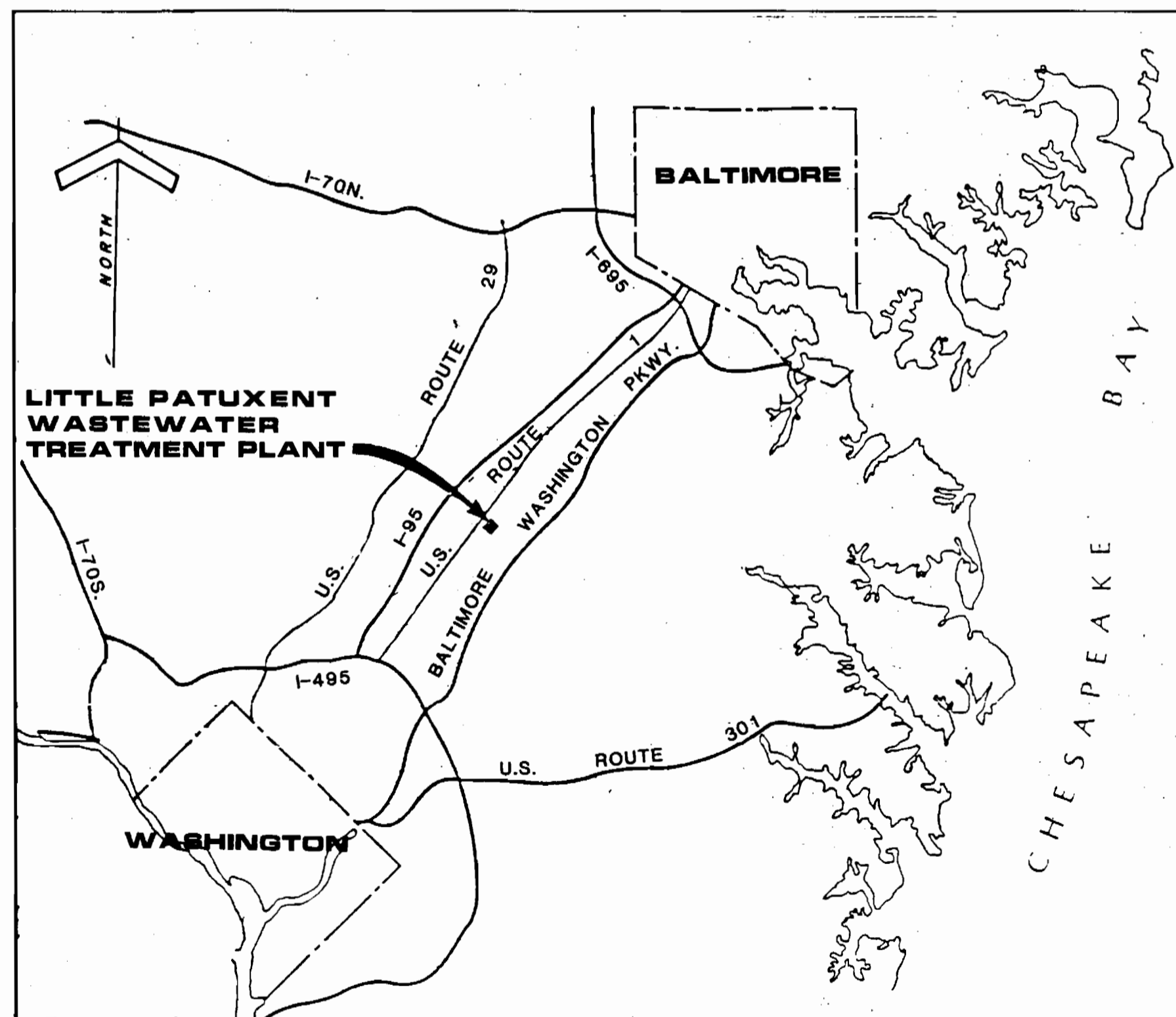


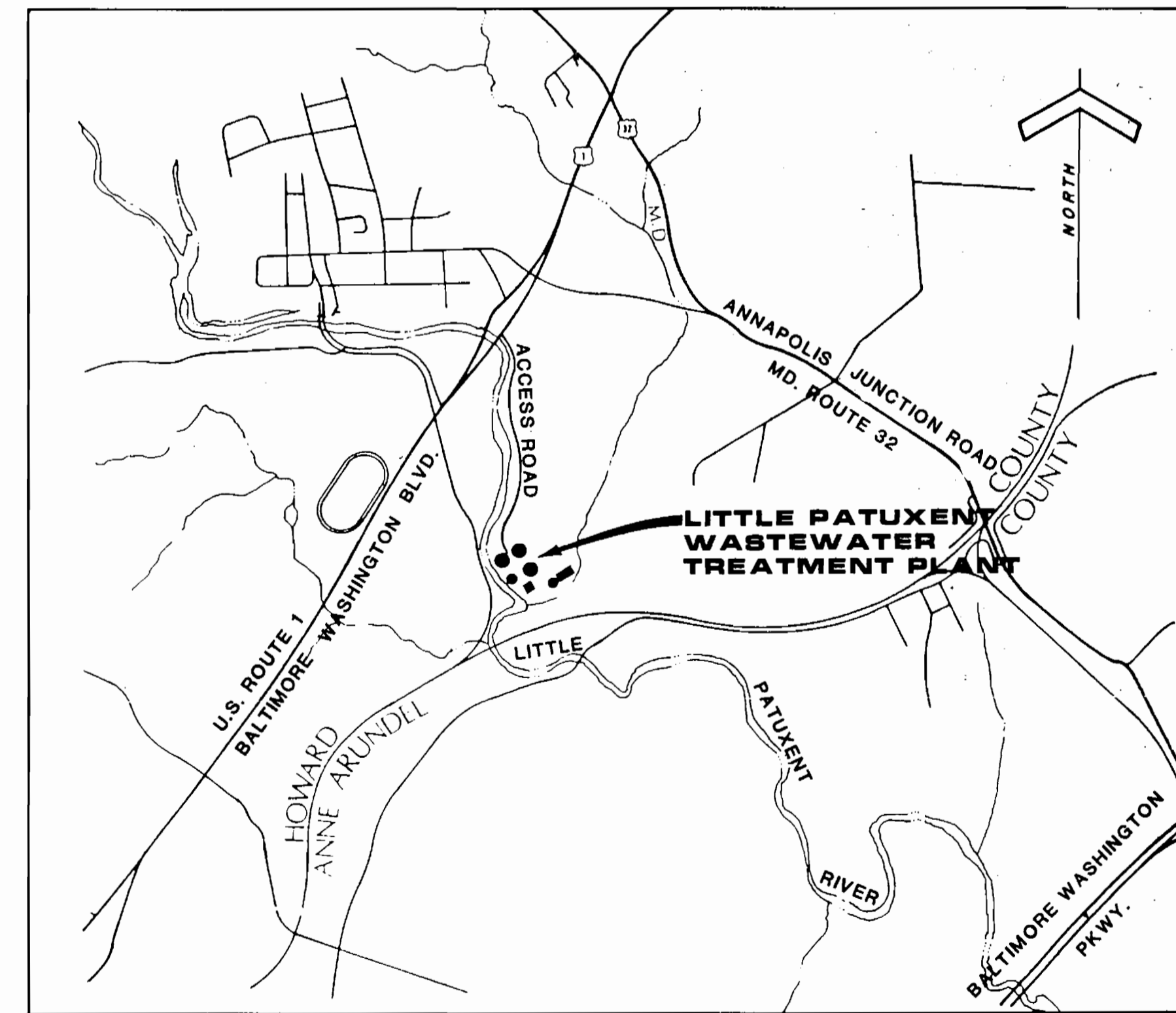
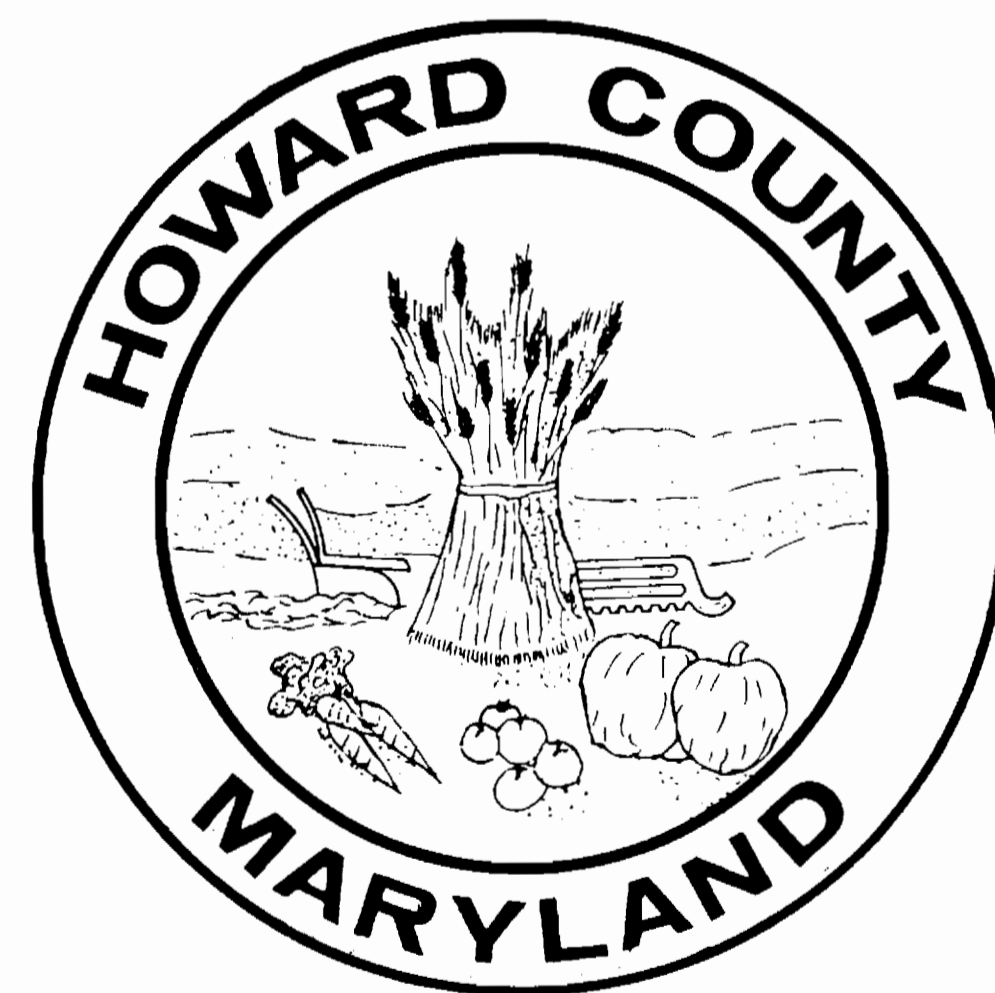
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142



LOCATION MAP

SCALE IN FEET 0 3 M. 6 MILES 12 MILES 18 MILES
 SCALE: 1" = 6 MILES



VICINITY MAP

SCALE IN FEET 0 500 1000 2000 3000
 SCALE: 1" = 1000'

LPT0587-ENR-240 08/10/88 164014

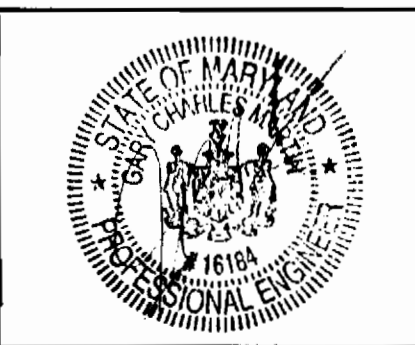
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE: *John J. O'Hara* 11/30/88
 CHIEF, BUREAU OF ENGINEERING DATE: *John J. O'Hara* 11-30-88
 CHIEF, UTILITY DESIGN DIVISION DATE: *Cy. Der Lien* 11-30-88

H CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS

HUTH ENGINEERS INC.
 P.O. BOX 3012 LANCASTER, PA 17604 (717) 269-7021

LANCASTER, PA ALLENTOWN, PA



DES:	R.L.S.				
	H.T.D.				
DRN:	CADD				
CHK:	<i>[Signature]</i>				
DATE:	8/88	BY:	NO.	REVISION	DATE

TITLE SHEET
 VICINITY & LOCATION MAP

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 1 OF 40
 G-1

GENERAL NOTES

1. THE LOCATIONS OF EXISTING PIPELINES AND STRUCTURES ARE APPROXIMATE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING LINES AND STRUCTURES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY.
2. THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES BY TEST PITS A MINIMUM OF TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN THE VICINITY OF THE UTILITIES.
3. ALL PIPELINE PROFILE ELEVATIONS ARE INVERT ELEVATIONS.
4. THE LOCATION OF ALL VALVE, FITTINGS, ETC. SHALL BE WHERE SHOWN ON THE DRAWINGS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
5. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE OR RESTRAINED WITH SPECIAL APPROVED DEVICES - SEE SPECIFICATIONS.
6. PIPELINES SHALL BE OF THE MATERIAL LISTED IN THE SPECIFICATIONS AND SHALL HAVE A MINIMUM COVER OF 2 FEET. SEWER AND WATER LINES SHALL HAVE A MINIMUM COVER OF 3 FEET UNLESS OTHERWISE SHOWN BY PROFILES OR ELEVATIONS ON THE PLANS.
7. 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.
8. THE CONTRACTOR SHALL PROVIDE A JOINT IN ALL EXTERIOR LOOSE JOINTED PIPE SYSTEMS WITHIN 2 FEET OF EXTERIOR WALLS.
9. ALL EXISTING VALVE BOXES, MANHOLE FRAMES AND COVERS AND SIMILAR APPURTENANCES SHALL BE ADJUSTED TO FINISHED GRADE.
10. SEDIMENT CONTROL MEASURES AS REQUIRED BY THE SITE DEVELOPMENT PLAN WILL BE CONSTRUCTED AS DIRECTED BY THE ENGINEER.
11. CONNECTIONS TO EXISTING PIPELINES MAY BE MADE BY TAPPING EXISTING PIPELINES UNDER PRESSURE OR BY SHUT DOWN OF SYSTEM DURING OFF PEAK HOURS IF ALLOWED BY THE ENGINEER.
12. ALL PIPELINES THAT ARE CAPPED OR PLUGGED SHALL BE FLAGGED WITH STRIPED 2x4'S SET 3 FEET INTO GROUND AND 2 FEET ABOVE GRADE, IDENTIFIED WITH ALL WEATHER MARKINGS, AND MAINTAINED THROUGHOUT CONSTRUCTION.
13. ALL EXISTING WALKWAYS OR PAVED AREAS THAT REQUIRE REMOVAL FOR CONSTRUCTION PURPOSES OR THAT ARE DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED.
14. ALL PIPELINES, CONDUITS AND UTILITY SYSTEMS INCLUDING STRUCTURES TO BE ABANDONED SHALL BE REMOVED BY THE CONTRACTOR ONLY TO THE DEGREE NECESSARY TO COMPLETE CONSTRUCTION AS DETERMINED BY THE ENGINEER. VOIDS LEFT BY SYSTEMS REMOVED SHALL BE BACKFILLED WITH SELECT MATERIAL AND COMPACTED AS PER THE SPECIFICATIONS. SYSTEMS THAT ARE DESIGNATED TO BE ABANDONED AND ALLOWED BY THE ENGINEER TO BE LEFT IN PLACE SHALL BE PERMANENTLY CAPPED OR SEALED WATERTIGHT AT EACH END. MATERIAL AND APPURTENANCES REMOVED SHALL BE SALVAGED AND BECOME THE PROPERTY OF THE COUNTY UNLESS OTHERWISE DIRECTED BY THE ENGINEER, MATERIAL AND APPURTENANCES NOT TO BE SALVAGED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
15. ALL OUTSIDE SEWER VALVES UP TO & INCLUDING 12" WILL BE RESILIENT WEDGE GATE VALVES OR PLUG VALVES. ALL VALVES LARGER THAN 12" SHALL BE STANDARD GATE VALVES. ALL OUTSIDE VALVES IN WATER LINES (POTABLE AND FLUSHING) SHALL BE STANDARD 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.

ABBREVIATIONS

PIPELINE

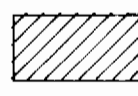
A	AIR
ABI	AERATION BASIN INFLUENT
CS	CONTACT STABILIZATION
D	DRAIN
DB	DUCTBANK
FM	FORCE MAIN
Pr.	PROFILE
S	SEWER OR INTERCEPTOR
TD	TANK DRAIN
TK	TANK
W	WATER (POTABLE)
FW	FLUSHING WATER
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
RNS	RETURN NITROGENOUS SLUDGE
WNS	WASTE NITROGENOUS SLUDGE
NABI	NITRIFICATION AERATION BASIN INFLUENT
FCP	FLOOD CONTROL PIPE

MISCELLANEOUS

B	BASELINE
BM	BENCH MARK
C	CENTERLINE
EXIST.	EXISTING
FF	FIRST FLOOR
MH	MANHOLE
INV. ELEV.	INVERT ELEVATION
R	RADIUS
N	NORTH
No.	NUMBER
E	EAST
S	SOUTH
W	WEST
WL	WATER LEVEL
PS	PUMPING STATION
w/	WITH
FD	FLOOR DRAIN
BLDG.	BUILDING
DICL.	DUCTILE IRON CEMENT LINED
CIP	CAST IRON PIPE
PVC	POLYVINYL CHLORIDE PIPE
UE	UNDERGROUND ELECTRIC
STN.	STAINLESS
ST.	STEEL

T.O.M.	TOP OF MASONRY
SIM.	SIMILAR
C.L.	CEMENT LINED
H.M.	HOLLOW METAL
PTD.	PAINTED

LEGEND

AB	AERATION BASIN
FEB	FLOW EQUALIZATION BASIN
CS	CONTACT STABILIZATION
PC	PRIMARY CLARIFIER
SC	SECONDARY CLARIFIER
NC	NITRIFICATION CLARIFIER
	PROPOSED STRUCTURES OR ADDITIONS
PS	PHOSPHORUS STRIPPER
PCB	PHOSPHORUS CONTROL BUILDING

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=143.50 FEET.

SHEET INDEX

SHEET AND DRAWING NO.	DESCRIPTION
GENERAL	
1	G-1 TITLE SHEET, LOCATION & VICINITY MAPS
2	G-2 SHEET INDEX, ABBE, TANK, LEGEND, GENERAL NOTES, ETC.
CIVIL	
3	SD-1 GENERAL OVERALL SITE PLAN / SITE DEVELOPMENT
4	SD-2 ALUM STORAGE BUILDING - SITE DEVELOPMENT PLAN
5	SD-3 FILTERS NO. 5 & 6 - SITE DEVELOPMENT PLAN
6	SD-4 SITE DEVELOPMENT DETAILS, NOTES & PROFILES
7	C-1 ALUM STORAGE BUILDING - UNIT LOCATION & YARD PIPING PLAN
8	C-2 FILTERS NO. 5 & 6 - UNIT LOCATION & YARD PIPING PLAN
9	C-3 GENERAL DETAILS
ARCHITECTURAL	
10	A-1 ALUM STORAGE BUILDING - DEMOLITION PLAN
11	A-2 ALUM STORAGE BUILDING - ROOF PLAN & ELEVATIONS
12	A-3 ALUM STORAGE BUILDING - MAIN FLOOR PLAN & WALL SECTIONS
13	A-4 ALUM STORAGE BUILDING - BUILDING SECTIONS & DETAILS
14	A-5 FILTERS NO. 5 & 6 - ROOF PLAN & ELEVATIONS
15	A-6 ARCH. DETAILS, SCHEDULES
STRUCTURAL	
16	S-1 ALUM STORAGE BUILDING - MAIN FLOOR PLANS & ROOF PLAN GENERAL NOTES
17	S-2 ALUM STORAGE BUILDING - DETAILS
18	S-3 FILTERS NO. 5 & 6 - ROOF PLAN & DETAILS
19	S-4 FILTERS NO. 5 & 6 - UPPER PLAN & SECTION
20	S-5 FILTERS NO. 5 & 6 - LOWER PLAN & SECTION
21	S-6 FILTERS NO. 5 & 6 - STRUCTURAL SECTIONS & DETAILS
MECHANICAL	
22	M-1 ALUM APPLICATION POINTS
23	M-2 ALUM STORAGE BUILDING - PROCESS & UTILITY FLOOR PLANS
24	M-3 ALUM STORAGE BUILDING - SECTIONS
25	M-4 ALUM FEED SCHEMATIC
26	M-5 FILTER CONTROL BUILDING / FLOCCULATORS NO. 3 & 4 - PLAN
27	M-6 FILTER CONTROL BUILDING / FLOCCULATORS NO. 3 & 4 - SECTION
28	M-7 FILTERS NO. 5 & 6 - UPPER PLAN & SECTION
29	M-8 FILTERS NO. 5 & 6 - LOWER PLAN & SECTION
30	M-9 FILTERS NO. 5 & 6 - SECTIONS & DETAILS
31	M-10 CHLORINE ROOM - PLAN
32	M-11 GENERAL DETAILS
ELECTRICAL	
33	E-1 ELECTRICAL SYMBOL AND ABBREVIATION LIST
34	E-2 ALUM STORAGE BLDG - POWER & LIGHTING PLAN
35	E-3 EXIST. FLOCCULATOR TK'S NO. 3 & 4 - CONTROL BLDG. - POWER & INSTRUMENTATION PLAN
36	E-4 FILTERS NO. 5 & 6 - POWER & LIGHTING PLAN
37	E-5 SCHEMATICS
38	E-6 SCHEMATICS
39	E-7 INSTRUMENTATION AND CONTROL DIAGRAMS
40	E-8 ANNUNCIATOR SYSTEM - SCHEMATICS AND DETAILS

L:\0287_LANDSCAPE\DWG\16/168 10/25/02

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
Director of Public Works <i>[Signature]</i> DATE: 11/30/02	Chief, Bureau of Engineering <i>[Signature]</i> DATE: 11/30/02
Chief, Bureau of Environmental Services <i>[Signature]</i> DATE: 11/30/02	Chief, Utility Design Division <i>[Signature]</i> DATE: 11/30/02

 CONSULTING ENGINEERS • SURVEYORS LANDSCAPE ARCHITECTS • PLANNERS HUTH ENGINEERS INC. P.O. BOX 3012 LANCASTER, PA 17604 (717) 269-7021 LANCASTER, PA ALLENTOWN, PA	
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DES: R.L.S.				
DRN: CADD				
CHK: <i>[Signature]</i>				
DATE: 8/88	BY: NO.	REVISION	DATE	

SHEET INDEX
 GENERAL NOTES
 ABBREVIATIONS & LEGEND

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHOROUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 2 OF 40
G-2

LEGEND

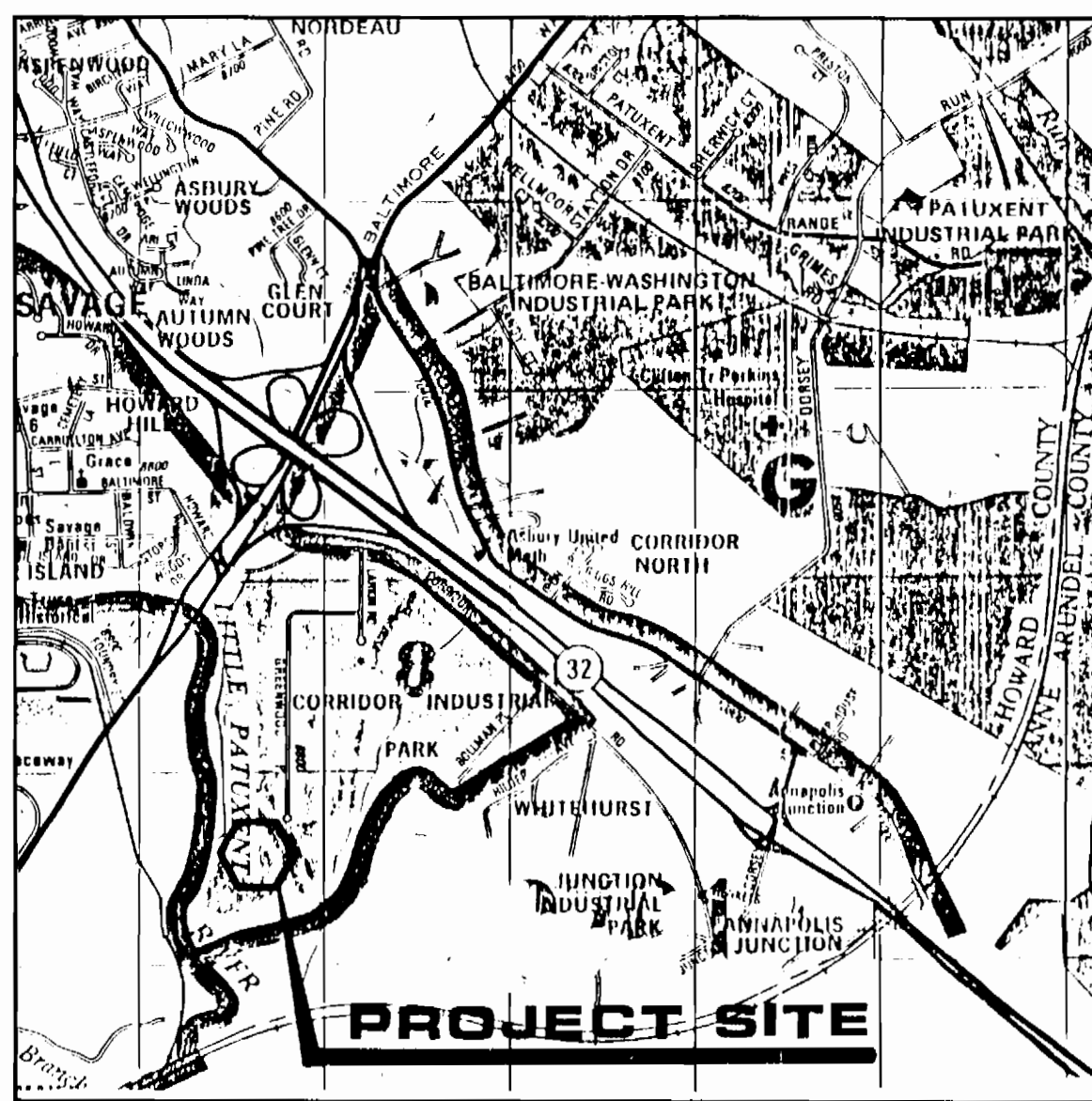
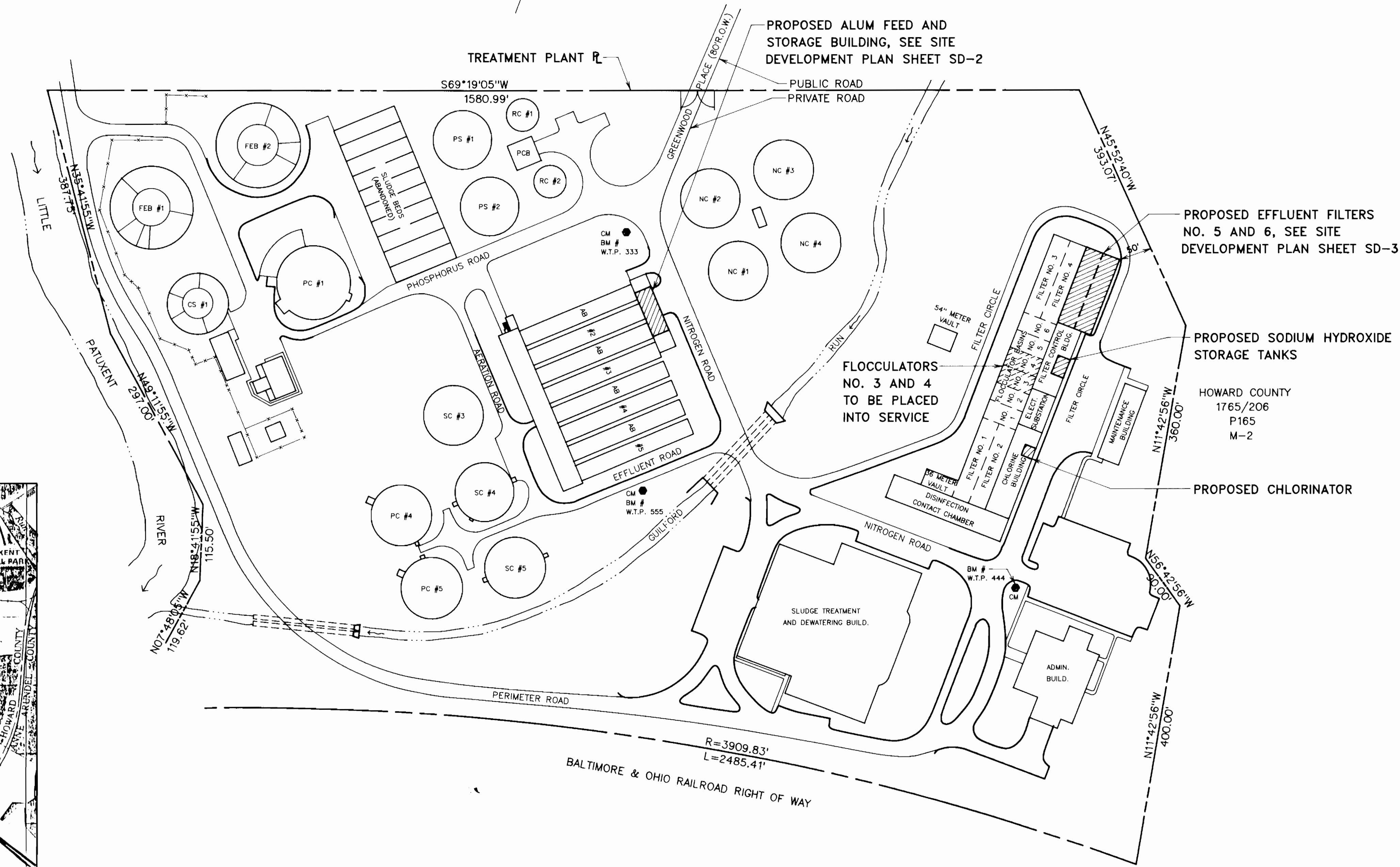
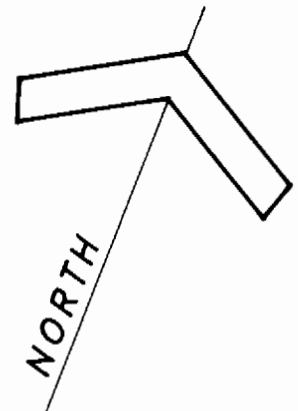
- AB AERATION BASIN
- FEB FLOW EQUALIZATION BASIN
- PCB PHOSPHORUS CONTROL BLDG.
- CS CONTACT STABILIZATION
- PS PHOSPHORUS STRIPPER
- PC PRIMARY CLARIFIER
- SC SECONDARY CLARIFIER
- NC NITRIFICATION CLARIFIER
- RC REACTION CLARIFIER
- PROPOSED STRUCTURES OR ADDITIONS

HOWARD COUNTY BENCH MARKS

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WATER SURFACE ELEVATION LITTLE PATUXENT RIVER - 100 YEAR FLOOD 143.50=FEET.

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



APPROVED: For Public Water And Public Sewerage Systems
Howard County Health Department
HOWARD COUNTY HEALTH DEPARTMENT
James B. ... 12-1-88
COUNTY HEALTH OFFICER DATE

ADDRESS CHART

LOT NUMBER	ADDRESS
PARCEL 200	8900 GREENWOOD PLACE

APPROVED: Howard County Office of Planning and Zoning
... 12-5-88
PLANNING DIRECTOR DATE
... 12-2-88
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 performance on-site inspection by The Howard Co. Soil Conservation District.
... 11-30-88
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements
James M. ... 12-2-88
S.O. SOIL CONSERVATION SERVICE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.
Approved: *Robert W. Zick* Date: 12-1-88

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.
... Date: 11/21/88

SUBDIVISION NAME		SECT./AREA	LOT/PARCEL #
LITTLE PATUXENT WWTP		-	200 198
PLAT #	RO L/F	BLOCK #	ZONE
423/516	618/537	24	M-2
WATER CODE		TAX/ZONE MAP	ELEC. DIST.
CD4		47	6
SEWER CODE		GENSUS TR.	
4020000		6064	

VICINITY MAP
SCALE IN FEET 0 500 1000 2000 3000
SCALE: 1" = 1000'

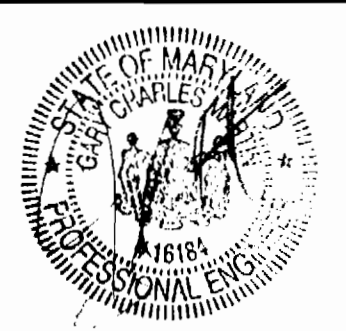
GENERAL OVERALL SITE PLAN / SITE DEVELOPMENT
SCALE IN FEET 0 50 100 200 300
SCALE: 1" = 100'

SITE ANALYSIS
A. AREA OF PARCEL/LOT = 38.0 ACRES.
B. PRESENT ZONING = M-2.
C. NUMBER OF PARKING SPACES ON SITE = 95.
D. OPEN SPACES REMAINING = 30.3 AC. 80 PERCENT
E. BUILDING COVERAGE OF SITE = 7.7 AC. 20 PERCENT
F. NUMBER OF EMPLOYEES = 60.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. ... 11-30-88
DIRECTOR OF PUBLIC WORKS DATE
... 11-30-88
CHIEF, BUREAU OF ENGINEERING DATE
... 11-30-88
CHIEF, UTILITY DESIGN DIVISION DATE

HUTH ENGINEERS INC.
CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS
P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7321
LANCASTER, PA ALLENTOWN, PA

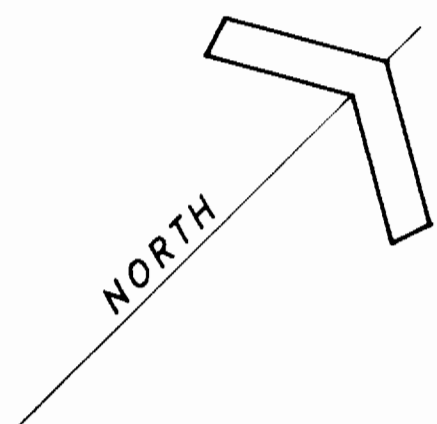


DES:	R.L.S.				
	H.T.D.				
DRN:	CADD				
CHK:	<i>...</i>				
DATE:	8/88	BY	NO.	REVISION	DATE

REVISION TO SDP-78-55
GENERAL OVERALL SITE PLAN
&
SITE DEVELOPMENT

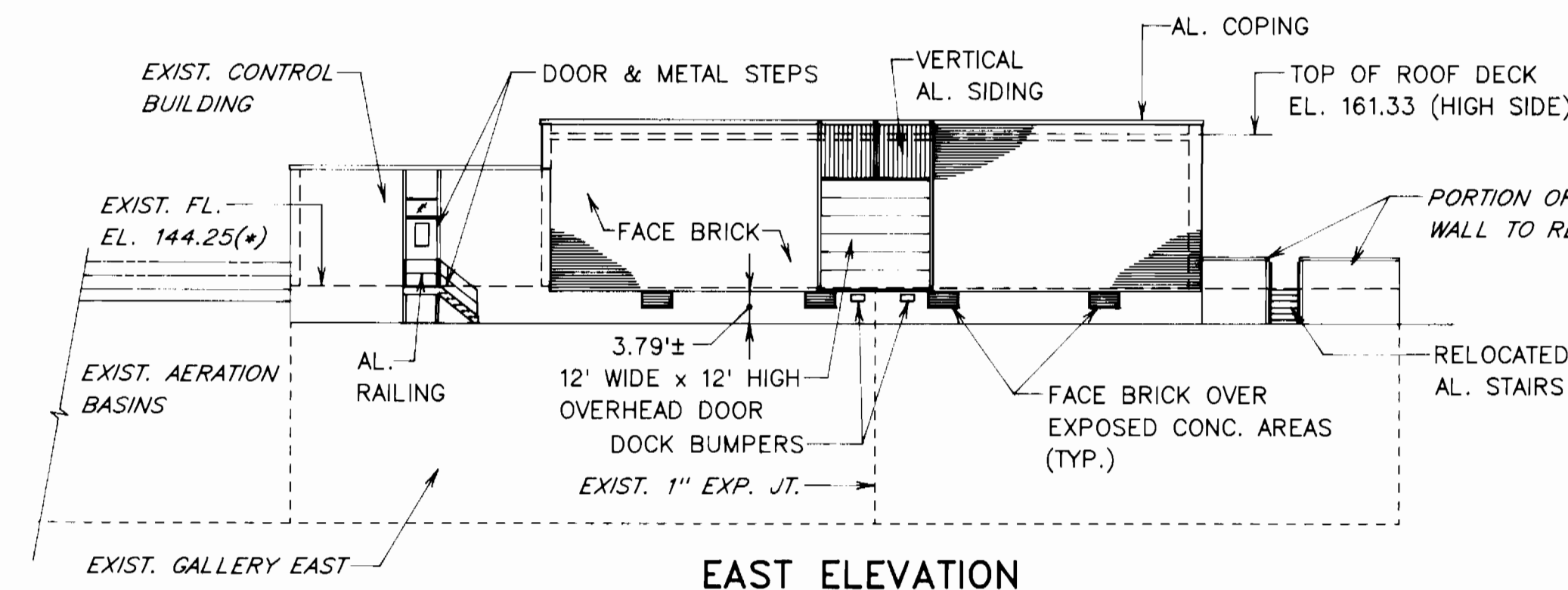
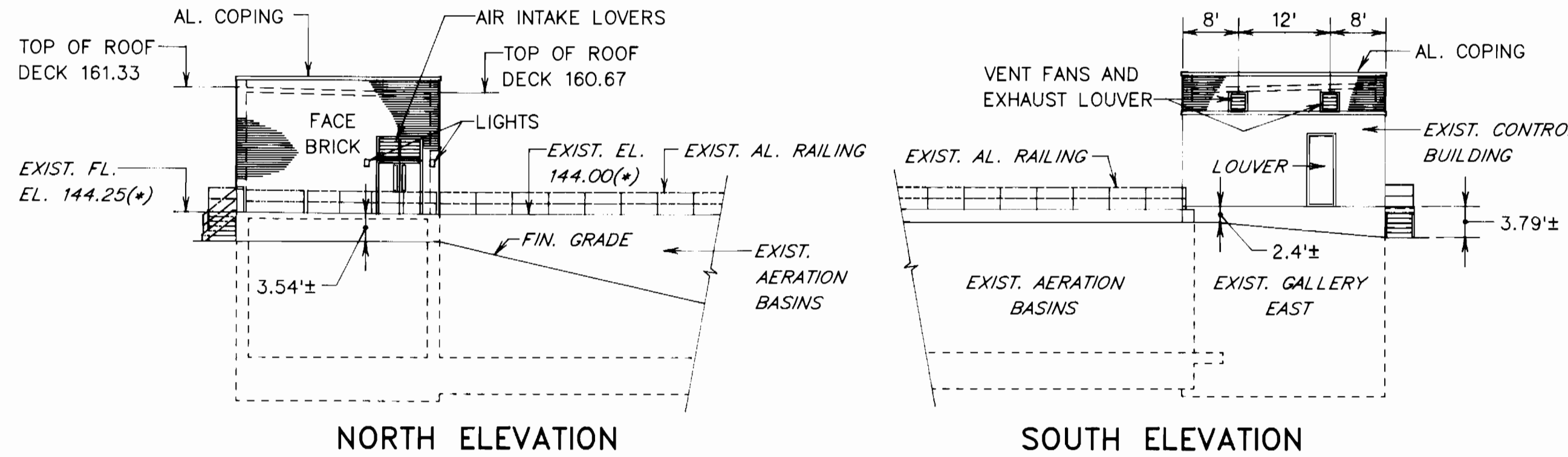
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 3 OF 40
SD-1

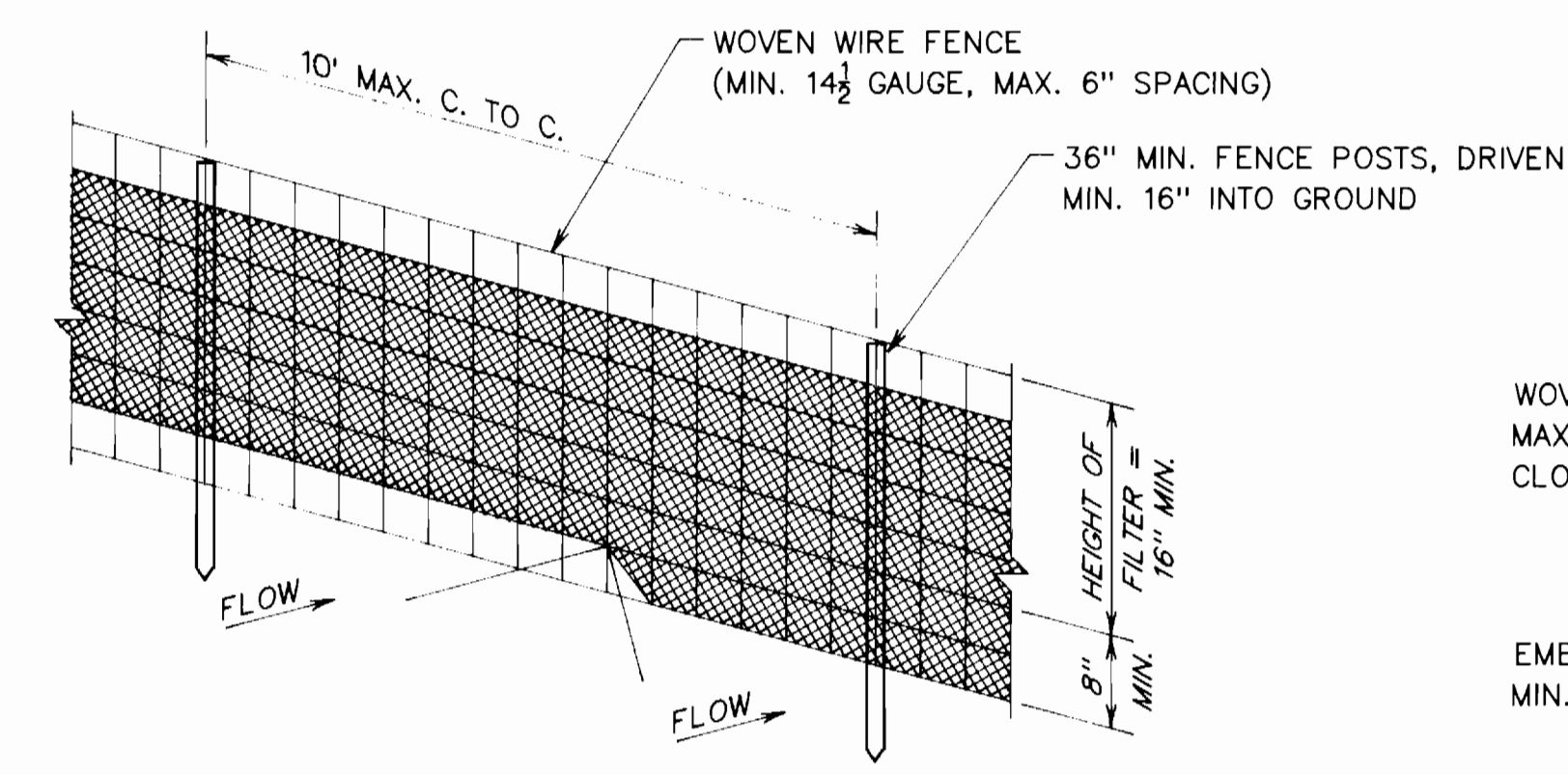


LEGEND

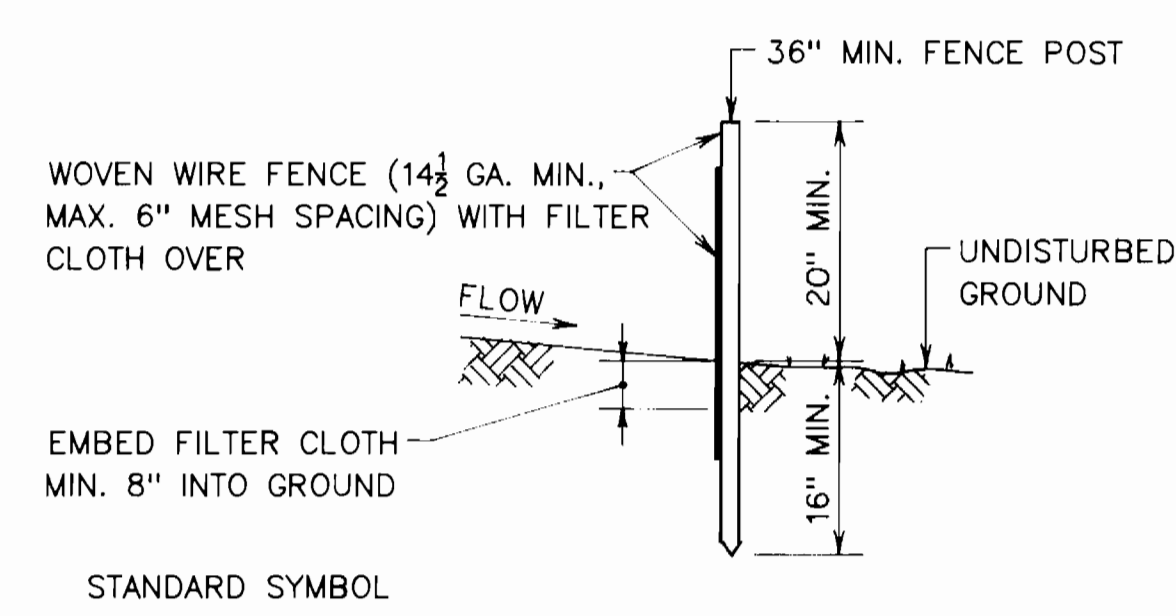
--- 140 ---	EXIST. GRADE
--- 141 ---	PROPOSED GRADE
----	EXIST. PIPING
====	PROPOSED PIPING
○ C.O.	PROPOSED CLEANOUT
-x-x-	SILT FENCE
+ 140.35	PROPOSED SPOT ELEVATION



ALUM STORAGE BUILDING ELEVATIONS
 SCALE IN FEET 0 8 16 32 48
 SCALE: 1/16" = 1'-0"



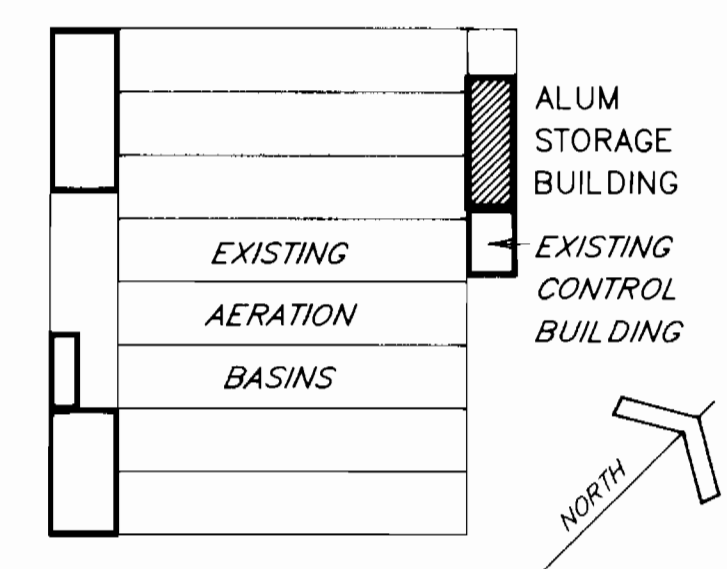
PERSPECTIVE VIEW - SILT FENCE



SECTION - SILT FENCE

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

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



KEY PLAN
NO SCALE

EROSION & 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 REDISTURBANCE, 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 WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
 TOTAL AREA OF SITE: .380 ACRES
 AREA DISTURBED: .022 ACRES
 AREA TO BE ROOFED OR PAVED: .022 ACRES
 AREA TO BE VEGETATIVELY STABILIZED: .011 ACRES
 TOTAL CUT: .4800 C.U. YDS.
 TOTAL FILL: .NONE C.U. YDS.
 OFFSITE WASTE/AREA LOCATION: CONTRACTOR TO DETERMINE
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITIES 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 THE SITES 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.

CONSTRUCTION SEQUENCE

- OBTAIN GRADING PERMIT
- INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES IN AREAS OF PROPOSED WORK PRIOR TO ANY CONSTRUCTION
- CONSTRUCT FILTERS AND ALUM BUILDING
- FINISH PROPOSED GRADES WITH PERMANENT SEEDING
- REPAVE DISTURBED ROADWAYS
- DURING CONSTRUCTION AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE OF THE SEDIMENT AND EROSION CONTROLS

APPROVED: For Public Water And Public Sewerage Systems
 Howard County Health Department
 COUNTY HEALTH OFFICER: *Joyce B. ...* DATE: 12/1/88

ADDRESS CHART

LOT NUMBER	ADDRESS
PARCEL 200	8900 GREENWOOD PLACE

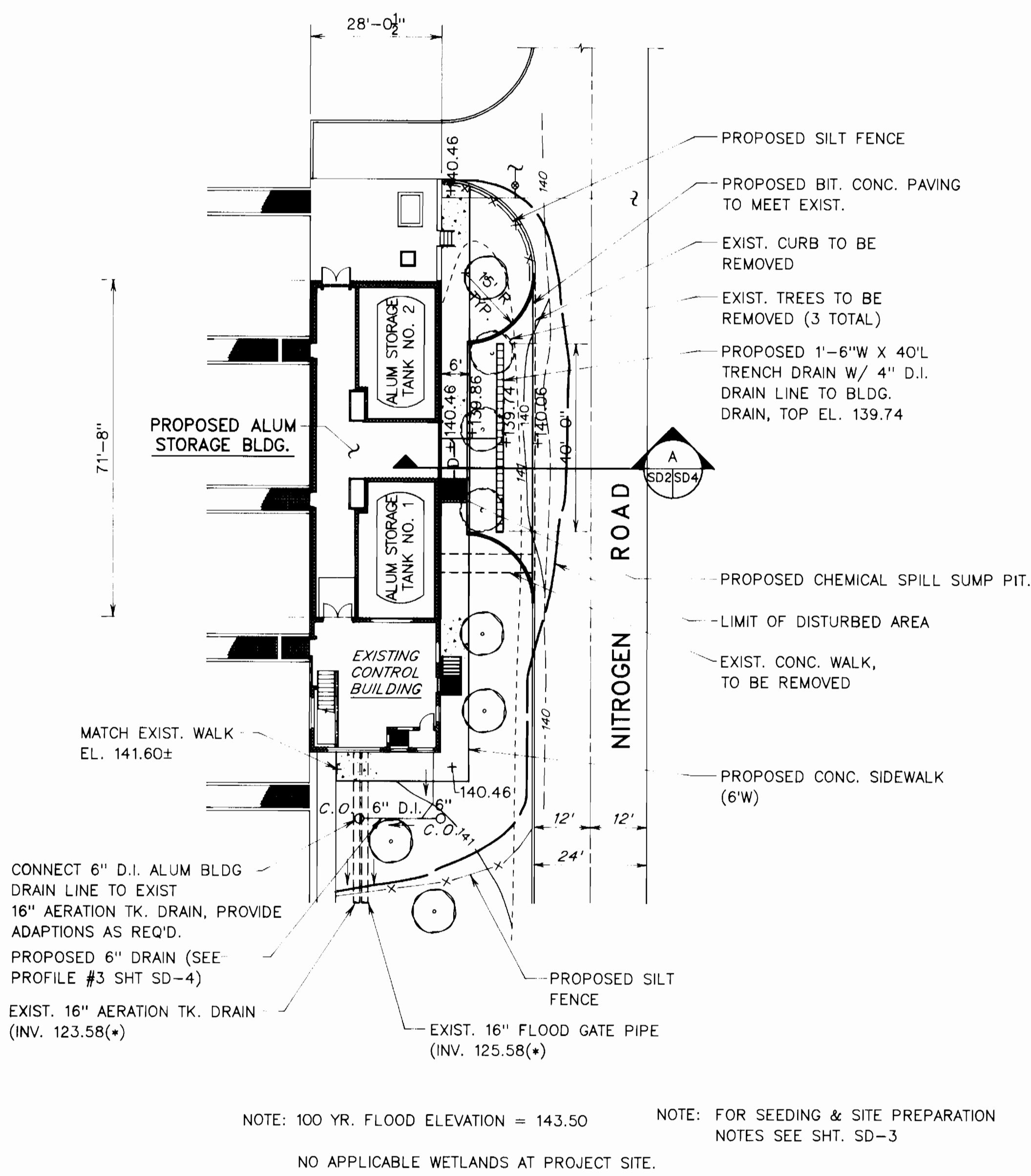
APPROVED: Howard County Office of Planning and Zoning
 PLANNING DIRECTOR: *...* DATE: 12-5-88
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT: *...* DATE: 12-2-88

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."
 S. SOIL CONSERVATION SERVICE: *...* DATE: 11-30-88

Reviewed for Howard County S.C.D. and meets technical requirements
 S. SOIL CONSERVATION SERVICE: *...* DATE: 12-2-88
 Approved: *...* DATE: 12-2-88

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.
 Date: 12/1/88

SUBDIVISION NAME	LITTLE PATUXENT WWTP	SECT./AREA	---	LOT/PARCEL #	200 198
PLAT #	423/518	BLOCK #	24	TAX/ZONE MAP	M-2 47
WATER CODE	618/537	ELEC. DIST.	6	DENSUS TR.	6064
SEWER CODE	C04				4020000



NOTE: 100 YR. FLOOD ELEVATION = 143.50
 NOTE: FOR SEEDING & SITE PREPARATION NOTES SEE SHT. SD-3
 NO APPLICABLE WETLANDS AT PROJECT SITE.

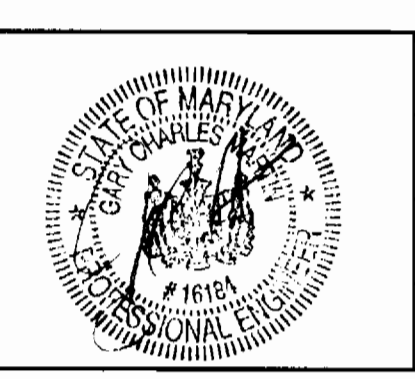
LEGEND
 (*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

ALUM STORAGE BUILDING SITE DEVELOPMENT PLAN

SCALE IN FEET 0 10 20 40 60
 SCALE: 1" = 20'

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John O'Hara* DATE: 11/30/88
 Chief, Bureau of Engineering: *...* DATE: 11-30-88
 Chief/Utility Design Division: *...* DATE: 11-30-88

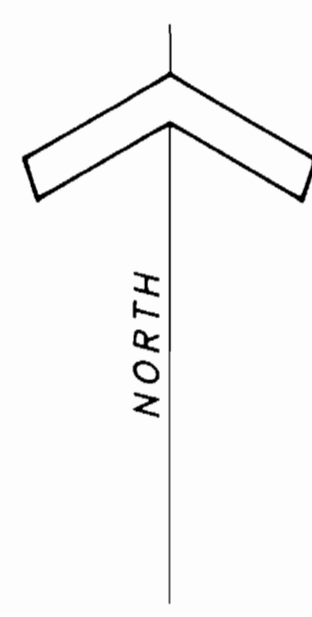
CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS
HUTH ENGINEERS INC.
 P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7021
 LANCASTER, PA ALLENTOWN, PA



DES:	H.T.D.		
DRN:	CADD		
CHK:	<i>JA</i>		
DATE:	8/88	BY NO.	REVISION

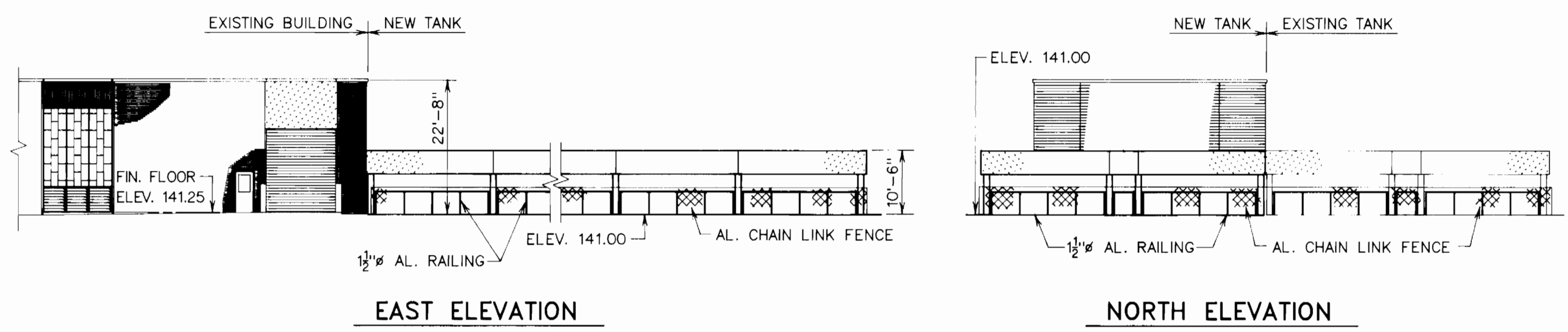
REVISION TO SDP-78-55
ALUM STORAGE BUILDING
 SITE DEVELOPMENT PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 4 OF 40
 SD-2



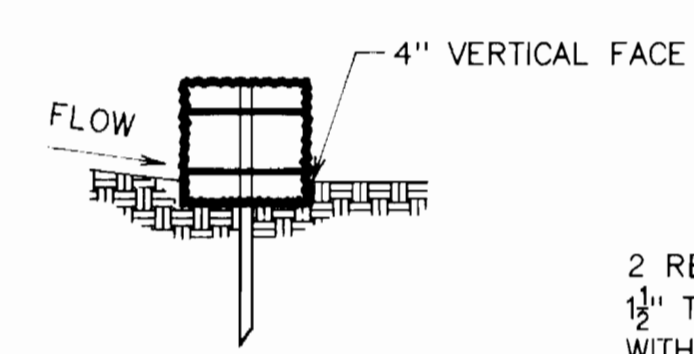
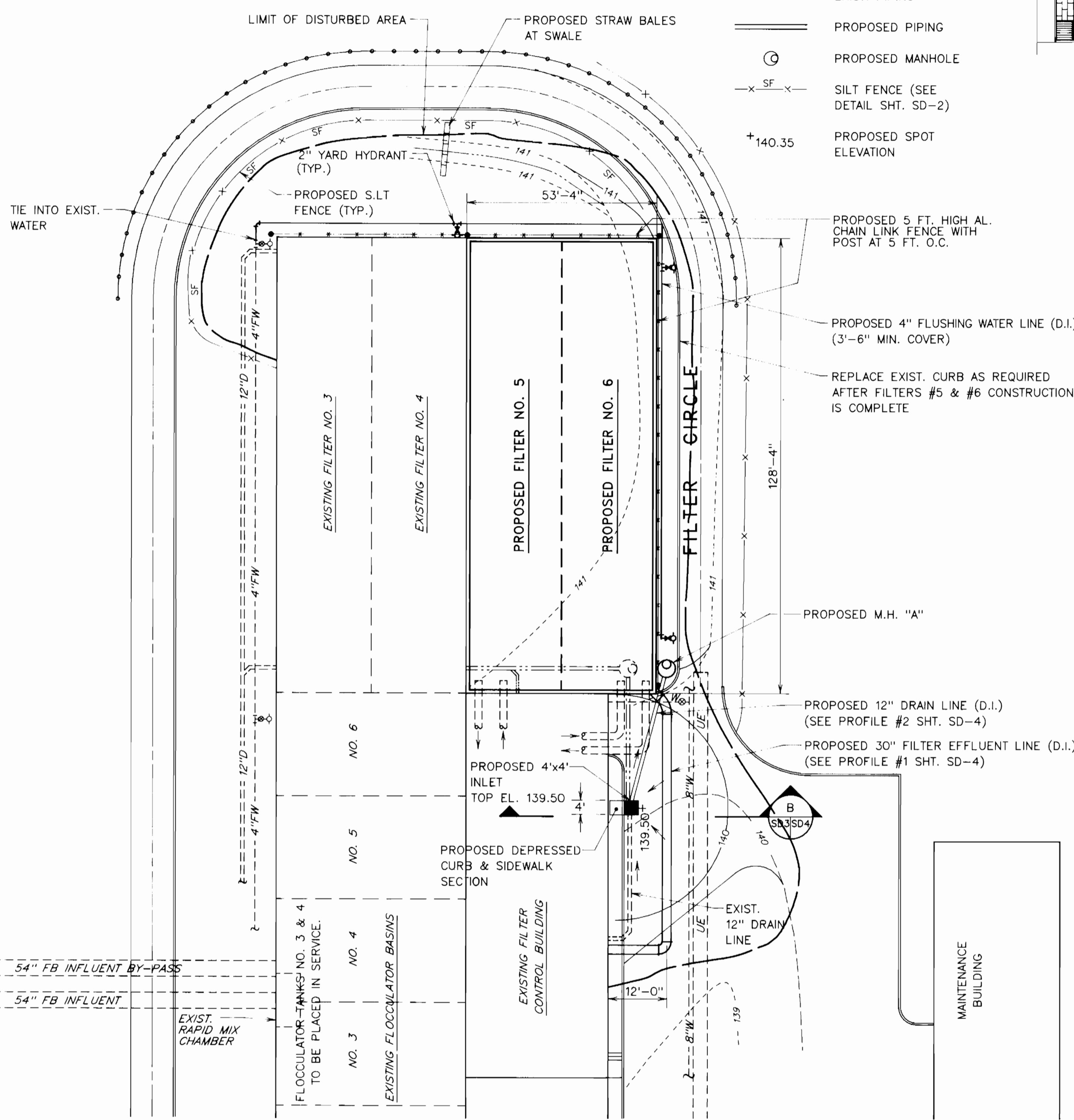
LEGEND

- 140 --- EXIST. GRADE
- 141 --- PROPOSED GRADE
- --- EXIST. PIPING
- --- PROPOSED PIPING
- ⊙ PROPOSED MANHOLE
- X-SF- SILT FENCE (SEE DETAIL SHT. SD-2)
- +140.35 PROPOSED SPOT ELEVATION



CONTROL BLDG & FILTERS NO. 5 & 6 ELEVATIONS

SCALE IN FEET 0 8 16 32 48
SCALE: 1/16" = 1'-0"



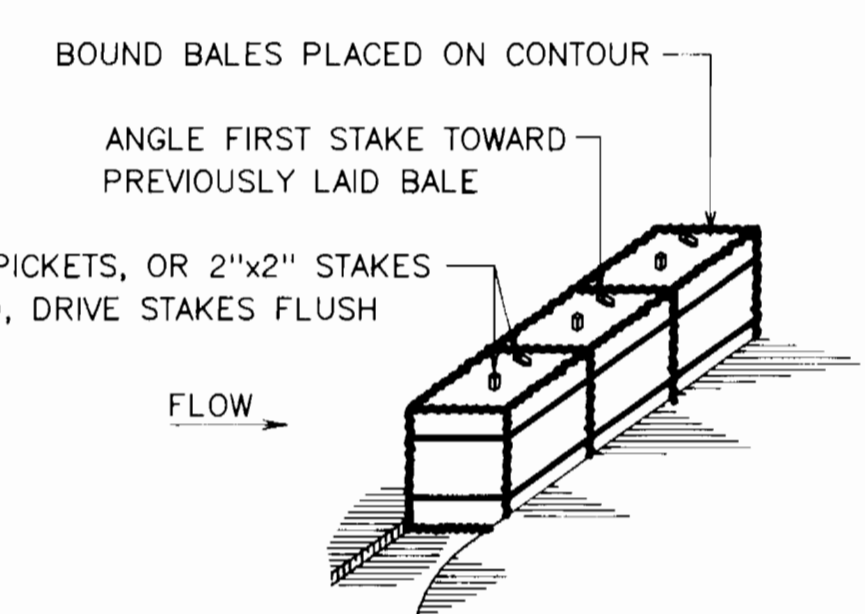
STANDARD SYMBOL
--- SBS ---

BEDDING DETAIL

STRAW BALE DIKE

CONSTRUCTION SPECIFICATIONS FOR STRAW BALE DIKE

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ADJUTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.



ANCHORING DETAIL

SEEDING AND SITE PREPARATION

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- 1) 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 DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS./100 SQ FT).
- 2) 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 DISC 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 KEEPING LOVEGRASS. DURING THE PERIOD OF 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 1.5 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 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 SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING 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 NOVEMBER 15, SEED WITH 2.5 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./1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAWMULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1.5 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 EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

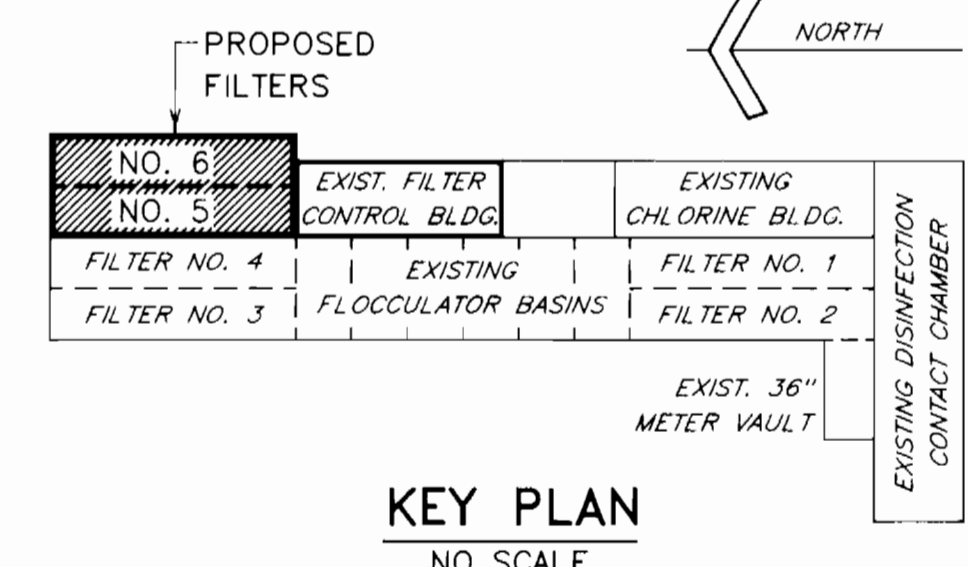
NOTE: 100 YR. FLOOD ELEVATION = 143.50

NOTE: FOR EROSION & SEDIMENT CONTROL NOTES SEE SHT. SD-2.

NO APPLICABLE WETLANDS AT PROJECT SITE.

FILTERS NO. 5 & 6 SITE DEVELOPMENT PLAN

SCALE IN FEET 0 10 20 40 60
SCALE: 1" = 20'



KEY PLAN

NO SCALE

APPROVED: For Public Water And Public Sewerage Systems
Howard County Health Department
HOWARD COUNTY HEALTH DEPARTMENT
Joyce Ford 12-1-88
COUNTY HEALTH OFFICER DATE

ADDRESS CHART	
LOT NUMBER	ADDRESS
PARCEL 200	8900 GREENWOOD PLACE

APPROVED: Howard County Office of Planning and Zoning
Thomas J. DeAngelis 12-2-88
PLANNING DIRECTOR DATE
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT
LKS

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 personal site inspection by The Howard Co. Soil Conservation District
John P. Len 11-30-88
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS

Reviewed for Howard County S.C.D. and meets technical requirements
John P. Len 12-3-88
SOIL CONSERVATION SERVICE

This development plan is approved for soil erosion and sediment control by the Howard County Soil Conservation District.
Approved: *Robert J. Zehn* Date: 12-2-88

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.
J.P.H. Date: 11/1/88

SUBDIVISION NAME		SECT./AREA	LOT/PARCEL #
LITTLE PATUXENT WWTP			200
PLAT #	RD 1/F	BLOCK #	ZONE
423/516		24	M-2
618/537			47
WATER CODE		ELEC. DIST.	CENSUS TR.
		6	6064
		SEWER CODE	
			4020000

1870567-404546 11/17/88 1943322.B

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John P. Len* 11/30/88
Chief, Bureau of Engineering: *John P. Len* 11-30-88
Chief, Utility Design Division: *John P. Len* 11-30-88

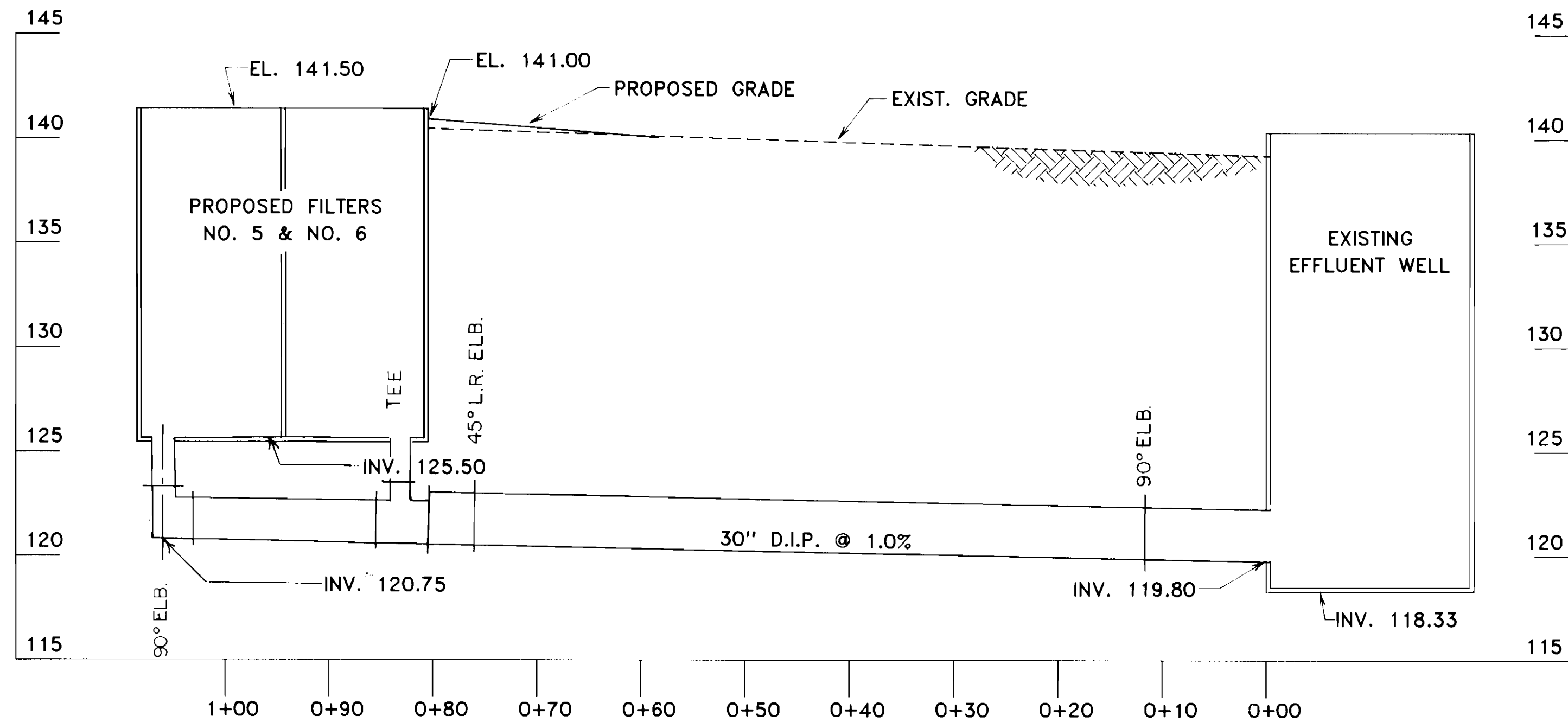
HUTH ENGINEERS INC.
CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS
P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7021
LANCASTER, PA ALLENTOWN, PA

DES: H.T.D.			
DRN: CADD			
CHK: <i>[Signature]</i>			
DATE: 8/88	BY: NO.	REVISION	DATE

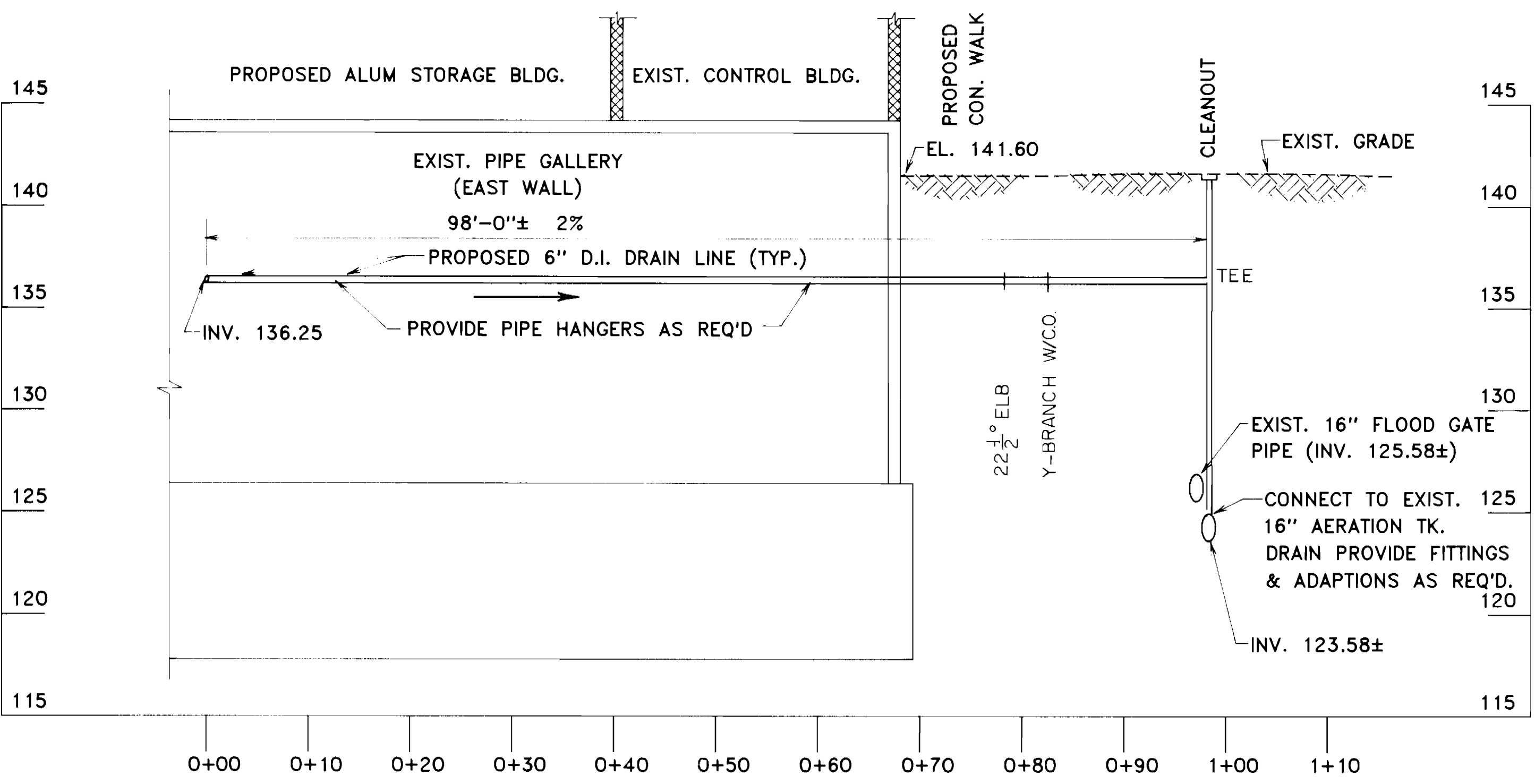
REVISION TO SDP 78-55
FILTERS NO. 5 & 6
SITE DEVELOPMENT PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

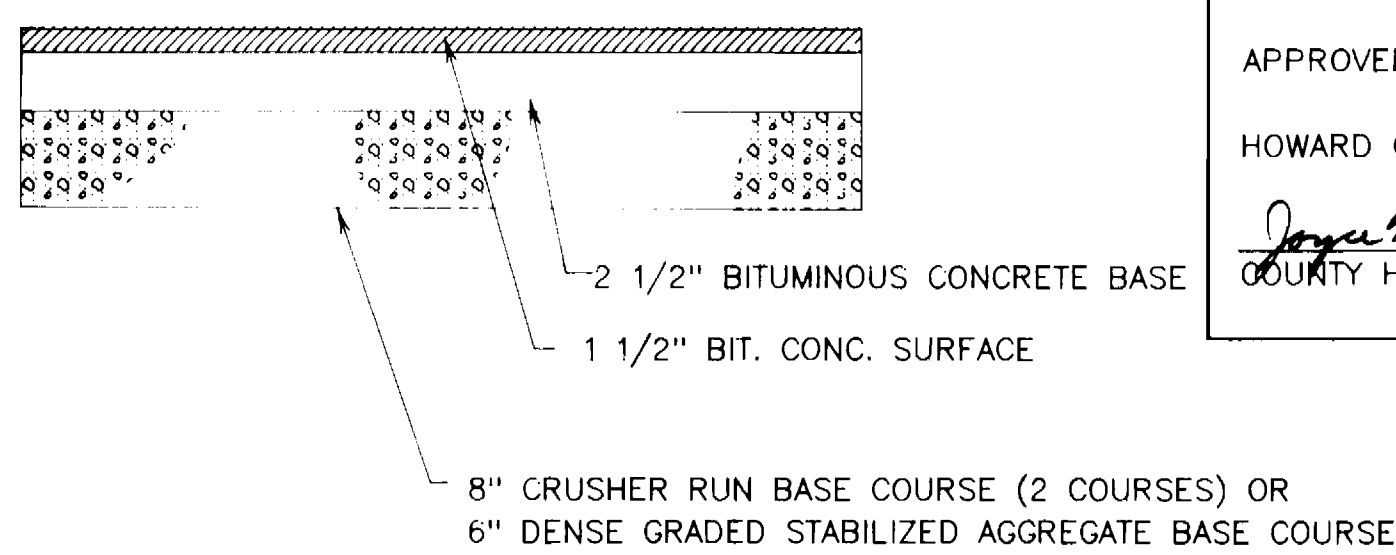
SCALE AS SHOWN
SHEET 5 OF 40
SD-3



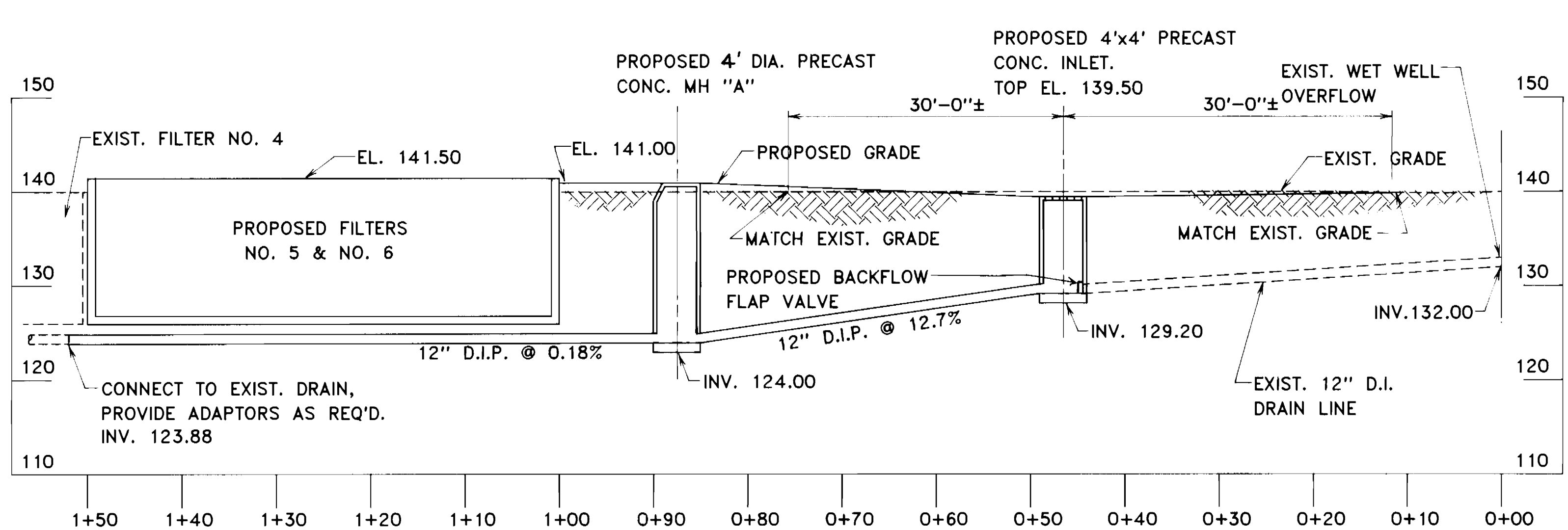
1 PROFILE #1 - 30" D.I. EFFLUENT LINE
 HORZ. SCALE 1"=10'
 VERT. SCALE 1"=5'



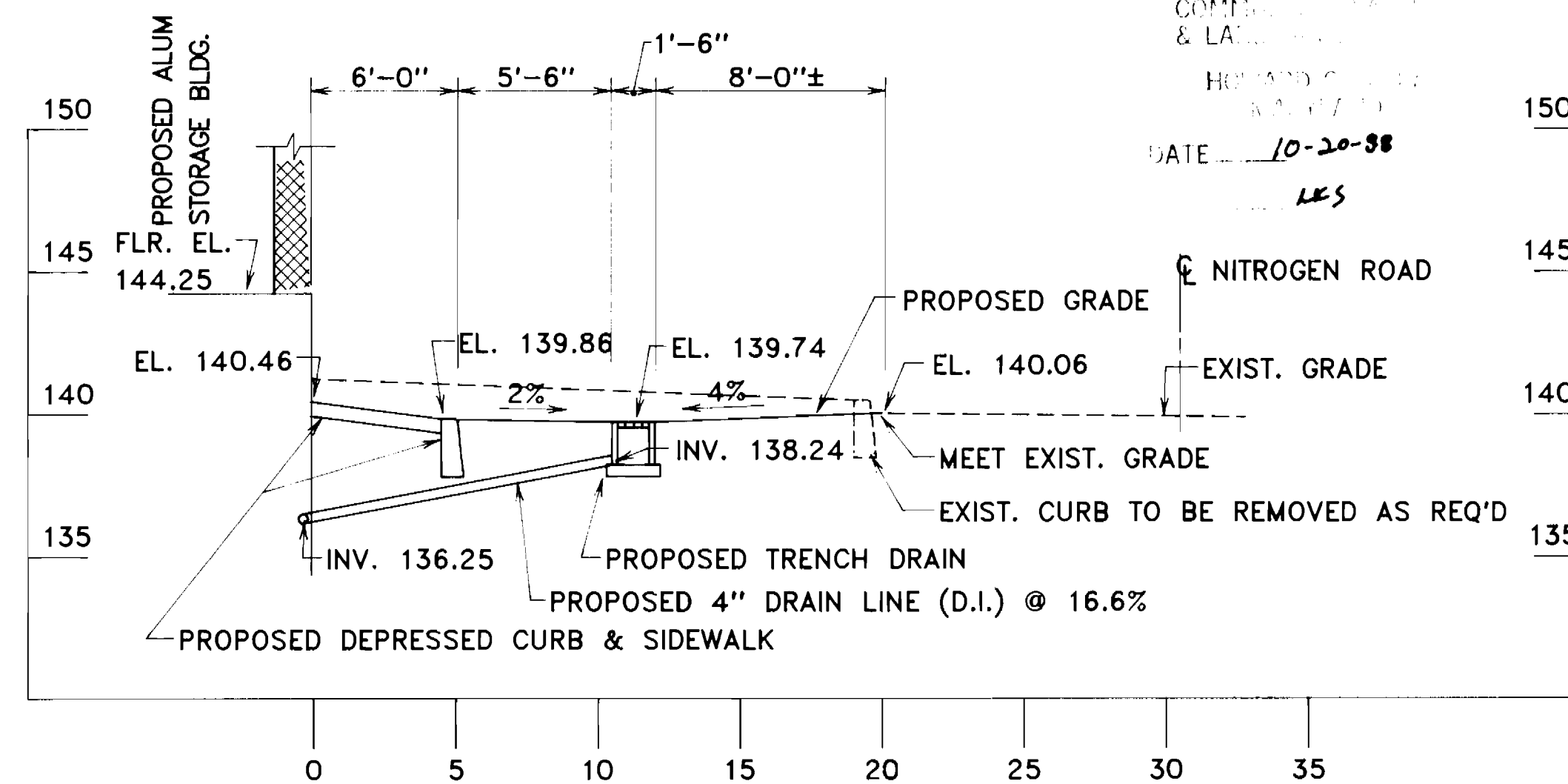
3 PROFILE #3 - ALUM STORAGE BLDG. DRAIN LINE
 HORZ. SCALE 1"=10'
 VERT. SCALE 1"=5'



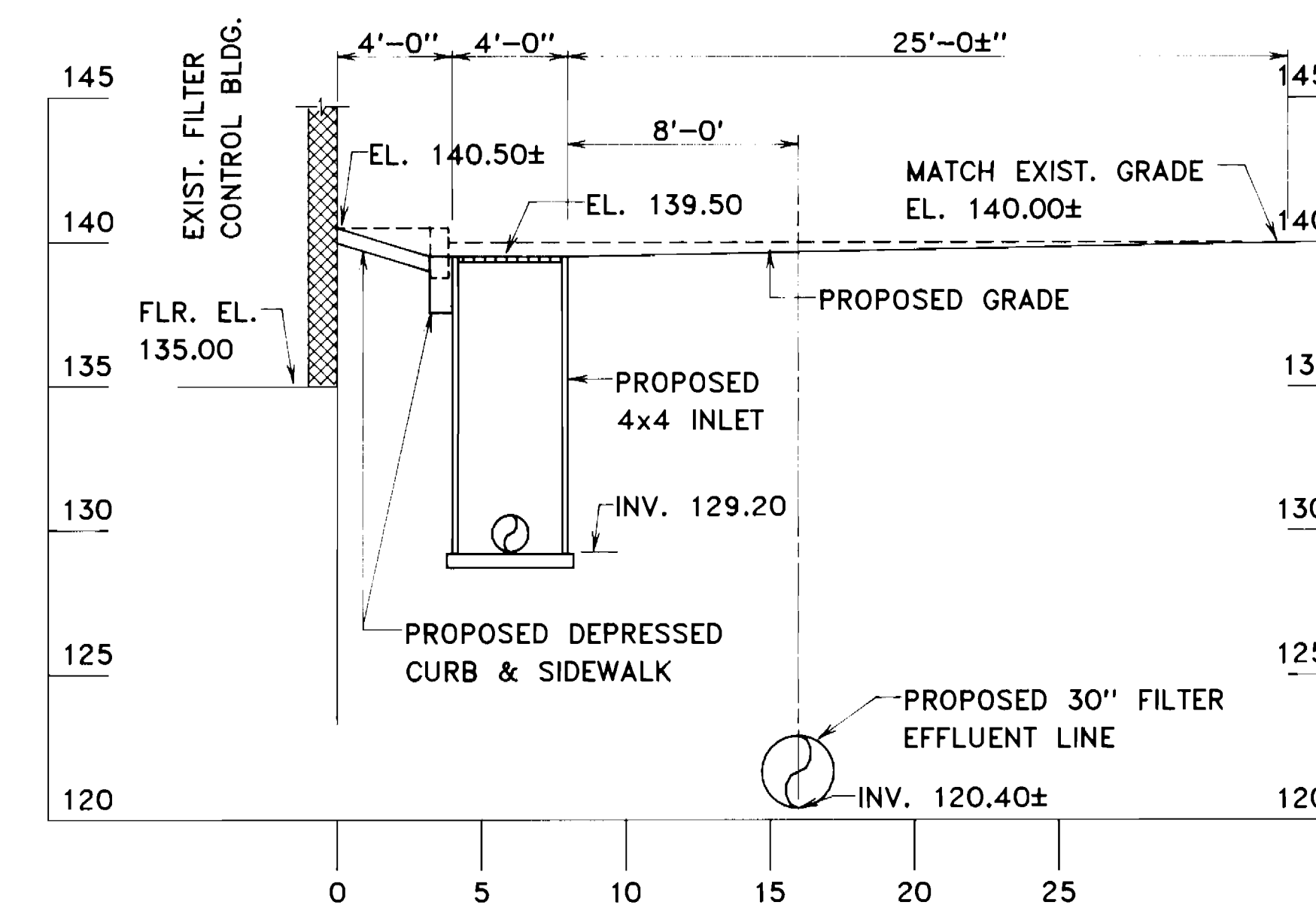
BITUMINOUS PAVEMENT DETAIL (STD. DETAIL R-2.01, P-2)
 NO SCALE



2 PROFILE #2 - 12" D.I. DRAIN LINE
 HORZ. SCALE 1"=10'
 VERT. SCALE 1"=10'



A CROSS SECTION (ALUM BLDG)
 SCALE 1"=5'-0"



B CROSS SECTION (FILTER CONTROL BLDG)
 SCALE 1"=5'-0"

GENERAL NOTES

1. THE DEVELOPER SHALL NOTIFY THE HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION SHOWN HEREIN.
2. SILT FENCING IS TO BE CONSTRUCTED PRIOR TO ANY ONSITE GRADING OR DISTURBANCE TO ANY EXISTING SURFACE MATERIAL.
3. ALL SEDIMENT STRUCTURES TO REMAIN IN PLACE UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY OFFICE OF INSPECTION AND PERMITS.
4. ALL AREAS DISTURBED BY GRADING SHALL BE SEEDED AND MULCHED.
5. INSTALL SEDIMENT CONTROL MEASURES DOWN GRADE OF CONSTRUCTION. EXCAVATE TRENCH AND PLACE MATERIAL ON UPSTREAM SIDE OF TRENCH.
6. IMMEDIATELY FOLLOWING PIPE INSTALLATION THE TRENCH SHALL BE BACKFILLED AND COMPACTED. ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH REQUIREMENTS SET FORTH HEREIN.
7. TEMPORARY STRAW BALE DIKES SHALL BE PLACED IMMEDIATELY DOWN HILL OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED LONGER THAN ONE WORKING DAY.
8. THE CONTRACTOR SHALL DISTURB AND OPEN TRENCH THE MINIMUM PRACTICAL AREA REQUIRED TO ACCOMPLISH THE WORK DESIGNATED FOR EACH DAY.

ADDRESS CHART	
LOT NUMBER	ADDRESS
PARCEL 200	8900 GREENWOOD PLACE

APPROVED: Howard County Office of Planning and Zoning
 PLANNING DIRECTOR: [Signature] DATE: 12-5-88
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT: [Signature] DATE: 12-2-88

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 professional seal on-site inspection by The Howard Co. Soil Conservation District.
 [Signature] DATE: 11-30-88
 BUREAU OF ENGINEERING
 DEPARTMENT OF PUBLIC WORKS

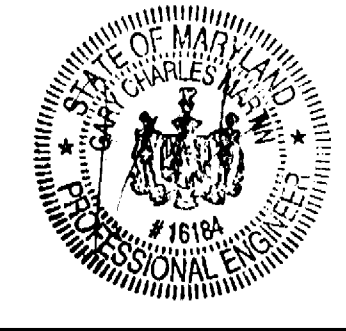
Reviewed for Howard County S.C.D. and meets technical requirements
 [Signature] DATE: 12-2-88
 U.S. SOIL CONSERVATION SERVICE
 Approved: [Signature] DATE: 12-2-88

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: 11/14/88

SUBDIVISION NAME		SECT./AREA	LOT/PARCEL #
LITTLE PATUXENT WWTP		-	200
PLAT #	RD. L/F	BLOCK #	ZONE
423/516	24	M-2	47
618/537			6
WATER CODE		SEWER CODE	6064
CO4			4020000

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 DIRECTOR OF PUBLIC WORKS: [Signature] DATE: 11-30-88
 CHIEF, BUREAU OF ENGINEERING: [Signature] DATE: 11-30-88
 CHIEF, UTILITY DESIGN DIVISION: [Signature] DATE: 11-30-88

CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS
HUTH ENGINEERS INC.
 P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7021
 LANCASTER, PA ALLENTOWN, PA

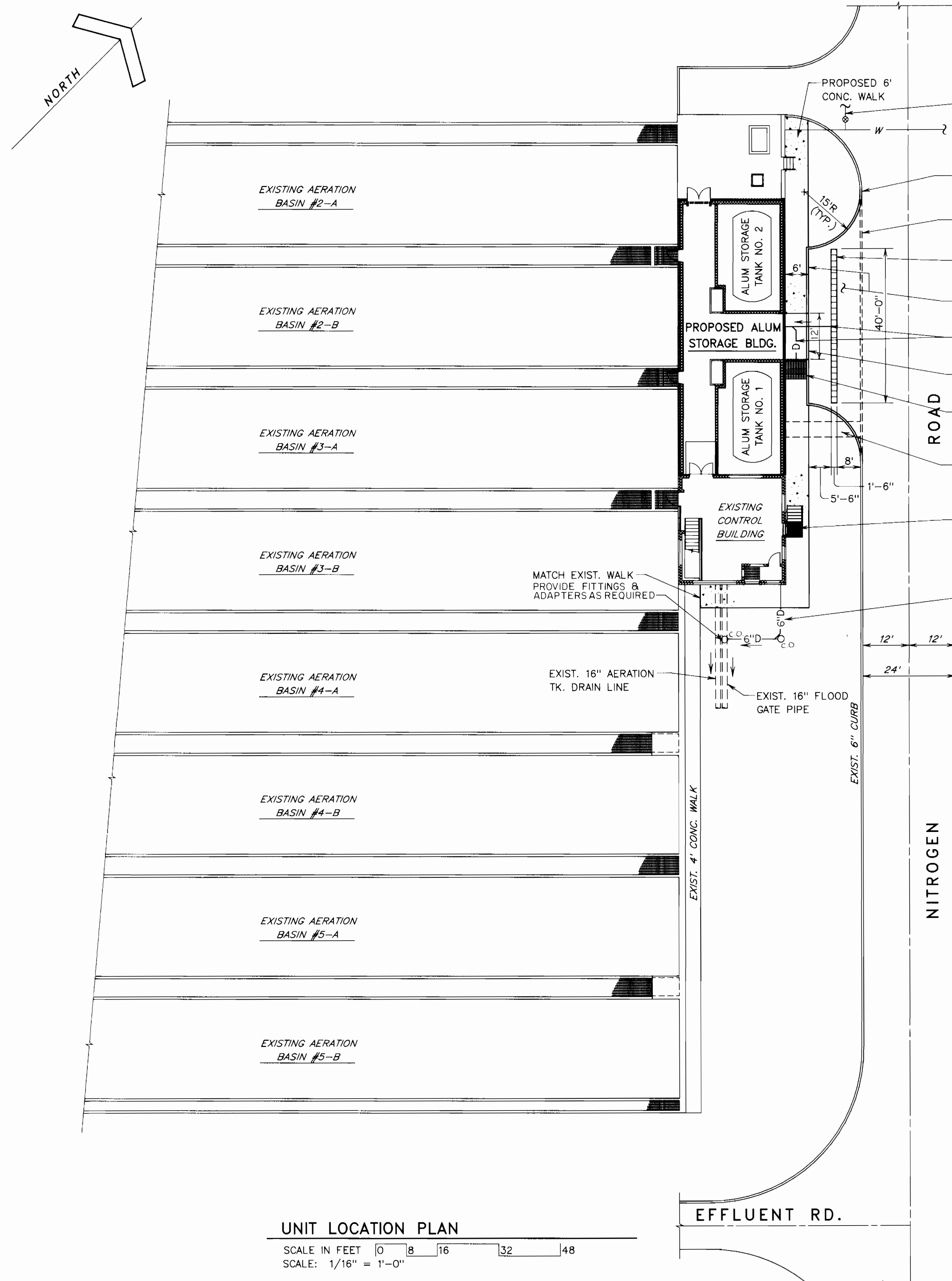


DES:	R.L.S.			
	H.T.D.			
DRN:	CADD			
CHK:	[Signature]			
DATE:	8/88	BY:	NO.	REVISION
				DATE

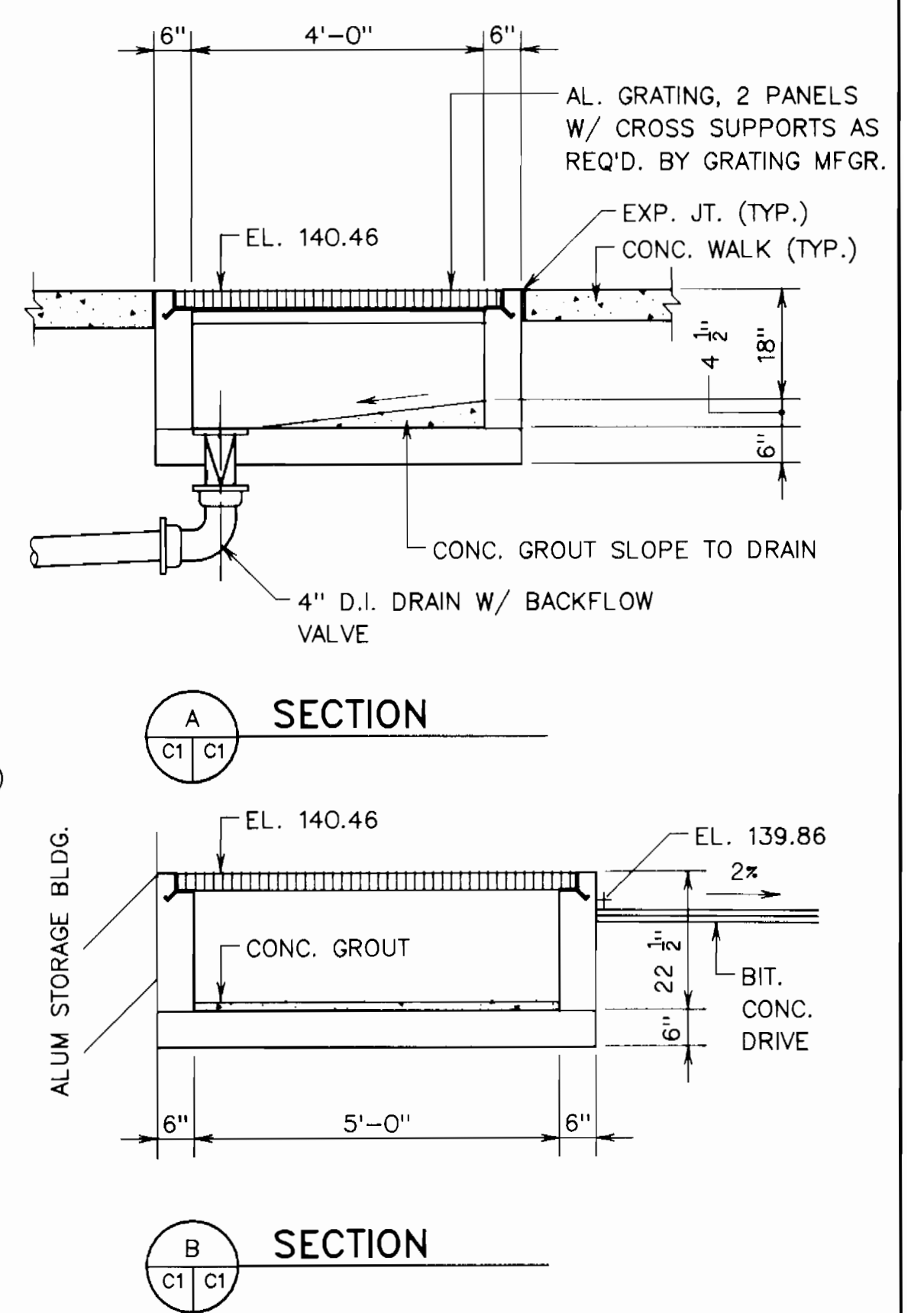
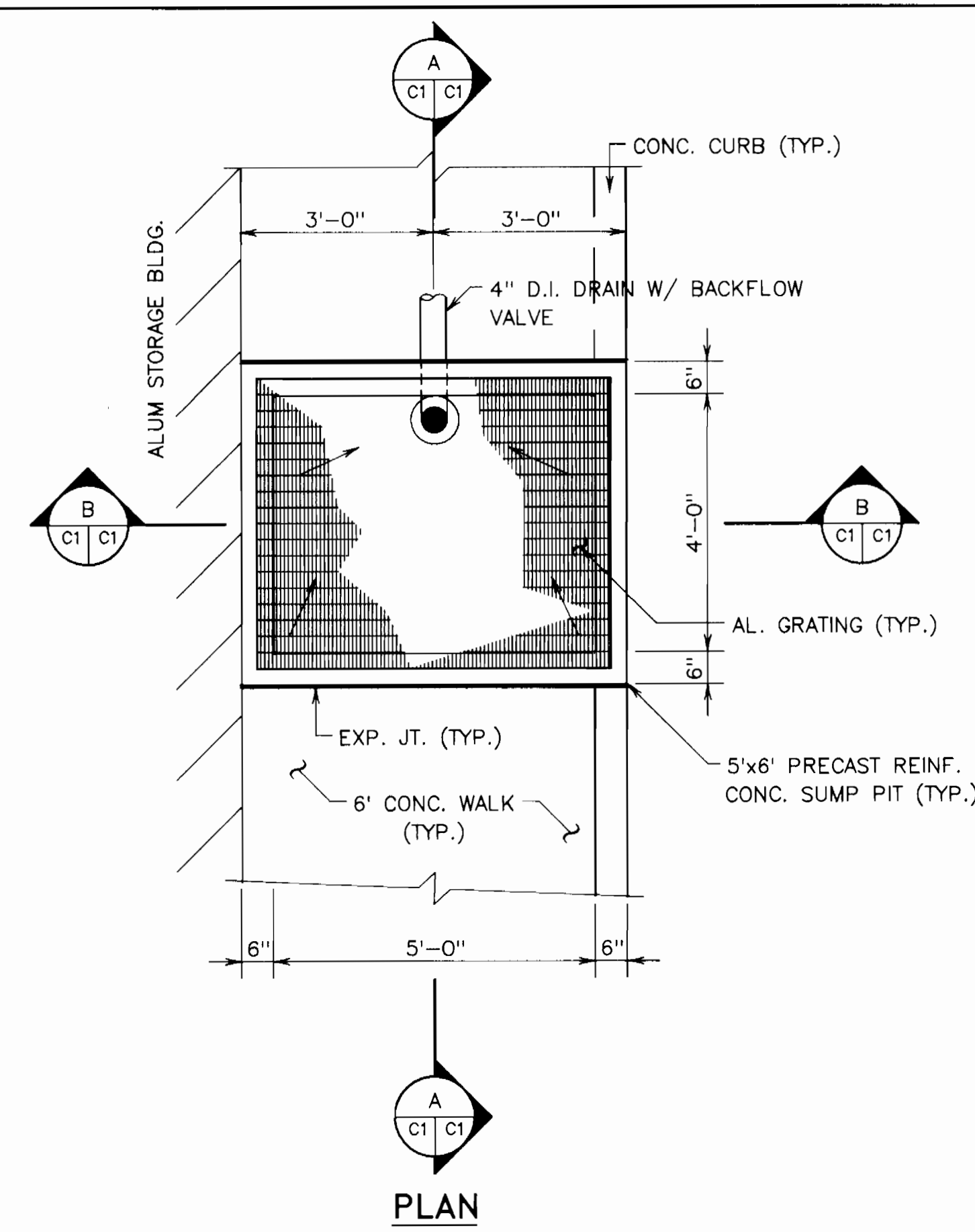
REVISION TO SDP-78-55
 SITE DEVELOPEMENT
 PROFILES, DETAILS & NOTES

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

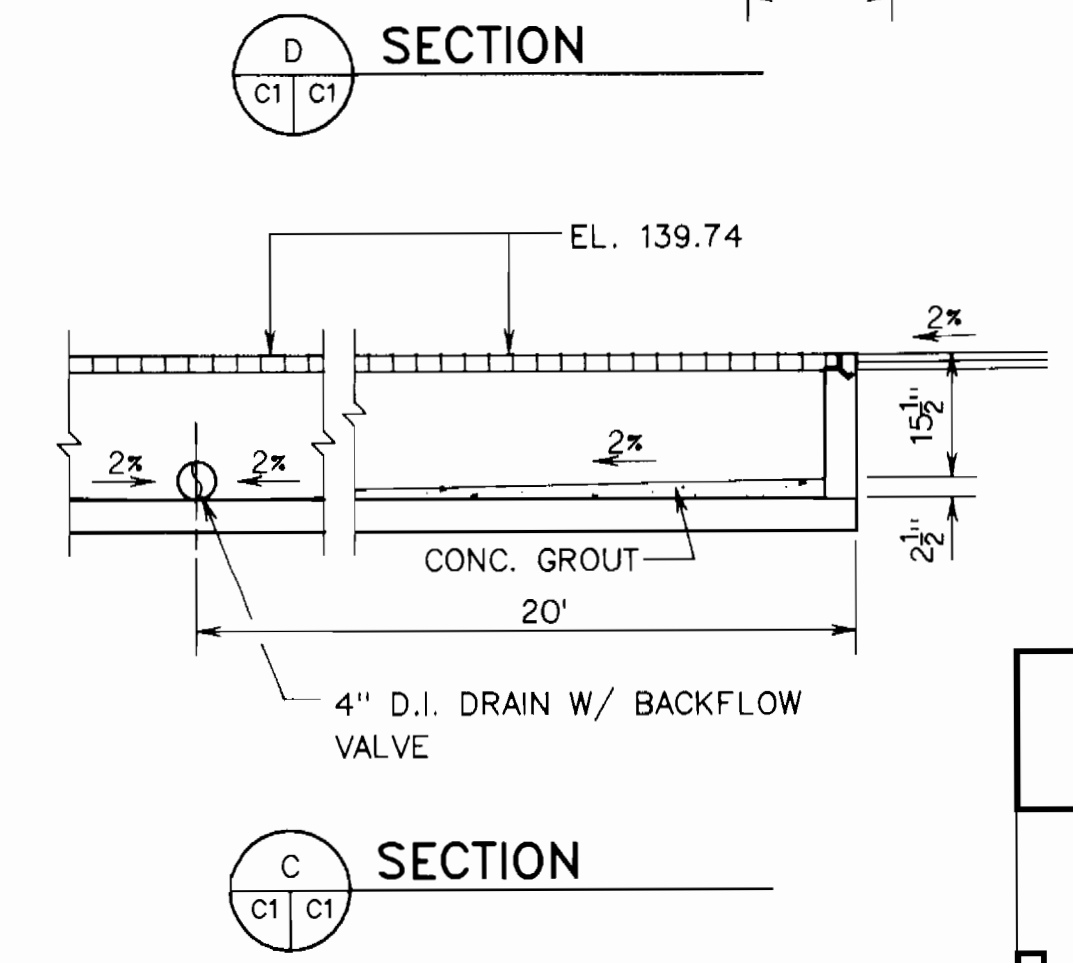
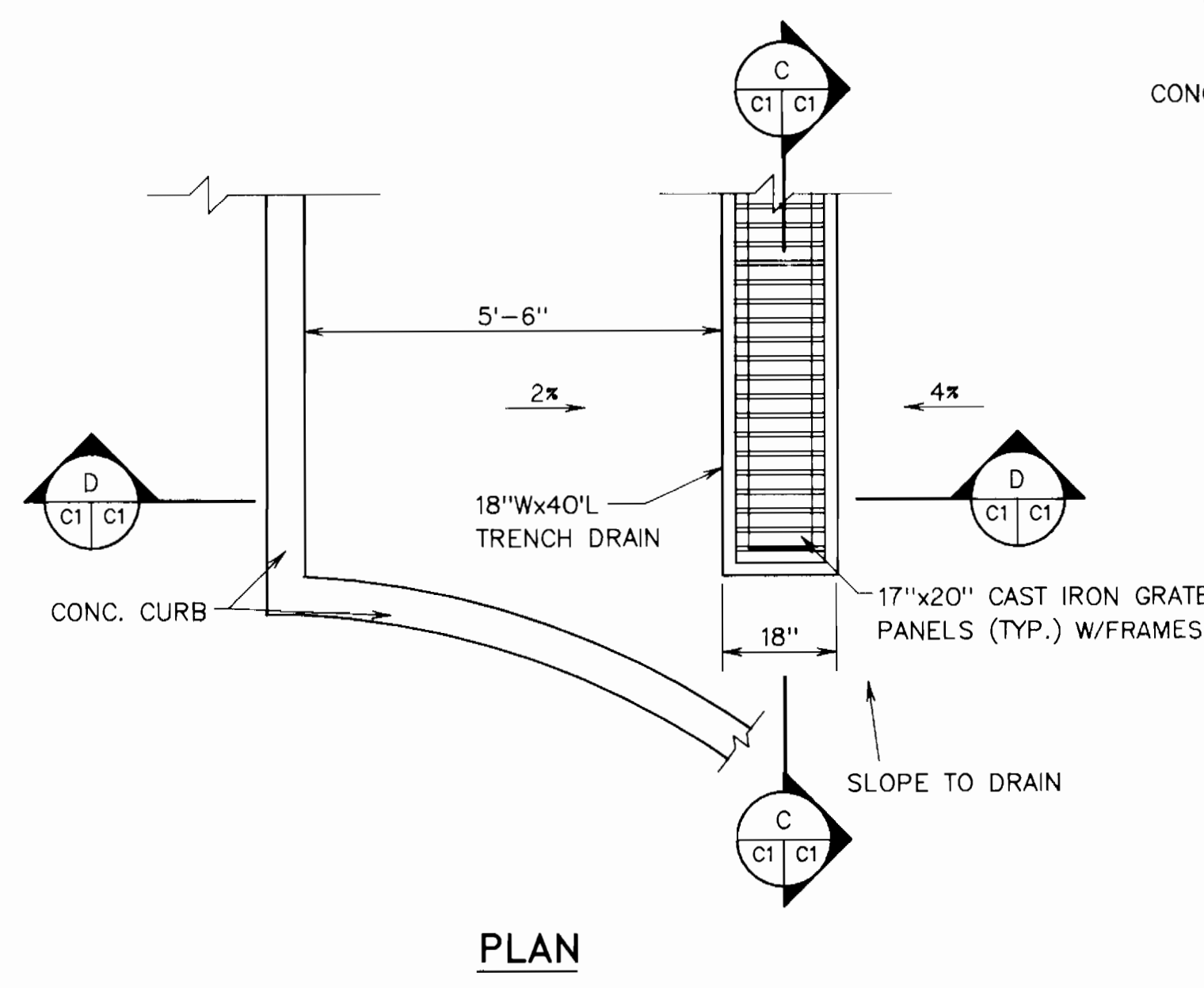
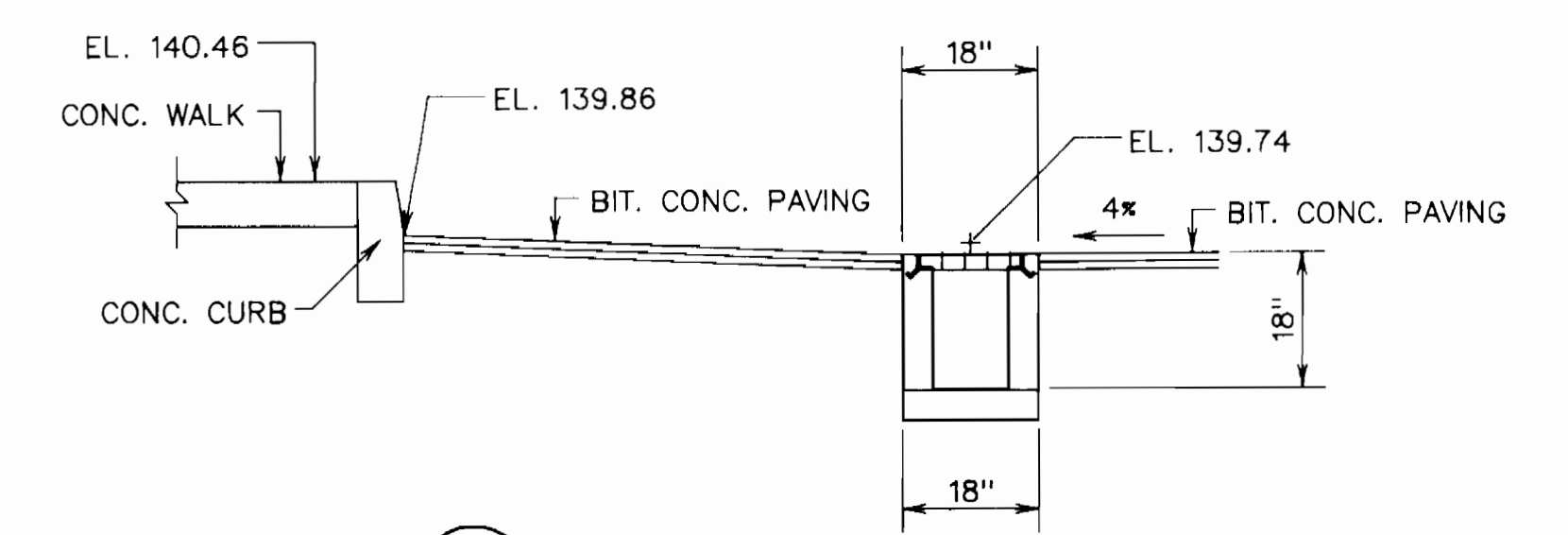
SCALE AS SHOWN
 SHEET 6 OF 40
 SD-4



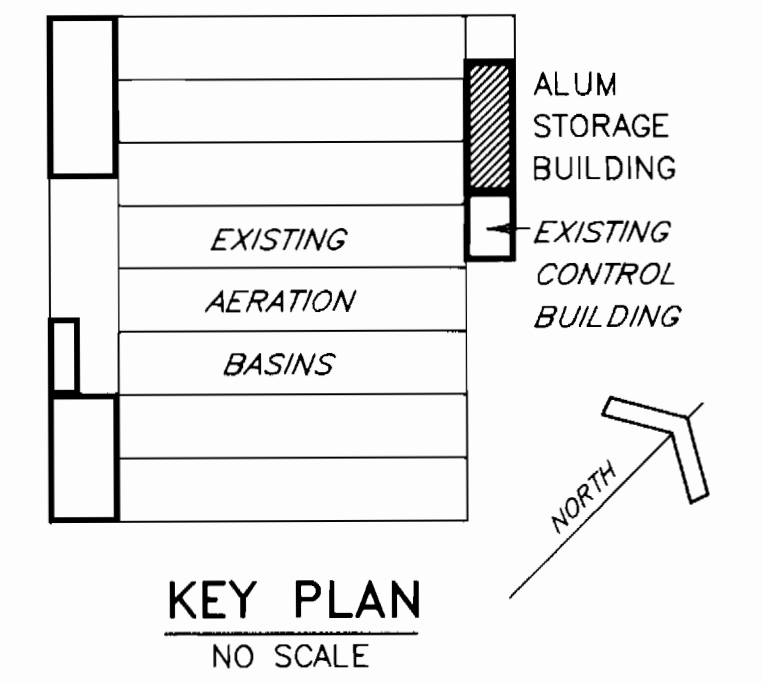
- EXIST. 4" C.I. POTABLE WATER LINE
- MEET EXIST. CURB (TYP.)
- REMOVE EXIST. CURB AS REQ'D.
- PROPOSED 18"X40' TRENCH DRAIN (SEE DETAIL THIS SHIT.)
- PROPOSED 40' WIDE BIT. CONC. DRIVE W/ 6" CONC. CURB
- PROPOSED 4" D.I. DRAIN LINES
- 12' WIDE SECTION OF DEPRESSED CURB & SIDEWALK FOR RAMP ACCESS TO BLDG. SEE DETAIL SHEET C-3
- PROPOSED 5'X6' SUMP PIT FOR CHEMICAL SPILLAGE DURING UNLOADING (SEE DETAIL THIS SHIT.)
- REMOVE EXIST. 4' CONC. WALK AND RESTORE TO LAWN AREA AS REQ'D.
- PROPOSED DOOR & METAL STEPS TO EXIST. BLDG.
- SEE PROFILE #3 SHIT. SD-4



CHEMICAL SPILL SUMP PIT DETAIL
 SCALE IN FEET 0 1 2 4 6
 SCALE: 1/2" = 1'-0"



TRENCH DRAIN DETAIL
 SCALE IN FEET 0 1 2 4 6
 SCALE: 1/2" = 1'-0"



NO FILE NET 09/16/88 15:22:17

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DATE: 11-30-88
 CHIEF, BUREAU OF ENGINEERING

DATE: 11-30-88
 CHIEF, UTILITY DESIGN DIVISION

CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS

HUTH ENGINEERS INC.
 P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021

LANCASTER, PA ALLENTOWN, PA

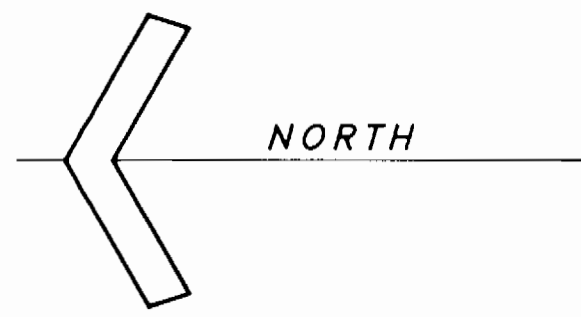


DES: H.T.D.			
DRN: CADD			
CHK: [Signature]			
DATE: 8/88	BY NO.	REVISION	DATE

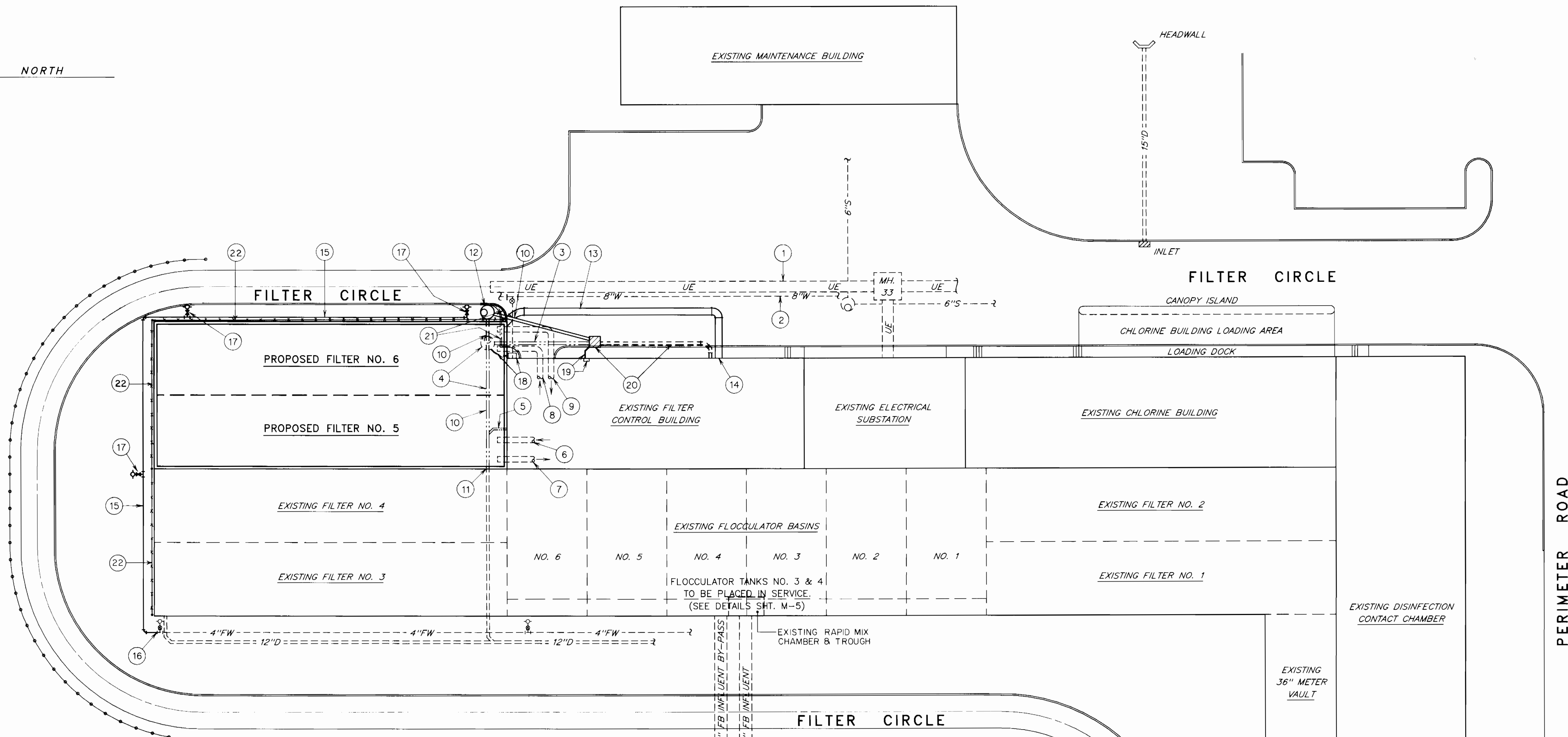
ALUM STORAGE BUILDING
 UNIT LOCATION PLAN & YARD PIPING

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 7 OF 40
C-1



NORTH

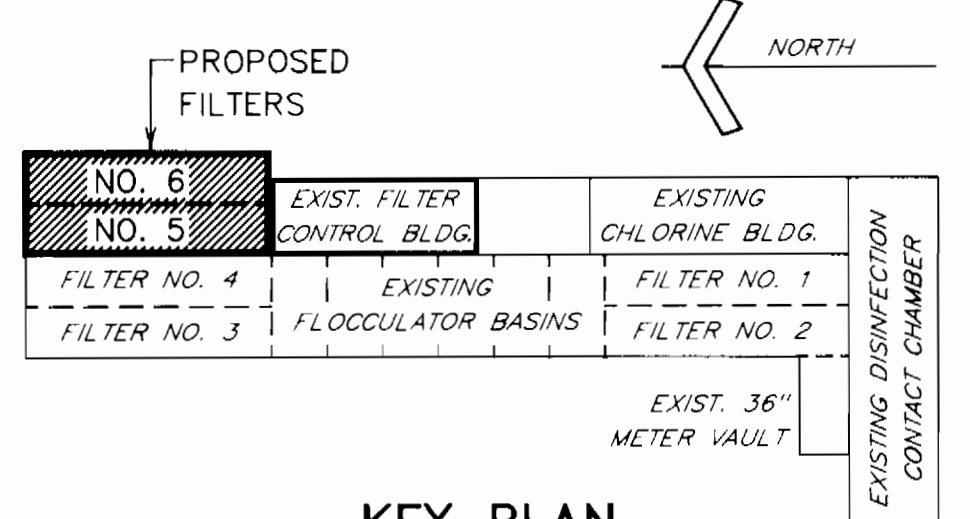


YARD PIPING KEY NOTES

- | | | |
|--|---|--|
| <p>① SHORE AND PROTECT EXISTING UNDERGROUND ELECTRICAL DUCT BANK, AS REQUIRED DURING CONSTRUCTION.</p> <p>② SHORE AND PROTECT EXISTING 8" WATER LINE AS REQUIRED DURING CONSTRUCTION.</p> <p>③ EXISTING 12" DRAIN TO BE ABANDONED, REMOVE AS REQUIRED AND CONCRETE FILL OPEN ENDS OF REMAINING PIPE.</p> <p>④ EXISTING 12" DRAIN AND MANHOLE TO BE ABANDONED AND REMOVED.</p> <p>⑤ EXISTING 8" DRAIN TO BE LOWERED AND TIED INTO NEW LOWERED 12" DRAIN REPLACEMENT.</p> <p>⑥ EXISTING 24" INFLUENT LINE FOR PROPOSED FILTER NO. 5. EXACT LOCATION TO BE DETERMINED IN THE FIELD.</p> <p>⑦ EXISTING 24" EFFLUENT LINE FOR PROPOSED FILTER NO. 5 TO BE ABANDONED, PLUGGED & REMOVED AS REQUIRED.</p> <p>⑧ EXISTING 24" INFLUENT LINE FOR PROPOSED FILTER NO. 6. EXACT LOCATION TO BE DETERMINED IN THE FIELD.</p> <p>⑨ EXISTING 24" EFFLUENT LINE FOR PROPOSED FILTER NO. 6 TO BE ABANDONED, PLUGGED & REMOVED AS REQUIRED.</p> <p>⑩ PROPOSED 12" DI DRAIN RELOCATION (LOWER) & EXTENDED TO PROPOSED MH "A". SEE PROFILE #2, SHT. SD-4</p> | <p>⑪ TIE PROPOSED 12" DI DRAIN INTO EXISTING 12" DRAIN. PROVIDE ADAPTOR AS REQUIRED.</p> <p>⑫ PROPOSED MANHOLE "A". REINSTALL EXISTING 12" BACK FLOW FLAP VALVE FROM EXISTING MANHOLE ON 12" MANHOLE INLET LINE.</p> <p>⑬ PROPOSED 30" DI EFFLUENT LINE FROM PROPOSED FILTERS NO. 5 & 6, SEE PROFILE #1 SHT. SD-4</p> <p>⑭ TIE PROPOSED 30" DI FILTER EFFLUENT LINE INTO EXISTING PUMPING STATION WET WELL</p> <p>⑮ PROPOSED 4" DI FLUSHING WATER LINE, MAINTAIN MINIMUM OF 3'-6" COVER.</p> <p>⑯ TIE INTO EXISTING 4" FLUSHING WATER LINE.</p> <p>⑰ PROPOSED 2" YARD HYDRANT.</p> <p>⑱ EXISTING DRAIN & PIPING TO BE ABANDONED & REMOVED.</p> <p>⑲ EXISTING 4" DISCHARGE FROM FILTER CONTROL BUILDING SUMP TO REMAIN. CONNECT TO PROPOSED INLET.</p> <p>⑳ PROPOSED 4' SQ. INLET FOR ALUM & SODIUM HYDROXIDE SPILLS, TO BE CONNECTED TO EXISTING 12" DRAIN. PROVIDE BACKFLOW FLAP VALVE ON 12" EXISTING INLET LINE.</p> | <p>㉑ REMOVE PORTION OF EXISTING CURB AND REPLACE AS REQUIRED.</p> <p>㉒ PROPOSED 5' HIGH AL. CHAIN LINK FENCE W/POSTS AT 5' O. C.</p> |
|--|---|--|

UNIT LOCATION & YARD PIPING PLAN

SCALE IN FEET 0 10 20 40 60
SCALE: 1" = 20'



KEY PLAN
NO SCALE

L870987_ENCLOSURE 08/19/88 16-436.9

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara*
Date: 11-30-88

Chief, Bureau of Engineering: *William E. Reddy*
Date: 11-30-88

Chief, Utility Design Division: *Cydon Lee*
Date: 11-30-88

HUTH ENGINEERS INC.
CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS

P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021

LANCASTER, PA ALLENTOWN, PA

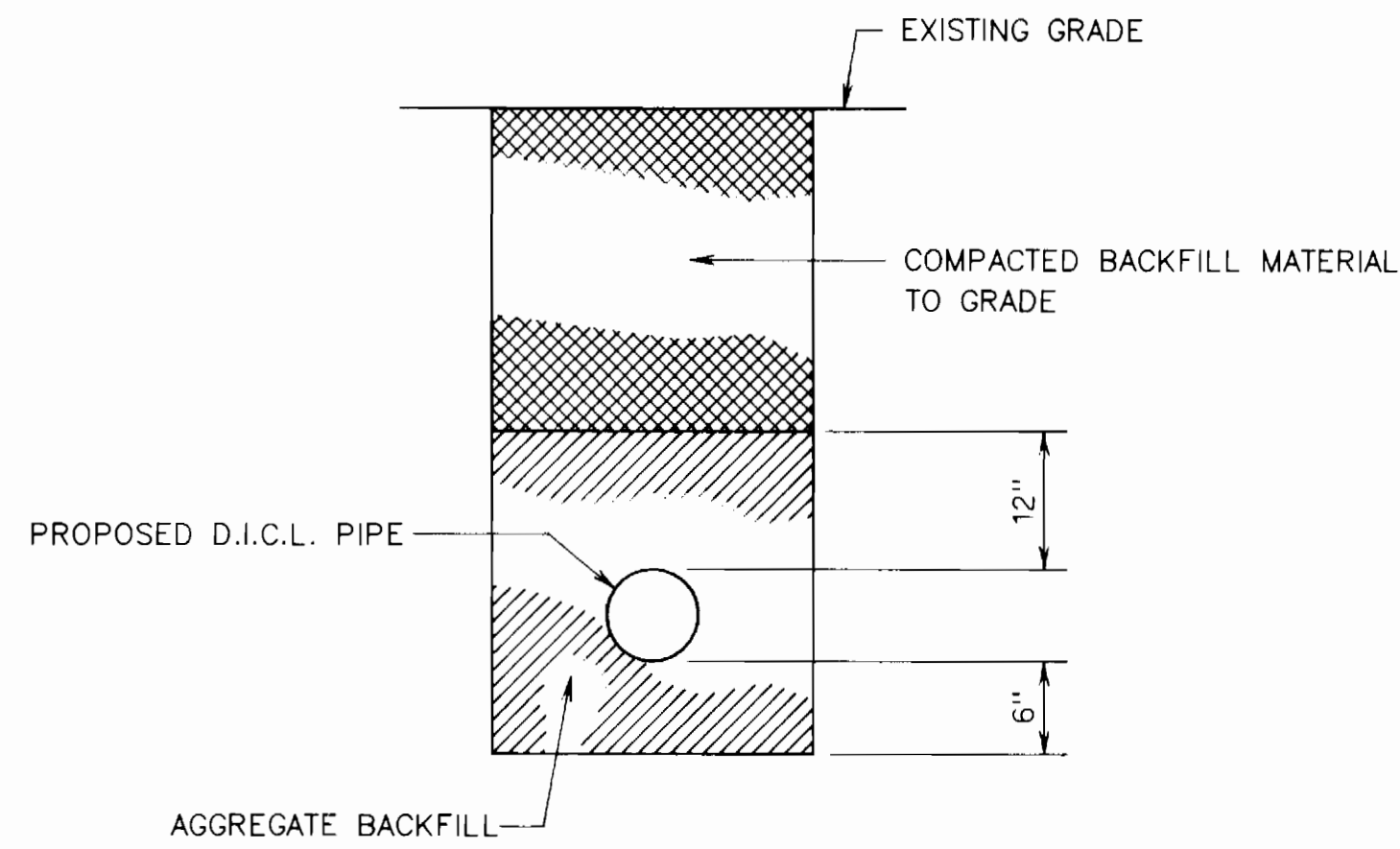


DES:	R.L.S. H.T.D.				
DRN:	CADD				
CHK:					
DATE:	8/88	BY:	NO.	REVISION	DATE

FILTERS NO. 5 & 6
UNIT LOCATION AND
YARD PIPING PLAN

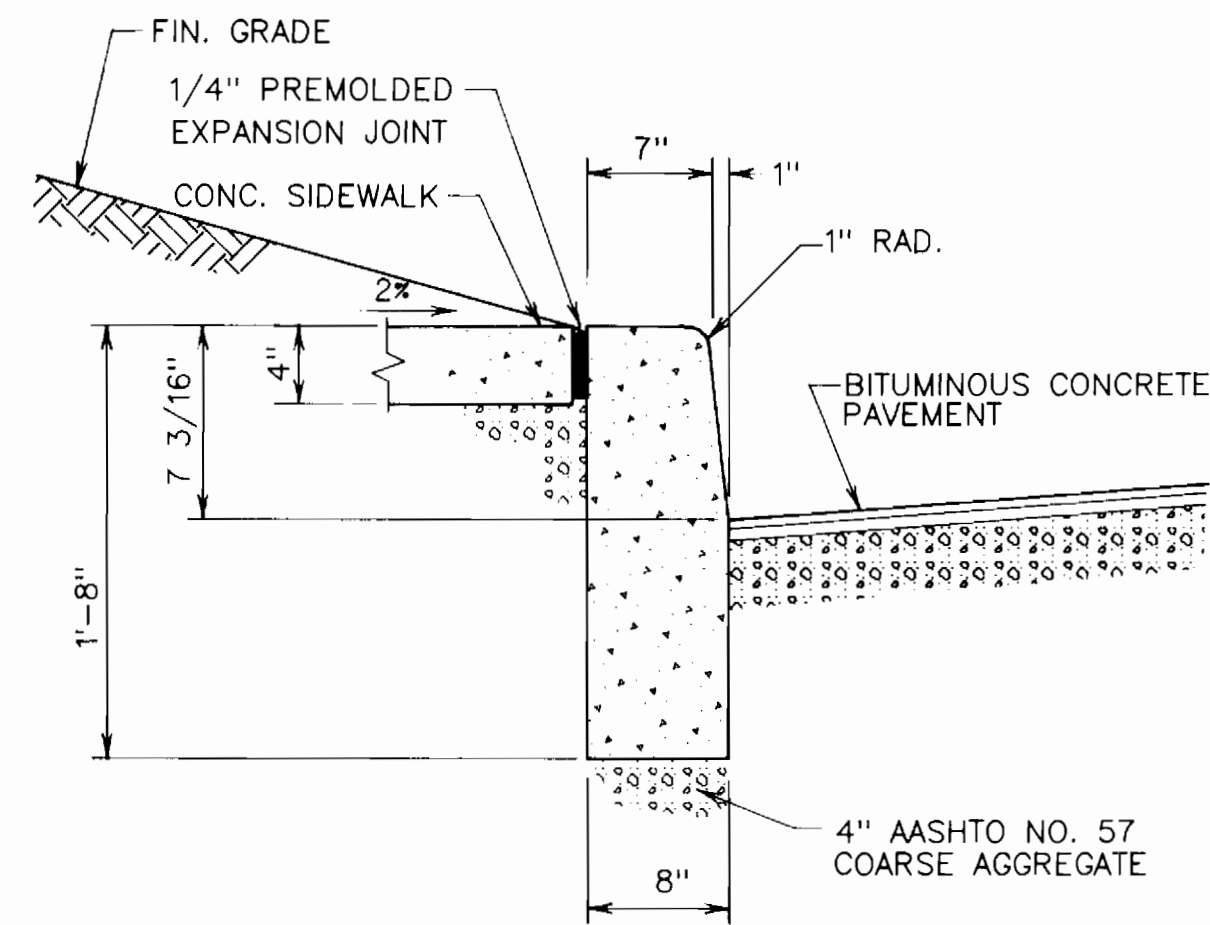
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 8 OF 40
C-2



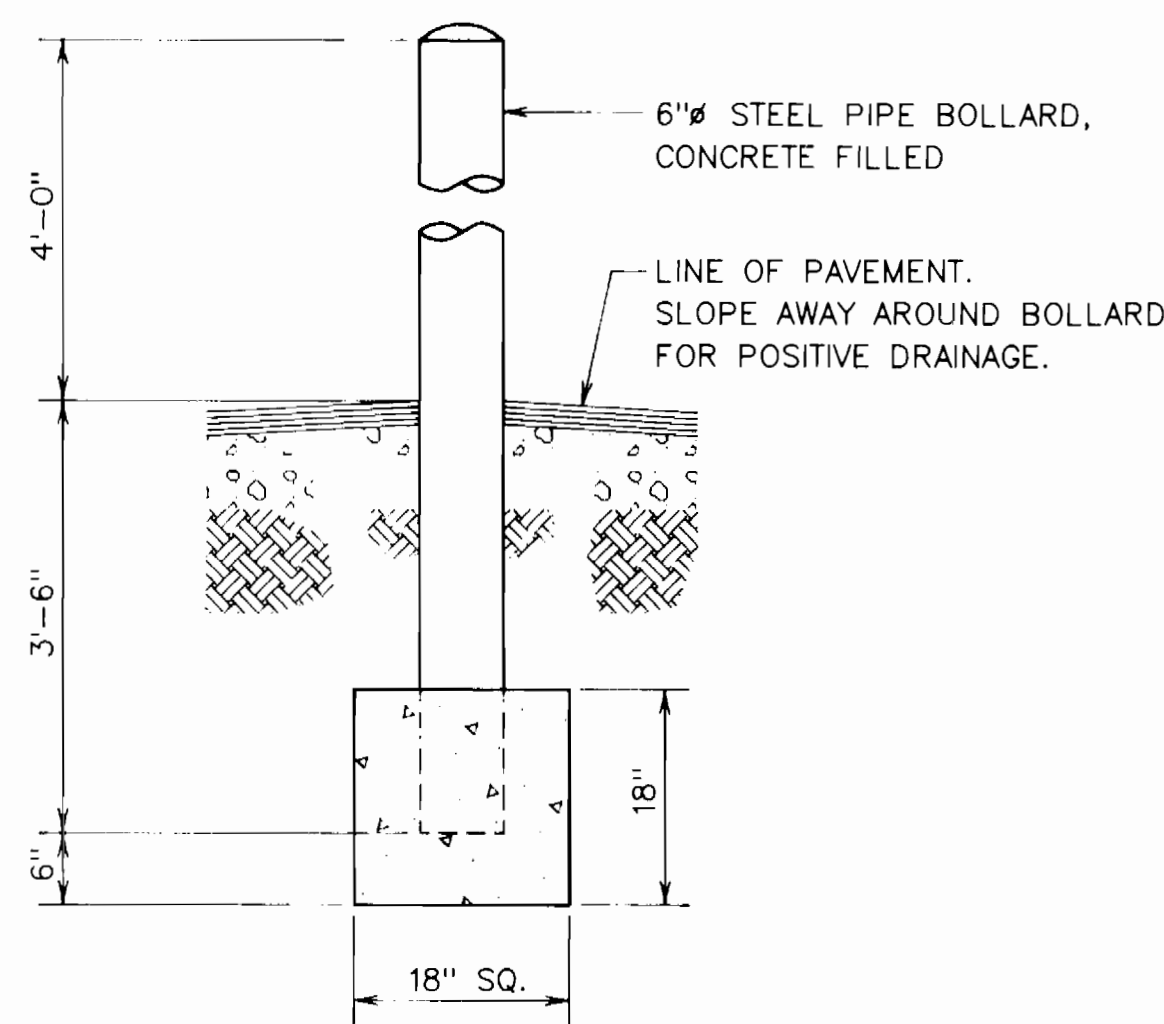
TYPICAL TRENCH SECTION

NO SCALE



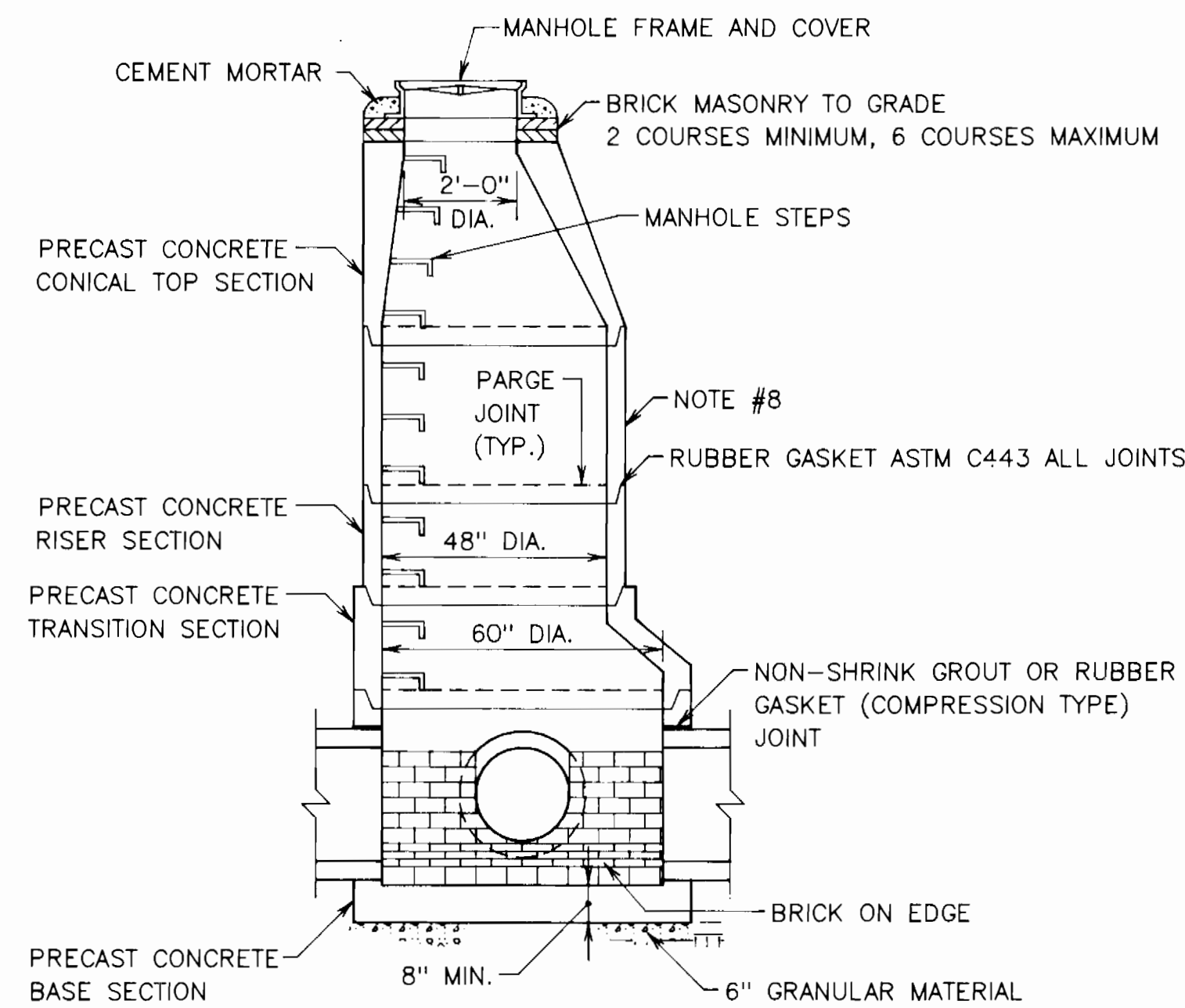
STANDARD STRAIGHT CURB DETAIL

NO SCALE NOTE: REF. TO HOWARD DESIGN MANUAL VOL. 4, R-3.03



EXTERIOR BOLLARD DETAIL

NO SCALE

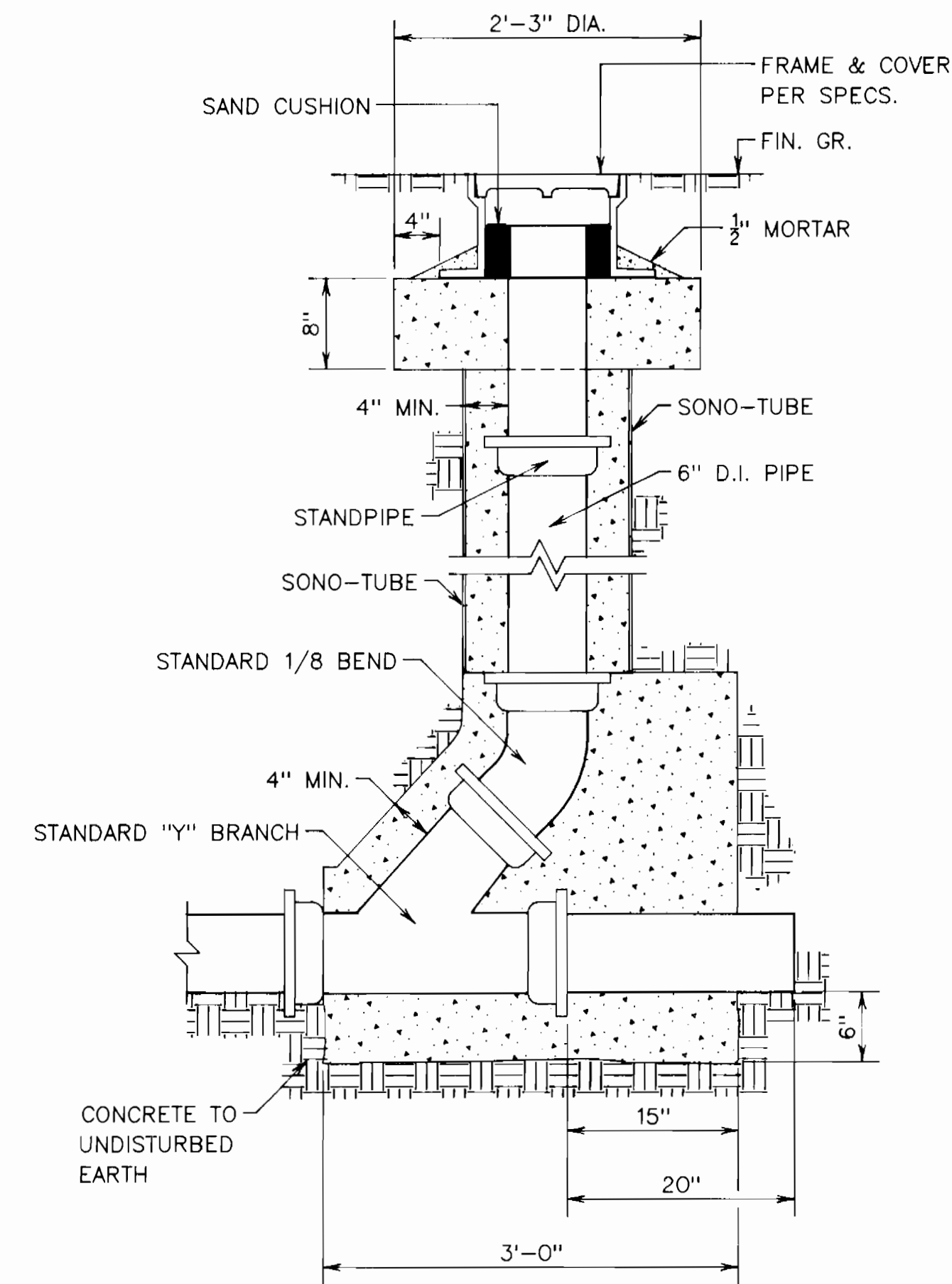


GENERAL NOTES

1. MANHOLE BASE SHALL BE BEDDED ON 6-INCH GRANULAR MATERIAL ON FIRM SUBGRADE.
2. EXCAVATION BELOW PIPES SHALL BE BACKFILLED WITH GRANULAR OR SELECT MATERIAL 1/3 OR WAY TO TOP OF PIPE.
3. CONNECTION BETWEEN MANHOLE WALL AND SEWER SHALL BE NON-SHRINK GROUT OR RUBBER GASKET (COMPRESSION TYPE) JOINT.
4. MANHOLE STEPS SHALL BE AS SPECIFIED. MANHOLE COVER SHALL BE AS SPECIFIED.
5. PROVIDE 2 COATS COAL TAR EPOXY COATING, 16 MIL. DRY. SANITARY SEWER ONLY. (EXTERIOR SURFACE ONLY)
6. PROVIDE PIPE JOINT WITHIN 2'-0" MAXIMUM FROM OUTSIDE OF MANHOLE WALL.
7. MANHOLE CHANNELS SHALL BE FORMED TO PROVIDE A SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES. BENCHES SHALL BE TO TOP OF PIPE OR AS SHOWN ON PLANS. MANHOLE CHANNELS AND BENCHES SHALL BE FORMED FROM SEWER BRICK, GRADE SS, ASTM C-32.
8. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C 478 EXCEPT AS SHOWN.

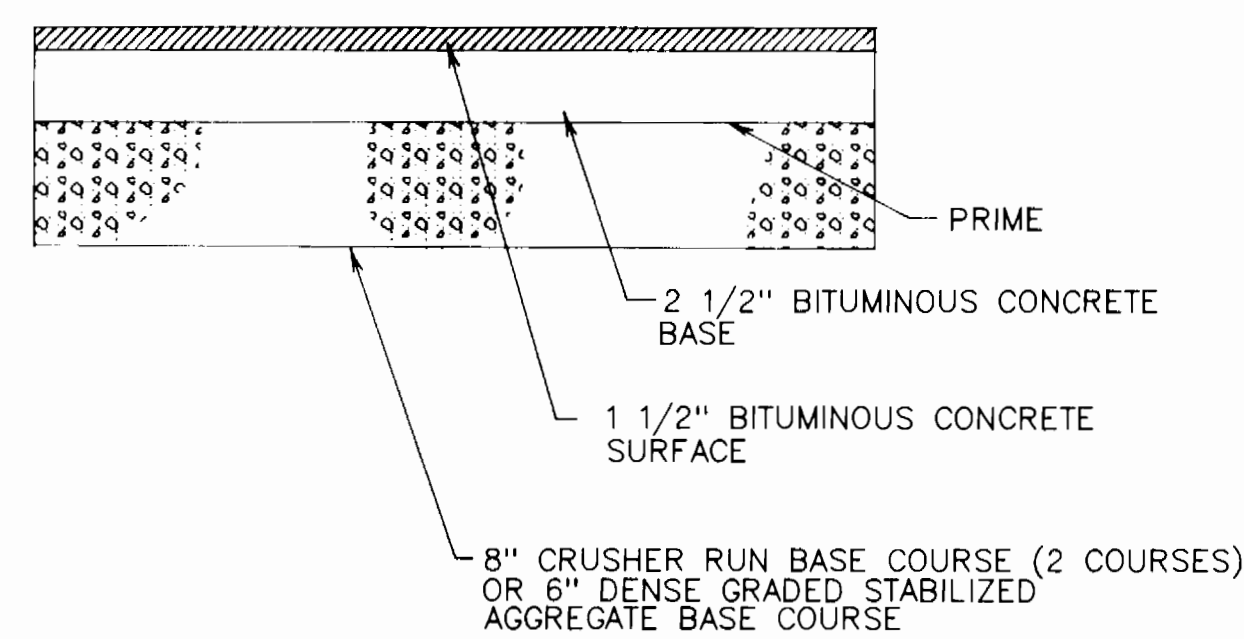
PRECAST CONCRETE MANHOLE DETAIL

NO SCALE NOTE: REF. TO HOWARD CO. DESIGN MANUAL, VOL.4, DETAIL G-5.11



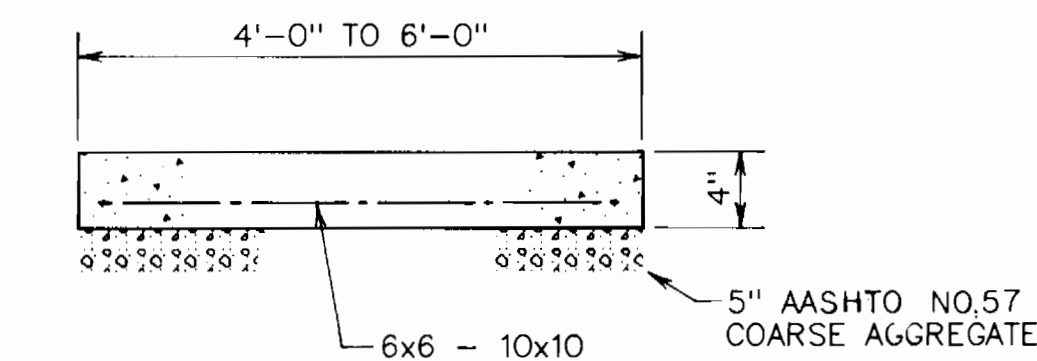
CLEAN OUT DETAIL

NO SCALE NOTE: REF. TO HOWARD CO. DESIGN MANUAL, VOL.4, DETAIL S-3.21

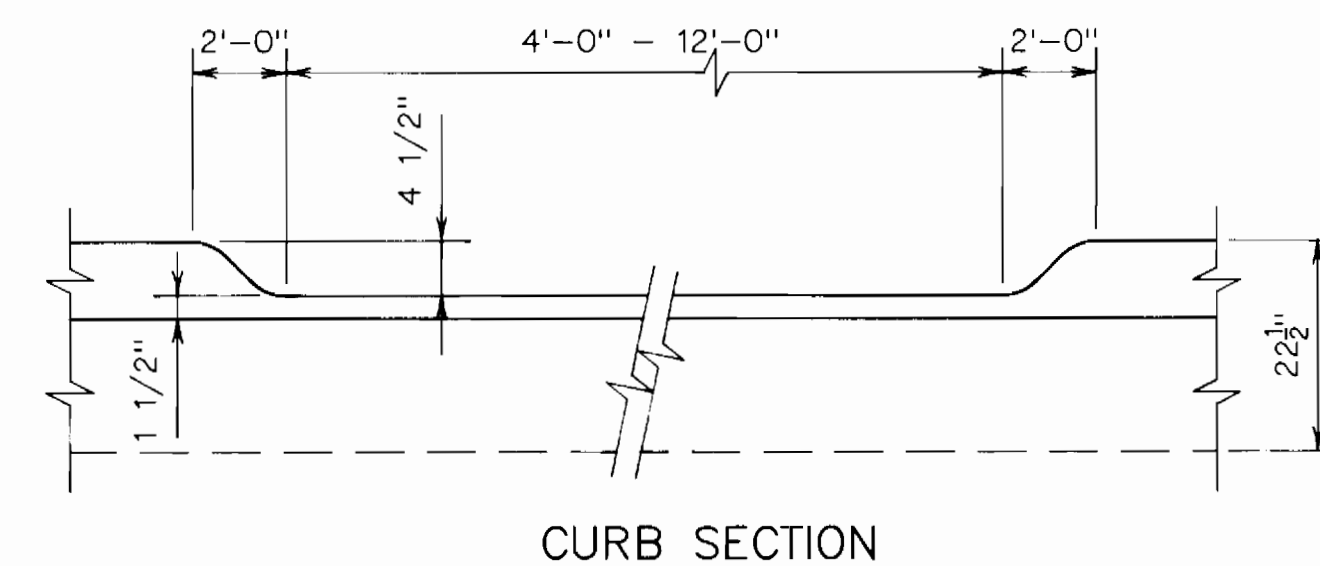


BITUMINOUS PAVEMENT

NO SCALE NOTE: REF. TO HOWARD CO. DESIGN MANUAL, VOL.4, DETAIL R-2.01,P-2



CONCRETE SIDEWALK SECTION



CURB SECTION

STANDARD CURB DEPRESSION & SIDEWALK AT DRIVE

NO SCALE NOTE: REF. TO HOWARD CO. DESIGN MANUAL, VOL. 4, DETAIL R-2.06

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS
John O'Hara 11/30/88
DATE

CHIEF, BUREAU OF ENGINEERING
John O'Hara 11-30-88
DATE

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
John O'Hara 11-30-88
DATE

CHIEF, UTILITY DESIGN DIVISION
John O'Hara 11-30-88
DATE

H CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS
HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7281
LANCASTER, PA ALLENTOWN, PA

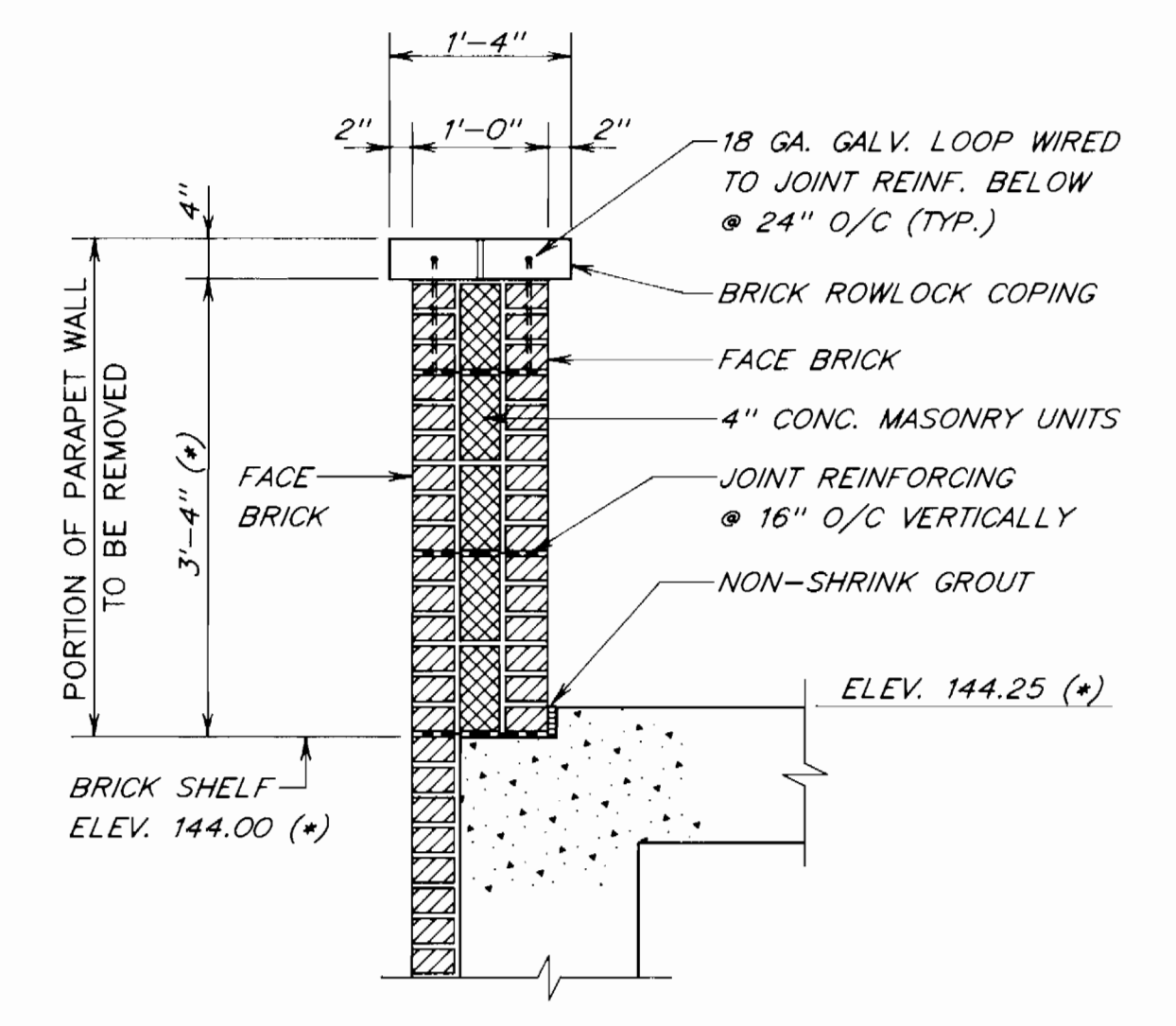
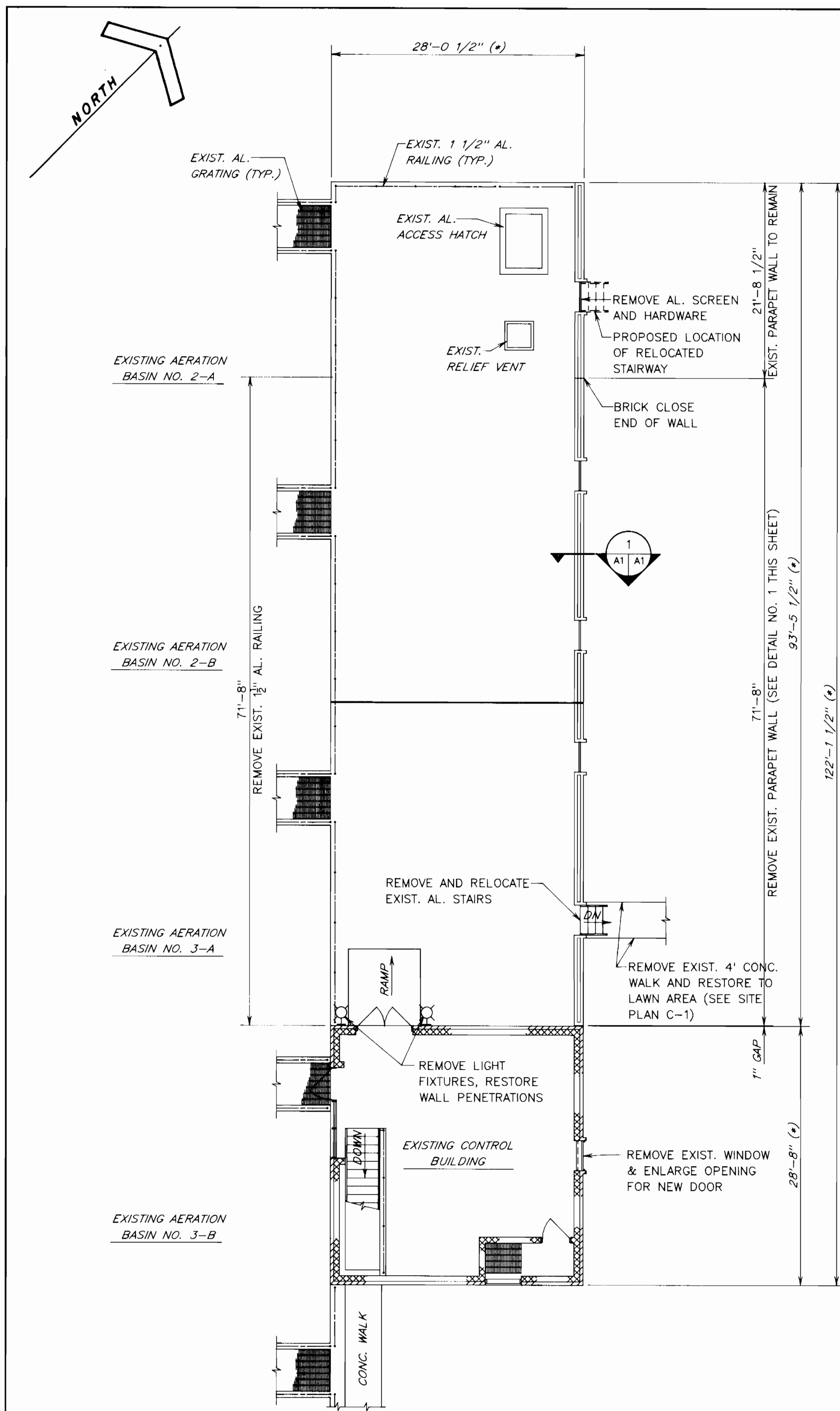


DES:	R.L.S.				
DRN:	CADD				
CHK:	<i>[Signature]</i>				
DATE:	8/88				
BY:	NO.	REVISION	DATE		

GENERAL DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHOROUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 9 OF 40
C-3



1 PARAPET WALL DETAIL

SCALE IN FEET 0 1 2 4 6

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

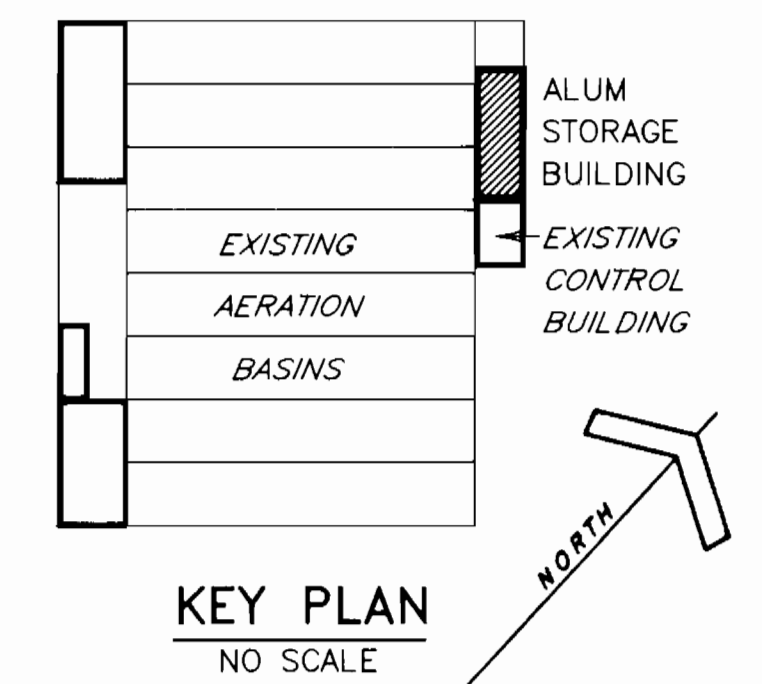
DEMOLITION FLOOR PLAN

SCALE IN FEET 0 4 8 16 24

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

LEGEND

(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.



L870567-EN04130-08/28/88 21635691

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John Johans
DIRECTOR OF PUBLIC WORKS
DATE: 11-30-88

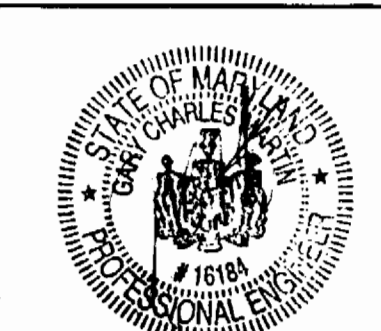
John Johans
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 11-30-88

John Johans
CHIEF, UTILITY DESIGN DIVISION
DATE: 11-30-88

CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS

HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7021

LANCASTER, PA ALLENTOWN, PA



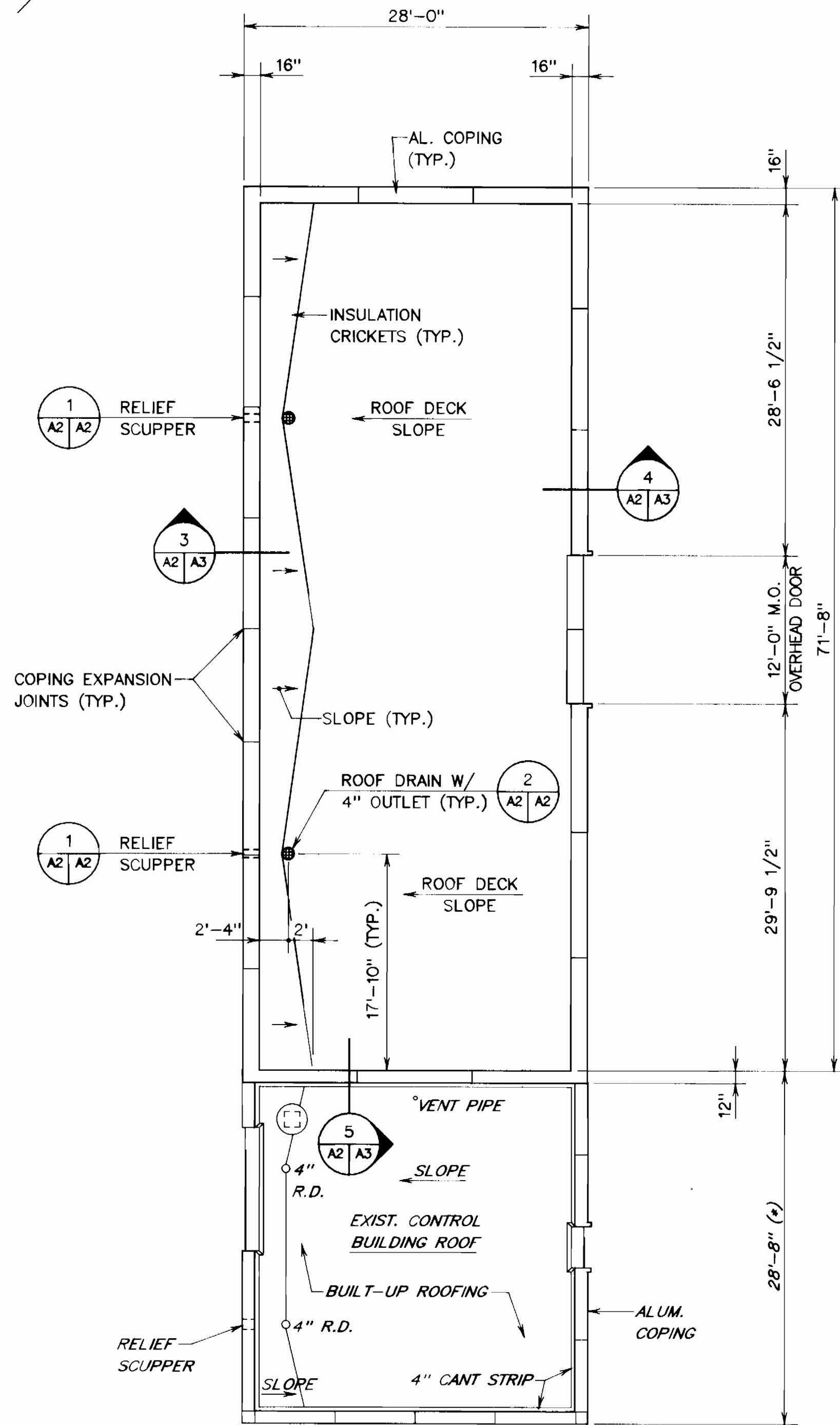
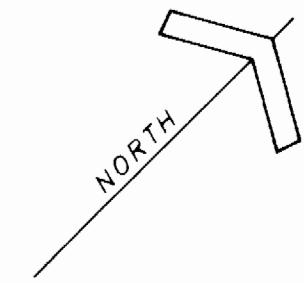
DES: H.T.D.				
DRN: CADD				
CHK: <i>H.T.D.</i>				
DATE: 8/88	BY	NO.	REVISION	DATE

ALUM STORAGE BUILDING

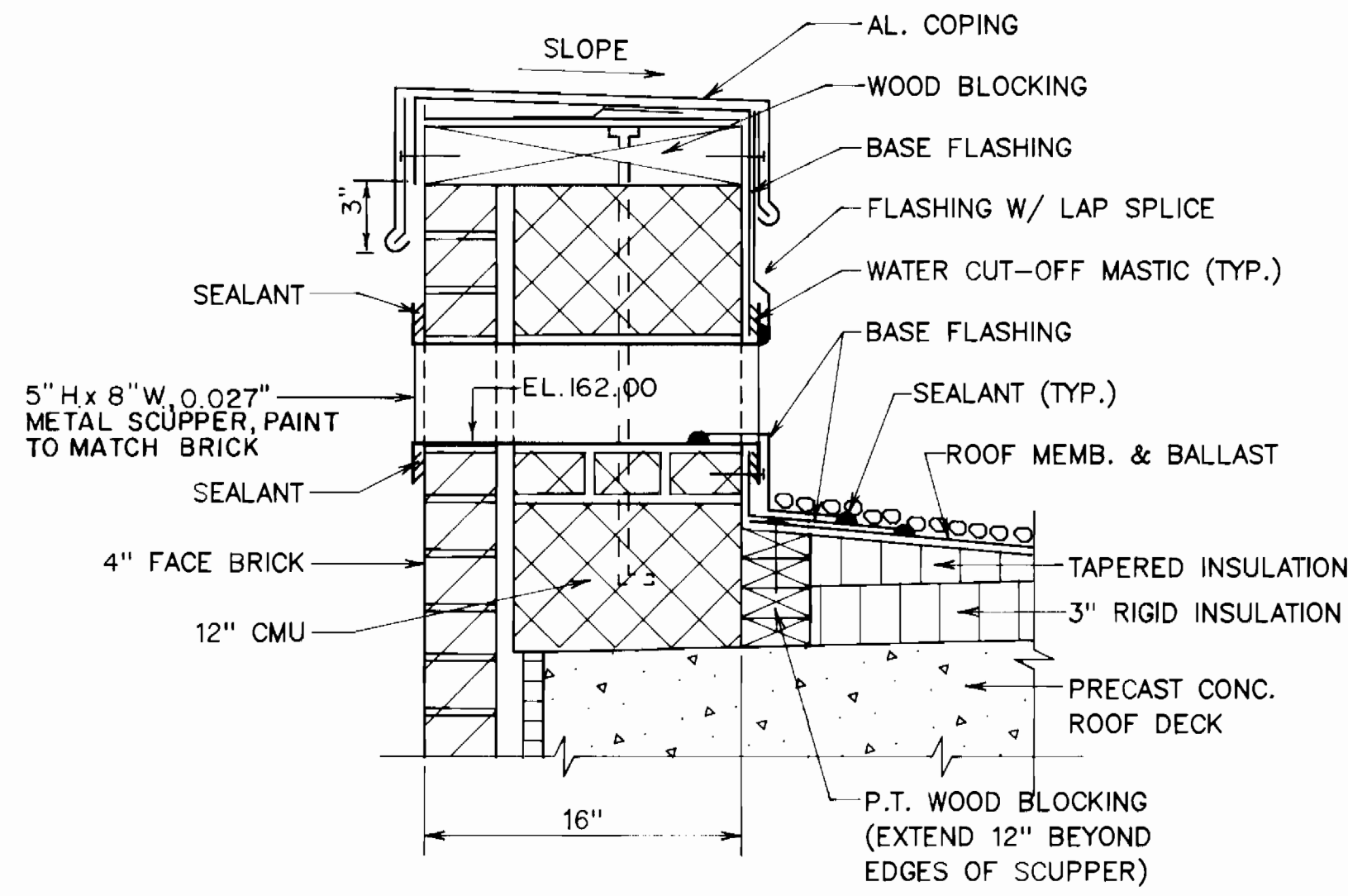
DEMOLITION FLOOR PLAN & DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

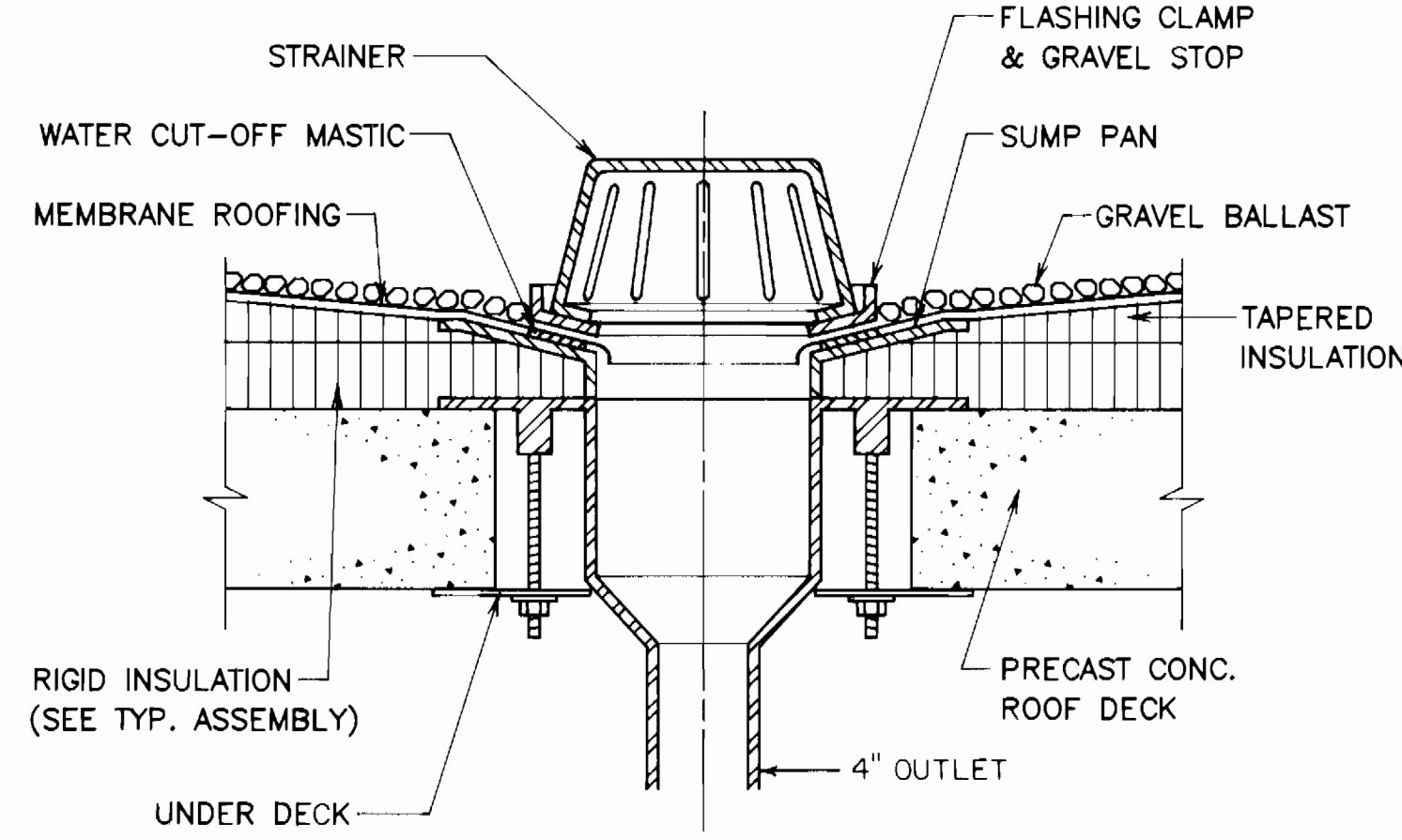
SCALE AS SHOWN
SHEET 10 OF 40
A-1



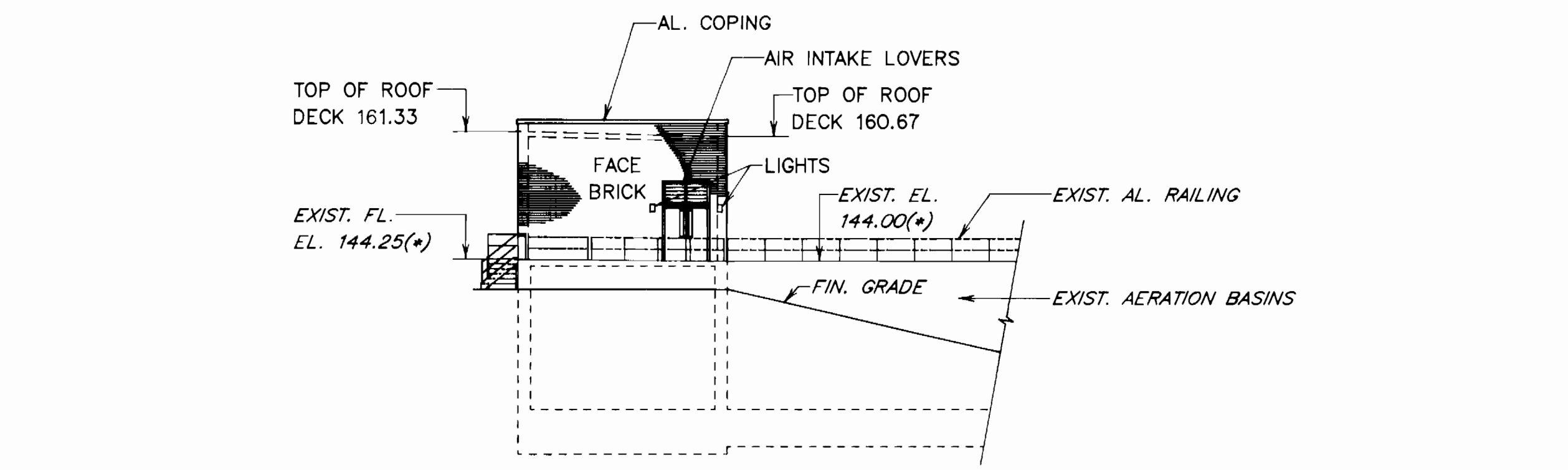
ARCHITECTURAL ROOF PLAN
 SCALE IN FEET 0 4 8 16 24
 SCALE: 1/8" = 1'-0"



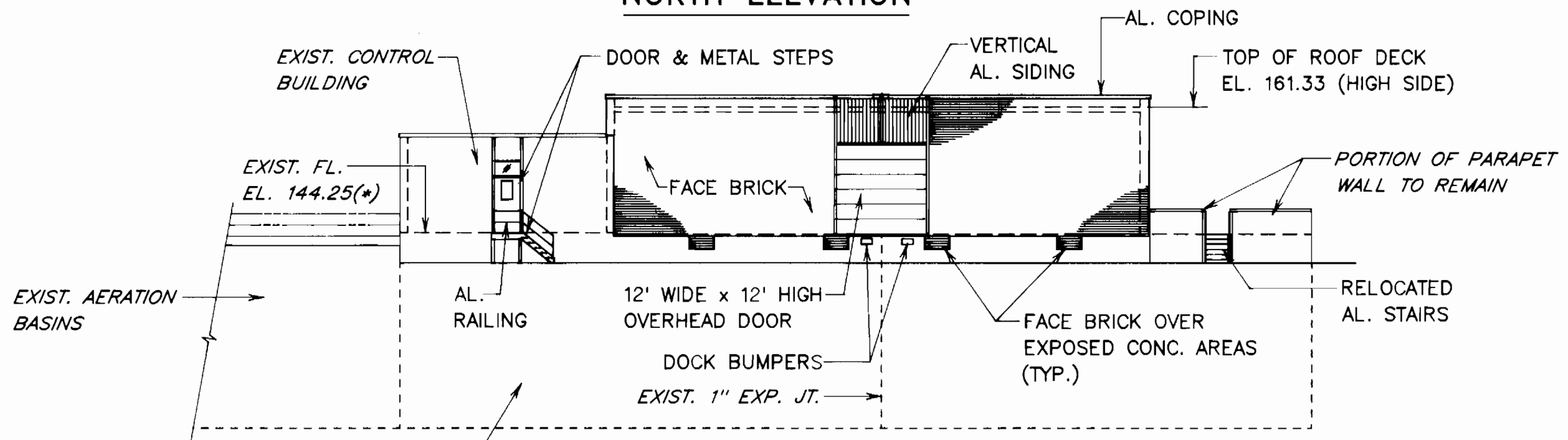
1 RELIEF SCUPPER DETAIL
 SCALE IN FEET 0 1/2 1 2
 SCALE: 1 1/2" = 1'-0"



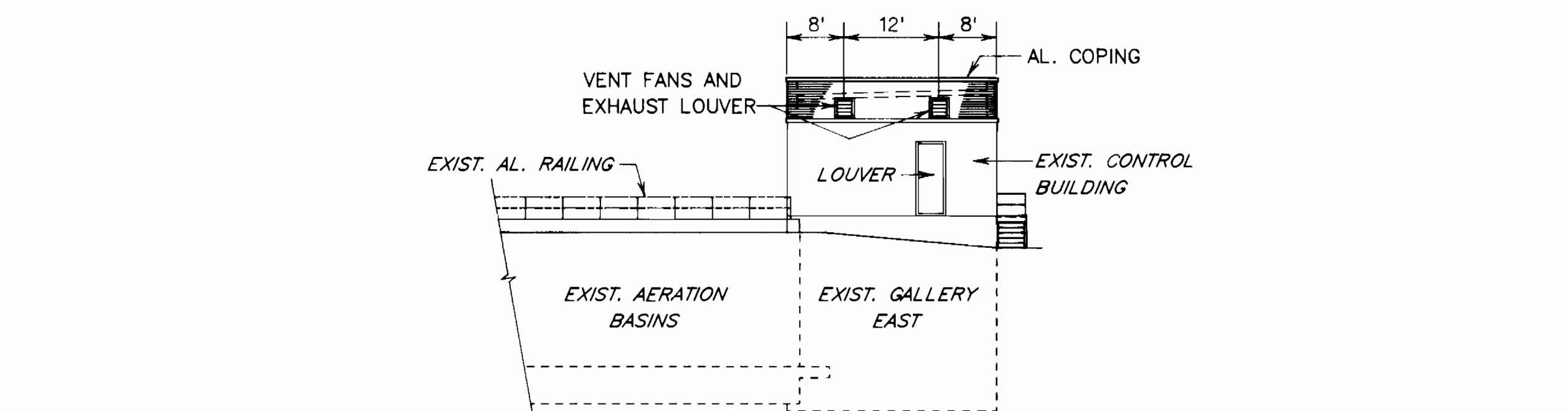
2 ROOF DRAIN DETAIL
 NO SCALE



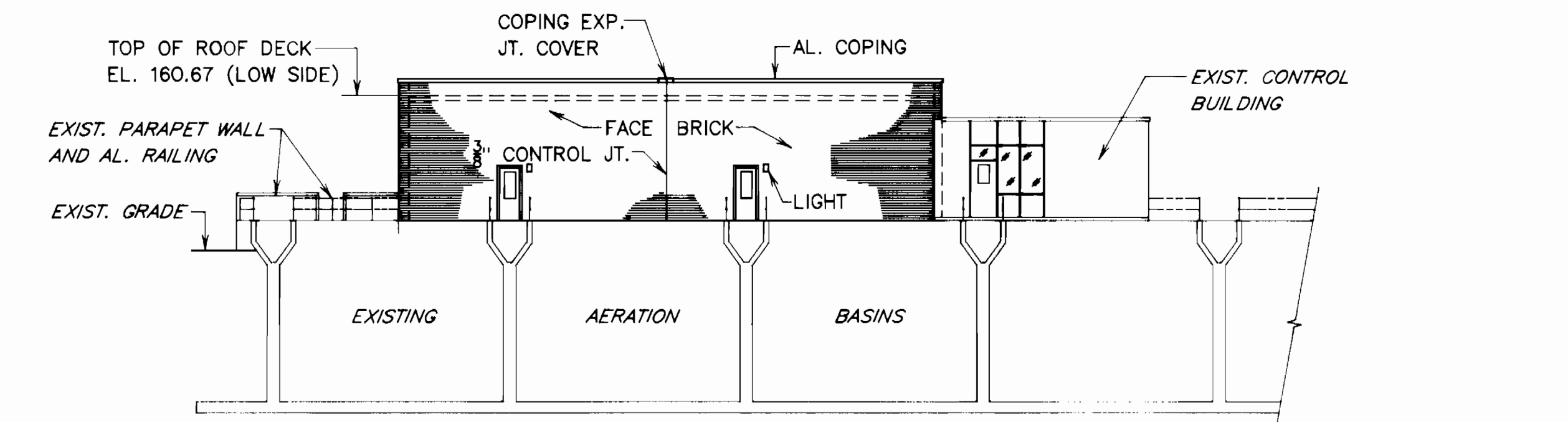
NORTH ELEVATION



EAST ELEVATION

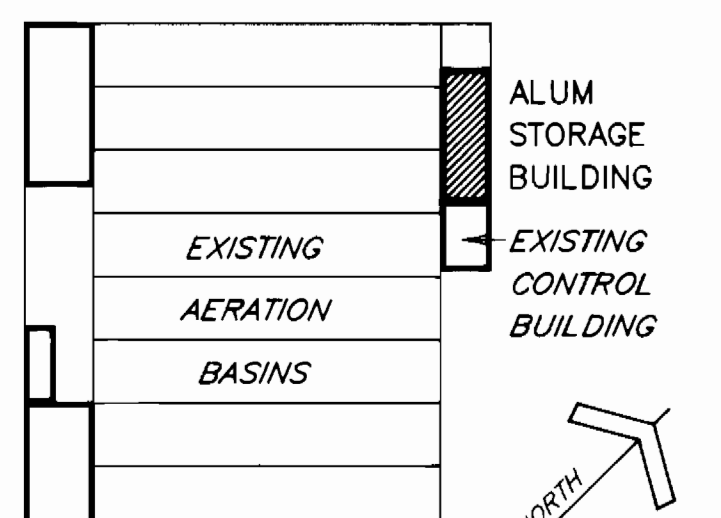


SOUTH ELEVATION



WEST ELEVATION

ALUM STORAGE BUILDING ELEVATIONS
 SCALE IN FEET 0 8 16 32 48
 SCALE: 1/16" = 1'-0"



KEY PLAN
 NO SCALE

LEGEND
 (*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 DIRECTOR OF PUBLIC WORKS: *John J. O'Hara* 11/30/88
 CHIEF, BUREAU OF ENGINEERING: *Richard R. Kelly* 11-30-88
 CHIEF, UTILITY DESIGN DIVISION: *Clayton J. Lewis* 11-30-88

HUTH ENGINEERS INC.
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 LANDSCAPE ARCHITECTS • PLANNERS
 P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7321
 LANCASTER, PA ALLENTOWN, PA

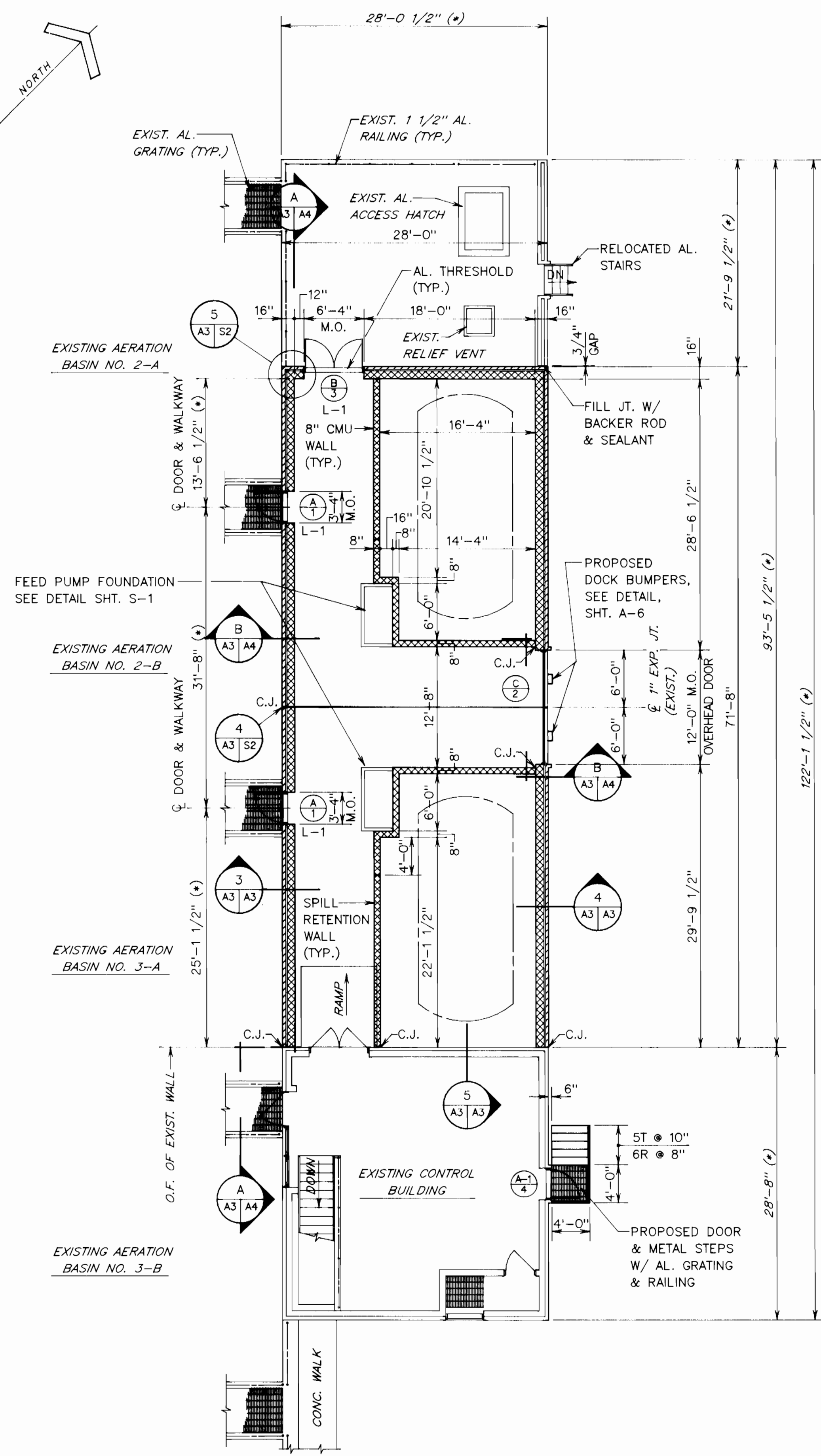
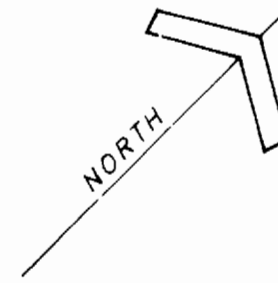


DES:	R.L.S.				
	H.T.D.				
DRN:	CADD				
CHK:					
DATE:	8/88	BY:	NO.	REVISION	DATE

ALUM STORAGE BUILDING
 ARCHITECTURAL ROOF PLAN
 AND BUILDING ELEVATIONS

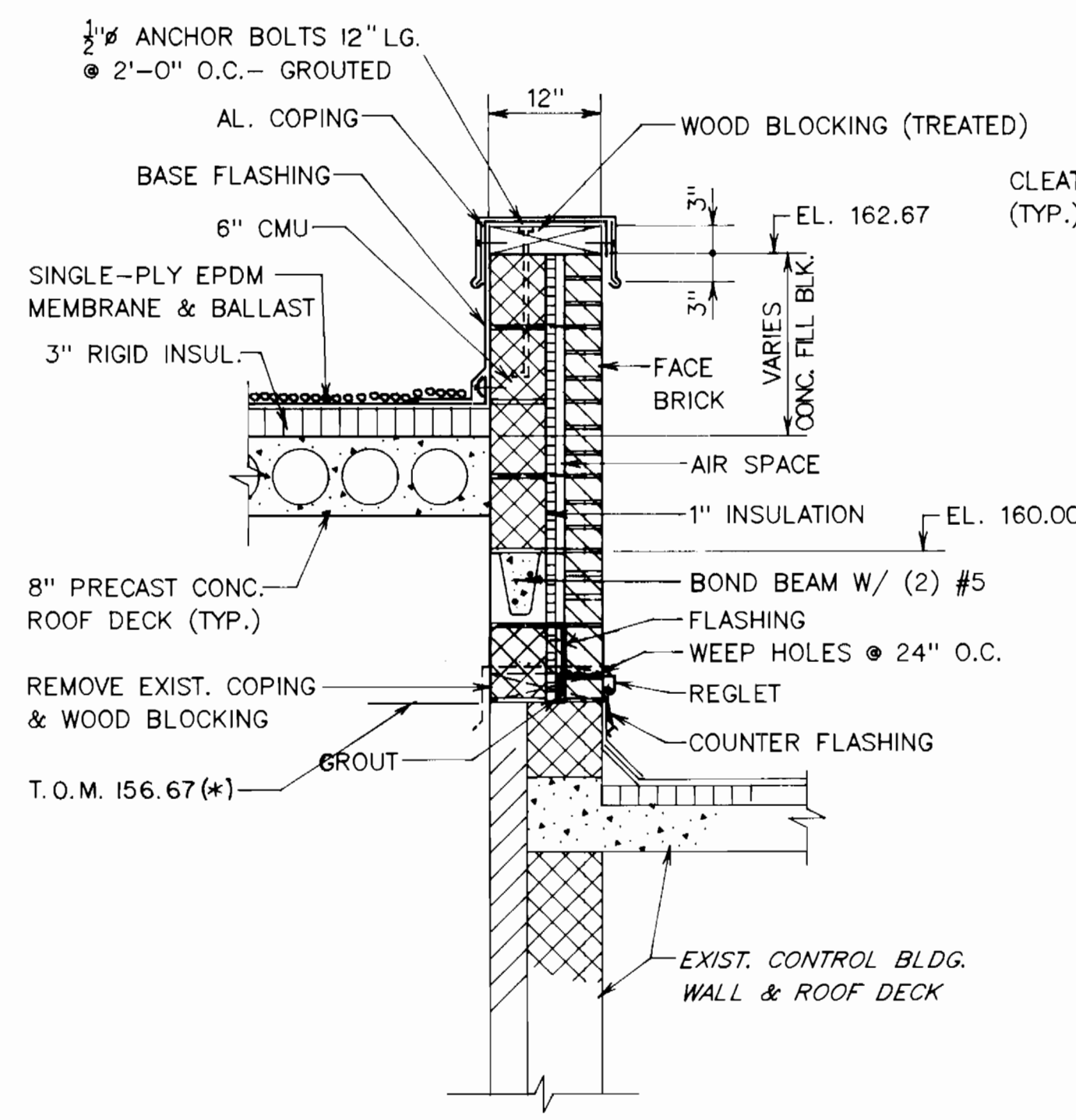
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 11 OF 40
A-2



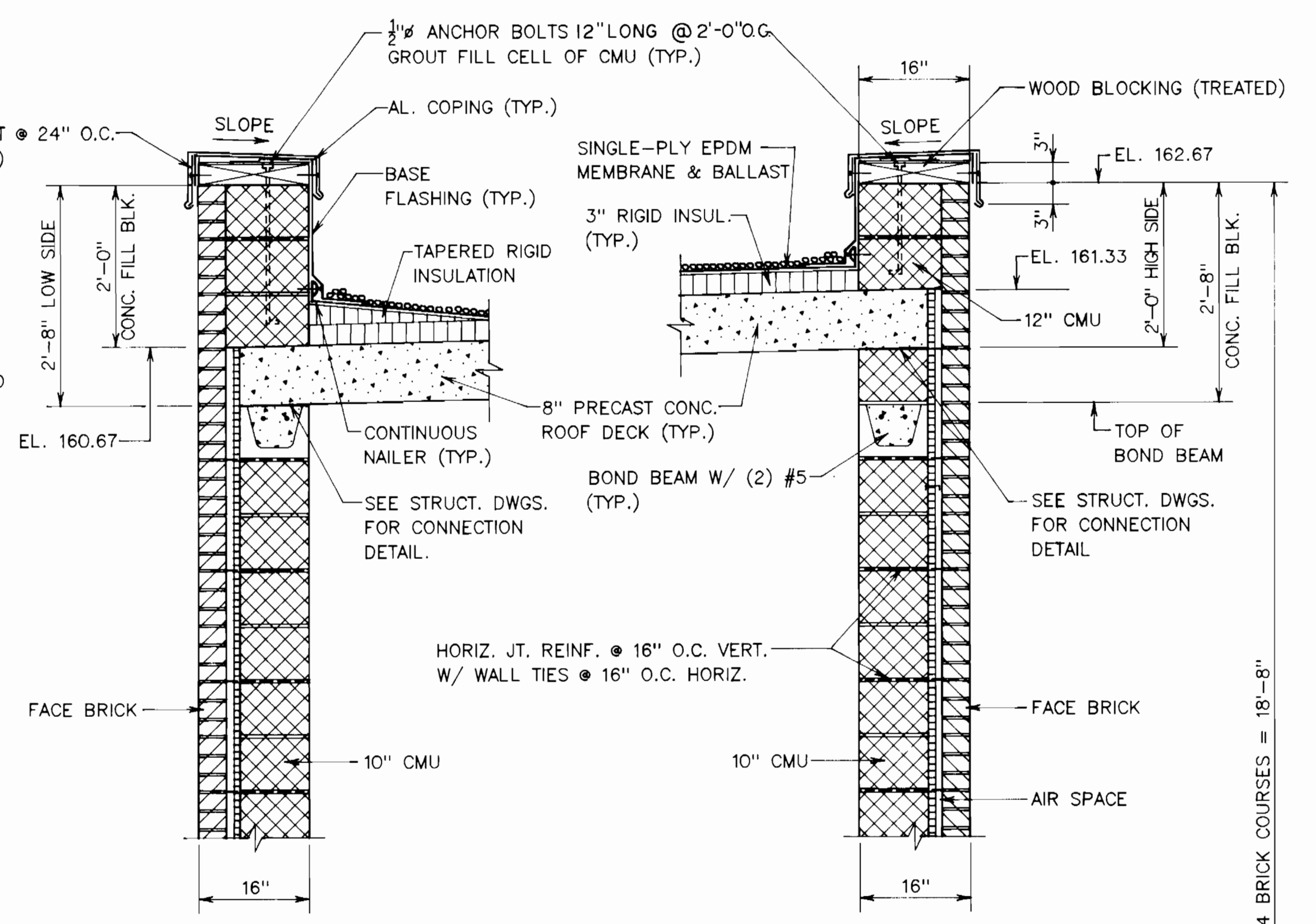
ARCHITECTURAL MAIN FLOOR PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



WALL SECTION @ EXIST. CONTROL BLDG.

SCALE IN FEET 0 1 1/2 1 2 3
SCALE: 3/4" = 1'-0"



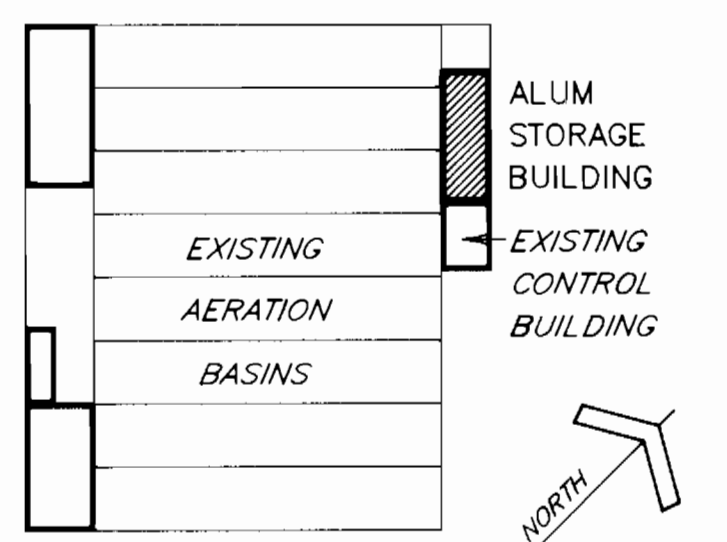
3 TYPICAL WALL SECTION

SCALE IN FEET 0 1 1/2 1 2 3
SCALE: 3/4" = 1'-0"

4 TYPICAL WALL SECTION

SCALE IN FEET 0 1 1/2 1 2 3
SCALE: 3/4" = 1'-0"

GENERAL NOTES:
1. FOR DOOR SCHEDULE, LINTEL SCHEDULE, DOOR TYPES & DETAILS, SEE SHT. A-6.



KEY PLAN
NO SCALE

LEGEND
(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

L170567_EK04130 08/18/08 13245413

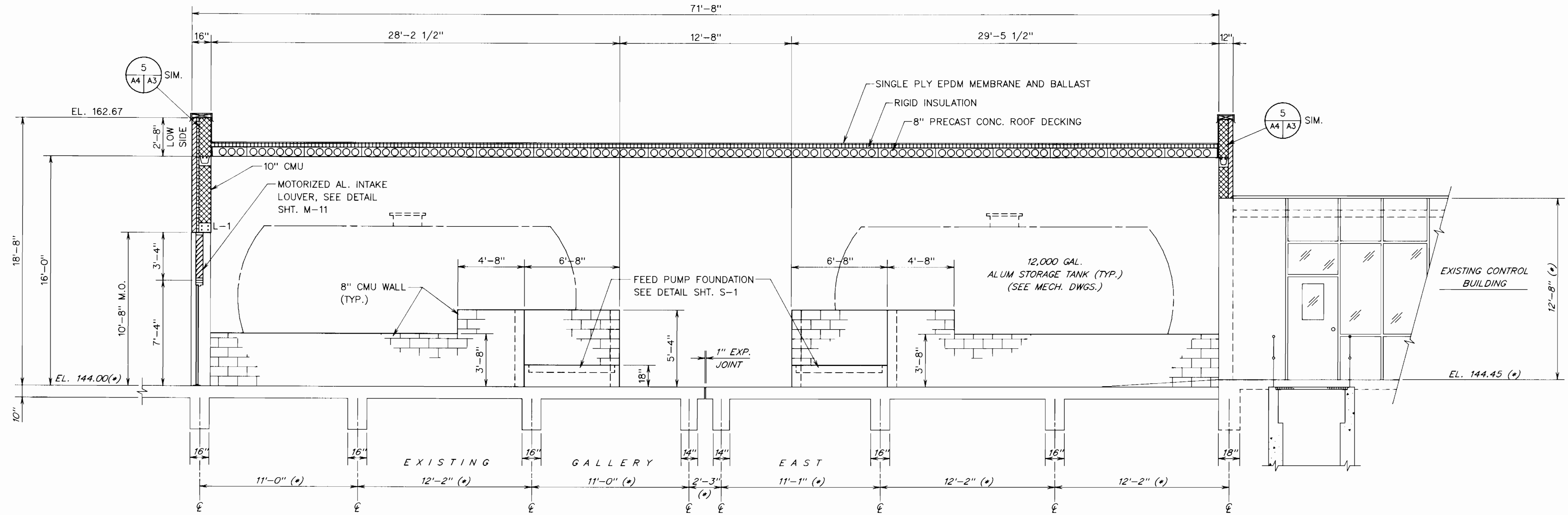
<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p>		<p>CONSULTING ENGINEERS • SURVEYORS LANDSCAPE ARCHITECTS • PLANNERS</p>	
<p>DATE: 11/30/08 11/30/08</p>	<p>DATE: 11-30-08 11-30-08</p>	<p>HUTH ENGINEERS INC. P.O. BOX 3012 LANCASTER, PA 17604 (717)269-7021</p>	
<p>DATE: 8/88</p>	<p>BY: NO.</p>	<p>REVISION</p>	<p>DATE</p>

ALUM STORAGE BUILDING
ARCHITECTURAL MAIN FLOOR PLAN
AND WALL SECTIONS

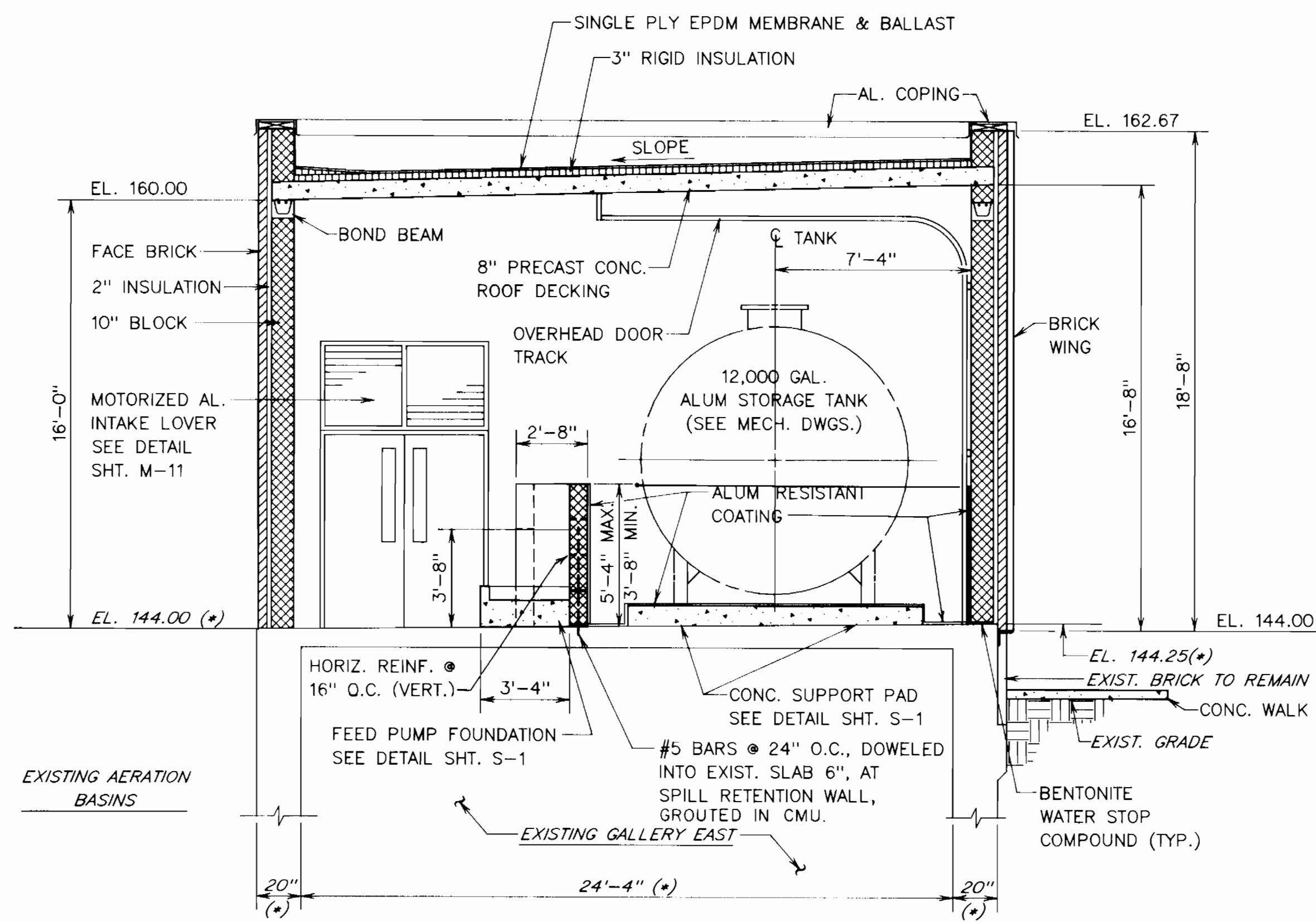
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 12 OF 40
A-3

SCALE AS SHOWN
SHEET 12 OF 40
A-3



A ALUM BUILDING SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

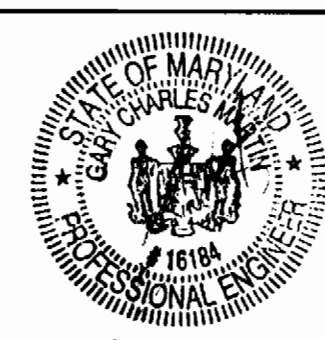


B ALUM STORAGE BUILDING SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

LEGEND
 (*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

H HUTH ENGINEERS INC.
 CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS
 P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-1021
 LANCASTER, PA ALLENTOWN, PA

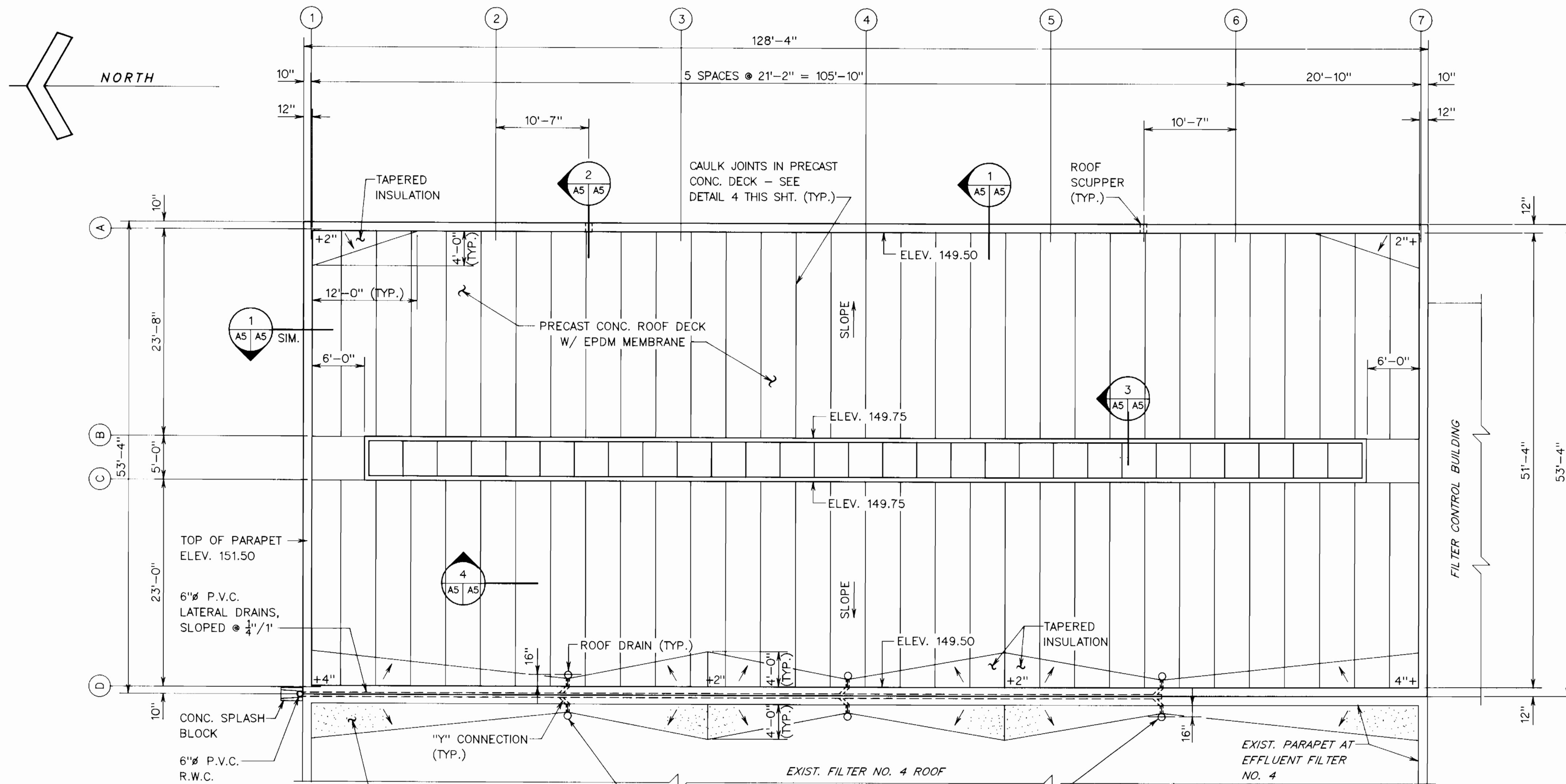


DES:	R.L.S.			
	H.T.D.			
DRN:	CADD			
CHK:				
DATE:	8/88	BY	NO.	REVISION
				DATE

ALUM STORAGE BUILDING
 ARCHITECTURAL SECTIONS AND DETAILS

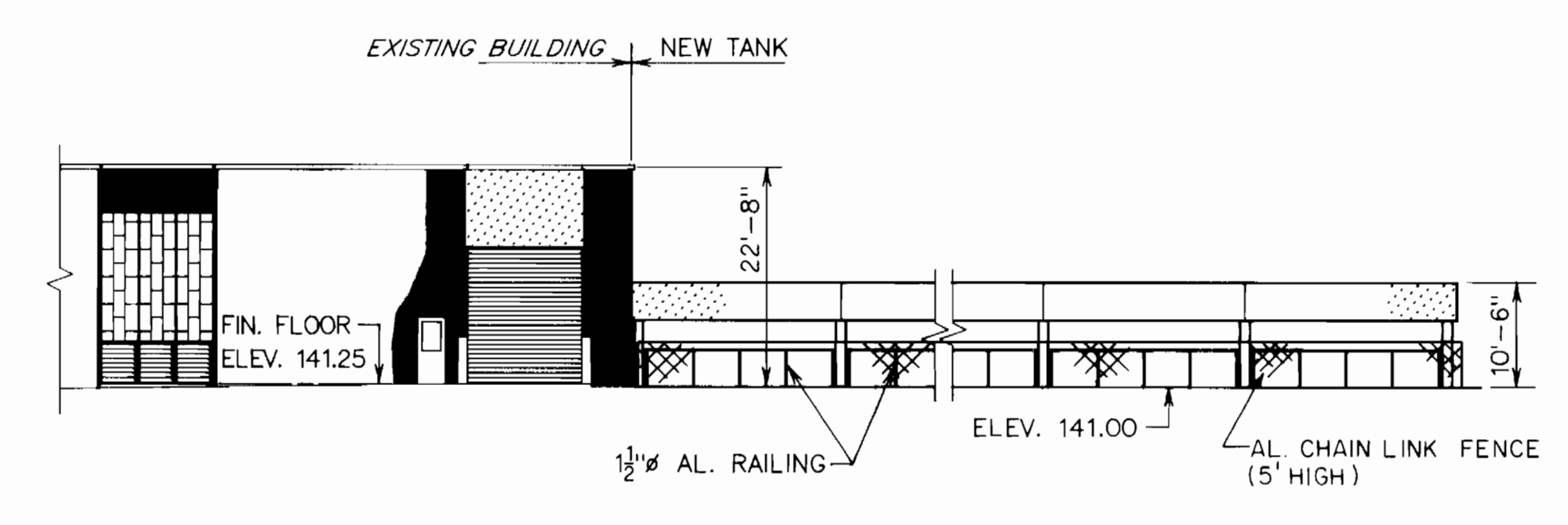
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 13 OF 40
A-4



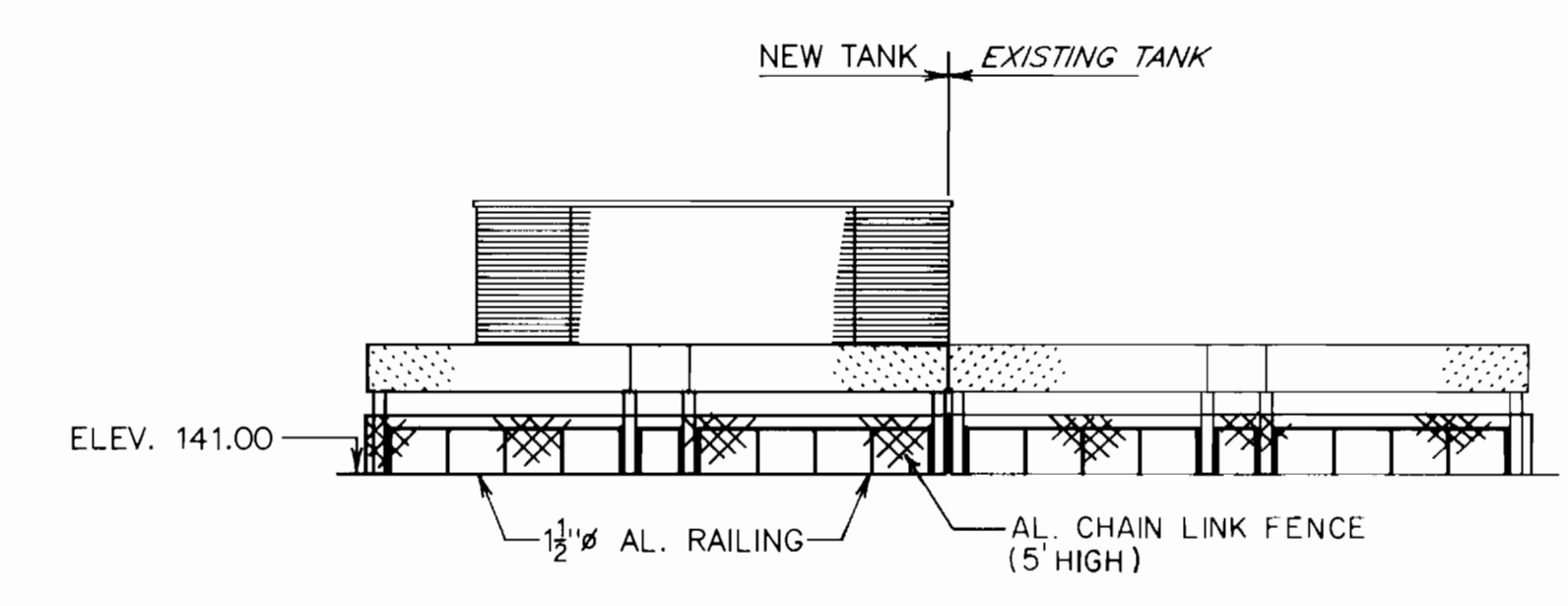
ROOF PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



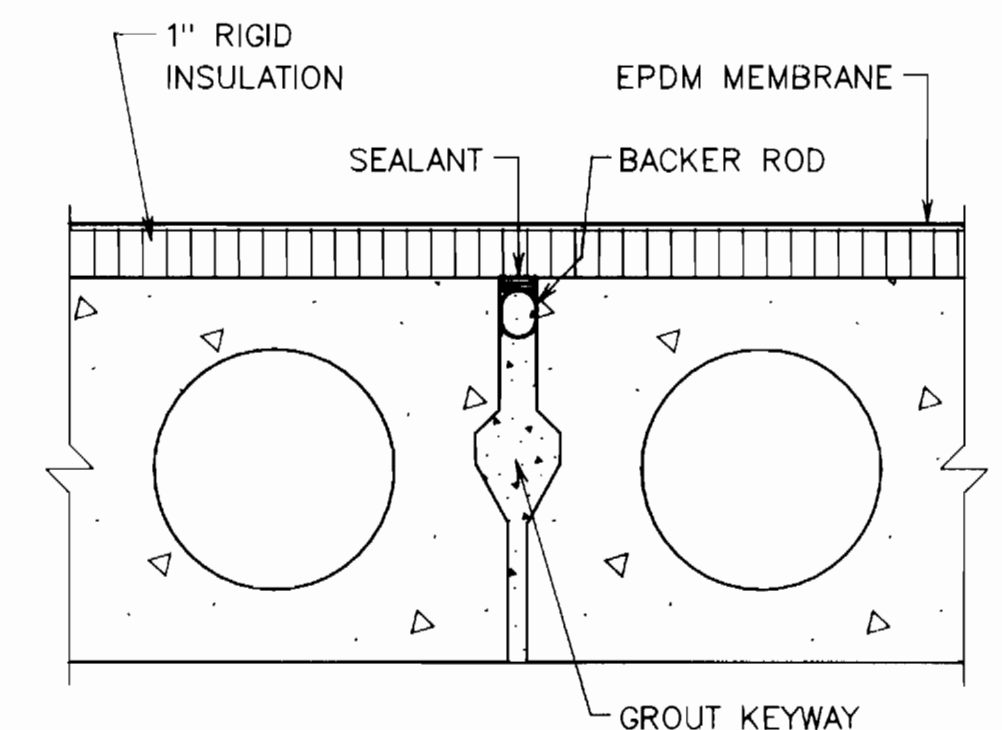
EAST ELEVATION

SCALE IN FEET 0 8 16 32 48
SCALE: 1/16" = 1'-0"



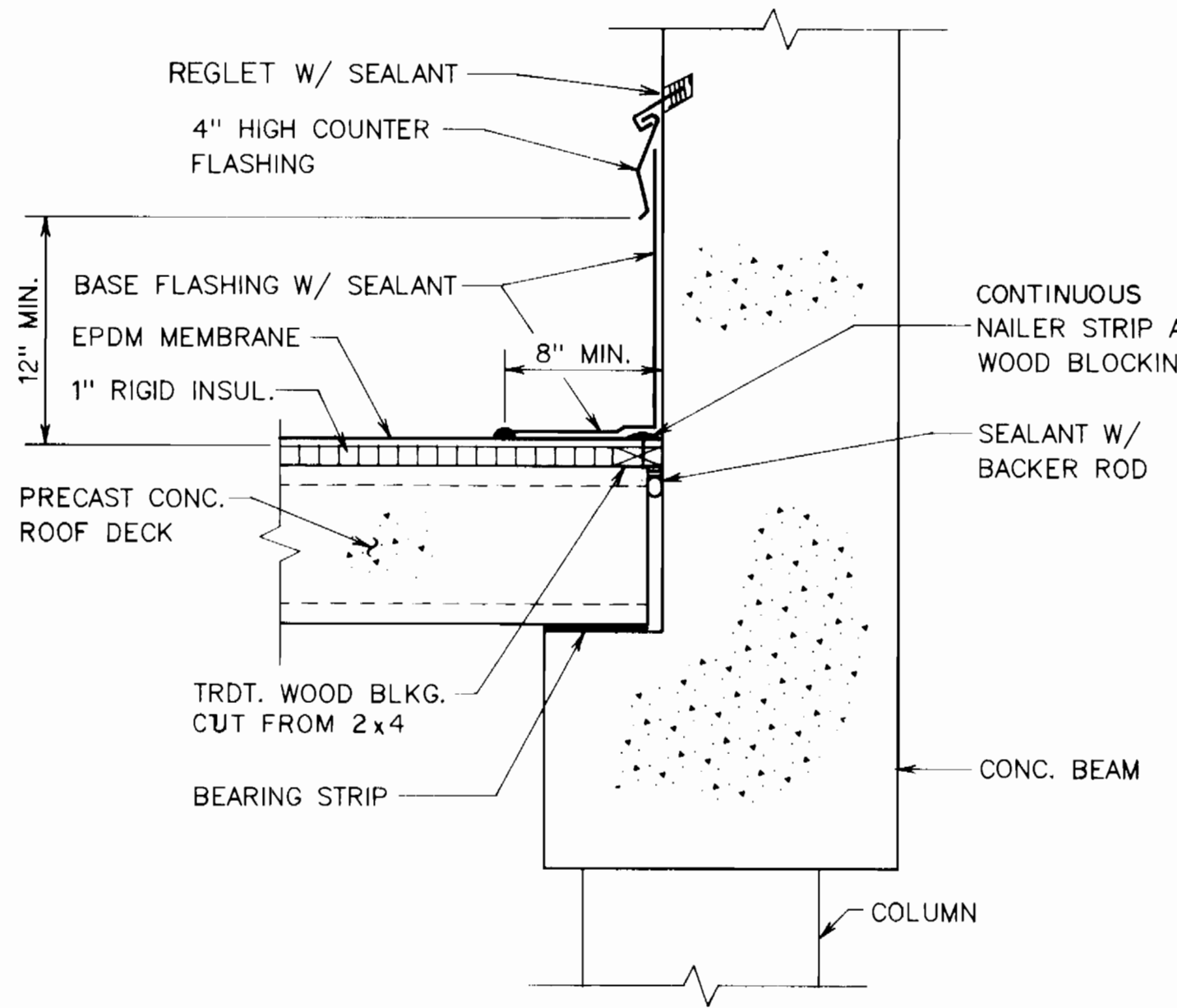
NORTH ELEVATION

SCALE IN FEET 0 8 16 32 48
SCALE: 1/16" = 1'-0"



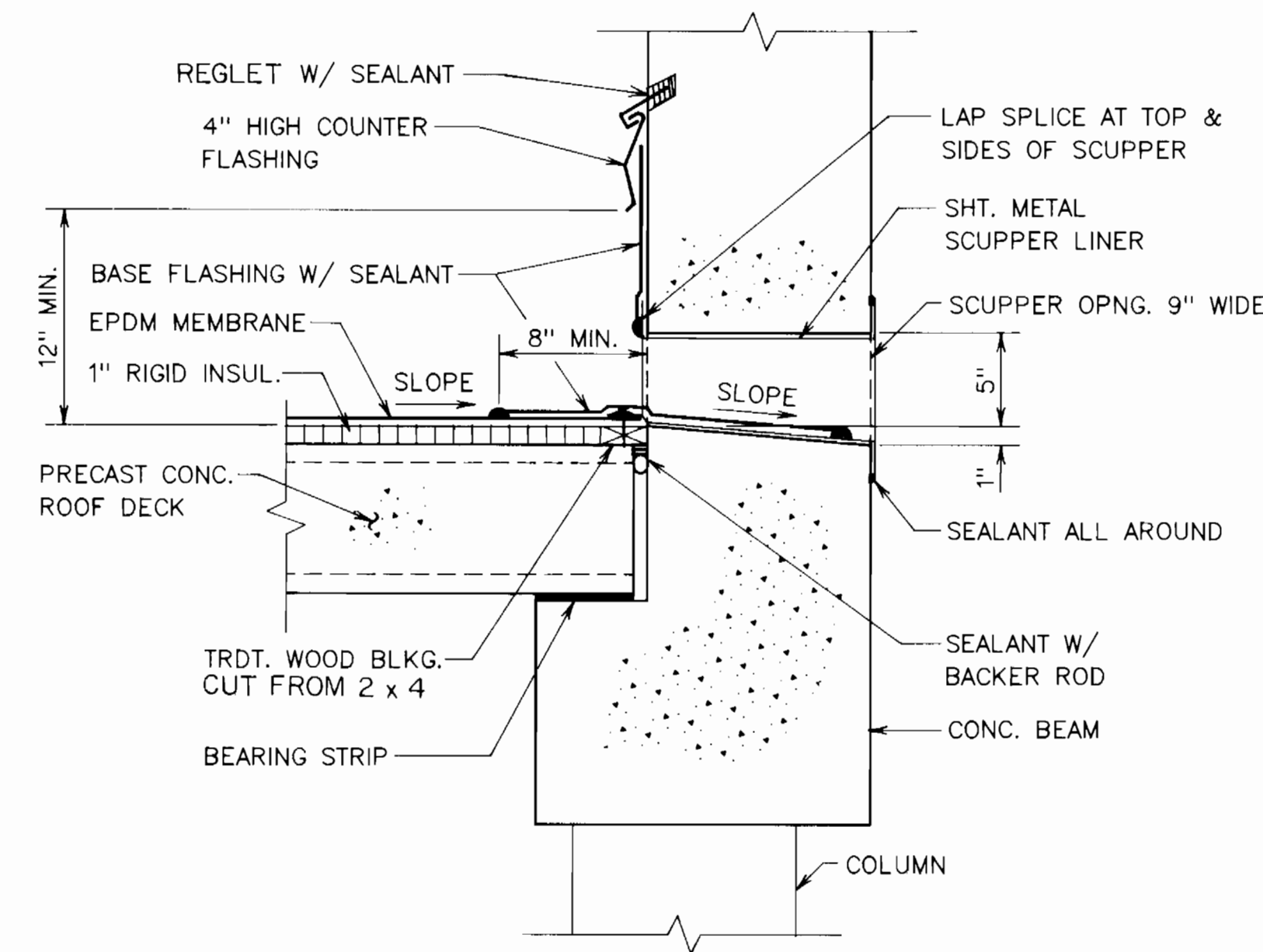
PRECAST CONCRETE ROOF DECK DETAIL

SCALE IN FEET 0 1/4 1/2 3/4 1
3" = 1'-0"



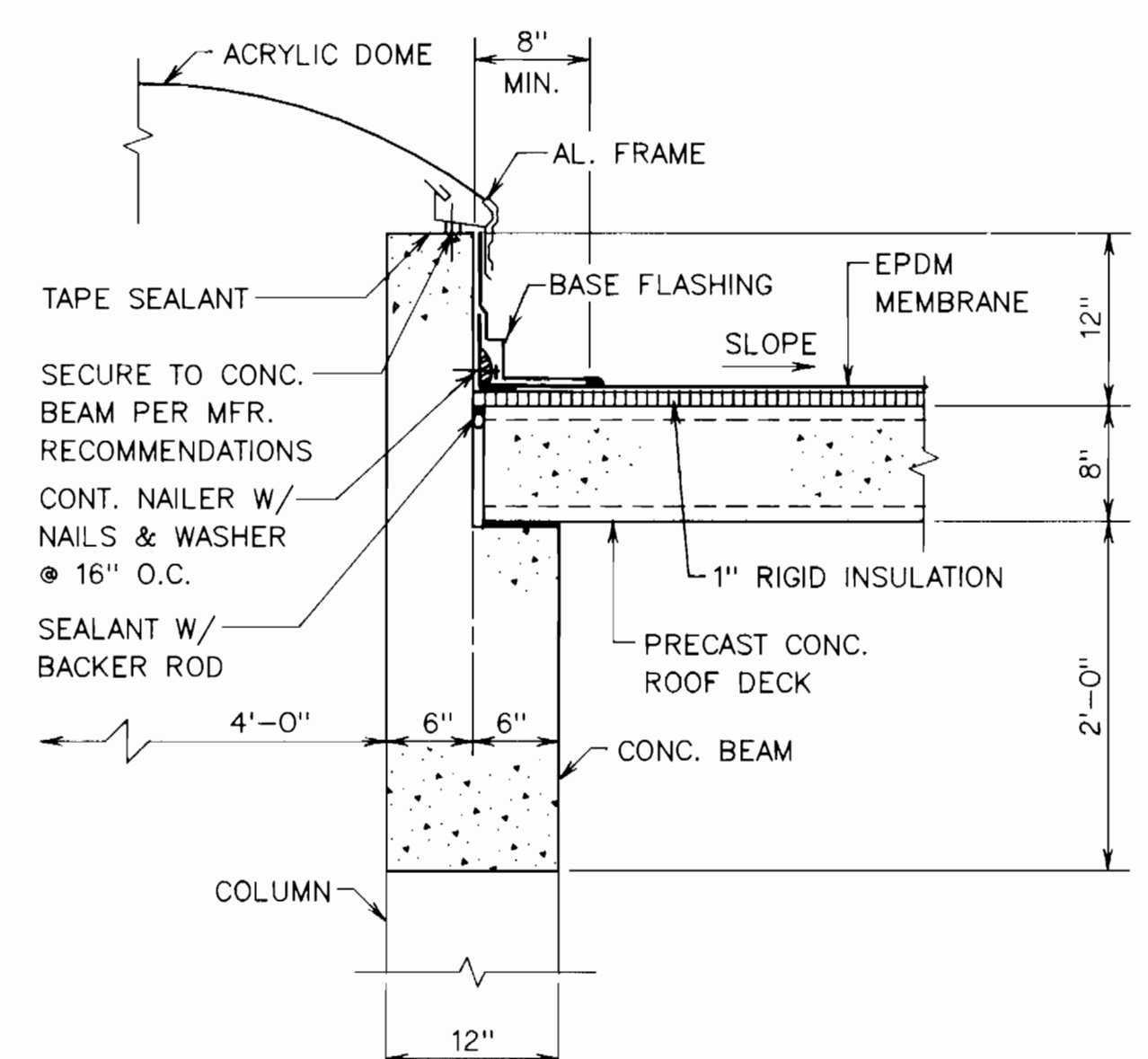
1 TYPICAL PARAPET DETAIL

SCALE IN FEET 0 1/2 1 2
SCALE: 1 1/2" = 1'-0"



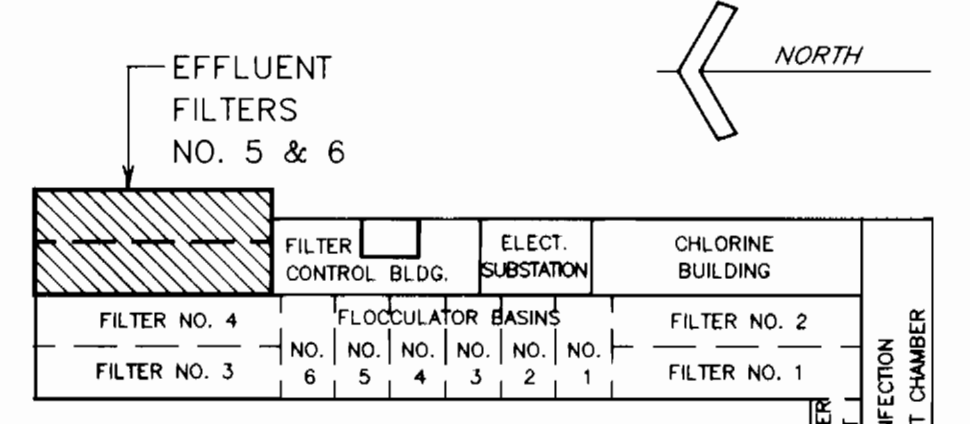
2 SCUPPER DETAIL

SCALE IN FEET 0 1/2 1 2
SCALE: 1 1/2" = 1'-0"



3 SKYLIGHT DETAIL

SCALE IN FEET 0 1/2 1 2 3
SCALE: 1" = 1'-0"

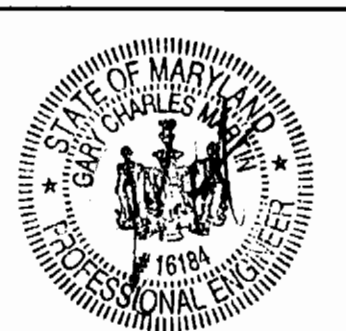


KEY PLAN

NO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

HUTH ENGINEERS INC.
CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS
P.O. BOX 3012 LANCASTER, PA 17604 (717)566-7021
LANCASTER, PA ALLENTOWN, PA



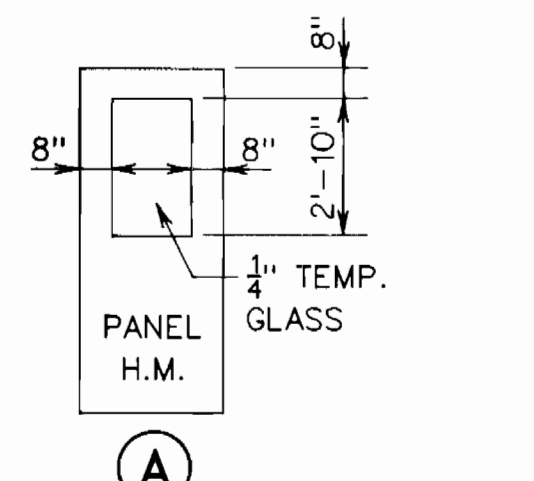
DES: H.T.D.			
DRN: CADD			
CHK: [Signature]			
DATE: 8/88	BY: NO.	REVISION	DATE

FILTERS NO. 5 & 6
ROOF PLAN, DETAILS, ELEVATIONS

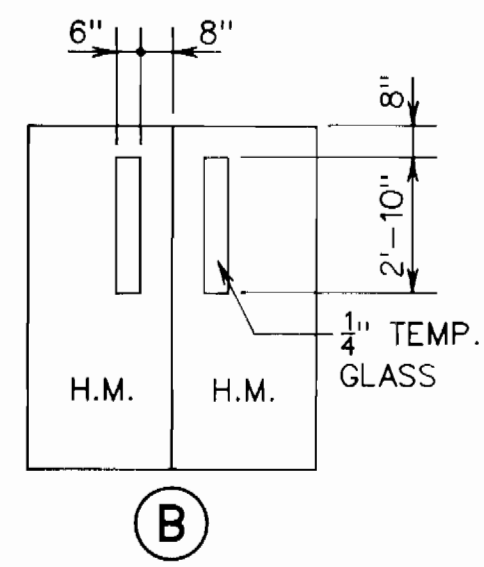
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 14 OF 40
A-5

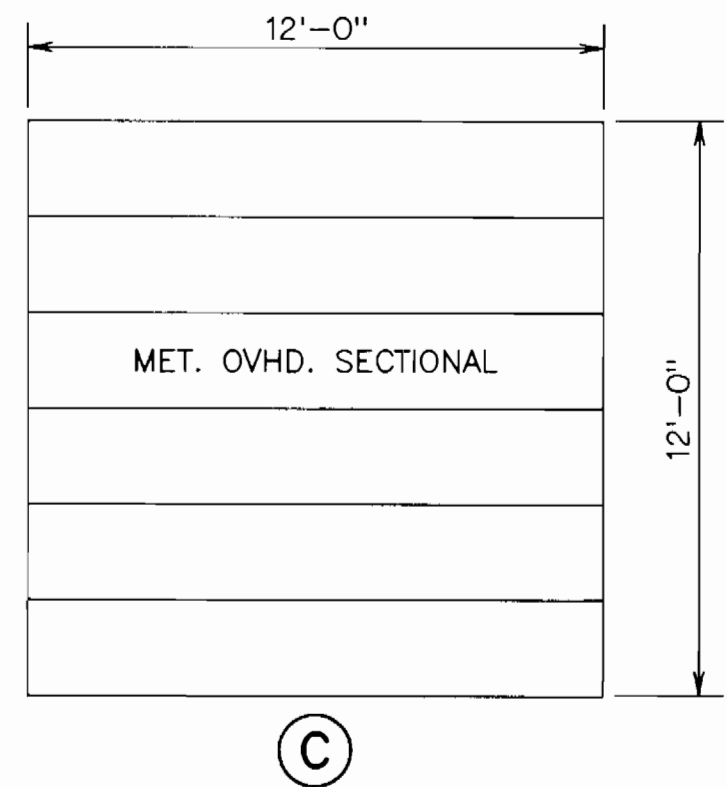
1870567.LPN433D 08/17/88 132142.4



TYPE	SIZE(WxHxT)	U.L. RATING
A	3'-0" x 7'-2" x 1 3/4"	---
A.1	3'-0" x 6'-8" x 1 3/4"	---



TYPE	SIZE(WxHxT)	U.L. RATING
B	(2), 3'-0" x 7'-2" x 1 3/4"	---
C	(1), 12'-0" x 12'-0"	---



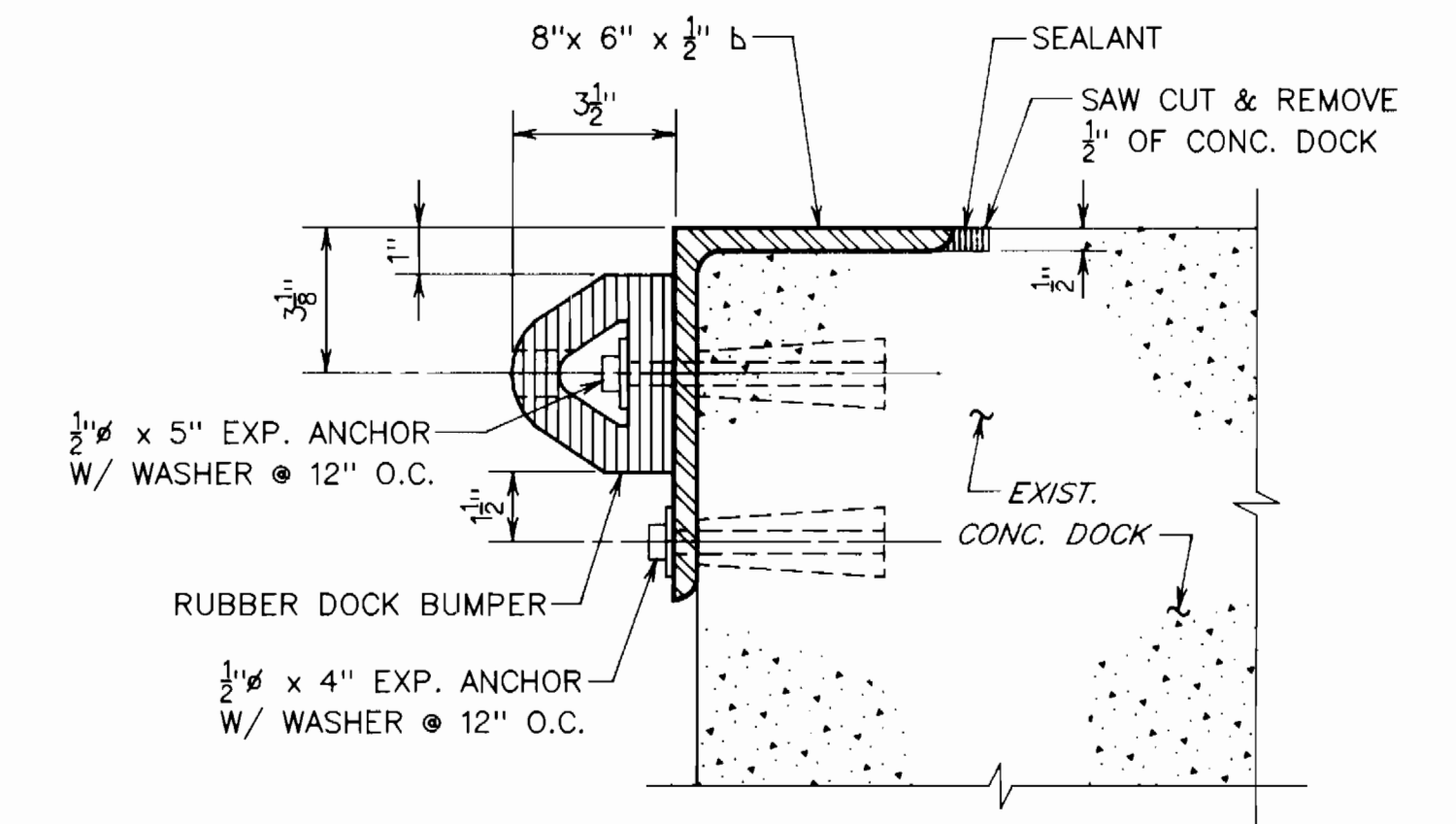
DOOR TYPES

NO SCALE

NO.	TYPE	DESCRIPTION	REMARKS
L-1	10" J.E. 38"	4 5 x 3 1/2 x 16 P.C. W/ 2#5 T. & B.	16" CAVITY WALL

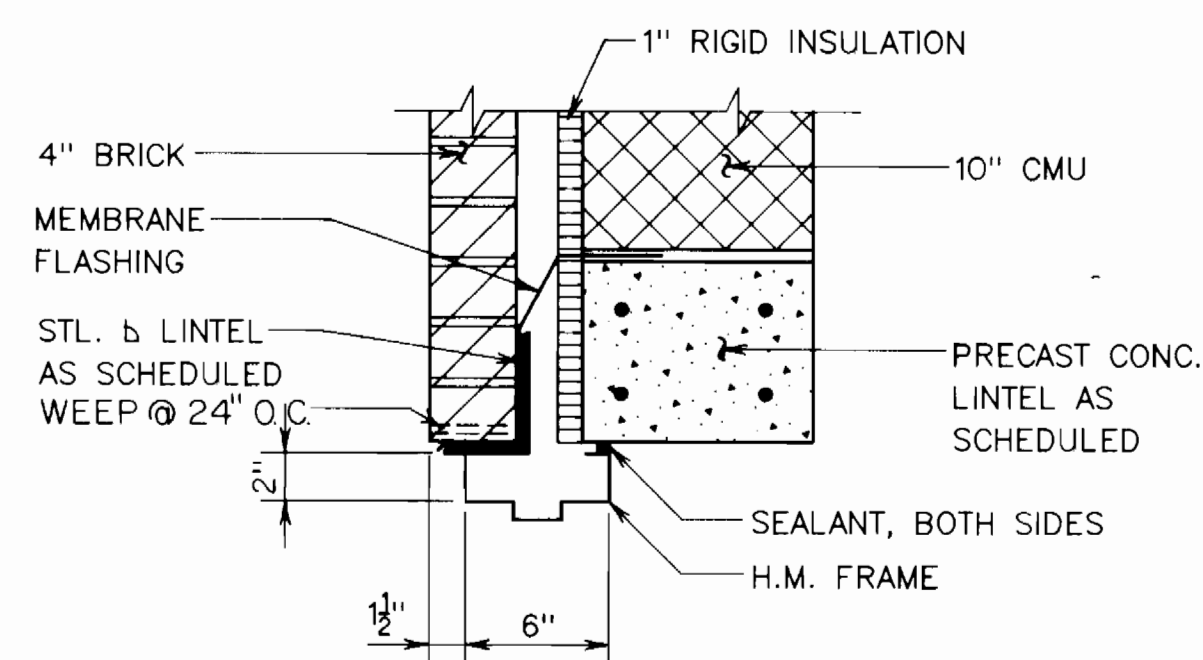
LINTEL SCHEDULE

NO SCALE

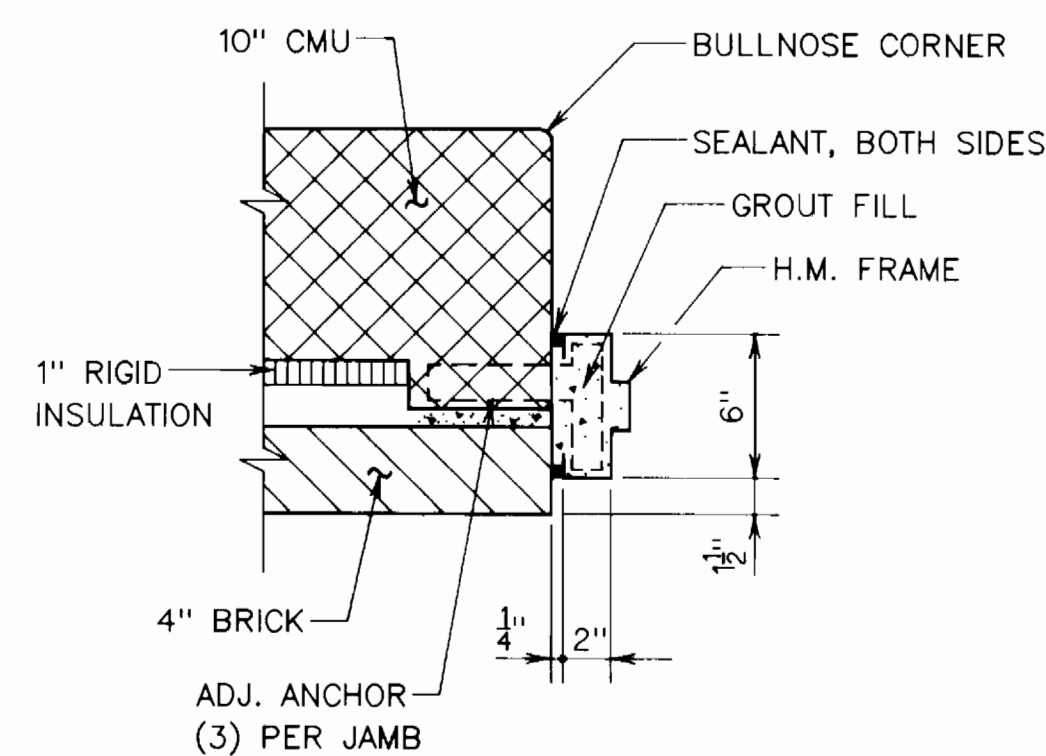


DOCK BUMPER DETAIL

SCALE IN FEET 0 1/2 1
SCALE: 3" = 1'-0"

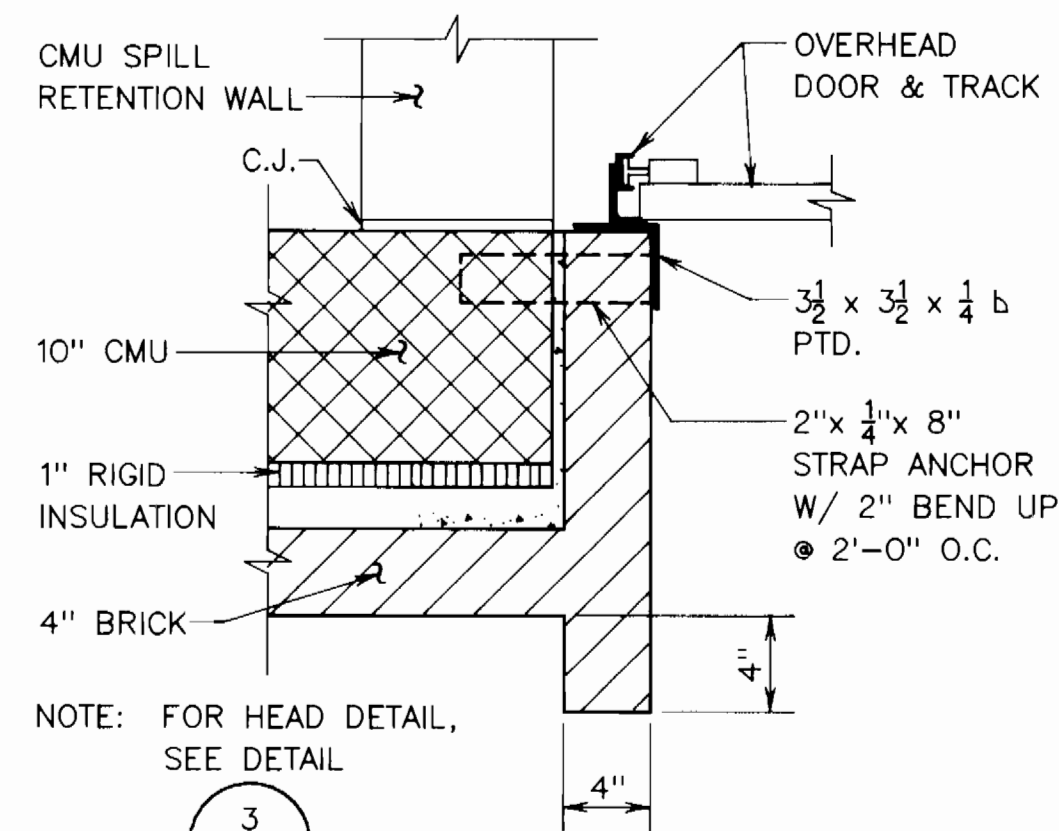


HEAD



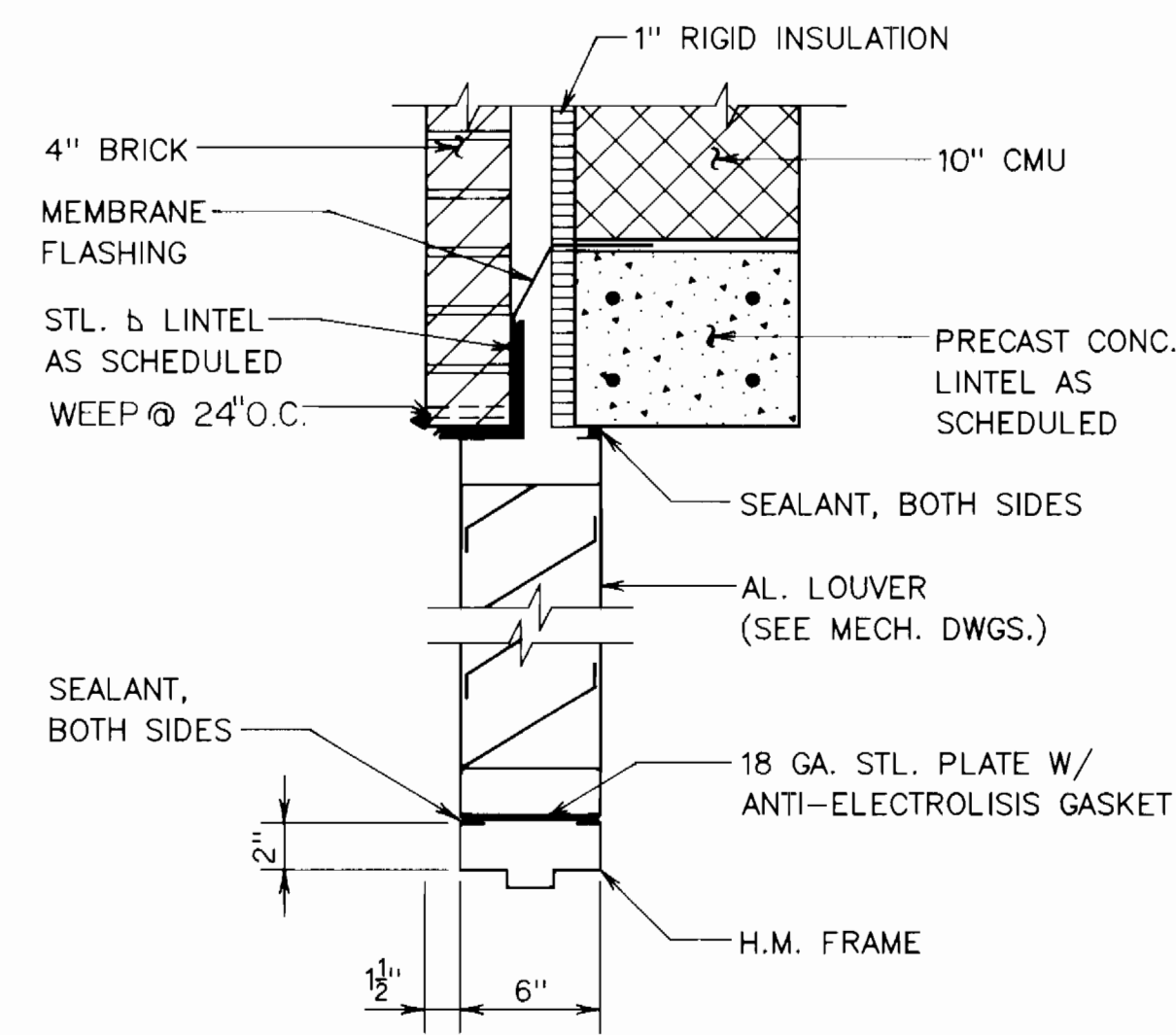
JAMB

1

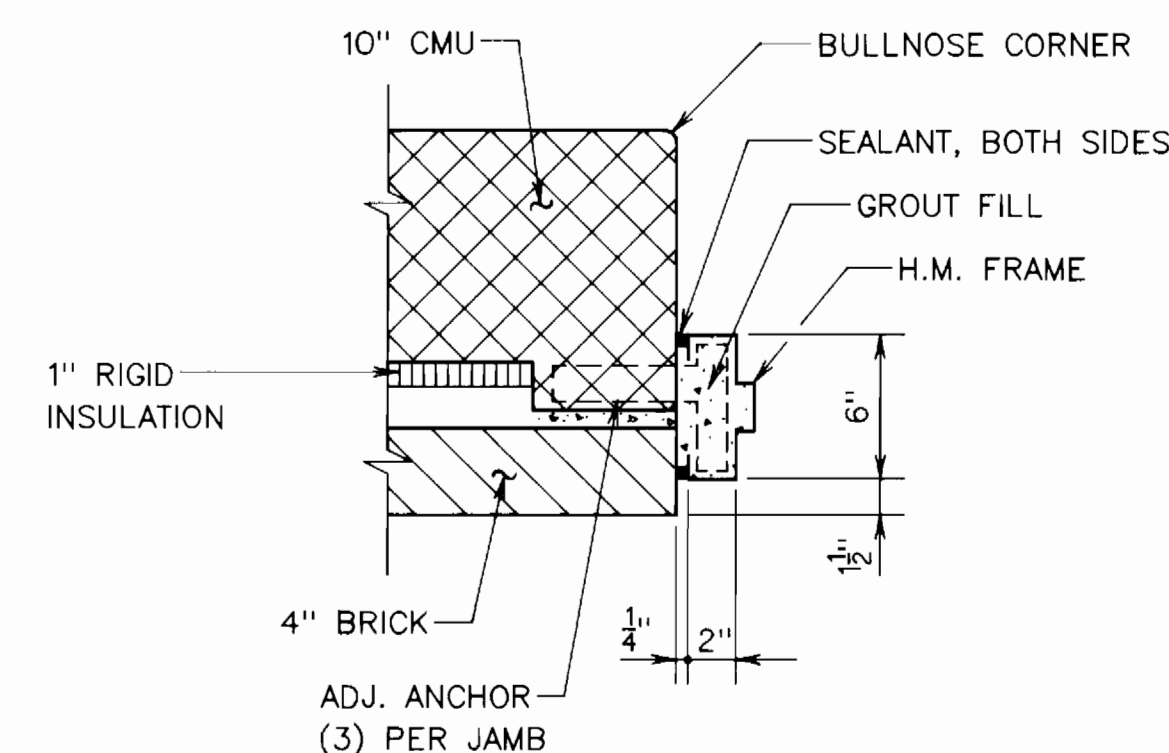


JAMB

2

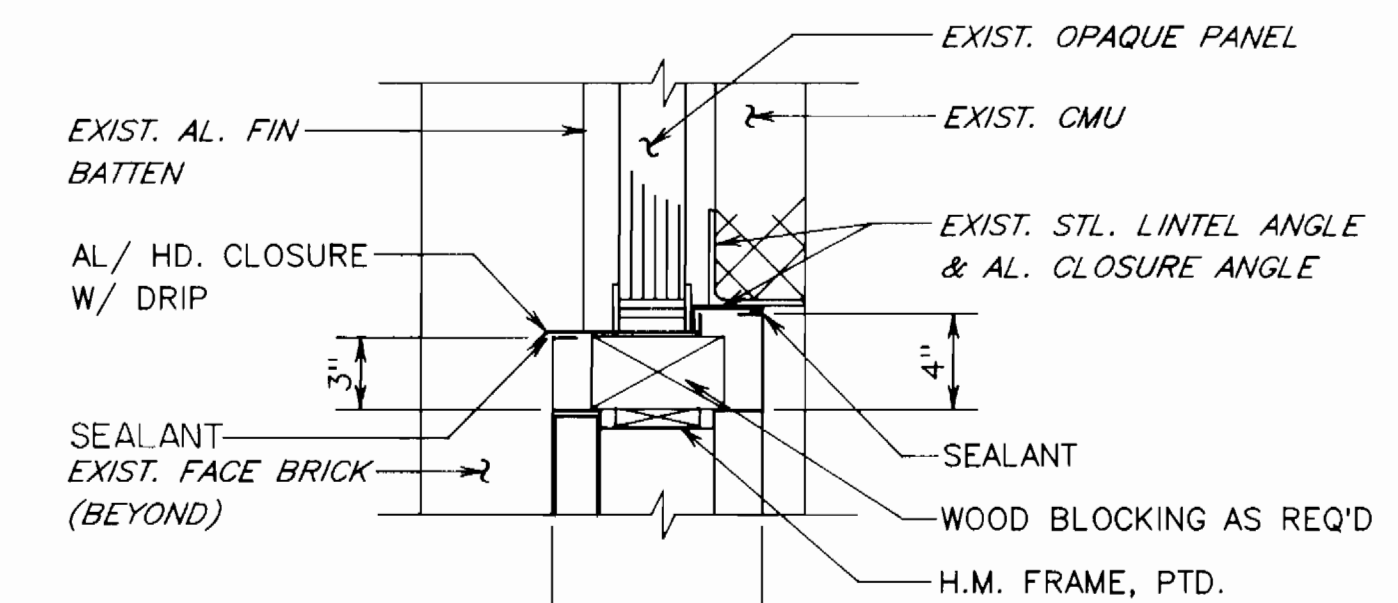


HEAD

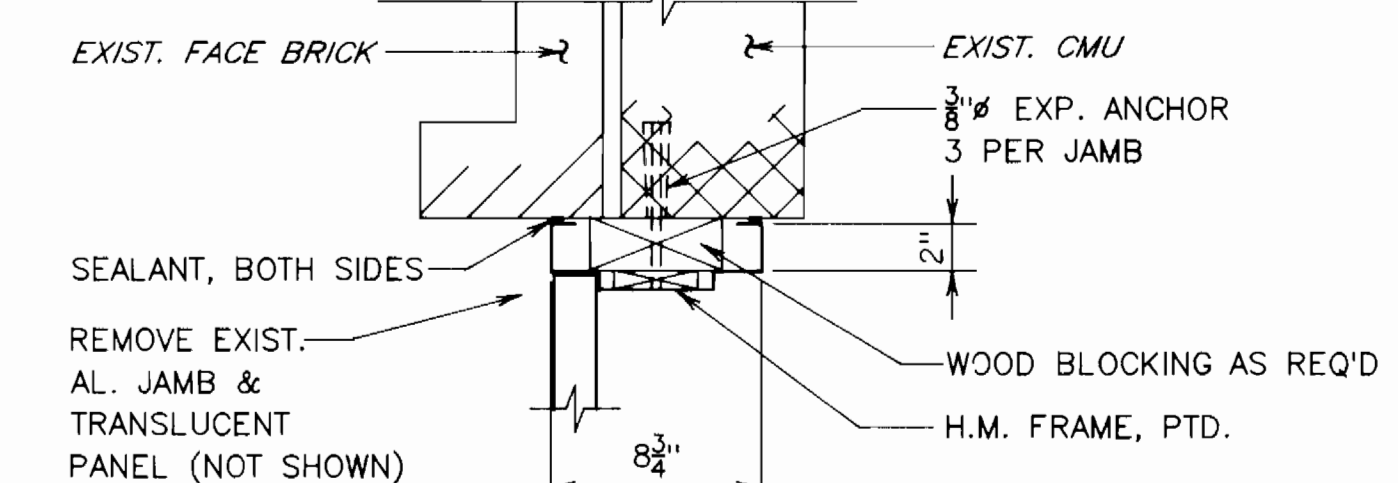


JAMB

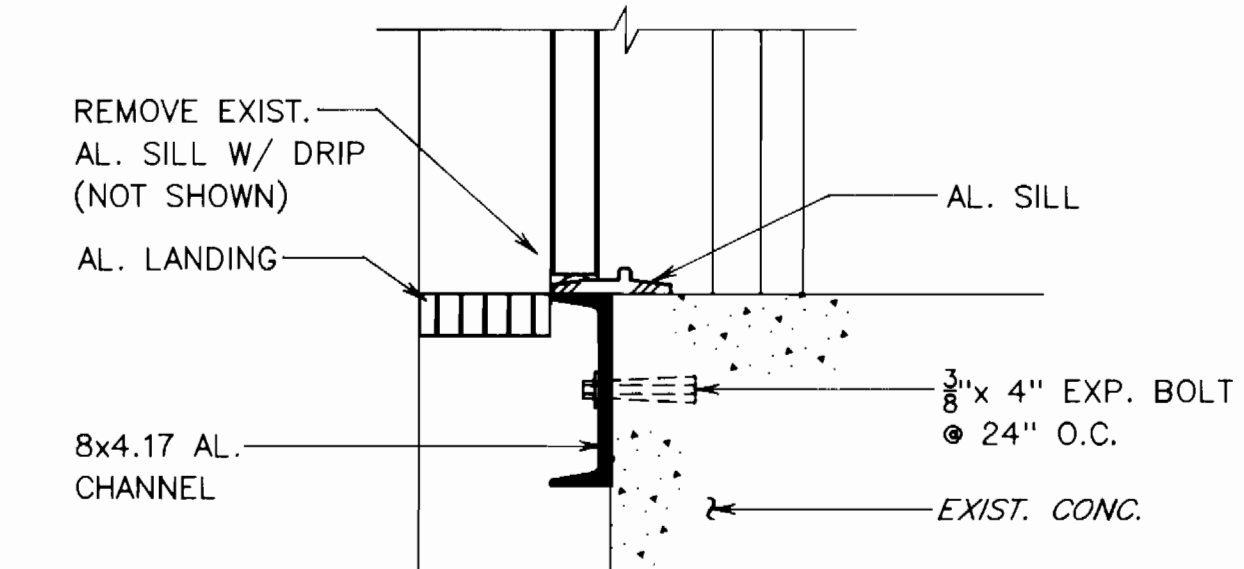
3



HEAD



JAMB



SILL

4

HEAD, JAMB & SILL TYPES

SCALE IN FEET 0 1/2 1 2

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LANCASTER, PA ALLENTOWN, PA



DES: R.L.			
DRN: CADD			
CHK: [Signature]			
DATE: 8/88	BY NO.	REVISION	DATE

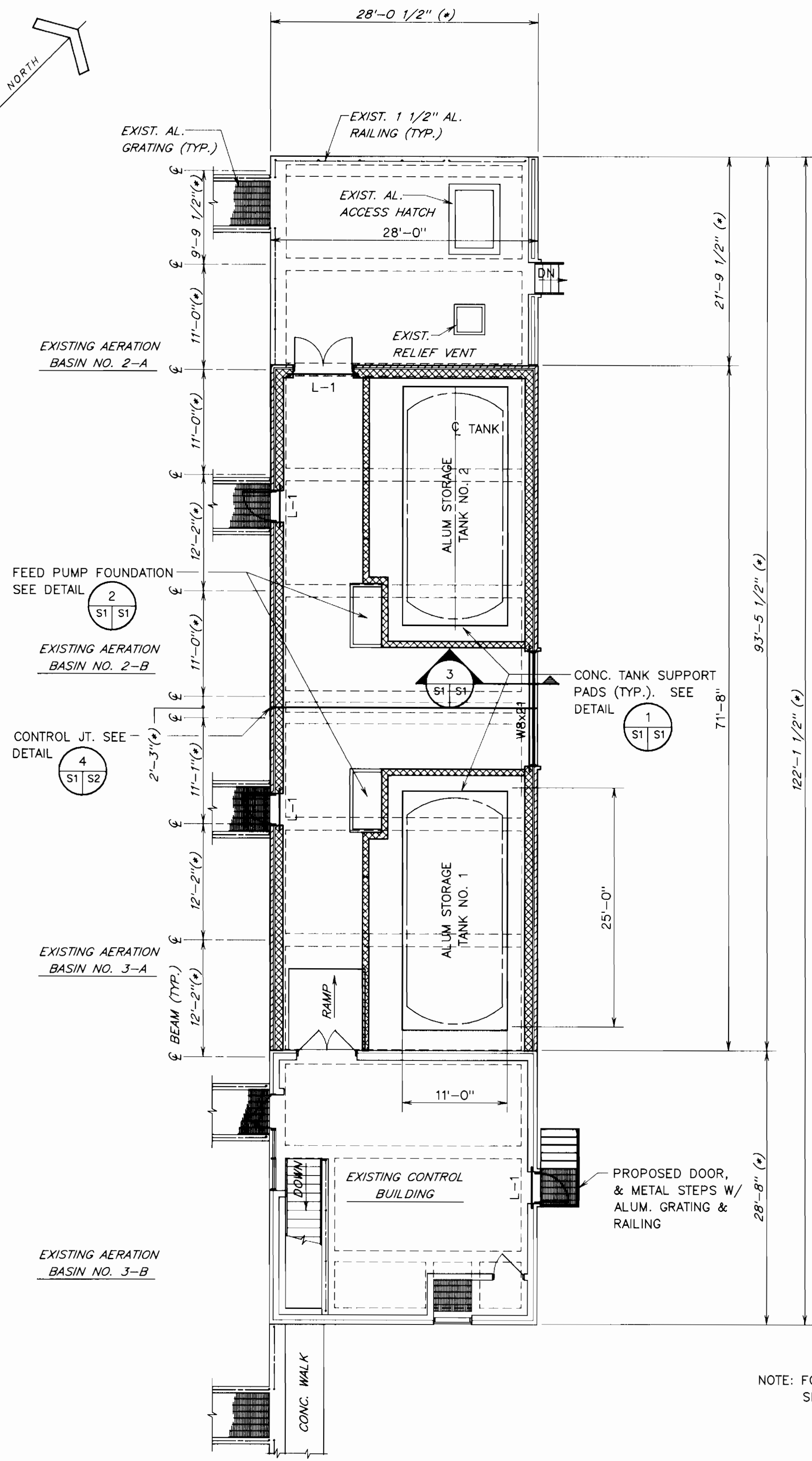
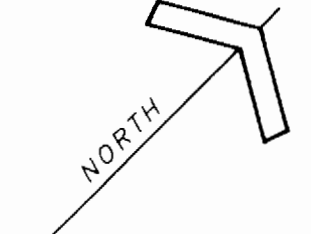
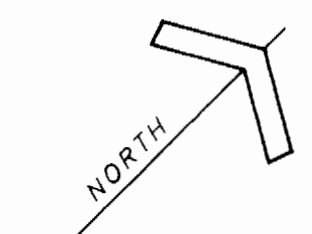
ALUM STORAGE BUILDING

ARCHITECTURAL DETAILS & SCHEDULES

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 15 OF 40
A-6

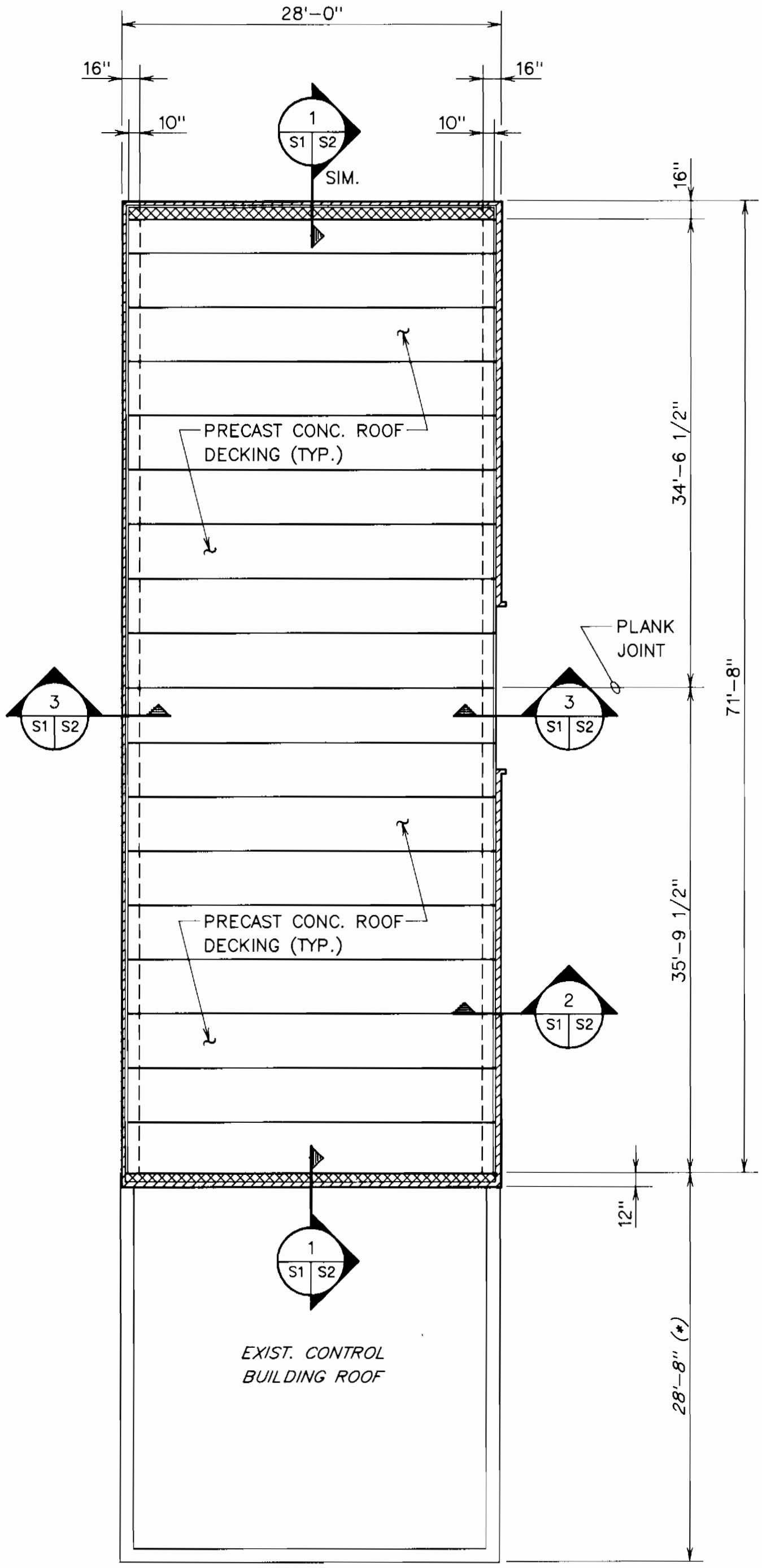
S-1881



STRUCTURAL FLOOR PLAN

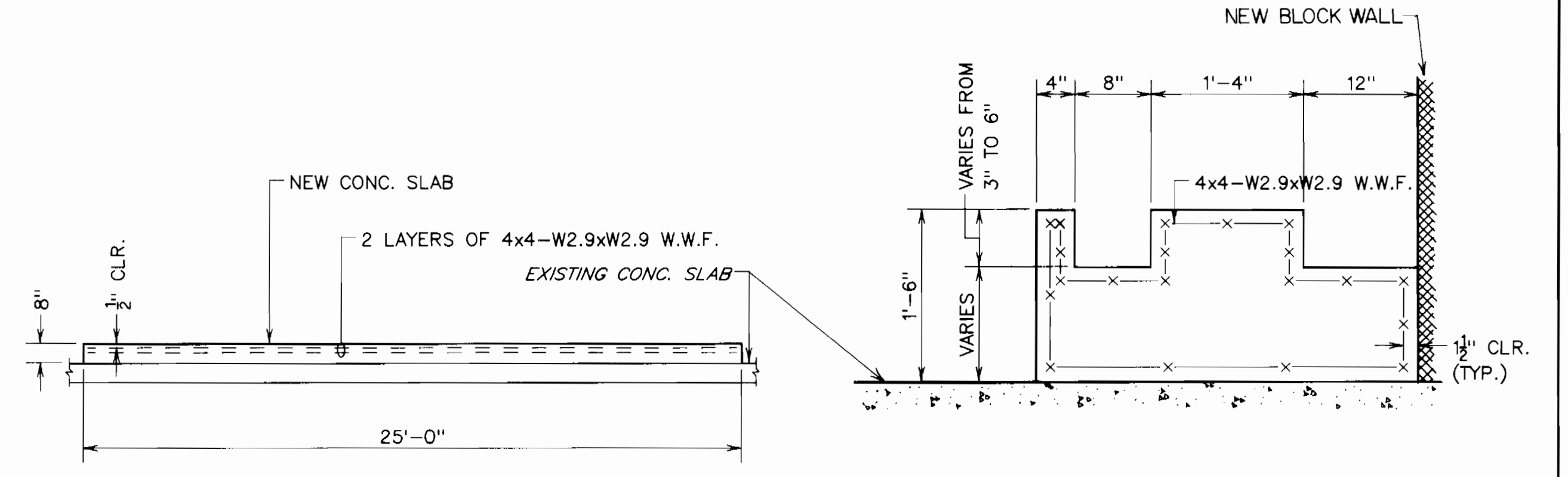
SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"

NOTE: FOR LINTEL SCHEDULE SEE SHT. A-6



STRUCTURAL ROOF PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"

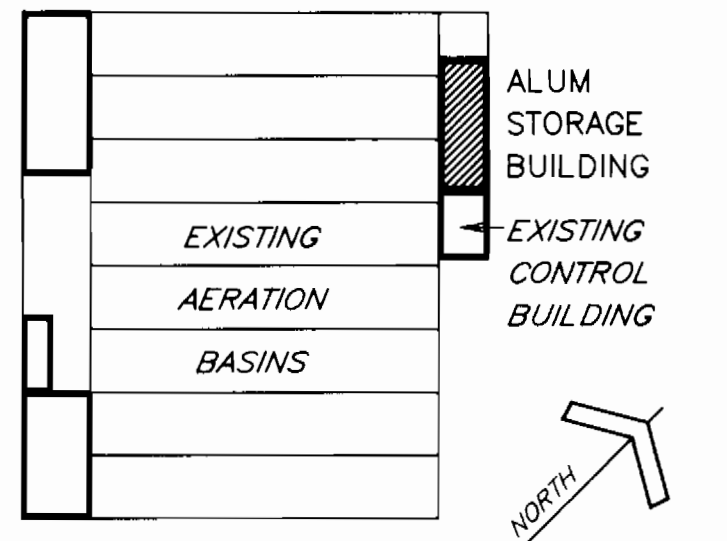


1 CONCRETE SUPPORT PAD DETAIL
NO SCALE

2 ALUM FEED PUMP BASE DETAIL
SCALE IN FEET 0 1/2 1 2 3
SCALE: 1" = 1'-0"

GENERAL NOTES

- DESIGN ROOF LIVE LOAD:.....30PSF
- MAXIMUM FOUNDATION PRESSURE = 2,000 PSF ASSUMED.
- ALL CONCRETE SHALL BE MECHANICALLY VIBRATED INCLUDING FOOTINGS AND SLABS.
- HORIZONTAL REINFORCING BARS IN WALL AND FOOTINGS SHALL BE CONTINUED AROUND CORNERS.
- CRACK CONTROL AND/OR CONSTRUCTION JOINTS IN WALLS SHALL BE SPACED AT NO MORE THAN 20 FEET. LOCATION OF ALL JOINTS SHALL BE APPROVED BY THE ENGINEER.
- PROVIDE ISOLATION JOINTS AT ALL MASONRY WALLS.
- WELDED WIRE FABRIC SHALL BE 6 x 6 - W 2.9 x W 2.9 AND SHALL BE PLACED ONE THIRD DOWN FROM THE TOP OF ALL SLABS ON GRADE UNLESS NOTED OTHERWISE.
- MINIMUM COVER FOR REINFORCING BARS SHALL BE 3/4" FOR SLABS, 1-1/2" FOR WALLS & BEAMS AND 3" FOR FOOTINGS UNLESS OTHERWISE NOTED.
- ALL LINTELS SHALL HAVE 8" MINIMUM BEARING. GROUT SOLID THE TOP TWO (2) COURSES OF MASONRY UNDER BEARING ENDS.
- ALL LINTELS SHALL HAVE A MINIMUM STRENGTH OF f_m = 1,500 PSI AND SHALL HAVE A BOTTOM COVER FOR THE REINFORCING BARS OF 1-1/2".
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND MUST NOTIFY THE ENGR. OF ANY DISCREPANCIES IN FIELD CONDITIONS BEFORE PROCEEDING WITH WORK.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615-60.
- ALL DETAILS OF REINFORCEMENT AND ACCESSORIES SHALL BE FABRICATED AND PROVIDED IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."
- ALL MORTAR SHALL BE TYPE M OR S.
- MASONRY WALLS SHALL BE REINFORCED WITH NO. 8 WIRE HORIZONTAL JOINT REINFORCEMENT AT 8" ON CENTER UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- BACKFILL SHALL BE GRANULAR MATERIAL APPROVED BY THE ENGR. BACKFILL SHALL BE DEPOSITED AND MACHINE-COMPACTED IN 8" LAYERS TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT, IN ACCORDANCE WITH ASTM D1557 METHOD D, AS VERIFIED BY A TESTING LABORATORY RETAINED BY THE OWNER.
- VERTICAL-SPANNING WALLS WHICH RETAIN FILL SHALL BE ADEQUATELY BRACED UNTIL THE FLOOR SLABS ARE IN PLACE.
- ALL OPENINGS IN WALLS SHALL BE REINFORCED WITH 2 - #5 DIAGONAL REINFORCING BARS IN EACH FACE OF THE WALL AT EACH CORNER OF THE OPENING AND SHALL EXTEND 2'-0" BEYOND THE OPENING IN EACH DIRECTION.
- PROVIDE DOWELS IN CONCRETE WALL FOOTINGS EQUIVALENT IN SIZE AND NUMBER TO VERTICAL STEEL, UNLESS NOTED OTHERWISE.



KEY PLAN
NO SCALE

LEGEND

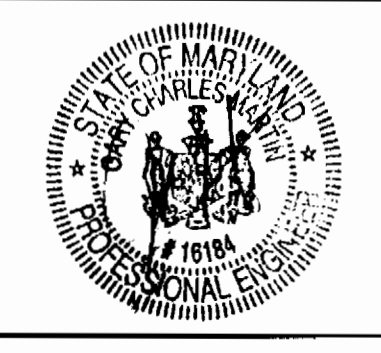
(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

1870567_E004130_08/19/88 21:44:38.4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* DATE: 8/30/88
Chief, Bureau of Engineering: *William E. King* DATE: 11-30-88
Chief, Bureau of Environmental Services: *John J. O'Hara* DATE: 11-30-88
Chief, Utility Design Division: *William E. King* DATE: 11-30-88

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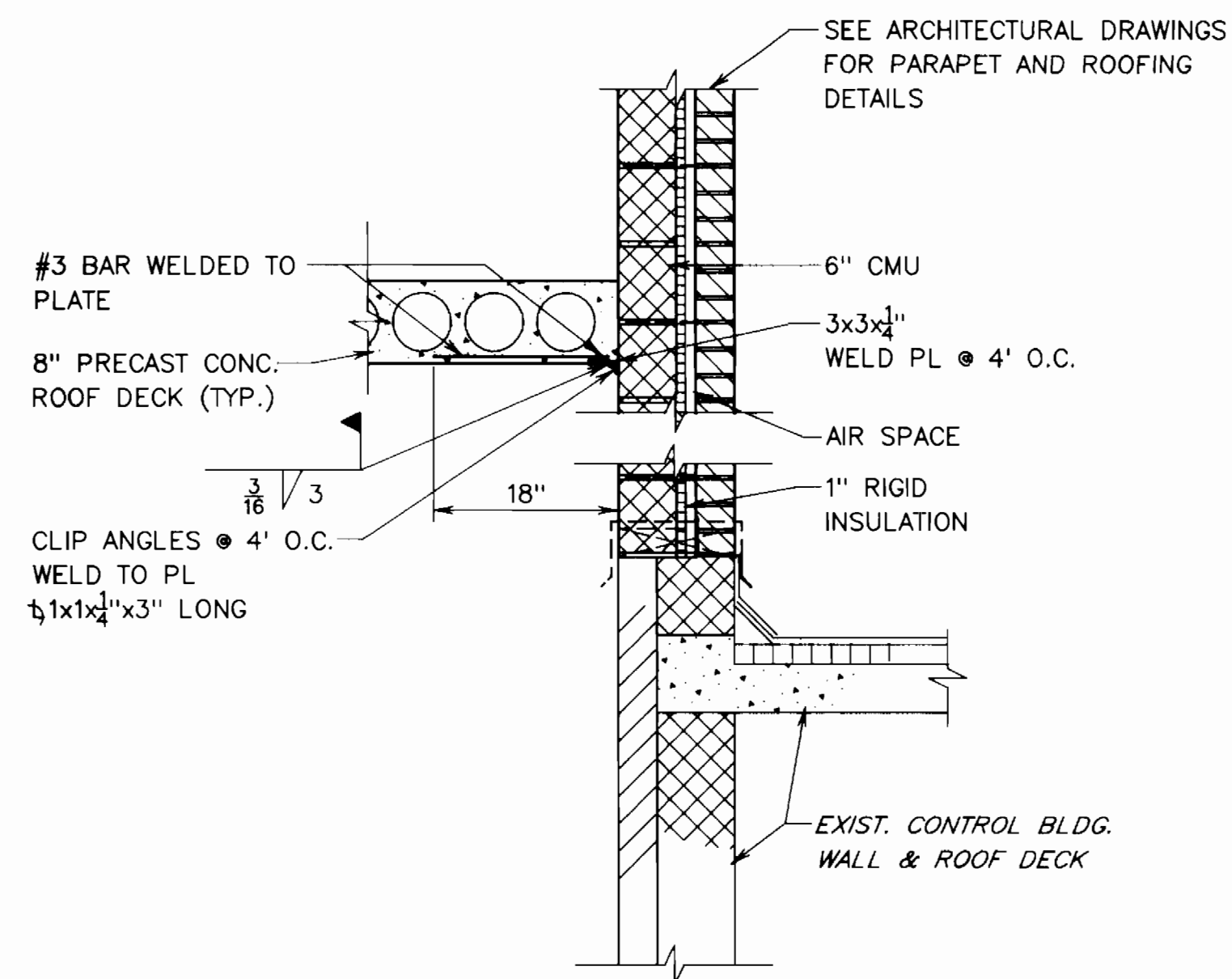


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DRN:	CADD				
CHK:	K J I				
DATE:	8/88	BY:	NO.	REVISION	DATE

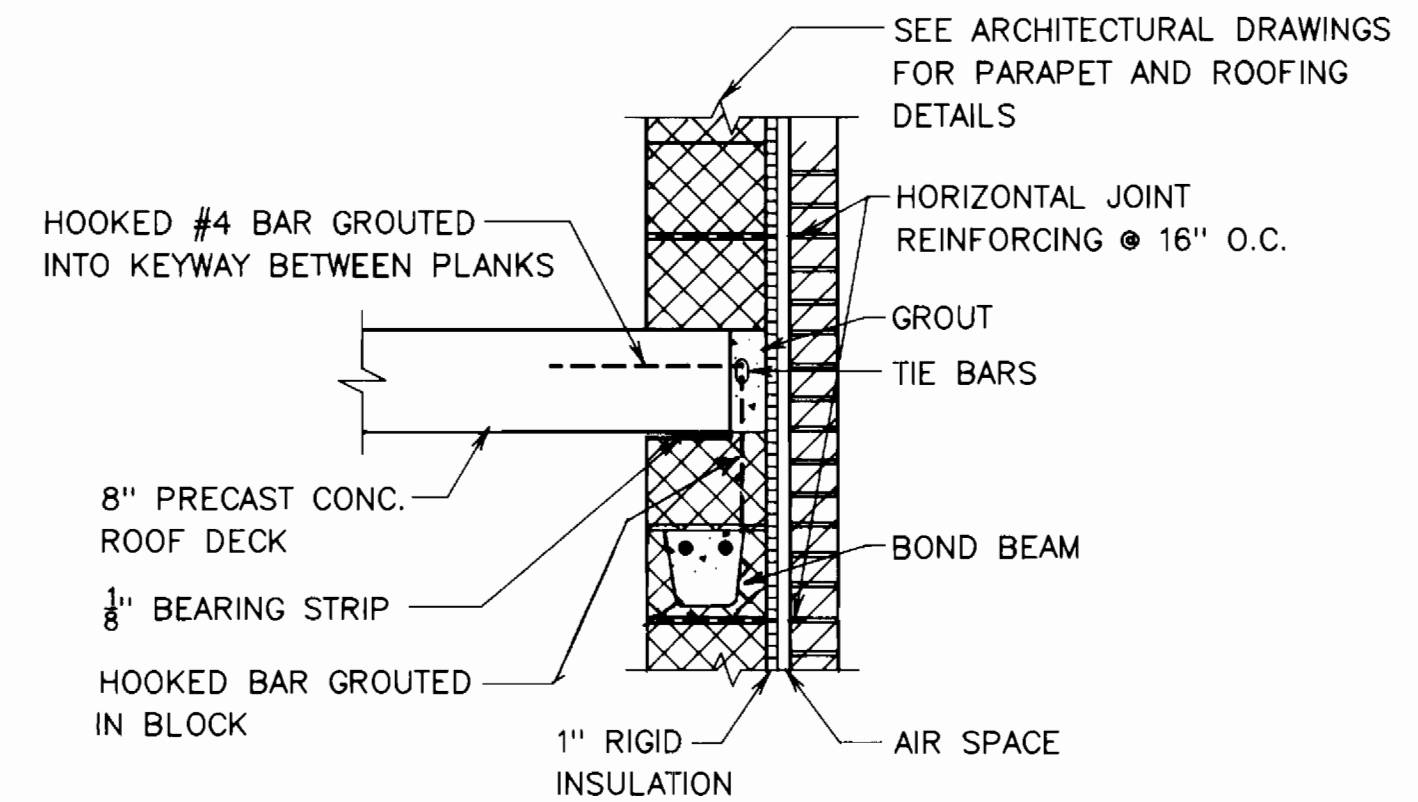
ALUM STORAGE BUILDING
STRUCTURAL MAIN FLOOR PLAN,
ROOF PLAN AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

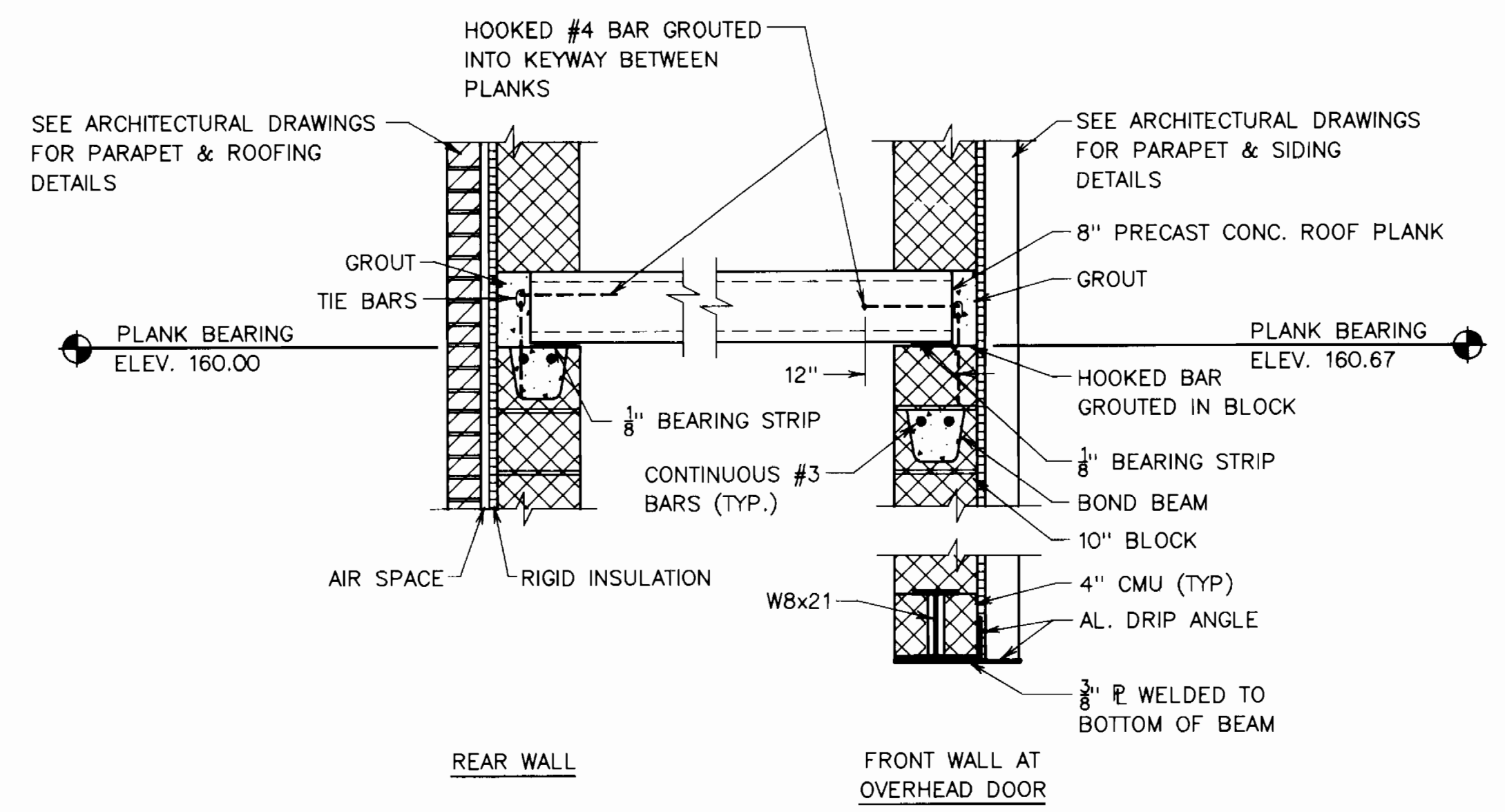
SCALE AS SHOWN
SHEET 16 OF 40
S-1



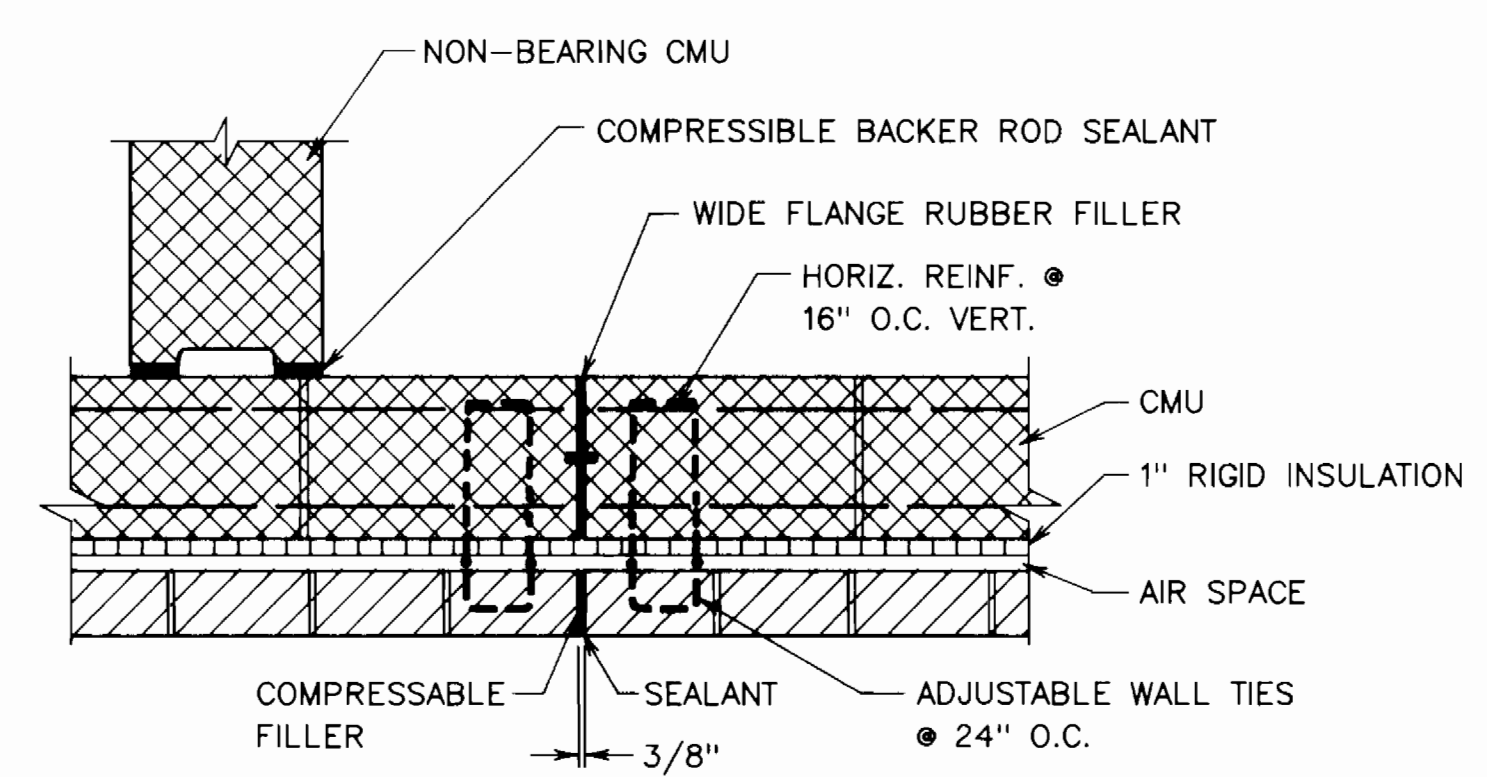
1 WALL SECTION @ EXIST. CONTROL BLDG.
 SCALE IN FEET 0 1/2 1 2 3
 SCALE: 3/4" = 1'-0"



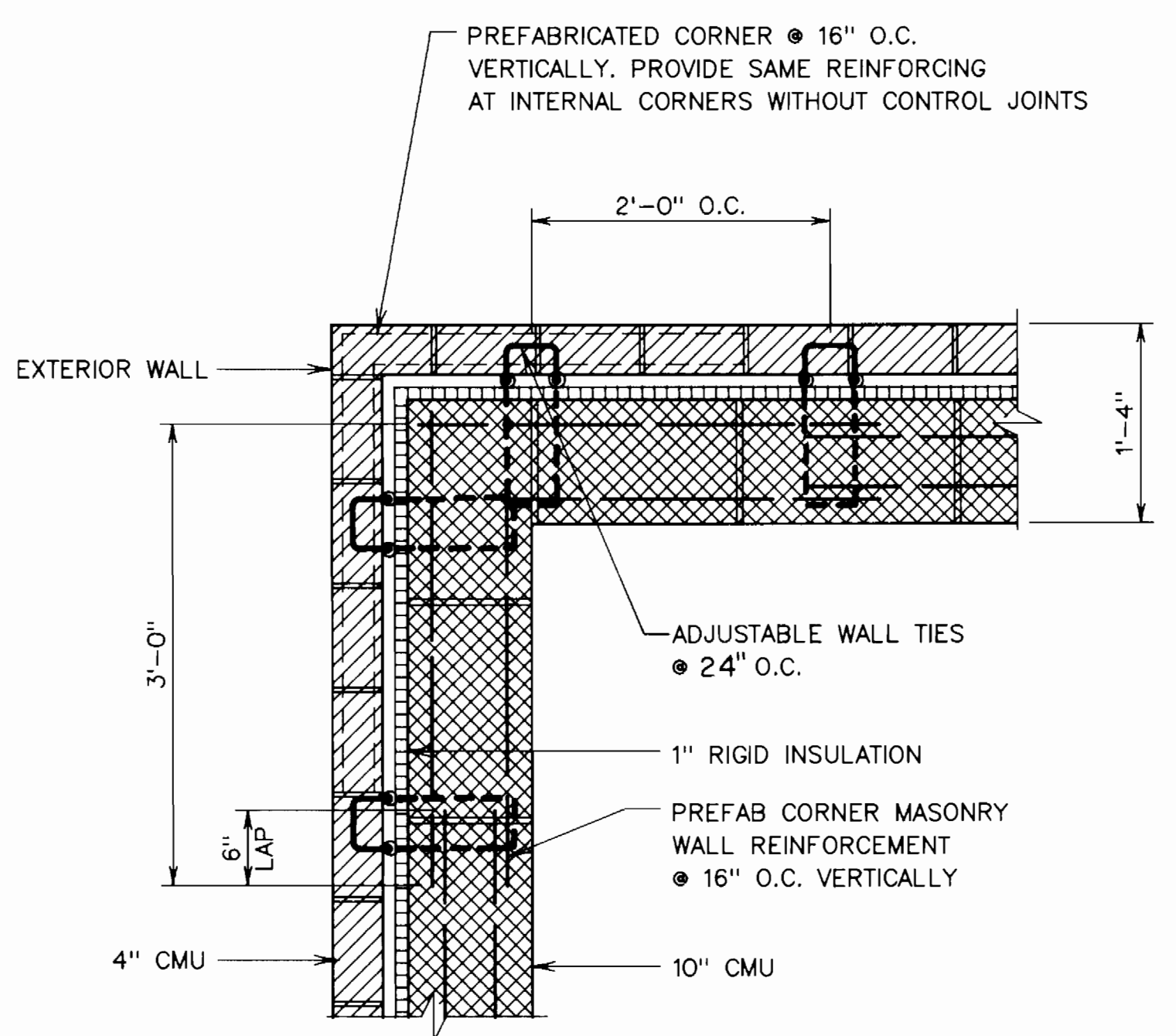
2 WALL SECTION (FRONT WALL TYP.)
 SCALE IN FEET 0 1/2 1 2 3
 SCALE: 3/4" = 1'-0"



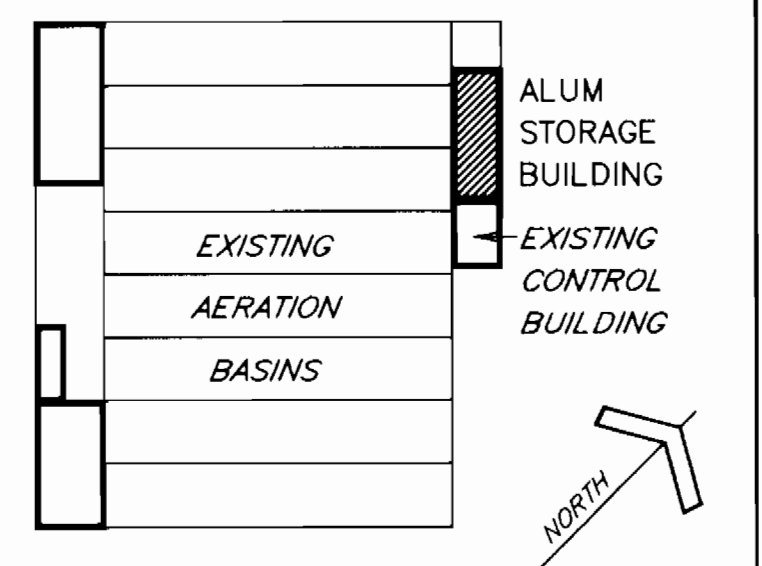
3 WALL SECTION (REAR WALL TYP. & FRONT WALL @ OVERHEAD DOOR)
 SCALE IN FEET 0 1/2 1 2 3
 SCALE: 3/4" = 1'-0"



4 CONTROL JOINT EXTERNAL WALLS DETAIL
 SCALE IN FEET 0 1/2 1 2 3
 SCALE: 1" = 1'-0"



5 EXTERIOR CORNER @ CAVITY WALL
 SCALE IN FEET 0 1/2 1 2 3
 SCALE: 1" = 1'-0"



KEY PLAN
 NO SCALE

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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

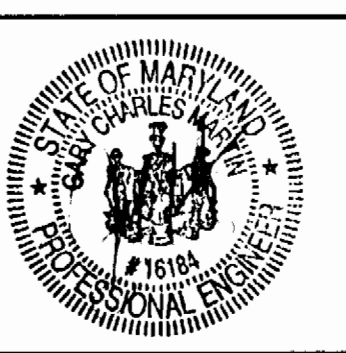
Samuel K. ...
 DIRECTOR OF PUBLIC WORKS DATE 11-30-88

John J. O'Hara
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE 11-30-88

John J. O'Hara
 CHIEF, BUREAU OF ENGINEERING DATE 11-30-88

John J. O'Hara
 CHIEF, UTILITY DESIGN DIVISION DATE 11-30-88

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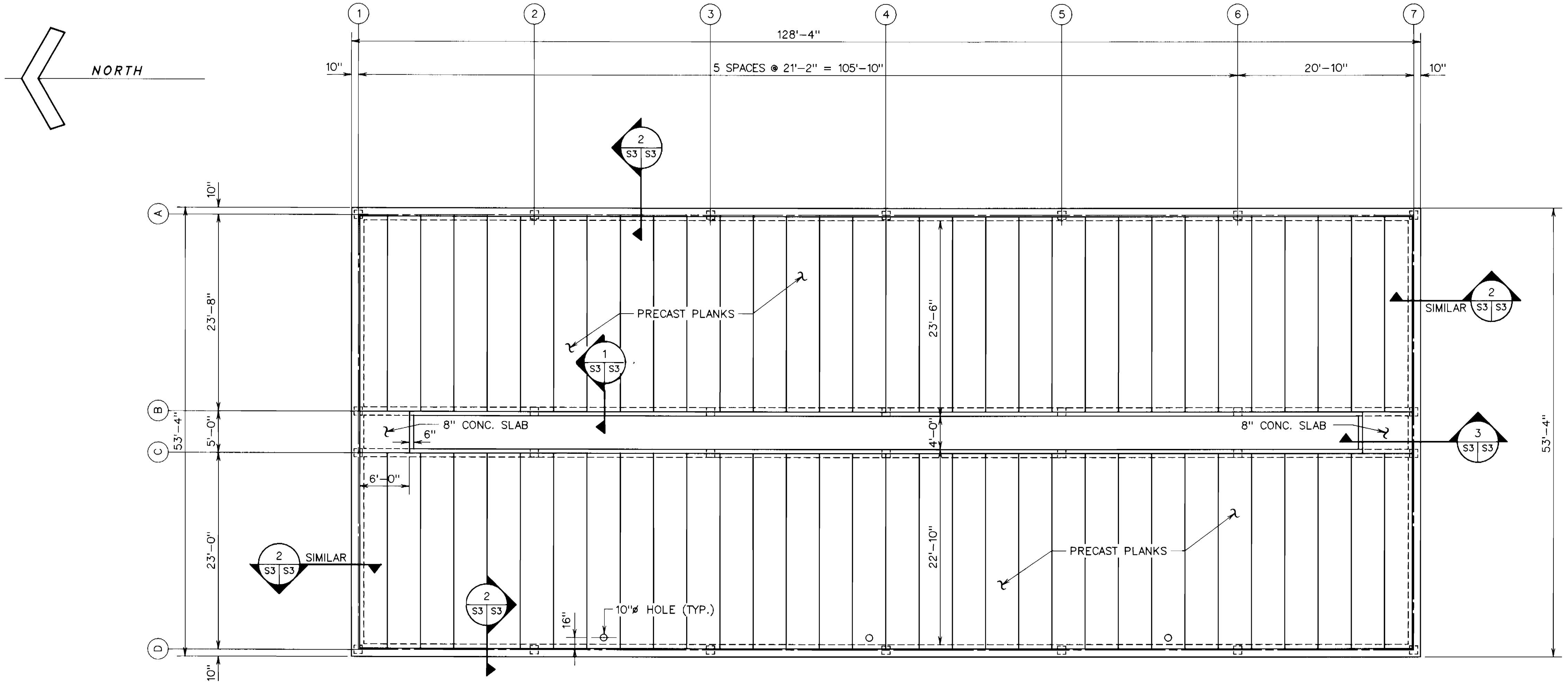


DES:	R.L.S.				
	H.T.D.				
DRN:	CADD				
CHK:	R.J.I.				
DATE:	8/88				
BY:		NO.		REVISION	DATE

ALUM STORAGE BUILDING
 DETAILS

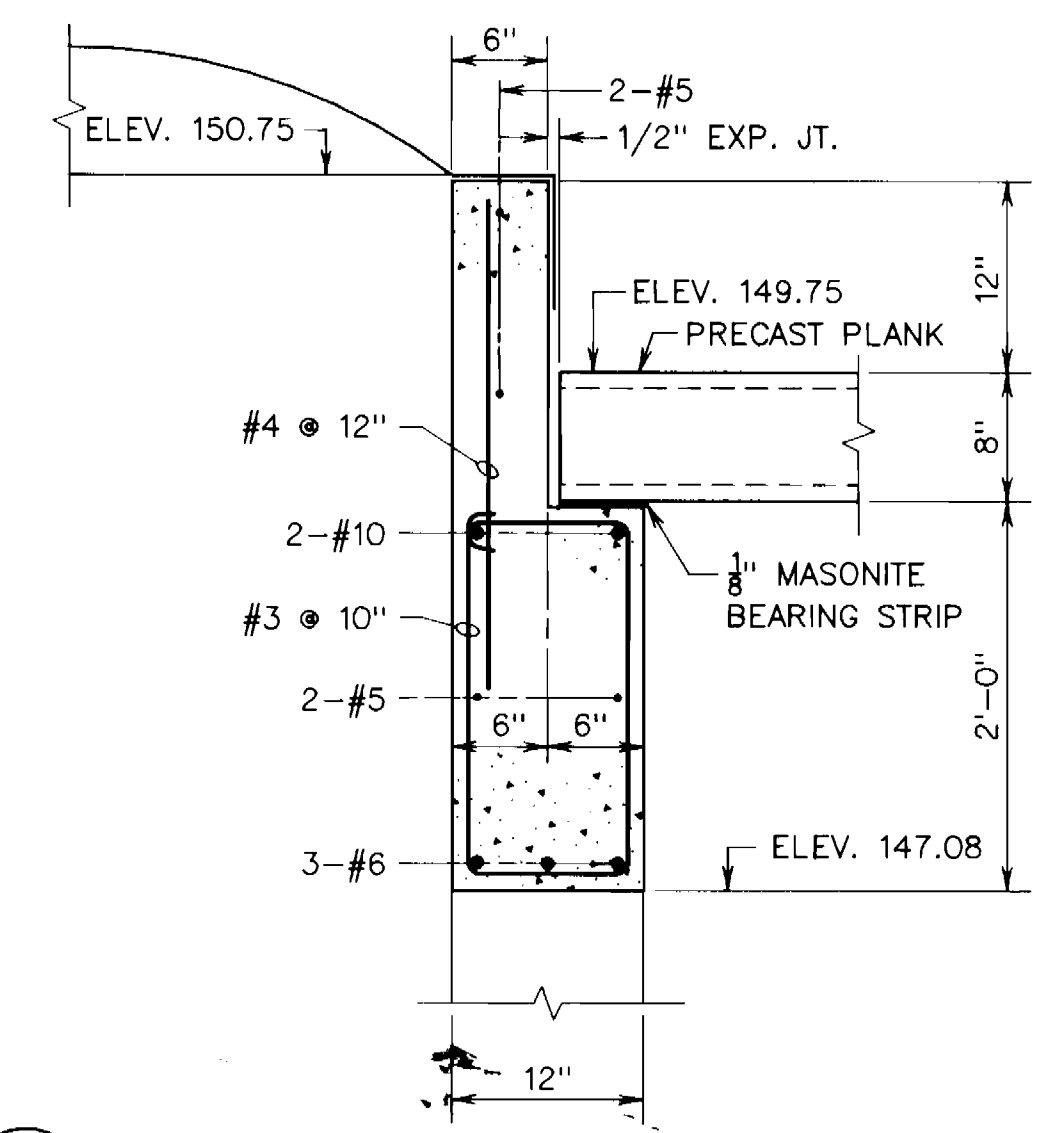
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 17 OF 40
S-2

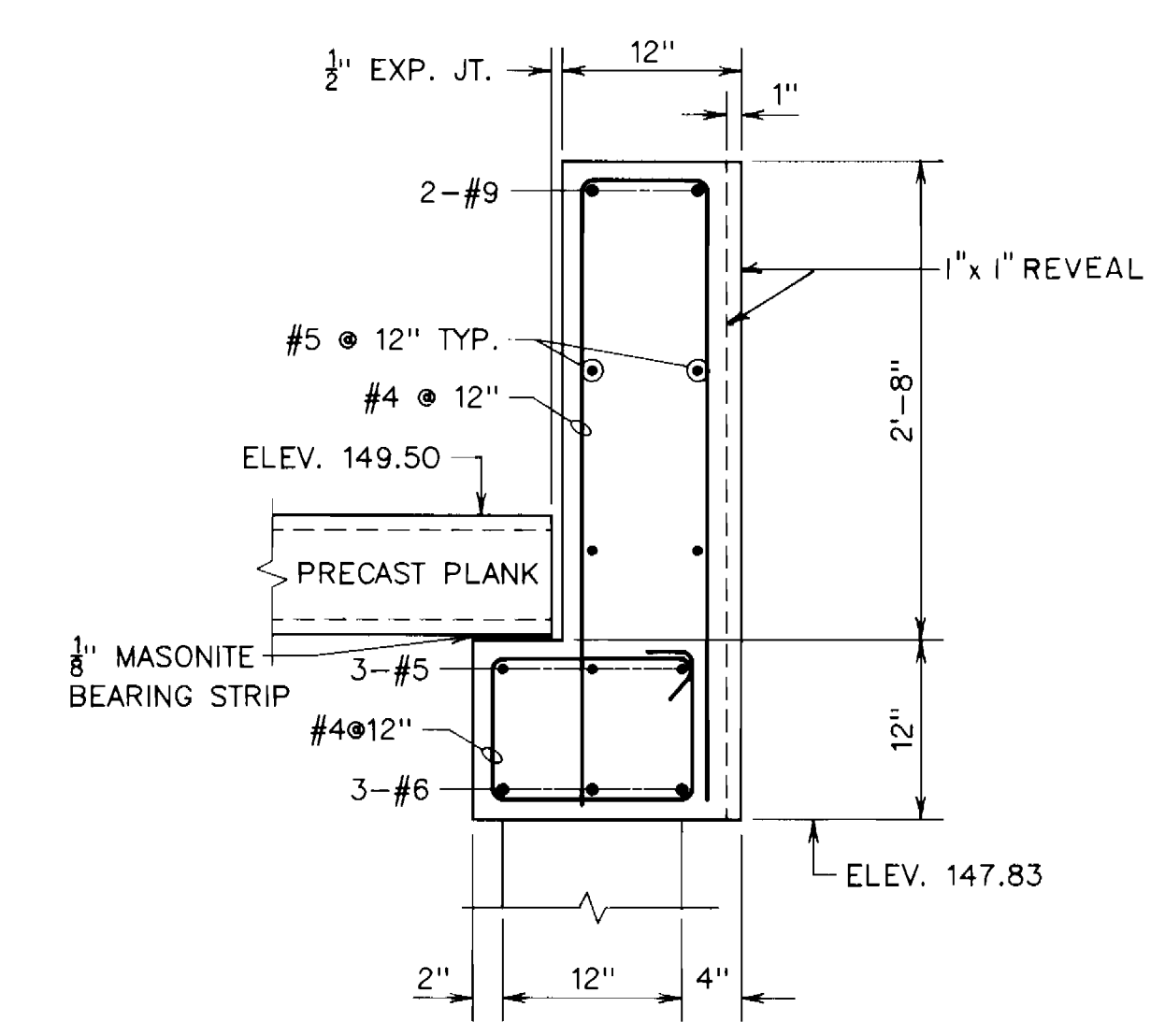


ROOF PLAN

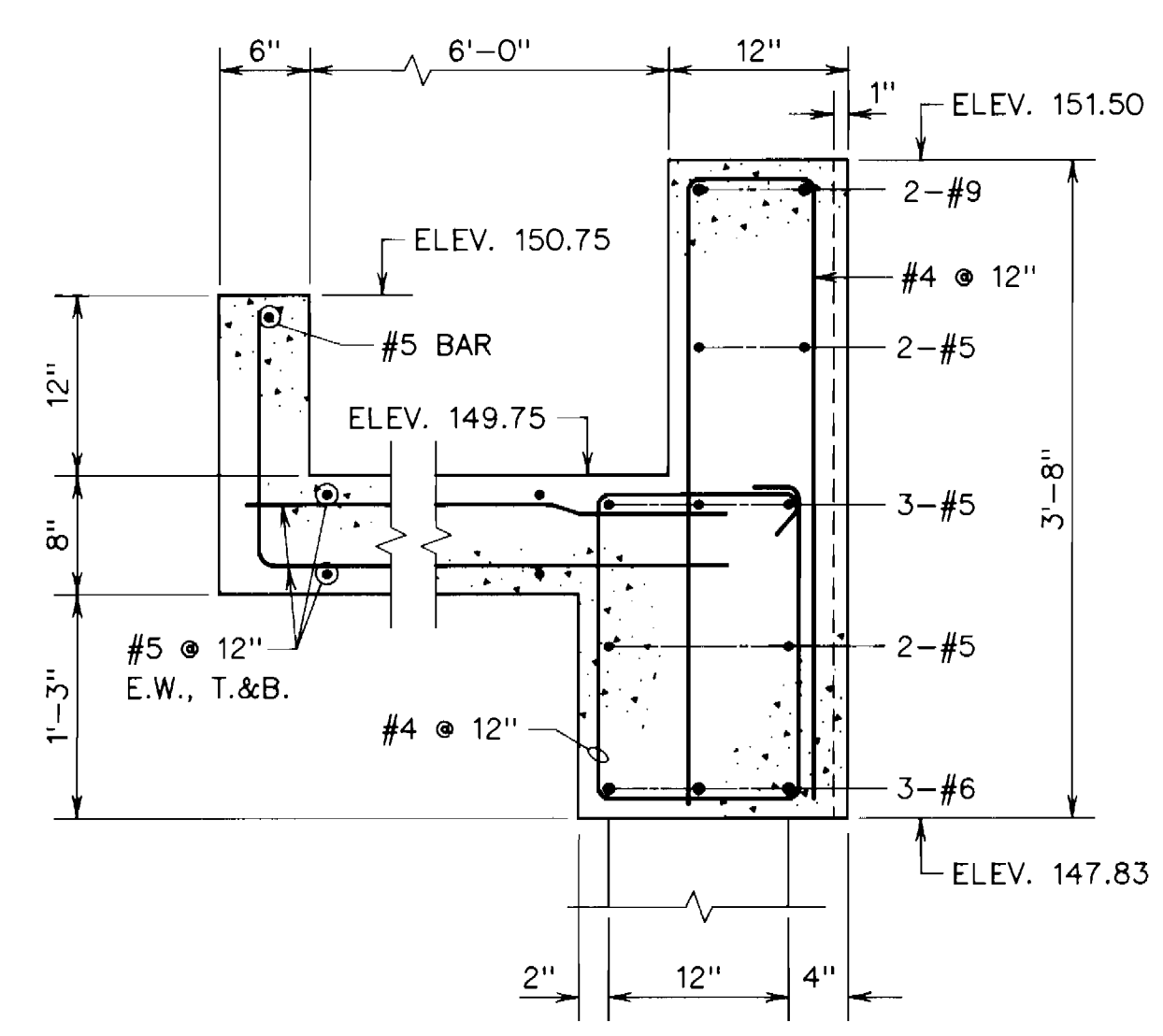
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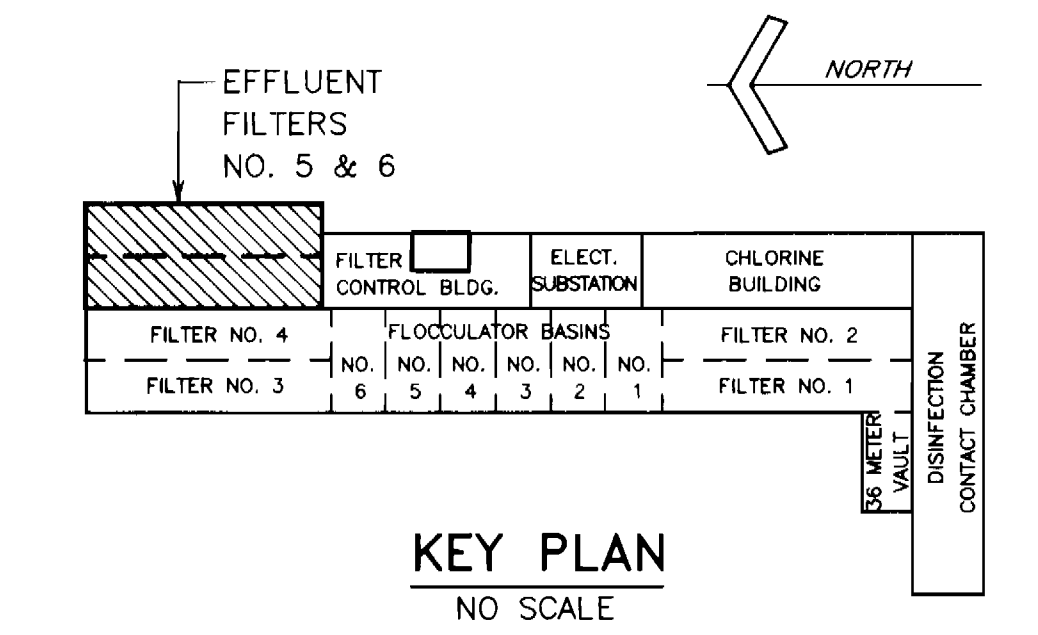
SECTION 1
SCALE IN FEET 0 1/2 1 2 3
SCALE: 1" = 1'-0"



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



SECTION 3
SCALE IN FEET 0 1/2 1 2 3
SCALE: 1" = 1'-0"



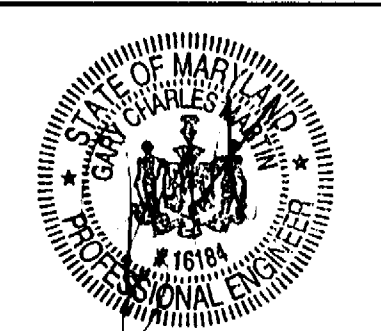
KEY PLAN
NO SCALE

L870567_EN0453D 08/11/88 19327.5

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* DATE: 11-30-88
Chief, Bureau of Engineering: *James M. Kelly* DATE: 11-30-88
Chief, Utility Design Division: *Don Lee* DATE: 11-30-88

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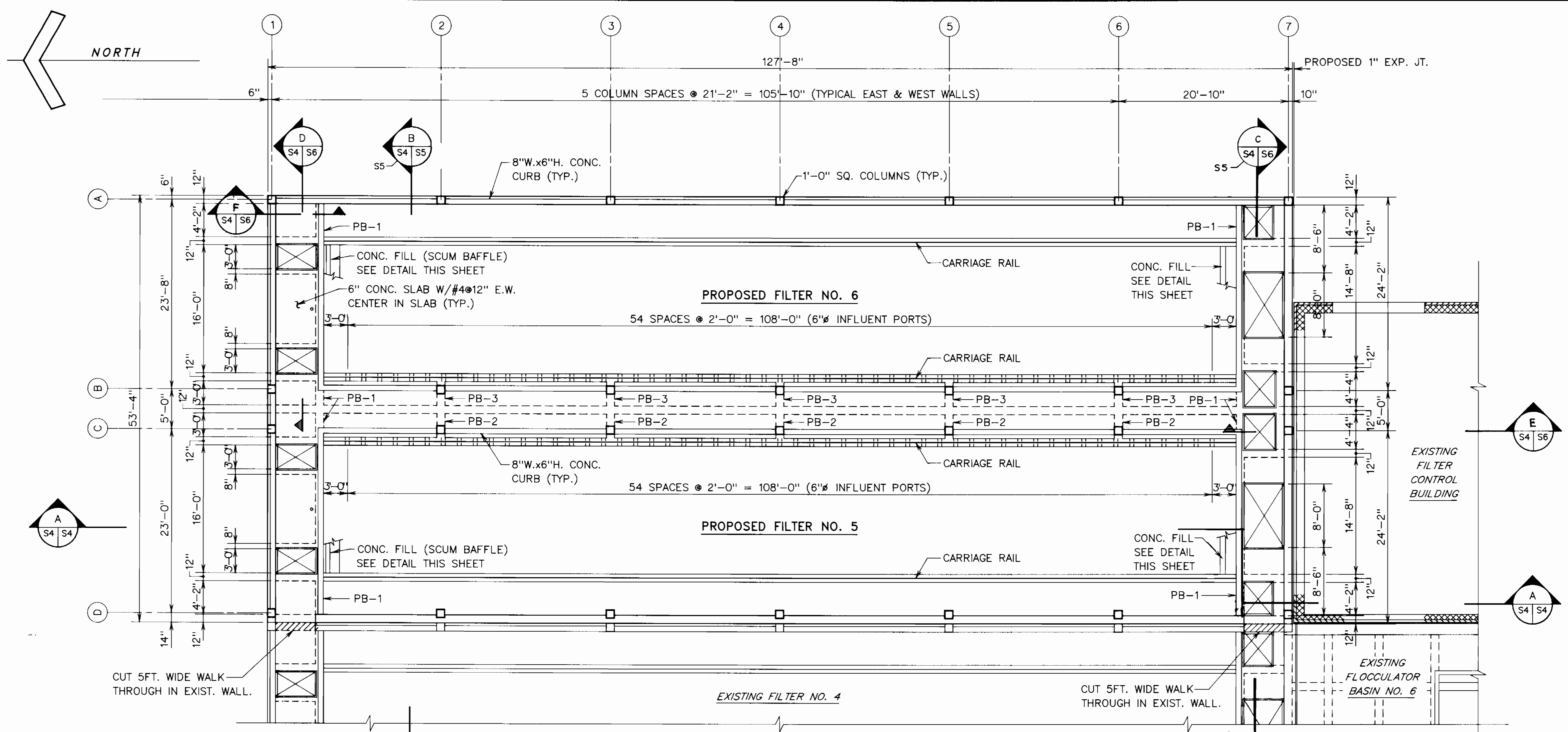


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DRN: CADD			
CHK: RJJ			
DATE: 8/88	BY NO.	REVISION	DATE

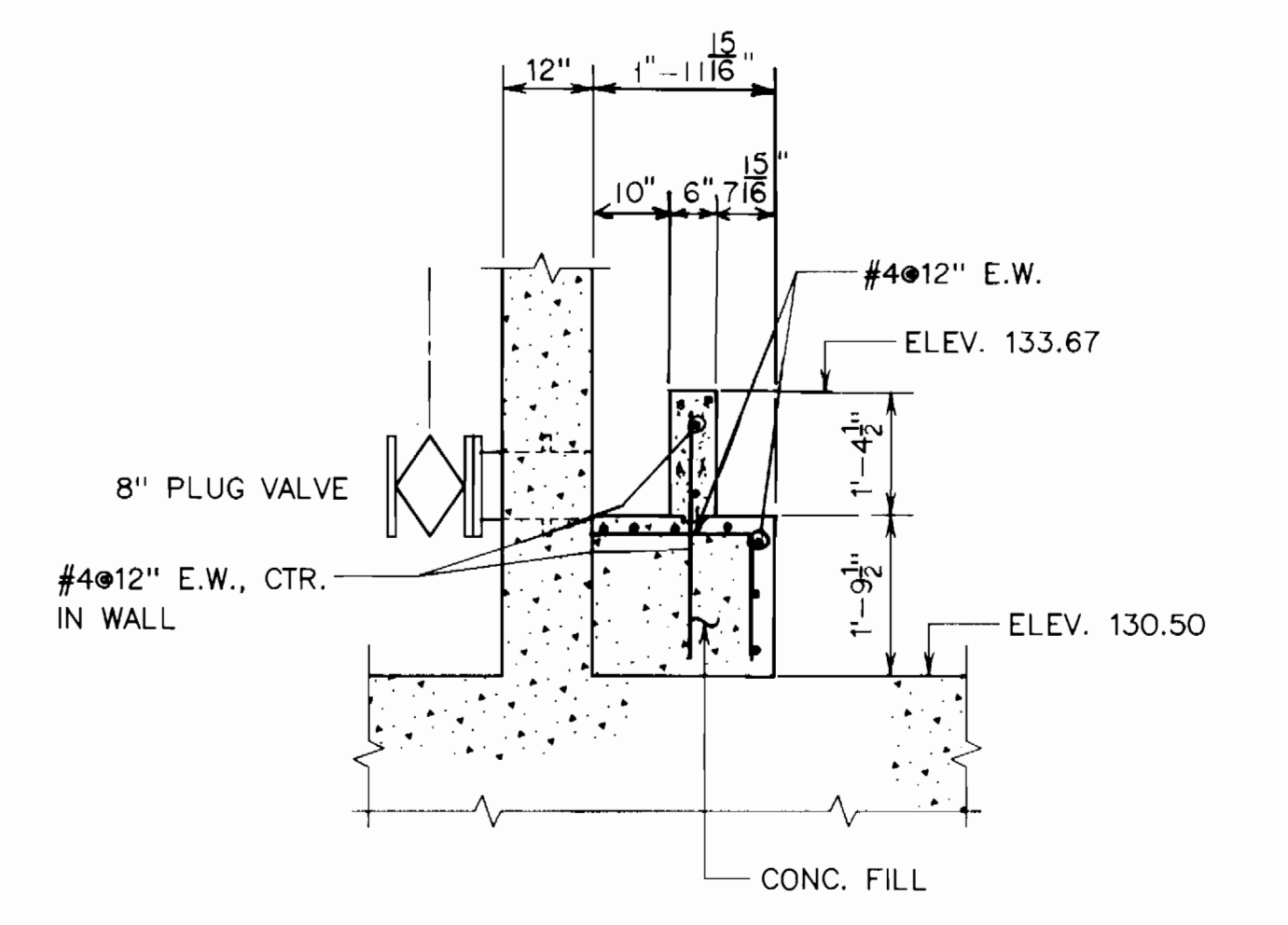
FILTERS NO. 5 & 6
ROOF PLAN & DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

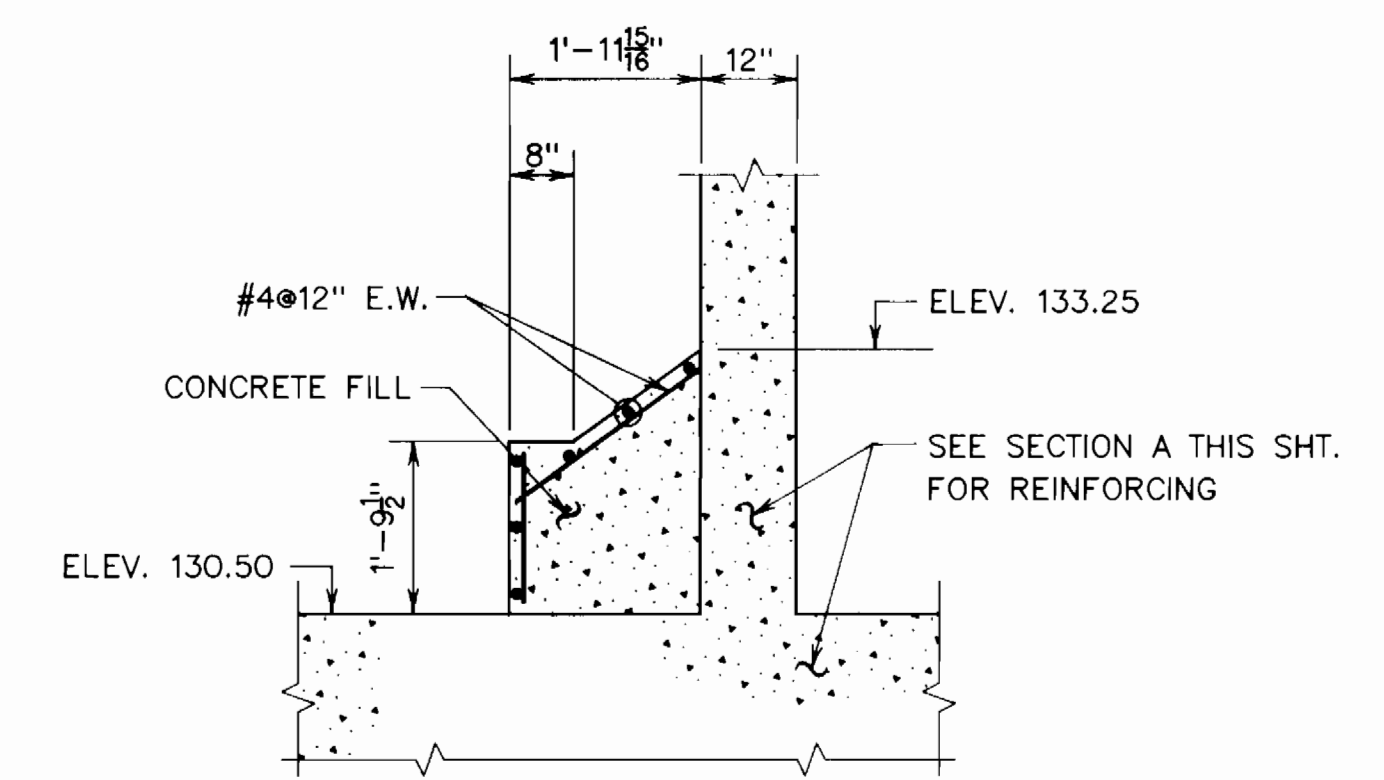
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SHEET 18 OF 40
S-3



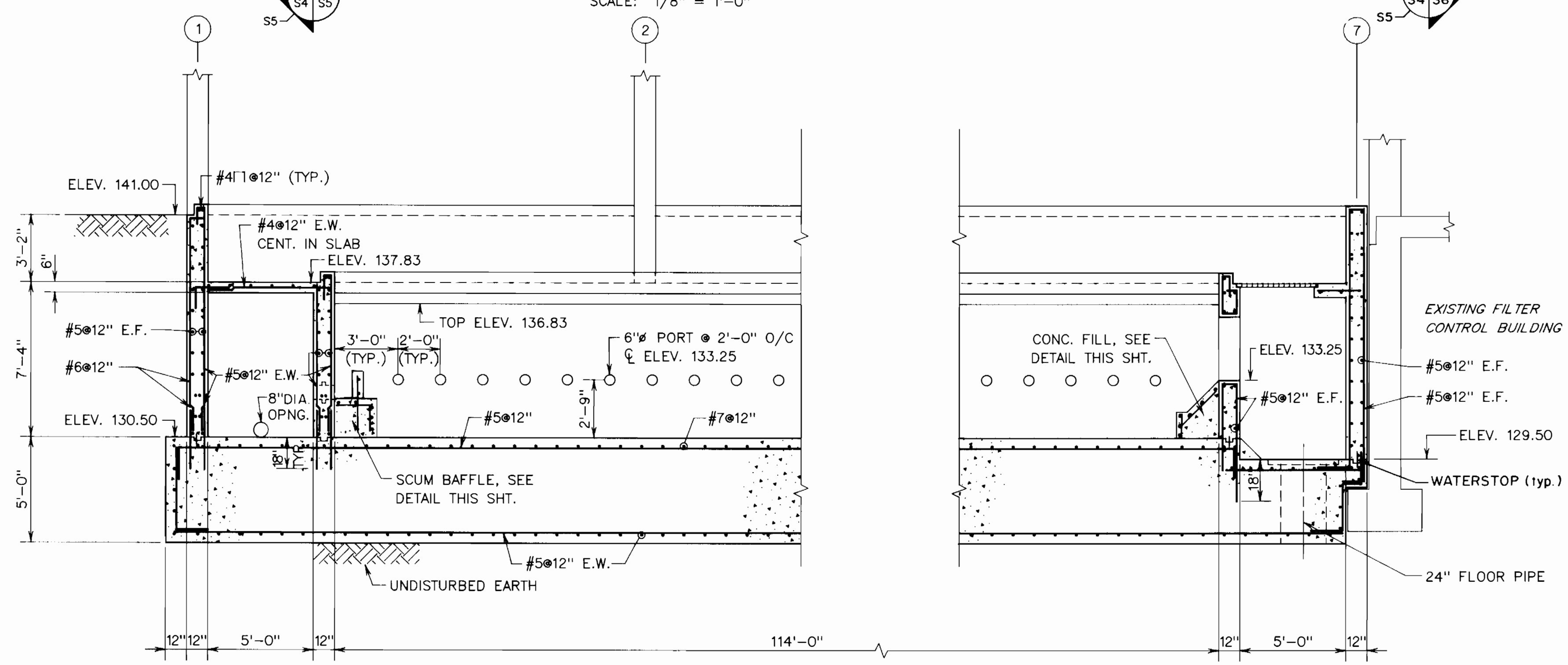
UPPER STRUCTURAL PLAN
 SCALE IN FEET 0 4 8 16 24
 SCALE: 1/8" = 1'-0"



SCUM BAFFLE DETAIL
 SCALE IN FEET 0 1 2 4 6
 SCALE: 1/2" = 1'-0"



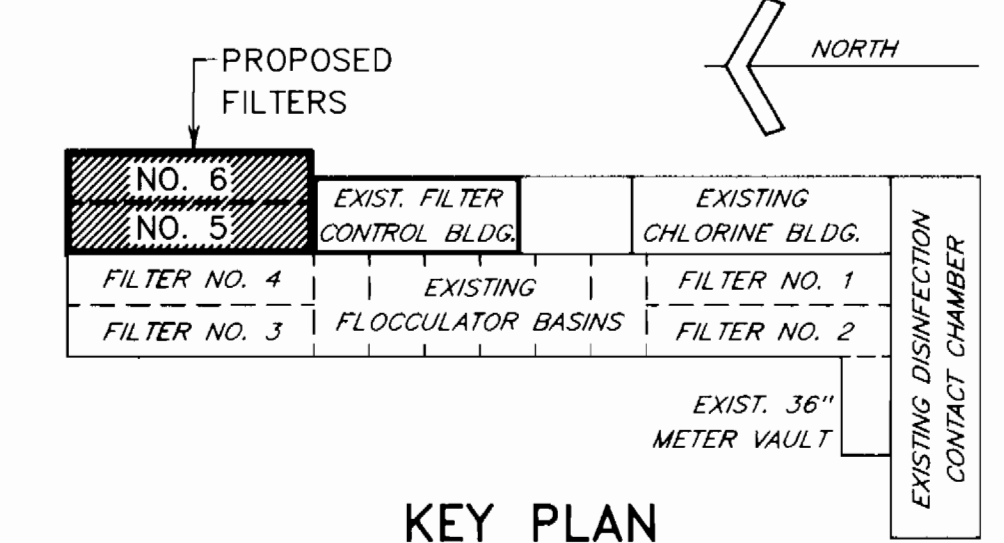
CONCRETE FILL DETAIL
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 SCALE: 1/2" = 1'-0"



STRUCTURAL SECTION THRU FILTERS
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

COLUMN SCHEDULE			
COLUMN MARK *	A1,A2,A3,A4,A5,A6,A7, B1,B7,C1,C7, D1,D2,D3,D4,D5,D6,D7	COLUMN MARK *	B2,B3,B4,B5,B6, C2,C3,C4,C5,C6
ELEVATION	148.83'	ELEVATION	149.08'
SIZE	12" X 12"	SIZE	12" X 12"
REINF.	4-#8	REINF.	4-#6
TIES	#3@12"	TIES	#3@12"
ELEV. 141.00' SPLICE	3'-3"	ELEV. 137.83' SPLICE	1'-6"

* SEE GRID ON UPPER STRUCTURE PLAN (THIS SHEET) FOR LOCATION OF COLUMNS.



KEY PLAN
 NO SCALE

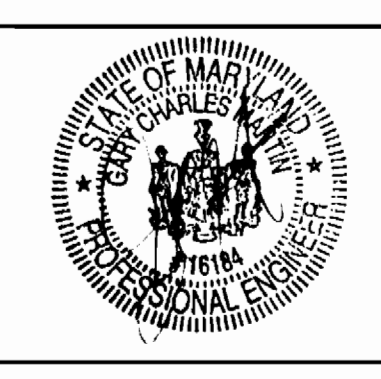
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* DATE: 11/30/88
 Chief, Bureau of Engineering: *William J. Reilly* DATE: 11/30/88
 Chief, Utility Design Division: *William J. Reilly* DATE: 11/30/88

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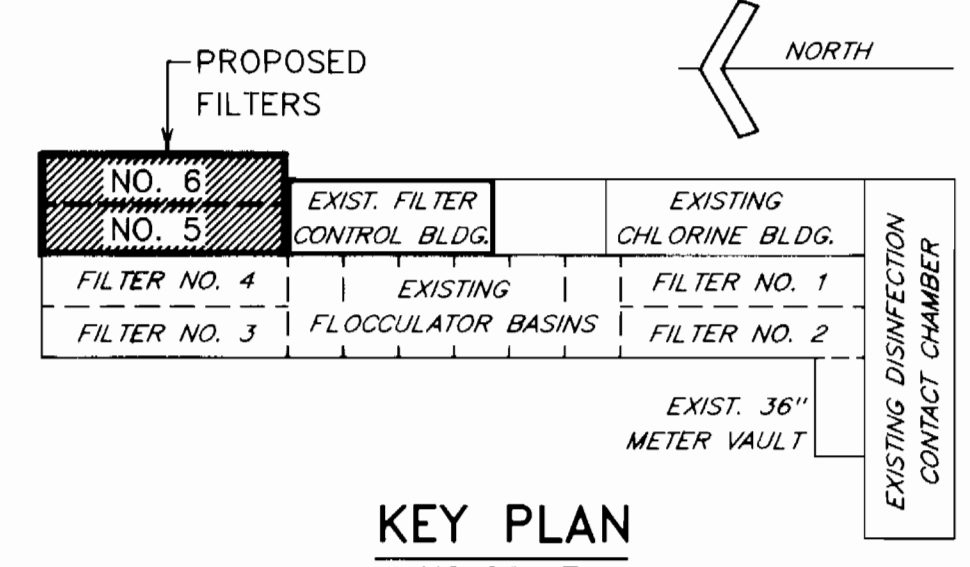
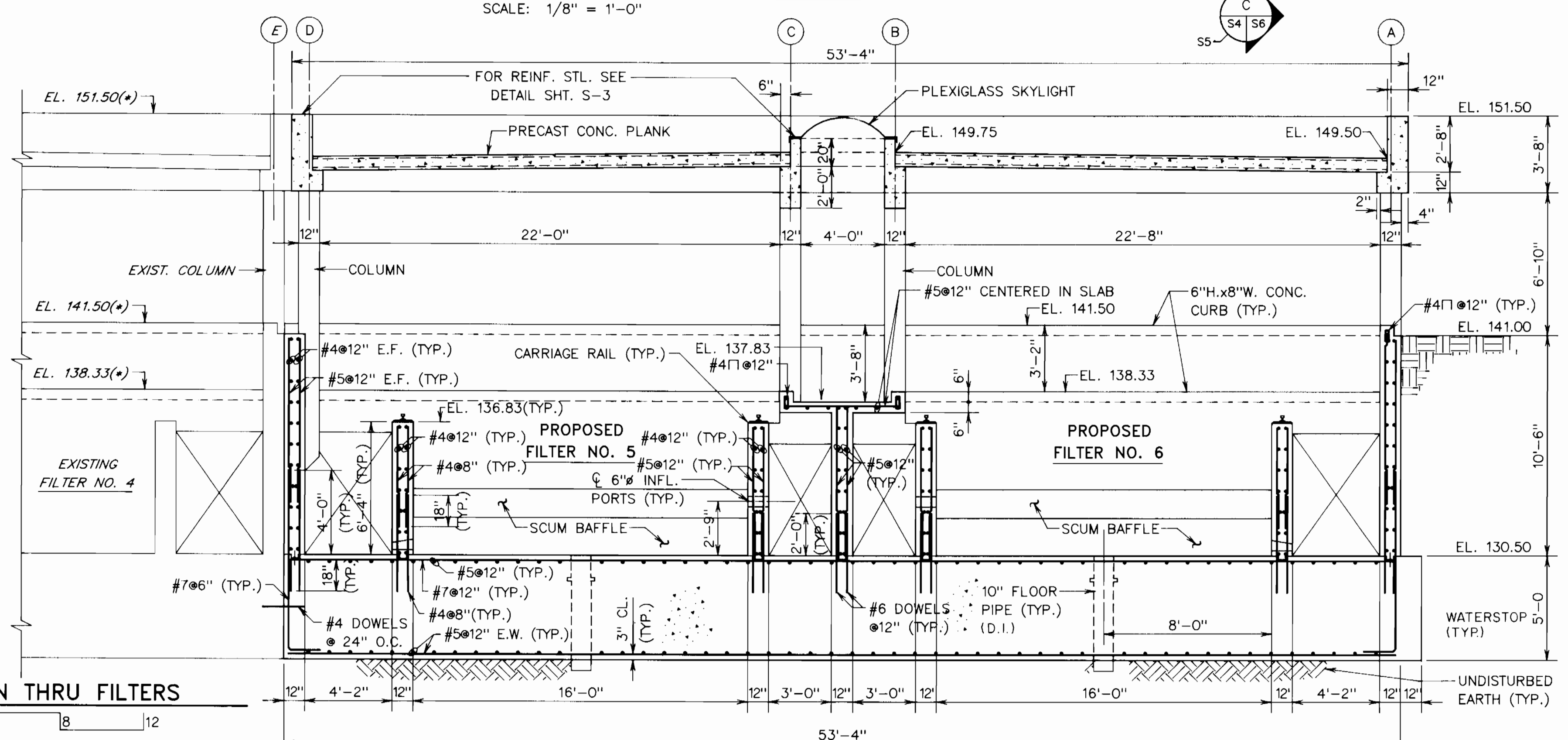
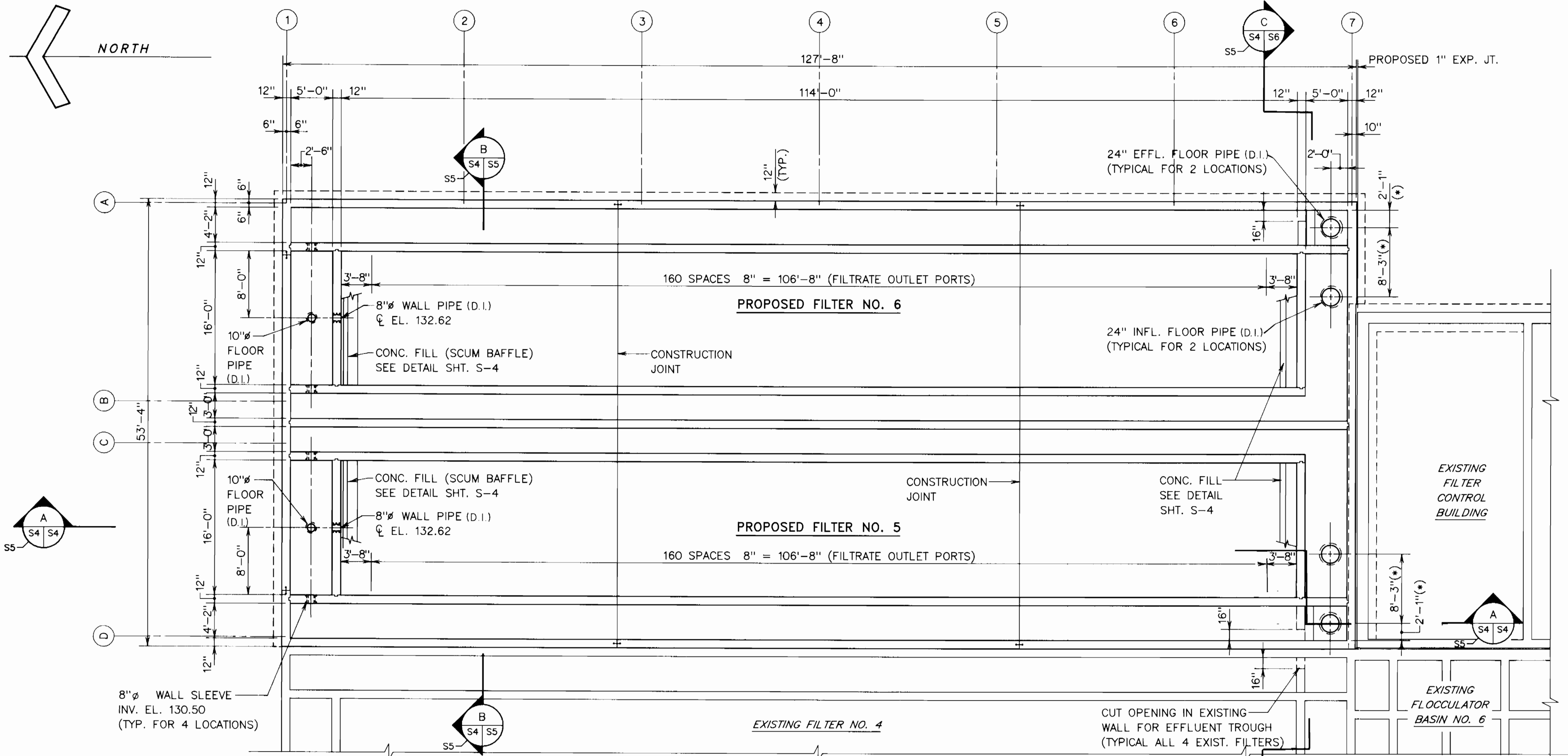
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DRN: CADD			
CHK: RJI			
DATE: 8/88			
BY NO.		REVISION	DATE

FILTERS NO. 5 & 6
 UPPER STRUCTURAL PLAN,
 SECTION AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 19 OF 40
S-4

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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

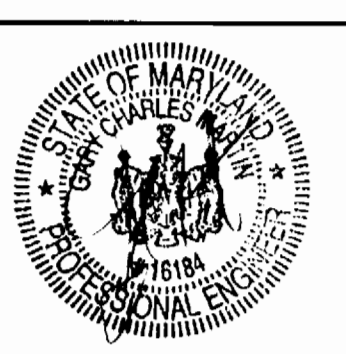
DATE: 11-30-88
 CHIEF, BUREAU OF ENGINEERING

DATE: 11-30-88
 CHIEF, UTILITY DESIGN DIVISION

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LANCASTER, PA ALLENTOWN, PA



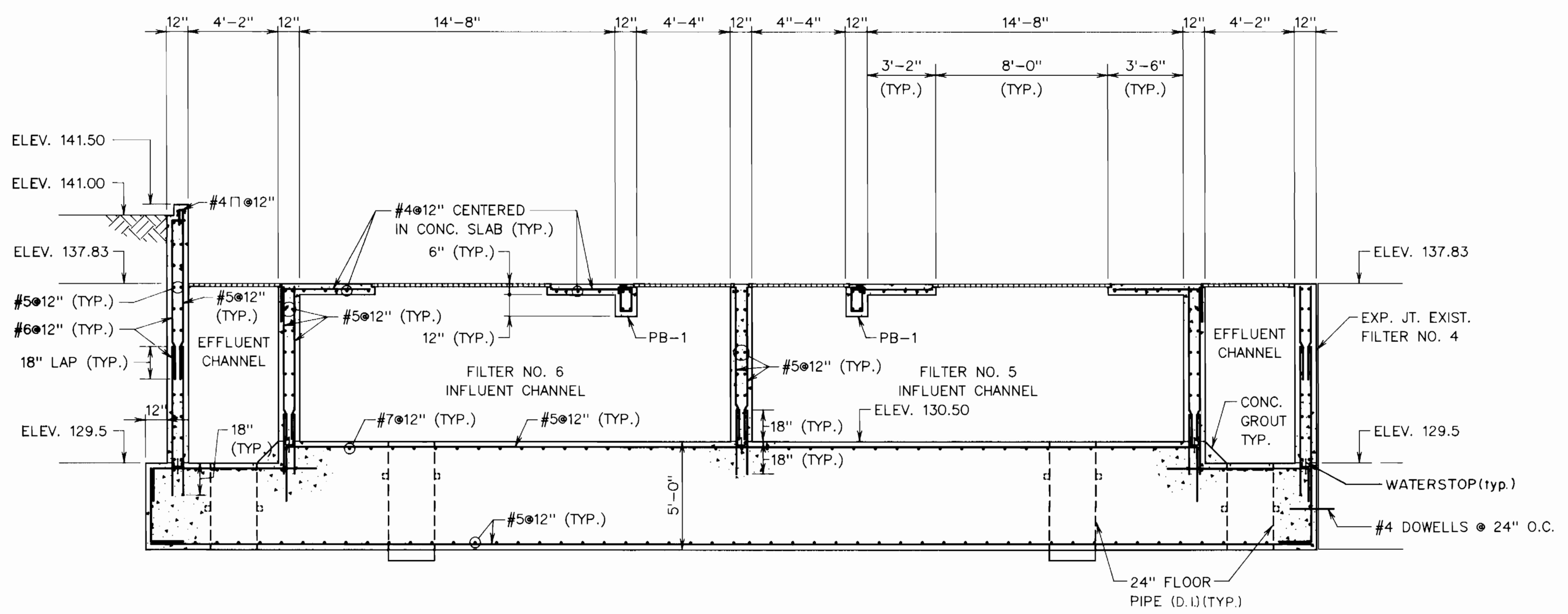
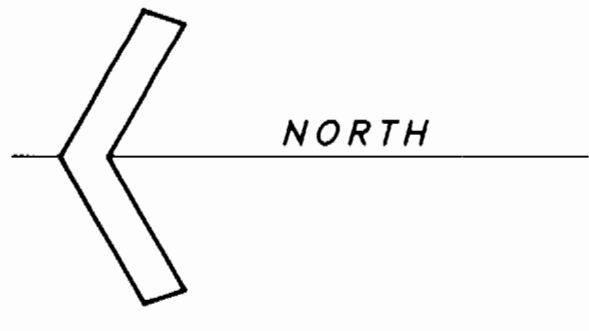
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DRN:	CADD				
CHK:	RJI				
DATE:	8/88	BY:	NO.	REVISION	DATE

FILTERS NO. 5 & 6
 LOWER STRUCTURAL PLAN,
 SECTION AND DETAILS

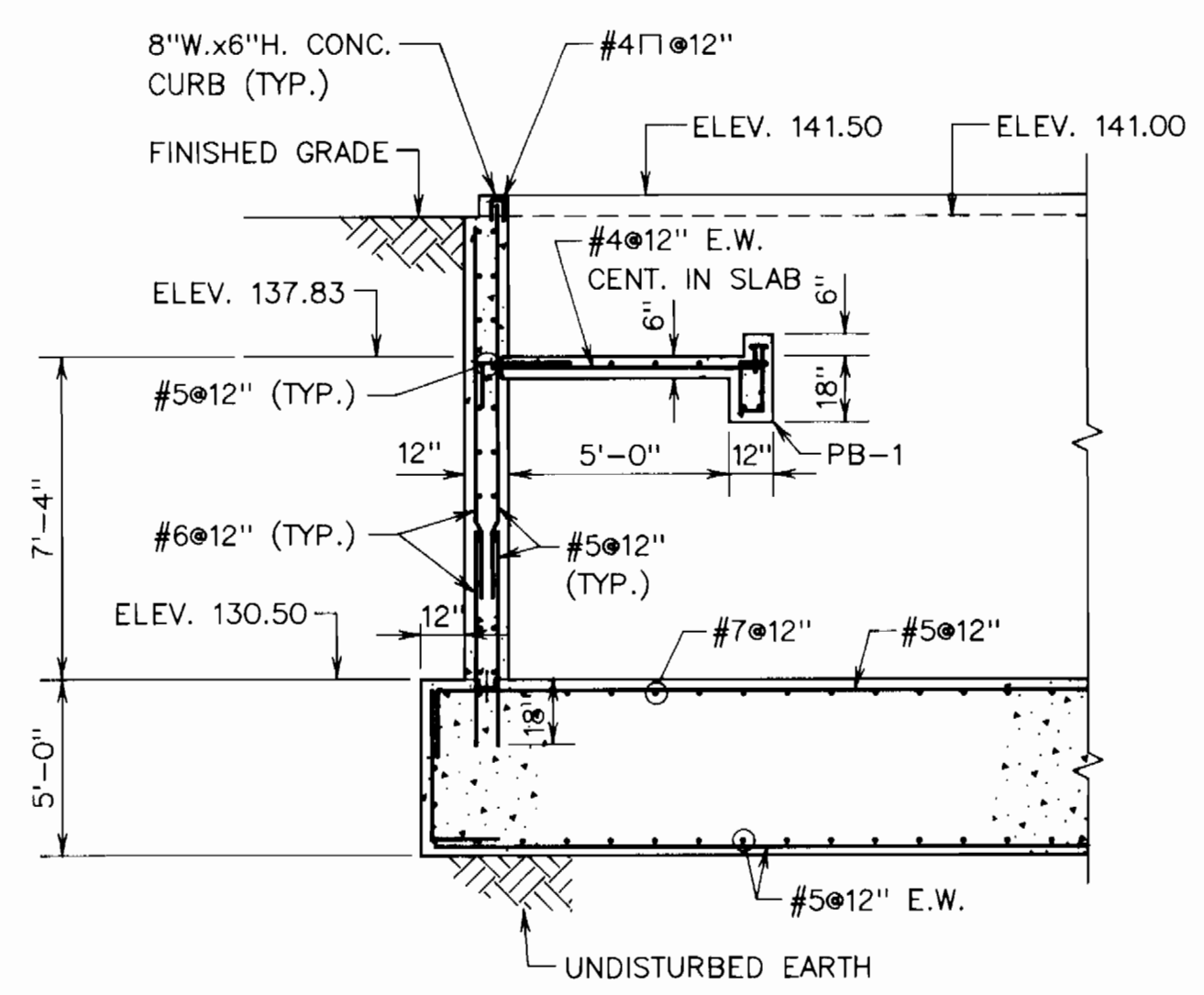
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 20 OF 40
 S-5

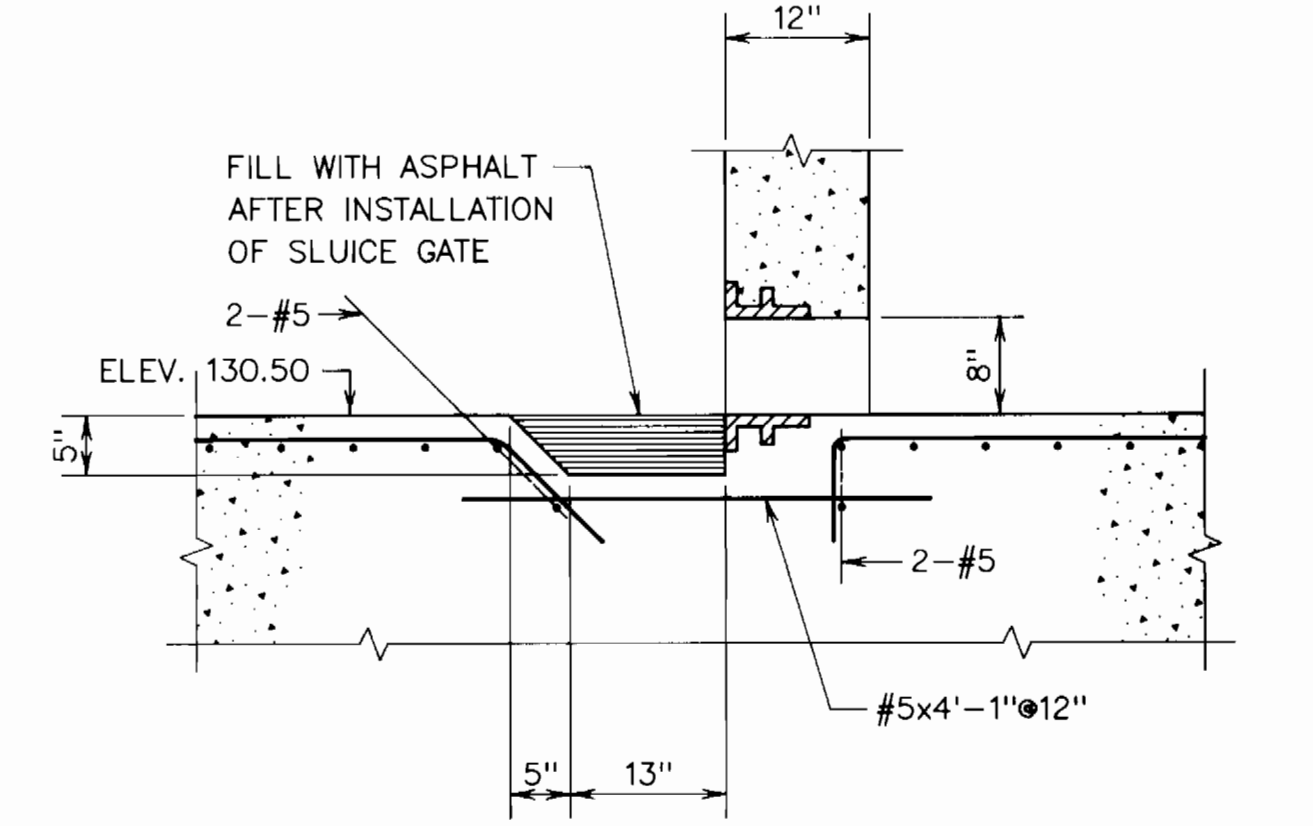
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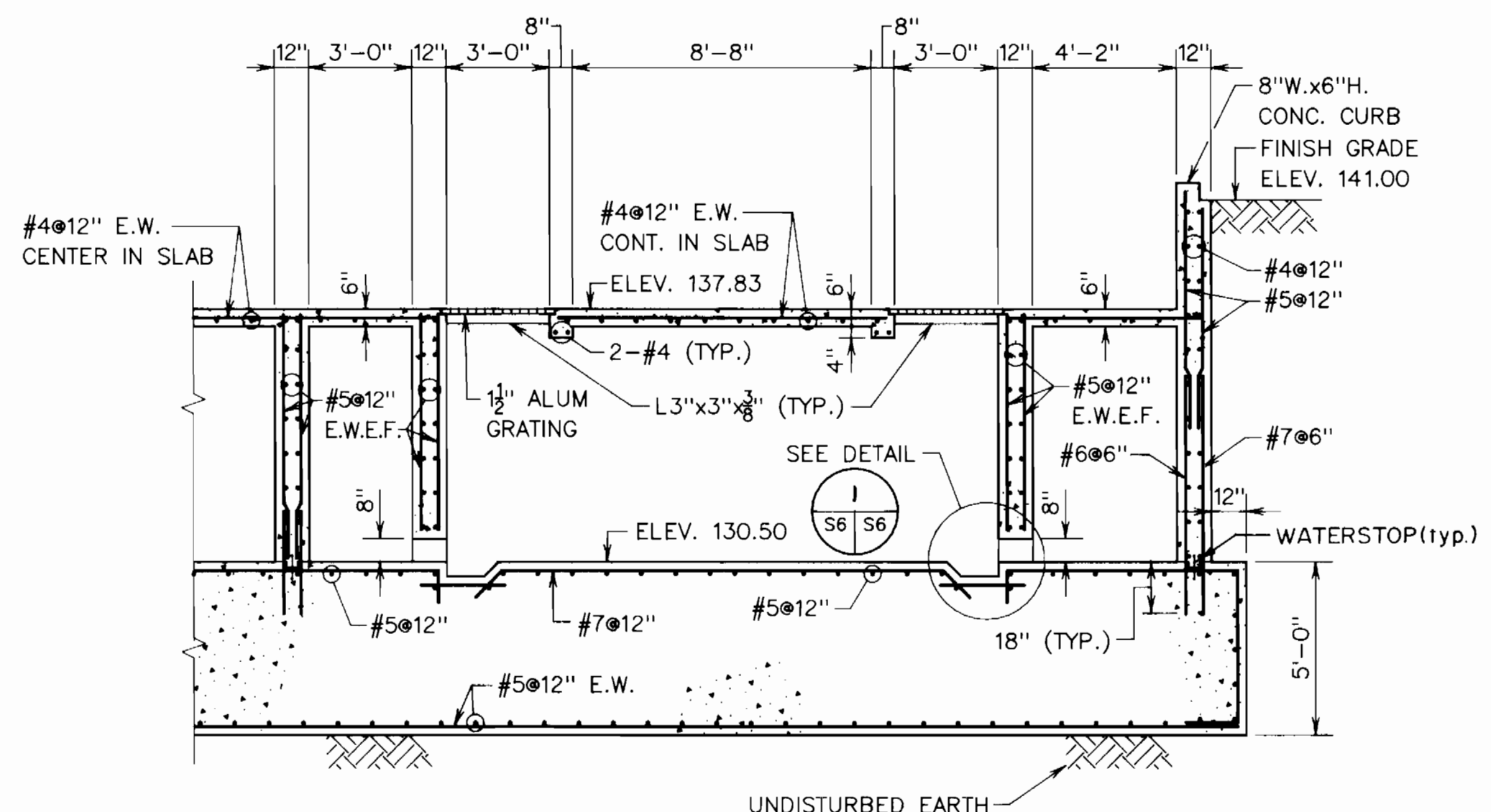
C STRUCTURAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"



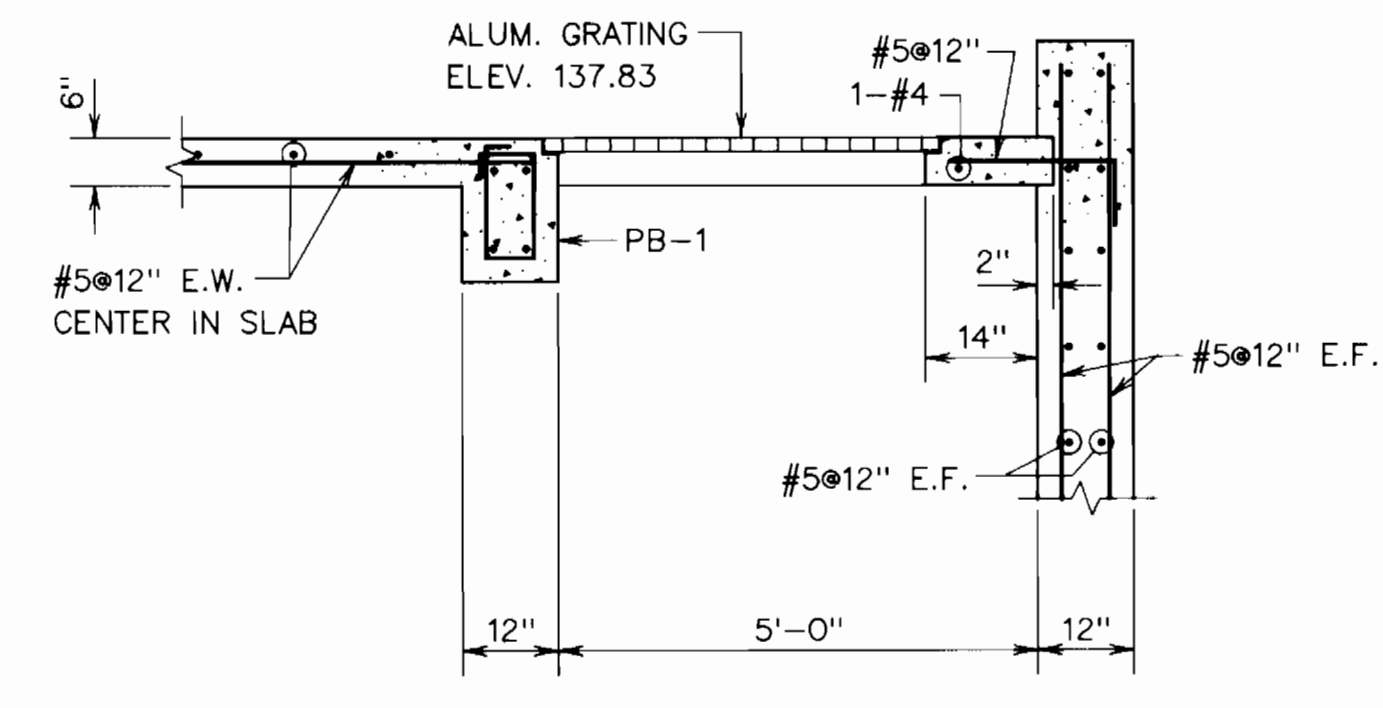
F STRUCTURAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"



I DETAIL
 SCALE IN FEET 0 1/2 1 2 3
 SCALE: 3/4" = 1'-0"

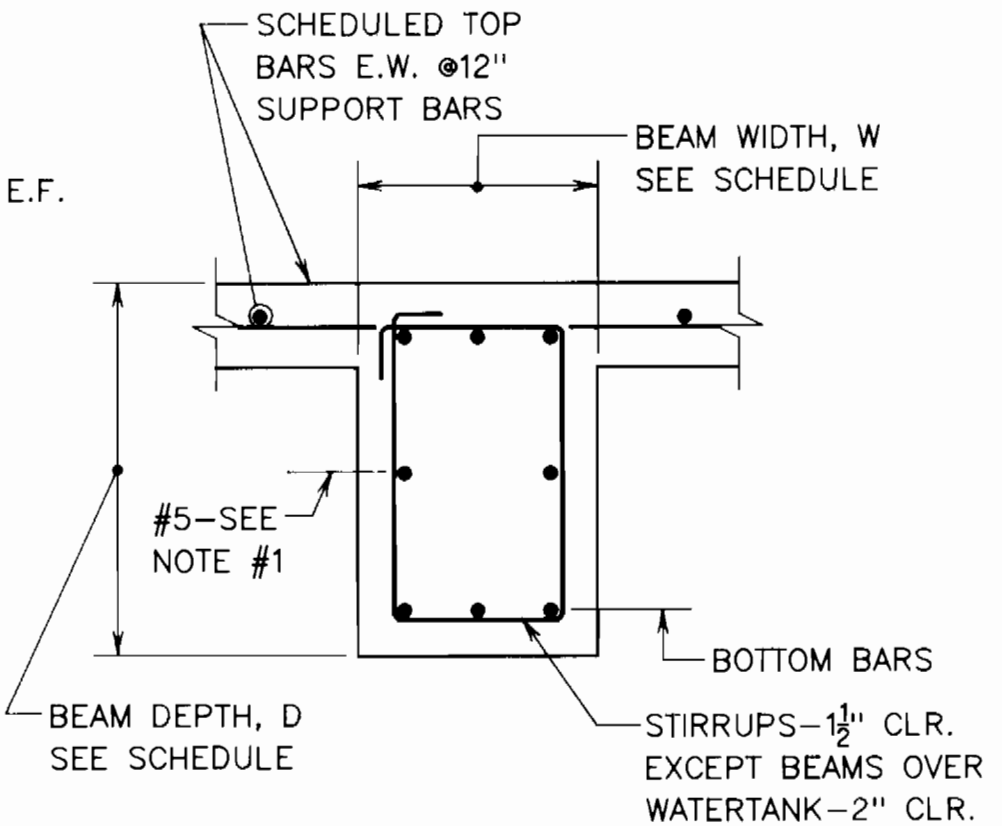


D STRUCTURAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

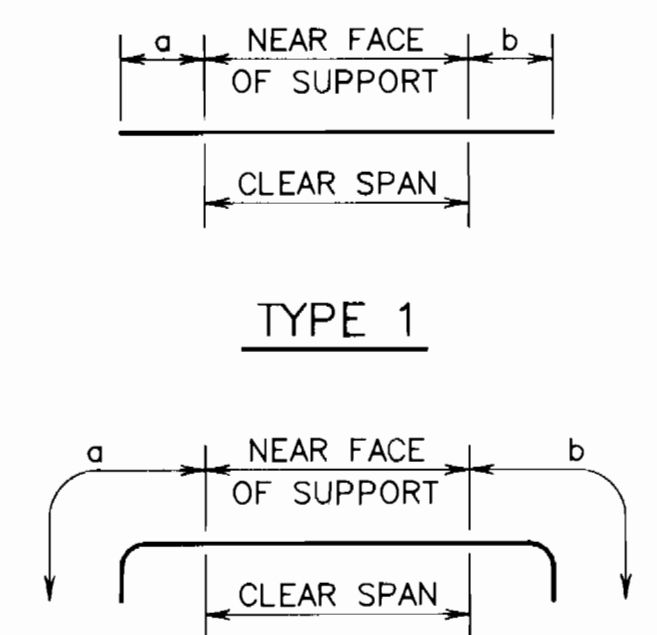


E STRUCTURAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

MARK	W	D	BOTTOM BARS			TOP BARS			STIRRUPS		REMARKS	LOCATION
			NO. & TYPE	DIMENSION		NO. & TYPE	DIMENSION		SIZE	SPACING		
PB-1	12"	18"	1 2-#5	6"	6"	4 2-#5	1'-6"	1'-6"	#3	6"	THRUOUT	SEE SHT. S-4 FILTER FLOOR
PB-2	12"	24"	1 3-#5	6"	4'-6"	4 3-#5	2'-6"	6'-6"	#4	10"	THRUOUT	SEE SHT. S-4 FILTER FLOOR
PB-3	12"	24"	BARS ARE FROM PB-2			FROM PB-2			#4	10"	THRUOUT	SEE SHT. S-4 FILTER FLOOR

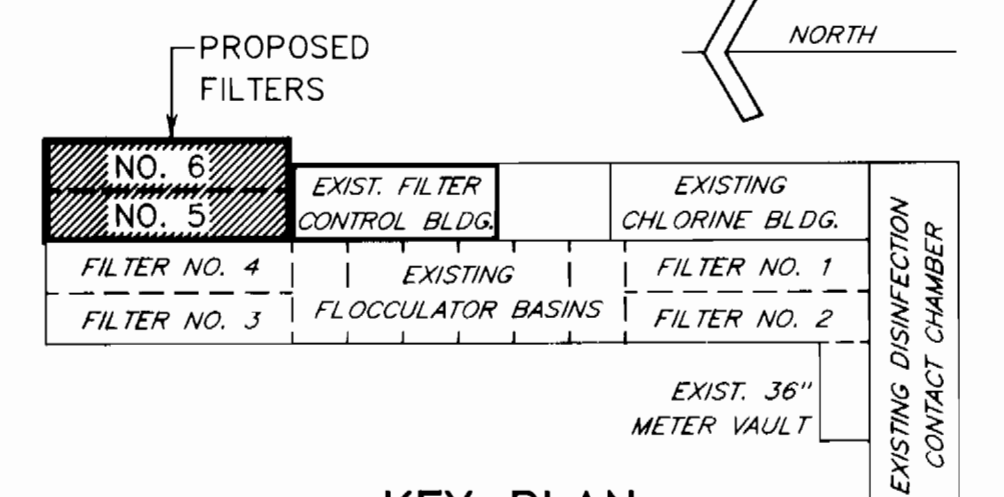


TYPICAL BEAM SECTION
 NO SCALE



BAR TYPES
 NO SCALE

NOTES:
 1. ALL BEAMS GREATER THAN 20" IN DEPTH SHALL HAVE ADDITIONAL #5@12" EACH FACE OF BEAM.



KEY PLAN
 NO SCALE

L:\05067_L\04580_06/11/88 048444

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DATE: 11-30-88
 CHIEF, BUREAU OF ENGINEERING

DATE: 11-30-88
 CHIEF, UTILITY DESIGN DIVISION

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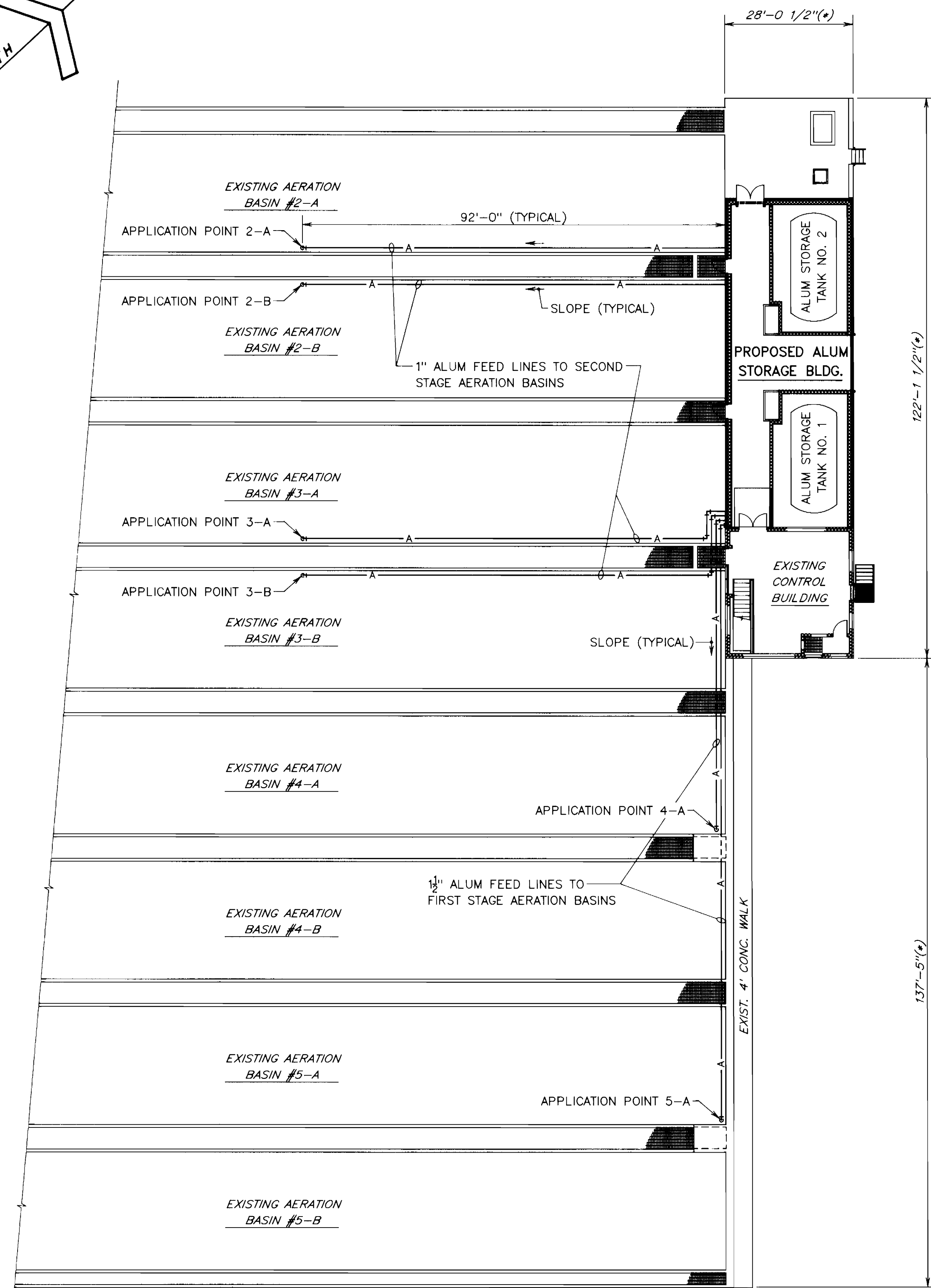
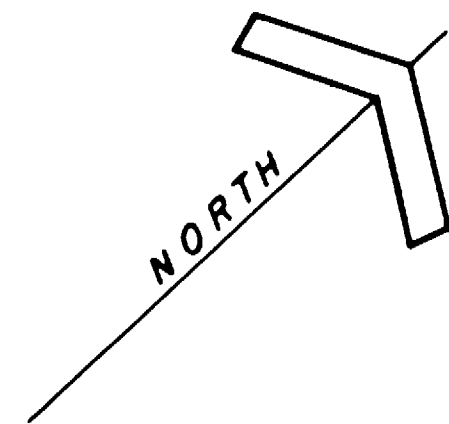


DES: H.T.D.			
DRN: CADD			
CHK: RJI			
DATE: 8/88	BY: NO.	REVISION	DATE

FILTERS NO. 5 & 6
 STRUCTURAL SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

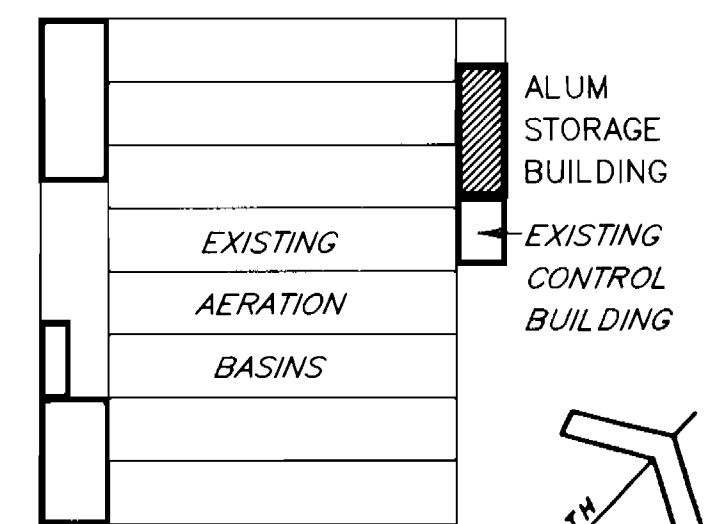
SCALE AS SHOWN
 SHEET 21 OF 40
S-6



- NOTE:
1. ALL POINTS OF APPLICATIONS TO BE ABOVE WATER SURFACE.
 2. ALL EXTERIOR ALUM FEED LINES TO BE INSULATED.
 3. ALL CHEMICAL FEED LINES TO BE PVC (SCH. 80).

**ALUM FEED APPLICATION POINTS -
AERATION BASINS & ALUM STOR. BLDG. PLAN**

SCALE IN FEET 0 8 16 32 48
SCALE: 1/16" = 1'-0"



KEY PLAN
NO SCALE

LEGEND

(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

L870567, ENHANCED 08/10/88 20454-5

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		HUTH ENGINEERS INC. CONSULTING ENGINEERS • SURVEYORS LANDSCAPE ARCHITECTS • PLANNERS P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7021 LANCASTER, PA ALLENTOWN, PA	
DIRECTOR OF PUBLIC WORKS <i>John J. Hines</i>	DATE 11-30-88	CHIEF, BUREAU OF ENGINEERING <i>Raymond E. Kelly</i>	DATE 11-30-88
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES <i>Walter</i>	DATE	CHIEF, UTILITY DESIGN DIVISION <i>Don Lane</i>	DATE

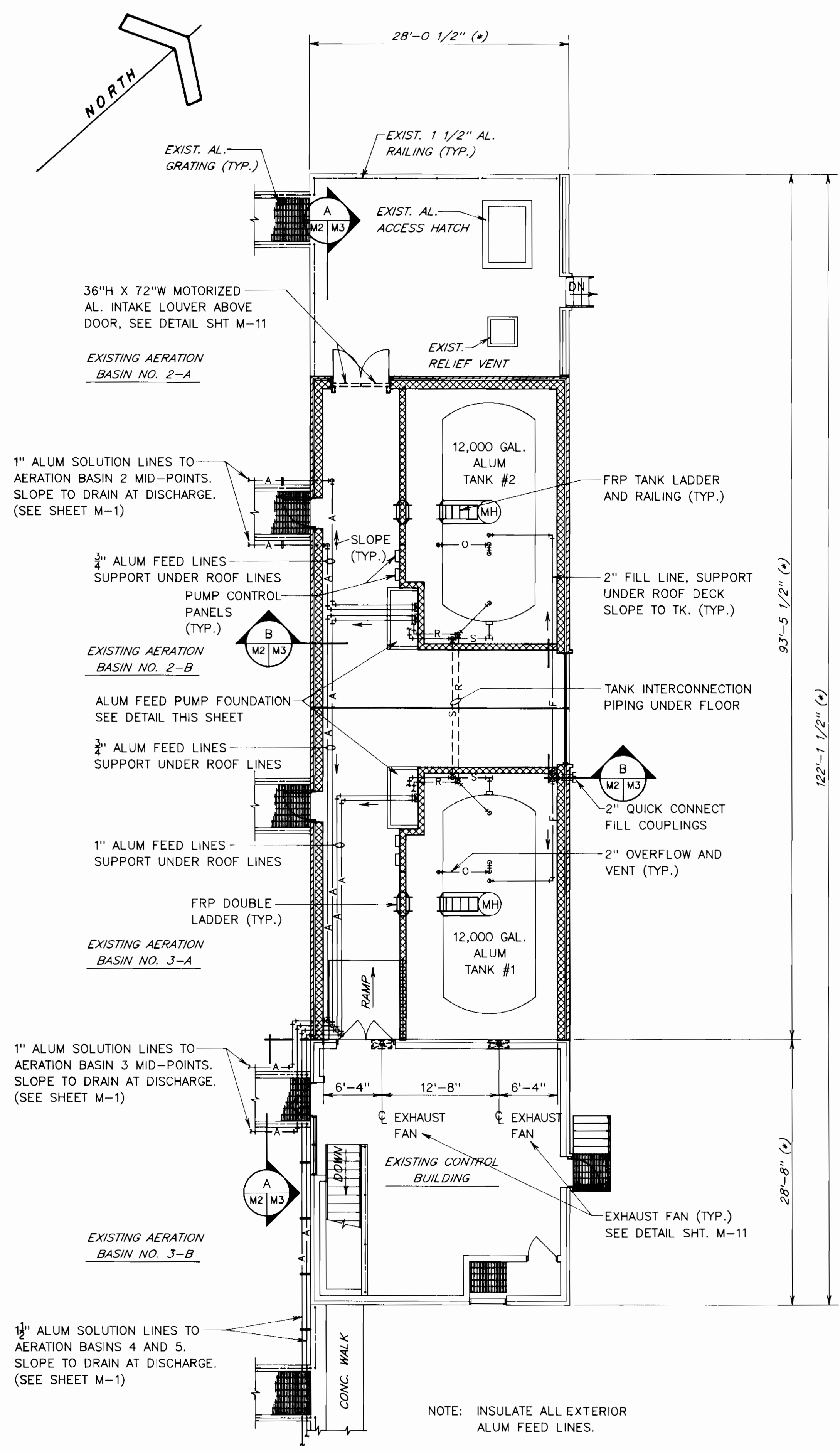
DES: H.T.D.					
DRN: CADD					
CHK: <i>Jyf</i>					
DATE: 8/88	BY	NO.	REVISION	DATE	

**AERATION BASINS AND
ALUM STORAGE BUILDING**

ALUM FEED APPLICATION POINTS
PLAN

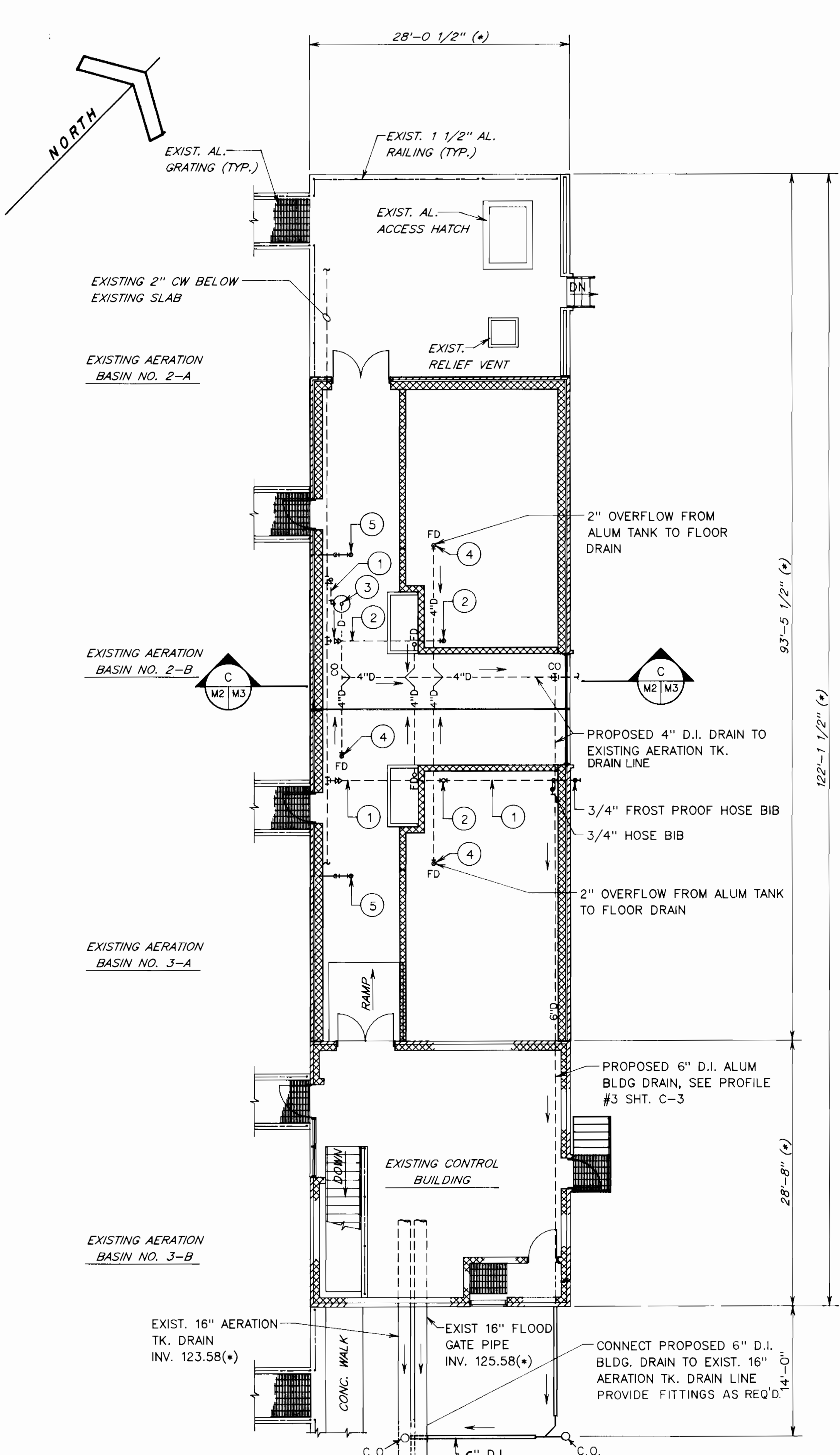
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 22 OF 40
M-1



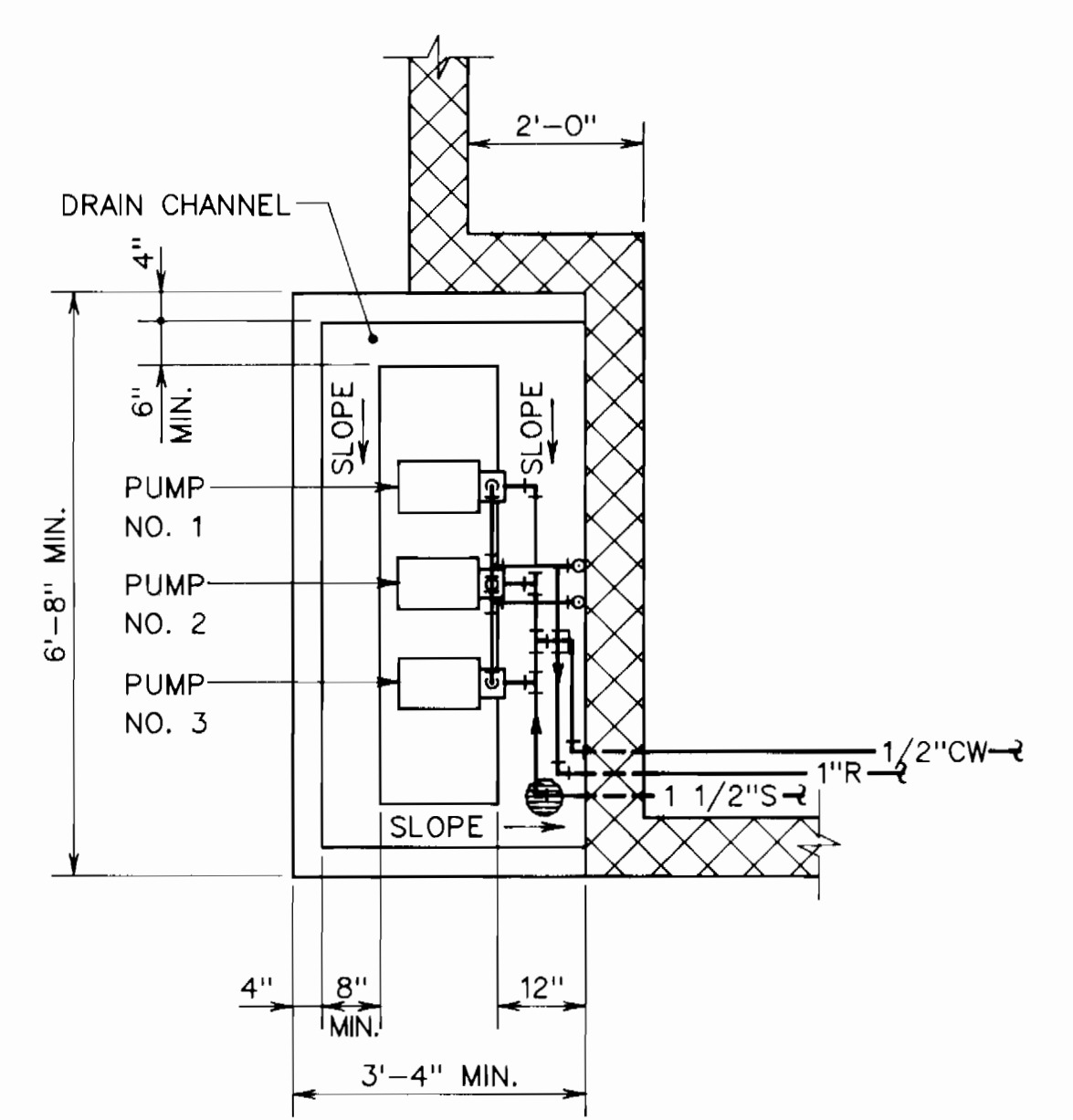
PROCESS - MAIN FLOOR PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



UTILITY - MAIN FLOOR PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



ALUM FEED PUMP DETAIL

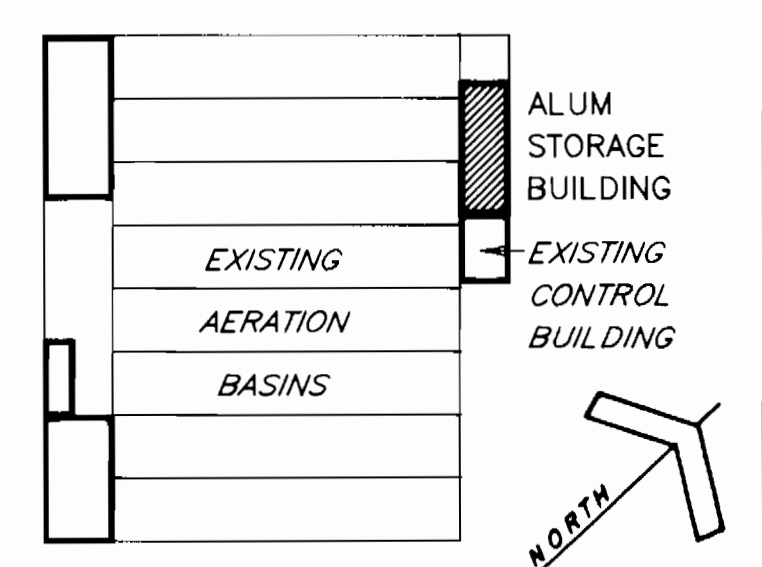
SCALE IN FEET 0 1 2 4 6
SCALE: 1/2" = 1'-0"

GENERAL NOTES

- DOUBLE CHECK VALVES FOR BACKFLOW PREVENTION SHALL BE INSTALLED ON ALL PROPOSED WATER SERVICE LINES AT THE POINT OF CONNECTION WITH EXISTING C.W. PLUMBING.
- THE EMERGENCY EYEWASH AND SHOWER SHALL BE A SINGLE, INTEGRAL UNIT AND WILL DRAIN TO THE PROPOSED 4" D.I. DRAIN LINE AS SHOWN.
- ALUM FEED PUMPS SHALL BE SPACED EVENLY ON A PAD APPROXIMATE 3' ABOVE THE DRAINAGE CHANNEL.
- THE DRAINAGE CHANNEL SURROUNDING THE ALUM FEED PUMPS, SHALL BE SLOPED TO THE 4" D.I. DRAIN AS SHOWN.
- OVERFLOW LINES FROM THE ALUM STORAGE TANKS SHALL BE CONNECTED TO THE PROPOSED 4" D.I. DRAIN AS SHOWN.
- ALL CHEMICAL FEED PIPING TO BE PVC (SCH. 80)

PIPING KEYNOTES

- PROPOSED 3/4" C.W. (COPPER TYPE K)
- PROPOSED 1/2" C.W. (ALUM PUMP FLUSHING CONN.) (COPPER TYPE K)
- PROPOSED EMERGENCY EYEWASH AND SHOWER
- PROPOSED 4" FLOOR DRAIN WITH BACKFLOW PREVENTOR
- PROPOSED ROOF DRAIN TO EXISTING AERATION BASIN (4" PVC SCH. 80)



KEY PLAN
NO SCALE

LEGEND

(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

NSP-HUTH-ENR-08087-ENR-130 06/16/88 17:51B.4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 11/30/88
Date: 11/30/88

Chief, Bureau of Engineering: *John J. O'Hara* 11-30-88
Date: 11-30-88

Chief, Utility Design Division: *John J. O'Hara* 11-30-88
Date: 11-30-88

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LANCASTER, PA ALLENTOWN, PA

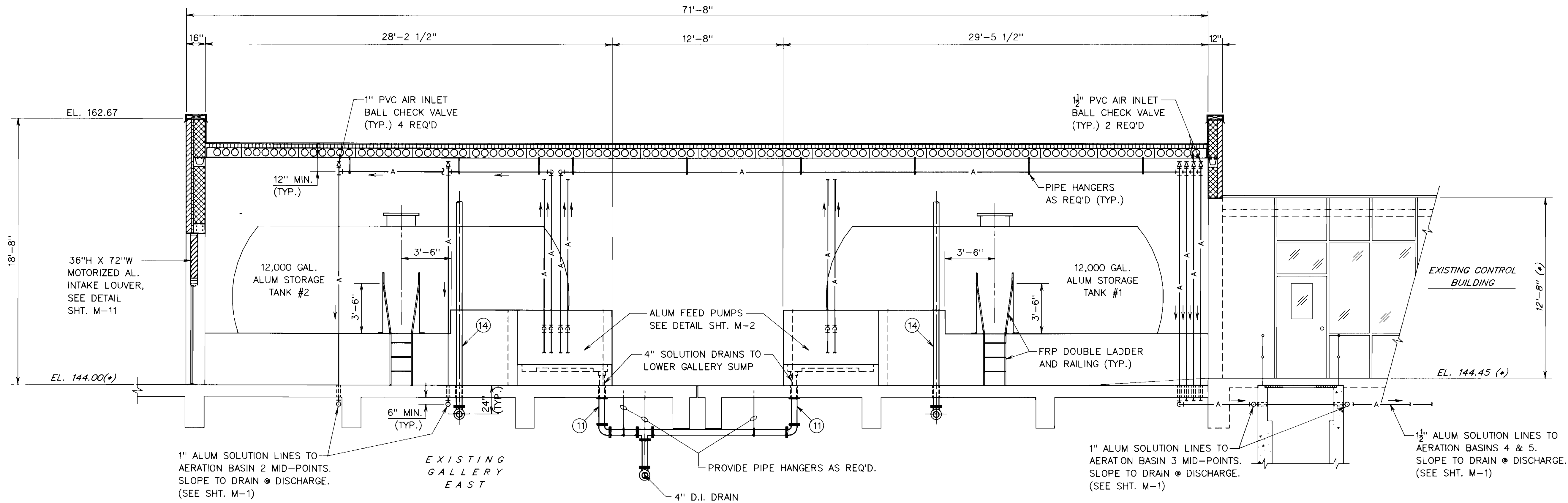


DES:	R.L.S. H.T.D.
DRN:	CADD
CHK:	<i>[Signature]</i>
DATE:	8/88
BY:	NO.
REVISION:	
DATE:	

ALUM STORAGE BUILDING
PROCESS AND UTILITY PIPING
MAIN FLOOR PLANS AND DETAILS

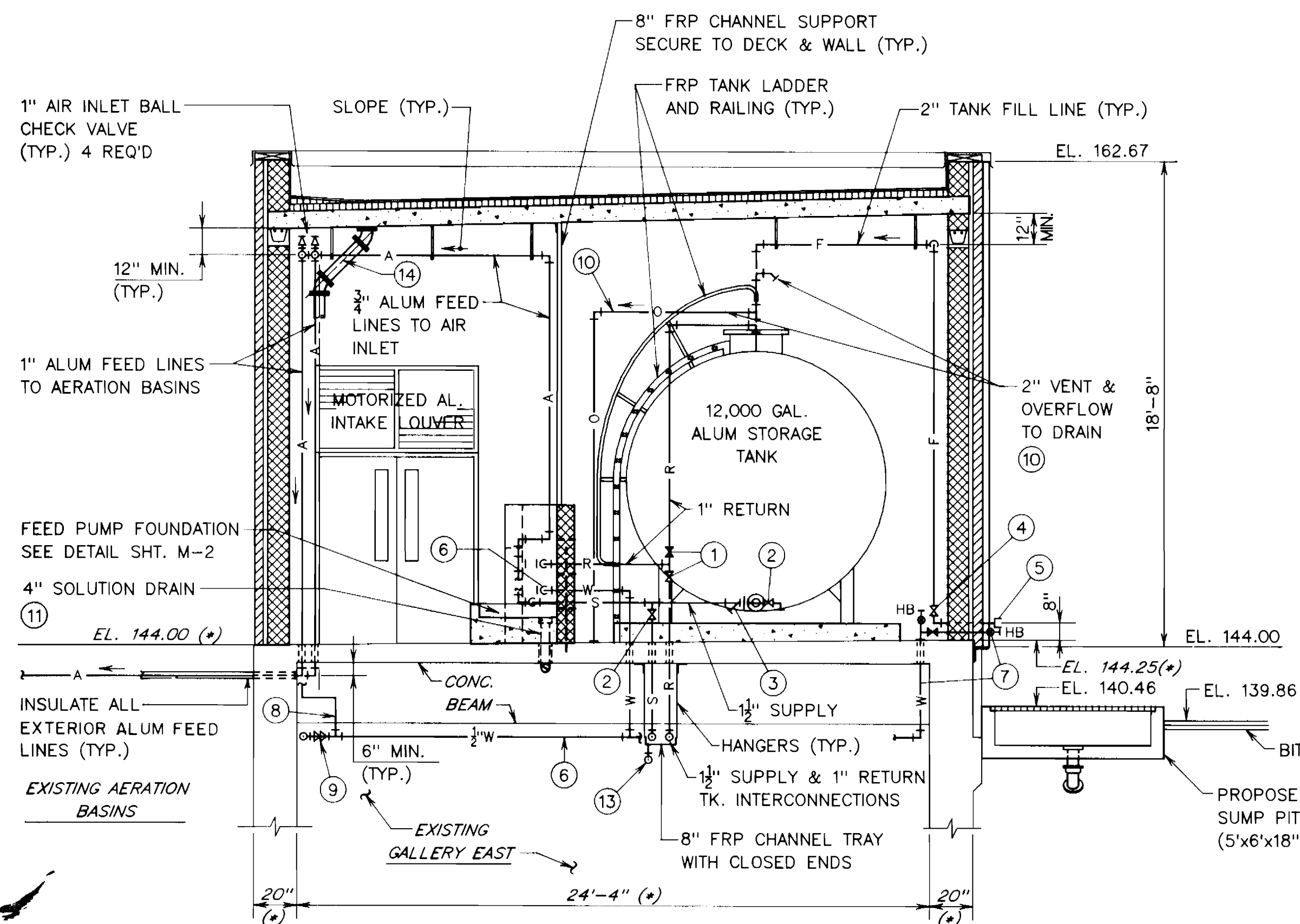
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 23 OF 40
M-2



A MECHANICAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

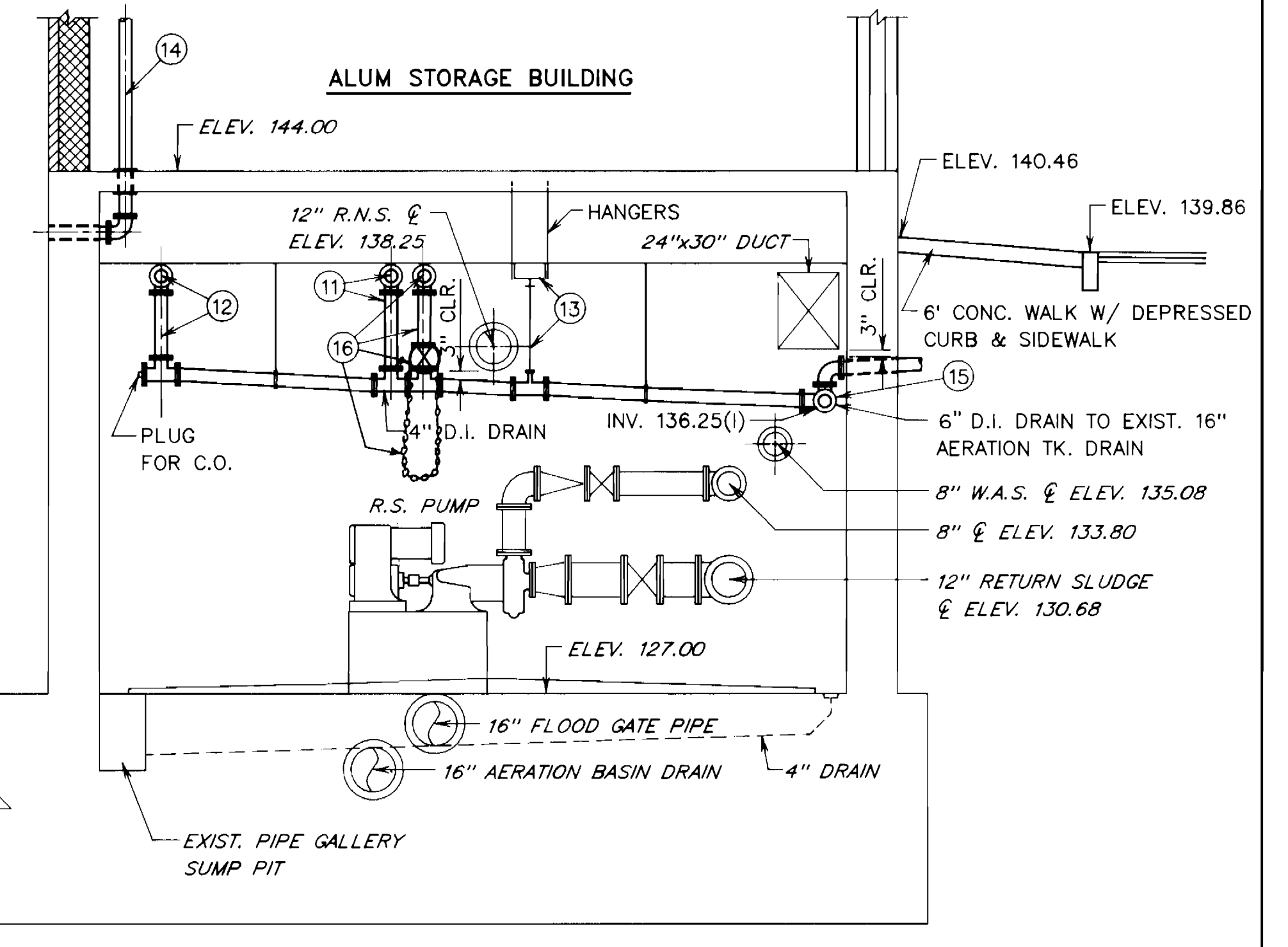
NOTE: 1. INSULATE ALL EXTERIOR ALUM FEED LINES
 2. ALL CHEMICAL FEED PIPING TO BE PVC SCH.80



B MECHANICAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

KEY NOTES

- | | |
|---|---|
| 1 1" BALL VALVE | 8 3/4" WATER LINE TO EYE WASH & EMERGENCY SHOWER |
| 2 1 1/2" BALL VALVE | 9 3/4" DOUBLE CHECK VALVE |
| 3 1 1/2" STRAINER | 10 2" ALUM TANK OVERFLOW TO FLOOR DRAIN |
| 4 2" BALL VALVE | 11 4" ALUM PUMP PAD DRAIN W/BACKFLOW PREVENTOR |
| 5 2" QUICK FILL COUPLING | 12 4" FLOOR DRAIN AND EMERGENCY SHOWER DRAIN |
| 6 1/2" FLUSHING CONNECTION | 13 1" DRAIN FROM FRP CHANNEL TO 4" D.I. DRAIN |
| 7 3/4" WATER LINE & HOSE BIB (FROST PROOF)(COPPER TYPE K) | 14 4" ROOF DRAIN TO AERATION BASIN(PVC SCH.80) |
| NOTE: SEE ALUM FEED SYSTEM PIPING SCHEMATIC SHT. M-4 | 15 4" X 4" X 4" SIDE OUTLET TEE |
| | 16 4" FLOOR DRAIN W/GATE VALVE & CHAIN WHEEL OPERATOR |



C MECHANICAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

LEGEND

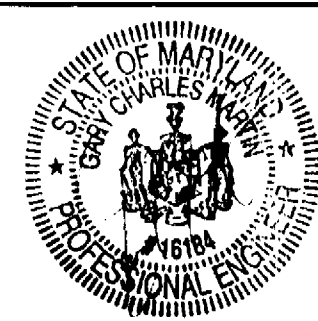
(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DATE: 11/30/88
 DIRECTOR OF PUBLIC WORKS
 DATE: 11/30/88
 CHIEF, BUREAU OF ENGINEERING

DATE: 11/30/88
 CHIEF, UTILITY DESIGN DIVISION

CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS
HUTH ENGINEERS INC.
 P.O. BOX 3032 LANCASTER, PA 17604 (717) 269-7021
 LANCASTER, PA ALLENTOWN, PA

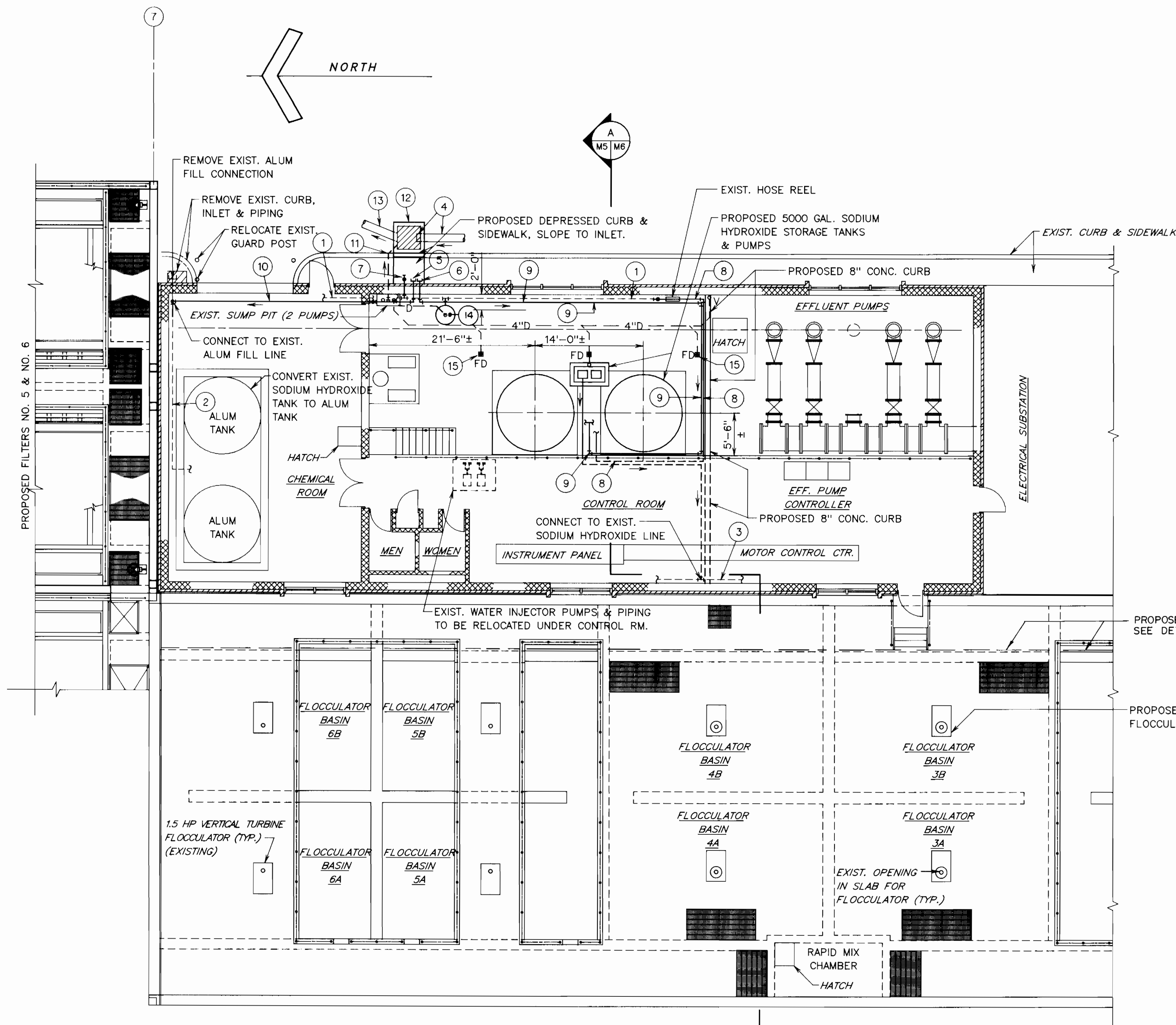


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	H.T.D.			
DRN:	CADD			
CHK:	J.P.			
DATE:	8/88	BY:	NO.	REVISION

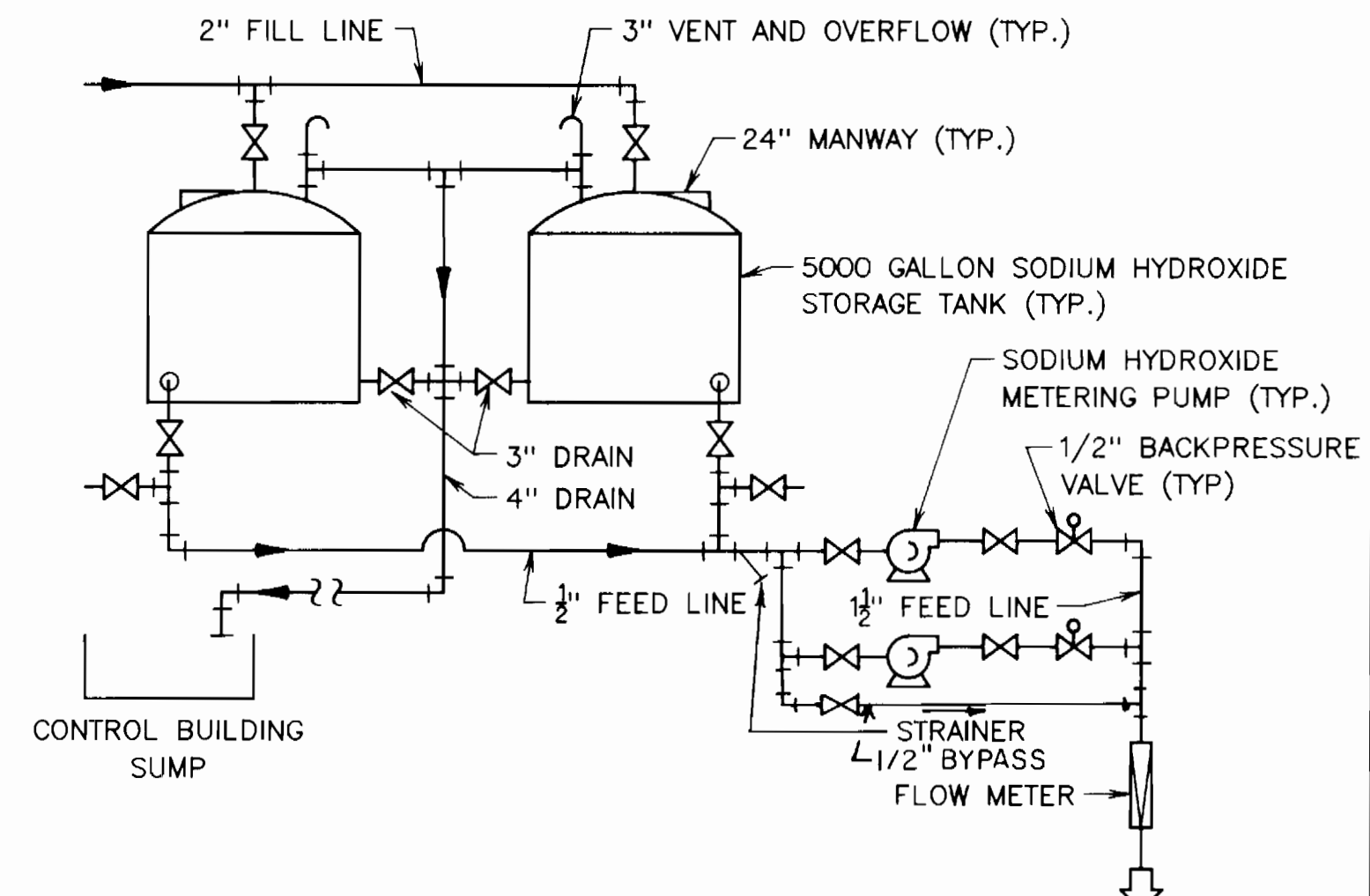
ALUM STORAGE BUILDING
 MECHANICAL SECTIONS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE SHOWN
 SHEET 24 OF 40
M-3



PLAN - FILTER CONTROL BUILDING & FLOCCULATORS #3 & 4
 SCALE IN FEET 0 4 8 16 24
 SCALE: 1/8" = 1'-0"



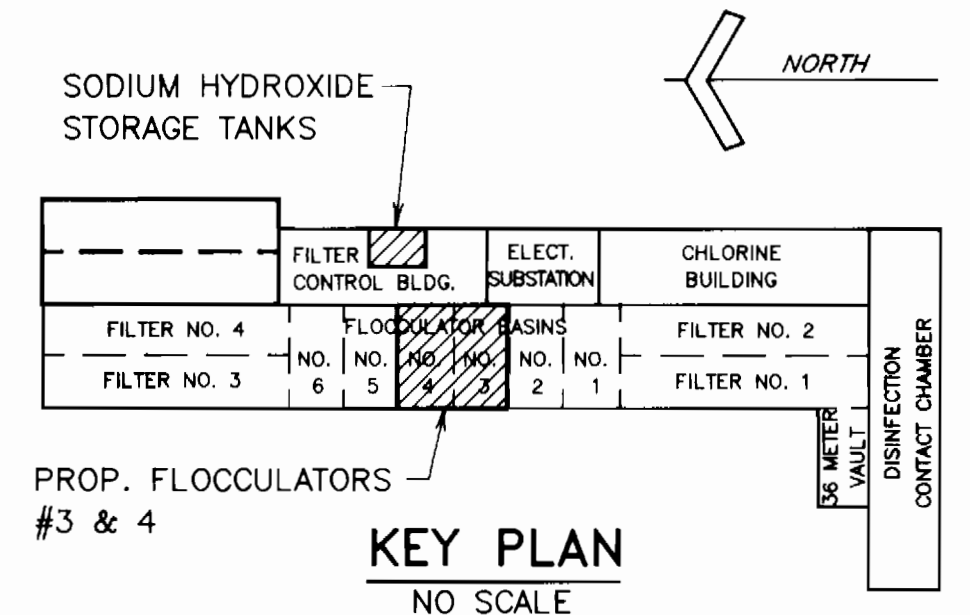
SCHEMATIC - SODIUM HYDROXIDE FEED
 NO SCALE

KEY NOTES

- ① EXIST. 3/4" CW LINE
- ② EXIST. ALUM TANK FILL LINE
- ③ EXIST. 1 1/2" SODIUM HYDROXIDE FEED LINE
- ④ EXIST. 12" DRAIN W/ PROPOSED BACKFLOW FLAP VALVE
- ⑤ PROPOSED ALUM, 2" QUICK CONNECT FILL COUPLING
- ⑥ PROPOSED SODIUM HYDROXIDE, 2" QUICK CONNECT FILL COUPLING
- ⑦ PROPOSED 3/4" CW LINE W/ FROSTPROOF HOSE BIB (COPPER TYPE K)
- ⑧ PROPOSED 3/4" CW LINE (FLUSHING CONNECTION) (COPPER TYPE K)
- ⑨ PROPOSED 2" SODIUM HYDROXIDE TANK FILL LINE
- ⑩ PROPOSED 2" ALUM TANK FILL LINE
- ⑪ PROPOSED 4" DISCHARGE FROM EXIST. SUMP PUMP TO INLET
- ⑫ PROPOSED 4" SQ. INLET
- ⑬ PROPOSED 12" D.I. DRAIN LINE TO PROPOSED MANHOLE
- ⑭ PROPOSED EMERGENCY EYEWASH & SHOWER W/ 3/4" CW LINE & DRAIN TO EXIST. SUMP PIT
- ⑮ INSTALL BACKFLOW DEVICE IN EXIST. FLOOR DRAINS

GENERAL NOTES

1. DOUBLE CHECK VALVES FOR BACKFLOW PREVENTION SHALL BE INSTALLED ON ALL PROPOSED WATER SERVICE LINES AT THE POINT OF CONNECTION WITH EXIST. CW PLUMBING.
2. THE EMERGENCY EYEWASH & SHOWER SHALL BE A SINGLE, INTEGRAL UNIT AND WILL DRAIN TO EXISTING SUMP PIT.
3. SODIUM HYDROXIDE FEED PUMPS SHALL BE SPACED EVENLY ON A PAD APPROX. 3" ABOVE THE DRAINAGE CHANNEL, DRAIN TO EXIST. FLOOR DRAIN. SEE SIMILAR DETAIL SHTS. M-2, S-1.
4. ALL CHEMICAL FEED PIPING TO BE PVC SCH. 80



KEY PLAN
 NO SCALE

LPT0567, ENW4560 08/19/88 20344232

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* 11/20/88
 Chief, Bureau of Engineering: *Richard B. Rupp* 11-30-88
 Chief, Bureau of Environmental Services: *John J. O'Hara* 11/20/88
 Chief, Utility Design Division: *Richard B. Rupp* 11-30-88

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 LANCASTER, PA ALLENTOWN, PA

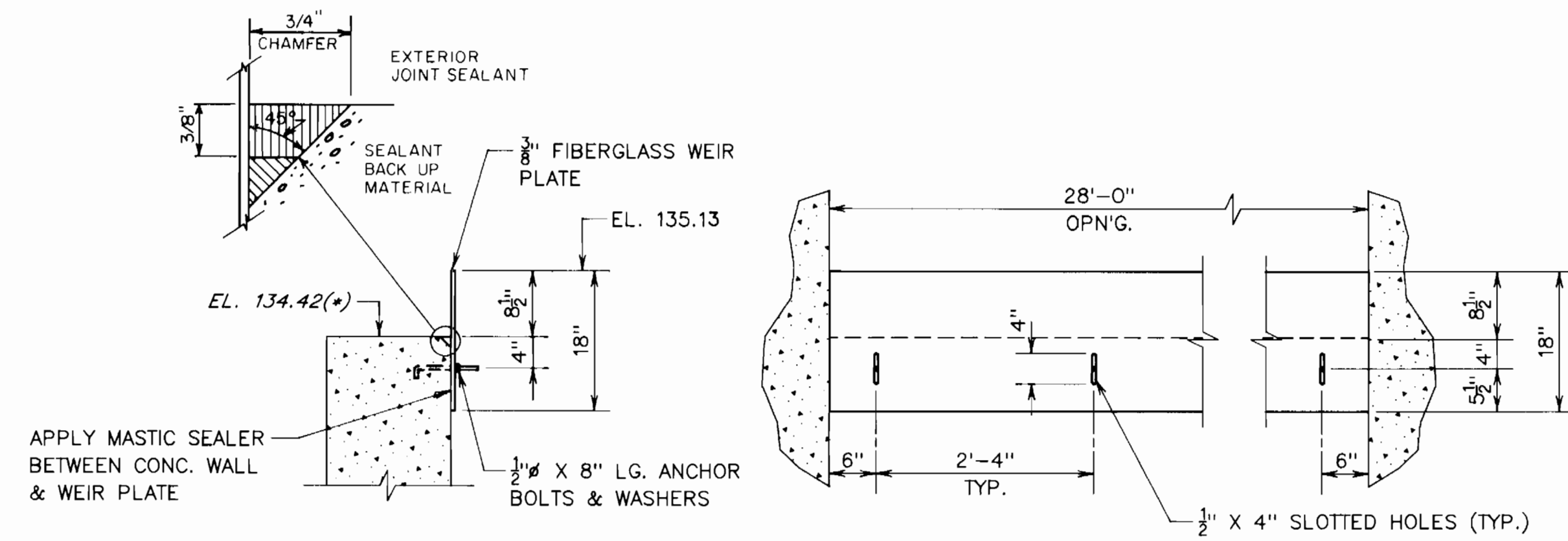


DES: H.T.D.			
DRN: CADD			
CHK: <i>[Signature]</i>			
DATE: 8/88	BY NO.	REVISION	DATE

FILTER CONTROL BLDG. & FLOCCULATORS #3 & 4
 PROPOSED SODIUM HYDROXIDE STORAGE TANKS & VERTICAL TURBINE FLOCCULATORS

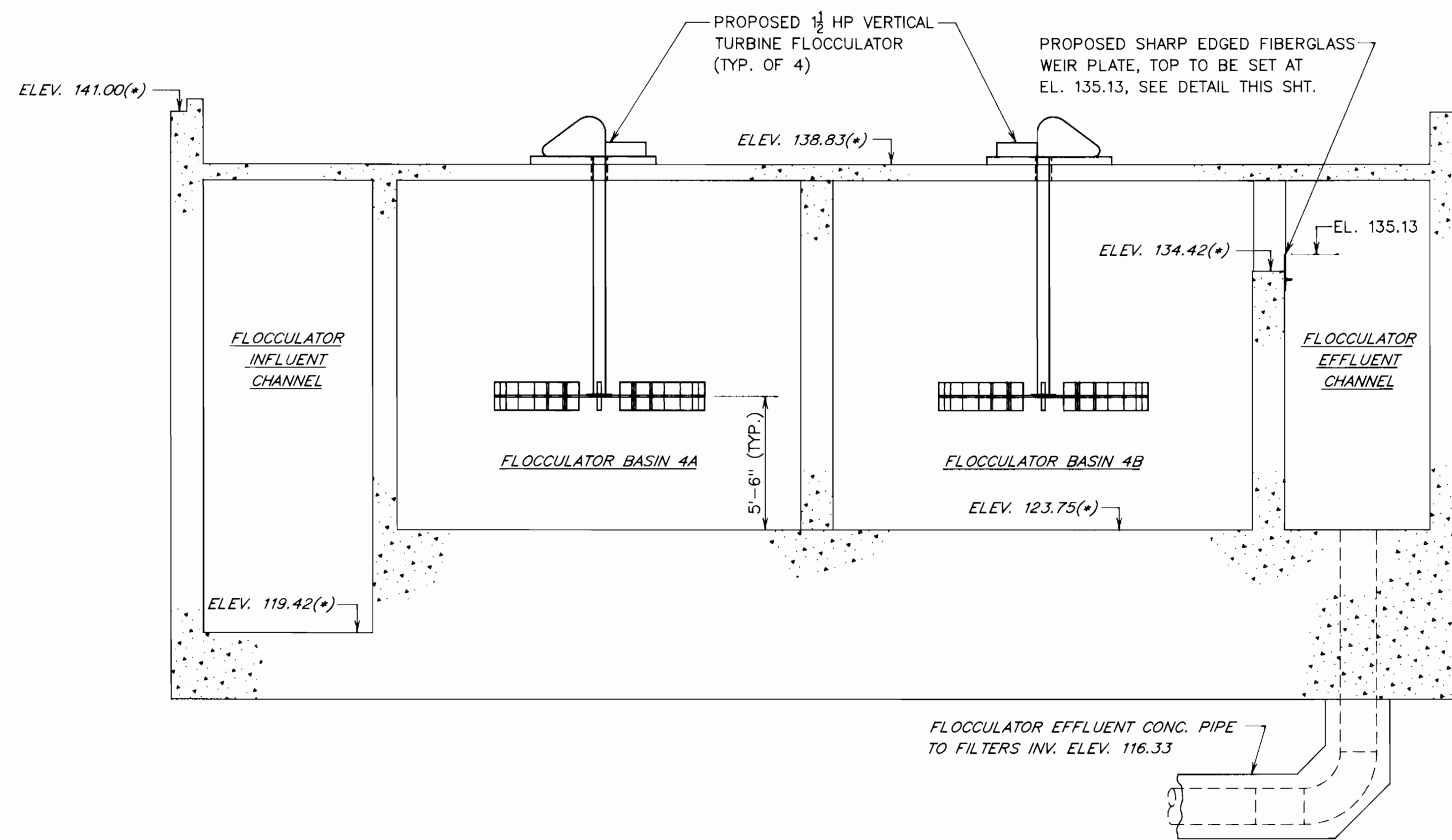
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 26 OF 40
M-5



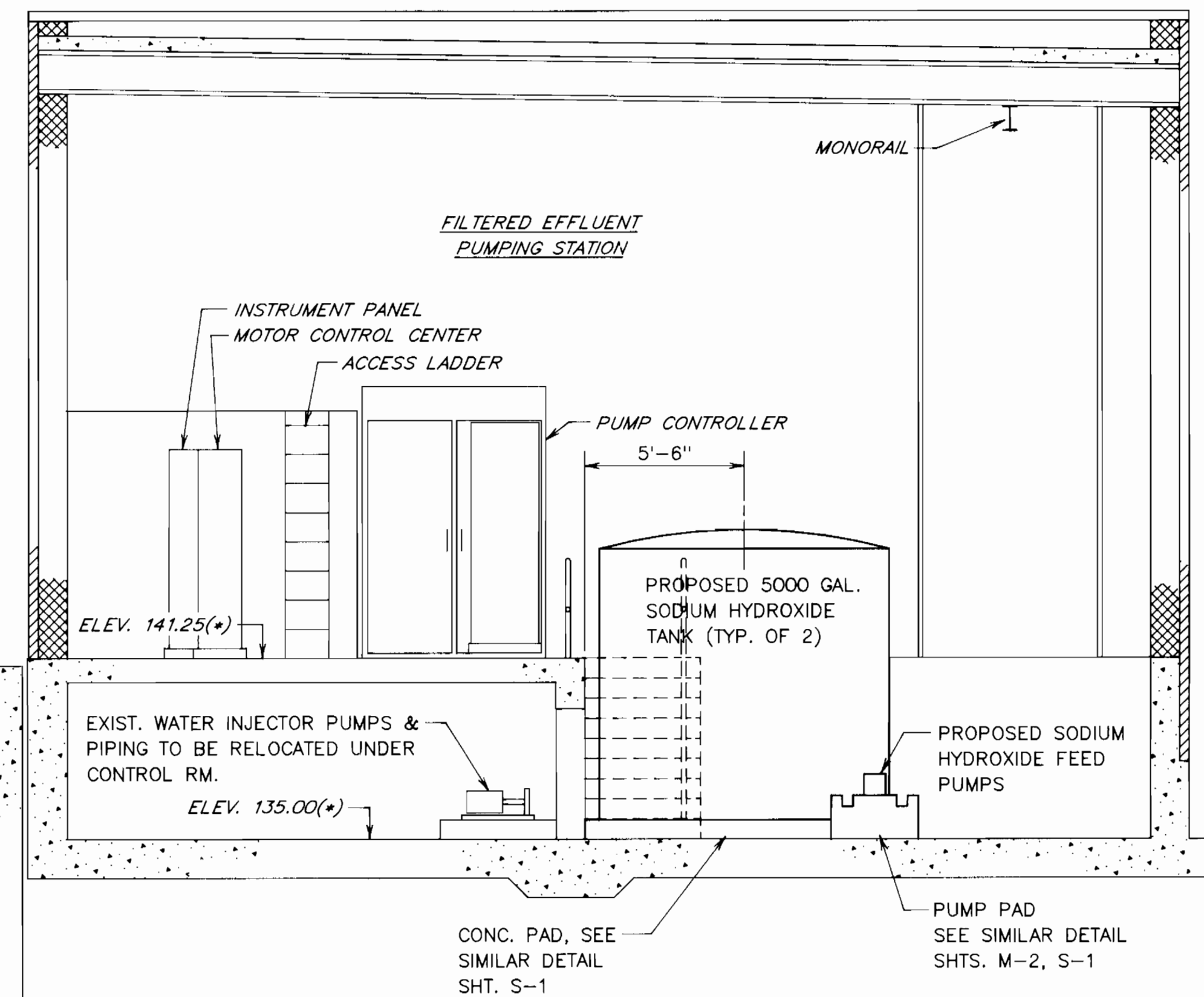
FIBERGLASS WEIR PLATE DETAIL

SCALE IN FEET 0 1/2 1 2 3
 SCALE: 3/4" = 1'-0"
 (TYP. FOR ALL SIX FLOCCULATOR BASINS)



SECTION

SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"



LEGEND

(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

L870567, ENCL 4380, 08/10/88, 23:39:18.8

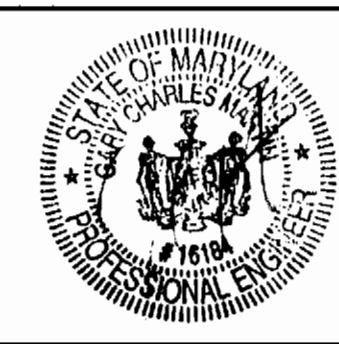
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 11-30-88
 Chief, Bureau of Engineering: *[Signature]* DATE: 11-30-88
 Chief, Utility Design Division: *[Signature]* DATE: 11-30-88

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 LANDSCAPE ARCHITECTS • PLANNERS

HUTH ENGINEERS INC.
 P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021

LANCASTER, PA ALLENTOWN, PA



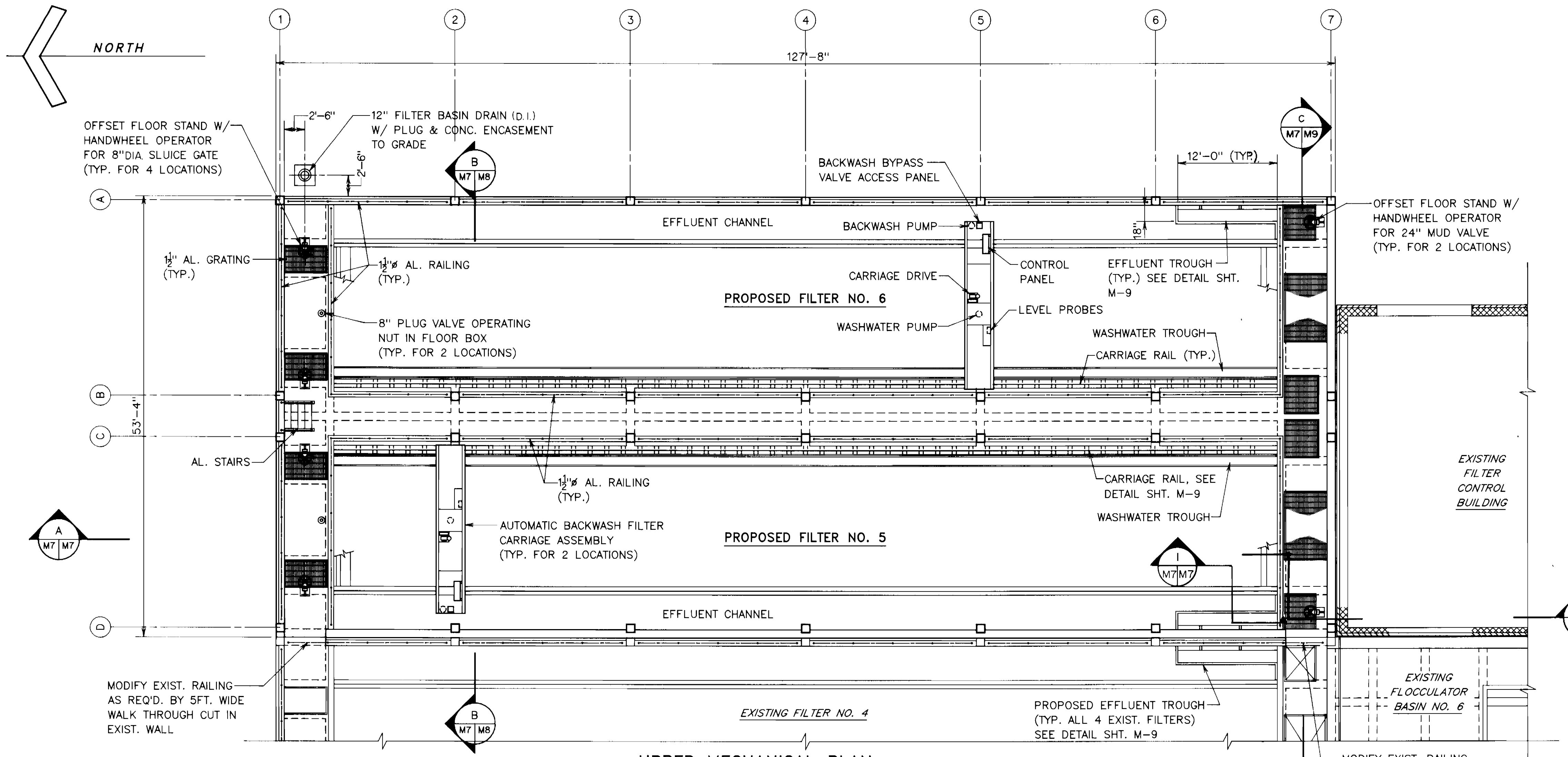
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DRN: CADD			
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DATE: 8/88	BY: NO.	REVISION	DATE

FILTER CONTROL BUILDING & FLOCCULATORS NO. 3 & 4

SECTION

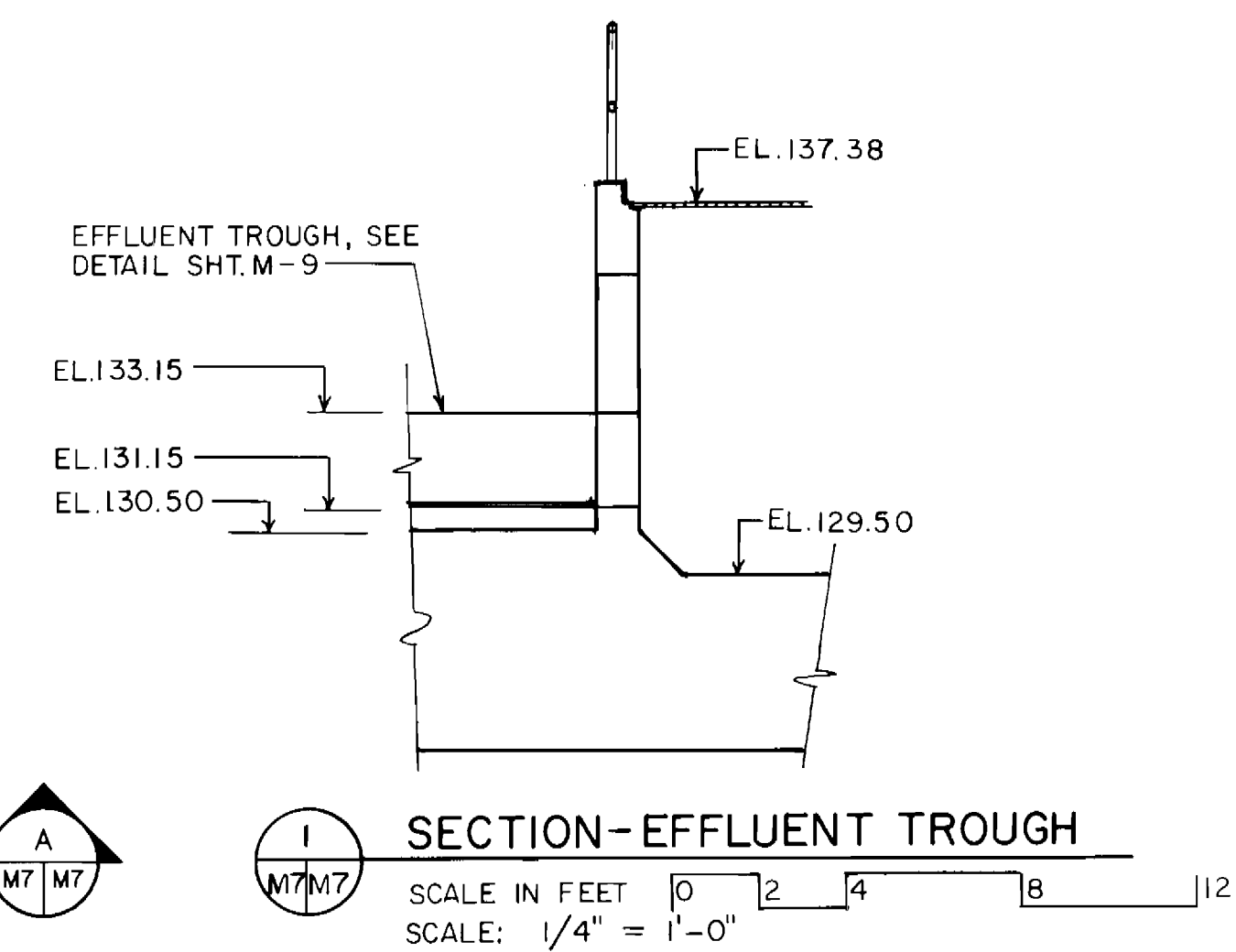
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 27 OF 40
 M-6



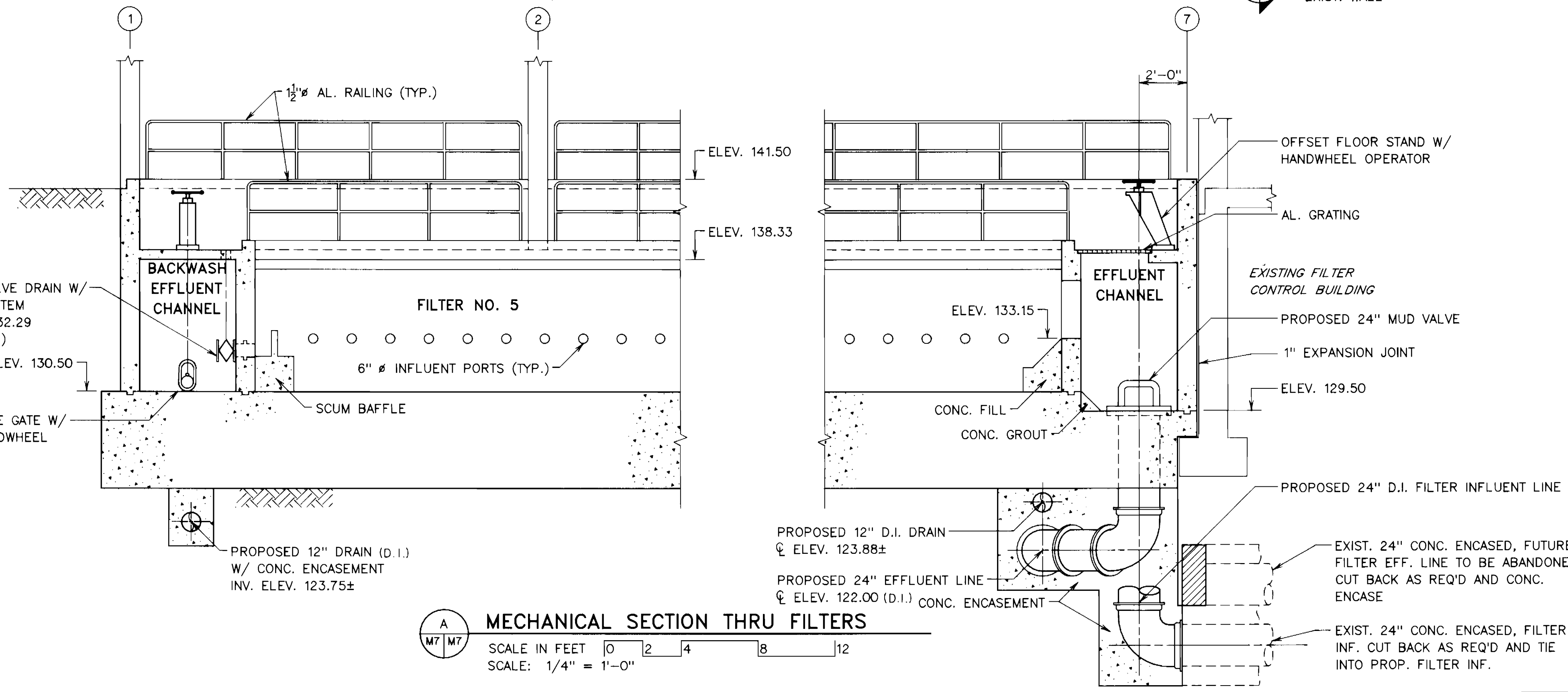
UPPER MECHANICAL PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



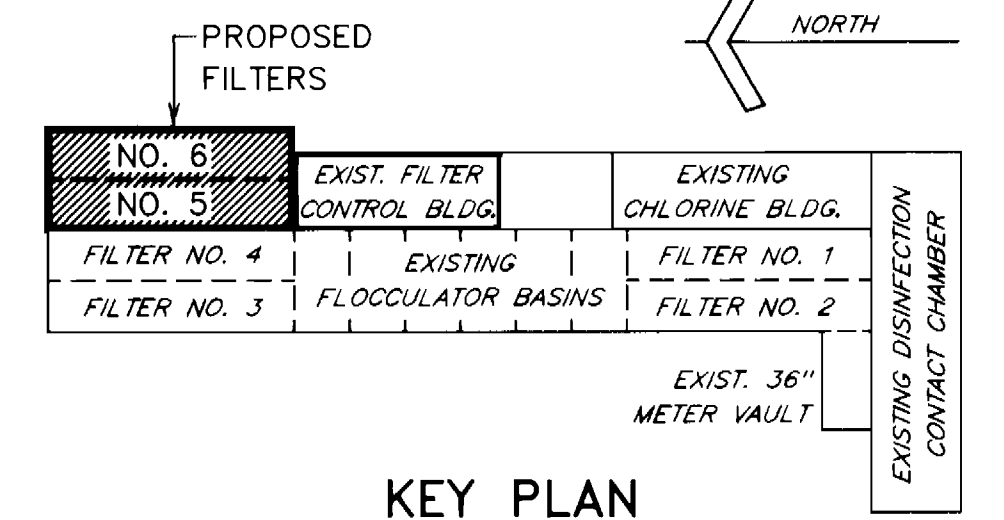
SECTION-EFFLUENT TROUGH

SCALE IN FEET 0 2 4 8 12
SCALE: 1/4" = 1'-0"



MECHANICAL SECTION THRU FILTERS

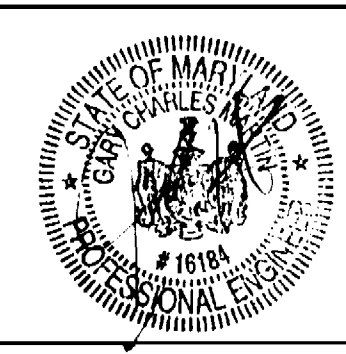
SCALE IN FEET 0 2 4 8 12
SCALE: 1/4" = 1'-0"



KEY PLAN
NO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

HUTH ENGINEERS INC.
CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS
P.O. BOX 3012 LANCASTER, PA 17604 (717) 299-7021
LANCASTER, PA ALLENTOWN, PA



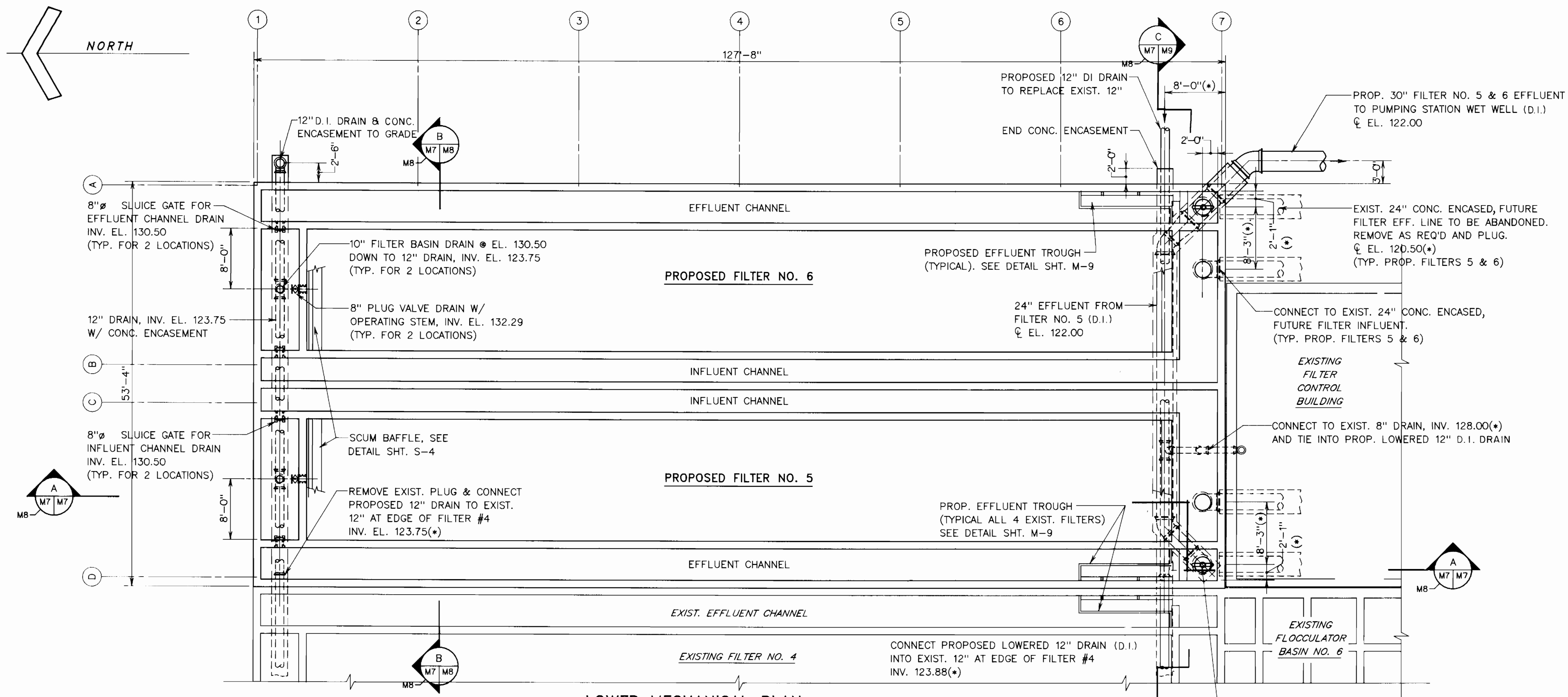
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DRN: CADD			
CHK: [Signature]			
DATE: 8/88	BY: NO.	REVISION	DATE

FILTERS NO. 5 & 6
UPPER MECHANICAL PLAN,
SECTION AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

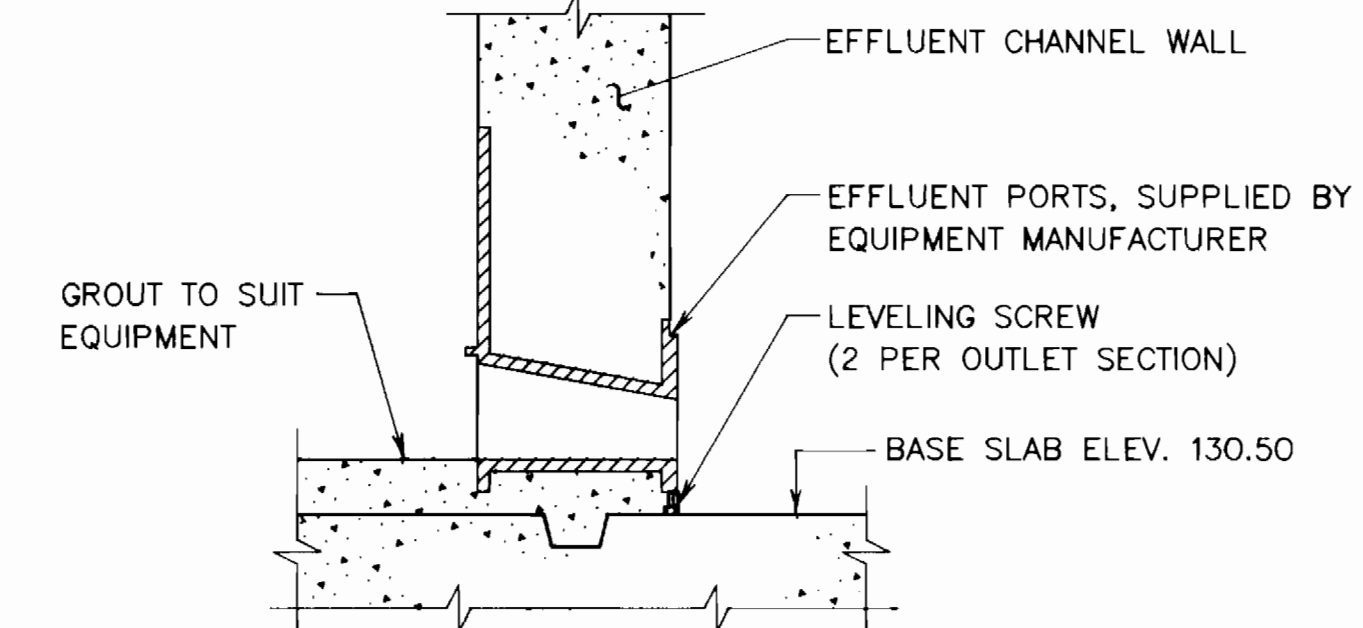
SCALE AS SHOWN
SHEET 28 OF 40
M-7

L170587-ENR4270 DR/1/1/88 34827.5



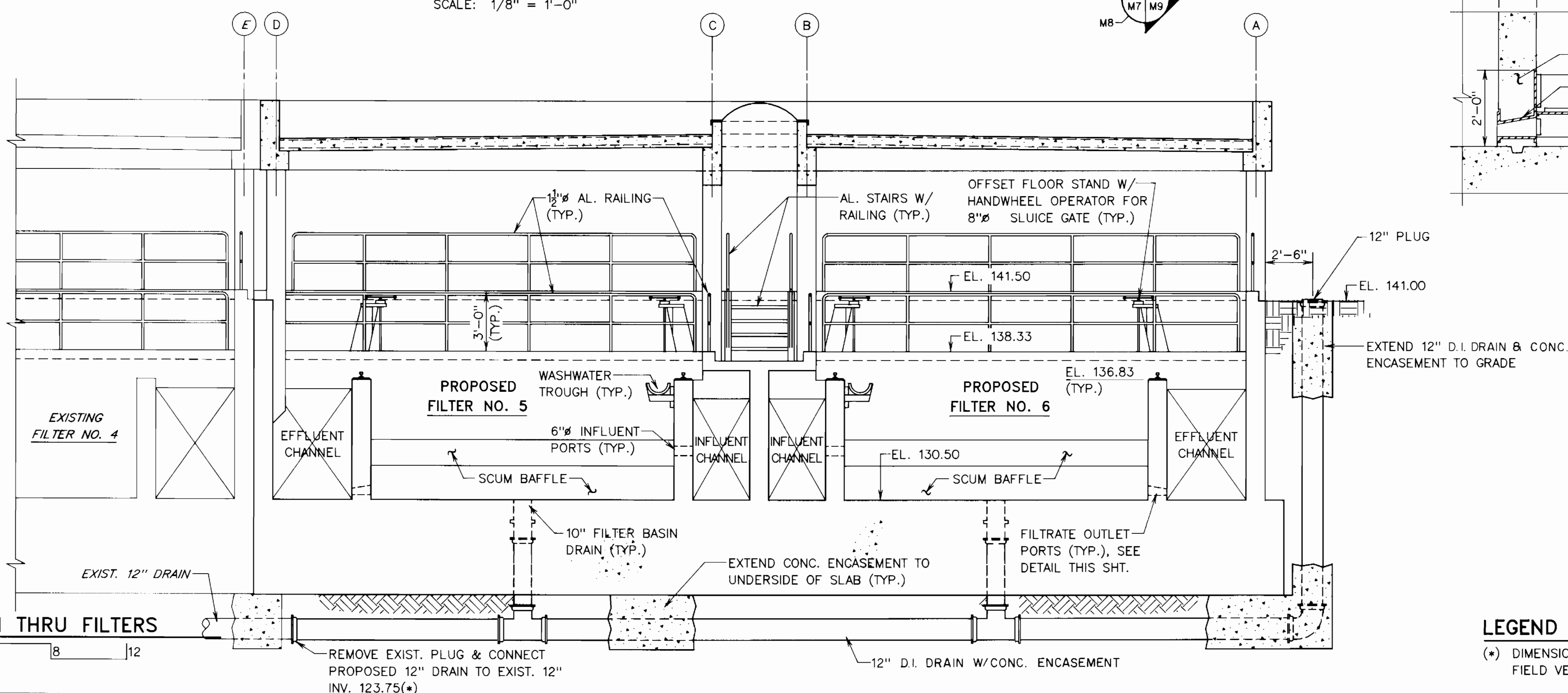
LOWER MECHANICAL PLAN

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



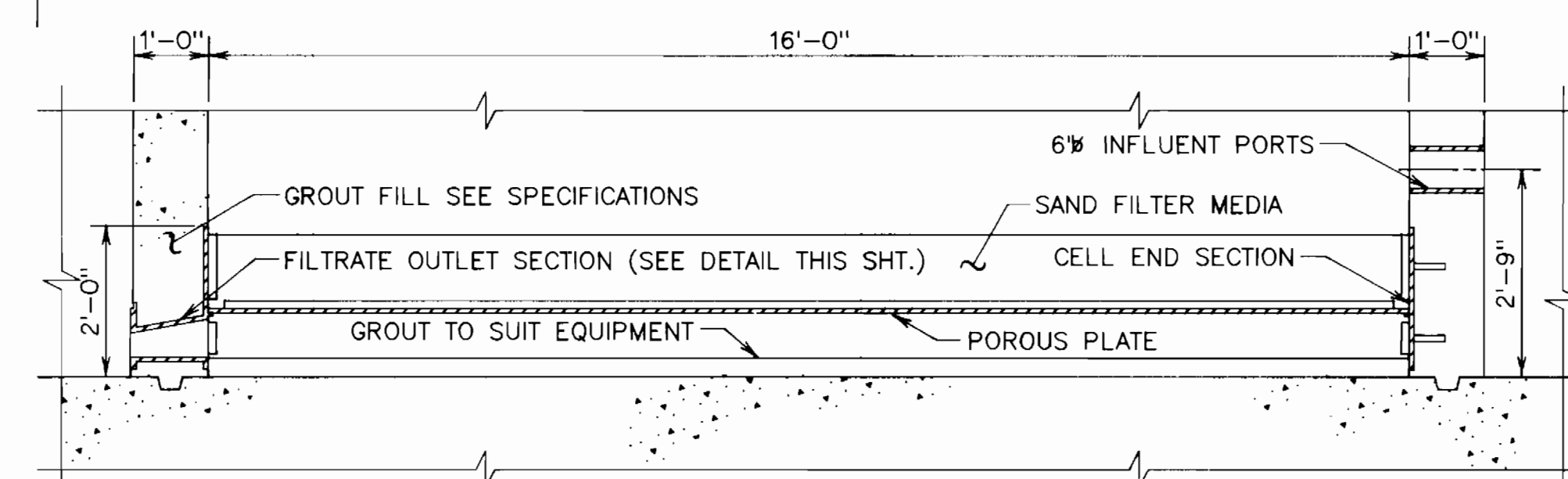
FILTRATE OUTLET PORT DETAIL

SCALE IN FEET 0 0.5 1 2 3
SCALE: 1" = 1'-0"



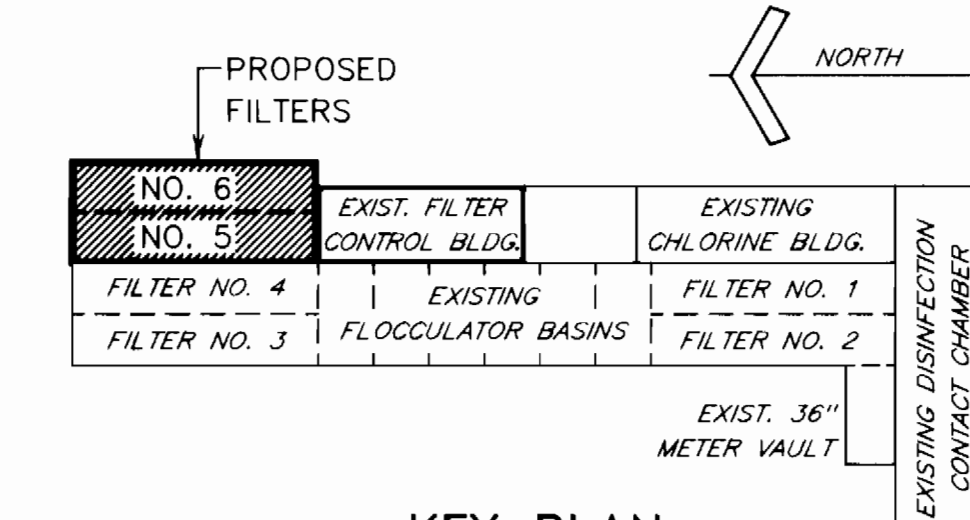
MECHANICAL SECTION THRU FILTERS

SCALE IN FEET 0 2 4 8 12
SCALE: 1/4" = 1'-0"



TYP. FILTER BED CROSS SECTION

SCALE IN FEET 0 1 2 4 6
SCALE: 1/2" = 1'-0"



KEY PLAN

NO SCALE

LEGEND

(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works
John J. O'Hara
BUREAU OF ENVIRONMENTAL SERVICES

Chief, Bureau of Engineering
11-30-88
Chief, Utility Design Division
11-30-88

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HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717) 669-1921
LANCASTER, PA ALLENTOWN, PA

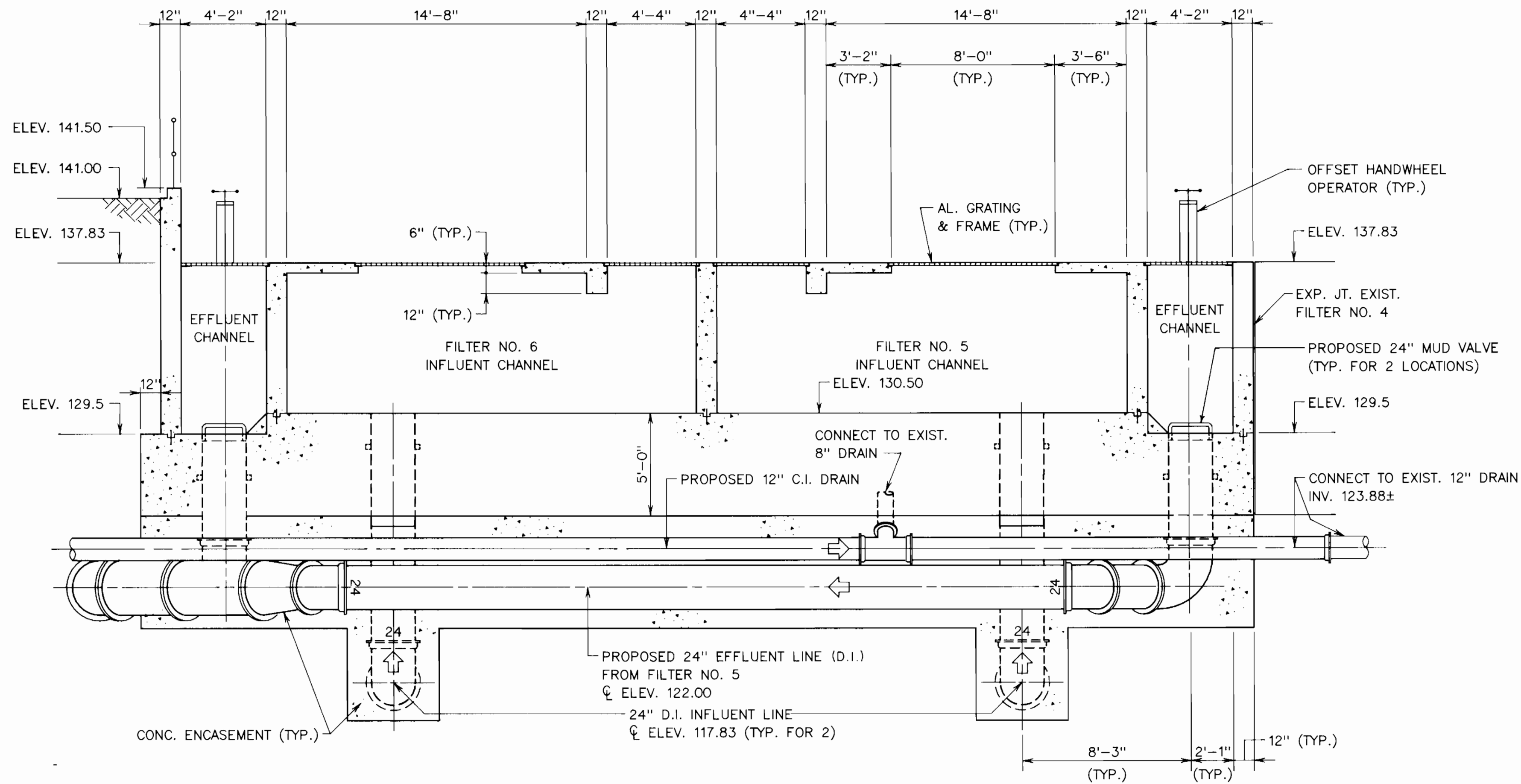
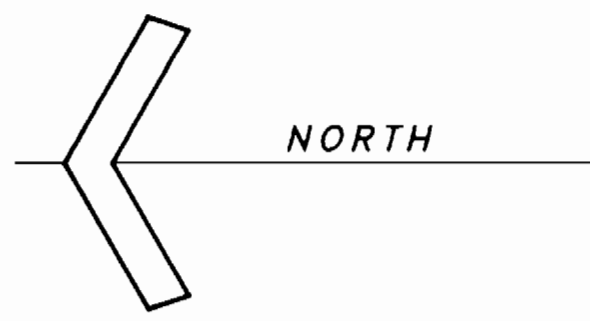


DES: H.T.D.				
DRN: CADD				
CHK: [Signature]				
DATE: 8/88	BY	NO.	REVISION	DATE

FILTERS NO. 5 & 6
LOWER MECHANICAL PLAN,
SECTIONS AND DETAILS

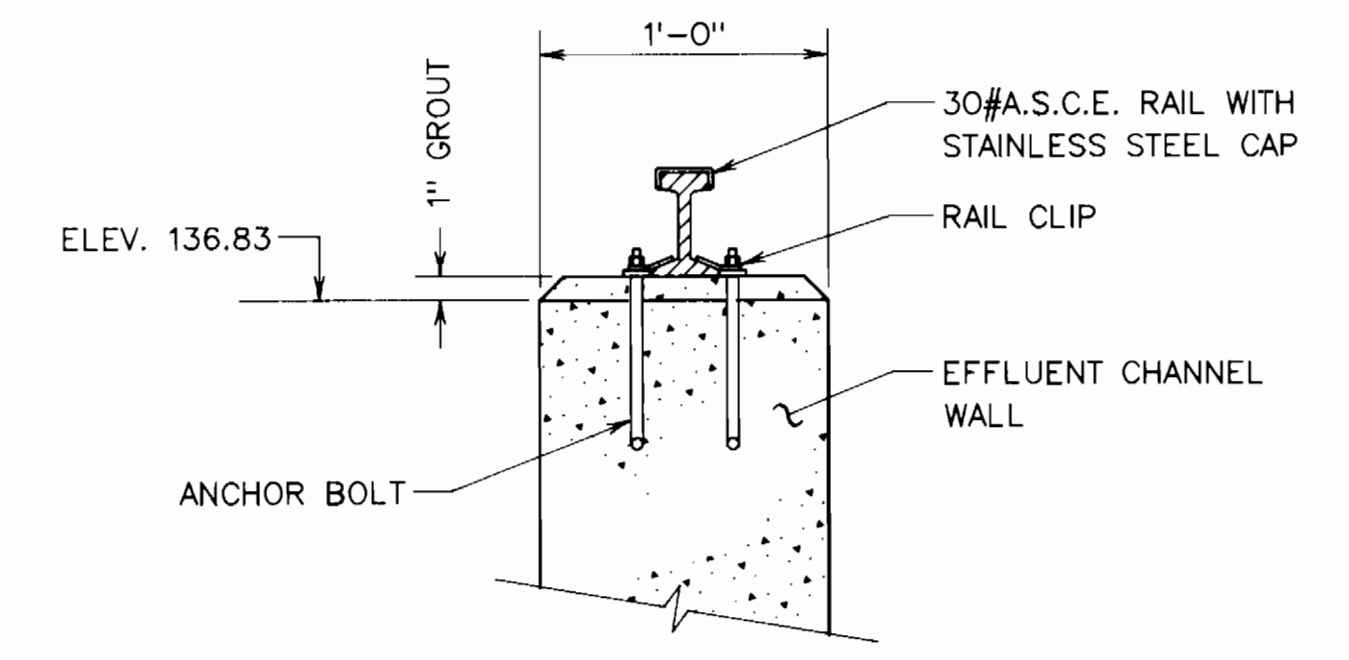
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 29 OF 40
M-8

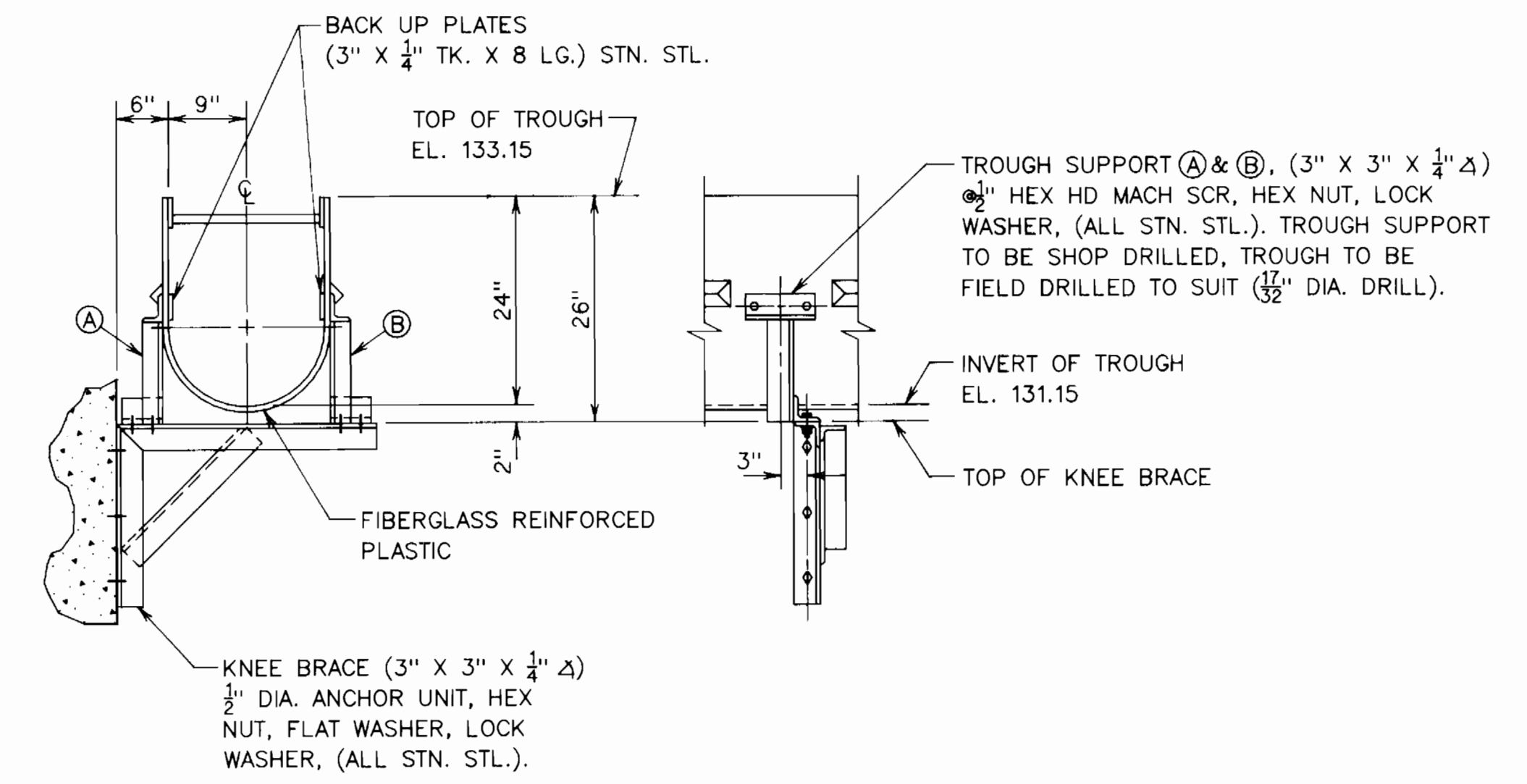


MECHANICAL SECTION
 SCALE IN FEET 0 2 4 8 12
 SCALE: 1/4" = 1'-0"

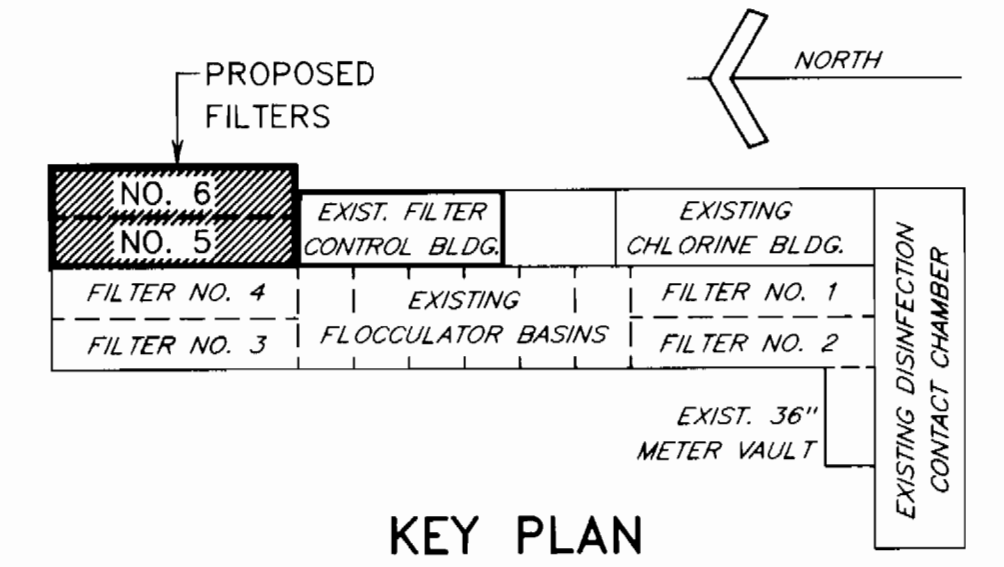
NOTE:
 RAIL CLIP & ANCHOR BOLT LOCATIONS & SIZES TO BE FURNISHED BY EQUIPMENT MANUFACTURER



CARRIAGE RAIL DETAIL
 SCALE IN FEET 0 .25 .5 1 1.5
 SCALE: 1-1/2" = 1'-0"



EFFLUENT TROUGH DETAIL
 SCALE IN FEET 0 .5 1 2 3
 SCALE: 3/4" = 1'-0"



KEY PLAN
 NO SCALE

LPT0567_ENC459D 08/11/88 04844.4

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

John J. O'Hara 11/30/88
 DIRECTOR OF PUBLIC WORKS DATE

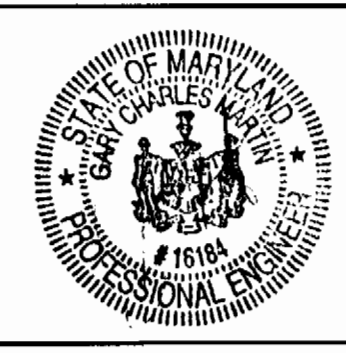
John J. O'Hara 11/30/88
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

John J. O'Hara 11-30-88
 CHIEF, UTILITY DESIGN DIVISION DATE

H CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS

HUTH ENGINEERS INC.
 P.O. BOX 3012 LANCASTER, PA 17604 (717) 299-7521

LANCASTER, PA ALLENTOWN, PA



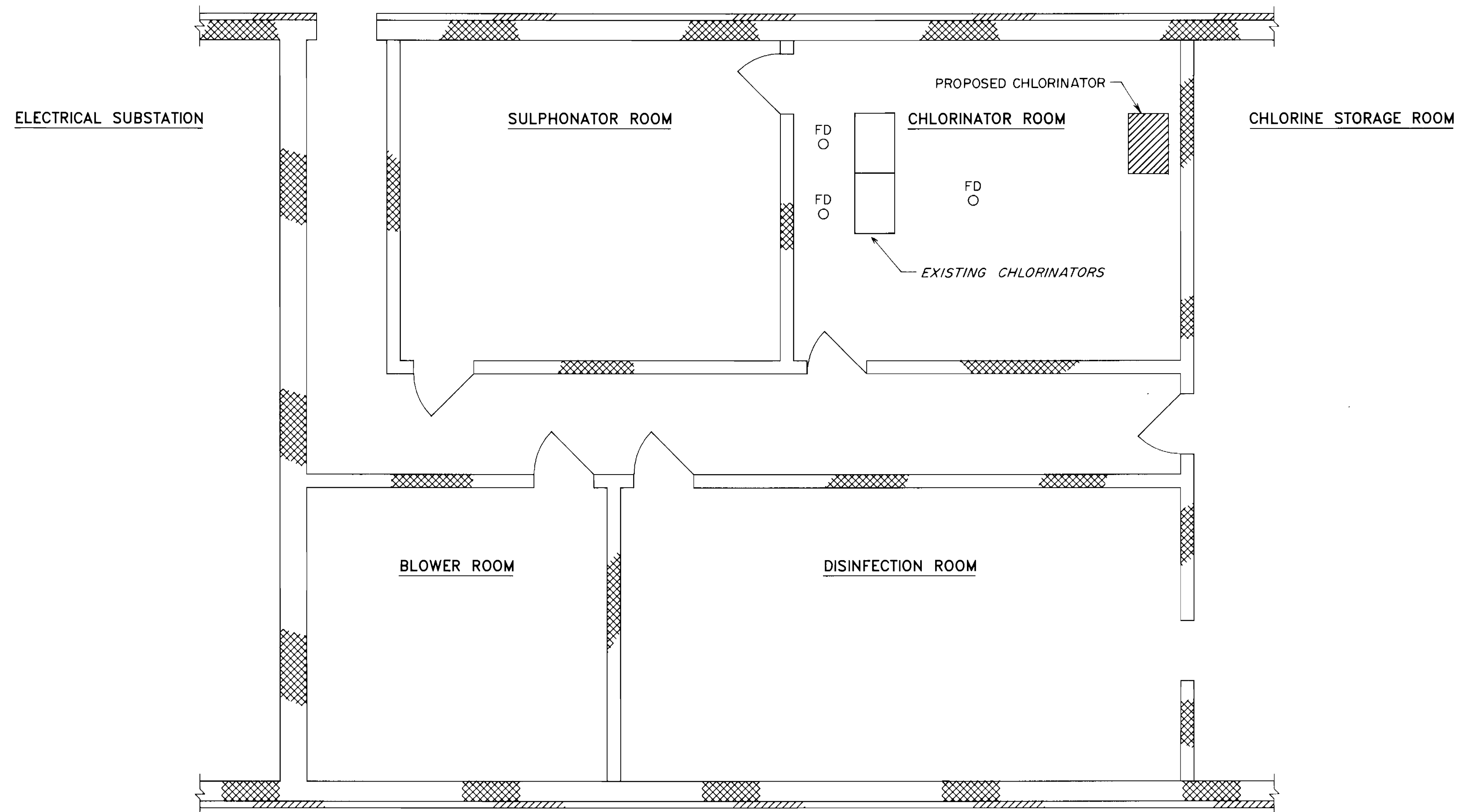
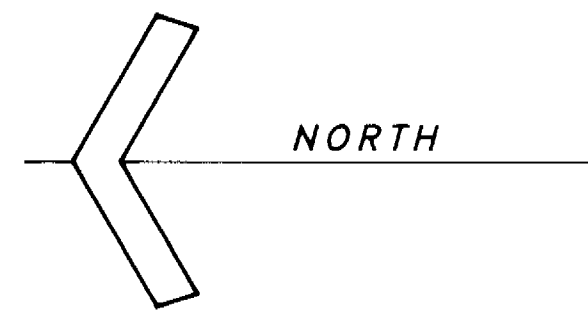
DES:	H.T.D.			
DRN:	CADD			
CHK:	<i>JTB</i>			
DATE:	8/88	BY:	NO.	REVISION
				DATE

FILTERS NO. 5 & 6

MECHANICAL SECTIONS AND DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

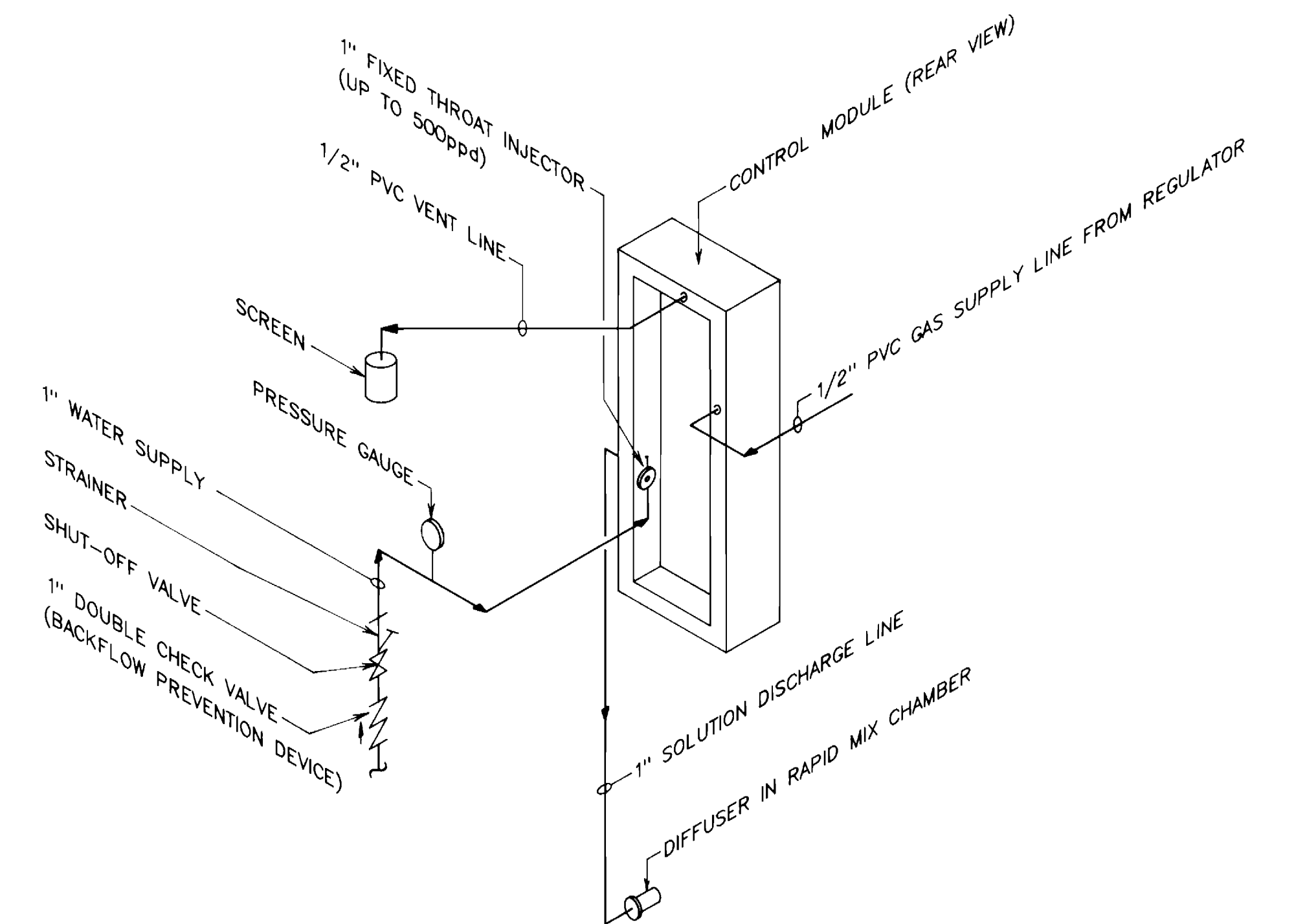
SCALE AS SHOWN
 SHEET 30 OF 40
M-9



CHLORINATOR ROOM FLOOR PLAN

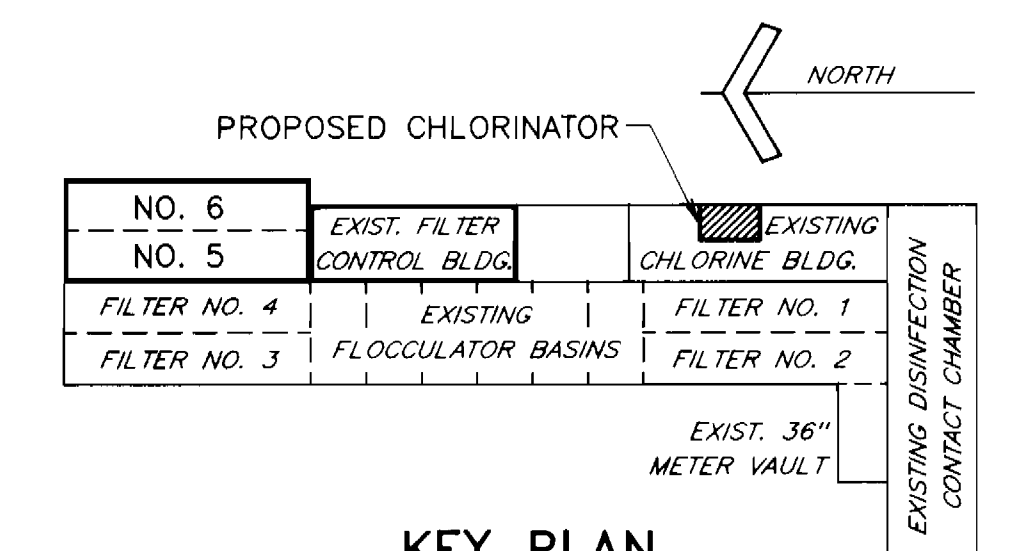
SCALE IN FEET 0 2 4 8 12
SCALE: 1/4" = 1'-0"

- NOTES:
1. ALL CHLORINE PIPING TO BE PVC SCH. 80
2. ALL WATER PIPING TO BE COPPER TYPE K



SCHEMATIC - VACUUM CHLORINATION SYSTEM FOR PRE-FILTRATION APPLICATION

NO SCALE



KEY PLAN
NO SCALE

L870567_LN0404D 08/11/88 17:10:8.1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE: 11-30-88
John J. O'Hara

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE: 11-30-88
John J. O'Hara

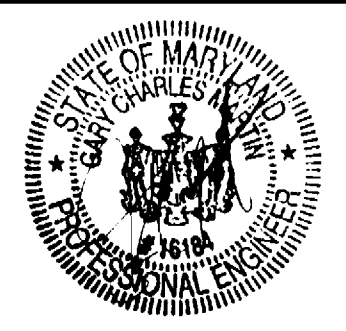
CHIEF, BUREAU OF ENGINEERING DATE: 11-30-88
Richard R. O'Neil

CHIEF, UTILITY DESIGN DIVISION DATE: 11-30-88
Don Lewis

H CONSULTING ENGINEERS • SURVEYORS
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HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021

LANCASTER, PA ALLENTOWN, PA

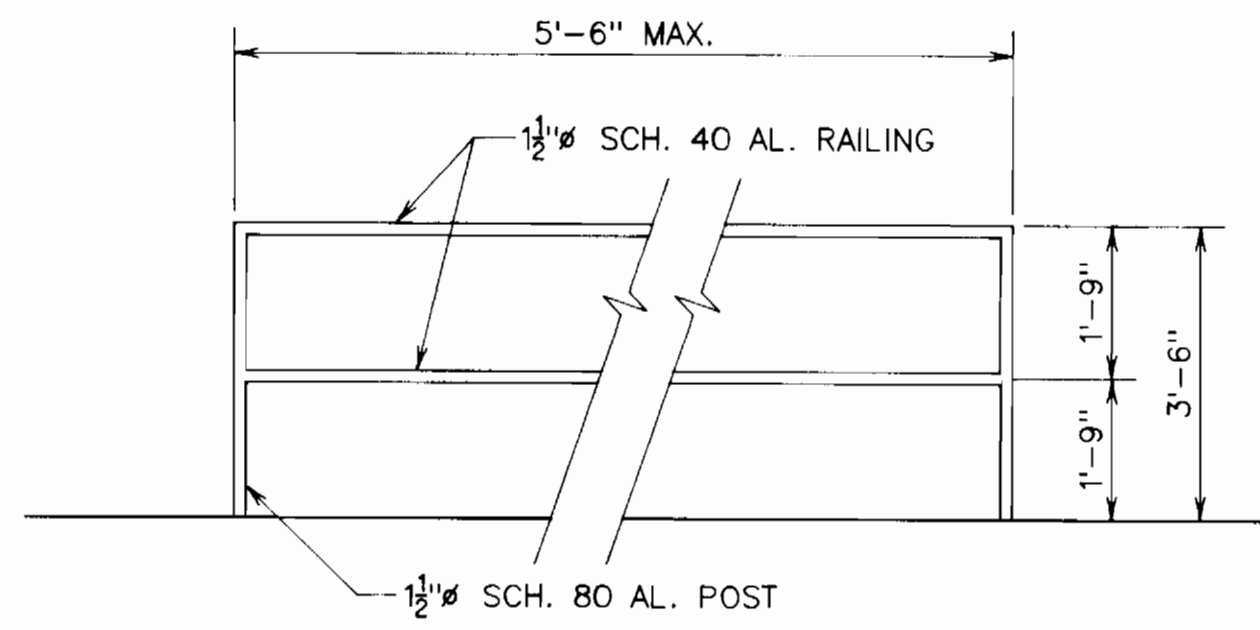


DES:	H.T.D.				
DRN:	CADD				
CHK:	<i>[Signature]</i>				
DATE:	8/88	BY	NO.	REVISION	DATE

CHLORINATOR ROOM
PROPOSED CHLORINATOR FLOOR PLAN & SCHEMATIC

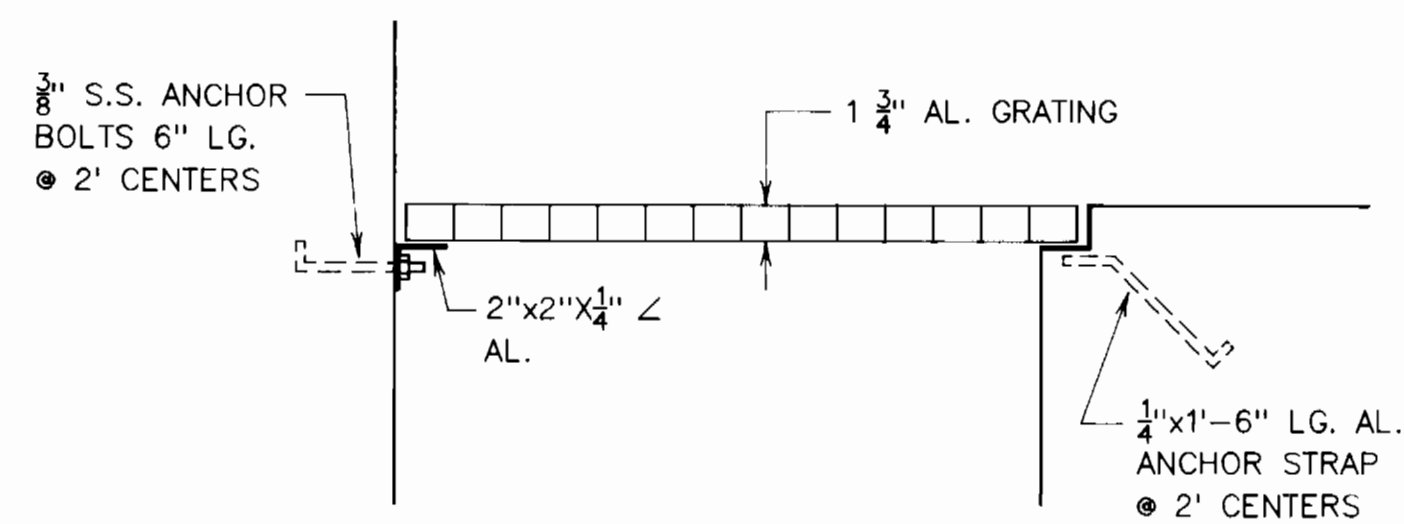
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 31 OF 40
M-10



TYPICAL ALUMINUM RAILING DETAIL

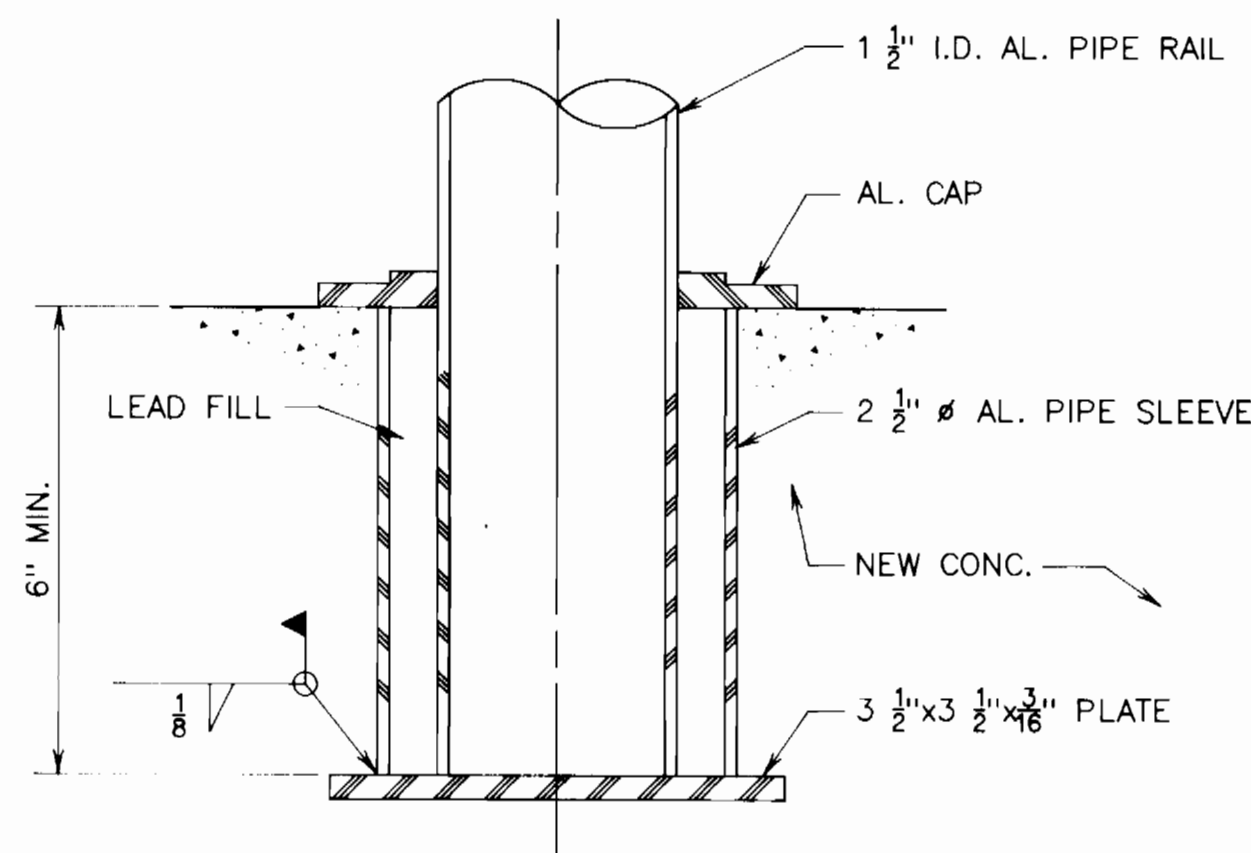
NO SCALE



NOTE: ALL ALUMINUM WHICH COMES IN CONTACT WITH CONCRETE SHALL BE PAINTED.

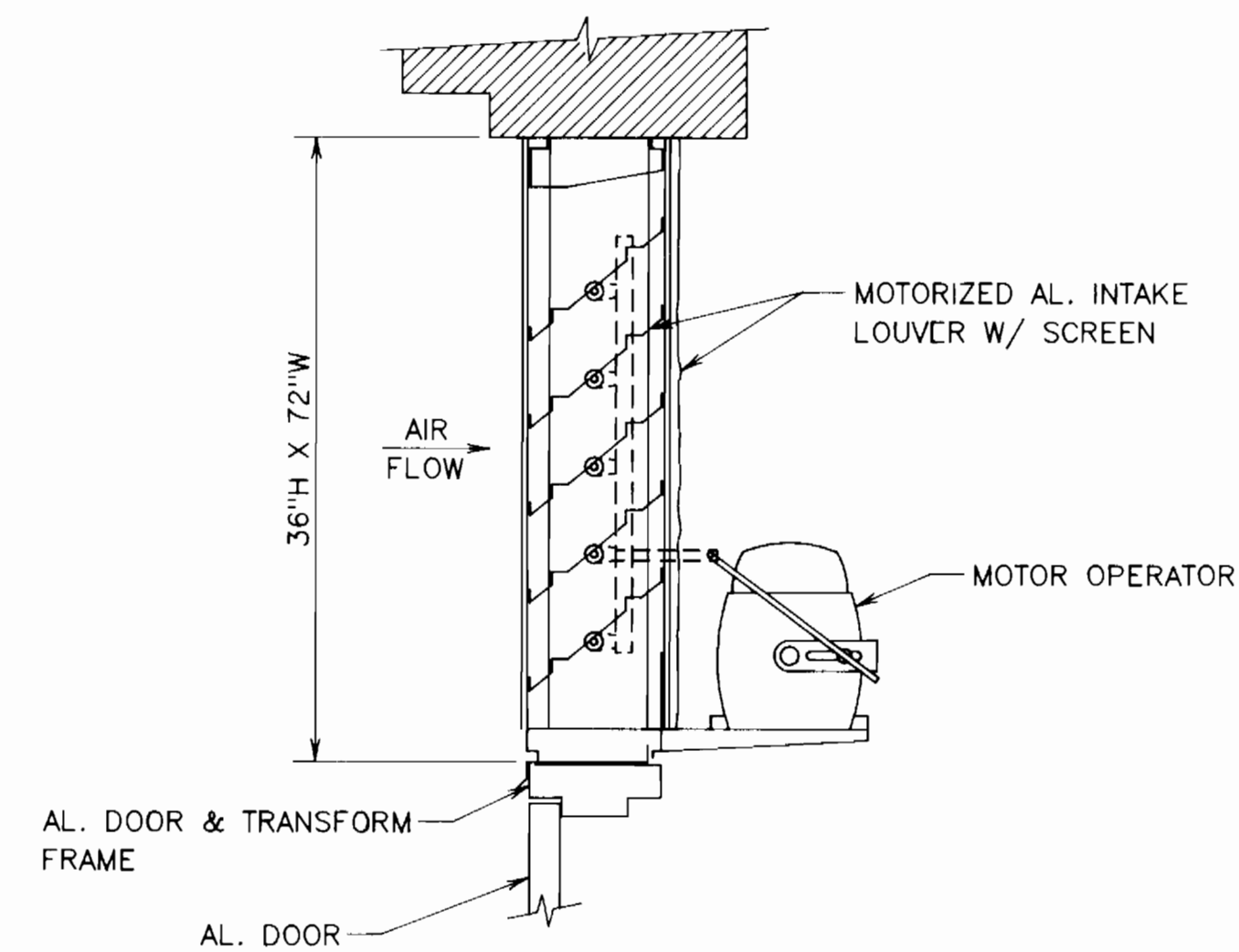
TYPICAL ALUMINUM GRATING DETAIL

NO SCALE



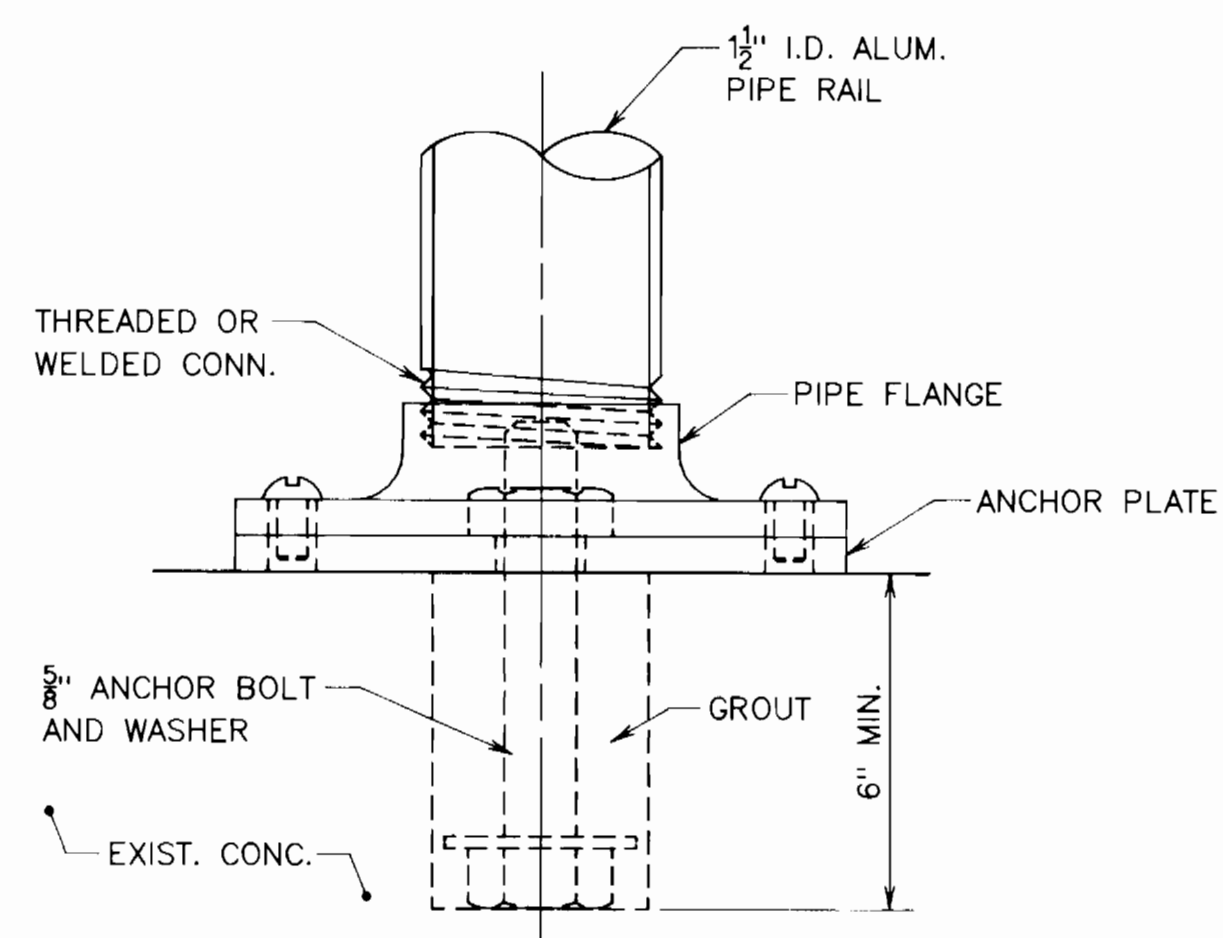
TYPICAL ALUMINUM RAILING ANCHOR DETAIL - NEW CONCRETE

NO SCALE



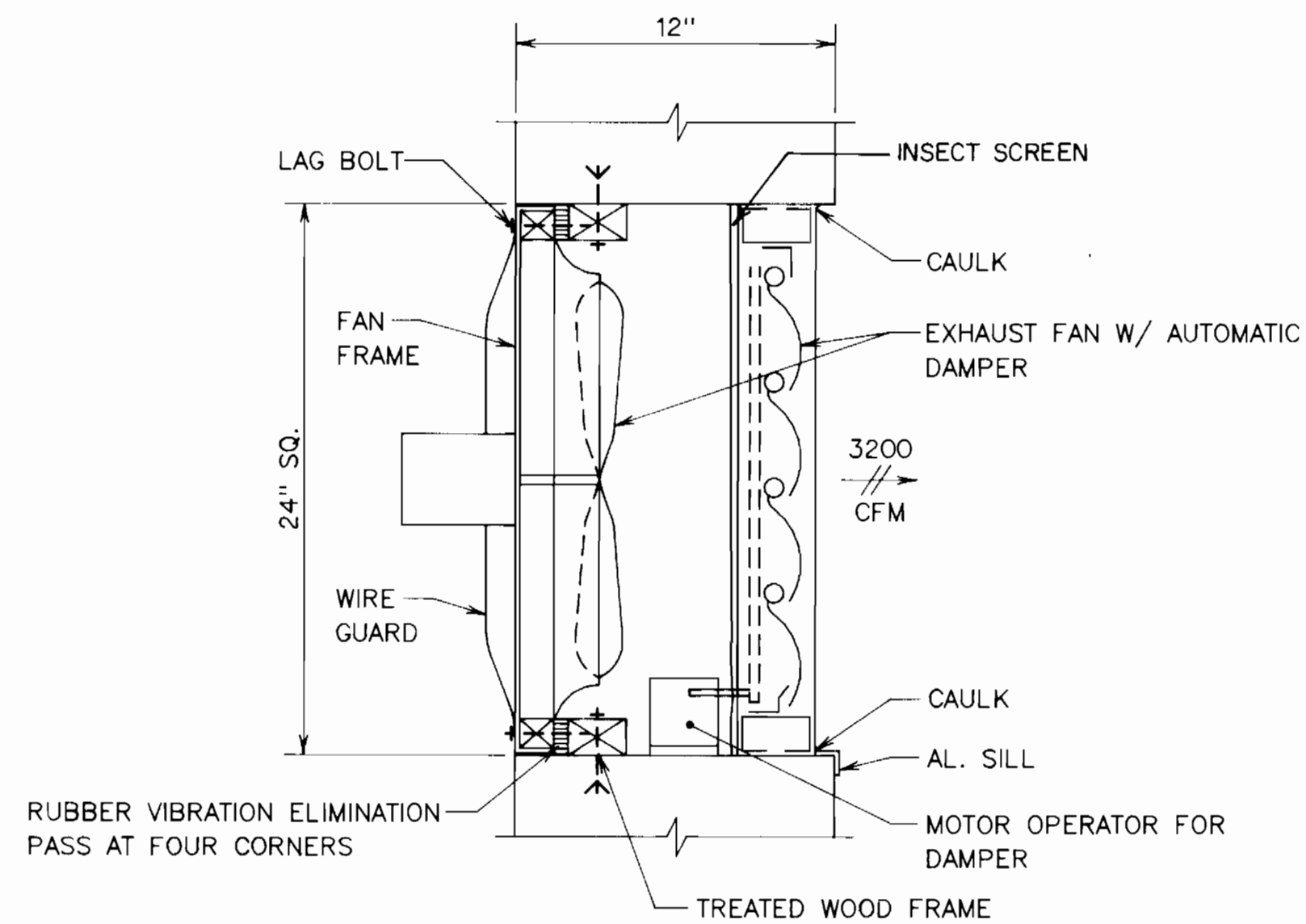
MOTORIZED AL. INTAKE LOUVER DETAIL

NO SCALE



TYPICAL ALUMINUM RAILING ANCHOR DETAIL - EXISTING CONCRETE

NO SCALE



EXHAUST FAN DETAIL

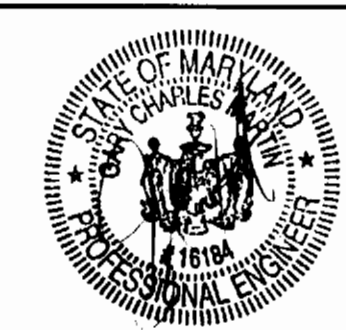
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS
DATE 11-30-88
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

CHIEF, BUREAU OF ENGINEERING DATE 11-30-88
CHIEF, UTILITY DESIGN DIVISION DATE 11-30-88

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LANCASTER, PA ALLENTOWN, PA



DES: R.L.S.			
DRN: CADD			
CHK: JLF			
DATE: 8/88	BY	NO.	REVISION
			DATE

GENERAL DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHOROUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 32 OF 40
M-11

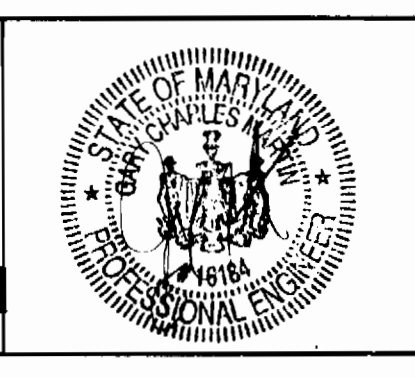
ELECTRICAL SYMBOL AND ABBREVIATION SCHEDULE

	FLUORESCENT FIXTURE, RECESSED; CEILING OUTLET		MOTOR STARTER, COMBINATION WITH CIRCUIT BREAKER		PRESSURE SWITCH
	FLUORESCENT FIXTURE, SURFACE; CEILING OUTLET		PUSH-BUTTON CONTROL STATION, ON-OFF UNLESS NOTED	UH	UNIT HEATER
	FLUORESCENT FIXTURE; WALL OUTLET		PUSH-BUTTON CONTROL STATION WITH PILOT LIGHT, ON-OFF UNLESS NOTED	CUH	CABINET UNIT HEATER
	CEILING FIXTURE		SELECTOR SWITCH CONTROL STATION, HAND-OFF-AUTO UNLESS NOTED	HC	HEATING-COOLING UNIT
	WALL FIXTURE		SELECTOR SWITCH CONTROL STATION WITH PILOT LIGHT, HAND-OFF-AUTO UNLESS NOTED	HV	HEATING-VENTILATING UNIT
	EXIT SIGN, ILLUMINATED (DIRECTIONAL ARROWS AS INDICATED)		TIME SWITCH	F	FAN
	EMERGENCY LIGHTING BATTERY UNIT (NUMBER OF HEADS AS INDICATED)		PHOTOELECTRIC CONTROL, SURFACE MOUNTED	ATC	AUTOMATIC TEMPERATURE CONTROL
	REMOTE EMERGENCY LIGHTING HEAD, WALL MOUNTED		JUNCTION BOX	EWC	ELECTRIC WATER COOLER
	POLE MOUNTED FIXTURE (NUMBER OF FIXTURES AS INDICATED)		JUNCTION BOX, WALL MOUNTED, RECESSED UNLESS NOTED	PRV	POWER ROOF VENTILATOR
S	SINGLE POLE SWITCH		DOOR POSITION SWITCH	AFF	ABOVE FINISHED FLOOR
S ₃	THREE WAY SWITCH		PULL BOX	AFG	ABOVE FINISHED GRADE
S ₄	FOUR WAY SWITCH		GROUND ROD - 3/4" DIA. x 10' L, COPPERCLAD STEEL, UNLESS NOTED	BFF	BELOW FINISHED FLOOR
S _D	DIMMER SWITCH		PANIC BUTTON	BFG	BELOW FINISHED GRADE
S _P	SWITCH WITH PILOT LIGHT		PANELBOARD - 120/208V/3PH/4W; 120/208V/1PH/3W; 120/240V/1PH/3W; 120/240V/3PH/4W; 208V/3PH/3W; 240V/3PH/3W	MH	MOUNTING HEIGHT
S _V	VOLUME CONTROL		PANELBOARD - 277/480V/3PH/4W; 480V/3PH/3W	WP	WEATHERPROOF
S _T	MANUAL MOTOR STARTER, SINGLE POLE WITH OVERLOADS		SMOKE DETECTOR	—	CONDUIT RUN CONCEALED IN WALL OR CEILING
S _{TP}	MANUAL MOTOR STARTER, SINGLE POLE WITH PILOT LIGHT AND OVERLOADS		HEAT DETECTOR	---	CONDUIT RUN UNDERGROUND OR UNDERFLOOR
S _M	MANUAL MOTOR STARTER, SINGLE POLE WITHOUT OVERLOADS		IONIZATION DETECTOR	---	CONDUIT RUN EXPOSED
S _{MP}	MANUAL MOTOR STARTER, SINGLE POLE WITH PILOT LIGHT, WITHOUT OVERLOADS		DUCT SMOKE DETECTOR	→	HOMERUN TO PANEL
	RECEPTACLE, DUPLEX 20A/125V/2P/3W UNLESS AMPS ARE INDICATED, GROUNDING		WATER FLOW SIGNAL UNIT	— # —	HATCH MARKS INDICATE QUANTITY OF #12 CONDUCTORS IN CONDUIT. CONDUIT SHALL CONTAIN 2 # 12 WHEN HATCH MARKS ARE NOT INDICATED, UNLESS NOTED
	RECEPTACLE, DUPLEX 20A/125V/2P/3W GROUNDING, GROUND FAULT INTERRUPTER		POST VALVE INICATOR SIGNAL UNIT	— G —	GROUND WIRE, SIZE AS INDICATED
	RECEPTACLES, TWO DUPLEX MOUNTED IN A DOUBLE GANG BOX		OS&Y VALVE SIGNAL UNIT	— E —	EMERGENCY WIRING
	RECEPTACLE, SINGLE 20A/125V/2P/3W UNLESS AMPS ARE INDICATED, GROUNDING		FIRE ALARM AUDIBLE/VISUAL UNIT		CONDUIT WITH TEE FITTING
	RECEPTACLE, DUPLEX 20A/125V/2P/3W UNLESS AMPS ARE INDICATED, GROUNDING, SURFACE FLOOR MOUNTED.		FIRE ALARM STATION		UNDERFLOOR DUCT; POWER AND JUNCTION BOX WITH INSERTS, UNLESS NOTED
	RECEPTACLE, DUPLEX 20A/125V/2P/3W UNLESS AMPS ARE INDICATED, GROUNDING, RECESSED FLOOR MOUNTED.		DOOR SECURITY SWITCH		UNDERFLOOR DUCT; POWER, TELEPHONE AND JUNCTION BOX WITH INSERTS, UNLESS NOTED
	RECEPTACLE, 125V/250V/3P/4W GROUNDING, AMPS AS INDICATED		INDICATES FIRE ALARM ZONES		UNDERFLOOR DUCT; WITH DUPLEX RECEPTACLE
	RECEPTACLE, 250V/3P/4W/3 PHASE, GROUNDING, AMPS AS INDICATED		INDICATES DOOR SECURITY ZONES		UNDERFLOOR DUCT; WITH DUPLEX RECEPTACLE AND TELEPHONE OUTLET
	'C' INDICATES RECEPTACLE TO BE MOUNTED ABOVE COUNTER		INDICATING CLOCK OR RECEPTACLE, BLACK 15A/125V/2P/3W, GROUNDING		CEILING MOUNTED SPEAKER, RECESSED
	NUMBER INDICATES MOUNTING HEIGHT ABOVE FLOOR		TELEPHONE WALL OUTLET, WALL HUNG; PAYPHONE		WALL MOUNTED SPEAKER, RECESSED
	RECEPTACLE, DUPLEX TWISTLOCK 20A/125V/2P/3W GROUNDING		TELEPHONE WALL OUTLET, WALL HUNG		WALL MICROPHONE RECEPTACLE
	RECEPTACLE, SINGLE TWISTLOCK 20A/125V/2P/3W GROUNDING, UNLESS AMPS ARE INDICATED		TELEPHONE WALL OUTLET		FLOOR MICROPHONE RECEPTACLE
	CONNECTOR BODY, 15A/125V/2P/3W GROUNDING ON DROP REEL		TELEPHONE FLOOR OUTLET		BUZZER
	MOTOR STARTER, MAGNETIC		TELEPHONE TERMINAL CABINET		BELL
	MOTOR STARTER, COMBINATION WITH DISCONNECT SWITCH, FUSED OR NON-FUSED AS INDICATED ON SCHEDULE		THERMOSTAT; 'N' INDICATES NIGHT STAT		HORN
	DISCONNECT SWITCH, FUSED OR NON-FUSED AS INDICATED		AQUISTAT		TELEVISION OUTLET, RECEIVER
	CONTACTOR		HUMIDISTAT	— FA —	FIRE ALARM WIRING
	TRANSFORMER		DAMPENER MOTOR	— T —	TELEPHONE CONDUIT
			SOLENOID VALVE		
			ELECTRIC PNEUMATIC SWITCH		
			PNEUMATIC ELECTRIC SWITCH		

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<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p>	
<p><i>James M. ...</i> DIRECTOR OF PUBLIC WORKS DATE: 11-30-88</p>	<p><i>William E. ...</i> CHIEF, BUREAU OF ENGINEERING DATE: 11-30-88</p>
<p><i>John J. O'Hara</i> CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE: 11-30-88</p>	<p><i>Don ...</i> CHIEF, UTILITY DESIGN DIVISION DATE: 11-30-88</p>

HUTH ENGINEERS INC.
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LANCASTER, PA ALLENTOWN, PA

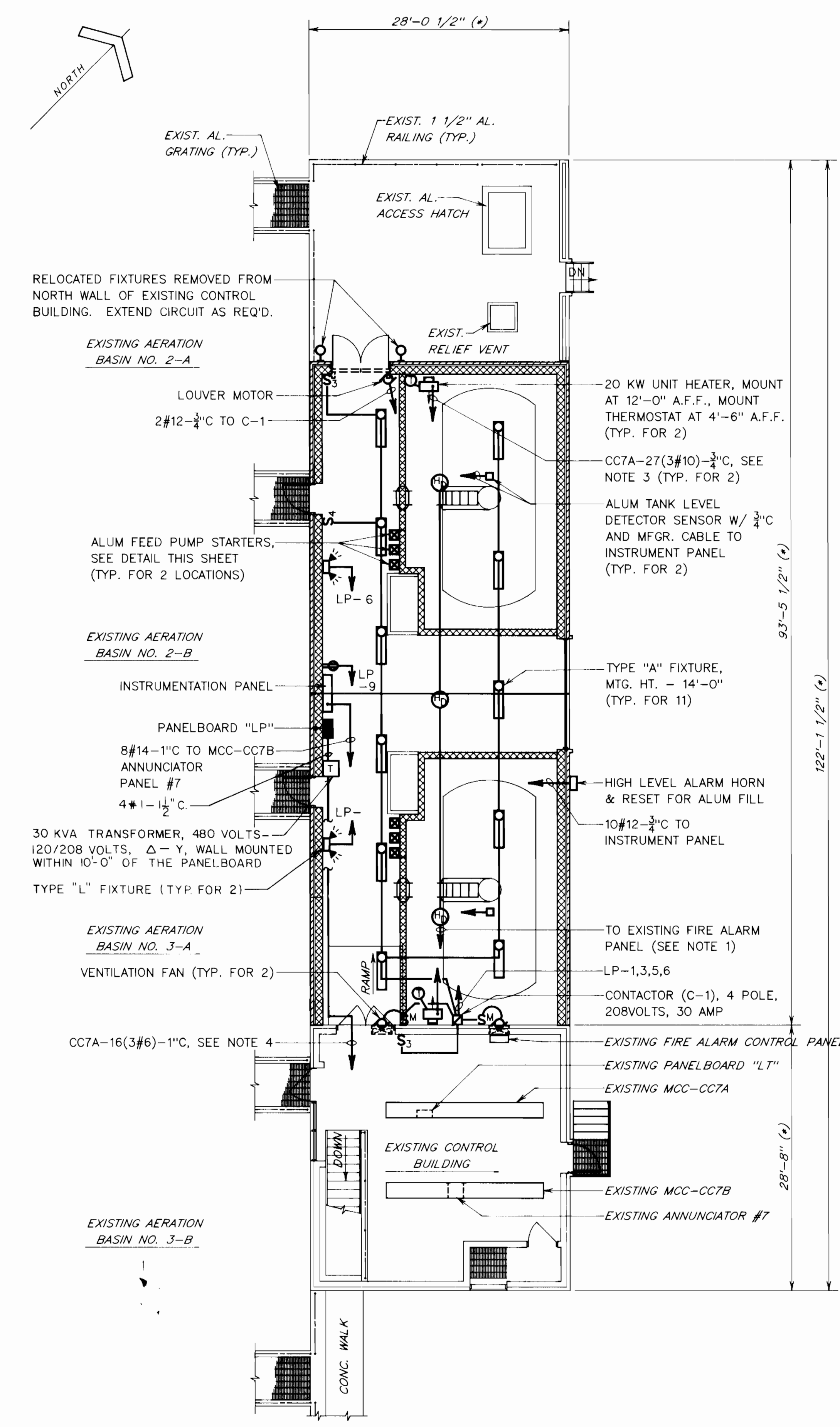


DES: R.L.S.				
DRN: CADD				
CHK: WJS				
DATE: 8/88	BY: NO.	REVISION	DATE	

ELECTRICAL SYMBOL & ABBREVIATION SCHEDULE

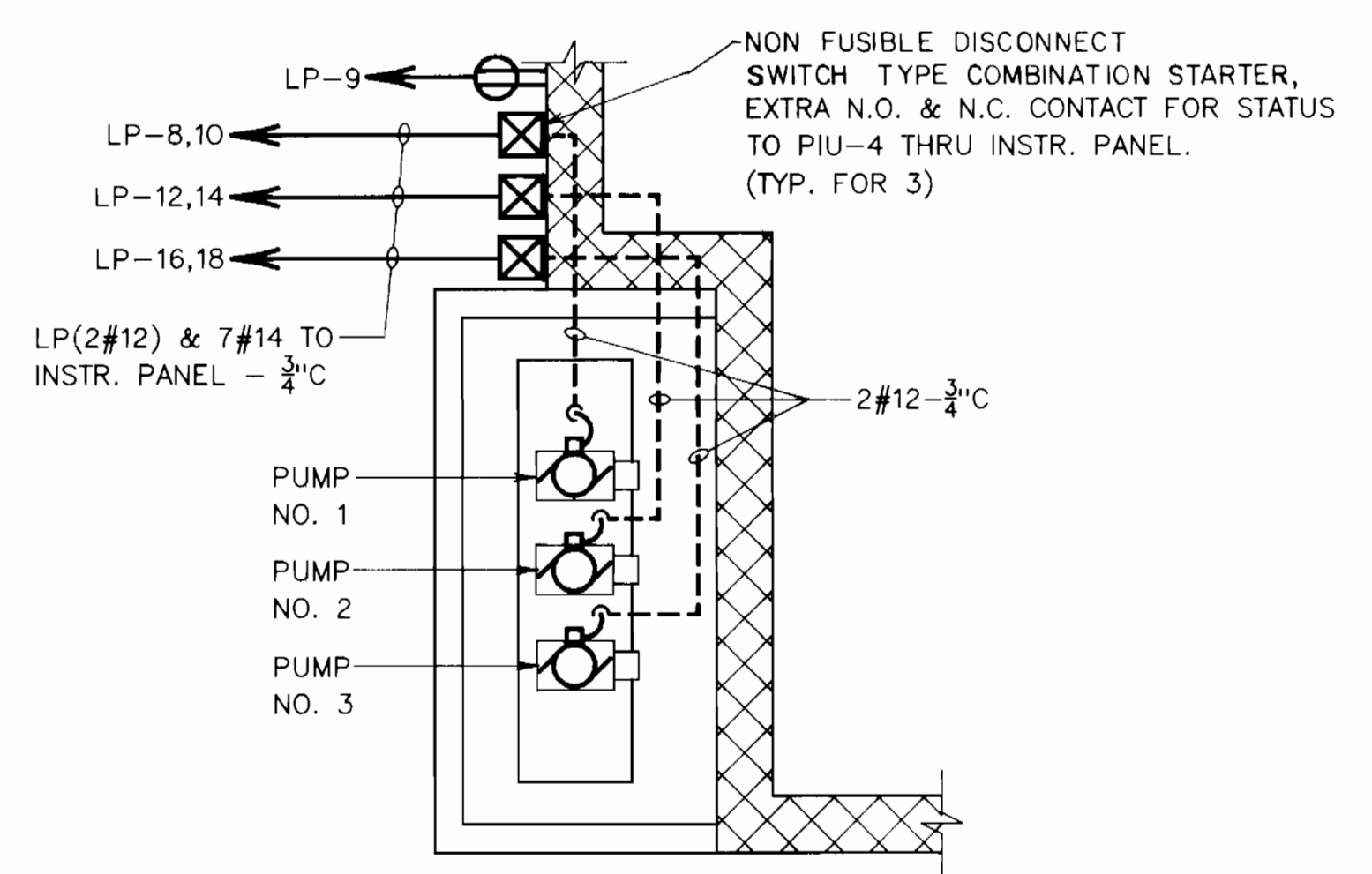
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHOROUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 33 OF 40
E-1



PANEL NO. "LP"
 LOCATION: ALUM ROOM
 120/208 VOLTS, 3 PHASE, 4 WIRE, 225 A. MAINS, 100 A. M.C.B.
 10,000 AMP AIC BREAKERS @ 240 VOLTS; SURFACE MOUNTING

DESIGNATION	CKT. BKR. TRIP NO.	PH.	CKT. BKR. NO.	TRIP	DESIGNATION
VENTILATION FAN	20 1	A	2	20	SPARE
VENTILATION FAN	20 3	B	4	20	INSTRUMENTATION PANEL
LOUVER MOTOR	20 5	C	6	20	LIGHTING, EMERGENCY LIGHTING
SPACE	- 7	A	8	15	ALUM FEED PUMPS #1 & #4
RECEPTACLES	20 9	B	10		
SPACE	20 11	C	12	15	ALUM FEED PUMPS #2 & #5
	20 13	A	14		
	20 15	B	16	15	ALUM FEED PUMPS #3 & #6
	20 17	C	18		
	20 19	A	20		SPACE
	20 21	B	22		
	- 23	C	24		
SPACE	- 25	A	26		
	- 27	B	28		
	- 29	C	30		
	- 31	A	32		
	- 33	B	34		
	- 35	C	36		
	- 37	A	38		
	- 39	B	40		
	- 41	C	42		



ALUM FEED PUMP STARTER DETAIL
 (TYP. FOR 2 LOCATIONS)

SCALE IN FEET 0 1 2 4 6
 SCALE: 1/2" = 1'-0"

NOTES:

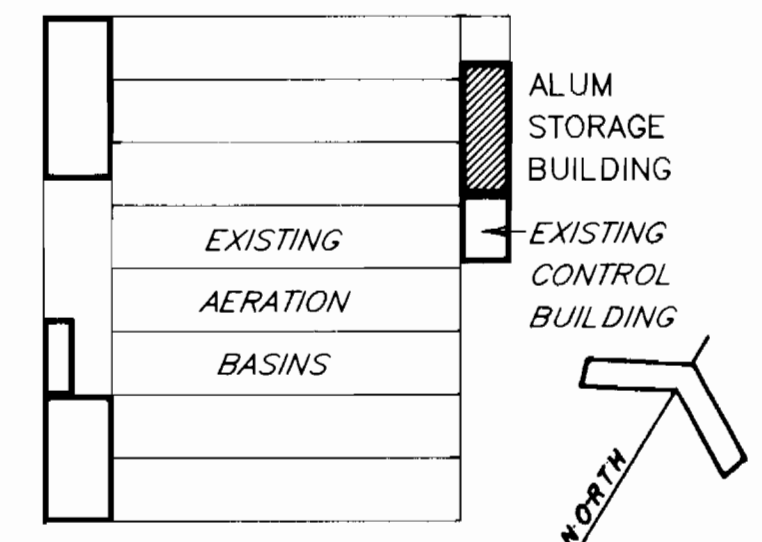
- FIRE DETECTORS (FD) SHALL BE CONNECTED INTO THE EXISTING FIRE ALARM CONTROL PANEL, ZONE 1, CONTROL BUILDING NO. 2 WITH #14 WIRE IN 1/2" C. THE DETECTORS SHALL BE 135° FIXED TEMPERATURE HEAT DETECTORS, SIMPLEX NO. 2098-9466.
- GROUNDING WIRES NOT SHOWN BUT REQUIRED IN ALL CONDUITS.
- REMOVE ONE 12-INCH HIGH MOTOR CONTROL CENTER CCTA-27 UNUSED BUCKET INSERT AND DOOR. REPLACE WITH (2)-30 AMP, 480 VOLT, 3 PHASE, 22,000 A.I.C. CIRCUIT BREAKERS WITH DOOR. LABEL ONE "ALUM ROOM UNIT HEATER NORTH" AND THE OTHER "ALUM ROOM UNIT HEATER SOUTH".
- REMOVE ONE 12 INCH HIGH MOTOR CONTROL CENTER CCTA-16 UNUSED BUCKET INSERT AND DOOR. REPLACE WITH BUCKET INSERT HAVING A CIRCUIT BREAKER WITH 100 AMP FRAME, 50 AMP TRIP, 480 VOLTS, 22,000 A.I.C. WITH DOOR. LABEL "30 KVA TRANSFORMER - ALUM ROOM".

POWER & LIGHTING - MAIN FLOOR PLAN

SCALE IN FEET 0 4 8 16 24
 SCALE: 1/8" = 1'-0"

LEGEND

(*) DIMENSIONS SHOWN W/ (*), INDICATE FIELD VERIFICATION REQ'D.



KEY PLAN
 NO SCALE

LBT0547 - ENR413D 08/25/88 15:13:17

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James M. ... 11/30/88
 DIRECTOR OF PUBLIC WORKS DATE

John O'Hara 11/30/88
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Richard E. ... 11-30-88
 CHIEF, BUREAU OF ENGINEERING DATE

Ch. Don Lee 11-30-88
 CHIEF, UTILITY DESIGN DIVISION DATE

HUTH ENGINEERS INC.
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P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7321

LANCASTER, PA ALLENTOWN, PA



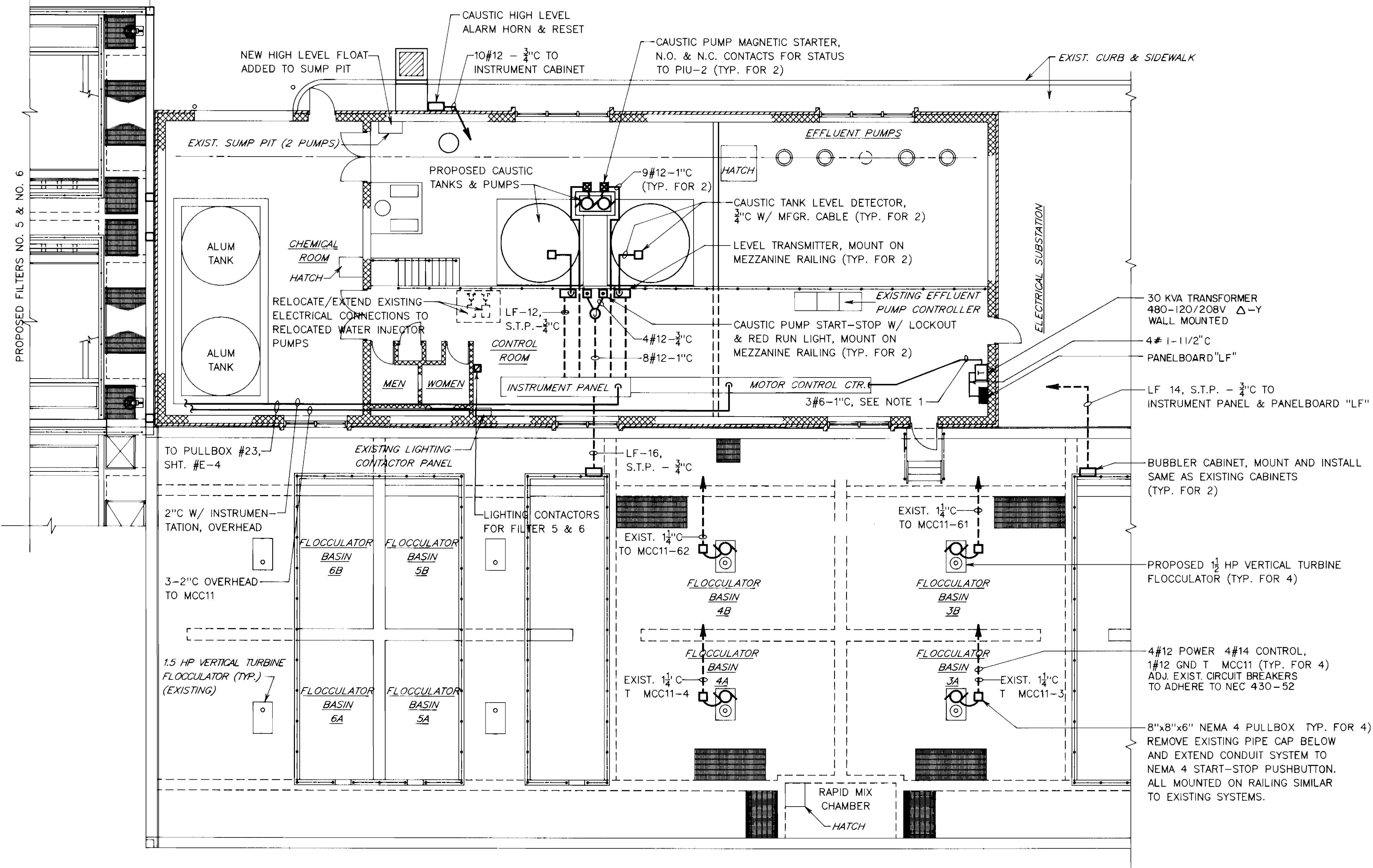
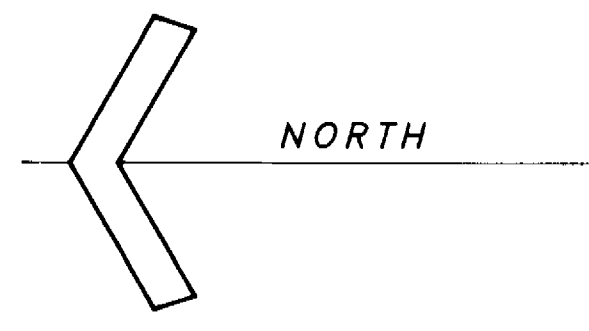
DES: W.R.S.			
DRN: CADD			
CHK: W.S.			
DATE: 8/88	BY NO.	REVISION	DATE

ALUM STORAGE BUILDING
 POWER & LIGHTING PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 34 OF 40
 E-2

7

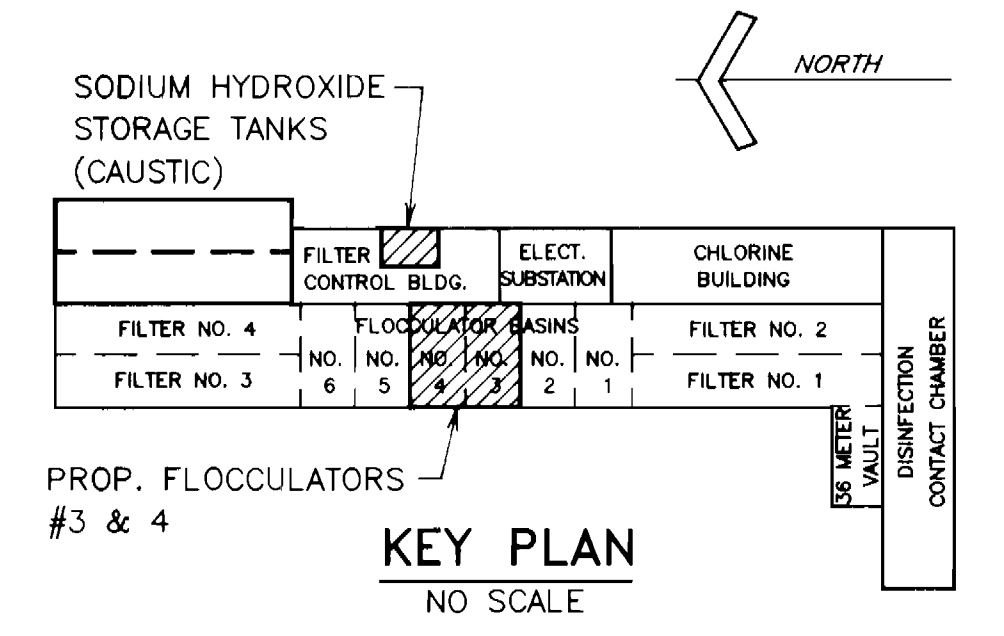


NOTES:

1. REMOVE MOTOR CONTROL CENTER CC11-7 UNUSED BUCKET INSERT AND DOOR. REPLACE WITH INSERT HAVING A CIRCUIT BREAKER WITH 100 AMP FRAME, 50 AMP TRIP, 480 VOLTS, 3 PHASE, 22,000 A.I.C. WITH DOOR, LABEL "30 KVA TRANSFORMER - PANELBOARD LF".
2. REMOVE MOTOR CONTROL CENTER CC11-8 UNUSED BUCKET INSERT AND DOOR. REPLACE WITH INSERT HAVING TWO CIRCUIT BREAKERS, EACH WITH 100 AMP FRAME, 30 AMP TRIP, 480 VOLTS, 3 PHASE, 22,000 A.I.C. WITH DOOR, LABEL ONE "FILTER #5" AND THE OTHER "FILTER #6".

PLAN - FILTER CONTROL BUILDING & FLOCCULATORS #3 & 4

SCALE IN FEET 0 4 8 16 24
SCALE: 1/8" = 1'-0"



13-54-28.C

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* DATE: 11-30-88
 Chief, Bureau of Engineering: *Clayton S. Ryan* DATE: 11-30-88
 Chief, Utility Design Division: *Clayton S. Ryan* DATE: 11-30-88

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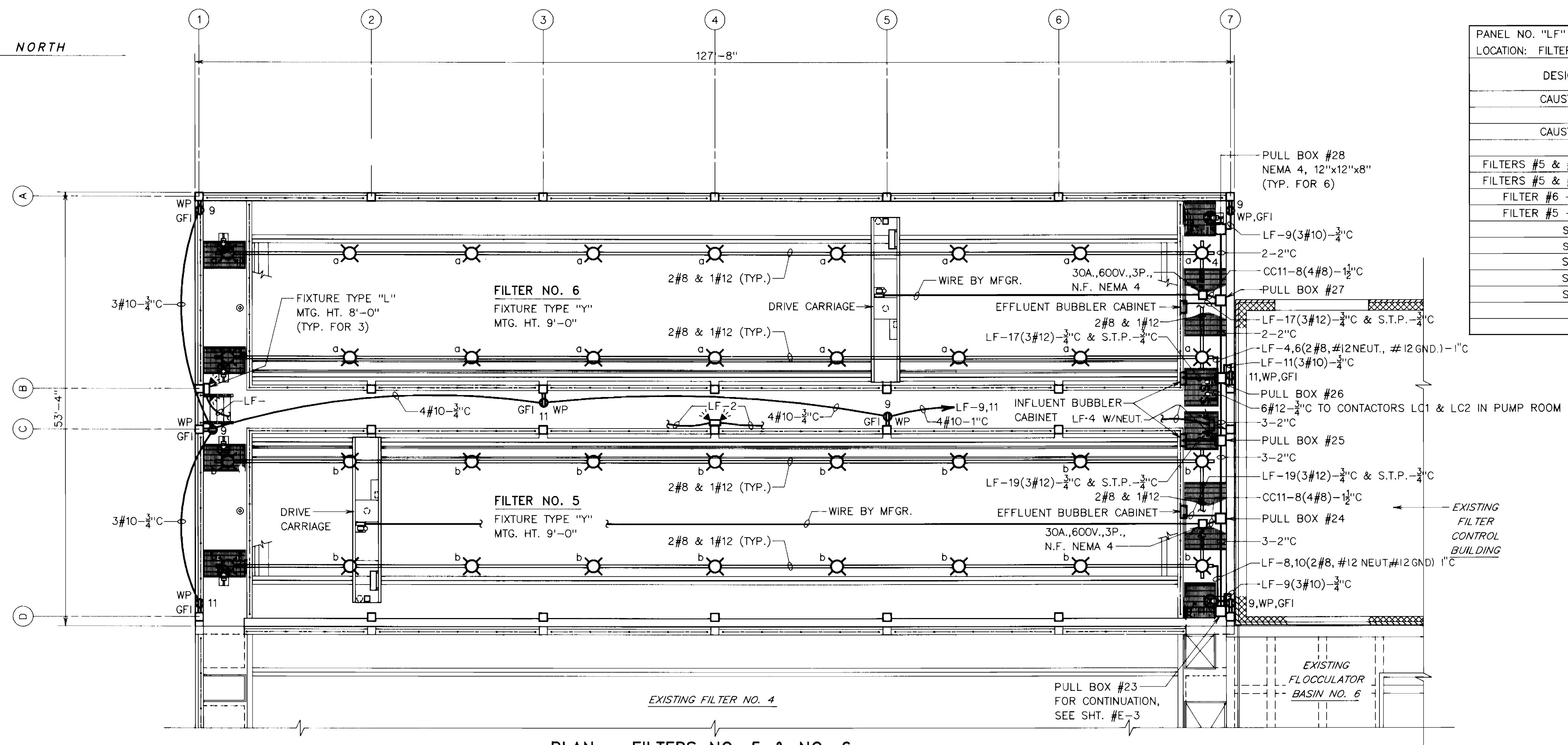
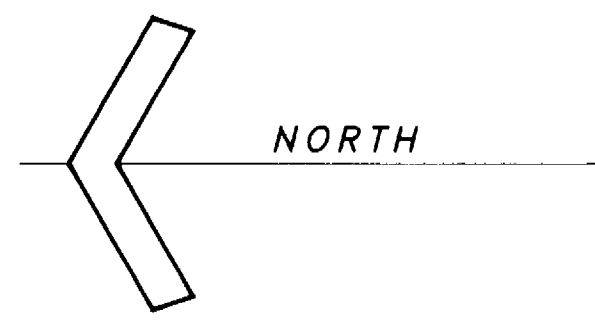


DES:	W.R.S.				
DRN:	CADD				
CHK:	WRS				
DATE:	8/88				
BY:		NO.		REVISION	DATE

FILTER CONTROL BLDG. & FLOCCULATORS #3 & 4
POWER & INSTRUMENTATION

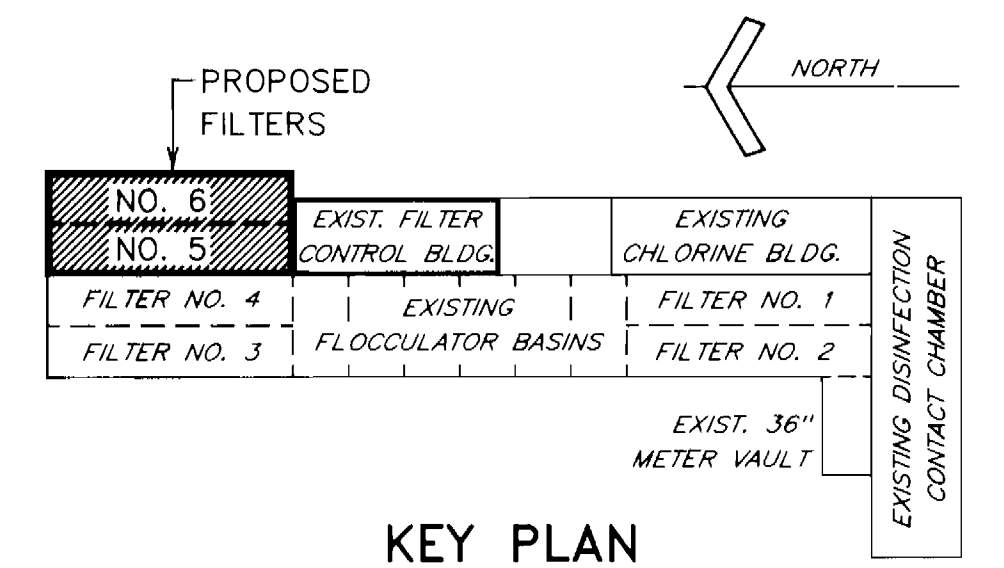
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 35 OF 40
E-3



PLAN - FILTERS NO. 5 & NO. 6
 SCALE IN FEET 0 4 8 16 24
 SCALE: 1/8" = 1'-0"

DESIGNATION		TRIP	BKR. NO.	PH.	CKT. NO.	BKR. TRIP	DESIGNATION
CAUSTIC PUMP		20	1	A	2		
CAUSTIC PUMP		20	3	B	4	20	FILTER #6 - TYPE "Y" LIGHTING, EMERGENCY LIGHTING
CAUSTIC PUMP		20	5	C	6	20	FILTER #5 - TYPE "Y" LIGHTING, EMERGENCY LIGHTING
FILTERS #5 & #6 - RECEPTACLES		20	9	B	10		
FILTERS #5 & #6 - RECEPTACLES		20	11	C	12	20	INSTRUMENTATION
FILTER #6 - TURBIDIMETER		20	13	A	14	20	FLOCCULATOR #3 - BUBBLER
FILTER #5 - TURBIDIMETER		20	15	B	16	20	FLOCCULATOR #4 - BUBBLER
SPARE		20	17	C	18	20	LIGHTING CONTACTORS LC1 & LC2
SPARE		20	19	A	20	20	SPARE
SPARE		20	21	B	22	20	SPARE
SPARE		20	23	C	24	20	SPARE
SPACE		-	25	A	26	-	SPACE
SPACE		-	27	B	28	-	SPACE
SPACE		-	29	C	30	-	SPACE



KEY PLAN
NO SCALE

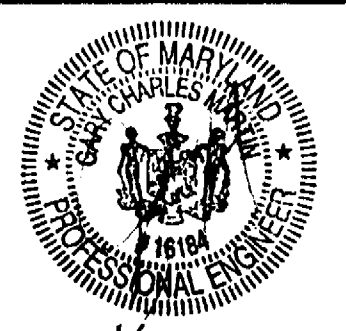
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hara 11/30/88
DIRECTOR OF PUBLIC WORKS DATE

Ol' Don Luan 11/30/88
CHIEF, UTILITY DESIGN DIVISION DATE

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LANDSCAPE ARCHITECTS • PLANNERS
HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021
LANCASTER, PA ALLENTOWN, PA

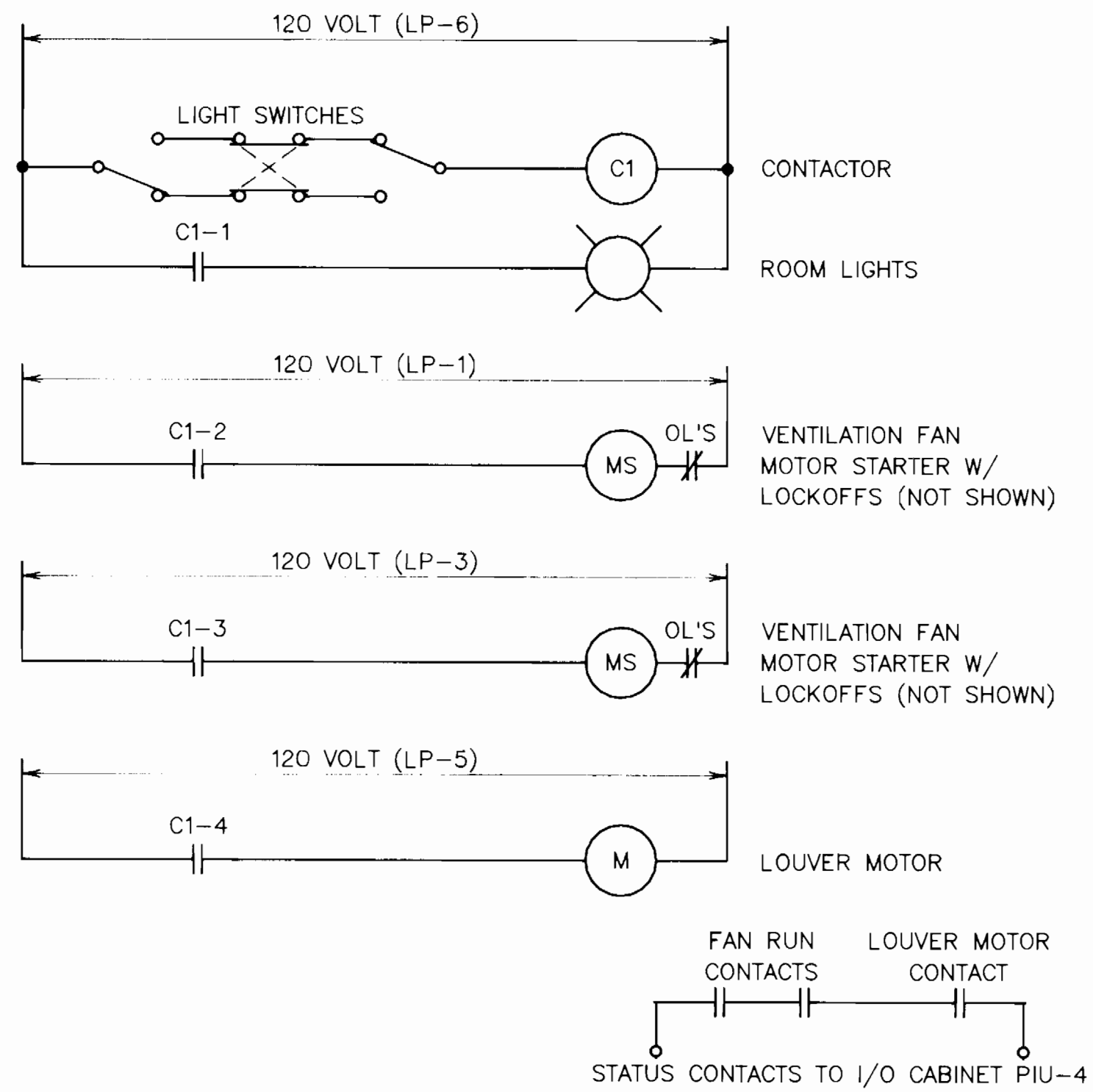


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DRN:	CADD			
CHK:	WCS			
DATE:	8/88	BY:	NO.	REVISION
				DATE

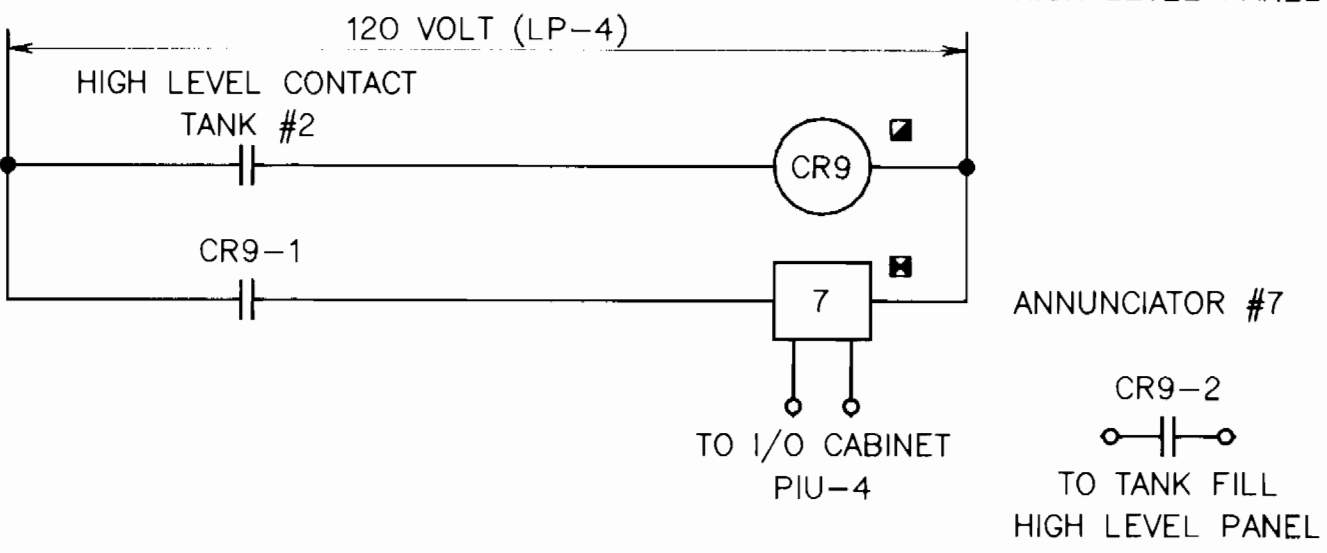
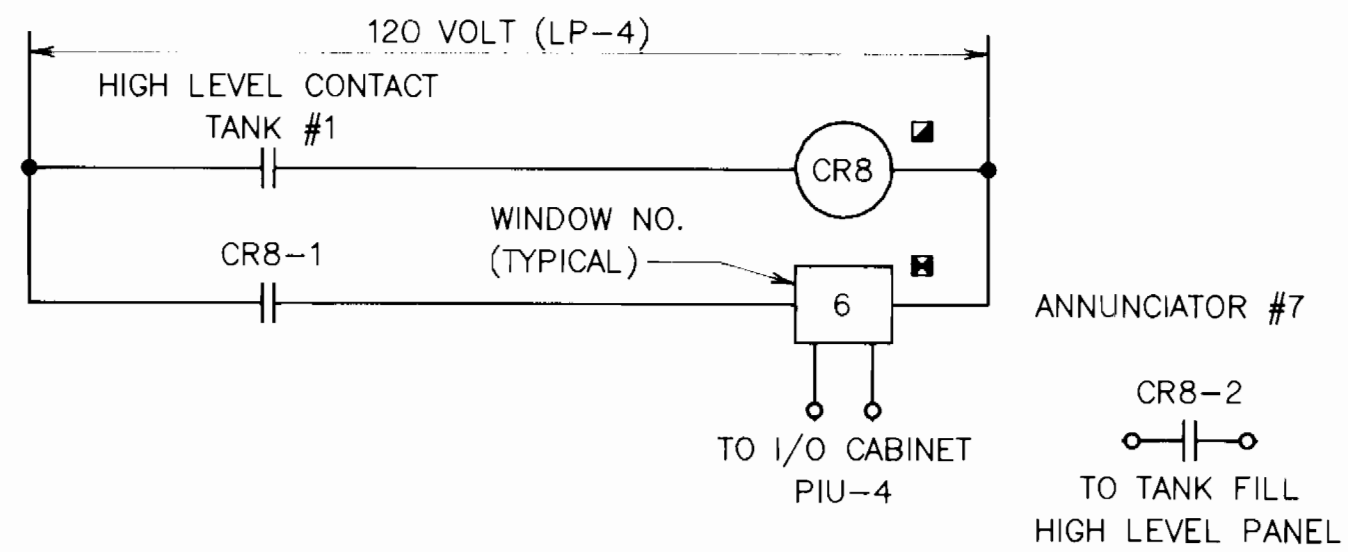
FILTERS NO. 5 & 6
POWER & LIGHTING PLAN

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

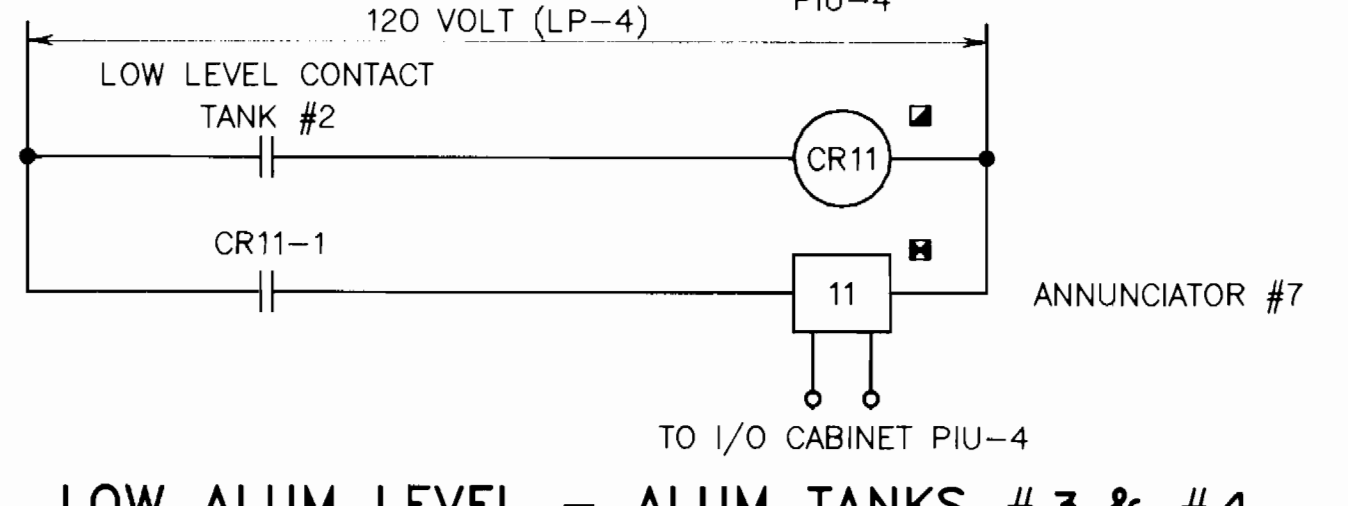
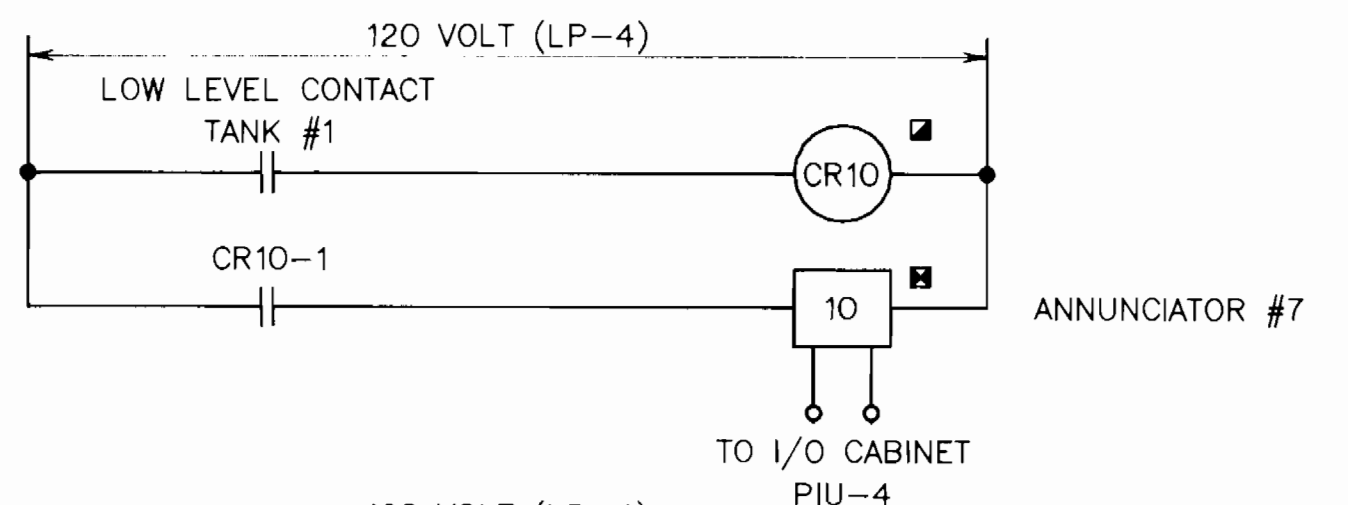
SCALE AS SHOWN
SHEET 36 OF 40
E-4



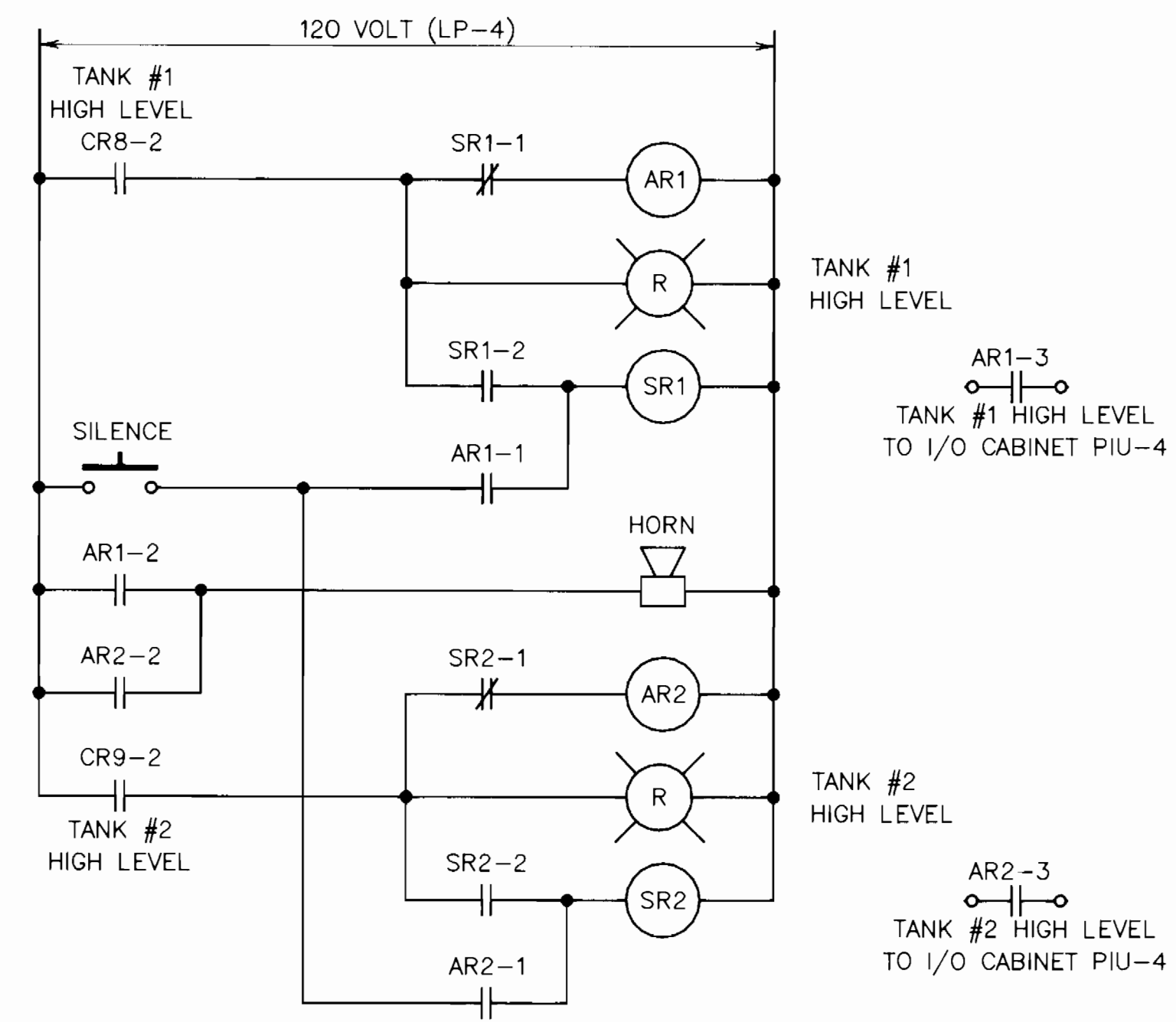
ALUM STORAGE BUILDING VENT/LIGHT CIRCUIT



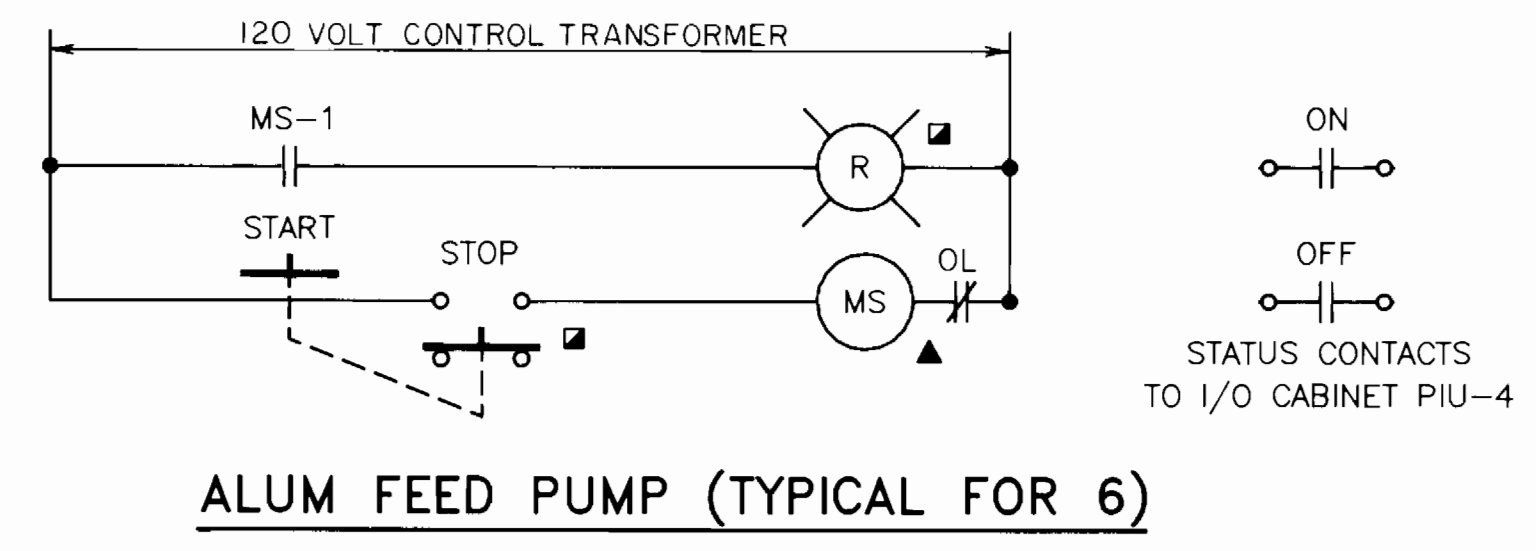
HIGH ALUM LEVEL - ALUM TANKS # 3 & # 4



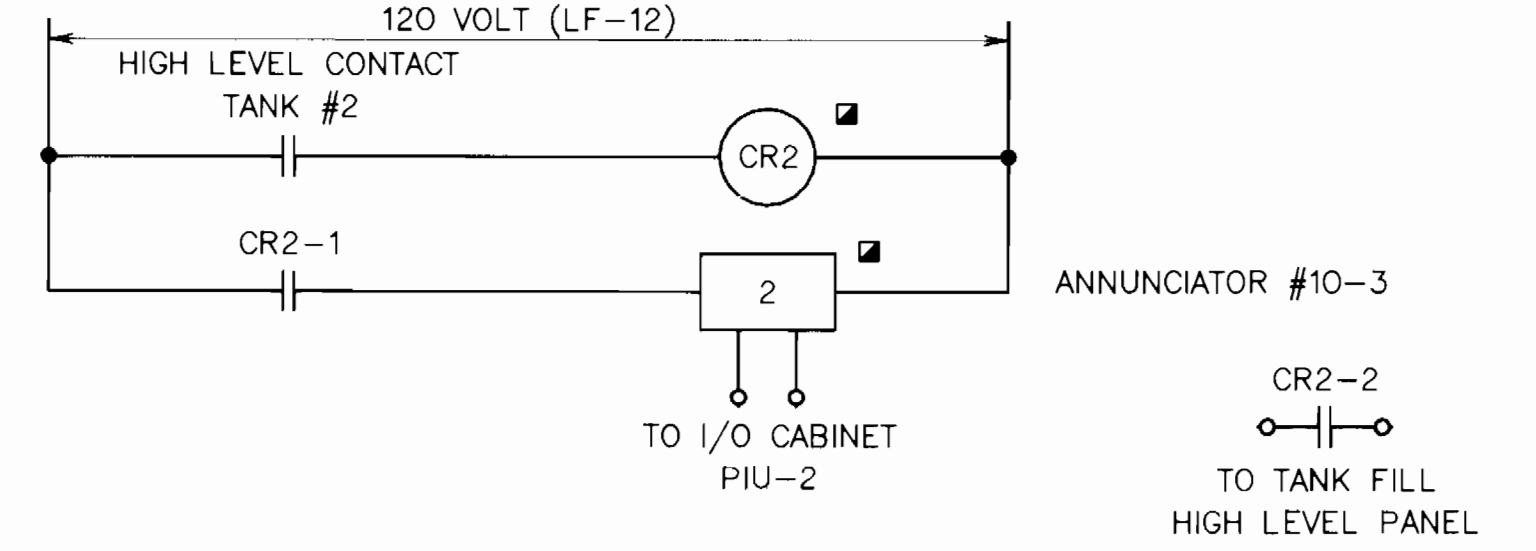
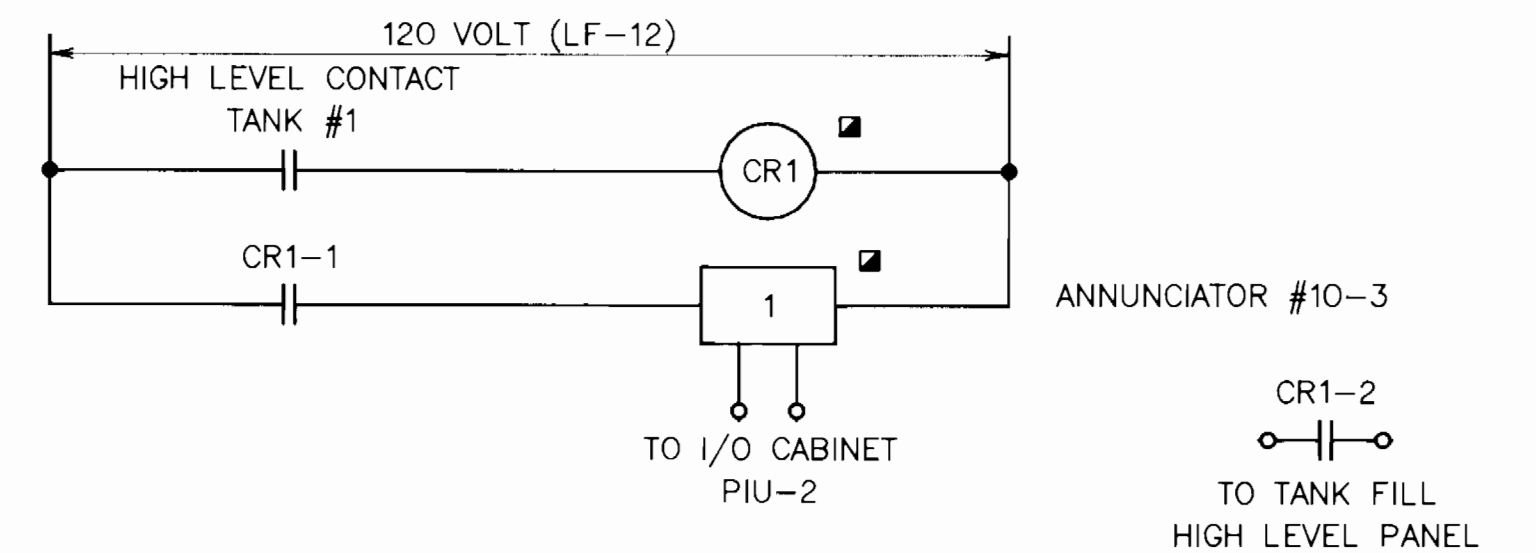
LOW ALUM LEVEL - ALUM TANKS # 3 & # 4



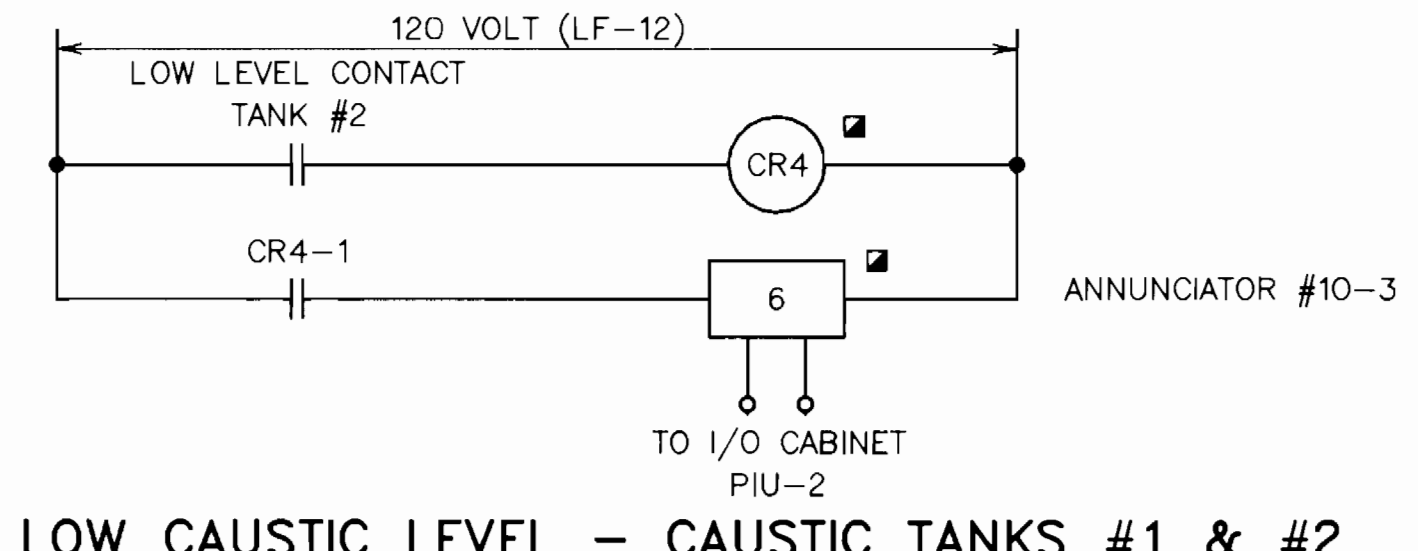
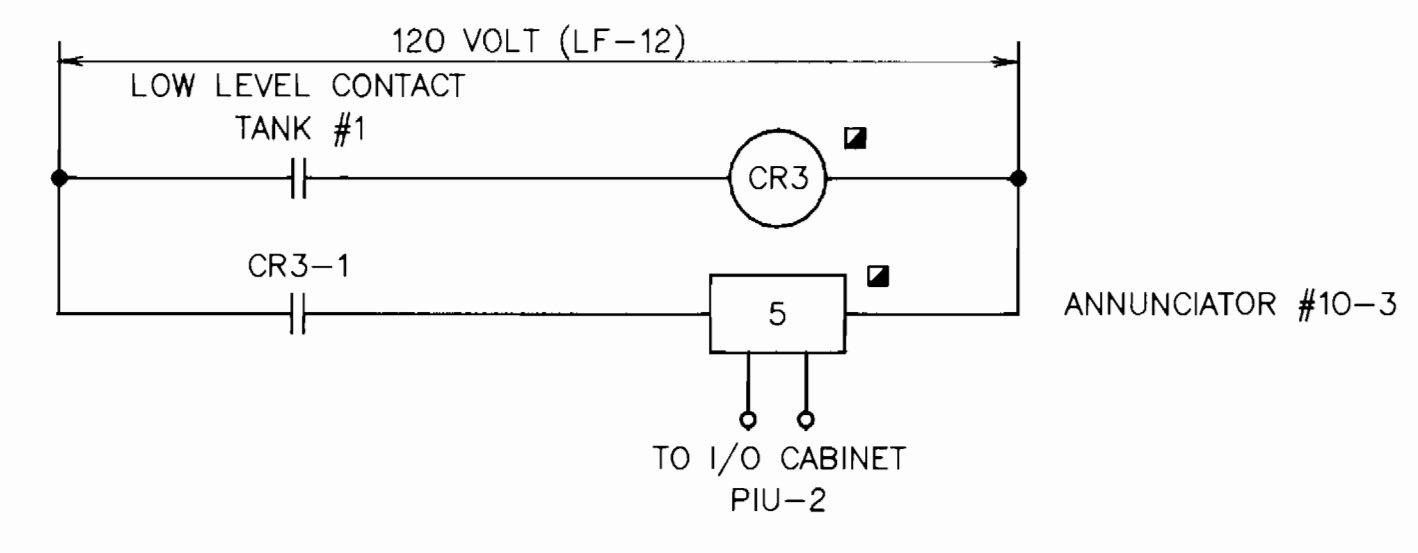
TANK FILL HIGH LEVEL - ALUM TANKS # 3 & # 4



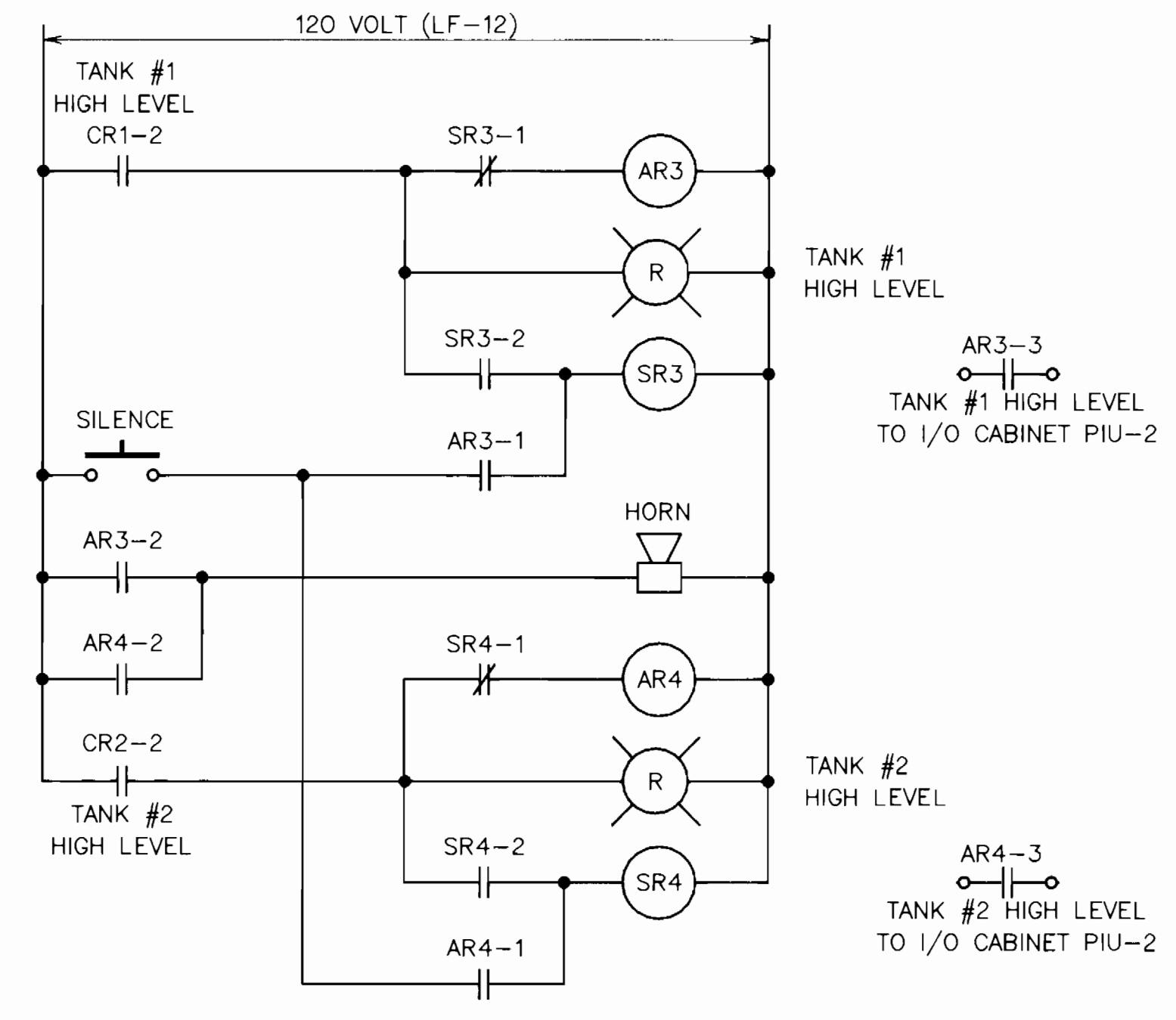
ALUM FEED PUMP (TYPICAL FOR 6)



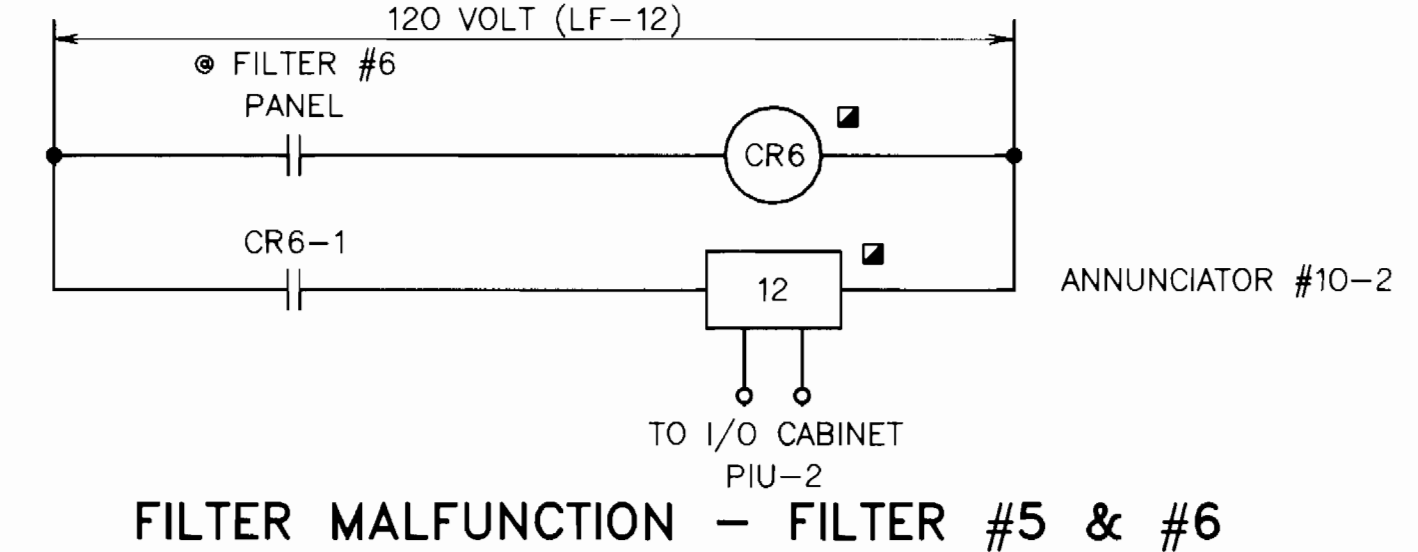
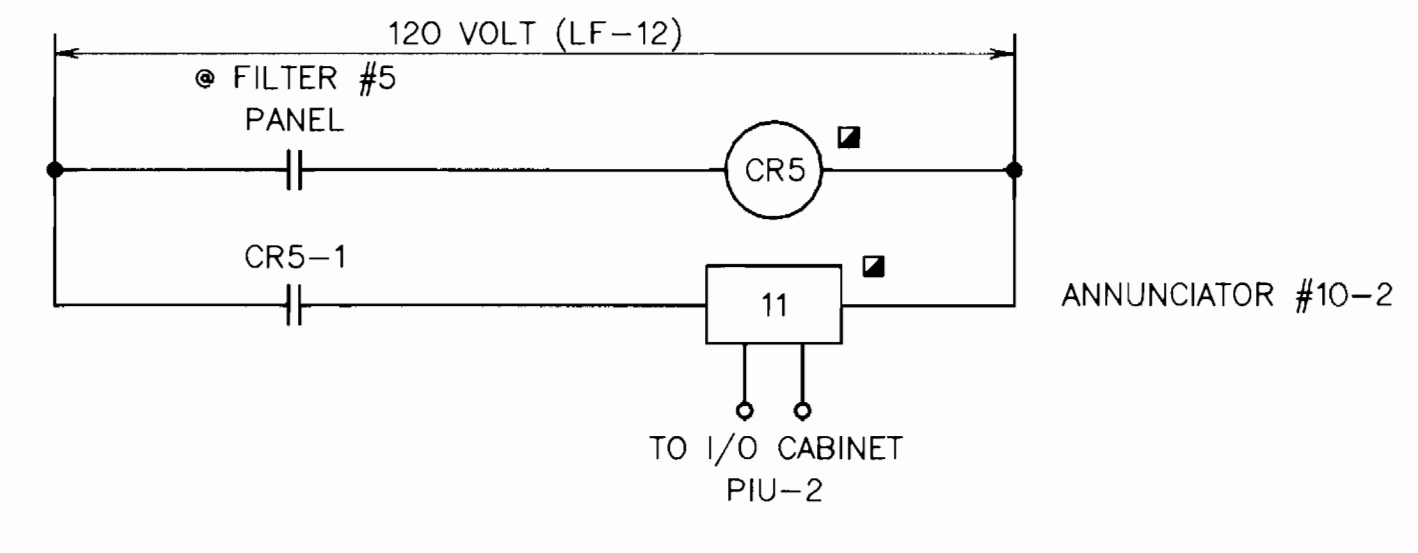
HIGH CAUSTIC LEVEL - CAUSTIC TANKS #1 & #2



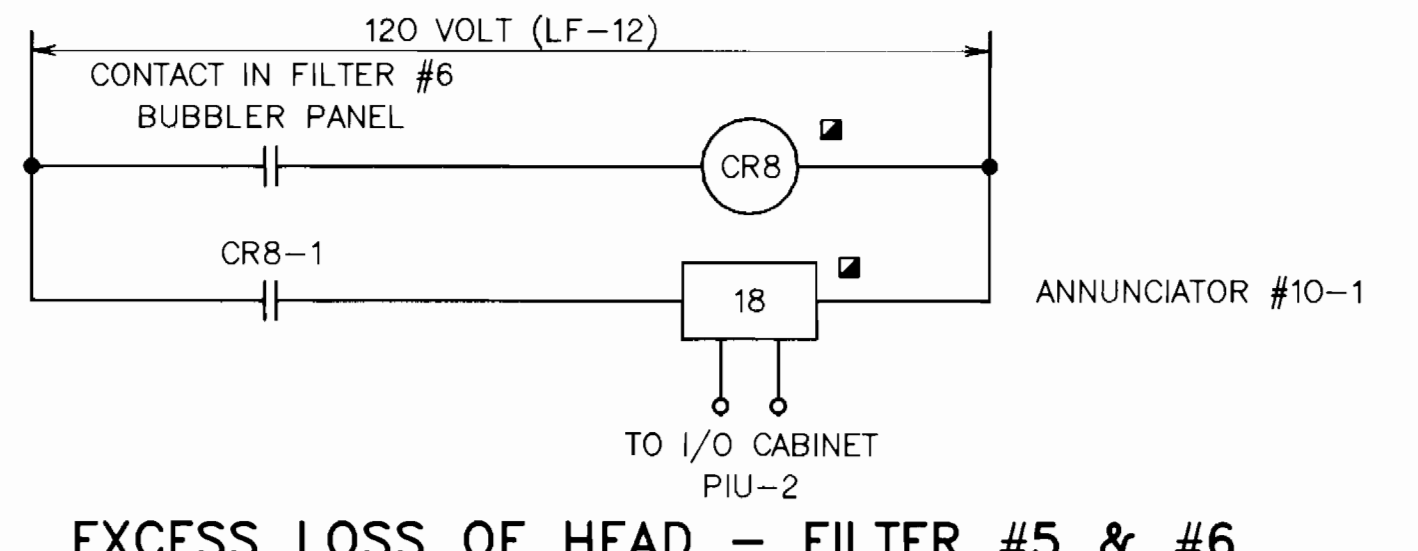
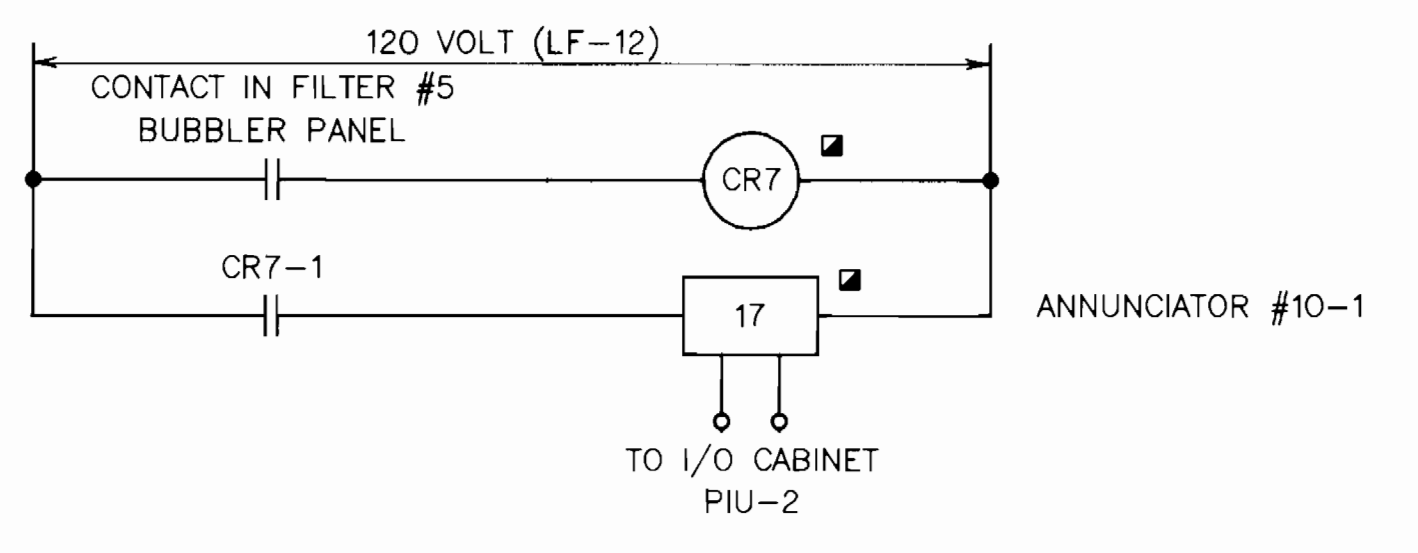
LOW CAUSTIC LEVEL - CAUSTIC TANKS #1 & #2



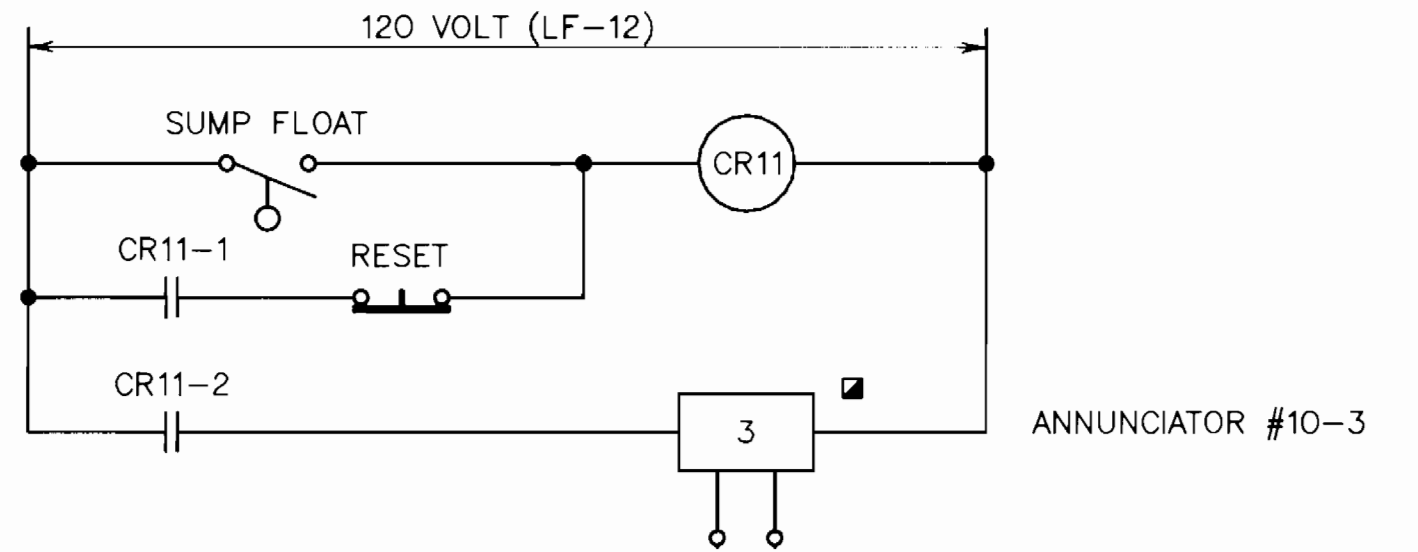
TANK FILL HIGH LEVEL - CAUSTIC TANKS #1 & #2



FILTER MALFUNCTION - FILTER #5 & #6



EXCESS LOSS OF HEAD - FILTER #5 & #6



HIGH WATER LEVEL IN CAUSTIC SUMP

LEGEND

- ▲ - DEVICE LOCATED AT MOTOR
- ⊠ - EXISTING DEVICE IN MCC-CC11
- - DEVICE IN INSTRUMENT PANEL
- ⊞ - EXISTING DEVICE IN MCC-CC7B

NSP:HUTH(ENL)870567_ENC05890_08/25/08 15:7:17.1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. O'Hara 11/30/88
DIRECTOR OF PUBLIC WORKS DATE

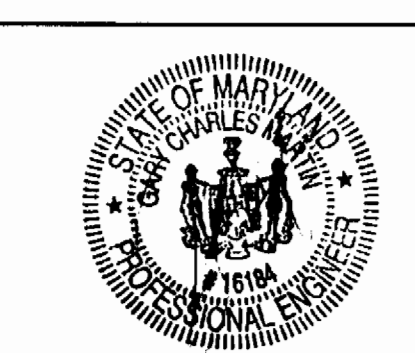
John J. O'Hara 11/30/88
CHIEF, BUREAU OF ENGINEERING DATE

John J. O'Hara 11/30/88
CHIEF / UTILITY DESIGN DIVISION DATE

H CONSULTING ENGINEERS • SURVEYORS
LANDSCAPE ARCHITECTS • PLANNERS

HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021

LANCASTER, PA ALLENTOWN, PA

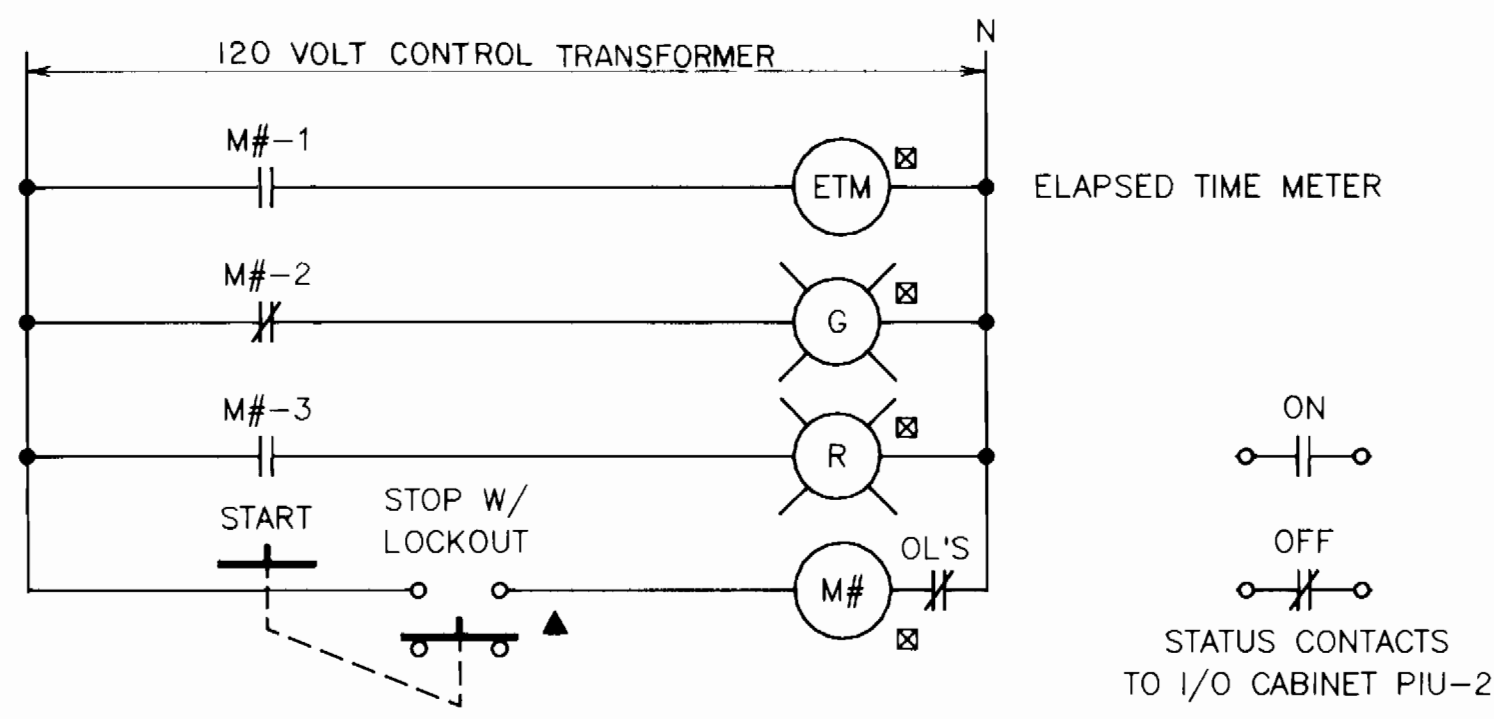


DES: W.R.S.				
DRN: CADD				
CHK: WRS				
DATE: 8/88	BY	NO.	REVISION	DATE

SCHEMATICS

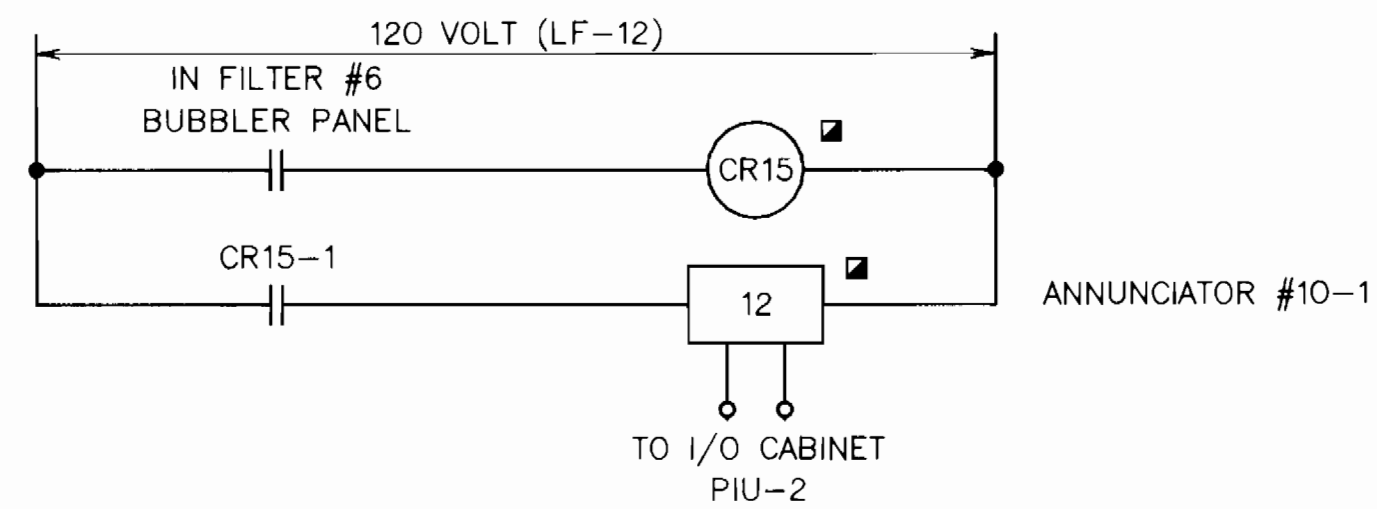
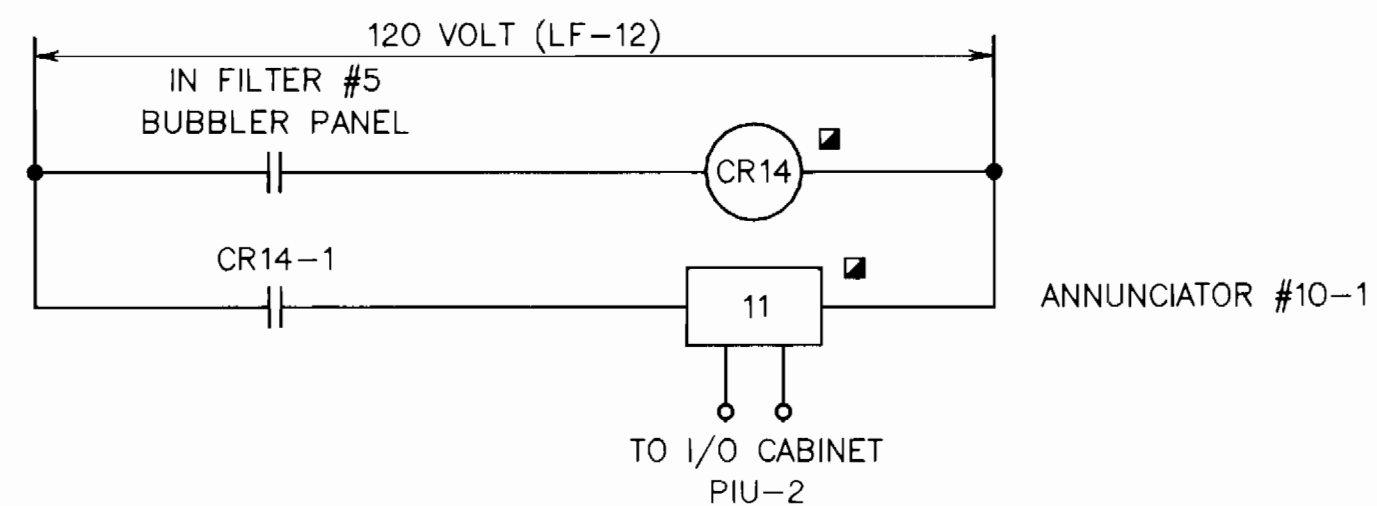
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 37 OF 40
E-5
S-1881

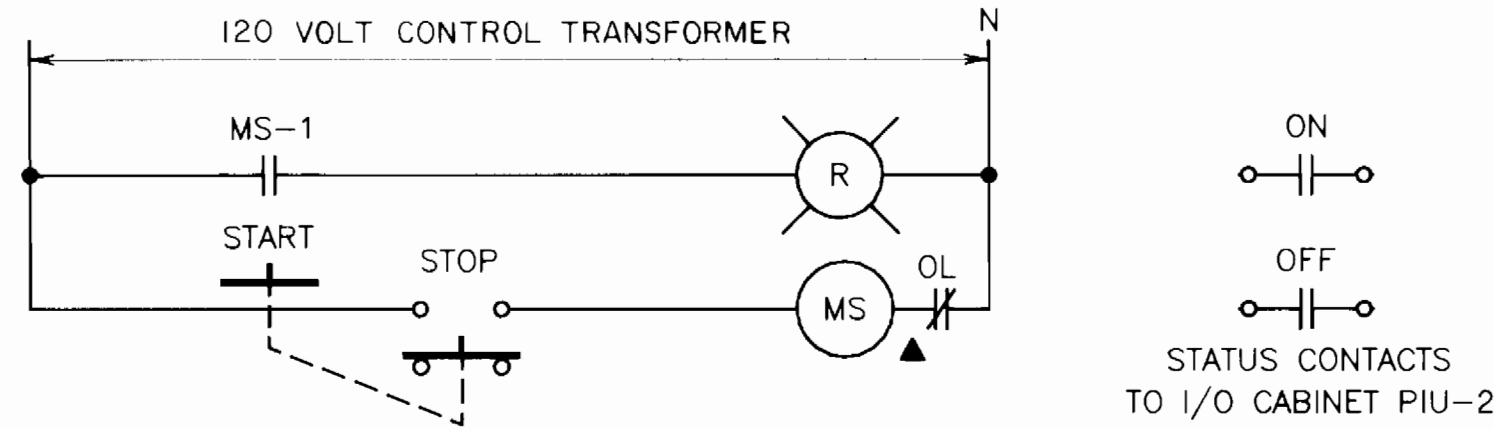


FLOCCULATOR (TYPICAL FOR 4)

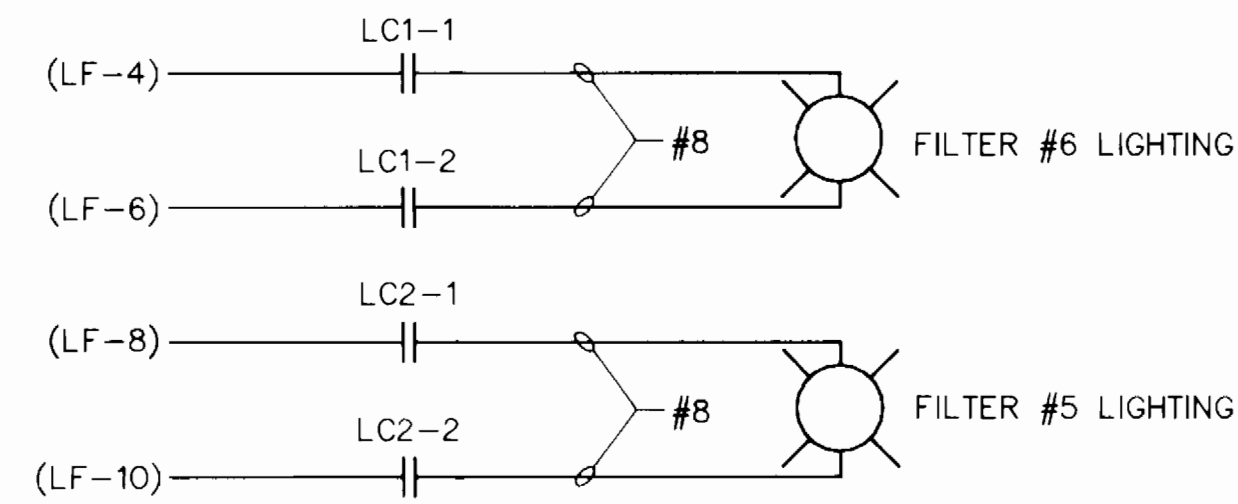
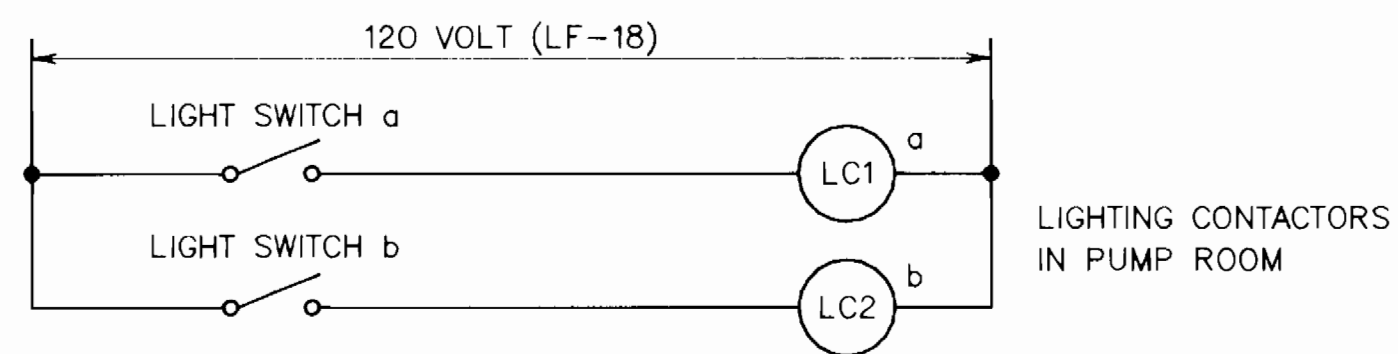
FLOCCULATOR UNIT #3A - STARTER M7
 FLOCCULATOR UNIT #3B - STARTER M8
 FLOCCULATOR UNIT #4A - STARTER M9
 FLOCCULATOR UNIT #4B - STARTER M10



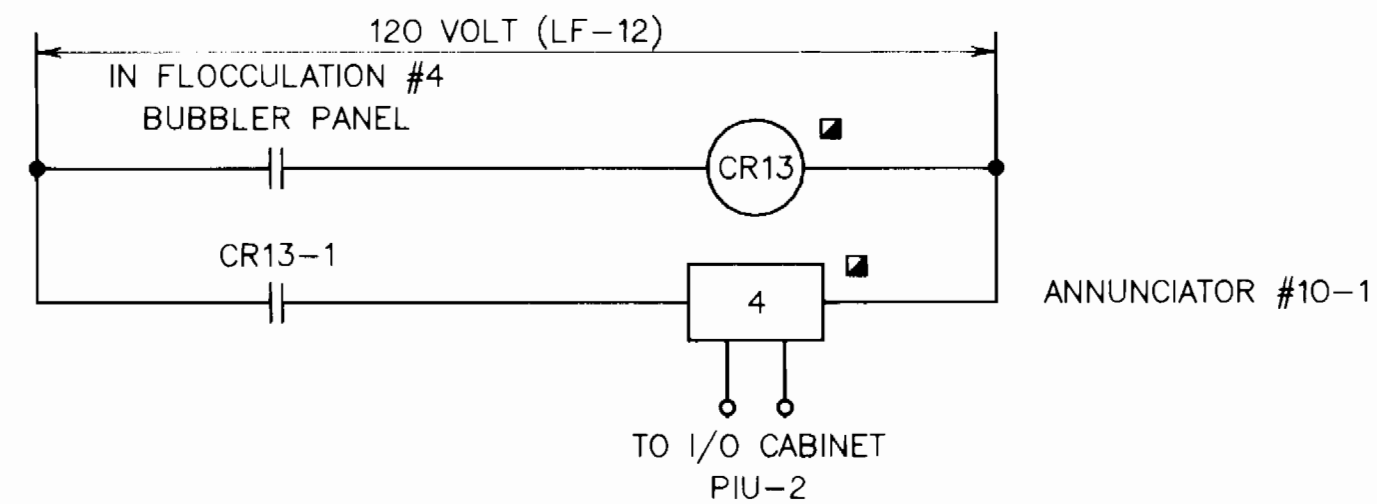
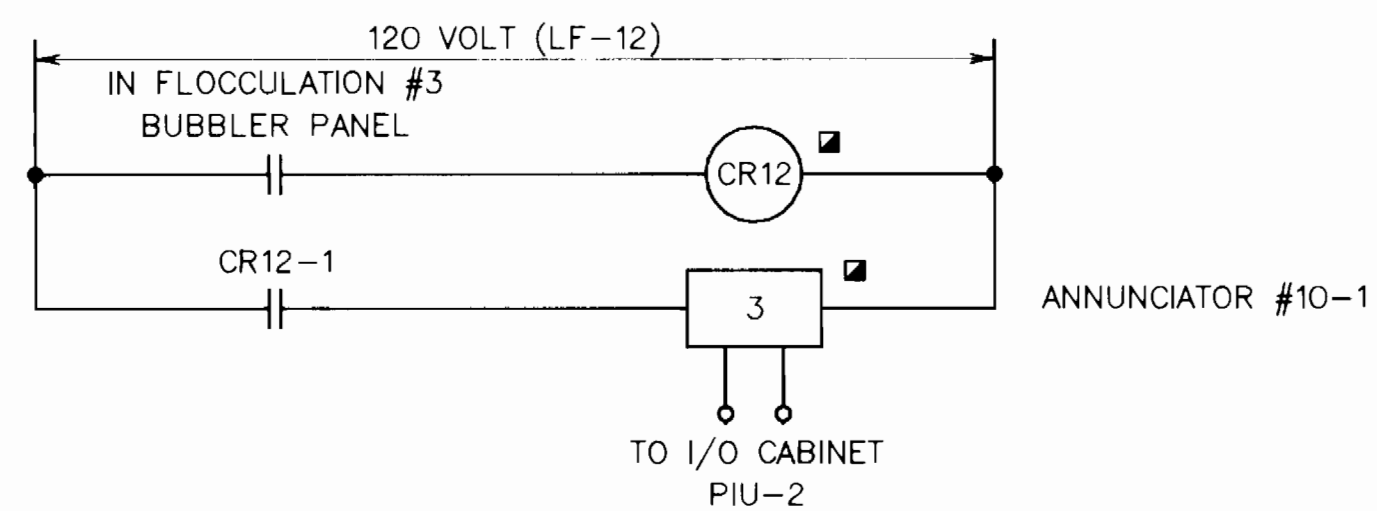
HIGH WATER LEVEL - INFLUENT FILTER #5 & #6



CAUSTIC FEED PUMP (TYPICAL FOR 2)



FILTER #5 & #6 LIGHTING CIRCUIT



HIGH WATER LEVEL - FLOCCULATION BASINS #3 & #4

LEGEND

- ▲ - DEVICE LOCATED AT MOTOR
- ⊠ - EXISTING DEVICE IN MCC-CC11
- - DEVICE IN INSTRUMENT PANEL
- ⊞ - EXISTING DEVICE IN MCC-CC7B

LB70267-EN05900 09/26/98 6:32:43.6

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James H. Lee 11/30/88
 DIRECTOR OF PUBLIC WORKS DATE
 John J. O'Hara 11/30/88
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE
 J. S. Berman 11/30/88
 CHIEF, BUREAU OF ENGINEERING DATE
 C. J. Deane 11/30/88
 CHIEF, UTILITY DESIGN DIVISION DATE

HUTH ENGINEERS INC.
 CONSULTING ENGINEERS • SURVEYORS
 LANDSCAPE ARCHITECTS • PLANNERS
 P.O. BOX 3012 LANCASTER, PA 17604 (717)569-7021
 LANCASTER, PA ALLENTOWN, PA



DES: W.R.S.				
DRN: CADD				
CHK: WJS				
DATE: 8/88	BY:	NO.	REVISION	DATE

SCHEMATICS

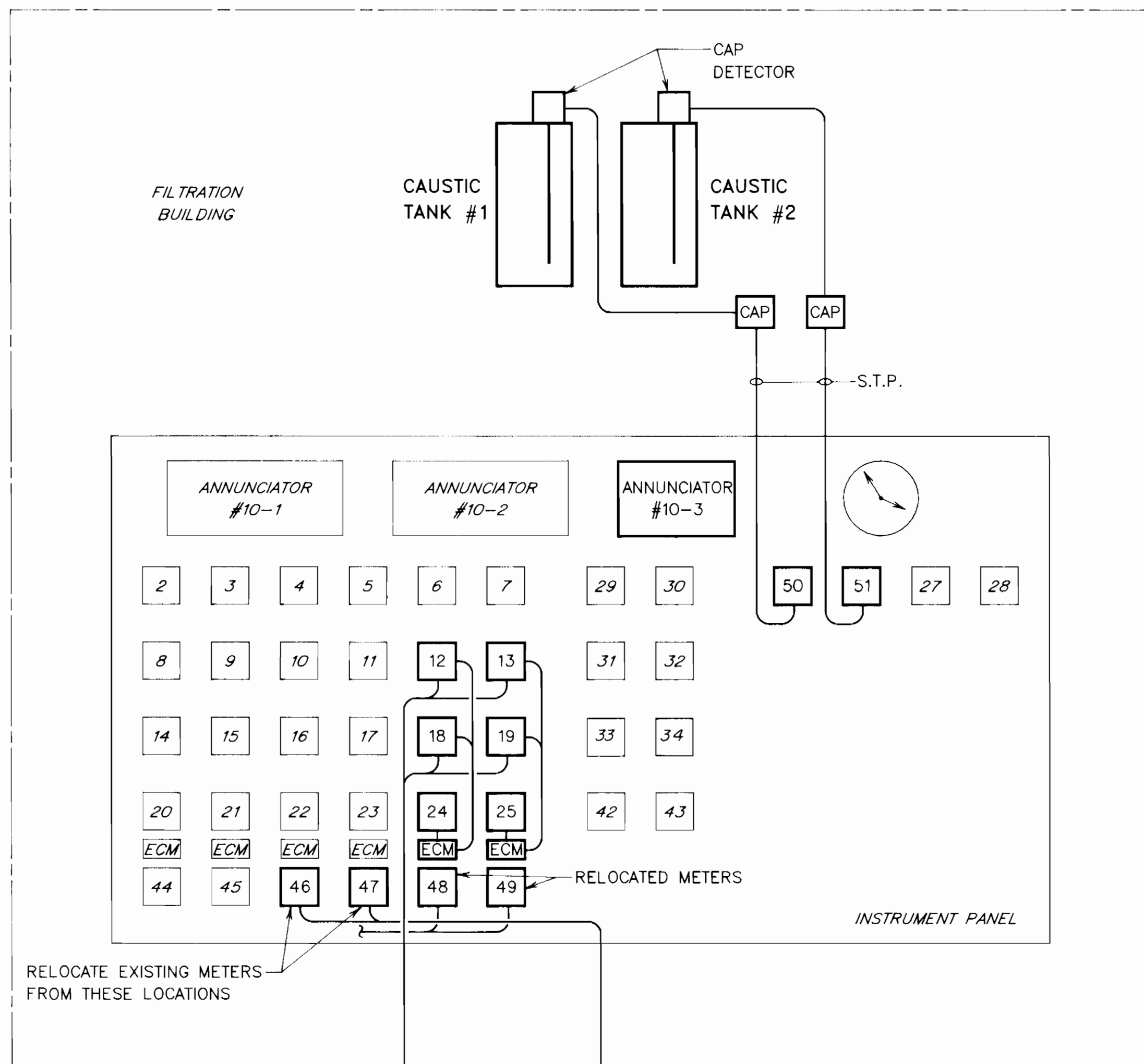
LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 38 OF 40

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S-1881



INSTRUMENT PANEL LEGEND

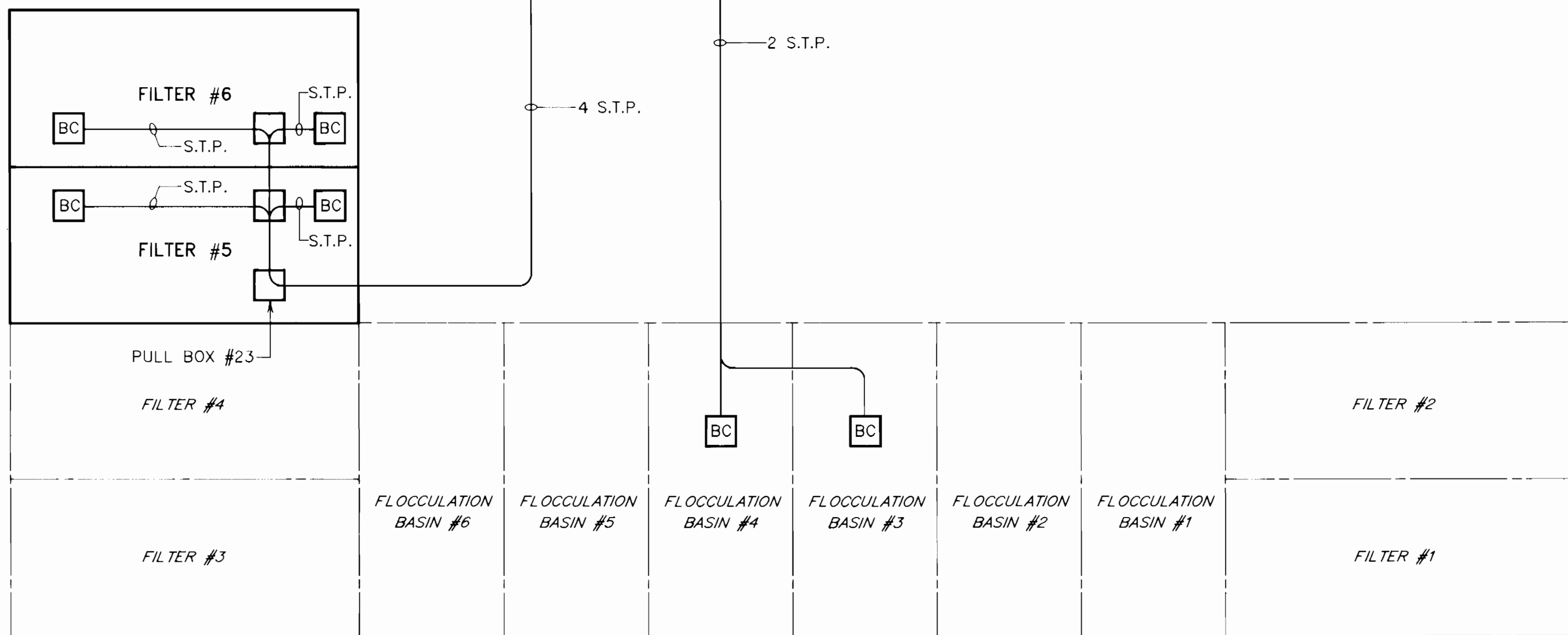
- 12. FILTER INFLUENT CHANNEL LEVEL - FILTER NO. 5
- 13. FILTER INFLUENT CHANNEL LEVEL - FILTER NO. 6
- 18. FILTER EFFLUENT CHANNEL LEVEL - FILTER NO. 5
- 19. FILTER EFFLUENT CHANNEL LEVEL - FILTER NO. 6
- 24. LOSS OF HEAD - FILTER NO. 5
- 25. LOSS OF HEAD - FILTER NO. 6

- 46. FLOCCULATION BASIN NO. 3 WATER LEVEL
- 47. FLOCCULATION BASIN NO. 4 WATER LEVEL
- 48. FLOCCULATION BASIN NO. 5 WATER LEVEL
- 49. FLOCCULATION BASIN NO. 6 WATER LEVEL
- 50. CAUSTIC TANK NO. 1 LEVEL
- 51. CAUSTIC TANK NO. 2 LEVEL

NOTE: PARTIAL NUMBERING THIS SHEET, REFER TO SHEET M-20, DRAWING NO. 65 OF 96, CONTRACT NO. 502-S FOR REFERENCE.

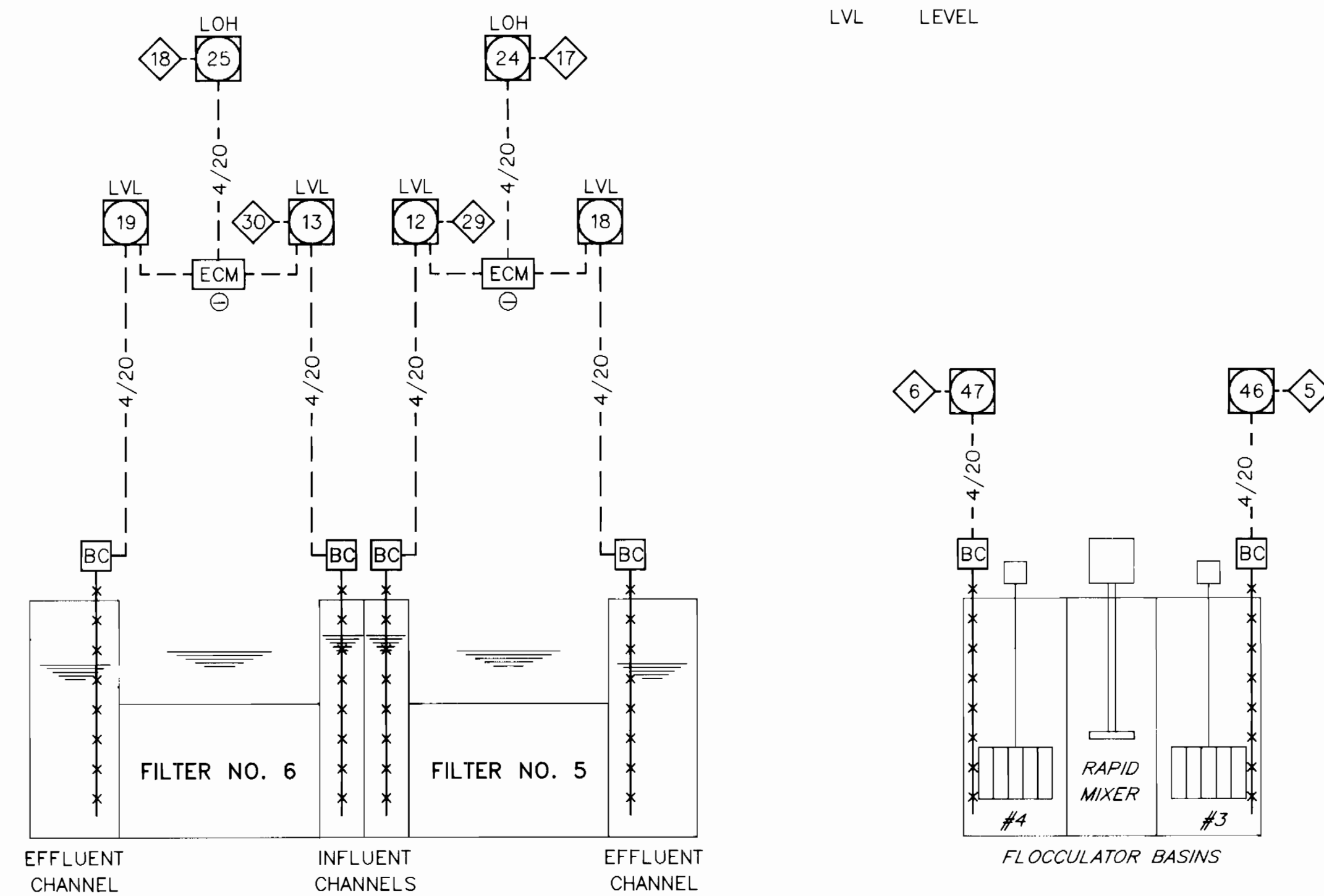
SCHEMATIC DIAGRAM LEGEND

- *** AIR BUBBLER
- 4/20- 4-20 ma ELECTRONIC SIGNAL
- ⬠# ALARM FUNCTION AND RELATED ANNUNCIATOR WINDOW
- ⊖# ELECTRONIC INDICATOR AND INSTRUMENT PANEL REFERENCE
- BC BUBBLER CABINET
- CAP CAPACITANCE LEVEL SENSOR
- ECM ELECTRONIC COMPUTING MODULE (⊖ = SUBTRACTOR ⊕ = ADDER)
- LOH LOSS OF HEAD
- LVL LEVEL



INSTRUMENTATION INTERCONNECTION DIAGRAM

NO SCALE



FILTRATION CONTROL SCHEMATIC DIAGRAM

NO SCALE

L870567...EN05942D 08/26/88 5:58:17.4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* DATE: 11-30-88
 Chief, Bureau of Engineering: *Richard E. Ryan* DATE: 11-30-88
 Chief, Bureau of Environmental Services: *John J. O'Hara* DATE: 11-30-88
 Chief, Utility Design Division: *Richard E. Ryan* DATE: 11-30-88

HUTH ENGINEERS INC.
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 P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021
 LANCASTER, PA ALLENTOWN, PA



DES: W.R.S.			
DRN: CADD			
CHK: <i>WS</i>			
DATE: 8/88	BY: NO.	REVISION	DATE

INSTRUMENTATION AND CONTROL DRAWINGS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
 PHOSPHORUS REMOVAL FACILITIES
 CAPITAL PROJECT S-6142
 CONTRACT NO. 24-1796
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 39 OF 40
 E-7

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18

EXISTING
ANNUNCIATOR #10-1
FILTRATION CONTROL BOARD
FILTRATION BUILDING

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18

EXISTING
ANNUNCIATOR #10-2
FILTRATION CONTROL BOARD
FILTRATION BUILDING

1	2	3	4
5	6	7	8
9	10	11	12

ANNUNCIATOR #10-3
FILTRATION CONTROL BOARD
FILTRATION BUILDING

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

EXISTING
ANNUNCIATOR #7
MOTOR CONTROL CENTER
"CC7"

ANNUNCIATOR #10-1	
POINT NO.	WINDOW INSCRIPTION
1	EXISTING
2	EXISTING
3	EXISTING
4	EXISTING
5	HIGH WATER LEVEL FLOCCULATOR BASIN NO. 5 FILTRATION BUILDING
6	HIGH WATER LEVEL FLOCCULATOR BASIN NO. 6 FILTRATION BUILDING
7	EXISTING
8	EXISTING
9	EXISTING
10	EXISTING
11	HIGH WATER LEVEL INFLUENT FILTER NO. 5 FILTRATION BUILDING
12	HIGH WATER LEVEL INFLUENT FILTER NO. 6 FILTRATION BUILDING
13	EXISTING
14	EXISTING
15	EXISTING
16	EXISTING
17	EXCESS LOSS OF HEAD FILTER NO. 5 FILTRATION BUILDING
18	EXCESS LOSS OF HEAD FILTER NO. 6 FILTRATION BUILDING

ANNUNCIATOR #10-2	
POINT NO.	WINDOW INSCRIPTION
1	EXISTING
2	EXISTING
3	EXISTING
4	EXISTING
5	EXISTING
6	EXISTING
7	EXISTING
8	EXISTING
9	EXISTING
10	EXISTING
11	FILTER MALFUNCTION A.B.W. FILTER NO. 5 FILTRATION BUILDING
12	FILTER MALFUNCTION A.B.W. FILTER NO. 6 FILTRATION BUILDING
13	EXISTING
14	EXISTING
15	EXISTING
16	EXISTING
17	EXISTING
18	EXISTING

ANNUNCIATOR #10-3	
POINT NO.	WINDOW INSCRIPTION
1	HIGH CAUSTIC LEVEL CAUSTIC TANK NO. 1 FILTRATION BUILDING
2	HIGH CAUSTIC LEVEL CAUSTIC TANK NO. 2 FILTRATION BUILDING
3	HIGH SUMP LEVEL PUMP ROOM FILTRATION BUILDING
4	BLANK (SPARE UNIT)
5	LOW CAUSTIC LEVEL CAUSTIC TANK NO. 1 FILTRATION BUILDING
6	LOW CAUSTIC LEVEL CAUSTIC TANK NO. 2 FILTRATION BUILDING
7	BLANK (SPARE UNIT)
8	BLANK (SPARE UNIT)
9	BLANK (SPARE UNIT)
10	BLANK (SPARE UNIT)
11	BLANK (SPARE UNIT)
12	BLANK (SPARE UNIT)

ANNUNCIATOR #7	
POINT NO.	WINDOW INSCRIPTION
1	EXISTING
2	EXISTING
3	EXISTING
4	EXISTING
5	EXISTING
6	ALUM TANK NO. 3 HIGH LEVEL
7	ALUM TANK NO. 4 HIGH LEVEL
8	
9	
10	ALUM TANK NO. 3 LOW LEVEL
11	ALUM TANK NO. 4 LOW LEVEL
12	
13	
14	
15	
16	EXISTING
17	EXISTING
18	EXISTING
19	EXISTING
20	EXISTING

NOTE:
1. ANNUNCIATOR PANELS TO BE WIRED ACCORDING TO SCHEMATICS ON DRAWINGS E-5 & E-6 AND INSCRIBED AS SHOWN THIS SHEET.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

H CONSULTING ENGINEERS • SURVEYORS
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HUTH ENGINEERS INC.
P.O. BOX 3012 LANCASTER, PA 17604 (717) 569-7021
LANCASTER, PA ALLENTOWN, PA



DES: W.R.S.			
DRN: CADD			
CHK: WRS			
DATE: 8/88	BY: NO.	REVISION	DATE

ANNUNCIATOR SYSTEM
SCHEDULES & DETAILS

LITTLE PATUXENT WASTEWATER TREATMENT PLANT
PHOSPHORUS REMOVAL FACILITIES
CAPITAL PROJECT S-6142
CONTRACT NO. 24-1796
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 40 OF 40
E-8