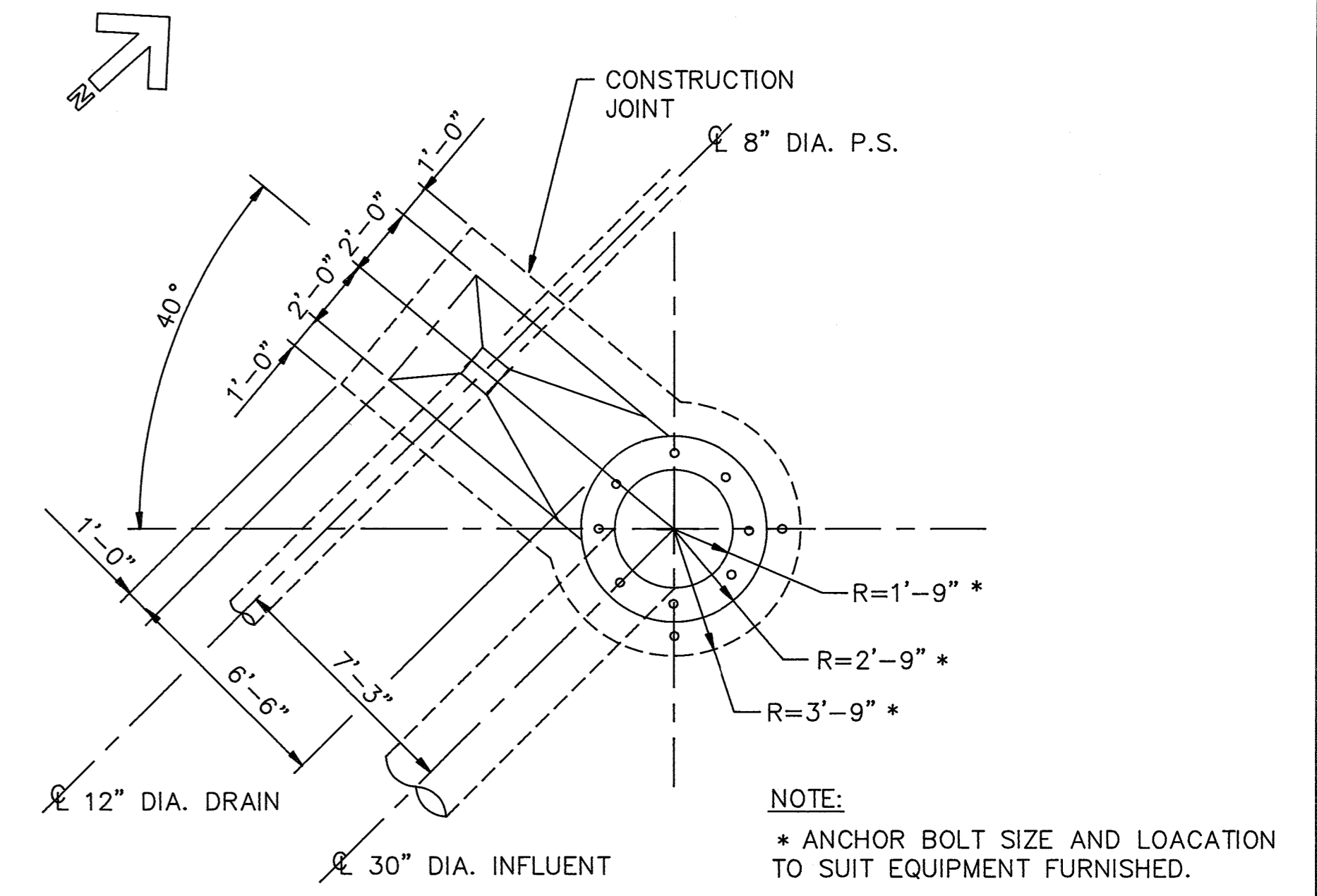
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND				DES: DR	MB 1	REVISE FOR BIDDING	3/5/92	STRUCTURAL	LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153	SCALE AS SHOWN
<i>Sam F. Lee</i> 5/7/96 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE				DRN: EB	MJC 2	RECORD DRAWING	3/5/94			
<i>John O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION DATE		CHK:	DATE:	BY NO.	REVISION	DATE	CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND	S-3A		
<i>John W. Done</i> 5-7-96 RES./PROF. ENGR. DATE										



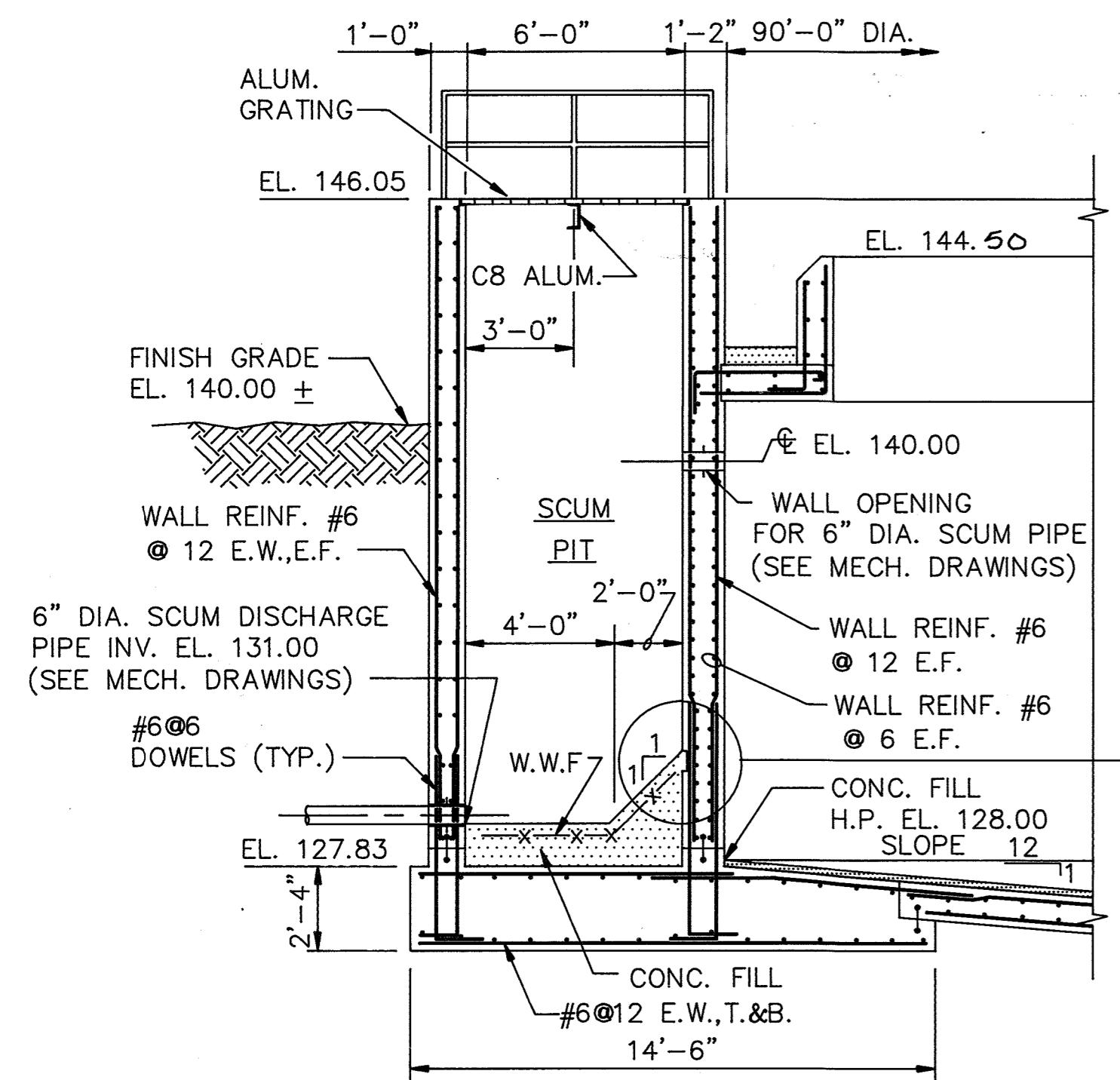
NOTE:
ALL PIPES UNDER CLARIFIER
TO BE ENCASED IN CONCRETE
SEE STD. DETAIL 3-3.30.1

NOTE:
* DIMENSION TO SUIT EQUIPMENT MANUFACTURER

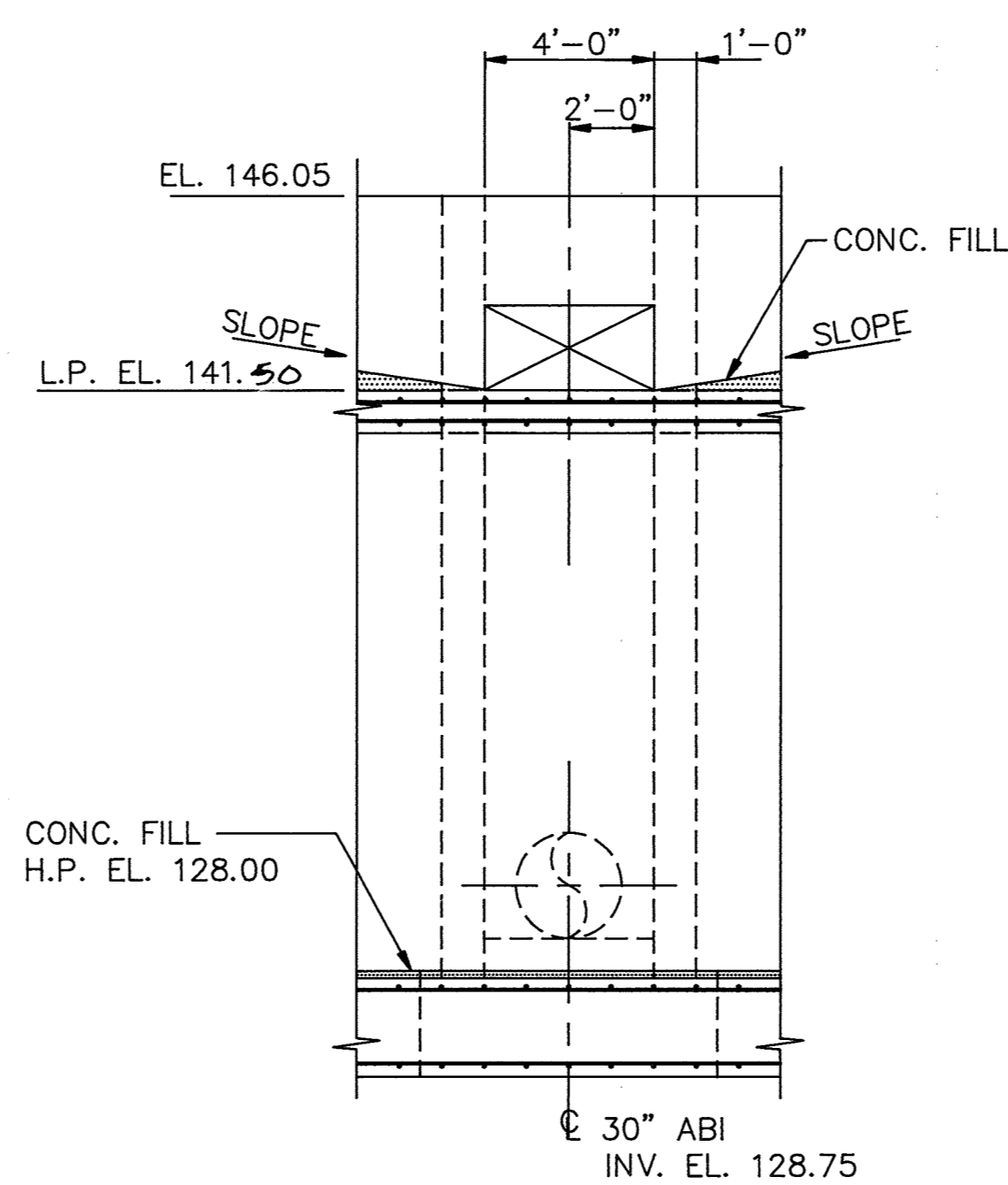
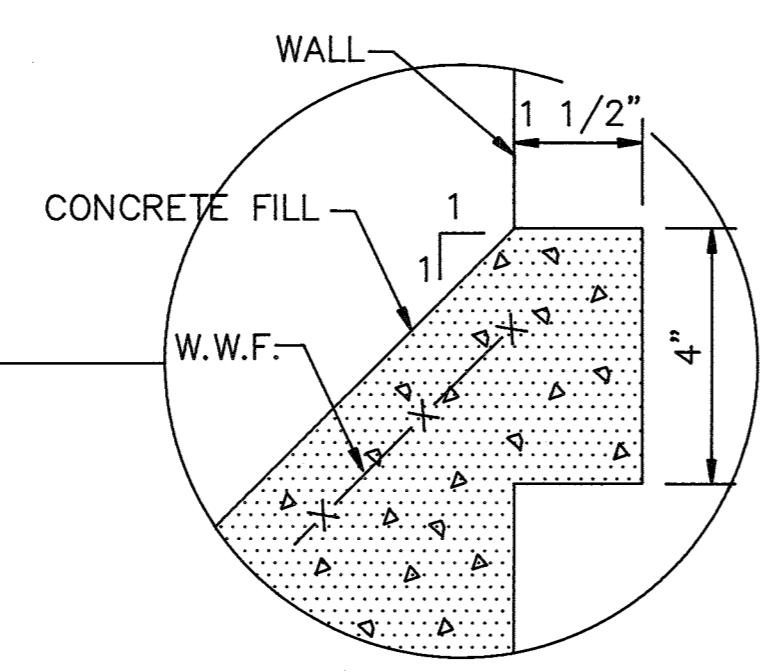
SECTION 1
SCALE: 1/4"=1'-0" S-3



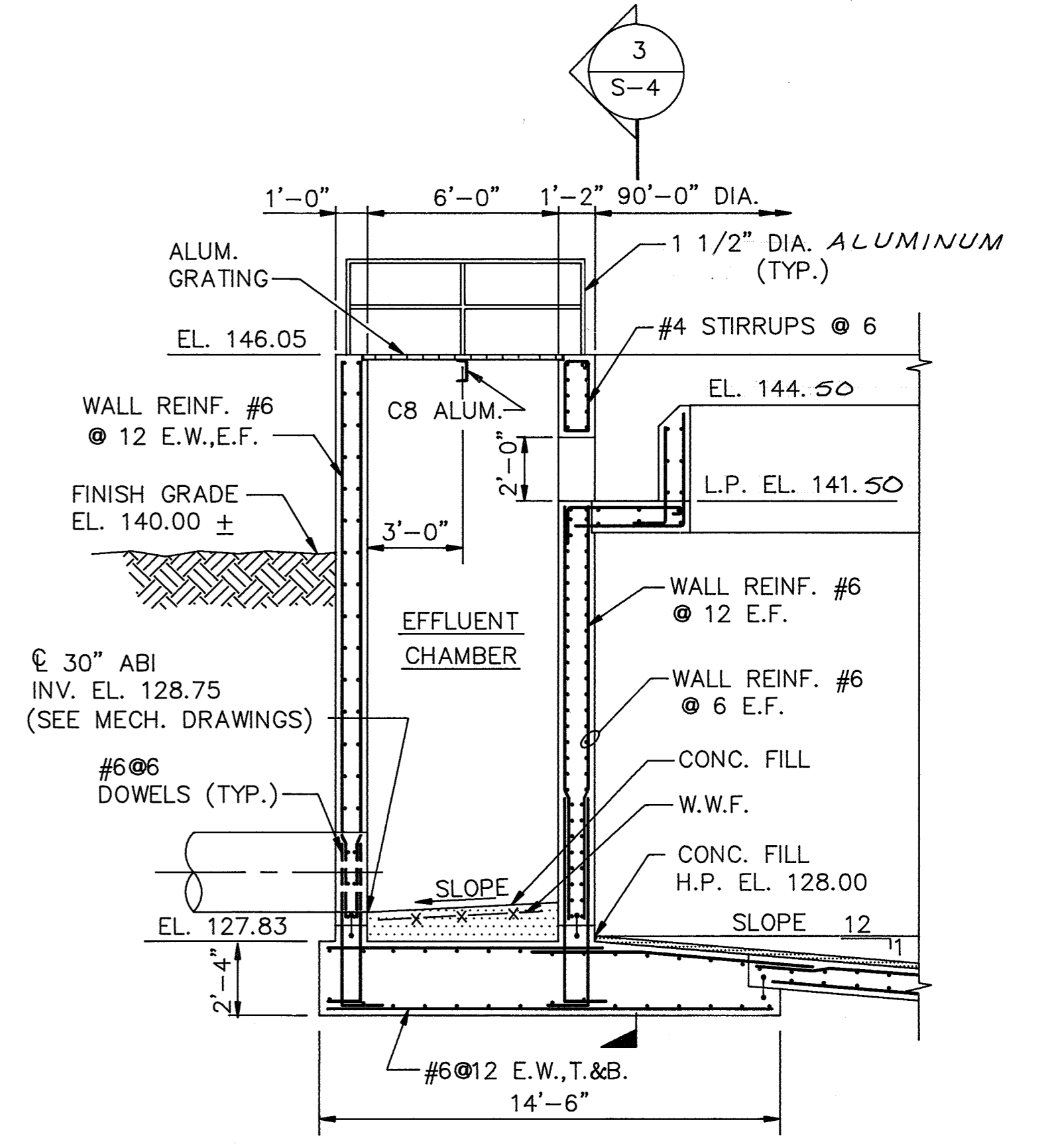
PARTIAL PLAN FOR
PRIMARY CLARIFIER NO. 2 CENTER PIER
SCALE: 1/4"=1'-0"



SECTION 2
SCALE: 1/4"=1'-0" S-3



SECTION 3
SCALE: 1/4"=1'-0" S-4



NOTE:
FOR TOP & BOTTOM STAIR LANDINGS SEE SHEET S-5.

SECTION 4
SCALE: 1/4"=1'-0" S-3

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: *John O'Hara* 3/6/92
Act. Chief, Bureau of Engineering: *Robert D. ...* 3-6-92
Chief, Bureau of Environmental Services: *...* 3-6-92
Chief, Utility Design Division: *...* 3-6-92

M&E Metcalf & Eddy
Jonathan W. ... 3/6/92
REG. PROF. ENGR.

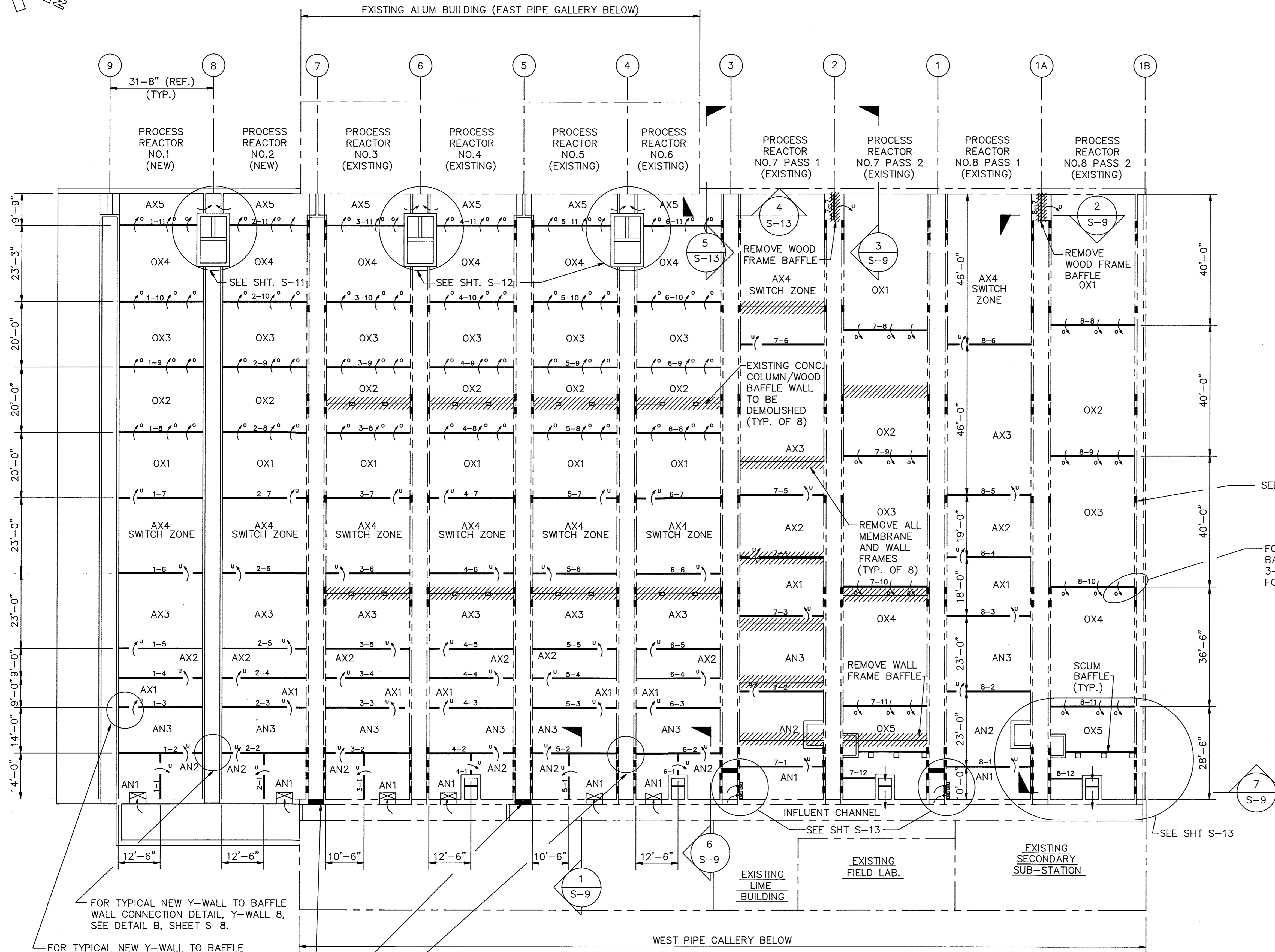
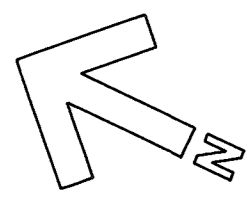
STATE OF MARYLAND
JONATHAN WINTROP DOANE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

DES: D. Colson				
DRN: J. Barneff				
CHK: M. Yu	2	RECORDED DRAWING	10/2/92	
DATE: 12/2/91	1	REVISED FOR BIDDING	3/5/92	
BY	NO.	REVISION	DATE	

STRUCTURAL
PRIMARY CLARIFIER SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 51 OF 226
S-4



- NOTES:
- SEE BAFFLE SCHEDULE SHEET M-10.
 - FOR NEW PROCESS REACTORS 1 & 2 STRUCTURAL. SEE SHEETS S-6 THROUGH S-11.
 - FOR STRUCTURAL MODIFICATIONS TO PROCESS REACTORS 3,4,5 & 6, SEE SHEET S-12.
 - FOR STRUCTURAL MODIFICATIONS TO PROCESS REACTORS 7 & 8, SEE SHEET S-13.
 - SEE SECTION 1/S-6 ON SHEET S-8 FOR EXISTING BAFFLE DEMOLITION.
 - SEE DETAIL A SHEET S-8 FOR CONCRETE COLUMN CUTOFF DETAIL.
 - BAFFLE LOCATION DIMENSIONS ARE SHOWN TO CENTERLINES OF BAFFLES.
 - AFTER REMOVAL OF EXISTING BAFFLE AND FRAMES IN PR-7, CUT ALL FASTENING BOLTS BACK TO 1" BELOW SURFACE AND REPAIR CONCRETE FLUSH TO EXISTING SURFACE WITH NON-SHRINK GROUT.
 - FOR OTHER MECHANICAL AND STRUCTURAL DEMOLITION SEE M-14, M-19 AND REFERENCED PLANS AND SECTIONS.
 - DENOTES EXISTING STOP PLATES IN Y-WALLS TO BE REMOVED AND REPAIRED BY FILLING OPENINGS W/ CONCRETE. SEE SHEET S-7 FOR ADDITIONAL INFORMATION.

SEE NOTE 10

FOR TYPICAL EXISTING Y-WALL TO NEW BAFFLE WALL CONNECTION, SEE DETAIL 3-3.24.1 IN SPECIFICATIONS. TYPICAL FOR Y-WALL 1B, 1A, 1, 2, & 3.

FOR TYPICAL NEW Y-WALL TO BAFFLE WALL CONNECTION DETAIL, Y-WALL 8, SEE DETAIL B, SHEET S-8.

FOR TYPICAL NEW Y-WALL TO BAFFLE WALL CONNECTION DETAIL, Y-WALL 9, SEE DETAIL 3-3.7.1 IN SPECIFICATIONS. CONTRACTOR MAY FORM CONTINUOUS AND PROVIDE BAFFLE WALL JOINT SIMILAR DETAIL B, SHEET S-8.

NEW END OF CHANNEL BULKHEAD SEE DETAIL ON SHEET S-13 (TYP. ⑦ & ⑤)

FOR TYPICAL EXISTING Y-WALL TO BAFFLE WALL CONNECTION DETAIL, Y-WALLS 4, 5, 6 & 7, SEE DETAIL C, SHEET S-8.

PLAN
SCALE: 1/16"=1'-0"

- LEGEND:
- DENOTES NEW TANK
 - - - DENOTES EXISTING TANK
 -) DENOTES OVERFLOW BAFFLE OPENING
 -)u DENOTES UNDERFLOW BAFFLE OPENING

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Lewis 3/6/92 DATE
DIRECTOR OF PUBLIC WORKS

John J. Ottawa 3/6/92 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Robert A. Dineen 3-6-92 DATE
ACT. CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Droe 3/6/92 DATE
REG. PROF. ENGR.

STATE OF MARYLAND
JONATHAN WINTHROP DROE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

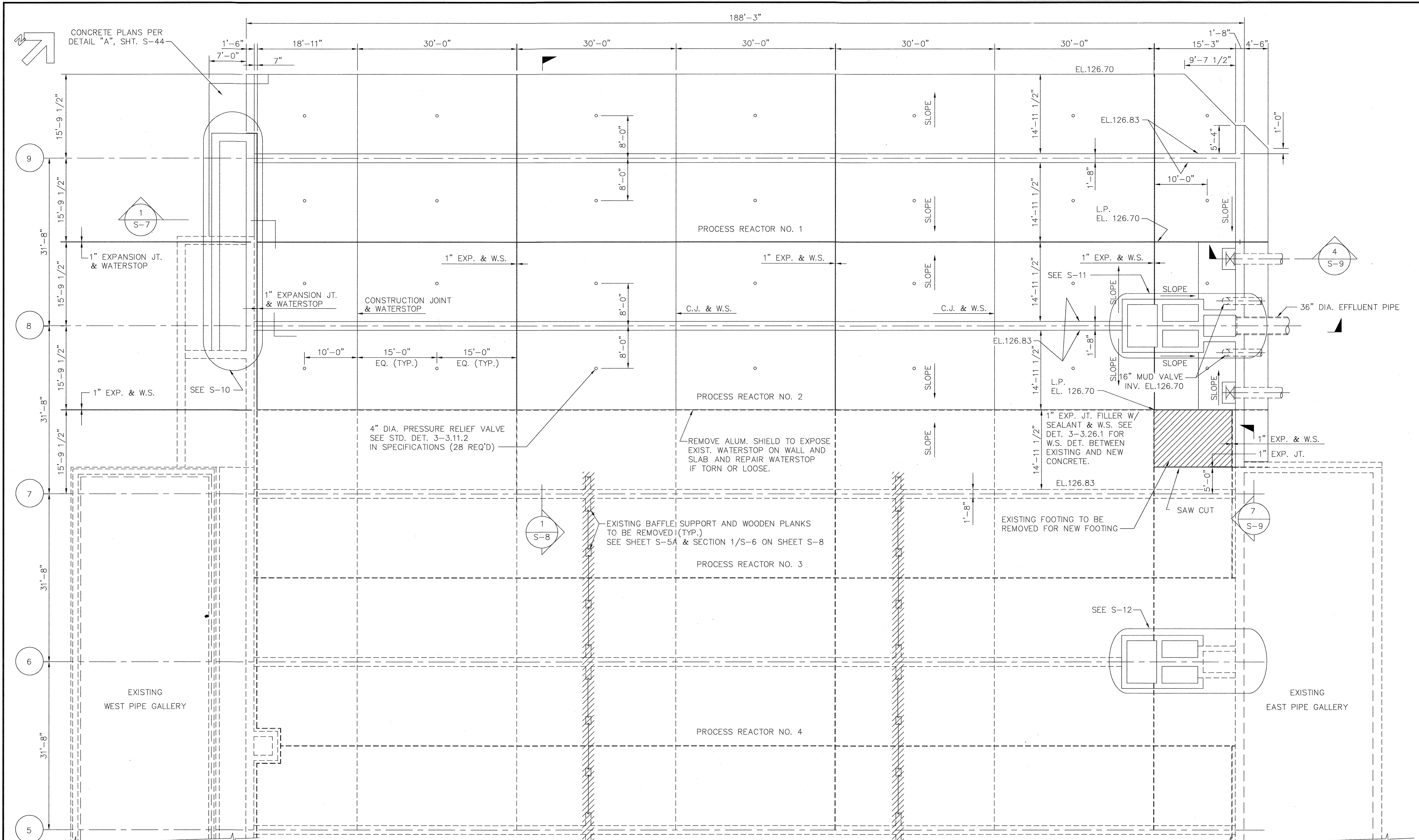
DES: S. HAVEY			
DRN: E. BURNETT			
CHK: HAVEY	1	2	RECORDED DRAWING SEE SUPPLEMENTAL SHT. S-5A-1
DATE: 12/1/91			3/5/92
BY	NO.	REVISION	DATE

STRUCTURAL
PROCESS REACTORS
GENERAL PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 53 OF 226
S-5A



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

- NOTES:
 1. FOR BAFFLE WALL DETAIL, SEE S-7.
 2. FOR ALL BAFFLE WALL LOCATIONS, SEE S-5A.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Lawrence J. Shaw 5/1/96
 DIRECTOR OF PUBLIC WORKS DATE

Paul D. Peterson 5/7/96
 CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Debra L. Jones 5-7-96
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Winthrop Done 5-7-96
 REGISTERED PROFESSIONAL ENGINEER
 No. 15140



DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL

SINGLE PASS PROCESS
 REACTOR NOS. 1 & 2
 FOUNDATION PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

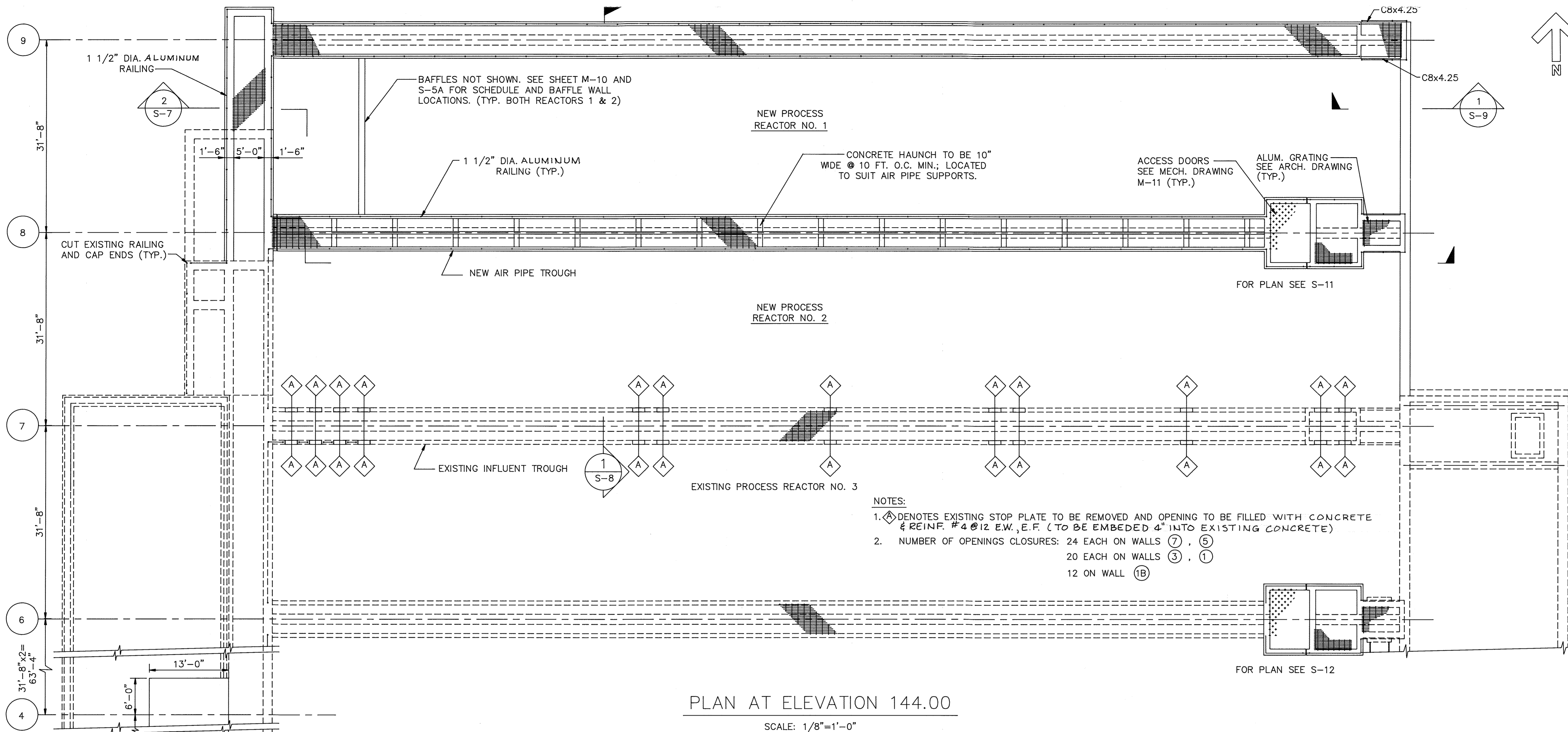
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 54 OF 226

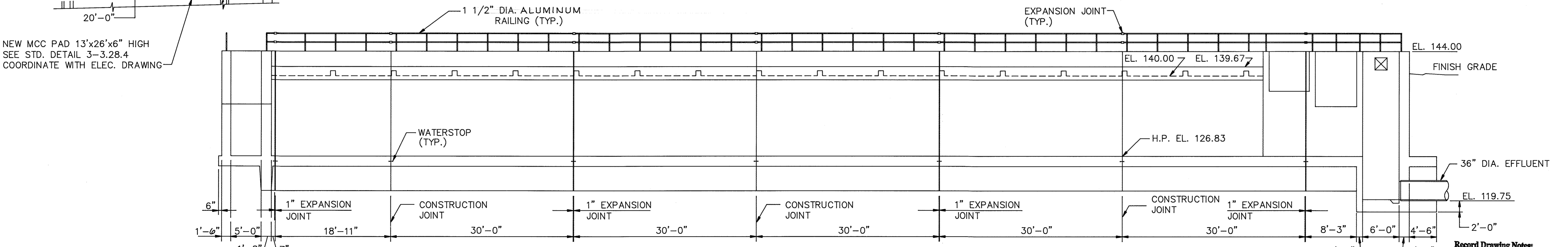
S-6A



PLAN AT ELEVATION 144.00

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

- NOTES:
1. \diamond DENOTES EXISTING STOP PLATE TO BE REMOVED AND OPENING TO BE FILLED WITH CONCRETE & REINF. #4 @ 12 E.W., E.F. (TO BE EMBEDDED 4" INTO EXISTING CONCRETE)
 2. NUMBER OF OPENINGS CLOSURES: 24 EACH ON WALLS (7), (5)
20 EACH ON WALLS (3), (1)
12 ON WALL (1B)



SECTION 2
SCALE: 1/8"=1'-0" S-7, S-8

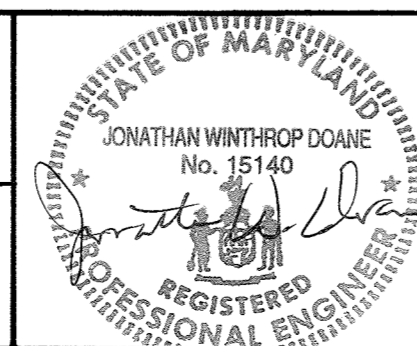
Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Lewis 3/6/92 *John O'Hara* 3-6-92
DIRECTOR OF PUBLIC WORKS DATE ACT CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE ACT CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Winthrop Doane 3/6/92
REG. PROF. ENGR. DATE



DES:	M. Yu				
DRN:	E. Burnett				
CHK:	J. HAVEY	2	RECORD DRAWING		
DATE:	12/7/91	1	REVISED FOR BIDDING	3/9/92	
BY:	NO.		REVISION	DATE	

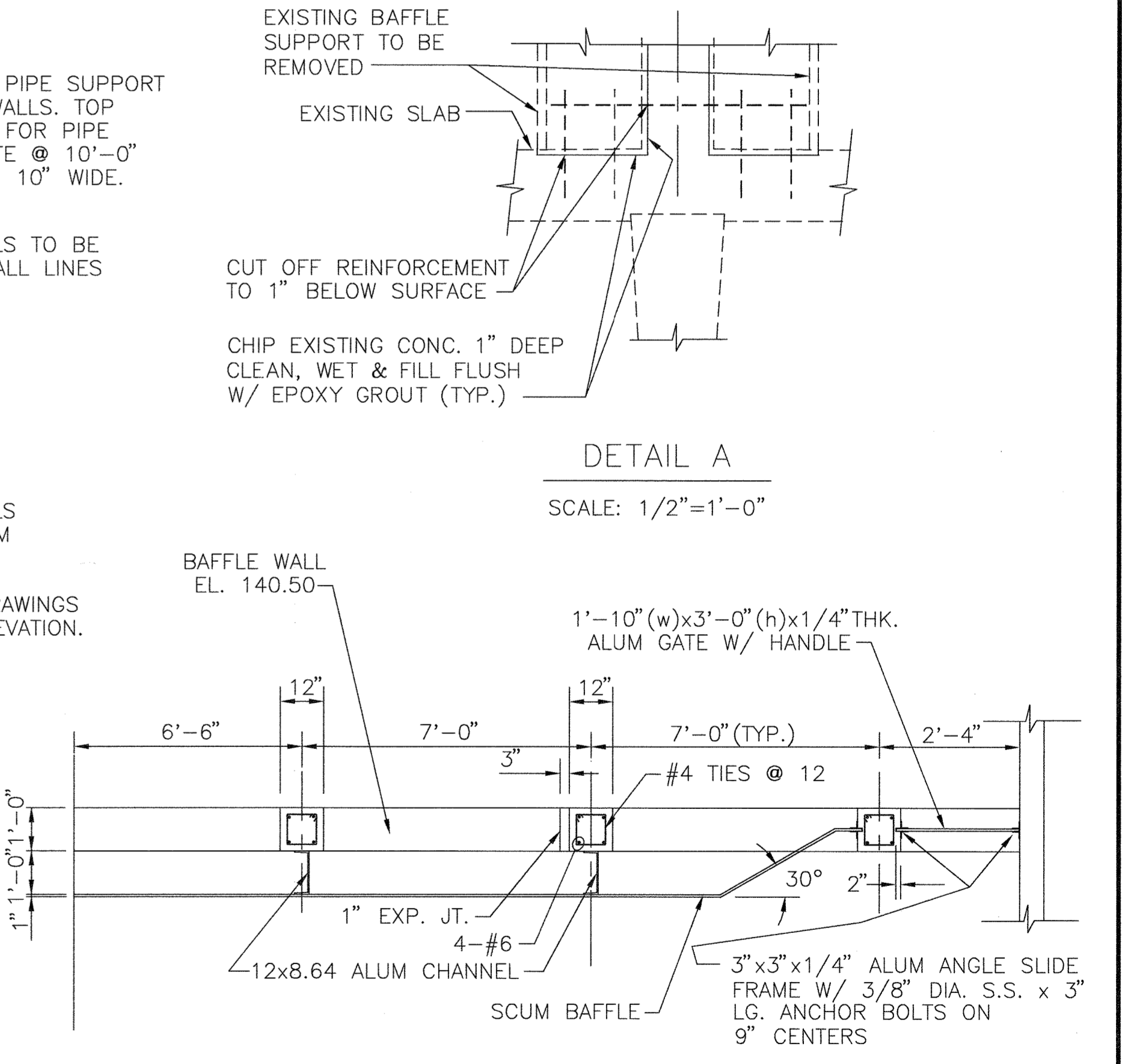
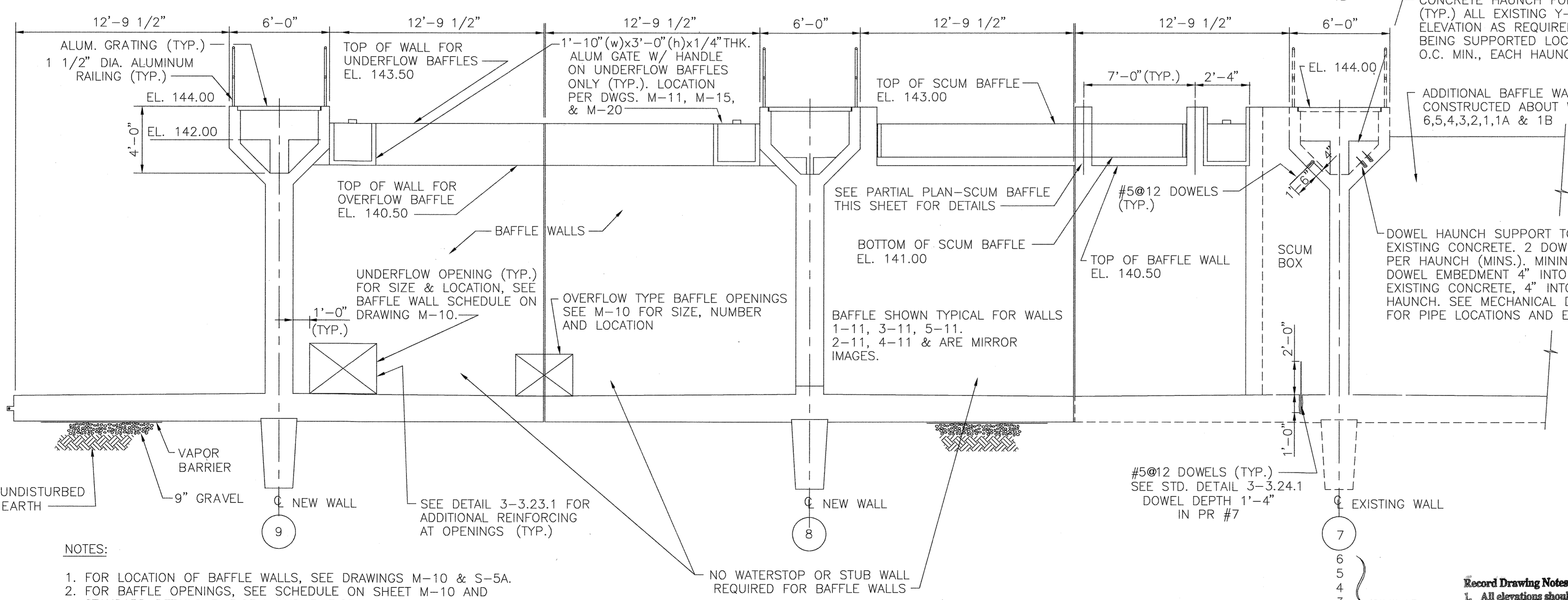
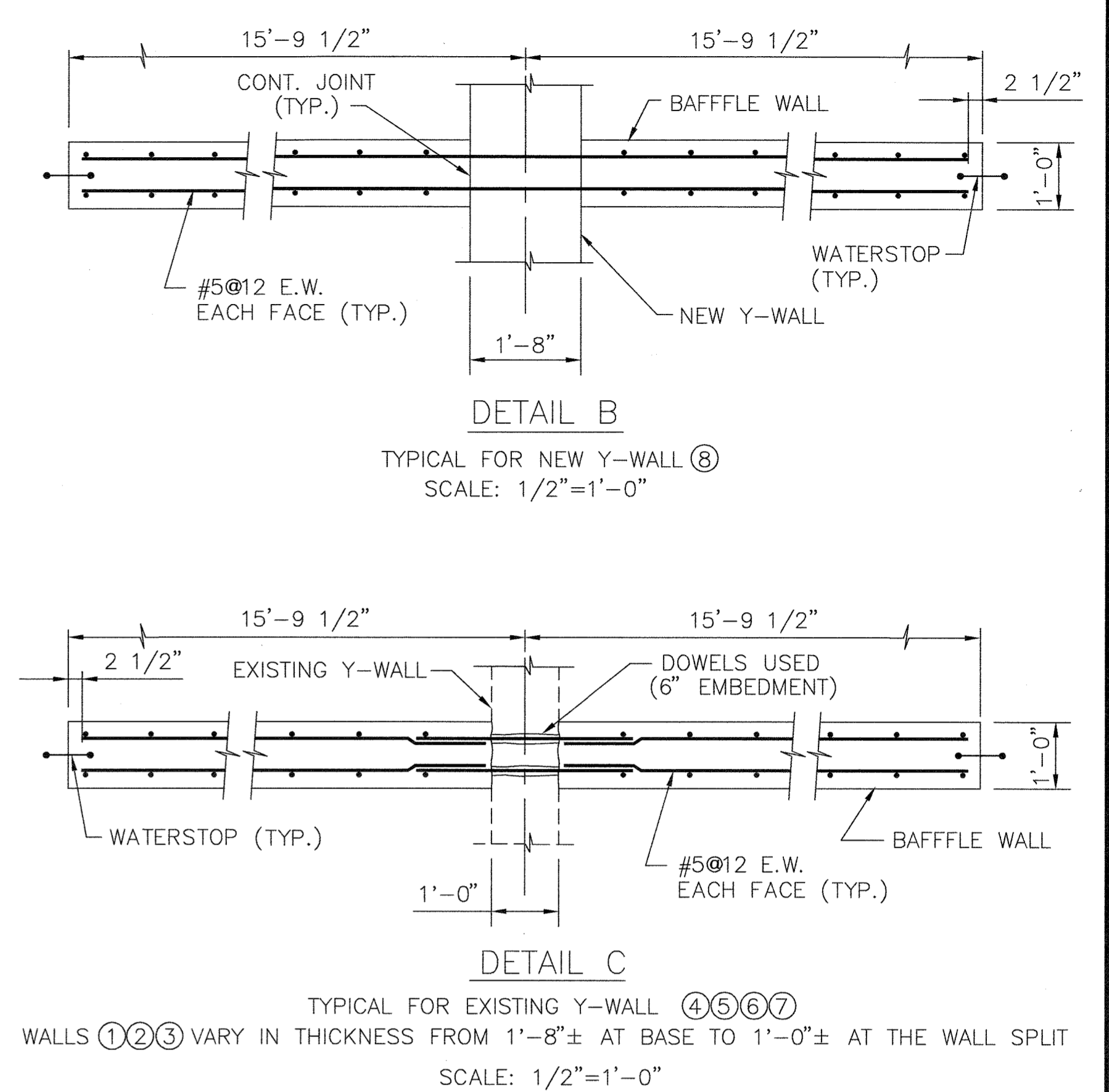
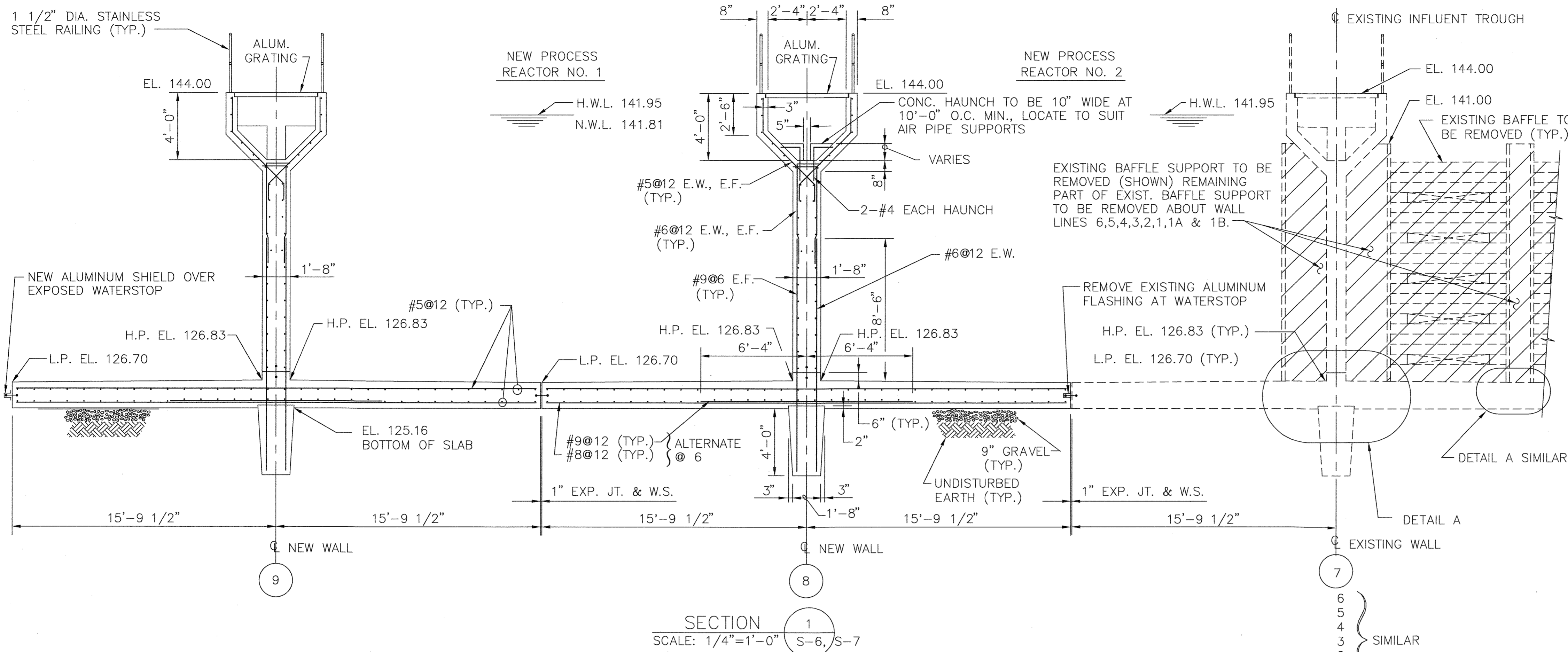
STRUCTURAL

SINGLE PASS PROCESS REACTORS NOS. 1 & 2
TOP PLAN AND SECTION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 55 OF 226
S-7



- NOTES:**
- FOR LOCATION OF BAFFLE WALLS, SEE DRAWINGS M-10 & S-5A.
 - FOR BAFFLE OPENINGS, SEE SCHEDULE ON SHEET M-10 AND STANDARD DETAILS 3-3.23.1 AND 3-3.23.2.
 - WATERSTOP IN VERTICAL WALL TO EXTEND TO TOP OF WALL.
 - PROVIDE MATCHING DOWELS INTO EXISTING WALLS, AND FOUNDATION @ 12" O.C.
 - FOR INTERSECTION OF TWO WALLS AND CORNER WALL, SEE ALSO STD. DETAILS 3-3.7.1 AND 3-3.8.1.

TYPICAL BAFFLE WALL DETAIL
SCALE: 1/4"=1'-0"

RECORD DRAWING
10/14/94

- Record Drawing Notes:**
- All elevations should be field verified before using
 - Weir and water elevations based on post-construction survey by Howard County.

PARTIAL PLAN - SCUM BAFFLE
(BAFFLE WALLS 1-11, 2-11, 3-11, 4-11, 5-11)
SCALE: NONE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John P. ... 5/7/96
DIRECTOR OF PUBLIC WORKS

Paul W. ... 5/7/96
CHIEF, BUREAU OF ENGINEERING

John ... 5-7-96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

... .. 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

... .. 5-7-96
REG. PROF. ENGR.

STATE OF MARYLAND
JACOBUS WINTHROP DOMIN
No. 15140
REGISTERED PROFESSIONAL ENGINEER

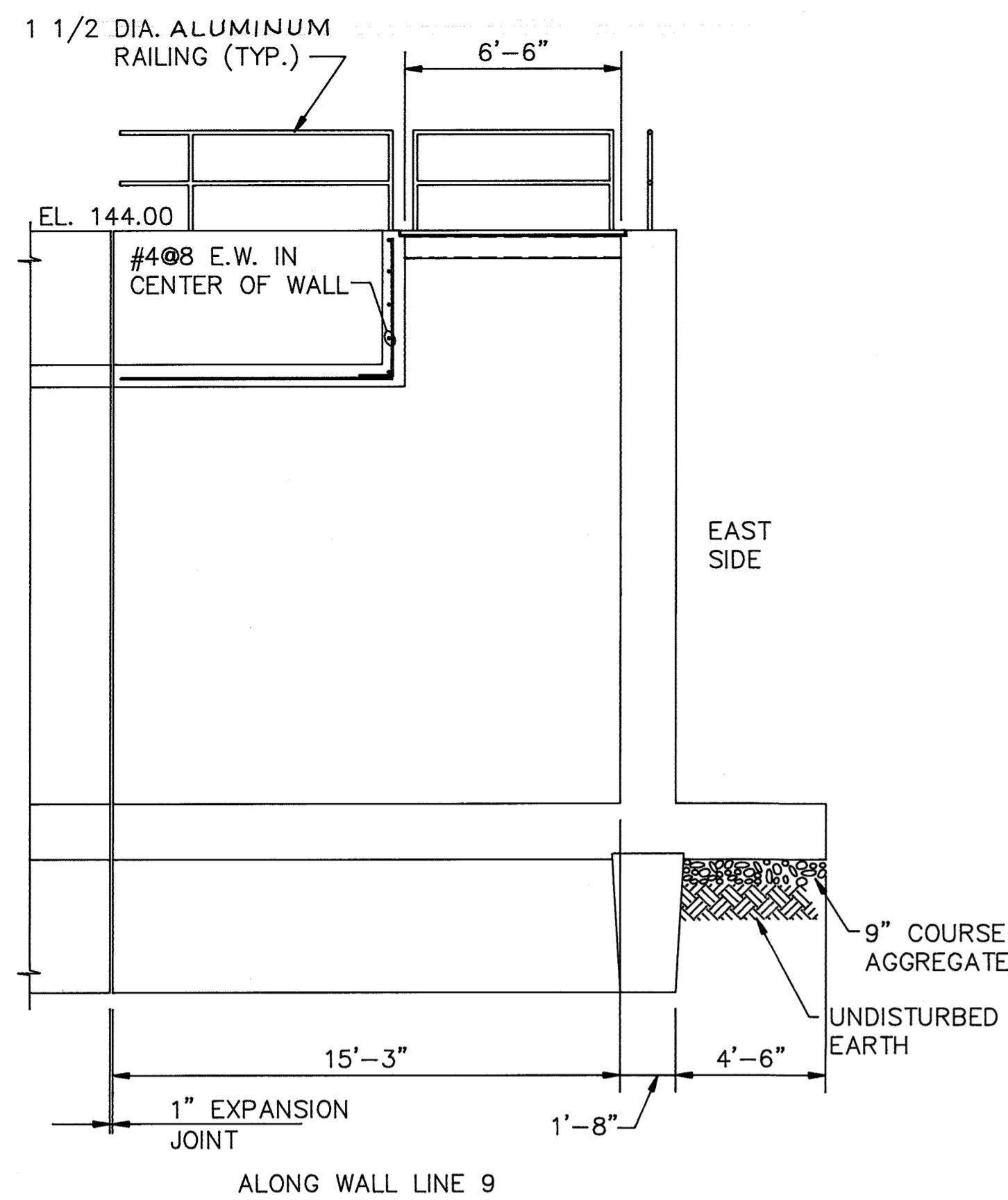
DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL
SINGLE PASS PROCESS
REACTOR NOS. 1 & 2
SECTIONS & DETAILS I

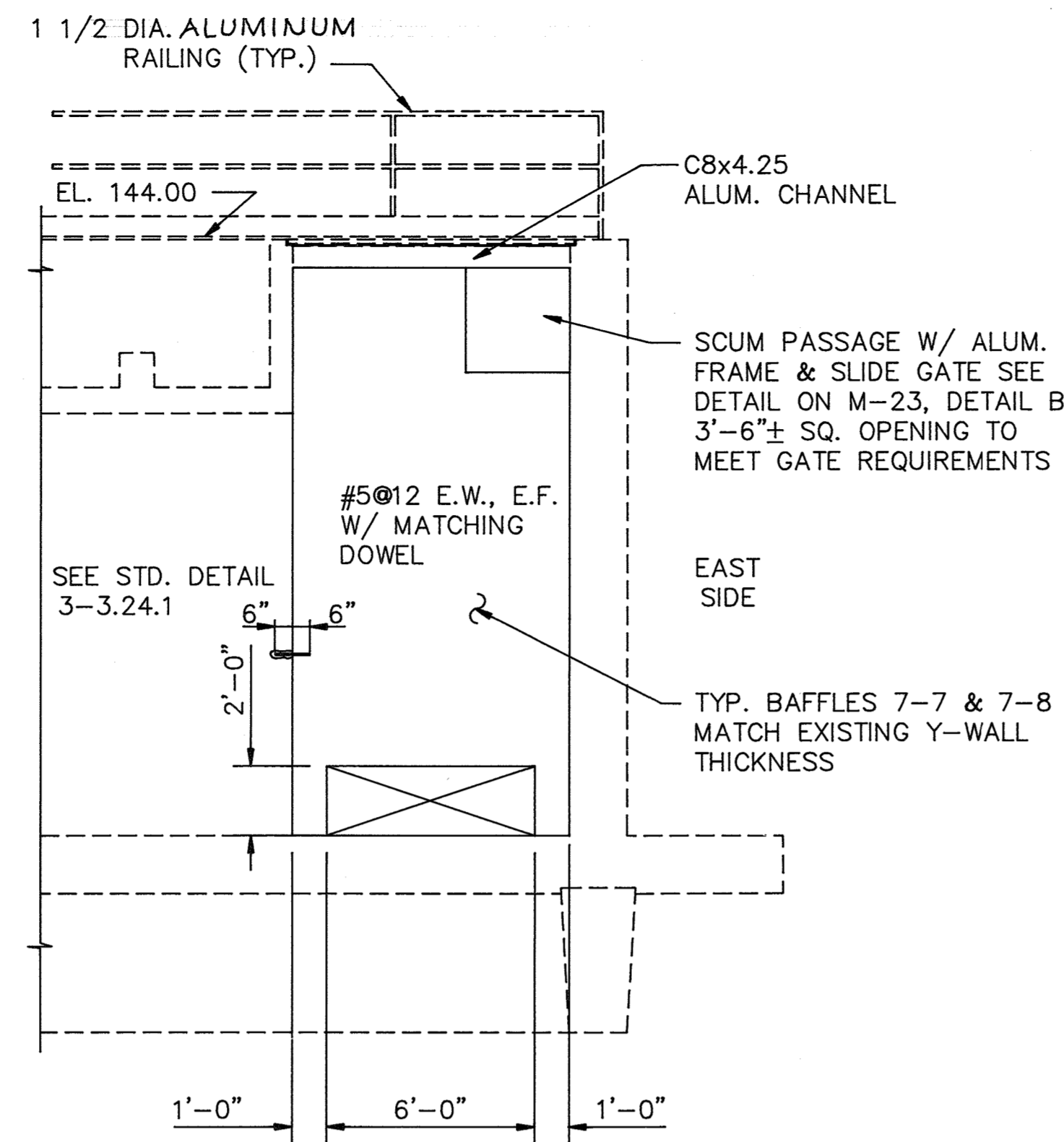
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

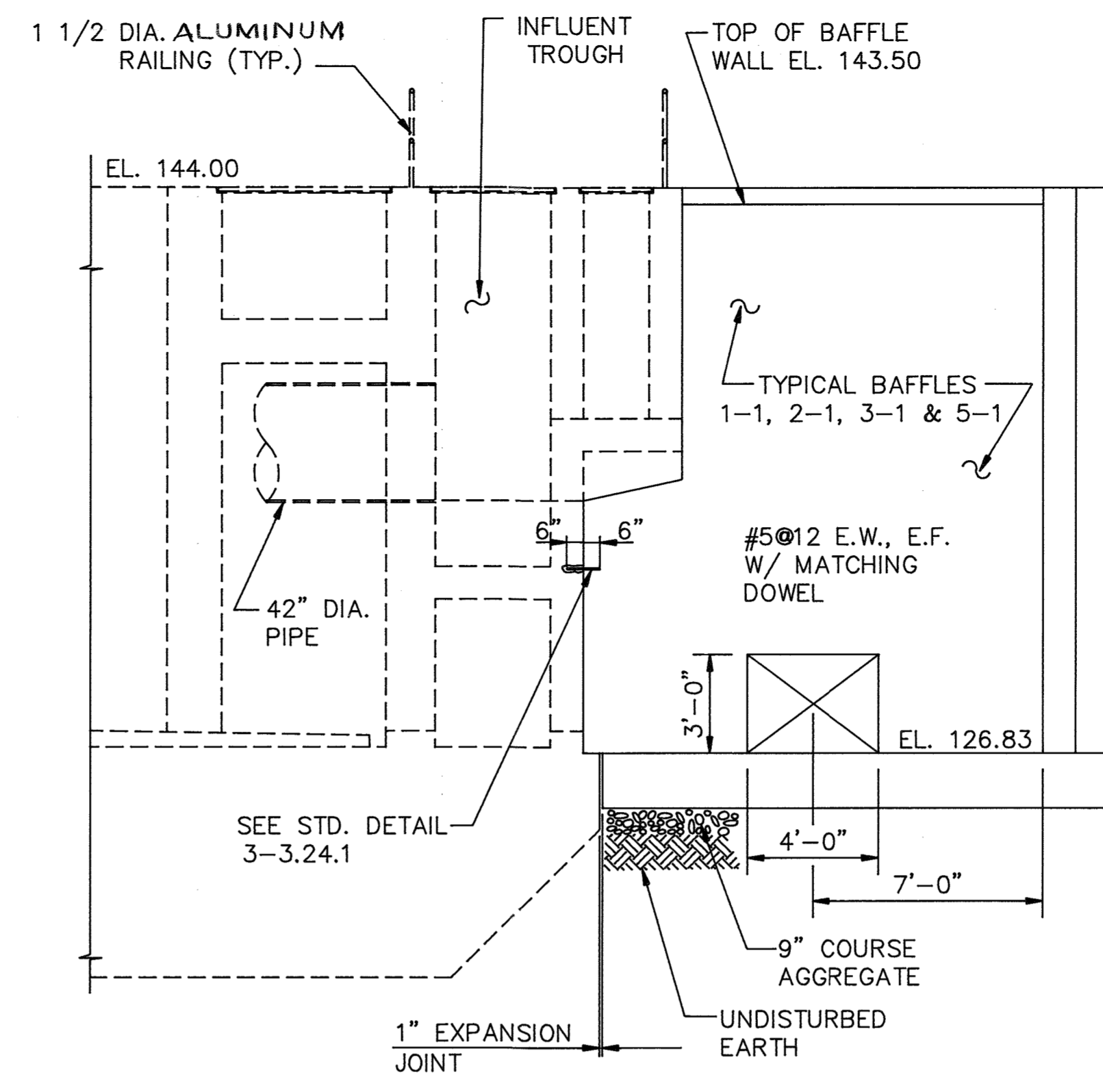
SCALE AS SHOWN
SHEET 56 OF 226
S-8A



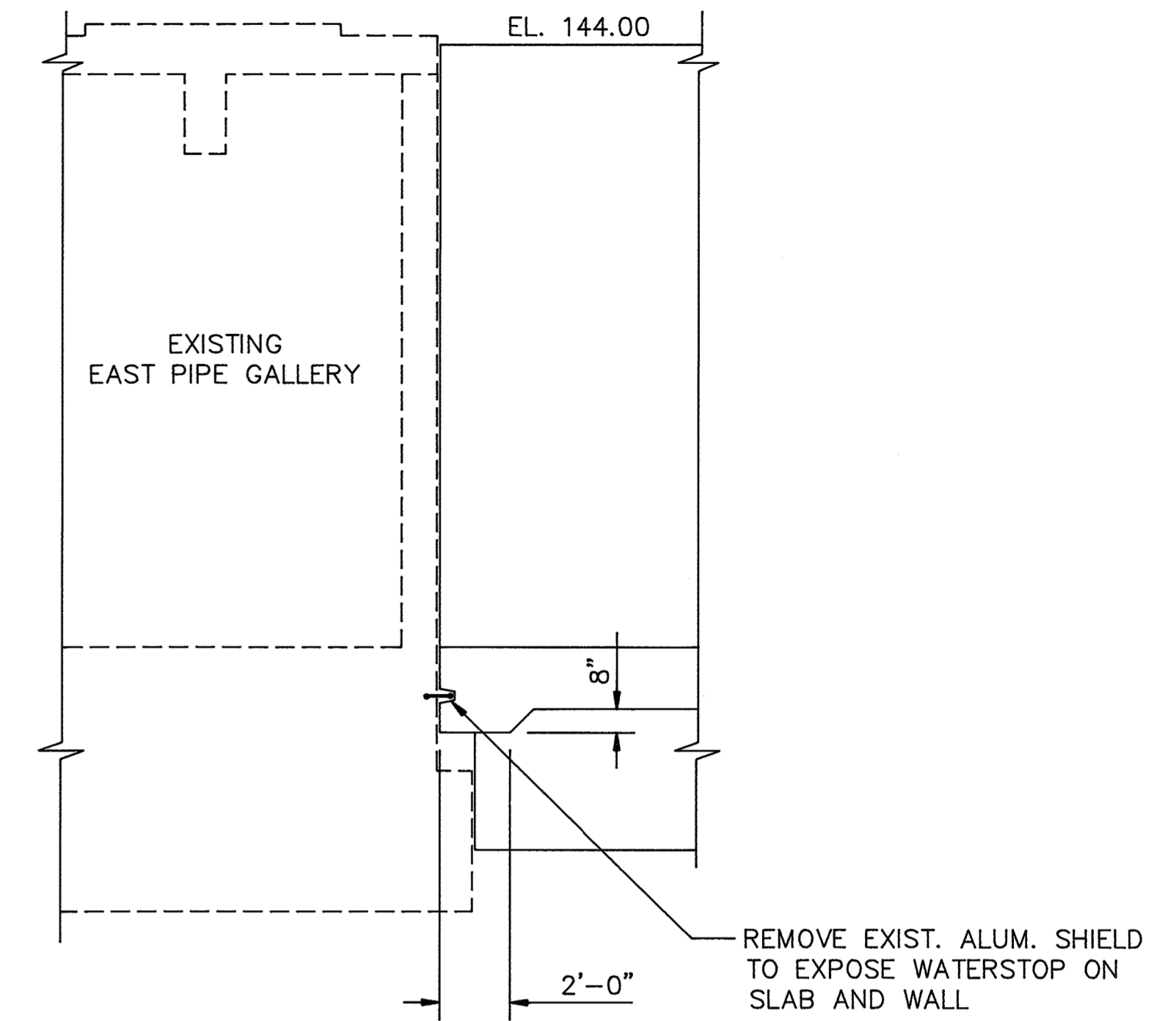
SECTION 1
SCALE: 1/4"=1'-0" S-7



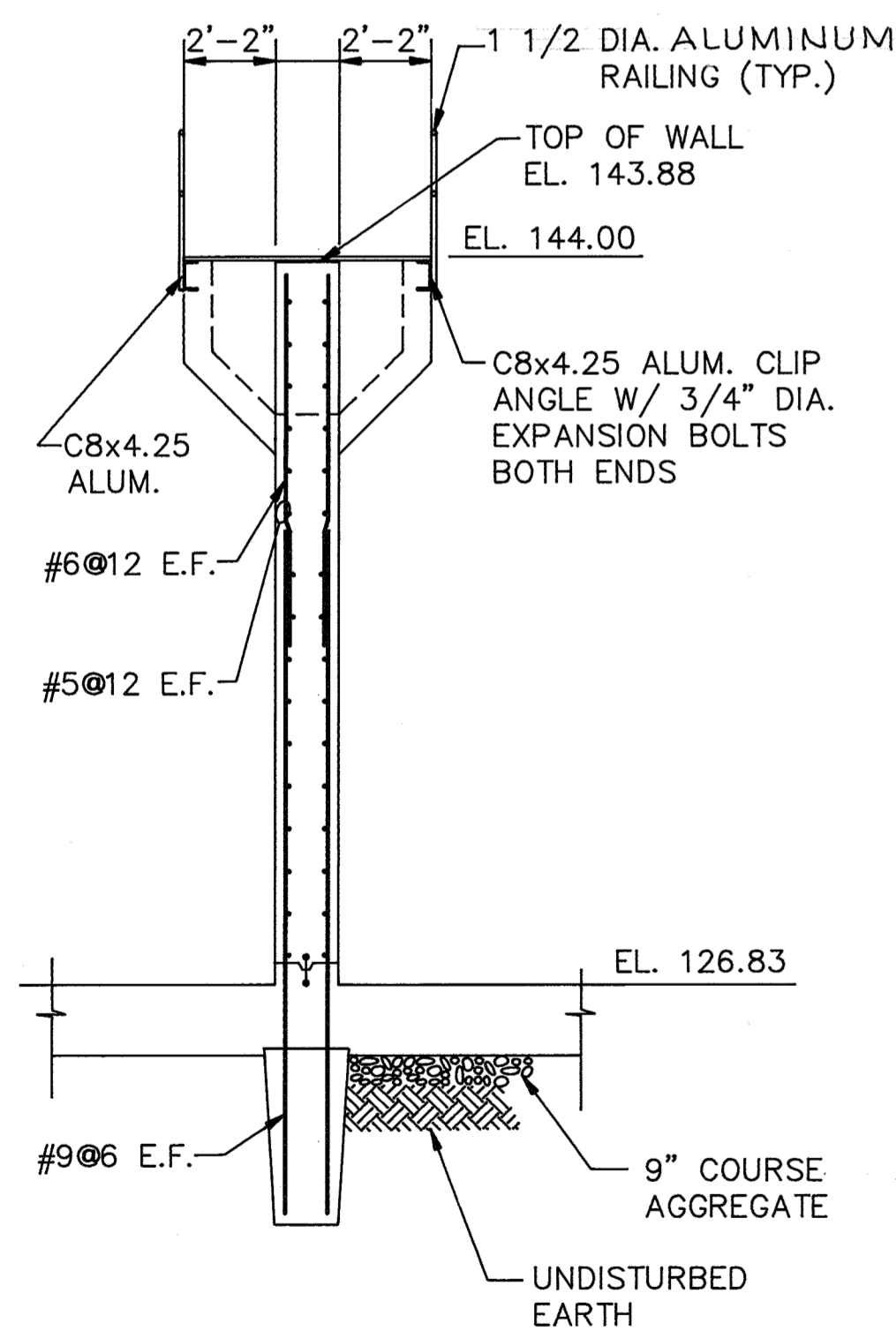
SECTION 3
SCALE: 1/4"=1'-0" S-5A M-10



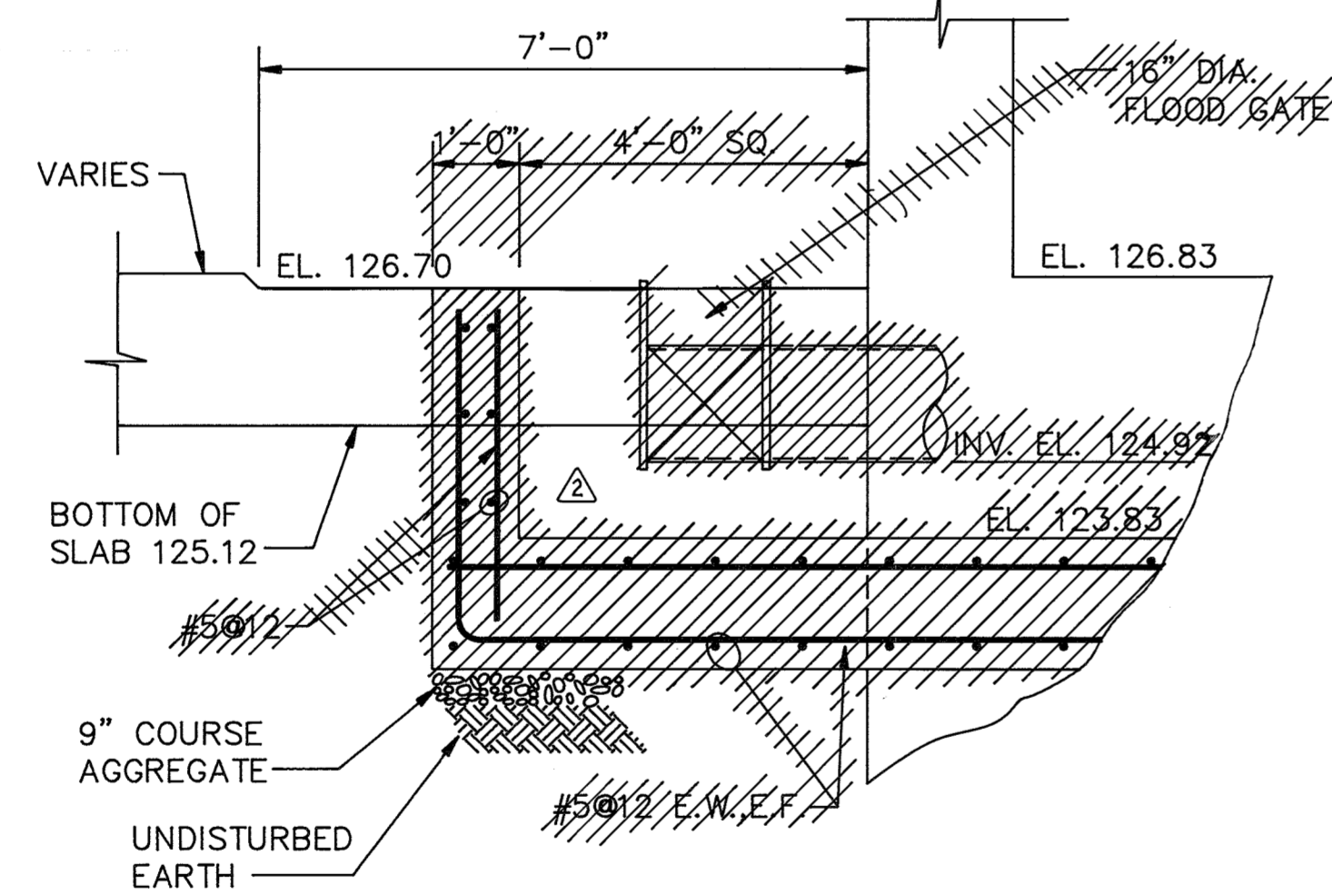
SECTION 1
SCALE: 1/4"=1'-0" S-5A



SECTION 7
SCALE: 1/4"=1'-0" S-6



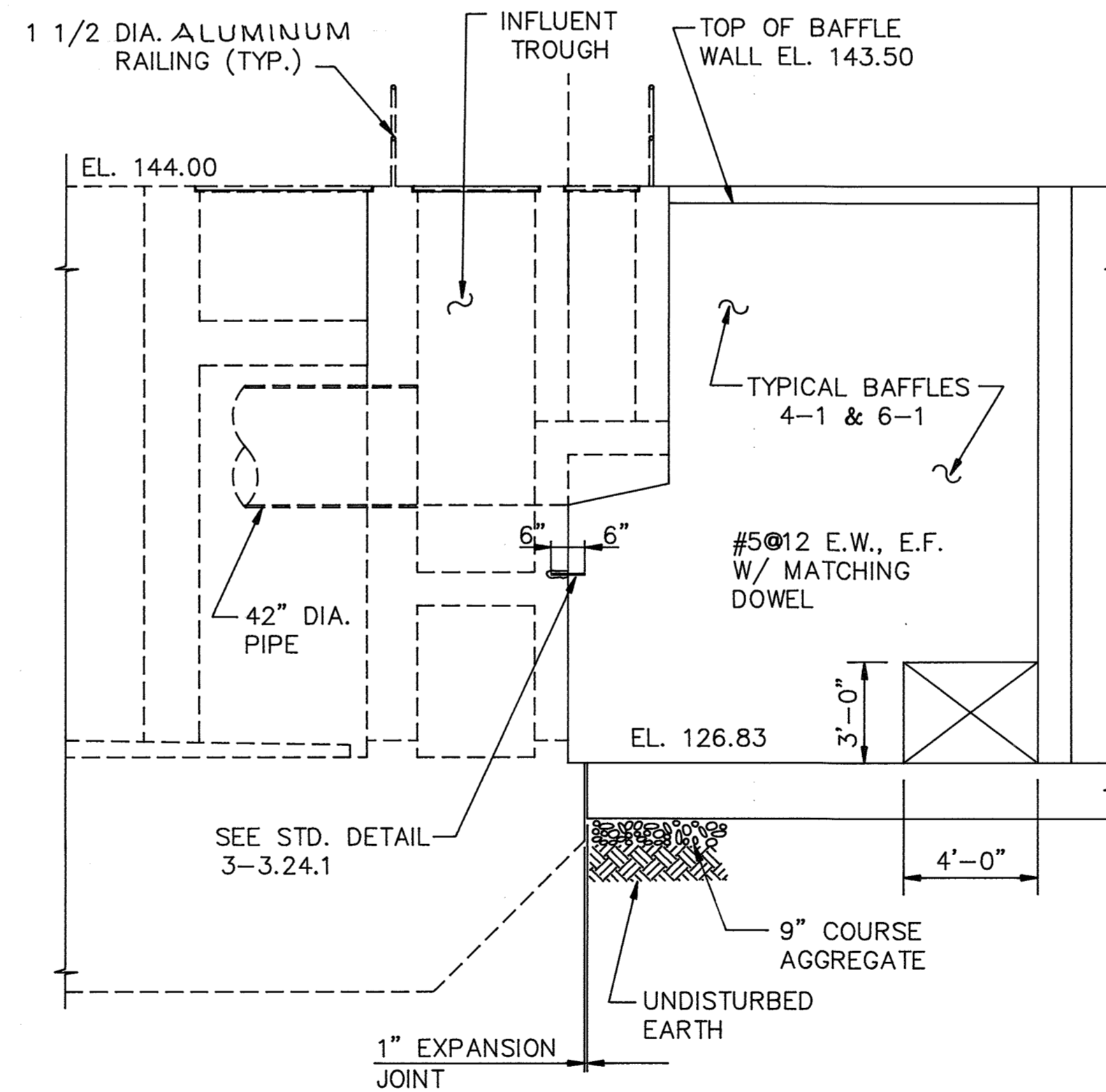
SECTION 2
SCALE: 1/4"=1'-0" S-5A



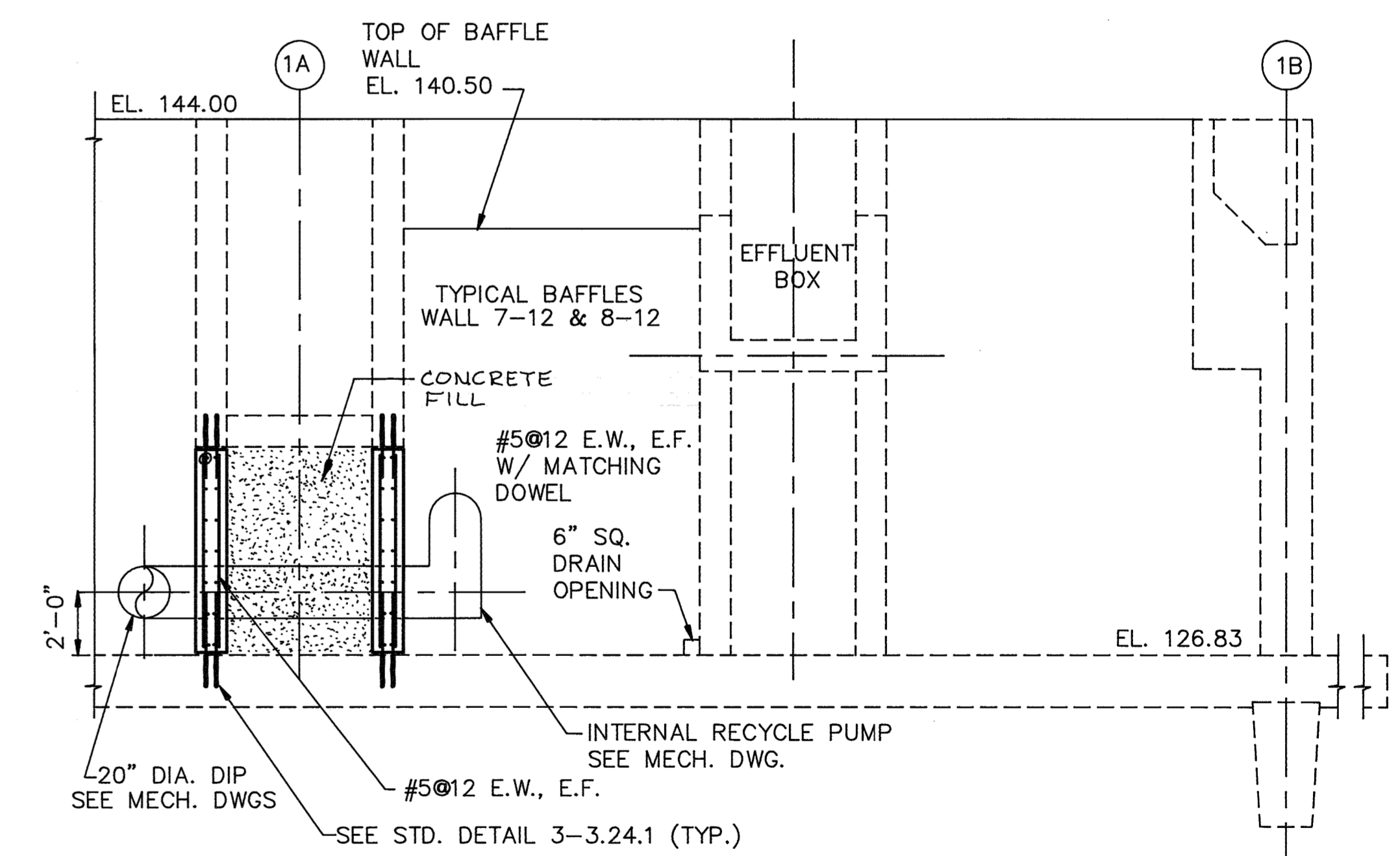
SECTION 4
SCALE: 1/4"=1'-0" S-6

NOTE:

1. ALL REINFORCEMENT #5@12 EACH WAY, EXCEPT NOTED OTHERWISE.
2. SEE MECHANICAL DRAWING FOR OPENING SIZE, PIPE SIZE AND BAFFLE WALL LOCATION.
3. WATERSTOP IN VERTICAL WALL SHALL EXTEND TO EL. 143.50.



SECTION 6
SCALE: 1/4"=1'-0" S-5A

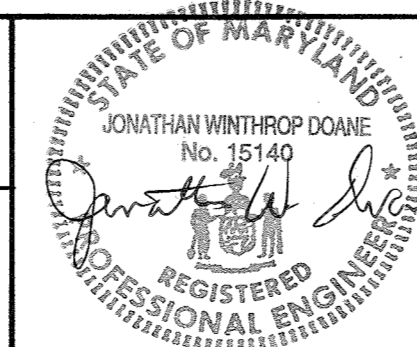


SECTION 7
SCALE: 1/4"=1'-0" S-5A

Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>James W. ...</i> DIRECTOR OF PUBLIC WORKS	<i>3/6/92</i> DATE
<i>John ...</i> CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	<i>3/6/92</i> DATE

M&E Metcalf & Eddy
<i>Jonathan W. ...</i> REG. PROF. ENGR.
<i>3/6/92</i> DATE

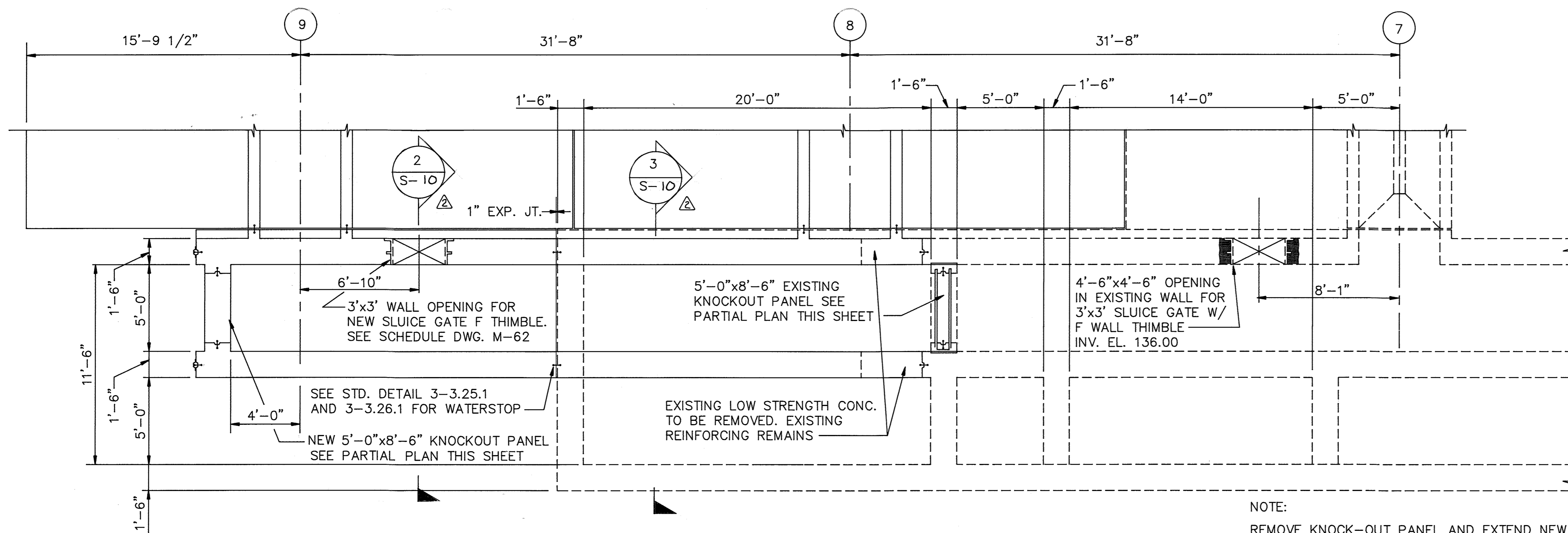


DES: M. YJ			
DRN: E. Burnett			
CHK: J. HAVY			
DATE: 12/7/91			
BY	NO.	REVISION	DATE
		1 REVISED FOR BIDDING	3/5/92

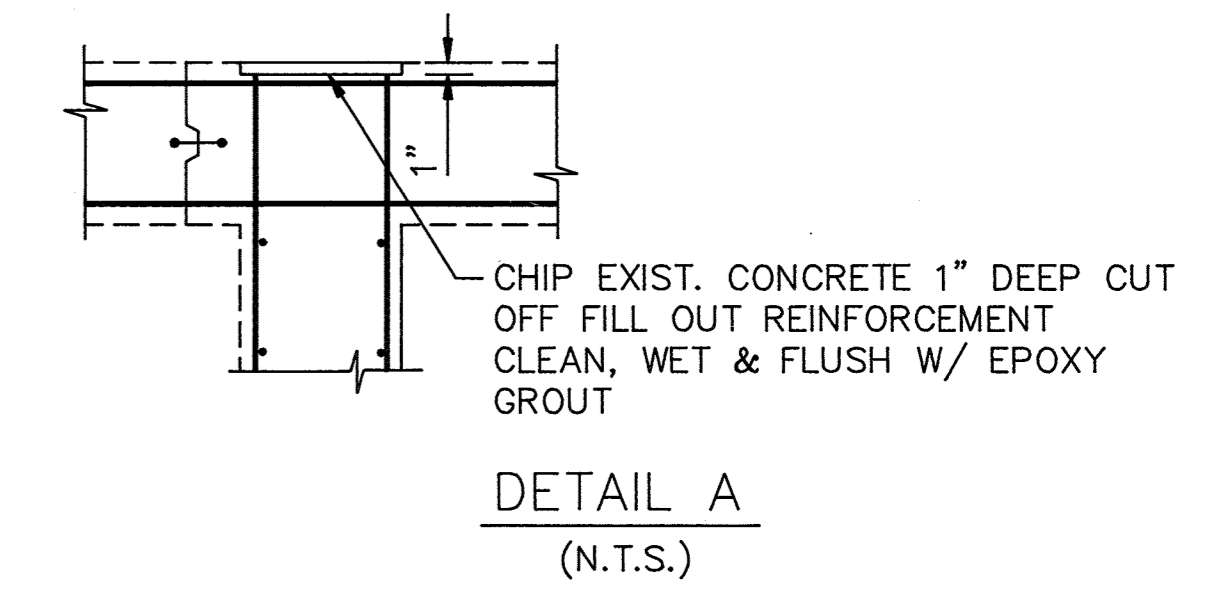
STRUCTURAL
PROCESS REACTORS
SECTIONS AND DETAILS II

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

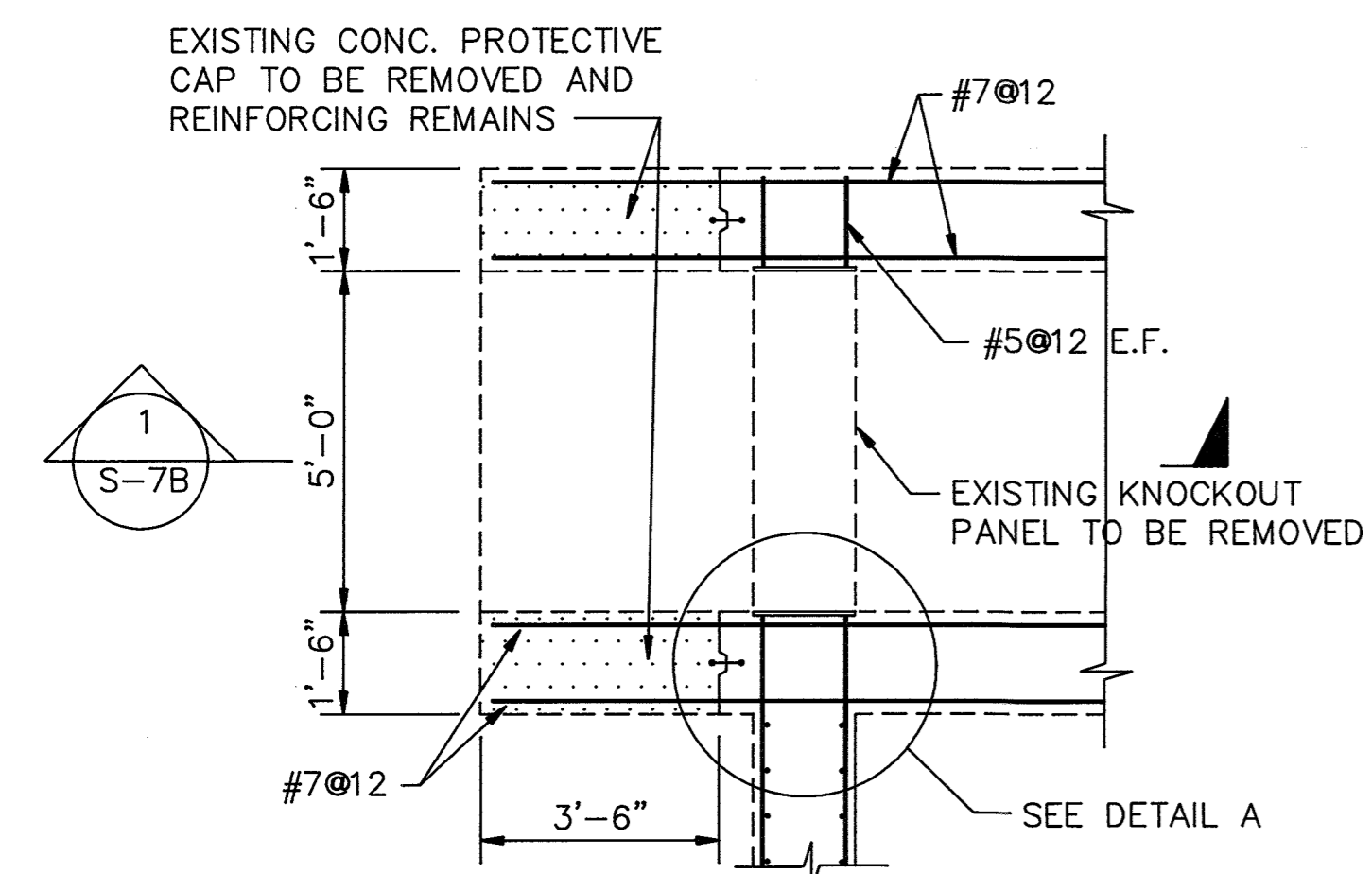
SCALE AS SHOWN
SHEET 57 OF 226
S-9



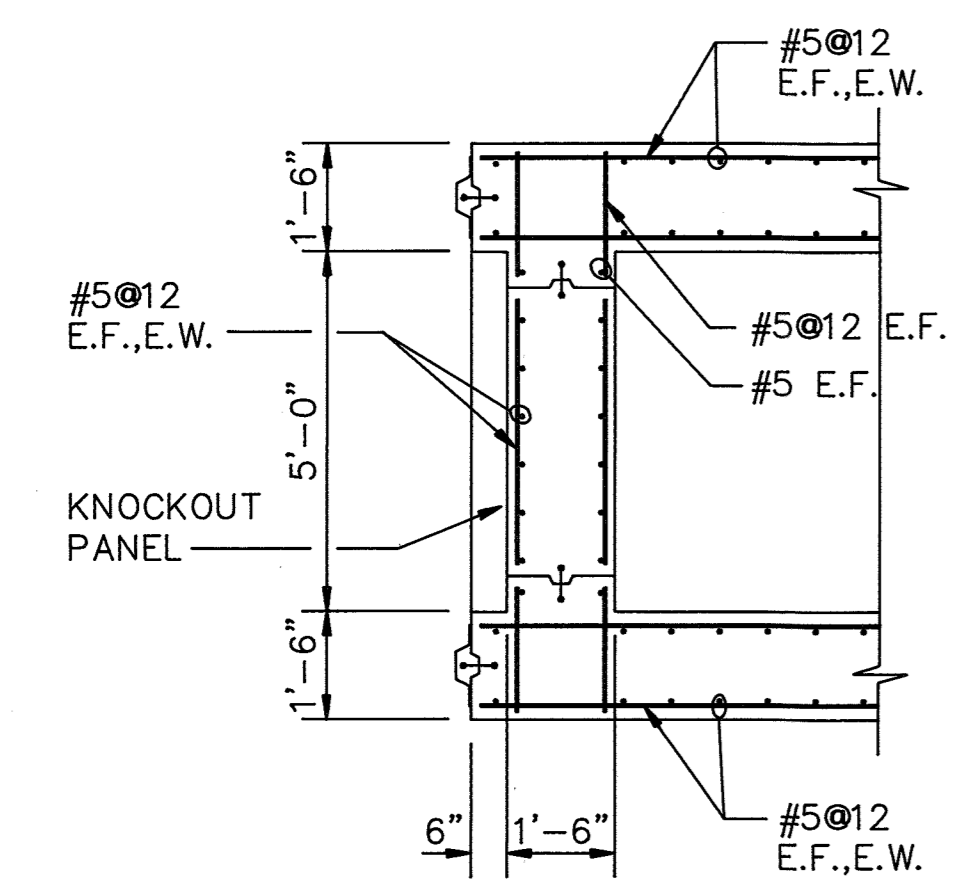
MIXING CHANNEL
SCALE: 1/4"=1'-0"



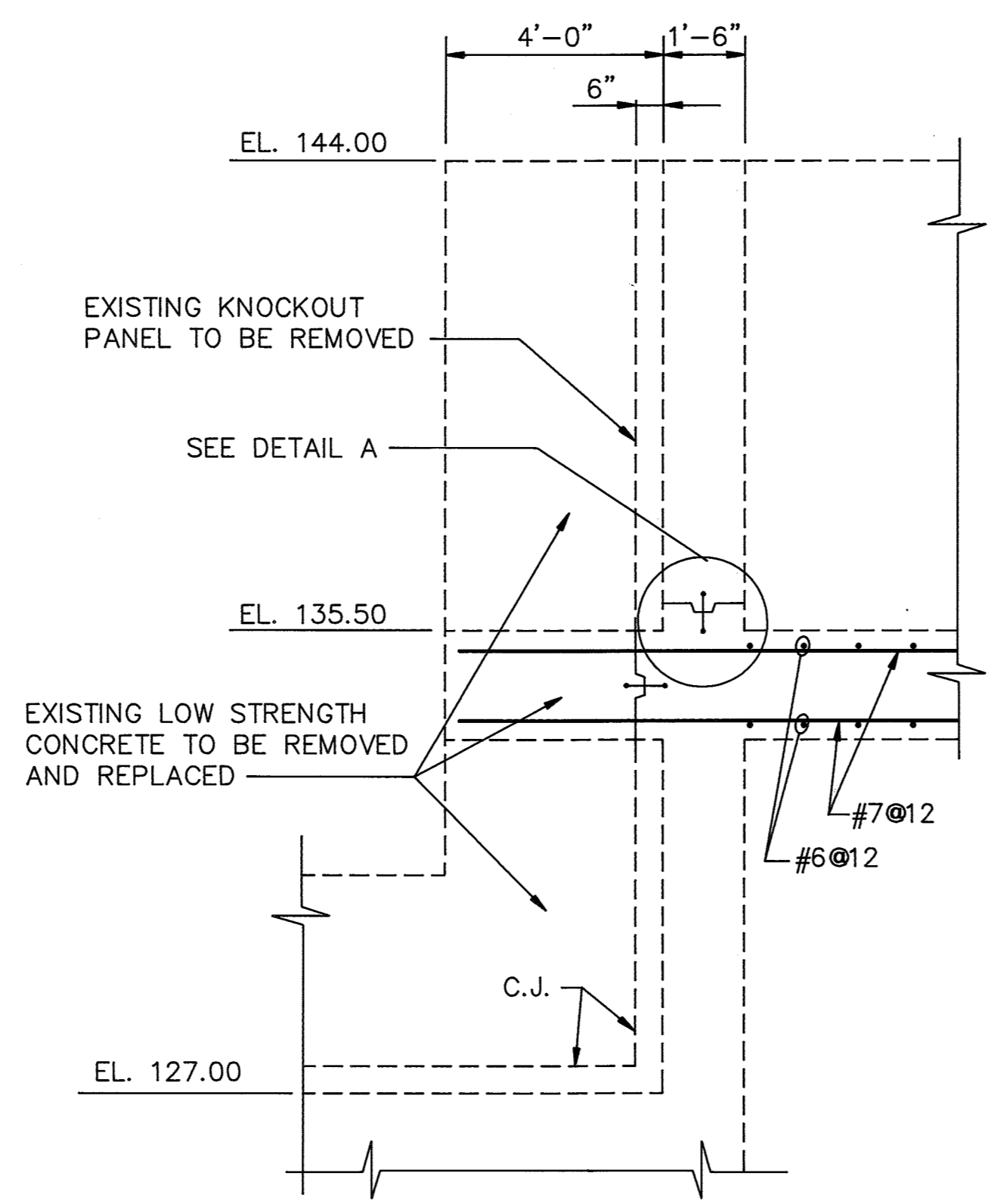
NOTE:
REMOVE KNOCK-OUT PANEL AND EXTEND NEW GRATING INTO EXISTING INFLUENT TROUGH.



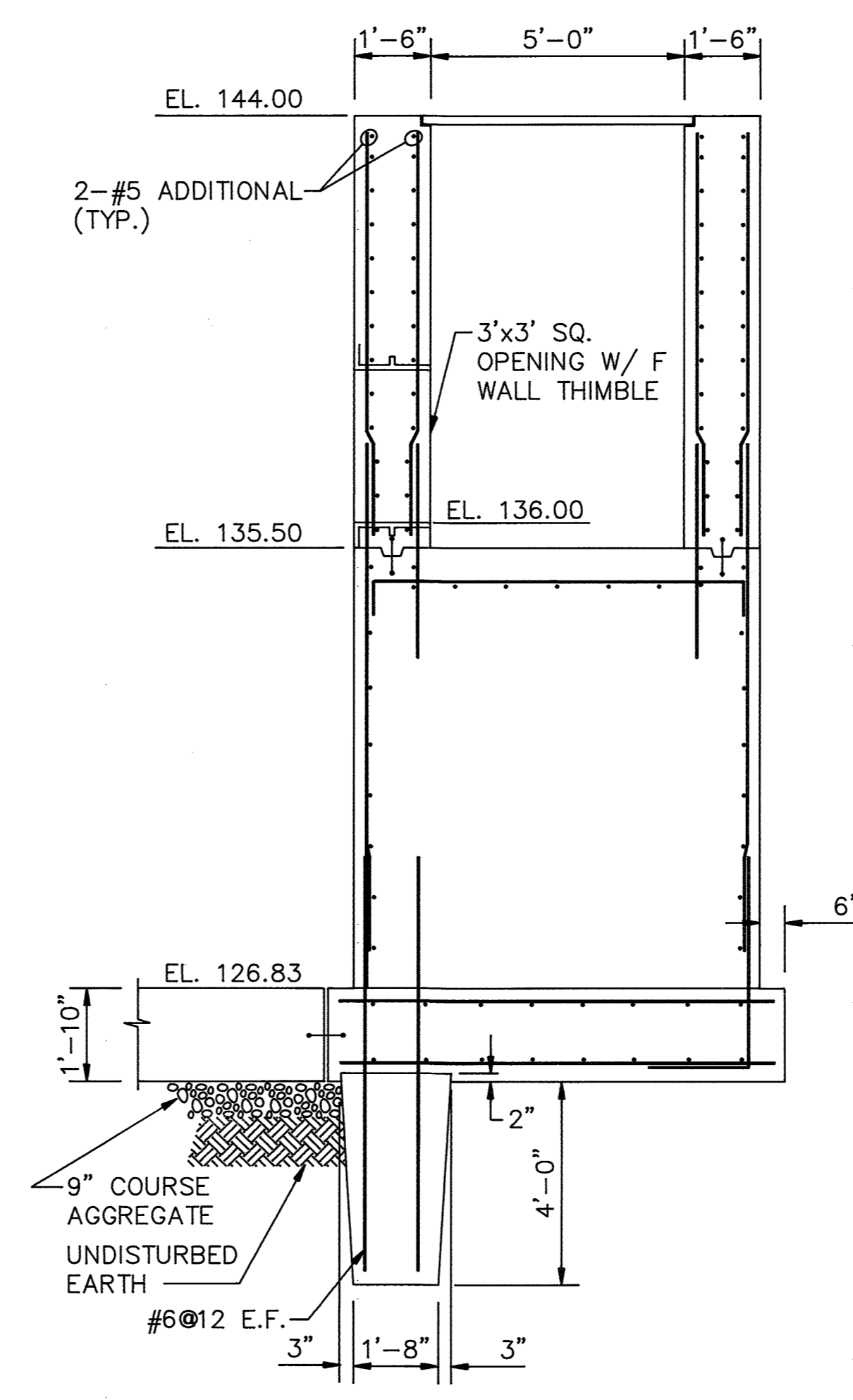
EXISTING KNOCKOUT PANEL
PARTIAL PLAN
SCALE: 3/8"=1'-0"



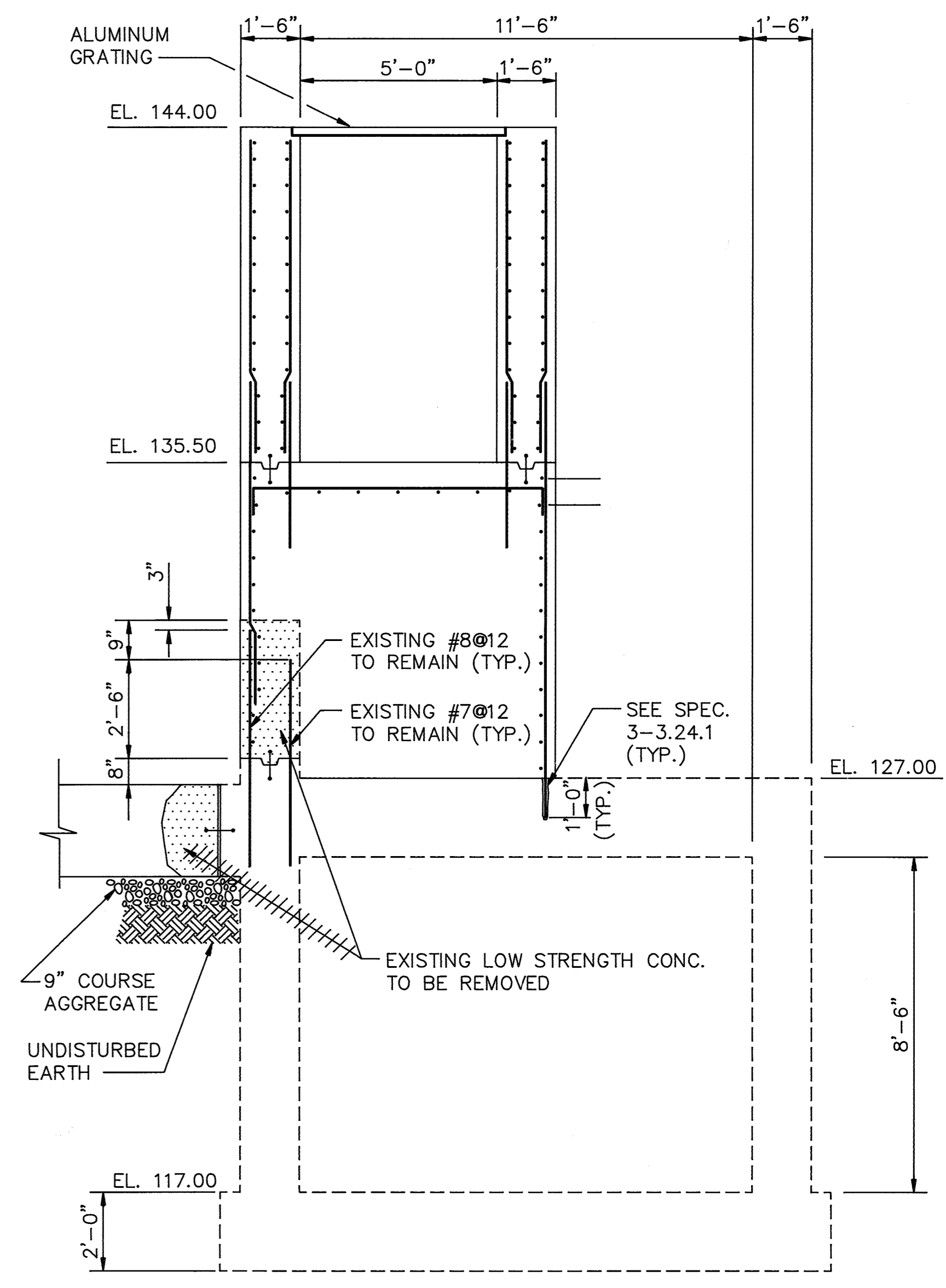
NEW KNOCKOUT PANEL
PARTIAL PLAN
SCALE: 3/8"=1'-0"



SECTION 1
N.T.S. S-10



SECTION 2
SCALE: 3/8"=1'-0" S-10



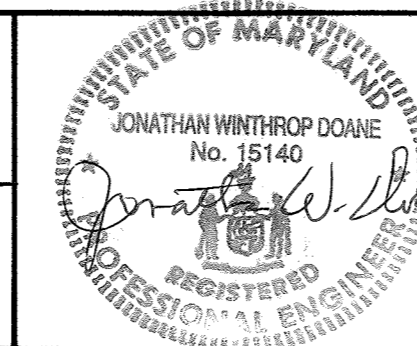
SECTION 3
SCALE: 3/8"=1'-0" S-10

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

NOTE:
ALL REINFORCEMENT #5@12 EACH WAY EXCEPT NOTED OTHERWISE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
3/6/92
DATE
3-6-92
DATE

M&E Metcalf & Eddy
3/6/92
DATE

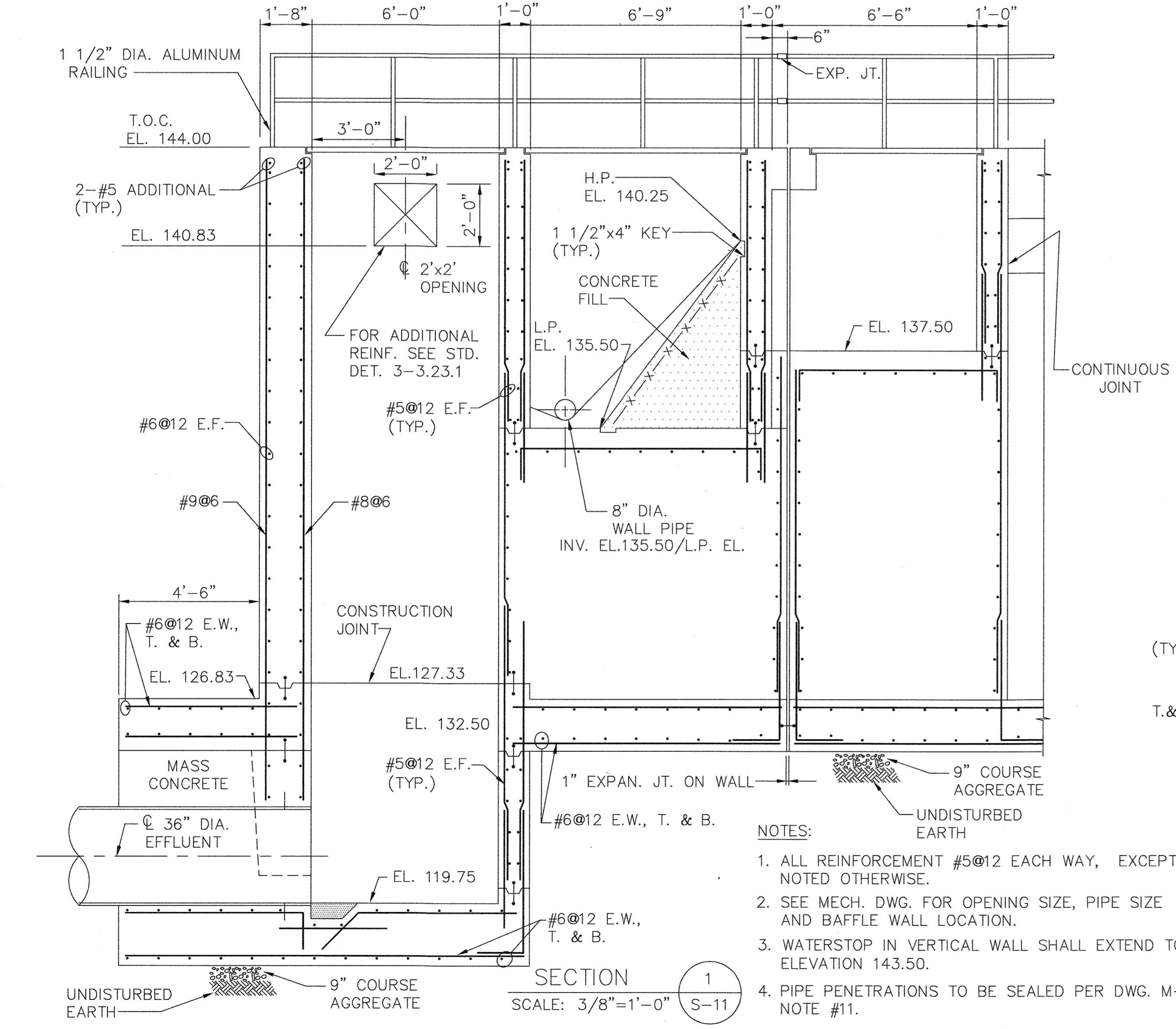
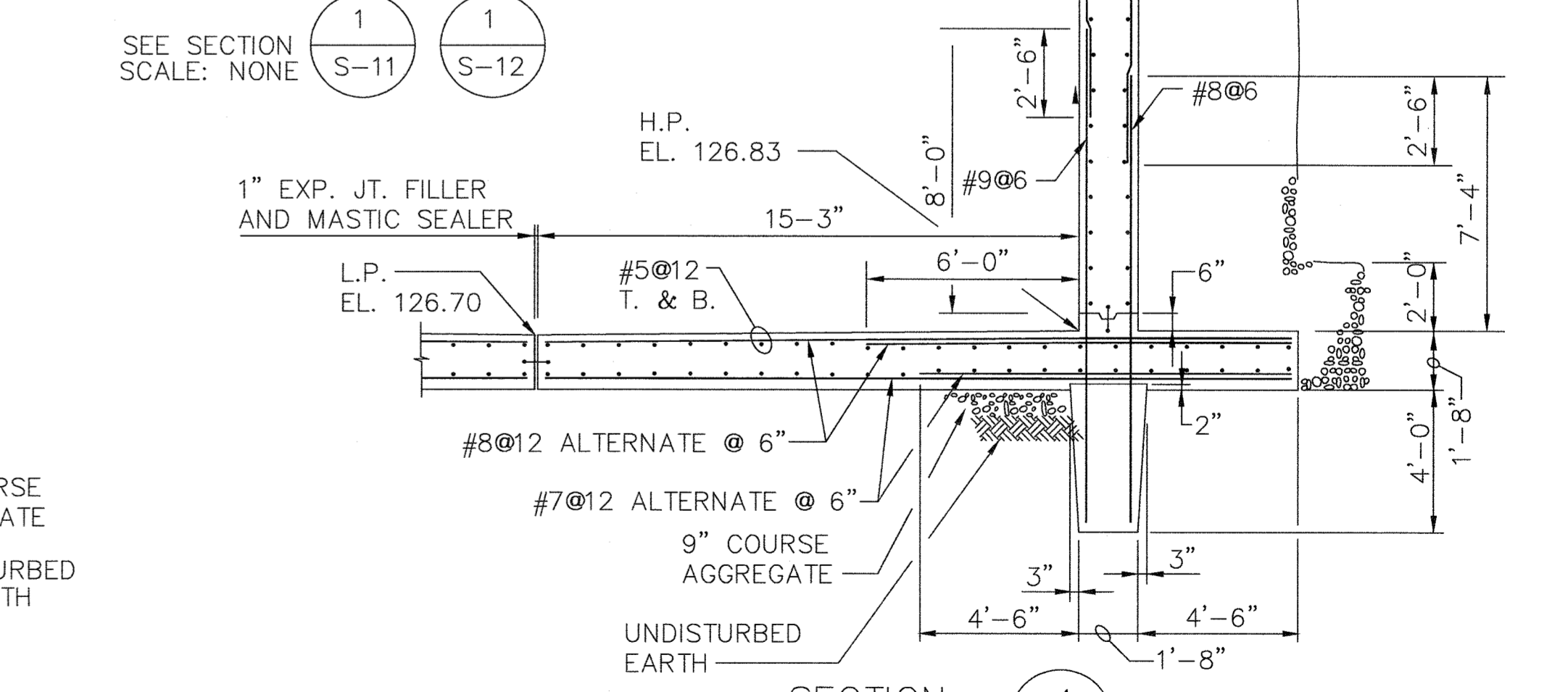
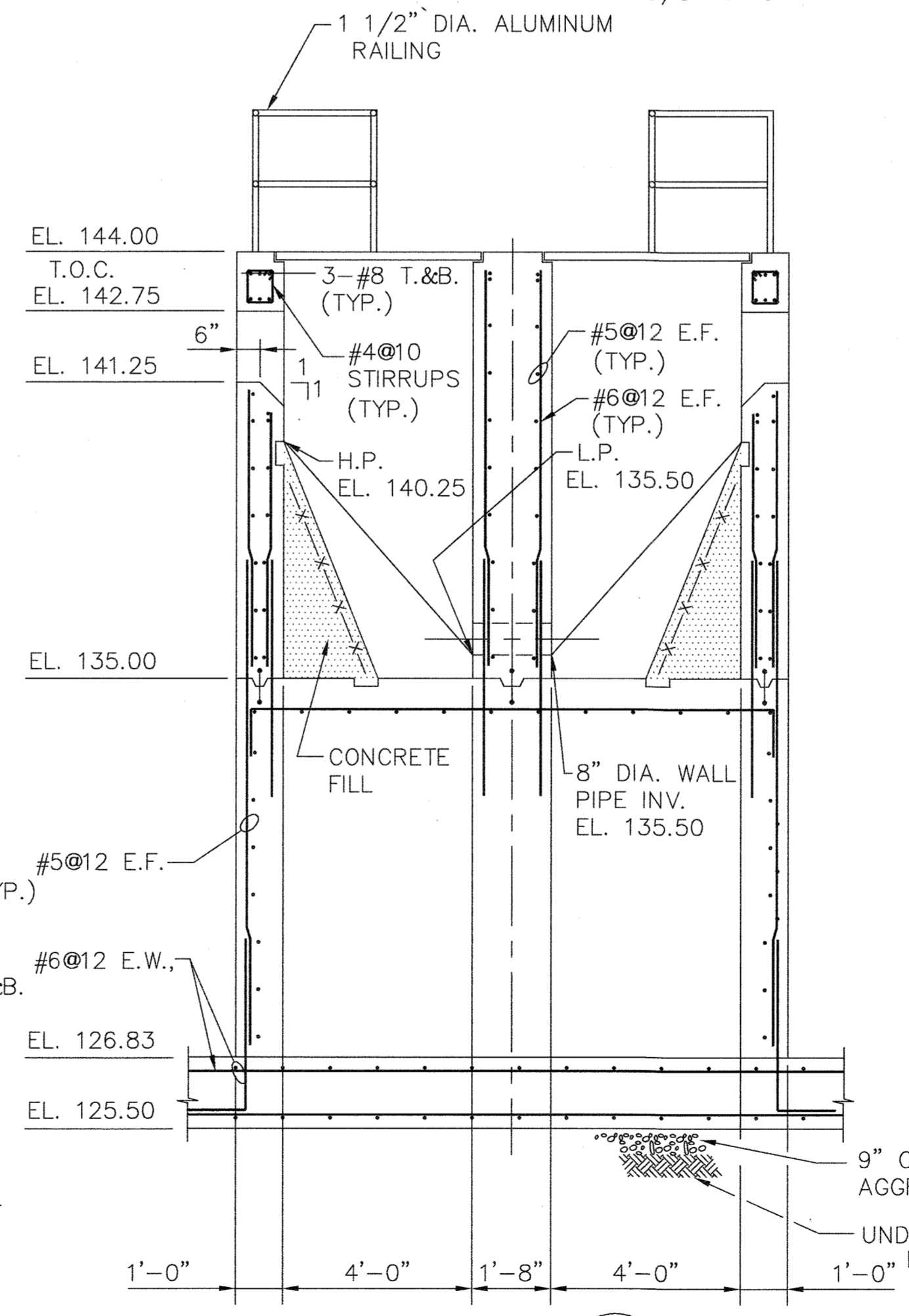
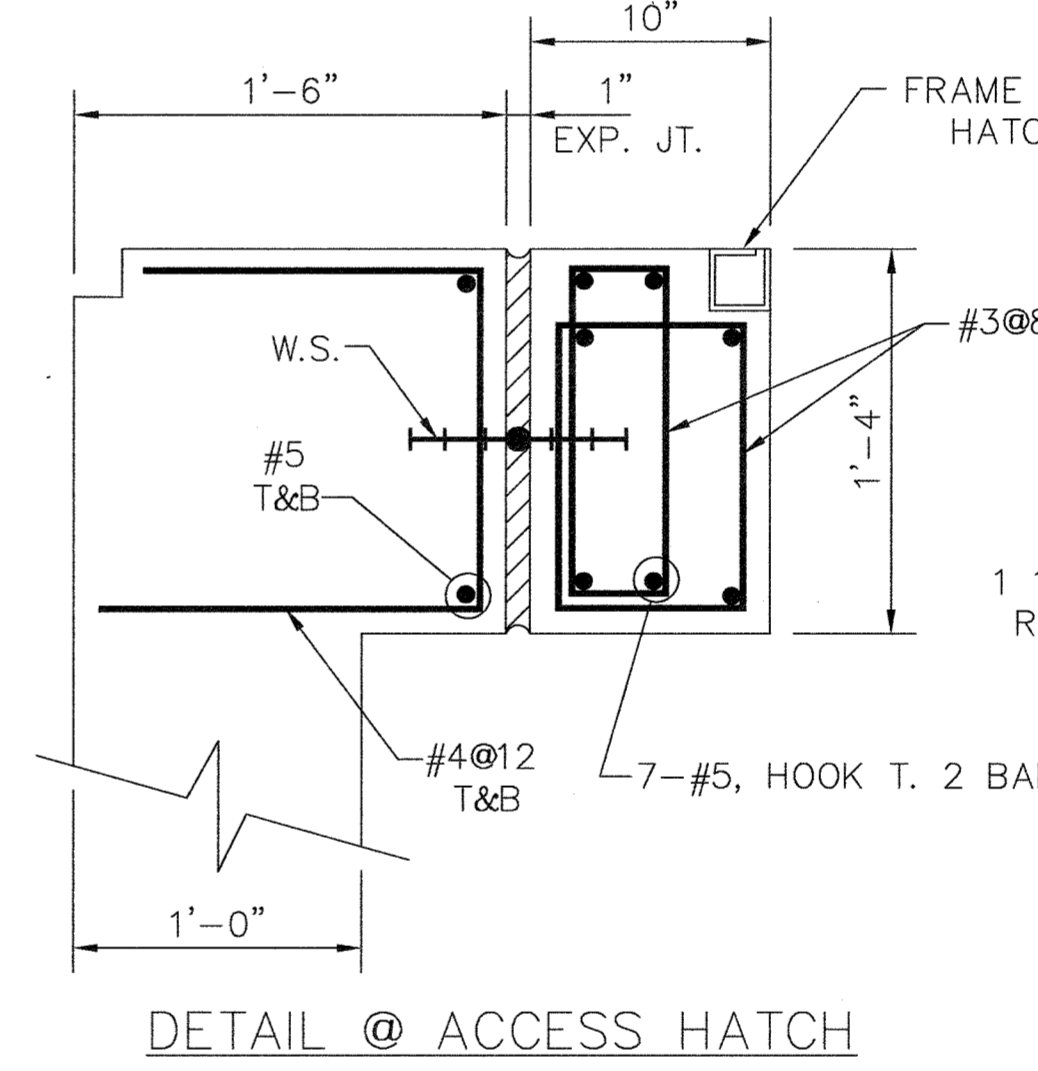
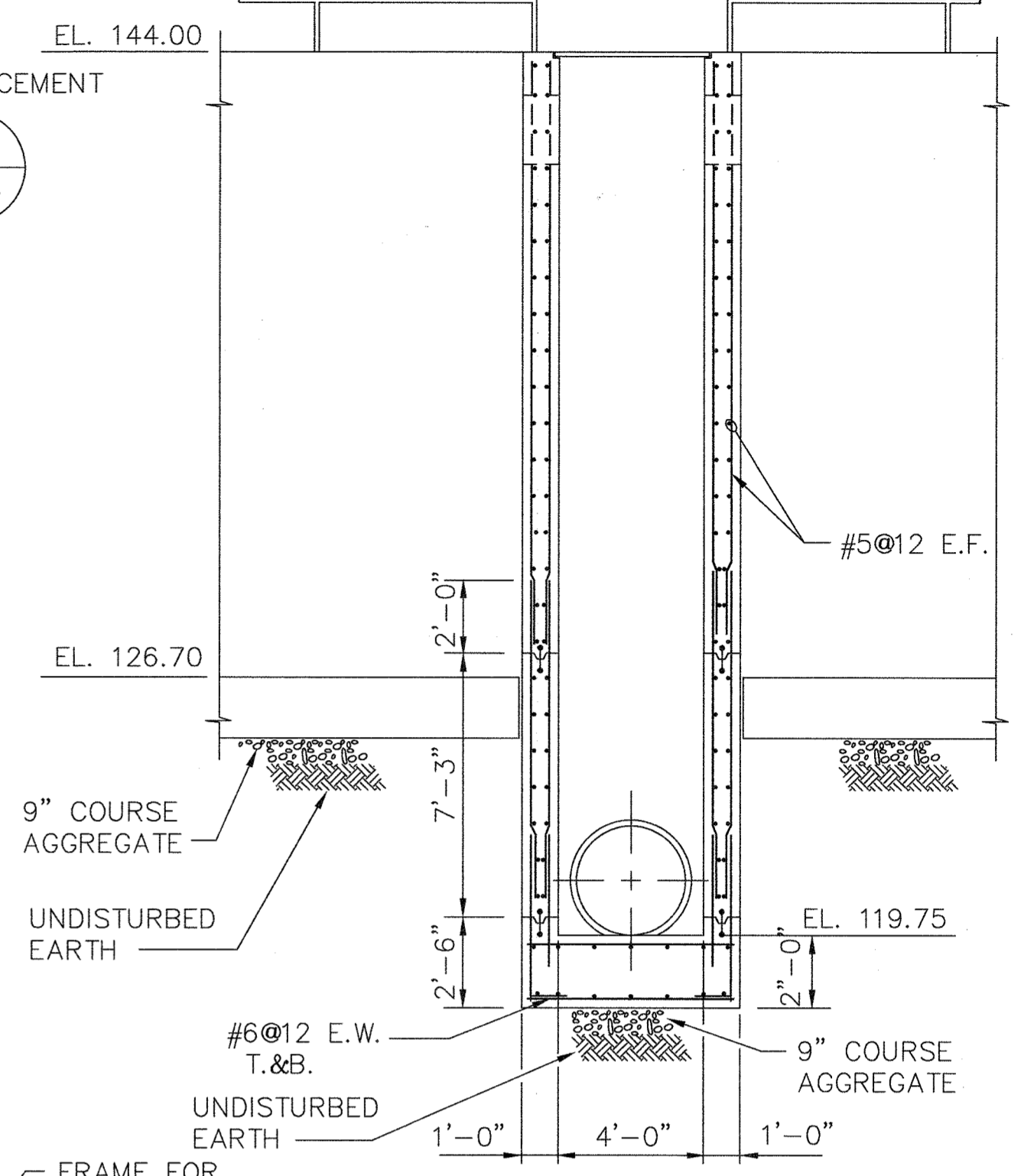
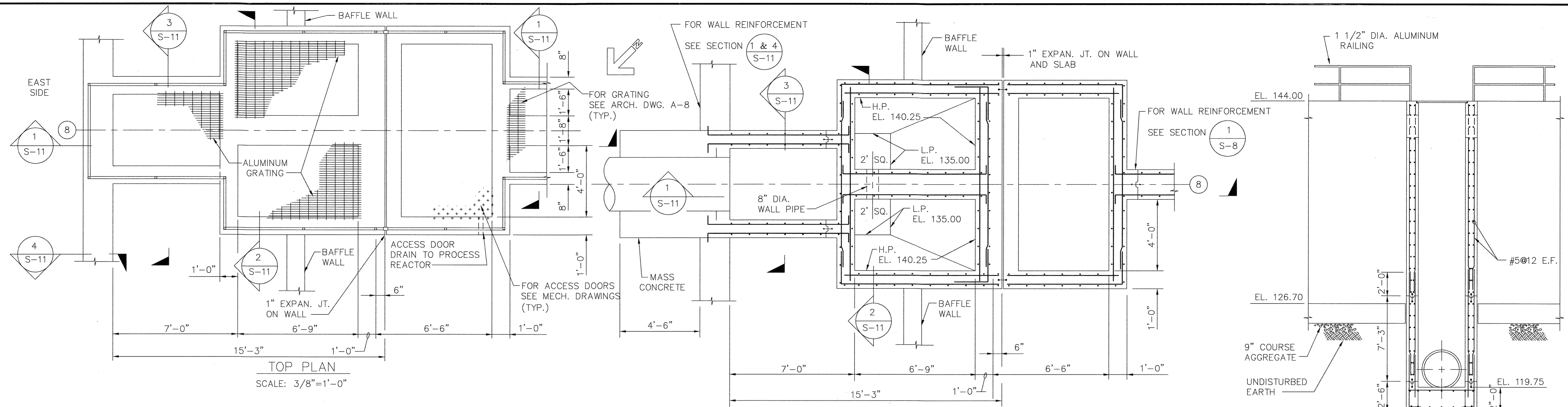


DES:	M. Yu				
DRN:	E. Burnett				
CHK:	J. HANEY	MC	2	RECORD DRAWING	
DATE:	12/1/91		1	REVISED FOR BIDDING	3/5/92
BY:		NO.		REVISION	DATE

STRUCTURAL
PROCESS REACTORS
SECTIONS AND DETAILS III

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 53 OF 226
S-10



- NOTES:
1. ALL REINFORCEMENT #5@12 EACH WAY, EXCEPT NOTED OTHERWISE.
 2. SEE MECH. DWG. FOR OPENING SIZE, PIPE SIZE AND BAFFLE WALL LOCATION.
 3. WATERSTOP IN VERTICAL WALL SHALL EXTEND TO ELEVATION 143.50.
 4. PIPE PENETRATIONS TO BE SEALED PER DWG. M-10 NOTE #11.

Record Drawing Notes:
 1. All elevations should be field verified before using.
 2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *Sam W. Shaw* 5/7/96
 Chief, Bureau of Engineering: *Paul D. Johnson* 5/7/96
 Chief, Bureau of Environmental Services: *John J. Hare* 5/7/96
 Chief, Utility Design Division: *Debra L. Lee* 5-7-96

M&E Metcalf & Eddy

REGISTERED PROFESSIONAL ENGINEER
 JOHNATHAN WINTHROP DOANE
 No. 15140
 5-7-96

STATE OF MARYLAND
 REGISTERED PROFESSIONAL ENGINEER

DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL

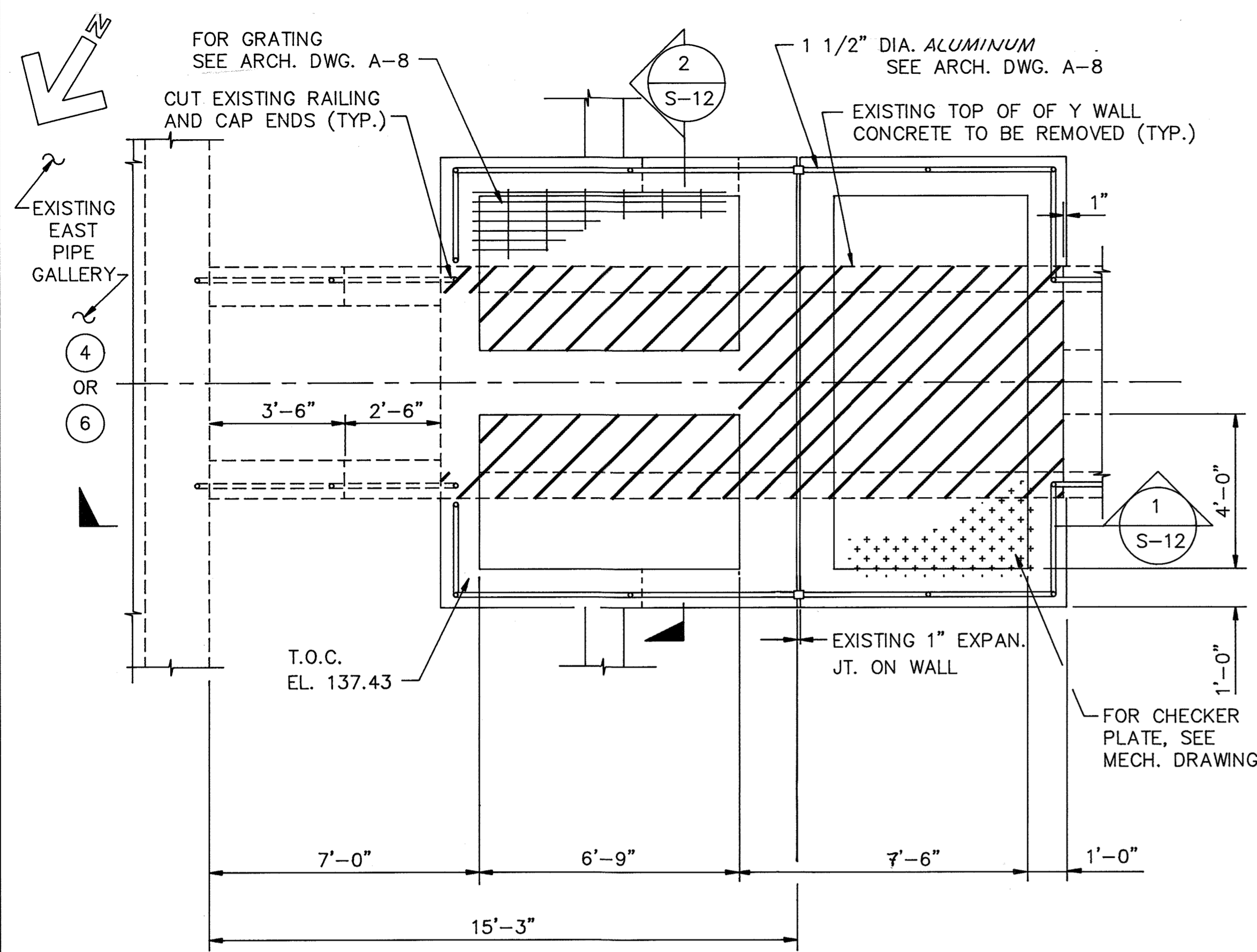
PROCESS REACTORS
 PLANS IV AND SECTIONS IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

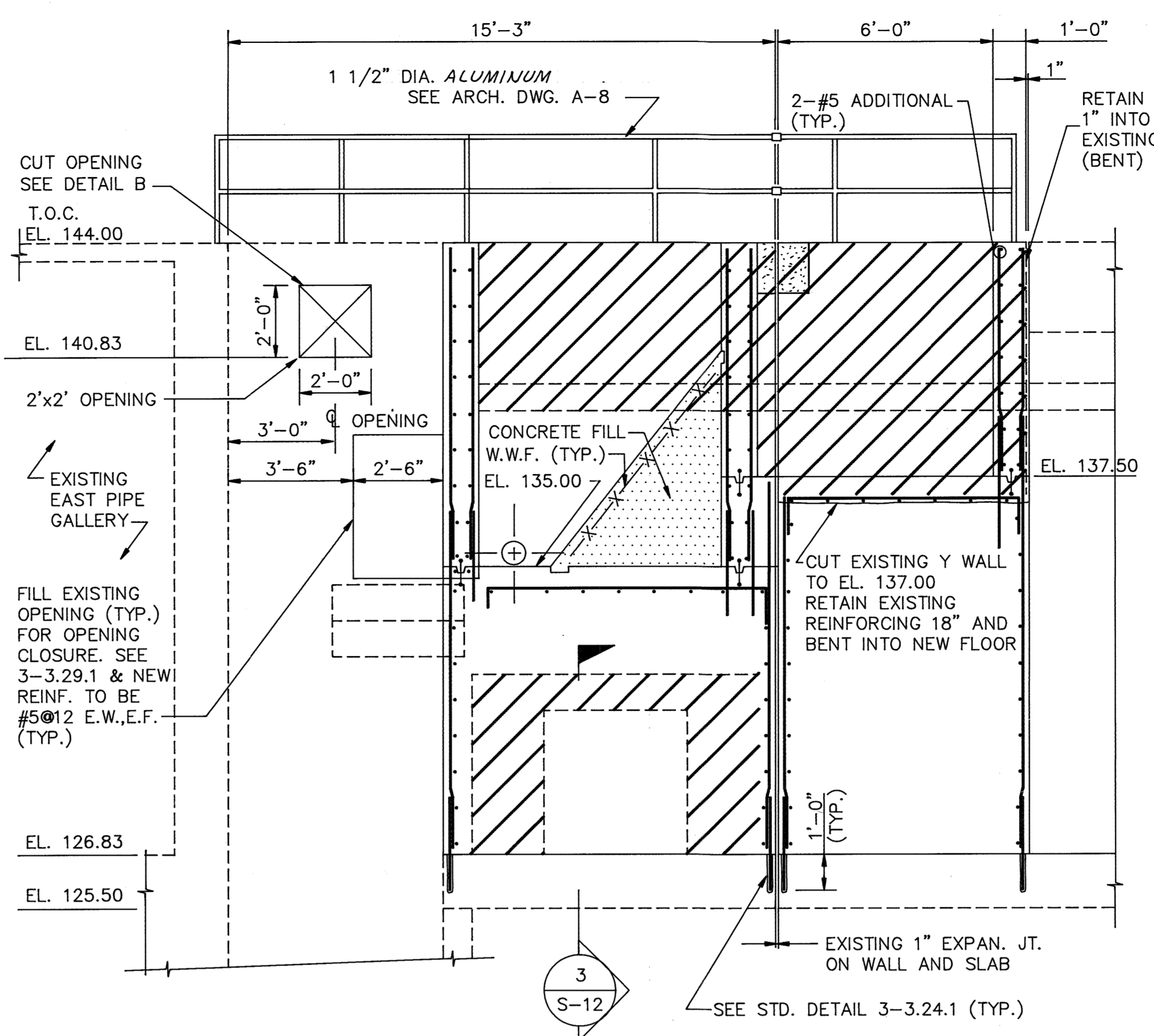
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

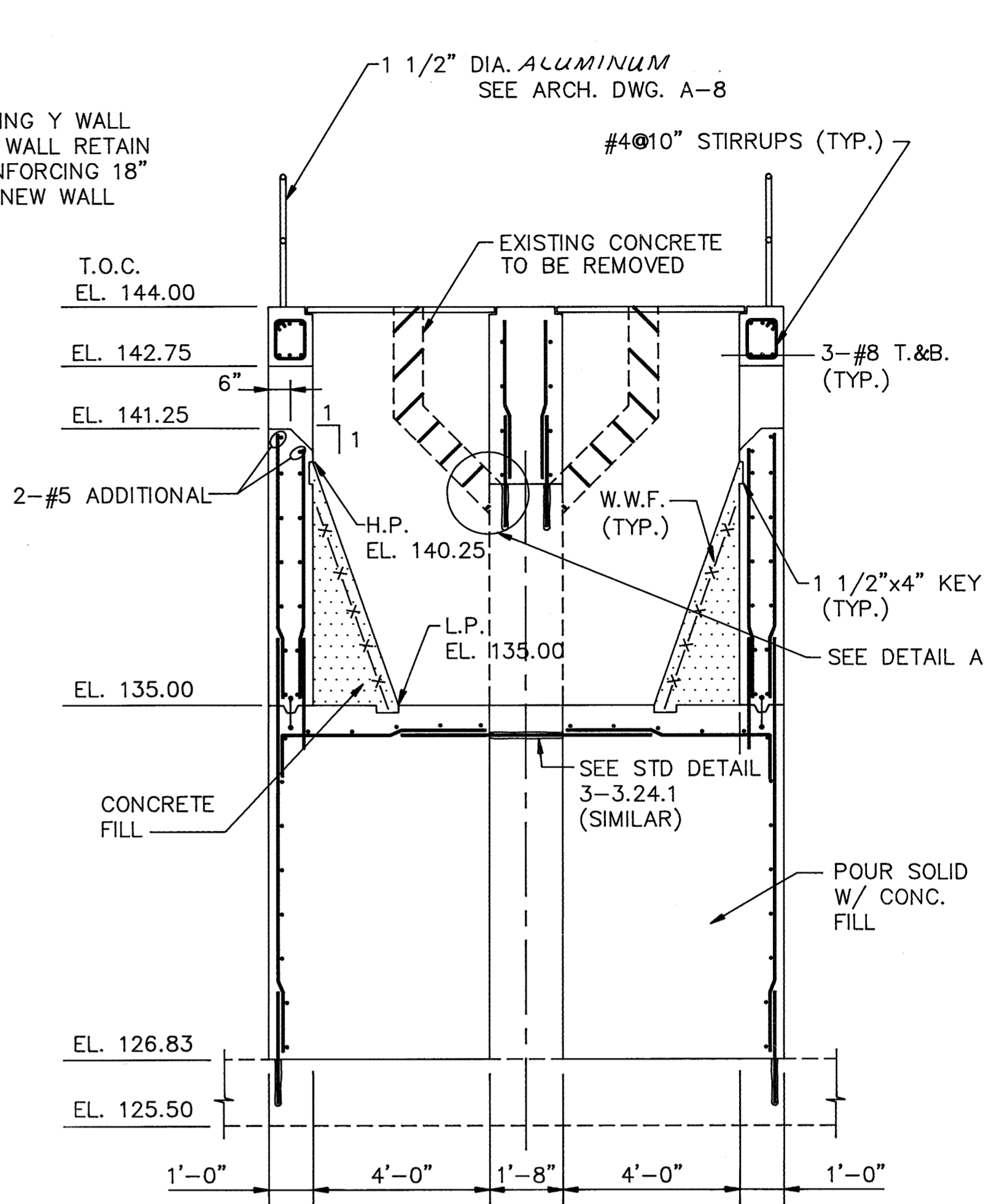
SCALE AS SHOWN
 SHEET 59 OF 226
 S-11A



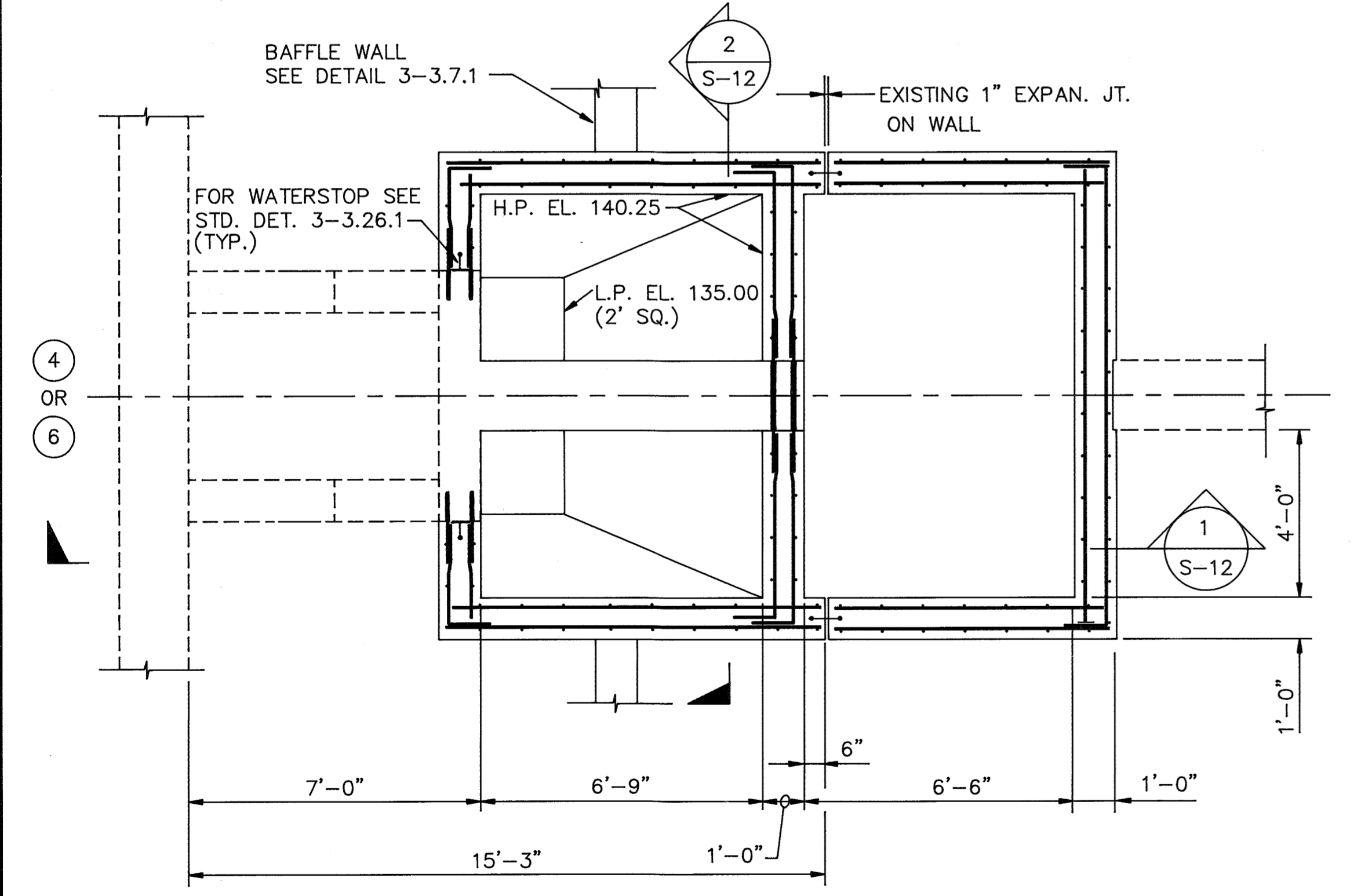
TOP PLAN
SCALE: 3/8"=1'-0"



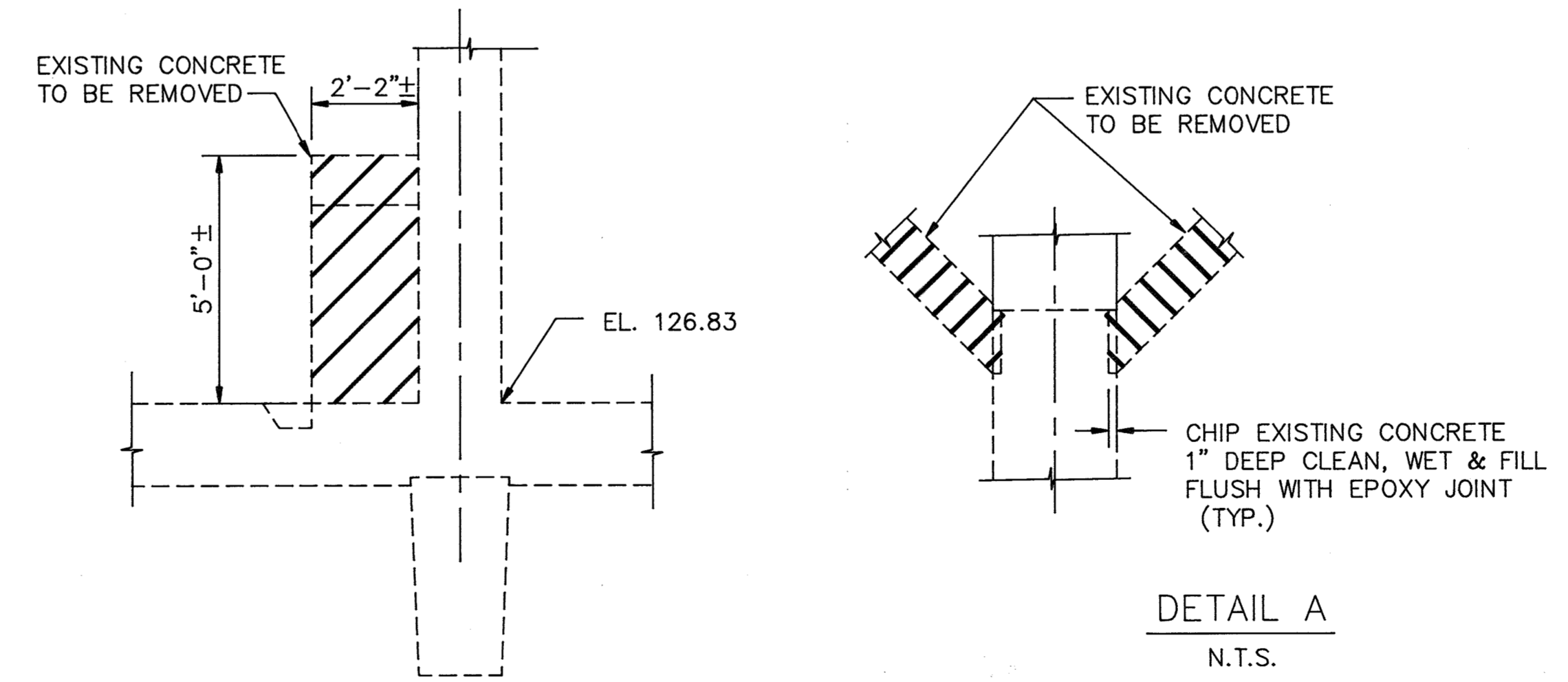
SECTION 1
SCALE: 3/8"=1'-0" S-12



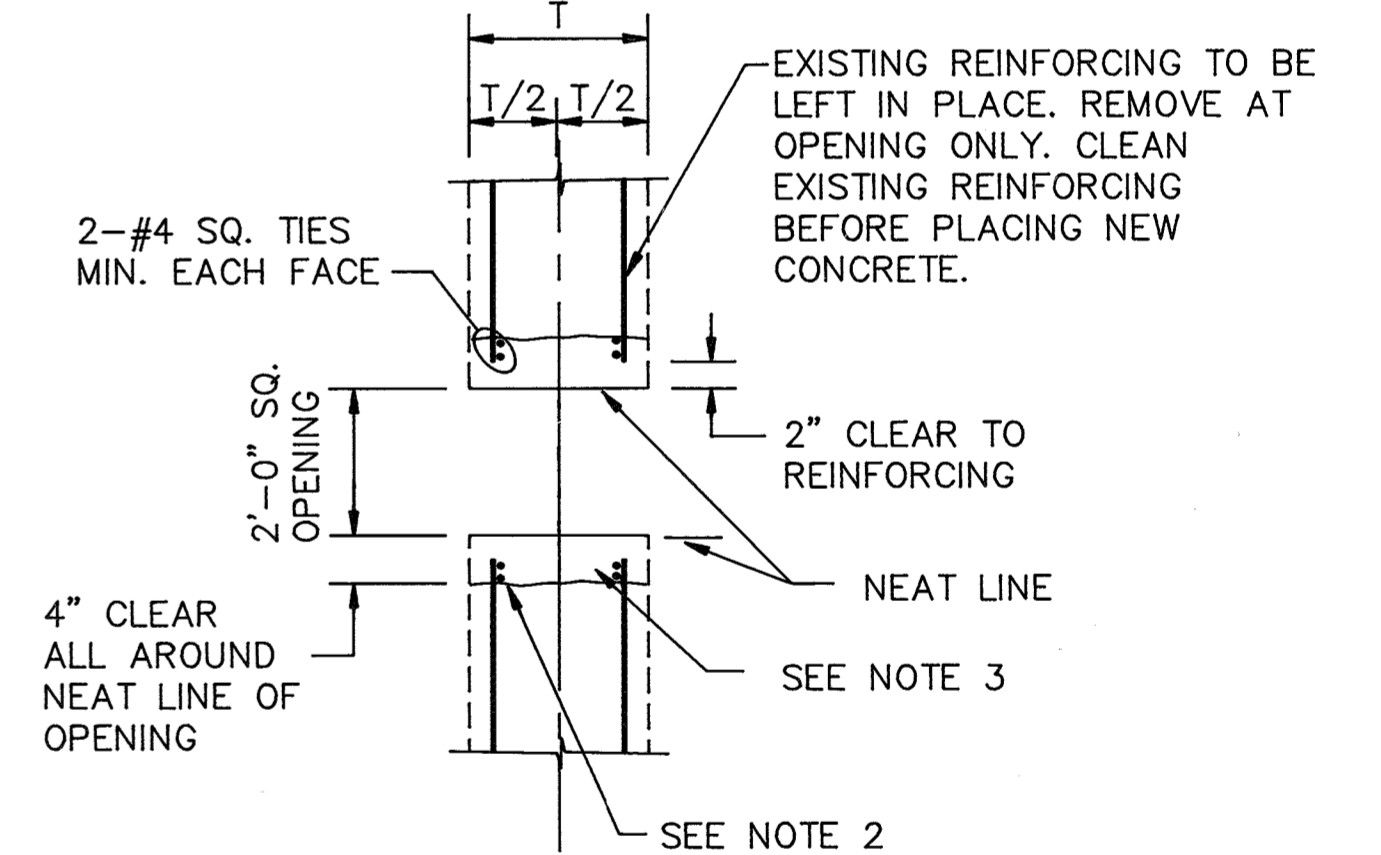
SECTION 2
SCALE: 3/8"=1'-0" S-12



BOTTOM PLAN
SCALE: 3/8"=1'-0"



DETAIL A
N.T.S.



DETAIL B
N.T.S.
NEW OPENING AT EXISTING WALL

- NOTES:
1. SEE MECHANICAL DRAWING FOR PIPE SIZE AND LOCATION.
 2. SEE STD. DETAIL 3-3.39

- NOTES:
1. THE USE OF HEAVY-DUTY PNEUMATIC HAMMERS ARE NOT PERMITTED TO REMOVE EXISTING CONCRETE FOR NEW OPENING.
 2. APPLY BONDING AGENT TO ROUGHENED PREPARED CONCRETE SURFACE IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS. BONDING AGENT TO BE LARSEN WELD-CRETE AS MANUFACTURED BY LARSEN PRODUCTS CORPORATION OF ROCKVILLE, MARYLAND OR AN ACCEPTABLE EQUIVALENT PRODUCT.
 3. FILL PENETRATION WITH CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS.

SECTION 3
SCALE: 3/8"=1'-0" S-12

- Record Drawing Notes
1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.

- NOTES:
1. ALL REINFORCEMENT #5@12 EACH WAY, EXCEPT NOTED OTHERWISE.
 2. SEE MECHANICAL DRAWING FOR OPENING SIZE, PIPE SIZE AND BAFFLE WALL LOCATION.
 3. WATERSTOP IN VERTICAL WALL SHALL EXTEND TO EL. 143.50.
 4. SEE DETAIL @ ACCESS HATCH ON SHEET S-11.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DATE: 3/6/92
ACF CHIEF, BUREAU OF ENGINEERING

DATE: 3-6-92
ACF CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

DATE: 3/6/92
REG. PROF. ENGR.

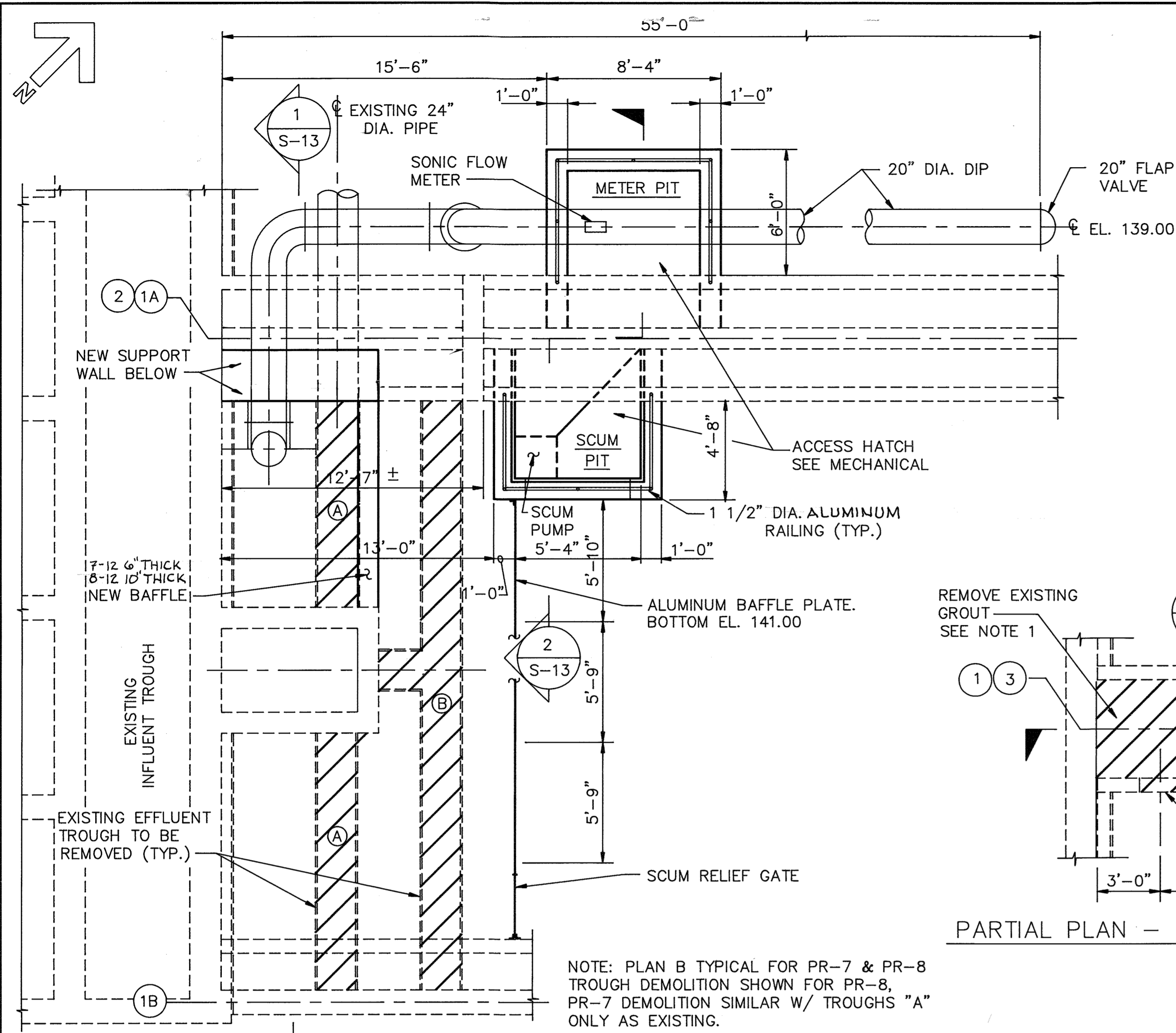
STATE OF MARYLAND
JONATHAN WINTHROP DOANE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

DES:	M. Yu			
DRN:	E. Burnett			
CHK:	J. HANEY	2	RECORD DRAWING	10/2/92
DATE:	12/7/91	1	REVISED FOR BIDDING	3/5/92
BY:		NO.	REVISION	DATE

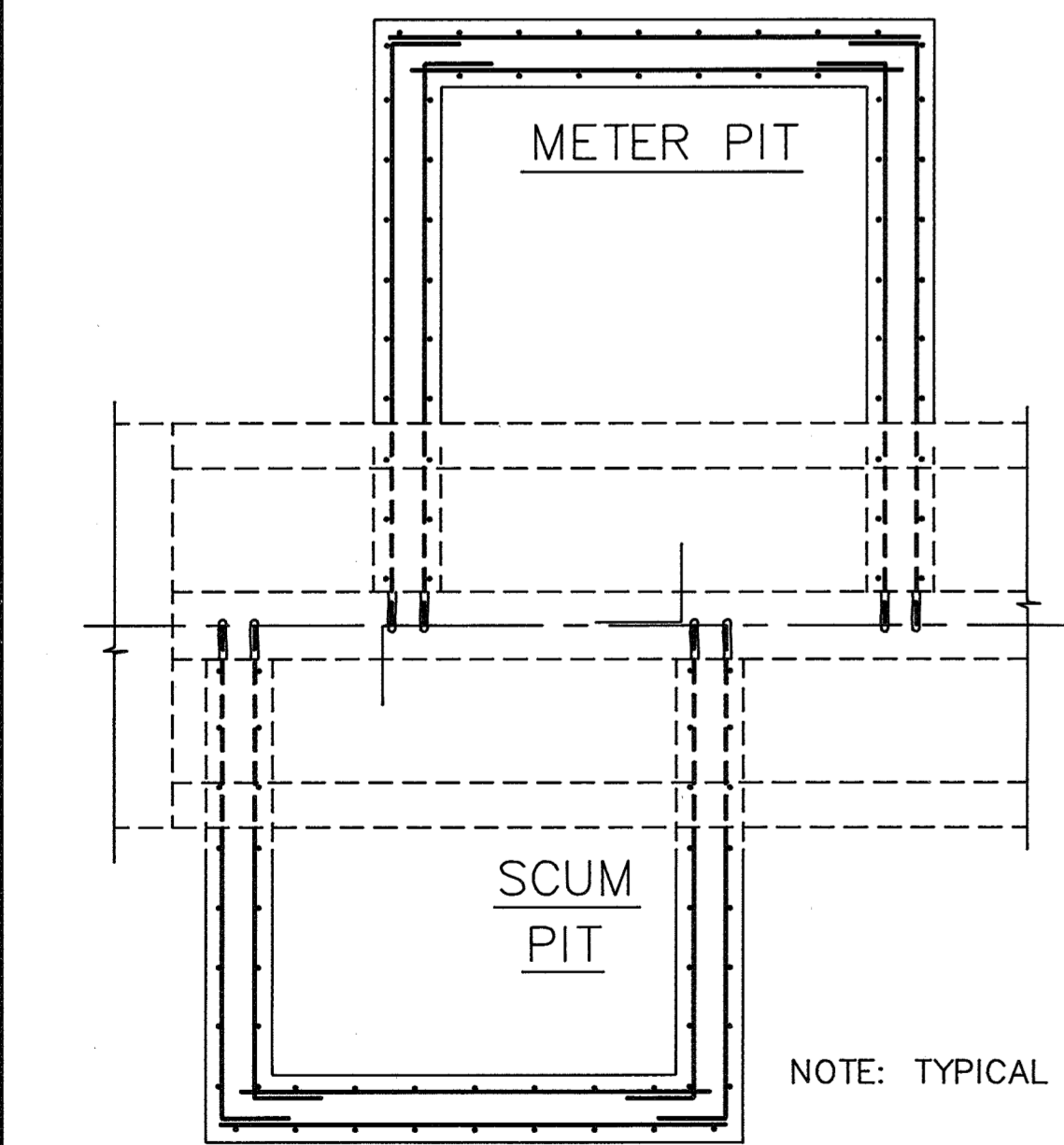
STRUCTURAL
PROCESS REACTOR MODIFICATION
SINGLE PASS BASIN
PLANS AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

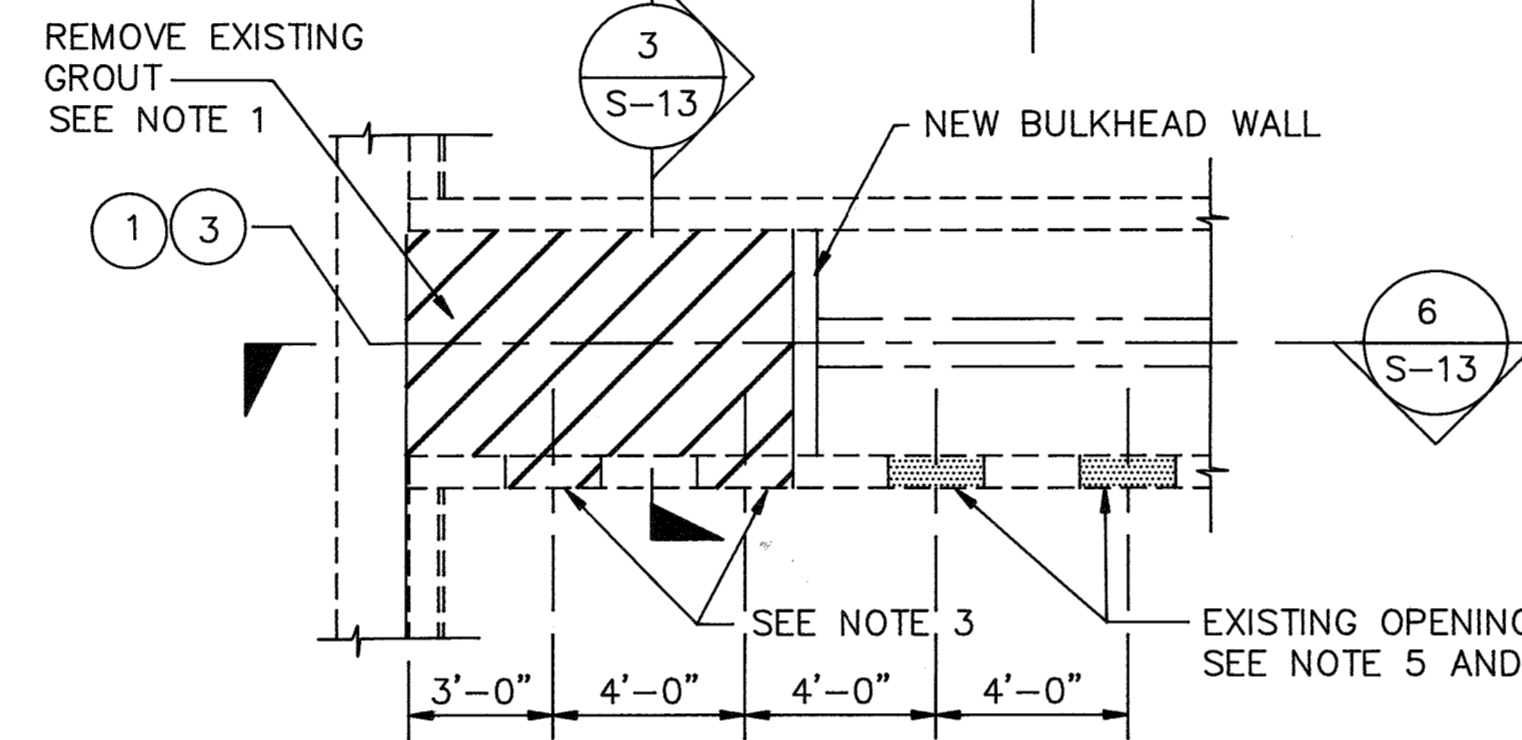
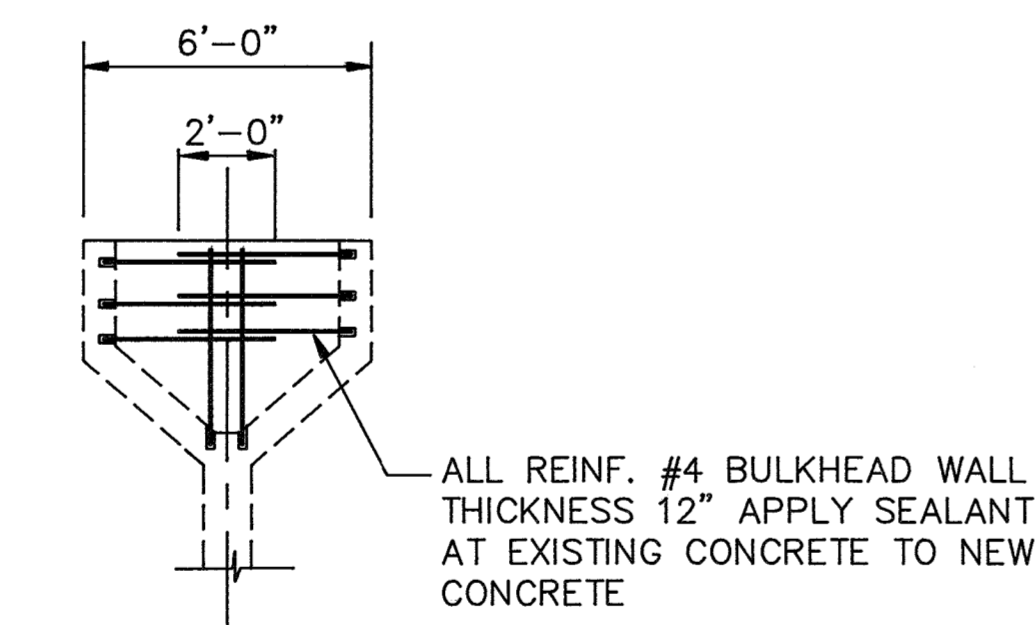
SCALE AS SHOWN
SHEET 60 OF 226
S-12



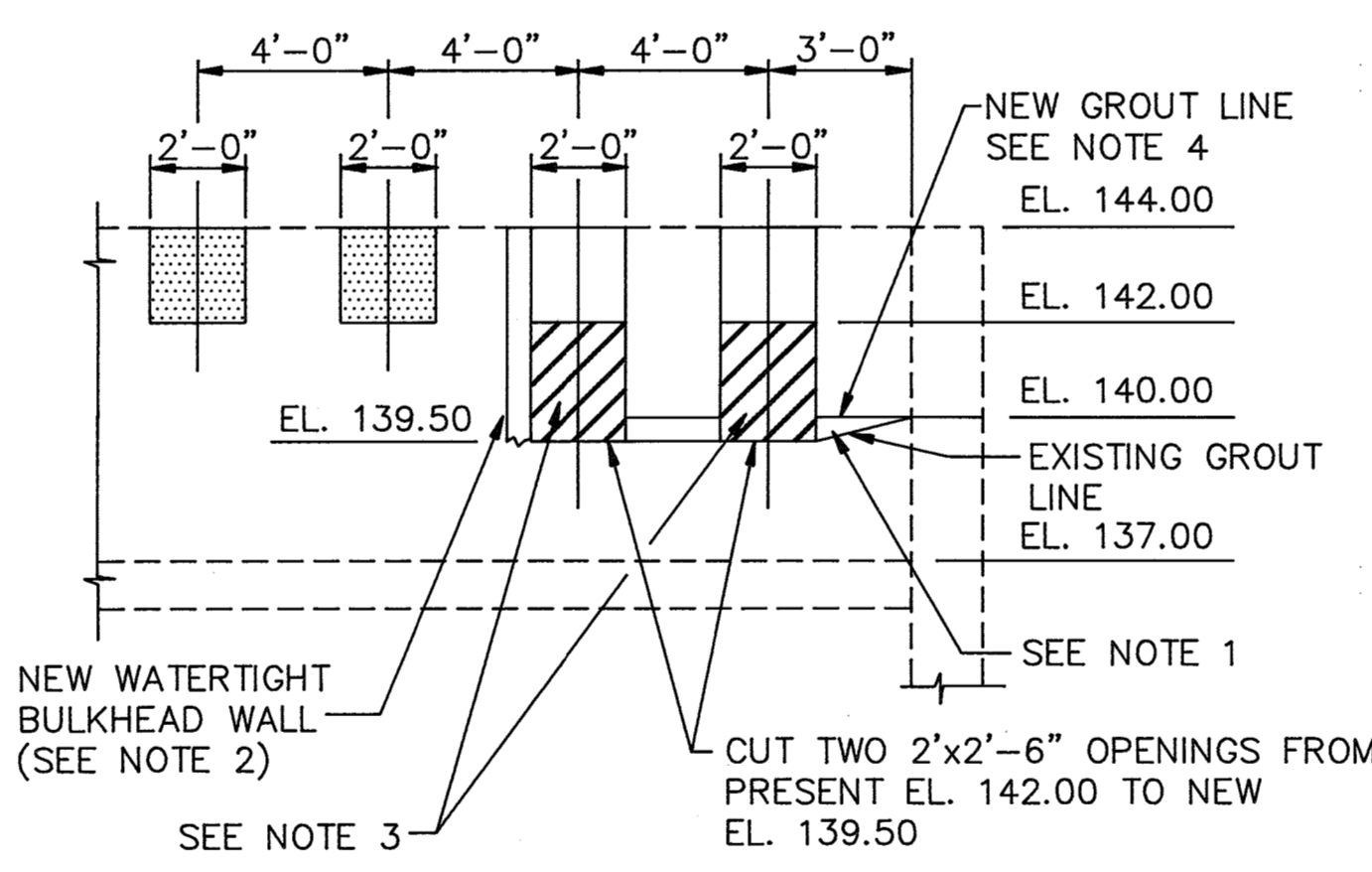
PARTIAL PLAN - EFFLUENT TROUGH
SCALE: 1/4"=1'-0"



PARTIAL PLAN - BOTTOM
SCALE: 3/8"=1'-0"

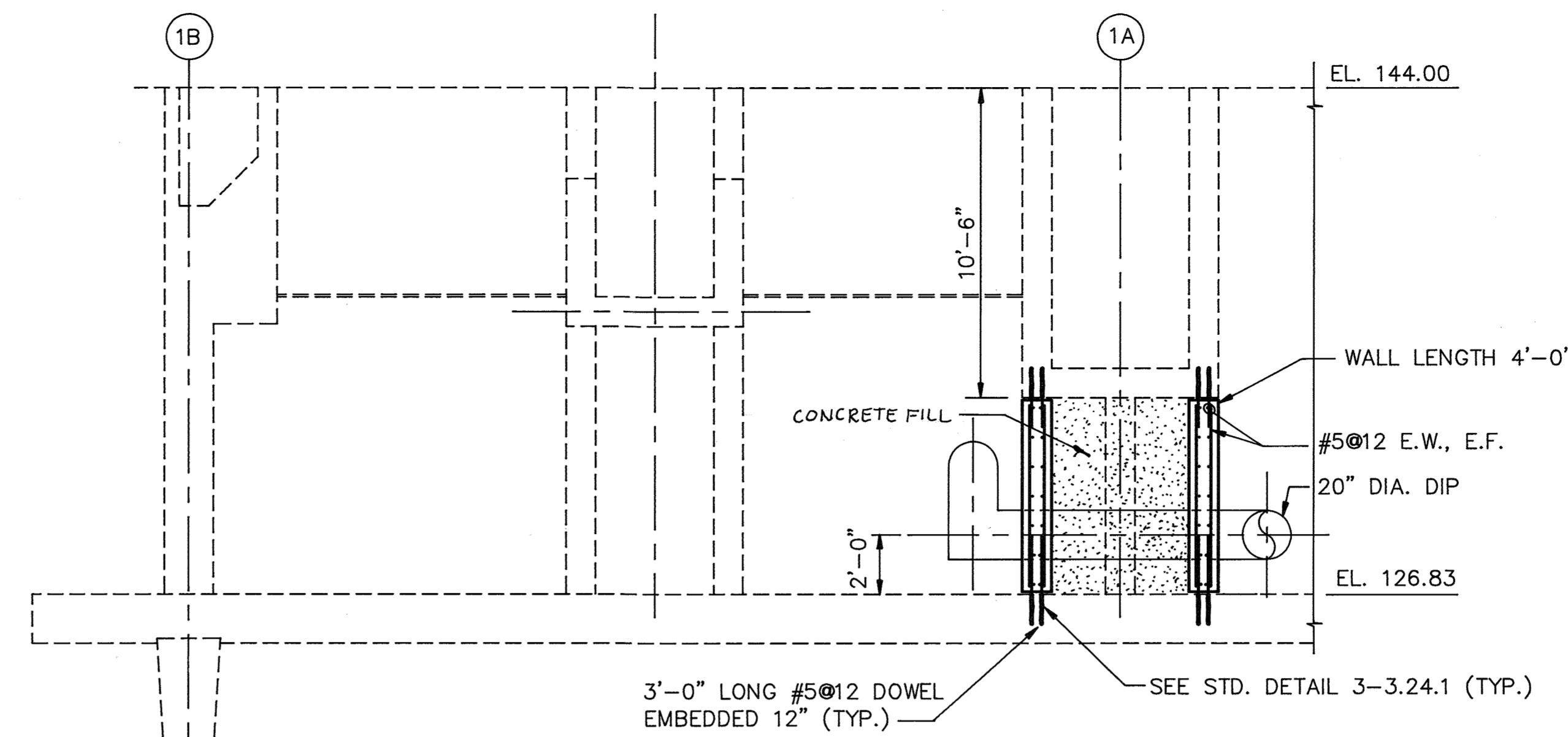


PARTIAL PLAN - INFLUENT CHANNEL TO PR 7 & 8
SCALE: 1/4"=1'-0"

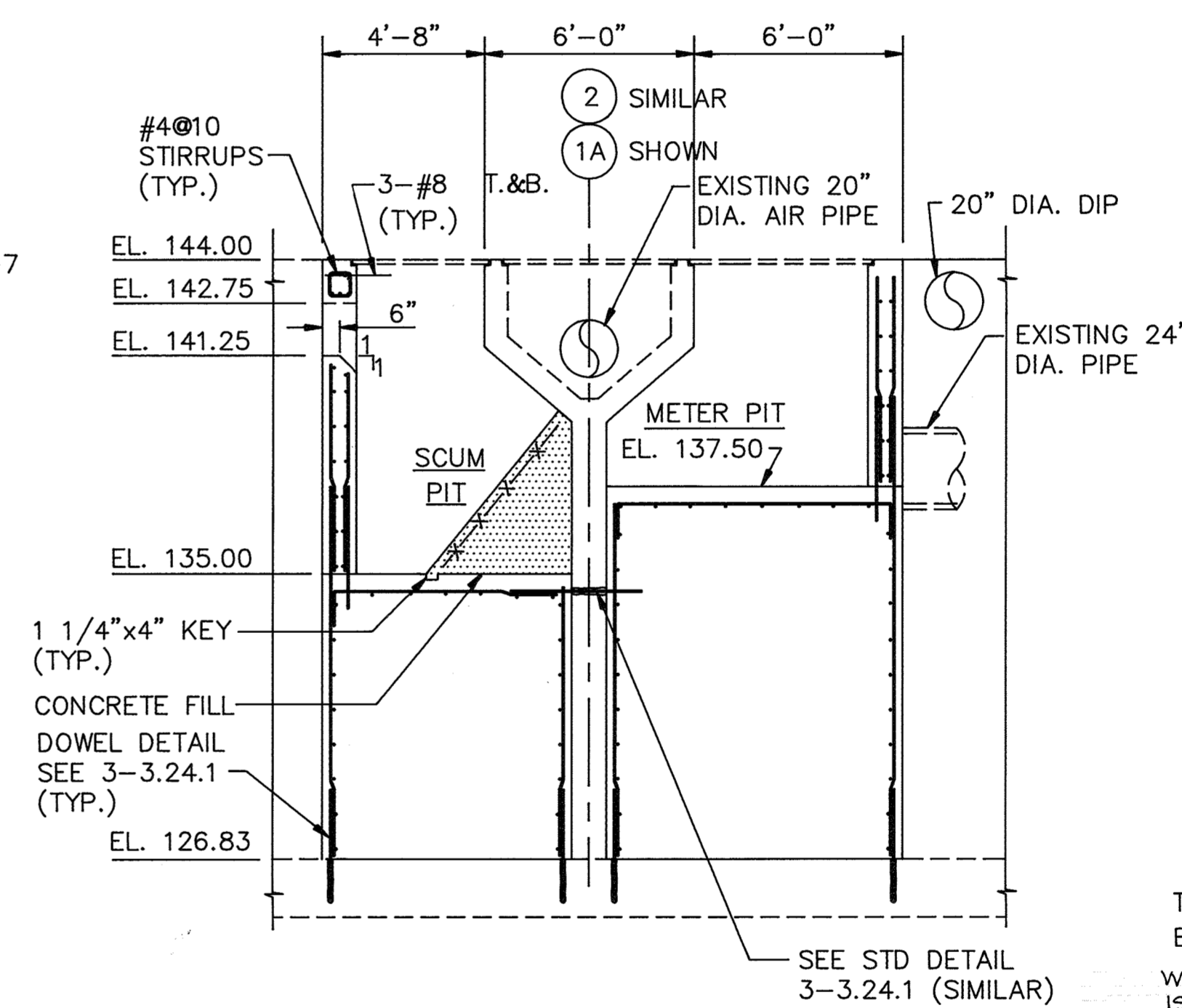


- NOTE:
1. REMOVE THE EXISTING CONCRETE GROUT TO INVERT EL. 139.50 ON THE FIRST 8'-6" OF CHANNEL. GROUT REMOVED ONLY AS NECESSARY FOR GATE INSTALLATION.
 2. INSTALL NEW BULKHEAD WALL 1'-0" THICK FROM BOTTOM EL. 139.50 TO TOP EL. 143.50 WITH WATERSTOP (SEE STANDARD DETAIL 3-3.26.1)
 3. ENLARGE THE EXISTING GATE OPENING BY CUTTING 2'-6" DEEP OPENING FROM THE EXISTING EL. 142.00 TO NEW EL. 139.50.
 4. REGROUT THE FIRST 2 FT. SLOPE FROM EL. 140.00 TO EL. 139.67 GROUT TO BULKHEAD WALL @ EL. 139.67.
 5. REMOVE THE LAST TWO INFLUENT GATES AND FILL HOLES WITH CONCRETE. SEE STANDARD DETAIL 3-3.29.1 WITH #4@12 E.W. & E.F..

SECTION 6
SCALE: 1/4"=1'-0"



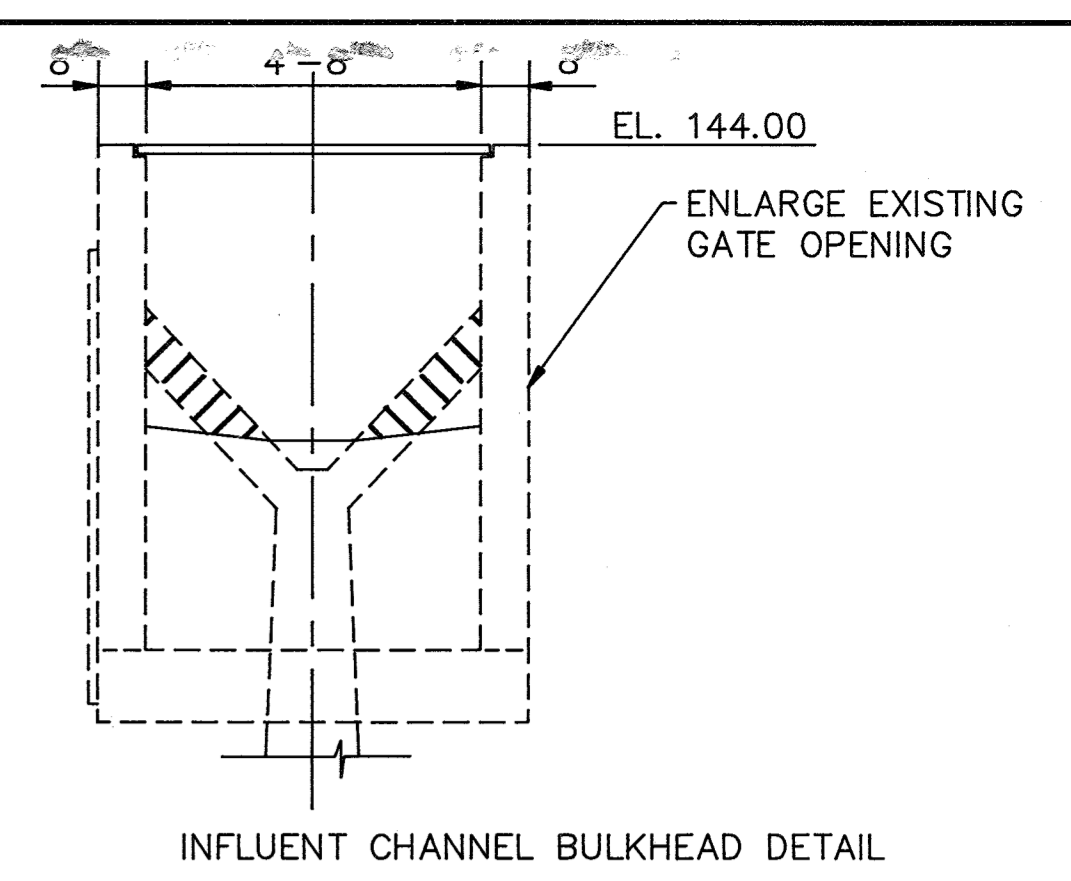
SECTION 1
SCALE: 1/4"=1'-0"



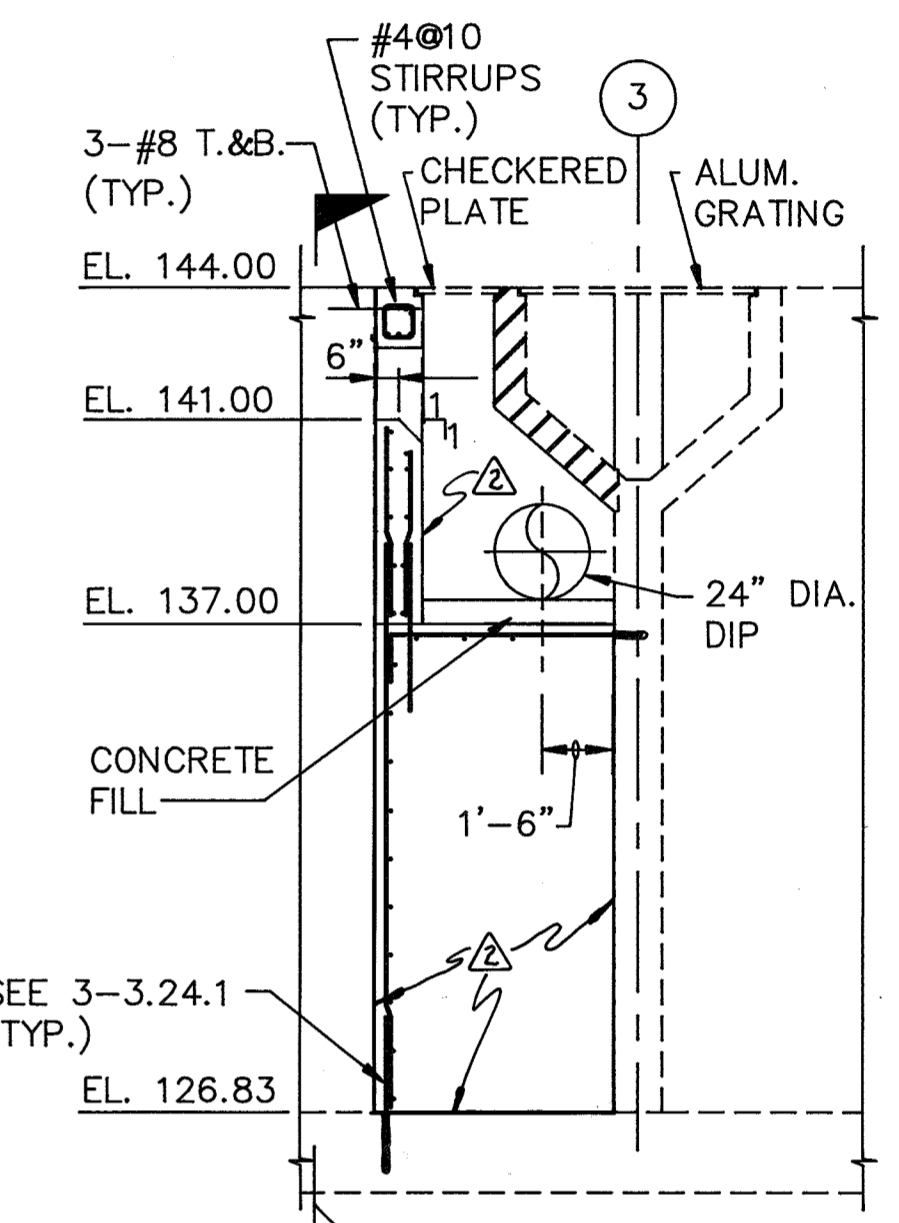
SECTION 2
SCALE: 1/4"=1'-0"

- NOTES:
1. ALL REINFORCEMENT #5@12 EACH WAY, EXCEPT NOTED OTHERWISE.
 2. SEE MECH. DRAWING FOR OPENING SIZE, PIPE SIZE AND BAFFLE WALL LOCATION.
 3. SEE STANDARD DETAIL 3-3.39 FOR PIPE PENETRATION CLOSURE.
 4. WATERSTOP IN VERTICAL WALL SHALL EXTEND TO EL. 143.50.
 5. SCUM BAFFLE CONSTRUCTION DETAILS ARE PROVIDED ON ADDENDUM #3 ATTACHMENTS J-1,2,3,4

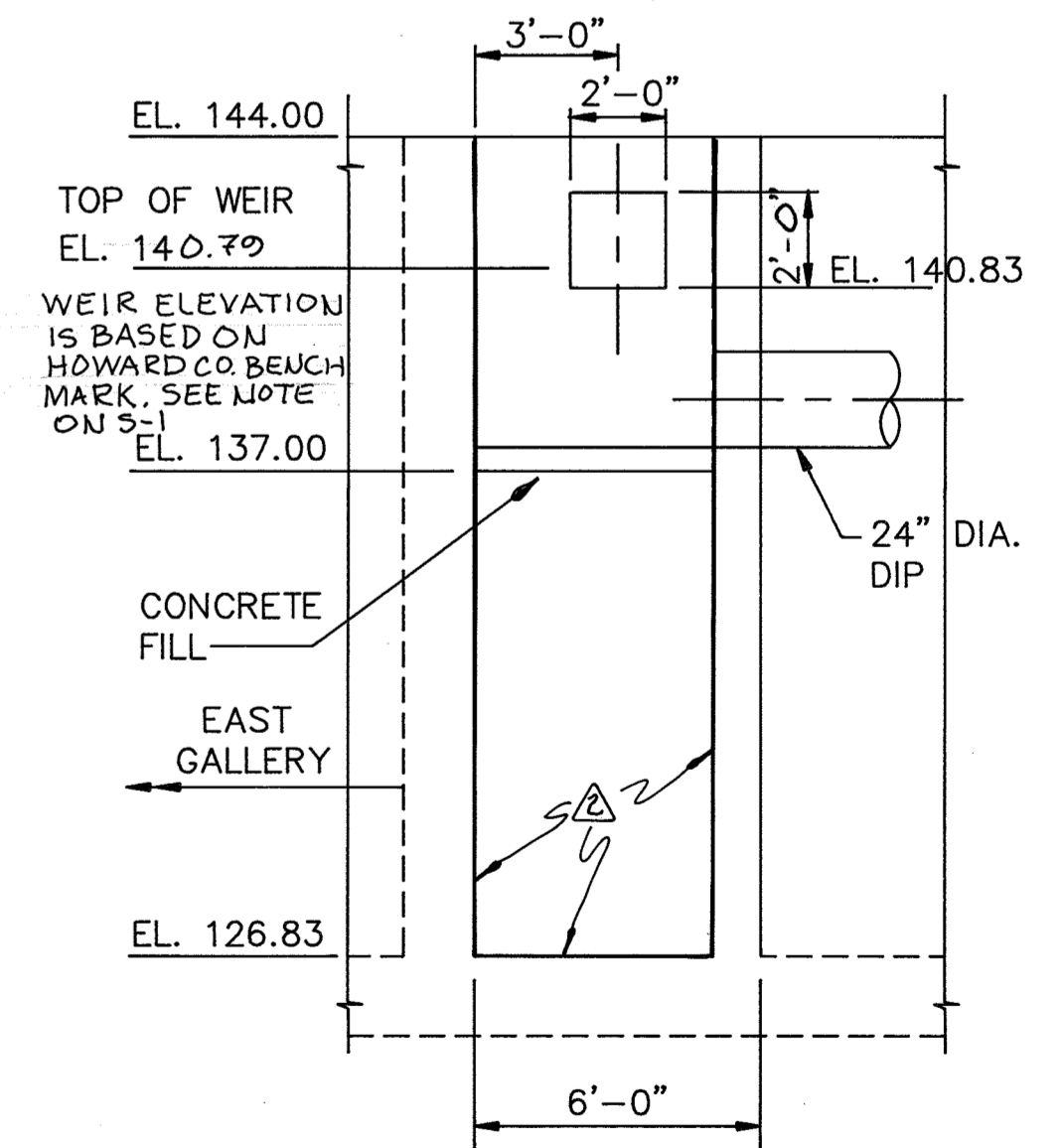
Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.



SECTION 3
SCALE: 3/8"=1'-0"



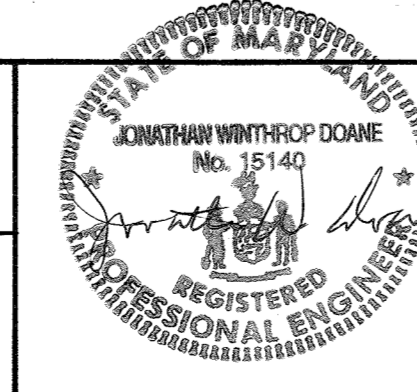
SECTION 4
SCALE: 1/4"=1'-0"



SECTION 5
SCALE: 1/4"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
3-6-92
3-6-92

M&E Metcalf & Eddy
3/6/92

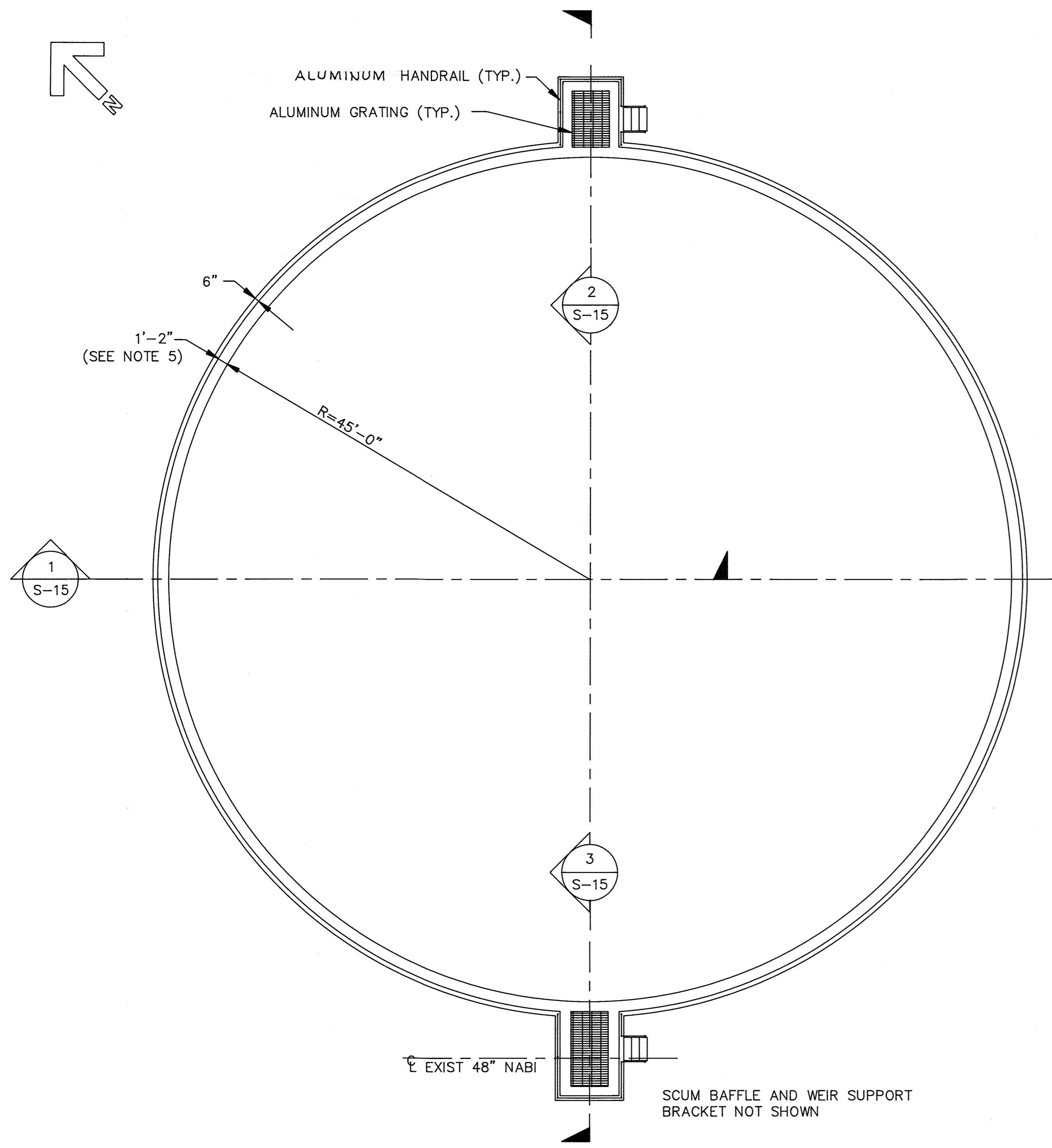


DES: M. Yu					
DRN: E. B. W. #1	4	RECORDED DRAWING			
	3	ADDENDUM #3			
CHK: J. HAVELY	2	ADDENDUM #2			
DATE: 12/1/91	1	REVISED FOR BIDDING			
BY	NO.	REVISION			DATE

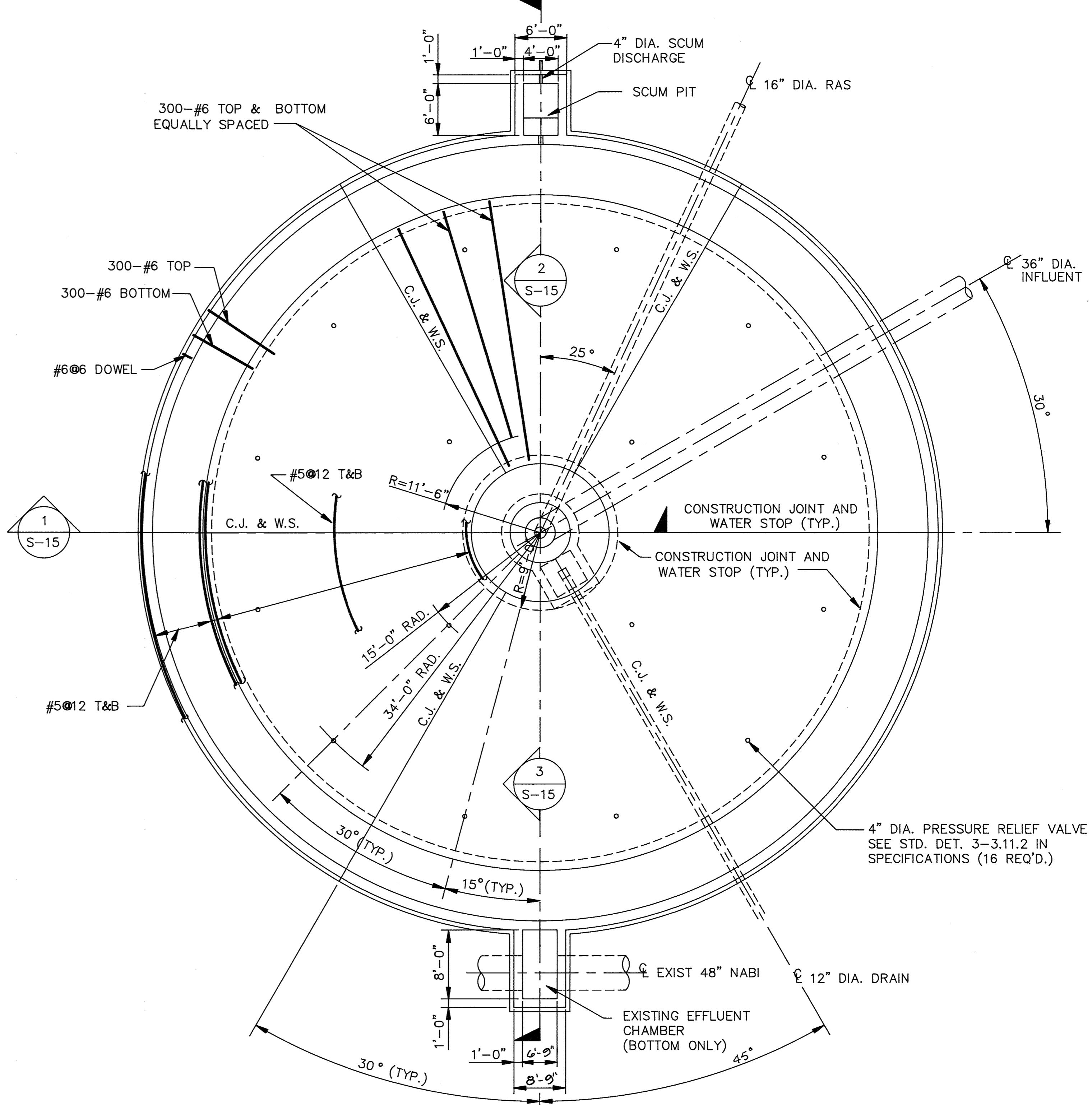
STRUCTURAL
PROCESS REACTOR MODIFICATION
DOUBLE PASS BASIN
PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 61 OF 226
S-13



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



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

- NOTES:
1. TYPICAL DETAILS TO BE FOUND IN SPECIFICATIONS APPENDIX "B".
 2. FOUNDATIONS BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF 2,000 LBS. PER SQ. FOOT.
 3. DESIGN LIVE LOADS:
 - a.) ALUMINUM GRATING: 100 PSF
 - b.) WASTEWATER: 63 PCF
 4. CENTER COLUMN ATTACHMENT PER EQUIPMENT SHOP DRAWINGS.
 5. WALL THICKNESS 1'-2" EXCEPT AT EFFLUENT CHAMBER (SEE SECTION 3)
 6. THE PLAN VIEW DOES NOT SHOW THE FULL SPAN WALKWAY & HANDRAIL THAT IS TO BE PROVIDED FOR FINAL CLARIFIER No. 2. PROVIDE AS SHOWN ON DETAILS & SHEET M-28.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

3/6/92
DATE Acf. CHIEF, BUREAU OF ENGINEERING

3/6/92
DATE Acf. CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

JONATHAN WINTHROP DOANE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

3/6/92
DATE REG. PROF. ENGR.

DES: D. Colson				
DRN: E. Burnett				
CHK: M. Yu	1/1	3	RECORD DRAWING	10/28/91
	DRG	2	ADDENDUM #3	4/10/92
		1	REVISED FOR BIDDING	3/5/92
DATE: 12/7/91	BY	NO.	REVISION	DATE

STRUCTURAL

FINAL CLARIFIER NO. 2
PLAN

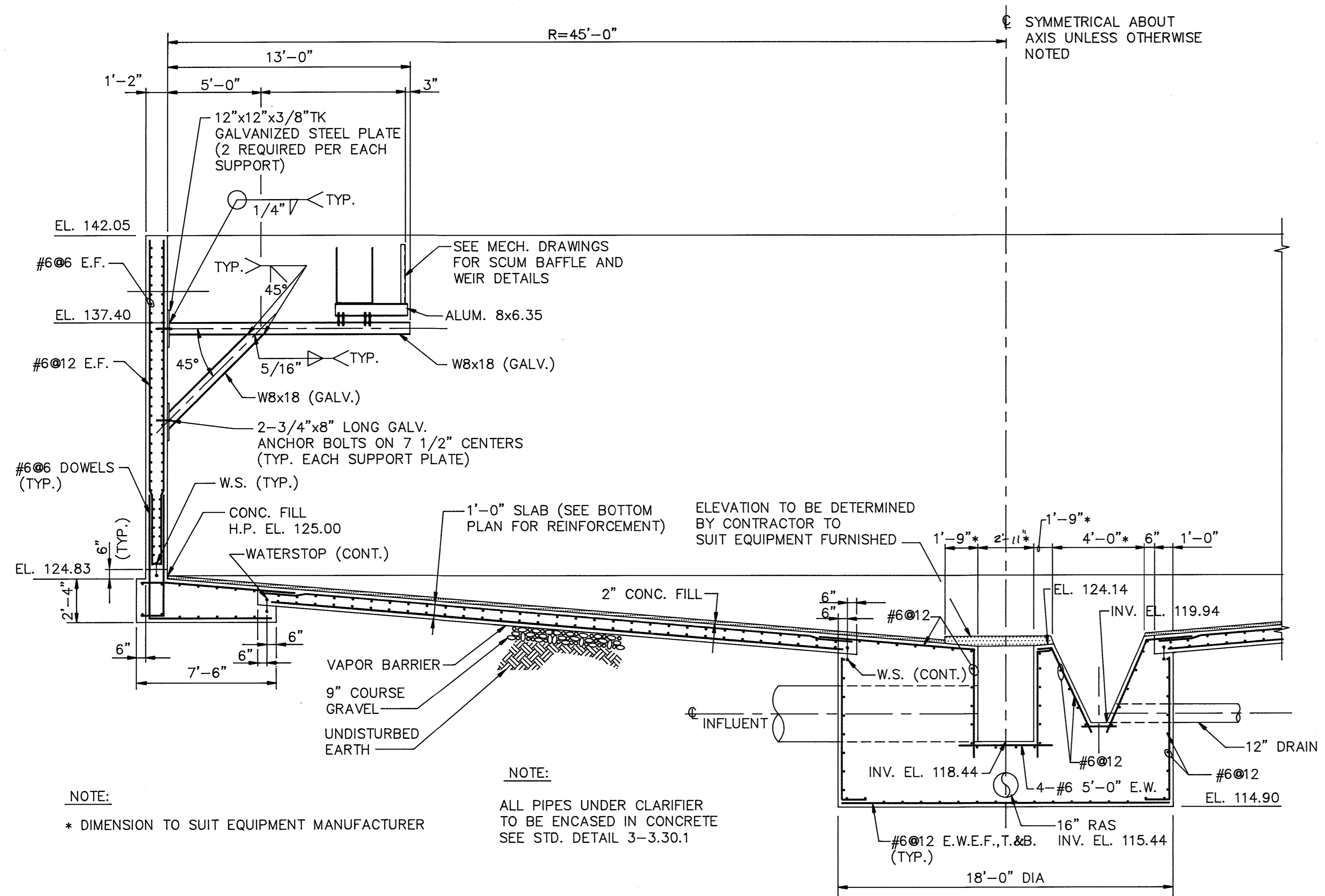
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

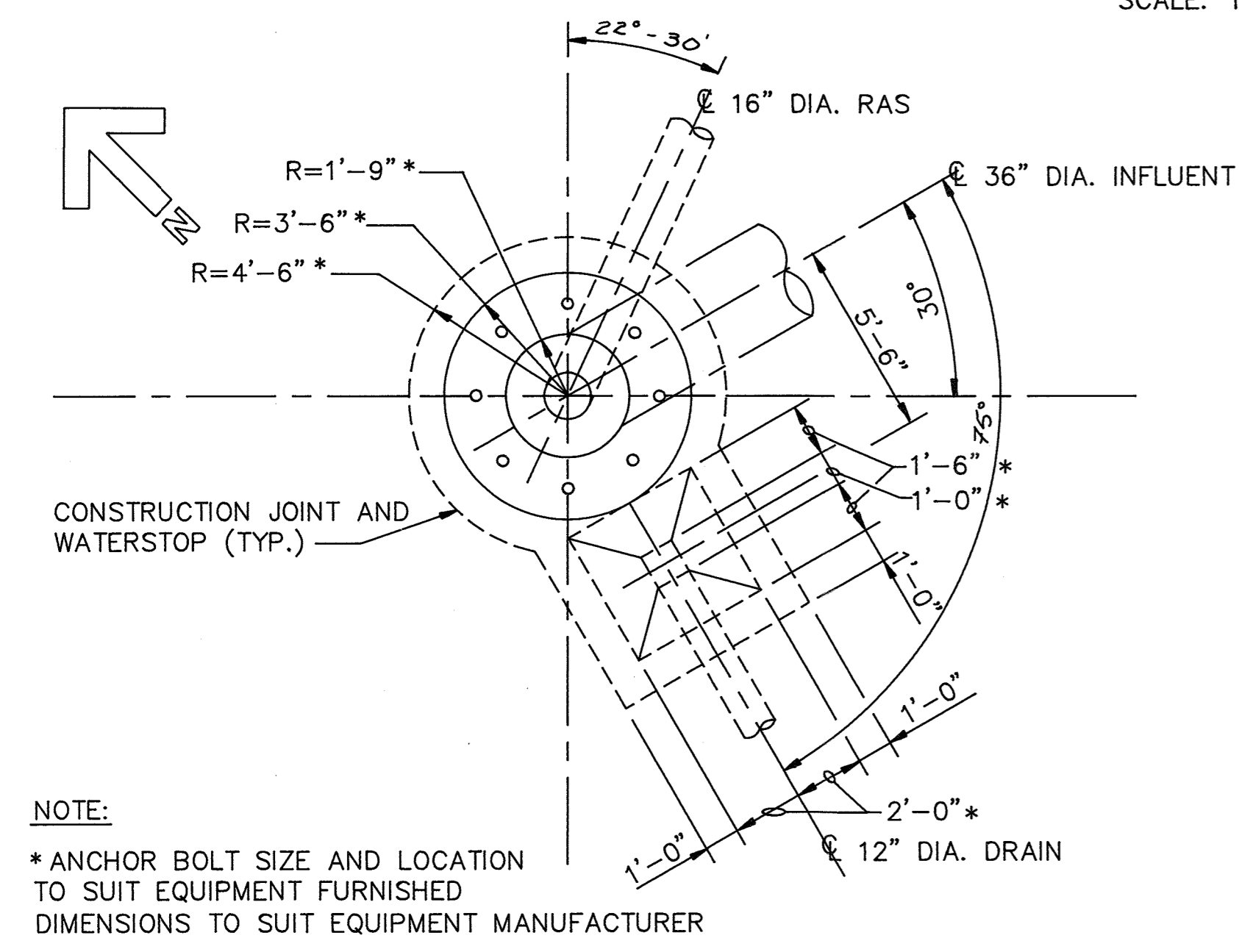
SCALE AS SHOWN

SHEET 62 OF 226

S-14



SECTION 1
SCALE: 1/4"=1'-0" S-14



PARTIAL PLAN FOR
FINAL CLARIFIER NO. 2 CENTER PIER
SCALE: 1/4"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 3/6/92
 Chief, Bureau of Environmental Services: *Robert A. ...* 3-6-92

M&E Metcalf & Eddy

Jonathan W. Drane 3/6/92
 REG. PROF. ENGR. DATE

STATE OF MARYLAND
 JONATHAN WINTHROP DOANE
 No. 15140
 REGISTERED PROFESSIONAL ENGINEER

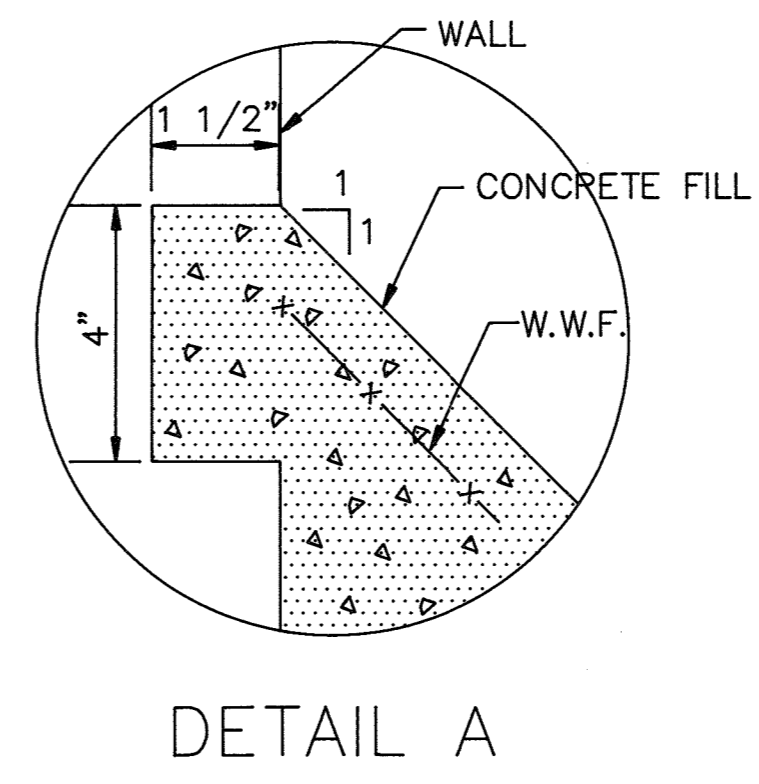
DES: D. Colson			
DRN: E. Burnett			
CHK: M. Yu			
DATE: 12/7/91	BY	NO.	REVISION
			1 RECORD DRAWING 1/1/92
			2 ADDENDUM #2 4/14/92
			3 REVISED FOR BIDDING 3/5/92

STRUCTURAL

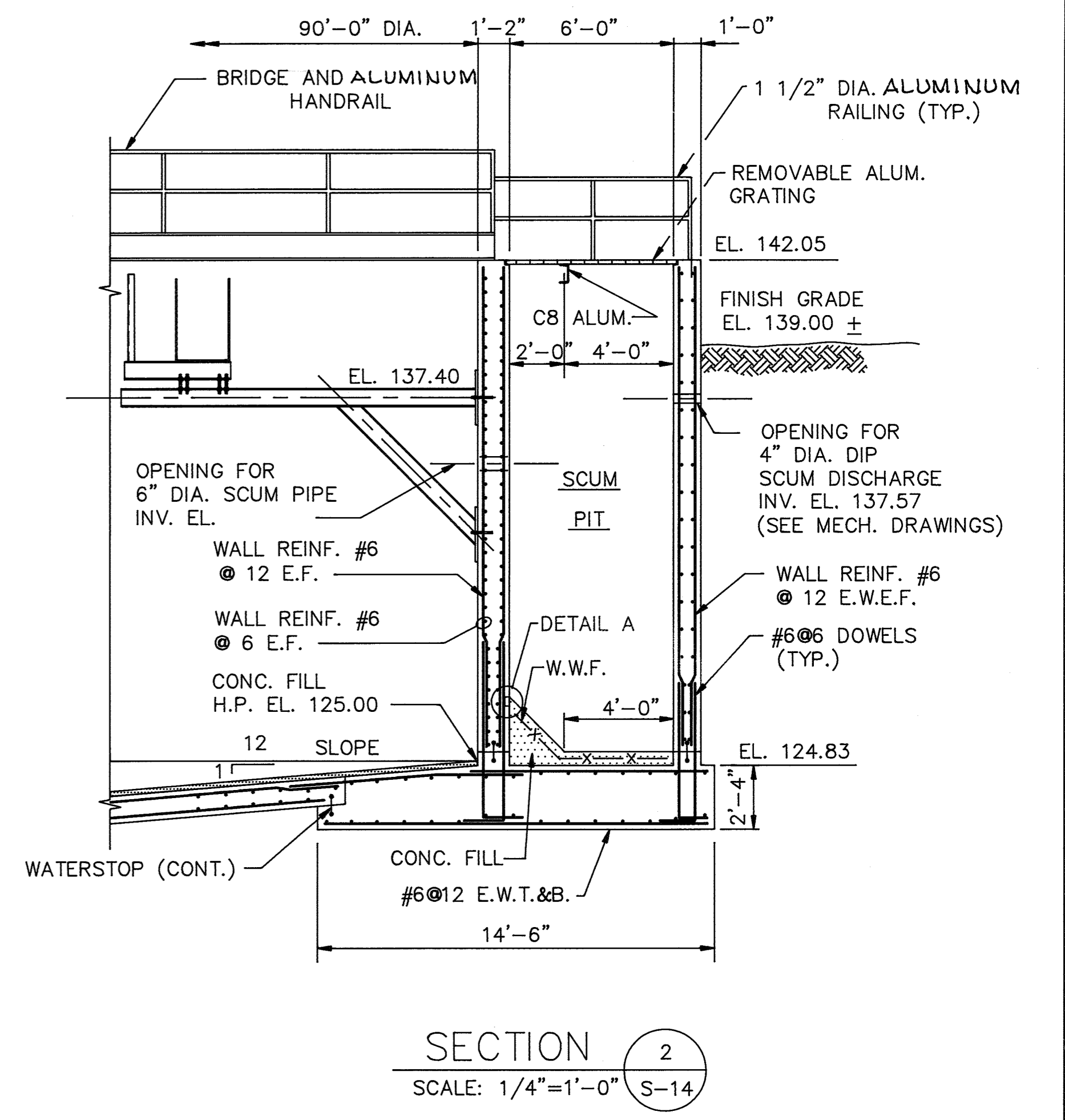
FINAL CLARIFIER NO. 2
SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

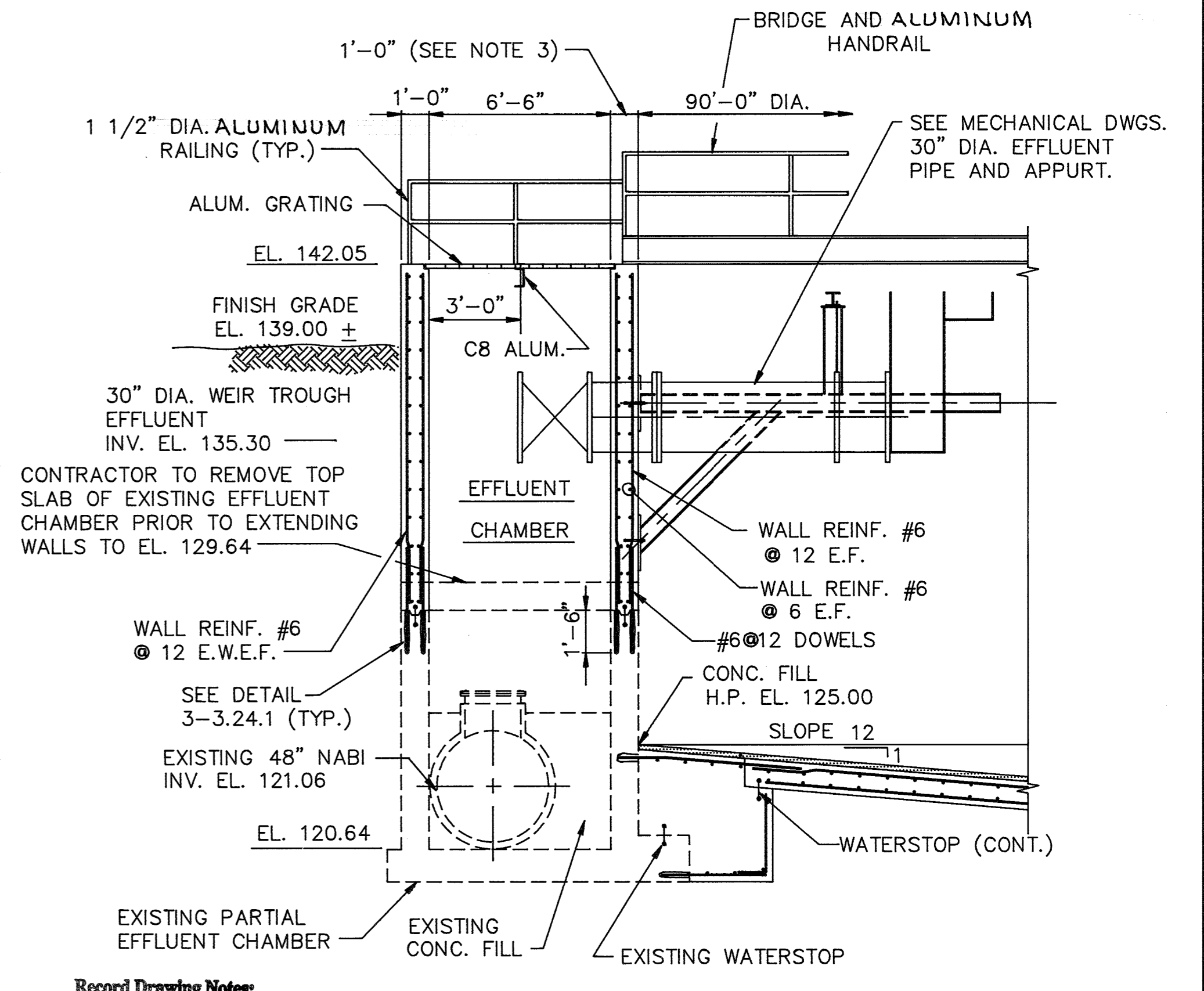
SCALE AS SHOWN
 SHEET 63 OF 226
 S-15



DETAIL A



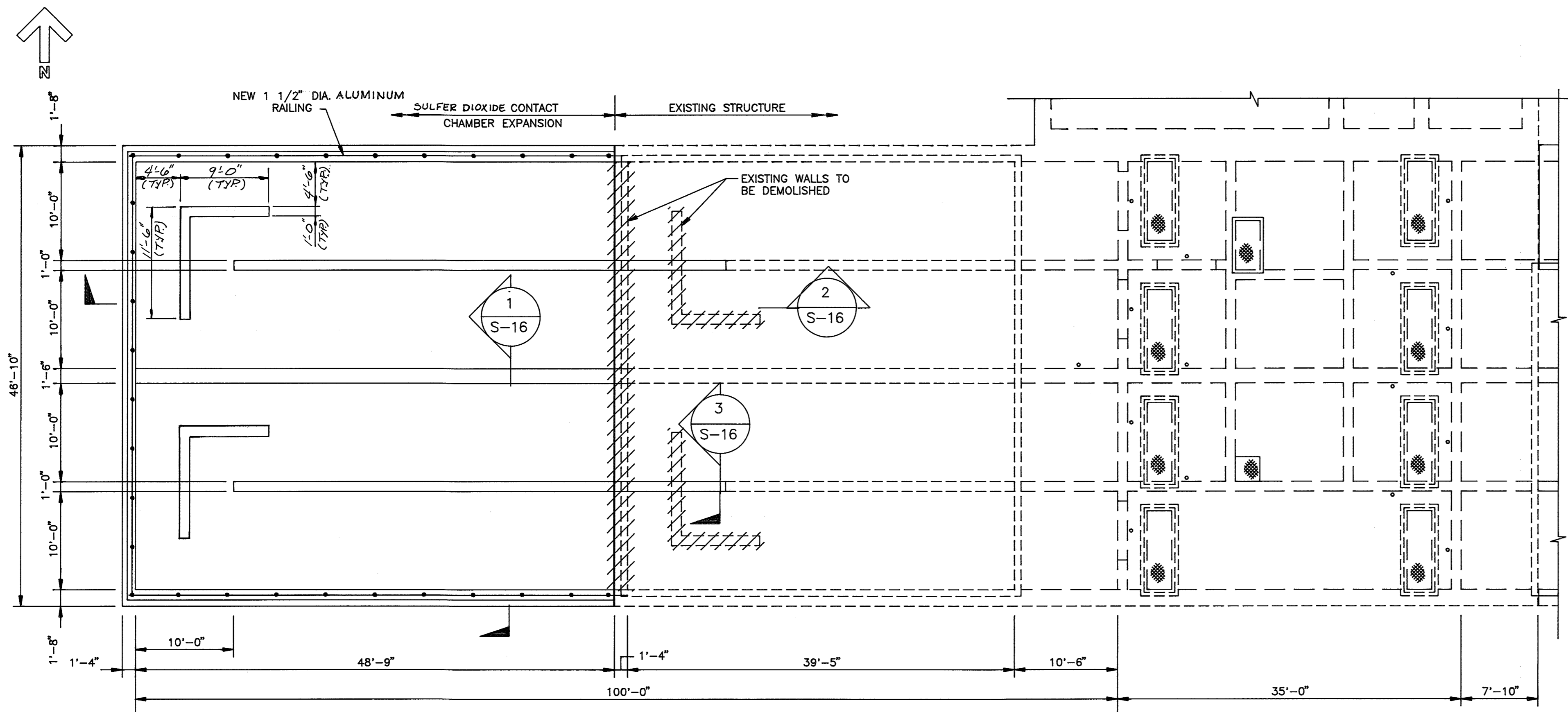
SECTION 2
SCALE: 1/4"=1'-0" S-14



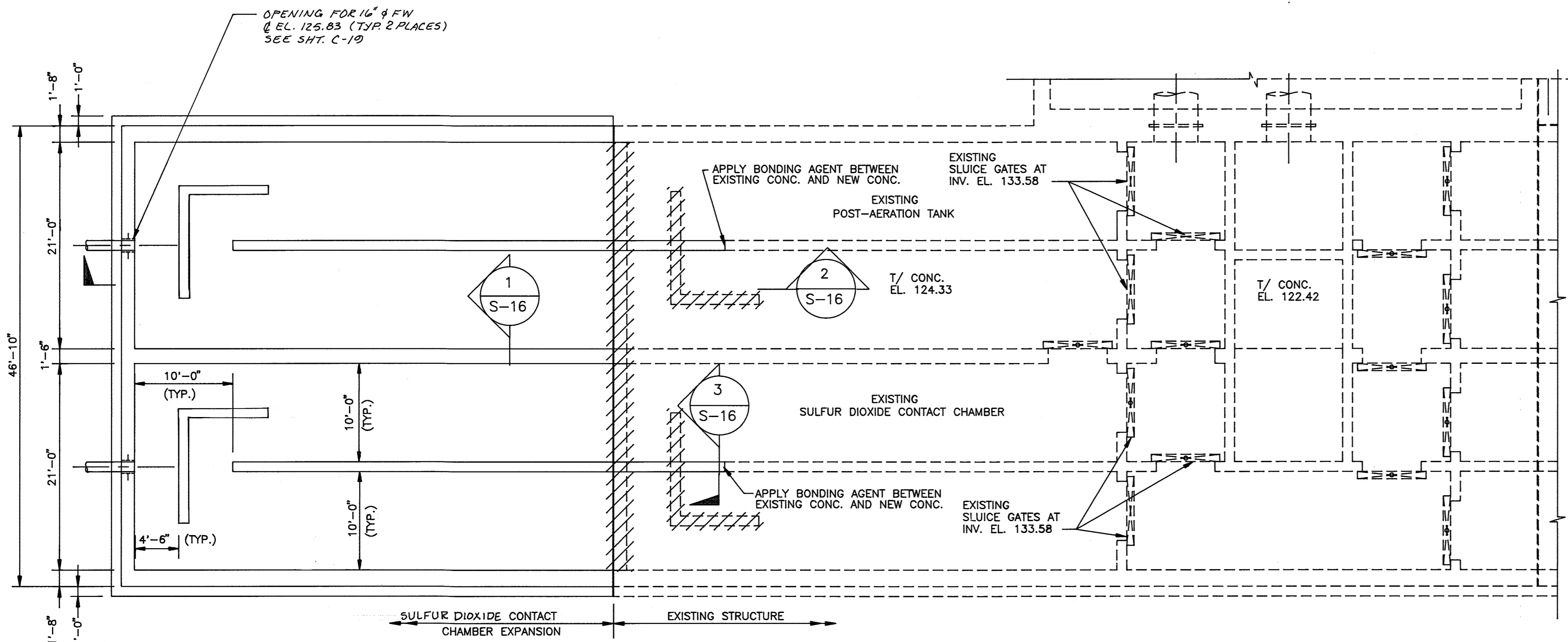
SECTION 3
SCALE: 1/4"=1'-0" S-14

- NOTES:
1. FINAL LOCATION OF CLARIFIER DEPENDANT ON LOCATION OF EXISTING PARTIAL EFFLUENT BOX. CONTRACTOR TO VERIFY.
 2. FOR TOP & BOTTOM STAIR LANDINGS SEE SHEET S-5.
 3. CLARIFIER WALL 1'-0" THICK AT EFFLUENT CHAMBER ONLY.

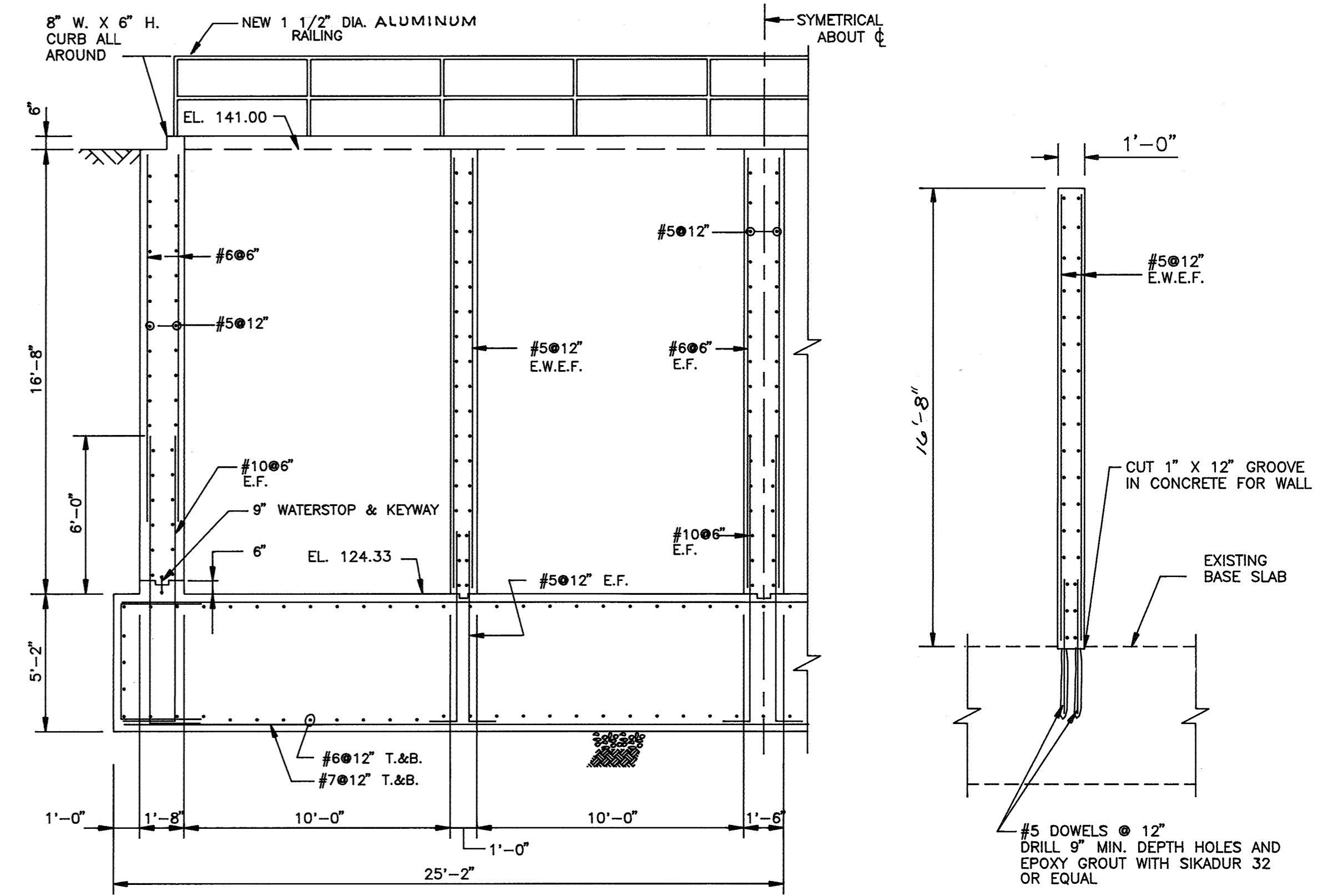
- Record Drawing Notes:
1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.



PLAN @ ELEV. 142.00
SCALE: 1/8" = 1'-0"

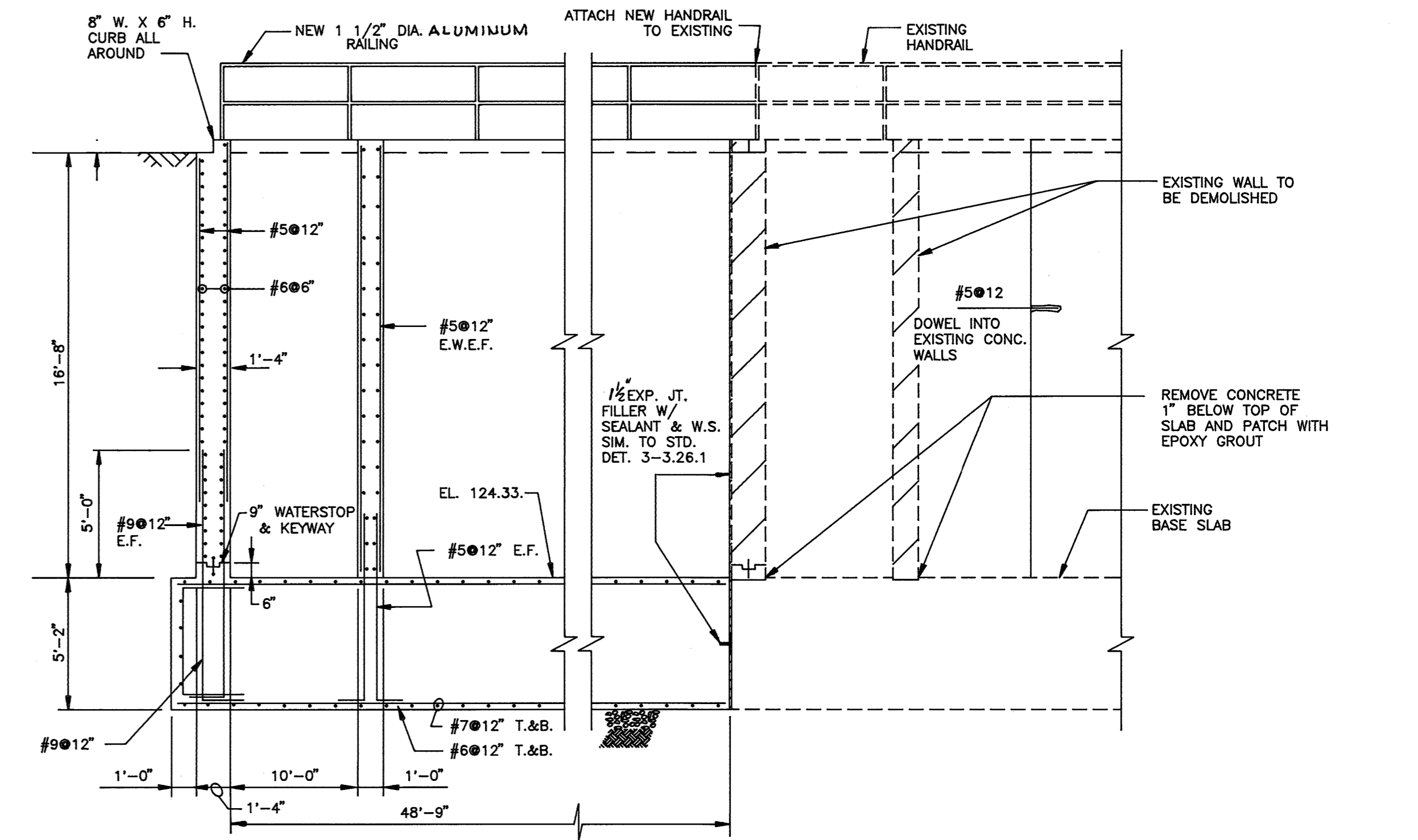


PLAN @ ELEV. 131.00
SCALE: 1/8" = 1'-0"



SECTION 1
SCALE: 1/4" = 1'-0" S-16

SECTION 3
SCALE: 1/4" = 1'-0" S-16



SECTION 2
SCALE: 1/4" = 1'-0" S-16

LEGEND:
— NEW CONSTRUCTION
--- EXISTING STRUCTURES

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

- NOTES
- FOUNDATION BASED ON ALLOWABLE SOIL BEARING PRESSURE 4000 PSF.
 - SEE STD. DETAIL 2-9.1.1 FOR FOUNDATION PREPARATION.
 - ALL SLUICE GATE INVERTS AT EL. 124.33 UNLESS OTHERWISE NOTED.
 - CONTRACTOR RESPONSIBLE FOR MAINTAINING PLANT FLOW DURING MODIFICATIONS.

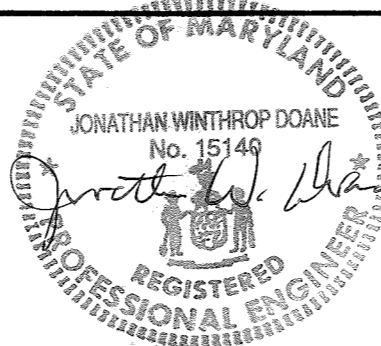
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Rama M. Lewis 3/6/92
DIRECTOR OF PUBLIC WORKS DATE

John W. Ashman 3/6/92
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Ashman 3/6/92
REG. PROF. ENGR. DATE



DES: D. R. THOMPSON			
DRN: E. BARNETT			
CHK: M. YU	1/2	2 RECORD DRAWING	2/12/94
DATE: 12/7/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

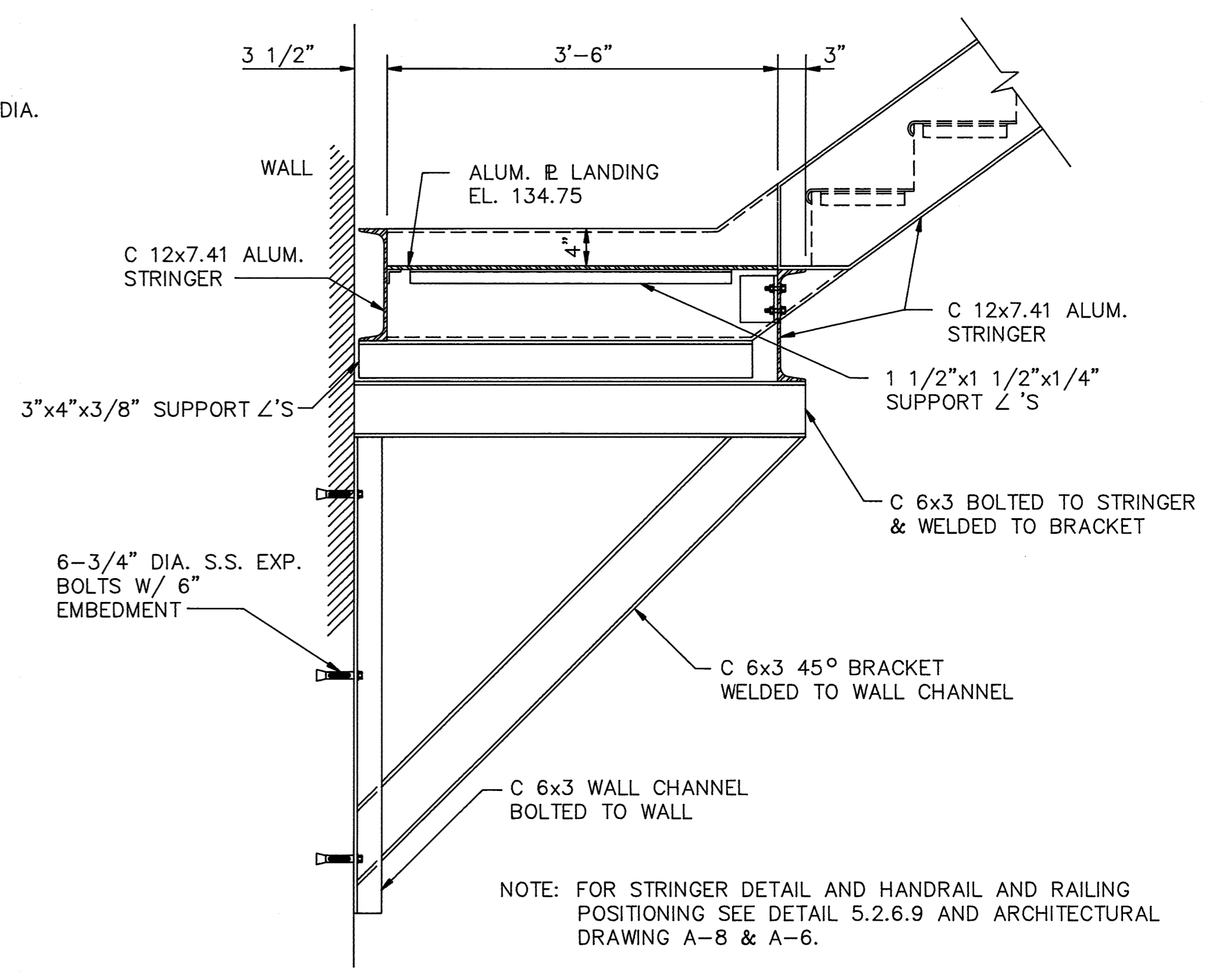
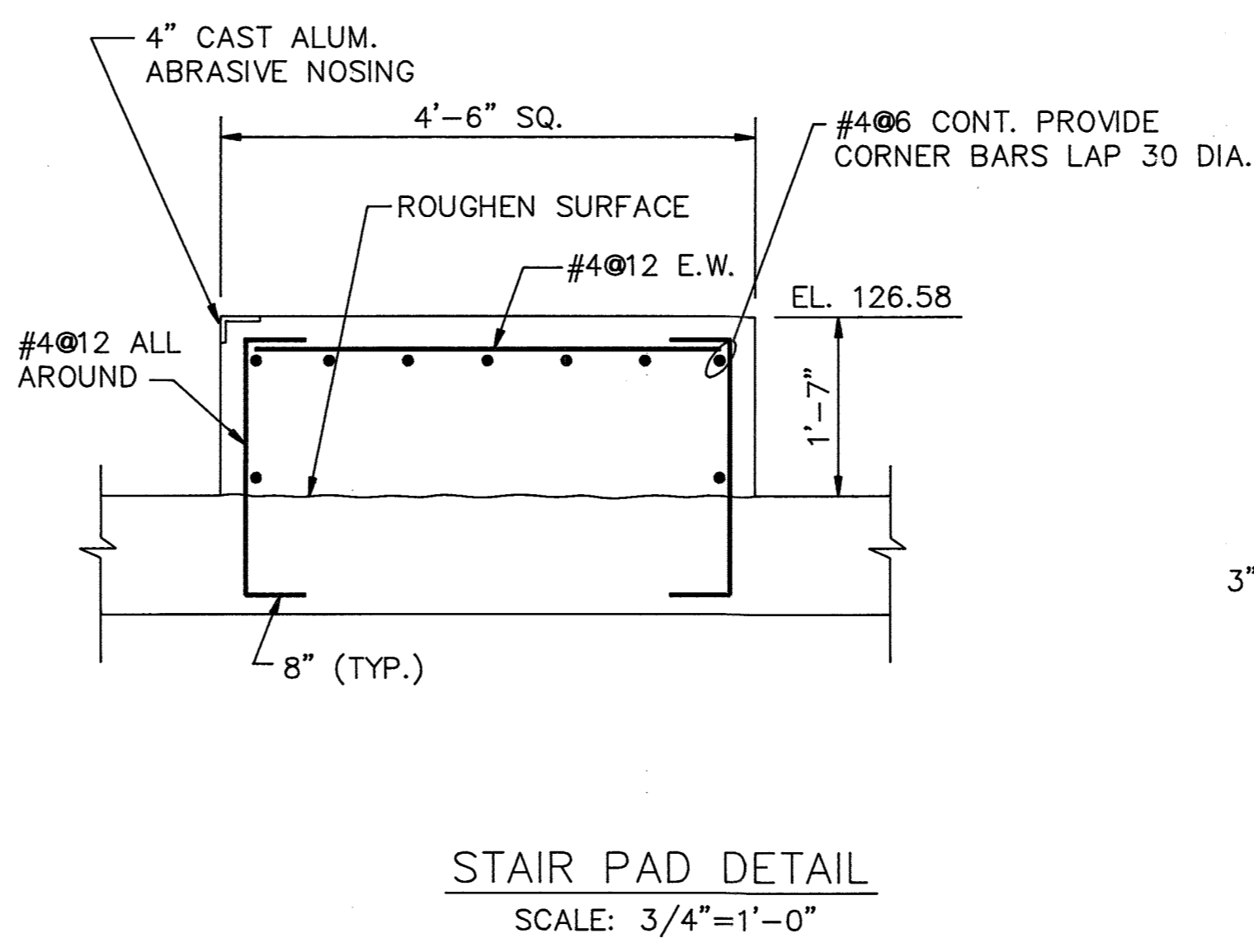
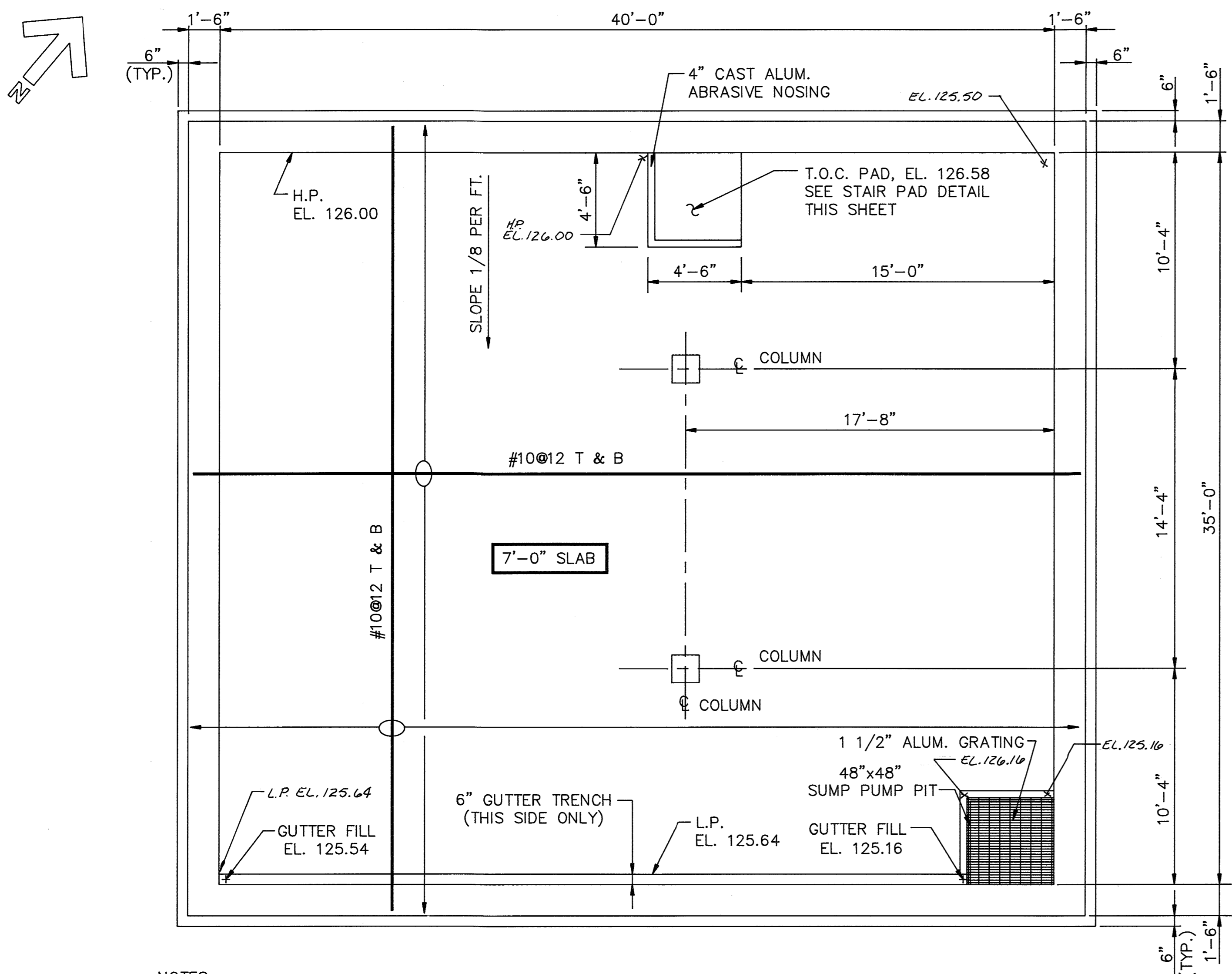
STRUCTURAL

SULFUR CONTACT BASIN
MODIFICATIONS
PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

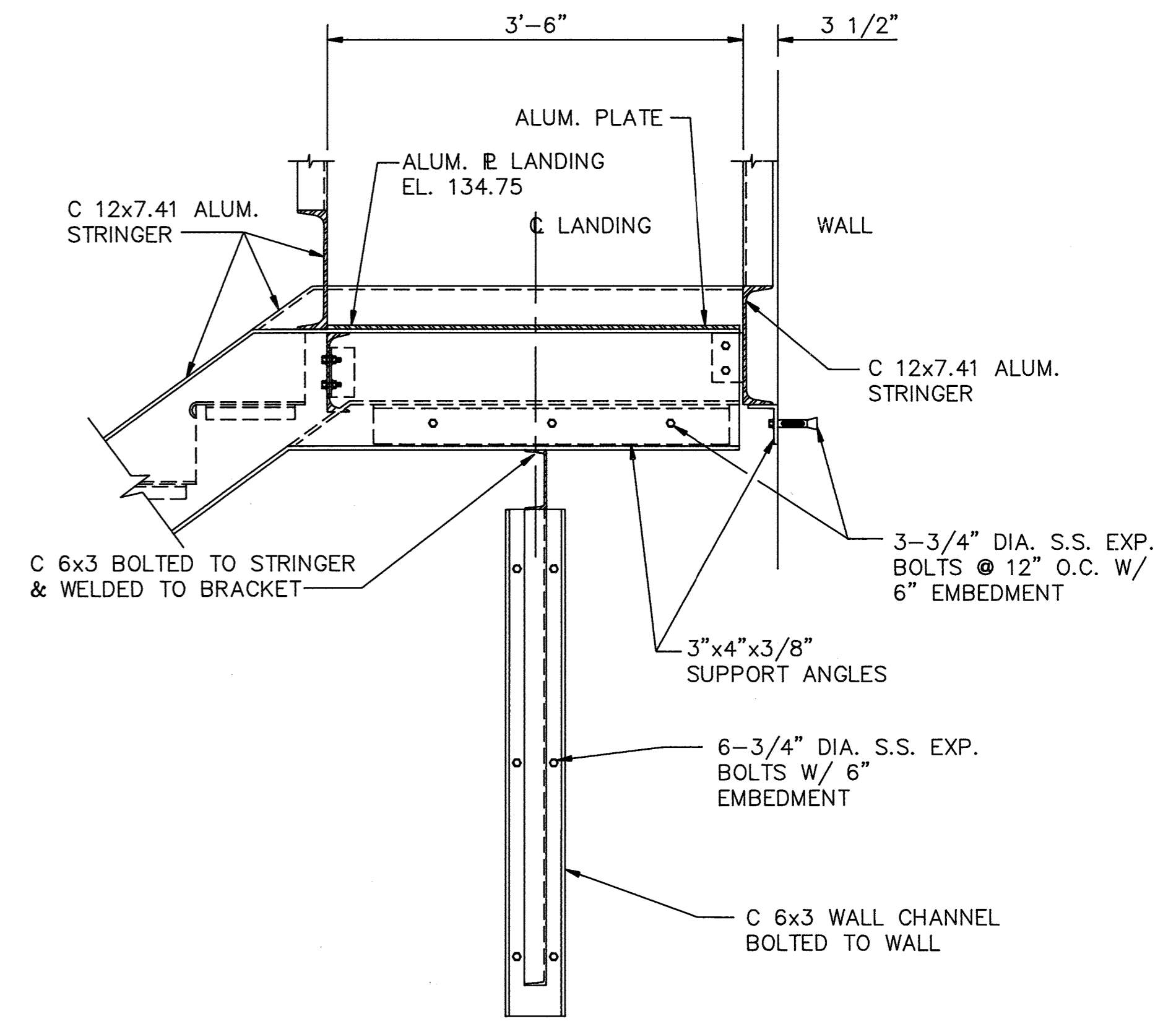
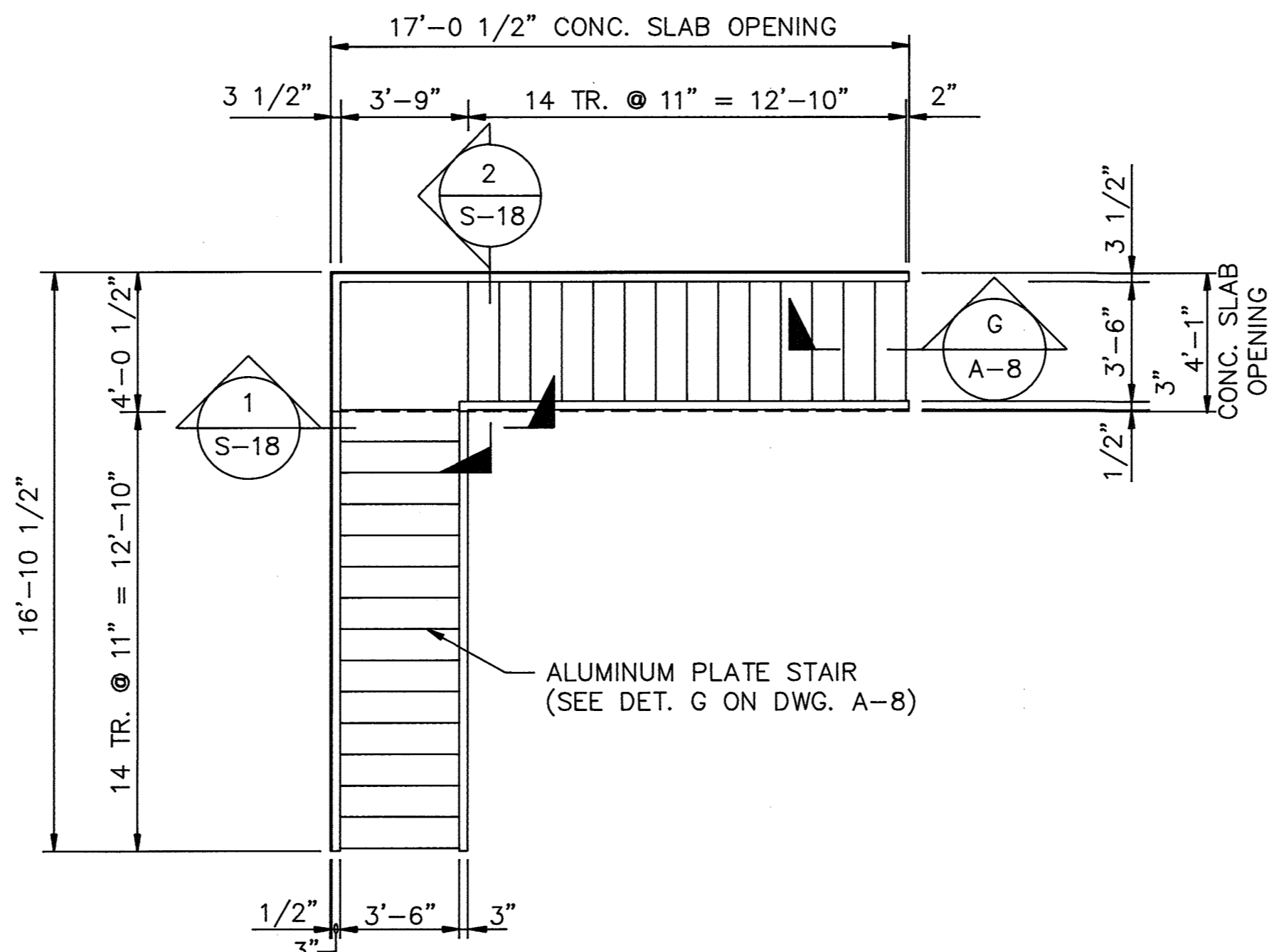
SCALE AS SHOWN
SHEET 64 OF 236
S-16



- NOTES:
1. FOUNDATION BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF 2,000 LBS PER SQ. FT.
 2. STANDARD DETAILS TO BE FOUND IN SPECIFICATIONS.
 3. TYPICAL DETAILS TO BE FOUND ON SHEET S-40.

FOUNDATION PLAN

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



SECTION 2

SCALE: 1"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

3/6/92
DATE

3-6-92
DATE

3/6/92
DATE

3-6-92
DATE

M&E Metcalf & Eddy

JOYATHAN WINTHROP DOANE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

3/6/92
DATE

DES: M. YU			
DRN: E. BURNETH			
CHK: M. YU	2	RECORD DRAWING	10/6/91
DATE: 12/7/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

STRUCTURAL

NORTH PUMP STATION
FOUNDATION PLAN
AND SECTIONS

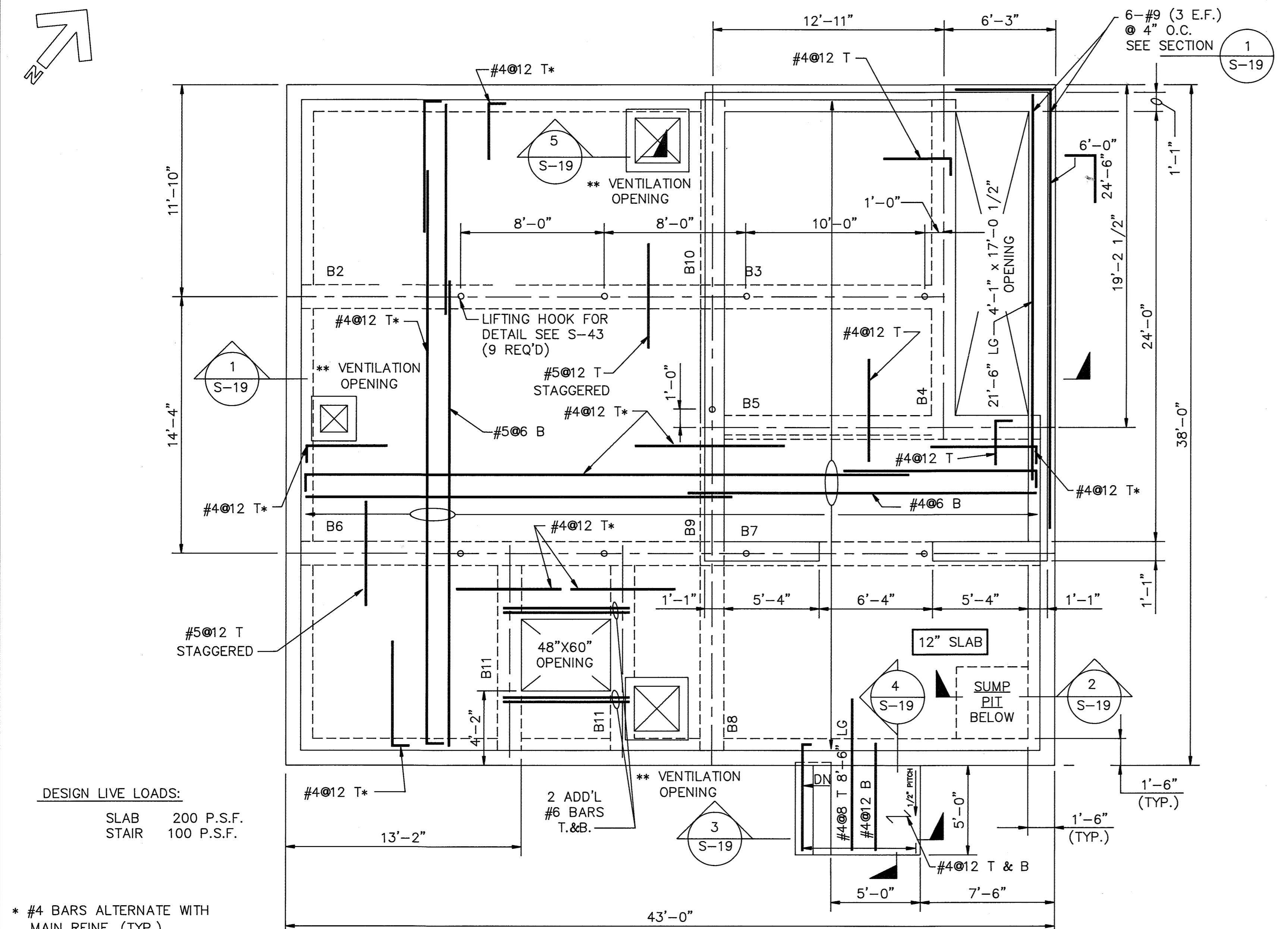
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 66 OF 236

S-18



DESIGN LIVE LOADS:
SLAB 200 P.S.F.
STAIR 100 P.S.F.

* #4 BARS ALTERNATE WITH MAIN REINF. (TYP.)

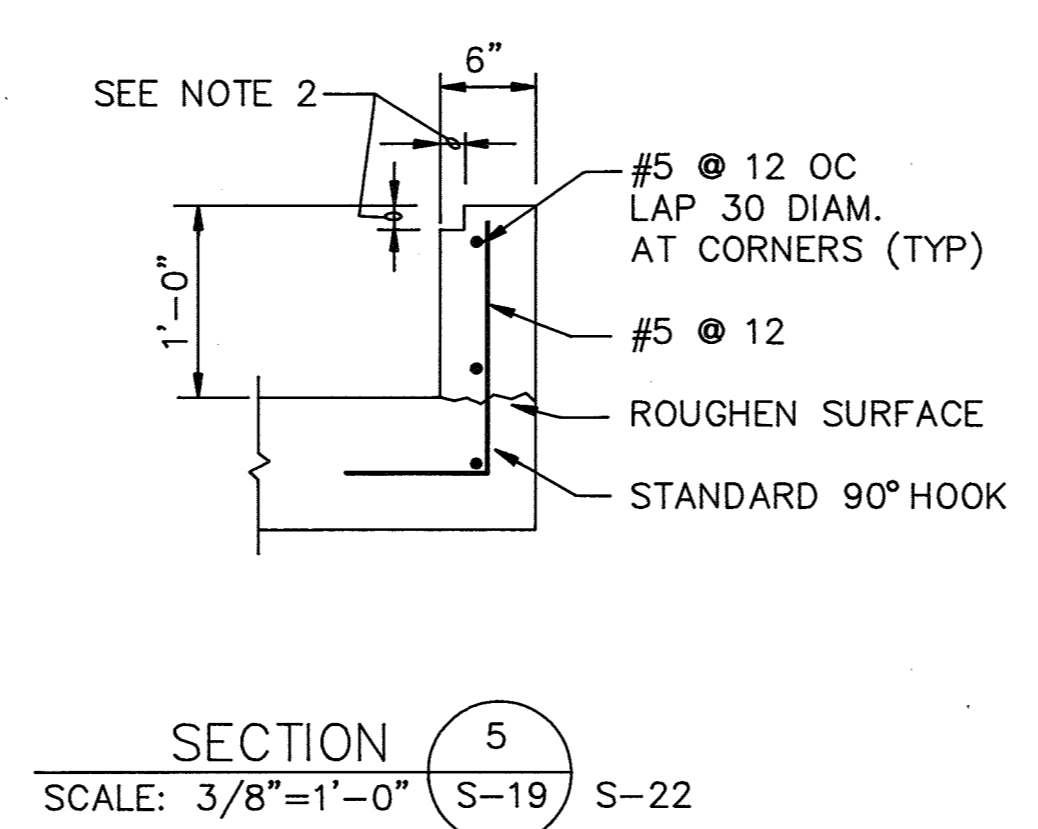
** FOR SIZE AND LOCATION OF VENTILATION OPENING, COORDINATE WITH DRAWING H-6.

FIRST FLOOR FRAMING PLAN
SCALE: 1/4"=1'-0"

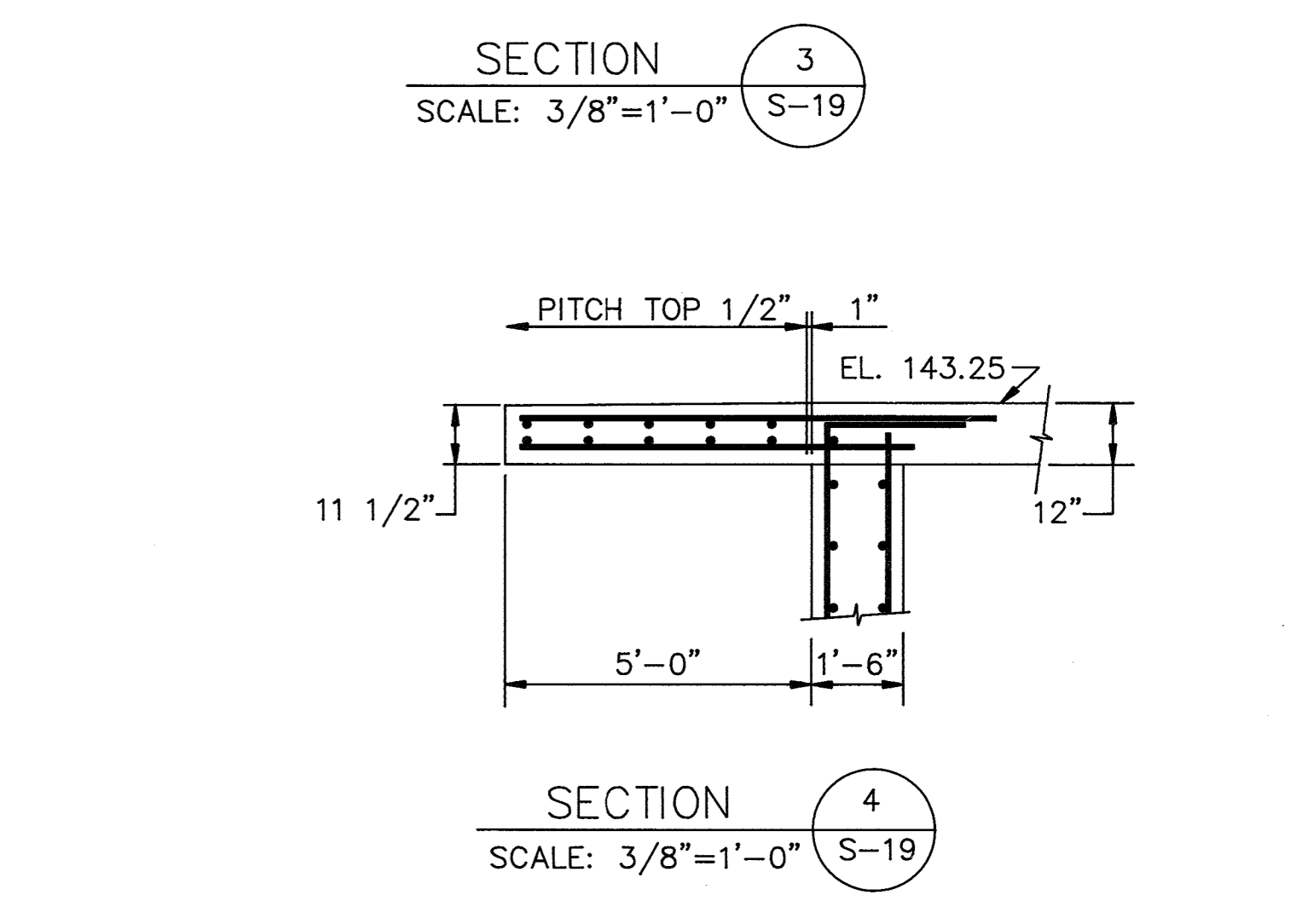
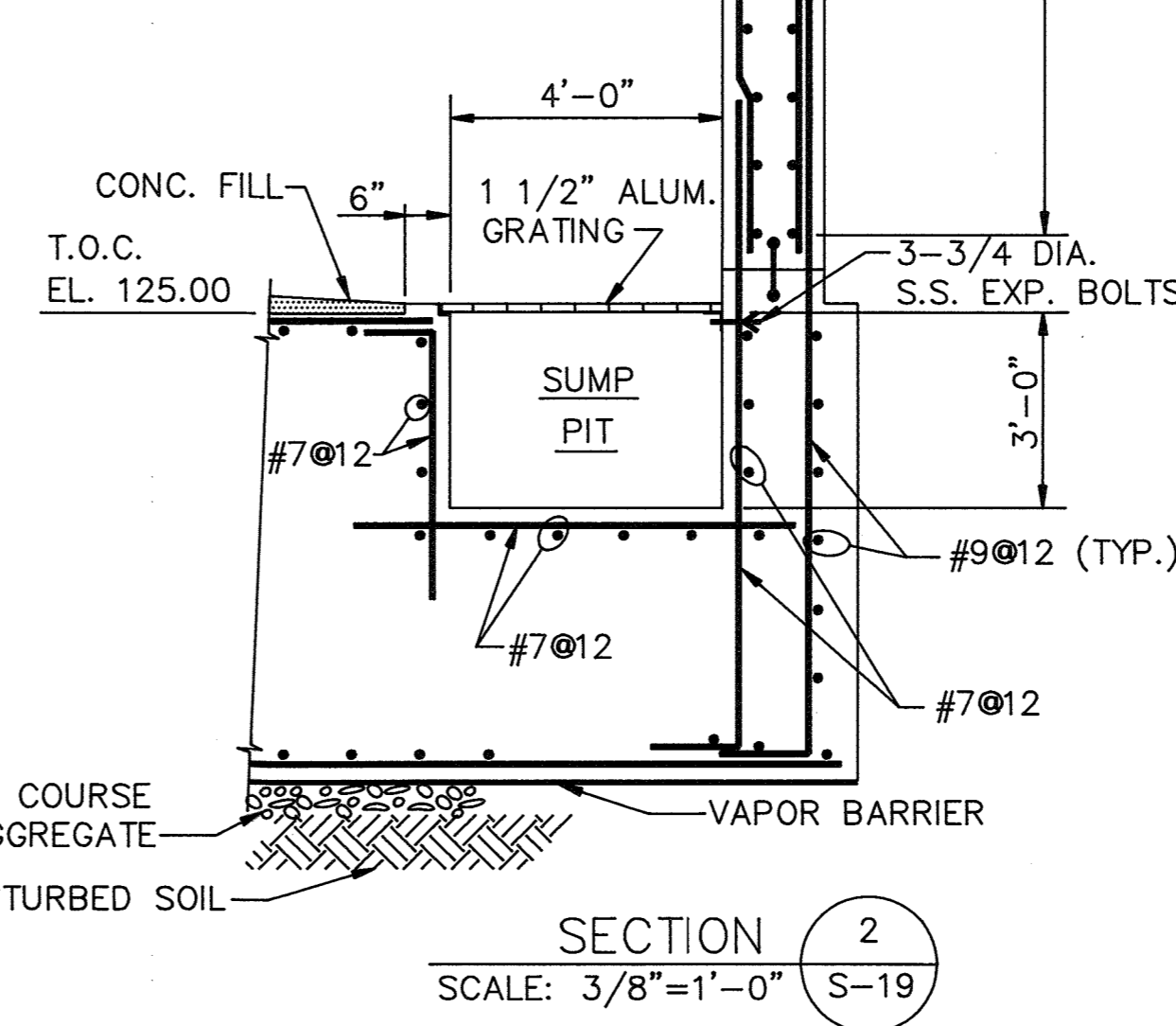
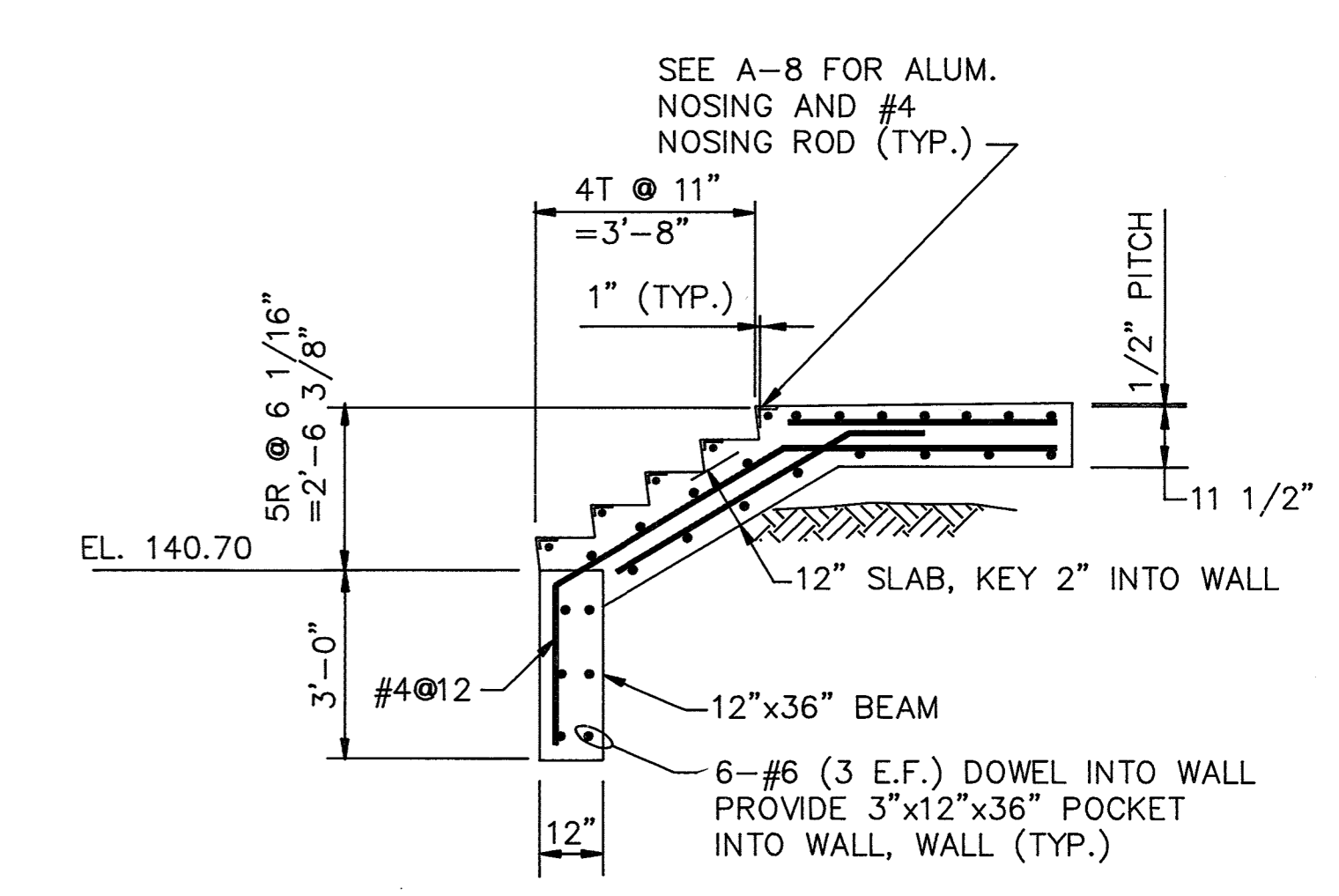
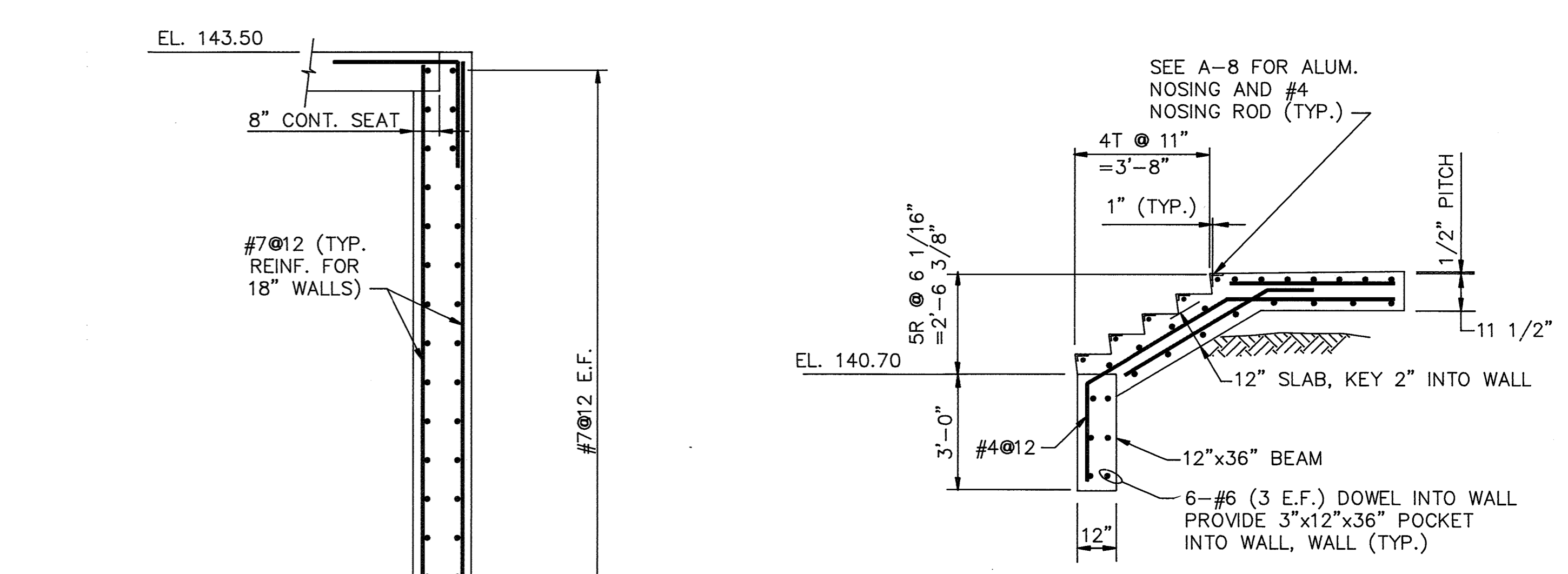
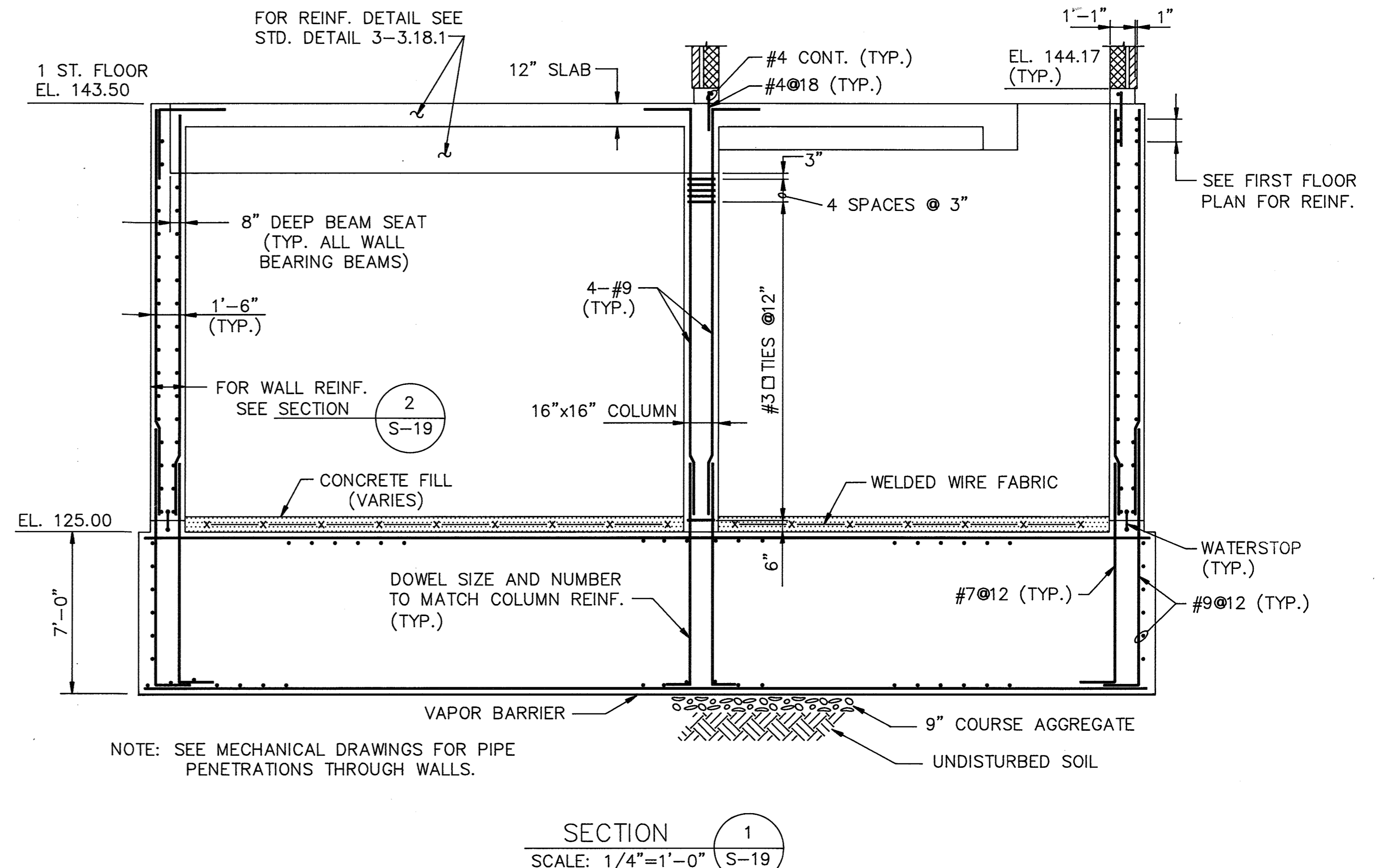
NOTE: SEE ARCHITECTURAL DRAWING A-6 FOR SLAB TOP ELEVATIONS AND FOR HANDRAIL POSITIONING.

BEAM SCHEDULE		1 ST. FLOOR										REMARKS
MARK	SIZE: WIDTH X DEPTH (MIN.)	REINFORCEMENT					STIRRUPS			REMARKS		
		BOTTOM		TOP			TYPE	SIZE	SPACING			
		CONT.	ADD.	ADD. LEFT	CONT.	ADD. RIGHT						
B1	-	-	-	-	-	-	-	-	-	-	-	NOT USED
B2	16x36	2-#9	3-#9	-	2-#9	2-#9	□	#3	1@2", BAL. @10			
B3	16x24	2-#9	-	-	3-#9	-	□	#3	1@2", BAL. @10			
B4	16x24	3-#9	-	-	3-#9	-	□	#3	1@2", BAL. @10			
B5	16x24	2-#9	2-#9	-	2-#9	1-#9	□	#3	1@2", BAL. @10			
B6	16x36	2-#9	3-#9	-	2-#9	3-#9	□	#3	1@2", BAL. @10			
B7	16x36	2-#9	1-#9	-	3-#9	-	□	#3	1@2", BAL. @10			
B8	16x36	2-#9	-	-	2-#9	2-#9	□	#3	1@2", BAL. @10			
B9	16x36	2-#9	2-#9	-	2-#9	2-#9	□	#3	1@2", BAL. @10			
B10	16x36	2-#9	-	-	2-#9	-	□	#3	1@2", BAL. @10			
B11	16x24	2-#9	-	-	2-#9	-	□	#3	1@2", BAL. @10		2 BEAMS	

BEAM MARK ON PLAN WILL BE DESIGNATED ON LEFT SIDE OF BEAM WORK WITH STD. DETAIL 3-3.18.1



NOTES:
1. FOR ADDITIONAL REINF., SEE STD. DETAIL 3-3.23.1.
2. DIMENSIONS SHALL BE SUITED TO EQUIPMENT FURNISHED.



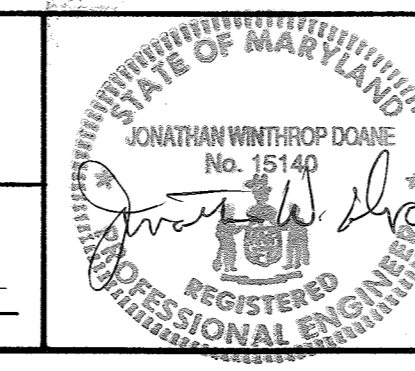
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 3/6/92
Date: 3/6/92

Chief of Environmental Services: *[Signature]* 3/6/92
Date: 3/6/92

M&E Metcalf & Eddy

Reg. Prof. Engr. *[Signature]* 3/6/92
Date: 3/6/92



DES.	DRN.	CHK.	DATE:	NO.	REVISION	DATE
M. Yu	E. Burnett	M. Yu	11/1/91	2	RECORDED DRAWING	11/1/91
			12/1/91	1	REVISED FOR BIDDING	3/5/92

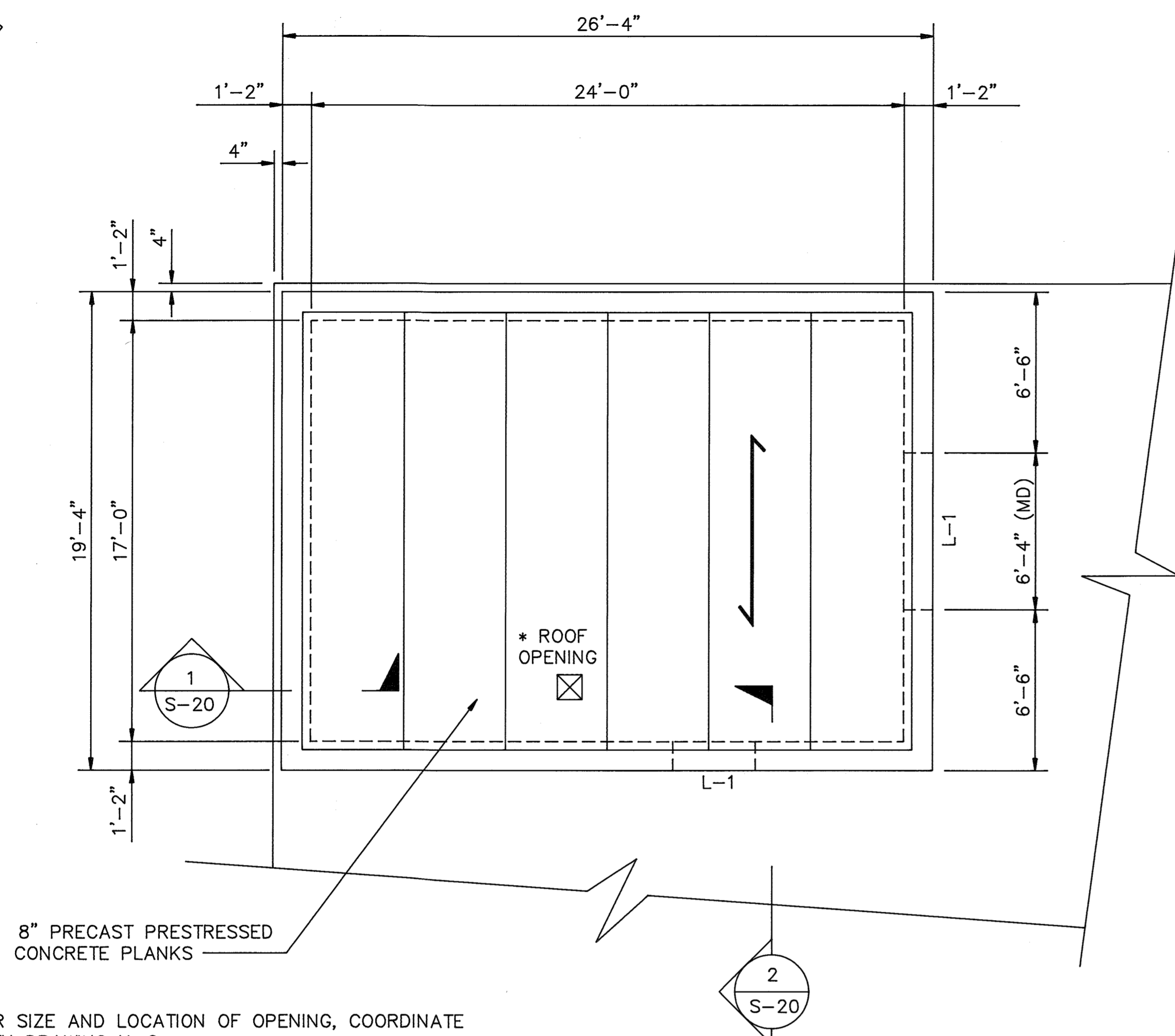
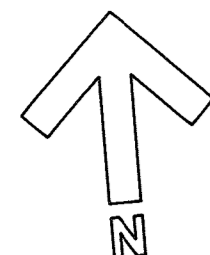
STRUCTURAL

NORTH PUMP STATION
FIRST FLOOR FRAMING PLAN
AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

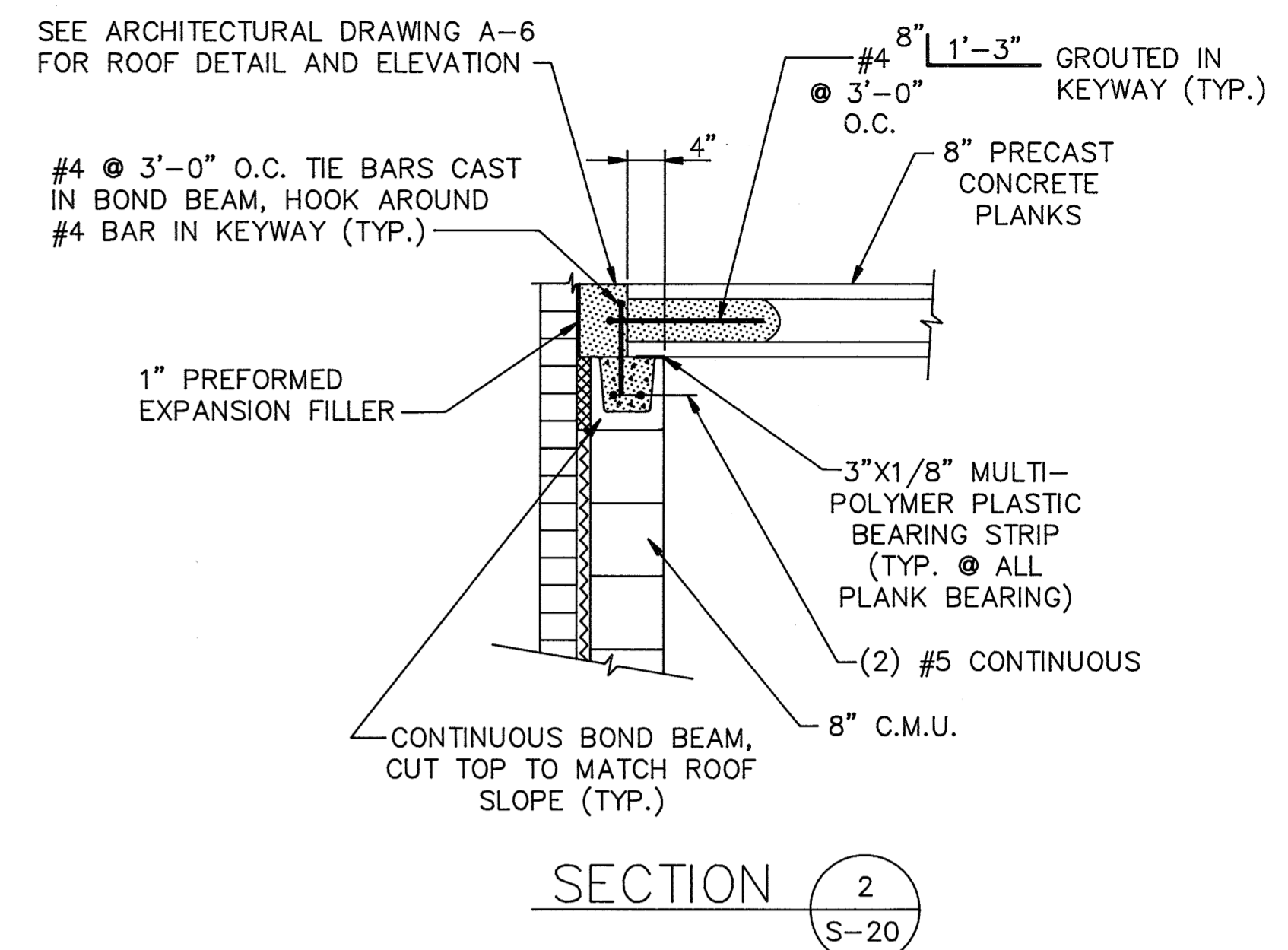
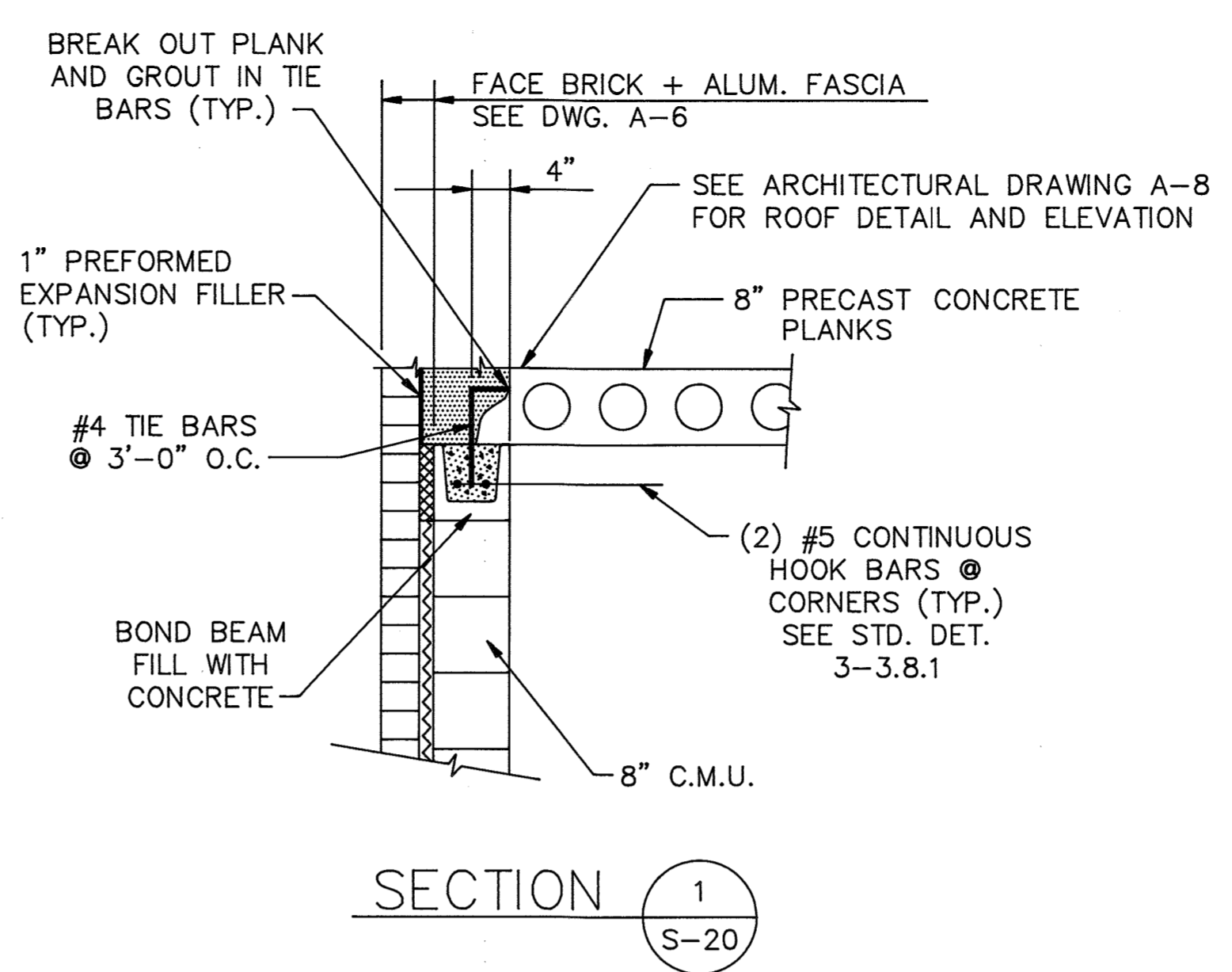
SCALE AS SHOWN
SHEET 67 OF 226
S-19



* FOR SIZE AND LOCATION OF OPENING, COORDINATE WITH DRAWING H-6.

DESIGN LIVE LOAD:
 1. ROOF SNOW LOAD = 30 PSF
 2. SUPERIMPOSED DL = 20 PSF

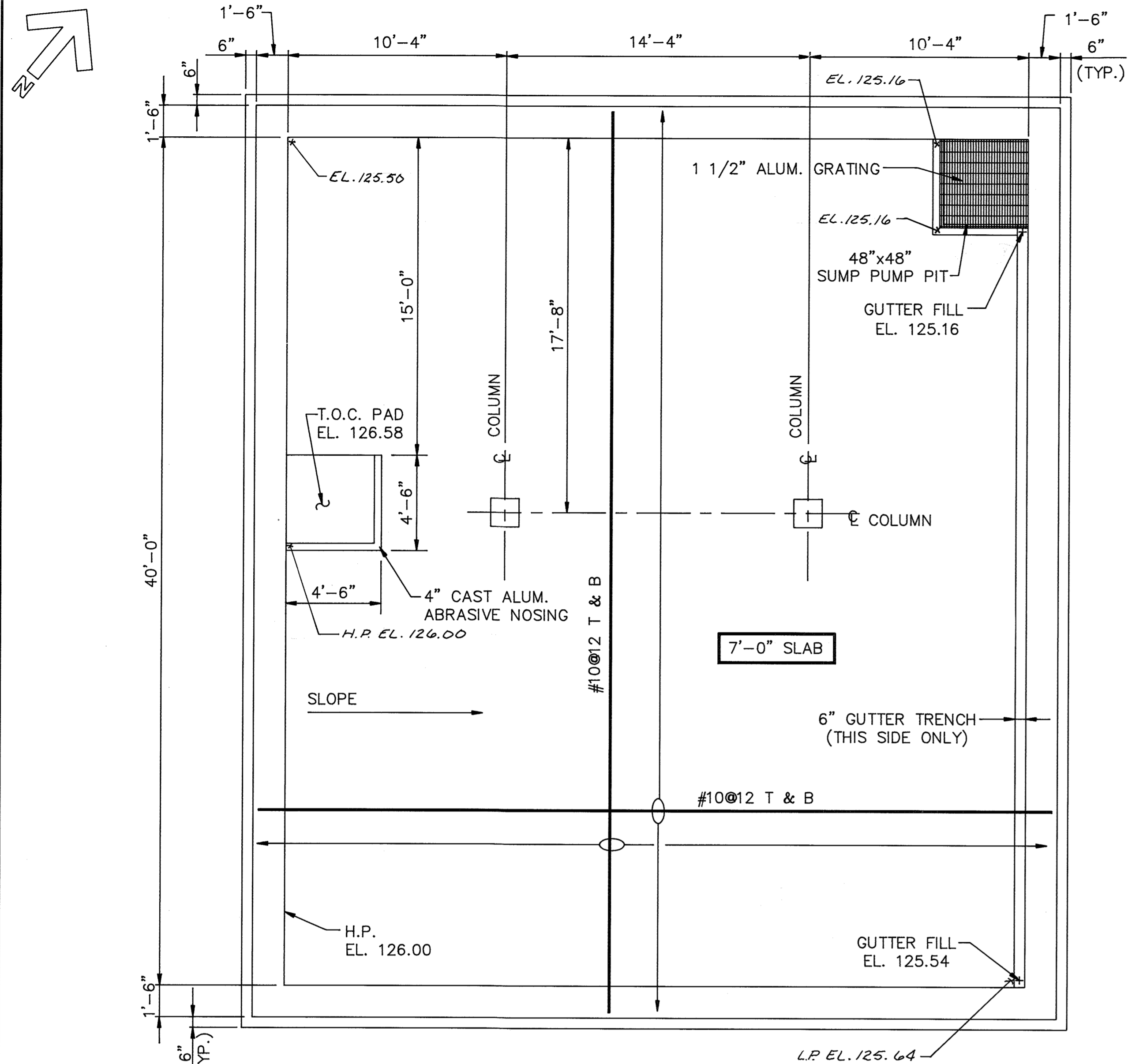
ROOF FRAMING PLAN
 SCALE: 1/4"=1'-0"



PRECAST CONCRETE LINTEL SCHEDULE				
MARK	SIZE WIDTH X DEPTH	REINFORCING	MINIMUM END BEARING	REMARKS
L-1	7 5/8" X 7 5/8"	(2) #5 CONTINUOUS	8" MINIMUM	SEE NOTE 2

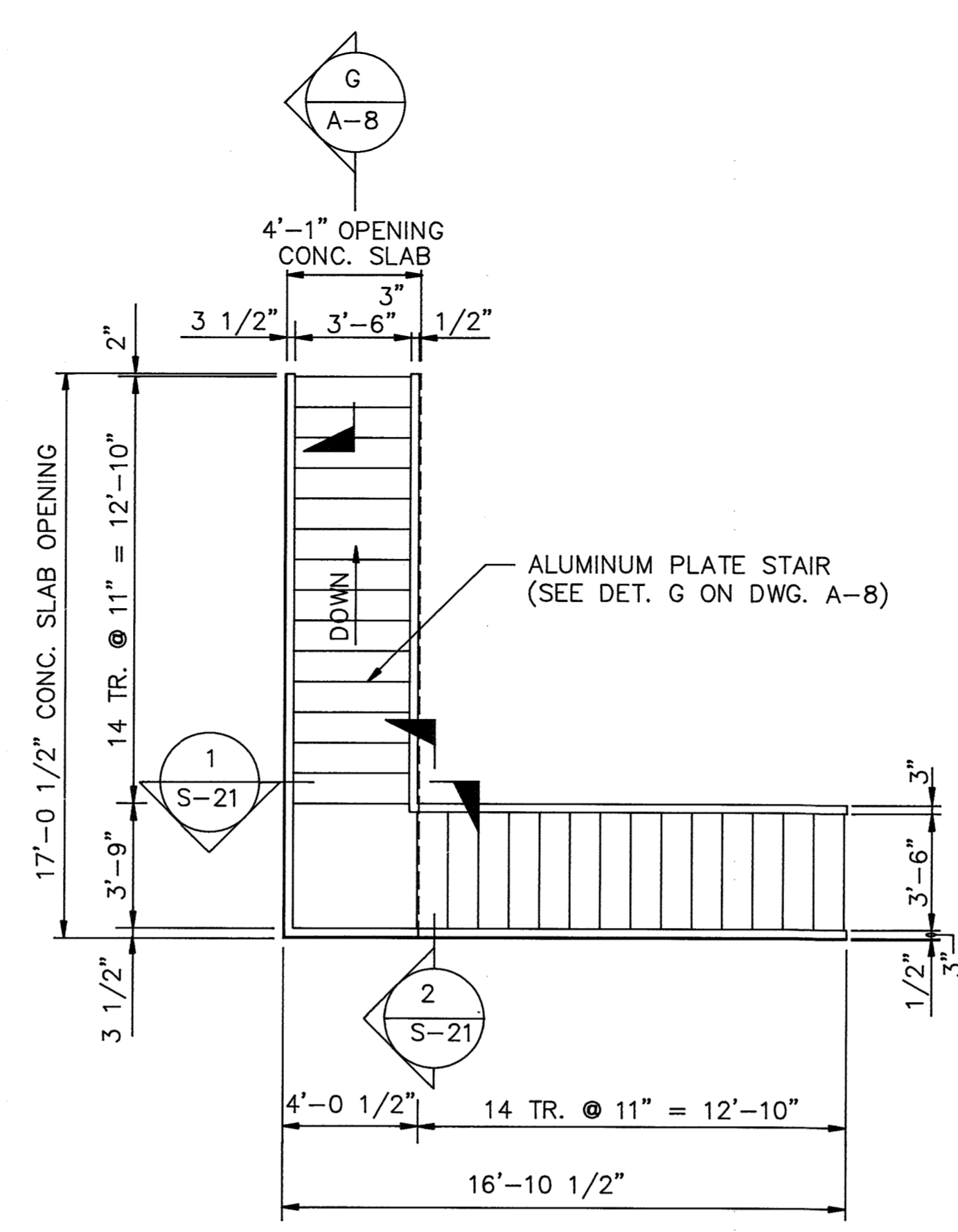
- NOTES:
1. FILL BLOCK UNDER BEARING ENDS OF LINTELS WITH #5 BAR AND MORTAR DOWN TO THE FIRST FLOOR.
 2. PROVIDE L5"x5"x5/16" (HOT DIPPED GALVANIZED) ATTACHED TO CONCRETE LINTEL AS SHOWN ON STD. DETAIL 3-3.31.1 .

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>John J. O'Hara</i> 12/6/91 Chief, Bureau of Engineering: <i>Debra A. Ray</i> 12-2-91 Chief, Bureau of Environmental Services: <i>John J. O'Hara</i> 12/6/91 Chief, Utility Design Division: <i>Debra A. Ray</i> 12-2-91				DES: M. YH DRN: E. Burnett CHK: M. YH DATE: 12/7/91	STRUCTURAL NORTH PUMP STATION ROOF FRAMING PLAN	LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 68 OF 226 S-20
REVISIONS: NO. 2 RECORD DRAWING 11/1/94 NO. 1 REVISED FOR BIDDING 3/5/92		REG. PROF. ENGR. DATE: 12/7/91		DATE: 12/7/91	DATE: 12/7/91	DATE: 12/7/91	DATE: 12/7/91

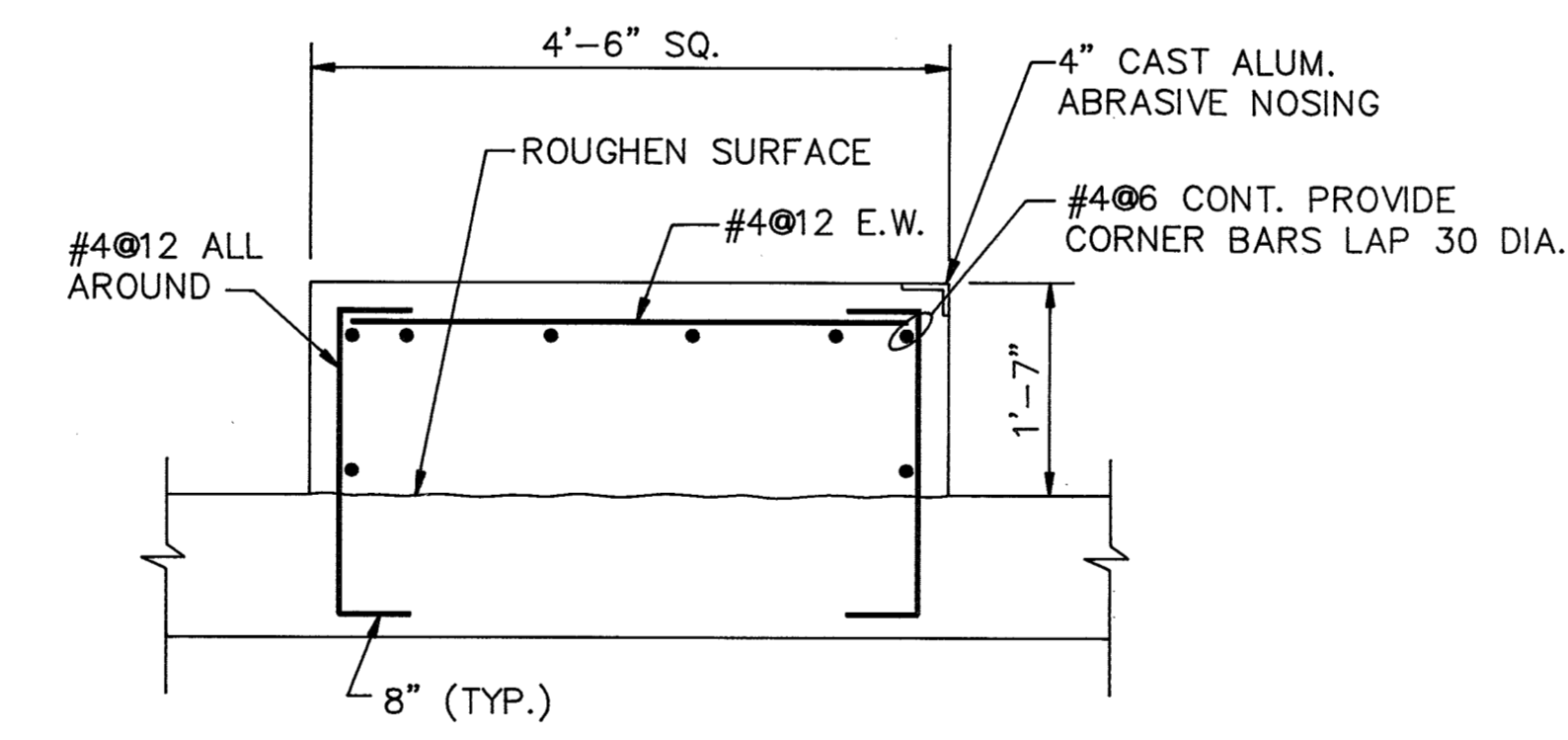


FOUNDATION PLAN
SCALE: 1/4"=1'-0"

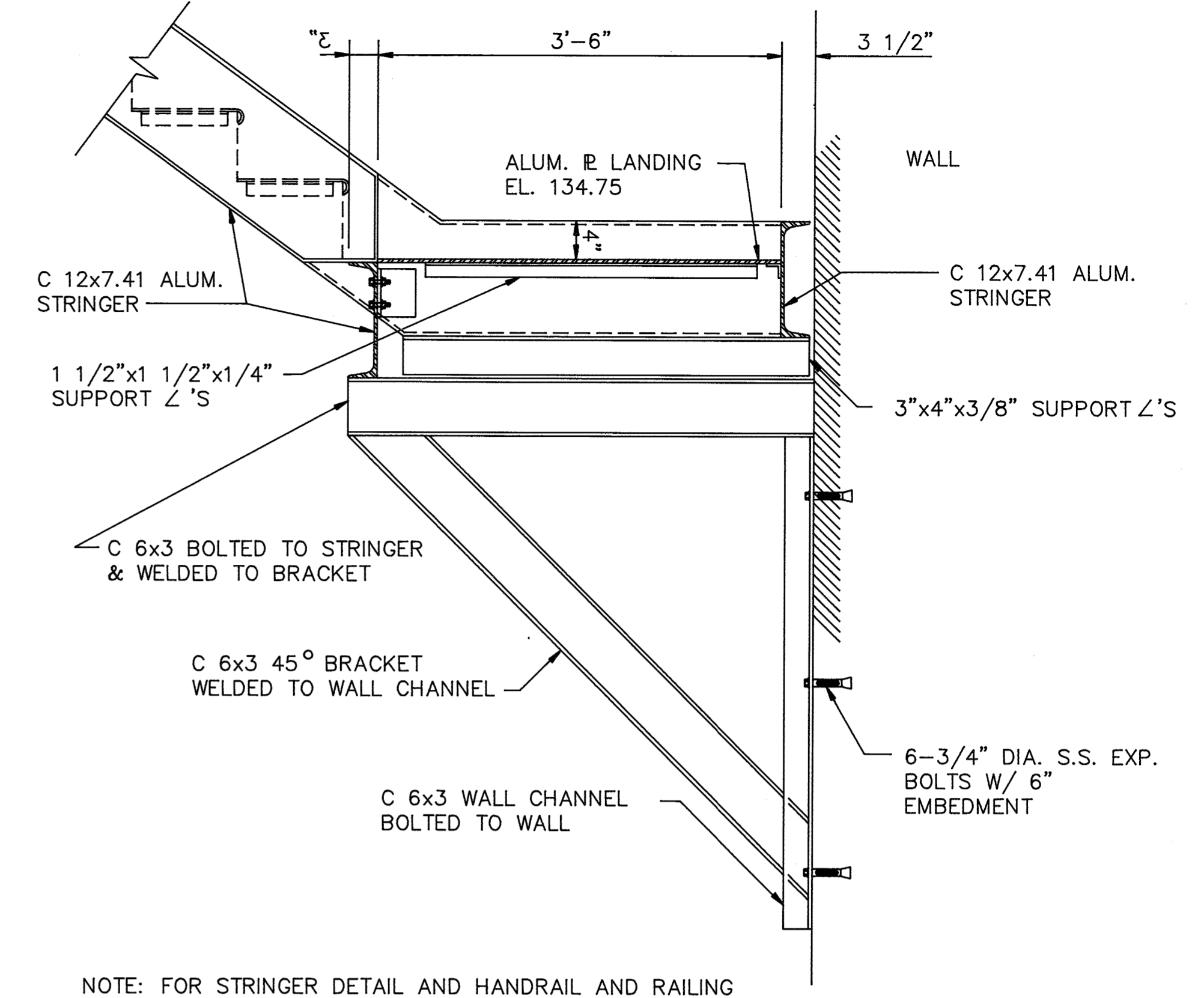
- NOTES:
1. FOUNDATION BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF 2,000 LBS PER SQ. FT.
 2. STANDARD DETAILS TO BE FOUND IN SPECIFICATIONS.
 3. TYPICAL DETAILS TO BE FOUND IN SHEET S-39.



PLAN OF STAIR
SCALE: 1/4"=1'-0"

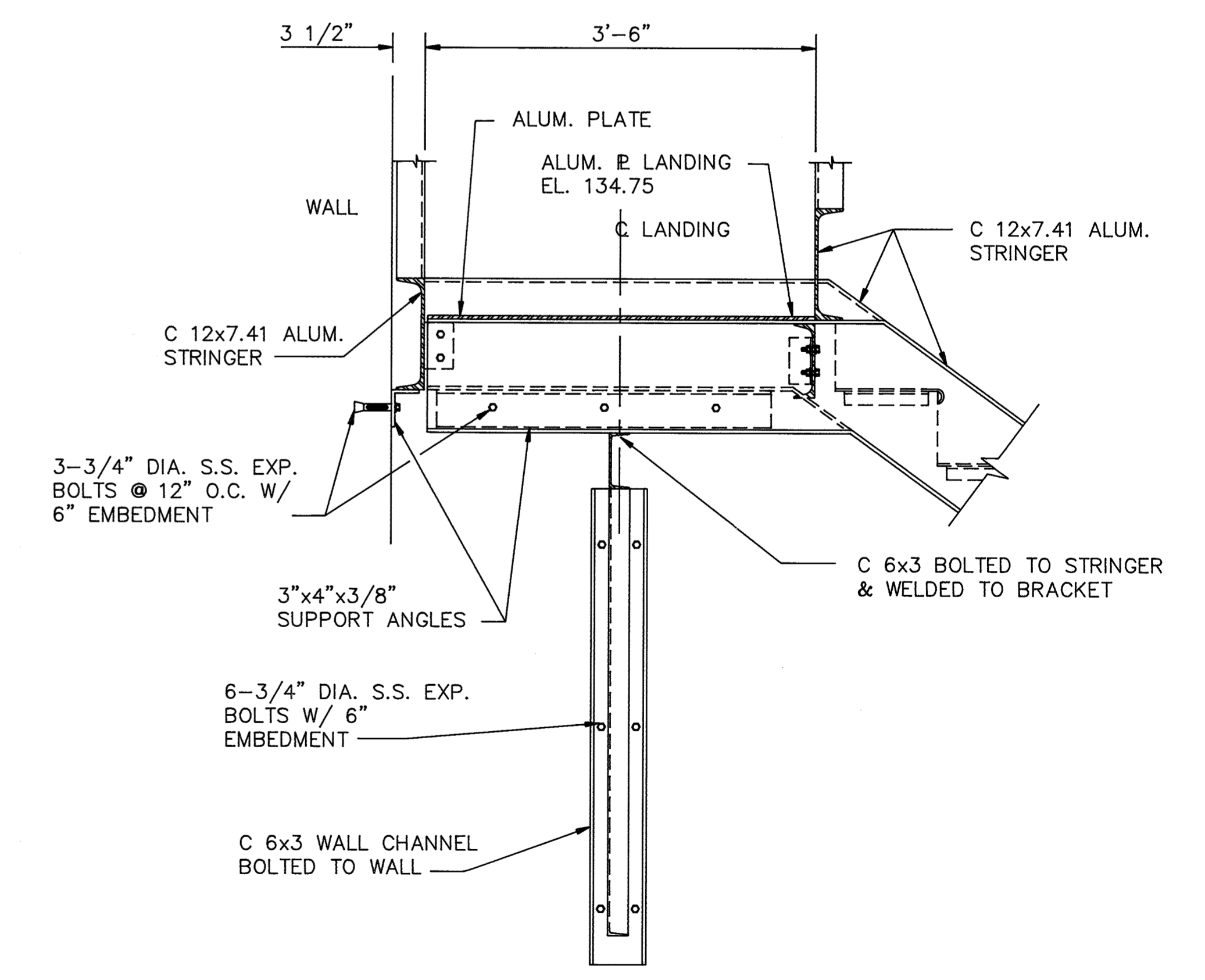


STAIR PAD DETAIL
SCALE: 3/4"=1'-0"



SECTION 1
SCALE: 1"=1'-0" S-21

NOTE: FOR STRINGER DETAIL AND HANDRAIL AND RAILING POSITIONING SEE DETAIL 5.2.6.9 AND ARCHITECTURAL DRAWING SECTION A-8 & A-6.



SECTION 2
SCALE: 1"=1'-0" S-21

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

3/6/92
DATE
Act. CHIEF, BUREAU OF ENGINEERING

3/6/92
DATE
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Throp, No. 15140
REGISTERED PROFESSIONAL ENGINEER

3/6/92
DATE
REG. PROF. ENGR.

DES: M. Yu					
DRN: E. Barnett					
CHK: M. Yu	2	RECORD DRAWING			
DATE: 12/7/91	1	REVISED FOR BIDDING			
BY	NO.	REVISION			DATE

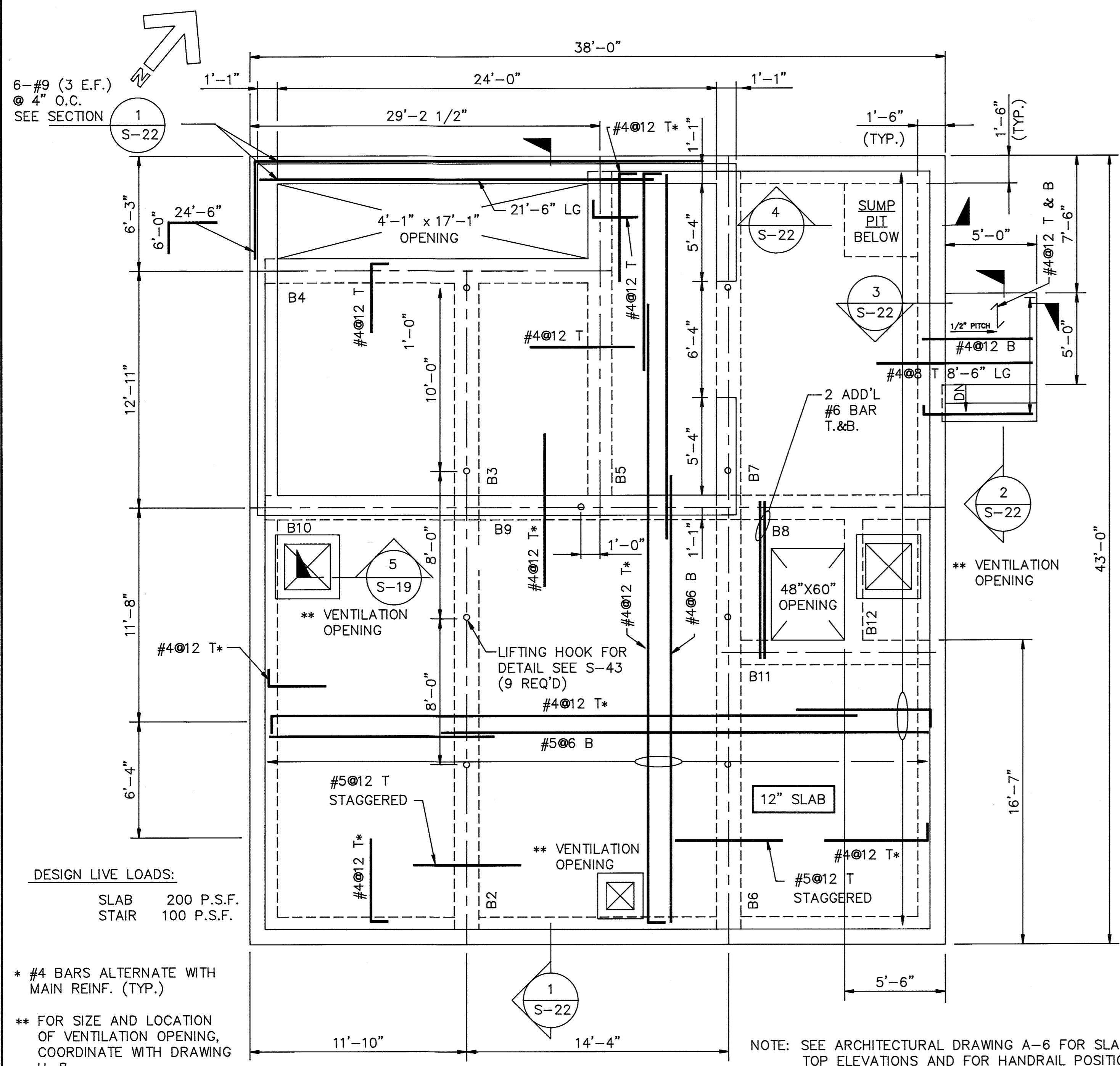
STRUCTURAL

SOUTH PUMP STATION
FOUNDATION PLAN, SECTION
AND STAIR

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S - 6153

CONTRACT NO. 20 - 3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 69 OF 226
S-21

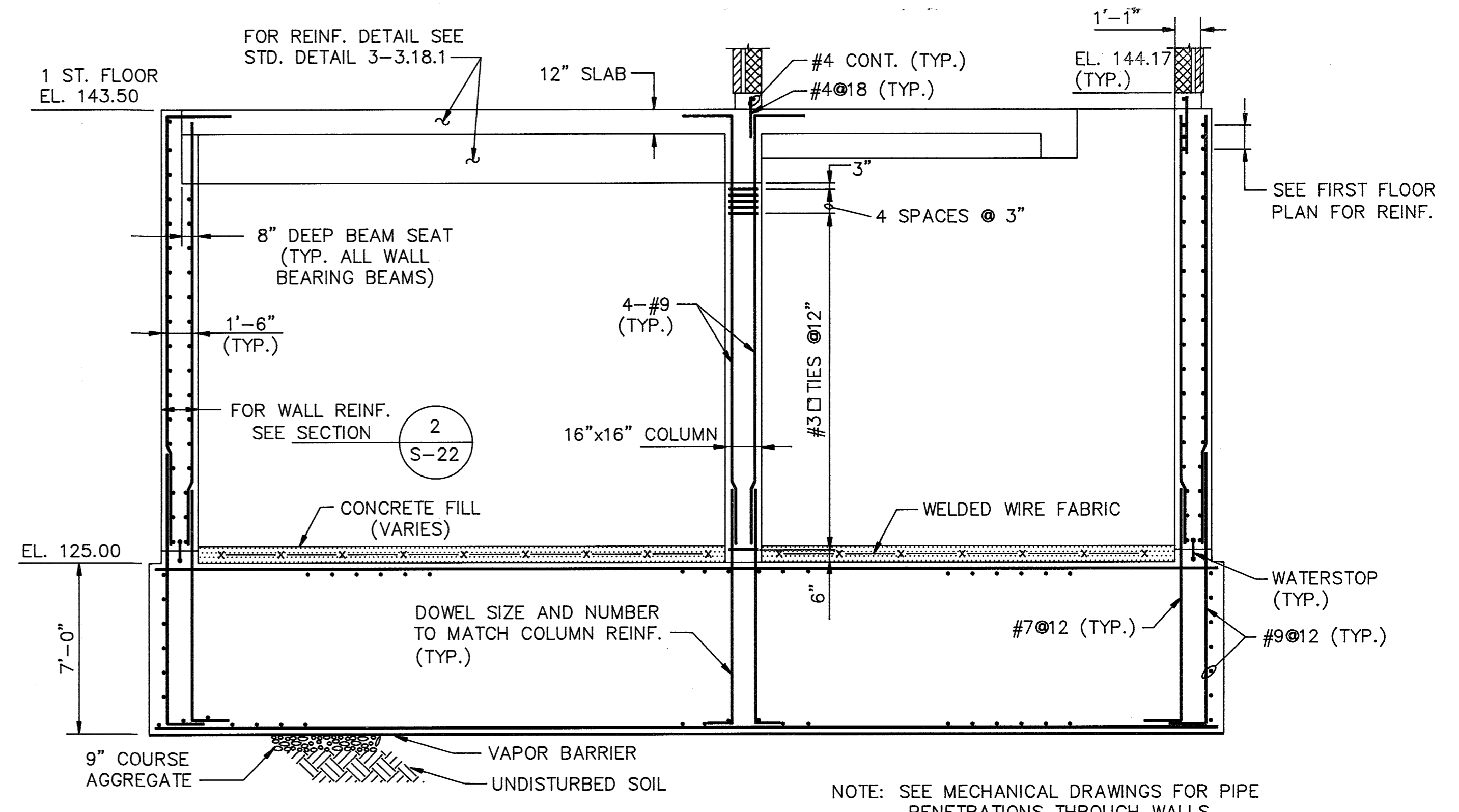


FIRST FLOOR FRAMING PLAN
SCALE: 1/4"=1'-0"

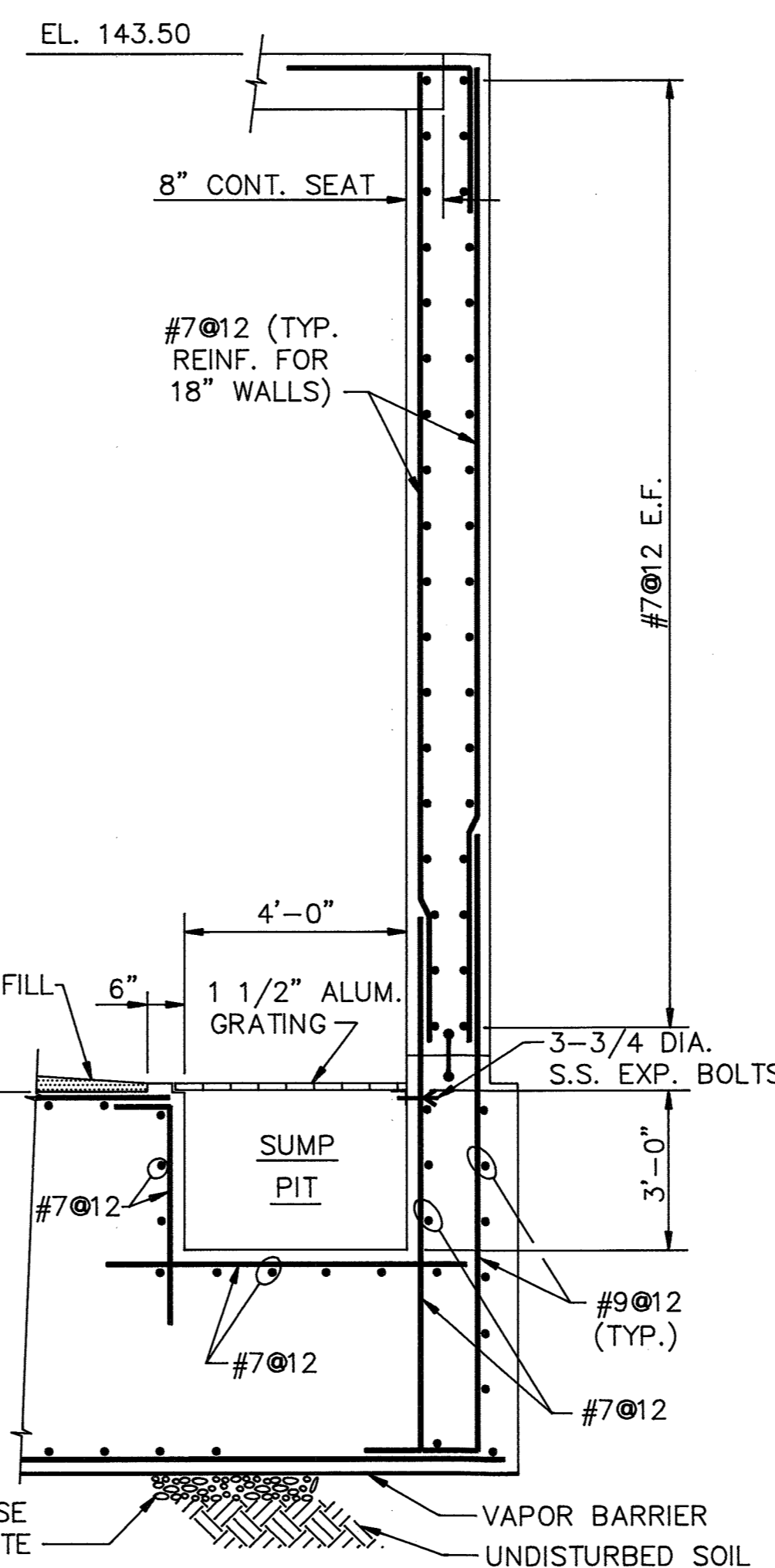
DESIGN LIVE LOADS:
SLAB 200 P.S.F.
STAIR 100 P.S.F.

* #4 BARS ALTERNATE WITH MAIN REINF. (TYP.)
** FOR SIZE AND LOCATION OF VENTILATION OPENING, COORDINATE WITH DRAWING H-8.

NOTE: SEE ARCHITECTURAL DRAWING A-6 FOR SLAB TOP ELEVATIONS AND FOR HANDRAIL POSITIONING.

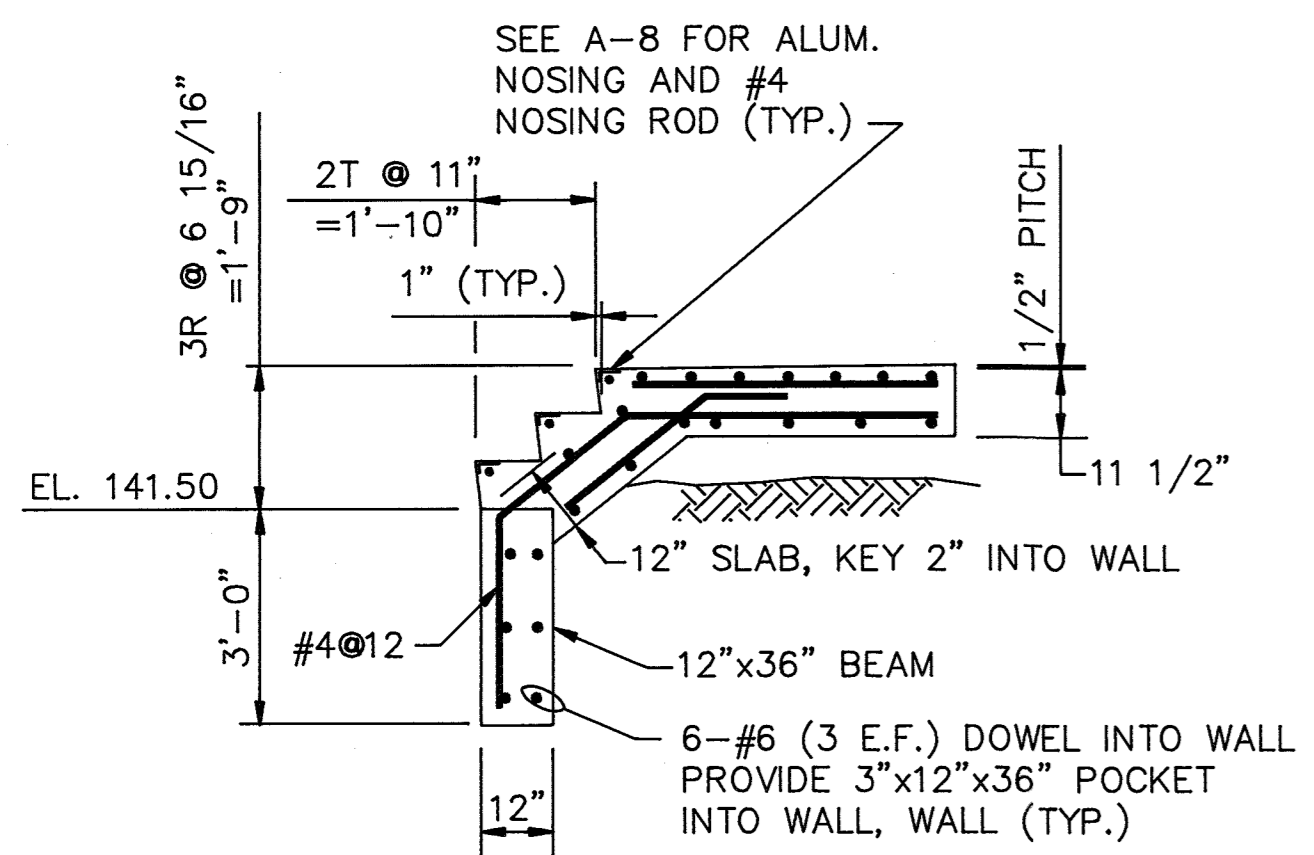


SECTION 1
SCALE: 1/4"=1'-0" S-22

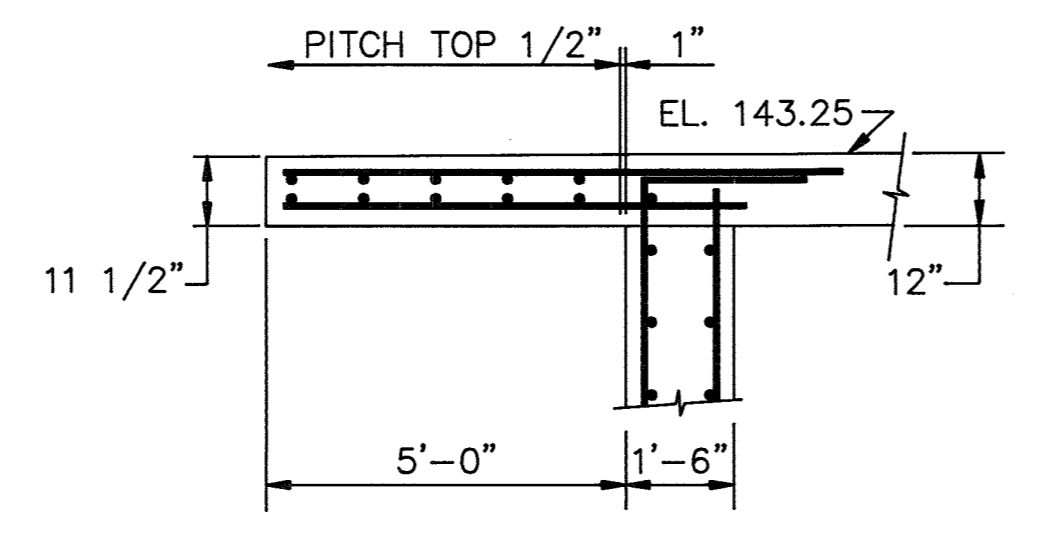


SECTION 4
SCALE: 3/8"=1'-0" S-22

BEAM SCHEDULE										BEAM MARK ON PLAN WILL BE DESIGNATED ON LEFT SIDE OF BEAM WORK WITH STD. DET. 3-3.18.1	
1 ST. FLOOR											
MARK	SIZE: WIDTH X DEPTH (MIN.)	REINFORCEMENT				STIRRUPS			REMARKS		
		BOTTOM		TOP		TYPE	SIZE	SPACING			
		CONT.	ADD.	ADD. LEFT	CONT.					ADD. RIGHT	
B1	-	-	-	-	-	-	-	-	-	NOT USED	
B2	16x36	2-#9	3-#9	-	2-#9	2-#9	□	#3	1@2", BAL. @10		
B3	16x24	2-#9	-	-	3-#9	-	□	#3	1@2", BAL. @10		
B4	16x24	3-#9	-	-	3-#9	-	□	#3	1@2", BAL. @10		
B5	16x24	2-#9	2-#9	-	2-#9	1-#9	□	#3	1@2", BAL. @10		
B6	16x36	2-#9	3-#9	-	2-#9	3-#9	□	#3	1@2", BAL. @10		
B7	16x36	2-#9	1-#9	-	3-#9	-	□	#3	1@2", BAL. @10		
B8	16x36	2-#9	-	-	2-#9	2-#9	□	#3	1@2", BAL. @10		
B9	16x36	2-#9	2-#9	-	2-#9	2-#9	□	#3	1@2", BAL. @10		
B10	16x36	2-#9	-	-	2-#9	-	□	#3	1@2", BAL. @10		
B11	16x24	2-#9	-	-	2-#9	-	□	#3	1@2", BAL. @10		
B12	16x24	2-#9	-	-	2-#9	-	□	#3	1@2", BAL. @10		



SECTION 2
SCALE: 3/8"=1'-0" S-22



SECTION 3
SCALE: 3/8"=1'-0" S-22

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
3-6-92
3-6-92

M&E Metcalf & Eddy
3/6/92

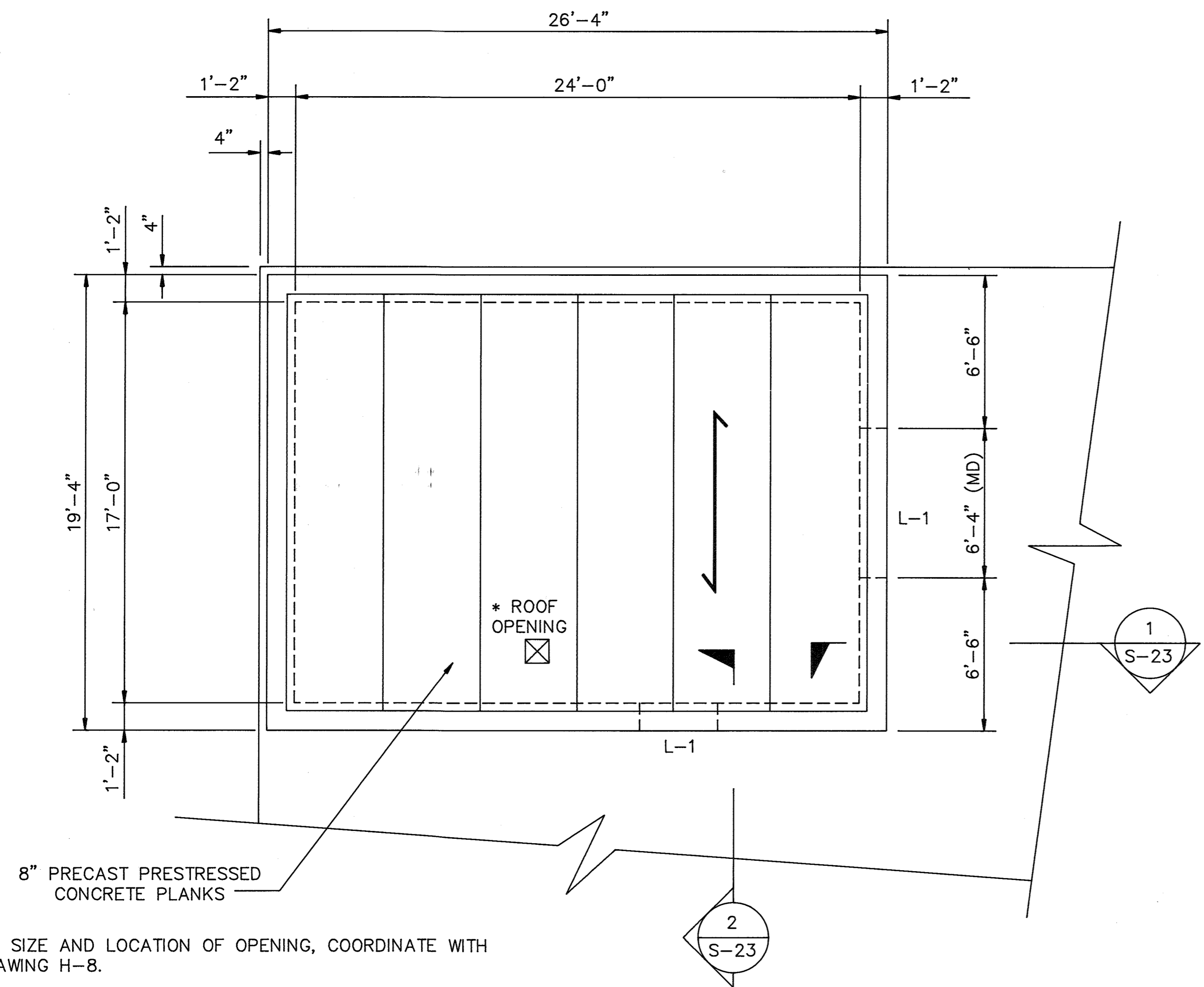
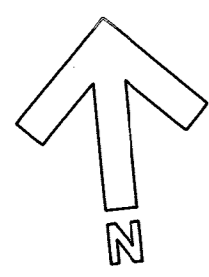
STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER

DES:	M. Yu		
DRN:	E. Burnett		
CHK:	M. Yu	AP 2	RECORDED DRAWING
DATE:	12/1/91	1	REVISED FOR BIDDING
BY:			
NO.:			
REVISION:			
DATE:			

STRUCTURAL
SOUTH PUMP STATION
FIRST FLOOR FRAMING PLAN
AND SECTIONS

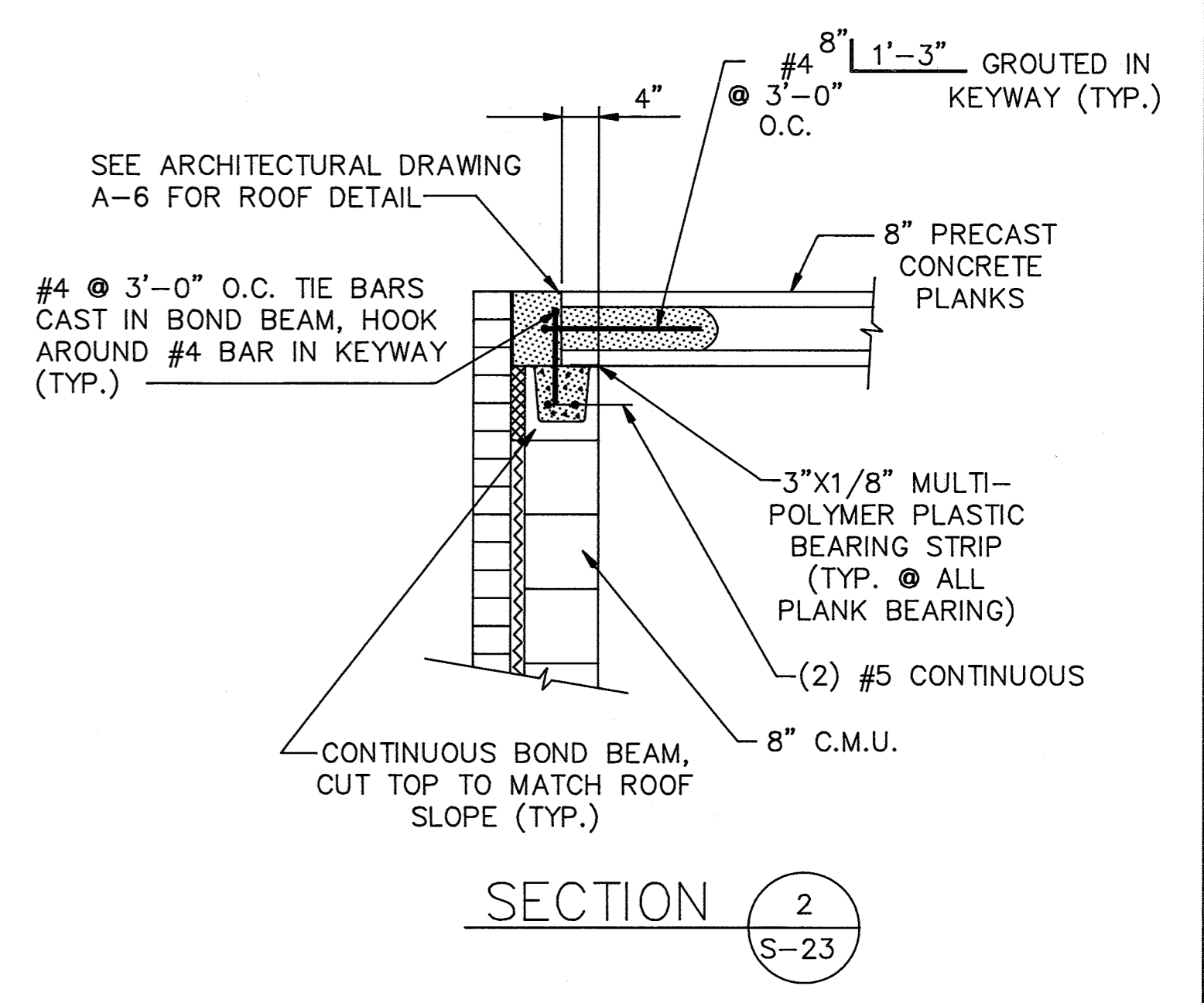
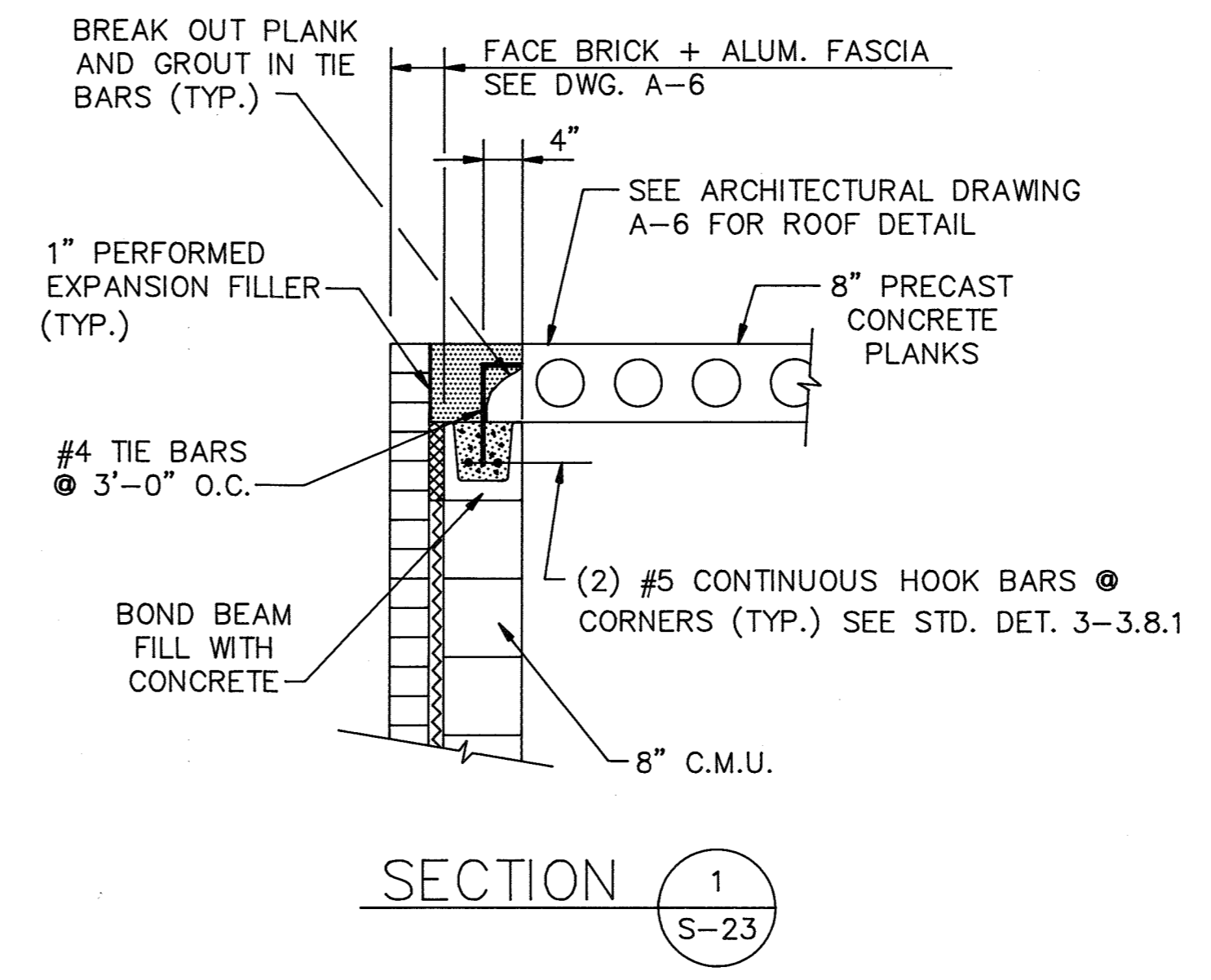
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 10 OF 226
S-22



* FOR SIZE AND LOCATION OF OPENING, COORDINATE WITH DRAWING H-8.
 DESIGN LIVE LOAD: 1. ROOF SNOW LOAD = 30 PSF
 2. SUPERIMPOSED DL = 20 PSF

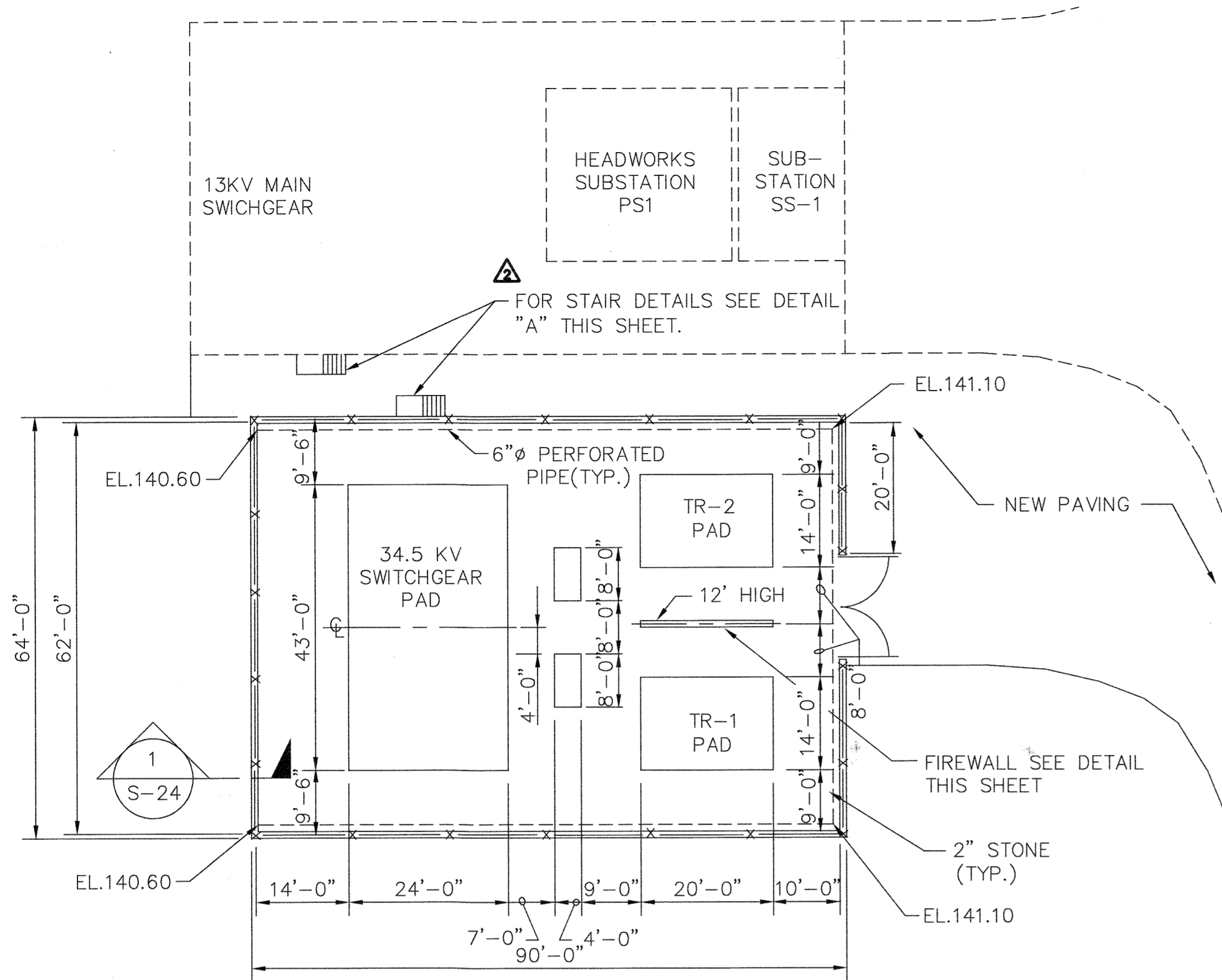
ROOF FRAMING PLAN
 SCALE: 1/4"=1'-0"



PRECAST CONCRETE LINTEL SCHEDULE				
MARK	SIZE WIDTH X DEPTH	REINFORCING	MINIMUM END BEARING	REMARKS
L-1	7 5/8" X 7 5/8"	(2) #5 CONTINUOUS	8" MINIMUM	SEE NOTE 2

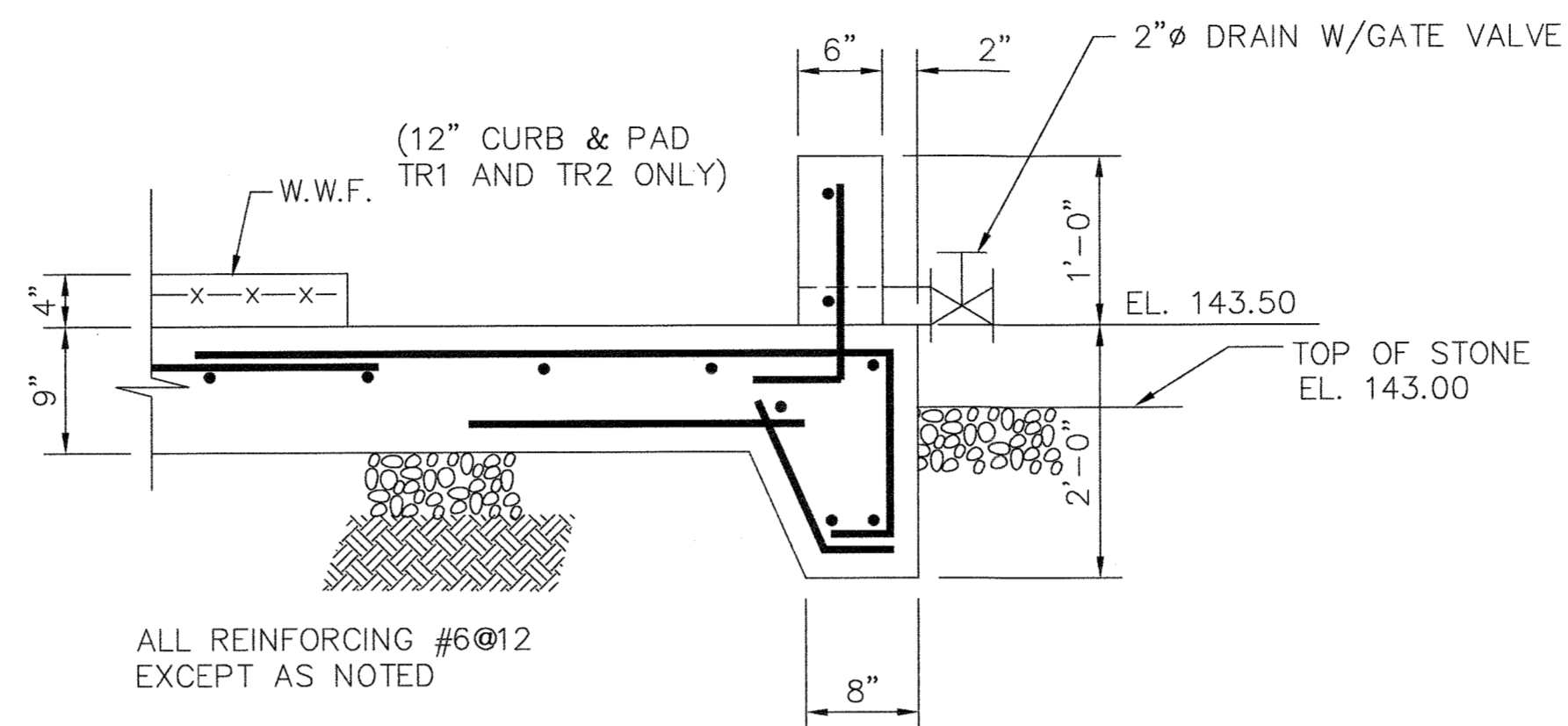
- NOTES:**
- FILL BLOCK UNDER BEARING ENDS OF LINTELS WITH #5 BAR AND MORTAR DOWN TO THE FIRST FLOOR.
 - PROVIDE L5"x5"x1/16" (HOT DIPPED GALVANIZED) ATTACHED TO CONCRETE LINTEL AS SHOWN ON STD. DETAIL 3-3.31.1 .

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>[Signature]</i> 12/9/91 Chief, Bureau of Engineering: <i>[Signature]</i> 12-9-91 Chief, Bureau of Environmental Services: <i>[Signature]</i> 12/9/91 Chief, Utility Design Division: <i>[Signature]</i> 12-9-91		M&E Metcalf & Eddy Registered Professional Engineer: <i>[Signature]</i> 12/9/91	DES: M.V.H. DRN: E. BARNETT CHK: M.V.H. DATE: 12/7/91	STRUCTURAL SOUTH PUMP STATION ROOF FRAMING PLAN	LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 71 OF 236 S-23
REVISIONS: NO. 2 RECORD DRAWING 11/1/91 NO. 1 REVISED FOR BIDDING 3/5/92						

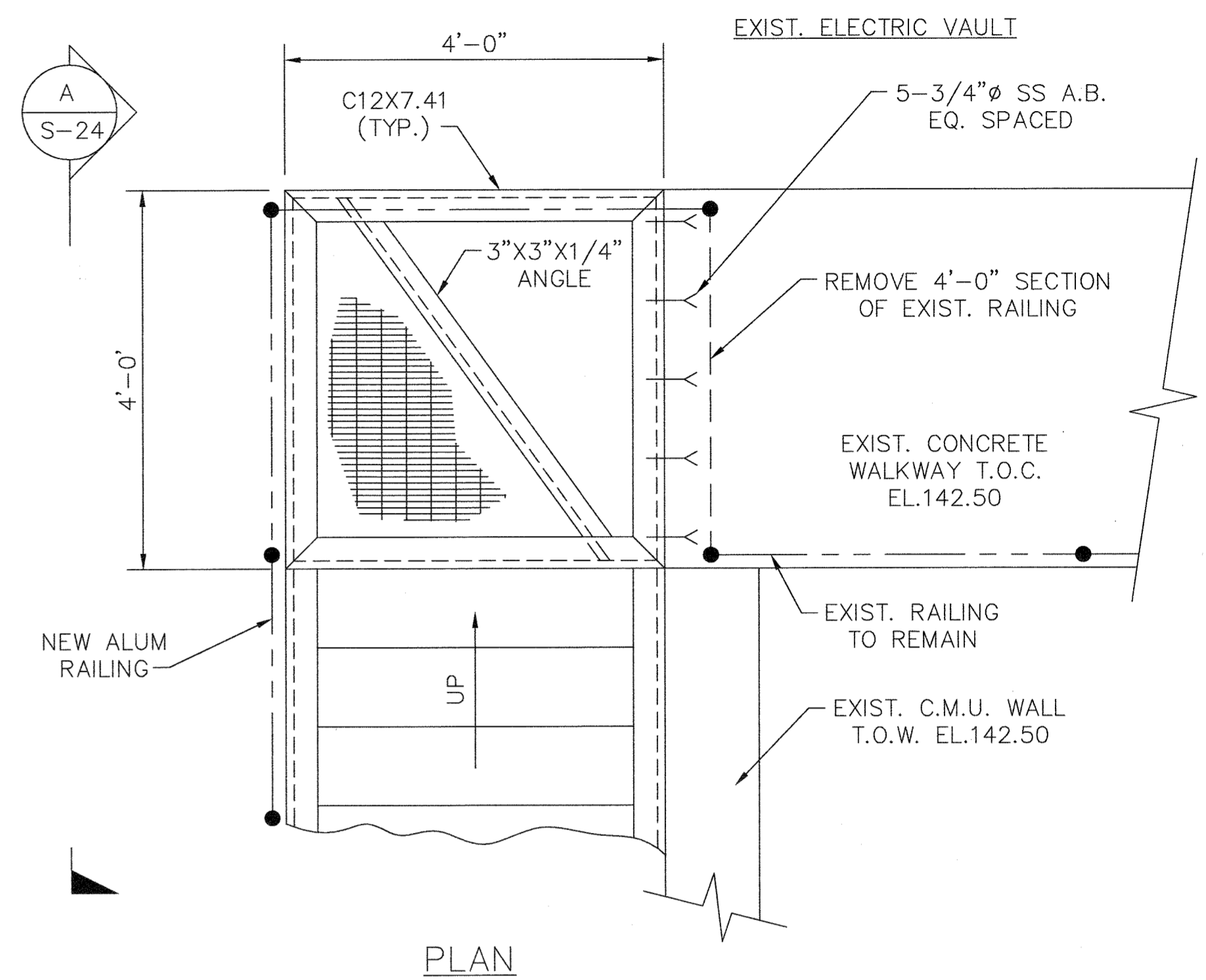


- NOTE:
1. SEE TYPICAL PAD DETAIL THIS SHEET.
 2. SEE CIVIL DRAWINGS.
 3. PAD RELOCATED 10'-0" FORWARD. NEW PERIMETER FRONT WALL LINES UP WITH EXISTING SUB-STATION FRONT WALL.

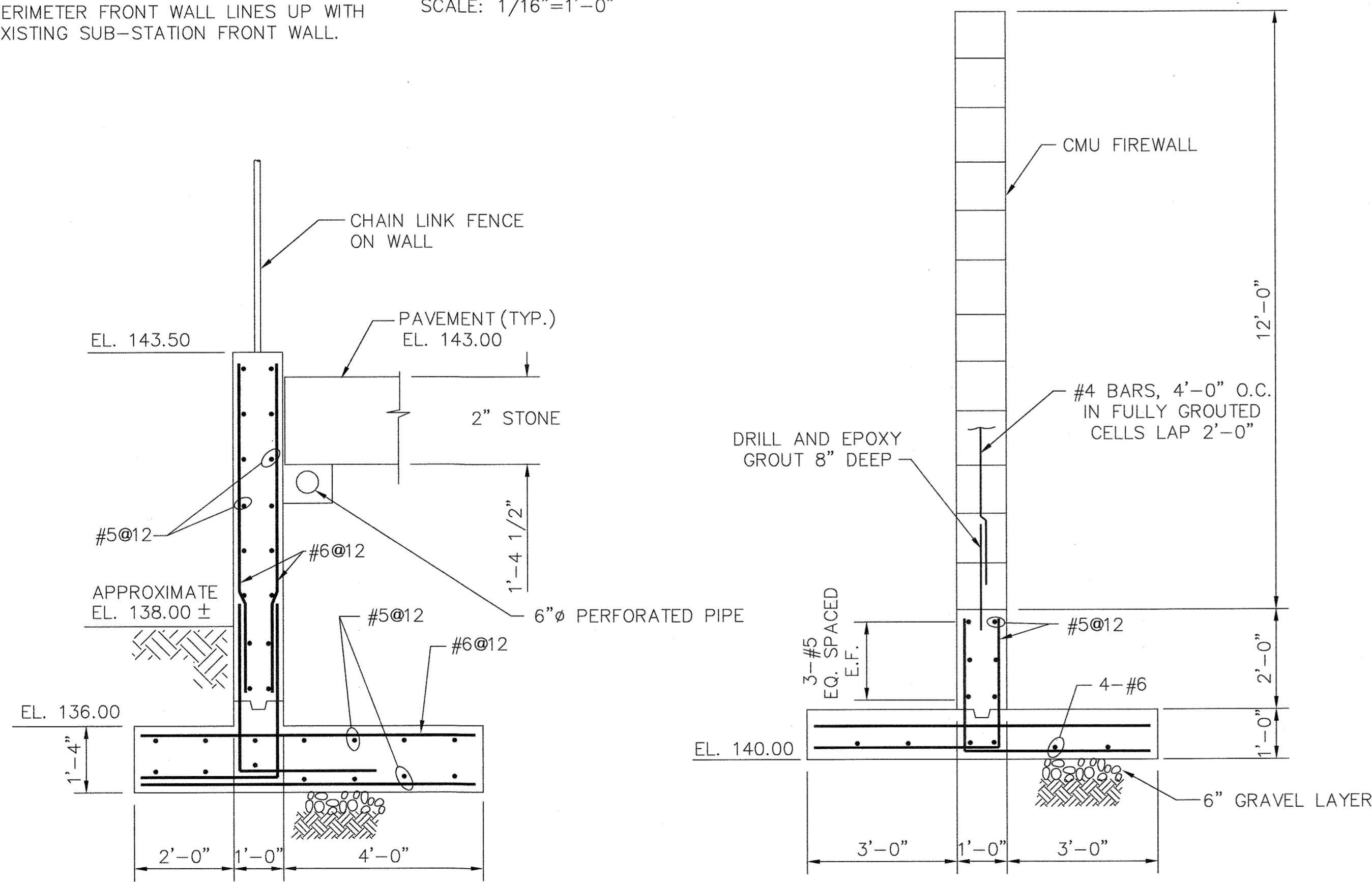
PAD LOCATIONS
SCALE: 1/16"=1'-0"



TYPICAL PAD DETAIL
SCALE: 1"=1'-0"

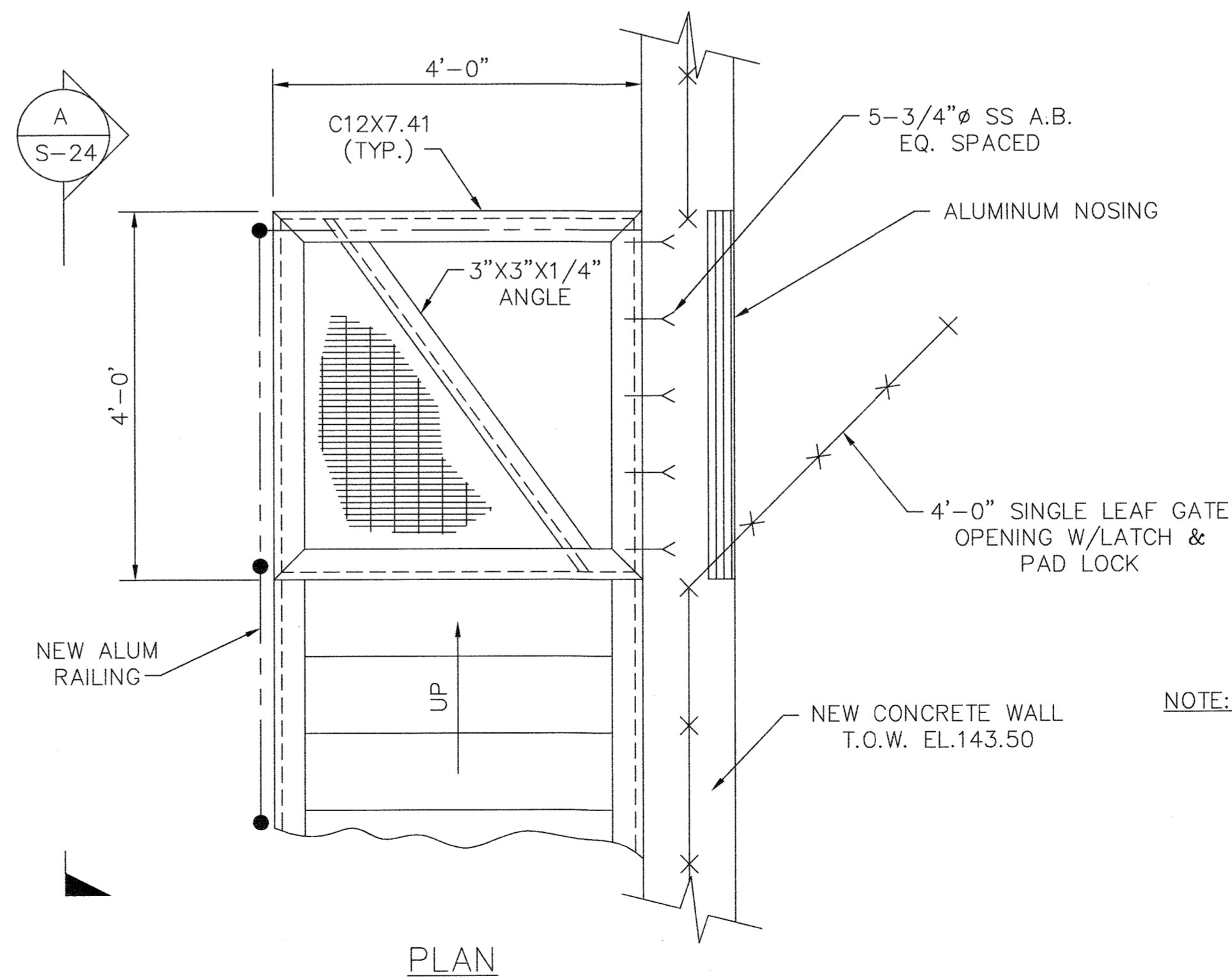


PLAN

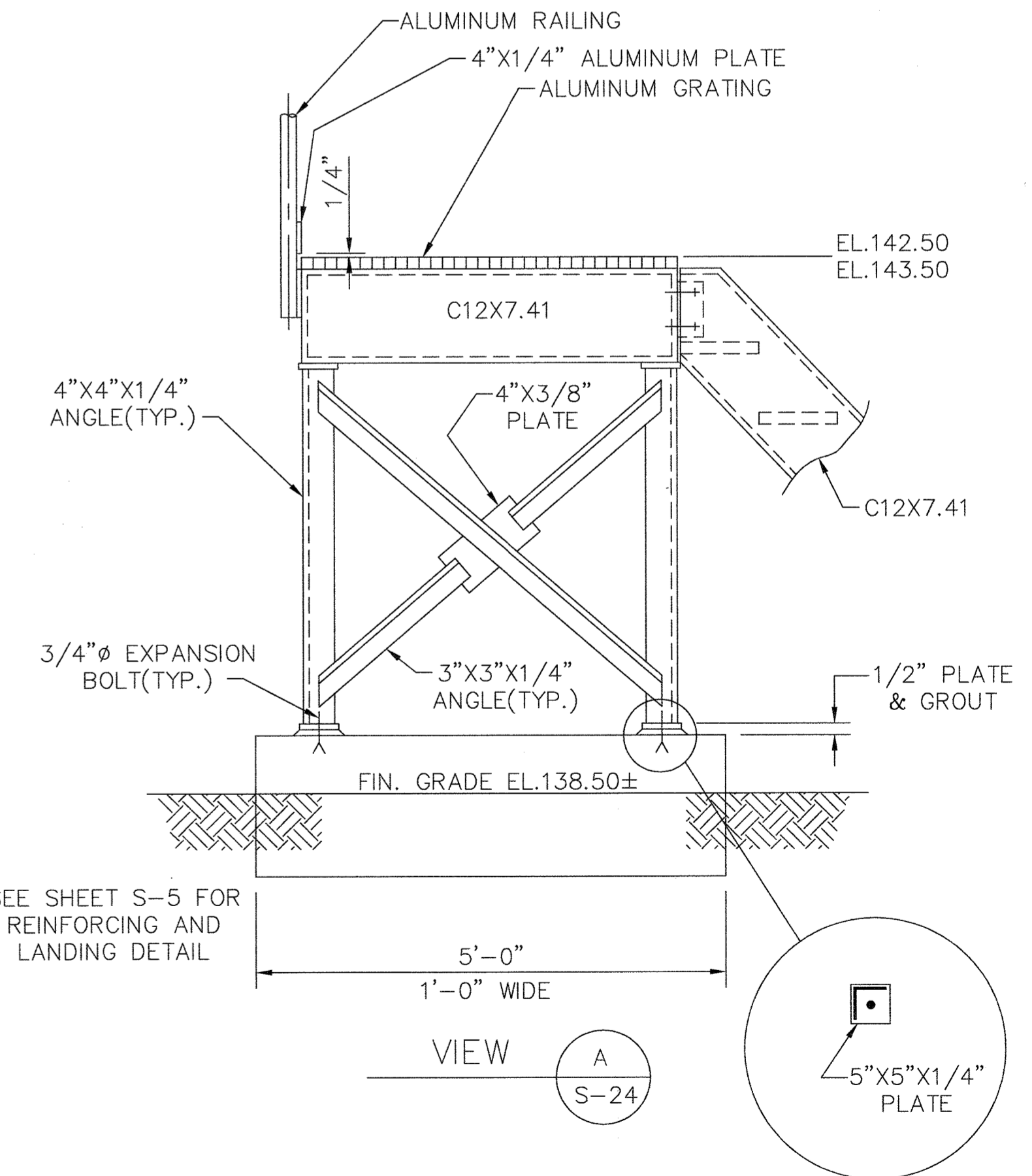


SECTION 1
RETAINING WALL
SCALE: 1/2"=1'-0"

FIREWALL DETAIL
SCALE: 1/2"=1'-0"



PLAN



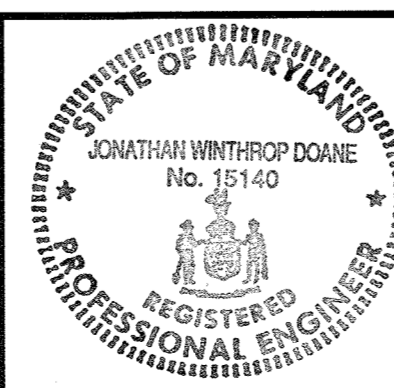
NOTE:
SEE SHEET S-5 FOR REINFORCING AND LANDING DETAIL

VIEW A
SCALE: NONE

DETAIL "A"
SCALE: NONE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

M&E Metcalf & Eddy



DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL
34.5 KV MAIN SUBSTATION
FOUNDATION
PLANS, SECTIONS, AND DETAIL

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
ADDITION NO. 5
CAPITAL PROJECT S-6153

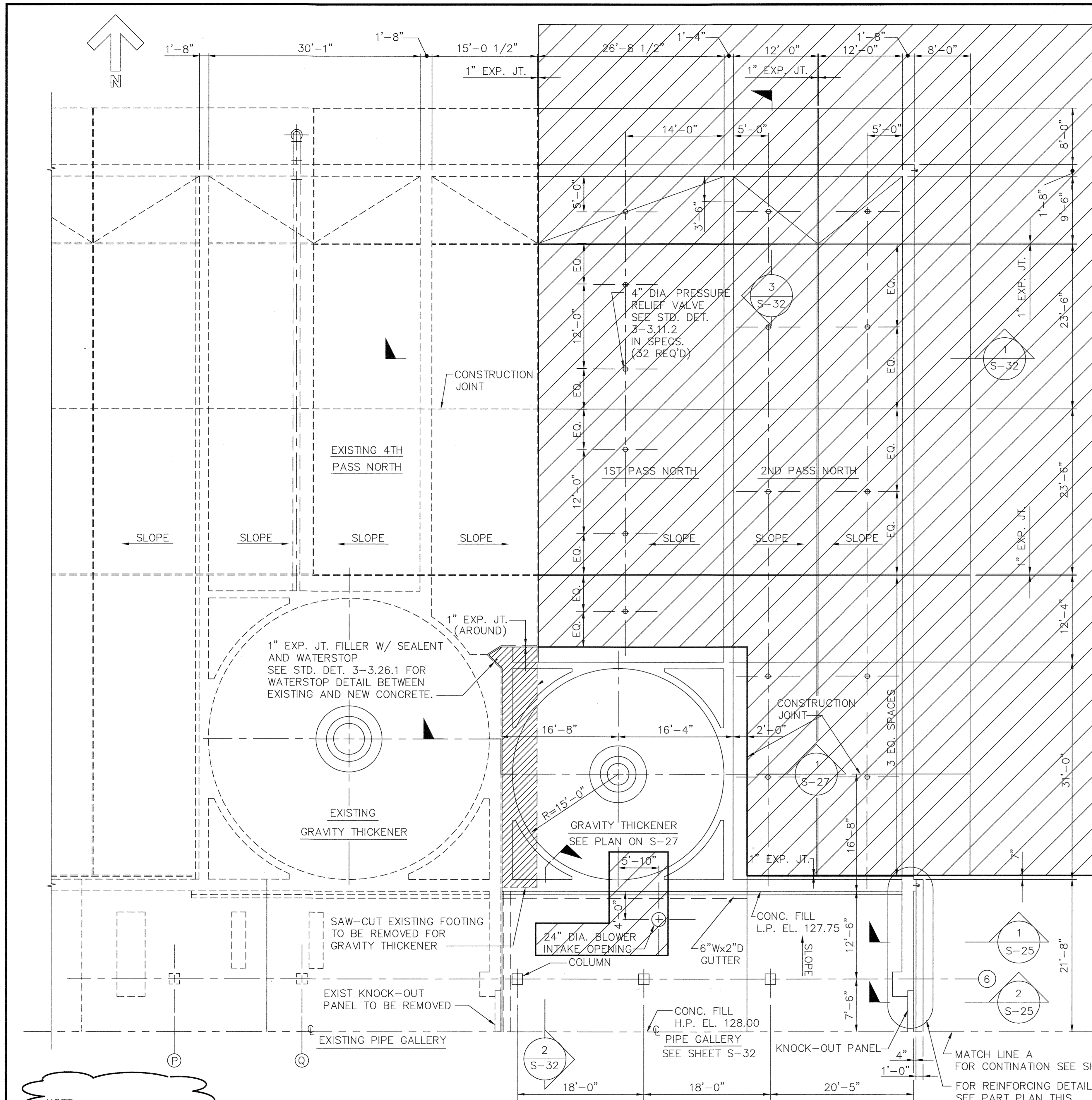
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 72 OF 226
S-24A

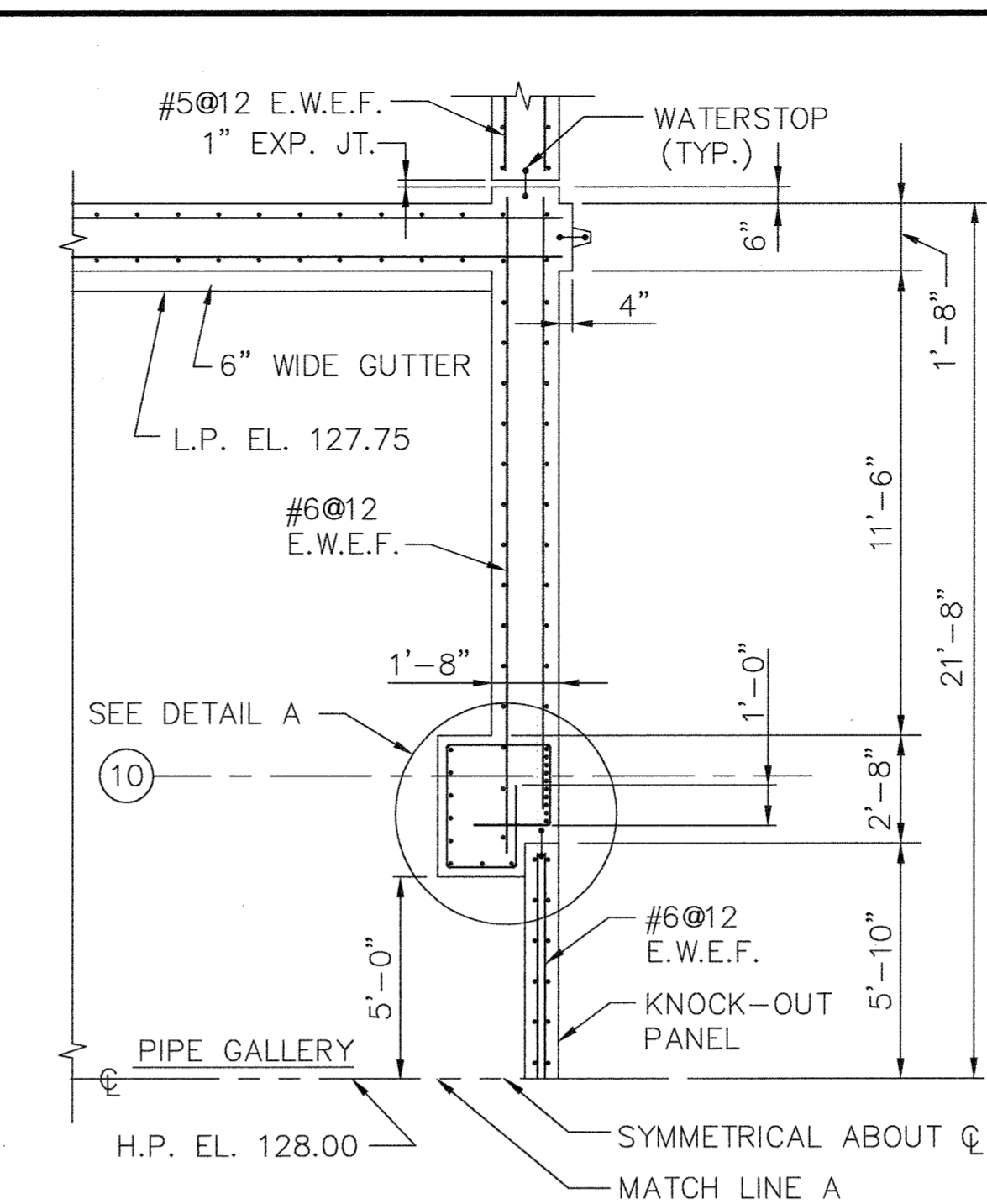
FILE NO.

Director of Public Works: *John A. ...* DATE: 5/12/96
Chief, Bureau of Engineering: *Paul ...* DATE: 5/7/96
Chief, Bureau of Environmental Services: *John O'Neil* DATE: 5/7/96
Chief, Utility Design Division: *De ...* DATE: 5-7-96

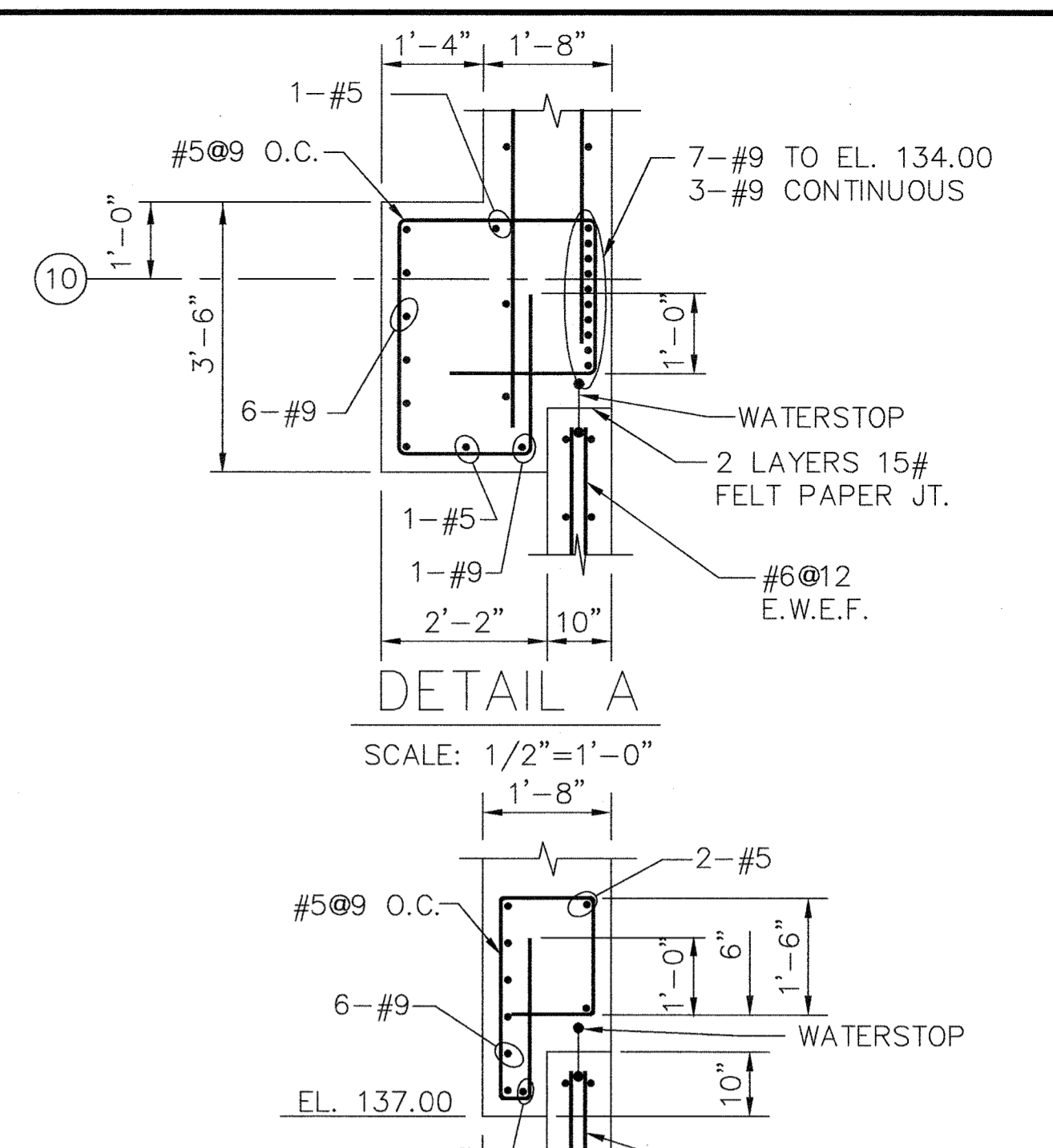
Reg. Prof. Engr. *Jonathan W. Doane* DATE: 5-7-96



PLAN AT EL. 128.67
SCALE: 1/8"=1'-0"

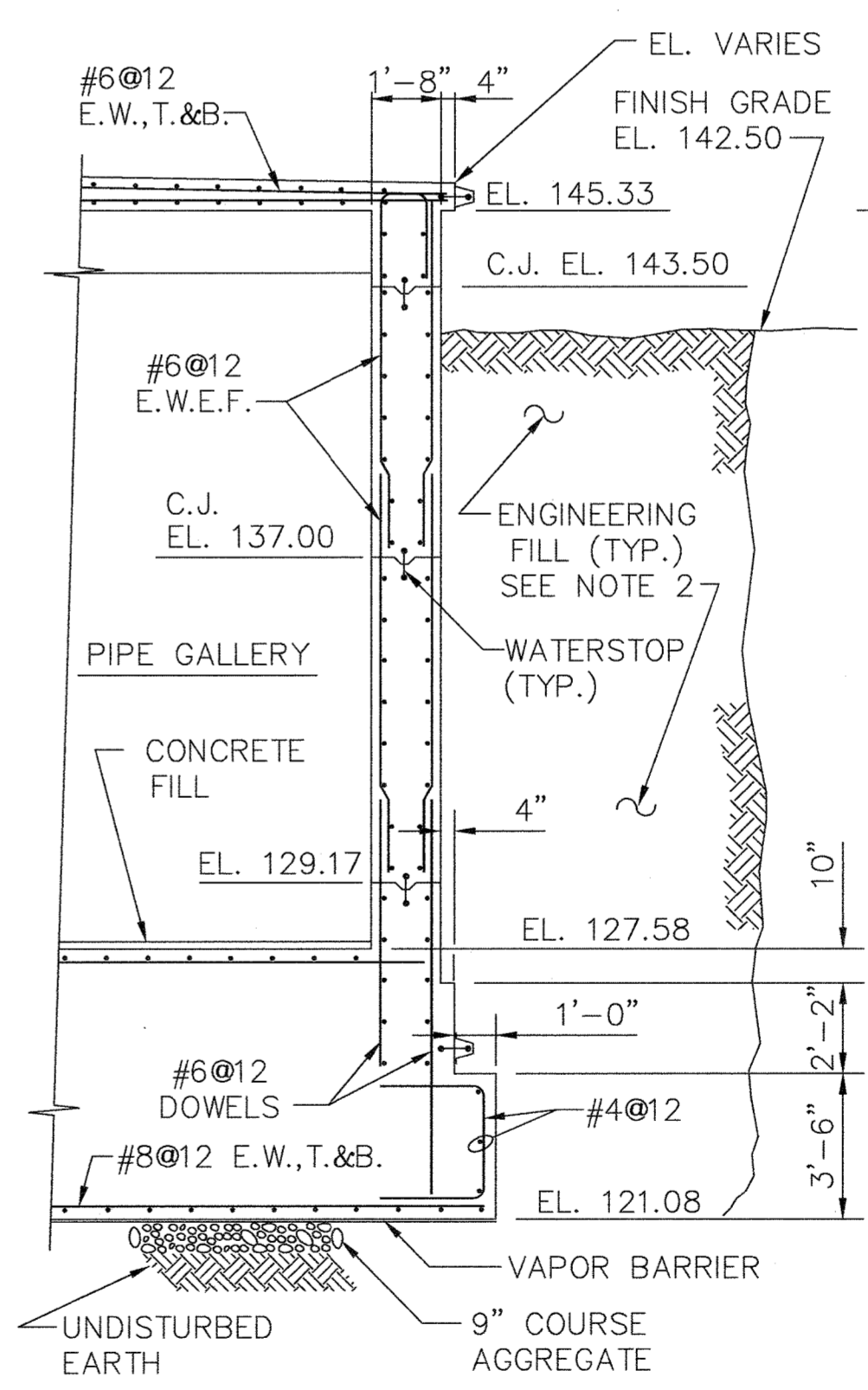


PART PLAN - EL. 128.00
SCALE: 1/4"=1'-0"

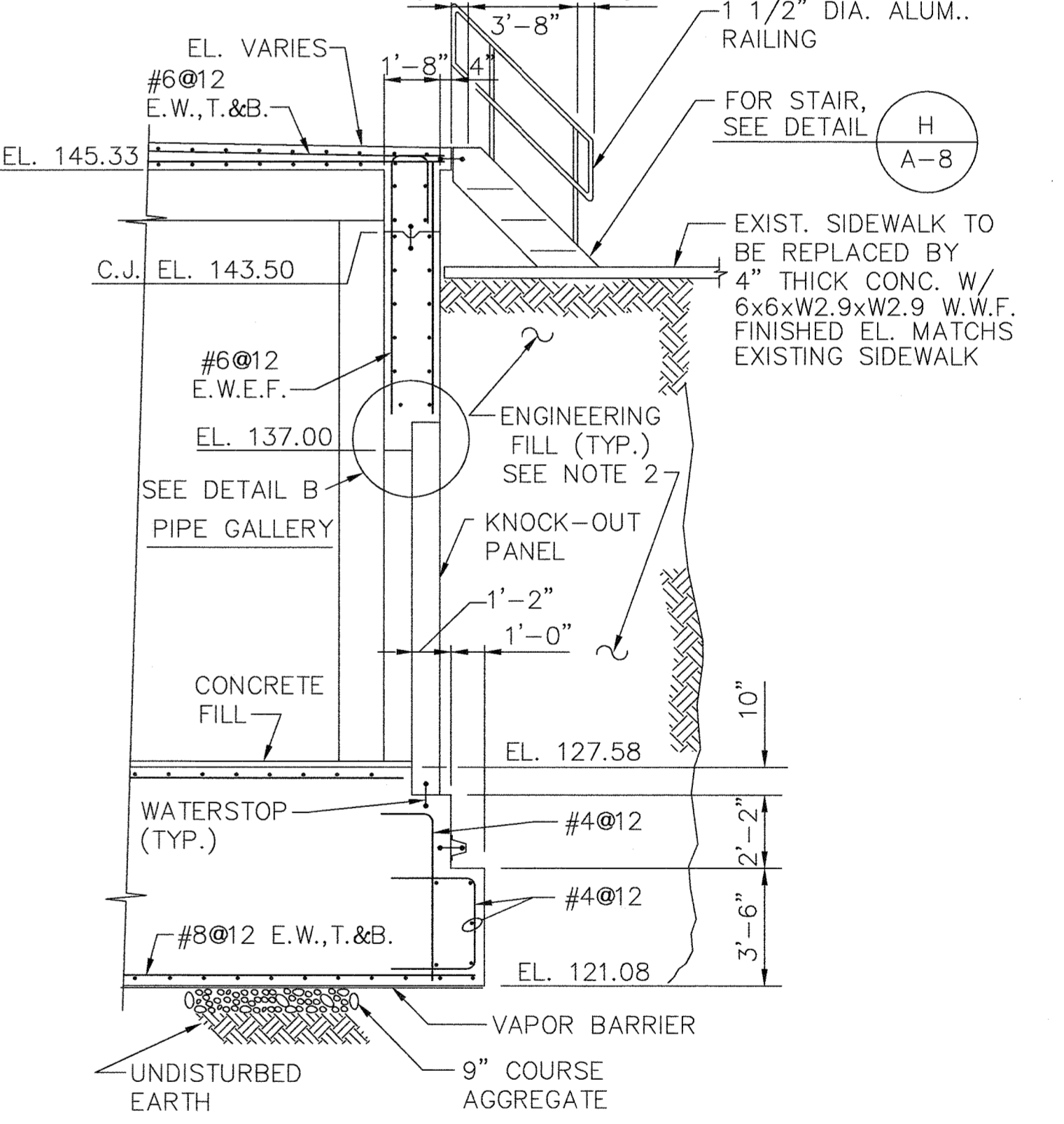


DETAIL A
SCALE: 1/2"=1'-0"

DETAIL B
SCALE: 1/2"=1'-0"



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



SECTION 2
SCALE: 1/4"=1'-0"

NOTES:

- FOUNDATION BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF 3,000 LBS PER SQ. FT.
- ENGINEERING FILL TO A MIN. 5 FT. FROM STRUCTURE WALL ALL AROUND DIGESTER AND TANKS. PLACED IN 8" LIFTS (MAT) AND DENSIFIED TO AT LEAST 95% OF ASTM D-1556 STD. DENSITY WHILE SOIL HAS ± 3% OF OPTIMUM MOISTURE CONTENT.
- STANDARD DETAILS TO BE FOUND IN SPECIFICATIONS APPENDIX "B".
- TYPICAL DETAILS TO BE FOUND ON DRAWING S-43.

RECORD DRAWING
10/17/94

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Shaw 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

Paul D. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hare 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Debra L. ... 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Janette W. Dore 5-7-96
REG. PROF. ENGR. DATE

STATE OF MARYLAND
JONATHAN WINTHROP DOANE
No. 15740
REGISTERED PROFESSIONAL ENGINEER

DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL

DIGESTER NO. 3
PLAN EL. 128.67

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

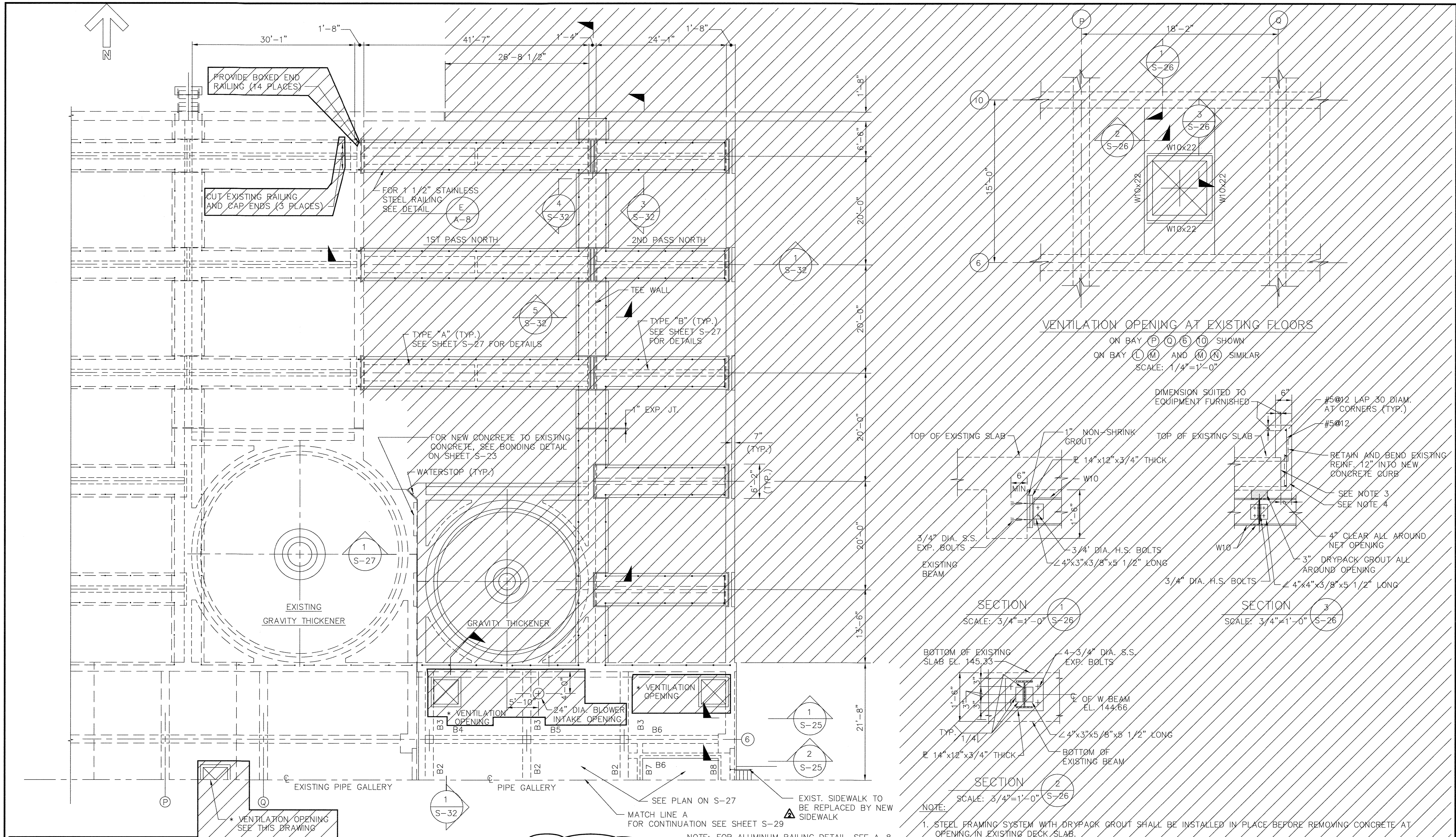
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 73 OF 226

S-25A



PLAN AT EL. 146.33
SCALE: 1/8"=1'-0"

NOTE:
DIGESTER AND GRAVITY THICKENERS DELETED FROM CONTRACT

- NOTE:
- STEEL FRAMING SYSTEM WITH DRYPACK GROUT SHALL BE INSTALLED IN PLACE BEFORE REMOVING CONCRETE AT OPENING IN EXISTING DECK SLAB.
 - THE USE OF HEAVY-DUTY PNEUMATIC HAMMERS ARE NOT PERMITTED TO REMOVE EXISTING CONCRETE FOR NEW VENTILATION OPENING.
 - APPLY BONDING AGENT TO ROUGHENED/PREPARED CONCRETE SURFACE IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS. BONDING AGENT TO BE LARSEN WELD-CRETE AS MANUFACTURED BY LARSEN PRODUCTS CORP. OF ROCKVILLE, MARYLAND OR AN ACCEPTABLE EQUIVALENT PRODUCT.
 - FILL CURB WITH CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam J. Slav 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

Paul J. Gerson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

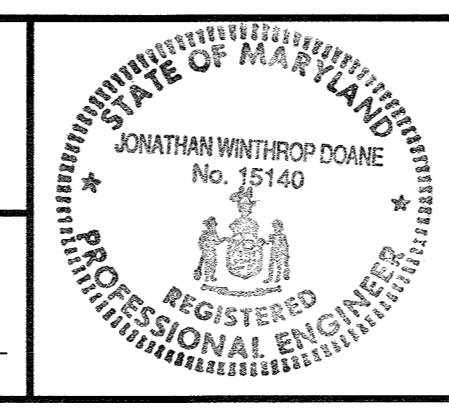
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Deanne 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Winthrop Doane No. 15140
REGISTERED PROFESSIONAL ENGINEER

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



DES:	DR	MB	1	REVISE FOR BIDDING	3/5/92
		MJC	2	RECORD DRAWING	3/5/94
DRN:	EB				
CHK:					
DATE:		BY	NO.	REVISION	DATE

STRUCTURAL

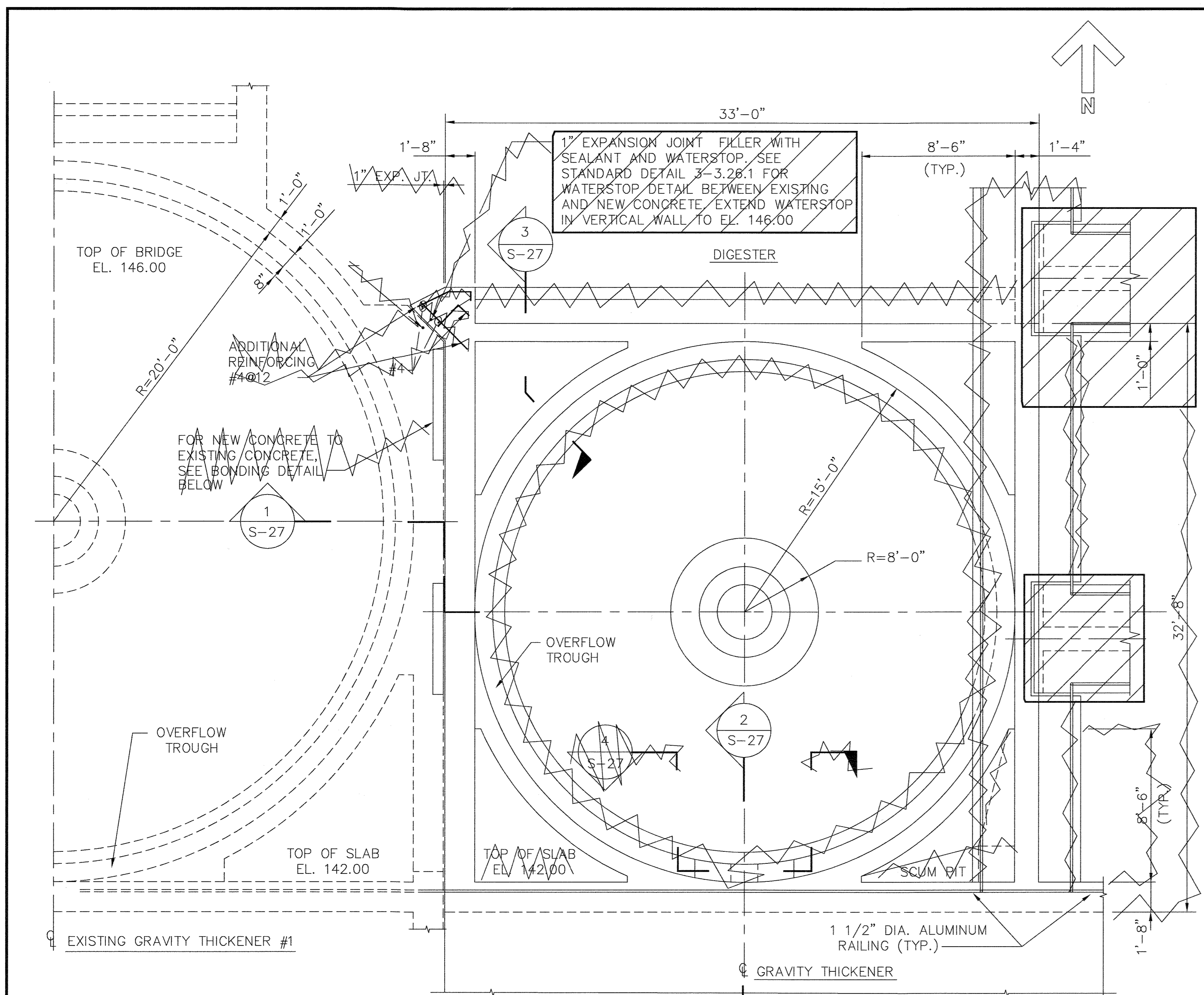
DIGESTER NO. 3
PLAN EL. 146.33
SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

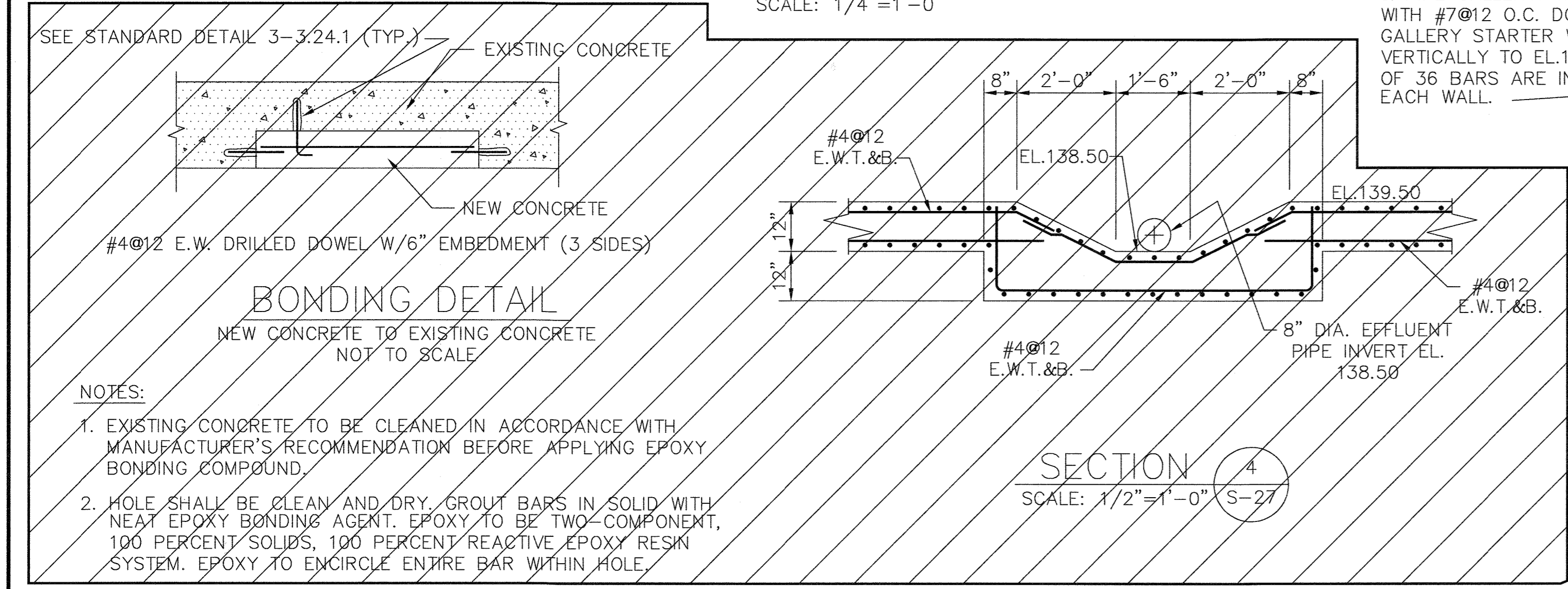
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 74 OF 226
S-26A

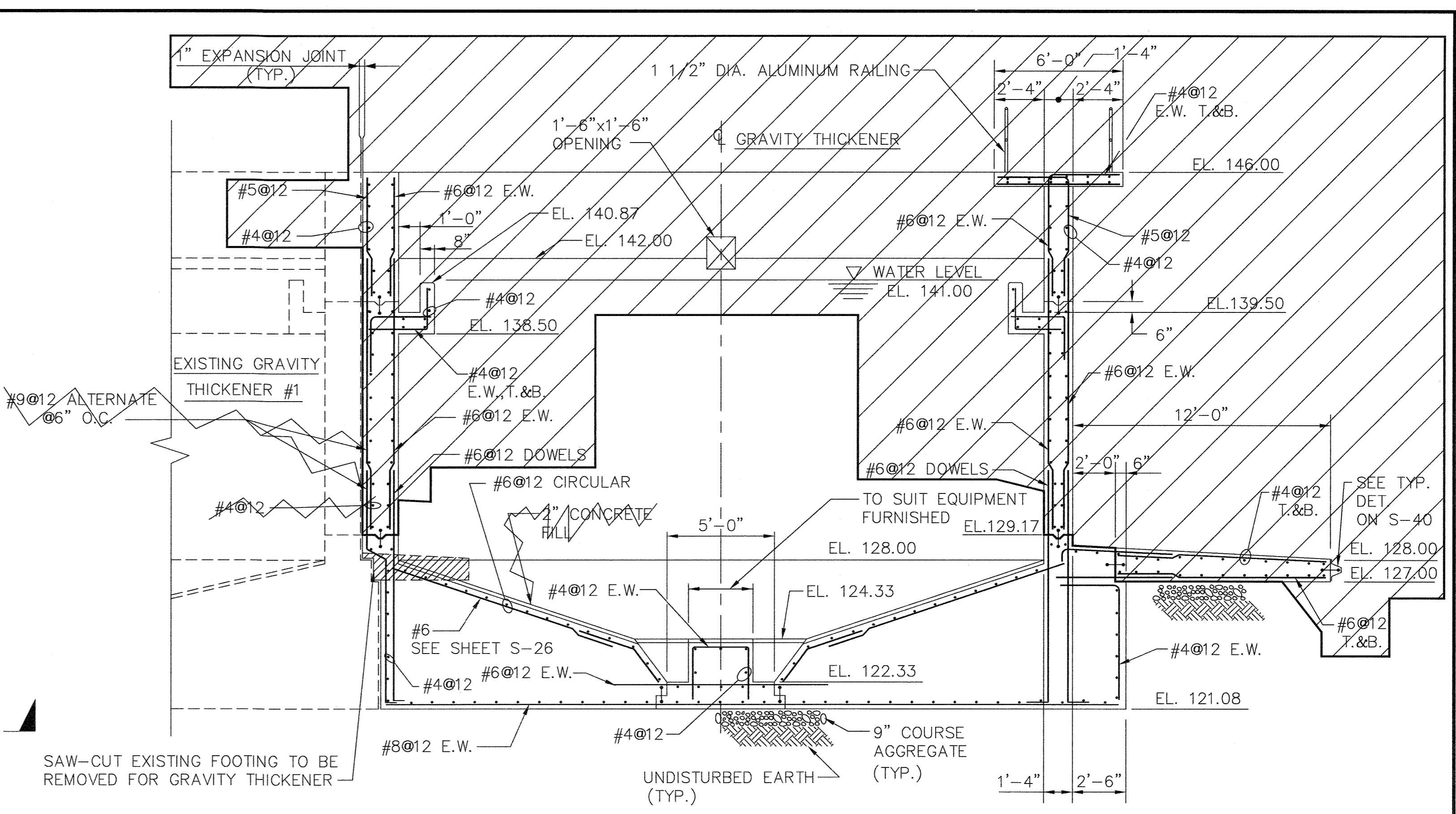


PLAN - NEW GRAVITY THICKENER NO. 3
SCALE: 1/4"=1'-0"



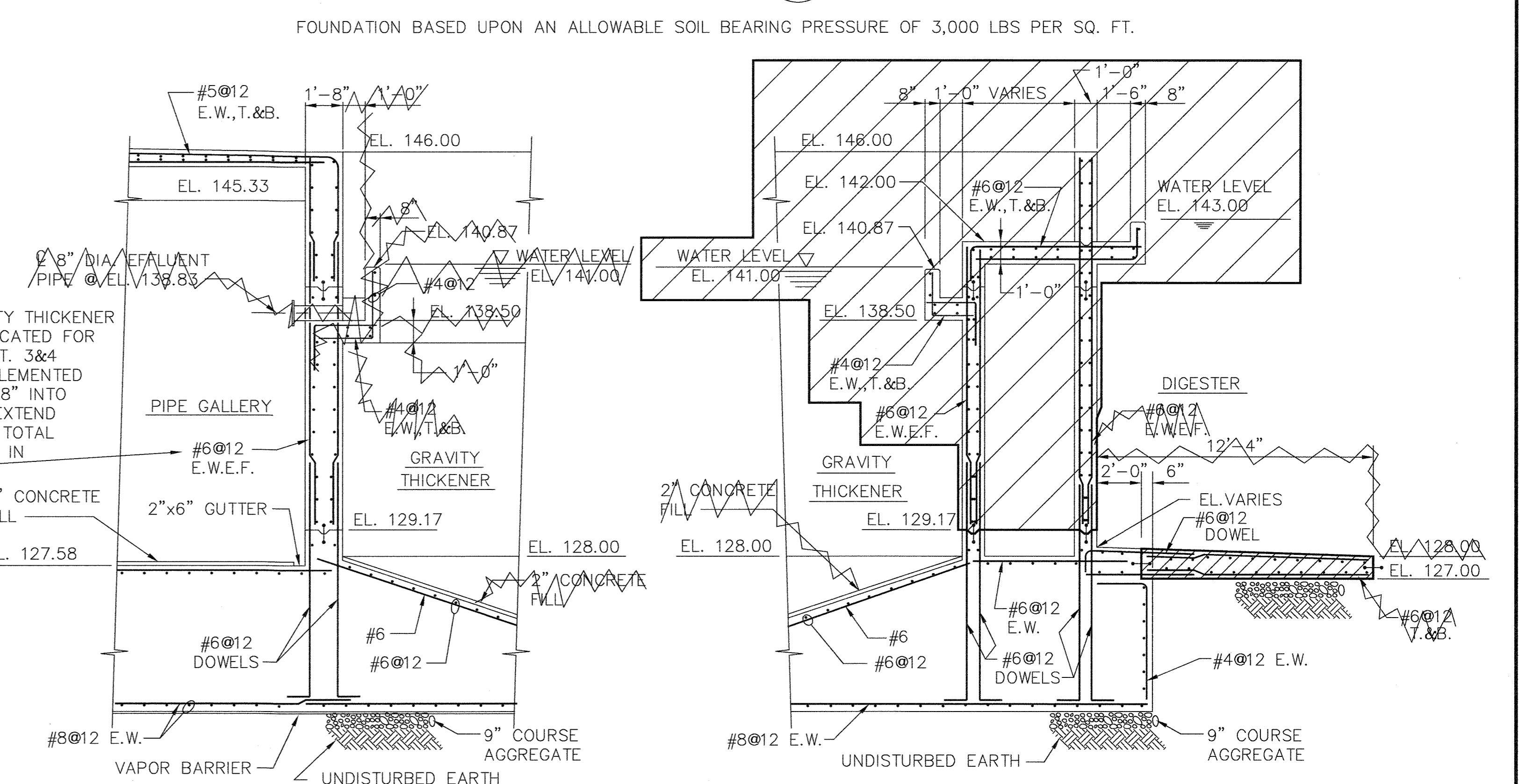
BONDING DETAIL
NEW CONCRETE TO EXISTING CONCRETE
NOT TO SCALE

SECTION 4
SCALE: 1/2"=1'-0" S-27



SECTION 1
SCALE: 1/4"=1'-0" S-25, S-26, S-28, S-29, S-30

NOTE:
ONLY THE GRAVITY THICKENER SLAB WAS
CONSTRUCTED. THE DIGESTERS AND
GRAVITY THICKENERS WERE DELETED
FROM THE CONTRACT.



SECTION 2
SCALE: 1/4"=1'-0" S-27

SECTION 3
SCALE: 1/4"=1'-0" S-27

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Sam M. Shaw 5/7/96
 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE
John Ottara 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION DATE

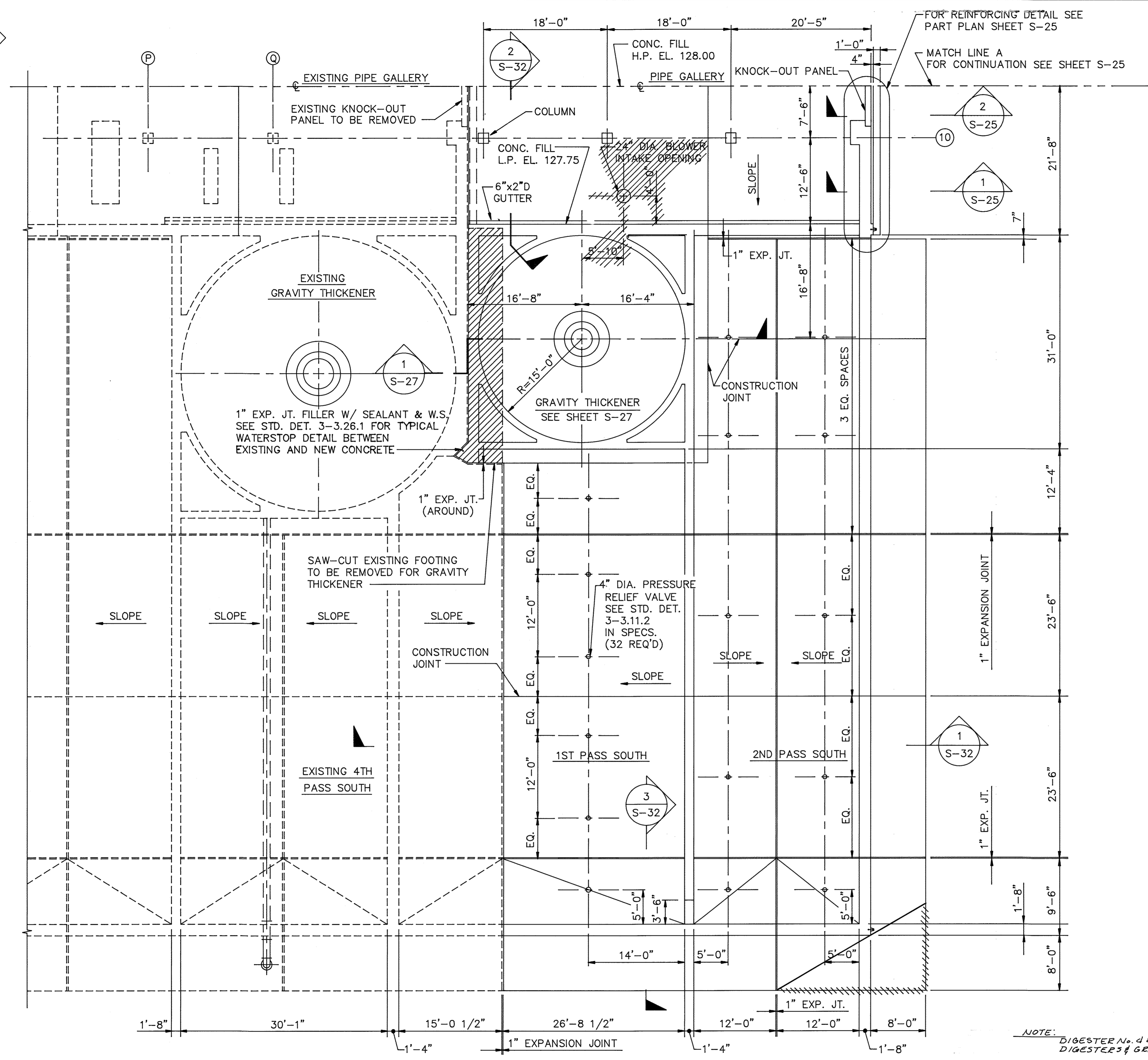
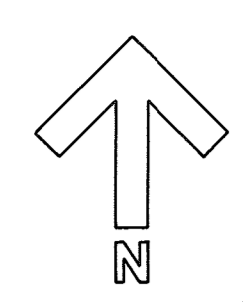
M&E Metcalf & Eddy
Jonathan W. Throp 5-7-96
 REG. PROF. ENGR. DATE



DES:	DR	MB	1	REVISE FOR BIDDING	3/5/92
		MJC	2	RECORD DRAWING	3/5/94
DRN:	EB				
CHK:					
DATE:		BY	NO.	REVISION	DATE

STRUCTURAL
 GRAVITY THICKENER NO. 3
 PLAN, SECTIONS AND DETAIL

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-30B2
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 75 OF 226
 S-27A



FOR REINFORCING DETAIL SEE PART PLAN SHEET S-25
MATCH LINE A FOR CONTINUATION SEE SHEET S-25

1" EXP. JT. FILLER W/ SEALANT & W.S. SEE STD. DET. 3-3.26.1 FOR TYPICAL WATERSTOP DETAIL BETWEEN EXISTING AND NEW CONCRETE

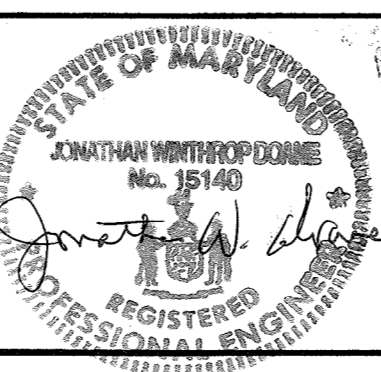
4" DIA. PRESSURE RELIEF VALVE SEE STD. DET. 3-3.11.2 IN SPECS. (32 REQ'D)

NOTE: DIGESTER No. 4 & GRAVITY THICKENER No. 4 SLAB ONLY CONSTRUCTED. DIGESTER #4 GRAVITY THICKENERS DELETED FROM CONTRACT.

PLAN AT EL. 128.67
SCALE: 1/8" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
12/9/91
12/9/91

M&E Metcalf & Eddy
12/9/91

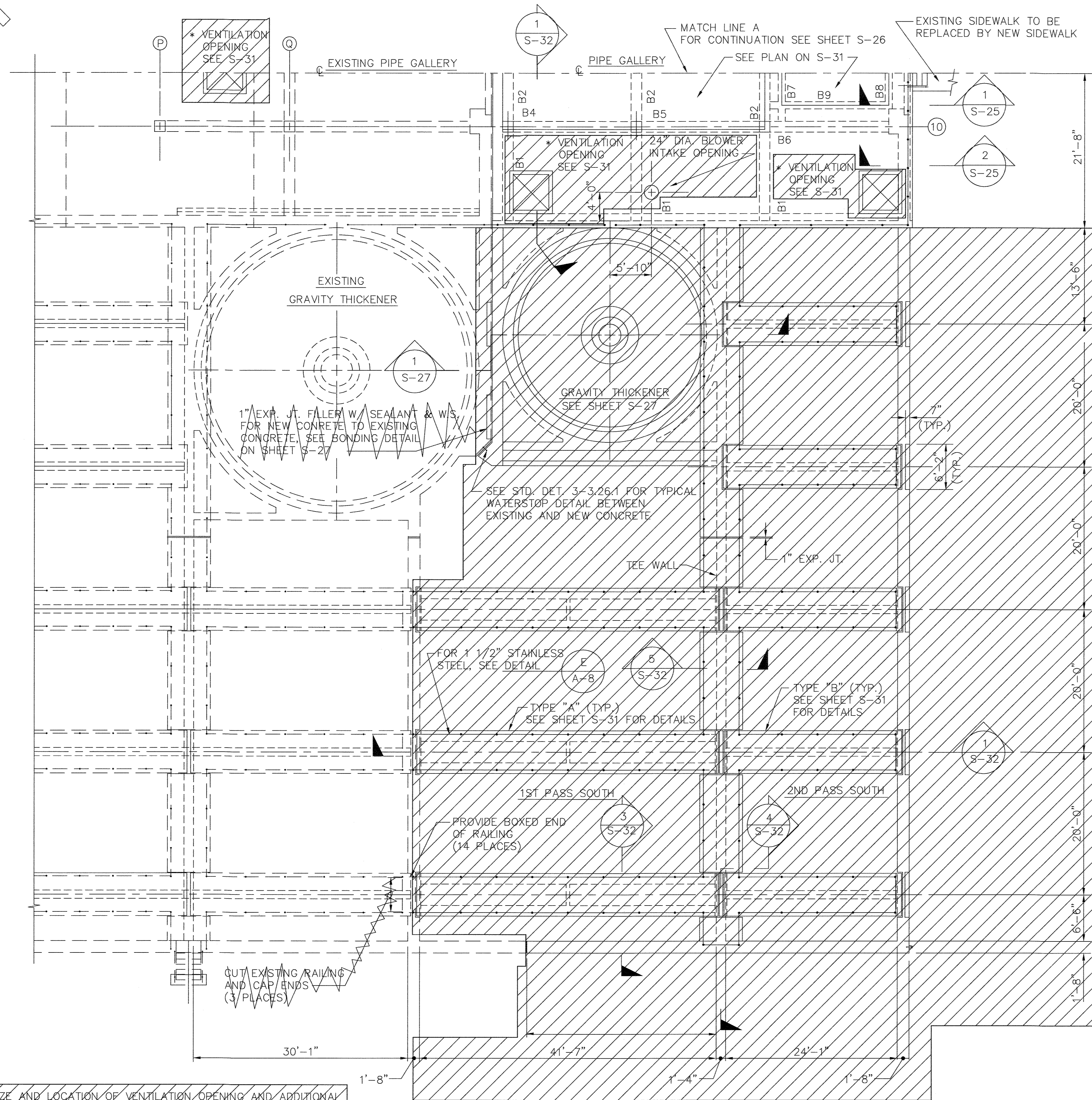
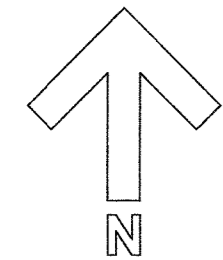


DES: M.V.H.			
DRN: C. Burnett			
CHK: M.V.H.	2	RECORDED DRAWING	12/6/91
DATE: 12/7/91	1	REVISED FOR BIDDING	1/5/92
BY: NO.		REVISION	DATE

STRUCTURAL
DIGESTER NO. 4
PLAN EL. 128.67

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 16 OF 226
S-28



* FOR SIZE AND LOCATION OF VENTILATION OPENING AND ADDITIONAL OPENINGS, COORDINATE WITH DRAWINGS H-10 AND H-11.

PLAN AT EL. 146.33

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

THIS WORK WAS DELETED FROM THE CONTRACT

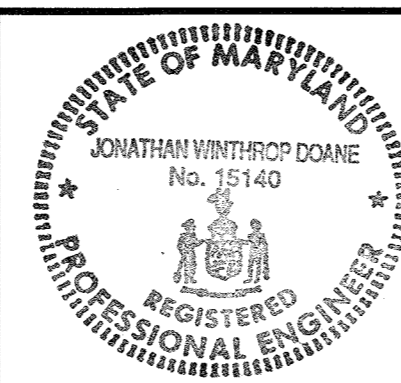
FILE NO.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Lawrence A. Brown 5/19/92 *Paul D. Seaman* 5/7/96
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE
John J. O'Hara 5/19/92 *Of Dan Liu* 5-7-96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Irwin 5-7-96
REG. PROF. ENGR. DATE



DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL
DIGESTER NO. 4
PLAN EL. 146.33
SECTIONS & DETAILS

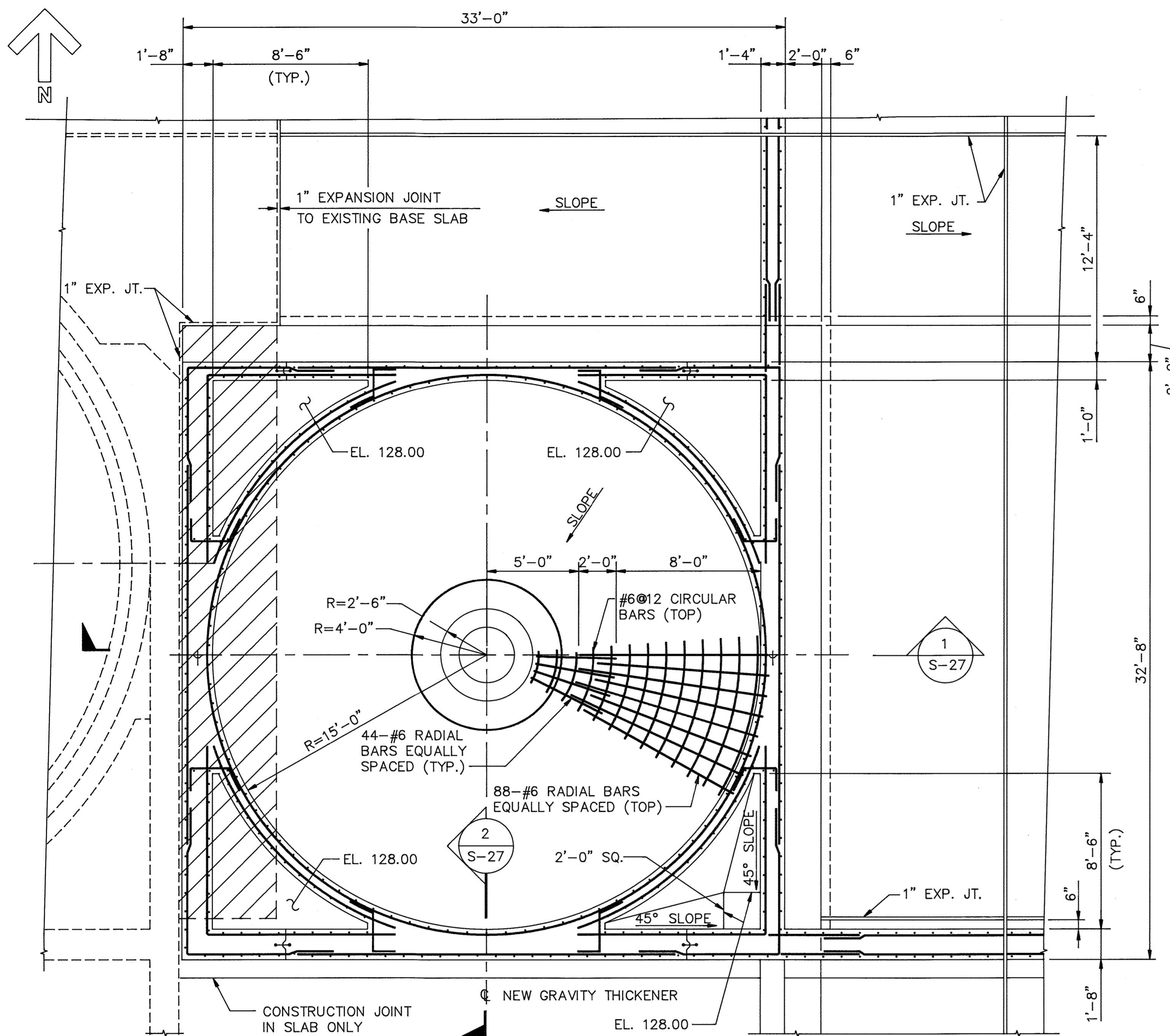
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 77 OF 226

S-29A

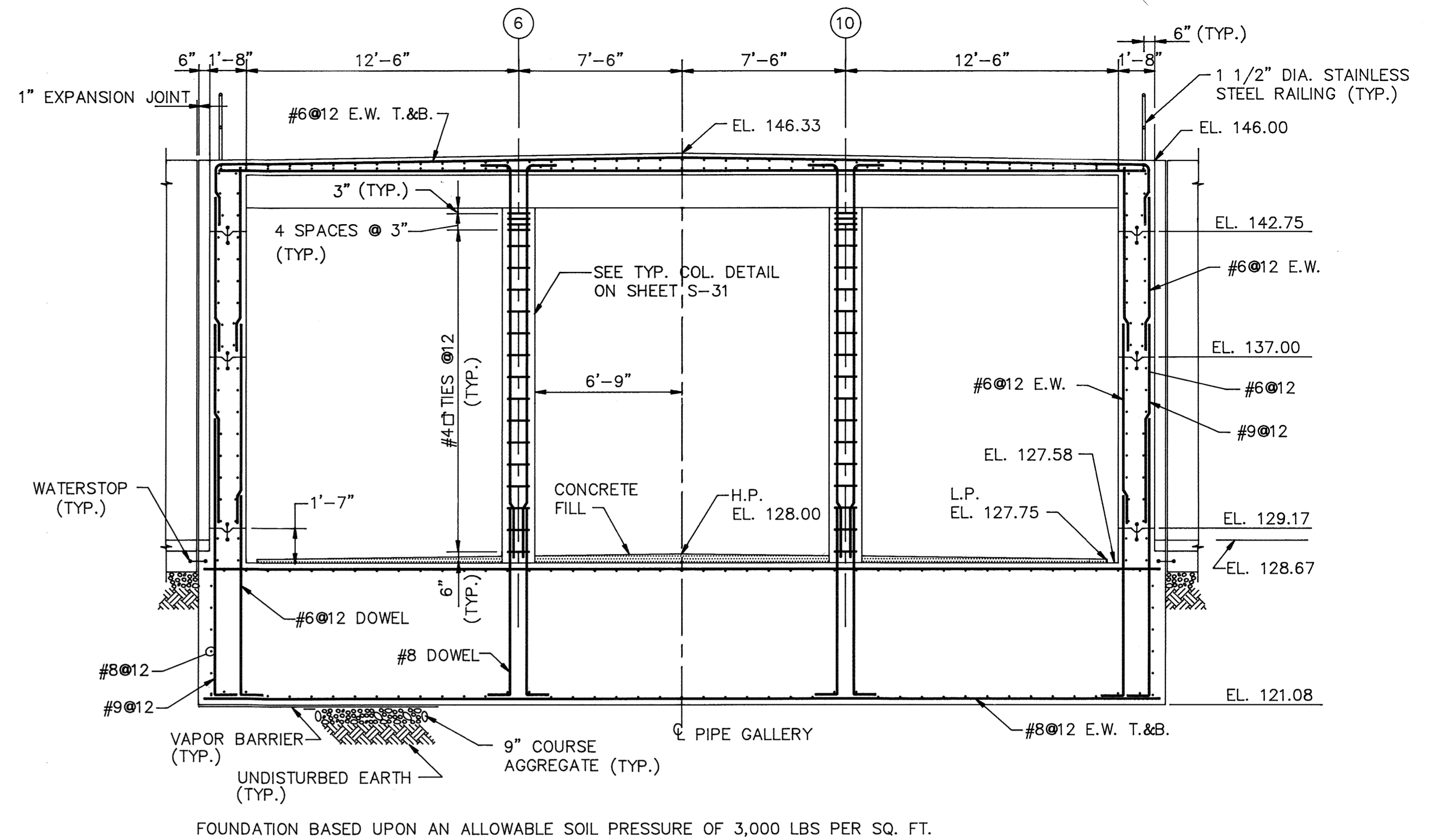


- NOTES:
1. SAW CUT THE EXISTING CONCRETE FOUNDATION IN CROSS-HATCHED AREAS.
 2. REMOVE CONCRETE IN CROSS-HATCHED AREAS.
 3. SEE STD. DET. 3-3.26.1 FOR TYPICAL DETAIL BETWEEN EXISTING AND NEW CONCRETE.

NOTE: GRAVITY THICKENER NO. 4 SIMILAR BUT OPPOSITE HAND.

PLAN AT EL. 130.00 - GRAVITY THICKENER NO. 3

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



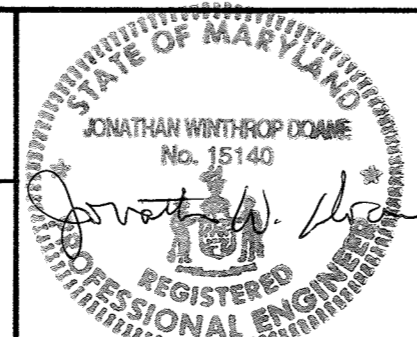
SECTION 1
SCALE: 1/4"=1'-0" S-31

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 12/9/91
 Chief, Bureau of Engineering: *[Signature]* 12/9/91
 Chief, Bureau of Environmental Services: *[Signature]* 12/9/91
 Chief, Utility Design Division: *[Signature]* 12/9/91

M&E Metcalf & Eddy

Jonathan W. Dowe 12/9/91
REG. PROF. ENGR. DATE



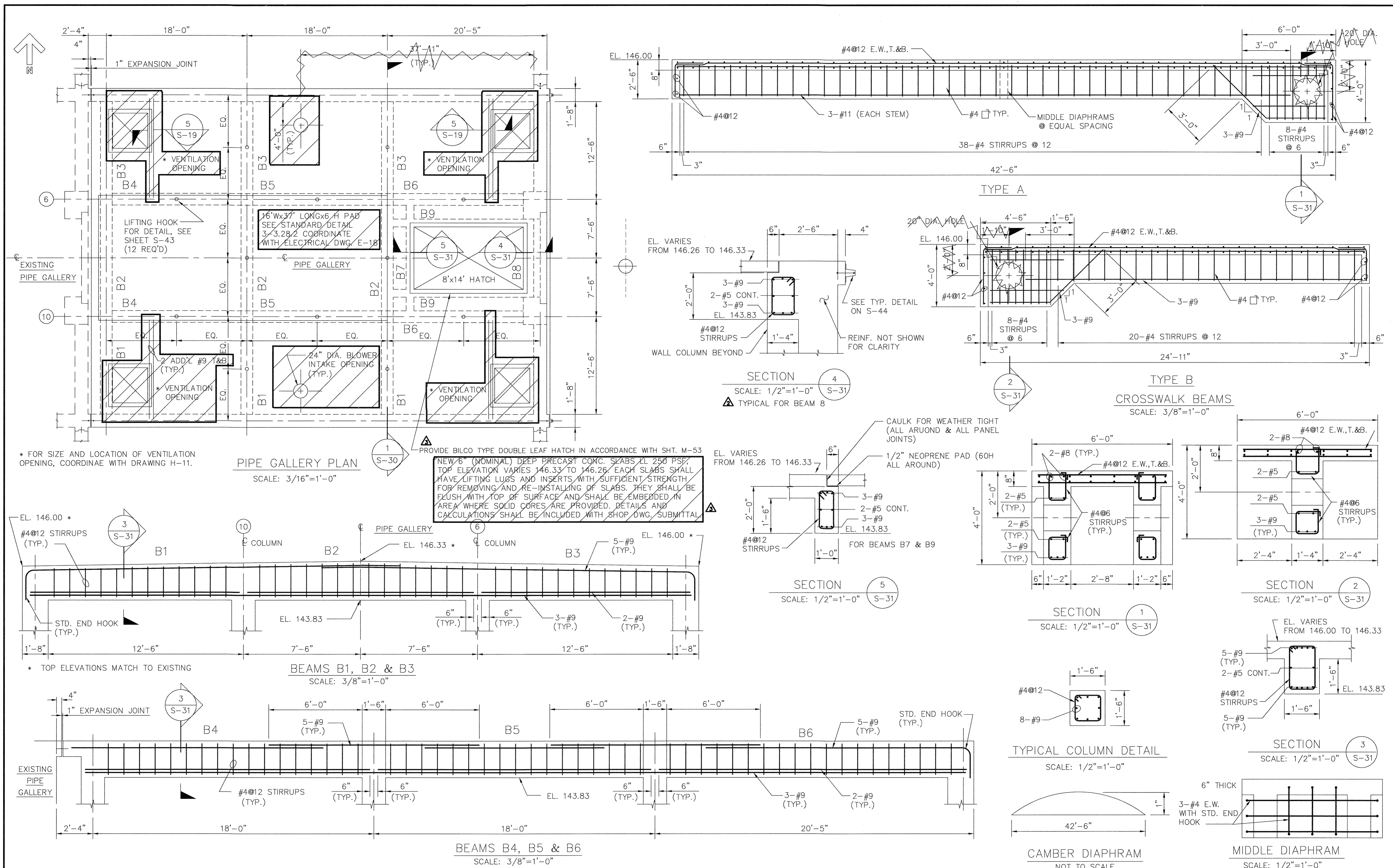
DES:	M.V.Y.		
DRN:	E. Burnett		
CHK:	M.V.Y.		
DATE:	12/7/91		
BY	NO.	REVISION	DATE
	2	RECORD DRAWING SEE SUPPLEMENTAL SHT. S-30A	11/1/94
	1	REVISED FOR BIDDING	3/5/92

STRUCTURAL

GRAVITY THICKENER NO. 3
PLAN, SECTION AND DETAILS

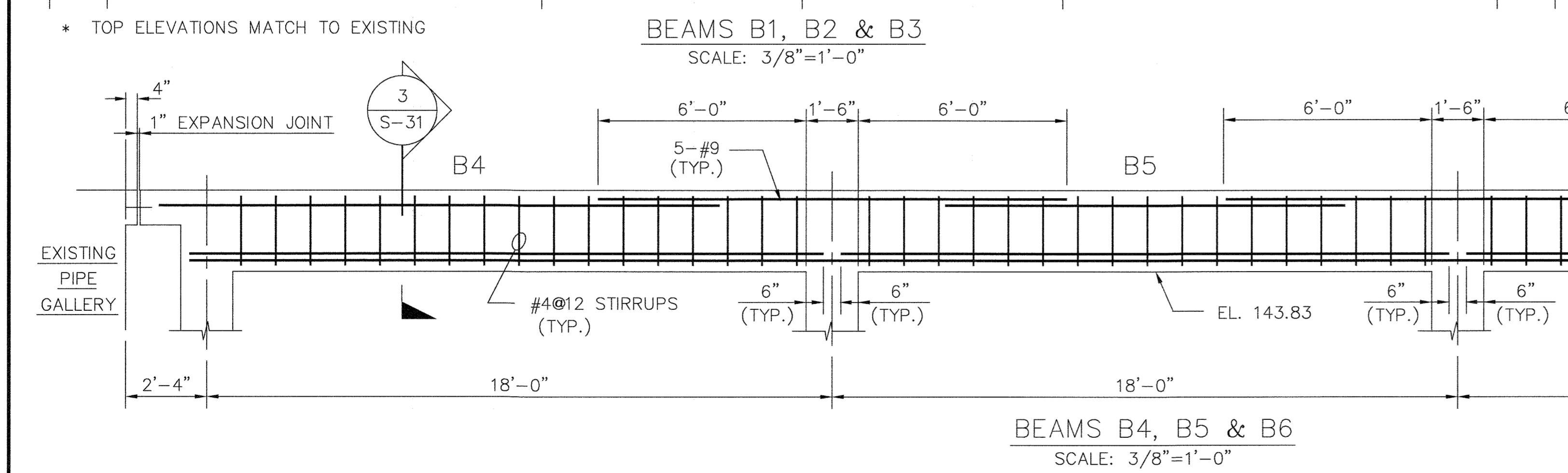
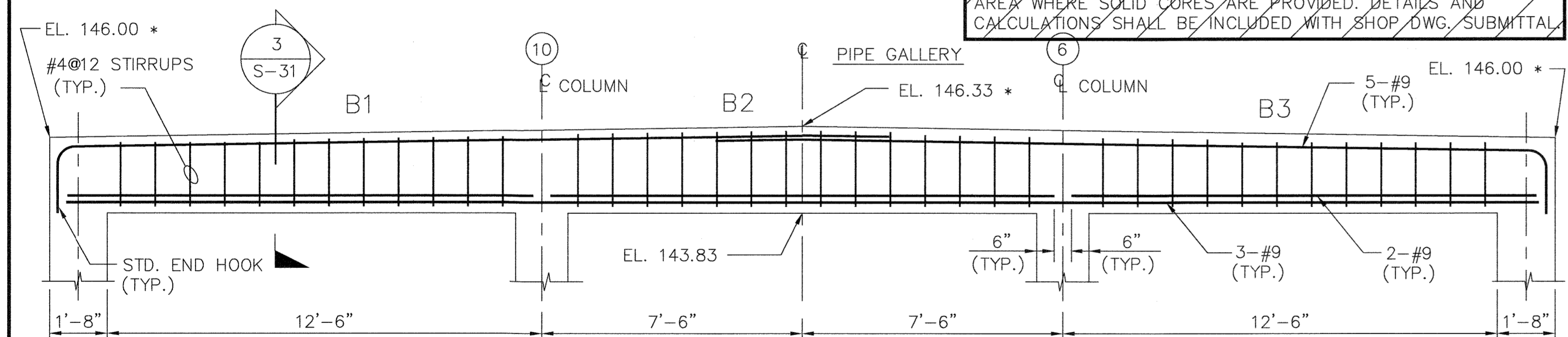
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 78 OF 236
 S-30



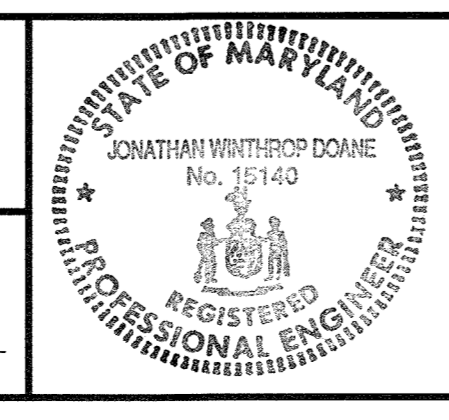
* FOR SIZE AND LOCATION OF VENTILATION OPENING, COORDINATE WITH DRAWING H-11.

PROVIDE BILCO TYPE DOUBLE LEAF HATCH IN ACCORDANCE WITH SHT. M-53
 NEW 6" (NOMINAL) DEEP PRECAST CONC. SLABS (L 250 PSI, TOP ELEVATION VARIES 146.33 TO 146.26). EACH SLAB SHALL HAVE LIFTING LUGS AND INSERTS WITH SUFFICIENT STRENGTH FOR REMOVING AND RE-INSTALLING OF SLABS. THEY SHALL BE FLUSH WITH TOP OF SURFACE AND SHALL BE EMBEDDED IN AREA WHERE SOLID CORES ARE PROVIDED. DETAILS AND CALCULATIONS SHALL BE INCLUDED WITH SHOP DWG. SUBMITTAL.



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *Lawrence J. ...* 5/1/96
 Chief, Bureau of Engineering: *Robert J. ...* 5/1/96
 Chief, Bureau of Environmental Services: *John J. ...* 5/1/96
 Chief, Utility Design Division: *...* 5-7-96

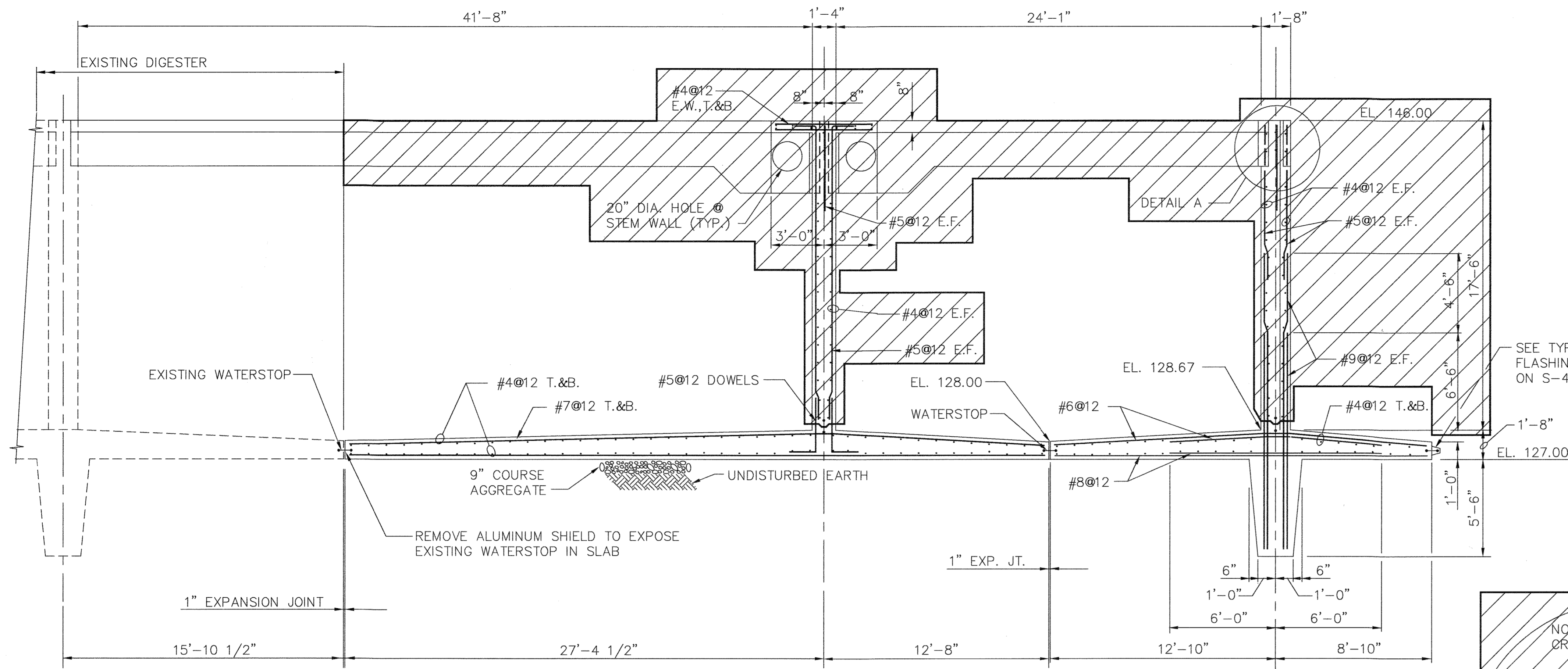
M&E Metcalf & Eddy
 Reg. Prof. Engr. *Jonathan W. ...* 5-7-96



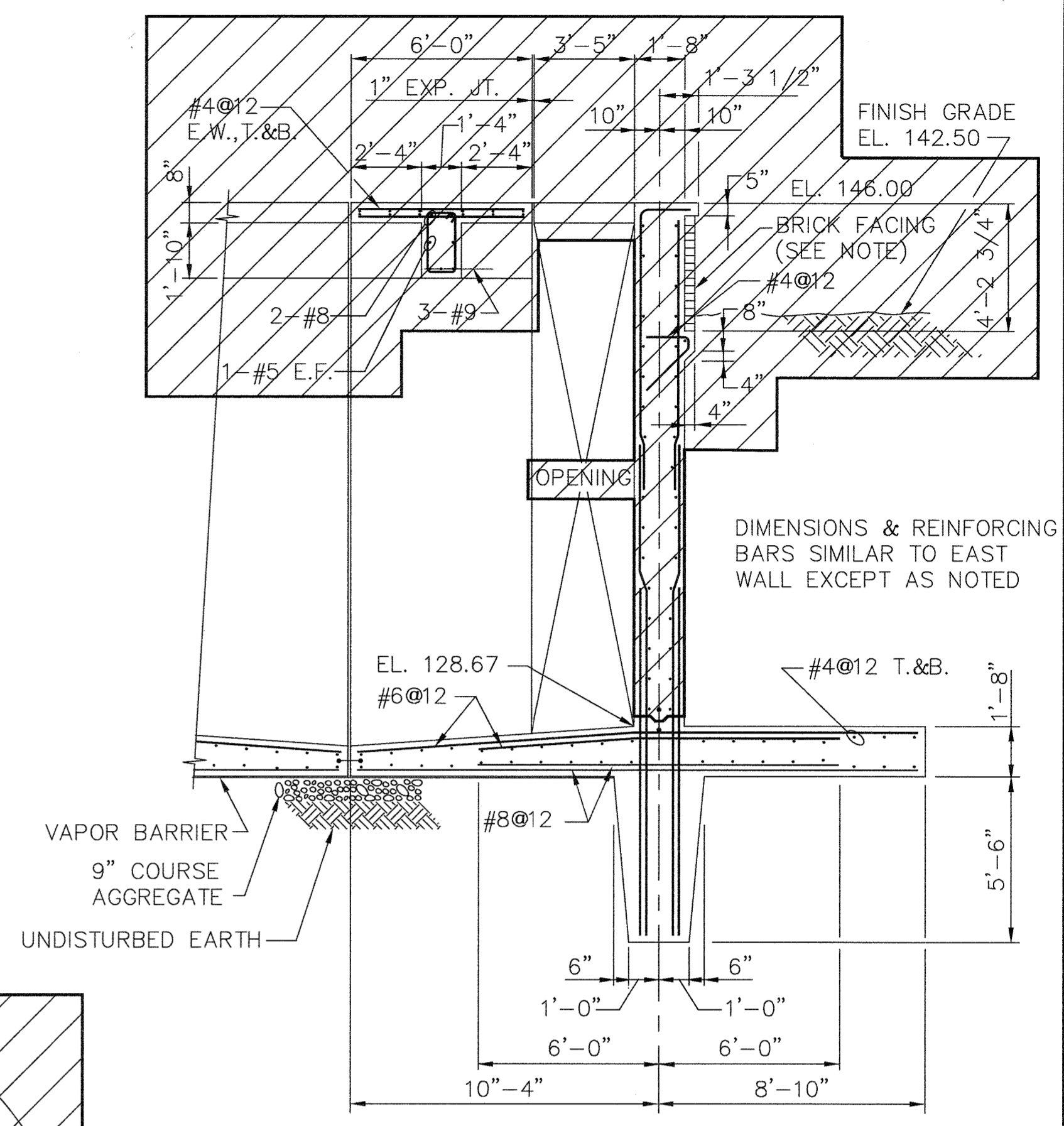
DES:	DR	MB	1	REVISE FOR BIDDING	3/5/92
		MJC	2	RECORD DRAWING	3/5/94
DRN:	EB				
CHK:					
DATE:		BY	NO.	REVISION	DATE

STRUCTURAL
 DIGESTER AND GRAVITY THICKENERS BEAMS AND COLUMNS

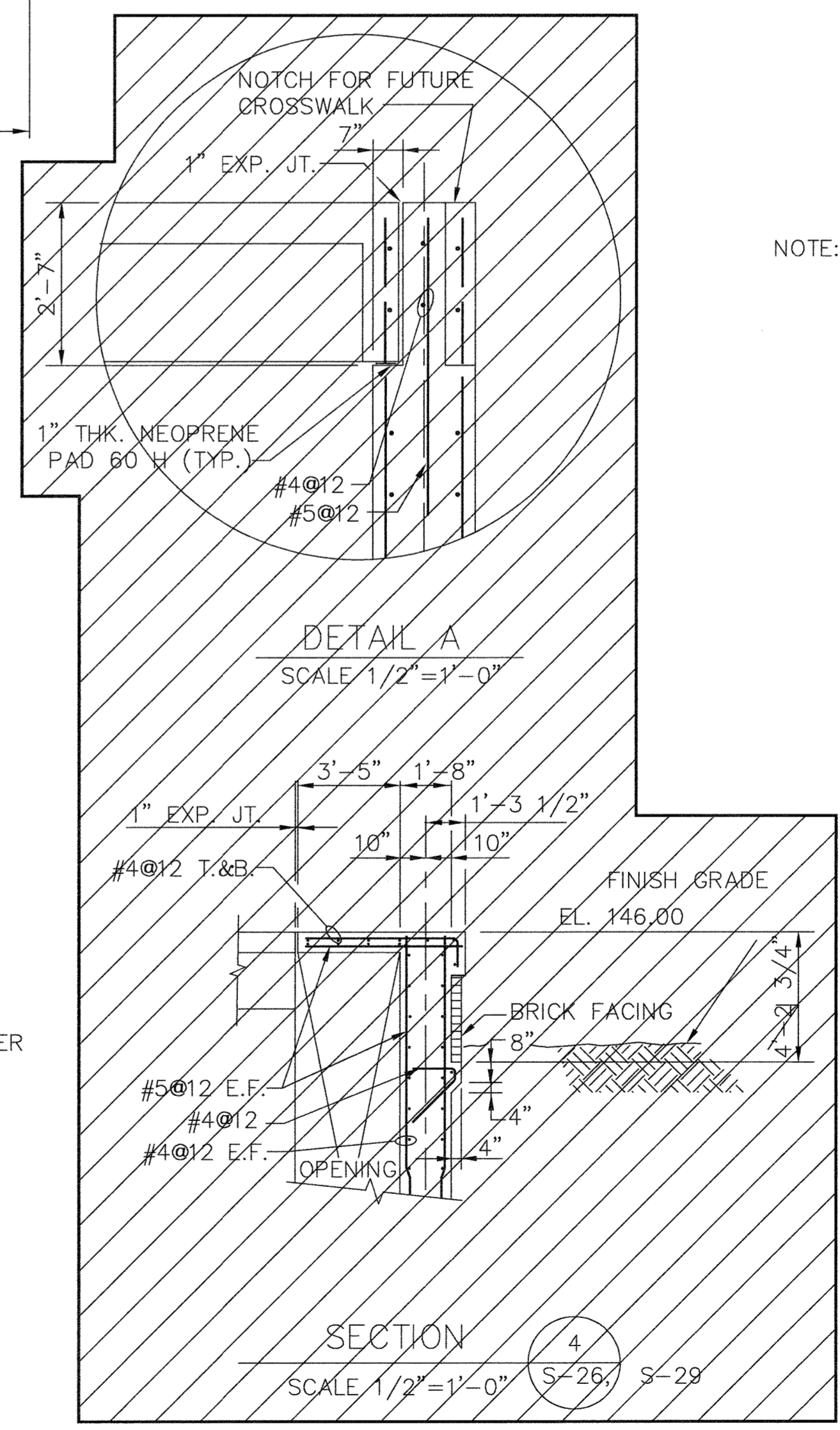
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 79 OF 226
 S-31A



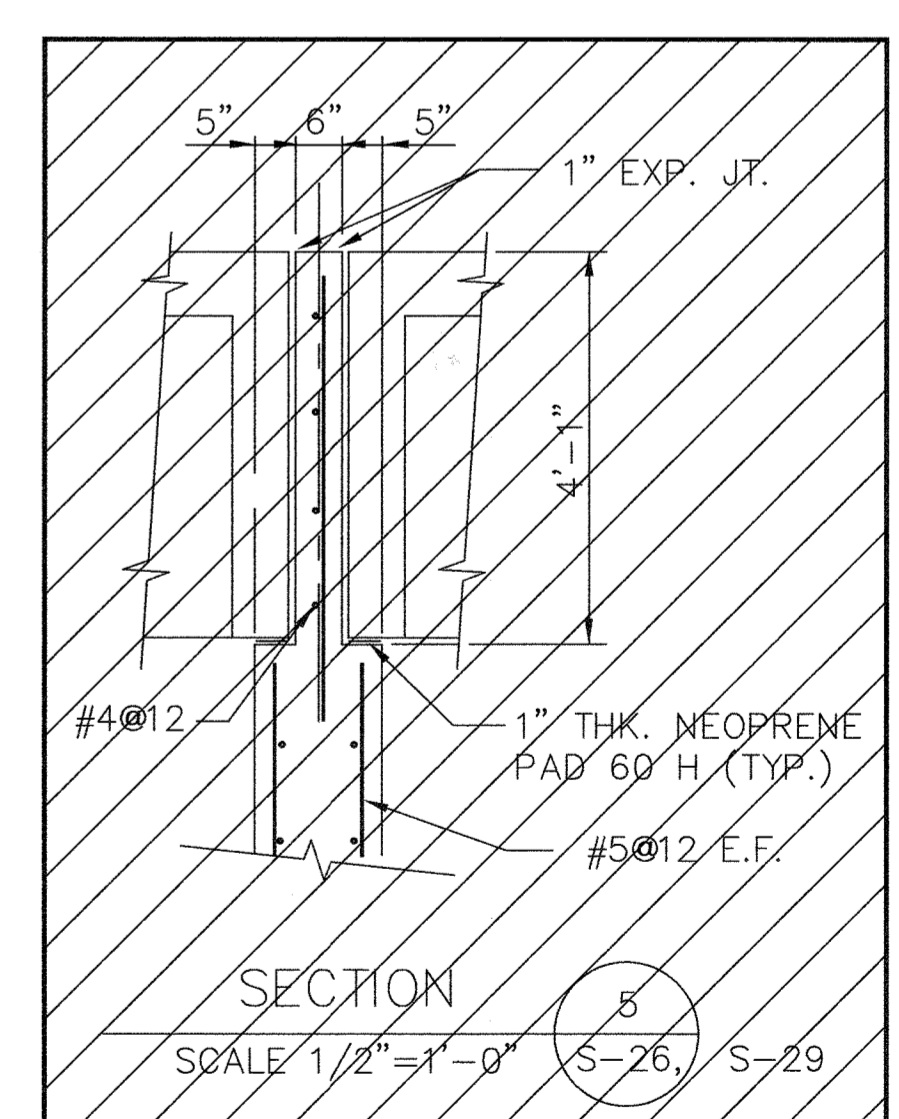
SECTION 1
SCALE: 1/4"=1'-0" S-25, S-26, S-28, S-29



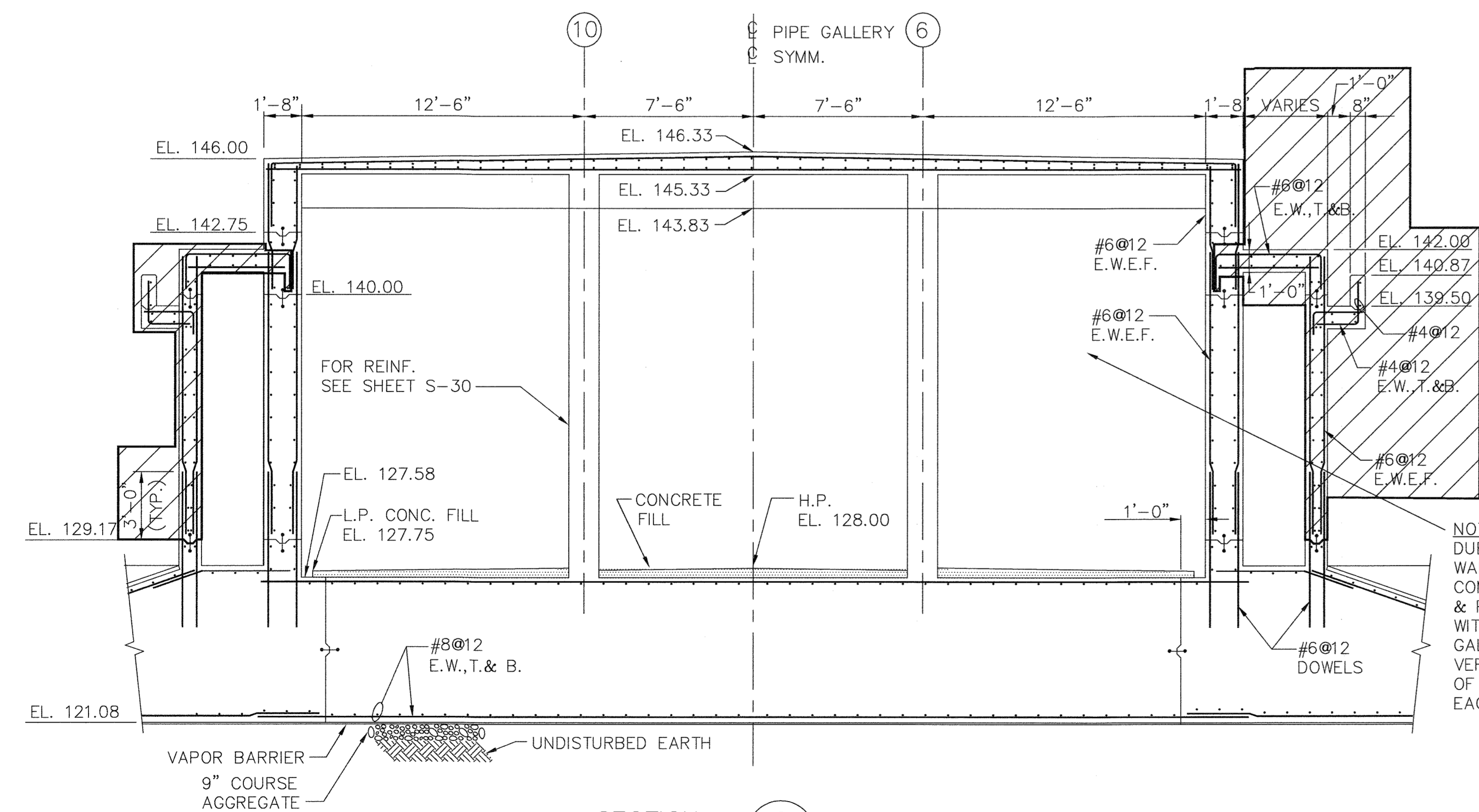
SECTION 3
SCALE: 1/4"=1'-0" S-25, S-26, S-28, S-29



SECTION 4
SCALE: 1/2"=1'-0" S-26, S-29



SECTION 5
SCALE: 1/2"=1'-0" S-26, S-29



SECTION 2
SCALE: 1/4"=1'-0" S-25, S-26, S-28, S-29

NOTE: DUE TO DELETION OF GRAVITY THICKENER WALLS, THE #6@12 O.C. INDICATED FOR COMMON WALLS BETWEEN G.T. 3&4 & PIPE GALLERY, WAS SUPPLEMENTED WITH #7@12 O.C. DOWELED 18" INTO GALLERY STARTER WALL & EXTEND VERTICALLY TO EL.139.00 A TOTAL OF 36 BARS ARE INSTALLED IN EACH WALL.

NOTE: PROVIDE GALV. DOVE TAIL SLOTS @ 24" O.C., HORIZONTALLY AND GALV. DOVE TAIL ANCHORS @ 16" O.C., VERTICALLY AT BRICK FACING (TYP.)

FILE NO.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Law 5/1/96 DATE
DIRECTOR OF PUBLIC WORKS

Paul H. Johnson 5/7/96 DATE
CHIEF, BUREAU OF ENGINEERING

John O'Hara 5/1/96 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Debra L. Lee 5-7-96 DATE
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96 DATE
REG. PROF. ENGR.



DES: DR	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	3/5/94
DRN: EB			
CHK:			
DATE:	BY NO.	REVISION	DATE

STRUCTURAL

DIGESTER AND PIPE GALLERY SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

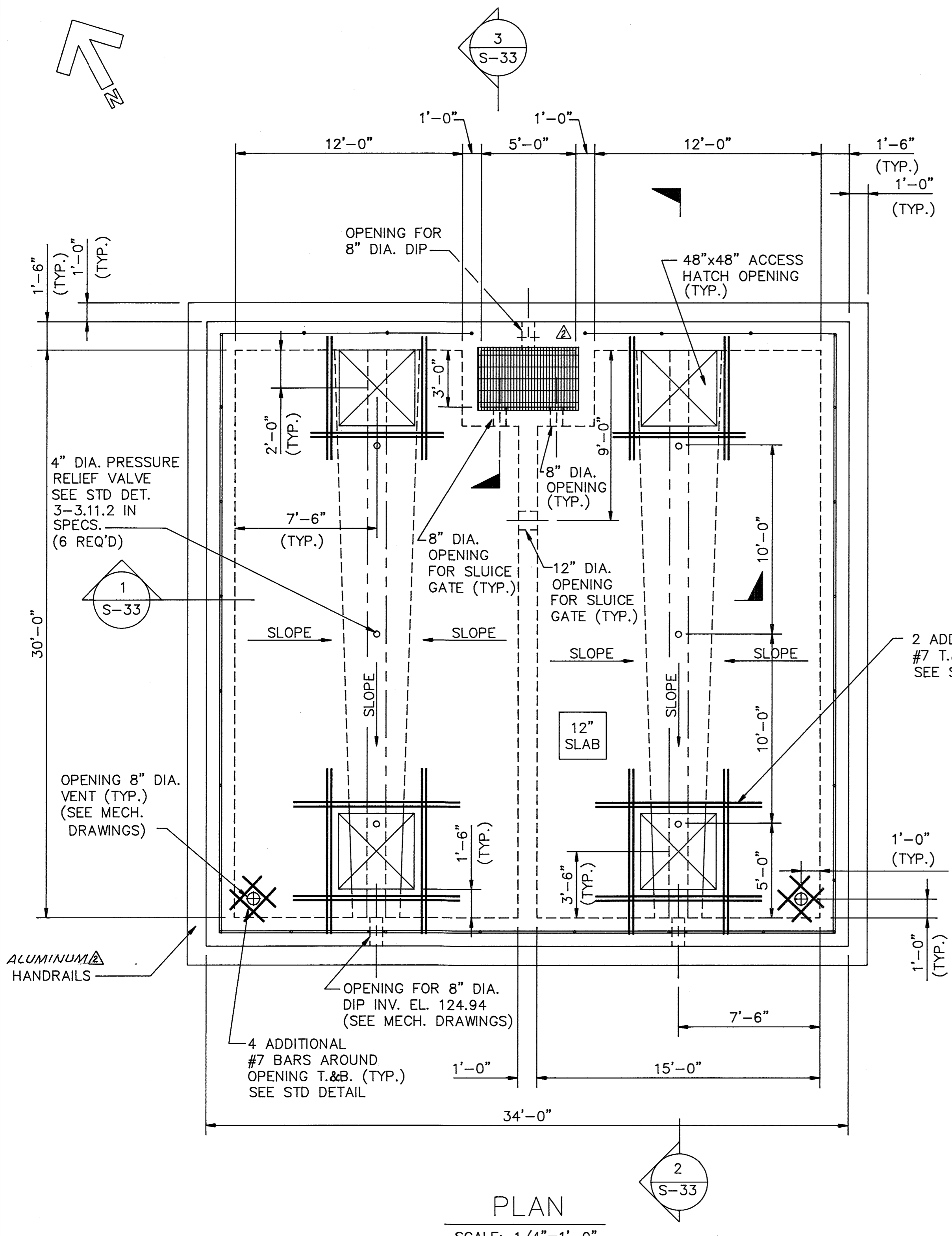
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

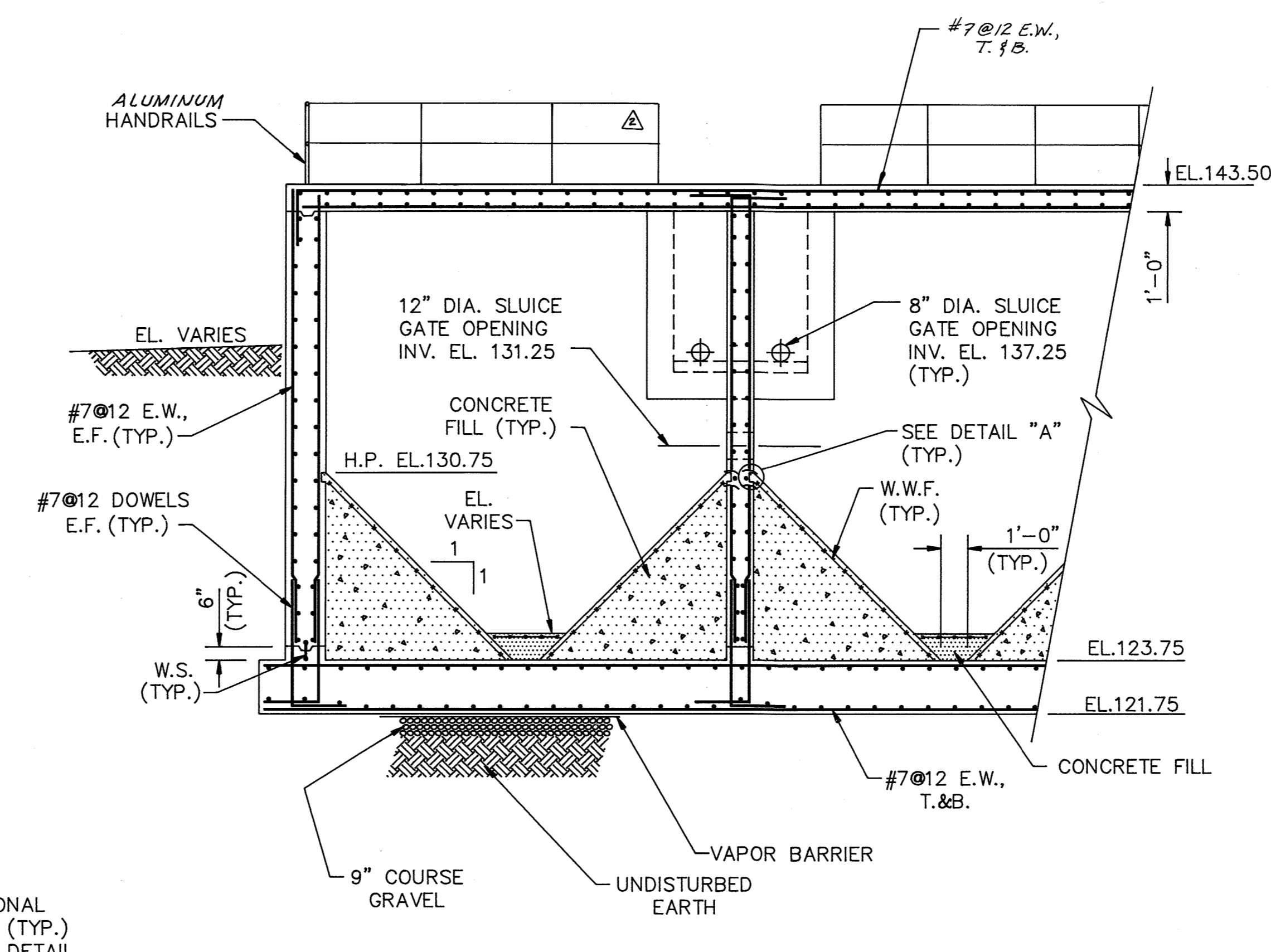
SHEET 80 OF 226

S-32A

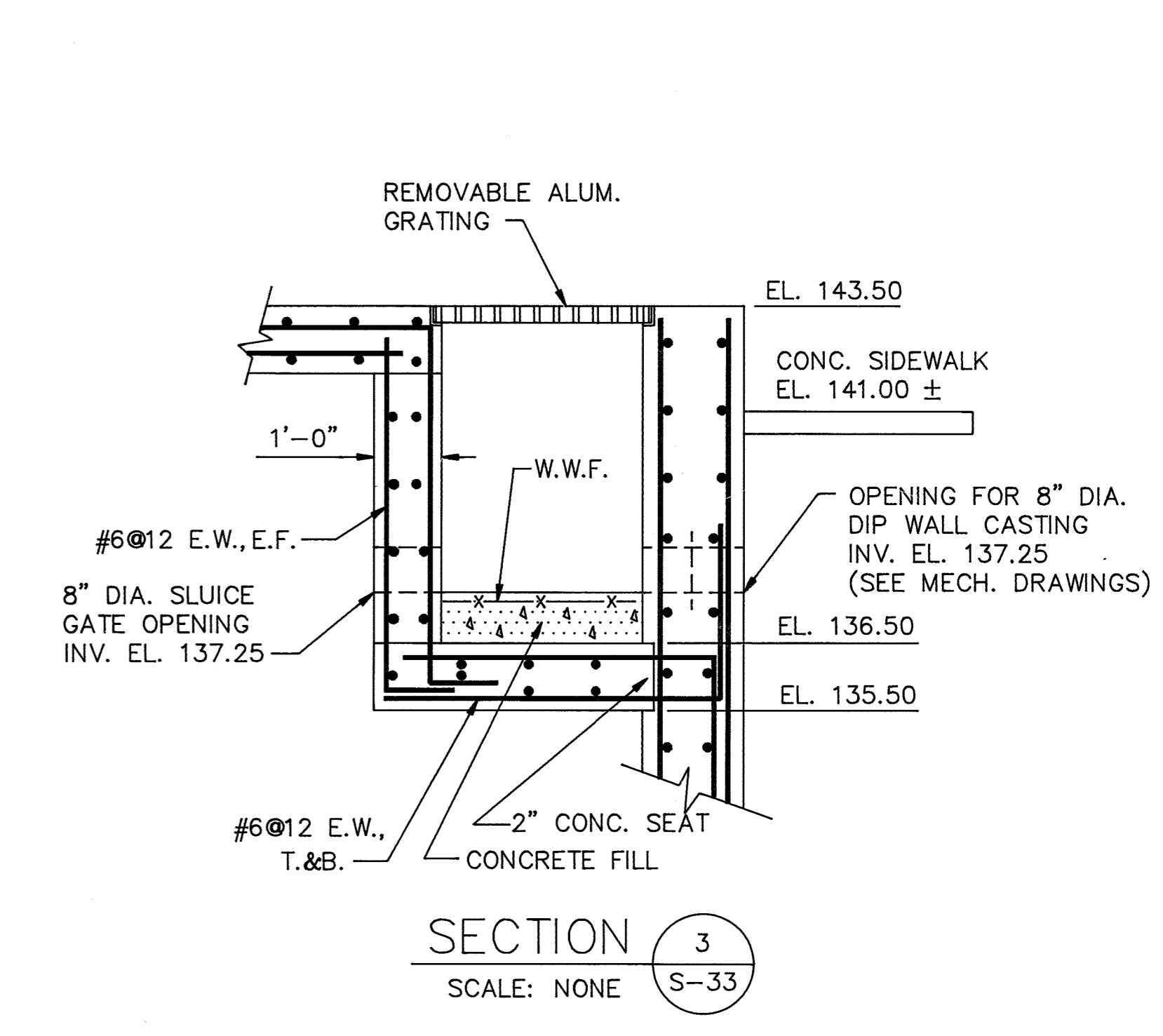


PLAN
SCALE: 1/4"=1'-0"

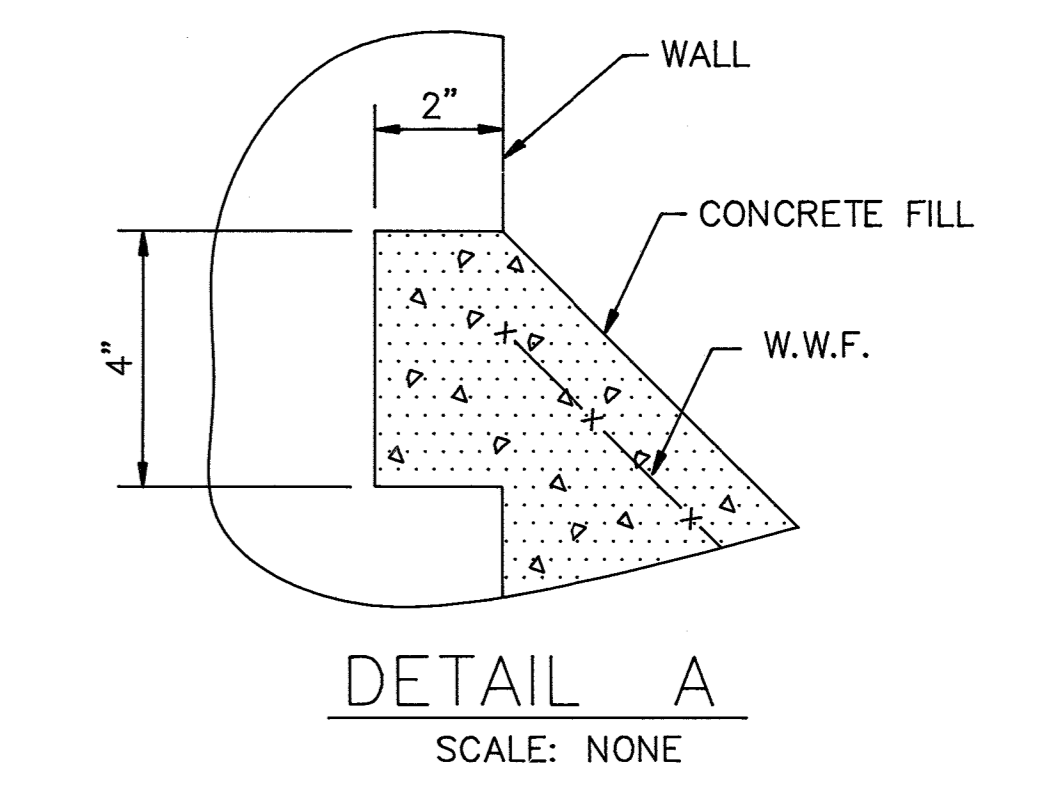
- NOTES:
- SEE ADDITIONAL REINFORCING DETAILS IN APPENDIX "B"
 - FOUNDATION BASED UPON ALLOWABLE SOIL BEARING PRESSURE OF 1500 P.S.F.
 - DESIGN LIVE LOADS:
 - A. TOP SLAB: 200 LBS. PER SQUARE FOOT
 - B. SEPTAGE: 65 LBS. PER CUBIC FOOT
 - CONTRACTOR TO PROVIDE ADDITIONAL OPENING FOR SLUCE GATE STEM OPERATORS.



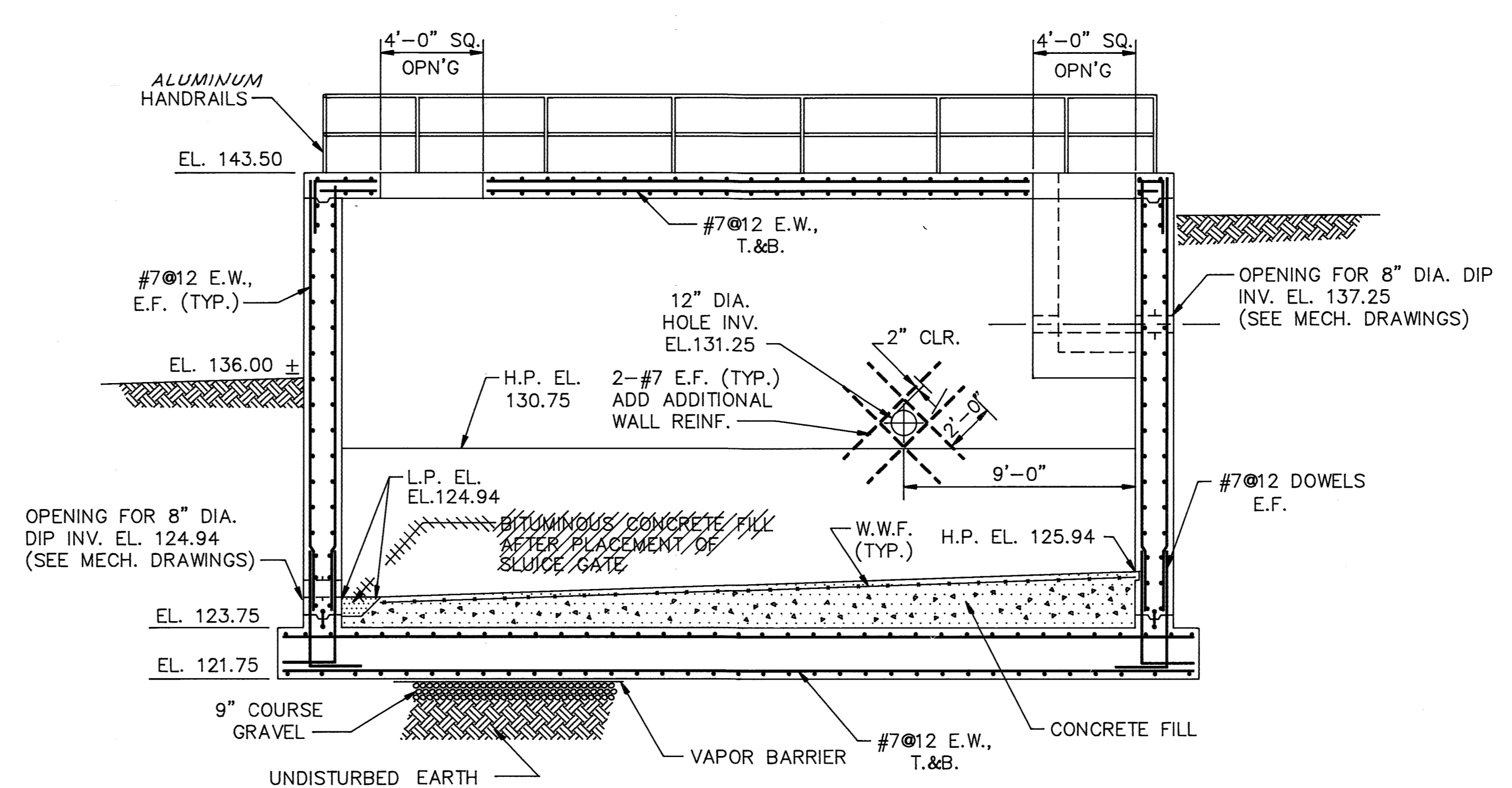
SECTION 1
SCALE: 1/4"=1'-0"



SECTION 3
SCALE: NONE



DETAIL A
SCALE: NONE



SECTION 2
SCALE: 1/4"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 3-6-92
Act. Chief of Bureau of Engineering: *[Signature]* 3-6-92

Chief of Bureau of Environmental Services: *[Signature]* 3-6-92
Act. Chief of Utility Design Division: *[Signature]* 3-6-92

M&E Metcalf & Eddy

Jonathan Winthrop Doane
No. 15140
REGISTERED PROFESSIONAL ENGINEER
REG. PROF. ENGR. DATE: 3/6/92

DES: D. Colson					
DRN: E. Burnett	AC	3	RECORD DRAWING	12/1/91	
CHK: M. Yu	DZG	2	ADDENDUM #3	4/10/92	
DATE: 12/7/91		1	REVISED FOR BIDDING	3/5/92	
BY	NO.		REVISION	DATE	

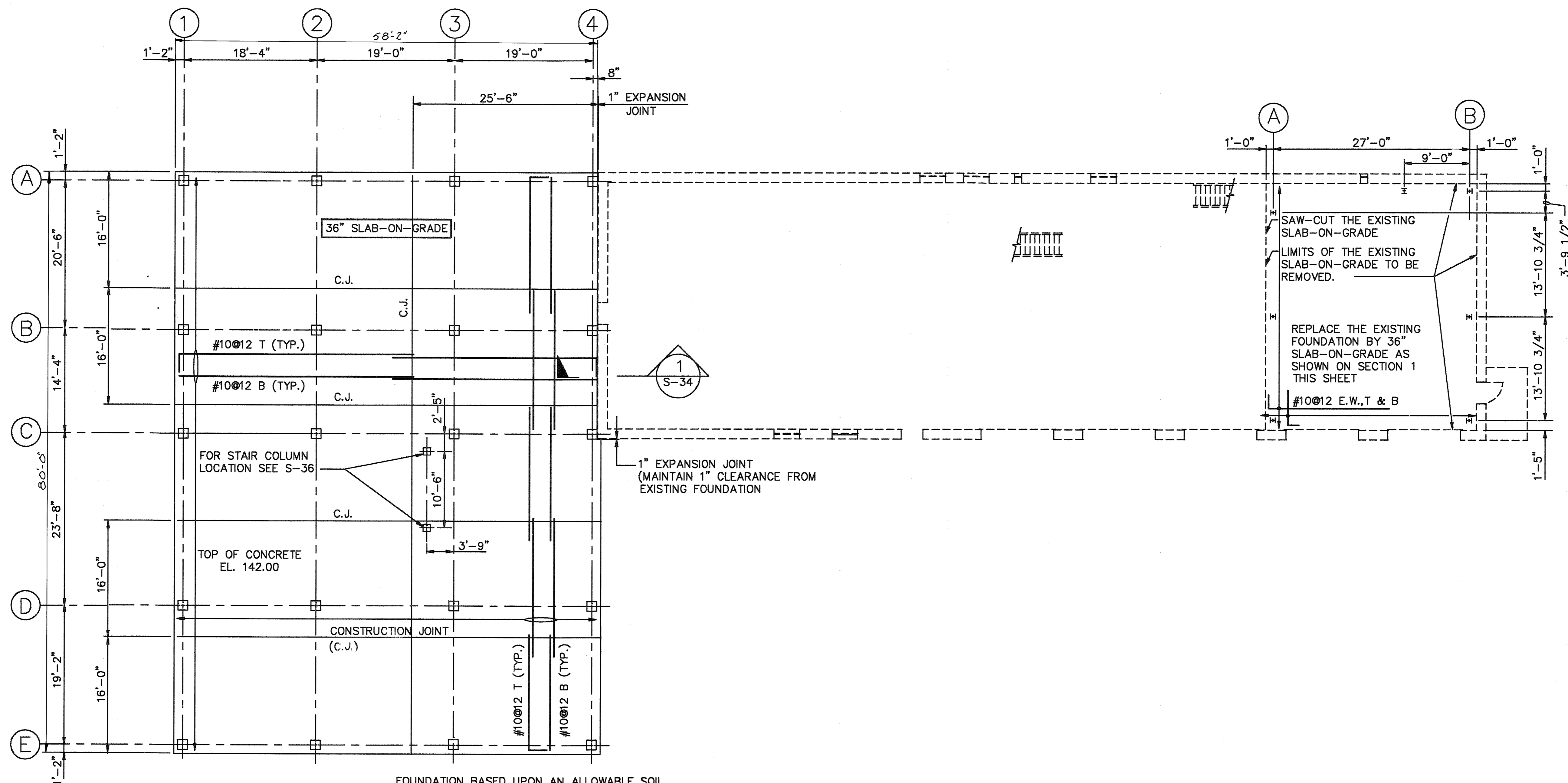
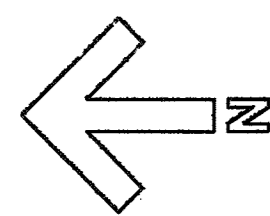
STRUCTURAL

SEPTAGE RECEIVING FACILITY
PLAN, SECTIONS, AND DETAIL

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

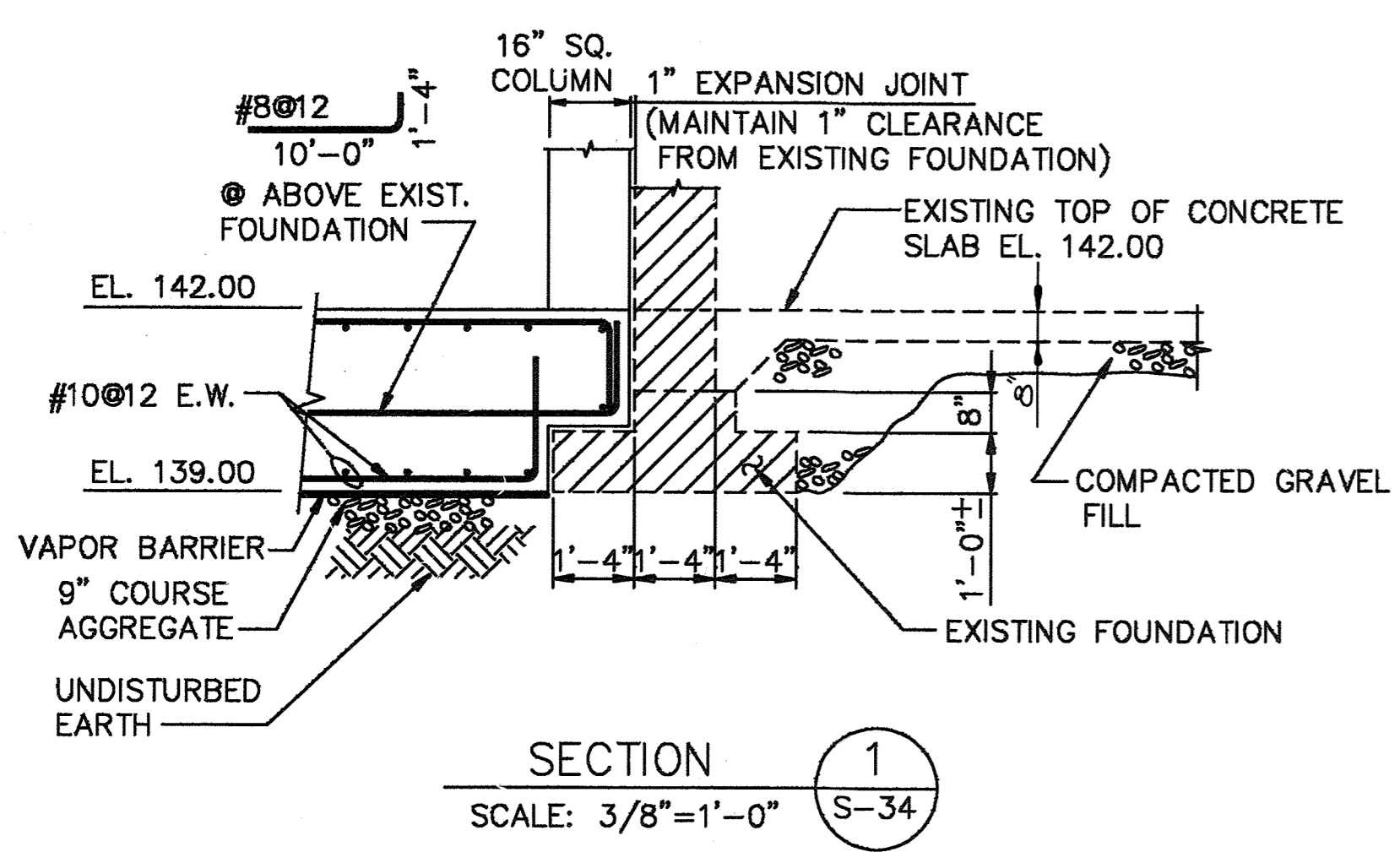
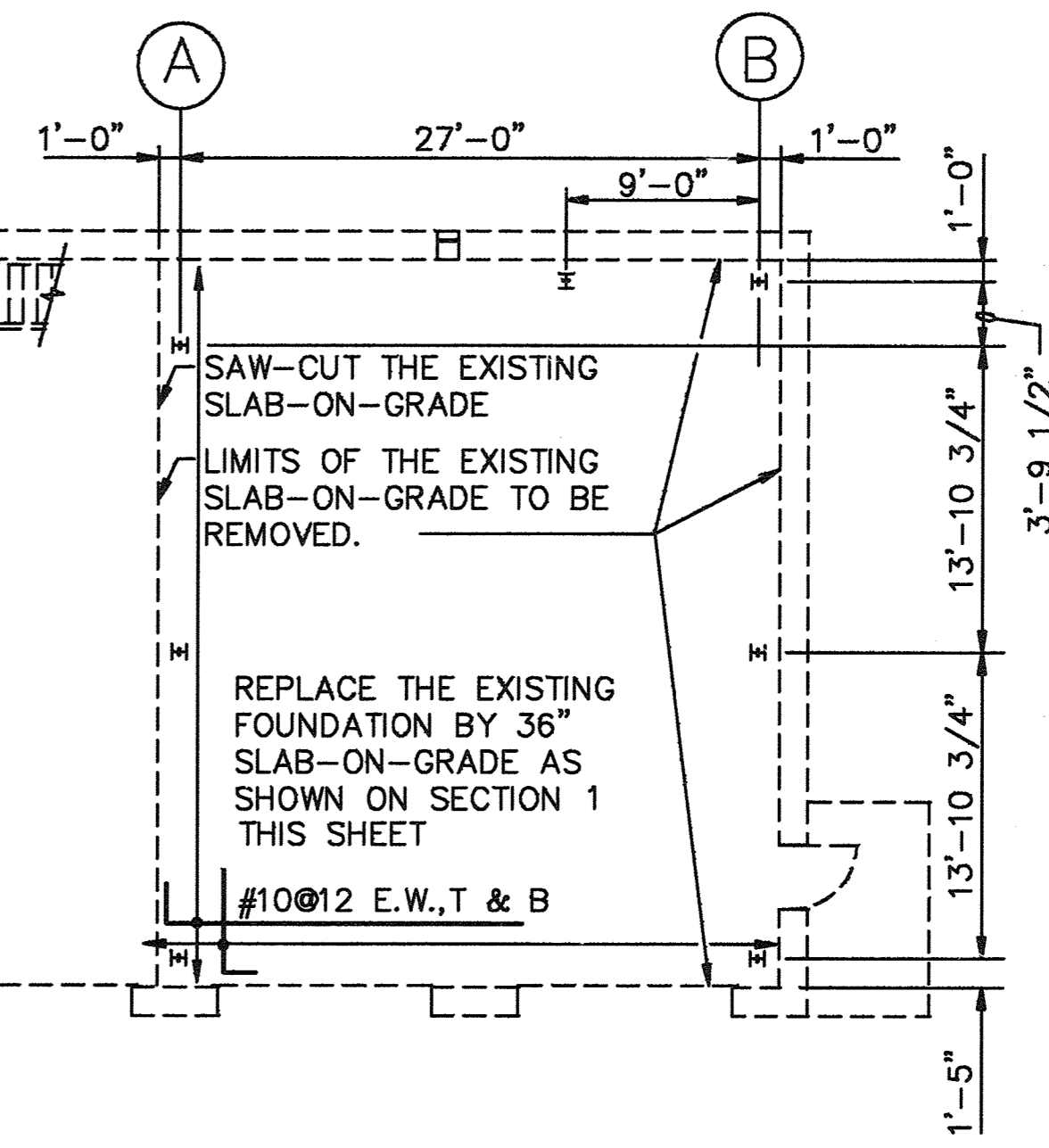
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET
21 OF 226
S-33



FOUNDATION BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF 3,500 LBS PER SQ. FT..

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



SECTION 1
SCALE: 3/8"=1'-0"

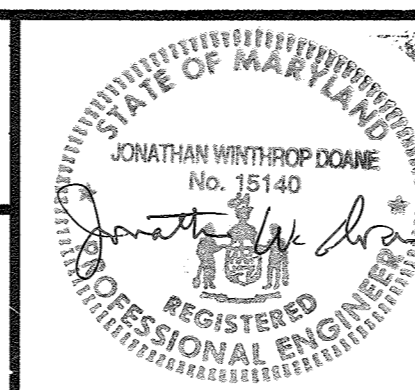
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James Walsh 12/9/91 *Michael J. Riley* 12/9/91
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

John O'Hara 12/9/91 *Clayton L. Pien* 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 12/9/91
REG. PROF. ENGR. DATE



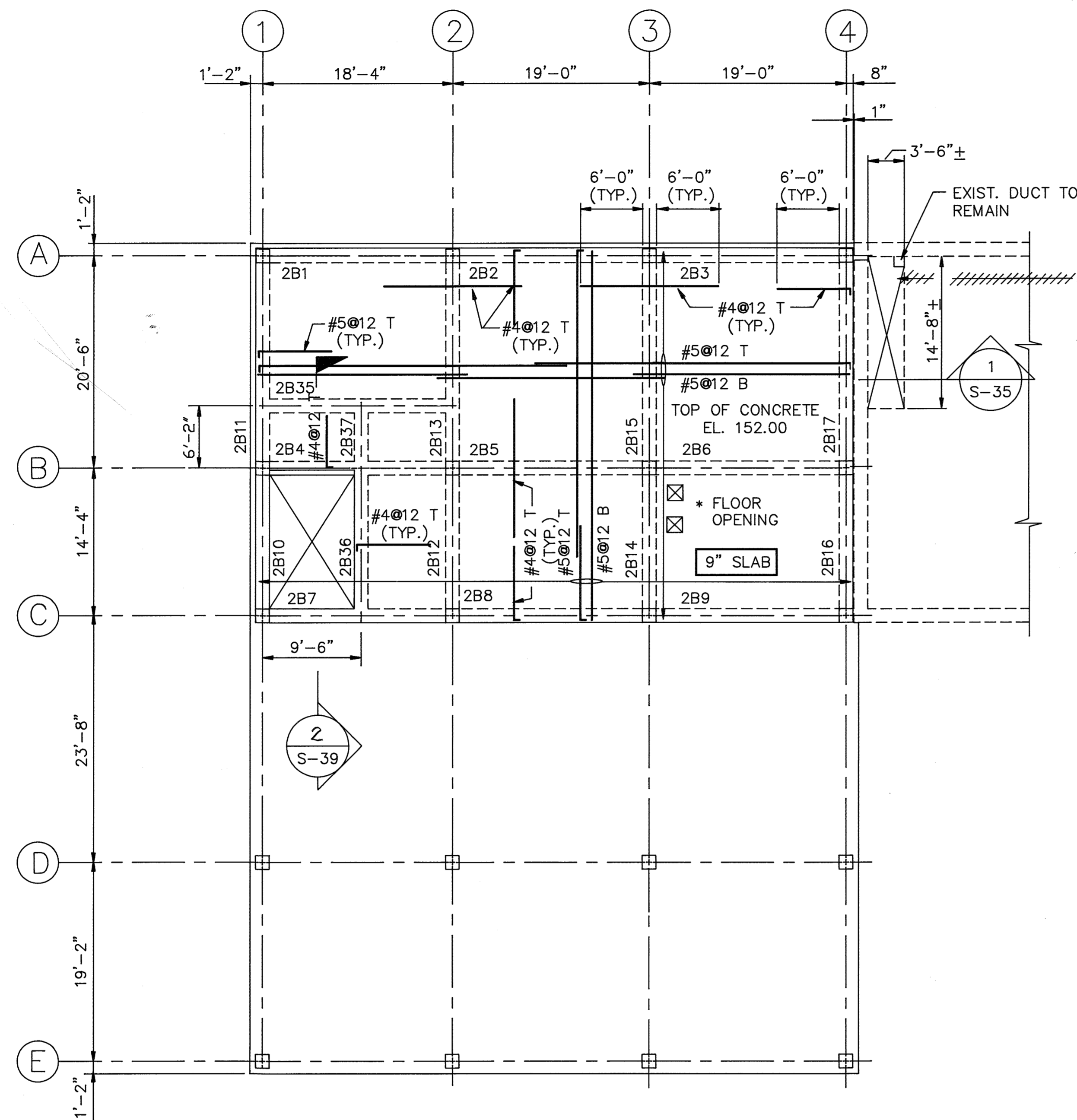
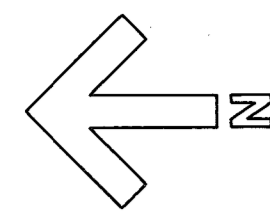
DES:	M 44			
DRN:	E. Barnett			
CHK:	M. V. V.	HC	3	RECORD DRAWING
		DEG	2	ADDENDUM #5
			1	REVISED FOR BIDDING
DATE:	12/7/91	BY	NO.	REVISION
				DATE

STRUCTURAL
**MAINTENANCE BUILDING
FOUNDATION PLAN
AND SECTION**

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 82 OF 226
S-34



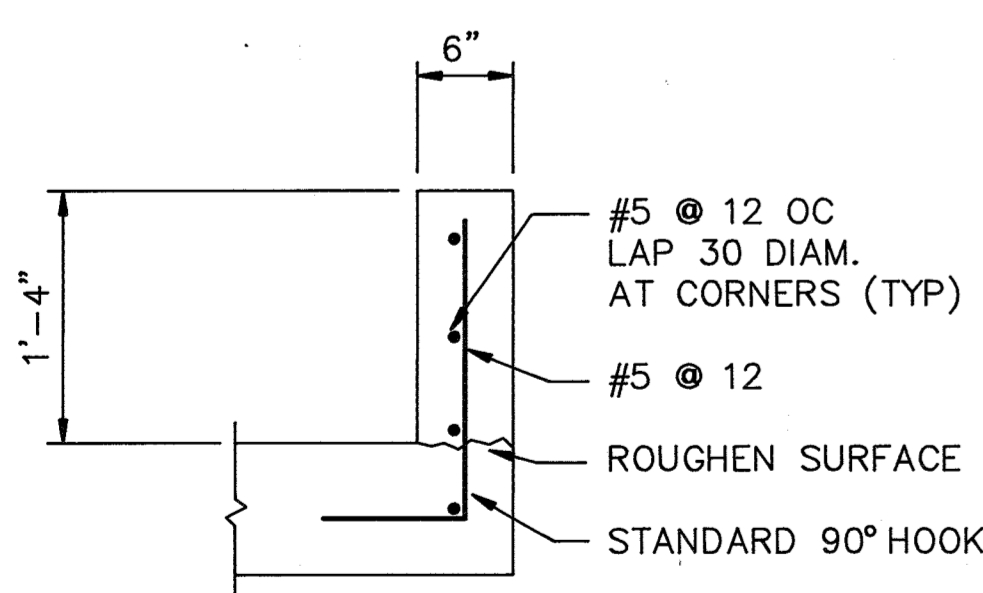
EXIST. STAIR TO BE REMOVED.
OPENING TO BE PATCHED BY
NEW SLAB FOR NEW SLAB
SEE SECTION 1/S-35

* FOR SIZE AND LOCATION OF OPENING, COORDINATE WITH DRAWINGS H-3 AND H-4.

PARTIAL 2ND FLOOR FRAMING

@ EL. 152.00

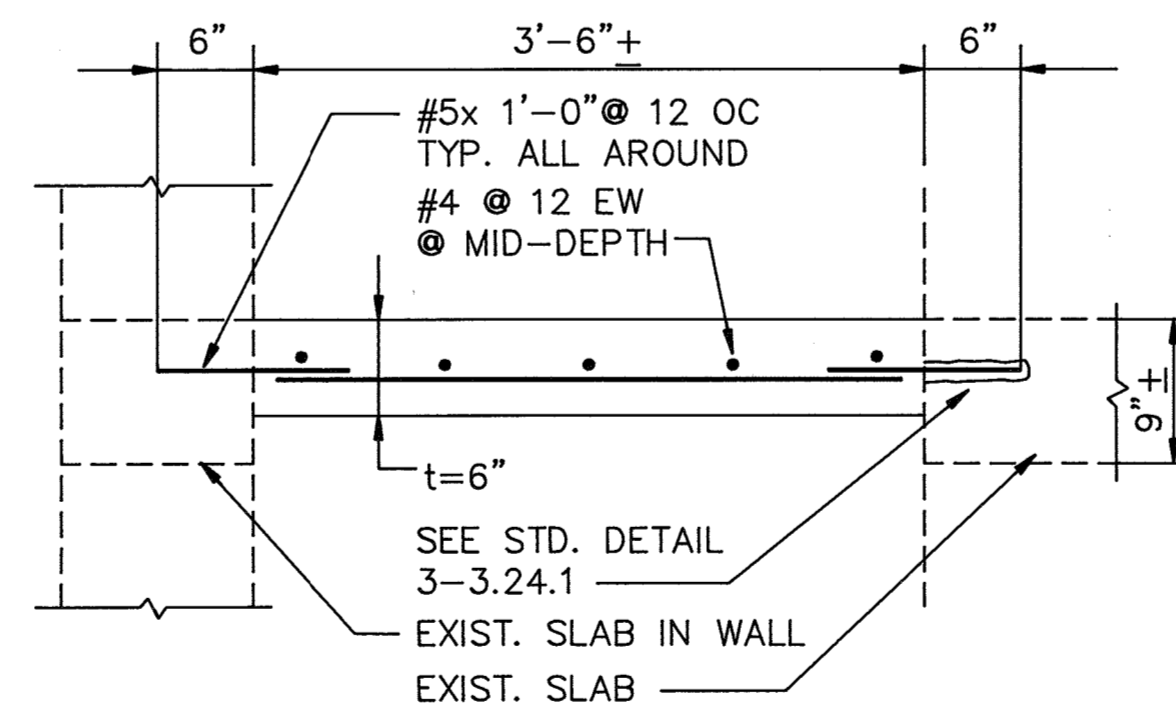
SCALE: 1/8"=1'-0"



SECTION 2

SCALE: 1"=1'-0"

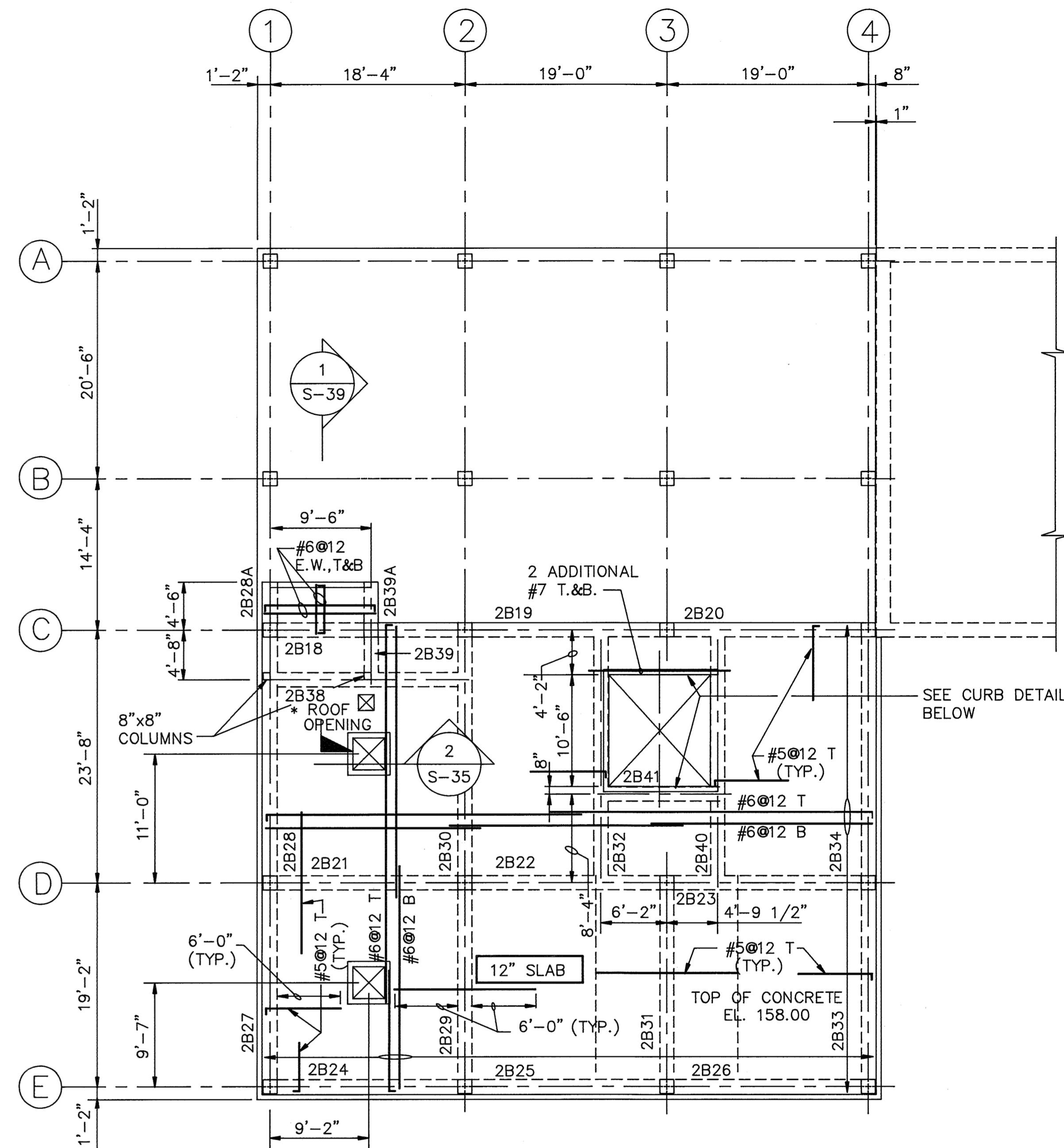
S-35



SECTION 1

SCALE: 1"=1'-0"

S-35

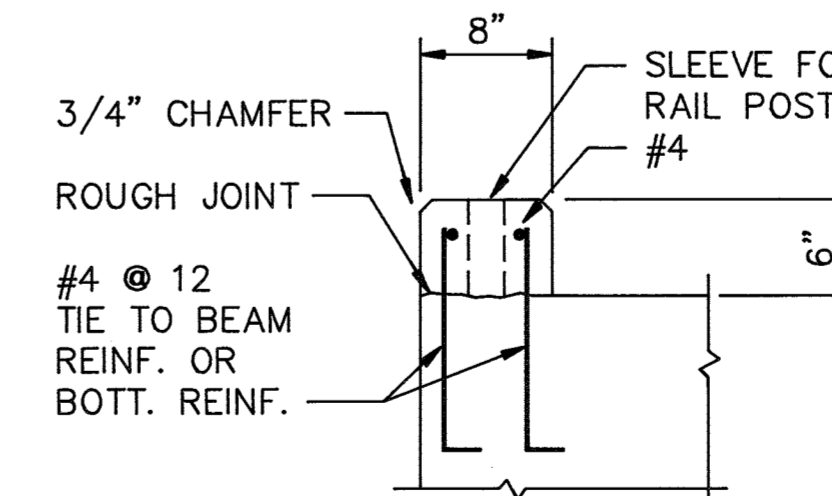


SEE CURB DETAIL BELOW

PARTIAL 2ND FLOOR FRAMING

@ EL. 158.00

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



CURB DETAIL

DESIGN LIVE LOADS:

1. SMALL PARTS STORAGE AREA: 300 PSF
2. OTHERS: 100 PSF

NOTES:

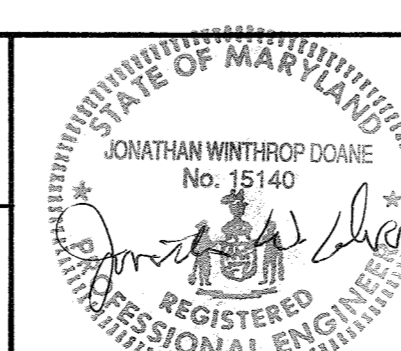
1. FOR ADDITIONAL REINF., SEE STD. DETAIL 3-3.23.1
2. FOR MORE INFORMATION, SEE SKYLIGHT DETAIL C/A-5

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John O'Hara* 3/6/92
Act. Chief, Bureau of Engineering: *John O'Hara* 3/6/92
Act. Chief, Utility Design Division: *John O'Hara* 3/6/92

M&E Metcalf & Eddy

Jonathan W. Donie, REG. PROF. ENGR. 3/6/92

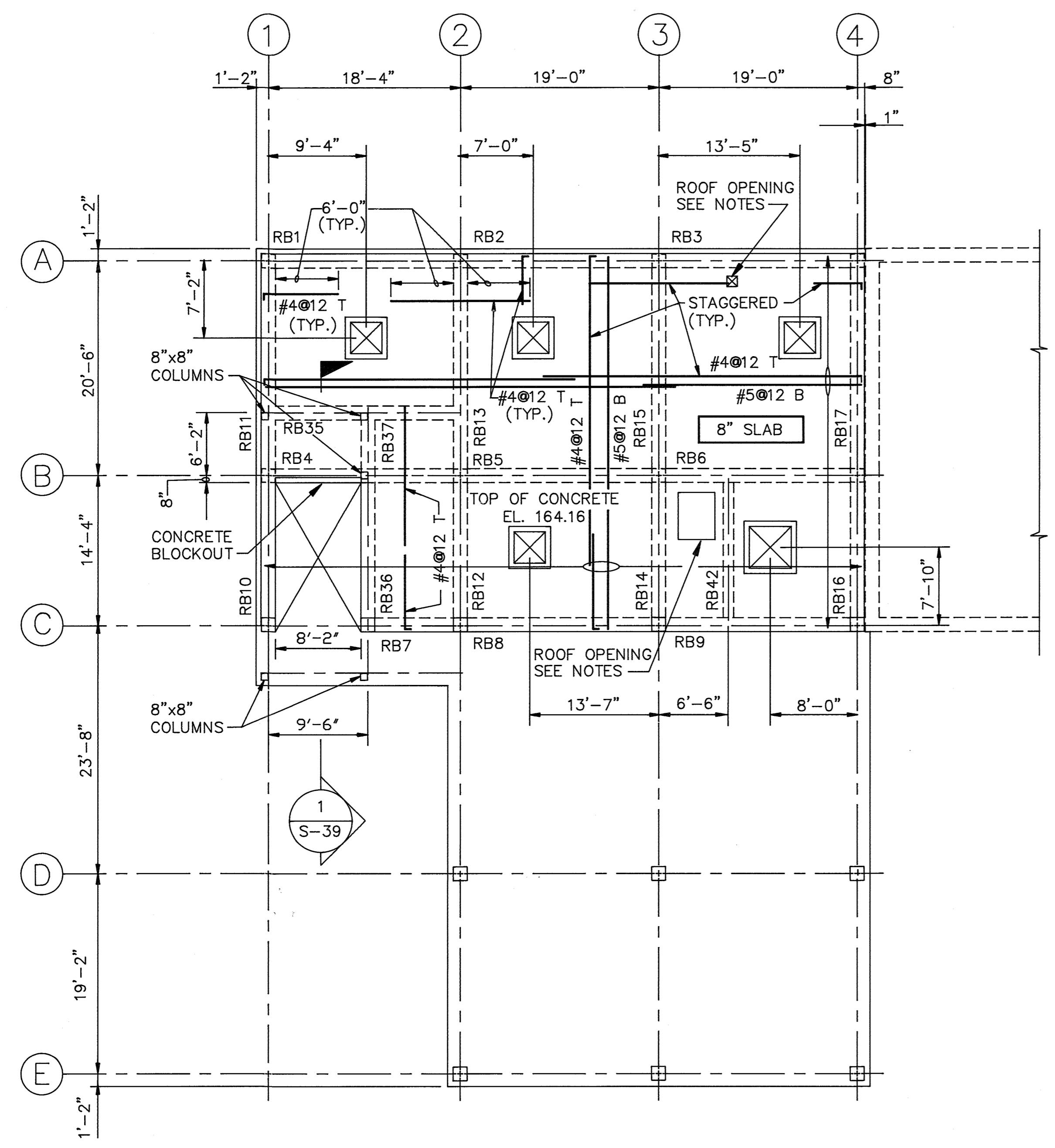
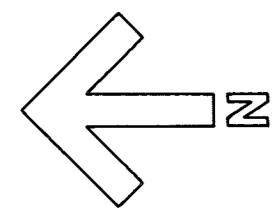


DES:	M. Yu			
DRN:	E. Borner			
CHK:	M. Yu	2	RECORD DRAWING	11/1/94
DATE:	12/7/91	1	REVISED FOR BIDDING	3/5/92
BY:	NO.		REVISION	DATE

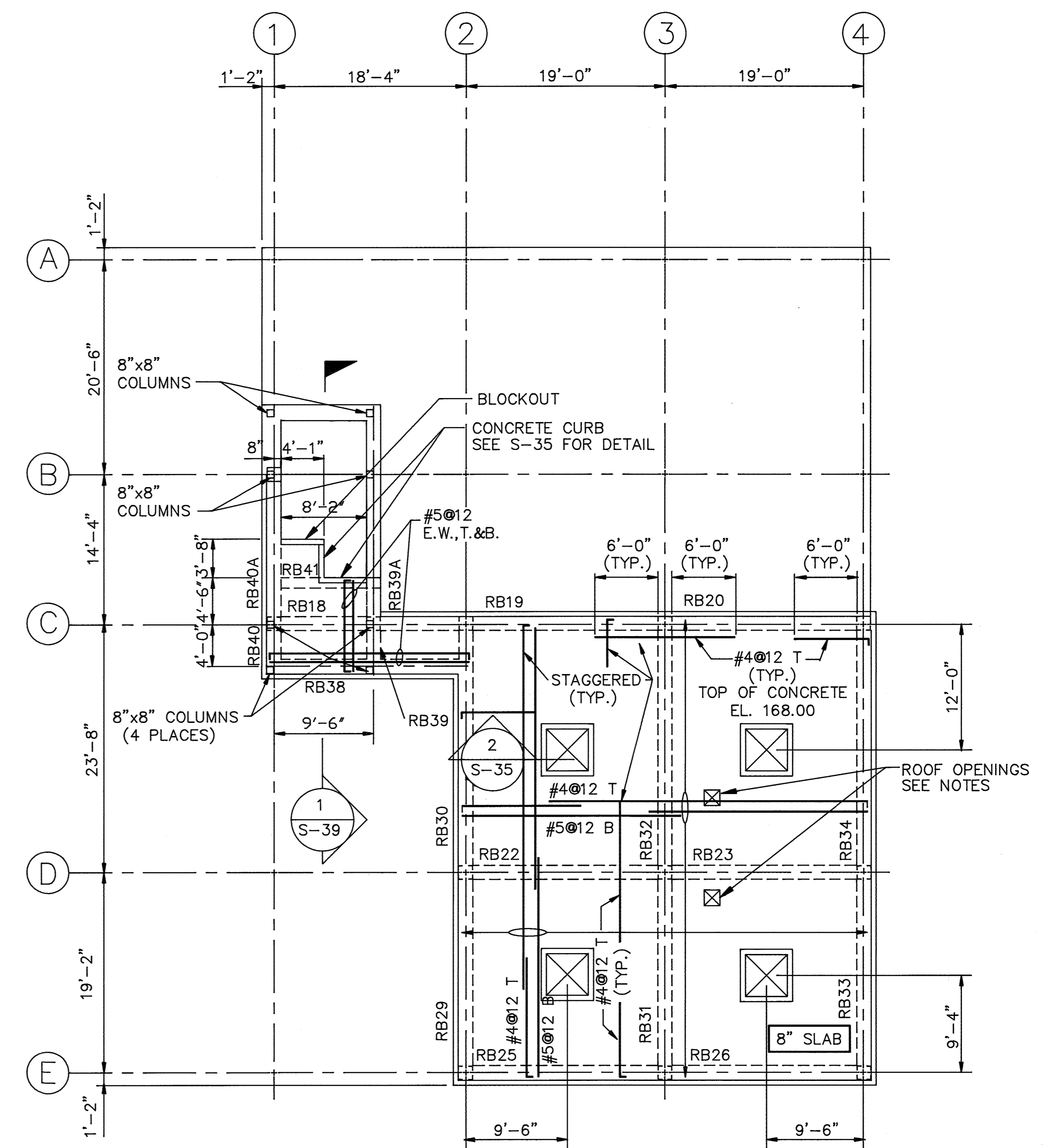
STRUCTURAL
MAINTENANCE BUILDING
SECOND FLOOR
FRAMING PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 83 OF 236
S-35



ROOF FRAMING PLAN
@ EL. 164.16
SCALE: 1/8"=1'-0"



ROOF FRAMING PLAN
@ EL. 168.00
SCALE: 1/8"=1'-0"

- DESIGN LIVE LOADS:
- 1. ROOF SNOW LOAD 30 PSF
 - 2. SUPERIMPOSED DL 20 PSF

- NOTES:
1. FOR SIZE AND LOCATION OF OPENINGS, COORDINATE WITH DRAWING H-4.
 2. ALL ROOF OPENINGS ARE WITH PREFAB ROOF CURB, EXCEPT SKYLIGHT OPENING.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

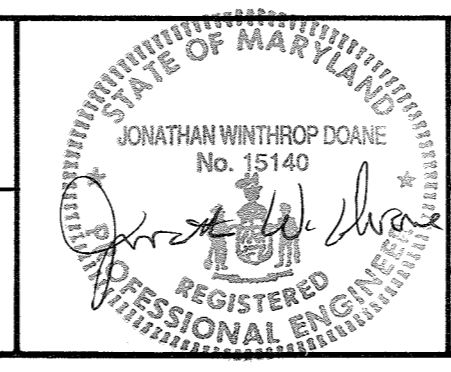
James M. Lee 3/6/92 DATE
DIRECTOR OF PUBLIC WORKS

John O'Brien 3/6/92 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Debra L. ... 3-6-92 DATE
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. ... 3/6/92 DATE
REG. PROF. ENGR.



DES: M. Yu			
DRN: E. Borchert			
CHK: M. Yu	2	RECORD DRAWING	11/1/91
	1	REVISED FOR BIDDING	3/5/92
DATE: 12/7/91	BY	NO.	REVISION

STRUCTURAL
MAINTENANCE BUILDING
ROOF FRAMING PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

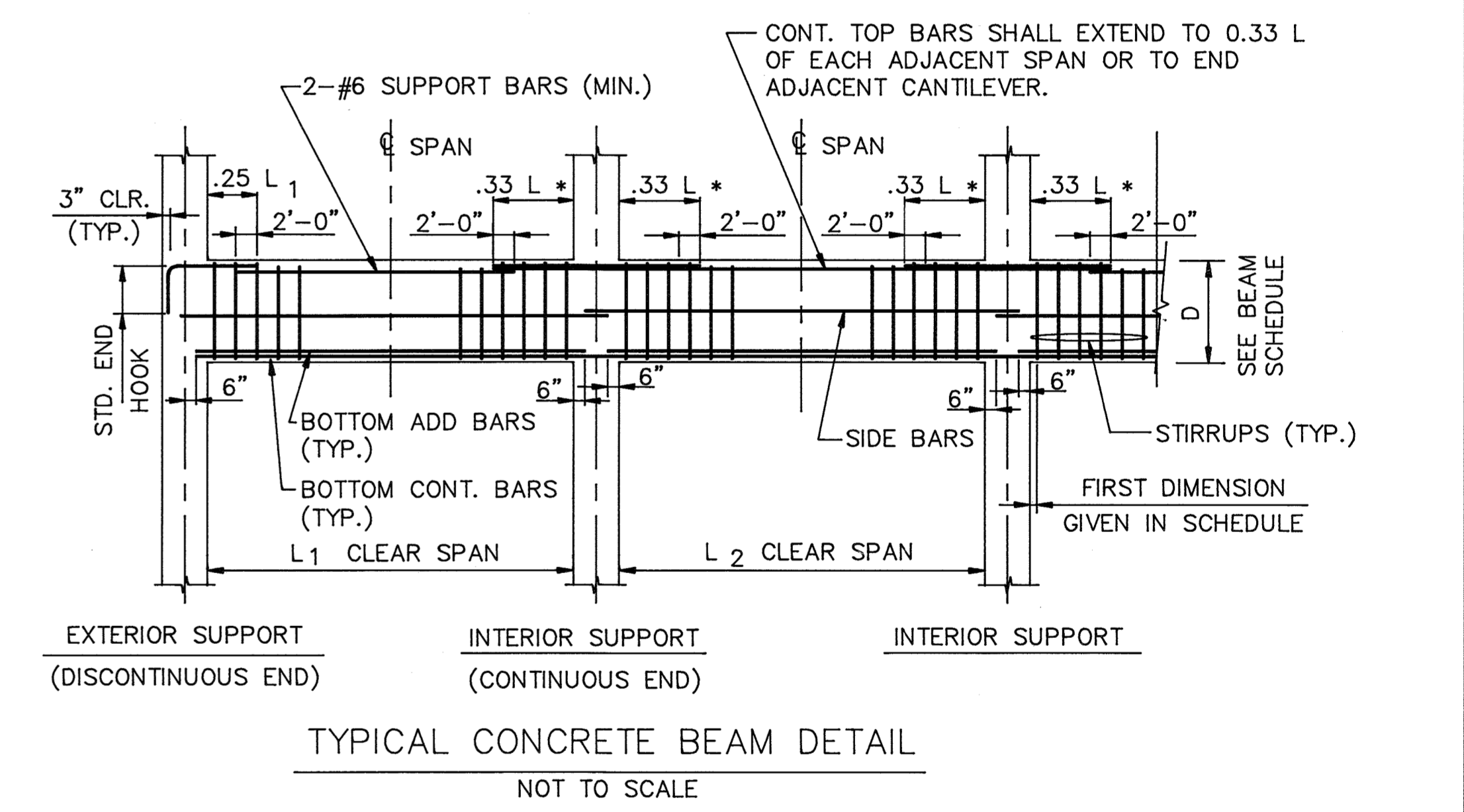
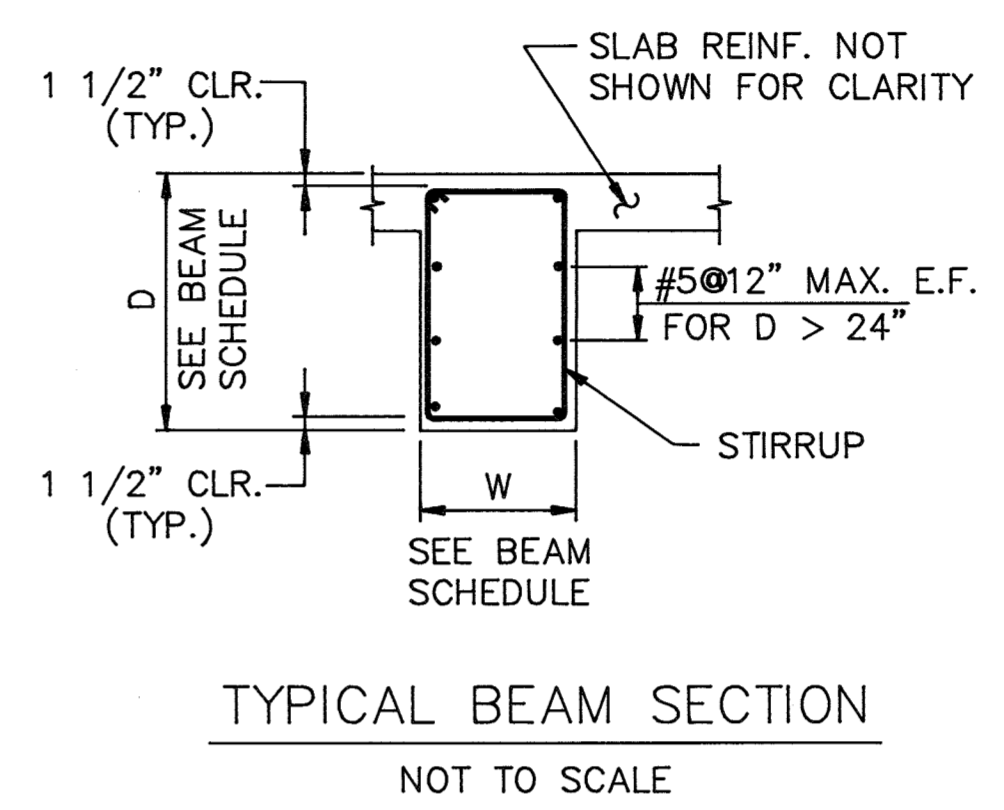
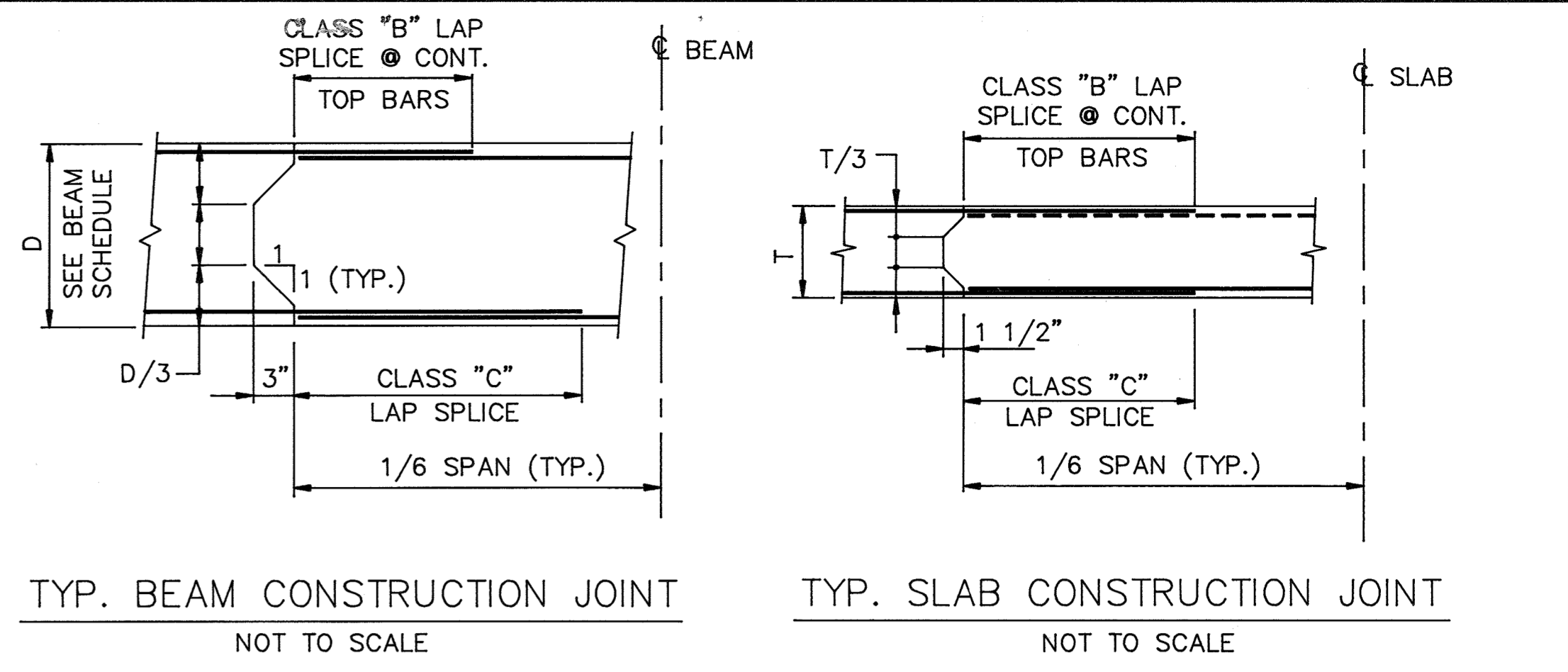
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 84 OF 226
S-36

BEAM SCHEDULE

BEAM MARK ON PLAN WILL BE DESIGNATED ON LEFT SIDE OF BEAM

2 ND. FLOOR										ROOF												
MARK	SIZE: WIDTH X DEPTH	REINFORCEMENT					STIRRUPS			REMARKS	MARK	SIZE: WIDTH X DEPTH	REINFORCEMENT					STIRRUPS			REMARKS	
		BOTTOM		TOP			TYPE	SIZE	SPACING				BOTTOM		TOP			TYPE	SIZE	SPACING		
		CONT.	ADD.	ADD. LEFT	CONT.	ADD. RIGHT								CONT.	ADD.	ADD. LEFT	CONT.				ADD. RIGHT	
2B1	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		RB1	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B2	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		RB2	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B3	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB3	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B4	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		RB4	16x24	3-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B5	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		RB5	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B6	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB6	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B7	16x24	2-#9	1-#9	-	2-#9	1-#9	□	#4	102", BAL. @10		RB7	16x24	3-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B8	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB8	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B9	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB9	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B10	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		RB10	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B11	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB11	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B12	16x24	2-#9	-	-	2-#9	2-#9	□	#4	102", BAL. @10		RB12	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B13	16x24	2-#9	1-#9	-	2-#9	1-#9	□	#4	102", BAL. @10		RB13	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B14	16x24	2-#9	-	-	2-#9	2-#9	□	#4	102", BAL. @10		RB14	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B15	16x24	2-#9	1-#9	-	2-#9	1-#9	□	#4	102", BAL. @10		RB15	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B16	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		RB16	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B17	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB17	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B18	16x36	2-#9	2-#9	-	2-#9	2-#9	□	#4	102", BAL. @12		RB18	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B19	16x36	2-#9	1-#9	-	2-#9	1-#9	□	#4	102", BAL. @12		RB19	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B20	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @12		RB20	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B21	16x36	2-#9	-	-	2-#9	2-#9	□	#4	102", BAL. @16		RB21									NOT USED		
2B22	16x36	3-#9	2-#9	-	2-#9	2-#9	□	#4	102", BAL. @12		RB22	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B23	16x36	2-#9	2-#9	-	2-#9	-	□	#4	102", BAL. @12		RB23	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B24	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB24										NOT USED	
2B25	16x36	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @16		RB25	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B26	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB26	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B27	16x36	2-#9	-	-	2-#9	2-#9	□	#4	102", BAL. @16		RB27	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10	NOT USED	
2B28	16x36	4-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB28	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10	NOT USED	
2B28A	16x36	4-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB29	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B29	16x36	2-#9	-	-	2-#9	3-#9	□	#4	102", 8@11", BAL. @16		RB30	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B30	16x36	3-#9	2-#9	-	3-#9	-	□	#4	102", 8@11", BAL. @16		RB31	16x24	2-#9	-	-	2-#9	2-#9	□	#4	102", BAL. @10		
2B31	16x36	3-#9	2-#9	-	5-#9	-	□	#4	102", 8@11", BAL. @16		RB32	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B32	16x36	3-#9	2-#9	-	5-#9	-	□	#4	102", 8@11", BAL. @16		RB33	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B33	16x36	2-#9	-	-	2-#9	2-#9	□	#4	102", BAL. @16		RB34	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B34	16x36	2-#9	1-#9	-	2-#9	-	□	#4	102", BAL. @16		RB35	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B35	16x24	2-#9	1-#9	-	2-#9	-	□	#4	102", BAL. @10		RB36	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B36	16x24	2-#9	1-#9	-	2-#9	-	□	#4	102", BAL. @10		RB37	16x24	2-#9	-	-	2-#9	1-#9	□	#4	102", BAL. @10		
2B37	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		RB38	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B38	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB39	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B39	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB39A	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B39A	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB40	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B40	16x36	2-#9	2-#9	-	4-#9	-	□	#4	102", BAL. @12		RB40A	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
2B41	16x36	2-#9	-	-	2-#9	-	□	#4	102", BAL. @16		RB41	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		
											RB42	16x24	2-#9	-	-	2-#9	-	□	#4	102", BAL. @10		



- NOTES:
- LARGER OF ADJACENT BEAM TOP BAR SHALL GOVERN.
 - L * IS THE GREATER OF ADJACENT SPANS L₁ OR L₂.

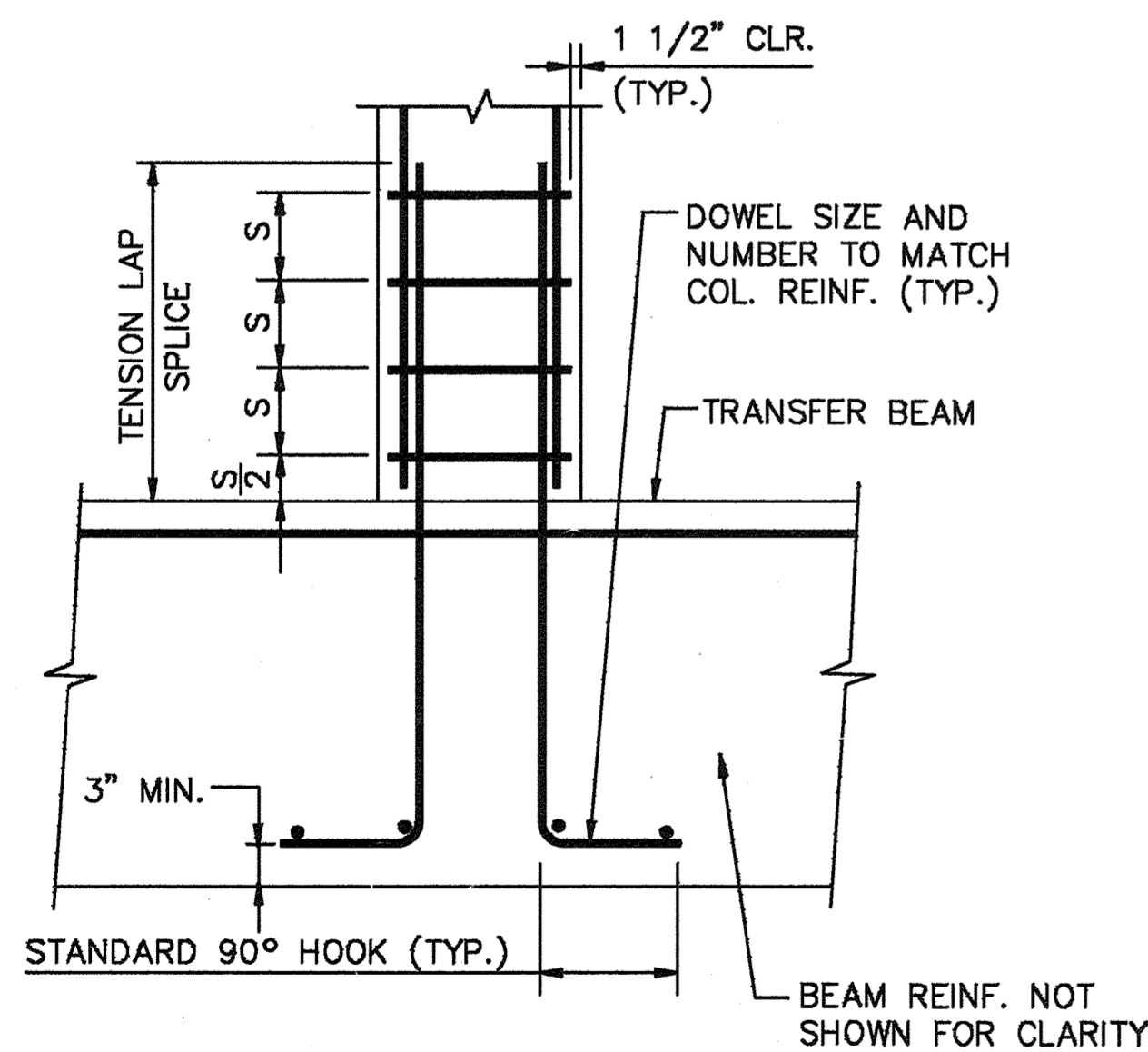
- NOTES:
- POSITION OF SCHEDULED LEFT AND RIGHT END TOP REINFORCEMENT IS DETERMINED BY THE ORIENTATION OF BEAM MARKED ON PLAN.
 - CONT. MEANS CONTINUOUS TOP REINFORCEMENT EXTENDED TO L/3 OF EACH ADJACENT SPAN OR TO END OF ADJACENT CANTILEVER.

<p style="text-align: center;">DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p>Director of Public Works: <i>[Signature]</i> 12/16/11 Chief, Bureau of Engineering: <i>[Signature]</i> 12/16/11 Chief, Bureau of Environmental Services: <i>[Signature]</i> 12/16/11 Chief, Utility Design Division: <i>[Signature]</i> 12/16/11</p>	<p style="text-align: center;">M&E Metcalf & Eddy</p> <p>REG. PROF. ENGR. <i>[Signature]</i> 12/17/11</p>	<p style="text-align: center;">STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER</p> <p><i>[Signature]</i> 12/17/11</p>	<p>DES: M-YH DRN: E. Burdett CHK: M-YH DATE: 12/17/11</p>	<p style="text-align: center;">STRUCTURAL</p> <p style="text-align: center;">MAINTENANCE BUILDING BEAM SCHEDULE AND DETAILS</p>	<p style="text-align: center;">LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p style="text-align: center;">CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>	<p style="text-align: center;">SCALE AS SHOWN SHEET 85 OF 226 S-37</p>
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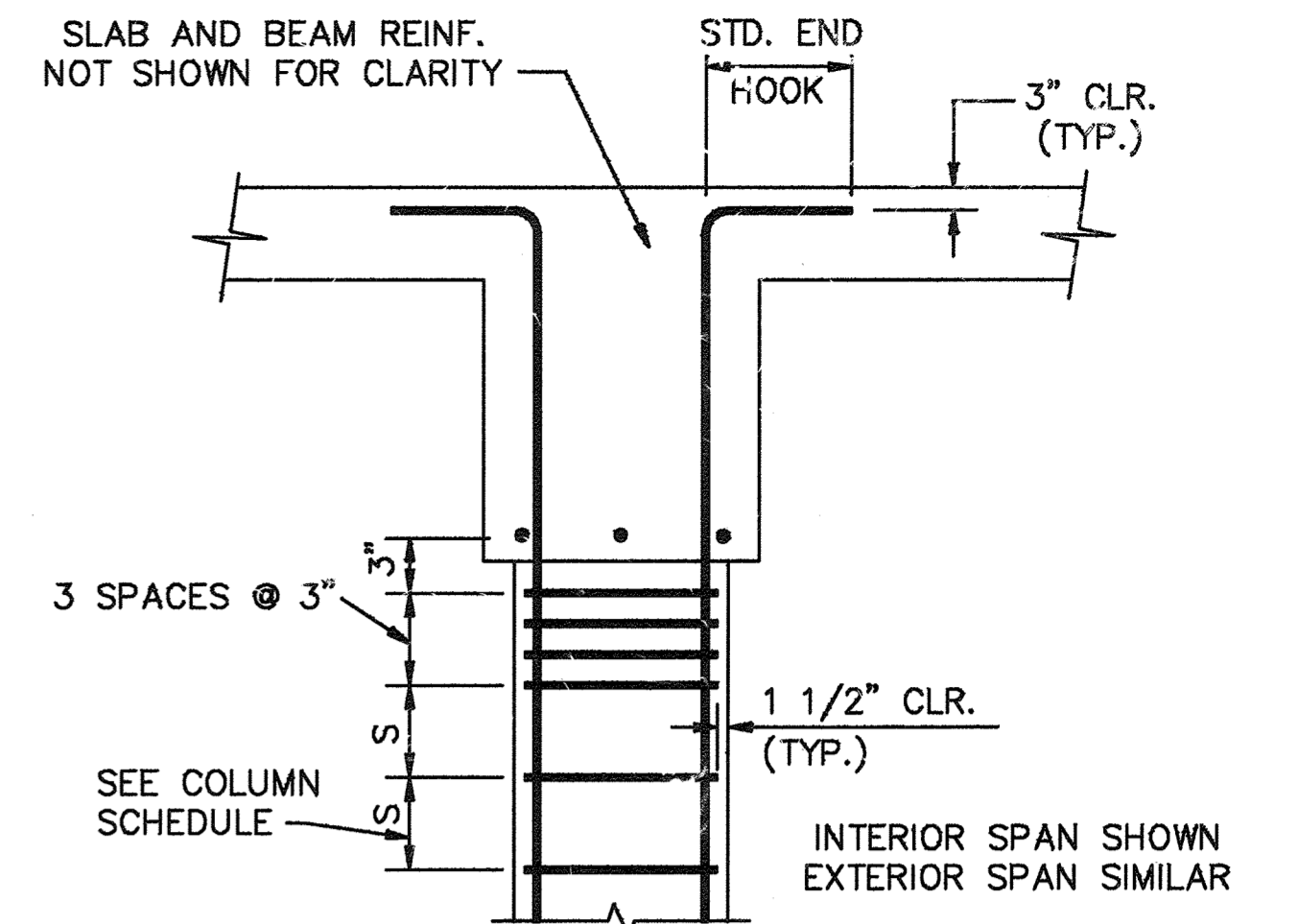
COLUMN SCHEDULE

COLUMN MARK	A-1 A-2 A-3 A-4 B-2 B-3 B-4	C-1 C-4	C-2 C-3	D-2 D-4	D-3	D-1 E-1	B-1 E-2 E-3 E-4	C.2-1 C.2-1.5	B-1 C-1 C-1.5	B-1.5 A.7-1 A.7-1.5	C-1.5	C.5-2.8	C.1-2.8
LEVEL EL. TO TOP OF STRUCT. (U.N.O.) PENTHOUSE LEVEL VARIES EL 177.83 ±													
ROOF EL. VARIES HIGH LEVEL EL. 168.00 ± LOW LEVEL EL. 164.16 ±								8"x8" 4-#7 #3@8	8"x8" 4-#7 #3@8	8"x8" 4-#7 #3@8			
SECOND FLOOR HIGH LEVEL EL. 158.00 ± LOW LEVEL EL. 152.00 ±	16" x 16" 4-#9 #3@12	16"x16" 8-#8 #3@12	16"x16" 8-#7 #3@12	16"x16" 4-#9 #3@12	16"x16" 4-#9 #3@12			8"x8" 4-#7 #3@8			16"x16" 4-#9 #3@12		TOP OF LANDING EL. 152.88
FIRST FLOOR EL. 142.00 ±	16" x 16" 4-#9 #3@12	16"x16" 8-#8 #3@12	16"x16" 8-#9 #3@12	16"x16" 8-#9 #3@12	16"x16" 12-#10 #3@12	16"x16" 4-#8 #3@12	16"x16" 4-#9 #3@12						TOP OF LANDING EL. 147.12
DOWELS	4-#9	8-#8	8-#9	8-#9	12-#10	4-#8	4-#9						4-#9

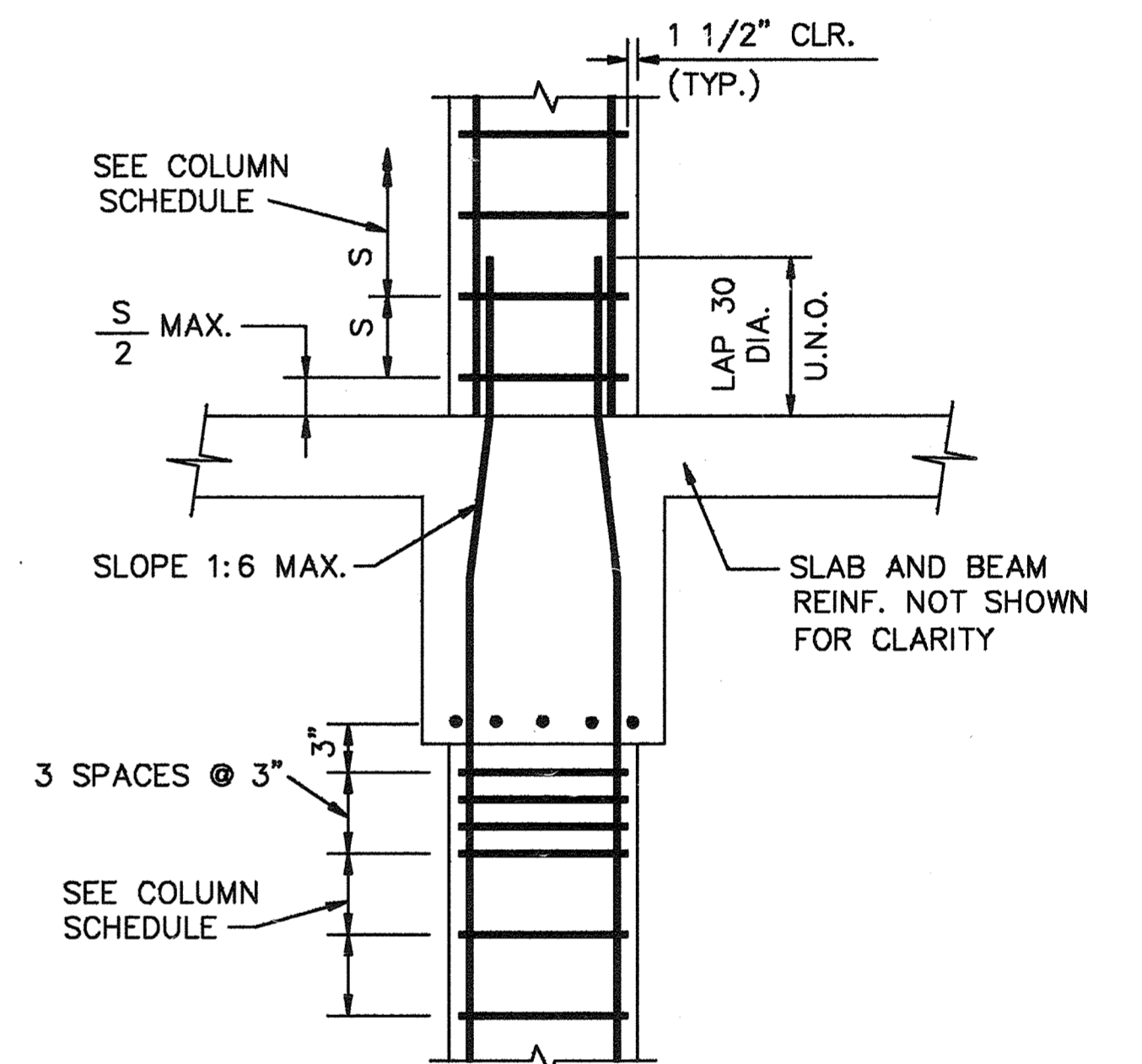
NOTE: INDICATES TRANSFER BEAM AT THE FLOOR LEVEL SHOWN.



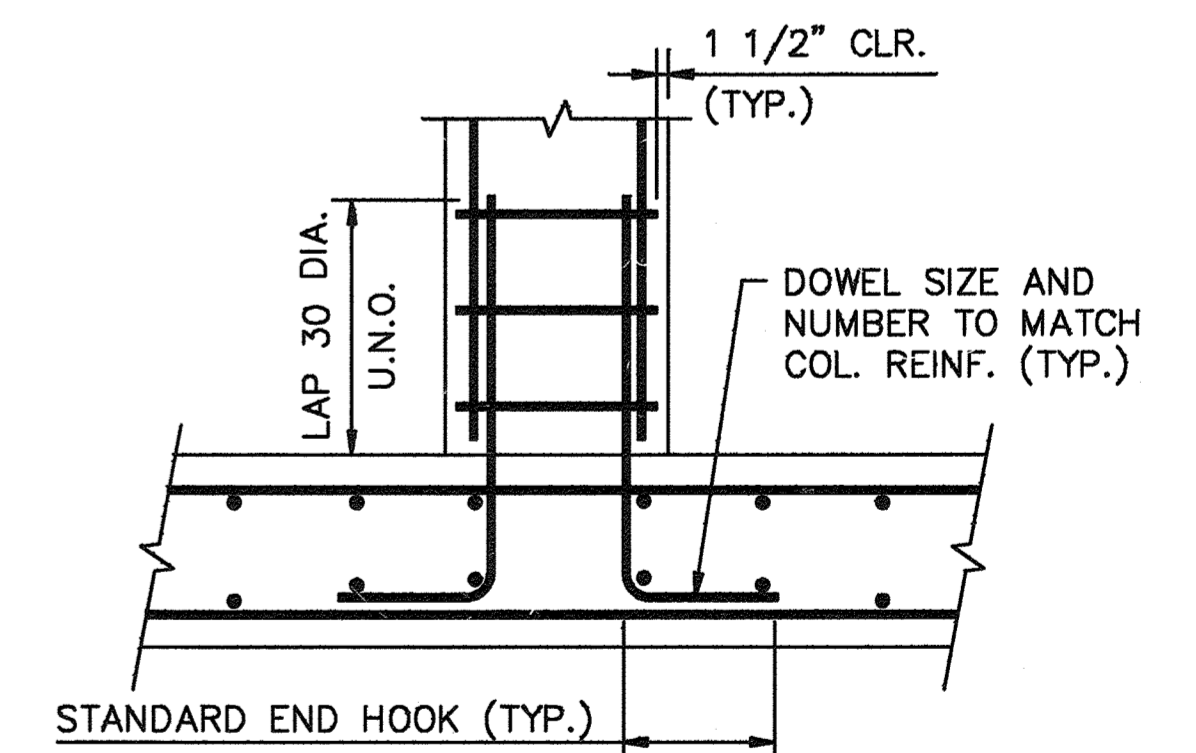
SPLICE DETAIL AT TRANSFER BEAM
NOT TO SCALE



TYPICAL TOP COLUMN DETAIL
NOT TO SCALE



TYPICAL COLUMN SPLICE DETAIL
NOT TO SCALE



NOTE:
FOR DIMENSIONS AND REINFORCEMENT
SEE COLUMN SCHEDULE.
TYPICAL BOTTOM COLUMN DETAIL
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hara 12/14/91
DIRECTOR OF PUBLIC WORKS DATE

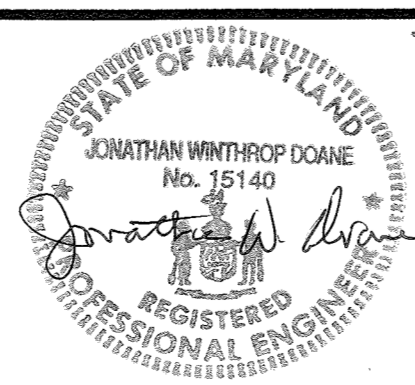
John J. O'Hara 12/19/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

W. S. ... 12-1-91
CHIEF, BUREAU OF ENGINEERING DATE

... 12-9-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. ... 12/26/91
REG. PROF. ENGR. DATE



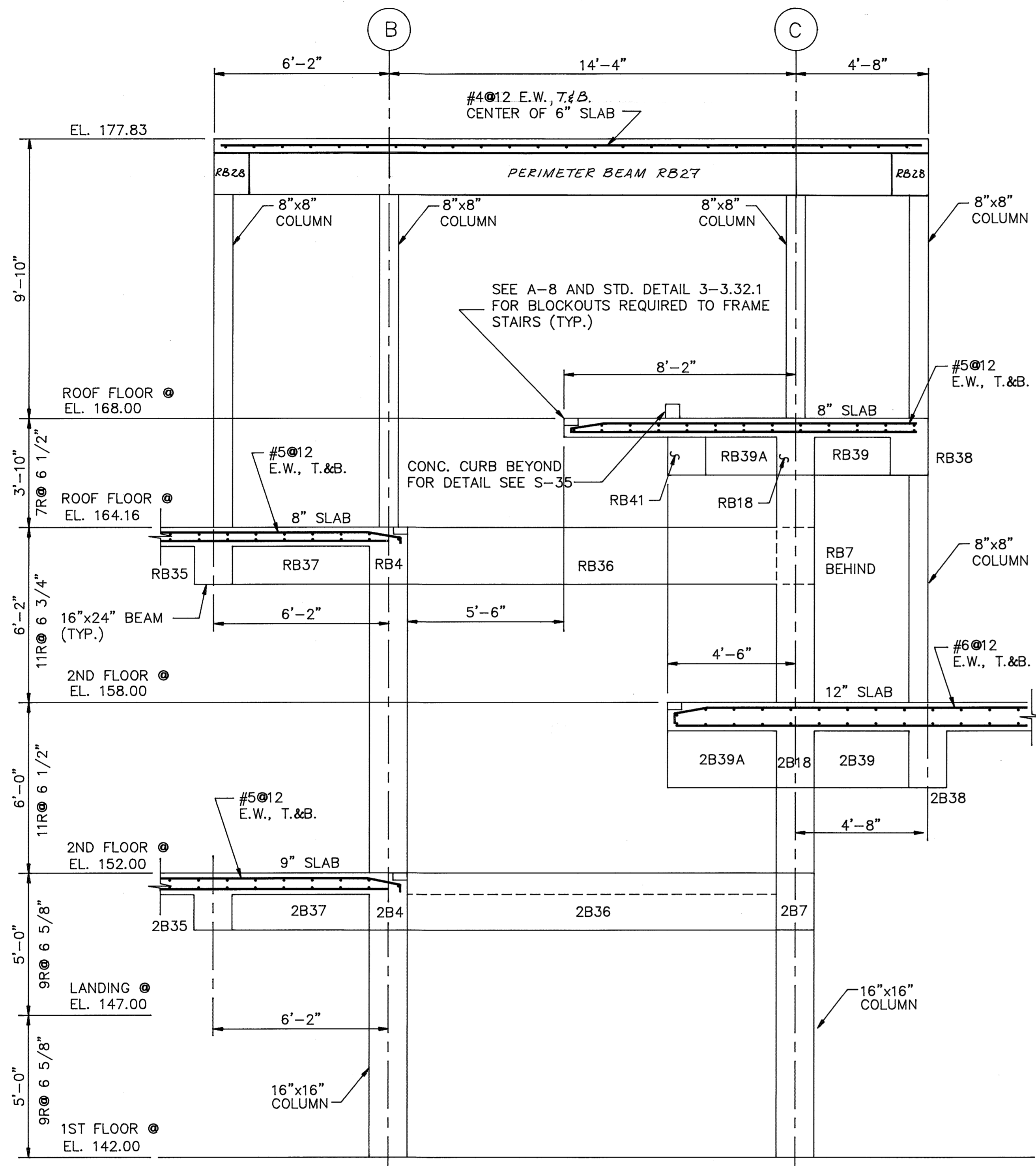
DES: M.YH			
DRN: E. Burnett			
CHK: M.YH	2	RECORD DRAWING	11/1/91
DATE: 12/7/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

STRUCTURAL
MAINTENANCE BUILDING
COLUMN SCHEDULE
AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 86 OF 226
S-38



SECTION 1
 PENTHOUSE STAIRWAY SECTION S-35, S-36
 SCALE: 3/8"=1'-0"

- NOTES:
- SEE ARCHITECTURAL DRAWINGS A-3 & A-8 FOR STAIR PLANS AND DETAILS.
 - ALUMINUM STAIRS SHALL BE DESIGNED BY THE CONTRACTOR FOR A LIVE LOAD OF 100 PSF. THE CONTRACTOR SHALL SUBMIT CALCULATIONS FOR REVIEW BY THE ENGINEER. ALL EMBEDMENT NEEDED FOR THE CONNECTION WITH THE FRAME SHALL BE COORDINATED BY THE CONTRACTOR.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

John J. O'Hara 12/19/91
 DIRECTOR OF PUBLIC WORKS DATE

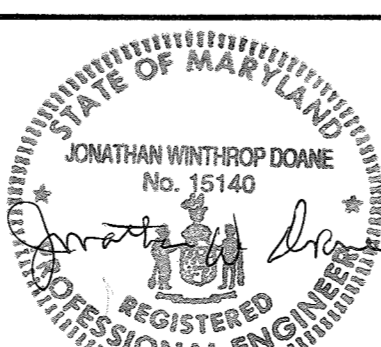
John J. O'Hara 12/19/91
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 12/19/91
 CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 12/19/91
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Dwyer 12/19/91
 REG. PROF. ENGR. DATE



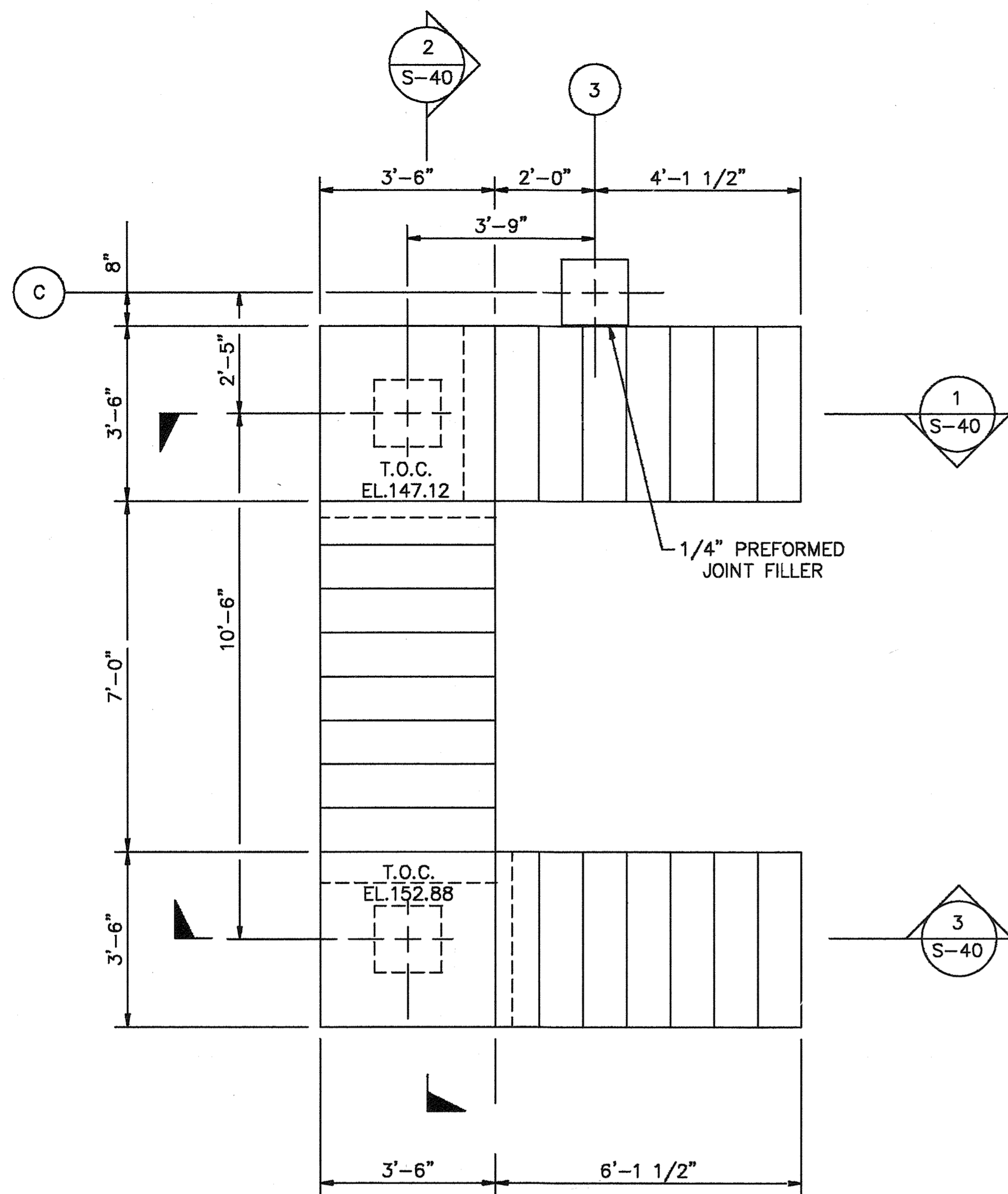
DES:	M. Y. Y.				
DRN:	E. Burnett				
CHK:	M. Y. Y.	1/1/92	2	RECORD DRAWING	1/1/92
DATE:	12/17/91		1	REVISED FOR BIDDING	3/5/92
BY:			NO.	REVISION	DATE

STRUCTURAL

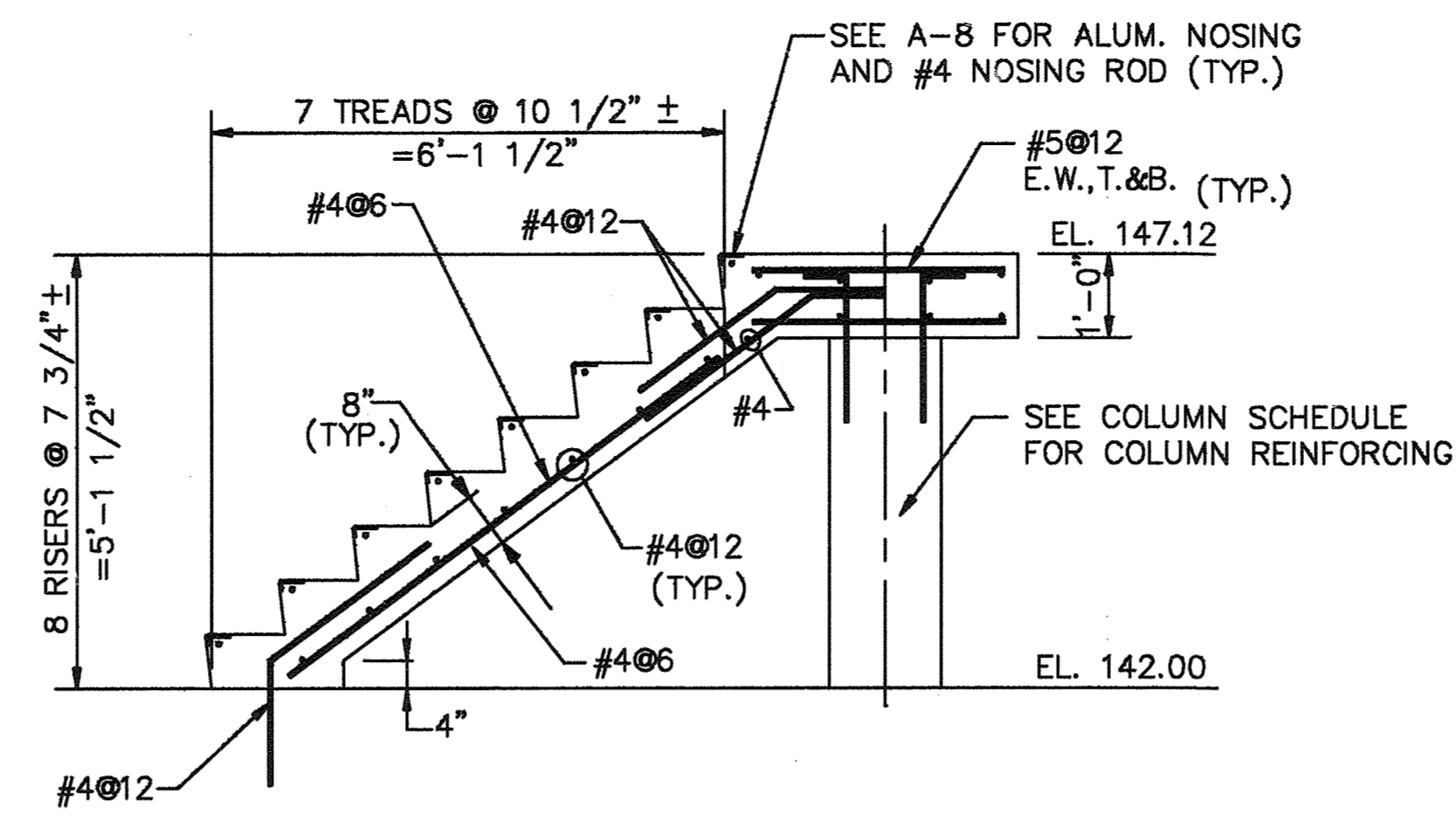
MAINTENANCE BUILDING
 PENTHOUSE STAIRWAY
 SECTION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

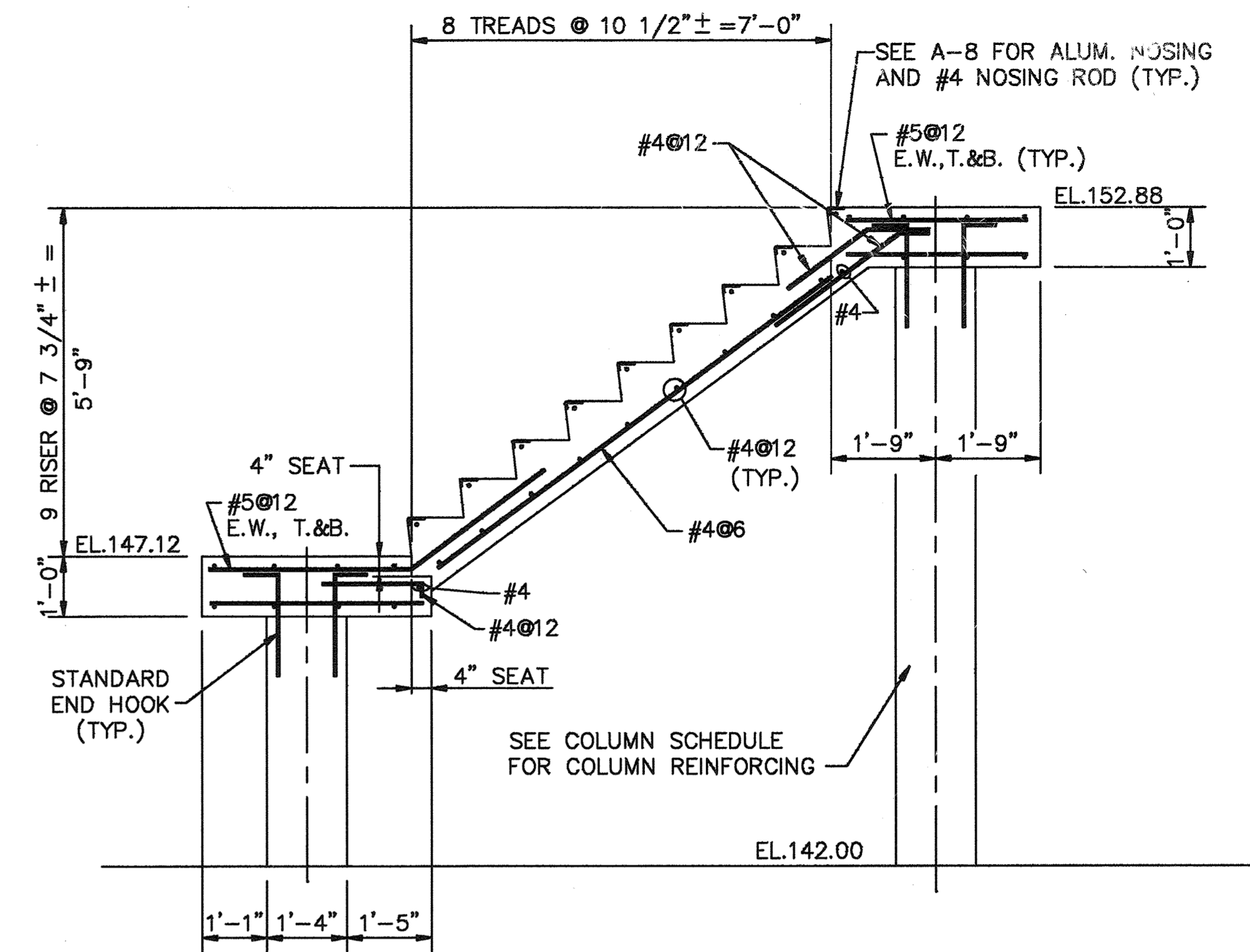
SCALE AS SHOWN
 SHEET 87 OF 226
 S-39



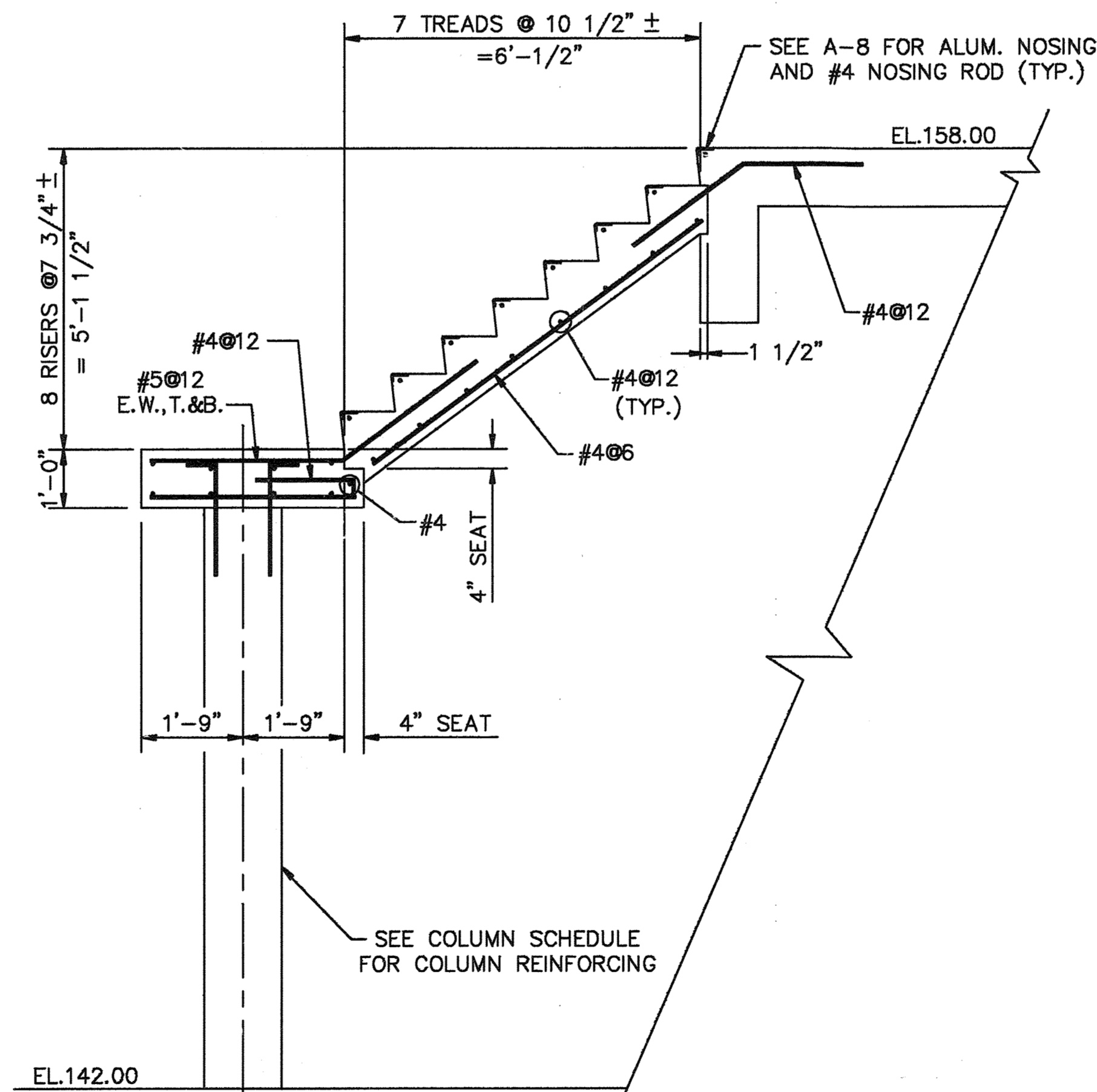
PLAN
SCALE: 1/2"=1'-0"



SECTION 1
SCALE: 1/2"=1'-0"



SECTION 2
SCALE: 1/2"=1'-0"



SECTION 3
SCALE: 1/2"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hara 12/9/91
DIRECTOR OF PUBLIC WORKS DATE

William B. Kelly 12/9/91
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 12/9/91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 12/9/91
REG. PROF. ENGR. DATE



DES:	M-VY			
DRN:	E. Burnett			
CHK:	M-VY			
DATE:	12/7/91			
BY:	NO.	NO.	REVISION	DATE
		2	RECORD DRAWING	1/1/94
		1	REVISED FOR BIDDING	3/5/92

STRUCTURAL

MAINTENANCE BUILDING
STAIR PLAN
AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

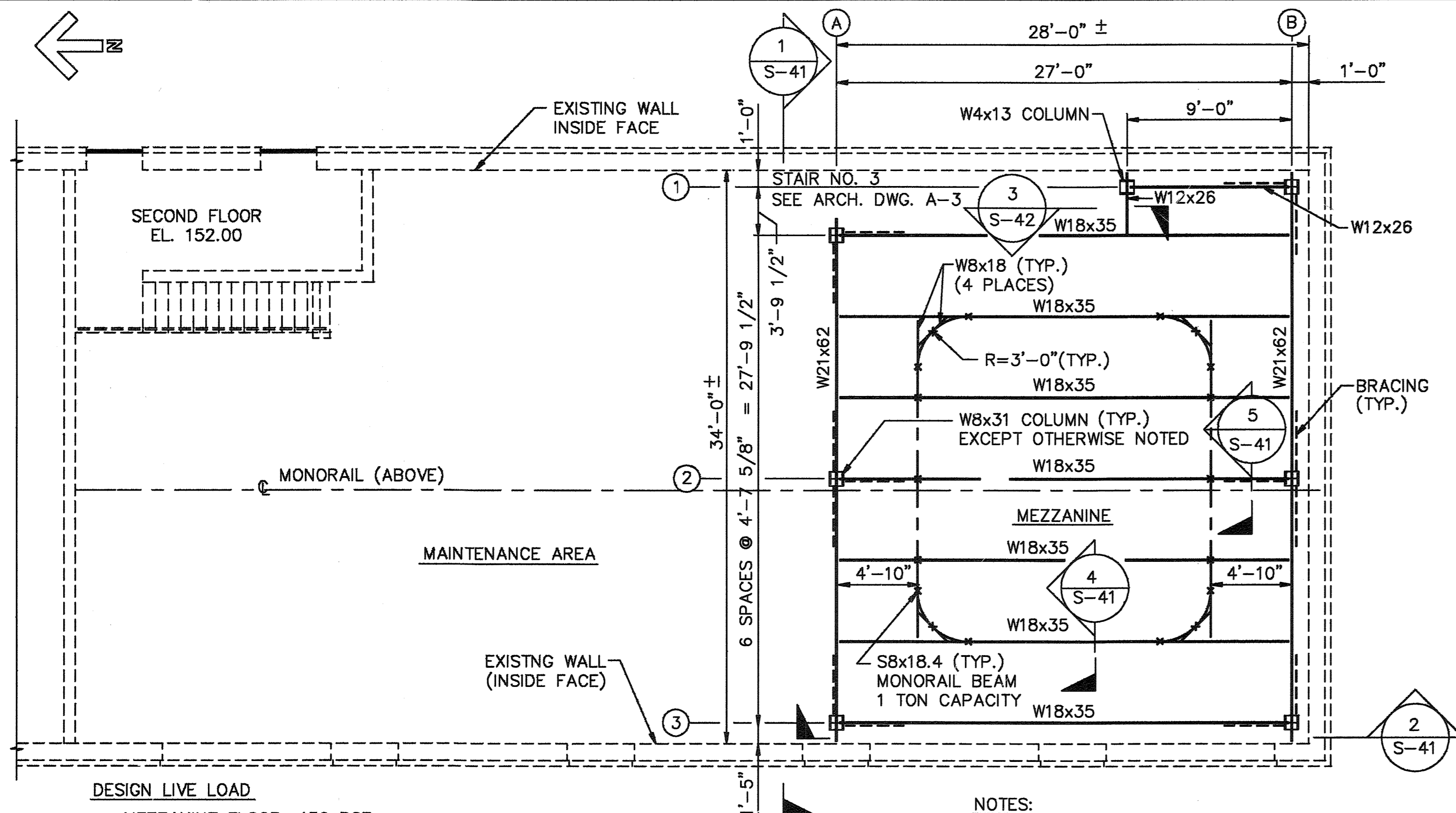
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

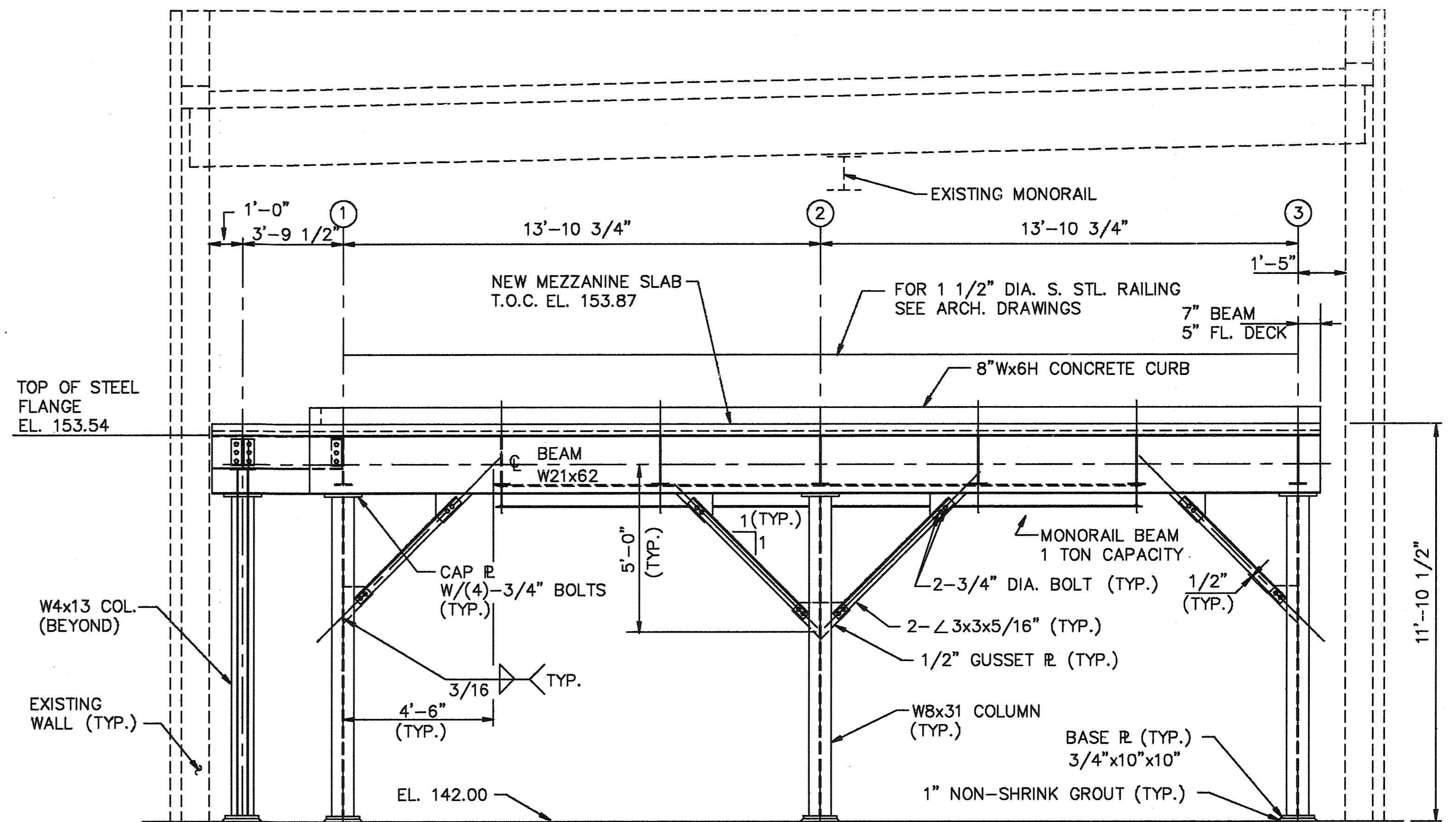
SCALE AS SHOWN

SHEET 88 OF 226

S-40

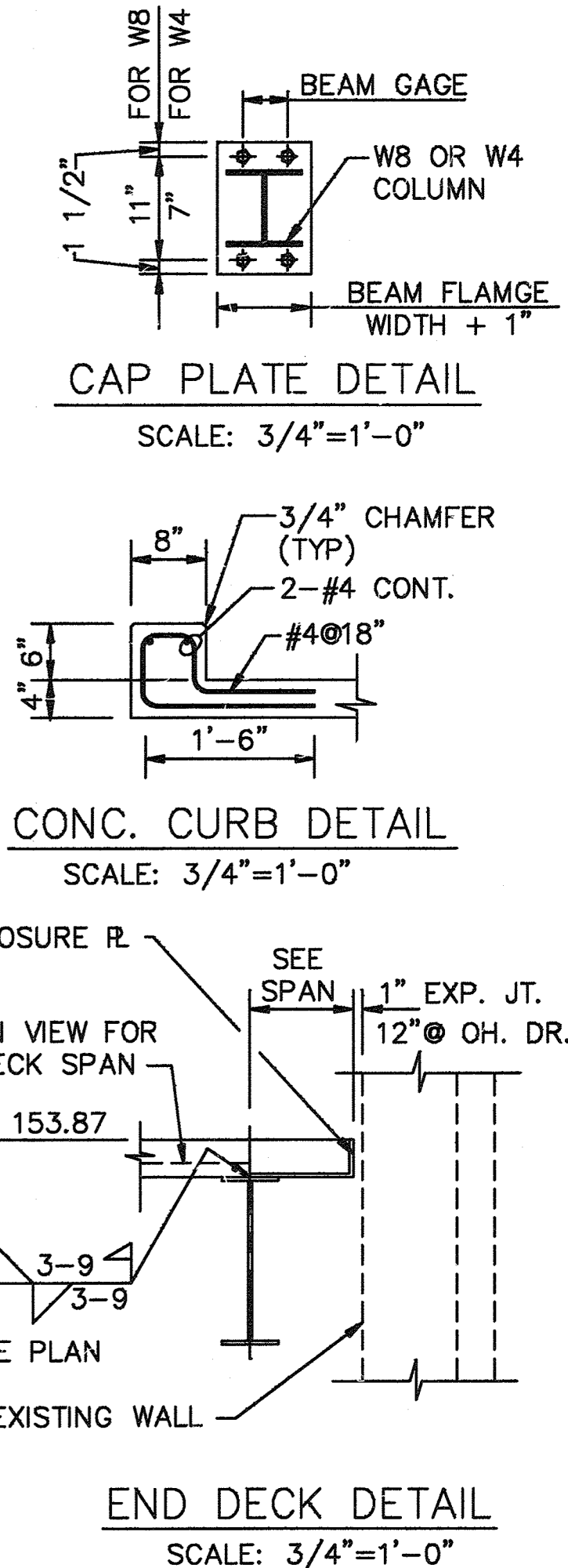
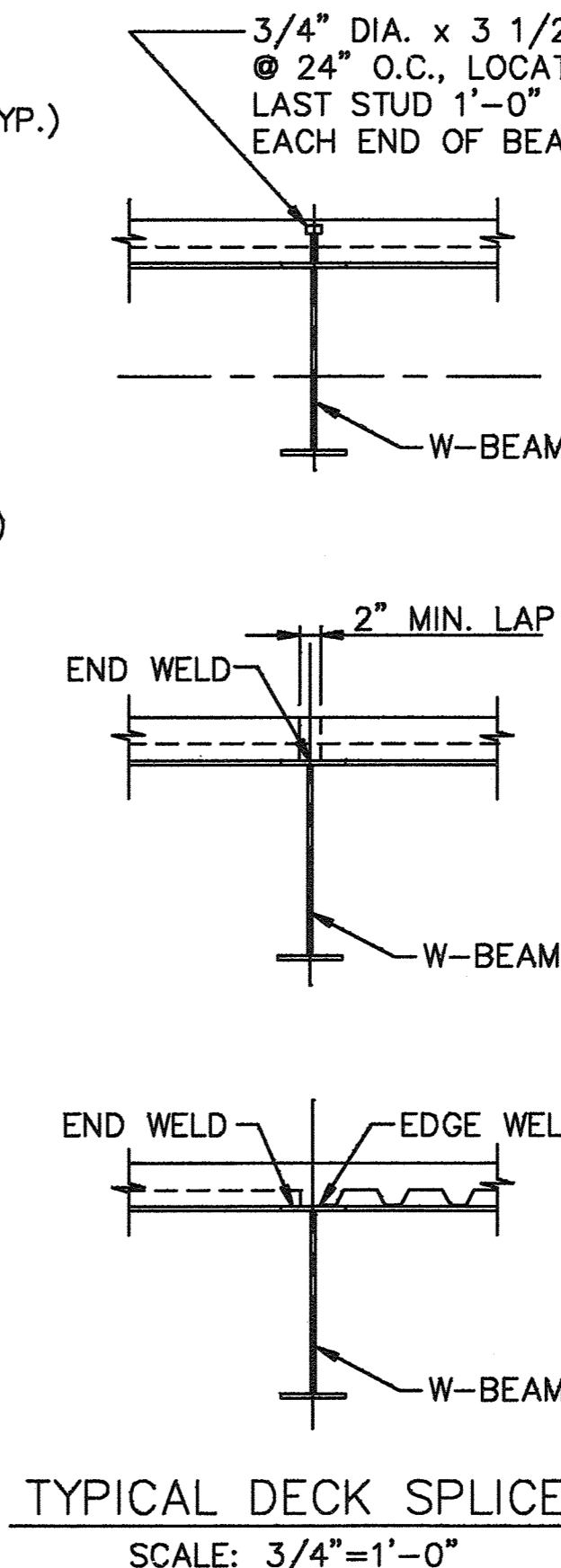
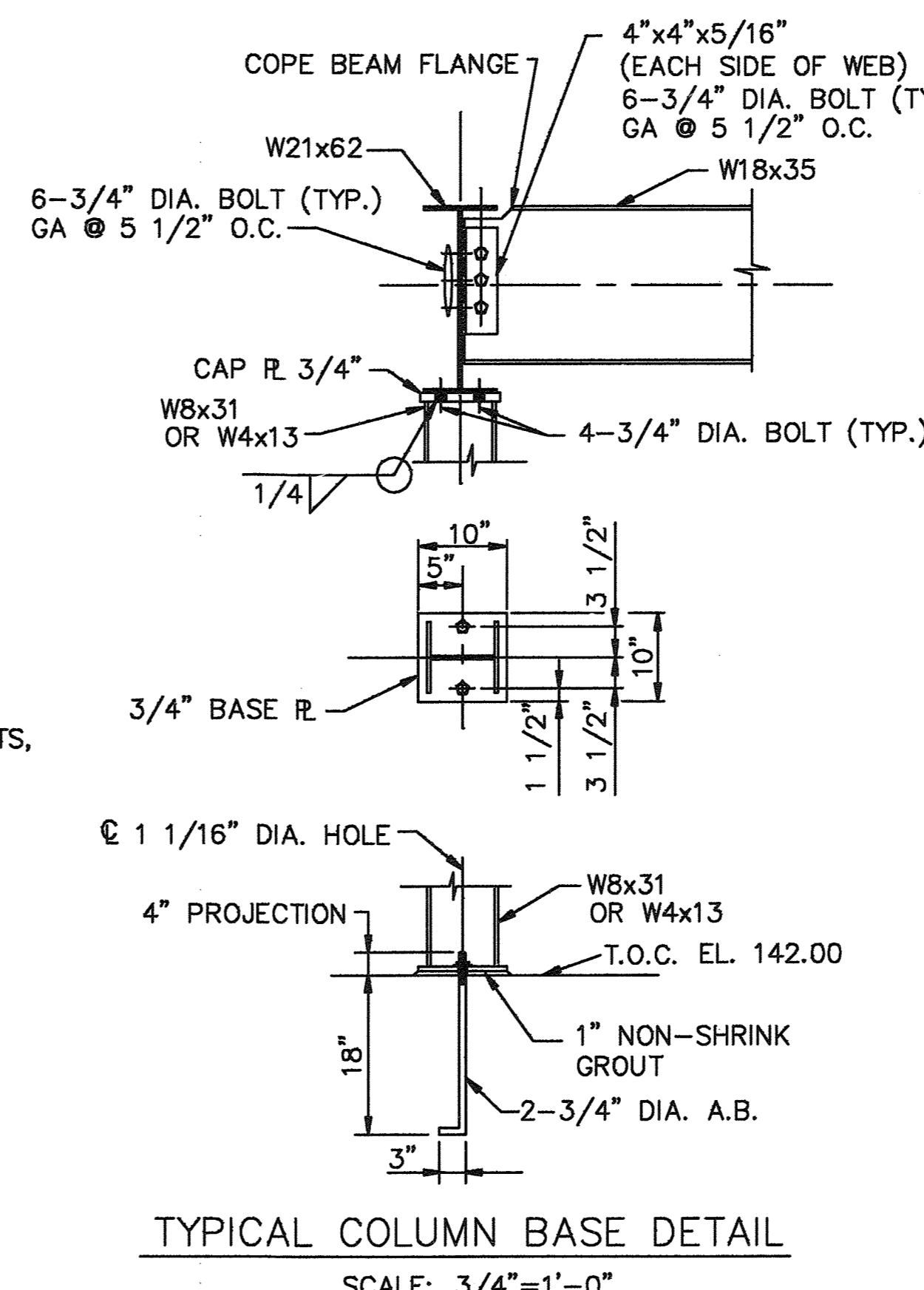
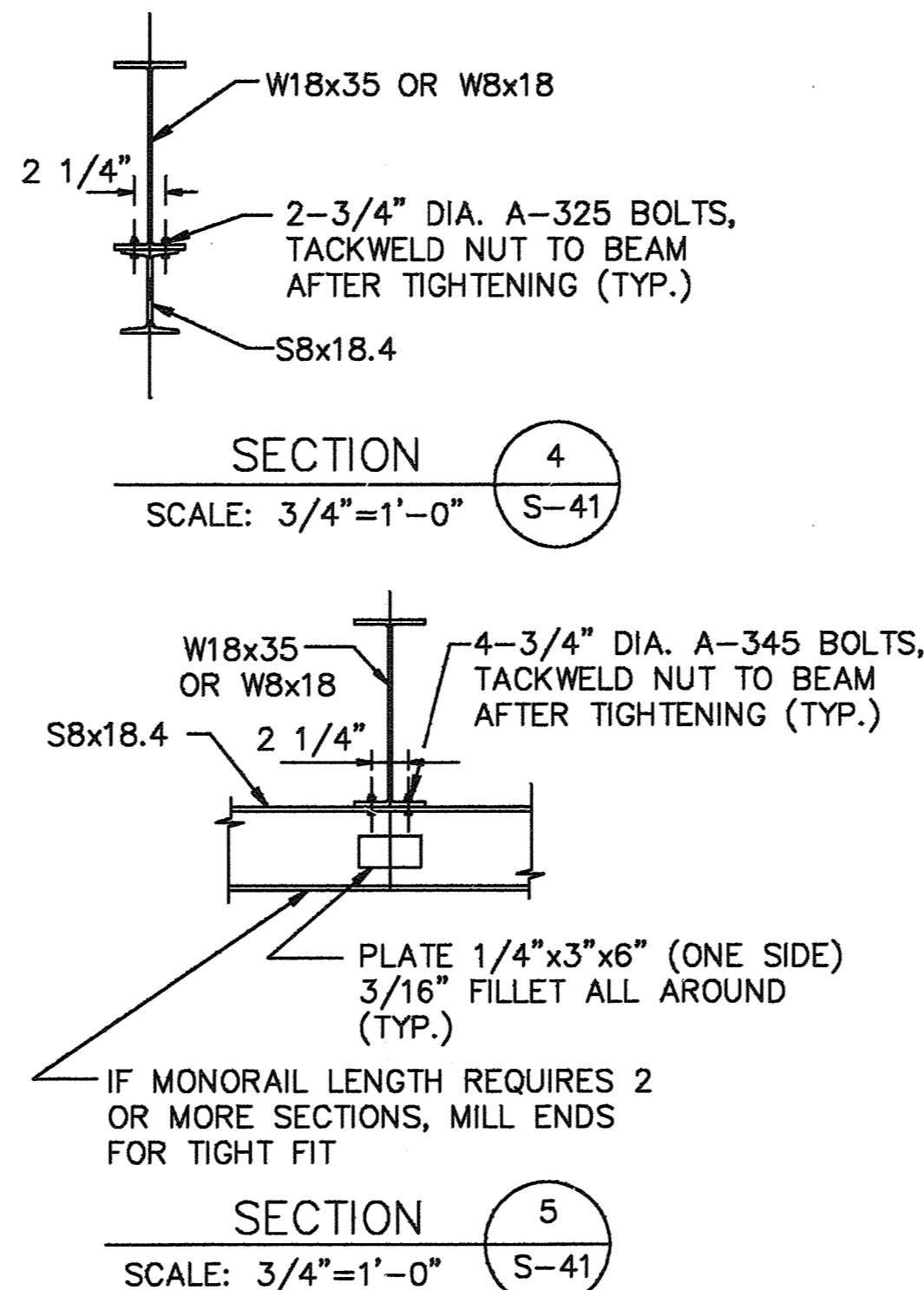
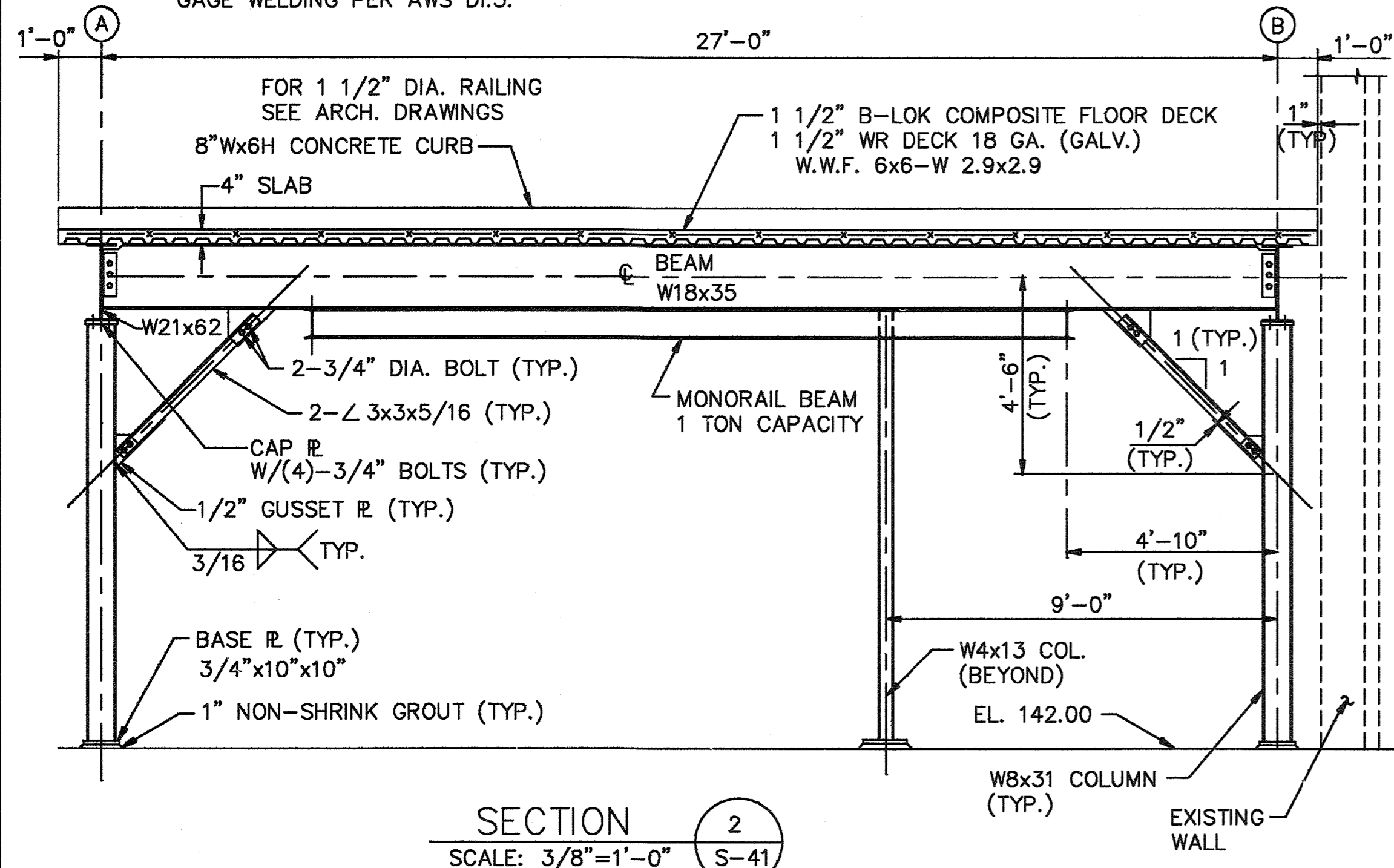


- NOTES:
1. BOTTOM FLANGE OF W8X18'S TO BE FLUSH WITH BOTTOM FLANGE OF W18X35'S.
 2. * = MONORAIL SUPPORT.
 3. PROVIDE 3/8" THICK GUSSET AS REQUIRED.
 4. MINIMUM 2-3/4" DIA. BOLTS PER CONNECTION.



STEEL DECK:

1. STEEL DECK SHALL CONFORM TO ASTM A446 WITH MINIMUM YIELD STRESS OF 33 KSI.
2. STEEL DECK SHALL BE CONTINUOUS OVER MINIMUM OF THREE SPANS UNLESS OTHERWISE NOTED.
3. STEEL DECK SHALL BE WIDE RIB TYPE. MATERIALS AND INSTALLATION SHALL MEET THE REQUIREMENTS OF THE STEEL DECK INSTITUTE'S "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, AND ROOF DECKS" UNLESS OTHERWISE NOTED.
4. DECKING CONTRACTOR SHALL FURNISH AND INSTALL CLOSURES AT DECK ENDS, EDGES AND OPENINGS.
5. STEEL DECK WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED FOR LIGHT GAGE WELDING PER AWS DI.3.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/9/91
12/9/91

M&E Metcalf & Eddy

12/9/91

STATE OF MARYLAND
JONATHAN WHITFIELD DOONE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

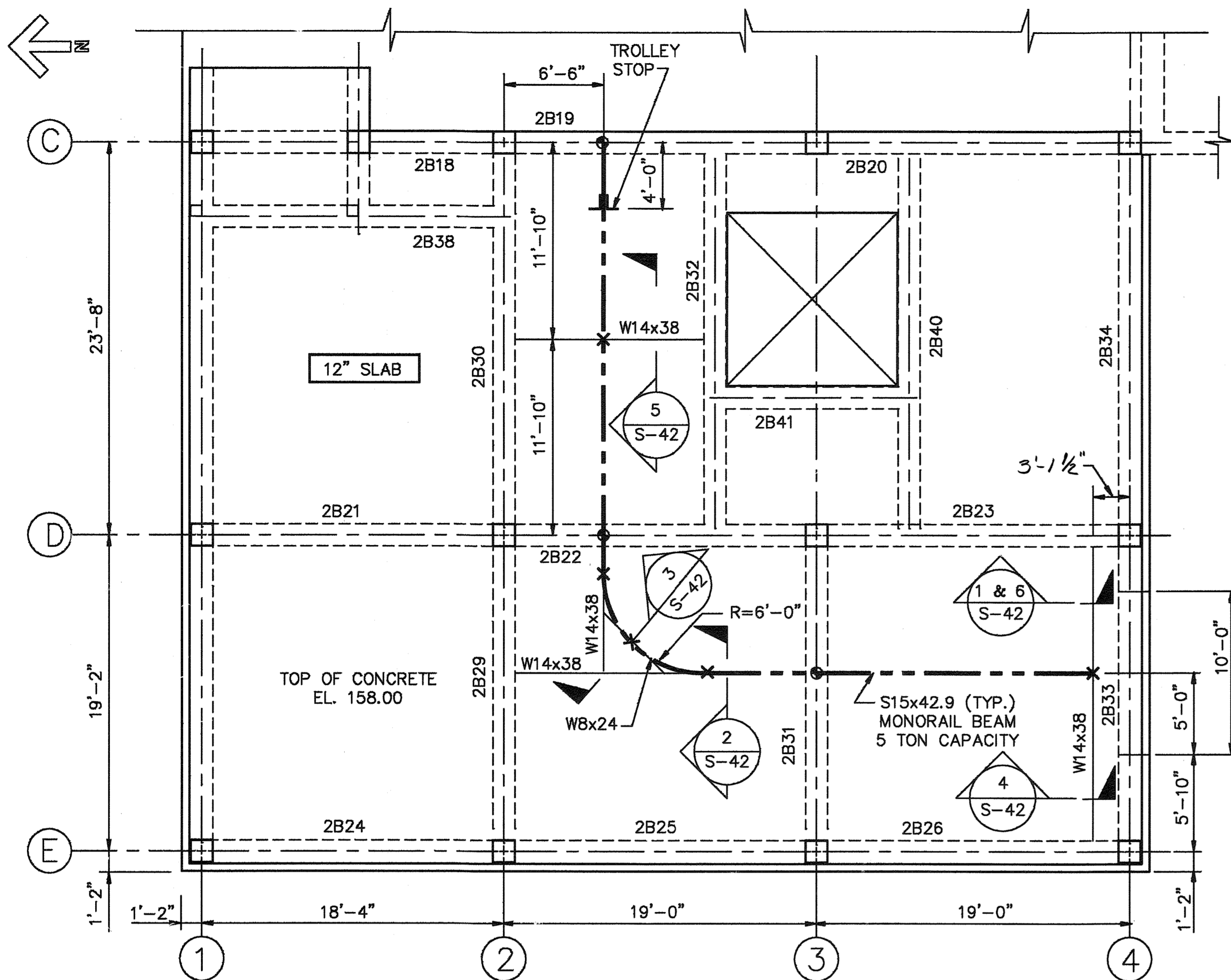
DES:	M. Y4			
DRN:	E. Burnett			
CHK:	M. Y4			
DATE:	12/7/91			
BY:	NO.	NO. 2	RECORD DRAWING	11/1/94
		1	REVISED FOR BIDDING	3/5/92

STRUCTURAL
MAINTENANCE BUILDING
MEZZANINE LEVEL FRAMING

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

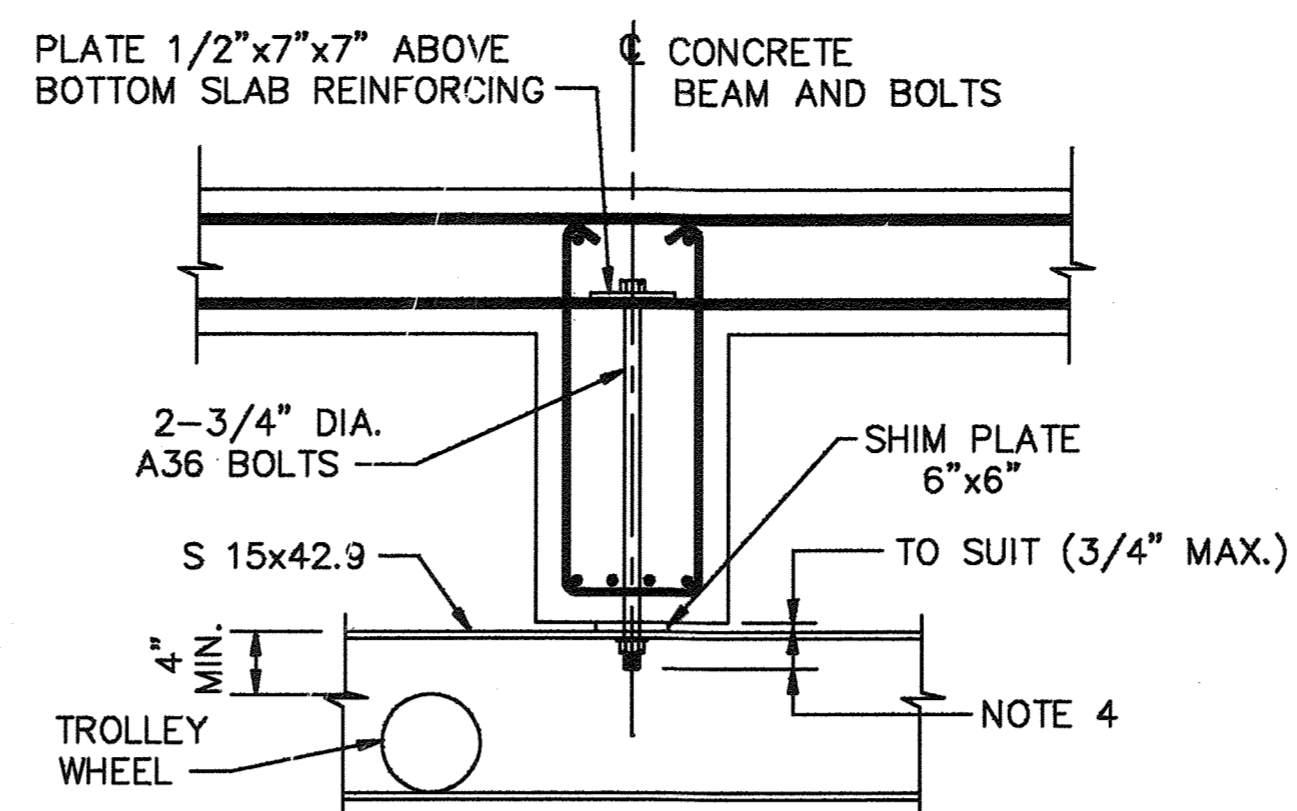
SCALE AS SHOWN
SHEET 89 OF 226
S-41



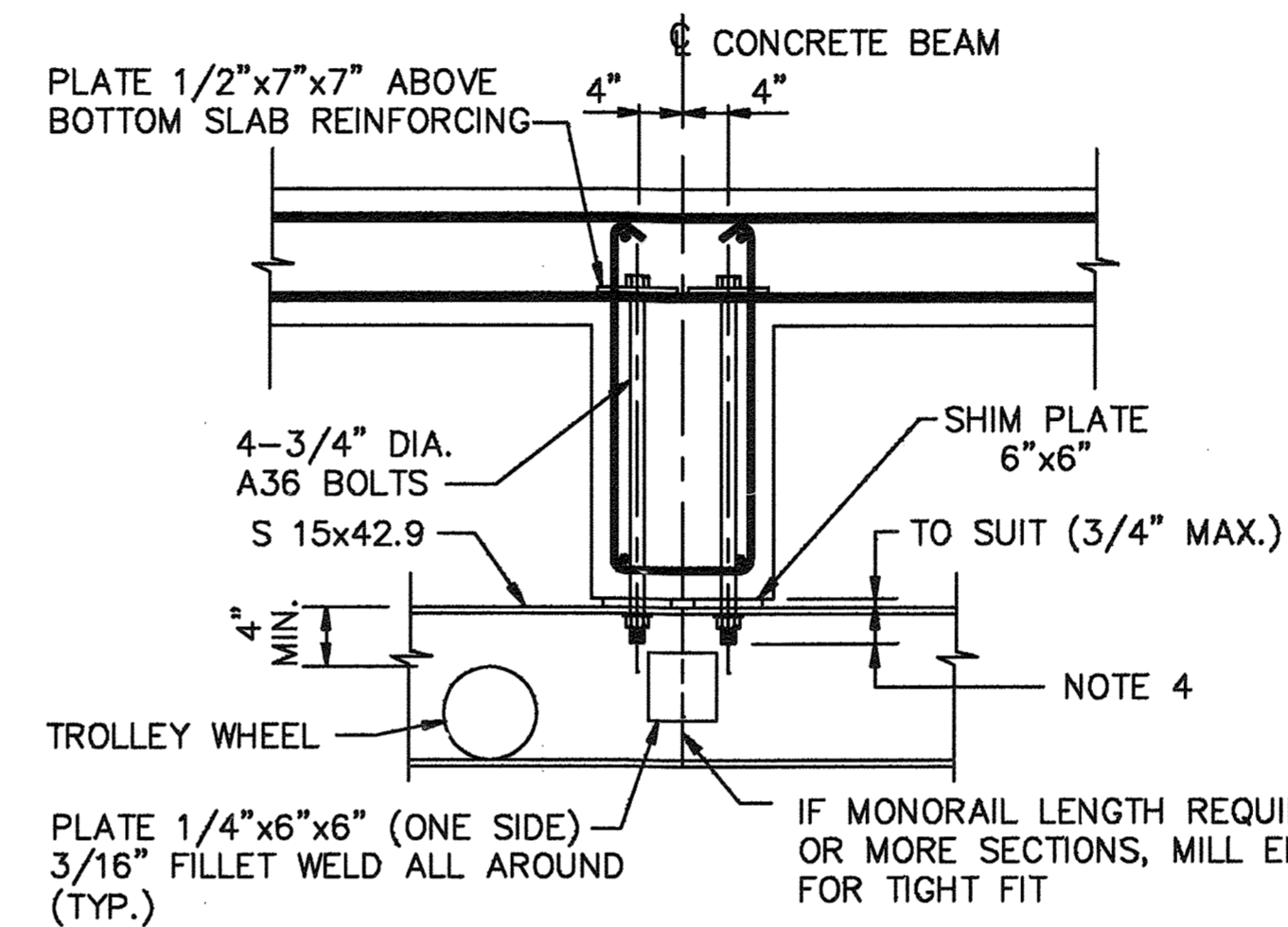
MONORAIL SUPPORT FRAMING PLAN
TOP OF MONORAIL EL. 155.00
SCALE: 3/16"=1'-0"

NOTES:

1. BOTTOM FLANGE OF W8x24'S TO BE FLUSH WITH BOTTOM FLANGE OF W14x38'S.
2. X = MONORAIL SUPPORT.
3. PROVIDE 3/8" THICK GUSSET AS REQUIRED.
4. MINIMUM 2 BOLTS PER CONNECTION.
5. SEE S-33 FOR BEAM SCHEDULE



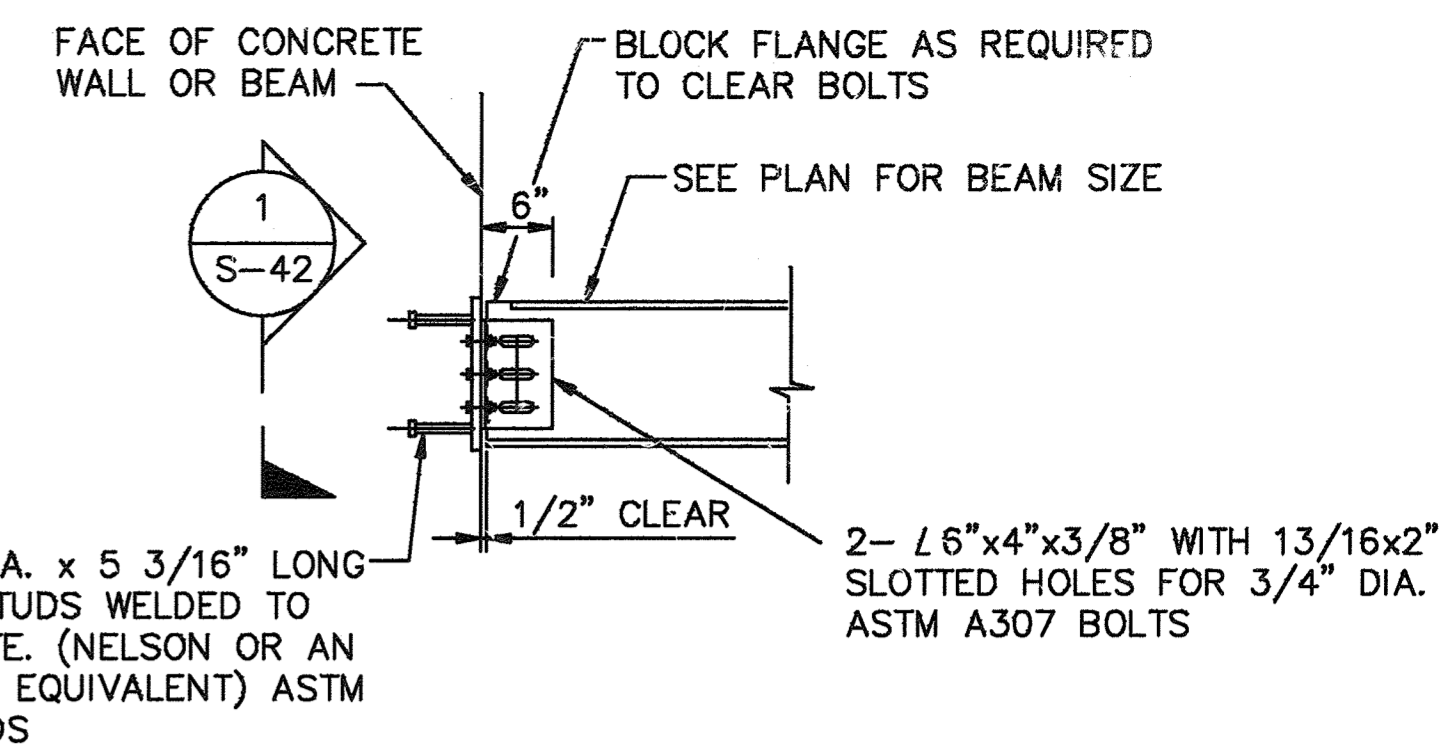
ELEVATION
SCALE: 3/4"=1'-0"



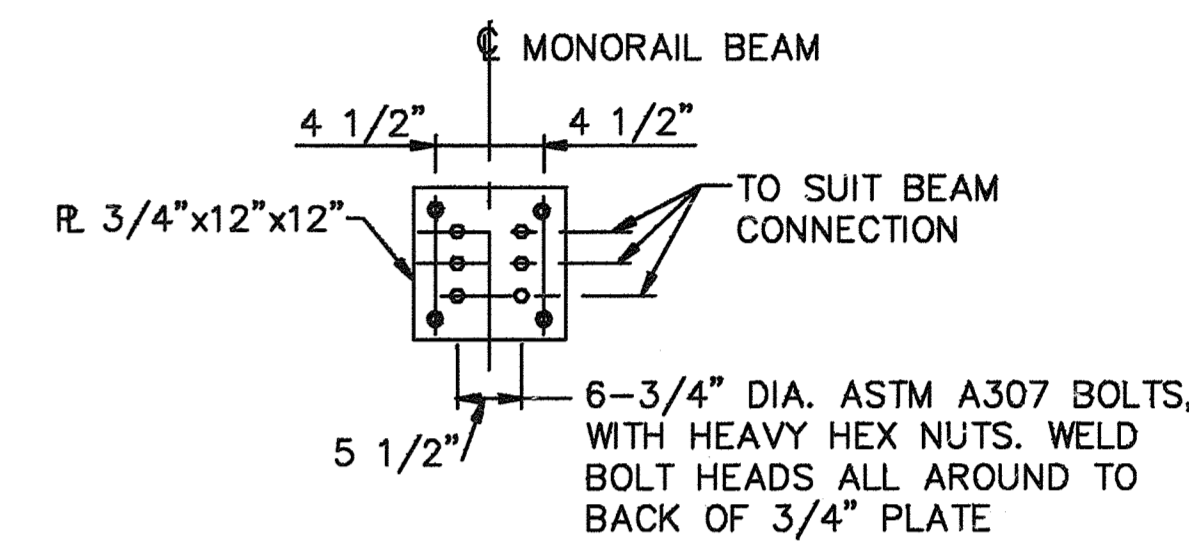
ELEVATION
SCALE: 3/4"=1'-0"

NOTES:

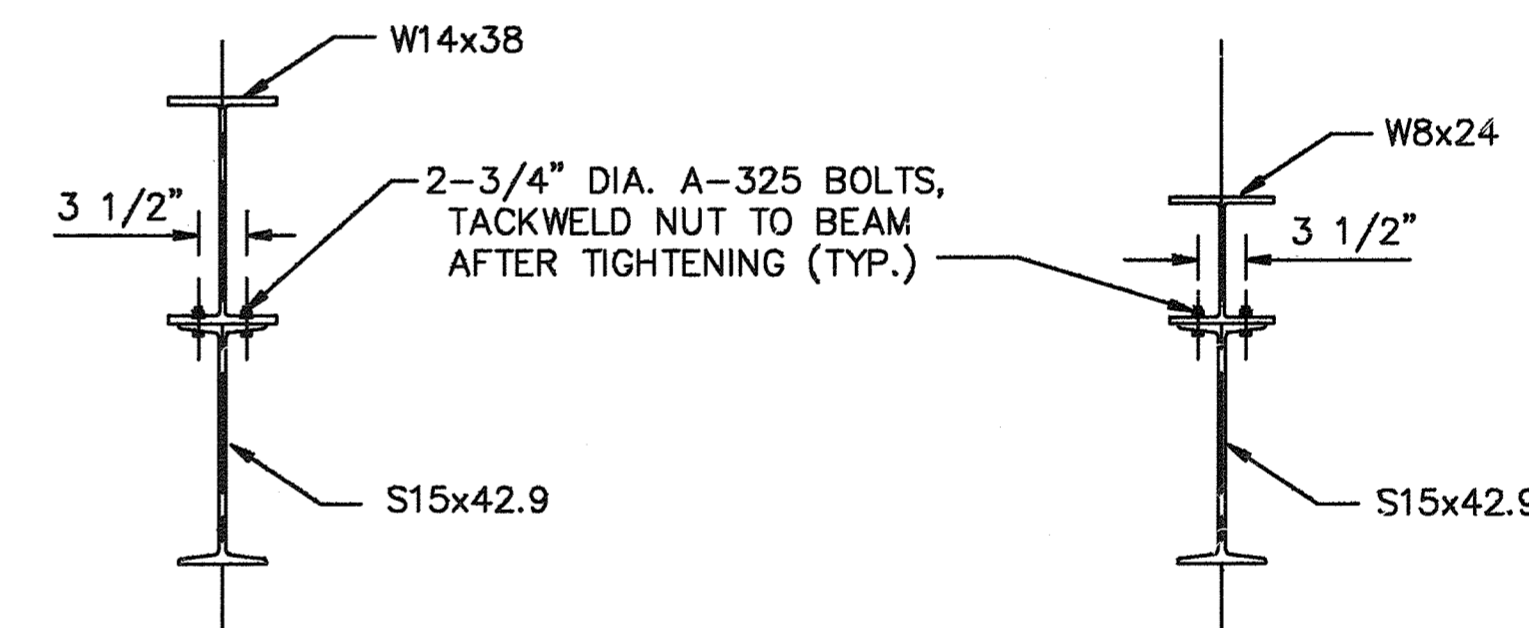
1. STEEL MONORAIL BEAMS SHALL BE BOLTED TO EACH CONCRETE BEAM INDICATED THUS ● ON PLAN.
2. FIELD MEASURE C TO C OF BOLTS IN EACH DIRECTION BEFORE BEAM FABRICATION.
3. AT 3/4" BOLTS PROVIDE WASHER, LOCK WASHER AND HEAVY HEX NUT. SPACE BOLTS AT BEAM FLANGE GAGE.
4. PROJECTION OF BOLTS SHALL BE VERIFIED BY THE CONTRACTOR FOR TROLLEY WHEEL CLEARANCE.



ELEVATION
SCALE: 3/4"=1'-0"

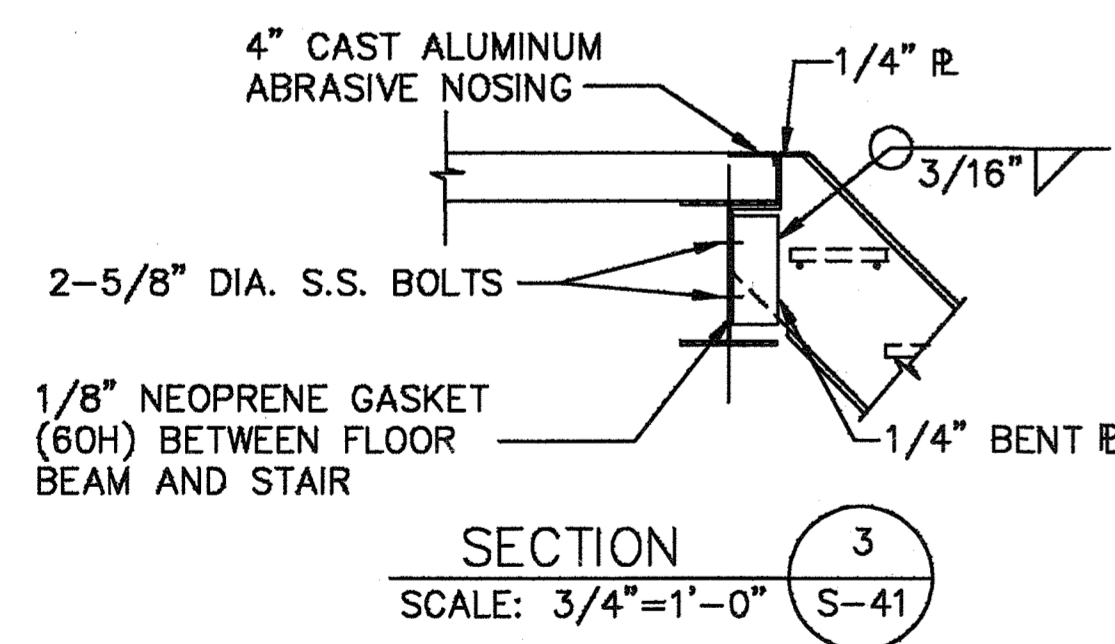


SECTION 1
SCALE: 3/4"=1'-0"



SECTION 2
SCALE: 1"=1'-0"

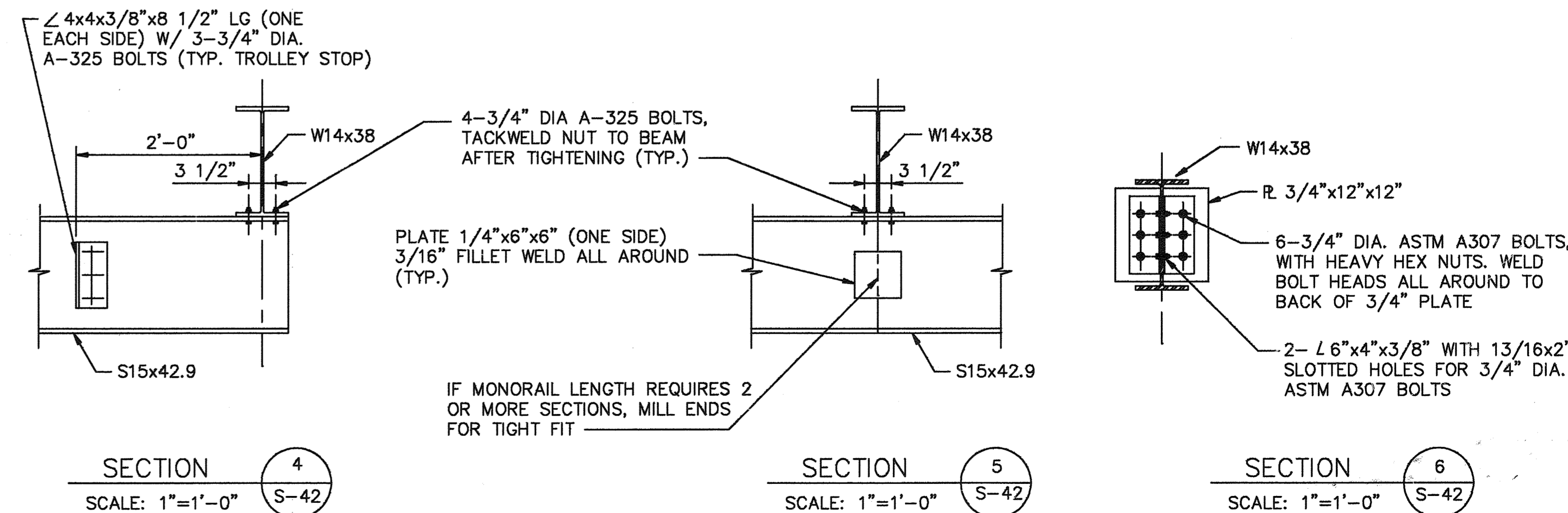
SECTION 3
SCALE: 1"=1'-0"



SECTION 3
SCALE: 3/4"=1'-0"

NOTES:

1. ALUMINUM STAIRS SHALL BE DESIGNED BY THE CONTRACTOR FOR A LIVE LOAD OF 100 PSF. THE CONTRACTOR SHALL SUBMIT CALCULATIONS FOR REVIEW BY THE ENGINEER. ALL EMBEDMENT NEEDED FOR THE CONNECTION WITH THE FRAME SHALL BE COORDINATED BY THE CONTRACTOR.
2. FOR STRINGER DETAIL, SEE STANDARD DETAIL 5-2.6.9.



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

SECTION 5
SCALE: 1"=1'-0"

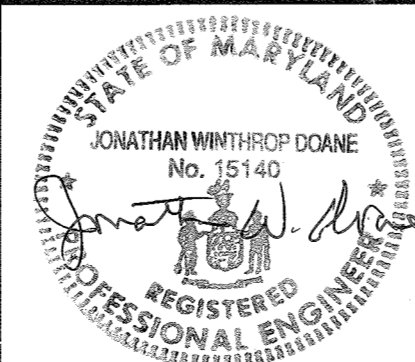
SECTION 6
SCALE: 1"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 12/19/91
DIRECTOR OF PUBLIC WORKS DATE
John O'Hara 12/19/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

M&E Metcalf & Eddy

Jonathan W. ... 12/19/91
REG. PROF. ENGR. DATE



DES:	M. V. V.
DRN:	G. Burnett
CHK:	M. V. V.
DATE:	12/17/91
BY:	NO.
NO.	2
REVISION	RECORD DRAWING
NO.	1
REVISION	REVISED FOR BIDDING
DATE:	11/11/91
DATE:	3/5/92

STRUCTURAL
MAINTENANCE BUILDING
MISCELLANEOUS
SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

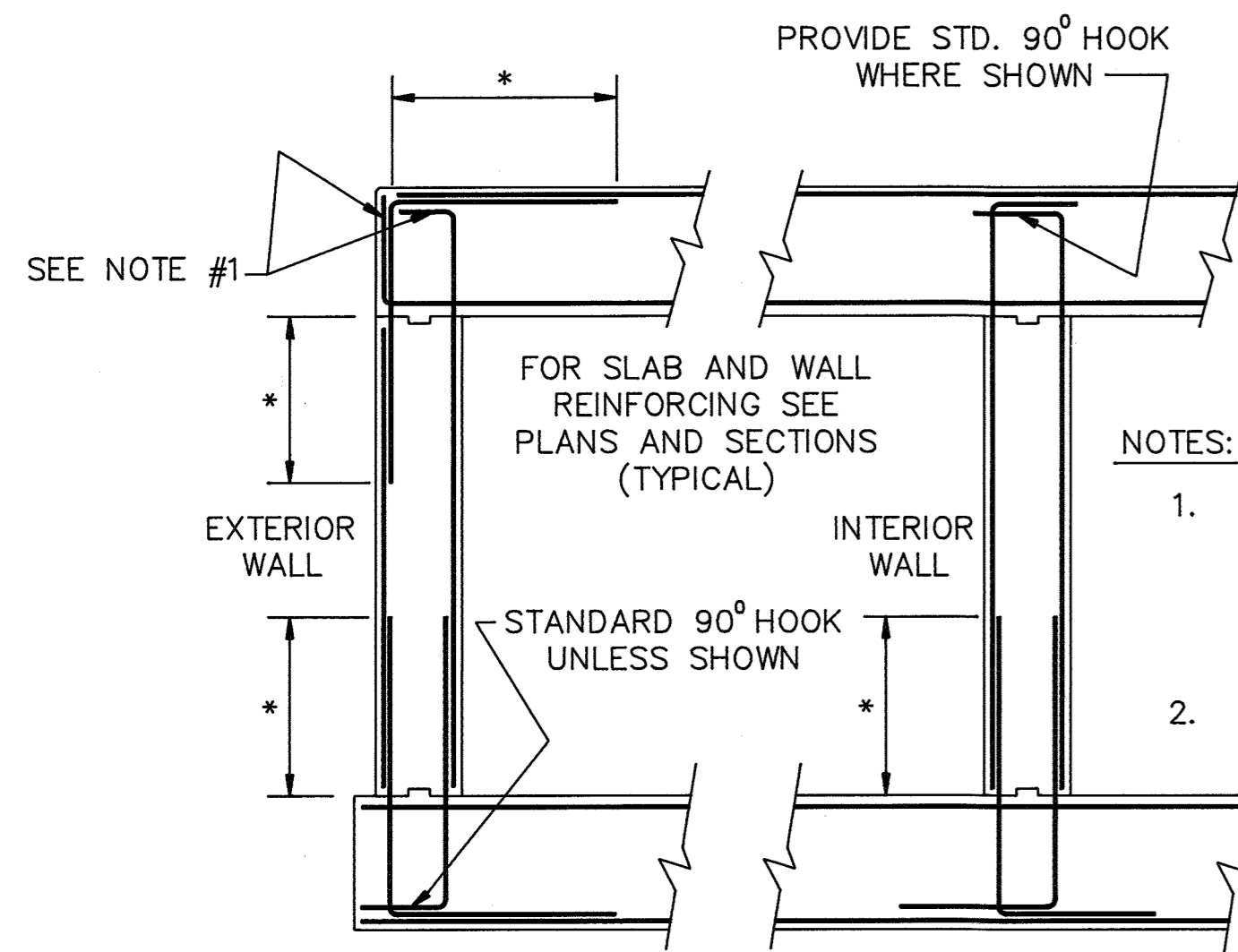
SCALE AS SHOWN
SHEET 92 OF 226
S-42

REINFORCING - SPLICE TABLE		GRADE 60 REINF. 4000 PSI CONC.									
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11	
TOP BARS	"B"	1'-1"	1'-5"	1'-10"	2'-2"	2'-9"	3'-8"	4'-7"	5'-10"	7'-2"	
	"C"	1'-5"	1'-11"	2'-5"	2'-10"	3'-7"	4'-10"	5'-11"	7'-8"	9'-5"	
OTHER BARS	"B"	1'-0"	1'-0"	1'-4"	1'-7"	2'-0"	2'-7"	3'-3"	4'-2"	5'-2"	
	"C"	1'-0"	1'-4"	1'-8"	2'-0"	2'-7"	3'-5"	4'-4"	5'-5"	6'-9"	

NOTES:

- TOP BARS ARE ALL HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR. THIS INCLUDES HORIZONTAL WALL REINFORCEMENT.
- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED, USE LAP LENGTH REQUIRED FOR LARGER BAR.
- FOR BARS SPACED CLOSER THAN 6" ON CENTER, INCREASE SPLICE LENGTHS BY 25%.
- UNLESS OTHERWISE SPECIFIED, LAP SPLICES SHALL BE CLASS "B" WHERE NO MORE THAN 1/2 THE BARS ARE LAP SPICED AND CLASS "C" WHERE MORE THAN 1/2 THE BARS ARE LAP SPICED.

1

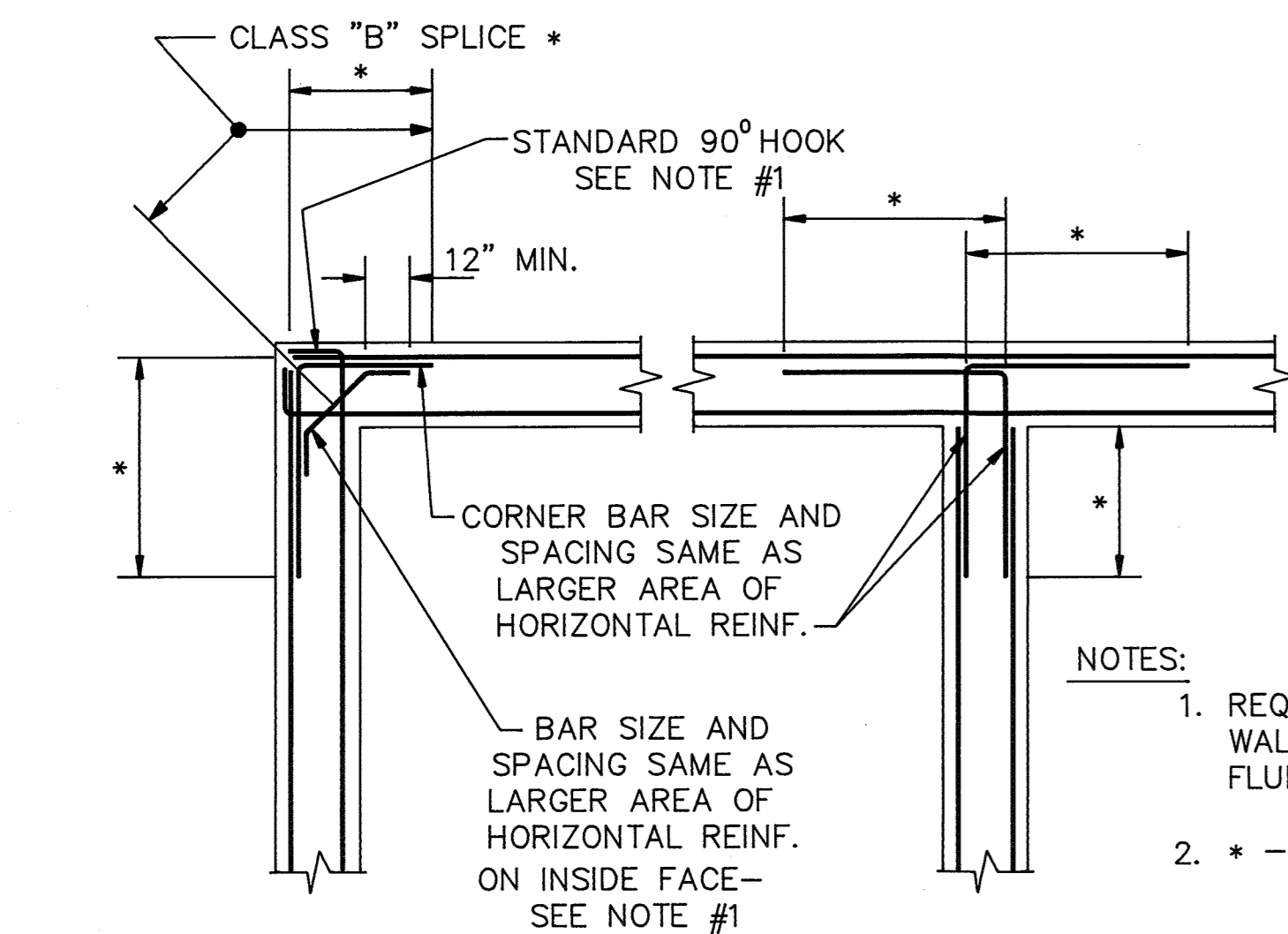


WALL REINFORCEMENT
PLACING DIAGRAM
ELEVATION

2

NOTES:

- PROVIDE STANDARD 90° HOOK FOR SLAB AND WALL REINF. OF TANKS AND CONDUITS SUBJECT TO FLUID PRESSURE FROM INSIDE.
- * - SEE SPLICE TABLE.

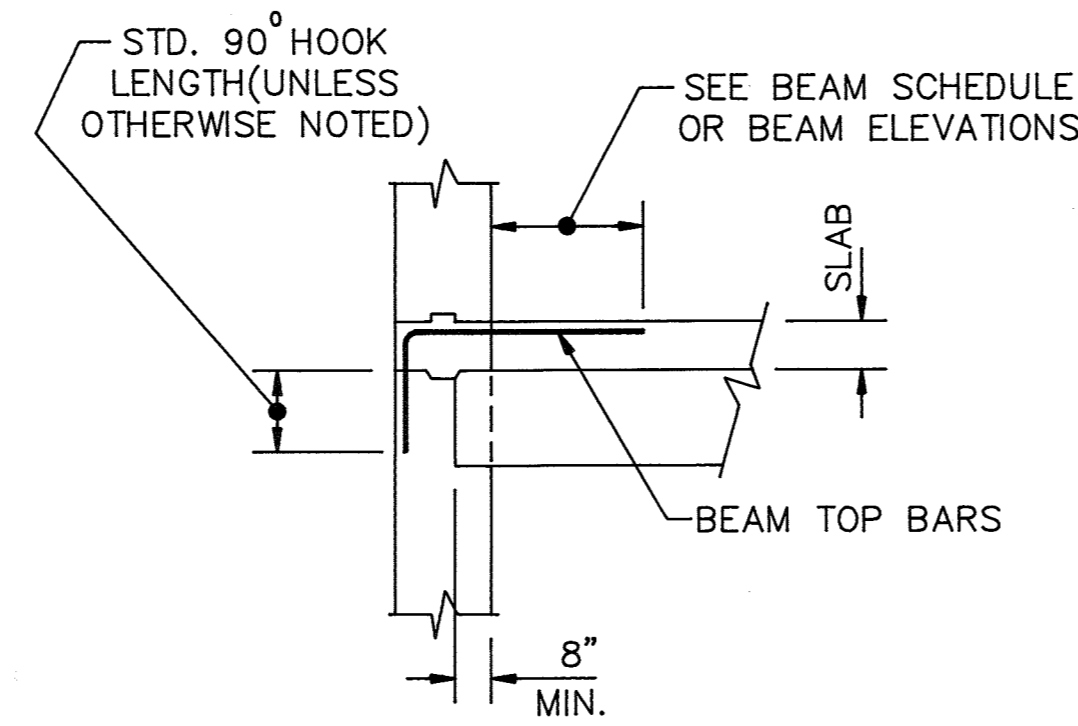


HORIZONTAL CORNER BAR DETAIL
PLAN

3

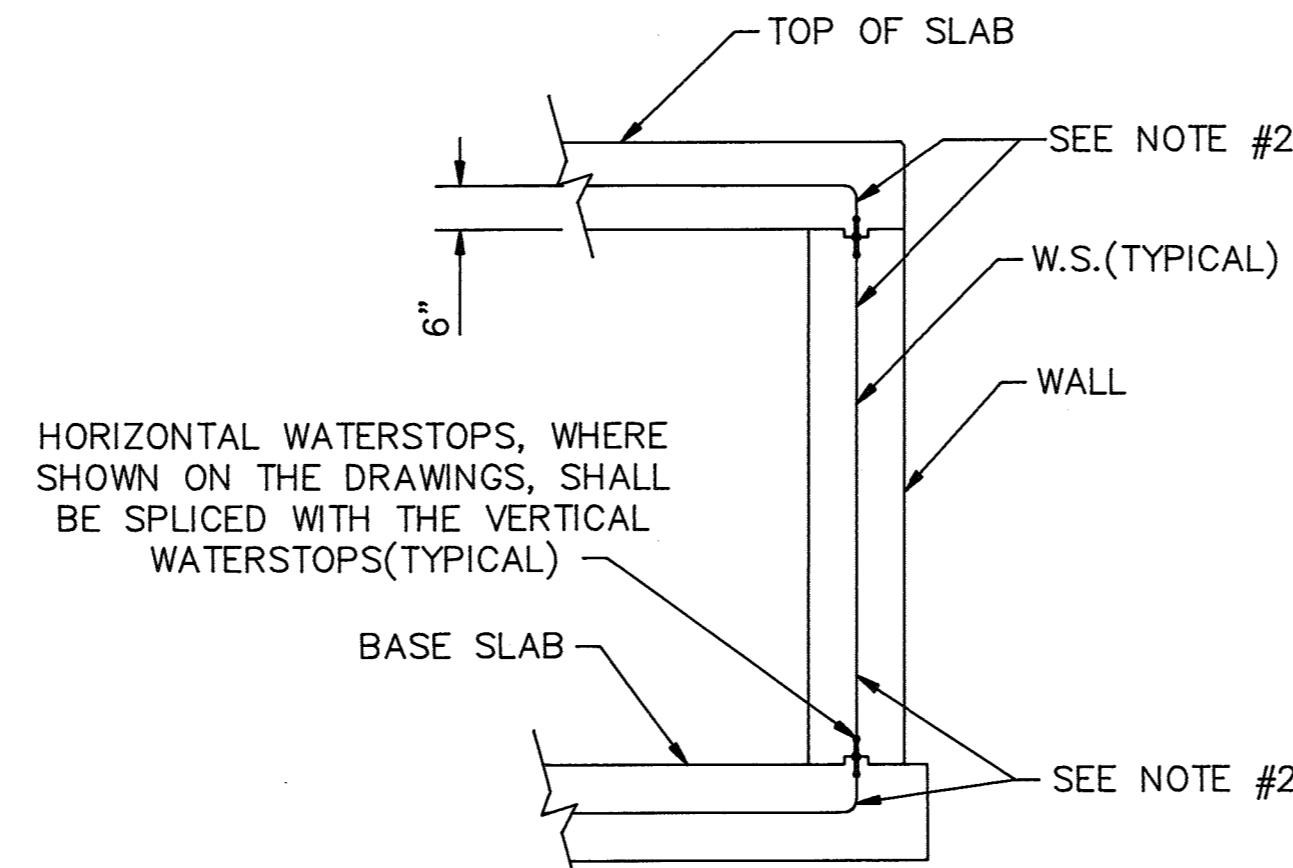
NOTES:

- REQUIRED ONLY WHERE WALLS ARE SUBJECT TO FLUID PRESSURE FROM INSIDE.
- * - SEE SPLICE TABLE.



BEAM POCKET DETAIL

4

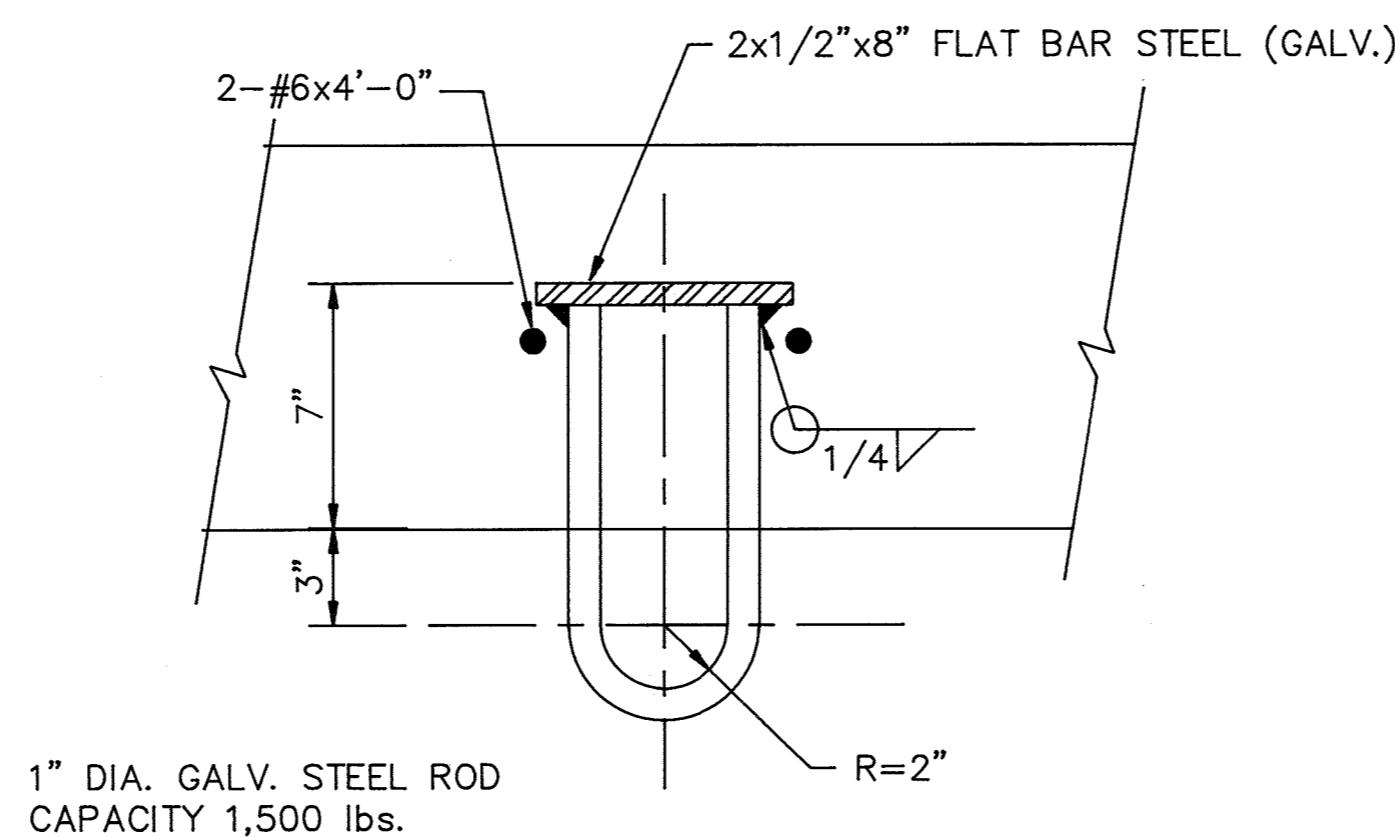


WATERSTOP PLACING DETAIL

5

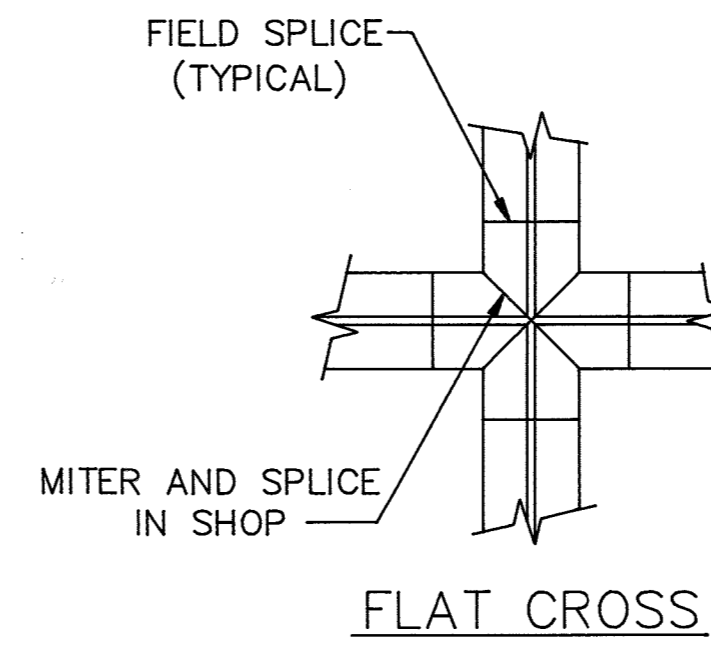
NOTES:

- W.S. DENOTES WATERSTOP
- EXTEND W.S. 6" OR SPLICE WITH A HORIZONTAL W.S. WHERE USED.
- W.S. SHALL BE SPICED AT CORNERS SO AS TO BE CONTINUOUS OR MAY BE PLACED IN ONE PIECE.



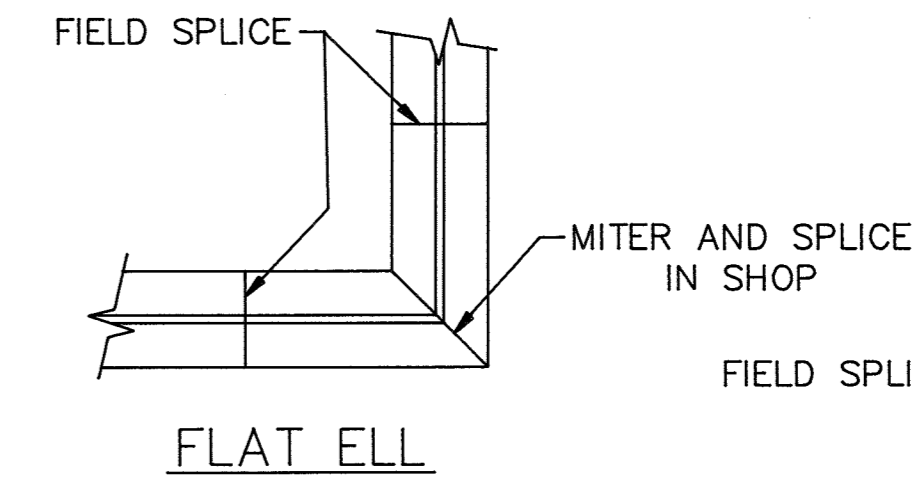
LIFTING HOOK DETAIL

7



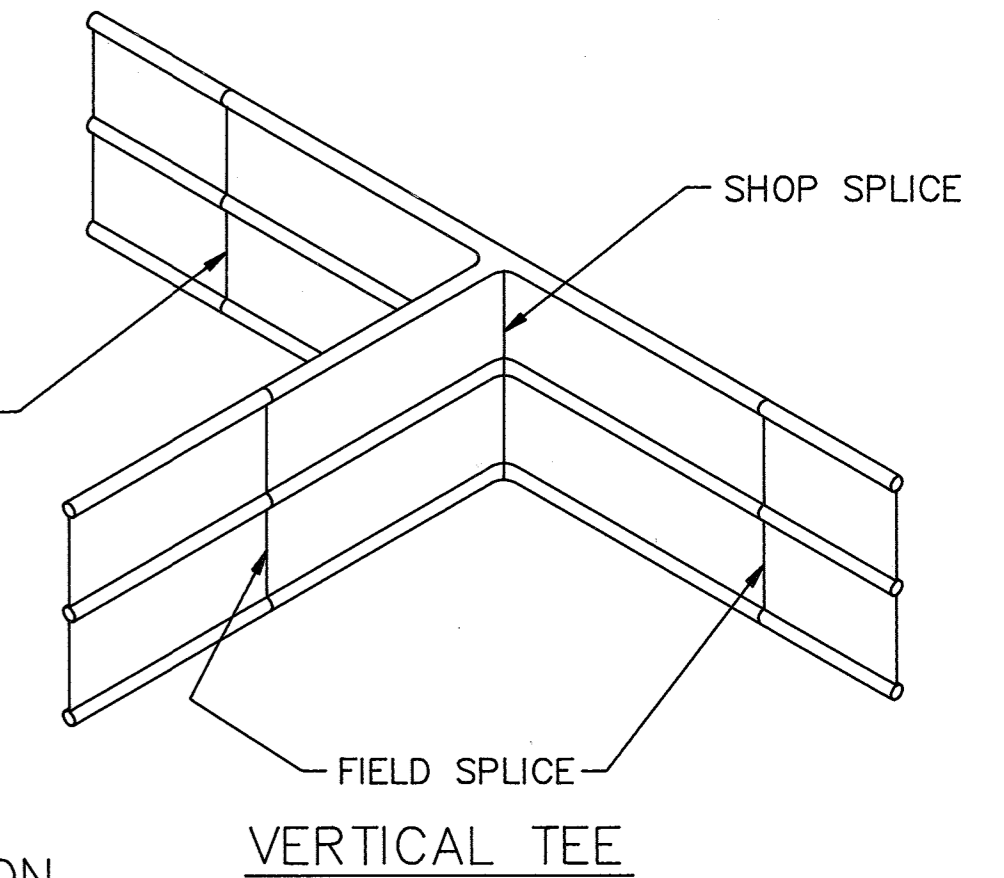
FLAT CROSS

6

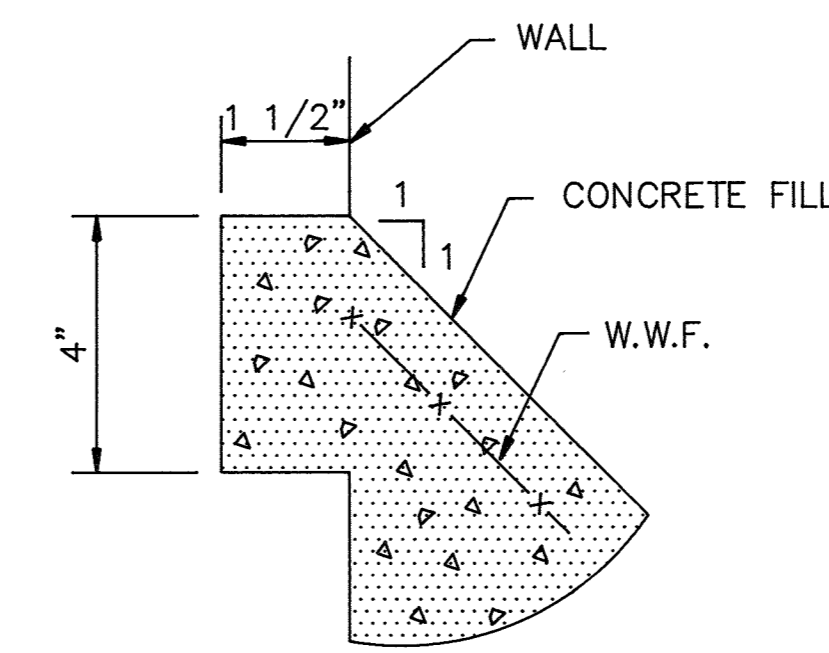


FLAT ELL

WATERSTOP SPLICE DETAIL AT INTERSECTION



VERTICAL TEE



DETAIL A

8

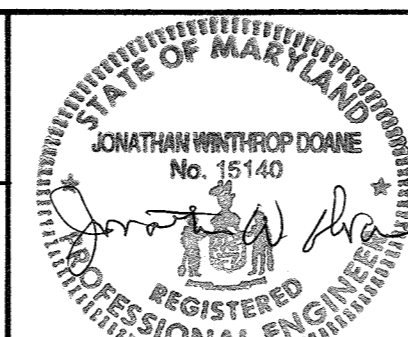
Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John O'Hara* 12/19/91
 Chief, Bureau of Engineering: *John O'Hara* 12/19/91
 Chief, Bureau of Environmental Services: *John O'Hara* 12/19/91
 Chief, Utility Design Division: *John O'Hara* 12/19/91

M&E Metcalf & Eddy

Jonathan W. Brown 12/19/91
 REG. PROF. ENGR.

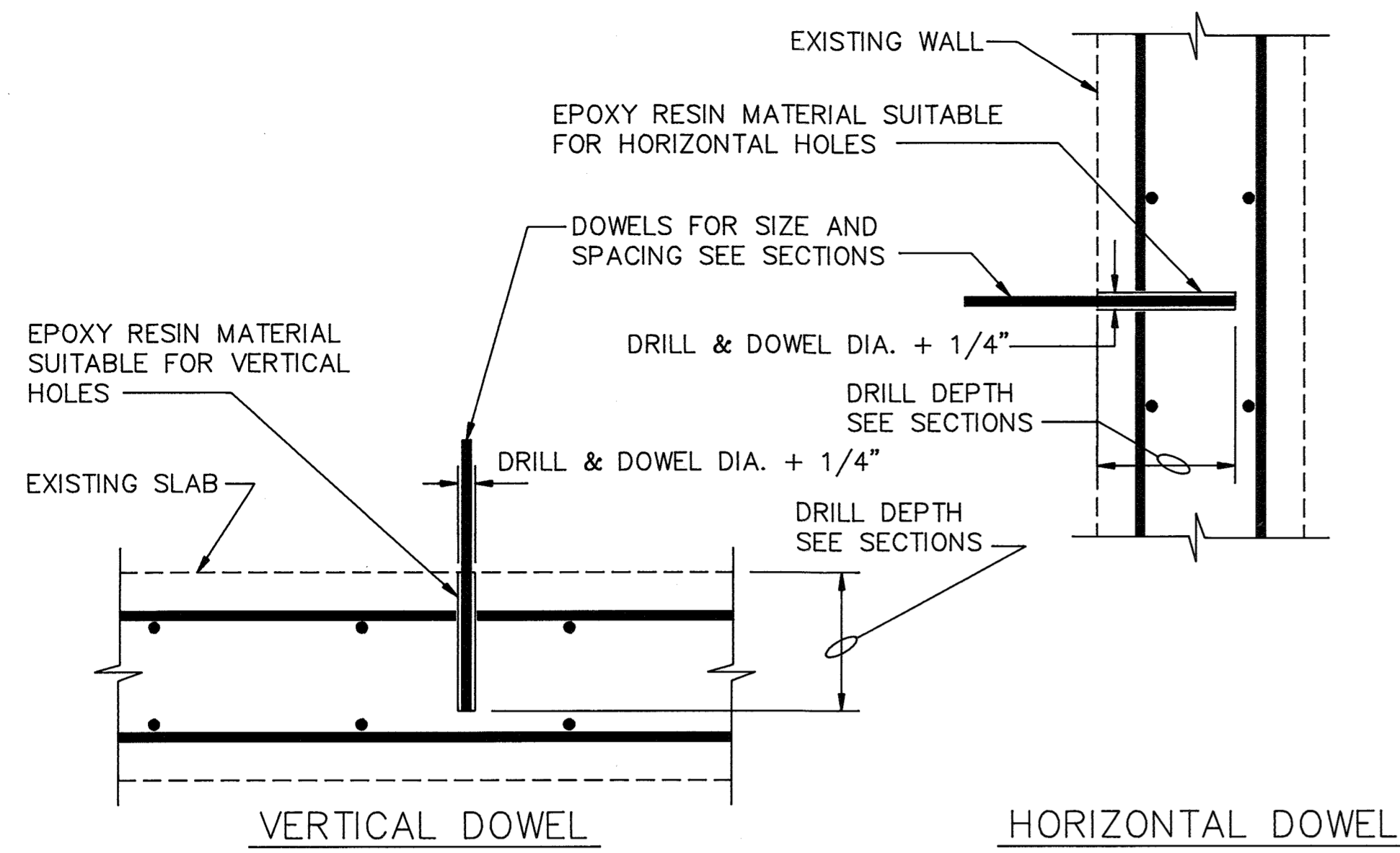


DES: M. V. V.			
DRN: E. Burnett			
CHK: M. V. V.	AP 2	RECORD DRAWING	11/1/91
DATE: 12/17/91	1	REVISED FOR BIDDING	3/15/92
BY	NO.	REVISION	DATE

STRUCTURAL
TYPICAL DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

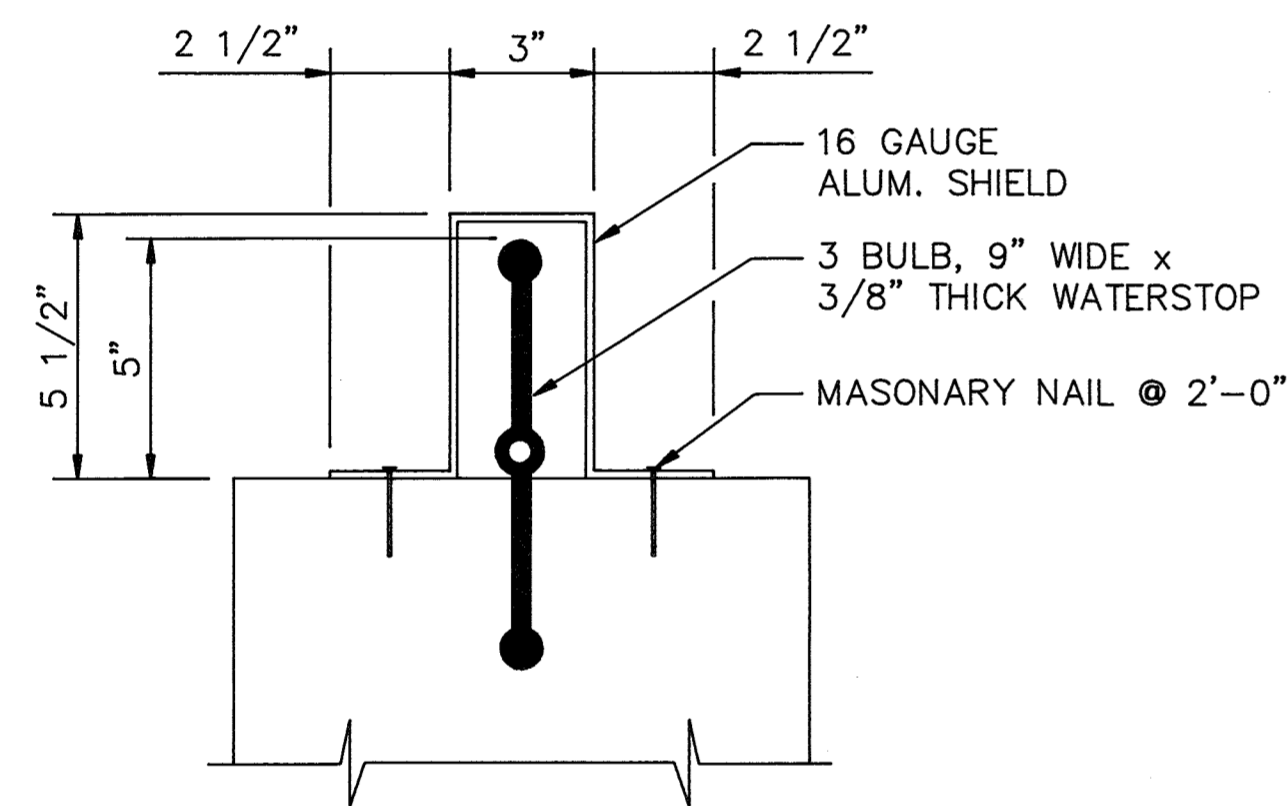
SCALE AS SHOWN
 SHEET 91 OF 226
 S-43



NOTE:

LOCATE EXISTING REINFORCEMENT & DRILL INTO EXISTING CONCRETE USING ROTARY PERCUSSION EQUIPMENT TO PRODUCE CLEAN, DRY, ROUGHENED HOLES. DO NOT DRILL THRU EXISTING REINFORCING PLACE DOWELS IN EPOXY RESIN MATERIAL IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

DOWEL GROUTING DETAIL



NOTE:

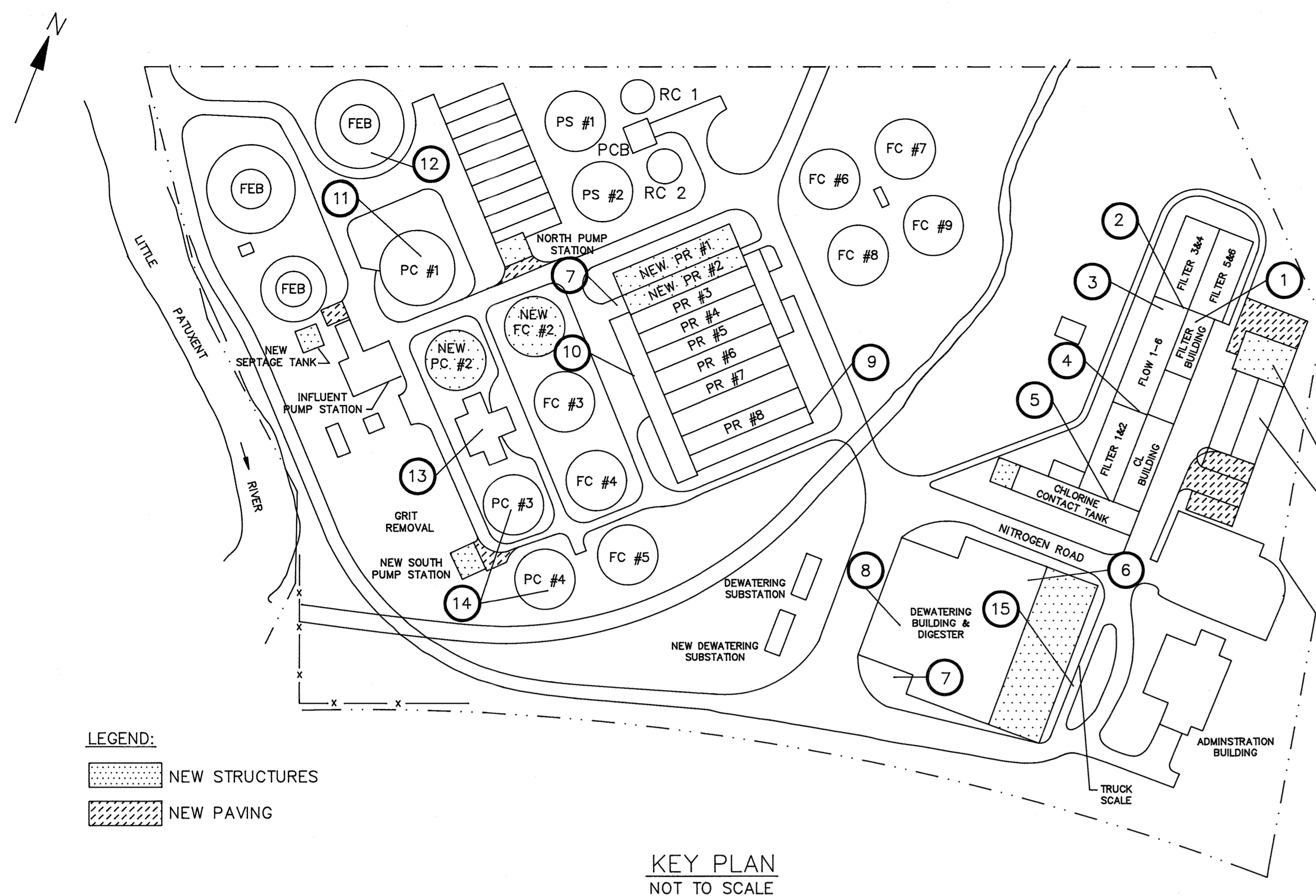
ALUMINUM FLASHING SHALL BE USED TO 2'-0" BELOW GRADE WHERE THE WATERSTOP IS EXPOSED FOR POSSIBLE FUTURE EXTENSION.

TYPICAL DETAIL OF FLASHING FOR WATERSTOP

SCALE: 3"=1'-0"

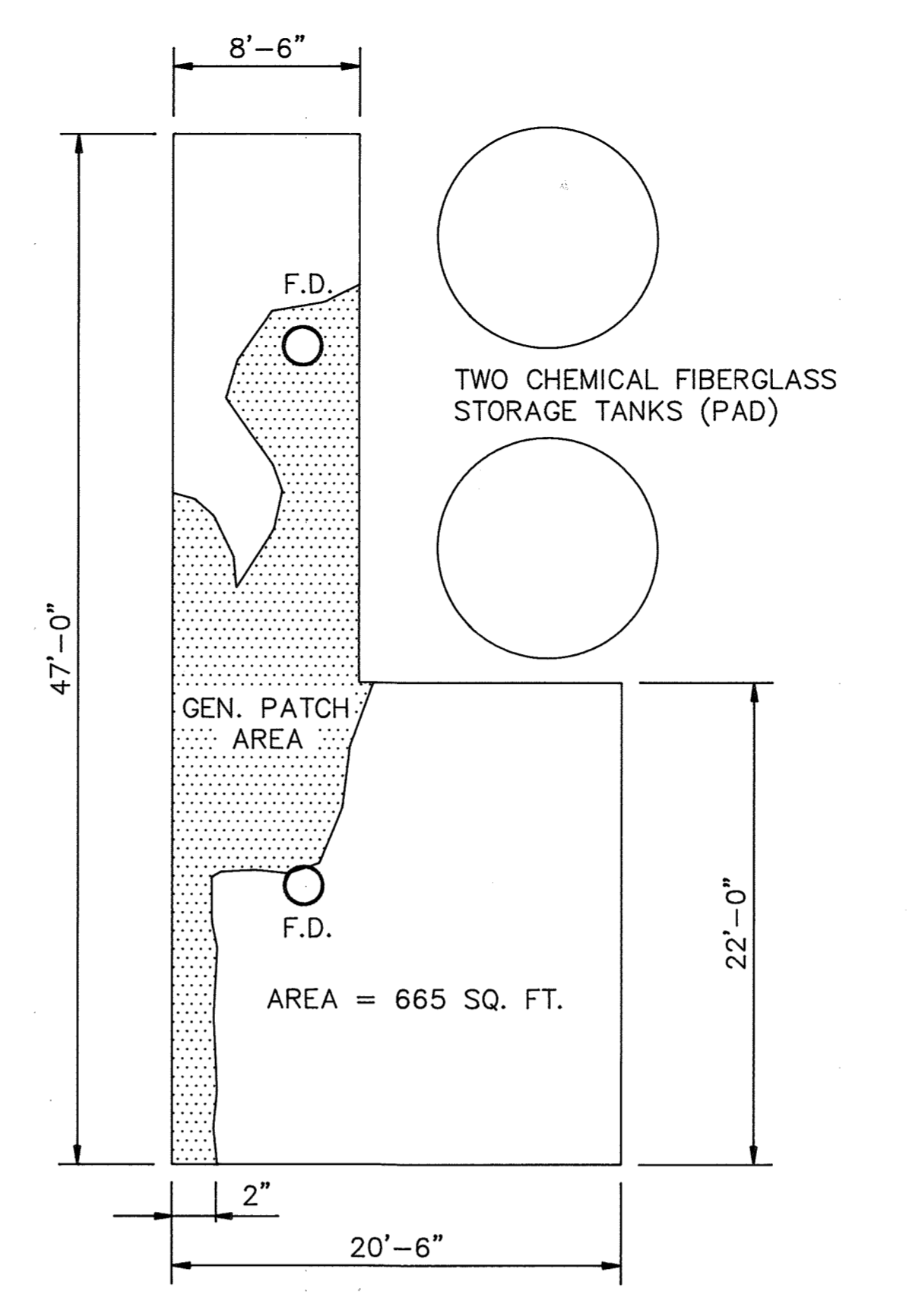
Record Drawing Notes:
 1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND [Signature] 12/19/21 DIRECTOR OF PUBLIC WORKS DATE [Signature] 12/10/21 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE		M&E Metcalf & Eddy [Signature] 12/19/21 REG. PROF. ENGR. DATE		 JONATHAN W. DOANE No. 15140 REGISTERED PROFESSIONAL ENGINEER		DES: M.YH DRN: E. Burnett CHK: M.YH DATE: 12/7/21		STRUCTURAL MISCELLANEOUS DETAILS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 92 OF 226 S-44
				1 2 RECORD DRAWING 11/1/24 1 REVISED FOR BIDDING 3/5/22		BY NO. REVISION DATE						



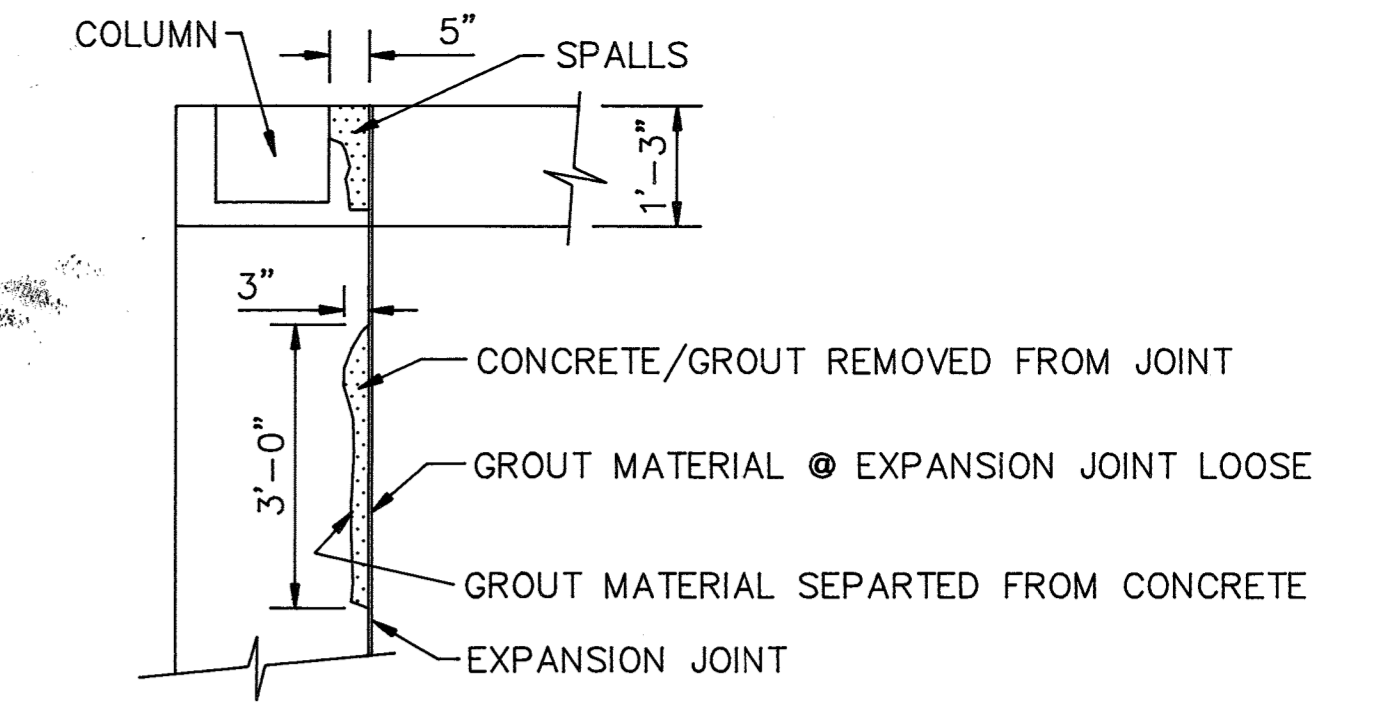
LEGEND:
 NEW STRUCTURES
 NEW PAVING

KEY PLAN
NOT TO SCALE

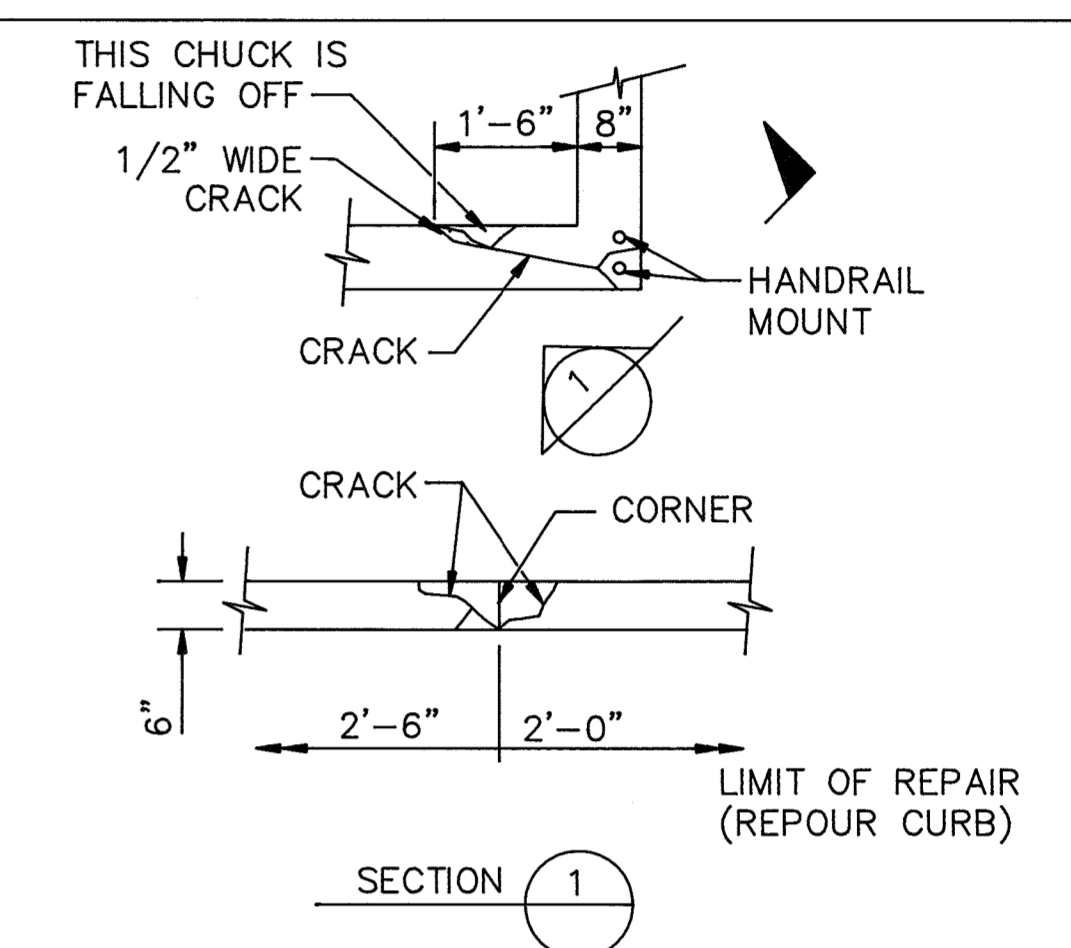


LOCATION 1 - FILTER CONTROL BUILDING
SCALE: NOT TO SCALE

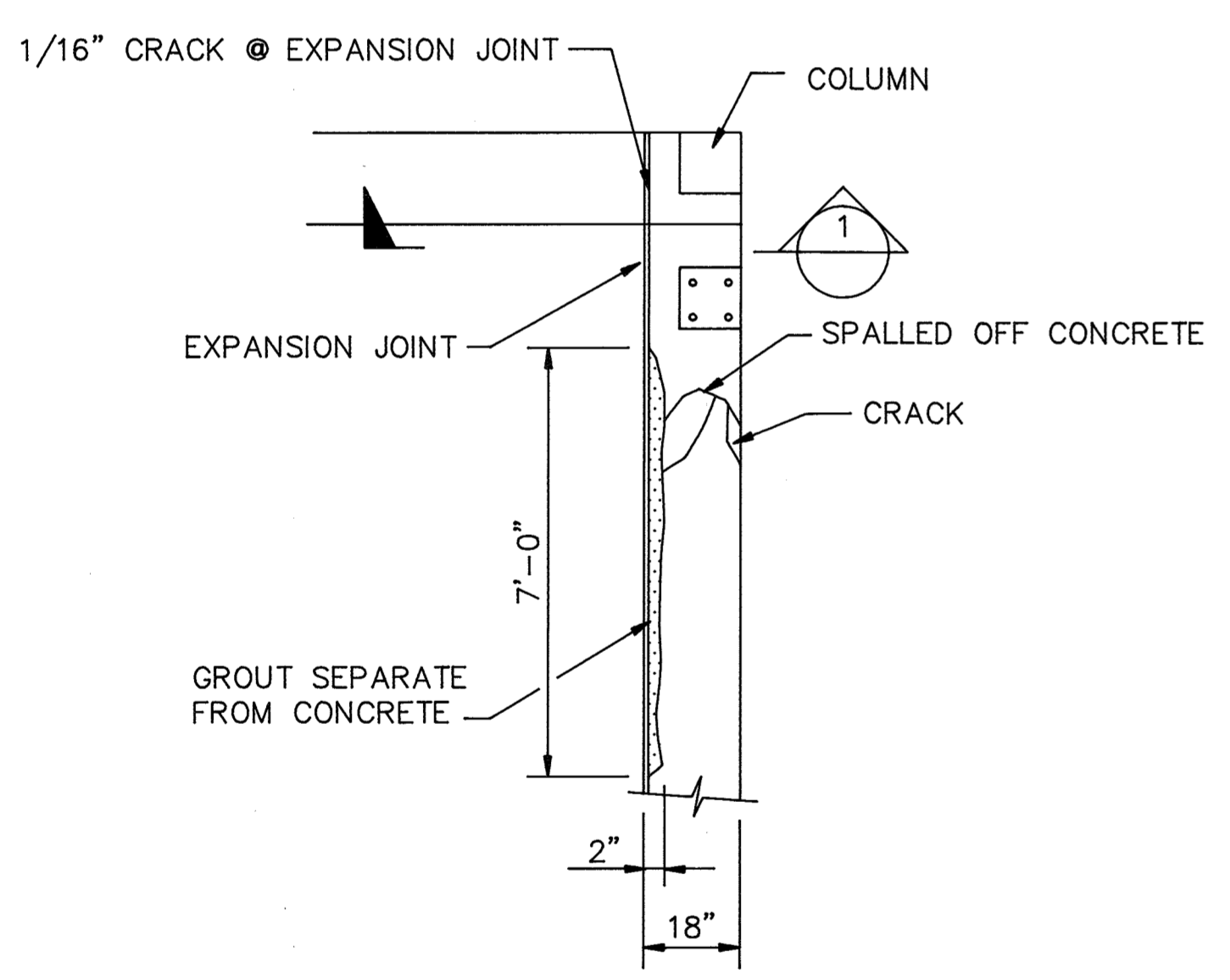
NOTE: AREA HAS BEEN PATCHED WITH CEMENTITIOUS MATERIAL.



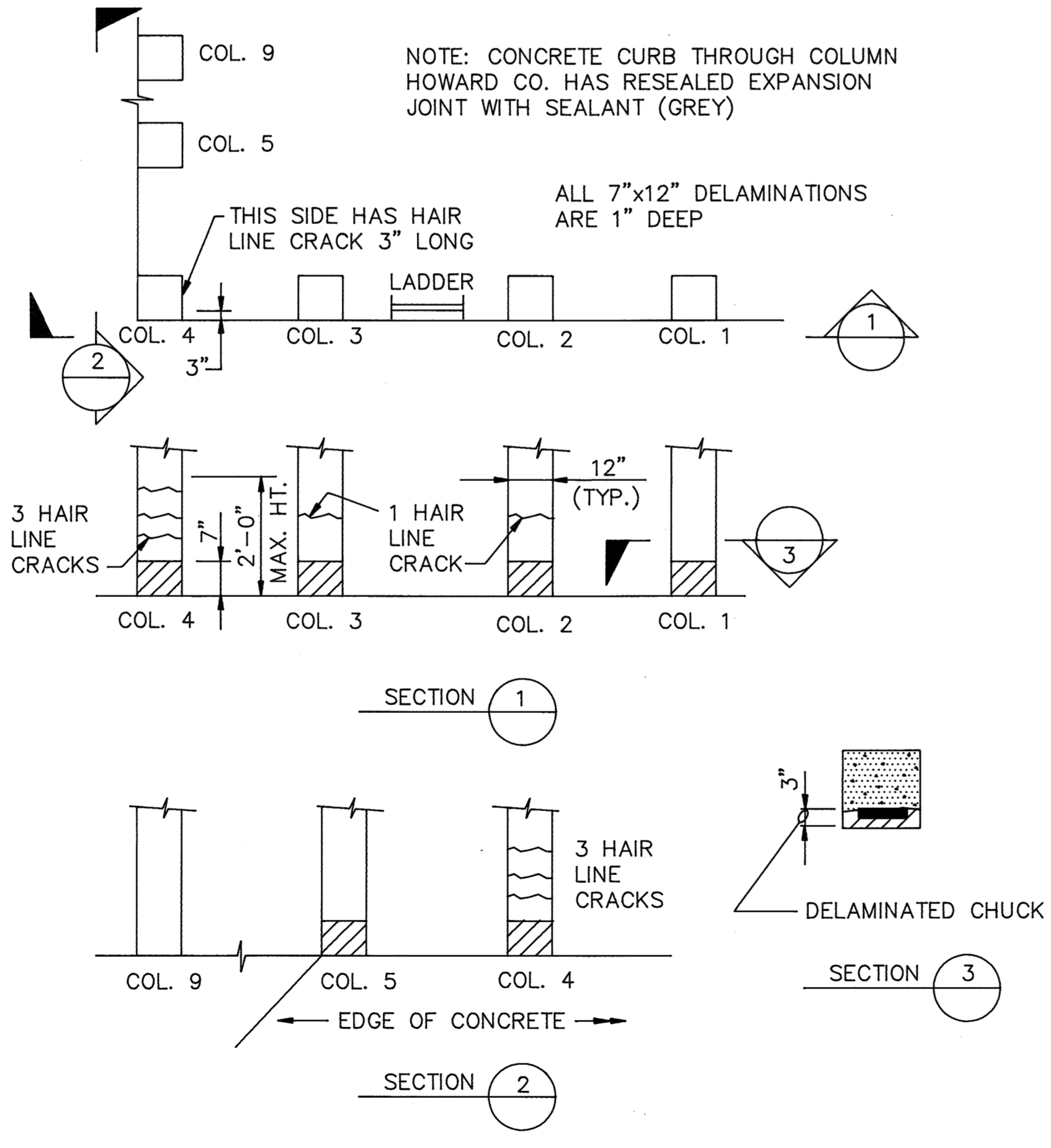
LOCATION 2 - SOUTH END OF FILTER NO. 4
SCALE: NOT TO SCALE



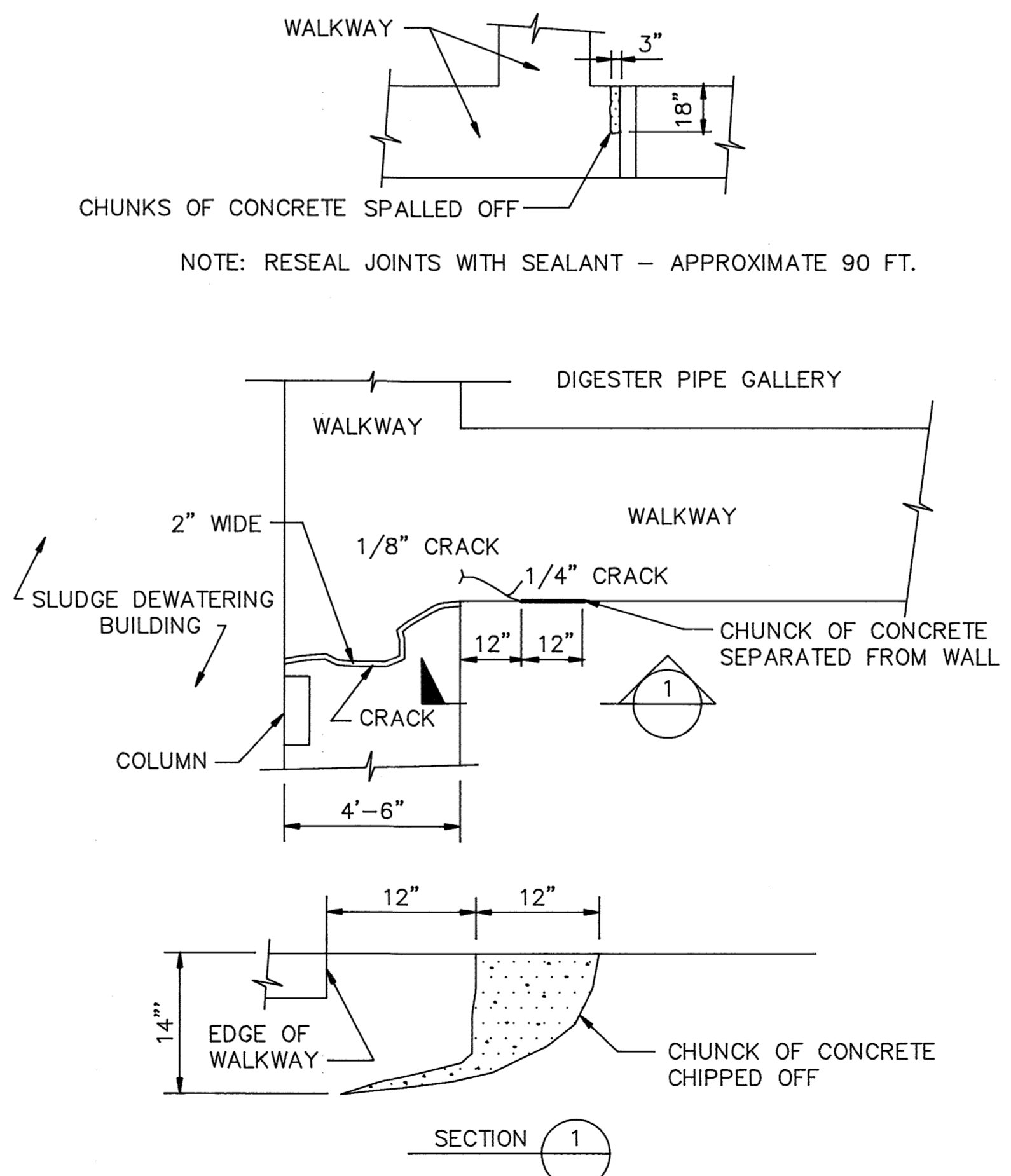
LOCATION 3 - NW CORNER OF FLOCCULATION BASIN 6
SCALE: NOT TO SCALE



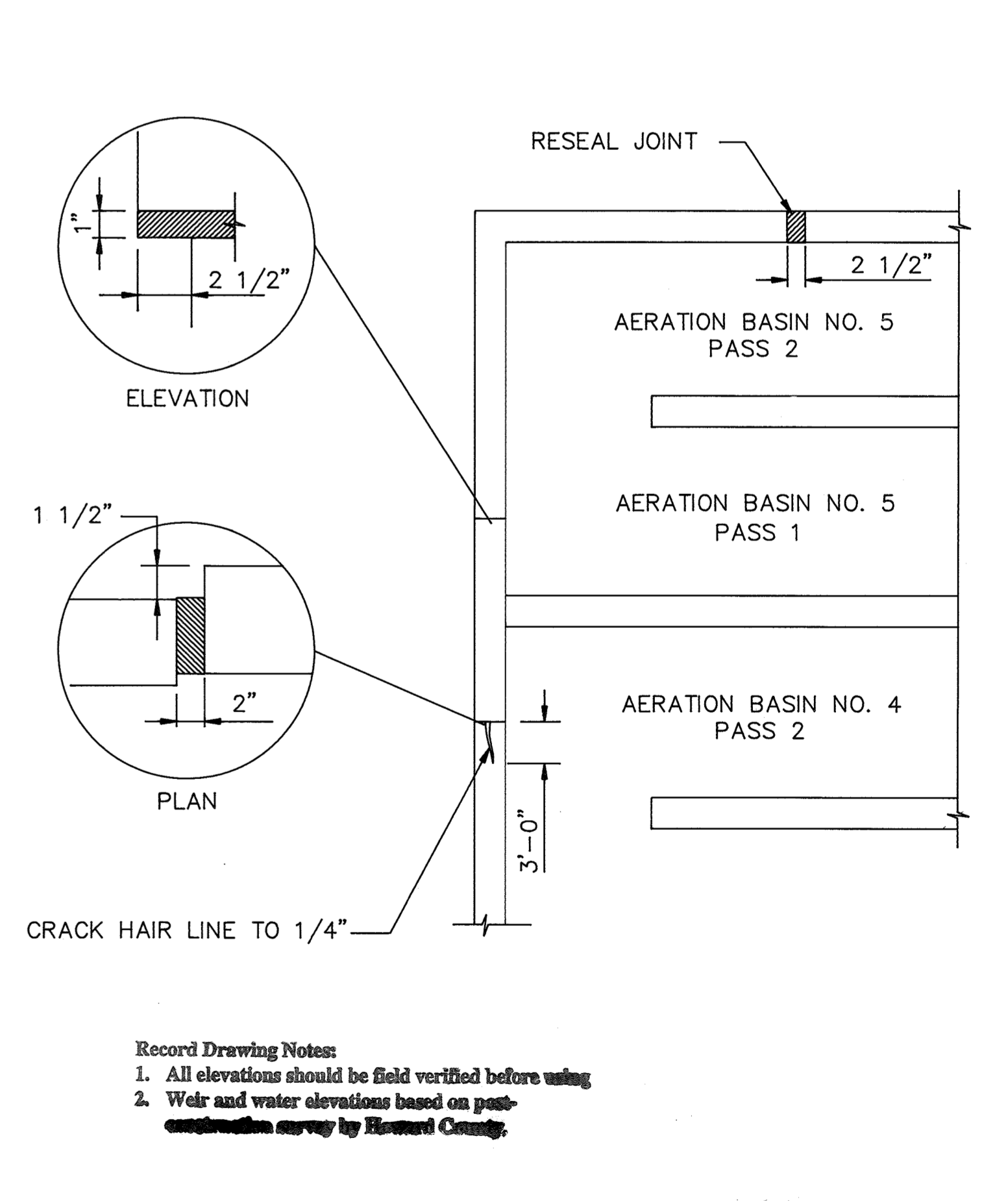
LOCATION 4 - NORTH END OF FILTER NO. 2
SCALE: NOT TO SCALE



LOCATION 5 - FILTER BUILDING
SCALE: NOT TO SCALE



LOCATION 6 - AEROBIC SLUDGE DIGESTER WALKWAY
SCALE: NOT TO SCALE



LOCATION 9 - AERATION BASIN NO. 5
SCALE: NOT TO SCALE

Record Drawing Notes:
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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John P. O'Hara* 12/19/91
 Chief, Bureau of Engineering: *William R. Kelly* 12/19/91
 Chief, Bureau of Environmental Services: *John P. O'Hara* 12/19/91
 Chief, Utility Design Division: *William R. Kelly* 12-8-91

M&E Metcalf & Eddy
 Jonathan W. Brown 12/7/91
 REG. PROF. ENGR. DATE

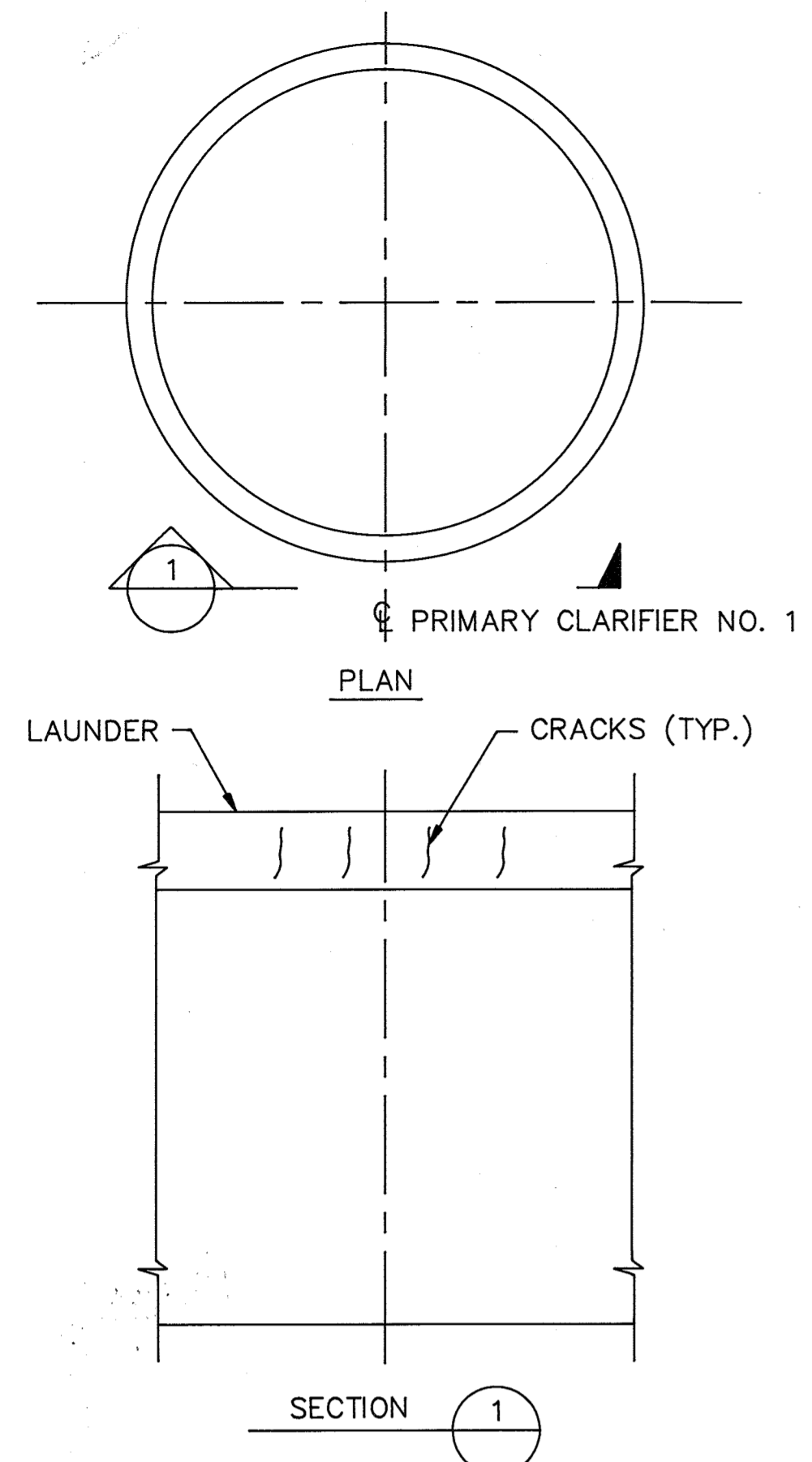
STATE OF MARYLAND
 JONATHAN WITHERSP DOANE
 No. 15140
 REGISTERED PROFESSIONAL ENGINEER

DES: D. Olson			
DRN: E. Burnett			
CHK: M. Y. Y.	2	RECORD DRAWING (SEE TABLE - S-46)	11/1/91
DATE: 12/7/91	1	REVISED FOR BIDDING	3/7/92
BY	NO.	REVISION	DATE

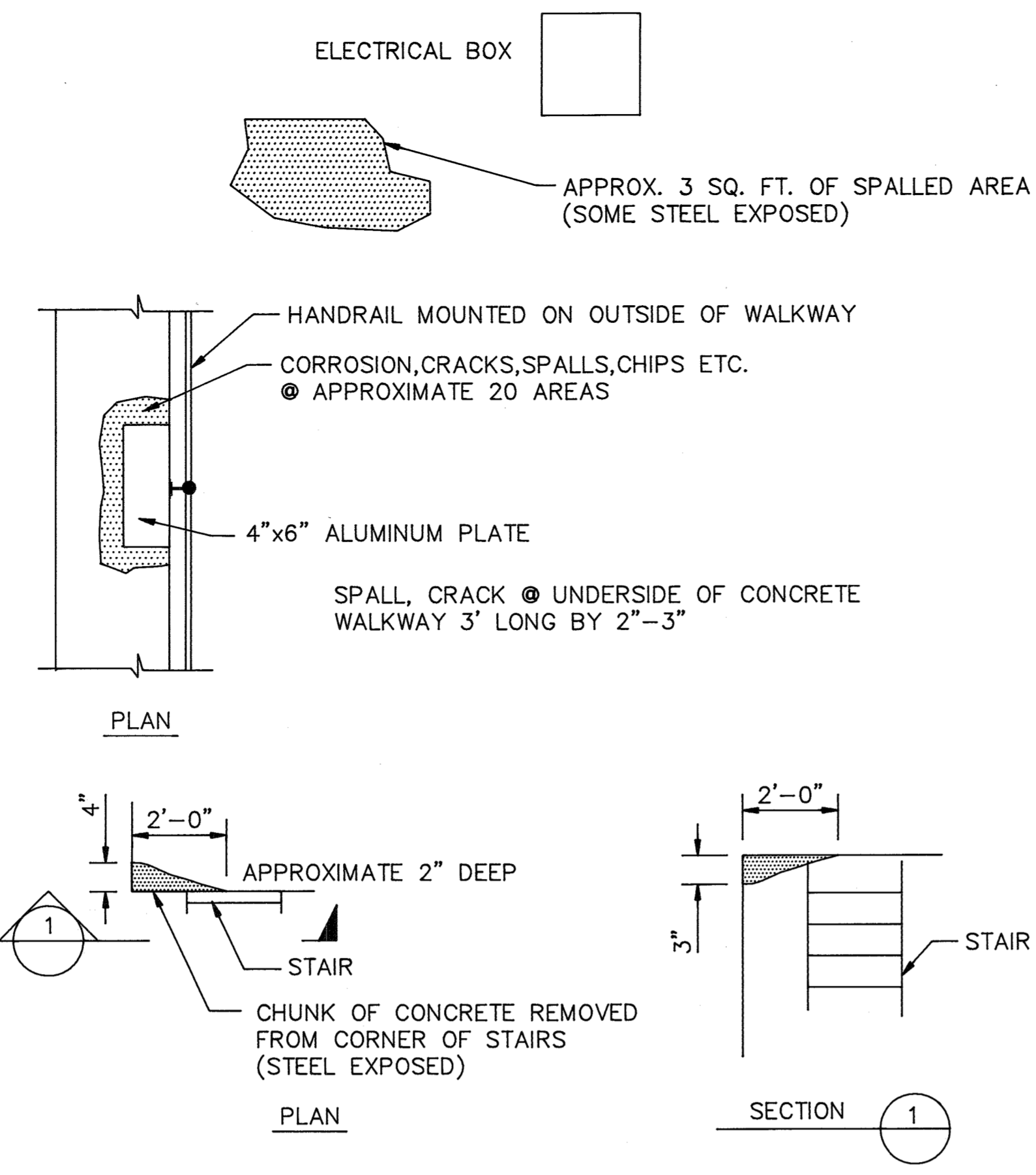
STRUCTURAL
 CONCRETE REHABILITATION
 KEY PLAN AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S - 6153
 CONTRACT NO. 20 - 3082
 HOWARD COUNTY, MARYLAND

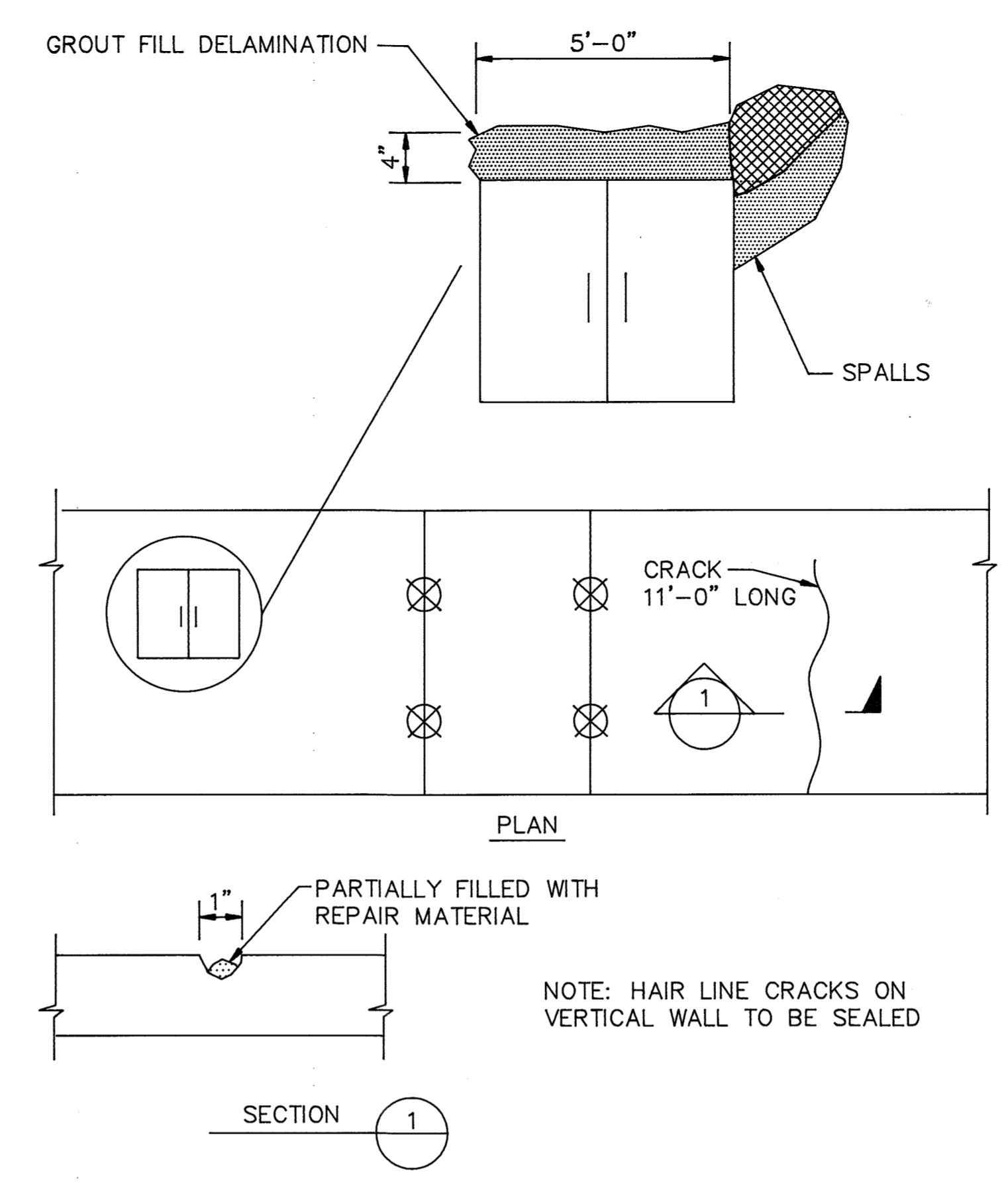
SCALE AS SHOWN
 SHEET 93 OF 226
 S-45



LOCATION 11 & 14 - PRIMARY CLARIFIERS NO. 1
SCALE: NOT TO SCALE
SEE SHEET S-45 FOR KEY PLAN



LOCATION 12 - FLOW EQUALIZATION BASIN NO. 2
SCALE: NOT TO SCALE
SEE SHEET S-45 FOR KEY PLAN



LOCATION 13 - GRID BASIN METER CHAMBER
SCALE: NOT TO SCALE
SEE SHEET S-45 FOR KEY PLAN

CONCRETE DETERIORATION

LOCATION	STRUCTURE	ITEMS	CRACK IN. FT. x MAX. CRACK WIDTH *			SPALLS	CORROSION IN. SQ. FT.	EXPANSION JOINT IN. FT. x SIZE	OTHERS	REMARKS
			SURFACE SEAL	ROUT AND SEAL	PRESSURE INJECTION					
1	FILTER CONTROL BUILDING						665 SQ. FT.			AREA HAS BEEN PATCHED: NEEDS PROTECTIVE COATING
2	FILTER NO. 4				1.25 SQ. FT. *					REPLACE LOOSE GROUT AT EXPANSION JOINT
3	FLOCCULATION BASIN							8"wx6"hx4'-6" CURB		REPOUR CURB
4	FILTER NO. 2									REPAIR SPALLED MATERIAL AND EXPANSION JOINT
5	FILTER BUILDING		12FT.x1/16"			3.5 SQ. FT. *				DELAMINATIONS ARE 3" DEEP
6	AEROBIC SLUDGE DICESTERS		5FT.x2" 1FT.x1/4"			0.5 SQ. FT.		90 LF SEALANT		REMOVE SIDEWALK, BACKFILL AREA, COMPACT AND REPLACE 30 SQ. FT.
7	SOLIDS PROCESSING BUILDING									AREA HAS BEEN REPAIRED AND COATED
8	DEWATERING BUILDING									AREA NEEDS FURTHER EVALVATION
9	AERATION BASIN NO. 5									STAIRS AND JIB CRANE AREA, NO REPAIR REQ'D
10	NITRIFICATION BASIN NO. 3									SURFACE SEAL VERT. & HORIZ. CRACKS IN LAUNDER
11	PRIMARY CLARIFIER NO. 1		48FT.x1/8"							GENERAL REPAIR
12	FLOW EQUALIZATION BASIN NO. 2							5 SQ. FT.		HAIR LINE CRACKS ON VERTICAL WALL
13	GRIT BASIN METER CHAMBER		11FT.x1/8"			4 SQ. FT. @ HATCH *		8 SQ. FT. *		PG 3 HAS BEEN REPAIRED/PG 4 HAS NOT
14	PRIMARY CLARIFIER NOS. 3 & 4		50FT.x1/8"							NO REPAIR REQUIRED AT PRESENT TIME
15	TRUCK SCALE									

* MAXIMUM CRACK WIDTH IN TERMS OF 1/4", 1/8", 1/16" OR HAIR LINE CRACK. * QUANTITIES INCREASED DURING CONSTRUCTION, NOT MEASURED.

Record Drawing Notes:
1. All elevations should be field verified before using
2. Wet and water elevations based on past construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John A. O'Hara* 12/19/91
Chief, Bureau of Engineering: *Michael R. Kelly* 12/19/91
Chief, Bureau of Environmental Services: *John A. O'Hara* 12/19/91
Chief, Utility Design Division: *John A. O'Hara* 12-9-91

M&E Metcalf & Eddy

Jonathan W. Brown 12/19/91
REG. PROF. ENGR. DATE

STATE OF MARYLAND
JONATHAN WINTHROP DOANE
No. 15140
Professional Engineer

DES: D. Colson
DRN: E. Barrett
CHK: M. Y. Y
DATE: 12/17/91

REVISIONS:
NO. 1 RECORDED DRAWING 11/1/91
NO. 2 REVISED FOR BIDDING 3/5/92

STRUCTURAL
CONCRETE REHABILITATION
DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 94 OF 226
S-46

DWG. ABBREV.	ITEM	SYMBOL	NOTES
	GATE VALVE		
	KNIFE GATE		
	PLUG VALVE		FLOW DIAGRAM ONLY
	BUTTERFLY VALVE		
	BALL VALVE		
	3-WAY BALL VALVE		
	BALL CHECK VALVE		
	DIAPHRAGM VALVE		
HG	HOSE GATE		
	PRESSURE REDUCING VALVE		
	BACK-PRESSURE VALVE		
	PRESSURE REGULATING VALVE		
	RELIEF VALVE		
	GLOBE VALVE		
	3-WAY VALVE		
	ANGLE VALVE		
	CHECK VALVE		
	PINCH VALVE		
	ROTAMETER		
	SCREWED UNION		
	FLANGED UNION		
	FLEXIBLE COUPLING		
	INSECT SCREEN		
	FLEXIBLE HOSE		
SG	SLUICE GATE		
PG	PREFABRICATED SLIDE GATE		
	WEIR		FLOW DIAGRAM ONLY
	MIXER		
	PULSATION DAMPER		
	CALIBRATION STAND PIPE		
	QUICK-DISCONNECT COUPLING		
	STATIC MIXER		
	TELESCOPING VALVE		
	FLAP VALVE		
	MUD VALVE		
WS	WATER SURFACE		
	ORIFACE PLATE		
	SCREW CONVEYOR		

DWG. ABBREV.	ITEM	SYMBOL	NOTES
	PIPE: 2"DIA. & SMALLER		
	PIPE: 3"DIA. & LARGER		
	FLANGE		
BF	BLIND FLANGE		
MJ	MECHANICAL JOINT		
	SLEEVE COUPLING		
	RESTRAINED COUPLING		
	VENTURI FLOW ELEMENT		
	WELDED PIPE		
	EXISTING PIPE AND FACILITIES		
	PROPOSED PIPE AND EQUIPMENT		
	EXISTING PIPE TO BE REMOVED		
	INSULATION PIPE: 2"DIA. & SMALLER		
	INSULATION PIPE: 3"DIA. & LARGER		
	SPLIT COUPLING		
	Y-STRAINER		
	DUPLEX STRAINER		
	GAUGE		
	DIRECTION OF FLOW		
	PITCH PIPE DOWN IN DIRECTION OF ARROW		
	CONCENTRIC REDUCER		
	ECCENTRIC REDUCER FLAT ON TOP		
	ECCENTRIC REDUCER FLAT ON BOTTOM		
	ANCHOR		
	DIAPHRAGM SEAL		
	SONIC METER		
	MAGNETIC FLOWMETER		
	LIMITS OF WORK (TRADE, CONTRACT, ETC.)		
	POINT OF CONNECTION - NEW WORK TO EXIST. WORK		
	MOTOR OPERATED ACTUATOR		
	SOLENOID OPERATED ACTUATOR		
	DIAPHRAGM ACTUATOR		
	CYLINDER-PNEUMATIC ACTUATOR		

DWG. ABBREV.	ITEM	SYMBOL	NOTES
	CYLINDER-PNEUMATIC ACTUATOR		
	EQUIPMENT MOTOR		
WALL CASTINGS			
FLG & MJ	FLANGE & MECHANICAL JOINT		
MJ & MJ	MECHANICAL JOINT & MECHANICAL JOINT		
M & PE	MECHANICAL JOINT & PLAIN END		
FLG & FLG	FLANGE & FLANGE		
FLG & PE	FLANGE & PLAIN END		
	BELL & BELL		
BELL & FLG	BELL & FLANGE		
BELL & PE	BELL & PLAIN END		
FITTINGS			
	TEE		
90° ELL	90° ELBOW		
45° ELL	45° ELBOW		
BASE ELL	BASE ELBOW		
	CROSS		
	LATERAL		
	CONCENTRIC REDUCER		
	EXCENTRIC REDUCER		

GENERAL NOTES

- THE CONTRACTOR'S ATTENTION IS DIRECTED TO APPENDIX B OF THE SPECIFICATIONS WHICH ARE PART OF THE CONTRACT DOCUMENTS MANY OF THE DETAILS REFERRED TO ON THESE DRAWINGS MAY BE FOUND THEREIN ADDITIONAL PERTINENT DETAILS ARE IN HOWARD COUNTY DESIGN MANUAL IV.
- UNLESS OTHERWISE INDICATED, LIQUID PIPING SHALL HAVE 3/4" LOW POINT DRAINS AND 3/4" HIGH POINT VENTS.
- IN-LINE INSTRUMENTATION SHALL BE PROVIDED WITH ISOLATED PRESSURE TAPS.
- THE CONTRACTOR SHALL MAKE ALL REQUIRED FIELD MEASUREMENTS TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, ELEVATIONS, AND OTHER CONDITIONS.
- REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR COVER PLATES, HATCHES, GRATING AND RAILING DETAILS.
- REFER TO INSTRUMENTATION DRAWINGS FOR INSTRUMENTATION AND CONTROL SYSTEMS; INSTRUMENT LOCATIONS ARE INDICATED ON MECHANICAL PROCESS DRAWINGS IN APPROXIMATE LOCATION ONLY.
- SMALL PIPING (SAMPLE, SERVICE WATER, ETC.) IS SHOWN DIAGRAMMATICALLY; FIELD-ROUTING SUBJECT TO APPROVAL OF THE ENGINEER.
- WALL AND FLOOR SLEEVES SHALL BE LARGE ENOUGH TO ACCOMMODATE FLANGES. FLOOR SLEEVES SHALL PROJECT AT LEAST 2" ABOVE FINISHED FLOOR, UNLESS OTHERWISE SHOWN. REFER TO DETAILS.
- SLEEVE OR SPLIT COUPLINGS ARE TO BE USED AS SHOWN, TO FACILITATE PIPING INSTALLATION.
- ALL FLEXIBLE CONNECTORS, INCLUDING EXPANSION JOINTS AND SLEEVE COUPLINGS SUBJECT TO PRESSURE, SHALL BE RESTRAINED AS INDICATED FOR EXPANSION AND FLEXIBILITY.
- ALL PIPE PENETRATIONS THROUGH INTERIOR AND EXTERIOR WALLS AND FLOORS SHALL BE SEALED WATERTIGHT.
- ALL PROCESS EQUIPMENT, INCLUDING PUMPS AND COMPRESSORS, SHALL BE ISOLATED FROM PIPING LOADS AND DYNAMICS BY FLEXIBLE CONNECTORS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS, EXCEPT AS OTHERWISE SHOWN. ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH TEFLON OR OTHER APPROVED PADS TO MINIMIZE VIBRATION AND/OR NOISE TRANSMISSION.
- PORTIONS OF NON-PROCESS PIPING (PLUMBING, HVAC, CIVIL) ARE SHOWN FOR CLARITY OF DESIGN ONLY; REFER TO APPROPRIATE DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
- PROVIDE WALL MOUNTED SIGNS IN ACCORDANCE WITH SPECIFIED ARCHITECTURAL REQUIREMENTS FOR ALL EXTERIOR WALL PENETRATIONS, INDICATING PIPE ORIGIN OR DESTINATION AND PIPE ELEVATION.
- ALL DIMENSIONS LOCATING EQUIPMENT ARE FROM FINISHED WALL SURFACES.

CHEMICAL NOTES

- ALL EQUIPMENT PADS EXCEPT STORAGE TANKS SHALL BE THE SAME HEIGHT AS THE HEIGHT OF CONTAINMENT CURBS UNLESS OTHERWISE INDICATED ON DRAWINGS.
- ALL VERTICAL PIPE PENETRATIONS IN CURBED AREAS SHALL HAVE SLEEVES OF THE SAME HEIGHT AS THE HEIGHT OF CURBS. FOR ADDITIONAL INFORMATION ON SLEEVES, REFER TO DETAIL 15-4.18 IN APPENDIX B SECTION OF THE SPECIFICATIONS.
- HORIZONTAL RUNS OF POLYVINYLCHLORIDE PIPE SHALL BE SUPPORTED ON EPOXY-COATED LIGHTWEIGHT STEEL CHANNEL WITH A MAXIMUM CHANNEL HANGER SPACING OF 5 FT. AND VERTICAL RUNS SUPPORTED WITH CLAMPS AT A MAXIMUM SPACING OF 3 FT. CENTER.
- ALL EQUIPMENT REQUIRING VENTING TO ATMOSPHERE SHALL HAVE VENTS LOCATED AWAY FROM ANY BUILDING OPENINGS.
- PIPE UNIONS SHALL BE PROVIDED AT ALL PIPING CONNECTIONS TO AND FROM EQUIPMENT AND AS SHOWN ON THE PIPING DIAGRAMS.

ABBREVIATIONS LEGEND

A	AIR	INV.	INVERT
AHP	AIR HIGH PRESSURE	JT	JOINT
APPROX.	APPROXIMATE	L	LIME
BLDG.	BUILDING	L.P.	LOW POINT
BOTT.	BOTTOM	LR	LONG RADIUS
CL	CENTER LINE	MH	MANHOLE
CONC.	CONCRETE	MIN.	MINIMUM
CONN.	CONNECTION	MAX.	MAXIMUM
CONT.	CONTINUATION	NO.	NUMBER
DIA.	DIAMETER	N.T.S.	NOT TO SCALE
DN	DOWN	NWS	NON-POTABLE WATER SUPPLY
DSL	DEWATERED SLUDGE	O.C.	ON CENTER
ECC.	ECCENTRIC	OD	OUTSIDE DIAMETER
EL.	ELEVATION	OPN'G	OPENING
ELL	ELBOW	P	PLATE
EXIST.	EXISTING	R	RADIUS
FINGR.	FINISHED GRADE	RED.	REDUCER OR REDUCING FITTING
FLEX.	FLEXIBLE	SHT.	SHEET
FLOCC.	FLOCCULATOR	S.S.	STAINLESS STEEL
FLG.	FLANGE	T.O.C.	TOP OF CONCRETE
HP.	HIGH POINT	TS	THICKENED SLUDGE
I.D.	INSIDE DIAMETER	TYP.	TYPICAL
AN	ANAEROBIC	W/	WITH
AX	ANOXIC	W.S.	WATER SURFACE
D	DRAIN	PSIS	PHOSPHORUS STRIPPER INFLUENT SLUDGE
FW	FLUSHING WATER	PSS	PHOSPHORUS STIPPED SLUDGE
IR	INTERNAL RECYCLE	PR	PROCESS REACTOR
OX	OXIC	RAS	RETURN ACTIVATED SLUDGE
PG	PREFABRICATED GATE	WL	WATER LEVEL
		WCS	WASTE CHEMICAL SLUDGE

GENERAL NOTES CONTINUED

- CONTRACTOR SHALL SURVEY AND RECORD ALL EFFLUENT WEIR CREST ELEVATIONS ON THE THREE EXISTING PRIMARY CLARIFIERS AND SEVEN EXISTING FINAL CLARIFIERS. EIGHT ELEVATIONS SHALL BE TAKEN ON EACH CLARIFIER AT 45 DEGREE INTERVALS AROUND THE CIRCUMFERENCE OF THE CLARIFIER. THE SURVEY INFORMATION SHALL BE PRESENTED TO THE ENGINEER WHO WILL THEN ESTABLISH FINAL WEIR CREST ELEVATIONS FOR ALL EXISTING AND NEW CLARIFIERS. THE CONTRACTOR SHALL THEN SET ALL WEIRS TO THE ASSIGNED ELEVATIONS. THE BID SHALL BE BASED UPON AN ASSUMPTION THAT THE ENTIRE WEIR LENGTH FOR ONE PRIMARY WILL REQUIRE WEIR ELEVATION ADJUSTMENTS BEYOND THE CURRENT ADJUSTMENT RANGE OF THE WEIR SLOT OR HOLE AND, AS SUCH, WILL REQUIRE THE REMOVAL OF EACH WEIR PLATE SECTION AND EXTENSION OF THE SLOT OR HOLE.
- SCEDULE OF PIPE PENETRATIONS:
 - DUCTILE IRON, STEEL OR PVC CARRYING LIQUID THROUGH NEW WALL-STD. DETAIL 15-4.18.1.
 - DUCTILE IRON, STEEL OR PVC CARRYING LIQUID THROUGH EXISTING WALL EXCEPT Y WALLS-STD. DETAIL 3-3.39.
 - DUCTILE IRON, STEEL OR PVC CARRYING LIQUID THROUGH EXISTING Y WALLS-STD. DETAIL 3-3.39.
 - AIR PIPING THROUGH NEW WALLS-STD. DETAIL 15-4.18.1.
 - AIR PIPING THROUGH EXISTING WALLS EXCEPT Y WALLS-ADDENDUM NO.2 ATTACHMENT H.
 - AIR PIPING THROUGH EXISTING Y WALLS-ADDENDUM NO.2 ATTACHMENT H.
- ELEVATIONS INDICATED ON THESE AND PREVIOUS CONTRACT DRAWINGS ARE NOT RELATIVE TO THE HOWARD COUNTY BENCH MARK. DURING CONSTRUCTION, NEW STRUCTURES WERE LOCATED SUCH THAT THEY PROPERLY TIE INTO EXISTING STRUCTURES. WEIR ELEVATIONS AND HIGH AND NORMAL WATER ELEVATIONS HAVE BEEN CORRECTED SO THAT THEY ARE BASED ON THE HOWARD COUNTY BENCH MARK.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Samuel L. Lewis 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

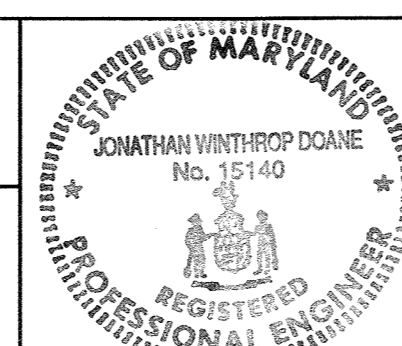
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



DES	DATE	BY	NO.	REVISION	DATE
M.J.C.					
J.H.					
M.J.C.	1			RECORD DRAWING	01/27/94

MECHANICAL

LEGEND, SYMBOLS & NOTES

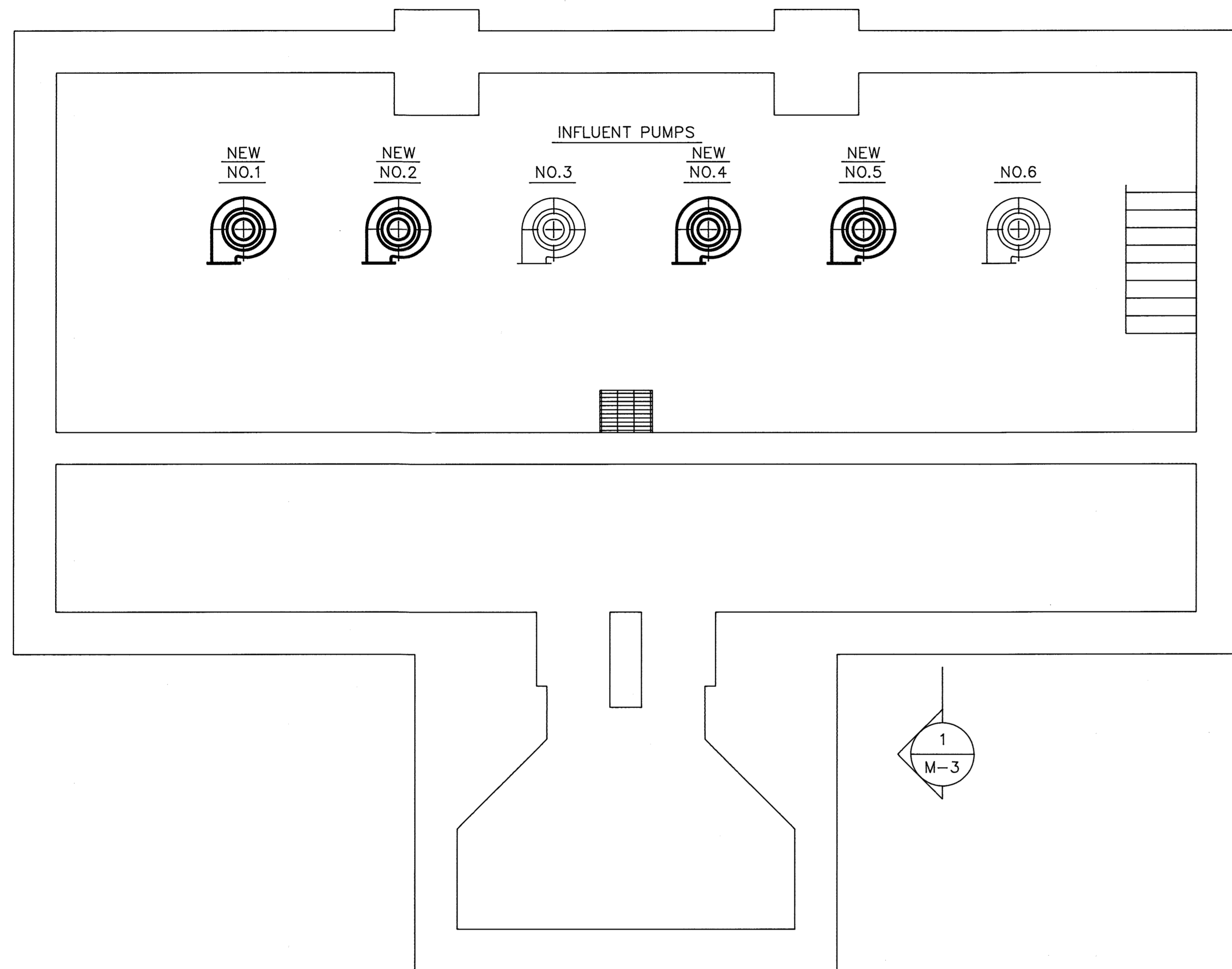
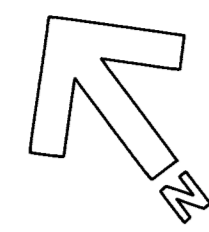
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

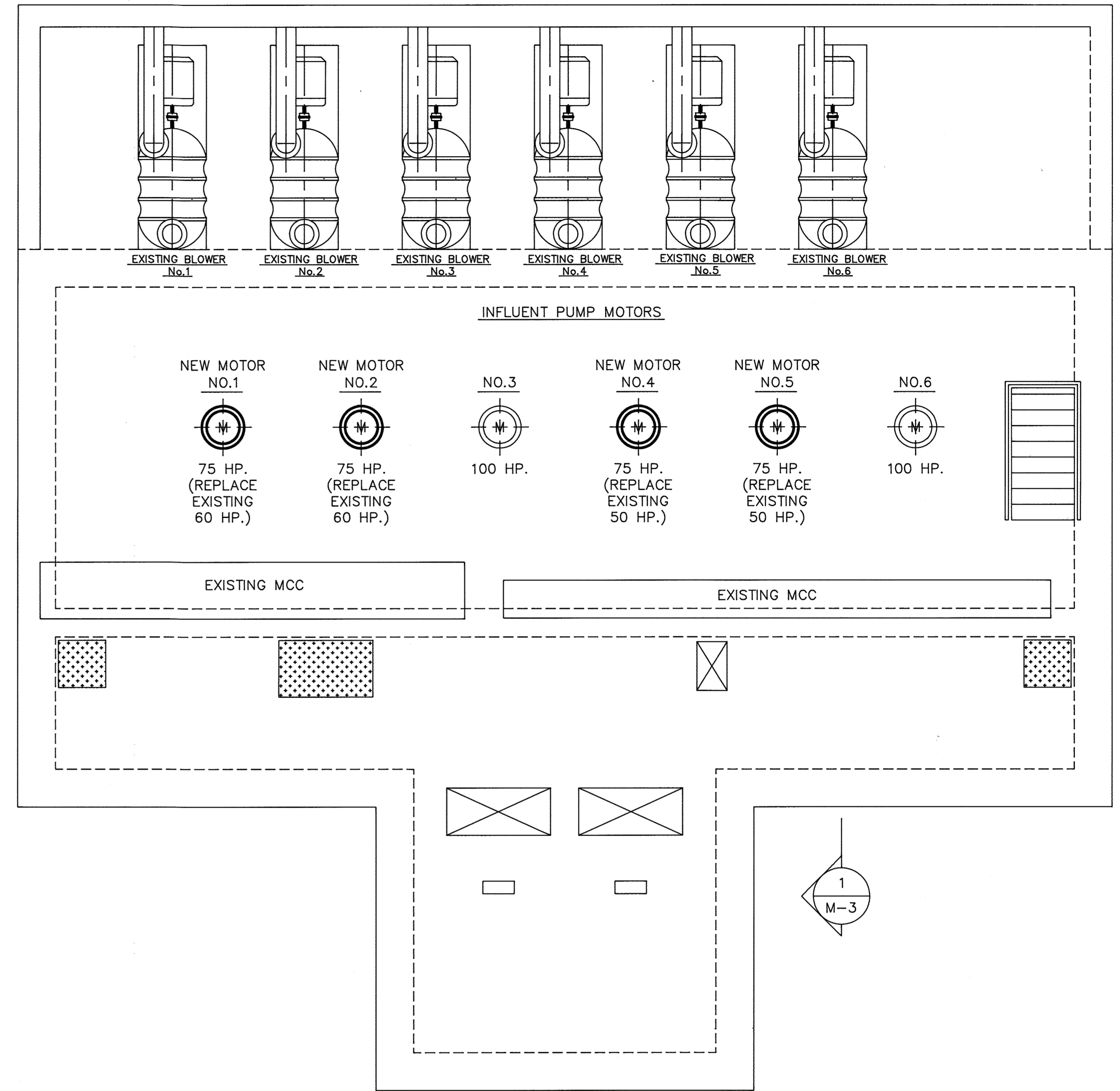
SCALE AS SHOWN

SHEET 95 OF 226

M-1A



PLAN @ EL. 125.00
SCALE: 1/4"=1'-0"



PLAN @ EL. 142.50
SCALE: 1/4"=1'-0"

NOTES:

1. NEW PUMP ASSEMBLIES MUST BE SET TO MATCH CENTER LINES OF EXISTING ASSEMBLIES BEING REPLACED BOTH IN PLAN AND ELEVATION.
2. NO MORE THAN ONE PUMP MAY BE TAKEN OUT OF SERVICE AT ANY ONE TIME.
3. ADD NEW MOTOR OPERATORS ON EXISTING BLOWERS 4, 5, & 6.

LEGEND:

- Record Drawing Notes:**
1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.

- DENOTES EXISTING EQUIPMENT
- DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

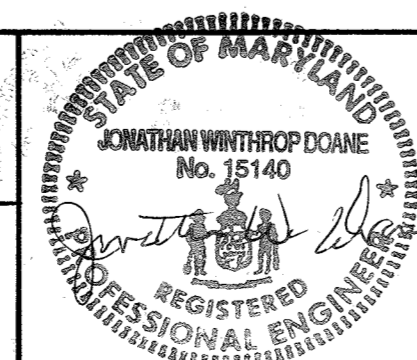
Director of Public Works: *Ramon M. Lewis* 3/6/92
DATE: 3-6-92

Chief, Bureau of Environmental Services: *John J. O'Hara* 3/6/92
DATE: 3-6-92

Asst. Chief, Utility Design Division: *Robert A. ...*
DATE: 3-6-92

M&E Metcalf & Eddy

Registered Professional Engineer: *Jonathan W. Done* 3/6/92
DATE: 3-6-92

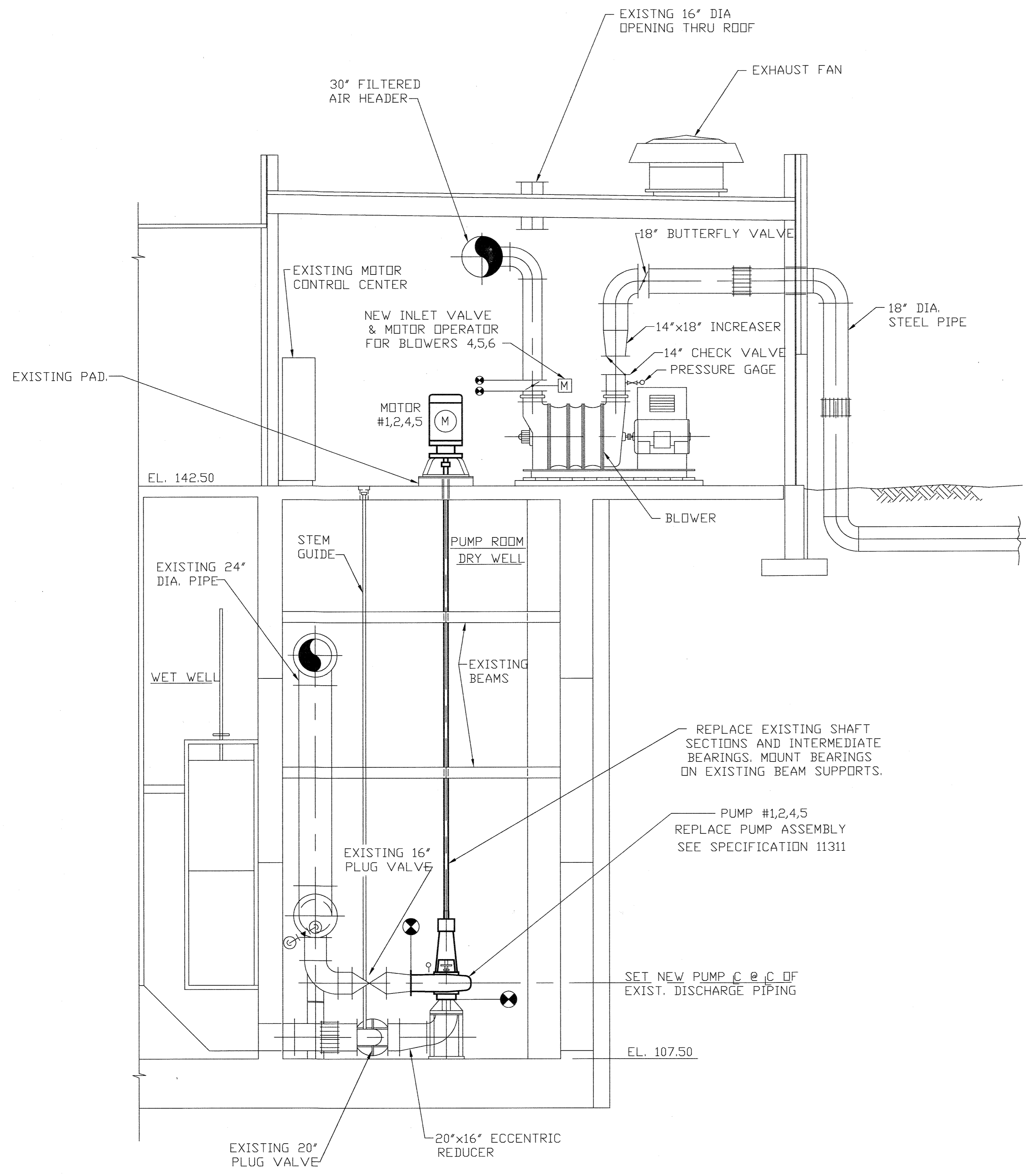


DES: <i>P. Stephy</i>			
DRN: <i>M. O'Hara</i>			
CHK: <i>P. Stephy</i>	2	RECORD DRAWING	
DATE: 3/6/92	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

MECHANICAL
HEADWORKS PUMP
MODIFICATIONS
PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 26 OF 226
M-2



SECTION 1
SCALE: 1/4"=1'-0" M-2

LEGEND:

- Record Drawing Notes:**
- All elevations should be field verified before using.
 - Weir and water elevations based on post-construction survey by Howard County.
- DENDOTES EXISTING EQUIPMENT
 — DENDOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Sam A. Lewis 5/1/96
 DIRECTOR OF PUBLIC WORKS DATE

John J. O'Hara 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Robert J. Sporn 5/7/96
 CHIEF, BUREAU OF ENGINEERING DATE

Debra L. ... 5-7-96
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
 REG. PROF. ENGR. DATE



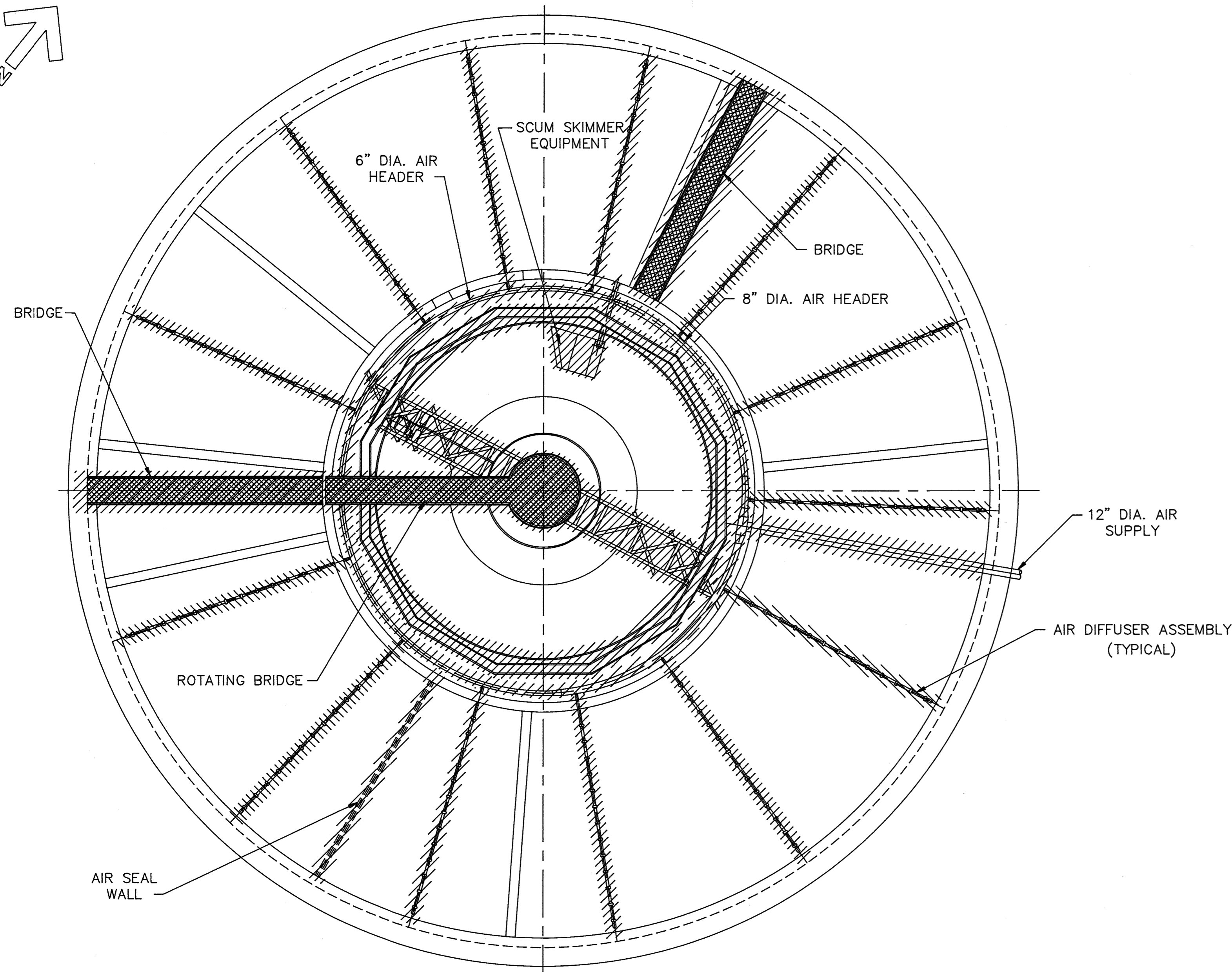
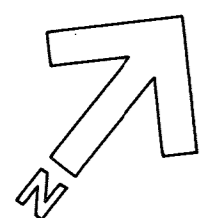
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DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING		11/2/94
	BY NO.	REVISION		DATE

MECHANICAL
 HEADWORKS PUMP
 MODIFICATIONS
 SECTIONS

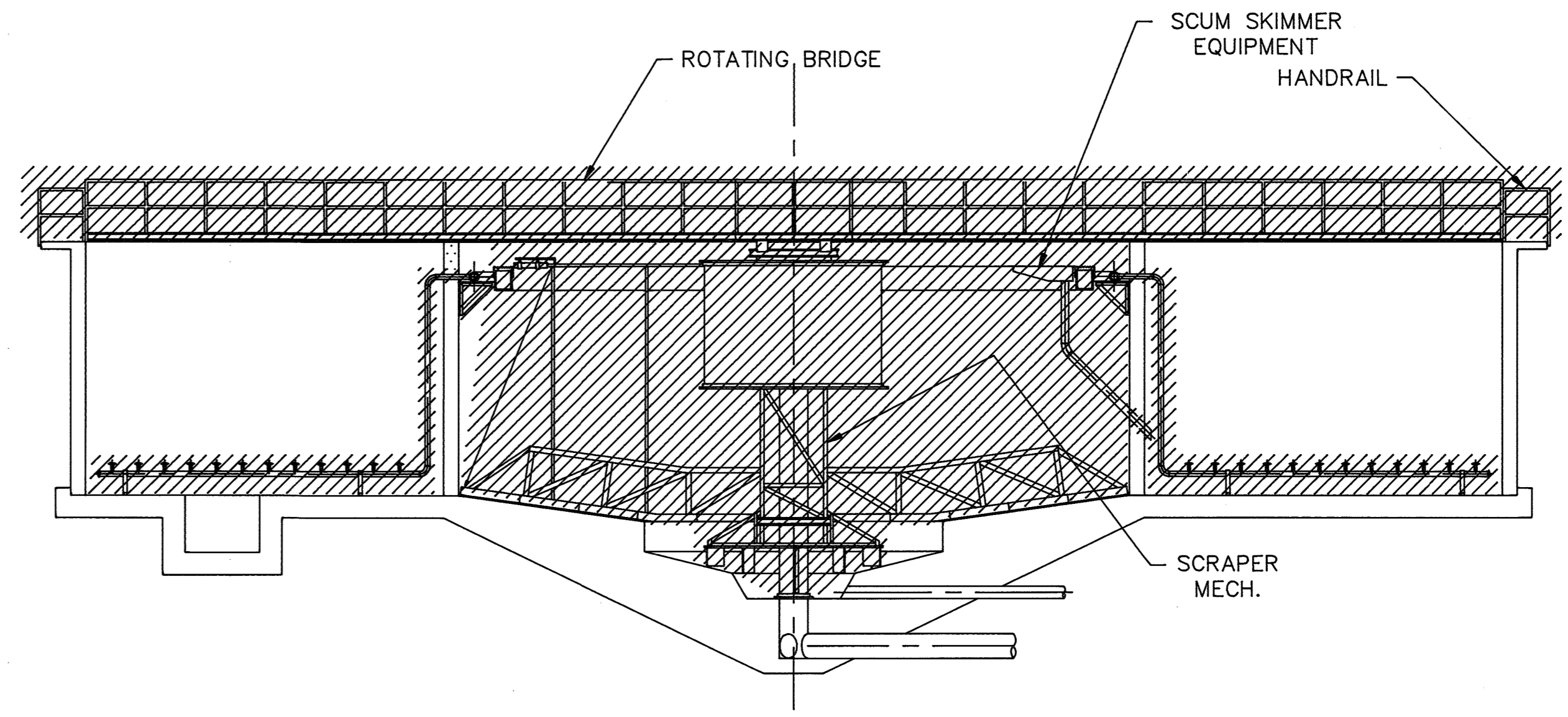
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 97 OF 226
 M-3A



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



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

NOTES:

1. CONTRACTOR TO REMOVE ALL DEBRIS FROM INSIDE TANK INCLUDING, SOIL, VEGETATION, SLUDGE, GRIT, AND TRASH.
2. SEE DWG. S-3 FOR LOCATION OF NEW 24"X24" OPENINGS.

- Record Drawing Notes:
1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.

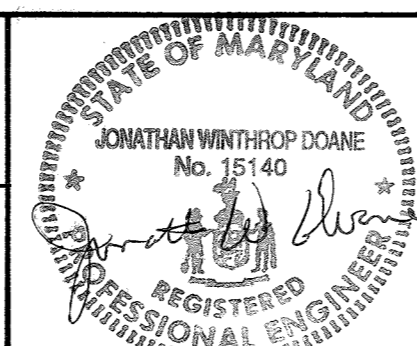
LEGEND:
 TO BE DEMOLISHED

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James H. Shaw 3/6/92
 DIRECTOR OF PUBLIC WORKS DATE ACT. CHIEF, BUREAU OF ENGINEERING
John J. O'Hara 3/6/92
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE ACT. CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Doane 3/6/92
 REG. PROF. ENGR. DATE

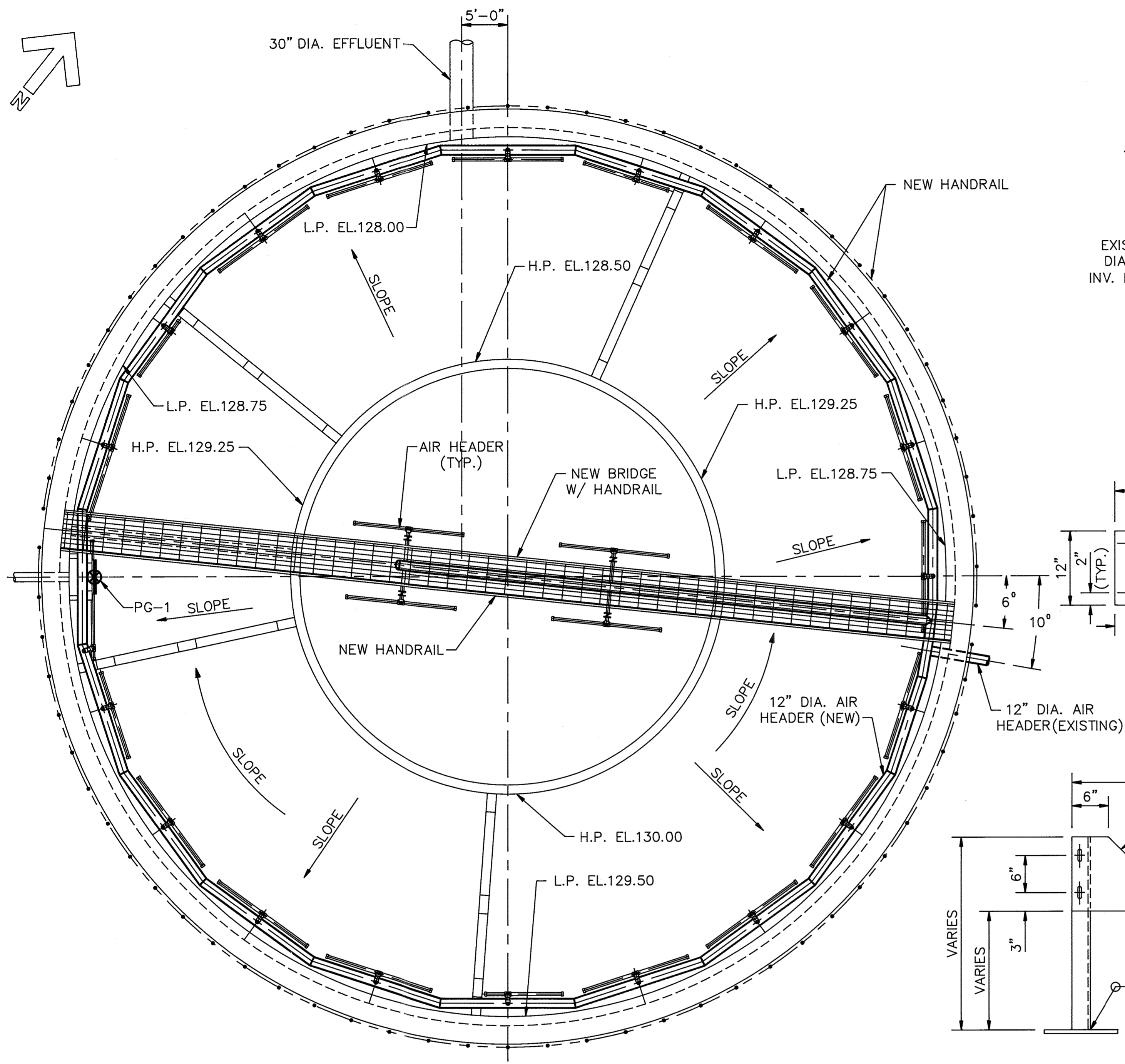


DES:			
DRN:	<i>M. O'Neil</i>		
CHK:	<i>P. Stepha</i>	2	RECORD DRAWING
DATE:	3/6/92	1	REVISED FOR BIDDING
BY:		NO.	REVISION
			DATE

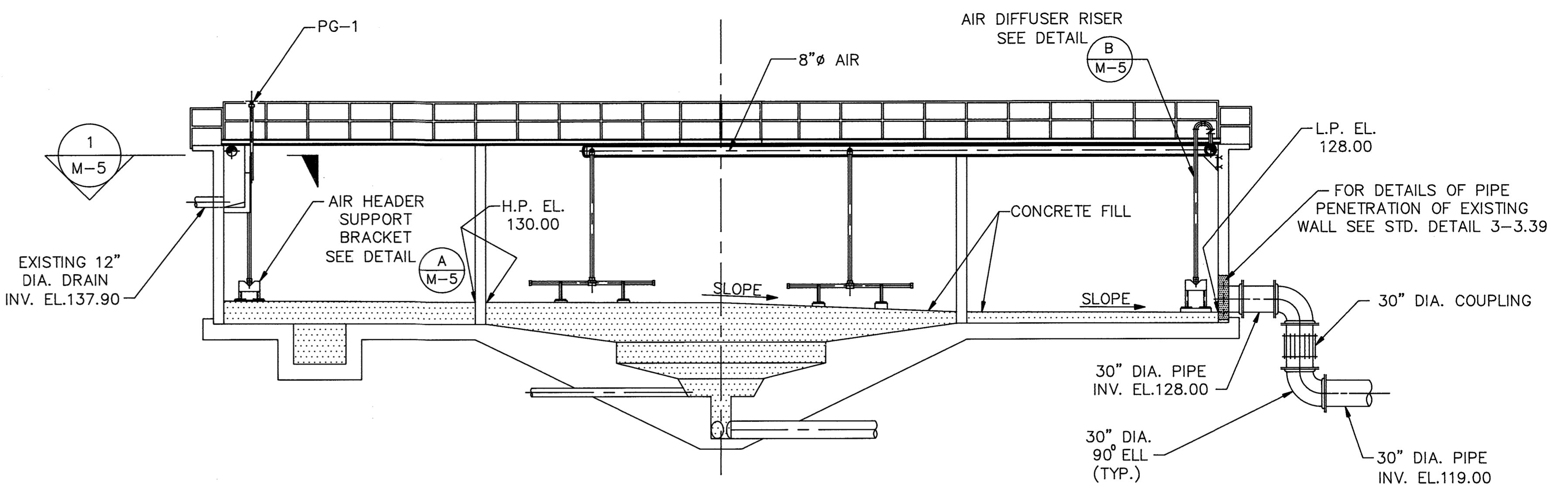
MECHANICAL
 FLOW EQUALIZATION BASIN NO.3
 MODIFICATIONS
 DEMOLITION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S - 6153
 CONTRACT NO. 20 - 3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 92 OF 226
 M-4

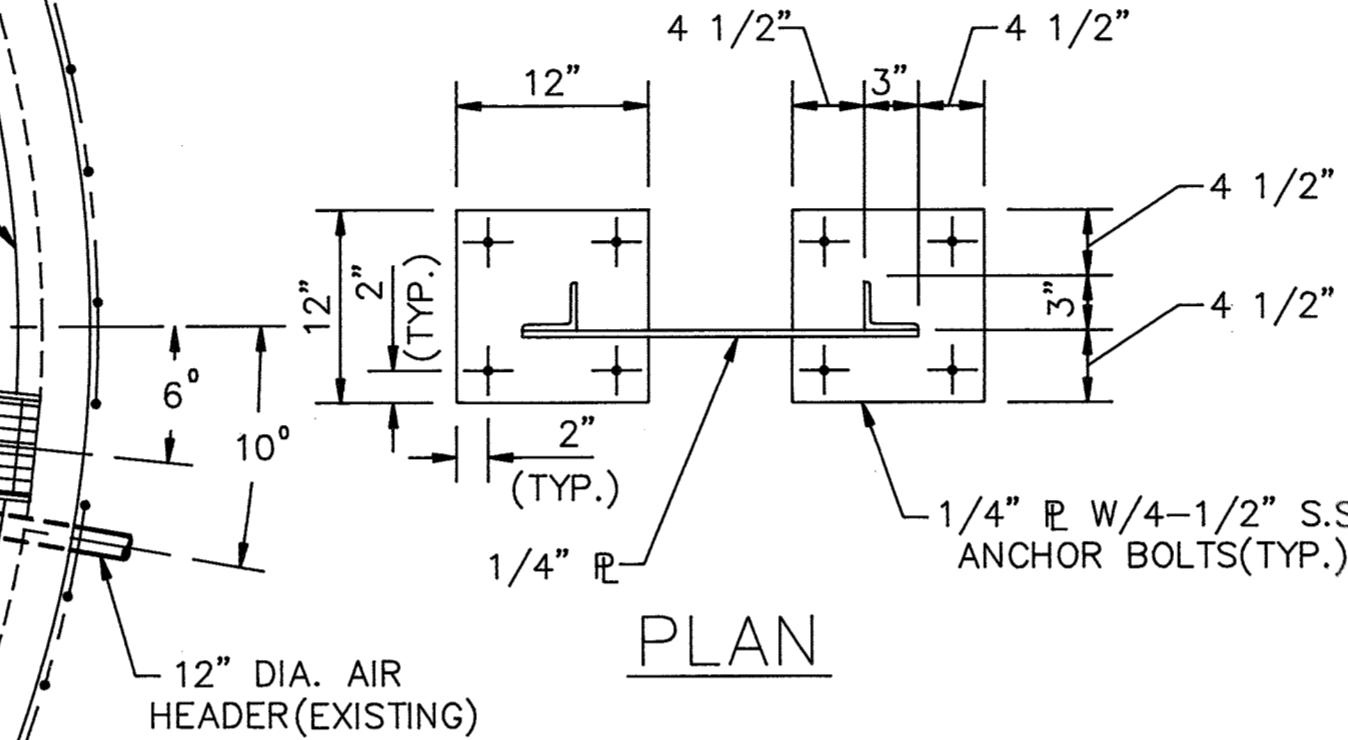


PLAN

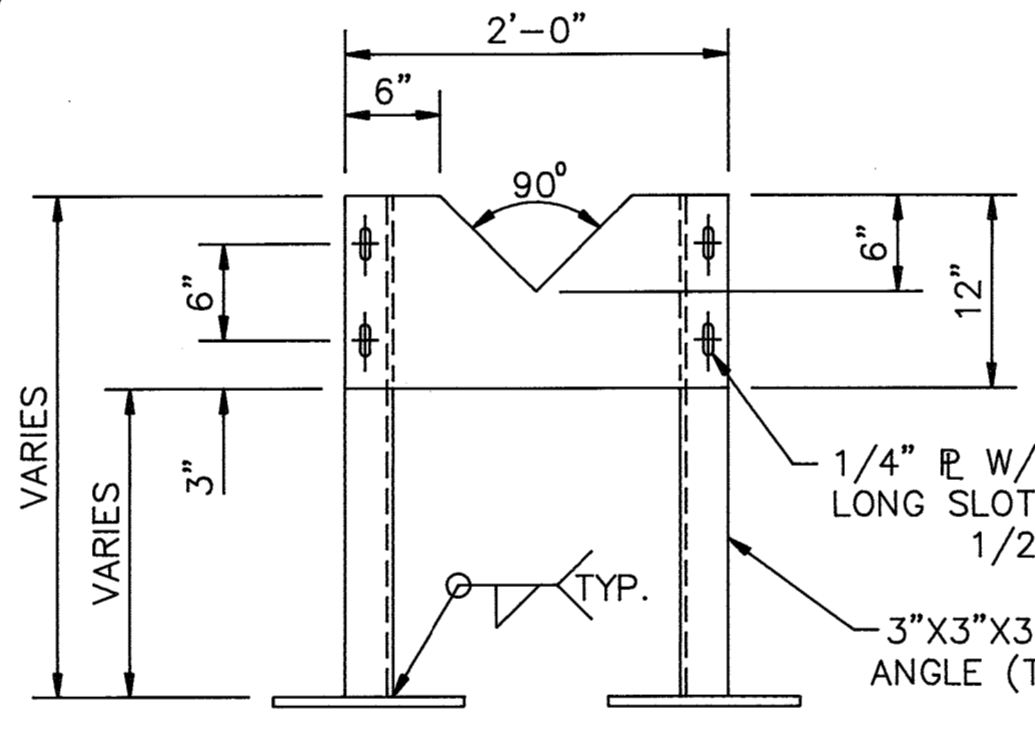


TYPICAL SECTION

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

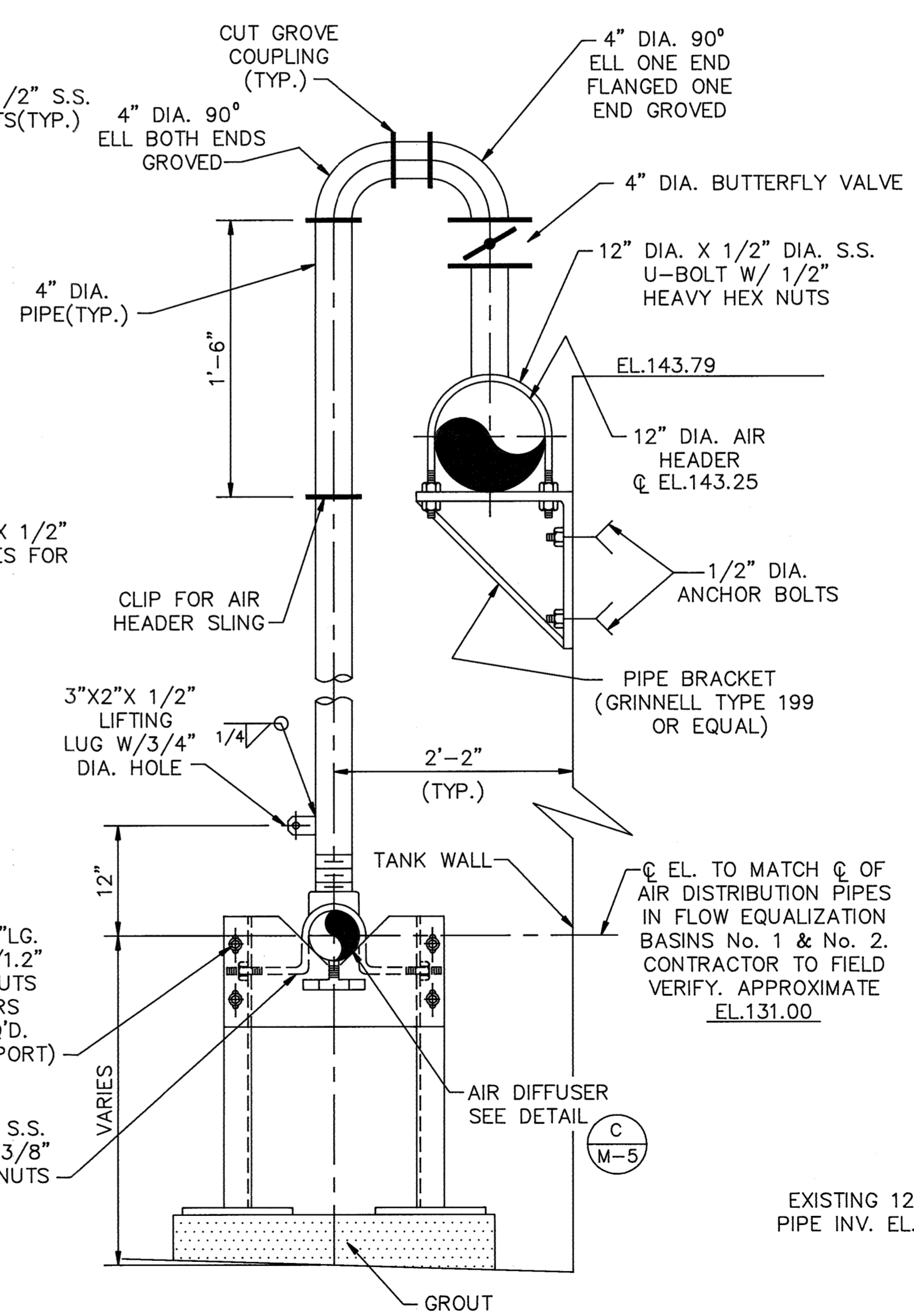


PLAN



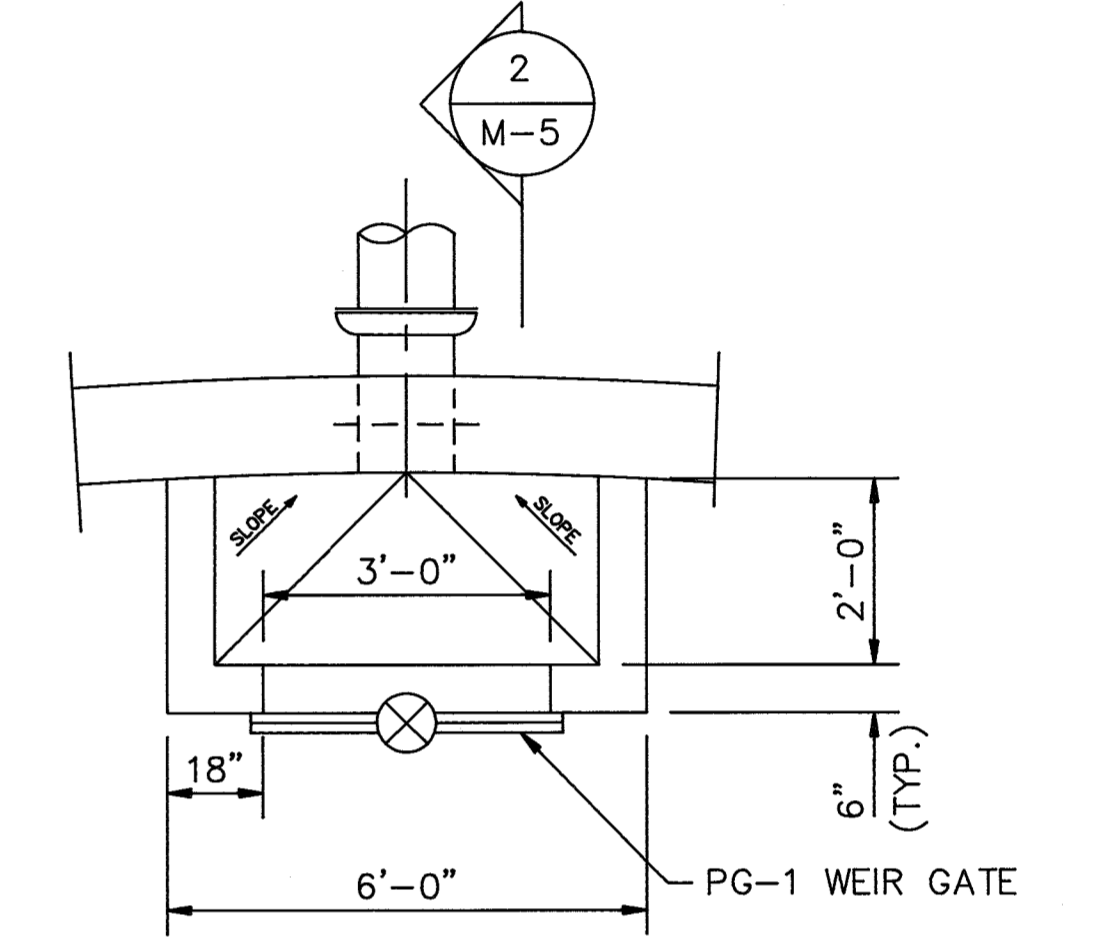
DETAIL A

SCALE: 1"=1'-0"



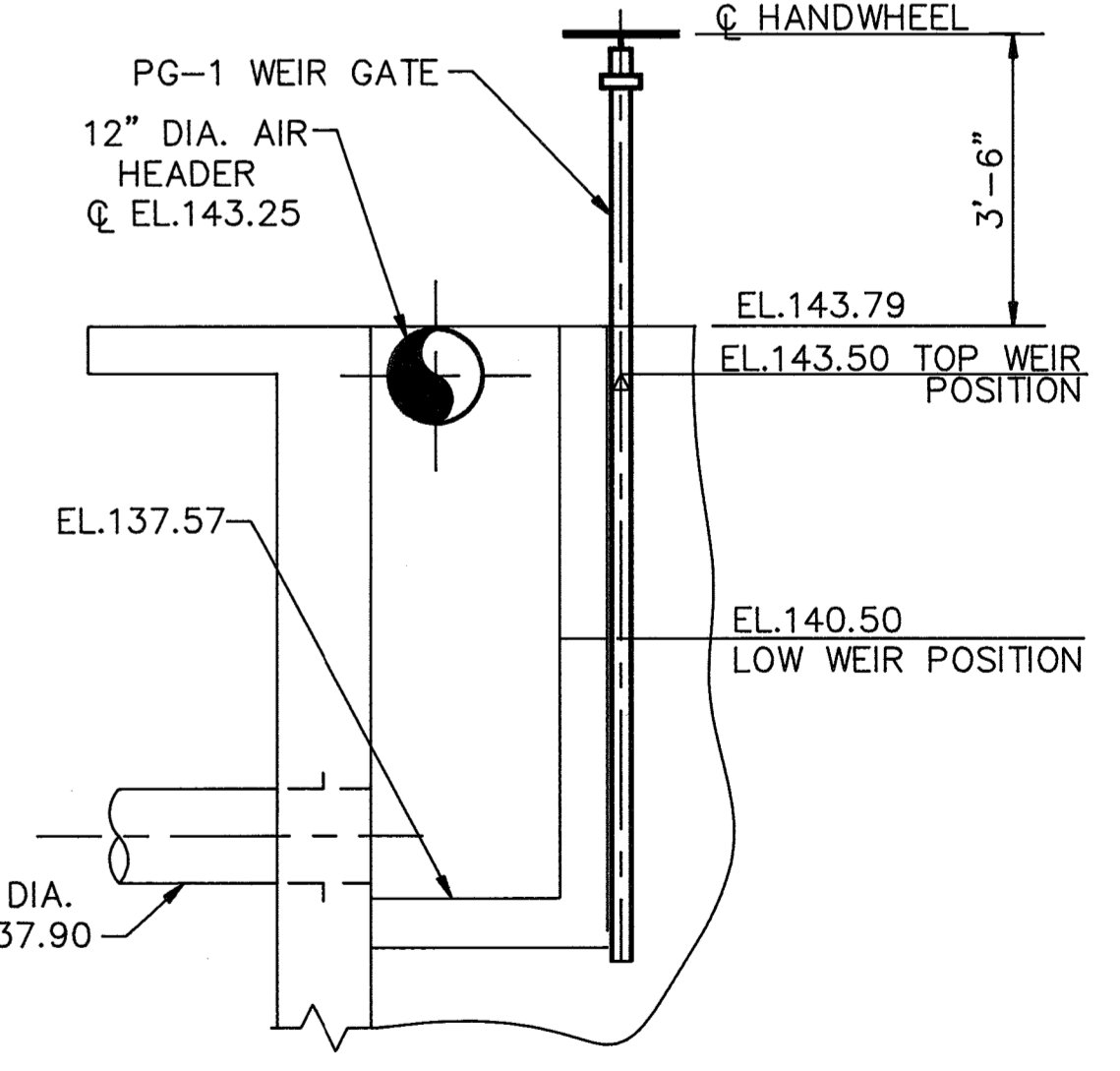
DETAIL B

SCALE: 1"=1'-0"



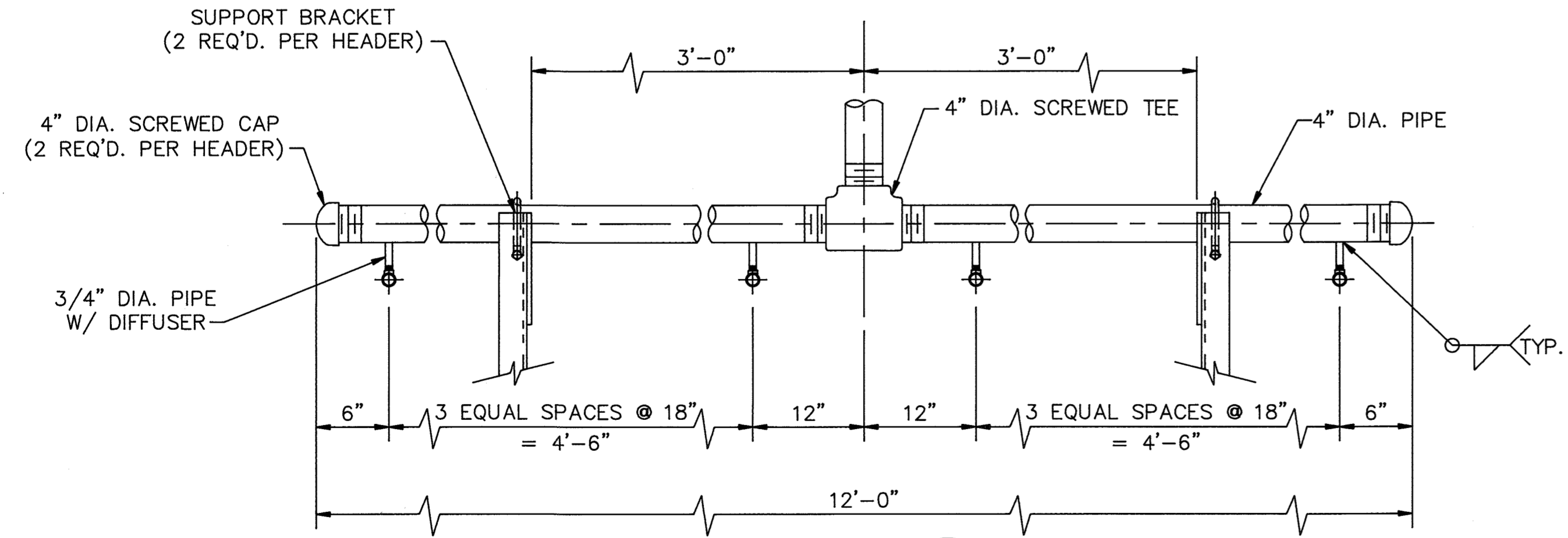
SECTION 1

SCALE: NONE



SECTION 2

SCALE: NONE



DETAIL C

SCALE: 1"=1'-0"

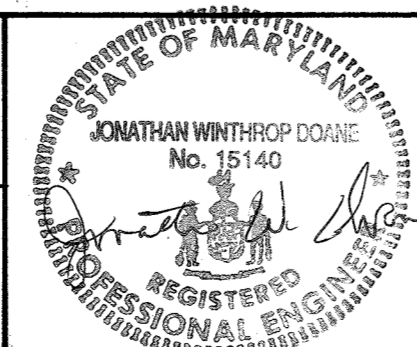
Record Drawing Notes:
 1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 3/6/92
 Act. Chief, Bureau of Engineering: *Robert A. ...* 3-6-92
 Chief, Bureau of Environmental Services: *...* 3-6-92
 Act. Chief, Utility Design Division: *...* 3-6-92

M&E Metcalf & Eddy

REG. PROF. ENGR. *Jonathan W. ...* 3/6/92

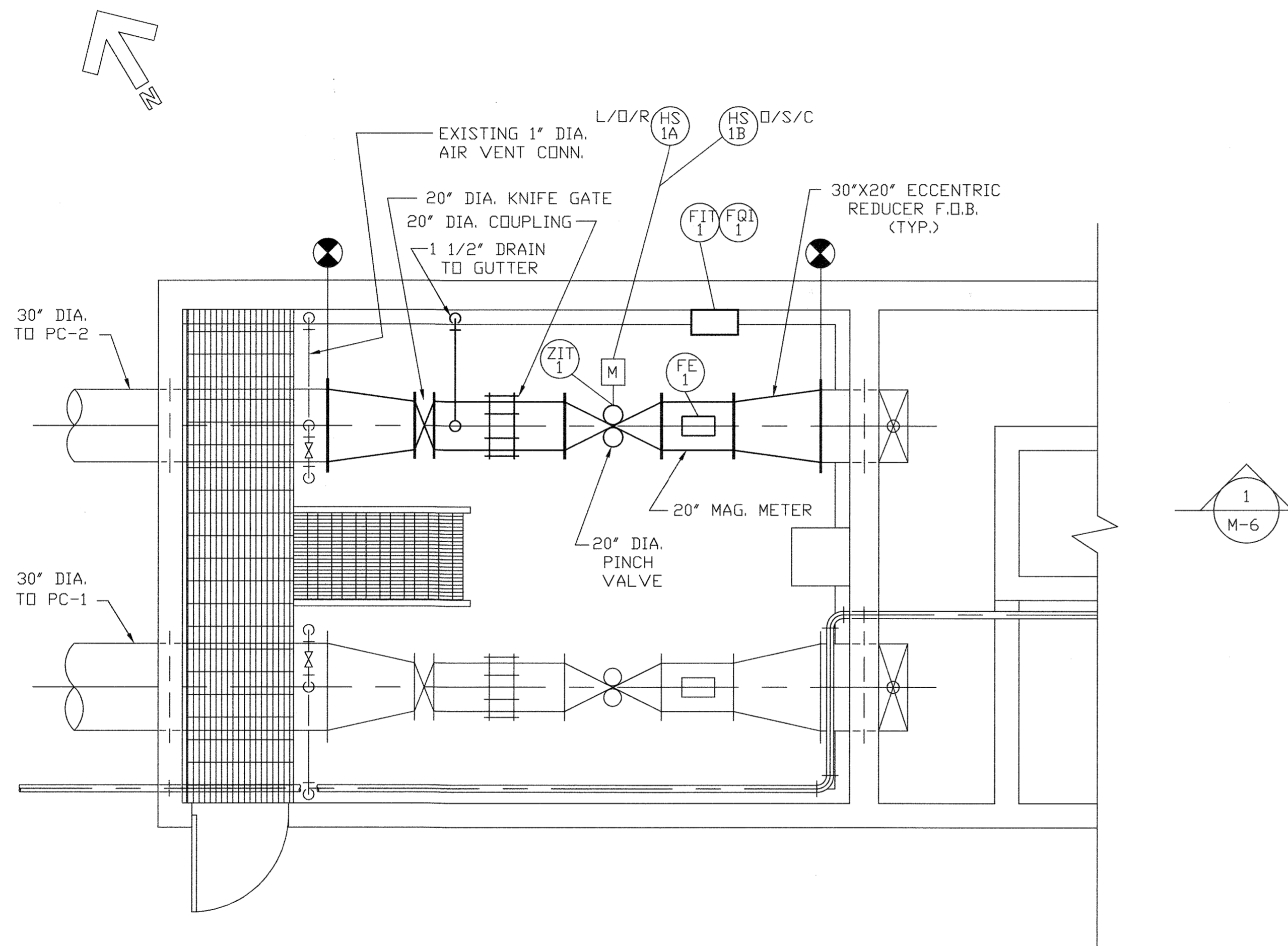


DES:	<i>P. ...</i>			
DRN:	<i>M. ...</i>			
CHK:	<i>P. ...</i>	2	RECORD DRAWING	11/16/99
DATE:	3/6/92	1	REVISED FOR BIDDING	3/6/92
BY:		NO.	REVISION	DATE

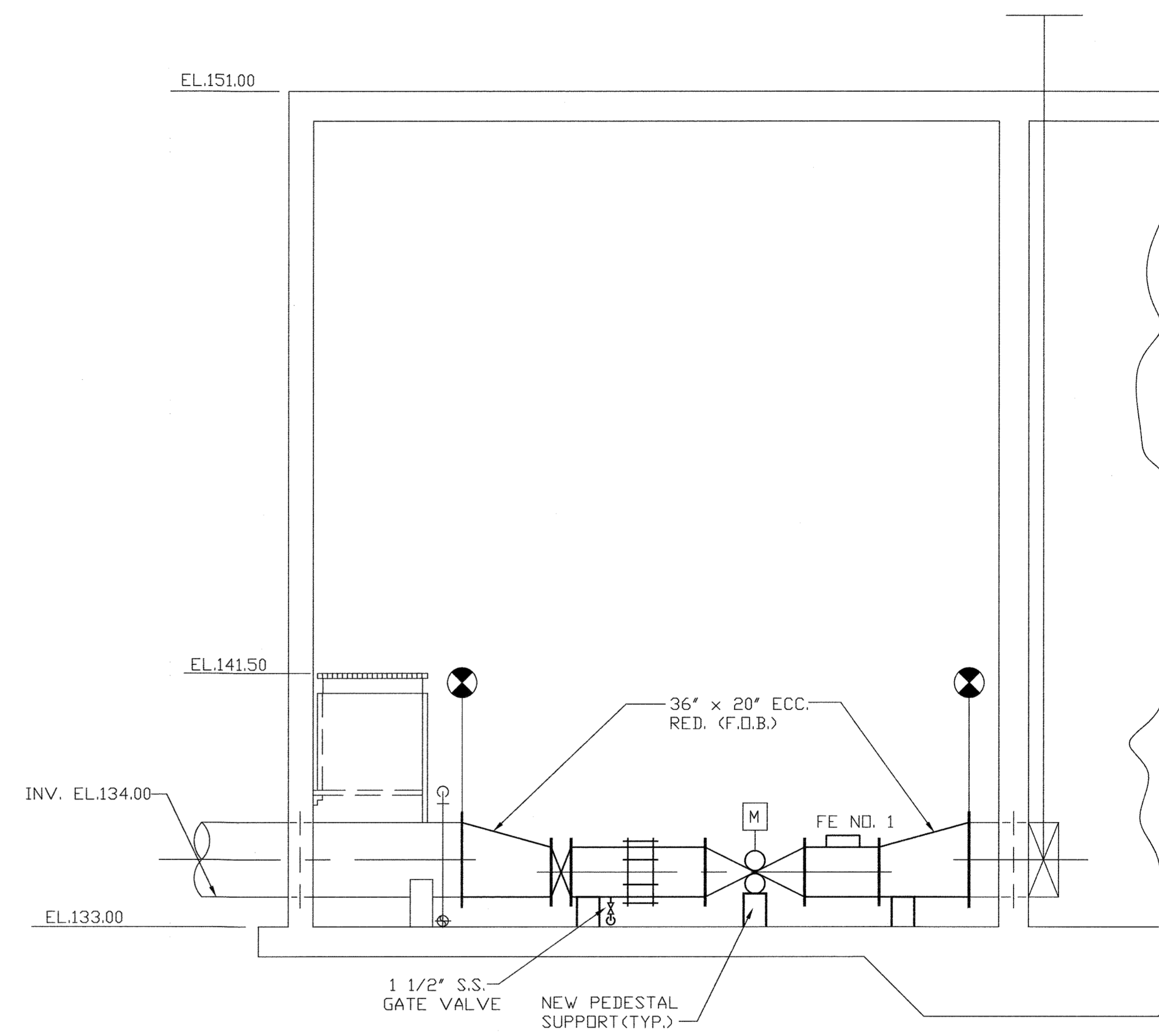
MECHANICAL
 FLOW EQUALIZATION BASIN NO.3
 MODIFICATIONS
 PLAN, SECTIONS & DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 99 OF 226
 M-5



PLAN
SCALE: 3/8"=1'-0"



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

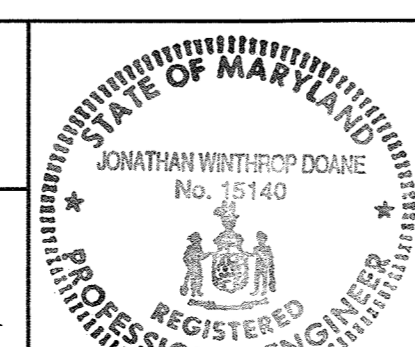
LEGEND:

- DENOTES EXISTING EQUIPMENT
- DENOTES NEW EQUIPMENT

Record Drawing Notes:
 1. All elevations should be field verified before using.
 2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John J. O'Hara* 5/7/96
 Chief, Bureau of Engineering: *Paul W. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *Jonathan W. Doane* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. Doane 5-7-96
 REG. PROF. ENGR.

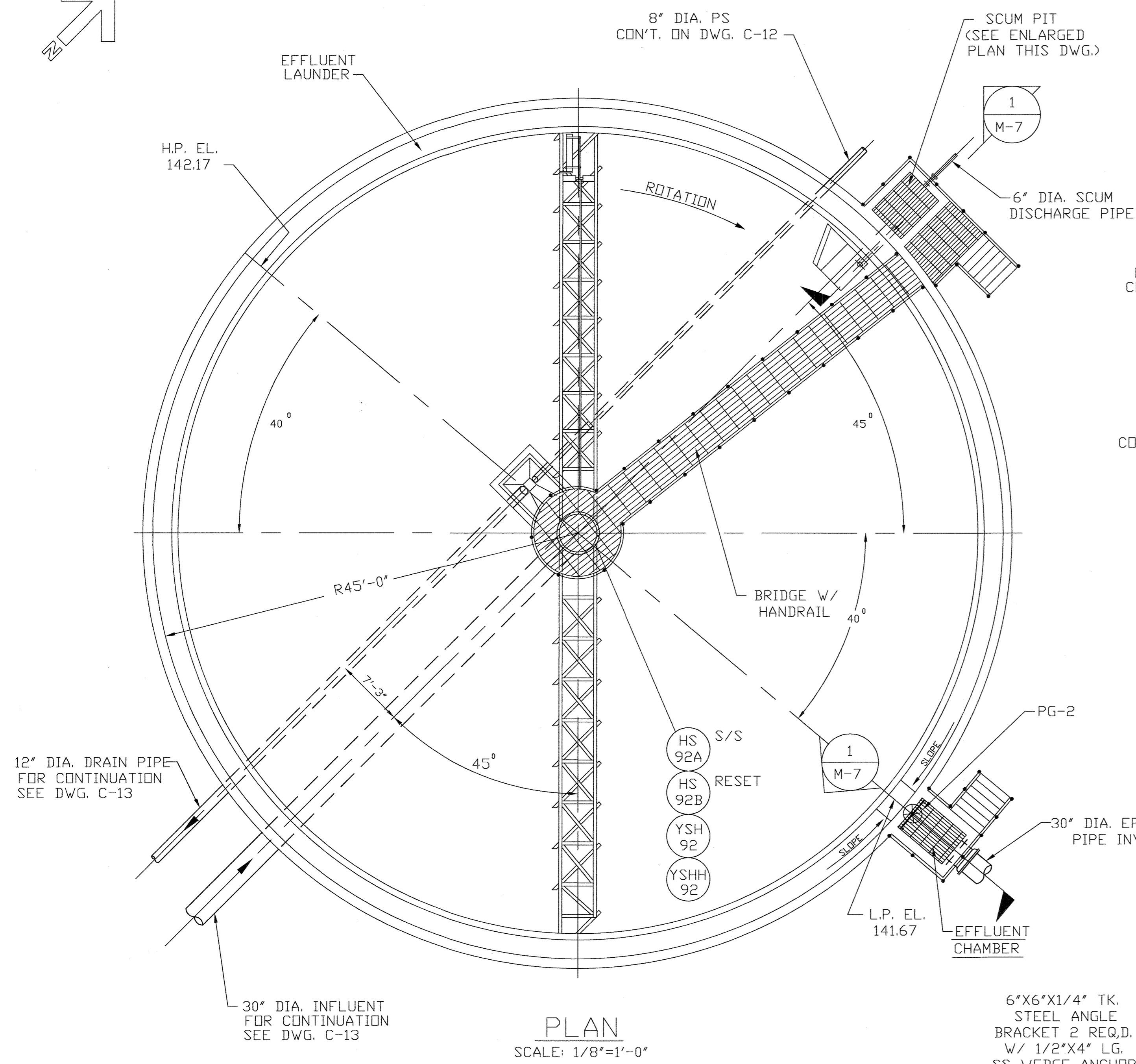
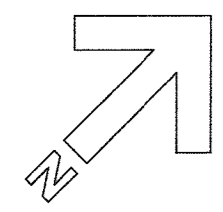


DES				
DRN	M.J.C.			
CHK	J.H.			
DATE	M.J.C.	1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION	DATE

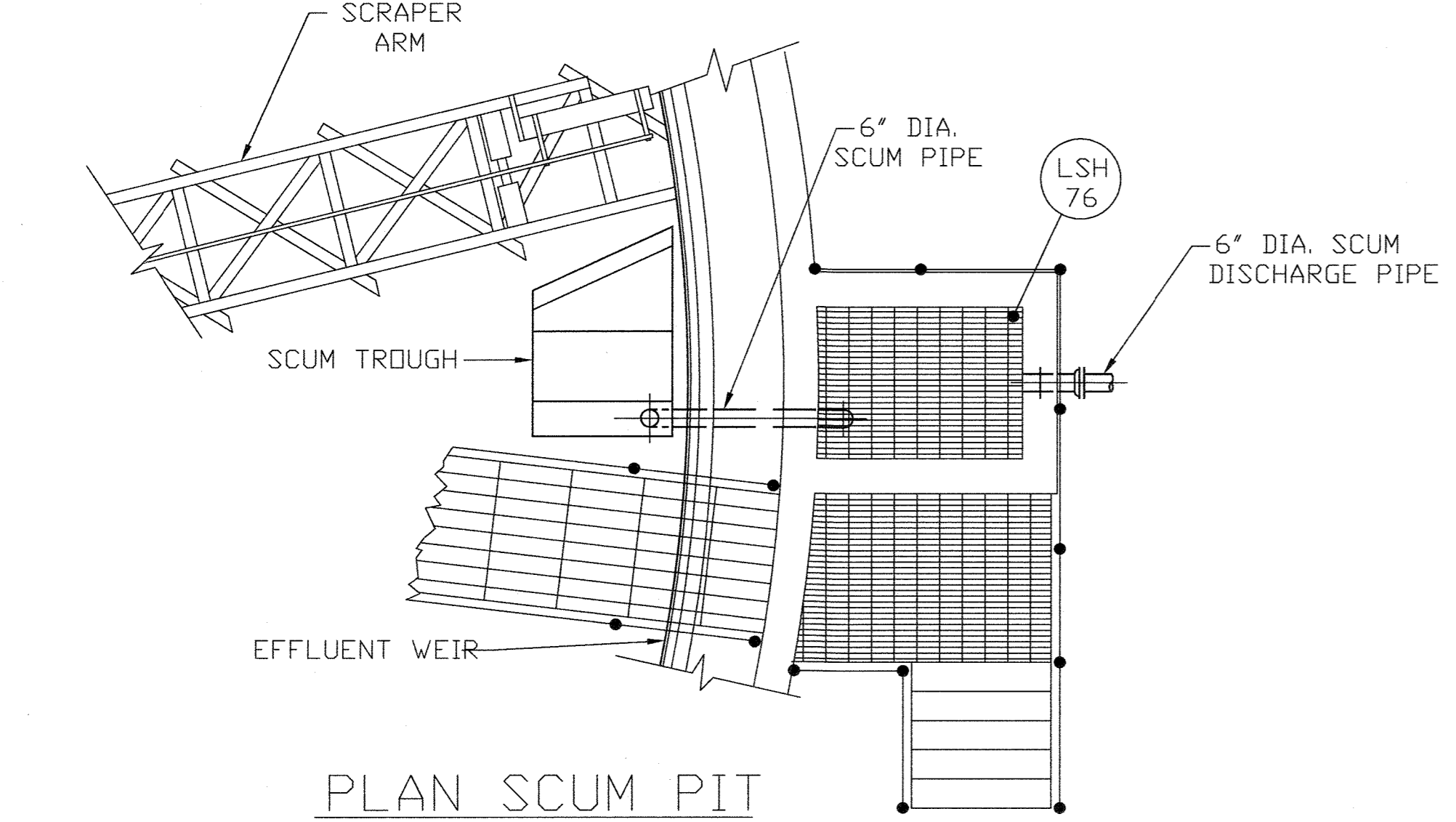
MECHANICAL
 PRIMARY METERING CHAMBER
 MODIFICATIONS
 PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

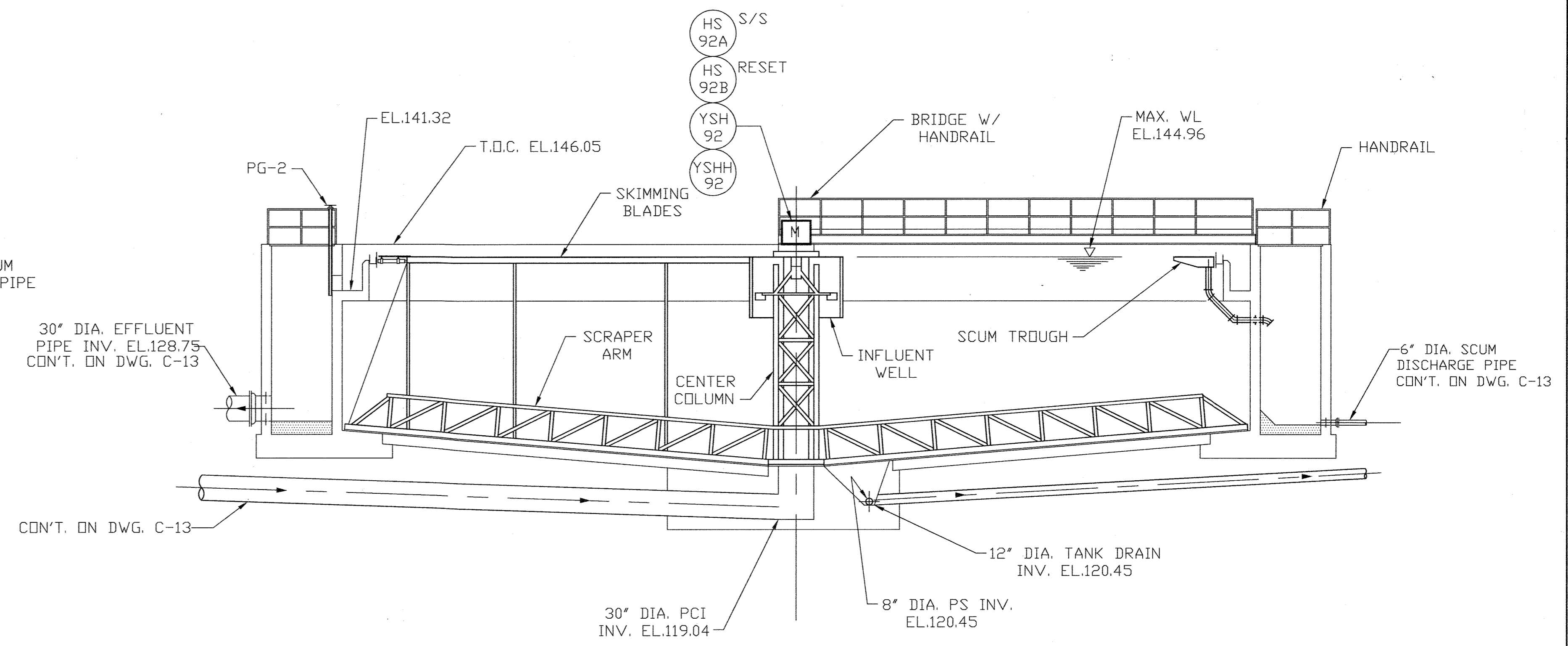
SCALE AS SHOWN
 SHEET 100 OF 226
 M-6A



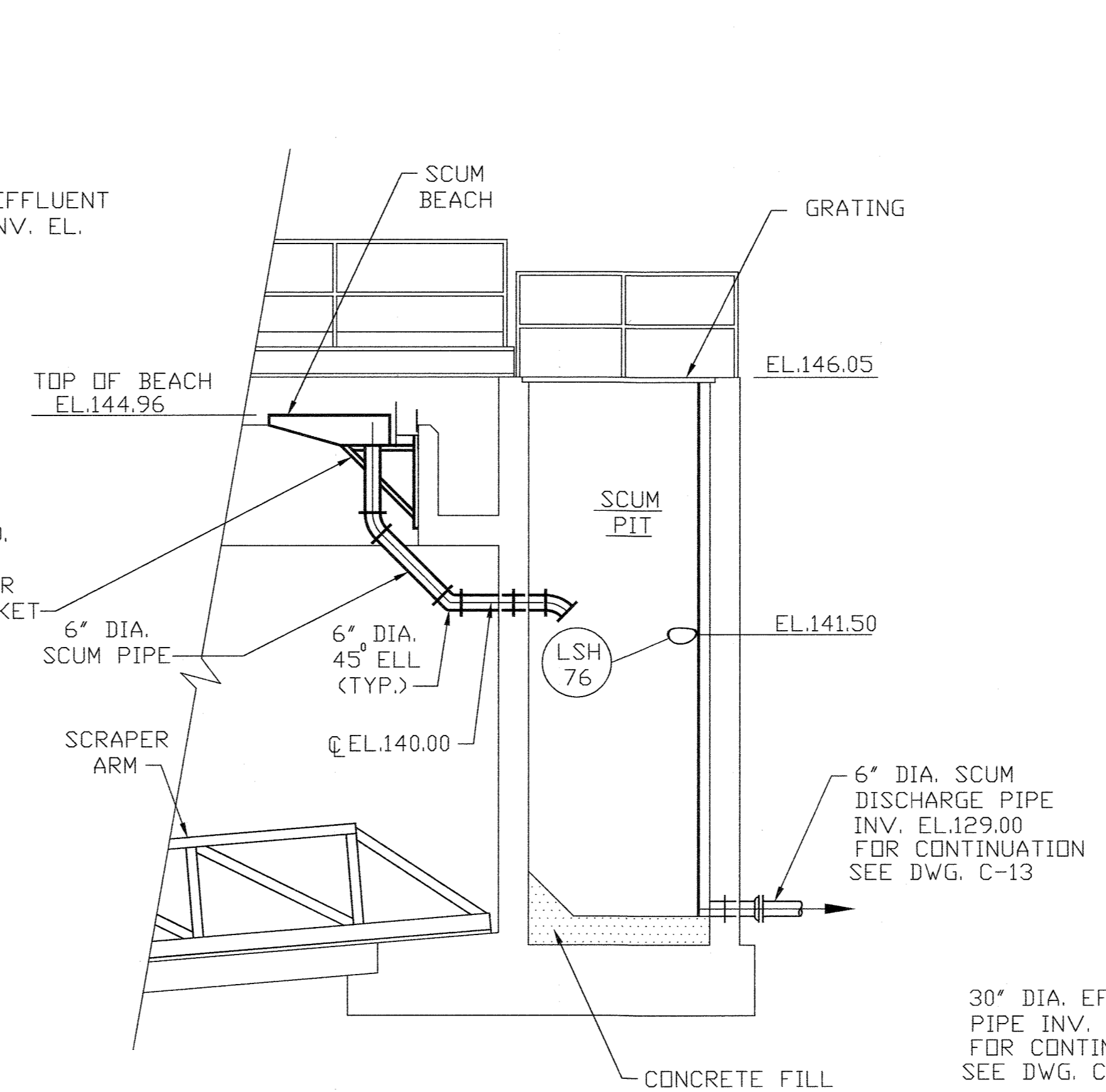
PLAN
SCALE: 1/8"=1'-0"



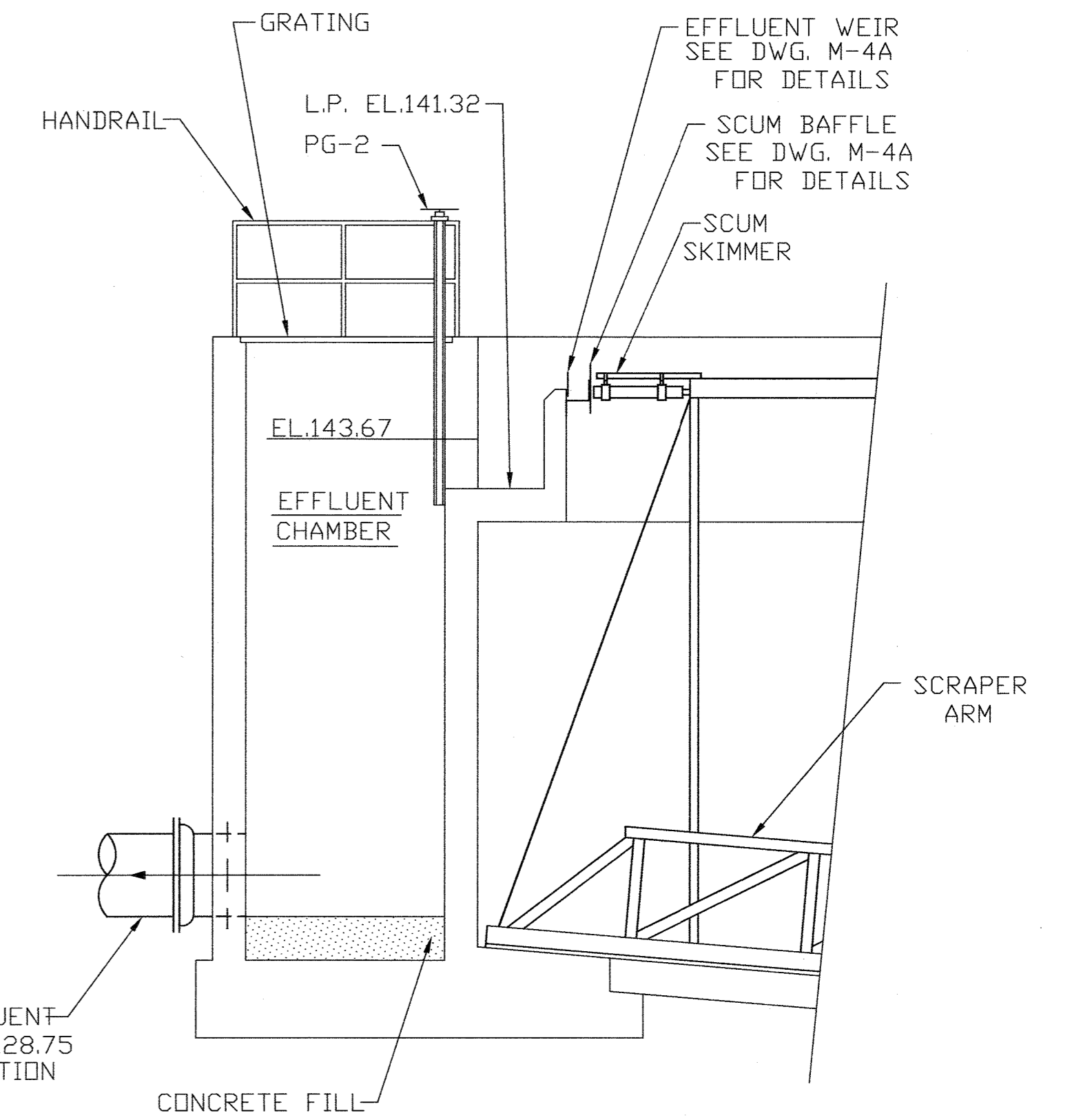
PLAN SCUM PIT
SCALE: 1/4"=1'-0"



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



SECTION 1
SCALE: 1/4"=1'-0" M-7



SECTION 2
SCALE: 1/4"=1'-0" M-7

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

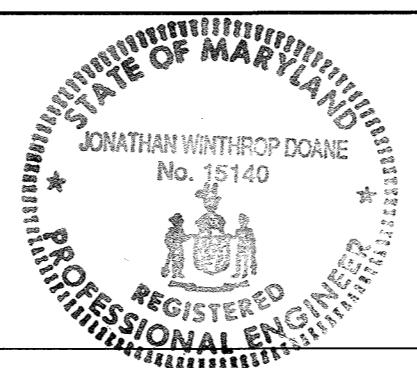
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 5/7/96
 Chief, Bureau of Environmental Services: *[Signature]* 5/7/96

Chief, Bureau of Engineering: *[Signature]* 5/7/96
 Chief, Utility Design Division: *[Signature]* 5-7-96

M&E Metcalf & Eddy

Professional Engineer: *[Signature]* 5-7-96
 Res. Prof. Engr. *[Signature]* 5-7-96



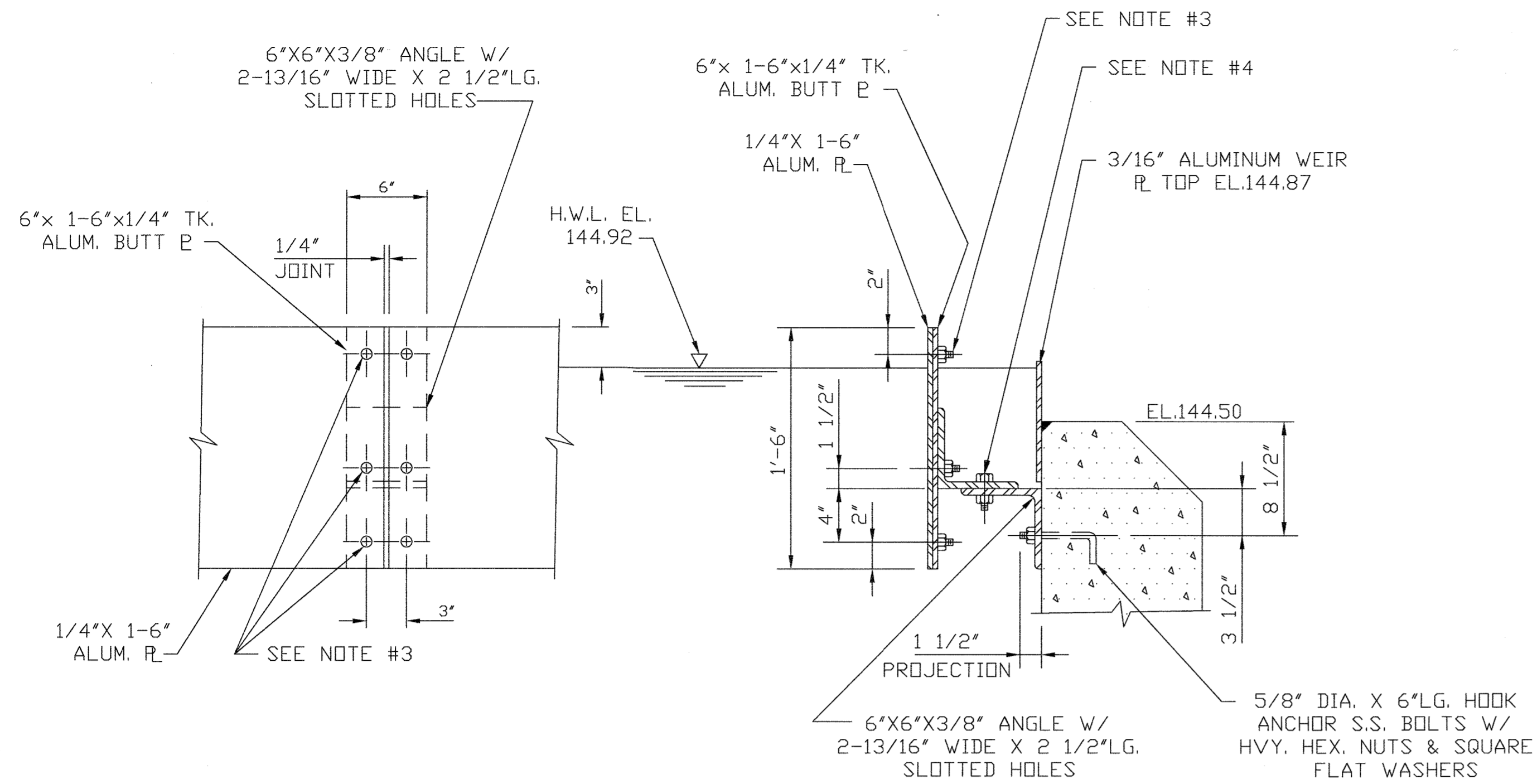
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DRN:	M.J.C.		
CHK:	J.H.		
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

MECHANICAL
PRIMARY CLARIFIER NO. 2
PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

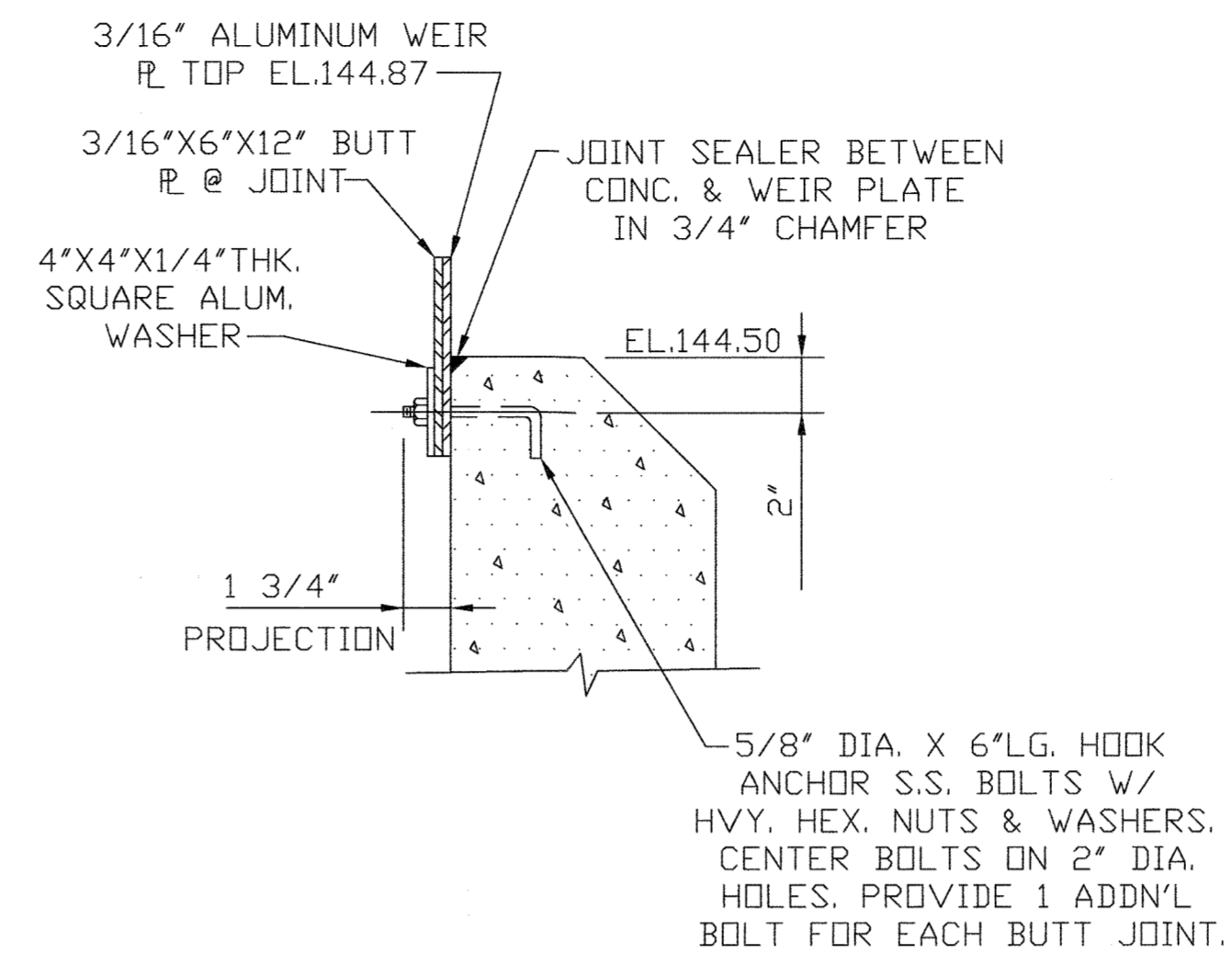
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 101 OF 226
M-7A

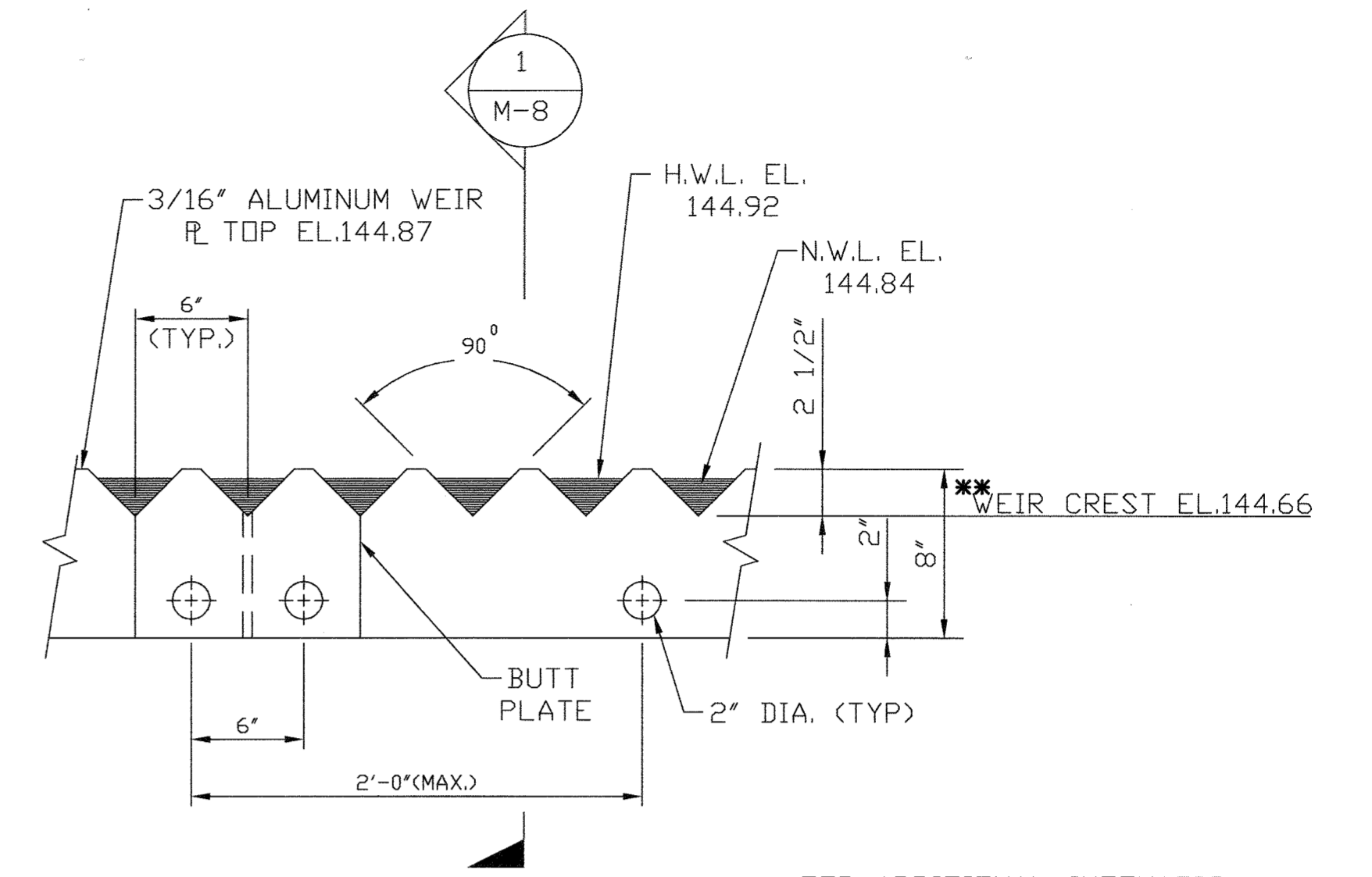


BAFFLE JOINT DETAIL

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



SECTION 1 M-8

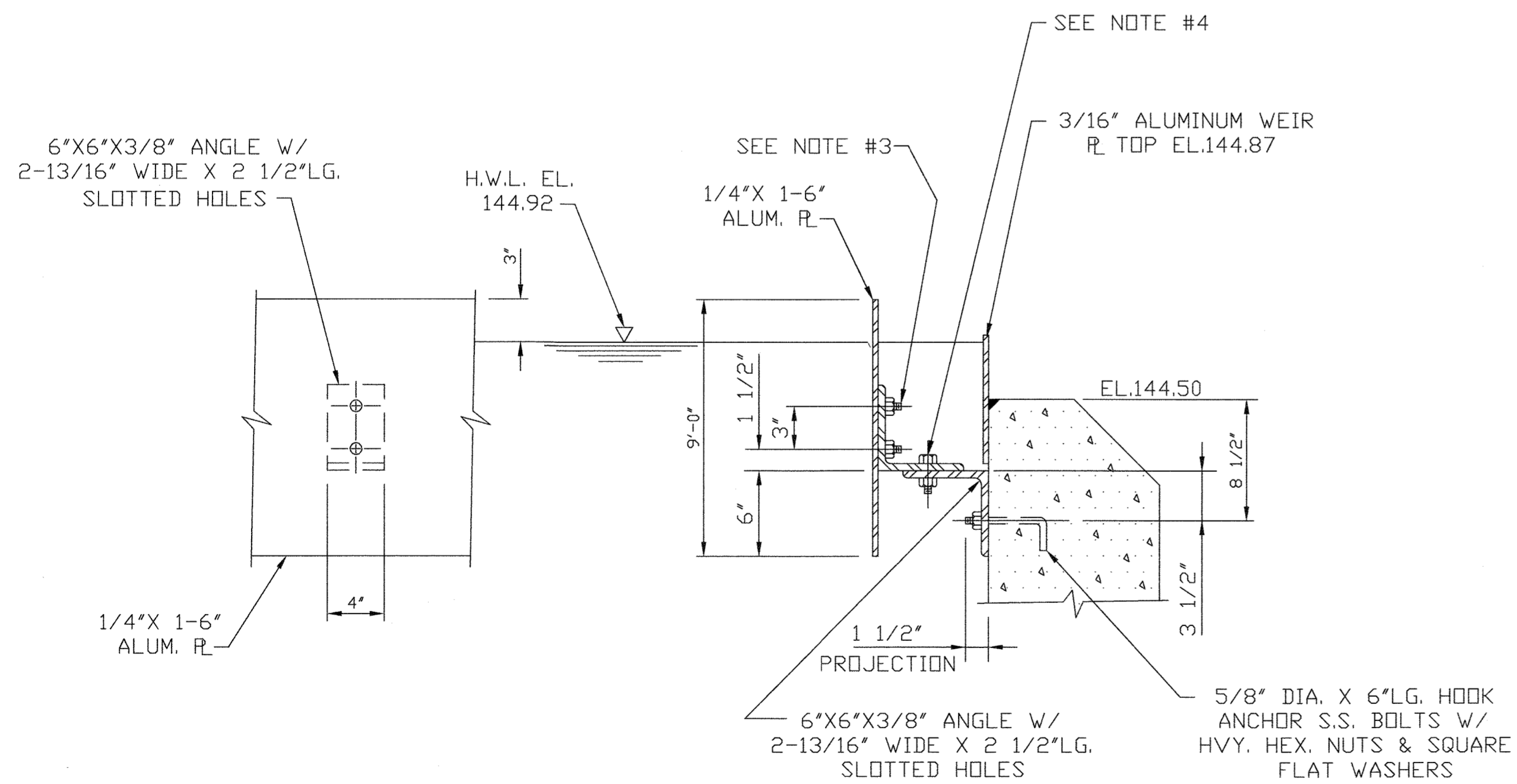


WEIR PLATE ELEVATION

** FOR ADDITIONAL INFORMATION SEE DWG. M-1 GENERAL NOTE 16

EFFLUENT WEIR DETAIL

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



SCUM BAFFLE DETAILS

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

NOTES:

1. SCUM BAFFLE ANGLE AND PLATES TO BE ALUMINUM ALLOY 6061-T6.
2. SETTING OF ANCHOR BOLTS TO BE EXACT WITH BOLTS FIXED FIRMLY IN PLACE TO ELIMINATE MOVEMENT DURING CONCRETE POUR. ALL ANCHOR BOLTS TO BE STAINLESS STEEL.
3. 1/2" DIA. X 1 3/4" LG. FLATHEAD STAINLESS STEEL BOLTS WITH HEAVY HEX NUTS AND ROUND FLAT WASHERS.
4. 3/4" DIA. X 2" LG. STAINLESS STEEL MACHINE BOLTS WITH HEAVY HEX NUTS AND WASHERS FOR 13/16" WIDE X 2" SLOTS.
5. SEE NOTES ON M-1.

Record Drawing Notes:

1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Law 5/1/94
DIRECTOR OF PUBLIC WORKS DATE

John J. O'Hara 5/1/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

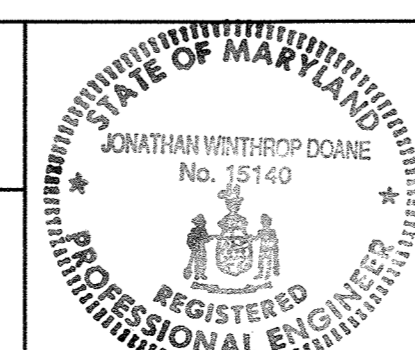
John J. O'Hara 5/1/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 5/1/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 5/1/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



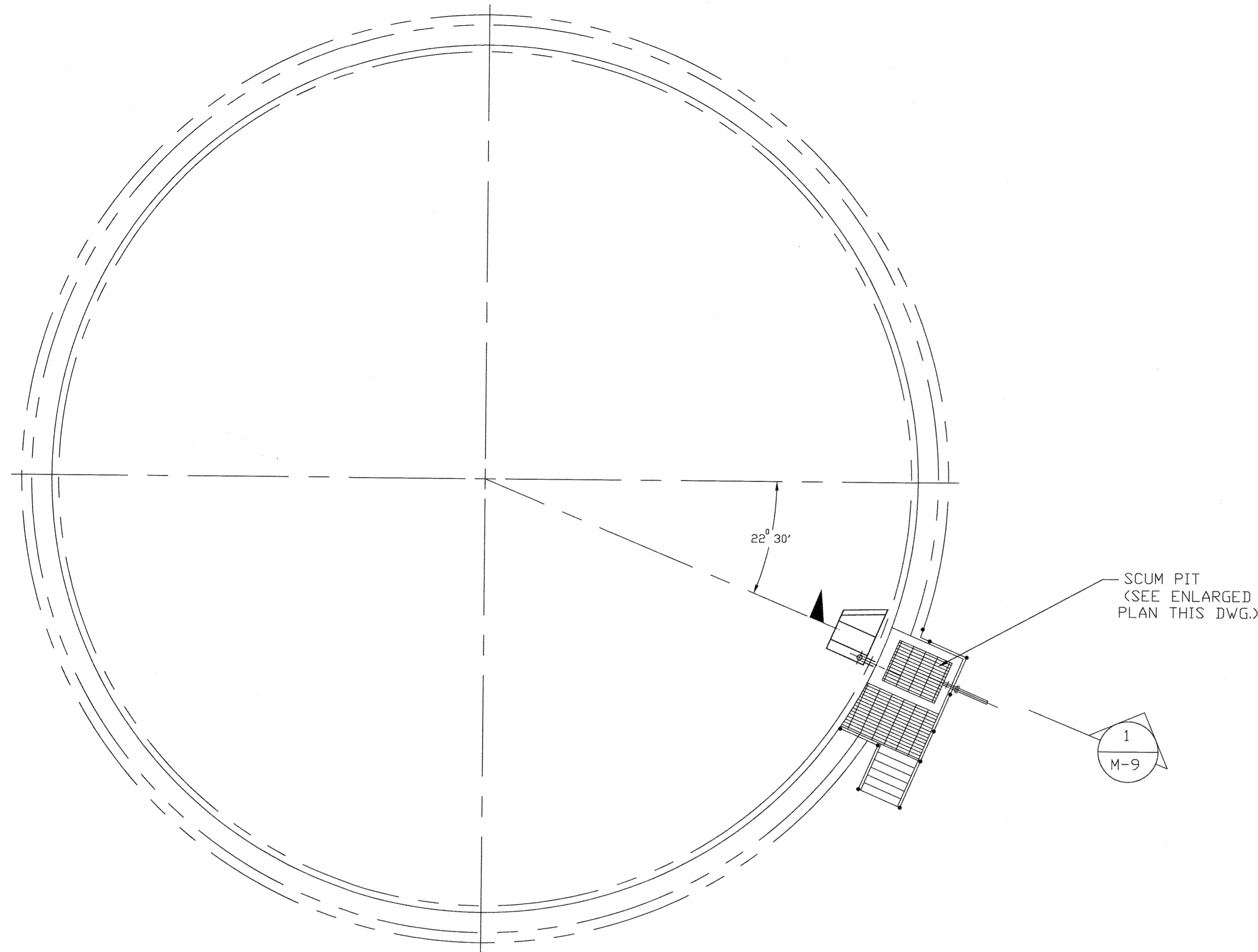
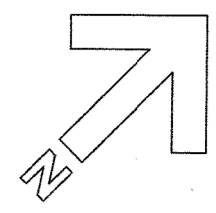
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DRN	M.J.C.			
CHK	J.H.			
DATE	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY	NO.	REVISION	DATE

MECHANICAL
PRIMARY CLARIFIER NO. 2
DETAILS

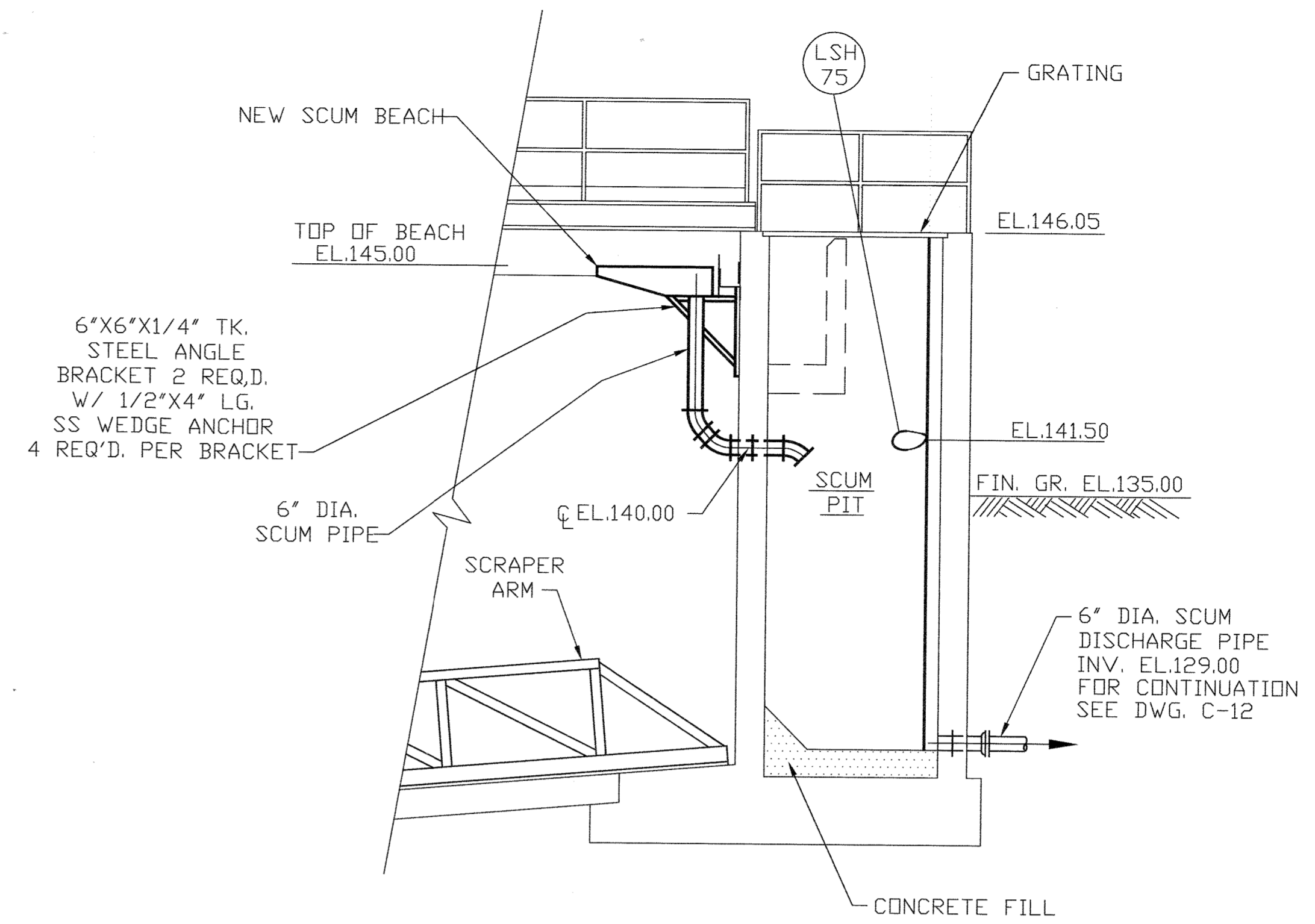
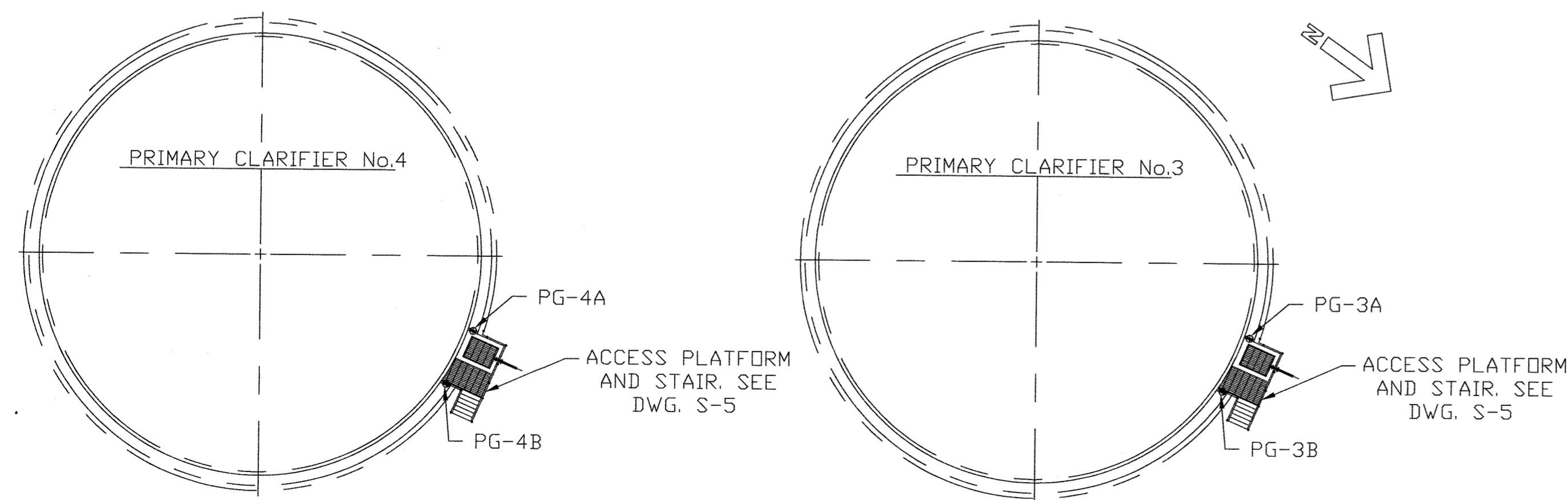
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

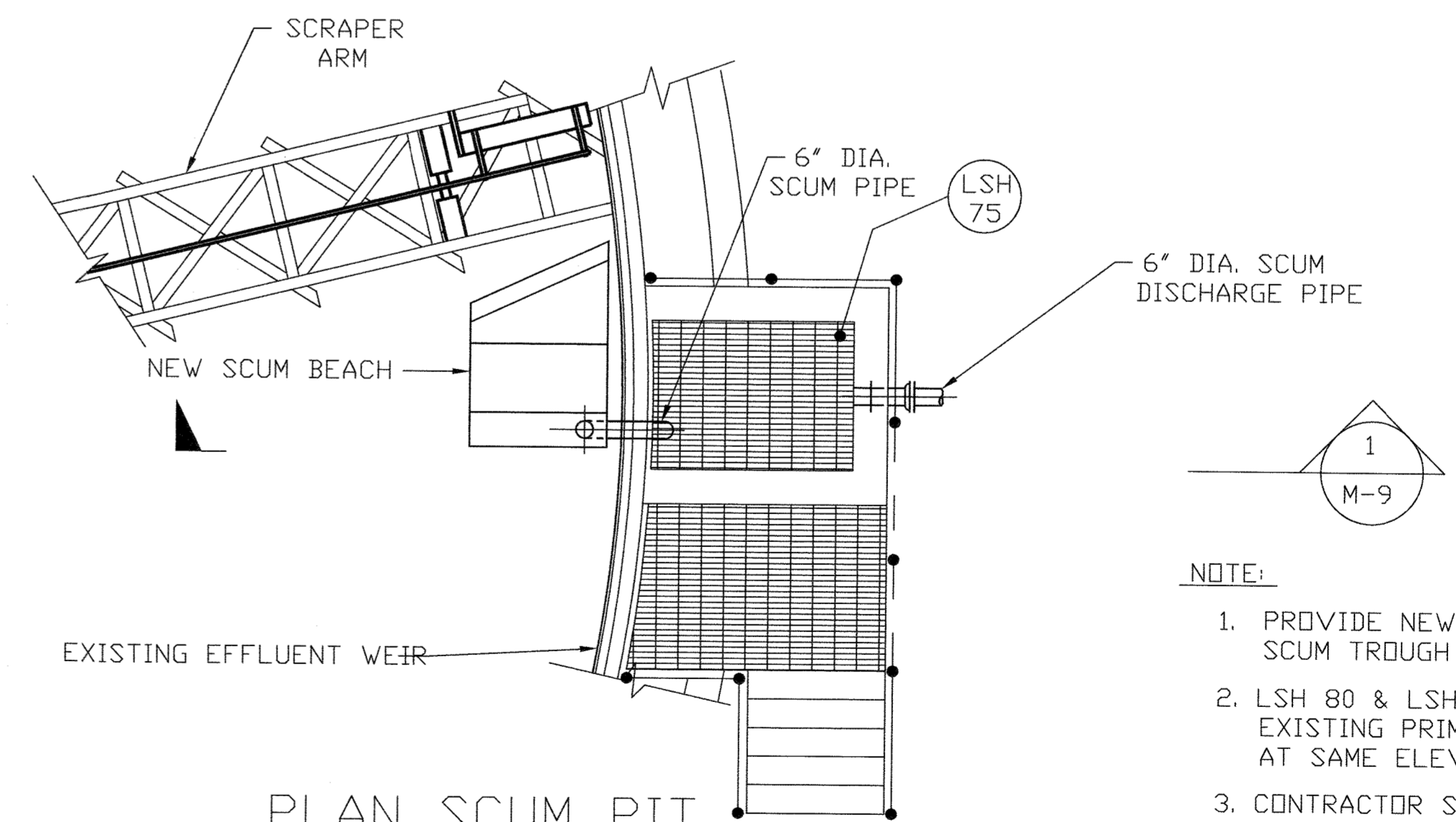
SCALE AS SHOWN
SHEET 102 OF 226
M-8A



PLAN OF PRIMARY CLARIFIER No.1
SCALE: NONE



SECTION 1
SCALE: 1/4"=1'-0" M-9



PLAN SCUM PIT
SCALE: 1/4"=1'-0"

- NOTE:
1. PROVIDE NEW FULL RADIUS SKIMMER AND SCUM TROUGH PER SPECIFICATION 11357
 2. LSH 80 & LSH 81 TO BE INSTALLED IN EXISTING PRIMARY CLARIFIERS 3 & 4 AT SAME ELEVATION.
 3. CONTRACTOR SHALL SET SCUM TROUGH AND EFFLUENT WEIR LEVELS ON ALL CLARIFIERS SUCH THAT ALL ARE AT THE SAME ELEVATION. SEE M-1 GENERAL NOTE 16 FOR ADDITIONAL REQUIREMENTS.
 4. WEIRS ARE SET AT 144.66 RELATIVE TO HOWARD COUNTY BENCH MK.

Record Drawing Notes:
 1. All elevations should be field verified before using
 2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. ...* 5/7/96
 Chief, Bureau of Engineering: *Robert ...* 5/7/96
 Chief, Bureau of Environmental Services: *John ...* 5/7/96
 Chief, Utility Design Section: *...* 5-7-96

M&E Metcalf & Eddy

Jonathan W. Doane
 No. 15140
 REGISTERED PROFESSIONAL ENGINEER

Jonathan W. Doane 5-7-96
 REG. PROF. ENGR. DATE

DES:					
DRN:	M.J.C.				
CHK:	J.H.				
DATE:	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY NO.	REVISION		DATE	

MECHANICAL

PRIMARY CLARIFIER NO. 1
 PLAN AND SECTIONS
 MODIFICATIONS

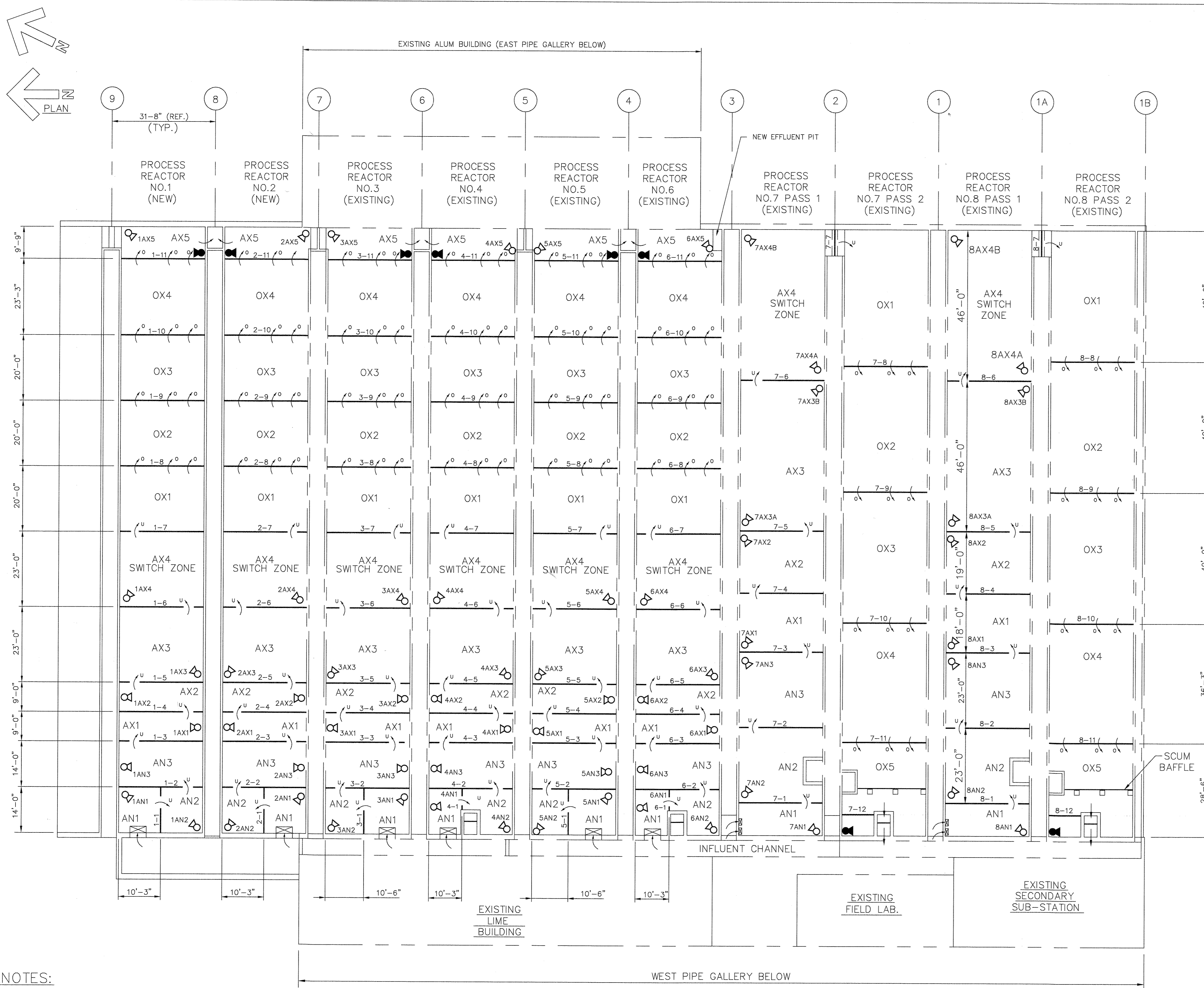
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 103 OF 226

M-9A



PROCESS REACTOR INTERNAL BAFFLE WALL SCHEDULE				
WALL TYPE	BAFFLE WALL DESIGNATION	LOCATION OF OPENING IN BAFFLE WALL	SIZE OF OPENINGS W x H (FT)	TOP OF BAFFLE ELEVATION
1	1-1, 2-1, 3-1, 5-1	EAST END BOTTOM	6 x 2	143.50
2	4-1, 6-1	EAST END BOTTOM	3 x 4	143.50
3	1-4, 1-6, 2-5, 3-5 4-4, 4-6, 5-5, 6-4, 6-6	SOUTH END BOTTOM	6 x 2	143.50
4	1-5, 2-4, 2-6, 3-4, 3-6, 4-5, 5-4 5-6, 6-5	NORTH END BOTTOM	6 x 2	143.50
5	1-8, 1-9, 1-10, 2-8, 2-9 2-10, 3-8, 3-9, 3-10, 4-8 4-9, 4-10, 5-8, 5-9, 5-10 6-8, 6-9, 6-10	FULL WIDTH TOP. 1 BOTTOM OPENINGS CENTERED	1.5X1.5	140.50
6	7-1, 7-5, 8-1, 8-5	SOUTH END BOTTOM	6 x 4	143.50
7	7-2, 7-4, 7-6, 8-2, 8-4 8-6	NORTH END BOTTOM	6 x 4	143.50
8	7-8, 7-9, 7-10, 7-11, 8-8 8-9, 8-10, 8-11	FULL WIDTH TOP. 1 BOTTOM OPENINGS CENTERED	2 x 2	140.50
9	1-11, 2-11, 3-11, 4-11, 5-11, 6-11	FULL WIDTH TOP W/SCUM BAFFLE	-	140.50
10	1-7, 4-7, 6-7, 1-3, 4-3 6-3	NORTH END BOTTOM	2 x 2	143.50
11	7-7, 8-7	CENTERED BOTTOM	6 x 2	143.50
12	2-3, 3-3, 5-3, 2-7, 3-7 5-7	SOUTH END BOTTOM	2 x 2	143.50
13	7-3, 8-3	SOUTH END BOTTOM	4 x 2	143.50
14	7-12, 8-12	FULL WIDTH TOP W/1 BOTTOM SOUTH END	0.5 X 0.5	140.50
15	1-2, 4-2, 6-2	NORTH END BOTTOM	6 x 2	143.50
16	2-2, 3-2, 5-2	SOUTH END BOTTOM	6 x 2	143.50

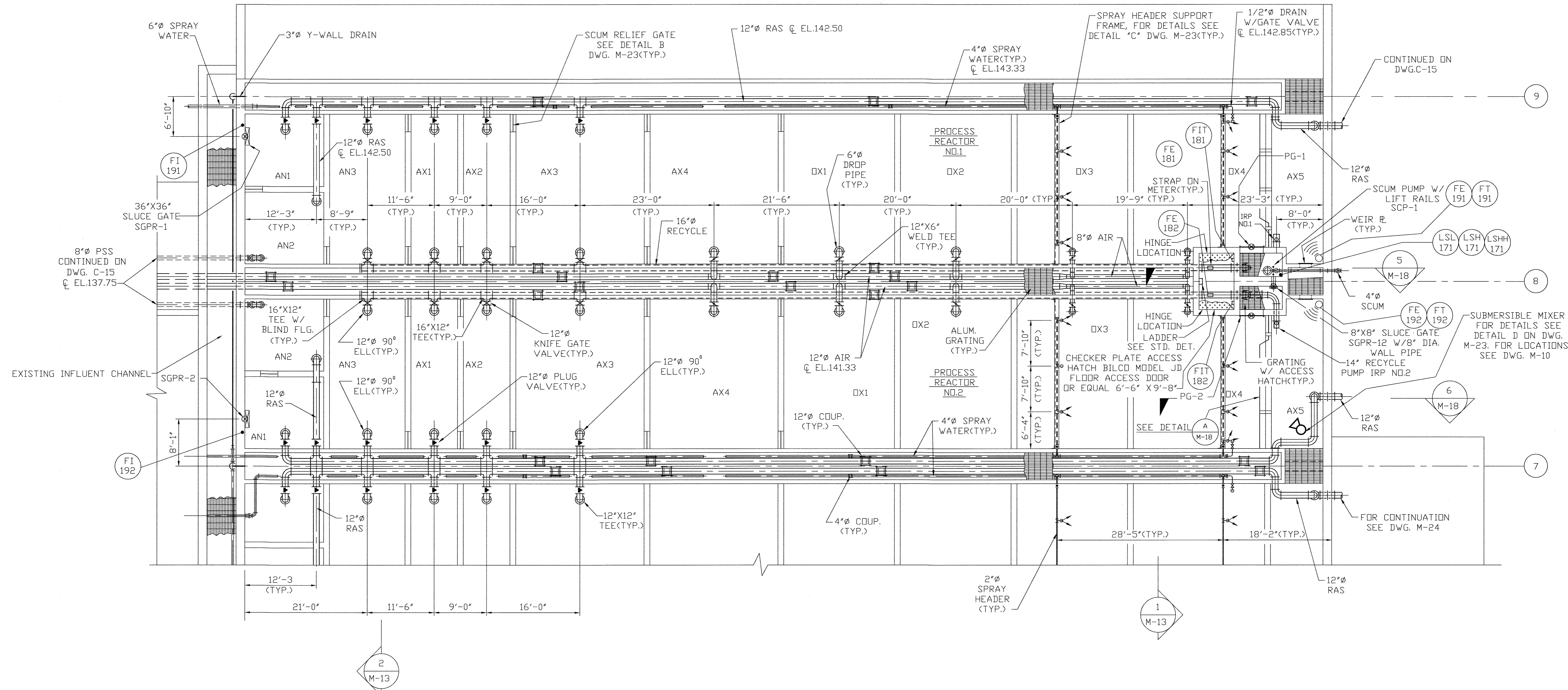
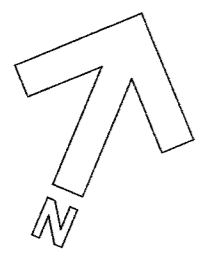
SUBMERSIBLE MIXER SCHEDULE			
MIXER DESIGNATION	LOCATION OF MIXER IN ZONE	MIXER DIRECTION OF PUMPING	MIXER HP/RPM
1AN1, 1AX5 3AX5, 5AX5	NORTHEAST CORNER	45° SOUTHWEST	1.5 /1130
7AN1, 8AN1, 1AN2, 4AN2 6AN2	SOUTHEAST CORNER	45° NORTHEAST	1.5 /1130
1AN3, 4AN3, 6AN3, 2AX1 3AX1, 5AX1, 1AX2, 4AX2 6AX2, 6AN1, 4AN1	NORTH WALL CENTER	SOUTH	1.5 /1130
1AX4, 2AX3, 3AX3, 4AX4 5AX3, 6AX4, 7AN2, 7AX1 7AX3A, 8AN2, 8AX1, 8AX3A	NORTHWEST CORNER	45° SOUTHEAST	3.2 /1700
1AX3, 4AX3, 5AX4, 6AX3 7AX4A, 8AX4A, 2AX4, 3AX4	SOUTHWEST CORNER	45° NORTHEAST	3.2 /1700
7AX3B, 8AX3B	SOUTH EAST CORNER	45° NORTHWEST	3.2 /1700
1AX1, 2AN3, 2AX2, 3AN3 3AX2, 4AX1, 5AN3, 5AX2 6AX1	SOUTH WALL CENTER	NORTH	1.5 /1130
2AN2, 3AN2, 5AN2	NORTHEAST CORNER	45° SOUTHEAST	1.5 /1130
2AN1, 3AN1, 5AN1, 2AX5, 4AX5, 6AX5	SOUTHEAST CORNER	45° NORTHWEST	1.5 /1130
7AN3, 7AX2, 7AX4B, 8AN3 8AX2, 8AX4B	NORTHEAST CORNER	45° SOUTHWEST	3.2 /1700
TOTAL QUANTITY 1.5 HP UNITS		38 INSTALLED + 10 SHELF SPARES	
TOTAL QUANTITY 3.2 HP UNITS		28 INSTALLED (SPARES EXISTING)	

NOTES:
1. PIPING, FLOW METERS & VALVES NOT SHOWN FOR CLARITY. ALL PUMP & MIXER LOCATIONS ARE APPROXIMATE. FOR LOCATIONS OF PIPING, METERS & VALVES SEE SPECIFIC REACTOR DRAWINGS.

PLAN
SCALE: 1/16"=1'-0"

LEGEND:

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>Samuel C. Co</i> 5/1/94 Chief, Bureau of Environmental Services: <i>John J. O'Hara</i> 5/1/94		M&E Metcalf & Eddy Chief, Utility Design Division: <i>David W. Jones</i> 5-7-94		STATE OF MARYLAND JONATHAN WINTHROP DOANE No. 15140 REGISTERED PROFESSIONAL ENGINEER		DES: _____ DRN: M.J.C. CHK: J.H. DATE: M.J.C. 1 RECORD DRAWING 11/2/94 BY NO. REVISION DATE		MECHANICAL PROCESS REACTORS GENERAL PLAN		LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 104 OF 226 M-10A
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PLAN @ EL.144.00
SCALE: 1/8"=1'-0"

- Record Drawing Notes:
- All elevations should be field verified before using
 - Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam M. Shaw 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

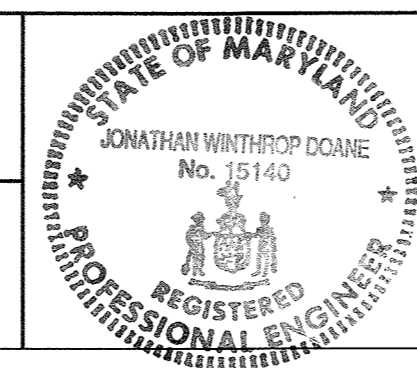
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Paul J. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Debra A. ... 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Done 5-7-96
REG. PROF. ENGR. DATE



DES					
DRN					
CHK					
DATE	M.J.C.	1	RECORD DRAWING	11/2/94	
	BY	NO.	REVISION	DATE	

MECHANICAL

SINGLE PASS PROCESS
REACTORS 1 AND 2
UPPER PLAN

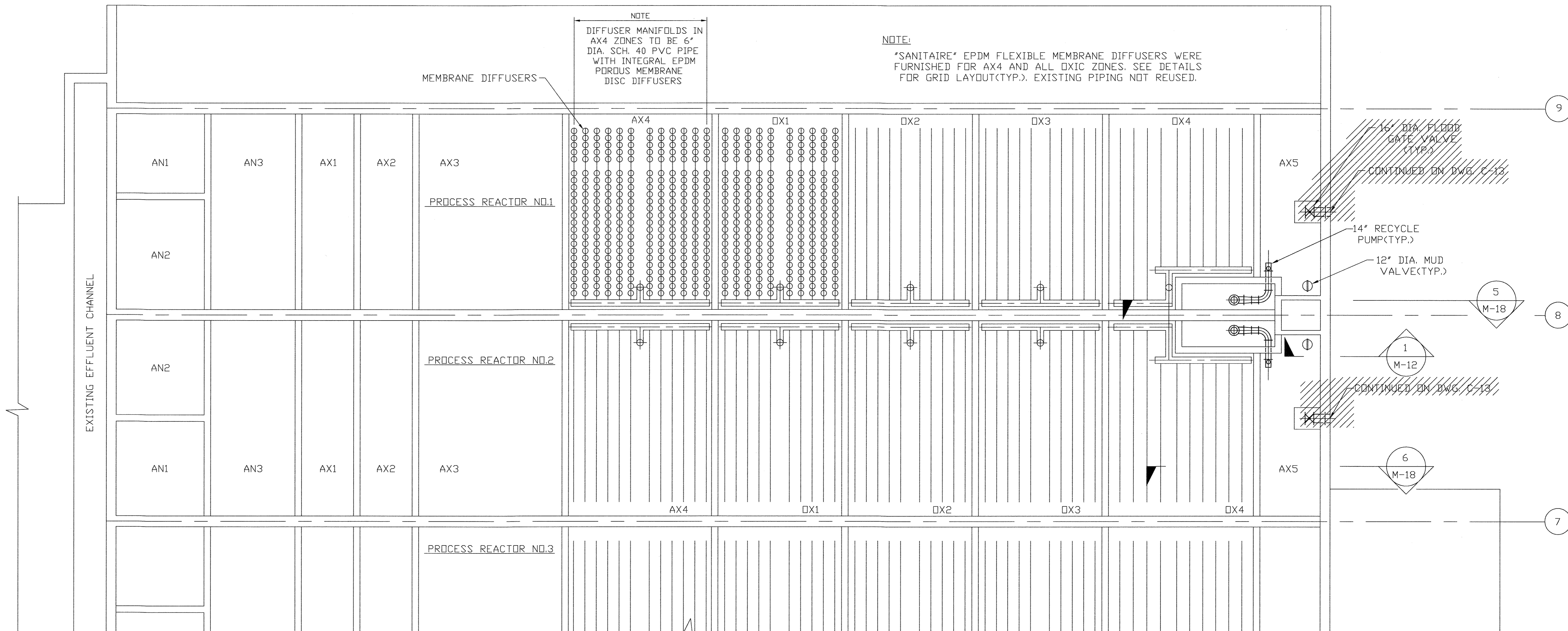
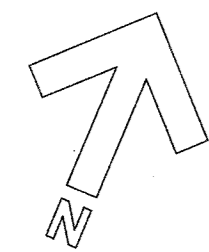
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 105 OF 226

M-11A

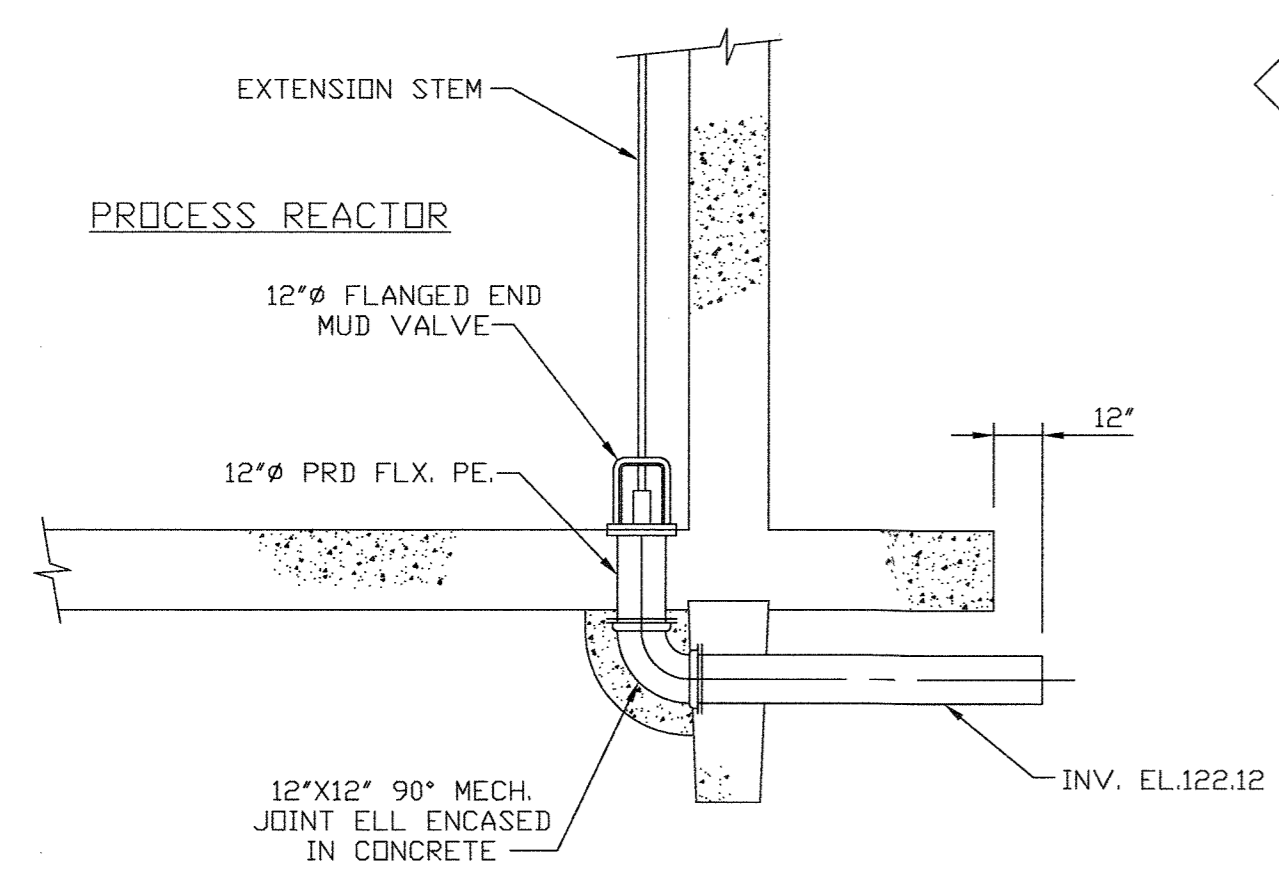


NOTE:
DIFFUSER MANIFOLDS IN AX4 ZONES TO BE 6" DIA. SCH. 40 PVC PIPE WITH INTEGRAL EPDM POROUS MEMBRANE DISC DIFFUSERS

NOTE:
"SANITAIRE" EPDM FLEXIBLE MEMBRANE DIFFUSERS WERE FURNISHED FOR AX4 AND ALL OXIC ZONES. SEE DETAILS FOR GRID LAYOUT(TYP.). EXISTING PIPING NOT REUSED.

240 FLEXIBLE MEMBRANE DIFFUSERS SHALL BE INSTALLED IN EACH AX4 ZONE

PLAN @ EL.130.00
SCALE:1/8"=1'-0"



SECTION 1
SCALE: NONE
M-12

- Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Lewis 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

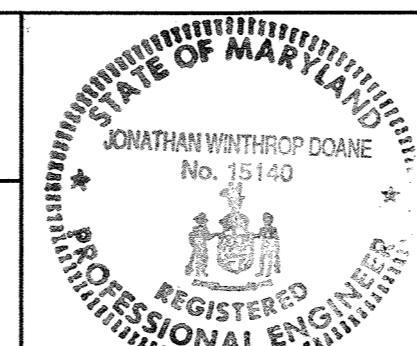
Paul C. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Oliver W. Jones 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Done 5-7-96
REG. PROF. ENGR. DATE

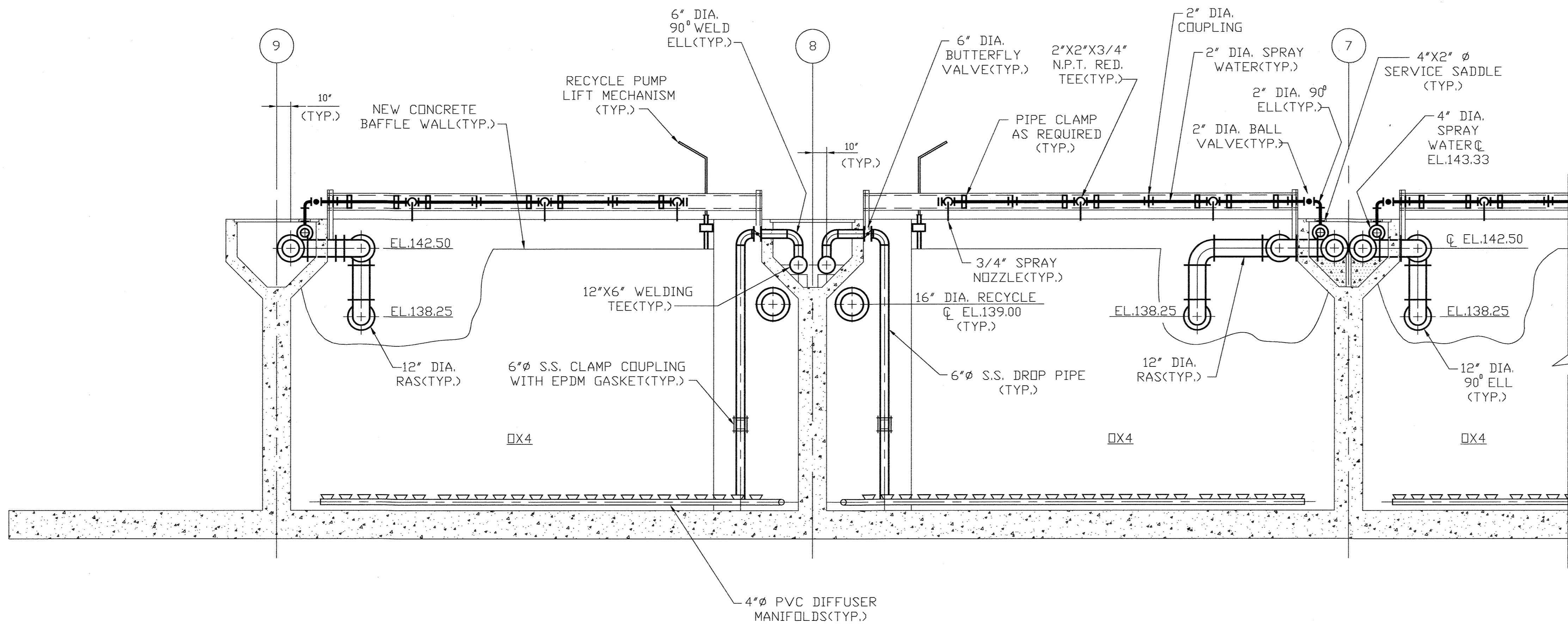


DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING		11/2/94
	BY NO.	REVISION		DATE

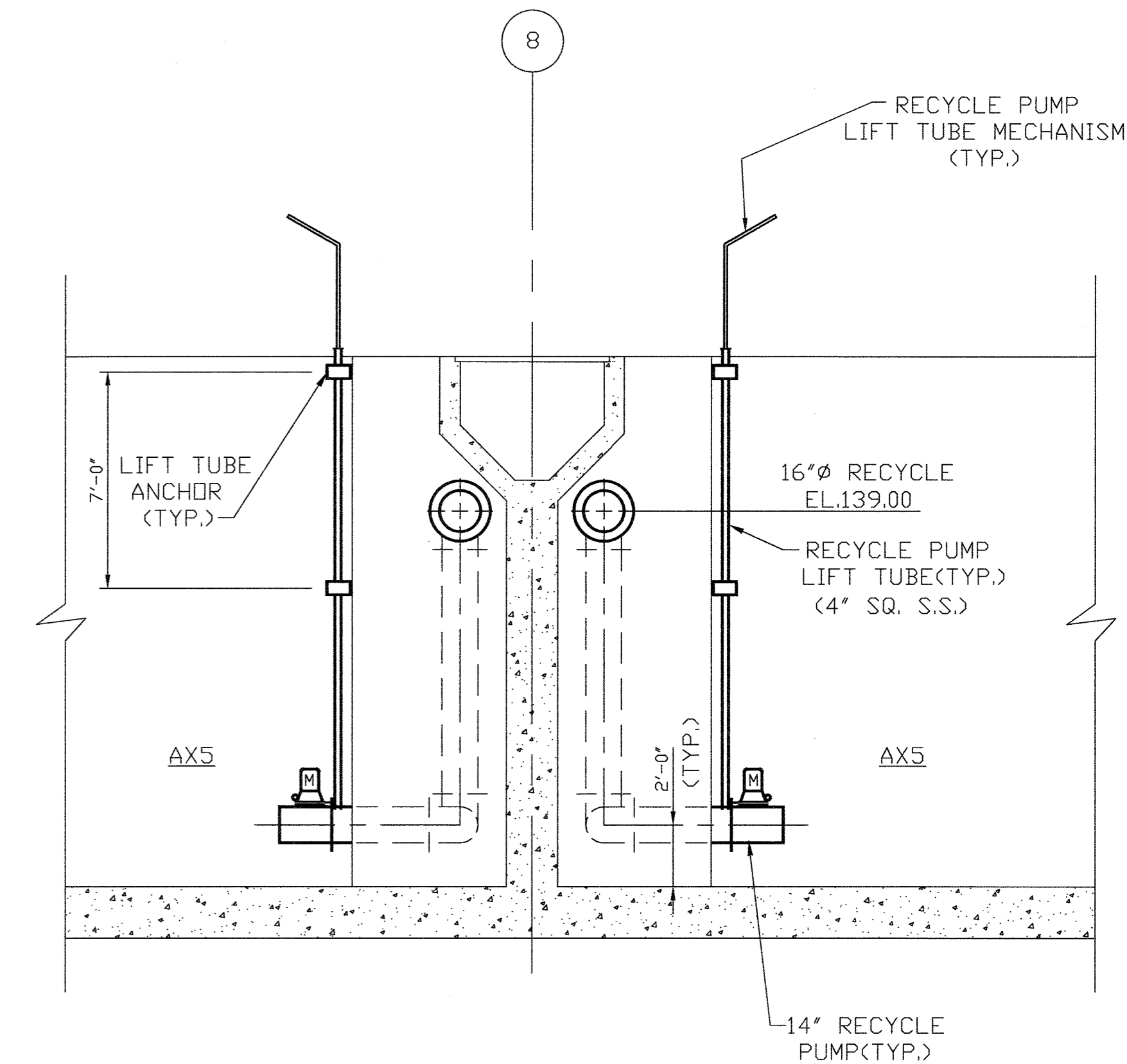
MECHANICAL
SINGLE PASS PROCESS REACTORS 1 AND 2
LOWER PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

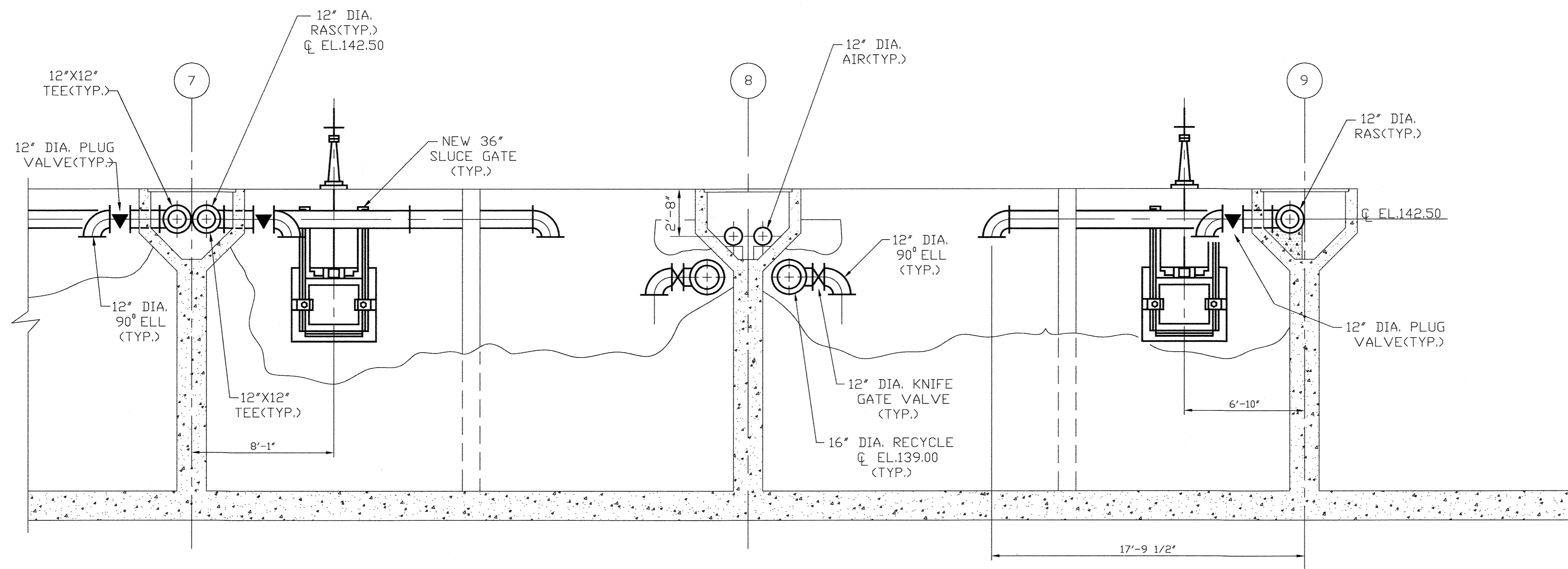
SCALE AS SHOWN
SHEET 106 OF 226
M-12A



SECTION 1
SCALE: 1/4" = 1'-0"
M-11
M-12



PARTIAL SECTION
IN ZONE AX5
SCALE: 1/4" = 1'-0"



SECTION 2
SCALE: 1/4" = 1'-0"
M-11
M-12

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam M. Shaw 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

Robert E. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Debra J. Sporn 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



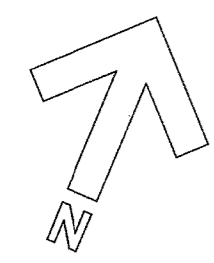
DES:					
DRN:	M.J.C.				
CHK:	J.H.				
DATE:	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

MECHANICAL
SINGLE PASS PROCESS
REACTORS 1 AND 2
SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 107 OF 226
M-13A



REMOVE ALL AIR PIPING & ANCHORING HARDWARE FROM ENTIRE LENGTH OF TANK

EXISTING 12" RAS TO BE REMOVED, CUT TO LENGTH, REFINISHED & REINSTALLED INSIDE Y-WALL CHANNEL (SEE NOTE B THIS DWG.)

REMOVE EXISTING 12" DROP PIPE & CROSS PIPE FROM HEADER TEE.

EXISTING 12" AIR HEADER TO REMAIN (SEE NOTE A THIS DWG.)

EXISTING 12" RAS TO REMAIN (TYP. OF 4)

REMOVE EXISTING 24" BLIND FLANGE

EXISTING 12" RAS TO BE REMOVED

EXISTING 24" PIPE

EXISTING CONCRETE COLUMN/WOOD BAFFLE WALL TO BE DEMOLISHED (TYP. OF 8)

PLAN @ ELEVATION 144.00
SCALE: 1/8"=1'-0"

NOTES:

- A. REUSE OF EXISTING AIR PIPING AND DIFFUSERS
- 1) ALL EXISTING 20" AND 12" AIR PIPING (Y-WALLS) HEADERS NOW IN USE IN THE EXISTING AERATION BASINS SHALL BE REUSED IN THIS CONTRACT.
- B. REUSE OF EXISTING 12" DIA. RAS PIPING
- 2) EXISTING 12" DIA. D.I.P. RAS PIPING SHALL BE REMOVED, SANDBLASTED AND REPAINTED PER SPECIFICATION 09941. THIS PIPE SHALL SERVE AS STOCK TO BE CUT TO LENGTH, COUPLED, FITTED AND VALVED AS SHOWN ON DWG. M-15. IN ADDITION, PROVIDE NEW RAS PIPING, FITTINGS AND VALVES NECESSARY TO COMPLETE THE CONFIGURATIONS SHOWN ON DWG. M-15.
- 3) 12" RAS PIPING TO BE REINSTALLED INSIDE Y WALLS AND NEW 12" PIPING INSIDE Y WALLS MAY BE CONNECTED USING CUT GROOVE COUPLINGS PER SPECIFICATION 02615. ALL 12" RAS PIPING OUTSIDE THE "Y" WALL SHALL BE FLANGED.
- 4) ALL REUSED PIPING SHALL BE PROVIDED WITH NEW GASKETS AND BOLTS.
- 5) SEE SALVAGE REQUIREMENTS FOR DOME DIFFUSERS IN CONTRACT SPEC. SECT. 02050.3.03.
- 6) CONTRACTOR SHALL DEMOLISH AND REMOVE ALL CONCRETE SADDLES SUPPORTING THE EXISTING CROSS PIPES (4 SADDLES PER CROSS PIPE). IDENTICAL SADDLES SHALL BE CONSTRUCTED UNDER ALL NEW AND RELOCATED CROSS PIPES.

NOTE:
EXISTING 12" DROP PIPES WERE REUSED IN PROCESS REACTORS 7&8 ONLY. NO OTHER DROP PIPES, CROSS HEADERS, OR DEFUSERS WERE REUSED-ALL WERE DEMOLISHED AND REMOVED FROM JOBSITE. EPDM FLEXIBLE MEMBRANE DIFFUSERS AND PVC MANIFOLDS WERE FURNISHED IN ALL AERATED ZONES.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James H. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

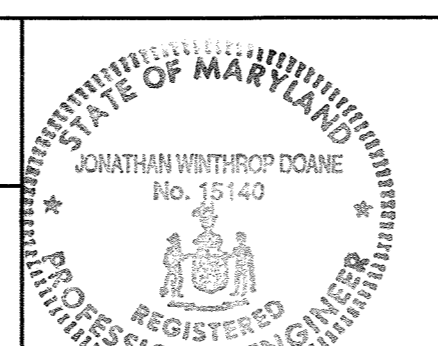
Paul R. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Debra W. Jones 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Winthrop Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER
NO. 15140



DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY	NO.	REVISION	DATE

MECHANICAL

SINGLE PASS PROCESS REACTOR MODIFICATIONS DEMOLITION PLAN

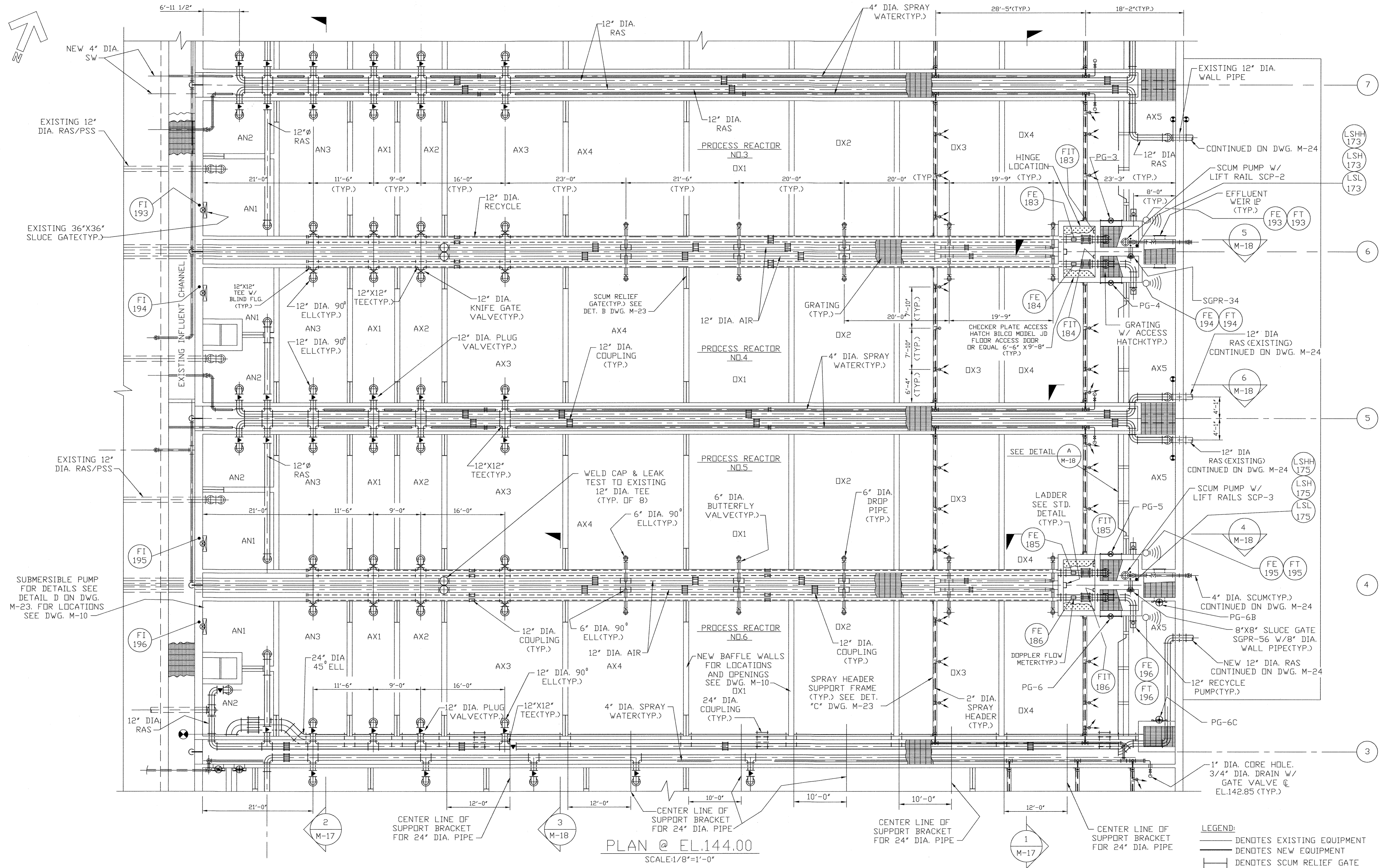
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 108 OF 226

M-14A

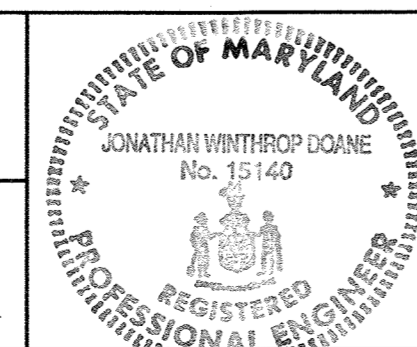


PLAN @ EL.144.00
SCALE: 1/8"=1'-0"

LEGEND:
 --- DENOTES EXISTING EQUIPMENT
 --- DENOTES NEW EQUIPMENT
 --- DENOTES SCUM RELIEF GATE

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director: *James P. Shaw* 5/7/96
 Chief, Bureau of Engineering: *Paul D. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John J. White* 5/7/96
 Chief, Utility Design Division: *Pat Deane* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. Jones 5-7-96
 REG. PROF. ENGR.



DES	DRN	CHK	DATE	BY	NO.	REVISION	DATE
	M.J.C.	J.H.		M.J.C.	1	RECORD DRAWING	11/2/94

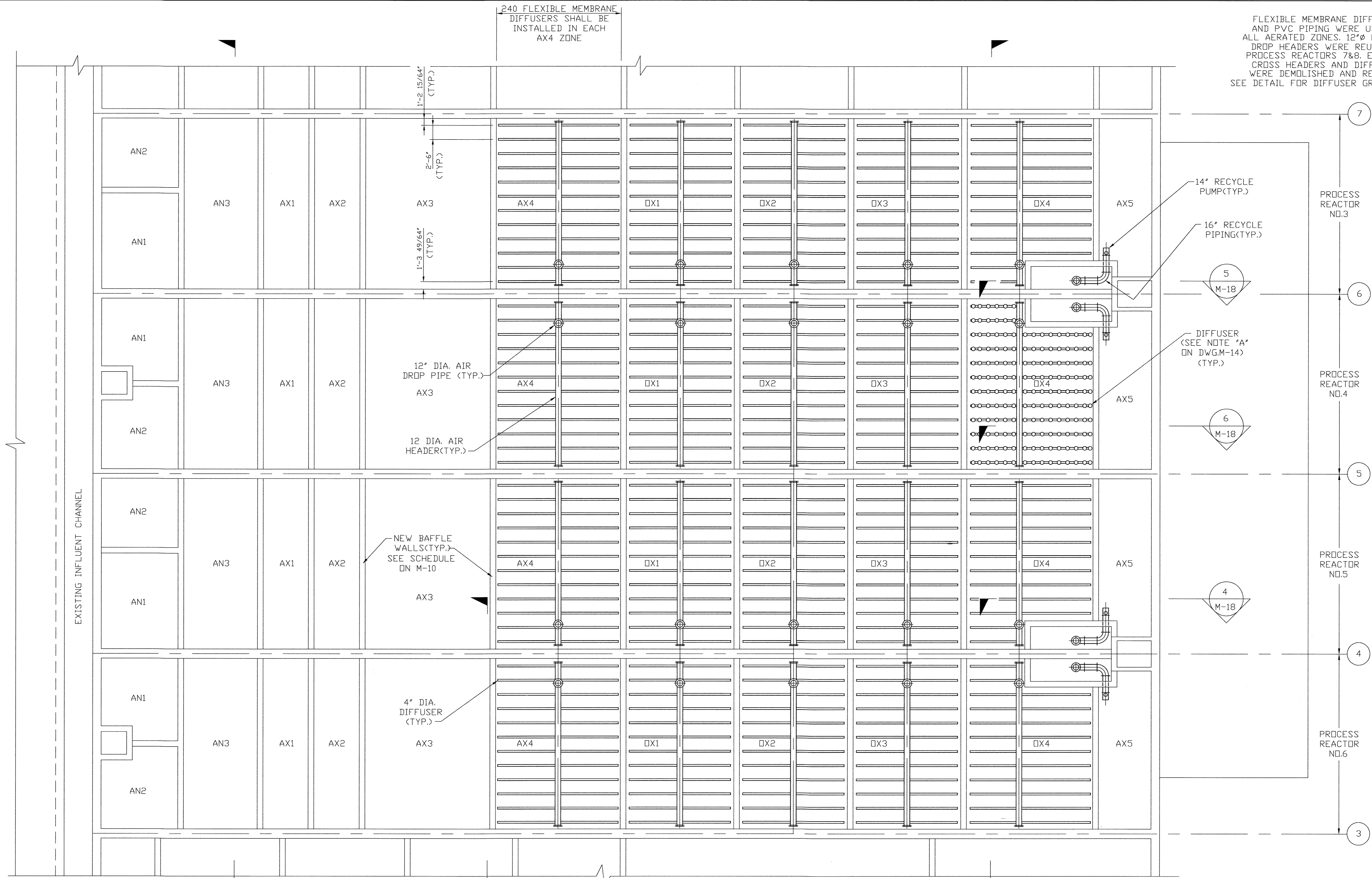
MECHANICAL
 SINGLE PASS PROCESS REACTOR MODIFICATIONS UPPER PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 109 OF 226
 M-15A

FLEXIBLE MEMBRANE DIFFUSERS AND PVC PIPING WERE USED IN ALL AERATED ZONES. 12" Ø EXISTING DROP HEADERS WERE REUSED IN PROCESS REACTORS 7&8. EXISTING CROSS HEADERS AND DIFFUSERS WERE DEMOLISHED AND REMOVED. SEE DETAIL FOR DIFFUSER GRID LAYOUT.

240 FLEXIBLE MEMBRANE DIFFUSERS SHALL BE INSTALLED IN EACH AX4 ZONE



PLAN @ EL.130.00
SCALE: 1/8" = 1'-0"

- Record Drawing Notes:**
- All elevations should be field verified before using
 - Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Shaw 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

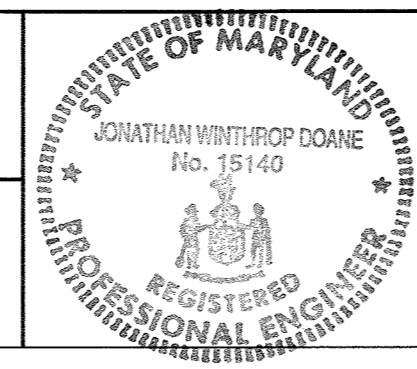
Paul R. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John Ottavio 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Oliver D. Dorian 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



DES	DRN	CHK	DATE	BY	NO.	REVISION	DATE
	M.J.C.	J.H.		M.J.C.	1	RECORD DRAWING	11/2/94

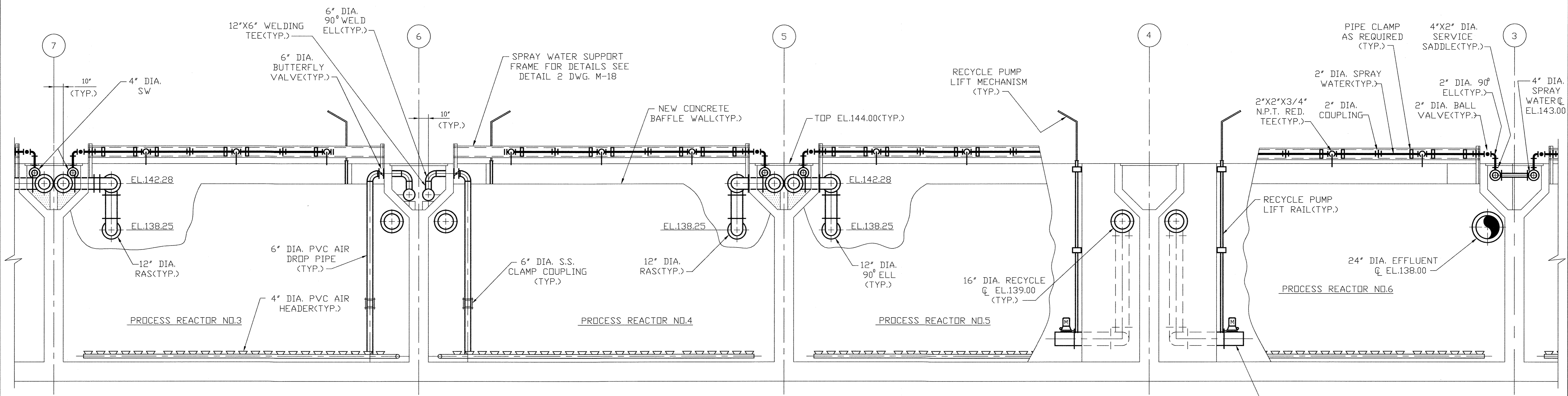
MECHANICAL

SINGLE PASS PROCESS REACTOR MODIFICATIONS LOWER PLAN

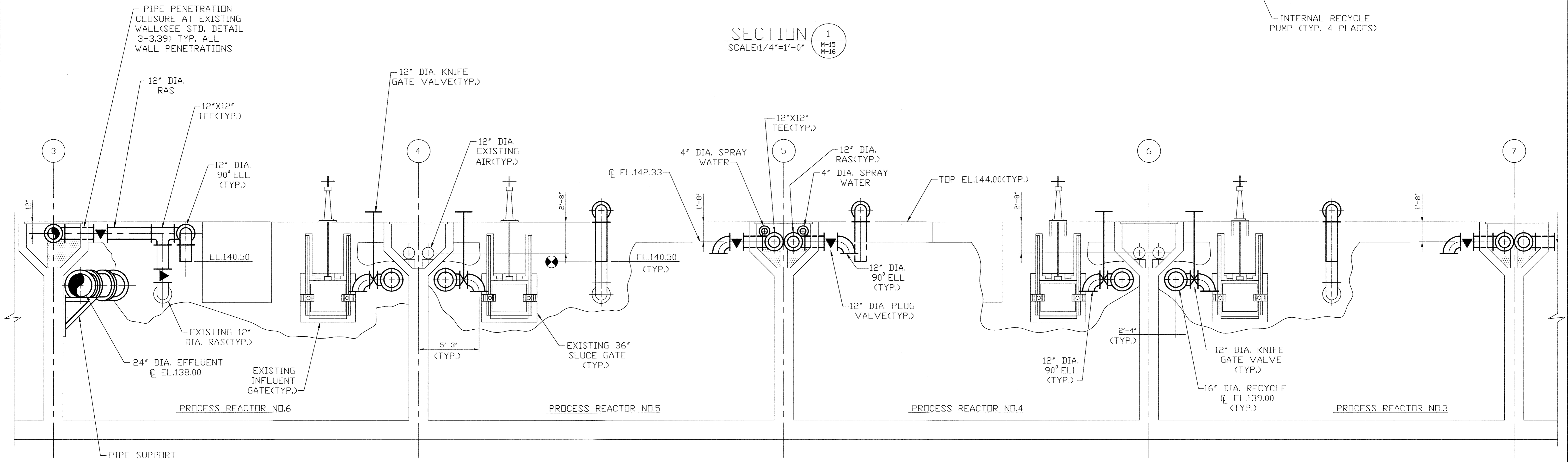
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 110 OF 226
M-16A



SECTION 1
SCALE: 1/4" = 1'-0"
M-15
M-16



SECTION 2
SCALE: 1/4" = 1'-0"
M-15
M-16

- Record Drawing Notes:
- All elevations should be field verified before using.
 - Weir and water elevations based on post-construction survey by Howard County.

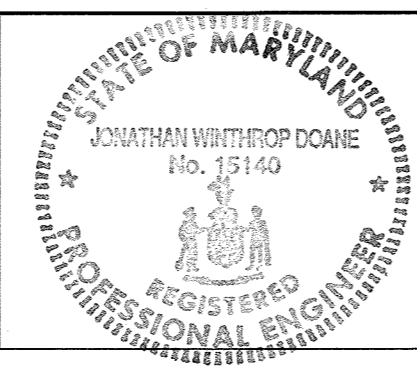
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/1/96
5/7/96

5/7/96

M&E Metcalf & Eddy

5-7-96



DES			
DRN	M.J.C.		
CHK	J.H.		
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION

MECHANICAL

SINGLE PASS PROCESS REACTOR MODIFICATIONS SECTIONS

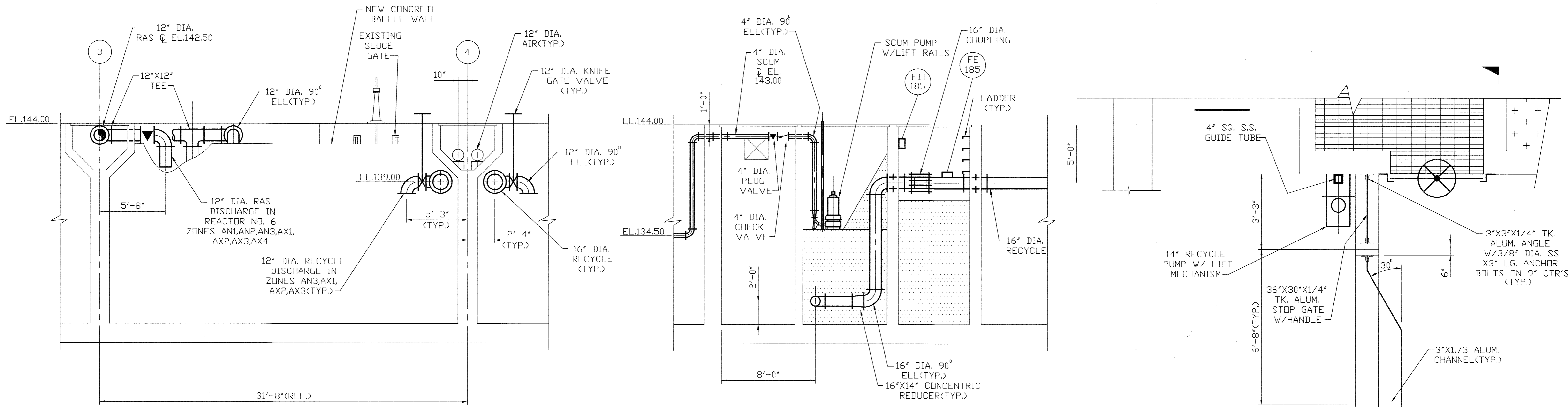
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

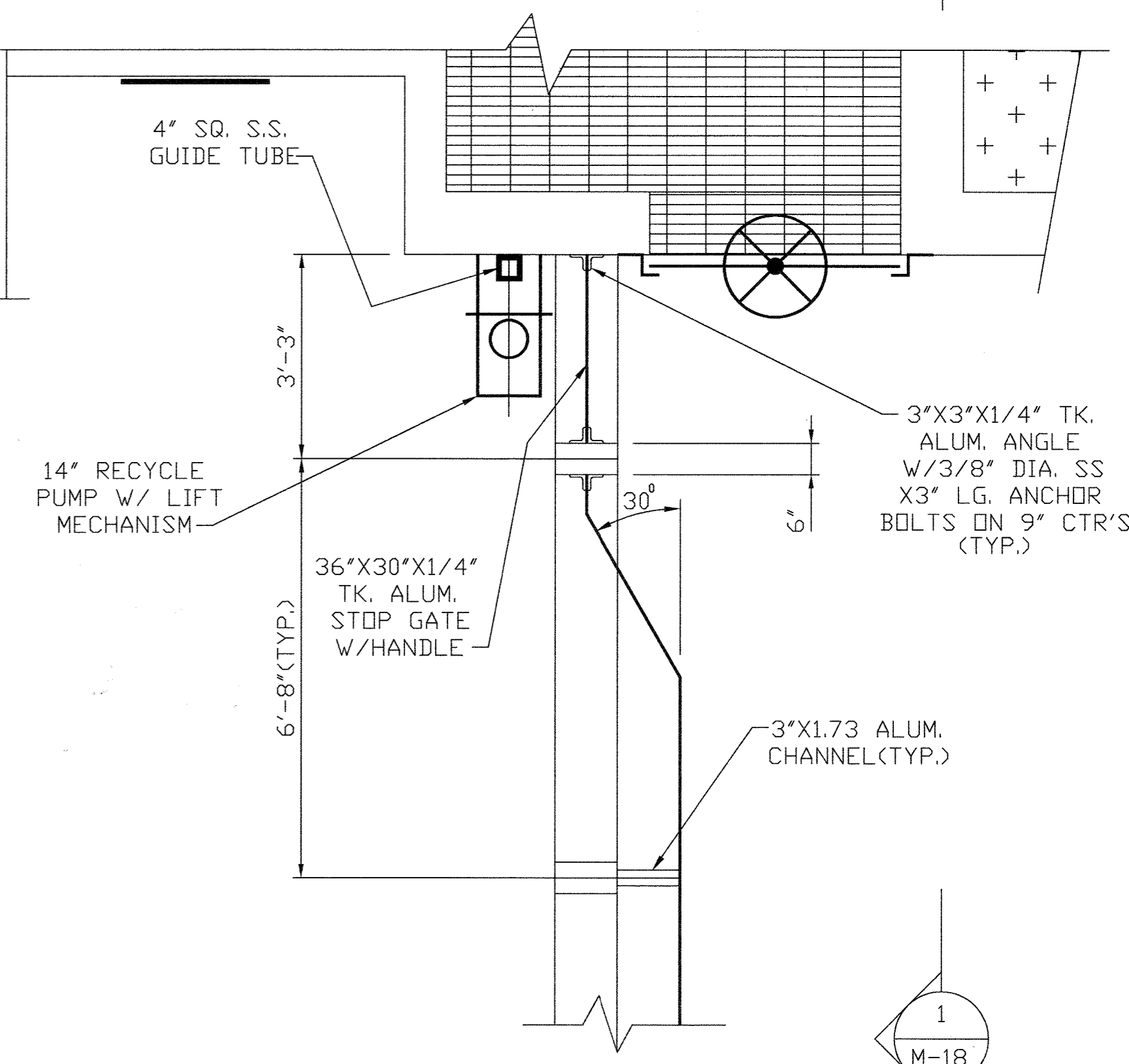
SHEET 111 OF 226

M-17A

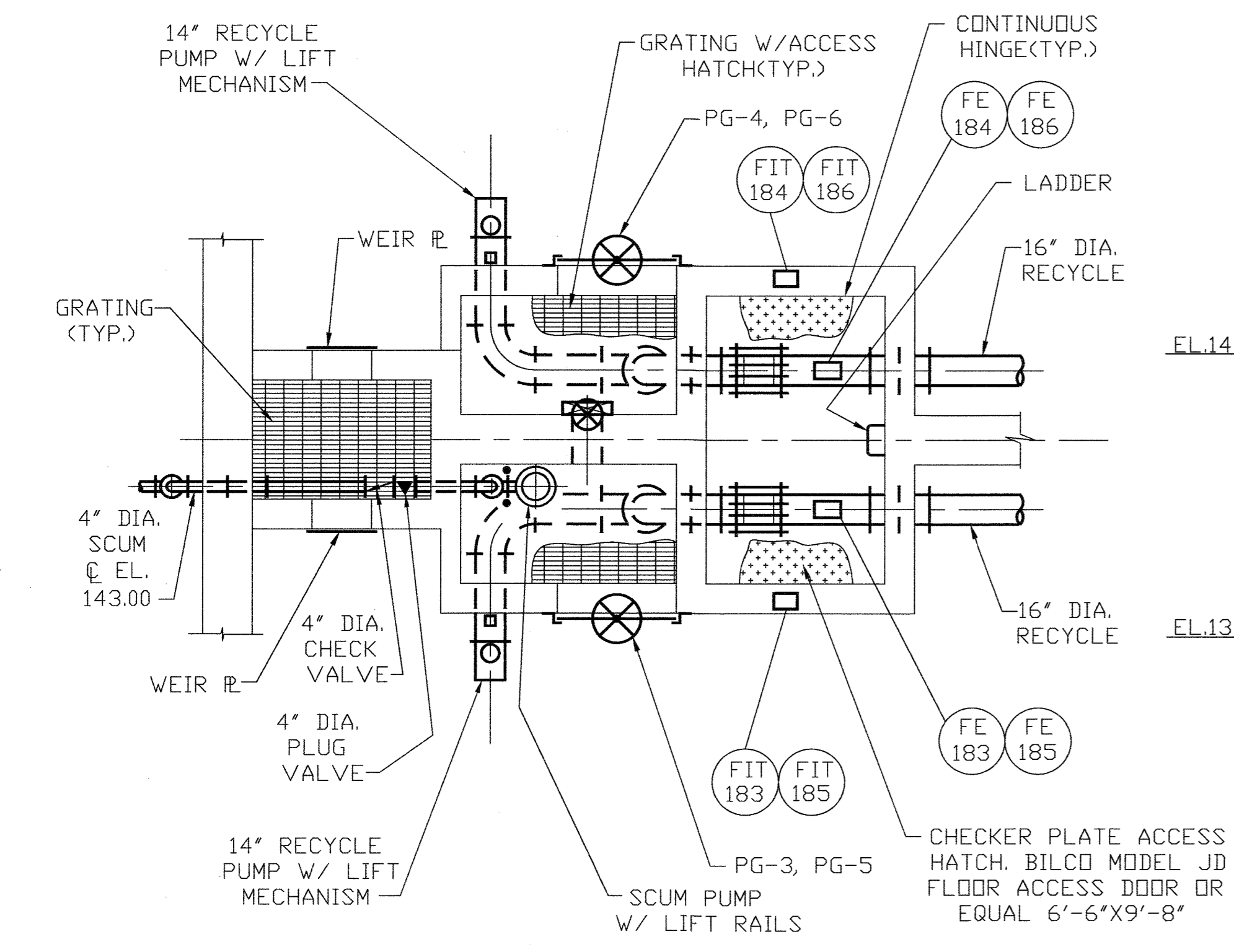


SECTION 3
SCALE: 1/4" = 1'-0"
M-15
M-16

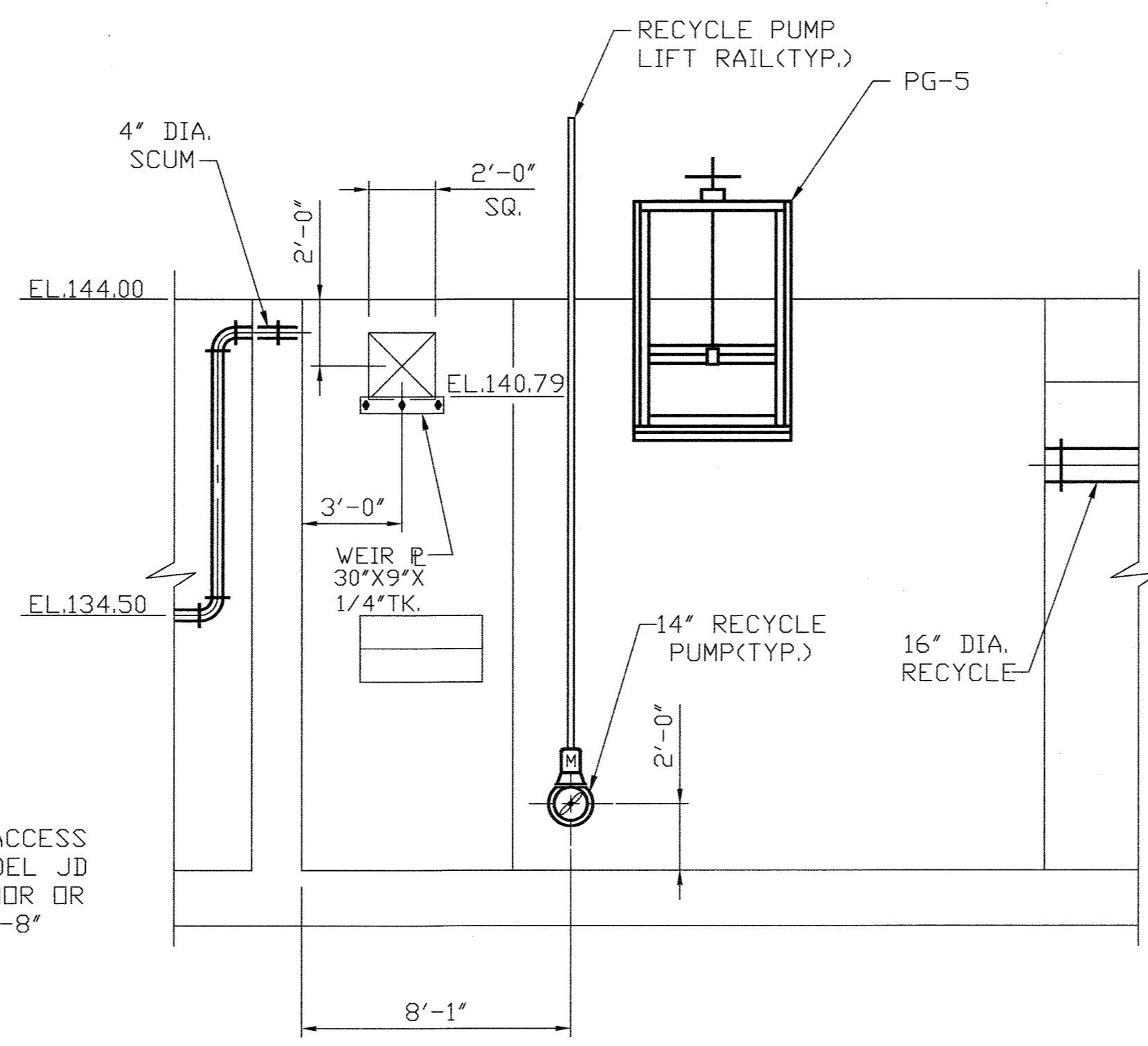
SECTION 5
SCALE: NONE
M-11
M-12
M-15
M-16



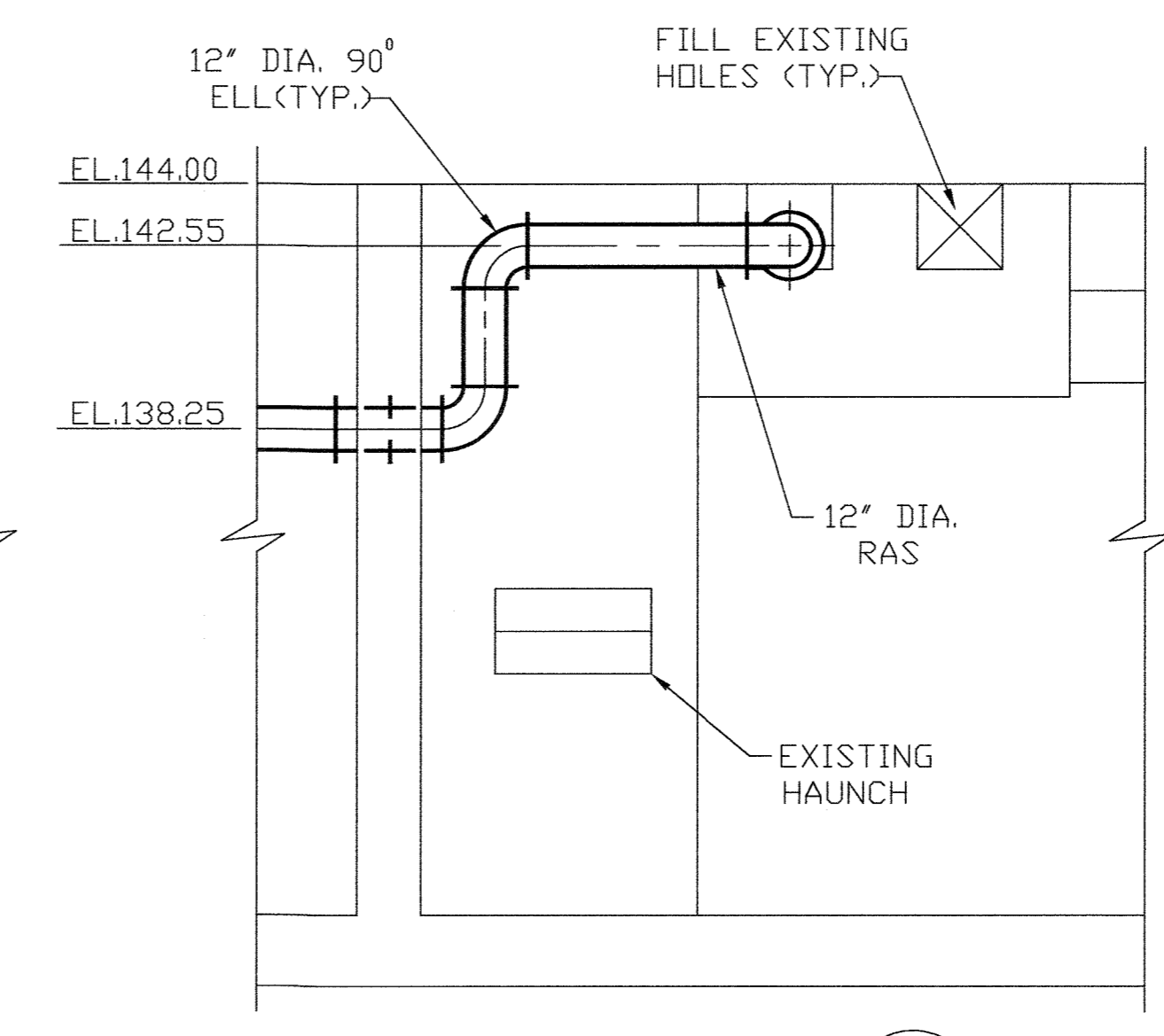
DETAIL A
SCALE: 1/2" = 1'-0"
M-15



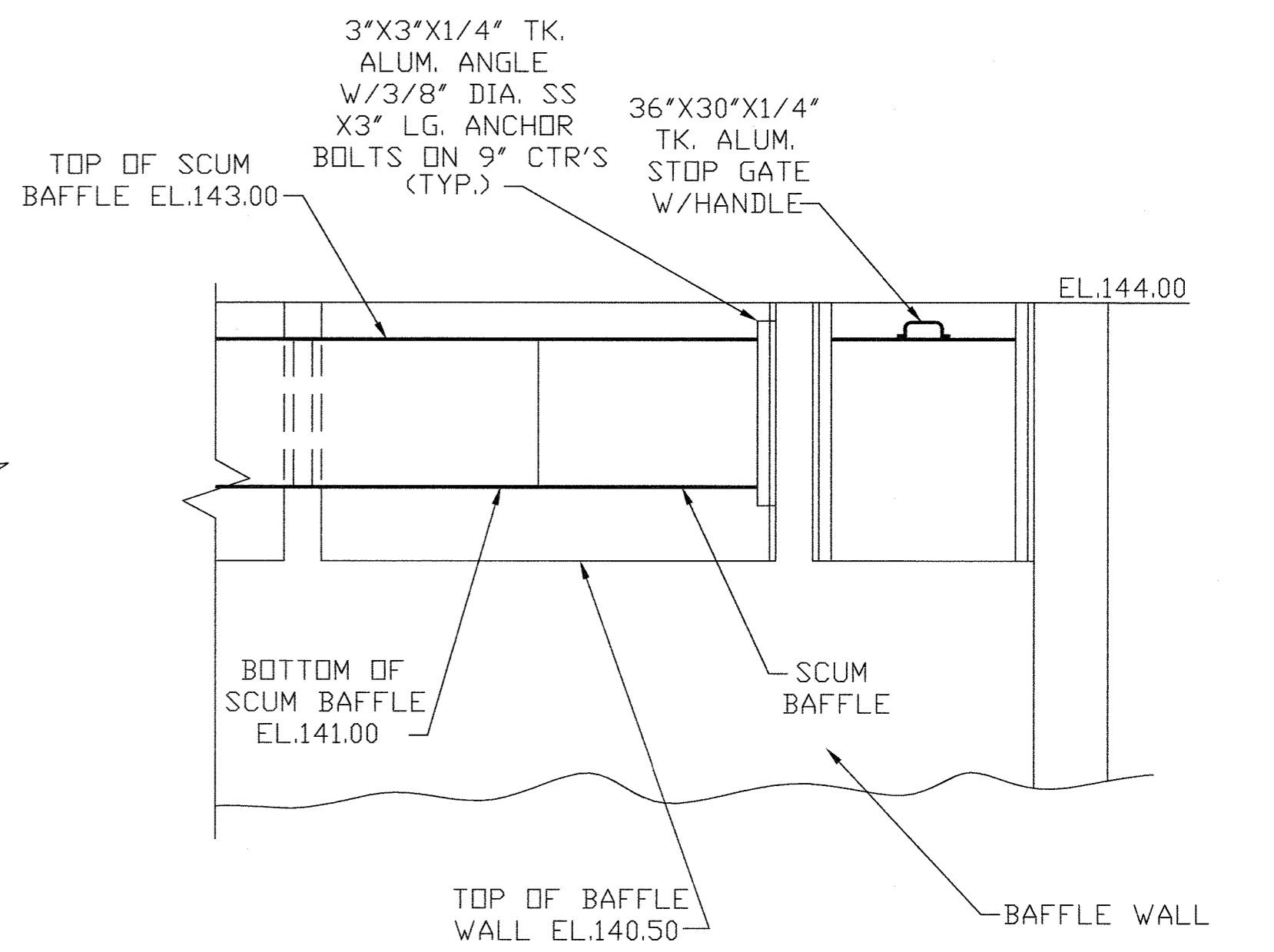
TYPICAL PLAN
SCUM PIT & METER VAULT
SCALE: NONE



SECTION 4
SCALE: 1/4" = 1'-0"
M-15
M-16



SECTION 6
SCALE: 1/4" = 1'-0"
M-11
M-12
M-15
M-16



SECTION 1
SCALE: 1/2" = 1'-0"
M-18

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Sullivan 5/1/16
DIRECTOR OF PUBLIC WORKS

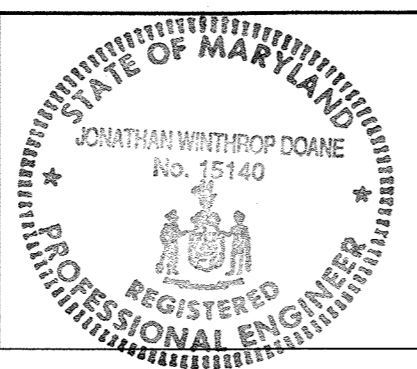
Paul D. Sporn 5/7/16
CHIEF, BUREAU OF ENGINEERING

John J. O'Hara 5/7/16
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Don Wilson 5-7-16
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan White 5-7-16
REGISTERED PROFESSIONAL ENGINEER



DES			
DRN	M.J.C.		
CHK	J.H.		
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION

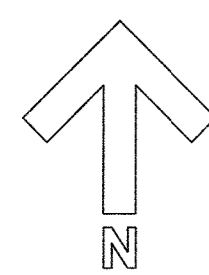
MECHANICAL

SINGLE PASS PROCESS
REACTOR MODIFICATIONS
SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

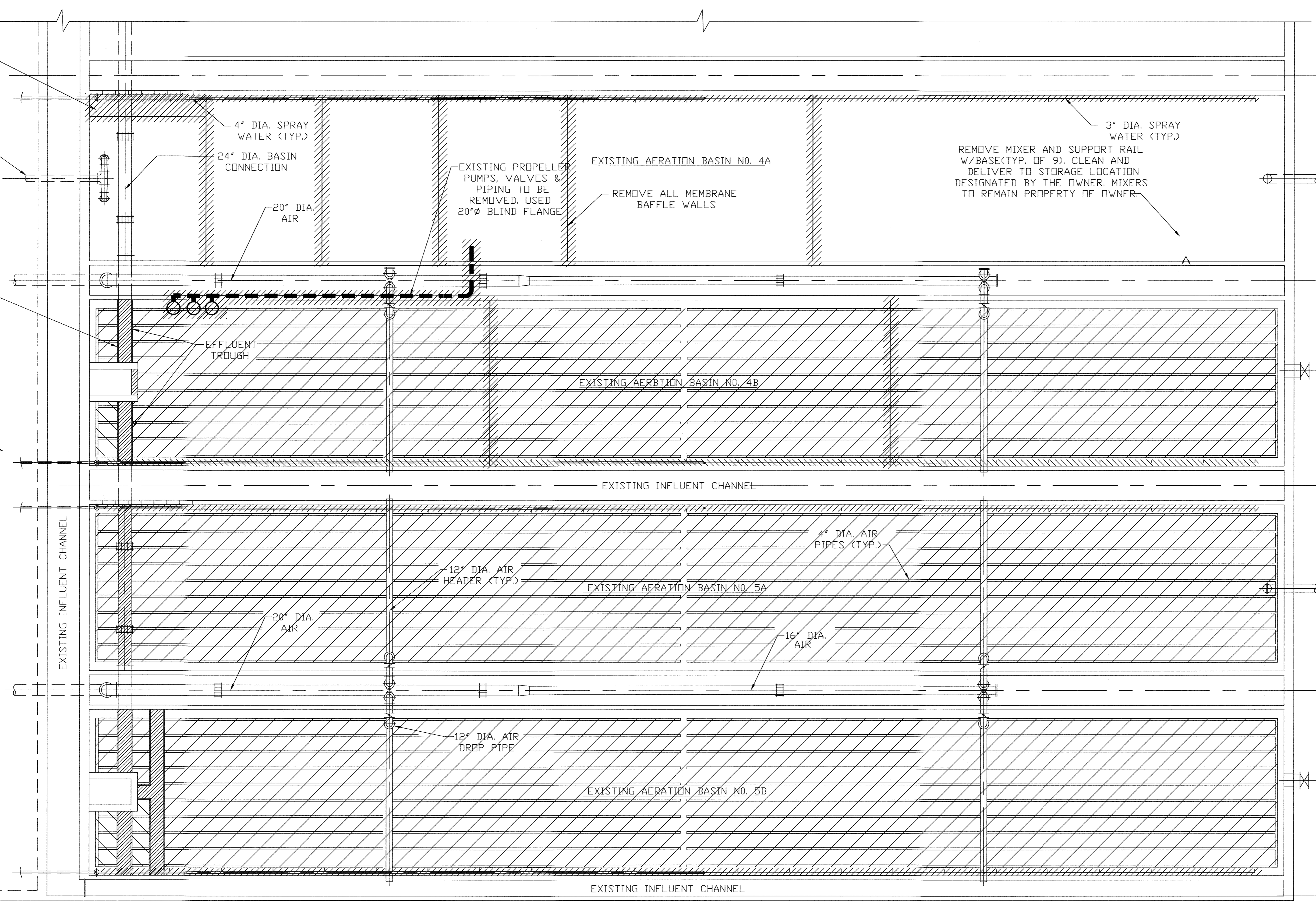
SCALE AS SHOWN
SHEET 112 OF 226
M-18A



BAFFLE BOX TO BE REMOVED

12" DIA. RETURN SLUDGE LINE

EFFLUENT TROUGH TO BE REPLACED W/ 24" PIPE



NOTES:

A. REUSE OF EXISTING AIR PIPING AND DIFFUSERS

1) ALL EXISTING 20" AND 12" AIR PIPING HEADERS NOW IN USE IN THE EXISTING AERATION BASINS SHALL BE REUSED IN THIS CONTRACT.

2) 40 12" DIA. DROP PIPES WITH 40 BOTTOM CROSS PIPES ARE REQUIRED IN THE NEW PROCESS REACTORS. OF THESE 38 ARE TO BE PROVIDED NEW AND 12 ARE TO CONSIST OF EXISTING 12" DIA. DROP/CROSS PIPE COMBINATIONS NOW IN PLACE IN THE EXISTING AERATION BASINS. THESE SHALL BE REINSTALLED AT NEW LOCATIONS SHOWN ON THE DRAWINGS. ALL MAIN AIR HEADER OPENINGS REMAINING AFTER RELOCATION OF DROP/CROSS PIPES SHALL BE CAPPED AND TESTED FOR LEAKAGE.

3) WITH THE EXCEPTION OF AX4 ZONES, ALL DIFFUSERS AND DIFFUSER PIPING SHOWN IN NEW PROCESS REACTORS 1 THRU 8 SHALL CONSIST OF THE EXISTING DIFFUSERS AND PIPES NOW INSTALLED IN THE EXISTING AERATION BASINS. THE EXISTING DIFFUSER ASSEMBLIES SHALL BE REMOVED, CUT TO THE NEW LENGTHS INDICATED ON PROCESS REACTOR DRAWINGS, CAPPED AND REINSTALLED USING EXISTING ANCHOR BRACKETS WITH NEW S.S. BOLTS.

4) DIFFUSER MANIFOLDS IN ALL AX4 ZONES SHALL CONSIST OF 4" SCHEDULE 40 PVC PIPE WITH INTEGRAL EPDM POROUS MEMBRANE DIFFUSERS.

B. REUSE OF EXISTING 12" DIA. RAS PIPING

1) EXISTING 12" DIA. D.I.P. RAS PIPING SHALL BE REMOVED, SANDBLASTED AND REPAINTED PER SPECIFICATION 09941. THIS PIPE SHALL SERVE AS STOCK TO BE CUT TO LENGTH, COUPLED, FITTED AND VALVED AS SHOWN ON DWG. M-15. IN ADDITION, PROVIDE NEW RAS PIPING, FITTINGS AND VALVES NECESSARY TO COMPLETE THE CONFIGURATIONS SHOWN ON DWG. M-15.

2) 12" RAS PIPING TO BE REINSTALLED INSIDE Y WALLS AND NEW 12" PIPING INSIDE Y WALLS MAY BE CONNECTED USING CUT GROOVE COUPLINGS PER SPECIFICATION 02615. ALL 12" RAS PIPING OUTSIDE THE "Y" WALL SHALL BE FLANGED.

3) ALL REUSED PIPING SHALL BE PROVIDED WITH NEW GASKETS AND BOLTS.

NOTE:

EXISTING CROSS HEADERS AND DIFFUSERS WERE NOT REUSED. FLEXIBLE MEMBRANE DIFFUSERS AND PVC PIPING WERE INSTALLED IN ALL AERATED ZONES. 12" STAINLESS STEEL DROP HEADERS WERE REUSED IN PR 7 & 8 ONLY.

PLAN @ FL.144.00
SCALE: 1/8" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hara 5/7/96
DIRECTOR OF PUBLIC WORKS

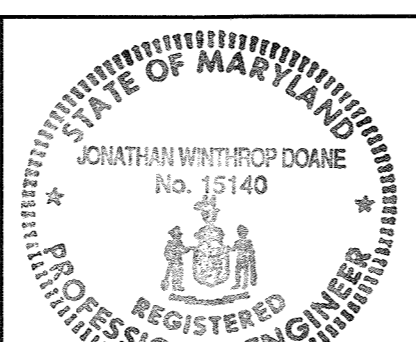
Paul J. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Oliver D. ... 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

James W. ... 5-7-96
REG. PROF. ENGR.



DES:			
DRN:	M.J.C.		
CHK:	J.H.		
DATE:			
	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

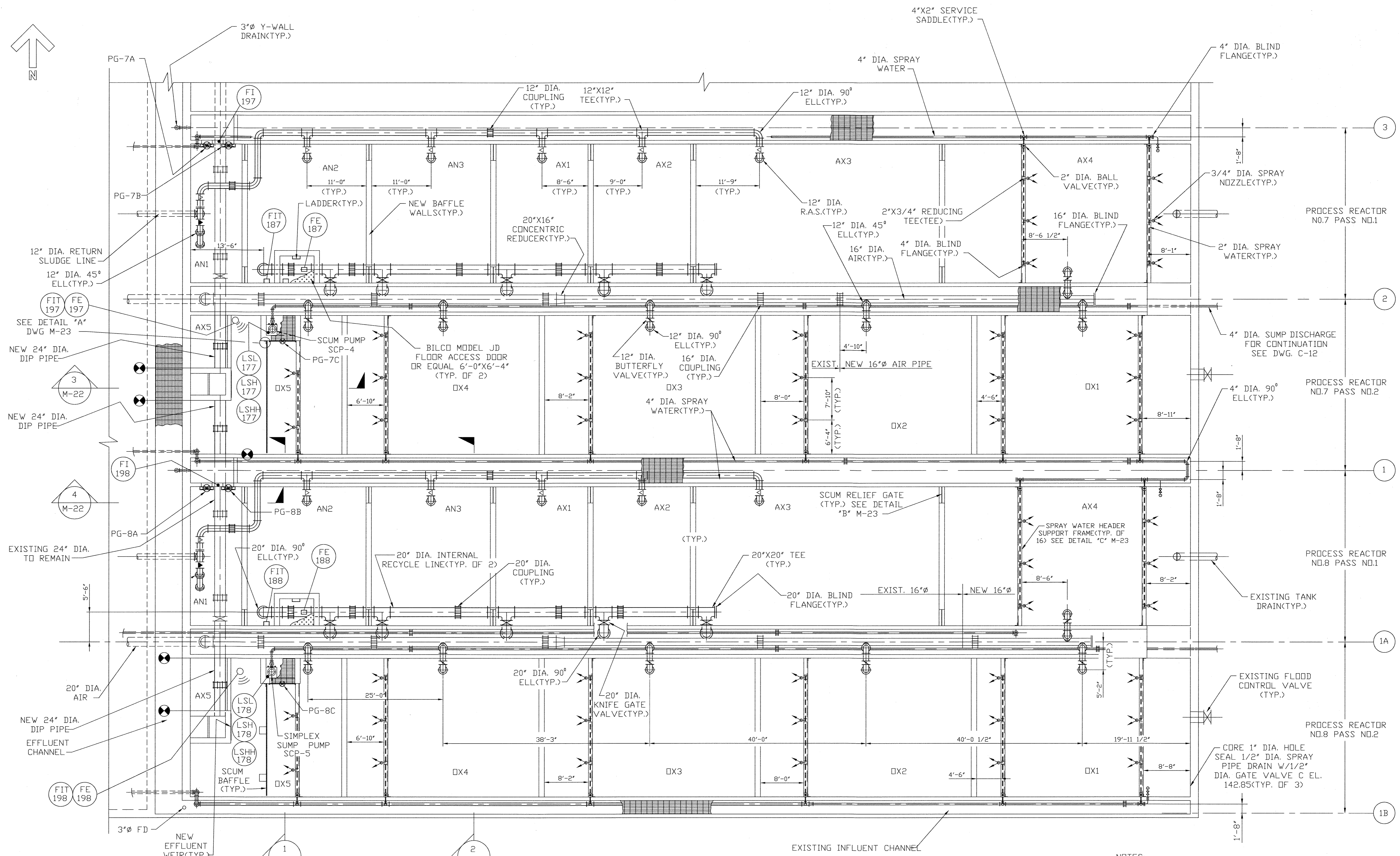
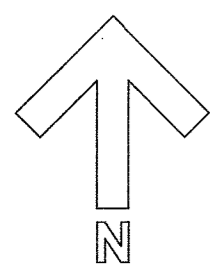
MECHANICAL

DOUBLE PASS PROCESS REACTOR MODIFICATIONS PLAN, DEMOLITION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 113 OF 226
M-19A



PLAN @ EL.144.00
SCALE: 1/8"=1'-0"

- NOTES:
1. CORE EXISTING CONCRETE DECKING ON Y-WALLS FOR ALL SPRAY WATER PIPE PENETRATIONS.
 2. INSULATE AND HEAT TRACE SCUM PUMP DISCHARGE PIPING ON ALL PROCESS REACTORS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

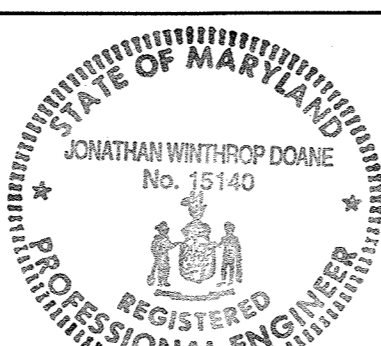
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Richard S. Brown 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Oliver S. Lewis 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER DATE



DES:			
DRN:	M.J.C.		
CHK:	J.H.		
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

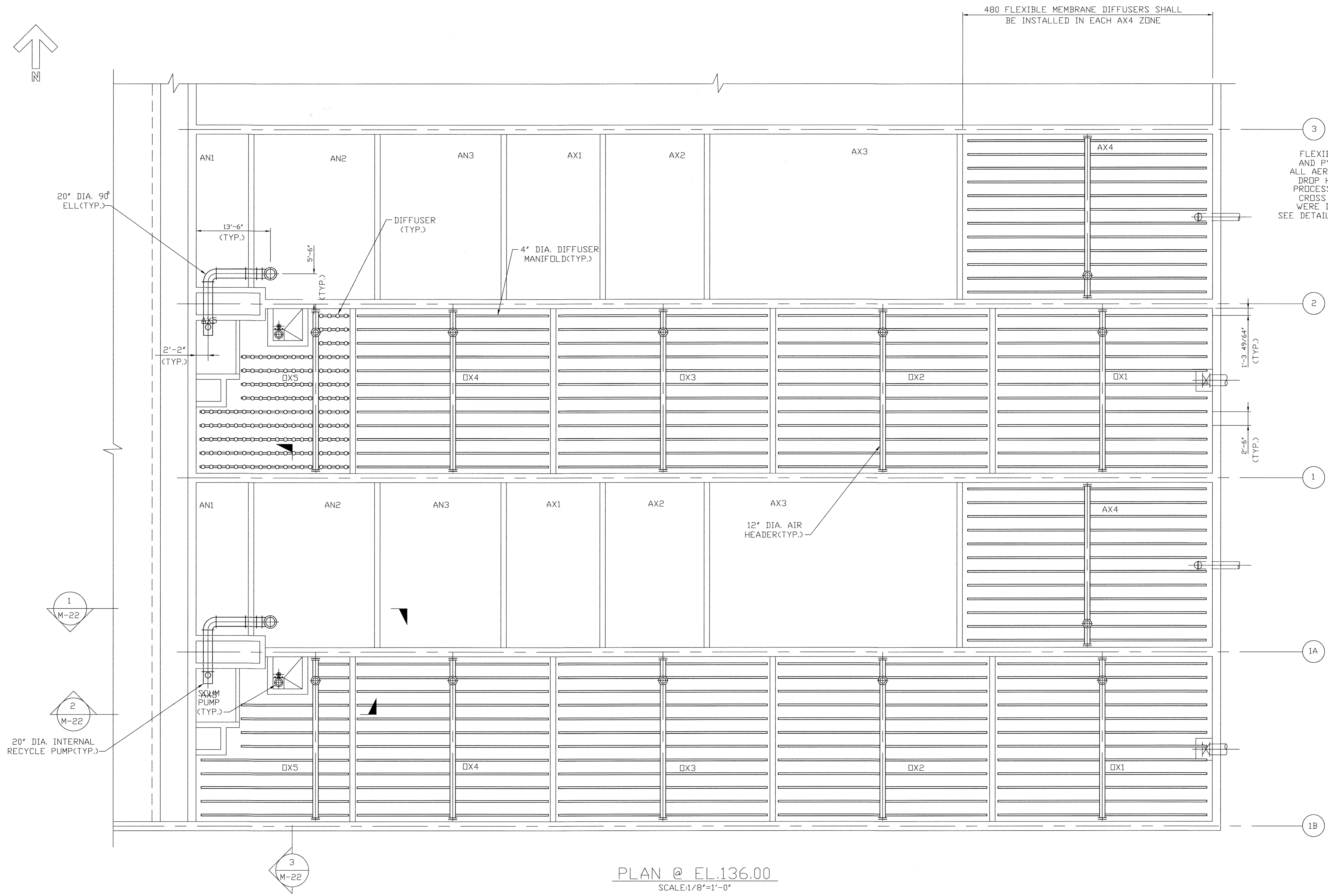
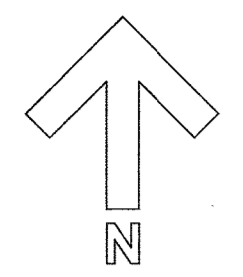
MECHANICAL

DOUBLE PASS PROCESS REACTOR MODIFICATIONS UPPER PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 114 OF 226
M-20A



3
 FLEXIBLE MEMBRANE DIFFUSERS AND PVC PIPING WERE USED IN ALL AERATED ZONES. 12"Ø EXISTING DROP HEADERS WERE REUSED IN PROCESS REACTORS 7&8. EXISTING CROSS HEADERS AND DIFFUSERS WERE DEMOLISHED AND REMOVED. SEE DETAIL FOR DIFFUSER GRID LAYOUT.

PLAN @ EL.136.00
 SCALE:1/8"=1'-0"

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *James R. Luna* 5/7/96
 Chief, Bureau of Engineering: *Paul H. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John O'Hara* 5/7/96
 Chief, Utility Design Division: *Debra L. ...* 5-7-96

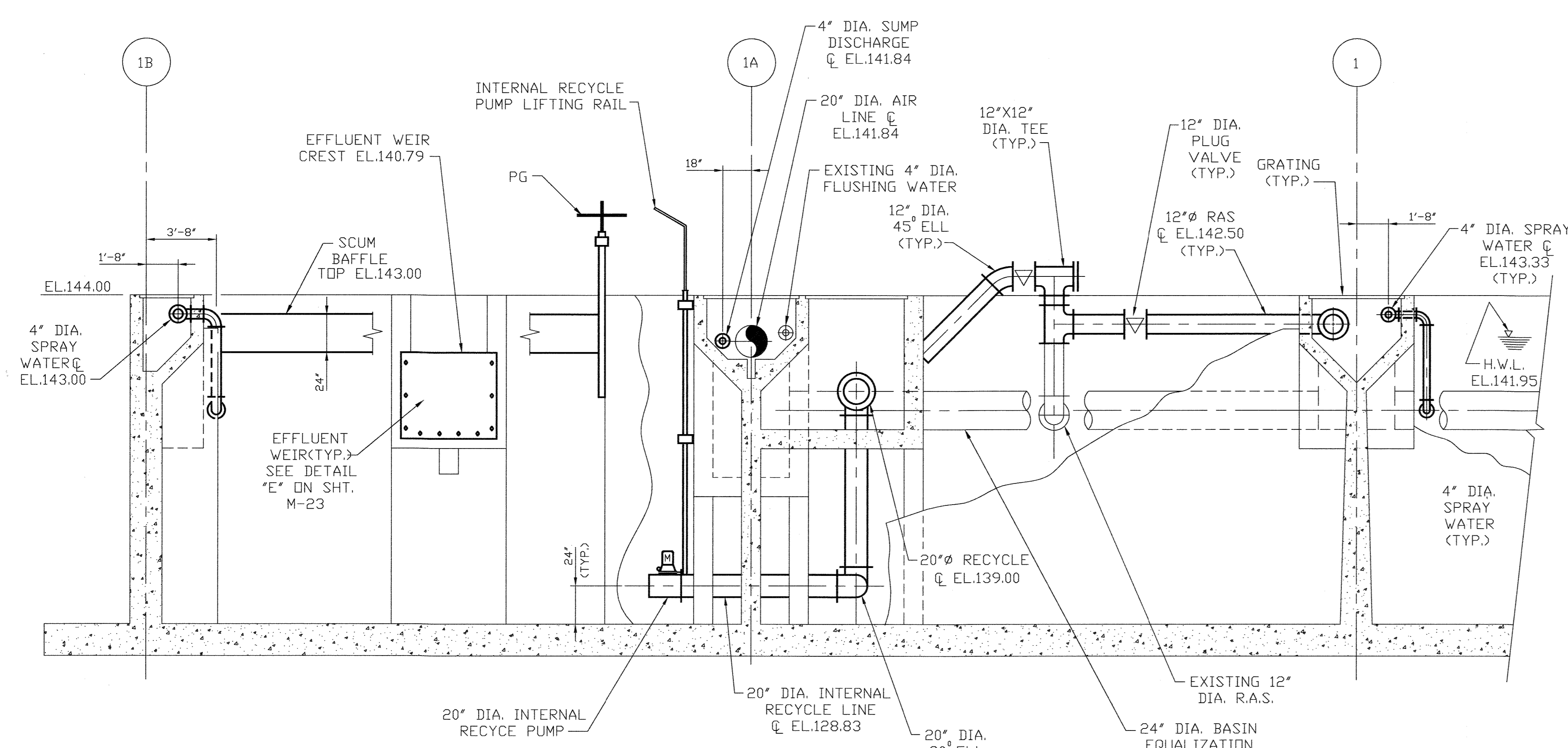
M&E Metcalf & Eddy
 Jonathan Whitcomb Doane No. 15140
 Registered Professional Engineer
 Date: 5-7-96

DES:					
DRN:	M.J.C.				
CHK:	J.H.				
DATE:	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION	DATE	

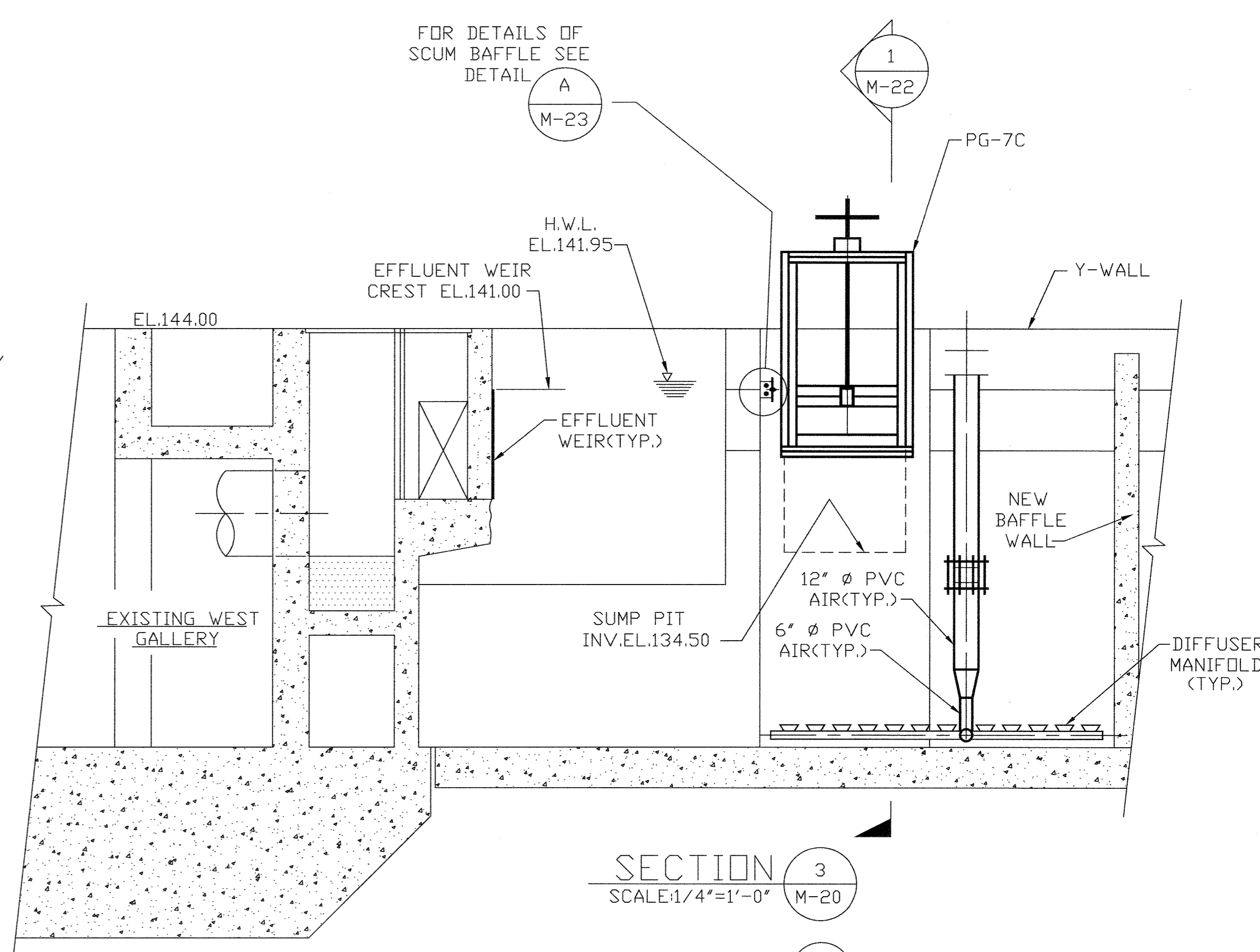
MECHANICAL
 DOUBLE PASS PROCESS REACTOR MODIFICATIONS LOWER PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

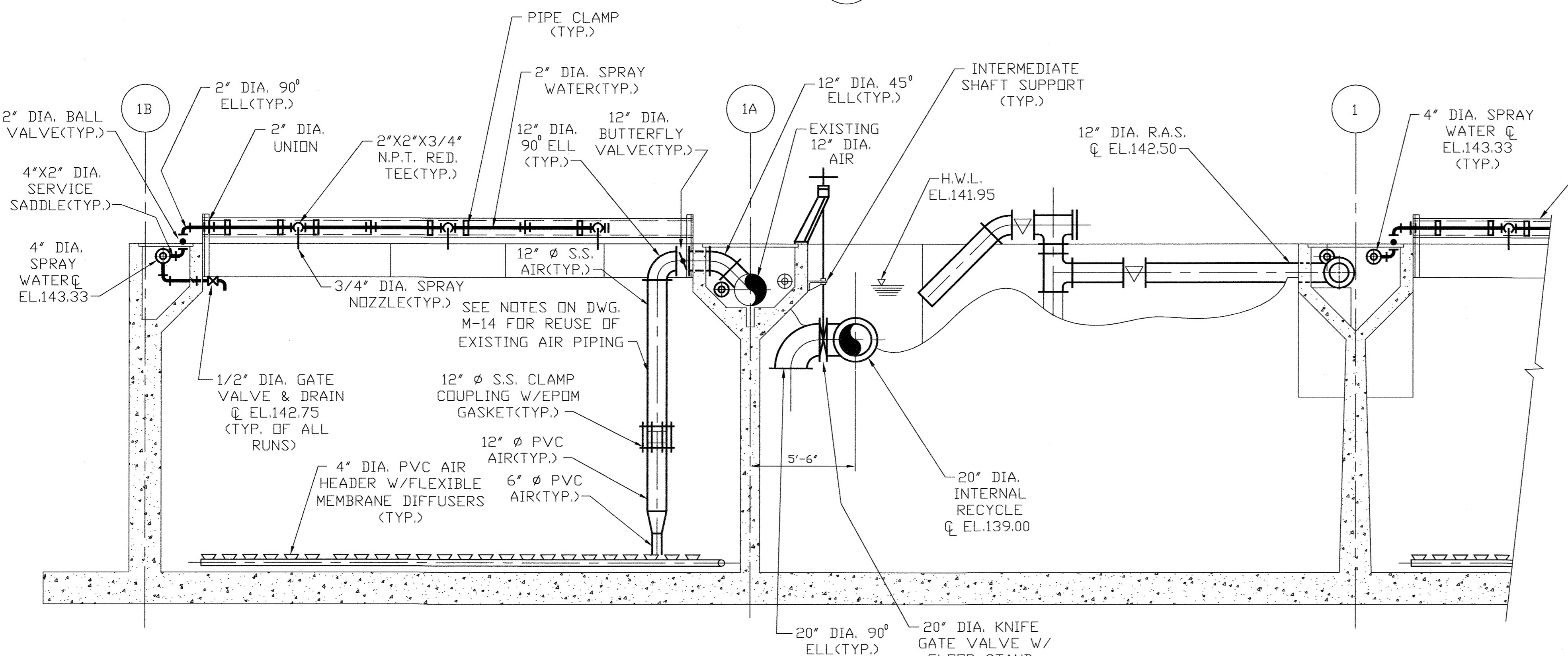
SCALE AS SHOWN
 SHEET 115 OF 226
 M-21A



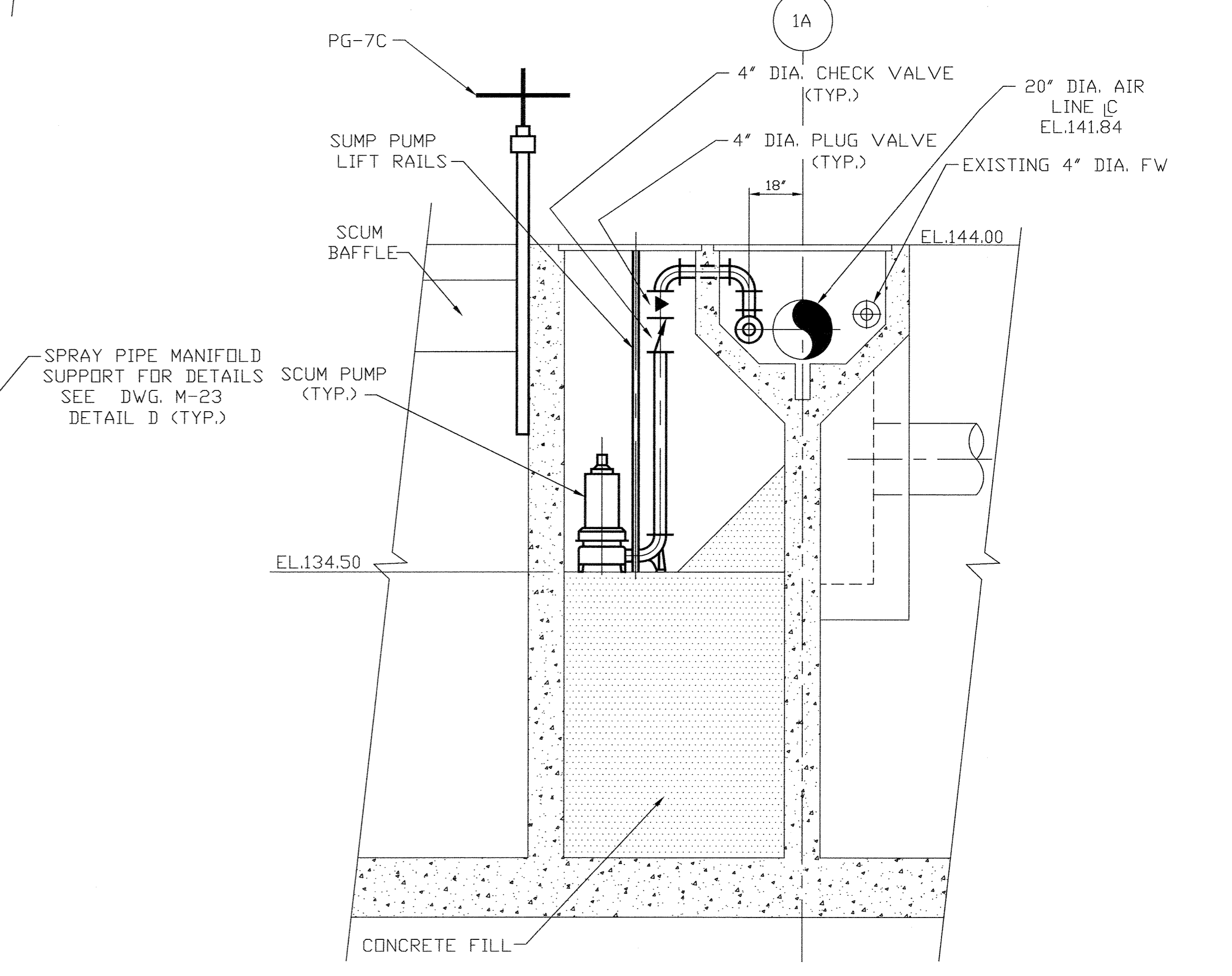
SECTION 1
SCALE: 1/4" = 1'-0"
M-20



SECTION 3
SCALE: 1/4" = 1'-0"
M-20



SECTION 2
SCALE: 1/4" = 1'-0"
M-20

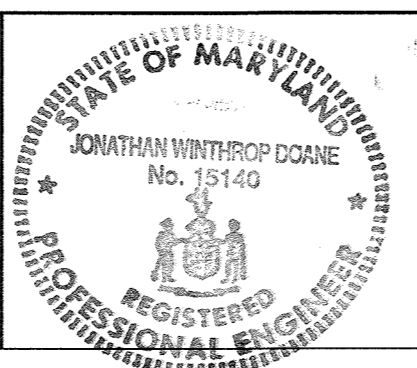


SECTION 1
SCALE: 3/8" = 1'-0"
M-22

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/7/96
5/7/96

M&E Metcalf & Eddy
5-7-96

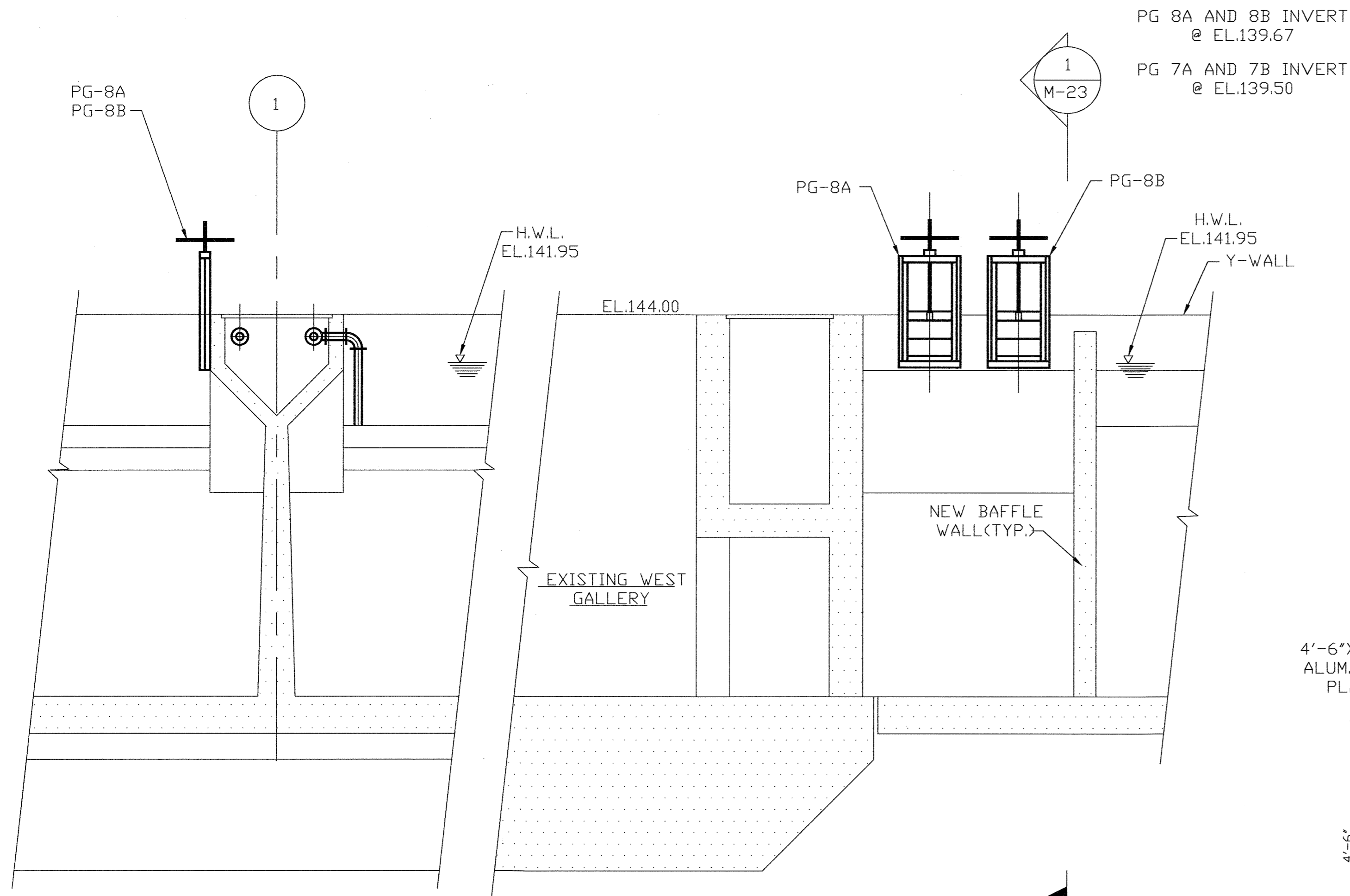


DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY NO.	REVISION		DATE	

MECHANICAL
DOUBLE PASS PROCESS
REACTOR MODIFICATIONS
SECTIONS

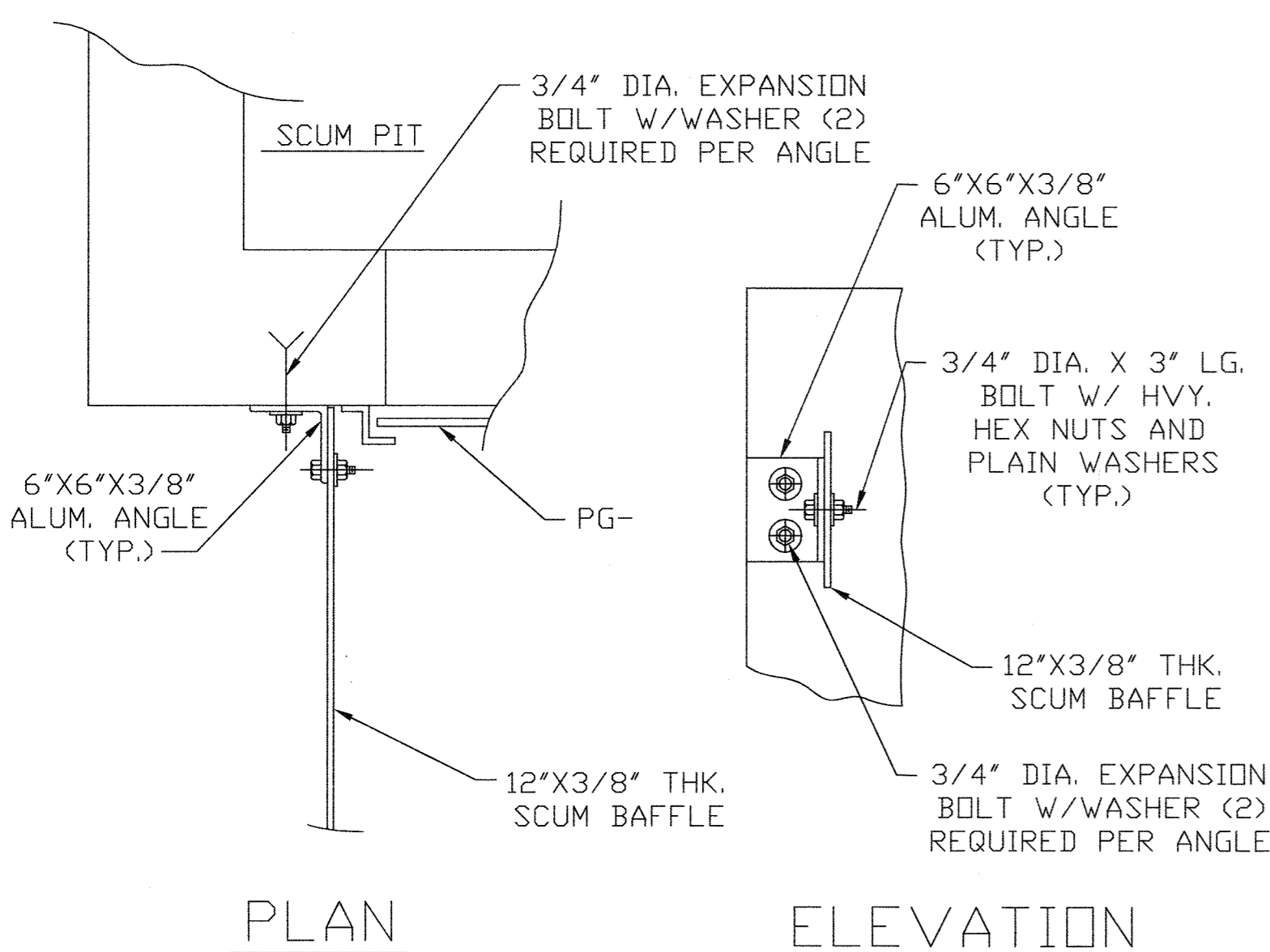
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 116 OF 226
M-22A

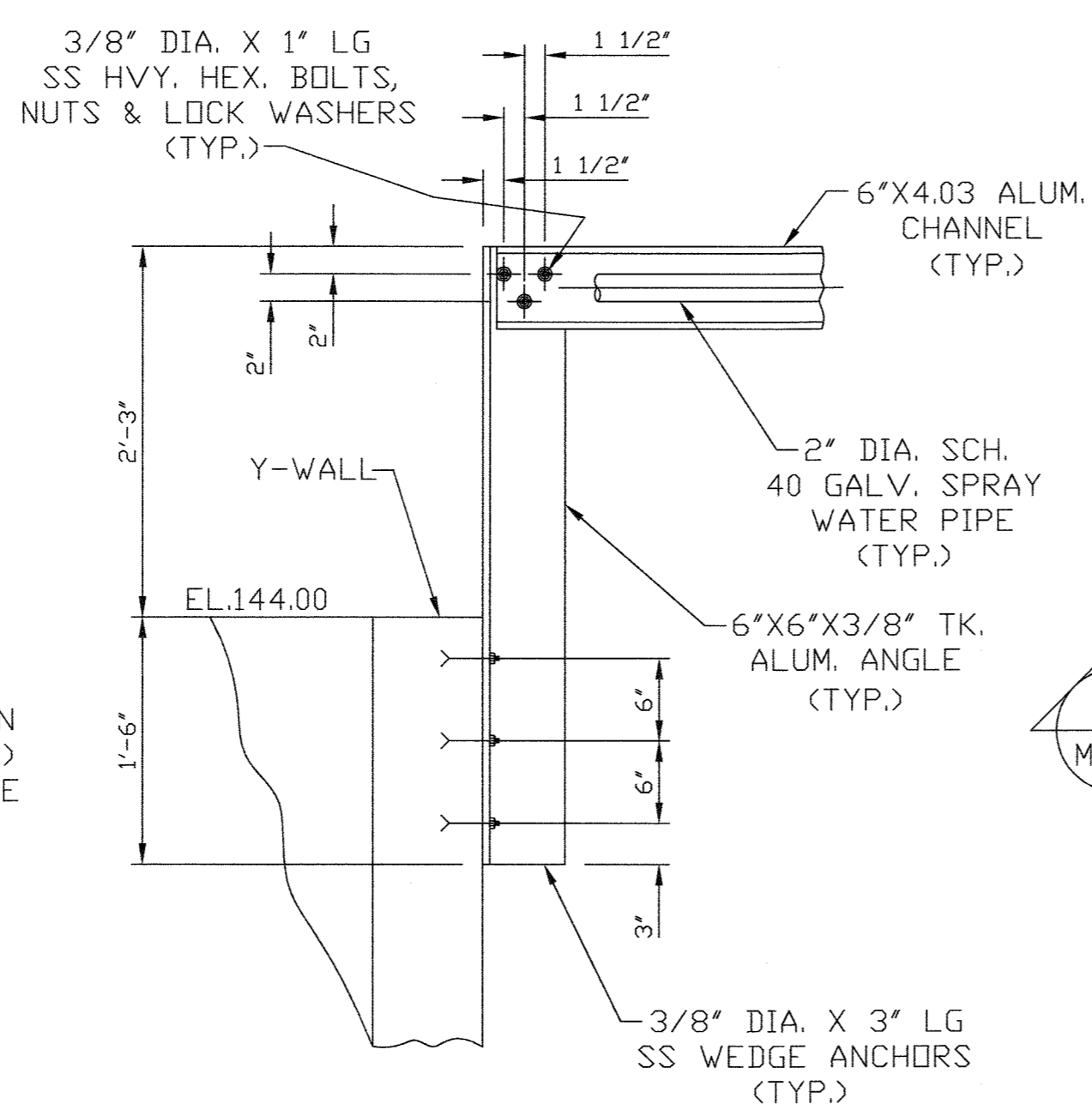


SECTION 1
SCALE: 1/4"=1'-0" M-23

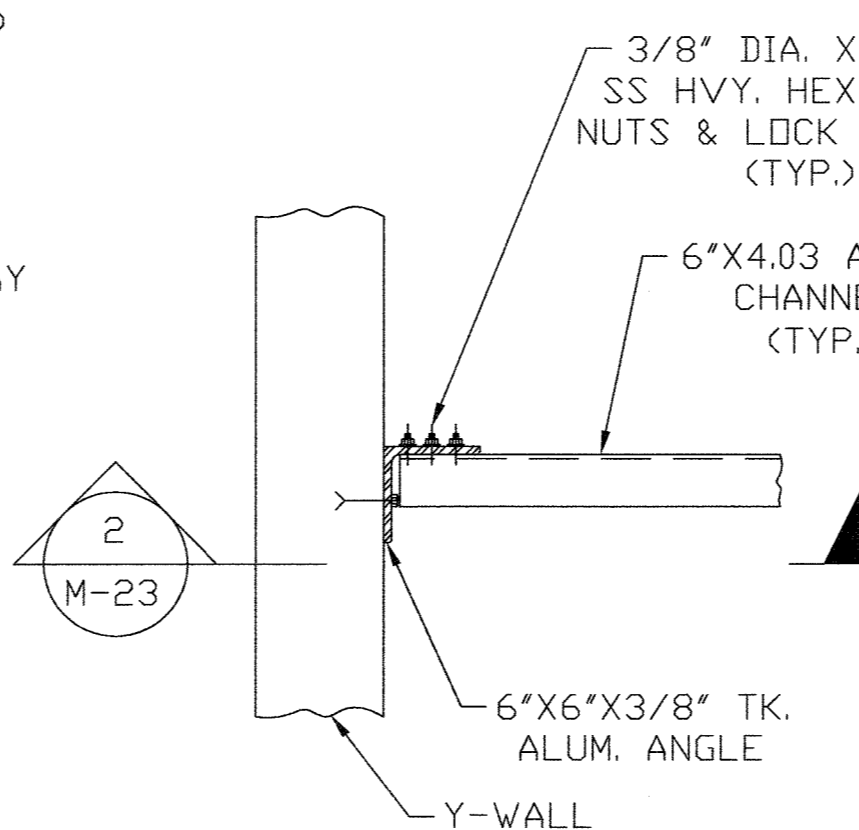
SECTION 4
SCALE: 1/4"=1'-0" M-20



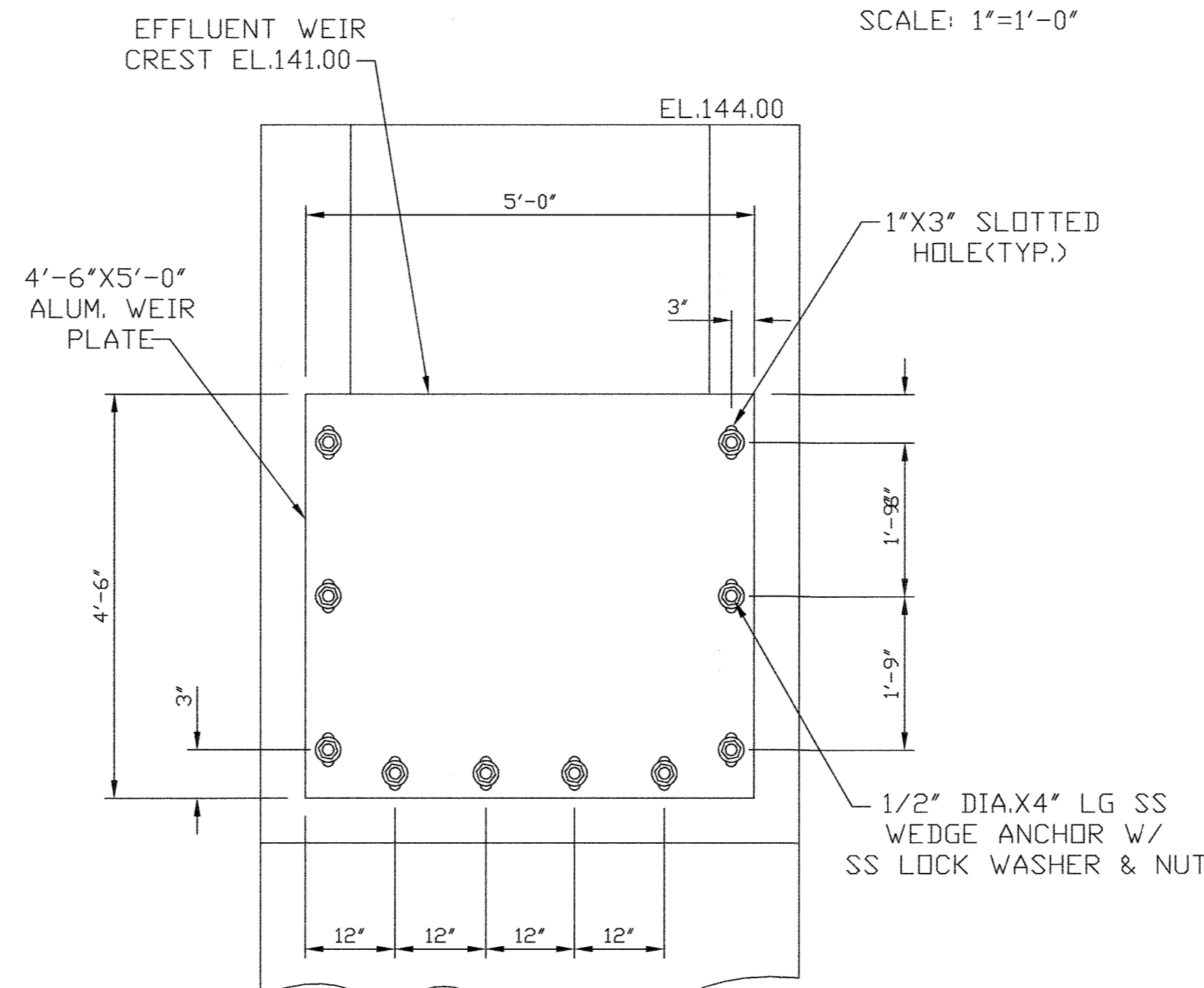
DETAIL A
SCALE: 1"=1'-0" M-22



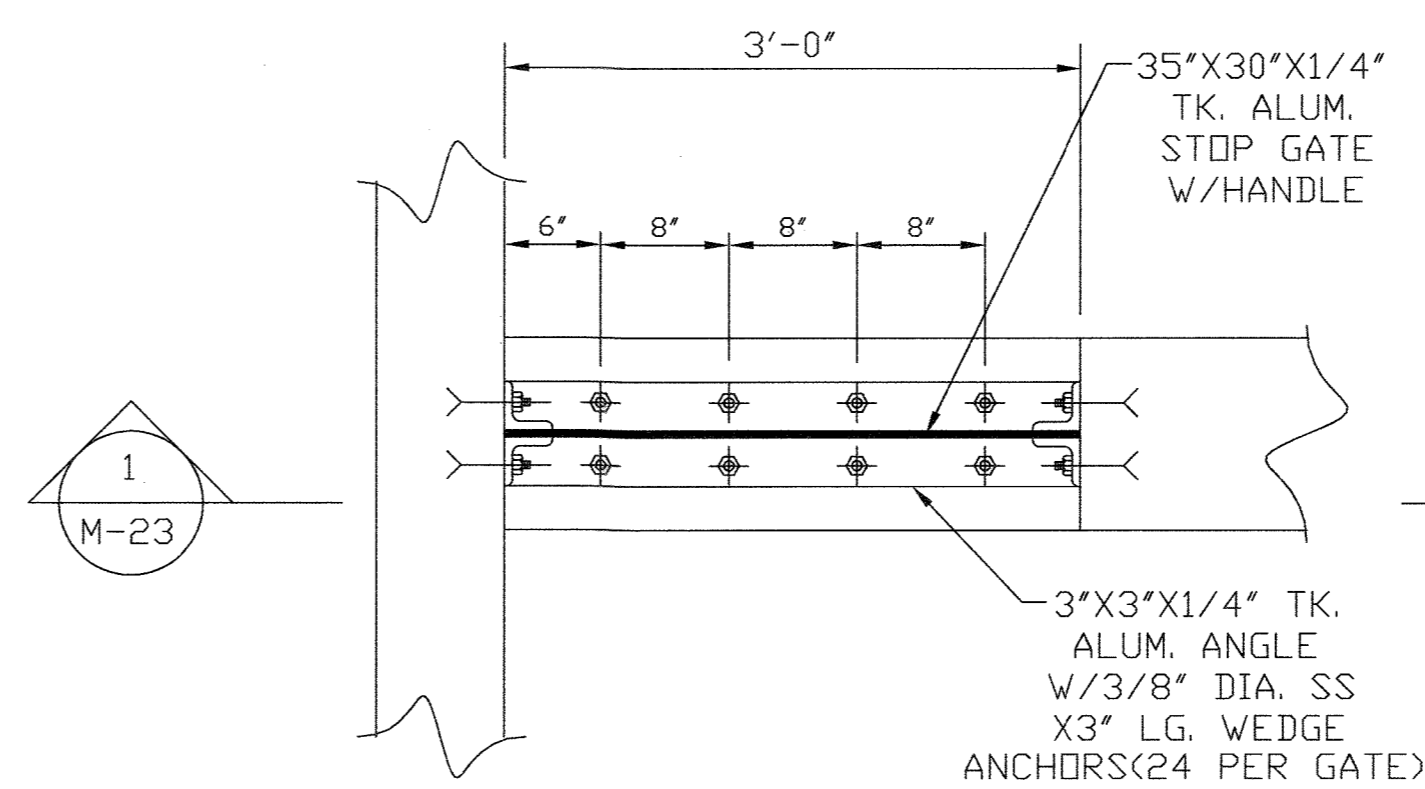
SECTION 2
SCALE: 1"=1'-0" M-23



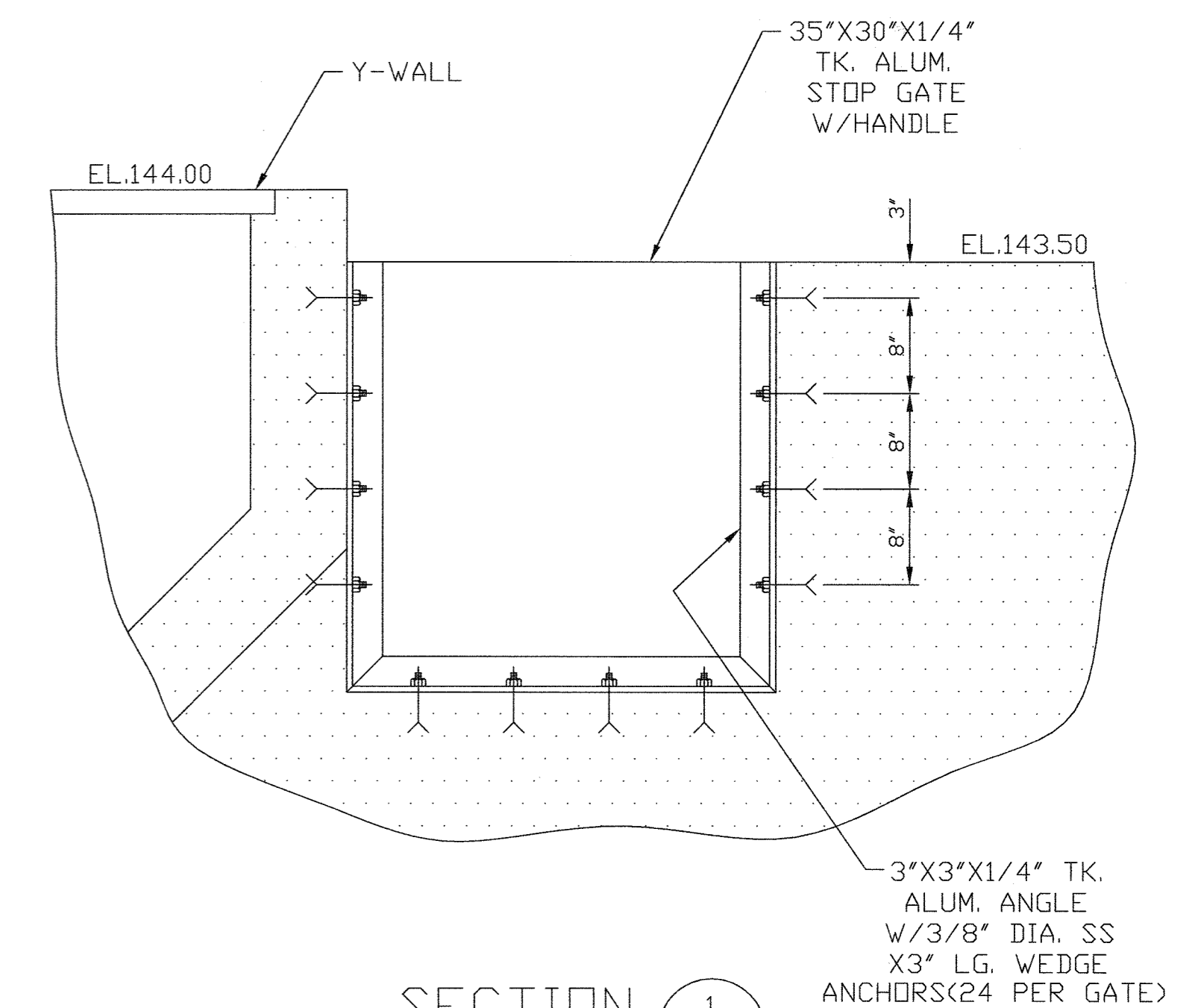
DETAIL "C"
SPRAY WATER
SUPPORT FRAME
SCALE: 1"=1'-0"



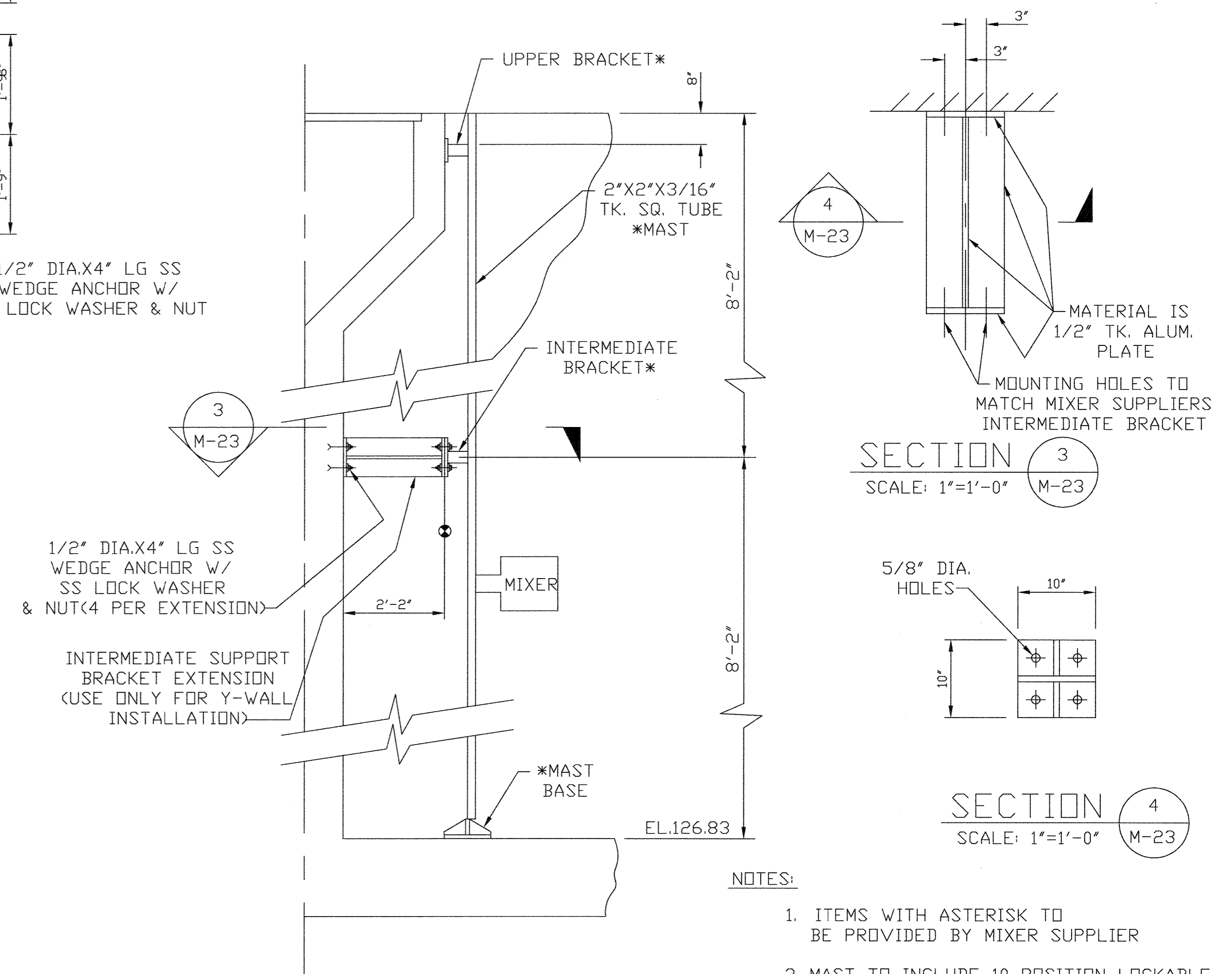
DETAIL "E"
EFFLUENT WEIR
SCALE: NONE



DETAIL "B"
SCUM RELIEF GATE
SCALE: 1"=1'-0"



SECTION 1
SCALE: 1"=1'-0" M-23



SECTION 3
SCALE: 1"=1'-0" M-23

SECTION 4
SCALE: 1"=1'-0" M-23

- NOTES:
1. ITEMS WITH ASTERISK TO BE PROVIDED BY MIXER SUPPLIER
 2. MAST TO INCLUDE 10 POSITION LOCKABLE POSITIONER PLATE AND HOIST SOCKET TO ATTACH TO UPPER SUPPORT BRACKET.

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DETAIL "D"
SUBMERSIBLE MIXER
LIFTOUT SYSTEM
SCALE: 1/2"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James H. Slaw 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

Paul R. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Jonathan W. Boone 5-7-96
REGISTERED PROFESSIONAL ENGINEER DATE

M&E Metcalf & Eddy

STATE OF MARYLAND
JONATHAN W. BOONE
No. 75140
REGISTERED PROFESSIONAL ENGINEER

DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

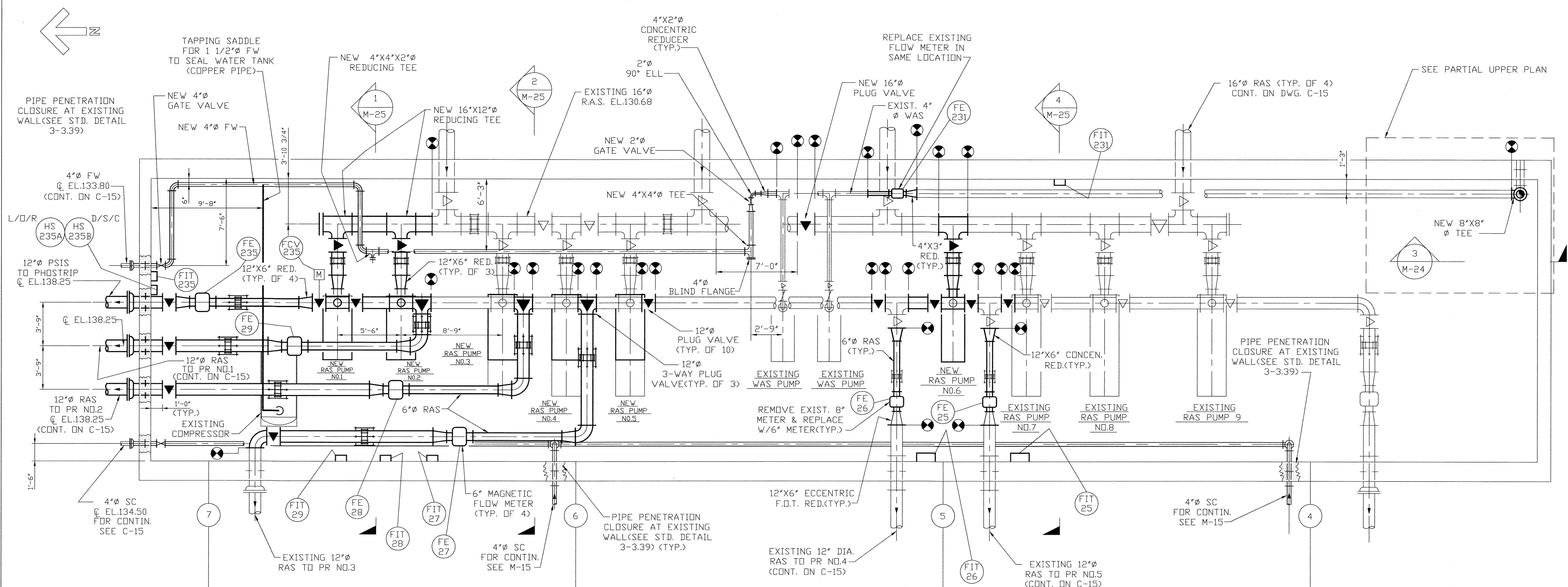
MECHANICAL

DOUBLE PASS PROCESS
REACTOR MODIFICATIONS
SECTIONS AND DETAILS

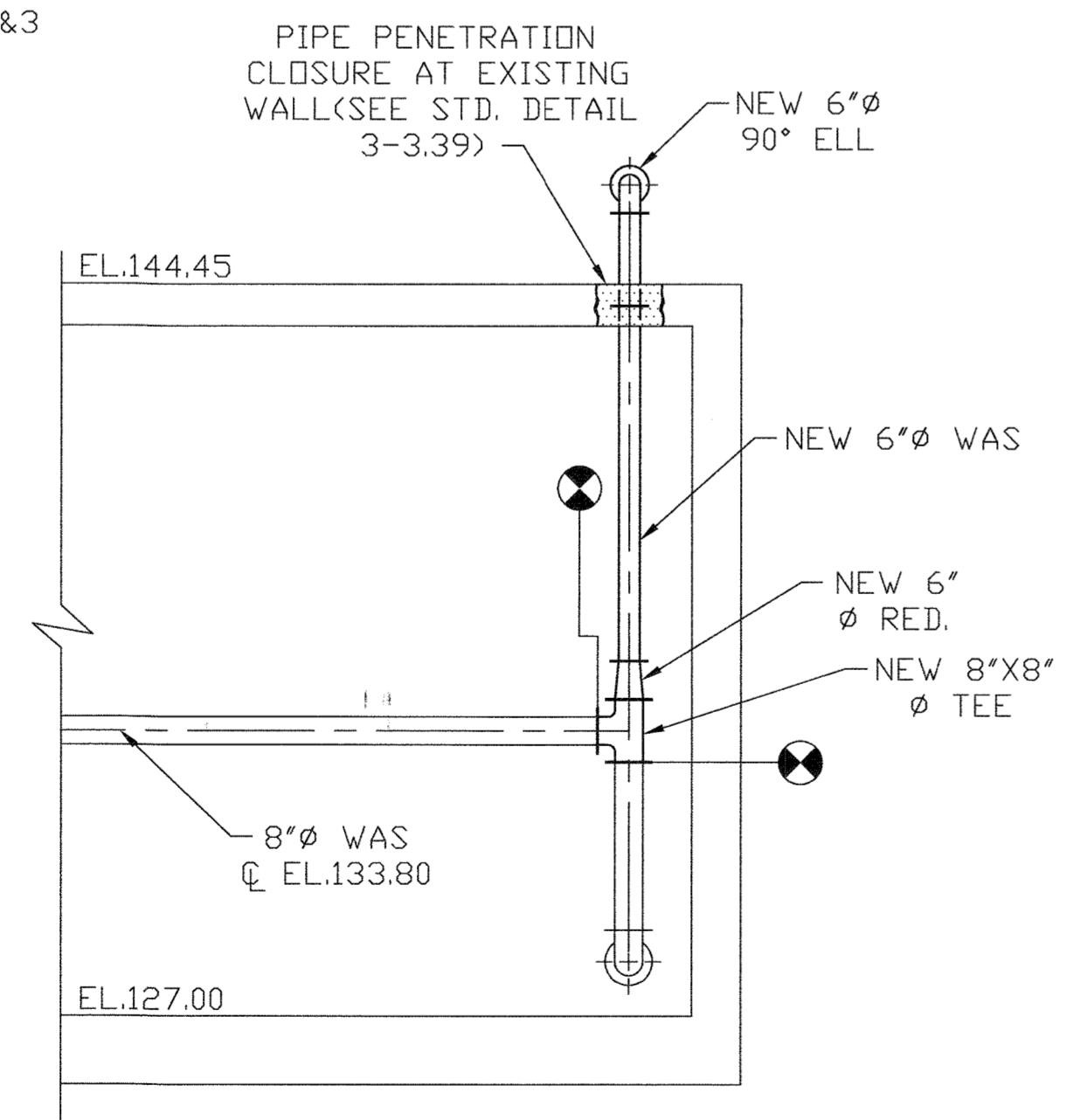
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

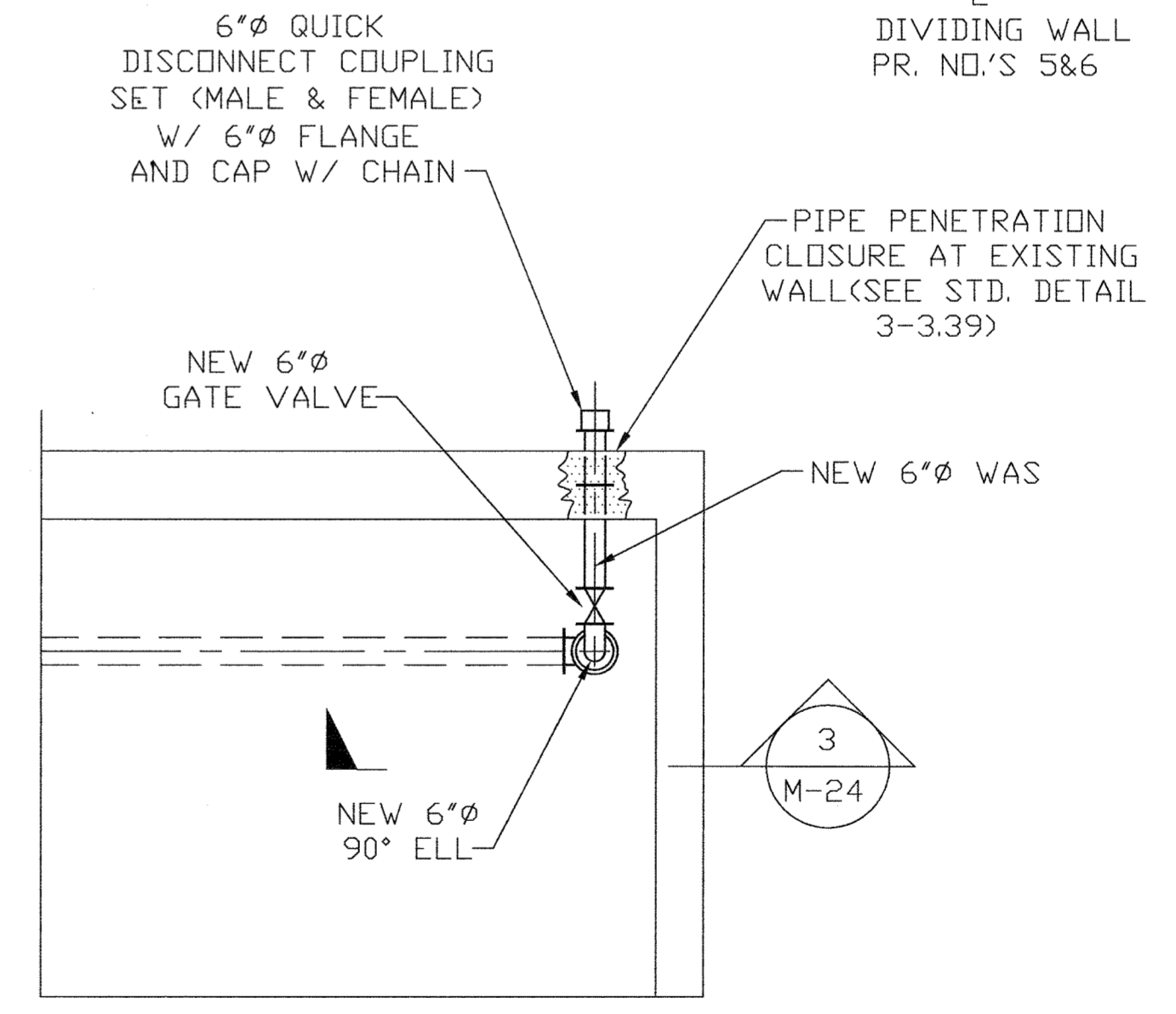
SCALE AS SHOWN
SHEET 117 OF 226
M-23A



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



SECTION 3
SCALE: 1/4"=1'-0"
M-24



PARTIAL UPPER PLAN
SCALE: 1/4"=1'-0"

- Record Drawing Notes:**
- All elevations should be field verified before using
 - Weir and water elevations based on post-construction survey by Howard County.

- LEGEND:**
- DENOTES EXISTING EQUIPMENT
 - DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James R. Law 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

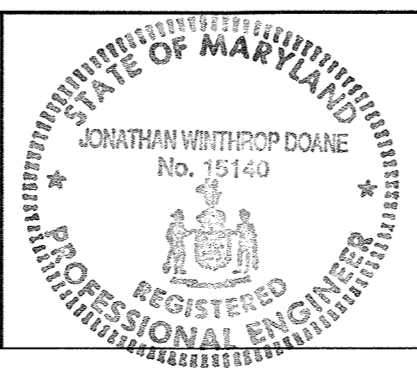
John J. O'Hara 5/7/96
CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE

Jonathan Whitrop Doane 5/7/96
CHIEF BUREAU OF ENGINEERING DATE

Oliver D. ... 5-7-96
CHIEF UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE

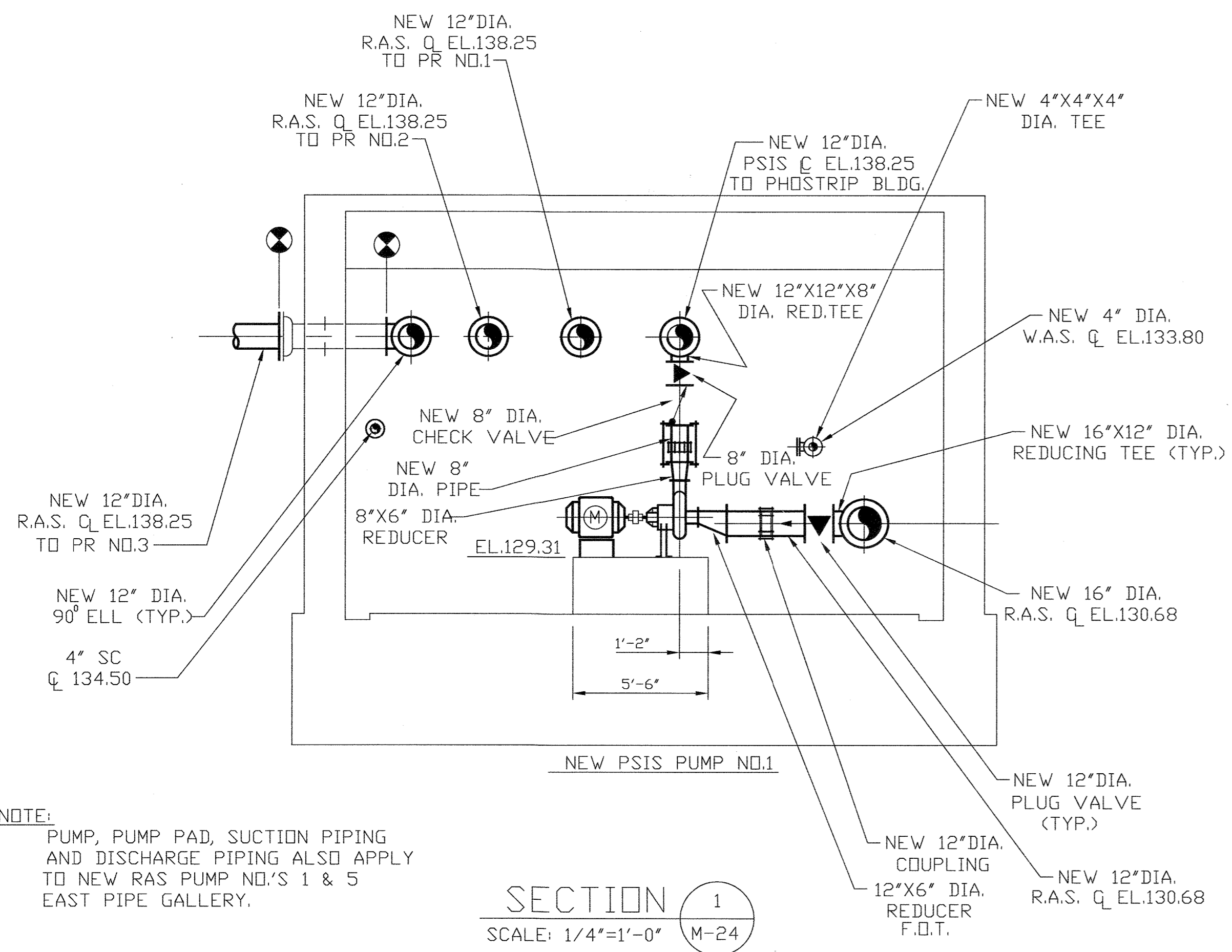


DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION	DATE	

MECHANICAL
EAST PIPE GALLERY
MODIFICATIONS
PLANS

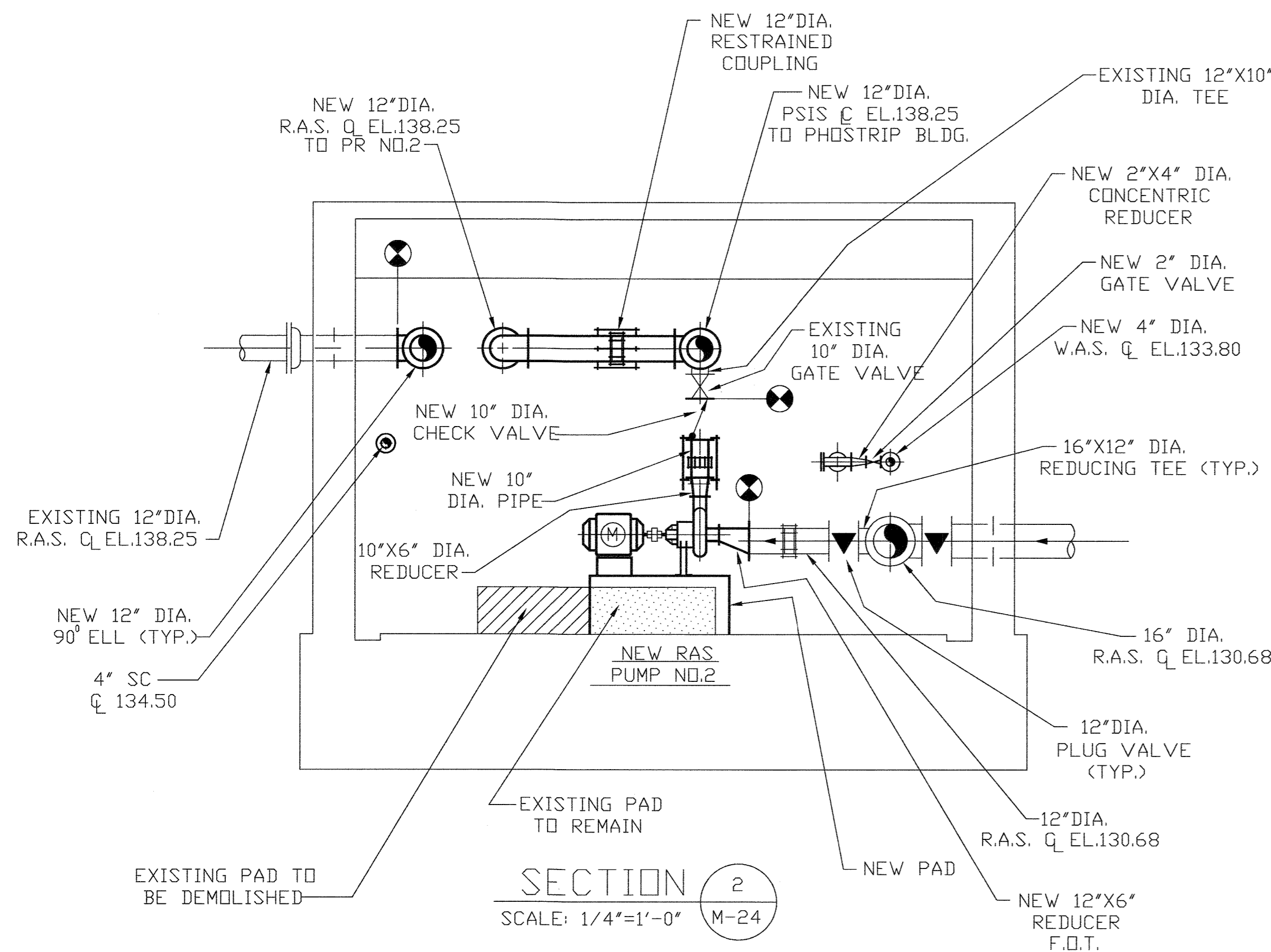
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 118 OF 226
M-24A



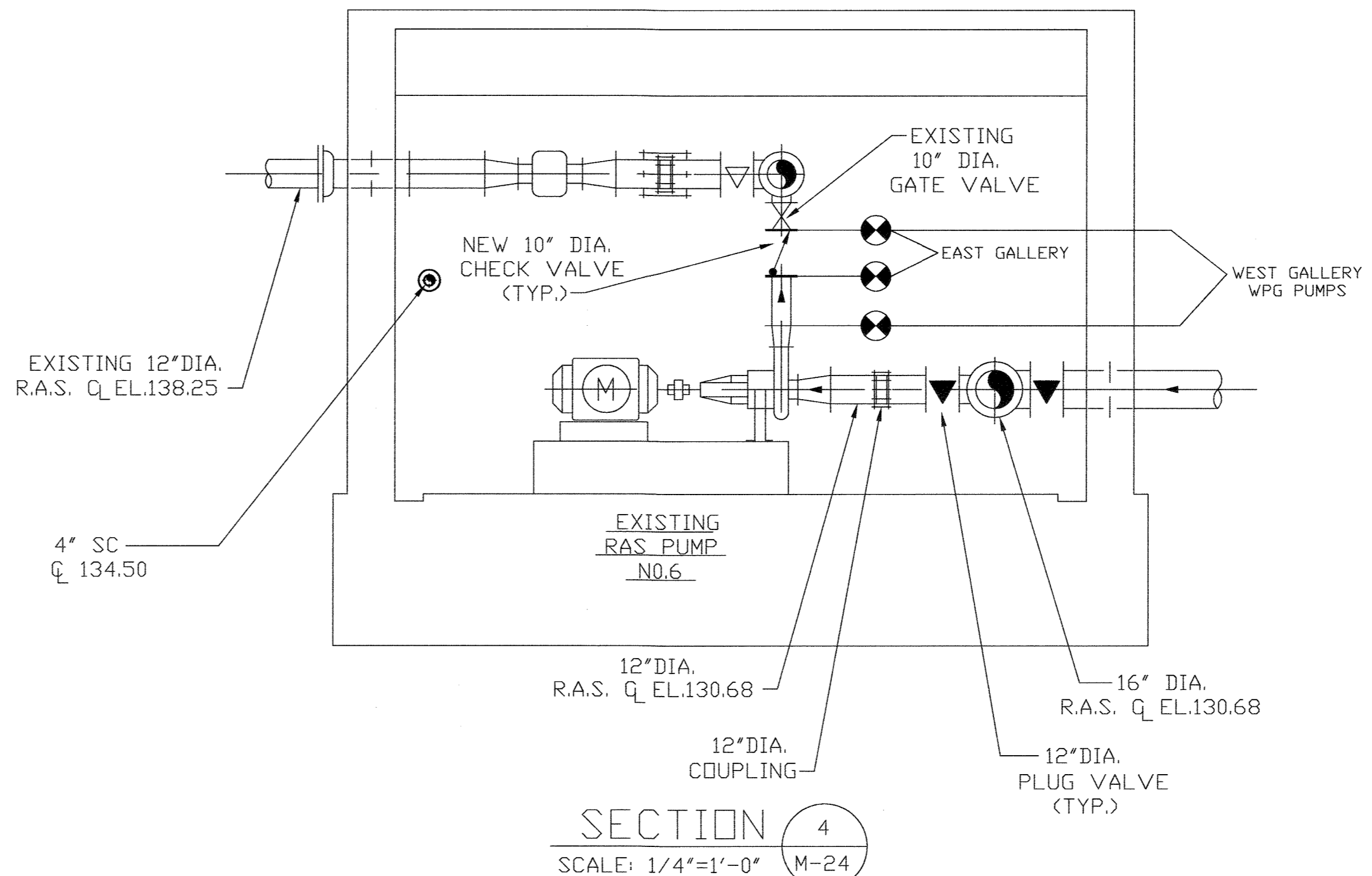
NOTE:
PUMP, PUMP PAD, SUCTION PIPING
AND DISCHARGE PIPING ALSO APPLY
TO NEW RAS PUMP NO'S 1 & 5
EAST PIPE GALLERY.

SECTION 1
SCALE: 1/4"=1'-0" M-24



NOTE:
PUMP, SUCTION PIPING, PAD & DISCHARGE PIPING
ALSO APPLY TO NEW RAS PUMP NO'S 3 & 4
IN EAST PIPE GALLERY AND RAS PUMP NO. 4 IN
WEST PIPE GALLERY.

SECTION 2
SCALE: 1/4"=1'-0" M-24



NOTE:
SECTION ALSO APPLIES TO PUMP NO'S
17, 15, 14, 12 & 11 IN WEST GALLERY

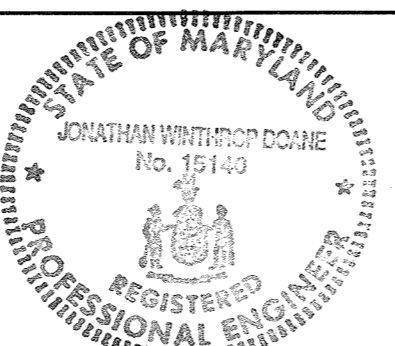
SECTION 4
SCALE: 1/4"=1'-0" M-24

LEGEND:
 DENOTES EXISTING EQUIPMENT
 DENOTES NEW EQUIPMENT
 CONNECTION OF EXISTING TO NEW

Record Drawing Notes:
 1. All elevations should be field verified before using.
 2. Water and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John J. [Signature]* 5/1/96
 Chief, Bureau of Engineering: *John B. [Signature]* 5/7/96
 Chief, Bureau of Environmental Services: *John [Signature]* 5/7/96
 Chief, Utility Design Division: *John [Signature]* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. [Signature] 5-7-96
 REG. PROF. ENGR.

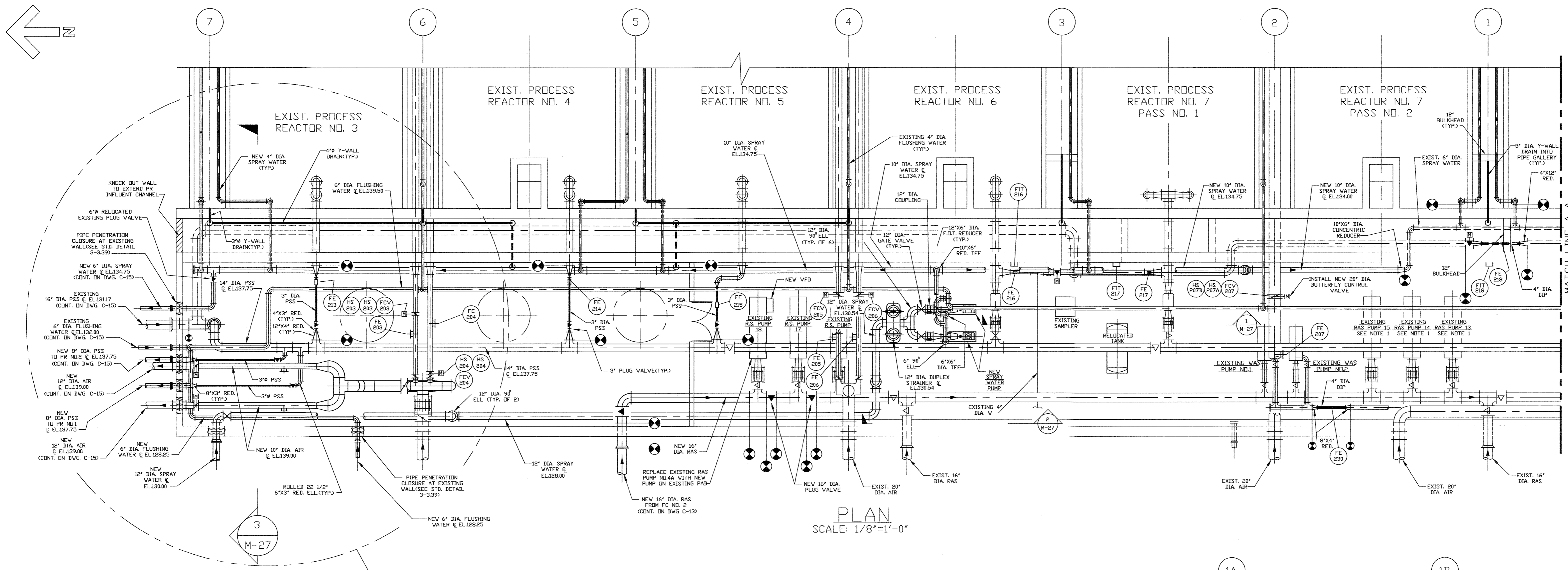
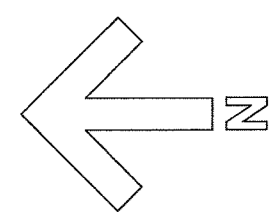


DES			
DRN	M.J.C.		
CHK	J.H.		
M.J.C.	1	RECORD DRAWING	11/2/94
DATE	BY	NO.	REVISION

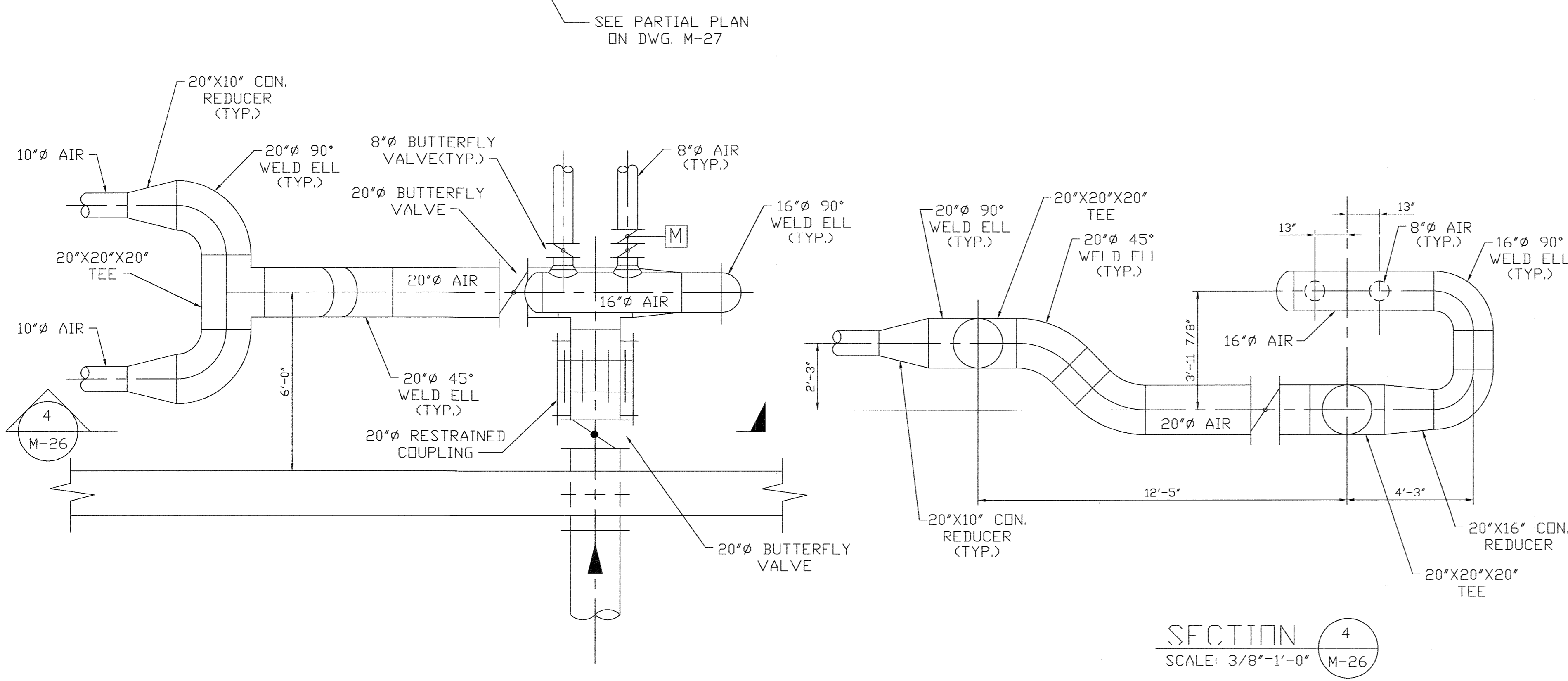
MECHANICAL
EAST PIPE GALLERY MODIFICATIONS SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 119 OF 226
 M-25A

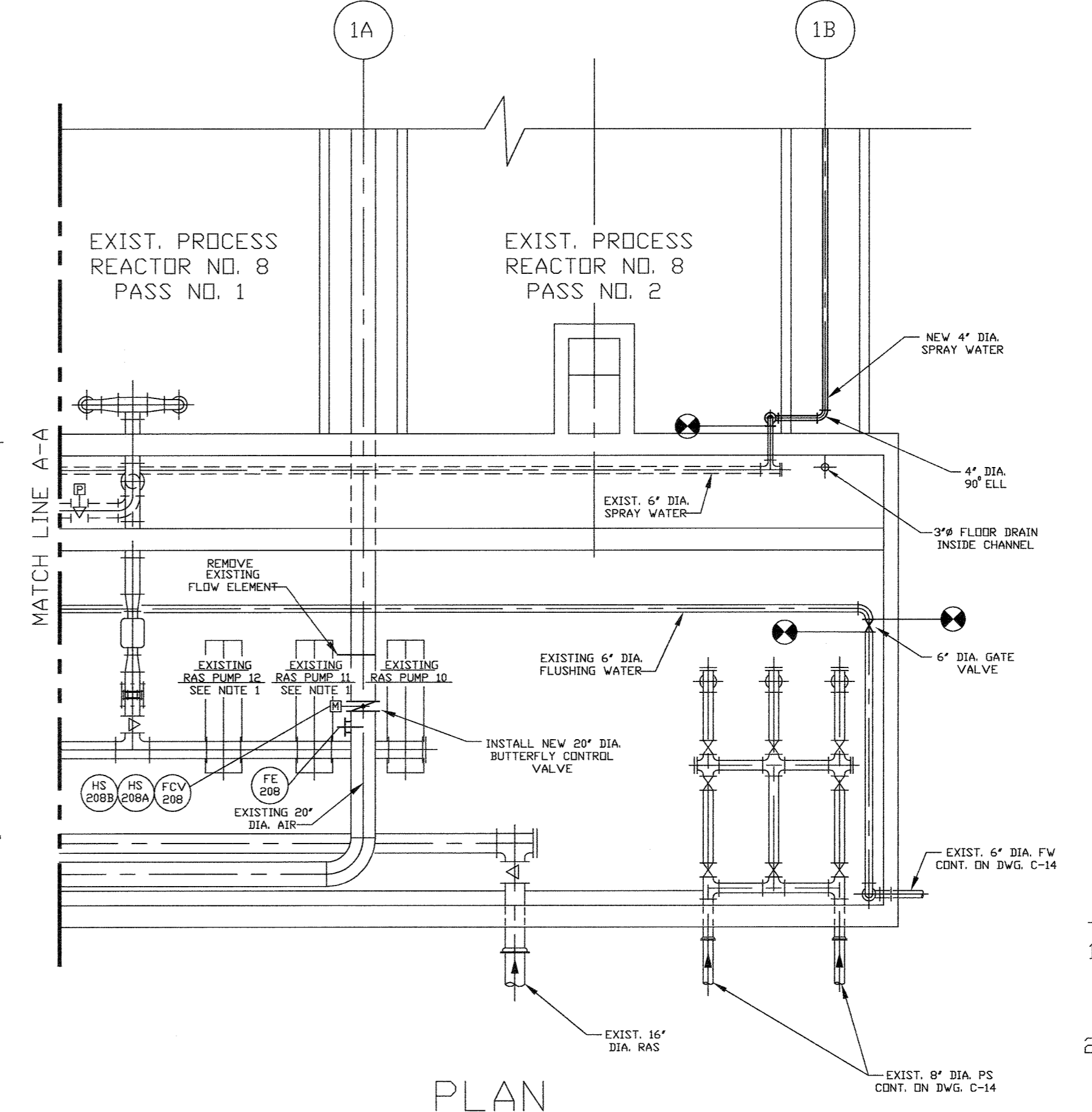


PLAN
SCALE: 1/8"=1'-0"



DETAIL OF 20"Ø AIR
PLAN
SCALE: 3/8"=1'-0"

SECTION 4
SCALE: 3/8"=1'-0"



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

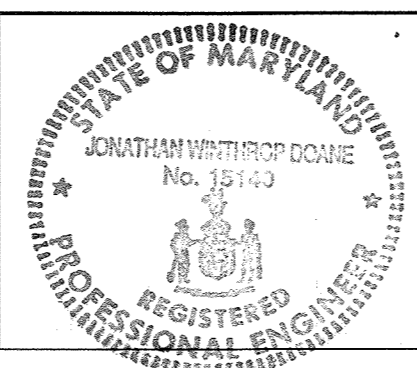
- NOTE:
- INSTALL NEW 10" DIA. CHECK VALVES IN DISCHARGE LINES OF RAS PUMP NO.'S 17, 15, 14, 12 & 11.
 - EXISTING SPRAY WATER AND EQUIPMENT WAS COMPLETELY REMOVED.

- Record Drawing Notes:
- All elevations should be field verified before using.
 - Weir and water elevations based on post-construction survey by Howard County.

LEGEND:
 DENOTES EXISTING EQUIPMENT
 DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *James A. Elmer* 5/7/96
 Chief, Bureau of Engineering: *Paul R. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John J. Hara* 5/7/96
 Chief, Utility Design Division: *Debra J. ...* 5-7-96

M&E Metcalf & Eddy
 REGISTERED PROFESSIONAL ENGINEER
James W. ... 5-7-96

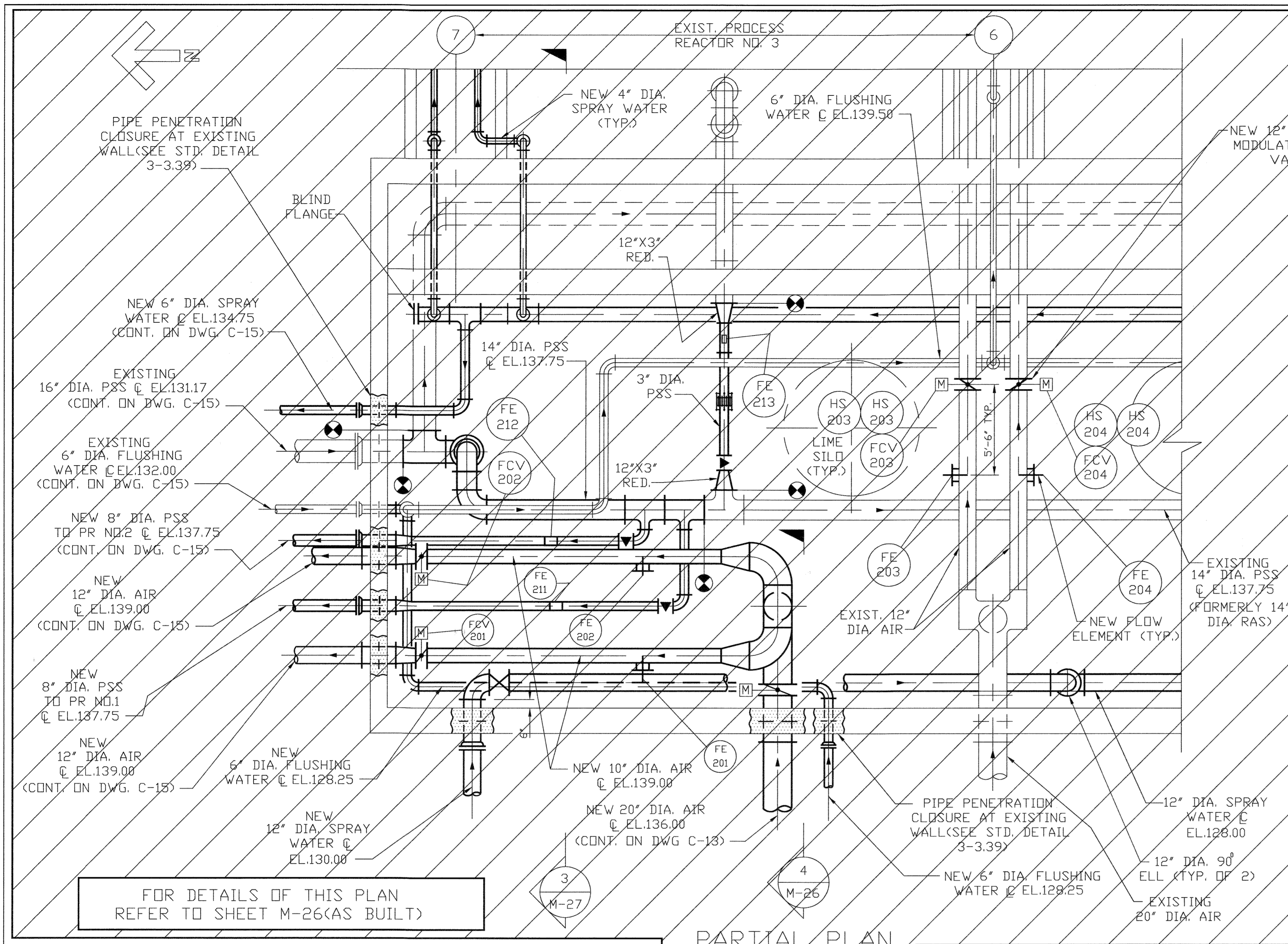


DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

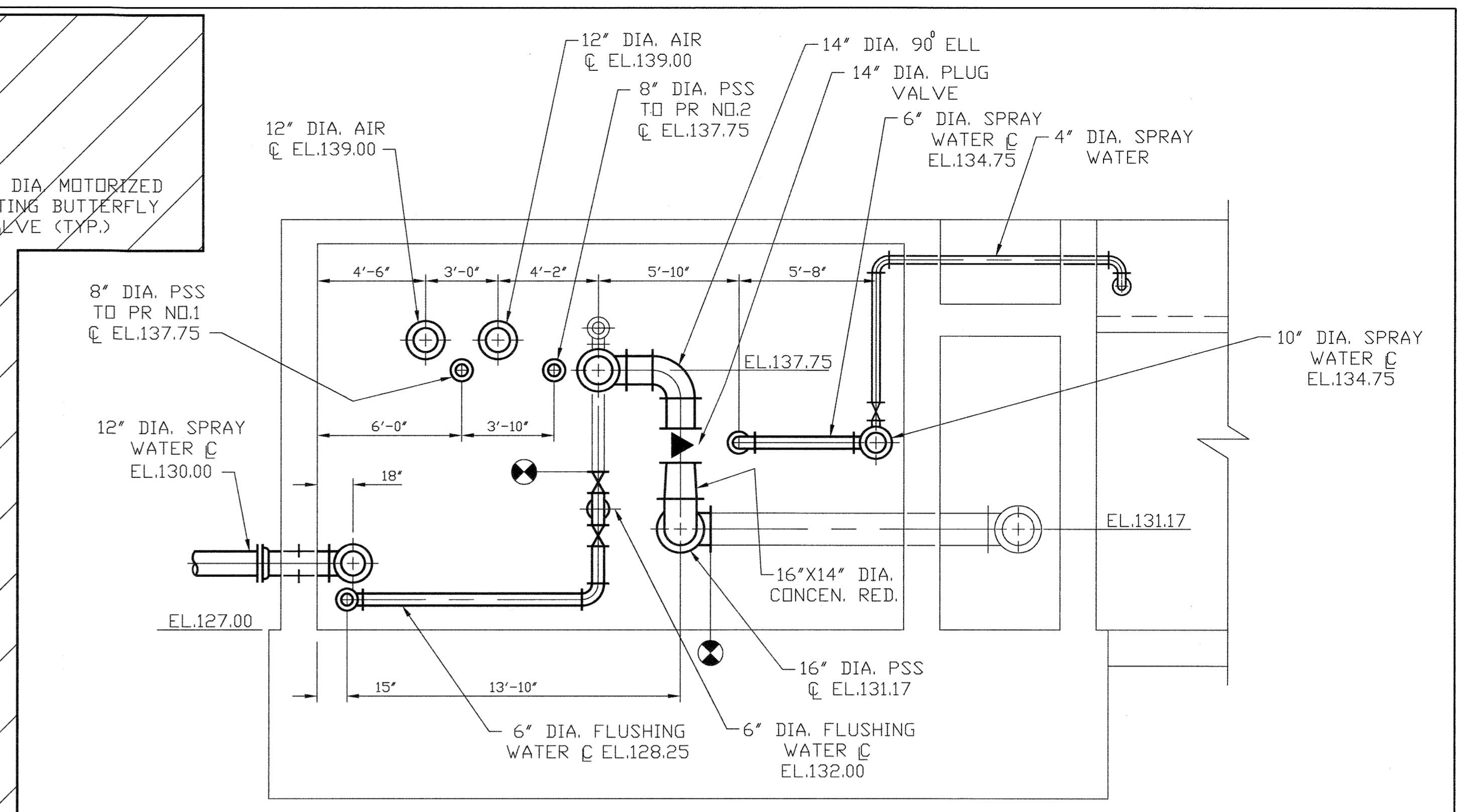
MECHANICAL
 WEST PIPE GALLERY
 MODIFICATIONS
 PLAN & SECTION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

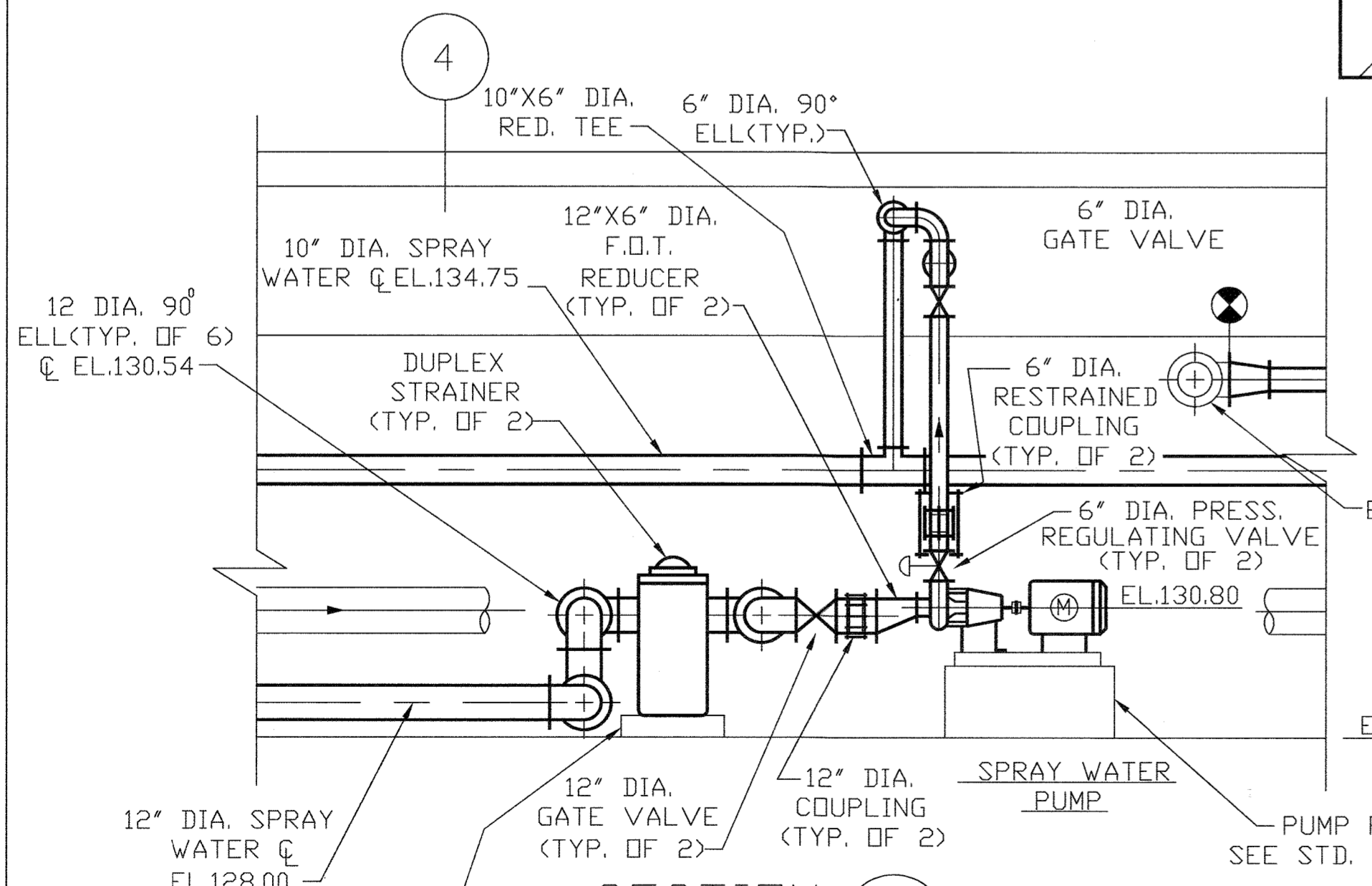
SCALE AS SHOWN
 SHEET 120 OF 226
 M-26A



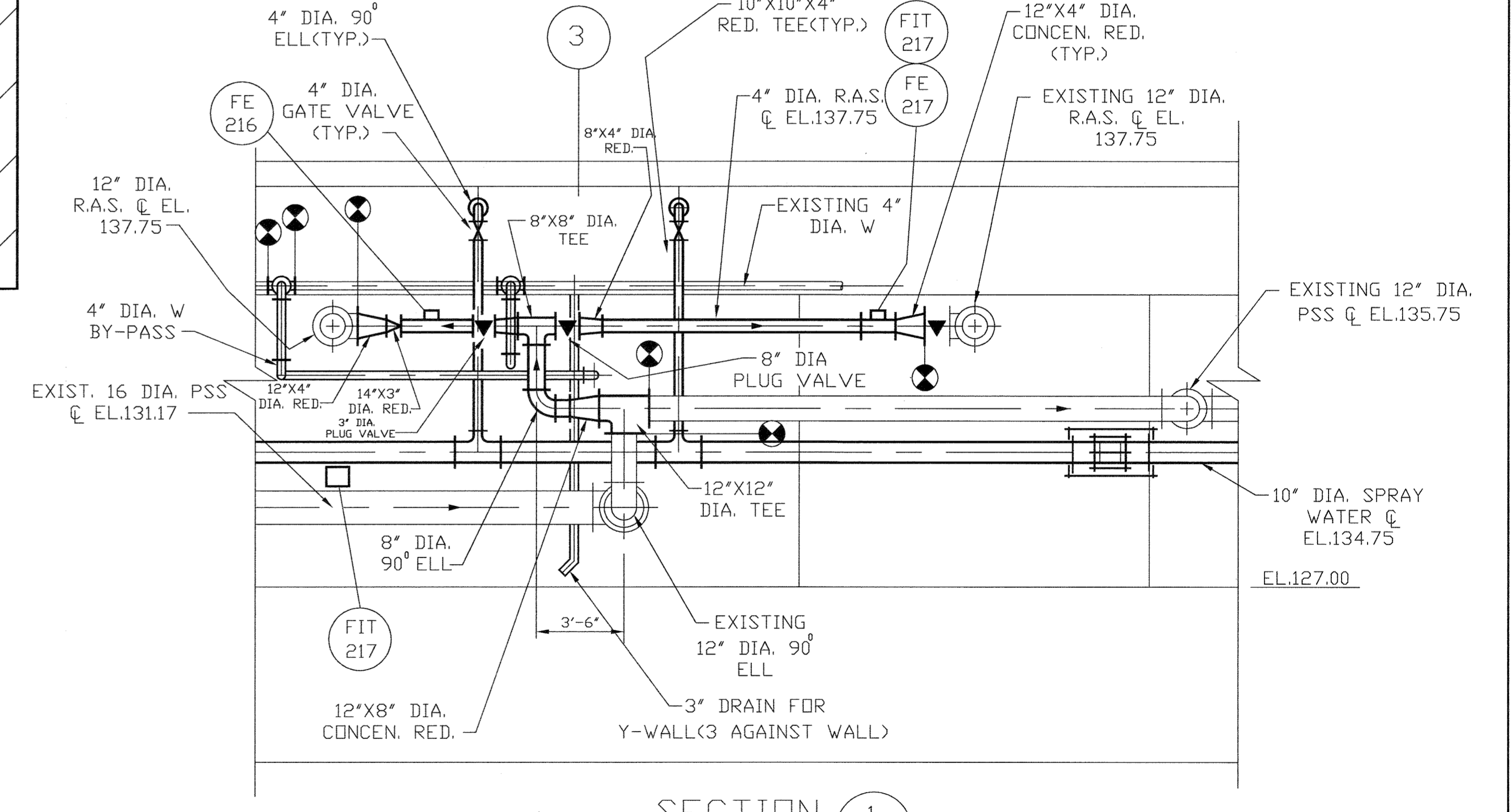
PARTIAL PLAN
SCALE: 1/4"=1'-0"



SECTION 3
SCALE: 1/4"=1'-0"
M-26
M-27



SECTION 2
SCALE: 1/4"=1'-0"
M-26

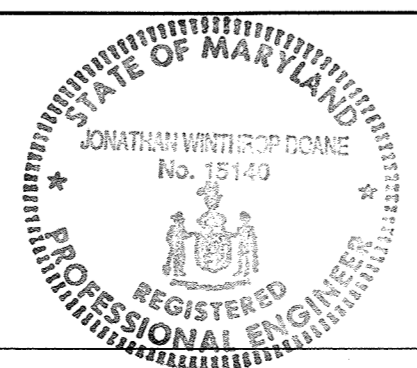


SECTION 1
SCALE: 1/4"=1'-0"
M-26

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/7/96
5/7/96

M&E Metcalf & Eddy
5-7-96

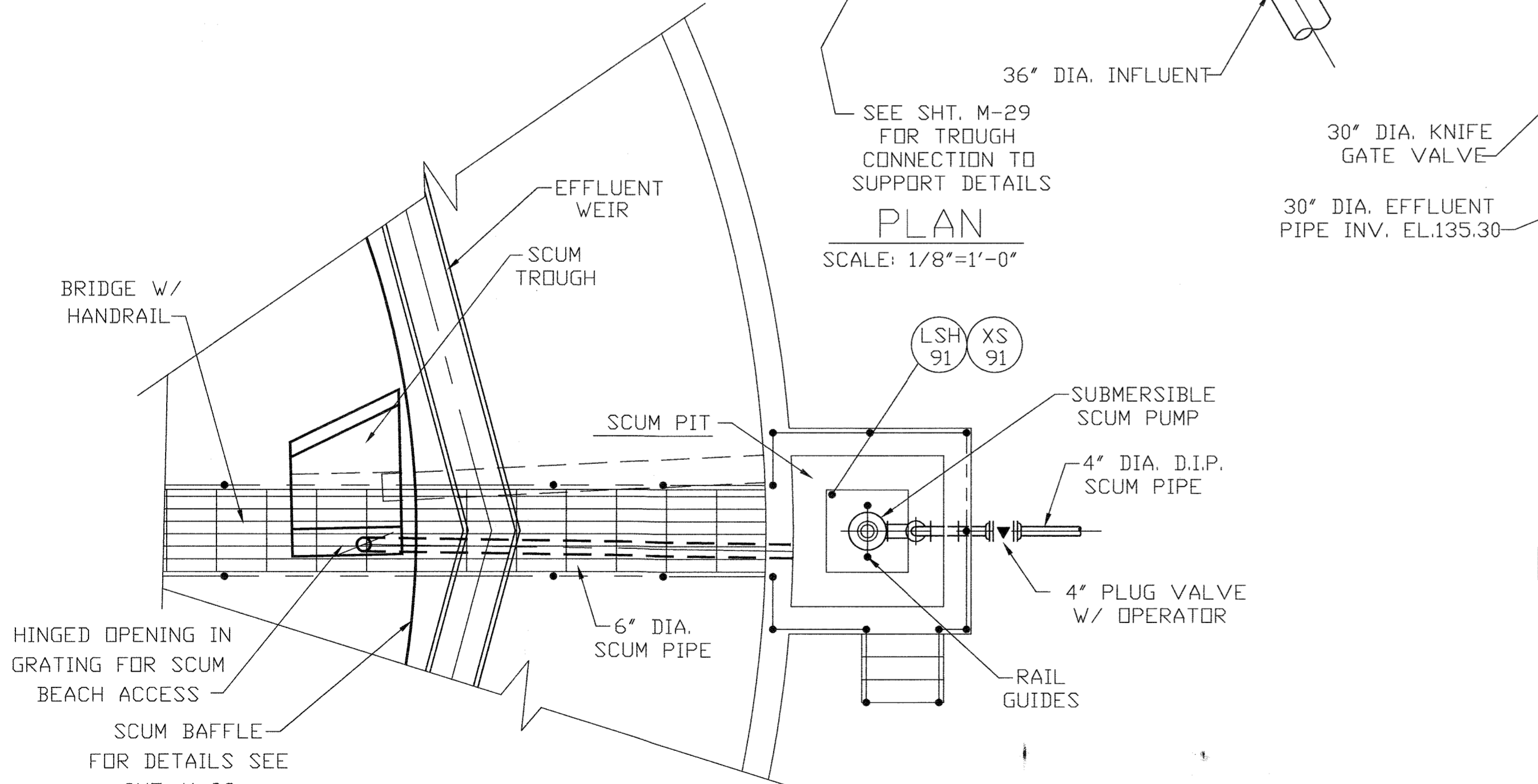
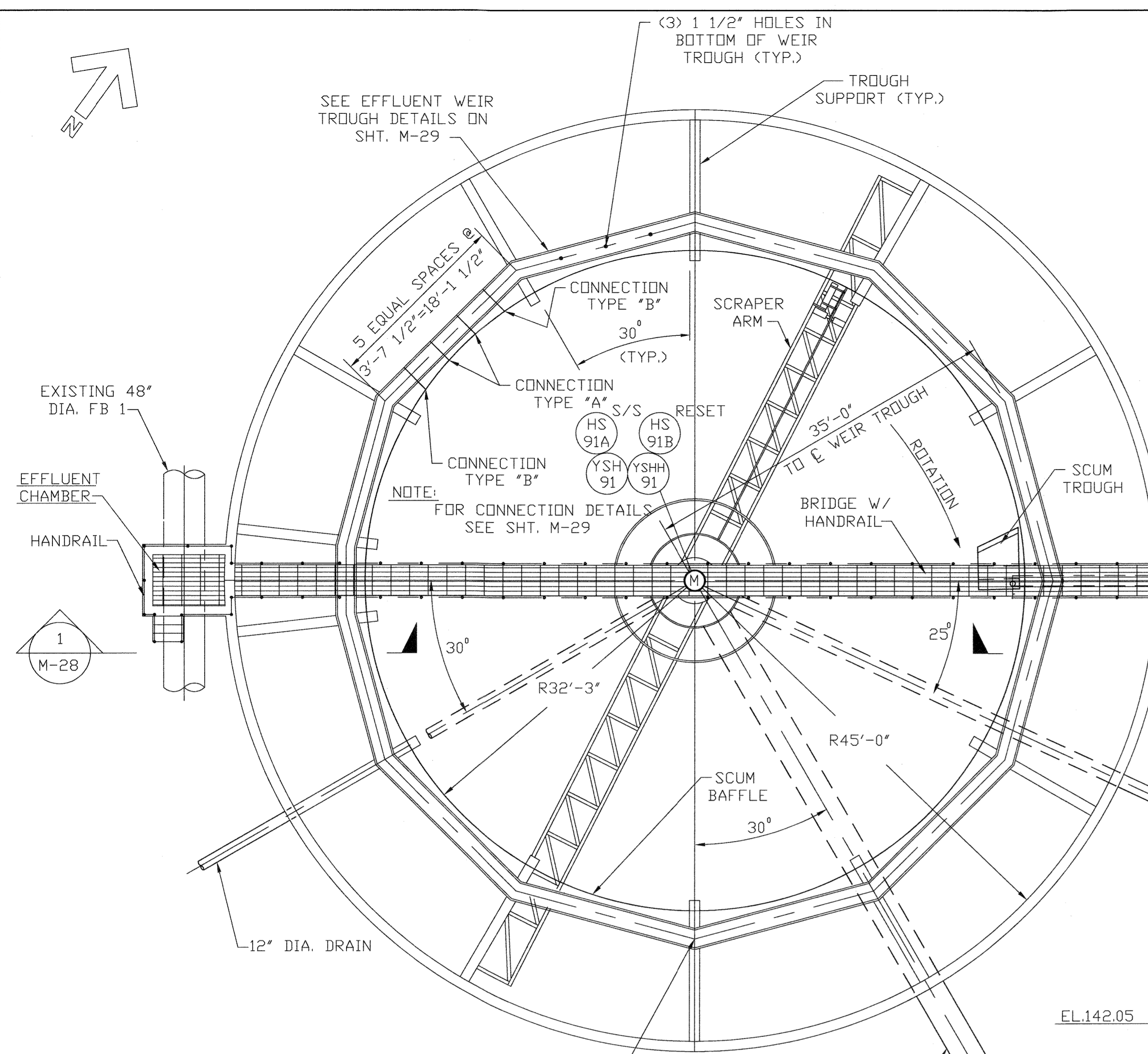


DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING	11/2/94		
	BY	NO.	REVISION		DATE

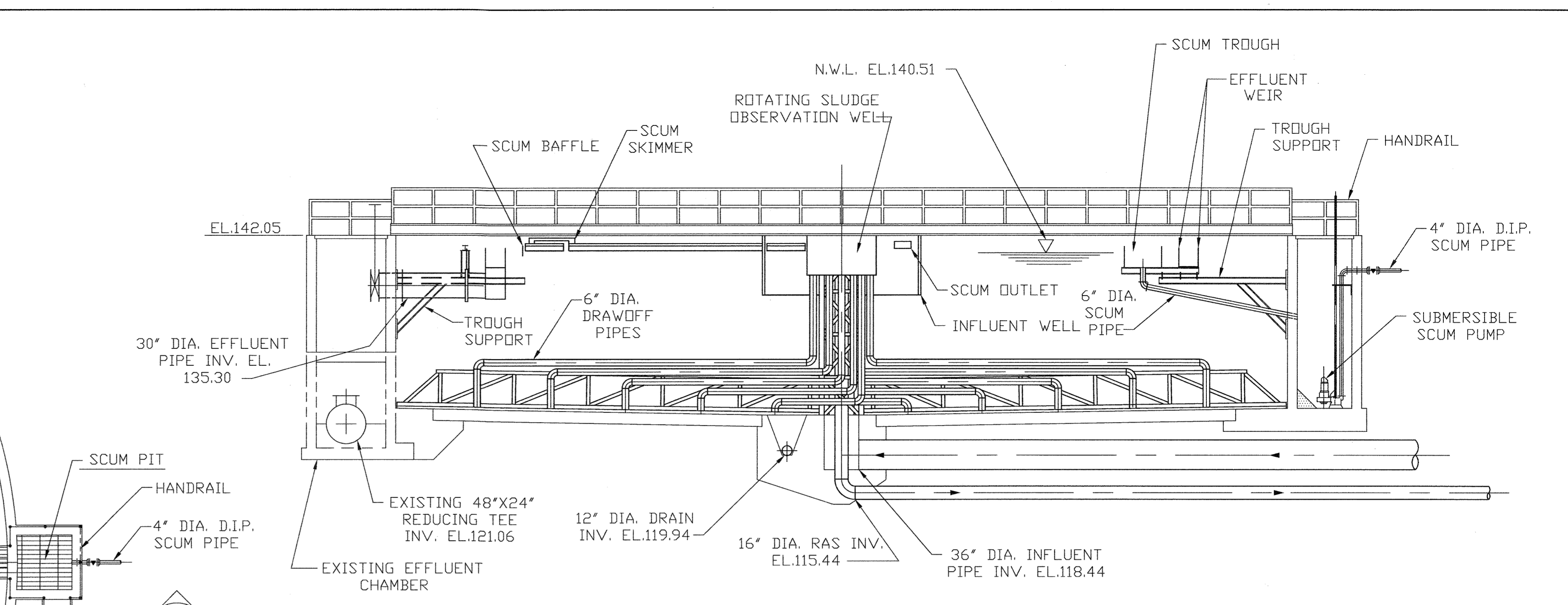
MECHANICAL
WEST PIPE GALLERY
MODIFICATIONS
SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 121 OF 226
M-27A

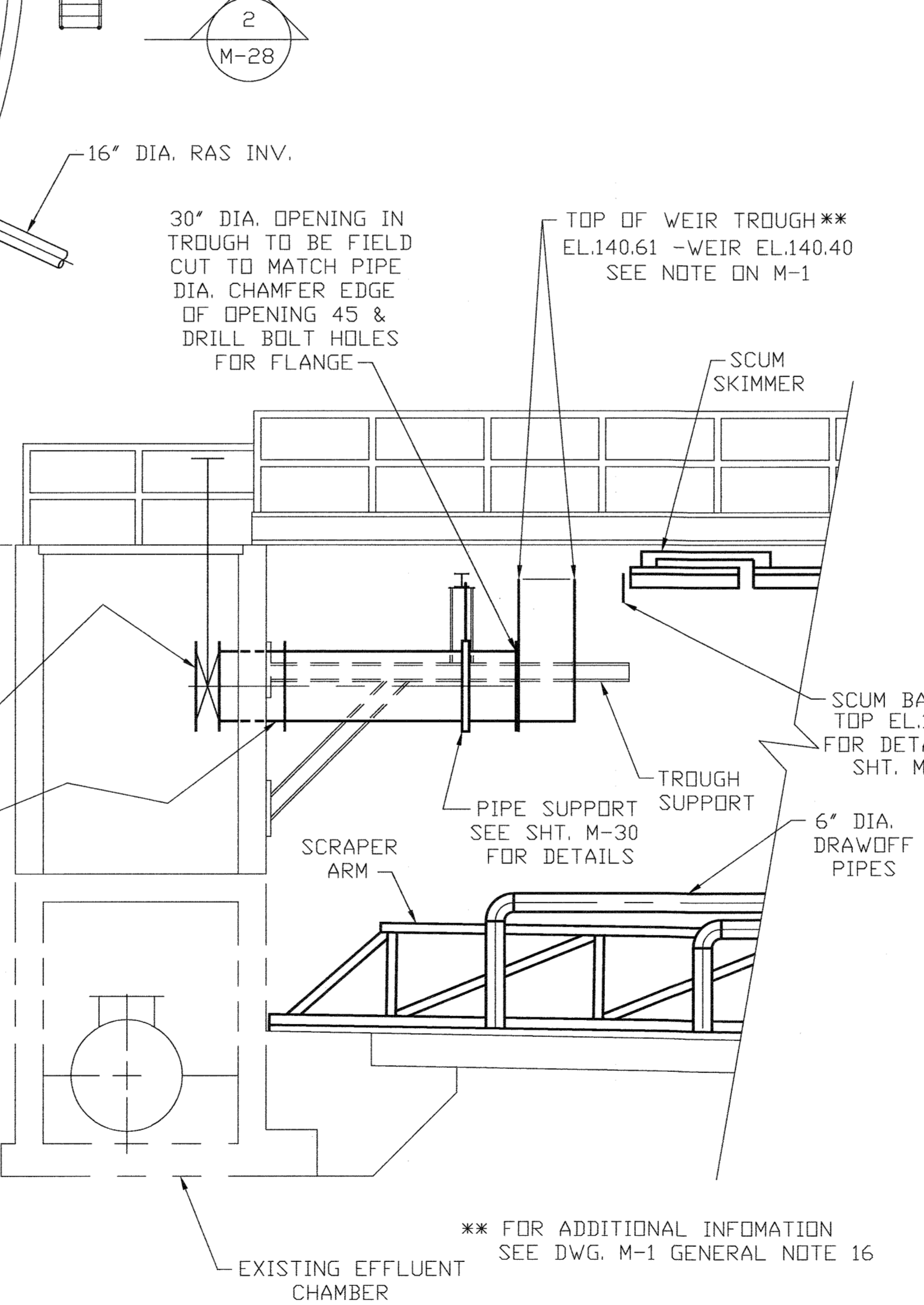


PARTIAL PLAN OF SCUM PIT
SCALE: 1/4"=1'-0"

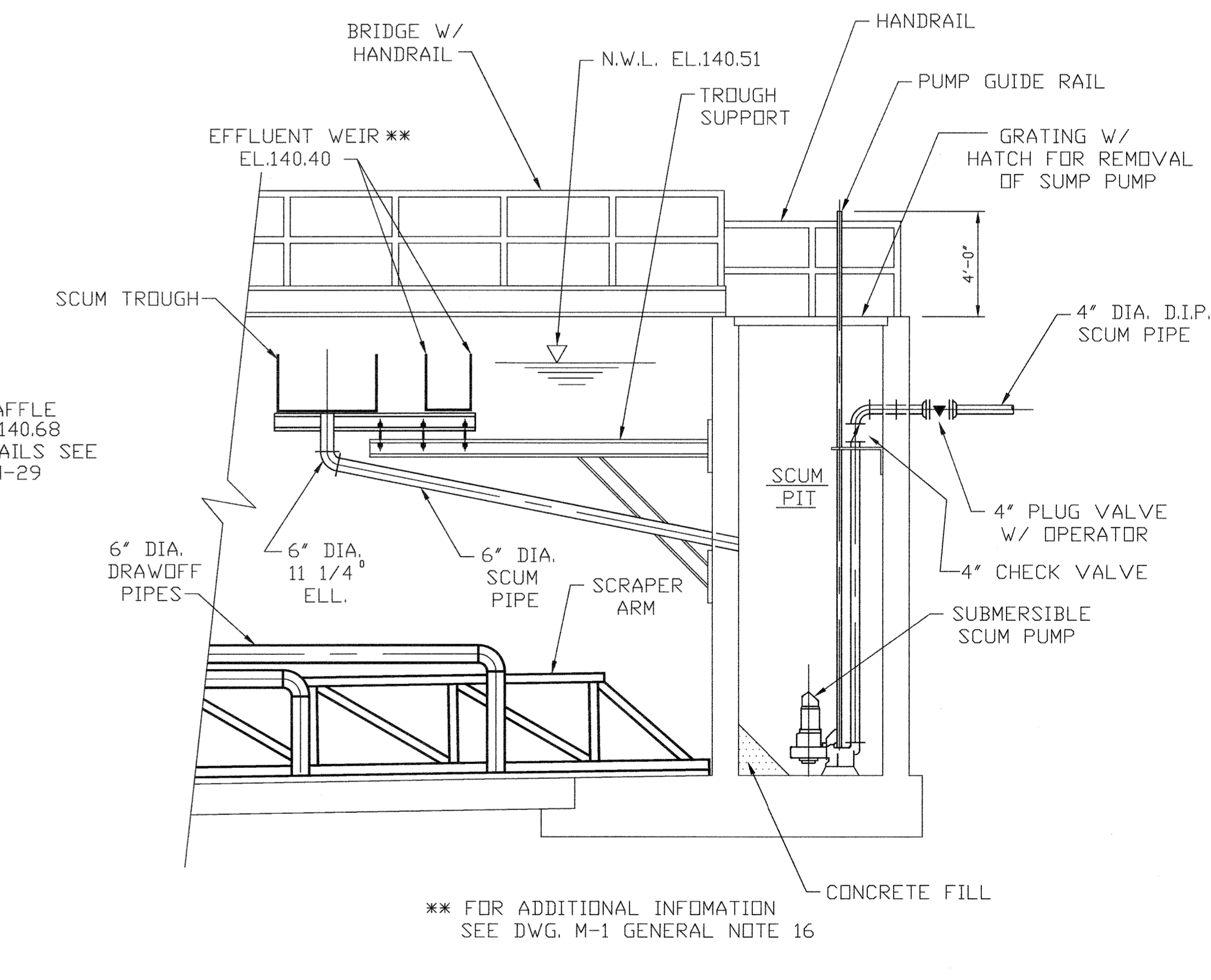


TYPICAL SECTION
SCALE: 1/8"=1'-0"

NOTE:
FINAL CLARIFIER NO. 2 WEIR ELEV. IS SET AT 140.40 RELATIVE TO HOWARD CO. BENCH MARK CORRESPONDING HIGH & NORMAL WATER ELEVATIONS ARE 140.56 & 140.51 RESPECTIVELY. SEE NOTE ON M-1.



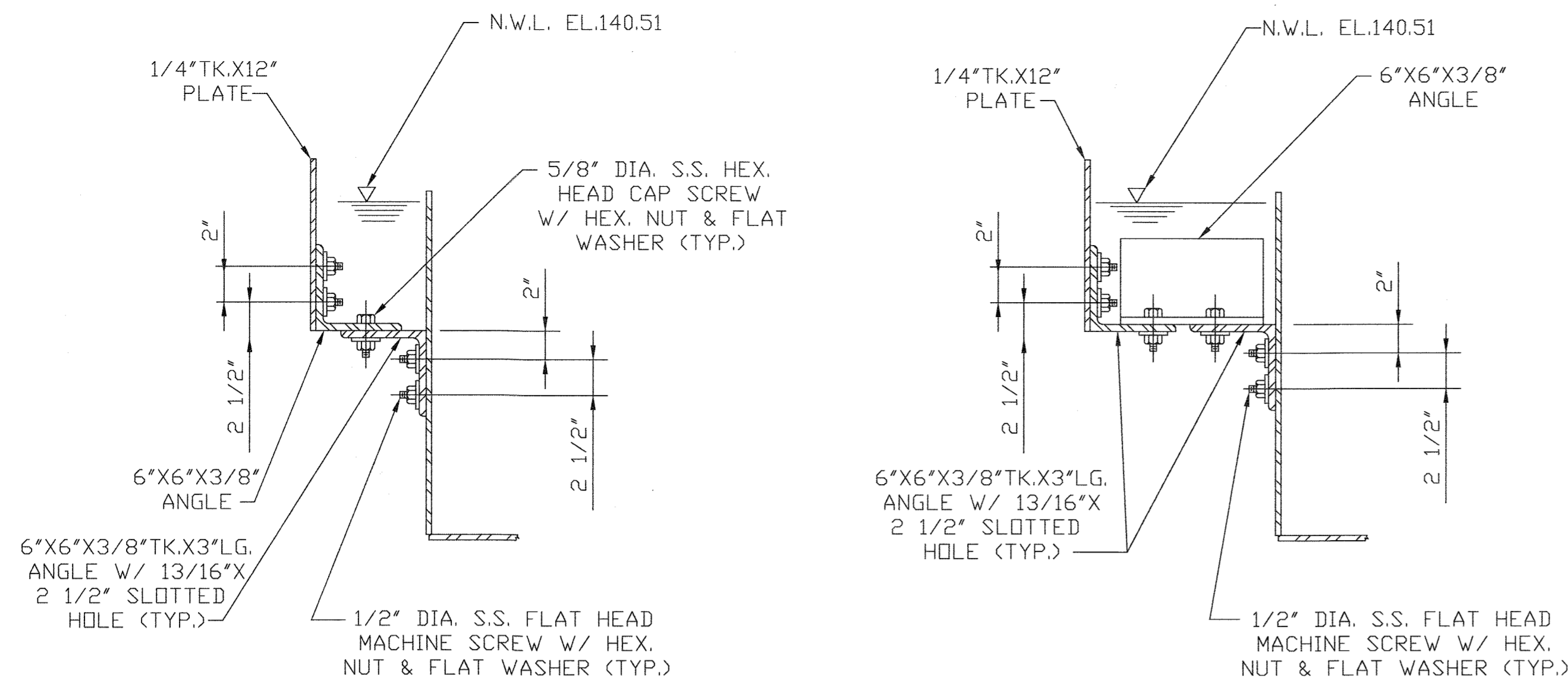
SECTION 1
SCALE: 1/4"=1'-0"



SECTION 2
SCALE: 1/4"=1'-0"

Record Drawing Notes:
1. All elevations should be field verified before using.
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James R. Brown</i> 5/1/96 DIRECTOR OF PUBLIC WORKS <i>John J. O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Jonathan W. Brown</i> 5-7-96 REG. PROF. ENGR.		STATE OF MARYLAND JONATHAN W. BROWN No. 75149 REGISTERED PROFESSIONAL ENGINEER		DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____		MECHANICAL FINAL CLARIFIER NO. 2 PLAN & SECTIONS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 122 OF 226 M-28A
M.J.C. 1 BY NO. REVISION DATE		RECORD DRAWING 11/2/94		DATE		DATE		DATE		DATE		



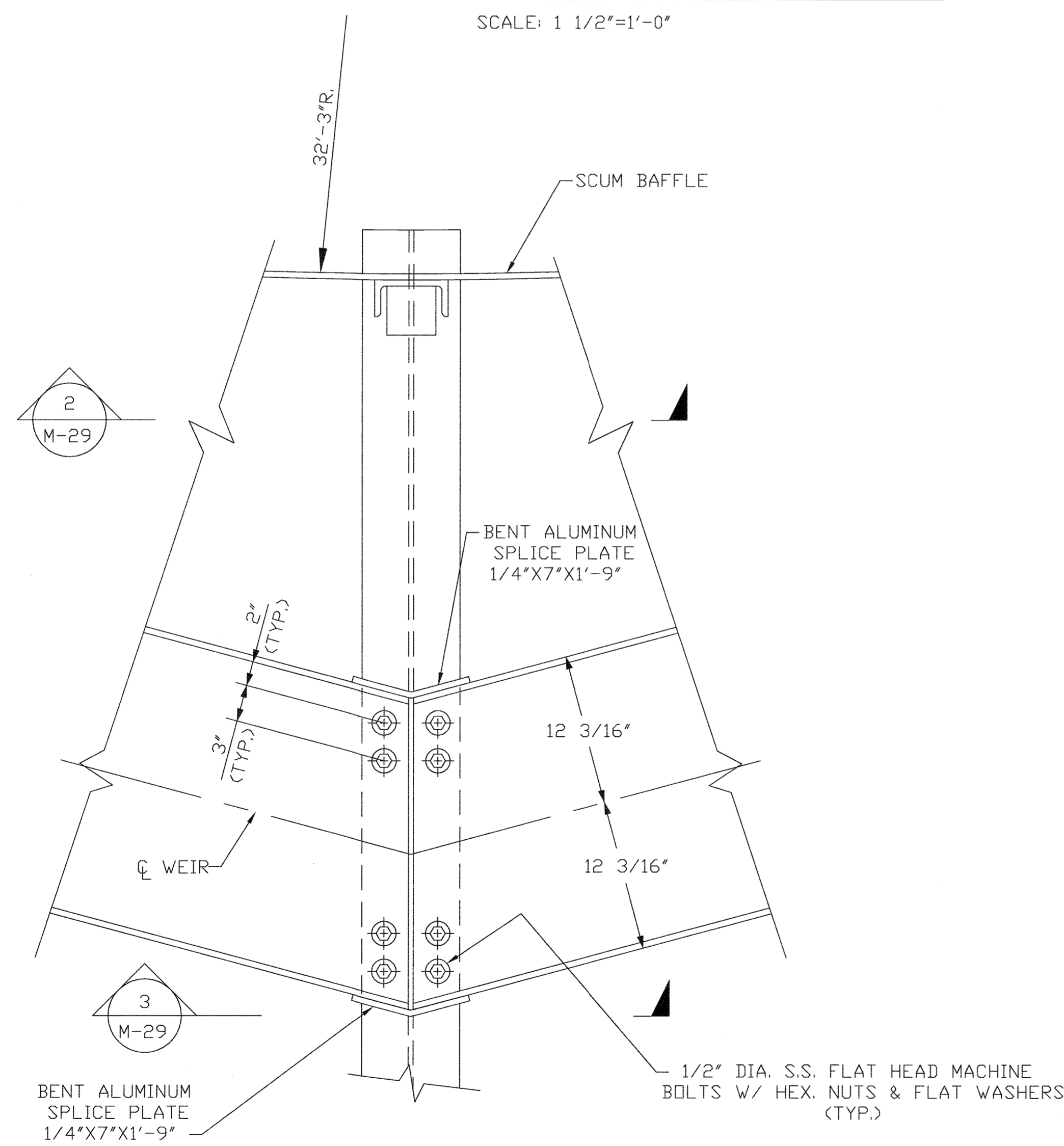
TYPE "A"

TYPE "B"

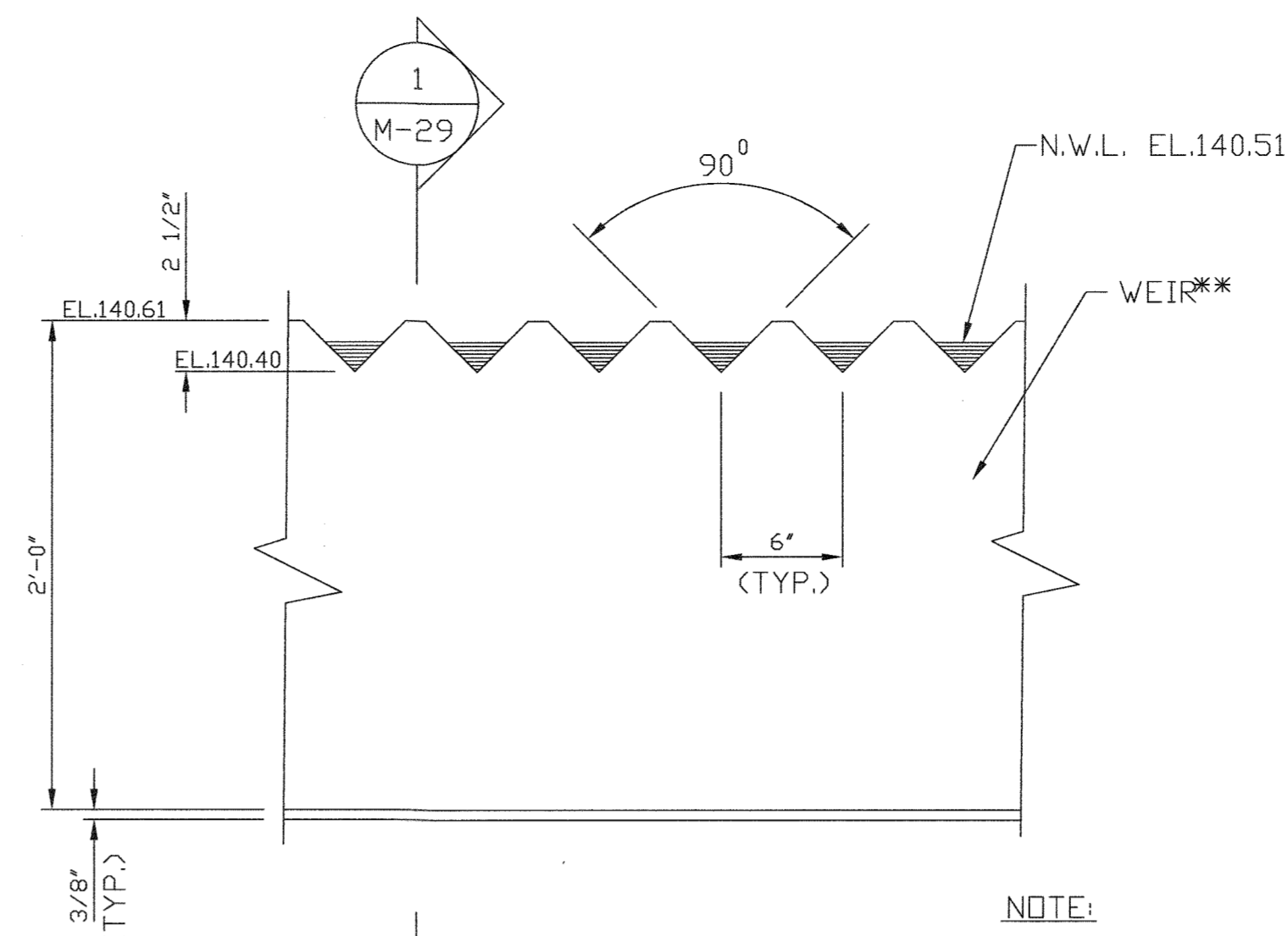
NOTE:
ALL ANGLES & PLATES SHALL BE ALUMINUM ALLOY 6061-T6

SCUM BAFFLE CONNECTION DETAILS

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

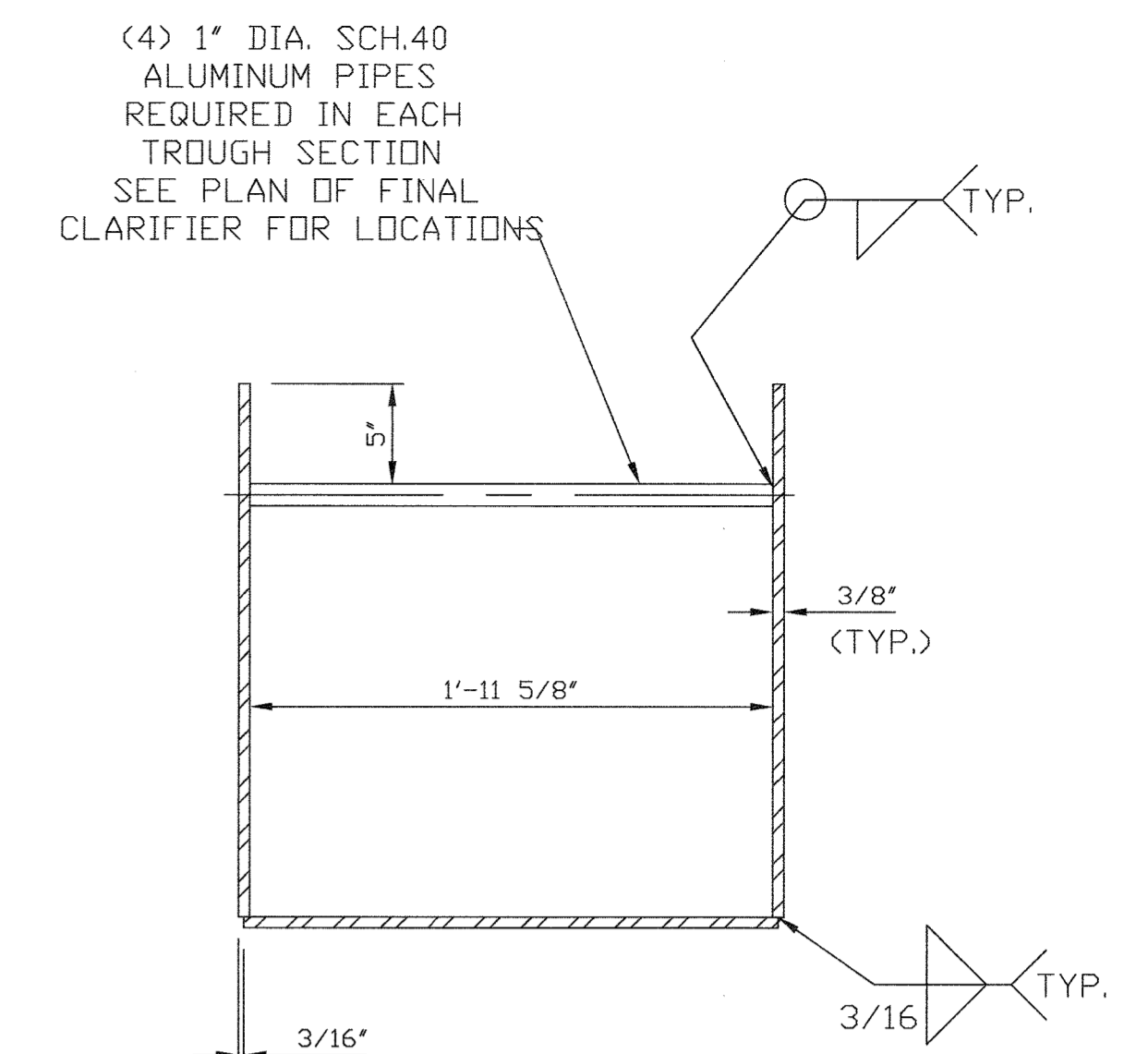


PART PLAN TROUGH SUPPORT
TROUGH CONNECTION TO SUPPORT DETAIL



ELEVATION

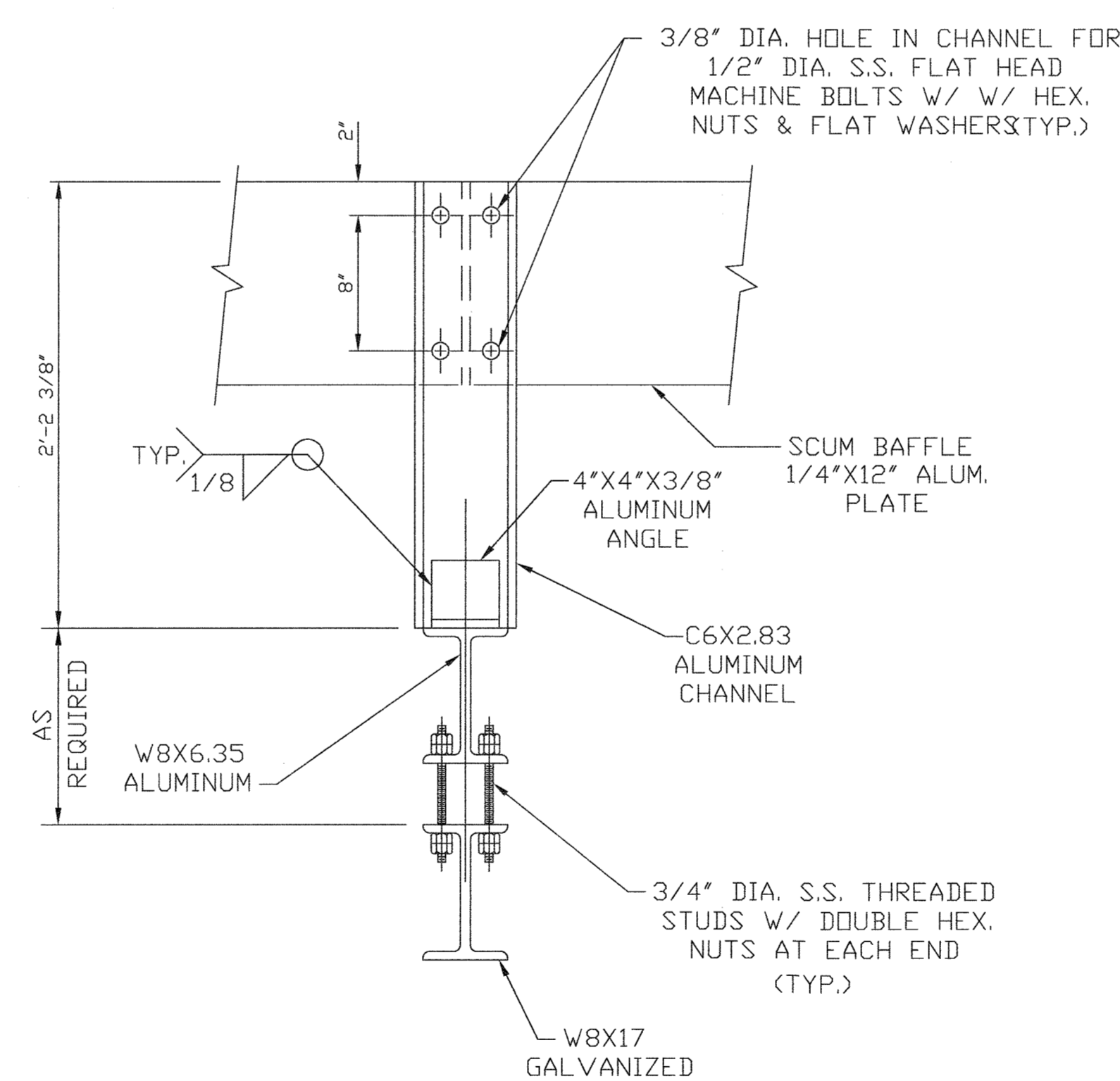
NOTE:
1. ALL ANGLES & PLATES SHALL BE ALUMINUM ALLOY 6061-T6.
2. WEIR IP NOTCHES TO BE FREE OF ALL BURRS.
** FOR ADDITIONAL INFORMATION SEE DWG. M-1 GENERAL NOTE 16



SECTION 1

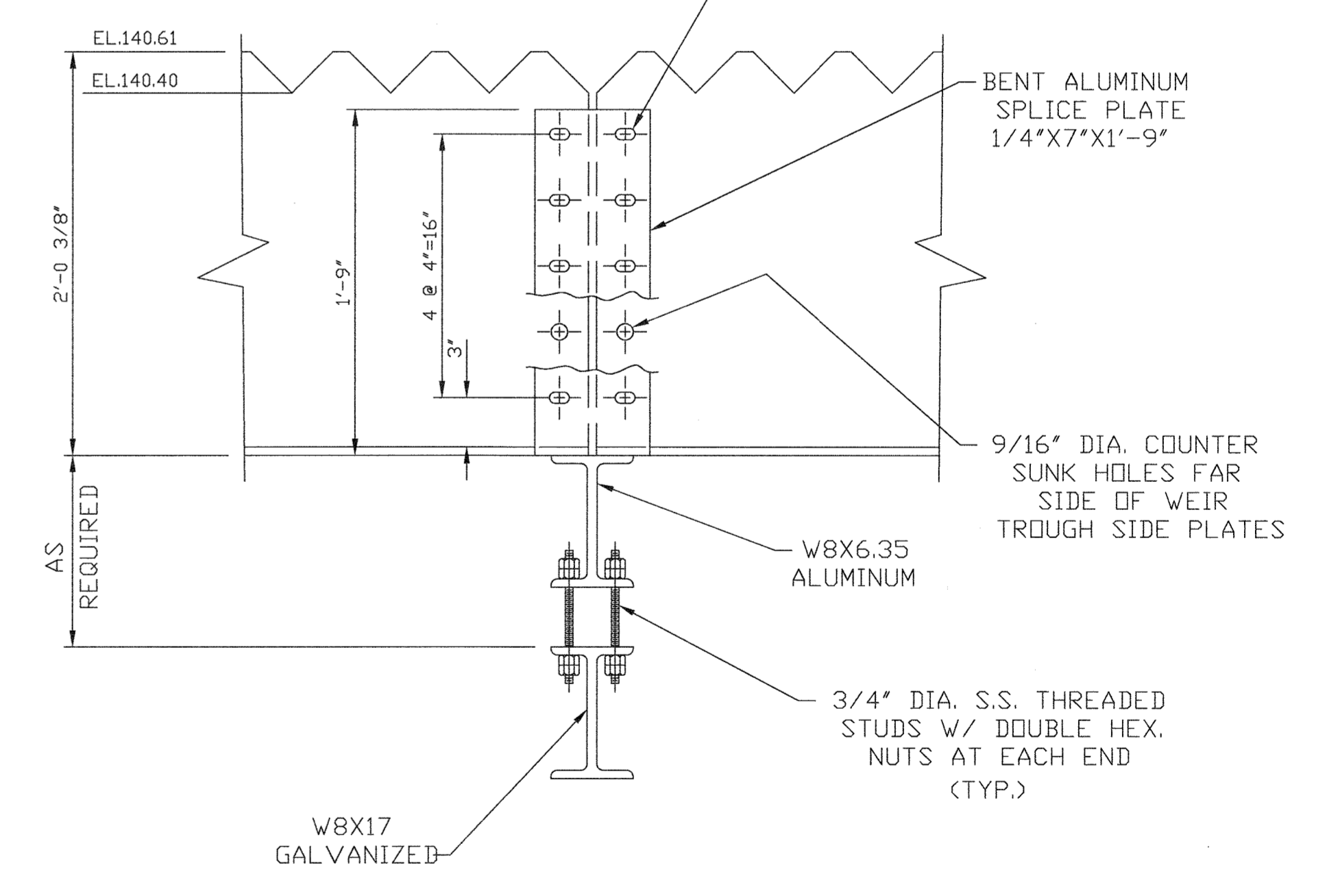
WEIR TROUGH DETAILS

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



SECTION 2

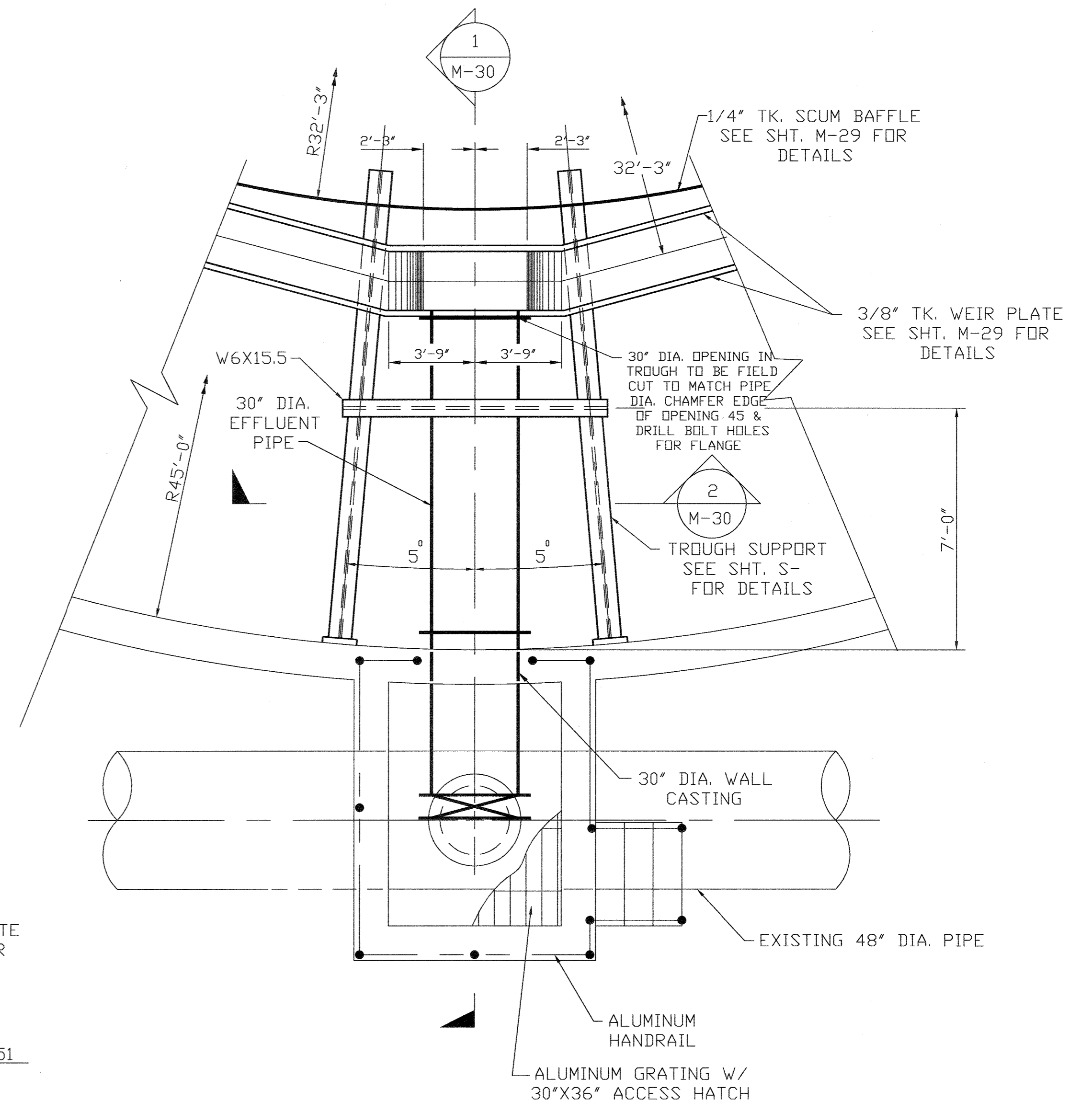
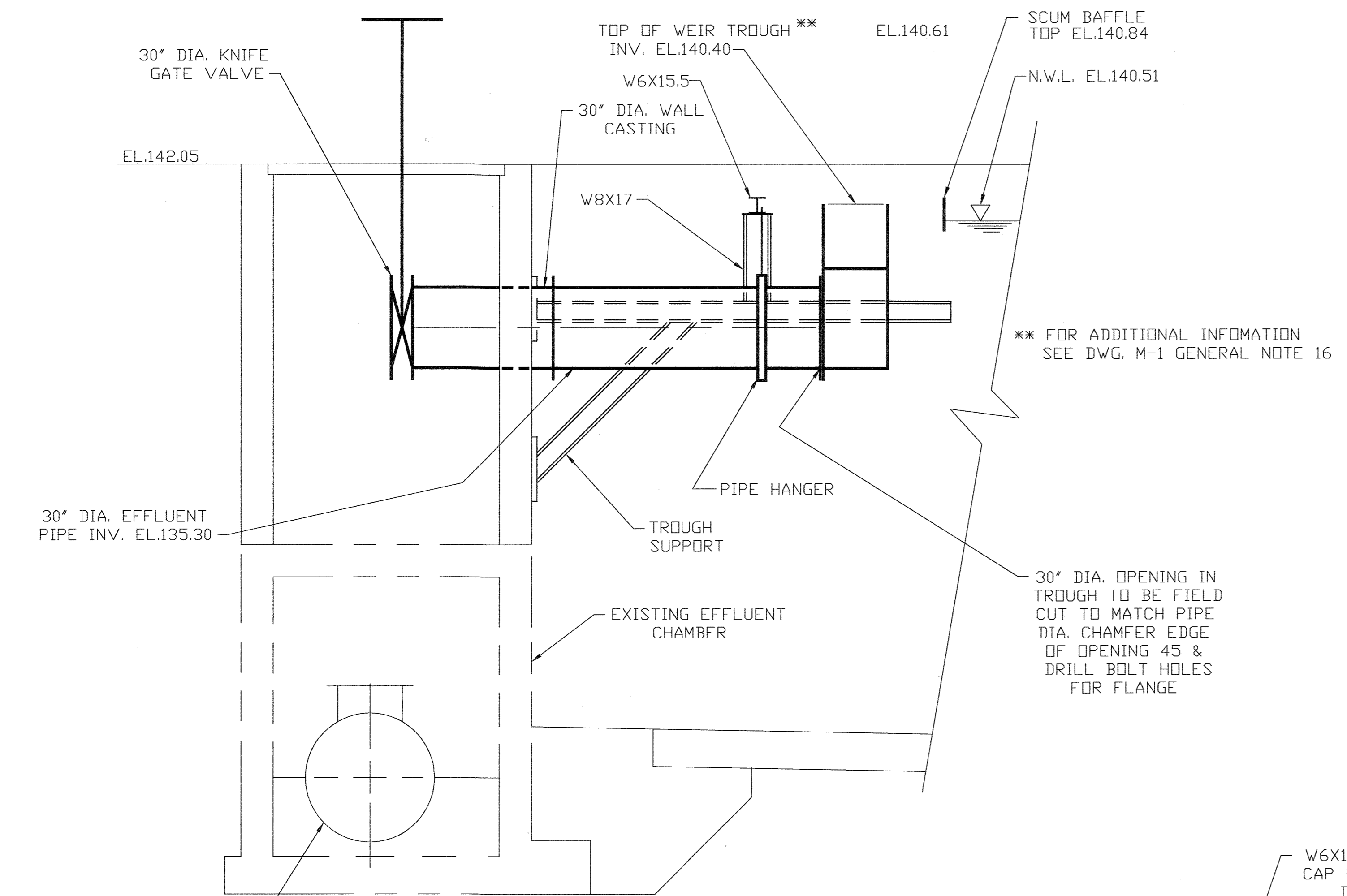
FINAL CLARIFIER 2 WEIRS ARE SET AT 140.40 RELATIVE TO HOWARD COUNTY BENCH MARK. CORRESPONDING HIGH AND NORMAL WATER ELEVATIONS ARE 140.56 AND 140.51 RESPECTIVLY. SEE NOTE ON M-1.



SECTION 3

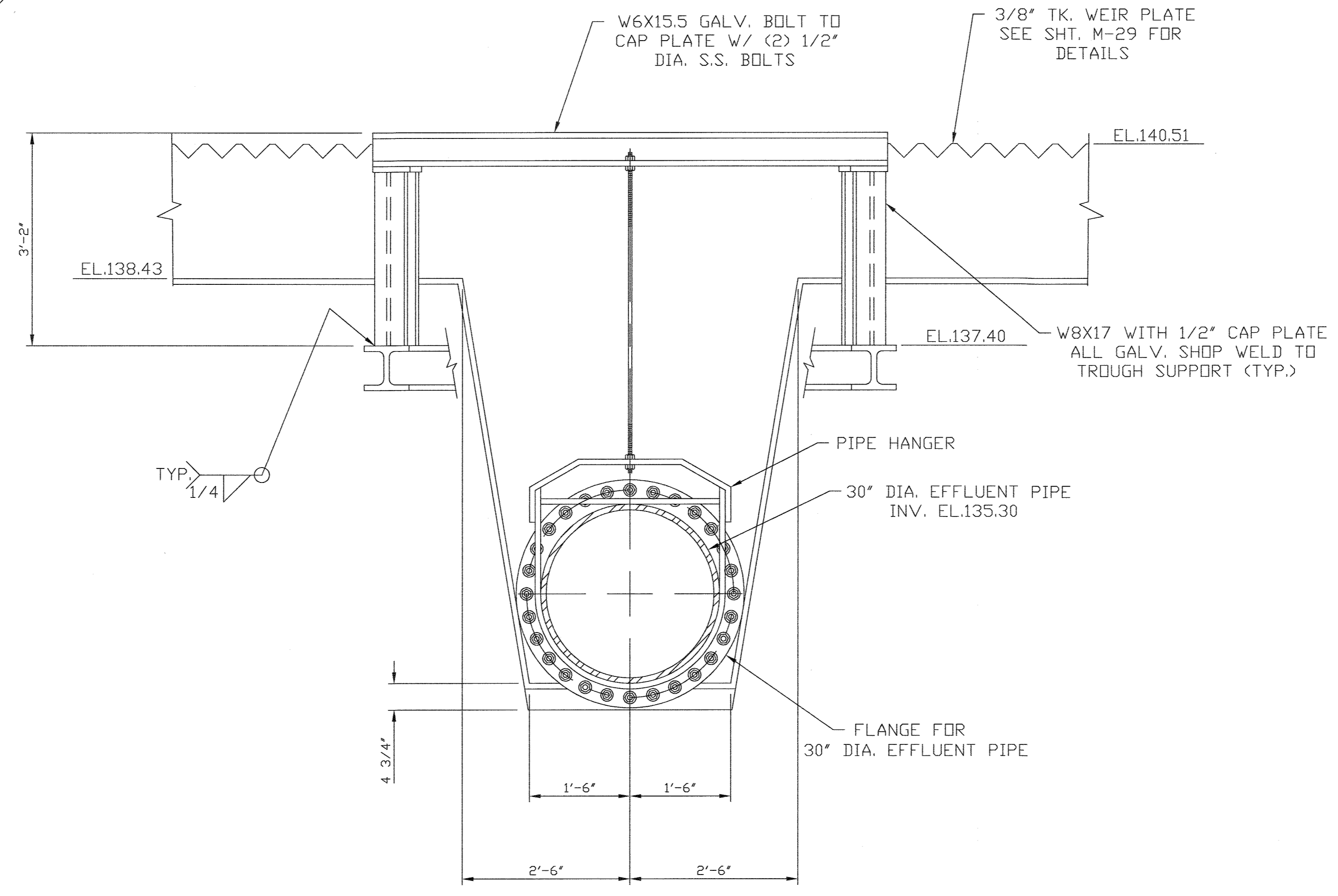
Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James A. Lew</i> 5/1/96 DIRECTOR OF PUBLIC WORKS <i>John J. O'Hara</i> 5/1/96 CHIEF BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Walter E. Eason</i> 5/7/96 CHIEF BUREAU OF ENGINEERING <i>Debra W. Brown</i> 5-7-96 REG. PROF. ENGR.		STATE OF MARYLAND JONATHAN WINTERKOPF COMBE No. 15140 REGISTERED PROFESSIONAL ENGINEER		DES: _____ DRN: M.J.C. CHK: J.H. DATE: M.J.C. 1 31/2/94 BY NO. REVISION DATE		MECHANICAL FINAL CLARIFIER NO. 2 SECTIONS AND DETAILS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 123 OF 226 M-29A	
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SECTION 1
SCALE: 1/2"=1'-0"
M-30

EFFLUENT CHAMBER PLAN
SCALE: 1/2"=1'-0"



SECTION 2
SCALE: 1/2"=1'-0"
M-30

- Record Drawing Notes:
- All elevations should be field verified before using
 - Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Lane 5/3/96
DIRECTOR OF PUBLIC WORKS

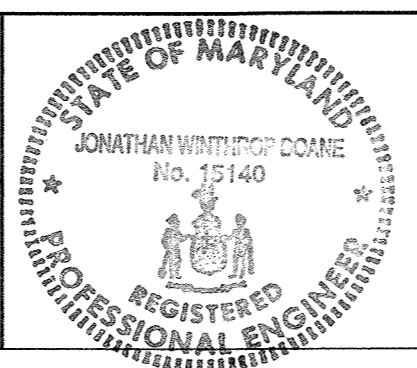
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

John W. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING

Debra J. Hines 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Lane 5-7-96
REG. PROF. ENGR.



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

MECHANICAL

FINAL CLARIFIER NO.2
DETAILS

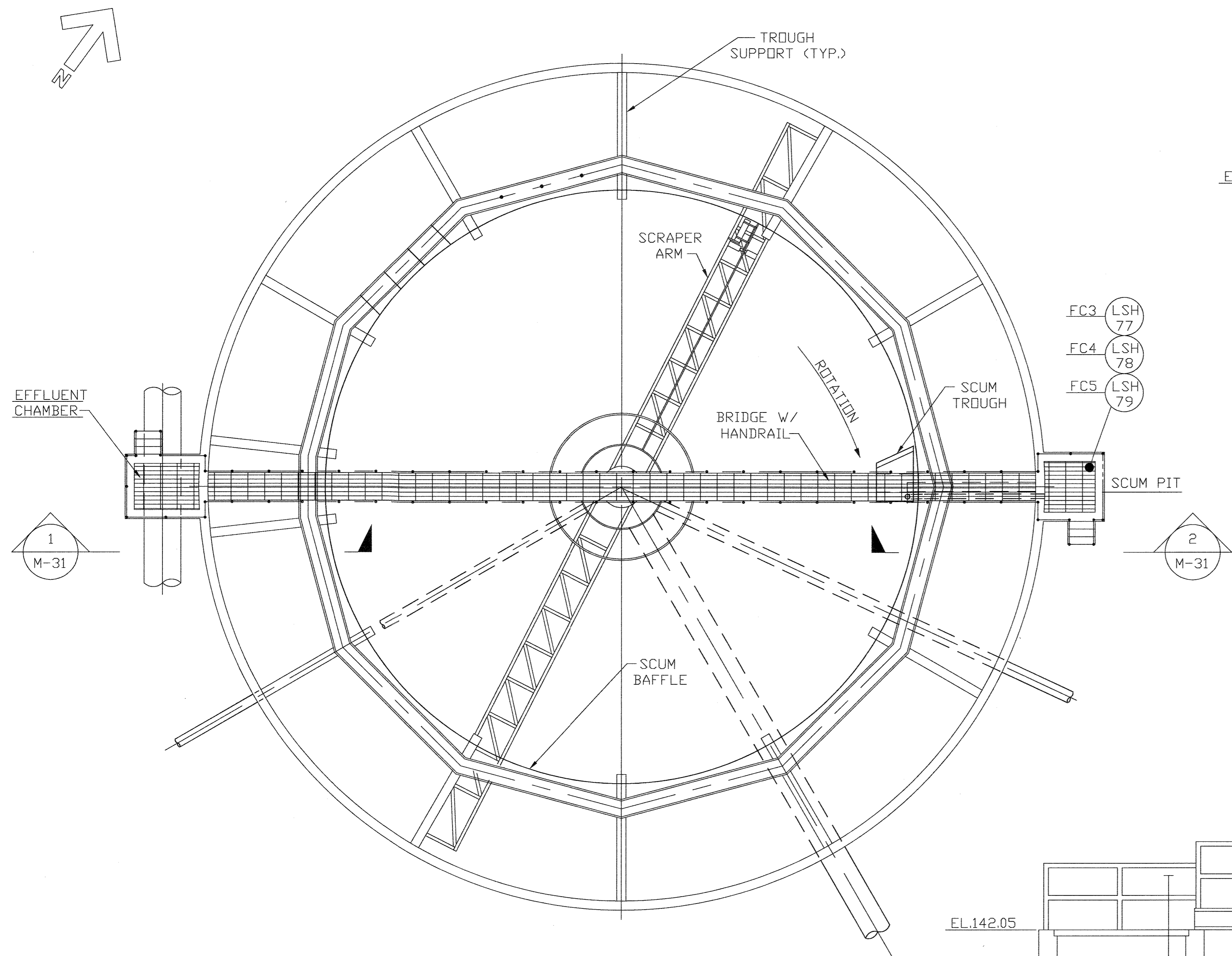
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

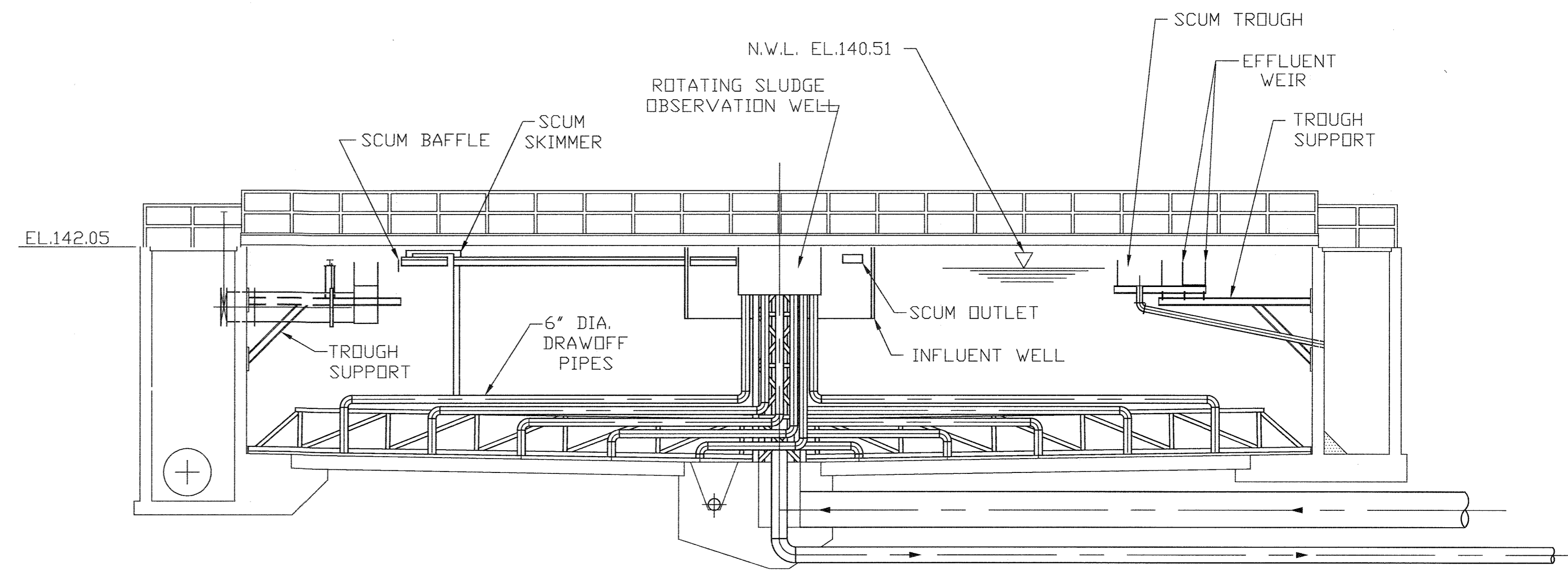
SCALE AS SHOWN

SHEET 124 OF 226

M-30A

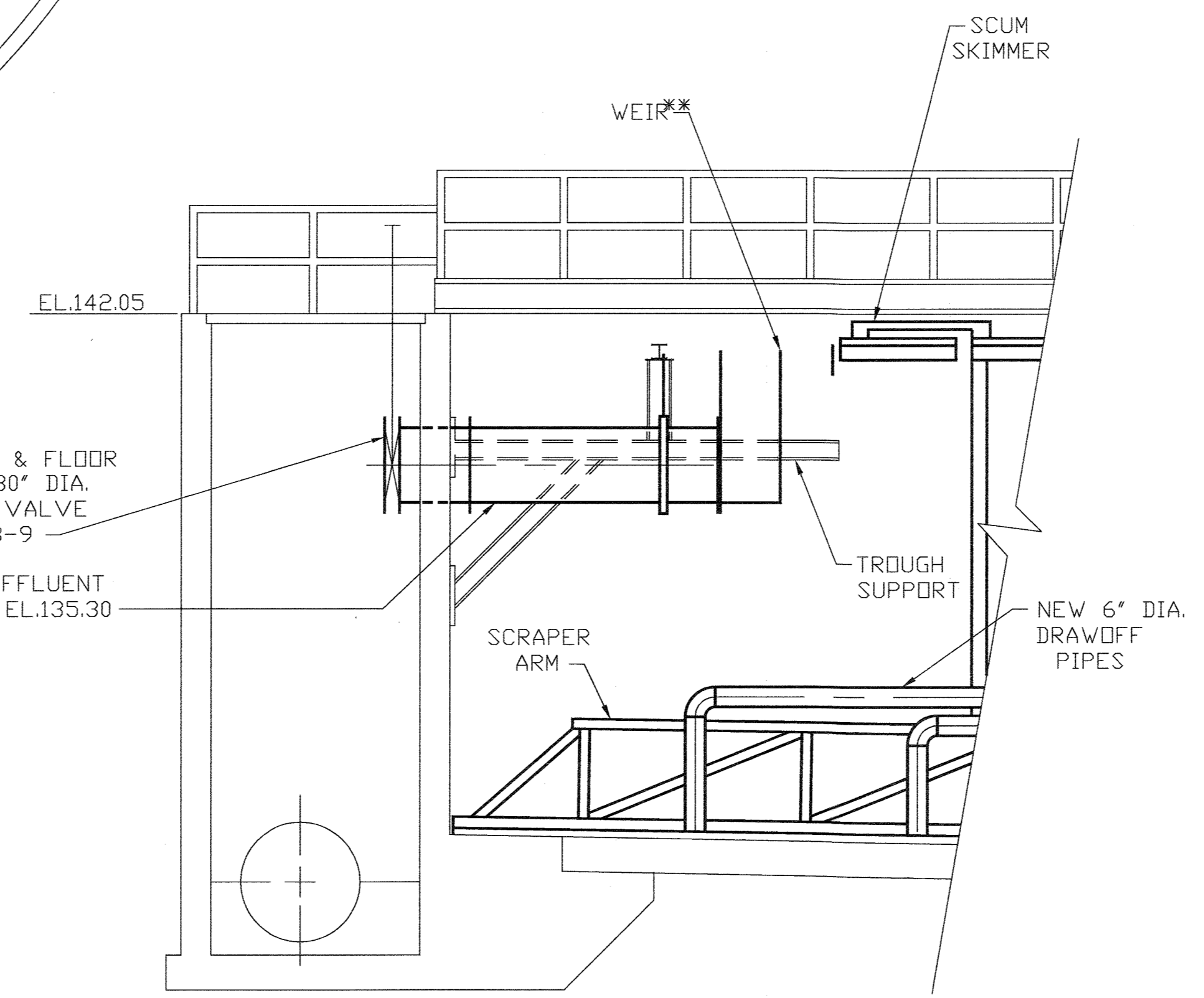


PLAN
SCALE: 1/8"=1'-0"

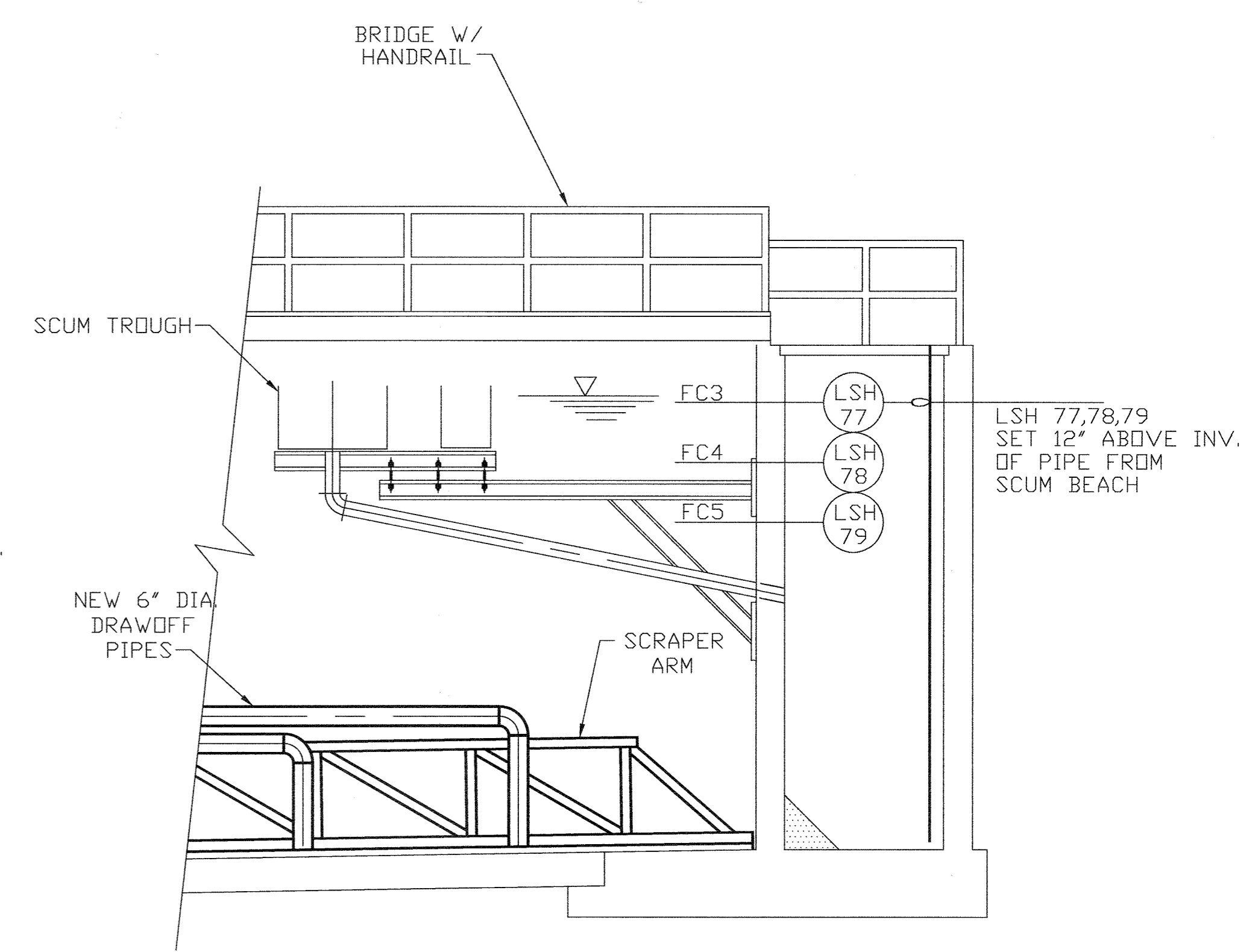


TYPICAL SECTION
SCALE: 1/8"=1'-0"

- NOTES:
1. THE CONTRACTOR SHALL REMOVE THE EXISTING 8"Ø SLUDGE DRAWOFF PIPES LEAVING SUFFICIENT PIPE EXTENDING BELOW THE ROTATING SLUDGE OBSERVATION WELL TO ALLOW FOR TRANSITION FROM THE EXISTING 8"Ø TO THE NEW 6"Ø. THE TRANSITION FITTING SHALL BE AS CLOSE AS PRACTICAL TO THE ROTATING SLUDGE OBSERVATION WELL & BE SECURELY SUPPORTED.
 2. FC 6-9 EXISTING DRAWOFF PIPES/VALVES IN OBSERVATION WELL 8"Ø. TOTAL OF 10 DRAFT TUBES PER TANK REPLACED WITH 6"Ø PIPE.
 3. FC 2 CONSTRUCTED WITH 10-6"Ø DRAFT TUBES.
 4. FC 3, FC 5 EXISTING 10" DRAFT TUBES REPLACED WITH 6"Ø. TOTAL OF 8 PER TANK.
 5. FC 4 EXISTING 12", 10", 8", 6" DRAFT TUBES REPLACED WITH 6"Ø. TOTAL OF 10 PER TANK.



SECTION 1
SCALE: 1/4"=1'-0" M-31



SECTION 2
SCALE: 1/4"=1'-0" M-31

NOTE:
CONTRACTOR TO BALANCE ALL WEIRS
** FOR ADDITIONAL INFORMATION SEE DWG. M-1 GENERAL NOTE 16
FC #6,7,8,9 ADJUST WEIR INVERT EL. TO 137.02
FC #2,3,4,5 ADJUST WEIR INVERT EL. TO 140.40
RELATIVE TO COUNTY BENCH MARK. SEE NOTE ON M-11.

Record Drawing Notes:
1. All elevations should be field verified before using
2. Weir and water elevations based on post-construction survey by Howard County.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/7/96
5/7/96

M&E Metcalf & Eddy

5-7-96

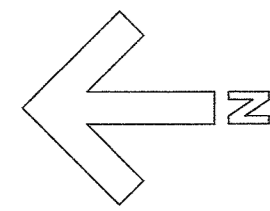
STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER

DES				
DRN	M.J.C.			
CHK	J.H.			
DATE	M.J.C. 1	RECORD DRAWING	31/2/94	
	BY	NO.	REVISION	DATE

MECHANICAL
FINAL CLARIFIER MODIFICATIONS
PLAN & SECTIONS
(FINAL CLARIFIERS 1,3,4,5,6,7,8)

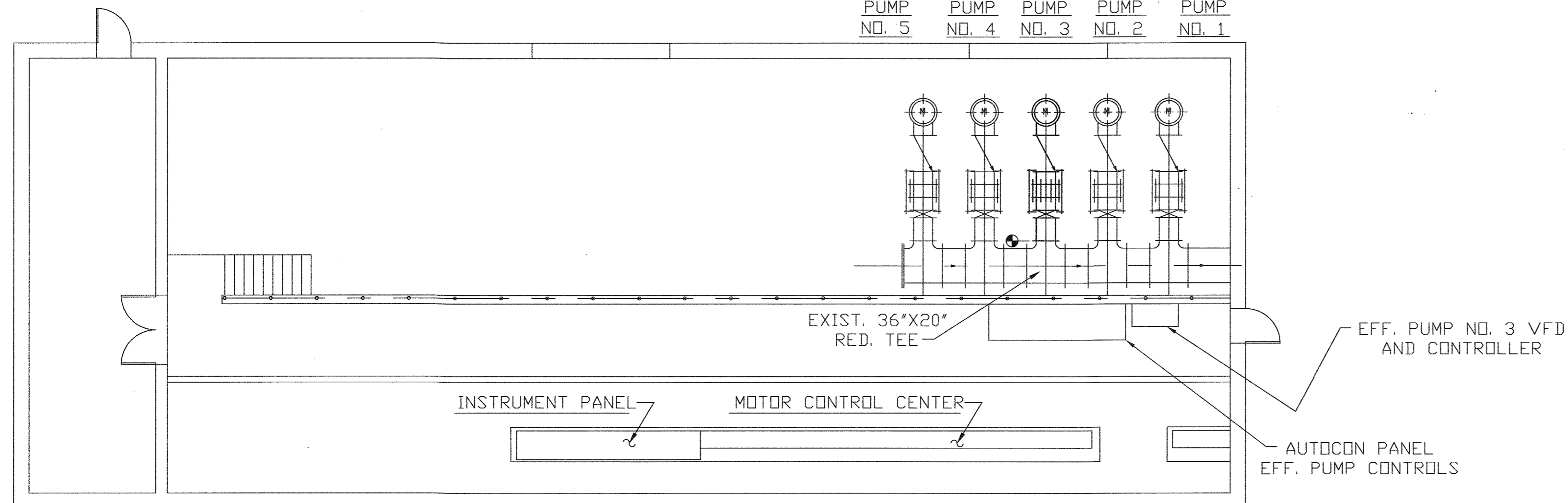
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 125 OF 226
M-31A

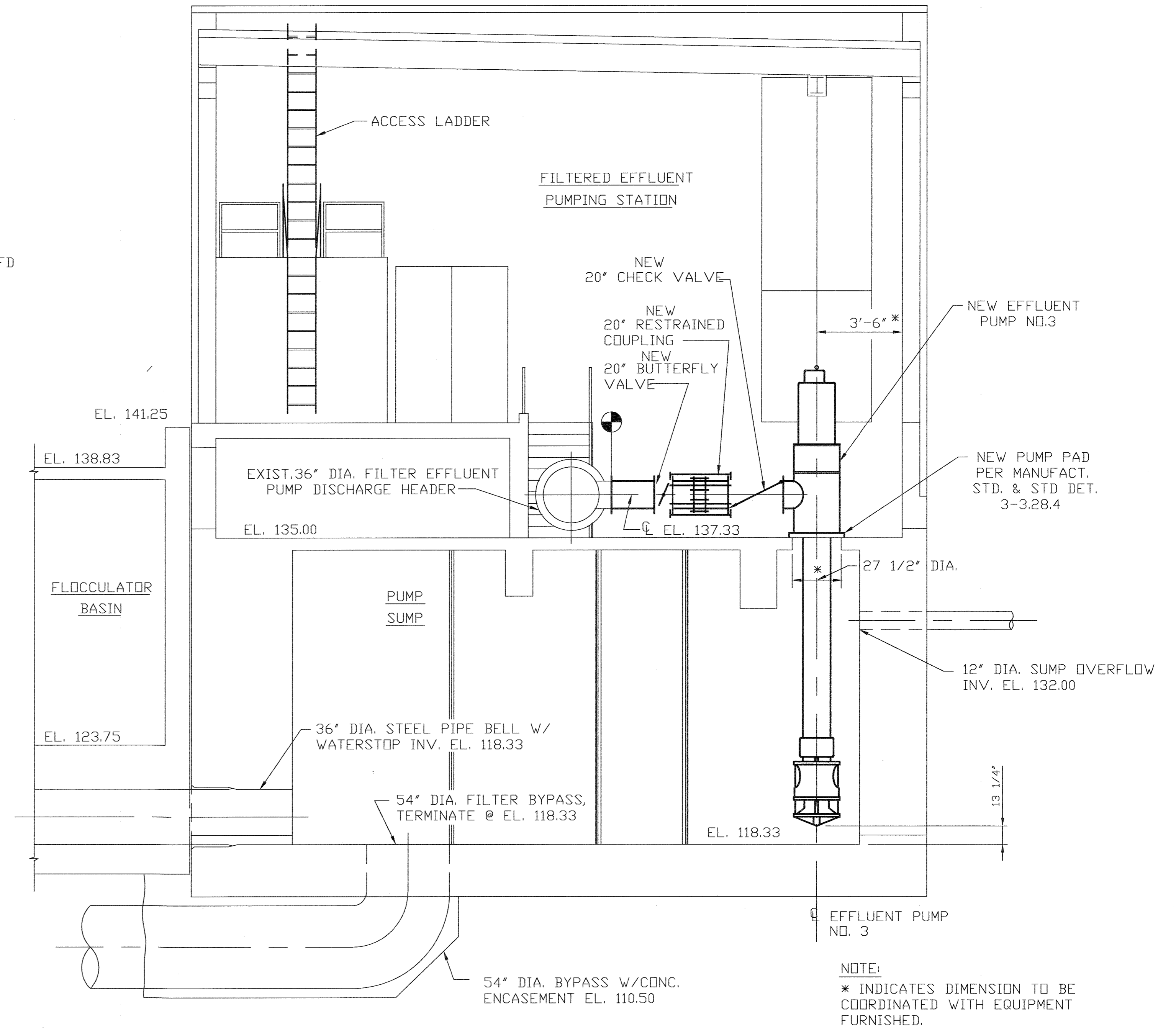


1
M-32

EXISTING EXISTING NEW EXISTING EXISTING
PUMP PUMP PUMP PUMP PUMP
NO. 5 NO. 4 NO. 3 NO. 2 NO. 1



PLAN AT EL. 141.00
SCALE: 1/8"=1'-0"



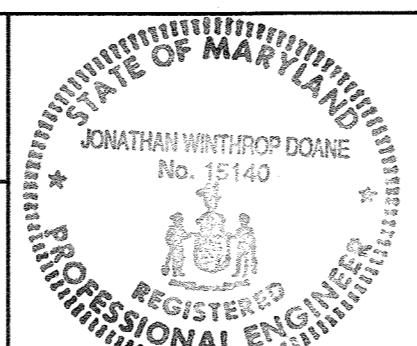
SECTION 1
SCALE: 1/4"=1'-0" M-32

NOTE:
* INDICATES DIMENSION TO BE COORDINATED WITH EQUIPMENT FURNISHED.

LEGEND:
—— DENOTES EXISTING EQUIPMENT
—— DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/1/96
5/7/96

M&E Metcalf & Eddy
Jonathan W. Done
5-7-96

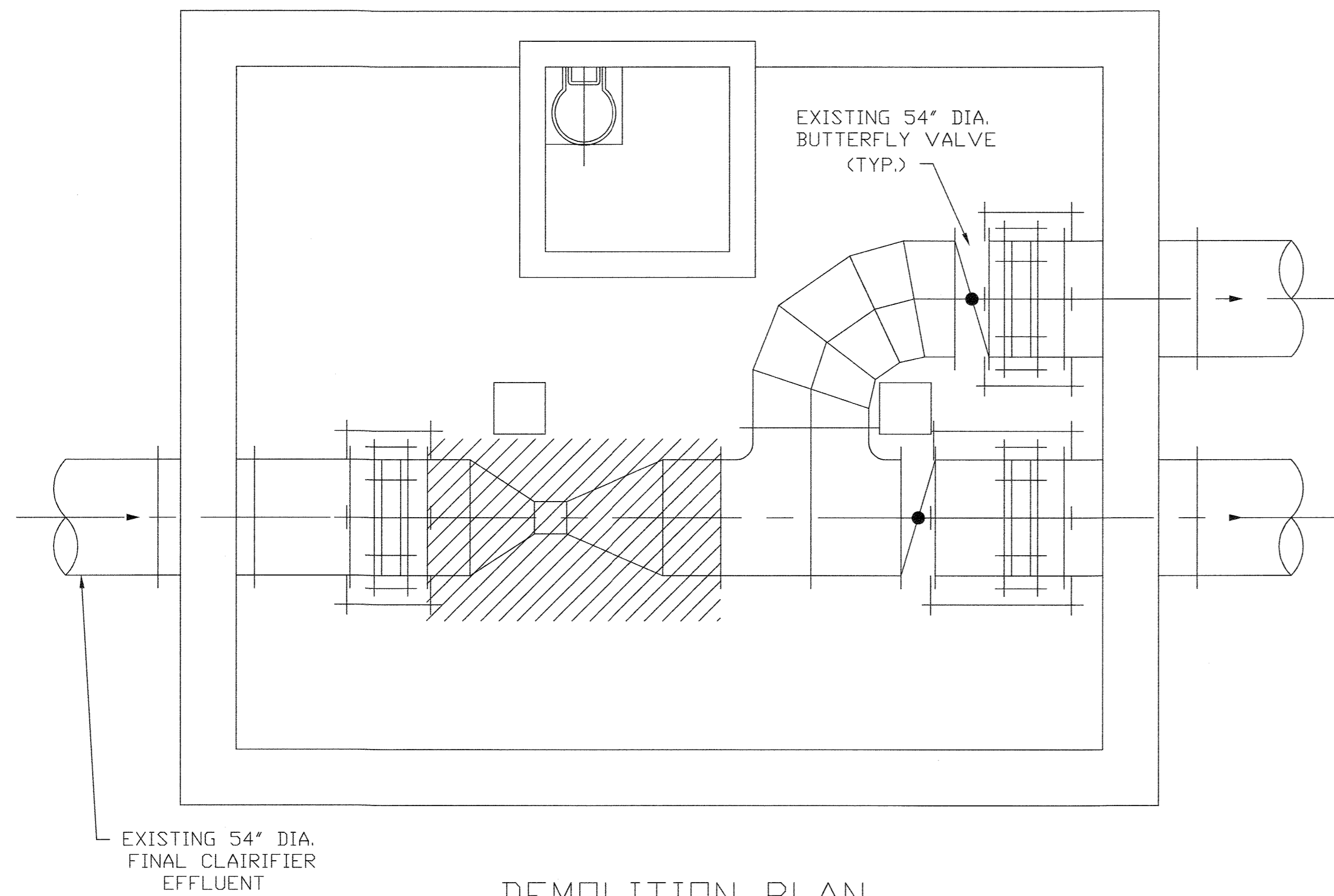
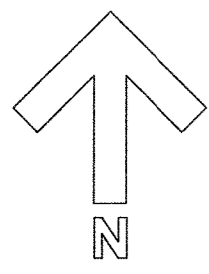


DES:					
DRN:	M.J.C.				
CHK:	J.H.				
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94		
	BY NO.	REVISION	DATE		

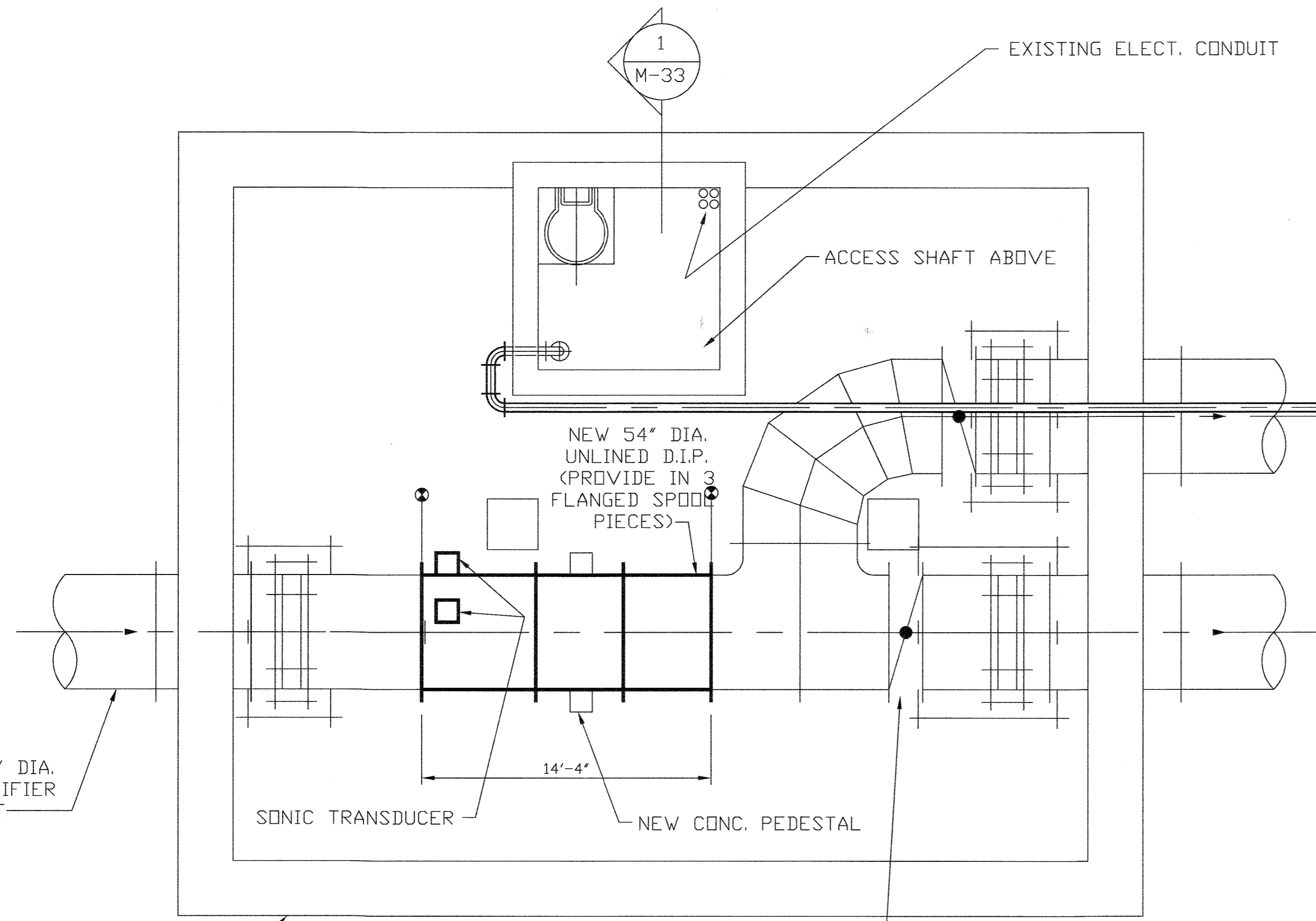
MECHANICAL
FILTER CONTROL BUILDING
PUMP MODIFICATIONS
PLAN AND SECTION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

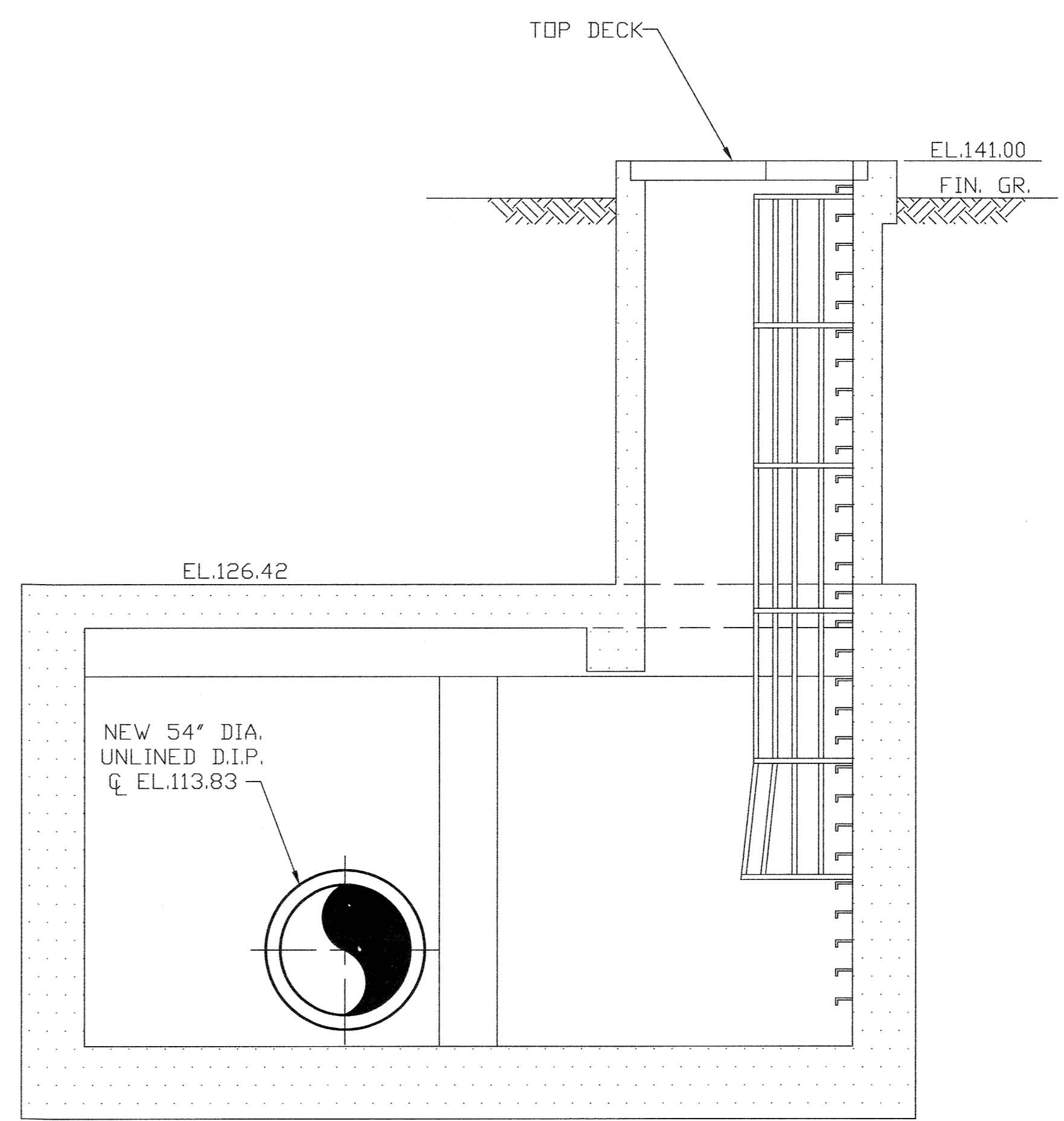
SCALE AS SHOWN
SHEET 126 OF 226
M-32A



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



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



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

- NOTE:
1. CONTRACTOR SHALL REMOVE TOP DECK, REINSTALL, AND SEAL UPON COMPLETION OF WORK.
 2. CONTRACTOR SHALL INSTALL NEW 54" DIA. PIPE IN FLANGED SECTIONS OF SUCH LENGTHS WHICH MAY BE LOWERED THROUGH EXISTING ACCESS SHAFT WITHOUT REMOVING LADDER CAGE OR ELECTRICAL CONDUIT.

LEGEND:

	DENOTES EXISTING EQUIPMENT
	DENOTES NEW EQUIPMENT
	TO BE DEMOLISHED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

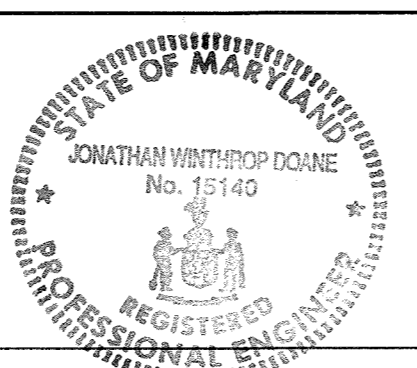
John P. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John P. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John P. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

M&E Metcalf & Eddy

Jonathan W. Brane 5-7-96
REG. PROF. ENGR. DATE



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING	11/2/94		
	BY	NO.	REVISION		DATE

MECHANICAL

54" METER VAULT
MODIFICATIONS
PLANS, SECTIONS AND DETAILS

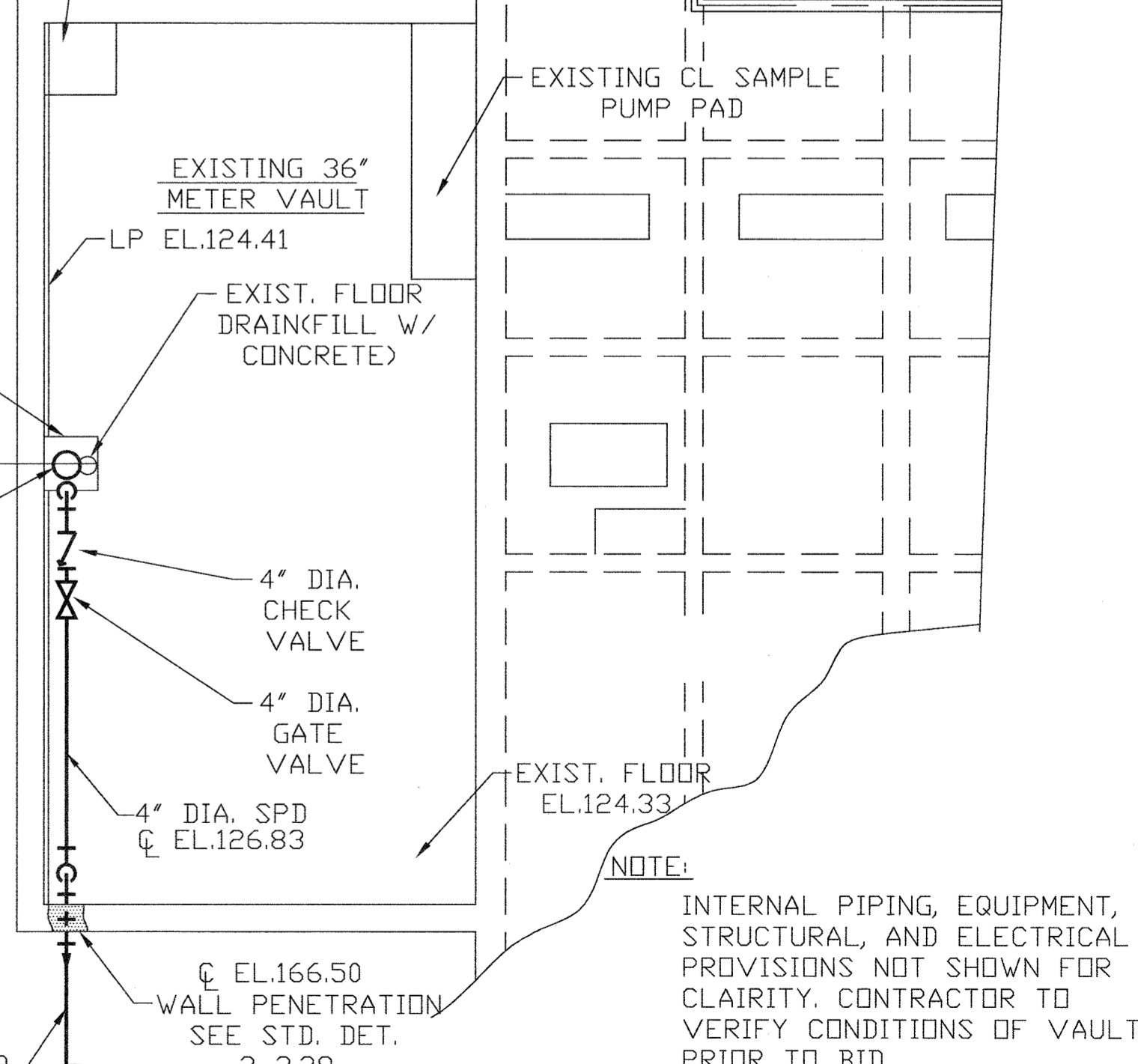
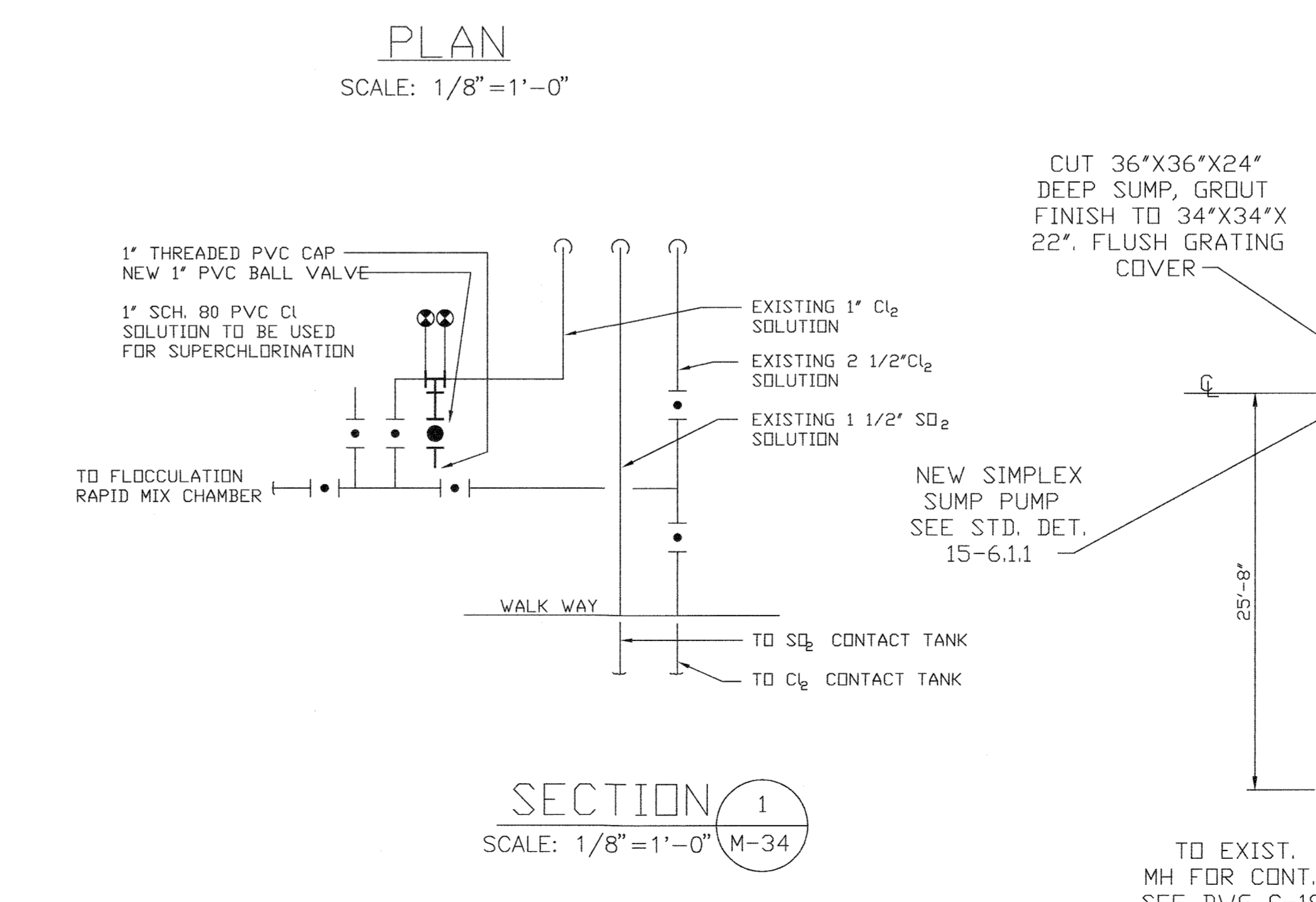
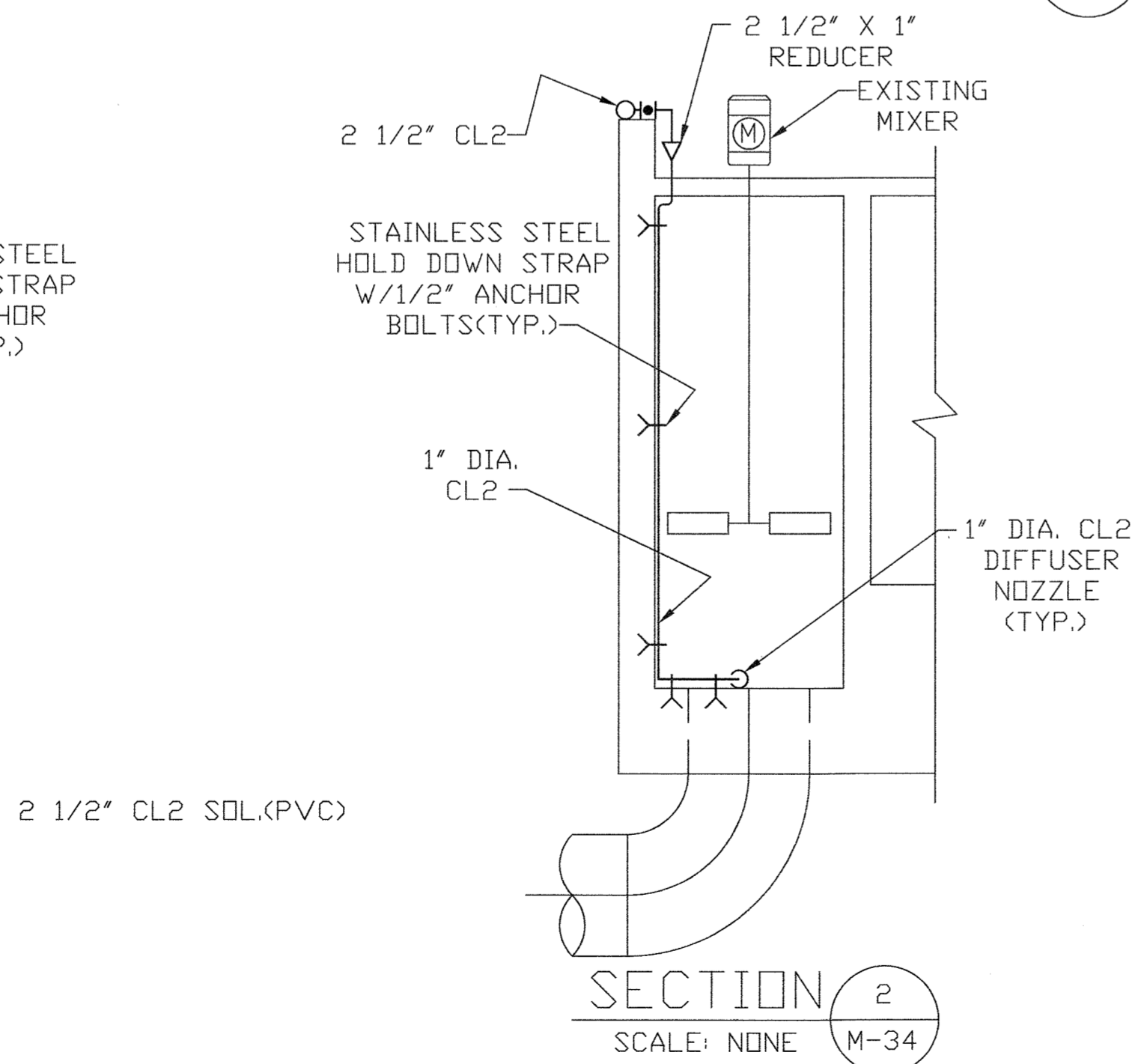
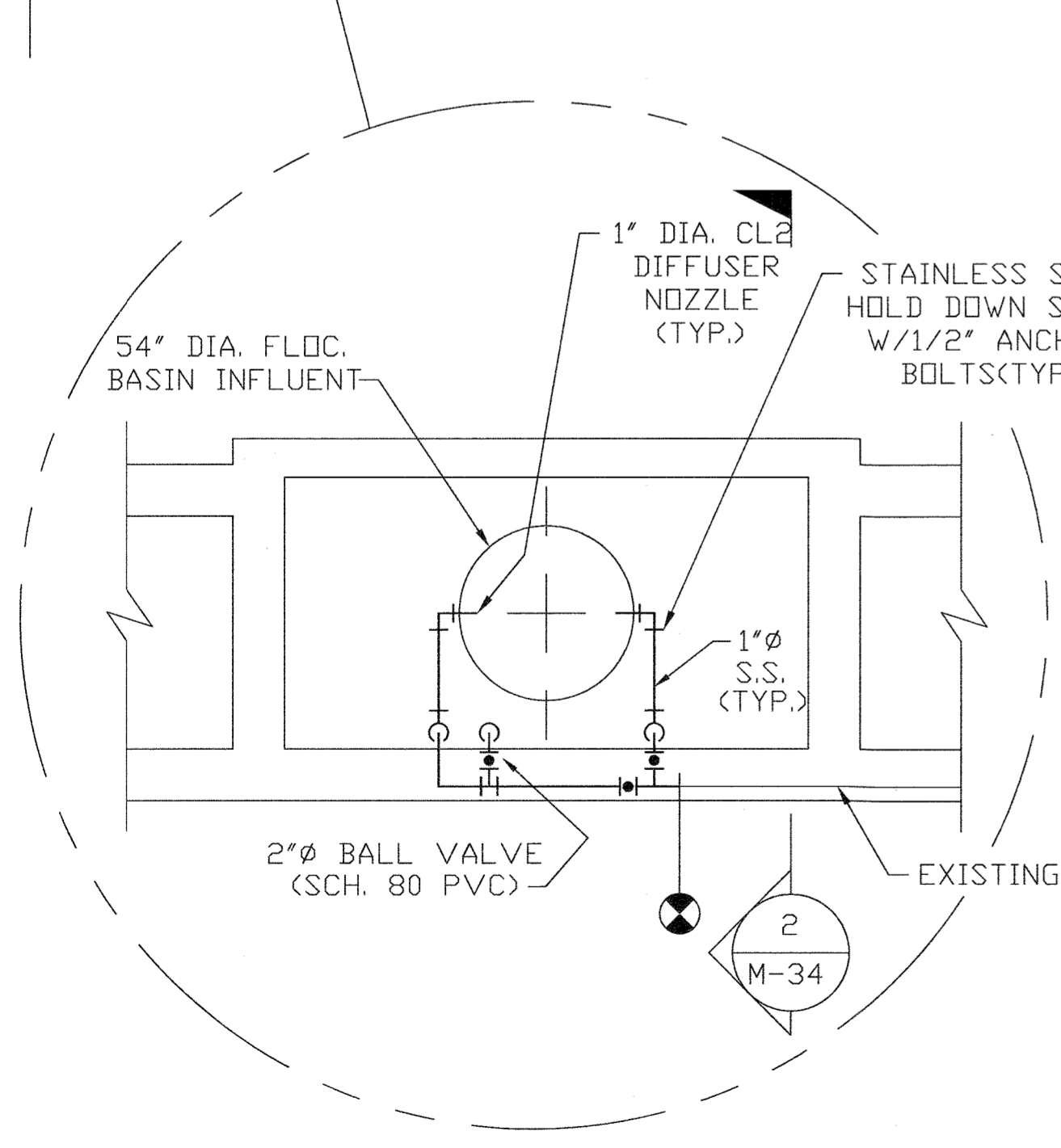
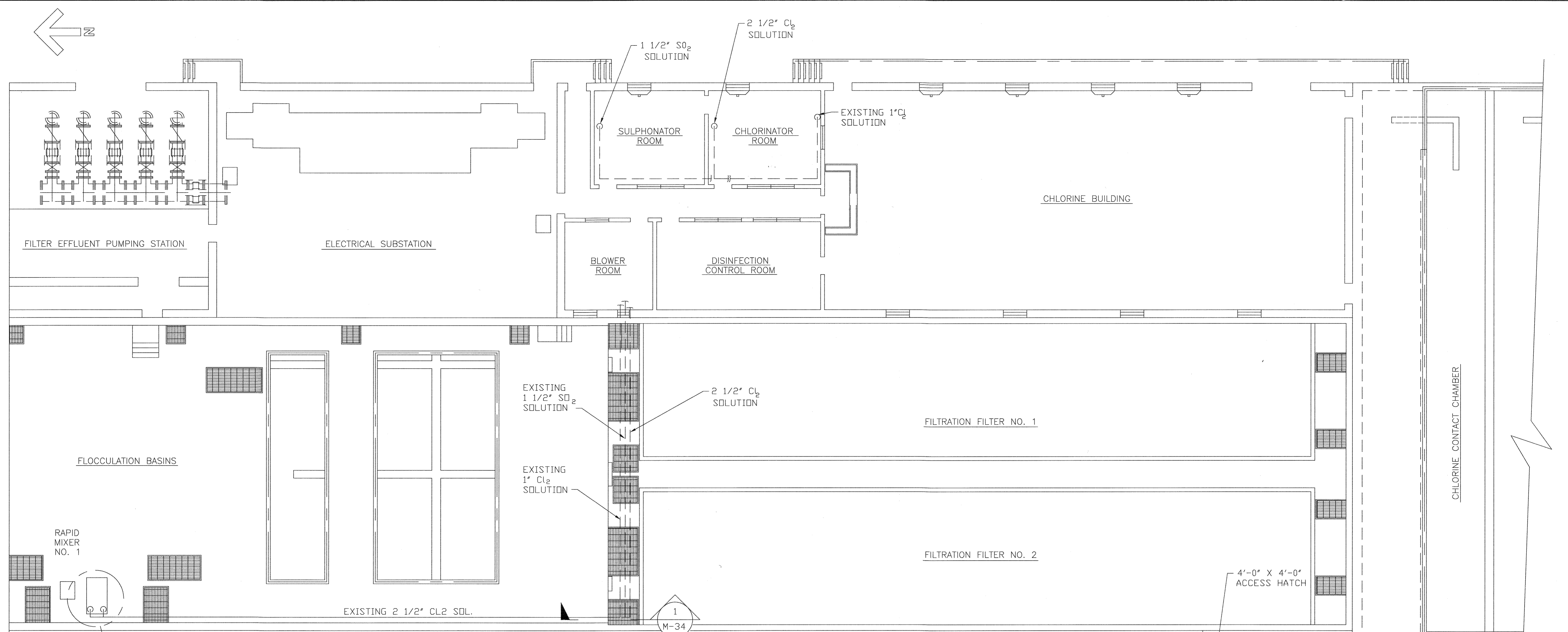
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 127 OF 226

M-33A



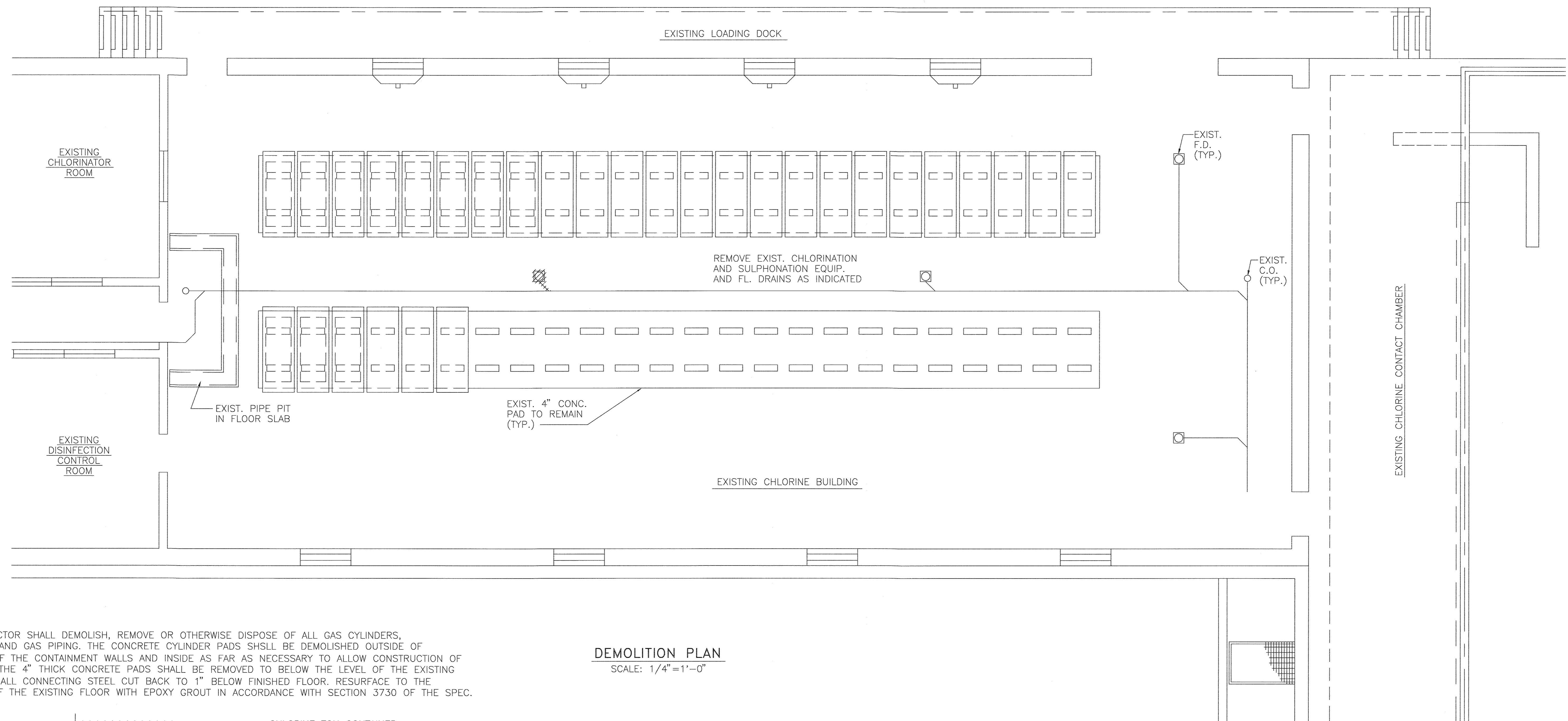
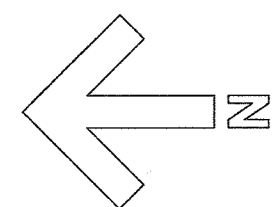
PLAN
SCALE: 1/8" = 1'-0"

SECTION 1
SCALE: 1/8" = 1'-0" M-34

SECTION 2
SCALE: NONE M-34

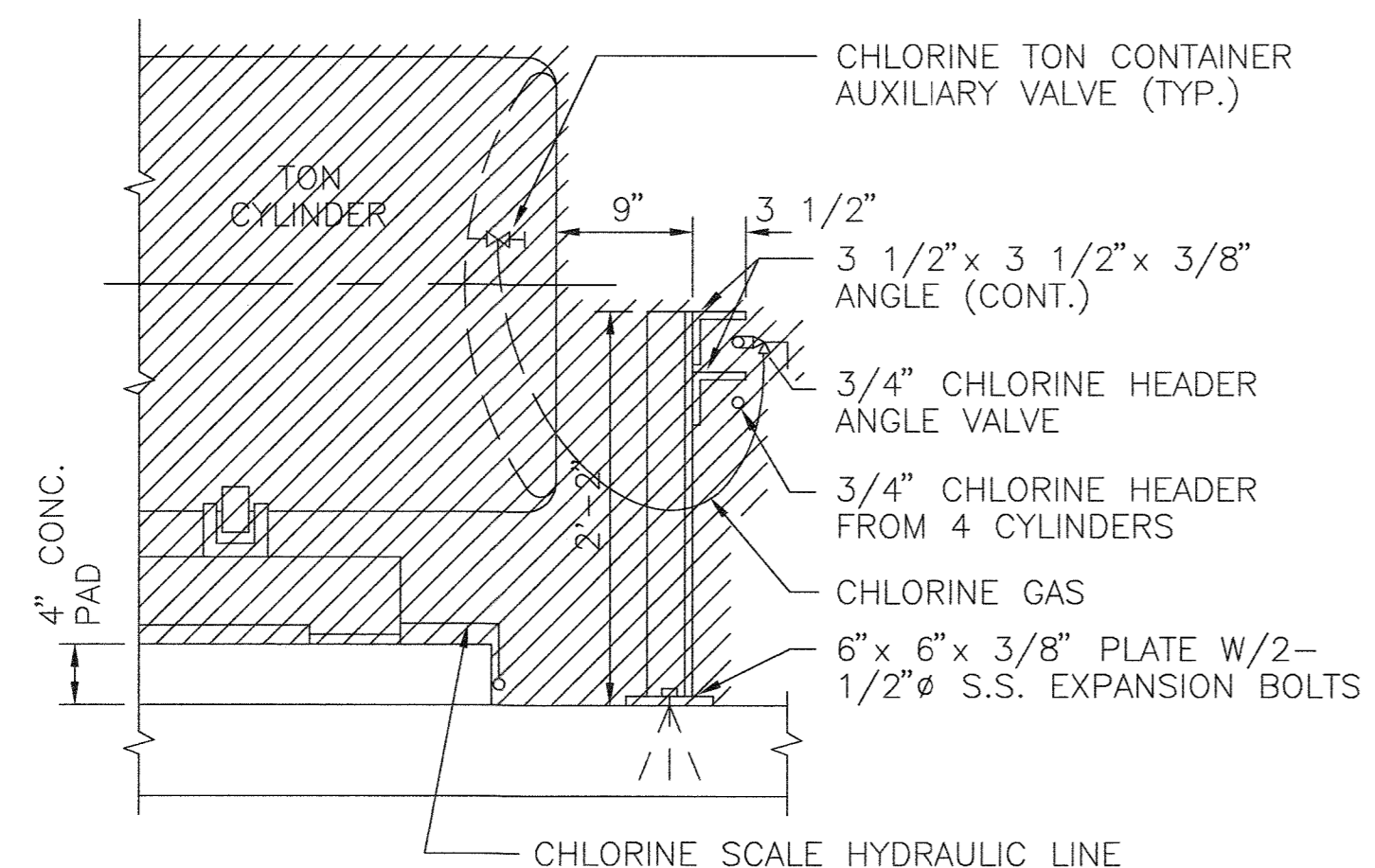
NOTE:
INTERNAL PIPING, EQUIPMENT, STRUCTURAL, AND ELECTRICAL PROVISIONS NOT SHOWN FOR CLARITY. CONTRACTOR TO VERIFY CONDITIONS OF VAULT PRIOR TO BID.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James A. Lewis</i> 5/7/96 DIRECTOR OF PUBLIC WORKS <i>John J. Hare</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Jonathan Whitthrop Doane</i> 5-7-96 REG. PROF. ENGR.		DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____		MECHANICAL CHLORINE BUILDING MODIFICATIONS OVERALL PLAN		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 128 OF 226 M-34A	
<i>John J. Hare</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		<i>Jonathan Whitthrop Doane</i> 5-7-96 REG. PROF. ENGR.		M.J.C. 1 BY NO. REVISION DATE		RECORD DRAWING 11/2/94		CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		M-34A	



NOTE:
 THE CONTRACTOR SHALL DEMOLISH, REMOVE OR OTHERWISE DISPOSE OF ALL GAS CYLINDERS, TRUNNIONS, AND GAS PIPING. THE CONCRETE CYLINDER PADS SHALL BE DEMOLISHED OUTSIDE OF THE LINES OF THE CONTAINMENT WALLS AND INSIDE AS FAR AS NECESSARY TO ALLOW CONSTRUCTION OF THE WALLS. THE 4" THICK CONCRETE PADS SHALL BE REMOVED TO BELOW THE LEVEL OF THE EXISTING FLOOR WITH ALL CONNECTING STEEL CUT BACK TO 1" BELOW FINISHED FLOOR. RESURFACE TO THE ELEVATION OF THE EXISTING FLOOR WITH EPOXY GROUT IN ACCORDANCE WITH SECTION 3730 OF THE SPEC.

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



DETAIL TON CHLORINE CYLINDER CONNECTION DEMOLITION
 SCALE: 1" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James A. New 5/1/96
 DIRECTOR OF PUBLIC WORKS

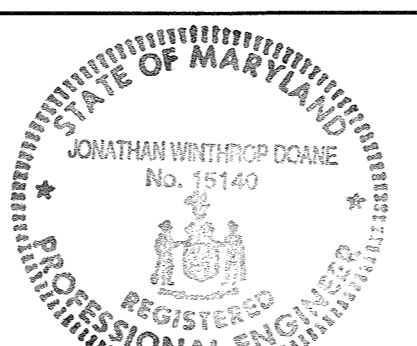
John P. Sporn 5/7/96
 CHIEF, BUREAU OF ENGINEERING

John O'Hara 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Ch. Deane 5-7-96
 CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Spore 5-7-86
 REG. PROF. ENGR.



DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY	NO.	REVISION	DATE

MECHANICAL

CHLORINE BUILDING MODIFICATIONS DEMOLITION PLAN

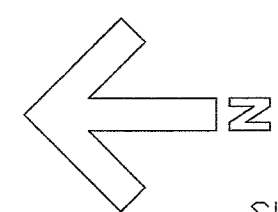
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 129 OF 226

M-35A



SUPPORT 4" LEADER FROM COL. & TERMINATE W/45° BEND @ ELEV. 139.00

SODIUM HYPOCHLORITE FILL STATION

FROST PROOF EMERGENCY SHOWER & EYEWASH STATION

SODIUM BISULFITE FILL STATION

4" DRAIN TO EXIST. 6" SANITARY SEWER

3/4" FROST PROOF HOSE BIB & HOSE RACK

4" DRAIN TO EXIST. 6" SANITARY SEWER

3/4" FROST PROOF HOSE BIB & HOSE RACK

2" CURB STOP (TYP.)

EXISTING 8" W

2" CURB STOP

2" WATER LINE

3'-0" (TYP.)

6" (TYP.)

SODIUM HYPOCHLORITE FILL PANEL

15'-0"

TANK NO. 2

TANK NO. 1

SODIUM BISULFITE FILL PANEL

2" SODIUM BISULFITE FILL LINE @ EL. 155.25

NEW 2" CW

LAL 49A LAH 49A LAHH 49A HS 49A

LAL 49B LAH 49B LAHH 49B HS 49B

LAL 54A LAH 54A LAHH 54A HS 54A

LAL 54B LAH 54B LAHH 54B HS 54B

LIT 49B LSL 49B

LSH 49B LSHH 49B

LIT 49A LSL 49A

LSH 49A LSHH 49A

2" SODIUM HYPOCHLORITE FILL PIPE @ EL. 154.42

FILL PIPE @ EL. 153.75

4" VENT @ EL. 155.34 (TYP.)

EXISTING LOADING DOCK

5000 GAL. SODIUM HYPOCHLORITE STORAGE TANK NO. 2

5000 GAL. SODIUM HYPOCHLORITE STORAGE TANK NO. 1

EMERGENCY SHOWER & EYEWASH

LE 49B

LE 49A

2" CLS

2" CLS

2" BSS

2" BSS

2'-6" x 2'-6" SUMP (TYP.)

5000 GAL. SODIUM BISULFITE STORAGE TANK NO. 2

5000 GAL. SODIUM BISULFITE STORAGE TANK NO. 1

2" BISULFITE FILL PIPE @ ELEV. 155.00

EXISTING FLOOR DRAIN TO BE PLUGGED (TYP.)

EXISTING FLOOR EL.141.25

NEW 2" CW

LIT 54B LSL 54B

LSH 54B LSHH 54B

STORAGE TRANSFER PIPING (TYP.)

4" B.V. (TYP.)

4" NOZZLE (TYP.)

LIT 54A LSL 54A

LSH 54A LSHH 54A

CHLORINE STORAGE ROOM

6" x 2'-0" CONTAINMENT WALL (TYP.)

2'-6" x 2'-6" x 2'-0" SUMP (TYP.)

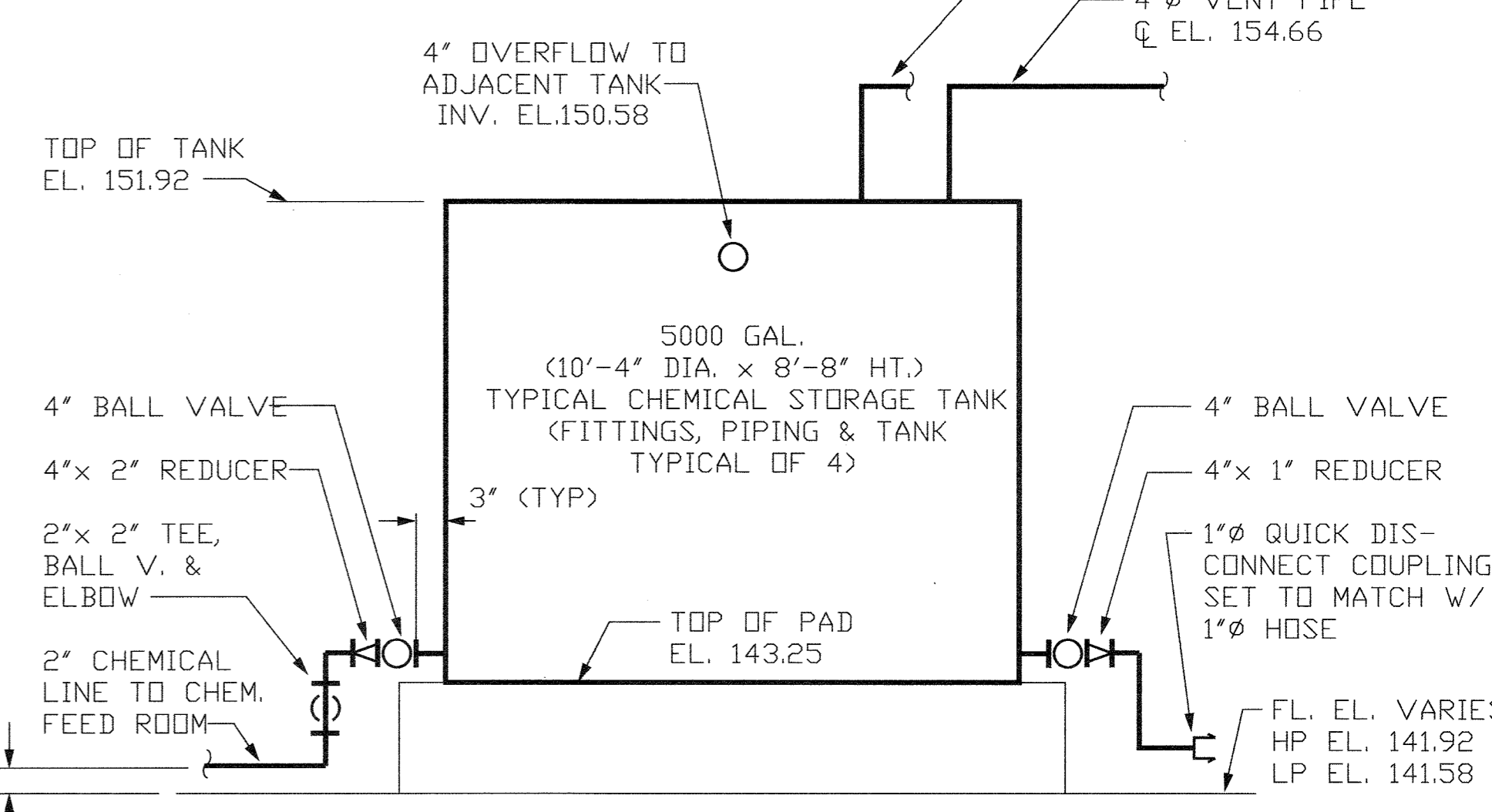
NEW 2" WATERLINE @ ELEV. 154.00

EMERGENCY SHOWER & EYEWASH

4" VENT @ ELEV. 154.66 (TYP.)

NOTE: MAINTAIN SLOPE ON CHEMICAL FILL PIPES FROM HIGH POINT AT FILL STATIONS TO STORAGE TANKS.

NEW LAYOUT PLAN SCALE: 1/4"=1'-0"



TYPICAL CHEMICAL STORAGE TANK ELEVATION SCALE: 3/8"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam O'Hare 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

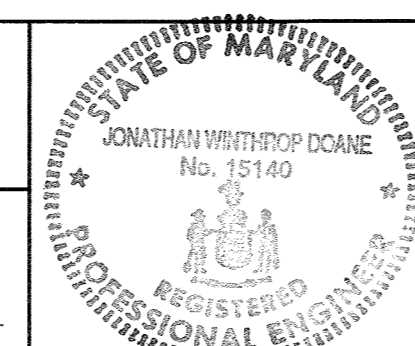
John J. O'Hare 5/7/96
CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hare 5/7/96
CHIEF BUREAU OF ENGINEERING DATE

John J. O'Hare 5-7-96
CHIEF UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER DATE



DES				
DRN	M.J.C.			
CHK	J.H.			
DATE	M.J.C. 1	RECORD DRAWING		11/2/94
	BY	NO.	REVISION	DATE

MECHANICAL

CHLORINE BUILDING MODIFICATIONS STORAGE AREA PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

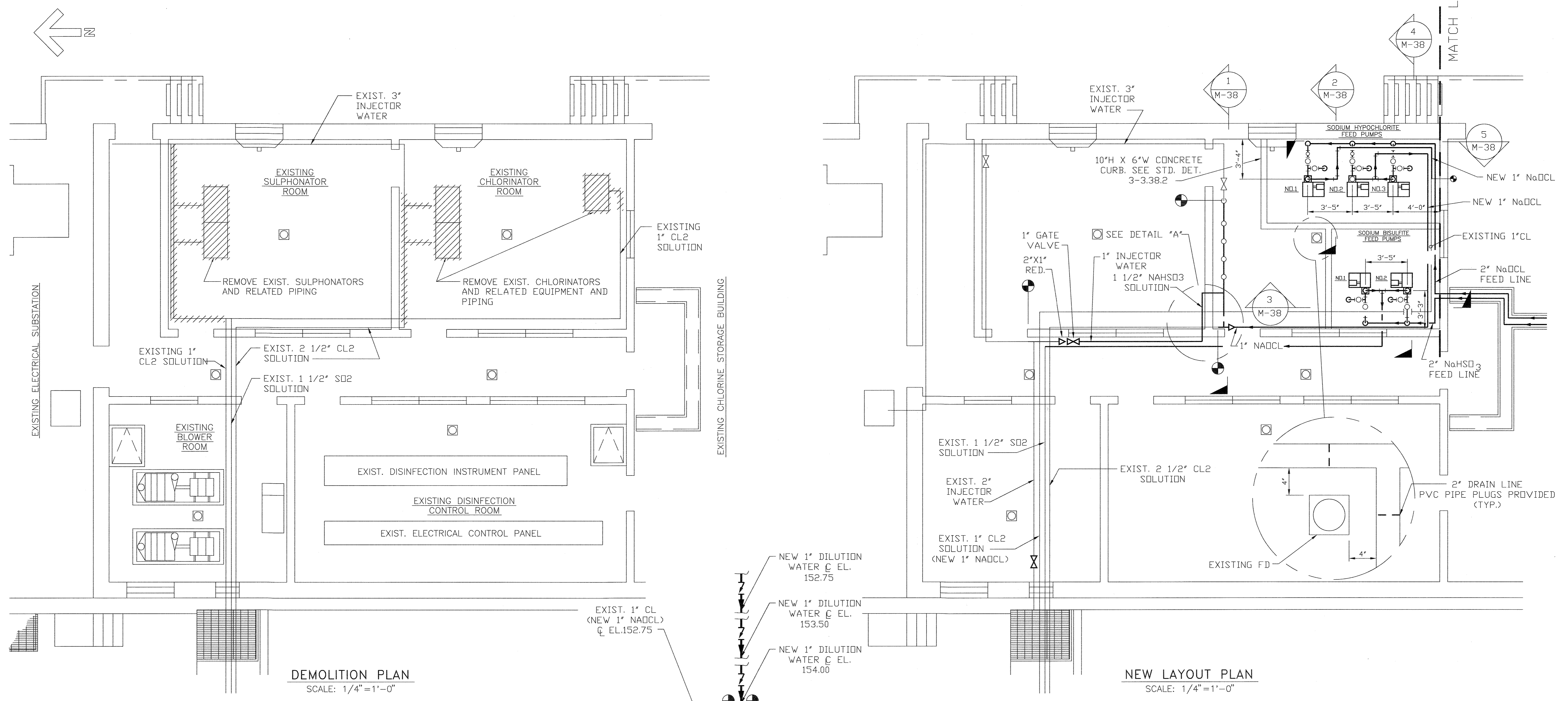
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 130 OF 226

M-36A

NOTE:
A VENT STANDPIPE, STRAINER, BYPASS AND VALVES WERE INSTALLED ON EACH PUMP SUCTION LINE.



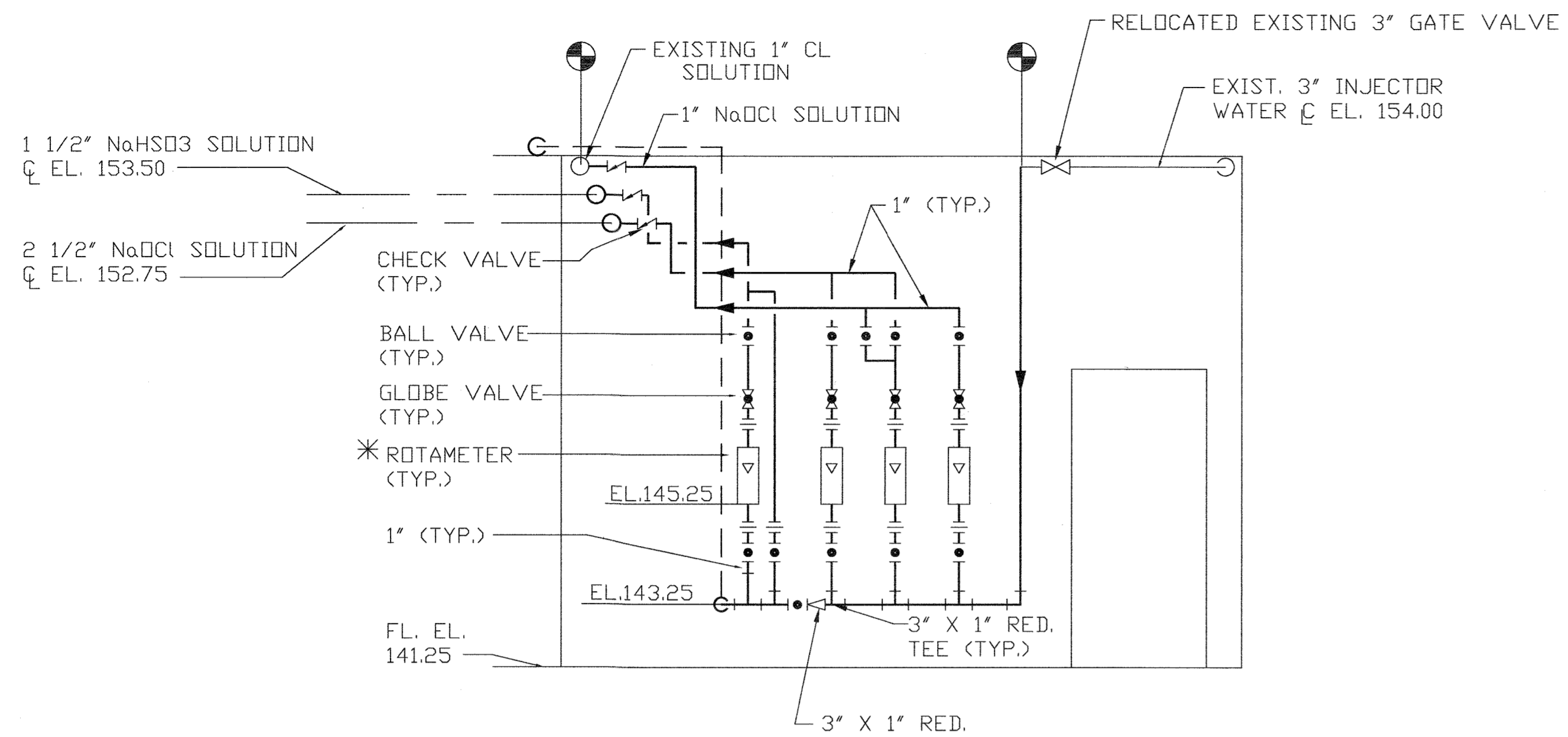
DEMOLITION PLAN
SCALE: 1/4"=1'-0"

NEW LAYOUT PLAN
SCALE: 1/4"=1'-0"

DETAIL "A"
SCALE: NONE

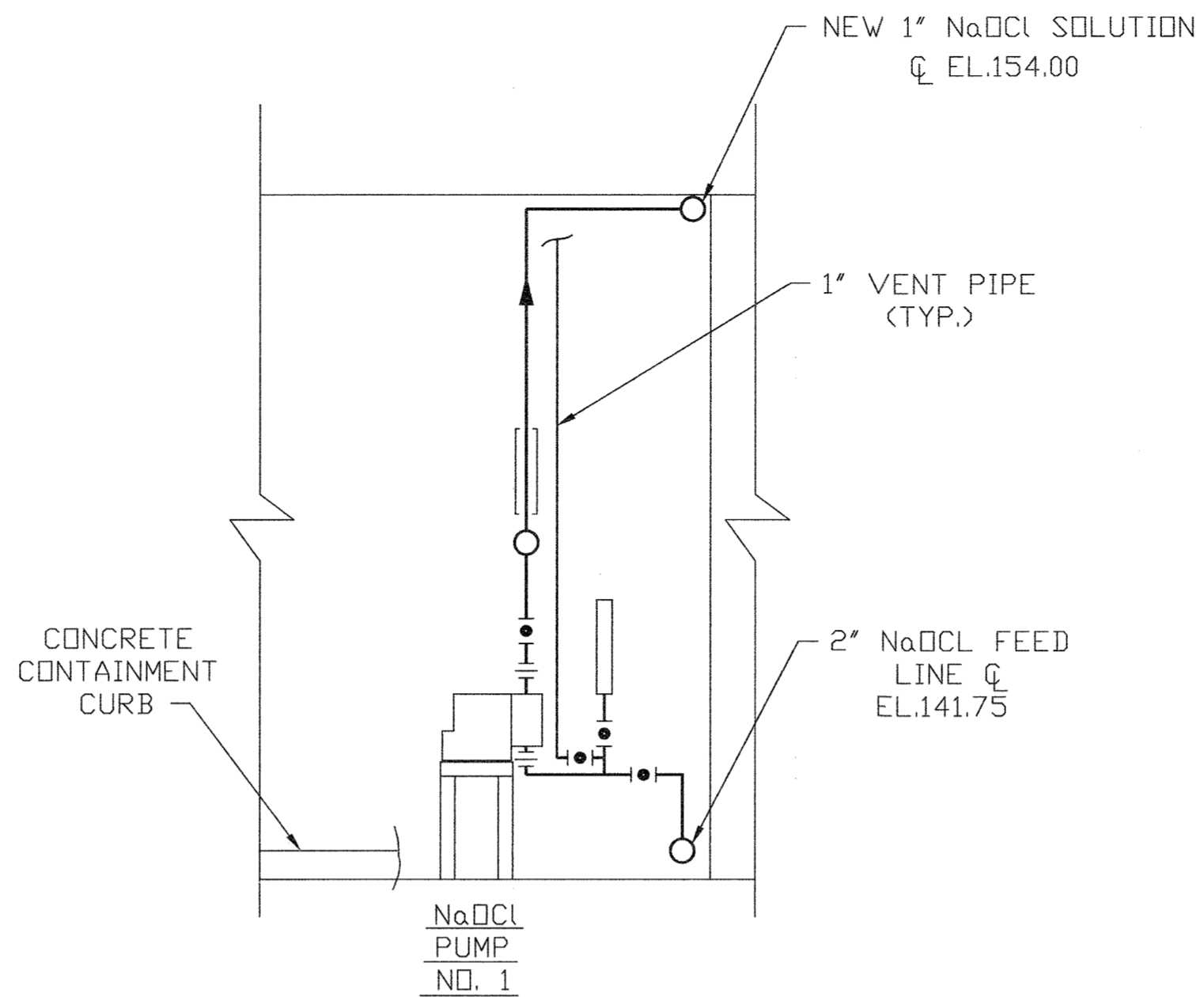
NOTE:
TEES AND BALL VALVES WERE INSTALLED ON EACH OF THE THREE CHEMICAL DISCHARGE AND TWO CHEMICAL SUCTION LINES AND ON THE INJECTOR WATER LINE FOR TEMPORARY USE DURING CONSTRUCTION. THESE CONNECTIONS WERE CAPPED WITH THREADED PVC PIPE PLUGS AND ABANDONED IN PLACE.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James A. Elmer</i> 5/7/96 DIRECTOR OF PUBLIC WORKS <i>John J. O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy Jonathan W. Doane 5-7-96 REG. PROF. ENGR.		STATE OF MARYLAND JONATHAN WINTHROP DOANE No. 15140 REGISTERED PROFESSIONAL ENGINEER		DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____		MECHANICAL CHLORINE BUILDING MODIFICATIONS CHEMICAL FEED RM PLANS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 131 OF 226 M-37A	
				M.J.C. 1 RECORD DRAWING 11/2/94 BY NO. REVISION DATE									

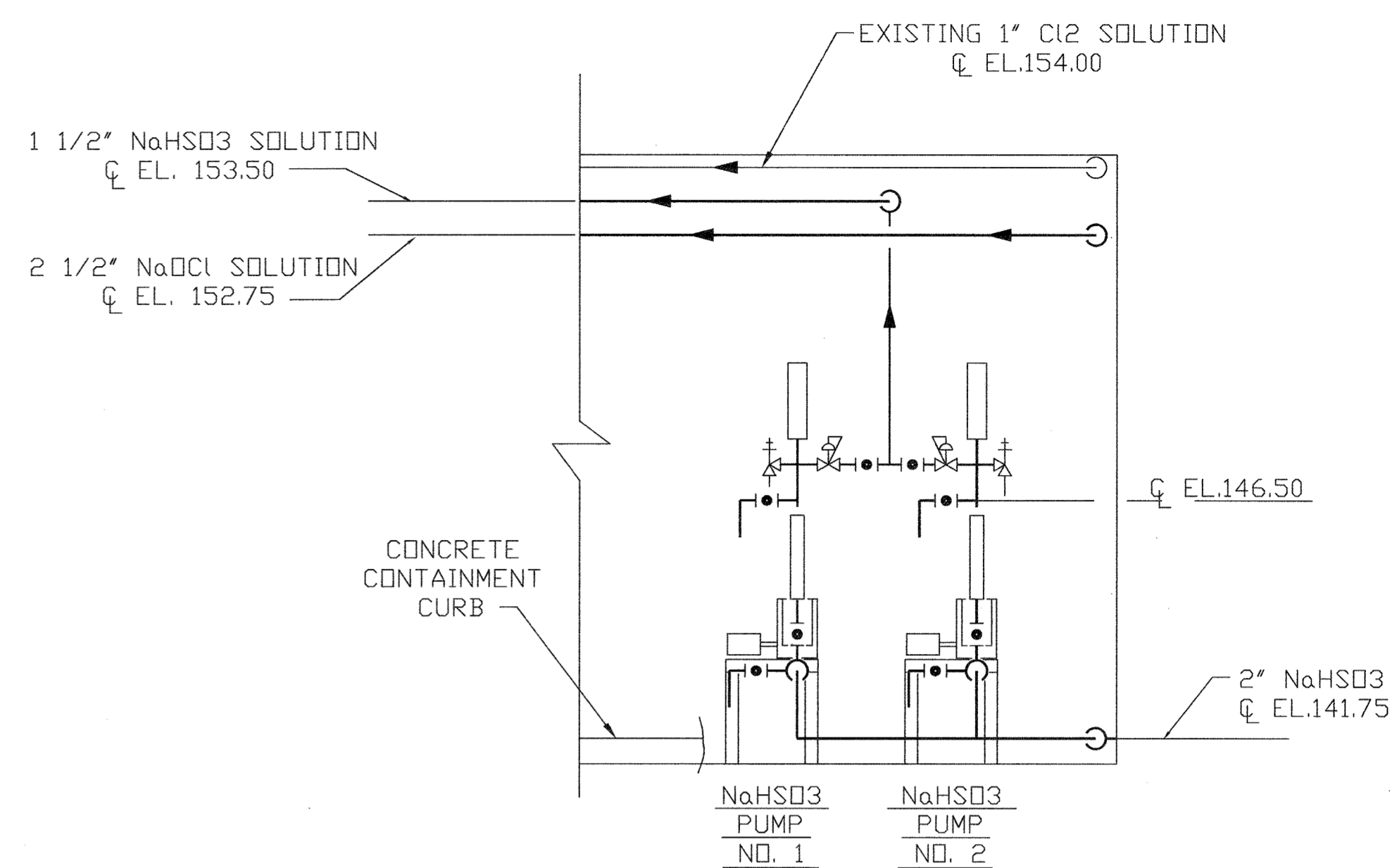


*FOR SIZE OF ROTAMETER
SEE SPECIFICATION
SECTION 15342.
0 TO 5 GPM

SECTION 1
SCALE: 3/8"=1'-0" M-37

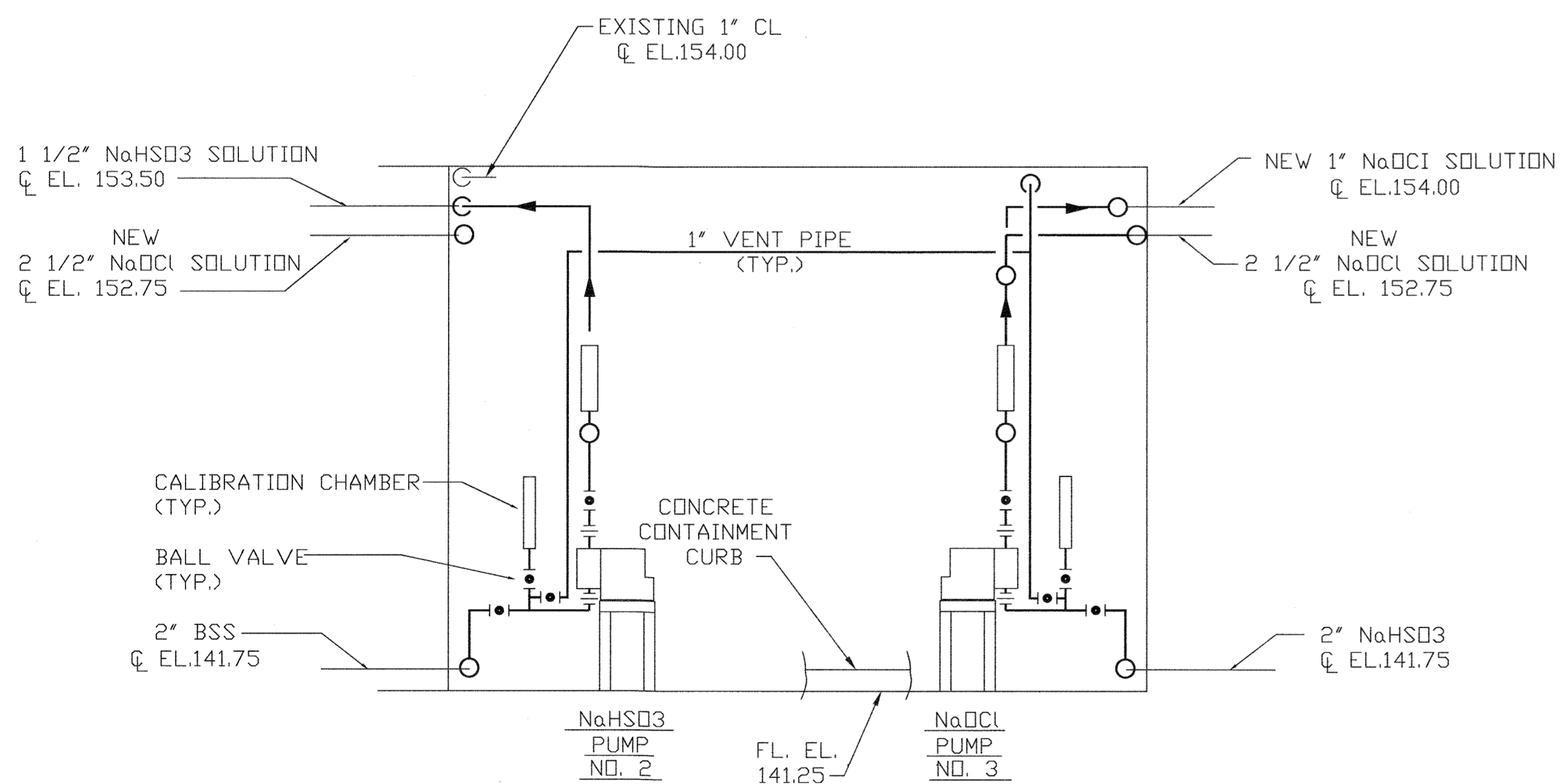


SECTION 2
SCALE: 3/8"=1'-0" M-37

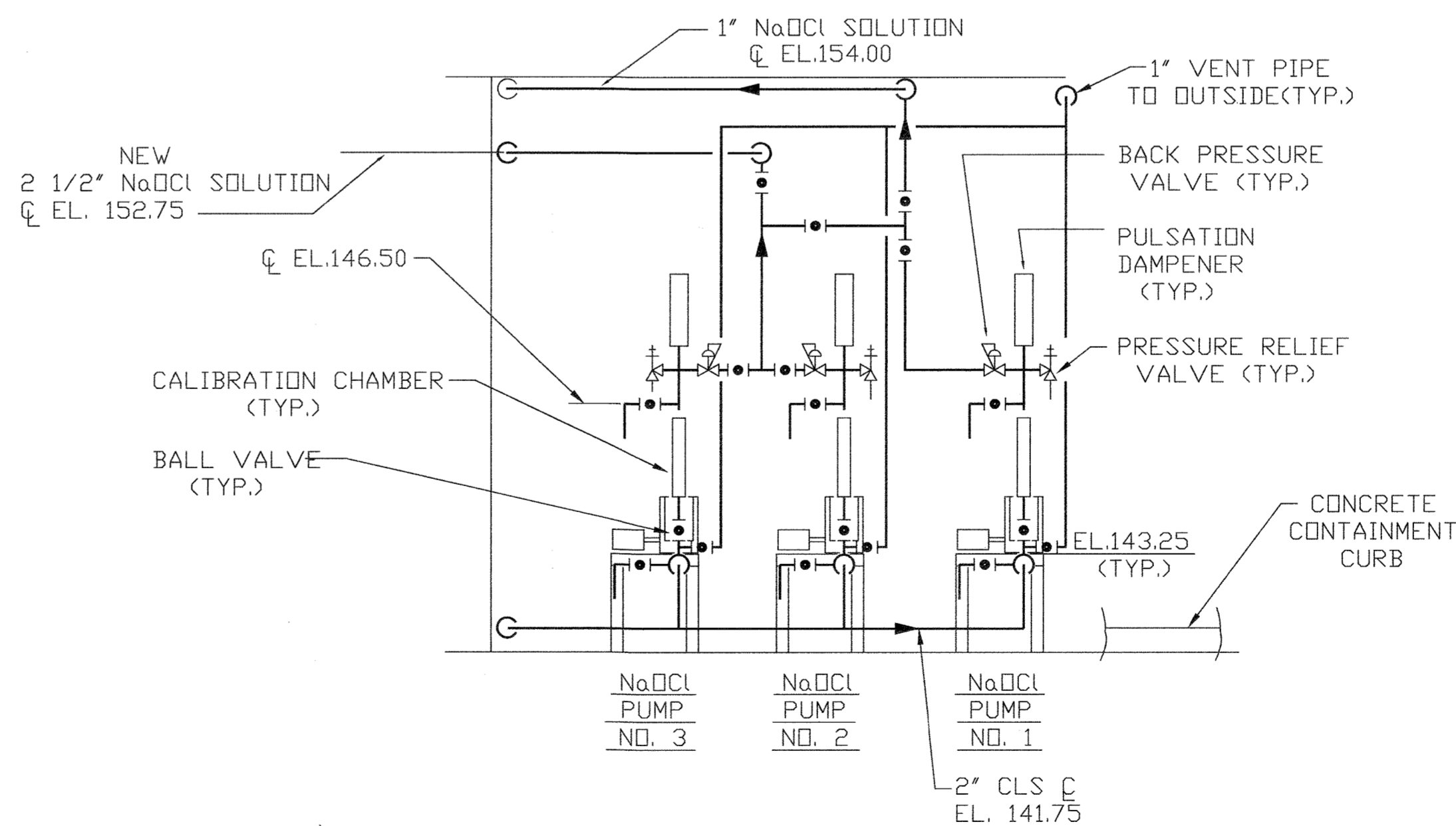


SECTION 3
SCALE: 3/8"=1'-0" M-37

NOTE:
A 1" VENT STANDPIPE, STRAINER, STRAINER BYPASS,
AND VALVES WERE INSTALLED ON EACH PUMP SUCTION LINE.



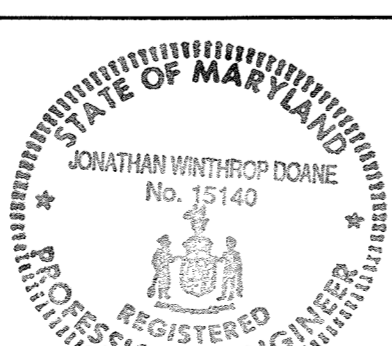
SECTION 4
SCALE: 3/8"=1'-0" M-37



SECTION 5
SCALE: 3/8"=1'-0" M-37

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/7/96
5/7/96

M&E Metcalf & Eddy
5-7-96

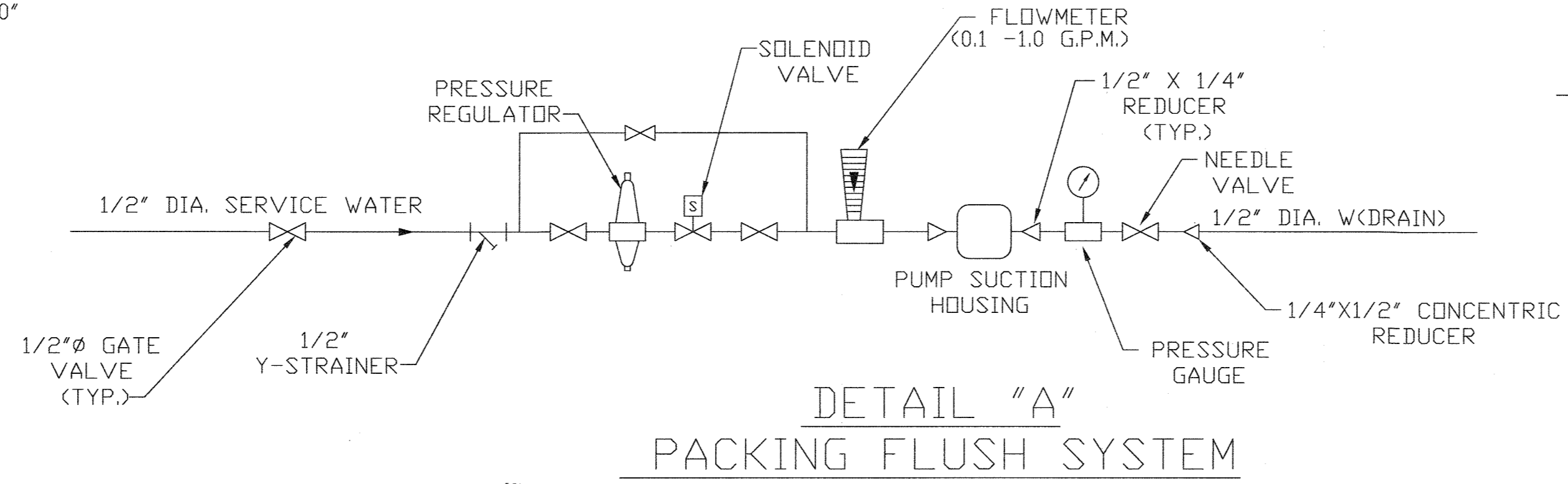
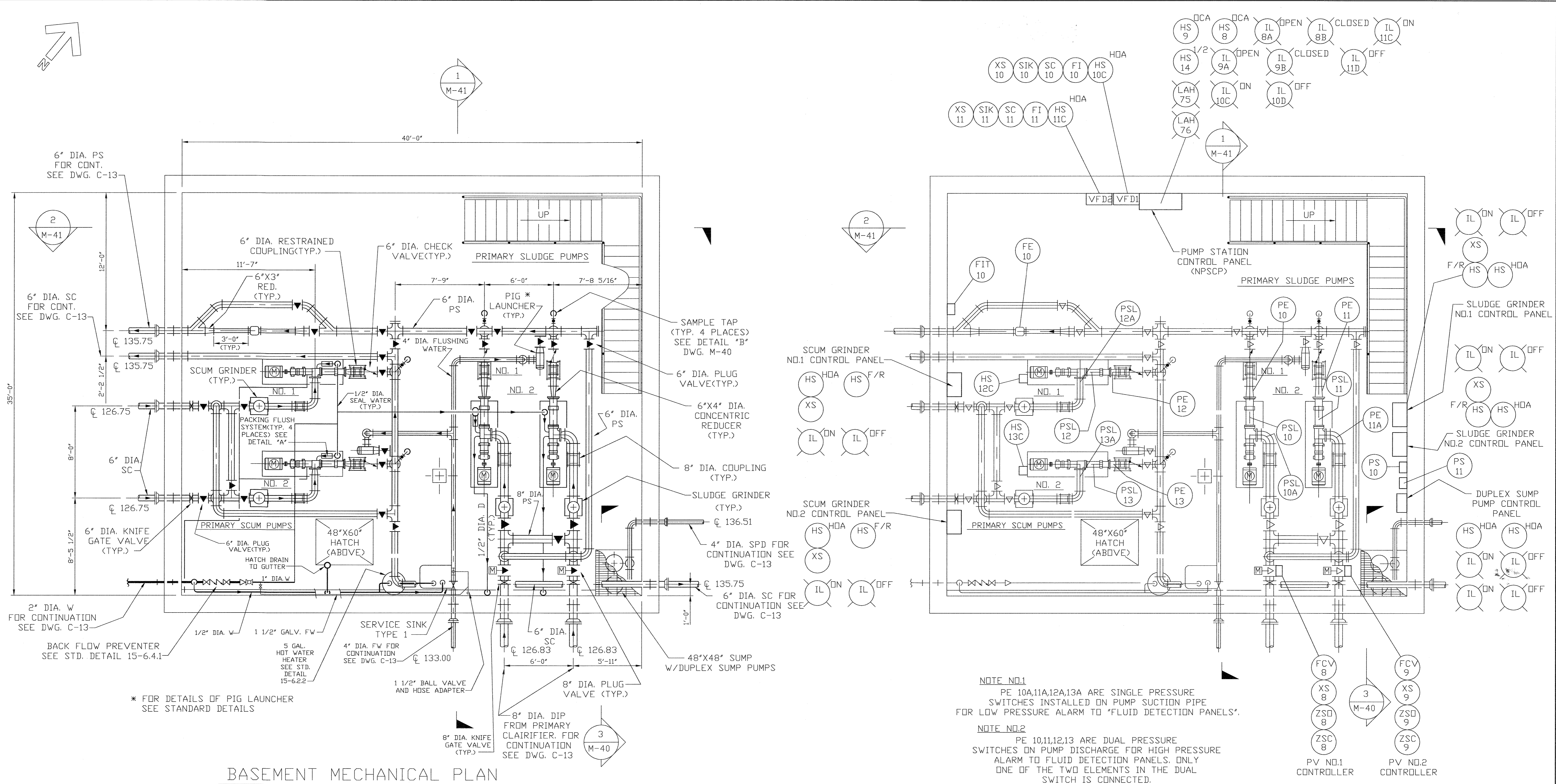


DES			
DRN	M.J.C.		
CHK	J.H.		
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION
			DATE

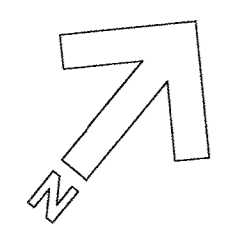
MECHANICAL
CHLORINE BUILDING
MODIFICATIONS
CHEMICAL FEED
ROOM SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

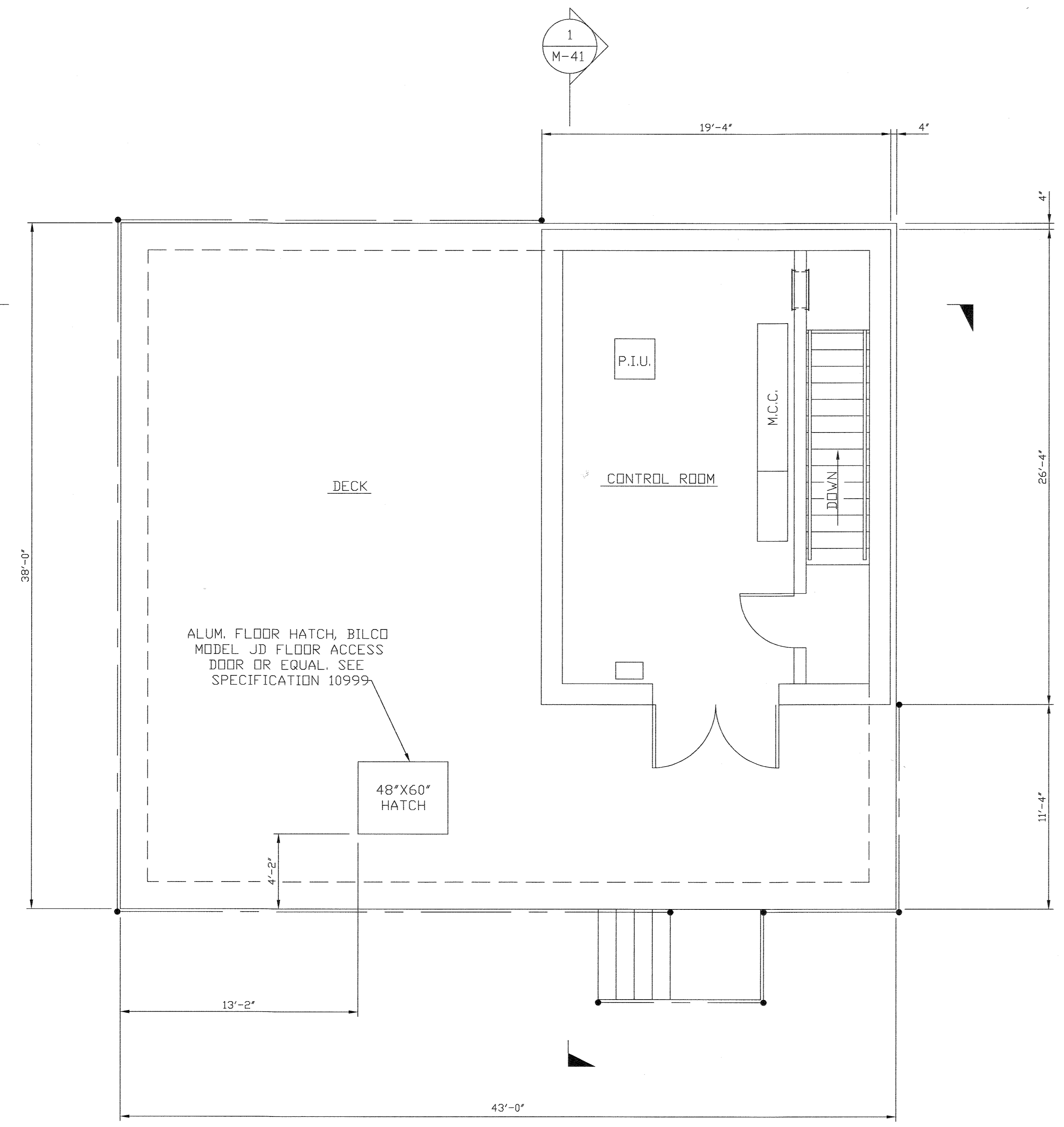
SCALE AS SHOWN
SHEET 132 OF 226
M-38A



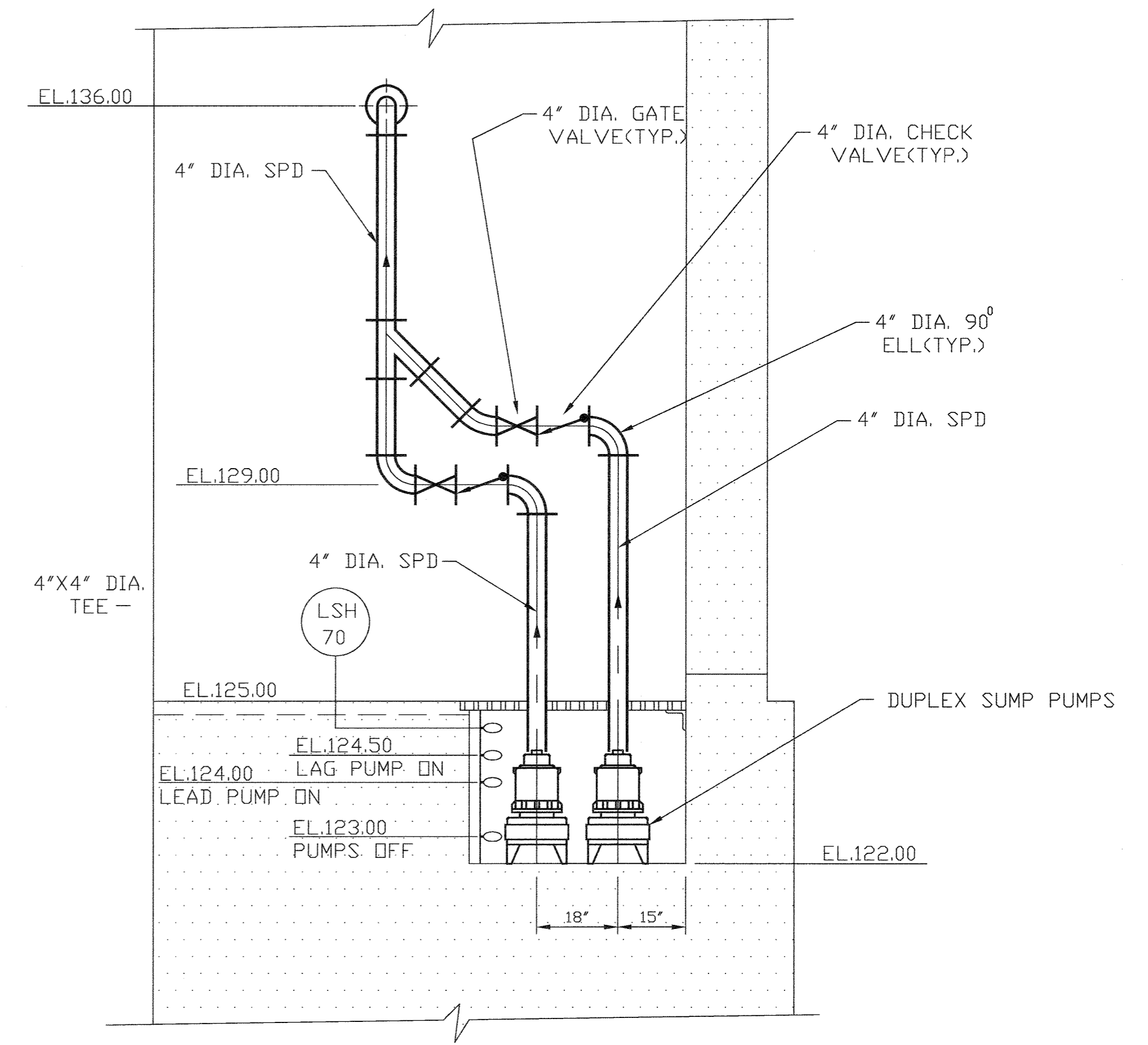
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>[Signature]</i> 5/1/96 Chief, Bureau of Engineering: <i>[Signature]</i> 5/7/96 Chief, Bureau of Environmental Services: <i>[Signature]</i> 5/7/96 Chief, Utility Design Division: <i>[Signature]</i> 5-7-96		M&E Metcalf & Eddy Jonathan W. Dome Registered Professional Engineer No. 15140 State of Maryland	DESIGN DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____	MECHANICAL NORTH PUMP STATION BASEMENT PLANS	LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 133 OF 226 M-39A
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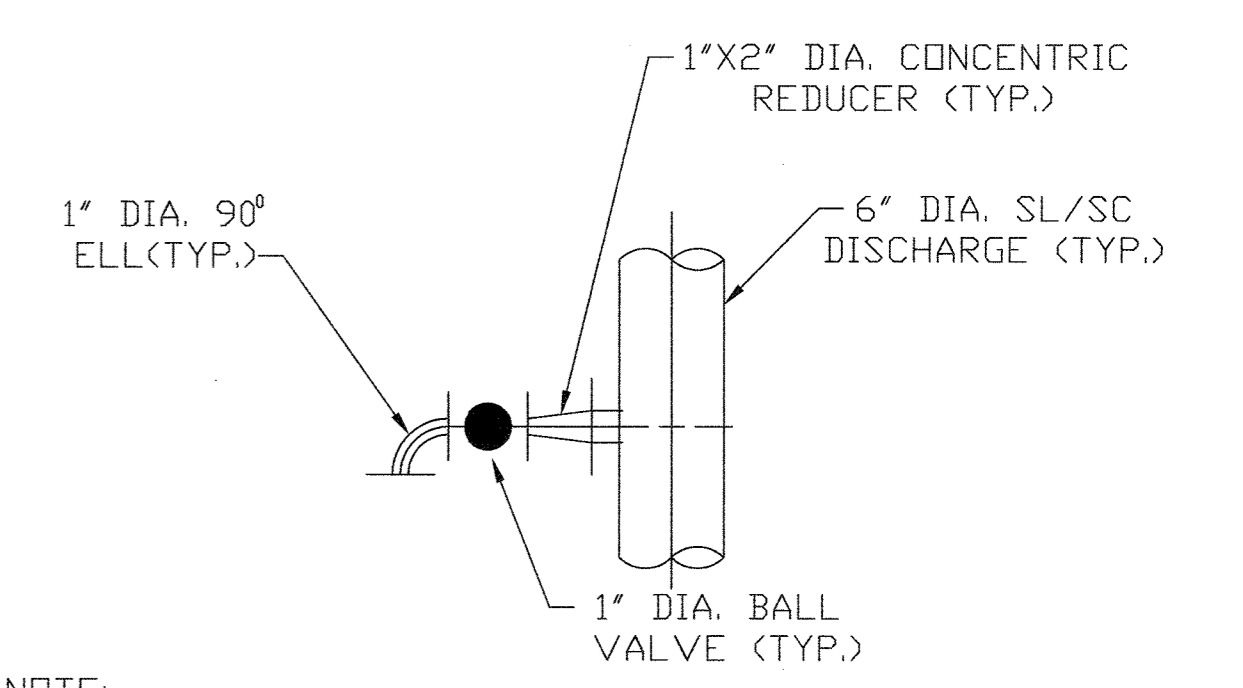
2
M-41



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



SECTION 3 3
SCALE: 1/2" = 1'-0" M-39 M-44



NOTE: SAMPLE TAP, TYPICAL (4) PLACES.

DETAIL B
SCALE: NONE M-39

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Samuel A. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

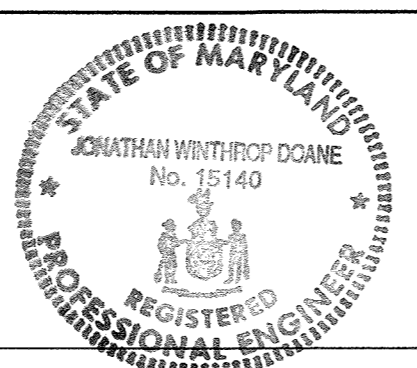
John J. O'Hare 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John W. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Debra J. Lane 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. D'Arcy 5-7-96
REG. PROF. ENGR. DATE



DES:				
DRN:	M.J.C.			
CHK:	J.H.			
M.J.C.	1	RECORD DRAWING		11/2/94
DATE:	BY	NO.	REVISION	DATE

MECHANICAL

NORTH PUMP STATION
UPPER PLAN AND SECTIONS

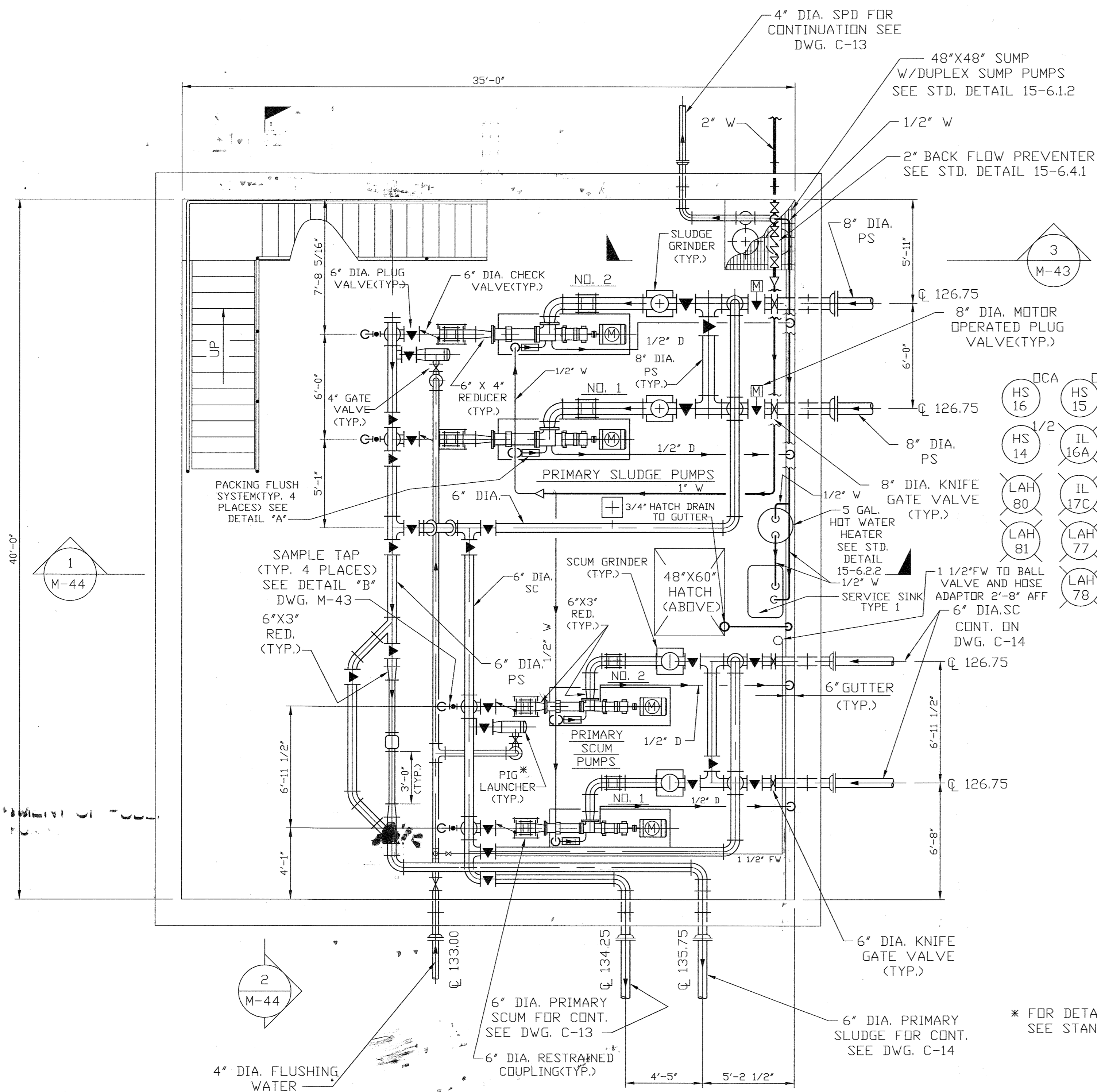
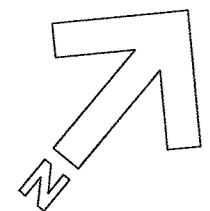
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

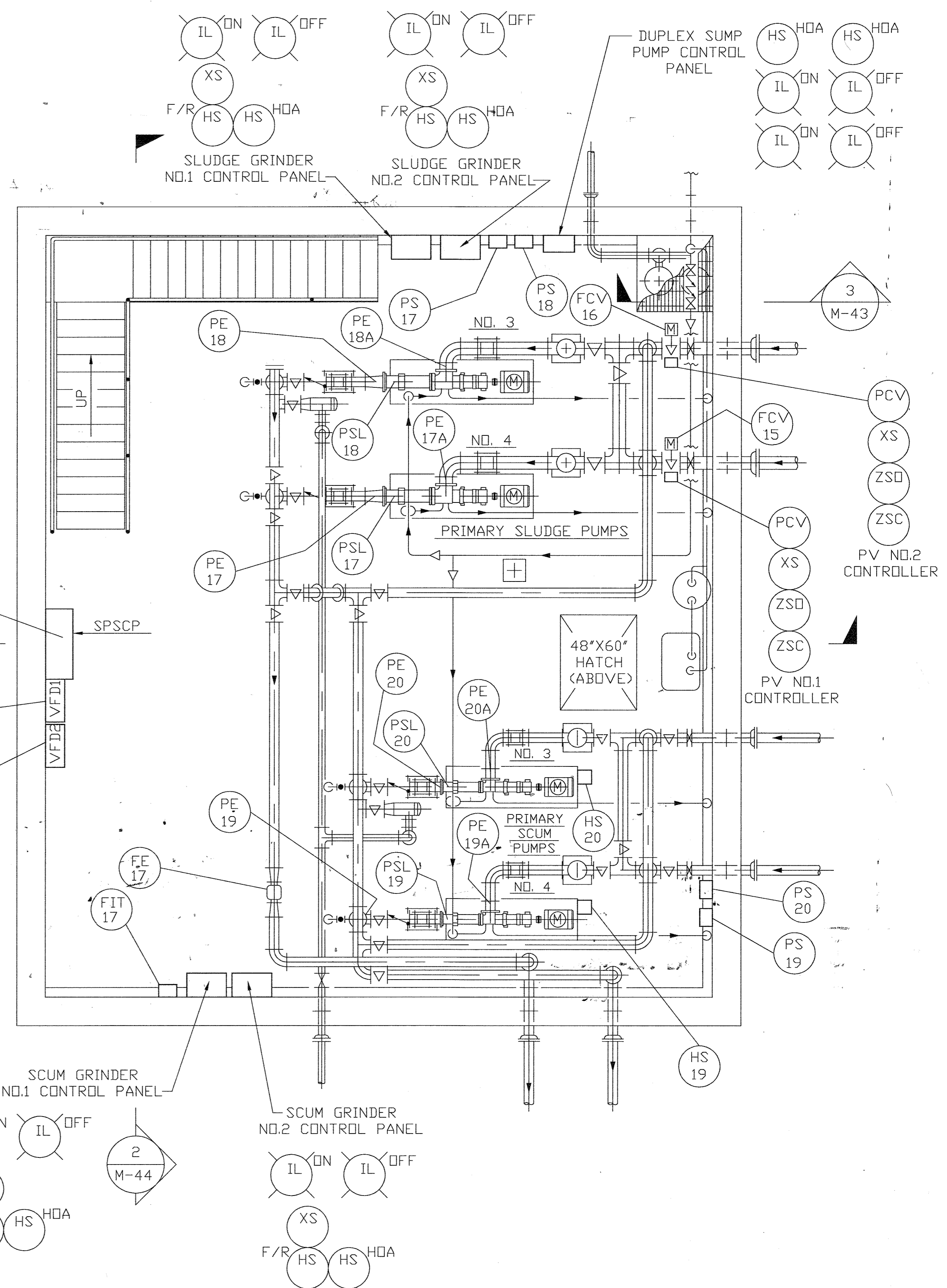
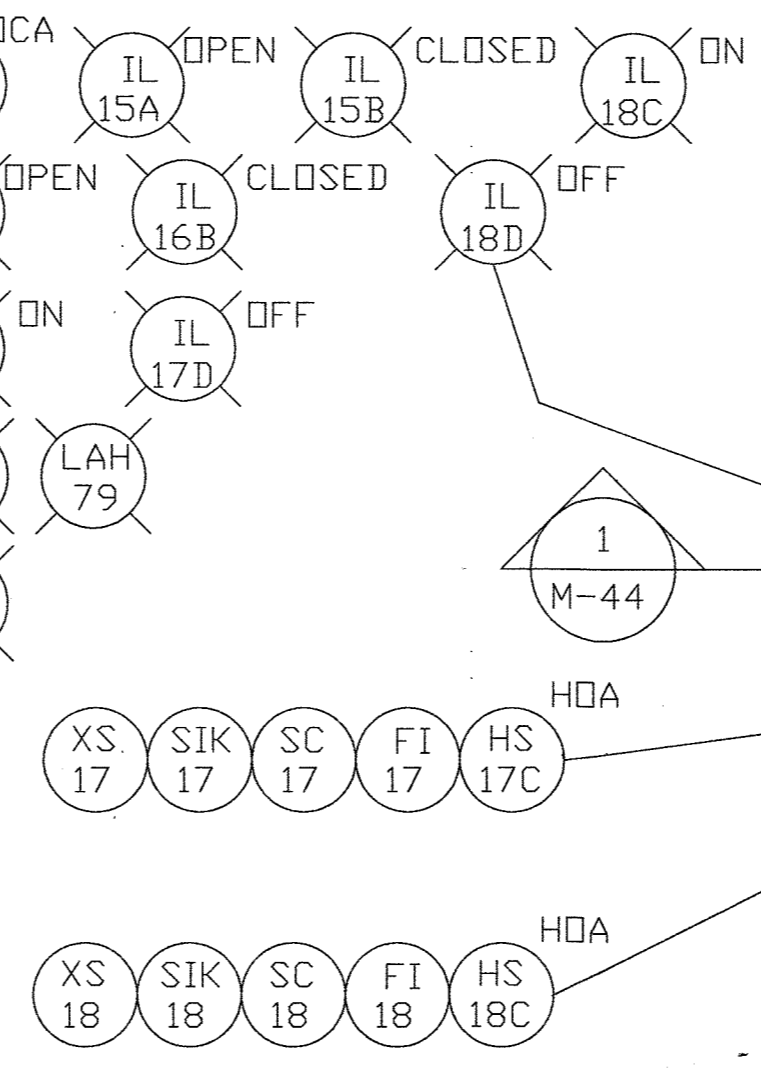
SCALE AS SHOWN

SHEET 134 OF 226

M-40A



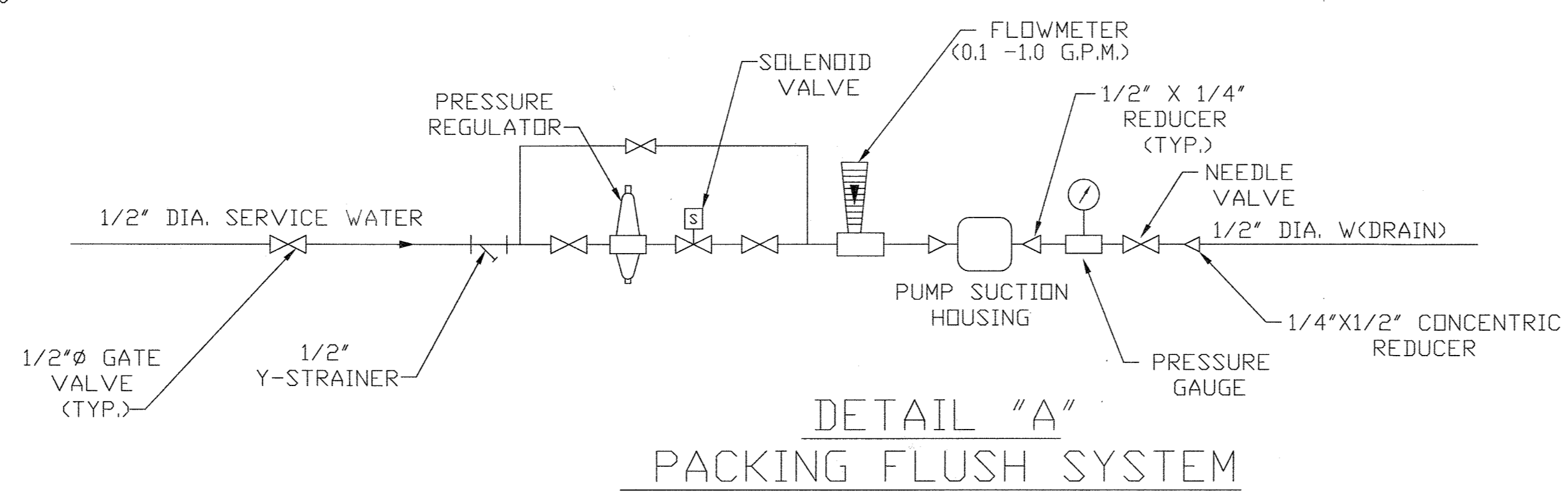
BASEMENT MECHANICAL PLAN
SCALE: 1/4" = 1'-0"



BASEMENT INSTRUMENTATION PLAN
SCALE: 1/4" = 1'-0"

NOTE NO.1
PE 17A, 18A, 19A, 20A ARE SINGLE PRESSURE SWITCHES INSTALLED ON PUMP SUCTION PIPE FOR LOW PRESSURE ALARM TO 'FLUID DETECTION PANELS'.

NOTE NO.2
PE 17, 18, 19, 20 ARE DUAL PRESSURE SWITCHES ON PUMP DISCHARGE FOR HIGH PRESSURE ALARM TO FLUID DETECTION PANELS. ONLY ONE OF THE TWO ELEMENTS IN THE DUAL SWITCH IS CONNECTED.



DETAIL "A"
PACKING FLUSH SYSTEM

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

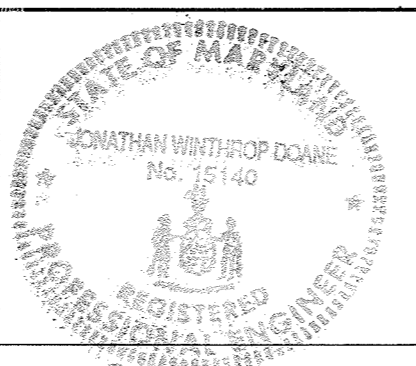
James P. Lewis 5/6/96
DIRECTOR OF PUBLIC WORKS DATE

William J. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

M&E Metcalf & Eddy

Jonathan W. Brown 5-7-96
REG. PROF. ENGR. DATE



DES				
DRN	M.J.C.			
CHK	J.H.			
DATE	M.J.C. 1	RECORD DRAWING		11/2/94
	BY	NO.	REVISION	DATE

MECHANICAL

SOUTH PUMP STATION
BASEMENT PLANS

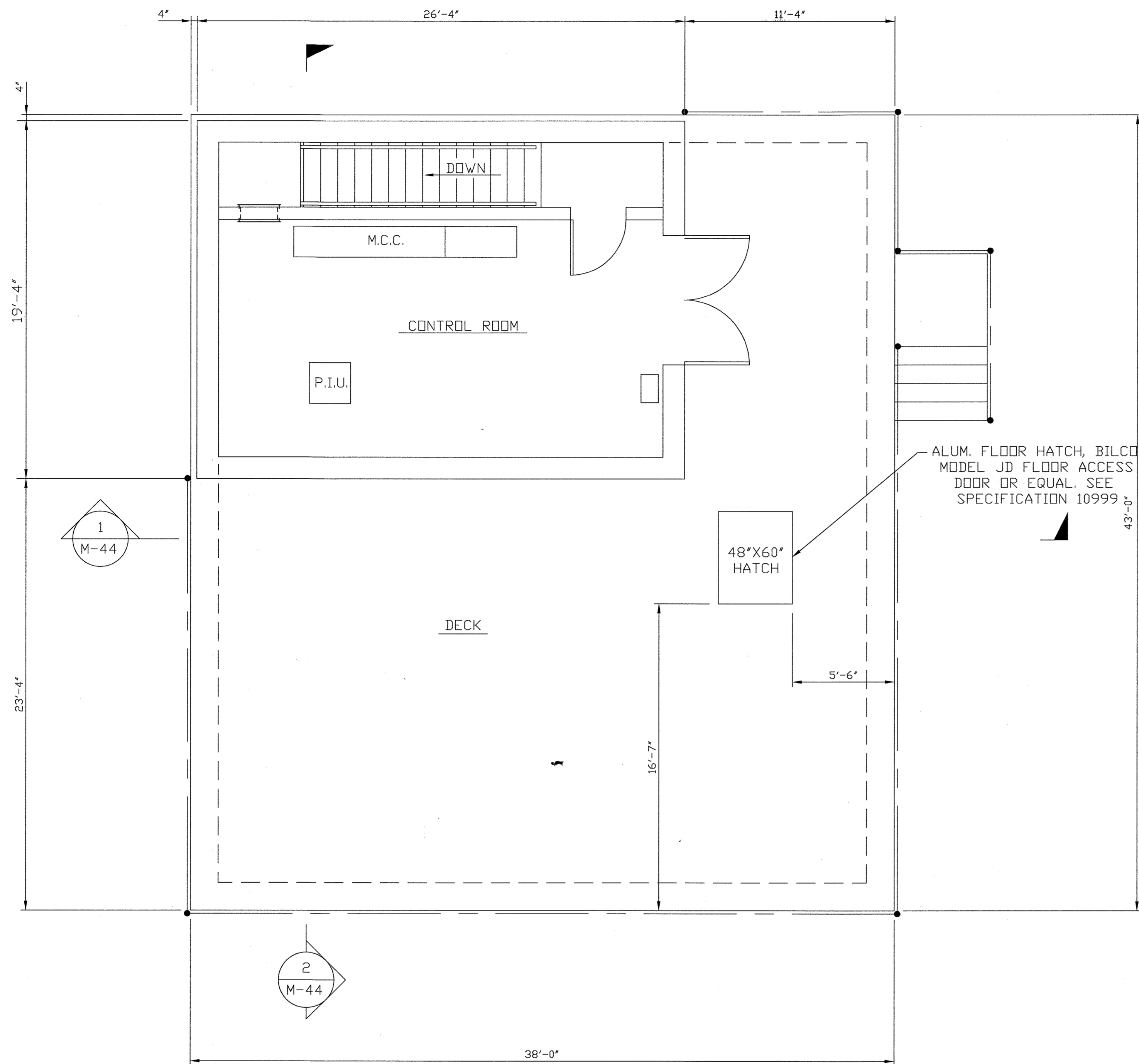
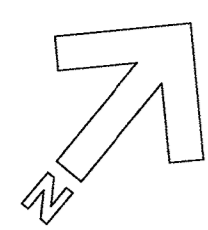
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

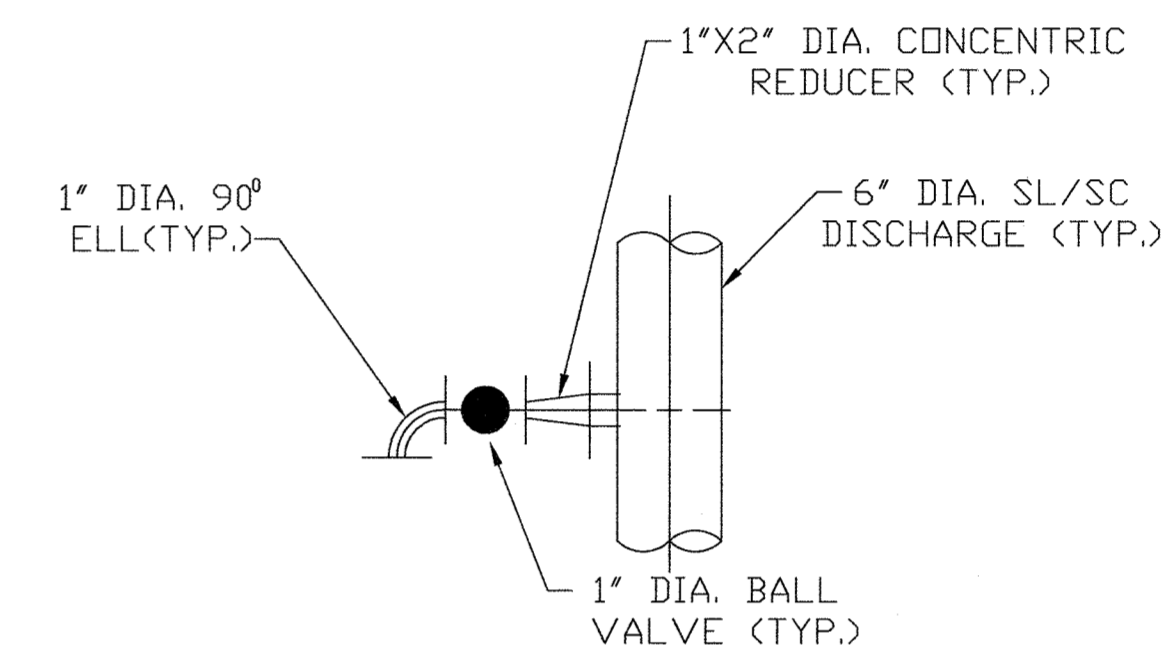
SCALE AS SHOWN

SHEET 136 OF 226

M-42A



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



NOTE:
SAMPLE TAP, TYPICAL (4) PLACES.

DETAIL B
SCALE: NONE
M-44

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Lewis 5/6/96
DIRECTOR OF PUBLIC WORKS DATE

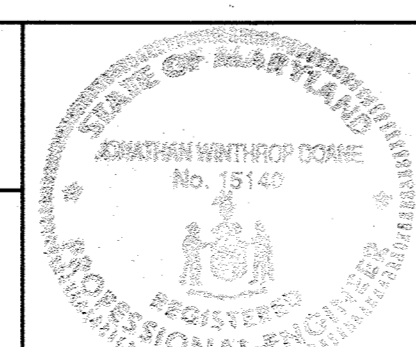
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John P. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Debra W. Drane 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Debra W. Drane 5-7-96
REG. PROF. ENGR. DATE



DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C.	1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION	DATE

MECHANICAL

SOUTH PUMP STATION
UPPER PLAN AND SECTIONS

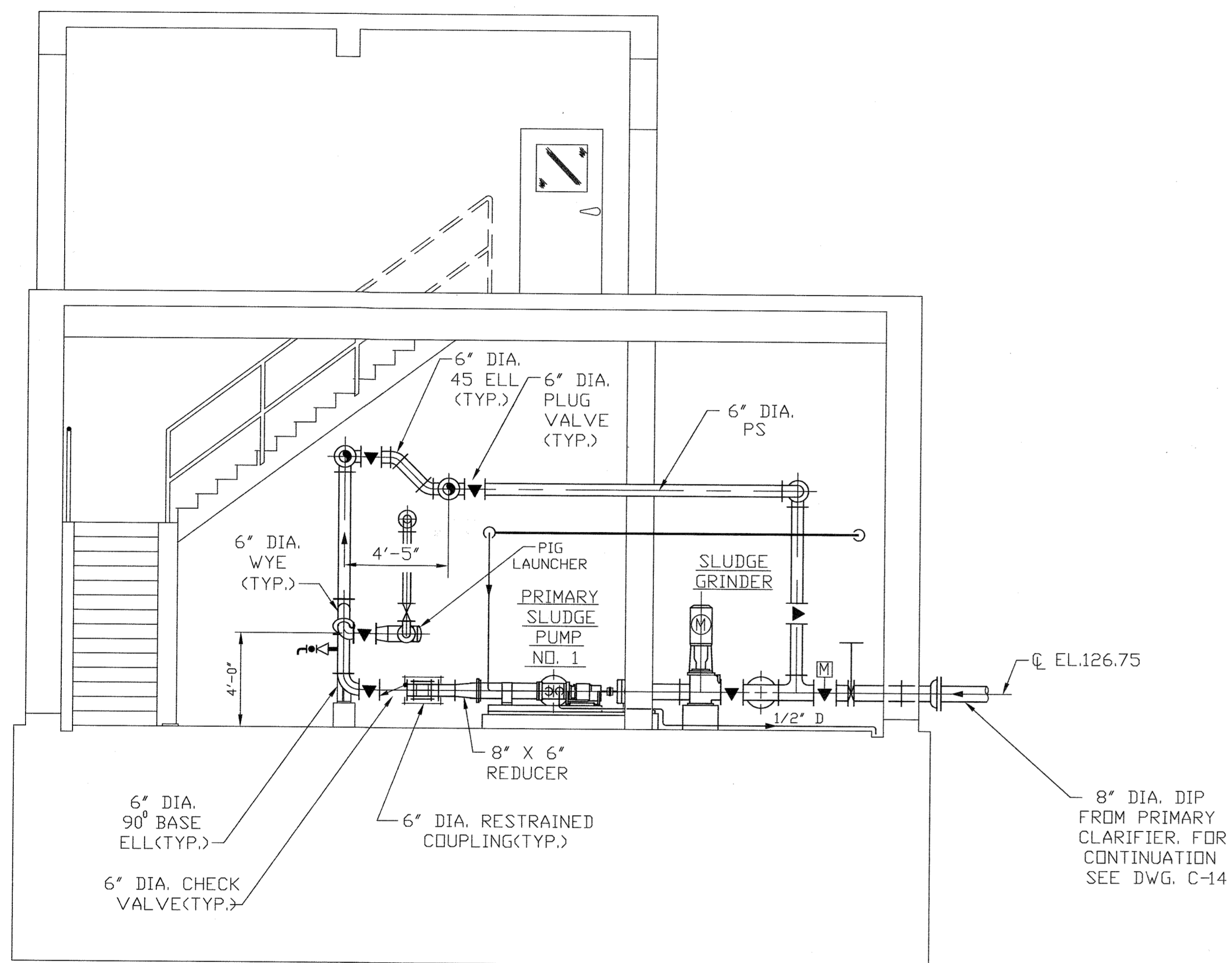
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

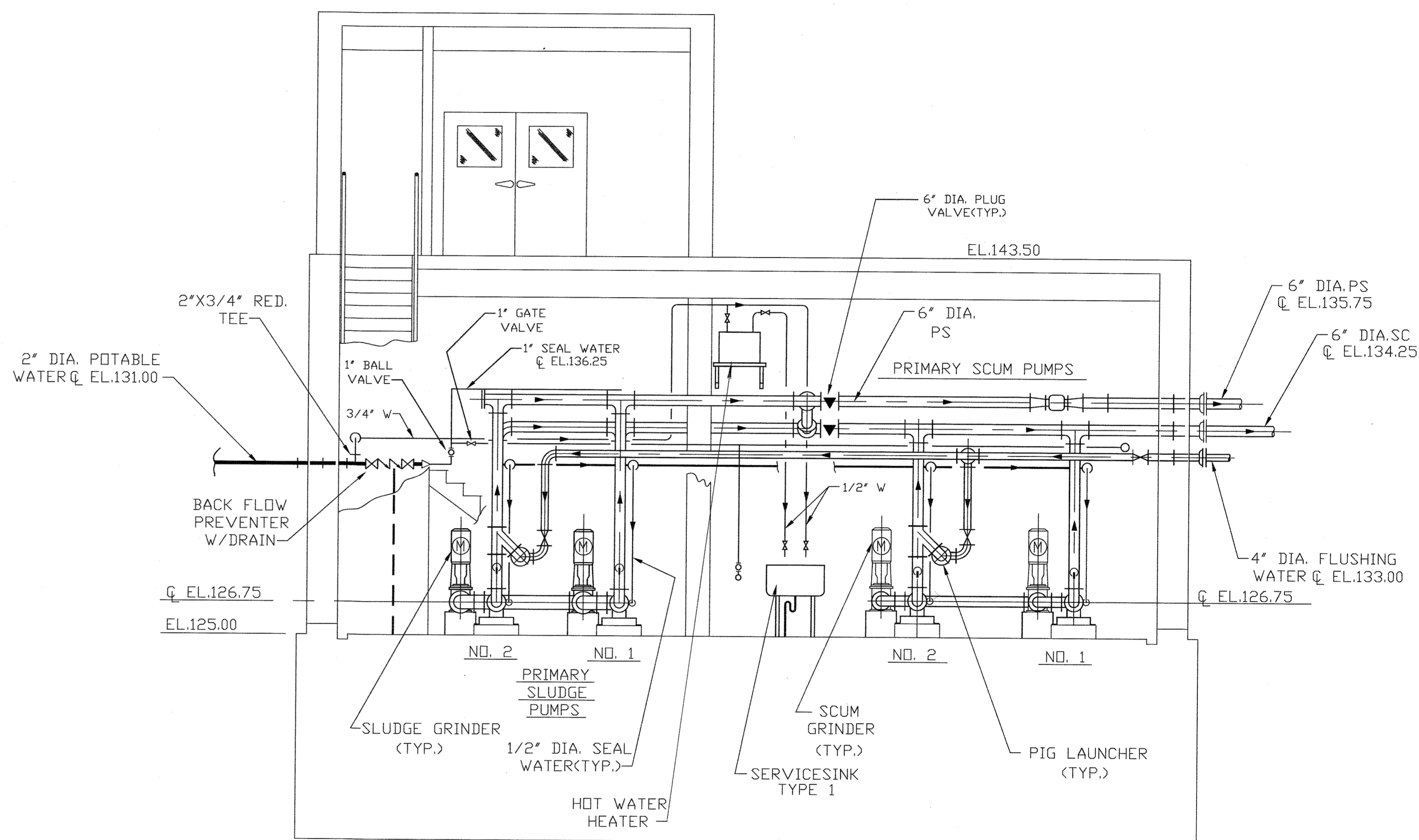
SCALE AS SHOWN

SHEET 137 OF 226

M-43A

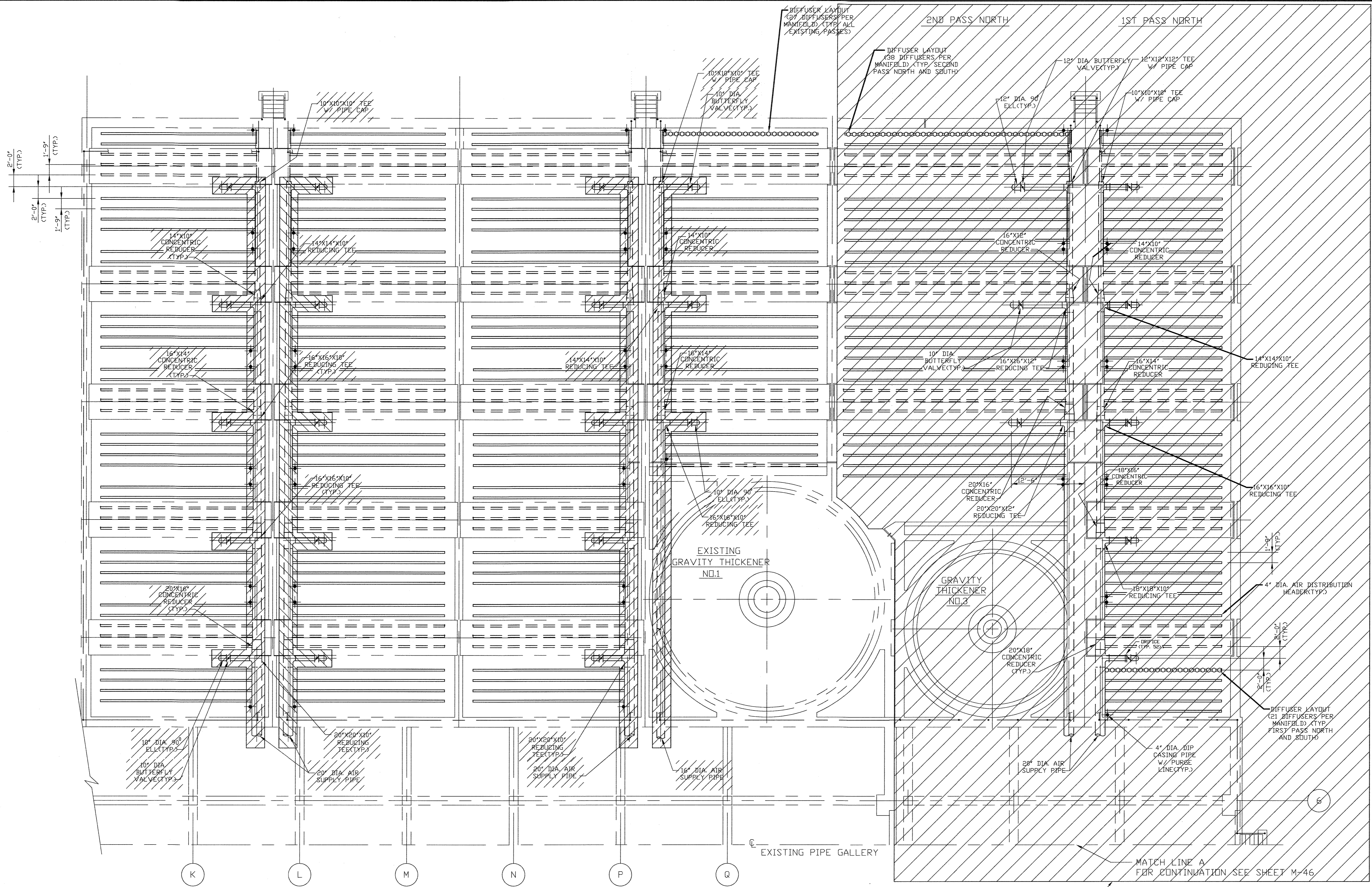
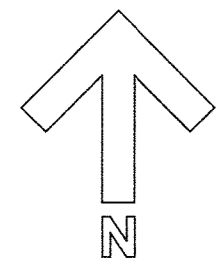


SECTION 1
SCALE: 1/4" = 1'-0" M-42



SECTION 2
SCALE: 1/4" = 1'-0" M-42

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James P. Swan</i> 5/7/96 DIRECTOR OF PUBLIC WORKS DATE <i>John J. O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE		M&E Metcalf & Eddy <i>Jonathan W. Doane</i> 5-7-96 CHIEF, UTILITY DESIGN DIVISION DATE				DES: _____ DPN: M.J.C. CHK: J.H. DATE: M.J.C. 1 11/2/94 BY NO. REVISION DATE		MECHANICAL SOUTH PUMP STATION SECTIONS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 138 OF 226 M-44A
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PLAN AT EL. 146.33

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

NOT CONSTRUCTED

NOTE:
 DIGESTER NO. 4 AND GRAVITY THICKENER NO. 4
 NOT CONSTRUCTED. SEE SHEET M-47A FOR
 MODIFICATIONS TO DIGESTER NO. 2 DIFFUSER ASSEMBLY.

NOTE:
 REMOVE ALL EXISTING DIFFUSER ASSEMBLIES.

LEGEND:
 ——— DENOTES EXISTING TANK
 ——— DENOTES NEW TANK
 ——— DENOTES NEW EQUIPMENT
 - - - - - DENOTES HIDDEN LINES

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James A. Lewis 5/7/96
 DIRECTOR OF PUBLIC WORKS DATE

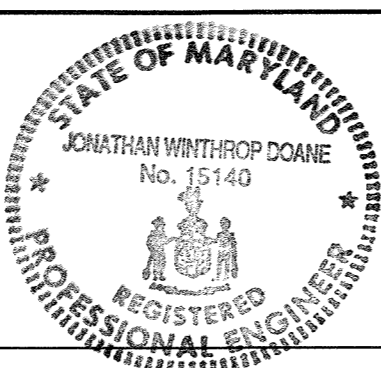
John J. Okay 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Richard J. Sporn 5/7/96
 CHIEF, BUREAU OF ENGINEERING DATE

Debra A. Brown 5-7-96
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Throp Doane 5-7-96
 REG. PROF. ENGR. DATE



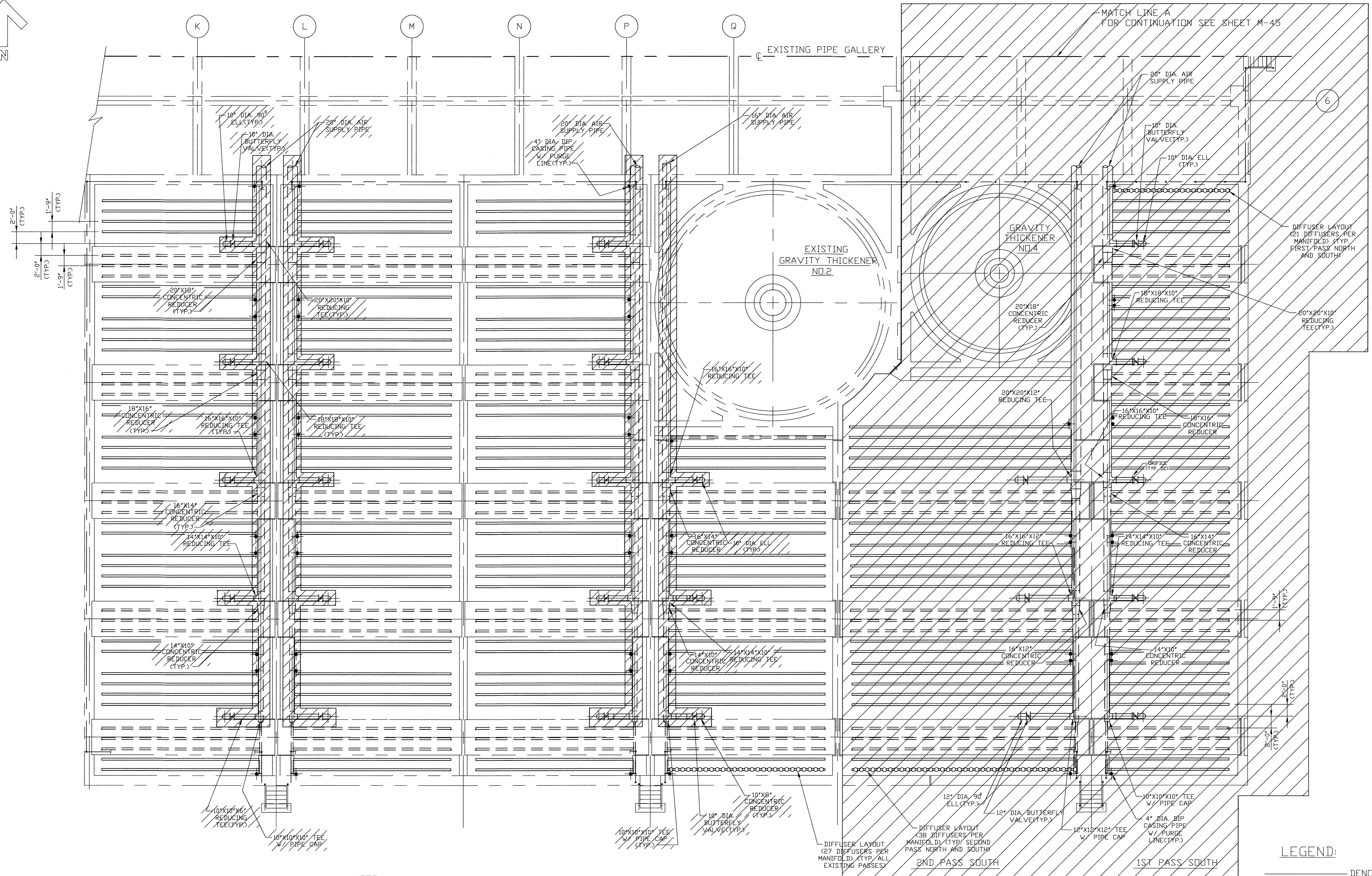
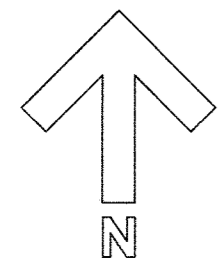
DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY NO.	REVISION	DATE	

MECHANICAL
 DIGESTERS NO'S. 1 & 3
 PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 139 OF 226
 M-45A



PLAN AT EL. 146.33
SCALE: 1/8"=1'-0"

NOTE:
DIGESTER NO. 4 AND GRAVITY THICKENER NO. 4
NOT CONSTRUCTED. SEE SHEET M-47A FOR
MODIFICATIONS TO DIGESTER NO. 2 DIFFUSER ASSEMBLY.

NOTE:
REMOVE ALL EXISTING DIFFUSER ASSEMBLIES.

LEGEND:
 ——— DENOTES EXISTING TANK
 - - - DENOTES NEW TANK
 ——— DENOTES NEW EQUIPMENT
 - - - DENOTES HIDDEN LINES

NOT CONSTRUCTED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam A. Shea 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

John O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Robert R. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE

M&E Metcalf & Eddy

STATE OF MARYLAND
JONATHAN WYTHROP DOANE
No. 15140
REGISTERED PROFESSIONAL ENGINEER

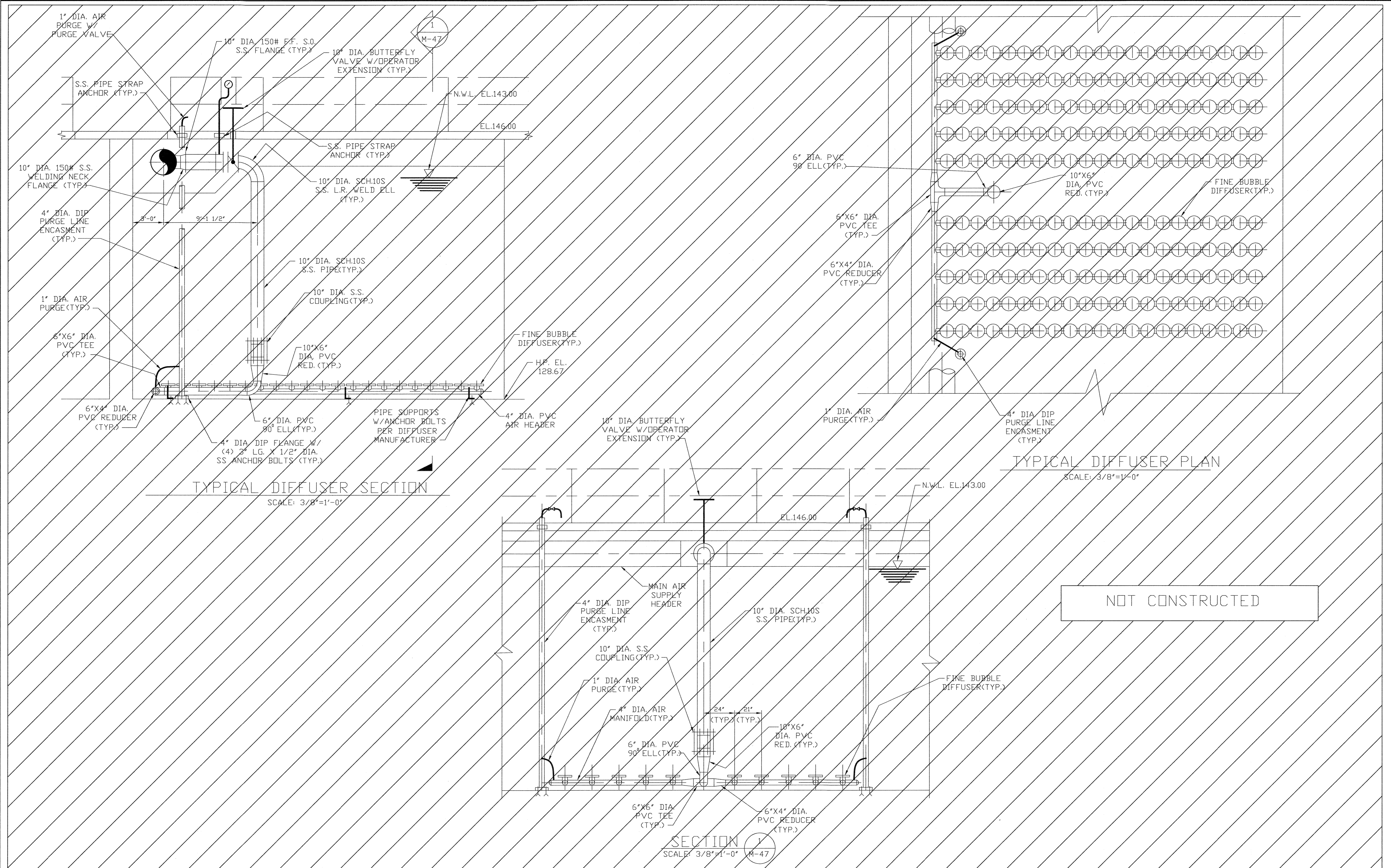
DES	DRN	CHK	DATE	BY	NO.	REVISION	DATE
	M.J.C.	J.H.		M.J.C.	1	RECORD DRAWING	11/2/94

MECHANICAL
DIGESTERS NO'S. 2 & 4
PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 142 OF 226
M-46A



TYPICAL DIFFUSER SECTION
SCALE: 3/8"=1'-0"

TYPICAL DIFFUSER PLAN
SCALE: 3/8"=1'-0"

SECTION 1
SCALE: 3/8"=1'-0" M-47

NOT CONSTRUCTED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Blum 5/2/96
DIRECTOR OF PUBLIC WORKS

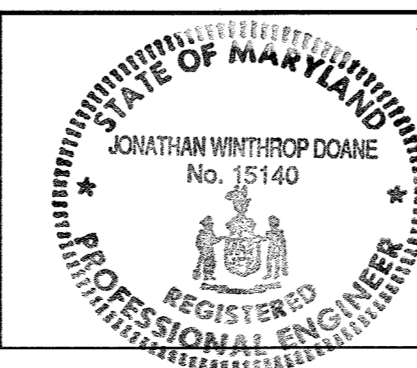
John P. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

John L. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING

Debra J. Brown 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Winthrop Donahue 5-7-96
REG. PROF. ENGR.



DES			
DRN	M.J.C.		
CHK	J.H.		
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION

MECHANICAL

DIGESTERS
SECTION AND DETAILS 1

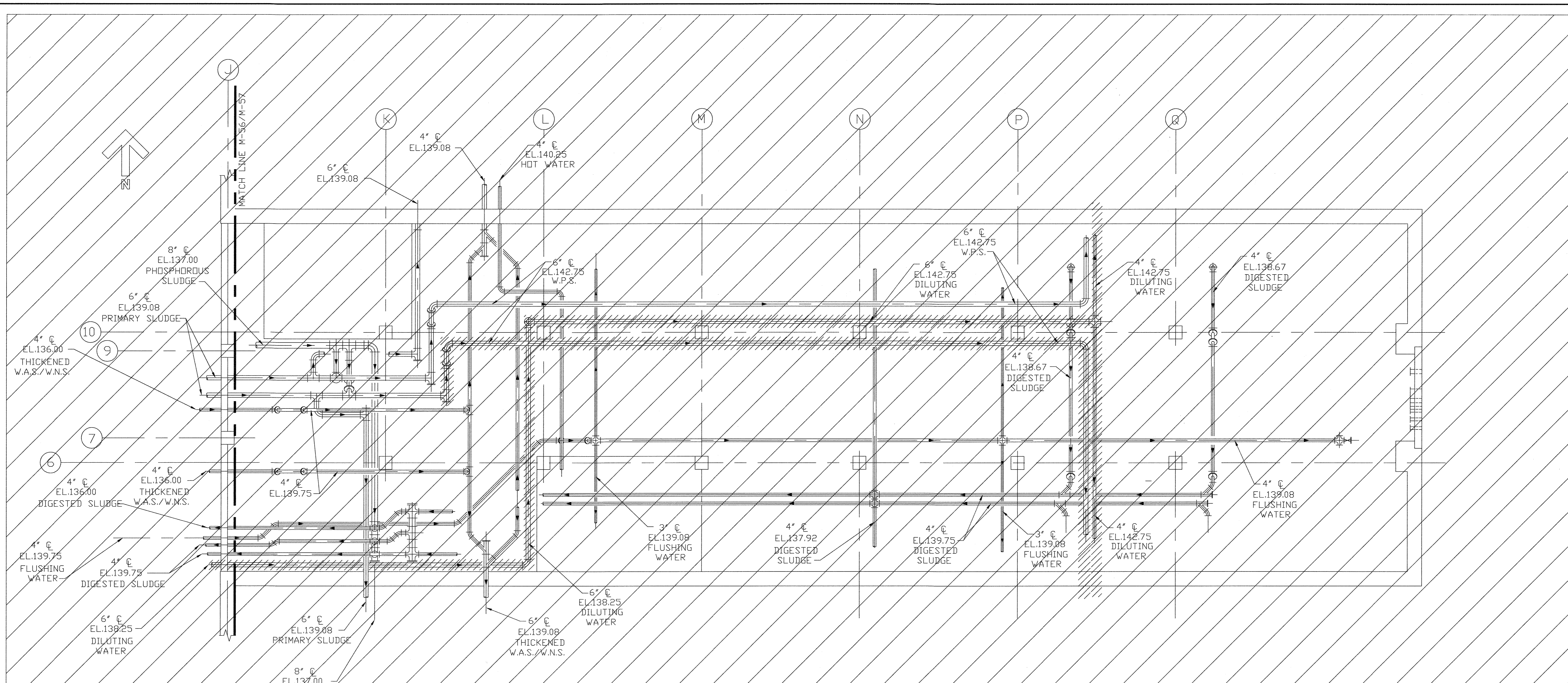
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 141 OF 226

M-47A



PLAN @ EL 130.00

NOT CONSTRUCTED

LEGEND:
 ——— DENOTES EXISTING EQUIPMENT
 [Hatched Box] TO BE DEMOLISHED

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *James P. Lane* 5/19/06
 Chief, Bureau of Engineering: *Paul A. Larson* 5/17/06
 Chief, Bureau of Environmental Services: *John O'Hara* 5/19/06
 Chief, Utility Design Division: *Debra J. ...* 5-7-06

M&E Metcalf & Eddy
 Jonathan W. Doane 5-7-06
 REG. PROF. ENGR.

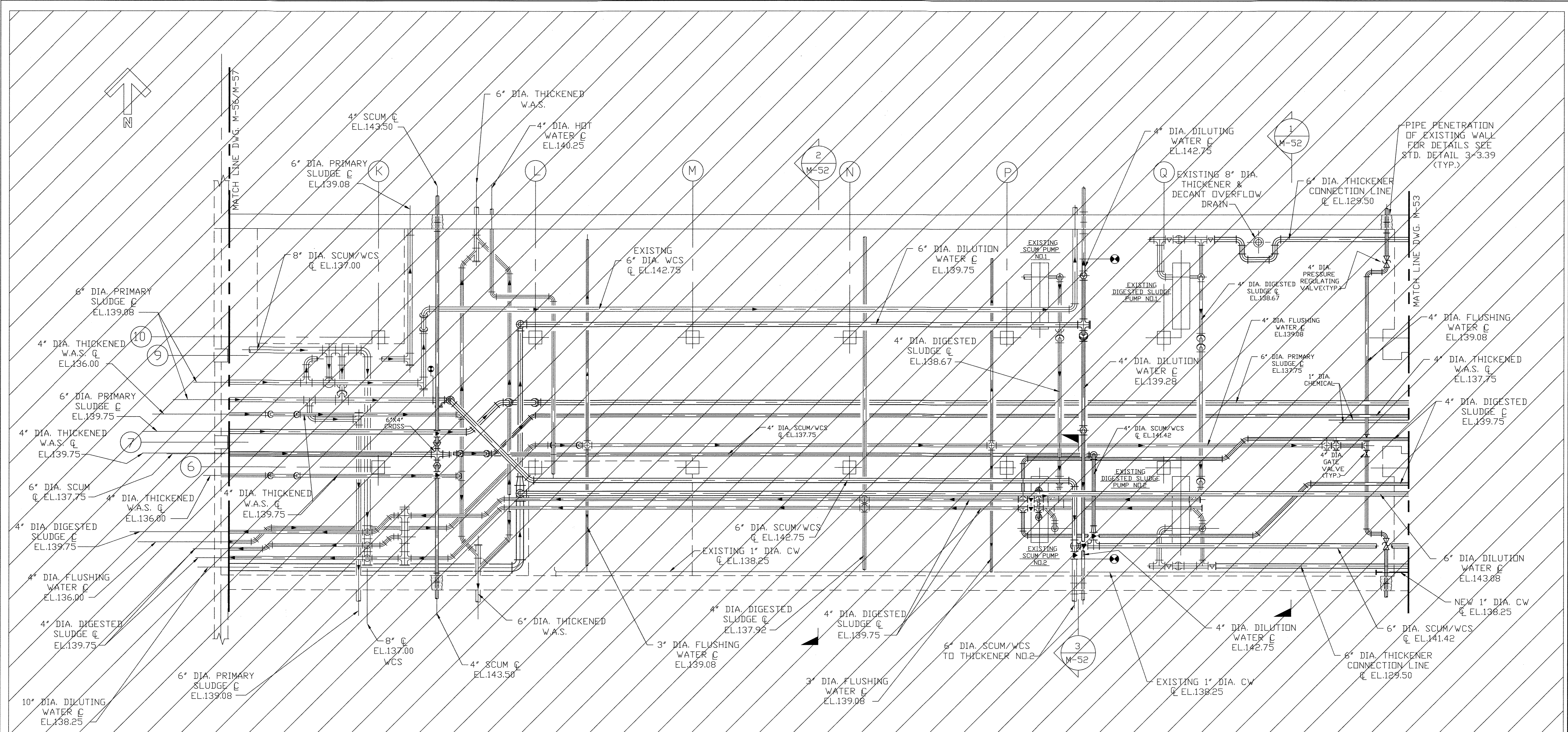


DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY NO.	REVISION	DATE	

MECHANICAL
 DIGESTER PIPE GALLERY
 MODIFICATIONS
 PROCESS PIPING PLAN
 DEMOLITION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 142 OF 226
 M-48A



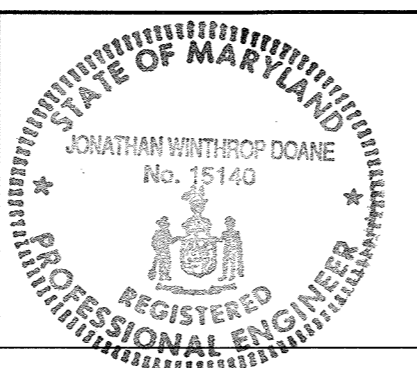
PLAN @ EL.130.00
SCALE: 3/16"=1'-0"

NOT CONSTRUCTED

LEGEND:
 --- DENOTES EXISTING EQUIPMENT
 ——— DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John P. O'Hara* 5/6/96
 Chief, Bureau of Environmental Services: *John P. O'Hara* 5/7/96
 Chief, Bureau of Engineering: *Charles R. Spang* 5/7/96
 Chief, Utility Design Division: *Debra J. ...* 5-7-96

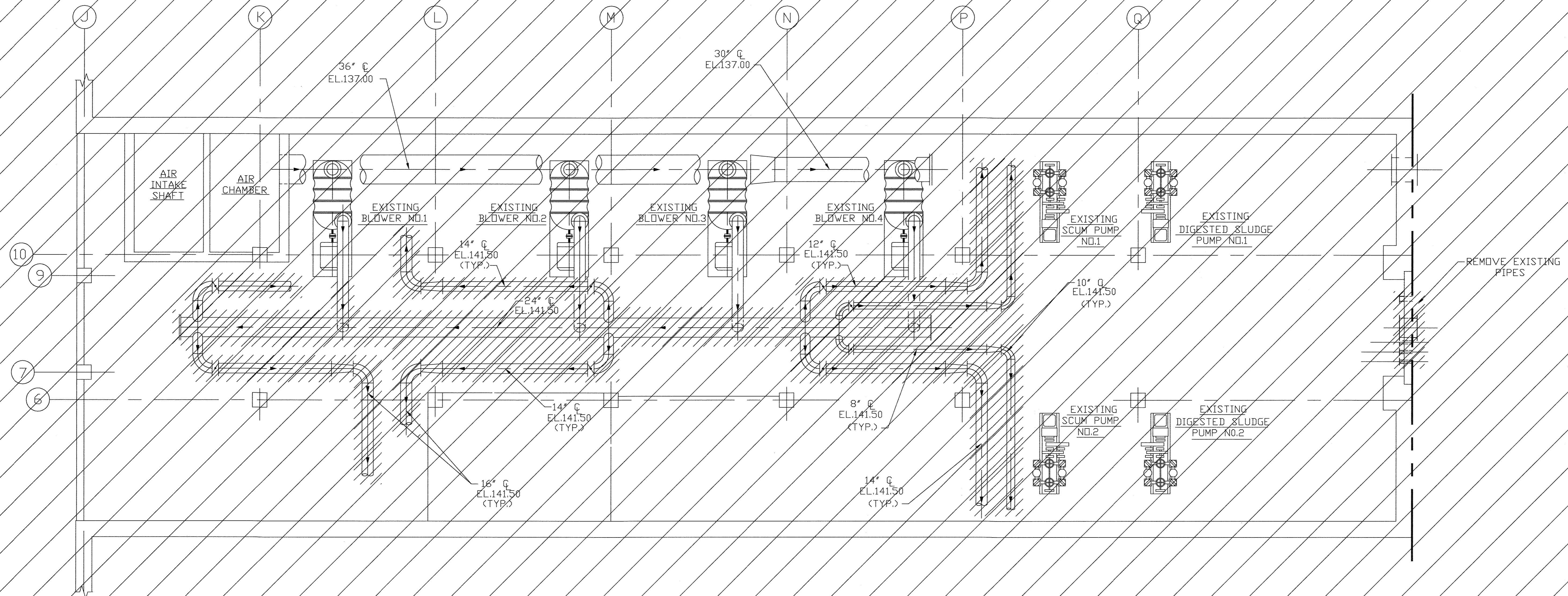
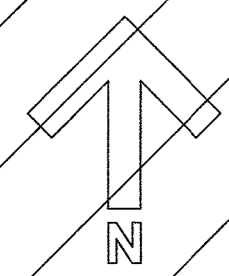
M&E Metcalf & Eddy
 Christian W. Doane 5-7-96
 REG. PROF. ENGR.



DES:			
DRN:	M.J.C.		
CHK:	J.H.		
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

MECHANICAL
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 143 OF 226
 M-49A



PLAN @ EL.128.00
SCALE: 3/16"=1'-0"

NOT CONSTRUCTED

- LEGEND:**
- DENOTES EXISTING EQUIPMENT
 - DENOTES NEW EQUIPMENT
 - /// DENOTES DEMOLITION

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Samuel A. Hines 5/7/96
DIRECTOR OF PUBLIC WORKS

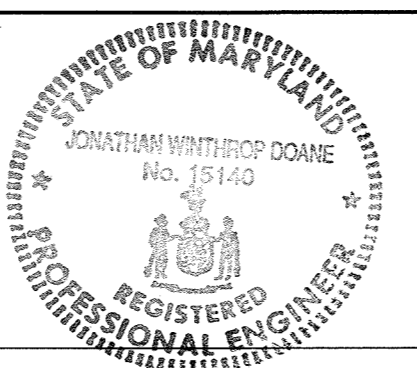
John H. Hines 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Charles W. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING

Debra J. Hines 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR.



DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY NO.	REVISION	DATE	

MECHANICAL

DIGESTER PIPE GALLERY
AIR PIPING DEMOLITION PLAN

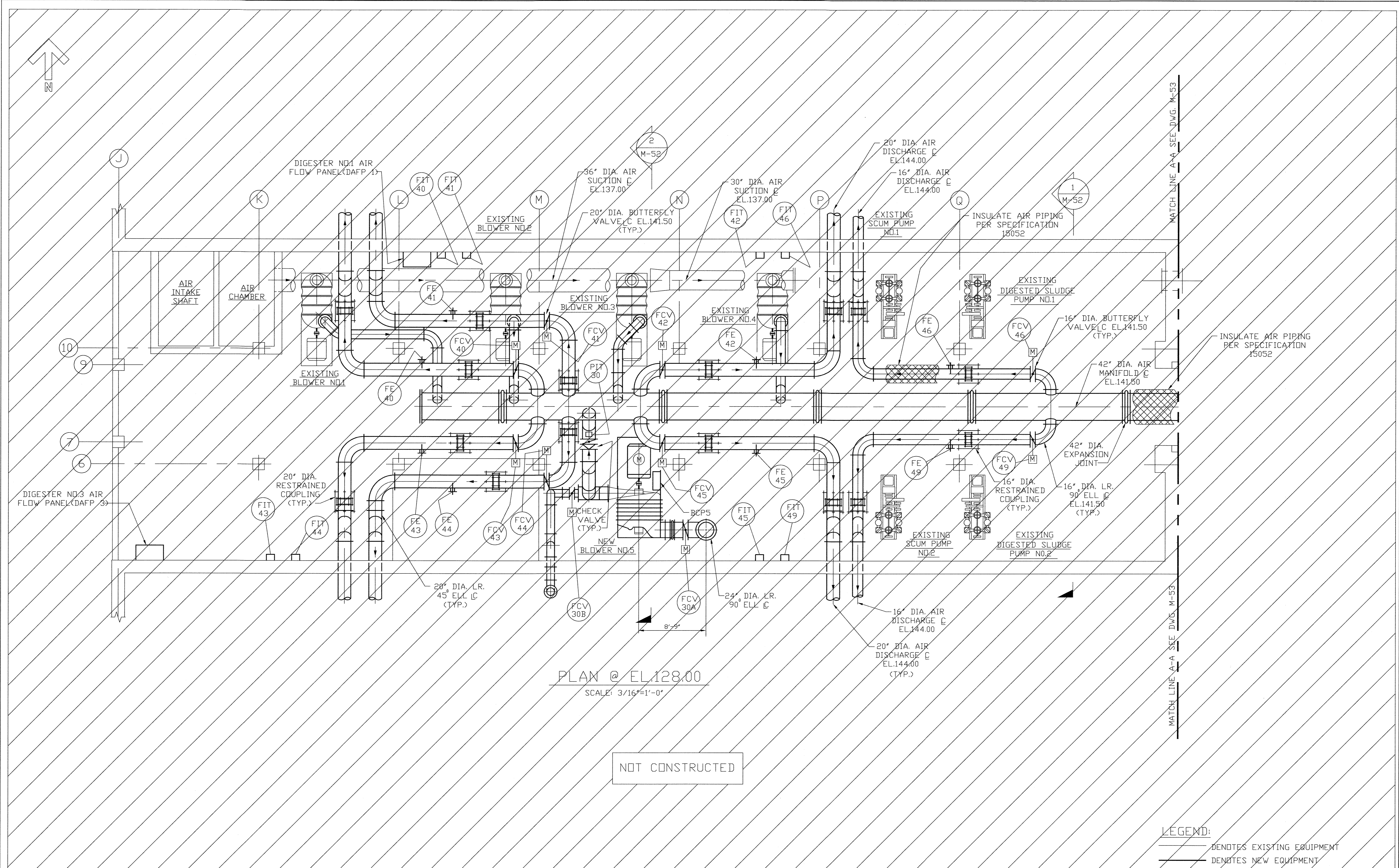
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 144 OF 226

M-50A



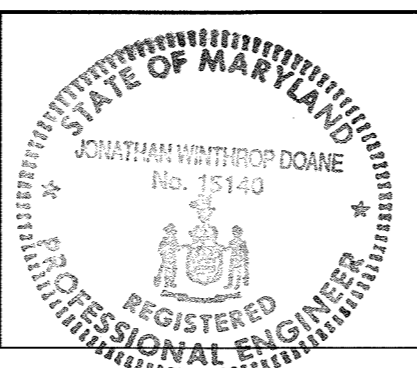
PLAN @ EL.128.00
SCALE: 3/16"=1'-0"

NOT CONSTRUCTED

LEGEND:
 ——— DENOTES EXISTING EQUIPMENT
 ——— DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 5/1/94
 5/7/96

M&E Metcalf & Eddy
 5-7-96

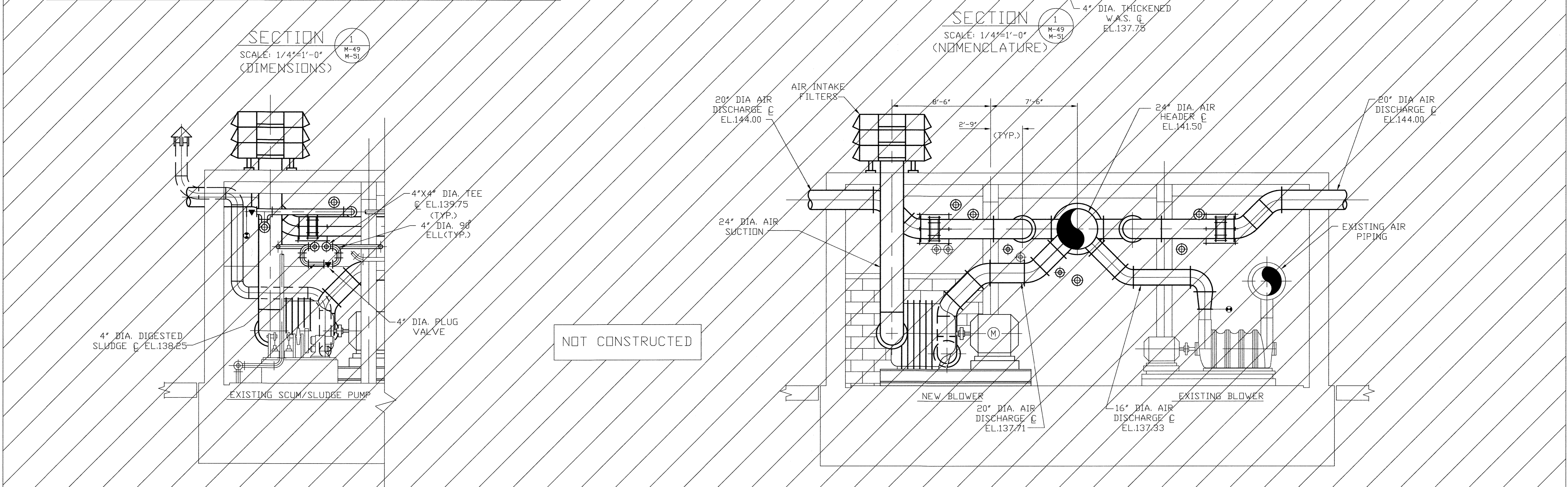
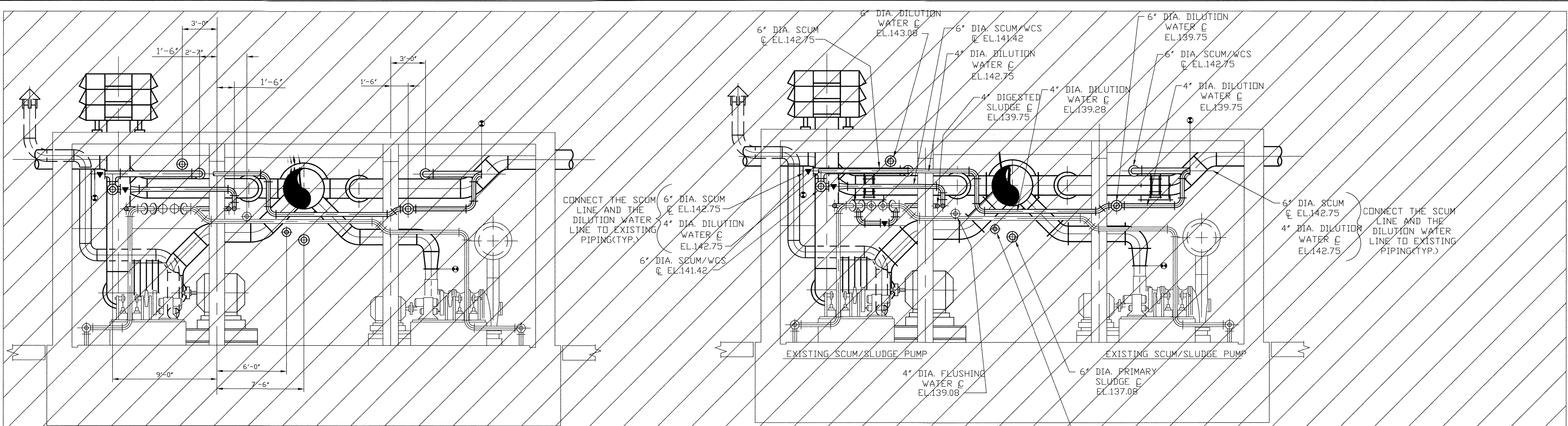


DES				
DRN	M.J.C.			
CHK	J.H.			
DATE	M.J.C. 1	RECORD DRAWING	11/2/94	
	BY	NO.	REVISION	DATE

MECHANICAL
 DIGESTER PIPE GALLERY
 AIR PIPING PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 145 OF 226
 M-51A



LEGEND:
 DENOTES EXISTING EQUIPMENT
 DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Brown 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

William J. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Oliver J. Lane 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Lane 5-7-96
REG. PROF. ENGR. DATE



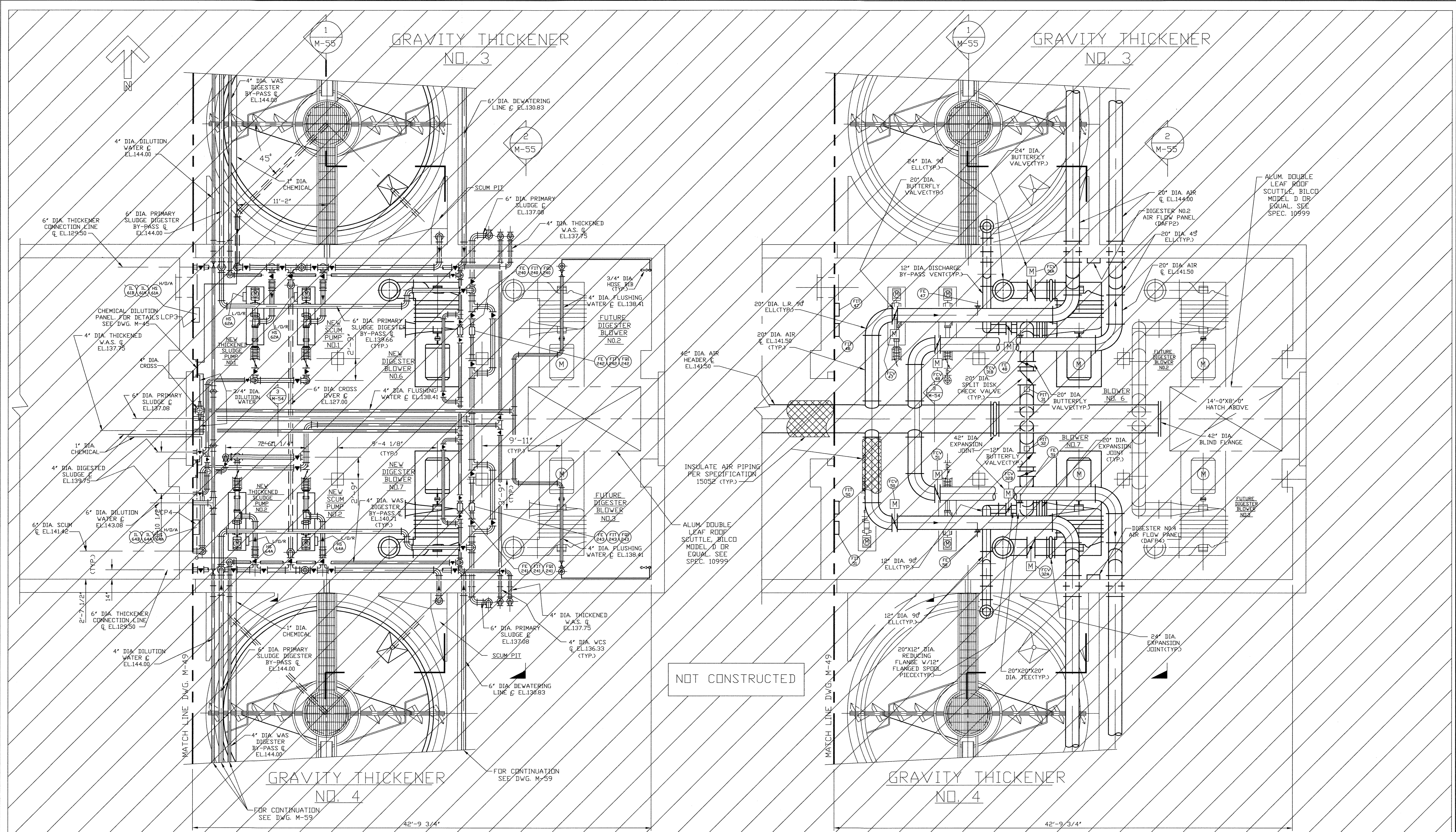
DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:	M.J.C.	1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION	DATE

MECHANICAL
DIGESTER PIPE GALLERY
MODIFICATIONS
SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 146 OF 226
M-52A



PROCESS PIPING PLAN @ EL.130.00
SCALE: 3/16"=1'-0"

AIR PIPING PLAN @ EL.128.00
SCALE: 3/16"=1'-0"

NOTE: COORDINATE ALL PIPING PENETRATIONS WITH STRUCTURAL WORK.

LEGEND:
 ——— DENOTES EXISTING EQUIPMENT
 ——— DENOTES NEW EQUIPMENT

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Sam A. Lewis 5/1/96
 DIRECTOR OF PUBLIC WORKS DATE

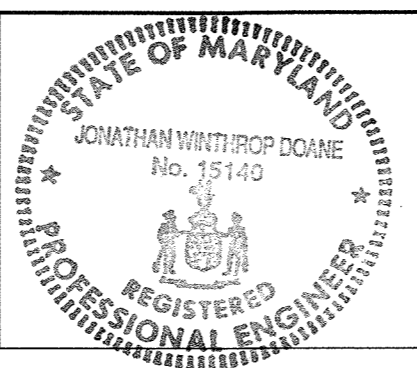
John P. O'Hara 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Paul J. Sporn 5/7/96
 CHIEF, BUREAU OF ENGINEERING DATE

Debra J. ... 5-7-96
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
 REG. PROF. ENGR. DATE



DES			
DRN	M.J.C.		
CHK	J.H.		
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

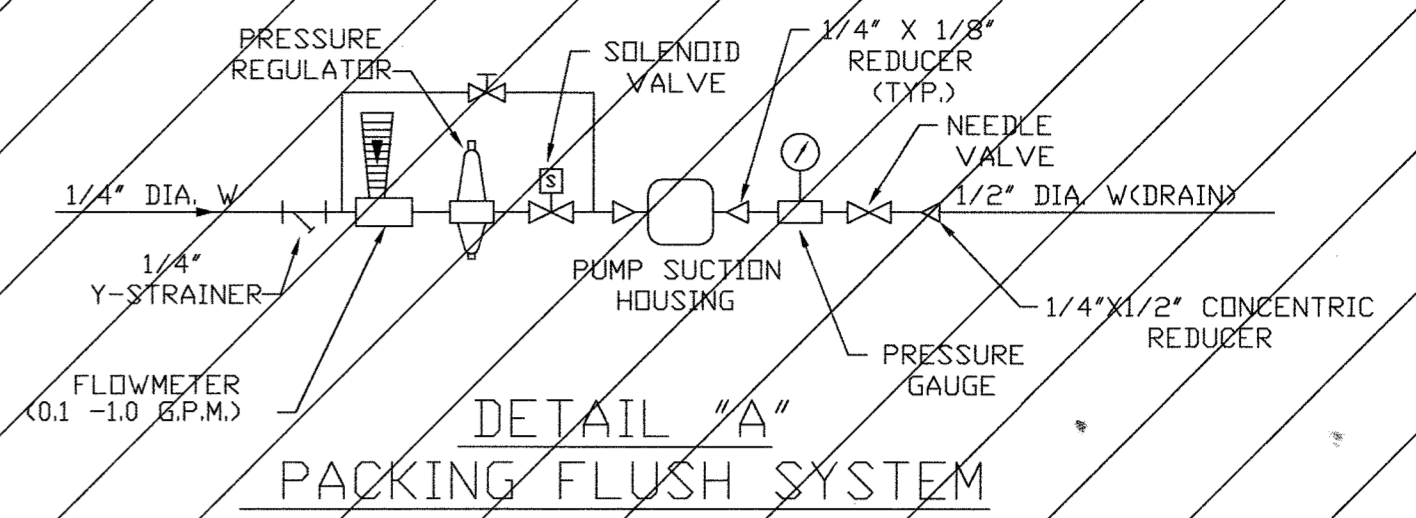
MECHANICAL
 DIGESTER PIPE GALLERY
 EXTENSION - PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

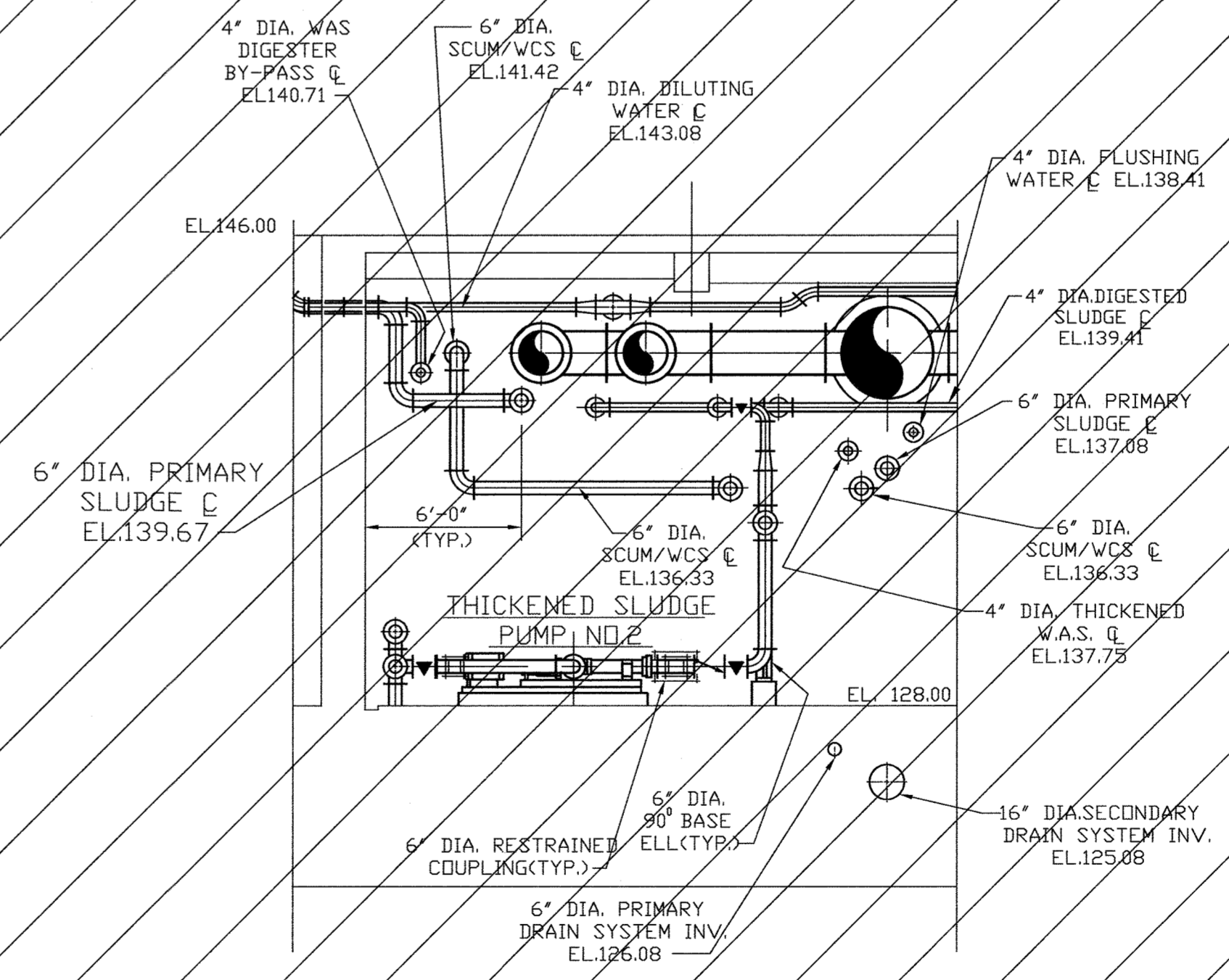
SCALE AS SHOWN
 SHEET 147 OF 226
 M-53A

GRAVITY THICKENER
NO. 3



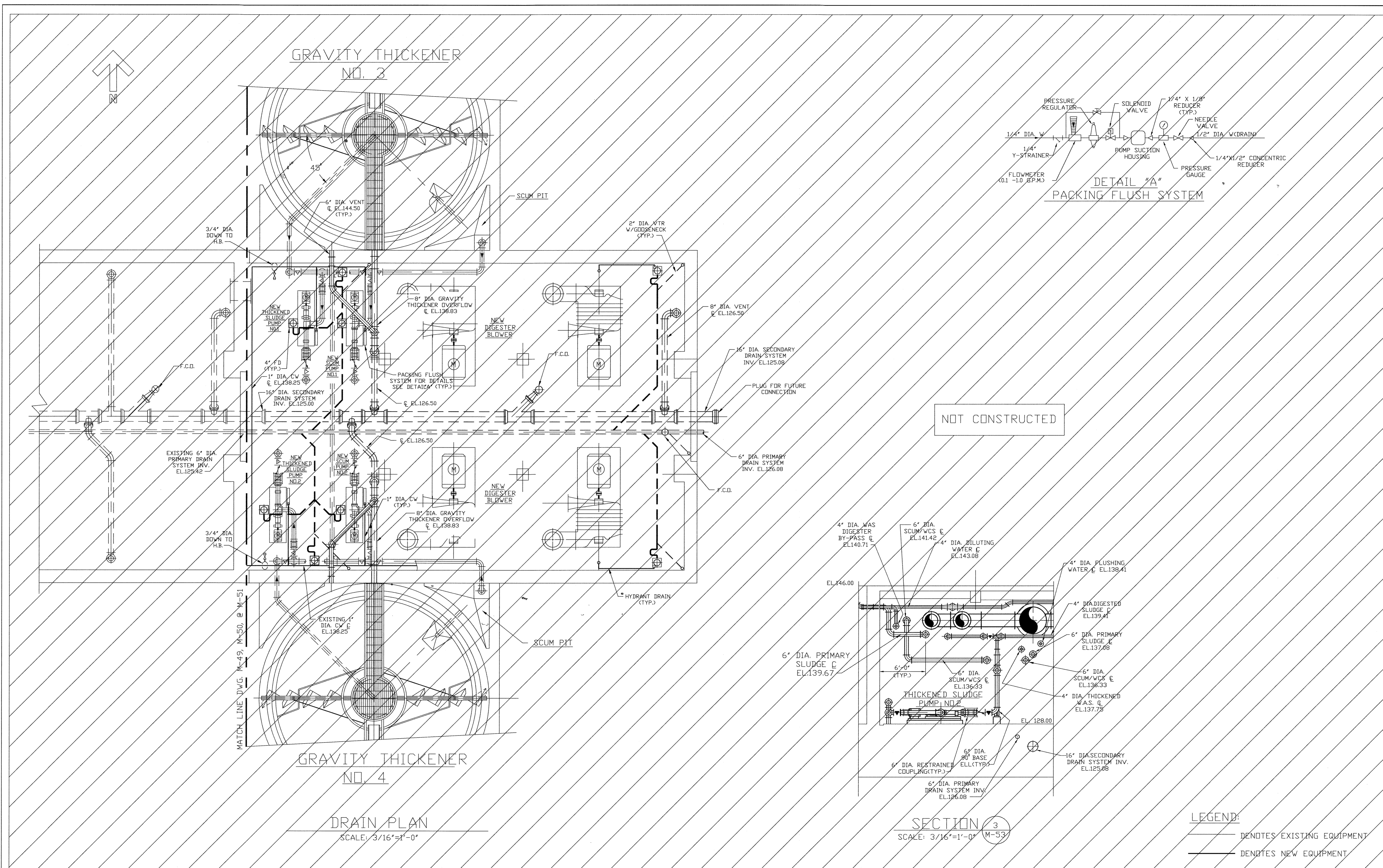
NOT CONSTRUCTED

GRAVITY THICKENER
NO. 4



LEGEND:
 ——— DENOTES EXISTING EQUIPMENT
 ——— DENOTES NEW EQUIPMENT

DRAIN PLAN
SCALE: 3/16"=1'-0"

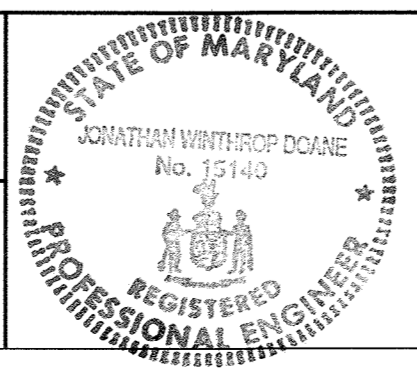


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *James J. Lee* 5/7/96
 Chief, Bureau of Engineering: *John J. O'Hara* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *John J. O'Hara* 5-7-96

M&E Metcalf & Eddy

Professional Engineer: *Jonathan W. Dwan* 5-7-96



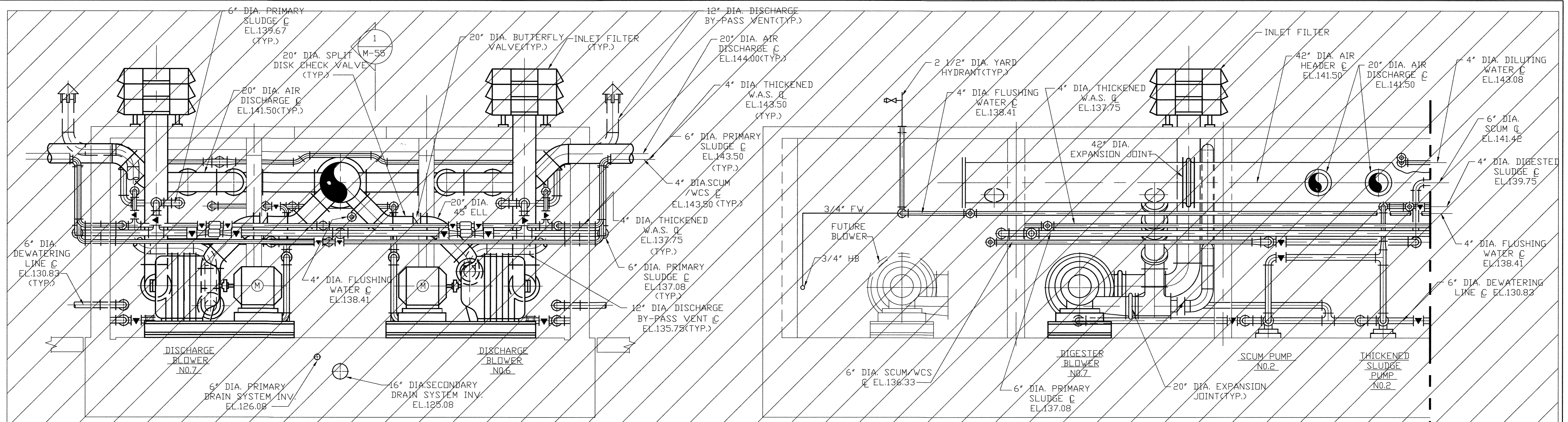
DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		01/27/94	
	BY NO.	REVISION		DATE	

MECHANICAL
DIGESTER PIPE GALLERY
EXTENSION - PLAN
DRAIN SYSTEM

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

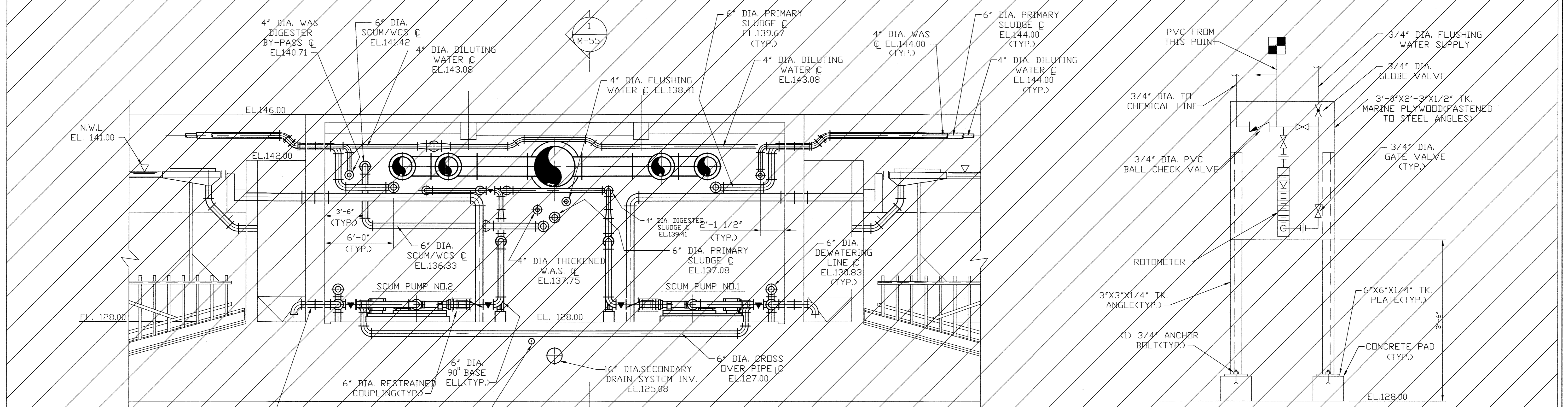
SCALE AS SHOWN
SHEET 148 OF 226
M-54A



SECTION 2
SCALE: 1/4"=1'-0" M-53

NOT CONSTRUCTED

SECTION 1
SCALE: 1/4"=1'-0" M-55

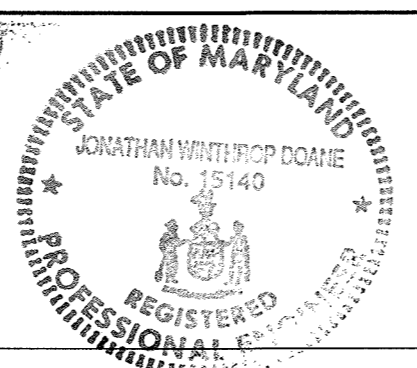


SECTION 1
SCALE: 1/4"=1'-0" M-53

CHEMICAL DILUTION PANEL
SCALE: 1"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/7/96
5/7/96

M&E Metcalf & Eddy
5-7-96

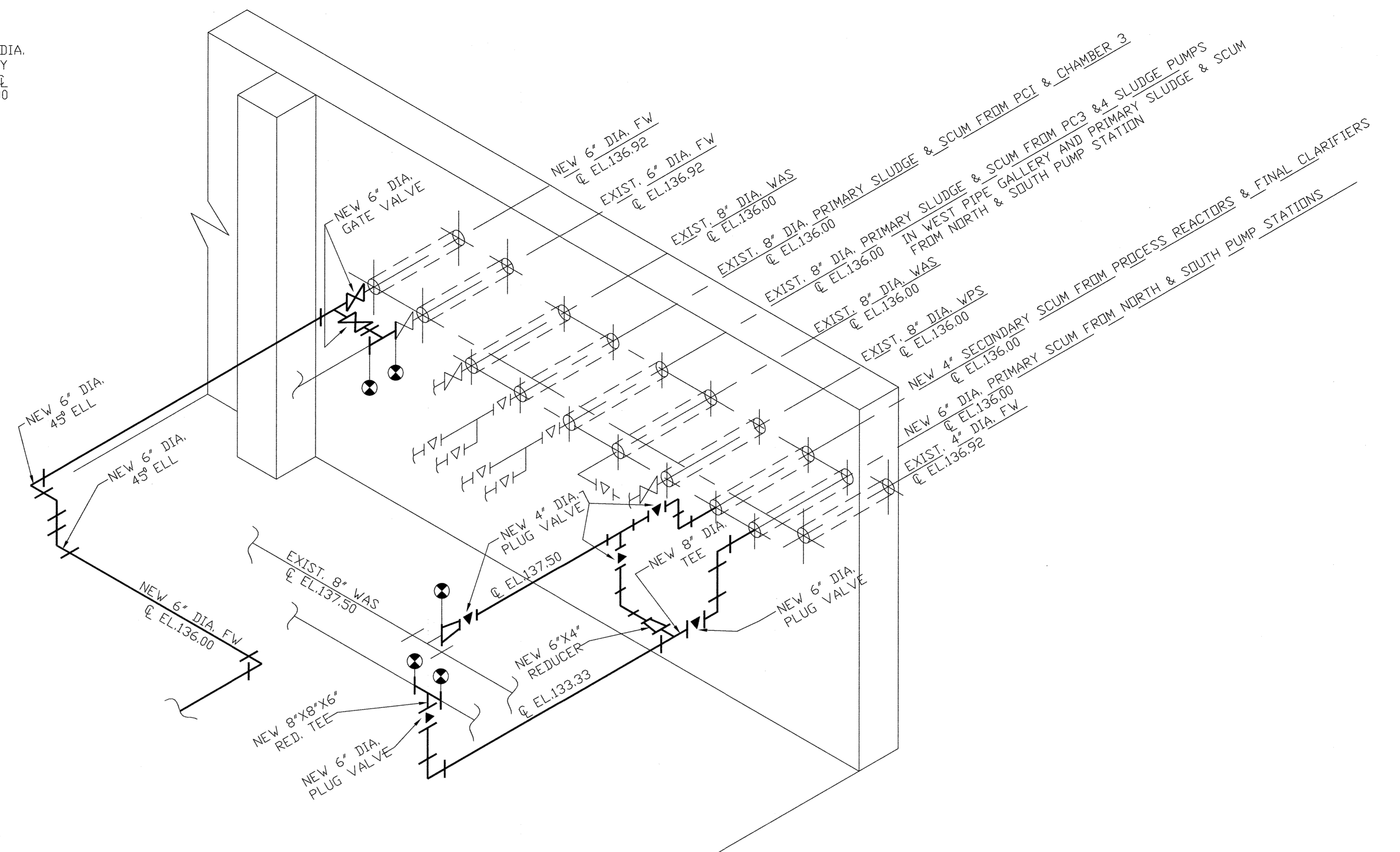
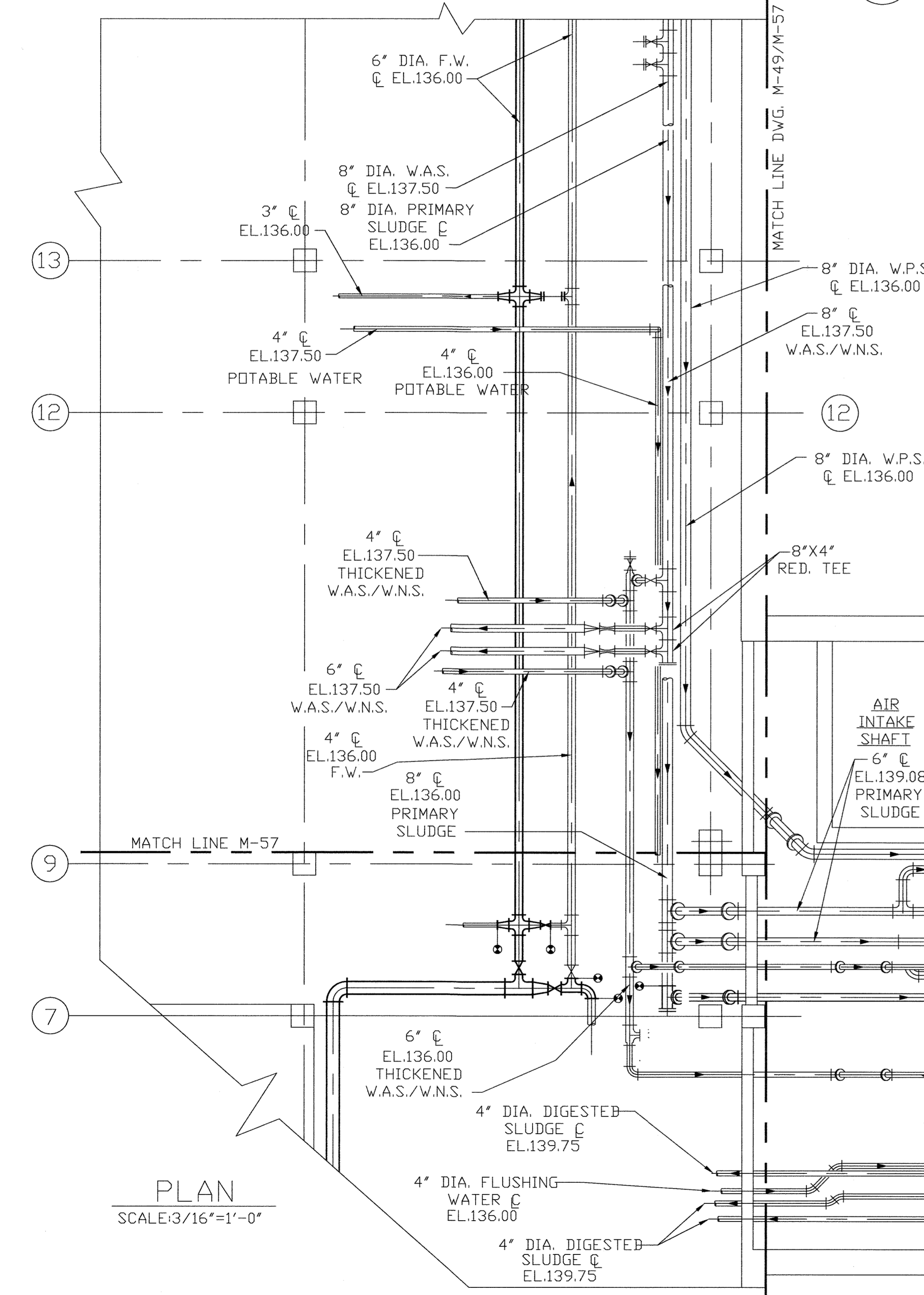
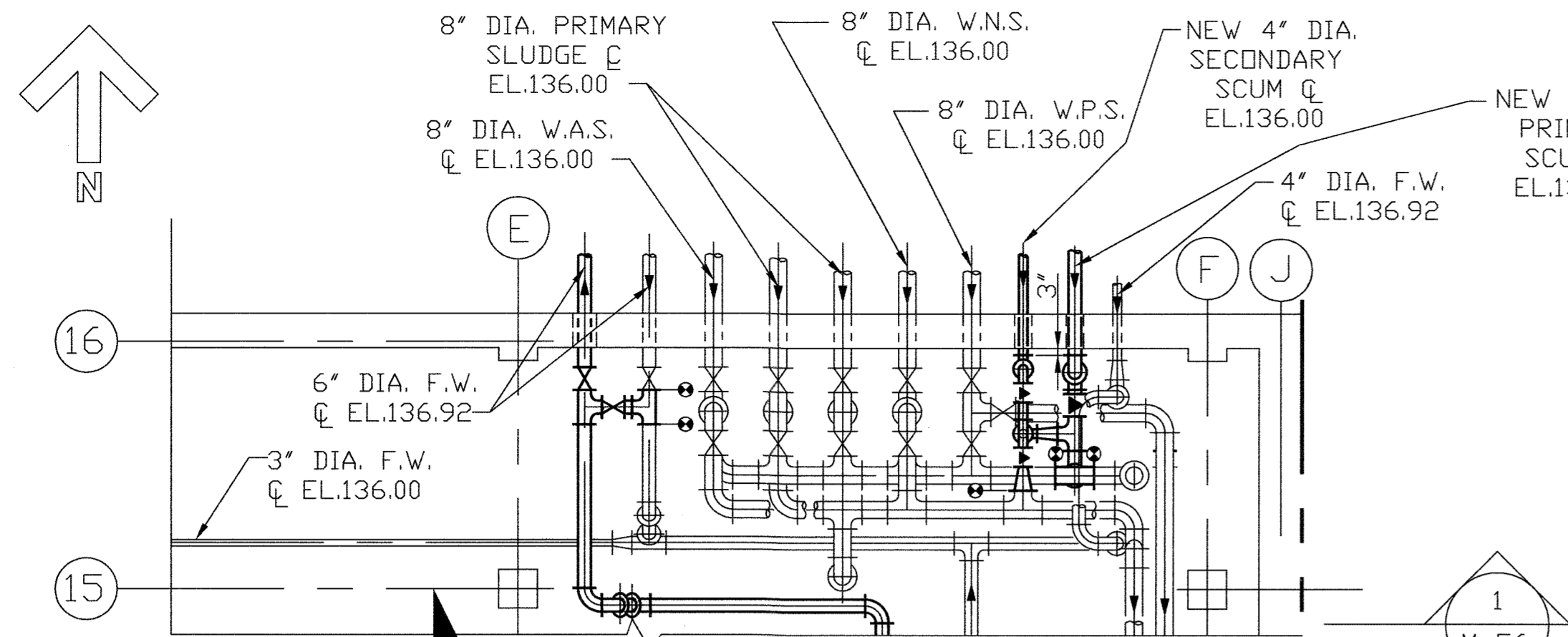


DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

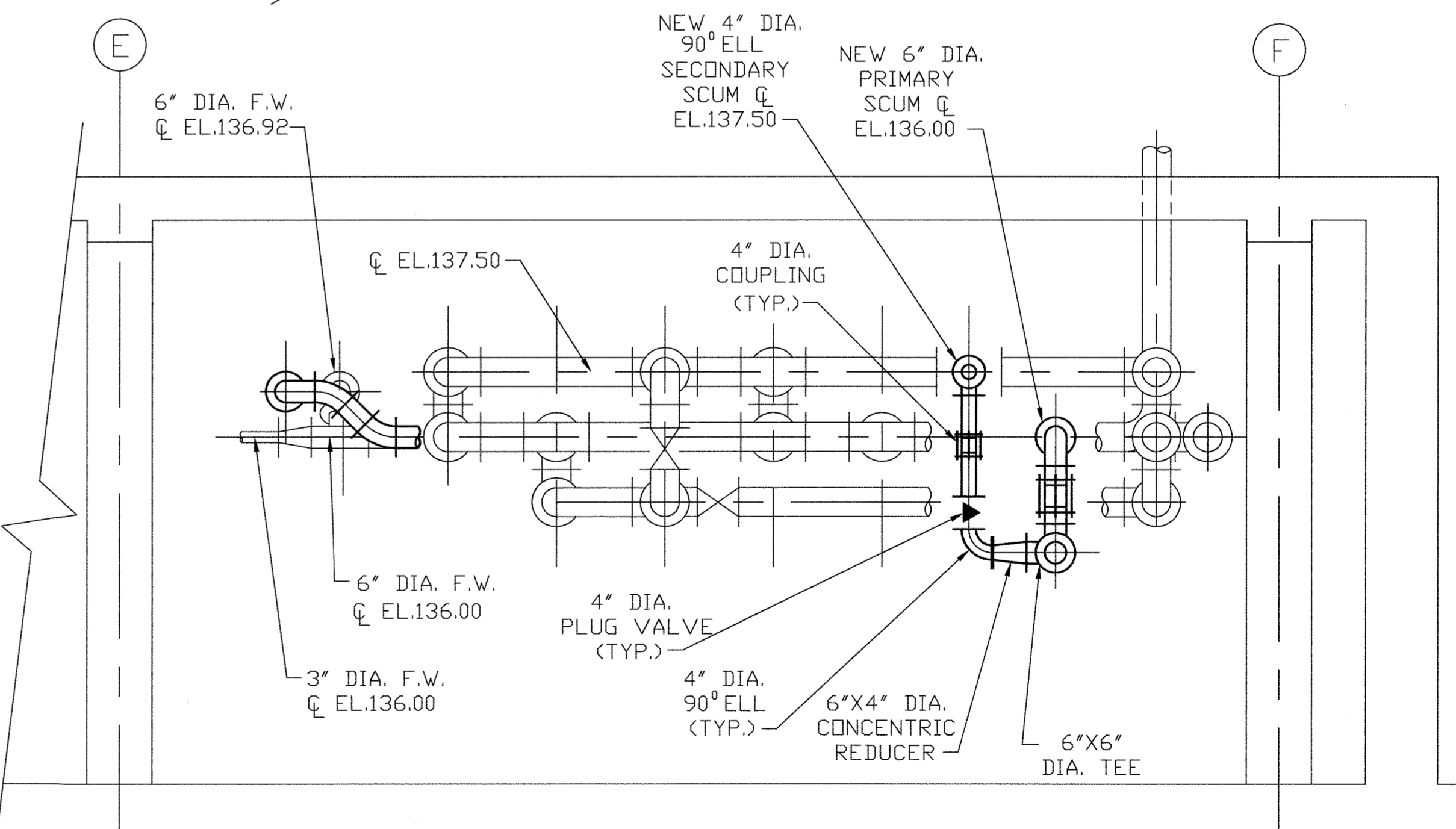
MECHANICAL
DIGESTER PIPE GALLERY
EXTENSION
SECTIONS AND DETAILS 1

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 149 OF 226
M-55A



DIGESTER BLDG.
PIPING ISOMETRIC
NORTH WALL BASEMENT
SCALE: NONE

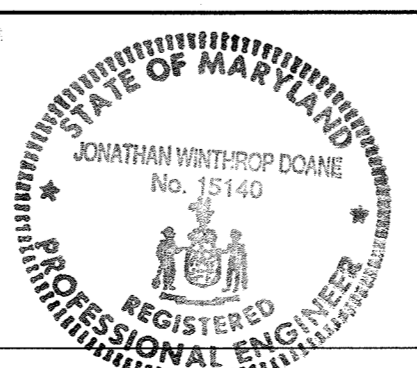


SECTION 1
SCALE: 3/8"=1'-0" M-56

LEGEND:
 ——— DENOTES EXISTING EQUIPMENT
 ——— DENOTES NEW EQUIPMENT
 ● DENOTES LIMITS OF CONSTRUCTION

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

M&E Metcalf & Eddy



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

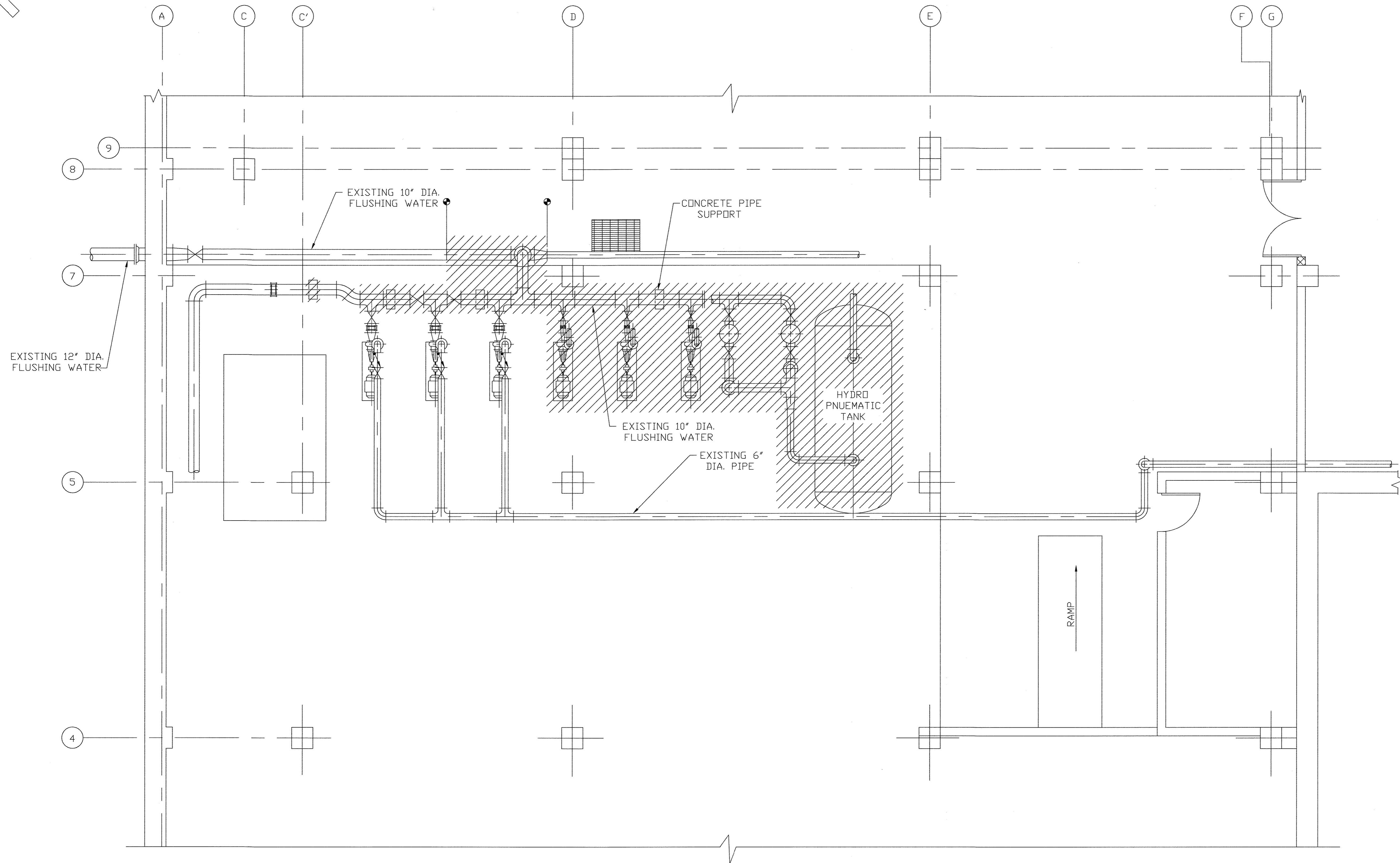
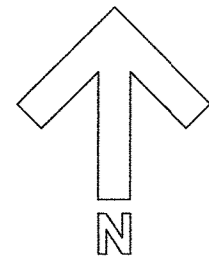
MECHANICAL
THICKENER PIPE GALLERY
MODIFICATIONS
PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 150 OF 226
M-56A1

Director of Public Works: *Samuel...* 5/1/94
 Chief, Bureau of Engineering: *...* 5/7/96
 Chief, Bureau of Environmental Services: *...* 5/7/96
 Chief, Utility Design Division: *...* 5-7-96

Res. Prof. Engr. *Jonathan W. Doane* 5-7-96



PLAN @ EL.140.00
SCALE: 1/4"=1'-0"

LEGEND:

- DENOTES EXISTING EQUIPMENT
- DENOTES NEW EQUIPMENT
- ////// INDICATES EQUIPMENT TO BE DEMOLISHED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. O'Hare 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

John J. O'Hare 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hare 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hare 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Done 5-7-96
REG. PROF. ENGR. DATE



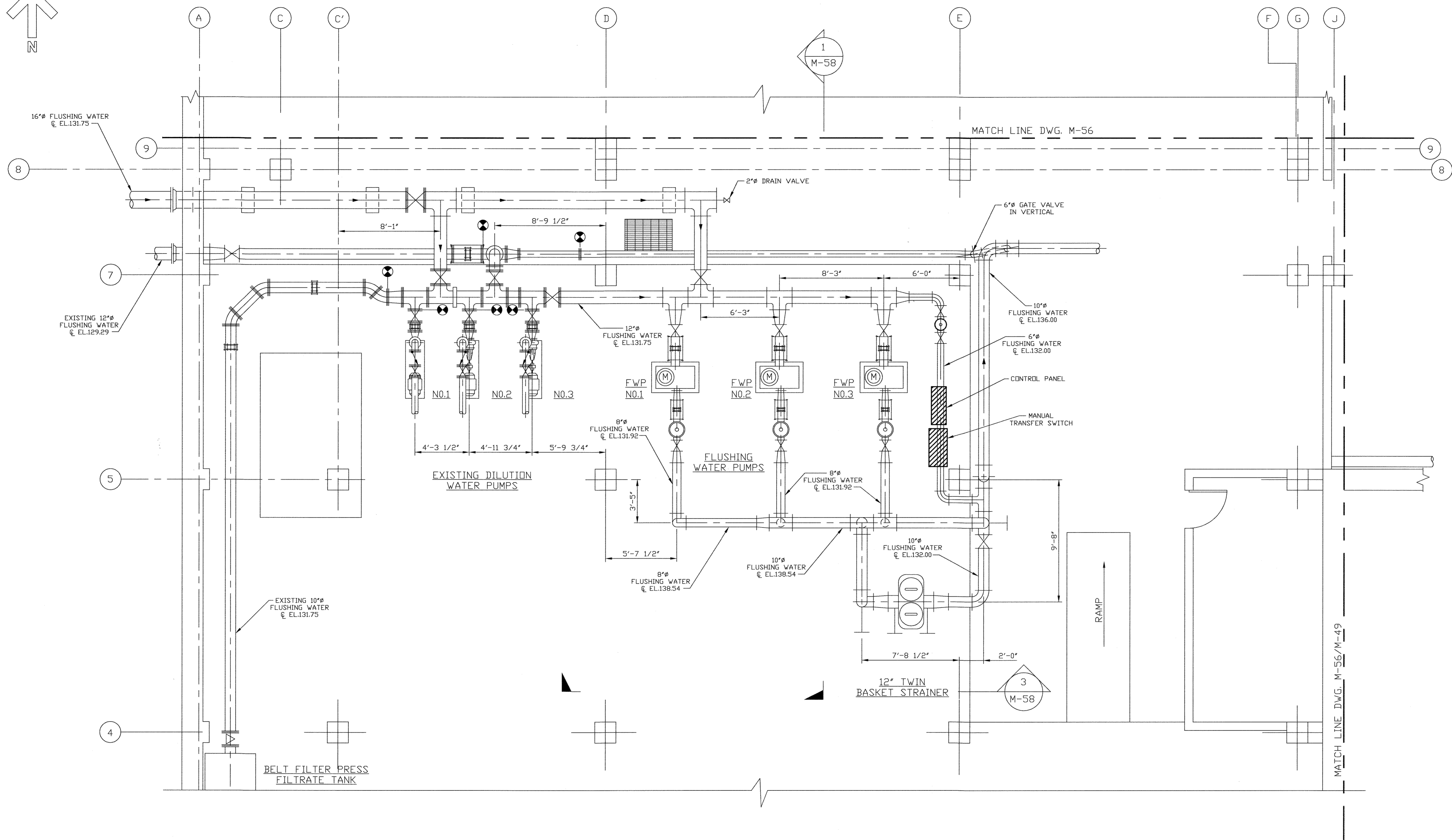
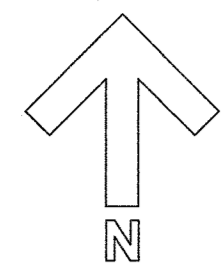
DES:			
DRN:	M.J.C.		
CHK:	J.H.		
DATE:	M.J.C. 1	RECORD DRAWING	11/2/94
	BY NO.	REVISION	DATE

MECHANICAL
DEWATERING BUILDING
FLUSHING WATER SYSTEM
MODIFICATIONS
DEMOLITION PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 151 OF 226
M-56B



PLAN @ EL.130.00
SCALE: 1/4"=1'-0"

LEGEND:

- DENOTES FLANGED FITTINGS
- DENOTES SPLIT COUPLING FITTINGS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam P. Swan 5/1/96 DATE
DIRECTOR OF PUBLIC WORKS

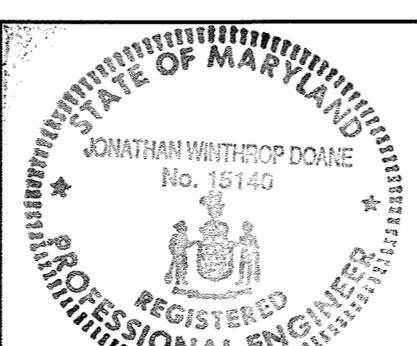
John W. Swan 5/7/96 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

John W. Swan 5/7/96 DATE
CHIEF, BUREAU OF ENGINEERING

John W. Swan 5-7-96 DATE
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Swan 5-7-96 DATE
REG. PROF. ENGR.



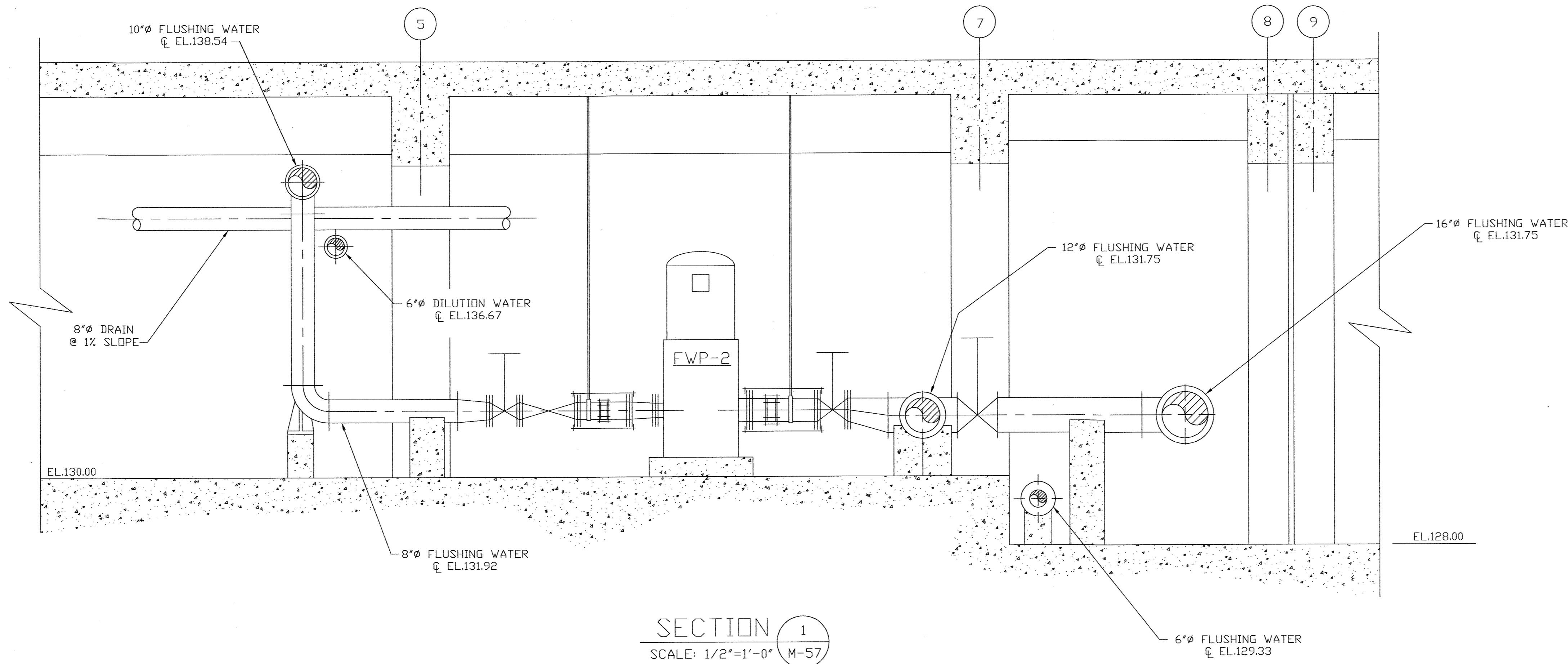
DES	DATE	BY	NO.	REVISION	DATE
M.J.C.					
J.H.					

MECHANICAL
DEWATERING BUILDING
FLUSHING WATER SYSTEM
MODIFICATIONS
PLAN

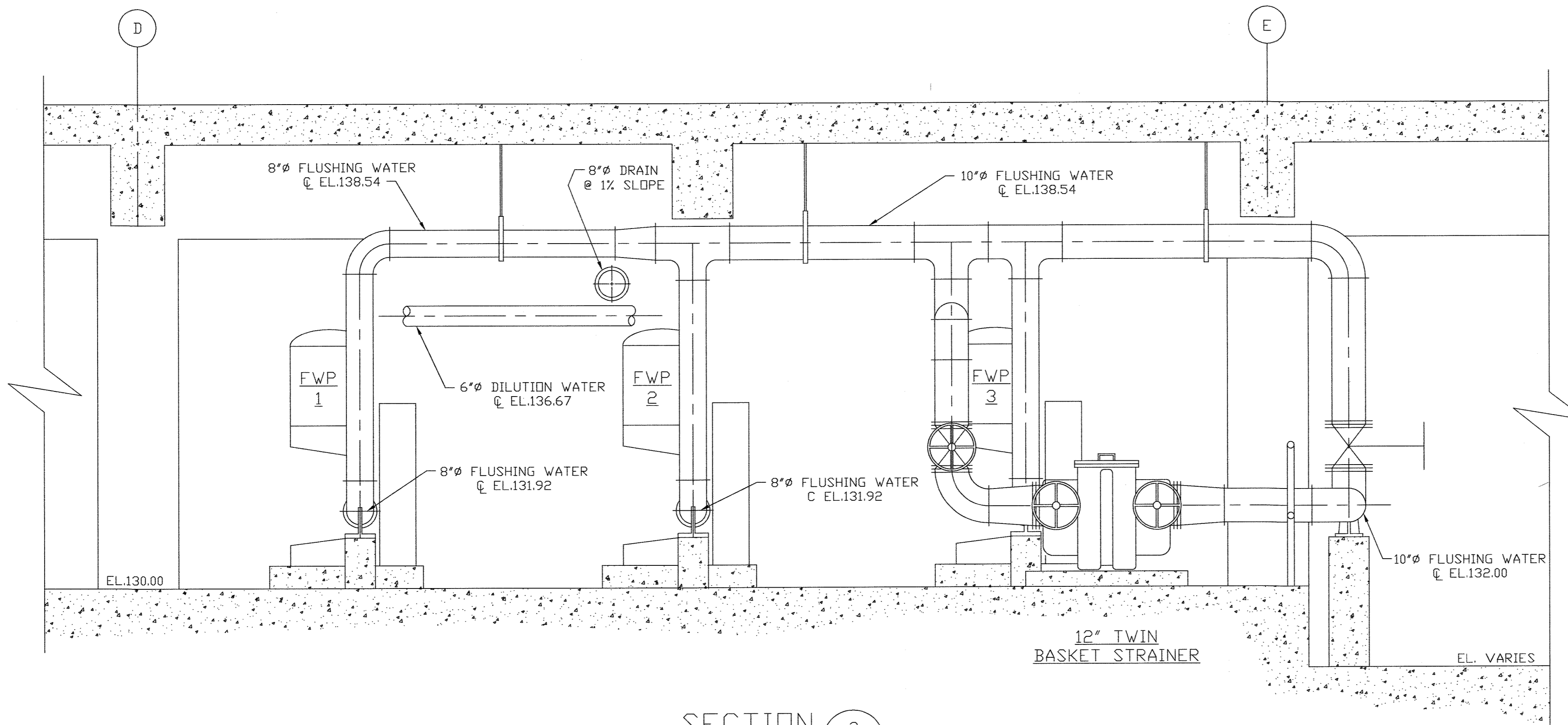
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND



SCALE AS SHOWN
SHEET 152 OF 226
M-57A



SECTION 1
SCALE: 1/2"=1'-0" M-57



SECTION 2
SCALE: 1/2"=1'-0" M-57

- LEGEND:
-  DENOTES FLANGED FITTINGS
 -  DENOTES SPLIT COUPLING FITTINGS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

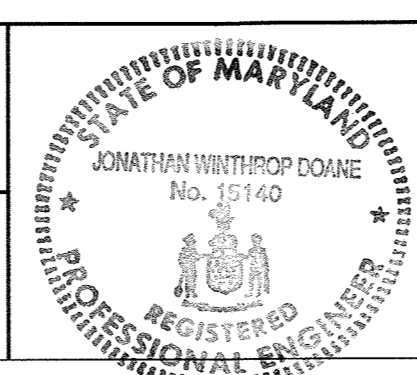
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Richard G. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Debra J. ... 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
REG. PROF. ENGR. DATE



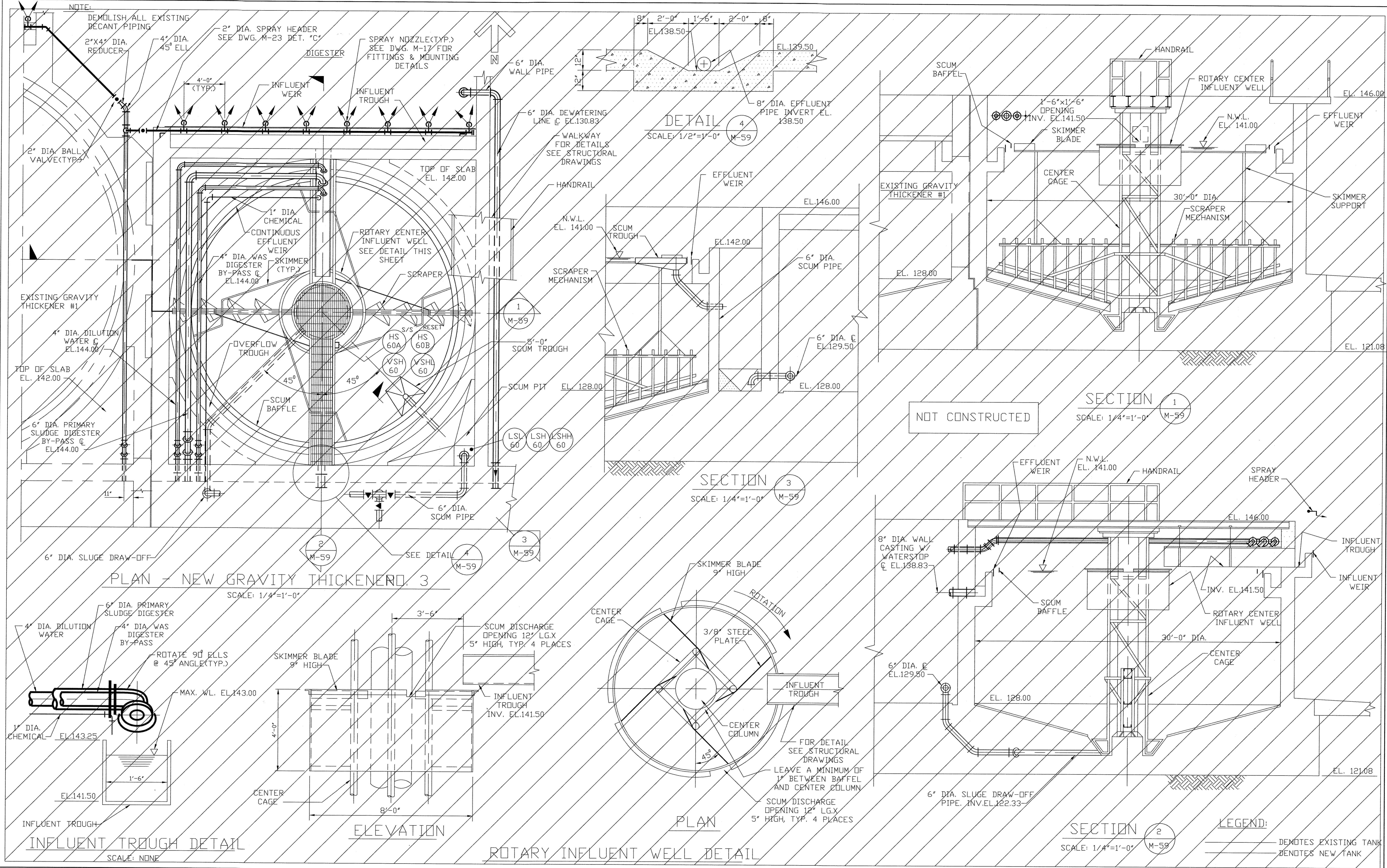
DES:				
DRN:	M.J.C.			
CHK:	J.H.			
DATE:		BY:	NO.	REVISION
				DATE

MECHANICAL
DEWATERING BUILDING
FLUSHING WATER SYSTEM
MODIFICATIONS
SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 193 OF 226
M-58A



PLAN - NEW GRAVITY THICKENER NO. 3
SCALE: 1/4"=1'-0"

ELEVATION

PLAN

ROTARY INFLUENT WELL DETAIL

SECTION 2
SCALE: 1/4"=1'-0"

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

SECTION 3
SCALE: 1/4"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Samuel S. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

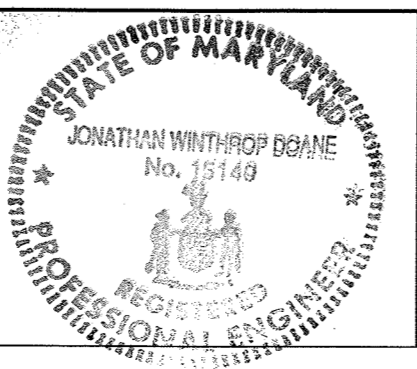
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Charles W. Eppson 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Dr. D. J. [Signature] 5-7-96
CHIEF, QUALITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

James W. [Signature] 5-7-96
REG. PROF. ENGR. DATE



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1		RECORD DRAWING		11/2/94
	BY NO.		REVISION		DATE

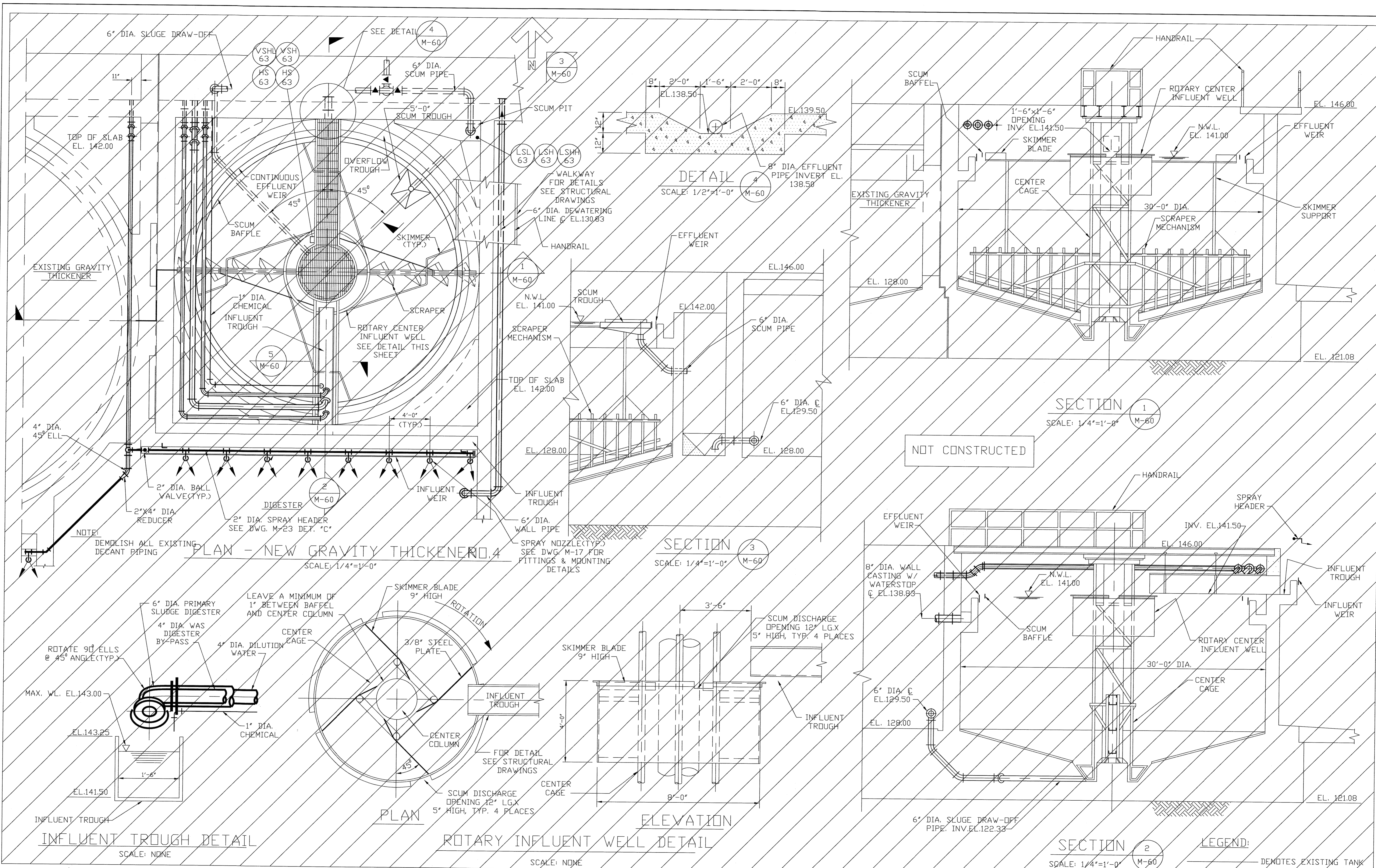
MECHANICAL

GRAVITY THICKENER NO. 3
PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 154 OF 226
M-59A



PLAN - NEW GRAVITY THICKENER NO. 4
SCALE: 1/4"=1'-0"

SECTION 3
SCALE: 1/4"=1'-0"

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

INFLUENT TROUGH DETAIL
SCALE: NONE

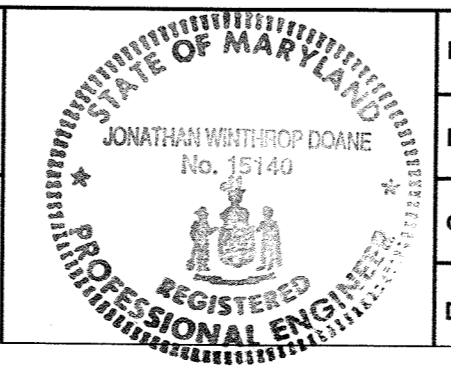
ROTARY INFLUENT WELL DETAIL
SCALE: NONE

SECTION 2
SCALE: 1/4"=1'-0"

LEGEND:
 _____ DENOTES EXISTING TANK
 _____ DENOTES NEW TANK

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

M&E Metcalf & Eddy



DES:					
DRN:	M.J.C.				
CHK:	J.H.				
DATE:	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY NO.	REVISION		DATE	

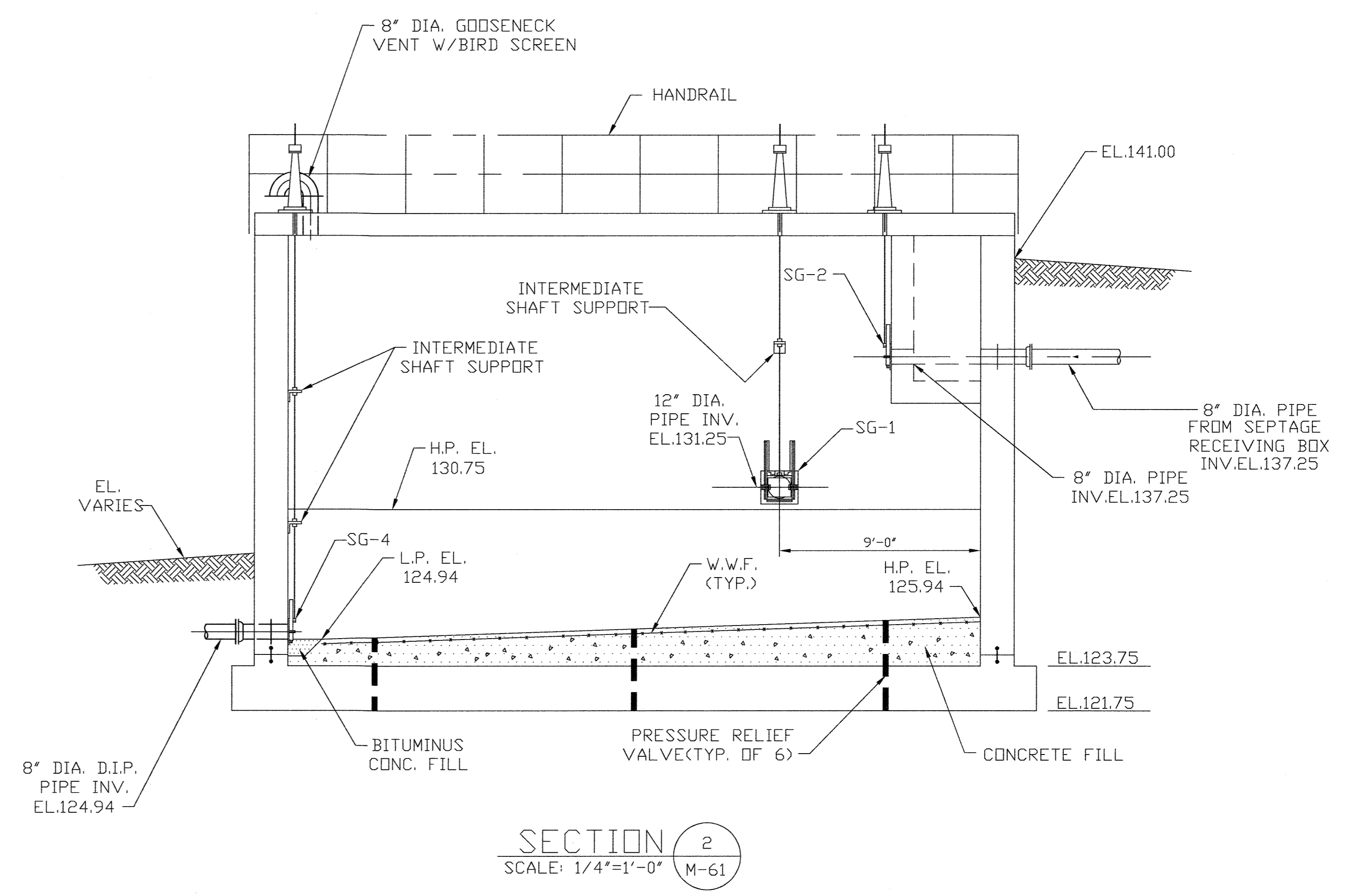
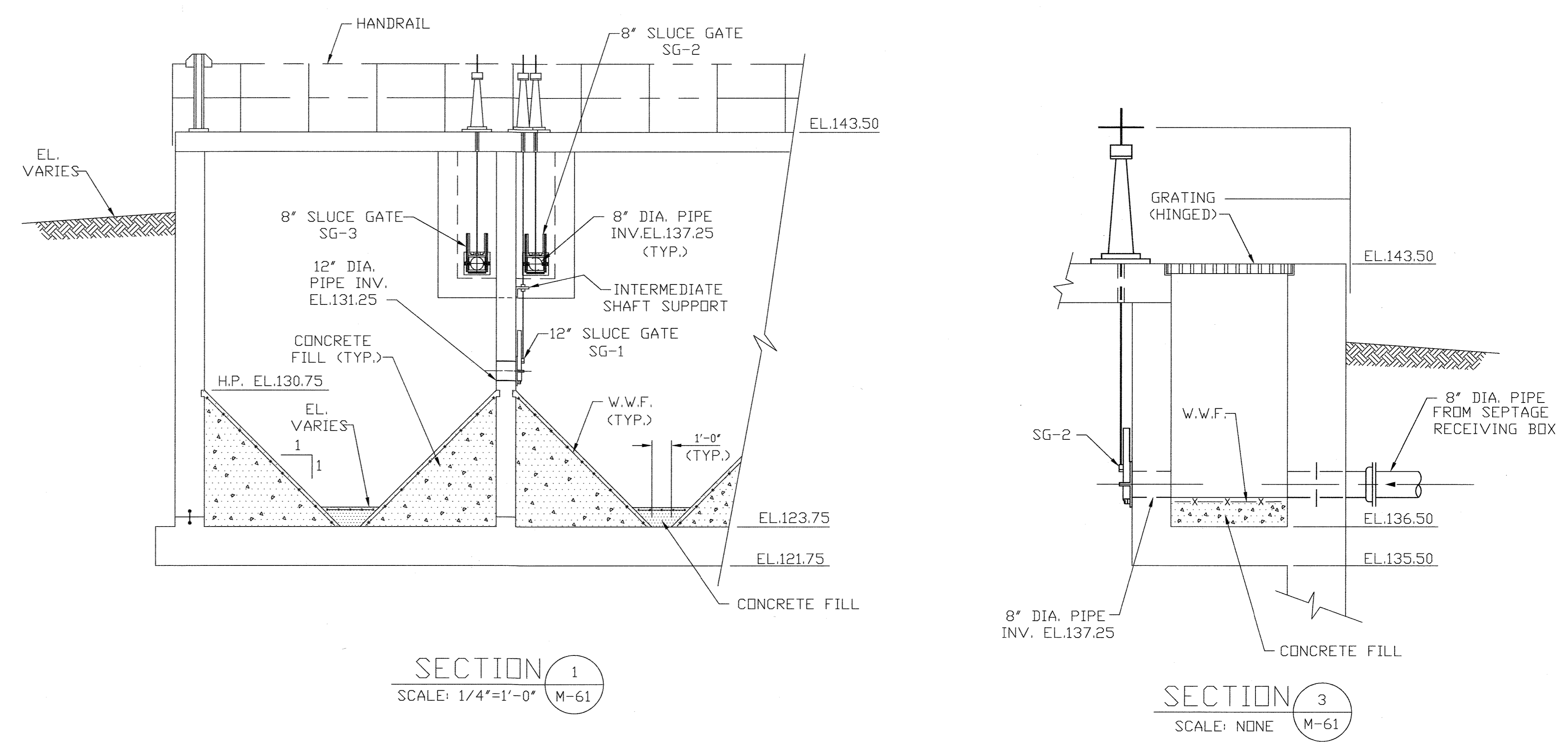
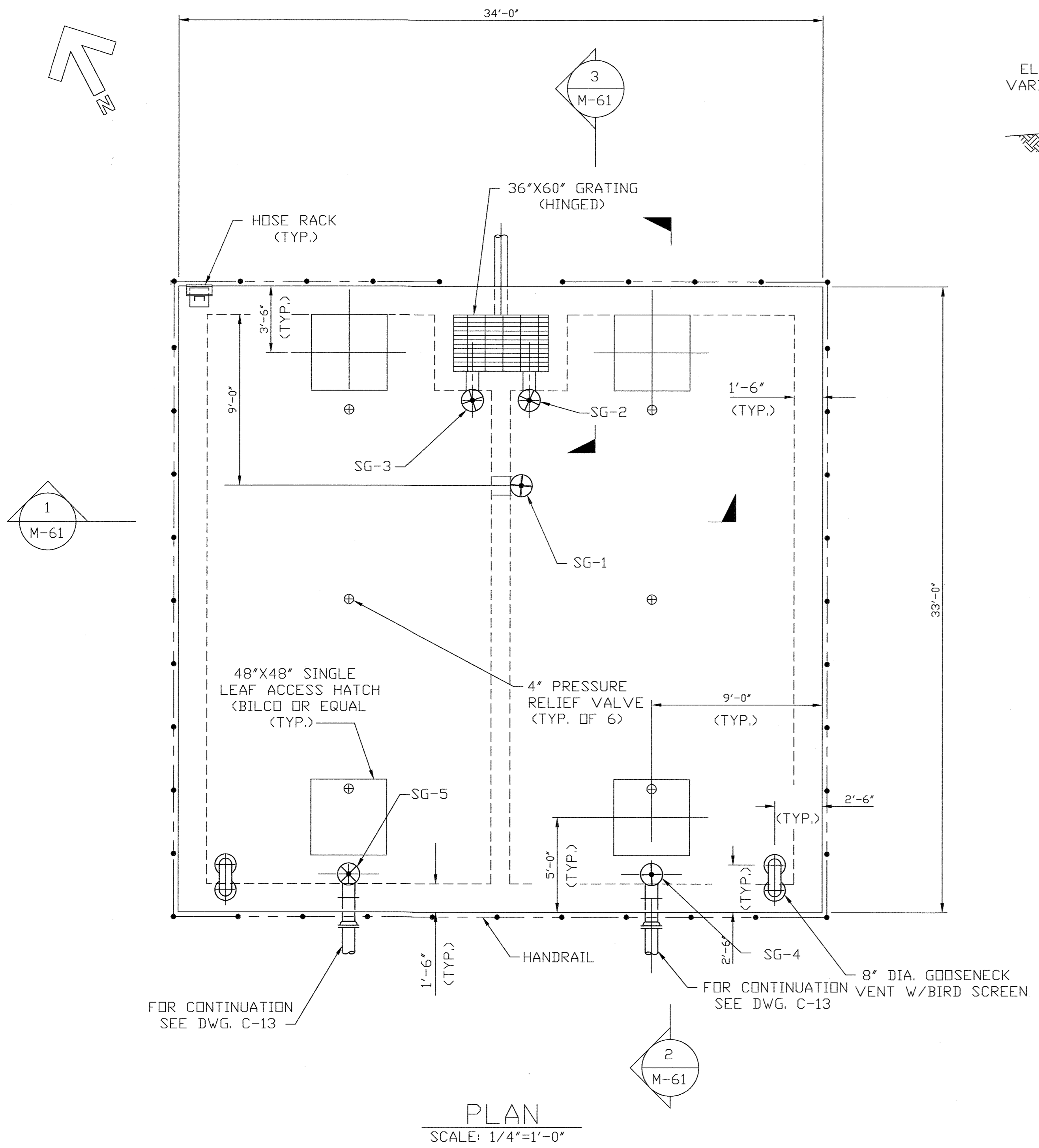
MECHANICAL
 GRAVITY THICKENER NO. 4
 PLAN AND SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 155 OF 226
 M-60A

[Signature] 5/7/94
 DIRECTOR OF PUBLIC WORKS
 [Signature] 5/7/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
 [Signature] 5-7-96
 CHIEF, UTILITY DESIGN DIVISION

[Signature] 5-7-96
 REG. PROF. ENGR.



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James P. Lowe</i> 5/1/96 DIRECTOR OF PUBLIC WORKS <i>John J. O'Hara</i> 5/1/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Paul J. Eppson</i> 5/7/96 CHIEF, BUREAU OF ENGINEERING <i>Oliver D. Kiser</i> 5-7-96 CHIEF, UTILITY DESIGN DIVISION <i>Donna W. Irwin</i> 5-7-96 REG. PROF. ENGR.				DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____ M.J.C. 1 RECORD DRAWING 11/2/94 BY NO. REVISION DATE		MECHANICAL SEPTAGE FACILITY PLAN, SECTIONS AND DETAILS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 156 OF 226 M-61A
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PUMP SCHEDULE

TAG NO.	PUMP DESIGNATION	LOCATION	PUMP TYPE	RATING POINT			MIN. SUCTION / DISCHARGE SIZE (IN.)	PUMP RPM MAX.	SEAL TYPE	MOTOR			DRIVE TYPE	SPEC. SECTION NO.	REMARKS
				CAPACITY GPM	HEAD FT.	MIN. EFF. %				HP	RPM MAX.	ENCL. TYPE			
IP 1,2,4,5	INFLUENT PUMP	INFLUENT PUMP STA.	VERTICAL CENTRIFUGAL	4750	45	82	-	700	WATER	75	700	-	DIRECT	11311	REPLACE EXISTING PUMPS, SHAFTS, MOTORS
EP 3	EFFLUENT PUMP	FILTER BUILDING	VERTICAL TURBINE	8200	16	84	20/20	880	WATER	50	702	DDP/WPI	VFD	11302	ADD ONE PUMP, SAME SIZE EXIST. PEERLESS
PSLP 1,2	PRIMARY SLUDGE PUMP	NORTH PUMP STA.	PROGRESSIVE CAVITY	125	50	-	8/8	244	WATER	10.0	1750	TEFC SEVERE	VFD	11310	PROVIDE ONE COMPLETE PUMP, REDUCER, MOTOR ASSEMBLY AS SPARE
PSCP 1,2	PRIMARY SCUM PUMP	NORTH PUMP STA.	PROGRESSIVE CAVITY	25	35	-	6/6	111	WATER	3	1750	TEFC	DIRECT	11310	PRIMARY SCUM, 6% SOLIDS
PSLP 3,4	PRIMARY SLUDGE PUMP	SOUTH PUMP STA.	PROGRESSIVE CAVITY	125	50	-	8/8	244	WATER	10.0	1750	TEFC SEVERE	VFD	11310	PRIMARY SLUDGE, 3-5% SOLIDS
PSCP 3,4	PRIMARY SCUM PUMP	SOUTH PUMP STA.	PROGRESSIVE CAVITY	25	35	-	8/8	111	WATER	3	155	-	DIRECT	11310	PRIMARY SCUM, 6% SOLIDS
RASP 2,3,4,5,6	RETURN ACTIVATED SLUDGE	EAST PIPE GALLERY	NON-CLOG CENTRIFUGAL	1200	18	-	6/6	1150	WATER	10	1150	TEFC	VFD	11306	
RASP 18	RETURN ACTIVATED SLUDGE	WEST PIPE GALLERY	CENTRIFUGAL	1200	18	-	6/6	1150	WATER	10	1150	TEFC	VFD	11306	
RASP 1	PHOS. STRIPPER INFLUENT SLUDGE PUMP	EAST PIPE GALLERY	CENTRIFUGAL	1200	18	-	6/6	1150	WATER	10	1150	TEFC	VFD	11306	
SWP 1,2	SPRAY WATER PUMPS	WEST PIPE GALLERY	CENTRIFUGAL	1200	100	82	6/6	-	MECH	40	1750	TEFC	DIRECT	11303	COMPLETE VARIABLE DEMAND, CONSTANT PRESSURE SYSTEM
SCP 1,2,3,4,5	PROCESS REACTOR SCUM PUMP	PROCESS REACTORS	SUBMERSIBLE	100	90	60	-/4	1750	MECH	10	1750	SUBMERSIBLE	DIRECT	11304	PUMP NO. 6 TO BE COMPLETE SHELF SPARE
DSCP 3	SCUM PUMP	DIGESTER NO. 3	PROGRESSIVE CAVITY	100	80	-	6/6	315	WATER	7.5	1750	TEFC	VFD	11310	FURNISHED BUT NOT INSTALLED. WORK DELETED FROM CONTRACT.
DSL 3	SLUDGE PUMP	DIGESTER NO. 3	PROGRESSIVE CAVITY	100	80	-	6/6	315	WATER	7.5	1750	TEFC	VFD	11310	FURNISHED BUT NOT INSTALLED. WORK DELETED FROM CONTRACT.
DSCP 4	SCUM PUMP	DIGESTER NO. 4	PROGRESSIVE CAVITY	100	80	-	6/6	315	WATER	7.5	1750	TEFC	VFD	11310	FURNISHED BUT NOT INSTALLED. WORK DELETED FROM CONTRACT.
DSL 4	SLUDGE PUMP	DIGESTER NO. 4	PROGRESSIVE CAVITY	100	80	-	6/6	315	WATER	7.5	1750	TEFC	VFD	11310	FURNISHED BUT NOT INSTALLED. WORK DELETED FROM CONTRACT.
IRP 1,2,3,4,5,6	INTERNAL RECYCLE PUMPS	SINGLE PASS AERATION	SUBMERSIBLE PROPELLER	730 MIN. TO 2200 MAX.	0.5 MIN. TO 2.5 MAX.	-	-	850	MECH	7.5	700	SUBMERSIBLE	VFD	11305	
IRP 7,8	INTERNAL RECYCLE PUMPS	DOUBLE PASS AERATION	SUBMERSIBLE PROPELLER	1500 MIN. TO 4500 MAX.	0.5 MIN. TO 4.0 MAX.	-	-	500	MECH	15	2125	SUBMERSIBLE	VFD	11305	
SP 1&2	DUPLEX SUMP PUMP	NORTH PUMP STA.	NON-CLOG SUBMERSIBLE	130	20	40	-/4	1750	MECH	2	1750	SUBMERSIBLE	DIRECT	11304	COMPLETE DUPLEX SYSTEM W/ CONTROLS AND LIFT OUT RAILS
SP 3&4	DUPLEX SUMP PUMP	SOUTH PUMP STA.	NON-CLOG SUBMERSIBLE	130	20	40	-/4	1750	MECH	2	1750	SUBMERSIBLE	DIRECT	11304	
SCP 6	SCUM PUMP	FINAL CLAR. NO. 2	SUBMERSIBLE	100	90	-	-/4	-	-	10	1750	SUBMERSIBLE	DIRECT	11304	
FWP 1,2,3	FLUSHING WATER PUMP	DEWATERING BUILDING	VERTICAL CENTRIFUGAL	1000	150	70	8/6	1750	MECH	60	1750	TEFC	DIRECT	11303	COMPLETE VARIABLE DEMAND, CONSTANT PRESSURE SYSTEM WITH AUTO CONTROL MULTIPUMP SERVICE
NADCLP 1,2,3	HYPOCHLORITE CHEMICAL FEED PUMPS	CHLORINE BUILDING	DIAPHRAM METERING PUMP	1	231	-	2/ 1 1/2	100	MECH	1/4	1725	TENV	-	11352	
HSDP 1&2	BISULFITE CHEMICAL FEED PUMPS	CHLORINE BUILDING	DIAPHRAM METERING PUMP	1/3	231	-	2/ 1 1/2	100	MECH	1/4	1725	TENV	-	11352	
CWP 1	CHEMICAL FEED SYSTEM CARRIER WATER PUMP	36" METER VAULT	CENTRIFUGAL	35	120	82	2/ 1 1/2	1800	MECH	5	1800	TEFC	DIRECT	11301	
SP 5	SUMP PUMP	36" METER VAULT	NON-CLOG SUBMERSIBLE	100	20	40	-/3	1750	MECH	2	1150	SUBMERSIBLE	DIRECT	11304	

SLUICE GATE SCHEDULE

TAG NO.	LOCATION	GATE SIZE W(IN.)xH(IN.)	FULL OPEN PORT W(IN.)xH(IN.)	OPENING INVERT ELEV.	OPERATION FLOOR ELEV.	CHANNEL DEPTH (IN.)	FRAME HEIGHT (IN.)	FRAME TYPE	OPERATOR TYPE	REMARKS
SG SF-1	SEPTAGE RECEIVING FAC.	12"x12"	12" DIA.	131.25	-	-	-	CIRCULAR FRAME	WALL BRACKETED FLOOR STAND W/HANDWHEEL	
SG SF-2,3	SEPTAGE RECEIVING FAC.	8"x8"	8" DIA.	137.25	143.50	-	-	CIRCULAR FRAME	WALL BRACKETED FLOOR STAND W/HANDWHEEL	
SG SF-4,5	SEPTAGE RECEIVING FAC.	8"x8"	8" DIA.	124.94	143.50	-	-	CIRCULAR FRAME FLANGE MOUNT	WALL BRACKETED FLOOR STAND W/HANDWHEEL	
SG PR-1,2	PROCESS REACTORS	36"x36"	36"x36"	136.00	144.00	-	-	INTEGRAL FRAME F THIMBLE TYPE	WALL BRACKETED FLOOR STAND W/GEAR REDUCER	
SG PR 1,2,3,4,5,6	PROCESS REACTORS	8"x8"	8" DIA.	135.30	144.00	-	-	CIRCULAR FRAME FLANGE MOUNT	FLOOR STAND W/HANDWHEEL	

PREFABRICATED SLIDE GATE SCHEDULE

TAG NO.	LOCATION	GATE SIZE W(IN.)xH(IN.)	FULL OPEN PORT W(IN.)xH(IN.)	OPENING INVERT ELEV.	OPERATION FLOOR ELEV.	CHANNEL DEPTH (IN.)	FRAME HEIGHT (FT.)	FRAME TYPE	OPERATOR TYPE	REMARKS
PG 7A,7B	PROCESS REACTOR NO. 7	24"x50"	24"x48"	139.50	144.00	3 FT	7'-9"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	WHEN CLOSED, TOP OF GATE ELEV. IS 143.67 W.R.T. TOP OF WALL EL.144.00
PG 8A,8B	PROCESS REACTOR NO. 8	24"x50"	24"x48"	139.50	144.00	3 FT	7'-9"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	
PG 7C,8C	PROCESS REACTORS 7 & 8	5'Wx2'H WEIR GATE	N/A	141.25	144.00	N/A	6'-10"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	SCUM PIT GATE
PG 1-6	PROCESS REACTORS 1-6	2.5'Wx1.5'H WEIR GATE	N/A	141.25	144.00	N/A	6'-10"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	SCUM PIT GATE
PG-1	FLOW EQUALIZATION BASIN 3	36"x36" WEIR GATE	N/A	140.50	143.79	N/A	8'-7 1/2"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	
PG-2	PRIMARY CLARIFIERS 2	48"x30"	48"x24"	141.67	146.25	N/A	5'-2 1/2"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	
PG 3A,3B PG 4A,4B	PRIMARY CLARIFIERS 3&4	24"x42"	24"x36"	141.67	146.25	VARIABLE	8'-8 1/2"	CHANNEL SIDES FACE BOTTOM	FRAME MOUNTED HANDWHEEL	SPECIAL FRAME
PG 6B,6C	PROCESS REACTOR NO. 6 EFFLUENT GATES	24"x24"		140.83	144.00	N/A	6'-8"	FACE MOUNTED	FRAME MOUNTED HANDWHEEL	MOUNTED INSIDE EFFLUENT PITS

GRINDER, BLOWER SCHEDULE

TAG NO.	EQUIPMENT NAME	TYPE OF EQUIPMENT	LOCATION	NO. OF UNITS	DESIGN INFORMATION			SPEC. SECTION	REMARKS
					HP	RPM	CAPACITY		
PSLG 1,2	PRIM. SLUDGE GRINDER	IN-LINE GRINDER	NORTH PUMP STATION	2	3	1800	125 GPM	11319	
PSCG 1,2	PRIM. SCUM GRINDER	IN-LINE GRINDER	NORTH PUMP STATION	2	3	1800	25 GPM	11319	
PSLG 3,4	PRIM. SLUDGE GRINDER	IN-LINE GRINDER	SOUTH PUMP STATION	2	3	1800	125 GPM	11319	
PSCG 3,4	PRIM. SCUM GRINDER	IN-LINE GRINDER	SOUTH PUMP STATION	2	3	1800	25 GPM	11319	

LEAKAGE ALLOWANCES:

- (A) ZERO LEAKAGE
- (B) LEAKAGE NOT TO EXCEED 0.15 GALLONS PER HOUR PER INCH OF DIAMETER PER 100 OF PIPE.
- (C) PRESSURE LOSS NOT TO EXCEED 5%.
- (D) VACCUUM LOSS NOT TO EXCEED 4" MERCURY COLUMN.

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>James M. Law</i> 5/7/96 DIRECTOR OF PUBLIC WORKS</p> <p><i>John O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>M&E Metcalf & Eddy</p> <p><i>Jonathan W. Donie</i> 5-7-96 REG. PROF. ENGR.</p>		<p>DES: _____</p> <p>DRN: M.J.C.</p> <p>CHK: J.H.</p> <p>DATE: _____</p>	<p>MECHANICAL</p> <p>SCHEDULE</p>	<p>LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p>CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 157 OF 226</p> <p>M-62A</p>
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VALVE SCHEDULE

TAG NO.	LOCATION	TYPE	SIZE (IN.)	RATING (PSI)	SERVICE	OPERATOR TYPE	END TYPE	REFERENCE DRAWING	REFERENCE SPECIFICATION	REMARKS
FCV 1	PRIMARY METERING CHAMBER	PINCH	20	125	WASTEWATER	MOTOR CONTROL WITH MODULATOR	FLANGE	M-6	15101-2.11	MULTI TURN CLOSURE
WAS-1	EAST PIPE GALLERY	GATE	6	175	WAS	HANDWHEEL	FLANGE	M-24	15101-2.02	
IRS	EAST PIPE GALLERY	PLUG	16	150	RAS	HANDWHEEL & GEAR OPERATOR	FLANGE	M-24	15101-2.06	
PSIS 1	EAST PIPE GALLERY	PLUG	12	175	RAS	HANDWHEEL & GEAR OPERATOR	FLANGE	M-24	15101-2.06	
S 1-3	EAST PIPE GALLERY	PLUG	12	175	RAS	HANDWHEEL & GEAR OPERATOR	FLANGE	M-24	15101-2.06	
D 1-10	EAST PIPE GALLERY	PLUG	12	175	RAS	CHAINWHEEL & GEAR OPERATOR	FLANGE	M-24	15101-2.06	
FCV-235	EAST PIPE GALLERY	PLUG	12	175	RAS	MOTOR CONTROL WITH MODULATOR	FLANGE	M-24	15101-2.06	MULTI TURN CLOSURE
FW-1 SC-1	EAST PIPE GALLERY	GATE	4	175	WATER	CHAINWHEEL	FLANGE	M-24	15101-2.02	
PSIS	EAST PIPE GALLERY	CHECK	8	175	RAS	SWING	FLANGE	M-25	15101-2.04	
RAS 1-3	EAST PIPE GALLERY	3-WAY PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-24	15101-2.06	
RAS PUMP 1	EAST PIPE GALLERY	CHECK	8	175	RAS	SWING	FLANGE	M-25	15101-2.04	
RAS PUMP 5	EAST PIPE GALLERY	CHECK	8	175	RAS	SWING	FLANGE	M-25	15101-2.04	
PSIS	EAST PIPE GALLERY	PLUG	8	175	PSIS	CHAINWHEEL	FLANGE	M-25	15101-2.06	
RAS 2, 3, 4, 6	EAST PIPE GALLERY	CHECK	10	175	RAS	SWING	FLANGE	M-25	15101-2.04	
FMBP 1-2	NORTH P.S. PUMP STATION	PLUG	6	175	SLUDGE	CHAINWHEEL	FLANGE	M-39	15101-2.06	
FW 1-2	NORTH P.S. PUMP STATION	GATE	4	175	WATER	HANDWHEEL	FLANGE	M-39	15101-2.02	PROVIDE CHAINWHEEL AS REQUIRED
BFP	NORTH P.S. PUMP STATION	BACKFLOW PREVENTION	4	175	POTABLE WATER		FLANGE	M-39	15410-2.16	
PSS 1-2	NORTH P.S. PUMP STATION	KNIFE GATE	8	175	SLUDGE	HANDWHEEL	FLANGE	M-39	15101-2.02	
PSCUM 1-2	NORTH P.S. PUMP STATION	KNIFE GATE	6	175	SLUDGE	HANDWHEEL	FLANGE	M-39	15101-2.02	
FCV 8-9	NORTH P.S. PUMP STATION	PLUG	8	175	SLUDGE	MOTOR CONTROL OPEN/CLOSE	FLANGE	M-39	15101-2.08	
PSCUM C 1-2	NORTH P.S. PUMP STATION	PLUG	6	175	SLUDGE	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-39	15101-2.08	PROVIDE CHAINWHEEL AS REQUIRED
PDISCH 1-3	NORTH P.S. PUMP STATION	PLUG	8	175	SLUDGE	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-39	15101-2.08	PROVIDE CHAINWHEEL AS REQUIRED
SDISCH 1-16	NORTH P.S. PUMP STATION	PLUG	6	175	SLUDGE	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-39	15101-2.08	PROVIDE CHAINWHEEL AS REQUIRED
CHK 1-2	NORTH P.S. PUMP STATION	CHECK	8	175	SLUDGE	SWING TYPE	FLANGE	M-39	15101-2.04	
CHK 3-4	NORTH P.S. PUMP STATION	CHECK	6	175	SLUDGE	SWING TYPE	FLANGE	M-39	15101-2.04	
FMBP 1-2	SOUTH P.S. PUMP STATION	PLUG	6	175	SLUDGE	CHAINWHEEL	FLANGE	M-39	15101-2.06	
PSS 1-2	SOUTH P.S. PUMP STATION	KNIFE GATE	8	175	SLUDGE	HANDWHEEL	FLANGE	M-42	15101-2.02	
PSCUM 1-2	SOUTH P.S. PUMP STATION	KNIFE GATE	6	175	SLUDGE	HANDWHEEL	FLANGE	M-42	15101-2.02	
FCV 15-16	SOUTH P.S. PUMP STATION	PLUG	8	175	SLUDGE	MOTOR CONTROL OPEN/CLOSE	FLANGE	M-42	15101-2.06	
SCUM C 1-2	SOUTH P.S. PUMP STATION	PLUG	6	175	SLUDGE	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-42	15101-2.06	PROVIDE CHAINWHEEL AS REQUIRED
PDISCH 1-3	SOUTH P.S. PUMP STATION	PLUG	8	175	SLUDGE	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-42	15101-2.06	PROVIDE CHAINWHEEL AS REQUIRED
SDISCH 1-19	SOUTH P.S. PUMP STATION	PLUG	6	175	SLUDGE	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-42	15101-2.06	PROVIDE CHAINWHEEL AS REQUIRED
FW 1-3	SOUTH P.S. PUMP STATION	GATE	4	175	WATER	HANDWHEEL	FLANGE	M-42	15101-2.02	PROVIDE CHAINWHEEL AS REQUIRED
BFP	SOUTH P.S. PUMP STATION	BACKFLOW PREVENTION	3	175	POTABLE WATER	HANDWHEEL	FLANGE	M-42	15410-2.16	

NOTE: VALVE SCHEDULES IS FOR CLARIFICATION. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL VALVES PER MECHANICAL DRAWINGS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James A. Sullivan</i> 5/7/96 DIRECTOR OF PUBLIC WORKS <i>John O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Jonathan W. Dore</i> 5-7-96 REG. PROF. ENGR.				DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____		M.J.C. 1 BY NO. _____ DATE: 11/2/94		MECHANICAL VALVE SCHEDULE 1		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 158 OF 226 M-63A
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VALVE SCHEDULE (CONTINUED)

TAG NO.	LOCATION	TYPE	SIZE (IN.)	RATING (PSI)	SERVICE	OPERATOR TYPE	END TYPE	REFERENCE DRAWING	REFERENCE SPECIFICATION	REMARKS
FWS	DEWATERING BUILDING	GATE	16	150	WATER	HANDWHEEL	FLANGE	M-57	15101-2.02	
FWSM 1-3	DEWATERING BUILDING	GATE	12	175	WATER	HANDWHEEL	FLANGE	M-57	15101-2.02	
FWD 1-4	DEWATERING BUILDING	GATE	10	175	WATER	HANDWHEEL	FLANGE	M-57	15101-2.02	
FWD 5-8	DEWATERING BUILDING	GATE	8	175	WATER	HANDWHEEL	FLANGE	M-57	15101-2.02	
FWD 9-17	DEWATERING BUILDING	GATE	6	175	WATER	HANDWHEEL	FLANGE	M-57	15101-2.02	
FW PUMP 1-3	DEWATERING BUILDING	PRESSURE RELIEF	6	200	WATER	HYDRAULIC/PILOT CONTROL	FLANGE	M-57	15101-2.15	
FW PUMP 1-3	DEWATERING BUILDING	PUMP CONTROL	6	200	WATER	SOLINOID CONTROL	FLANGE	M-57	15101-2.37	
PSS-9	WEST PIPE GALLERY	PLUG	14	175	SLUDGE	CHAINWHEEL WITH GEAR OPERATOR	FLANGE	M-27	15101-2.06	
WPG RAS PUMPS 4B, 5A, 5B, 6A, 6B	WEST PIPE GALLERY	CHECK	10	175	RAS	SWING	FLANGE	M-25	15101-2.04	
FCV-208	WEST PIPE GALLERY	BUTTERFLY	20	25	AIR	MOTOR CONTROL WITH MODULATOR		M-26	15101-2.09	
FCV-207	WEST PIPE GALLERY	BUTTERFLY	20	25	AIR	MOTOR CONTROL WITH MODULATOR		M-26	15101-2.09	
WPG PR NEW	WEST PIPE GALLERY	BUTTERFLY	20	25	AIR	CHAINWHEEL WITH GEAR OPERATOR		M-26	15101-2.09	
FCV-201	WEST PIPE GALLERY	BUTTERFLY	10	25	AIR	MOTOR CONTROL WITH MODULATOR		M-26	15101-2.09	
FCV-202	WEST PIPE GALLERY	BUTTERFLY	10	25	AIR	MOTOR CONTROL WITH MODULATOR		M-26	15101-2.09	
WPG SPRAY 1-5	WEST PIPE GALLERY	GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-26	15101-2.02	
WPG PSS 1-6	WEST PIPE GALLERY	PLUG	3	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-26	15101-2.06	
WPG PSS 7,8	WEST PIPE GALLERY	PLUG	4	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-26	15101-2.06	
WPG SPRAY 6-7	WEST PIPE GALLERY	PRESSURE RELIEF & PRESSURE REGULATING	6	200	SPRAY WATER	HYDRAULIC/PILOT CONTROL	FLANGE	M-27	15101-2.15	
FCV-203, 204 205, 206	WEST PIPE GALLERY	BUTTERFLY	8	25	AIR	MOTOR CONTROL WITH MODULATOR		M-26	15101-2.09	
RAS 1-3	WEST GALLERY	PLUG	16	175	RAS	GEAR OPERATOR WITH HANDWHEEL	FLANGE	M-26	15101-2.06	
FW 1-4	WEST GALLERY	GATE	6	175	FW	HANDWHEEL	FLANGE	M-26, M-27	15101-2.02	
SPRAY 1-2	WEST GALLERY	GATE	6	175	WASTEWATER	HANDWHEEL	FLANGE	M-27	15101-2.02	
SPRAY 1-5	WEST GALLERY	GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-26, M-27	15101-2.02	
SPRAY 3-10	WEST GALLERY	GATE	4	175	WASTEWATER	CHAINWHEEL	FLANGE	M-26, M-27	15101-2.02	
FEB3 1-24	FLOW E.Q. BASIN #3	BUTTERFLY	4	25	AIR	LEVER WITH 10 POSITION LOCK		M-5	15101-2.08	

NOTE: VALVE SCHEDULES ARE FOR CLARIFICATION. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL VALVES AS PER MECHANICAL DRAWINGS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>Samuel A. Lewis</i> 5/7/96 Chief, Bureau of Engineering: <i>Robert E. Sporn</i> 5/7/96 Chief, Bureau of Environmental Services: <i>John P. O'Hara</i> 5/7/96 Chief, Utility Design Division: <i>Dr. Don Liu</i> 5-7-96		M&E Metcalf & Eddy Jonathan W. Down 5-7-96 REG. PROF. ENGR.		DES: _____ DPN: M.J.C. CHK: J.H. DATE: _____ BY: _____ NO. _____	MECHANICAL VALVE SCHEDULE II RECORD DRAWING 11/2/94 REVISION _____ DATE _____	LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 159 OF 226 M-64A
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VALVE SCHEDULE (CONTINUED)

TAG NO.	LOCATION	TYPE	SIZE (IN.)	RATING (PSI)	SERVICE	OPERATOR TYPE	END TYPE	REFERENCE DRAWING	REFERENCE SPECIFICATION	REMARKS
PR1-RAS 1-6	PROCESS REACTOR #1	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-15	15101-2.06	
PR2-RAS 1-6	PROCESS REACTOR #2	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-15	15101-2.06	
PR3-RAS 1-6	PROCESS REACTOR #3	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-15	15101-2.06	
PR4-RAS 1-6	PROCESS REACTOR #4	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-15	15101-2.06	
PR5-RAS 1-6	PROCESS REACTOR #5	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-15	15101-2.06	
PR6-RAS 1-8	PROCESS REACTOR #6	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-15	15101-2.06	
PR7-RAS 1-7	PROCESS REACTOR #7	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-20	15101-2.06	
PR8-RAS 1-7	PROCESS REACTOR #8	PLUG	12	175	RAS	HANDWHEEL WITH GEAR	FLANGE	M-20	15101-2.06	
PR1-IR 1-4	PROCESS REACTOR #1	KNIFE GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-15	15101-2.02	ALL STAINLESS STEEL
PR2-IR 1-4	PROCESS REACTOR #2	KNIFE GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-15	15101-2.02	ALL STAINLESS STEEL
PR3-IR 1-4	PROCESS REACTOR #3	KNIFE GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-15	15101-2.02	ALL STAINLESS STEEL
PR4-IR 1-4	PROCESS REACTOR #4	KNIFE GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-15	15101-2.02	ALL STAINLESS STEEL
PR5-IR 1-4	PROCESS REACTOR #5	KNIFE GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-15	15101-2.02	ALL STAINLESS STEEL
PR6-IR 1-4	PROCESS REACTOR #6	KNIFE GATE	12	175	WASTEWATER	HANDWHEEL	FLANGE	M-15	15101-2.02	ALL STAINLESS STEEL
PR7-IR 1-5	PROCESS REACTOR #7	KNIFE GATE	20	150	WASTEWATER	HANDWHEEL	FLANGE	M-20	15101-2.02	ALL STAINLESS STEEL
PR8-IR 1-5	PROCESS REACTOR #8	KNIFE GATE	20	150	WASTEWATER	HANDWHEEL	FLANGE	M-20	15101-2.02	ALL STAINLESS STEEL
PR1-AIR 1-5	PROCESS REACTOR #1	BUTTERFLY	6	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-15	15101-2.09	
PR2-AIR 1-5	PROCESS REACTOR #2	BUTTERFLY	6	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-15	15101-2.09	
PR3-AIR 1-5	PROCESS REACTOR #3	BUTTERFLY	6	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-15	15101-2.09	
PR4-AIR 1-5	PROCESS REACTOR #4	BUTTERFLY	6	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-15	15101-2.09	
PR5-AIR 1-5	PROCESS REACTOR #5	BUTTERFLY	6	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-15	15101-2.09	
PR6-AIR 1-5	PROCESS REACTOR #6	BUTTERFLY	6	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-15	15101-2.09	
PR7-AIR 1-6	PROCESS REACTOR #7	BUTTERFLY	12	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-20	15101-2.09	
PR8-AIR 1-6	PROCESS REACTOR #8	BUTTERFLY	12	25	AIR	HANDWHEEL WITH GEAR OPERATOR		M-20	15101-2.09	
PR MV 1	PROCESS REACTOR #1	MUD VALVE	12	150	DRAIN	RISING STEM WITH WALL BRACKETS AND HANDWHEEL	FLANGED	M-12	15101-2.22	
PR MV 2	PROCESS REACTOR #2	MUD VALVE	12	150	DRAIN	RISING STEM WITH WALL BRACKETS AND HANDWHEEL	FLANGED	M-12	15101-2.22	
PR FG 1	PROCESS REACTOR #1	FLOOD GATE	16	150	DRAIN	OPERATOR EXTENSION WITH WALL BRACKETS AND HANDWHEEL	FLANGED	M-12	15101-2.02	NOT CONSTRUCTED
PR FG 2	PROCESS REACTOR #2	FLOOD GATE	16	150	DRAIN	OPERATOR EXTENSION WITH WALL BRACKETS AND HANDWHEEL	FLANGED	M-12	15101-2.02	NOT CONSTRUCTED

NOTE: VALVE SCHEDULES ARE FOR CLARIFICATION. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL VALVES AS PER MECHANICAL DRAWINGS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>James A. Lee</i> 5/7/96 Chief, Bureau of Environmental Services: <i>John O'Hare</i> 5/7/96		M&E Metcalf & Eddy Chief, Utility Design Division: <i>Jonathan W. Drane</i> 5-7-96				DES: _____ DFN: M.J.C. CHK: J.H. DATE: _____		M.J.C. 1 BY NO. _____ DATE: 11/2/94		MECHANICAL VALVE SCHEDULE III		LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 160 OF 226 M-65A
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VALVE SCHEDULE (CONTINUED)

TAG NO.	LOCATION	TYPE	SIZE (IN.)	RATING (PSI)	SERVICE	OPERATOR TYPE	END TYPE	REFERENCE DRAWING	REFERENCE SPECIFICATION	REMARKS
AD1, 1-18	AEROBIC DIGESTER #1	BUTTERFLY	10	25	AIR	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-45	15101-2.09	
AD2, 1-18	AEROBIC DIGESTER #2	BUTTERFLY	10	25	AIR	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-46	15101-2.09	
AD3, 1-5	AEROBIC DIGESTER #3	BUTTERFLY	10	25	AIR	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-45	15101-2.09	
AD4, 1-5	AEROBIC DIGESTER #4	BUTTERFLY	10	25	AIR	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-46	15101-2.09	
AD3, 1-3	AEROBIC DIGESTER #3	BUTTERFLY	12	25	AIR	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-45	15101-2.09	
AD4, 1-3	AEROBIC DIGESTER #4	BUTTERFLY	12	25	AIR	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-46	15101-2.09	
FCV 40,41,42	DIGESTER PIPE GALLERY (EXISTING)	BUTTERFLY	20	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 46	DIGESTER PIPE GALLERY (EXISTING)	BUTTERFLY	16	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 43,44,45	DIGESTER PIPE GALLERY (EXISTING)	BUTTERFLY	20	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 49	DIGESTER PIPE GALLERY (EXISTING)	BUTTERFLY	16	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 47,48	DIGESTER PIPE GALLERY (NEW)	BUTTERFLY	20	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 50,51	DIGESTER PIPE GALLERY (NEW)	BUTTERFLY	20	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
BLOWER #5	DIGESTER PIPE GALLERY	SPLIT DISC CHECK	20	25	AIR		FLANGE	M-51	15101-2.05	
BLOWER #6	DIGESTER PIPE GALLERY	SPLIT DISC CHECK	20	25	AIR	NOT CONSTRUCTED	FLANGE	M-53	15101-2.05	
BLOWER #7	DIGESTER PIPE GALLERY	SPLIT DISC CHECK	20	25	AIR		FLANGE	M-53	15101-2.05	
BCQWBRA#5	DIGESTER PIPE GALLERY	BUTTERFLY	24	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-51	15101-2.09	
FCV 31A	DIGESTER PIPE GALLERY	BUTTERFLY	24	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 32A	DIGESTER PIPE GALLERY	BUTTERFLY	24	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
BCQWBRB#5	DIGESTER PIPE GALLERY	BUTTERFLY	12	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-51	15101-2.09	
FCV 31B	DIGESTER PIPE GALLERY	BUTTERFLY	12	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
FCV 32B	DIGESTER PIPE GALLERY	BUTTERFLY	12	25	AIR	MOTOR CONTROL WITH MODULATOR	FLANGE	M-53	15101-2.09	
BLOWER #5	DIGESTER PIPE GALLERY	BUTTERFLY	20	25	AIR	GEAR OPERATOR WITH CHAIN WHEEL	FLANGE	M-51	15101-2.09	
BLOWER #6	DIGESTER PIPE GALLERY	BUTTERFLY	20	25	AIR	GEAR OPERATOR WITH CHAIN WHEEL	FLANGE	M-53	15101-2.09	
BLOWER #7	DIGESTER PIPE GALLERY	BUTTERFLY	20	25	AIR	GEAR OPERATOR WITH CHAIN WHEEL	FLANGE	M-53	15101-2.09	

NOTE: VALVE SCHEDULES ARE FOR CLARIFICATION. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL VALVES PER MECHANICAL DRAWINGS.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James J. Slon 5/19/96
 DIRECTOR OF PUBLIC WORKS DATE

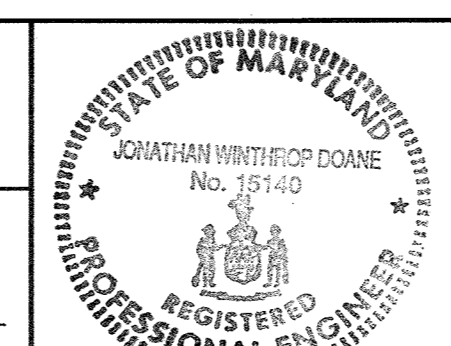
John J. O'Hara 5/19/96
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 5/7/96
 CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5-7-96
 CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Done 5-7-96
 REG. PROF. ENGR. DATE



DES			
DRN	M.J.C.		
CHK	J.H.		
DATE	M.J.C. 1	RECORD DRAWING	11/2/94
	BY	NO.	REVISION
			DATE

MECHANICAL

VALVE SCHEDULE IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 161 OF 226

M-66A

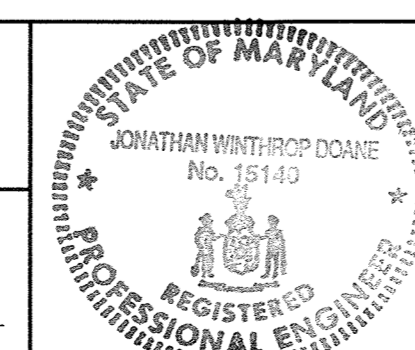
VALVE SCHEDULE (CONTINUED)

TAG NO.	LOCATION	TYPE	SIZE (IN)	RATING (PSI)	SERVICE	OPERATOR TYPE	END TYPE	REFERENCE DRAWING	REFERENCE SPECIFICATION	REMARKS
TSSP #1, 1-11	DIGESTER PIPE GALLERY (NEW)	PLUG	6	175	SLUDGE	2 INCH NUT	FLANGE	M-53	15101-2.06	DELETED FROM CONTRACT
TSSP #1, 11	DIGESTER PIPE GALLERY (NEW)	PLUG	6	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-53	15101-2.06	
TSSP #1, 12-13	DIGESTER PIPE GALLERY (NEW)	PLUG	4	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-53	15101-2.06	
TSSP #2, 1-11	DIGESTER PIPE GALLERY (NEW)	PLUG	6	175	SLUDGE	2 INCH NUT	FLANGE	M-53	15101-2.06	
TSSP #2, 11-12	DIGESTER PIPE GALLERY (NEW)	PLUG	6	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-53	15101-2.06	
TSSP #2, 13-15	DIGESTER PIPE GALLERY (NEW)	PLUG	4	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-53	15101-2.06	
GT SPRAY 1-2	DIGESTER PIPE GALLERY	PRESSURE REDUCING	4	200	WATER	PILOT	FLANGE	M-49	15101-2.14	
WCS/SC 1-3	DIGESTER PIPE GALLERY	PLUG	6	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-49, M-53	15101-2.06	
AD3 PS, 1-5	DIGESTER PIPE GALLERY (NEW)	PLUG	6	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-53	15101-2.06	
AD3 WAS, 1-5	DIGESTER PIPE GALLERY (NEW)	PLUG	4	175	SLUDGE	GEAR OPERATOR	FLANGE	M-53	15101-2.06	
AD4 PS, 1-5	DIGESTER PIPE GALLERY (NEW)	PLUG	6	175	SLUDGE	GEAR OPERATOR	FLANGE	M-53	15101-2.06	
AD4 WAS, 1-5	DIGESTER PIPE GALLERY (NEW)	PLUG	4	175	SLUDGE	GEAR OPERATOR	FLANGE	M-53	15101-2.06	
ADFW, 1-2	DIGESTER PIPE GALLERY (NEW)	GATE	4	175	WATER	HANDWHEEL	FLANGE	M-53	15101-2.02	
ADDW, 1-2	DIGESTER PIPE GALLERY (NEW)	GATE	4	175	WATER	HANDWHEEL	FLANGE	M-53	15101-2.02	
PSL 1,2,3,4	DIGESTER BLDG. NORTH WALL (FLOTATION THICKENER GALLERY)	PLUG	8	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-56	15101-2.06	
ADGTS, 1-2	DIGESTER PIPE GALLERY (EXISTING)	GATE	4	175	FW	CHAINWHEEL	FLANGE	M-49	15101-2.02	DELETED FROM CONTRACT
ADSC, 1-4	DIGESTER PIPE GALLERY	GATE	4	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-49	15101-2.02	
ADWCS 1	DIGESTER PIPE GALLERY	PLUG	6	175	SLUDGE	GEAR OPERATOR	FLANGE	M-49	15101-2.06	
GT1 1-2	DIGESTER PIPE GALLERY (EXISTING)	PLUG	4	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-49	15101-2.06	
GT2 2-1	DIGESTER PIPE GALLERY (EXISTING)	PLUG	4	175	SLUDGE	GEAR OPERATOR WITH CHAINWHEEL	FLANGE	M-49	15101-2.06	
FEP 3	FILTER EFFLUENT PUMP STATION	BUTTERFLY	20	25	WATER	HANDWHEEL WITH GEAR OPERATOR	FLANGE	M-32	15101-2.08	
FEP 3	FILTER EFFLUENT PUMP STATION	CHECK	20	175	WATER	SWING	FLANGE	M-32	15101-2.04	
FCV 4,5,6	HEADWORKS BUILDING	BUTTERFLY	14	25	AIR	MOTOR CONTROL WITH MODULATOR		M-3	15101-2.09	

NOTE: VALVE SCHEDULES ARE FOR CLARIFICATION. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL VALVES AS PER MECHANICAL DRAWINGS.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John J. O'Hara* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Bureau of Engineering: *Paul G. Egan* 5/7/96
 Chief, Utility Design Division: *Paul G. Egan* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. Doane 5-7-96
 REG. PROF. ENGR.



DES:			
DRN:	M.J.C.		
CHK:	J.H.		
M.J.C.	1	RECORD DRAWING	11/2/94
DATE:	BY	NO.	REVISION

MECHANICAL
 VALVE SCHEDULE V

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 162 OF 226
 M-67A

PIPE SCHEDULE

SYSTEM ID ABBREVIATION	NAME	PIPE MATERIAL SCHEDULE/CLASS	MINIMUM PRESSURE (PSI)	TEST MEDIUM	DURATION (MINUTES)	LEAKAGE ALLOWANCE	SPECIFICATION SECTION NO.	REMARKS
PSC	PRIMARY SCUM	DI	150	WATER	60	A	02615	
P.S.	PRIMARY SLUDGE	DI	150	WATER	60	A	02615	
PRI/PRD	PROCESS REACTOR INFLUENT/ PROCESS REACTOR DRAIN	DI	150	WATER	60	A	02615	
IR	PROCESS REACTOR INTERNAL RECYCLE	DI		WATER	60	A	02615	
RAS	RETURN ACTIVATED SLUDGE	DI	150	WATER	60	A	02615	
PSS	PHOSPHORUS STRIPPED SLUDGE	DI	150	WATER	60	A	02615	
BAS	BURIED AIR SERVICE	DI	25	AIR	120	A,C	02615	
EASD	EXPOSED AIR SERVICE OUTSIDE		25	AIR	120	A,C	15066	SEE SPEC. SCHEDULE ON PAGE 15066-6 FOR SCHEDULE, GAGE AND PLATE THICKNESS
EASI	EXPOSED AIR SERVICE INSIDE	STEEL SCH 40	25	AIR	120	A,C	15066	SEE SPEC. SCHEDULE ON PAGE 15066-6 FOR SCHEDULE, GAGE AND PLATE THICKNESS
SAS	SUBMERGED AIR SERVICE	SS SCH 10	25	AIR	120	A,C	15066	SEE SPEC. SCHEDULE ON PAGE 15066-6 FOR SCHEDULE, GAGE AND PLATE THICKNESS
ADM	AERATION DIFFUSER MANIFOLD	SDR 26	25	AIR	120	A,C	15817	
SSPWE	SURFACE SPRAY WATER EXPOSED	DI	150	WATER	60	A	15370/02615	PROVIDE SCH. 40 STEEL FOR ALL LINES LESS THAN 4"Ø
SPWB	SPRAY WATER BURIED	DI	150	WATER	60	A	02615	
SPD	SUMP PUMP DISCHARGE	DI	150	WATER	60	A	02615	
PW	PLANT WATER (NON-POTABLE)	DI	150	WATER	60	A	02615	INSULATE INSIDE STRUCTURES
FW	FLUSHING WATER	DI	150	WATER	60	A	02615	
W	POTABLE WATER	COPPER	150	WATER	60	A	15410	INSULATE INSIDE STRUCTURES
V	VENT	DWV	5	WATER	60	A	15410	
D	DRAIN	DWV	5	WATER	60	A	15410	
S	SANITARY SEWER	SDR 35	-	WATER	1440	B	15370	UP TO 6"Ø
SD	STORM DRAIN	RCP CLASS IV	-	WATER	1440	B	02609	8"Ø USED PVC SDR
CRS	CHLORINE RESIDUAL SAMPLE	PVC SCH 80	120	WATER	240	A	15370	INSULATE INSIDE STRUCTURES
CCF	CONCENTRATED CHEMICAL FEED	PVC SCH 80	110	WATER	60	A	15370	
HWD	HEATING WATER DISCHARGE	PVC SCH 80	110	WATER	60	A	15370	INSULATE INSIDE STRUCTURES
PCI	PRIMARY CLARIFIER INFLUENT/EFFLUENT	DI	150	WATER	60	A	02615	
FCI	FINAL CLARIFIER INFLUENT/EFFLUENT	DI	150	WATER	60	A	02615	
CFD	CHEMICAL FILL OUTSIDE	PVC SCH 80	110	WATER	60	A	15066	
CFI	CHEMICAL FILL INSIDE	PVC SCH 80	110	WATER	60	A	15370	
FCP	FLOOD CONTROL PIPE	DI	150	WATER	60	A	02615	
FEIE	FLOW EQUALIZATION INFLUENT/EFFLUENT	DI	150	WATER	60	A	02615	
FBI	FLOCCULATION BASIN INFLUENT	DI	150	WATER	60	A	02615	54" METER VAULT SPOOL PIECE

LEAKAGE ALLOWANCES:

- (A) ZERO LEAKAGE
- (B) LEAKAGE NOT TO EXCEED 0.15 GALLONS PER HOUR PER INCH OF DIAMETER PER 100 OF PIPE.
- (C) PRESSURE LOSS NOT TO EXCEED 5%.
- (D) VACUUM LOSS NOT TO EXCEED 4" MERCURY COLUMN.

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>James J. Lee</i> 5/6/96 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>John J. O'Hara</i> 5/7/96 CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE</p>	<p>M&E Metcalf & Eddy</p> <p><i>Jonathan W. Jones</i> 5-7-96 REG. PROF. ENGR. DATE</p>		<p>DES: _____</p> <p>DRN: M.J.C.</p> <p>CHK: J.H.</p> <p>DATE: _____</p>	<p>MECHANICAL</p> <p>PIPE SCHEDULE</p>	<p>LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p>CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 163 OF 226</p> <p>M-68A</p>
			<p>M.J.C. 1 RECORD DRAWING 01/2/94</p> <p>BY NO. REVISION DATE</p>			

ABBREVIATIONS

DWG. ABBREV.	ITEM	SYMBOL	NOTES
	PRESSURE REGULATING VALVE LINE TO SIDE REGULATED		
	BALL VALVE		
	GLOBE VALVE		
	CHECK VALVE		
	GATE VALVE		
	FLANGED JOINT		
	SCREWED UNION		
	CONCENTRIC REDUCER		
	STRAINER		
	ELECTRIC UNIT HEATER		
	ELECTRIC CABINET UNIT HEATER		
	ROUND DUCT UP		
	MOTOR FOR M.O.D.		
	THERMOSTAT W/# OF DEVICE CONTROLLED AND FUNCTION		HEAT/COOL HP-8
	FRP DUCT SUPPORT NUMBER		
	SUPPLY/OUTSIDE AIR DUCT UP		
	RETURN/EXHAUST AIR DUCT UP		
	SUPPLY/OUTSIDE AIR DUCT DOWN		
	RETURN/EXHAUST AIR DUCT DOWN		
	TURNING VANES IN ELBOW		
	FLEXIBLE CONNECTION		
	TRANSITION (RECTANGULAR TO RECTANGULAR)		
	VOLUME DAMPER		
	SWITCH W/# OF DEVICE CONTROLLED AND FUNCTION		SOF EF-4
	FLANGED PIPE/DUCT		
	ELECTRIC BASEBOARD HEATER		
	FIRE STAT W/# OF DEVICE		
	SMOKE DETECTOR W/# OF DEVICE		

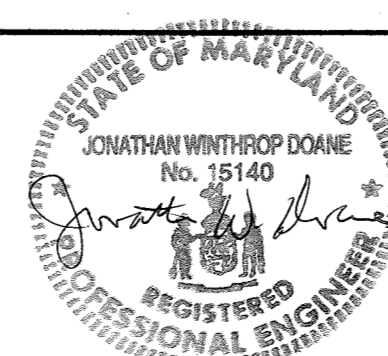
A	AIR	HWD	HEATING WATER DISCHARGE
AFF	ABOVE FINISHED FLOOR	HWS	HEATING WATER SUPPLY
ALUM.	ALUMINUM	M.O.D.	MOTOR OPERATED DAMPER
BDD	BACK DRAFT DAMPER	NaOH	SODIUM HYDROXIDE
BF	BLIND FLANGE	NaOCl	SODIUM HYPOCHLORIDE
B.O.D.	BOTTOM OF DUCT	N.C.	NORMALLY CLOSED
CD	CEILING DIFFUSER	NK.	NECK
CFM	CUBIC FEET PER MINUTE	N.O.	NORMALLY OPEN
CL	CENTERLINE ELEVATION	OA	OUTSIDE AIR
D,VD	VOLUME DAMPER	PH	PERCENT HYDROGEN ION CONCENTRATION
DR	DRAIN	PVC	POLYVINYLCHLORIDE
Ø, DIA.	DIAMETER	PW	PLANT WATER
EAG	EXHAUST AIR GRILLE	POT.W	POTABLE WATER
ECUH	ELECTRIC CABINET UNIT HEATER	RAG	RETURN AIR GRILLE (ALSO EXHAUST AIR)
EDH	ELECTRIC DUCT HEATER	SAD	SUPPLY AIR DIFFUSER
EUH	ELECTRIC UNIT HEATER	SAG	SUPPLY AIR GRILLE
EXH.	EXHAUST	SF-1	SUPPLY FAN AND NO.
EF-1	EXHAUST FAN AND NO.	S.O.F.	SLOW, OFF, FAST
FAI	FRESH AIR INTAKE	S.P.	STATIC PRESSURE
F.D.	FIRE DAMPER	S.S.	STAINLESS STEEL
FLEX.	FLEXIBLE CONNECTION	SQ.	SQUARE
FLG.	FLANGE	T.O.C.	TOP OF CONCRETE ELEVATION
F.O.B.	FLAT ON BOTTOM	T.O.D.	TOP OF DUCT ELEVATION
F.O.T.	FLAT ON TOP	TSTAT	THERMOSTAT
FRP	FIBER REINFORCED POLYESTER	TYP.	TYPICAL
GBD	GRAVITY BACKDRAFT DAMPER	W/	WITH
GALV.	GALVANIZED	*	BASED ON EQUIPMENT FURNISHED
H.O.A.	HAND OFF AUTO		
H.O.R.	HAND OFF REMOTE		
HP-1	HEAT PUMP AND NO.		
HVU-1	HEATER VENTILATION UNIT AND NUMBER		
HVAC	HEATER VENTILATION & AIR CONDITIONING UNIT		
△ RAR	RETURN AIR REGISTER		

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

<i>James A. Lee</i> 12/6/91 DIRECTOR OF PUBLIC WORKS DATE	<i>Debra J. Kelly</i> 12-9-91 CHIEF, BUREAU OF ENGINEERING DATE
<i>John J. O'Hara</i> 12/9/91 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE	<i>Debra J. Kelly</i> 12-9-91 CHIEF, UTILITY DESIGN DIVISION DATE



Jonathan W. Drane 12/9/91
REG. PROF. ENGR. DATE



DESIGNED BY	DATE	NO.	REVISION	DATE
DES: J.S. Hughes				
DRN: P. Annala				
CHK: J.S. Hughes	12/9/91	3	RECORD DRAWING	1/13/92
		2	ADDENDUM #5	4/12/92
		1	REVISED FOR BIDDING	7/5/92
DATE: 12/7/91		BY	NO.	REVISION

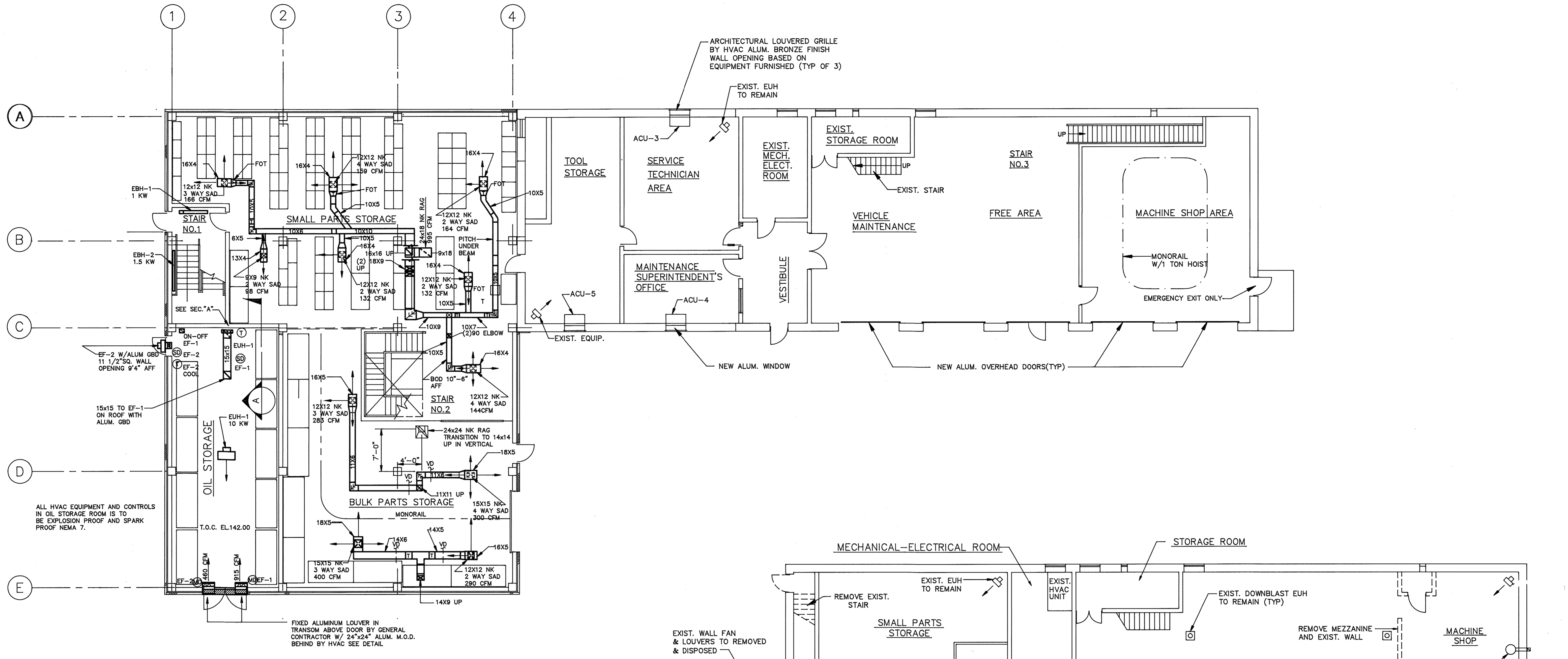
HVAC

LEGEND, SYMBOLS & NOTES

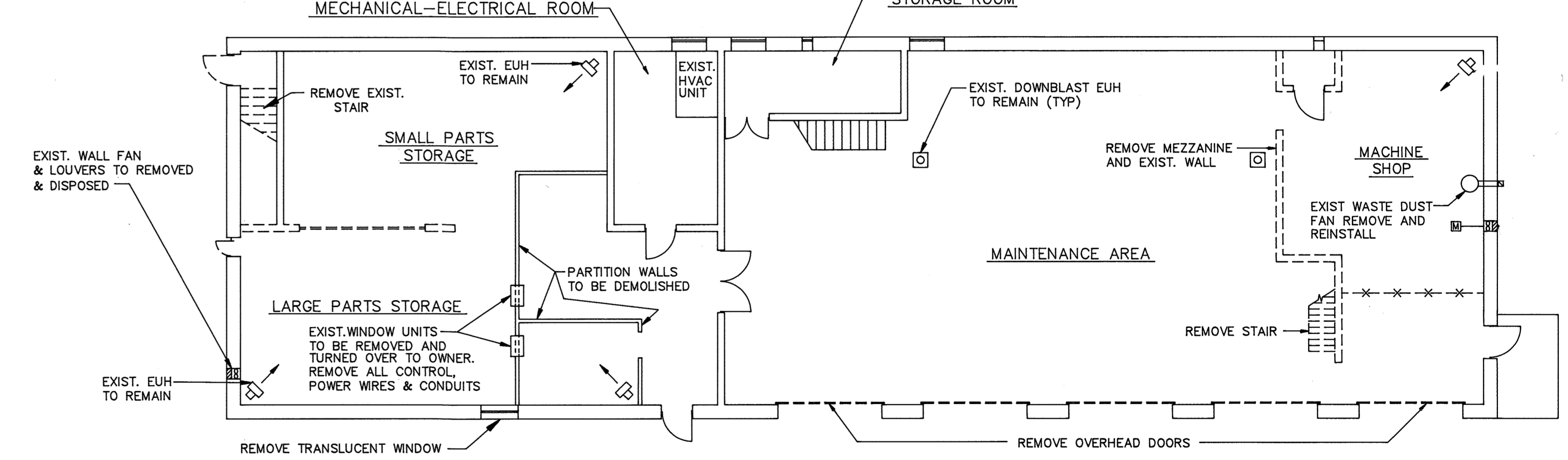
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

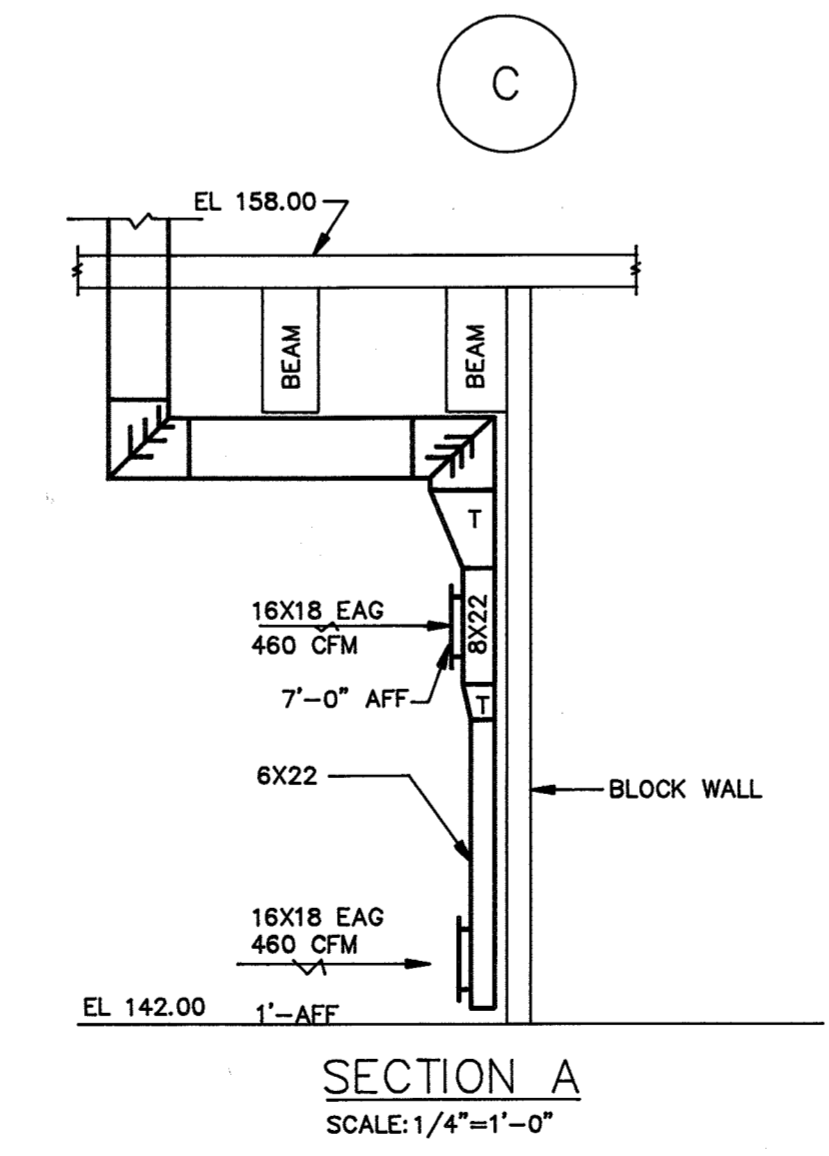
SCALE AS SHOWN
SHEET 168 OF 226
H-1



FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



FIRST FLOOR DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



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

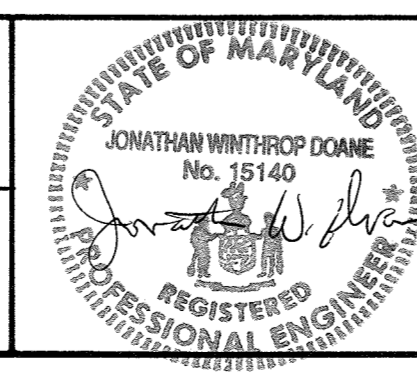
- NOTES:
1. ALL DUCTWORK IN OIL STORAGE AREA TO BE ALUMINUM 24 B & S GAGE MINIMUM.
 2. DUCTWORK IN THE REMAINDER OF THE BUILDING SHALL BE GALVANIZED STEEL 26 GAUGE MINIMUM.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *James W. Jones* 12/1/91
 Chief, Bureau of Engineering: *Richard P. Kelly* 12-9-91
 Chief, Bureau of Environmental Services: *Johnathan W. Jones* 12/1/91
 Chief, Utility Design Division: *Johnathan W. Jones* 12-9-91



Jonathan W. Jones
 REG. PROF. ENGR. 12/1/91

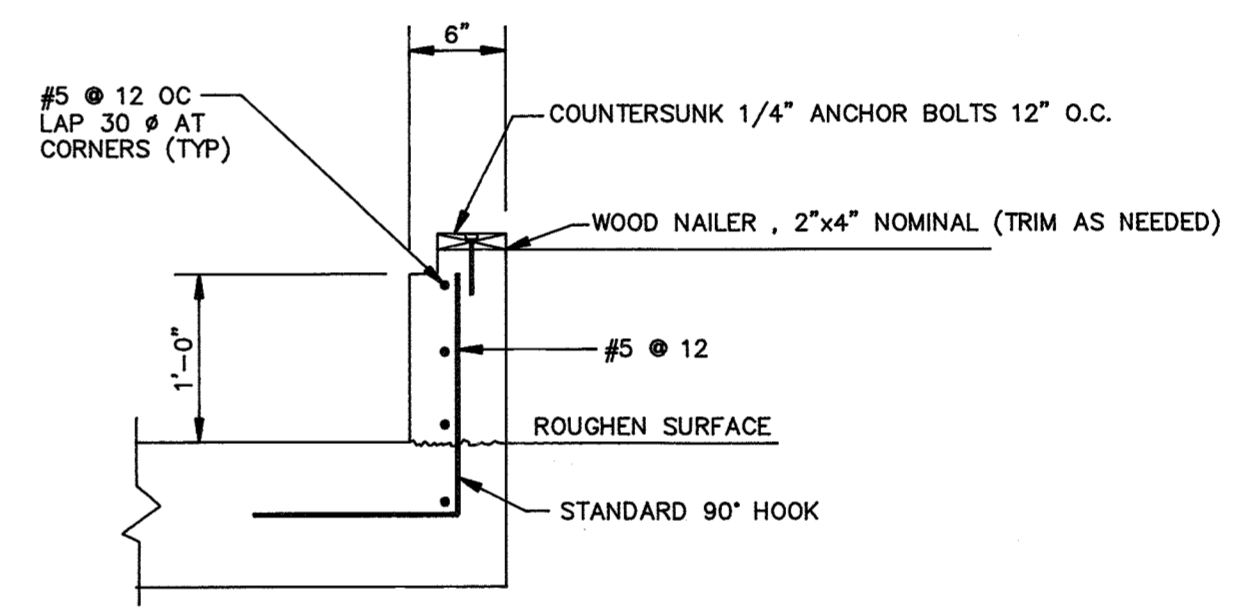
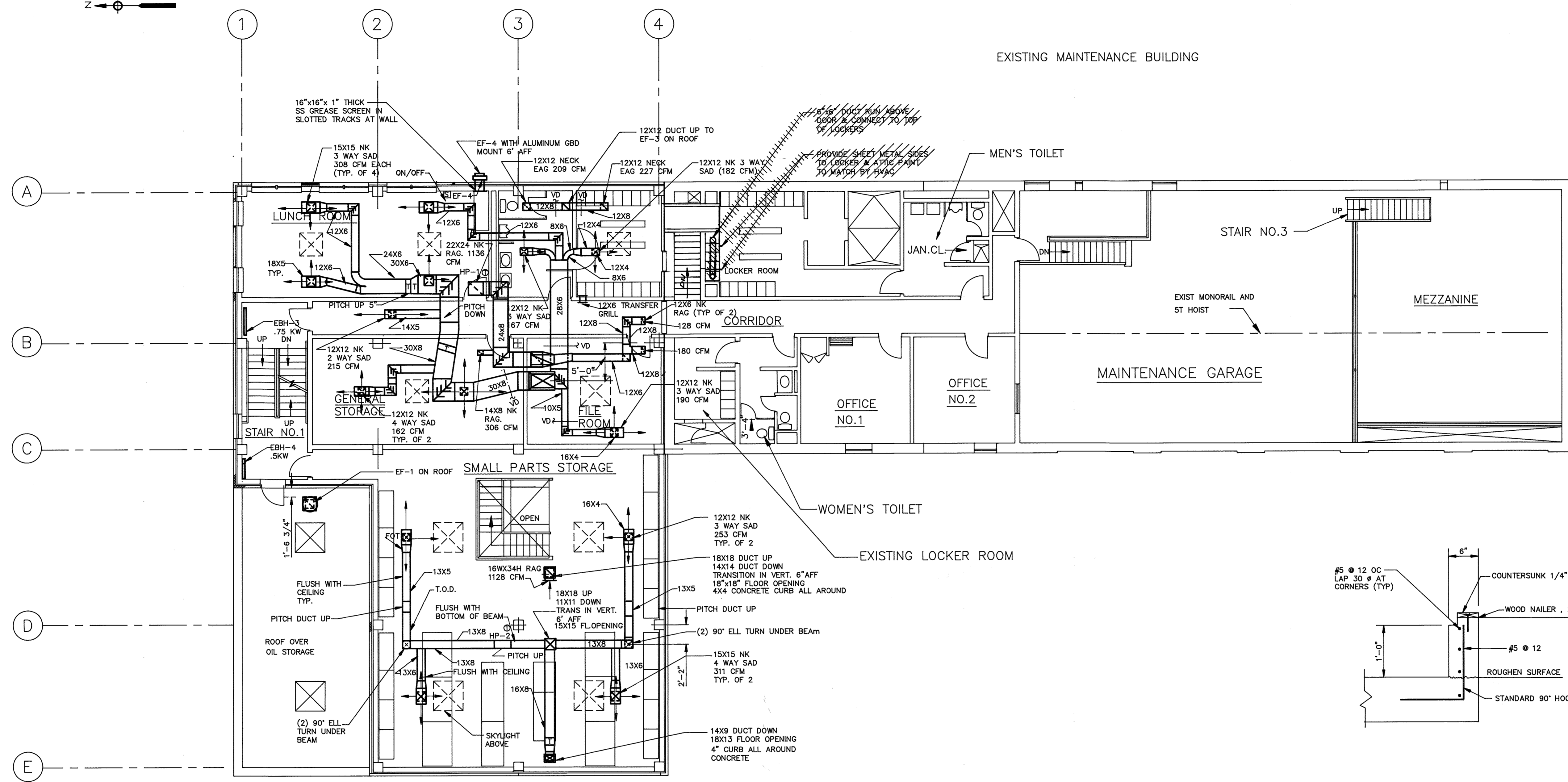
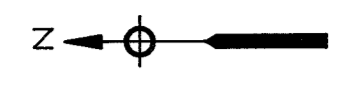


DES:	J.S. Hughes				
DRN:	P. Medina	MC	3	RECORD DRAWING SEE SUPPLEMENTAL SH. H-2A	11/3/91
CHK:	J.S. Hughes	DZG	2	ADDENDUM #5	11/2/91
DATE:	12/7/91		1	REVISED FOR BIDDING	1/5/92
BY			NO.	REVISION	DATE

HVAC
MAINTENANCE BUILDING
FIRST FLOOR PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET
 165 OF 226
 H-2

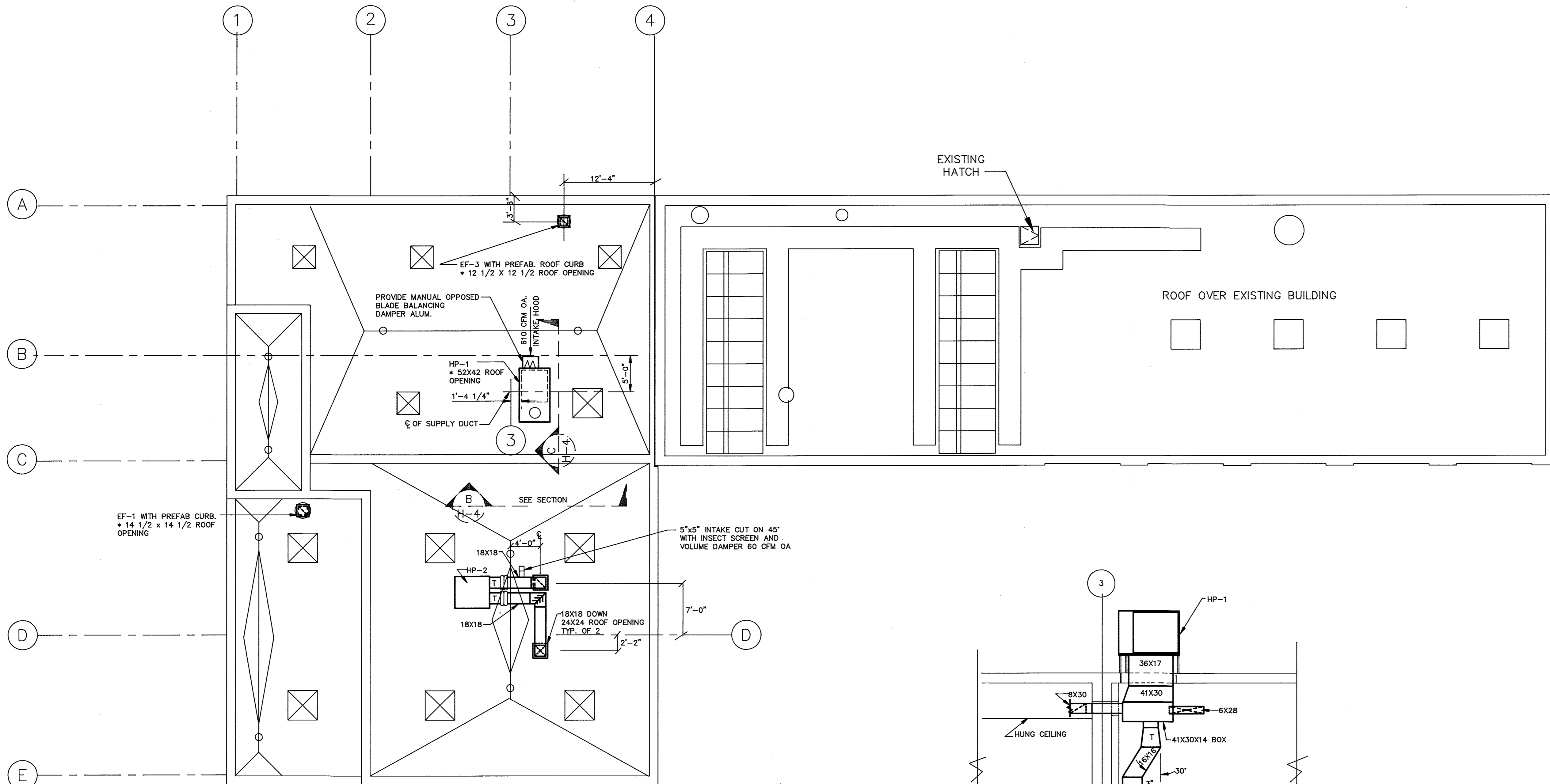


CONCRETE ROOF CURB
DETAIL "D"
SCALE: 1"=1'-0"

SECOND FLOOR PLAN
SCALE: 1/8"=1'-0"

- NOTES:
1. DUCTWORK AT SECOND FLOOR TO BE GALVANIZED STEEL EXCEPT DUCT THROUGH WALL AT EF-4 TO BE ALUMINUM.
 2. SEE SECTIONS "B" AND "C" ON SHEET H-4 FOR DUCTWORK BELOW HP-1.

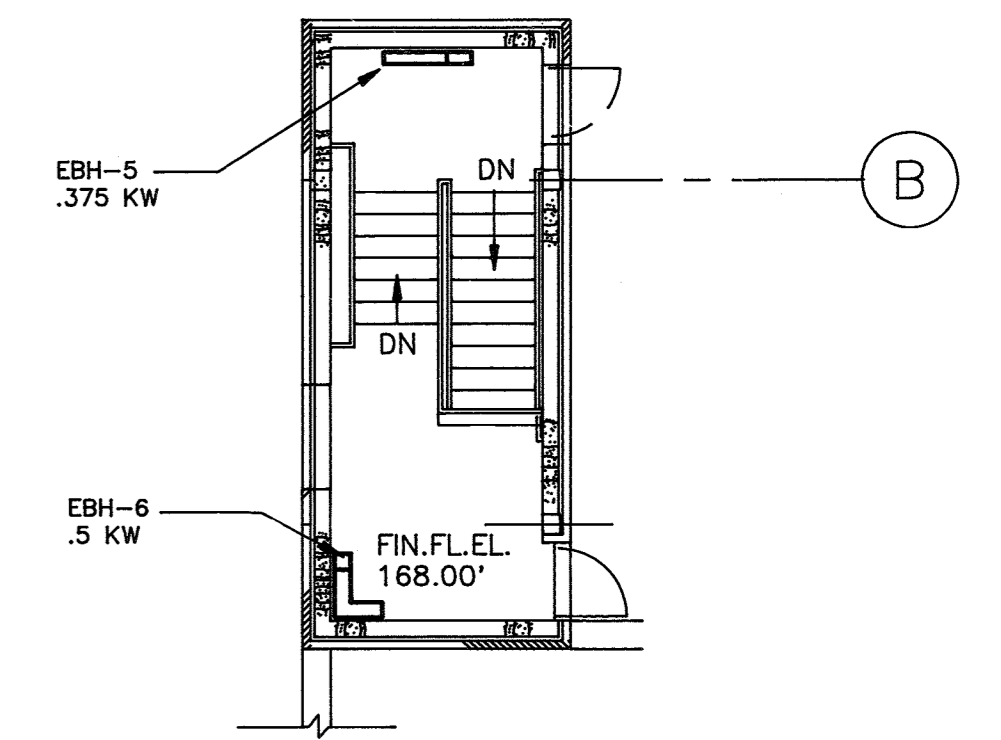
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DIRECTOR OF PUBLIC WORKS: <i>[Signature]</i> 12/9/91 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES: <i>[Signature]</i> 12/9/91		M&E Metcalf & Eddy CHIEF, BUREAU OF ENGINEERING: <i>[Signature]</i> 12/9/91 CHIEF, UTILITY DESIGN DIVISION: <i>[Signature]</i> 12/9/91		STATE OF MARYLAND JONATHAN WINTROP DOANE No. 15140 REGISTERED PROFESSIONAL ENGINEER		DES: <i>J.S. Hughes</i> DRN: <i>P. Madala</i> CHK: <i>J.S. Hughes</i> DATE: 12/7/91		HVAC MAINTENANCE BUILDING SECOND FLOOR PLAN		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 166 OF 226 H-3
				REVISIONS: 2 RECORD DRAWING 1/13/94 1 REVISED FOR BIDDING 3/5/92								



* BASED ON EQUIPMENT FURNISHED

ROOF PLAN

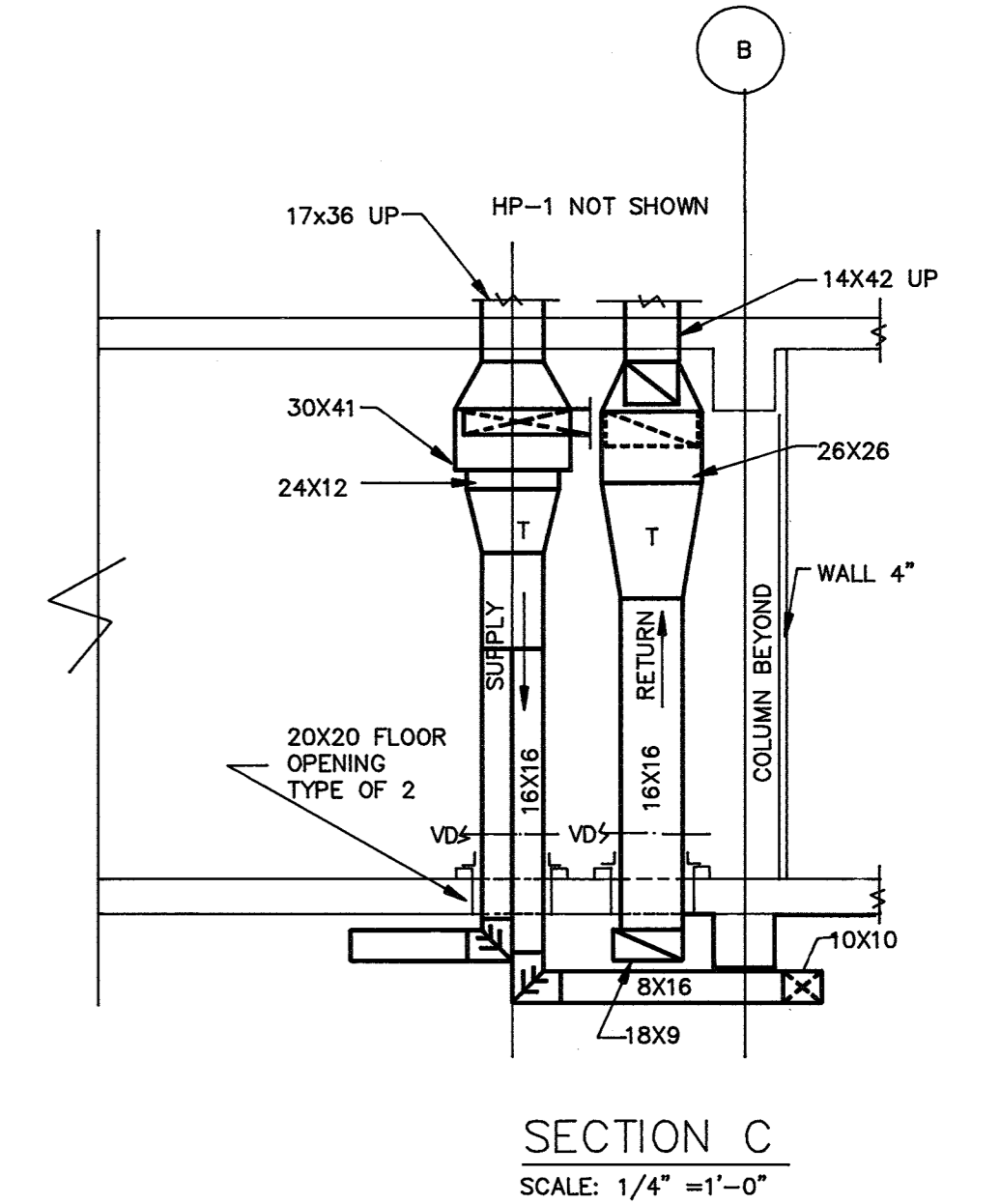
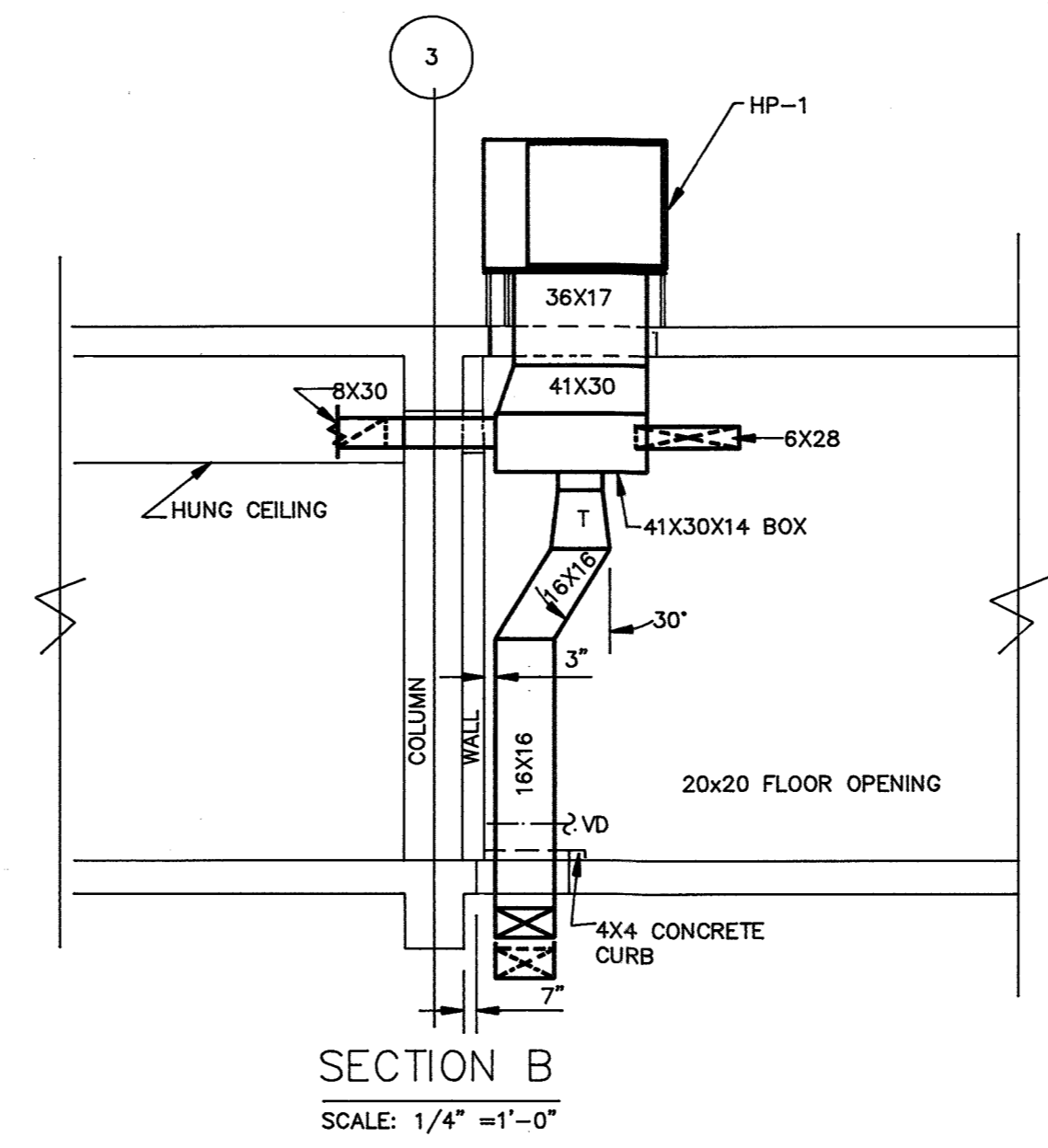
SCALE: 1/8" = 1'-0"



PLAN-PENTHOUSE

FL. EL. 168.00'

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



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/9/91
DIRECTOR OF PUBLIC WORKS DATE

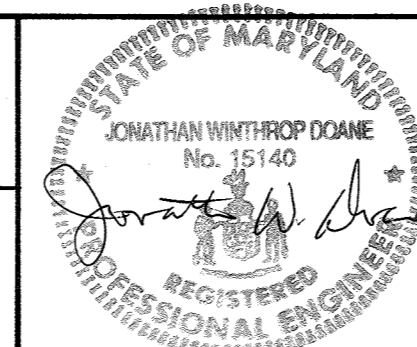
[Signature] 12-9-91
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12-9-91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

[Signature] 12-9-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

[Signature] 12/9/91
REG. PROF. ENGR. DATE



DES: J.S. Hughes			
DRN: P. Mendicino			
CHK: J.S. Hughes	2	RECORD DRAWING	11/3/91
DATE: 12/7/91	1	REVISED FOR BIDDING	3/5/92
BY	NO.	REVISION	DATE

HVAC

**MAINTENANCE BUILDING
ROOF PLAN**

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 167 OF 226

H-4

FAN SCHEDULE

MARK NO.	LOCATION AND AREA SERVED	CAPACITY CFM	STATIC PRESSURE IN. H2O	FAN SPEED MAX.	MIN WHEEL SIZE	MOTOR HP	ELECT. V,PH,HZ	MOTOR SPEED	REMARKS
EF-1	MAINTENANCE BUILDING OIL STORAGE ROOM	915	1/4	1248	10"	1/4	120,1,60	1800	CENTRIFUGAL UP BLAST, ROOF MOUNT, BELT DRIVE, EXPLOSION PROOF
EF-2	MAINTENANCE BUILDING OIL STORAGE ROOM	458	1/4	1550	8.5"	1/20	120,1,60	1550	CENTRIFUGAL SIDEWALL, DIRECT DRIVE, EXPLOSION PROOF
EF-3	MAINTENANCE BUILDING TOILET AND LOCKER ROOMS	436	1/4	1550	8.5"	1/4	120,1,60	1550	CENTRIFUGAL, ROOF MOUNT, DIRECT DRIVE, ODP
EF-4	MAINTENANCE BUILDING LUNCH ROOM	95	3/8	1550	6.5"	1/30	120,1,60	1550	CENTRIFUGAL SIDEWALL, DIRECT DRIVE, EXPLOSION PROOF
EF-5	SOUTH PUMP STATION BASEMENT	4620	1/2	659	24"	1	480,3,60	1800	CENTRIFUGAL ROOF MOUNT, BELT DRIVE, ODP
EF-6	SOUTH PUMP STATION BASEMENT	2490	1/2	831	18"	1/2	480,3,60	1800	CENTRIFUGAL ROOF MOUNT, BELT DRIVE, 2 SPEED
SF-7	SOUTH PUMP STATION ELECTRICAL ROOM	545	3/8	1550	12"	1/12	120,1,60	1550	PROPELLER ROOF SUPPLY, DIRECT 2 SPEED,ODP
EF-8	NORTH PUMP STATION BASEMENT	4620	1/2	659	24"	1	480,3,60	1800	CENTRIFUGAL ROOF MOUNT, BELT DRIVE, ODP
EF-9	NORTH PUMP STATION BASEMENT	2490	1/2	831	18"	1/2	480,3,60	1800	CENTRIFUGAL ROOF MOUNT, BELT DRIVE, 2 SPEED
SF-10	NORTH PUMP STATION ELECTRICAL ROOM	545	3/8	1550	12"	1/12	120,1,60	1550	PROPELLER ROOF SUPPLY, DIRECT 2 SPEED,ODP
EF-11 A&B	DIGESTER PIPE GALLERY EXTENSION	28,850	1/8	628	48"	5	480,3,60	1800	PROPELLER ROOF EXHAUST, BELT DRIVE, ODP, MOTOR SERVICE FACTOR 1.15 6 BLADE PROPELLER
SF-12 A&B	DIGESTER PIPE GALLERY EXTENSION	28,850	1/8	756	48"	5	480,3,60	1800	PROPELLER ROOF EXHAUST, BELT DRIVE, ODP, MOTOR SERVICE FACTOR 1.15 6 BLADE PROPELLER
EF-13 A&B	EXISTING DIGESTER GALLERY	22,700	1/4	408	48"	5	480,3,60	1800	CENTRIFUGAL ROOF MOUNT, BELT DRIVE, ODP, MOTOR SERVICE FACTOR 1.15
SF-14	EXISTING DIGESTER GALLERY	55,000	1/8	565	60"	10	480,3,60	1800	PROPELLER ROOF SUPPLY, BELT DRIVE, ODP, MOTOR SERVICE FACTOR 1.15

ELECTRICAL UNIT HEATER SCHEDULE

MARK NO.	LOCATION	LOAD	ELECTRICAL V,PH,HZ	REMARKS
EUH-1	MAINTENANCE BUILDING OIL STORAGE	10 KW	480,3,60	EXPLOSION PROOF SPARK PROOF
EUH-2	SOUTH PUMP STATION BASEMENT	20 KW	480,3,60	
EUH-3	SOUTH PUMP STATION BASEMENT	20 KW	480,3,60	
EUH-4	NORTH PUMP STATION BASEMENT	20 KW	480,3,60	
EUH-5	NORTH PUMP STATION BASEMENT	20 KW	480,3,60	

AIR CONDITIONING AND HEAT PUMP SCHEDULE

MARK NO.	WINTER CONDITIONS					SUMMER CONDITIONS						FAN CAPACITY				LOCATION	
	HEAT CAP. MBTU/HR.	INLET AIR TEMP F	OUTLET AIR TEMP F	HEAT PUMP KW	BACK UP ELECTR.		COOL CAP MBTU/HR	INLET AIR TEMP. F		OUTLET AIR TEMP. F		COMPRESSOR KW	FLOW CFM	EXT. S.P. H2O	RPM		MOTOR HP
					STAGES	KW		DRY BULB	WET BULB	DRY BULB	WET BULB						
HP-1	64.6 *	58.9	76.8	10.4	2	27	90.9	81.0	67.0	-	-	10.4	3300	.50	1052	2	MAINTENANCE BUILDING
HP-2	43.1 *	68.5	85.0	6.9	1	15	64.2	78.4	65.2	-	-	6.9	2400	.50	950	1	MAINTENANCE BUILDING
ACU-1	12.2**	60.0	95.0	1.49	2	5.0	13.5	-	-	-	-	0.48	320	-	-	1/8	SOUTH PUMP STATION
ACU-2	12.2**	60.0	95.0	1.49	2	5.0	13.5	-	-	-	-	0.48	320	-	-	1/8	NORTH PUMP STATION
ACU-3	6.0**	60.0	80.0	0.63	2	2.3	6.8	-	-	-	-	0.21	280	-	-	1/15	MAINTENANCE BUILDING
ACU-4	6.0**	60.0	80.0	0.63	2	2.3	6.8	-	-	-	-	0.21	280	-	-	1/15	MAINTENANCE BUILDING
ACU-5	6.0**	60.0	80.0	0.63	2	2.3	6.8	-	-	-	-	0.21	280	-	-	1/15	MAINTENANCE BUILDING

* BASED ON 37 F OUTSIDE AIR TEMPERATURE.
** BASED ON 47 F OUTSIDE AIR TEMPERATURE

ACU-1 THROUGH ACU-5 ARE TERMINAL PACKAGED HEAT PUMP WITH BACK UP ELECTRIC AND TWO-STAGE HEATING AND COOLING. 280V, 1PH, 60HZ

ELECTRIC HEATER SCHEDULE

MARK NO.	LOCATION	TYPE	CAPACITY	ELECTRICAL V,PH,HZ	REMARKS
EBH-1	MAINTENANCE BUILDING STAIRWELL NO. 1	BASEBOARD	1 KW	208,1,60	4 FT X 250 WATTS/FT
EBH-2	MAINTENANCE BUILDING STAIRWELL NO. 1	BASEBOARD	1.5 KW	208,1,60	6 FT X 250 WATTS/FT
EBH-3	MAINTENANCE BUILDING STAIRWELL NO. 1	BASEBOARD	.75 KW	208,1,60	3 FT X 250 WATTS/FT
EBH-4	MAINTENANCE BUILDING STAIRWELL NO. 1	BASEBOARD	.5 KW	208,1,60	2 FT X 250 WATTS/FT
EBH-5	MAINTENANCE BUILDING STAIRWELL NO. 1	BASEBOARD	.375 KW	208,1,60	3 FT X 125 WATTS/FT
EBH-6	MAINTENANCE BUILDING STAIRWELL NO. 1	BASEBOARD	.50 KW	208,1,60	4 FT X 125 WATTS/FT CORNER UNIT.
EDH-1	SOUTH PUMP STATION ELECTRICAL ROOM	DUCT HEATER	5 KW	480,3,60	3 STAGE
EDH-2	NORTH PUMP STATION ELECTRICAL ROOM	DUCT HEATER	5 KW	480,3,60	3 STAGE

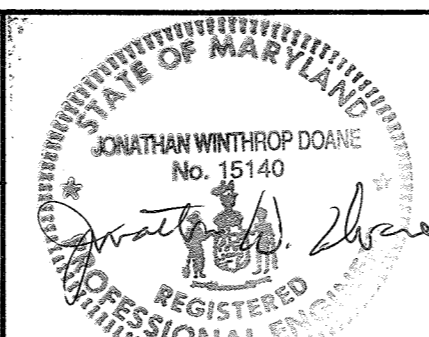
1. ALL EBH'S WITH INTEGRAL THERMOSTATS RATED FOR FULL VOLTAGE
2. EDH 1 & 2 WITH 3 STAGE THERMOSTATS FOR 480V, 3PH POWER

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Ramesh K. Kumar* 3/6/92
Act. Chief, Bureau of Engineering: *O. J. Donahue* 3-6-92
Chief, Bureau of Environmental Services: *John O'Hara* 3/6/92
Act. Chief, Utility Design Division: *Robert O'Neil* 3-6-92

M&E Metcalf & Eddy

Jonathan W. Dornie 3/6/92
REG. PROF. ENGR. DATE

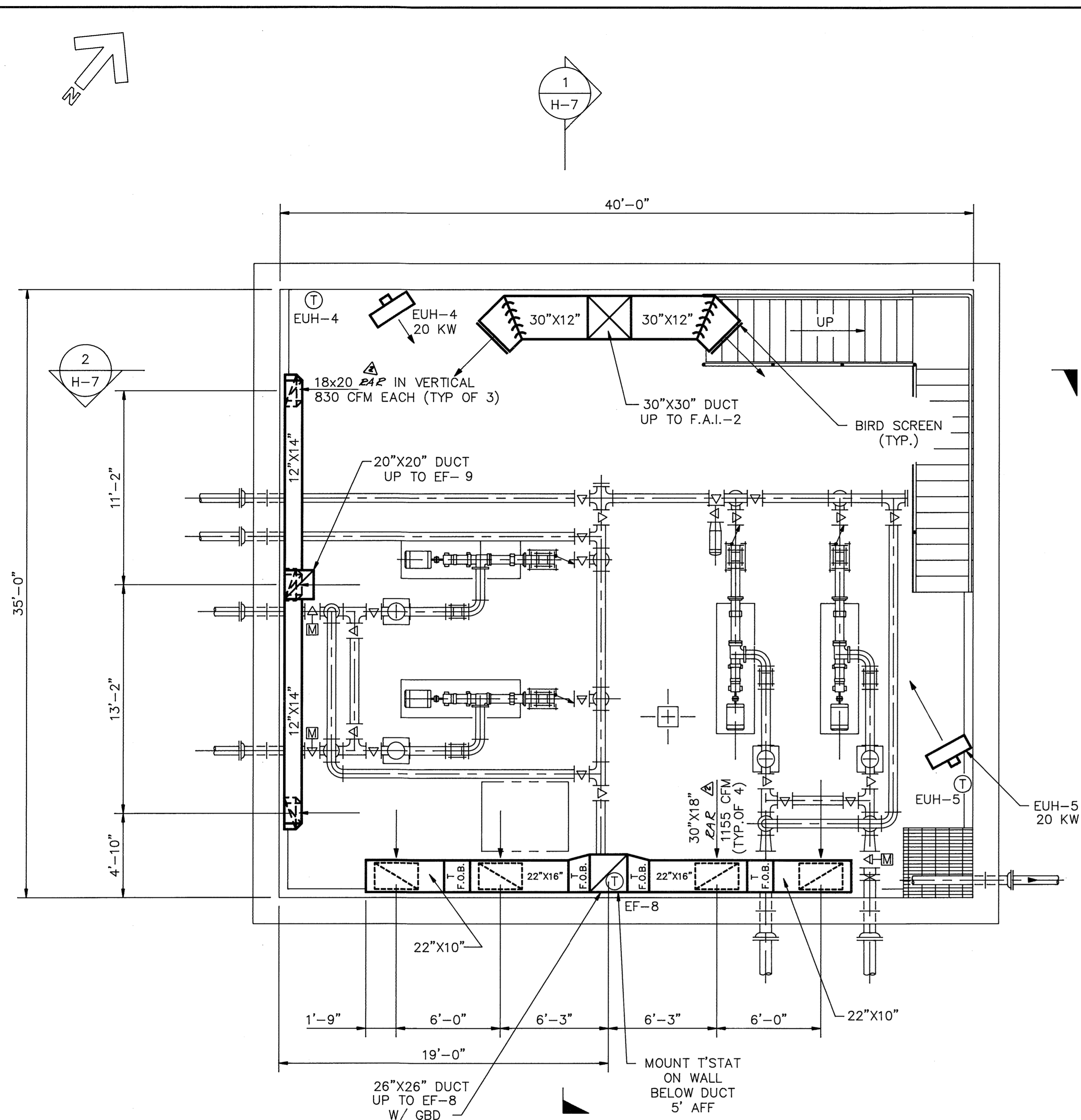


DES: S.S. HUGHES			
DRN: P. NIKENDEKA			
CHK: S.S. HUGHES	2	RECORD DRAWING	11/3/91
DATE: 12/17/91	1	REVISED FOR BIDDING	3/9/92
BY	NO.	REVISION	DATE

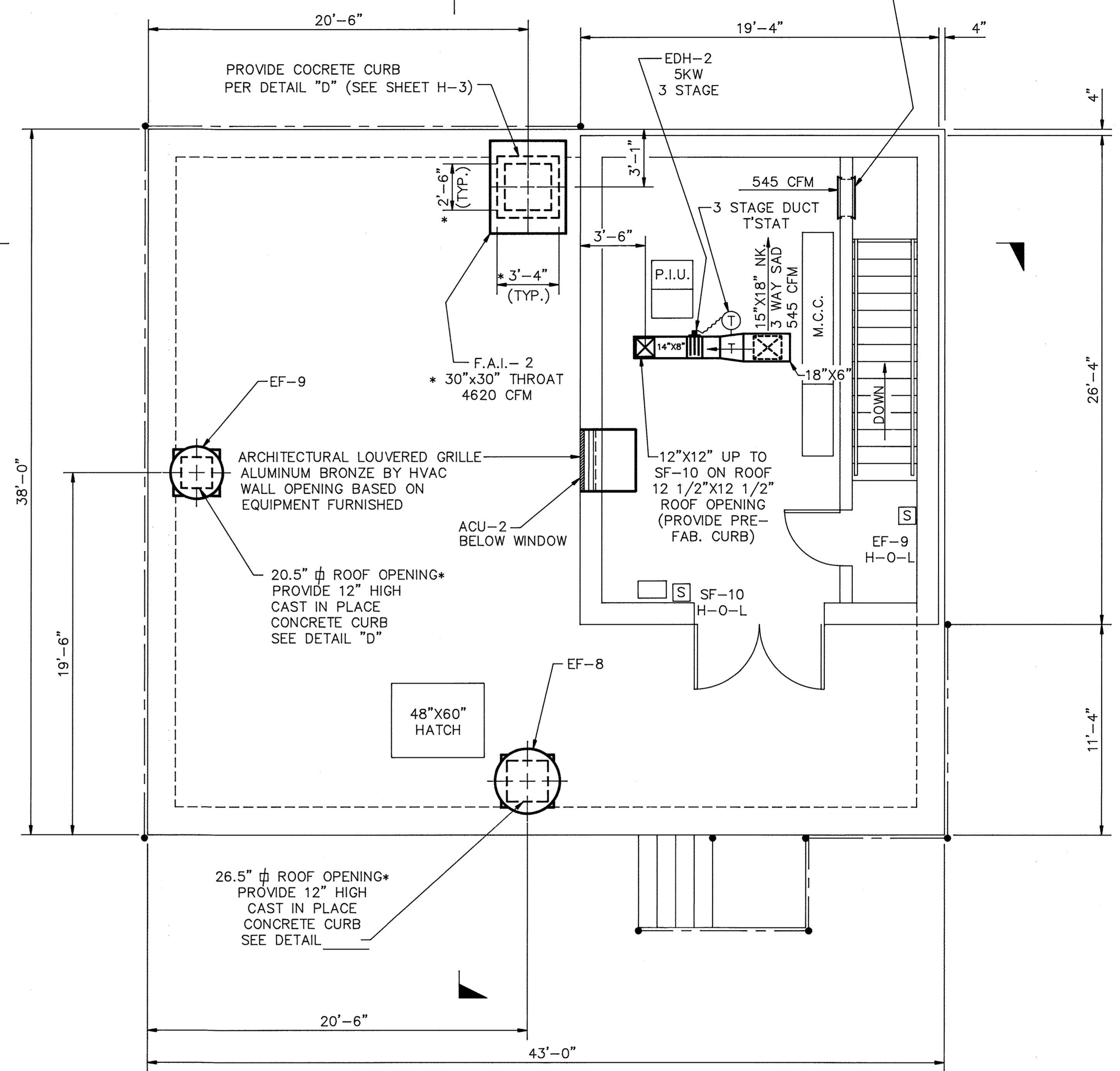
HVAC
SCHEDULES

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 168 OF 226
H-5



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



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

NOTE: * ACTUAL DIMENSION BASED UPON EQUIPMENT FURNISHED.

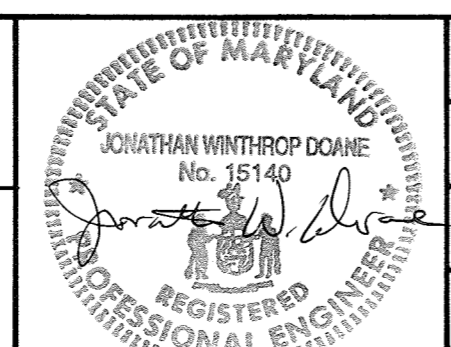
NOTE:
1. ALL DUCTWORK TO BE ALUMINUM 22 B&S GAUGE MINIMUM.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 12/9/91
 Chief, Bureau of Engineering: *John J. O'Hara* 12-9-91
 Chief, Bureau of Environmental Services: *John J. O'Hara* 12-9-91
 Chief, Utility Design Division: *John J. O'Hara* 12-9-91

M&E Metcalf & Eddy

Jonathan W. Drake 12/9/91
 REG. PROF. ENGR. DATE

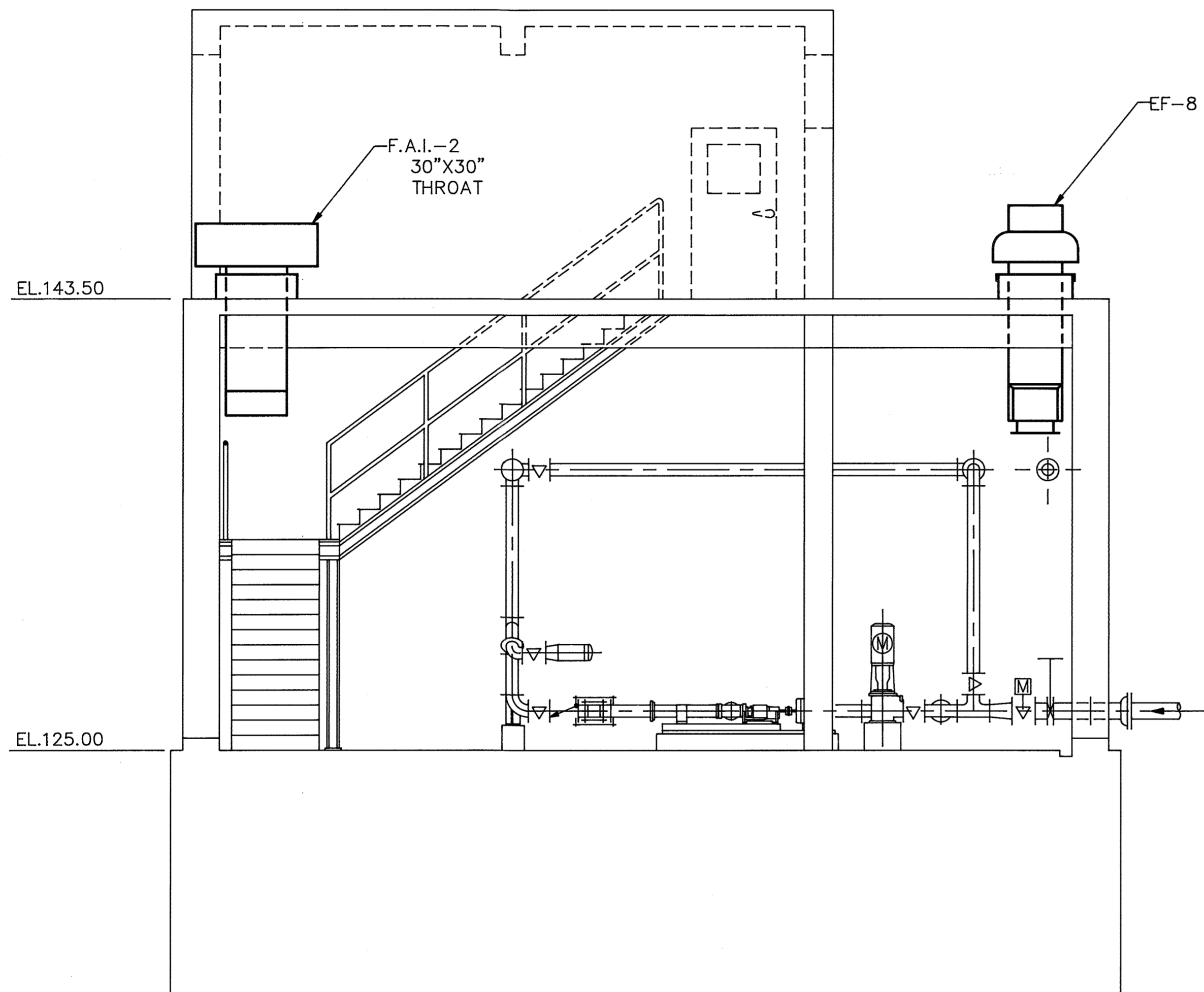


DES:	J.S. Hughes			
DRN:	R. Medel/6			
CHK:	J.S. Hughes			
DATE:	12/7/91			
BY	NO.	REVISION	DATE	
	3	RECORD DRAWING	11/3/91	
	2	ADDENDUM #3	11/14/91	
	1	REVISED FOR BIDDING	3/2/92	

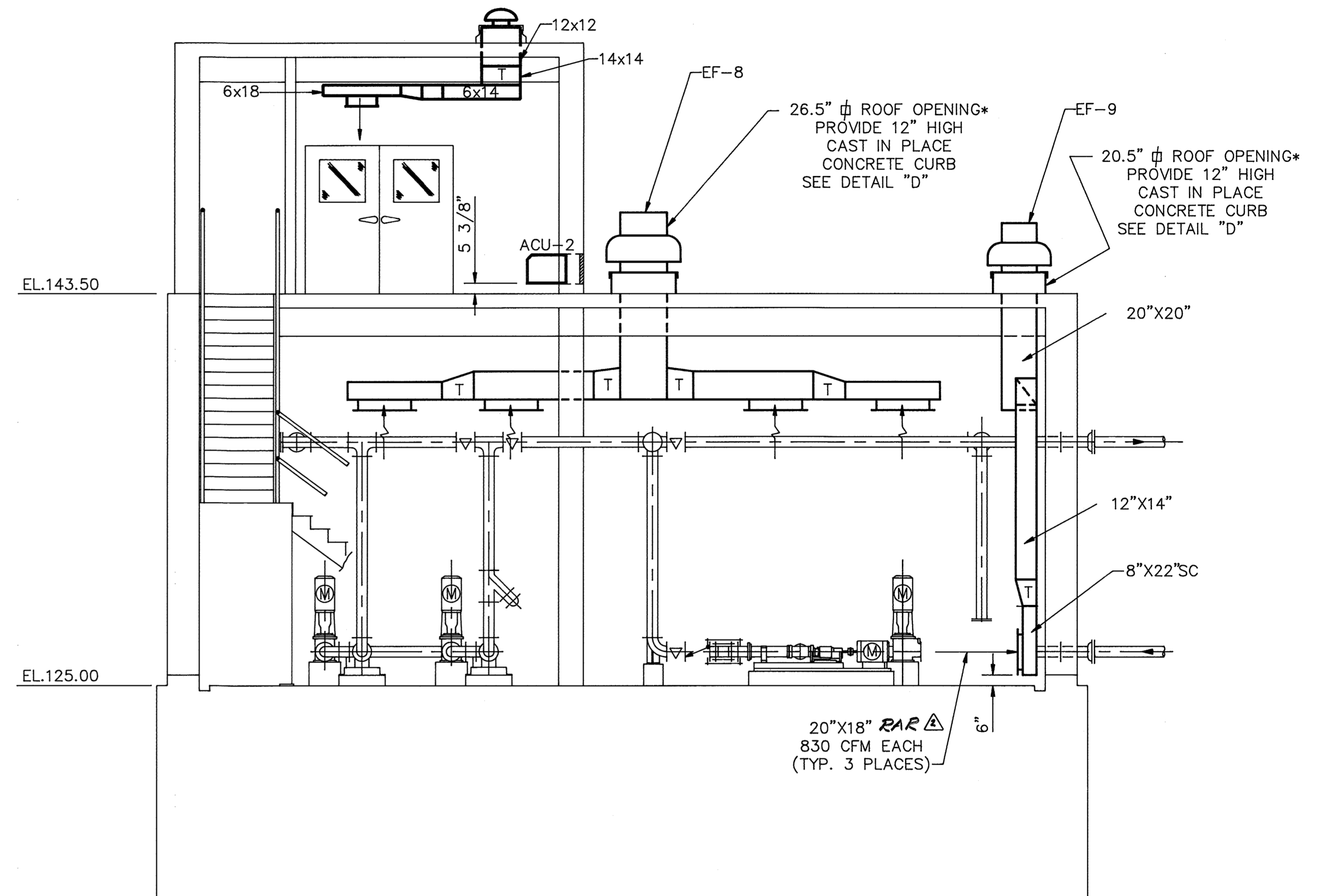
HVAC
NORTH PUMP STATION
PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 169 OF 226
H-6



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



SECTION 2
SCALE: 1/4"=1'-0"

NOTE: * ACTUAL DIMENSION BASED UPON EQUIPMENT FURNISHED.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James W. Lane 12/9/91
DIRECTOR OF PUBLIC WORKS DATE

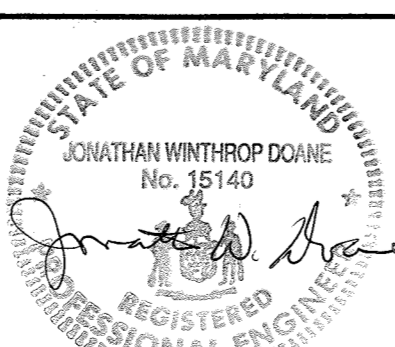
William J. Kelly 12/9/91
CHIEF, BUREAU OF ENGINEERING DATE

John J. Hase 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Orlando 12-9-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Downe 12/9/91
REG. PROF. ENGR. DATE

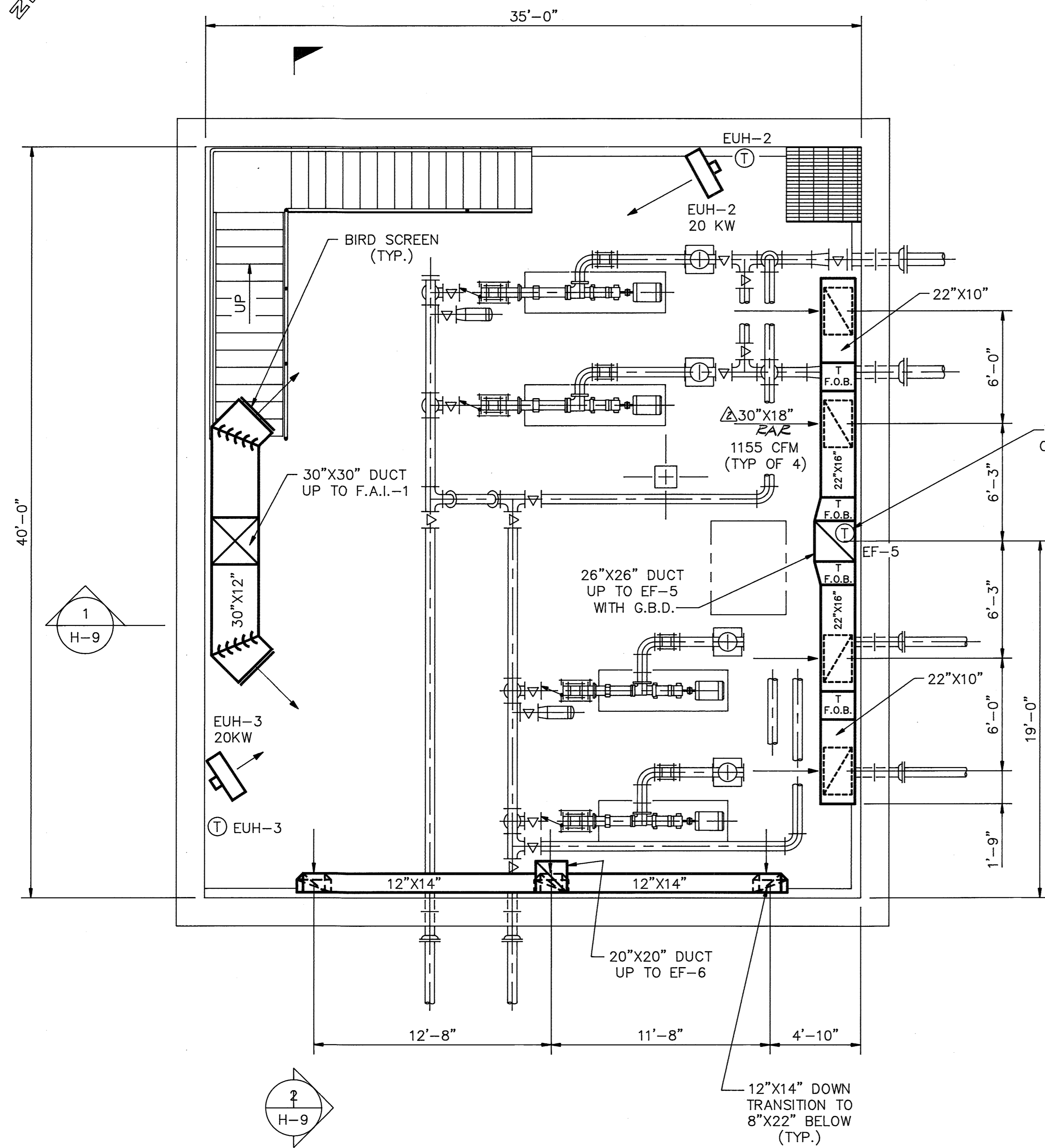
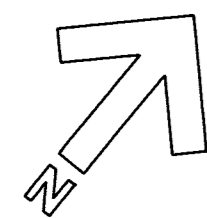


DES:	J.S. Hughes			
DRN:	P.M. Smith			
CHK:	J.S. Hughes	12/9/91	3	RECORD DRAWING
			2	ADDENDUM #5
			1	REVISED FOR BIDDING
DATE:	12/9/91	BY	NO.	REVISION
				DATE

HVAC
NORTH PUMP STATION
SECTIONS

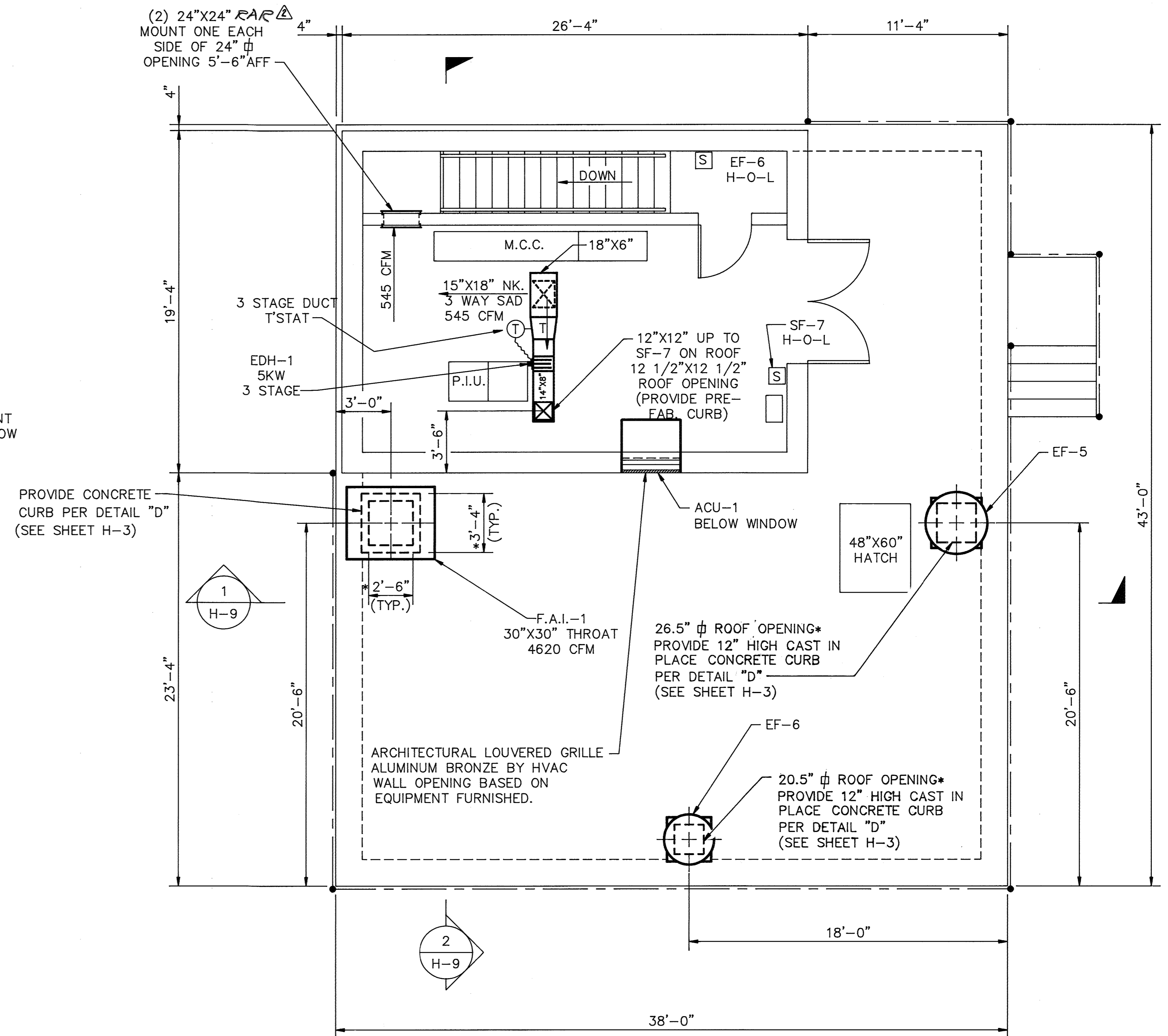
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 170 OF 226
H-7



BASEMENT PLAN

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



UPPER PLAN

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

NOTES:

1. ALL DUCTWORK TO BE ALUMINUM 22 B&S GAGE MINIMUM.

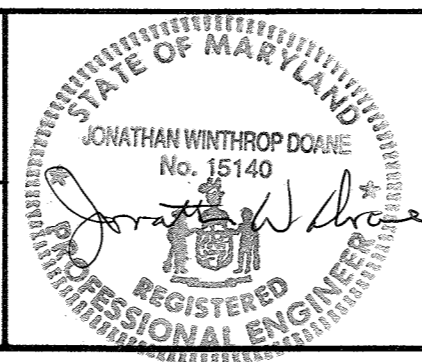
NOTE: * ACTUAL DIMENSION BASED UPON EQUIPMENT FURNISHED.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *James M. Lee* 12/9/91
 Chief, Bureau of Engineering: *Michael R. Kelly* 12-9-91
 Chief, Bureau of Environmental Services: *John J. O'Hara* 12/9/91
 Chief, Utility Design Division: *Dee Dee Kim* 12-9-91

M&E Metcalf & Eddy

Registered Professional Engineer: *Jonathan W. Brown* 12/9/91

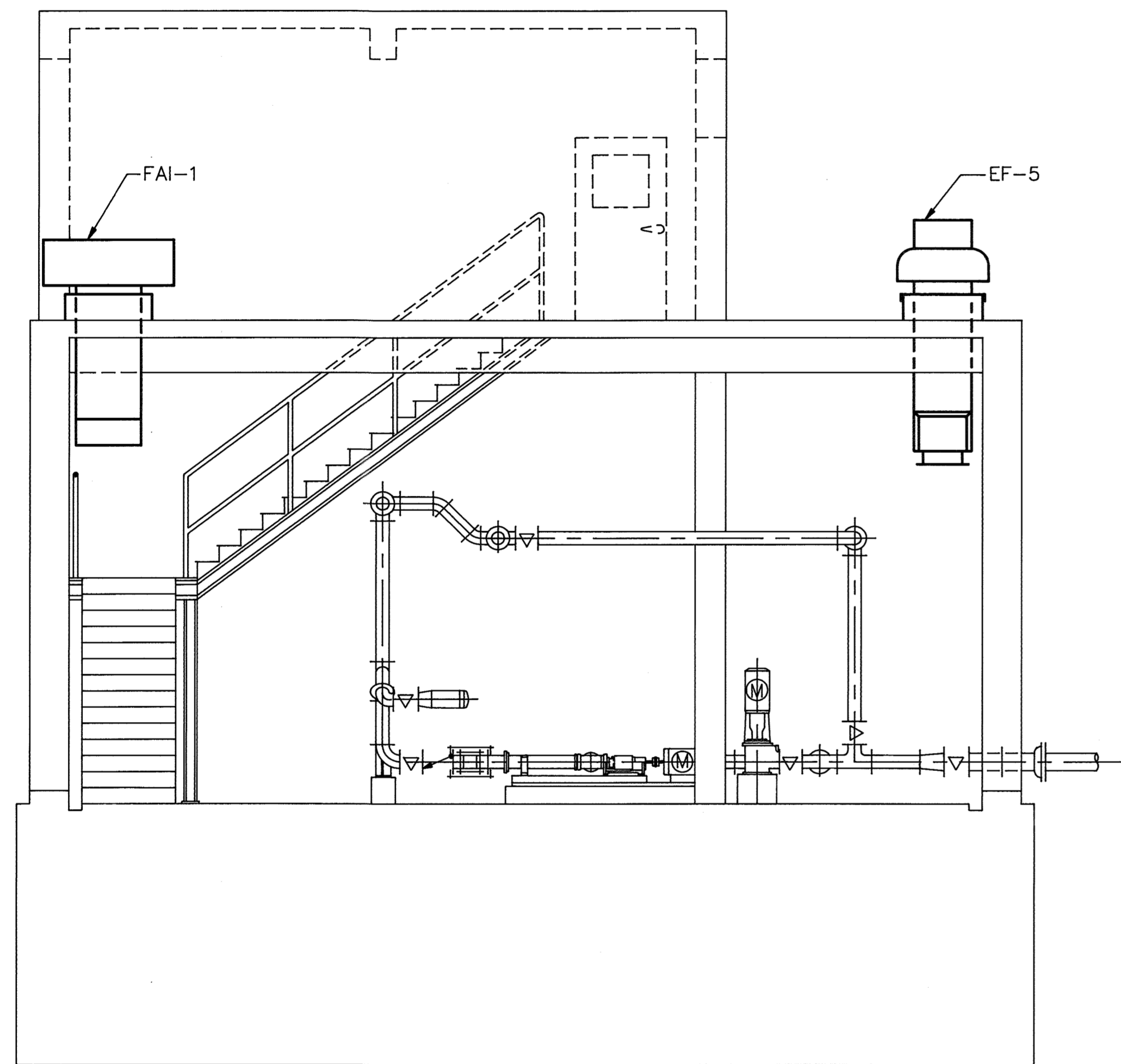


DES:	J.S. Hughes			
DRN:	P. Mordike			
CHK:	J.S. Hughes	NO. 3	RECORDED DRAWING	1/13/92
		NO. 2	ADDENDUM #5	4/1/92
DATE:	12/17/91	NO. 1	REVISED BY BIDDING	2/5/92
BY:		NO.	REVISION	DATE

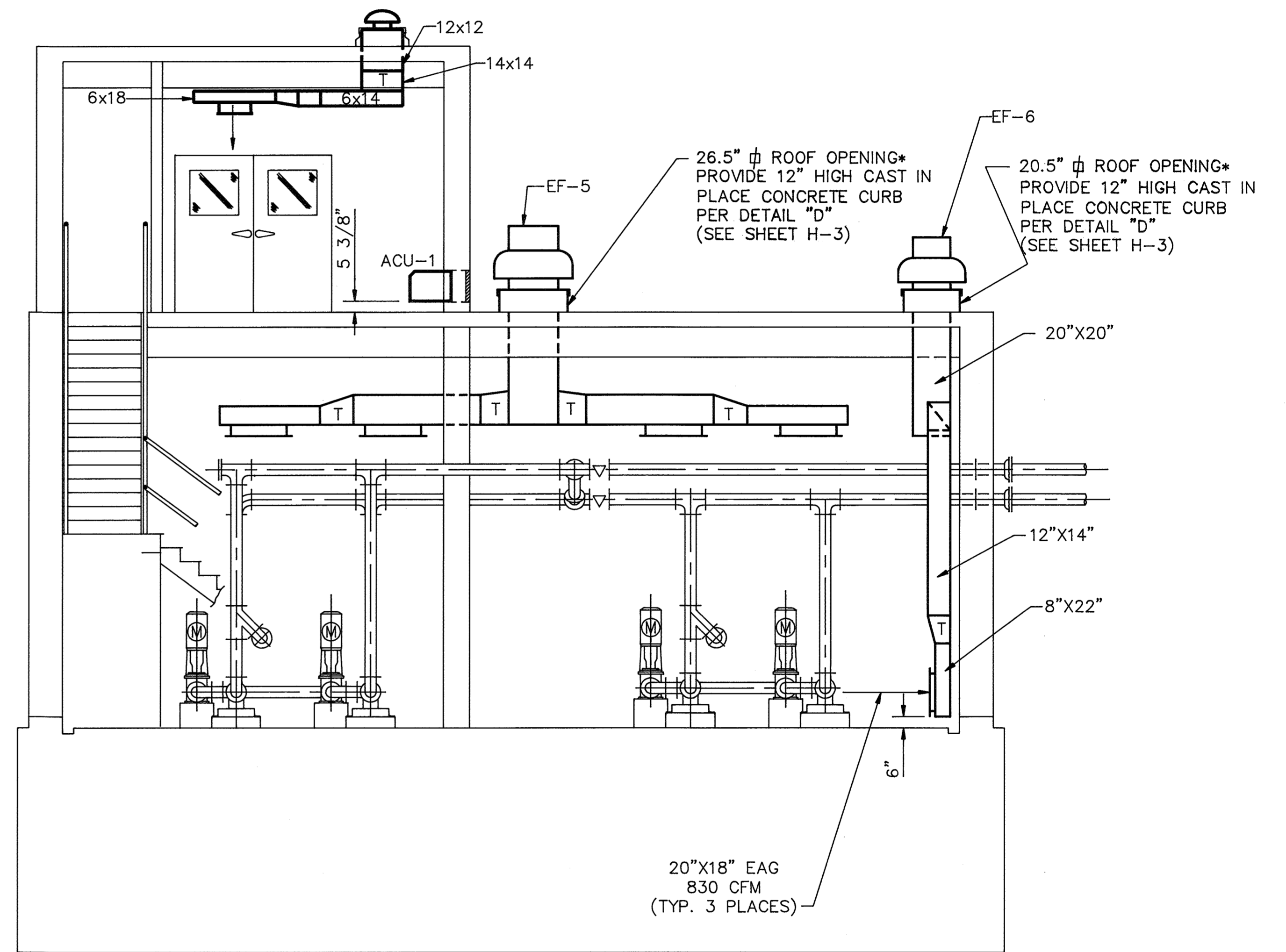
HVAC
SOUTH PUMP STATION
PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 171 OF 226
H-8



SECTION 1
SCALE: 1/4" = 1'-0" H-8



SECTION 2
SCALE: 1/4" = 1'-0" H-8

NOTE: * ACTUAL DIMENSION BASED UPON EQUIPMENT FURNISHED.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Samuel J. Lee 12/9/91
DIRECTOR OF PUBLIC WORKS DATE

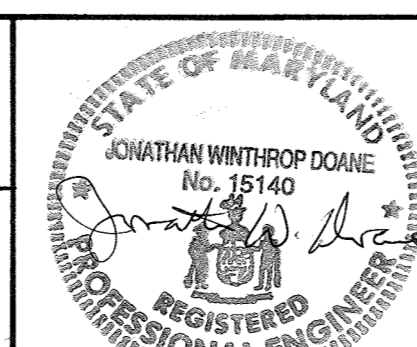
Michael J. Kelly 12-9-91
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 12/9/91
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

David L. ... 12-9-91
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. ... 12/9/91
REG. PROF. ENGR. DATE

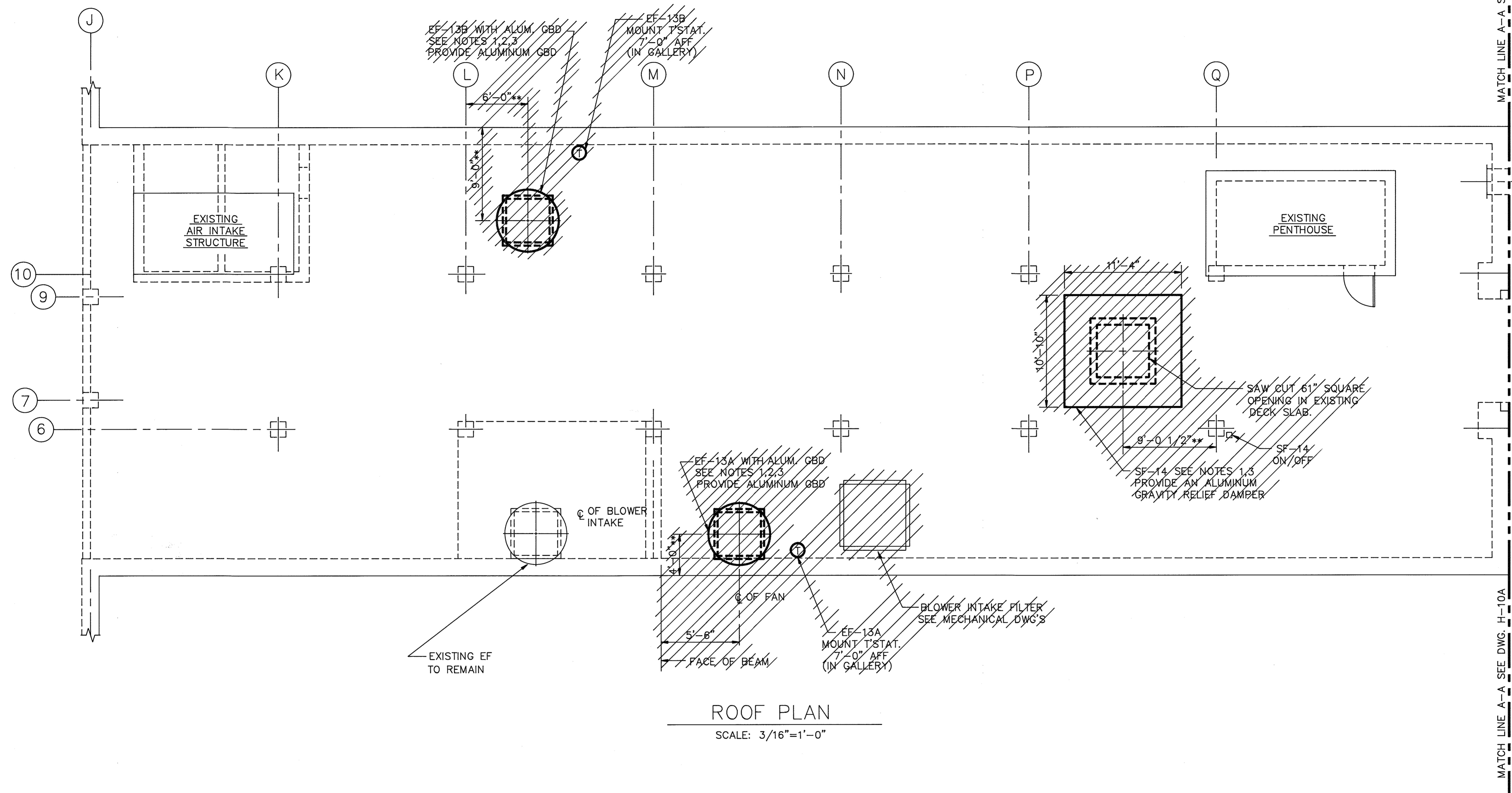
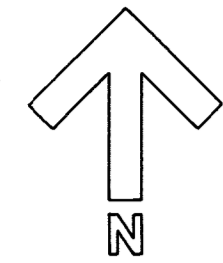


DES:	J.S. Hughes				
DRN:	R. ...				
CHK:	J.S. Hughes	MC	2	RECORD DRAWING	
DATE:	12/7/91		1	REVISED FOR BIDDING	1/7/92
BY		NO.		REVISION	DATE

HVAC
SOUTH PUMP STATION
SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 172 OF 226
H-9



ROOF PLAN
SCALE: 3/16"=1'-0"

NOTES

1. REMOVE ALL EXISTING ELECTRICAL CONDUIT SUPPORTS BELOW FAN AND RE-INSTALL ON ADJACENT SIDES OF OPENING.
2. SAW CUT 50 1/2" SQUARE OPENING IN EXISTING CONCRETE DECK. PROVIDE TEMPORARY BRACING OF SLAB AND PROTECT ALL EXISTING PIPE, CONDUIT, AND EQUIPMENT BELOW.
3. INSTALL NEW 12" TALL CONCRETE CURB PER DETAIL "D".
4. ** APPROXIMATE LOCATION. TO BE FIELD LOCATED TO MINIMIZE CONFLICT WITH SUPPORTS BELOW.

LEGEND:

- DENOTES EXISTING EQUIPMENT
- DENOTES NEW EQUIPMENT

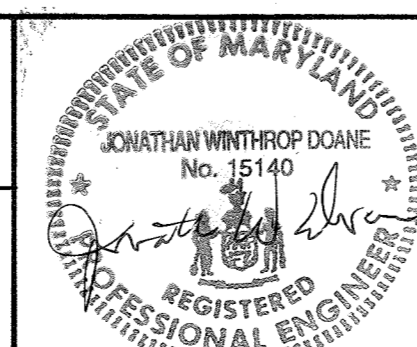
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. Obara 3/6/92 DATE ACT. CHIEF, BUREAU OF ENGINEERING 3-6-92 DATE
DIRECTOR OF PUBLIC WORKS

John J. Obara 3/6/92 DATE ACT. CHIEF, UTILITIES DESIGN DIVISION 3-6-92 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

M&E Metcalf & Eddy

Jonathan W. Doane 3/6/92 DATE
REG. PROF. ENGR.



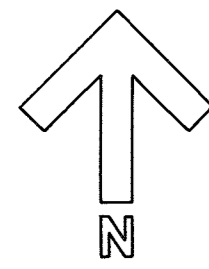
DES: S.S. HOOPER			
DRN: P. MURPHY			
CHK: S.S. HOOPER	10	3	RECORD DRAWING
	02G	2	ADDENDUM #5
		1	REVISED FOR BIDDING
DATE: 9/27/91	BY	NO.	REVISION
			DATE

HVAC
DIGESTER PIPE GALLERY
PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

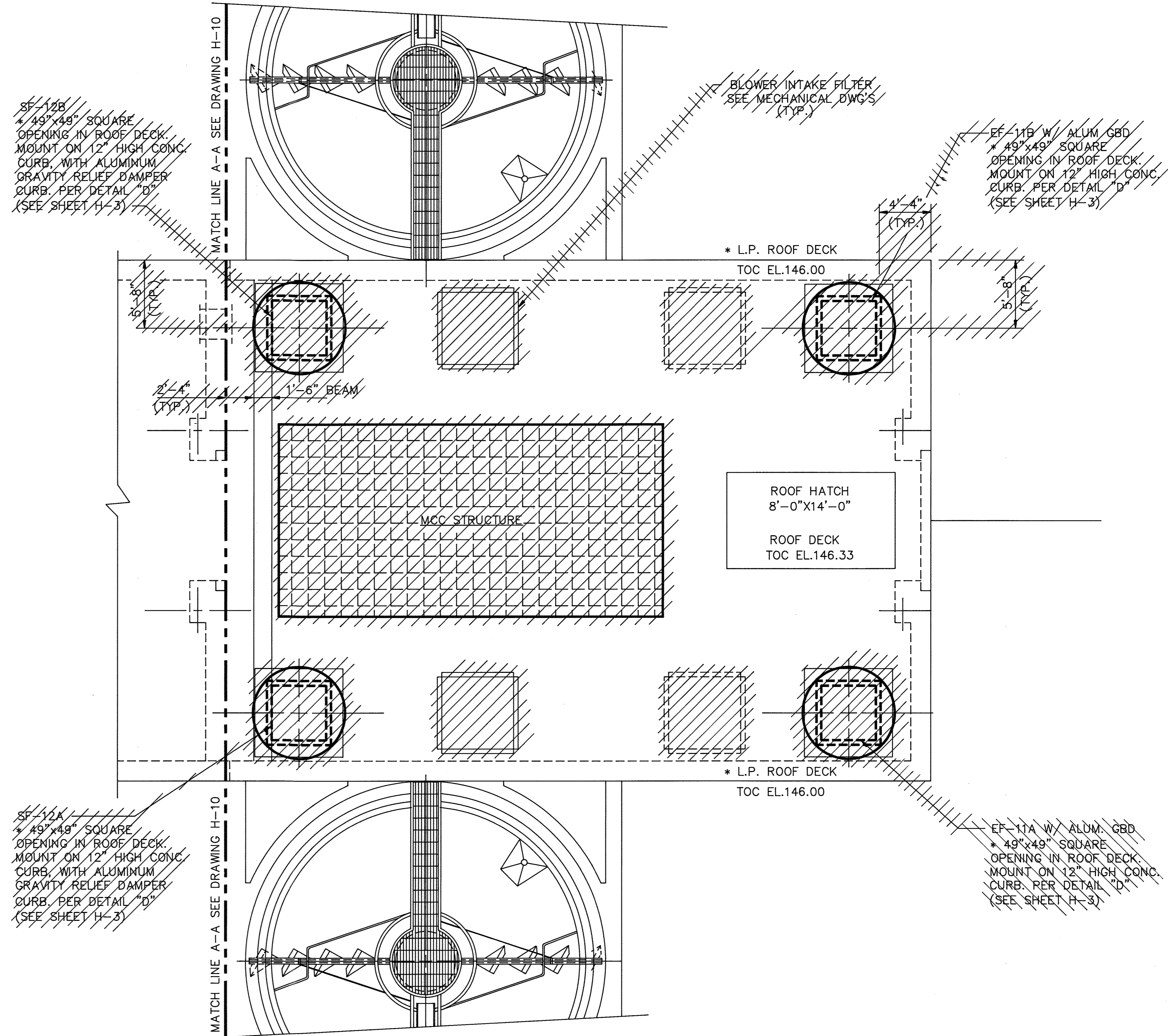
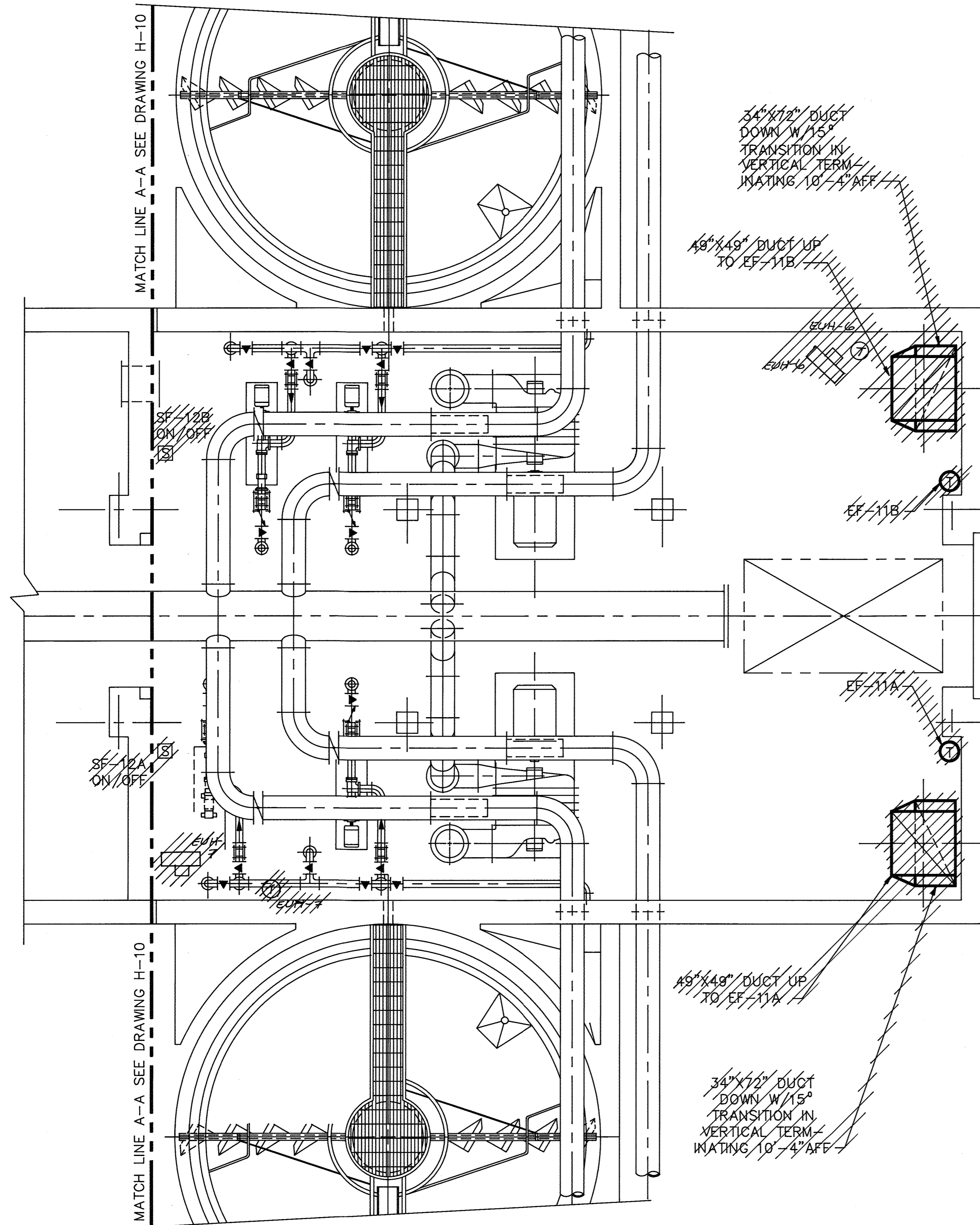
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 173 OF 226
H-10



GRAVITY THICKENER
NO. 3

GRAVITY THICKENER
NO. 3



GRAVITY THICKENER
NO. 4

GRAVITY THICKENER
NO. 4

HVAC DUCTING PLAN
SCALE: 3/16"=1'-0"

HVAC ROOF PLAN
SCALE: 3/16"=1'-0"

NOTE:

1. ALL DUCTWORK TO BE ALUMINUM 22 B&S GAGE MINIMUM.
2. ALL MECHANICAL & ELECTRICAL WORK SHOWN ON THIS DRAWING WAS DELETED. ONLY THE STRUCTURAL WORK WAS CONSTRUCTED.
3. FANS & UNIT HEATERS WERE DELETED. ELECTRICAL WORK FOR UNIT HEATERS 6&7 WAS INSTALLED.

LEGEND:

- DENOTES EXISTING EQUIPMENT
- DENOTES NEW EQUIPMENT

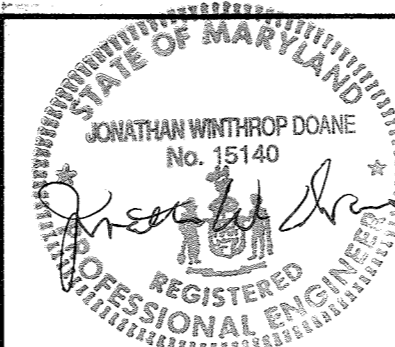
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Brien 3/6/92 3-6-92
DIRECTOR OF PUBLIC WORKS DATE ACT. CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Brien 3/6/92 3-6-92
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE ACT. CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Whitrop Doane 3/6/92
REG. PROF. ENGR. DATE



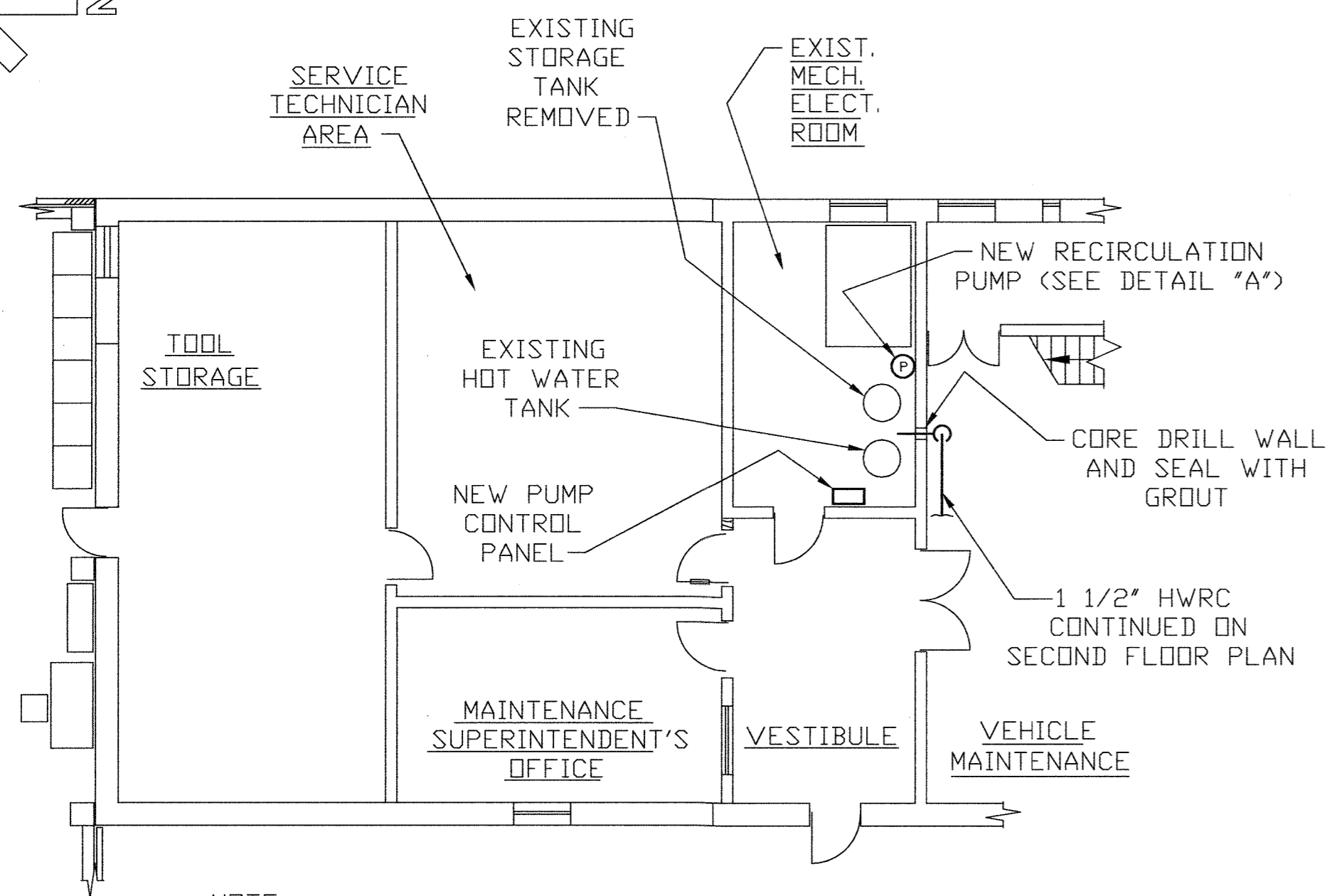
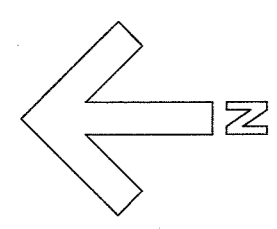
DES:	J.S. HANNA				
DRN:	P. M. GARDNER				
CHK:	J.S. HANNA	3	RECORD DRAWING	11/3/92	
		2	ADDENDUM #5	11/6/92	
DATE:	12/7/91	1	REVISED FOR BIDDING	3/5/92	
BY	NO.		REVISION	DATE	

HVAC
DIGESTER PIPE GALLERY
EXTENSION - PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 174 OF 226
H-11



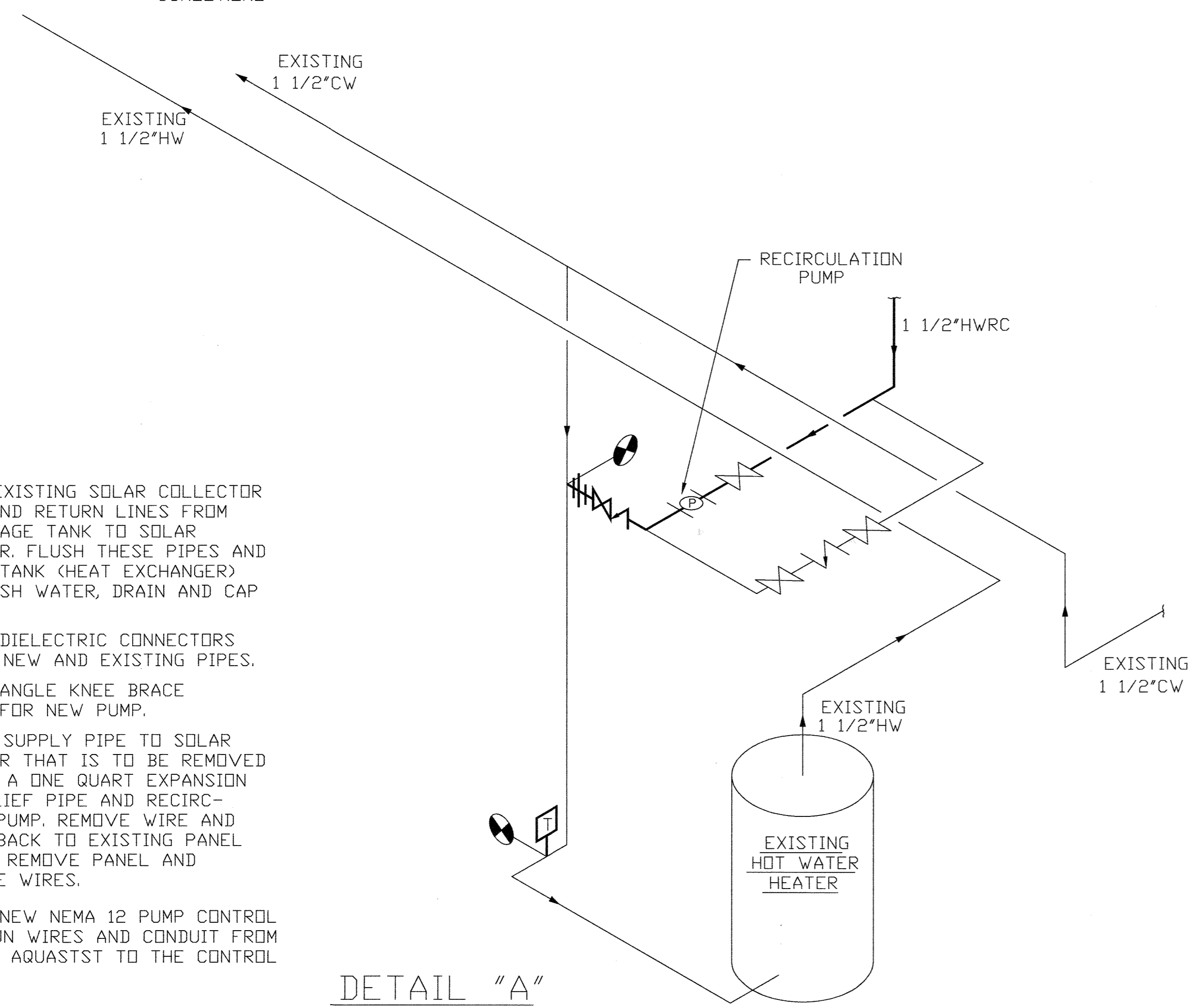
NOTE:
FOR PIPING AND VALVING IN EXISTING MECHANICAL ROOM
SEE WATER DETAIL "A".

**PARTIAL PLAN
FIRST FLOOR**
SCALE: NONE

ABBREVIATIONS		SYMBOLS	
C.O.	CLEANOUT	⊠	FLOOR DRAIN
CW	COLD WATER (POTABLE)	○	ROOF DRAIN
HW	HOT WATER (POTABLE)	┌	P-TRAP
HWRC	HOT WATER RECIRCULATION (POTABLE)	⊥	CLEANOUT WITH CAP
W	WASTE (SANITARY SEWER)	⊥	VENT THROUGH ROOF
V	VENT	⊗	GATE VALVE
RL	RAIN LEADER	⊗	CHECK VALVE
VTR	VENT THROUGH ROOF	⊕	CIRCUIT SETTER
P-1	FIXTURE TYPE NUMBER SEE SPECIFICATIONS	⊕	AQUASTAT
FD-1	FLOOR DRAIN TYPE NUMBER SEE SPECIFICATIONS	⊕	PUMP
FCD	FLOOR CLEANOUT	⊕	WATER HAMMER ARRESTOR
WC	WATER CLOSET	⊕	LIMIT OF CONTRACT
WCD	WALL CLEANOUT	—	DENOTES EXISTING EQUIPMENT
FLG	FLANGES (PAIR)	—	DENOTES NEW EQUIPMENT
RD-1	ROOF DRAIN AND TYPE NUMBER	—	DIELECTRIC CONNECTOR

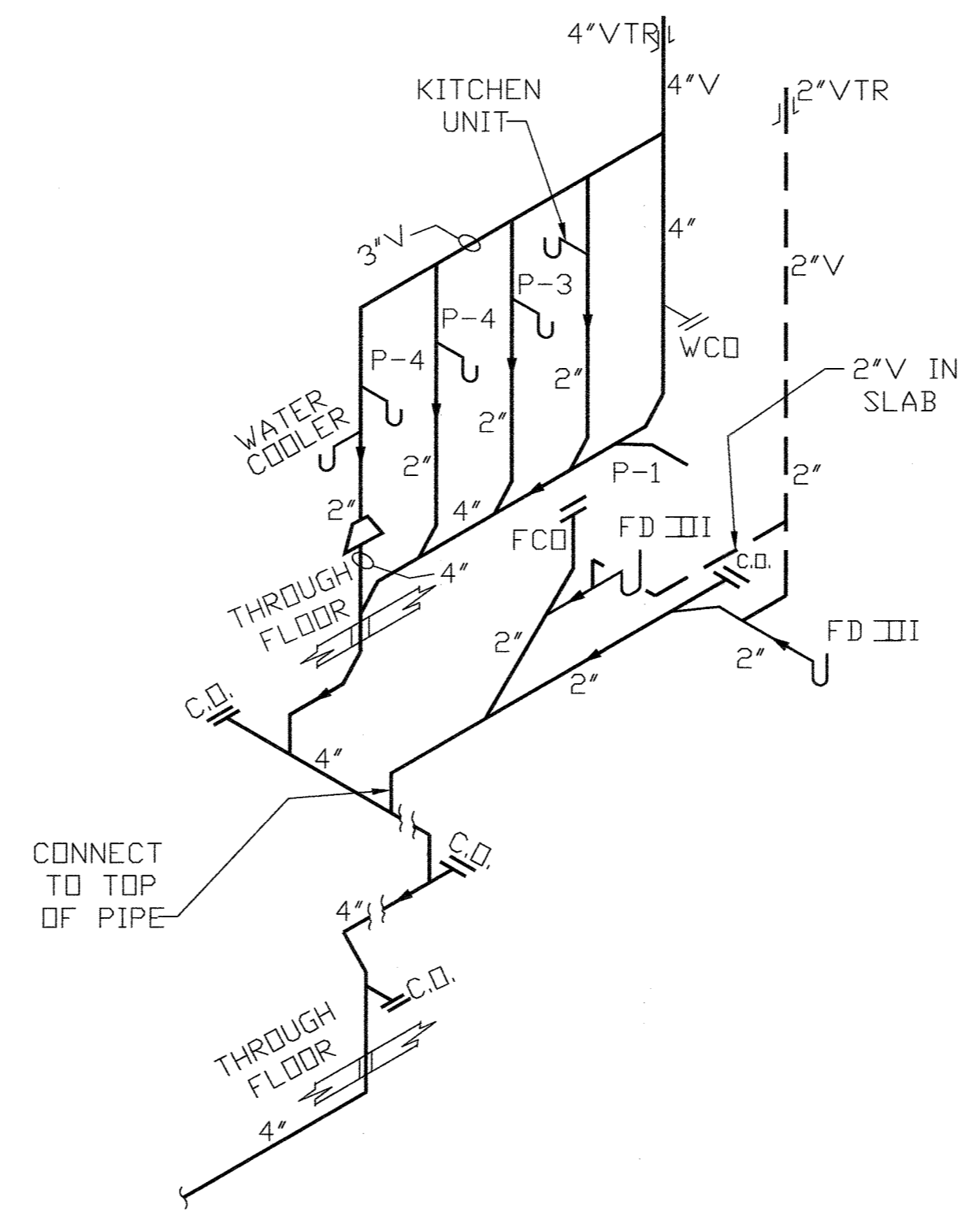
NOTE:
REFER TO DWG. M-1 AND H-1 FOR OTHER
SYMBOLS AND ABBREVIATIONS.

- GENERAL NOTES (ALL DRAWINGS):
1. PROVIDE SLEEVES AT ALL WALL AND FLOOR PENETRATIONS BY PIPES IN AREAS OF NEW CONSTRUCTION.
 2. PROVIDE ESCUTCHEONS AT ALL WALL PENETRATIONS.
 3. CORE DRILL OR SAW CUT ALL PENETRATIONS THROUGH EXISTING WALLS OR SLABS.

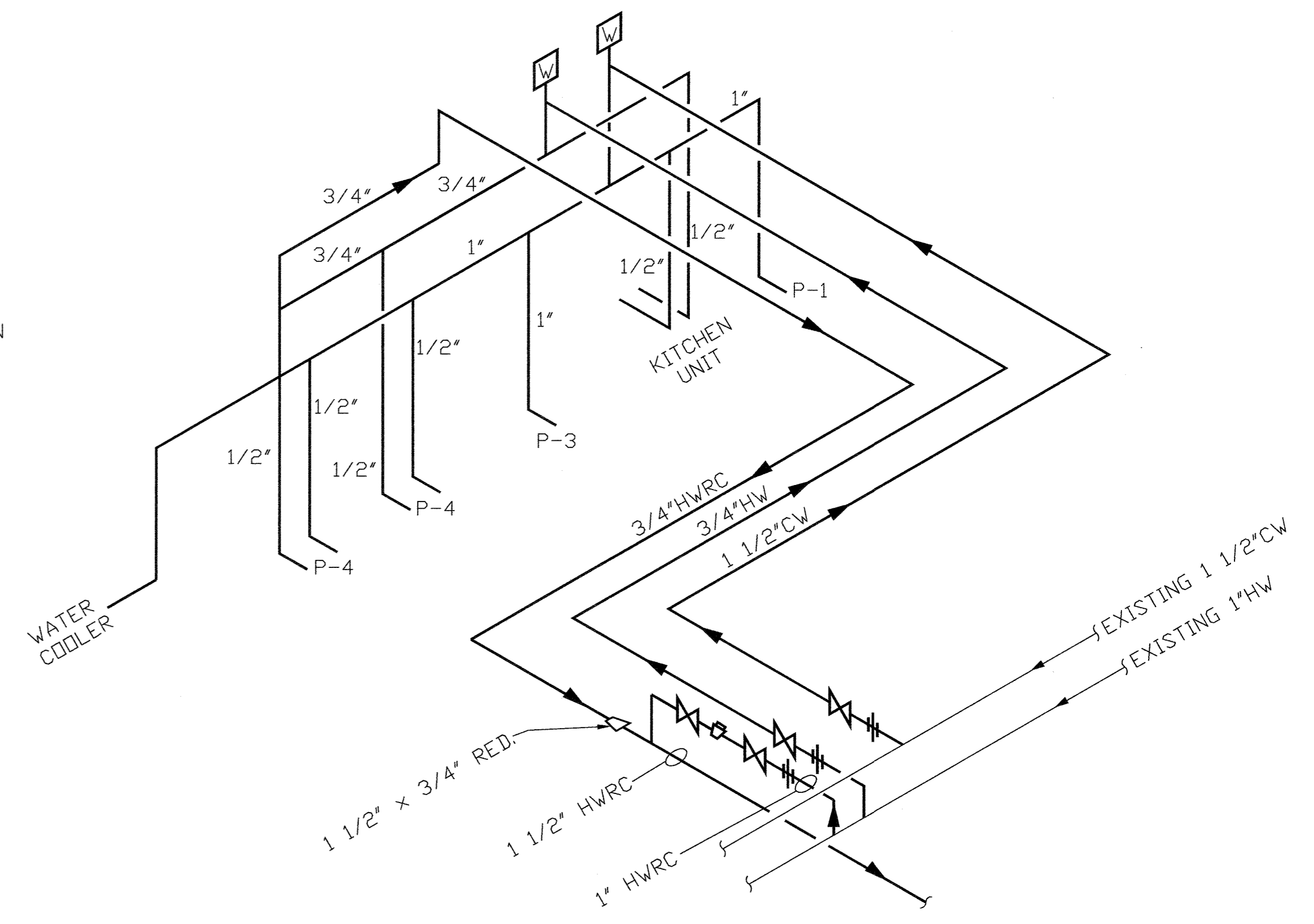


- NOTES:
1. REMOVE EXISTING SOLAR COLLECTOR SUPPLY AND RETURN LINES FROM THE STORAGE TANK TO SOLAR COLLECTOR. FLUSH THESE PIPES AND STORAGE TANK (HEAT EXCHANGER) WITH FRESH WATER, DRAIN AND CAP PIPES.
 2. PROVIDE DIELECTRIC CONNECTORS BETWEEN NEW AND EXISTING PIPES.
 3. PROVIDE ANGLE KNEE BRACE SUPPORT FOR NEW PUMP.
 4. EXISTING SUPPLY PIPE TO SOLAR COLLECTOR THAT IS TO BE REMOVED CONTAINS A ONE QUART EXPANSION TANK, RELIEF PIPE AND RECIRCULATION PUMP. REMOVE WIRE AND CONDUIT BACK TO EXISTING PANEL ON WALL. REMOVE PANEL AND TERMINATE WIRES.
 5. PROVIDE NEW NEMA 12 PUMP CONTROL PANEL. RUN WIRES AND CONDUIT FROM PUMP AND AQUASTAT TO THE CONTROL PANEL.

DETAIL "A"
WATER PIPING SCHEMATIC
EXISTING MECHANICAL ROOM
SCALE: NONE

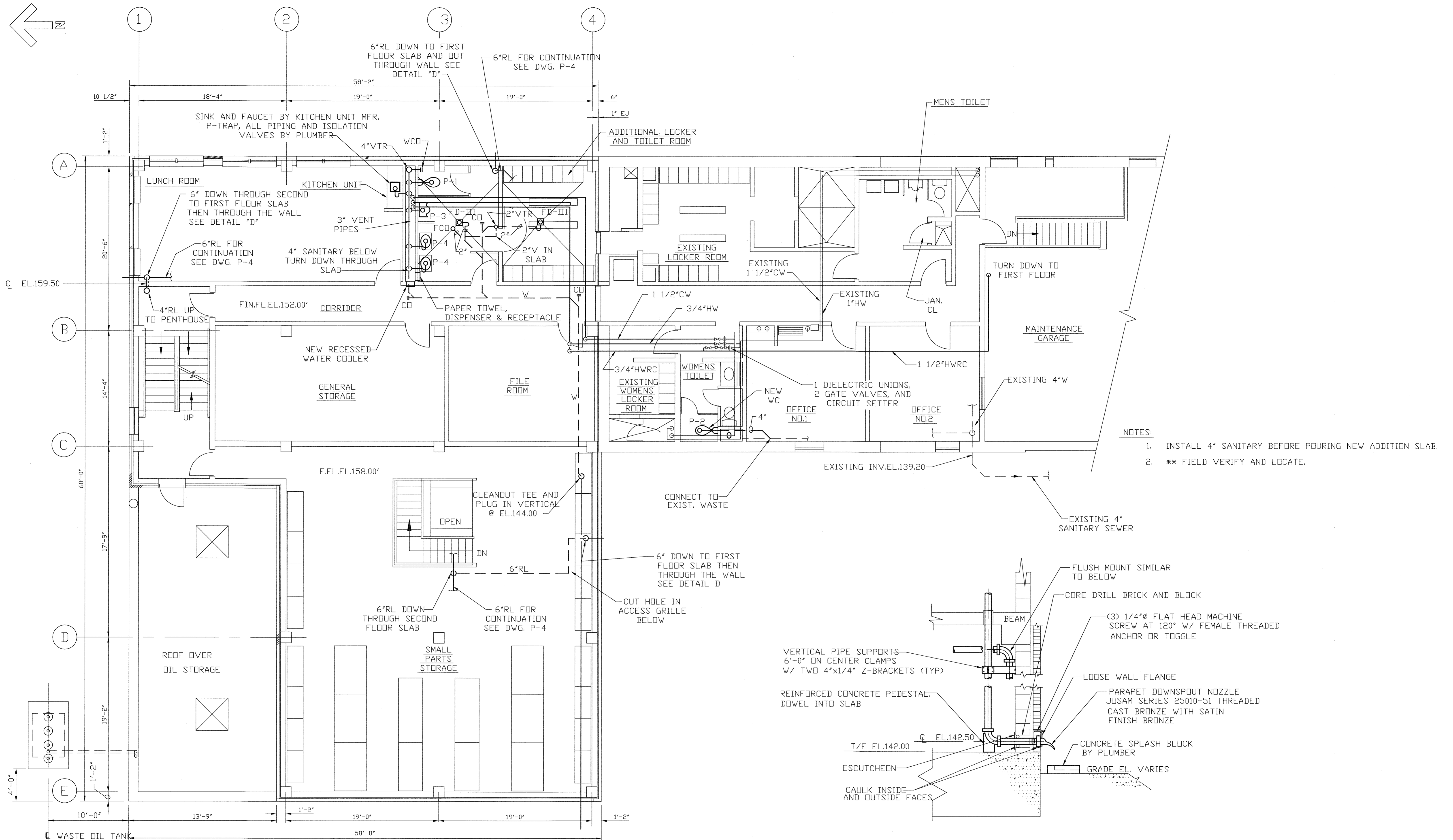
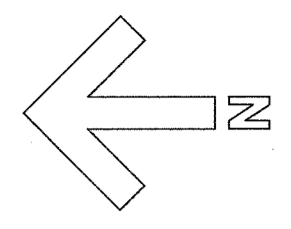


DETAIL "B"
SANITARY RISER DIAGRAM
SCALE: NONE

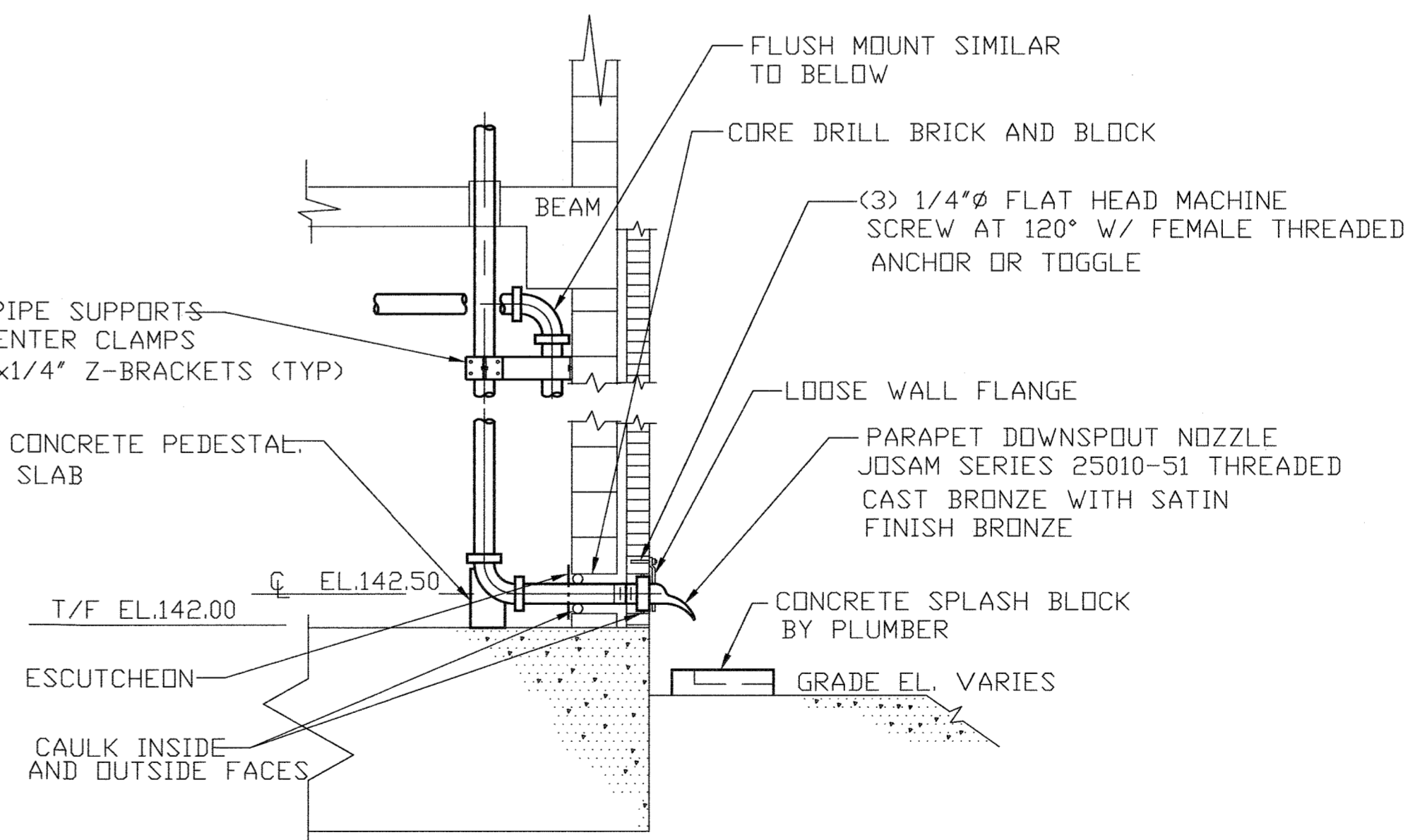


DETAIL "C"
WATER RISER DIAGRAM
SCALE: NONE

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James A. Lewis</i> 5/2/96 DIRECTOR OF PUBLIC WORKS <i>John O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Jonathan W. Doane</i> 5-7-96 REG. PROF. ENGR.		STATE OF MARYLAND JONATHAN WINTHROP DOANE No. 13140 REGISTERED PROFESSIONAL ENGINEER		DES: _____ DRN: M.J.C. CHK: J.H. DATE: _____ BY: _____ NO. _____		MECHANICAL RISER DIAGRAMS PLAN AND SYMBOLS		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 175 OF 226 P-1A
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- NOTES:
1. INSTALL 4" SANITARY BEFORE POURING NEW ADDITION SLAB.
 2. ** FIELD VERIFY AND LOCATE.



DETAIL "D"
DOWNSPOUT NOZZLE DETAIL
SCALE: 1/2" = 1'-0"

SECOND FLOOR PLAN

SCALE: 3/16" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. ... 5/7/96
DIRECTOR OF PUBLIC WORKS

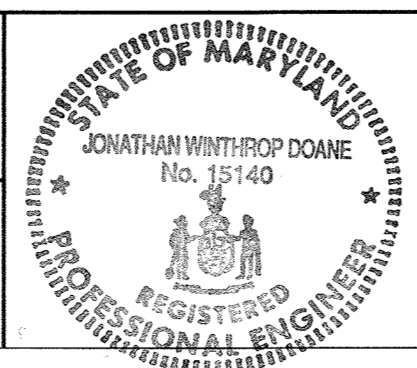
John J. O'Hara 5/7/96
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

Robert E. ... 5/7/96
CHIEF BUREAU OF ENGINEERING

De ... 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
REGISTERED PROFESSIONAL ENGINEER



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

MECHANICAL

MAINTENANCE BUILDING
SECOND FLOOR PLAN

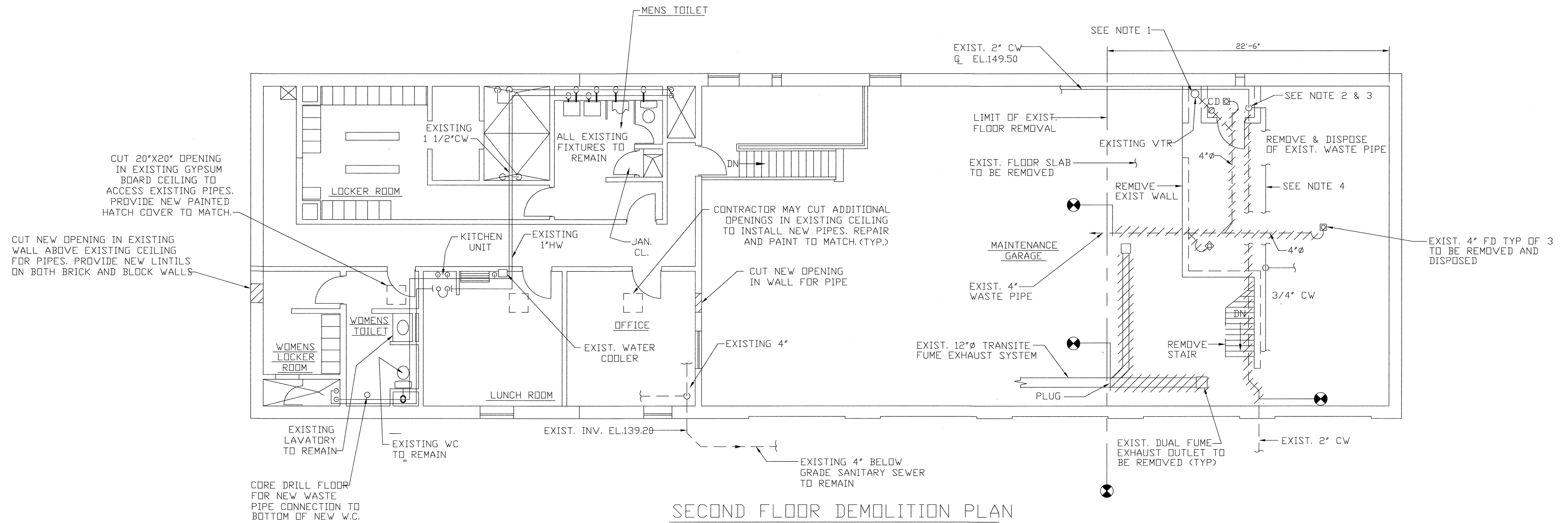
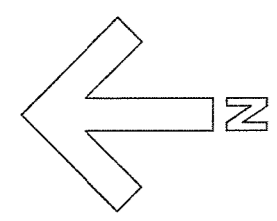
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

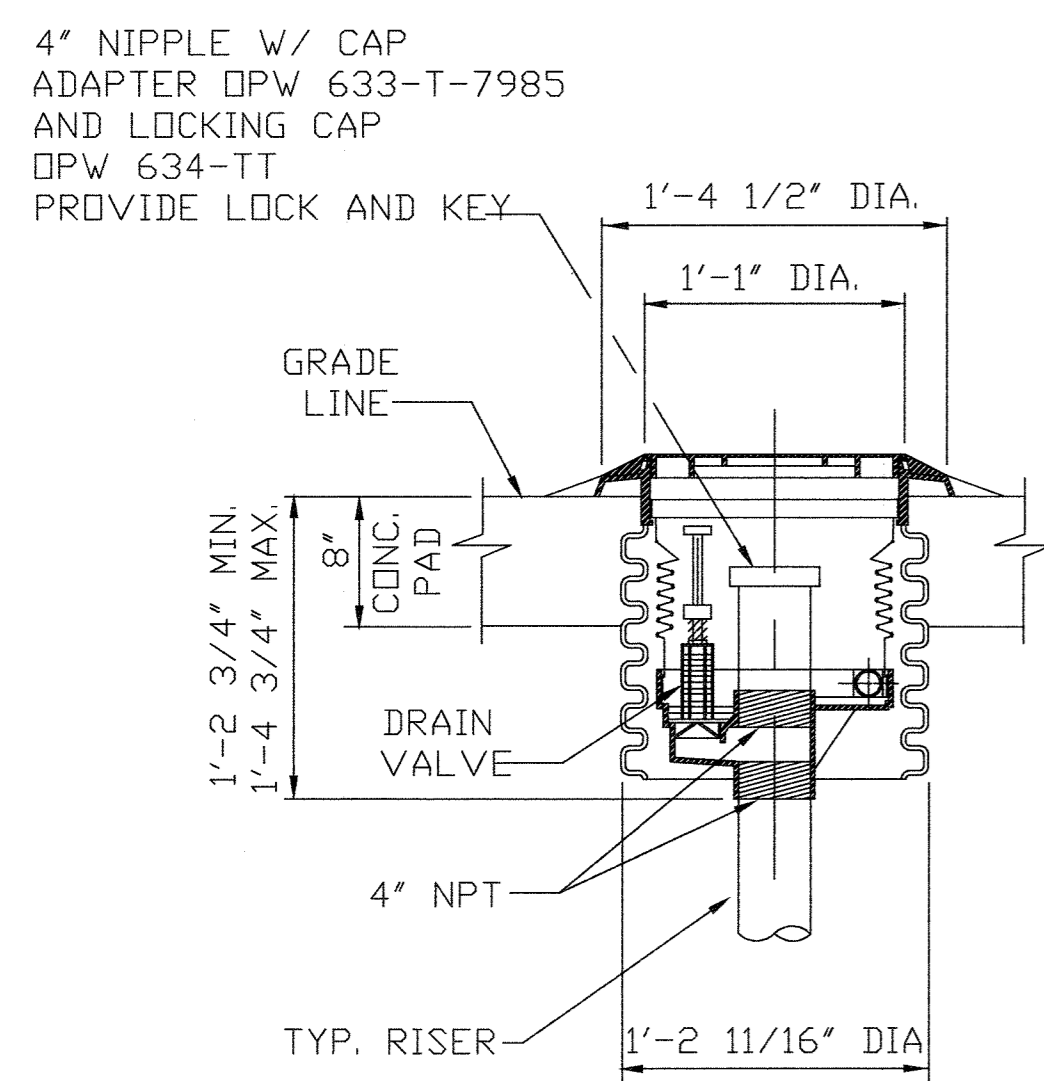
SHEET 176 OF 226

P-2A

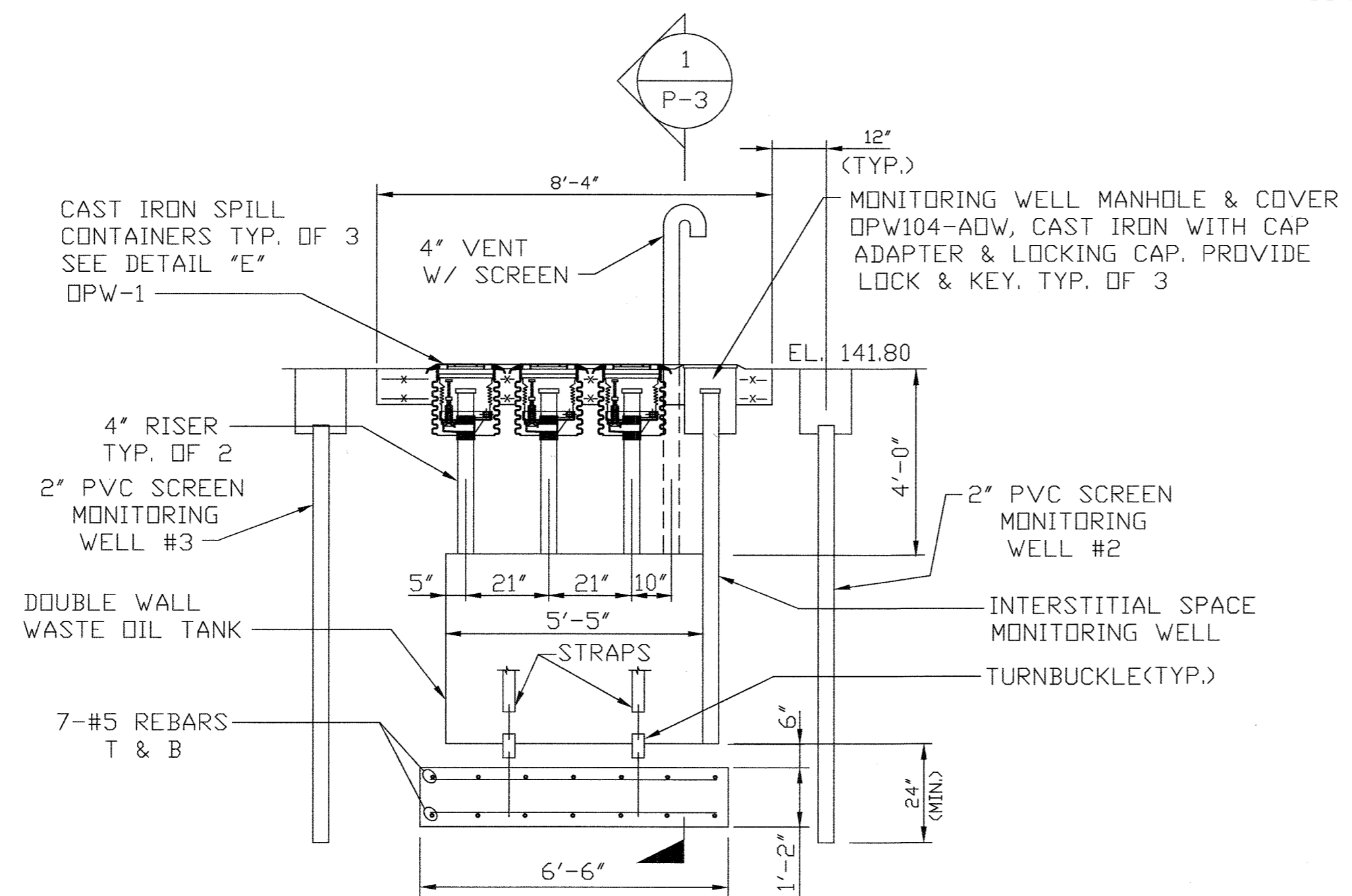


SECOND FLOOR DEMOLITION PLAN

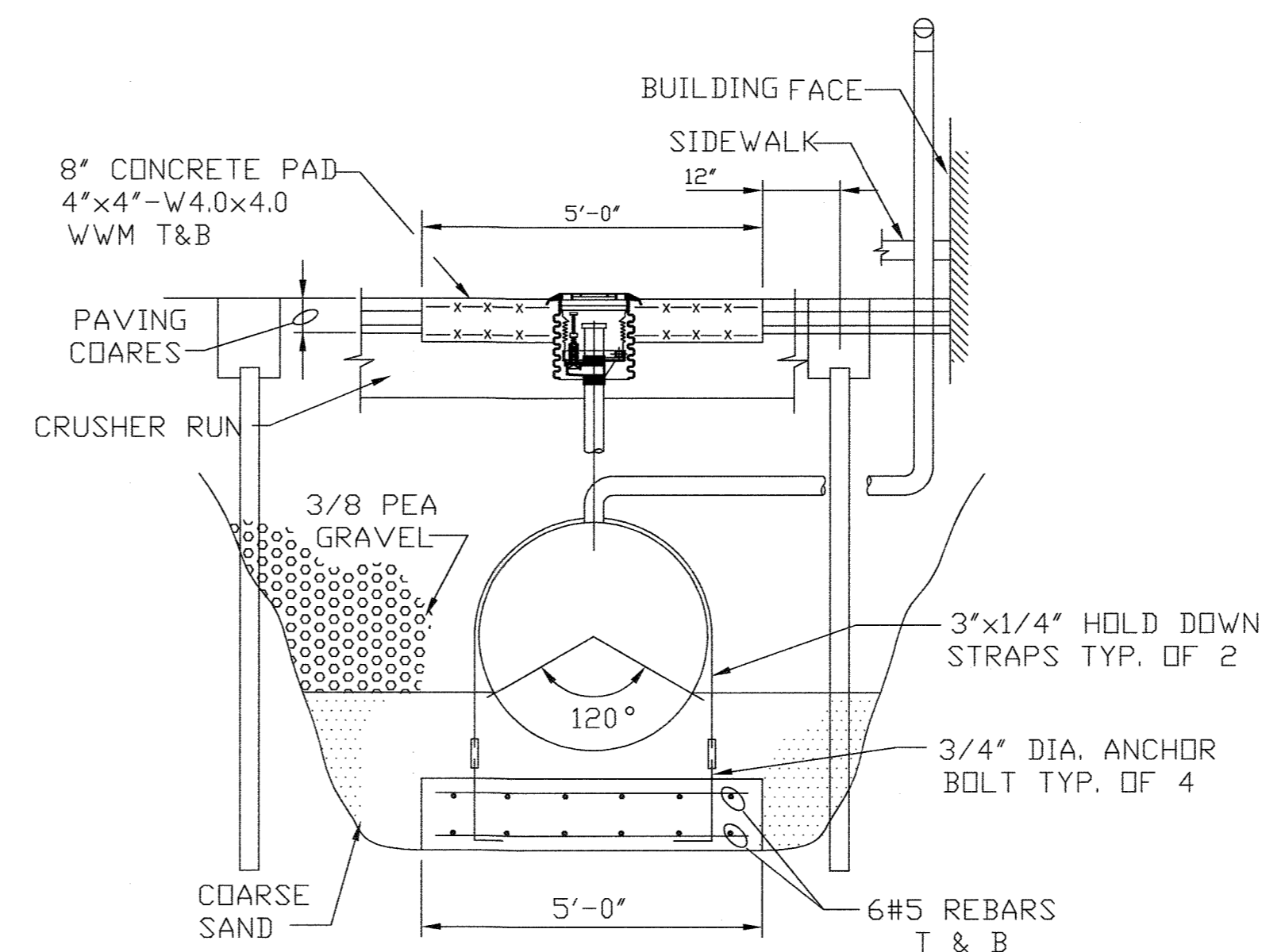
SCALE: 3/16"=1'-0"



DETAIL E
SCALE: 1"=1'-0"



DETAIL F
SCALE: 3/4"=1'-0"



SECTION
SCALE: 3/4"=1'-0"

NOTES:

1. CUT EXISTING PIPE ONE FOOT ABOVE FIRST FLOOR SLAB AND DEMOLISH WASTE PIPES BELOW GRADE.
2. CUT EXISTING 2" CW PIPE ONE FOOT ABOVE FIRST FLOOR SLAB AND TWO FEET ABOVE MEZZANINE LEVEL AT OUTSIDE WALL. REMOVE VERTICAL SECTION. CAP EXISTING PIPE UNTIL WATER SUPPLY IS RECONNECTED.
3. WATER SUPPLY TO BUILDING MUST BE MAINTAINED AT ALL TIMES. IF DEMOLITION & REPLACEMENT OF EXISTING PIPE CAUSES A SHUTDOWN OF OVER TWO HOURS, PROVIDE TEMPORARY WATER PIPING TO MAINTAIN BUILDING SERVICE.
4. REMOVE EXPOSED 1" & 3/4" CW PIPING.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John P. Shaw 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

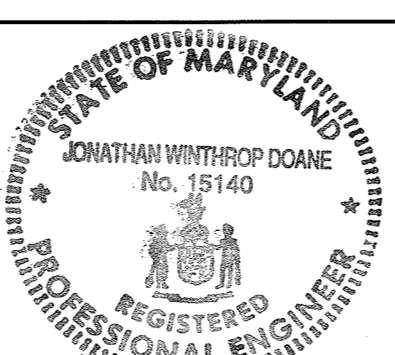
John P. O'Hara 5/7/96
CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE

John P. O'Hara 5/7/96
CHIEF BUREAU OF ENGINEERING DATE

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

MECHANICAL

MAINTENANCE BUILDING
SECOND FLOOR
DEMOLITION PLAN

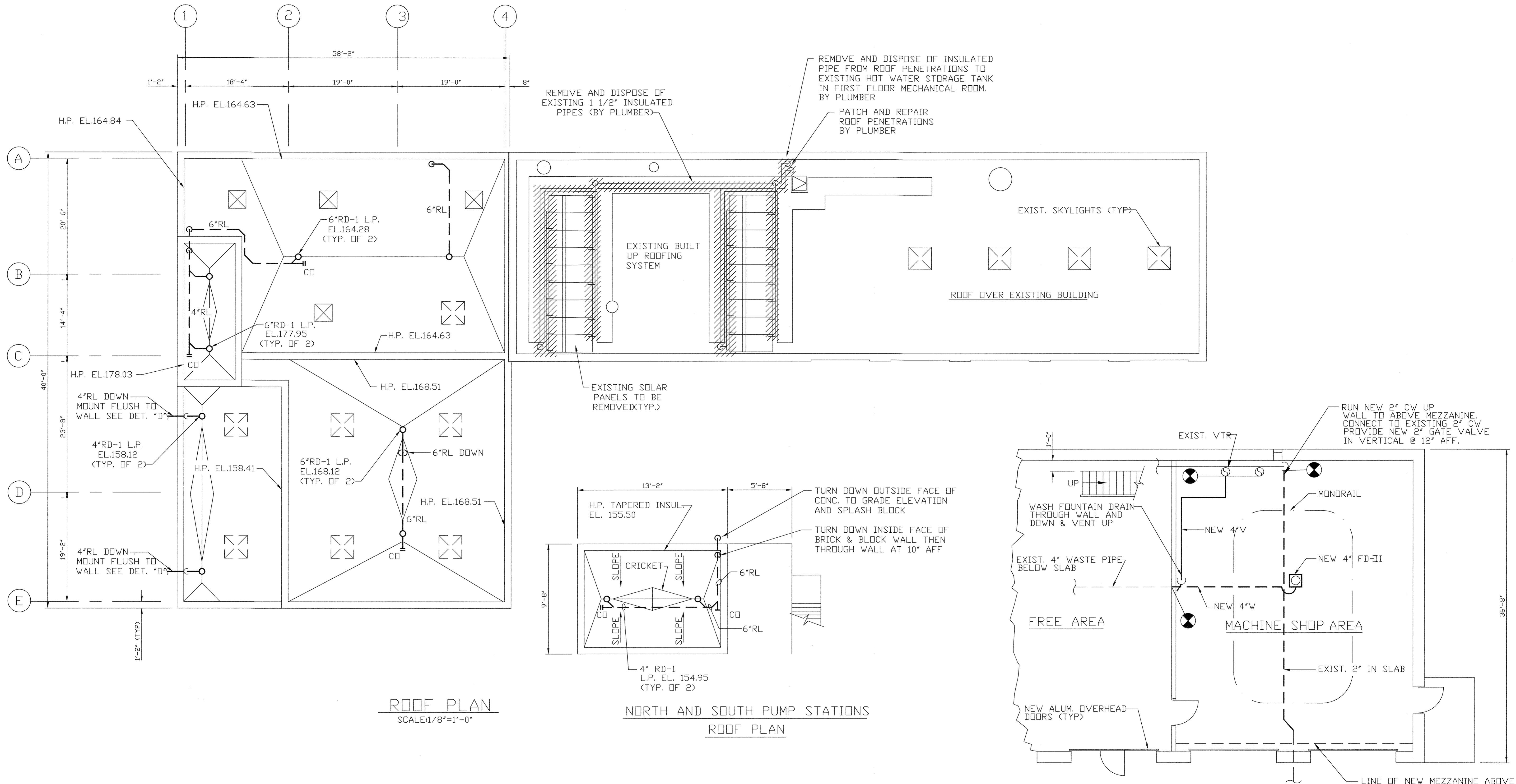
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 177 OF 226

P-3A



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

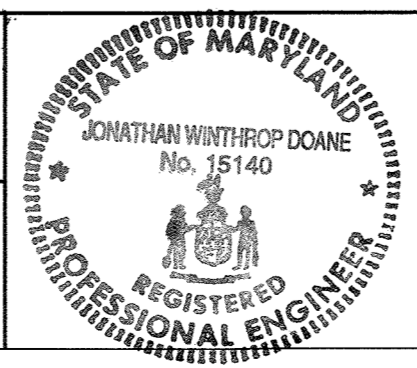
NORTH AND SOUTH PUMP STATIONS
ROOF PLAN

GARAGE FIRST
FLOOR PLAN
SCALE: 3/16" = 1'-0"

LEGEND:
 ——— DENOTES EXISTING EQUIPMENT
 ——— DENOTES NEW EQUIPMENT
 // // // TO BE DEMOLISHED

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *Jan P. Shaw* 5/7/96
 Chief, Bureau of Engineering: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *Jonathan W. Doane* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. Doane 5-7-96
 REG. PROF. ENGR.



DES					
DRN	M.J.C.				
CHK	J.H.				
DATE	M.J.C. 1	RECORD DRAWING		11/2/94	
	BY	NO.	REVISION		DATE

MECHANICAL
 MAINTENANCE BUILDING
 ROOF AND GARAGE PLANS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 178 OF 226
 P-4A

MEANINGS OF IDENTIFICATION LETTERS

THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS

FIRST LETTER	SUCCEEDING LETTERS				
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ANALOG	ALARM		
B	BURNER FLAME		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL OR DIGITAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GAGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE OR INPUT		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N	VIBRATION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY	RELIEF	RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	USER'S CHOICE			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

THE FOLLOWING DESIGNATIONS ARE USED TO BETTER IDENTIFY AN INSTRUMENT CONTROL FUNCTION

I/P	CURRENT TO PNEUMATIC CONVERTER	f(x)	CHARACTERISTIC
E/I	VOLTAGE TO CURRENT CONVERTER	P	PROPORTIONAL CONTROL MODE
I/I	CURRENT TO CURRENT CONVERTER	D	DERIVATIVE
Σ	ADD OR TOTALIZE	I	INTEGRAL CONTROL MODE
Δ	DIFFERENCE	DO	DISSOLVED OXYGEN
√	SQUARE ROOT	pH	HYDROGEN ION CONCENTRATION
X	MULTIPLY	VSD/SCR	VARIABLE SPEED DRIVE
÷	DIVIDE	VFD	VARIABLE FREQUENCY DRIVE
>	HIGH SELECT	(I)	FURNISHED BY INSTRUMENTATION
<	LOW SELECT	(M)	FURNISHED BY MECHANICAL
PV	PROCESS VARIABLE	(E)	FURNISHED BY ELECTRICAL
SP	SET POINT		

	HYDRAULIC CONTROL LINES
	ELECTRIC INSTRUMENT LINES
	PNEUMATIC SIGNAL
	PROCESS FLOW
	CAPILLARY TUBING
	BALL VALVE
	CHECK VALVE
	BUTTERFLY VALVE, DAMPER, OR LOUVER
	PLUG VALVE
	GATE VALVE
	DIAPHRAGM VALVE
	GLOBE VALVE
	FLOAT VALVE
	3-WAY VALVE
	SOLENOID VALVE
	SELF-OPERATING BACK PRESSURE REGULATOR VALVE
	SELF-OPERATING PRESSURE REGULATOR VALVE
	PRESSURE REDUCING REGULATOR VALVE W/EXTERNAL PRESSURE TAP
	PINCH VALVE

SYMBOLS

	HOSE CONNECTION
	DRAIN
	CALIBRATION STANDPIPE
	PULSATION DAMPENER
	HOSE
	SLUICE GATE
	SLIDE GATE

ACTUATORS

	MOTOR
	SOLENOID
	DIAPHRAGM ACTUATOR WITH POSITIONER

	CENTRIFUGAL PUMP OR BLOWER
	METERING PUMP
	POSITIVE DISPLACEMENT PUMP
	MIXER
	FLOW RATE CONTROLLER
	FLOW ELEMENT (VENTURI)
	ORIFICE PLATE
	MAGNETIC FLOWMETER
	INSERT FLOW ELEMENT (VENTURI)
	ROTAMETER
	PARSHALL FLUME
	WEIR
	ACCOUSTIC OR ULTRASONIC SENSOR

PANEL NAMES

AP	EXISTING AUTOTRON PANEL
BCP5	BLOWER CONTROL PANEL 5
BCP6	BLOWER CONTROL PANEL 6
BCP7	BLOWER CONTROL PANEL 7
BCPRP	BLOWER CONTROL FOR PROCESS REACTOR PANEL
BFP	BELT FILTER PRESS PANEL
DAFP	DIGESTER AIR FLOW PANEL
LCP5	LOCAL CONTROL PANEL 5
NPSCP	NORTH PUMP STATION CONTROL PANEL
PRAP	PROCESS REACTOR AIR FLOW PANEL
PRPSP	PROCESS REACTOR PHOSPHOROUS STRIP PANEL
SBFP	SODIUM BISULFITE FILL PANEL
SCP1	SPEED CONTROL PANEL 1
SPSCP	SOUTH PUMP STATION CONTROL PANEL
SHFP	SODIUM HYPOCHLORITE FILL PANEL
SIP	SIGNAL ISOLATION PANEL

HAND SWITCH POSITION SYMBOLS

(UNLABELLED SWITCHES ARE TO BE ON-OFF)

A	AUTOMATIC
C	CLOSE
F	FAST OR FORWARD
H	HAND
J	JOG
L	LOCAL
M	MANUAL
O	OPEN OR OFF
R	REMOTE OR REVERSE
E/S	EMERGENCY STOP
S/S	START/STOP
S	SLOW OR START

THESE SYMBOLS MAY BE COMBINED TO INDICATE MULTIPLE POSITION SELECTOR SWITCHES. E.G. L/O/R IS A LOCAL/OFF/REMOTE SELECTOR SWITCH.

FUNCTIONAL IDENTIFICATION (SEE LEGEND TABLE)

LOOP IDENTIFICATION NUMBER

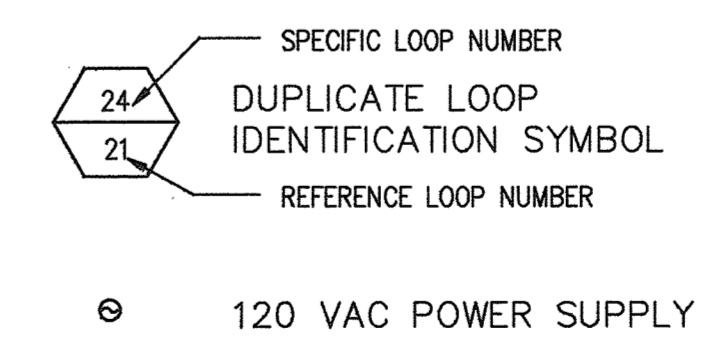
	FRONT PANEL MOUNTED
	REAR PANEL MOUNTED
	FIELD MOUNTED

INSTRUMENT SYMBOLS

	HAND SWITCH POSITION SYMBOL (SEE LEGEND)
	LOCATION
	COMPUTER CONTROL SYSTEM CONFIGURABLE FUNCTION (DISPLAYED ON CRT)
	COMPUTER CONTROL SYSTEM CONFIGURABLE FUNCTION (NOT DISPLAYED ON CRT)
	STATUS INDICATION

COMPUTER INPUT/OUTPUT SYMBOLS

	COMPUTER ANALOG INPUT
	COMPUTER ANALOG OUTPUT
	COMPUTER DISCRETE INPUT
	COMPUTER DISCRETE OUTPUT



120 VAC POWER SUPPLY

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Ramon H. Lee* 3/6/92
 Chief, Bureau of Engineering: *Oy Don Lee* 3-6-92
 Chief, Bureau of Environmental Services: *John D. Hana* 3/6/92
 Chief, Utility Design Division: *Robert P. Dig...* 3-6-92

M&E Metcalf & Eddy

Jonathan W. Doane 3/6/92
 REG. PROF. ENGR.

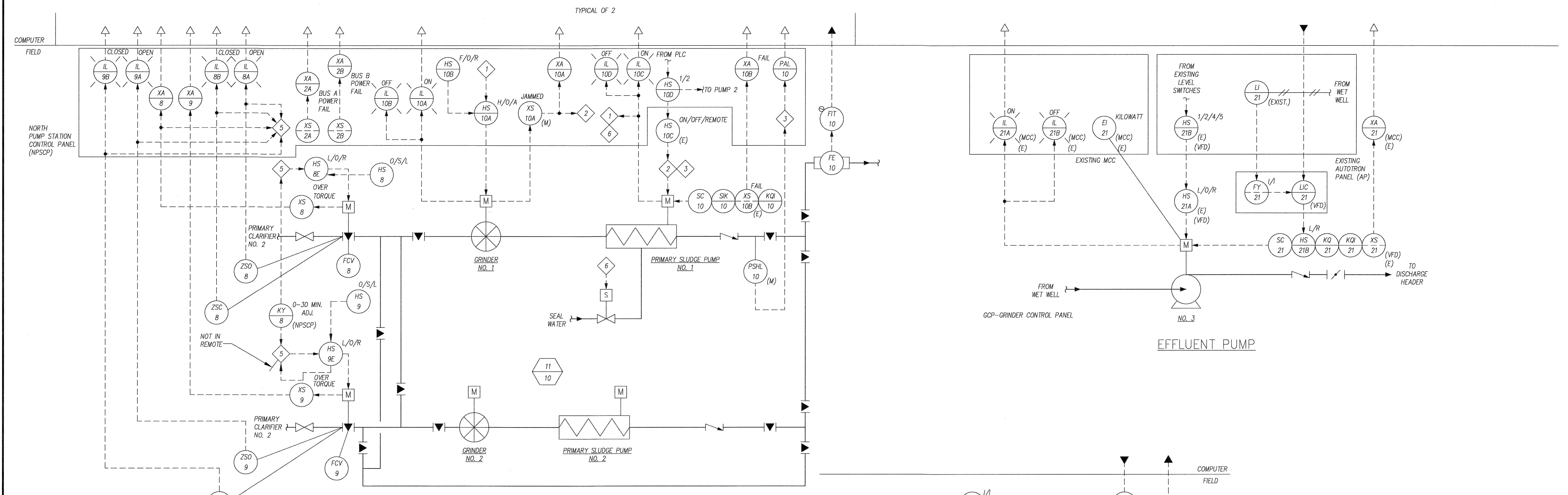


DES: SZOTTFRIED	MB	1	REVISE FOR BIDDING	3/5/92
DRN: S. COOK				
CHK: F. BAILEY				
DATE: 3/6/92	BY	NO.	REVISION	DATE
			REVISED FOR BIDDING	3/5/92

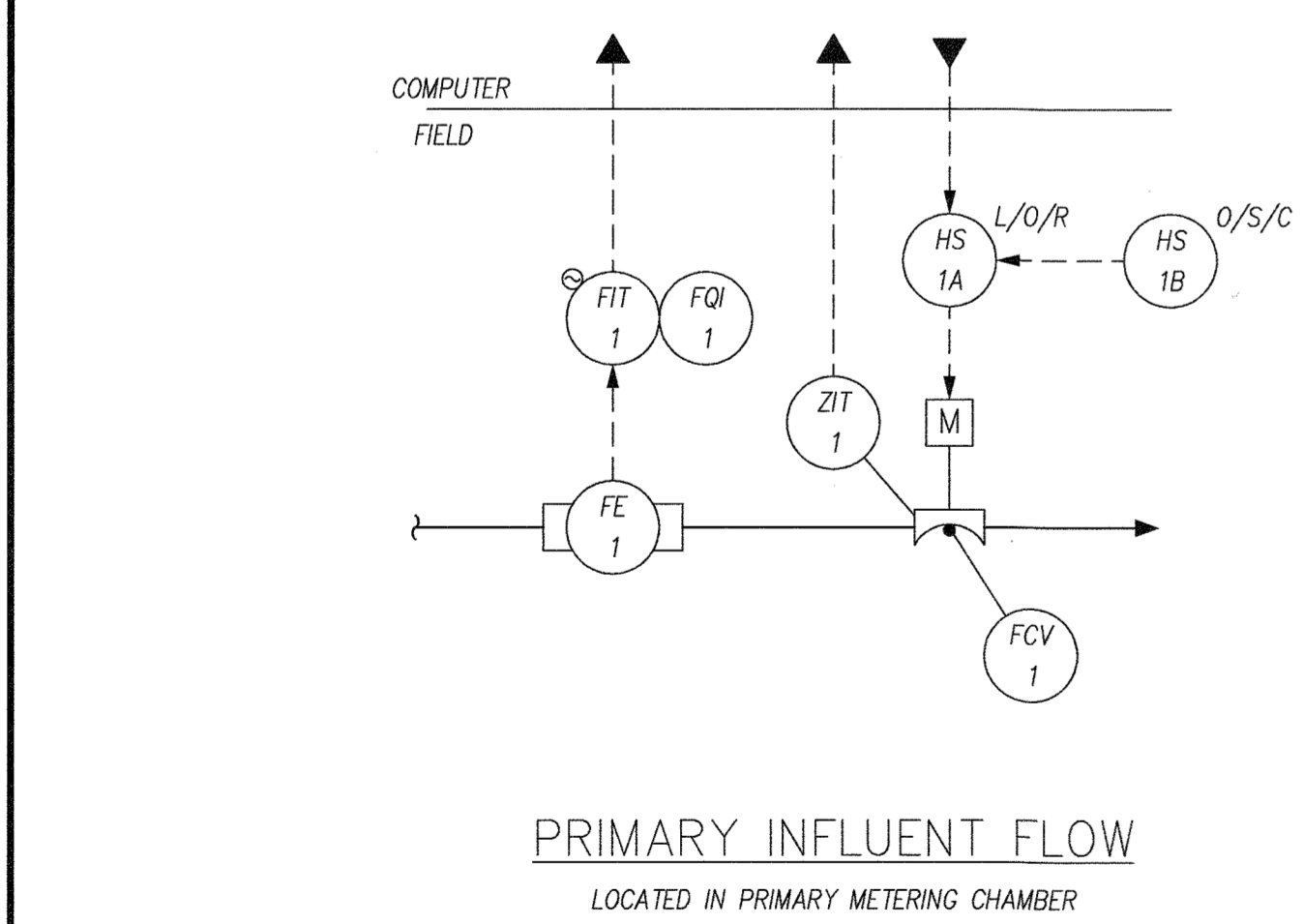
INSTRUMENTATION
LEGEND, SYMBOLS, &
GENERAL NOTES

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-8153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

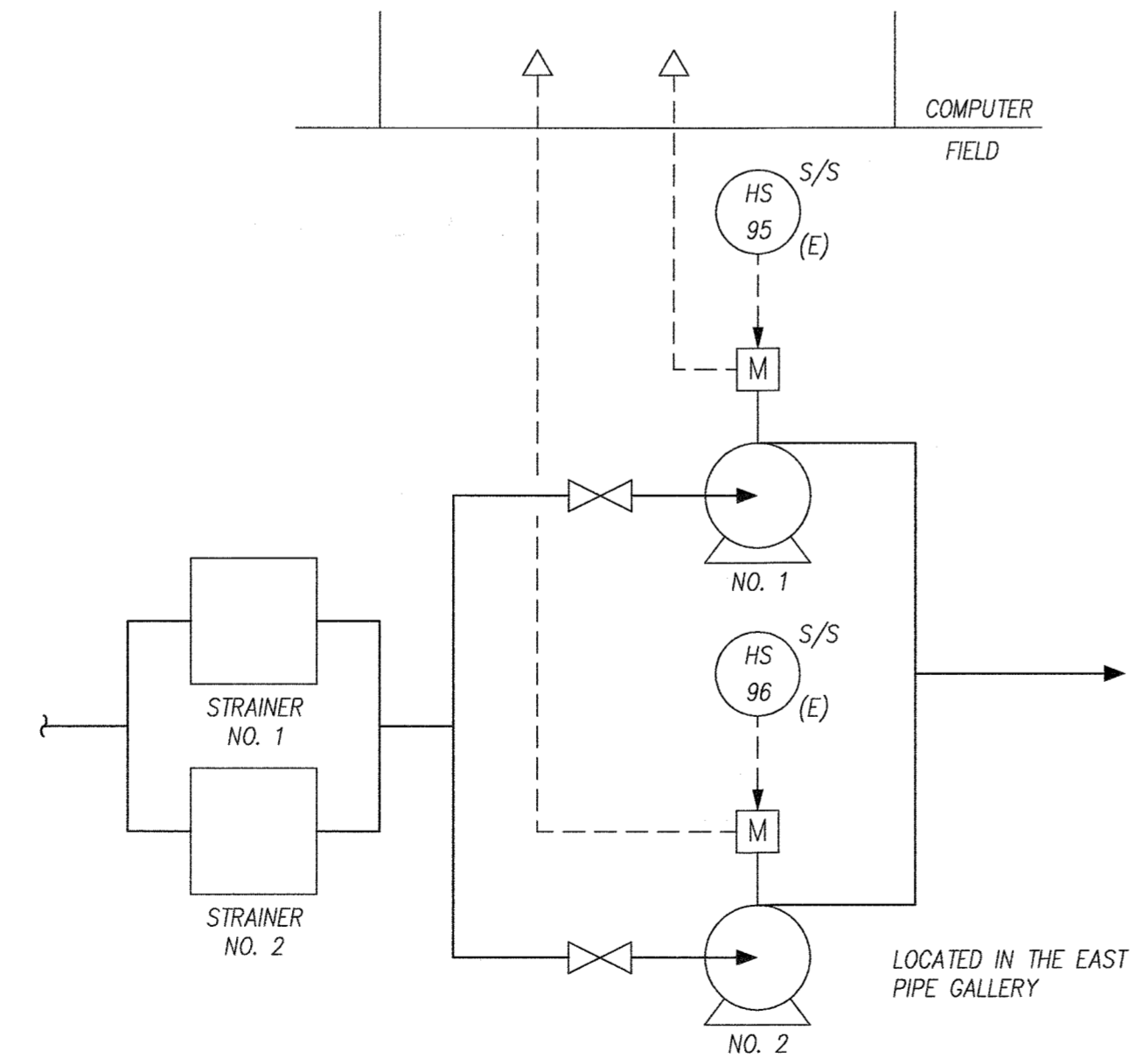
SCALE AS SHOWN
 SHEET 179 OF 226
 1-1



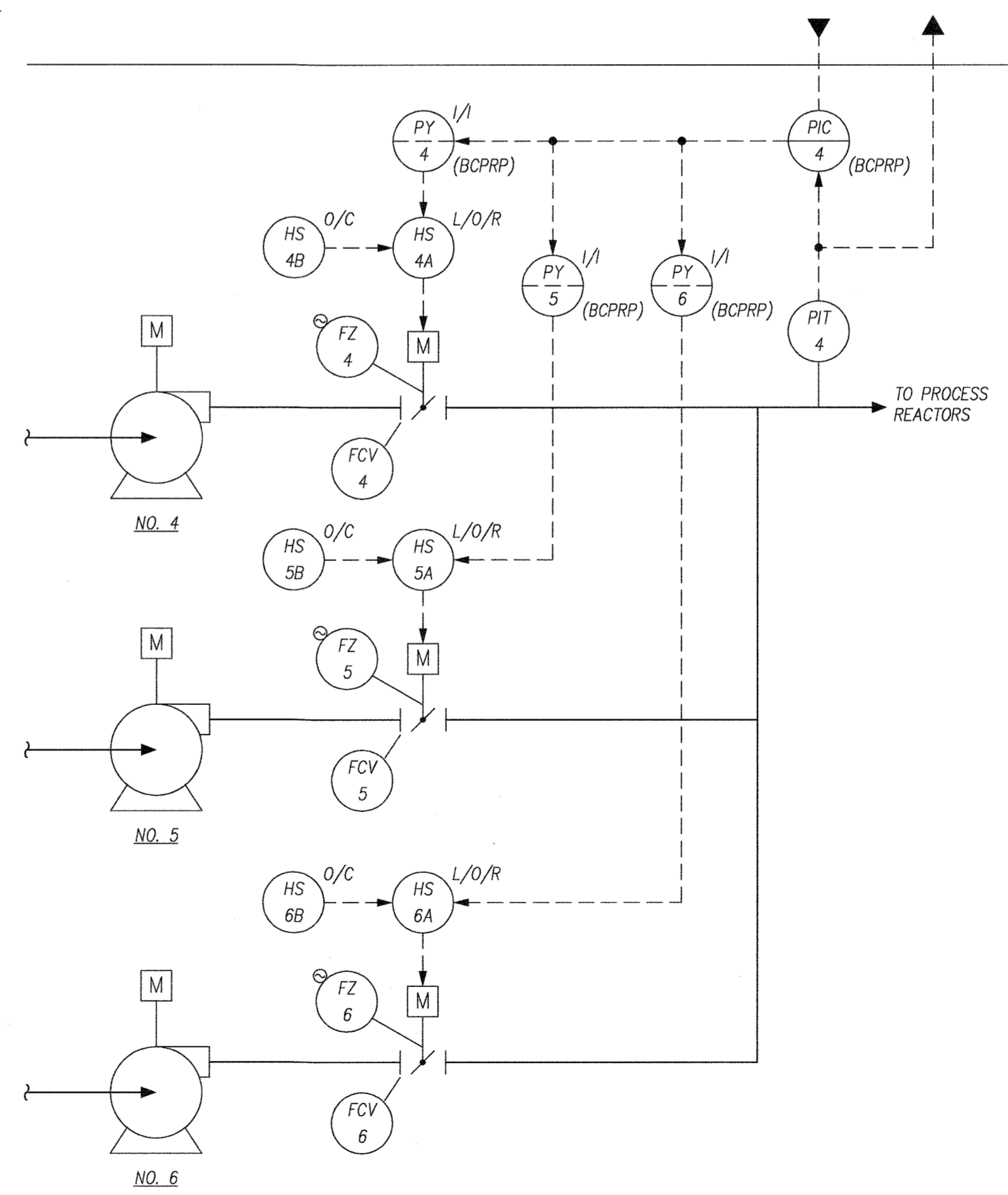
PRIMARY SLUDGE PUMPS
 TYPICAL FOR 2
 NORTH PUMP STATION AS SHOWN,
 SOUTH PUMP STATION, LOOPS 15, 16, 17 AND 18 AND POWER FAIL LOOP 3
 PRIMARY CLARIFIERS NO. 3 AND NO. 4, LCP 4



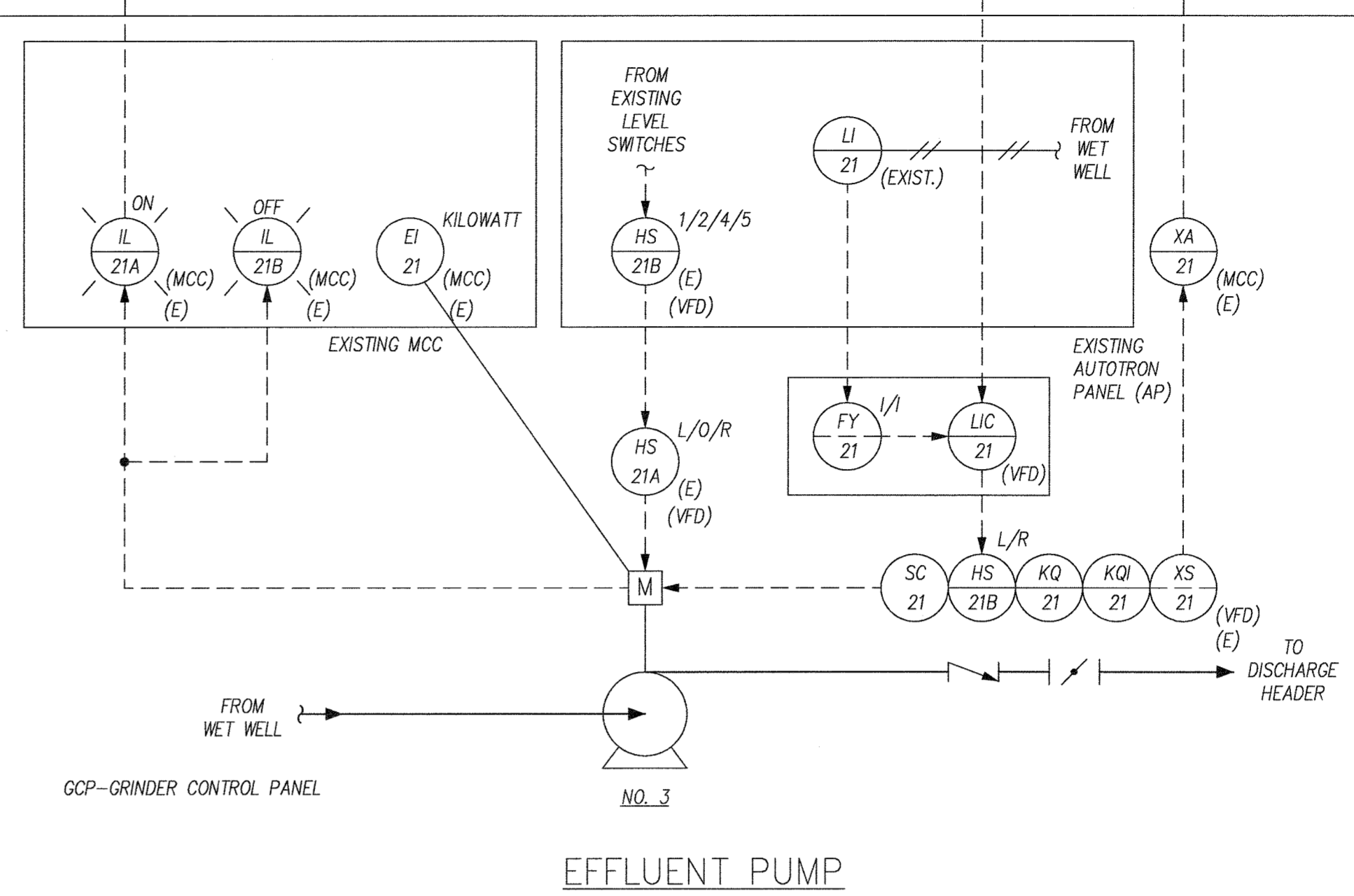
PRIMARY INFLUENT FLOW
 LOCATED IN PRIMARY METERING CHAMBER



SPRAY WATER PUMPS
 SIMILAR FOR 3 SPRAY WATER PUMPS,
 LOCATED IN THE WEST PIPE GALLERY, LOOPS 97, 98, AND 99



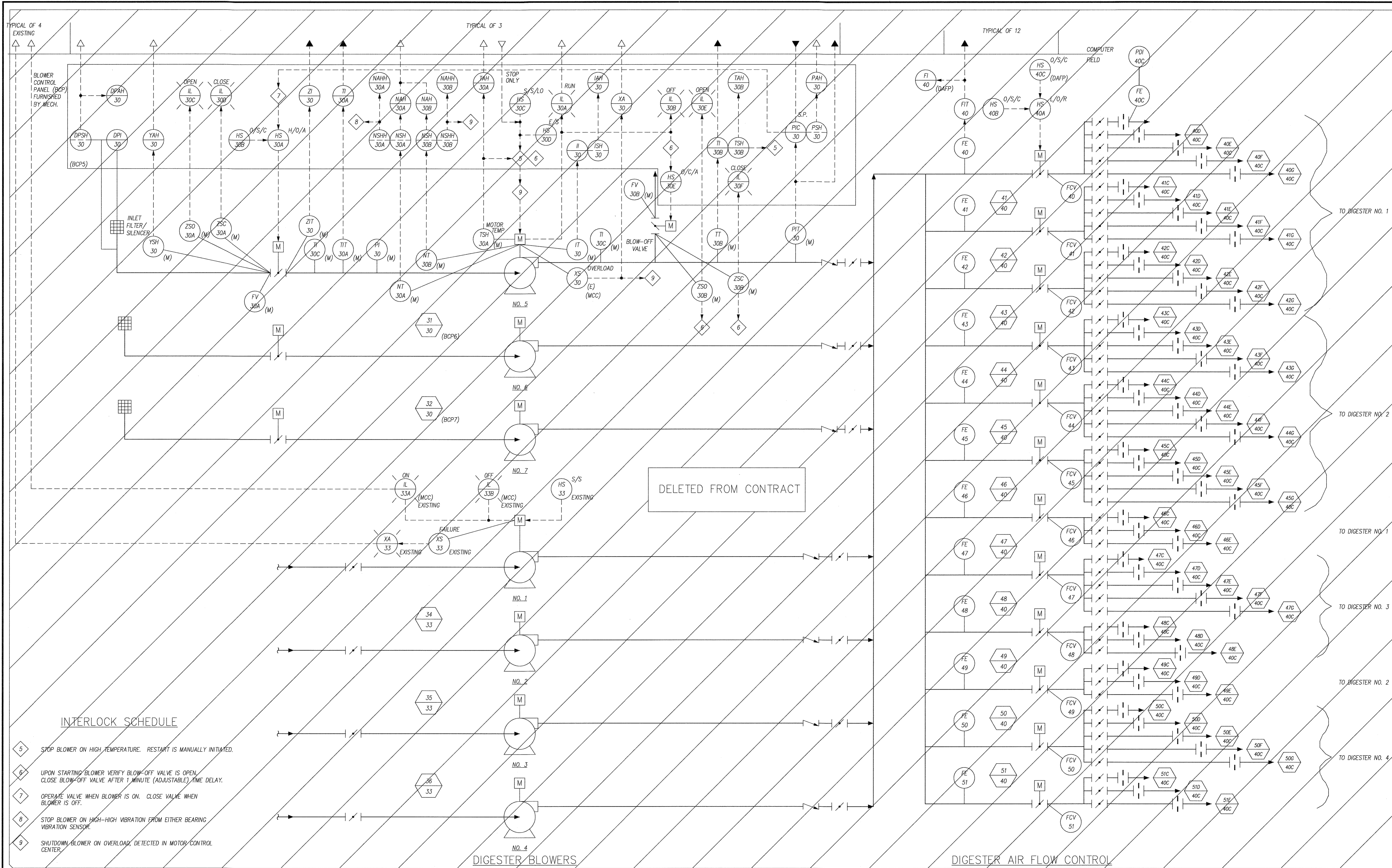
EXISTING PROCESS REACTOR BLOWERS
 LOCATED AT HEADWORKS BUILDING



EFFLUENT PUMP

- INTERLOCK SCHEDULE**
- 1 WHEN IN AUTOMATIC, START GRINDER WHEN DEDICATED PUMP STARTS. STOP WHEN PUMP STOPS.
 - 2 STOP PUMP IF GRINDER IS JAMMED.
 - 3 STOP PUMP ON HIGH OR LOW DISCHARGE PRESSURE AFTER A TIME DELAY.
 - 4 SHUT DOWN DRIVE ON HIGH-HIGH TORQUE. MANUAL RESET.
 - 5 WHEN IN AUTO VALVES SHALL ALTERNATE ON 0-30 MINUTE INTERVALS (ADJUSTABLE). WHEN SWITCHOVER IS PERFORMED ONE VALVE SHALL ALWAYS REMAIN OPEN TO KEEP MOTOR RUNNING.
 - 6 OPEN SOLENOID VALVE WHEN PUMP IS IN OPERATION.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James H. Shaw</i> 5/7/96 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING <i>John J. O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION		M&E Metcalf & Eddy <i>Jonathan W. Doane</i> 5-2-96 REG. PROF. ENGR. DATE		DES: SZOTTFRIED MB 1 REVISE FOR BIDDING 3/5/92 MJC 2 RECORD DRAWING 2/5/95 DRN: S. COOK CHK: DATE: BY NO. REVISION DATE		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 180 OF 226 I-2A
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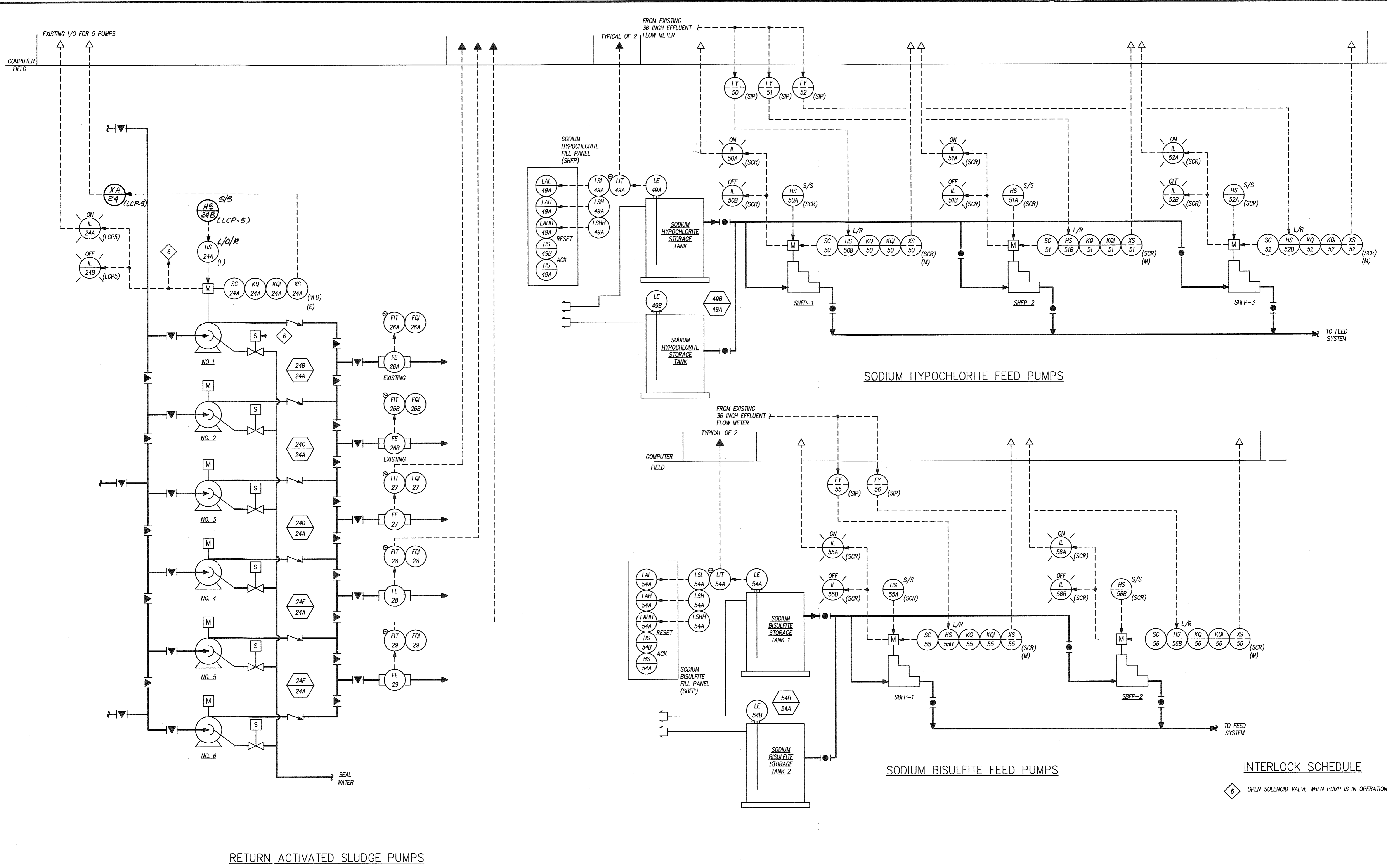
INTERLOCK SCHEDULE

- 5 STOP BLOWER ON HIGH TEMPERATURE. RESTART IS MANUALLY INITIATED.
- 6 UPON STARTING BLOWER VERIFY BLOW-OFF VALVE IS OPEN. CLOSE BLOW-OFF VALVE AFTER 1 MINUTE (ADJUSTABLE) TIME DELAY.
- 7 OPERATE VALVE WHEN BLOWER IS ON. CLOSE VALVE WHEN BLOWER IS OFF.
- 8 STOP BLOWER ON HIGH-HIGH VIBRATION FROM EITHER BEARING VIBRATION SENSOR.
- 9 SHUTDOWN BLOWER ON OVERLOAD, DETECTED IN MOTOR CONTROL CENTER.

DIGESTER BLOWERS

DIGESTER AIR FLOW CONTROL

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>Lawrence J. ...</i> 5/7/96 <i>Paul H. ...</i> 5/7/96 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE</p> <p><i>John J. ...</i> 5/7/96 <i>Dr. ...</i> 5-7-96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION DATE</p>	<p>M&E Metcalf & Eddy</p> <p><i>Jonathan W. ...</i> 5-7-96 REG. PROF. ENGR. DATE</p>	<p>DES: SZOTTFRIED MB 1 REVISE FOR BIDDING 3/5/92 MJC 2 RECORD DRAWING 2/5/95</p> <p>DRN: S. COOK</p> <p>CHK:</p> <p>DATE:</p>	<p>BY NO. REVISION DATE</p>	<p>INSTRUMENTATION LOOP DIAGRAMS II</p>	<p>LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p>CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 181 OF 226</p> <p>1-3A</p>
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RETURN ACTIVATED SLUDGE PUMPS

SODIUM HYPOCHLORITE FEED PUMPS

SODIUM BISULFITE FEED PUMPS

INTERLOCK SCHEDULE

6 OPEN SOLENOID VALVE WHEN PUMP IS IN OPERATION.

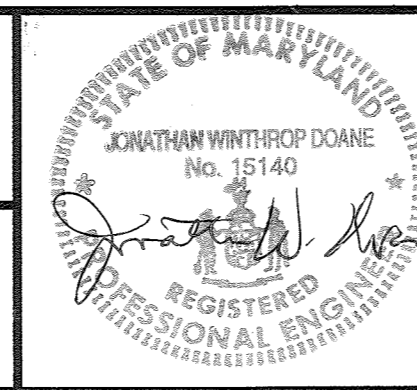
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 3/6/92
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 3/6/92
BUREAU CHIEF, ENVIRONMENTAL SERVICES DATE ARCHITECT, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Joseph W. ... 3/6/92
REG. PROF. ENGR. DATE



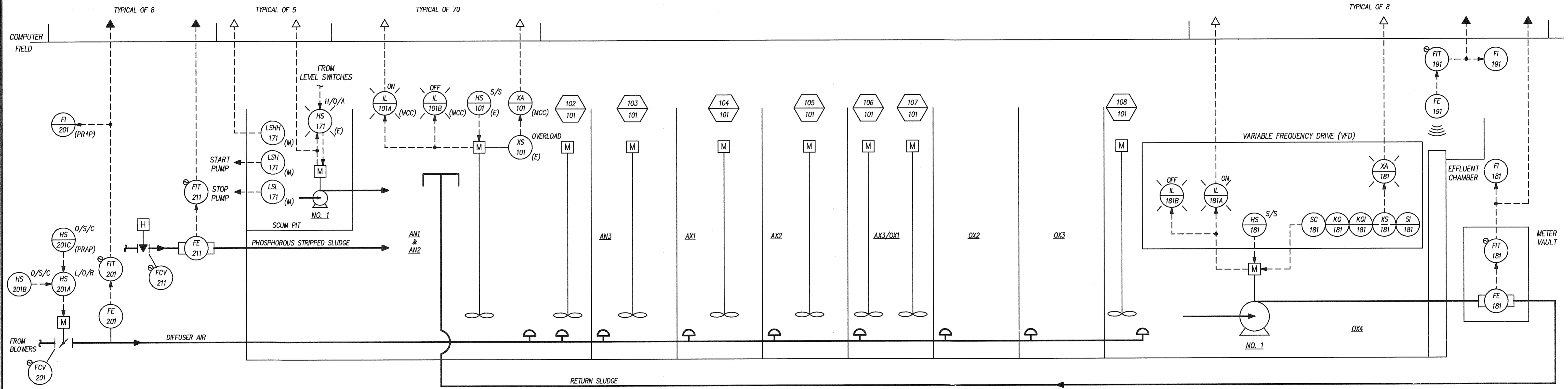
DES:	SZOTTFRIED	MB	1	REVISE FOR BIDDING	3/5/92
DRN:	S. COOK				
CHK:	F. BAILEY				
DATE:	3/6/92	BY:	NO.	REVISED FOR BIDDING	3/6/92
				REVISION	DATE

INSTRUMENTATION
LOOP DIAGRAMS III

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 182 OF 226
1-4



SCUM PUMP FOR PROCESS REACTORS

- TYPICAL OF 8
- LOOP 171 PUMP NO. 1, NEW PROCESS REACTOR NO. 1
 - LOOP 173 PUMP NO. 3, EXISTING PROCESS REACTOR NO. 3
 - LOOP 175 PUMP NO. 5, EXISTING PROCESS REACTOR NO. 5
 - LOOP 177 PUMP NO. 7, EXISTING PROCESS REACTOR NO. 7
 - LOOP 178 PUMP NO. 8, EXISTING PROCESS REACTOR NO. 8

PHOSPHOROUS STRIPPER SLUDGE FLOW

- TYPICAL OF 8
- LOOP 211, NEW PROCESS REACTOR NO. 1
 - LOOP 212, NEW PROCESS REACTOR NO. 2
 - LOOP 213, EXISTING PROCESS REACTOR NO. 3
 - LOOP 214, EXISTING PROCESS REACTOR NO. 4
 - LOOP 215, EXISTING PROCESS REACTOR NO. 5
 - LOOP 216, EXISTING PROCESS REACTOR NO. 6
 - LOOP 217, EXISTING PROCESS REACTOR NO. 7
 - LOOP 218, EXISTING PROCESS REACTOR NO. 8

PROCESS REACTOR MIXERS

- TYPICAL OF 70
- MIXER LOOPS 101 THRU 108, NEW PROCESS REACTOR NO. 1
 - MIXER LOOPS 109 THRU 116, NEW PROCESS REACTOR NO. 2
 - MIXER LOOPS 117 THRU 124, EXISTING PROCESS REACTOR NO. 3
 - MIXER LOOPS 125 THRU 132, EXISTING PROCESS REACTOR NO. 4
 - MIXER LOOPS 133 THRU 140, EXISTING PROCESS REACTOR NO. 5
 - MIXER LOOPS 141 THRU 148, EXISTING PROCESS REACTOR NO. 6
 - MIXER LOOPS 149 THRU 159, EXISTING PROCESS REACTOR NO. 7
 - MIXER LOOPS 160 THRU 170, EXISTING PROCESS REACTOR NO. 8

AIR FLOW CONTROL FOR PROCESS REACTORS

- TYPICAL OF 8
- LOOP 201, FLOW FOR NEW PROCESS REACTOR NO. 1
 - LOOP 202, FLOW FOR NEW PROCESS REACTOR NO. 2
 - LOOP 203, FLOW FOR EXISTING PROCESS REACTOR NO. 3
 - LOOP 204, FLOW FOR EXISTING PROCESS REACTOR NO. 4
 - LOOP 205, FLOW FOR EXISTING PROCESS REACTOR NO. 5
 - LOOP 206, FLOW FOR EXISTING PROCESS REACTOR NO. 6
 - LOOP 207, FLOW FOR EXISTING PROCESS REACTOR NO. 7
 - LOOP 208, FLOW FOR EXISTING PROCESS REACTOR NO. 8

RECIRCULATION PUMPS

- TYPICAL OF 8
- LOOP 181, NEW PROCESS REACTOR NO. 1, VFD 1
 - LOOP 182, NEW PROCESS REACTOR NO. 2, VFD 2
 - LOOP 183, EXISTING PROCESS REACTOR NO. 3, VFD 3
 - LOOP 184, EXISTING PROCESS REACTOR NO. 4, VFD 4
 - LOOP 185, EXISTING PROCESS REACTOR NO. 5, VFD 5
 - LOOP 186, EXISTING PROCESS REACTOR NO. 6, VFD 6
 - LOOP 187, EXISTING PROCESS REACTOR NO. 7, VFD 7
 - LOOP 188, EXISTING PROCESS REACTOR NO. 8, VFD 8

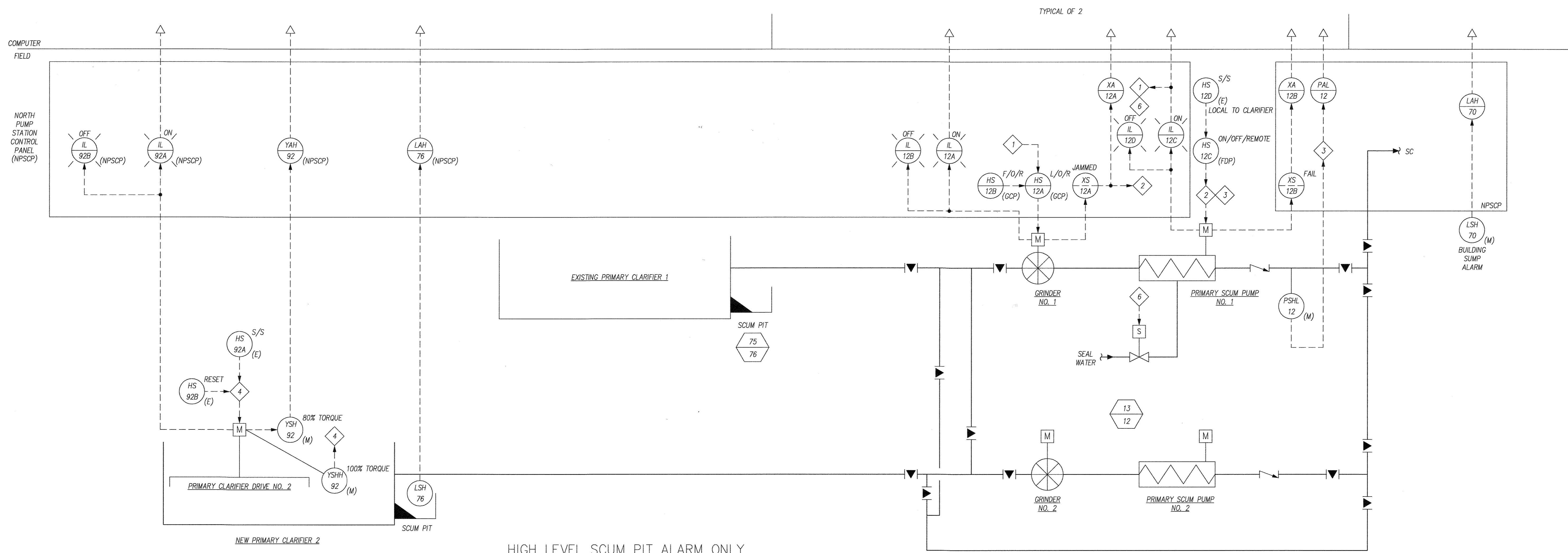
RECIRCULATION PUMPS

- TYPICAL OF 8
- LOOP 191, EFFLUENT FLOW PROCESS REACTOR NO. 1
 - LOOP 192, EFFLUENT FLOW PROCESS REACTOR NO. 2
 - LOOP 193, EFFLUENT FLOW PROCESS REACTOR NO. 3
 - LOOP 194, EFFLUENT FLOW PROCESS REACTOR NO. 4
 - LOOP 195, EFFLUENT FLOW PROCESS REACTOR NO. 5
 - LOOP 196, EFFLUENT FLOW PROCESS REACTOR NO. 6
 - LOOP 197, EFFLUENT FLOW PROCESS REACTOR NO. 7
 - LOOP 198, EFFLUENT FLOW PROCESS REACTOR NO. 8

PROCESS REACTORS 1 THRU 6

PROCESS REACTORS 7 AND 8 SIMILAR EXCEPT DOUBLE SIZED

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>James J. O'Hara</i> 3/6/92 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>John J. O'Hara</i> 3/6/92 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE</p>		<p>M&E Metcalf & Eddy</p> <p><i>Jonathan W. Doane</i> 3/6/92 REG. PROF. ENGR. DATE</p>		<p>DES: SZOTT FRIED MB 1 REVISE FOR BIDDING 3/5/92</p> <p>DRN: S. COOK</p> <p>CHK: F. BAILEY</p> <p>DATE: 3/6/92</p>		<p>INSTRUMENTATION LOOP DIVAGRAMS IV</p>		<p>LITTLE PATUXENT WASTEWATER TREATMENT PLANT</p> <p>LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p>CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>		<p>SCALE AS SHOWN</p> <p>SHEET 183 OF 226</p> <p>1-5</p>	
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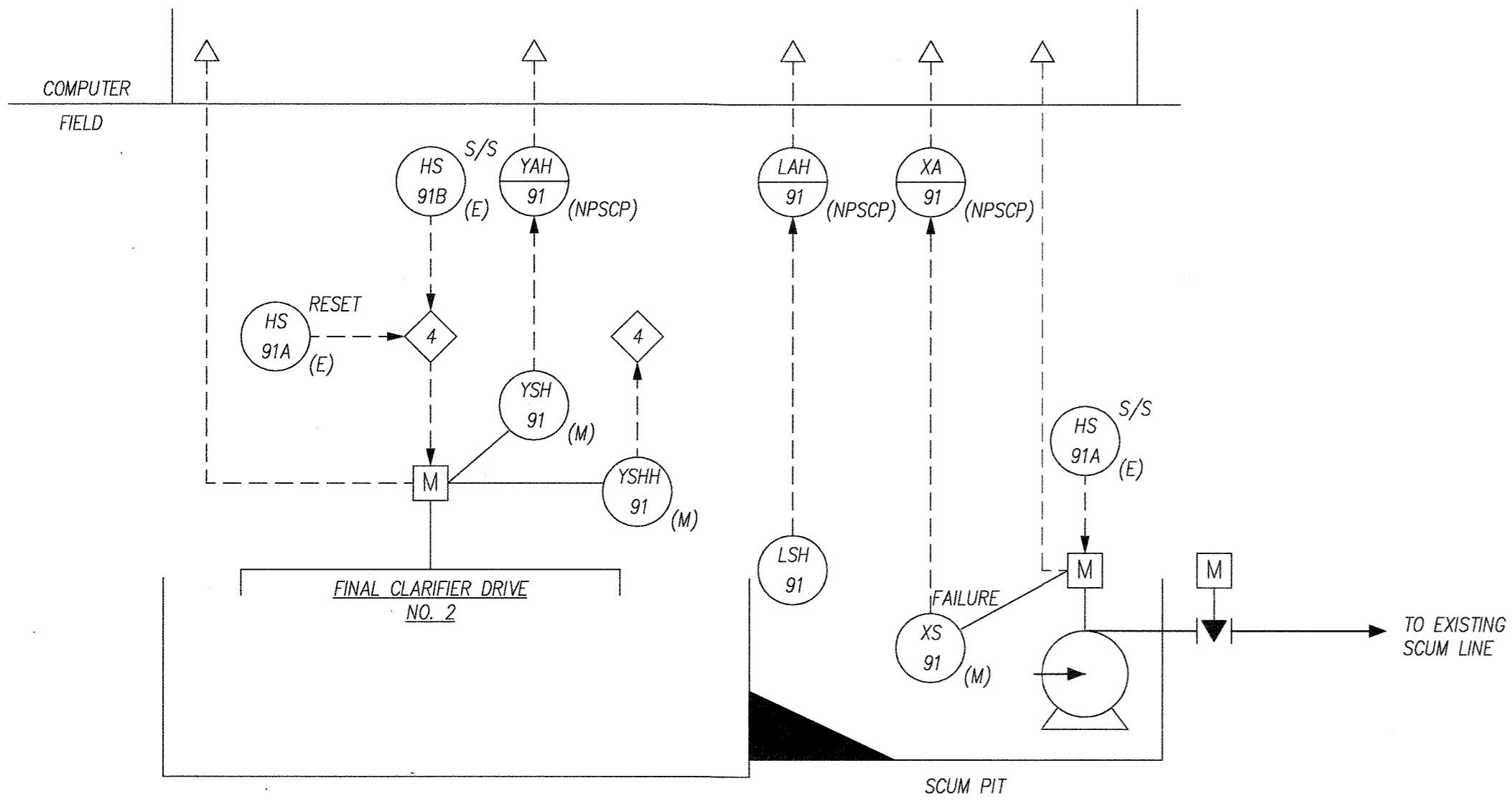


HIGH LEVEL SCUM PIT ALARM ONLY

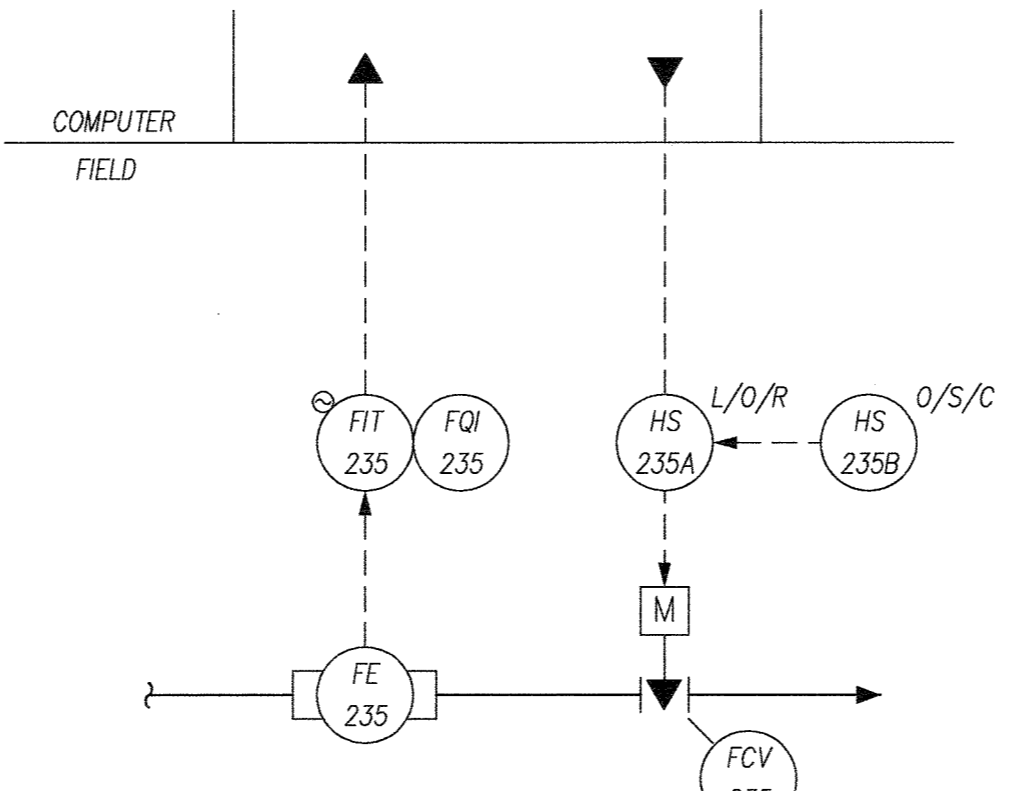
TYPICAL OF 4
 EXISTING FINAL CLARIFIER NO. 3 SIMILAR, LOOP 77
 EXISTING FINAL CLARIFIER NO. 4 SIMILAR, LOOP 78, ALARMS INDICATED ON SPSCP
 EXISTING FINAL CLARIFIER NO. 5 SIMILAR, LOOP 79, ALARMS INDICATED ON SPSCP
 EXISTING PRIMARY CLARIFIER NO. 1 SIMILAR, LOOP 75
 EXISTING PRIMARY CLARIFIER NO. 3 SIMILAR, LOOP 80
 EXISTING PRIMARY CLARIFIER NO. 4 SIMILAR, LOOP 81
 EXISTING FINAL CLARIFIER NO. 1, SIMILAR, LOOP 82
 EXISTING FINAL CLARIFIER NO. 6, SIMILAR, LOOP 83
 EXISTING FINAL CLARIFIER NO. 7, SIMILAR, LOOP 84
 EXISTING FINAL CLARIFIER NO. 8, SIMILAR, LOOP 85
 EXISTING FINAL CLARIFIER NO. 9, SIMILAR, LOOP 86

PRIMARY SCUM PUMPS

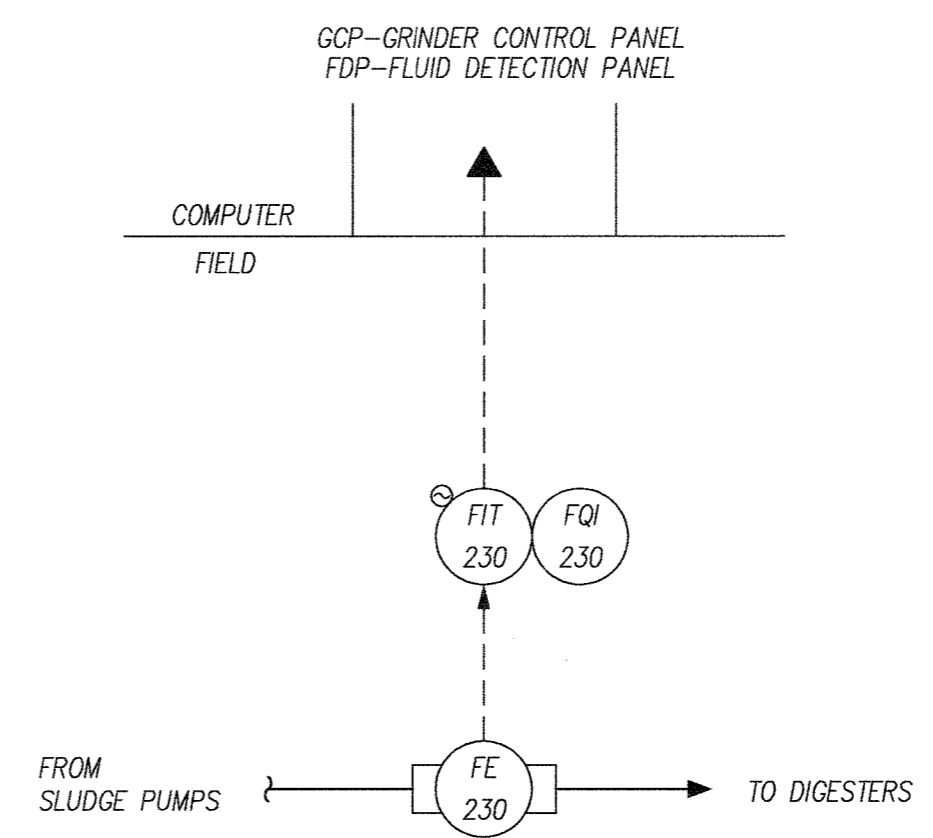
TYPICAL FOR 2
 NORTH PUMP STATION AS SHOWN
 SOUTH PUMP STATION, LOOPS 19 AND 20, PRIMARY CLARIFIERS NO. 3 AND NO. 4, (SPSCP), LOOP 95 AND LOOP 94 AND BUILDING SUMP ALARM, LSH-71.
 PRIMARY CLARIFIER NO. 2 DRIVE, LOOP 93



FINAL CLARIFIER DRIVE AND SCUM PUMP



PHOSPHOROUS STRIPPER INFLUENT SLUDGE



SLUDGE FEED FLOW

TYPICAL FOR 5
 LOOP 231, WASTE ACTIVATED SLUDGE
 LOOP 240, PRIMARY SLUDGE
 LOOP 241, PRIMARY SLUDGE
 LOOP 242, WASTE ACTIVATED SLUDGE
 LOOP 243, WASTE ACTIVATED SLUDGE

INTERLOCK SCHEDULE

- 1 WHEN IN AUTOMATIC, START GRINDER WHEN DEDICATED PUMP STARTS. STOP WHEN PUMP STOPS.
- 2 STOP PUMP IF GRINDER IS JAMMED.
- 3 STOP PUMP ON HIGH OR LOW DISCHARGE PRESSURE AFTER A TIME DELAY.
- 4 SHUT DOWN DRIVE ON HIGH-HIGH TORQUE. MANUAL RESET.
- 6 OPEN SOLENOID VALVE WHEN PUMP IS IN OPERATION.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John J. O'Hara* 5/7/96
 Chief, Bureau of Engineering: *Paul J. Sposon* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *John J. O'Hara* 5-7-96

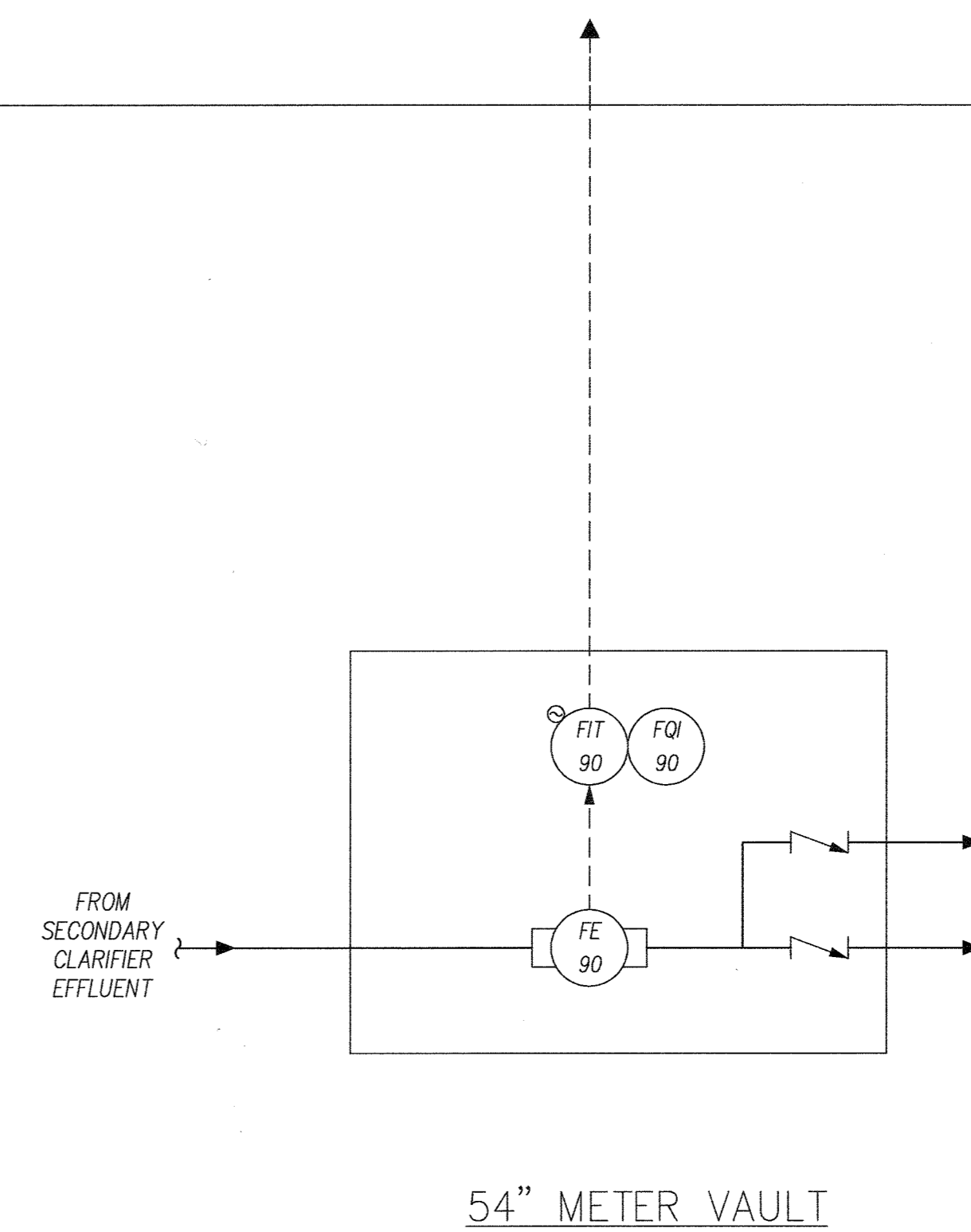
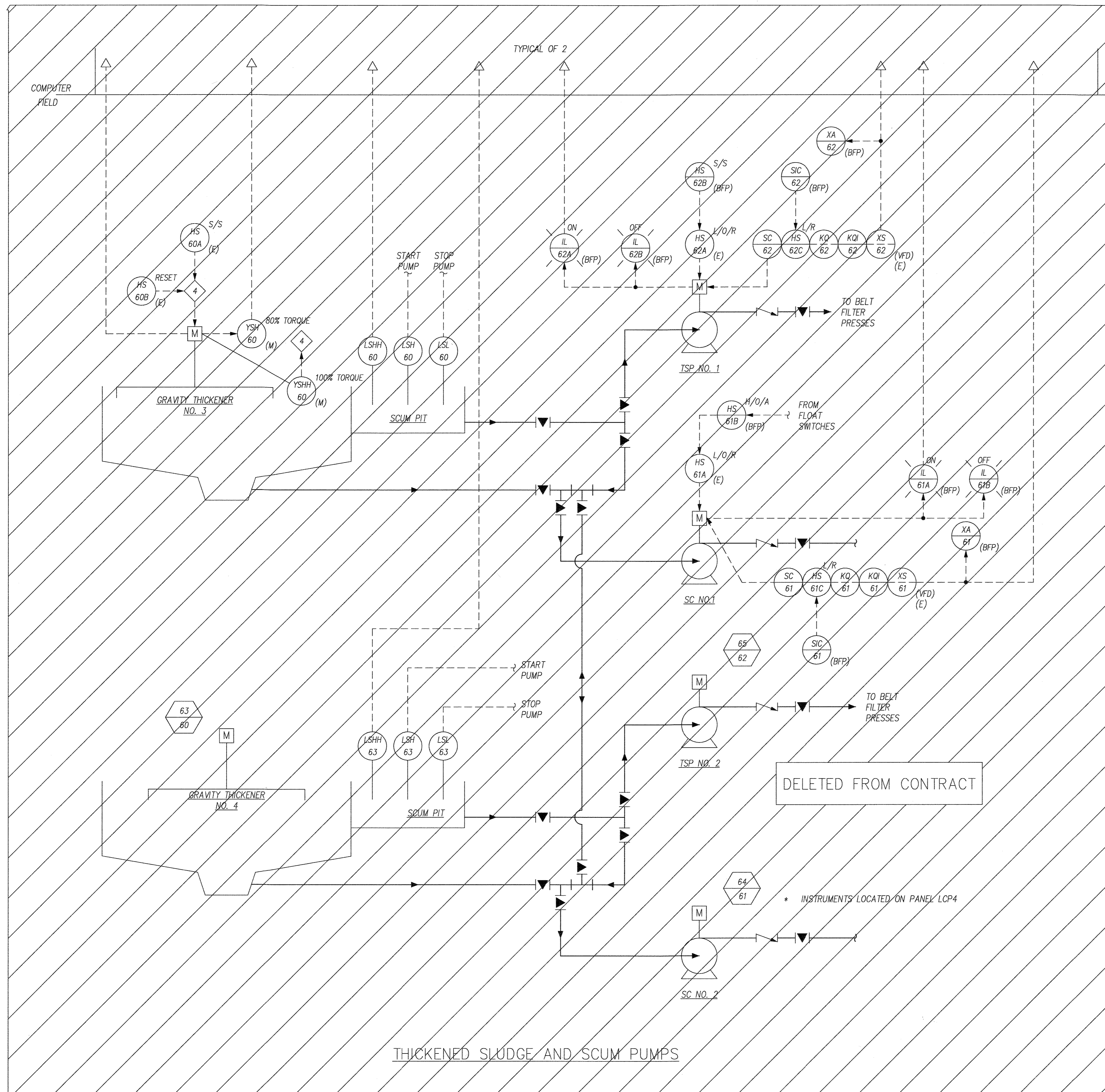
M&E Metcalf & Eddy
 Registered Professional Engineer
 Jonathan Winthrop Doane No. 15140
 5-7-96



DES: SZOTTFRIED	MB 1	REVISE FOR BIDDING	3/5/92
	MJC 2	RECORD DRAWING	2/5/95
DRN: S. COOK			
CHK:			
DATE:	BY NO.	REVISION	DATE

INSTRUMENTATION LOOP DIAGRAMS V

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 184 OF 226
 I-6A



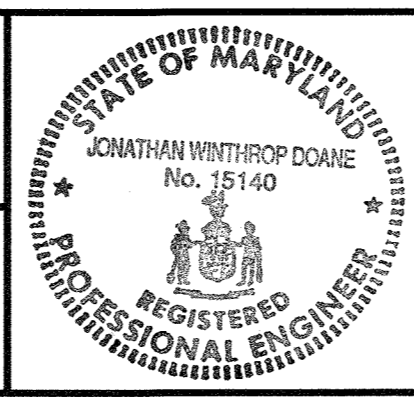
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Lee 5/1/96 *Paul W. Johnson* 5/7/96
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING

John J. O'Brien 5/7/96 *Q. Donlan* 5-7-96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Stone 5-7-96
REG. PROF. ENGR. DATE



DES:	SZOTTFRIED	MB	1	REVISE FOR BIDDING	3/5/92
DRN:	S. COOK	MJC	2	RECORD DRAWING	2/5/95
CHK:					
DATE:		BY	NO.	REVISION	DATE

INSTRUMENTATION
LOOP DIAGRAMS VI

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
185 OF 226

1-7A

FOR PLAN VIEW ONLY

- SURFACE, RECESSED OR PENDANT MOUNTED INCANDESCENT OR HIGH INTENSITY DISCHARGE LIGHTING FIXTURE
- SURFACE, RECESSED OR PENDANT MOUNTED FLUORESCENT LIGHTING FIXTURE
- WALL MOUNTED INCANDESCENT OR HIGH INTENSITY DISCHARGE LIGHTING FIXTURE
- EXISTING LIGHTING FIXTURES
- POLE OR POST-TOP MOUNTED LIGHTING UNIT
- ROADWAY LIGHTING UNIT
- WALL MOUNTED EXIT LIGHT
- CEILING OR PENDANT MOUNTED EXIT LIGHT
- REMOTE MOUNTED AUXILIARY LIGHTING HEAD MOUNT 7'-6" ABOVE FLOOR
- SINGLE POLE SWITCH CONTROLS FIXTURES MARKED "a"
- THREE-WAY SWITCH CONTROLS FIXTURES MARKED "a"
- FOUR-WAY SWITCH CONTROLS FIXTURES MARKED "b"
- DUPLEX RECEPTACLE (GROUND TYPE)
- SINGLE RECEPTACLE (GROUND TYPE)
- SPECIAL PURPOSE RECEPTACLE, TYPE AND AMPERE RATING AS INDICATED ON PLAN
- DENOTES DEVICE OR EQUIPMENT - FLUSH MOUNTED
- DENOTES DEVICE OR EQUIPMENT - SURFACE MOUNTED
- CLOCK RECEPTACLE MOUNTED 7'-6" ABOVE FINISHED FLOOR
- MANUAL MOTOR STARTER
- MAGNETIC MOTOR STARTER
- MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH
- REDUCED VOLTAGE MOTOR STARTER
- TWO SPEED MOTOR STARTER
- MAGNETIC CONTACTOR
- DISCONNECT SWITCH
- WALL MOUNTED THERMOSTAT - MOUNTED 5'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
- PANELBOARD
- POWER DISTRIBUTION PANEL
- UH = UNIT HEATER - FOR FAN HORSEPOWER, SEE PANELBOARD SCHEDULE
- EUH = ELECTRIC UNIT HEATER - FOR KW RATING, SEE SINGLE LINE DIAGRAM
- MOTOR - FOR HORSEPOWER RATING, SEE PANELBOARD SCHEDULE OR SINGLE LINE DIAGRAM
- D = DAMPER MOTOR
- M = MOTORIZED VALVE
- TELEPHONE TERMINAL CABINET
- TELEPHONE OUTLET, WALL MOUNTED
- JUNCTION BOX
- GROUND ROD - TYPE AND SIZE AS INDICATED ON PLAN
- CONTROL STATION

LETTER "A" DENOTES TYPE OF FIXTURE;
 "3" DENOTES PANELBOARD BRANCH CIRCUIT NO. 3;
 "a" DENOTES CONTROLLED BY LOCAL SWITCH "a".

LETTER DENOTES TYPE OF FIXTURE;
 NUMBER DENOTES PANELBOARD BRANCH CIRCUIT

FOR PLAN VIEW ONLY (CONT.)

- EXPLOSIONPROOF SEALING FITTING
- CONDUIT FITTING-E DENOTES EXPANSION FITTING
- CONDUIT RUNS CONCEALED IN FLOOR, WALL AND UNDERGROUND
- CONDUIT RUNS EXPOSED
- CONDUIT TURNING UP OR TOWARD OBSERVER
- CONDUIT TURNING DOWN OR AWAY FROM OBSERVER
- FLEXIBLE CONDUIT
- DIRECT BURIAL CABLE
- GROUNDING CABLE
- CONDUIT FOR TELEPHONE COMPANY'S WIRING
- CONDUIT FOR FIRE ALARM SYSTEM
- HOMERUN TO PANELBOARD - LETTERS AND NUMERALS DENOTE PANELBOARD AND CIRCUIT NUMBERS. ARROWS INDICATE NUMBER OF CIRCUITS (SEE GENERAL NOTE 4).
- DENOTES SECTION NO. OR DETAIL LETTER
- DENOTES SHEET NO. ON WHICH SECTIONS OR DETAIL IS EITHER SHOWN AND/OR TAKEN
- CONDUIT NUMBER FOR WIRING - SEE SCHEDULE
- A.F.F. ABOVE FINISHED FLOOR
- W DENOTES WATERTIGHT EQUIPMENT
- WP DENOTES WEATHERPROOF EQUIPMENT
- XP DENOTES EXPLOSIONPROOF EQUIPMENT
- SV SOLENOID VALVE
- CWS CONDUIT WALL ENTRANCE SEAL
- EWC ELECTRIC WATER COOLER
- PULL BOX
- CTB = CONTROL WIRING TERMINAL BOX
- STB = SIGNAL WIRING TERMINAL BOX

FIRE ALARM SYSTEM

- FA FIRE ALARM CONTROL PANEL
- FAA FIRE ALARM ANNUNCIATOR PANEL
- FB FIRE ALARM BELL, NUMBER DENOTES SIZE
- F MANUAL FIRE ALARM STATION
- FB MANUAL FIRE ALARM STATION AND ALARM BELL
- FD FIRE ALARM DISCONNECT SWITCH
- FH FIRE ALARM HORN
- F FIRE DETECTOR
- SD SMOKE DETECTOR
- HD HEAT DETECTOR

INTERCOM SYSTEM

- ITW INTERCOM TELEPHONE WALL OUTLET
- D TW DESK TYPE WALL MOUNTED
- TRUMPET TYPE LOUDSPEAKER, WALL MOUNTED
- TRUMPET, BI-DIRECTIONAL TYPE LOUDSPEAKER, WALL MOUNTED
- TB TERMINAL BOX
- H HORN

SECURITY SYSTEM

- DL DOOR LOCK
- DS DOOR ALARM DOOR SWITCH
- KS DOOR ALARM KEY BYPASS SWITCH
- KP KEY PAD
- CR CARD READER
- CS CARD SENSOR
- MD MOTION DETECTOR
- SSCP SECURITY SYSTEM CONTROL PANEL

FOR SINGLE LINE DIAGRAM AND PLAN VIEW CONTROL DEVICES

- SL STOP-PUSHBUTTON, MOMENTARY-CONTACT TYPE WITH LOCKOUT LATCH
- SS START-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE
- SSL START-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE WITH LOCKOUT LATCH
- SSI START-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE WITH RED (RUN) AND GREEN (OFF) INDICATING LIGHTS
- SF SLOW-FAST PUSHBUTTON, MOMENTARY-CONTACT TYPE
- SFS SLOW-FAST-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE
- SC SPEED CONTROLLER
- JOC JOG-OPEN-CLOSE PUSHBUTTON, MOMENTARY-CONTACT TYPE
- JSSL JOG-START-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE WITH LOCKOUT SWITCH
- JSL JOG-STOP PUSHBUTTON, WITH LOCKOUT
- FSR FORWARD-STOP-REVERSE PUSHBUTTON, MOMENTARY-CONTACT TYPE
- FSRL FORWARD-STOP-REVERSE PUSHBUTTON, MOMENTARY-CONTACT TYPE WITH LOCKOUT LATCH
- FOH FAN-OFF-HEATER SELECTOR SWITCH
- RTM RUNNING TIME METER
- HOA HAND-OFF-AUTOMATIC SELECTOR SWITCH
- LR LOCAL-REMOTE SELECTOR SWITCH
- LOR LOCAL-OFF-REMOTE SELECTOR SWITCH
- OC OPEN-CLOSE SWITCH
- OCA OPEN-CLOSE-AUTO SELECTOR SWITCH
- OSC OPEN-STOP-CLOSE PUSHBUTTON
- SSM START-STOP PUSHBUTTON, MAINTAINED-CONTACT TYPE
- ES EMERGENCY STOP SWITCH
- FS FLOAT SWITCH
- TS TIME SWITCH
- LS LIMIT SWITCH
- PS PRESSURE SWITCH
- SV SOLENOID VALVE
- VPS VACUUM PRESSURE SWITCH
- TQ TORQUE ALARM SWITCH
- PHL PHOTOELECTRIC SWITCH
- PE PNEUMATIC ELECTRIC
- T THERMOSTAT
- HWT HIGH WATER TEMPERATURE SWITCH
- SQ SEQUENCE SELECTOR SWITCH
- SEL SELECTOR SWITCH
- BTD BEARING TEMPERATURE DETECTOR
- BTS BEARING TEMPERATURE SWITCH
- CV CONE VALVE
- EOV ELECTRICALLY OPERATED VALVE
- EUH ELECTRIC UNIT HEATER
- FC FLOW CONTROLLER
- FE FLOW ELEMENT
- FIT FLOW INDICATING TRANSMITTER
- FT FLOW TRANSMITTER
- LC LEVEL CONTROLLER
- LE LEVEL ELEMENT
- LI LEVEL INDICATOR
- LIT LEVEL INDICATING TRANSMITTER
- LLS LOW LEVEL SHUTDOWN
- LT LEVEL TRANSMITTER
- MCC MOTOR CONTROL CENTER
- MSD MOISTURE SENSING DETECTION PANEL
- MTP MOTOR THERMAL PROTECTOR (BUILT-IN)
- MOV MOTOR OPERATED VALVE
- RB RESET BUTTON
- SI SPEED INDICATOR
- SCR SILICON CONTROL RECTIFIER
- SWSV SEAL WATER SOLENOID VALVE
- TI TIMER
- HOS HAND-OFF-STANDBY SELECTOR SWITCH
- MHC MECHANICALLY HELD LIGHTING CONTACTOR
- SH SPACE HEATER

FOR SINGLE LINE DIAGRAMS

- MOLDED CASE CIRCUIT BREAKER, THERMAL MAGNETIC TRIP, WITH CURRENT LIMITING FUSES, 3-POLE UNLESS OTHERWISE NOTED. UPPER NUMERAL INDICATES FRAME SIZE, LOWER NUMERAL INDICATES TRIP SETTING.
- MOLDED CASE CIRCUIT BREAKER, THERMAL MAGNETIC TRIP, 3-POLE UNLESS OTHERWISE NOTED. UPPER NUMERAL INDICATES FRAME SIZE, LOWER NUMERAL INDICATES TRIP SETTING.
- MOTOR CIRCUIT PROTECTOR. NUMERAL INDICATES CONTINUOUS CURRENT RATING. MCPL = WITH CURRENT LIMITING FUSES.
- LOW VOLTAGE POWER CIRCUIT BREAKER, DRAWOUT TYPE, MANUALLY OR ELECTRICALLY OPERATED WITH STATIC TRIP DEVICES AND GROUND SENSOR. UPPER NUMERAL INDICATES FRAME SIZE, LOWER NUMERAL INDICATES TRIP SETTING. "E" INDICATES ELECTRICALLY OPERATED.
- UNFUSED DISCONNECT SWITCH. NUMERAL DENOTES AMPERE RATING.
- FUSED DISCONNECT SWITCH, 3-POLE UNLESS OTHERWISE NOTED. UPPER NUMERAL INDICATES FUSE CLIP AMPERE SIZE, LOWER NUMERAL INDICATES FUSE RATING.
- CT = CURRENT TRANSFORMER, NUMERAL DENOTES QUANTITY.
- PT = POTENTIAL TRANSFORMER, DRAWOUT TYPE NUMERAL DENOTES QUANTITY.
- CPT = CONTROL POWER TRANSFORMER, DRAWOUT TYPE WITH FUSE.
- PT = POTENTIAL TRANSFORMER, NUMERAL DENOTES QUANTITY. CPT = CONTROL POWER TRANSFORMER WITH FUSE.
- FUSED DISCONNECT SWITCH DRAWOUT TYPE
- TRANSFORMER, SIZE AS NOTED
- MAGNETIC STARTER
 - FVNR = FULL VOLTAGE, NON-REVERSING
 - FVR = FULL VOLTAGE, REVERSING
 - FVTS = FULL VOLTAGE TWO SPEED
 - RVNR = REDUCED VOLTAGE, NON-REVERSING AUTO-TRANSFORMER TYPE
 - PW = PART WINDING
 - C = MAGNETIC CONTACTOR (WITHOUT OL.)
- AUXILIARY CONTACTS: 1a = ONE NORMALLY OPEN, 1b = ONE NORMALLY CLOSED
- NUMERAL INDICATES NEMA SIZE
- SYNCHRONOUS MOTOR. NUMERAL DENOTES HORSEPOWER.
- SQUIRREL CAGE INDUCTION MOTOR. NUMERAL DENOTES HORSEPOWER.
- WOUND ROTOR INDUCTION MOTOR. NUMERAL DENOTES HORSEPOWER. SC=SECONDARY CONTROL
- A = AMMETER
- V = VOLTMETER
- W = WATTMETER
- WH = WATTHOUR METER
- D = DEMAND METER
- EX = EXCITER
- F = FREQUENCY METER
- RT = RUNNING TIME METER
- TA = TACHOMETER
- TG = TACHOMETER GENERATOR
- PF = POWER FACTOR METER
- VAR = VAR METER
- VR = VOLTAGE REGULATOR
- KWH = KILOWATTHOUR METER
- FUSE-CLF DENOTES CURRENT LIMITING TYPE
- INDICATING LIGHTS: R=RED, B=BLUE, G=GREEN, A=AMBER
- ELECTRIC UNIT HEATER KW RATING AS NOTED
- ELECTRICALLY INTERLOCKED
- MECHANICALLY INTERLOCKED
- NORMALLY OPEN CONTACT (DEENERGIZED POSITION)
- NORMALLY CLOSED CONTACT (DEENERGIZED POSITION)
- ATS AUTOMATIC TRANSFER SWITCH
- AL ALARM
- AN ANNUNCIATOR
- CR CONTROL RELAY
- TD TIME DELAY RELAY
- OL'S MOTOR OVERLOADS
- MCP MOTOR CIRCUIT PROTECTOR
- GFO GRINDER FAILURE OVERRIDE
- SPF SHEAR PIN FAILURE
- VSS VOLTMETER SELECTOR SWITCH
- ASS AMMETER SELECTOR SWITCH
- TS TEST BLOCK
- SURGE PROTECTIVE EQUIPMENT
- LIGHTNING ARRESTER, NUMERAL DENOTES QUANTITY
- HIGH VOLTAGE POWER CIRCUIT BREAKER, DRAWOUT TYPE, ELECTRICALLY OPERATED, STORED-ENERGY TYPE, 125 VOLT D.C. CLOSE AND TRIP.
- GFP GROUND FAULT PROTECTION

GENERAL NOTES

1. ALL CONDUIT AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.
2. CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL TO BEAMS AND WALLS.
3. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTIONS TO MOTORS AND OTHER EQUIPMENT.
4. NO CONDUIT SMALLER THAN 3/4" PIPE SIZE NOR WIRE SMALLER THAN NO.12 A.W.G. SHALL BE USED UNLESS OTHERWISE NOTED.
5. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
6. SWITCHES SHALL BE MOUNTED 4'-6" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED. RECEPTACLES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. EXCEPT RECEPTACLES IN OFFICES OR AREAS WITH HUNG CEILINGS SHALL BE MOUNTED 1'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
7. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INSIDE OF THE EXTERIOR WALLS ABOVE GRADE, OR IN OTHER LOCATIONS CONSIDERED AS DAMP, SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4" AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
8. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE TOP CIRCUIT BREAKER OPERATING HANDLE TO THE FLOOR SHALL NOT EXCEED 6'-6".
9. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO THE FINISHED FLOOR.
10. CONDUIT AND WIRE (NOT SHOWN) FOR THE HVAC CONTROL EQUIPMENT AND MISCELLANEOUS DEVICES SHALL BE FURNISHED AND INSTALLED UNDER OTHER SECTIONS OF THE SPECIFICATIONS AND SHALL BE:
 - a. 3/4" (MIN.) STEEL CONDUIT.
 - b. NO.12 COPPER WIRE (SEE SPECIFICATIONS). QUANTITY OF WIRES AS REQUIRED.
11. CONDUIT AND WIRE (NOT SHOWN) FOR THE LIGHTING FIXTURES, SWITCHES AND/OR RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND SHALL BE:
 - a. 3/4" (MIN.) RIGID STEEL CONDUIT RUN.
 1. EXPOSED IN UNFINISHED AREAS.
 2. CONCEALED ABOVE HUNG CEILINGS AND IN WALLS IN FINISHED AREAS.
 - b. NO.12 COPPER WIRE (MIN.) TYPE "THW". QUANTITY OF WIRES AS REQUIRED.
12. OUTLET, SWITCH, JUNCTION, PULL AND TERMINAL BOXES SHALL BE PROVIDED WITH NEMA ENCLOSURES AS INDICATED IN THE SPECIFICATIONS.
13. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS AS REQUIRED. FOR EXACT LOCATIONS OF EXPANSION JOINTS SEE STRUCTURAL DRAWINGS.
14. SWITCHGEAR AND MCC COMPARTMENT DESIGNATIONS AS INDICATED BELOW:
 - BLANK - NOT INTENDED FOR USE-PLATE ONLY
 - SPACE - CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN.
 - SPARE - CONTAINS A COMPLETE BREAKER OR STARTER INSTALLED, SIZE AS INDICATED, AVAILABLE FOR FUTURE USE.
15. ALL MOTOR STARTER CONTROL TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR; IN ADDITION TO THE STARTER COIL, IT SHALL INCLUDE RELAYS, TIMERS, MOTOR HEATERS, INDICATING LIGHTS, ETC.
16. DUCTLINE CONDUIT SIZES ARE GIVEN IN THE DUCTLINE SECTIONS WHERE THE SAME CONDUIT NUMBER IS USED BOTH IN THE DUCTLINE AND IN THE BUILDING. THE CONDUIT SIZE GIVEN IN THE CONDUIT SCHEDULE APPLIES TO THE CONDUIT IN THE BUILDING ONLY.
17. ALL UNDERGROUND CONDUIT SHALL BE ENCASED IN CONCRETE AS SPECIFIED AND SHOWN ON SHT. E-40 UNLESS OTHERWISE INDICATED.
18. FOR EXPLANATION OF INSTRUMENTATION SYMBOLS SHOWN ON ELECTRICAL DRAWINGS, SEE INSTRUMENTATION LEGEND AND NOTES SHEET.

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>John J. O'Hara</i> 5/1/96 DIRECTOR OF PUBLIC WORKS</p> <p><i>John J. O'Hara</i> 5/1/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>M&E Metcalf & Eddy</p> <p><i>Jonathan W. Doane</i> 5-7-96 REG. PROF. ENGR.</p>		<p>DES: _____</p> <p>DRN: M.J.C.</p> <p>CHK: J.E.H.</p> <p>DATE: _____</p>	<p>ELECTRICAL</p> <p>LEGEND, SYMBOLS & GENERAL NOTES</p>	<p>LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p>CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 186 OF 226</p> <p>E-1R</p>									
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>M.J.C.</td> <td>1</td> <td>RECORD DRAWING</td> <td>4/3/95</td> </tr> <tr> <td>BY</td> <td>NO.</td> <td>REVISION</td> <td>DATE</td> </tr> </table>	M.J.C.	1	RECORD DRAWING	4/3/95	BY	NO.	REVISION	DATE				
M.J.C.	1	RECORD DRAWING	4/3/95												
BY	NO.	REVISION	DATE												



NOTES CONTINUED:

5. NEW GATE SECURITY USED EXISTING DUCT BANKS THROUGH MH# 2, 22, 20, 19, 18, PS2, PIV3, PS2, 18, 30, 31, 32, 37, 39.
6. NEW MAIN BUILDING SECURITY AND FIRE PROTECTION USED EXISTING DUCT BANKS THROUGH MH# 33, 32, 37, 39.
7. CONDUITS C-7A-10,11 AND C-7B-6,7 AND C-20-104, 105, 106 WERE DELETED. EXISTING CONDUIT WAS USED.
8. DIGESTERS, GRAVITY THICKENERS, MCC-18, PS5 WERE DELETED FROM CONTRACT.

SITE PLAN
SCALE: 1"=60'-0"

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-37, E-38 & E-39.
3. FOR DUCT BANK SECTIONS SEE SHT. E-40.
4. NPS & SPS TEL. WIRES(T-21-37,T-22-31) TERMINATE AT THE TEL. BOX IN THE 13.2 KV SUBSTATION. THE WIRES USE EXISTING DUCT BANKS THROUGH MH# 3, 3A.

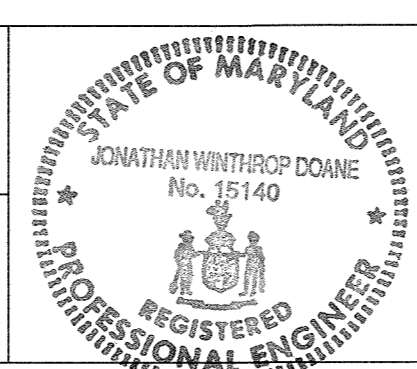
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. ... 5/7/96
DIRECTOR OF PUBLIC WORKS

John ... 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
REG. PROF. ENGR.



DES	DRN	CHK	DATE	M.J.C.	BY	NO.	REVISION	DATE
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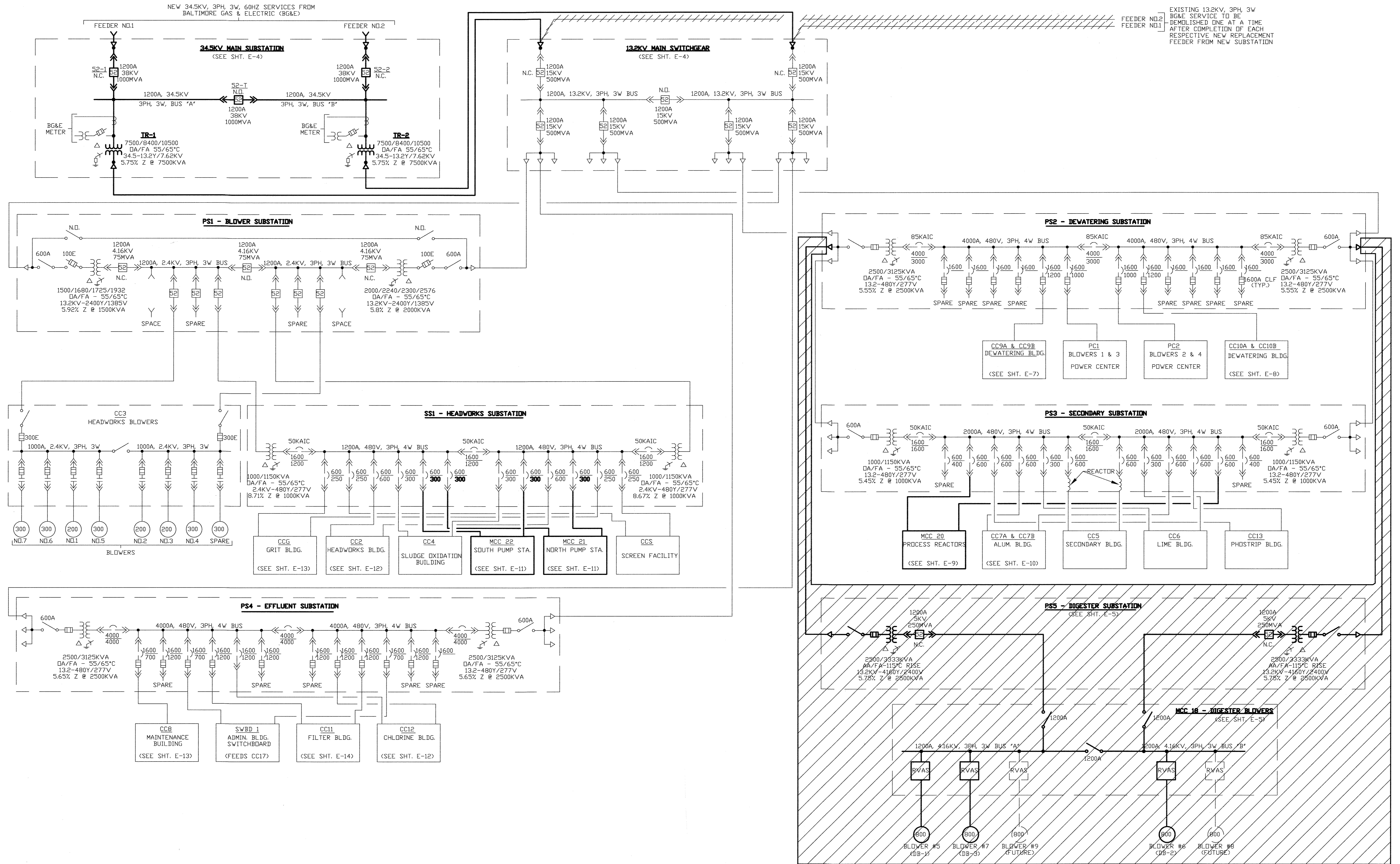
ELECTRICAL

SITE PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

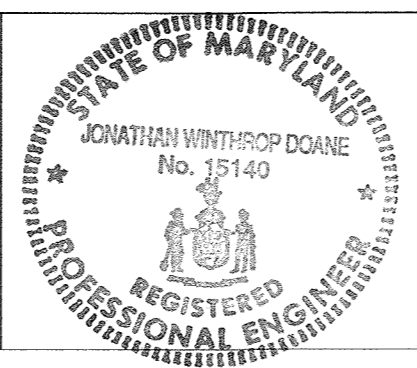
SCALE AS SHOWN
SHEET 187 OF 226
E-2R



EXISTING 13.2KV, 3PH, 3W BG&E SERVICE TO BE DEMOLISHED ONE AT A TIME AFTER COMPLETION OF EACH RESPECTIVE NEW REPLACEMENT FEEDER FROM NEW SUBSTATION

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *James A. Lewis* 5/7/96
 Chief, Bureau of Engineering: *John O'Hara* 5/7/96
 Chief, Bureau of Environmental Services: *John O'Hara* 5/7/96

M&E Metcalf & Eddy
 Chief, Bureau of Engineering: *John O'Hara* 5/7/96
 Reg. Prof. Engr. *Jonathan W. Doane* 5-7-96

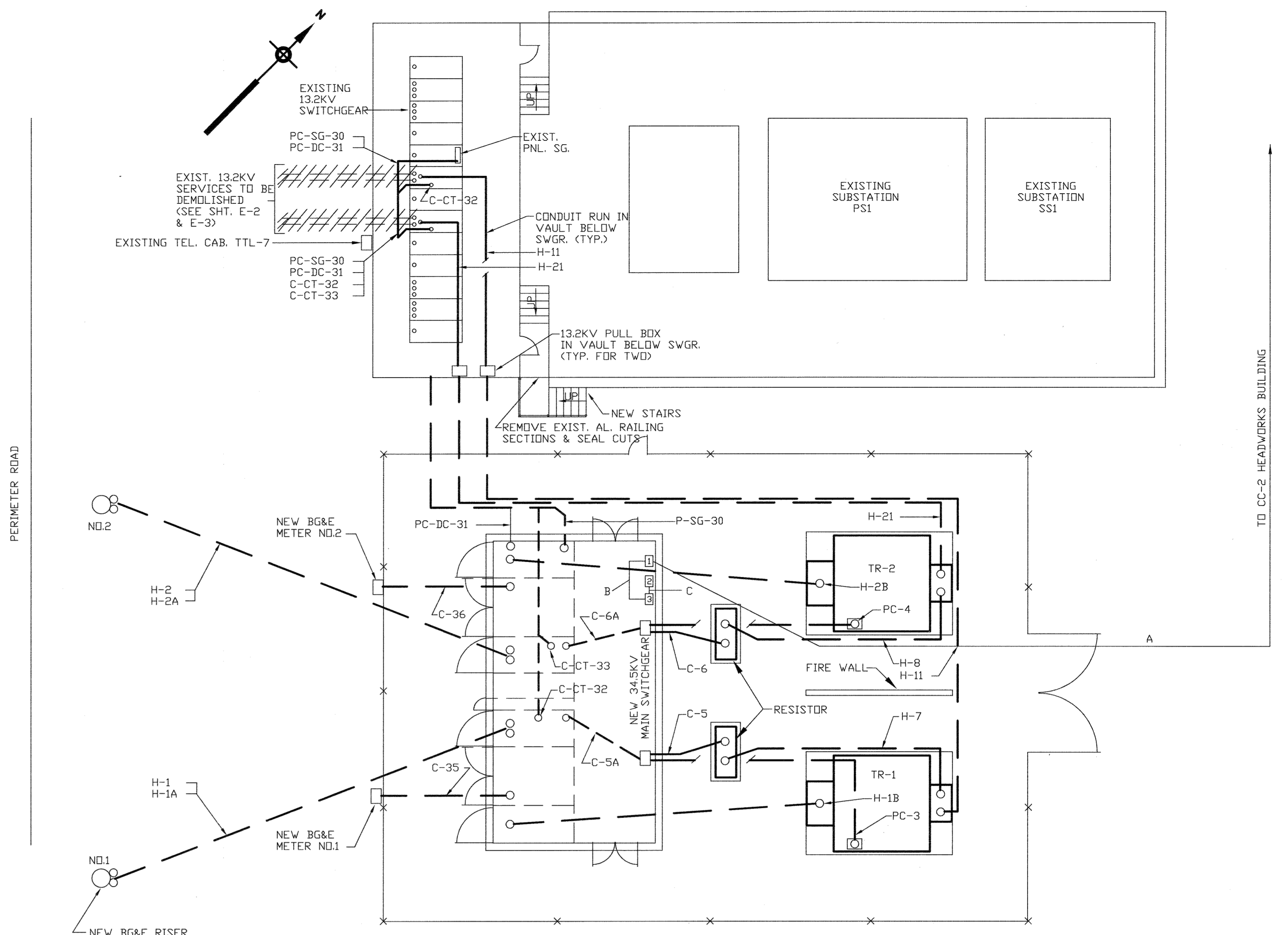
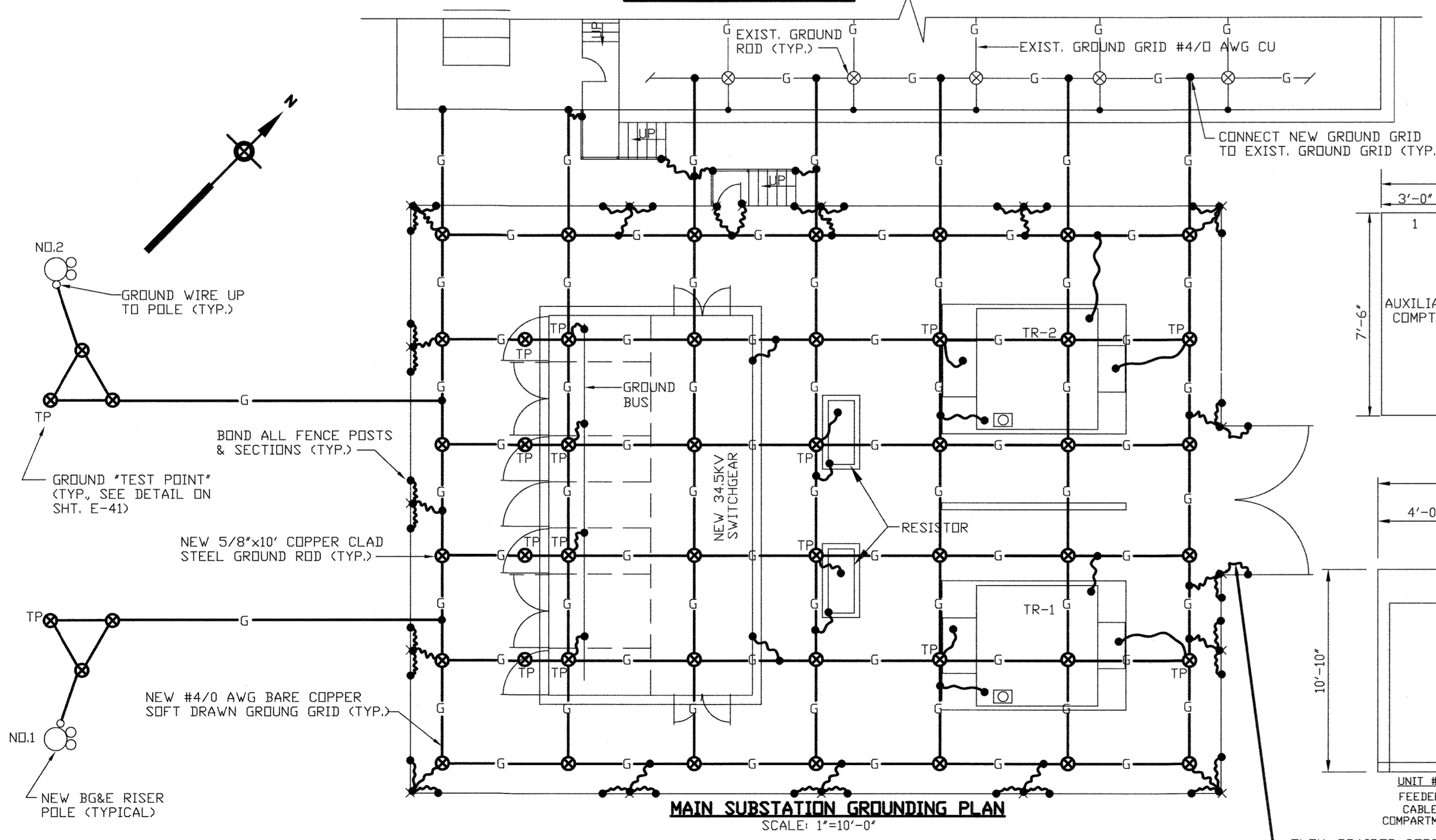
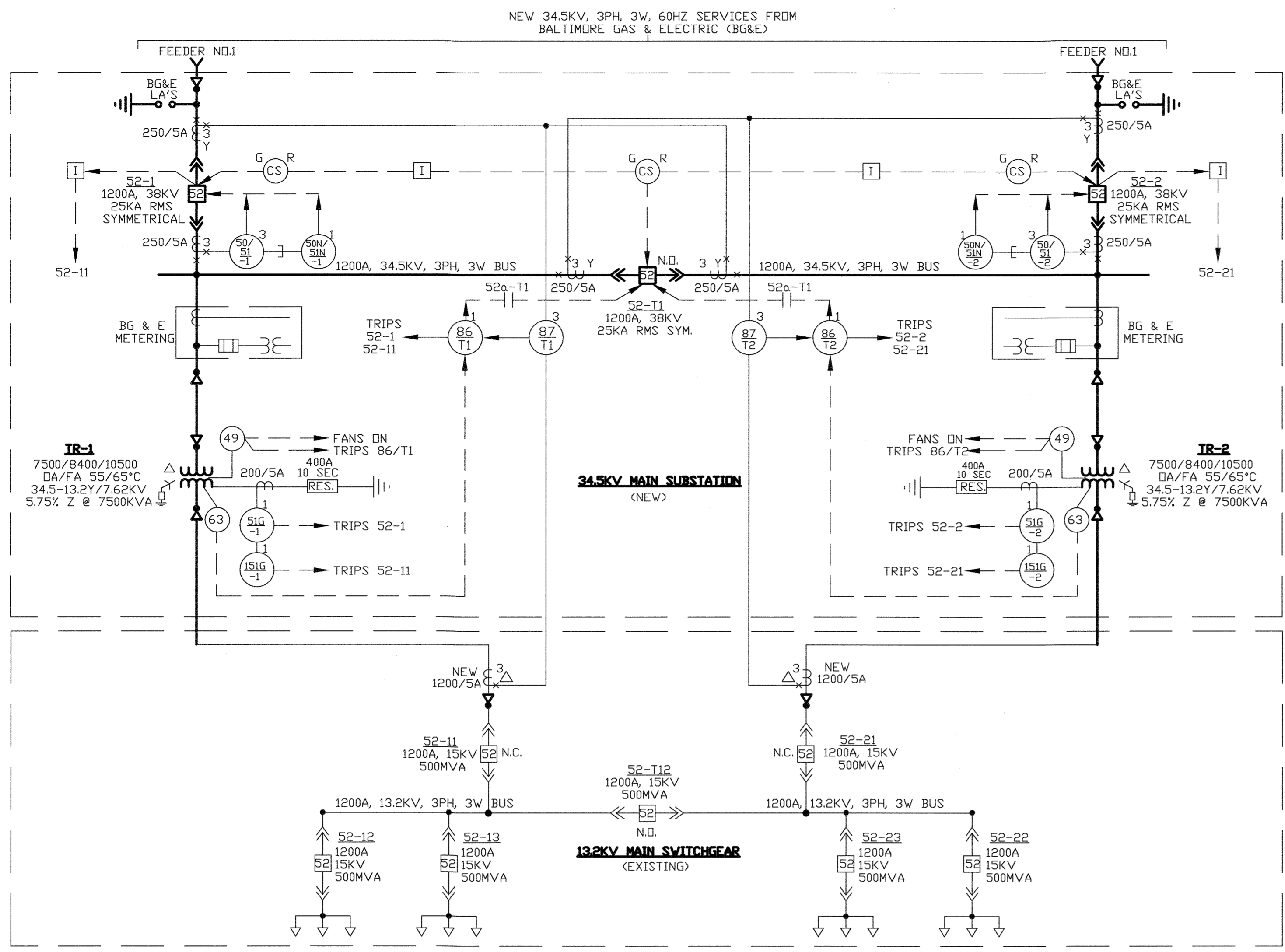


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DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/2/95
	BY NO.	REVISION	DATE

ELECTRICAL
 PLANT ONE LINE DIAGRAM

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 188 OF 226
 E-3R



FRONT ELEVATION - EXISTING 13.2KV MAIN SWITCHGEAR

INDOOR ENCLOSURE ONLY - NO SCALE

1	2	3	4	5	6	7	8	9	10	11	12	13
AUXILIARY COMPT.	FEEDER BREAKER 52-12	FEEDER BREAKER 52-13	BG&E METERING COMPT.	PT'S CPT SURGE PROT.	MAIN BREAKER 52-11	TIE BREAKER 52-T12	MAIN BREAKER 52-21	PT'S CPT SURGE PROT.	BG&E METERING COMPT.	FEEDER BREAKER 52-23	FEEDER BREAKER 52-22	AUXILIARY COMPT.
			SEE NOTE 5		SEE NOTE 4		SEE NOTE 4		SEE NOTE 5			

FRONT ELEVATION - NEW 34.5KV MAIN SWITCHGEAR

SEE NOTE 3, OUTDOOR ENCLOSURE NOT SHOWN - NO SCALE

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8
FEEDER CABLE COMPARTMENT	BG&E METERING LINE #1	INCING MAIN BREAKER LINE #1	TIE BREAKER	INCING MAIN BREAKER LINE #2	BG&E METERING LINE #2	FEEDER CABLE COMPARTMENT	

CONDUITS:

A - 2" C 3-#3/0 CC2 TO 480 V PNL 1-#2

B - 1" C 3-#4 480 V PNL TO XFRM 1-#3

C - 2" C 3-#3/0 XFRM TO 240/120 PNL 1-#2

PC - DC-31 SPARE

- NOTES:**
- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
 - FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-39.
 - DIMENSIONS & ARRANGEMENT SHOWN ARE APPROXIMATE AND MAY BE SLIGHTLY MODIFIED, WITH ENGINEER'S & BG&E'S PRIOR APPROVALS, BASED ON MANUFACTURER'S STANDARDS.
 - REMOVE EXISTING BG&E SERVICE & CONNECT NEW CABLES FROM NEW SUBSTATION. FURNISH & INSTALL THREE NEW 1200/5A CURRENT TRANSFORMERS FOR EACH MAIN BREAKER AS SHOWN ON ONE LINE DIAGRAM.
 - REMOVE EXISTING CT'S & PT'S AND RETURN TO BG&E. PROVIDE NEW BUS LINKS & INSULATION TO MATCH EXISTING METAL CLAD DESIGN. REMOVE ALSO EXISTING BG&E WATTHOUR METERS (NOT SHOWN) & RETURN TO BG&E.
 - TELEPHONE CONDUIT T-1,T-2 WERE DELETED.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James G. Linn 5/7/96
 DIRECTOR OF PUBLIC WORKS DATE

John J. O'Hara 5/7/96
 CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 5/7/96
 CHIEF BUREAU OF ENGINEERING DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
 REG. PROF. ENGR. DATE



DES				
DRN				
CHK				
DATE	M.J.C. 1	RECORD DRAWING	4/2/95	
	BY	NO.	REVISION	DATE

ELECTRICAL

ONE LINE DIAGRAM

34.5KV MAIN SUBSTATION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT

LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION

ADDITION NO. 5

CAPITAL PROJECT S-6153

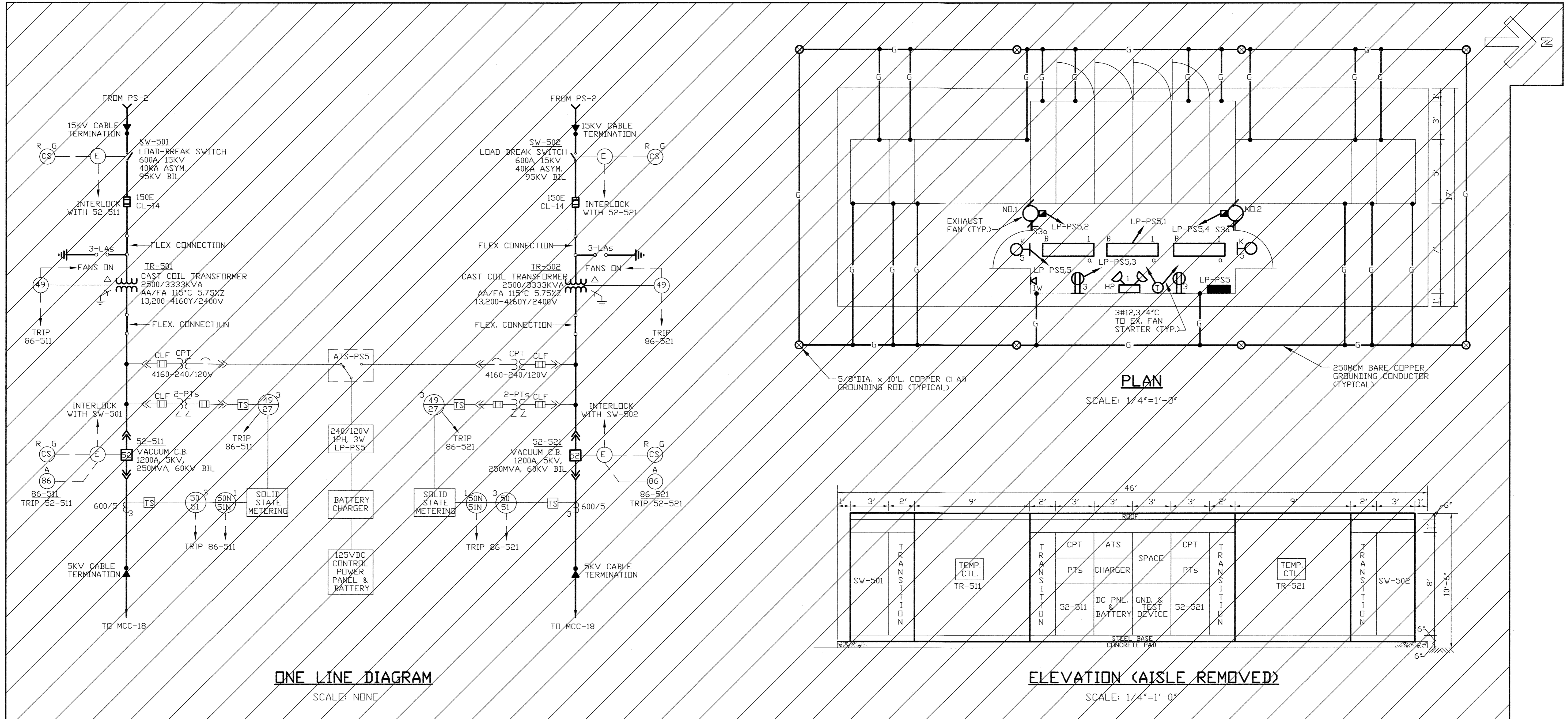
CONTRACT NO. 20-3082

HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 189 OF 226

E-4R



DELETED FROM CONTRACT

NOTES:

- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.

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HOWARD COUNTY, MARYLAND

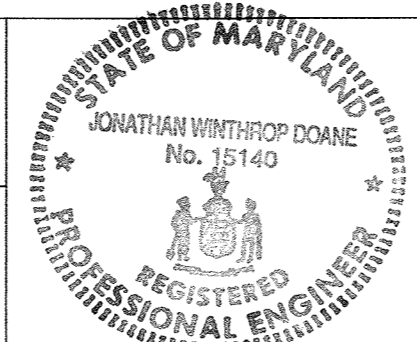
Samuel L. ... 5/1/96
DIRECTOR OF PUBLIC WORKS

John J. ... 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

... 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
REG. PROF. ENGR.



DES:					
DRN:					
CHK:					
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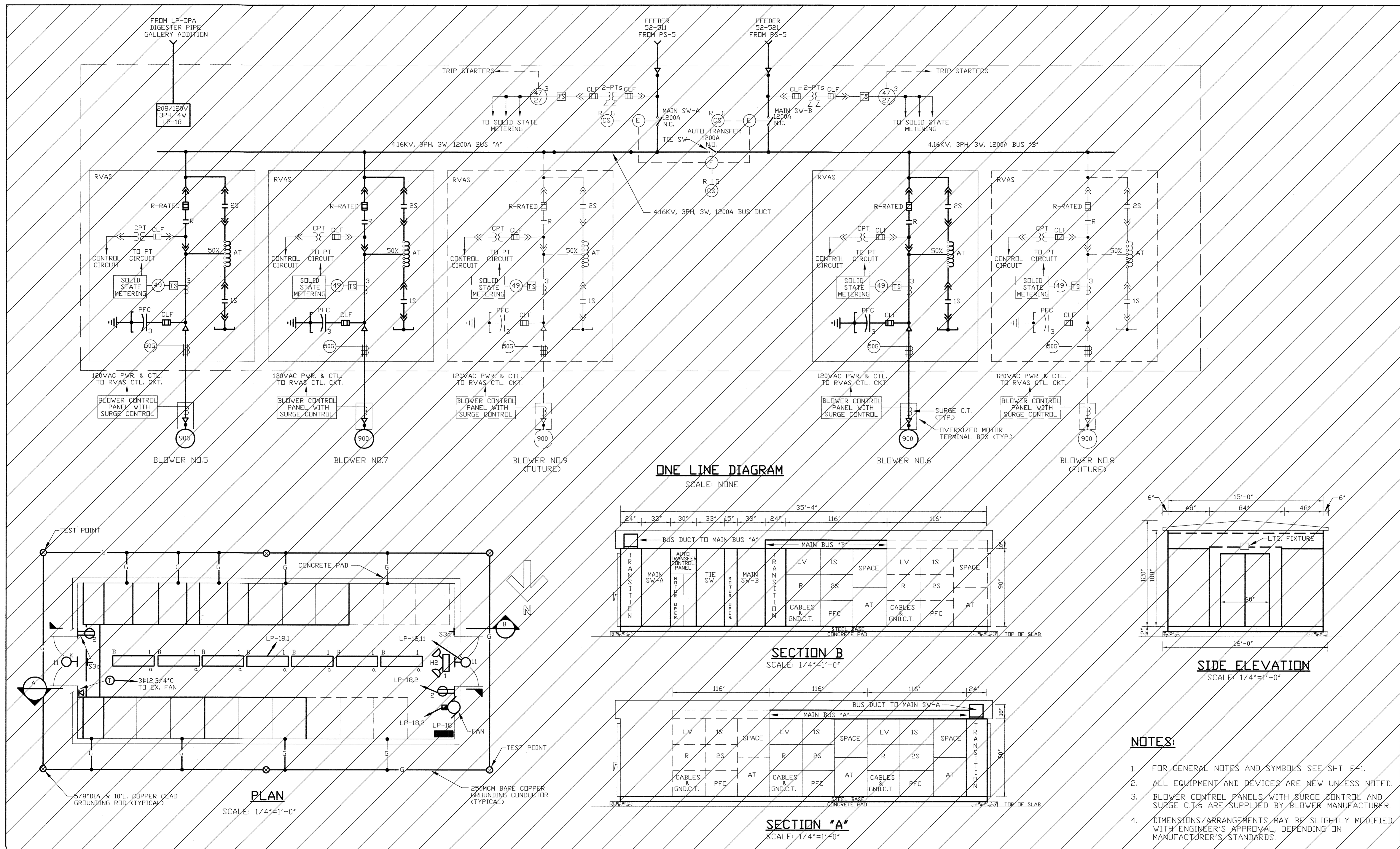
ELECTRICAL

ONE LINE DIAGRAM - PS5
- DIGESTER SUBSTATION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 190 OF 226
E-5R



DELETED FROM CONTRACT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Samuel P. Kwan 5/16/96
DIRECTOR OF PUBLIC WORKS DATE

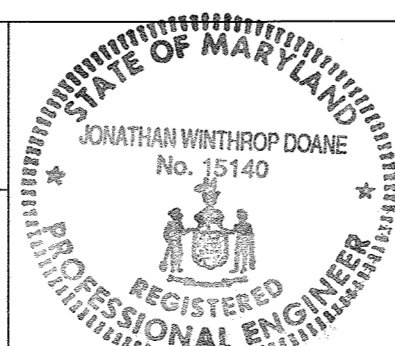
John J. O'Hara 5/17/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John P. Ryan 5/17/96
CHIEF, BUREAU OF ENGINEERING DATE

Cheryl W. Doane 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REG. PROF. ENGR. DATE



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DRN				
CHK				
DATE	M.J.C.	1	RECORD DRAWING	4/2/95
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ELECTRICAL

ONE LINE DIAGRAM - MCC18
-DIGESTER BLOWERS

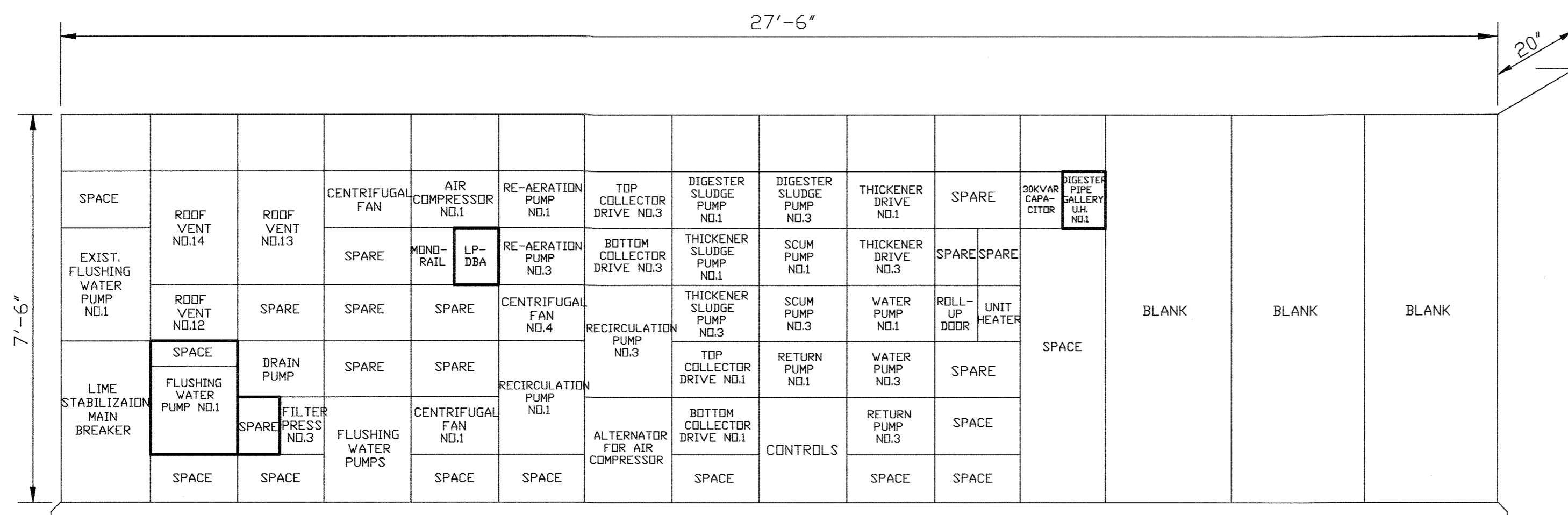
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

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HOWARD COUNTY, MARYLAND

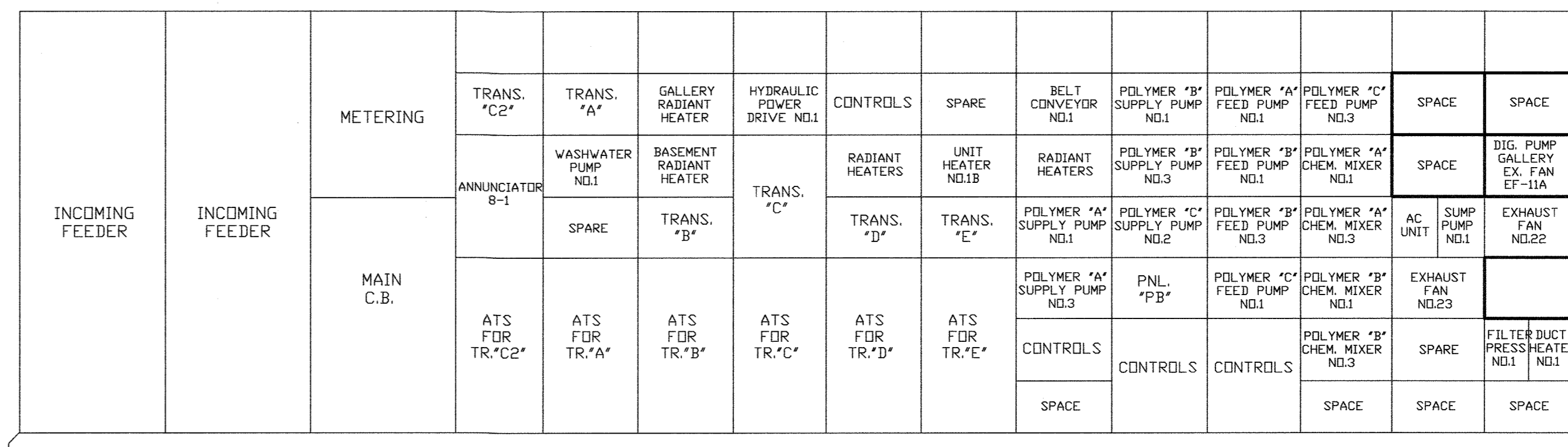
SCALE AS SHOWN

SHEET 191 OF 226

E-6R

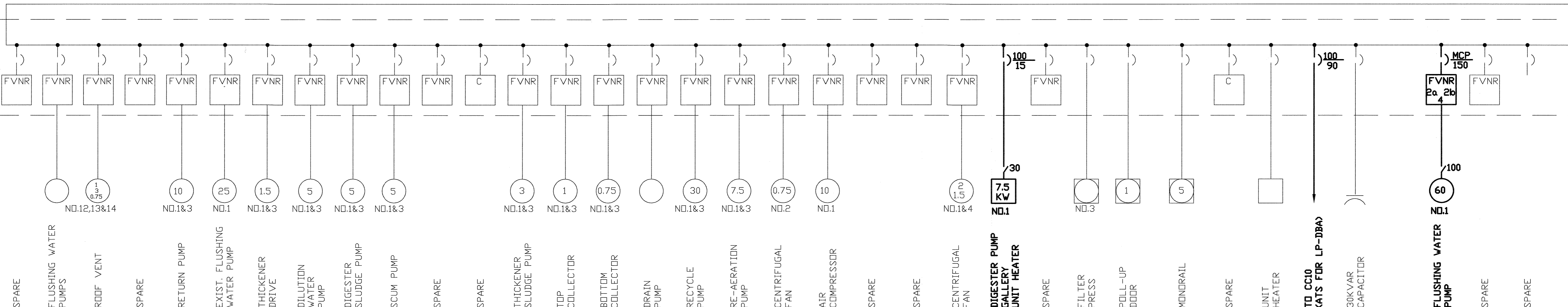
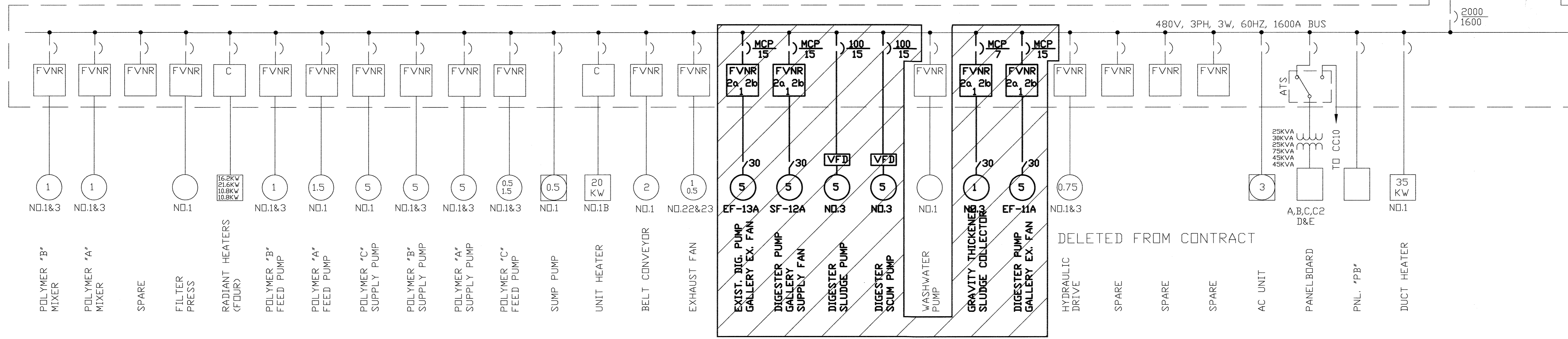
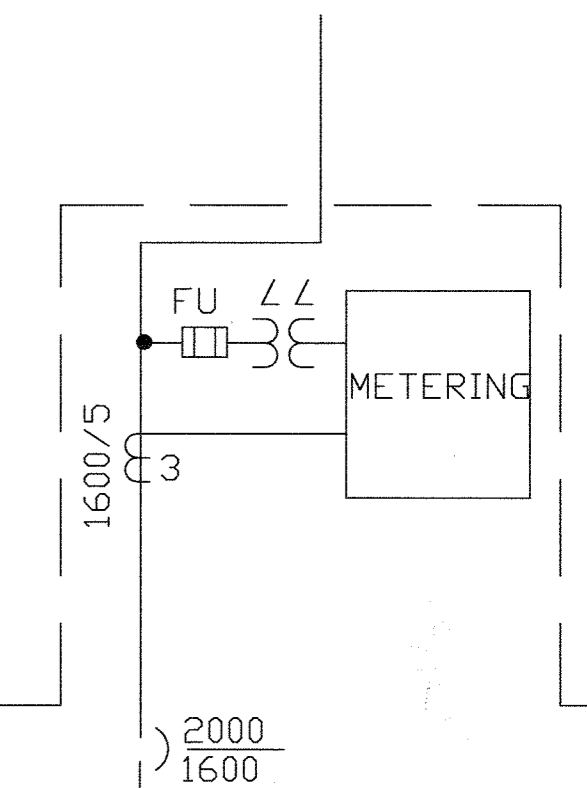


CC9 - REAR ELEVATION
(MCC 9B)



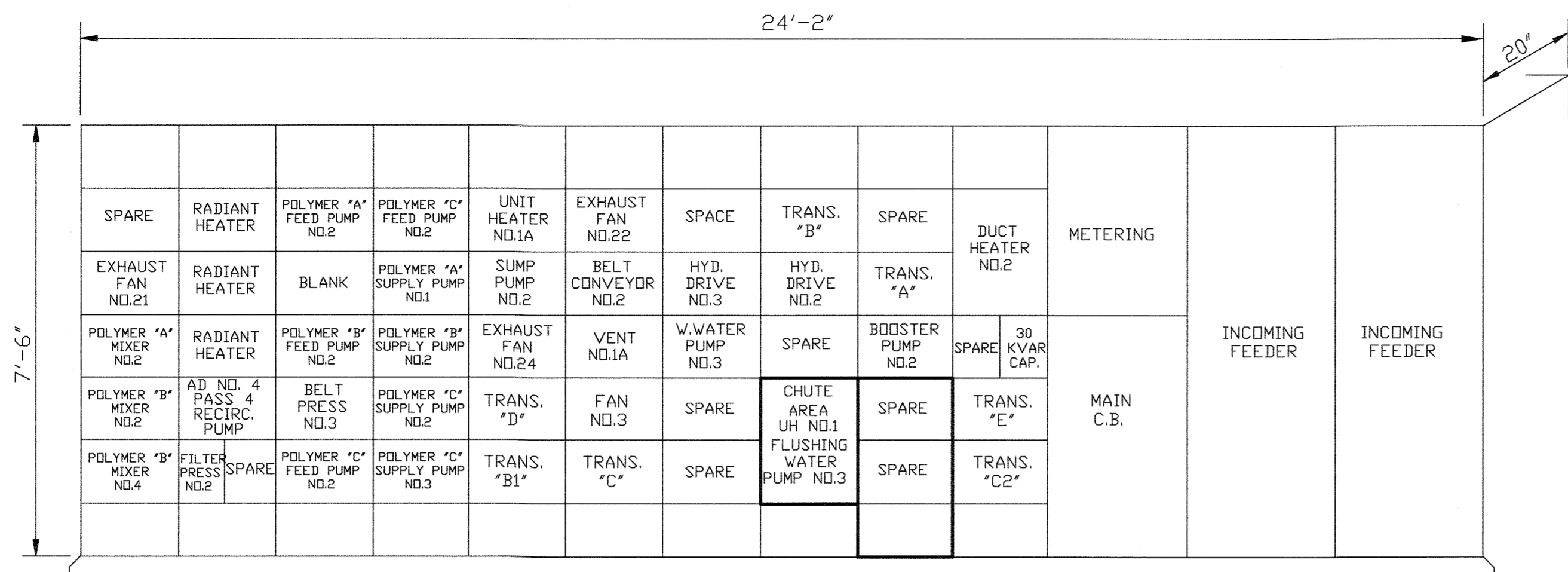
CC9 - FRONT ELEVATION
(MCC 9A)

FROM PS2
DEWATERING SUBSTATION

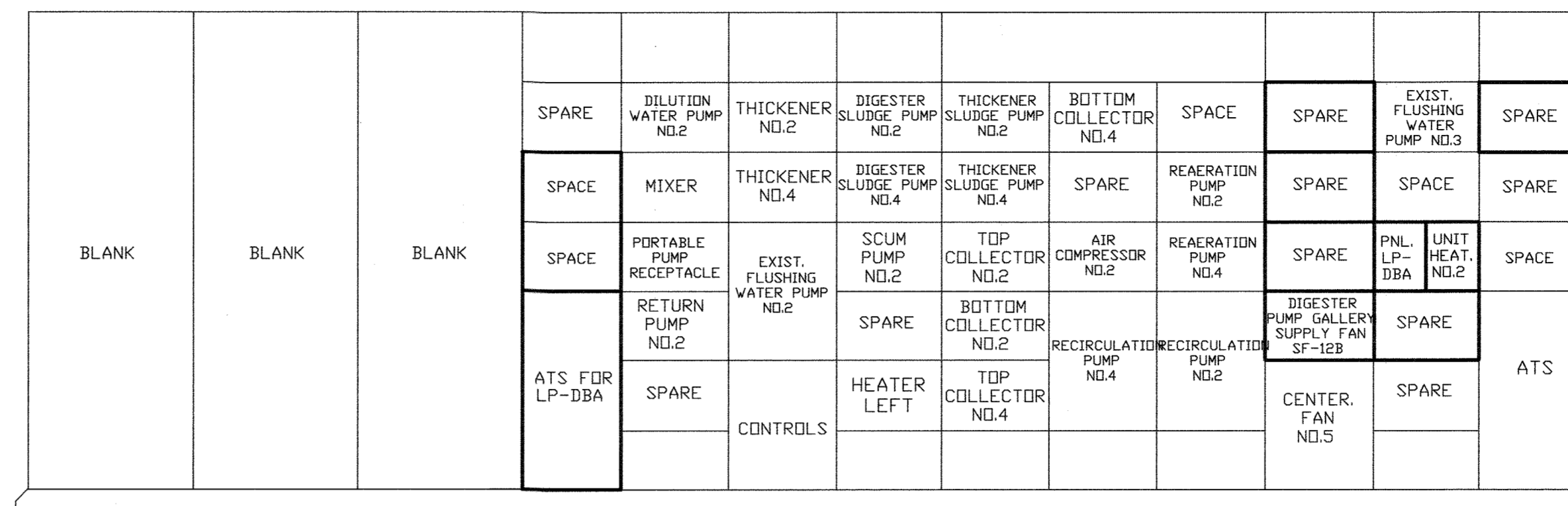


ONE LINE DIAGRAM

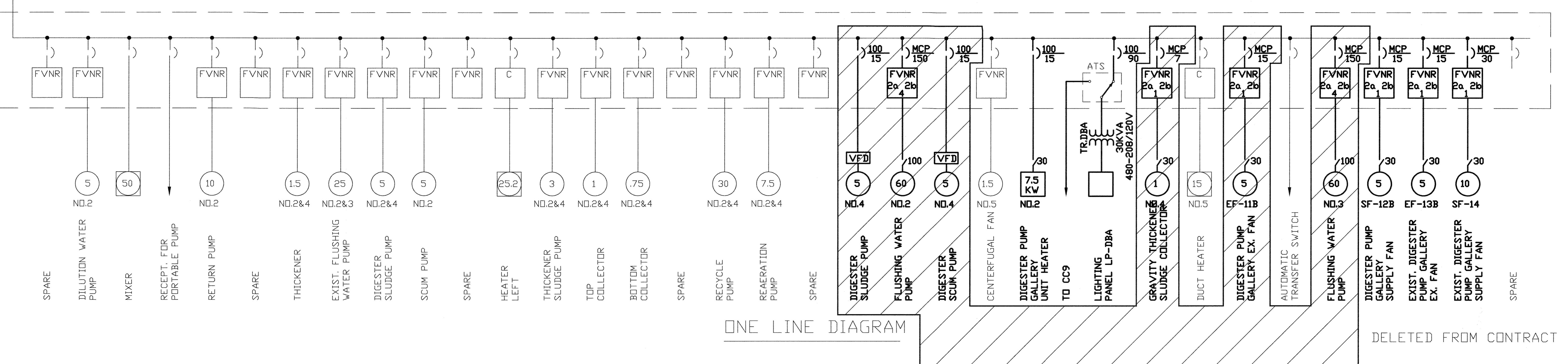
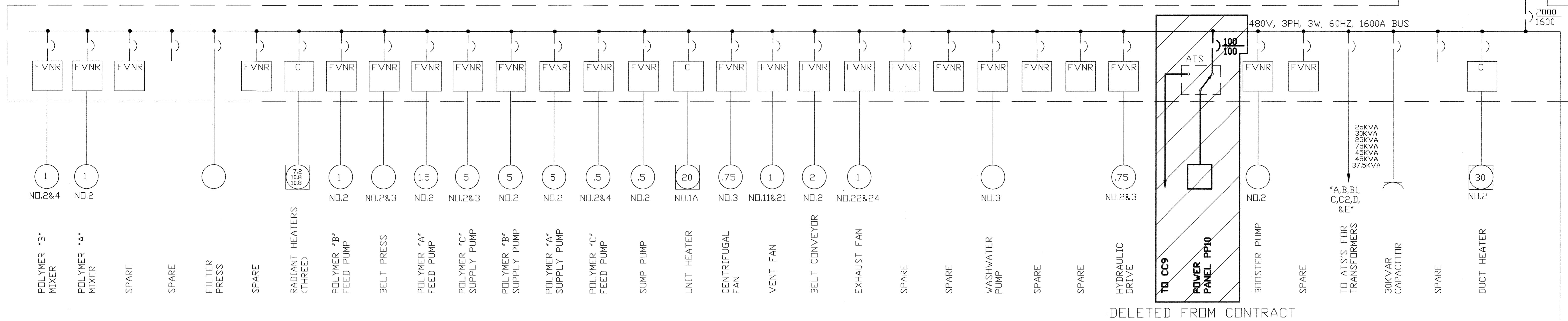
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Samuel S. Lewis</i> 5/1/94 DIRECTOR OF PUBLIC WORKS <i>John O'Hara</i> 5/7/96 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES		M&E Metcalf & Eddy <i>Jonathan W. Wilson</i> 5-7-96 REG. PROF. ENGR.		DES: _____ DRN: _____ CHK: _____ DATE: _____		ELECTRICAL ONE LINE DIAGRAM - CC9 -DEWATERING BUILDING		LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 192 OF 226 E-7R
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MCC10 - FRONT ELEVATION
(MCC 10A)



MCC10 - REAR ELEVATION
(MCC 10B)

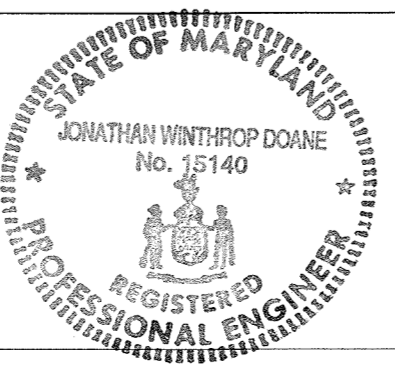


ONE LINE DIAGRAM

DELETED FROM CONTRACT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/7/96
5/7/96

M&E Metcalf & Eddy
5-7-96

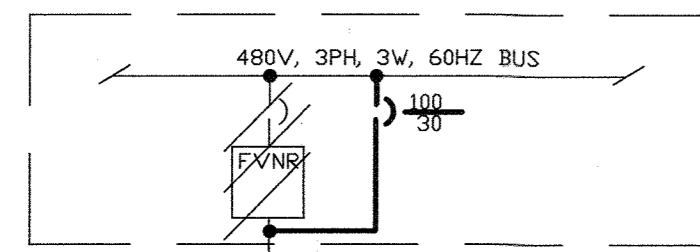


DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/2/95
	BY	NO.	REVISION

ELECTRICAL
ONE LINE DIAGRAM - CC10
-DEWATERING BUILDING

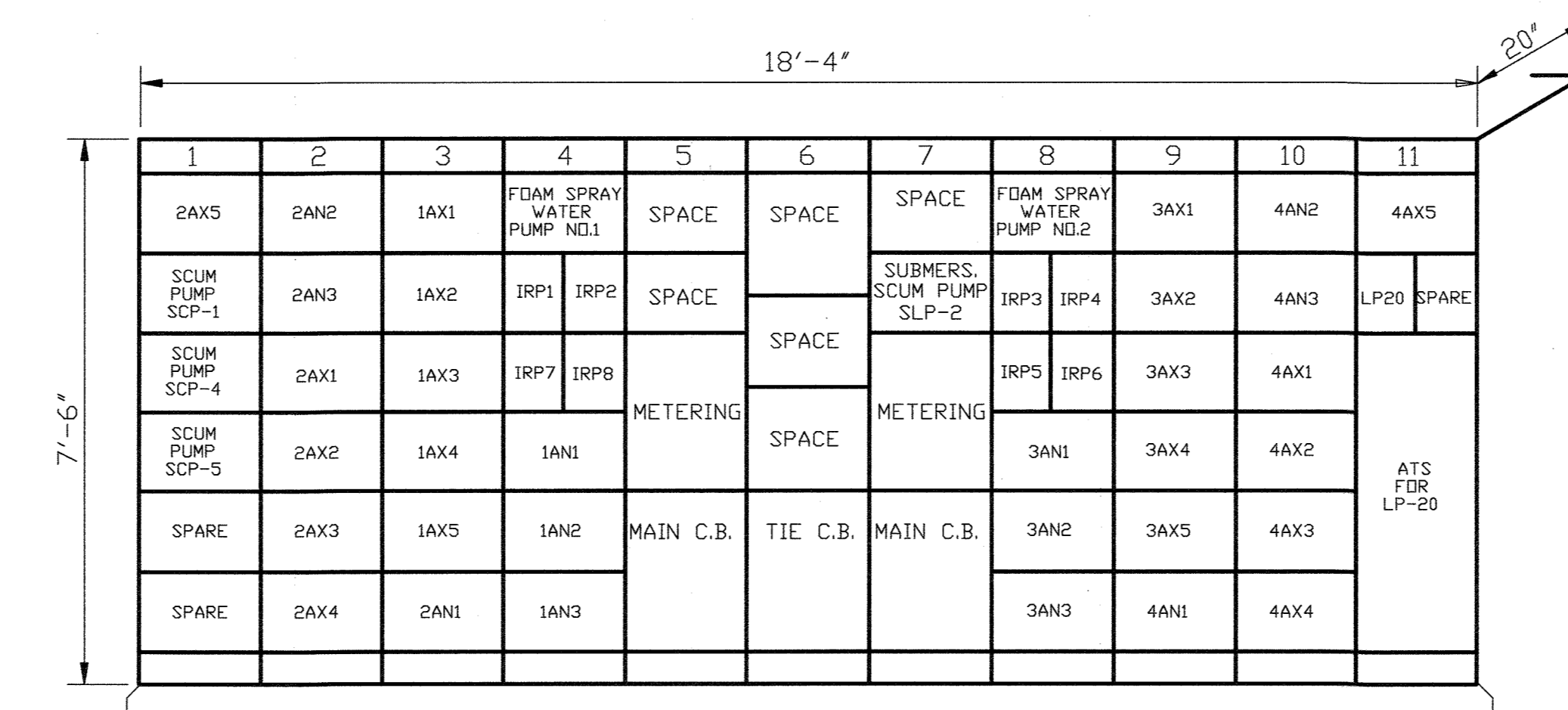
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 193 OF 226
E-8R



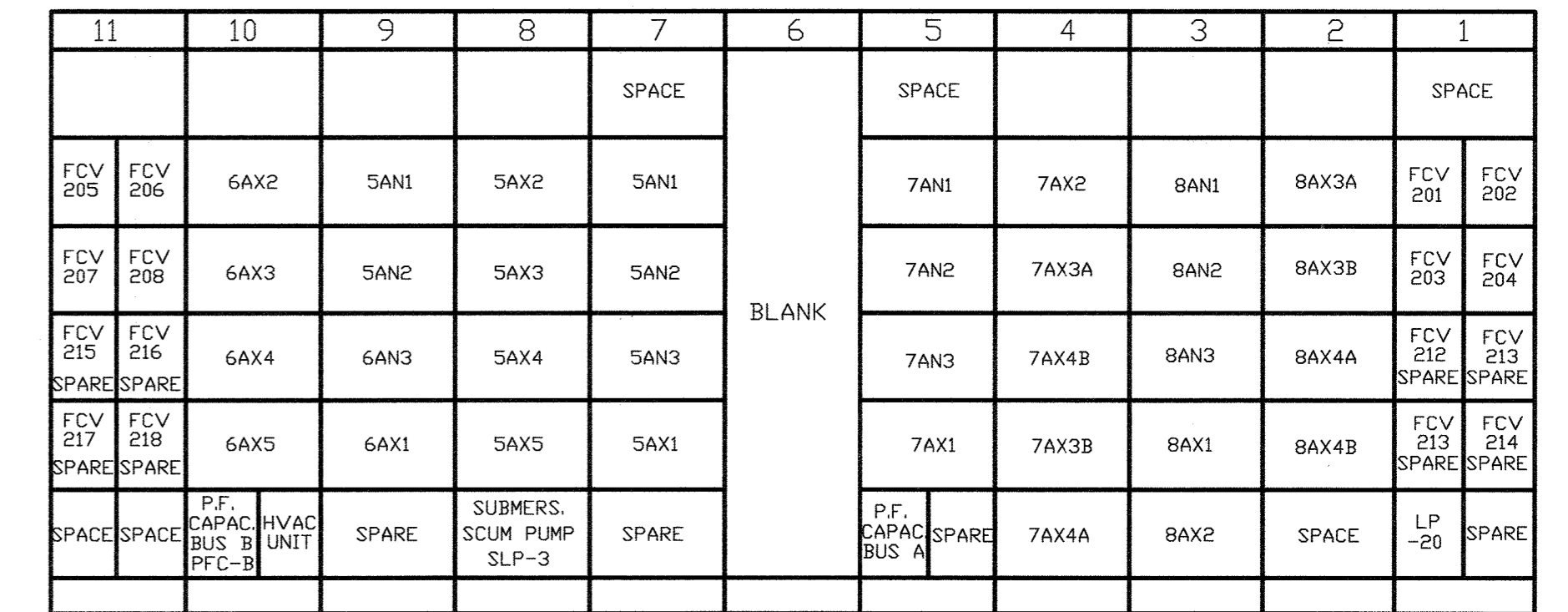
PART OF EXIST. CC6 - ONE LINE DIAGRAM

NONE



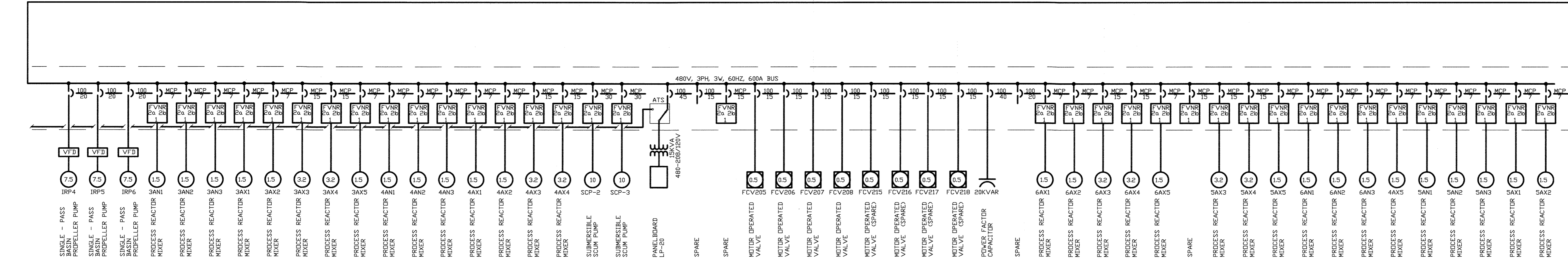
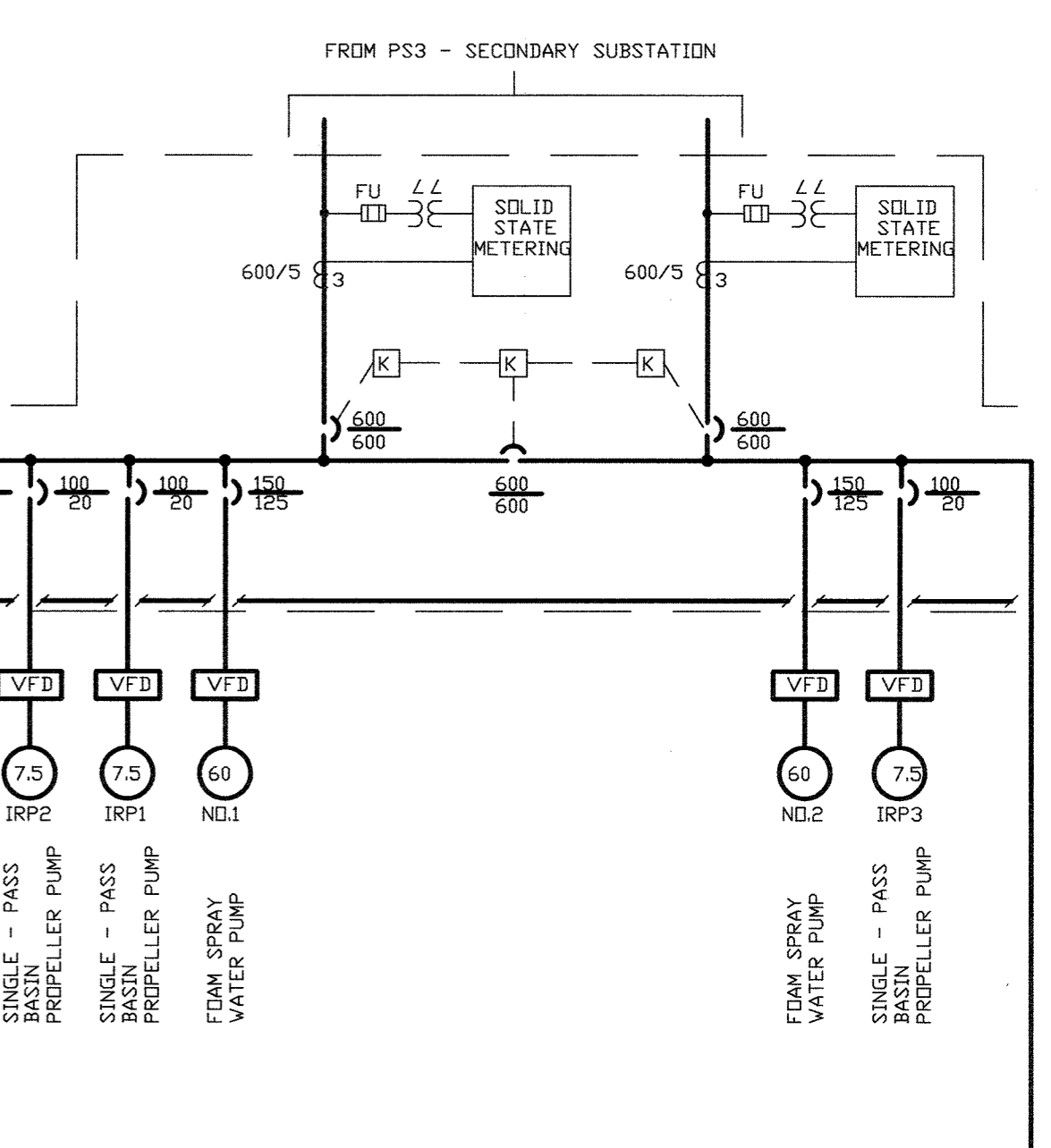
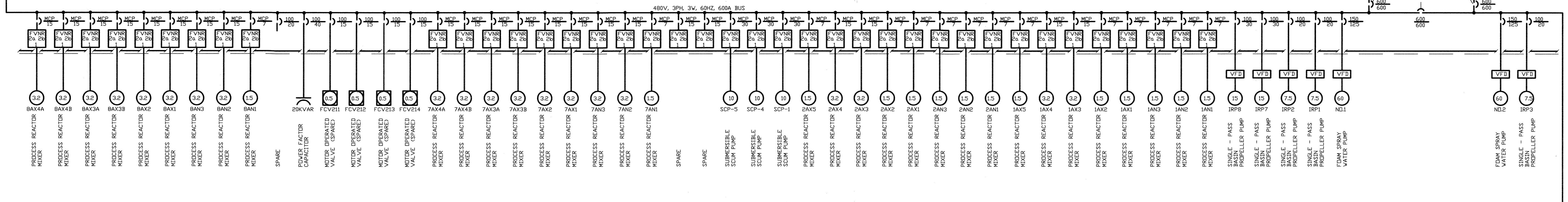
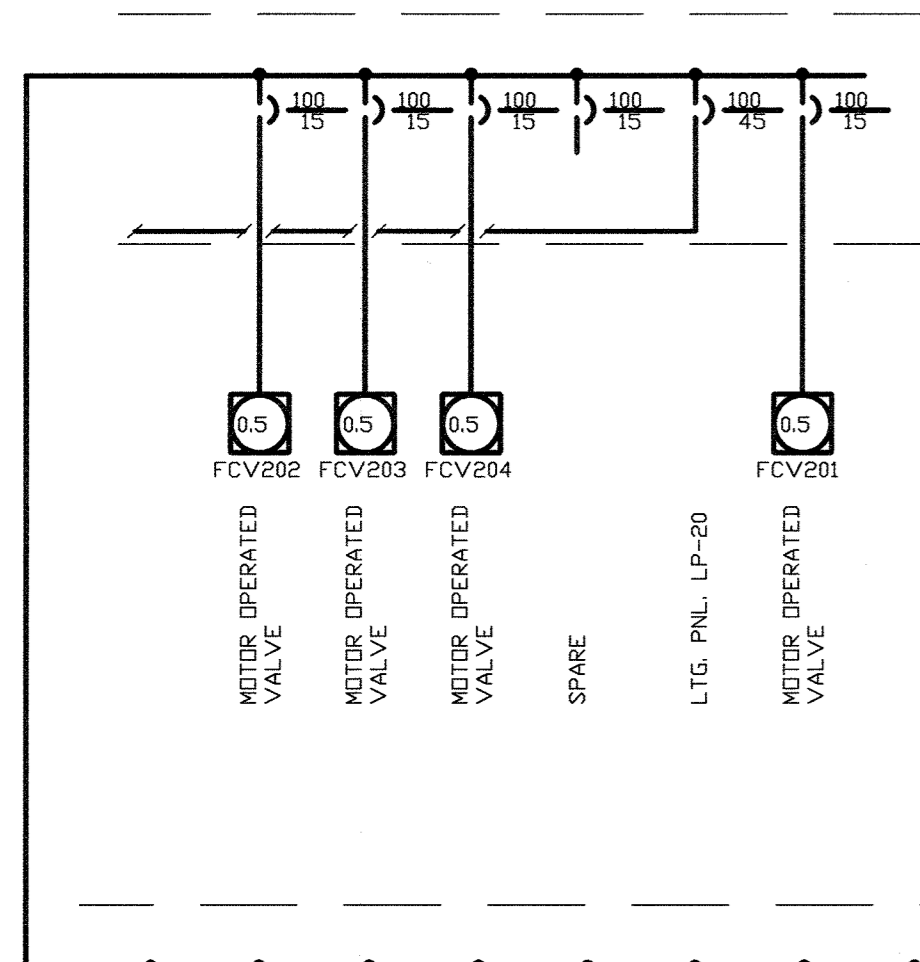
MCC 20 - FRONT ELEVATION

NONE



MCC 20 - REAR ELEVATION

NONE



ONE LINE DIAGRAM

NONE

NOTES:

- SEE SHT. E-20 FOR MCC20 OUTDOOR WALK-IN ENCLOSURE.

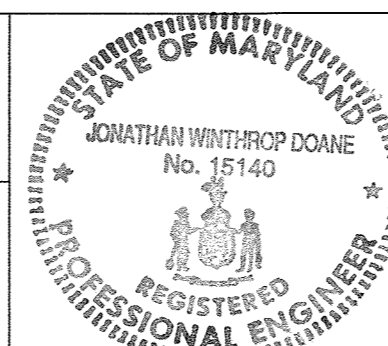
DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

Director of Public Works: *Samuel A. Lewis* 5/7/96
 Chief, Bureau of Engineering: *Paul D. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *Debra J. Lewis* 5-7-96

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
 REG. PROF. ENGR.



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/2/95
	BY NO.	REVISION	DATE

ELECTRICAL

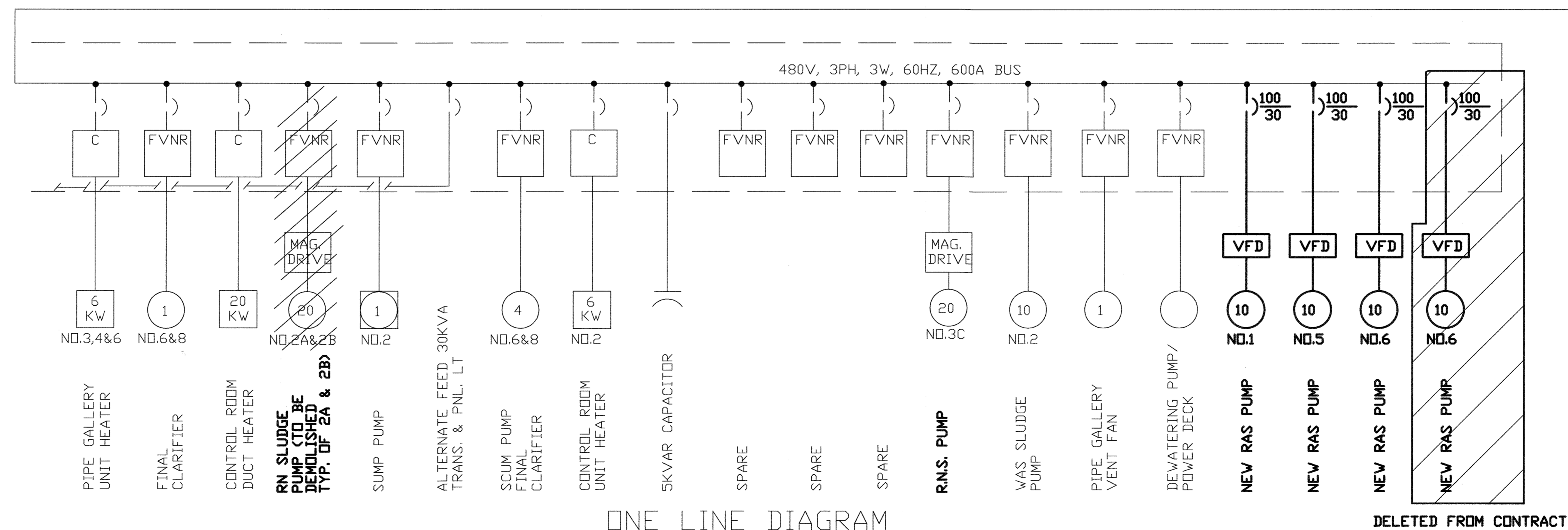
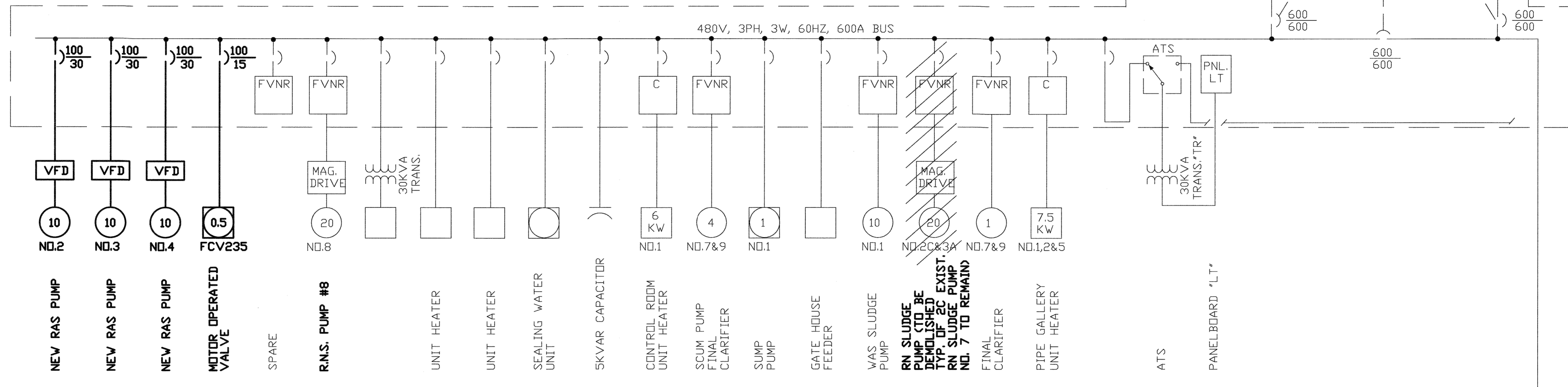
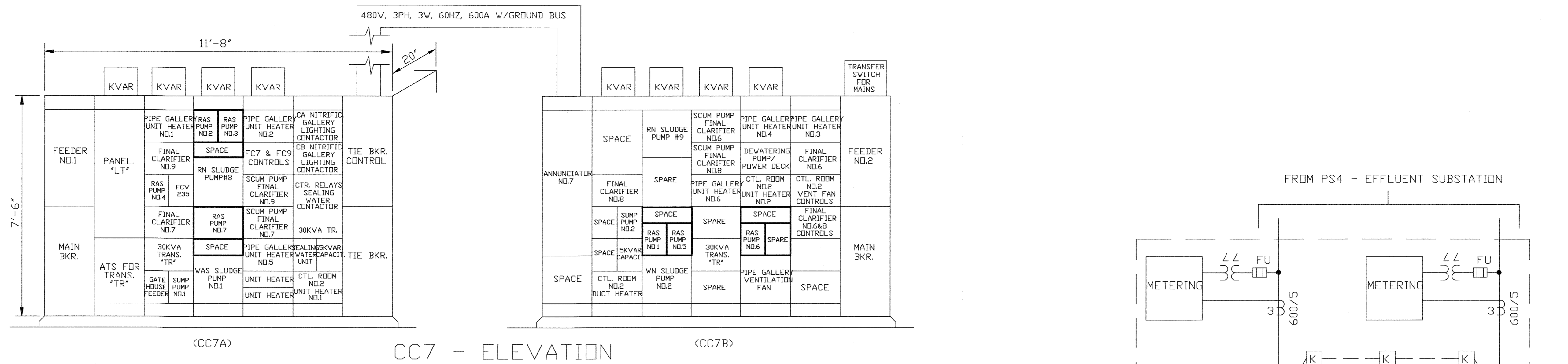
ONE LINE DIAGRAM - MCC20 - PROCESS REACTORS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION

ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 194 OF 226
 E-9R

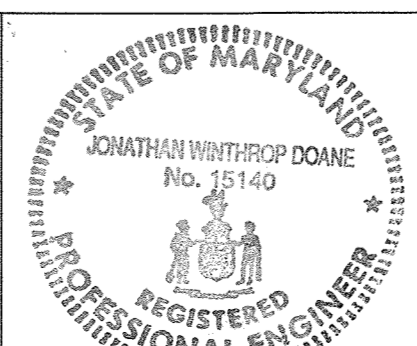


ONE LINE DIAGRAM

DELETED FROM CONTRACT

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *James M. Lee* 5/1/96
 Chief, Bureau of Engineering: *Paul J. Sporn* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/1/96
 Chief, Utility Design Division: *Paul J. Sporn* 5-7-96

M&E Metcalf & Eddy
Quate W. Jones 5-7-96
 REG. PROF. ENGR.

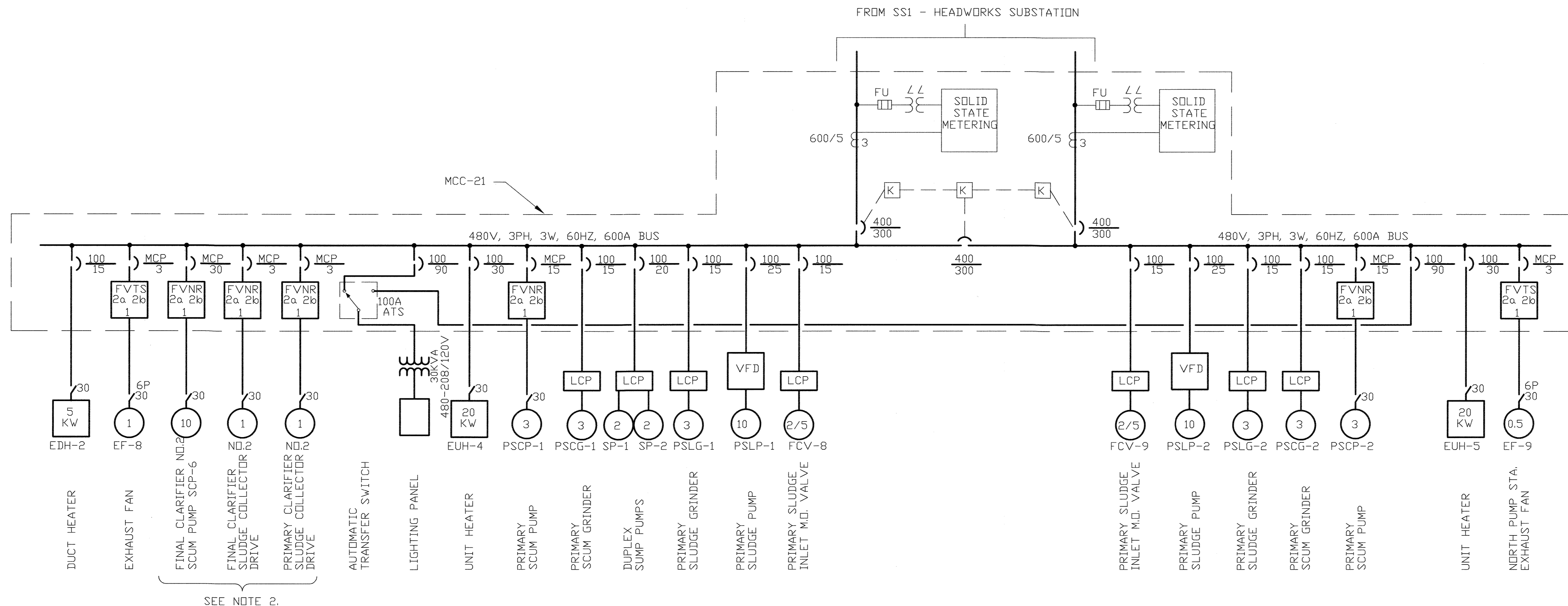


DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/4/95
	BY NO.	REVISION	DATE

ELECTRICAL
 ONE LINE DIAGRAM - CC7
 - ALUM BUILDING

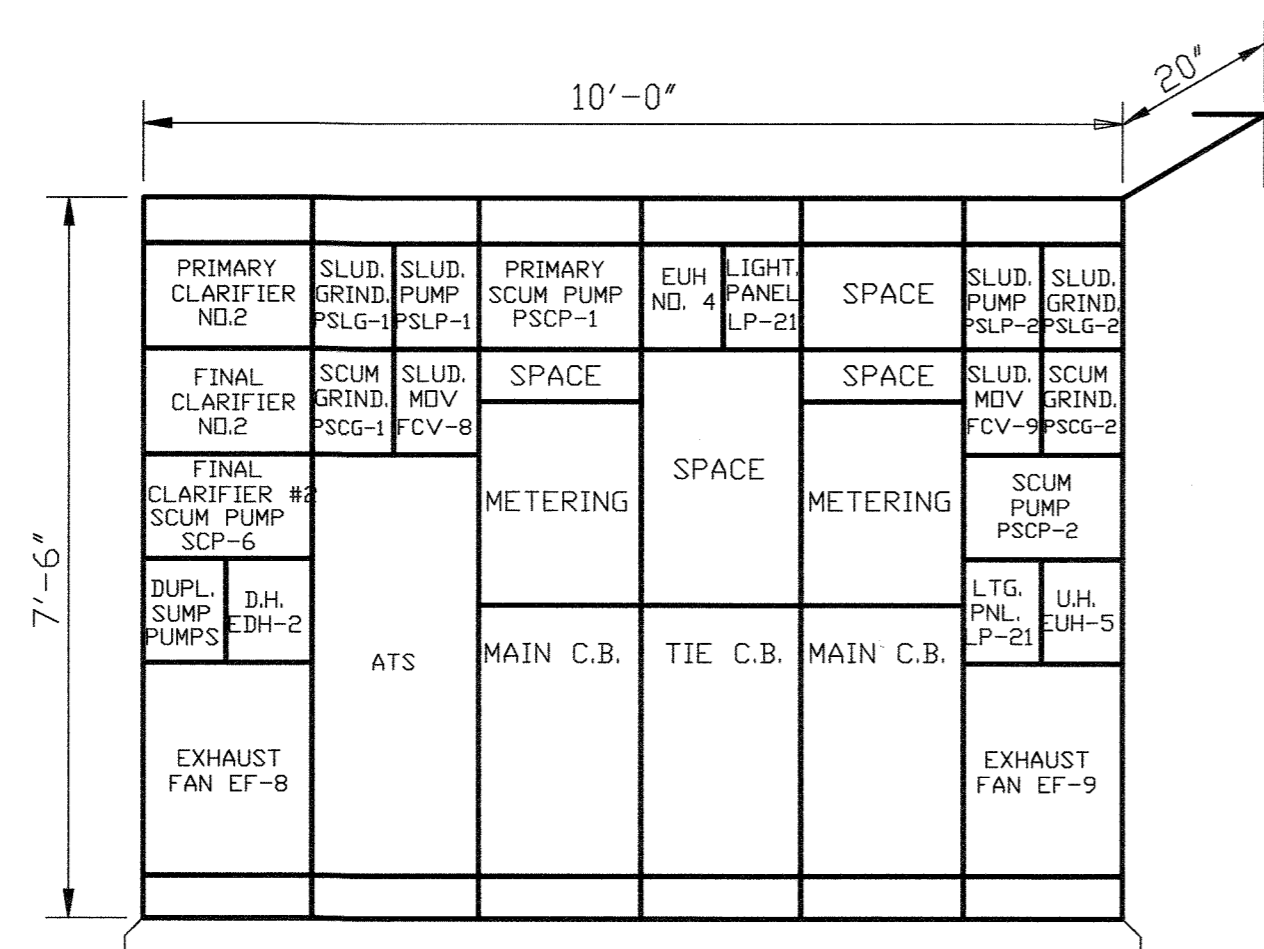
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 195 OF 226
 E-10R

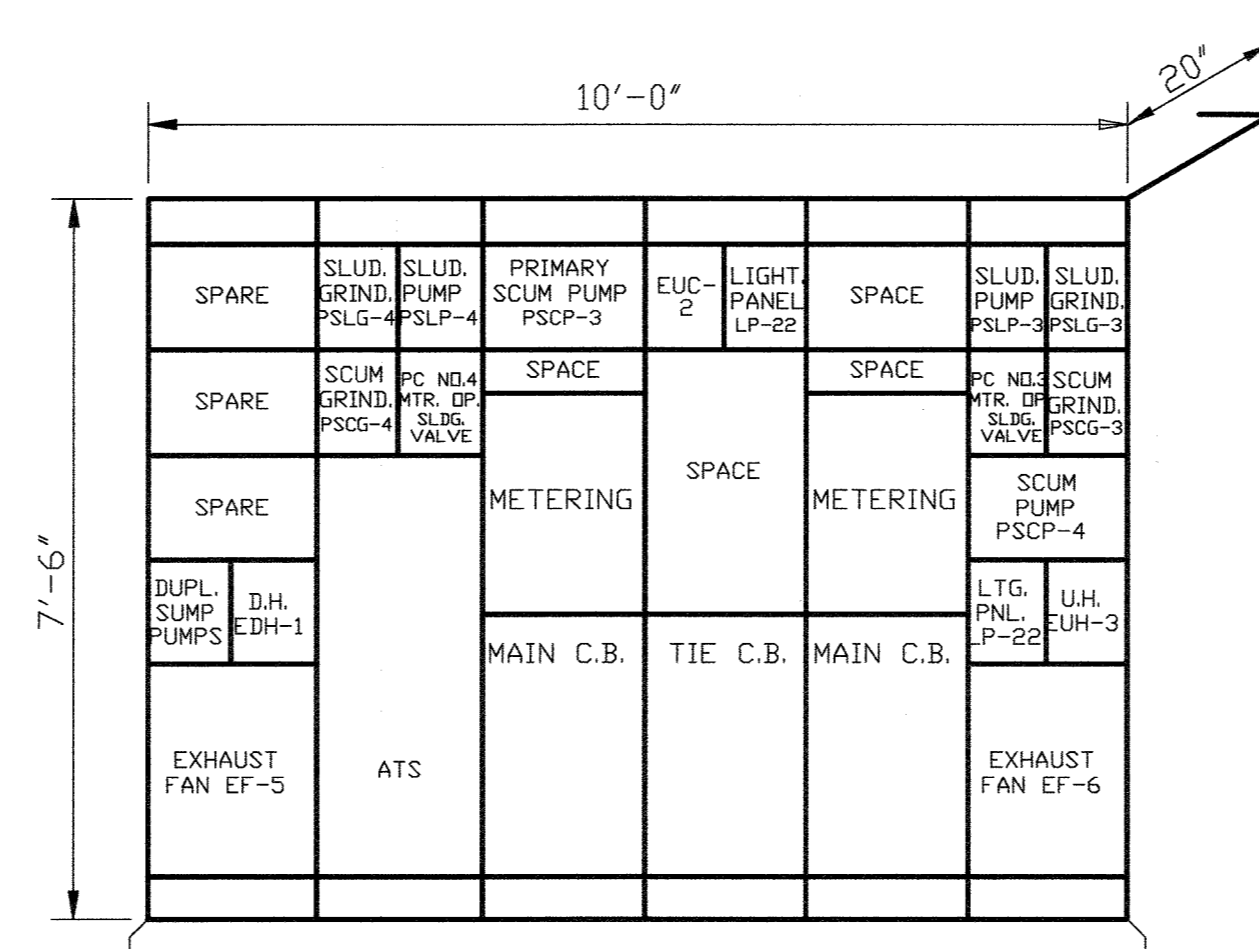


ONE LINE DIAGRAM

SEE NOTE 3



MCC 21 - ELEVATION



MCC 22 - ELEVATION

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHEET E-1
2. LOADS FOR MCC 21 ONLY. SPARE STARTERS FOR MCC 22. SEE ALSO MCC ELEVATIONS THIS SHEET.
3. ONE LINE DIAGRAM IS TYPICAL FOR NORTH & SOUTH PUMP STATIONS EXCEPT NOTE 2 ABOVE.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Sam P. Linn 5/1/96
DIRECTOR OF PUBLIC WORKS

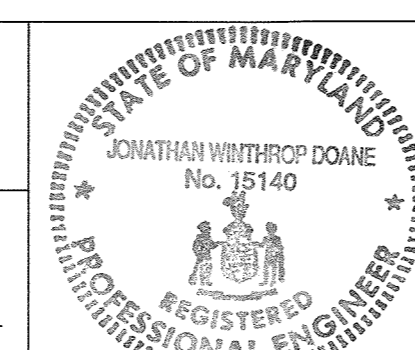
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

William J. Spain 5/7/96
CHIEF, BUREAU OF ENGINEERING

Debra J. Linn 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Dome 5-7-96
REG. PROF. ENGR.



DES					
DRN					
CHK					
DATE	M.J.C.	1	RECORD DRAWING	4/4/95	
	BY	NO.	REVISION	DATE	

ELECTRICAL

ONE LINE DIAGRAM -
MCC21 - NORTH PUMP STA.
& MCC22 - SOUTH PUMP STA.

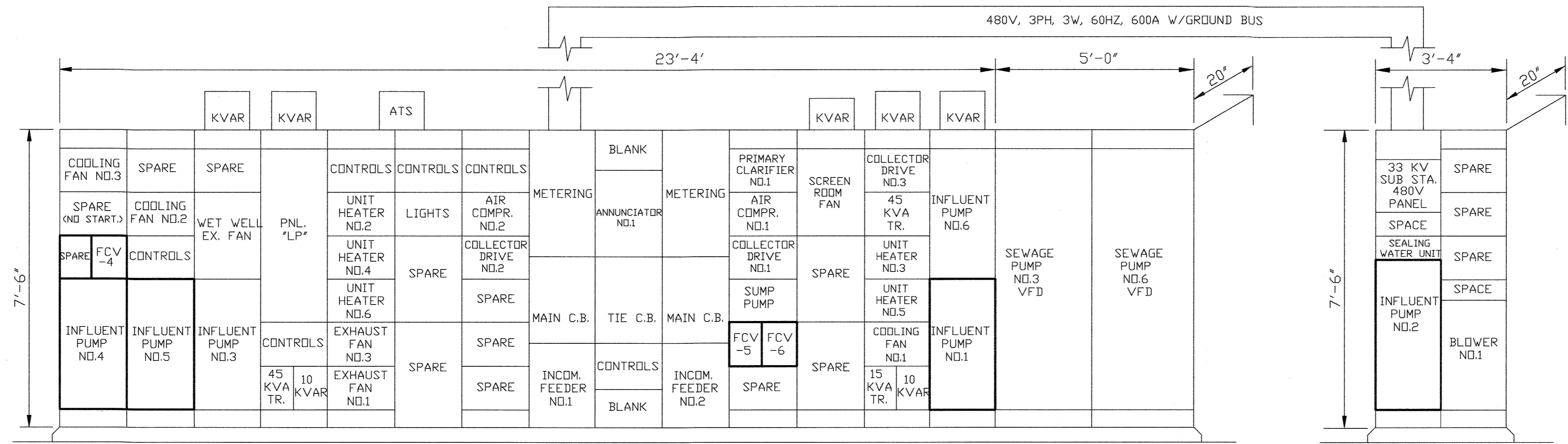
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

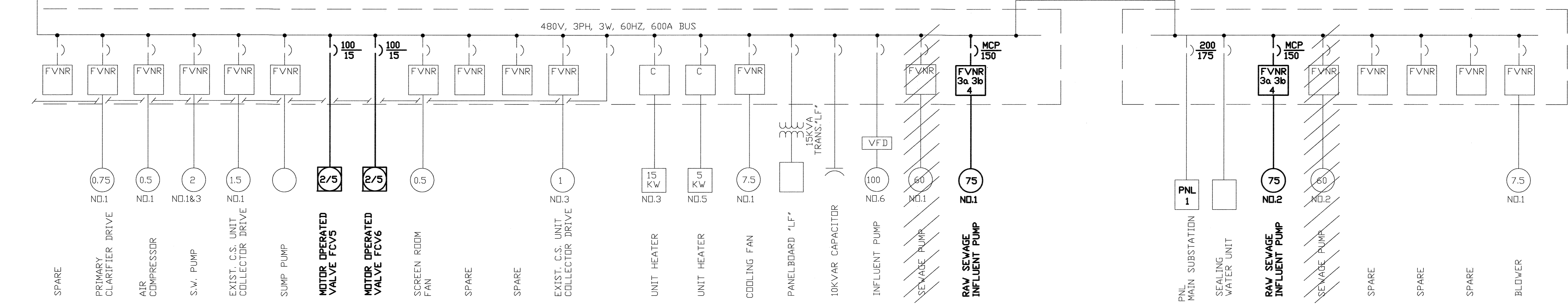
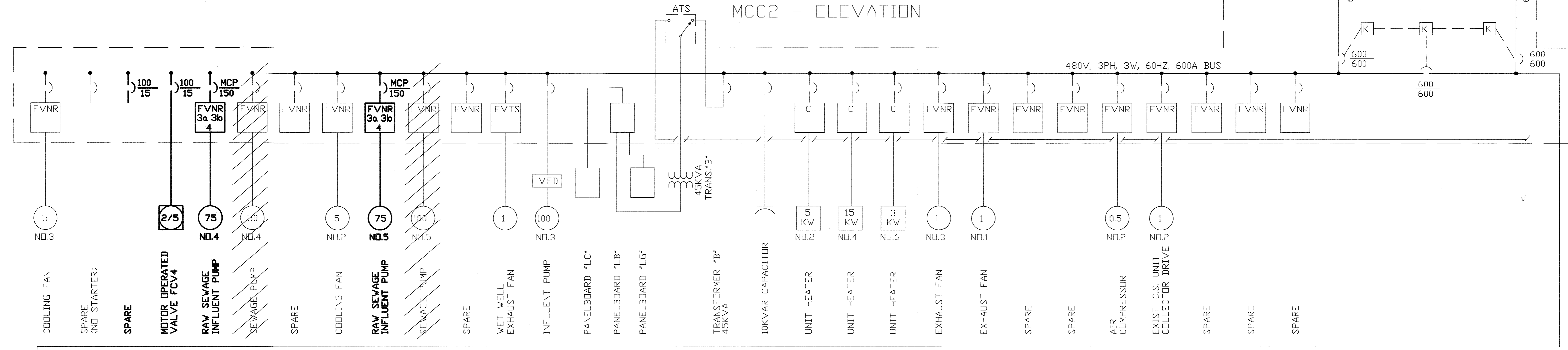
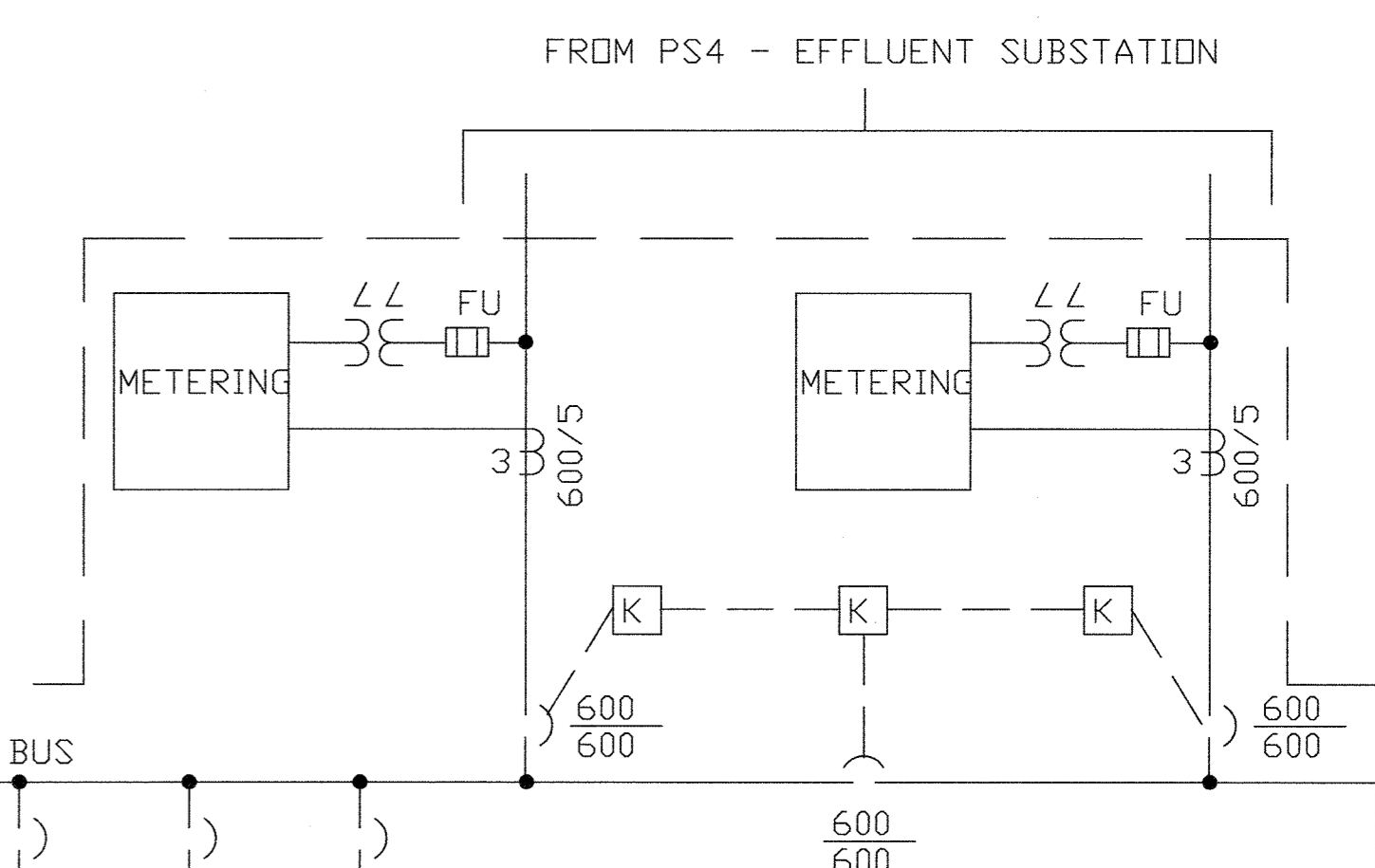
SCALE AS SHOWN

SHEET 196 OF 226

E-11R



MCC2 - ELEVATION



ONE LINE DIAGRAM

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John A. Law* 5/17/96
 Chief, Bureau of Engineering: *John J. O'Hare* 5/17/96
 Chief, Utility Design Division: *John J. O'Hare* 5-7-96

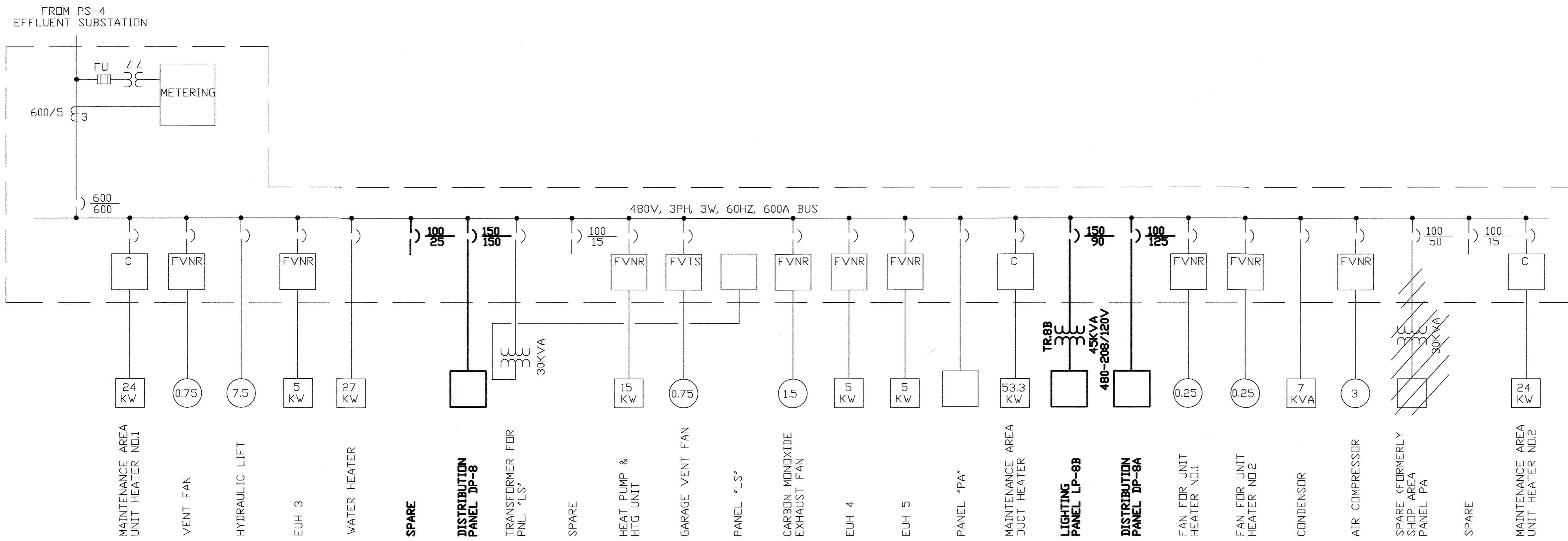
M&E Metcalf & Eddy
 Jonathan Winthrop O'Connell, No. 19140
 Registered Professional Engineer
 Date: 5-7-96

DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

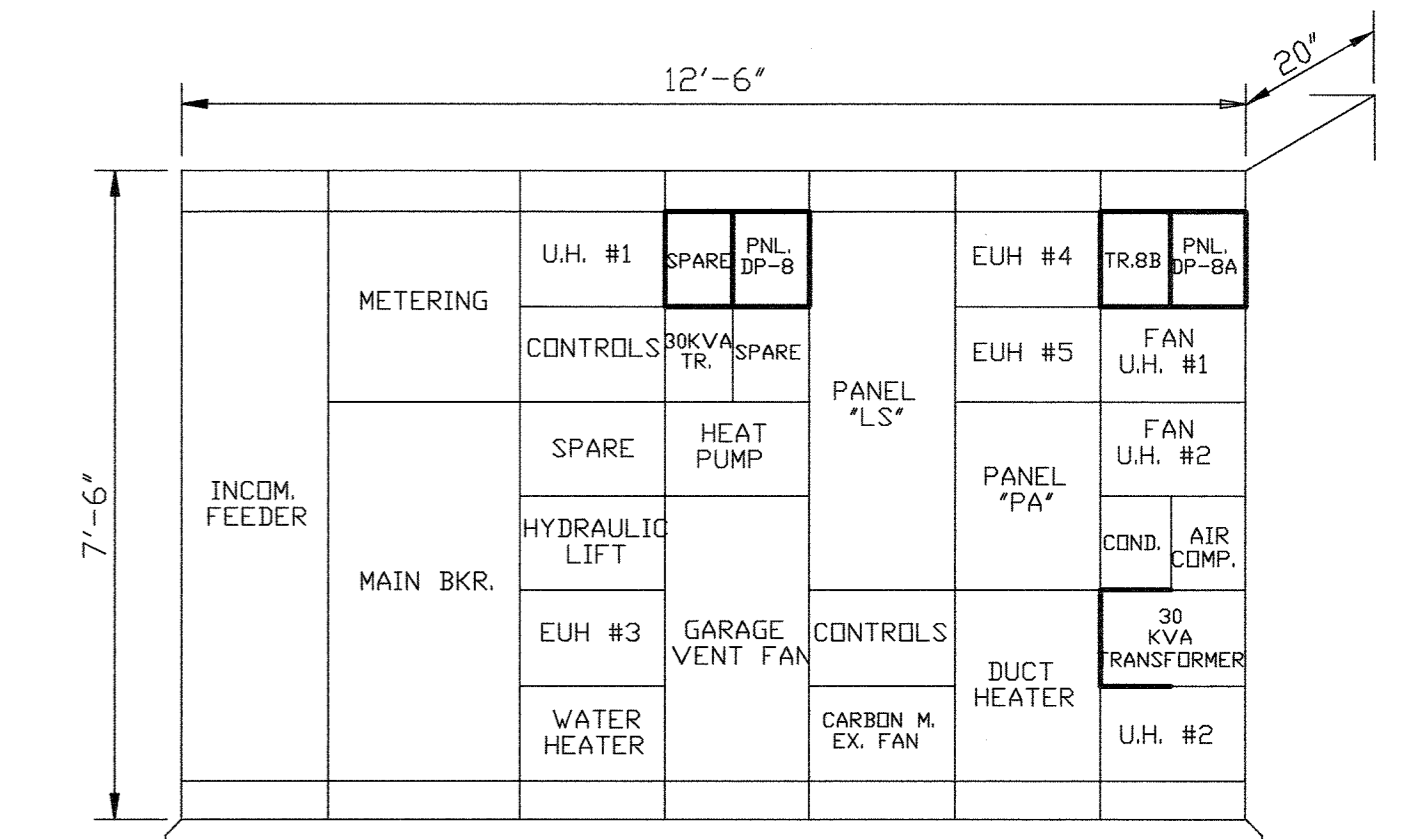
ELECTRICAL
 ONE LINE DIAGRAM - CC2
 -HEADWORKS BUILDING

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

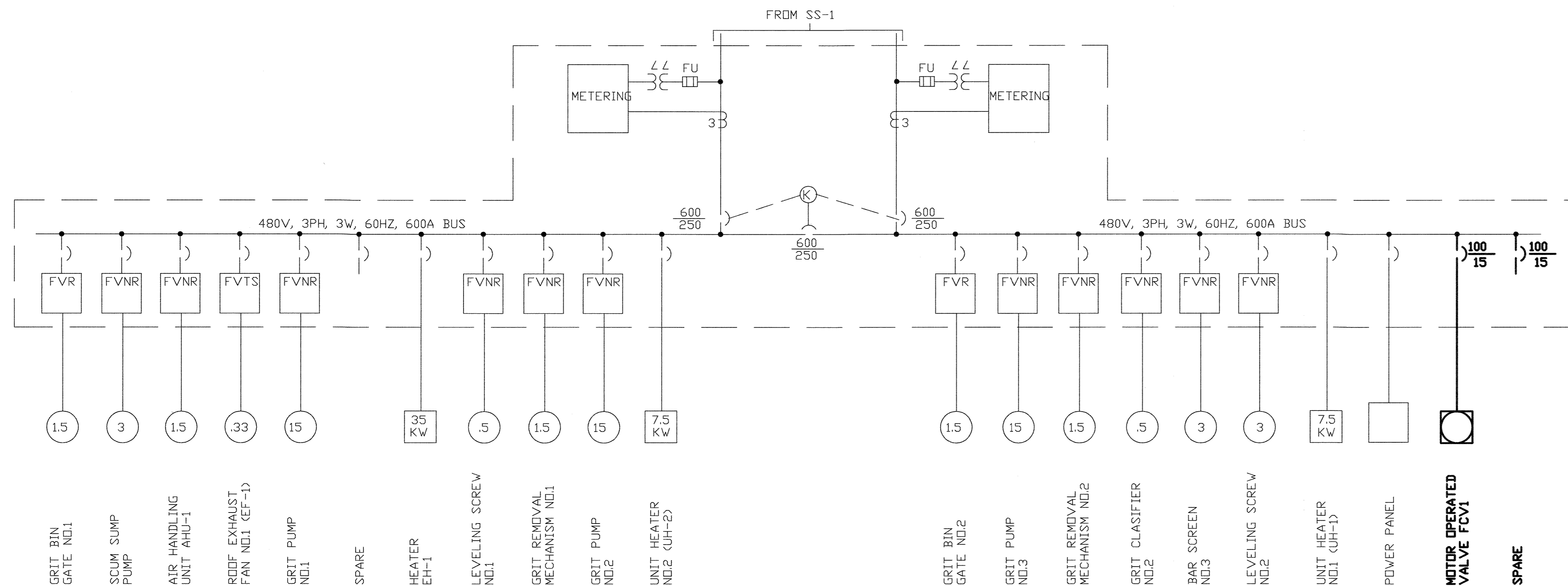
SCALE AS SHOWN
 SHEET 197 OF 226
 E-12R



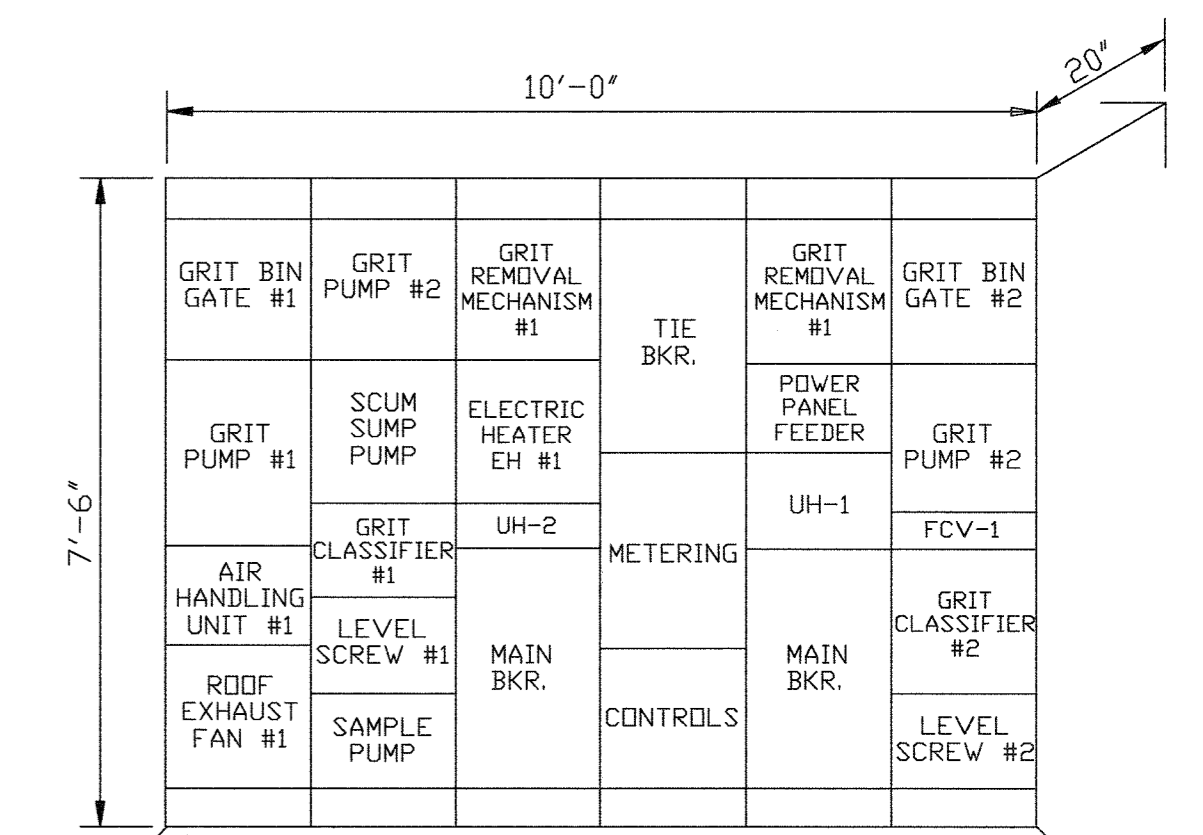
CC8 - ONE LINE DIAGRAM



CC 8 - ELEVATION



CCG - ONE LINE DIAGRAM



CCG - ELEVATION

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS

Paul J. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Dr. Dan Rine 5-7-96
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER

DES					
DRN					
CHK					
DATE	M.J.C.	1	RECORD DRAWING	4/10/95	
	BY	NO.	REVISION	DATE	

ELECTRICAL

ONE LINE DIAGRAM - CC8
- MAINTENANCE BUILDING
& CCG - GRIT FACILITY

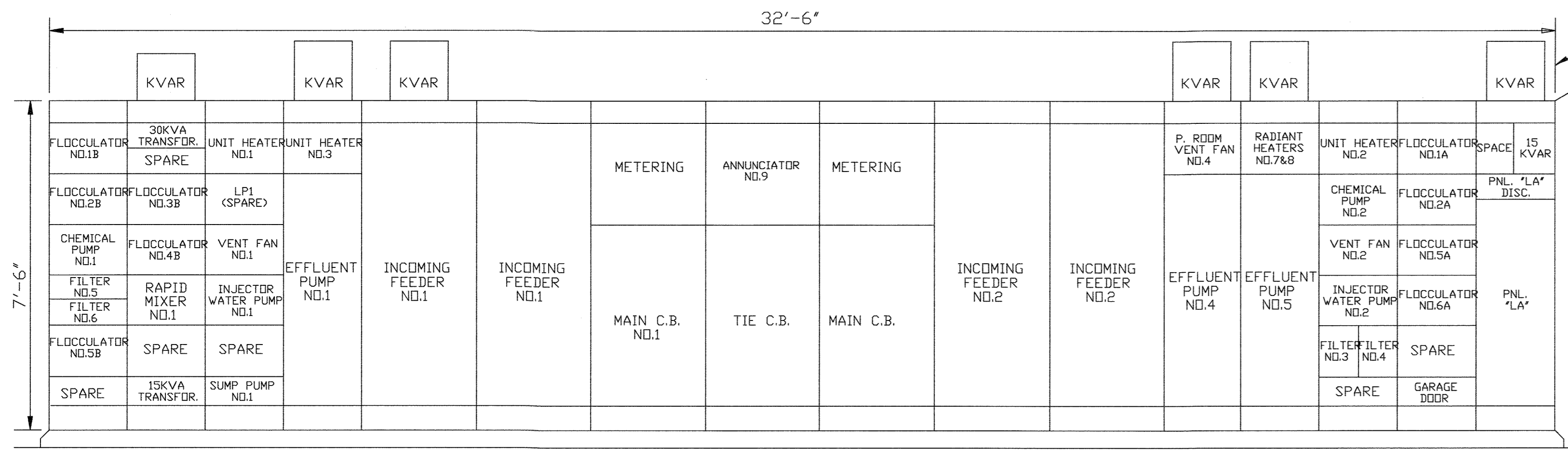
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

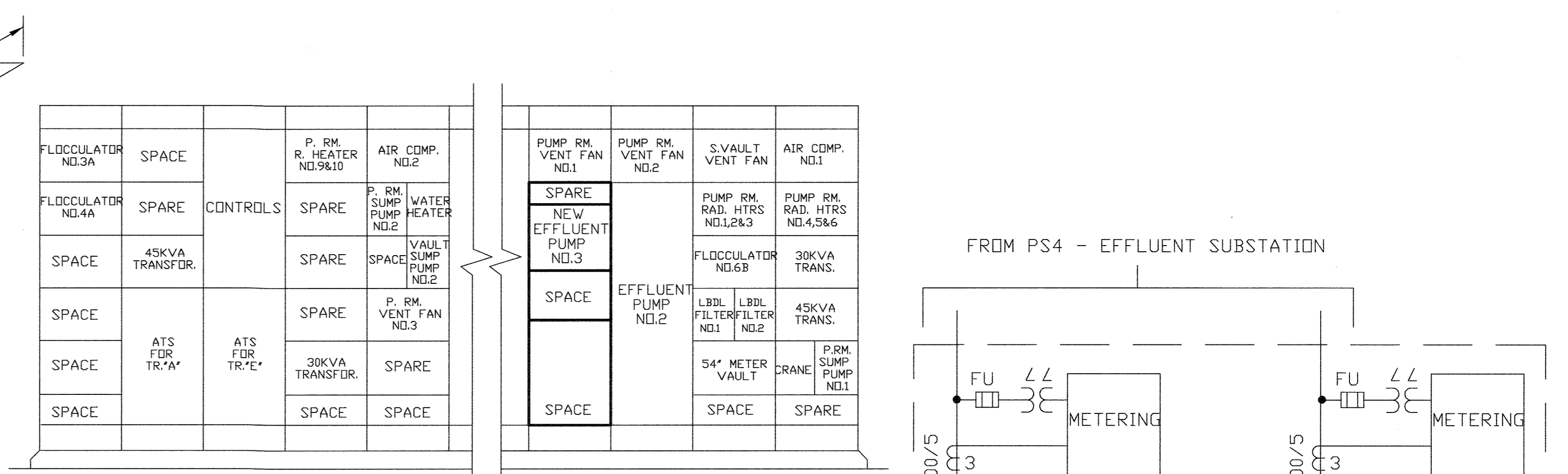
SHEET 198 OF 226

E-13R



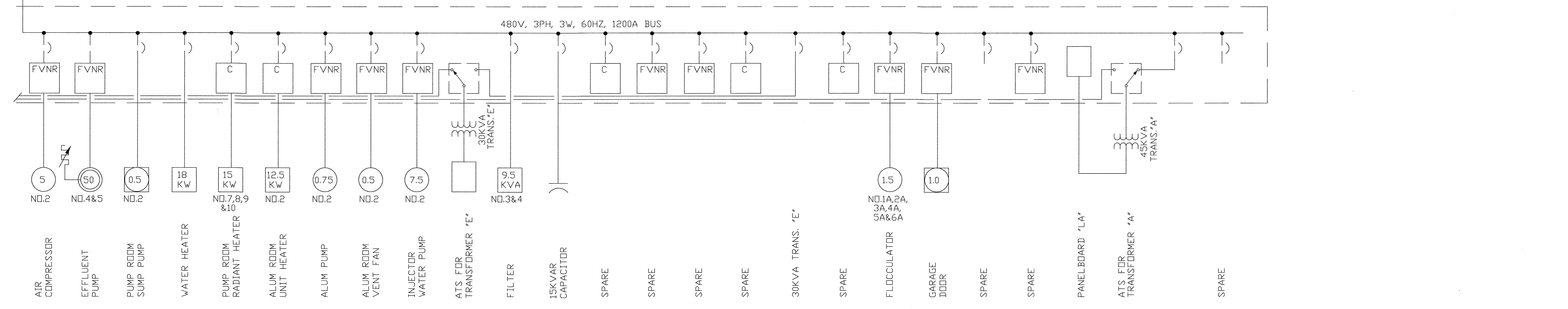
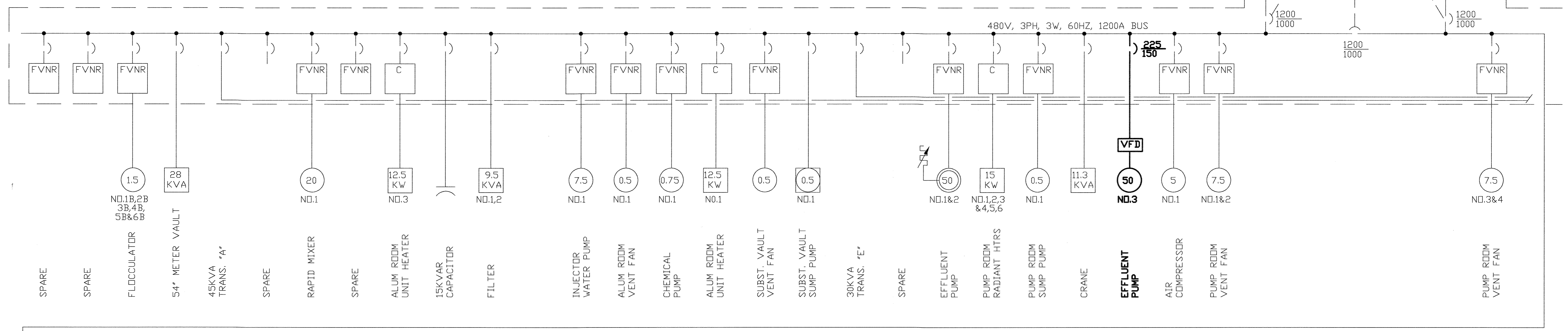
MCC 11 - FRONT ELEVATION

SCALE: NONE



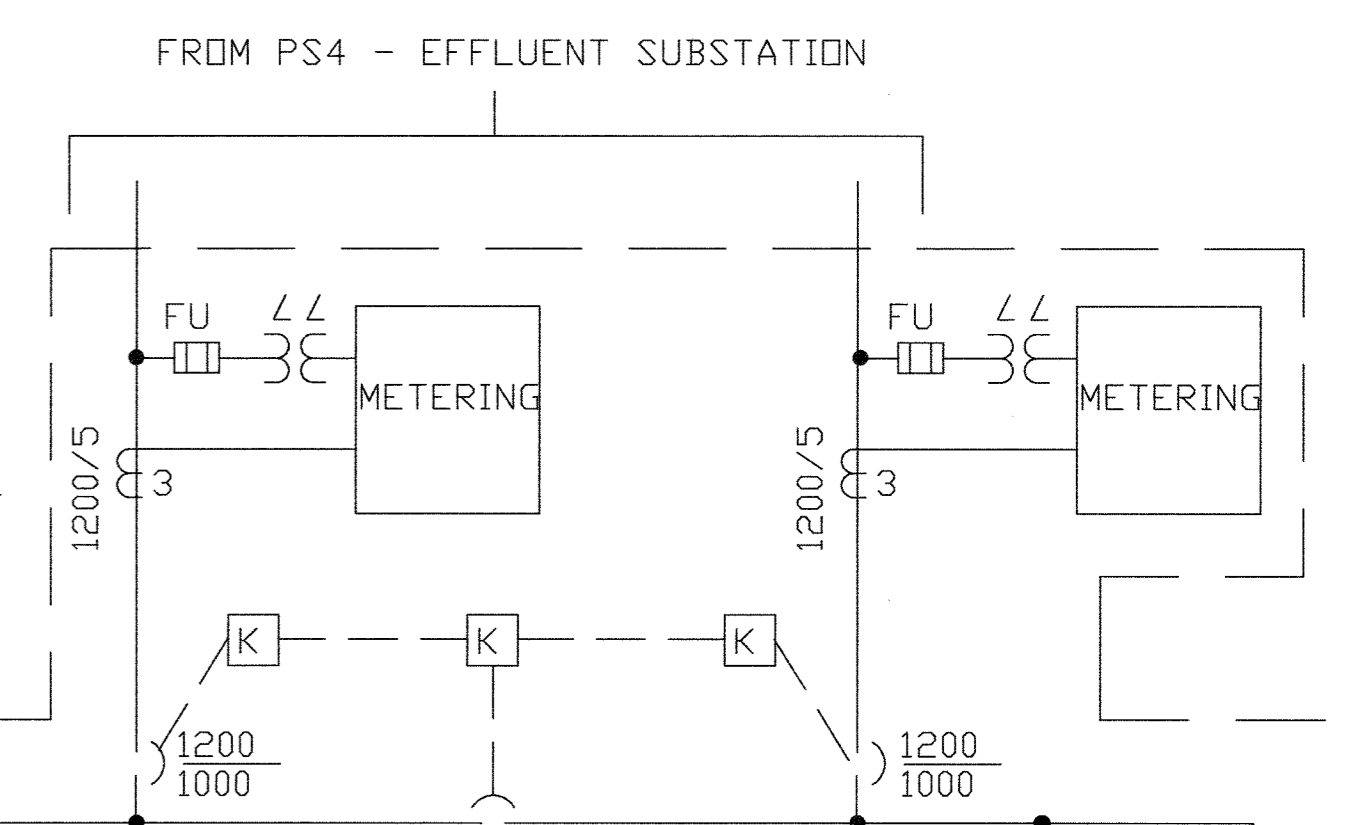
MCC 11 - REAR ELEVATION

SCALE: NONE



ONE LINE DIAGRAM

SCALE: NONE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James G. Kear 5/1/96 DATE
DIRECTOR OF PUBLIC WORKS

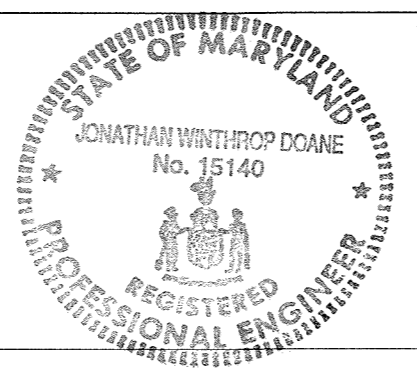
John J. O'Hara 5/1/96 DATE
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Richard E. Spason 5/2/96 DATE
CHIEF, BUREAU OF ENGINEERING

Debra A. ... 5-7-96 DATE
CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96 DATE
REG. PROF. ENGR.



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

ELECTRICAL

ONE LINE DIAGRAM - CC11
- FILTER BUILDING

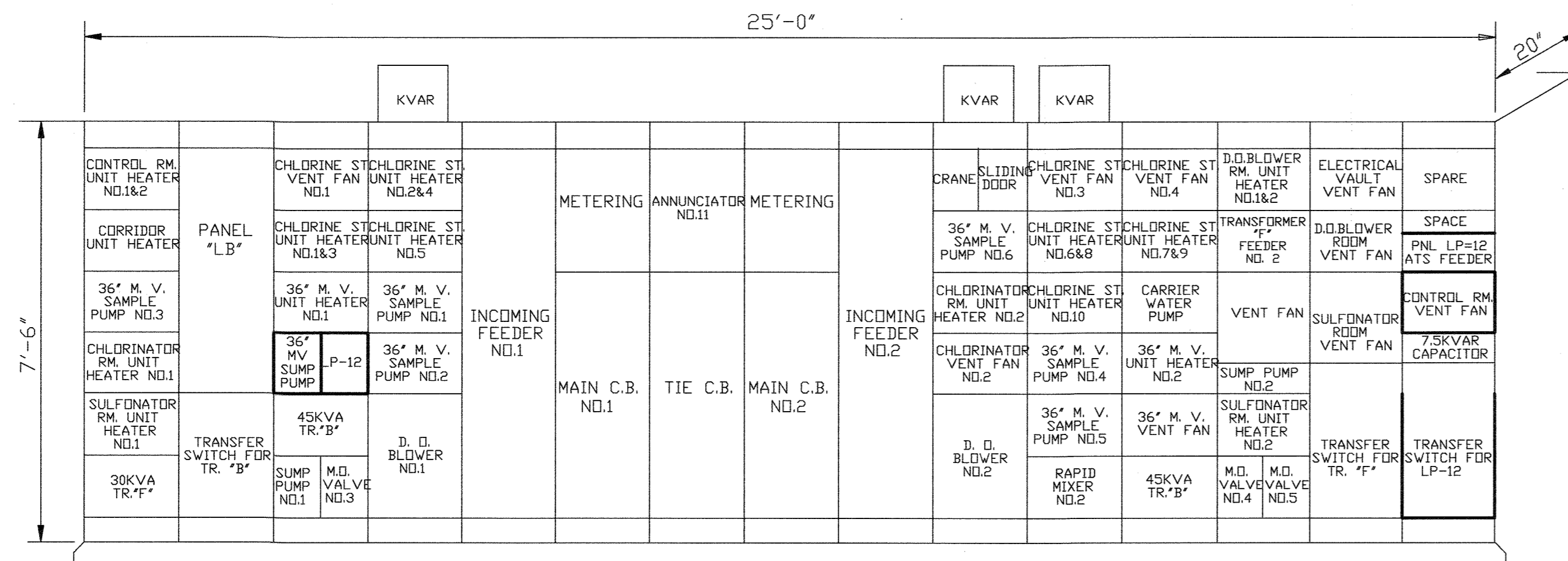
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

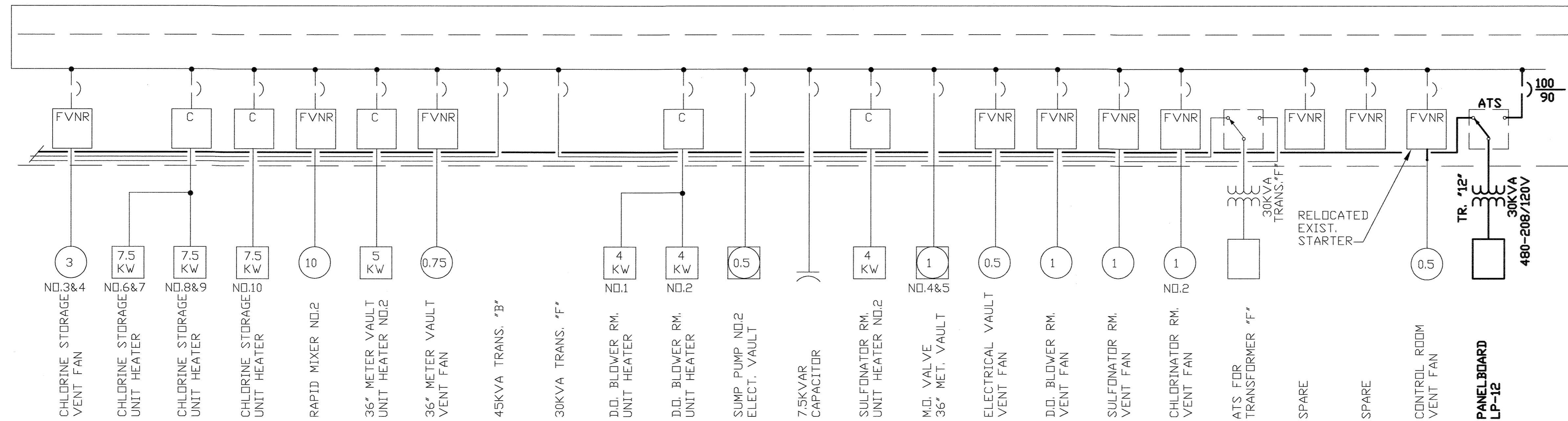
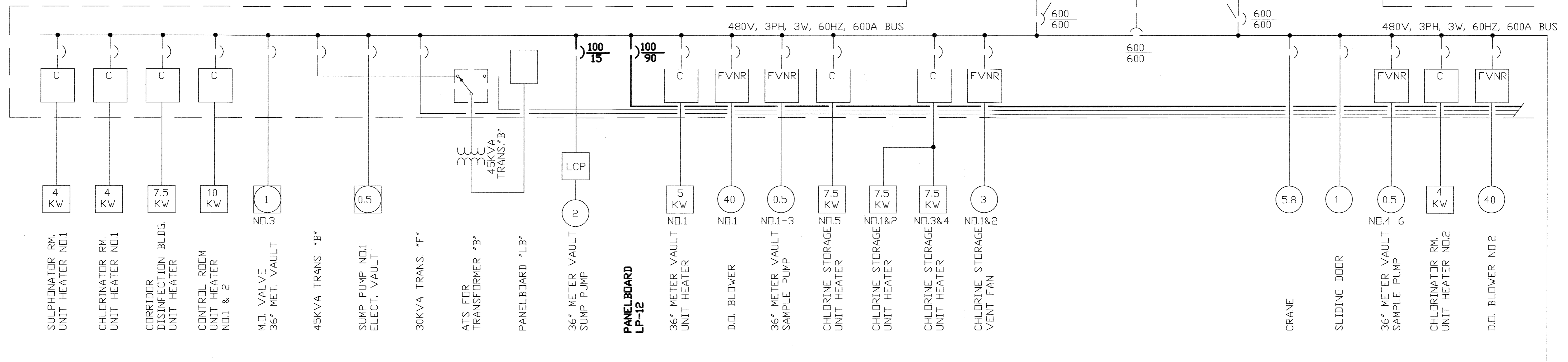
SCALE AS SHOWN

SHEET 199 OF 226

E-14R



MCC12 - ELEVATION

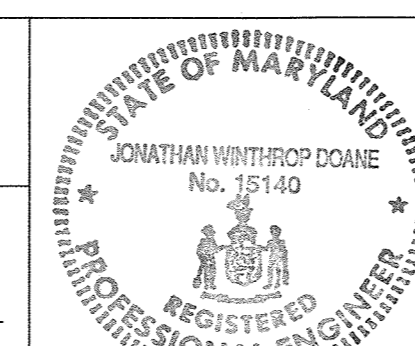


ONE LINE DIAGRAM

NOTE:
 NEW CHEMICAL FEED SYSTEM CARRIER WATER PUMP (5HP) INSTALLED IN 36" METER VAULT TO REPLACE EXISTING SULFONATOR INJECTOR PUMP. EXISTING BREAKER, WIRING AND LOCAL HAND SWITCH REUSED.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *Samuel G. Lewis* 5/7/96
 Chief, Bureau of Environmental Services: *John J. O'Hara* 5/7/96
 Chief, Utility Design Division: *Paul J. DeLeon* 5-7-96

M&E Metcalf & Eddy
 Jonathan W. Doane 5-7-96
 Reg. Prof. Engr.

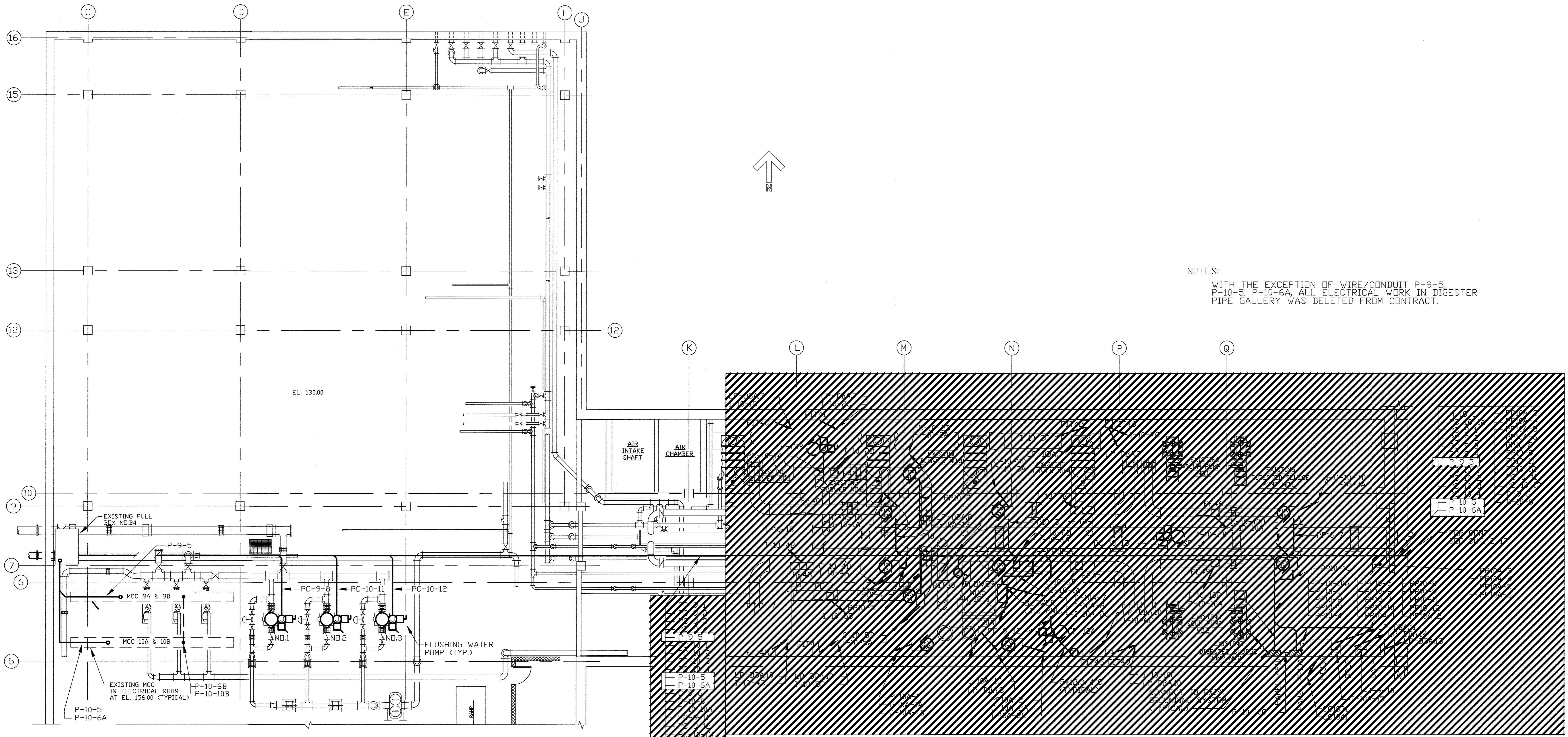


DES	DRN	CHK	DATE
M.J.C.	1		4/10/95
BY	NO.	REVISION	DATE

ELECTRICAL
 ONE LINE DIAGRAM - CC12
 -CHLORINE BUILDING

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 ADDITION NO. 5
 CAPITAL PROJECT S-6153
 CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

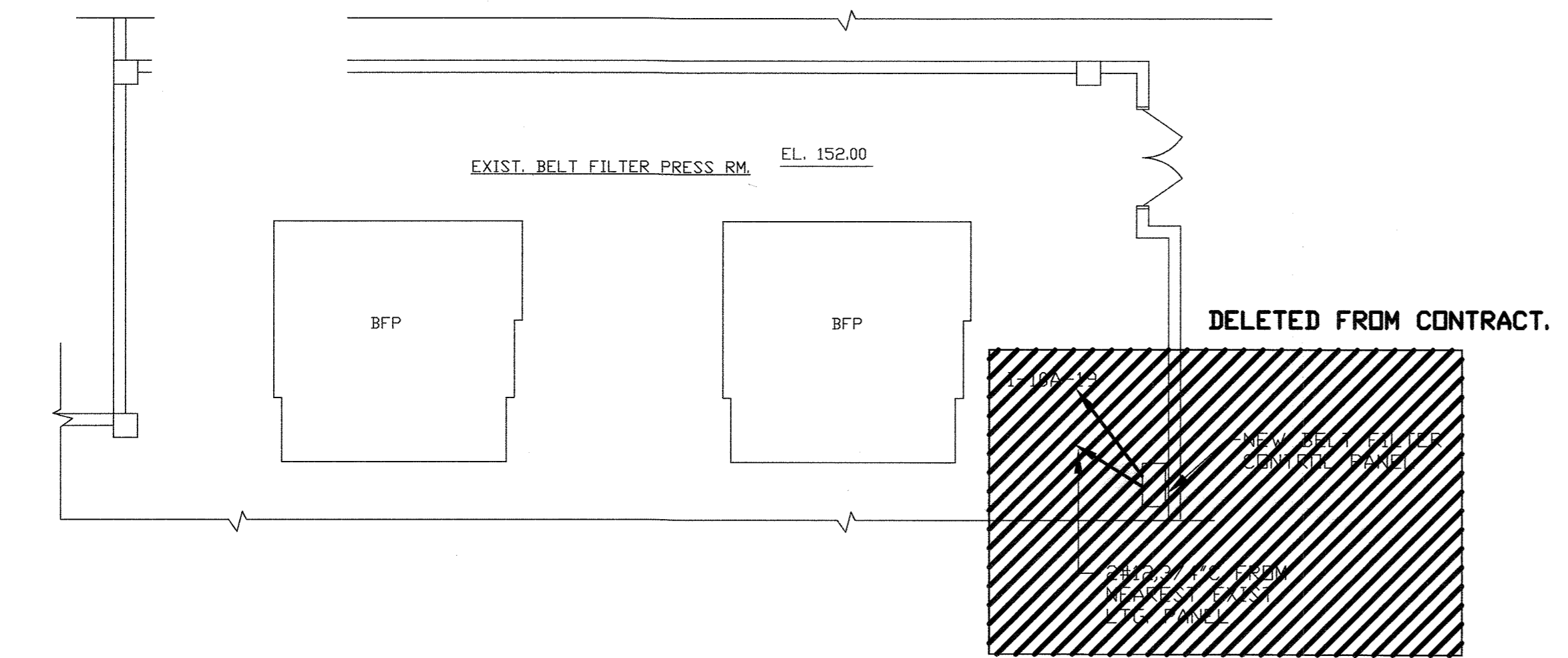
SCALE AS SHOWN
 SHEET 200 OF 226
 E-15R



NOTES:
 WITH THE EXCEPTION OF WIRE/CONDUIT P-9-5,
 P-10-5, P-10-6A, ALL ELECTRICAL WORK IN DIGESTER
 PIPE GALLERY WAS DELETED FROM CONTRACT.

PLAN @ EL.128.00
 SCALE: 1/8"=1'-0"

- NOTES:
1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
 2. FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-38 AND SHT. E-39.
 3. FOR PANEL SCHEDULES SEE SHT. E-34 AND SHT. E-35.



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James J. Lewis 5/7/96 DATE
 DIRECTOR OF PUBLIC WORKS

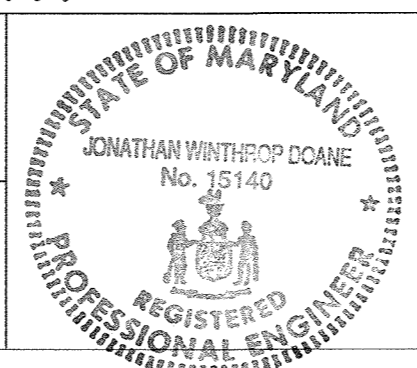
Julie R. Sporn 5/7/96 DATE
 CHIEF, BUREAU OF ENGINEERING

John J. O'Hara 5/7/96 DATE
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

Patricia A. Lian 5-7-96 DATE
 CHIEF, UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96 DATE
 REG. PROF. ENGR.



DES				
DRN				
CHK				
DATE	M.J.C.	1	RECORD DRAWING	4/10/95
	BY	NO.	REVISION	DATE

ELECTRICAL

LIGHTING AND POWER PLANS
 -DEWATERING BUILDING &
 DIGESTER PIPE GALLERY

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
 ADDITION NO. 5
 CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

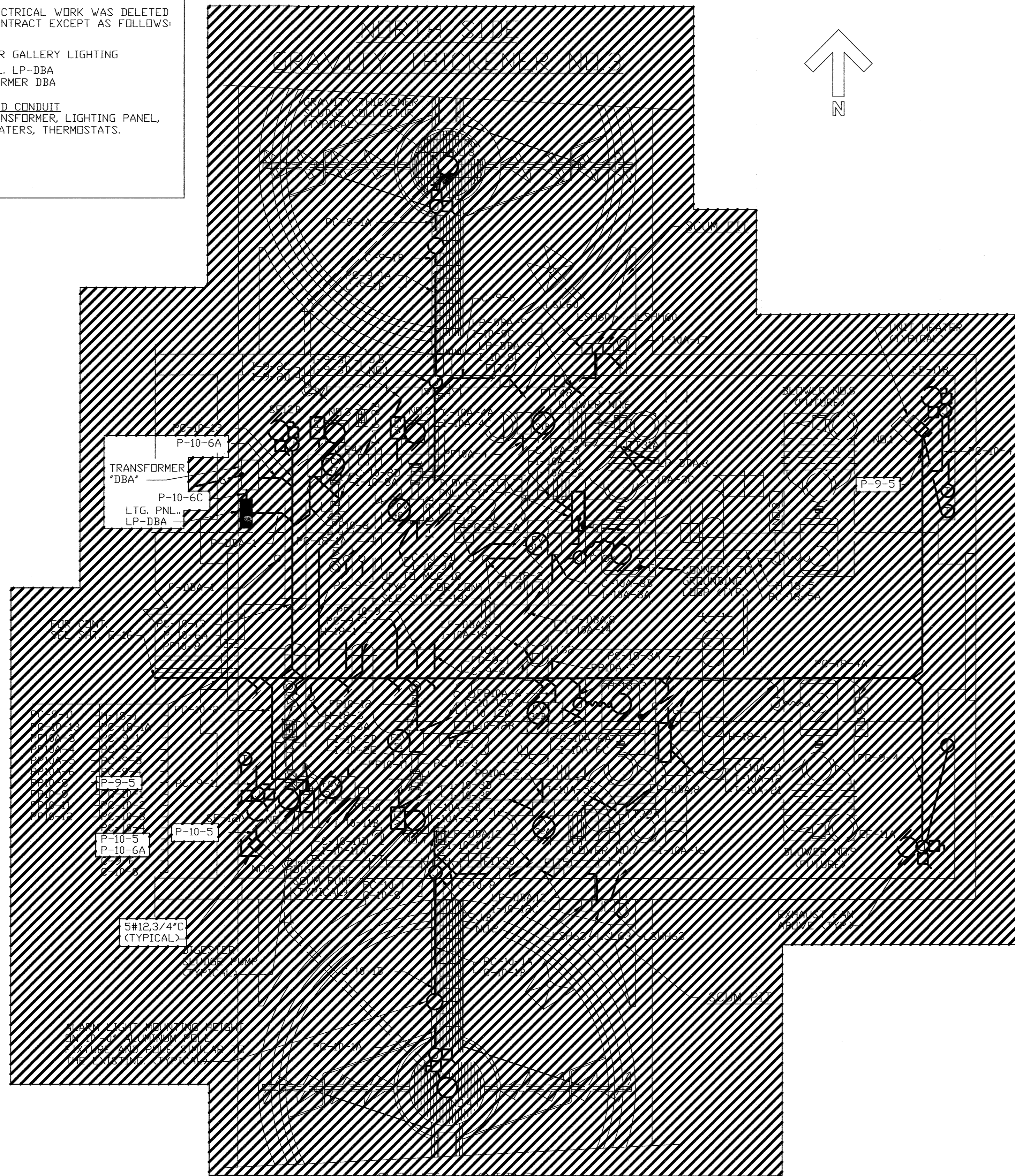
SHEET 201 OF 226

E-16R

NOTE:
ALL ELECTRICAL WORK WAS DELETED
FROM CONTRACT EXCEPT AS FOLLOWS:

DIGESTER GALLERY LIGHTING
LTG. PNL. LP-DBA
TRANSFORMER DBA

WIRE AND CONDUIT
FOR TRANSFORMER, LIGHTING PANEL,
UNIT HEATERS, THERMOSTATS.
P-10-6A
P-10-6C
P-9-5
P-10-5

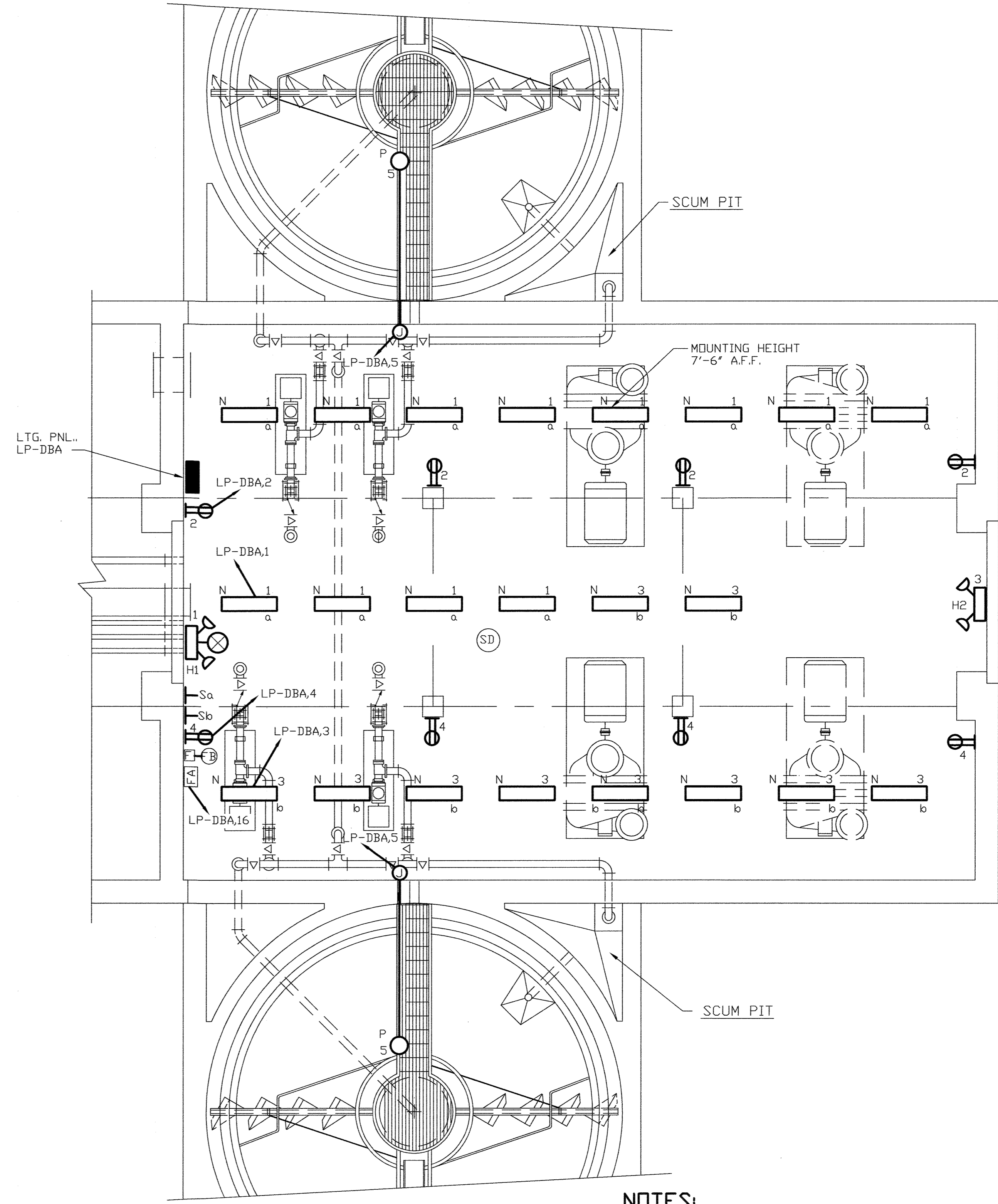


SOUTH SIDE
GRAVITY THICKENER NO.4

POWER - PLAN

SCALE: 3/16"=1'-0"

NORTH SIDE
GRAVITY THICKENER NO.3



SOUTH SIDE
GRAVITY THICKENER NO.4

LIGHTING - PLAN

SCALE: 3/16"=1'-0"

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT & WIRE SCHEDULE SEE SHT. E-38.
3. FOR PANEL SCHEDULES SEE SHT. E-34.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

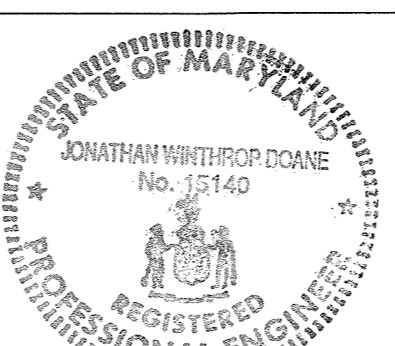
John J. Shaw 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

John J. Shaw 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. Shaw 5/7/96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Dwyer 5-7-96
REG. PROF. ENGR. DATE



DES				
DRN				
CHK				
DATE	M.J.C.	1	RECORD DRAWING	4/10/95
	BY	NO.	REVISION	DATE

ELECTRICAL

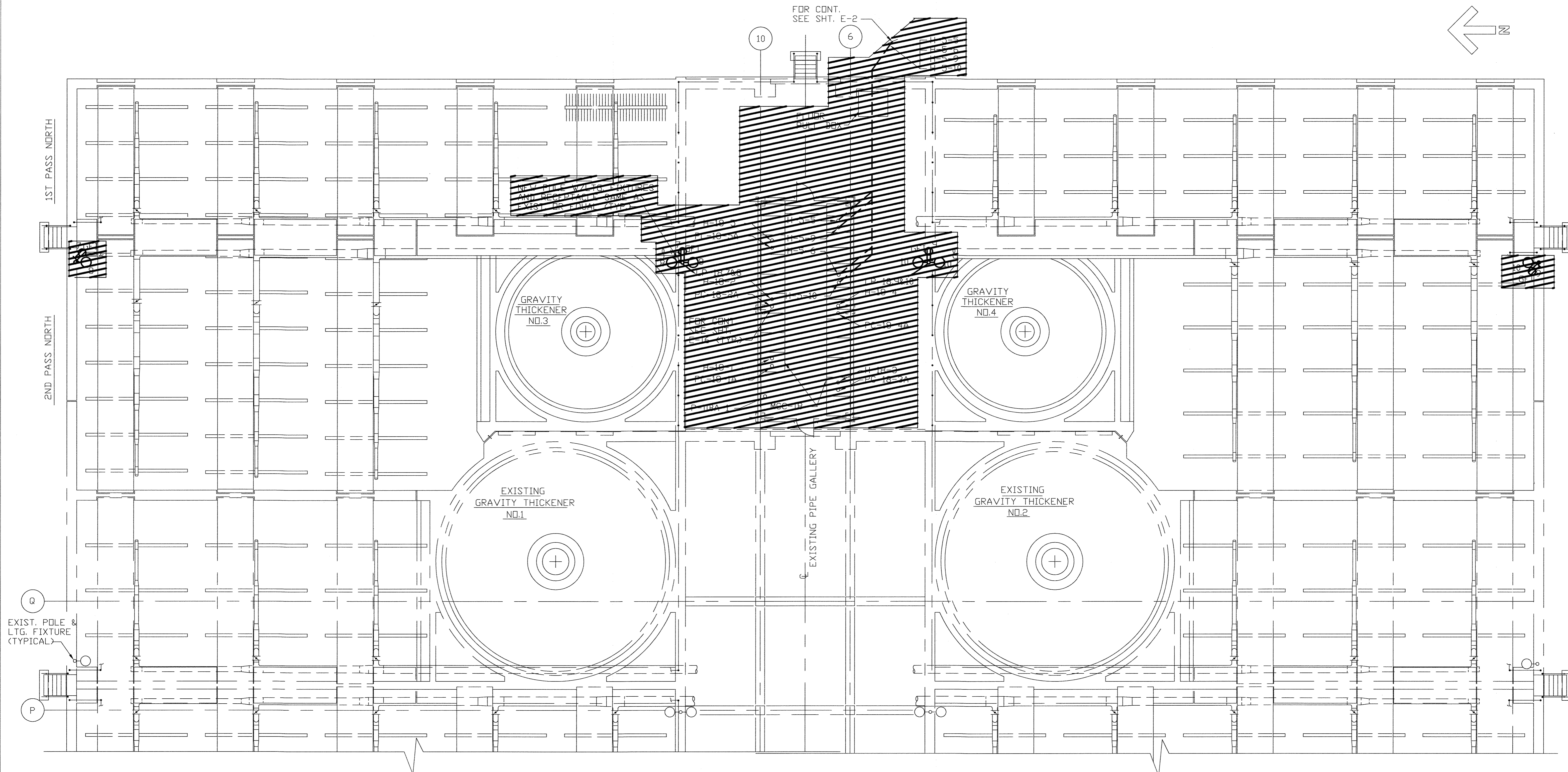
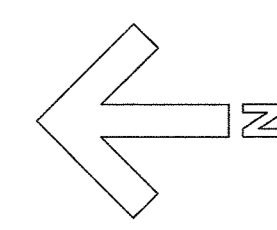
LIGHTING & POWER PLANS -
DIGESTER PIPE GALLERY ADDITION

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

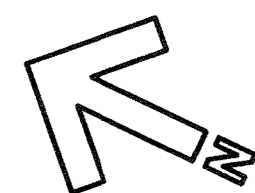
SCALE AS SHOWN
SHEET 202 OF 226
E-17R

FOR CONT.
SEE SHT. E-2

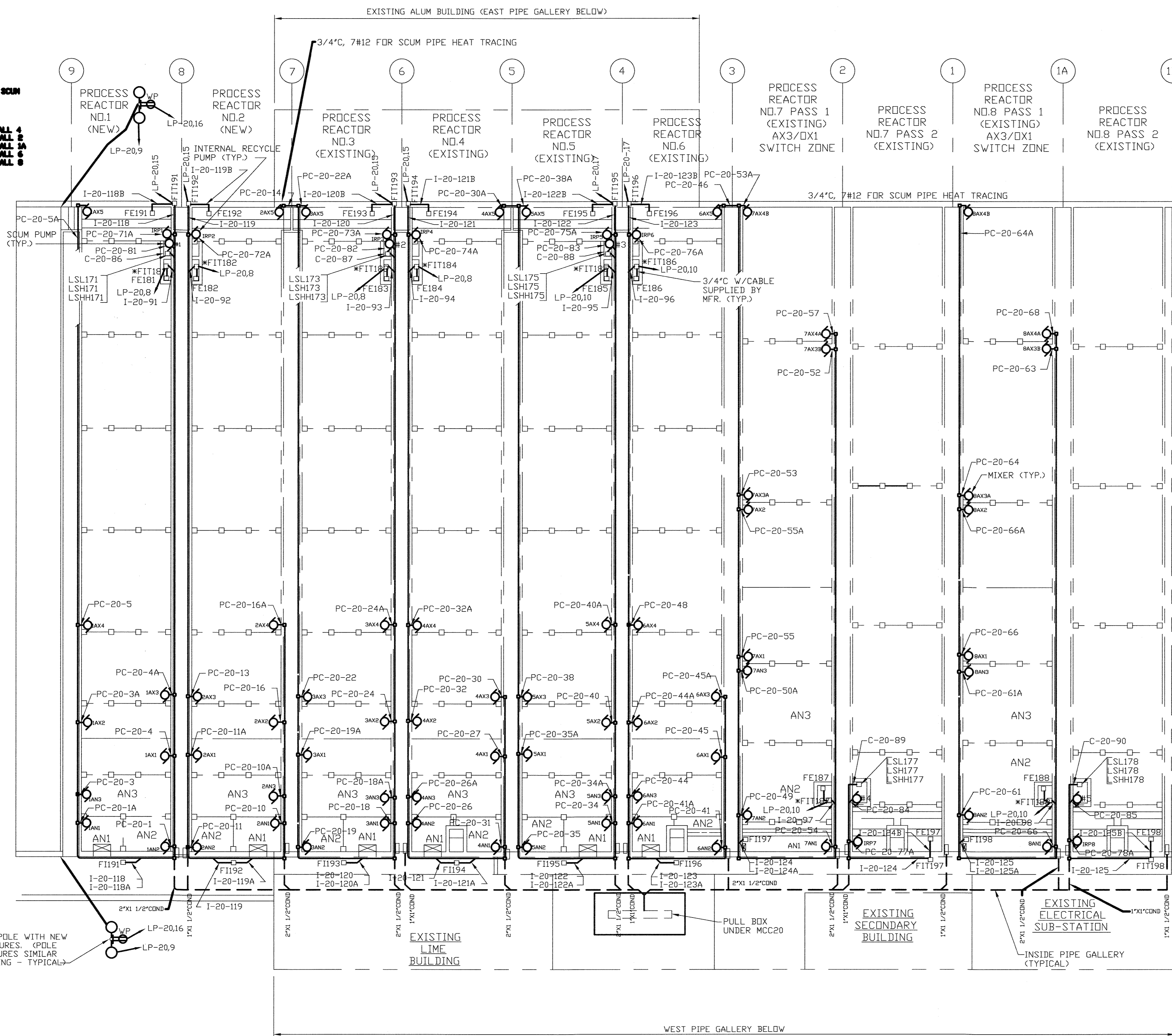


- NOTES:
- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
 - FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-38.

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>James J. Leo</i> 5/7/96 DIRECTOR OF PUBLIC WORKS</p> <p><i>John O'Hara</i> 5/7/96 CHIEF BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>M&E Metcalf & Eddy</p> <p><i>Jonathan W. Shraw</i> 5-7-96 REG. PROF. ENGR.</p>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>DES:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DRN:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CHK:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DATE:</td> <td>M.J.C. 1</td> <td>RECORD DRAWING</td> <td>4/10/95</td> </tr> <tr> <td></td> <td>BY NO.</td> <td>REVISION</td> <td>DATE</td> </tr> </table>	DES:				DRN:				CHK:				DATE:	M.J.C. 1	RECORD DRAWING	4/10/95		BY NO.	REVISION	DATE	<p>ELECTRICAL</p> <p>LIGHTING & POWER PLANS - DIGESTERS</p>	<p>LITTLE PATUXENT WASTEWATER TREATMENT PLANT LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION ADDITION NO. 5 CAPITAL PROJECT S-6153</p> <p>CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 203 OF 226</p> <p>E-18R</p>
DES:																										
DRN:																										
CHK:																										
DATE:	M.J.C. 1	RECORD DRAWING	4/10/95																							
	BY NO.	REVISION	DATE																							



HEAT TRACING INSTALLED FOR SCUM
RECHARGE PIPES.
ALUM ELBE LP-PHL
CKT 11-SCP-3 RECHARGE, Y-WALL 4
CKT 12-SCP-4 RECHARGE, Y-WALL 5
CKT 13-SCP-5 RECHARGE, Y-WALL 1A
CKT 17-SCP-2 RECHARGE, Y-WALL 6
CKT 22-SCP-1 RECHARGE, Y-WALL 8



PLAN
SCALE: 1/16"=1'-0"

- NOTES:**
- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
 - FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-37.
 - PROVIDE 30 AMP PLUG & RECEPTACLE NEMA 4X FOR EACH SUBMERSIBLE MIXER & PUMP.
- * FIT 181 THROUGH 188 WERE INSTALLED ON THE PROCESS REACTOR HANDRAIL.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

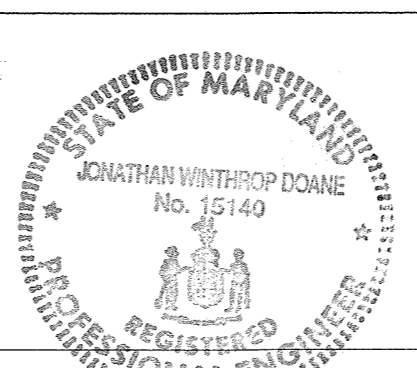
James P. Lewis 5/1/96
DIRECTOR OF PUBLIC WORKS
DATE

John D. Hare 5/1/96
CHIEF BUREAU OF ENVIRONMENTAL SERVICES
DATE

John D. Hare 5/7/96
CHIEF UTILITY DESIGN DIVISION
DATE

M&E Metcalf & Eddy

Jonathan W. Stone 5-7-96
REG. PROF. ENGR.
DATE



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY	NO.	REVISION

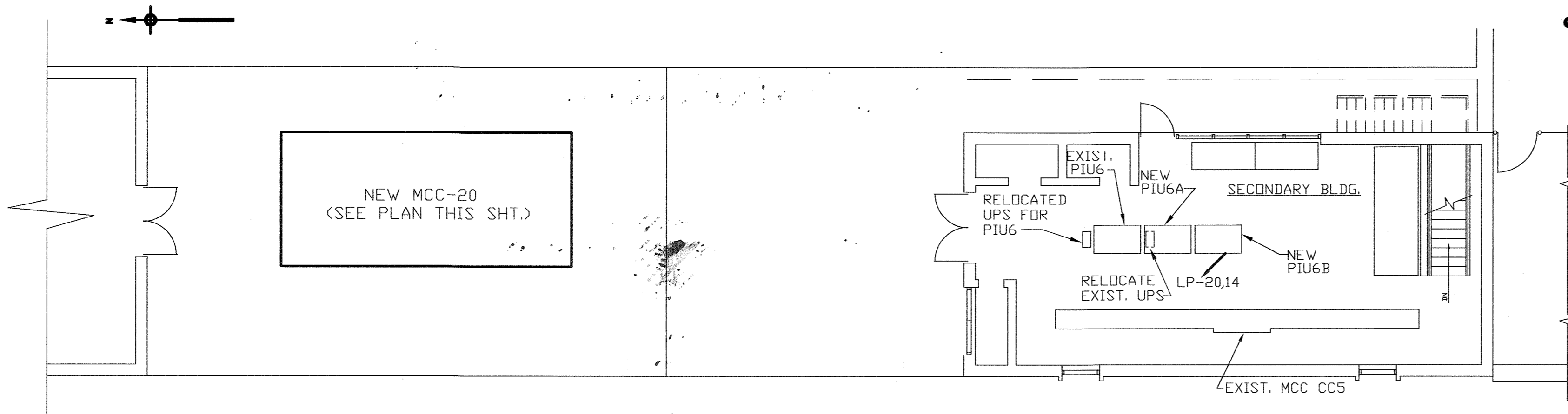
ELECTRICAL

LIGHTING & POWER PLANS -
PROCESS REACTORS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

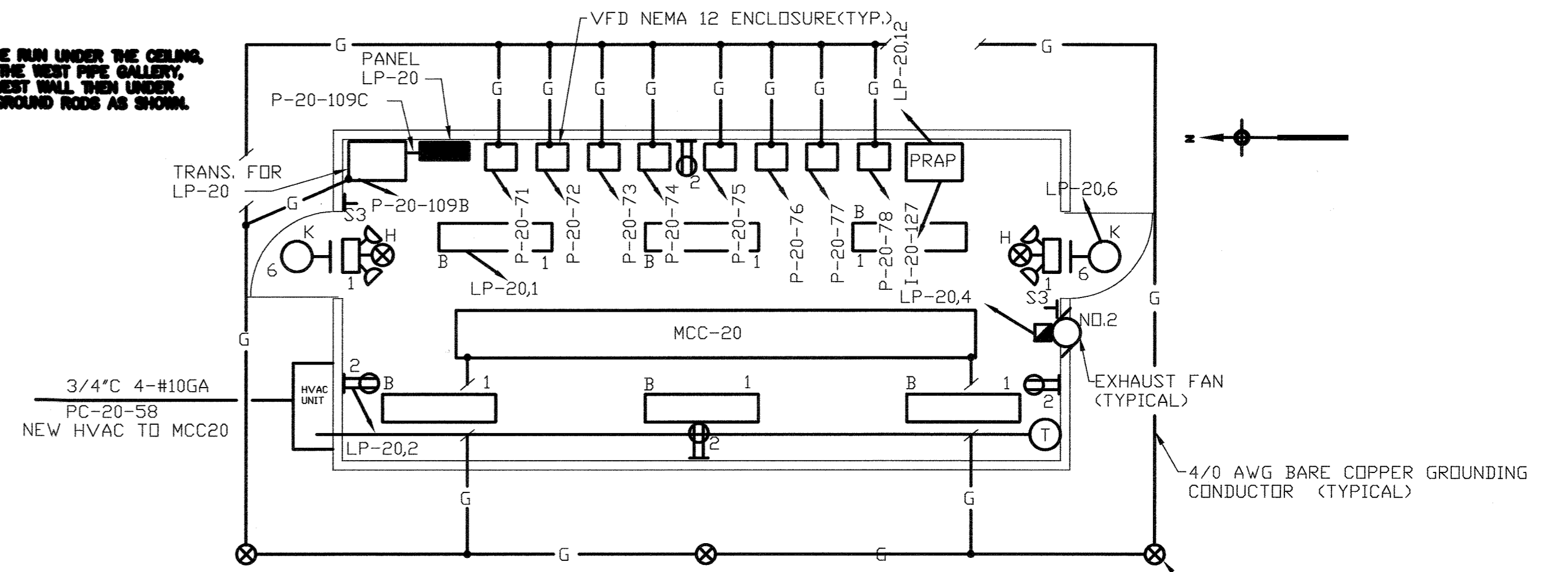
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 204 OF 226
E-19R



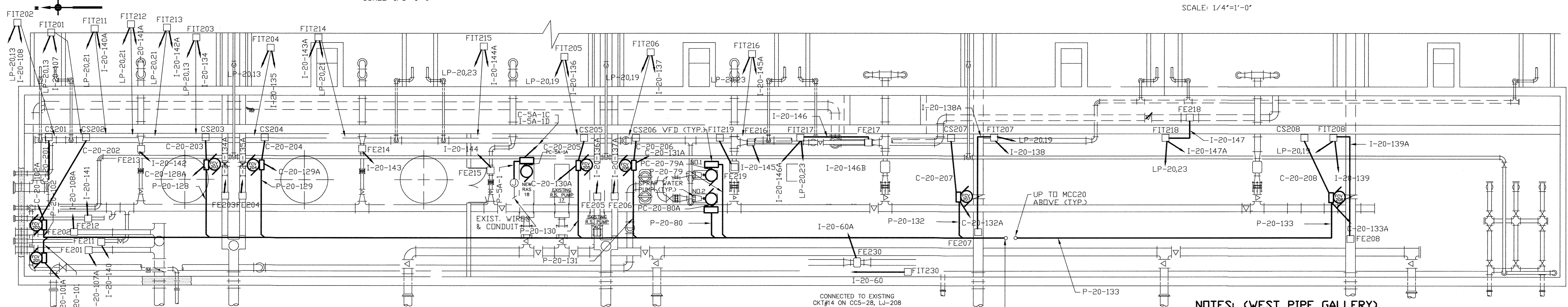
TOP OF WEST PIPE GALLERY - PART PLAN

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



MOTOR CONTROL CENTER MCC-20 - PLAN

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

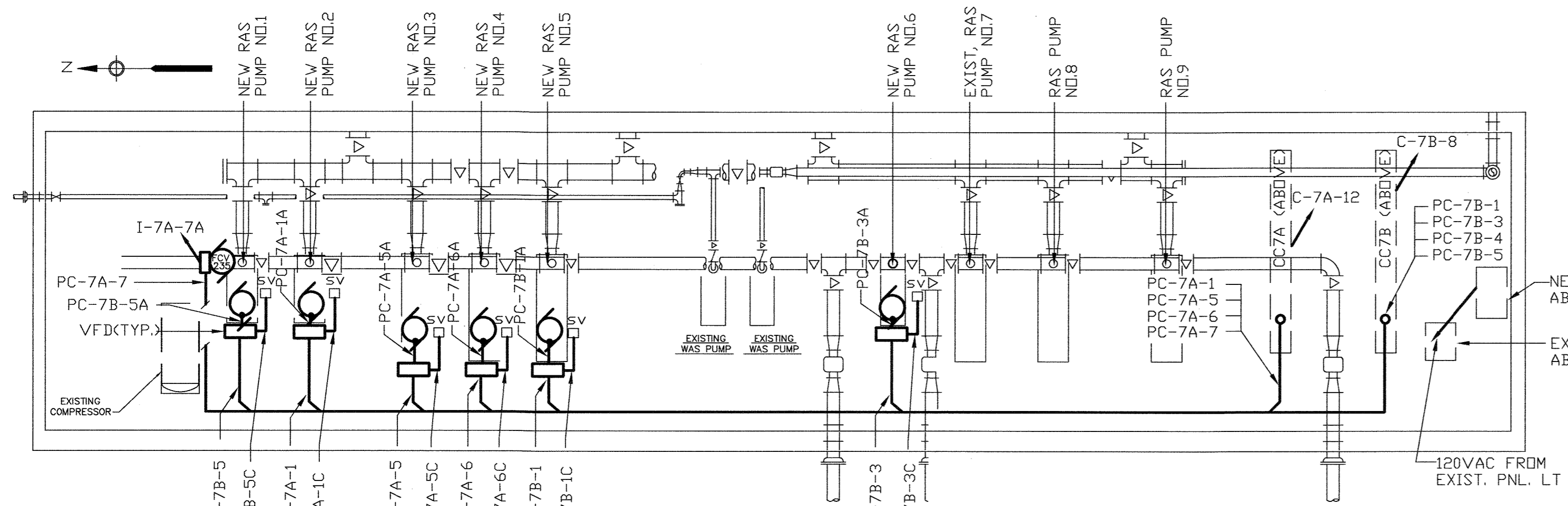


WEST PIPE GALLERY - PLAN

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

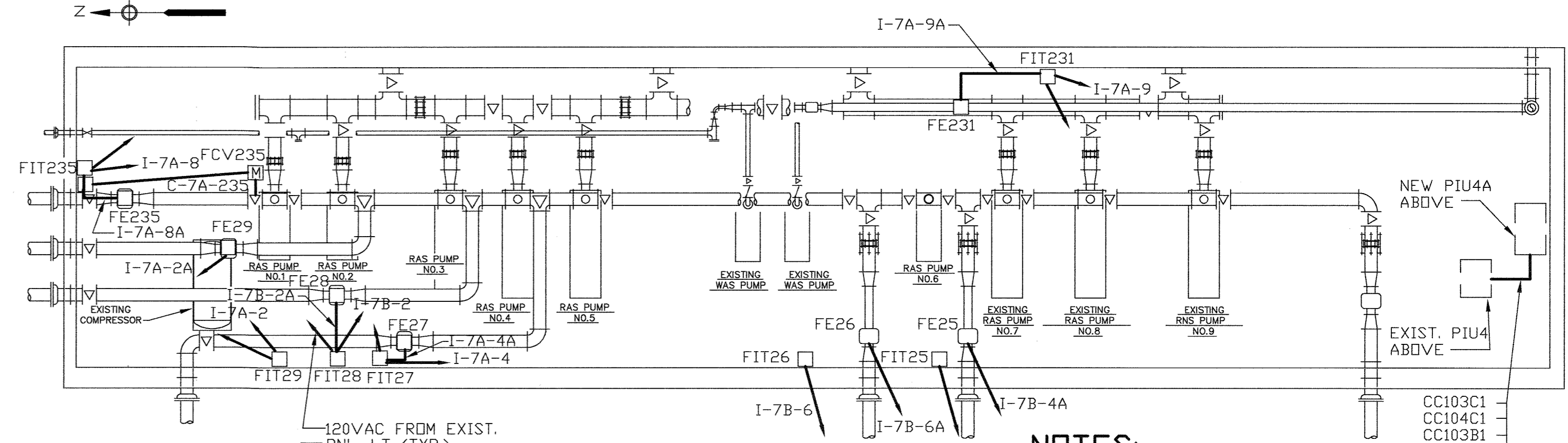
NOTES: (WEST PIPE GALLERY)

- FCV 211 THRU 218 WERE DELETED ALONG WITH ASSOCIATED WIRE AND CONDUIT. THESE VALVES ARE MANUALLY OPERATED VALVES.
 - FE/FIT 219 REPLACES EXISTING RAS METER TO PR #6 MCC 6 LQ CKT#38.
 - FE/FIT 211 THRU 218A I-20-40A THRU I-20-47A RUN TO THE PRAP PANEL TERMINAL STRIP. THESE METERS ARE CONNECTED TO THE COMPUTER VIA 8 #16SH IN I-20-127.
 - A NUMBER OF EXISTING FLOW METERS WERE REMOVED/REPLACED AND POWERED FROM NEW LP-20. THE FOLLOWING PANEL BOARD SHOULD NOW BE SPARE.
- WPG-MCC6-LQ CKT #35
MCC5-LR CKT #14,18,32
EPG-MCC7-LT CKT #12,21,18,20



EAST PIPE GALLERY LOWER PLAN - POWER

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



EAST PIPE GALLERY LOWER PLAN - CONTROL

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

NOTES:

- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
- FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-37 & E-39.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Sullivan 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

John J. O'Hara 5/7/96
CHIEF BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 5/7/96
CHIEF BUREAU OF ENGINEERING DATE

John J. O'Hara 5-7-96
CHIEF UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Brown 5-7-96
REG. PROF. ENGR. DATE



DES	DRN	CHK	DATE	M.J.C.	NO.	RECORD DRAWING	REVISION	DATE

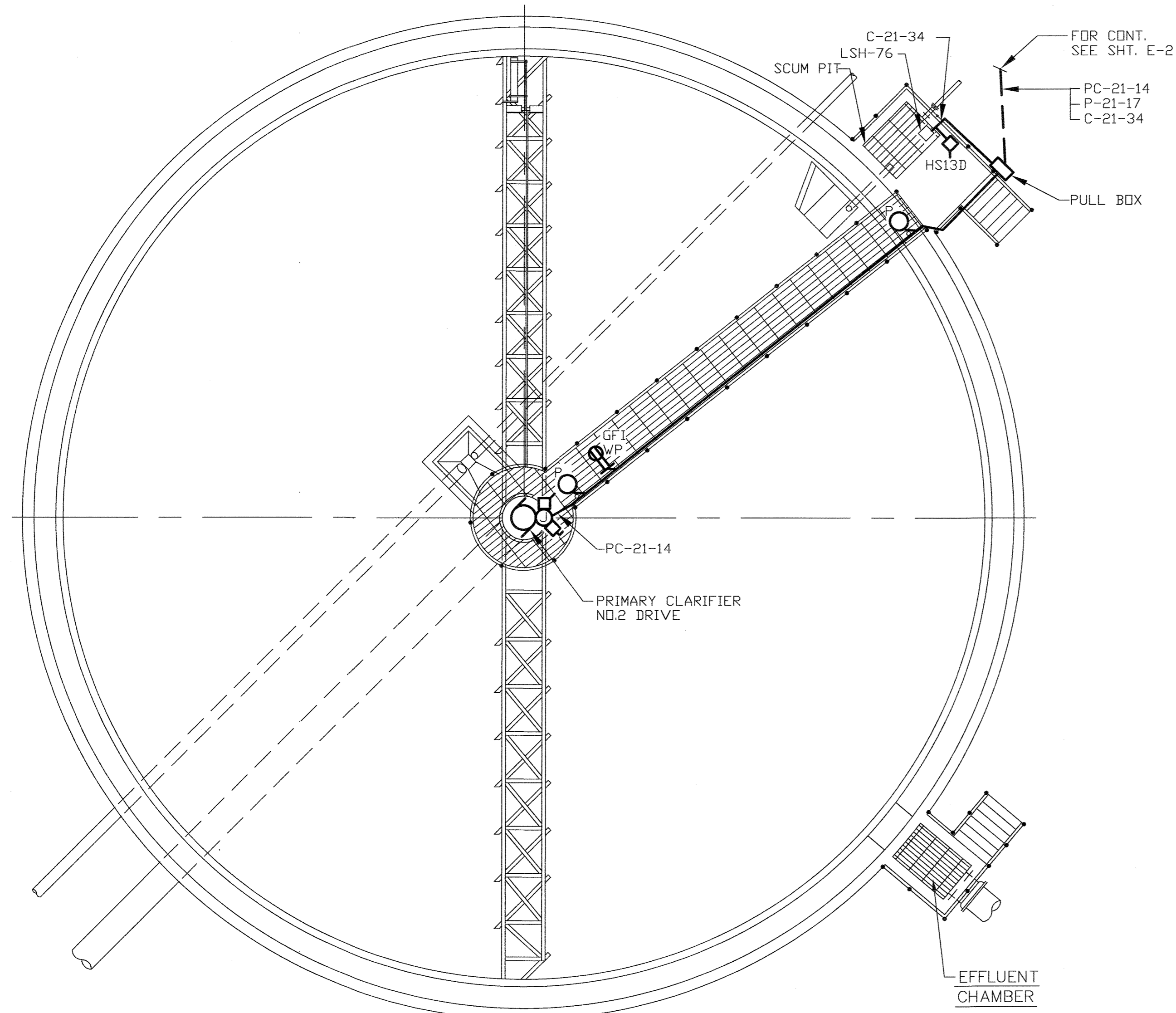
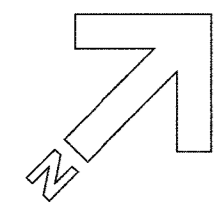
ELECTRICAL

LIGHTING & POWER PLANS - ALUM BUILDING, EAST PIPE GALLERY & SECONDARY BUILDING

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

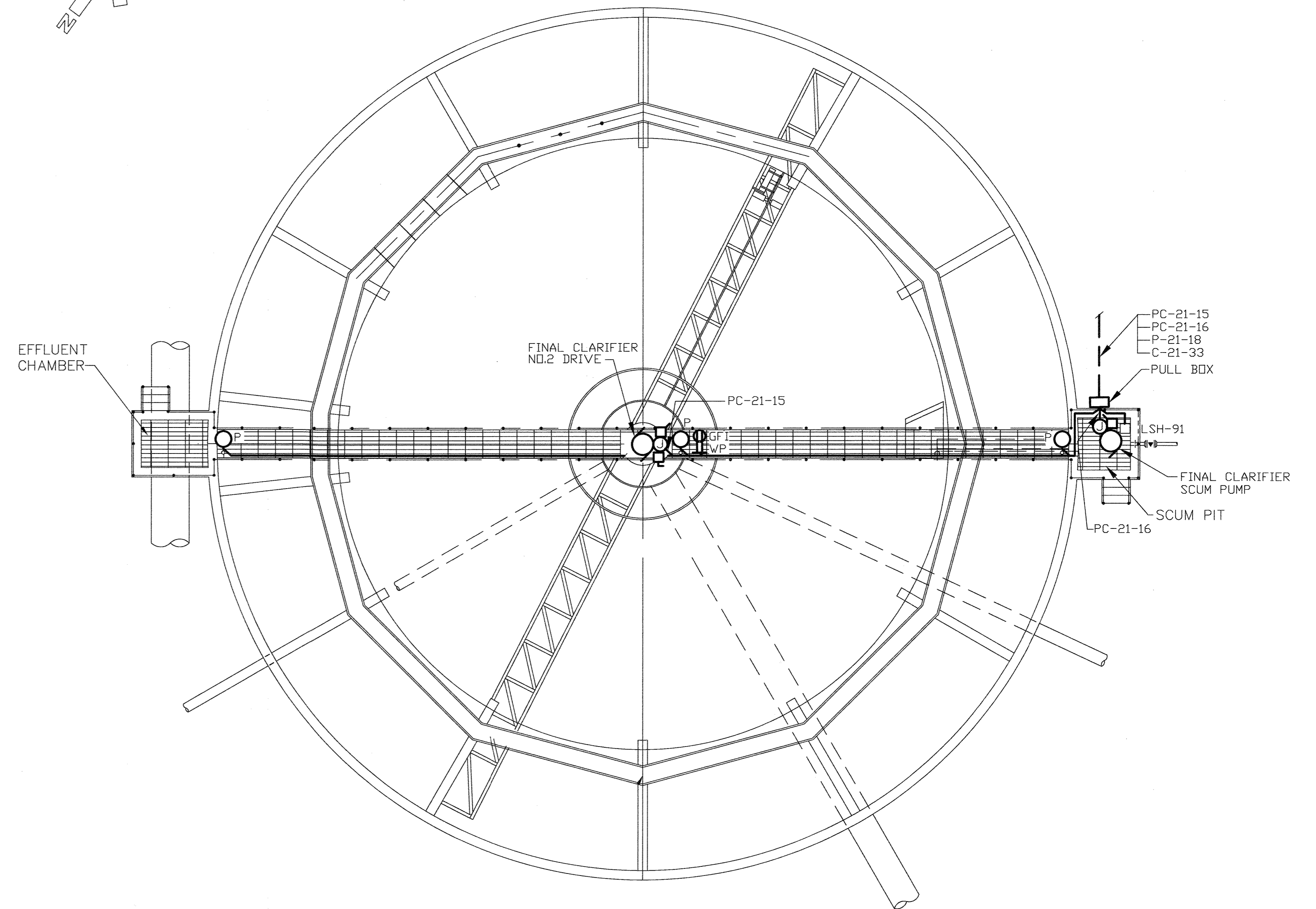
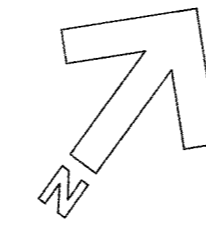
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 205 OF 226
E-20R



PRIMARY CLARIFIER NO. 2 - PLAN

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



FINAL CLARIFIER NO. 2 - PLAN

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

NOTE:

THE PC#2 & FC#2 LIGHT POLES LOCATED ON SUPPORT PEDESTALS CONSTRUCTED OUT SIDE OF THE WALKWAY.

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT & WIRE SCHEDULE SEE SHT. E-36.
3. FOR LIGHTING PANEL SCHEDULES SEE SHT. E-34.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hara 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

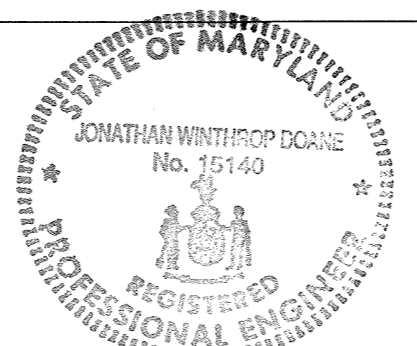
Paul D. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERS DATE

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John W. Dorn 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Dorn 5-7-96
REG. PROF. ENGR. DATE



DES:			
DRN:			
CHK:			
DATE:	M.J.C. 1	RECORD DRAWING	4/10/95
	BY	NO.	DATE

ELECTRICAL

LIGHTING & POWER PLANS -
PRIMARY & FINAL
CLARIFIERS NO. 2

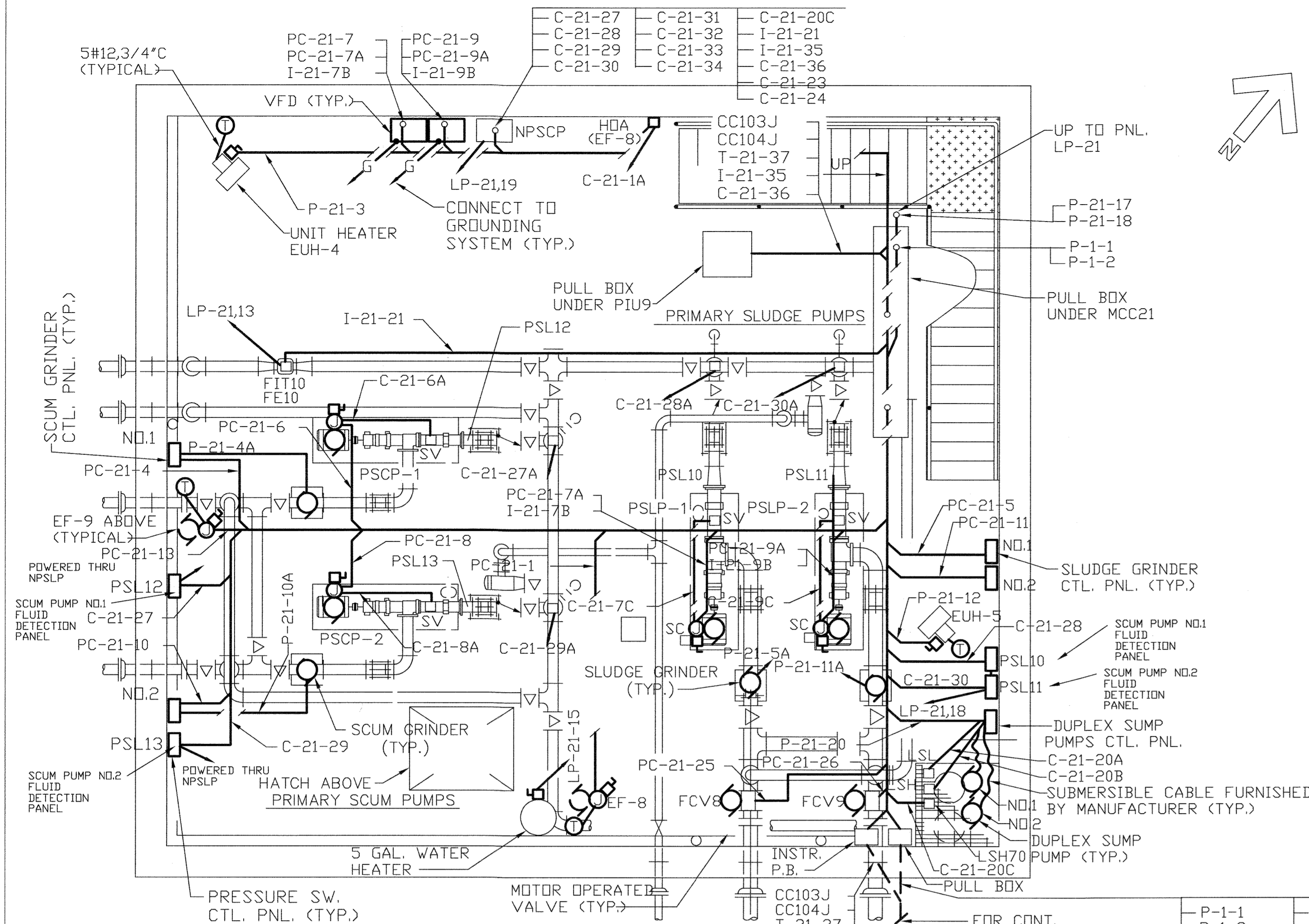
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 206 OF 226

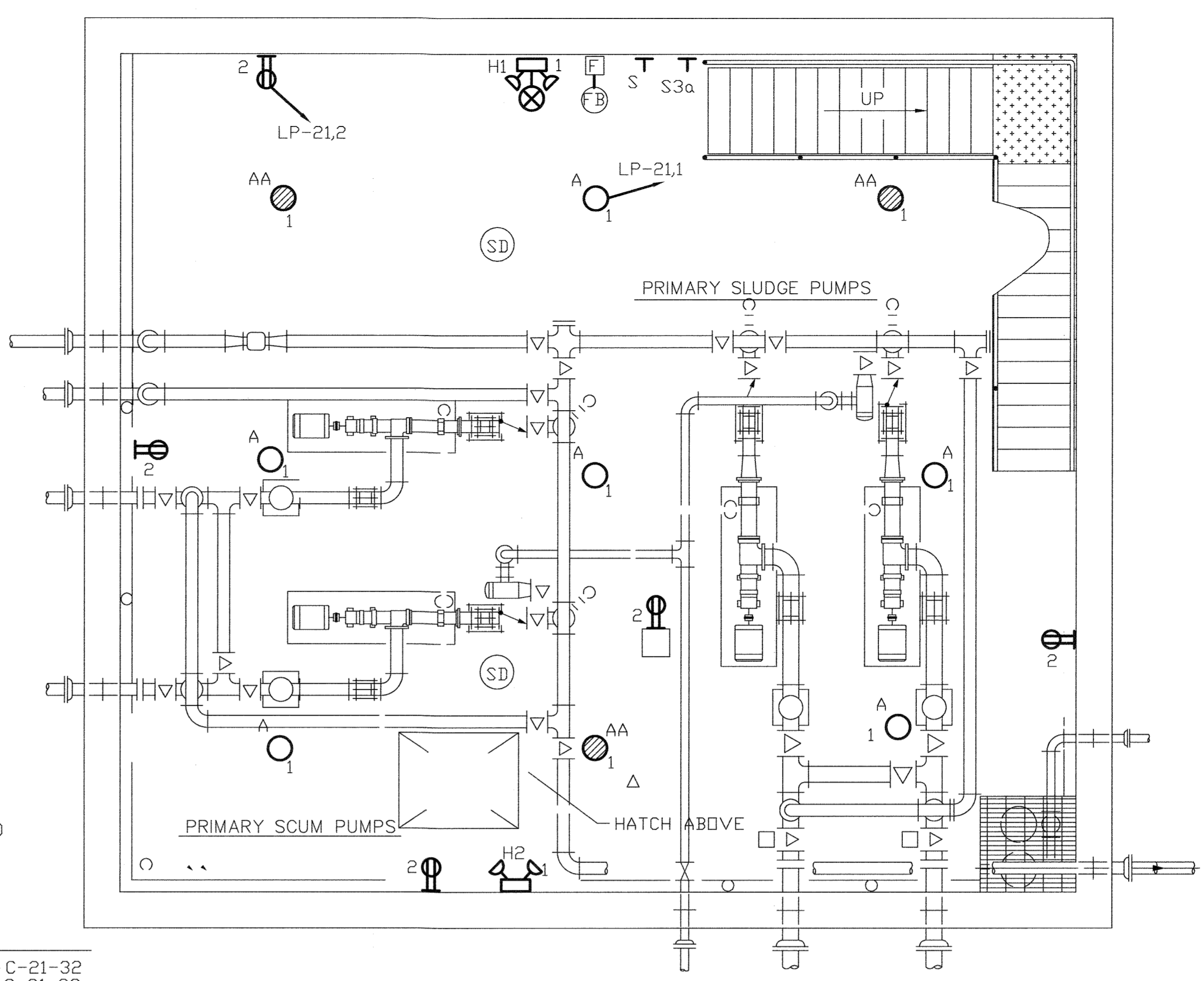
E-21R



BASEMENT PLAN - POWER

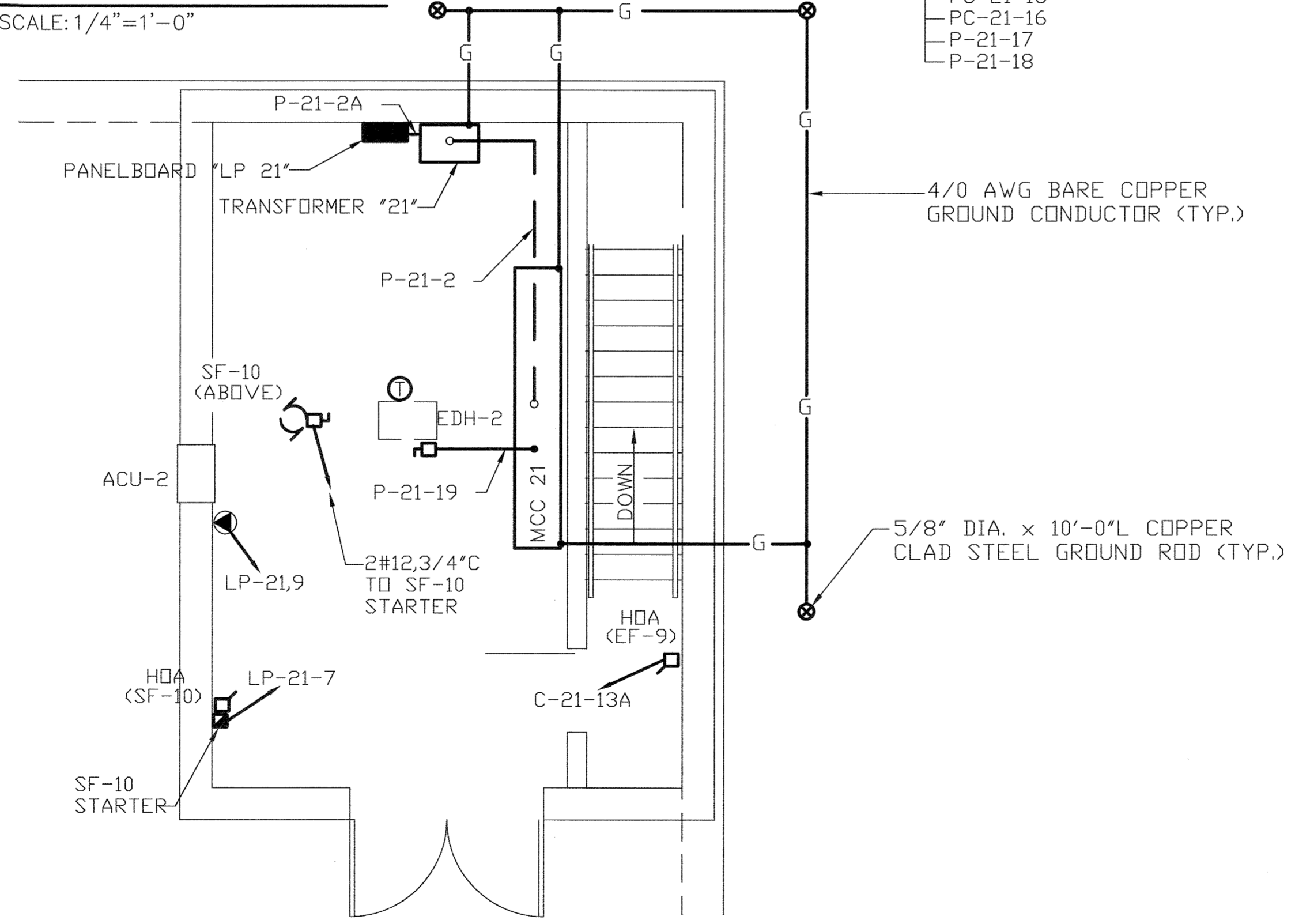
SCALE: 1/4" = 1'-0"

- P-1-1
- P-1-2
- PC-21-14
- PC-21-15
- PC-21-16
- P-21-17
- P-21-18
- C-21-32
- C-21-33
- C-21-34



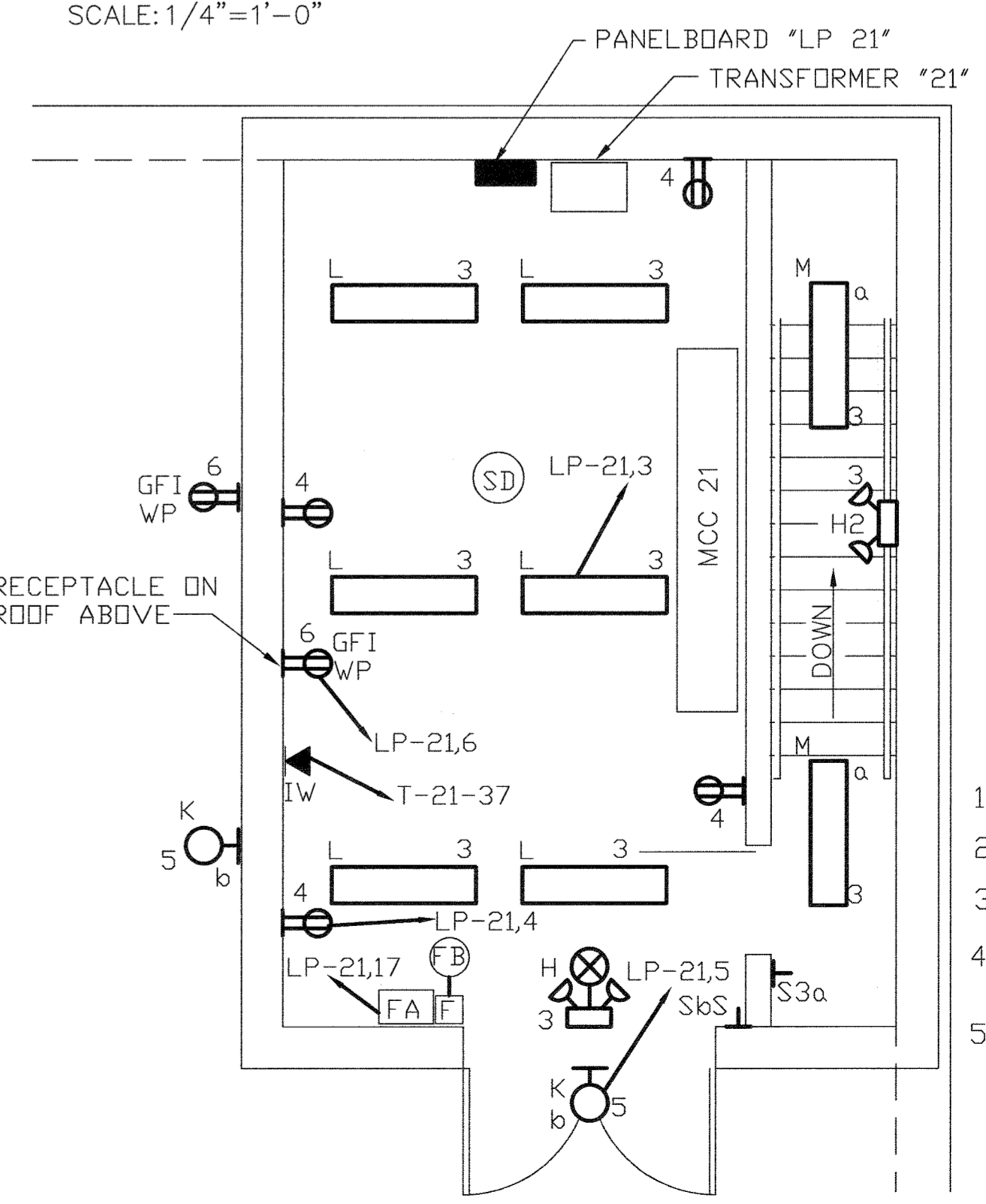
BASEMENT PLAN - LIGHTING

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



UPPER PLAN - POWER

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



UPPER PLAN - LIGHTING

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

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-36.
3. FOR PANELBOARD SCHEDULE SEE SHT. E-34.
4. FOR FIRE ALARM SYSTEM AND INTERCOM/TELEPHONE SYSTEM WIRING, SEE RISER DIAGRAMS ON SHT. E-3.
5. PIV NO. 9 WAS DELETED FROM CONTRACT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Lewis 5/2/96
DIRECTOR OF PUBLIC WORKS DATE

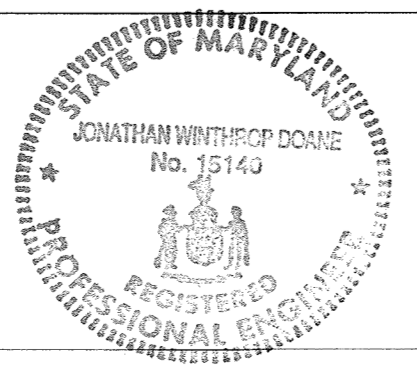
William J. Egan 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Brien 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Clayton J. Williams 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Williams 5-7-96
REG. PROF. ENGR. DATE



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

ELECTRICAL

LIGHTING & POWER PLANS - NORTH PUMP STATION

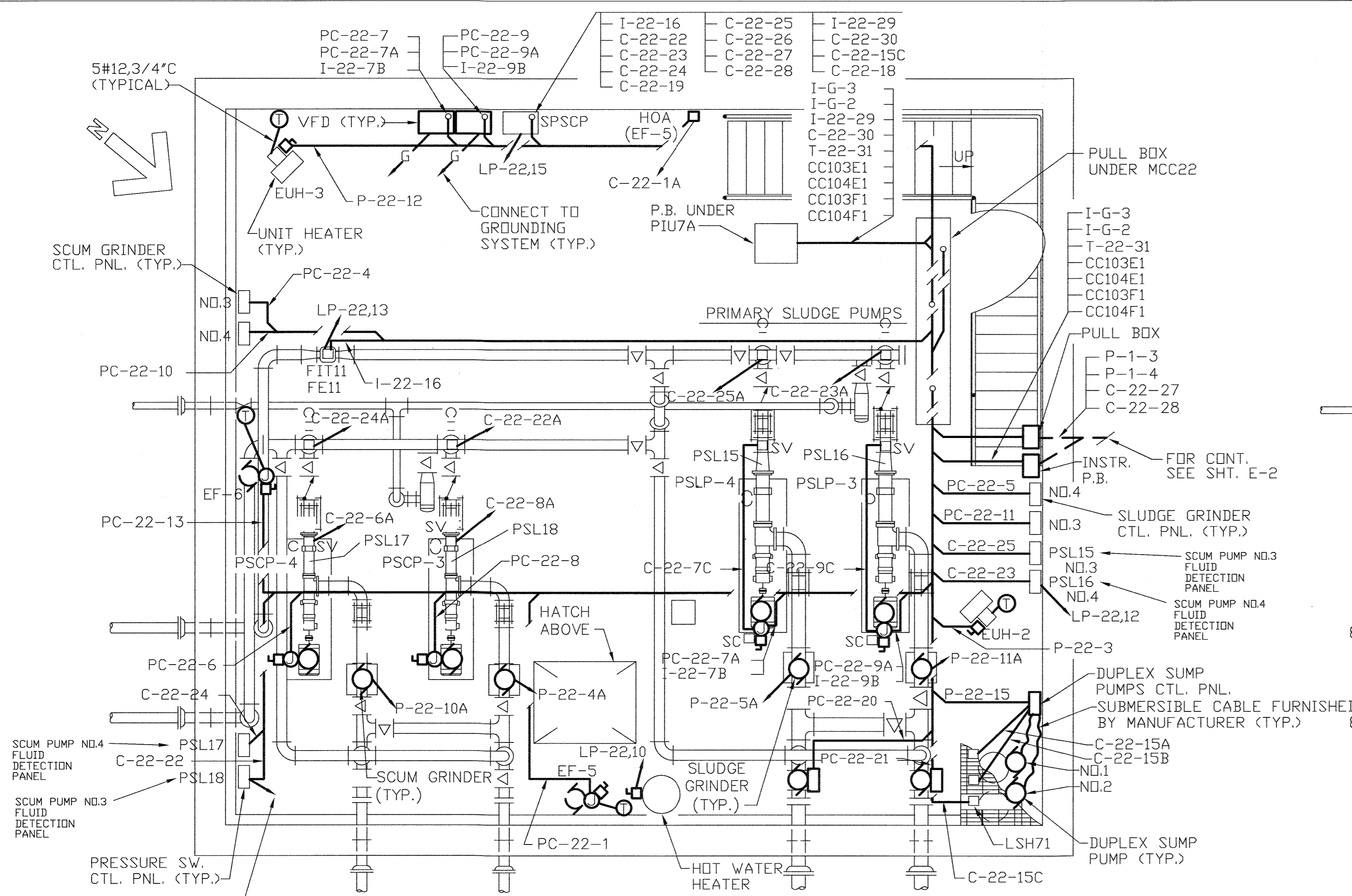
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

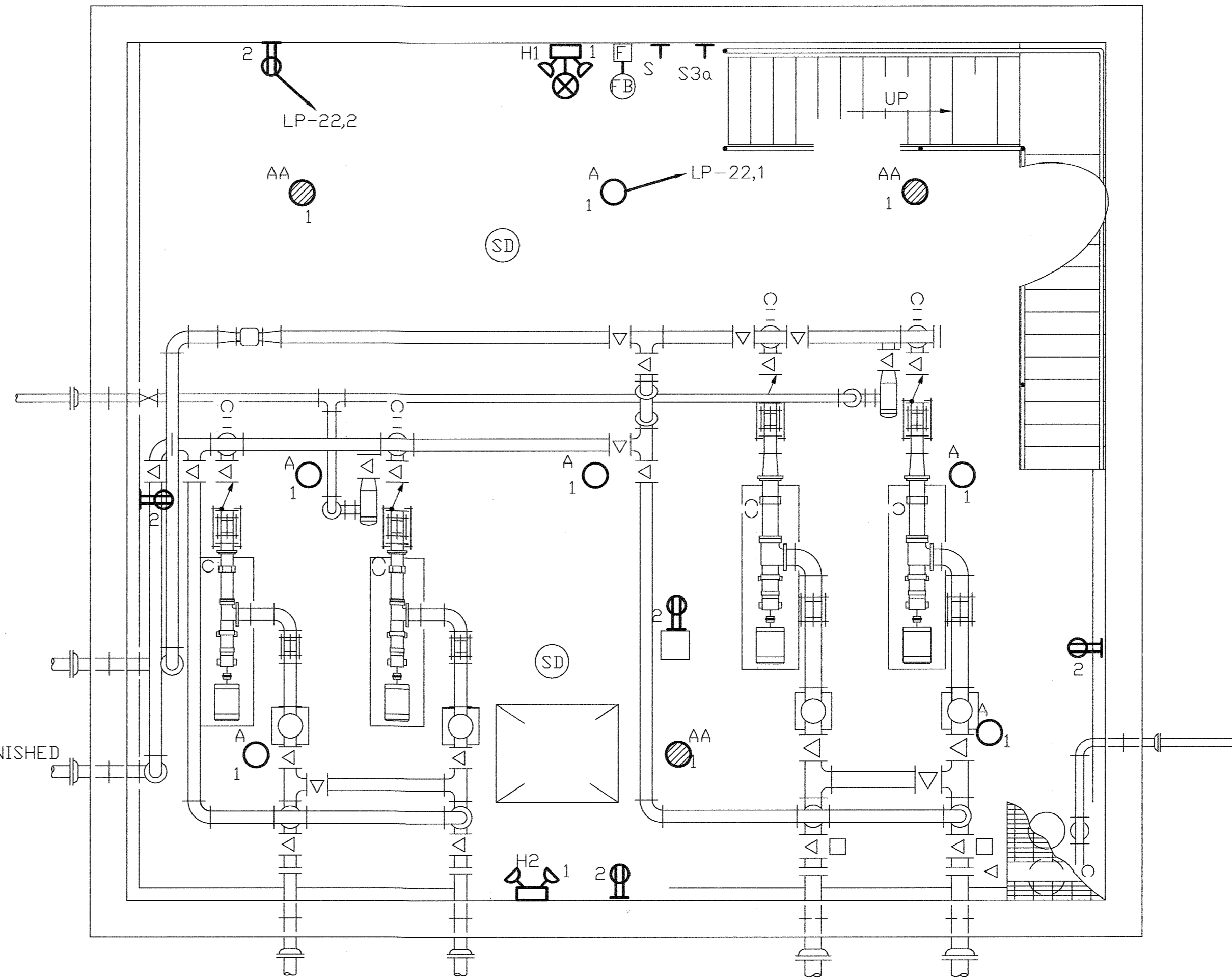
SHEET 207 OF 226

E-22R



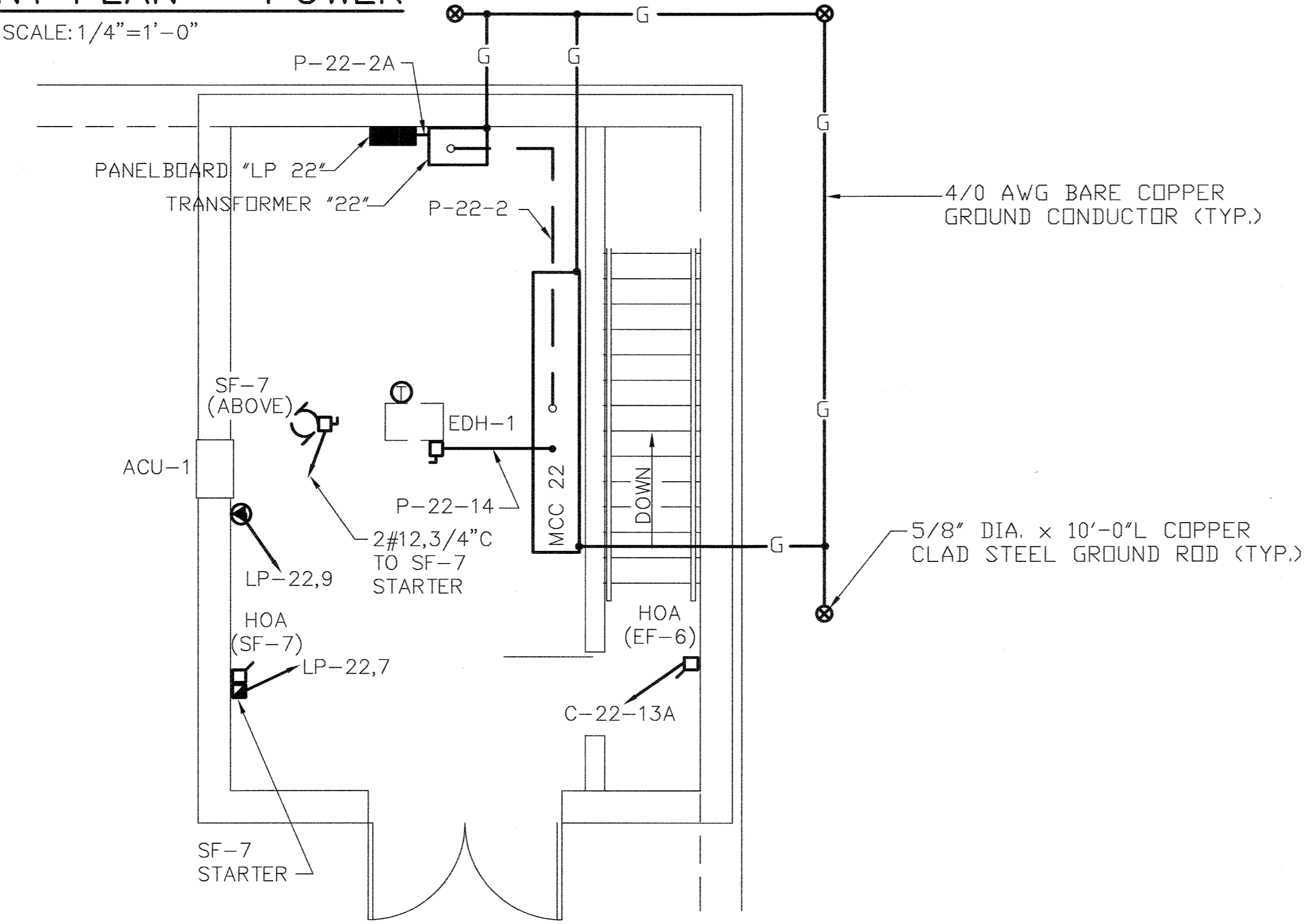
BASEMENT PLAN - POWER

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



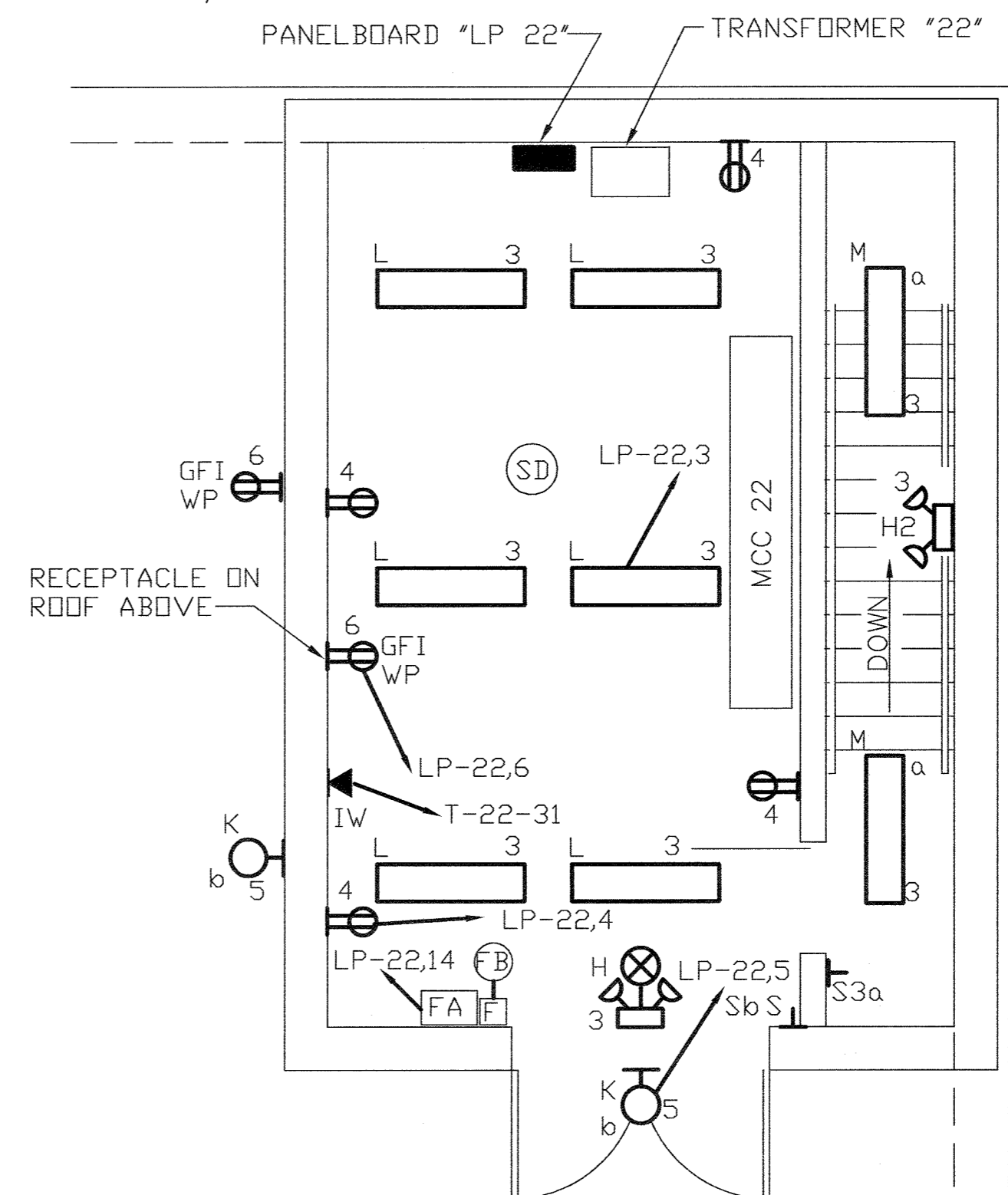
BASEMENT PLAN - LIGHTING

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



UPPER PLAN - POWER

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



UPPER PLAN - LIGHTING

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

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-36.
3. FOR PANELBOARD SCHEDULE SEE SHT. E-34.
4. FOR FIRE ALARM SYSTEM AND INTERCOM/TELEPHONE SYSTEM WIRING, SEE RISER DIAGRAMS ON SHT. E-37.
5. PIV 7A WAS DELETED FROM CONTRACT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Shaw 5/1/96 DATE
DIRECTOR OF PUBLIC WORKS

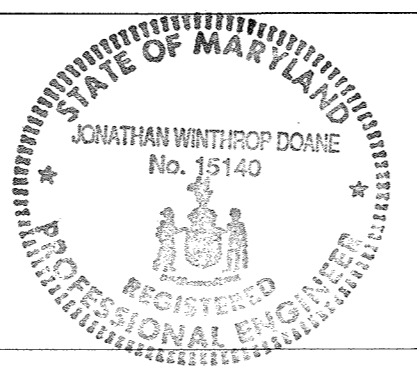
John J. O'Hara 5/1/96 DATE
CHIEF BUREAU OF ENVIRONMENTAL SERVICES

William J. Brown 5/7/96 DATE
CHIEF BUREAU OF ELECTRICAL SERVICES

William J. Brown 5-7-96 DATE
CHIEF UTILITY DESIGN DIVISION

M&E Metcalf & Eddy

William J. Brown 5-7-96 DATE
REG. PROF. ENGR.



DES:			
DRN:			
CHK:			
DATE:	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

ELECTRICAL

LIGHTING & POWER PLANS - SOUTH PUMP STATION

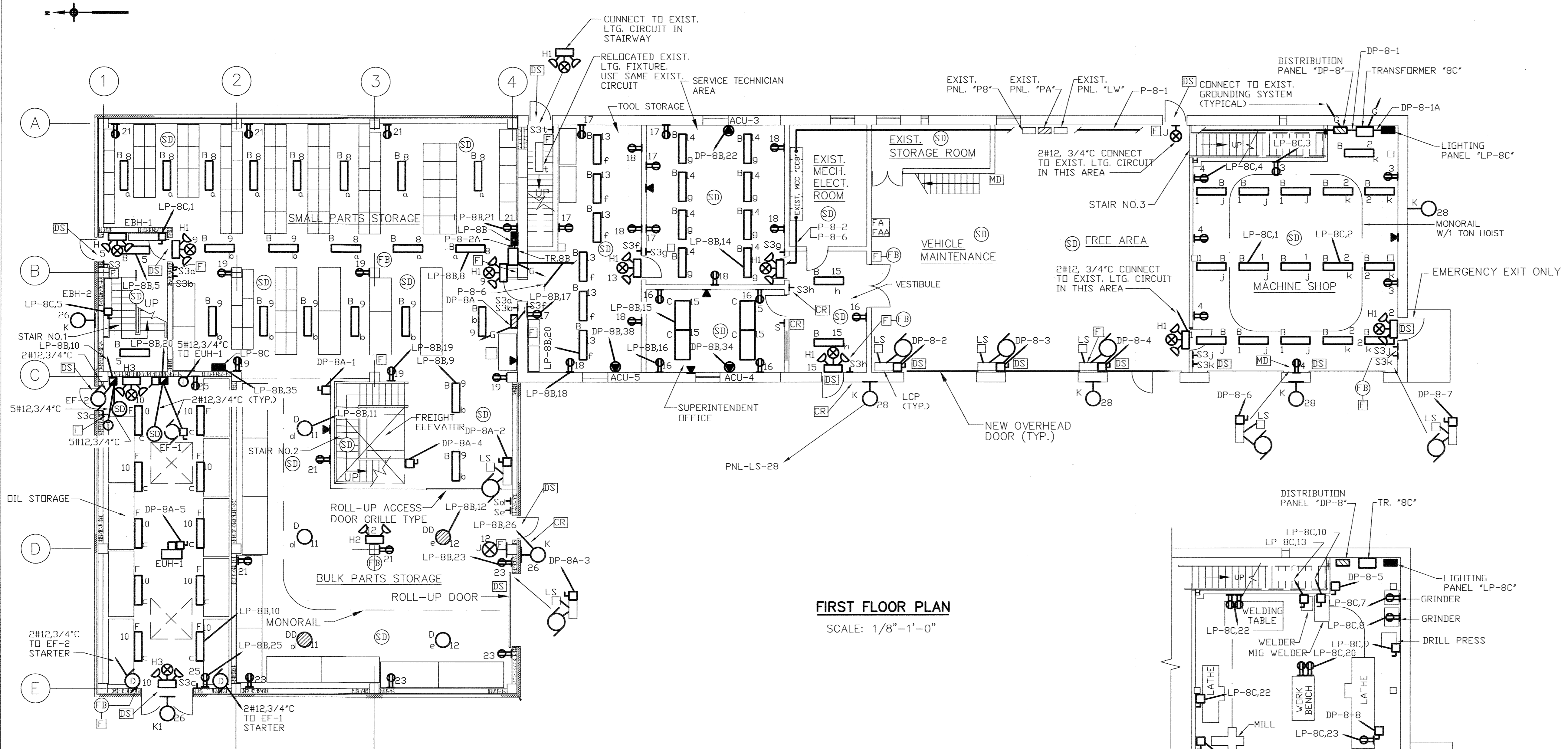
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

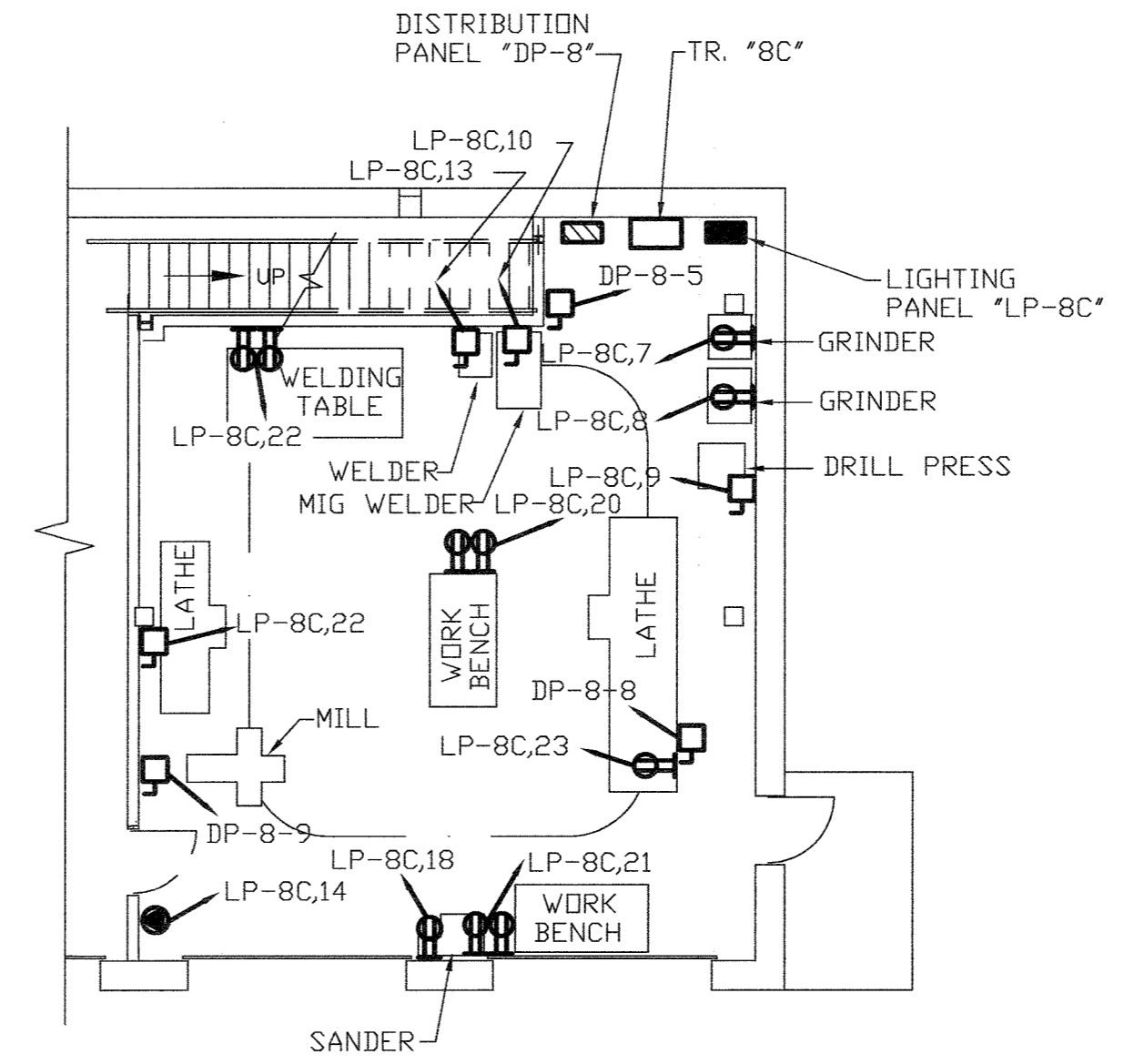
SCALE AS SHOWN

SHEET 208 OF 226

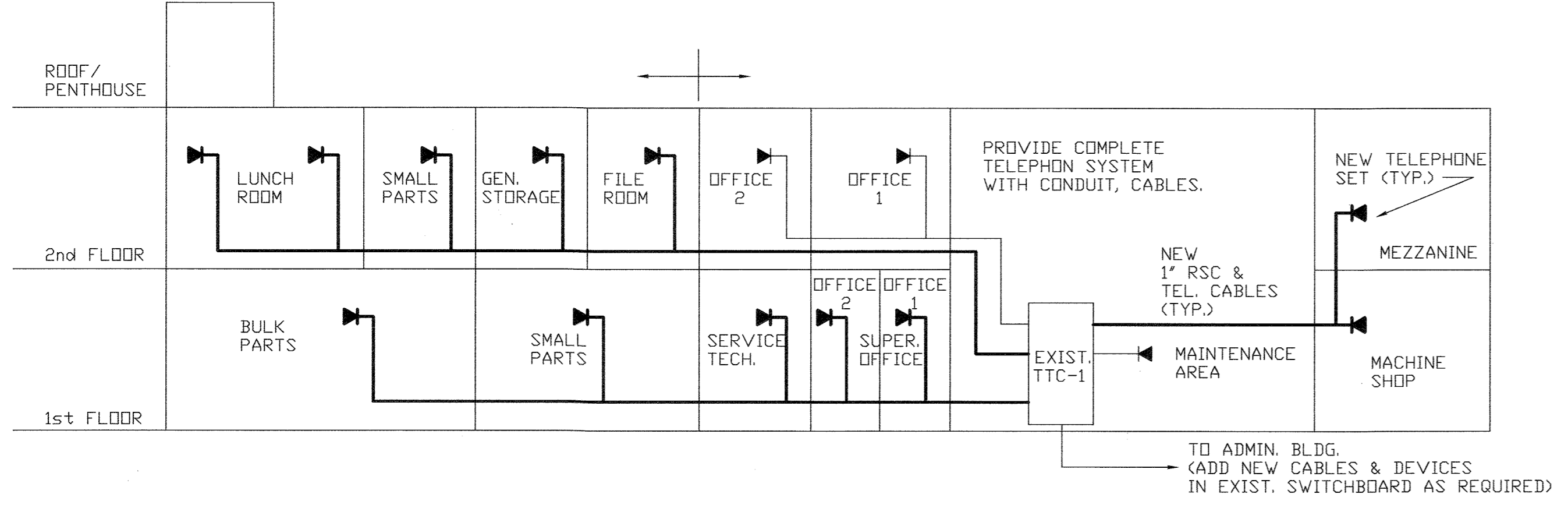
E-23R



FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"



MACHINE AREA POWER PLAN
SCALE: 1/8"=1'-0"



MAINTENANCE BUILDING TELEPHONE SYSTEM RISER DIAGRAM
NO SCALE

- NOTES:**
- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
 - FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-38.
 - FOR LIGHTING PANEL SCHEDULES SEE SHT. E-34.
 - ALL ELECTRICAL EQUIPMENT IN OIL STORAGE ROOM SHALL BE IN NEMA 7 ENCLOSURE.

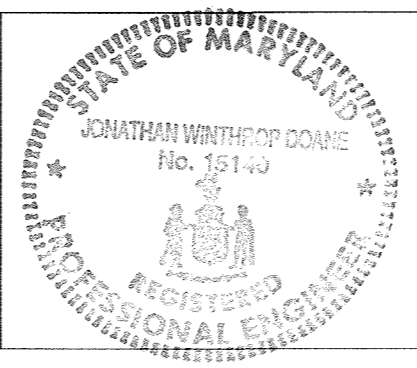
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS

John J. O'Brien 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

M&E Metcalf & Eddy

Jonathan W. Stone 5-7-96
PRINCIPAL ENGINEER



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY	NO.	REVISION

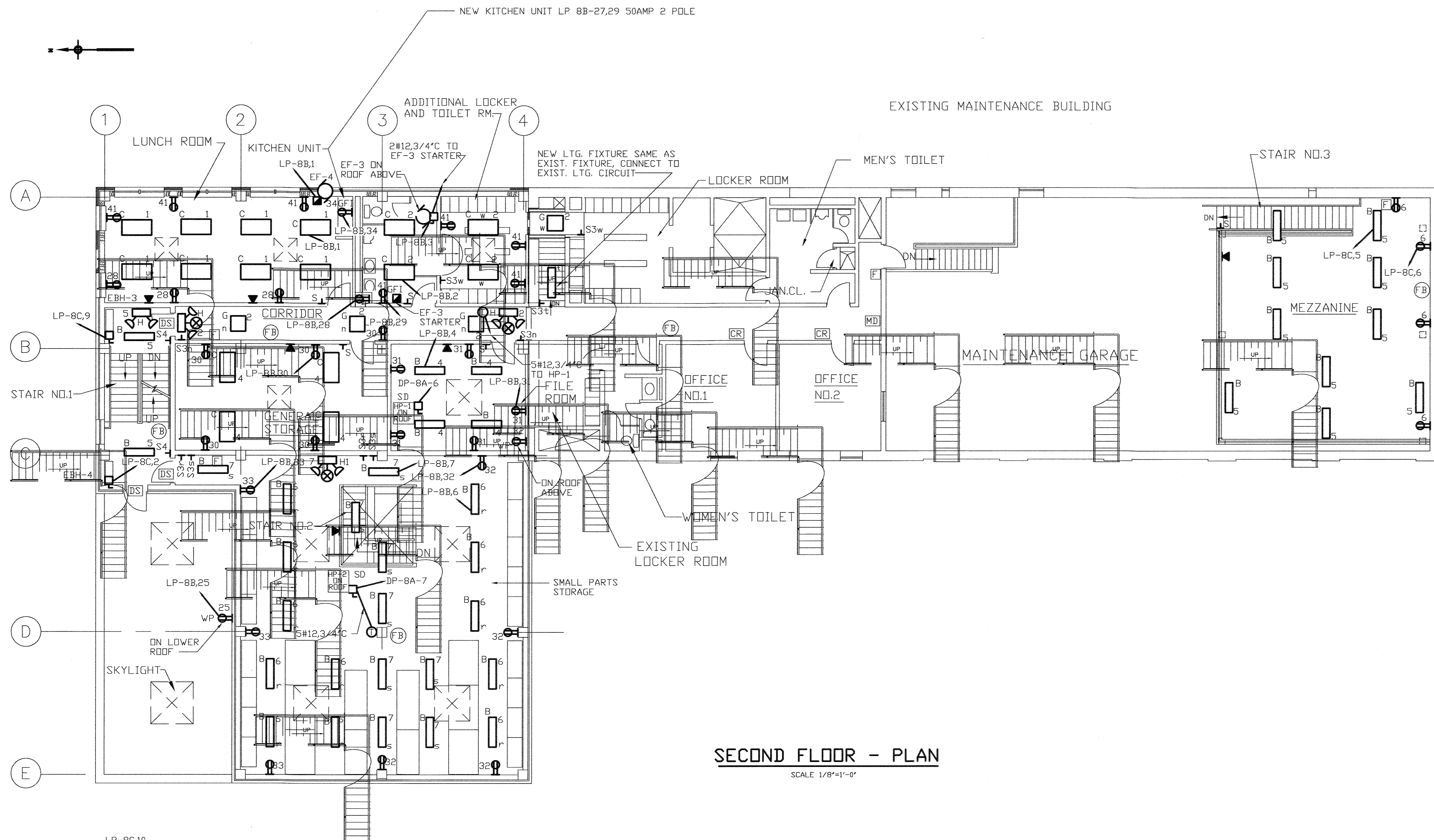
ELECTRICAL

LIGHTING & POWER PLANS -
MAINTENANCE BUILDING
FIRST FLOOR

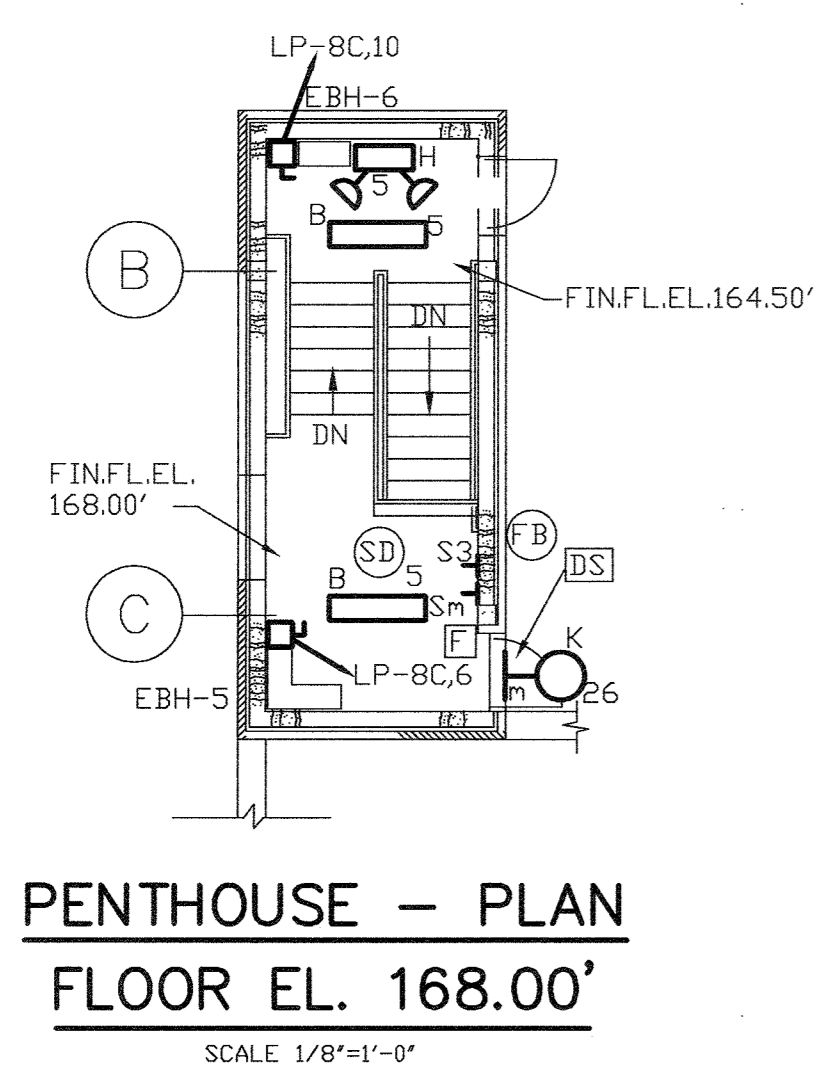
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 209 OF 225
E-24R



SECOND FLOOR - PLAN
SCALE 1/8"=1'-0"



PENTHOUSE - PLAN
FLOOR EL. 168.00'
SCALE 1/8"=1'-0"

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-38.
3. FOR LIGHTING PANEL SCHEDULES SEE SHT. E-34.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Lee 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

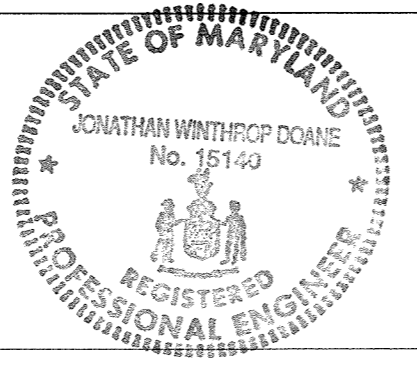
Joseph P. Sporn 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John Ohara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Clayton D. ... 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. ... 5-7-96
REG. PROF. ENGR. DATE



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

ELECTRICAL

**LIGHTING & POWER PLANS -
MAINTENANCE BUILDING
SECOND FLOOR**

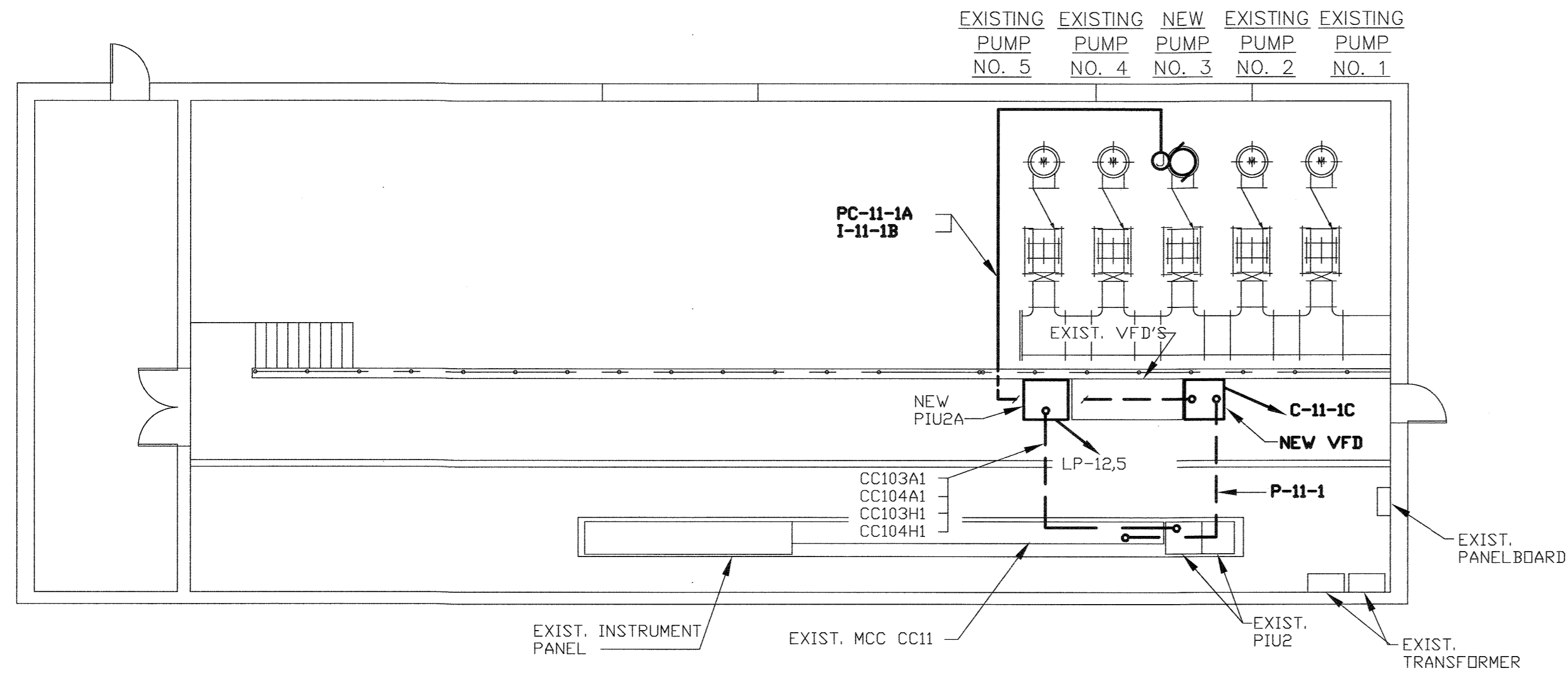
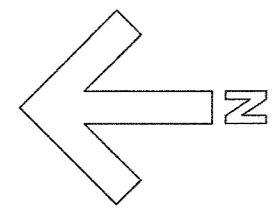
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

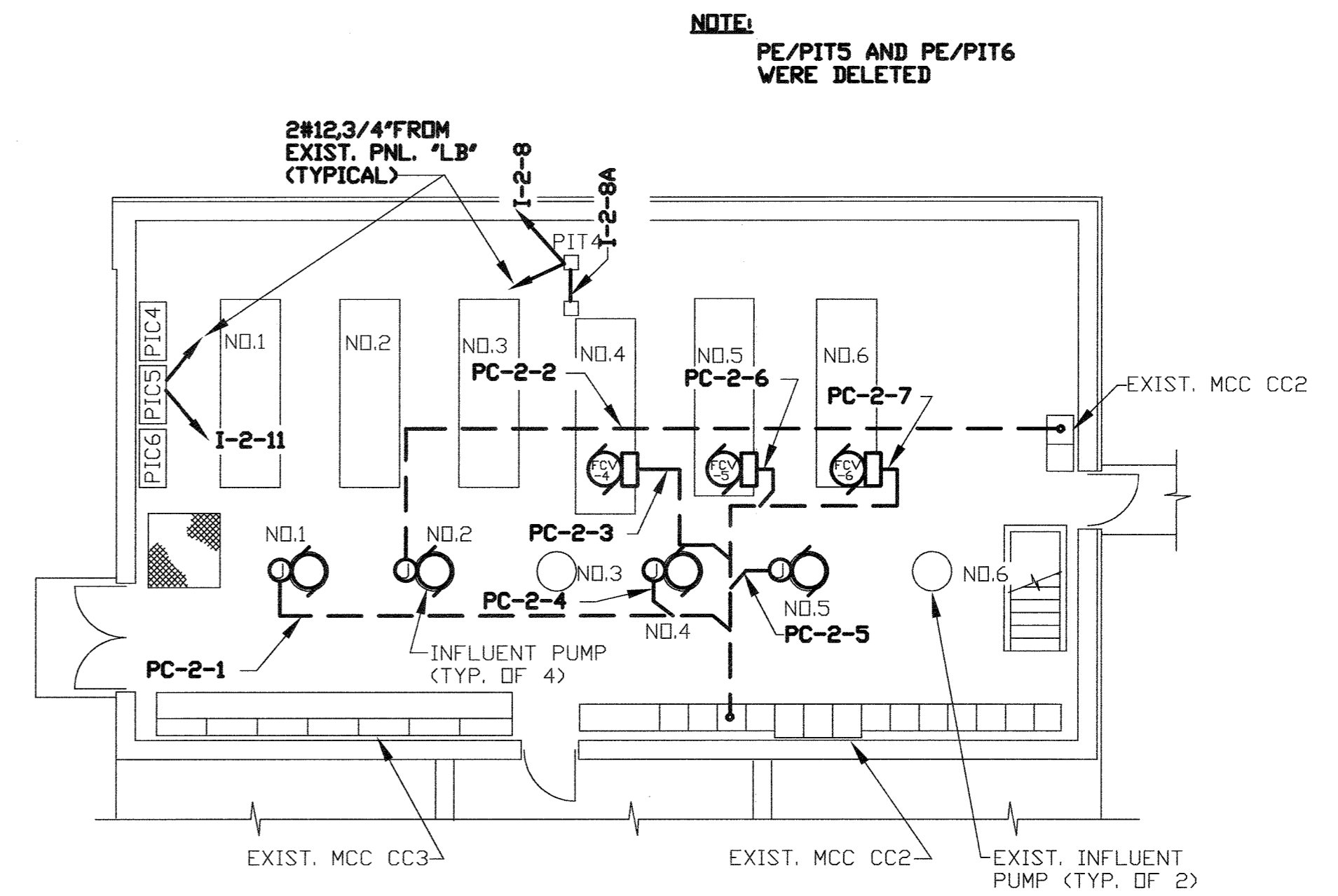
SHEET 210 OF 226

E-25R



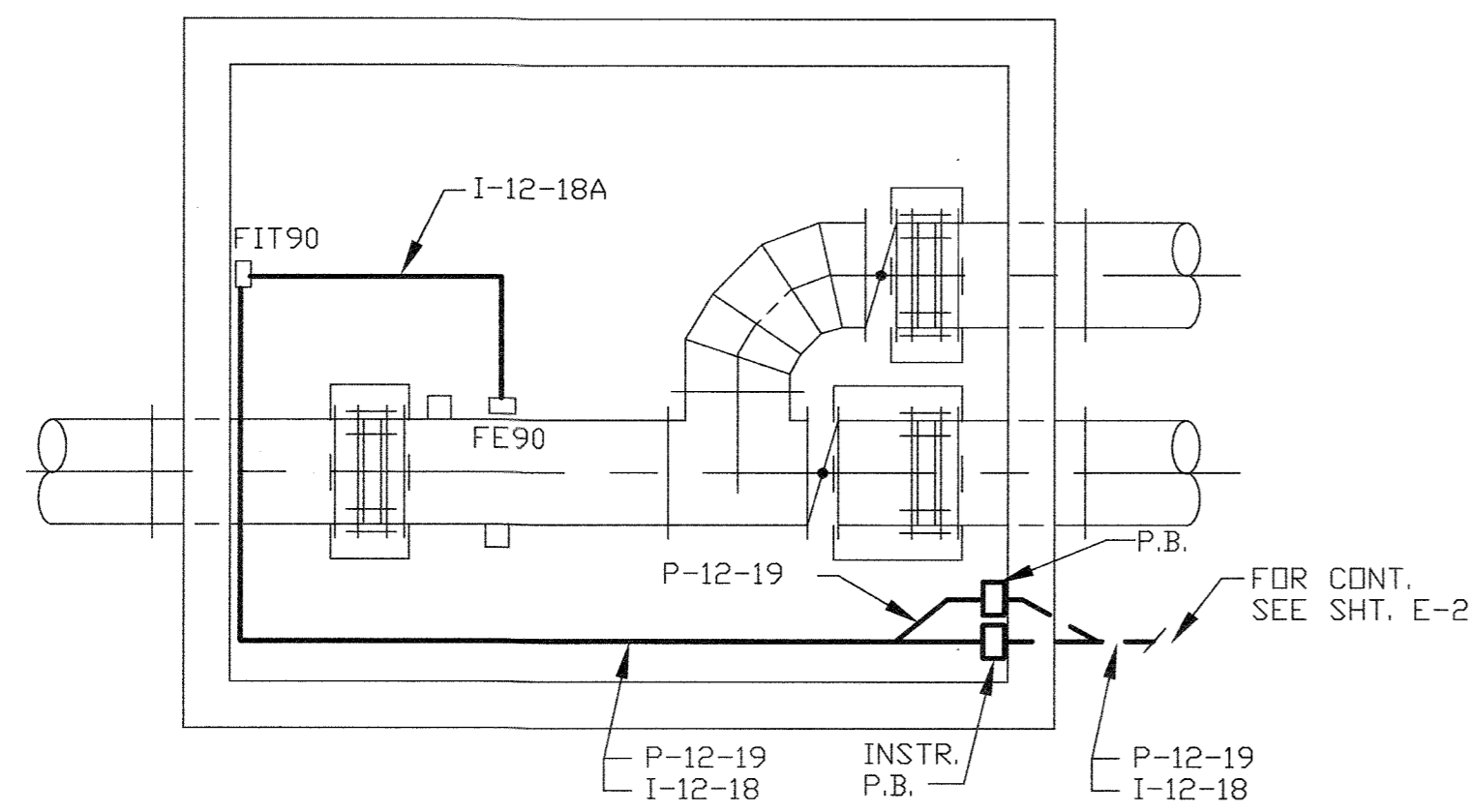
FILTER BLDG. - PLAN AT EL. 141.00

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



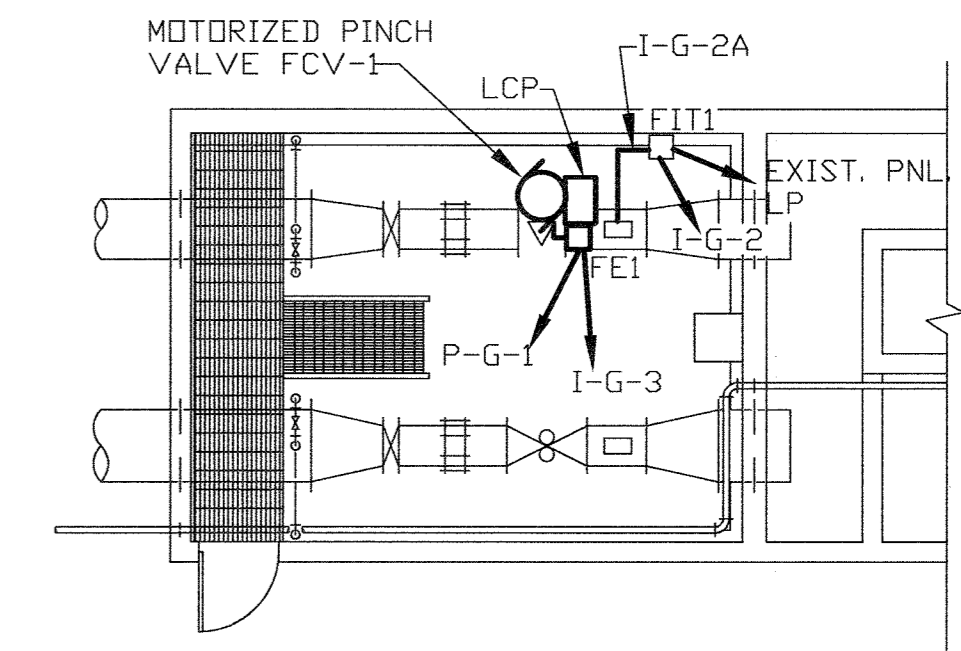
INFLUENT PUMP STA. - PLAN AT EL. 142.50

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



54" EFFLUENT METERING CHAMBER - PLAN

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



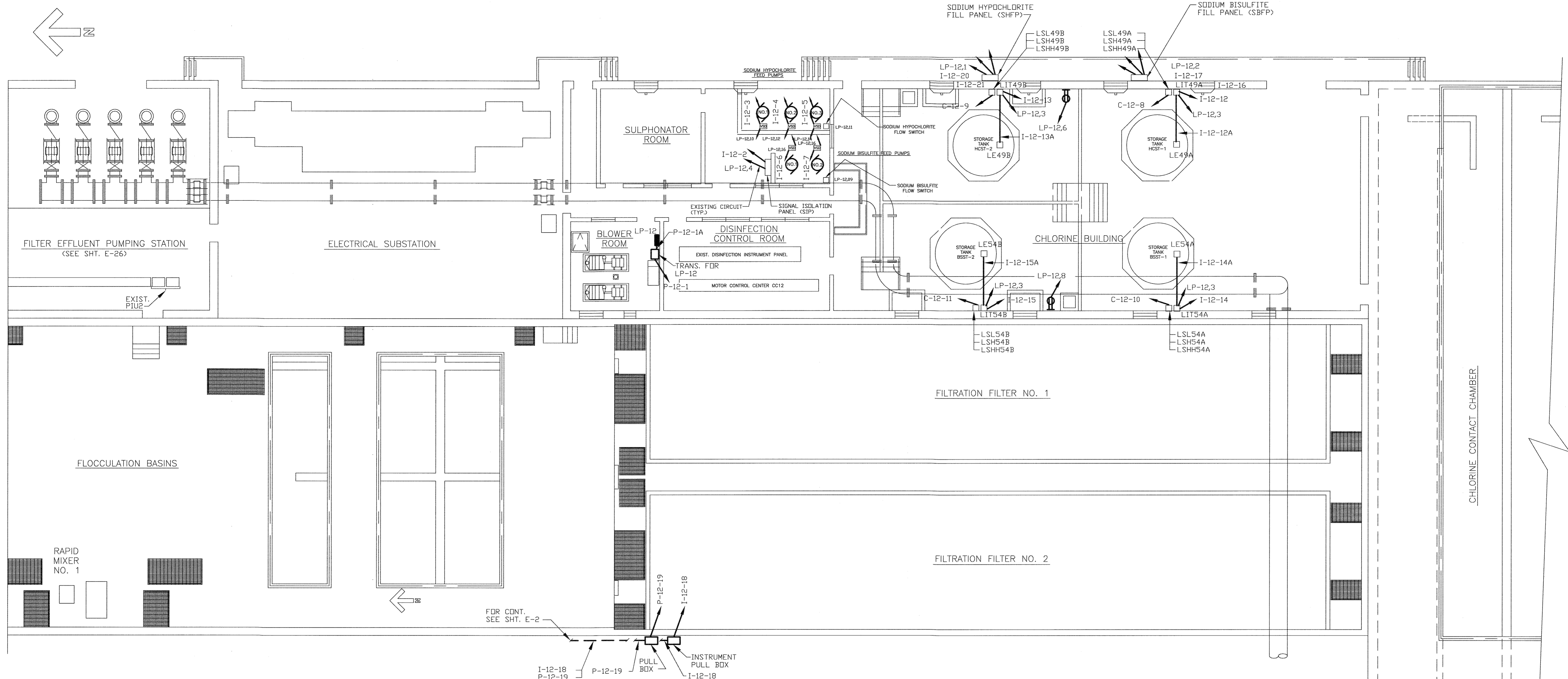
PRIMARY METERING CHAMBER - PLAN

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

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 5/7/96 DATE: 5/7/96		M&E Metcalf & Eddy DATE: 5-7-96				DES: _____ DRN: _____ CHK: _____ DATE: _____		ELECTRICAL LIGHTING & POWER PLANS - FILTER BUILDING, METERING CHAMBERS & INFLUENT PUMP STA.		LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 211 OF 226 E-26R
M.J.C. 1 BY NO. DATE		RECORD DRAWING REVISION DATE		4/10/95		DATE		DATE		DATE		



PLAN

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

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
2. FOR CONDUIT AND WIRE SCHEDULE SEE SHT. E-39.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

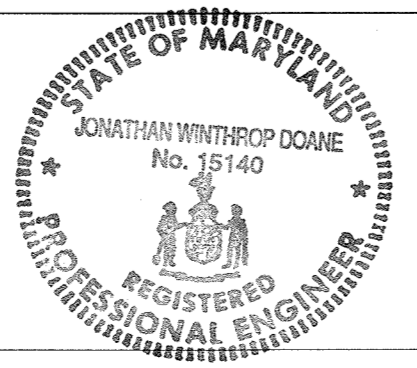
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Paul J. Seaman 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

Clayton D. Quinn 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER DATE



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

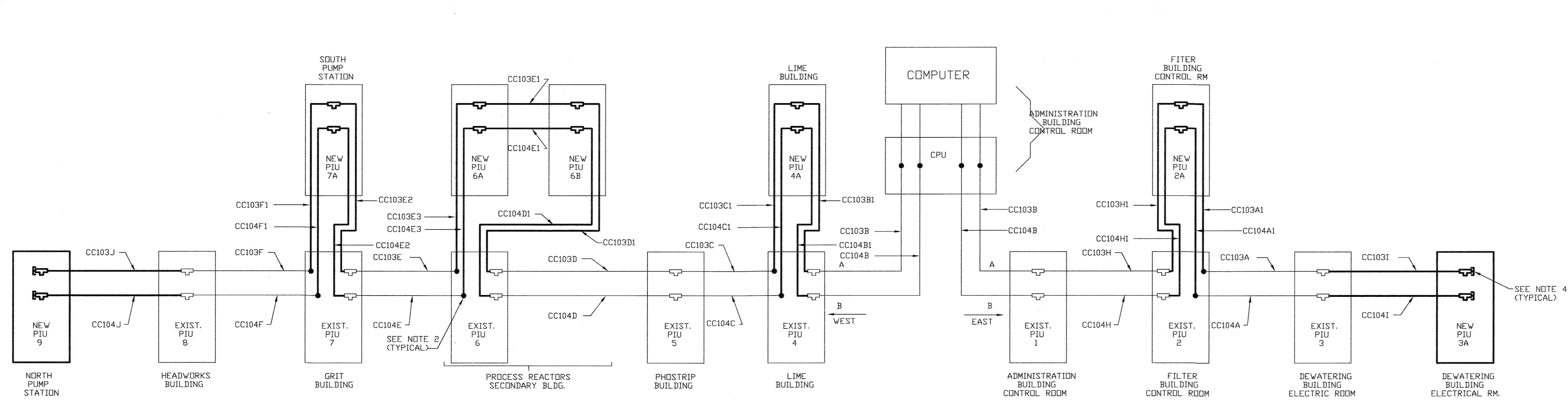
ELECTRICAL

LIGHTING & POWER PLANS -
CHLORINE BUILDING

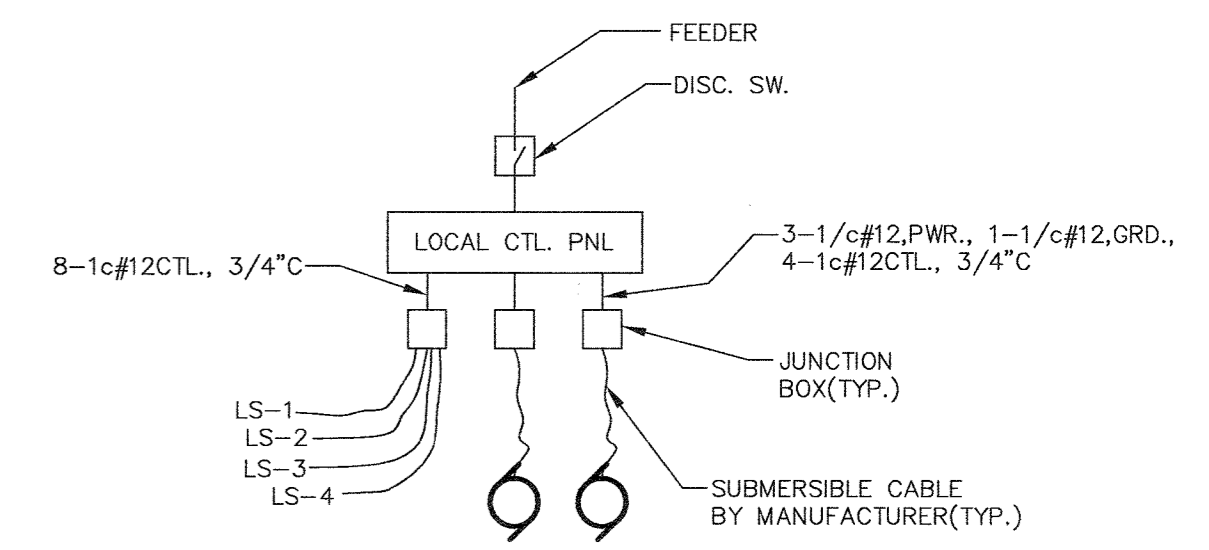
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

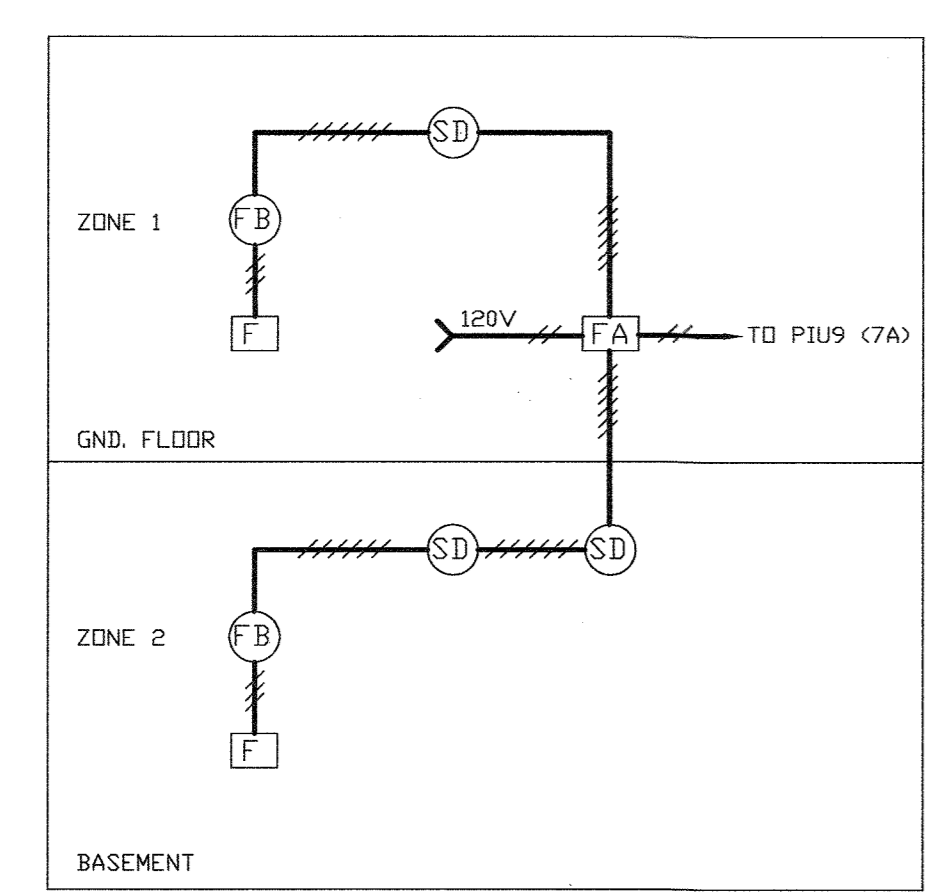
SCALE AS SHOWN
SHEET 212 OF 226
E-27R



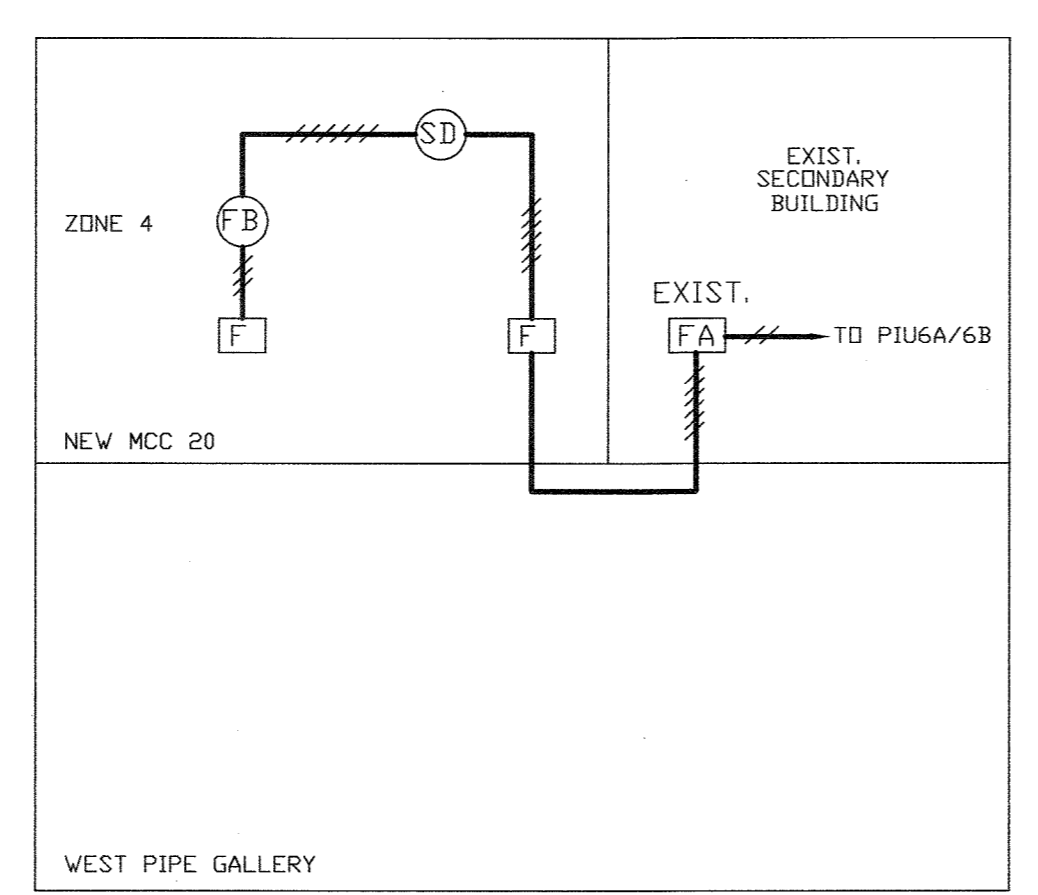
COMPUTER CONTROL SYSTEM
NO SCALE



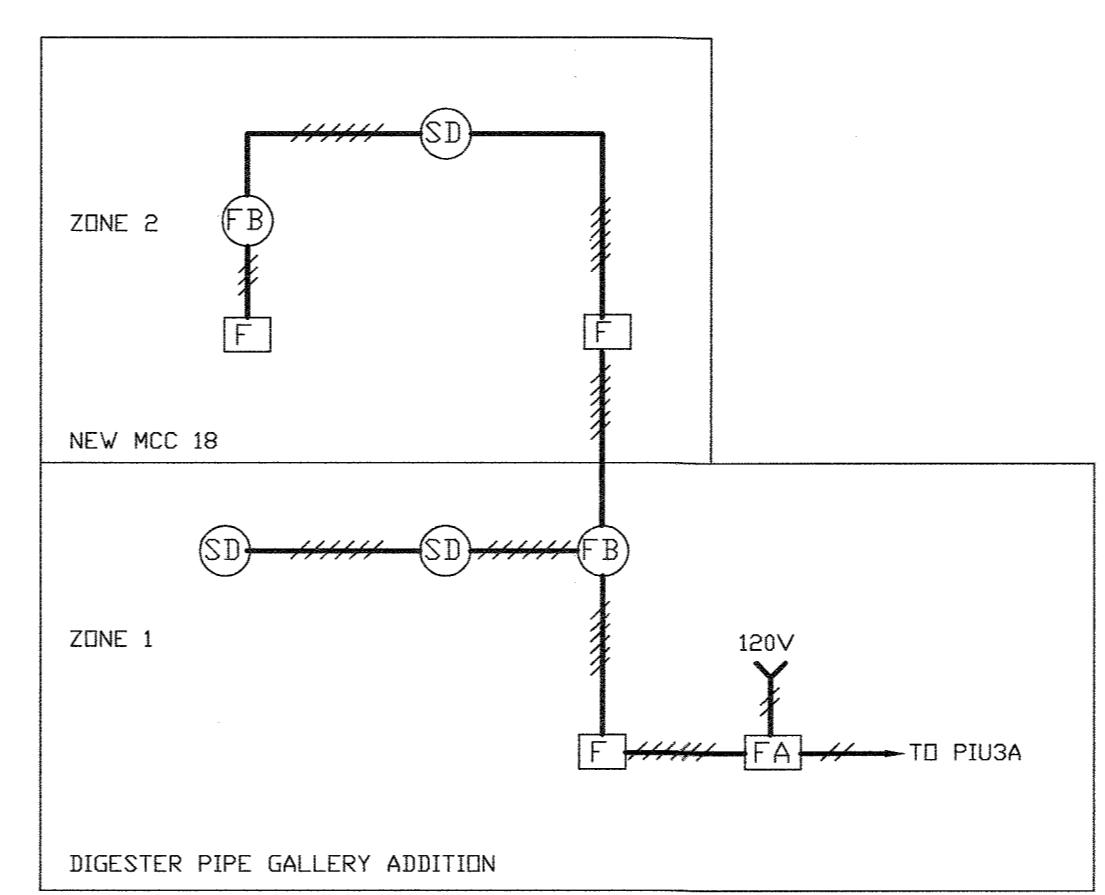
RISER DIAGRAM FOR DUPLEX SUMP PUMPS



NEW NORTH & SOUTH PUMP STATIONS
NO SCALE

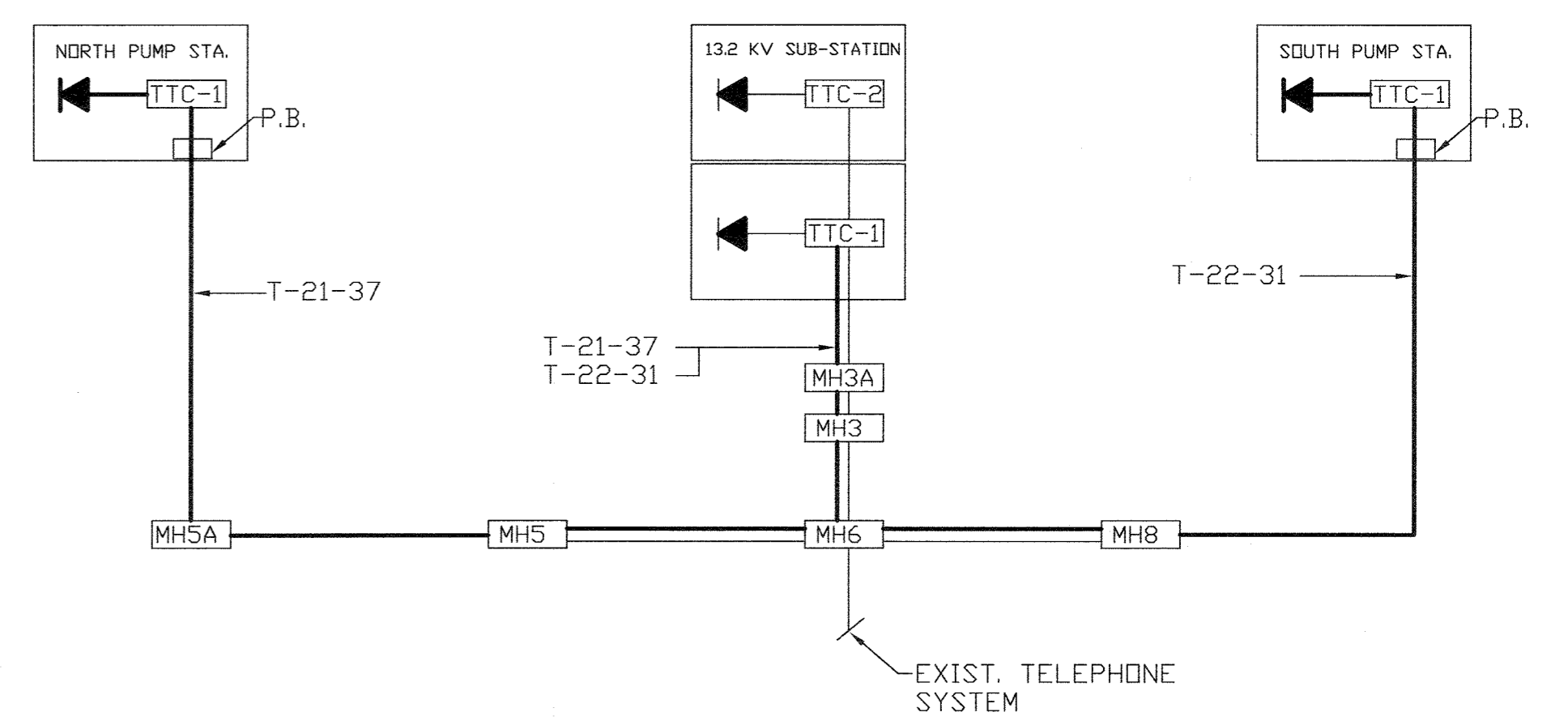


WEST PIPE GALLERY AREA
NO SCALE



DIGESTER AREA
NO SCALE

FIRE ALARM SYSTEMS

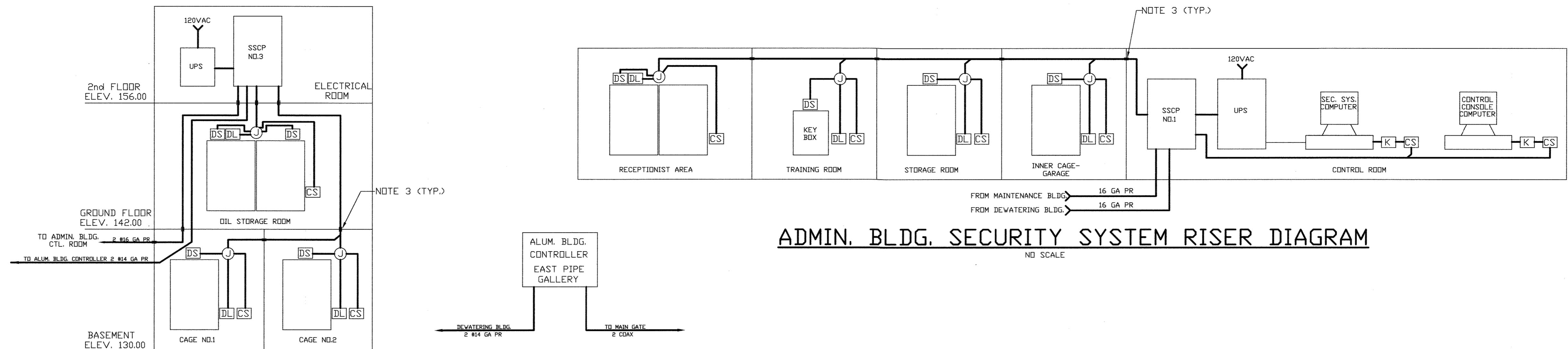


NORTH & SOUTH PUMP STATIONS TELEPHONE RISER DIAGRAM
NO SCALE

NOTES

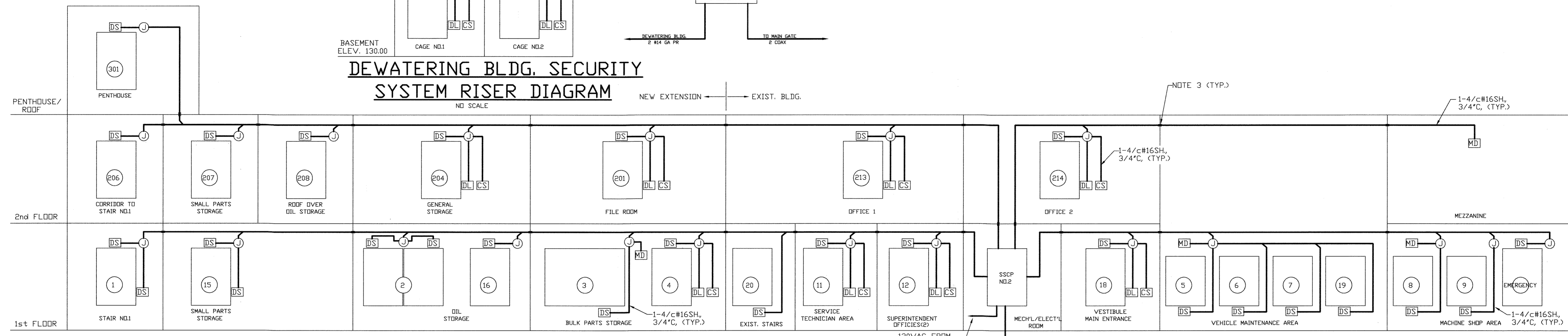
- USE COAXIAL CABLE BELDEN 8213 (#14AWG) FOR EAST AND WEST DATA HIGHWAYS A & B (SAME AS EXISTING).
- DISCONNECT EXISTING COAXIAL CABLE, PROVIDE NEW STRAIGHT CONNECTOR AND CONNECT TO NEW PIU (TYP. FOR PIU2, 2A, 3, 3A, 6, 6A, 7, 7A & 8).
- ALL DATA HIGHWAY CABLES BETWEEN ANY TWO NEW/EXISTING PIU SHALL BE OF CONTINUOUS LENGTH WITHOUT SPLICES AND COUPLINGS.
- FURNISH AND INSTALL THE FOLLOWING HONEYWELL (OR EQUAL) FITTINGS FOR NEW DATA HIGHWAY CABLES: PART NOS. C-KCAD1, C-KCAD2, C-KCAD3 AND INSULATOR FOR COAXIAL CONNECTOR HOUSING.
- FURNISH AND INSTALL NEW INPUT/OUTPUT CARDS TO EXISTING PIU AS REQUIRED.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>James P. Lewis</i> 5/7/96 Chief, Bureau of Environmental Services: <i>John Johnson</i> 5/7/96		M&E Metcalf & Eddy Chief, Bureau of Engineering: <i>Jonathan W. Doane</i> 5/7/96 Chief, Utility Design Division: <i>Debra L. Lane</i> 5-7-96 Registered Professional Engineer: <i>Jonathan W. Doane</i> 5-7-96		DES: _____ DRN: _____ CHK: _____ DATE: _____		ELECTRICAL RISER DIAGRAMS I		LITTLE PATUXENT WASTEWATER TREATMENT PLANT ADDITION NO. 5 CAPITAL PROJECT S-6153 CONTRACT NO. 20-3082 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 213 OF 226 E-28R
		M.J.C. 1 RECORD DRAWING 4/10/95 BY NO. REVISION DATE								

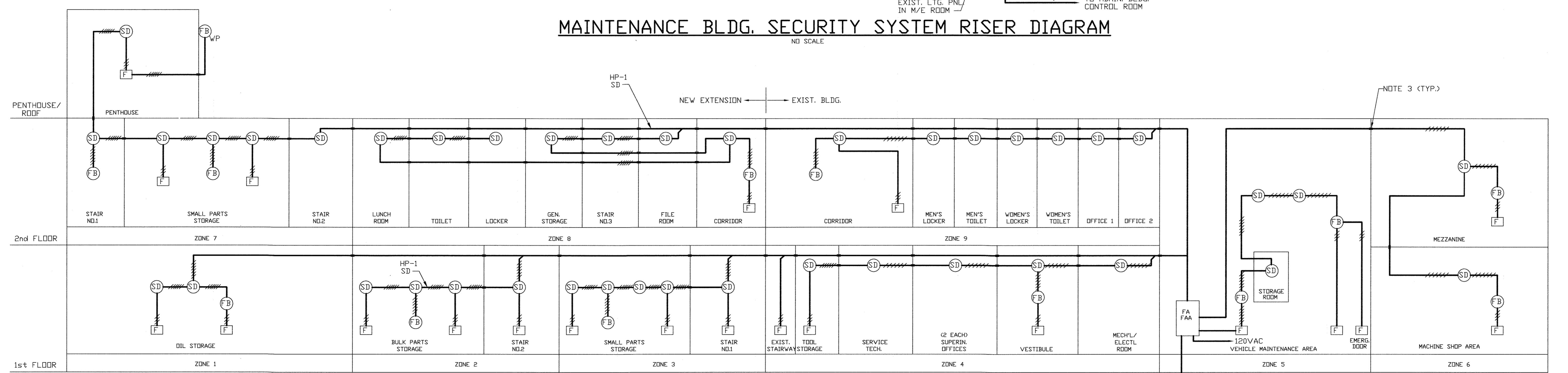


ADMIN. BLDG. SECURITY SYSTEM RISER DIAGRAM
NO SCALE

DEWATERING BLDG. SECURITY SYSTEM RISER DIAGRAM
NO SCALE



MAINTENANCE BLDG. SECURITY SYSTEM RISER DIAGRAM
NO SCALE



MAINTENANCE BLDG. FIRE ALARM SYS. RISER DIAGRAM
NO SCALE

- NOTES**
- FOR GENERAL NOTES AND SYMBOLS SEE SHT. E-1.
 - REPLACE EXIST. FIRE ALARM & SECURITY SYSTEMS WITH NEW SYSTEMS.
 - PROVIDE APPROVED FIRE SEAL IN ALL WALL/FLOOR CONDUIT PENETRATION.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Clum 5/1/96
DIRECTOR OF PUBLIC WORKS DATE

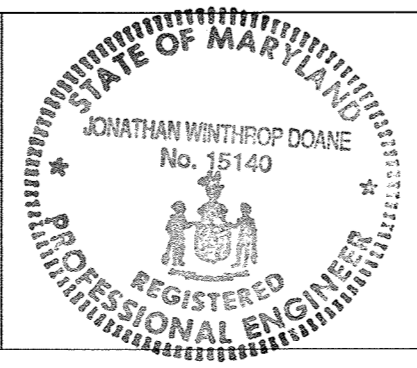
John J. O'Hara 5/1/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan W. Doane 5-3-96
REG. PROF. ENGR. DATE



DES					
DRN					
CHK					
DATE	M.J.C. 1	RECORD DRAWING	4/10/95		
	BY NO.	REVISION	DATE		

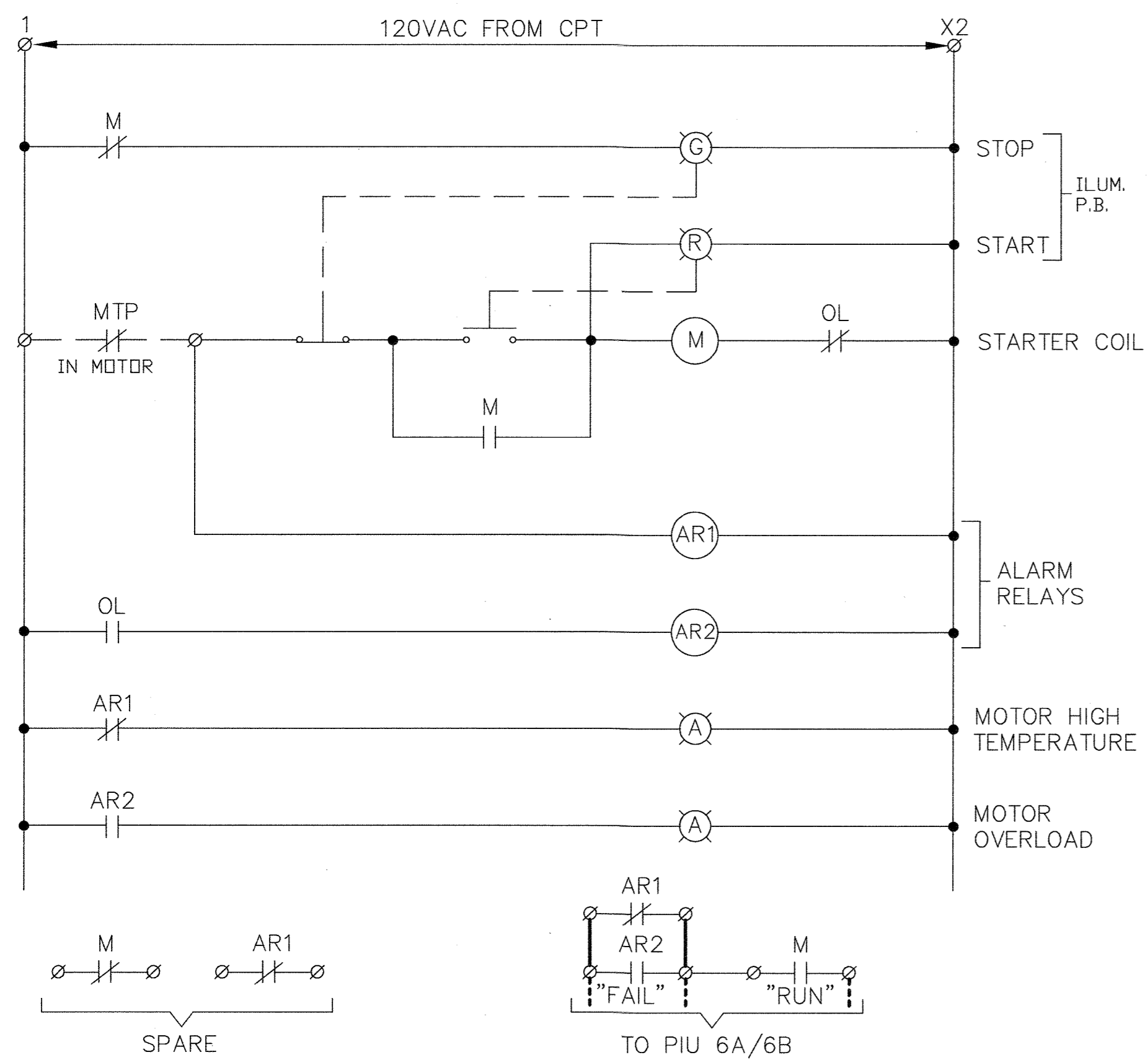
ELECTRICAL

RISER DIAGRAM II

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

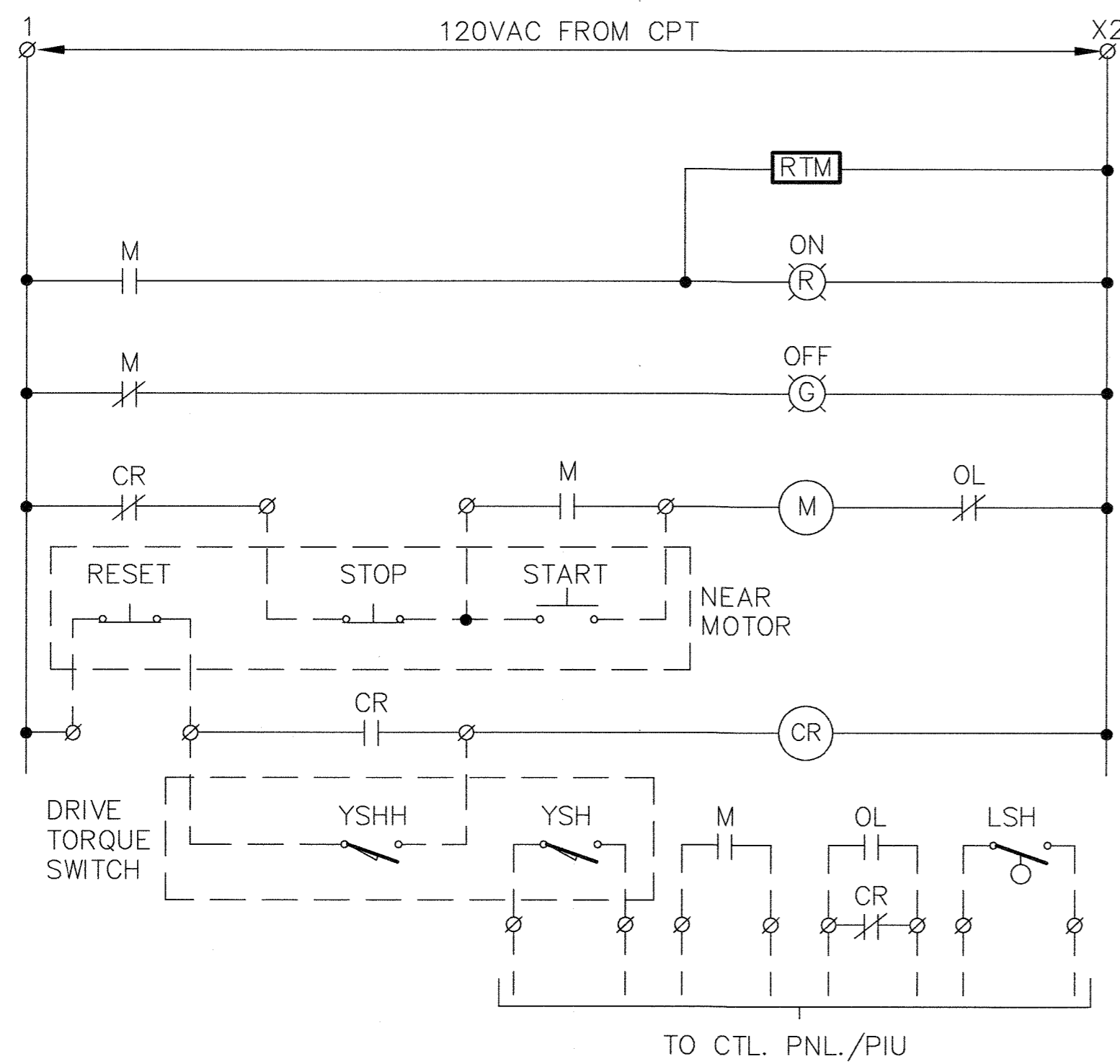
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 214 OF 226
E-29R



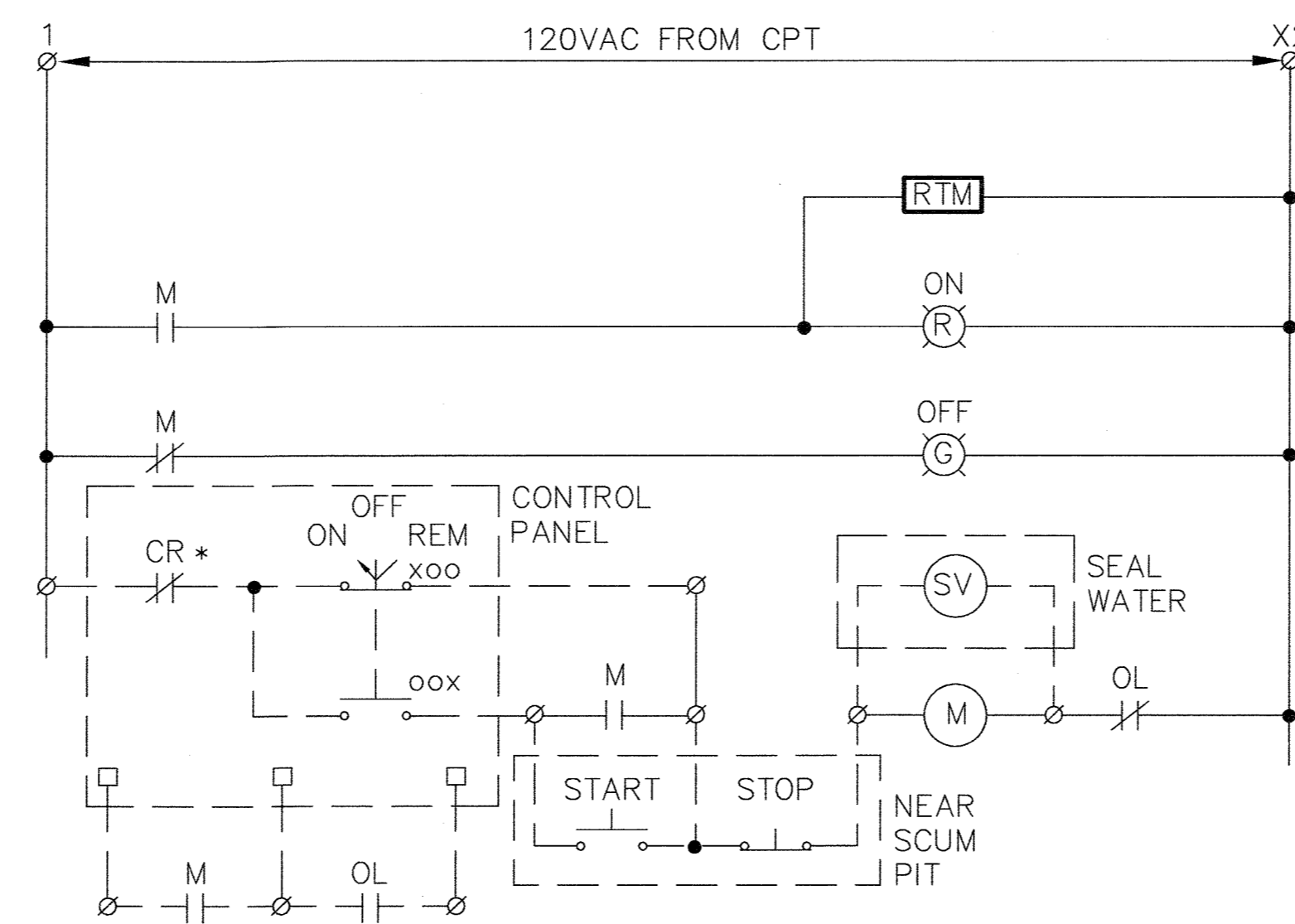
NOTE: ALL DEVICES ARE IN MCC UNLESS NOTED.

PROCESS REACTOR MIXER
(TYPICAL FOR 66 P.R. MIXERS)



NEW PRIMARY CLARIFIER NO.2

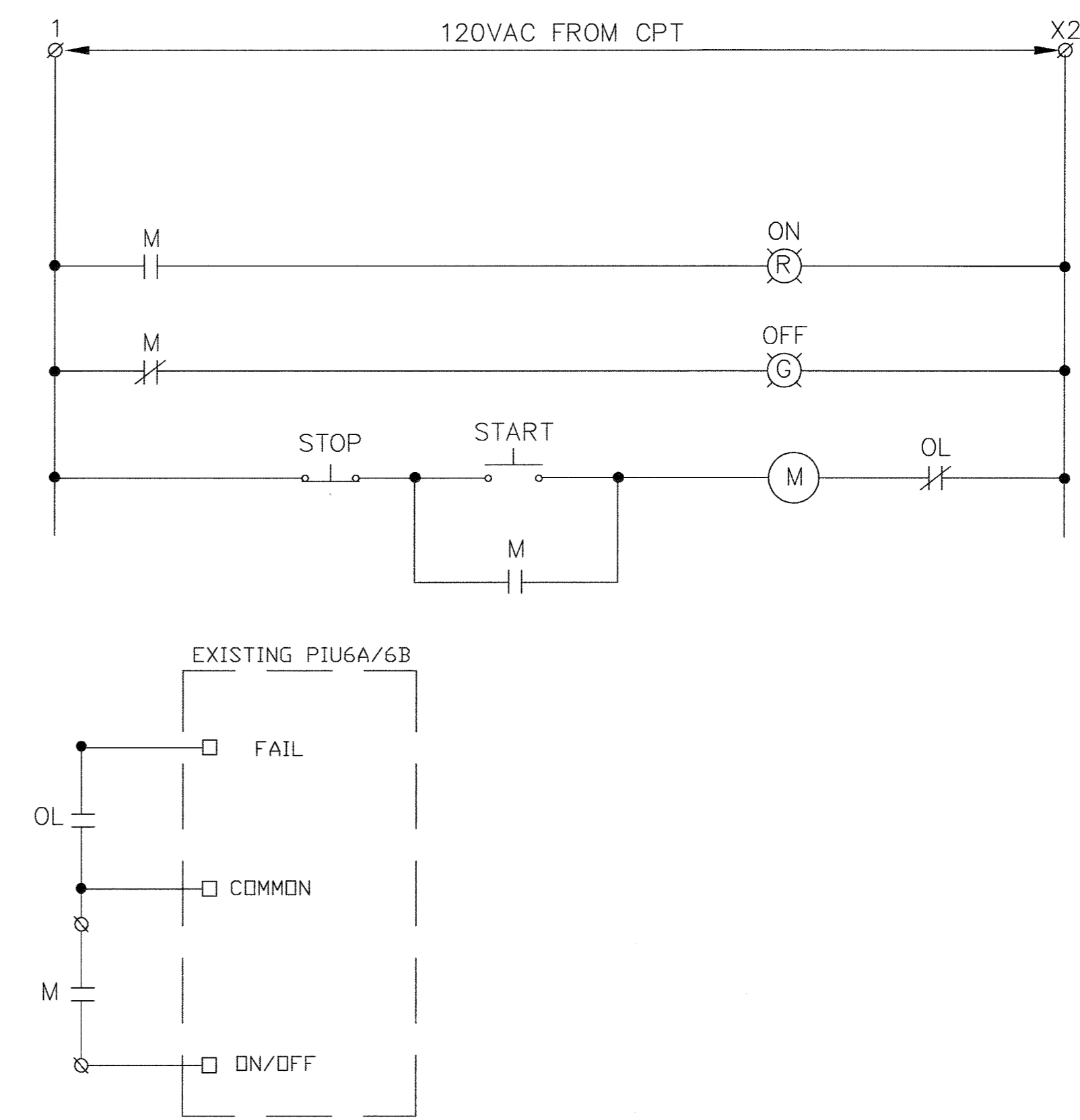
TYPICAL FOR: NEW FINAL CLARIFIER NO.2
NEW GRAVITY THICKENER NO.3
NEW GRAVITY THICKENER NO.4



PRIMARY SCUM PUMP

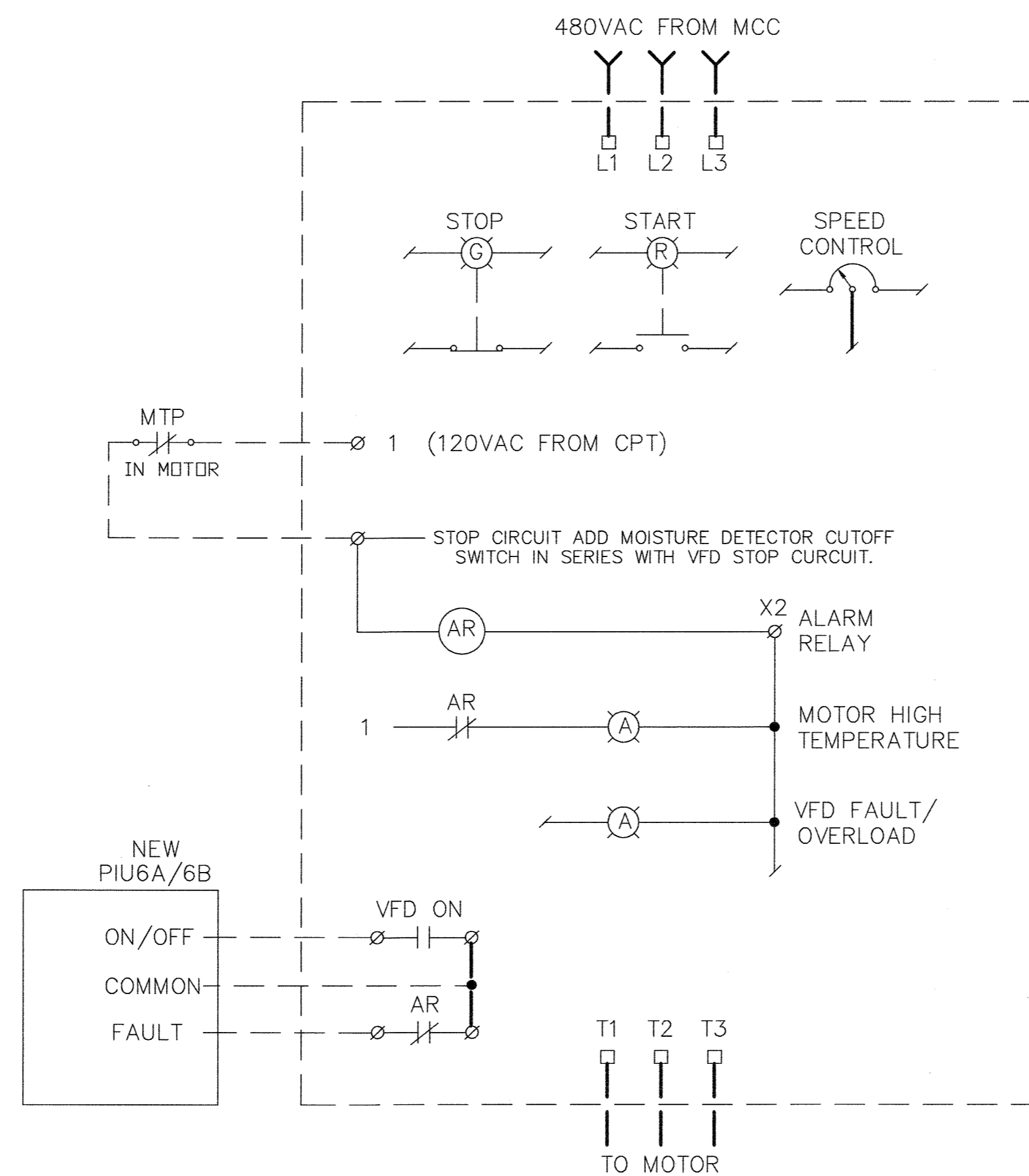
TYPICAL OF 4: NORTH P.S. SCUM PUMPS NO.1 & NO.2
SOUTH P.S. SCUM PUMPS NO.1 & NO.2

* CR21 - PUMP NO.1, CR27 - PUMP NO.2



SPRAY WATER PUMPS

(TYPICAL FOR PUMP NO.1 & NO.2)



NOTE: ALL DEVICES ARE IN VFD UNLESS NOTED.

INTERNAL RECYCLE PUMP VFD

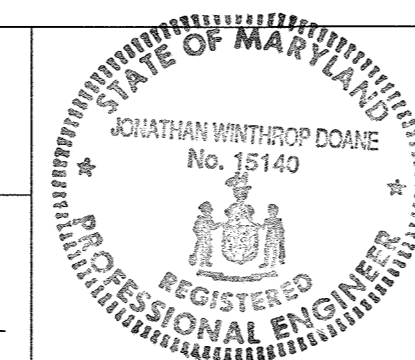
(TYPICAL FOR 8 RECYCLE PUMPS)

NOTE:

FOR AS-BUILT SCHEMATIC DIAGRAMS,
REFER TO O&M MANUALS OF MCC'S,
VFD'S AND CONNECTED EQUIPMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/1/94
5/7/96

M&E Metcalf & Eddy
5-7-96

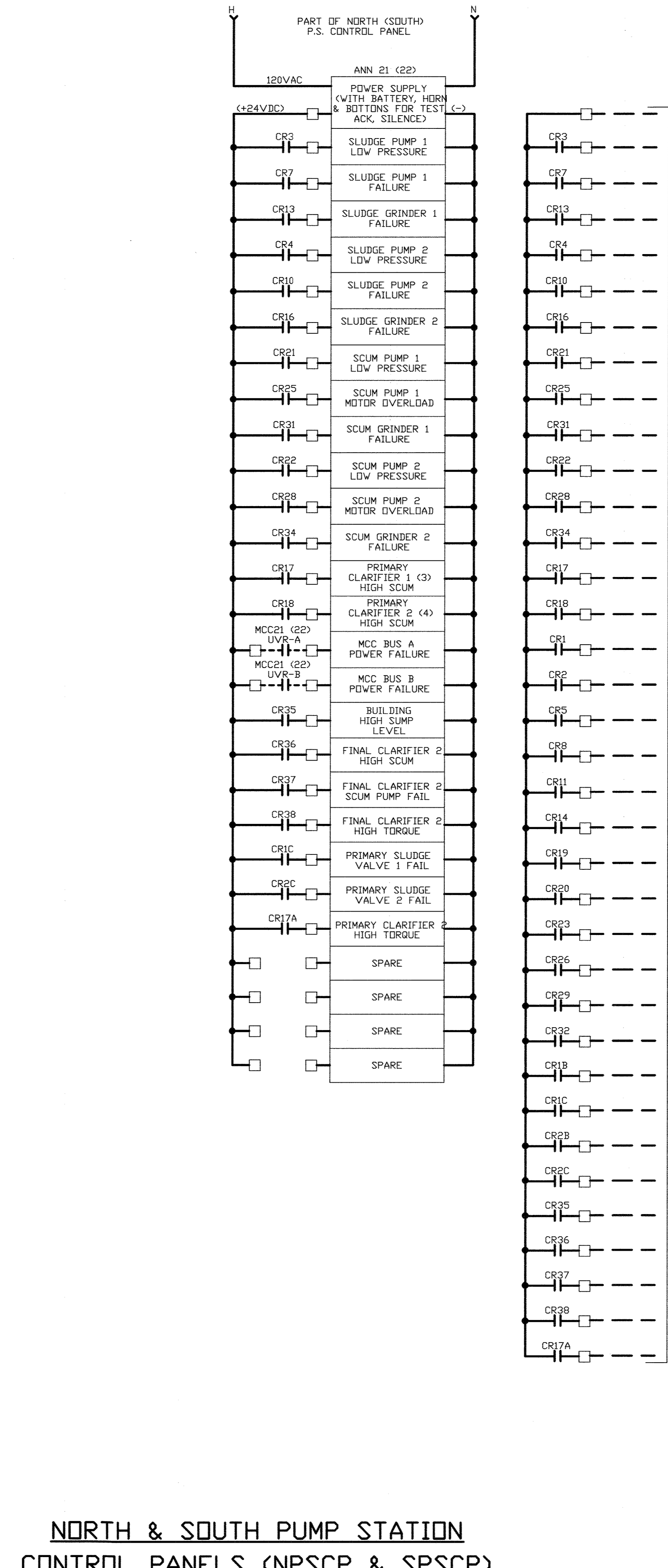
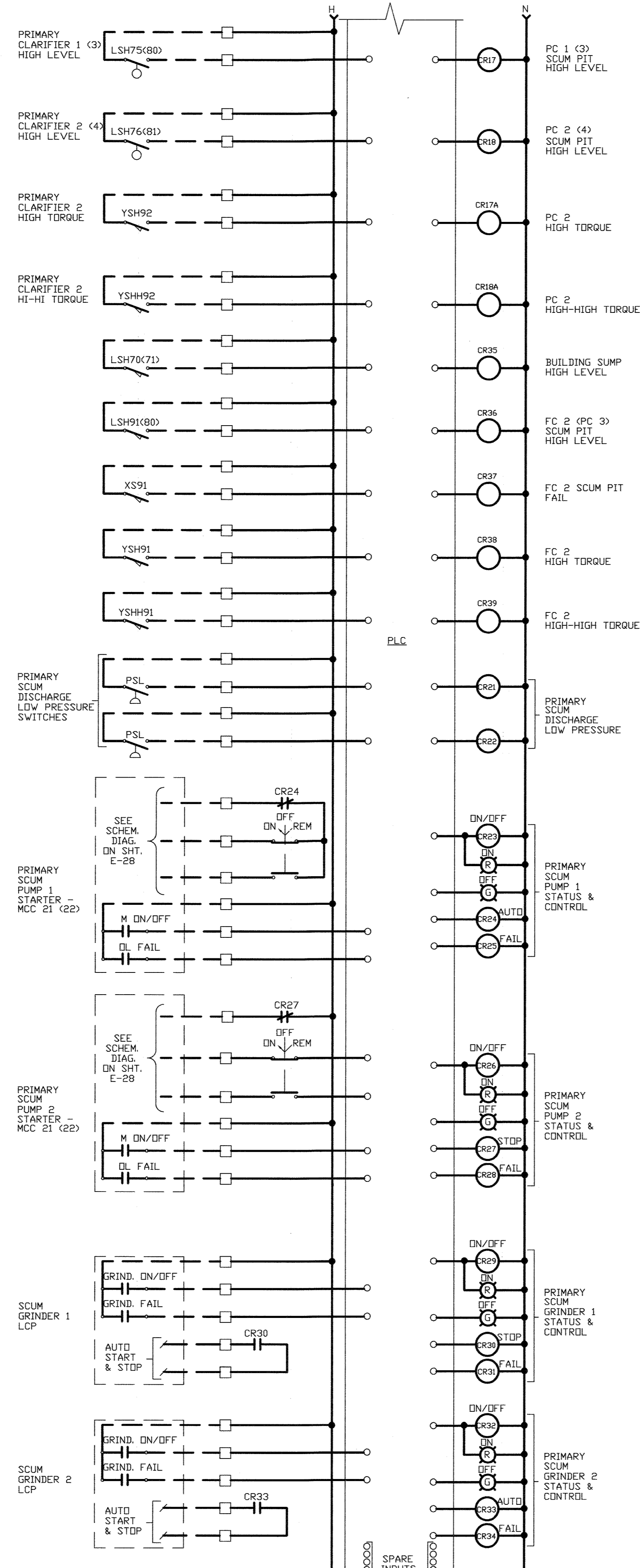
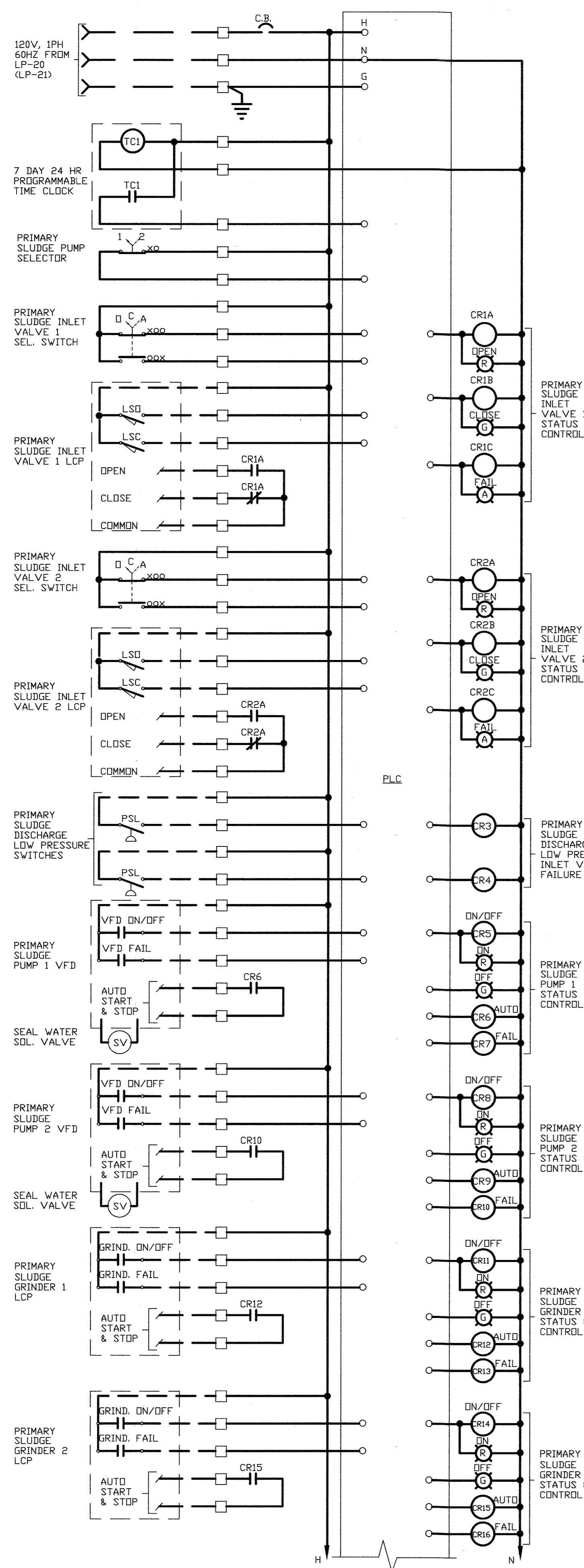


DES:			
DRN:			
CHK:			
DATE:	M.J.C. 1	RECORD DRAWING	4/10/95
	BY	NO.	REVISION

ELECTRICAL
SCHEMATIC DIAGRAMS I

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 215 OF 226
E-30R



NORTH & SOUTH PUMP STATION CONTROL PANELS (NPSCP & SPSCP)
NO SCALE

- NOTES:**
- FOR OTHER SYMBOLS SEE SHT. E-1.
 - ITEMS IN PARENTHESIS PERTAIN TO SOUTH PUMP STATION
 - FOR AS-BUILT SCHEMATIC DIAGRAMS, REFER TO INSTRUMENTATION O&M MANUALS.

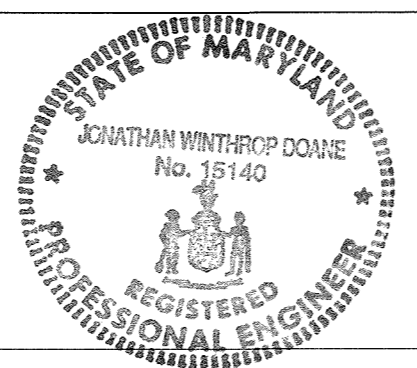
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/2/96
5/7/96

5/7/96

M&E Metcalf & Eddy

5-7-96



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY	NO.	REVISION
			DATE

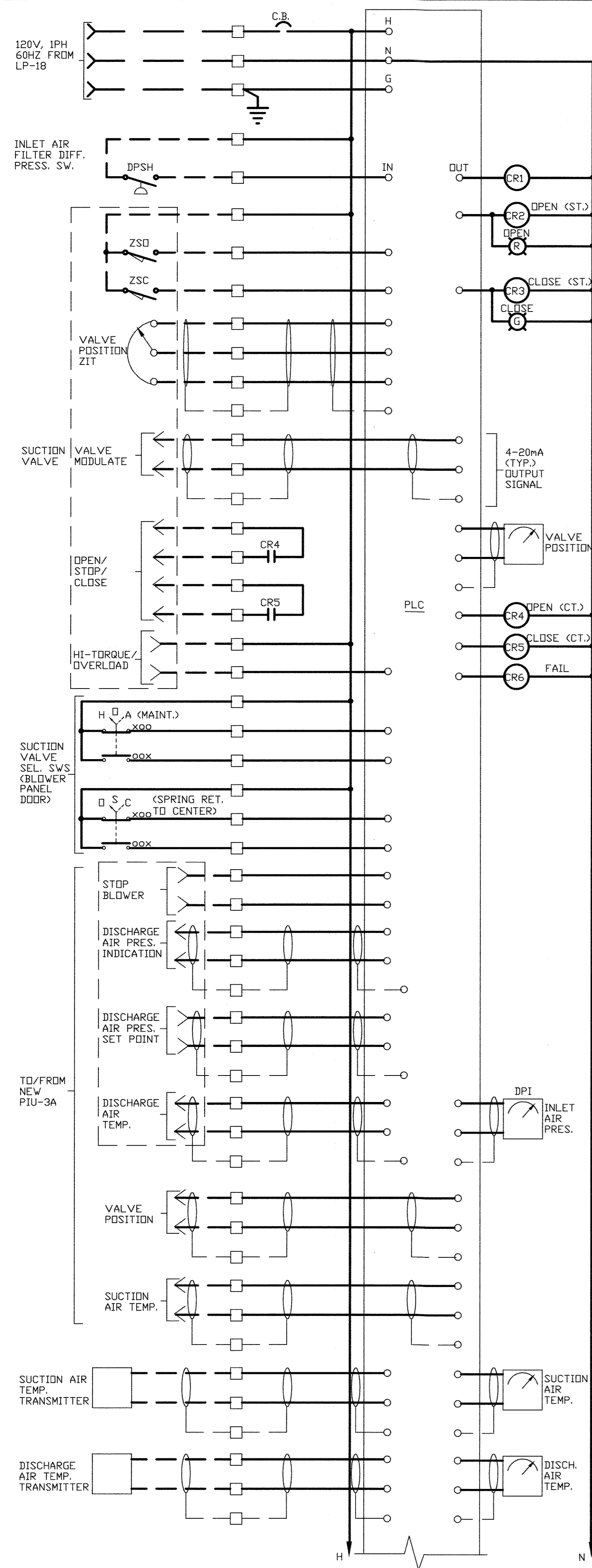
ELECTRICAL

SCHEMATIC DIAGRAMS II

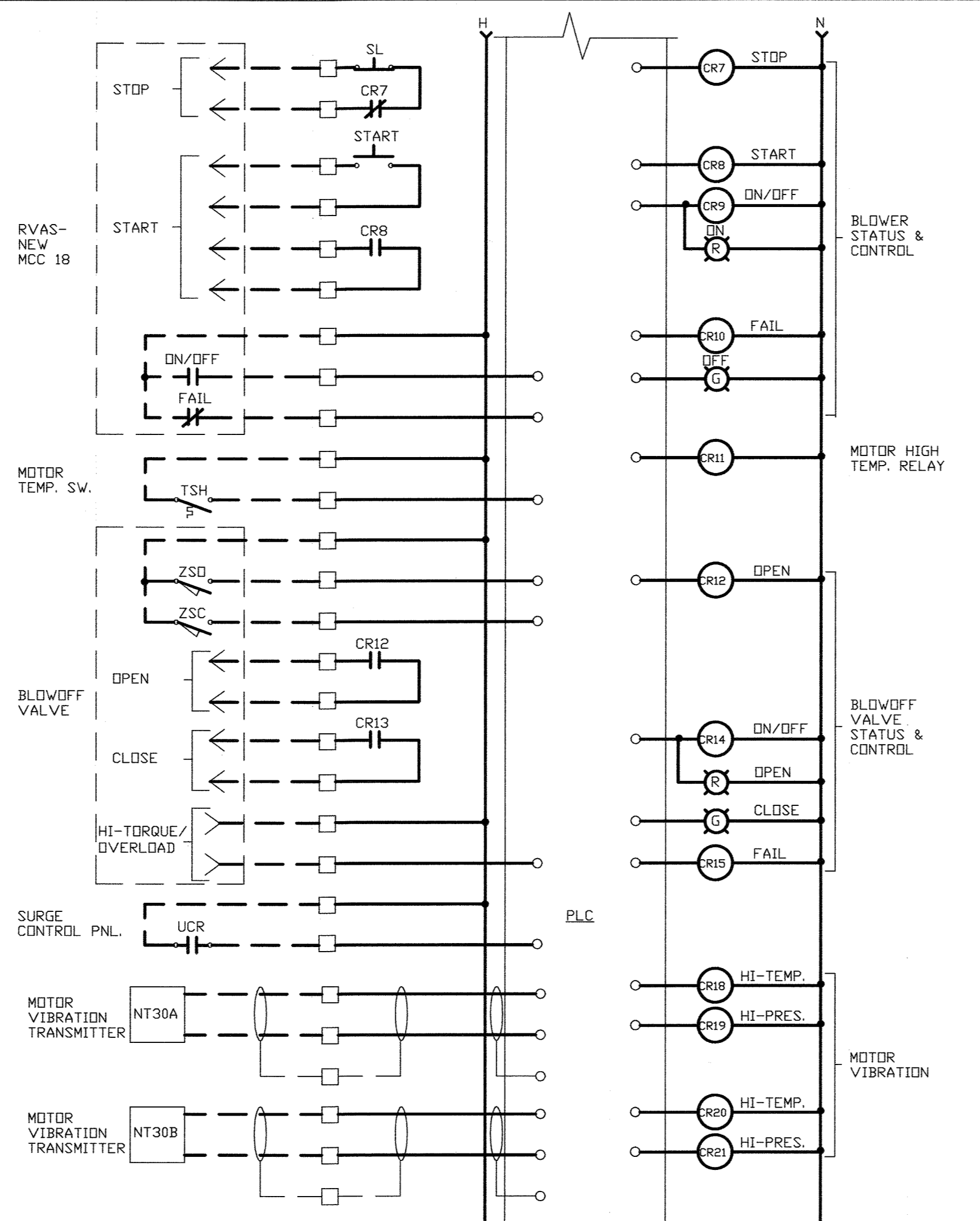
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 216 OF 226
E-31R

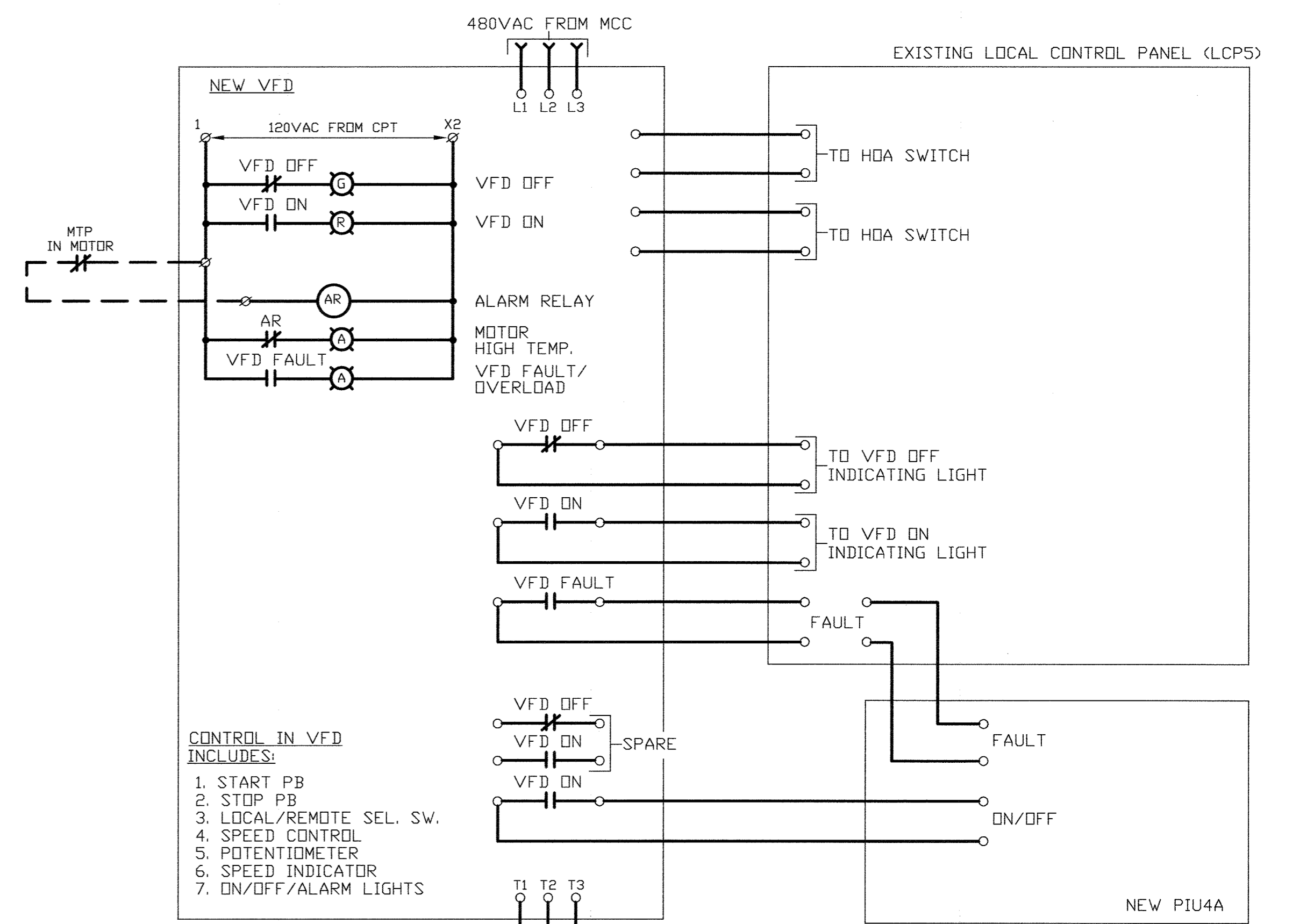


NEW BLOWER CONTROL PANEL
(TYPICAL OF 3)

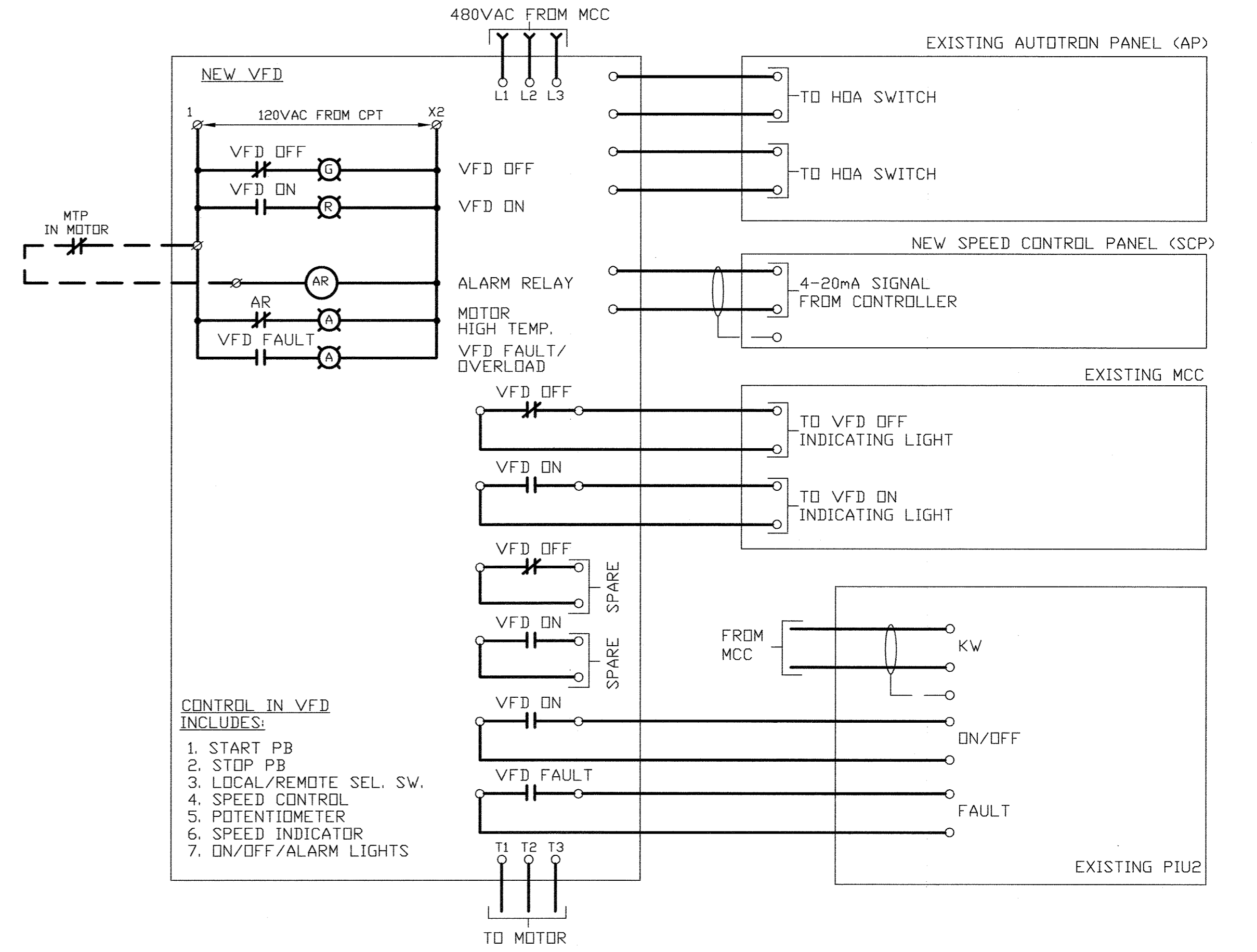


NOTES:

- FOR OTHER SYMBOLS SEE SHT. E-1.
- ALL DEVICES ARE IN MCC OR CONTROLLER UNLESS OTHERWISE INDICATED.
- PROVIDE DISCONNECT SWITCH NEAR MOTOR WHERE INDICATED ON PLANS.
- REFER TO MANUFACTURER'S INSTRUCTION FOR WIRING OTHER EQUIPMENT OR DEVICES.
- FOR AS BUILT SCHEMATIC DIAGRAMS, REFER TO O&M MANUALS OF MCC'S, VFD'S, INSTRUMENTATION CONTROL PANELS AND CONNECTED EQUIPMENT.



RETURN ACTIVATED SLUDGE PUMPS VFD
(RAS PUMP SWING NO.2A SIMILAR)



EFFLUENT PUMP NO.3 VFD

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Shea 5/7/96
DIRECTOR OF PUBLIC WORKS DATE

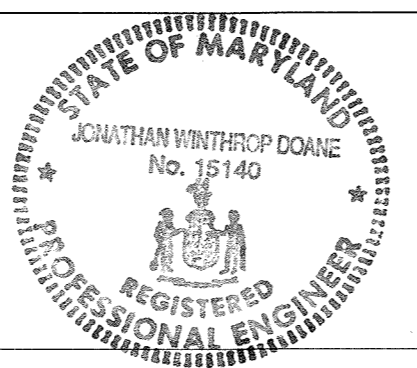
John J. O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. Shea 5/7/96
CHIEF, BUREAU OF ENGINEERING DATE

John J. Shea 5-7-96
CHIEF, UTILITY DESIGN DIVISION DATE

M&E Metcalf & Eddy

Jonathan Winthrop Donie 5-7-96
REGISTERED PROFESSIONAL ENGINEER DATE



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	4/10/95
	BY NO.	REVISION	DATE

ELECTRICAL

SCHEMATIC DIAGRAMS III

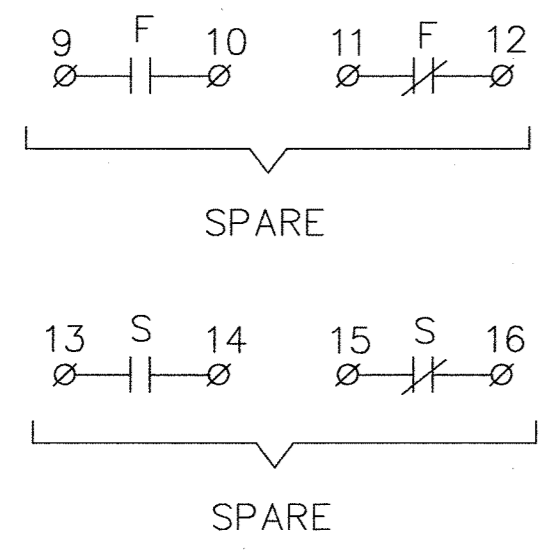
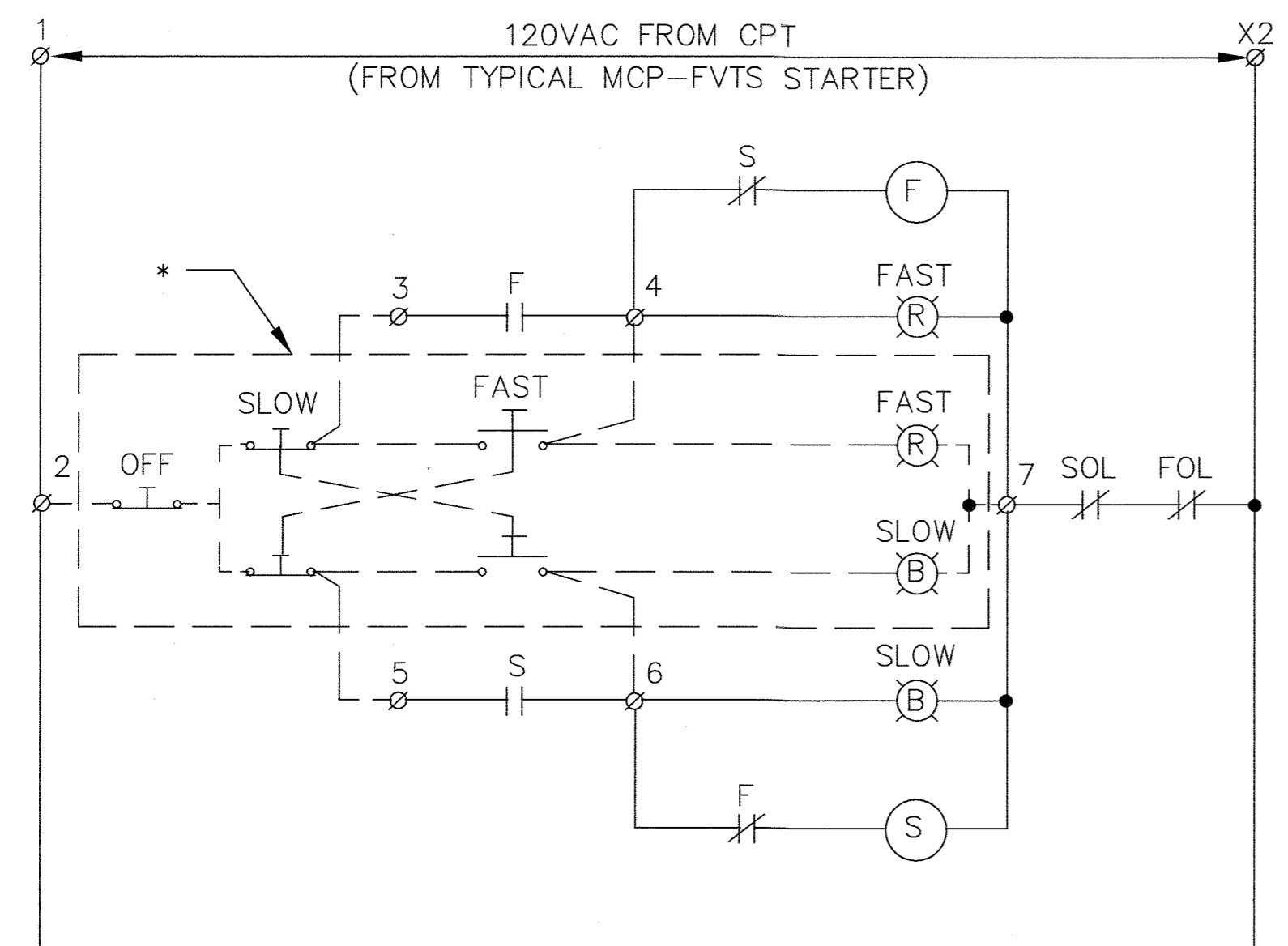
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

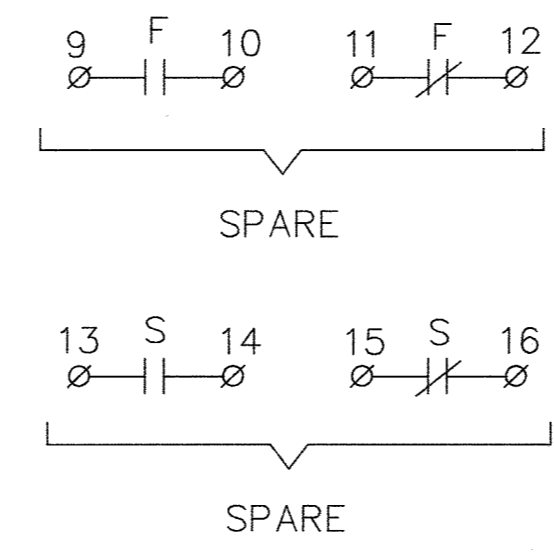
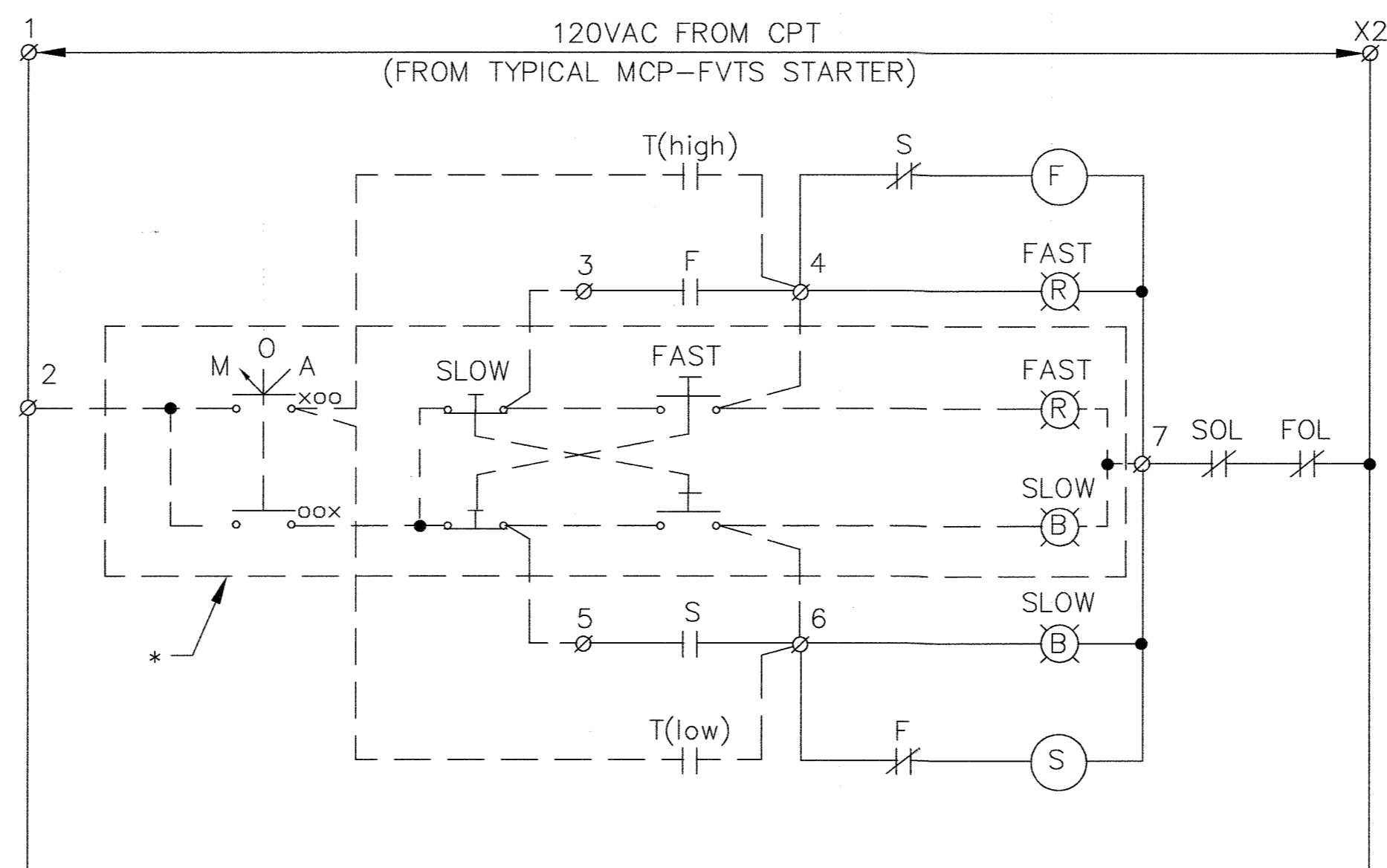
SHEET 217 OF 226

E-32R



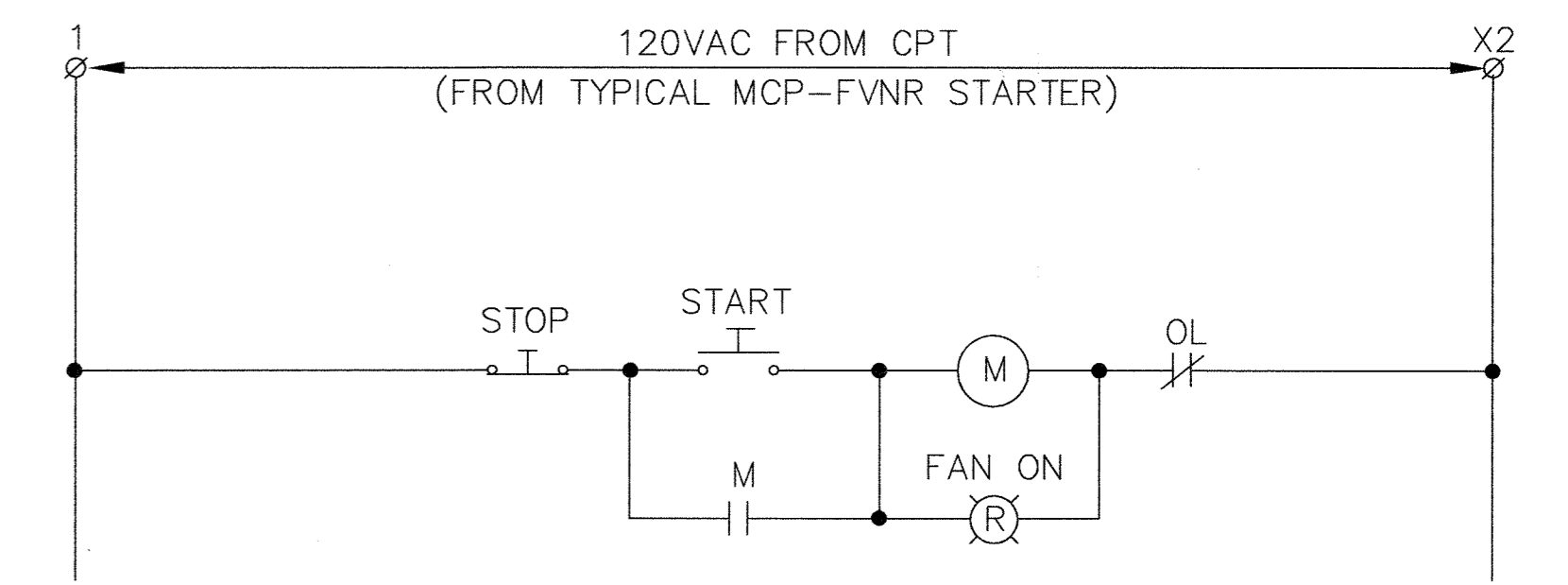
STARTERS "F" & "S" ARE MECHANICALLY INTERLOCKED
* SEE PLANS FOR LOCATIONS

**NORTH & SOUTH PUMP STATION
EXHAUST FAN - TWO SPEED MANUAL CONTROL**
(TYPICAL FOR EF-6 & EF-9)

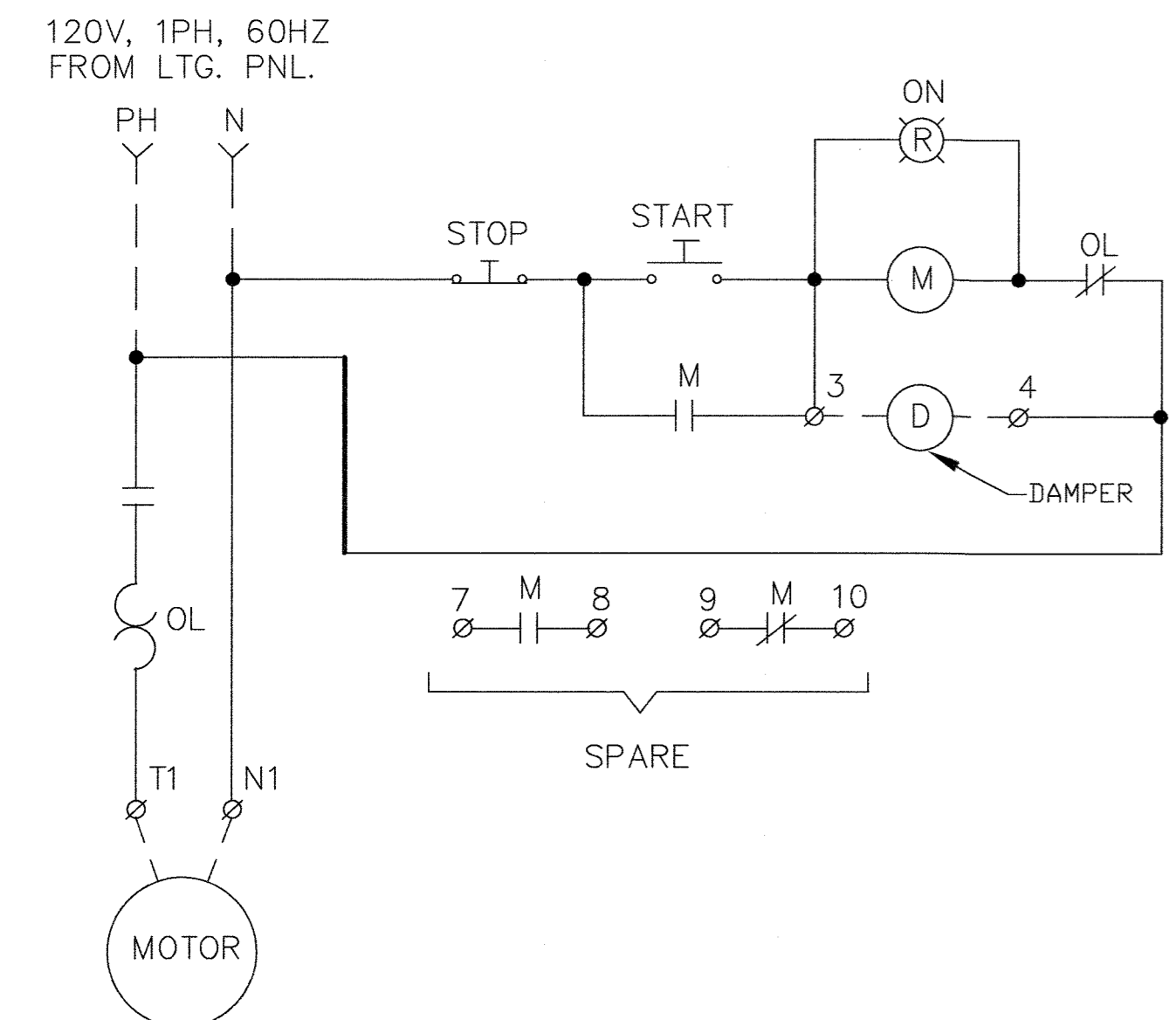


STARTERS "F" & "S" ARE MECHANICALLY INTERLOCKED
* SEE PLANS FOR LOCATIONS

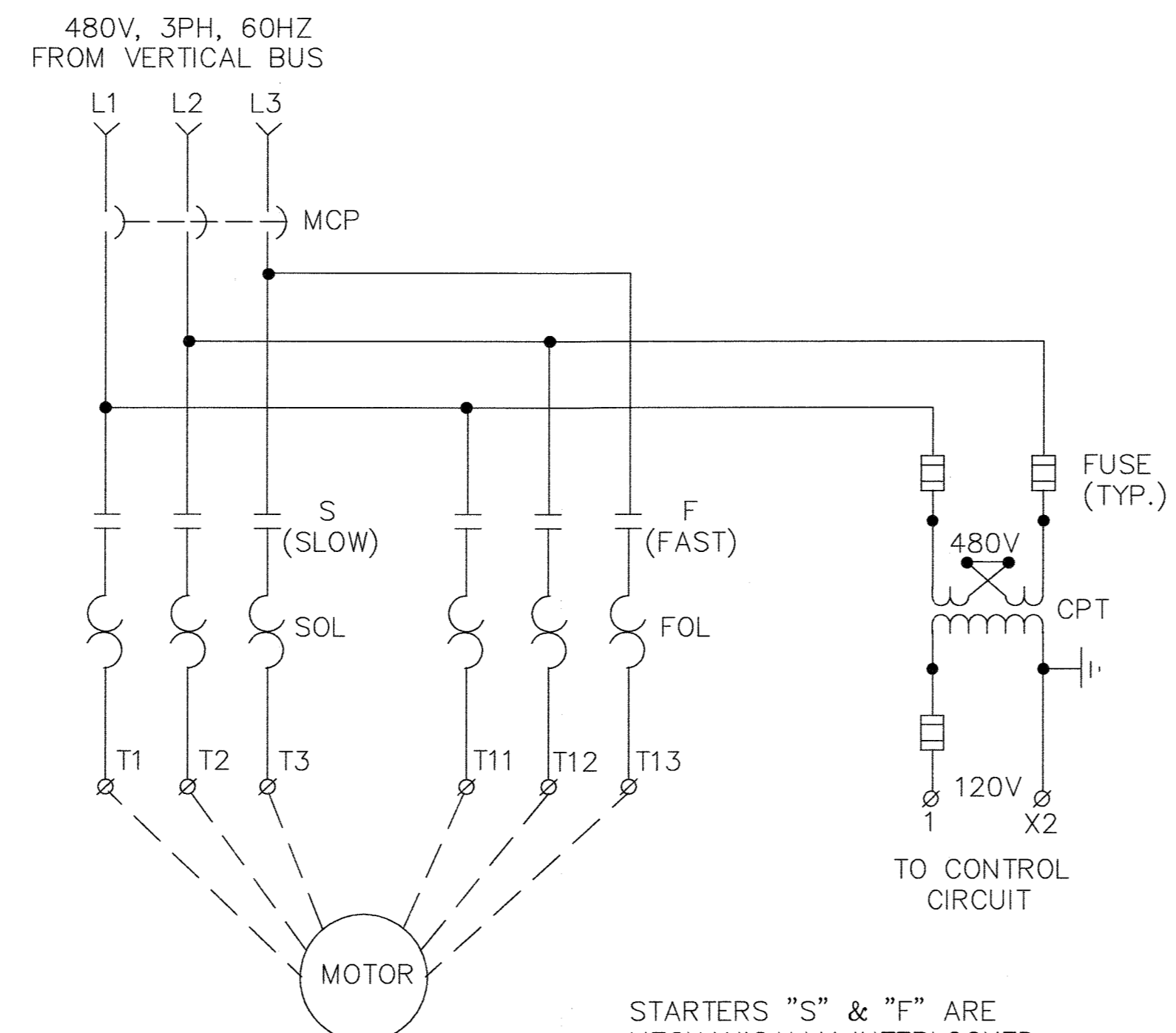
**NORTH & SOUTH PUMP STATION
EXHAUST FAN - TWO SPEED AUTO/MANUAL CONTROL**
(TYPICAL FOR EF-5 & EF-8)



DIGESTER GALLERY EXHAUST FAN
(TYPICAL FOR FAN NO.1 & NO.2)

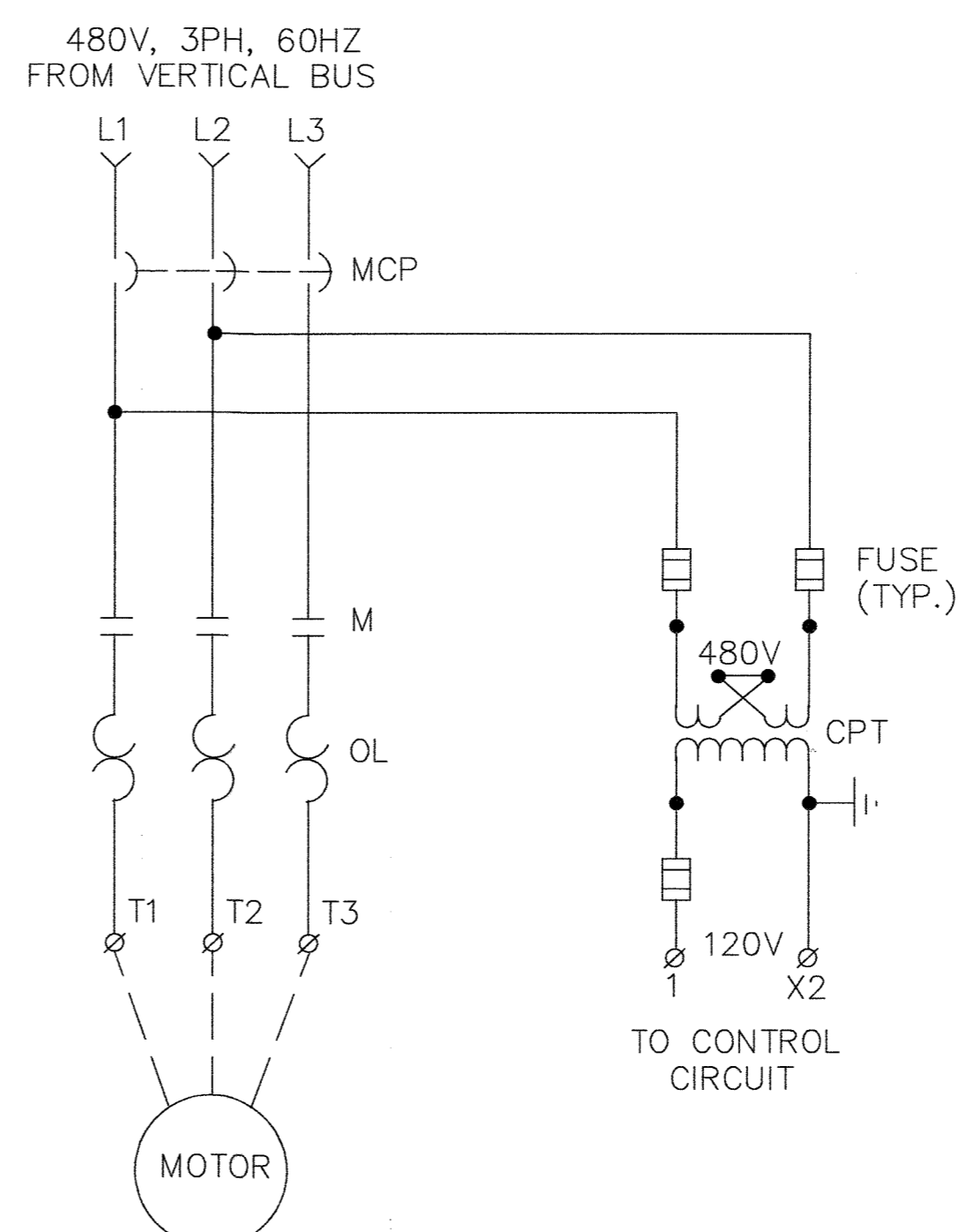


EXHAUST FAN AT MAINTENANCE BUILDING
(TYPICAL FOR EF-1 & EF-2; EXHAUST FANS EF-3 & EF-4 SIMILAR, EXCEPT NO DAMPER)



STARTERS "S" & "F" ARE MECHANICALLY INTERLOCKED

**TYPICAL COMBINATION
MCP-FVTS STARTER**



**TYPICAL COMBINATION
MCP-FVNR STARTER**

SCHEMATIC SYMBOLS:

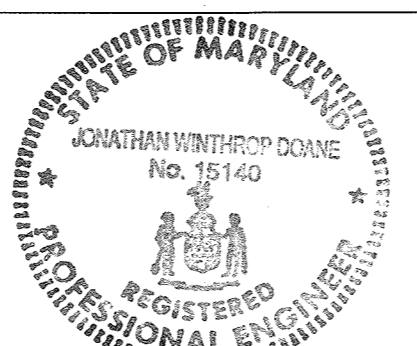
- FACTORY WIRING IN MCC OR BY CONTROLLER MANUFACTURER
- - - - FIELD WIRING BY CONTRACTOR
- 12/Ø TERMINAL BLOCK IN MCC OR CONTROLLER, NUMBER DENOTES TERMINAL BLOCK MARKING

NOTES:

1. FOR OTHER SYMBOLS SEE SHT. E-1.
2. ALL DEVICES ARE IN MCC OR CONTROLLER UNLESS OTHERWISE INDICATED.
3. PROVIDE DISCONNECT SWITCH NEAR MOTOR WHERE INDICATED ON PLANS.
4. REFER TO MANUFACTURER'S INSTRUCTION FOR WIRING OTHER EQUIPMENT OR DEVICES.
5. FOR AS BUILT SCHEMATIC DIAGRAMS, REFER TO O&M MANUALS OF MCC'S AND CONNECTED EQUIPMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
5/7/96
5/7/96

M&E Metcalf & Eddy
5-7-96



DES			
DRN			
CHK			
DATE	M.J.C. 1	RECORD DRAWING	6/10/95
	BY	NO.	REVISION
			DATE

ELECTRICAL
SCHEMATIC DIAGRAMS IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 218 OF 226
E-33R

DISTR. PNL. "DP-8"

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 150A FRAME, 150A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL 100A B C 15			2			
			3				4	1.00		MACHINE SHOP MONDRAIL
			5				6			
VEHICLE MAINTENANCE ROLL-UP DOOR NO.1	.50	37.50	7	15	15		8			MACHINE SHOP ROLL-UP DOOR NO.1
			9				10	.50		
			11	15	15		12			
VEHICLE MAINTENANCE ROLL-UP DOOR NO.2	.50		15	15		16		.50		MACHINE SHOP ROLL-UP DOOR NO.2
			17	15	30		18			
VEHICLE MAINTENANCE ROLL-UP DOOR NO.3	.50		19	15	30		20			
			21				22			LATHE
			23				24			
			25				26			
SPARE			27				28			MILL
			29				30			
			31				32			
SPARE			33				34			SPARE
			35				36			

TOTAL CONNECTED LOAD: 52.00 KVA
PANEL LOCATION: MACHINE SHOP

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP-8B"

SERVICE: 208/120V., 3PH., 4W., 60HZ.
MAIN CIRCUIT BREAKER: 225A FRAME, 150A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL			2	.90		CORRIDOR, TOILET AND LOCKER ROOM LIGHTING
LUNCH RM. LTG. & EF-4	1/30	.80	1				3			
			4				5	.80		TOILET EXHAUST FAN EF-3
			6				7	.65		STAIR NO.1 LIGHTING
SMALL PARTS STORAGE LIGHTING (SECOND FLOOR)		.90	7				8	.110		SMALL PARTS STORAGE LIGHTING (SECOND FLOOR)
SMALL PARTS STORAGE LIGHTING (FIRST FLOOR)		.110	9				10	1.10	1/20	SMALL PARTS STORAGE LIGHTING (FIRST FLOOR)
BULK PARTS STORAGE LIGHTING		.96	11				12	.65		BULK PARTS STORAGE LIGHTING
TOOL ROOM LIGHTING		.65	13				14	.85		SERVICE TECHNICIAN RM. LIGHTING
SUPERINTENDENT OFFICE AND VESTIBULE LIGHTING		.65	15				16	.90		SUPERINTENDENT OFFICE RECEPTACLES
TOOL STORAGE & SERVICE TECHNICIAN RM. RECEPT'S		1.08	17				18	1.26		TOOL STORAGE & SERVICE TECHNICIAN RECEPT'S
SMALL PARTS STORAGE RECEPT'S		.90	19				20	1/4		DIL. STORAGE EX. FAN EF-1
BULK PARTS STORAGE & SMALL PARTS STORAGE RECEPT'S		1.26	21				22	2.30		AC UNIT ACU-3
BULK PARTS STORAGE RECEPT'S		.72	23				24			
DIL. STORAGE & ROOF RECEPT'S		.54	25				26	.60		OUTSIDE LIGHTING
KITCHEN UNIT			27				28	.72		WATER FOUNTAIN & LUNCH ROOM RECEPTACLES
			29				30	1.04		GENERAL STORAGE AND CORRIDOR RECEPTACLES
			31				32	.90		SMALL PART STORAGE & ROOF RECEPT'S
FILE ROOM RECEPTACLES		.90	31				34	2.30		AC UNIT ACU-4
SMALL PARTS STORAGE & ROOF RECEPTACLES		.72	33				36			
			35				38	2.30		AC UNIT ACU-5
			39				40			
LUNCH ROOM, LOCKER RM REC.			41				42			SPARE

TOTAL CONNECTED LOAD: 38.15 KVA
PANEL LOCATION: SMALL PARTS STORAGE

ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP-12"

SERVICE: 208/120V., 3PH., 4W., 60HZ.
MAIN CIRCUIT BREAKER: 100A FRAME, 100A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL			2	.50		SODIUM HYPOCHLORITE FILL PANEL (SSFP)
			3				4	1.00		SIGNAL ISOLATION PANEL (SIP)
SODIUM BISULFITE FLOW SWITCH		.50	1				5	.50		PORTABLE TRANSFER PUMP
LI49A, LI49B, LI49C & LI49D		.20	3				6			PORTABLE TRANSFER PUMP
FIUZA		.50	5				7	.50		FIU90
			9				10	1.10		SODIUM HYPOCHLORITE FLOW SWITCH
			11				12	1.10		SODIUM BISULFITE FLOW SWITCH
			13				14	1.10		SODIUM HYPOCHLORITE FLOW SWITCH PUMP #2
			15				16	1.10		SODIUM HYPOCHLORITE FLOW SWITCH PUMP #3
			17				18	1.10		SODIUM BISULFITE FLOW SWITCH PUMP #1
			19				20			SPARE
			21				22			SPARE
			23				24			HEAT TRACING FDR 2' CW @ LOADING DOCK

TOTAL CONNECTED LOAD: 3.20 KVA
PANEL LOCATION: BLOWER ROOM

ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

LIGHTING FIXTURE SCHEDULE

TYPE	MTG	LAMP	WATTS	MANUFACTURER & CATALOG NUMBER	
				DESCRIPTION	CATALOG NUMBER
A	PEND.	HPS	100	CROUSE-HINDS CO. CAT. NO. VMVS2A100GP/120	DR EQUAL
AA	PEND.	HPS	100	CROUSE-HINDS CO. CAT. NO. VMVS2A100GP/QTZ/120	DR EQUAL
B	PEND.	FLUOR.	2x40	HUBBELL LIGHTING CO. CAT. NO. IC042R-PE10-S1	DR EQUAL
C	RECESS	FLUOR.	2x40	HUBBELL LIGHTING CO. CAT. NO. RD2GNA01-S1	DR EQUAL
D	CEIL.	HPS	250	CROUSE-HINDS CO. CAT. NO. VMVS2C250GP/120	DR EQUAL
DD	CEIL.	HPS	250	CROUSE-HINDS CO. CAT. NO. VMVS2C250GP/QTZ/120	DR EQUAL
E	CEIL.	HPS	100	CROUSE-HINDS CO. CAT. NO. VMVS2C100GP/120	DR EQUAL
EE	CEIL.	HPS	100	CROUSE-HINDS CO. CAT. NO. VMVA2C100GP/QTZ/120	DR EQUAL
F	PEND.	FLUOR.	2x40	CROUSE-HINDS CO. CAT. NO. EVF2208/120	DR EQUAL
G	RECESS	FLUOR.	2U	HUBBELL LIGHTING CO. CAT. NO. RA2GNA01-S1	DR EQUAL
H	WALL	INCAND	70	DUAL LITE CO. CAT. NO. EWRWW-RGI-2 (TWO EMERGENCY HEADS)	DR EQUAL
H1	WALL	INCAND	70	LIGHT ALARMS CO. CAT. NO. X78/2L (TWO EMERGENCY HEADS)	DR EQUAL
H2	WALL	INCAND	60	LIGHT ALARMS CO. CAT. NO. 2ABC1/L25	DR EQUAL
H3	WALL	INCAND	70	LIGHT ALARMS CO. CAT. NO. EXP-6-EFF402/M-X402 (EMERGENCY HEAD) DR EQUAL	DR EQUAL
J	WALL	INCAND	50	LIGHT ALARMS CO. CAT. NO. X7BRA (EXIT LIGHT)	DR EQUAL
K	WALL	HPS	100	APPLETON LIGHTING CO. CAT. NO. G-AM374L-MT-W/PHOTO CELL	DR EQUAL
K1	WALL	HPS	100	APPLETON LIGHTING CO. CAT. NO. G-AM371L-MT-1/2-W/PHOTOCCELL (WALL MOUNTED) DR EQUAL	DR EQUAL
L	PEND.	FLUOR.	3x40	HUBBELL LIGHTING CO. CAT. NO. SSC3NA01-S1C	DR EQUAL
M	PEND.	FLUOR.	2x40	HUBBELL LIGHTING CO. CAT. NO. EBL042R-SPDR-S1	DR EQUAL
N	PEND.	FLUOR.	2x40	CROUSE-HINDS CO. CAT. NO. FVN 4240 TG	DR EQUAL
P	POLE	HPS	100	GENERAL ELECTRIC CO. CAT. NO. P17M10SIN2AM5SGR WITH POLE CAT. NO. ARTA103S4.DA SNT DR EQUAL	DR EQUAL

DISTR. PNL. "DP-8A"

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 150A FRAME, 125A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL 35A B C 15			2			
			3				4	.50		BULK PARTS STORAGE MONDRAIL
			5				6			
			7	15	15		8			
BULK PARTS STORAGE ROLL-UP DOOR	.50		9	15	15		10	1.50		SMALL PARTS STORAGE FREIGHT ELEVATOR
			11				12			
			13				14			
OIL STORAGE UNIT HEATER EUH-1		10.00	15	30	25		16	27.00	2.00	HEAT PUMP HP-1
			17				18			
			19				20			
SPARE			21				22	15.00	1.00	HEAT PUMP HP-2
			23				24			
SPARE			19				20			
			21				22			
SPARE			21				24			SPARE

TOTAL CONNECTED LOAD: 72.00 KVA
PANEL LOCATION: SMALL PARTS STORAGE

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP 21"

SERVICE: 208/120V., 3PH., 4W., 60HZ.
MAIN CIRCUIT BREAKER: 100A FRAME, 100A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL			2	.90		NORTH PUMP STATION BASEMENT LIGHTING
			3				4	.72		NORTH PUMP STATION EL. RM. AND STAIRS LTG.
			5				6	.18		NORTH PUMP STATION OUTSIDE LIGHTING
			7				8	1.00		NORTH PUMP STATION SUPPLY FAN SF-10
			9				10	.60		AC UNIT ACU-1
			11				12	.18		PRIMARY CLARIFIER NO.2 LIGHTING
			13				14	.60		PRIMARY CLARIFIER NO.2 RECEPTACLE
			15				16	.18		FINAL CLARIFIER NO.2 LIGHTING
TRANSMITTER FIT10		.05	13				18	.20		FINAL CLARIFIER NO.2 RECEPTACLE & HEAT TRACING PRESSURE SWITCHES PSL10, PSL11, (SLUDGE PUMPS)
HOT WATER HEATER		1.50	15				20			SPARE
			17				22			SPARE
FIRE ALARM CONTROL PANEL		1.50	17				24			SPARE
CONTROL PANEL NPSCP		1.00	19				24			SPARE
			21				24			SPARE
SPARE			23							

TOTAL CONNECTED LOAD: 16.90 KVA
PANEL LOCATION: ELECTRICAL ROOM

ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP-8C"

SERVICE: 240/120V, 1PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 225A FRAME, 200A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL			2	.75		MACHINE SHOP LIGHTING
MACHINE SHOP LIGHTING		.90	1				3	.54		MACHINE SHOP RECEPTACLES
MACHINE SHOP RECEPTACLES		.54	3				4	.72		MACHINE SHOP RECEPTACLES
			5				6	.72		MEZZANINE RECEPTACLES EX. FAN
GRINDER NO.1		1.00	5				7			GRINDER NO.2
			7				8			
			9				10			
DRILL PRESS			11				12			MIG WELDER
			13				14			
			15				16			
WELDER			17				18			WELDER RECEPTACLE
			19				20			
LATHE			21				22			SANDER, EXIT LIGHT
WORK BENCH RECEPTACLE			22				24			WELDING TABLE RECEPTACLE
LATHE RECEPTACLE			23				26			SPARE
SPARE			25				28			SPARE
SPARE			27				30			SPARE
SPARE			29				32			SPARE
SPARE			31							

TOTAL CONNECTED LOAD: 4.63 KVA
PANEL LOCATION: MACHINE SHOP

ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP 22"

SERVICE: 208/120V., 3PH., 4W., 60HZ.
MAIN CIRCUIT BREAKER: 100A FRAME, 100A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL			2	.90		SOUTH PUMP STATION BASEMENT LIGHTING
			3				4	.72		SOUTH PUMP STATION EL. RM. AND STAIRS LTG.
			5				6	.18		SOUTH PUMP STATION OUTSIDE LIGHTING
			7				8	1.00		SPARE
			9				10	1.50		HOT WATER HEATER
AC UNIT ACU-2		5.00	11				12	.20		PRESSURE SWITCHES PSL15, PSL16, (SLUDGE PUMPS)
			13				14	.50		FIRE ALARM CONTROL PANEL
TRANSMITTER FIT11		.05	13				16			SPARE
CONTROL PANEL SPSCP		1.00	15				18			SPARE
SPARE			17				20			SPARE
SPARE			19				22			SPARE
SPARE			21				24			SPARE

TOTAL CONNECTED LOAD: 14.30 KVA
PANEL LOCATION: ELECTRICAL ROOM

ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP-DBA"

SERVICE: 208/120V., 3PH., 4W., 60HZ.
MAIN CIRCUIT BREAKER: 100A FRAME, 100A TRIP

LOCATION	HP	KVA	CIR. NO.	GROUND BUS			CIR. NO.	KVA	HP	LOCATION
				A	B	C				
			1	NEUTRAL			2	.72		NEW THICKENER GALLERY LIGHTING
			3				4	.72		NEW THICKENER GALLERY RECEPT'S
			5							
			6							
			7							
			8							
			9							
			10							
			11							
			12							
			13							
			14							
			15							
			16							
			17							
			18							
			19							
			20							
			21							
			22							
			23							

TOTAL CONNECTED LOAD: 23.43 KVA
PANEL LOCATION: DEWATERING BLDG. ADDITION

ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

PANELBOARD "LP-8C"

SERVICE: 208/120V., 3PH., 4W., 60HZ.
MAIN CIRCUIT BREAKER: 100A FRAME, 30A TRIP

LOCATION	HP	KVA
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SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A FRAME, 60A TRIP

PANELBOARD "LP-18" CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.	NEUTRAL	CIR. NO.	KVA	HP	LOCATION
			A B C	A B C				
MCC-18 LIGHTING		.80	1		2	.72	1/4	EXHAUST FAN NO.1
MCC-18 RECEPTACLES		.38	3		4	.36	1/4	EXHAUST FAN NO.2
UNIT HEATER NO.1		2.00	5		6	2.00		UNIT HEATER NO.2
GRAVITY THICKENER NO.3 RECEPTACLES		.36	7		8	.60		GRAVITY THICKENER NO.3 LIGHTING
GRAVITY THICKENER NO.4 RECEPTACLES		.36	9		10	.60		GRAVITY THICKENER NO.4 LIGHTING
OUTSIDE LIGHTING		.39	11		12			SPARE
SPARE			13		14			SPARE
SPARE			15		16			SPARE
SPARE			17		18			SPARE
SPARE			19		20			SPARE
SPARE			21		22			SPARE
SPARE			23		24			SPARE

TOTAL CONNECTED LOAD: 6.78 KVA
PANEL LOCATION: MOTOR CONTROL CENTER MCC-18
ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A FRAME, 60A TRIP

PANELBOARD "LP-PSS" CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.	NEUTRAL	CIR. NO.	KVA	HP	LOCATION
			A B C	A B C				
SUBSTATION PSS LIGHTING		.35	1		2	.36	1/4	EXHAUST FAN NO.1
SUBSTATION PSS RECEPTACLES		.36	3		4	.36	1/4	EXHAUST FAN NO.2
OUTSIDE LIGHTING		.88	5		6			SPARE
SPARE			7		8			SPARE
SPARE			9		10			SPARE
SPARE			11		12			SPARE
SPARE			13		14			SPARE
SPARE			15		16			SPARE
SPARE			17		18			SPARE
SPARE			19		20			SPARE
SPARE			21		22			SPARE
SPARE			23		24			SPARE

TOTAL CONNECTED LOAD: 3.00 KVA
PANEL LOCATION: SUBSTATION PSS
ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 100A FRAME, 100A TRIP

POWER PANEL PP10 CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.	NEUTRAL	CIR. NO.	KVA	HP	LOCATION
			A B C	A B C				
MOTOR OPERATED VALVE FCV40	2/5		1		2			MOTOR OPERATED VALVE FCV41
			3		4	2/5		
			5		6			
			7		8			
MOTOR OPERATED VALVE FCV42	2/5		9		10	2/5		MOTOR OPERATED VALVE FCV43
			11		12			
			13		14			
MOTOR OPERATED VALVE FCV44	2/5		15		16	2/5		MOTOR OPERATED VALVE FCV45
			17		18			
			19		20			
MOTOR OPERATED VALVE FCV46	2/5		21		22	2/5		MOTOR OPERATED VALVE FCV47
			23		24			
			25		26			
MOTOR OPERATED VALVE FCV48	2/5		27		28	2/5		MOTOR OPERATED VALVE FCV49
			29		30			
			31		32			
MOTOR OPERATED VALVE FCV50	2/5		33		34	2/5		MOTOR OPERATED VALVE FCV51
			35		36			
			37		38			
SPARE			39		40	15.00		POWER PANEL PP10A
			41		42			

TOTAL CONNECTED LOAD: 57.00 KVA
PANEL LOCATION: EXISTING DIGESTER PIPE GALLERY
ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN 100A LUGS ONLY

POWER PANEL PP10A CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.	NEUTRAL	CIR. NO.	KVA	HP	LOCATION
			A B C	A B C				
MOTOR OPERATED VALVE FCV30A	2/5		1		2			MOTOR OPERATED VALVE FCV30B
			3		4	2/5		
			5		6			
			7		8			
MOTOR OPERATED VALVE FCV31A	2/5		9		10	2/5		MOTOR OPERATED VALVE FCV31B
			11		12			
			13		14			
MOTOR OPERATED VALVE FCV32A	2/5		15		16	2/5		MOTOR OPERATED VALVE FCV32B
			17		18			
			19		20			
SPARE			21		22			SPARE
			23		24			

TOTAL CONNECTED LOAD: 5.00 KVA
PANEL LOCATION: EXISTING DIGESTER PIPE GALLERY
ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A FRAME, 50A TRIP

PANELBOARD "LP-20" CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.	NEUTRAL	CIR. NO.	KVA	HP	LOCATION
			A B C	A B C				
MCC-20 LIGHTING		.70	1		2	.72		MCC-20 RECEPTACLES
SPARE			3		4			SPARE
SPARE			5		6	.27		OUTDDOR LIGHTING
SPARE			7		8	.20		FIT181, FIT182, FIT183 & FIT184
PROCESS REACTORS OUTSIDE LIGHTING	.80		9		10	.20		FIT185, FIT186, FIT187 & FIT188
			11		12	.50		PRAP
FIT201, FIT202, FIT203, FIT204	.20		13		14	1.00		PIUGA/6B
FIT191, FIT192, FIT193, FIT194	.20		15		16	.36		PROCESS REACTORS RECEPT'S
FIT195, FIT196, FIT197, FIT198	.20		17		18			SPARE
FIT205, FIT206, FIT207, FIT208	.20		19		20			SPARE
FIT211, FIT212, FIT213, FIT214	.20		21		22			SPARE
FIT215, FIT216, FIT217, FIT218	.20		23		24			SPARE

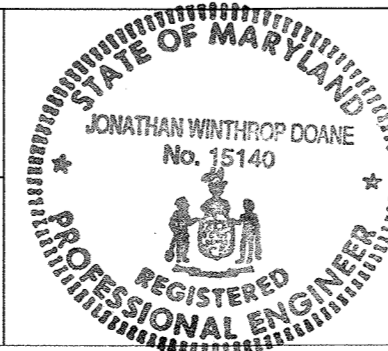
TOTAL CONNECTED LOAD: 11.83 KVA
PANEL LOCATION: MOTOR CONTROL CENTER MCC-20
ALL BRANCH C/B 100 AMP FRAME, 15 AMP TRIP (UNLESS NOTED OTHERWISE)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Lewis 5/7/96
DIRECTOR OF PUBLIC WORKS
John O'Hara 5/7/96
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

M&E Metcalf & Eddy

Jonathan W. Doane 5-7-96
REGISTERED PROFESSIONAL ENGINEER



DES:			
DRN:			
CHK:			
DATE:	M.J.C. 1	RECORD DRAWING	6/10/95
	BY NO.	REVISION	DATE

ELECTRICAL

EQUIPMENT SCHEDULES II

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153

CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 220 OF 226
E-35R

Table with columns: CONDUIT NO., SIZE, QTY., CABLE SIZE, FROM, TO, REMARKS. Contains items PC-21-1 to C-21-20C.

Table with columns: CONDUIT NO., SIZE, QTY., CABLE SIZE, FROM, TO, REMARKS. Contains items PC-22-1 to C-22-15C.

Table with columns: CONDUIT NO., SIZE, QTY., CABLE SIZE, FROM, TO, REMARKS. Contains items I-21-21 to T-22-31.

Project information including Department of Public Works, Metcalf & Eddy logo, engineering seals, title 'CONDUIT & WIRE SCHEDULE I', project name 'LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION', and drawing details.

CONDUIT & WIRE SCHEDULE						
CONDUIT NO.	SIZE	CABLE		FROM	TO	REMARKS
		QTY.	SIZE			
P-3-1	2 x 3"	6-1/2	300MCM	EXIST. SECONDARY SUBSTATION PS3	MOTOR CONTROL CENTER MCC 20 (BUS A)	POWER GROUND
P-3-2	2 x 3"	6-1/2	300MCM	EXIST. SECONDARY SUBSTATION PS3	MOTOR CONTROL CENTER MCC 20 (BUS B)	POWER GROUND
PC-20-1A	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX1	POWER GROUND CONTROL
PC-20-4	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX1	POWER GROUND CONTROL
PC-20-3A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX2	POWER GROUND CONTROL
PC-20-4A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX3	POWER GROUND CONTROL
PC-20-5A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX5	POWER GROUND CONTROL
PC-20-1	3/4"	2-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX2	POWER GROUND CONTROL
PC-20-3	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX3	POWER GROUND CONTROL
PC-20-5	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.1 MIXER 1AX4	POWER GROUND CONTROL
PC-20-11	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX2	POWER GROUND CONTROL
PC-20-10A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX3	POWER GROUND CONTROL
PC-20-11A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX1	POWER GROUND CONTROL
PC-20-16	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX2	POWER GROUND CONTROL
PC-20-13	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX3	POWER GROUND CONTROL
PC-20-14	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX5	POWER GROUND CONTROL
PC-20-18	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX1	POWER GROUND CONTROL
PC-20-16A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.2 MIXER 2AX4	POWER GROUND CONTROL
PC-20-19	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX2	POWER GROUND CONTROL
PC-20-18A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX3	POWER GROUND CONTROL
PC-20-19A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX1	POWER GROUND CONTROL
PC-20-24	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX2	POWER GROUND CONTROL
PC-20-22	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX3	POWER GROUND CONTROL
PC-20-22A	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX5	POWER GROUND CONTROL
PC-20-18	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX1	POWER GROUND CONTROL
PC-20-24A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.3 MIXER 3AX4	POWER GROUND CONTROL
PC-20-26	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX2	POWER GROUND CONTROL
PC-20-26A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX3	POWER GROUND CONTROL
PC-20-27	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX1	POWER GROUND CONTROL
PC-20-32	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX2	POWER GROUND CONTROL
PC-20-30	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX3	POWER GROUND CONTROL
PC-20-30A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX5	POWER GROUND CONTROL
CP-20-31	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX1	POWER GROUND CONTROL
PC-20-32A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.4 MIXER 4AX4	POWER GROUND CONTROL
PC-20-35	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX2	POWER GROUND CONTROL
PC-20-34A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX3	POWER GROUND CONTROL
PC-20-35A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX1	POWER GROUND CONTROL
PC-20-40	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX2	POWER GROUND CONTROL
PC-20-38	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX3	POWER GROUND CONTROL
PC-20-38A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX5	POWER GROUND CONTROL
PC-20-34	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX1	POWER GROUND CONTROL
PC-20-40A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.5 MIXER 5AX4	POWER GROUND CONTROL

CONDUIT & WIRE SCHEDULE						
CONDUIT NO.	SIZE	CABLE		FROM	TO	REMARKS
		QTY.	SIZE			
PC-20-41A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX1	POWER GROUND CONTROL
PC-20-44	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX3	POWER GROUND CONTROL
PC-20-45	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX1	POWER GROUND CONTROL
PC-20-44A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX2	POWER GROUND CONTROL
PC-20-45A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX3	POWER GROUND CONTROL
PC-20-46	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX5	POWER GROUND CONTROL
PC-20-41	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX2	POWER GROUND CONTROL
PC-20-48	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 6AX4	POWER GROUND CONTROL
PC-20-50	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.7 MIXER 7AX2	POWER GROUND CONTROL
PC-20-50A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX3	POWER GROUND CONTROL
PC-20-55	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX1	POWER GROUND CONTROL
PC-20-57	3/4"	2-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX3B	POWER GROUND CONTROL
PC-20-53A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX4B	POWER GROUND CONTROL
PC-20-54	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX1	POWER GROUND CONTROL
PC-20-55A	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX2	POWER GROUND CONTROL
PC-20-53	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX3A	POWER GROUND CONTROL
PC-20-57A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 7AX4A	POWER GROUND CONTROL
PC-20-58	3/4"	3-1/2	10	HVAC	HVAC UNIT	POWER GROUND CONTROL
PC-20-59	3/4"	5-1/2	12	THERMOSTAT	HVAC UNIT	CONTROL
PC-20-61	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.8 MIXER 8AX2	POWER GROUND CONTROL
PC-20-61A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX3	POWER GROUND CONTROL
PC-20-66	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX1	POWER GROUND CONTROL
PC-20-68	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX3B	POWER GROUND CONTROL
PC-20-64A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX4B	POWER GROUND CONTROL
PC-20-65	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX1	POWER GROUND CONTROL
PC-20-66A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX2	POWER GROUND CONTROL
PC-20-64	3/4"	6-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX3A	POWER GROUND CONTROL
PC-20-68A	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	PROCESS REACTOR NO.6 MIXER 8AX4A	POWER GROUND CONTROL
PC-20-69	3/4"			SPACE		
P-20-71	3/4"	3-1/2	10	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-1 VFD	POWER GROUND CONTROL
PC-20-71A	3/4"	3-1/2	10	RECYCLE PUMP IRP-1 VFD	RECYCLE PUMP IRP-1	POWER GROUND CONTROL
P-20-72	3/4"	3-1/2	10	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-2 VFD	POWER GROUND CONTROL
PC-20-72A	3/4"	3-1/2	10	RECYCLE PUMP IRP-2 VFD	RECYCLE PUMP IRP-2	POWER GROUND CONTROL
P-20-73	3/4"	3-1/2	10	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-3 VFD	POWER GROUND CONTROL
PC-20-73A	3/4"	3-1/2	10	RECYCLE PUMP IRP-3 VFD	RECYCLE PUMP IRP-3	POWER GROUND CONTROL
P-20-74	3/4"	3-1/2	10	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-4 VFD	POWER GROUND CONTROL
PC-20-74A	3/4"	3-1/2	10	RECYCLE PUMP IRP-4 VFD	RECYCLE PUMP IRP-4	POWER GROUND CONTROL
P-20-75	3/4"	3-1/2	10	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-5 VFD	POWER GROUND CONTROL
PC-20-75A	3/4"	3-1/2	10	RECYCLE PUMP IRP-5 VFD	RECYCLE PUMP IRP-5	POWER GROUND CONTROL
P-20-76	3/4"	3-1/2	10	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-6 VFD	POWER GROUND CONTROL
PC-20-76A	3/4"	3-1/2	10	RECYCLE PUMP IRP-6 VFD	RECYCLE PUMP IRP-6	POWER GROUND CONTROL
P-20-77	1"	3-1/2	6	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-7 VFD	POWER GROUND CONTROL
PC-20-77A	1 1/4"	3-1/2	4	RECYCLE PUMP IRP-7 VFD	RECYCLE PUMP IRP-7	POWER GROUND CONTROL
P-20-78	1"	3-1/2	4	MOTOR CONTROL CENTER MCC 20	RECYCLE PUMP IRP-8 VFD	POWER GROUND CONTROL
PC-20-78A	1 1/4"	3-1/2	4	RECYCLE PUMP IRP-8 VFD	RECYCLE PUMP IRP-8	POWER GROUND CONTROL

CONDUIT & WIRE SCHEDULE						
CONDUIT NO.	SIZE	CABLE		FROM	TO	REMARKS
		QTY.	SIZE			
P-20-79	1 1/4"	3-1/2	6	MOTOR CONTROL CENTER MCC 20	FOAM SPRAY CNTRL PNL PUMP ND1	POWER GROUND CONTROL
PC-20-79A	1 1/4"	3-1/2	6	FOAM SPRAY PUMP ND1 CNRL PNL	FOAM SPRAY PUMP ND1	POWER GROUND CONTROL
P-20-80	1 1/4"	3-1/2	6	MOTOR CONTROL CENTER MCC 20	FOAM SPRAY PUMP ND2 CNTRL PNL	POWER GROUND CONTROL
PC-20-80A	1 1/4"	3-1/2	6	FOAM SPRAY PUMP ND2 CNTRL PNL	FOAM SPRAY PUMP ND2	POWER GROUND CONTROL
PC-20-81	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	SCUM PUMP SCP-1	POWER GROUND CONTROL
PC-20-82	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	SCUM PUMP SCP-2	POWER GROUND CONTROL
PC-20-83	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	SCUM PUMP SCP-3	POWER GROUND CONTROL
PC-20-84	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	SCUM PUMP SCP-4	POWER GROUND CONTROL
PC-20-85	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	SCUM PUMP SCP-5	POWER GROUND CONTROL
C-20-86	3/4"	8-1/2	12	MCC 20	LSL177L,SH177L,SHH171	CONTROL
C-20-87	3/4"	8-1/2	12	MCC 20	LSL173L,SH173L,SHH173	CONTROL
C-20-88	3/4"	8-1/2	12	MCC 20	LSL175L,SH175L,SHH175	CONTROL
C-20-89	3/4"	8-1/2	12	MCC 20	LSL177L,SH177L,SHH177	CONTROL
C-20-90	3/4"	8-1/2	12	MCC 20	LSL178L,SH178L,SHH178	CONTROL
I-20-91	3/4"	1-PR	16SH.	FIT181	F1181(CIN VFD,MCC20)	INSTRUMENT
I-20-91A	3/4"	1-PR	16SH.	F1181(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-92	3/4"	1-PR	16SH.	F1182	F1182(CIN VFD,MCC20)	INSTRUMENT
I-20-92A	3/4"	1-PR	16SH.	F1182(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-93	3/4"	1-PR	16SH.	F1183	F1183(CIN VFD,MCC20)	INSTRUMENT
I-20-93A	3/4"	1-PR	16SH.	F1183(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-94	3/4"	1-PR	16SH.	F1184	F1184(CIN VFD,MCC20)	INSTRUMENT
I-20-94A	3/4"	1-PR	16SH.	F1184(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-95	3/4"	1-PR	16SH.	F1185	F1185(CIN VFD,MCC20)	INSTRUMENT
I-20-95A	3/4"	1-PR	16SH.	F1185(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-96	3/4"	1-PR	16SH.	F1186	F1186(CIN VFD,MCC20)	INSTRUMENT
I-20-96A	3/4"	1-PR	16SH.	F1186(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-97	3/4"	1-PR	16SH.	F1187	F1187(CIN VFD,MCC20)	INSTRUMENT
I-20-97A	3/4"	1-PR	16SH.	F1187(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
I-20-98	3/4"	1-PR	16SH.	F1188	F1188(CIN VFD,MCC20)	INSTRUMENT
I-20-98A	3/4"	1-PR	16SH.	F1188(CIN VFD,MCC20)	PIU6A/6B	INSTRUMENT
C-20-99	2x3"	2x12	12	MCC 20	PIU6A/6B	CONTROL
I-20-100	2"	8-PR	16SH.	MCC 20	PIU6A/6B	INSTRUMENT
P-20-101	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	MOTOR OPERATED VALVE FCV201	POWER GROUND CONTROL
C-20-101A	3/4"	4-1/2	12	FCV201	PRAP	CONTROL
P-20-102	3/4"	3-1/2	12	MOTOR CONTROL CENTER MCC 20	MOTOR OPERATED VALVE FCV202	POWER GROUND CONTROL
C-20-102A	3/4"	4-1/2	12	FCV202	PRAP	CONTROL
I-20-103	3/4"	1-PR	16SH.	SP2E	F.C.#3 LSH77	CONTROL
C-20-104	1"	2-1/2	12	MCC 20	F.C.#4 LSH78	CONTROL
C-20-105	1"	2-1/2	12	MCC 20	F.C.#5 LSH79	CONTROL
C-20-106	1"	2-1/2	12	MCC 20	F.C.#5 LSH79	CONTROL
I-20-107	3/4"	1-PR	16SH.	FIT201	PRAP	INSTRUMENT
I-20-107A	3/4"	1-PR	16SH.	FIT201	PRAP	INSTRUMENT
I-20-108	3/4"	1-PR	16SH.	FIT202	PRAP	INSTRUMENT
I-20-108A	3/4"	1-PR	16SH.	FIT202	FE202	INSTRUMENT
P-20-109	1"	3-1/2	8	MOTOR CONTROL CENTER MCC 20	ATS FOR LTG. PANEL LP-20	POWER GROUND CONTROL
P-20-109A	1"	3-1/2	8	MOTOR CONTROL CENTER MCC 20	ATS FOR LTG. PANEL LP-20	POWER GROUND CONTROL
P-20-109B	1"	3-1/2	8	ATS FOR LTG. PANEL LP-20	TRANSFORMER FOR LTG. PANEL LP-20	POWER GROUND CONTROL
P-20-109C	1"	3-1/2	6	TRANSFORMER FOR LTG. PANEL LP-20	LIGHTING PANEL LP-20	POWER NEUTRAL GROUND CONTROL
I-20-201	3/4"	12-1/2	12	FCV 201 CONTROL STA.	FCV 201 MTR. OP. VALVE	CONTROL

CONDUIT & WIRE SCHEDULE							
CONDUIT NO.	CONDUIT SIZE	CABLE QTY.	CABLE SIZE	FROM	TO	REMARKS	
P-8-1	1/2"	3-1/2	1/0	MOTOR CONTROL CENTER CC 8	DISTRIBUTION PANEL DP-8B	POWER GROUND	
P-8-2	1"	3-1/2	4	MOTOR CONTROL CENTER CC 8	LIGHTING TRANSFORMER TR. 8B	POWER GROUND	
P-8-2A	2"	3-1/2	2/0	LIGHTING TRANSFORMER TR. 8B	LIGHTING PANEL LP-8B	POWER NEUTRAL GROUND	
P-8-3					SPACE		
P-8-4					SPACE		
P-8-5					SPACE		
P-8-6	1/2"	3-1/2	1/0	MOTOR CONTROL CENTER CC 8	DISTRIBUTION PANEL DP-8A	POWER GROUND	
DP-8-1	1"	2-1/2	2	DISTRIBUTION PANEL DP-8	LIGHTING TRANSFORMER TR. 8C	POWER GROUND	
DP-8-1A	2"	3-1/2	3/0	LIGHTING TRANSFORMER TR. 8C	LIGHTING PANEL LP-8C	POWER NEUTRAL GROUND	
DP-8-2	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8	VEHICLE MAINTENANCE ROLL-UP DOOR NO.1	POWER GROUND	
DP-8-3	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8	VEHICLE MAINTENANCE ROLL-UP DOOR NO.2	POWER GROUND	
DP-8-4	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8	VEHICLE MAINTENANCE ROLL-UP DOOR NO.3	POWER GROUND	
DP-8-5	3/4"	3-1/2	10	DISTRIBUTION PANEL DP-8	MACHINE SHOP MONORAIL	POWER GROUND	
DP-8-6	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8	MACHINE SHOP ROLL-UP DOOR NO.1	POWER GROUND	
DP-8-7	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8	MACHINE SHOP ROLL-UP DOOR NO.2	POWER GROUND	
DP-8-8	3/4"	3-1/2	10	DISTRIBUTION PANEL DP-8	MACHINE SHOP LATHE	POWER GROUND	
DP-8-9	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8	MACHINE SHOP MILL	POWER GROUND	
DP-8A-1	3/4"	3-1/2	10	DISTRIBUTION PANEL DP-8A	BULK PARTS STORAGE MONORAIL	POWER GROUND	
DP-8A-2	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8A	BULK PARTS STORAGE ROLL-UP GRILL	POWER GROUND	
DP-8A-3	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8A	BULK PARTS STORAGE ROLL-UP DOOR	POWER GROUND	
DP-8A-4	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8A	SMALL PARTS STORAGE FREIGHT ELEVATOR	POWER GROUND	
DP-8A-5	3/4"	3-1/2	12	DISTRIBUTION PANEL DP-8A	OIL STORAGE UNIT HEATER EUH-1	POWER GROUND	
DP-8A-6	3/4"	3-1/2	8	DISTRIBUTION PANEL DP-8A	HEAT PUMP HP-1	POWER GROUND	
DP-8A-7	3/4"	3-1/2	10	DISTRIBUTION PANEL DP-8A	HEAT PUMP HP-2	POWER GROUND	
PC-10-1	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER PUMP GALLERY ADDITION J.B. ND3	POWER GROUND CONTROL	
PC-10-1A	3/4"	3-1/2	12	DIGESTER PUMP GALLERY ADDITION J.B. ND3	GRAVITY THICKENER SLUDGE COLLECTOR NO.4	POWER GROUND CONTROL	
C-10-1B	3/4"	2-1/2	12	DIGESTER PUMP GALLERY ADDITION J.B. ND2	GRAVITY THICKENER NO.4 ALARM LIGHT	CONTROL	
PC-10-2	1"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	DIGESTER SLUDGE PUMP NO.4 VFD	POWER GROUND CONTROL	
PC-10-2A	1"	3-1/2	12	DIGESTER SLUDGE PUMP NO.4 VFD	DIGESTER SLUDGE PUMP NO.4	POWER GROUND CONTROL	
I-10-2B	3/4"	1-PR	16SH	D.S.L. PUMP NO.4 VFD	D.S.L. PUMP NO.4	INSTRUMENT	
I-10-2B	3/4"	1-PR	16SH	D.S.L. PUMP NO.4 VFD	D.S.L. PUMP NO.4	INSTRUMENT	
I-10-2C	3/4"	1-PR	16SH	D.S.L. PUMP NO.4 VFD	BFP	INSTRUMENT	
PC-10-3	1"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	DIGESTER SCUM PUMP NO.4 VFD	POWER GROUND CONTROL	
PC-10-3A	1"	3-1/2	12	DIGESTER SCUM PUMP NO.4 VFD	DIGESTER SCUM PUMP NO.4	POWER GROUND CONTROL	
I-10-2B	3/4"	1-PR	16SH	D.S.C. PUMP NO.4 VFD	D.S.C. PUMP NO.4	INSTRUMENT	
I-10-3D	3/4"	2-PR	16SH	D.S.C. PUMP NO.4 VFD	P13A	INSTRUMENT	
I-10-3E	3/4"	1-PR	16SH	D.S.C. PUMP NO.4 VFD	BFP	INSTRUMENT	
PC-10-4	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	DIGESTER PUMP GALLERY EXHAUST FAN EF-11B	POWER GROUND CONTROL	
P-10-5	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	DIGESTER PUMP GALLERY UNIT HEATER NO.2	POWER GROUND	
P-10-6	1"	3-1/2	4	EXIST. MOTOR CONTROL CENTER CC10	ATS FOR LTG. PANEL LP-DBA	POWER GROUND	
P-10-6A	1"	3-1/2	4	ATS FOR LTG. PANEL LP-DBA	LIGHTING TRANSFORMER TR-DBA	POWER GROUND	
P-10-6B	1"	3-1/2	4	ATS FOR LTG. PANEL LP-DBA	EXIST. MOTOR CONTROL CENTER CC9	POWER GROUND	
P-10-6C	1 1/4"	3-1/2	2	LIGHTING TRANSFORMER TR-DBA	LIGHTING PANEL LP-DBA	POWER NEUTRAL GROUND	
P-10-7					SPACE		
C-10-8	3/4"	4-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	LEVEL SWITCHES LSH63 & LSL63	CONTROL	
C-10-9	1 1/4"	28-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	BFP CTL. PNL. IN BELT FILTER PRESS ROOM	CONTROL	
P-10-10	1 1/4"	3-1/2	2	EXIST. MOTOR CONTROL CENTER CC10	ATS FOR POWER PANEL PP10	POWER GROUND	
P-10-10A	1 1/4"	3-1/2	2	ATS FOR POWER PANEL PP10	POWER PANEL PP10	POWER GROUND	
P-10-10B	1 1/4"	3-1/2	2	EXIST. MOTOR CONTROL CENTER CC9	ATS FOR POWER PANEL PP10	POWER GROUND	
P-10-10C	3/4"	2-1/2	9	POWER PANEL PP10	POWER PANEL PP10A	POWER GROUND	
P-10-11	3"	3-1/2	350	EXIST. MOTOR CONTROL CENTER CC10	FW PUMP MANUAL TRANSFER SWITCH	POWER GROUND	
P-10-12	3"	3-1/2	2	FW PUMP MANUAL TRANSFER SWITCH	FLUSHING WATER PUMP CTRL. PNL.	POWER GROUND	
PC-10-13	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	DIGESTER PUMP GALLERY SUPPLY FAN SF-12B	POWER GROUND CONTROL	
PC-10-14	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	EXIST. DIG. P. GALLERY EXHAUST FAN EF-12B	POWER GROUND CONTROL	
PC-10-15	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC10	EXIST. DIG. P. GALLERY SUPPLY FAN SF-14	POWER GROUND CONTROL	

CONDUIT & WIRE SCHEDULE							
CONDUIT NO.	CONDUIT SIZE	CABLE QTY.	CABLE SIZE	FROM	TO	REMARKS	
PC-9-1	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER PUMP GALLERY ADDITION J.B. ND1	POWER GROUND CONTROL	
PC-9-1A	3/4"	3-1/2	12	DIGESTER PUMP GALLERY ADDITION J.B. ND1	GRAVITY THICKENER SLUDGE COLLECTOR NO.3	POWER GROUND CONTROL	
C-9-1B	3/4"	2-1/2	12	DIGESTER PUMP GALLERY ADDITION J.B. ND1	GRAVITY THICKENER NO.3 ALARM LIGHT	CONTROL	
PC-9-2	1"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER SLUDGE PUMP NO.3 VFD	POWER GROUND CONTROL	
PC-9-2A	1"	3-1/2	12	DIGESTER SLUDGE PUMP NO.3 VFD	DIGESTER SLUDGE PUMP NO.3	POWER GROUND CONTROL	
I-9-2B	3/4"	1-PR	16SH	D.S.L. PUMP NO.3 VFD	D.S.L. PUMP NO.3	INSTRUMENT	
I-9-2C	3/4"	2-PR	16SH	D.S.L. PUMP NO.3 VFD	P13A	INSTRUMENT	
I-9-2D	3/4"	1-PR	16SH	D.S.L. PUMP NO.3 VFD	BFP	INSTRUMENT	
PC-9-3	1"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER SCUM PUMP NO.3 VFD	POWER GROUND CONTROL	
PC-9-3A	1"	3-1/2	12	DIGESTER SCUM PUMP NO.3 VFD	DIGESTER SCUM PUMP NO.3	POWER GROUND CONTROL	
I-9-3B	3/4"	1-PR	16SH	D.S.C. PUMP NO.3 VFD	D.S.C. PUMP NO.3	INSTRUMENT	
I-9-3C	3/4"	2-PR	16SH	D.S.C. PUMP NO.3 VFD	P13A	INSTRUMENT	
I-9-3D	3/4"	1-PR	16SH	D.S.C. PUMP NO.3 VFD	BFP	INSTRUMENT	
PC-9-4	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER PUMP GALLERY EXHAUST FAN EF-11A	POWER GROUND CONTROL	
P-9-5	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER PUMP GALLERY UNIT HEATER NO.1	POWER GROUND	
P-9-8	3"	3-1/2	350	EXIST. MOTOR CONTROL CENTER CC9	FW PUMP MANUAL TRANSFER SWITCH	POWER GROUND	
C-9-9	1 1/4"	20-1/2	12	FW PUMP CTRL. PNL.	P13A	CONTROL	
I-9-9	3"	24-PR	16SH	DAFP	P13A	INSTRUMENT	
PC-9-11	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	DIGESTER PUMP GALLERY SUPPLY FAN SF-12A	POWER GROUND CONTROL	
PC-9-12	3/4"	3-1/2	12	EXIST. MOTOR CONTROL CENTER CC9	EXIST. D. PUMP GALLERY EXHAUST FAN EF-13A	POWER GROUND CONTROL	
PP10-1	3/4"	3-1/2	12	POWER PANEL PP10	FCV40	POWER GROUND	
I-10-1A	3/4"	1-PR	16SH	FCV40	DAFP	INSTRUMENT	
I-10-1B	3/4"	1-PR	16SH	MFR	FE40	INSTRUMENT	
I-10-1C	3/4"	1-PR	16SH	F1140	DAFP	INSTRUMENT	
C-10-1D	3/4"	6-1/2	12	FCV40	DAFP	CONTROL	
PP10-2	3/4"	3-1/2	12	POWER PANEL PP10	FCV41	POWER GROUND	
I-10-2A	3/4"	1-PR	16SH	FCV41	DAFP	INSTRUMENT	
I-10-2B	3/4"	1-PR	16SH	MFR	FE41	INSTRUMENT	
I-10-2C	3/4"	1-PR	16SH	F1141	DAFP	INSTRUMENT	
C-10-2D	3/4"	6-1/2	12	FCV41	DAFP	CONTROL	
PP10-3	3/4"	3-1/2	12	POWER PANEL PP10	FCV42	POWER GROUND	
I-10-3A	3/4"	1-PR	16SH	FCV42	DAFP	INSTRUMENT	
I-10-3B	3/4"	1-PR	16SH	MFR	FE42	INSTRUMENT	
I-10-3C	3/4"	1-PR	16SH	F1142	DAFP	INSTRUMENT	
C-10-3D	3/4"	6-1/2	12	FCV42	DAFP	CONTROL	
PP10-4	3/4"	3-1/2	12	POWER PANEL PP10	FCV43	POWER GROUND	
I-10-4A	3/4"	1-PR	16SH	FCV43	DAFP	INSTRUMENT	
I-10-4B	3/4"	1-PR	16SH	MFR	FE43	INSTRUMENT	
I-10-4C	3/4"	1-PR	16SH	F1143	DAFP	INSTRUMENT	
C-10-4D	3/4"	6-1/2	12	FCV43	DAFP	CONTROL	
PP10-5	3/4"	3-1/2	12	POWER PANEL PP10	FCV44	POWER GROUND	
I-10-5A	3/4"	1-PR	16SH	FCV44	DAFP	INSTRUMENT	
I-10-5B	3/4"	1-PR	16SH	MFR	FE44	INSTRUMENT	
I-10-5C	3/4"	1-PR	16SH	F1144	DAFP	INSTRUMENT	
C-10-5D	3/4"	6-1/2	12	FCV44	DAFP	CONTROL	
PP10-6	3/4"	3-1/2	12	POWER PANEL PP10	FCV45	POWER GROUND	
I-10-6A	3/4"	1-PR	16SH	FCV45	DAFP	INSTRUMENT	
I-10-6B	3/4"	1-PR	16SH	MFR	FE45	INSTRUMENT	
I-10-6C	3/4"	1-PR	16SH	F1145	DAFP	INSTRUMENT	
C-10-6D	3/4"	6-1/2	12	FCV45	DAFP	CONTROL	
PP10-7	3/4"	3-1/2	12	POWER PANEL PP10	FCV46	POWER GROUND	
I-10-7A	3/4"	1-PR	16SH	FCV46	DAFP	INSTRUMENT	
I-10-7B	3/4"	1-PR	16SH	MFR	FE46	INSTRUMENT	
I-10-7C	3/4"	1-PR	16SH	F1146	DAFP	INSTRUMENT	
C-10-7D	3/4"	6-1/2	12	FCV46	DAFP	CONTROL	
PP10-8	3/4"	3-1/2	12	POWER PANEL PP10	FCV47	POWER GROUND	
I-10-8A	3/4"	1-PR	16SH	FCV47	DAFP	INSTRUMENT	
I-10-8B	3/4"	1-PR	16SH	MFR	FE47	INSTRUMENT	
I-10-8C	3/4"	1-PR	16SH	F1147	DAFP	INSTRUMENT	
C-10-8D	3/4"	6-1/2	12	FCV47	DAFP	CONTROL	
PP10-9	3/4"	3-1/2	12	POWER PANEL PP10	FCV48	POWER GROUND	
I-10-9A	3/4"	1-PR	16SH	FCV48	DAFP	INSTRUMENT	
I-10-9B	3/4"	1-PR	16SH	MFR	FE48	INSTRUMENT	
I-10-9C	3/4"	1-PR	16SH	F1148	DAFP	INSTRUMENT	
C-10-9D	3/4"	6-1/2	12	FCV48	DAFP	CONTROL	
PP10-10	3/4"	3-1/2	12	POWER PANEL PP10	FCV49	POWER GROUND	
I-10-10A	3/4"	1-PR	16SH	FCV49	DAFP	INSTRUMENT	
I-10-10B	3/4"	1-PR	16SH	MFR	FE49	INSTRUMENT	
I-10-10C	3/4"	1-PR	16SH	F1149	DAFP	INSTRUMENT	
C-10-10D	3/4"	6-1/2	12	FCV49	DAFP	CONTROL	
PP10-11	3/4"	3-1/2	12	POWER PANEL PP10	FCV50	POWER GROUND	
I-10-11A	3/4"	1-PR	16SH	FCV50	DAFP	INSTRUMENT	
I-10-11B	3/4"	1-PR	16SH	MFR	FE50	INSTRUMENT	
I-10-11C	3/4"	1-PR	16SH	F1150	DAFP	INSTRUMENT	
C-10-11D	3/4"	6-1/2	12	FCV50	DAFP	CONTROL	
PP10-12	3/4"	3-1/2	12	POWER PANEL PP10	FCV51	POWER GROUND	
I-10-12A	3/4"	1-PR	16SH	FCV51	DAFP	INSTRUMENT	
I-10-12B	3/4"	1-PR	16SH	MFR	FE51	INSTRUMENT	
I-10-12C	3/4"	1-PR	16SH	F1151	DAFP	INSTRUMENT	
C-10-12D	3/4"	6-1/2	12	FCV51	DAFP	CONTROL	

CONDUIT & WIRE SCHEDULE							
CONDUIT NO.	CONDUIT SIZE	CABLE QTY.	CABLE SIZE	FROM	TO	REMARKS	
PP10A-1	3/4"	3-1/2	12	POWER PANEL PP10A	FV30A	POWER GROUND	
I-10A-1A	3/4"	2-PR	16SH	FV30A & ZIT30	BLOWER NO.5 CTL. PNL.	INSTRUMENT	
I-10A-1B	3/4"	6-1/2	12	FV30A	BLOWER NO.5 CTL. PNL.	CONTROL	
I-10A-1C	3/4"	1-PR	16SH	T130A	BLOWER NO.5 CTL. PNL.	INSTRUMENT	
I-10A-1D					SPACE		
PP10A-2	3/4"	3-1/2	12	POWER PANEL PP10A	FV30B	POWER GROUND	
C-10A-2A	3/4"	3-1/2	12	FV30B	BLOWER NO.5 CTL. PNL.	CONTROL	
C-10A-2B					SPACE		
I-10A-2C							

CONDUIT & WIRE SCHEDULE table with columns: CONDUIT NO., SIZE, QTY., CABLE SIZE, FROM, TO, REMARKS. Includes entries like PC-7A-1, I-7A-2, C-7A-3, etc.

CONDUIT & WIRE SCHEDULE table with columns: CONDUIT NO., SIZE, QTY., CABLE SIZE, FROM, TO, REMARKS. Includes entries like PC-2-1, PC-2-2, PC-2-3, etc.

CONDUIT & WIRE SCHEDULE table with columns: CONDUIT NO., SIZE, QTY., CABLE SIZE, FROM, TO, REMARKS. Includes entries like H-1, H-1A, H-1B, etc.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works
5/19/96
Chief, Bureau of Engineering
5/19/96
Chief, Bureau of Environmental Services
5/19/96
Chief, Utility Design Division
5-7-96

M&E Metcalf & Eddy
Professional Engineer
5/19/96

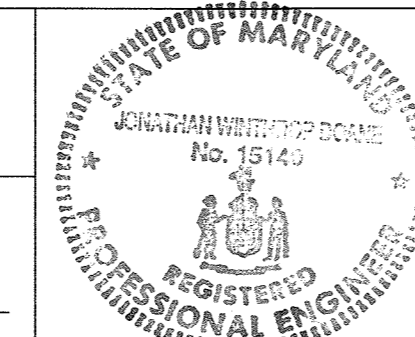
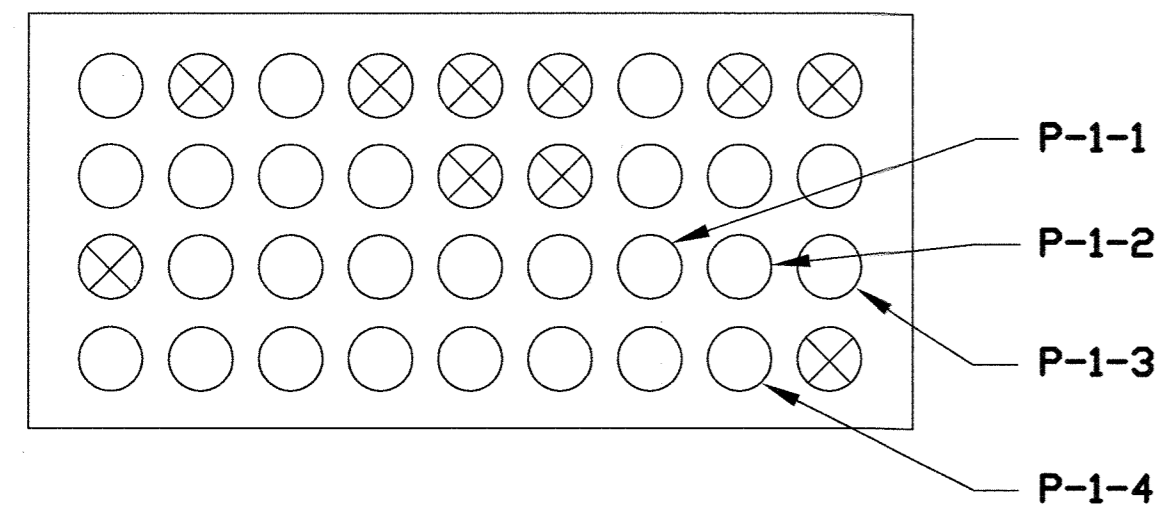


Table with columns: DES, DRN, CHK, DATE, BY, NO. Includes M.J.C. and REVISION information.

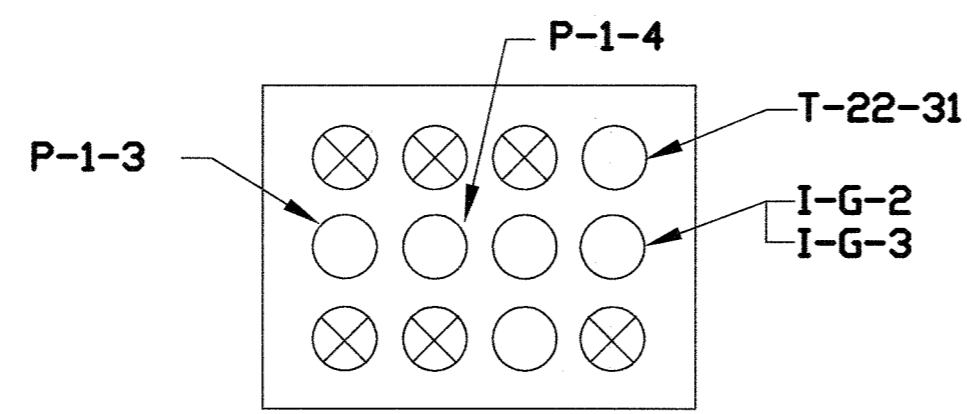
ELECTRICAL
CONDUIT & WIRE SCHEDULE IV

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

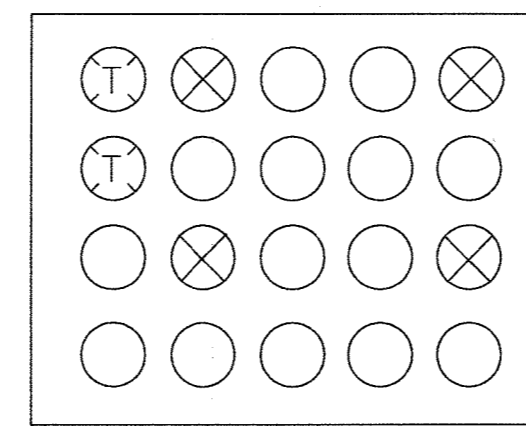
SCALE AS SHOWN
SHEET 224 OF 226
E-39R



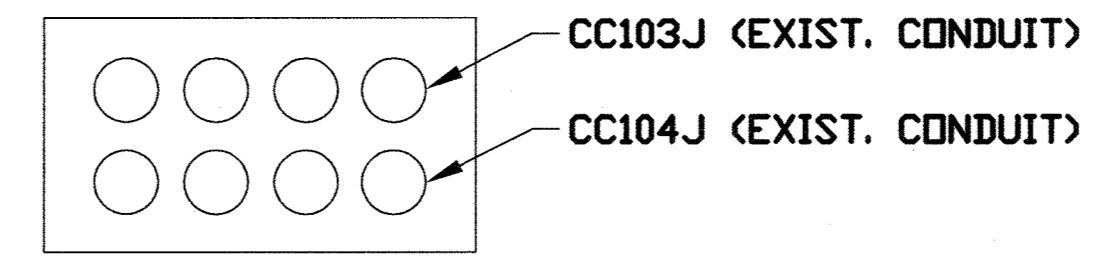
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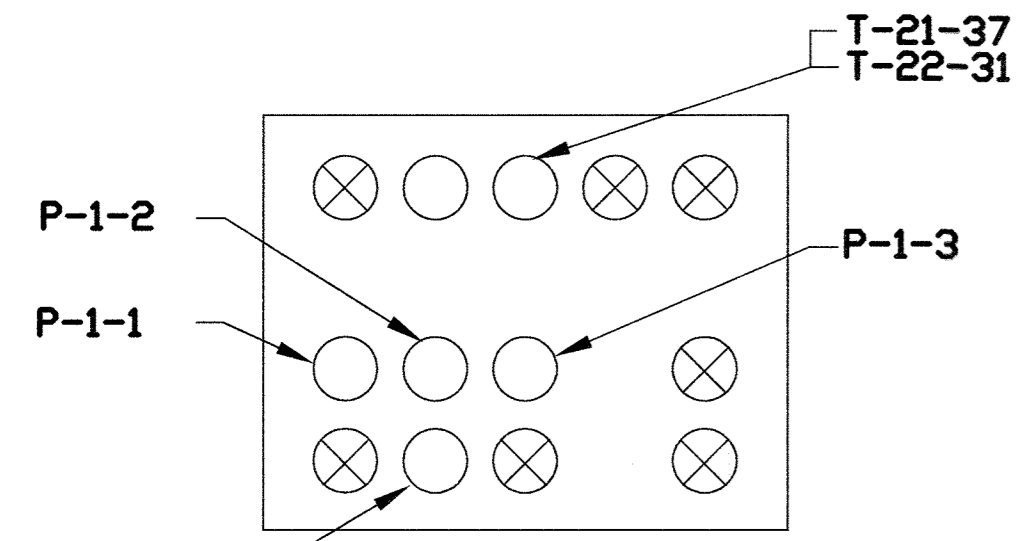
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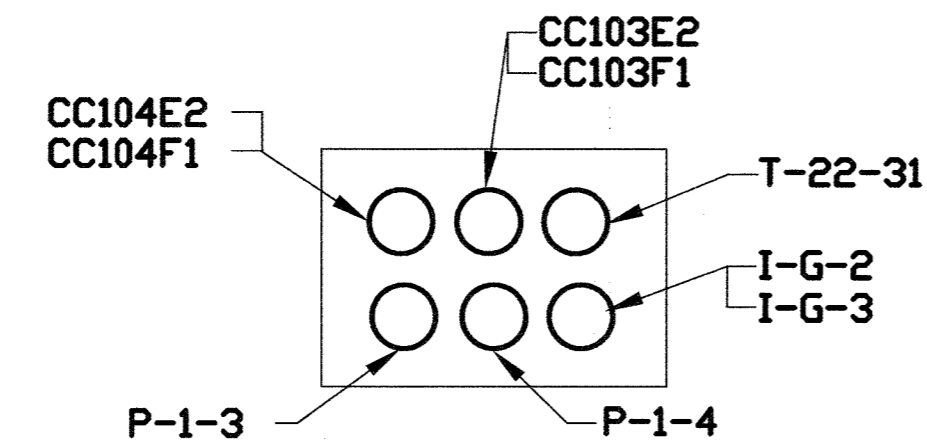
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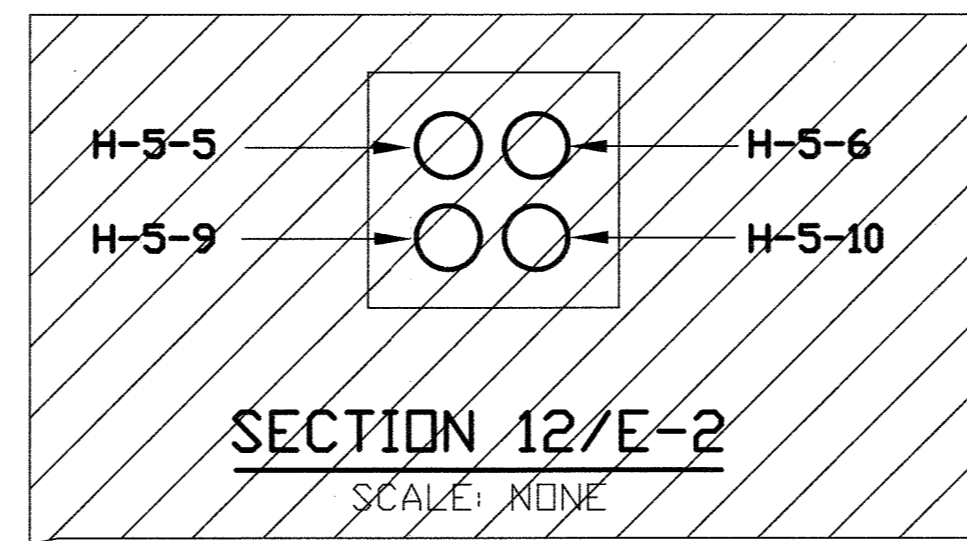
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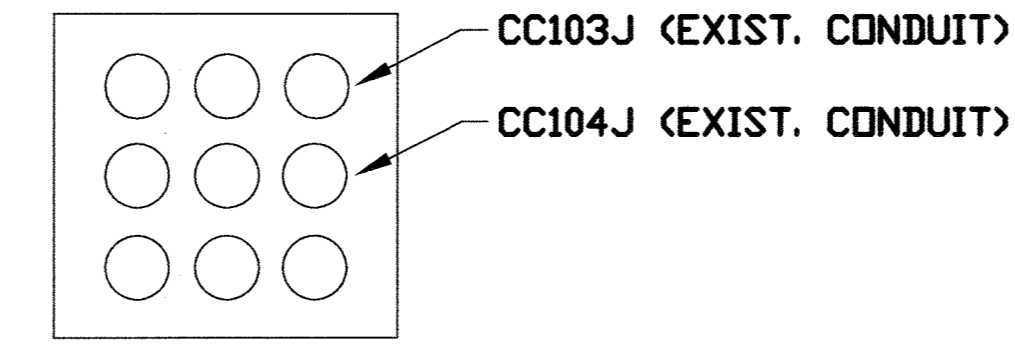
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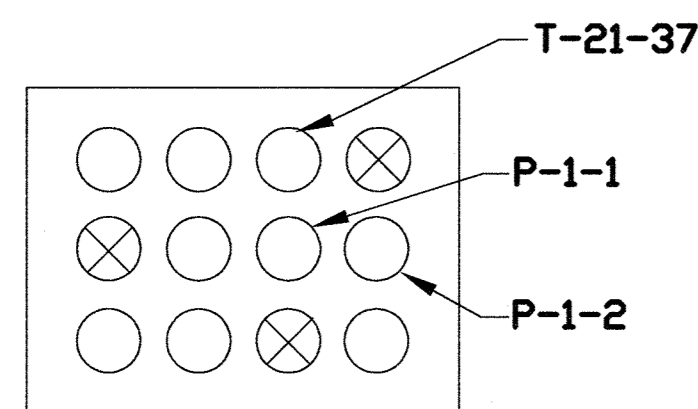
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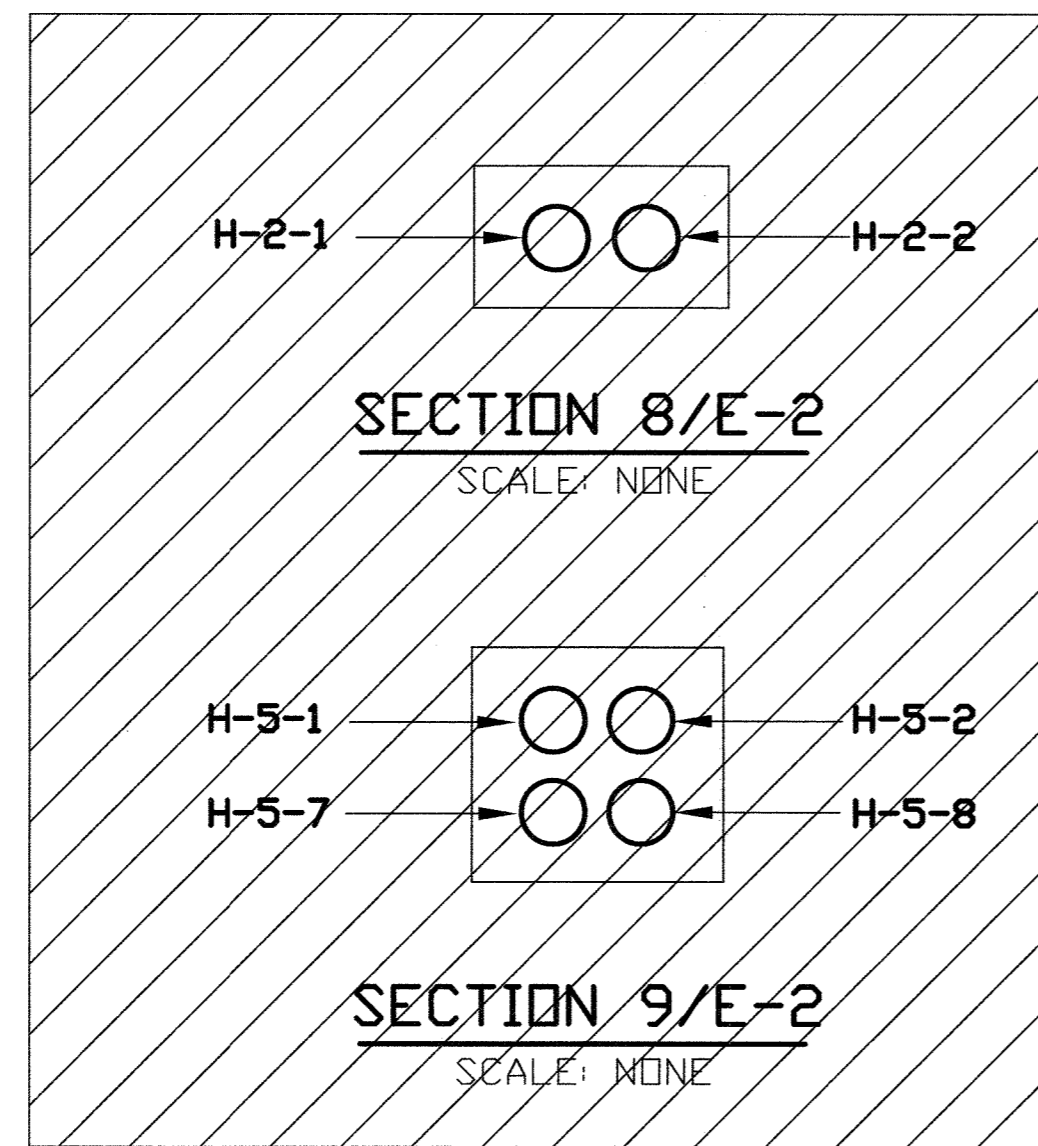
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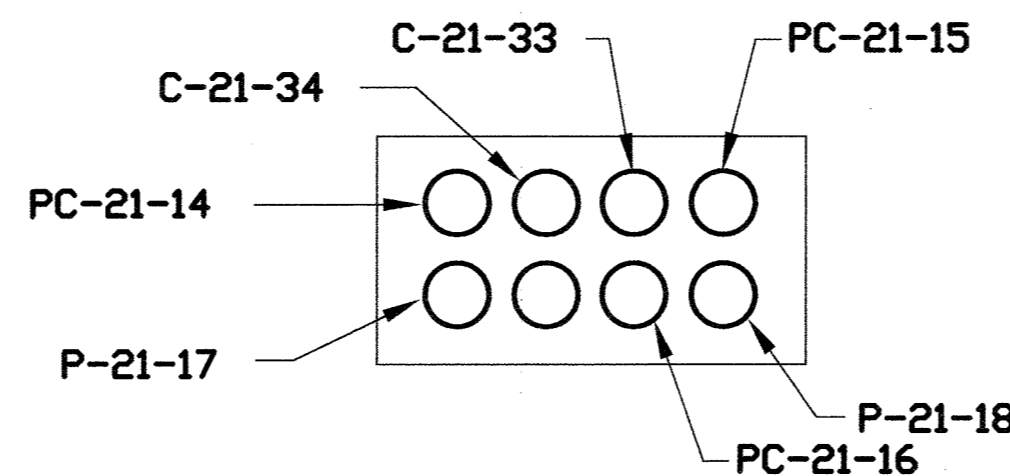
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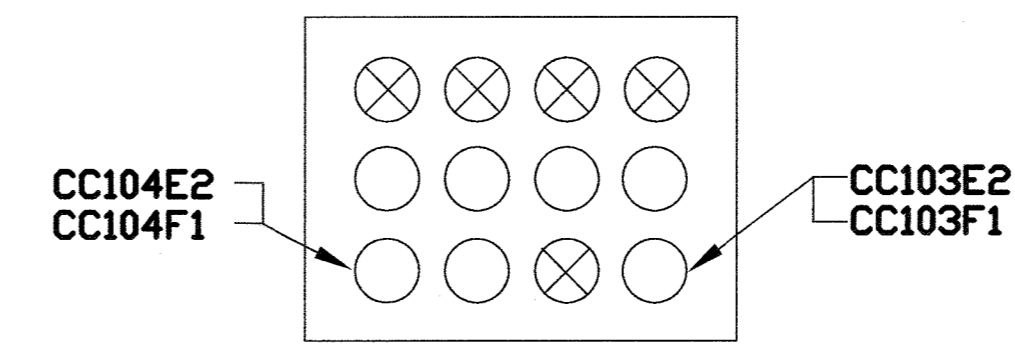
SECTION 3/E-2
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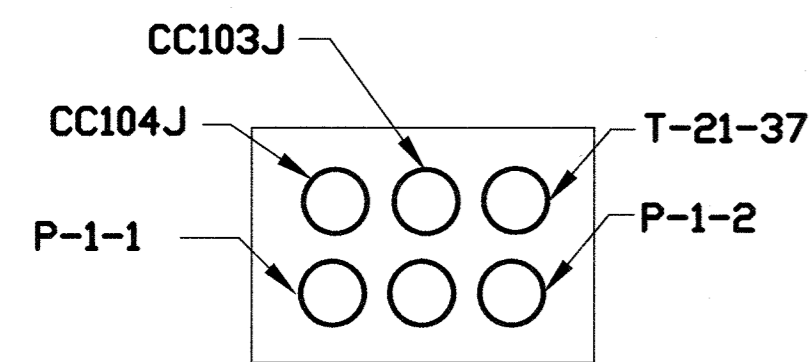
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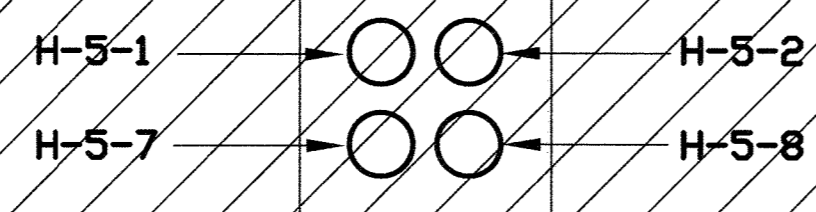
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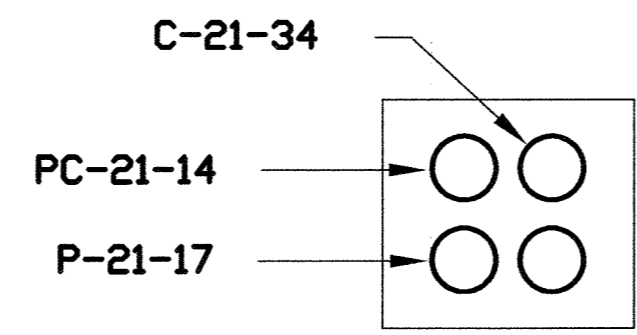
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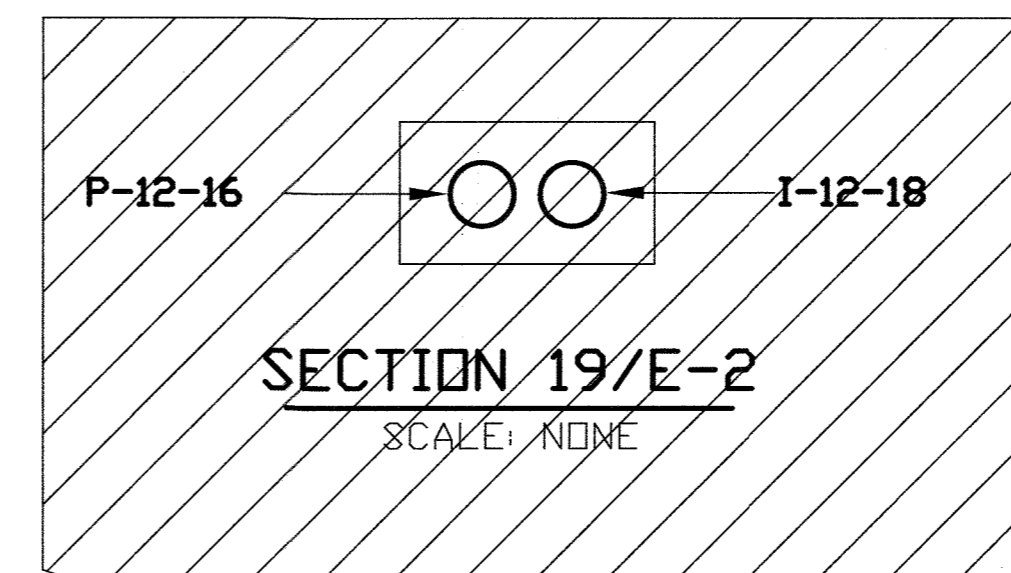
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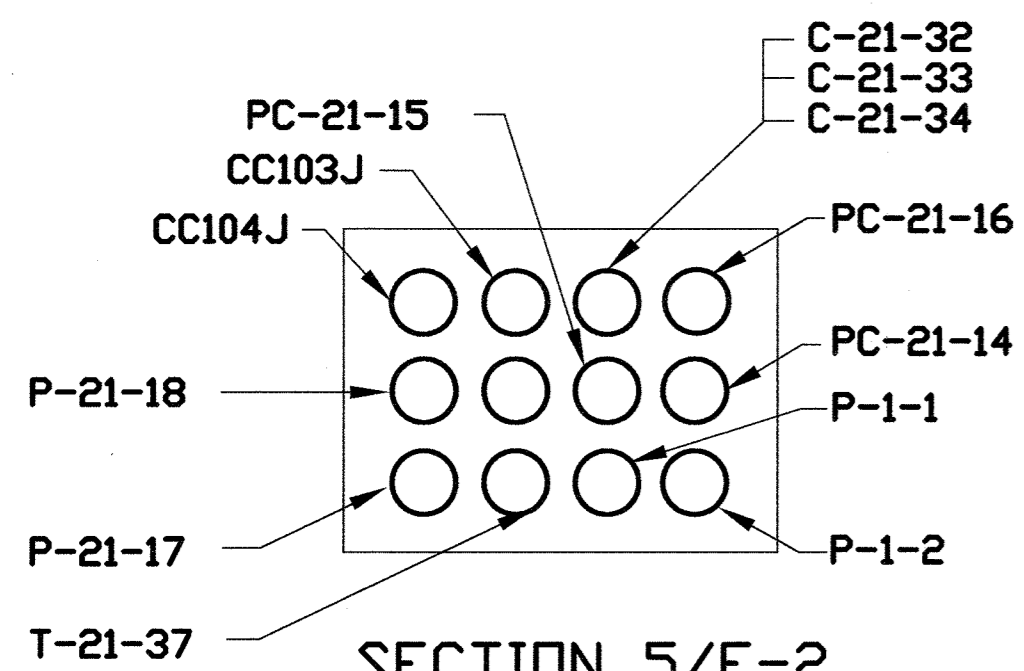
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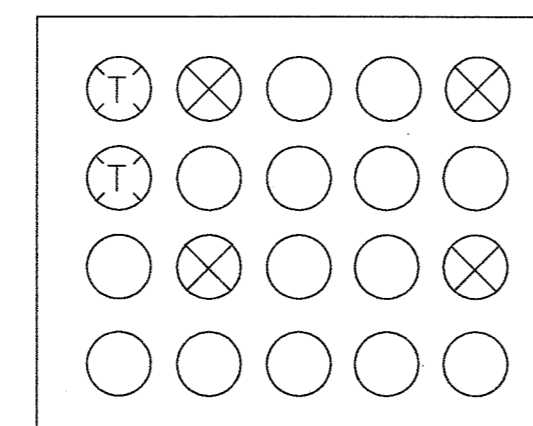
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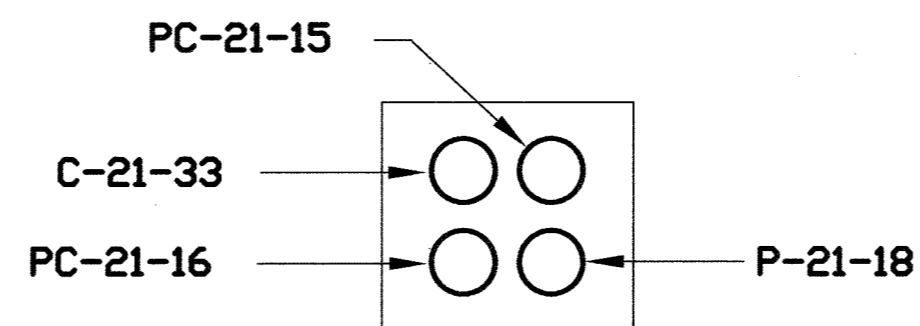
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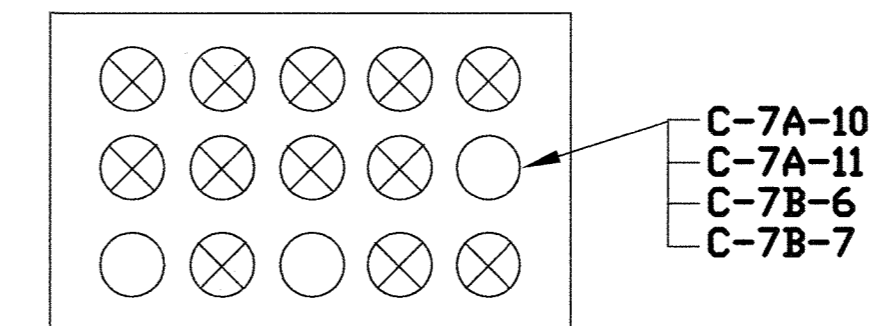
SECTION 5/E-2
SCALE: NONE



SECTION 10/E-2
SCALE: NONE



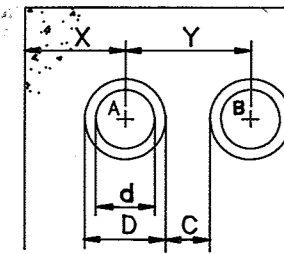
SECTION 15/E-2
SCALE: NONE



SECTION 20/E-2
SCALE: NONE

NOTE:
USED EXISTING DUCT BANK BETWEEN 54" METERING VAULT AND FILTER BUILDING MCC-11 PULL BOX.

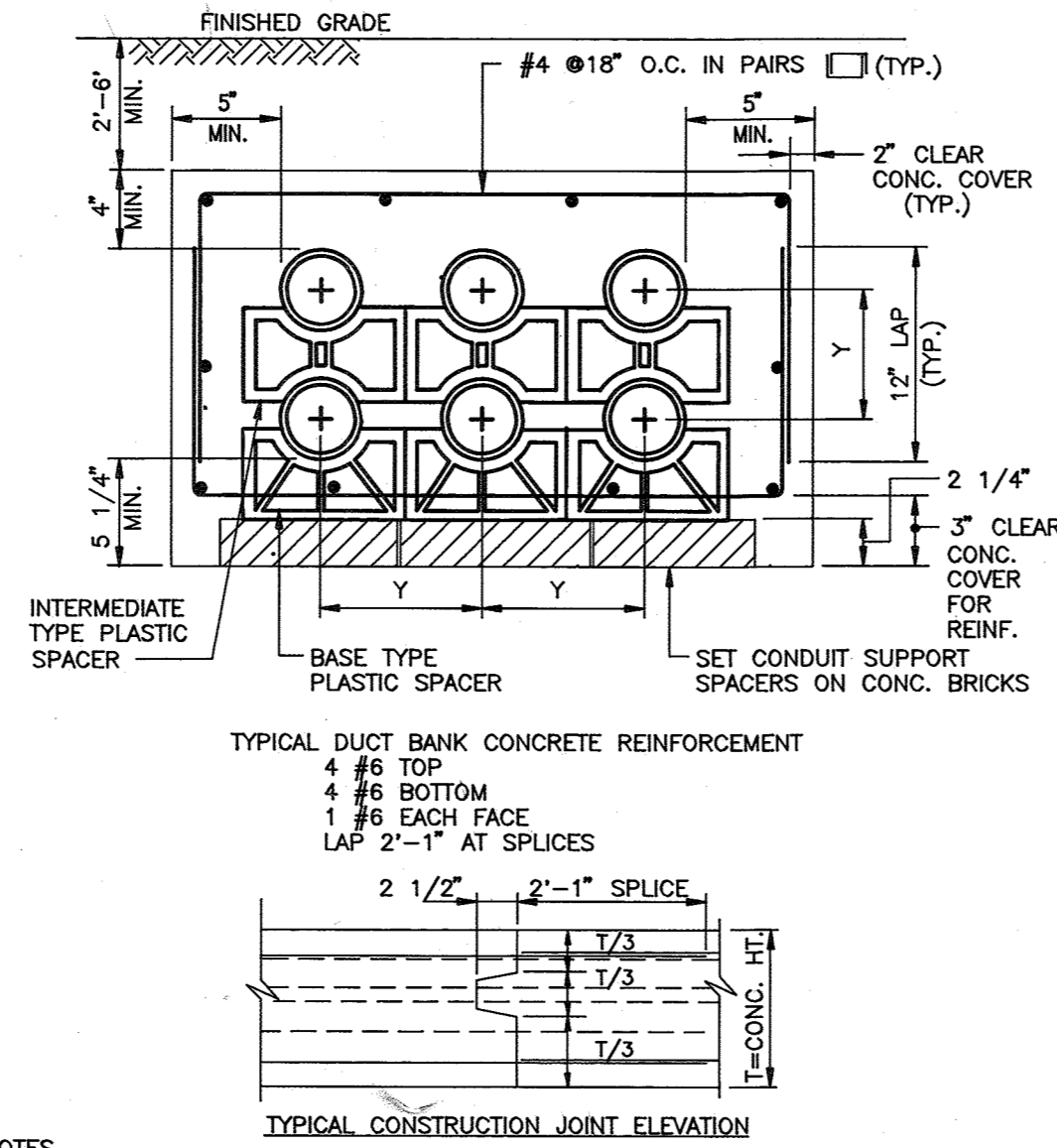
NOTES:
1. CONDUITS IN DUCT BANKS ARE 4" PVC UNLESS NOTED OTHERWISE.
2. DUCT BANK PROFILES ARE NOT PROVIDED. REFER TO CIVIL DRAWINGS FOR COORDINATION WITH EXISTING AND NEW UNDERGROUND STRUCTURES.



NOTE:
CLEARANCE "C" IS 1"
IF BOTH CONDUITS A & B
ARE 1 1/2" SIZE OR SMALLER,
BUT "C" IS 2" IF EITHER
A OR B IS 2" OR LARGER

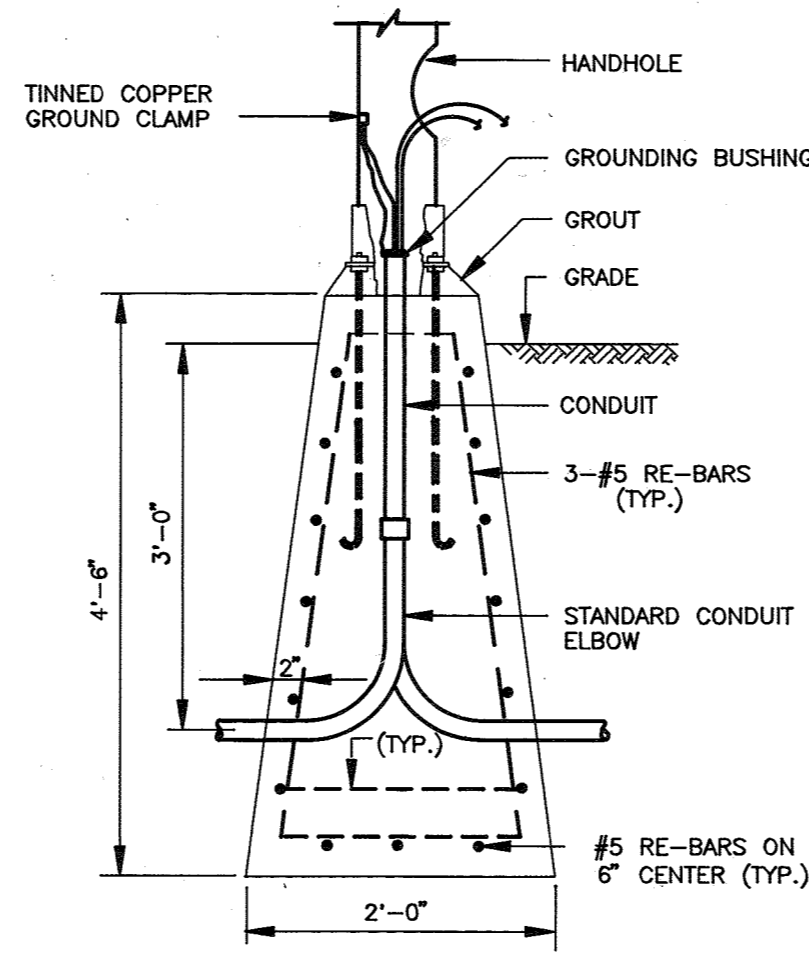
A	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
d	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.546	4.026	5.047	6.065
D	0.840	1.050	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.563	6.625
X	3.420	3.525	3.658	3.830	3.950	4.188	4.438	4.750	5.000	5.250	5.782	6.313
B	VALUES OF Y											
1/2	1.840	1.945	2.078	2.250	2.370	3.608	3.858	4.170	4.420	4.670	5.202	5.733
3/4		2.050	2.183	2.355	2.475	3.713	3.963	4.275	4.325	4.775	5.307	5.838
1			2.315	2.488	2.608	3.846	4.096	4.408	4.658	4.908	5.440	5.971
1 1/4				2.660	2.780	4.018	4.268	4.580	4.830	5.080	5.612	6.143
1 1/2					2.900	4.138	4.388	4.700	4.950	5.200	5.732	6.263
2						4.376	4.626	4.938	5.188	5.439	5.970	6.501
2 1/2							4.875	5.188	5.438	5.688	6.220	6.751
3								5.500	5.750	6.000	6.532	7.063
3 1/2									6.000	6.250	6.782	7.313
4										6.500	7.032	7.563
5											7.563	8.095
6												8.625

MINIMUM SPACING OF CONDUITS IN CONCRETE ENVELOPES

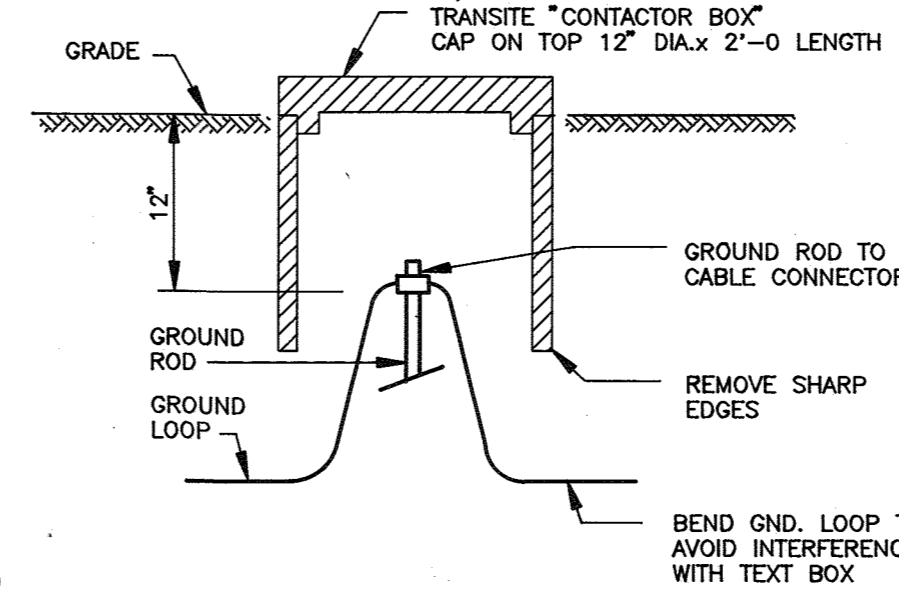


NOTES:
1. FOR EACH ADDED ROW (HORIZ.) OF DUCTS ADD 1 #6 TOP & 1 #6 BOTTOM.
2. FOR EACH ADDED TIER (VERT.) OF DUCTS ADD 1 #6 EACH FACE MID-DISTANCE BETWEEN DUCTS.
3. CONCRETE CONSTRUCTION JOINTS SHALL NOT BE SPACED MORE THAN 40 FEET O.C.

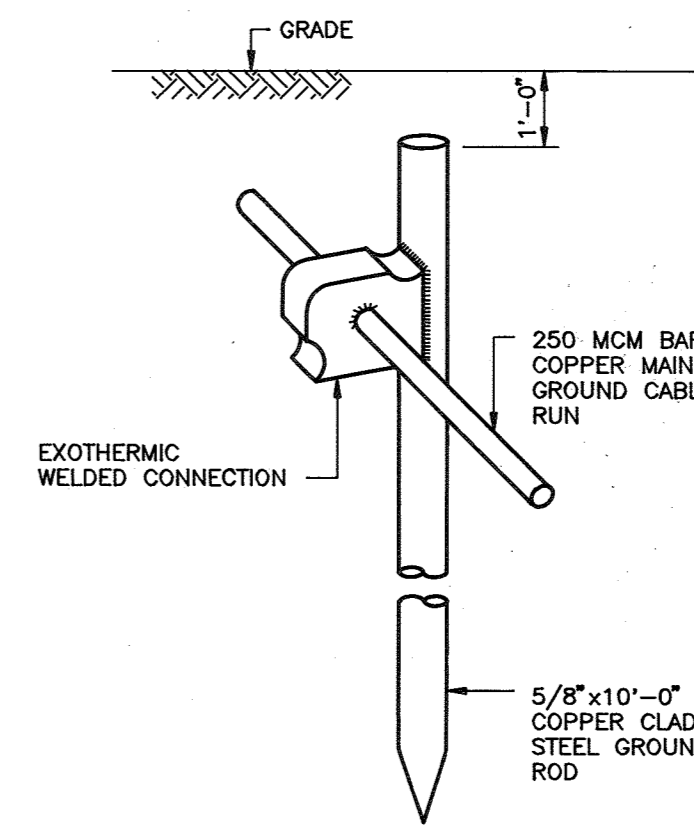
TYPICAL DUCT BANK SECTION UNDER ROADWAY AND PAVED AREA



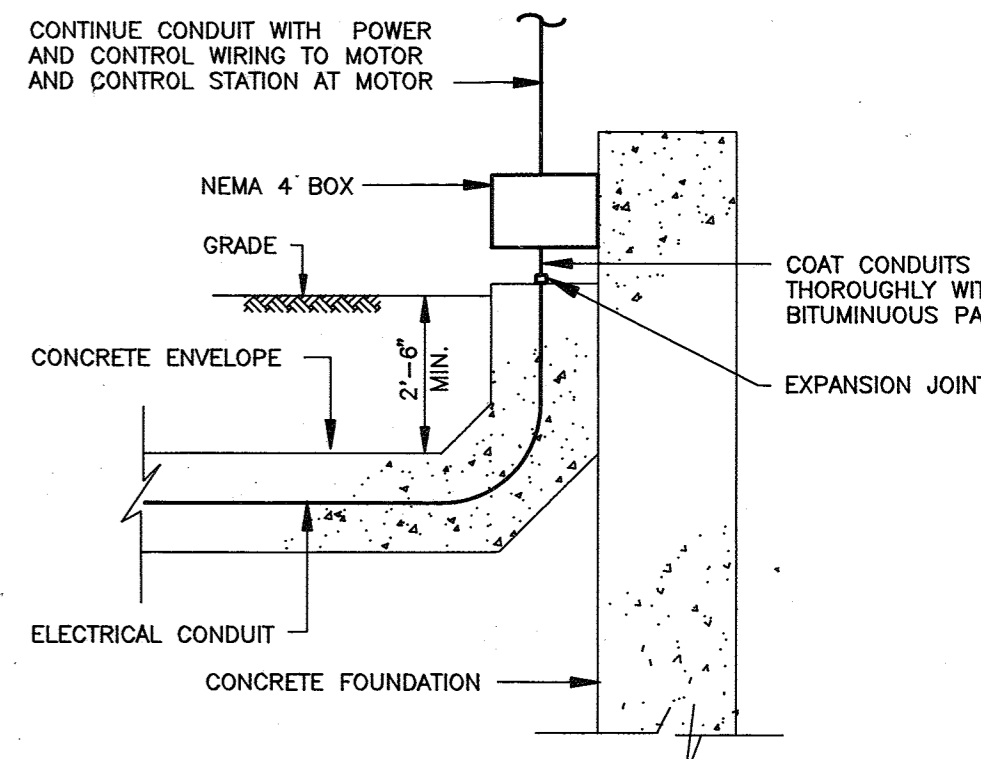
TYPICAL LIGHTING FOUNDATION



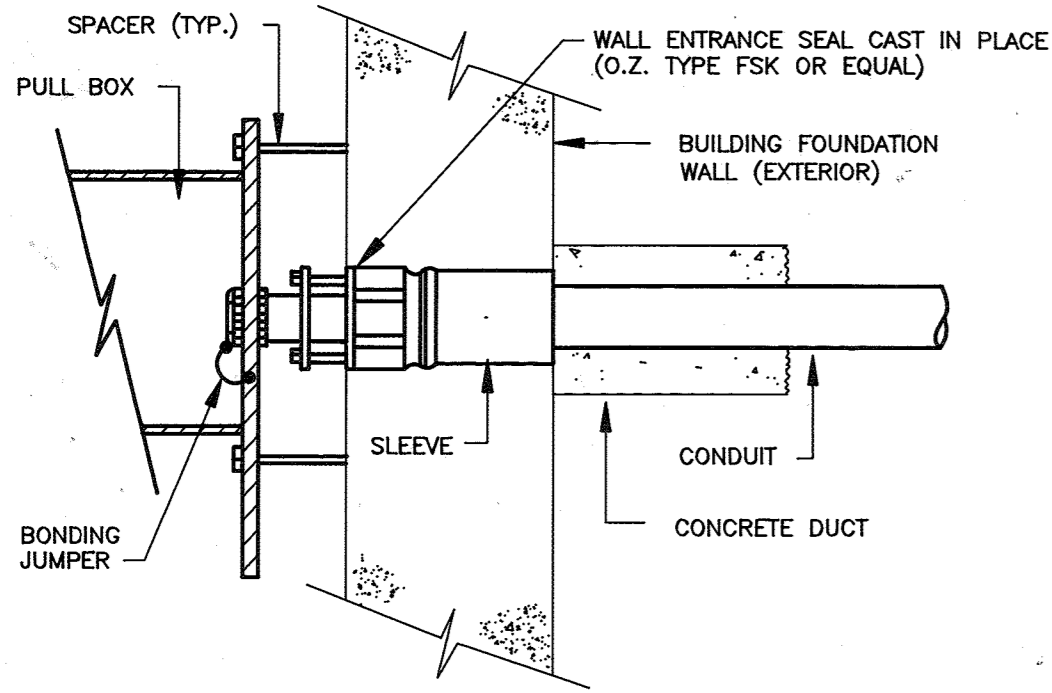
TEST POINT



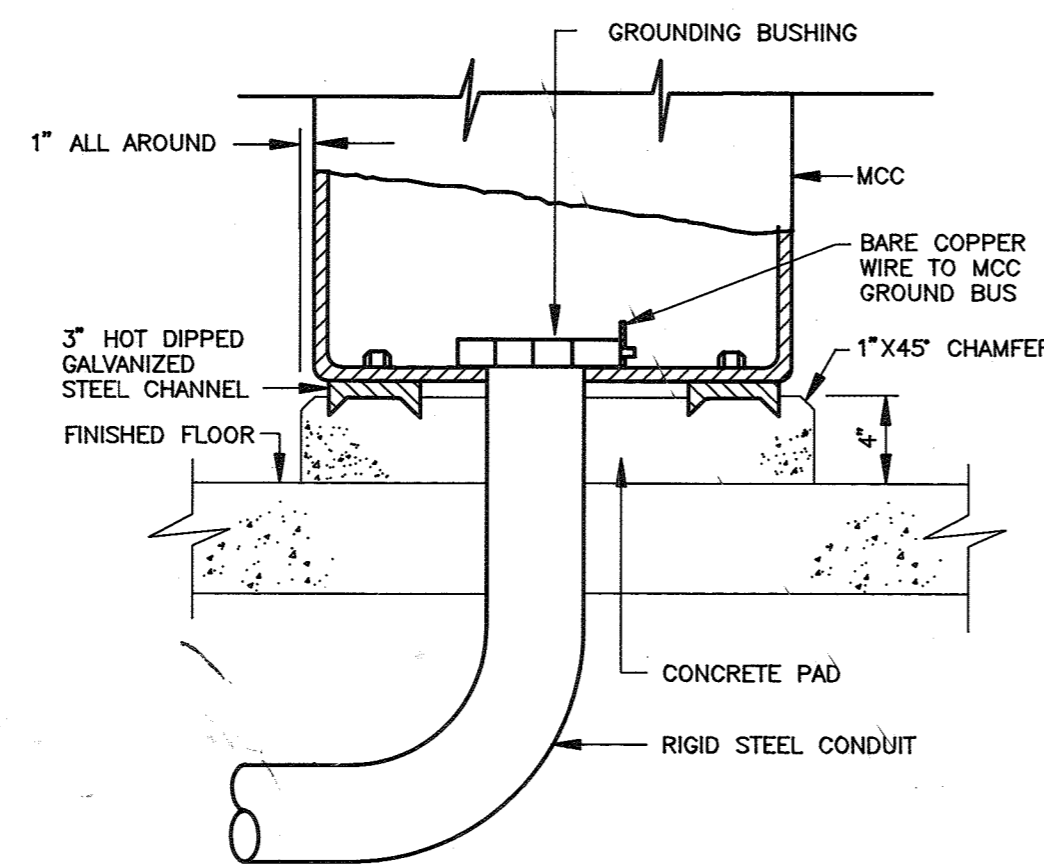
TYPICAL GROUND ROD INSTALLATION



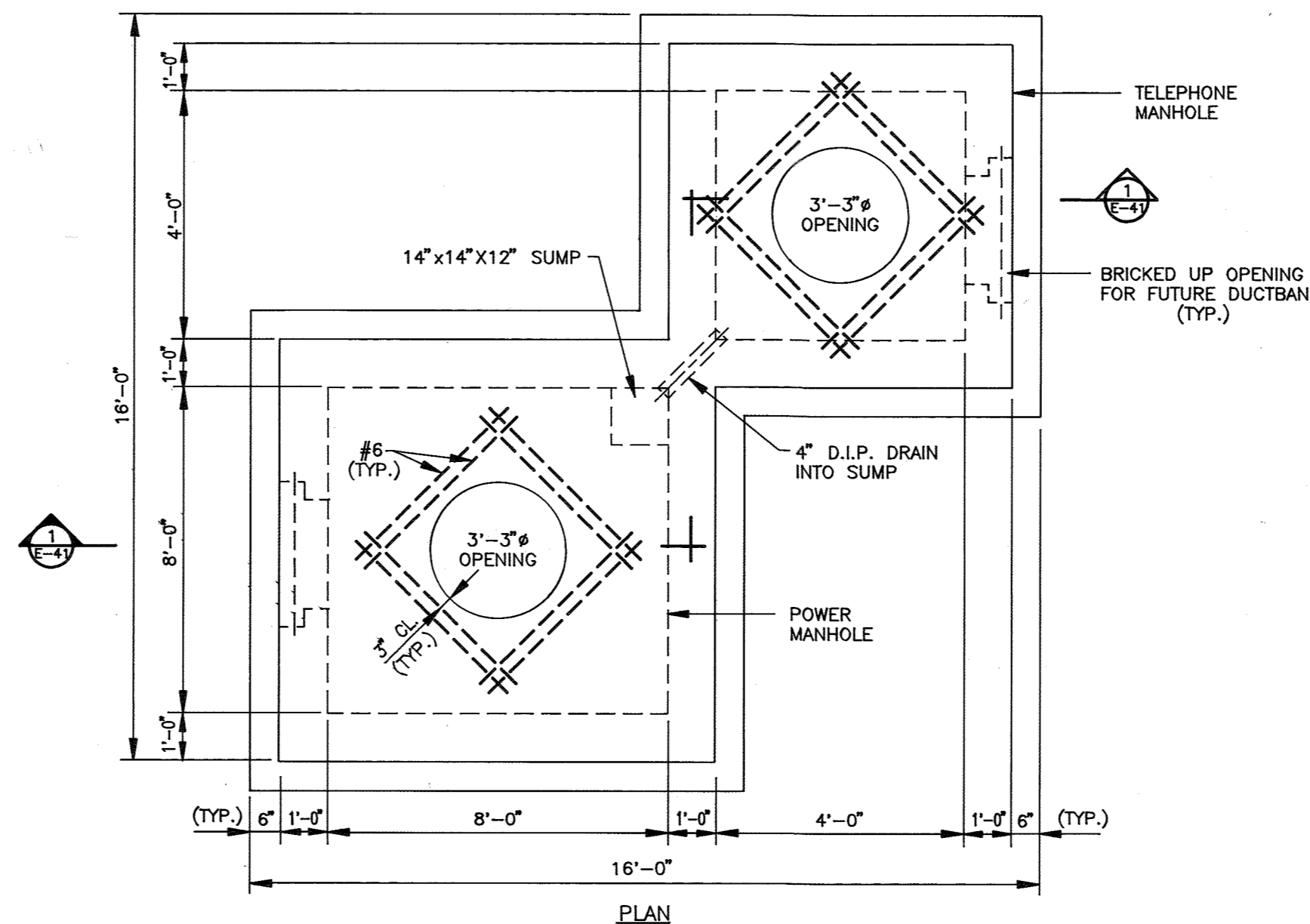
TYPICAL CONDUIT STUB-UP



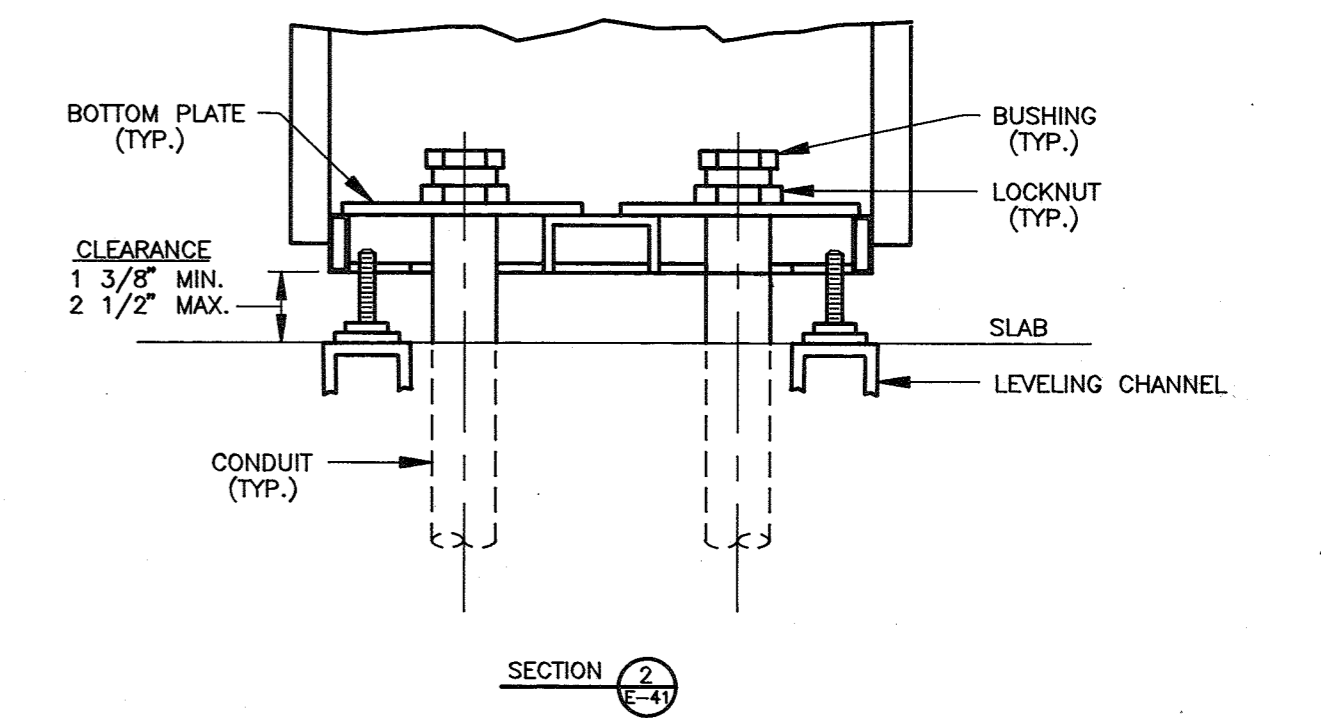
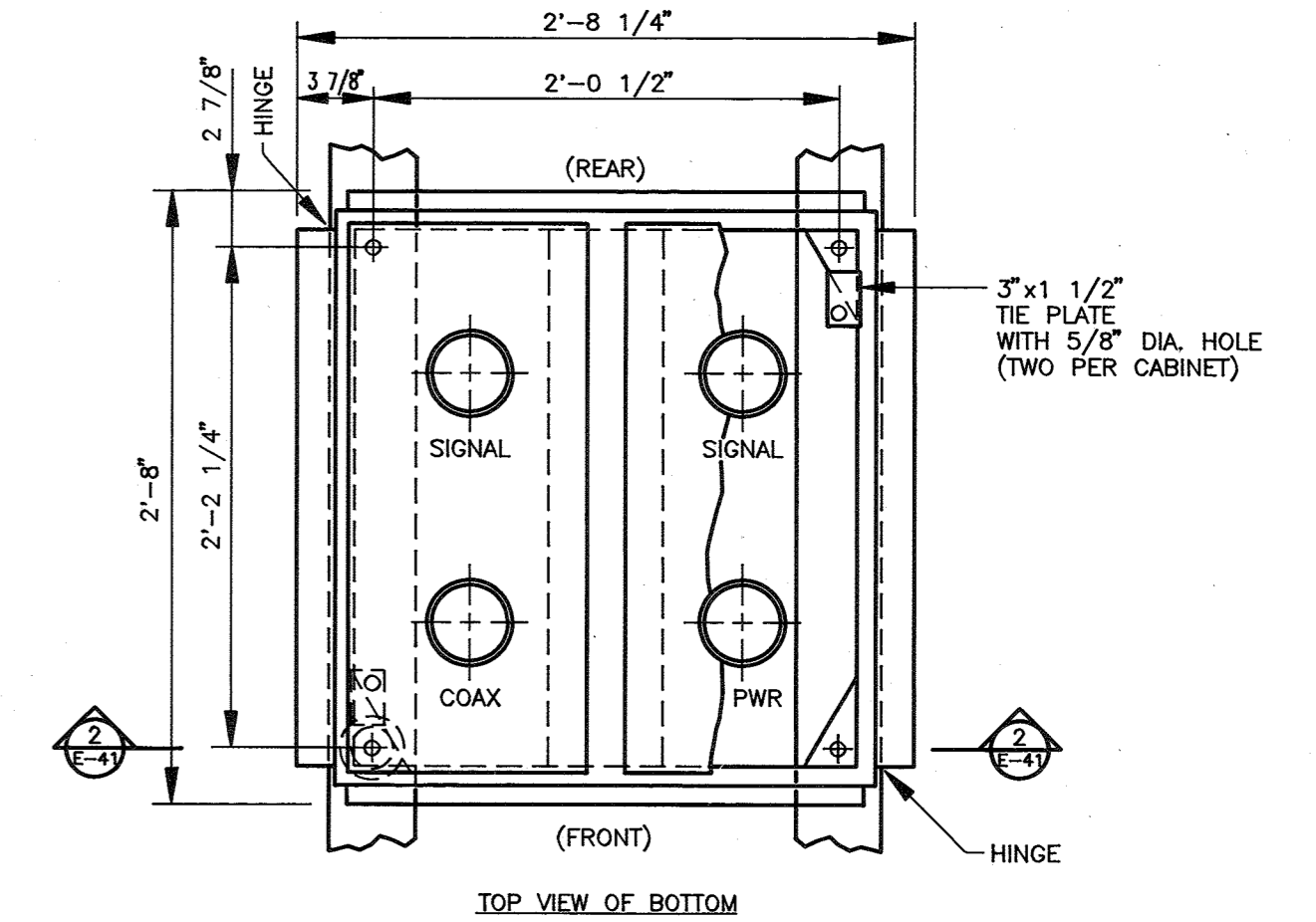
NEW BUILDING CONDUIT WALL ENTRANCE SEAL



M.C.C. CONDUIT ENTRANCE FROM BELOW

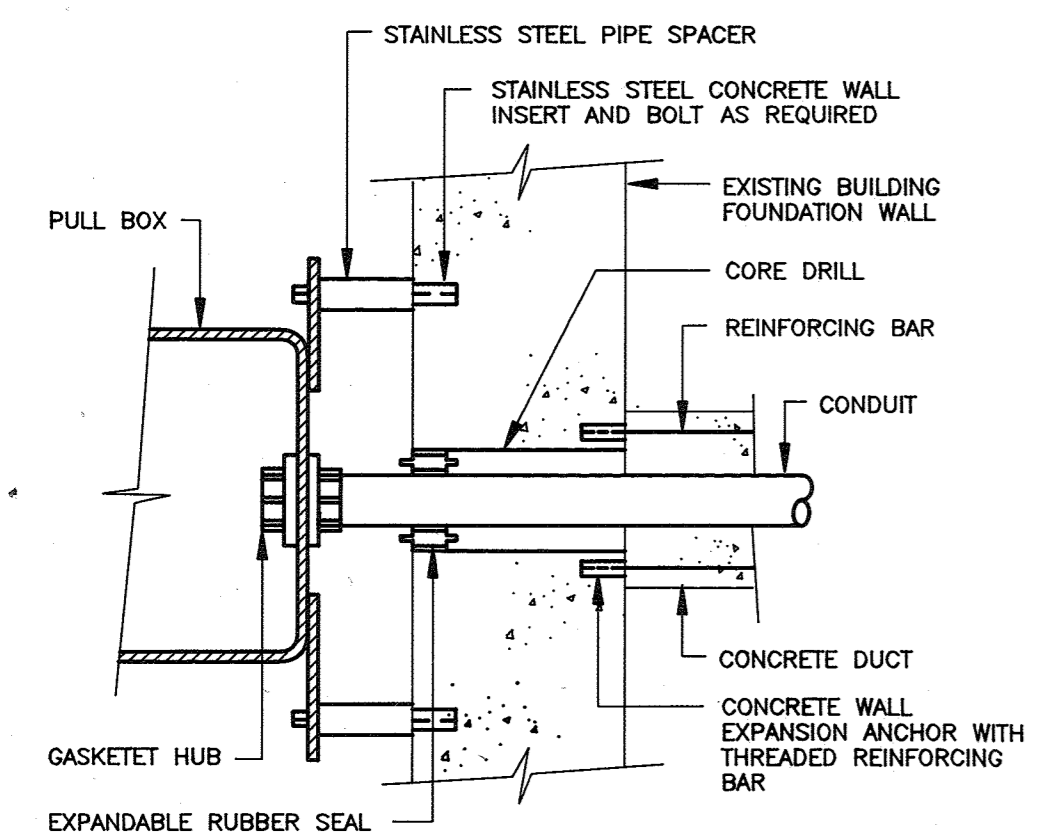


TYPICAL POWER AND INSTRUMENT/TELEPHONE MANHOLE

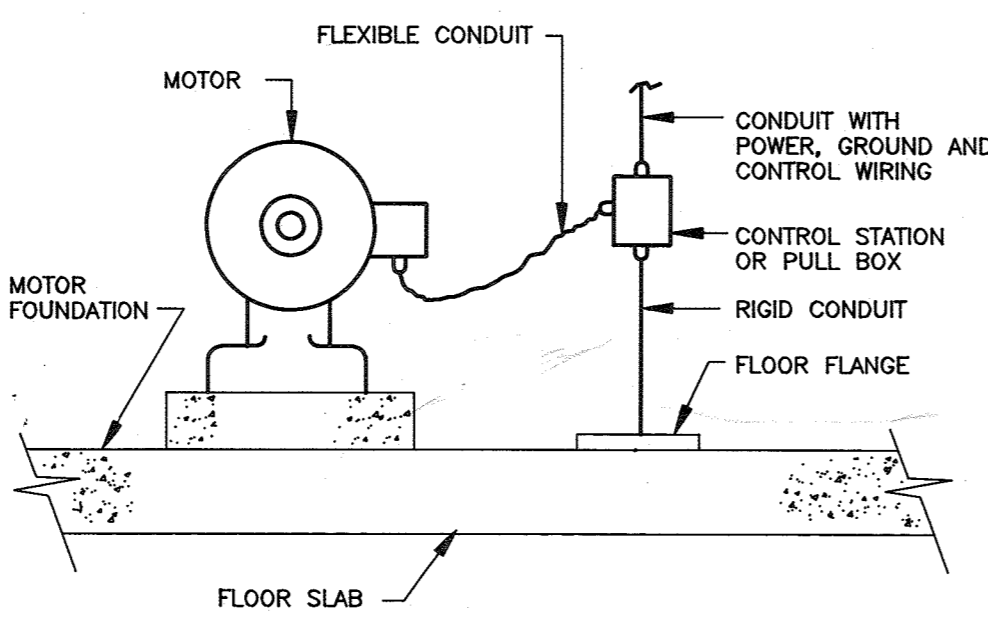


NOTE:
1. TYPICAL FOR ALL PIU'S EXCEPT PIU-1 WHICH DOES NOT REQUIRE TIE-DOWN.
2. NO WIRE ENTRY IS POSSIBLE IN THE BATTERY BACK-UP AREA. USE PLATES ONLY.

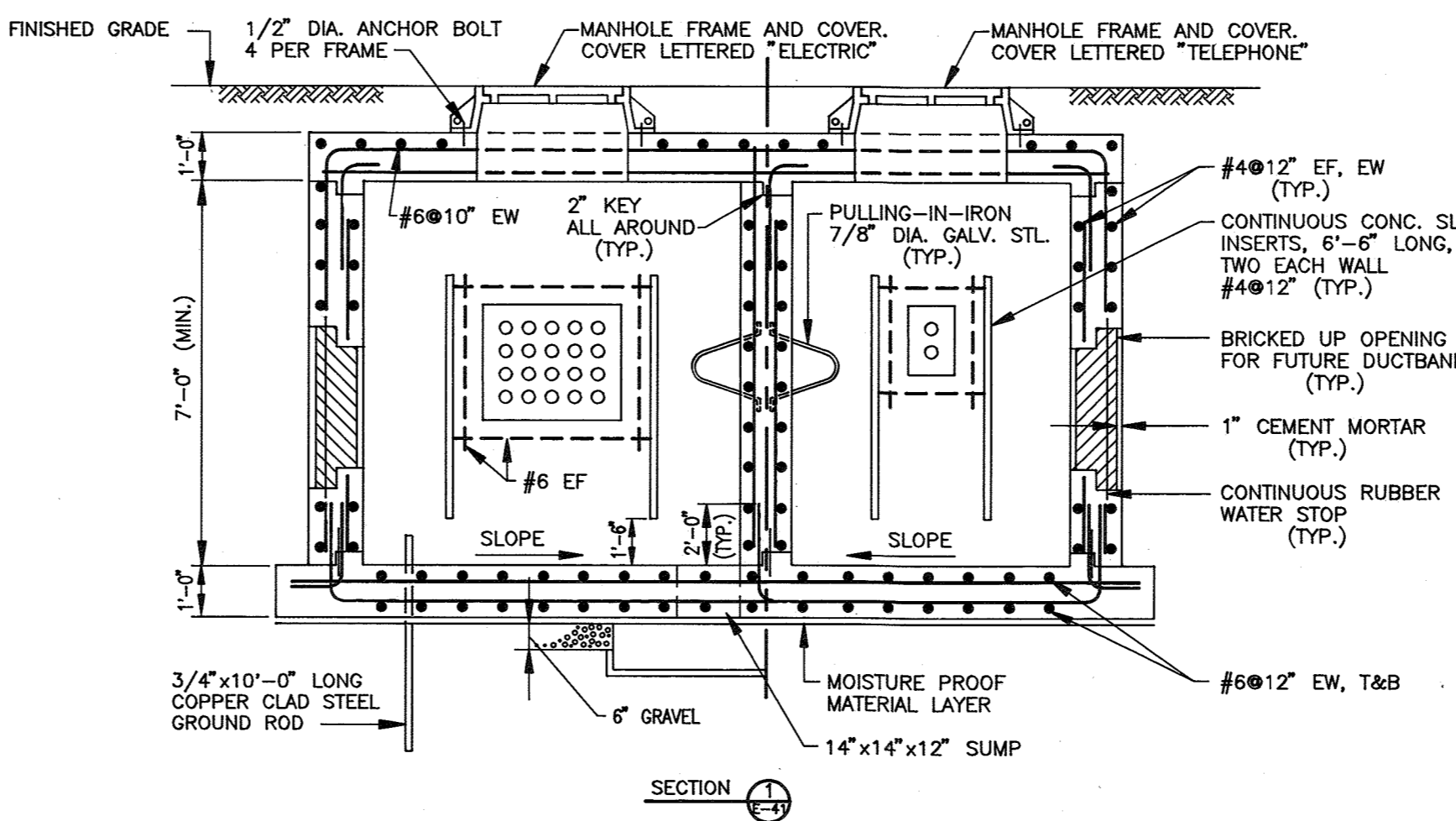
PIU TIEDOWN AND CONDUIT ENTRY DETAIL



EXISTING BUILDING CONDUIT WALL ENTRANCE SEAL



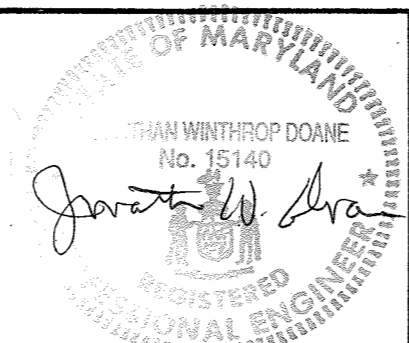
TYPICAL HORIZONTAL FEEDER DETAIL



TYPICAL POWER AND INSTRUMENT/TELEPHONE MANHOLE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

M&E Metcalf & Eddy



DESIGNED BY	E. Amaba	DATE	12/5/91
DRAWN BY	W. Tuccillo	DATE	12/5/91
CHECKED BY	E. Amaba	DATE	4/3/92
REVISION	2 NOT REVISED FOR RECORD	DATE	3/5/92
REVISION	1 REVISED FOR BIDDING	DATE	

ELECTRICAL
MISCELLANEOUS DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
LITTLE PATUXENT WASTEWATER TREATMENT PLANT EXPANSION
ADDITION NO. 5
CAPITAL PROJECT S-6153
CONTRACT NO. 20-3082
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 226 OF 226
E-41