

LOCATION PLAN  
SCALE: 1"=1000'

# CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION

## WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

CONTRACT 2  
CWSRF NO. 3266

HONORABLE DONNA D. HOLADAY, MAYOR

NEWBURYPORT SEWER COMMISSION

DAVID HANLON, CHAIRMAN

ROBERT COOK

JOHN TOMASZ

ANTHONY J. FURNARI, DIRECTOR OF PUBLIC SERVICES

JOSEPH DUGAN, CHIEF OPERATOR

JULY 2011

VOLUME 1 OF 2

**Weston & Sampson**

Five Centennial Drive, Peabody, Massachusetts 01960

RECORD DRAWING

RECORD DRAWINGS BASED ON AS-BUILT  
INFORMATION PROVIDED BY THE CONTRACTOR.  
DIMENSIONS AND ELEVATIONS HAVE NOT BEEN  
VERIFIED BY WESTON & SAMPSON

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- H-1 HVAC - LEGEND & GENERAL NOTES
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H-GT.1 GRAVITY THICKENER - HVAC PLANS
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- P-1 PLUMBING - LEGEND, GENERAL NOTES & DETAILS
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I-5 INSTRUMENTATION & CONTROL - GENERAL DIAGRAMS AND DETAILS "IV"
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I-LD.1 INSTRUMENTATION & CONTROL - LOOP DIAGRAMS "V"
I-LD.2 INSTRUMENTATION & CONTROL - LOOP DIAGRAMS "VI"
I-LD.3 INSTRUMENTATION & CONTROL - LOOP DIAGRAMS "VII"
I-LD.4 INSTRUMENTATION & CONTROL - LOOP DIAGRAMS "VIII"
I-LD.5 INSTRUMENTATION & CONTROL - LOOP DIAGRAMS "IX"

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- E-0 ELECTRICAL - GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
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E-3 ELECTRICAL - SYSTEM RISER DIAGRAMS "I"
E-4 ELECTRICAL - SYSTEM RISER DIAGRAMS "II"
E-5 ELECTRICAL - SYSTEM RISER DIAGRAMS "III"
E-6 ELECTRICAL - SYSTEM RISER DIAGRAMS "IV"
E-7 ELECTRICAL - SYSTEM RISER DIAGRAMS "V"
E-8 ELECTRICAL - GENERAL DIAGRAMS AND DETAILS "I"
E-9 ELECTRICAL - GENERAL DIAGRAMS AND DETAILS "II"
E-10 ELECTRICAL - GENERAL DIAGRAMS AND DETAILS "III"
E-11 ELECTRICAL - GENERAL DIAGRAMS AND DETAILS "IV"
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E-GT.1 ELECTRICAL - GRAVITY THICKENER POWER/LIGHTING DEMO PLAN
E-GT.2 ELECTRICAL - GRAVITY THICKENER POWER/LIGHTING PROPOSED PLAN
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E-HW.2 ELECTRICAL - HEADWORKS BUILDING PWR/LTG PROPOSED PLANS
E-HW.3 ELECTRICAL - HEADWORKS BUILDING WIRING DETAIL
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- E-OB.2 ELECTRICAL - OPERATIONS BUILDING BASEMENT PROPOSED POWER PLAN
E-OB.3 ELECTRICAL - OPERATIONS BUILDING BASEMENT DEMOLITION LIGHTING PLAN
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E-OB.6 ELECTRICAL - OPERATIONS BUILDING SECOND FLOOR POWER/LIGHTING DEMOLITION PLAN
E-OB.7 ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR DEMOLITION LIGHTING PLAN
E-OB.8 ELECTRICAL - OPERATIONS BUILDING ROOF POWER DEMOLITION PLAN
E-OB.9 ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR PROPOSED POWER PLAN
E-OB.10 ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR PROPOSED LIGHTING PLAN
E-OB.11 ELECTRICAL - OPERATIONS BUILDING MEZZ LEVEL DEMO/PROP POWER & LIGHTING PLAN
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E-OB.13 ELECTRICAL - OPERATIONS BUILDING WIRING DETAILS "II"
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E-OB.17 ELECTRICAL - OPERATIONS BUILDING MCC RISER DIAGRAMS & DETAILS "II"
E-OB.18 ELECTRICAL - OPERATIONS BUILDING MCC RISER DIAGRAMS & DETAILS "III"
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E-OB.20 ELECTRICAL - OPERATIONS BUILDING SCHEDULES "II"
E-PV.1 ELECTRICAL - OPERATIONS BUILDING PV SYSTEM POWER PLAN
E-PV.2 ELECTRICAL - OPERATIONS BUILDING PV SYSTEM WIRING DIAGRAMS

- ELECTRICAL - OPERATIONS BUILDING BASEMENT PROPOSED POWER PLAN
ELECTRICAL - OPERATIONS BUILDING BASEMENT DEMOLITION LIGHTING PLAN
ELECTRICAL - OPERATIONS BUILDING BASEMENT PROPOSED LIGHTING PLAN
ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR DEMOLITION POWER PLAN
ELECTRICAL - OPERATIONS BUILDING SECOND FLOOR POWER/LIGHTING DEMOLITION PLAN
ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR DEMOLITION LIGHTING PLAN
ELECTRICAL - OPERATIONS BUILDING ROOF POWER DEMOLITION PLAN
ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR PROPOSED POWER PLAN
ELECTRICAL - OPERATIONS BUILDING FIRST FLOOR PROPOSED LIGHTING PLAN
ELECTRICAL - OPERATIONS BUILDING MEZZ LEVEL DEMO/PROP POWER & LIGHTING PLAN
ELECTRICAL - OPERATIONS BUILDING WIRING DETAILS "I"
ELECTRICAL - OPERATIONS BUILDING WIRING DETAILS "II"
ELECTRICAL - OPERATIONS BUILDING WIRING DETAILS "III"
ELECTRICAL - OPERATIONS BUILDING WIRING DETAILS "IV"
ELECTRICAL - OPERATIONS BUILDING MCC RISER DIAGRAMS & DETAILS "I"
ELECTRICAL - OPERATIONS BUILDING MCC RISER DIAGRAMS & DETAILS "II"
ELECTRICAL - OPERATIONS BUILDING MCC RISER DIAGRAMS & DETAILS "III"
ELECTRICAL - OPERATIONS BUILDING SCHEDULES "I"
ELECTRICAL - OPERATIONS BUILDING SCHEDULES "II"
ELECTRICAL - OPERATIONS BUILDING PV SYSTEM POWER PLAN
ELECTRICAL - OPERATIONS BUILDING PV SYSTEM WIRING DIAGRAMS

ABBREVIATION KEY SHEET

PROCESS AREAS

- AB - AERATION BLOWER BUILDING
AD - AEROBIC DIGESTORS
AT - AERATION TANKS
CC - CHLORINE CONTACT TANKS
DI - DISINFECTION
EP - EFFLUENT PUMPING
FC - FERRIC CHLORIDE CONTAINMENT AREA
GT - GRAVITY THICKENERS
LB - OPERATIONS CONTROL & LAB BUILDING
LD - INSTRUMENTATION LOOP DIAGRAMS
OF - OUTFALL
PC - PRIMARY CLARIFIERS
HW - HEADWORKS
IP - INFLUENT PUMPING
OB - OPERATIONS BUILDING (#157 WATER ST.)
OC - ODOR CONTROL SYSTEM (BIOFILTER)
PP - PRIMARY SLUDGE PUMPING
SC - SECONDARY CLARIFIERS
SP - SECONDARY SLUDGE PUMPING

DISCIPLINES

- G - GENERAL
C - CIVIL
D - DEMOLITION
A - ARCHITECTURAL
S - STRUCTURAL
M - MECHANICAL
H - HVAC
P - PLUMBING
I - INSTRUMENTATION
E - ELECTRICAL
F - FIRE PROTECTION

NOTES:

- \*A - AB.4 SHEET 34 OF 248 AERATION BUILDING - WALL SECTIONS & DETAILS
A - GT.2 SHEET 43 OF 248 GRAVITY THICKENERS - REPAIR - ELEVATIONS

INDICATES SUPPLEMENTAL INFORMATION AVAILABLE IN VOLUME II
INDICATES WORK DELETED FROM CONTRACT 2 SCOPE

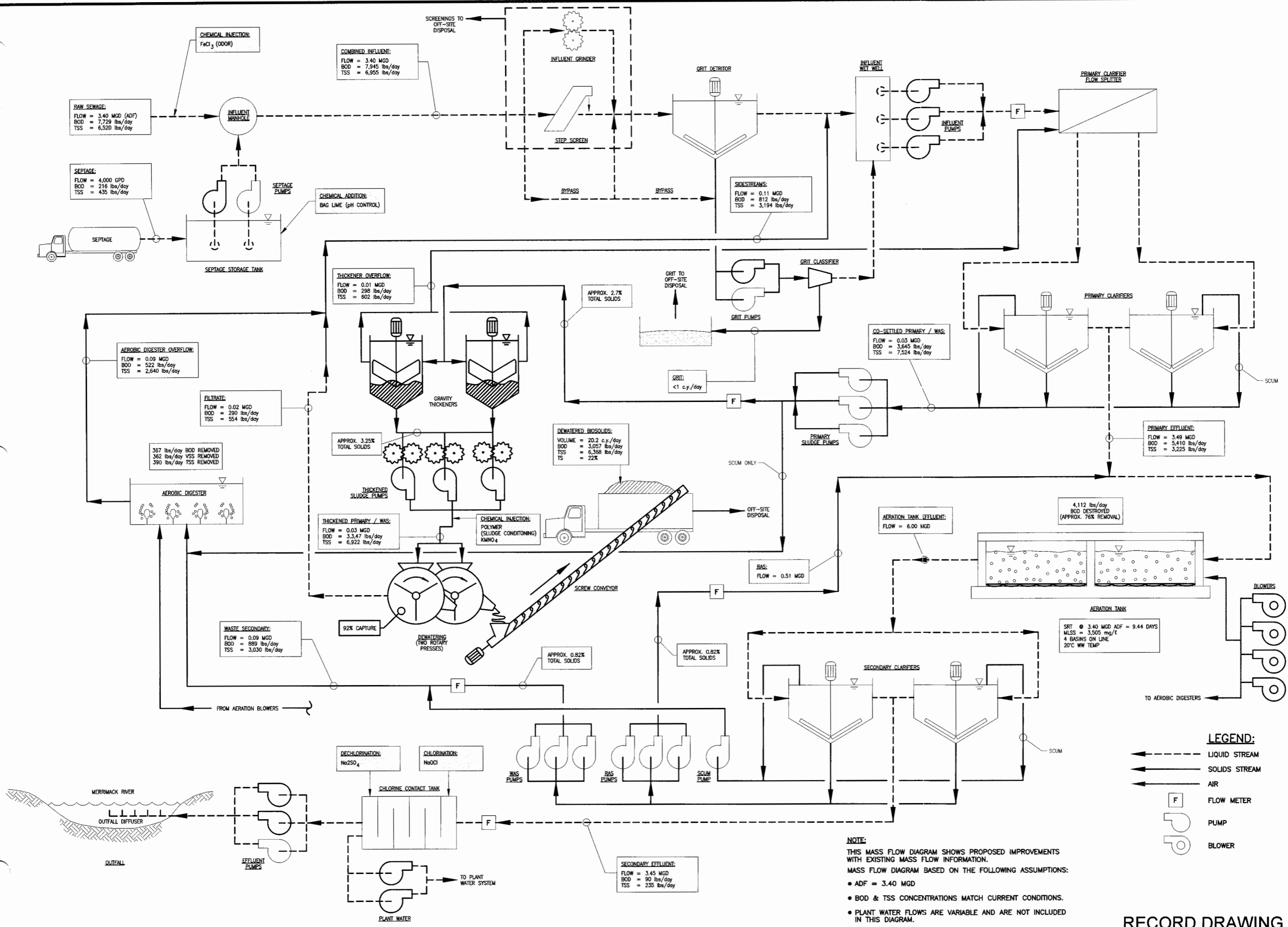
Weston & Sampson logo and contact info. Project title: CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT DRAWING INDEX. Job No: 2090269, Contract: NONE, Scale: GEN\_2. Drawing No: 189-201. Includes a table for drawing records and a 'G-1' label.

RECORD DRAWING

RECORD DRAWINGS BASED ON AS-BUILT INFORMATION PROVIDED BY THE CONTRACTOR. DIMENSIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED BY WESTON & SAMPSON



G:\Newburyport\_MA\1010269\_WWTF\Design\CAD\DWG\Drawings - Record Drawings\Mass Flow\_2.dwg



1	05/2014	Dr. By	MJM	App. By	KMN	RECORD DRAWING
		Chk. By	ELM			Description
						A
						P
						R
						O
						V
						E
						D
						DATE

REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**MASS FLOW DIAGRAM WITH PROPOSED IMPROVEMENTS**

SCALE: MASS-FLOW AS NOTED

CONTRACT: 2090269

APP. BY: KMN

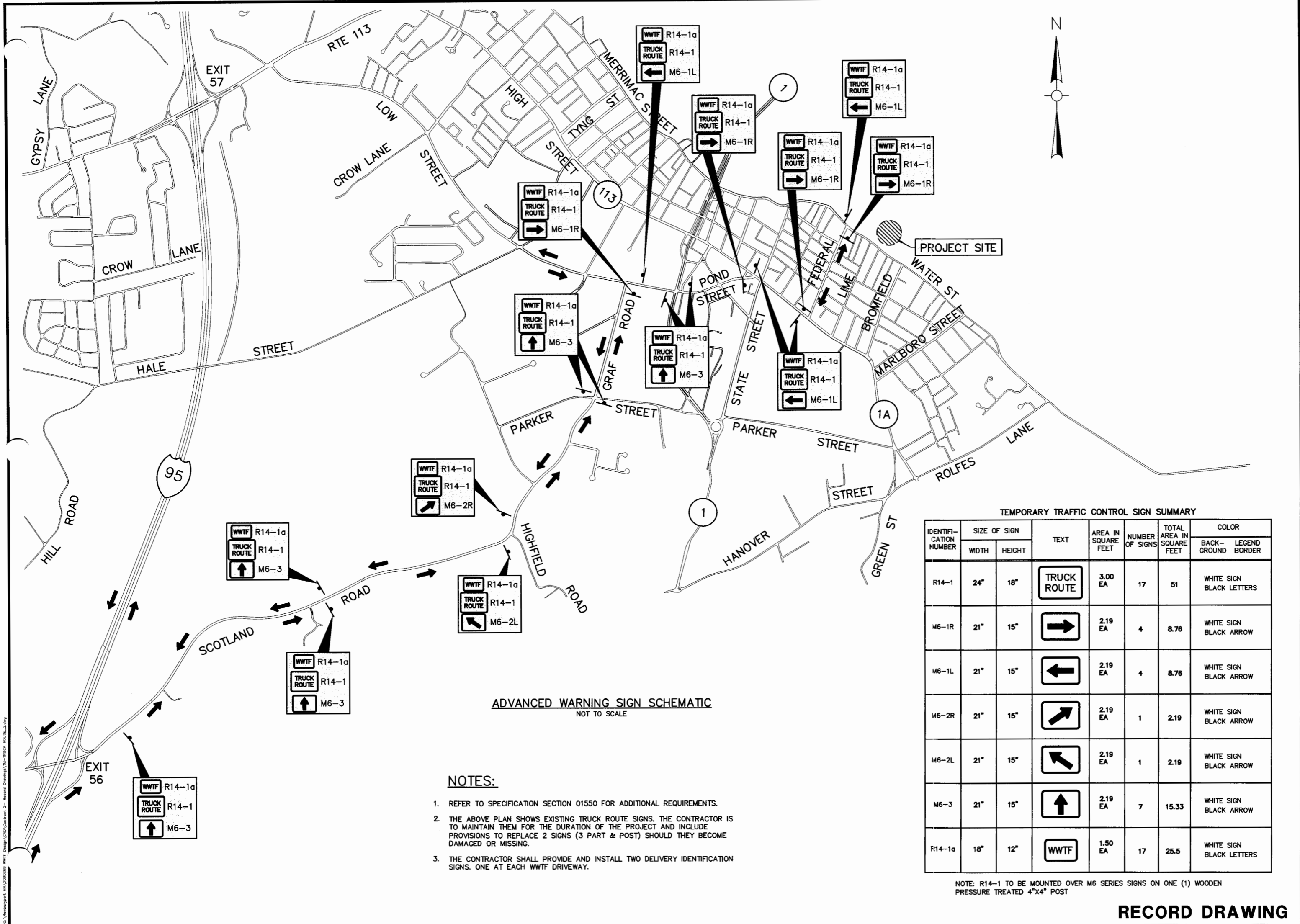
CHK. BY: CNR

DES. BY: PJS

DR. BY: MAS

FILE NO. 189-199

SHEET 4 OF 202



ADVANCED WARNING SIGN SCHEMATIC  
NOT TO SCALE

**NOTES:**

1. REFER TO SPECIFICATION SECTION 01550 FOR ADDITIONAL REQUIREMENTS.
2. THE ABOVE PLAN SHOWS EXISTING TRUCK ROUTE SIGNS. THE CONTRACTOR IS TO MAINTAIN THEM FOR THE DURATION OF THE PROJECT AND INCLUDE PROVISIONS TO REPLACE 2 SIGNS (3 PART & POST) SHOULD THEY BECOME DAMAGED OR MISSING.
3. THE CONTRACTOR SHALL PROVIDE AND INSTALL TWO DELIVERY IDENTIFICATION SIGNS. ONE AT EACH WWTF DRIVEWAY.

**TEMPORARY TRAFFIC CONTROL SIGN SUMMARY**

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	AREA IN SQUARE FEET	NUMBER OF SIGNS	TOTAL AREA IN SQUARE FEET	COLOR	
	WIDTH	HEIGHT					BACK-GROUND	LEGEND BORDER
R14-1	24"	18"	TRUCK ROUTE	3.00 EA	17	51	WHITE SIGN	BLACK LETTERS
M6-1R	21"	15"	→	2.19 EA	4	8.76	WHITE SIGN	BLACK ARROW
M6-1L	21"	15"	←	2.19 EA	4	8.76	WHITE SIGN	BLACK ARROW
M6-2R	21"	15"	↗	2.19 EA	1	2.19	WHITE SIGN	BLACK ARROW
M6-2L	21"	15"	↖	2.19 EA	1	2.19	WHITE SIGN	BLACK ARROW
M6-3	21"	15"	↑	2.19 EA	7	15.33	WHITE SIGN	BLACK ARROW
R14-1a	18"	12"	WWTF	1.50 EA	17	25.5	WHITE SIGN	BLACK LETTERS

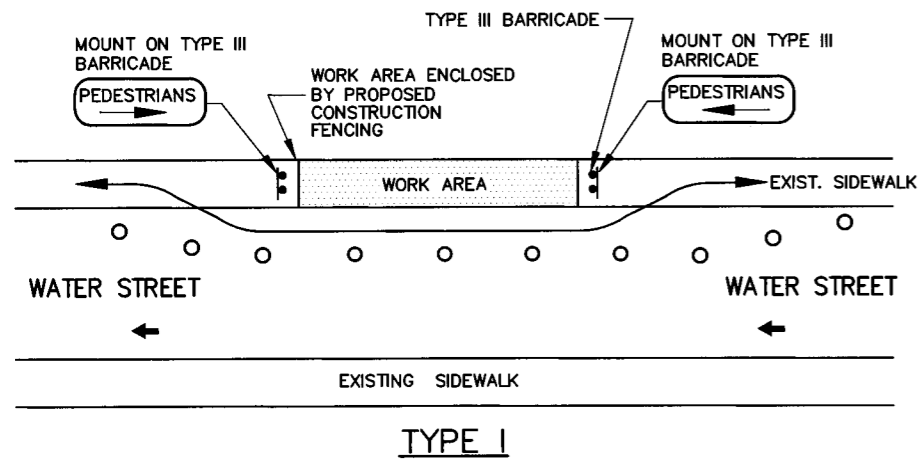
NOTE: R14-1 TO BE MOUNTED OVER M6 SERIES SIGNS ON ONE (1) WOODEN PRESSURE TREATED 4"x4" POST

**RECORD DRAWING**

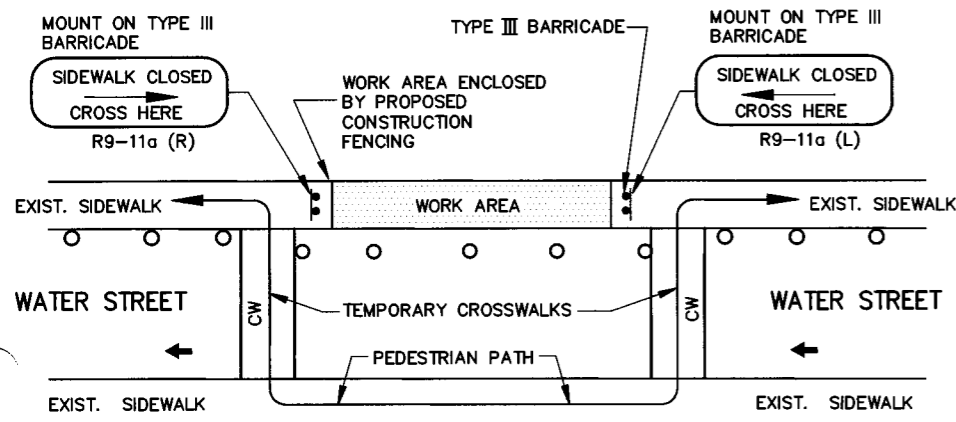
1	05/2014	MAM	Dr. By	ELM	Chk. By	KMN	App. By	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	App. By	App. By	App. By	Description
A P P R O V E D								
								DATE
								REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**TRAFFIC MANAGEMENT PLAN**  
**TRUCK ROUTE**

SCALE: AS NOTED  
JOB NO. 2090269  
CONTRACT: 2  
DR. BY: RWS  
CHK. BY: LFK  
APP. BY: KMN



**TYPE I**

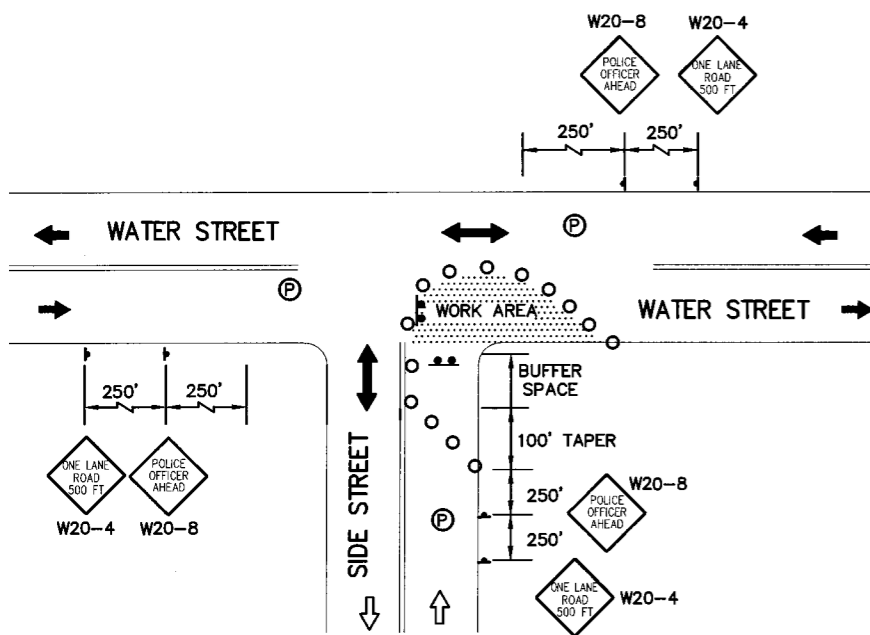


**TYPE II**

TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING AND AS DIRECTED BY THE ENGINEER.

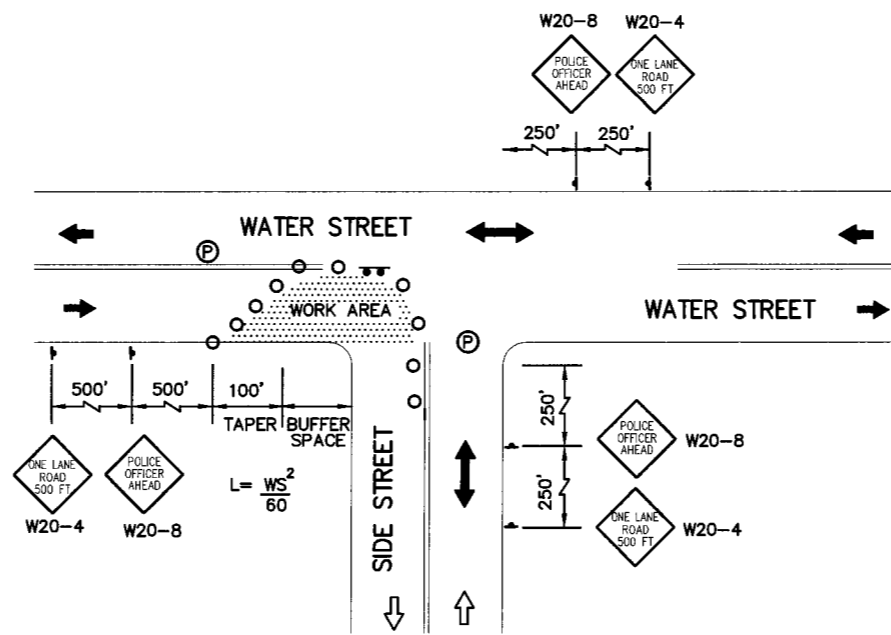
**PEDESTRIAN BYPASS**

N.T.S.



**INTERSECTION LANE CLOSURE-TYPE I**

N.T.S.



**INTERSECTION LANE CLOSURE-TYPE II**

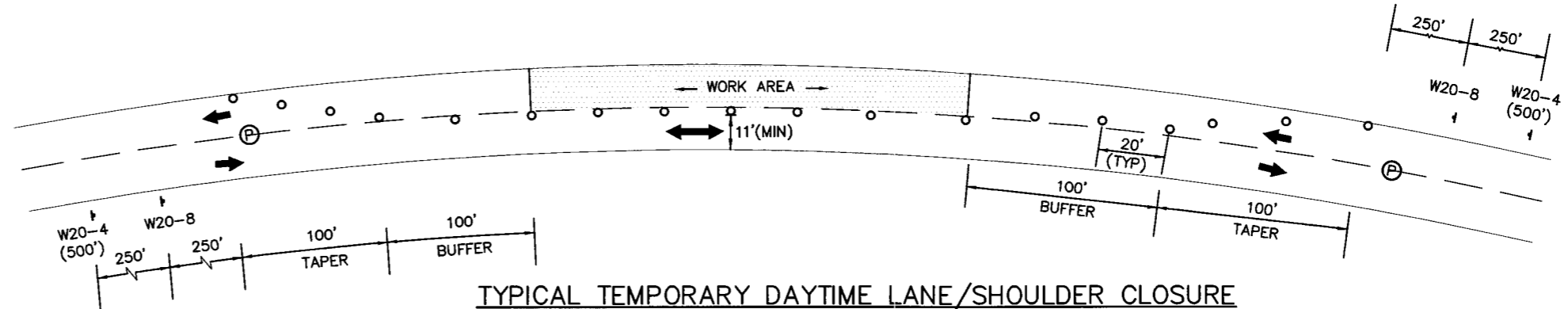
N.T.S.

**LEGEND**

- ◻ REFLECTORIZED CHANNELIZING DEVICE
- REFLECTORIZED DRUM WITH LIGHT
- ← TRAFFIC FLOW DURING CONSTRUCTION
- ↔ NORMAL TRAFFIC FLOW
- Ⓟ POLICE DETAIL OFFICER
- Ⓜ PORTABLE BREAKAWAY BARRICADE TYPE III
- Ⓝ CONSTRUCTION SIGN
- ▨ WORK AREA
- N.T.S. NOT TO SCALE
- ARROW BOARD

**NOTES:**

1. PLACEMENT OF ALL CONSTRUCTION SIGNS, DRUMS, BARRICADES, TRAFFIC DEVICES AND THE SHAPE, SIZE & COLOR OF ALL TEMPORARY TRAFFIC SIGNS SHALL CONFORM WITH THE 2003 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND REVISIONS.
2. ADVANCE WARNING SIGN PLACEMENT AND TAPER LENGTH TO BE ADJUSTED ACCORDING TO STREET CONDITIONS AND DRIVEWAY OPENINGS.
3. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES.
4. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
5. NONESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.
6. PEDESTRIANS SHALL BE PROVIDED WITH ACCESS AND SAFE PASSAGE THROUGH THE TEMPORARY TRAFFIC CONTROL ZONE AT ALL TIMES.
7. ADVISORY SPEED PLATES (W13-1) SHALL BE USED IF APPLICABLE AND AS DIRECTED BY THE ENGINEER.
8. MAINTAIN ONE LANE (MIN. 10' WIDTH) AT ALL TIMES DURING CONSTRUCTION.



**TYPICAL TEMPORARY DAYTIME LANE/SHOULDER CLOSURE (ONE LANE - BI-DIRECTIONAL)**

N.T.S.

**TEMPORARY TRAFFIC SIGN SUMMARY**

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT
	WIDTH	HEIGHT	
G20-2a	48"	24"	END ROAD WORK
W13-1 (OPT)	18"	18"	M.P.H.
W20-1	48"	48"	ROAD WORK AHEAD
W20-4	48"	48"	ONE LANE ROAD 500 FT
W20-8	48"	48"	POLICE OFFICER AHEAD

1	05/20/14	MJM	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					REGISTERED PROFESSIONAL ENGINEER
					DATE

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PIPE SCHEDULE

ABBREVIATION	DESCRIPTION	LOCATION	MATERIAL	JOINT SYSTEM
ADO	AEROBIC DIGESTER OVERFLOW	INTERIOR EXISTING	-	-
		EXTERIOR EXISTING	DI	MJ
AIR	AIR	INTERIOR EXISTING	PVC	VARIES
		INTERIOR PROPOSED 1-1/2" OR SMALLER	COPPER CLASS "M"	SOLDERED
		INTERIOR PROPOSED 2"-9"	304L SS SCH. 5S	FLANGED
		INTERIOR PROPOSED LARGER THAN 9"	SS & FRP	WELDED OR FLANGED
		EXTERIOR EXISTING	FRP & CI	WELDED OR FLANGED
		EXTERIOR PROPOSED	SS & DI	WELDED OR FLANGED
ATE	AERATION BASIN EFFLUENT	EXTERIOR EXISTING	DI	MJ
		EXTERIOR PROPOSED	DI	MJ
CHEM	CHEMICAL FEED	INTERIOR	SEE NOTE 1	-
		EXTERIOR	SEE NOTE 1	-
DSL	DIGESTED SLUDGE	EXTERIOR EXISTING	DI	MJ
		EXTERIOR PROPOSED	DI	MJ
DWG	DEWATERED GRIT	INTERIOR EXISTING	CONVEYOR	-
		INTERIOR PROPOSED	CONVEYOR	-
DWS	DEWATERED SLUDGE	INTERIOR EXISTING	CONVEYOR	-
		INTERIOR PROPOSED	CONVEYOR	-
EFF	WWTF EFFLUENT	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	PLASTIC	WELDED OR FLANGED
FIL	FILTRATE (DEWATERING OF GRIT)	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
GTO	GRAVITY THICKENER OVERFLOW	INTERIOR EXISTING	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
INF	INFLUENT	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	RCP-DI-CI	VARIES
PCE	PRIMARY CLARIFIER EFFLUENT	INTERIOR EXISTING	-	-
		EXTERIOR EXISTING	DI	MJ
PSL	PRIMARY SLUDGE	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
		EXTERIOR PROPOSED	DI	MJ

NOTES:

- REFER TO INDIVIDUAL DRAWINGS FOR CHEMICAL FEED PIPE COMPOSITION.
- REFER TO SPECIFICATIONS FOR PIPE CLASSES AND SPECIFIC JOINTING REQUIREMENTS.

ABBREVIATION	DESCRIPTION	LOCATION	MATERIAL	JOINT SYSTEM
PCE	PRIMARY CLARIFIER EFFLUENT	INTERIOR EXISTING	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
PSL	PRIMARY SLUDGE	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
		EXTERIOR PROPOSED	DI	MJ
RAS	RETURN ACTIVATED SLUDGE	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
RAW	RAW SEWAGE	EXTERIOR EXISTING	BRICK SEWER	-
		INTERIOR EXISTING	CI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
SC	SCUM	EXTERIOR EXISTING	DI	MJ
		EXTERIOR PROPOSED	DI	MJ
		INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
SCE	SECONDARY CLARIFIER EFFLUENT	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
SD	STORMWATER/DRAINAGE	EXTERIOR EXISTING	RCP, DI, CMP	VARIES
		EXTERIOR PROPOSED	PVC	GASKETED
PW	PLANT WATER	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
SEP	SEPTAGE	INTERIOR EXISTING	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
SG	SUSPENDED GRIT	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	CI	MJ
TSL	THICKENED SLUDGE	INTERIOR EXISTING	DI	FLANGED
		INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
W	WATER MAIN (POTABLE)	INTERIOR PROPOSED	DI	FLANGED
		EXTERIOR EXISTING	DI	MJ
WAS	WASTE ACTIVATED SLUDGE	INTERIOR EXISTING	DI	FLANGED
		EXISTING	CI	MJ
		PROPOSED	DI	MJ

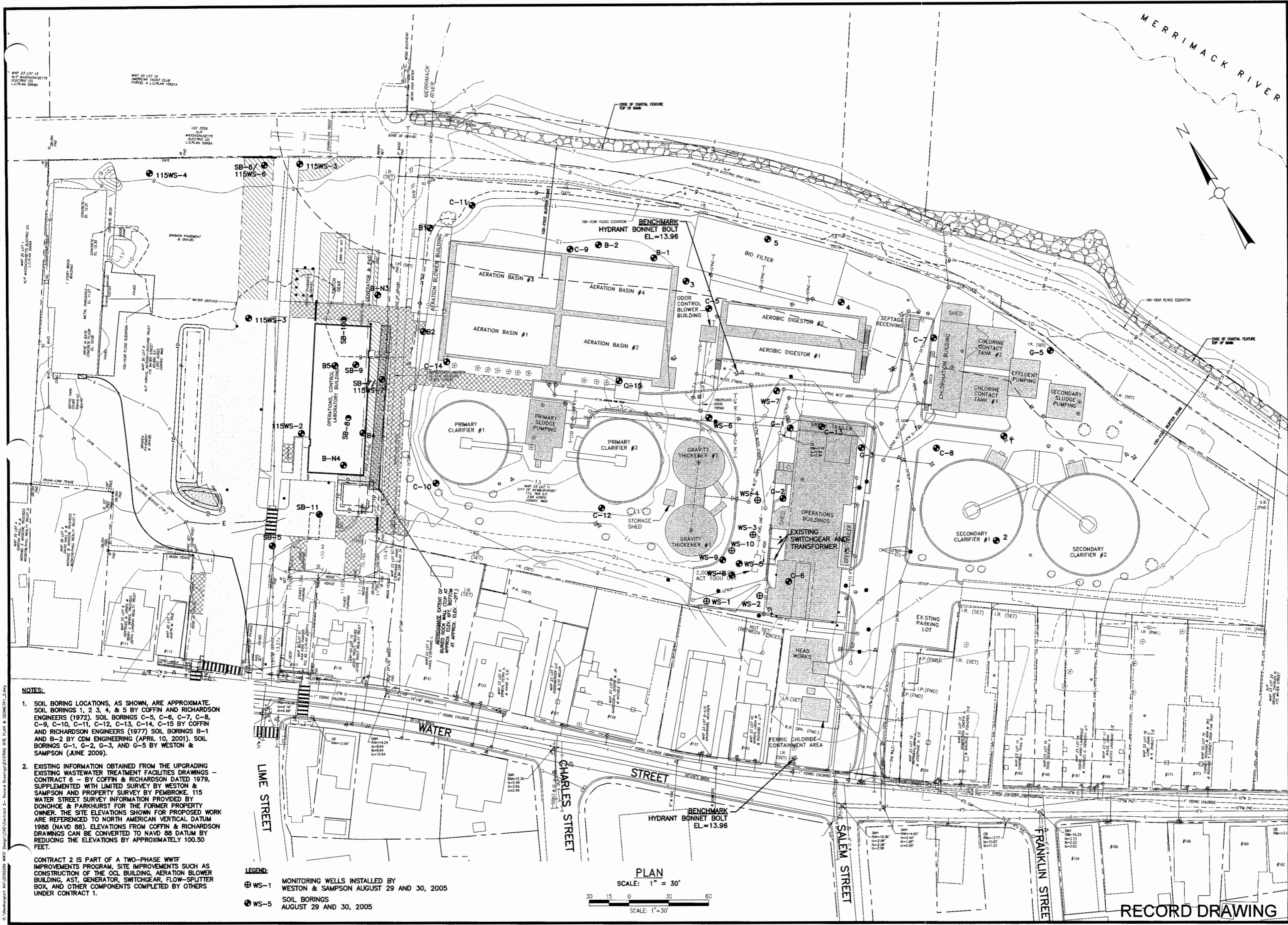
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1	05/2014	M.M.	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					REGISTERED PROFESSIONAL ENGINEER
					DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES

WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 PROCESS PIPE SCHEDULE INDEX  
 SCALE: AS NOTED  
 JOB NO. 2090269  
 CONTRACT: 2  
 CADD NO. 189-196  
 PIPE SCHEDULE  
 DR. BY: HBD  
 DES. BY: MAS  
 CHK. BY: CNR  
 APP. BY: KMN

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**NOTES:**

- SOIL BORING LOCATIONS, AS SHOWN, ARE APPROXIMATE. SOIL BORINGS 1, 2, 3, 4, & 5 BY COFFIN AND RICHARDSON ENGINEERS (1972). SOIL BORINGS C-5, C-6, C-7, C-8, C-9, C-10, C-11, C-12, C-13, C-14, C-15 BY COFFIN AND RICHARDSON ENGINEERS (1977). SOIL BORINGS B-1 AND B-2 BY CDM ENGINEERS (APRIL 10, 2001). SOIL BORINGS C-1, C-2, C-3, AND G-5 BY WESTON & SAMPSON (JUNE 2009).
- EXISTING INFORMATION OBTAINED FROM THE UPGRADING EXISTING WASTEWATER FACILITIES DRAWINGS - CONTRACT 6 - BY COFFIN & RICHARDSON DATED 1979, SUPPLEMENTED WITH LIMITED SURVEY BY WESTON & SAMPSON AND PROPERTY SURVEY BY PEMBROKE. 115 WATER STREET SURVEY INFORMATION PROVIDED BY DONOHOE & PARKHURST FOR THE FORMER PROPERTY OWNER. THE SITE ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE ELEVATIONS BY APPROXIMATELY 100.50 FEET.

**LEGEND:**

- ⊕ WS-1 MONITORING WELLS INSTALLED BY WESTON & SAMPSON AUGUST 29 AND 30, 2005
- ⊙ WS-5 SOIL BORINGS AUGUST 29 AND 30, 2005

**PLAN**  
SCALE: 1" = 30'  
30 15 0 30 60  
SCALE: 1" = 30'

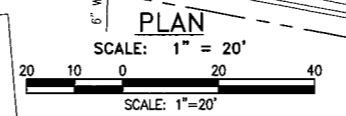
1	05/2014	RWS	EAM	KMN	RECORD DRAWING
No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	R	O
		V	E	D	
					DATE

REGISTERED PROFESSIONAL ENGINEER





- NOTES:**
- EXISTING INFORMATION OBTAINED FROM THE UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES DRAWINGS - CONTRACT 6 - BY COFFIN & RICHARDSON DATED 1979, SUPPLEMENTED WITH LIMITED SURVEY BY WESTON & SAMPSON AND PROPERTY SURVEY BY PEMBROKE, 115 WATER STREET SURVEY INFORMATION PROVIDED BY DONOHOE & PARKHURST FOR THE FORMER PROPERTY OWNER. THE SITE ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE ELEVATIONS BY APPROXIMATELY 100.50 FEET.
  - CONTRACT 2 IS PART OF A TWO-PHASE WWTF IMPROVEMENTS PROGRAM. SITE IMPROVEMENTS SUCH AS CONSTRUCTION OF THE OCL BUILDING, AERATION BLOWER BUILDING, AST, GENERATOR, SWITCHGEAR, FLOW-SPLITTER BOX, SELECT YARD-PIPING, AND OTHER COMPONENTS COMPLETED BY OTHERS UNDER CONTRACT 1.



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No.	Date	Dr. By	Chk. By	App. By	App. By	App. By	App. By	Description	DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

EXISTING YARD PIPING

SCALE: NOTED

CONTRACT: 2

JOB NO. 2090269

DR. BY: PJS

CHK. BY: LRT

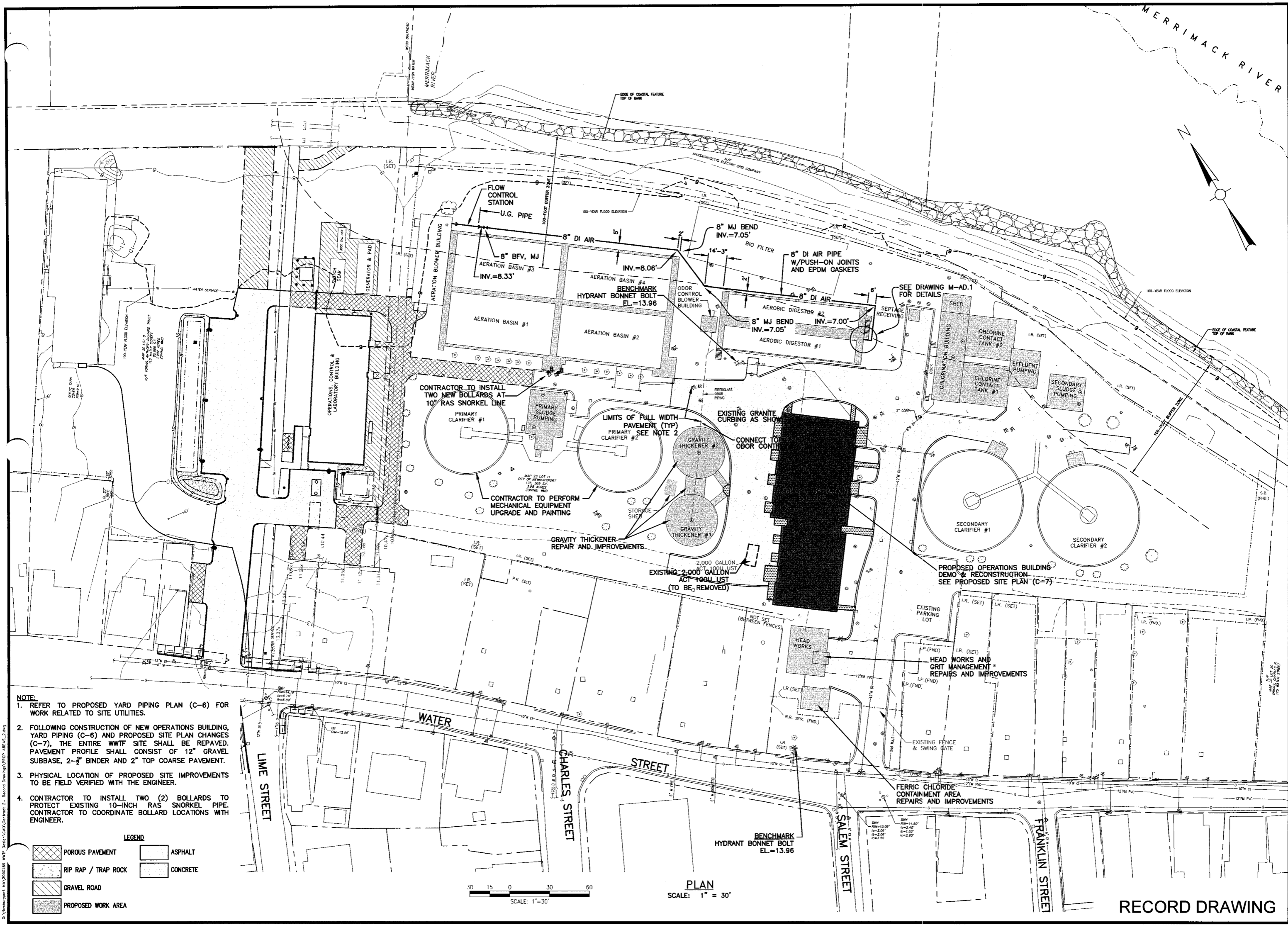
APP. BY: KMN

CADD NO. YARD PIPING

FILE NO. 199-194

RECORD DRAWING

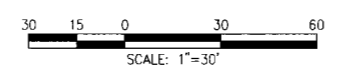
SHEET 9 OF 202



- NOTE:**
1. REFER TO PROPOSED YARD PIPING PLAN (C-6) FOR WORK RELATED TO SITE UTILITIES.
  2. FOLLOWING CONSTRUCTION OF NEW OPERATIONS BUILDING, YARD PIPING (C-6) AND PROPOSED SITE PLAN CHANGES (C-7), THE ENTIRE WWTF SITE SHALL BE REPAVED. PAVEMENT PROFILE SHALL CONSIST OF 12" GRAVEL SUBBASE, 2-1/2" BINDER AND 2" TOP COARSE PAVEMENT.
  3. PHYSICAL LOCATION OF PROPOSED SITE IMPROVEMENTS TO BE FIELD VERIFIED WITH THE ENGINEER.
  4. CONTRACTOR TO INSTALL TWO (2) BOLLARDS TO PROTECT EXISTING 10-INCH RAS SNORKEL PIPE. CONTRACTOR TO COORDINATE BOLLARD LOCATIONS WITH ENGINEER.

**LEGEND**

	POROUS PAVEMENT		ASPHALT
	RIP RAP / TRAP ROCK		CONCRETE
	GRAVEL ROAD		
	PROPOSED WORK AREA		



**PLAN**  
SCALE: 1" = 30'

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No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	P	O
		V	E	D	
					DATE
					REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

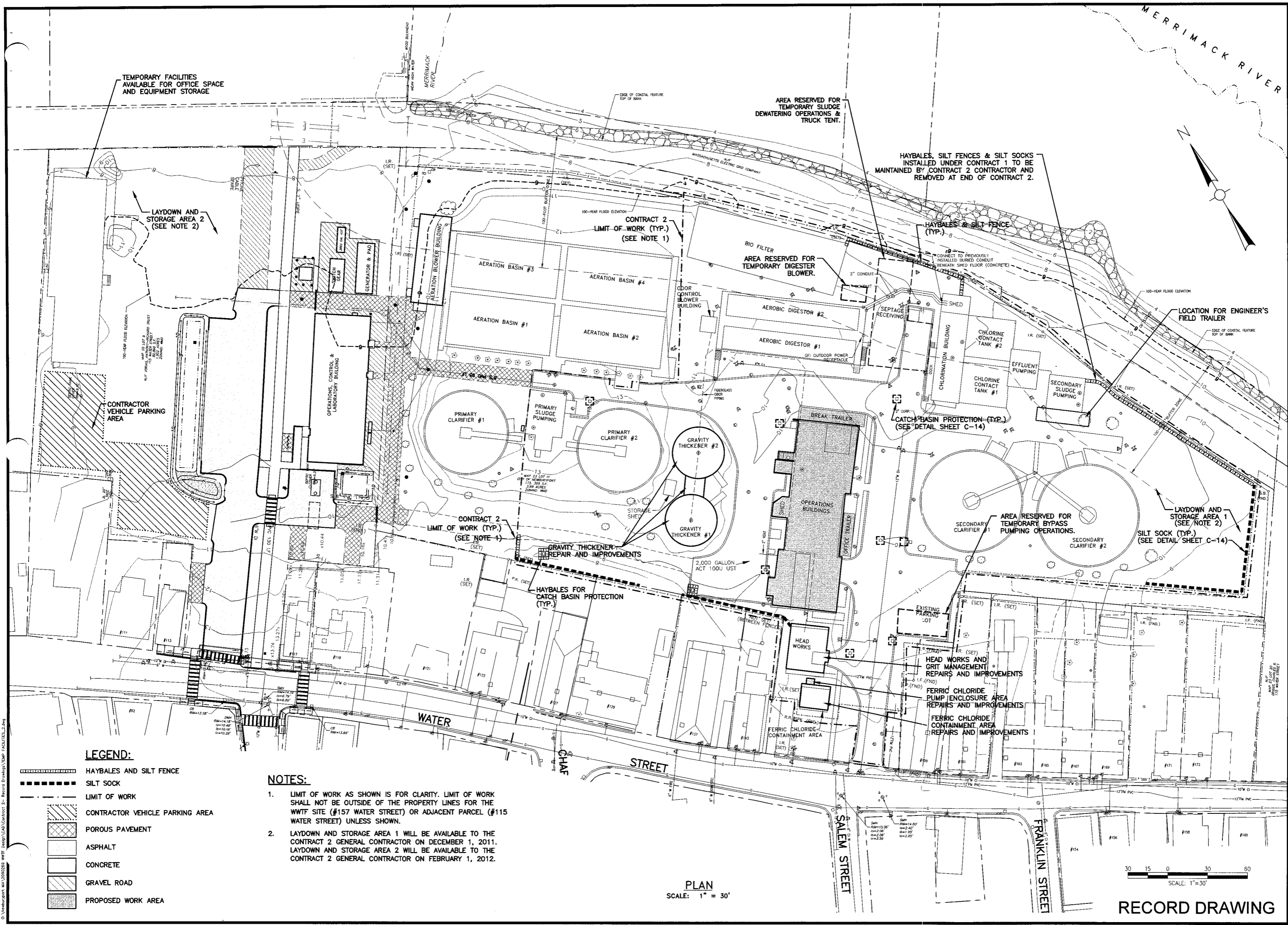
**SITE PLAN**  
**AREAS OF PROPOSED WORK**

SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2090269  
 FILE NO. 189-193

DRY BY	RWS	CNR	LRT	KMN
CHK. BY				
APP. BY				

**RECORD DRAWING**

**SHEET 10 OF 202**



TEMPORARY FACILITIES AVAILABLE FOR OFFICE SPACE AND EQUIPMENT STORAGE

LAYDOWN AND STORAGE AREA 2 (SEE NOTE 2)

AREA RESERVED FOR TEMPORARY SLUDGE DEWATERING OPERATIONS & TRUCK TENT.

HAYBALES, SILT FENCES & SILT SOCKS INSTALLED UNDER CONTRACT 1 TO BE MAINTAINED BY CONTRACT 2 CONTRACTOR AND REMOVED AT END OF CONTRACT 2.

CONTRACT 2 LIMIT OF WORK (TYP.) (SEE NOTE 1)

BIO FILTER AREA RESERVED FOR TEMPORARY DIGESTER BLOWER.

CONTRACTOR VEHICLE PARKING AREA

LOCATION FOR ENGINEER'S FIELD TRAILER

CONTRACT 2 LIMIT OF WORK (TYP.) (SEE NOTE 1)

CATCH BASIN PROTECTION (TYP.) (SEE DETAIL SHEET C-14)

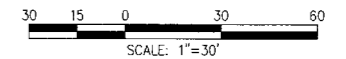
LAYDOWN AND STORAGE AREA 1 (SEE NOTE 2)

**LEGEND:**

	HAYBALES AND SILT FENCE
	SILT SOCK
	LIMIT OF WORK
	CONTRACTOR VEHICLE PARKING AREA
	POROUS PAVEMENT
	ASPHALT
	CONCRETE
	GRAVEL ROAD
	PROPOSED WORK AREA

- NOTES:**
- LIMIT OF WORK AS SHOWN IS FOR CLARITY. LIMIT OF WORK SHALL NOT BE OUTSIDE OF THE PROPERTY LINES FOR THE WWTF SITE (#157 WATER STREET) OR ADJACENT PARCEL (#115 WATER STREET) UNLESS SHOWN.
  - LAYDOWN AND STORAGE AREA 1 WILL BE AVAILABLE TO THE CONTRACT 2 GENERAL CONTRACTOR ON DECEMBER 1, 2011. LAYDOWN AND STORAGE AREA 2 WILL BE AVAILABLE TO THE CONTRACT 2 GENERAL CONTRACTOR ON FEBRUARY 1, 2012.

PLAN SCALE: 1" = 30'



RECORD DRAWING

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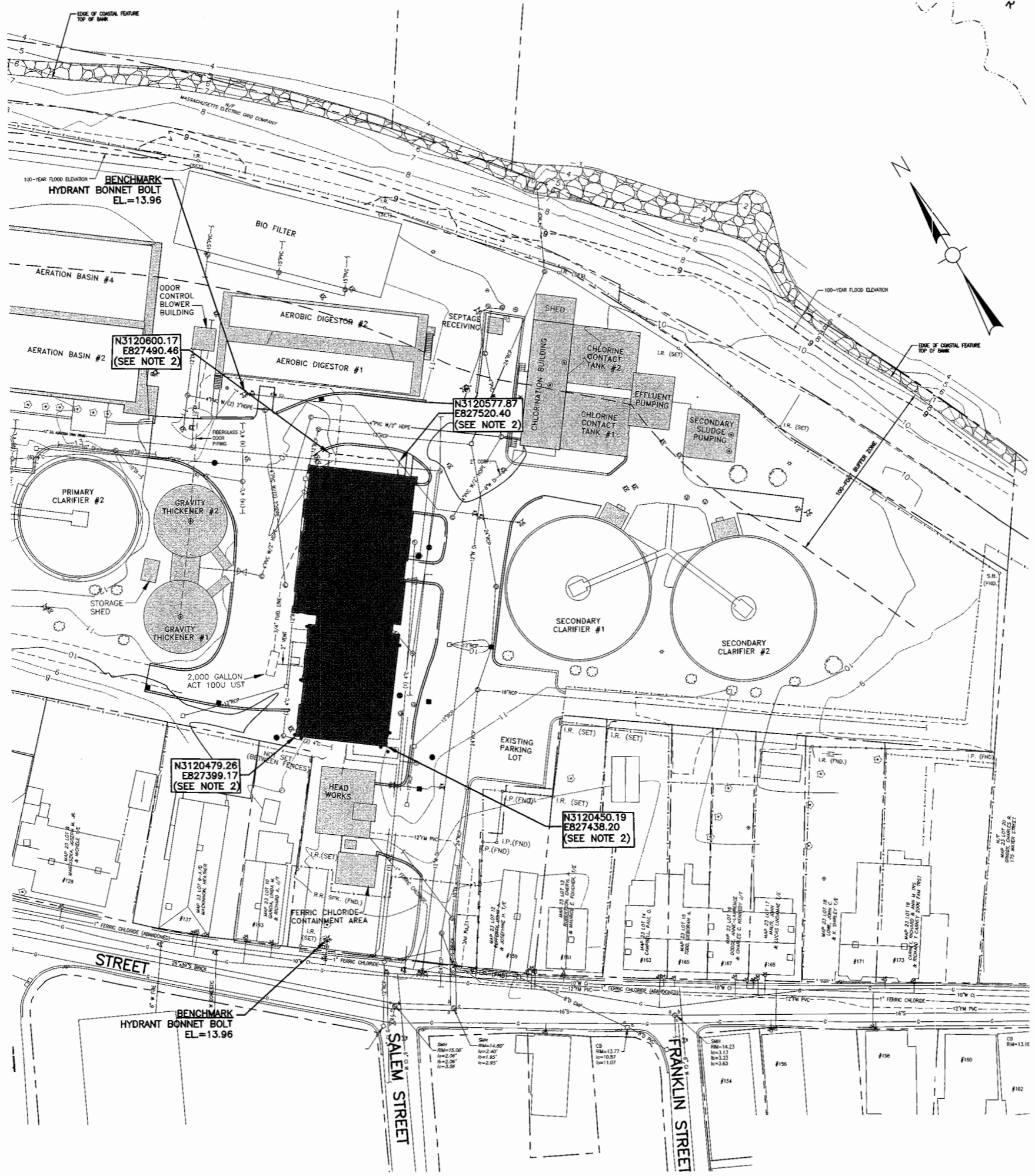
No.	Date	Dr. By	Chk. By	App. By	Description
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DATE \_\_\_\_\_

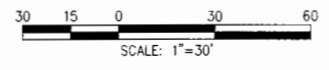
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 SITE PLAN  
 TEMPORARY FACILITIES  
 SCALE: AS NOTED  
 CONTRACT: 2 2090269  
 JOB NO.  
 CAD NO. TEMP FAC  
 DR BY: RWS  
 DSN BY: CNR  
 CHK BY: LRT  
 APP BY: KMN



**SOURCE:**  
 PLAN DEVELOPED FROM INFORMATION TAKEN FROM A PLAN ENTITLED 'MONUMENTATION PLAN NEWBURYPORT, MASSACHUSETTS PREPARED FOR MUNICIPAL SEWERAGE TREATMENT FACILITY' BY PEMBROKE LAND SURVEY CO., P.O. BOX 205 SALEM, NH P.O. BOX 491 NEWBURYPORT, MA DATED FEBRUARY 3, 1998, PLAN ENTITLED 'SKETCH 1 SEPTEMBER 2008 ADDITIONAL TESTING 115 WATER STREET, NEWBURYPORT, MA' BY DONOHOE AND PARKHURST, INC. DATED OCTOBER 2, 2008 AND SUPPLEMENTED WITH INFORMATION TAKEN FROM THE NEWBURYPORT GIS AND FROM SURVEYS PERFORMED BY WESTON & SAMPSON ENGINEERS IN 2005 AND 2009.

**NOTES:**  
 1. EXISTING INFORMATION OBTAINED FROM THE UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES DRAWINGS - CONTRACT 6 - BY COFFIN & RICHARDSON DATED 1979, SUPPLEMENTED WITH LIMITED SURVEY BY WESTON & SAMPSON AND PROPERTY SURVEY BY PEMBROKE, 115 WATER STREET SURVEY INFORMATION PROVIDED BY DONOHOE & PARKHURST FOR THE FORMER PROPERTY OWNER. THE SITE ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE ELEVATIONS BY APPROXIMATELY 100.50 FEET.  
 2. COORDINATES SHOWN ARE APPROXIMATE. BUILDING TO BE LOCATED BASED ON OFFSETS PROVIDED AND AS DETERMINED IN THE FIELD BY THE CONTRACTOR.  
 3. CONTRACT 2 IS PART OF A TWO-PHASE WWTF IMPROVEMENTS PROGRAM. SITE IMPROVEMENTS SUCH AS CONSTRUCTION OF THE OCL BUILDING, SITE IMPROVEMENTS SUCH AS CONSTRUCTION OF THE OCL BUILDING, AERATION BLOWER BUILDING, AST, GENERATOR, SWITCHGEAR, FLOW-SPLITTER BOX, AND OTHER COMPONENTS COMPLETED BY OTHERS UNDER CONTRACT 1.

**PLAN**  
 SCALE: 1" = 30'



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No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	R	O
		V	E	D	
					DATE
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**PROPOSED SITE GEOMETRY**

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO.: 2

DR. BY: PJS  
 CK. BY: CNR  
 APP. BY: KMN

FILE NO.: 189-191

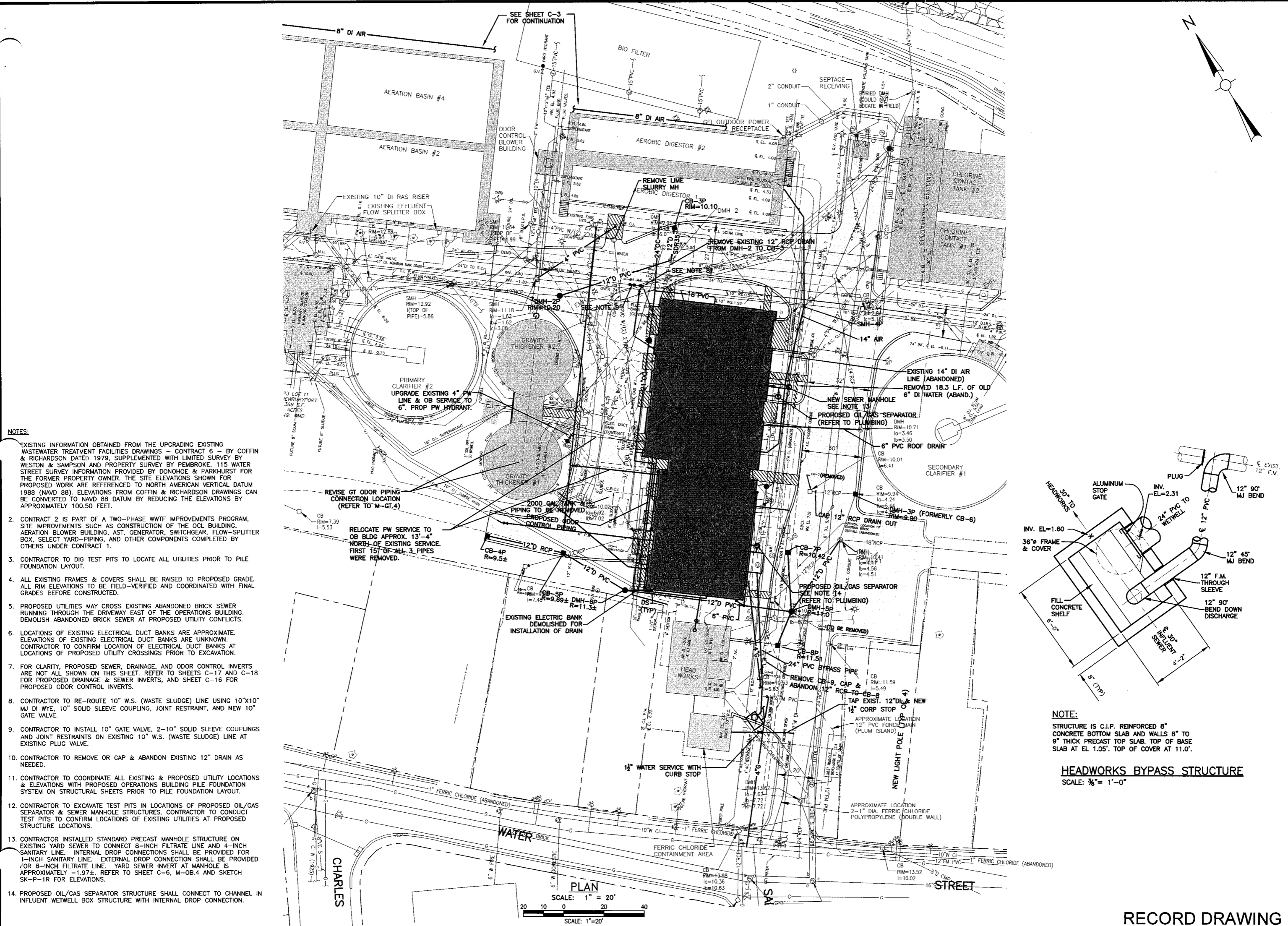
RECORD DRAWING

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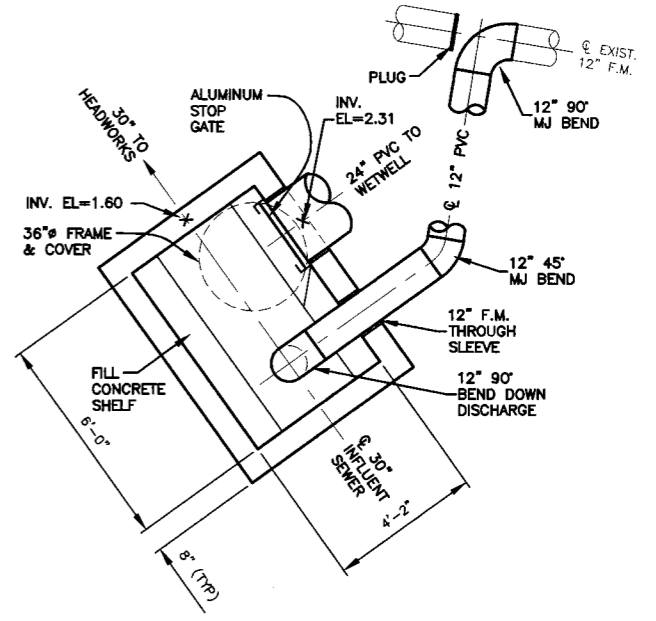
1	05/2014	RWS	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Ch. By	App. By	Description
		A	P	P	R
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					REGISTERED PROFESSIONAL ENGINEER
					DATE

FILE NO.	189-190
CONTRACT	2
SCALE	NOTED
JOB NO.	2090269
DR BY	DRS
CHK BY	CNR
APP BY	KMN

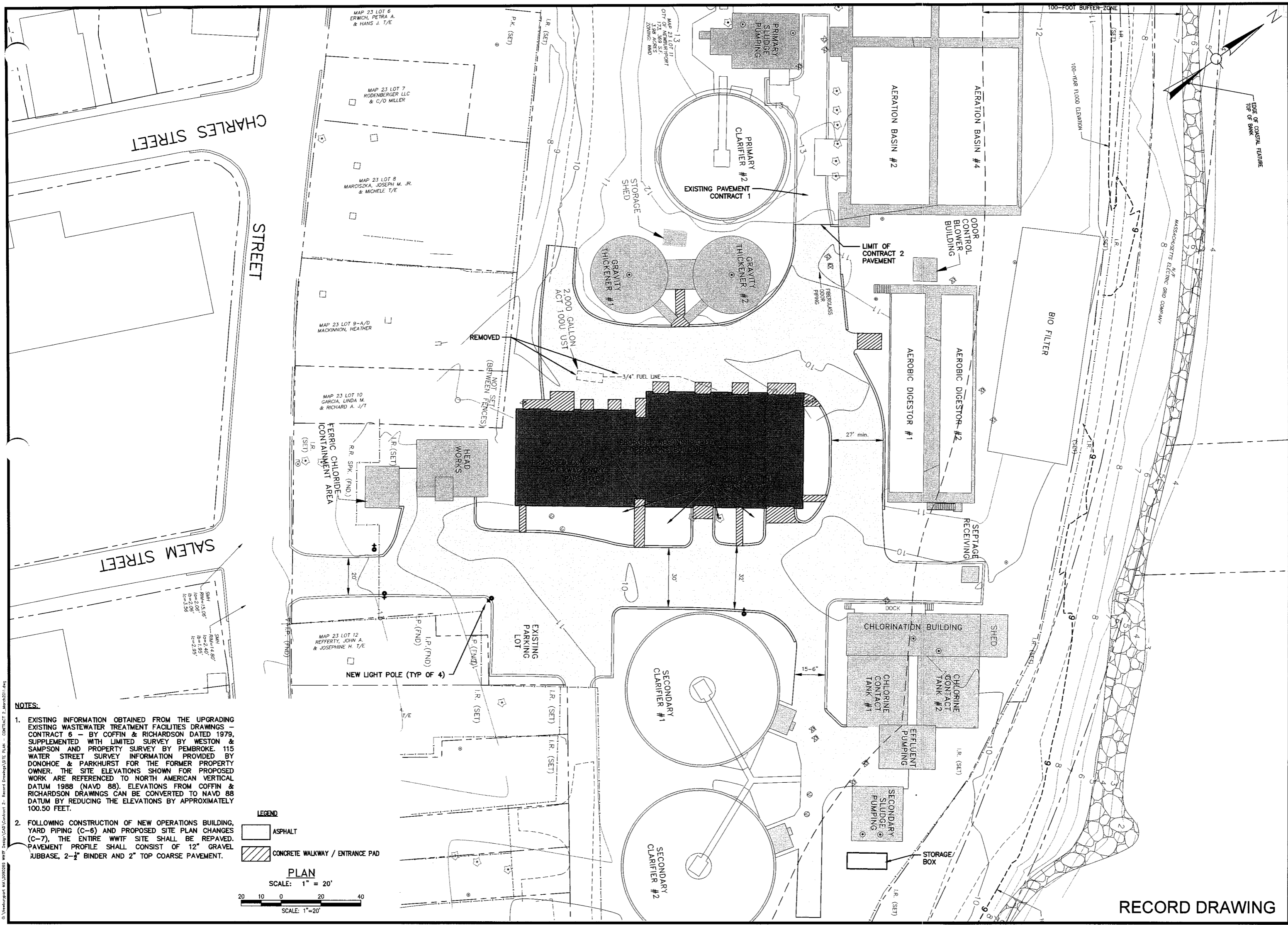
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**PROPOSED YARD PIPING PLAN**  
 157 WATER STREET



- NOTES:**
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  - CONTRACT 2 IS PART OF A TWO-PHASE WWTF IMPROVEMENTS PROGRAM. SITE IMPROVEMENTS SUCH AS CONSTRUCTION OF THE OCL BUILDING, AERATION BLOWER BUILDING, AST, GENERATOR, SWITCHGEAR, FLOW-SPLITTER BOX, SELECT YARD-PIPING, AND OTHER COMPONENTS COMPLETED BY OTHERS UNDER CONTRACT 1.
  - CONTRACTOR TO DIG TEST PITS TO LOCATE ALL UTILITIES PRIOR TO PILE FOUNDATION LAYOUT.
  - ALL EXISTING FRAMES & COVERS SHALL BE RAISED TO PROPOSED GRADE. ALL RIM ELEVATIONS TO BE FIELD-VERIFIED AND COORDINATED WITH FINAL GRADES BEFORE CONSTRUCTION.
  - PROPOSED UTILITIES MAY CROSS EXISTING ABANDONED BRICK SEWER RUNNING THROUGH THE DRIVEWAY EAST OF THE OPERATIONS BUILDING. DEMOLISH ABANDONED BRICK SEWER AT PROPOSED UTILITY CONFLICTS.
  - LOCATIONS OF EXISTING ELECTRICAL DUCT BANKS ARE APPROXIMATE. ELEVATIONS OF EXISTING ELECTRICAL DUCT BANKS ARE UNKNOWN. CONTRACTOR TO CONFIRM LOCATION OF ELECTRICAL DUCT BANKS AT LOCATIONS OF PROPOSED UTILITY CROSSINGS PRIOR TO EXCAVATION.
  - FOR CLARITY, PROPOSED SEWER, DRAINAGE, AND ODOR CONTROL INVERTS ARE NOT ALL SHOWN ON THIS SHEET. REFER TO SHEETS C-17 AND C-18 FOR PROPOSED DRAINAGE & SEWER INVERTS, AND SHEET C-16 FOR PROPOSED ODOR CONTROL INVERTS.
  - CONTRACTOR TO RE-ROUTE 10" W.S. (WASTE SLUDGE) LINE USING 10"x10" MJ DI WYE, 10" SOLID SLEEVE COUPLING, JOINT RESTRAINT, AND NEW 10" GATE VALVE.
  - CONTRACTOR TO INSTALL 10" GATE VALVE, 2-10" SOLID SLEEVE COUPLINGS AND JOINT RESTRAINTS ON EXISTING 10" W.S. (WASTE SLUDGE) LINE AT EXISTING PLUG VALVE.
  - CONTRACTOR TO REMOVE OR CAP & ABANDON EXISTING 12" DRAIN AS NEEDED.
  - CONTRACTOR TO COORDINATE ALL EXISTING & PROPOSED UTILITY LOCATIONS & ELEVATIONS WITH PROPOSED OPERATIONS BUILDING PILE FOUNDATION SYSTEM ON STRUCTURAL SHEETS PRIOR TO PILE FOUNDATION LAYOUT.
  - CONTRACTOR TO EXCAVATE TEST PITS IN LOCATIONS OF PROPOSED OIL/GAS SEPARATOR & SEWER MANHOLE STRUCTURES. CONTRACTOR TO CONDUCT TEST PITS TO CONFIRM LOCATIONS OF EXISTING UTILITIES AT PROPOSED STRUCTURE LOCATIONS.
  - CONTRACTOR INSTALLED STANDARD PRECAST MANHOLE STRUCTURE ON EXISTING YARD SEWER TO CONNECT 8-INCH FILTRATE LINE AND 4-INCH SANITARY LINE. INTERNAL DROP CONNECTIONS SHALL BE PROVIDED FOR 1-INCH SANITARY LINE. EXTERNAL DROP CONNECTION SHALL BE PROVIDED FOR 8-INCH FILTRATE LINE. YARD SEWER INVERT AT MANHOLE IS APPROXIMATELY -1.97±. REFER TO SHEET C-6, M-OB.4 AND SKETCH SK-P-1R FOR ELEVATIONS.
  - PROPOSED OIL/GAS SEPARATOR STRUCTURE SHALL CONNECT TO CHANNEL IN INFLUENT WETWELL BOX STRUCTURE WITH INTERNAL DROP CONNECTION.

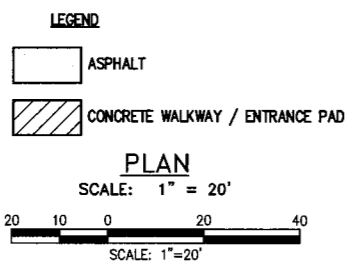


**NOTE:**  
 STRUCTURE IS C.I.P. REINFORCED 8" CONCRETE BOTTOM SLAB AND WALLS 8" TO 9" THICK PRECAST TOP SLAB. TOP OF BASE SLAB AT EL. 1.05'. TOP OF COVER AT 11.0'.



**NOTES:**

- EXISTING INFORMATION OBTAINED FROM THE UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES DRAWINGS - CONTRACT 6 - BY COFFIN & RICHARDSON DATED 1979, SUPPLEMENTED WITH LIMITED SURVEY BY WESTON & SAMPSON AND PROPERTY SURVEY BY PEMBROKE. 115 WATER STREET SURVEY INFORMATION PROVIDED BY DONOHOE & PARKHURST FOR THE FORMER PROPERTY OWNER. THE SITE ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE ELEVATIONS BY APPROXIMATELY 100.50 FEET.
- FOLLOWING CONSTRUCTION OF NEW OPERATIONS BUILDING, YARD PIPING (C-6) AND PROPOSED SITE PLAN CHANGES (C-7), THE ENTIRE WWTF SITE SHALL BE REPAVED. PAVEMENT PROFILE SHALL CONSIST OF 12" GRAVEL SUBBASE, 2-1/2" BINDER AND 2" TOP COARSE PAVEMENT.



**Weston & Sampson**  
 Five Centennial Drive, Peabody, MA 01960  
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No.	Date	Dr. By	Ck. By	App. By	Description
1	05/20/14	MJM	ELM	KMM	RECORD DRAWING

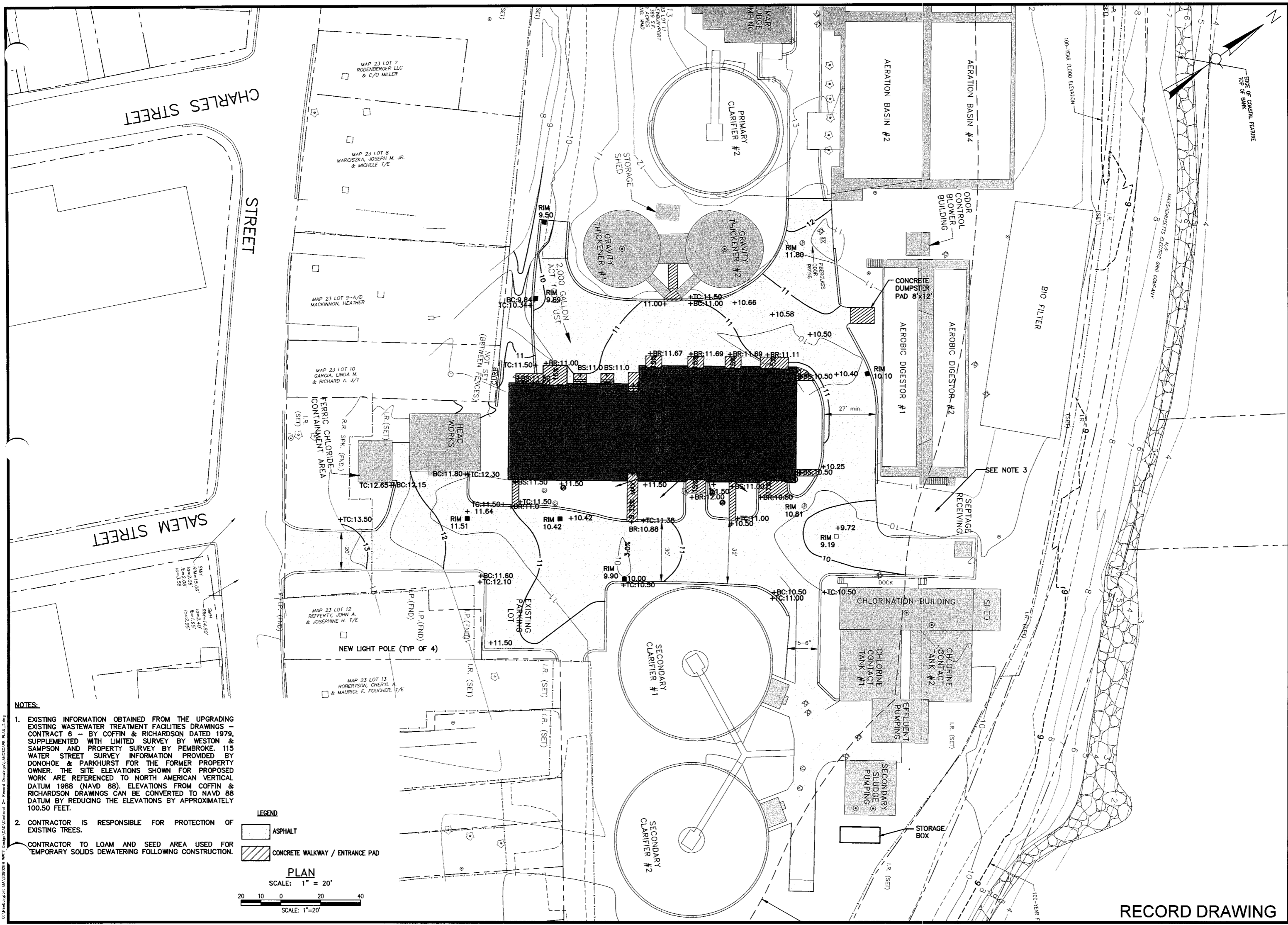
REGISTERED PROFESSIONAL ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**PROPOSED SITE PLAN**  
**#157 WATER STREET**

SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2  
 CADD NO. 189-189  
 FILE NO. 189-189

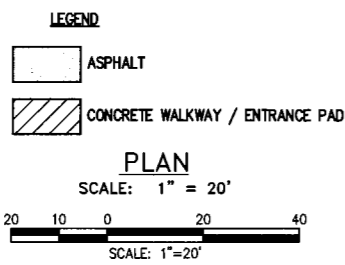
DRY BY PAS  
 BSNLBY CNR  
 CHK BY LRT  
 APP BY KMM



**NOTES:**

- EXISTING INFORMATION OBTAINED FROM THE UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES DRAWINGS - CONTRACT 6 - BY COFFIN & RICHARDSON DATED 1979, SUPPLEMENTED WITH LIMITED SURVEY BY WESTON & SAMPSON AND PROPERTY SURVEY BY PEMBROKE. 115 WATER STREET SURVEY INFORMATION PROVIDED BY DONOHOE & PARKHURST FOR THE FORMER PROPERTY OWNER. THE SITE ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE ELEVATIONS BY APPROXIMATELY 100.50 FEET.
- CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF EXISTING TREES.

CONTRACTOR TO LOAM AND SEED AREA USED FOR TEMPORARY SOLIDS DEWATERING FOLLOWING CONSTRUCTION.



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No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	RMS	ELM	KMN	RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER

DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

CADD NO.	SCALE	CONTRACT	JOB NO.	DRY BY	CHK BY	APP BY
189-188	LANDSCAPE	AS NOTED	2090269	LT	CNR	KMN

**GRADING AND LANDSCAPING PLAN**  
**#157 WATER STREET**

RECORD DRAWING

REVISE GT ODOR\_PIPING CONNECTION LOCATION (REFER TO M-GT.4)

REHABILITATE GRAVITY THICKENERS AND REPLACE COVERS (TYP. OF 2)

RELOCATE OVERHEAD ODOR CONTROL PIPE SUPPORTS TO WEST SIDE OF BUILDING (REFER TO M-GT.4).

32"Ø MH FRAME & COVER OVER 21" VERTICAL FOR ACCESS. SEE SHEET M-OB.13 & M-OB.15.

CONNECT TO EXISTING 24" ODOR CONTROL PIPE SEE SHEET M-OB.15 FOR DETAILS

RE-CONNECT TO EXISTING ODOR CONTROL PIPE AT DROP.

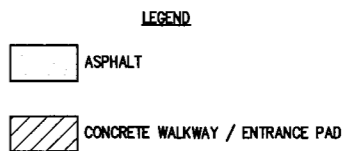
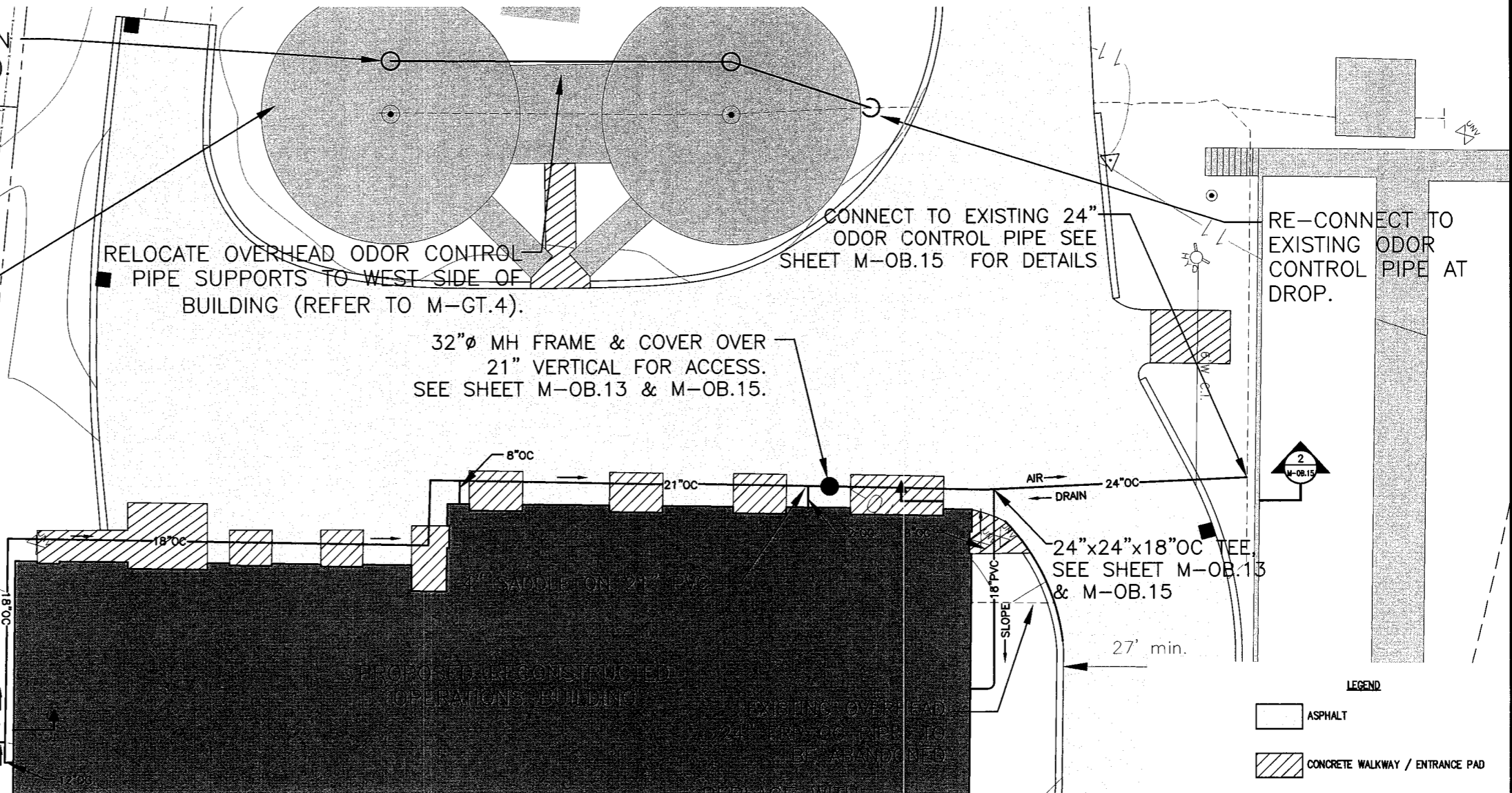
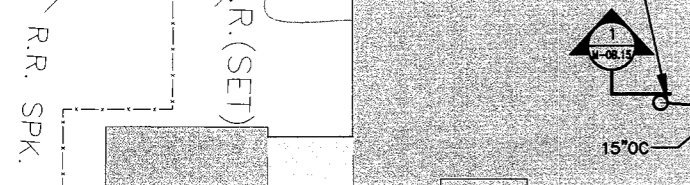
CONNECT TO EXISTING 14" FRP HEADWORKS OC PIPING ABOVE ROOF PENETRATION SEE SHEET M-OB.15 FOR DETAILS

24"x24"x18" OC TEE SEE SHEET M-OB.13 & M-OB.15

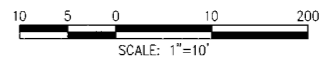
P 23 LOT 9-A/D SKINNON, HEATHER

AP 23 LOT 10 MARCIA, LINDA M. RICHARD A. J/T

FERRIC LOT UNIT

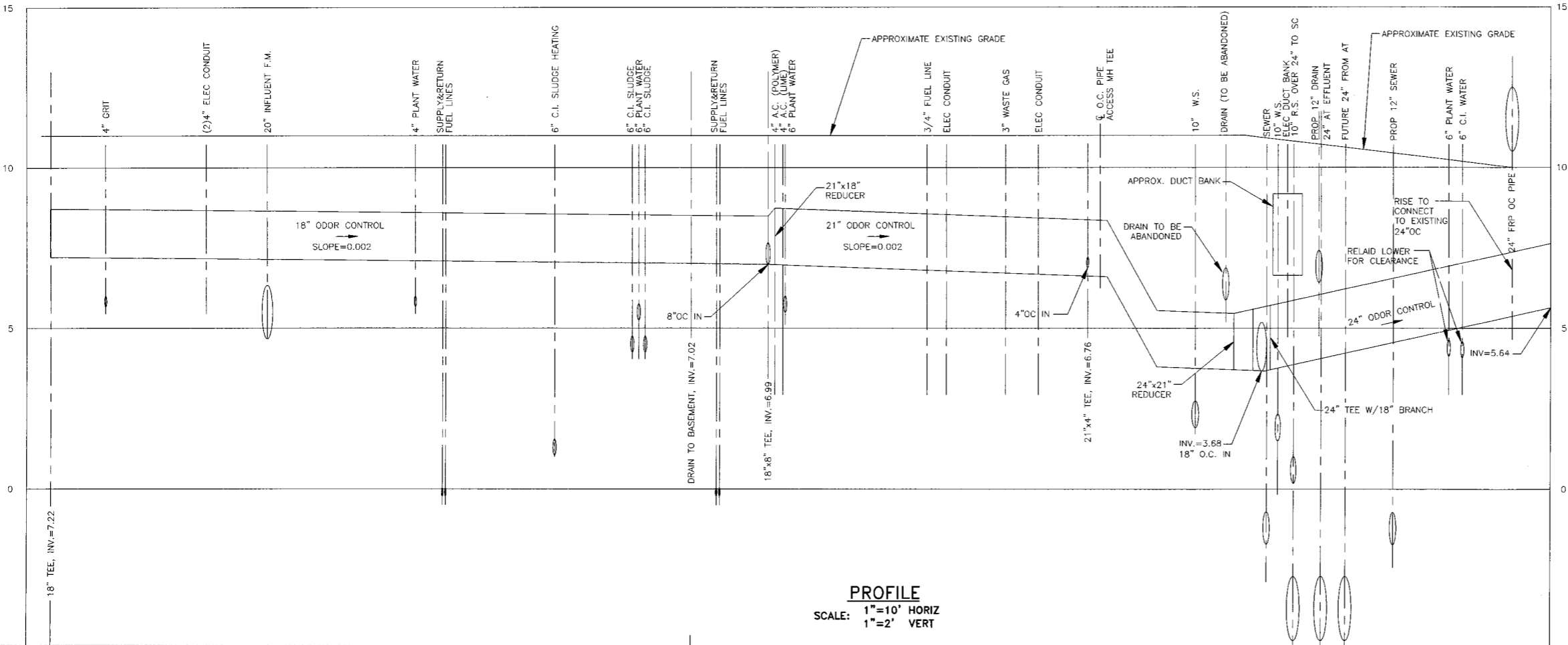


PLAN SCALE: 1" = 10'



ODOR CONTROL NOTES:

1. ALL ODOR CONTROL PIPING SHALL SLOPE CONTINUOUSLY DOWN TO LOW POINT ADJACENT TO NORTH SIDE OF TRUCK GARAGE.
2. ALL ODOR CONTROL PIPE SIZE TRANSITIONS SHALL USE ONLY ECCENTRIC REDUCERS TO MAINTAIN CONSTANT SLOPE AT PIPE INVERT.
3. ALL ODOR CONTROL PIPING SHALL BE BURIED WITH MINIMUM COVER OF 12 INCHES.
4. BURIED ODOR CONTROL PIPING SHALL BE PROTECTED WITH CONCRETE SLAB AT ALL ROAD CROSSINGS AND GARAGE ENTRYWAYS. SEE STRUCTURAL DRAWINGS FOR CONCRETE SLAB DETAILS.
5. ALL EXTERIOR ODOR CONTROL PIPING SHALL BE SDR-35 PVC WITH RUBBER GASKETED PUSH-ON FITTINGS. INTERIOR SMALL DIAMETER ODOR CONTROL PIPING SHALL BE CPVC WITH FLANGED FITTINGS.
6. TEMPORARY ODOR CONTROL PIPING SHALL BE PROVIDED TO ACTIVE GRAVITY THICKENER DURING CONSTRUCTION. ALL ODOR CONTROL PIPE CONNECTIONS TO GRAVITY THICKENERS SHALL BE RESTORED FOLLOWING COMPLETION OF WORK.
7. FOR LOCATIONS OF OTHER PROPOSED YARD PIPING SEE SHEETS C-8, C-15 & C-16.



PROFILE SCALE: 1"=10' HORIZ 1"=2' VERT

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1	05/2014	DATE	REGISTERED PROFESSIONAL ENGINEER
No.	Date	Dr. By	App. By
M.M.	ELM	K.M.	K.M.
Dr. By	Chk. By	App. By	DATE
A	P	P	R
O	V	E	D
RECORD DRAWING Description			

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**ODOR CONTROL YARD PIPING PLAN AND PROFILE**

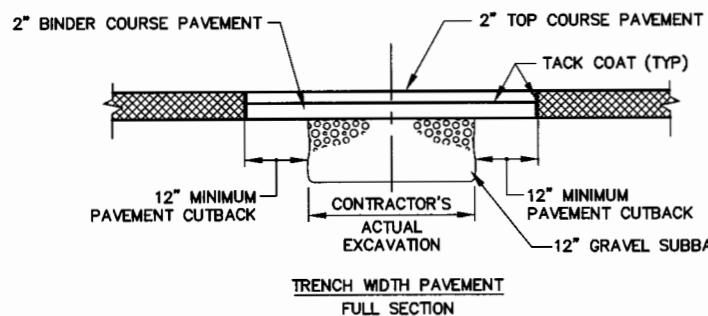
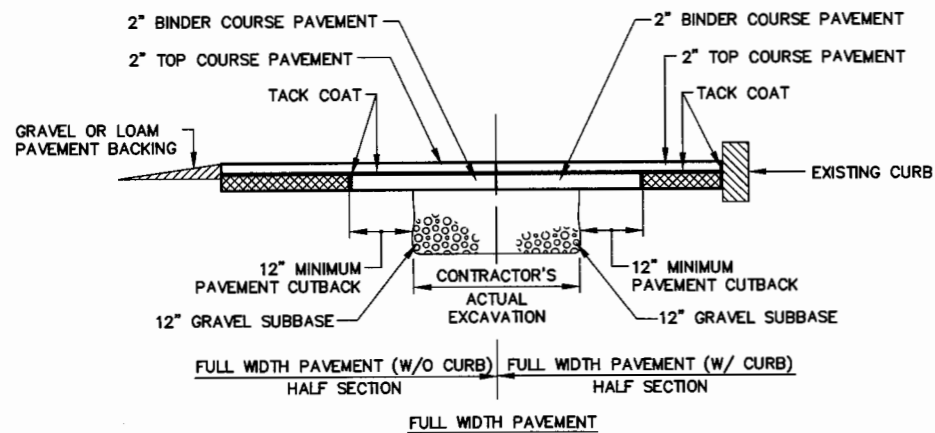
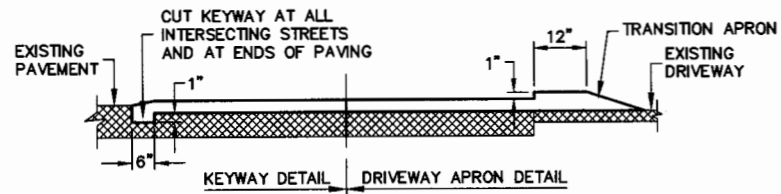
SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO.: 2  
 CADD NO.: 189-187  
 FILE NO.: 189-187

DR. BY: PAS  
 CHK. BY: CNR  
 LRT: K.M.

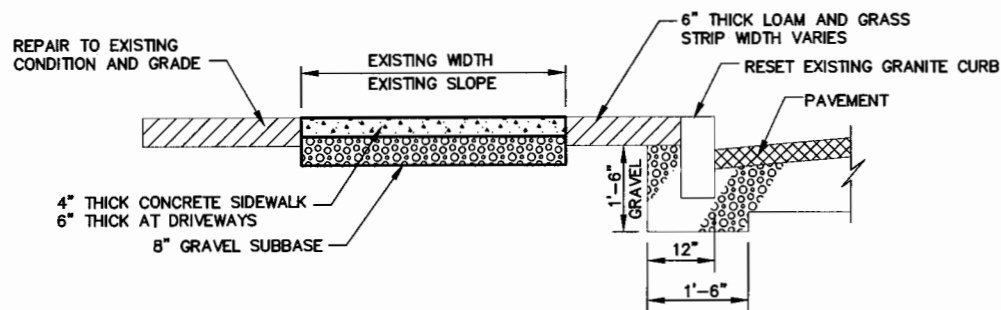
APP. BY: K.M.

RECORD DRAWING

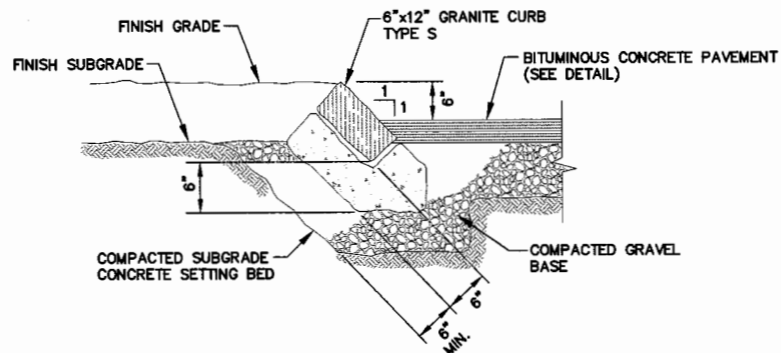




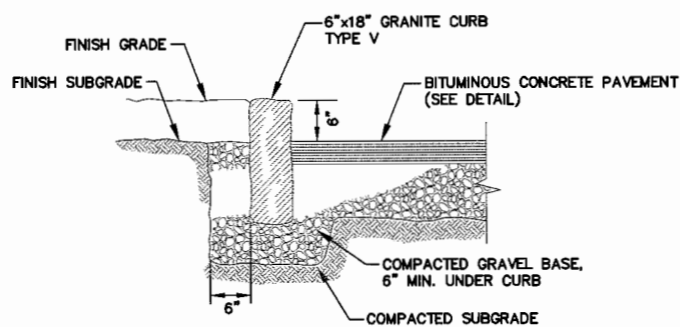
**PAVEMENT REPLACEMENT DETAILS**  
N.T.S.



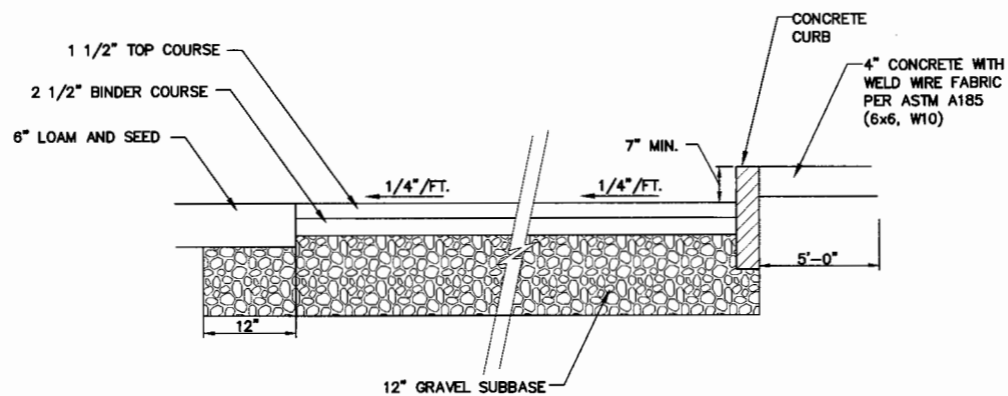
**TYPICAL SECTION THROUGH CONCRETE SIDEWALK**  
N.T.S.



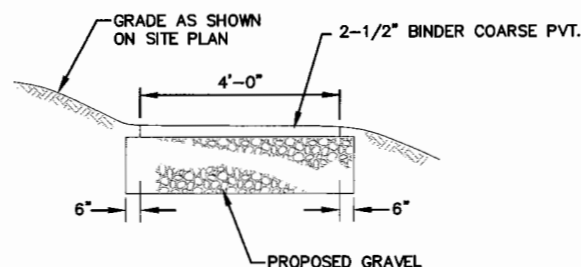
**TYPICAL SLOPED GRANITE CURB DETAIL**  
N.T.S.



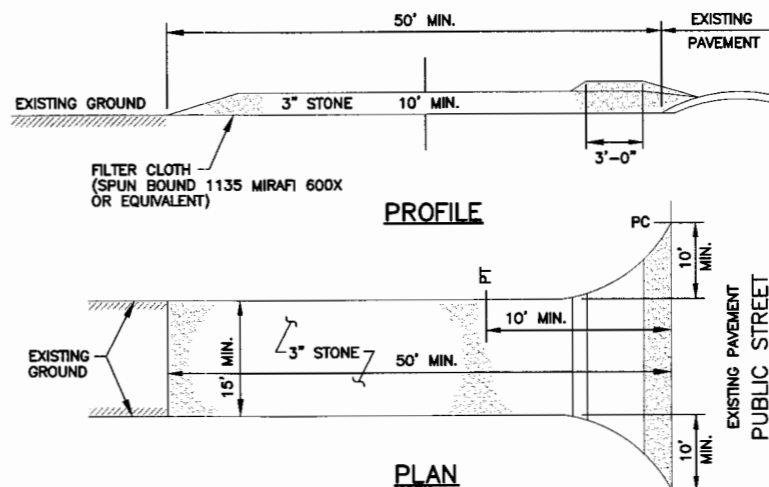
**TYPICAL VERTICAL GRANITE CURB DETAIL**  
N.T.S.



**TYPICAL DRIVEWAY DETAIL**  
N.T.S.



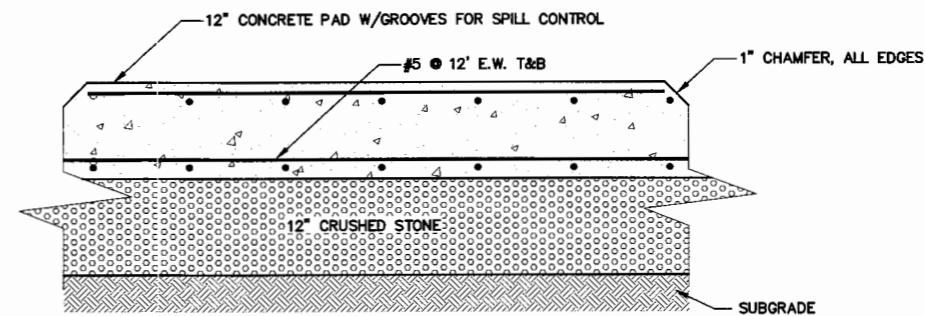
**BITUMINOUS PAVEMENT WALKWAY DETAIL**  
N.T.S.



**NOTES:**

1. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
2. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
3. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
6. STONE SHALL BE REMOVED AT THE CONCLUSION OF PROJECT AND ACCUMULATED SEDIMENT DISPOSED OF IN ACCORDANCE WITH SPEC SECTION 02282. REMOVAL OF STONE SHALL BE AT NO ADDITIONAL COST TO THE OWNER.

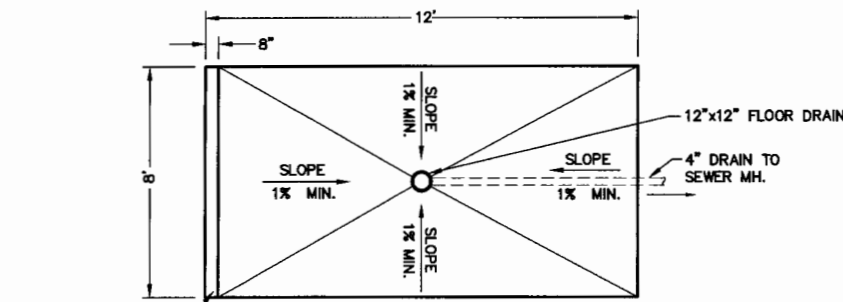
**STABILIZED CONSTRUCTION ENTRANCE (ANTI-TRACKING PAD)**  
N.T.S.



**REINFORCED CONCRETE PAD - SECTION DETAIL**  
N.T.S.

**CONSTRUCTION NOTES FOR REINFORCED CONCRETE:**

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF ACI BUILDING CODE AND TO THE LATEST MASS. BUILDING CODE.
2. CONCRETE SHALL BE NORMAL WEIGHT AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AFTER 28 DAYS.
3. CONCRETE SHALL REACH 40% OF ITS 28 DAYS STRENGTH BEFORE FORMS ARE REMOVED.
4. REINFORCING BARS SHALL CONFORM TO ASTM A615 WITH 60,000 PSI YIELD STRENGTH, EPOXY COATED.



**NOTES:**

1. CONCRETE PAD TO SLOPE AT MINIMUM 1% TO 12" DRAIN AT CENTER, TO DRAIN BY NEW 4" PIPE TO SEWER MH.
2. 12" THICK CONCRETE PAD REINFORCED PER CONCRETE PAD DETAIL ABOVE.

**DUMPSTER PAD - PLAN VIEW**  
N.T.S.

**RECORD DRAWING**

1	05/2014	M.M.	Dr. By	A	P	R	O	V	E	D	DATE
		ELM	Ck. By								REGISTERED PROFESSIONAL ENGINEER
		KMN	App. By								

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

DR. BY	CHK. BY	APP. BY
RWS	CNR	LRT
DES. BY	CHK. BY	APP. BY

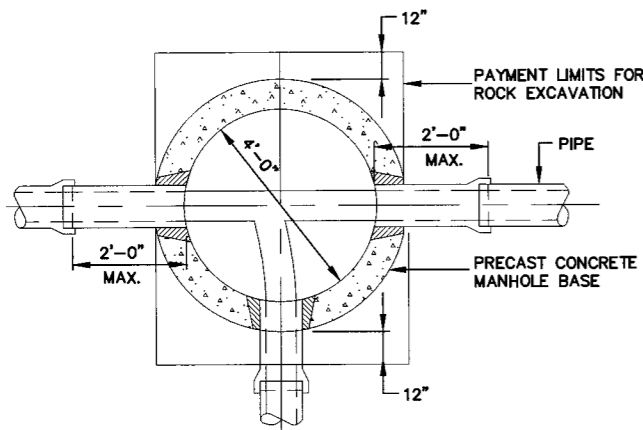
CONTRACT: 2090269

SCALE: NOTED

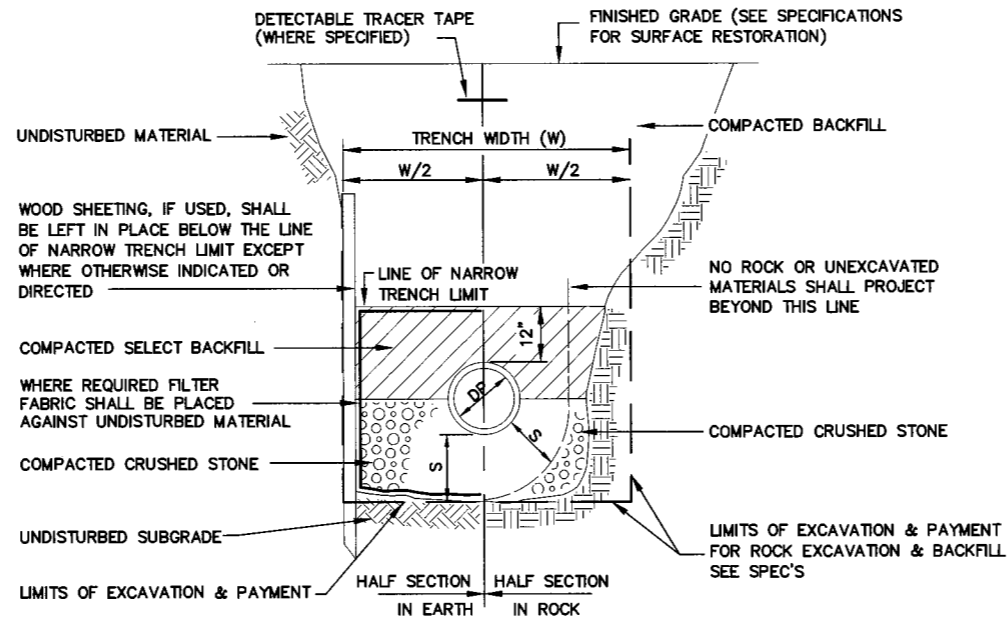
CADD NO. CV DETS

FILE NO. 189-186

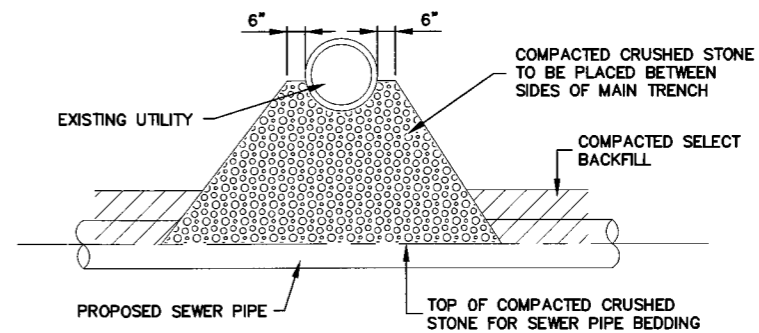
**C-10**  
 SHEET 17 OF 202



**4'-0" DIA. MANHOLE PLAN**  
N.T.S.



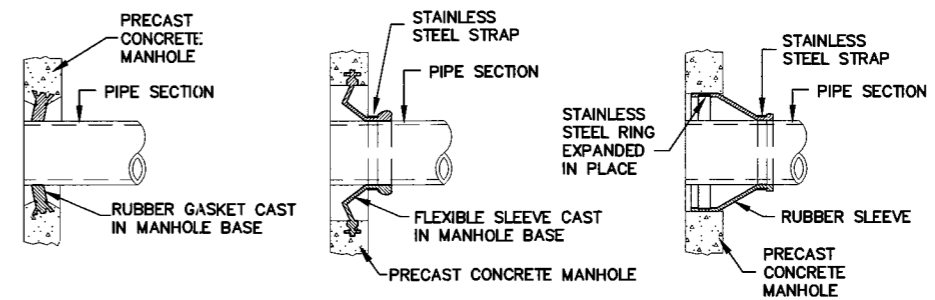
**TRENCH DETAIL**  
(SEWER, FORCE MAIN, STORM DRAIN)  
N.T.S.



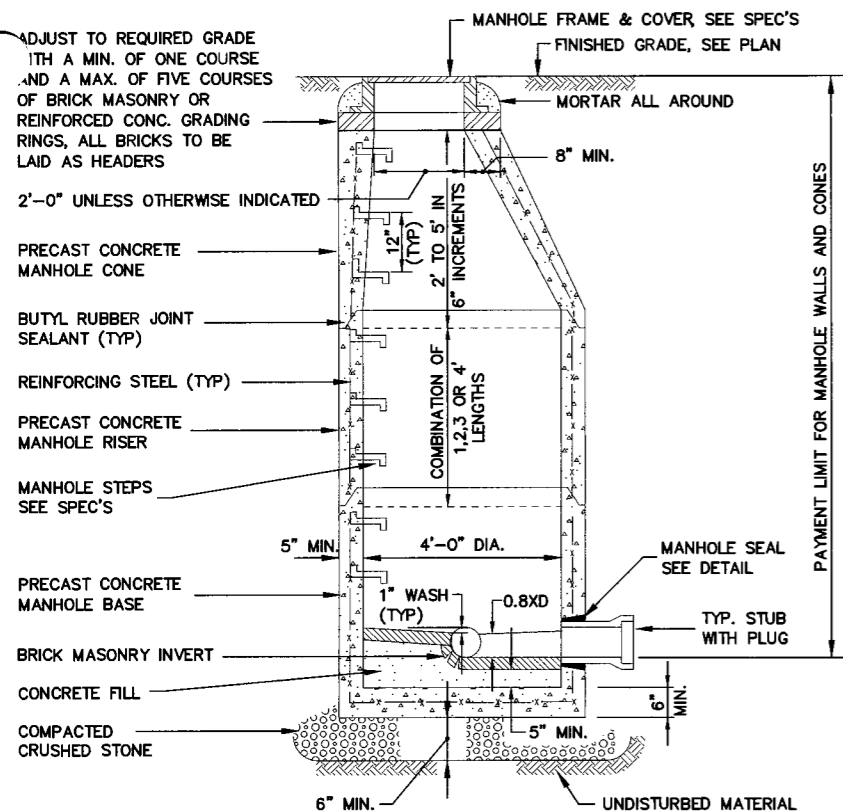
**UTILITY CROSSING DETAIL**  
N.T.S.

DEPTH TO INVERT	DIAMETER OF PIPE (DP)	MAXIMUM TRENCH WIDTH BELOW LINE OF NARROW TRENCH LIMIT (SHEETED OR UNSHEETED) (W)	MINIMUM CLEARANCE (S)
0-12'	TO 18"	5'	6"
0-12'	21"-24"	5'	7-1/2"
OVER 12'	TO 18"	7'	6"
OVER 12'	21"-24"	7'	7-1/2"

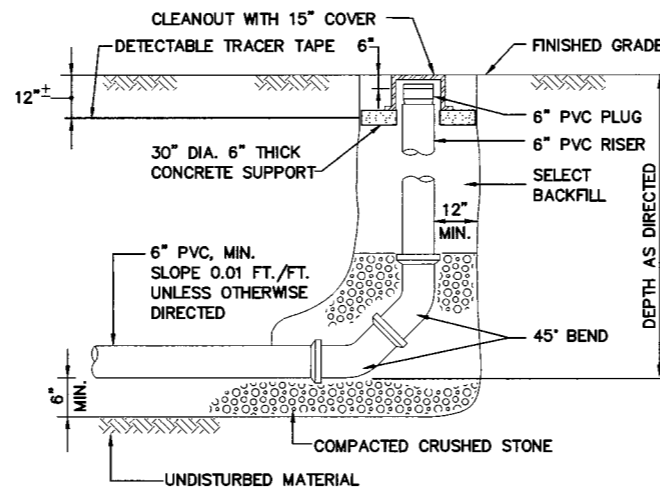
**TABLE A**



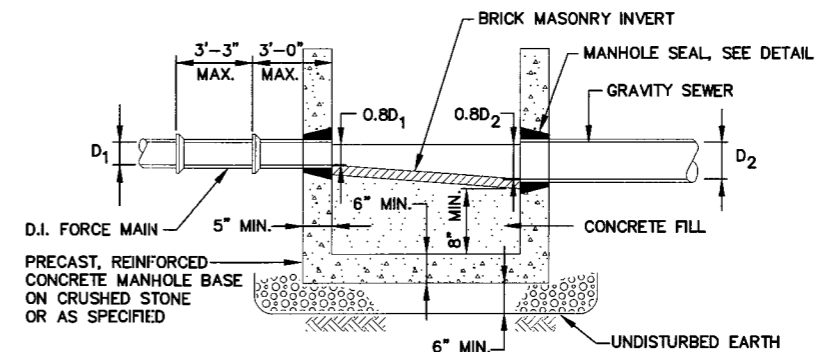
**MANHOLE SEAL DETAILS**  
N.T.S.



**4'-0" DIA. PRECAST CONCRETE MANHOLE DETAIL**  
N.T.S.



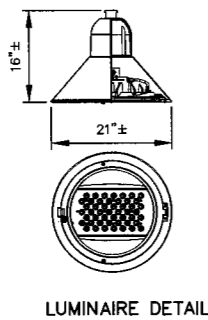
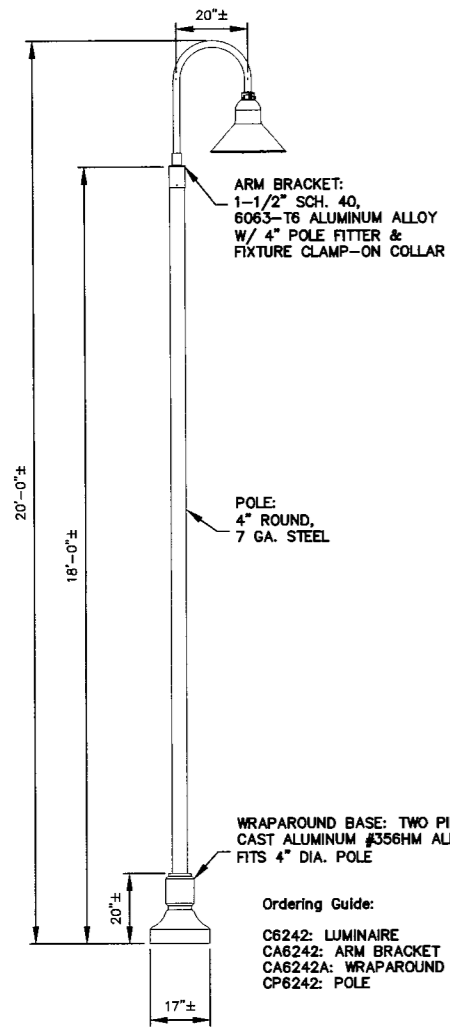
**CLEANOUT DETAIL**  
N.T.S.



**TYPICAL FORCE MAIN CONNECTION TO MANHOLE DETAIL**  
N.T.S.

1	05/2014	MM	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	Description
		A	P	R	O
		V	E	D	
					DATE
					REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	CONTRACT NO. 2090269	DR. BY RWS	CHK. BY CNR	APP. BY KMN
<b>CIVIL SITE DETAILS II</b>	SCALE: NOTED	CV DETS		
FILE NO. 189-185				



MOUNTING:  
X SIDE ARM  
X TOP ARM  
- WALL MOUNT

COLOR: (specify)  
- BLACK  
- WHITE  
- BRONZE  
- GRAY  
- GREEN

LENS:  
X FLAT GLASS  
- POLYCARBONATE SAG

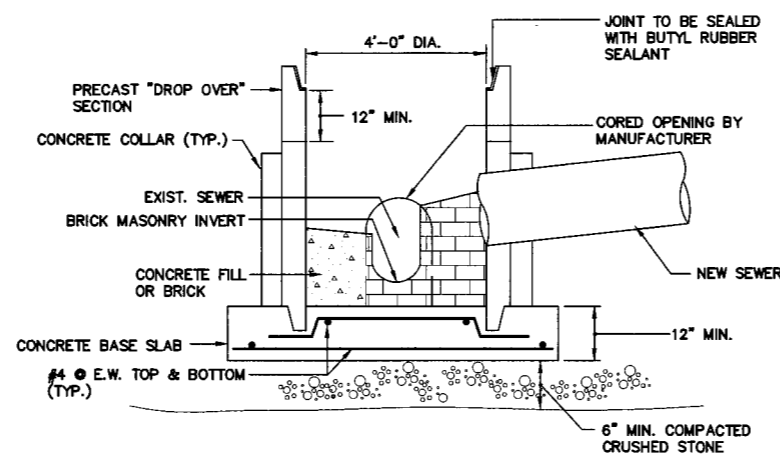
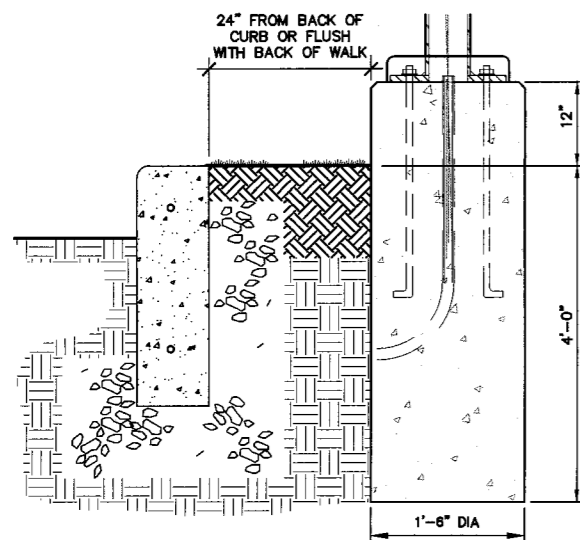
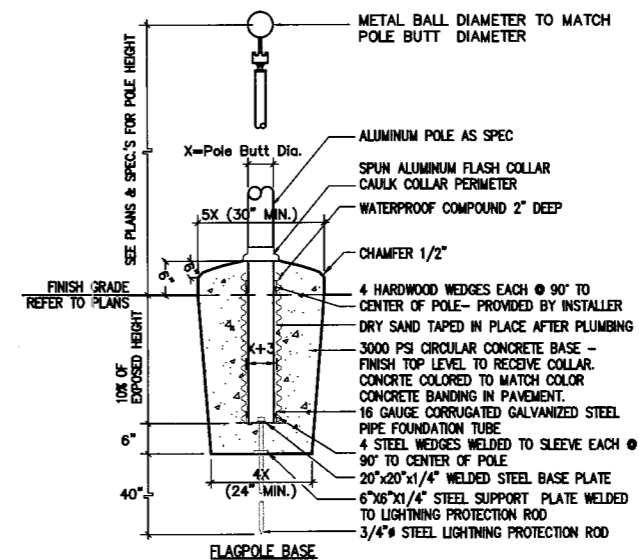
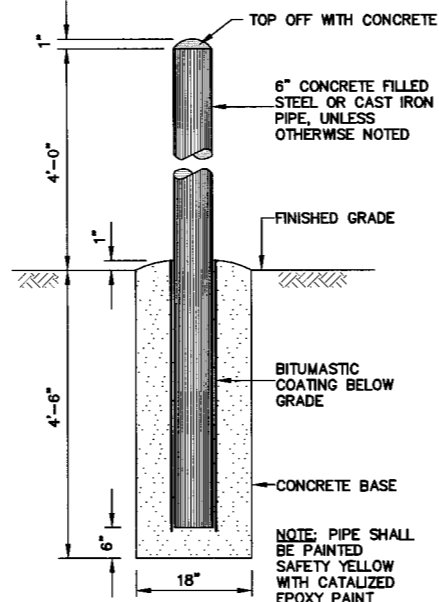
OPTICS:  
TYPE II  
X TYPE III  
- TYPE IV  
- TYPE V

PHOTO CONTROL:  
X NONE

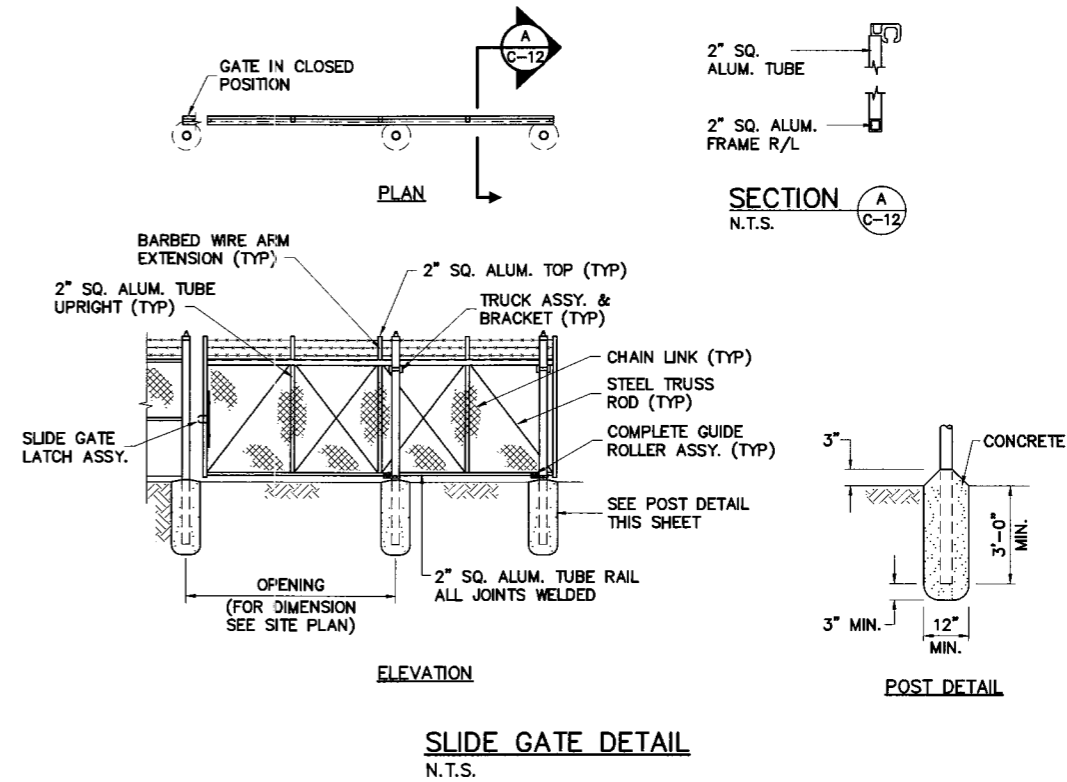
SOURCE / LUMENS  
X LED / 6700

LED MODULE SPECIFICATIONS:  
- 120-277 VAC INPUT,  
50-60Hz AUTO SENSING.  
- 49 TOTAL LEDS  
- 6000K COLOR TEMPERATURE (CCT).  
- 70 COLOR RENDERING INDEX (CRI).  
- IP66 RATED OPTICAL ASSEMBLY.  
- 60,000 HOURS @ 70% LUMEN  
MAINTENANCE.  
- -40°C TO 50°C TEMPERATURE RANGE.

LUMINAIRE MATRIX



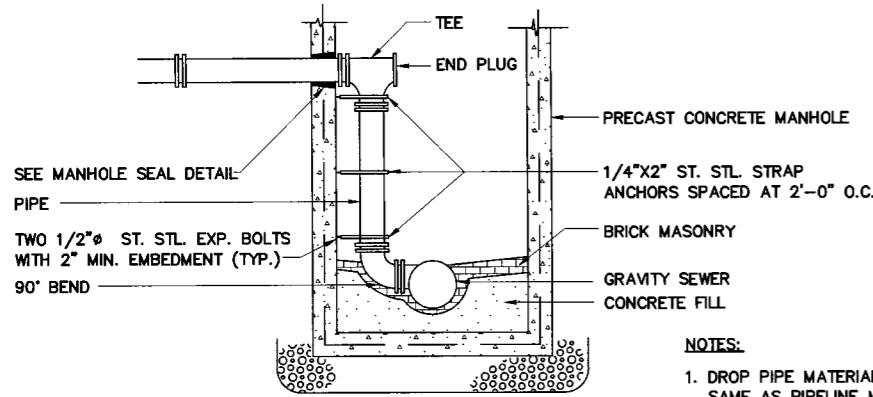
NOTE:  
THE "DROP OVER" SECTION SHALL BE INDEPENDENTLY SUPPORTED  
TO ALLOW FOR PROPER CURING OF THE BASE SLAB



1	05/2014	MJM	ELM	KMN	RECORD DRAWING	Description	DATE
No.	Date	Dr:By	Chk:By	App:By	A P P R O V E D		REGISTERED PROFESSIONAL ENGINEER

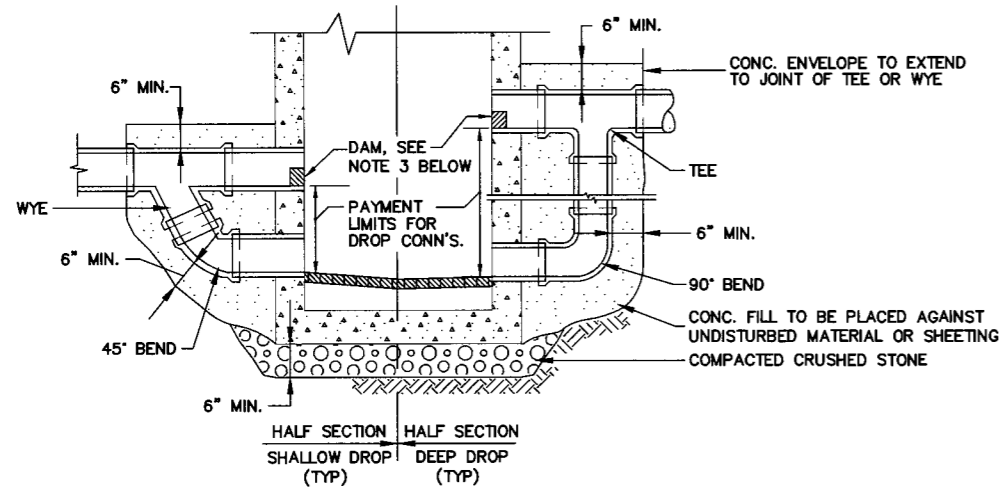
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

CADD NO.	CV DETS	SCALE:	NOTED	CONTRACT:	2	2090269	DR BY:	RWS	DSN BY:	CNR	CHK BY:	LRT	APP BY:	KMN
FILE NO.	189-184													



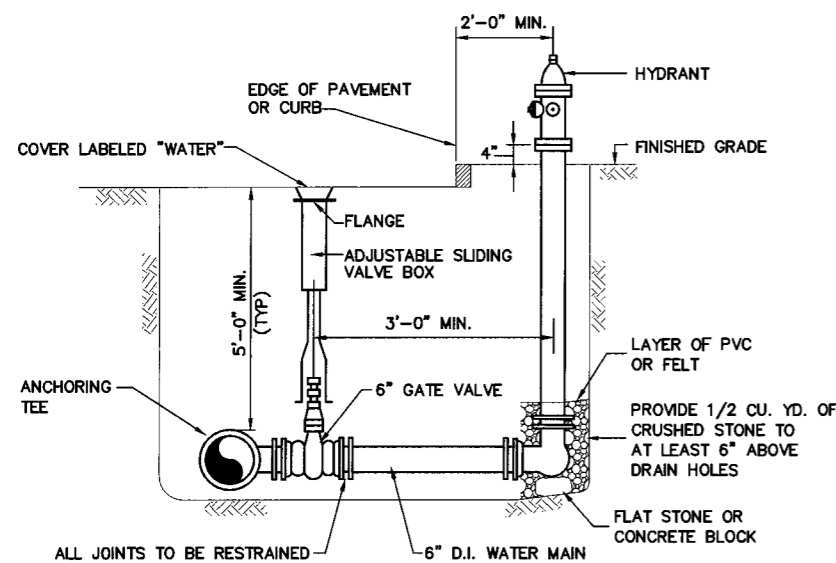
- NOTES:**
1. DROP PIPE MATERIALS TO BE SAME AS PIPELINE MATERIALS
  2. DIMENSIONS & CONSTRUCTION OF MANHOLE TO BE SIMILAR TO TYP. MANHOLE EXCEPT AS SHOWN
  3. FOR PIPE UP TO AND INCLUDING 8", USE 4" DIAMETER MANHOLE; OVER 8", USE 5" DIAMETER MANHOLE

**INSIDE DROP CONNECTION DETAIL**  
N.T.S.

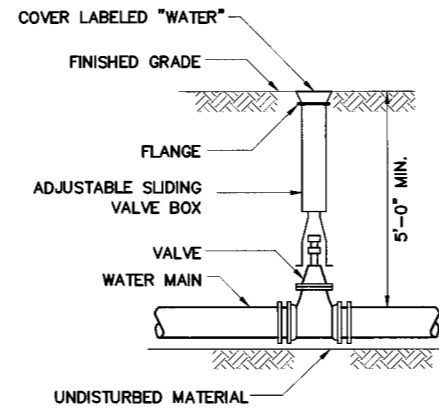


- NOTES:**
1. DROP PIPE TO BE SAME DIAMETER AS SEWER DISCHARGE INTO MANHOLE UNLESS OTHERWISE SHOWN ON DRAWINGS.
  2. DIMENSIONS & CONSTRUCTION OF DROP MANHOLE TO BE SIMILAR TO TYPICAL MANHOLE EXCEPT AS SHOWN.
  3. FOR PVC PIPE, EPOXY HALF PLUG TO PIPE. FOR DI, VC AND RC PIPE, MORTAR AND BRICK IN PIPE.

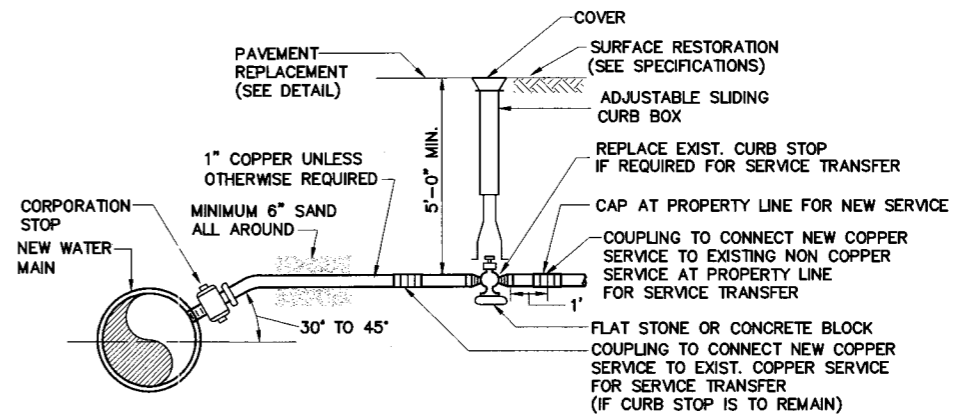
**DROP CONNECTION DETAIL**  
N.T.S.



**HYDRANT AND VALVE DETAIL**  
N.T.S.



**VALVE AND BOX DETAIL**  
N.T.S.



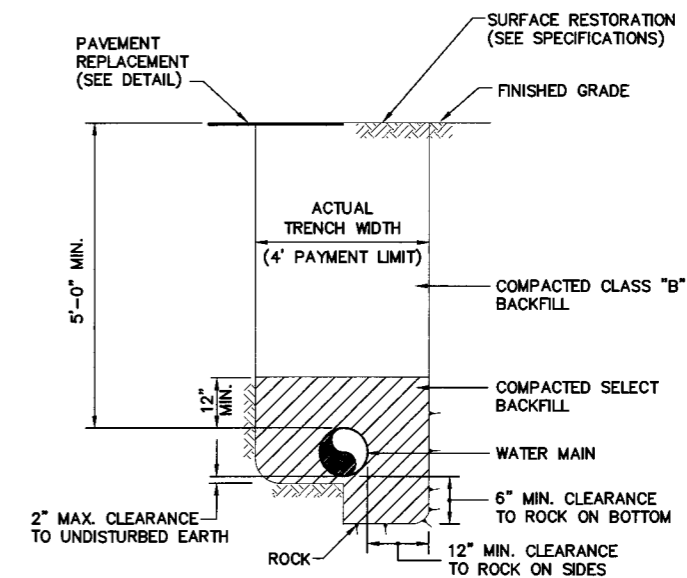
- NOTE:** PROVIDE SADDLE FOR ALL AC AND PVC MAINS AND ALL 2" OR LARGER STOPS

**WATER SERVICE DETAIL**  
N.T.S.

**TABLE 1**  
REQUIRED LENGTH OF RESTRAINED JOINTS FROM FITTINGS (FEET)

PIPE SIZE	90° BEND	45° BEND OR WYE BRANCH	22 1/2° BEND	11 1/4° BEND	PLUG OR CAP	TEE (BRANCH)
6"	25 (30.5)	10.5 (12.5)	5 (6)	2.5 (3)	43 (64)	34 (51)
8"	33 (40)	13.5 (16.5)	6.5 (8)	3 (4)	55 (82)	47 (70)
10"	40 (48.5)	16.5 (20)	8 (9.5)	4 (5)	67 (100)	58 (87)
12"	47 (56.5)	19.5 (23.5)	9.5 (11.5)	4.5 (5.5)	79 (118)	70 (105)
16"	59.5 (72)	24.5 (30)	12 (14.5)	6 (7)	101 (152)	92 (139)
20"	72 (86.5)	30 (36)	14.5 (17)	7 (8.5)	123 (184)	114 (171)
24"	84 (100)	35 (41)	16.5 (20)	8 (10)	144 (216)	134 (202)
30"	100 (120)	41 (50)	20 (24)	10 (12)	174 (261)	165 (247)

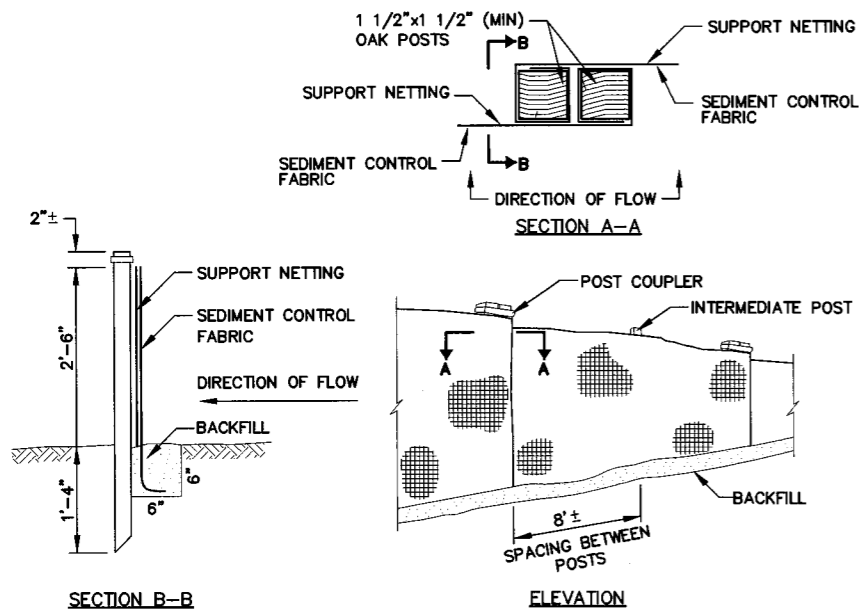
- NOTES:**
1. RESTRAINED LENGTHS LISTED IN PARENTHESES ARE FOR PIPE WRAPPED IN POLYETHYLENE. THE OTHER ASSOCIATED LENGTHS ARE FOR PLAIN UNWRAPPED DUCTILE IRON PIPE.
  2. THE CONTRACTOR SHALL USE THIS TABLE IN CONJUNCTION WITH THE APPROPRIATE PIPE SPECIFICATION SECTION.



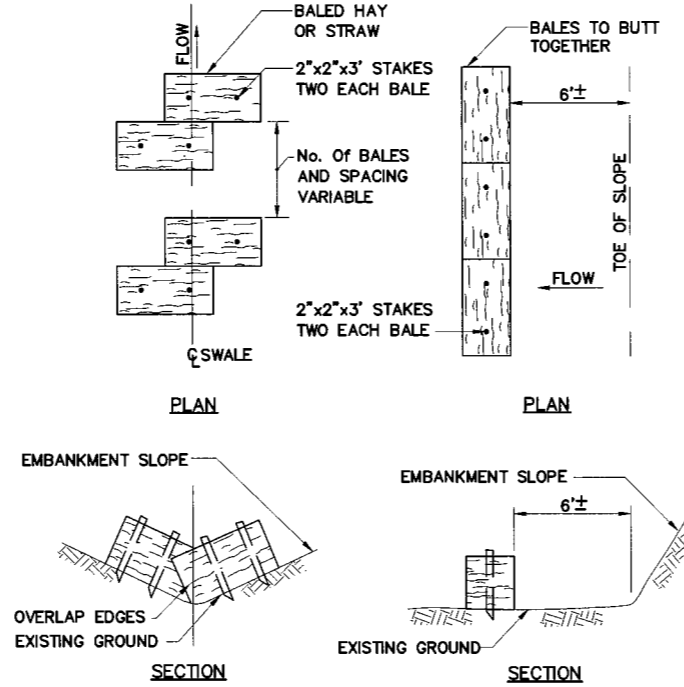
**WATER MAIN TRENCH DETAIL**  
N.T.S.

No.	Date	Dr. By	Ch. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING
A P P R O V E D					
					DATE
					REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT					
<b>CIVIL SITE DETAILS IV</b>					
SCALE:	NOTED	CONTRACT:	2	2090269	DR. BY:
CADD NO.:	CV DETS	JOB NO.:	2	2090269	DES. BY:
FILE NO.:	189-183	CHK. BY:	LRT	APP. BY:	KMN



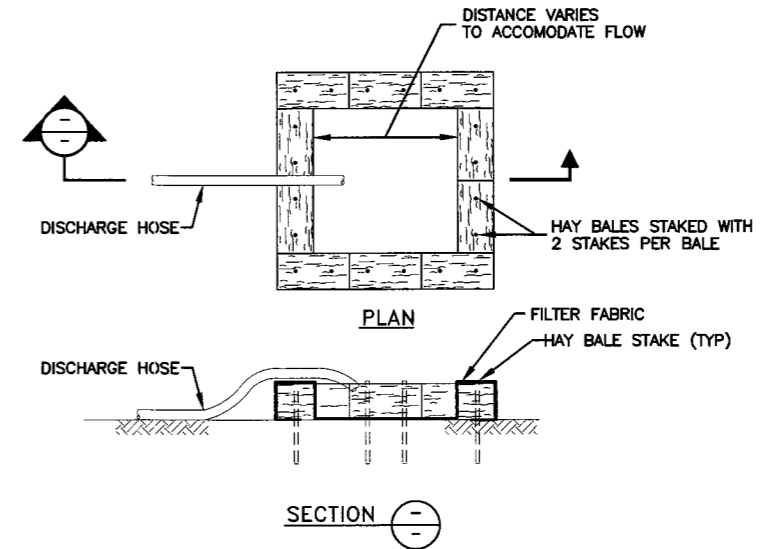
**SILT FENCE DETAIL**  
N.T.S.



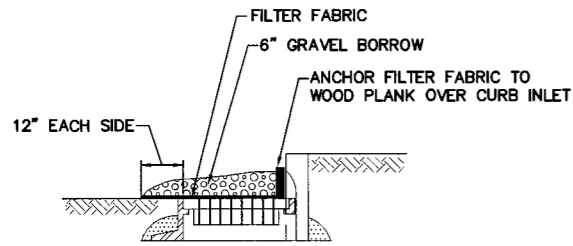
NOTE: TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES IN TOWARD THE TOE OF SLOPE

NOTE: TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES AWAY FROM THE TOE OF SLOPE

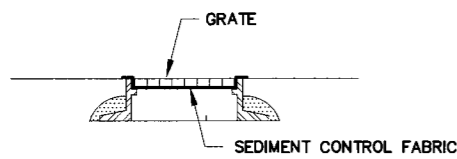
**HAY BALES DETAIL**  
N.T.S.



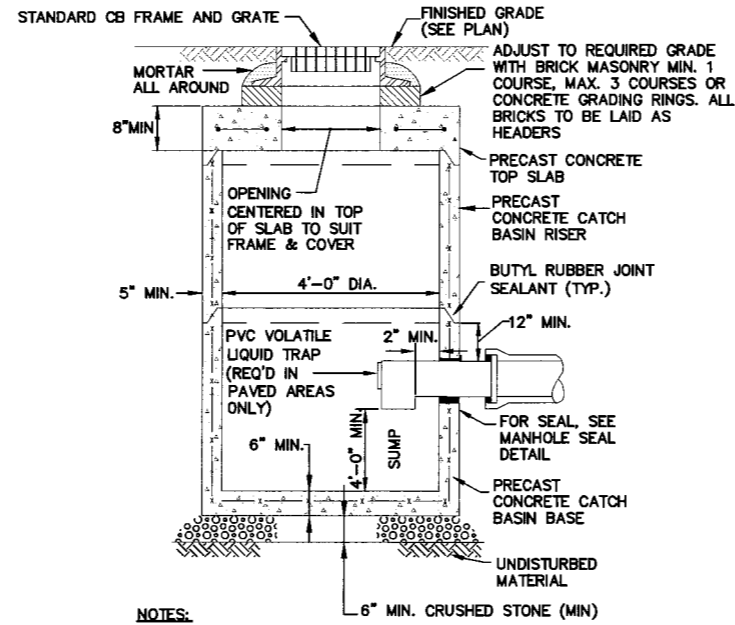
**DEWATERING DISCHARGE DISPOSAL DETAIL**  
N.T.S.



**CATCH BASIN INLET PROTECTION DETAIL**  
N.T.S.

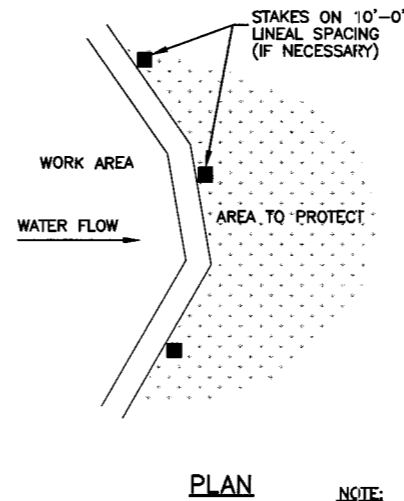


**CATCH BASIN PROTECTION DETAIL**  
N.T.S.



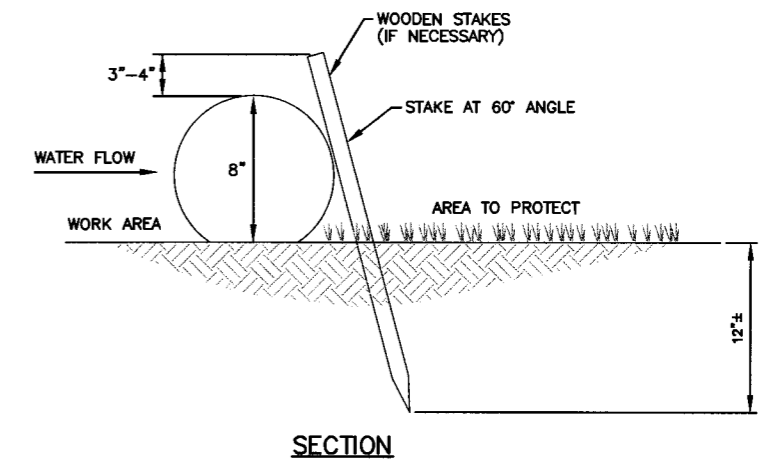
NOTES:  
1. STEEL REINFORCING TO MEET OR EXCEED H2O LOADING.

**PRECAST DRAINAGE STRUCTURE DETAIL**  
N.T.S.



NOTE:  
1. WHEN LAID ON PAVEMENT OR AGAINST FENCE STAKE IS NOT NECESSARY.

**SILK SOCK DETAIL**  
N.T.S.

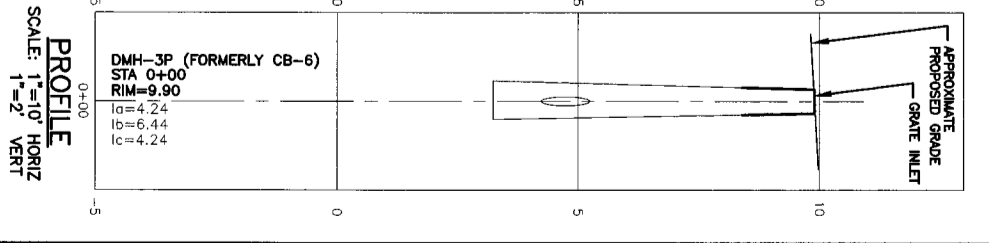
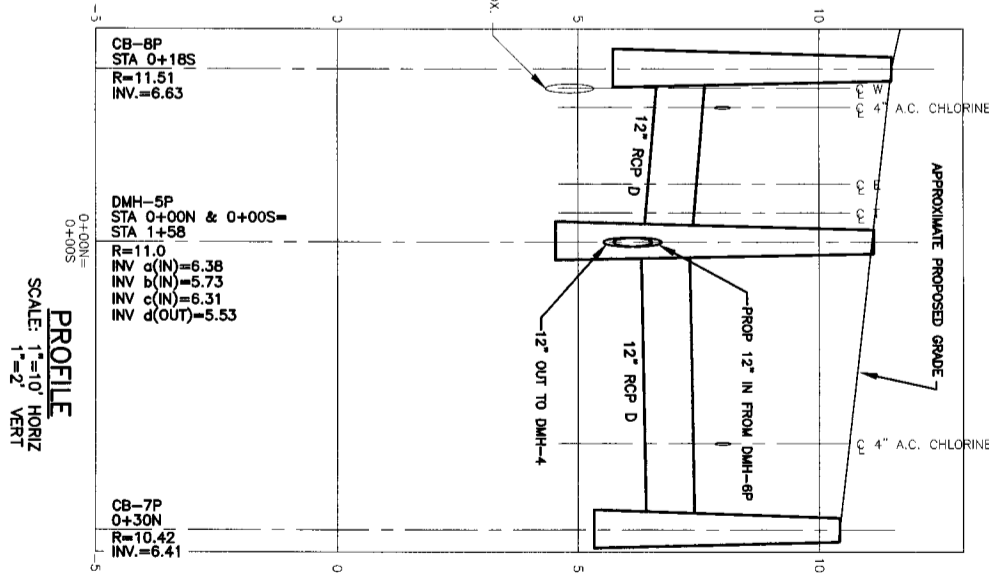
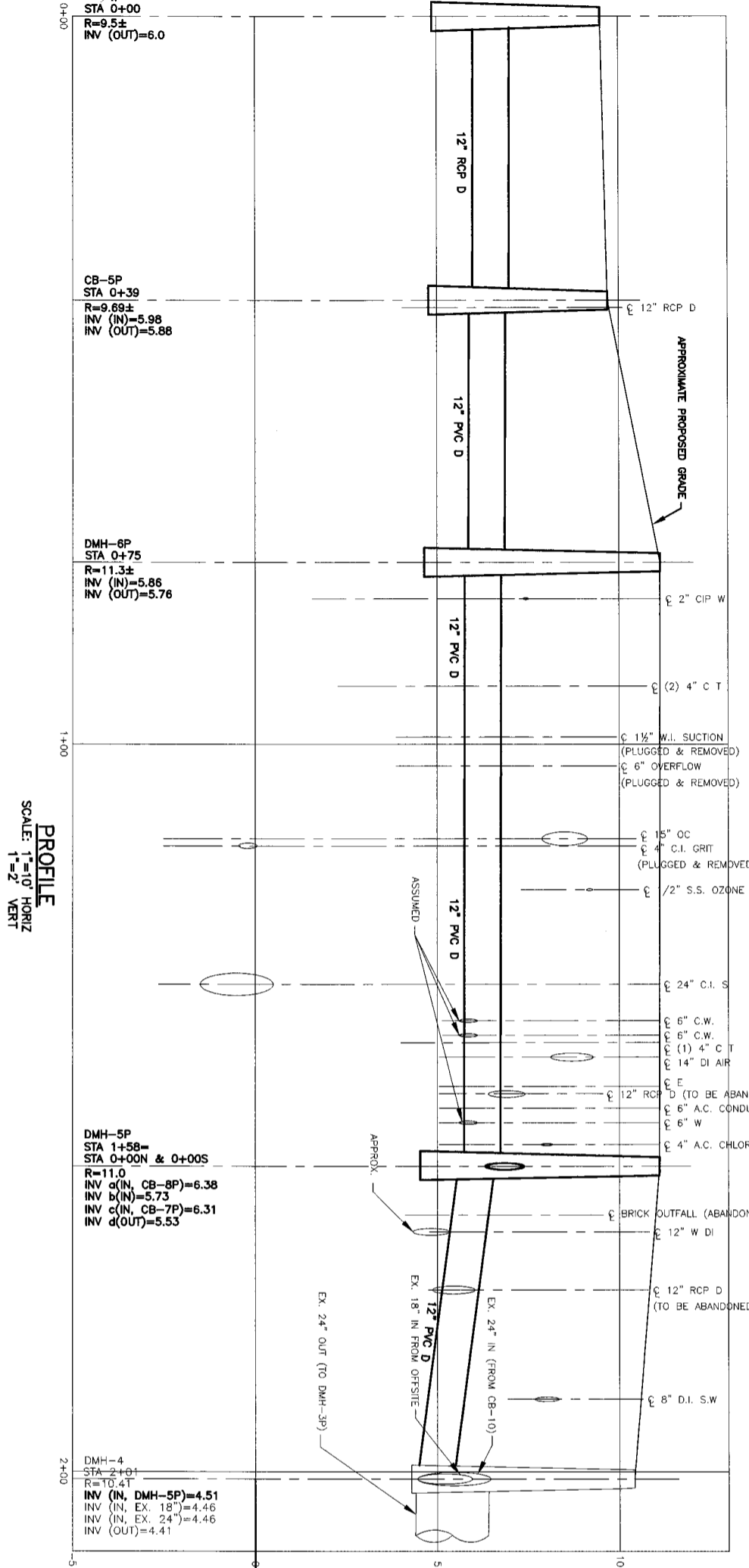


**SECTION**

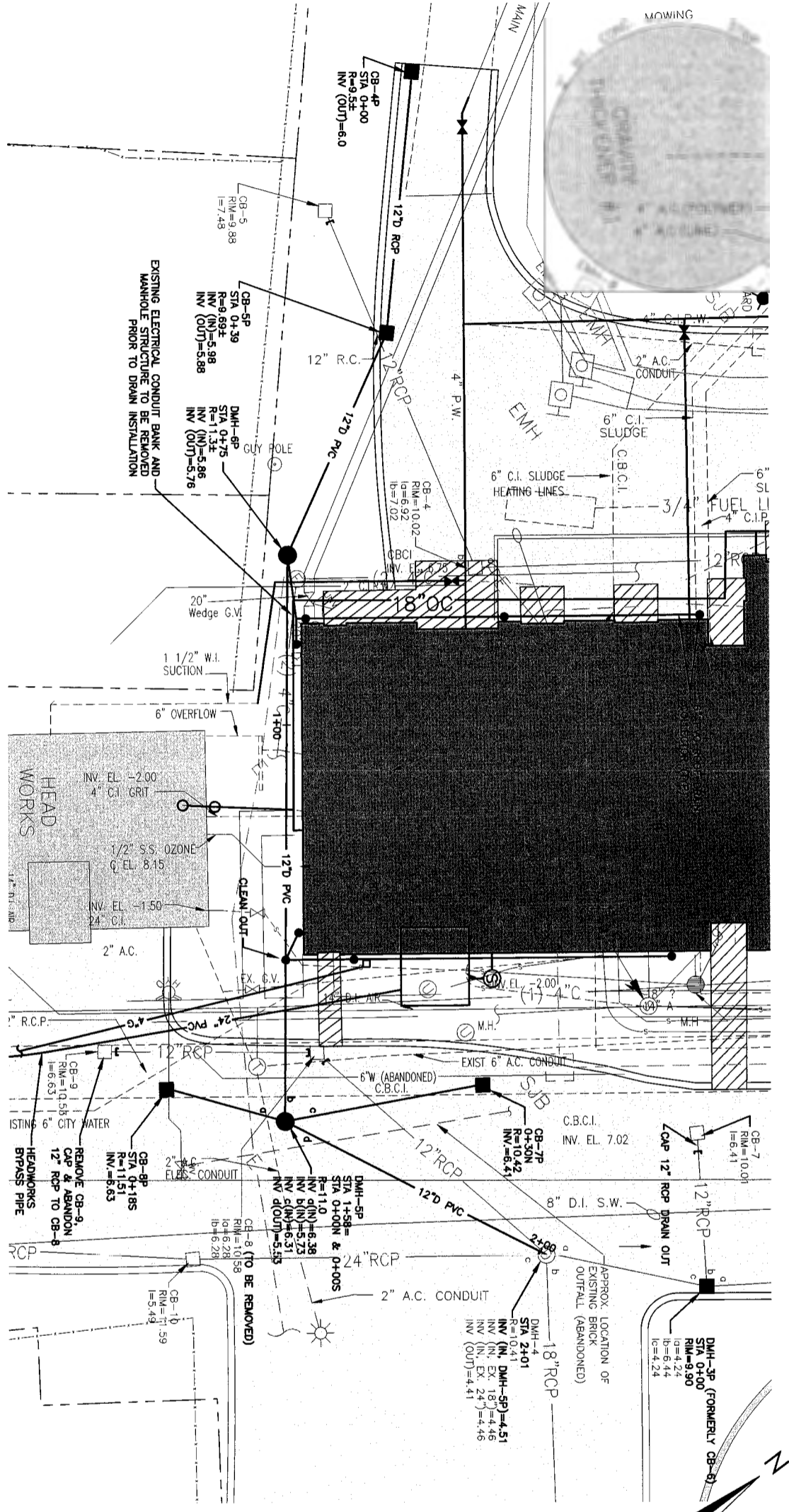
No.	Date	Dr. By	Ch. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING
A P P R O V E D					
					DATE

REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	CONTRACT:	NOTED	SCALE:	CV DETS	JOB NO.:	2090269	DR. BY:	DSN BY:	CHK. BY:	APP. BY:
							RWS	CNR	LRT	KMN



**PLAN**  
SCALE: 1"=10'

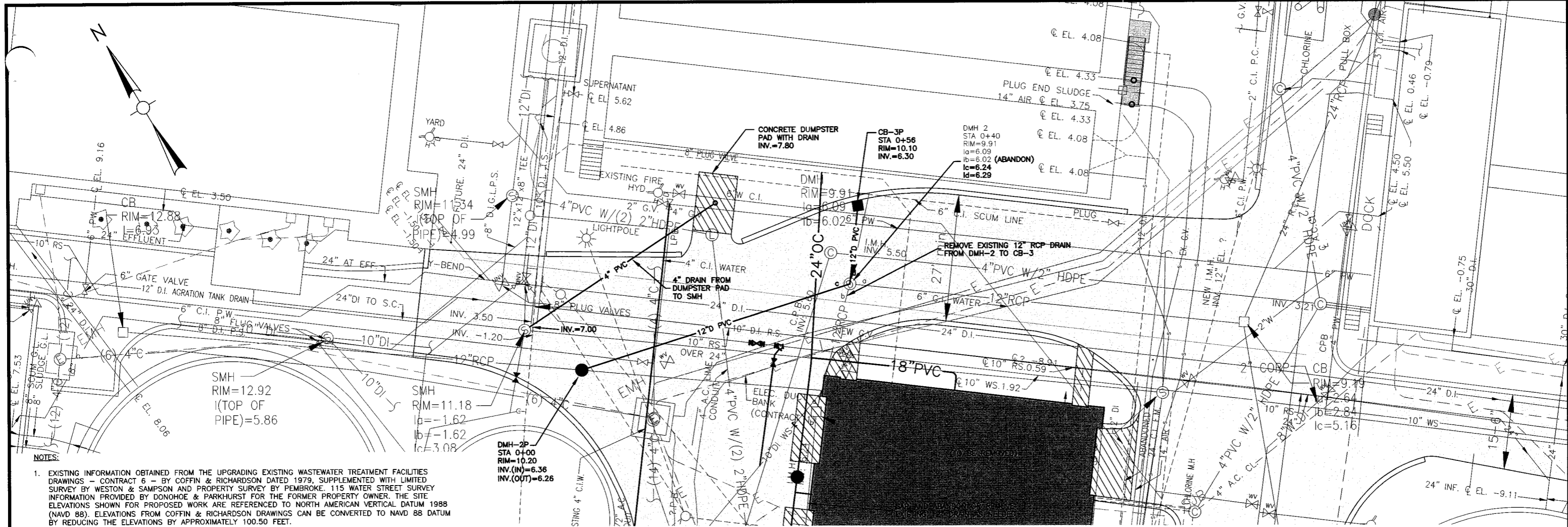


C-15  
SHEET 22 OF 202

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION									
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT									
PROPOSED DRAINAGE PLANS & PROFILES 157 WATER STREET - OB BLDG AREA									
FILE NO.	CADD NO.	SCALE:	CONTRACT:	JOB NO.	DR.BY	DSN.BY	CHK.BY	APP.BY	
189-181	YARD PIPING	NOTED		2090269	RWS	CNR	LRT	KMN	

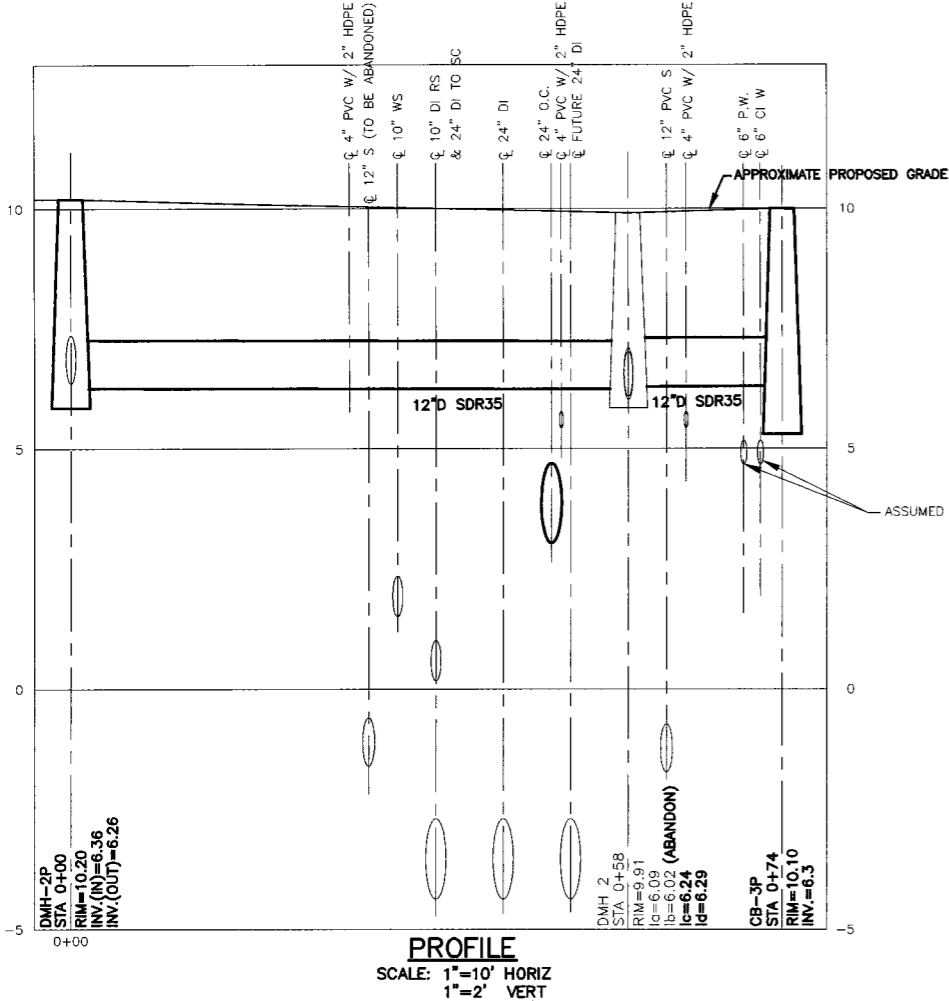
No.	Date	Dr.By	Ck.By	App.By	Description
1	05/2014	RWS	ELM	KMN	RECORD DRAWING
		A	P	P	R
		O	V	E	D
REGISTERED PROFESSIONAL ENGINEER					DATE

**Weston & Sampson**  
Five Centennial Drive, Peabody, MA 01960  
(978) 532-1900 (800) SAMPSON  
www.westonandsampson.com

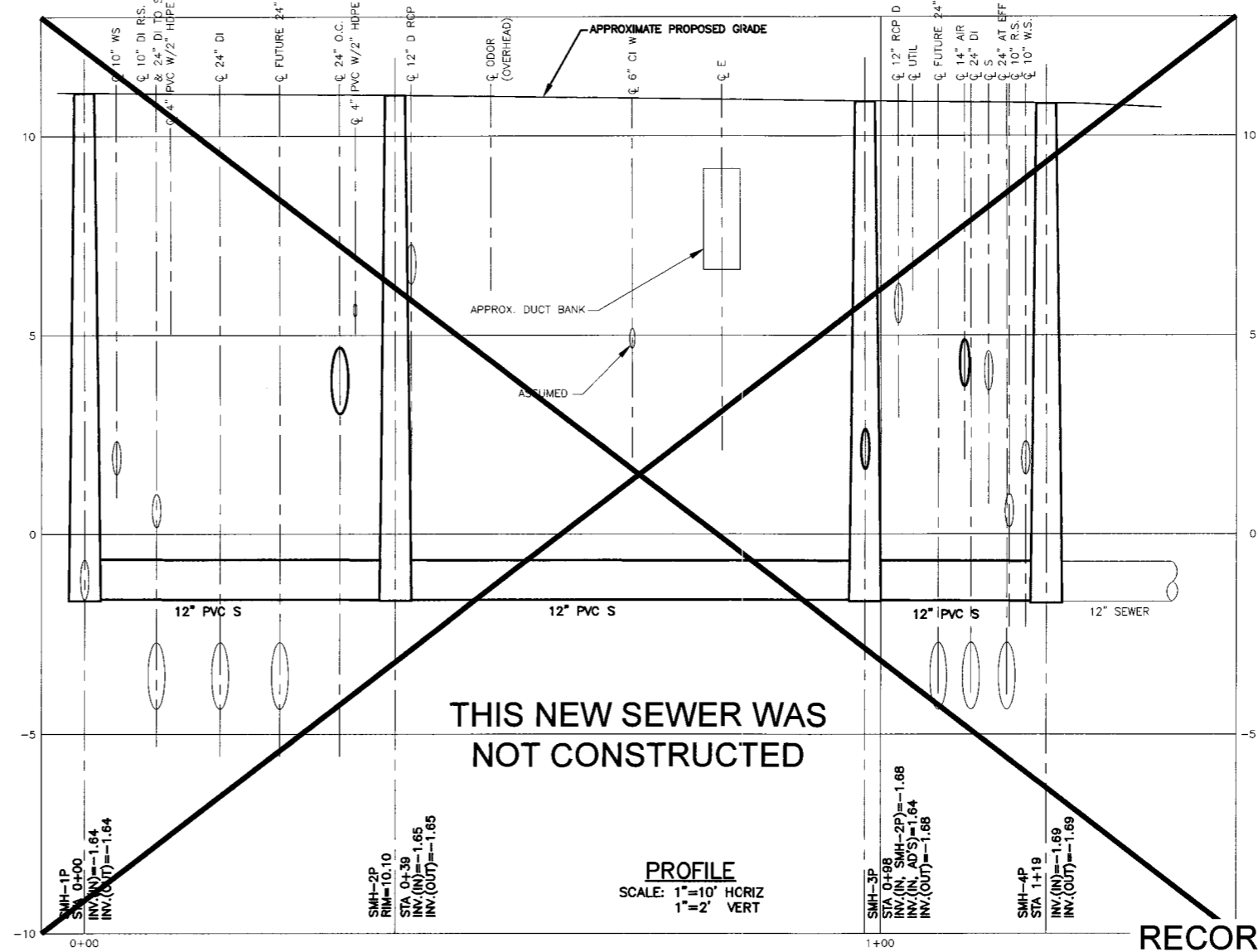


PLAN  
SCALE: 1" = 10'

- NOTES:
- EXISTING INFORMATION OBTAINED FROM THE UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES DRAWINGS - CONTRACT 6 - BY COFFIN & RICHARDSON DATED 1979, SUPPLEMENTED WITH LIMITED SURVEY BY WESTON & SAMPSON AND PROPERTY SURVEY BY PEMBROKE. 115 WATER STREET SURVEY INFORMATION PROVIDED BY DONOHUE & PARKHURST FOR THE FORMER PROPERTY OWNER. THE SITE ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE ELEVATIONS BY APPROXIMATELY 100.50 FEET.
  - CONTRACT 2 IS PART OF A TWO-PHASE WWTF IMPROVEMENTS PROGRAM. SITE IMPROVEMENTS SUCH AS CONSTRUCTION OF THE OCL BUILDING, AERATION BLOWER BUILDING, AST, GENERATOR, SWITCHGEAR, FLOW-SPLITTER BOX, SELECT YARD-PIPING, AND OTHER COMPONENTS COMPLETED BY OTHERS UNDER CONTRACT 1.
  - EXCAVATE TEST PITS IN LOCATIONS OF SMH 1P, SMH 2P AND DMH 2P PRIOR TO ORDERING PRECAST STRUCTURES.
  - FOR LOCATIONS OF OTHER PROPOSED YARD PIPING SEE SHEETS C-6 & C-9.



PROFILE  
SCALE: 1"=10' HORIZ  
1"=2' VERT



PROFILE  
SCALE: 1"=10' HORIZ  
1"=2' VERT

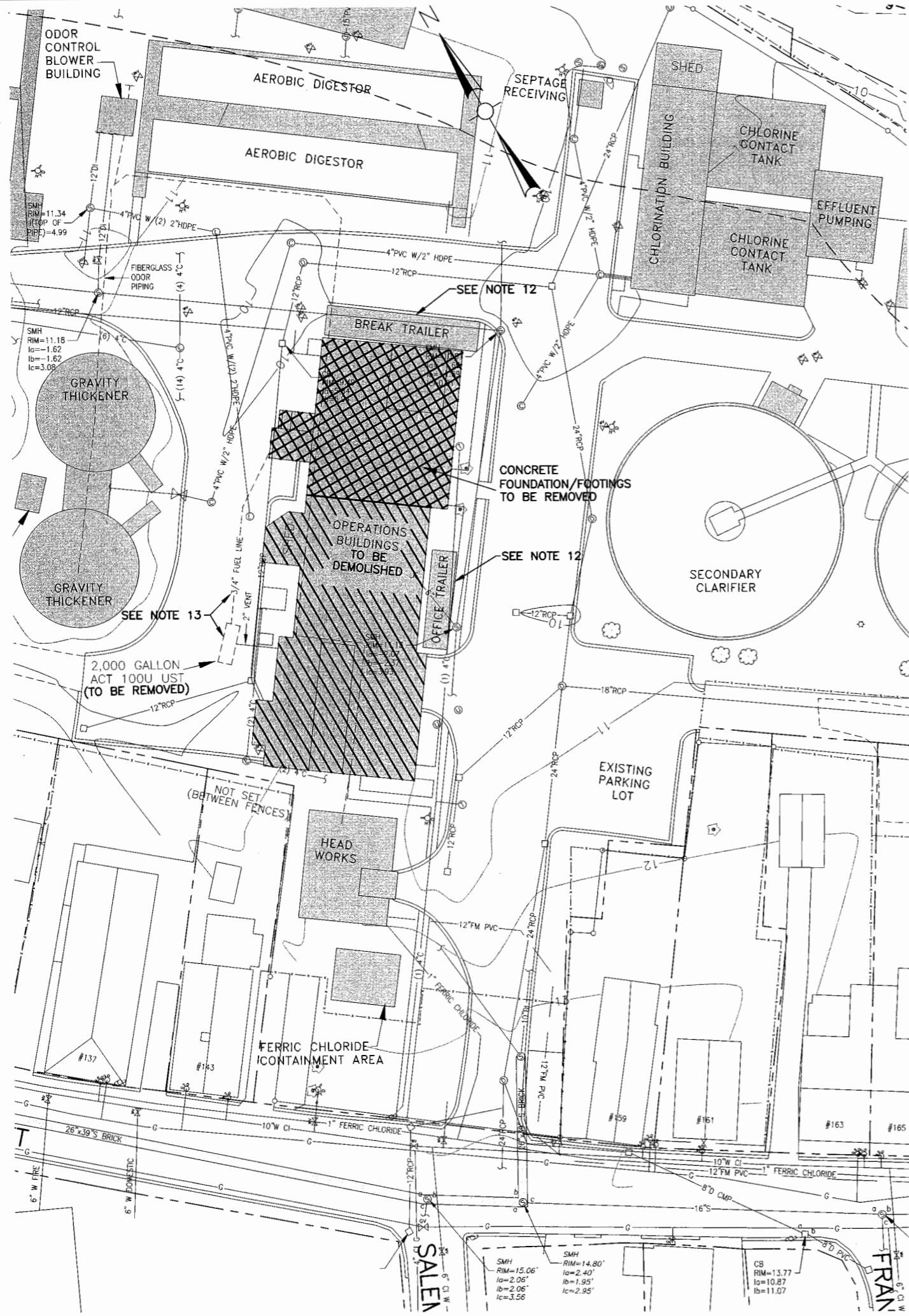
RECORD DRAWING

1	05/2014	RWS	ELM	KMN	RECORD DRAWING
No.	Date	Drawn By	Checked By	App. By	Description
A	P	R	O	V	E
D					

REGISTERED PROFESSIONAL ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**PROPOSED SEWER AND DRAINAGE  
PLANS & PROFILES**

FILE NO.	189-180
SCALE	NOTED
CONTRACT	2
JOB NO.	2090269
DR BY	PJS
CHK BY	CNR
APP BY	KMN



**PLAN**  
 SCALE: 1" = 20'  
 SCALE: 1" = 20'

**DEMOLITION NOTES:**

- CONTRACTOR SHALL MAINTAIN ACCESS DRIVEWAY FROM WATER STREET OPEN, ACCESSIBLE, AND FREE OF DEBRIS, MATERIAL AND/OR EQUIPMENT AT ALL TIMES DURING THE PROJECT. ACCESS DRIVEWAYS SHALL BE MAINTAINED CLEAR AT ALL TIMES FOR NEWBURYPORT FIRE DEPARTMENT ACCESS.
- EXCEPT AS REQUIRED TO PERFORM SPECIFIC WORK ACTIVITIES RELATED TO UTILITY DISCONNECTION/ABANDONMENT, CONTRACTOR SHALL CONFINED HIS OPERATIONS, INCLUDING ALL STOCKPILING, STORAGE, AND STAGING, TO AREAS WITHIN THE LIMIT OF WORK. STOCKPILE DEMOLITION MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02220 - BUILDING DEMOLITION.
- THE CONTRACTOR SHALL COORDINATE THE LOCATION AND USE OF A TEMPORARY WATER SERVICE FOR DEMOLITION ACTIVITIES WITH THE CITY OF NEWBURYPORT WATER DEPARTMENT AND SHALL PROVIDE REQUIRED BACKFLOW PREVENTER(S) AND METER(S), AS REQUIRED, AT NO ADDITIONAL COST TO THE OWNER.
- TEMPORARY ELECTRICAL PROVISIONS SHALL BE COORDINATED WITH THE REQUIREMENTS OF DIVISION 16000.
- CONTRACTOR SHALL DEMOLISH AND REMOVE ALL ABOVE GRADE STRUCTURAL COMPONENTS OF THE OPERATIONS BUILDING IN THEIR ENTIRETY, INCLUDING APPURTENANCES ASSOCIATED WITH THE STRUCTURE SUCH AS STAIRS, PORCHES, DECKS, BUILD-OUTS, ETC., THAT MAY EXIST BEYOND THE HATCHING INDICATED. DEMOLITION WORK SHALL EXCLUDE THOSE STAIRS THAT LEAD DOWN TO THE INFLUENT PUMP ROOM AND THOSE STAIRS THAT LEAD DOWN TO THE WETWELL.
- CONTRACTOR SHALL DEMOLISH AND REMOVE THE FIRST FLOOR SLAB IN THE AREA ABOVE THE OPERATIONS BUILDING BASEMENT. CONTRACTOR SHALL CONDUCT DEMOLITION OF FIRST FLOOR SLAB IN A MANNER THAT PROTECTS THE TREATMENT SYSTEM EQUIPMENT AND COMPONENTS, ALLOWS FOR CONTINUOUS OPERATION OF THE RAW SEWAGE PUMPS IN THE BASEMENT AREA, AND PROTECTS THE EXISTING BASEMENT WALLS PER SPECIFICATION SECTION 02220 - BUILDING DEMOLITION. CONTRACTOR SHALL PROVIDE NECESSARY WEATHER PROTECTION TO EXPOSED BASEMENT AREAS DURING FIRST FLOOR SLAB DEMOLITION.
- TO FACILITATE DEMOLITION OF THE FIRST FLOOR SLAB ABOVE THE BASEMENT AREA, THE CONTRACTOR SHALL SAW CUT THE EXISTING BASEMENT FOUNDATION WALLS. CONTRACTOR SHALL COORDINATE SAW CUT ELEVATIONS WITH STRUCTURAL SHEETS (ELEVATION VARIES). CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF BASEMENT WALLS DURING AND FOLLOWING DEMOLITION OF THE CONCRETE FLOOR SLAB.
- CONTRACTOR SHALL DEMOLISH AND REMOVE SUBGRADE CONCRETE FOOTINGS/FOUNDATIONS IN THEIR ENTIRETY AT THE LOCATIONS INDICATED ON THE DRAWING AND IN ACCORDANCE WITH SPECIFICATION SECTION 02220 - BUILDING DEMOLITION.
- CONTRACTOR SHALL PROCEED WITH ASBESTOS ABATEMENT ACTIVITIES AND DEMOLITION OF THE FORMER WASTEWATER TREATMENT OPERATIONS BUILDING IN SUCH A MANNER SO AS TO ALLOW FOR SAFE AND UNINTERRUPTED ACCESS TO THE OPERATIONS BUILDING BASEMENT, TO REMAIN IN PLACE, BY THE CITY OF NEWBURYPORT WASTEWATER TREATMENT PERSONNEL DURING NON-DEMOLITION HOURS OR AS NEEDED TO FACILITATE THE CONTINUAL MANAGEMENT OF INFLUENT WASTEWATER FLOWS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE RELATED DUST-CONTROL PER SPECIFICATION SECTION 01562-DUST CONTROL.
- IF ASBESTOS CEMENT PIPE IS ENCOUNTERED AND IS DAMAGED/BROKEN DURING FOUNDATION DEMOLITION ACTIVITIES, IT SHALL BE ABATED AS PER SPECIFICATION SECTION 02111 - ASBESTOS ABATEMENT FOR UNDERGROUND UTILITIES. UNDAAMAGED ASBESTOS CEMENT PIPE UNCOVERED DURING DEMOLITION ACTIVITIES SHALL BE PLUGGED AND ABANDONED IN PLACE IN ACCORDANCE WITH SPECIFICATION SECTION 02222 - UTILITY ABANDONMENT.
- CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TWO (2) MOBILE OFFICE TRAILERS LOCATED ADJACENT TO THE OPERATIONS BUILDING.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE 2,000 GALLON DIESEL FUEL OIL UNDERGROUND STORAGE TANK (UST) AND ALL RELATED PIPING, VENTS AND TANK APPURTENANCES. REMOVAL AND DISPOSAL OF THE UST AND ASSOCIATED CONTENTS SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 02115 - REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS.
- CONTRACTOR IS DIRECTED TO SELECTIVE DEMOLITION SHOWN ON INDIVIDUAL DISCIPLINE DRAWINGS. ALL DEMOLITION WORK SHALL BE COORDINATED BY THE GENERAL CONTRACTOR.

**UTILITY ABANDONMENT NOTES:**

- CONTRACTOR SHALL COORDINATE WITH NATIONAL GRID FOR DISCONNECTION AND REMOVAL OF ELECTRICAL UTILITY, INCLUDING METER, AND CUTTING/CAPPING OF BURIED ELECTRICAL WIRE AND CONDUIT AT THE LOCATION AT THE LOCATION SHOWN ON THE CONTRACT DRAWINGS, AND SHALL PAY ALL COSTS ASSOCIATED WITH ELECTRICAL SERVICE TERMINATION/DISCONNECTION INCLUDING CUTTING, CAPPING, REMOVAL AND DISPOSAL, AS REQUIRED.
- IF PRESENT, CONTRACTOR SHALL COORDINATE DISCONNECTION AND REMOVAL OF TELEPHONE/CABLE/INTERNET SERVICE TO THE BUILDING WITH SERVICE PROVIDERS AND SHALL PAY ALL COSTS ASSOCIATED WITH SERVICE TERMINATION /DISCONNECTION INCLUDING REMOVAL AND DISPOSAL, AS REQUIRED.
- UTILITY FEEDS TO AND FROM THE BUILDING SHALL BE DISCONNECTED/TERMINATED IN ACCORDANCE WITH SPECIFICATION SECTIONS 02222 - UTILITY ABANDONMENT AND 00890 -PERMITS. CONTRACTOR IS REFERRED TO CIVIL DRAWINGS FOR LOCATIONS OF SITE UTILITIES.
- THE WWTF TREATMENT PROCESSES ARE TO REMAIN OPERATIONAL AT ALL TIMES DURING DEMOLITION AND CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL INCLUDE PROVISIONS FOR BYPASS PUMPING OR OPERATION OF INFLUENT PUMPING AT ALL TIMES IN ORDER TO MAINTAIN FORWARD FLOW THROUGH THE FACILITY.

**LEGEND:**

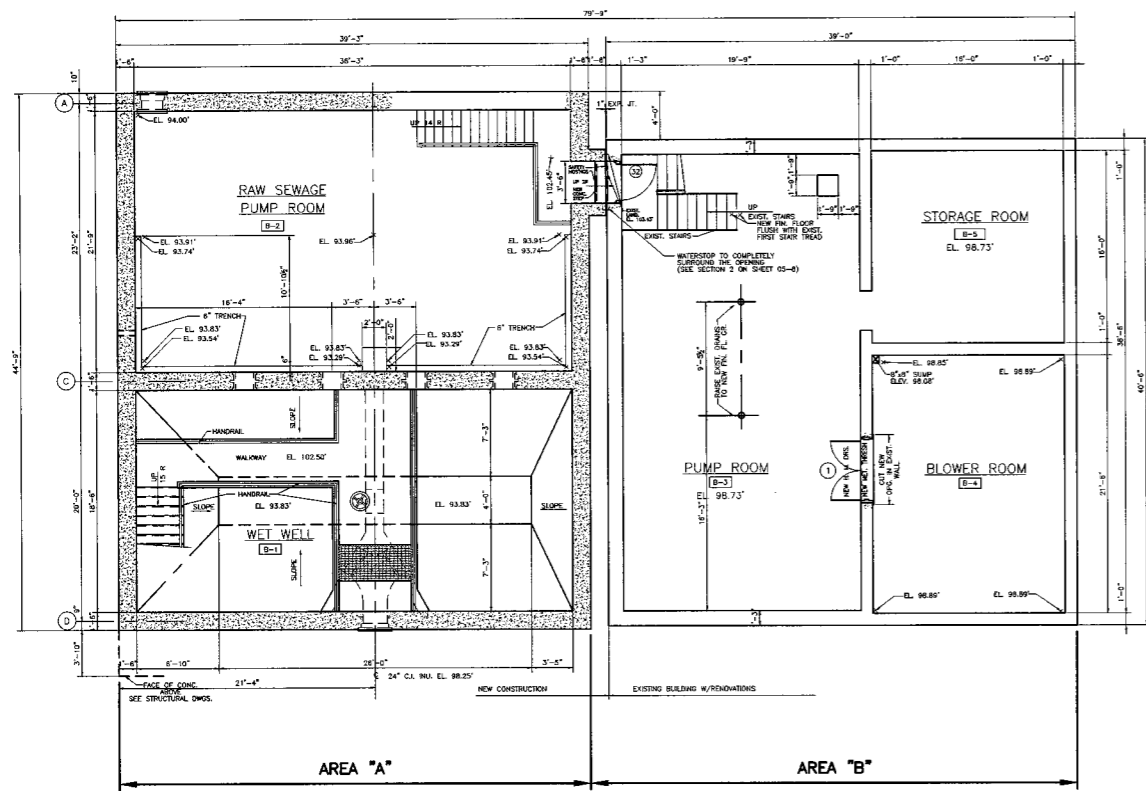
- CHAIN LINK FENCE
- EXISTING BUILDING
- ABOVE GRADE STRUCTURES AND FIRST FLOOR SLAB TO BE DEMOLISHED (SEE NOTES 5, 6 AND 7)
- ABOVE GRADE AND BELOW GRADE STRUCTURE / FOUNDATIONS TO BE DEMOLISHED (SEE NOTES 5 AND 8)

1	05/20/14	RWS	Dr. By	ELM	Chk. By	KMN	App. By	RECORD DRAWING	Description	A	P	R	O	V	E	D	DATE
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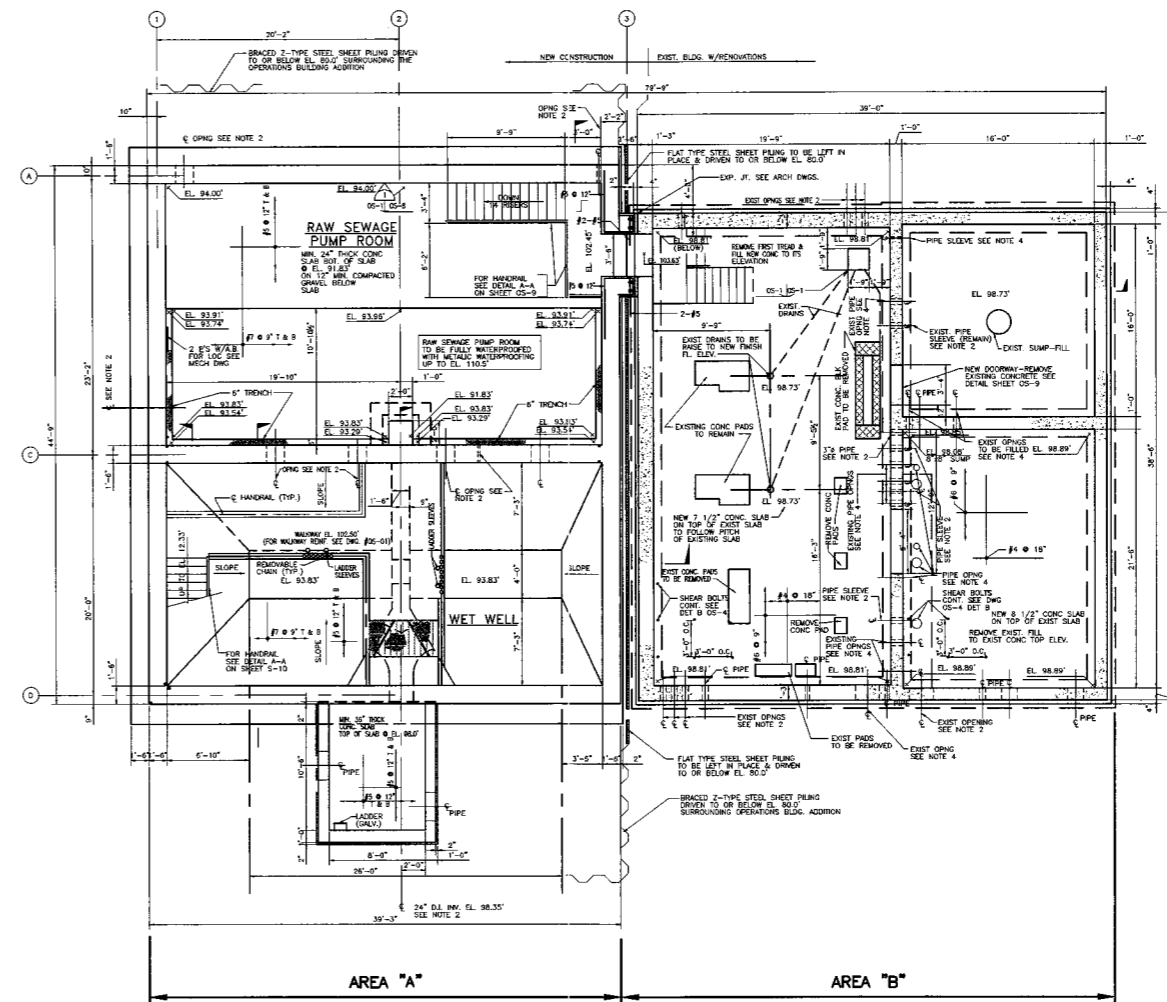
REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**DEMOLITION / UTILITY ABANDONMENT PLAN**  
 SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2  
 FILE NO. 189-179

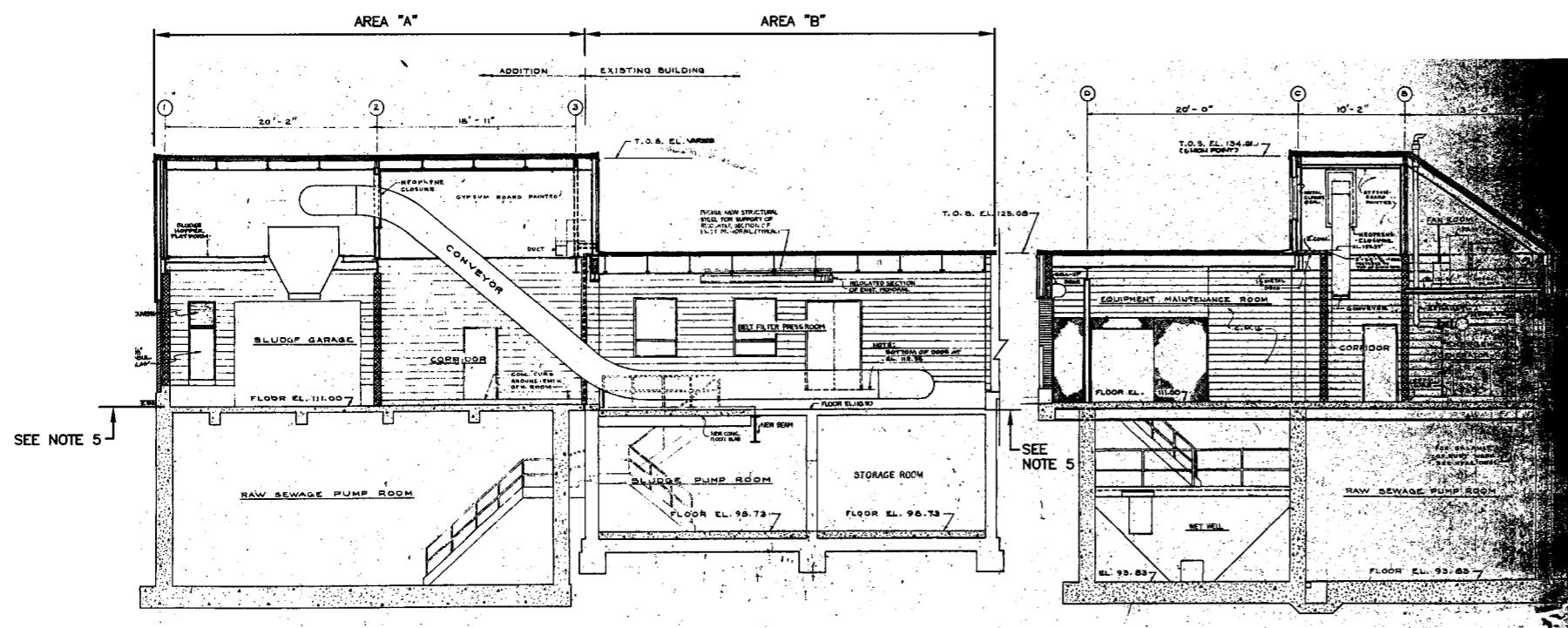




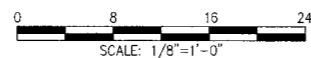
ARCHITECTURAL BASEMENT PLAN — AREAS "A" AND "B"  
SCALE: 1/8"=1'-0"



STRUCTURAL BASEMENT PLAN — AREAS "A" AND "B" (SEE NOTE 4)  
SCALE: 1/8"=1'-0"



ARCHITECTURAL SECTION — AREAS "A" AND "B"  
SCALE: 1/8"=1'-0"

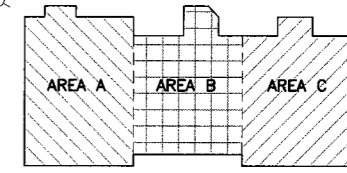
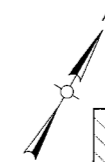


NOTES:

- BUILDING FLOOR PLANS, ELEVATIONS, AND SECTIONS TAKEN FROM THE PLANS DATED JULY 1979, ENTITLED "CITY OF NEWBURYPORT, MASSACHUSETTS CONTRACT NO. 6 - UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES" PROVIDED BY CITY OF NEWBURYPORT DEPARTMENT OF PUBLIC WORKS.
- THIS DRAWING DEPICTS A REPRODUCTION/UPGRADING OF THE BUILDING DESIGN PLANS DATED JUNE 1977. ALL NOTES SHOWN PERTAIN TO PREVIOUS SITE CONSTRUCTION REQUIREMENTS. THE INFORMATION HEREIN IS PROVIDED FOR CONTRACTOR INFORMATION PURPOSES ONLY.
- CONTRACTOR TO VERIFY LOCATIONS AND CONDITION OF INTERNAL BUILDING COMPONENTS AND ITEMS DEPICTED PRIOR TO BEGINNING DEMOLITION WORK.
- AREA "C" DOES NOT HAVE A BASEMENT.
- ALL STRUCTURAL AND BUILDING ELEMENTS ABOVE FINISH FIRST FLOOR ELEVATION (ELEVATION VARIES - REFER TO SECTIONS SHOWN) TO BE DEMOLISHED AND REMOVED IN THEIR ENTIRETY. FIRST FLOOR SLAB SHALL ALSO BE REMOVED IN ITS ENTIRETY.
- ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
- D-DRAWINGS ARE DEMOLITION DRAWINGS SHOWING ORIGINAL DESIGN OF THE EXISTING OPERATIONS BUILDING, WHICH IS TO BE PARTIALLY DEMOLISHED AS SHOWN HEREIN AS PART OF THIS CONTRACT. CURRENT EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN IN THE D-DRAWINGS AS THE RESULT OF CHANGES DURING THE ORIGINAL CONSTRUCTION ITSELF AND FROM OTHER SUBSEQUENT WORK. D-DRAWINGS ARE PROVIDED FOR THE INFORMATION OF BIDDERS, WHO SHOULD VISIT THE SITE TO INFORM THEMSELVES OF THE CURRENT EXISTING CONDITIONS. D-DRAWINGS DO NOT SHOW ANY NEW WORK; THEY ONLY SHOW PRIOR REPRESENTATIONS OF EXISTING CONDITIONS TO BE DEMOLISHED.

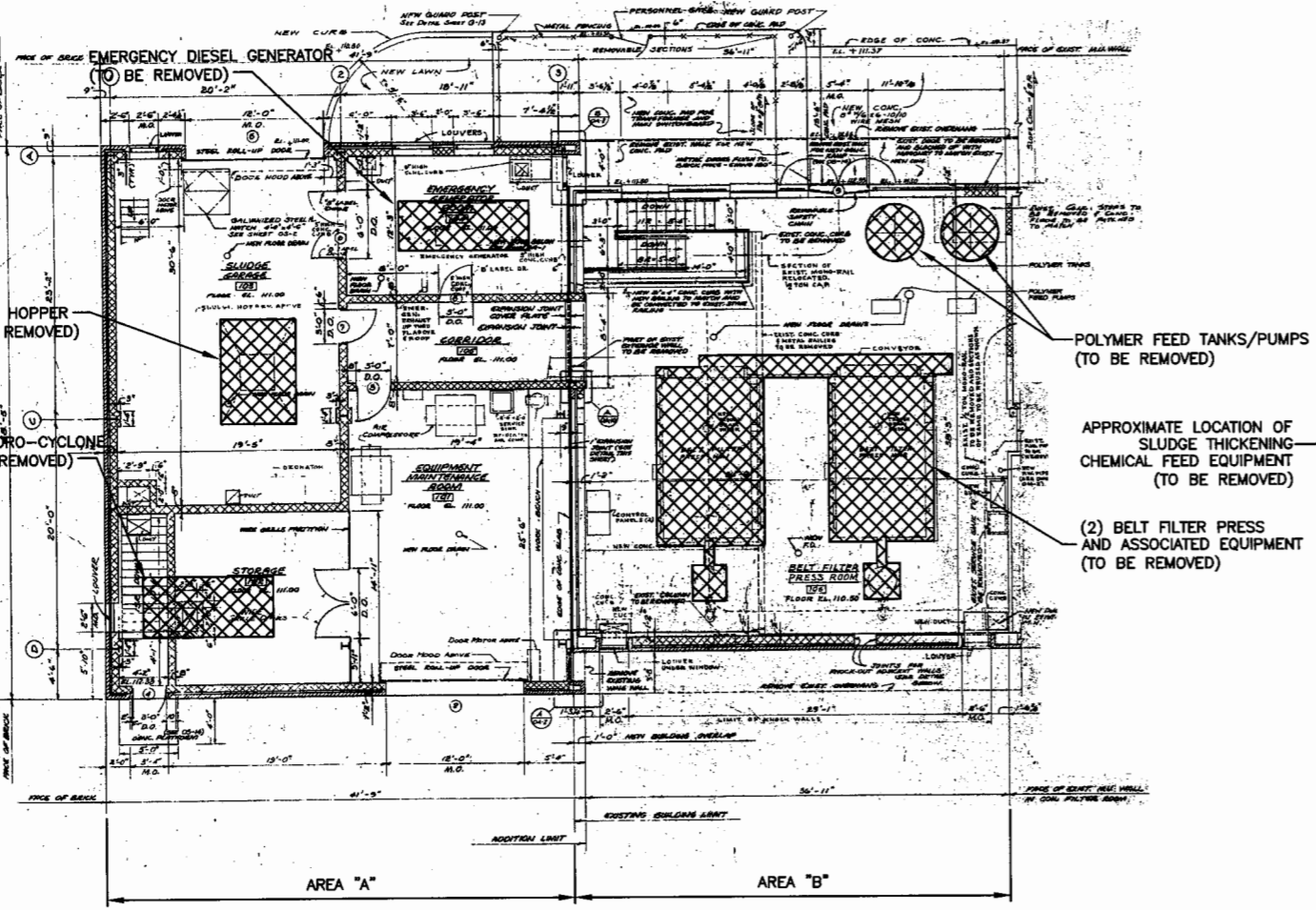
LEGEND

	BRICK
	MASONRY UNITS
	CONCRETE
	METAL STUD VENEER PLASTER PARTITION
	STEEL
	RIGID INSULATION
	BLANKET INSULATION
	ALUMINUM
	ARCHITECTURAL PANEL
	LOCATION OF HARD EXISTING

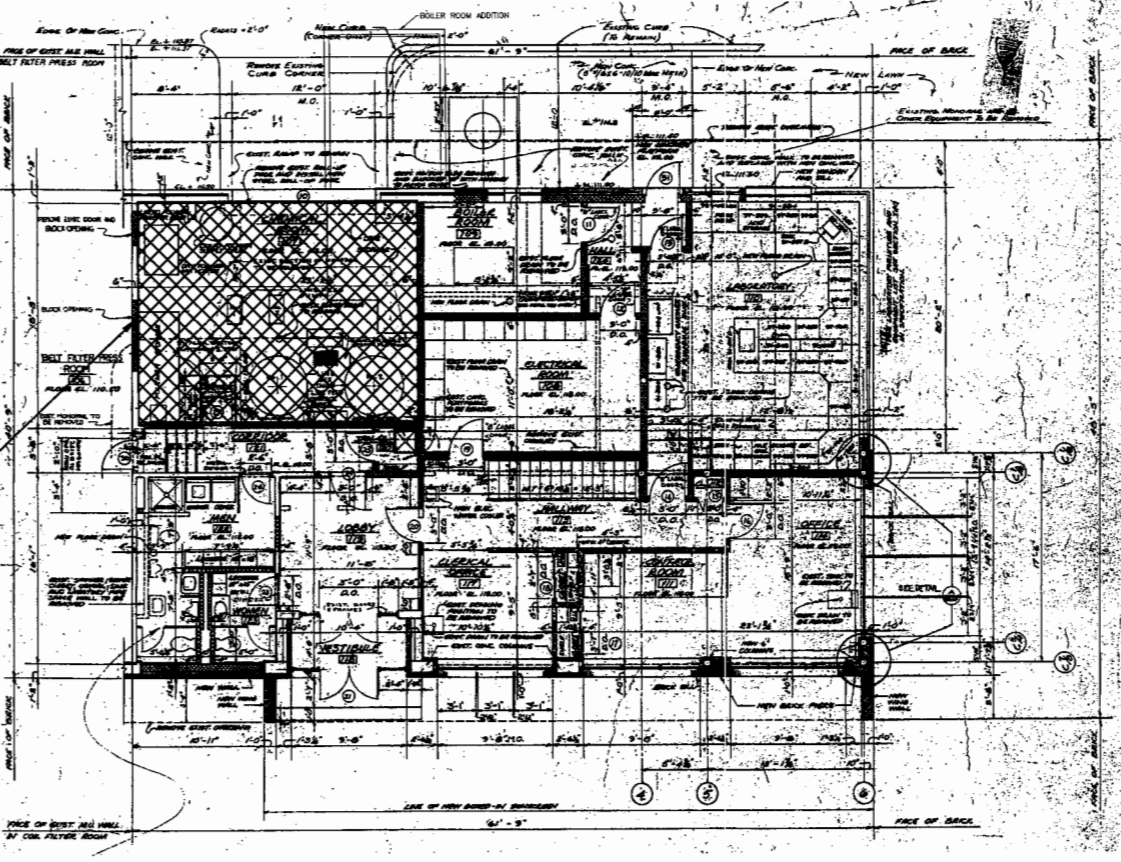


No.	1	Date	05/2014	Dr. By	ELM	App. By	KWN	Description	RECORD DRAWING
A P P R O V E D									
REGISTERED PROFESSIONAL ENGINEER									
									DATE

1	05/2014	MAM	Dr. By	ELM	Chk. By	KMN	App. By	A	P	P	O	V	E	D
No.	Date	Dr. By	Chk. By	App. By	App. By	App. By	App. By	REGISTERED PROFESSIONAL ENGINEER						
RECORD DRAWING Description														

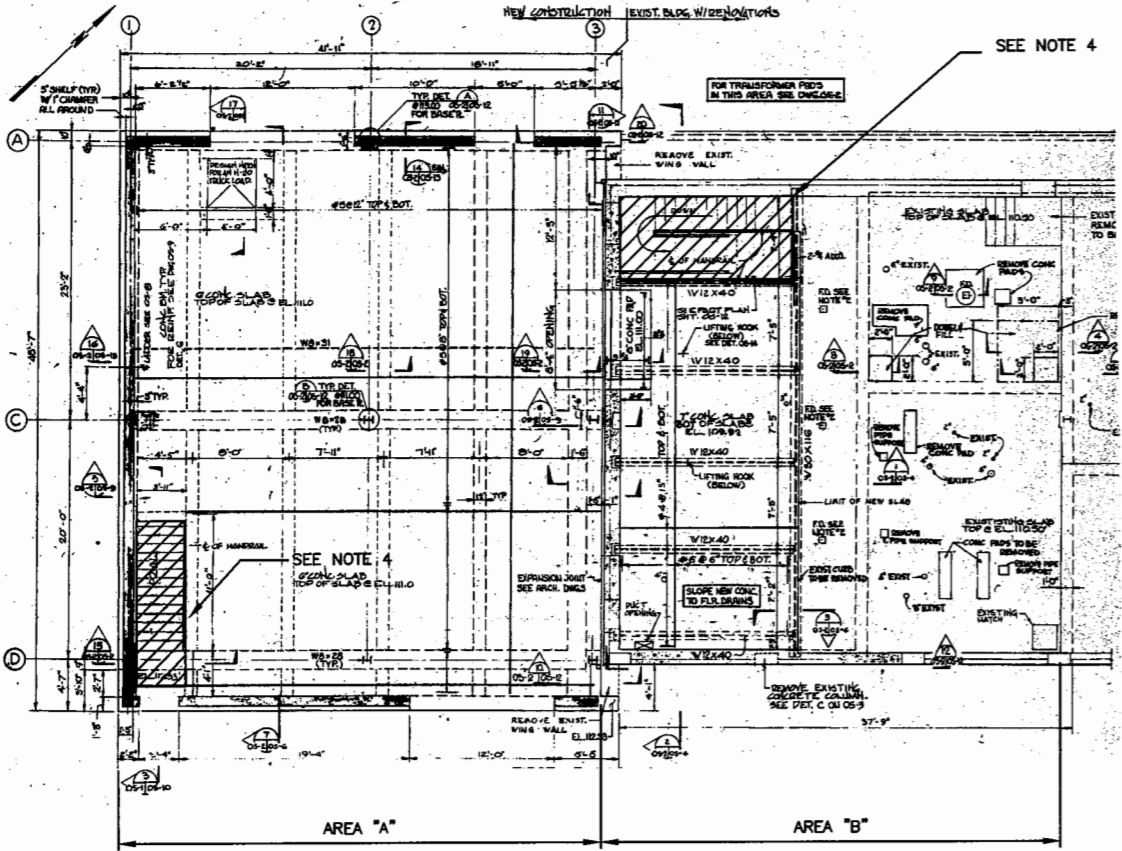


**ARCHITECTURAL FIRST FLOOR PLAN – AREAS "A" AND "B"**  
 SCALE: 1/8"=1'-0"

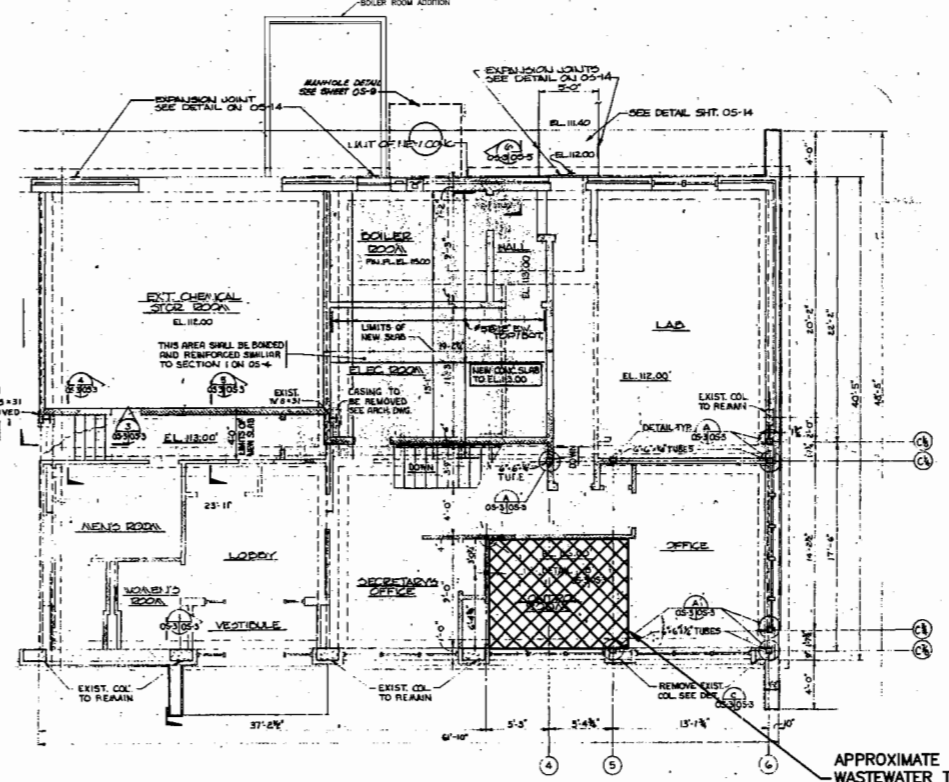


**ARCHITECTURAL FIRST FLOOR PLAN – AREA "C"**  
 SCALE: 1/8"=1'-0"

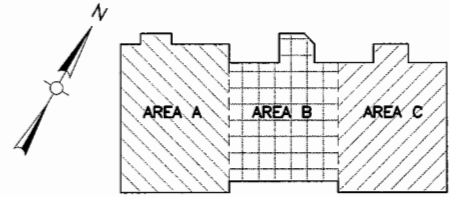
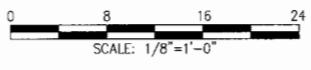
- NOTES:**
- BUILDING FLOOR PLANS, ELEVATIONS, AND SECTIONS TAKEN FROM THE PLANS DATED JULY 1979, ENTITLED "CITY OF NEWBURYPORT, MASSACHUSETTS CONTRACT NO. 6 – UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES" PROVIDED BY CITY OF NEWBURYPORT DEPARTMENT OF PUBLIC WORKS.
  - THIS DRAWING DEPICTS A REPRODUCTION/UPGRADING OF THE BUILDING DESIGN PLANS DATED JUNE, 1977. ALL NOTES SHOWN PERTAIN TO PREVIOUS SITE CONSTRUCTION REQUIREMENTS. THE INFORMATION HEREIN IS PROVIDED FOR CONTRACTOR INFORMATION PURPOSES ONLY.
  - CONTRACTOR TO VERIFY LOCATIONS AND CONDITION OF INTERNAL BUILDING COMPONENTS AND ITEMS DEPICTED PRIOR TO BEGINNING DEMOLITION WORK.
  - CONTRACTOR SHALL MAINTAIN A PORTION OF EXISTING CONCRETE FLOOR SLAB AND ENTRANCE STAIRS TO THE RAW SEWAGE PUMP ROOM AND INFLUENT WET WELL. CONTRACTOR SHALL PHASE DEMOLITION TO PROVIDE UNINTERRUPTED ACCESS TO THESE BASEMENT ACCESS POINTS DURING NON-DEMOLITION HOURS. IN THE EVENT THAT EITHER STAIRWAY IS DISRUPTED OR INACCESSIBLE BECAUSE OF DEMOLITION ACTIVITIES, THEN THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AN ALTERNATIVE SAFE TEMPORARY POINT OF ACCESS TO THESE AREAS.
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
  - D-DRAWINGS ARE DEMOLITION DRAWINGS SHOWING ORIGINAL DESIGN OF THE EXISTING OPERATIONS BUILDING, WHICH IS TO BE PARTIALLY DEMOLISHED AS SHOWN HEREIN AS PART OF THIS CONTRACT. CURRENT EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN IN THE D-DRAWINGS AS THE RESULT OF CHANGES DURING THE ORIGINAL CONSTRUCTION ITSELF AND FROM OTHER SUBSEQUENT WORK. D-DRAWINGS ARE PROVIDED FOR THE INFORMATION OF BIDDERS, WHO SHOULD VISIT THE SITE TO INFORM THEMSELVES OF THE CURRENT EXISTING CONDITIONS. D-DRAWINGS DO NOT SHOW ANY NEW WORK; THEY ONLY SHOW PRIOR REPRESENTATIONS OF EXISTING CONDITIONS TO BE DEMOLISHED.



**STRUCTURAL FIRST FLOOR PLAN – AREAS "A" AND "B"**  
 SCALE: 1/8"=1'-0"

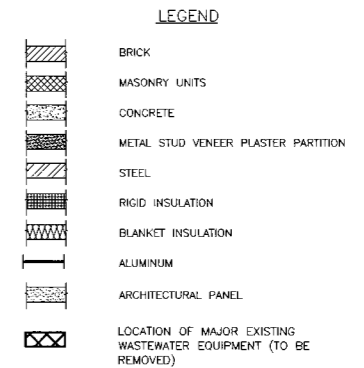
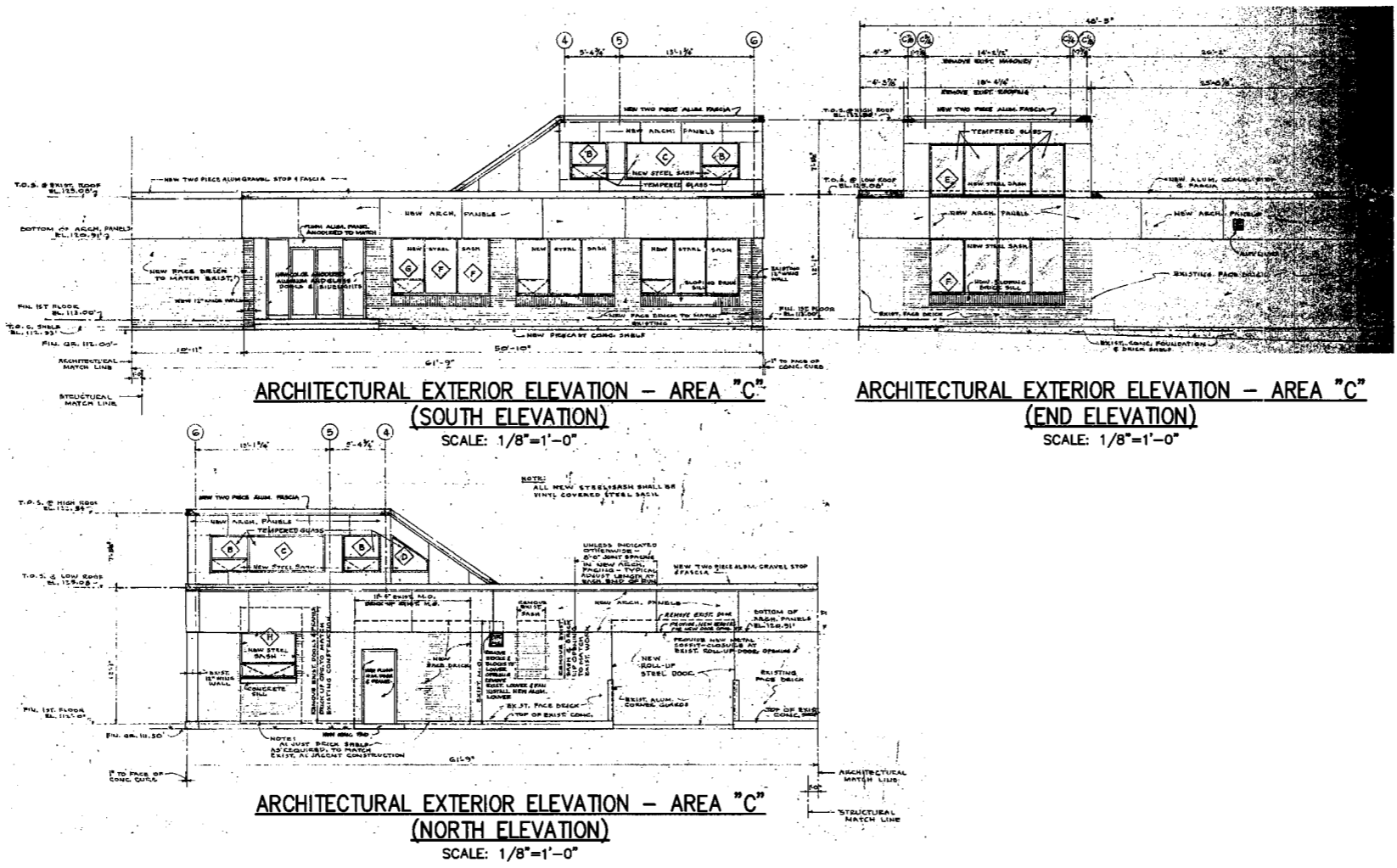


**STRUCTURAL FIRST FLOOR PLAN – AREA "C"**  
 SCALE: 1/8"=1'-0"



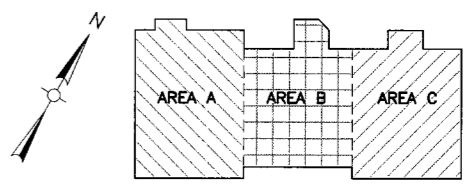
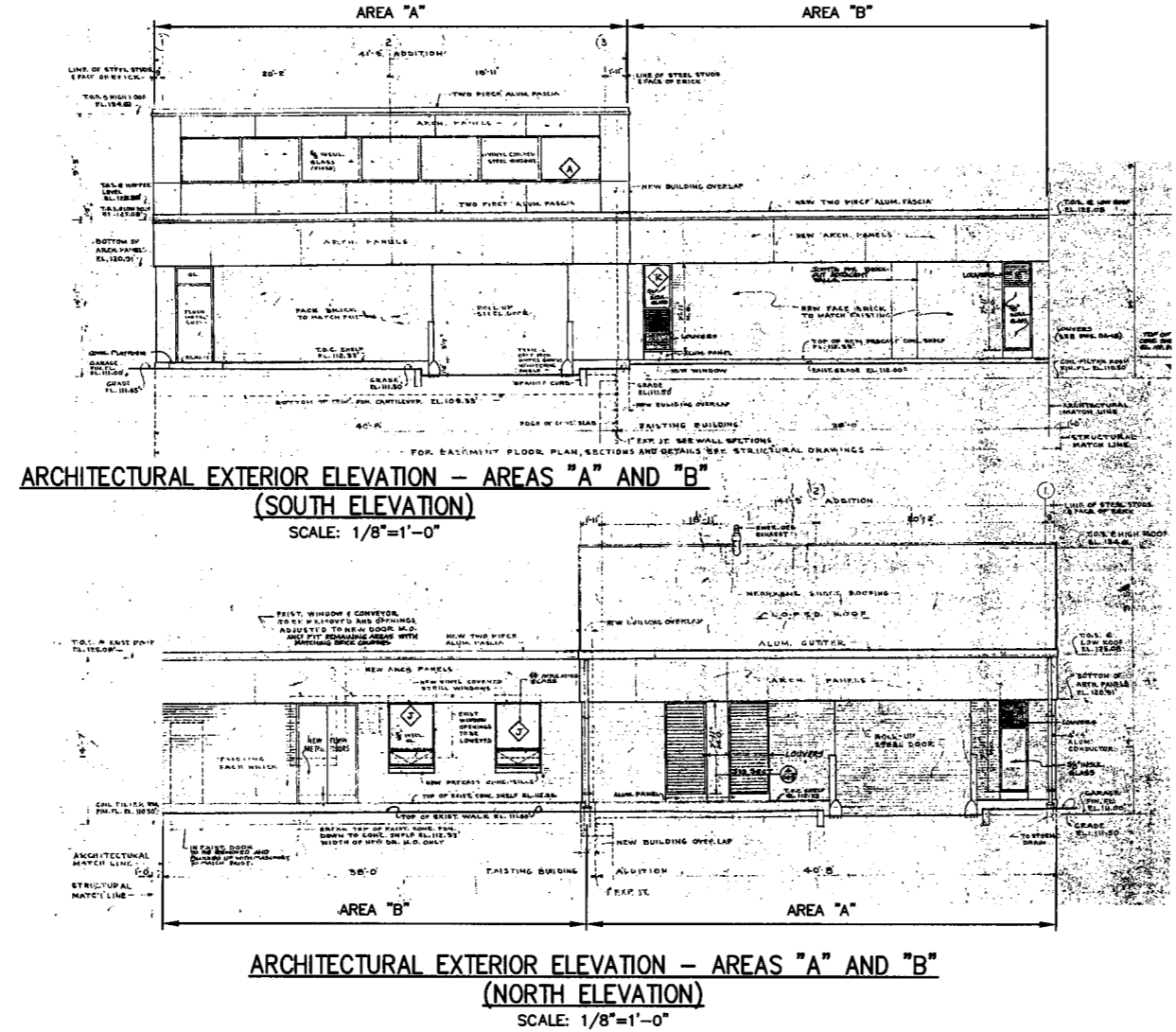
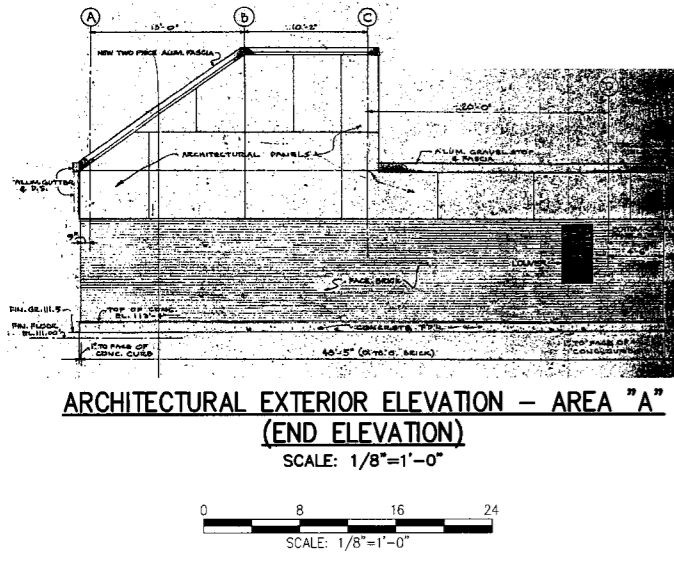
**KEY PLAN**  
 NOT TO SCALE

**RECORD DRAWING**



**NOTES:**

- BUILDING FLOOR PLANS, ELEVATIONS, AND SECTIONS TAKEN FROM THE PLANS DATED JULY 1979, ENTITLED "CITY OF NEWBURYPORT, MASSACHUSETTS CONTRACT NO. 8 - UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES" PROVIDED BY CITY OF NEWBURYPORT DEPARTMENT OF PUBLIC WORKS.
- THIS DRAWING DEPICTS A REPRODUCTION/UPGRADING OF THE BUILDING DESIGN PLANS DATED JUNE 1977. ALL NOTES SHOWN PERTAIN TO PREVIOUS SITE CONSTRUCTION REQUIREMENTS. THE INFORMATION HEREIN IS PROVIDED FOR CONTRACTOR INFORMATION PURPOSES ONLY.
- CONTRACTOR TO VERIFY LOCATIONS AND CONDITION OF INTERNAL BUILDING COMPONENTS AND ITEMS DEPICTED PRIOR TO BEGINNING DEMOLITION WORK.
- ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
- D-DRAWINGS ARE DEMOLITION DRAWINGS SHOWING ORIGINAL DESIGN OF THE EXISTING OPERATIONS BUILDING, WHICH IS TO BE PARTIALLY DEMOLISHED AS SHOWN HEREIN AS PART OF THIS CONTRACT. CURRENT EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN IN THE D-DRAWINGS AS THE RESULT OF CHANGES DURING THE ORIGINAL CONSTRUCTION ITSELF AND FROM OTHER SUBSEQUENT WORK. D-DRAWINGS ARE PROVIDED FOR THE INFORMATION OF BIDDERS, WHO SHOULD VISIT THE SITE TO INFORM THEMSELVES OF THE CURRENT EXISTING CONDITIONS. D-DRAWINGS DO NOT SHOW ANY NEW WORK; THEY ONLY SHOW PRIOR REPRESENTATIONS OF EXISTING CONDITIONS TO BE DEMOLISHED.



**KEY PLAN**  
NOT TO SCALE

**RECORD DRAWING**

No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	MJM	ELM	KAN	RECORD DRAWING
		A	P	R	O
		V	E	D	

REGISTERED PROFESSIONAL ENGINEER  
DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**EXISTING OPERATIONS BUILDING**  
**ARCHITECTURAL EXTERIOR ELEVATIONS**

SCALE: NONE  
CONTRACT: 2090269  
JOB NO.: 2  
FILE NO.: 189-176

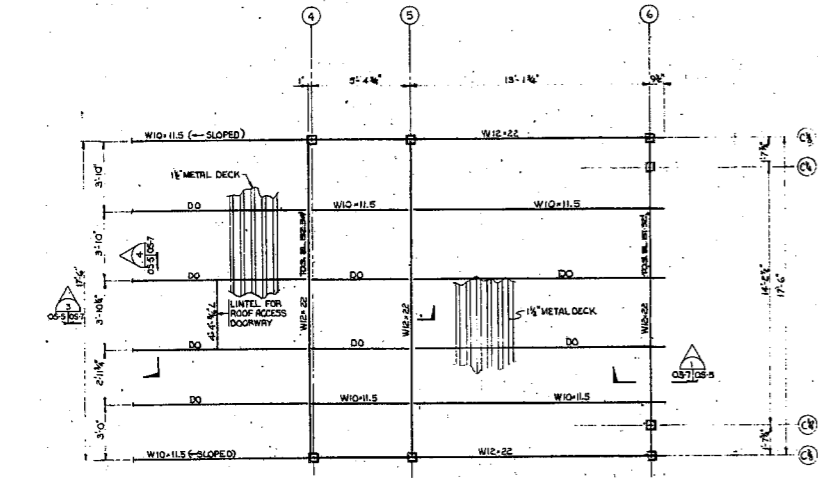
DESIGN BY: PJS  
CHECKED BY: BJM  
APP. BY: KAN

DR. BY: PJS  
CHK. BY: BJM  
APP. BY: KAN

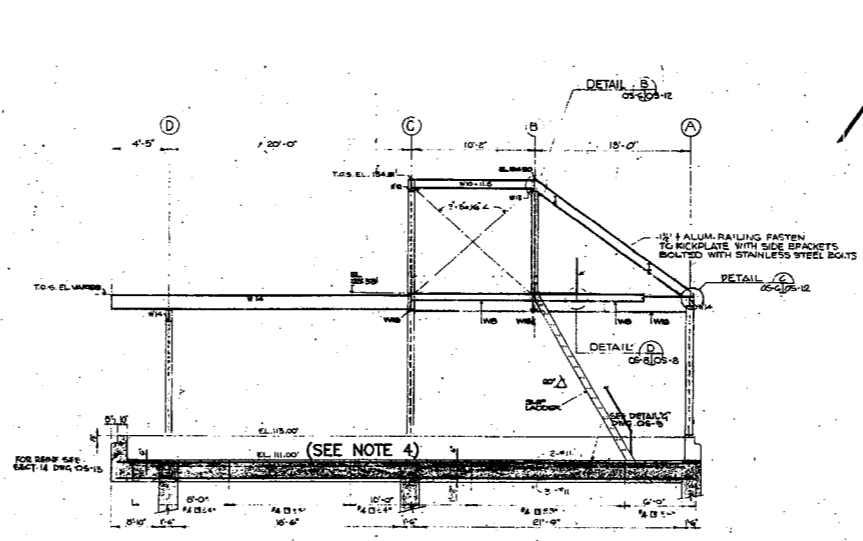
189-176 DEMO-PLAN-2

**D-4**

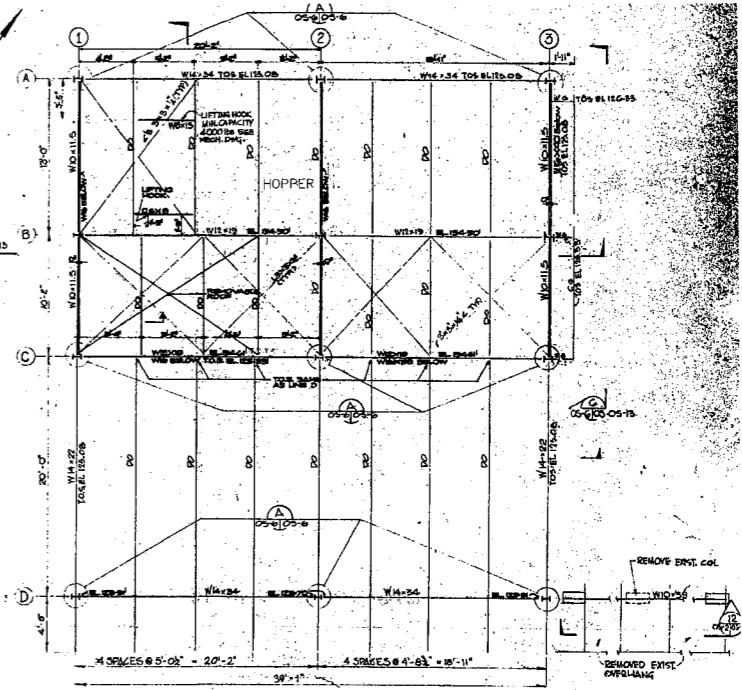
SHEET 27 OF 202



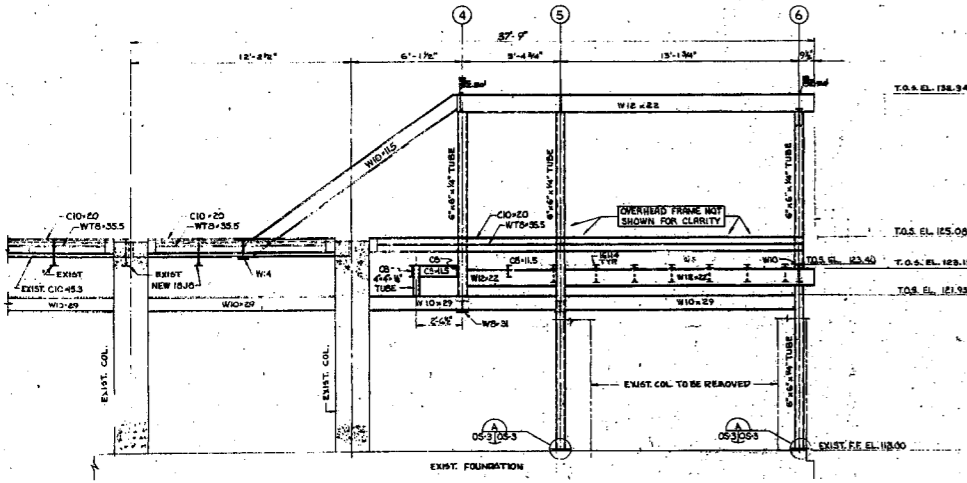
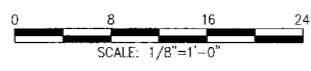
**ROOF FRAMING PLAN - AREA "C" (SECOND FLOOR)**  
SCALE: 3/16"=1'-0"



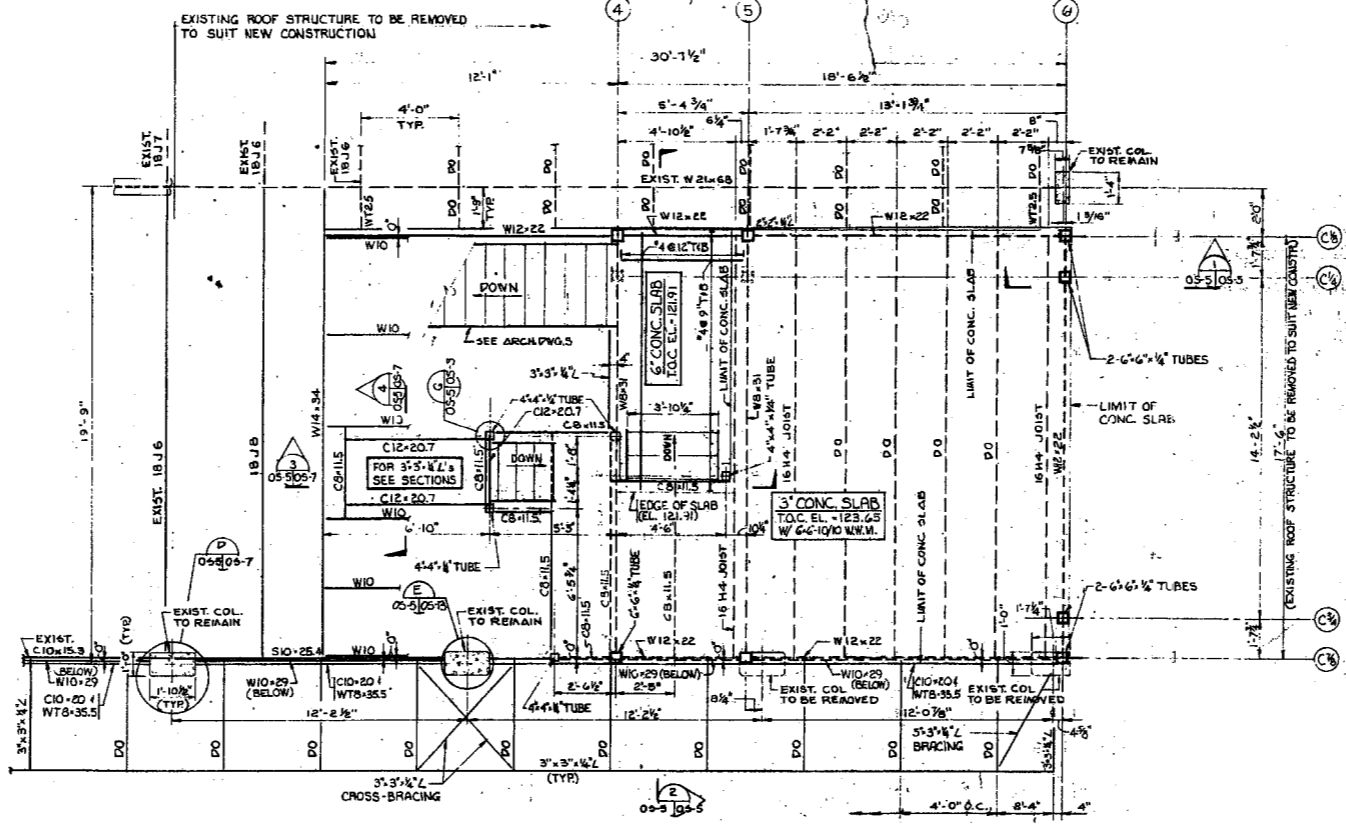
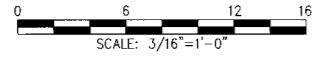
**SECTION - AREA "A"**  
SCALE: 1/8"=1'-0"



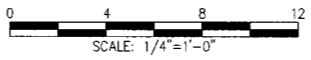
**ROOF FRAMING PLAN - AREA "A"**  
SCALE: 1/8"=1'-0"



**ELEVATION - AREA "C"**  
SCALE: 3/16"=1'-0"

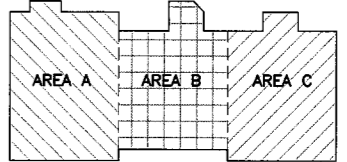
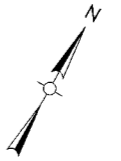


**SECOND FLOOR FRAMING PLAN - AREA "C"**  
SCALE: 1/4"=1'-0"



**LEGEND**

[Symbol]	BRICK
[Symbol]	MASONRY UNITS
[Symbol]	CONCRETE
[Symbol]	METAL STUD VENEER PLASTER PARTITION
[Symbol]	STEEL
[Symbol]	ROOF INSULATION
[Symbol]	BLANKET INSULATION
[Symbol]	ALUMINUM
[Symbol]	ARCHITECTURE PANEL
[Symbol]	LOCATION OF MAJOR EXISTING WATERWATER EQUIPMENT TO BE REMOVED



**KEY PLAN**  
NOT TO SCALE

- NOTES:**
- BUILDING FLOOR PLANS, ELEVATIONS, AND SECTIONS TAKEN FROM THE PLANS DATED JULY 1979, ENTITLED "CITY OF NEWBURYPORT, MASSACHUSETTS CONTRACT No. 6 - UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES" PROVIDED BY CITY OF NEWBURYPORT DEPARTMENT OF PUBLIC WORKS.
  - THIS DRAWING DEPICTS A REPRODUCTION/UPGRADING OF THE BUILDING DESIGN PLANS DATED JUNE 1977. ALL NOTES SHOWN PERTAIN TO PREVIOUS SITE CONSTRUCTION REQUIREMENTS. THE INFORMATION HEREIN IS PROVIDED FOR CONTRACTOR INFORMATION PURPOSES ONLY.
  - CONTRACTOR TO VERIFY LOCATIONS AND CONDITION OF INTERNAL BUILDING COMPONENTS AND ITEMS DEPICTED PRIOR TO BEGINNING DEMOLITION WORK.
  - ALL STRUCTURAL AND BUILDING ELEMENTS ABOVE TOP OF FIRST FLOOR SLAB ELEVATION (ELEVATIONS VARIES - REFER TO DRAWINGS) TO BE DEMOLISHED AND REMOVED IN THEIR ENTIRETY.
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
  - D-DRAWINGS ARE DEMOLITION DRAWINGS SHOWING ORIGINAL DESIGN OF THE EXISTING OPERATIONS BUILDING, WHICH IS TO BE PARTIALLY DEMOLISHED AS SHOWN HEREIN AS PART OF THIS CONTRACT. CURRENT EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN IN THE D-DRAWINGS AS THE RESULT OF CHANGES DURING THE ORIGINAL CONSTRUCTION ITSELF AND FROM OTHER SUBSEQUENT WORK. D-DRAWINGS ARE PROVIDED FOR THE INFORMATION OF BIDDERS, WHO SHOULD VISIT THE SITE TO INFORM THEMSELVES OF THE CURRENT EXISTING CONDITIONS. D-DRAWINGS DO NOT SHOW ANY NEW WORK. THEY ONLY SHOW PRIOR REPRESENTATIONS OF EXISTING CONDITIONS TO BE DEMOLISHED.

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No.	1	Date	05/2014	Dr. By	ELM	App. By	KMN	RECORD DRAWING	Description
A P P R O V E D									
REGISTERED PROFESSIONAL ENGINEER									
									DATE

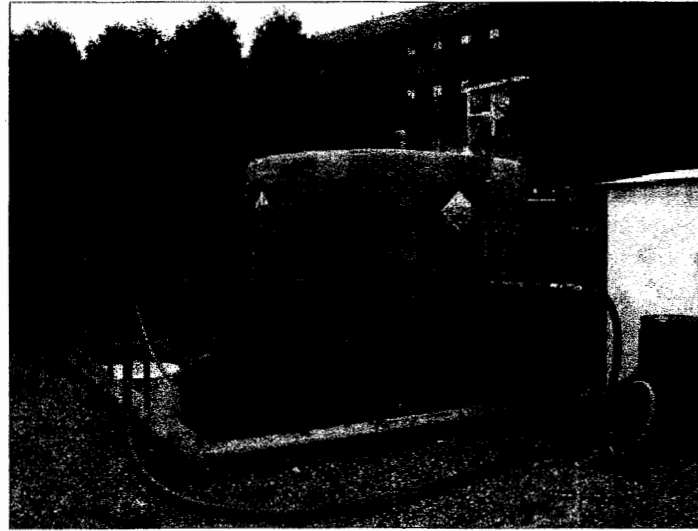
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**EXISTING OPERATIONS BUILDING  
STRUCTURAL FRAMING - FLOOR PLANS & ELEVATIONS**

CADD NO. 189-175  
SCALE: NONE  
CONTRACT: 2090269  
JOB NO. 2  
DR. BY: PJS  
CHK. BY: BJM  
APP. BY: KMN  
FILE NO. 189-175  
SCALE: NONE  
CONTRACT: 2090269  
JOB NO. 2  
DR. BY: PJS  
CHK. BY: BJM  
APP. BY: KMN  
SHEET 28 OF 202

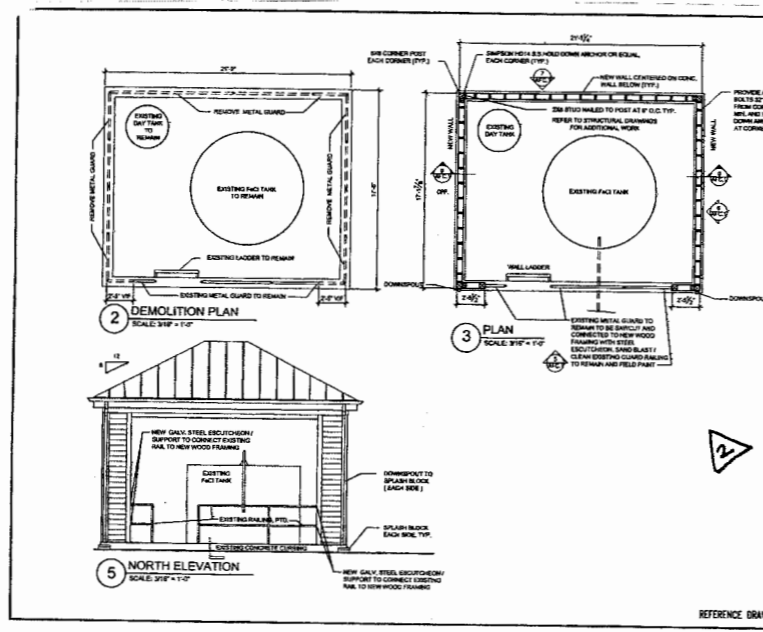
**D-5**

**RECORD DRAWING**

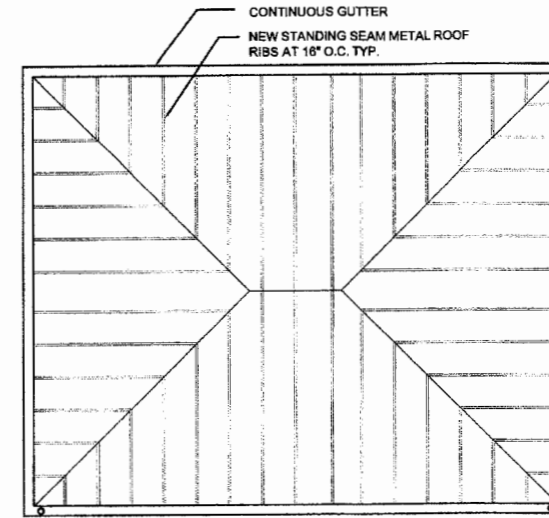




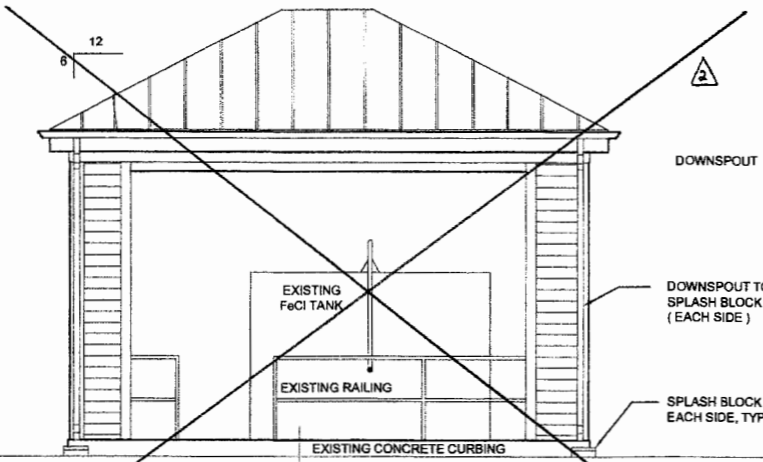
1 PHOTO - EXISTING CONDITIONS



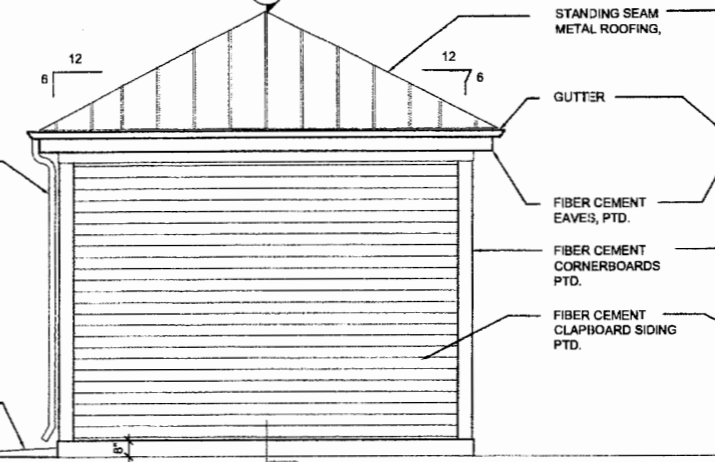
CITY OF NEWBURGHPORT, MA  
WWT IMPROVEMENTS PROJECT  
CONTRACT 2  
SK-A-2



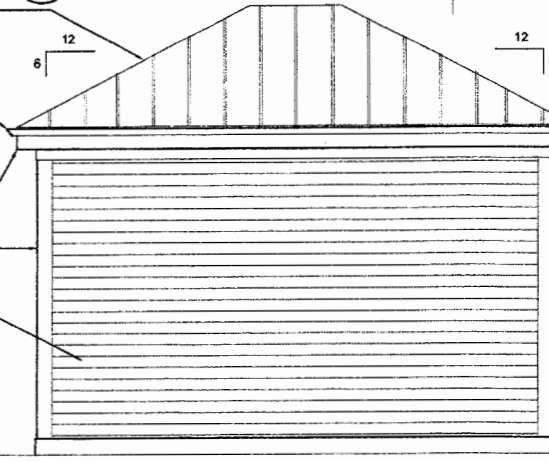
4 ROOF PLAN SCALE: 1/4" = 1'-0"



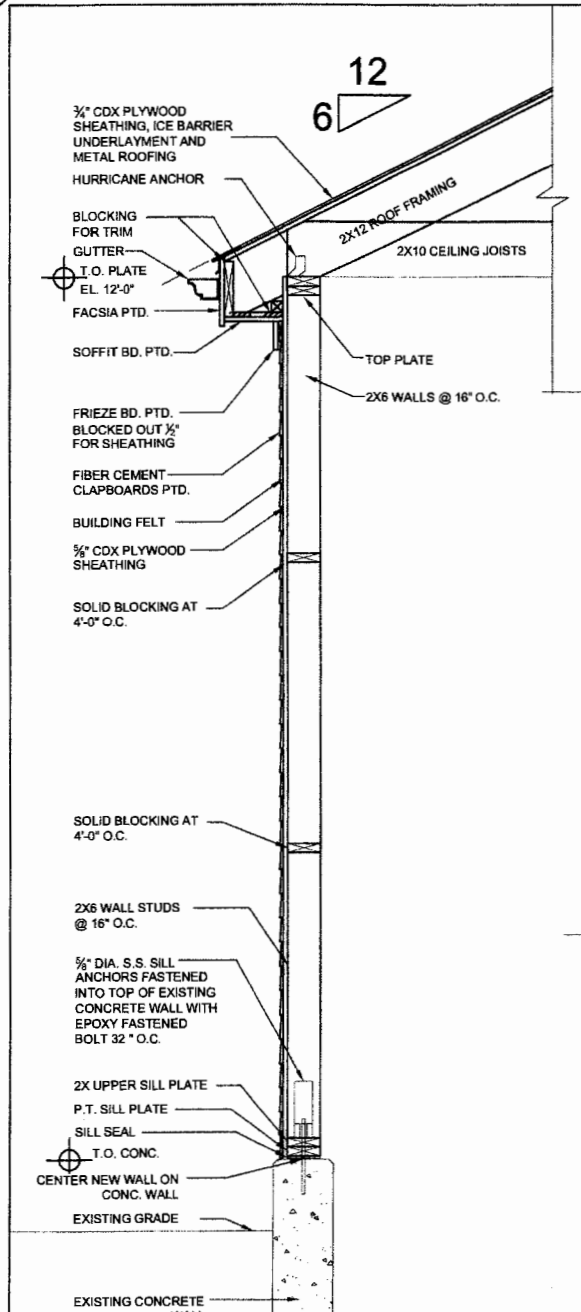
5 NORTH ELEVATION SCALE: 1/4" = 1'-0"



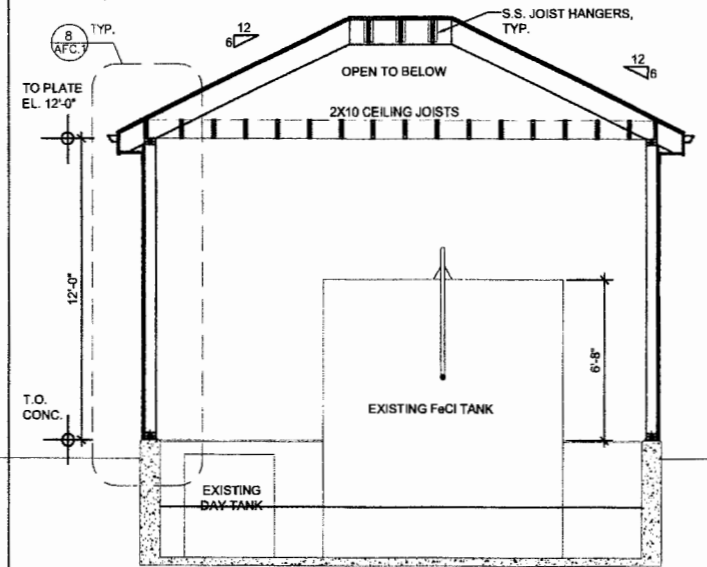
6 WEST ELEVATION (EAST SIMILAR) SCALE: 1/4" = 1'-0"



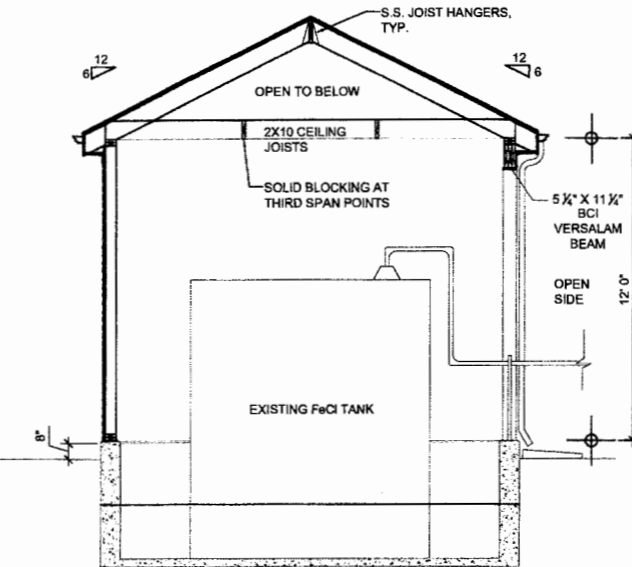
7 SOUTH ELEVATION SCALE: 1/4" = 1'-0"



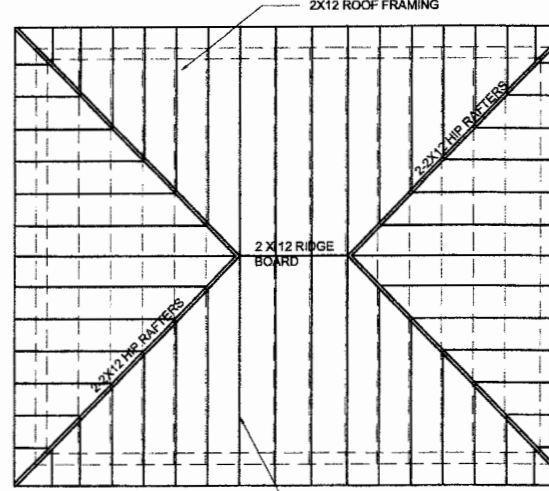
8 WALL SECTION SCALE: 3/4" = 1'-0"



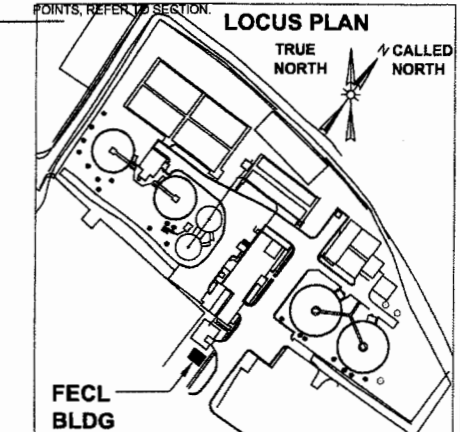
9 SECTION SCALE: 1/4" = 1'-0"



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



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



GENERAL NOTES:

1. ALL WOOD MEMBERS IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED ALL OTHERS TO BE KD SPF NO. 2 OR BETTER.
2. ALL METAL CONNECTORS TO BE STAINLESS STEEL
3. ALL FASTENERS TO BE STAINLESS STEEL

**Dimarini & Wolfe**  
ARCHITECTS - URBAN DESIGNERS  
BOSTON, MASSACHUSETTS

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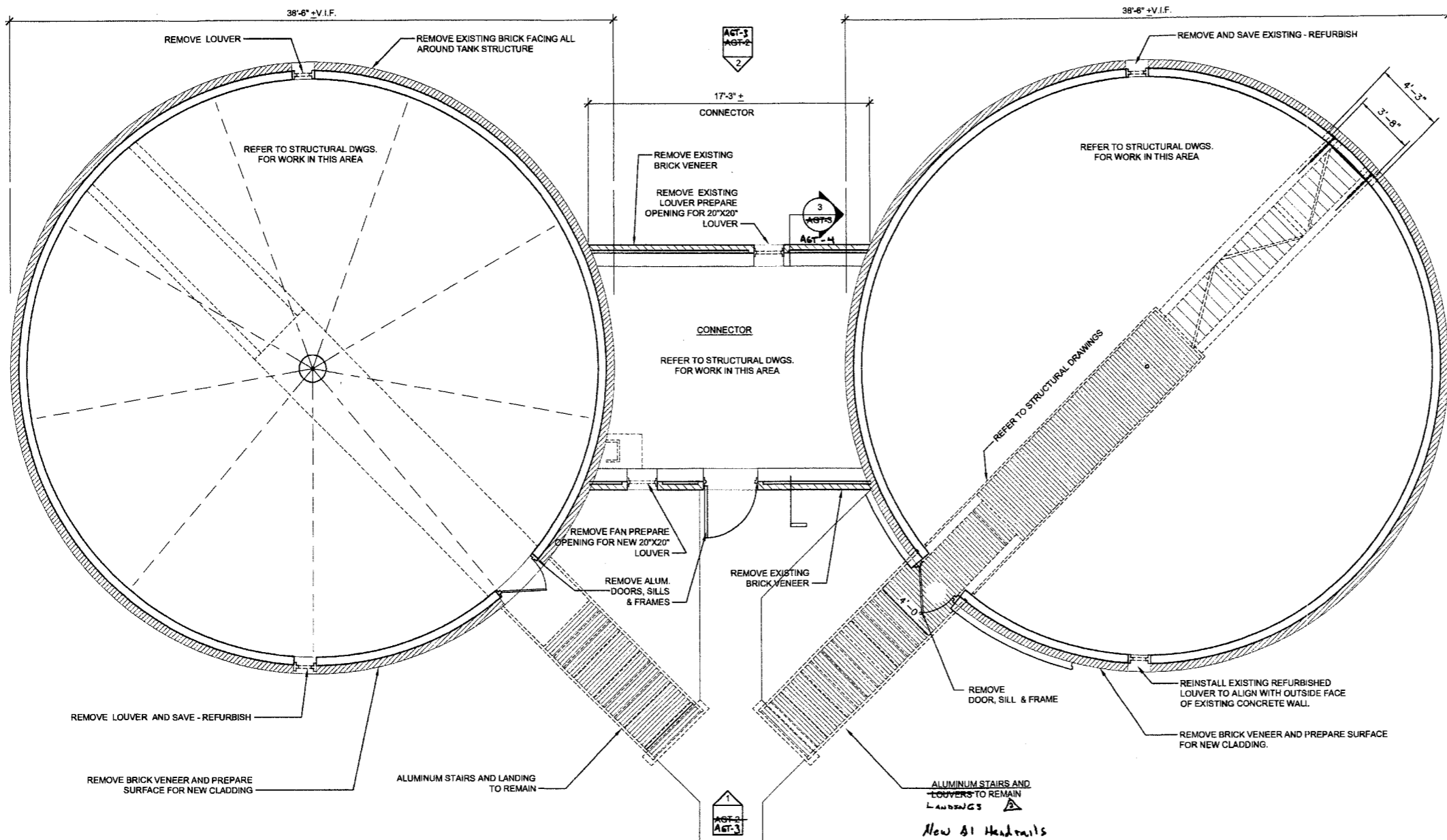
No.	Date	Dr.	By	Chk.	By	App.	By	Description
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3		A	P	P	R	O	V	D
4		A	P	P	R	O	V	D
5		A	P	P	R	O	V	D
6		A	P	P	R	O	V	D
7		A	P	P	R	O	V	D
8		A	P	P	R	O	V	D
9		A	P	P	R	O	V	D
10		A	P	P	R	O	V	D
11		A	P	P	R	O	V	D



WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
FECL ENCLOSURE  
PHOTO, PLANS, ELEVATIONS & SECTIONS  
SCALE: AS NOTED  
JOB NO. 2090269  
CONTRACTOR: JBC/DC M/W M/W  
JOB NO. 2090269  
CONTRACTOR: JBC/DC M/W M/W  
JOB NO. 2090269  
CONTRACTOR: JBC/DC M/W M/W

A-FC.7  
FILE NO. 189-173  
SHEET 30 OF 202

AS BUILT



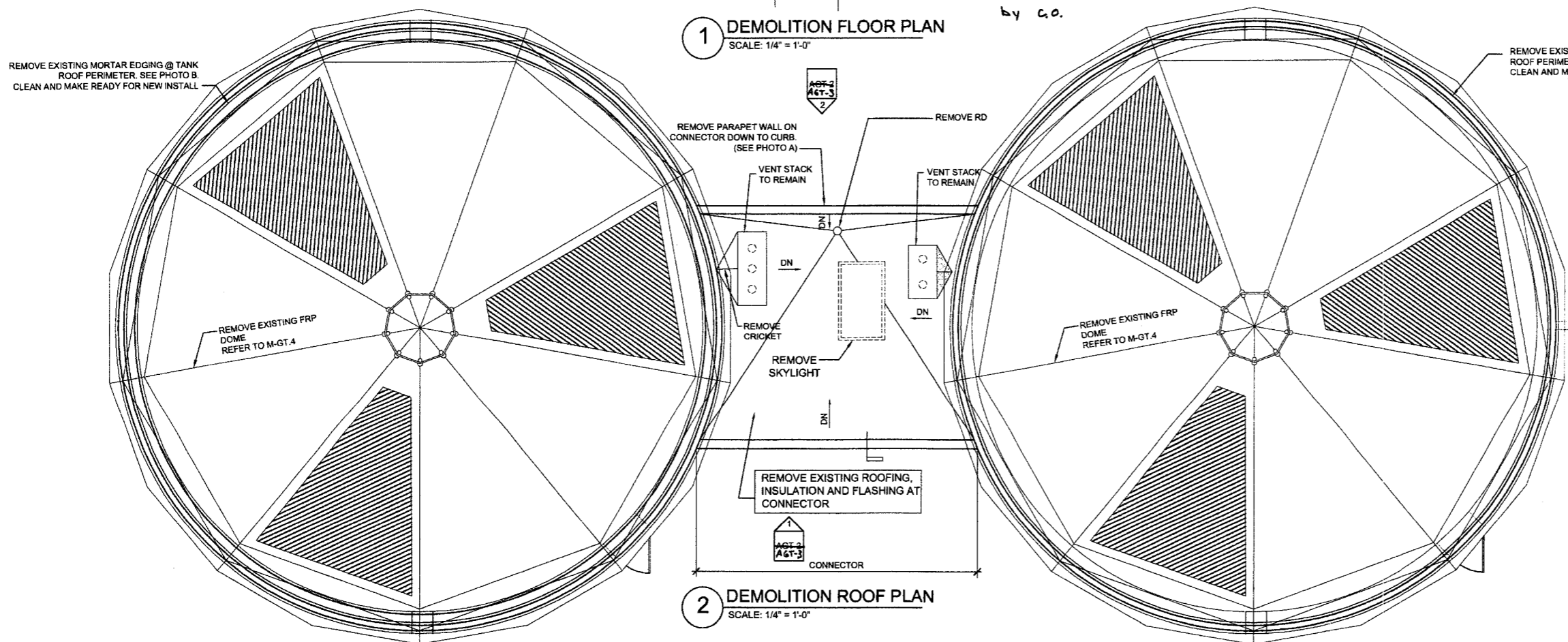
**GENERAL NOTES:**

- REPAIR ANY CRACKS IN CONCRETE WALLS OF TANK STRUCTURES PRIOR TO RESURFACING.
- WHERE BRICK TIES AND/OR SLOTS ARE FOUND, NOTIFY STRUCTURAL ENGINEER AND ARCHITECT FOR ASSESSMENT.
- WHERE BRICK VENEER BACK UP IS NOT CONCRETE, NOTIFY ARCHITECT FOR ASSESSMENT.
- RESURFACE ENTIRE CONCRETE TANK STRUCTURE EXTERIOR WITH PROFILE METAL PANEL.

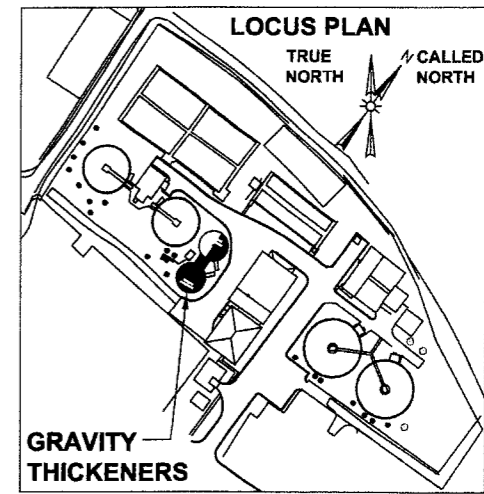
**GENERAL DEMO NOTES:**

- REMOVE ALL BRICK FACING ON GRAVITY THICKENER TANKS AND ON CONNECTOR.

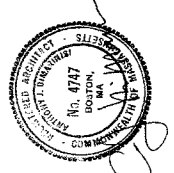
**1 DEMOLITION FLOOR PLAN**  
SCALE: 1/4" = 1'-0"



**2 DEMOLITION ROOF PLAN**  
SCALE: 1/4" = 1'-0"



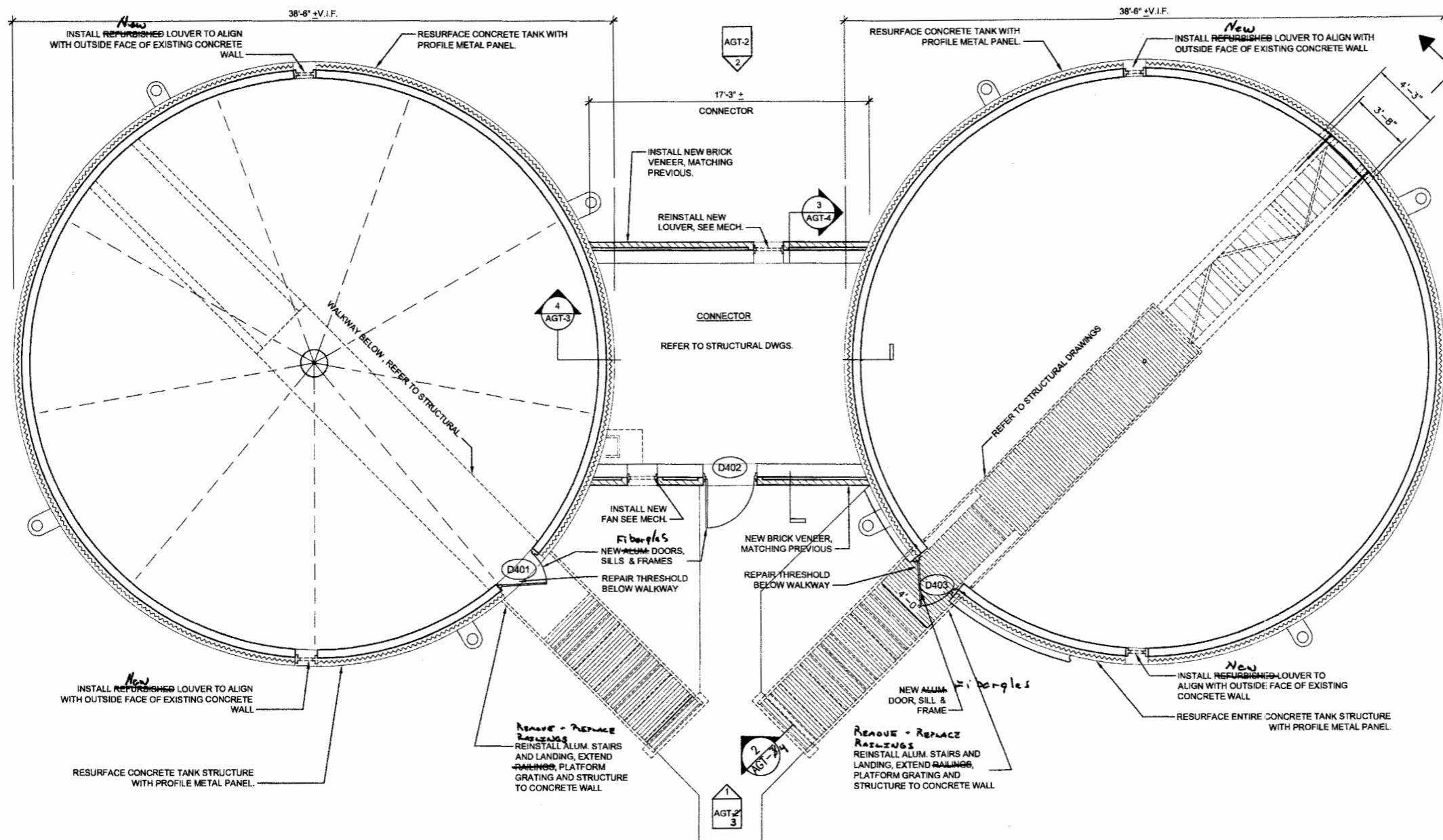
No.	Date	Dr. By	Ch. By	App. By	Description
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2					V
3					E
4					F
5					R
6					O
7					C
8					A
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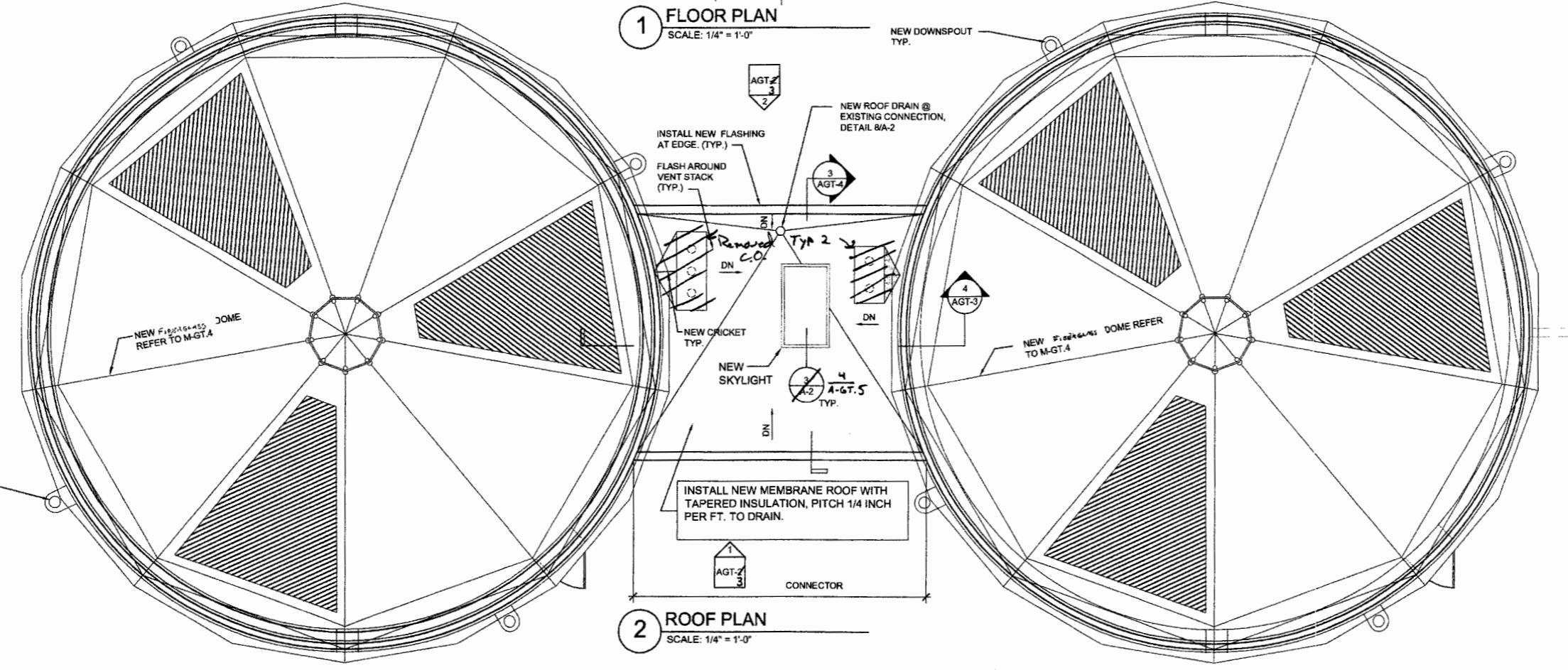
WASTE WATER TREATMENT FACILITY IMPROVEMENTS PROJECT	DATE: 7/19/11
GRAVITY THICKENER	DATE: 7/19/11
DEMOLITION PLANS	DATE: 7/19/11
CONTRACT NO. 2090269	DATE: 7/19/11
SCALE: 1/4" = 1'-0"	DATE: 7/19/11
FILE NO. 189-172	DATE: 7/19/11

**AS BUILT**

**A-GT.1**



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



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



- GENERAL NOTES:
1. REPAIR ANY CRACKS IN CONCRETE WALLS OF TANK STRUCTURES PRIOR TO RESURFACING.
  2. WHERE BRICK TIES AND/OR SLOTS ARE FOUND, NOTIFY STRUCTURAL ENGINEER AND ARCHITECT FOR ASSESSMENT.
  3. WHERE BRICK VENEER BACK UP IS NOT CONCRETE, NOTIFY ARCHITECT FOR ASSESSMENT.
  4. RESURFACE ENTIRE CONCRETE TANK STRUCTURE EXTERIOR WITH PROFILE METAL PANEL.
  5. PROVIDE BLOCKING FOR ANY SURFACE MOUNTED ITEMS. TYP.

**DiMarinisi & Wolfe**  
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BOSTON, MASSACHUSETTS

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www.westonsampson.com

No.	Date	Dr. By	App. By	Description
1		A	P	R
2		A	P	O
3		A	P	V
4		A	P	E
5		A	P	D

7/19/11  
DATE  
REGISTERED ARCHITECT



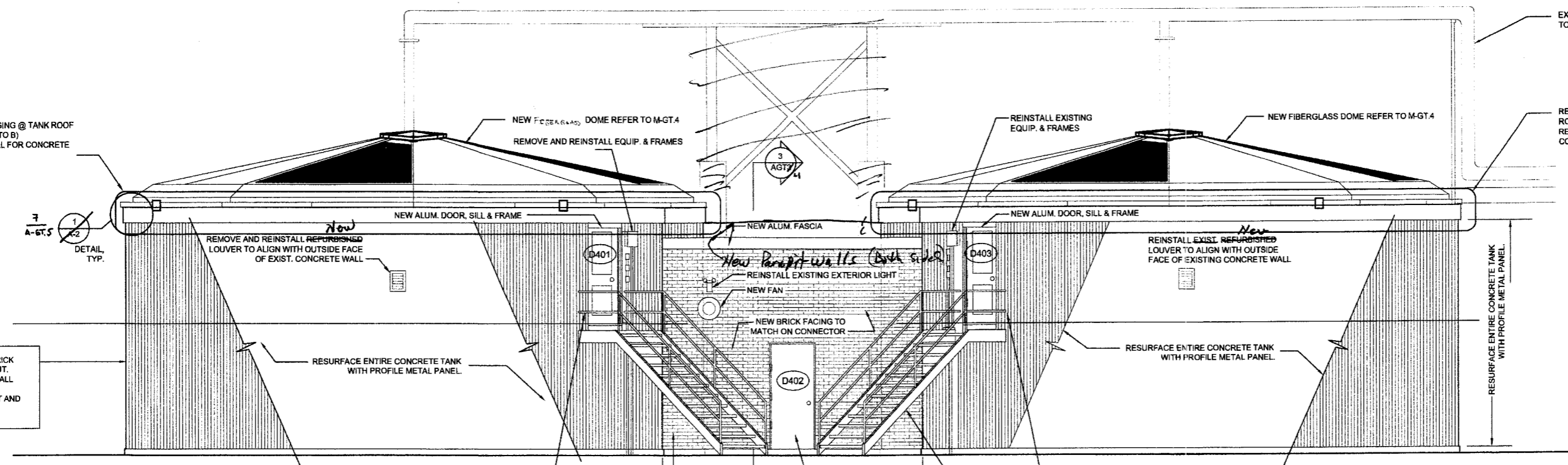
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
GRAVITY THICKENER  
REPAIR - PLANS  
SCALE: 1/4" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DR. BY: DSN, BY: CHK, BY: APP, BY: MIW  
BC/CIC/MIW

AS BUILT

A-GT.2  
FILE NO. 189-171



REMOVE MORTAR EDGING @ TANK ROOF PERIMETER. (SEE PHOTO B) REFER TO STRUCTURAL FOR CONCRETE REPAIR. (TYP.)



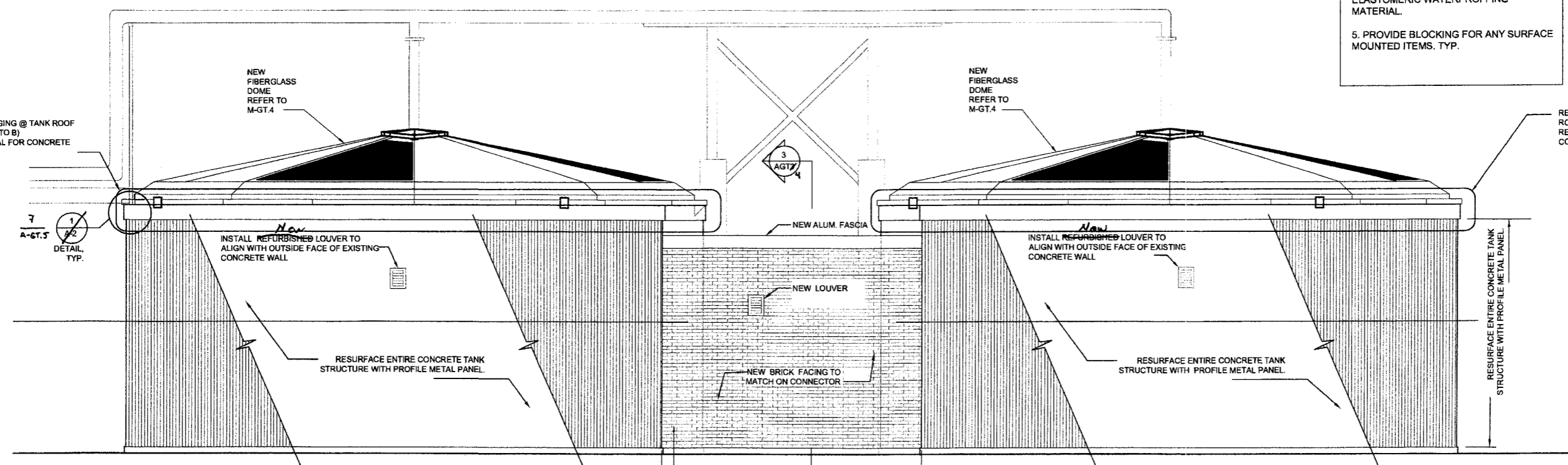
**1** SOUTHEAST ELEVATION  
SCALE: 1/4" = 1'-0"

GENERAL NOTE:  
REMOVE EXISTING BRICK VENEER THROUGHOUT. REMOVE AND STORE ALL SURFACE MOUNTED EQUIPMENT, CONDUIT AND LOUVERS FOR REINSTALLATION.

GENERAL NOTE:  
REMOVE EXISTING BRICK VENEER REMOVE AND STORE ALL SURFACE MOUNTED EQUIPMENT, CONDUIT AND LOUVERS FOR REINSTALLATION. CONNECTOR TO RECEIVE NEW BRICK VENEER.

- GENERAL NOTES:
1. REPAIR ANY CRACKS IN CONCRETE WALLS OF TANK STRUCTURES PRIOR TO RESURFACING.
  2. WHERE BRICK TIES AND/OR SLOTS ARE FOUND, NOTIFY STRUCTURAL ENGINEER AND ARCHITECT FOR ASSESSMENT.
  3. WHERE BRICK VENEER BACK UP IS NOT CONCRETE, NOTIFY ARCHITECT FOR ASSESSMENT.
  4. RESURFACE ENTIRE CONCRETE TANK STRUCTURE EXTERIOR WITH ELASTOMERIC WATERPROOFING MATERIAL.
  5. PROVIDE BLOCKING FOR ANY SURFACE MOUNTED ITEMS. TYP.

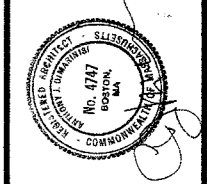
REMOVE MORTAR EDGING @ TANK ROOF PERIMETER. (SEE PHOTO B) REFER TO STRUCTURAL FOR CONCRETE REPAIR. (TYP.)



**2** NORTHWEST ELEVATION  
SCALE: 1/4" = 1'-0"

GENERAL NOTE:  
REMOVE EXISTING BRICK VENEER REMOVE AND STORE ALL SURFACE MOUNTED EQUIPMENT, CONDUIT AND LOUVERS FOR REINSTALLATION. CONNECTOR TO RECEIVE NEW BRICK VENEER.

No.	Date	Dr.	By	Ck.	By	App.	By	Description
1	7/13/11							DATE

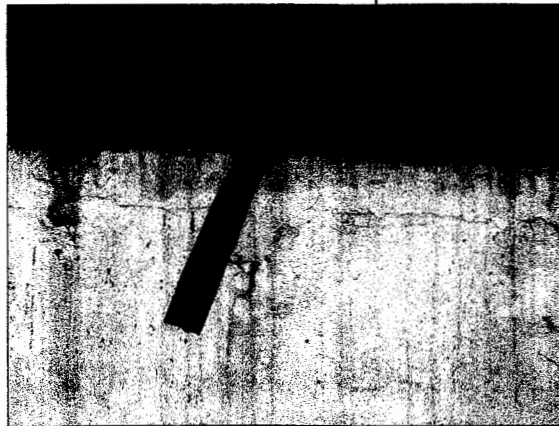


WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
GRAVITY THICKENER  
REPAIR - ELEVATIONS  
SCALE: 1/4" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DATE: 7/13/11  
FILE NO. 189-170

**AS BUILT**

**A-GT.3**

REMOVE PARAPET  
DOWN TO CURB



REMOVE EXISTING  
MORTAR EDGING



**A** INTERIOR OF PARAPET WALL  
TO BE REMOVED

**B** TOP OF TANK WALL/BOTTOM OF  
FIBERGLASS DOME - EXTERIOR VIEW

**C** TOP OF TANK WALL/BOTTOM OF  
FIBERGLASS DOME - INTERIOR VIEW

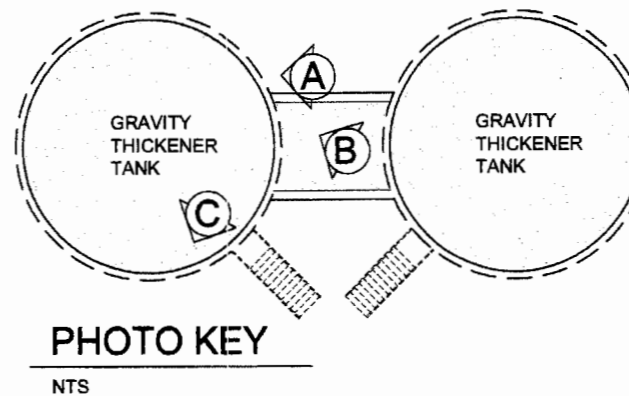


PHOTO KEY  
NTS

GENERAL NOTES:

- REPAIR ANY CRACKS IN CONCRETE WALLS OF TANK STRUCTURES PRIOR TO RESURFACING.
- WHERE BRICK TIES AND/OR SLOTS ARE FOUND, NOTIFY STRUCTURAL ENGINEER AND ARCHITECT FOR ASSESSMENT.
- WHERE BRICK VENEER BACK UP IS NOT CONCRETE, NOTIFY ARCHITECT FOR ASSESSMENT.
- RESURFACE ENTIRE CONCRETE TANK STRUCTURE EXTERIOR WITH ELASTOMERIC WATERPROFFING MATERIAL. *See Appendix Sheet A-A-BARRETT*
- ALL ELEVATIONS ARE PER NAVD 88 DATUM
- PROVIDE BLOCKING FOR ANY SURFACE MOUNTED ITEMS. TYP.

**Dimarinisi & Wolfe**  
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BOSTON, MASSACHUSETTS

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Description  
V O R  
7/13/11  
DATE

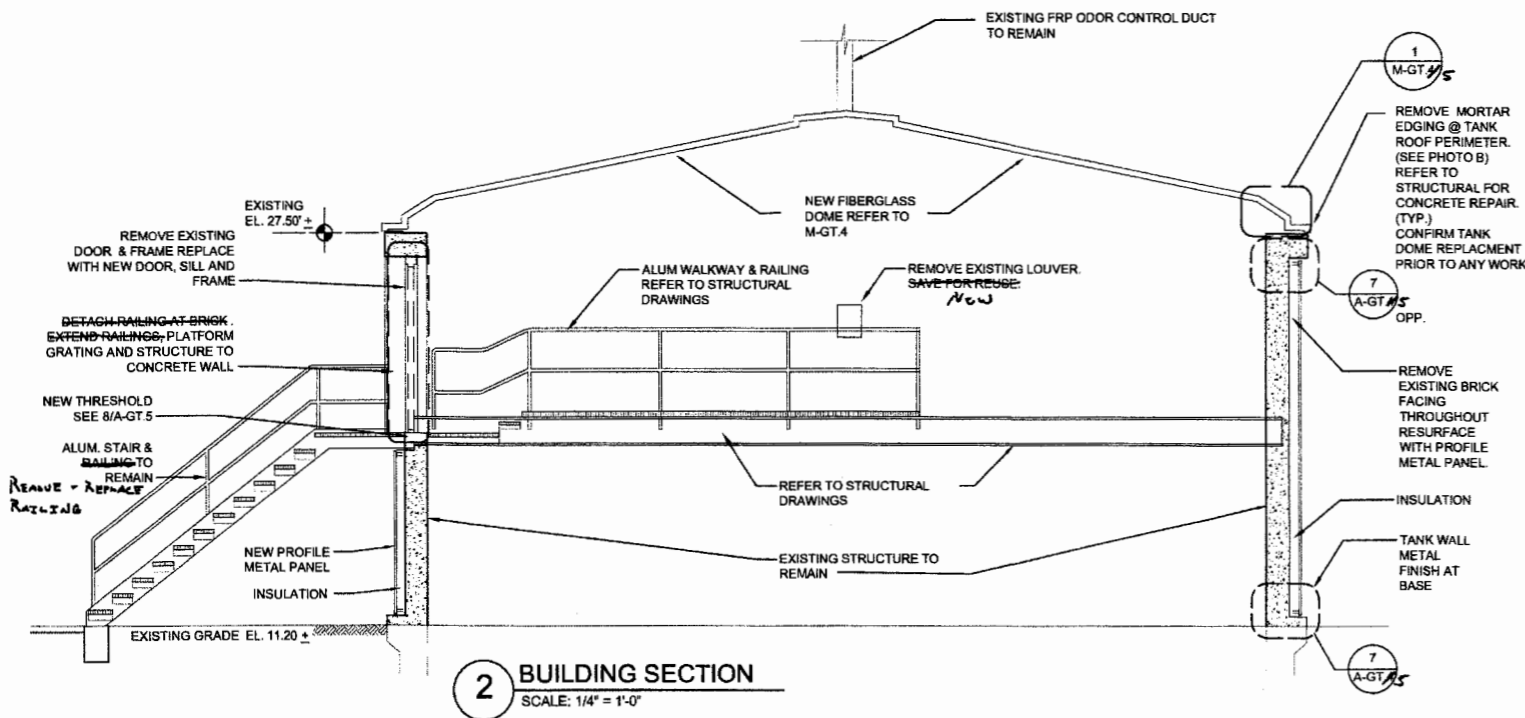
Dr. By: *C. J. M. M. M.*  
No. 4747  
REG. ARCHITECT



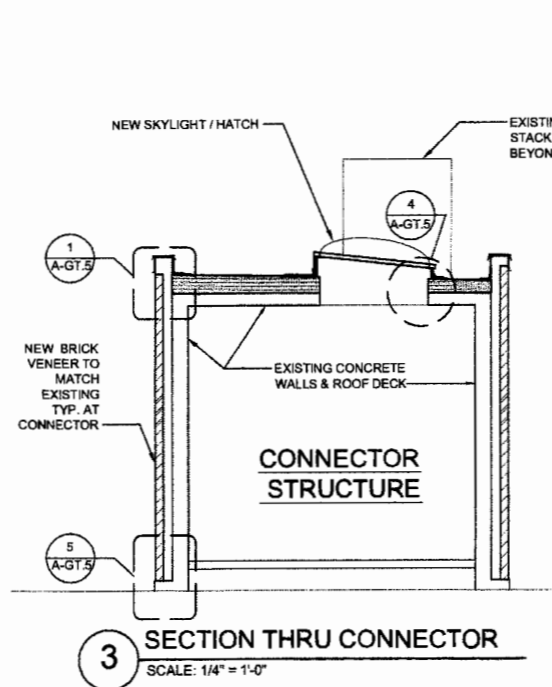
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
GRAVITY THICKENER  
SECTIONS, PHOTOGRAPHS & DOOR SCHEDULE  
JOB NO. 2090269  
SCALE: AS NOTED  
CONTRACT 2

CITY OF NEWBURYPORT, MA  
WWTF IMPROVEMENTS PROJECT  
CONTRACT 2  
REFERENCE 4/A-GT.4  
SK-A-5

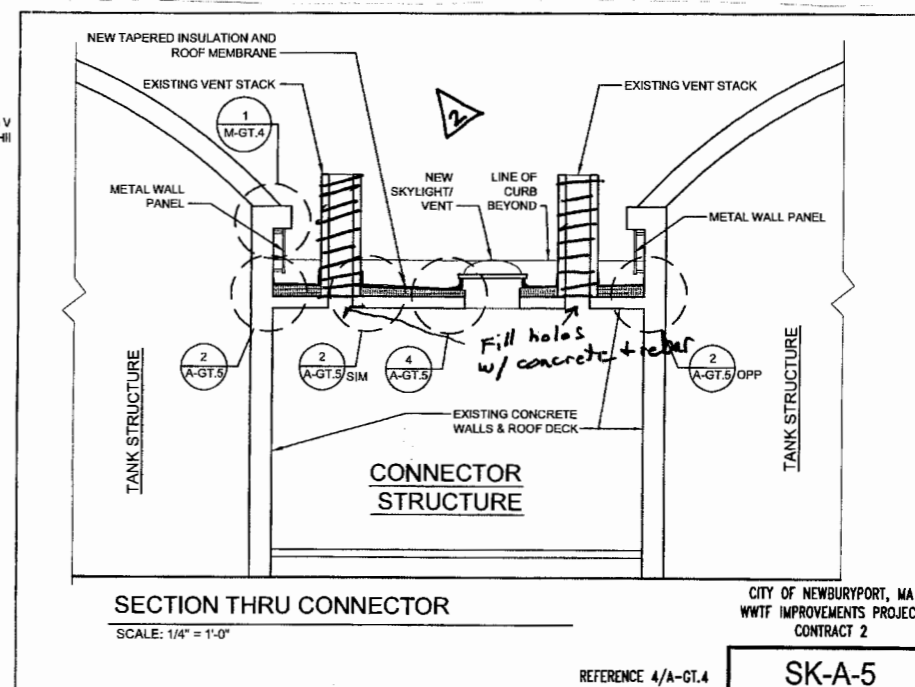
AS NOTED  
FILE NO. 189-169  
SHEET 34 OF 202



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



**3** SECTION THRU CONNECTOR  
SCALE: 1/4" = 1'-0"

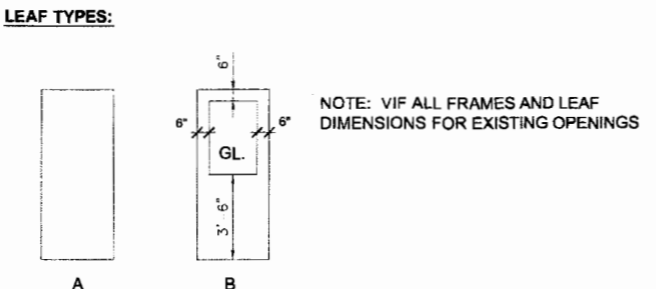
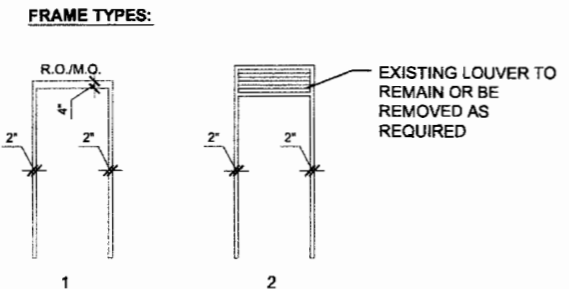


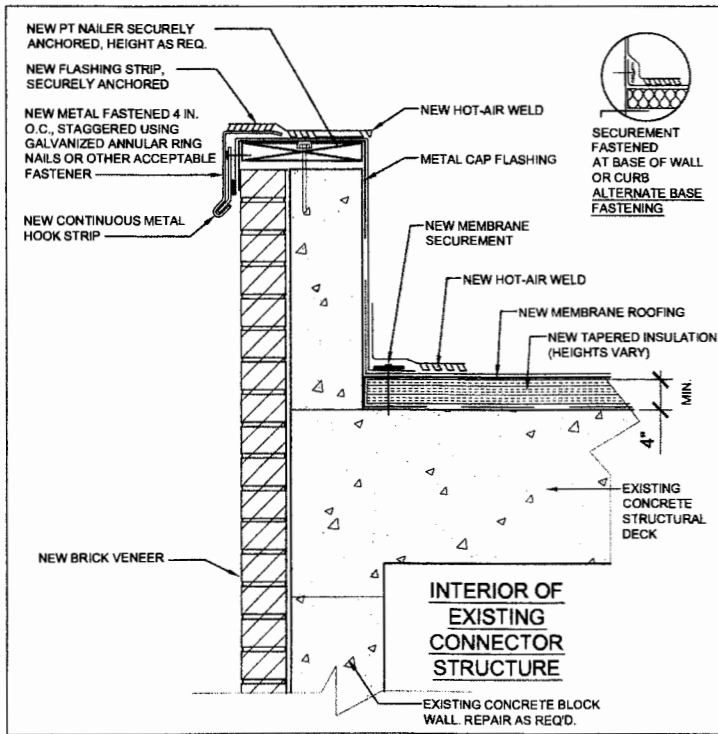
**SECTION THRU CONNECTOR**  
SCALE: 1/4" = 1'-0"  
CITY OF NEWBURYPORT, MA  
WWTF IMPROVEMENTS PROJECT  
CONTRACT 2  
REFERENCE 4/A-GT.4  
SK-A-5

DOOR SCHEDULE

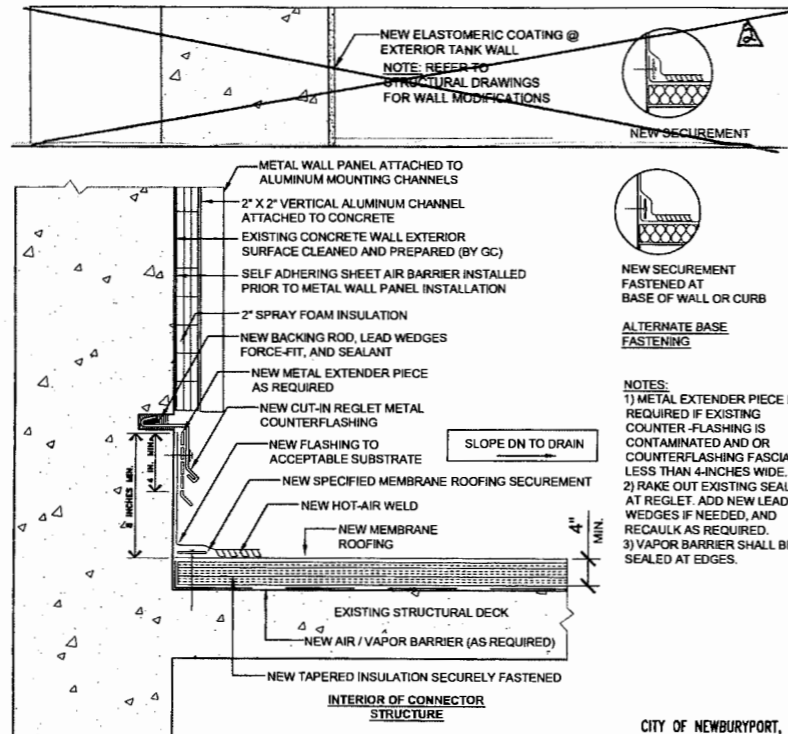
DOOR OPNG. NO.	FRAME				LEAF																DOOR OPNG. NO.				
	TYPE	M.O. / R.O. W	M.O. / R.O. H	DEPTH	JAMB	JAMB	HEAD	THR.	MATERIAL	FINISH	COLOR	TYPE	QTY.	W	H	MATERIAL	THK.	FINISH	COLOR	UL LABEL		HDW SET	GLAZING	SIGNAGE	REMARKS
D401	1	VIF	VIF	6"	11/A-GT.5	11/A-GT.5	12/A-GT.5	8/A-GT.5	ALUM.	FF	TBS	B	1	3'-0"	7'-0"	ALUM.	1 3/4"	FF	TBS		HW-GT1	TGL		* DOOR HT. AS REQ'D. BY NEW PLATFORM COVER	D401
D402	1	VIF	VIF	6"	9/A-GT.5	9/A-GT.5	10/A-GT.5	T1	ALUM.	FF	TBS	A	1	3'-0"	7'-0"	ALUM.	1 3/4"	FF	TBS		HW-GT2				D402
D403	1	VIF	VIF	6"	11/A-GT.5	11/A-GT.5	12/A-GT.5	8/A-GT.5	ALUM.	FF	TBS	B	1	3'-0"	7'-0"	ALUM.	1 3/4"	FF	TBS		HW-GT1	TGL		* DOOR HT. AS REQ'D. BY NEW PLATFORM COVER	D403

- ABBREVIATIONS:  
 F.F. - FACTORY FINISH  
 GL - GLASS  
 GT - GRAVITY THICKENER  
 H.M. - HOLLOW METAL  
 P.M. - PRESSED METAL  
 PTD - PAINTED  
 S.C.W. - SOLID CORE WOOD  
 TBS - TO BE SELECTED  
 TGL - 1" TEMPERED INSULATED GLASS  
 WGL - 1/4" WIRE GLASS  
 VIF - VERIFY IN FIELD

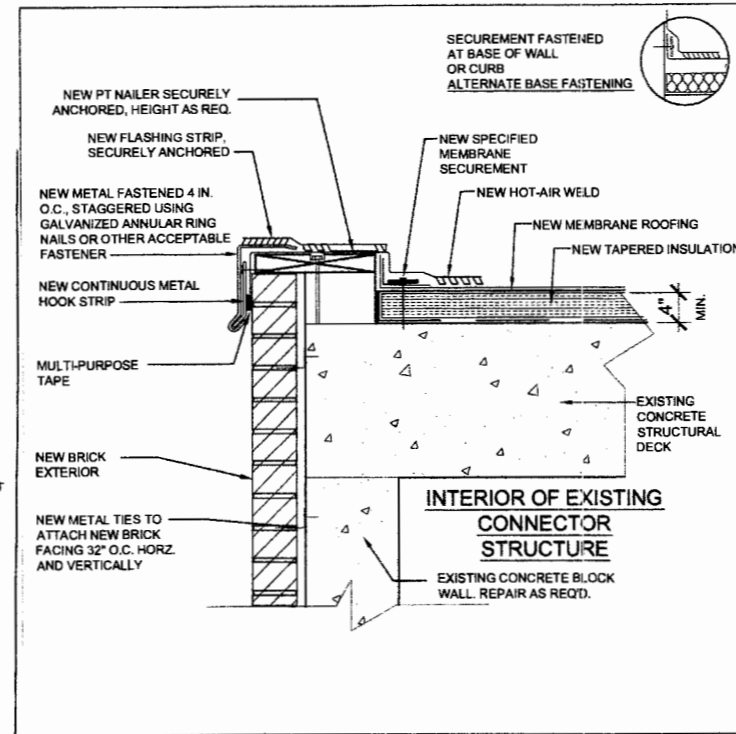




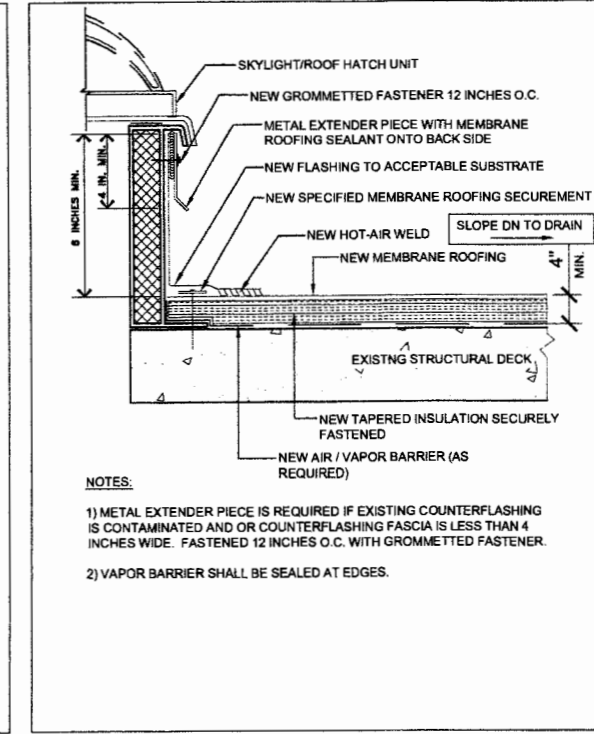
**1 CUT-IN REGLET @ CONNECTOR ROOF/TANK JOINT**



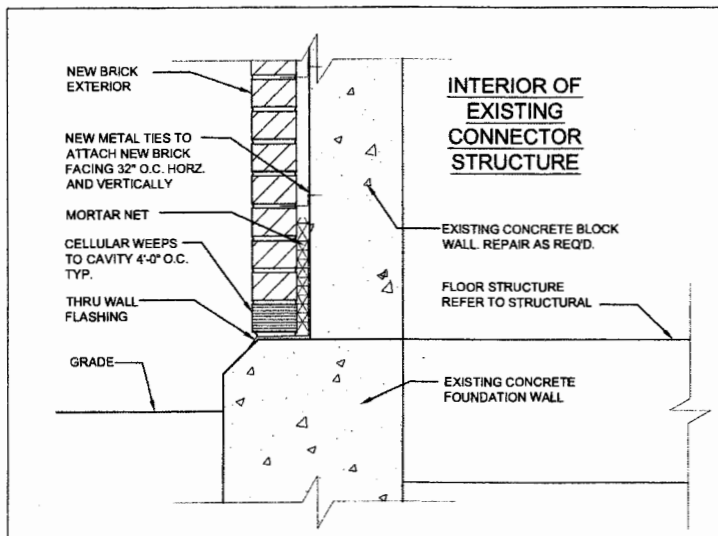
**CUT-IN REGLET @ CONNECTOR ROOF/TANK JOINT**  
SCALE: 1 1/2" = 1'-0"  
REFERENCE 2/A-GT.5 SK-A-4



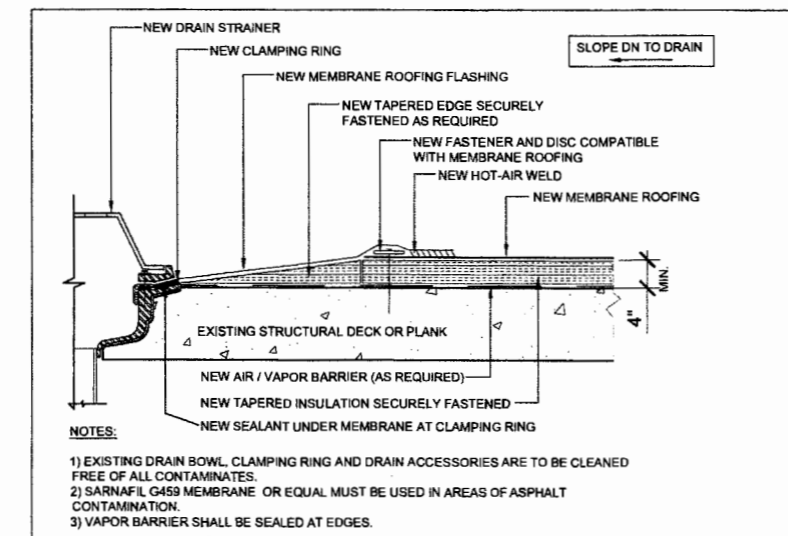
**3 TOP OF GT CONNECTOR**  
SCALE: NTS



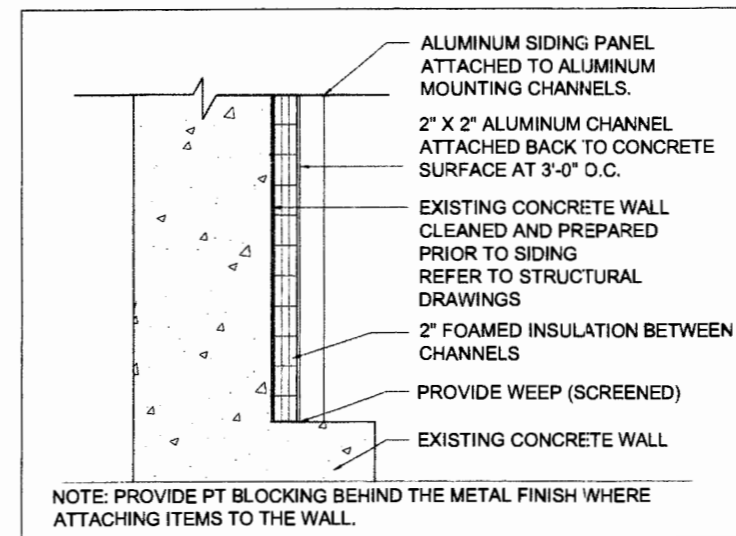
**4 ROOF HATCH / SKYLIGHT FLASHING**  
SCALE: NTS



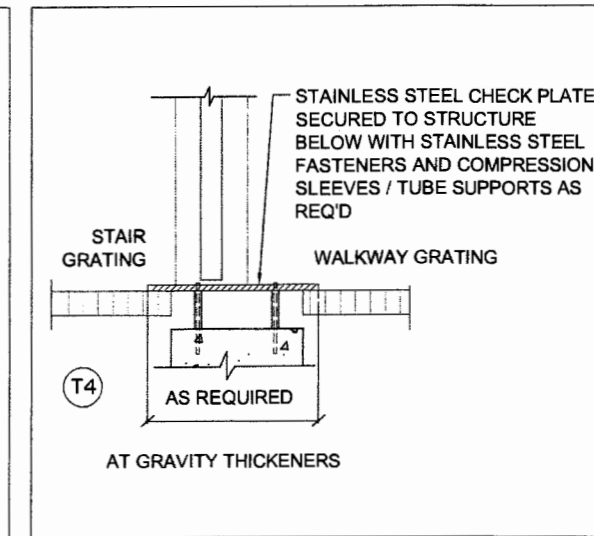
**5 BOTTOM OF GT CONNECTOR**  
SCALE: NTS



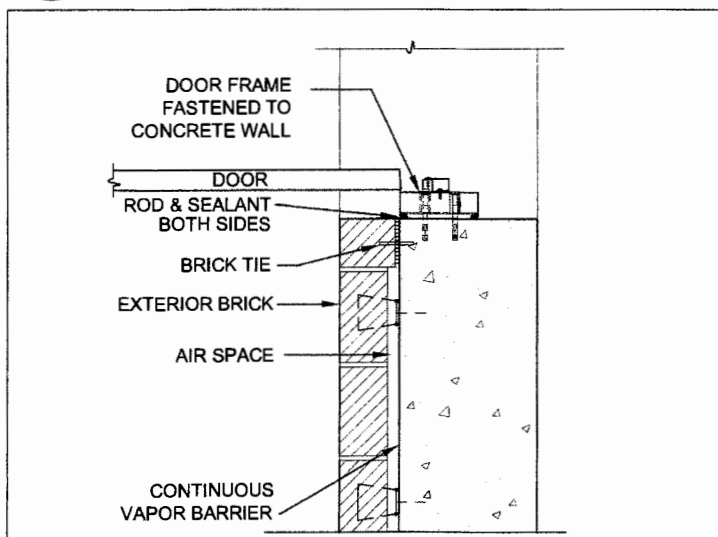
**6 CLAMPING RING ROOF DRAIN**  
SCALE: 1 1/2" = 1'-0"



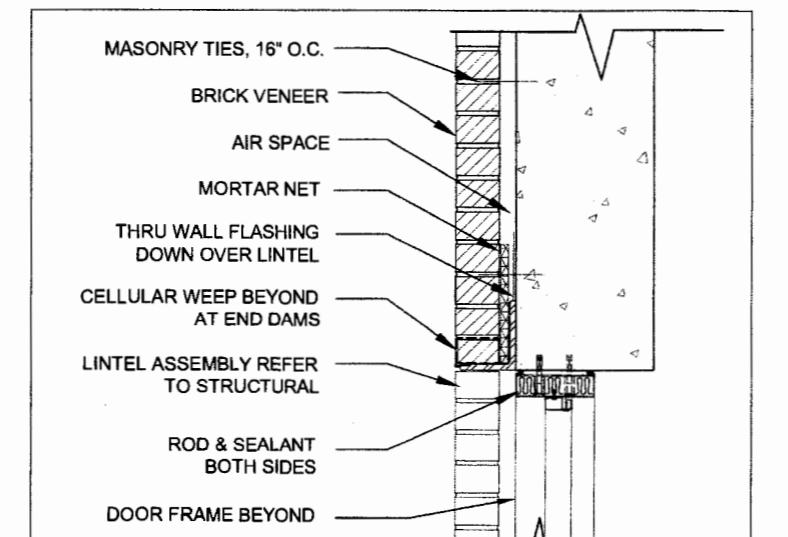
**7 TANK WALL METAL FINISH**  
SCALE: 1 1/2" = 1'-0"



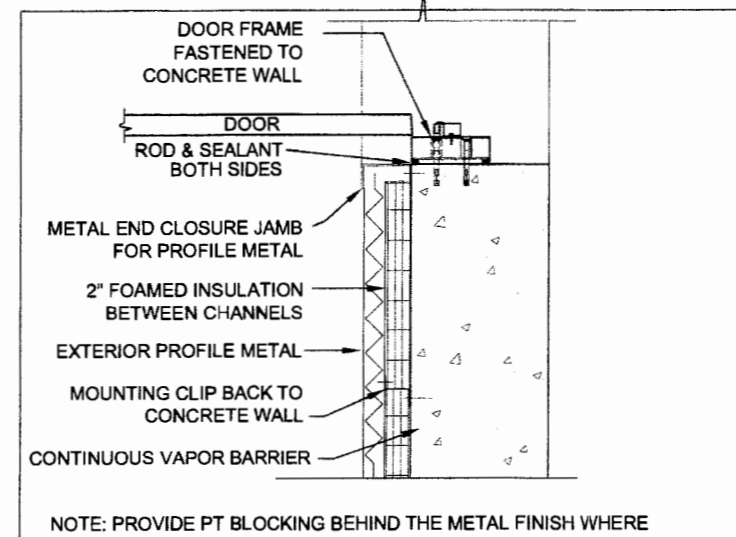
**8 DOOR THRESHOLD**  
SCALE: 1 1/2" = 1'-0"



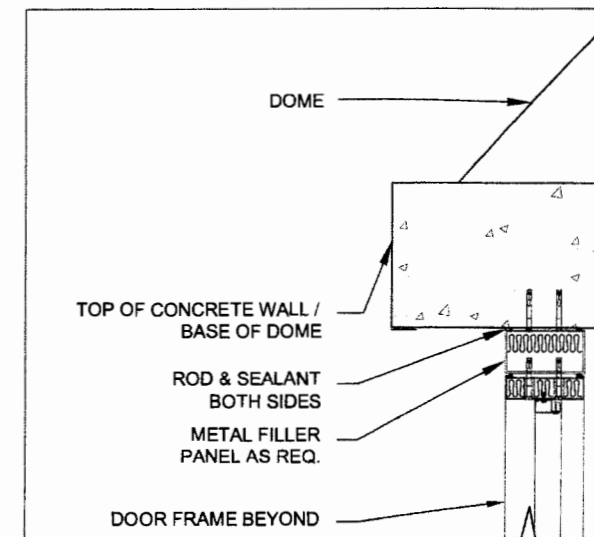
**9 DOOR JAMB AT BRICK VENEER**  
SCALE: NTS



**10 DOOR HEAD AT BRICK VENEER**  
SCALE: NTS



**11 DOOR JAMB AT METAL FINISH**  
SCALE: NTS

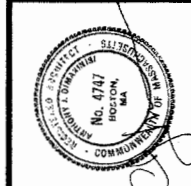


**12 DOOR HEAD AT METAL FINISH**  
SCALE: NTS

**DiMarinisi & Wolfe**  
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BOSTON, MASSACHUSETTS

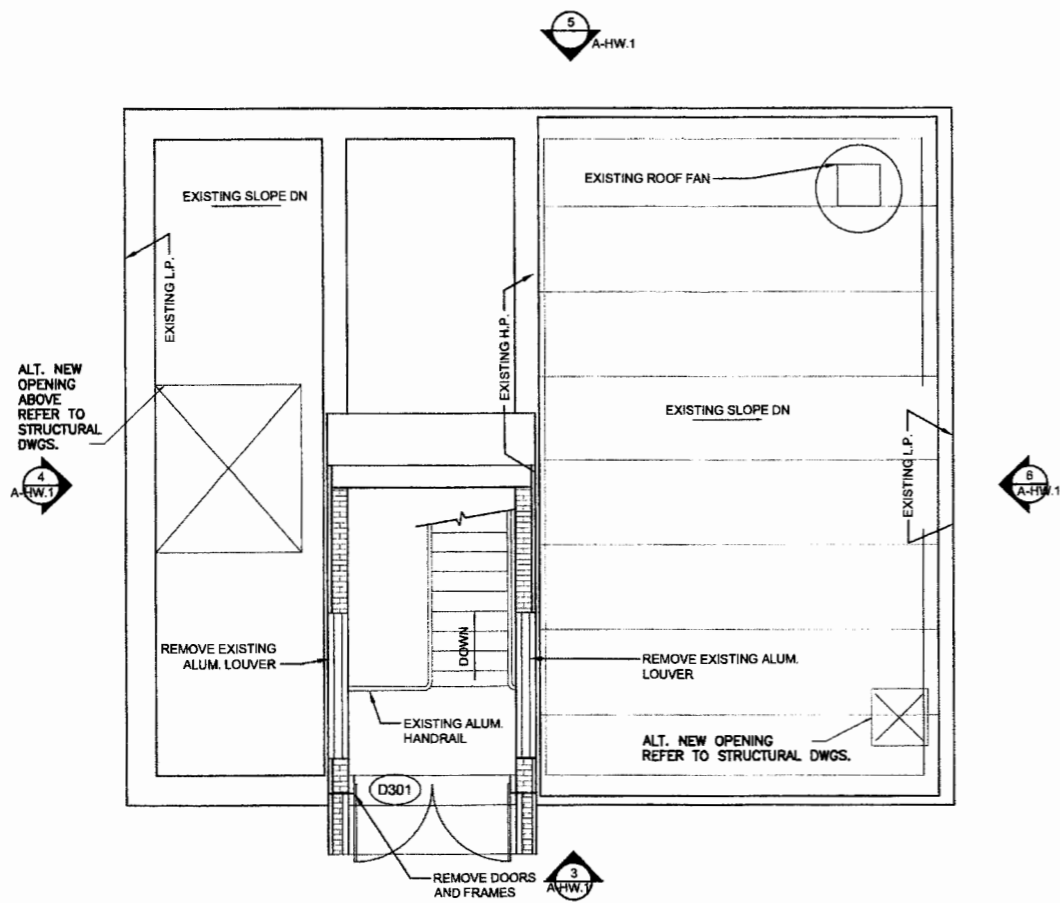
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No.	Date	Dr. By	Chk. By	App. By	Description
1	7/13/2011				

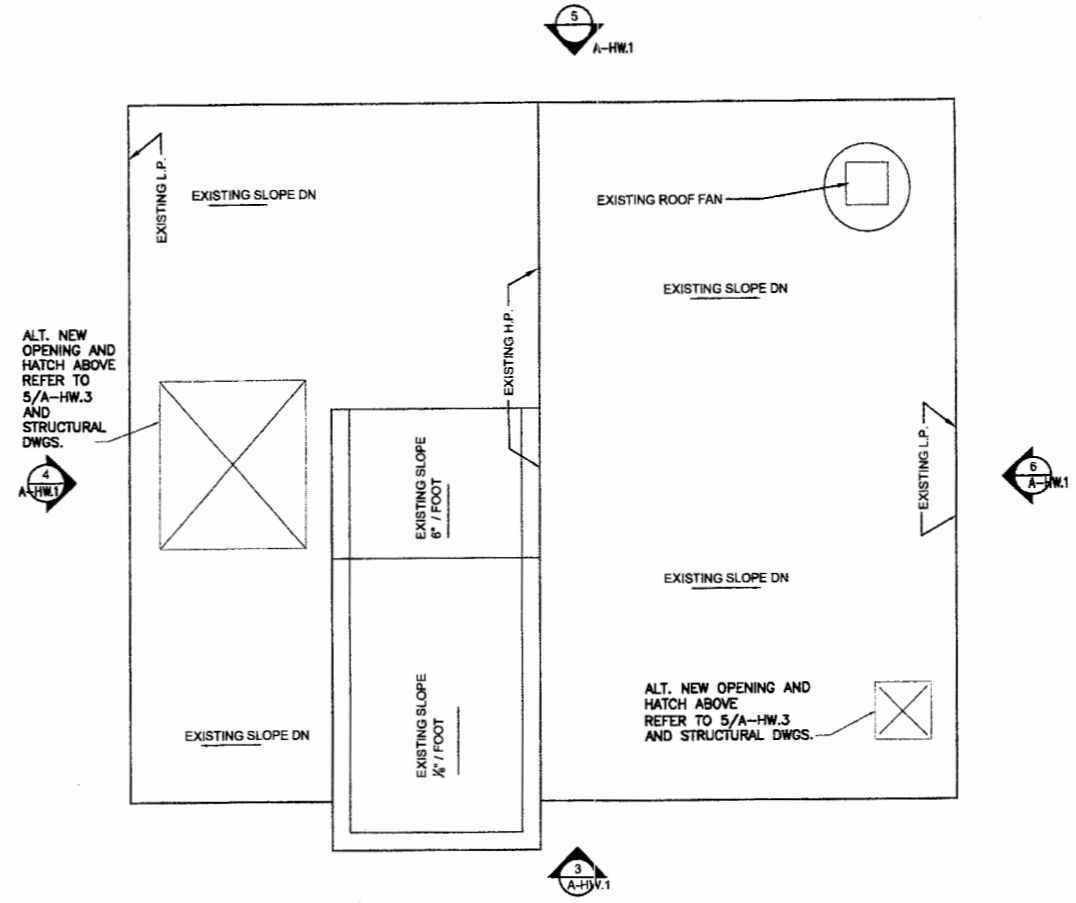


WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
GRAVITY THICKENER DETAILS  
SCALE: AS NOTED  
CONTRACT 2  
JOB NO. 2090269  
ISS. BY: JSA, EP  
CHK. BY: APB, MW  
FILE NO. 189-168

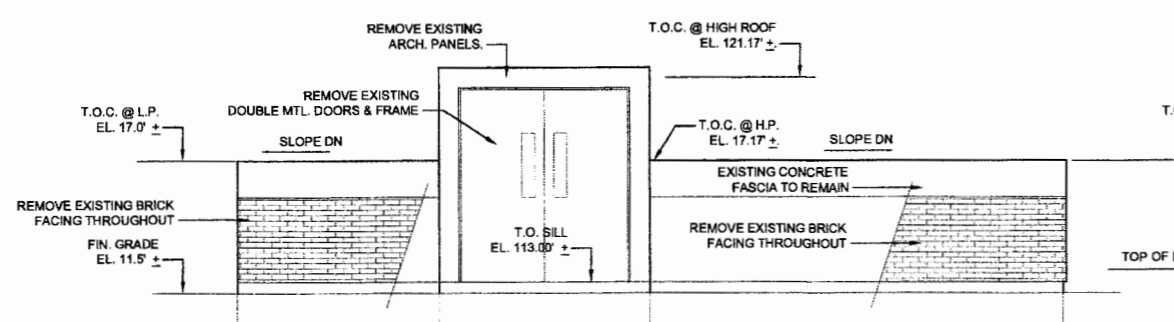
**AS BUILT**  
A-GT.5  
SHEET 35 of 202



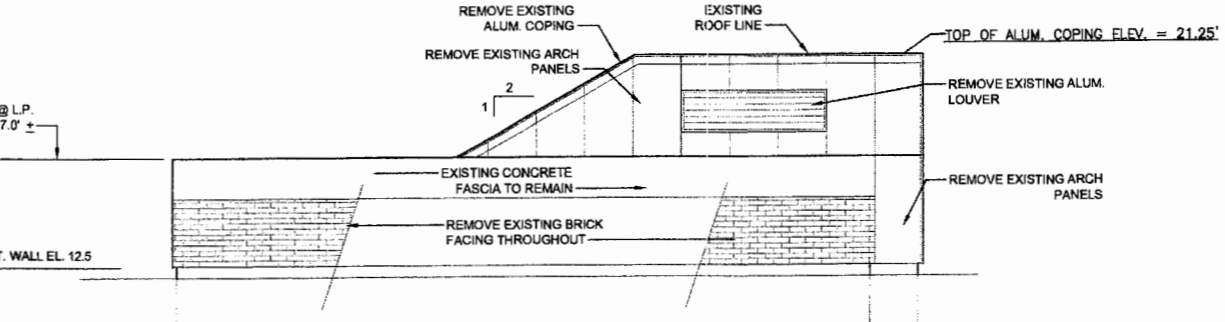
1 PLAN AT ELEVATION 18.5 +  
SCALE: 1/4" = 1'-0"



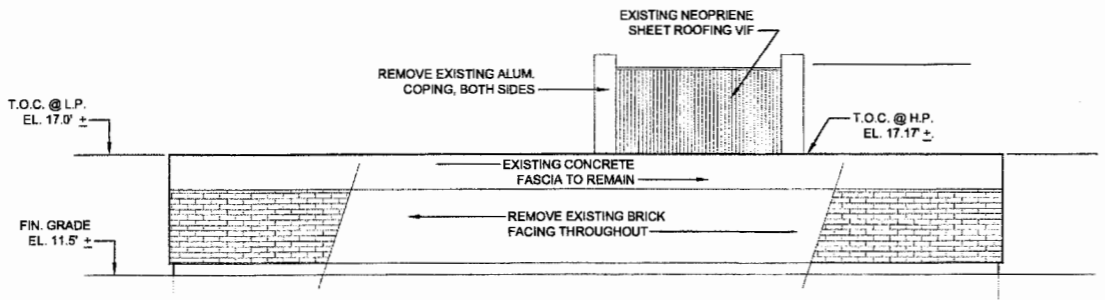
2 ROOF PLAN AT ELEVATION 20.50 +  
SCALE: 1/4" = 1'-0"



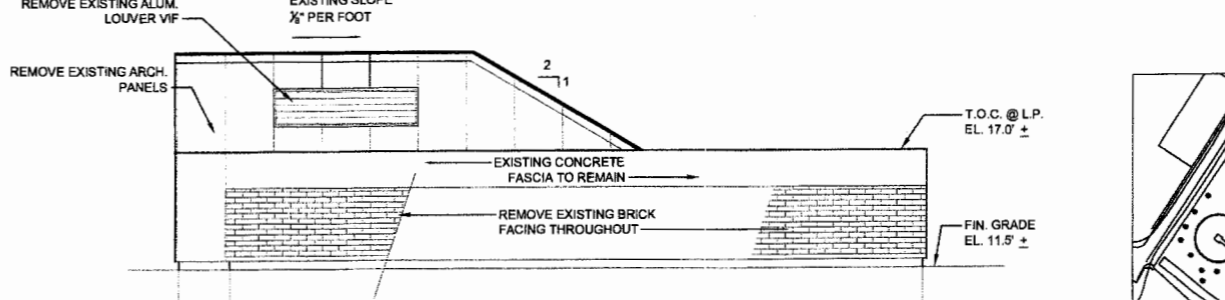
3 SOUTH ELEVATION  
SCALE: 1/4" = 1'-0"



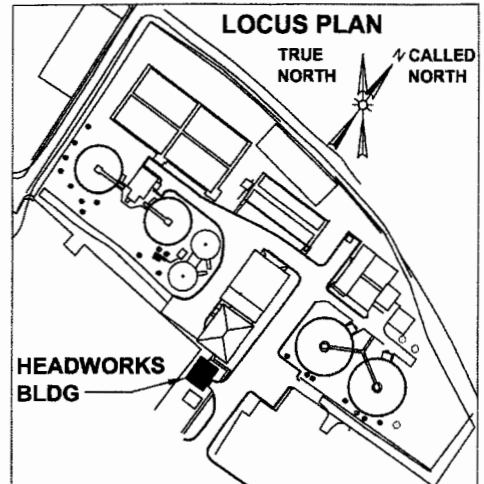
4 WEST ELEVATION  
SCALE: 1/4" = 1'-0"



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



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



Dimarinisi & Wolfe  
ARCHITECTS • URBAN DESIGNERS  
BOSTON, MASSACHUSETTS

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No.	Date	Dr. By	App. By	Description
1				
2				
3				
4				
5				
6				
7	7/13/11			

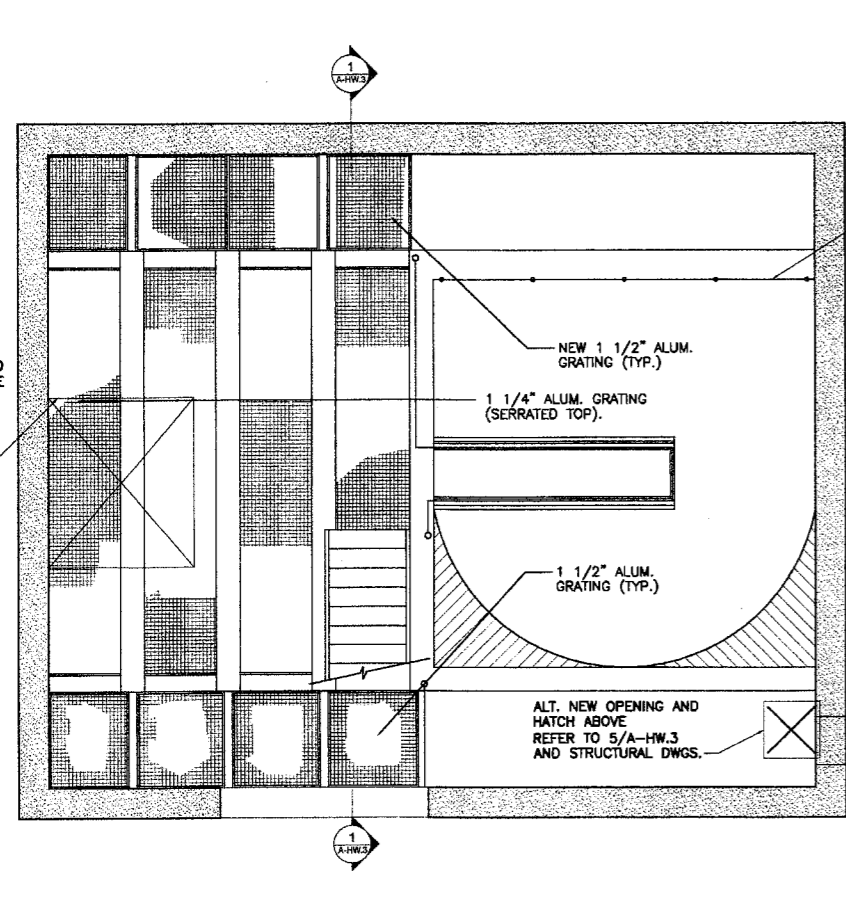
REGISTERED ARCHITECT



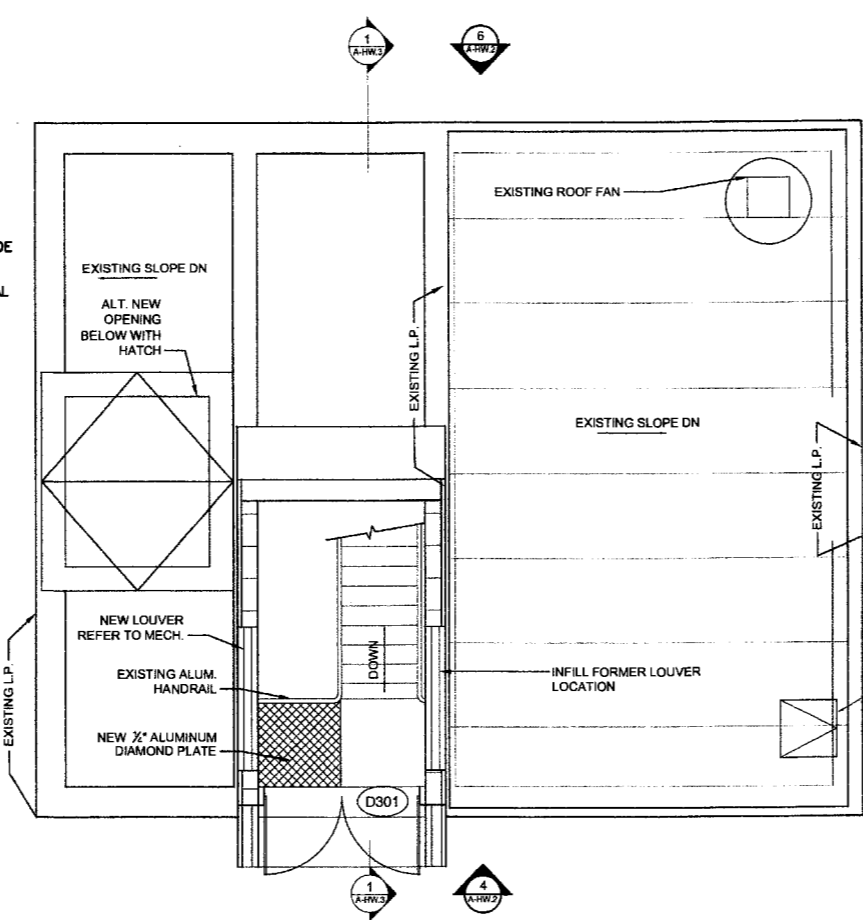
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
HEADWORKS BUILDING  
PLANS & ELEVATIONS - DEMOLITION  
SCALE: 1/4" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DR. BY: DSN, BY: CHK, BY: APP. BY: MIW  
EC/TC/MIW  
DATE

AS BUILT  
FILE NO. 189-167  
SHEET 36 OF 202  
A-HW.7

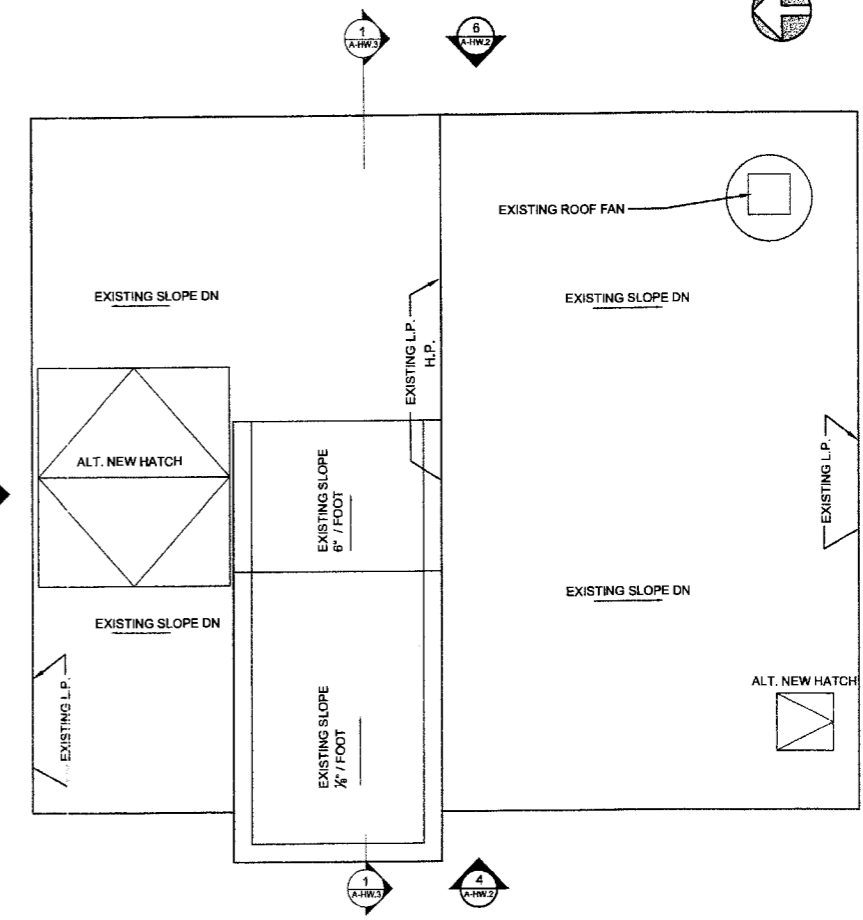
NORTH



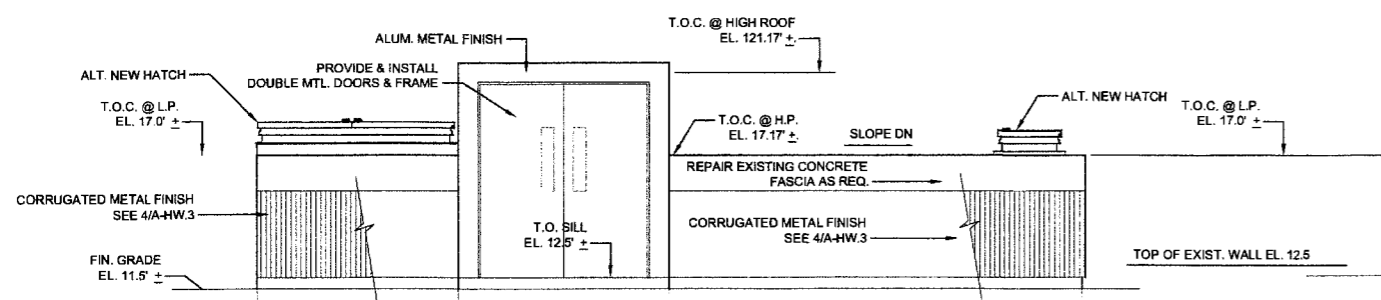
**1 FLOOR PLAN @ EL. 16.50 ±**  
SCALE: 1/4" = 1'-0"



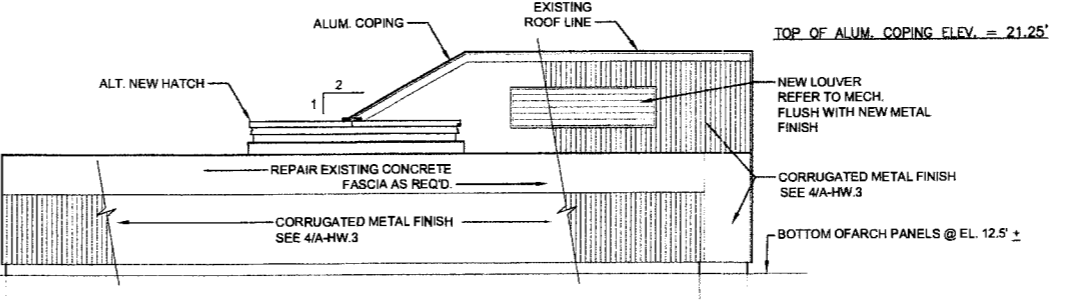
**2 FLOOR PLAN @ EL. 18.50 ± SHOWING PLANK ROOF**  
SCALE: 1/4" = 1'-0"



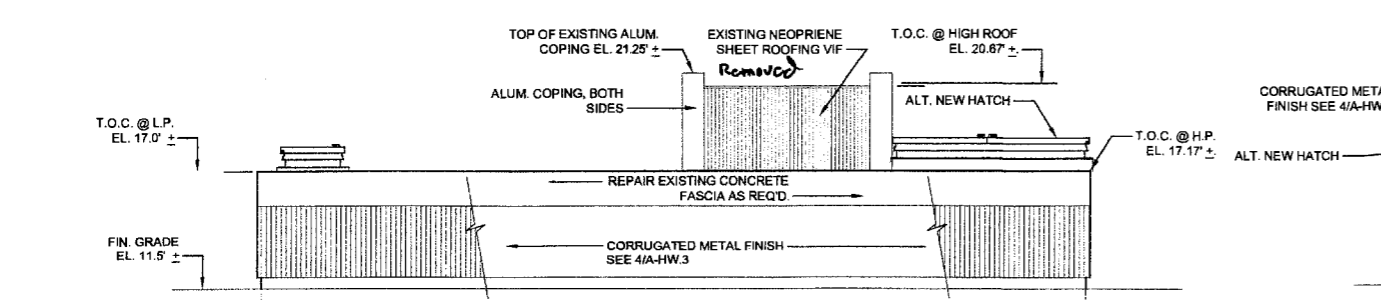
**3 ROOF PLAN**  
SCALE: 1/4" = 1'-0"



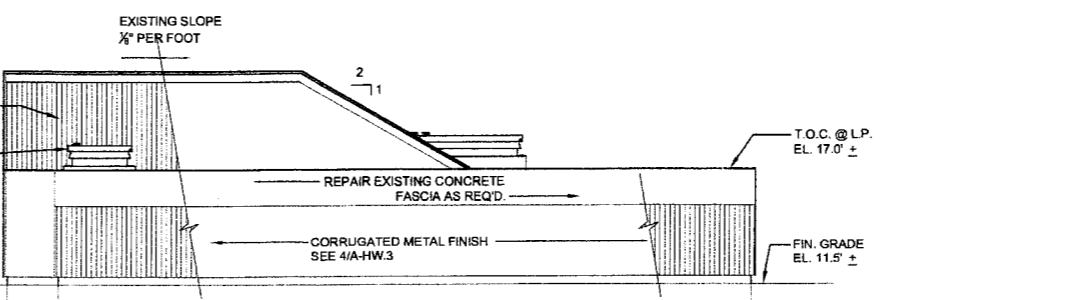
**4 SOUTH ELEVATION**  
SCALE: 1/4" = 1'-0"



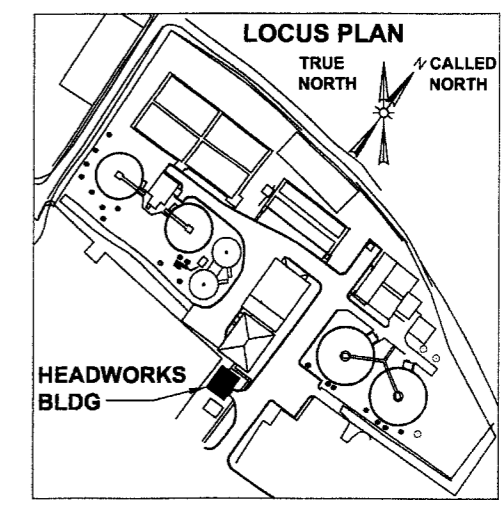
**5 WEST ELEVATION**  
SCALE: 1/4" = 1'-0"



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



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



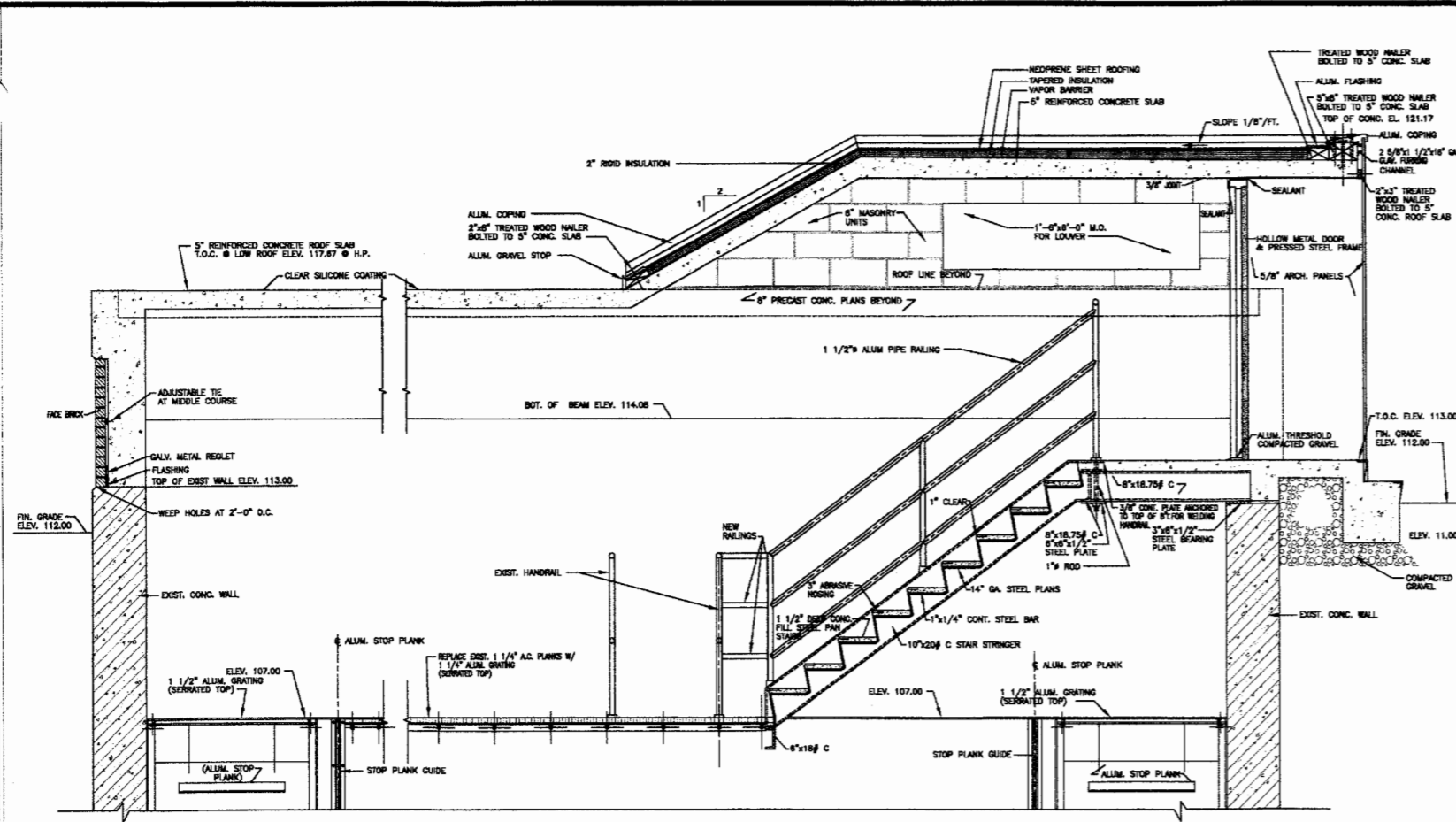
No.	Date	Dr. By	Chk. By	App. By	Description
1	7/13/11				OVER
2					REVISION



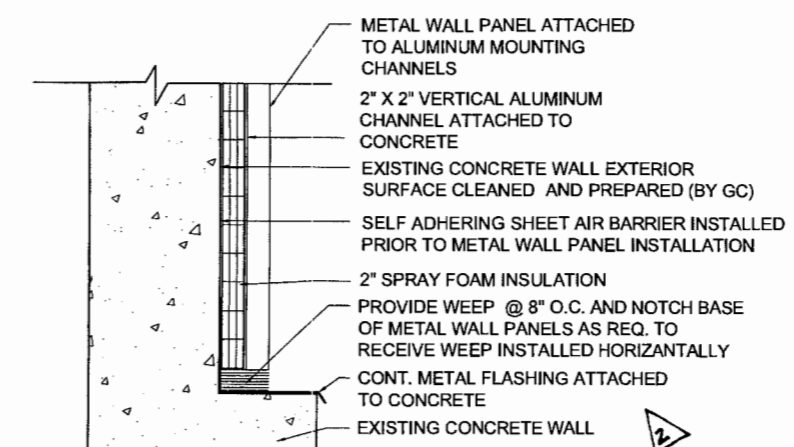
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
HEADWORKS BUILDING  
PLANS & ELEVATIONS - RENOVATION  
SCALE: 1/4" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DR. BY: TSK, BY: CHK, BY: APP, BY: MIW  
DESIGN: TSK, BY: CHK, BY: APP, BY: MIW  
CONTRACT 2

**AS BUILT**

**A-HW.2**  
FILE NO. 189-166  
SHEET 37 OF 202

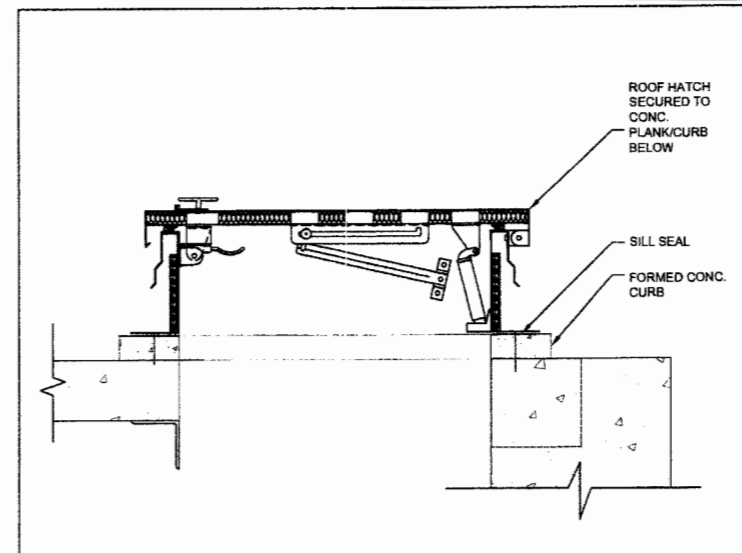


1 BUILDING SECTION  
SCALE: 1/2" = 1'-0"



NOTES:  
1. HEAD DETAIL AND DETAIL AT CONNECTOR SIMILAR, EXCEPT DELETE FLASHING, WEEP AND NOTCHING PANEL.  
2. PROVIDE PT BLOCKING BEHIND THE METAL WALL PANELS WHERE ATTACHING ITEMS TO THE WALL.

METAL WALL PANEL BASE DETAIL  
SCALE: 1-1/2" = 1'-0"  
CITY OF NEWBURYPORT, MA  
WWTF IMPROVEMENTS PROJECT  
CONTRACT 2  
REFERENCE 4/A-HW.3 & 7/A-GT.5  
SK-A-3



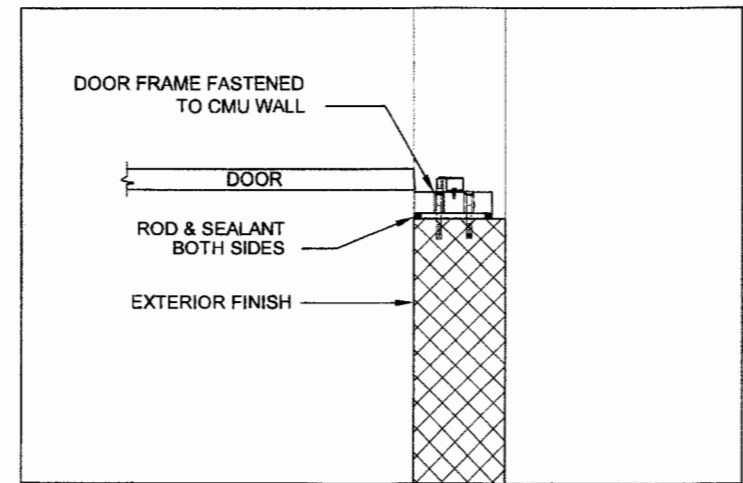
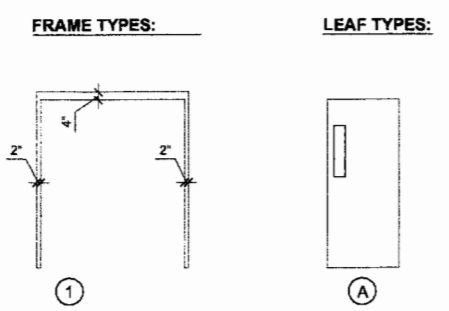
5 ALT. ROOF HATCH (TWO LEAF MODEL SIM.)  
SCALE: 1 1/2" = 1'-0"

**DOOR SCHEDULE**

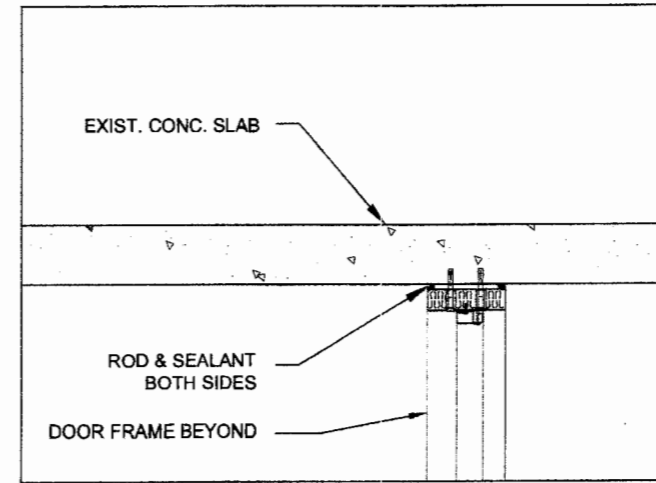
DOOR OPNG. NO.	FRAME											LEAF								UL LABEL	HDW SET	GLAZING	SIGNAGE	REMARKS	DOOR OPNG. NO.
	TYPE	M.O. / R.O. W	M.O. / R.O. H	DEPTH	JAMB	JAMB	HEAD	THR.	MATERIAL	FINISH	COLOR	TYPE	QTY.	W	H	MATERIAL	THK.	FINISH	COLOR						
D301	1	VIF	VIF	6"	2/A-HW.3	2/A-HW.3	3/A-HW.3	ALUM.	ALUM.	FF	TBS	A	2	3'-0"	7'-0"	ALUM.	1 3/4"	FF	TBS		HW-1	WIRE GL.			

**ABBREVIATIONS:**  
ALUM. - ALUMINUM  
F.F. - FACTORY FINISH  
TBS - TO BE SELECTED  
TGL - 1" TEMPERED INSULATED GLASS  
VIF - VERIFY IN FIELD

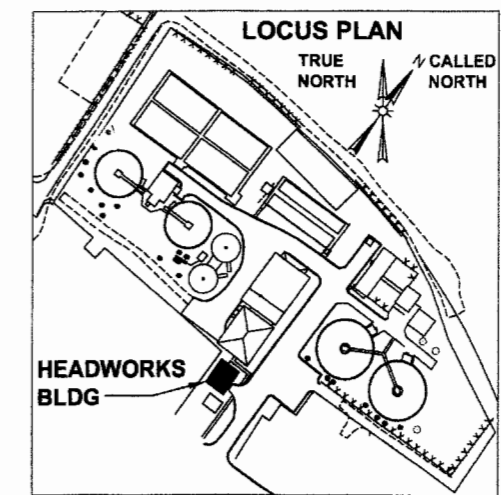
**NOTE:**  
VIF ALL FRAMES AND LEAF DIMENSIONS FOR EXISTING OPENINGS



2 DOOR JAMB AT CMU WALL  
SCALE: 3" = 1'-0"



3 DOOR HEAD AT CMU WALL  
SCALE: 3" = 1'-0"



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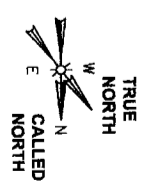
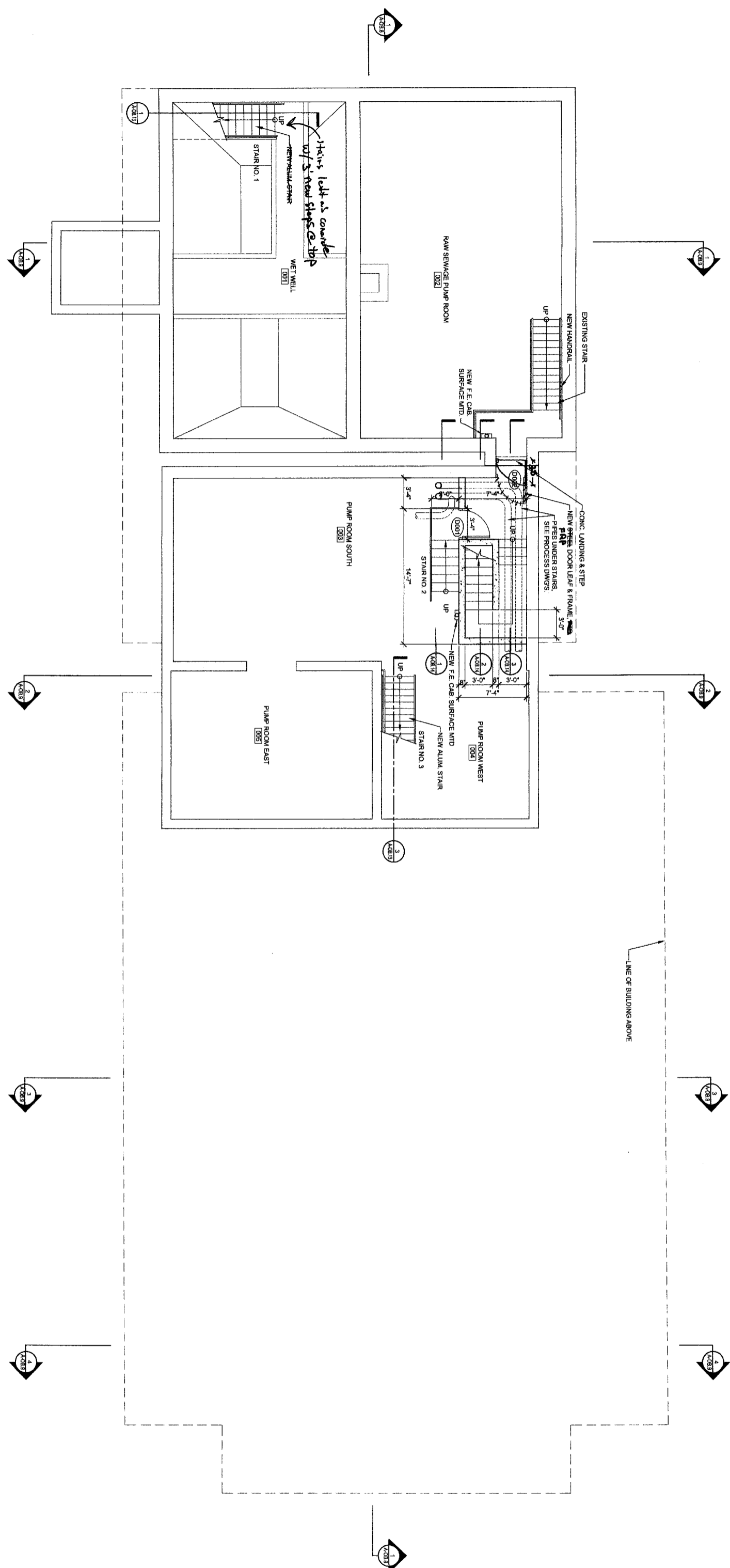
**DiMarinisi & Wolfe**  
ARCHITECTS • URBAN DESIGNERS  
BOSTON, MASSACHUSETTS

NO. 4947  
REGISTERED ARCHITECT  
COMMONWEALTH OF MASSACHUSETTS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
HEADWORKS BUILDING  
SECTION, DETAILS & DOOR SCHEDULE - RENOVATION

FILE NO. 189-165  
JOB NO. 2090269  
SCALE: AS NOTED  
CONTRACT 2  
DATE: 7/17/11

A-HW.3  
SHEET 38 of 202



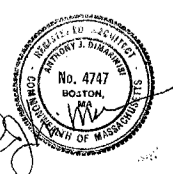
**DiMarinisi & Wolfe**  
 ARCHITECTS • URBAN DESIGNERS  
 BOSTON, MASSACHUSETTS

SHEET 3904-202  
**A-OB.1**

**AS BUILT**

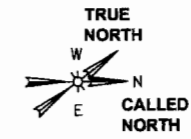
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING  
 BASEMENT PLAN**

FILE NO. 189-164  
 CAD NO. 189-164  
 SCALE: 3/8"=1'-0"  
 CONTRACT 2  
 JOB NO. 2090269  
 DR. BY IRC/DJS  
 DSN. BY MIW  
 CHK. BY MIW  
 APP. BY MIW



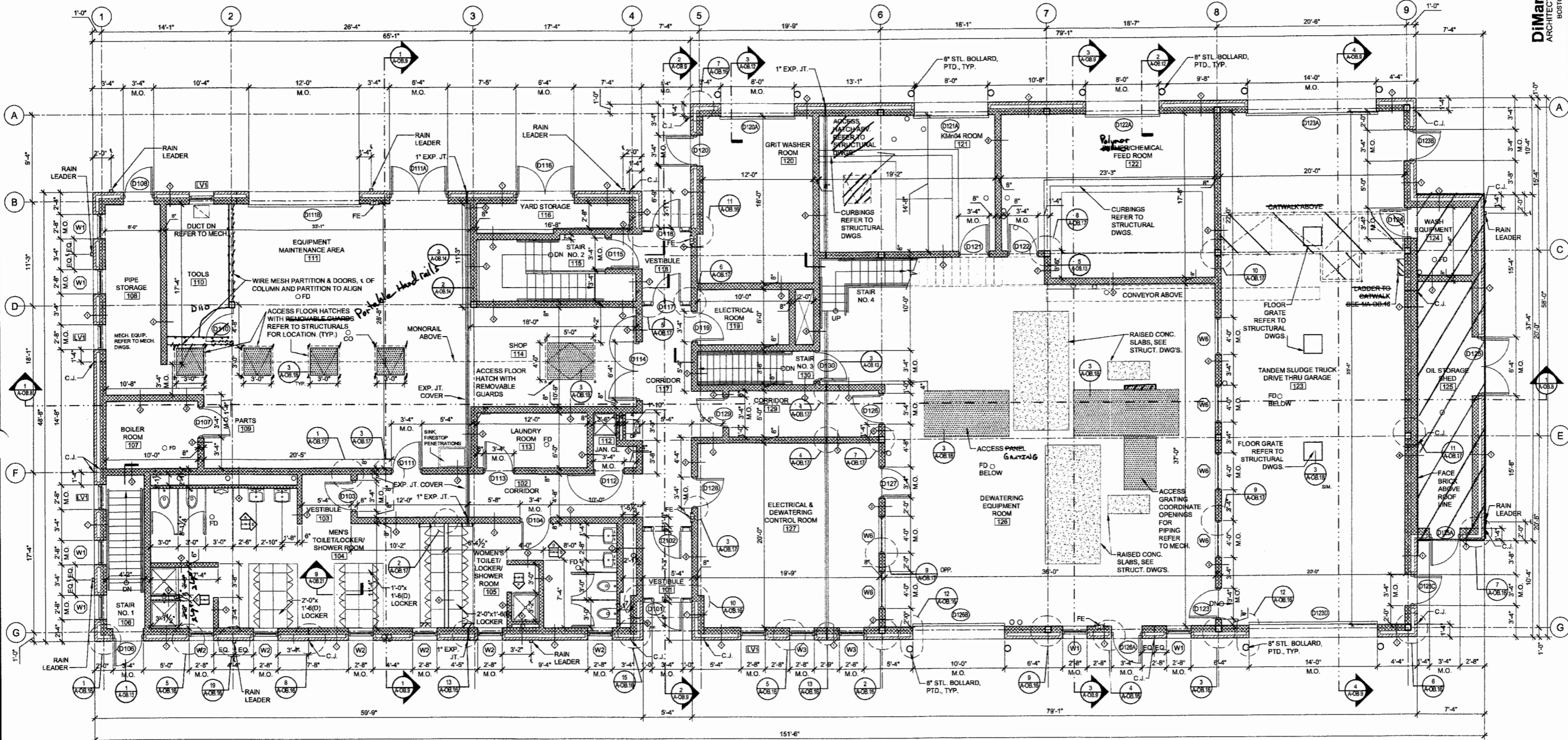
No.	Date	Dr. By	Ck. By	App. By	Description
A P P R O V E D					
 REGISTERED ARCHITECT					7/15/11 DATE

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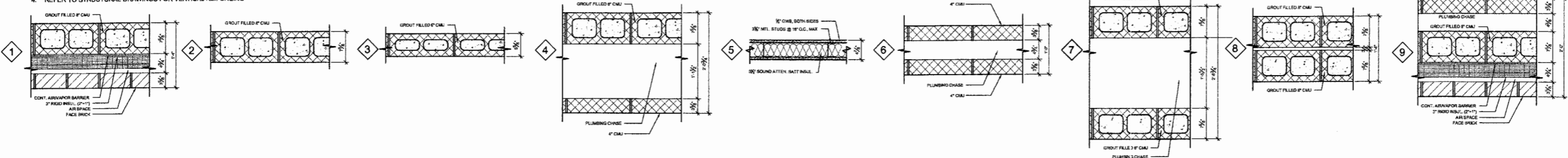
**DiMarinisi & Wolfe**  
ARCHITECTS • URBAN DESIGNERS  
BOSTON, MASSACHUSETTS

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- GENERAL NOTES:**
- REFER TO STRUCTURAL DRAWINGS FOR LOCATIONS AND SIZES OF CONCRETE CURBS AND OPENINGS FOR FLOOR HATCHES, ACCESS PANELS AND GRATES.
  - REFER TO PLUMBING DRAWINGS FOR LOCATIONS OF FLOOR DRAINS.

- PARTITION / WALL TYPES**
- GENERAL NOTES:
- EXTERIOR WALL ARE WALL TYPE 1 EXCEPT AS NOTED
  - INTERIOR PARTITIONS / WALLS ARE TYPE 2 EXCEPT AS NOTED
  - ALL PARTITIONS ARE TO UNDERSIDE OF STRUCTURE ABOVE
  - REFER TO STRUCTURAL DRAWINGS FOR VERTICAL REINFORCING



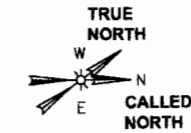
No.	Date	Dr. By	Chk. By	App. By	Description
1	7/15/11				



CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
FIRST FLOOR PLAN  
SCALE: 3/8"=1'-0"  
JOB NO. 2090269 [BC/DJS MIW MIW]  
DR. BY [DKS] BY [CHK.] BY [APP.] BY [MIW]  
CONTRACT 2

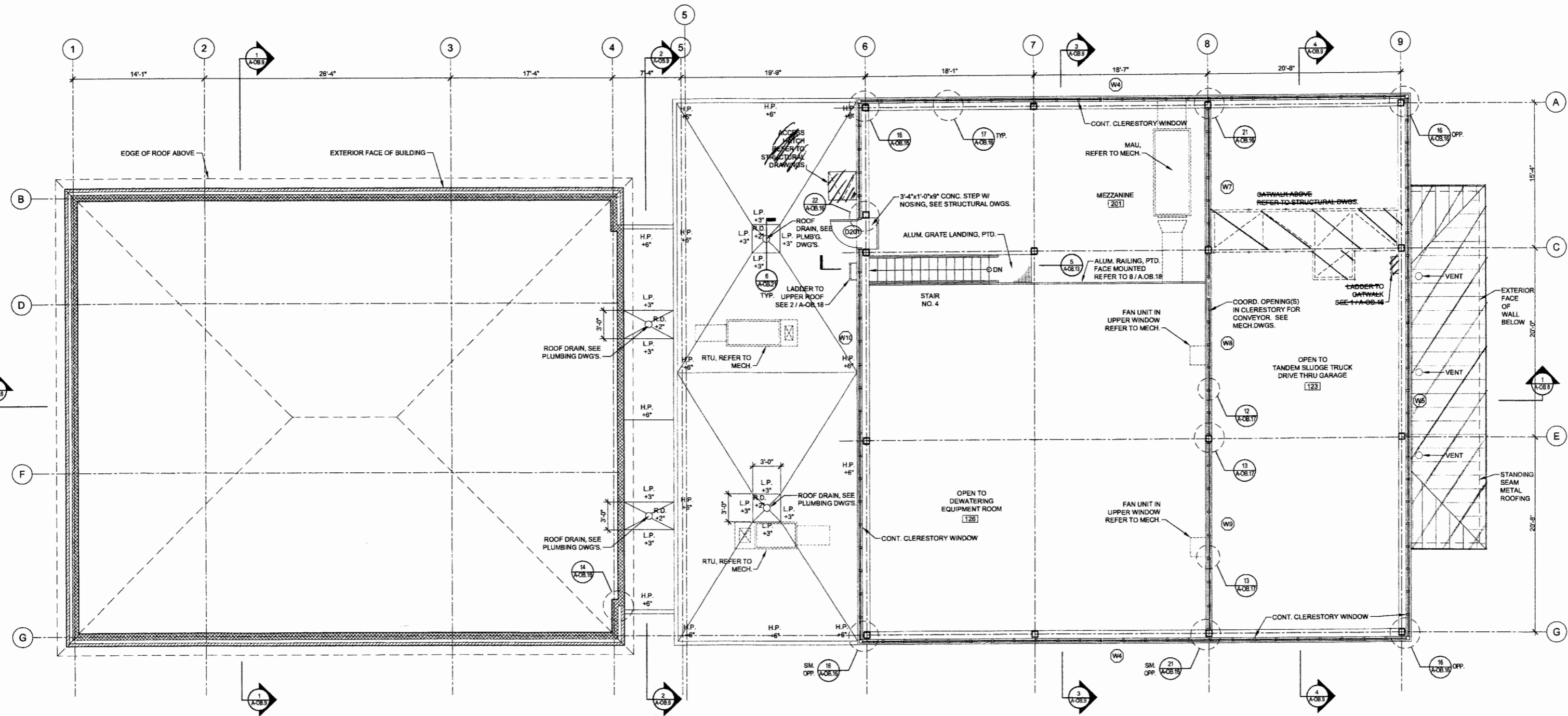
**AS BUILT**  
A-OB.2  
FILE NO. 189-163  
SHEET 40 OF 202





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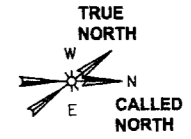


No.	Date	Dr. By	Chk. By	App. By	Description
1	7/13/11	AW	AW	AW	MEZZANINE/CLERESTORY PLAN



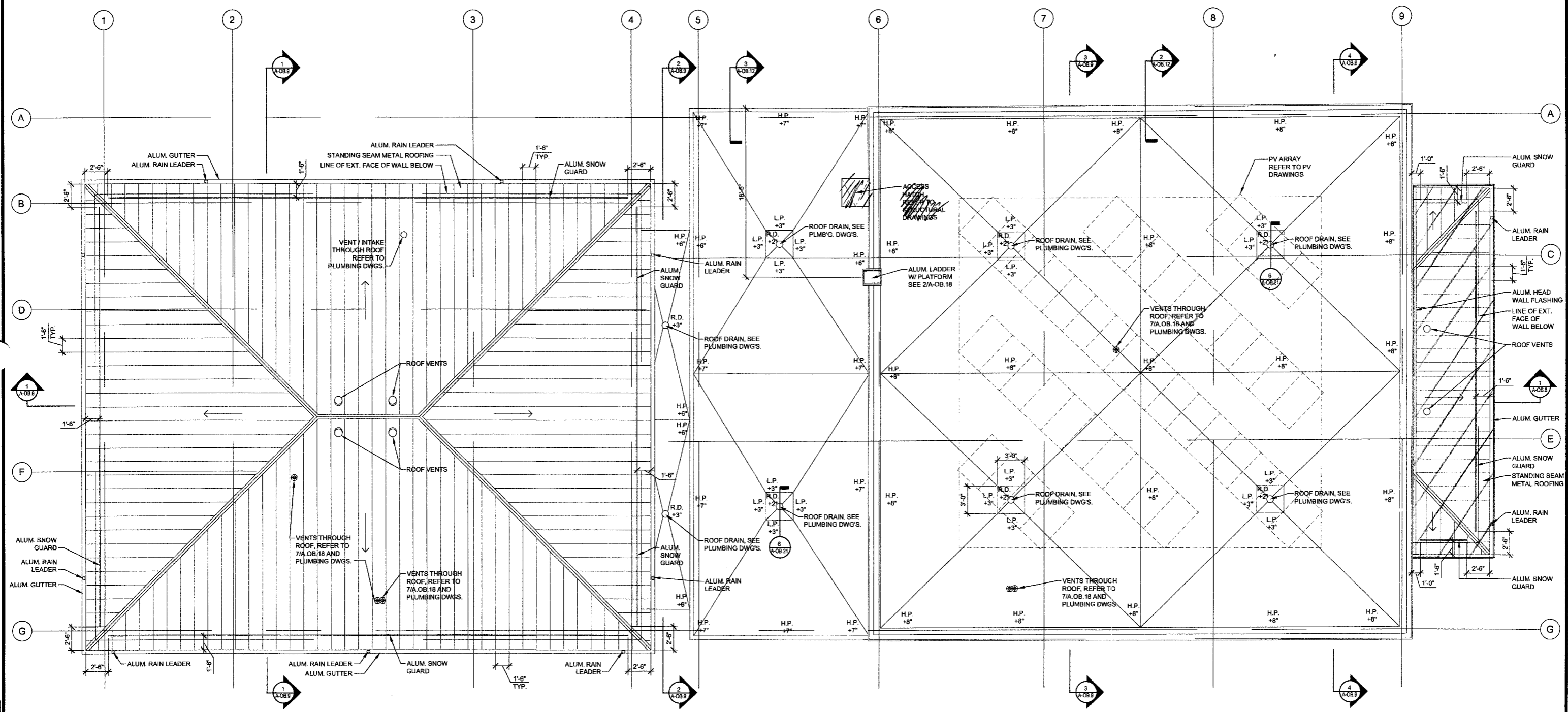
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 MEZZANINE/CLERESTORY PLAN  
 SCALE: 3/8" = 1'-0"  
 JOB NO. 2090269  
 DRAWING 2

**AS BUILT**  
 A-OB.3  
 SHEET 41 OF 203

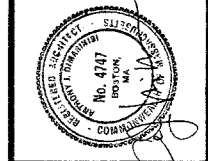


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No.	Date	Dr. By	Chk. By	App. By	Description
1	7/13/11				DATE

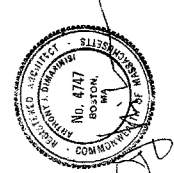


CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
ROOF PLAN

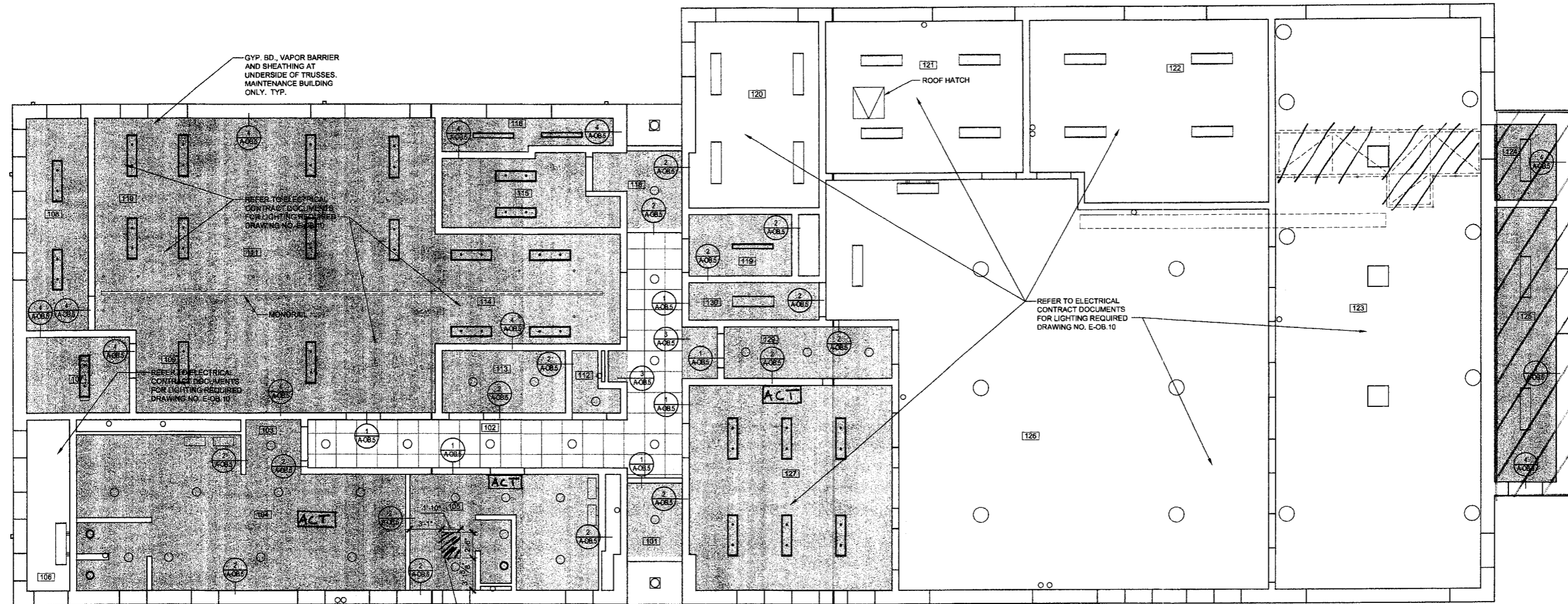
SCALE: 3/8" = 1'-0"  
CONTRACT: 2090269  
JOB NO. 189-161  
DR. BY: BSN  
CHK. BY: MIW  
APP. BY: MIW

**AS BUI**  
CAD/INSTR  
FILE NO. 189-161  
SHEET 42 OF 202

No.	Date	Dr. By	Ck. By	App. By	Description
1					
2	7/13/11				REFLECTED CEILING PLAN

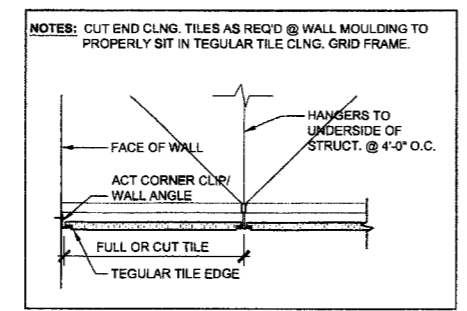


CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
REFLECTED CEILING PLAN  
SCALE: 1/8" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DES. BY: JBC/JAS  
CHK. BY: M/W  
APP. BY: M/W

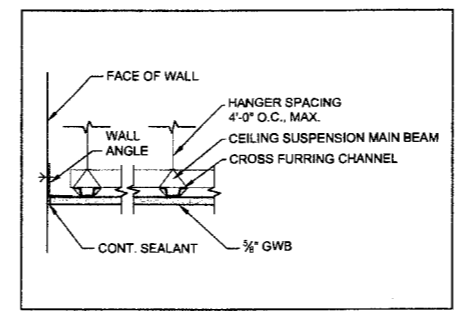


- LEGEND**
- SUSPENDED FIXTURE
  - RECESSED FIXTURE
  - ⊗ RECESSED WATERPROOF FIXTURE
  - ⊙ RECESSED SHOWER FIXTURE
  - ▭ SURFACE MOUNTED / SUSPENDED INDUSTRIAL FIXTURE
  - ▭ WALL MOUNTED FIXTURE (ABOVE SINK)
  - ▭ 2X2 SUSPENDED ACOUSTIC TILE CEILING
  - ▨ GYPSUM BOARD CEILING
  - ▭ FLUSH ACCESS HATCH IN CEILING

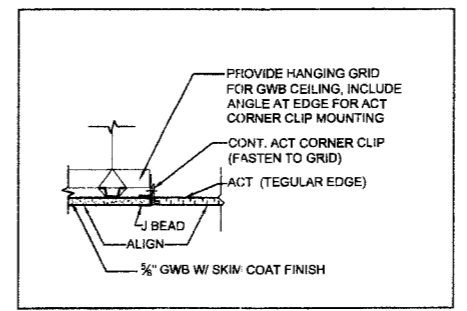
FLUSH ACCESS HATCH  
22" x 40"  
REFER TO MECHANICAL DRAWINGS



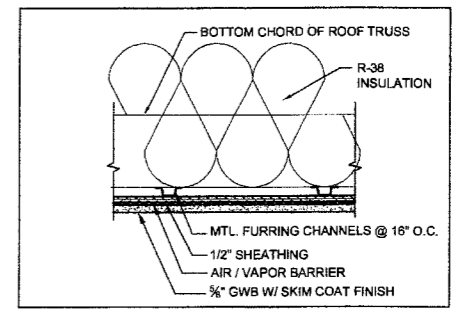
**1 ACT SUSPENSION CEILING**  
SCALE: 1 1/2" = 1'-0"



**2 GWB SUSPENSION CEILING**  
SCALE: 1 1/2" = 1'-0"



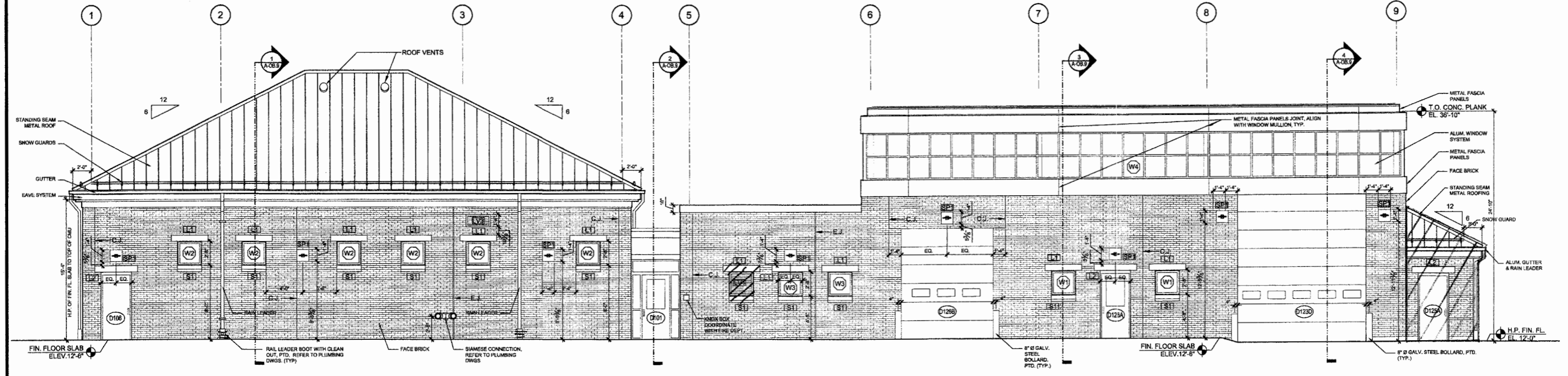
**3 ACT / GWB TRANSITION**  
SCALE: 1 1/2" = 1'-0"



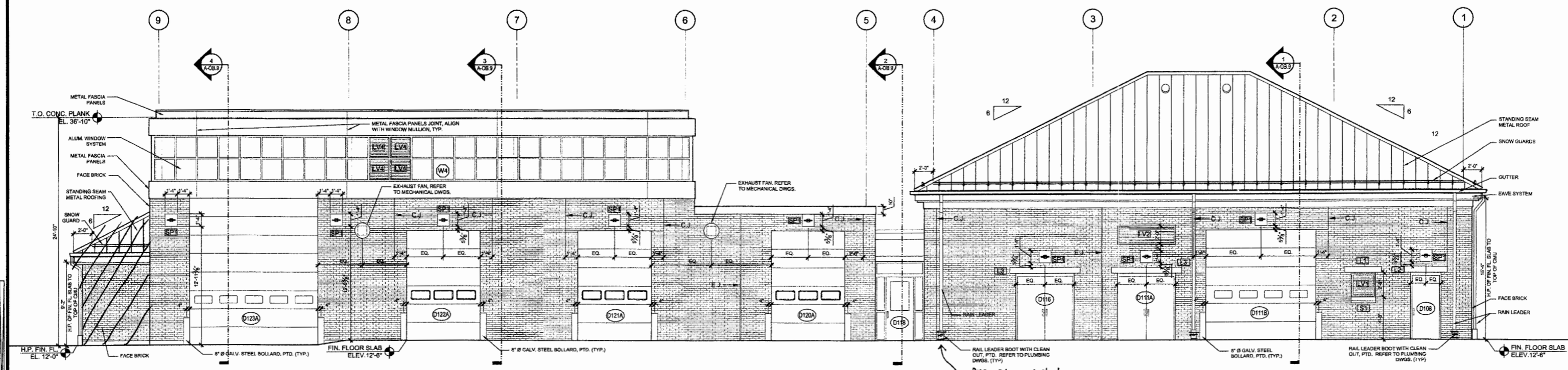
**4 GWB ON FURRING STRIPS WITH VAPOR BARRIER UNDER B.O. TRUSSES. (HIGH CLG.)**  
SCALE: 1 1/2" = 1'-0"

**AS BUILT**

**A-OB-5**  
FILE NO. 189-160  
SHEET 43 OF 202



1 EAST ELEVATION



2 WEST ELEVATION

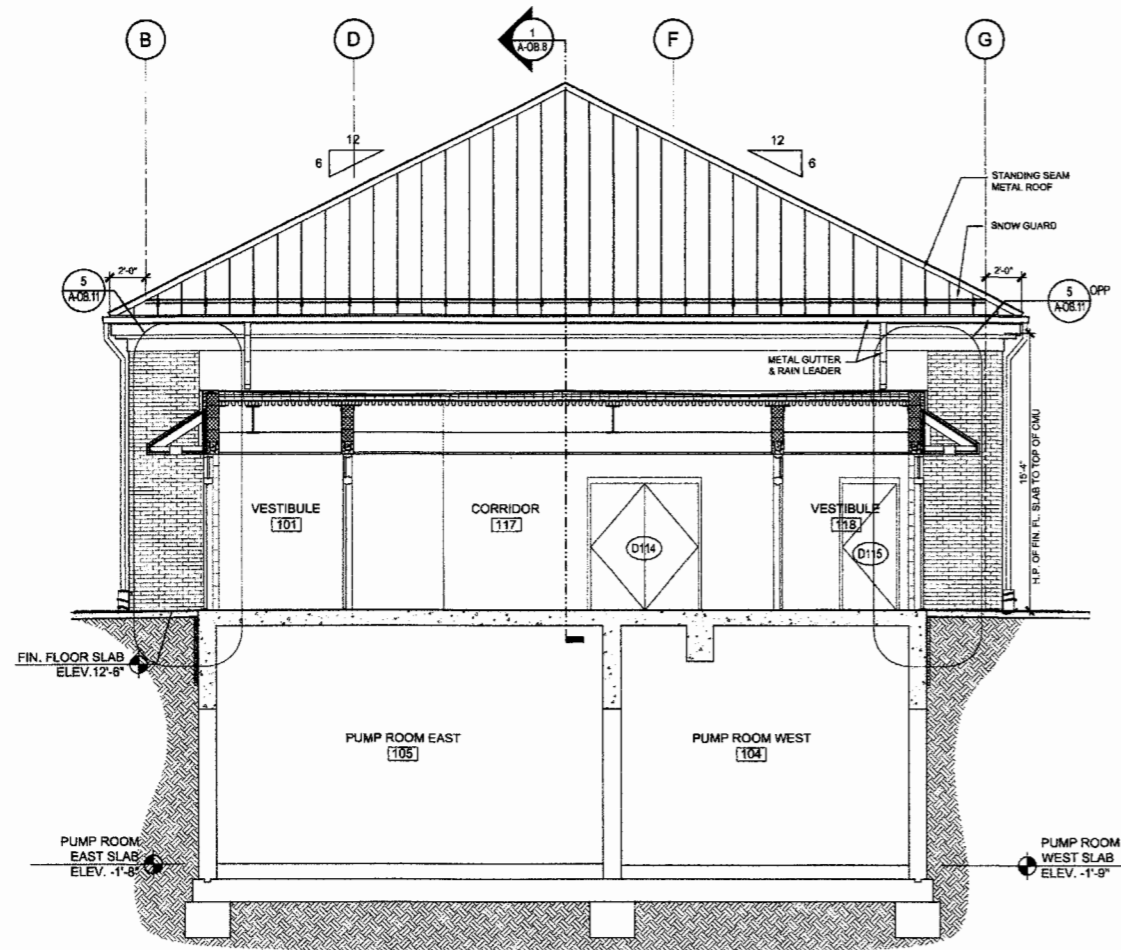
No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					7/13/11 DATE



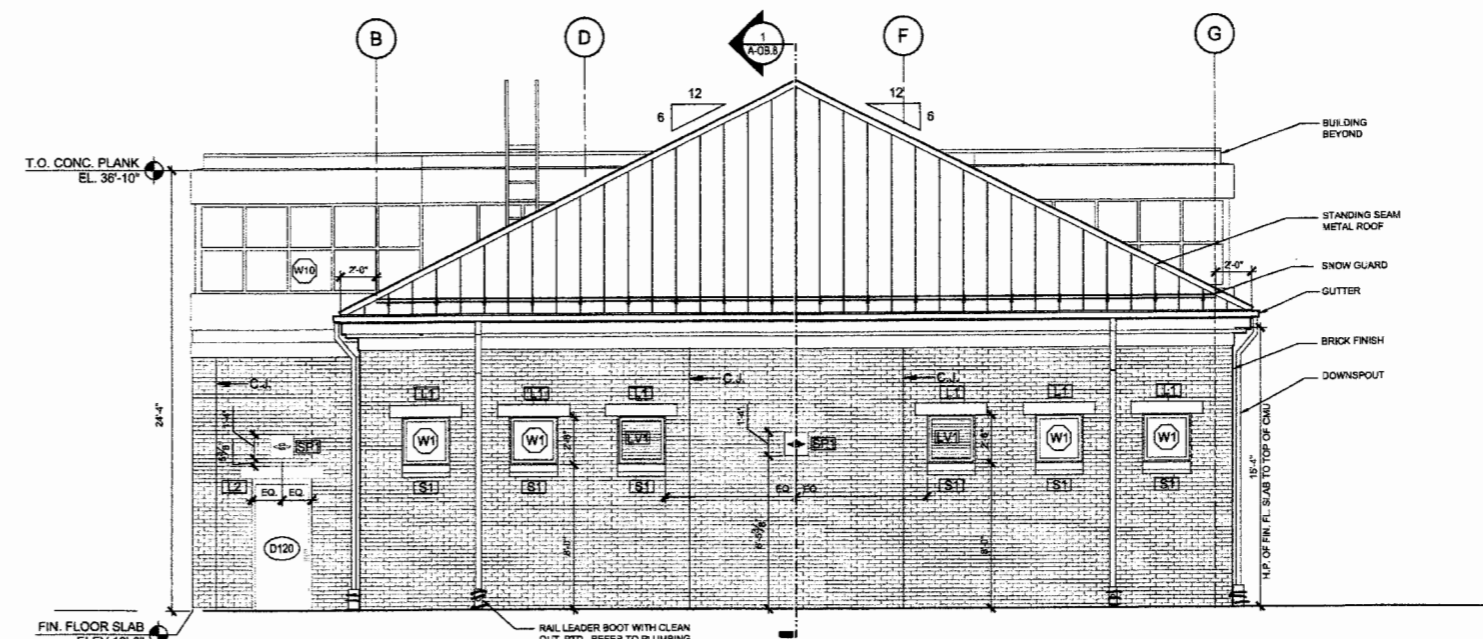
SCALE:	3/8" = 1'-0"
CONTRACT:	2
JOB NO.:	2090269
DR. BY:	DSN
CHK. BY:	MIW
APP. BY:	MIW

**AS BUILT**

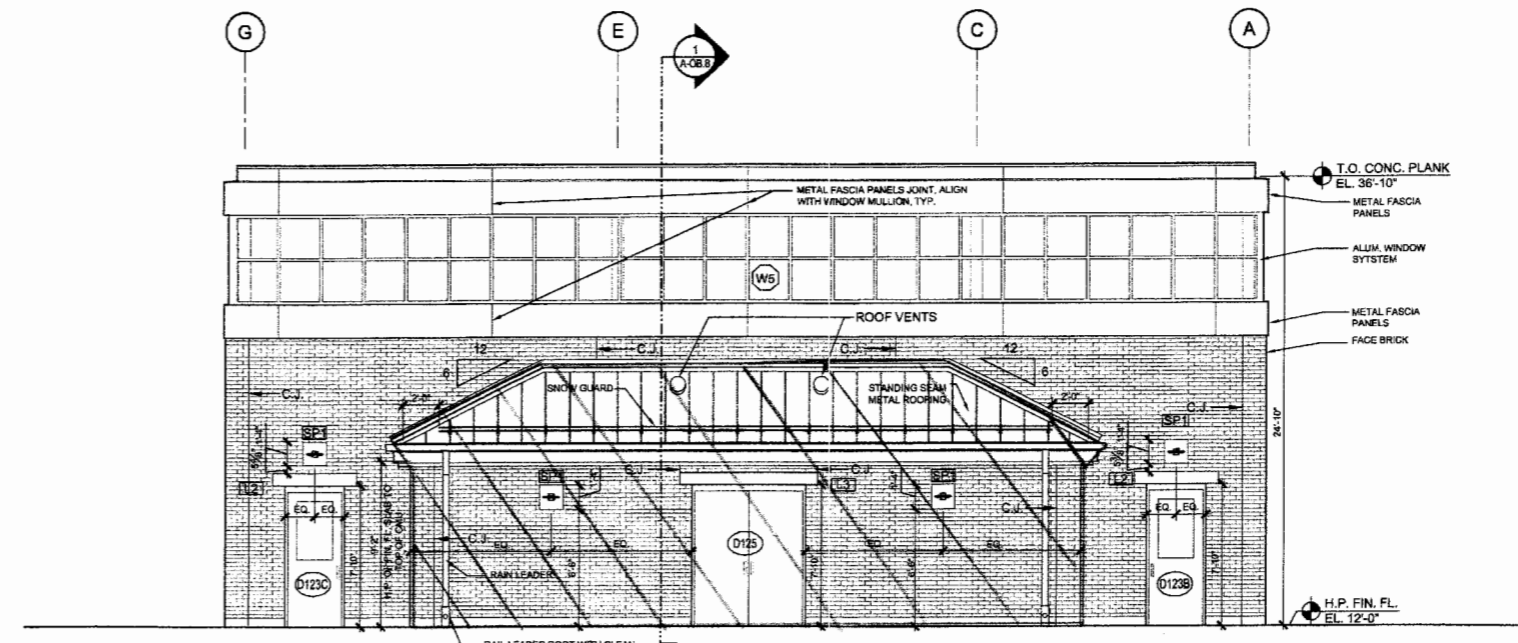
A-OB.6  
 FILE NO. 189-1159



3 HIP ROOF NORTH ELEVATION / BUILDING SECTION



1 SOUTH ELEVATION



2 NORTH ELEVATION

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No.	Date	Dr. By	Ch. By	App. By	Description
					A P P R O V E D
					7/13/11
					DATE



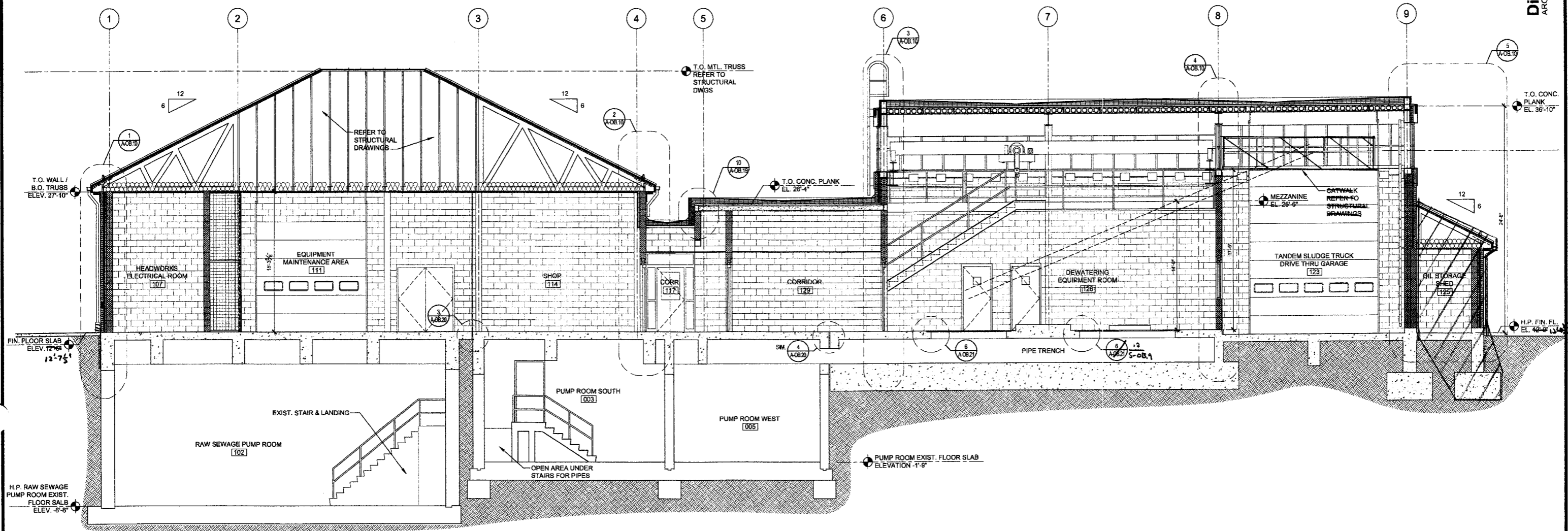
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
EXTERIOR ELEVATIONS

SCALE: 1/8" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DR. BY: JDN  
CHK. BY: M/W  
APP. BY: M/W

AS BUILT

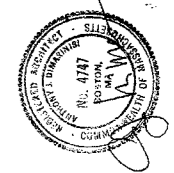
A-OB.7  
FILE NO. 189-158

SHEET 45 OF 202



1 BUILDING SECTION

No.	Date	Dr. By	Ck. By	App. By	Description
1	7/13/11				REVISED

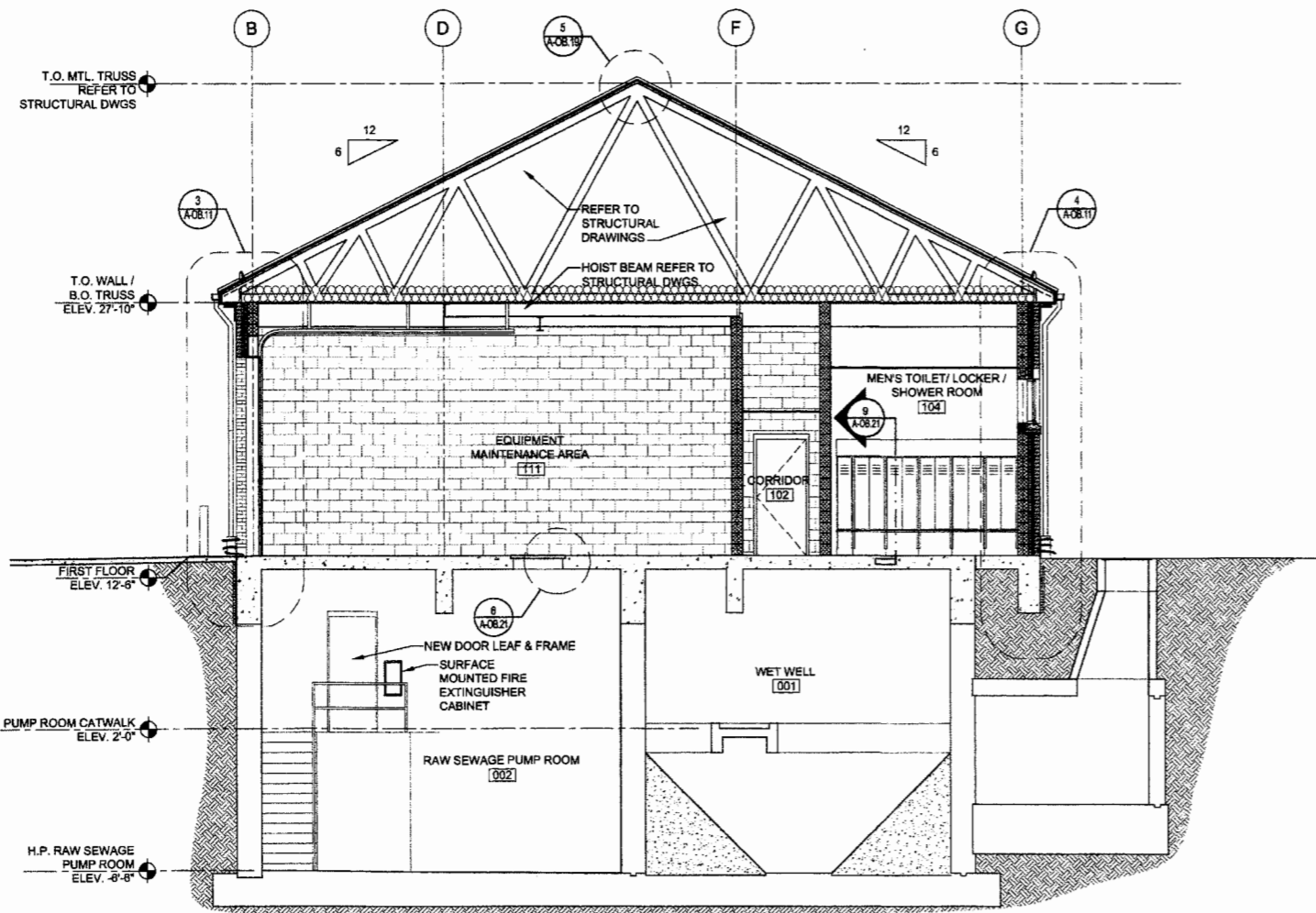


CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 OPERATIONS BUILDING  
 BUILDING SECTIONS

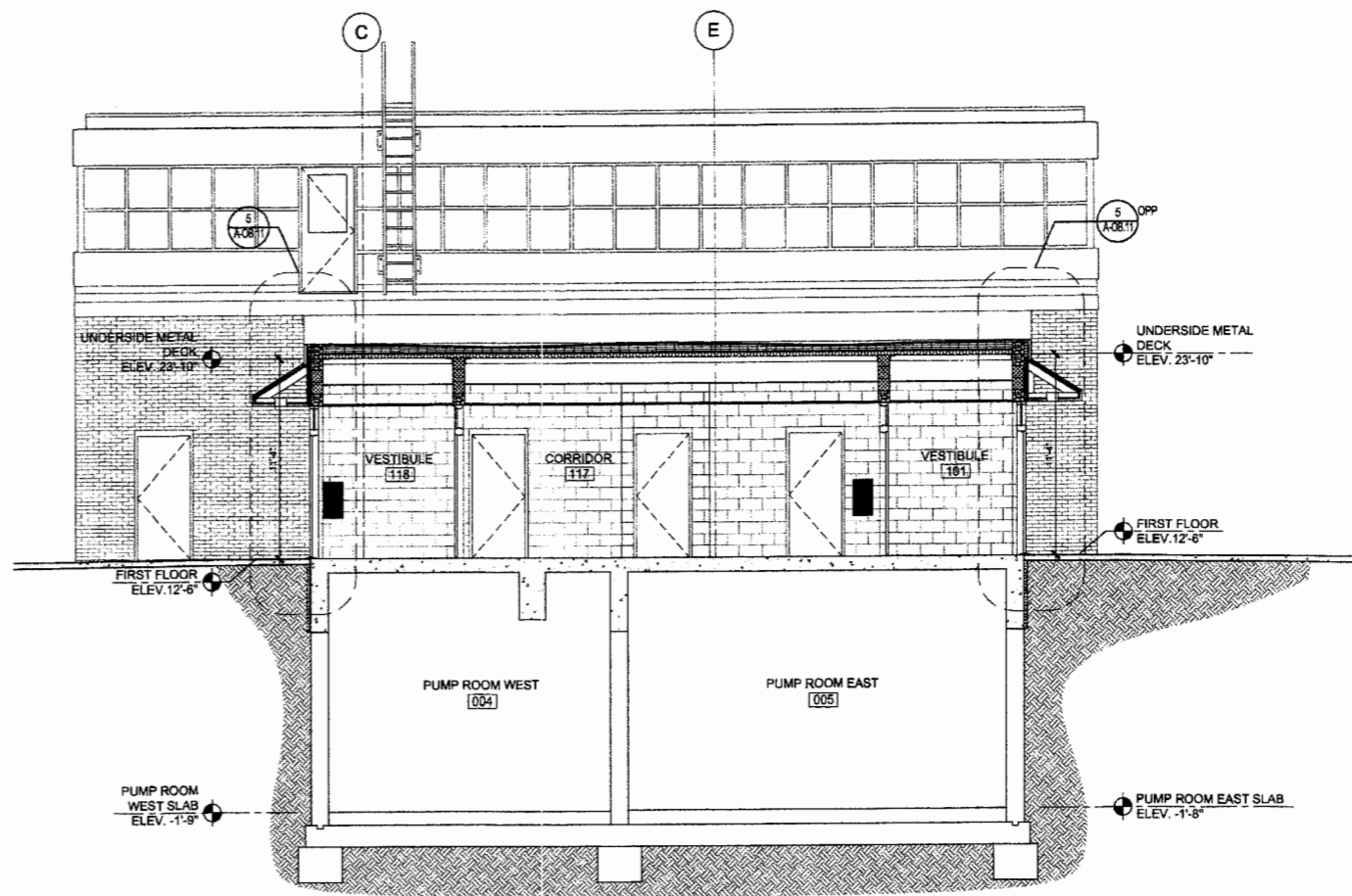
SCALE: 3/8" = 1'-0"  
 CONTRACT: 2  
 JOB NO. 2090269  
 DRN. BY: TSK/JDS  
 USN. BY: MIW  
 CHK. BY: MIW  
 APP. BY: MIW

**AS BUILT**

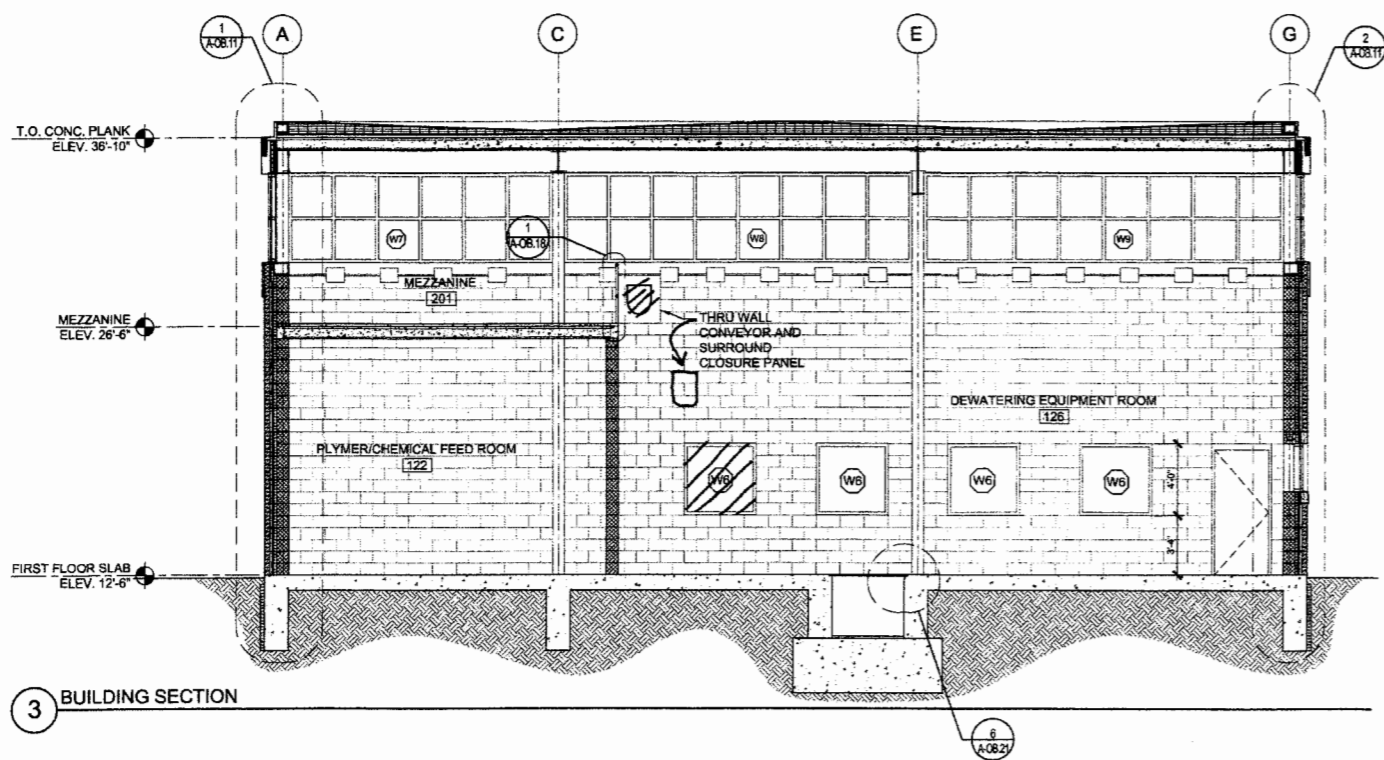
A-OB.8  
 FILE NO. 189 - 157



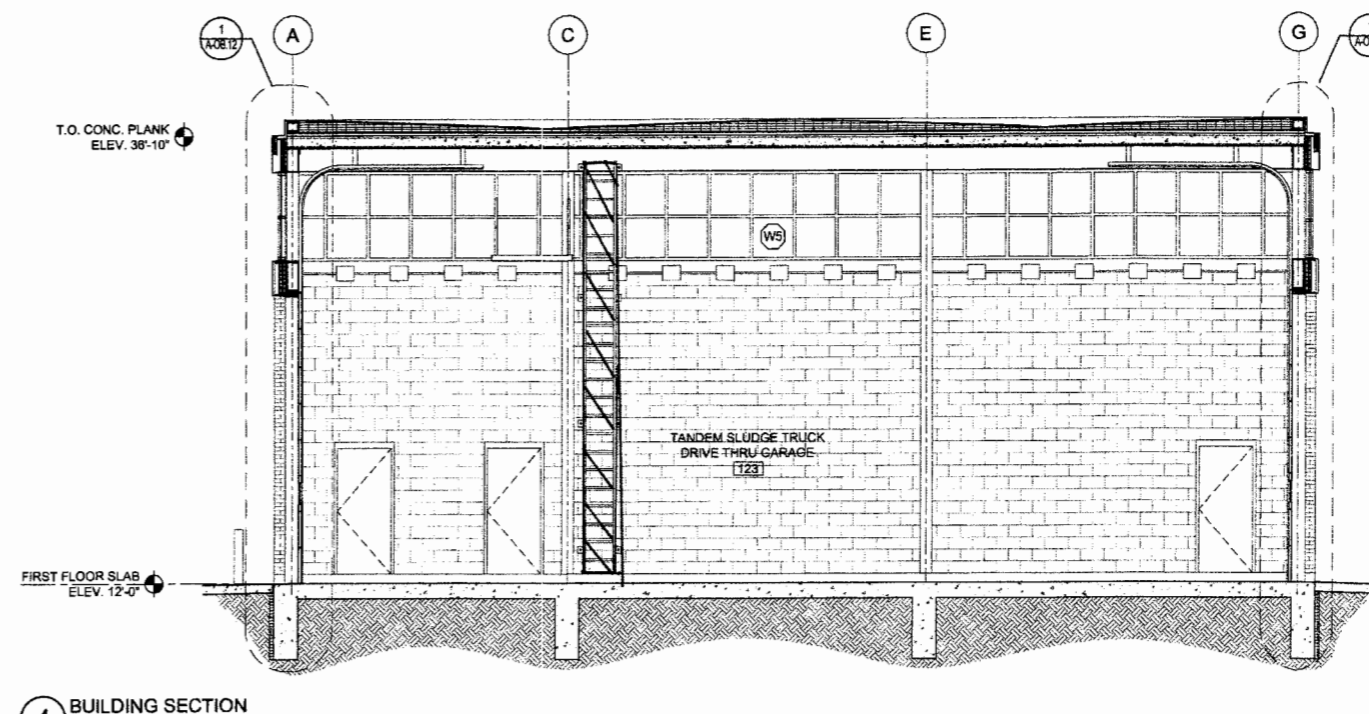
1 BUILDING SECTION



2 BUILDING SECTION



3 BUILDING SECTION



4 BUILDING SECTION

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No.	Date	Dr. By	Ck. By	App. By	Description	REV	DATE
1					OPERATIONS BUILDING		7/13/11



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DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
BUILDING SECTIONS

SCALE: 3/8" = 1'-0"  
JOB NO. 20090269  
CONTRACT 2

DES. BY: [ ]  
CHK. BY: [ ]  
REV. BY: [ ]  
REV. NO. [ ]

**A-OB.9**  
SHEET 47 OF 202

No.	Date	Dr. By	Ck. By	App. By	Description
1	7/13/11				OVERHEAD
2					V
3					O
4					D

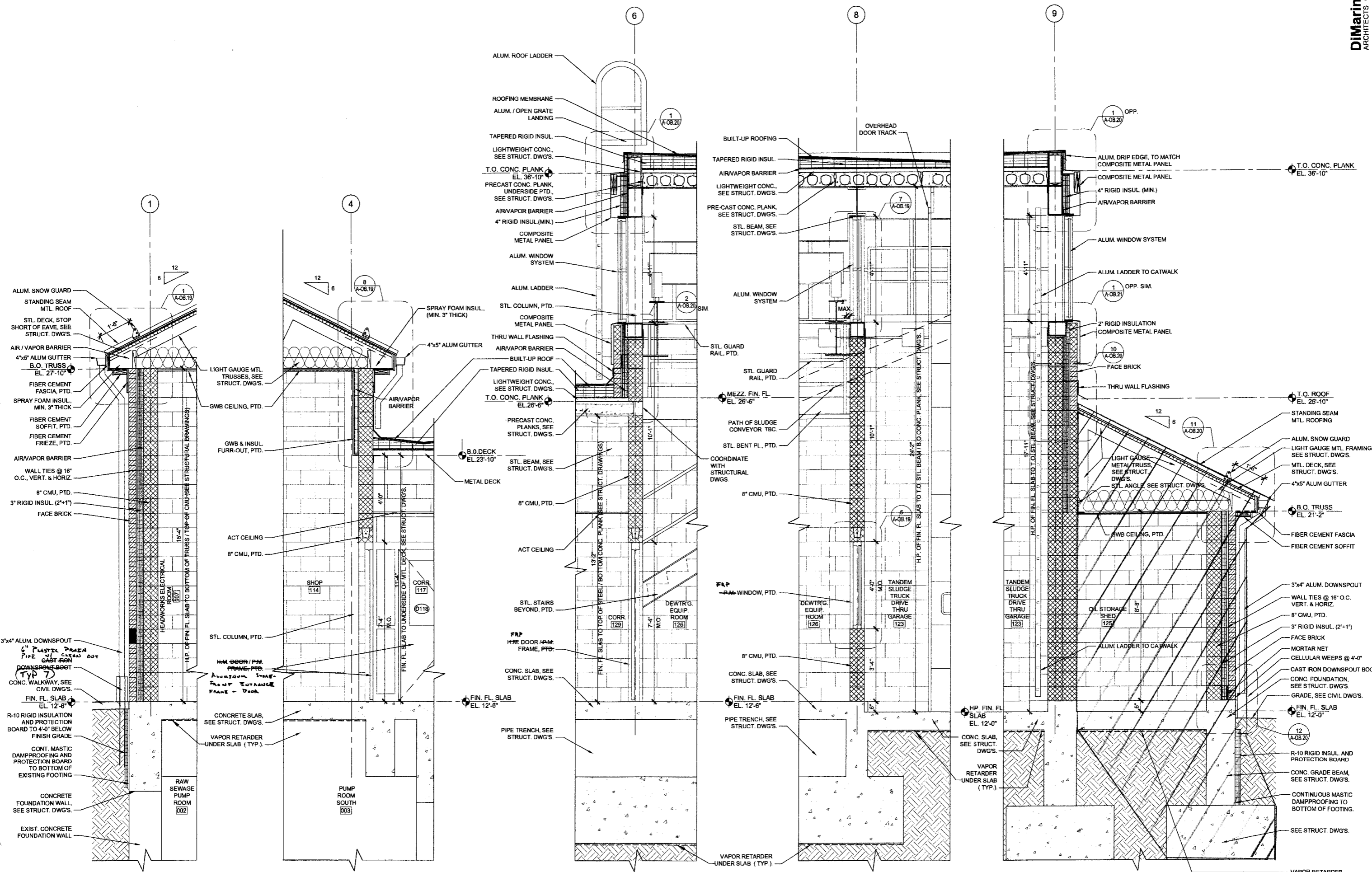


CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
WALL SECTIONS

SCALE: 1" = 1'-0"  
CONTRACT: 2090269  
JOB NO. 100000000  
DESIGNER: JMW  
CHECKER: JMW  
DATE: 7/13/11

**AS BUILT**

A-OB.10  
FILE NO. 139-155  
SHEET 480-202



1 SECTION @ HIP ROOF  
2 SECTION @ HIP ROOF/LOW ROOF  
3 SECTION @ LOW ROOF/HIGH ROOF  
4 SECTION @ SLAB ELEV. CHANGE  
5 SECTION @ OIL STORAGE SHED

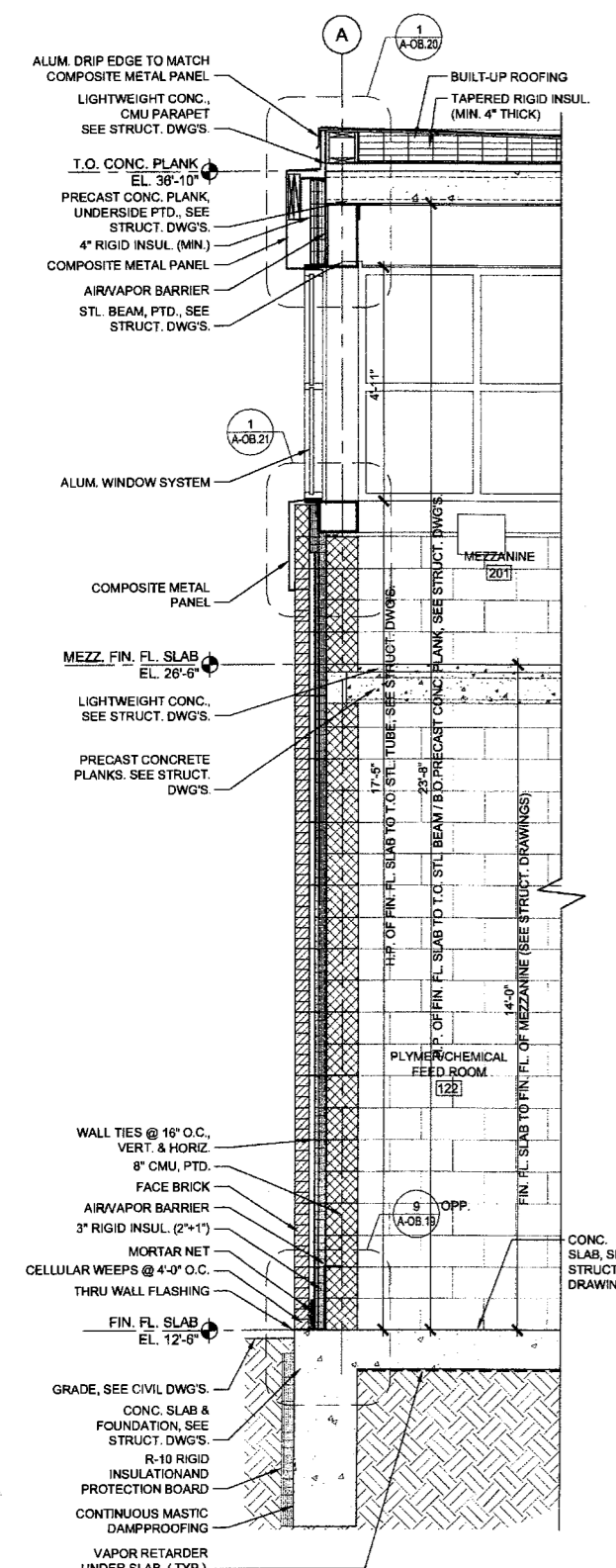


No.	Date	Dr. By	Ck. By	App. By	Description
1					
2	7/13/11				

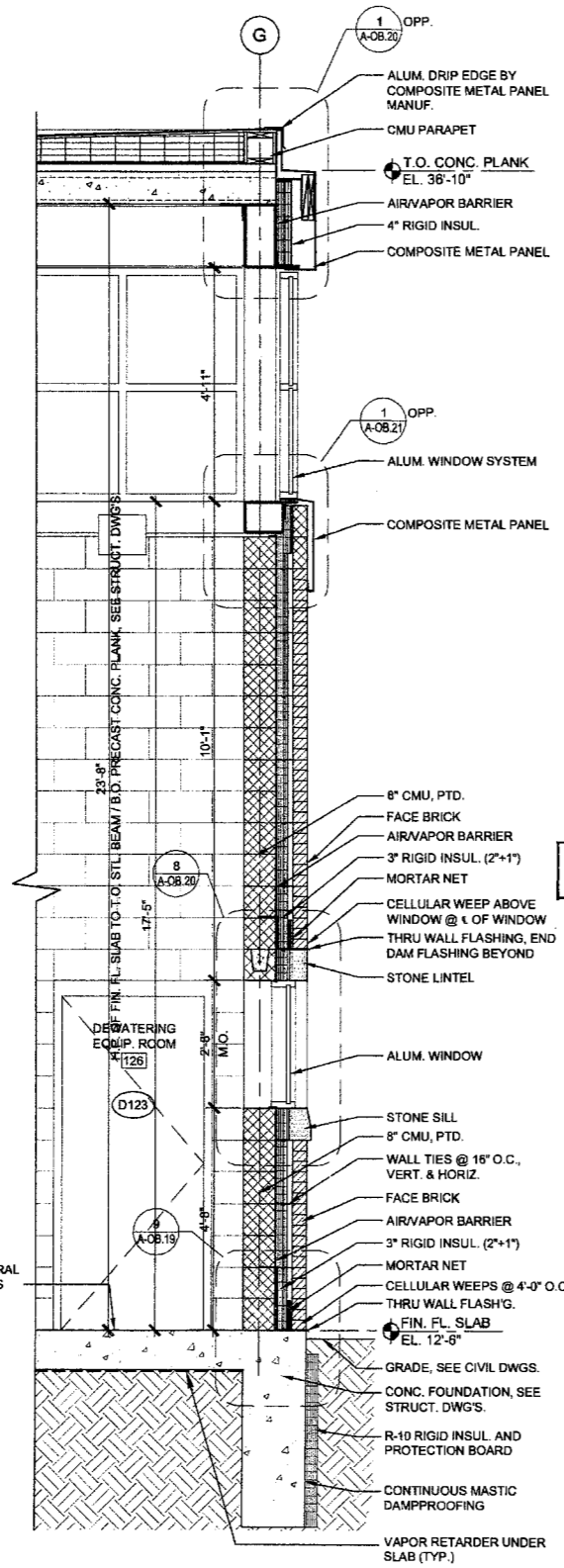


CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
WALL SECTIONS

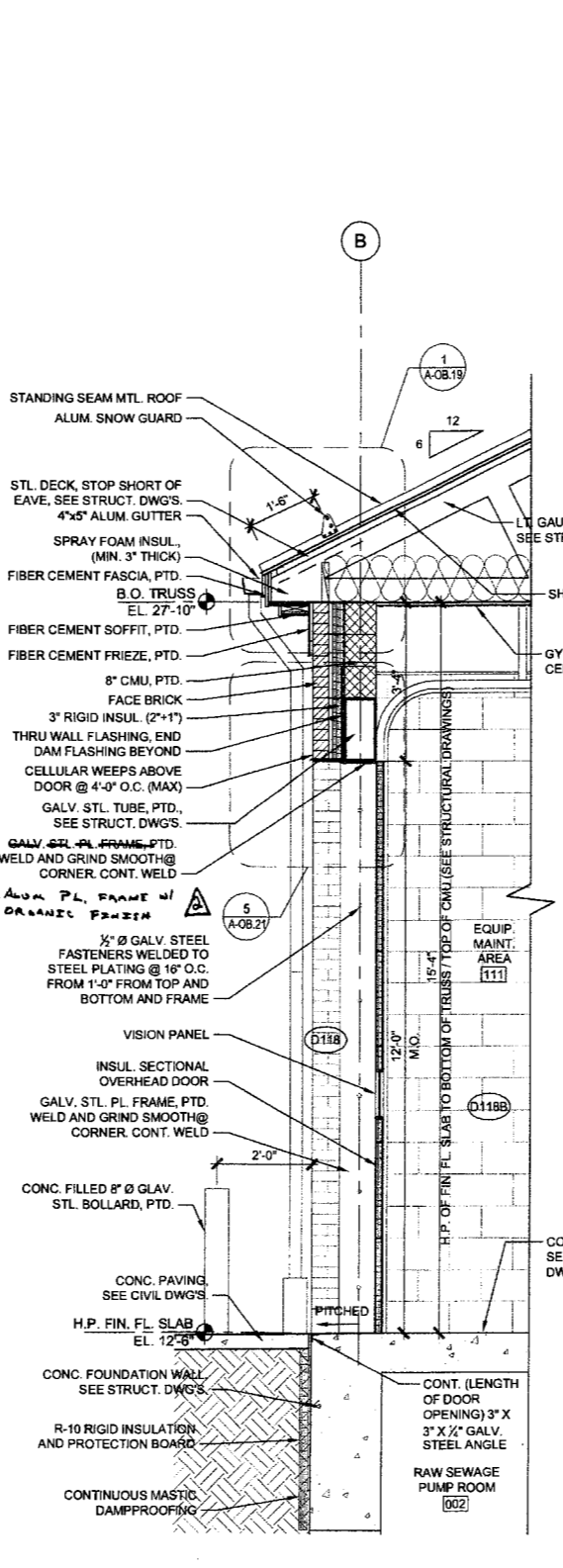
SCALE: 1"=1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DESIGNED BY: MIAW  
CHECKED BY: MIAW  
DATE: 7/13/11



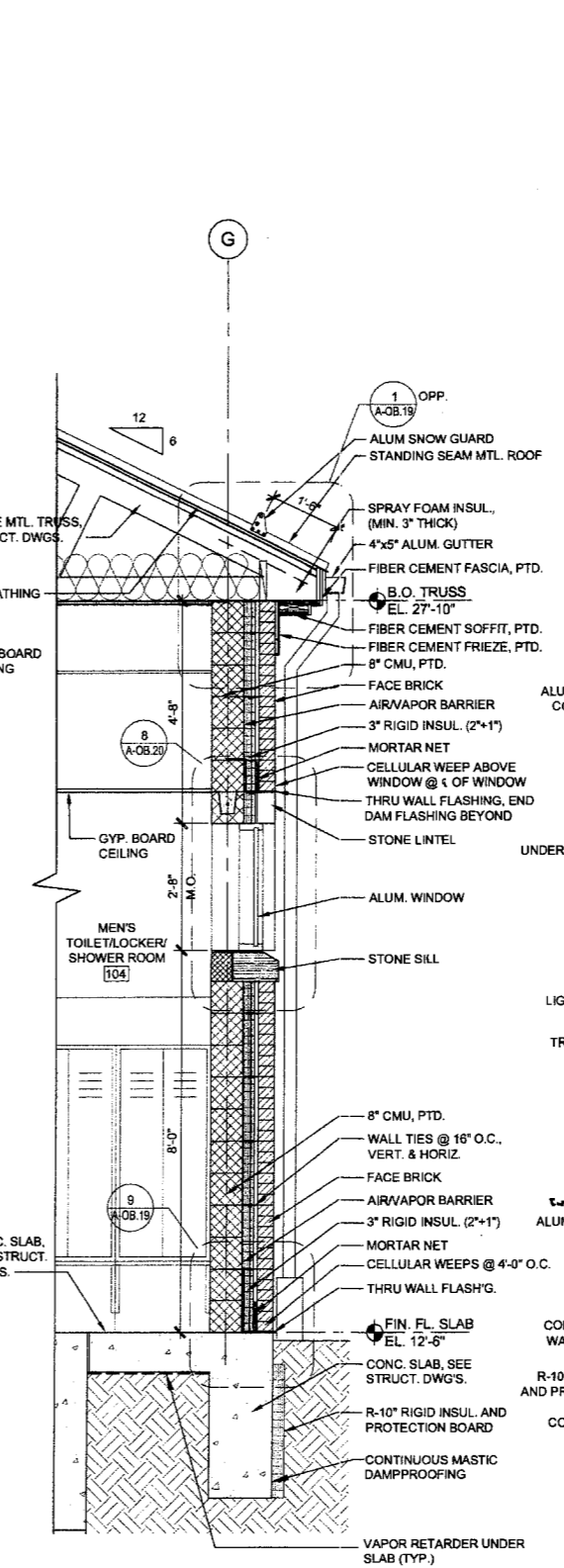
1 SECTION @ MEZZANINE/POLYMER/CHEMICAL FEED ROOM



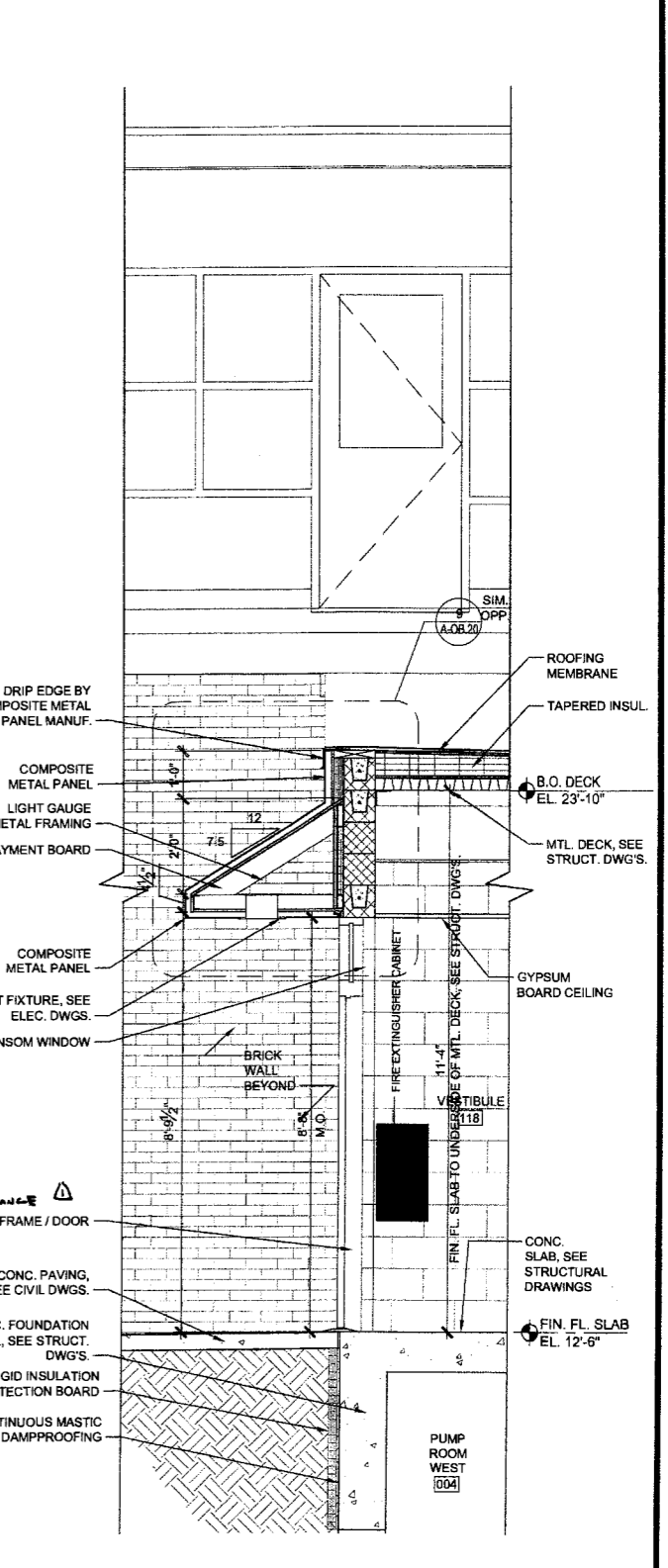
2 SECTION @ DEWATERING EQUIPMENT ROOM



3 SECTION @ SECTIONAL DOOR @ HIP ROOF



4 SECTION @ OPERABLE WINDOW



5 SECTION @ WEST ENTRANCE

No.	Date	Dr. By	Chk. By	App. By	Description
1	7/13/11	ADW	MMW		REGISTERED ARCHITECT

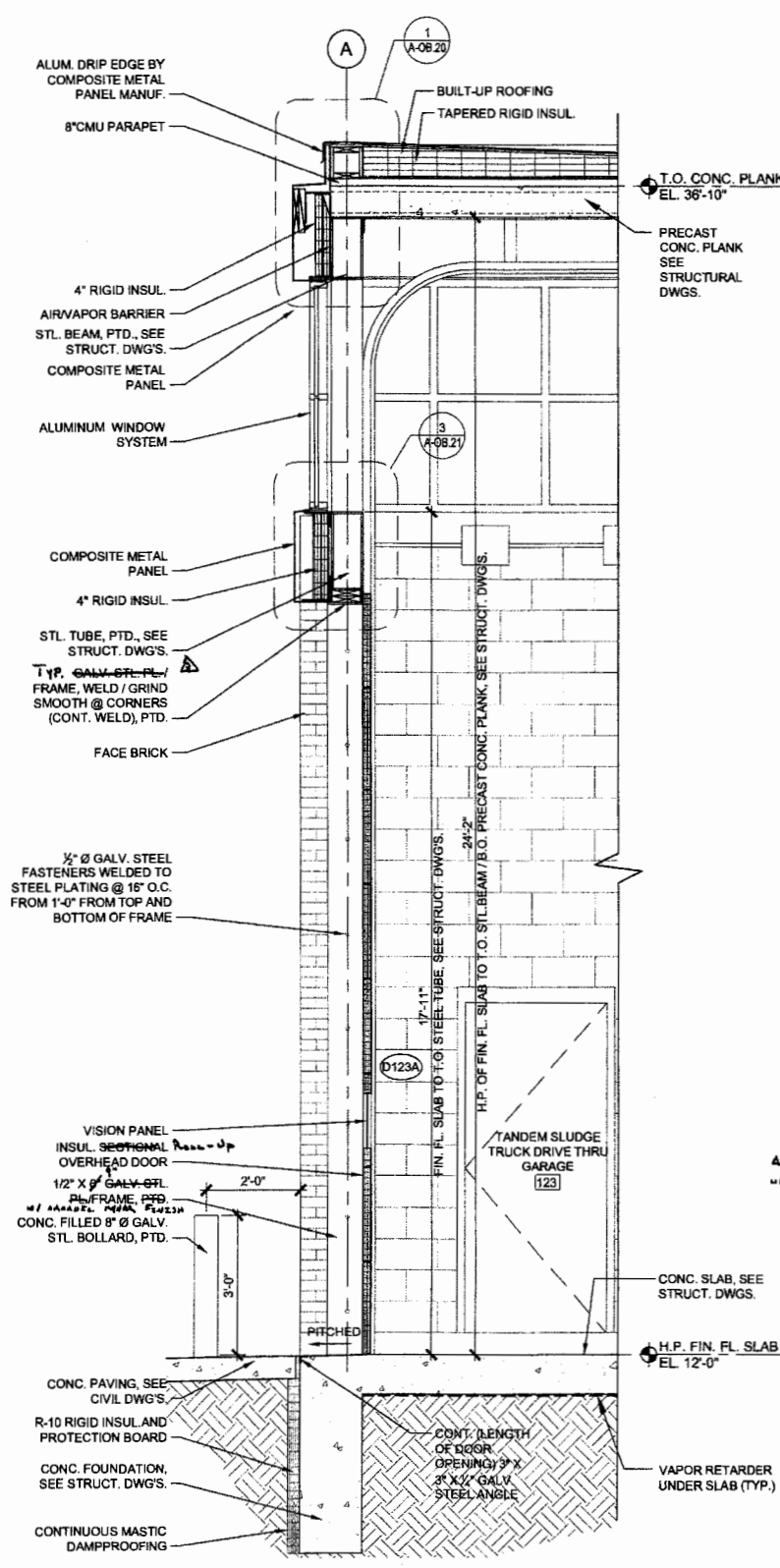


CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 OPERATIONS BUILDING  
 WALL SECTIONS

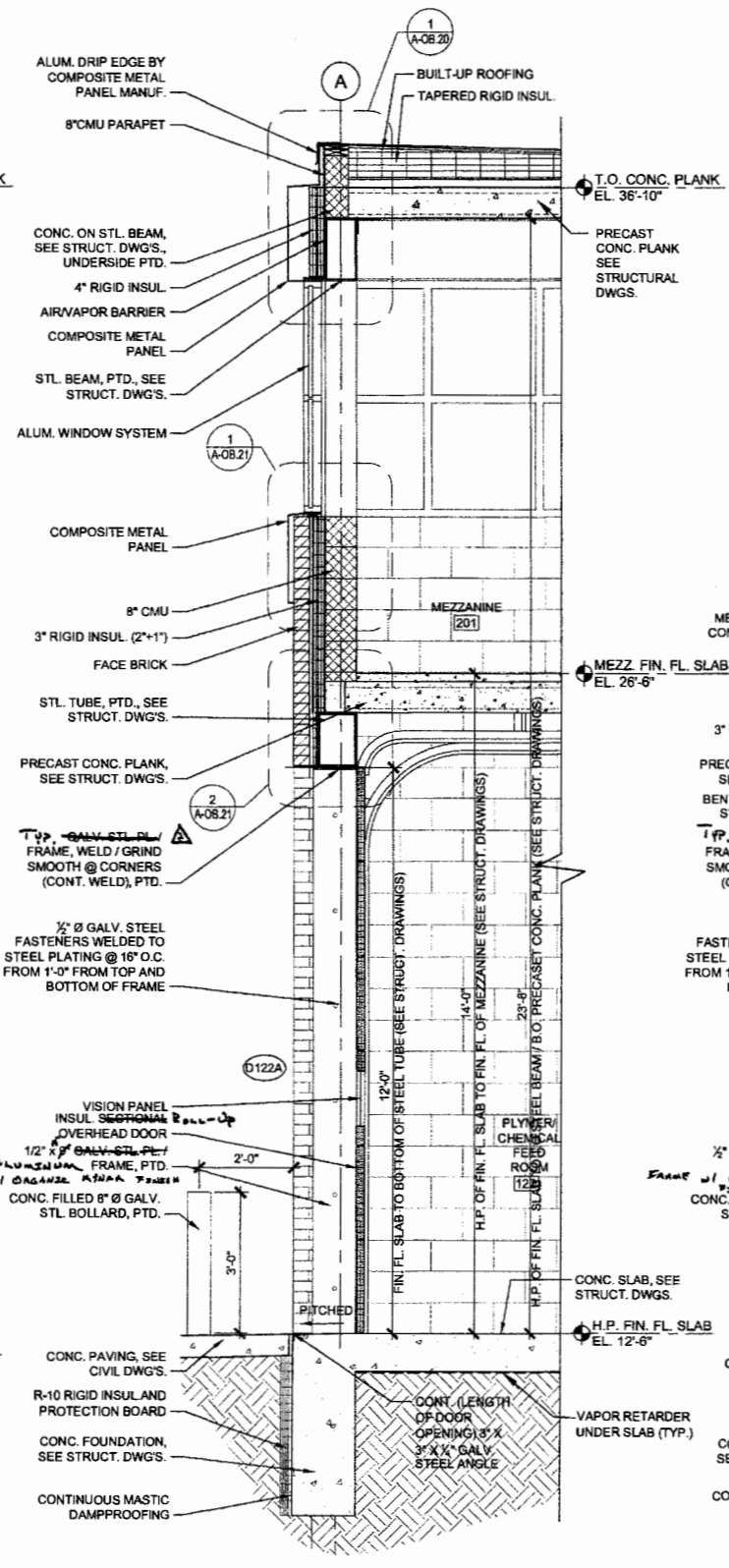
SCALE: 1"=1'-0"  
 CONTRACT NO. 2090269  
 DR. BY: ADW  
 CHK. BY: MMW  
 APP. BY: MIW

**AS BUILT**

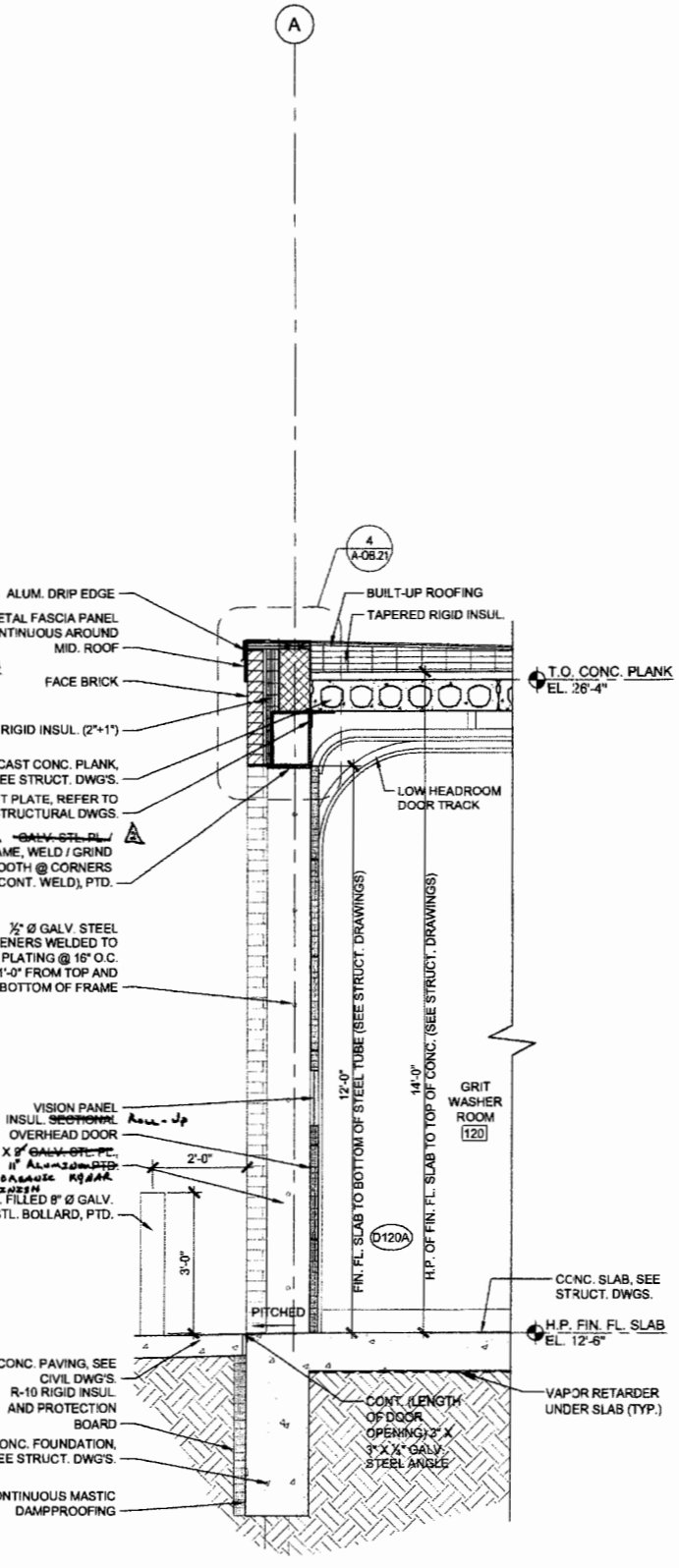
FILE NO. 189-153  
 SHEET 509 OF 202



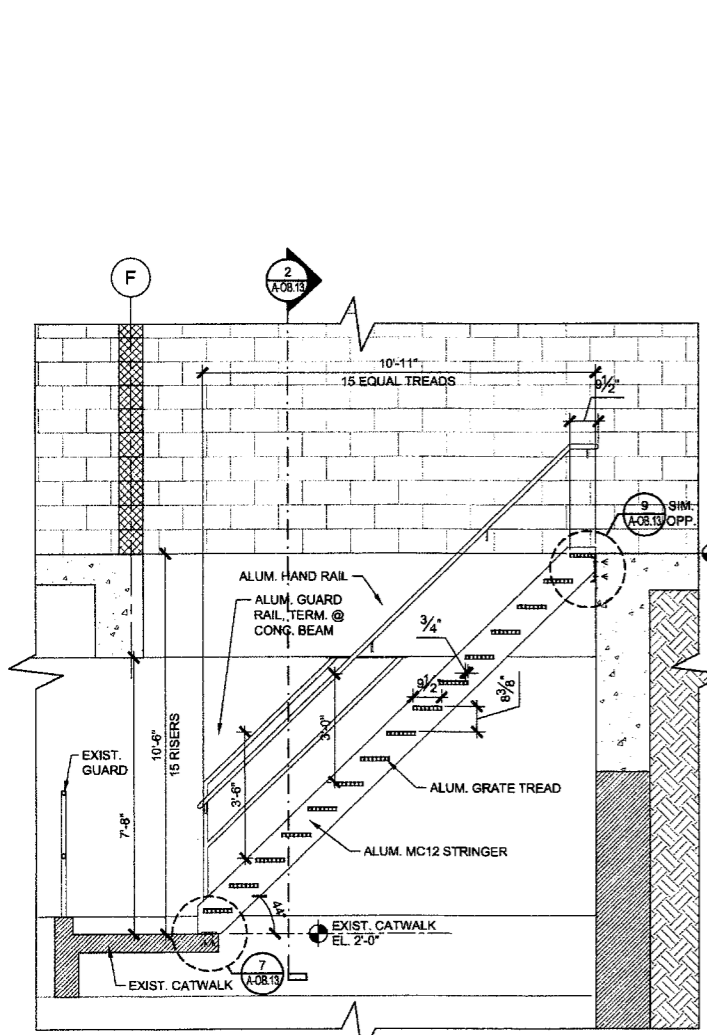
1 SECTION @ SECTIONAL DOOR @ GARAGE



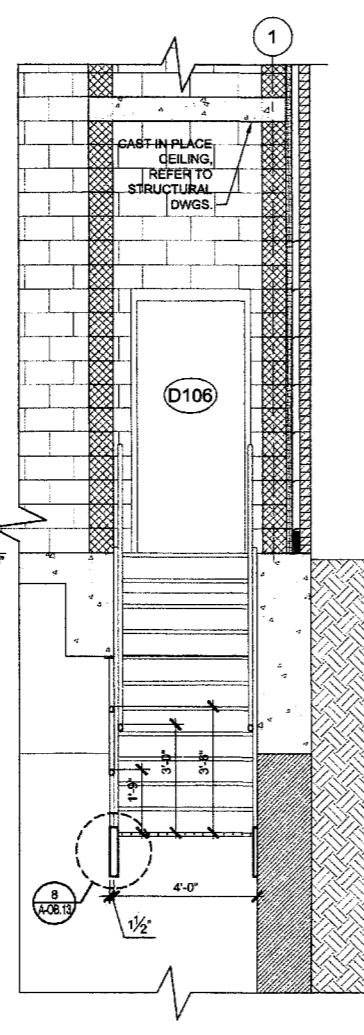
2 SECTION @ SECTIONAL DOOR @ PLYMER/CHEM. FEED ROOM



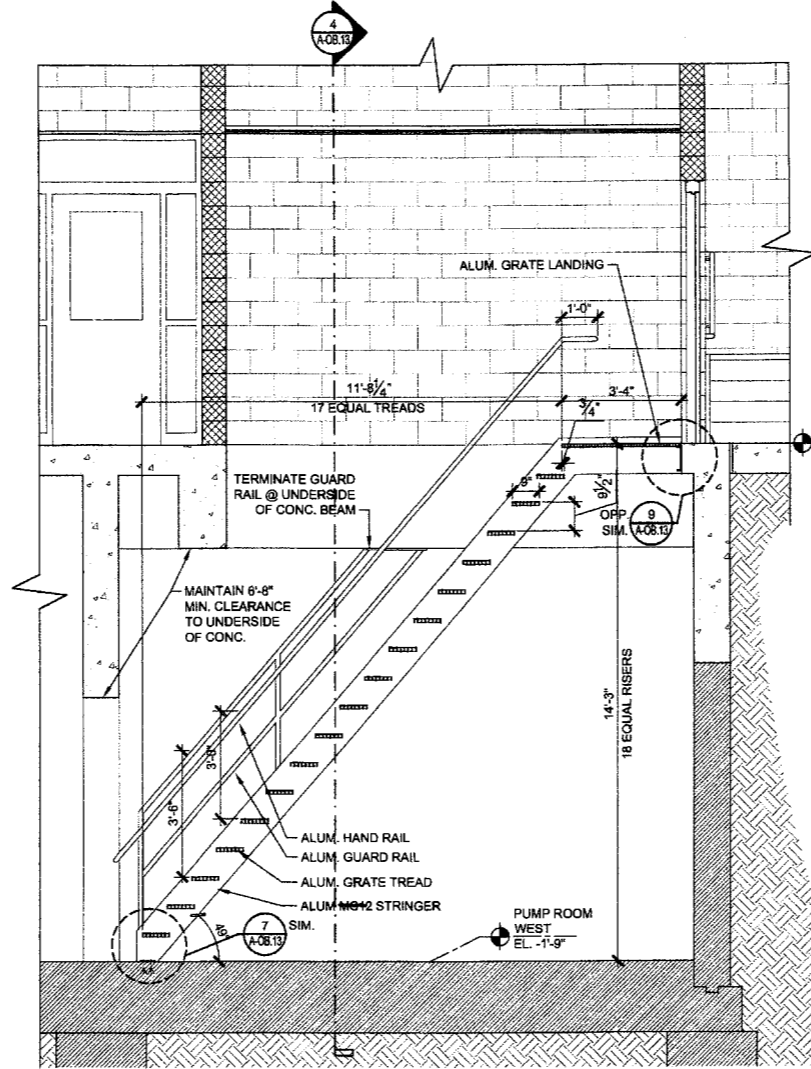
3 SECTION @ SECTIONAL DOOR @ GRIT WASHER ROOM



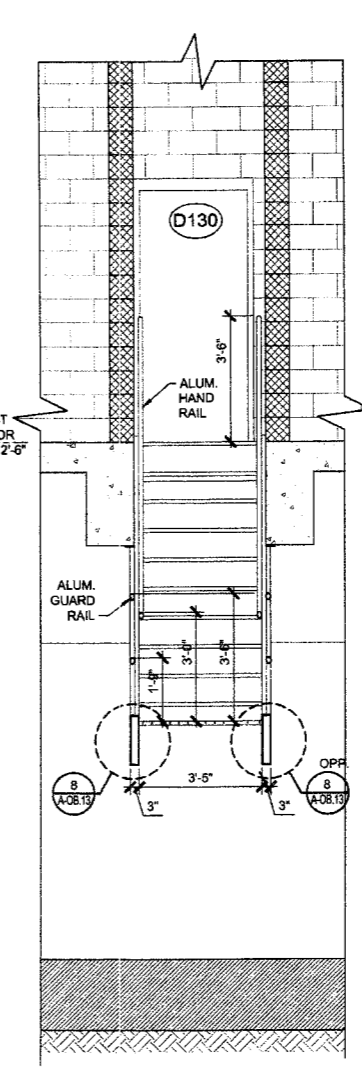
1 NETWELL STAIR Remain concrete w/ 3 new steps @ Top  
STAIR NO. 1 SECTION 106  
3/8" = 1'-0"



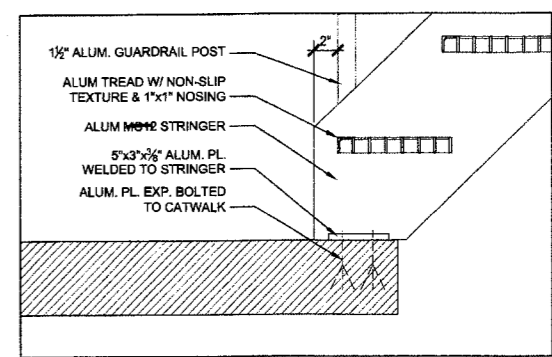
2 NETWELL STAIR  
STAIR NO. 1 SECTION 106  
3/8" = 1'-0"



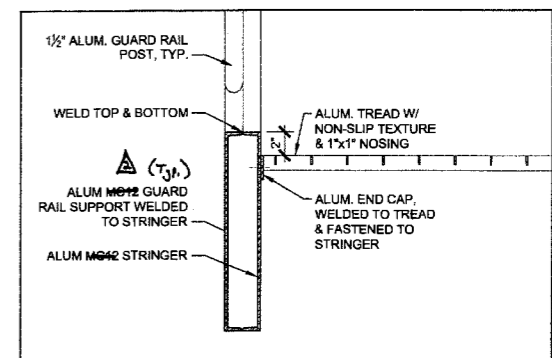
3 STAIR NO. 3 SECTION 130  
3/8" = 1'-0"



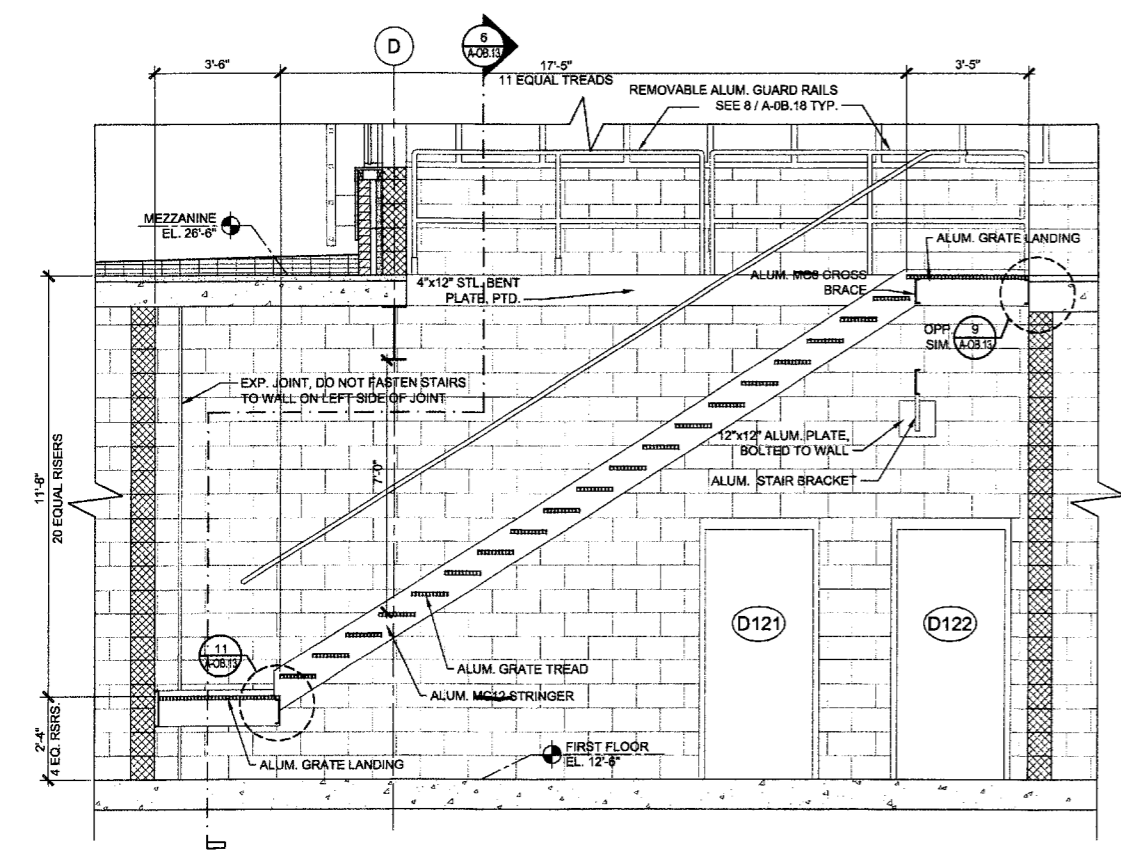
4 STAIR NO. 3 SECTION 130  
3/8" = 1'-0"



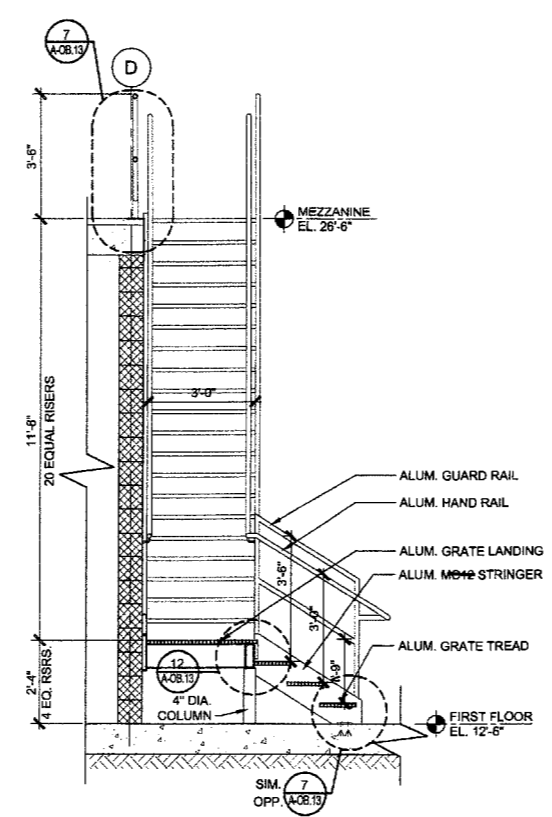
7 STAIR @ LANDING  
1 1/2" = 1'-0"



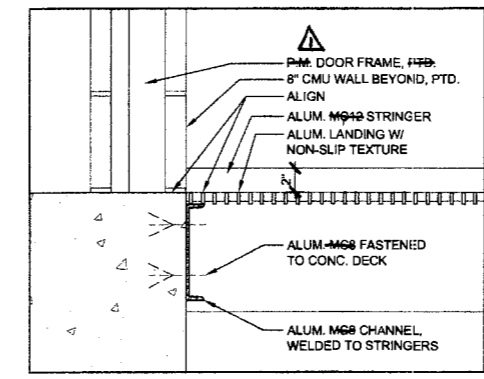
8 STAIR STRINGER W/ GUARD RAIL  
1 1/2" = 1'-0"



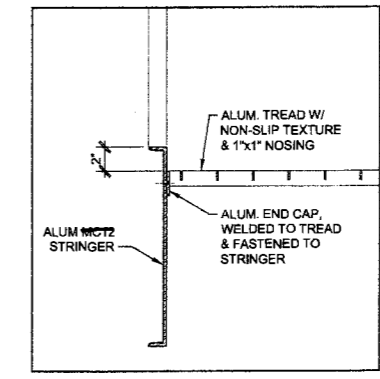
5 STAIR NO. 4 SECTION 126  
3/8" = 1'-0"



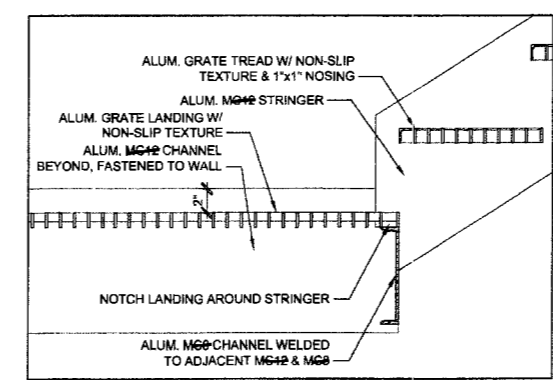
6 STAIR NO. 4 SECTION 126  
3/8" = 1'-0"



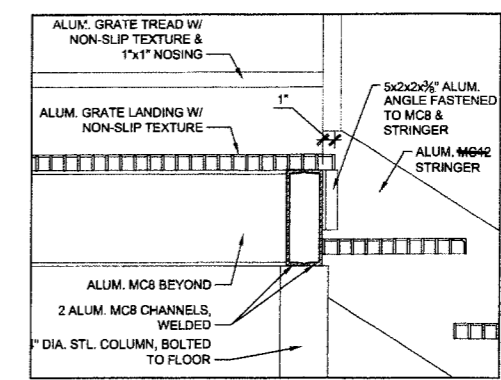
9 ALUM. LANDING @ CONCRETE  
1 1/2" = 1'-0"



10 STAIR STRINGER  
1 1/2" = 1'-0"



11 LANDING @ STAIR  
1 1/2" = 1'-0"



12 LANDING @ STAIR  
1 1/2" = 1'-0"

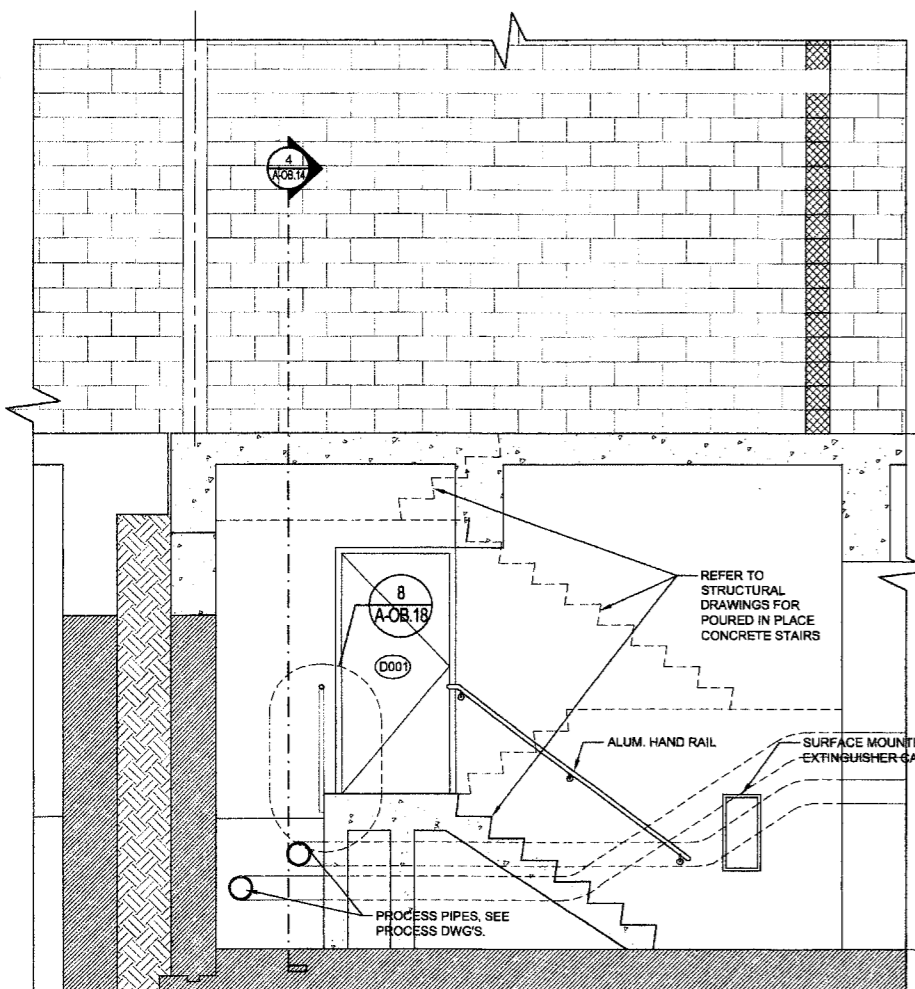
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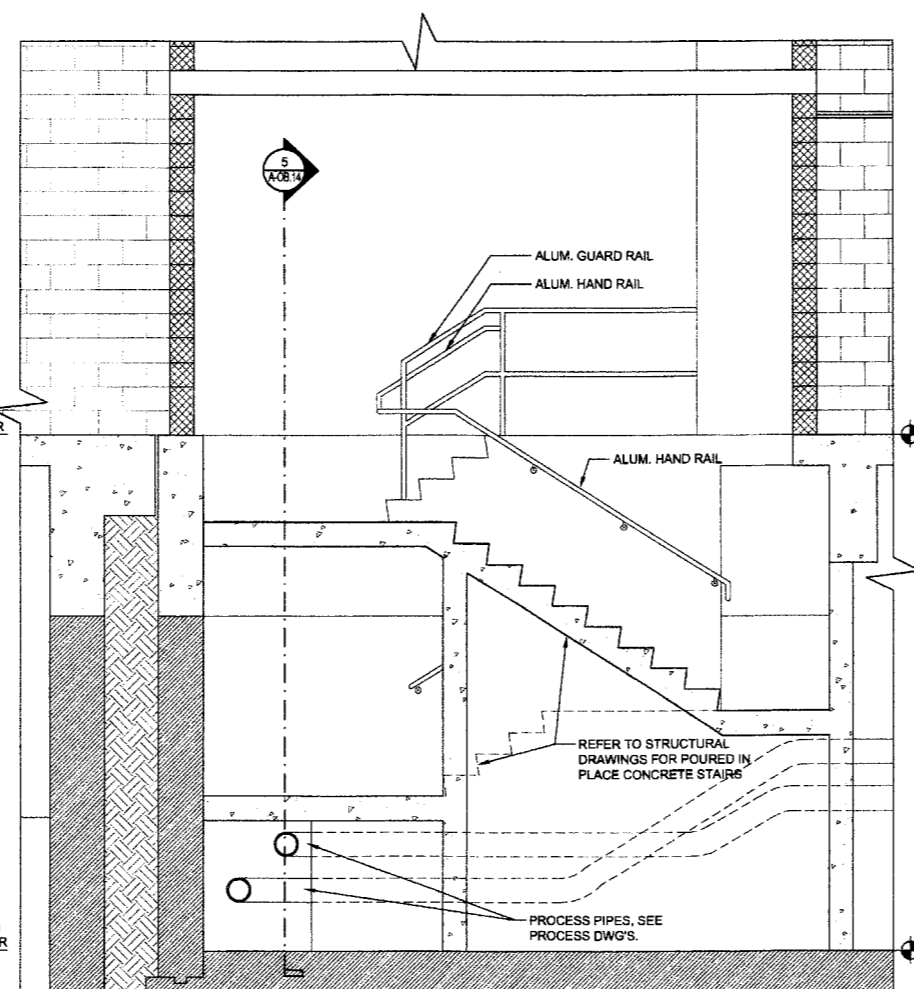
No.	Date	Dr.	By	Ck.	By	App.	By	Description
1								
2								
3								
4								
5								
6								
7	7/13/11							



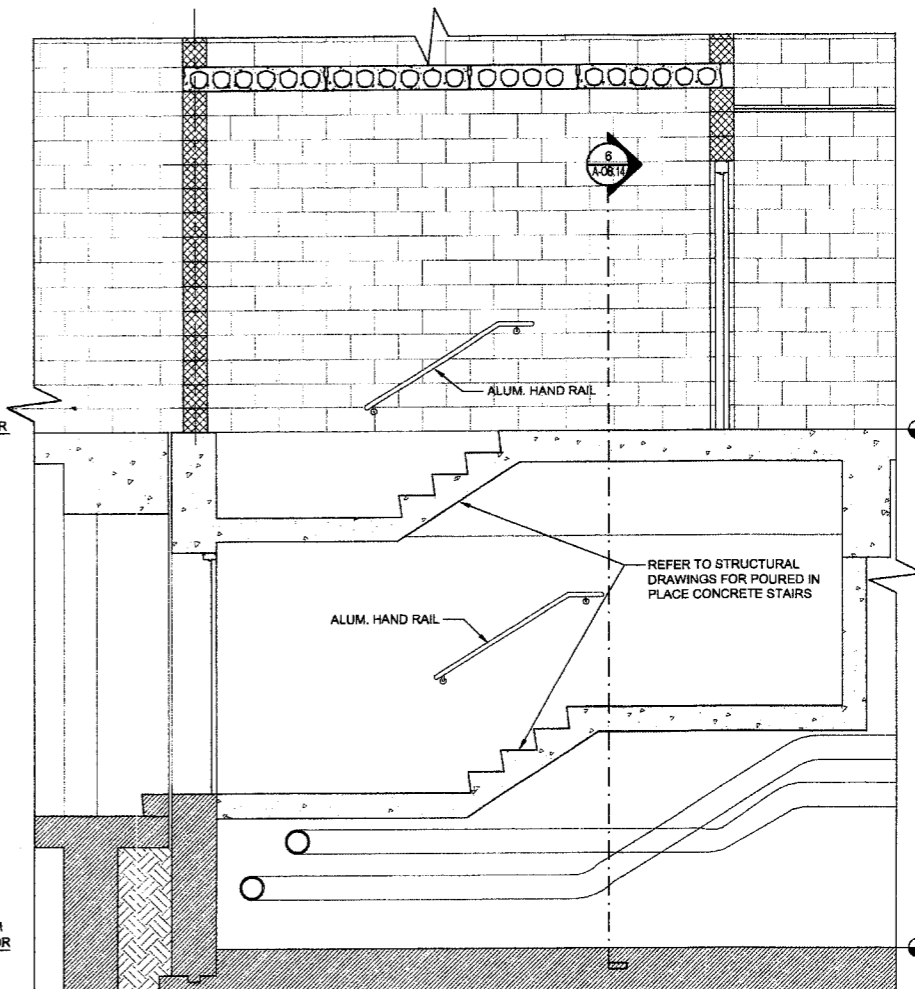
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
STAIR NO'S. 1, 3 & 4 SECTIONS / DETAILS  
SCALE: AS NOTED  
JOB NO. 2090269 HBC/JDS  
CONTRACT 2  
DATE: AS NOTED  
FILE NO. 189-152  
SHEET 51 OF 202



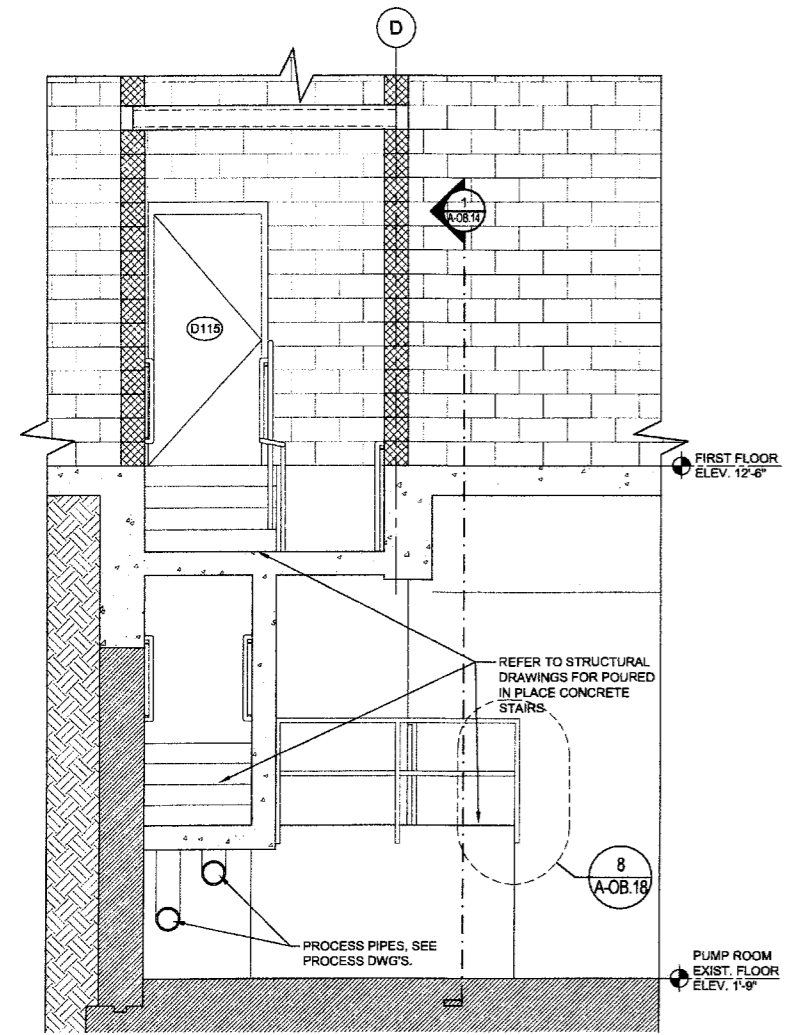
1 STAIR NO. 2 SECTION



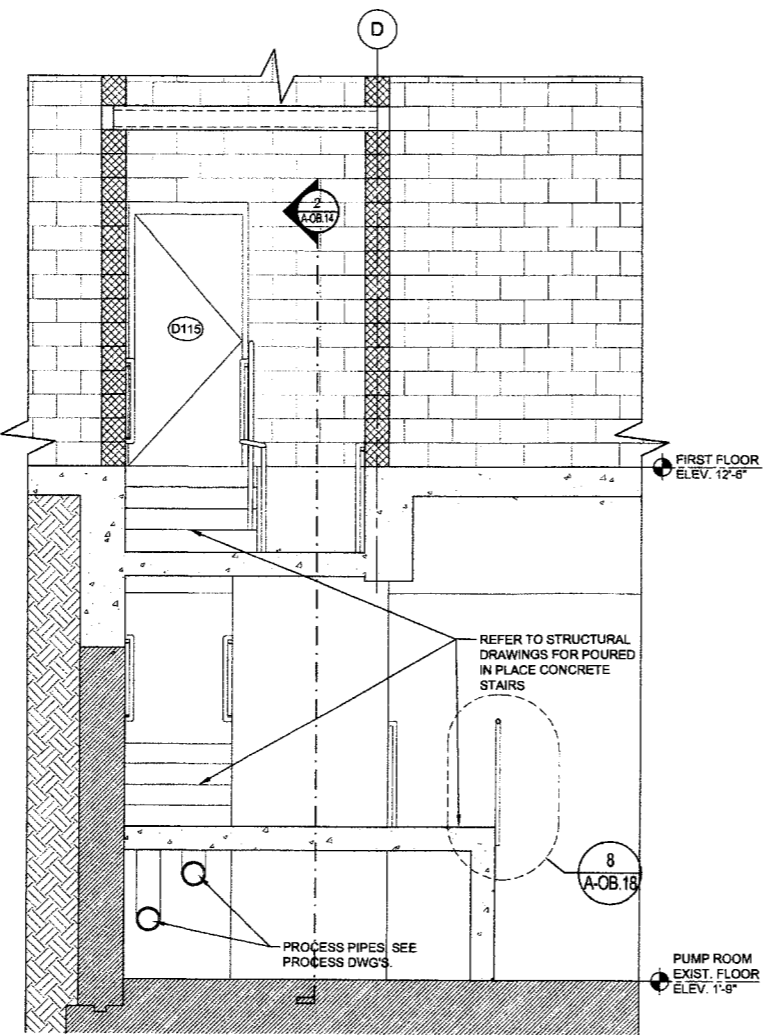
2 STAIR NO. 2 SECTION



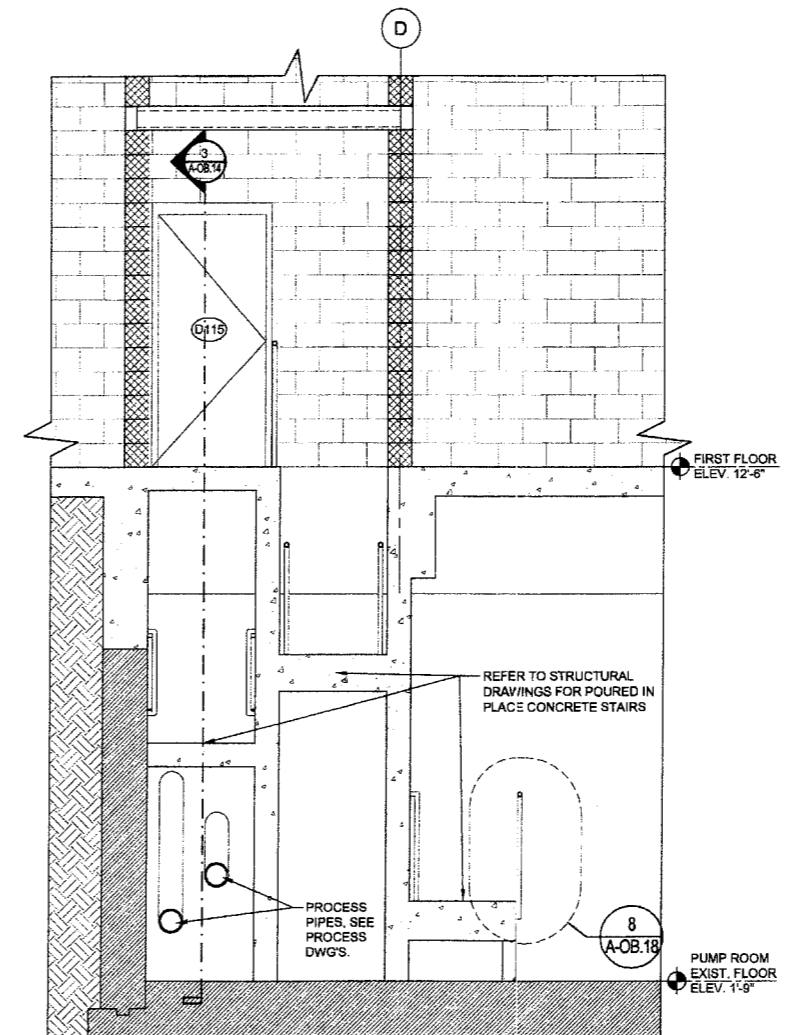
3 STAIR NO. 2 SECTION



4 STAIR NO. 2 SECTION



5 STAIR NO. 2 SECTION



6 STAIR NO. 2 SECTION

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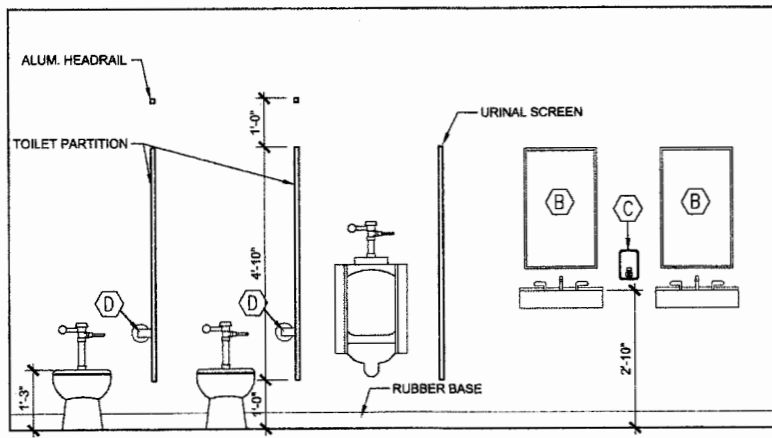
No.	Date	Dr. By	Chk. By	App. By	Description
1	7/13/11	ADJ	MM		DATE
A P P R O V E D					
REGISTERED ARCHITECT					



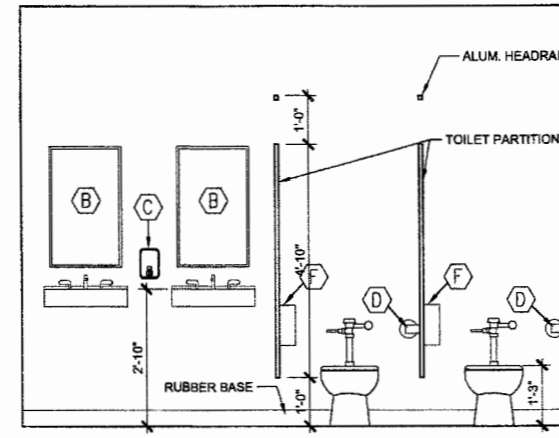
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
STAIR NO. 2 SECTIONS / DETAILS  
SCALE: 3/8" = 1'-0"  
JOB NO. 2090269  
CONTRACT 2  
DESIGN BY: [CHK. BY] APP. BY: MIW  
DRAWN BY: [CHK. BY] MIW

**AS BUILT**

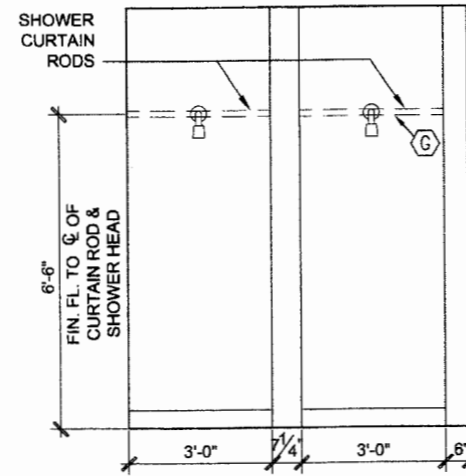
**A-OB.14**  
FILE NO. 189-151



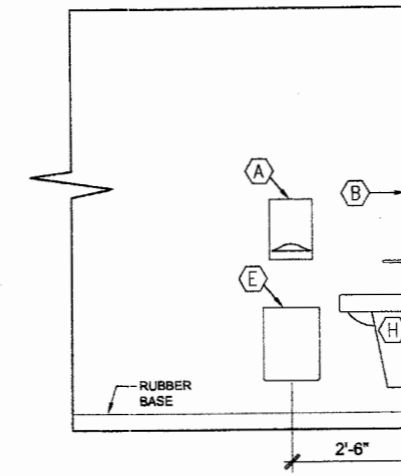
**A** MEN'S RESTROOM ELEVATION



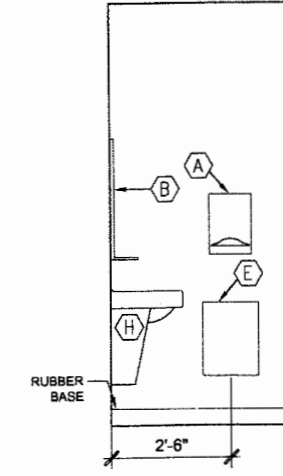
**B** WOMEN'S RESTROOM ELEVATION



**C** MEN'S SHOWER ELEVATION



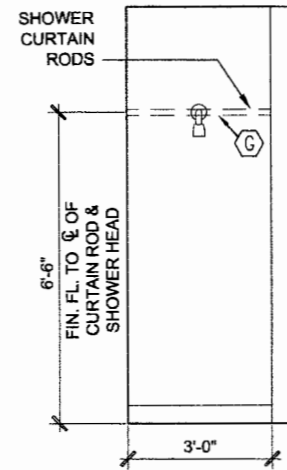
**D** WOMEN'S RESTROOM ELEVATION



**E** MEN'S RESTROOM ELEVATION

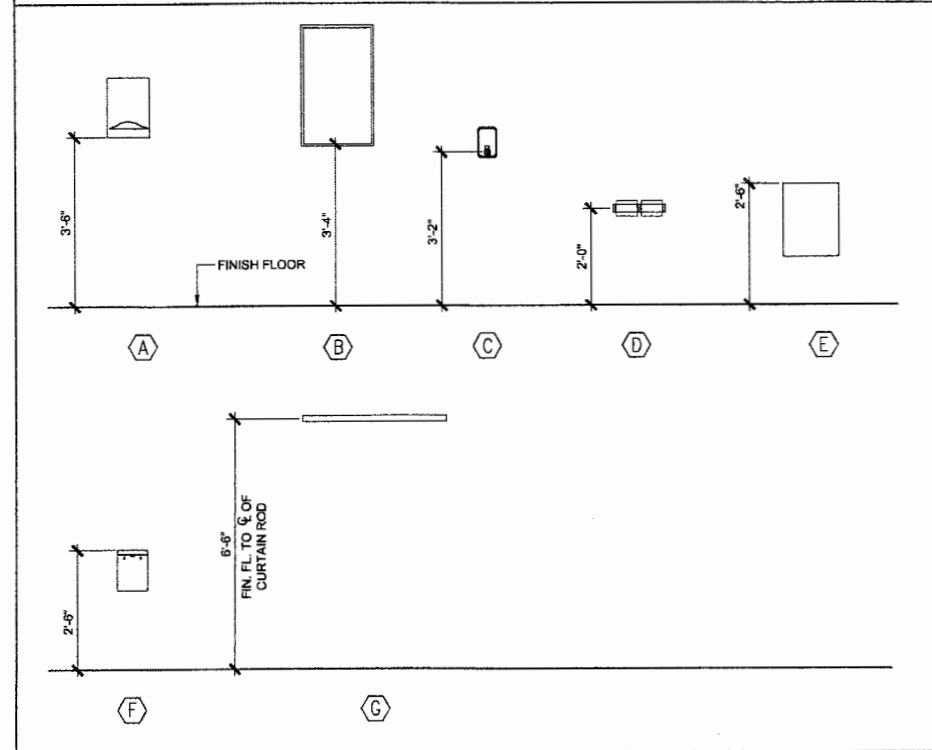
**ACCESSORY LEGEND**

- A** SURFACE MOUNTED PAPER TOWEL DISPENSER (GAMCO MODEL # TTD-2)
- B** MIRROR W/ SHELF (GAMCO MODEL # CS-18X30)
- C** SOAP DISPENSER (GAMCO MODEL # G-72)
- D** DOUBLE TOILET PAPER DISPENSER (GAMCO MODEL # TD-2)
- E** WASTE RECEPTACLE (GAMCO MODEL # WR-2)
- F** SANITARY NAPKIN DISPOSAL (GAMCO MODEL # HD-1)
- G** SHOWER ROD, CURTAIN AND HOOKS (GAMCO MODELS # 125 SR, 100SC-42/72 & 100CH.SS)



**F** WOMEN'S SHOWER ELEVATION

**EQUIPMENT ELEVATIONS / MOUNTING HEIGHT**



**DiMarinisi & Wolfe**  
ARCHITECTS • URBAN DESIGNERS  
BOSTON, MASSACHUSETTS

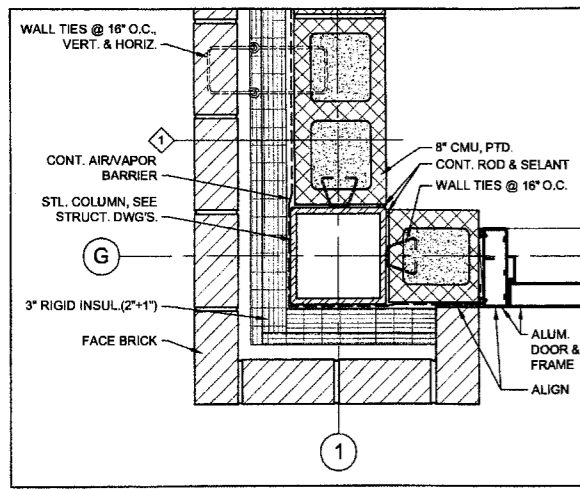
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P/O Contemetal Drive, Peabody, MA 01960  
(978) 532-1900 (800) SAMPSON  
www.westonandsampson.com

No.	Date	Dr. By	Ch. By	App. By	Description
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2					P
3					R
4					O
5					V
6					E
7					D
8					
9					
10					

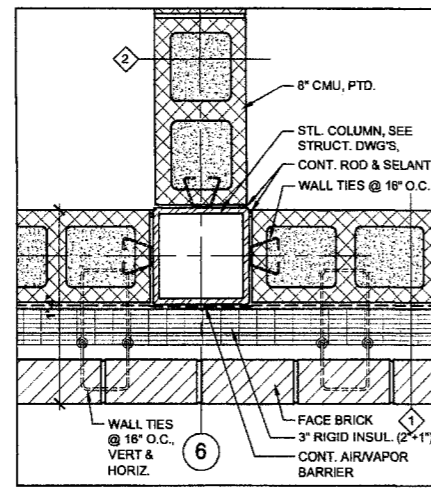
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7/13/11 DATE



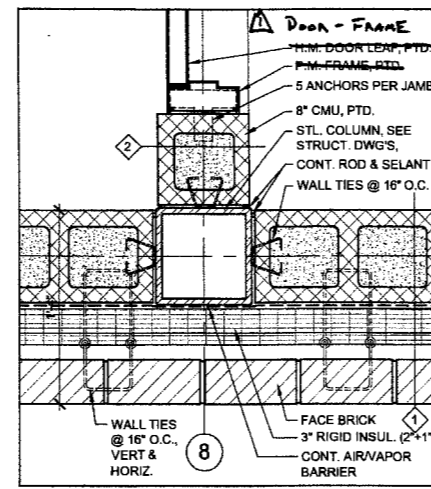
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
INTERIOR ELEVATIONS (TOILET/SHOWER ROOMS)  
SCALE: 1/8" = 1'-0"  
JOB NO. 2090269 | DR. BY: IB/DJS | CHK. BY: MIW | APP. BY: MIW  
CONTRACT 2



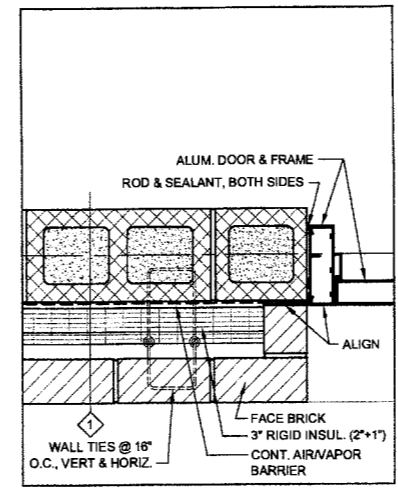
1 CORNER @ STAIR NO. 1



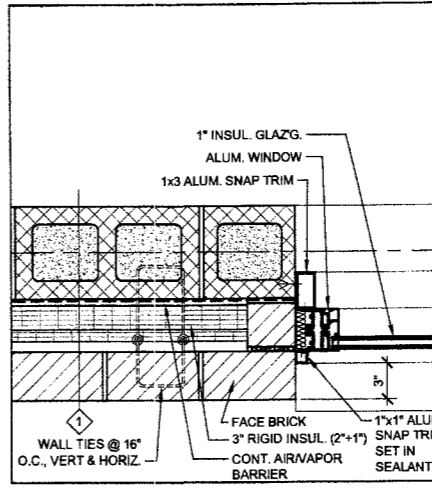
2 EXT. WALL @ CLMN. & WALL



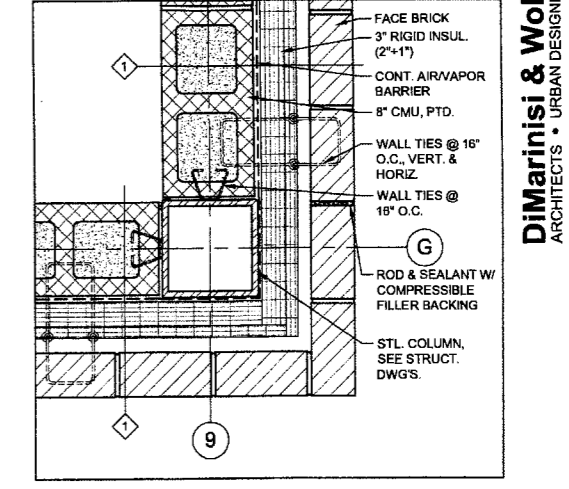
3 EXT. WALL @ CLMN. & DOOR



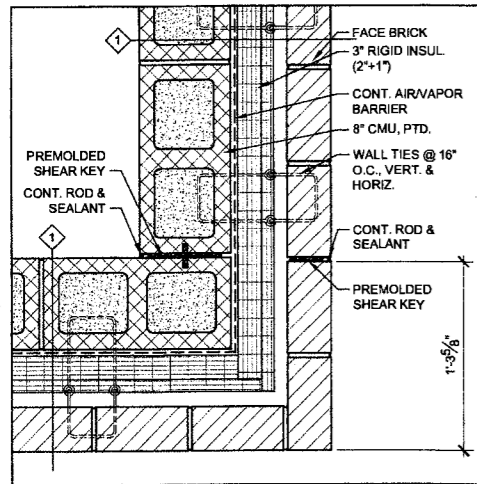
4 TYP. EXT. DOOR JAMB



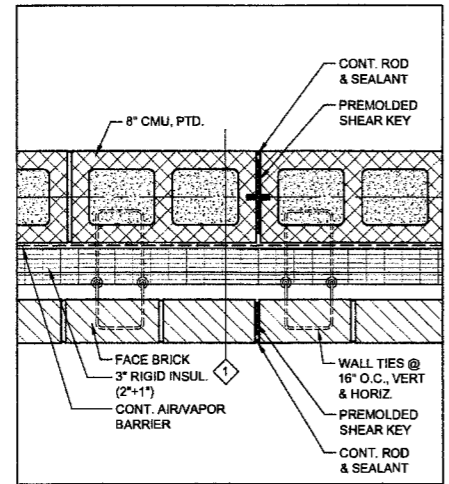
5 TYP. EXT. WINDOW JAMB



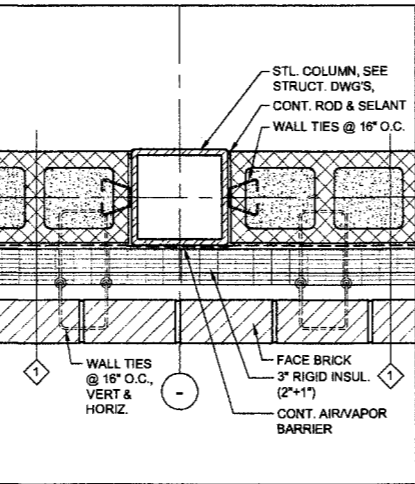
6 TYP. EXT. CORNER W/ CONTROL JT.



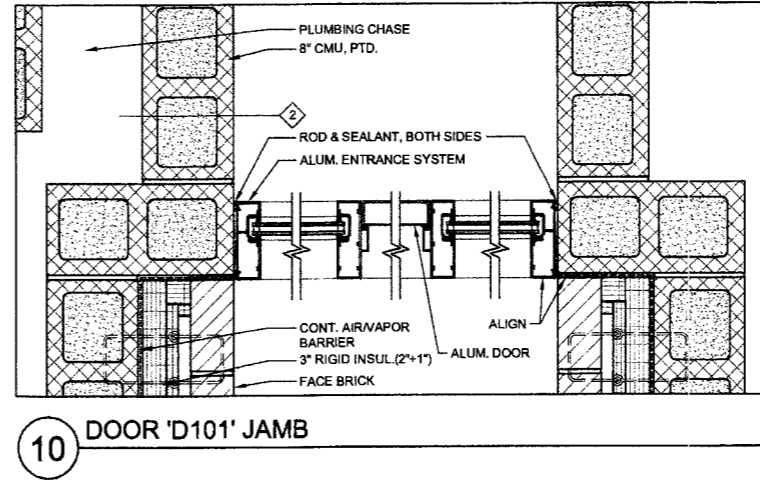
7 CORNER W/ EXPANSION JOINT



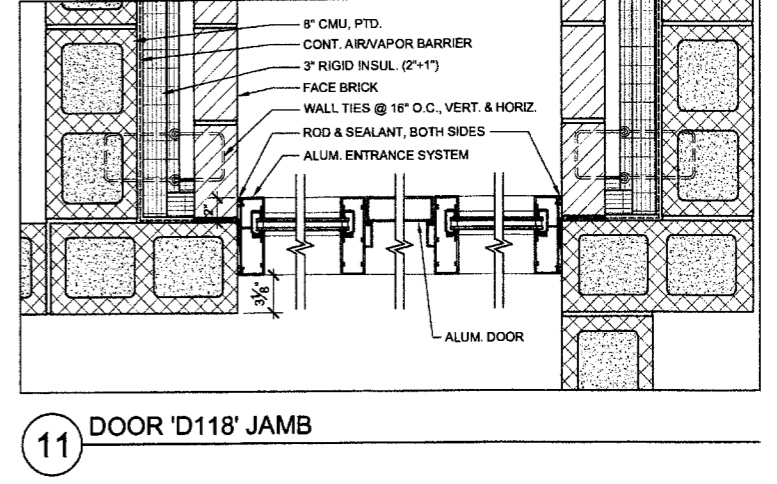
8 EXT. WALL CONTROL JOINT



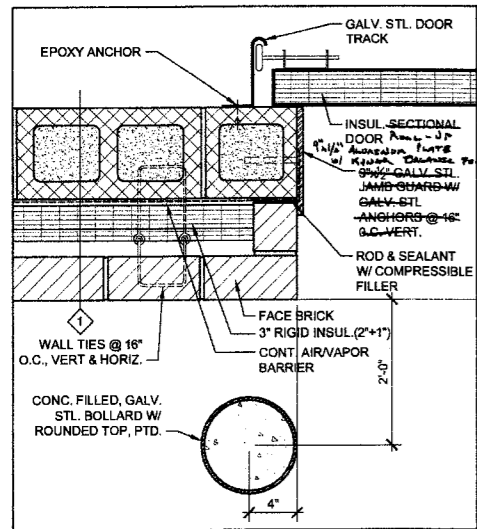
9 EXT. WALL @ COLUMN



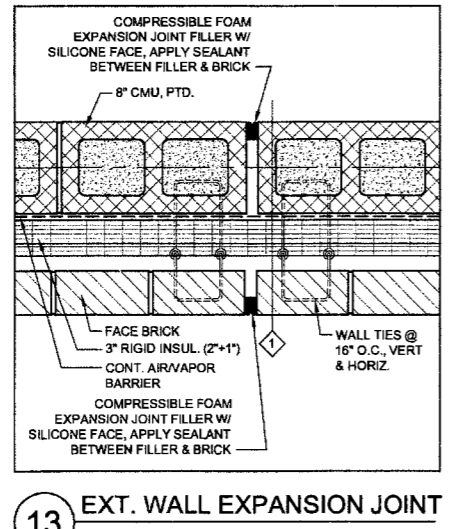
10 DOOR 'D101' JAMB



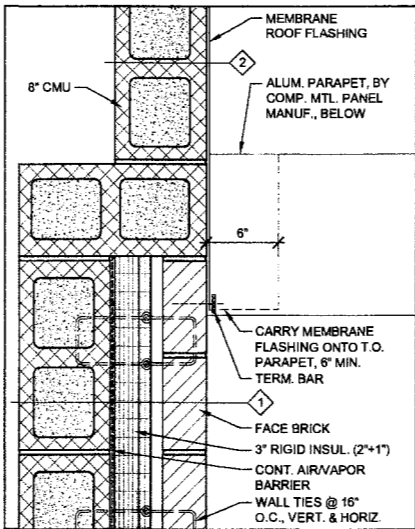
11 DOOR 'D118' JAMB



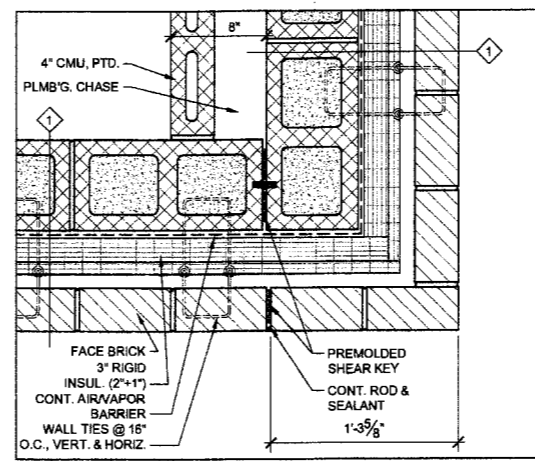
12 JAMB @ SECTIONAL OVERHEAD DOOR



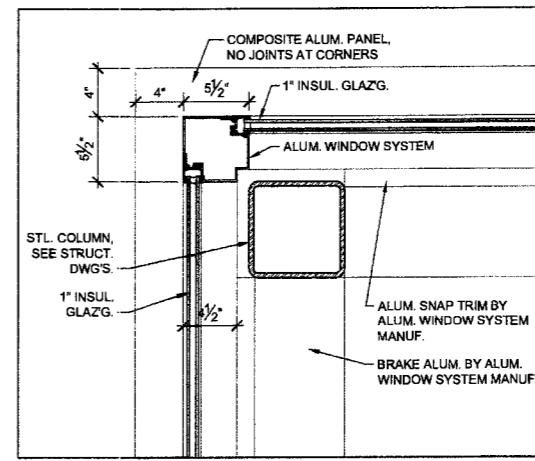
13 EXT. WALL EXPANSION JOINT



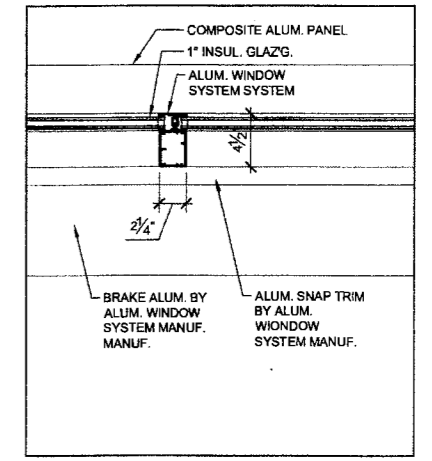
14 BRICK/CMU TRANSITION



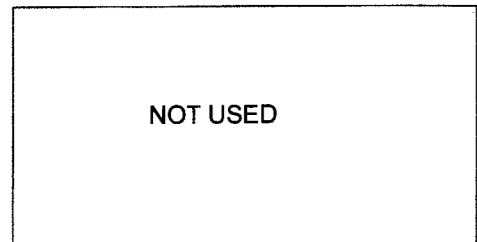
15 EXT. CORNER @ DOOR 'D101'



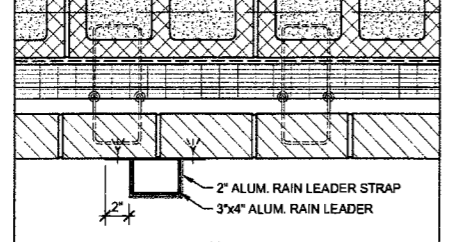
16 CLERESTORY CORNER



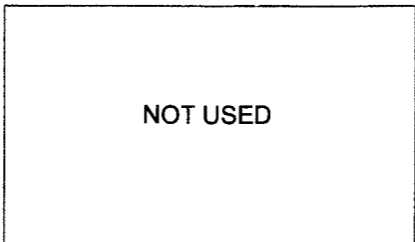
17 CLERESTORY MULLION



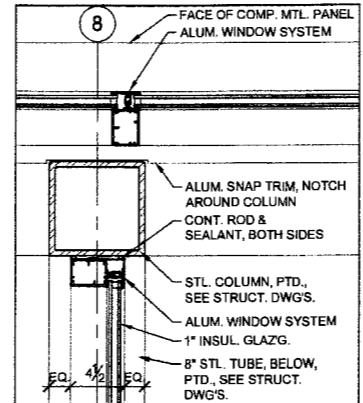
18 NOT USED



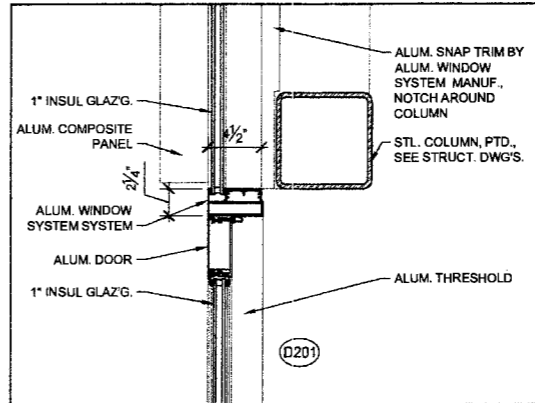
19 RAIN LEADER



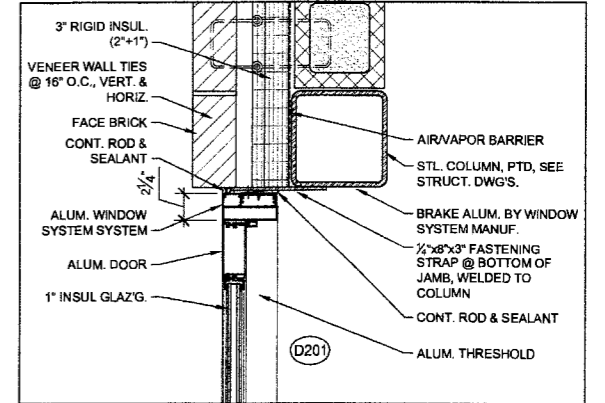
20 NOT USED



21 CLERESTORY @ COLUMN



22 ROOF DOOR @ CLERESTORY



23 ROOF DOOR @ CMU

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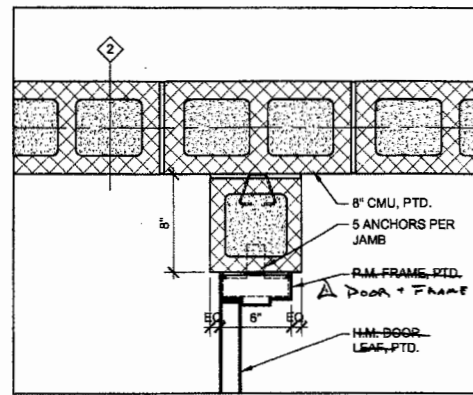
**Dimarini & Wolfe**  
 ARCHITECTS • URBAN DESIGNERS  
 BOSTON, MASSACHUSETTS

City of Newburyport, Massachusetts  
 Department of Public Services, Sewer Division  
 Wastewater Treatment Facility Improvements Project  
 OPERATIONS BUILDING  
 EXTERIOR PLAN DETAILS

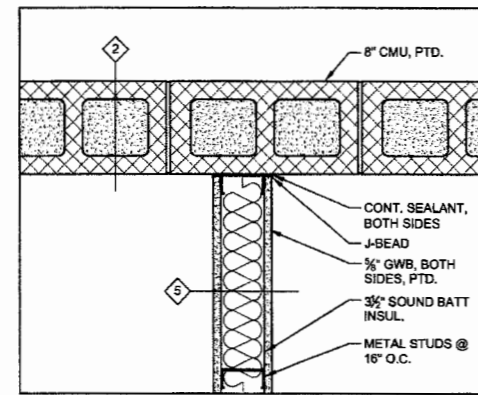
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 File No. 189-149  
 SHEET 54 OF 202

DATE: 7/13/11  
 Description: V O V R O V E D  
 No. Date Dr. By Ck. By App. By  
 G. J. Weston  
 REGISTERED ARCHITECT

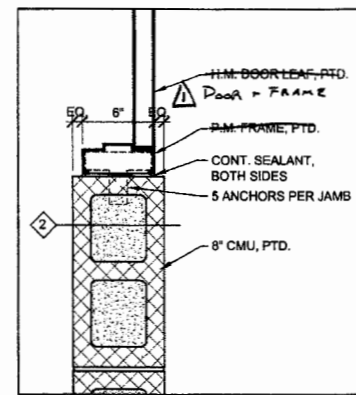
AS BUILT



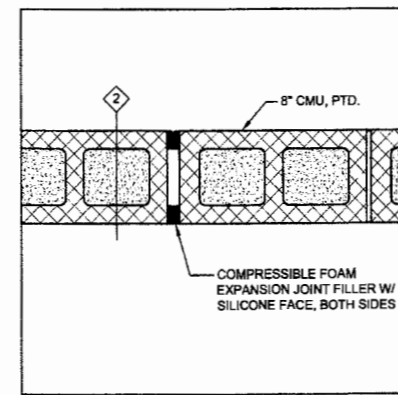
1 INTERIOR DOOR JAMB



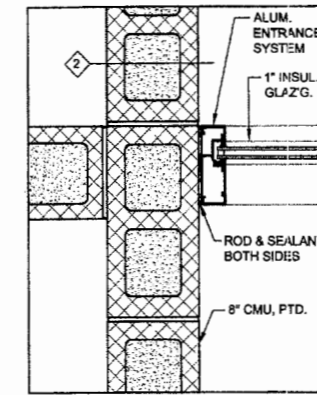
2 CMU WALL @ GWB WALL



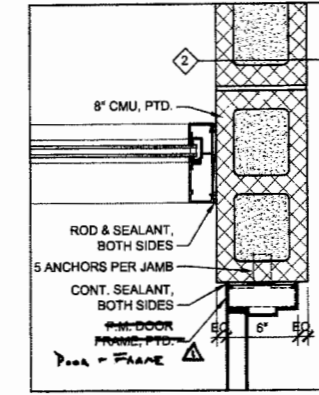
3 INT. DOOR JAMB



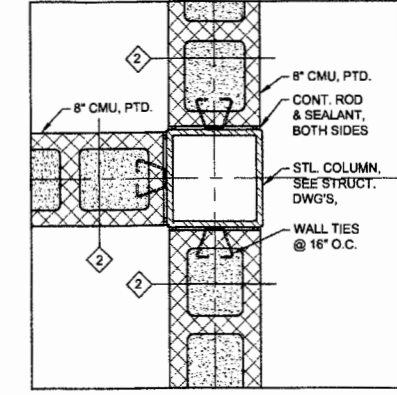
4 TYP. INT. EXPANSION JOINT



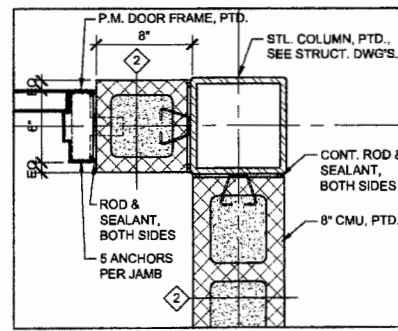
5 DOOR 'D117' JAMB



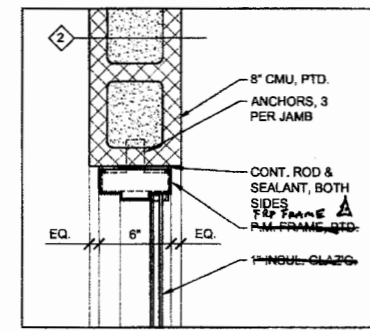
6 DOOR 'D117' JAMB



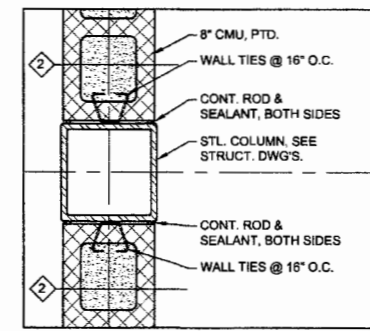
7 INTERIOR WALLS @ COLUMN



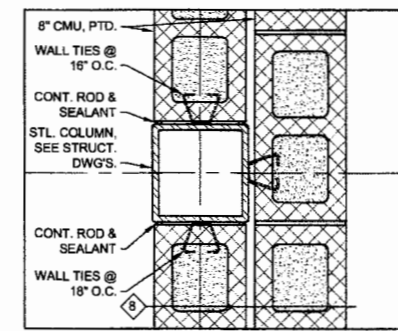
8 INTERIOR DOOR JAMB @ COLUMN



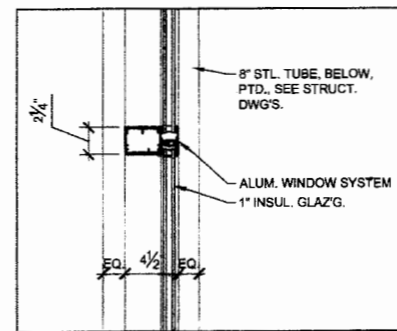
9 INT. WINDOW JAMB



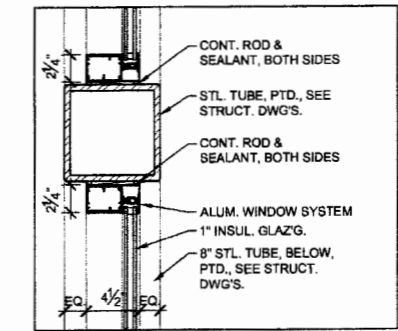
10 INT. WALL @ COLUMN



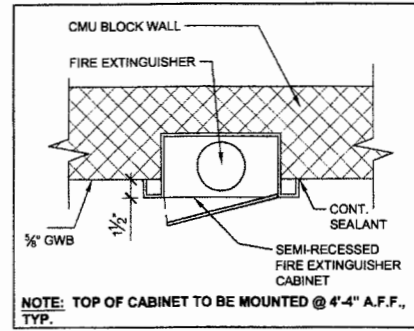
11 DBL. CMU WALL @ CLMN.



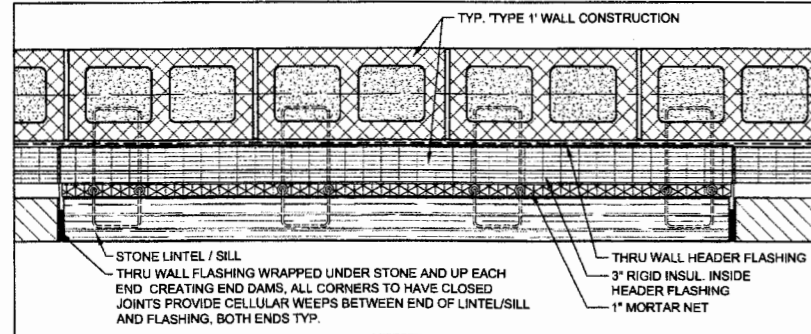
12 CLERESTORY MULLION



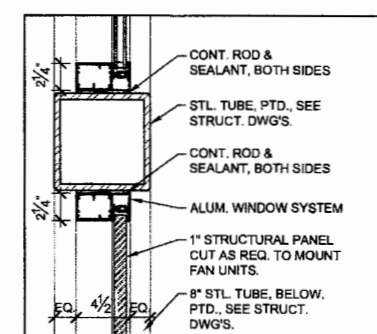
13 CLERESTORY @ COLUMN



14 FIRE EXTINGUISHER CABINET  
SCALE: 1/2" = 1'-0"



15 LINTEL / SILL FLASHING W/ END DAMS (LINTEL STONE SHOWN) TYP.



13 CLERESTORY @ FAN PANEL

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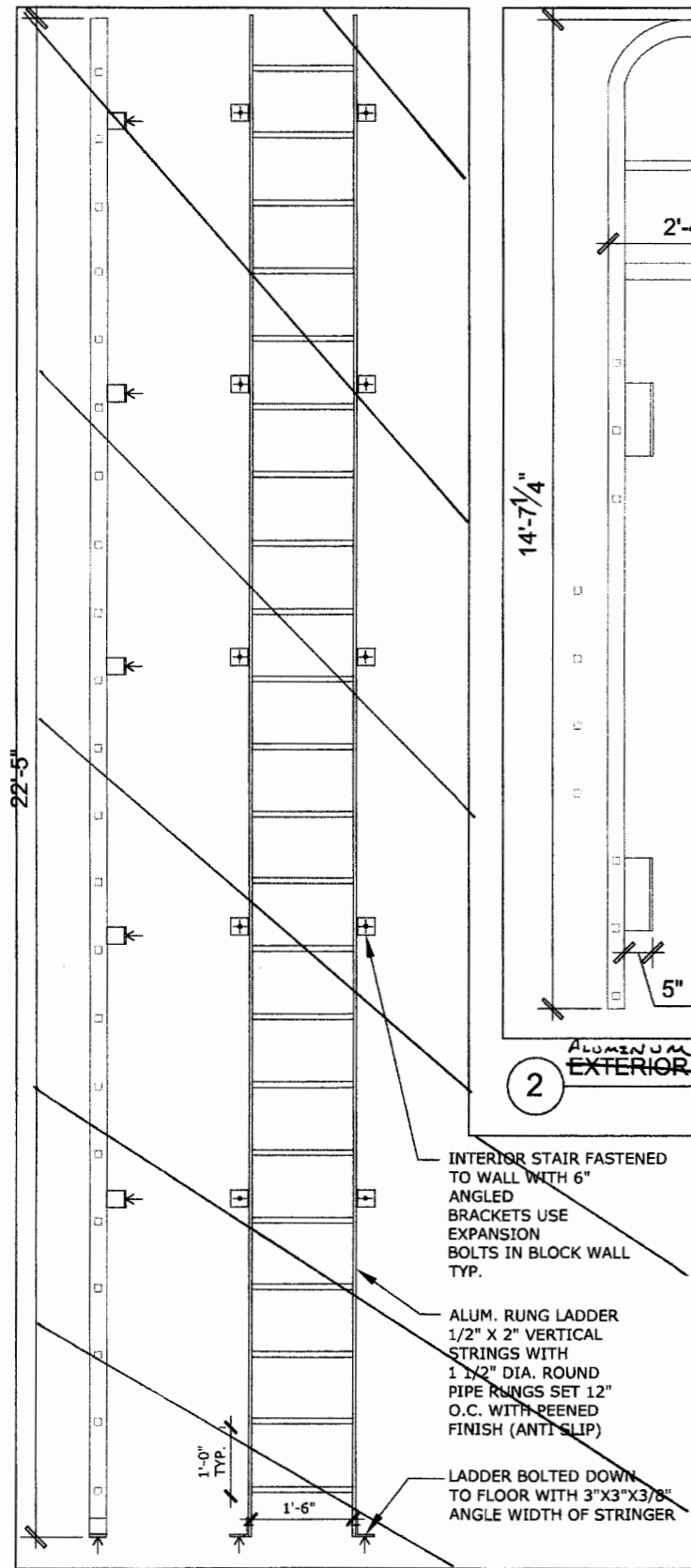
No.	Date	Dr.	By	Ck.	By	App.	By	Description



CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
INTERIOR PLAN DETAILS

SCALE: 1/2" = 1'-0"  
CONTRACT: 2  
JOB NO.: 2090269  
DR. BY: IBG/MS  
CHK. BY: MIW  
APP. BY: MIW

AS BUILT  
FILE NO.: 189-148  
SHEET 55 OF 202

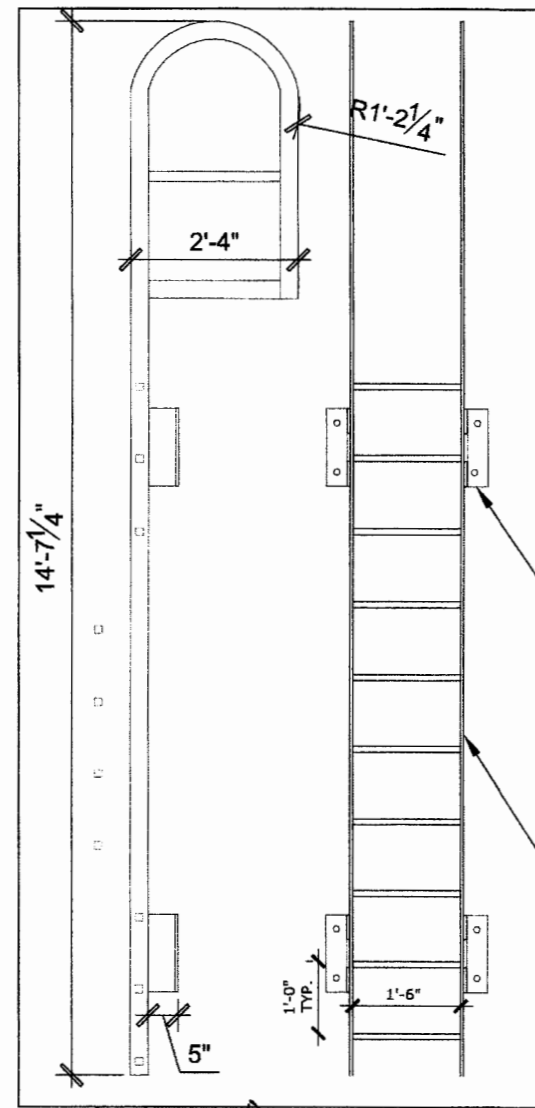


**1** INTERIOR ALUM. LADDER TO CATWALK  
SCALE 3/4" = 1'-0"

INTERIOR STAIR FASTENED TO WALL WITH 6" ANGLED BRACKETS USE EXPANSION BOLTS IN BLOCK WALL TYP.

ALUM. RUNG LADDER 1/2" X 2" VERTICAL STRINGS WITH 1 1/2" DIA. ROUND PIPE RUNGS SET 12" O.C. WITH PEENED FINISH (ANTI SLIP)

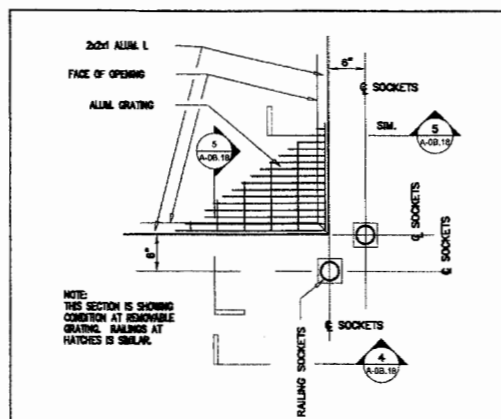
LADDER BOLTED DOWN TO FLOOR WITH 3"X3"X3/8" ANGLE WIDTH OF STRINGER



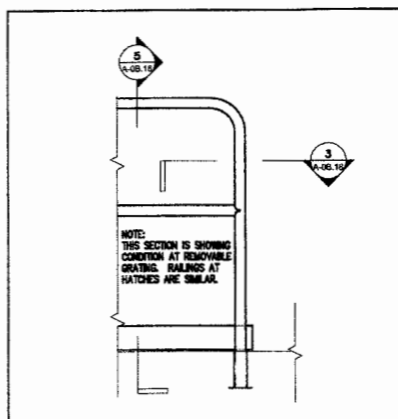
**2** ALUMINUM EXTERIOR STEEL LADDER TO UPPER ROOF  
SCALE 3/4" = 1'-0"

LADDER EXTERIOR STAIR FASTENED TO WALL WITH 6" ANGLED BRACKETS FASTEN BACK TO BLOCKING UNDERNEATH FASCIA

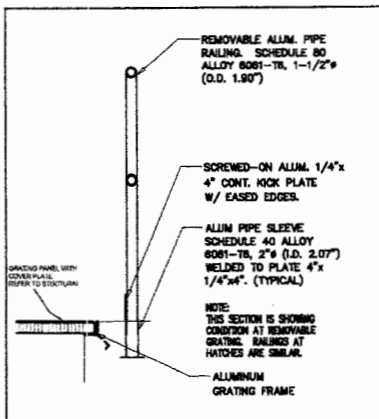
ALUMINUM RUNG LADDER 1/2" X 2" VERTICAL STRINGS WITH 1 1/2" DIA. ROUND PIPE RUNGS SET 12" O.C. WITH PEENED FINISH (ANTI SLIP) PTD.



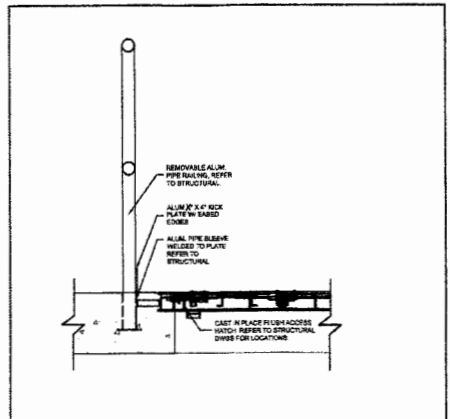
**3** REMOVABLE GUARD SOCKETS  
SCALE: 3/4" = 1'-0"



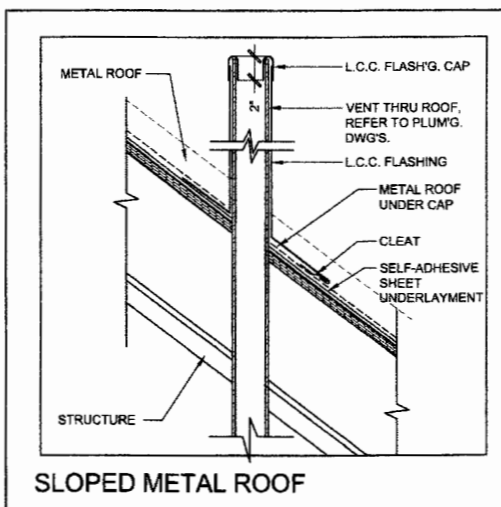
**4** REMOVABLE GUARD ELEV.  
SCALE: 3/4" = 1'-0"



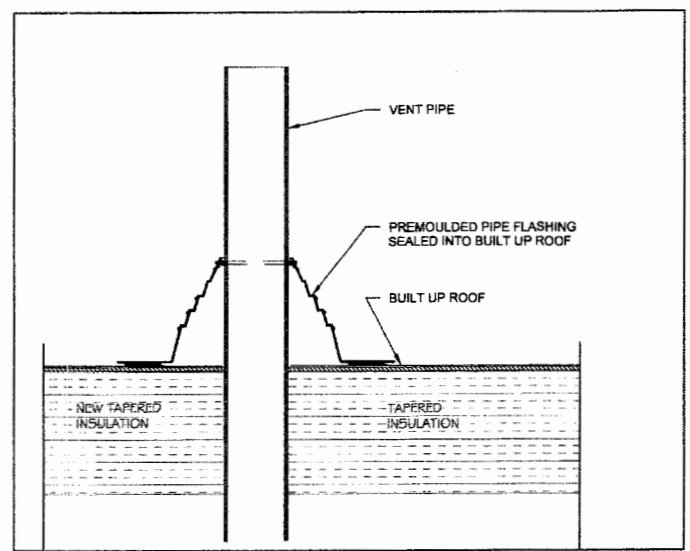
**5** REMOVABLE GUARD SECTION  
SCALE: 3/4" = 1'-0"



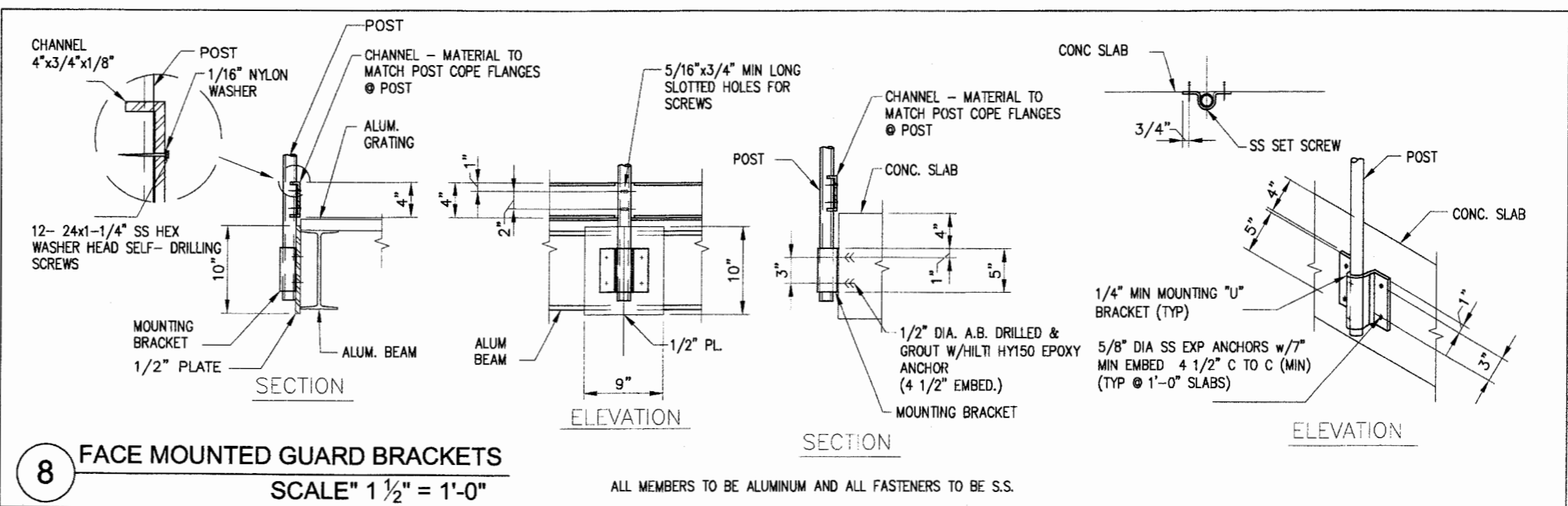
**6** REMOVABLE GUARD SECTION AT HATCH  
SCALE: 3/4" = 1'-0"



**7** THROUGH THE ROOF VENT FLASHING  
SCALE: 1 1/2" = 1'-0"



LOW PITCH BUILT UP ROOF



**8** FACE MOUNTED GUARD BRACKETS  
SCALE 1 1/2" = 1'-0"

ALL MEMBERS TO BE ALUMINUM AND ALL FASTENERS TO BE S.S.

**Dimarini & Wolfe**  
ARCHITECTS • URBAN DESIGNERS  
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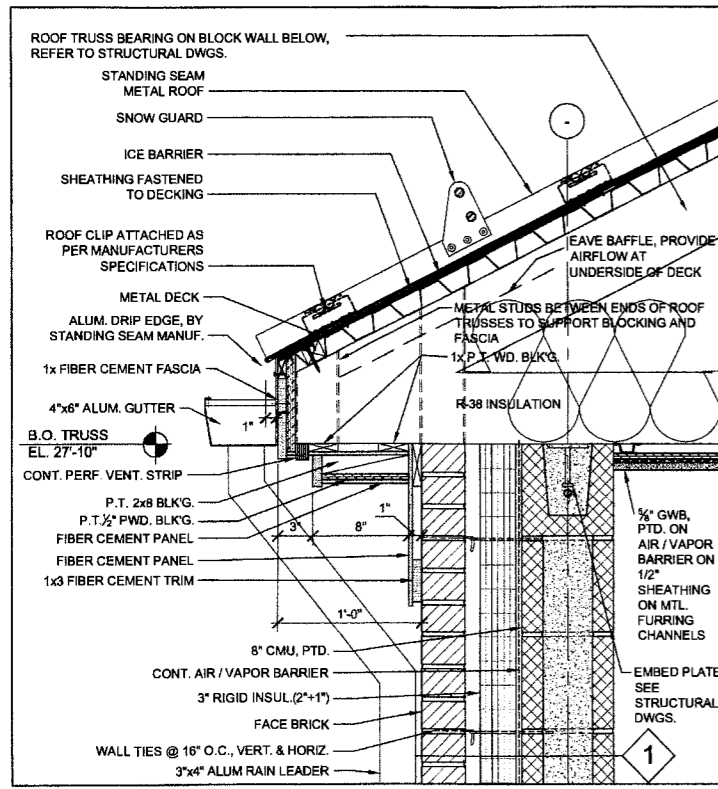
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7	7/13/11				
8					



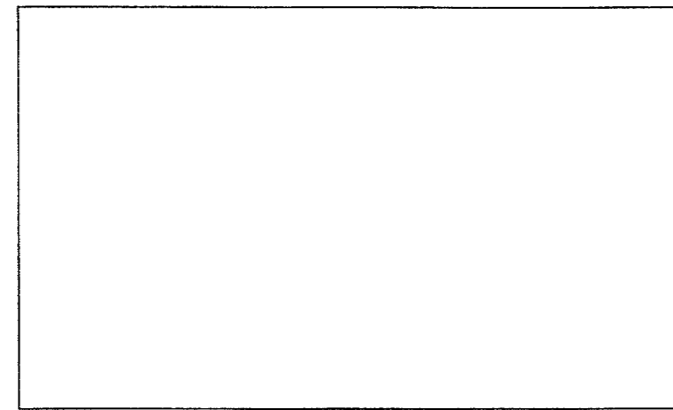
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
LADDER, GRATE, HATCH, GUARD AND ASSORTED DETAILS  
JOB NO. 2090269  
SCALE: AS NOTED  
CONTRACT 2

**AS BUILT**  
A-OB.18  
FILE NO. 189-147  
SHEET 56 OF 202

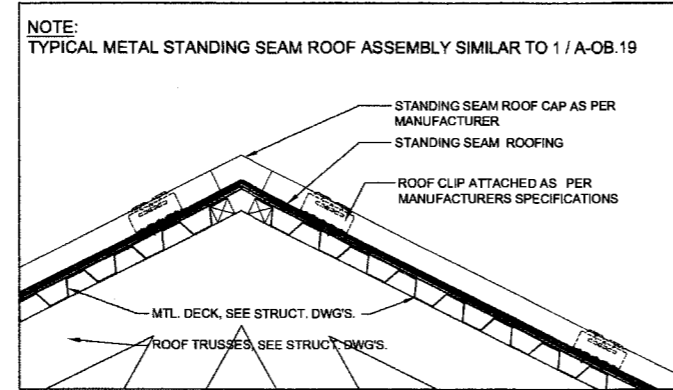




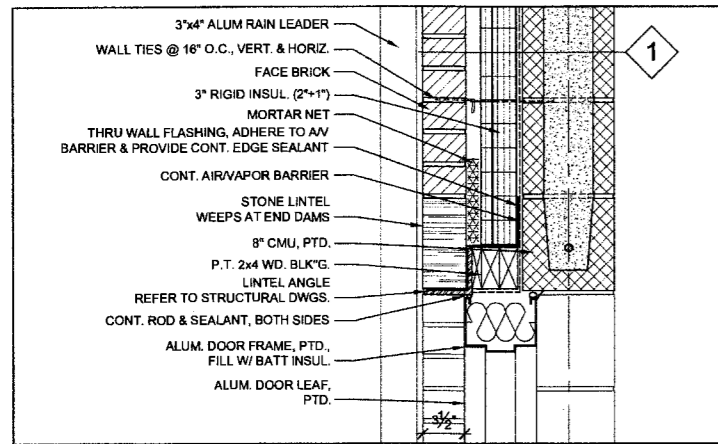
1 ROOF EAVE



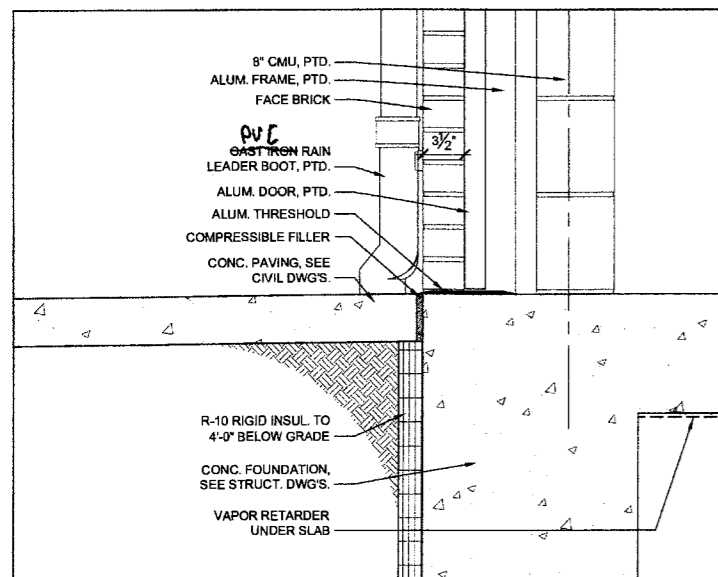
4 NOT USED



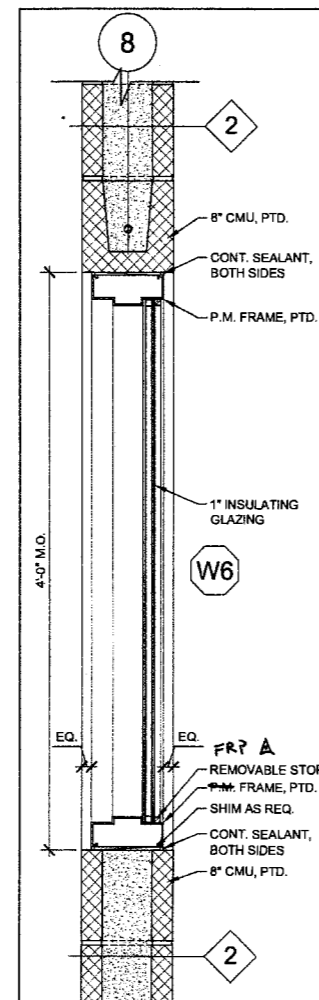
5 ROOF RIDGE



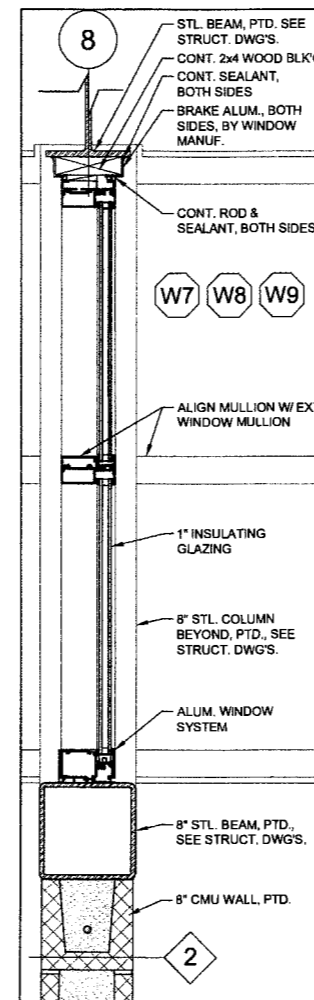
2 EXT. ALUM. METAL DOOR HEAD



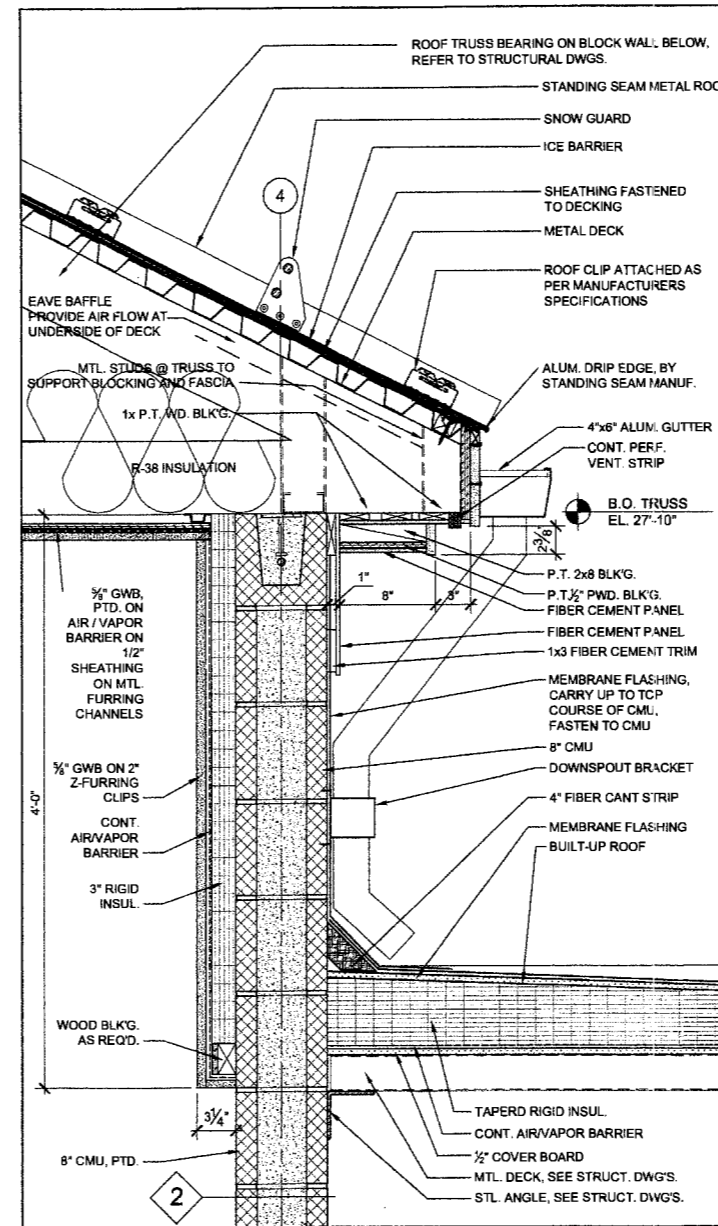
3 EXT. ALUM. METAL DOOR SILL



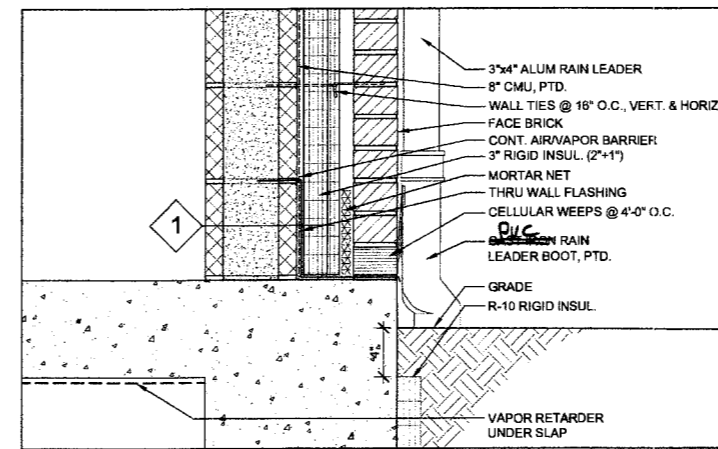
6 INTERIOR WINDOW



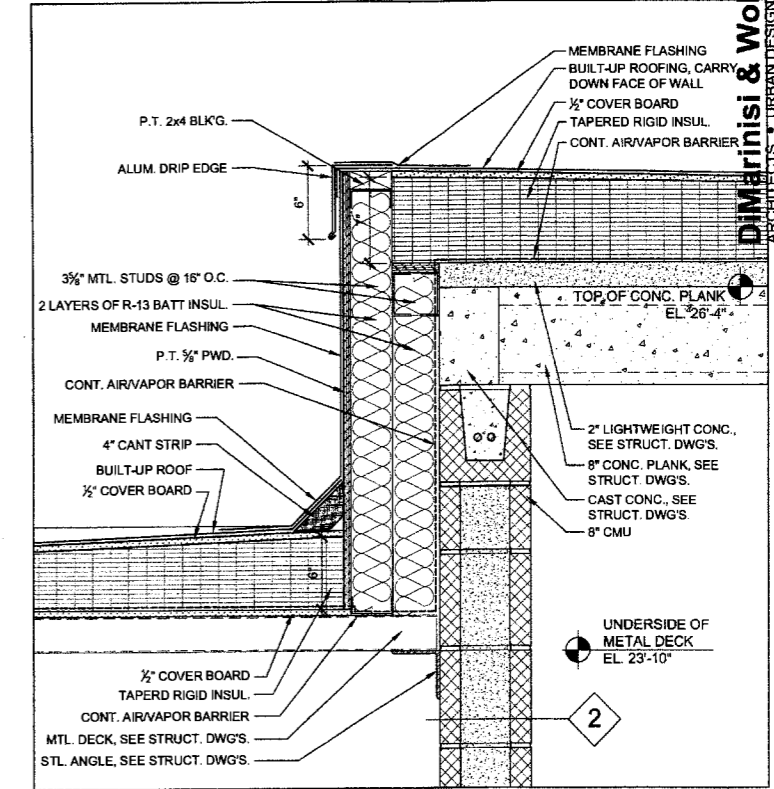
7 INTERIOR CLERESTORY



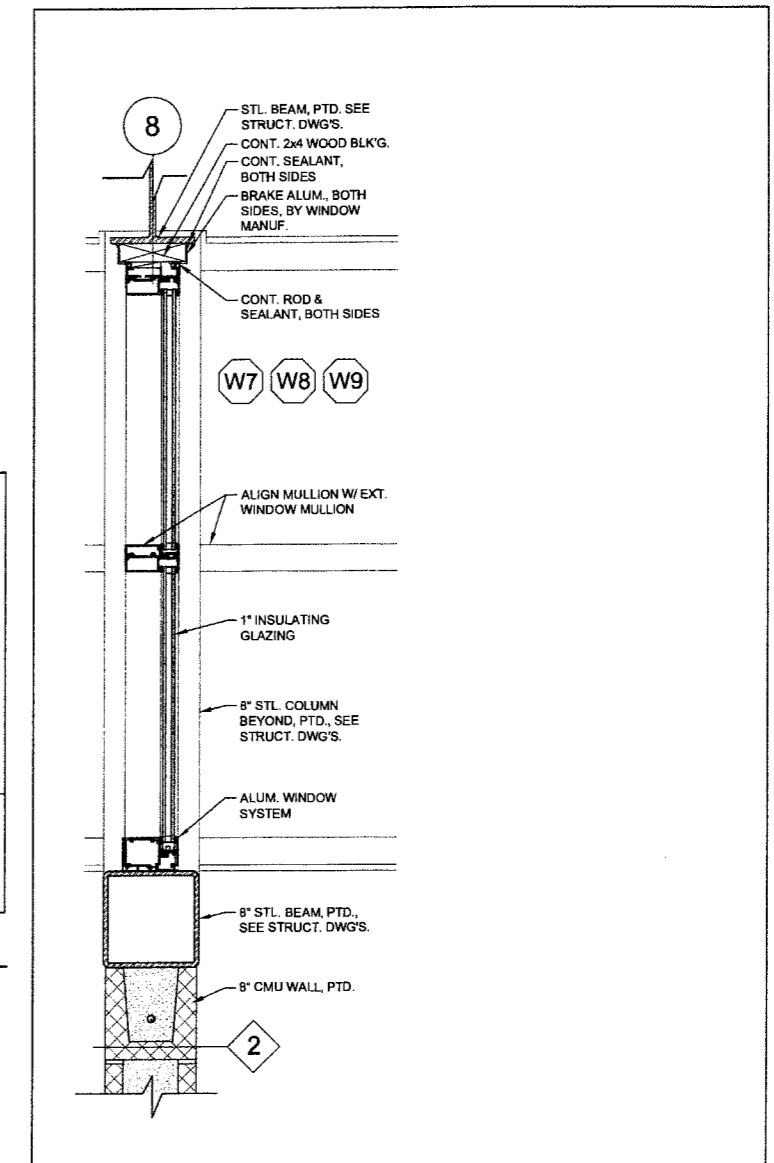
8 HIP ROOF @ LOW ROOF



9 WALL BASE



10 CORRIDOR ROOF @ MID ROOF



11 INTERIOR CLERESTORY MECHANICAL OPENING

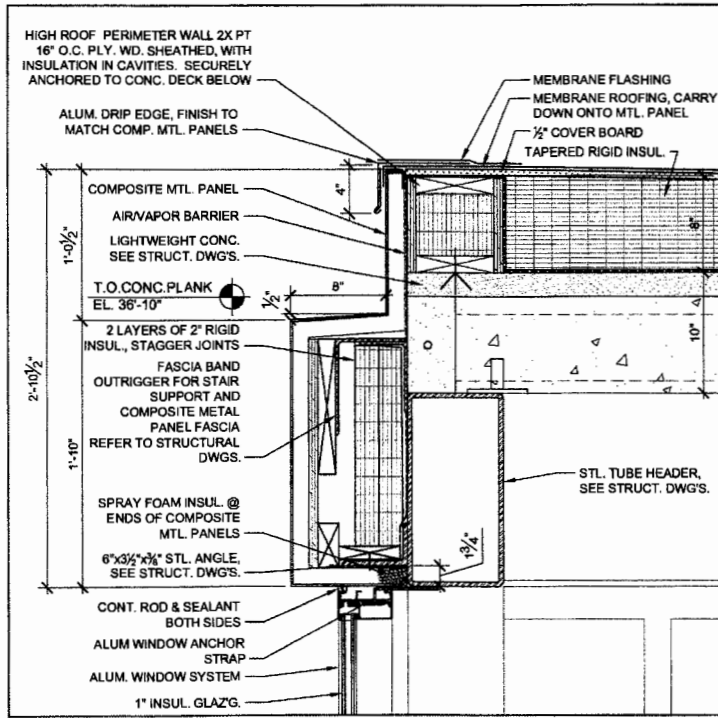
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 Architects + Urban Designers  
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No.	Date	Dr.	By	App.	By

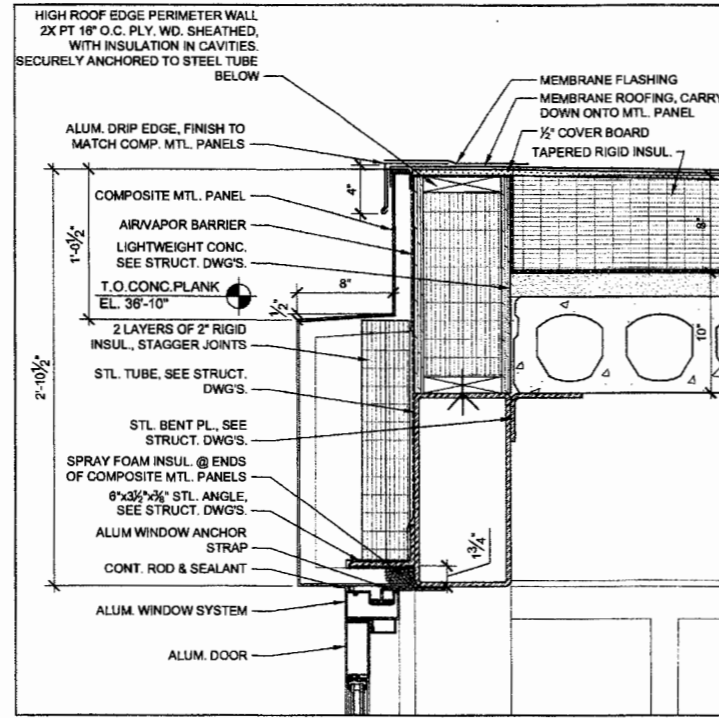
PROJECT: WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 SHEET: 189-1-1-07  
 DATE: 7/15/11  
 DRAWN: M. MA...  
 CHECKED: M. MA...  
 APPROVED: M. MA...

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 OPERATIONS BUILDING VERTICAL DETAILS

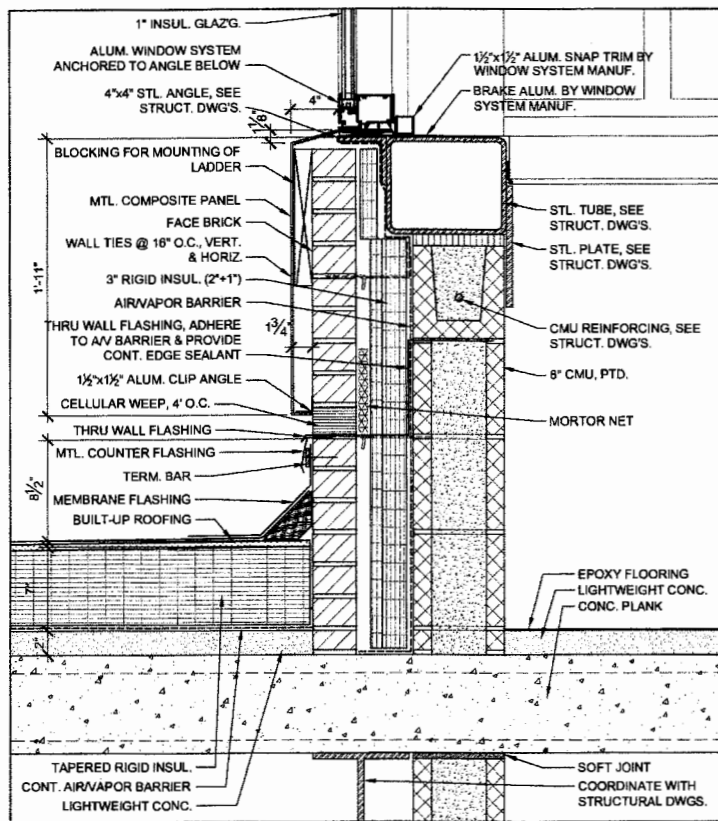
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 REF NO. 189-1-46  
 SHEET 57 OF 202



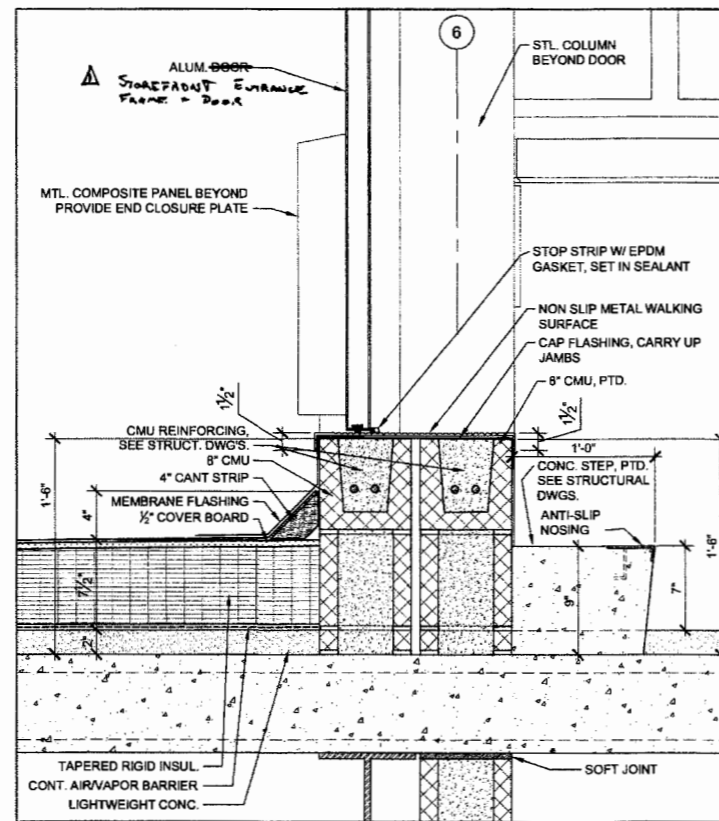
1 TYP. HIGH ROOF EDGE (PERPENDICULAR TO PLANK)



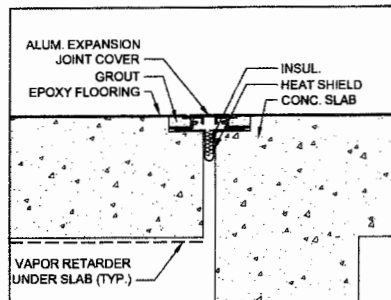
5 ROOF ACCESS DOOR HEAD @ MEZZANINE AND TYP. HIGH ROOF EDGE (PARALLEL TO PLANK)



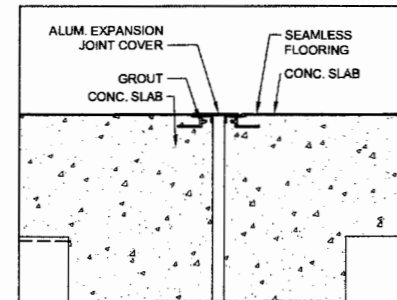
2 MID ROOF @ HIGH ROOF



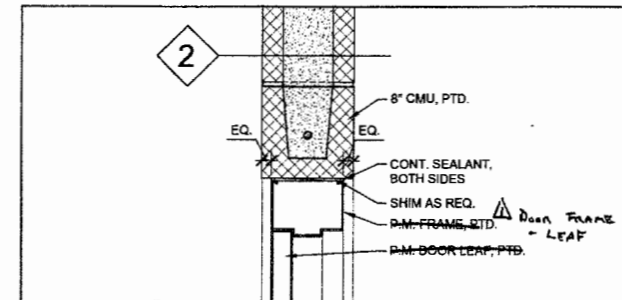
6 ROOF ACCESS DOOR SILL



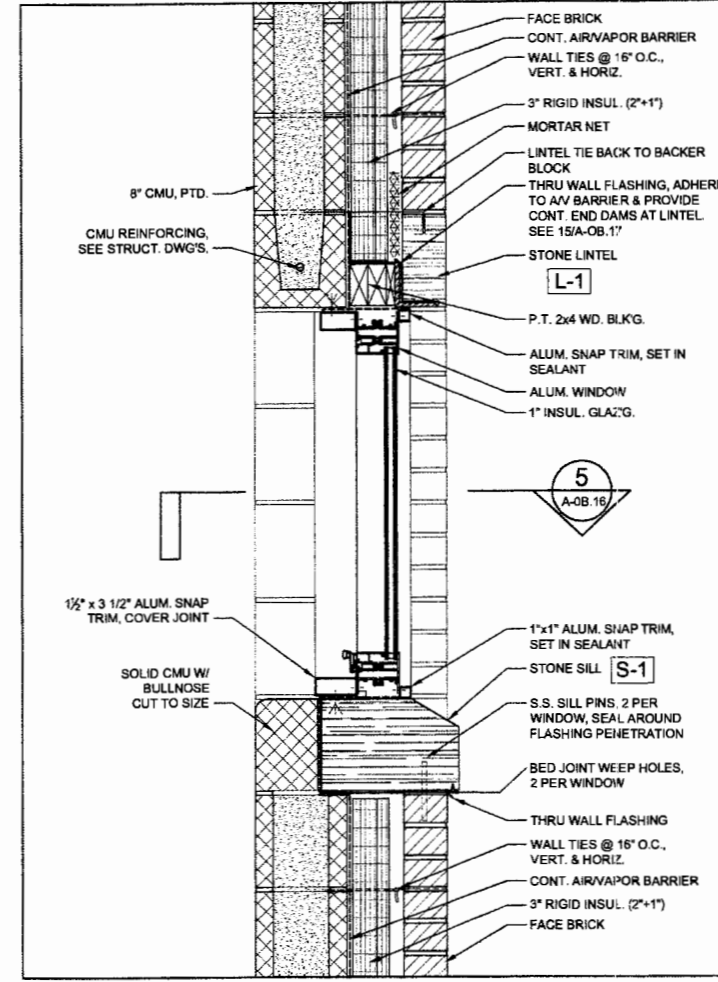
3 RATED FLOOR EXP. JOINT



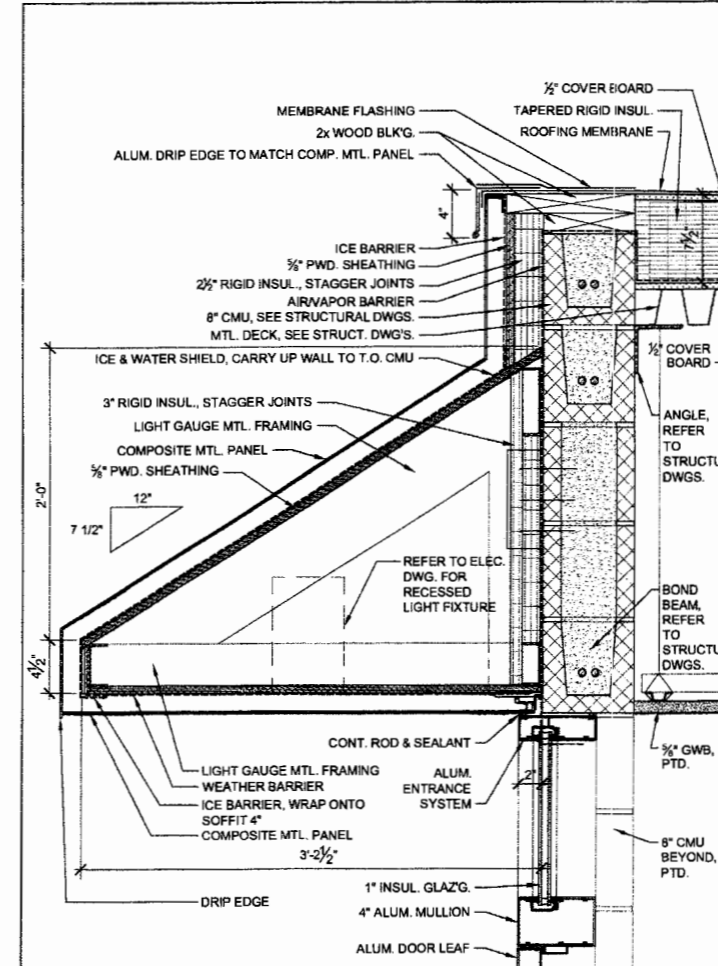
4 FLOOR EXPANSION JOINT



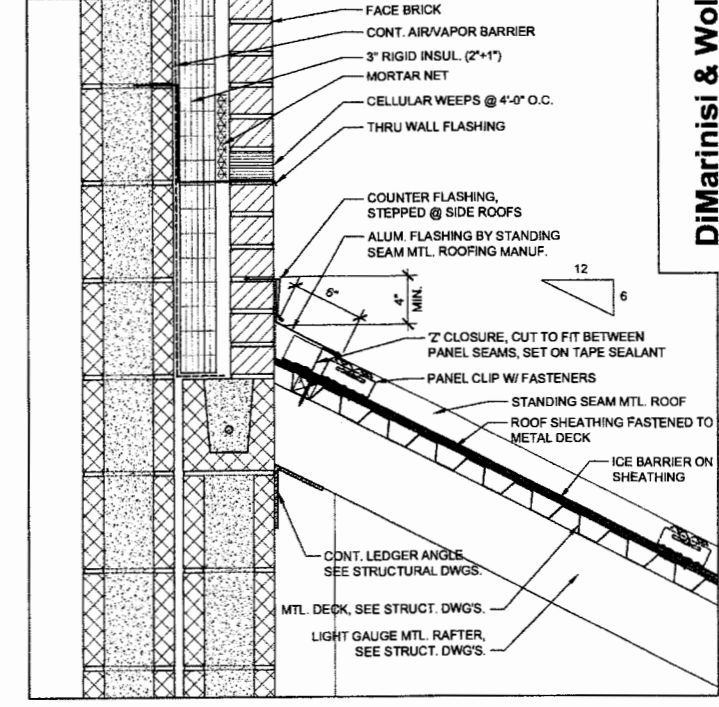
7 TYPICAL INTERIOR DOOR HEAD



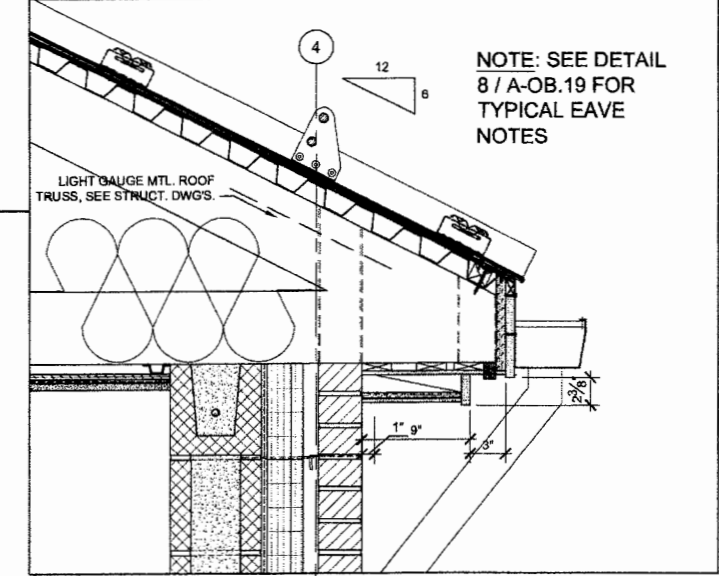
8 ALUMINUM WINDOW IN MASONRY WALL



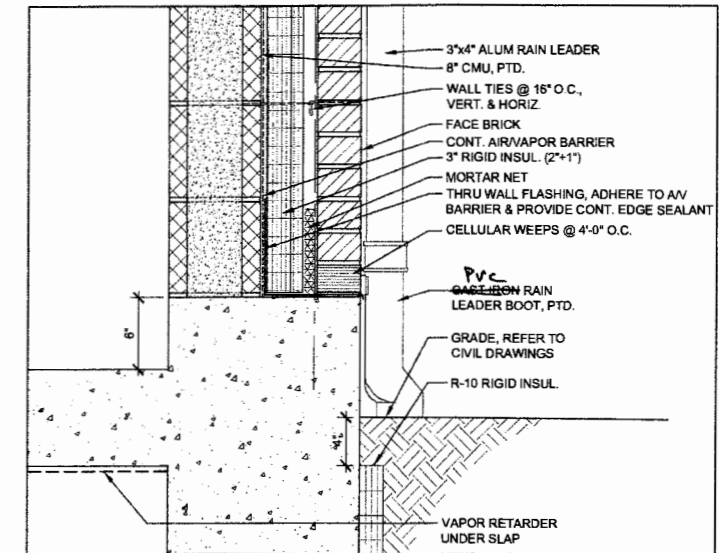
9 MAIN ENTRANCE CANOPY AND LOW ROOF EDGE



10 UPPER SHED ROOF CONNECTING TO WALL



11 ROOMS '124' & '125' ROOF EAVE



12 RAISED CONCRETE @ WALL BASE

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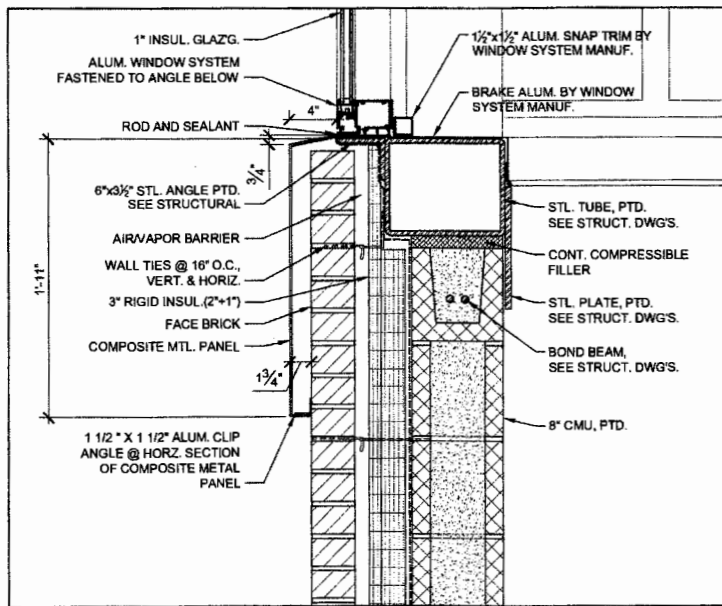
FILE NO. 189-145  
SHEET 58 OF 202

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
VERTICAL DETAILS

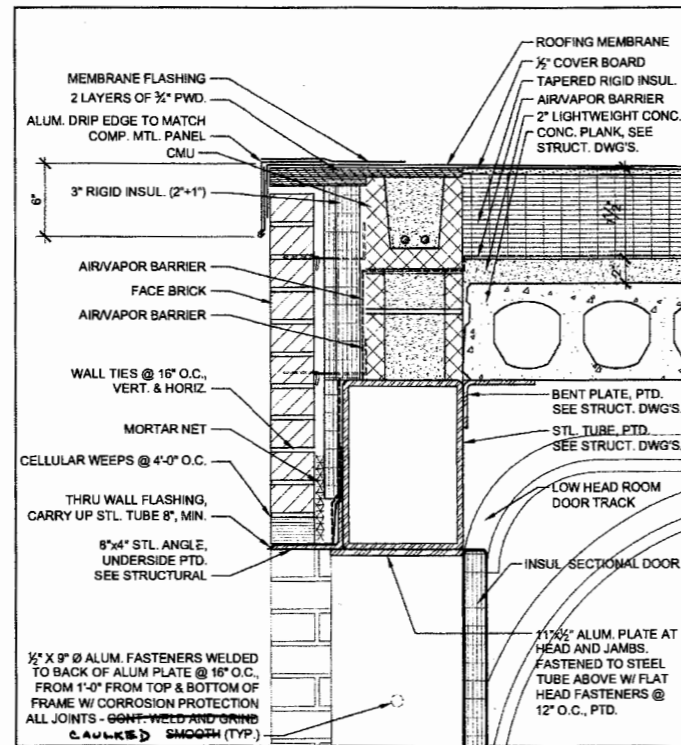
CONTRACT NO. 2090269  
SCALE: 1/2" = 1'-0"

DR. BY: [Signature]  
CHK. BY: [Signature]  
APP. BY: [Signature]

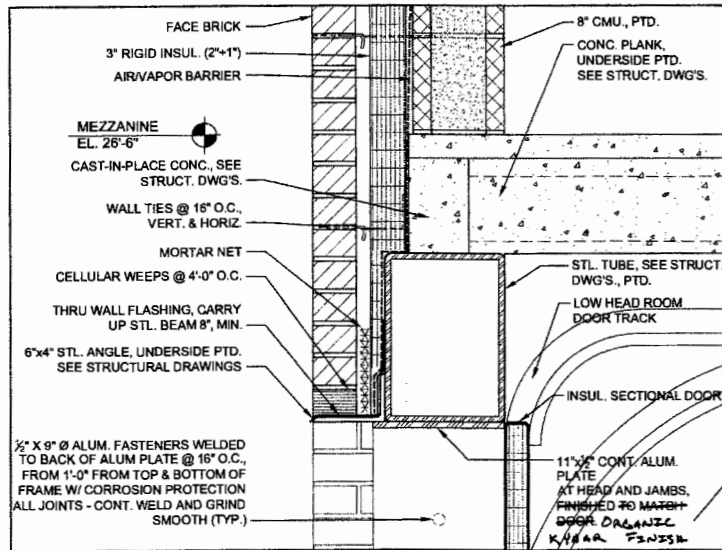
DATE: 7/13/11



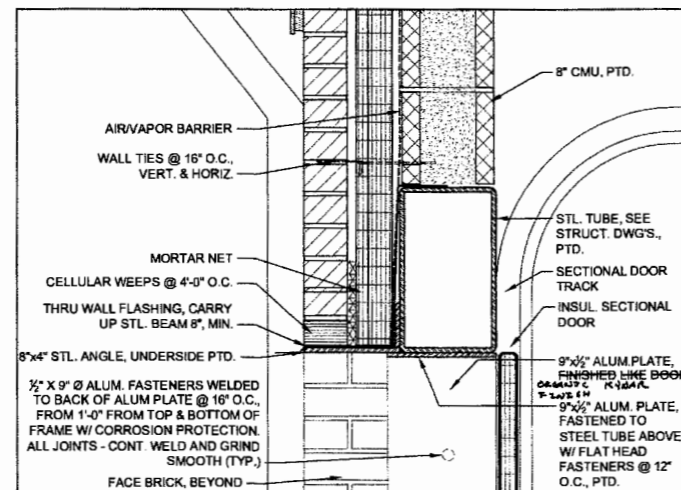
**1 CLERESTORY SILL**  
SCALE: 1 1/2" = 1'-0"



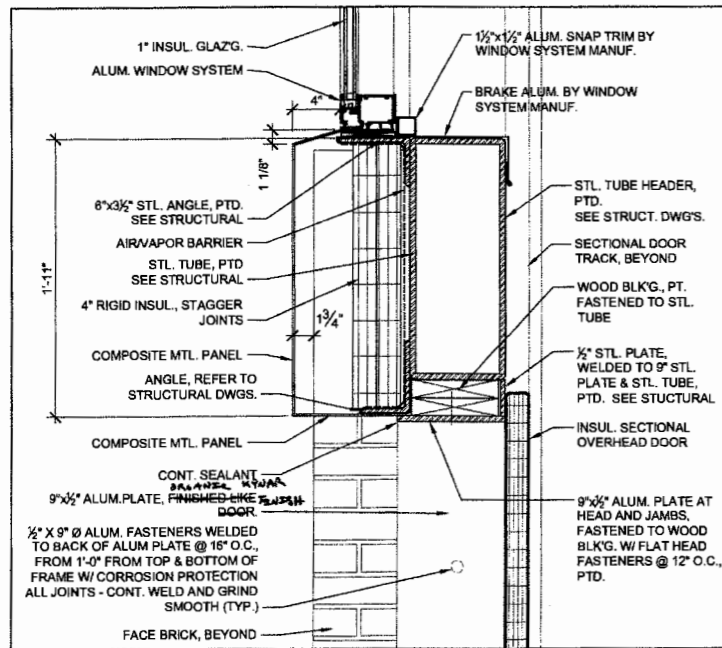
**4 DOOR 120A HEADER AT MID. ROOF EDGE**  
SCALE: 1 1/2" = 1'-0"



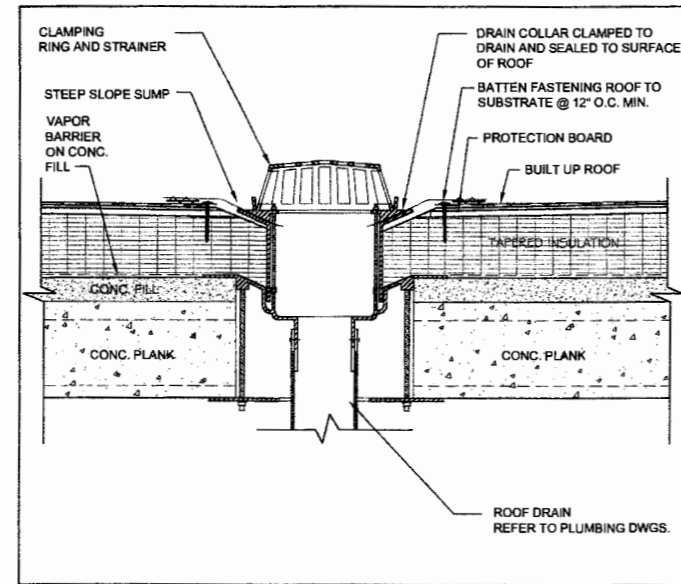
**2 DOORS 121A & 122A HEAD**  
SCALE: 1 1/2" = 1'-0"



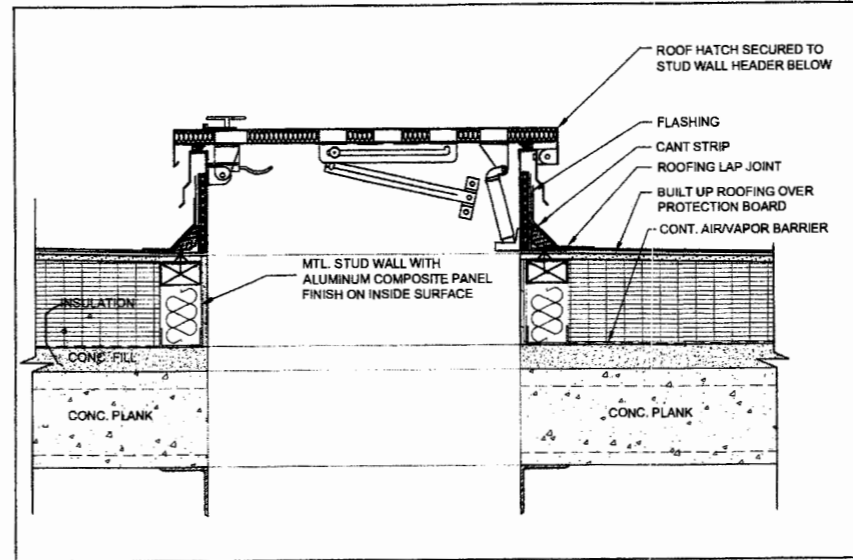
**5 HEADER AT DOOR D118 (MAINTENANCE AREA)**  
SCALE: 1 1/2" = 1'-0"



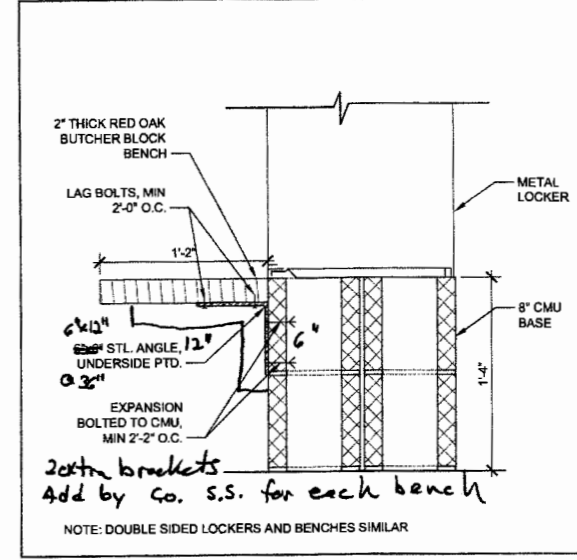
**3 DOOR 123A HEAD**  
SCALE: 1 1/2" = 1'-0"



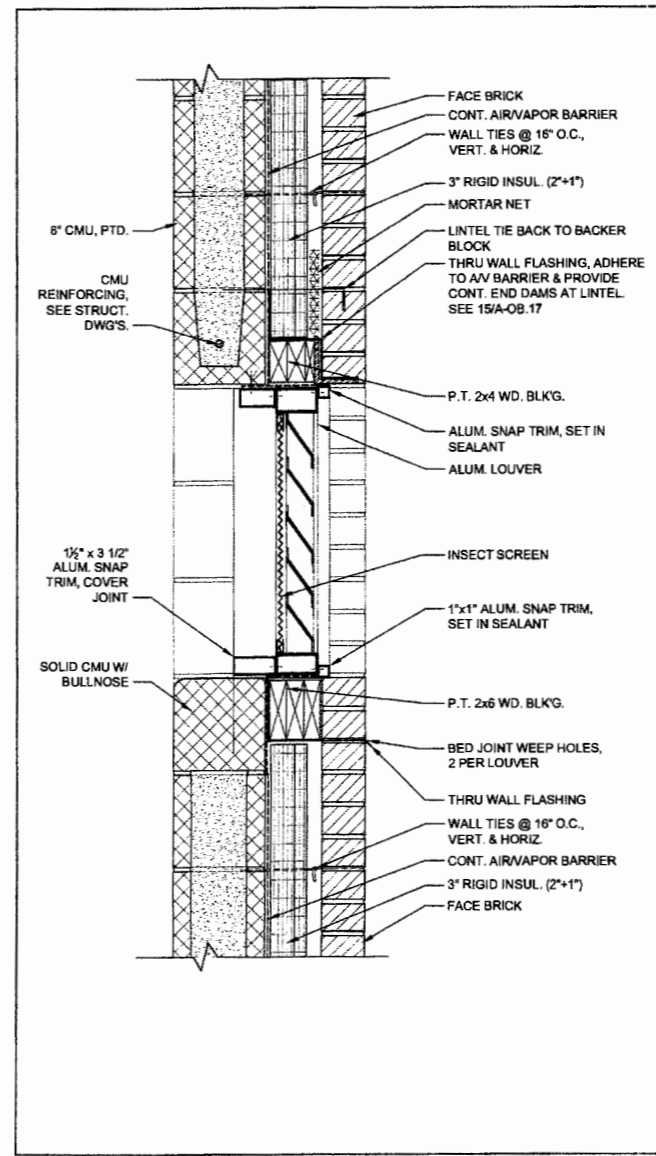
**6 ROOF DRAIN AND LOW SLUMP DETAIL**  
SCALE: 1 1/2" = 1'-0"



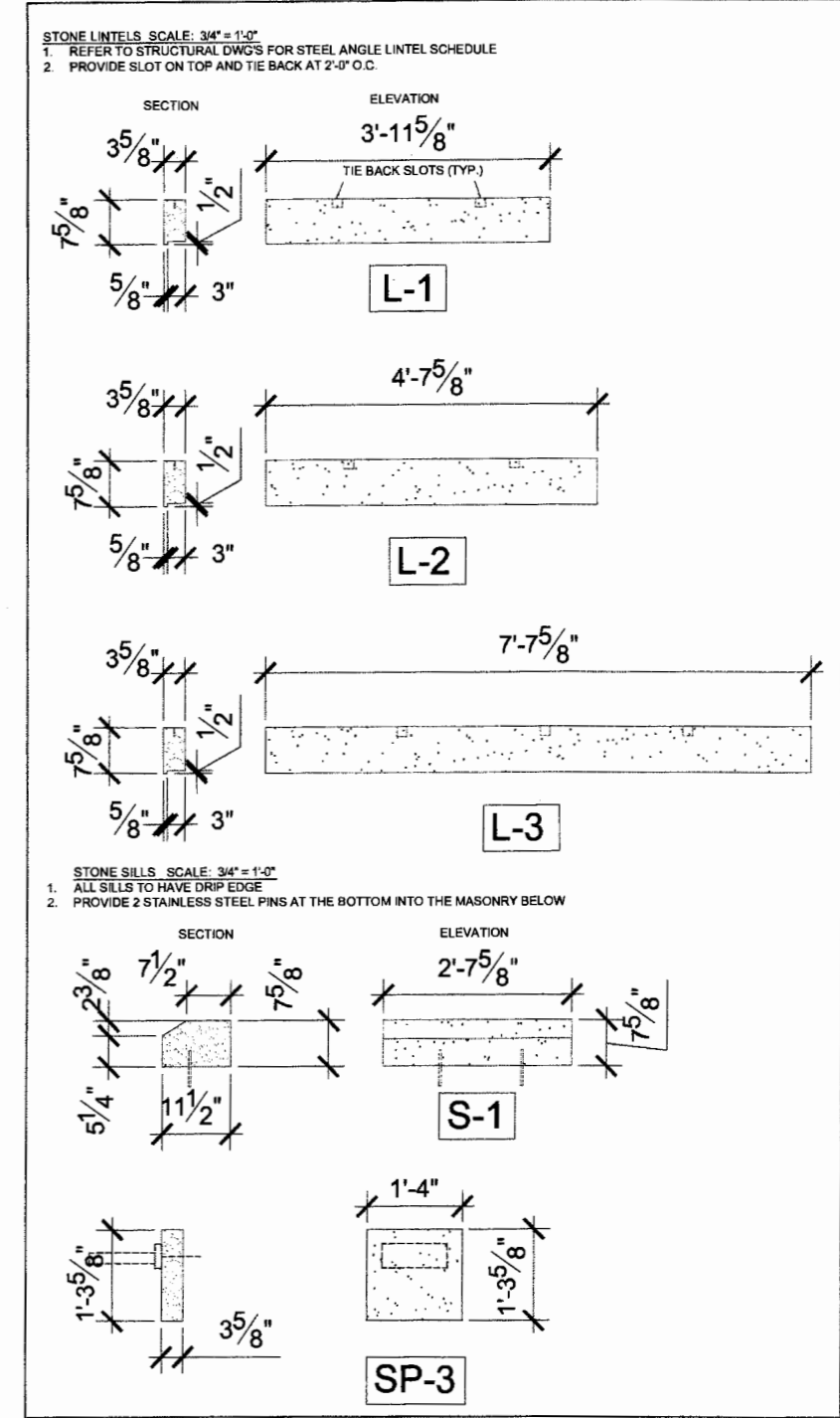
**7 ROOF HATCH**  
SCALE: 1 1/2" = 1'-0"



**9 LOCKER BASE AND BENCH**  
SCALE: 1 1/2" = 1'-0"



**8 ALUMINUM LOUVER IN MASONRY WALL**  
SCALE: 1 1/2" = 1'-0"



**DiMarinisi & Wolfe**  
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DATE: 7/19/11

REGISTRATION: No. 4177, MA, REGISTERED ARCHITECT

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
VERTICAL DETAILS AND LINTELS

CONTRACT: 2090269 [BC/AUS] M/W M/W  
SCALE: AS NOTED  
JOB NO. 2090269 [BC/AUS] M/W M/W  
DR. BY [DKN] M/W  
CHK. BY [APP] M/W

**AS BUILT**

A-OB.27  
FILE NO. 189-144  
SHEET 59 of 202

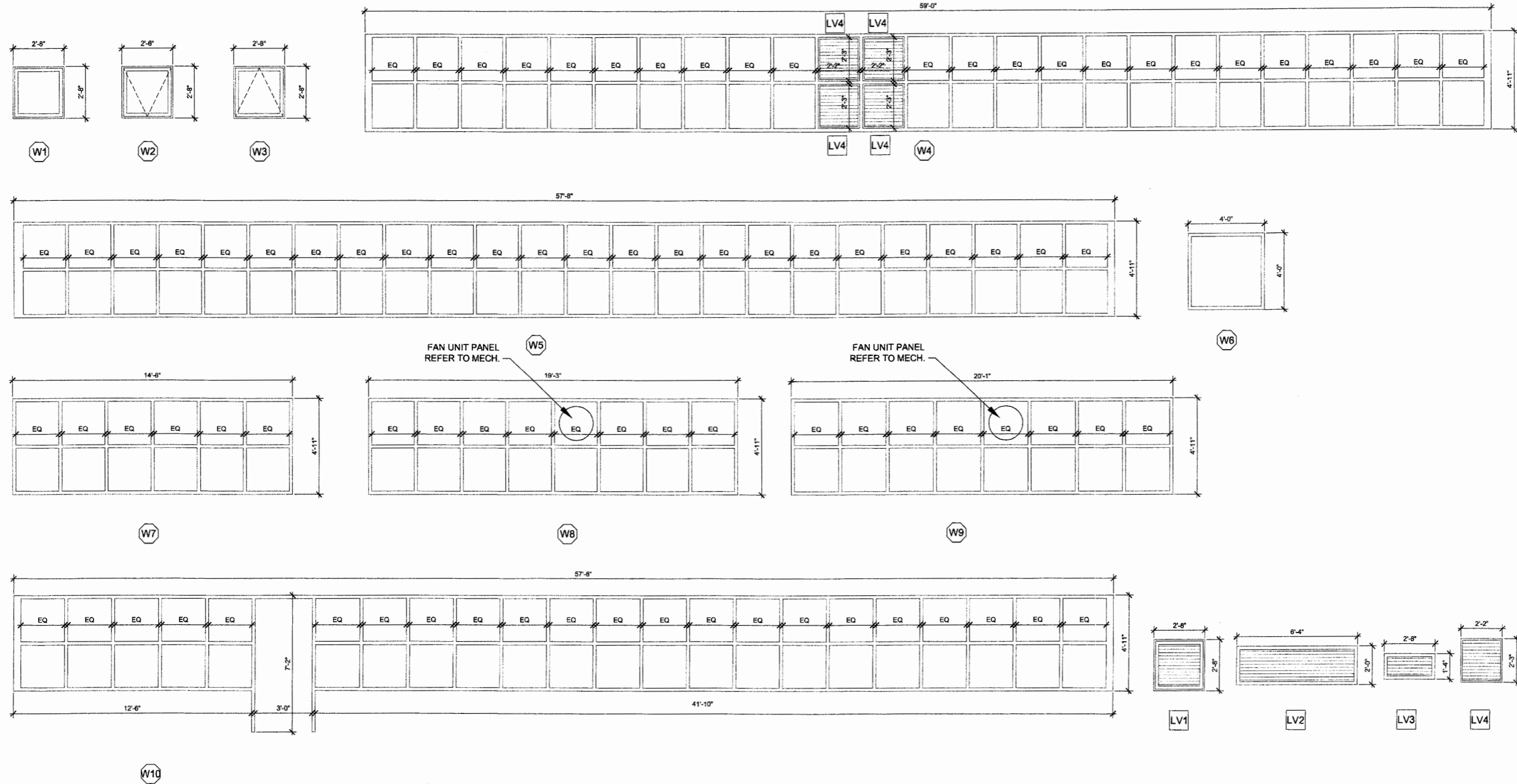


**WINDOW SCHEDULE**

NO.	TYPE	QTY.	R.O. / M.O.		THK.	JAMB	JAMB	HEAD	SILL	MATERIAL	FINISH	COLOR	GLAZING	REMARKS
			W	H										
W1	FIXED	8	2'-8"	2'-8"	4 1/2"	5/A-OB.16	5/A-OB.16	8/A-OB.20	8/A-OB.20	ALUM.	F.F.	TBD	INSUL. / LOW E	
W2	HOPPER	8	2'-8"	2'-8"	4 1/2"	5/A-OB.16	5/A-OB.16	8/A-OB.20	8/A-OB.20	ALUM.	F.F.	TBD	INSUL. / LOW E	PROVIDE INSECT SCREEN
W3	AWNING	2	2'-8"	2'-8"	4 1/2"	5/A-OB.16	5/A-OB.16	8/A-OB.20	8/A-OB.20	ALUM.	F.F.	TBD	INSUL. / LOW E	PROVIDE INSECT SCREEN
W4	FIXED	2	58'-0"	4'-11"	4 1/2"	16/A-OB.16	17/A-OB.16	1/A-OB.20	1/A-OB.21	ALUM.	F.F.	TBD	INSUL. / LOW E	COORDINATE LOUVER SIZES / LOCATION WITH MECH DWGS
W5	FIXED	1	57'-8"	4'-11"	4 1/2"	18/A-OB.16	17/A-OB.16	1/A-OB.20	1/A-OB.21	ALUM.	F.F.	TBD	INSUL. / LOW E	
W6	FIXED	5	4'-0"	4'-0"	4 1/2"	9/A-OB.17	9/A-OB.17	8/A-OB.19	8/A-OB.19	ALUM.	PAINTED F.F.	TBD		
W7	FIXED	1	14'-8"	4'-11"	4 1/2"	21/A-OB.16	13/A-OB.17	7/A-OB.19	7/A-OB.19	ALUM.	F.F.	TBD		
W8	FIXED	1	19'-3"	4'-11"	4 1/2"	13/A-OB.17	13/A-OB.17	7/A-OB.19	7/A-OB.19	ALUM.	F.F.	TBD		REFER TO MECHANICAL DRAWINGS FOR EQUIPMENT PLACEMENT
W9	FIXED	1	20'-1"	4'-11"	4 1/2"	13/A-OB.17	21/A-OB.16	7/A-OB.19	7/A-OB.19	ALUM.	F.F.	TBD		REFER TO MECHANICAL DRAWINGS FOR EQUIPMENT PLACEMENT
W10	FIXED	1	57'-8"	4'-11"	4 1/2"	16/A-OB.16	17/A-OB.16	7/A-OB.19	7/A-OB.19	ALUM.	F.F.	TBD	INSUL. / LOW E	

**LOUVER SCHEDULE**

NO.	TYPE	QTY.	R.O.		THK.	JAMB	JAMB	HEAD	SILL	MATERIAL	FINISH	COLOR	REMARKS
			W	H									
LV1	STORM PROOF LOUVER	4	2'-8"	2'-8"	4 1/2"	5/A-OB.16 (SIM)	5/A-OB.16 (SIM)	8/A-OB.20 (SIM)	8/A-OB.20 (SIM)	ALUM.	F.F.	T.B.S.	PROVIDE BIRD SCREEN
LV2	STORM PROOF LOUVER	1	6'-4"	2'-0"	4 1/2"	5/A-OB.16 (SIM)	5/A-OB.16 (SIM)	8/A-OB.21	8/A-OB.21	ALUM.	F.F.	T.B.S.	PROVIDE BIRD SCREEN
LV3	STORM PROOF LOUVER	1	2'-8"	1'-4"	4 1/2"	5/A-OB.16 (SIM)	5/A-OB.16 (SIM)	8/A-OB.21 (SIM)	8/A-OB.21 (SIM)	ALUM.	F.F.	T.B.S.	PROVIDE BIRD SCREEN
LV4	STORM PROOF LOUVER	4	2'-2"	2'-3"	4 1/2"	12/A-OB.17 (SIM)	12/A-OB.17 (SIM)	1/A-OB.20 (SIM)	1/A-OB.21 (SIM)	ALUM.	F.F.	T.B.S.	PROVIDE BIRD SCREEN / SIZE OF LOUVER TO BE COORDINATED WITH WINDOW MANUFACTURER



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No.	Date	Dr. By	Ck. By	App. By	Description

*C. J. M. Moran*  
 REGISTERED ARCHITECT



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 OPERATIONS BUILDING  
 WINDOW & LOUVER SCHEDULES  
 SCALE: AS NOTED  
 JOB NO. 2090269  
 CONTRACT 2  
 DISK BY: [CHK. BY] MIW  
 [APP. BY] MIW

**AS BUILT**  
 A-OB.23  
 FILE NO. 189-142  
 SHEET 61 of 202

NEW CONSTRUCTION

A GENERAL

- A1 CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS STATE BUILDING CODE, 8TH EDITION (780 CMR)...

B FOUNDATIONS

- B1 NEW FOUNDATIONS FOR THIS PROJECT CONSIST OF MINI-PILES, PILE CAPS, ON-GRADE FOOTINGS AND SLABS, GRADES AND STRUCTURAL SLABS...

C CONCRETE

- C1 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)" AND CONCRETE FOR BUILDING AND PAVEMENT CONSTRUCTION SPECIFICATION, SECTION 03300...

D REINFORCEMENT

- D1 REINFORCEMENT WORK OF DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO LATEST "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)"...

E STRUCTURAL STEEL

- E1 STRUCTURAL STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (AISC S335)"...

F REINFORCED MASONRY

- F1. CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530)" AND THE "SPECIFICATIONS FOR MASONRY STRUCTURES (ACI 530.1)"...

G. ENGINEERED, PREFABRICATED LIGHT GAGE (LG) STEEL ROOF TRUSSES:

- G1 PRE-FABRICATED LIGHT GAGE STEEL ROOF TRUSS MANUFACTURER SHALL BE FULLY RESPONSIBLE FOR THE DESIGN, FABRICATION AND ERECTION OF THE COMPLETE FRAMING OF THE ROOF STRUCTURE...

H STRUCTURAL DESIGN LOADS

- H1 STRUCTURAL DESIGN LOAD: CONFORMING TO MASSACHUSETTS STATE BUILDING CODE (780 CMR), 8TH EDITION.

Table with 4 columns: WIND PRESSURE (PSF) OPERATION BLDG - ADMIN AREA, WIND PRESSURE (PSF) OPERATION BLDG - PROCESS AREA, BLDG. SURFACE, EFFECTIVE WIND AREA (SF)

- H2 DEAD LOADS (A) WEIGHT OF BUILDING COMPONENTS ACTUAL WEIGHT (B) LOW ROOF: SHEATH/MEP/CEILING ALLOWANCE 20 PSF...

J GRATING

- J1 ALUMINUM GRATING TYPICAL U.N.O. AS INDICATED ON THE PLANS.

Sketches and field notes have been incorporated into Structural Drawings. Please refer to Volume II Appendix B for further information.

RECORD DRAWING

THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

ABBREVIATIONS

Table with 4 columns: ABBREVIATION, FULL NAME, ABBREVIATION, FULL NAME

Weston & Sampson logo and contact information: Five Centennial Drive, Peabody, MA 01960

Professional Engineer registration table with columns: No., Date, Dr. By, App. By, Description, DATE

Professional Engineer registration table with columns: No., Date, Dr. By, App. By, Description, DATE

Professional Engineer registration table with columns: No., Date, Dr. By, App. By, Description, DATE

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**RECORD DRAWING**

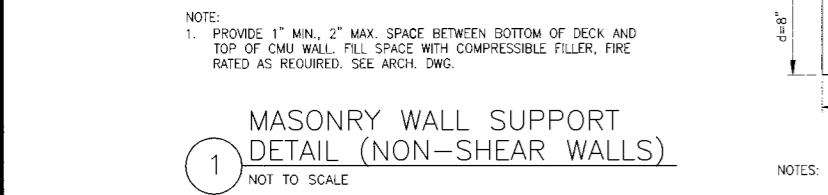
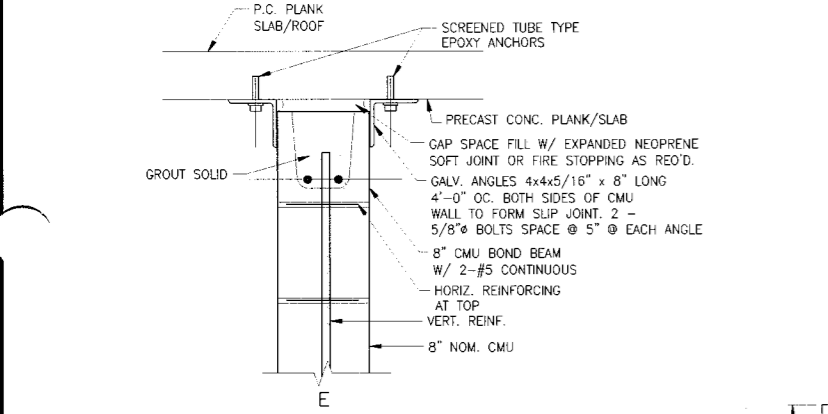
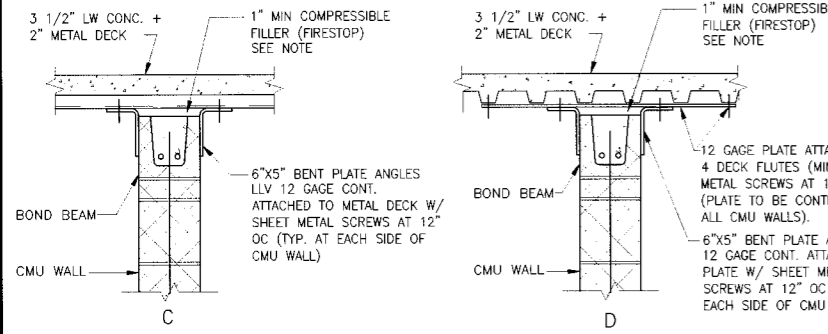
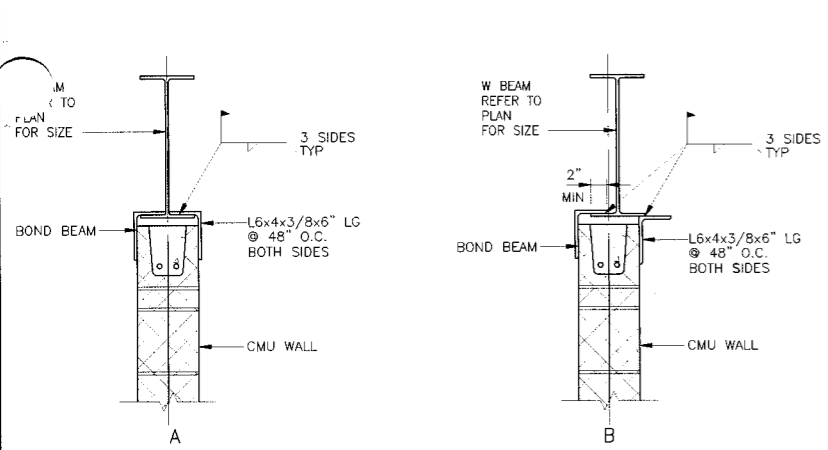
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

KLIN ASSOCIATES, INC.  
CONSULTING ENGINEERS

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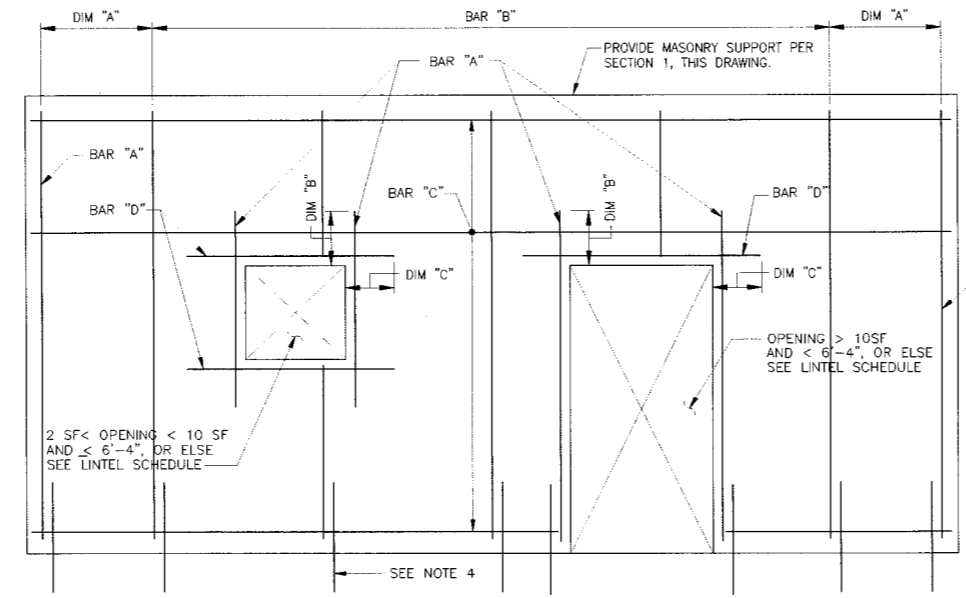
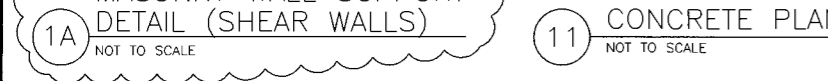
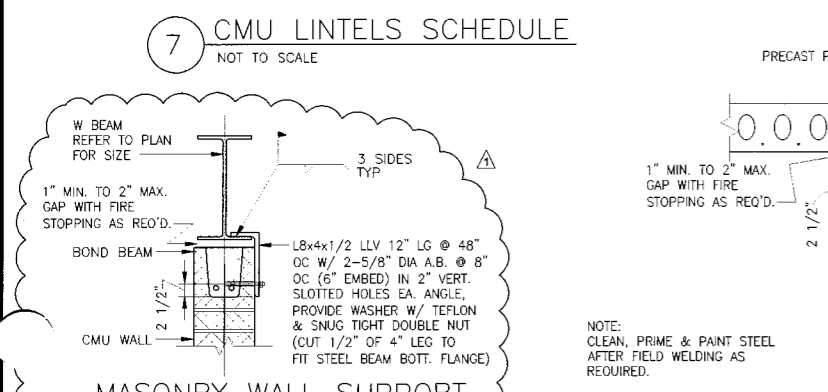
No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	R	O
					V
					E
					D

REGISTERED ARCHITECT \_\_\_\_\_ DATE \_\_\_\_\_



**REINFORCING IN LINTELS**

CLEAR SPAN	≤ 4'-0"		> 4'-0" & ≤ 8'-0"	
	d	BARS	d	BARS
8" BLOCK	8"	2-#5	16"	2-#5
12" BLOCK	8"	2-#7	16"	2-#7



**CMU WALL SCHEDULE**

WALL TYPE	CMU TYPE	BAR "A"	BAR "B"	BAR "C"	BAR "D"	DIM "A"	DIM "B"	DIM "C"
8" CMU WALL	8" HOLLOW	2-#5	#5 @ 24"	2-#5 @ 48"	2-#5	24"	24"	24"

- NOTES:**
- REFER TO ARCH. DWGS. FOR ALL MASONRY WALL LAYOUT AND TYPES.
  - FOR TYPICAL MASONRY WALL REINFORCING SEE SCHEDULE ABOVE.
  - COORDINATE WITH HVAC DRAWINGS FOR WALL PENETRATION SIZE AND LOCATION.
  - PROVIDE DOWEL BARS IN FOUNDATION WALLS AND FLOOR SLABS TO MATCH VERTICAL REINFORCING U.N.O.
  - FOR CMU BOND BEAM REINFORCING SEE ARCHITECTURAL SECTIONS. USE LINTEL CMU FOR ALL HORIZONTAL REINFORCING.

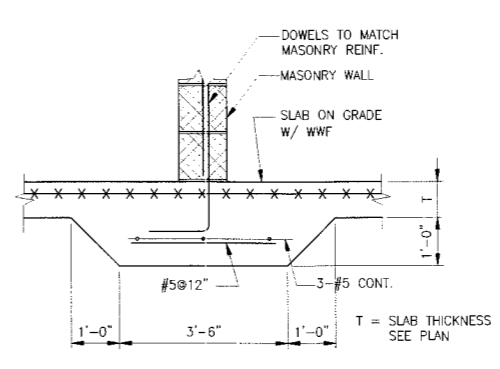
**2 CMU WALL ELEVATION & SCHEDULE**  
NOT TO SCALE

**STEEL LINTEL SCHEDULE (PER SPEC. SECTION 05500)**

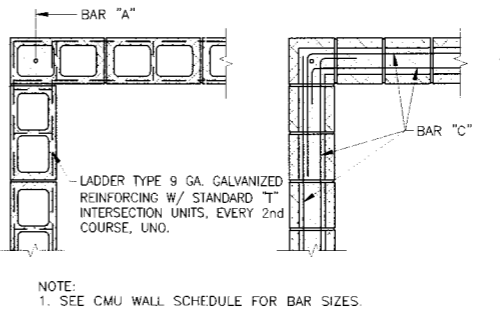
MAX. MASONRY OPENING	WALL THICKNESS	
	6" WALL (L)	8" WALL (L)
3'-0"	2-L3x2 1/2x 1/4	2-L3 1/2x3 1/2x 1/4
4'-0"	2-L3x2 1/2x 1/4	2-L4x3 1/2x 1/4
5'-0"	2-L3 1/2x2 1/2x 1/4	2-L4x3 1/2x 1/4
6'-0"	2-L3 1/2x2 1/2x 1/4	2-L5x3 1/2x 1/4
8'-0"	2-L3 1/2x2 1/2x 1/4	2-L6x3 1/2x 1/4

- NOTES:**
- PROVIDE AND INSTALL LINTEL ANGLES FOR MASONRY OPENINGS IN ACCORDANCE WITH THE SCHEDULE ABOVE. INSTALL LONG LEG VERTICAL.
  - PROVIDE 6" MIN. BEARING AT EACH END BUT NOT LESS THAN 1" PER FOOT OF SPAN. FILL 2 COURSES OF MASONRY BELOW BEARING WITH MORTAR.
  - WHERE MIN. BEARING CANNOT BE PROVIDED, ATTACH SECURELY TO ADJACENT STRUCTURAL MEMBERS OR PROVIDE SEPARATE SUPPORTS.
  - WHERE LINTELS OCCUR IN EXTERIOR WALLS, MIN. THICKNESS SHALL BE 5/16" AND ANGLES SHALL BE HOT DIPPED GALVANIZED. 5. WHERE WALL THICKNESS EXCEEDS 12" PROVIDE 1 ADDITIONAL ANGLE FOR EACH ADDITIONAL 4" OF WALL.

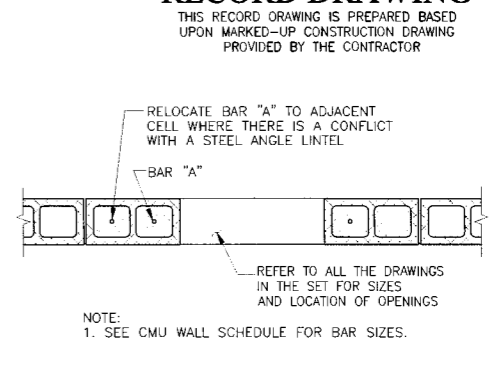
**9 STEEL LINTEL SCHEDULE (PER SPEC. SECTION 05500)**  
NO SCALE



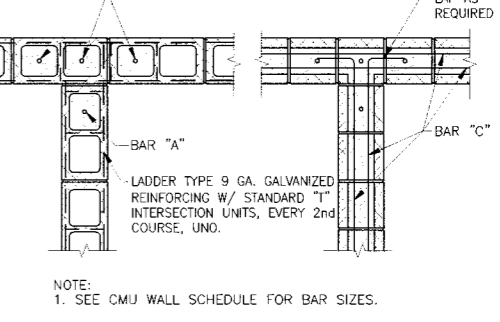
**3 SLAB THICKEN UNDER MASONRY WALL**  
NOT TO SCALE



**5 MASONRY CORNER REINFORCING DETAIL**  
NOT TO SCALE



**4 MASONRY OPENING JAMB REINFORCING DETAIL**  
NOT TO SCALE



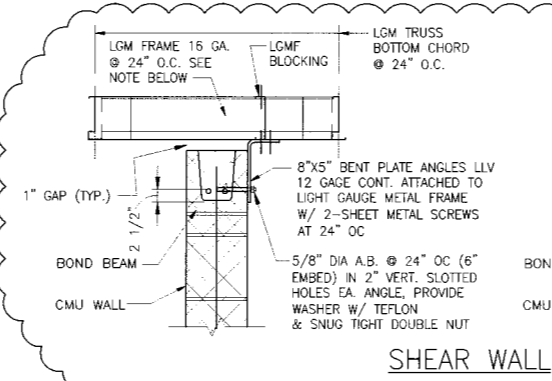
**6 MASONRY INTERSECTION REINFORCING DETAIL**  
NOT TO SCALE

**STEEL LINTEL SCHEDULE @ MASONRY VENEER ONLY**

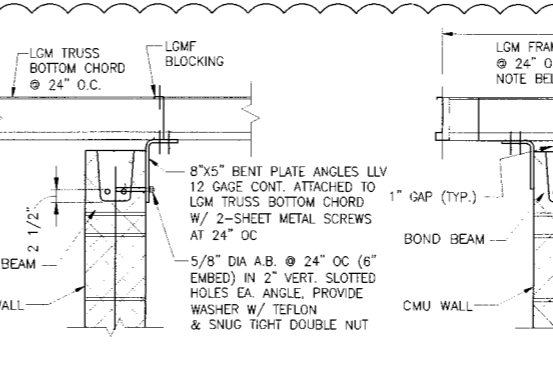
MAX. MASONRY OPENING	NON-BEARING WALL THICKNESS	
	4" WALL (L) (BRICK VENEER)	8" NOMINAL WALL (L)
3'-0"	1-4x3 1/2x 1/8"	-
4'-0"	1-4x3 1/2x 1/8"	2-4x3 1/2x 1/8"
5'-0"	1-6x3 1/2x 1/8"	-
6'-0"	1-6x3 1/2x 1/8"	-
8'-0"	1-6x3 1/2x 1/8"	-
10'-0"	1-6x3 1/2x 1/8"	-
12'-0"	1-8x4x 1/2"	-

- NOTES:**
- PROVIDE AND INSTALL LINTEL ANGLES FOR MASONRY OPENINGS IN ACCORDANCE WITH THE SCHEDULE ABOVE. INSTALL LONG LEG VERTICAL.
  - PROVIDE 6" MIN. BEARING AT EACH END BUT NOT LESS THAN 1" PER FOOT OF SPAN. FILL 2 COURSES OF MASONRY BELOW BEARING WITH MORTAR.
  - WHERE MIN. BEARING CANNOT BE PROVIDED, ATTACH SECURELY TO ADJACENT STRUCTURAL MEMBERS OR PROVIDE SEPARATE SUPPORTS.
  - ALL ANGLE LINTELS SHALL HAVE A MINIMUM THICKNESS OF 3/16" AND SHALL BE HOT DIPPED GALVANIZED. PRE-DRILL FOR THE BACKS.

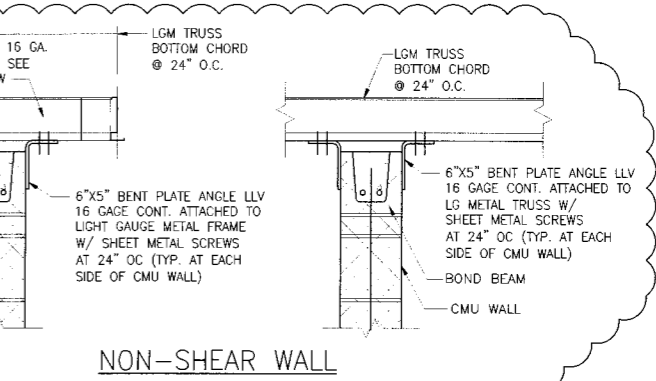
**10 STEEL LINTEL SCHEDULE @ MASONRY VENEER ONLY**  
NO SCALE



**12 SHEAR WALL**  
NOT TO SCALE



**12 CMU WALL SUPPORT AT LGM TRUSS DETAIL**  
NOT TO SCALE

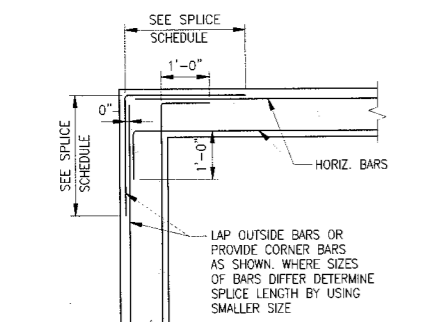


**12 NON-SHEAR WALL**  
NOT TO SCALE

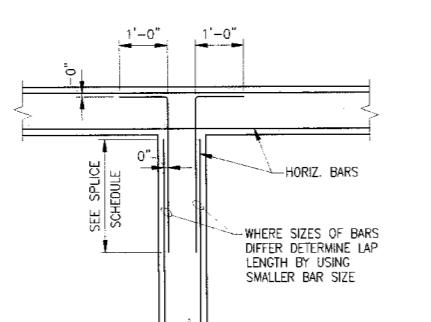
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**TYPICAL DETAILS 1**

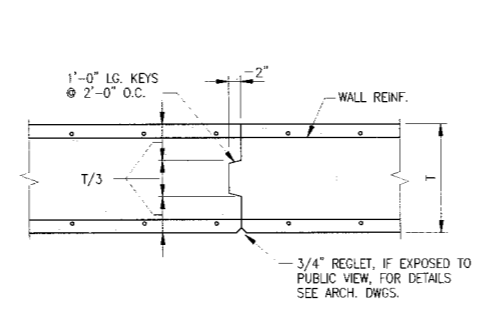
SCALE: AS NOTED  
CONTRACT: 2090269  
JOB NO. 2090269  
DRY BY: VVS  
CHK BY: RSL  
APP BY: CK  
FILE NO. 189-138



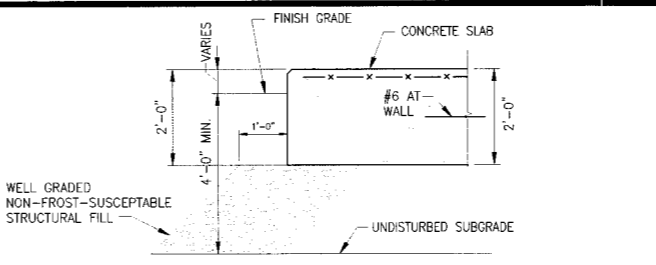
1 HORIZONTAL WALL REINF. PLAN AT CORNER  
NOT TO SCALE



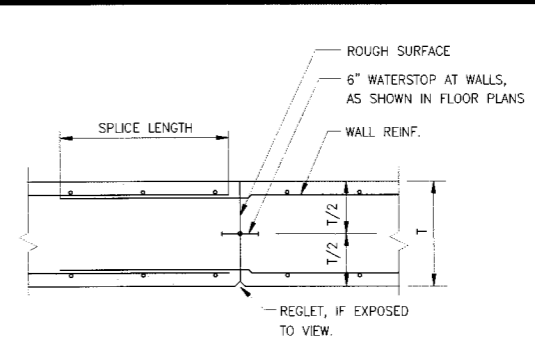
2 HORIZONTAL WALL REINF. PLAN AT INTERSECTIONS  
NOT TO SCALE



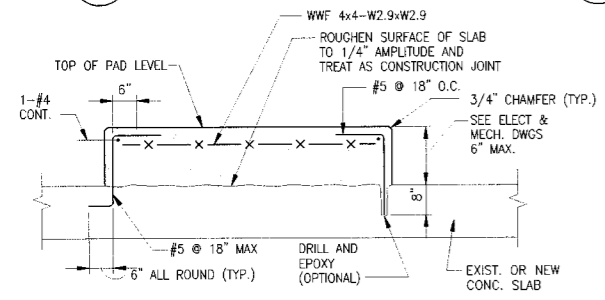
3 WALL CONSTRUCTION JOINT  
NOT TO SCALE



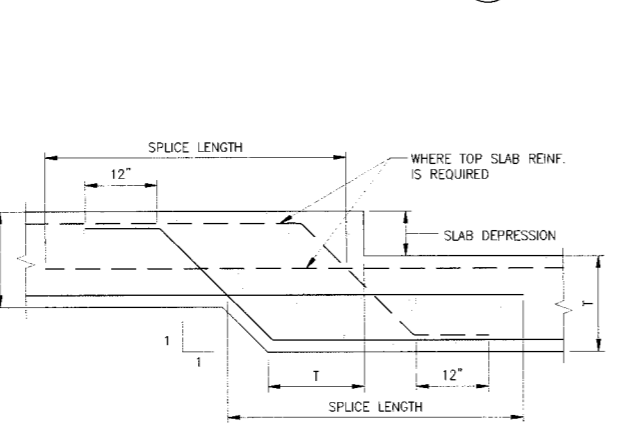
4 TYPICAL CONCRETE DOWNTURN @ ENTRANCE AREAS  
NOT TO SCALE



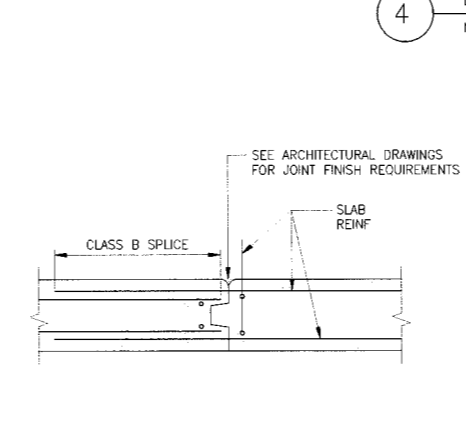
5 WALL C.J. WITH WATERSTOP  
NOT TO SCALE



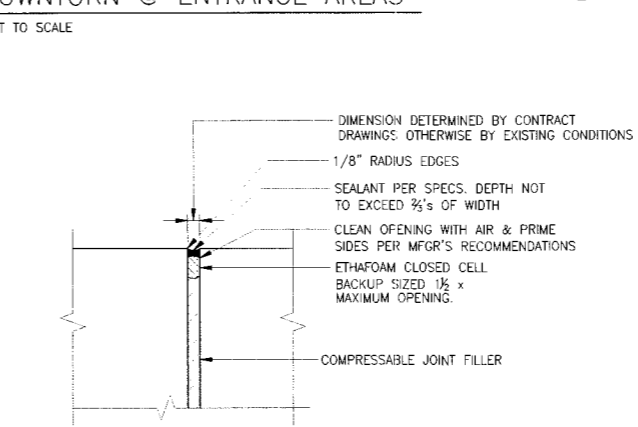
6 INTERIOR CONCRETE EQUIPMENT PAD DETAIL  
NOT TO SCALE



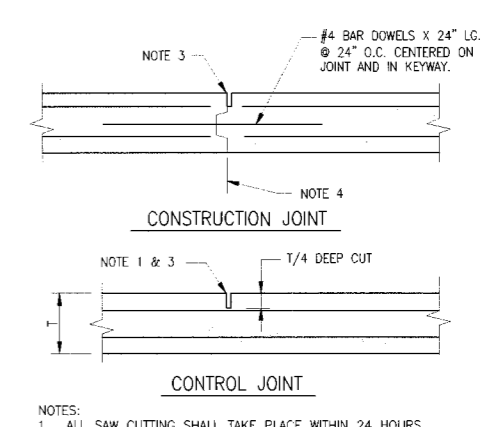
7 DEPRESSION STEP AT FRAMED CONCRETE SLAB  
NOT TO SCALE



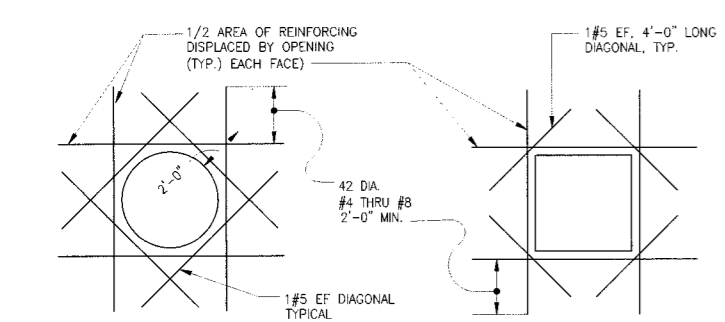
8 FRAMED SLAB CONSTRUCTION JOINT  
NOT TO SCALE



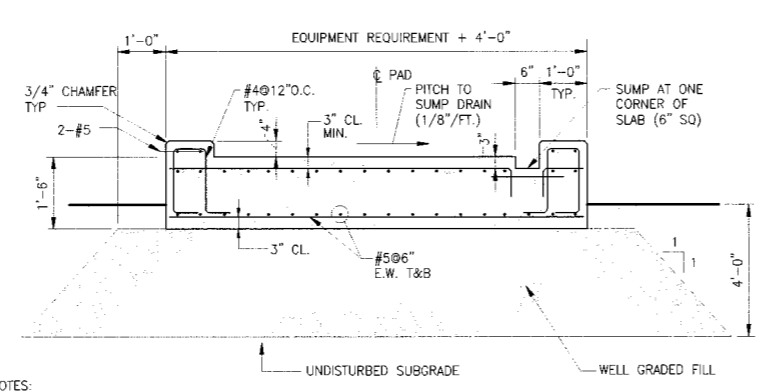
9 EXPANSION JOINT DETAIL  
NOT TO SCALE



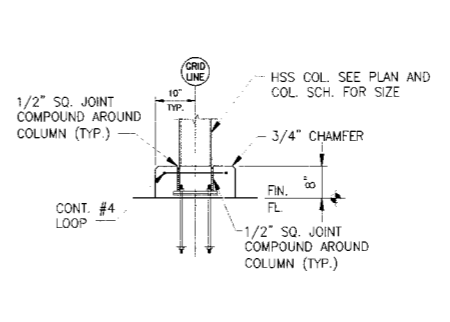
10 SLAB ON GRADE JOINT DETAILS  
NOT TO SCALE



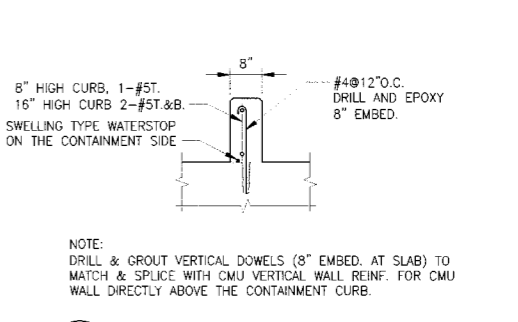
11 TYPICAL ADDITIONAL REINF. AT OPENINGS  
NOT TO SCALE



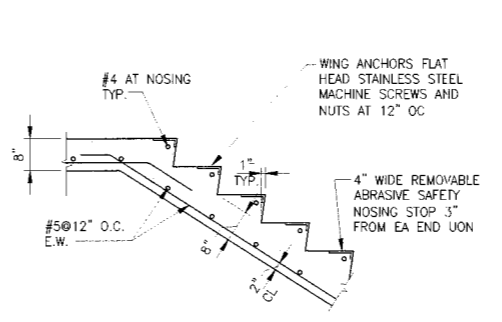
12 EXTERIOR CONCRETE EQUIPMENT SLAB  
NOT TO SCALE



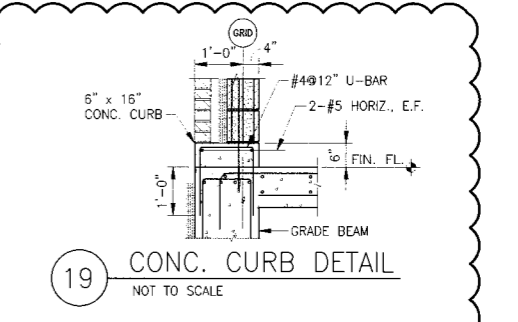
13 PROTECTION CURB  
NOT TO SCALE



14 CONTAINMENT CURB  
NOT TO SCALE



15 TYP. STAIR REINF.  
NOT TO SCALE



19 CONC. CURB DETAIL  
NOT TO SCALE



18 TYP. STAIR STEP AND LANDING AT EXISTING WALL  
NOT TO SCALE

CLASS B TENSION SPLICE		F <sub>y</sub> =60000 PSI									
MIN. SPLICE & DEVELOPMENT LENGTH SCHEDULE (UNLESS SHOWN OTHERWISE ON DRAWINGS)											
BAR SIZE		BAR SIZE									
		#3	#4	#5	#6	#7	#8	#9	#10	#11	
SPLICE LENGTH (SL)	TOP BARS	24"	32"	41"	47"	71"	79"	91"	101"	113"	
	BASE	18"	25"	31"	37"	54"	62"	70"	78"	87"	
DEVELOPMENT LENGTH (DL)	TOP BARS	18"	25"	31"	37"	54"	62"	70"	78"	87"	
	BASE LENGTH	14"	19"	24"	28"	42"	47"	54"	60"	67"	

16 SPLICE SCHEDULE  
NO SCALE

CLEAR CONCRETE COVER FOR CAST-IN-PLACE CONCRETE OVER REINFORCEMENT (INCHES)			
MEMBER	EXPOSURE CONDITIONS		
	AIR	WEATHER	EARTH OR STONE
FOOTINGS FOUNDATION, MATS AND PILE CAPS	2*	2*	2*
WALL, JOISTS, BEAM STIRRUPS AND COLUMN TIES	1 1/2	2	2
FRAMED SLAB	2	2	3•

17 CONCRETE COVER SCHEDULE  
NO SCALE

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

No.	Date	Dr. By	Chk. By	App. By	Description
		A	P	P	R
					O
					V
					E
					D

REGISTERED ARCHITECT \_\_\_\_\_ DATE \_\_\_\_\_

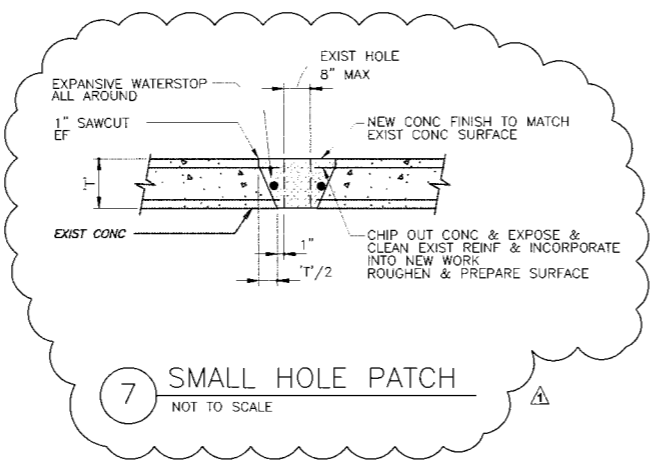
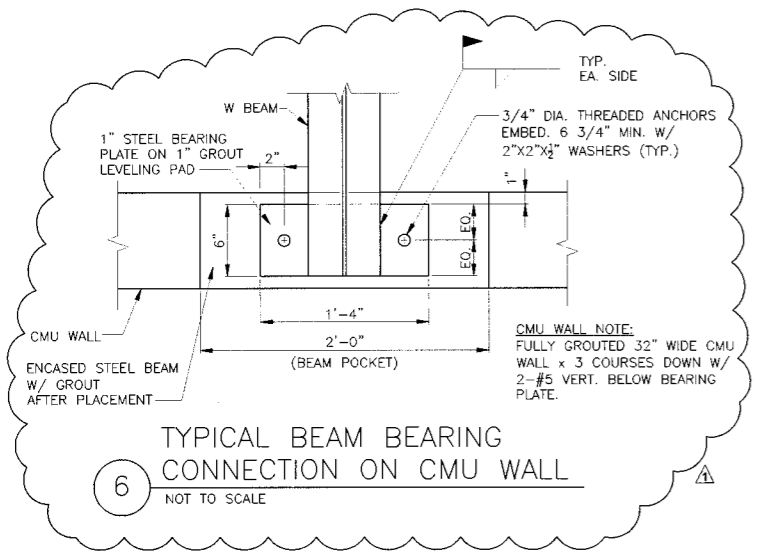
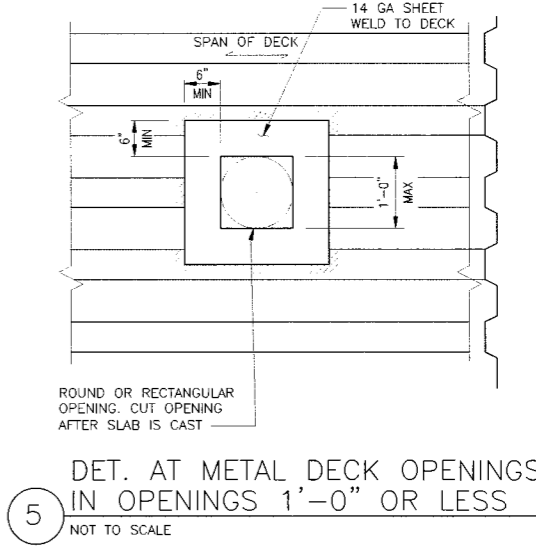
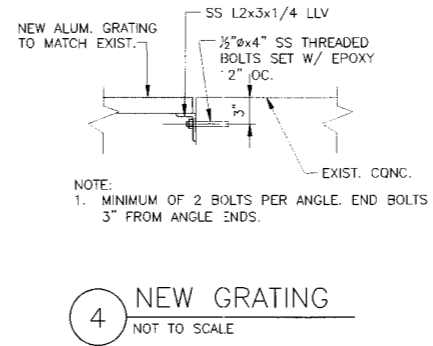
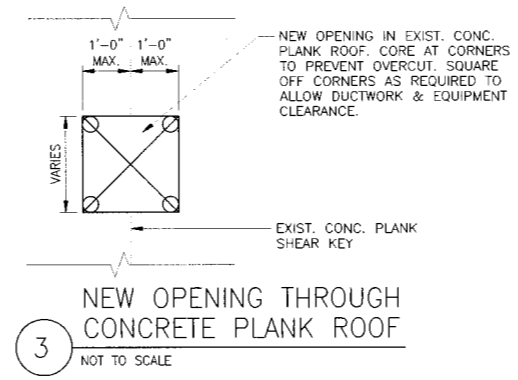
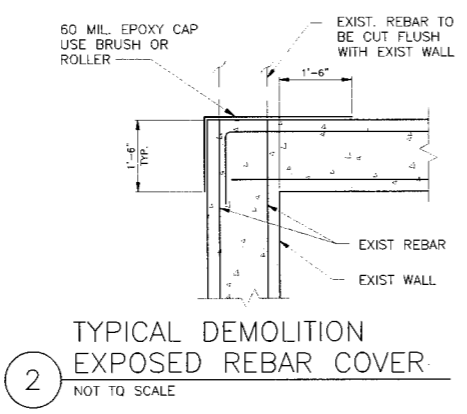
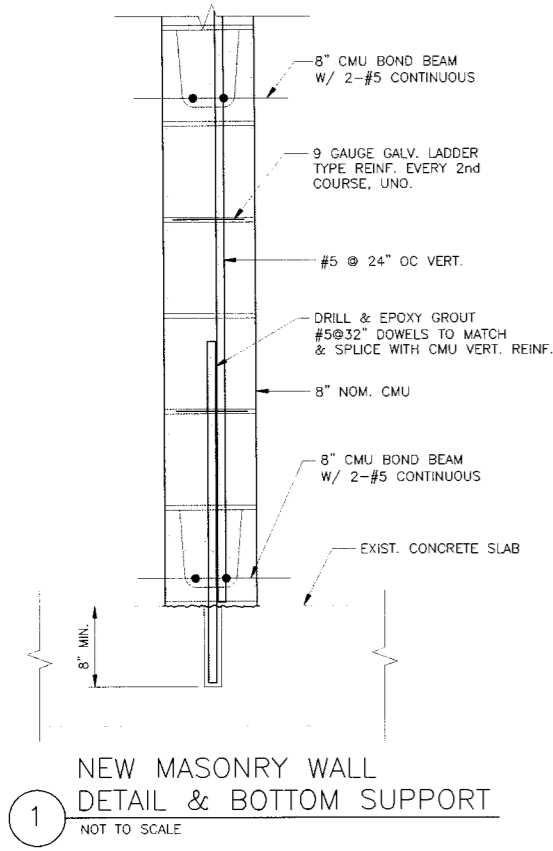
DRY	CHK BY	APP. BY
WVS	CK	RSJ

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**TYPICAL DETAILS II**

CONTRACT: 2\_2090269  
SCALE: AS NOTED  
JOB NO. 2090269

FILE NO. 189-137



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No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	P	R O V E D

REGISTERED ARCHITECT \_\_\_\_\_ DATE \_\_\_\_\_

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

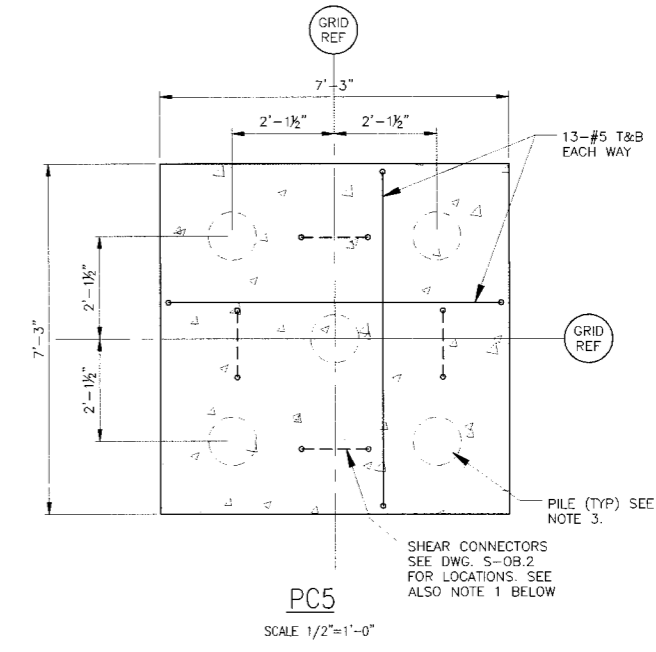
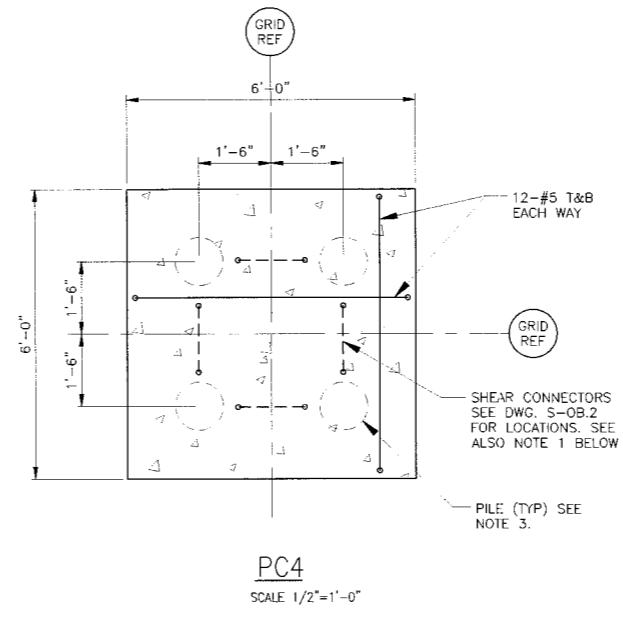
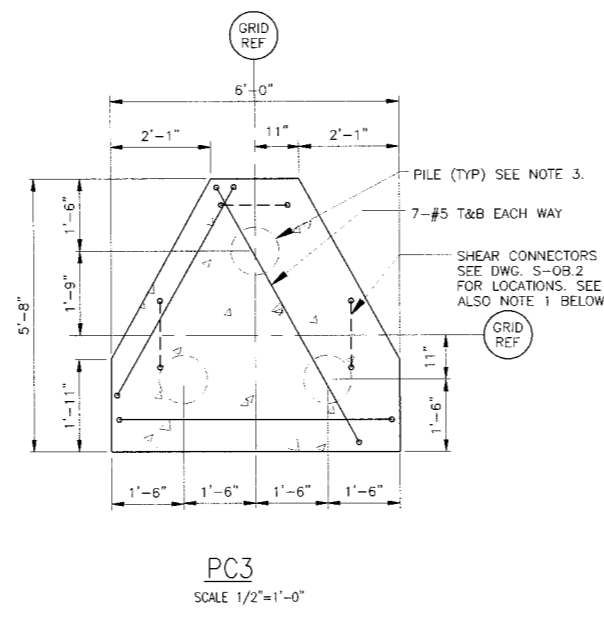
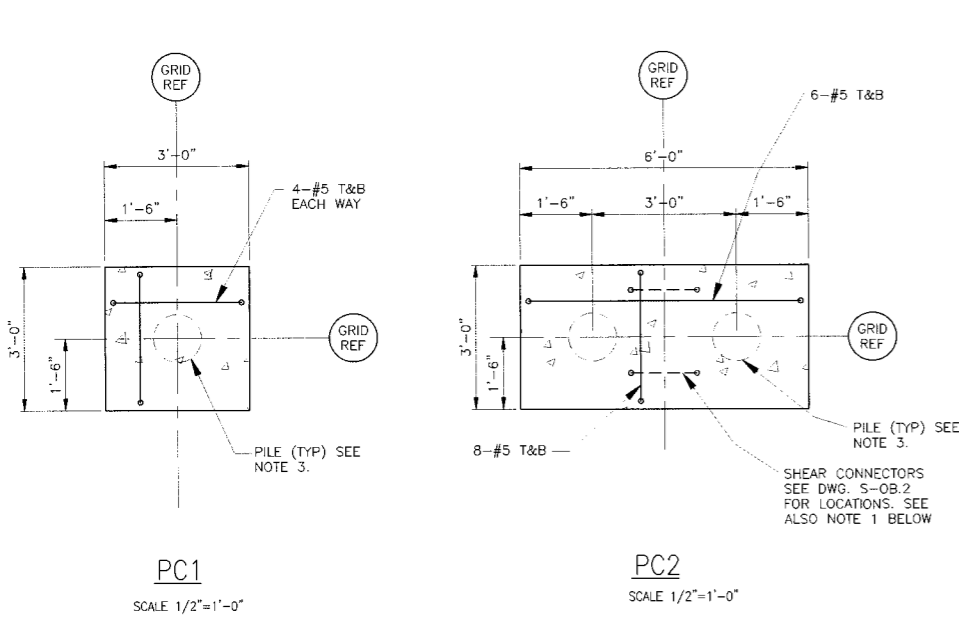
**TYPICAL DETAILS III**

CADD NO.	SCALE	CONTRACT	JOB NO.	DR BY	DSN BY	CHK BY	APP BY
189-136	AS NOTED	2	2090269	VVS	GK	RSL	

FILE NO. 189-136  
S-6  
SHEET 67 OF 202

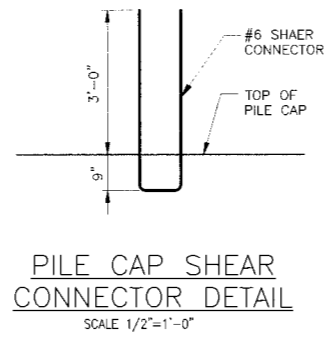
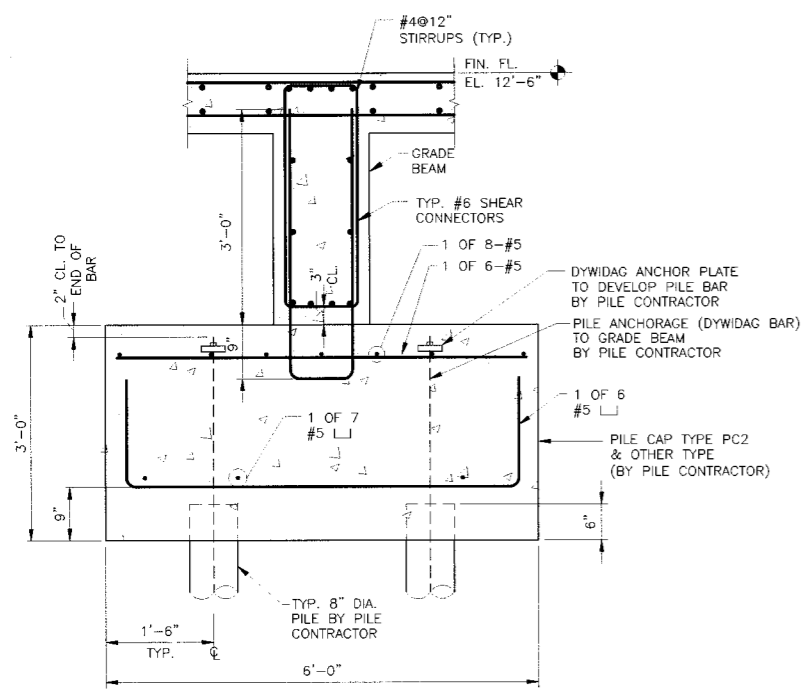
**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

E:\2009\209 Newburyport Sewer\CONTRACT\189\189-136\Drawings\W02\_S-6\_Special Details.dwg



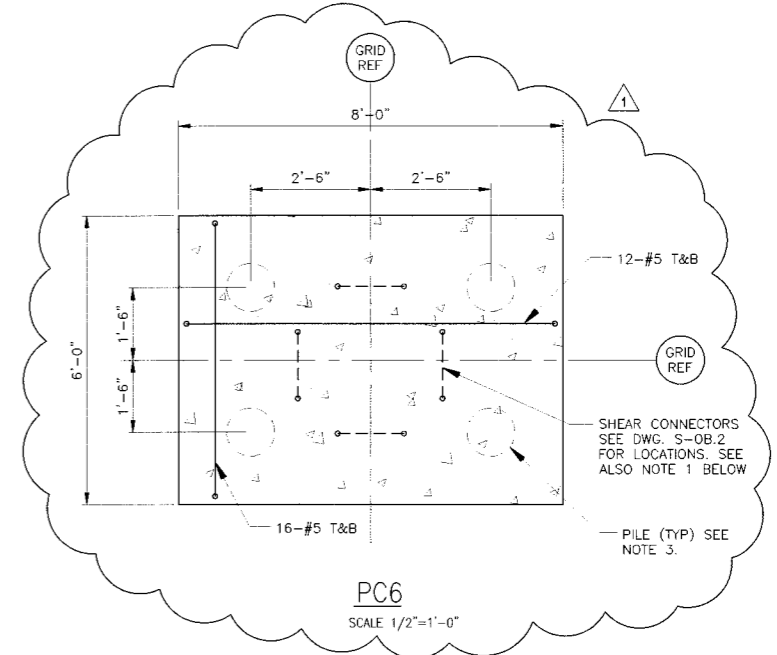
**PILE CAP DETAILS**  
SCALE 1/2"=1'-0"

- NOTES:**
1. PROVIDE #6 PIER CAP SHEAR CONNECTOR AT INTERFACE WITH GRADE BEAM. SEE DETAIL ON THIS SHEET.
  2. FOR TOP OF PILE CAP ELEVATION AND LOCATION SEE S-08.2.
  3. PILE ARE 8" DIA. 40 TON MINI PILES.



**TYPICAL PILE, PILE CAP & GRADE BEAM INTERFACE AND REINF. DETAIL**  
SCALE 3/4"=1'-0"

- NOTES:**
1. PROVIDE #6 PIER CAP SHEAR CONNECTOR AT INTERFACE WITH GRADE BEAM. SEE DETAIL ON THIS SHEET.
  2. FOR ADDITIONAL REINF. INFO. SEE S-08.3.
  3. FOR GRADE BEAM REINF. SEE SCHEDULE ON S-08.11.
  4. FOR PILE CAP TYPE DETAIL THIS SHEET.



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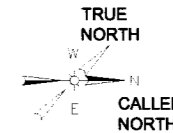
No.	Date	Dr. By	Chk. By	App. By	Description				
		A	P	P	R	O	V	E	D

REGISTERED ARCHITECT

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	CONTRACT NO. 2030269	DR. BY WVS	CHK. BY RSL	APP. BY
<b>TYPICAL DETAILS IV</b>	SCALE: AS NOTED	DATE: 2/20/09	JOB NO. 2030269	DATE

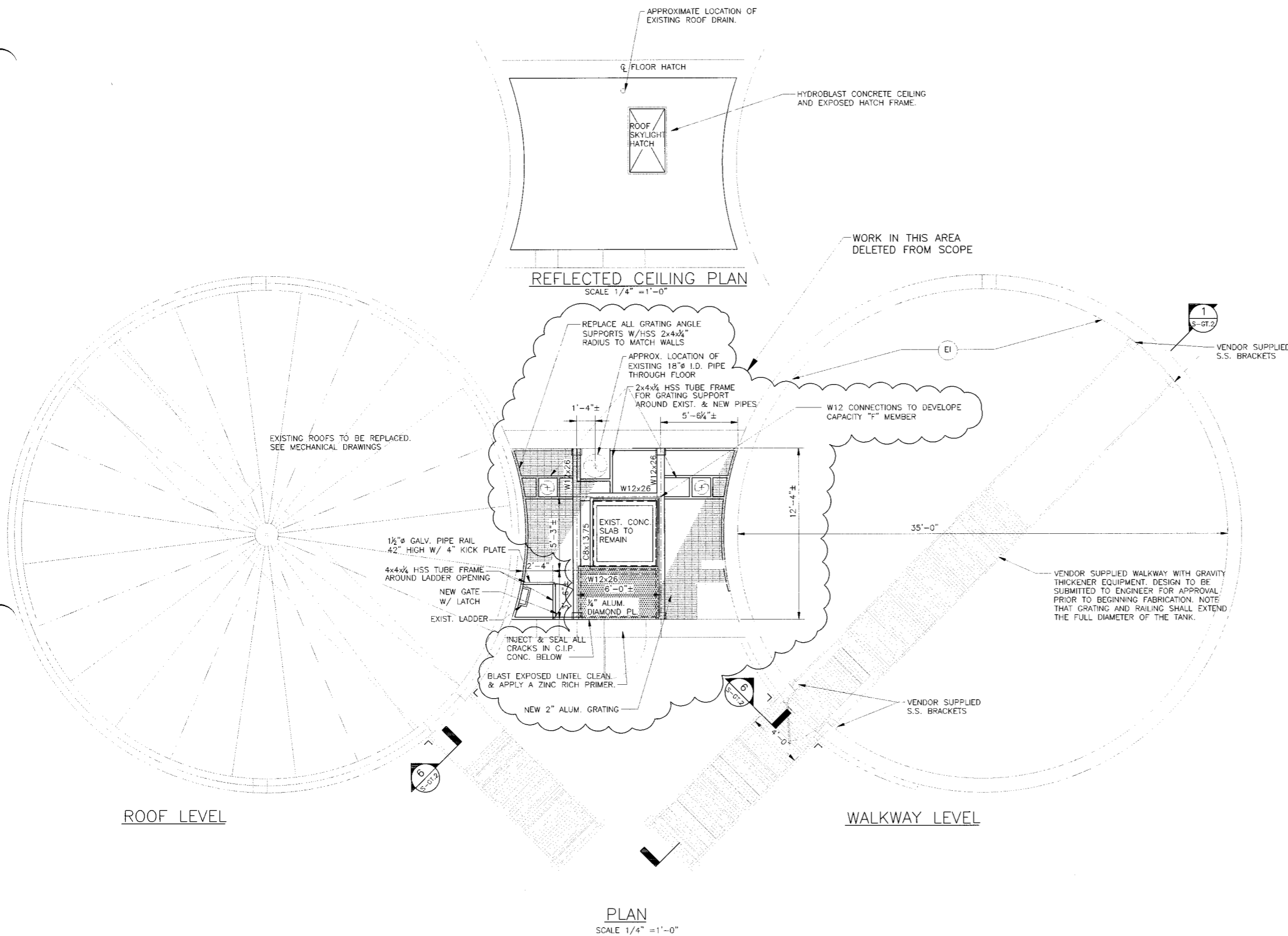
FILE NO. 189-135  
SHEET 68 OF 202

**RECORD DRAWING**  
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No.	Date	Dr. By	Chk. By	App. By	Description
		A	P	P	R O V E D

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**GRAVITY THICKENERS  
 PLANS AND REPAIR NOTES**

CONTRACT: 2090269  
 JOB NO. 2  
 SCALE: AS NOTED  
 DR. BY: EDS  
 CHK. BY: EJB  
 APP. BY: RSL

KEY	DESCRIPTION OF WORKS	WALL	BASE SLAB	FLOOR SLAB	TOTAL QUANTITY	UNITS	COMMENTS
HL	HYDROBLAST CLEANING (SLIGHTLY ETCH SURFACE)	4700*	1100*	-	11600	SF.	
HM	HYDROBLAST REMOVAL TO 3/16" DEEP	-	-	-	-	SF.	
HR	HYDROBLAST TO REMOVE ELEMENT	-	-	-	-	SF.	
PF	POLYMER FILL OF BUG HOLES AND SHALLOW POPOUTS	480*	-	-	960	SF.	
PS	POLYMER REPAIRS UP TO 1 1/2" DEEP	40*	-	-	80	SF.	
PD	POLYMER REPAIRS OVER 1 1/2" DEEP	10*	-	-	20	SF.	
L	INSTALLED LINER	-	-	-	-	SF.	
EF	EPOXY CRACKS FINGER-SEALING LESS THAN 10 MILS.	120*	-	-	240	L.F.	
CI	CORROSION INHIBITOR COATING	4700*	1100*	-	11600	SF.	
EI	EPOXY CRACK INJECTION 10 TO 60 MILS.	100@14"	-	-	200	L.F.	
UI	URETHANE CRACK INJECTION	-	-	-	-	L.F.	
SJ	CRACK REPAIR VIA NEW SEALED JOINT UP TO 3/4"	-	-	-	-	L.F.	
EJ	NEW EXPANSION JOINT	-	-	-	-	L.F.	

**NOTES:**

GENERAL CONTRACTOR TO REVIEW EXISTING CONDITIONS. ANY UNUSUAL CONDITIONS THAT MAY ADVERSELY AFFECT THE WORK SHALL BE REPORTED TO THE ENGINEER. BEGINNING WORK SHALL CONSTITUTE ACCEPTANCE OF UNDERLYING CONDITIONS. WORK SHOWN ON ONE TANK SHALL INFER THAT SAME WORK IS REQUIRED ON THE OTHER TANK, UNO.

HYDROBLAST BOTH TANK AREAS PRIOR TO BEGINNING REPAIR WORK. HYDROBLAST DOES NOT HAVE TO TOTALLY REMOVE EXISTING LINER.

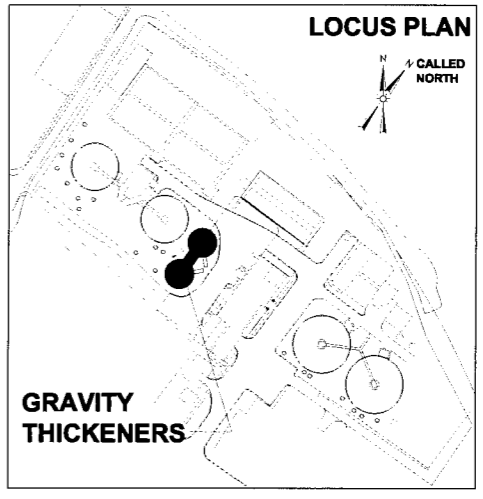
ALL REQUIREMENTS APPLY TO BOTH TANKS.

REPAIR TABLE:  
 LISTED QUANTITY INDICATES SPECIFIC WORK TO BE PERFORMED FOR THIS STRUCTURE. A QUANTITY LISTING OF ZERO INDICATES THAT NO SCHEDULED WORK OF THIS TYPE IS REQUIRED.

ELEVATIONS SHOWN ON THIS DRAWING CONFORM TO MSLNOVD STANDARD. TO CONVERT TO NAVD 88, SUBTRACT 100.50' FROM ELEVATIONS GIVEN HERE.

ALL STEEL FABRICATIONS SHALL BE H.D. GALVANIZED AFTER FABRICATION. U.O. FIELD WELDED CONNECTIONS SHALL BE PRIMED WITH A ZINC RICH PRIMER.

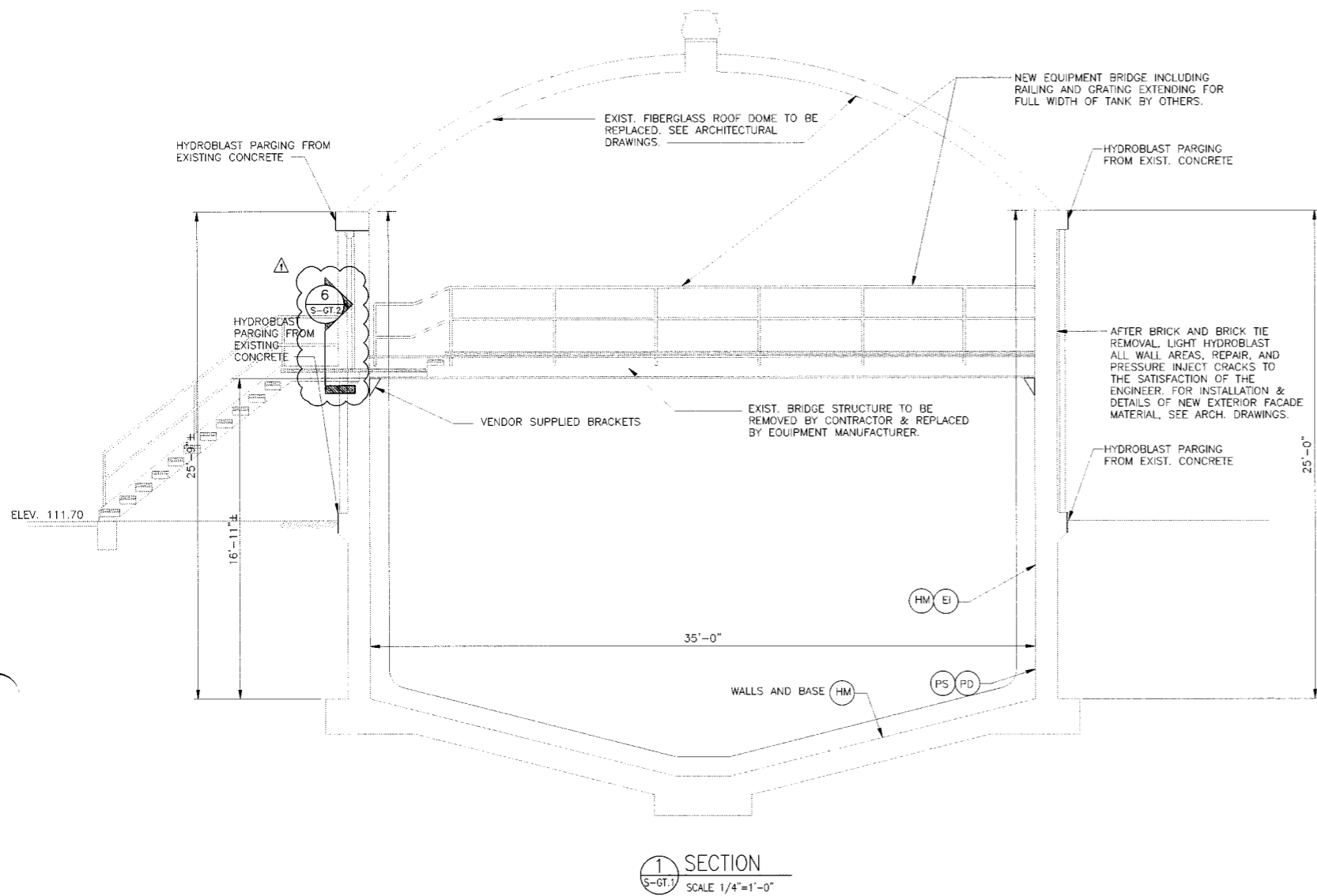
NEW STRUCTURAL INTERSECTION CONNECTIONS TO BE DEVELOPED TO THE CAPACITY OF THE W BEAMS AND HSS TUBES, EITHER WELDED OR BOLTED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.



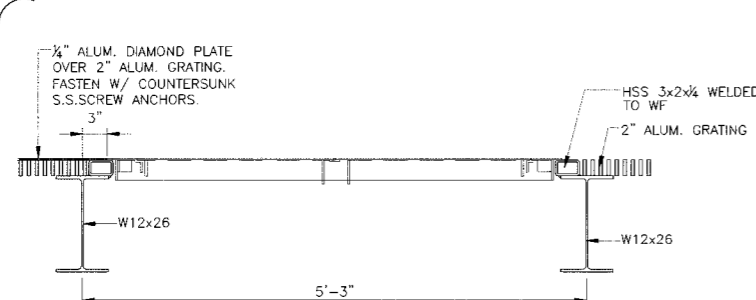
**RECORD DRAWING**  
 THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

\* PER TANK (2 TANKS)

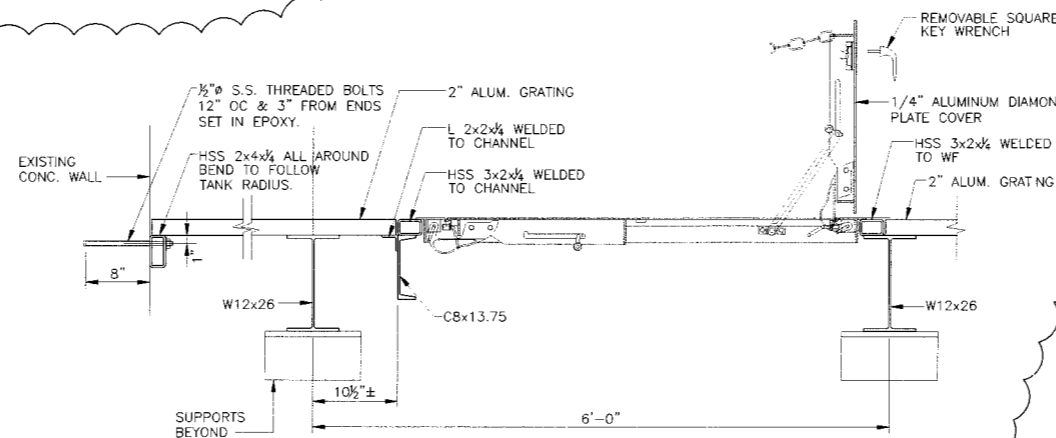
E:\2020\2020 Newburyport WTP\CONTRACT\AS\2020\Newburyport WTP\Drawings\05 Sections and Details



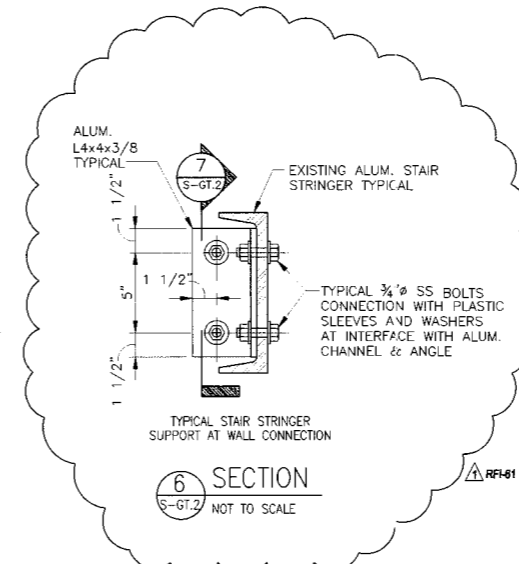
1 SECTION  
S-GT.1 SCALE 1/4"=1'-0"



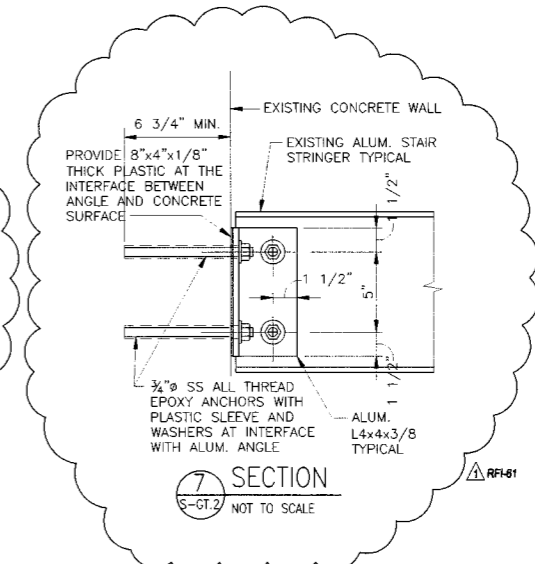
2 DETAIL  
S-GT.1 NOT TO SCALE



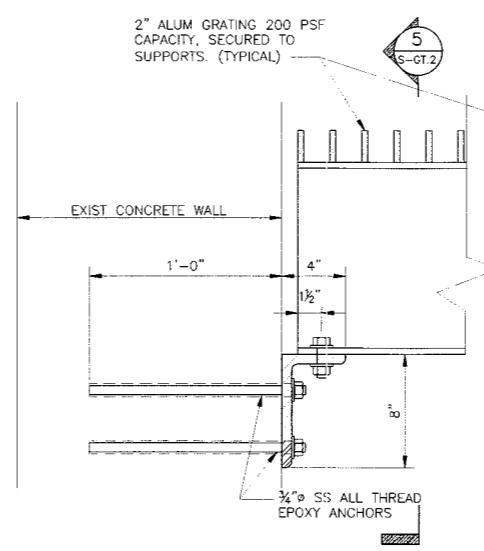
3 DETAIL  
S-GT.1 NOT TO SCALE



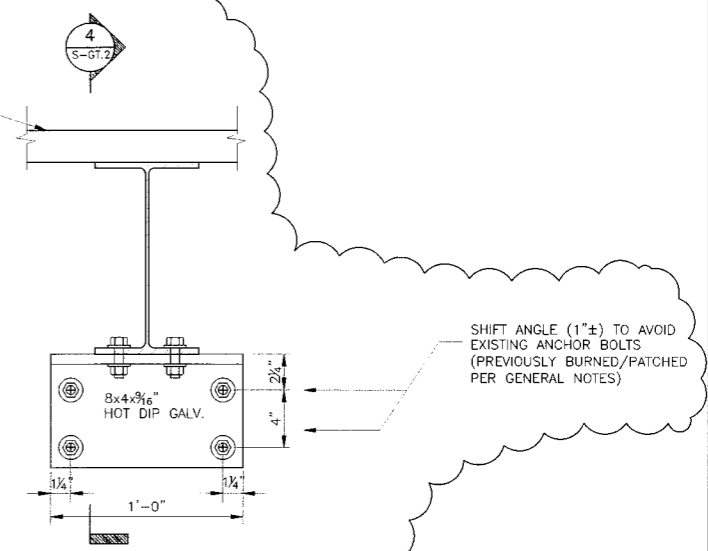
6 SECTION  
S-GT.2 NOT TO SCALE



7 SECTION  
S-GT.2 NOT TO SCALE



4 SECTION  
S-GT.1 NOT TO SCALE



5 SECTION  
S-GT.1 NOT TO SCALE

NOTE:  
ELEVATIONS SHOWN ON THIS DRAWING CONFORM TO MSL STANDARD. TO CONVERT TO NAVD 88, SUBTRACT 100.50' FROM ELEVATIONS GIVEN HERE.

WORK IN THIS AREA DELETED FROM SCOPE

No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	R	O
		P	P	O	V
					E
					D

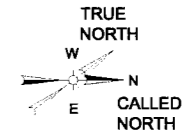
REGISTERED ARCHITECT \_\_\_\_\_ DATE \_\_\_\_\_

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**GRAVITY THICKENERS SECTIONS AND DETAILS**

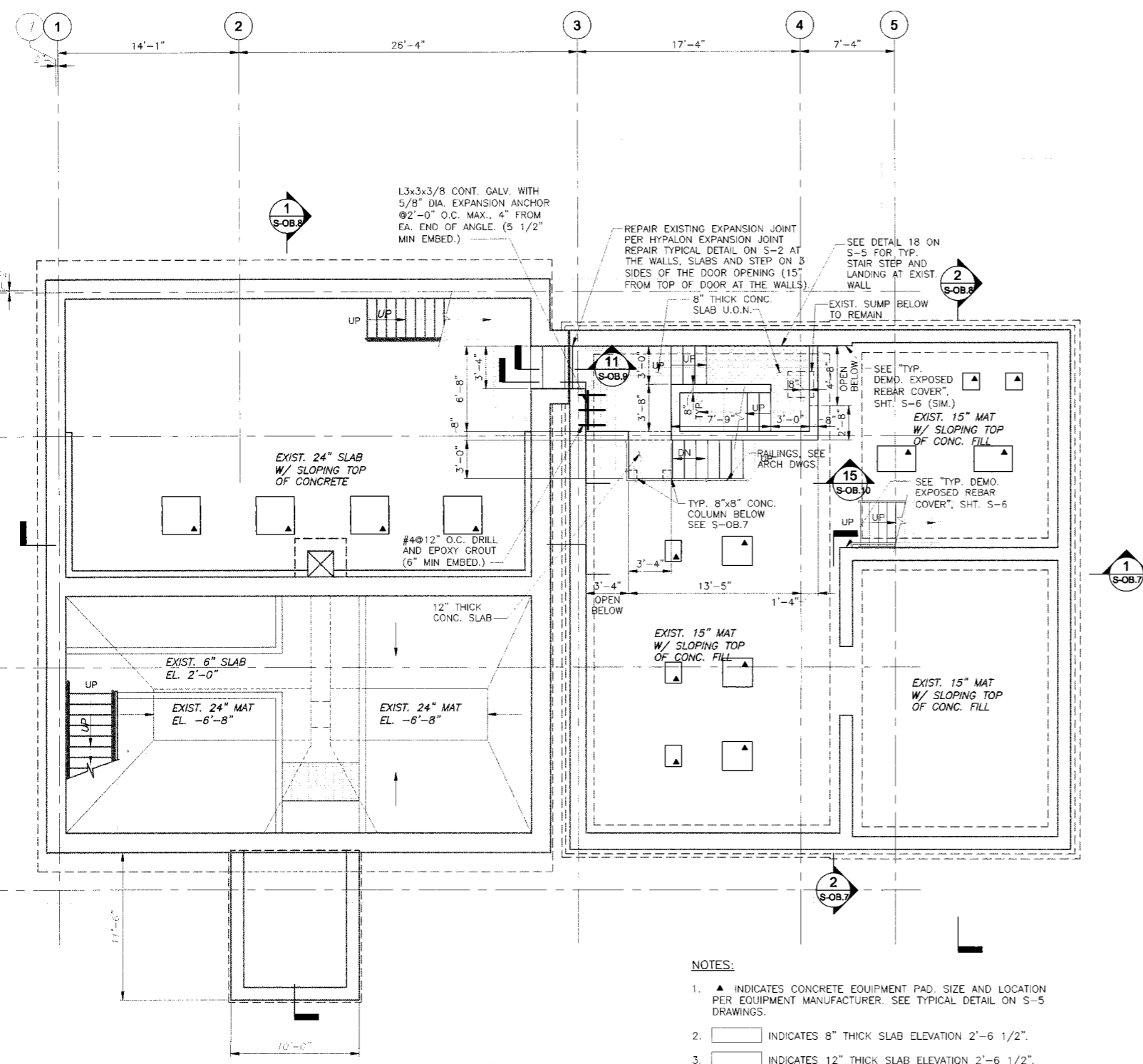
SCALE: AS NOTED  
CONTRACT: 2090269  
JOB NO. 2090269  
CADD NO. 189-133  
DR. BY: EDS  
CHK. BY: EJB  
APP. BY: RSL





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**BASEMENT PLAN**  
SCALE 3/16"=1'-0"

- NOTES:**
- ▲ INDICATES CONCRETE EQUIPMENT PAD. SIZE AND LOCATION PER EQUIPMENT MANUFACTURER. SEE TYPICAL DETAIL ON S-5 DRAWINGS.
  - ▭ INDICATES 8" THICK SLAB ELEVATION 2'-6 1/2".
  - ▭ INDICATES 12" THICK SLAB ELEVATION 2'-6 1/2".
  - ▭ INDICATES 8" THICK SLAB ELEVATION 5'-5".
  - COORDINATE SLAB ELEVATION WITH ARCHITECTURAL DRAWING AND EXISTING ELEVATION.
  - VERIFY IN FIELD DIMENSION AND ELEVATION FOR THE PROPOSED STRUCTURE.
  - VERIFY IN FIELD DIMENSION FOR EXISTING CONDITION BASED ON EXISTING DRAWING INFORMATION NOTED ON GENERAL NOTES AS ON DRAWING S-1.

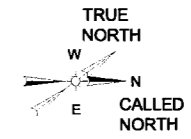
No.	Date	Dr. By	App. By	Description

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	
<b>OPERATIONS BUILDING BASEMENT PLAN</b>	
CADD NO. 189-131	CONTRACT: 2
SCALE: AS NOTED	DRBY: WVS
	DSNBY: GK
	CHK BY: RSL
	APP BY:

**S-OB.1**  
FILE NO. 189-131

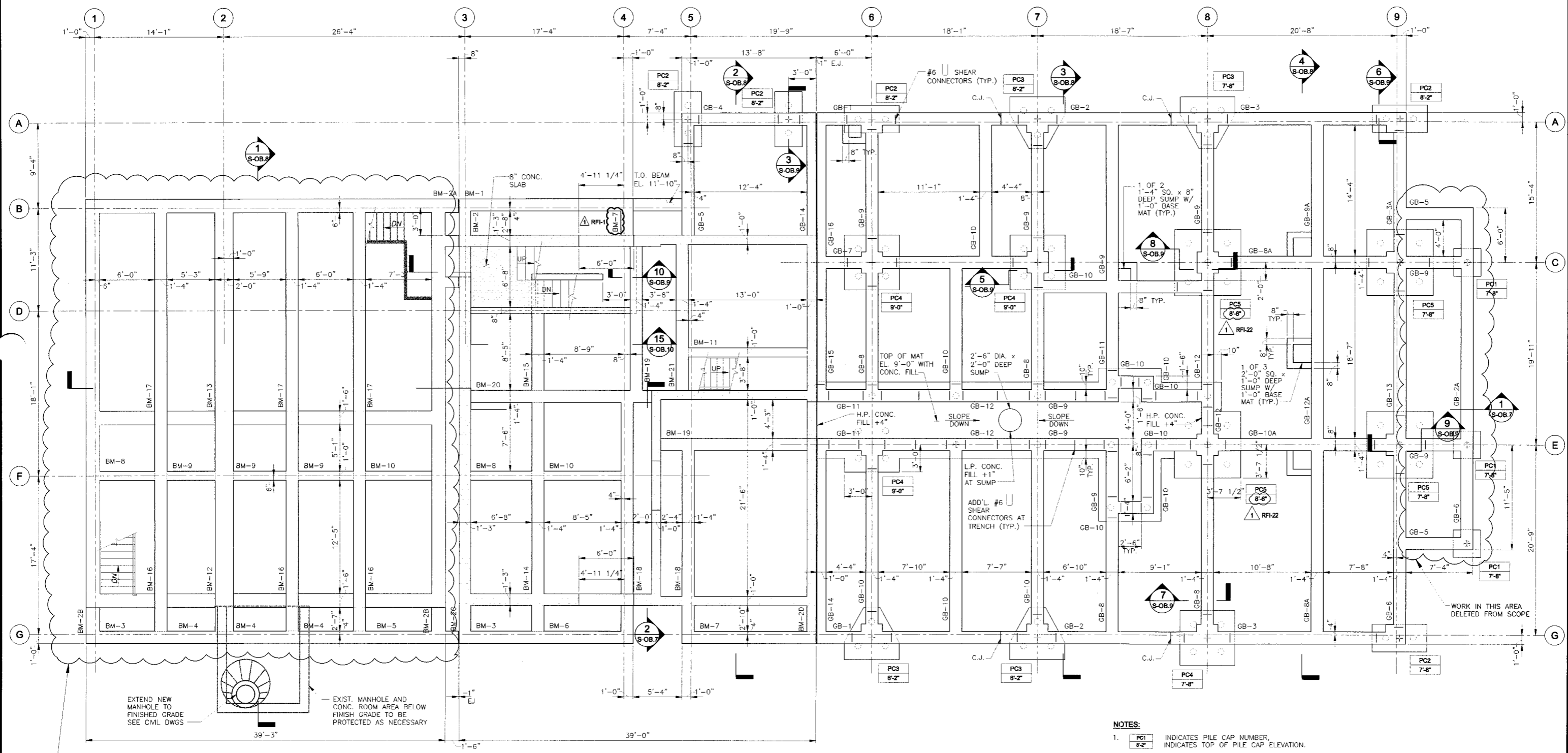
**RECORD DRAWING**  
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**GRADE BEAM AND FOUNDATION PLAN**  
SCALE 3/16"=1'-0"

- NOTES:**
- PC# INDICATES PILE CAP NUMBER, #C# INDICATES TOP OF PILE CAP ELEVATION.
  - FOR PILE CAP DETAILS SEE DWG S-OB.9.
  - Ø DENOTES 8" DIA. 40 TON PILE.
  - FOR GRADE BEAM SIZE & REINFORCING, SEE GRADE BEAM SCHEDULE ON DWG S-OB.11.
  - INDICATES SAWCUT EXISTING WALL AT EL. 8'-6"
  - INDICATES SAWCUT EXISTING WALL AT EL. 8'-3"
  - INDICATES SAWCUT EXISTING WALL AT EL. 6'-6"
  - INDICATES SLAB ELEVATION 10'-2 1/2".

AREA "A" EXISTING SLAB REMAINED AND NEW CONCRETE SLAB AND GRADE BEAM ABOVE REDESIGNED BY STV, INC. REFER TO STV, INC. DRAWINGS IN APPENDIX B OF VOLUME II OF RECORD DRAWINGS FOR DETAILS.

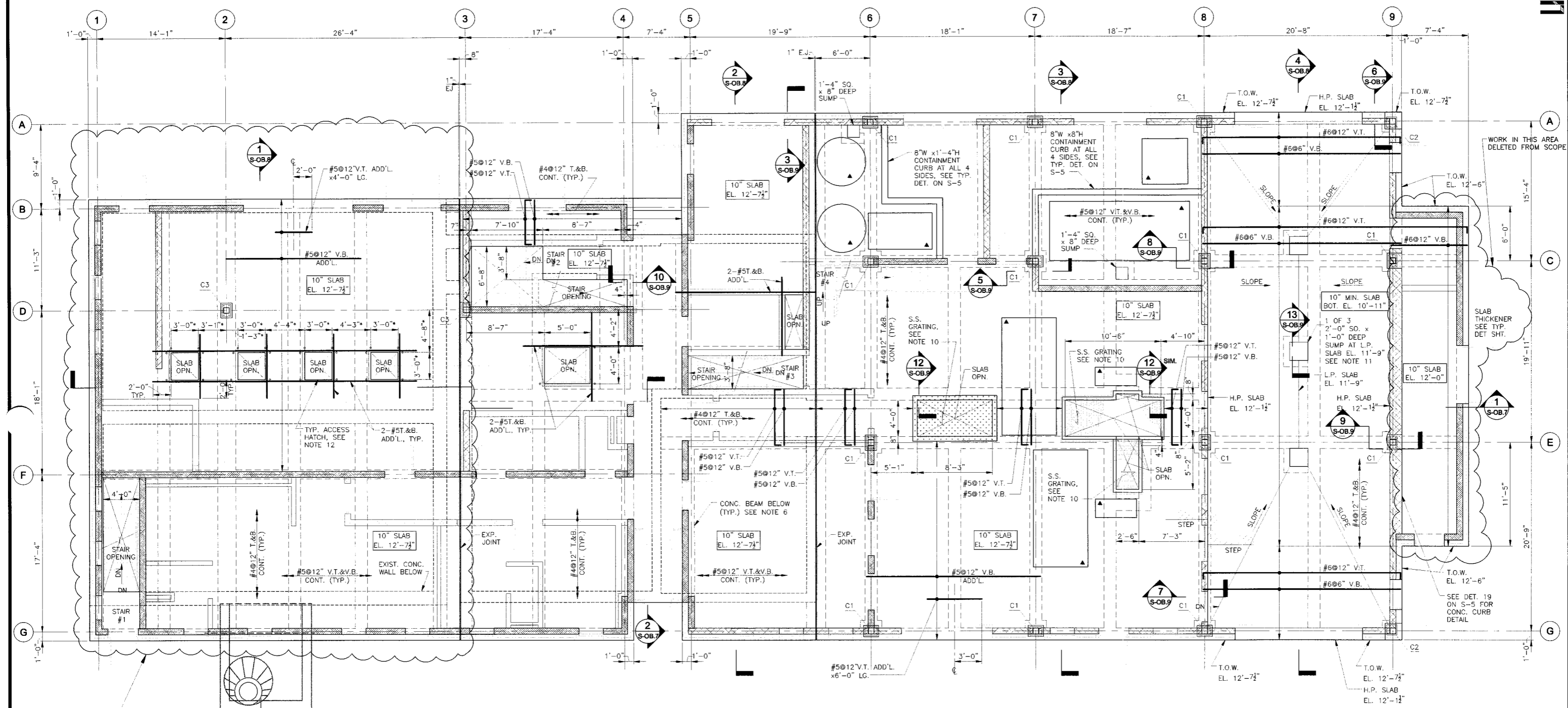
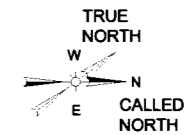
EXTEND NEW MANHOLE TO FINISHED GRADE SEE CIVIL DWGS  
EXIST. MANHOLE AND CONC. ROOM AREA BELOW FINISH GRADE TO BE PROTECTED AS NECESSARY

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	R	O
		V	E	D	

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING GRADE BEAM AND FOUNDATION PLANS**  
SCALE: AS NOTED  
CONTRACT: 2090269  
JOB NO. 2  
DR. BY: WVS  
CHK. BY: RSL  
FILE NO. 189-130

**S-OB.2**  
SHEET 73 OF 202



**FIRST FLOOR PLAN**  
 SCALE 3/16"=1'-0"

**NOTES:**

- ▲ INDICATES CONCRETE EQUIPMENT PAD. SIZE AND LOCATION PER EQUIPMENT MANUFACTURER. SEE TYPICAL DETAIL ON S-5 DRAWINGS.
- ▨ INDICATES TYPICAL 1/4" THICK SEALED T304 S.S. DIAMOND PL. ON 4" HIGH S.S. GRATING.
- ▩ INDICATES CMU PARTITION WALL.
- ▧ INDICATES CMU SHEAR WALL.
- ▦ INDICATES CMU BEARING & SHEAR WALL.
- FOR COLUMN SCHEDULE SEE S-08.11.
- COORDINATE LOCATION OF WALLS, SLAB OPENINGS AND SLOPES WITH ARCHITECTURAL DRAWINGS.
- TOP OF WALL EL. 12'-6" U.N.O.
- COORDINATE CONTAINMENT CURBS WITH MECH. DWGS.
- ← INDICATED TYP. SPAN FOR 4" HIGH HEAVY DUTY 316 S.S. GRATING FOR H2O TRUCK LOADING.
- PROVIDE 3" HIGH HEAVY DUTY 316 S.S. GRATING FOR H2O TRUCK LOADING.

**CONTINUE:**

- PROVIDE ALUMINUM ACCESS HATCH, SEE ARCH. DWGS. FOR DETAILS.
- \* INDICATES DIMENSIONS TO BE COORDINATED WITH MECH. DWGS.
- SPACE SLAB ADDITIONAL REINFORCING IN BETWEEN MAIN REINFORCING.
- FOR SLAB REINFORCING DETAIL DIAGRAM SEE SHEET S-08.11.
- COORDINATE WALL LOCATION WITH CONCRETE BEAM SUPPORT ON DRAWING S-08.2.

AREA "A" EXISTING SLAB REMAINED AND NEW CONCRETE SLAB AND GRADE BEAM ABOVE REDESIGNED BY STV, INC. REFER TO STV, INC. DRAWINGS IN APPENDIX B OF VOLUME II OF RECORD DRAWINGS FOR DETAILS.

WORK IN THIS AREA DELETED FROM SCOPE

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING**  
**FIRST FLOOR PLAN**

**S-08.3**

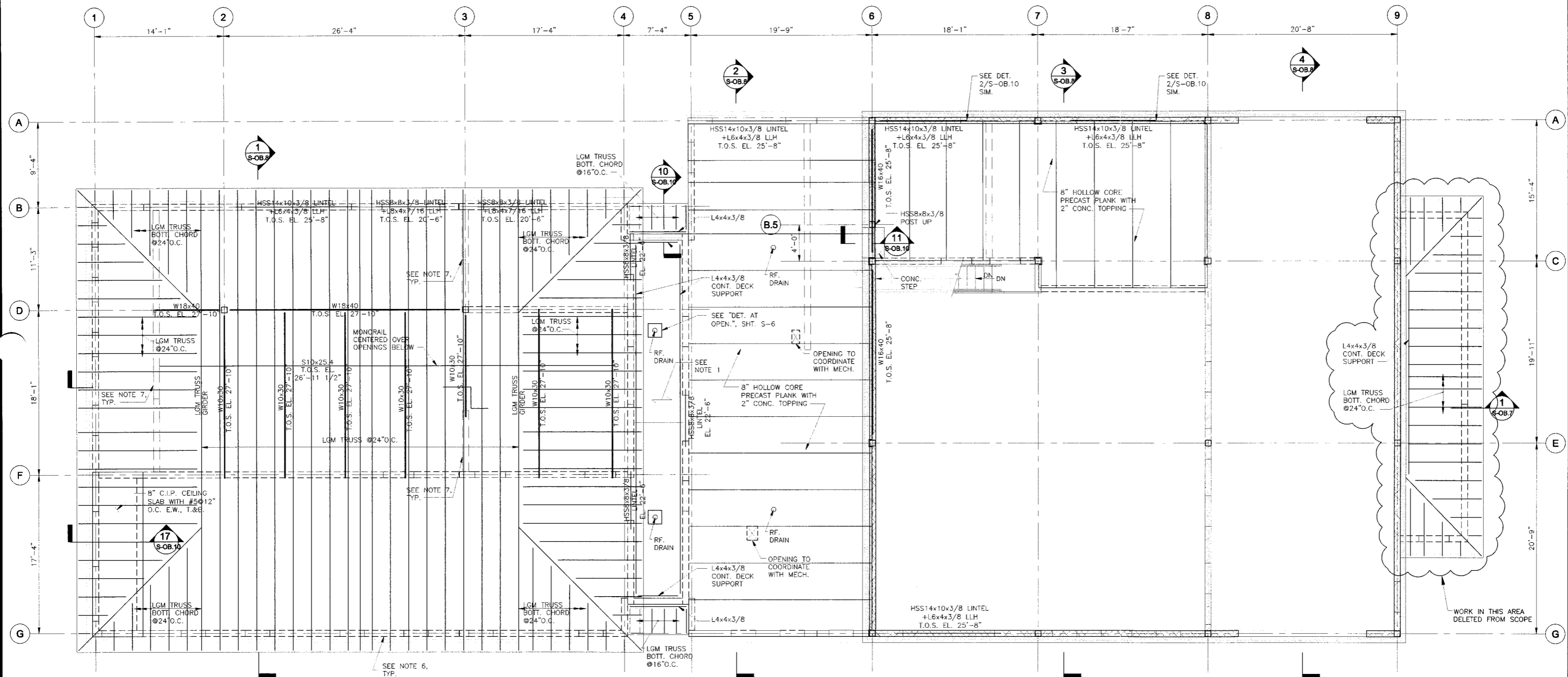
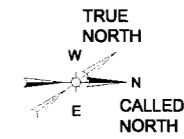
**RECORD DRAWING**  
 THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

No.	Date	Dr. By	Chk. By	App. By	Description

CADD NO. 189-129  
 SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2090269  
 DRBY: VVS  
 DSNBY: RSL  
 CHKBY: RSL  
 APPBY: RSL

REGISTERED ARCHITECT  
 DATE:

E:\2009\2090269 - Newburyport WWP\CONTRACT\ESTIM\As-Built Drawings\209 S-08.3 First Floor Plan.dwg



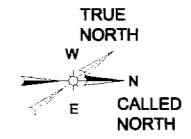
**TRUSS BOTTOM CHORD AND MEZZANINE PLANS**  
SCALE 3/16"=1'-0"

- NOTES:**
- INDICATES TYPICAL SPAN OF 3" METAL DECK TYPE NI 18 GA.
  - L.G.M. TRUSS MANUFACTURER TO DESIGN AND PROVIDE L.G. HORIZONTAL BRACING AT L.G. TRUSS BOTTOM CHORD TO BRACE THE TOP OF BEARING WALLS AND TO TRANSFER LATERAL LOAD TO BEARING WALLS AND SHEAR WALLS INDICATED ON S-OB.3.
  - L.G.M. TRUSS MANUFACTURER TO DESIGN TRUSS BOTTOM CHORD WITH MEP/CEILING LOADING OF 15 PSF.
  - \* INDICATES DIMENSIONS TO BE COORDINATED WITH MECH. DWGS.
  - INDICATES CMU SHEAR WALL.
  - INDICATES CMU BEARING AND SHEAR WALL BELOW.
  - INDICATES CMU SHEAR BELOW.

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

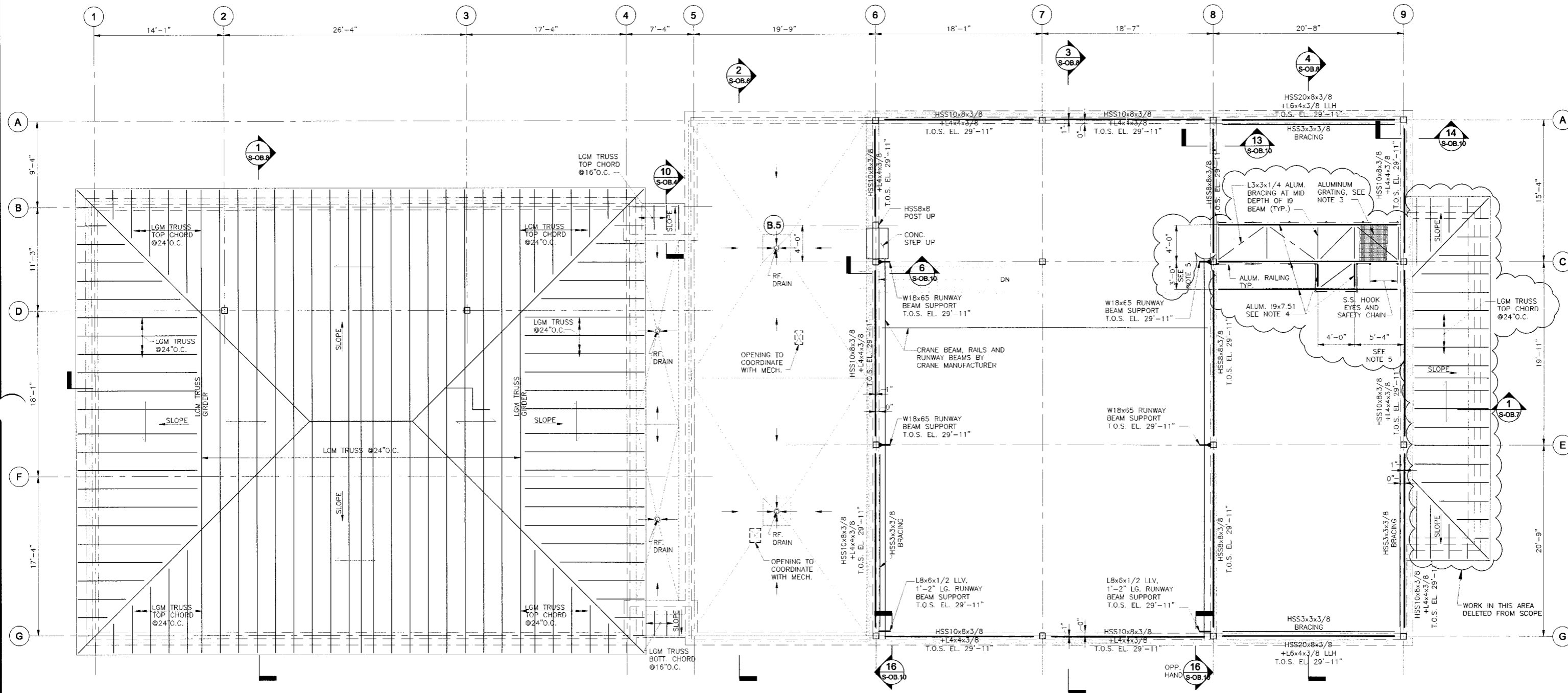
No.	Date	Dr. By	Ck. By	App. By	Description

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**TRUSS BOTTOM CHORD AND MEZZANINE PLANS**  
SCALE: AS NOTED  
JOB NO. 2090269  
CONTRACT: 2  
CADD NO. 189-128  
DR. BY: VVS  
CHK. BY: RSL  
DES. BY: VVS  
APP. BY: RSL



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CONSULTING ENGINEERS

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TRUSS TOP CHORD AND CLERESTORY PLANS  
SCALE 3/16"=1'-0"

NOTES:

- INDICATES MOMENT CONNECTION.
- INDICATES TYPICAL SPAN OF 1 1/2" METAL DECK TYPE B 18GA.
- INDICATED 1 1/4x3/16 ALUM. GRATING WITH BEARING BARS AT 1 3/16" O.C., CROSS BRACING @ 4". TOP SURFACE SHALL BE FINISH WITH MILL FINISH. PROVIDE BAR AT EXPOSED EDGES.
- PROVIDE S.S. BOLT CONNECTIONS AT ALUM. CATWALK FRAMING.
- DELETED.
- L.G.M. TRUSS MANUFACTURER TO DESIGN TRUSS TOP CHORD WITH SHEATH/ROOFING LOADING OF 10 PSF AND SNOW LOAD PER MASS. CODE 8TH EDITION.

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

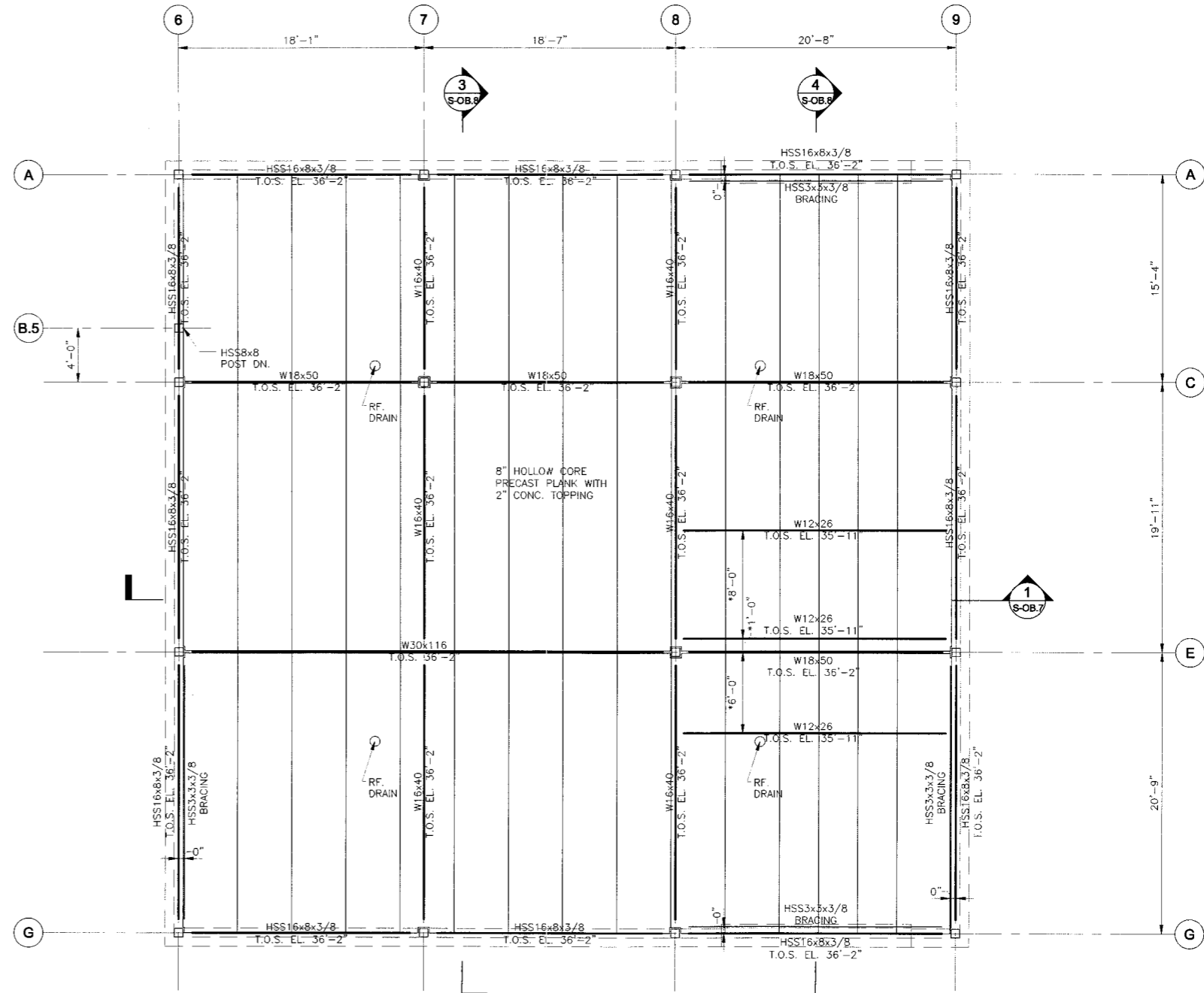
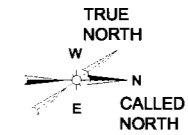
No.	Date	Dr. By	Ck. By	App. By	Description
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P					
R					
O					
V					
E					
D					

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	
<b>TRUSS TOP CHORD AND CLERESTORY PLANS</b>	
SCALE: AS NOTED	CONTRACT: 2090269
CADD NO. 189-127	DR. BY: WVS
	CHK. BY: RSL
	APP. BY: _____
	DATE: _____

**S-OB.5**  
FILE NO. 189-127  
SHEET 76 OF 202

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**HIGH ROOF FRAMING PLAN**  
SCALE 3/16"=1'-0"

**NOTE:**

- 1. \* INDICATES DIMENSION TO BE COORDINATED WITH SCREW CONVEYOR SUPPORT LOCATIONS.

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

No.	Date	Dr. By	A	Dr. By	Ck. By	App. By	Description
							V E D
							R O D
							P P D

DATE

REGISTERED ARCHITECT

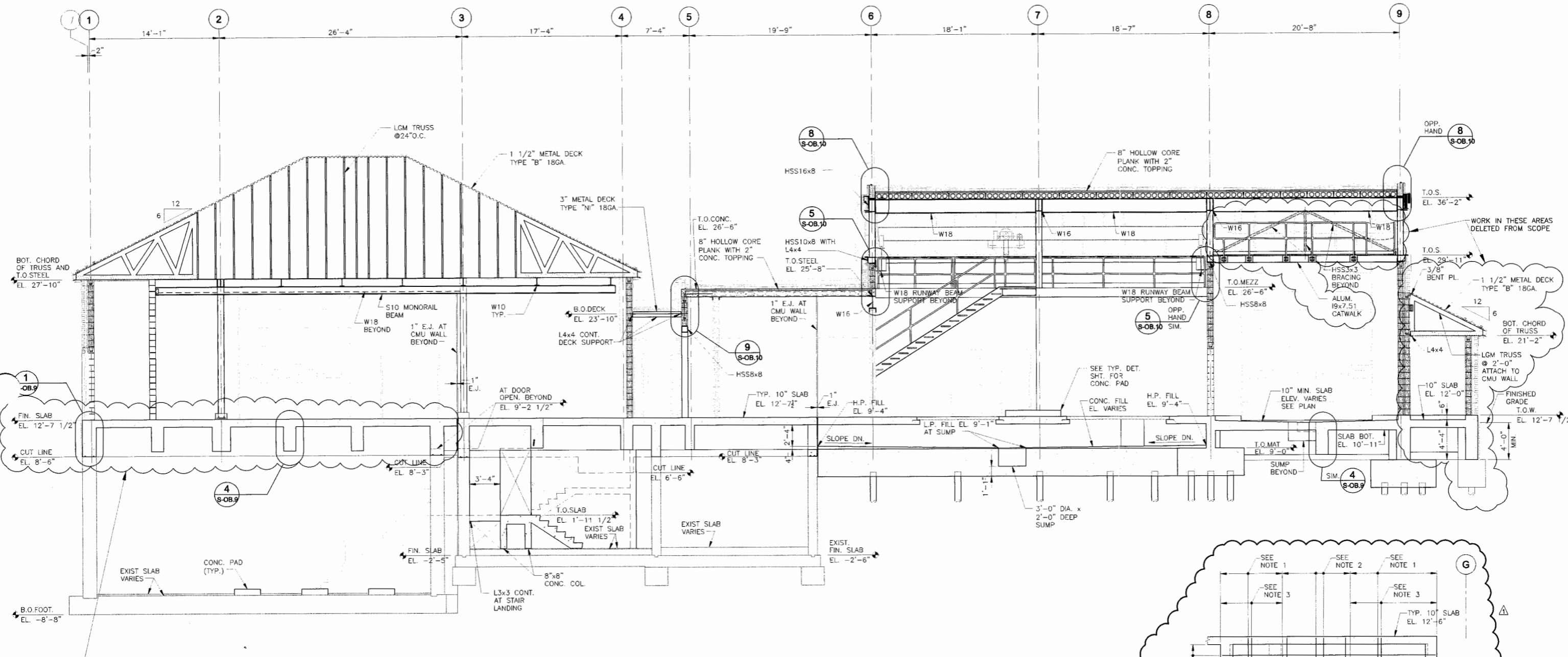
CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**OPERATIONS BUILDING  
HIGH ROOF FRAMING PLAN**

FILE NO.	189-126
CADD NO.	
SCALE	AS NOTED
CONTRACT	2
JOB NO.	2090269
DRY BY	VVS
DSN BY	GK
CHK BY	RSL
APP BY	

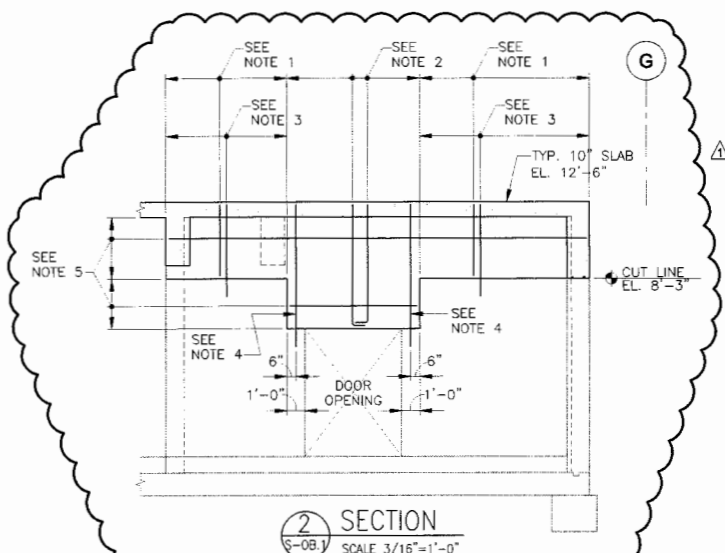
**S-OB.6**

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AREA "A" EXISTING SLAB REMAINED AND NEW CONCRETE SLAB AND GRADE BEAM ABOVE REDESIGNED BY STV, INC. REFER TO STV, INC. DRAWINGS IN APPENDIX B OF VOLUME 1 OF RECORD DRAWINGS FOR DETAILS.

**1 SECTION**  
SCALE 3/16"=1'-0"



- 2 SECTION**  
SCALE 3/16"=1'-0"
- WALL REINF. NOTES:**
- #7@9" VERT. E.F.
  - #4@9" VERT. E.F. WITH STD. HOOK END.
  - #7@9" VERT. DOWELS DRILL & EPOXY GROUT AT THE CENTER OF THE WALL AND STAGGERED 4 1/2" OF THE MAIN VERT. REINF.
  - 1-1/2" VERT. DOWELS DRILL & EPOXY GROUT AT THE CENTER OF THE WALL.
  - #7@9" HORIZ. E.F.

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

No.	Date	Dr. By	Ck. By	App. By	Description

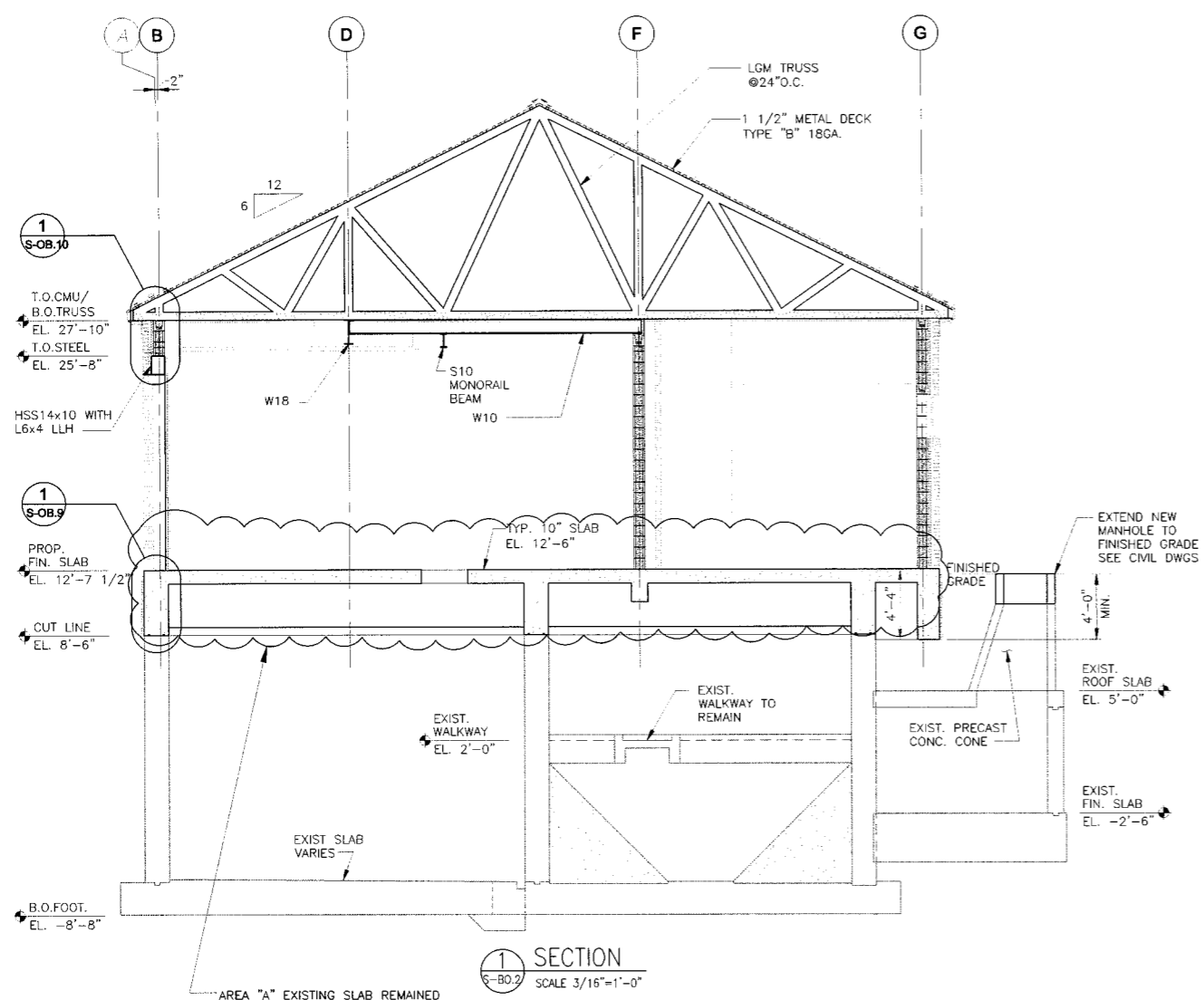
REGISTERED ARCHITECT  
DATE

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	OPERATIONS BUILDING SECTIONS AND DETAILS I
SCALE: AS NOTED	CONTRACT: 2
CADD NO. 189-125	JOB NO. 2090269
	DR. BY: [ ]
	CHK. BY: [ ]
	APP. BY: [ ]

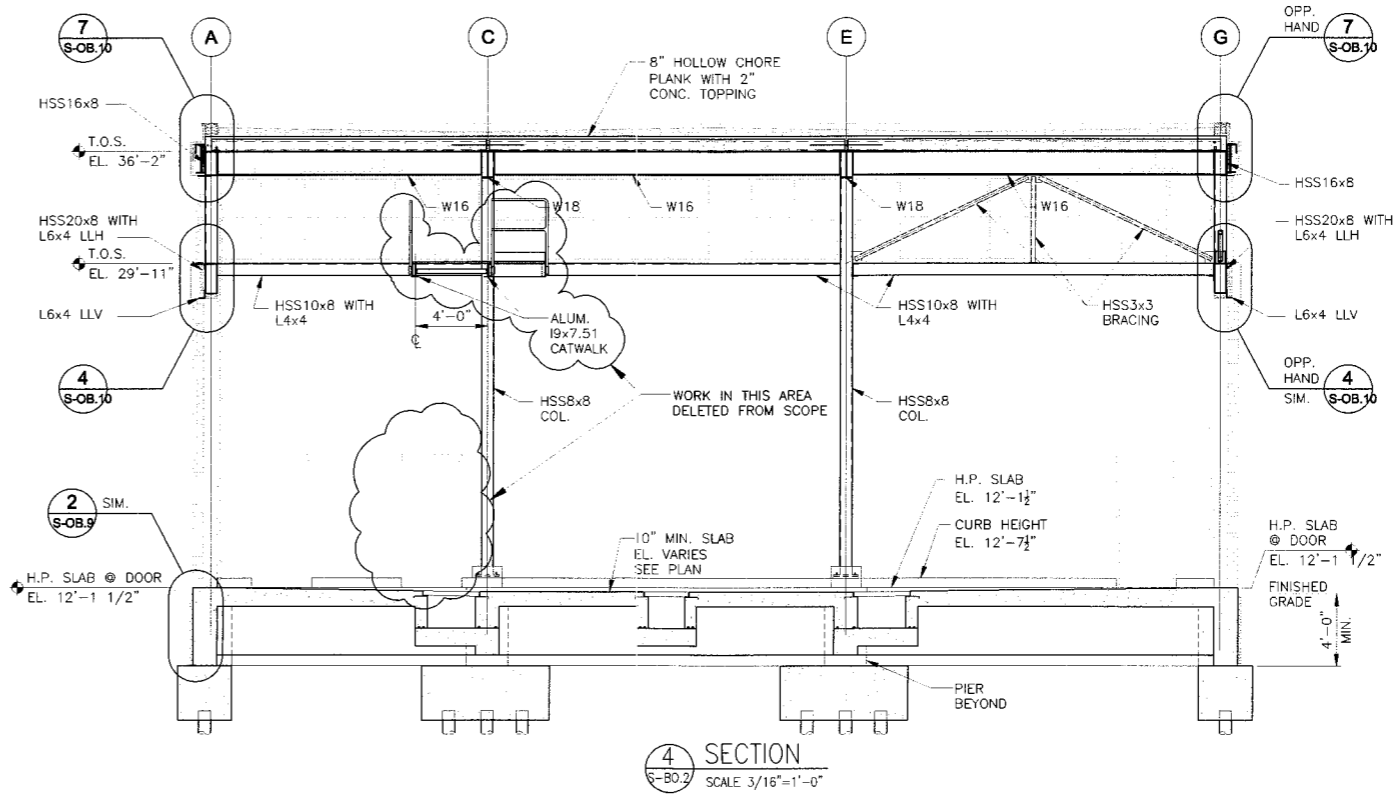
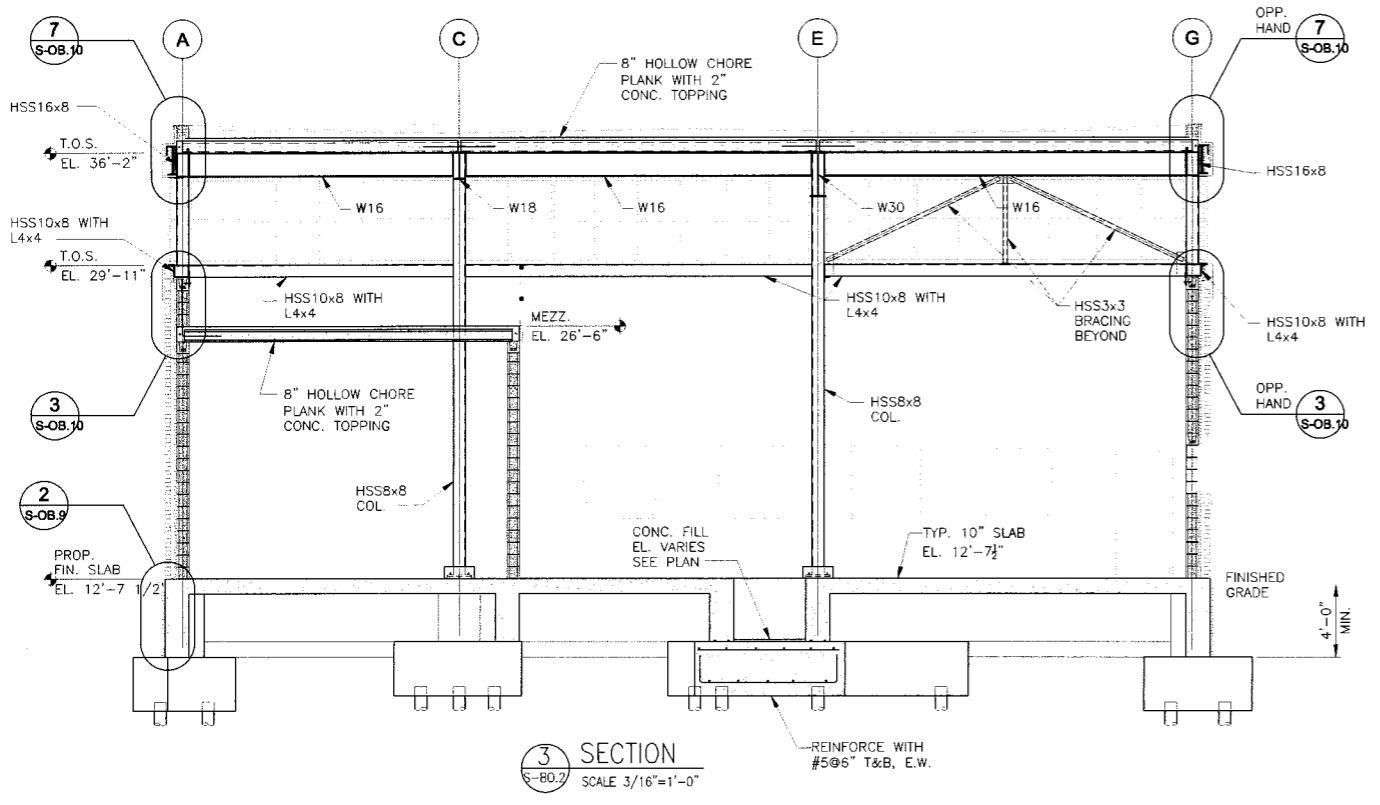
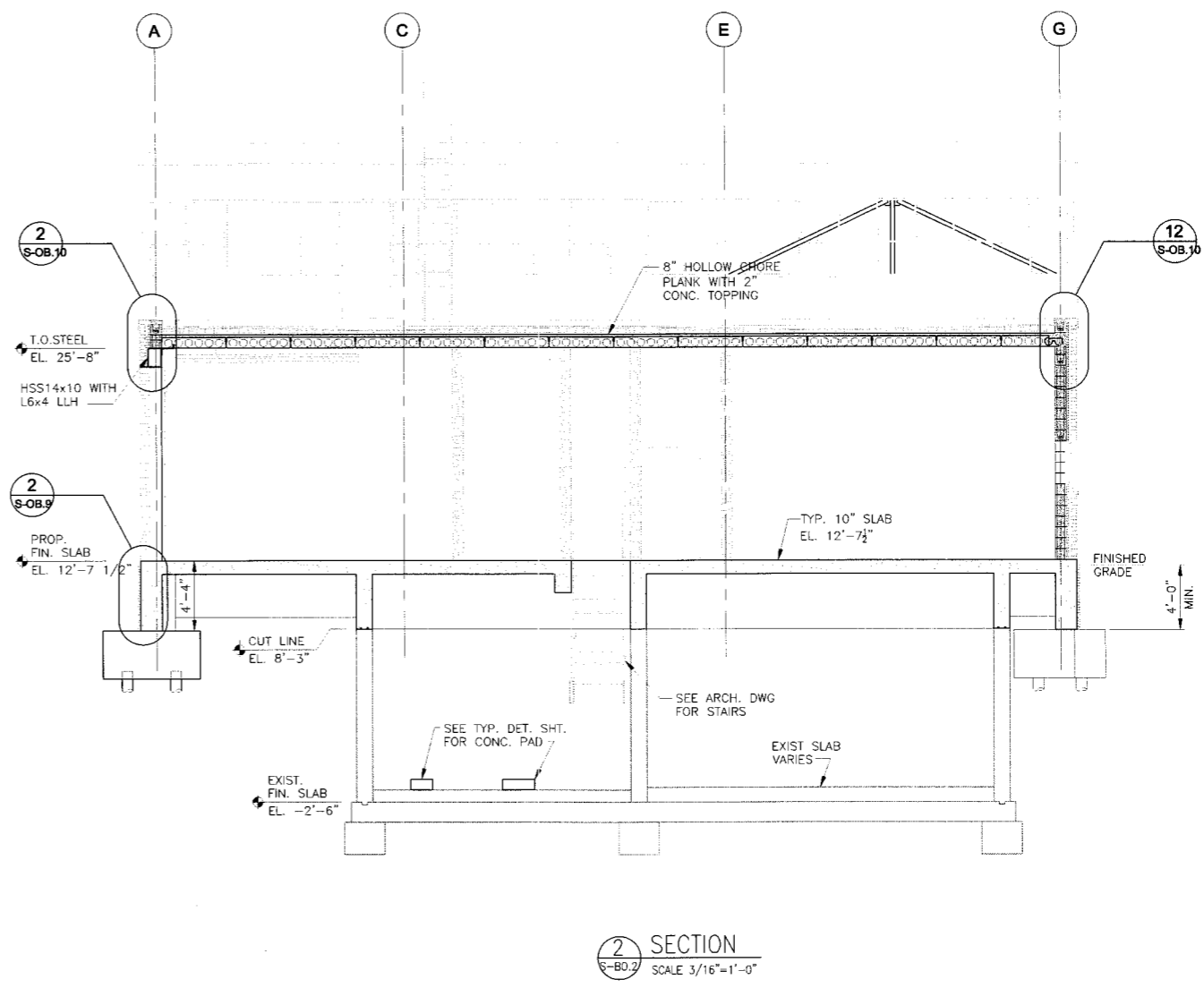
No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED ARCHITECT  
DATE

CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING SECTIONS AND DETAILS II**  
JOB NO. 2090269  
SCALE: AS NOTED  
CONTRACT: 2  
CADD NO. 189-124  
DRY BY: VVS  
DSN BY: GK  
CHK BY: RSL  
APP. BY: [Signature]

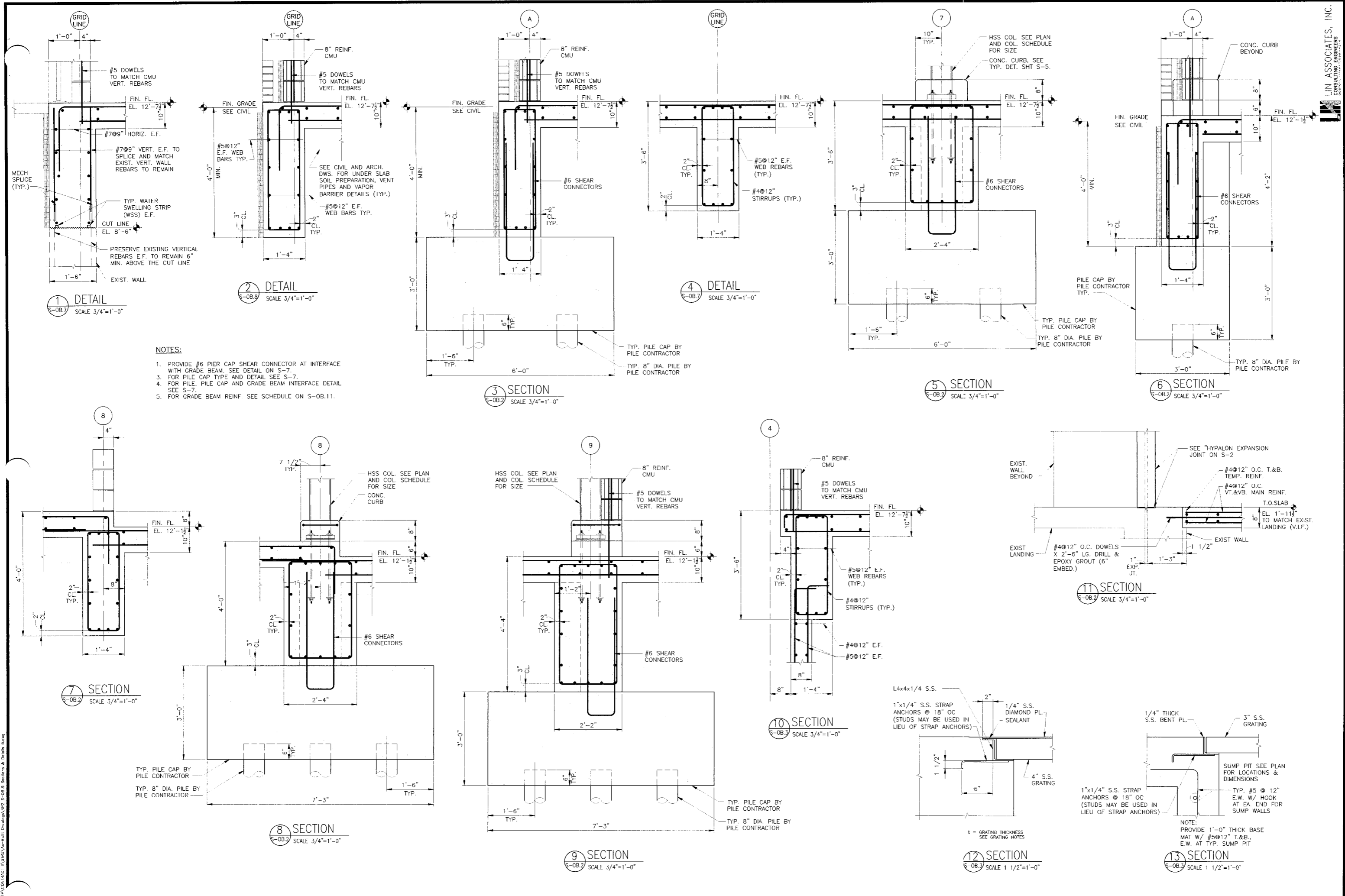


AREA "A" EXISTING SLAB REMAINED AND NEW CONCRETE SLAB AND GRADE BEAM ABOVE REDESIGNED BY STV, INC. REFER TO STV, INC. DRAWINGS IN APPENDIX B OF VOLUME II OF RECORD DRAWINGS FOR DETAILS.



**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

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- NOTES:**
1. PROVIDE #6 PIER CAP SHEAR CONNECTOR AT INTERFACE WITH GRADE BEAM. SEE DETAIL ON S-7.
  2. FOR PILE CAP TYPE AND DETAIL SEE S-7.
  3. FOR PILE, PILE CAP AND GRADE BEAM INTERFACE DETAIL SEE S-7.
  4. FOR GRADE BEAM REINF. SEE SCHEDULE ON S-OB.11.

LIN ASSOCIATES, INC.  
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No.	Date	Dr. By	Ck. By	App. By	Description
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REGISTERED ARCHITECT DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

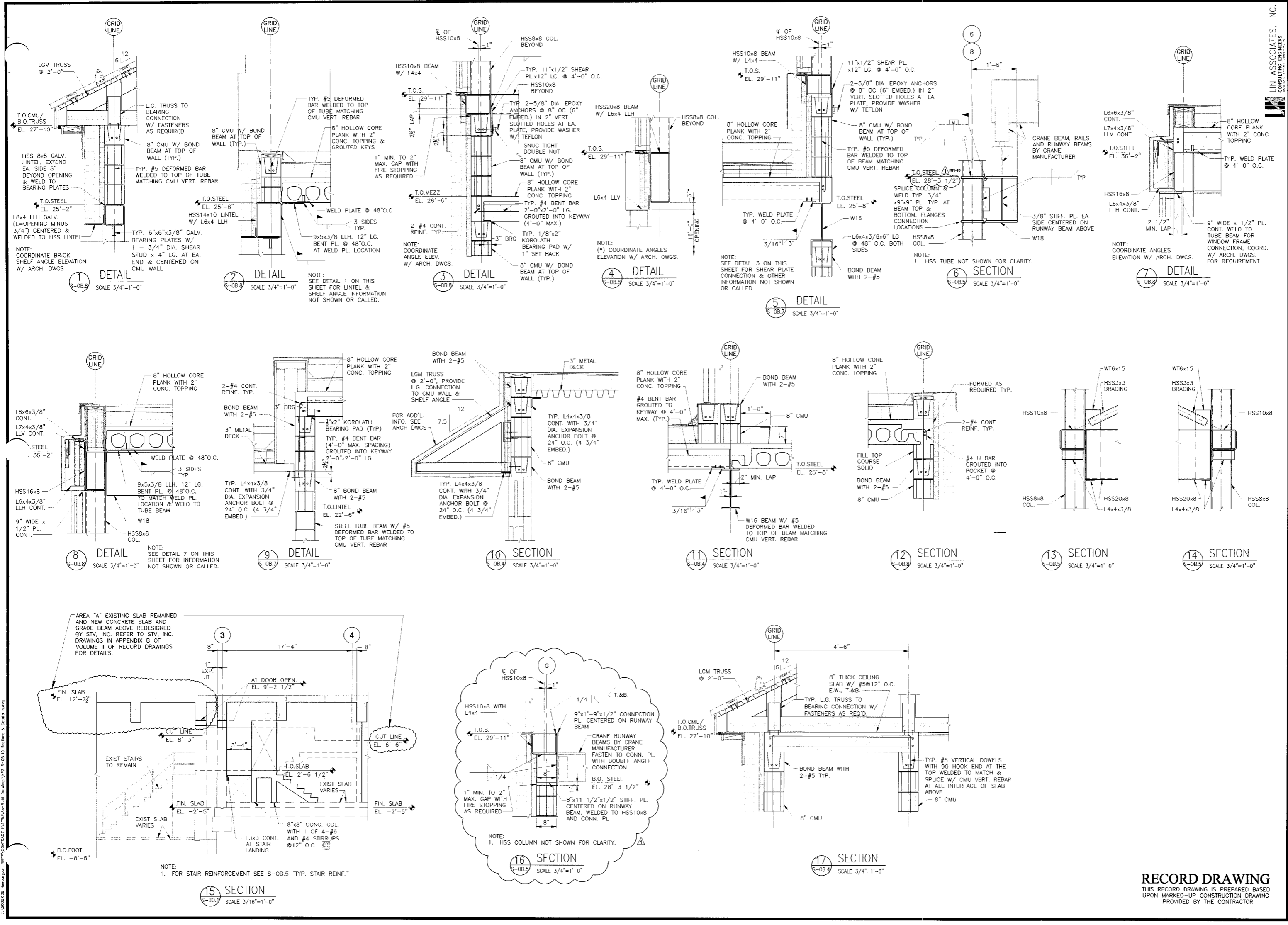
**OPERATIONS BUILDING  
SECTIONS AND DETAILS III**

SCALE: AS NOTED  
JOB NO. 2090269  
DR. BY: WVS  
CHK. BY: RSL  
APP. BY: [Signature]  
CADD NO. 189-123  
CONTRACT: 2

**S-OB.9**  
FILE NO. 189-123  
SHEET 80 OF 202

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR





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No.	Date	Dr. By	Ck. By	App. By	Description

REGISTERED ARCHITECT

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**OPERATIONS AND DETAILS IV**

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

CONTRACT: 2  
 SCALE: AS NOTED  
 JOB NO.: 2090269  
 DRBY: VVS  
 ISNBY: GK  
 CHKBY: RSL

CADD NO.: 189-122

**RECORD DRAWING**  
 THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

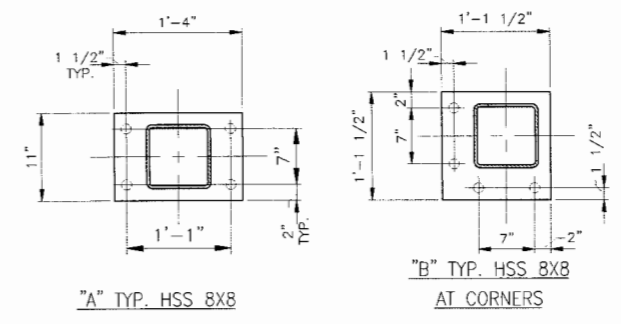
S-OB.10

SHEET 81 OF 202

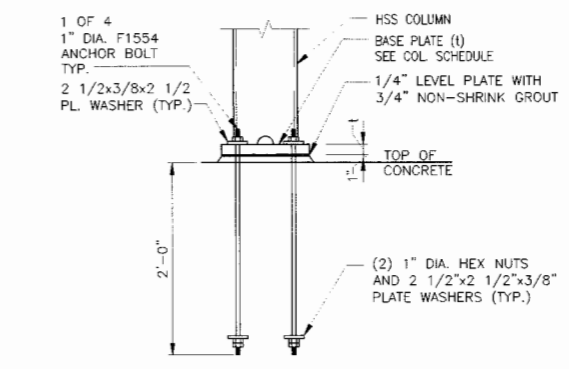
BEAM MARK	BEAM SIZE b x h	END OF BEAM (TYP.)	CL. ADJ. SPAN	CL. SUPPORT	CL. SPAN	CL. ADJ. SPAN	END OF BEAM (TYP.)	STIRRUPS
-1	16" x 52"	END OF BEAM (TYP.)		7#6	7#6		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-2	16" x 52"	REINF. FROM ADJ. SPAN (TYP.)		7#6	7#6		END OF BEAM (TYP.)	#4 @ 12"
GB-2A	16" x 52"	REINF. FROM ADJ. SPAN (TYP.)		7#6	7#6		END OF BEAM (TYP.)	#4 @ 12"
GB-3	16" x 52"	5'-0"		7#6	7#6		END OF BEAM (TYP.)	#4 @ 12"
GB-3A	16" x 52"	REINF. FROM ADJ. SPAN (TYP.)		7#6	7#6		END OF BEAM (TYP.)	#4 @ 12"
GB-4	16" x 52"	END OF BEAM (TYP.)		4#6	4#6		END OF BEAM (TYP.)	#4 @ 12"
GB-5	16" x 52"	END OF BEAM (TYP.)		7#6	7#6		END OF BEAM (TYP.)	#4 @ 12"
GB-6	16" x 52"	END OF BEAM (TYP.)		7#6	7#6		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-7	16" x 42"	END OF BEAM (TYP.)		7#5	7#5		END OF BEAM (TYP.)	#4 @ 12"
GB-8	16" x 42"	END OF BEAM (TYP.)		7#5	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-8A	16" x 39" RF-22 MIN.	END OF BEAM (TYP.)		7#5	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-9	16" x 42"	REINF. FROM ADJ. SPAN (TYP.)		7#5	7#5		END OF BEAM (TYP.)	#4 @ 12"
GB-9A	16" x 42" MIN.	REINF. FROM ADJ. SPAN (TYP.)		7#5	7#5		END OF BEAM (TYP.)	#4 @ 12"
GB-10	16" x 42"	END OF BEAM (TYP.)		7#5	7#5			#4 @ 12"
GB-10A	16" x 39" RF-22 MIN.	3'-0"		7#5	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-11	16" x 42"	END OF BEAM (TYP.)		7#5	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-12	16" x 42"	REINF. FROM ADJ. SPAN (TYP.)		7#5	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-12A	16" x 42" MIN.	REINF. FROM ADJ. SPAN (TYP.)		7#5	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-13	16" x 52" RF-1	REINF. FROM ADJ. SPAN (TYP.)		7#6	7#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-14	12" x 24"	END OF BEAM (TYP.)		2#6	2#6		END OF BEAM (TYP.)	#4 @ 12"
GB-15	12" x 24"	END OF BEAM (TYP.)		2#6	2#6		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
GB-16	12" x 24"	REINF. FROM ADJ. SPAN (TYP.)		3#6	2#6		END OF BEAM (TYP.)	#4 @ 12"
BM-1	16" x 52" + 16" x 44"	END OF BEAM (TYP.)		4#6	4#6		END OF BEAM (TYP.)	#4 @ 12"

3 GRADE BEAM SCHEDULE  
NO SCALE

BEAM MARK	BEAM SIZE b x h	END OF BEAM (TYP.)	CL. ADJ. SPAN	CL. SUPPORT	CL. SPAN	CL. ADJ. SPAN	END OF BEAM (TYP.)	STIRRUPS
BM-2	15" x 52"	END OF BEAM (TYP.)		6#6	6#6		END OF BEAM (TYP.)	#4 @ 12"
BM-2A	18" x 52"	END OF BEAM (TYP.)		6#6	6#6		END OF BEAM (TYP.)	#4 @ 12"
BM-2B	18" x 52"	END OF BEAM (TYP.)		6#6	6#6		END OF BEAM (TYP.)	#4 @ 12"
BM-2C	15" x 52"	END OF BEAM (TYP.)		6#6	6#6		END OF BEAM (TYP.)	#4 @ 12"
BM-2D	12" x 52"	END OF BEAM (TYP.)		6#6	6#6		END OF BEAM (TYP.)	#4 @ 12"
BM-3	16" x 52"	END OF BEAM (TYP.)		4#4	4#4		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-4	16" x 52"	REINF. FROM ADJ. SPAN (TYP.)		4#4	4#4		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-5	16" x 52"	REINF. FROM ADJ. SPAN (TYP.)		4#4	4#4		END OF BEAM (TYP.)	#4 @ 12"
BM-6	16" x 52"	REINF. FROM ADJ. SPAN (TYP.)		4#4	4#4		END OF BEAM (TYP.)	#4 @ 12"
BM-7	16" x 52"	END OF BEAM (TYP.)		4#4	4#4		END OF BEAM (TYP.)	#4 @ 12"
BM-8	12" x 24"	END OF BEAM (TYP.)		2#5	2#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-9	12" x 24"	REINF. FROM ADJ. SPAN (TYP.)		2#5	2#5		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-10	12" x 24"	REINF. FROM ADJ. SPAN (TYP.)		2#5	2#5		END OF BEAM (TYP.)	#4 @ 12"
BM-11	12" x 24"	END OF BEAM (TYP.)		2#5	3#6		END OF BEAM (TYP.)	#4 @ 12"
BM-12	24" x 42"	END OF BEAM (TYP.)		5#7	5#7		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-13	24" x 42"	REINF. FROM ADJ. SPAN (TYP.)		5#7	6#6		END OF BEAM (TYP.)	#4 @ 12"
BM-14	16" x 39"	END OF BEAM (TYP.)		5#6	5#6		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-15	16" x 39"	REINF. FROM ADJ. SPAN (TYP.)		5#6	5#6		END OF BEAM (TYP.)	#4 @ 12"
BM-16	16" x 42"	END OF BEAM (TYP.)		5#6	5#6		REINF. FROM ADJ. SPAN (TYP.)	#4 @ 12"
BM-17	16" x 42"	REINF. FROM ADJ. SPAN (TYP.)		5#6	5#6		END OF BEAM (TYP.)	#4 @ 12"
BM-18	16" x 42" RF-1 CANTILEVER	END OF BEAM (TYP.)		5#6	5#6		END OF BEAM (TYP.)	#4 @ 12"
BM-19	16" x 42"	END OF BEAM (TYP.)		5#6	5#6		END OF BEAM (TYP.)	#4 @ 12"
BM-20	16" x 42"	END OF BEAM (TYP.)		4#6	7#6			#4 @ 12"
BM-21	16" x 42"	END OF BEAM (TYP.)		4#6	7#6		END OF BEAM (TYP.)	#4 @ 12"



TYP. BASE PLATE DETAIL

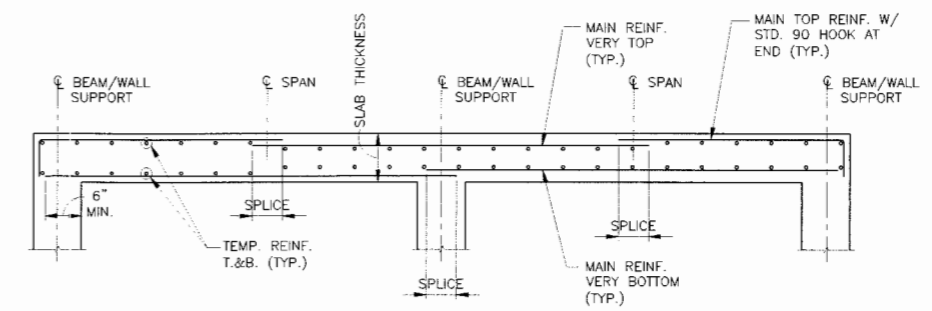


1 BASE PLATE  
SCALE 1"=1'-0"

NOT APPLICABLE. SEE STV, INC. DRAWINGS IN APPENDIX B OF VOLUME II RECORD DRAWINGS FOR AREA "A" GRADE BEAM SCHEDULE.

COLUMN MARK	C1	C2	C3
T.O.S. EL. 36'-2"			
T.O.S. EL. 27'-10"	HSSB-8x3/8"	HSSB-8x3/8"	HSSB-8x3/8"
FIRST FLOOR EL. 12'-6"			
BASE PLATE TYPE	A	B	A
BOTTOM OF PLATE ELEV.	12'-7"	12'-7"	12'-7" (1)
BASE PLATE THICKNESS 't'	1 1/4"	1 1/4"	1 1/4"
ANCHOR BOLT DIA.	1"	1"	1"

2 COLUMN SCHEDULE  
NO SCALE



3 FRAMED SLAB REINFORCING DETAIL  
NO SCALE

**RECORD DRAWING**  
THIS RECORD DRAWING IS PREPARED BASED UPON MARKED-UP CONSTRUCTION DRAWING PROVIDED BY THE CONTRACTOR

NOTES:  
1. FOR REINF. SIZE & SPACING SEE PLANS.  
2. SEE REINF. SPLICE REQUIREMENT AND CONCRETE COVER SEE APPLICABLE TYPICAL DETAILS.

LLIN ASSOCIATES, INC.  
CONSULTING ENGINEERS

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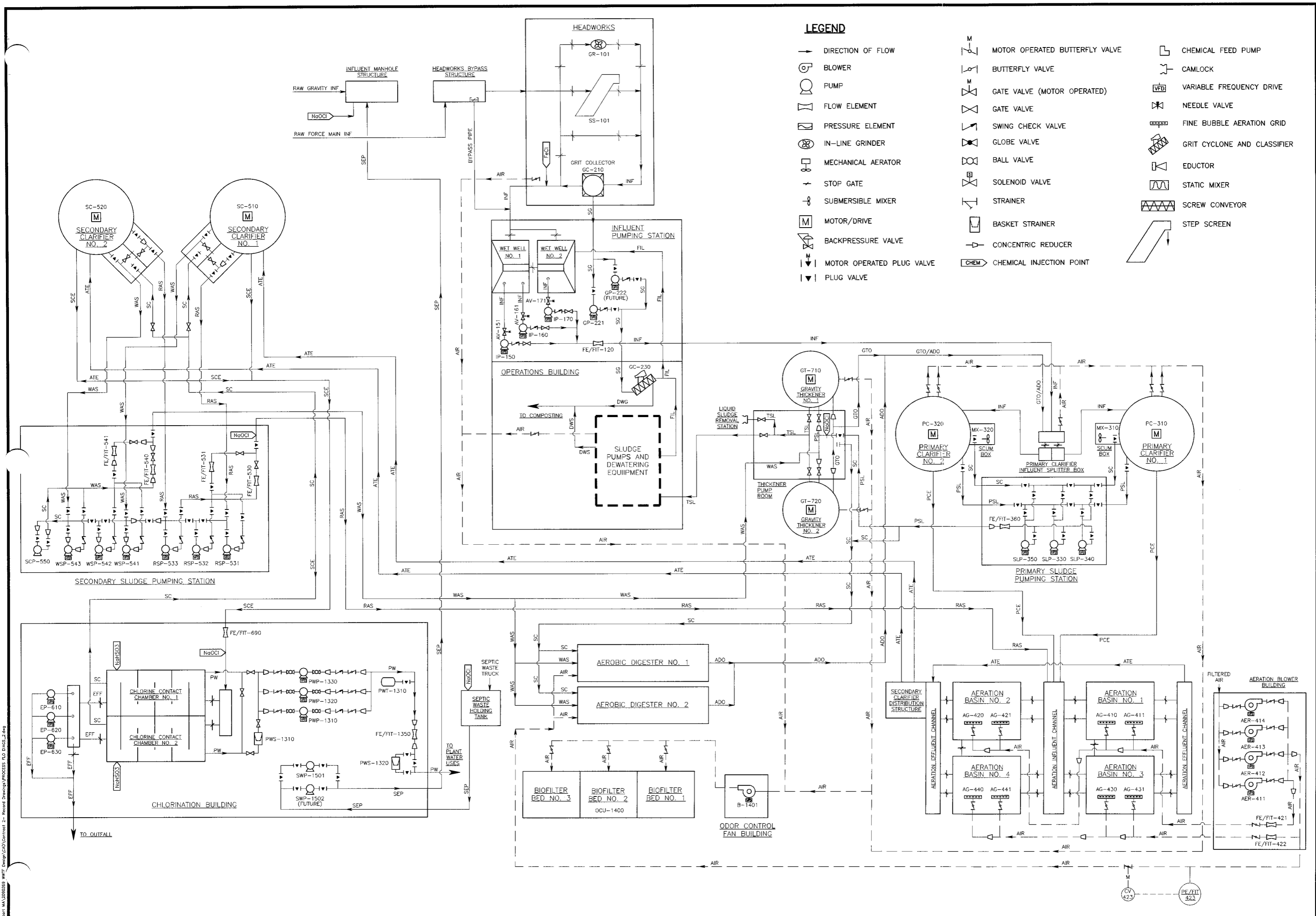
No.	Date	Dr. By	Ch. By	App. By	Description	DATE
1						

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**OPERATIONS BUILDING  
COLUMN AND BEAM SCHEDULES**

SCALE: AS NOTED  
JOB NO. 2090269  
CONTRACT: 2  
DR. BY: VVS  
CHK. BY: RSL  
APP. BY: RSL

FILE NO. 189-121  
SHEET 82 OF 202



- ### LEGEND
- DIRECTION OF FLOW
  - ⊙ BLOWER
  - ⊙ PUMP
  - ⊘ FLOW ELEMENT
  - ⊘ PRESSURE ELEMENT
  - ⊘ IN-LINE GRINDER
  - ⊘ MECHANICAL AERATOR
  - ⊘ STOP GATE
  - ⊘ SUBMERSIBLE MIXER
  - ⊘ MOTOR/DRIVE
  - ⊘ BACKPRESSURE VALVE
  - ⊘ MOTOR OPERATED PLUG VALVE
  - ⊘ PLUG VALVE
  - ⊘ MOTOR OPERATED BUTTERFLY VALVE
  - ⊘ BUTTERFLY VALVE
  - ⊘ GATE VALVE (MOTOR OPERATED)
  - ⊘ GATE VALVE
  - ⊘ SWING CHECK VALVE
  - ⊘ GLOBE VALVE
  - ⊘ BALL VALVE
  - ⊘ SOLENOID VALVE
  - ⊘ STRAINER
  - ⊘ BASKET STRAINER
  - ⊘ CONCENTRIC REDUCER
  - ⊘ CHEMICAL INJECTION POINT
  - ⊘ CHEMICAL FEED PUMP
  - ⊘ CAMLOCK
  - ⊘ VARIABLE FREQUENCY DRIVE
  - ⊘ NEEDLE VALVE
  - ⊘ FINE BUBBLE AERATION GRID
  - ⊘ GRIT CYCLONE AND CLASSIFIER
  - ⊘ EDUCTOR
  - ⊘ STATIC MIXER
  - ⊘ SCREW CONVEYOR
  - ⊘ STEP SCREEN

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No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING

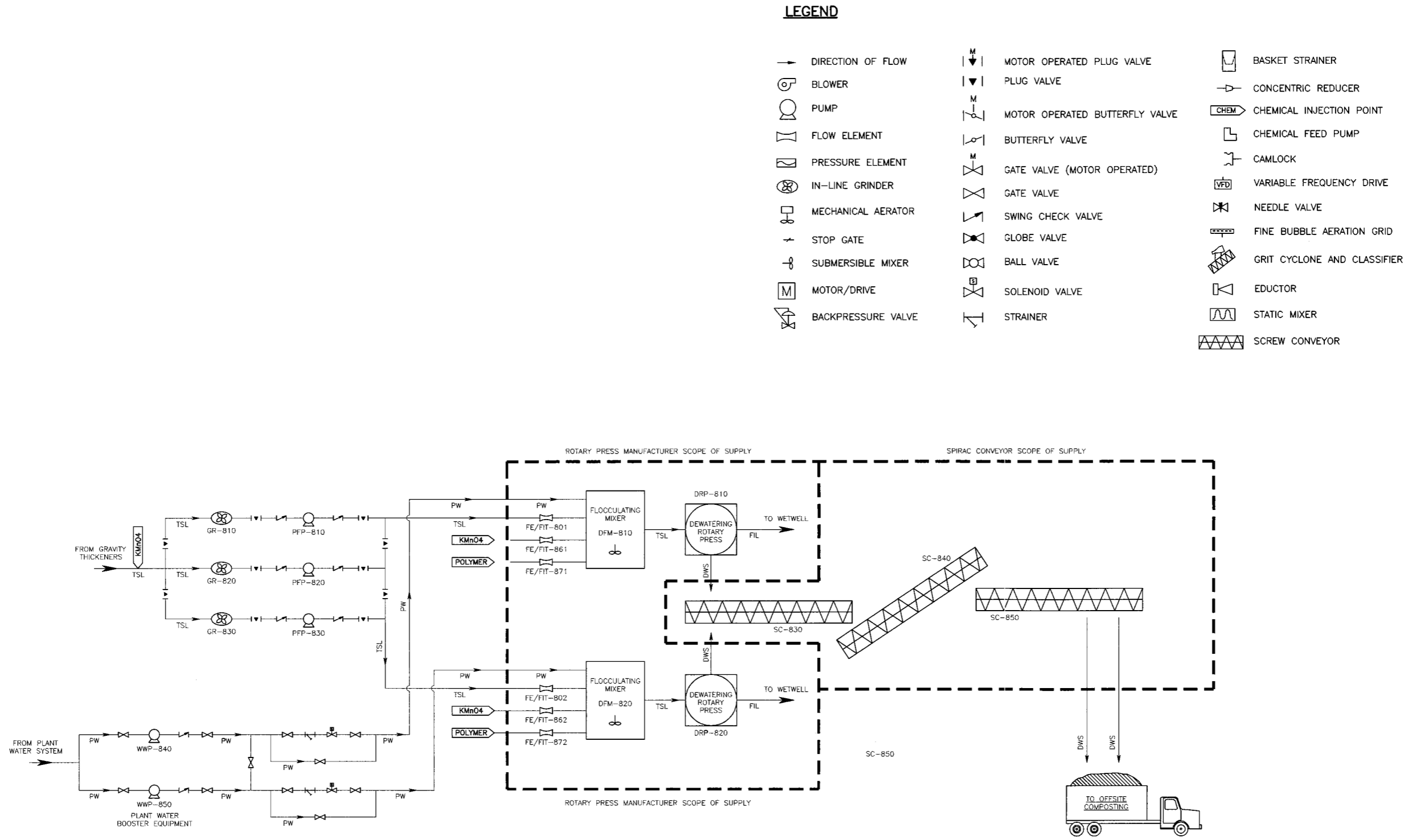
REGISTERED PROFESSIONAL ENGINEER  
 DATE

CADD NO.	SCALE:	AS NOTED	CONTRACT:	2	JOB NO.	2090269	DR. BY:	DSN	HBY	CHK. BY:	DWL	APP. BY:	KMN
FILE NO.	M-1.7	199-120											

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**PROCESS FLOW DIAGRAM**  
 SHEET 83 OF 202

RECORD DRAWING

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**LEGEND**

- DIRECTION OF FLOW
- ⊗ BLOWER
- ⊙ PUMP
- ∩ FLOW ELEMENT
- ⊞ PRESSURE ELEMENT
- ⊗ IN-LINE GRINDER
- ⊕ MECHANICAL AERATOR
- ⊥ STOP GATE
- ⊕ SUBMERSIBLE MIXER
- M MOTOR/DRIVE
- ⊗ BACKPRESSURE VALVE
- ⊗ M MOTOR OPERATED PLUG VALVE
- ⊗ PLUG VALVE
- ⊗ M MOTOR OPERATED BUTTERFLY VALVE
- ⊗ BUTTERFLY VALVE
- ⊗ M GATE VALVE (MOTOR OPERATED)
- ⊗ GATE VALVE
- ⊗ SWING CHECK VALVE
- ⊗ GLOBE VALVE
- ⊗ BALL VALVE
- ⊗ SOLENOID VALVE
- ⊗ STRAINER
- ⊗ BASKET STRAINER
- ⊗ CONCENTRIC REDUCER
- CHEM CHEMICAL INJECTION POINT
- ⊗ CHEMICAL FEED PUMP
- ⊗ CAMLOCK
- VFD VARIABLE FREQUENCY DRIVE
- ⊗ NEEDLE VALVE
- ⊗ FINE BUBBLE AERATION GRID
- ⊗ GRIT CYCLONE AND CLASSIFIER
- ⊗ EDUCTOR
- ⊗ STATIC MIXER
- ⊗ SCREW CONVEYOR

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DATE \_\_\_\_\_  
 REGISTERED PROFESSIONAL ENGINEER \_\_\_\_\_

No.	Date	Dr. By	App. By	Description
1	05/2014	MLM	KMN	RECORD DRAWING

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

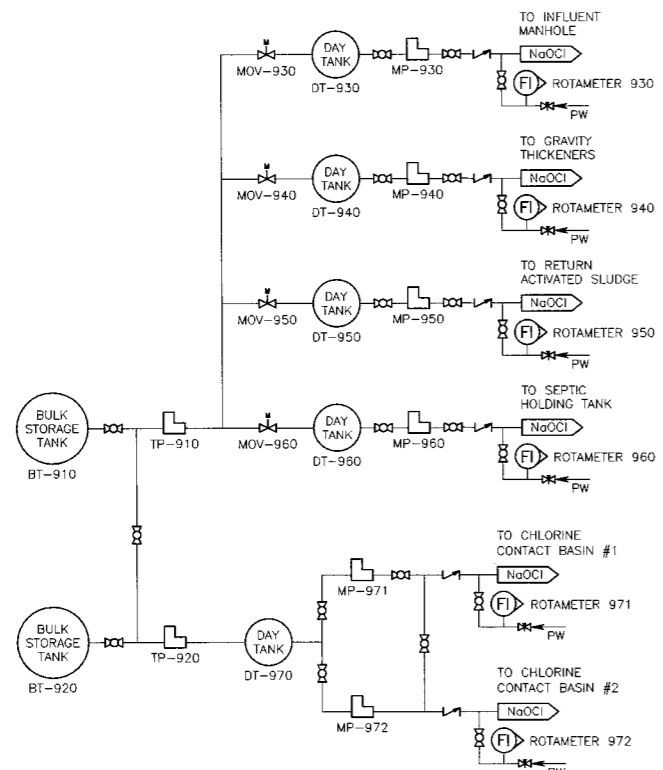
SCALE: M-1 AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2  
 DR. BY: DSN  
 DES. BY: HBD  
 CHK. BY: DWL  
 APP. BY: KMN

**M-1.2**

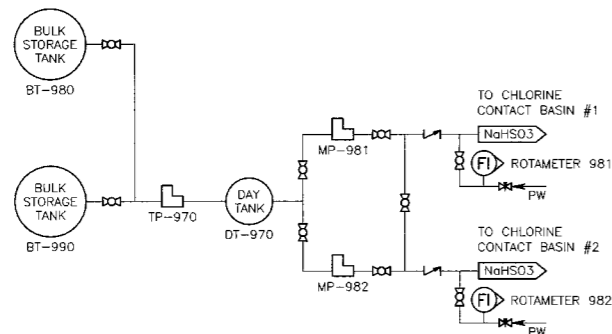
FILE NO. 189-119

**PROCESS FLOW DIAGRAM  
 SLUDGE DEWATERING EQUIPMENT**

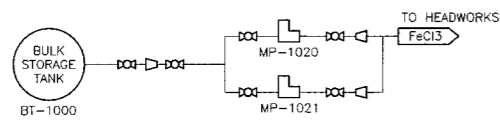
RECORD DRAWING



**SODIUM HYPOCHLORITE FEED SYSTEM**



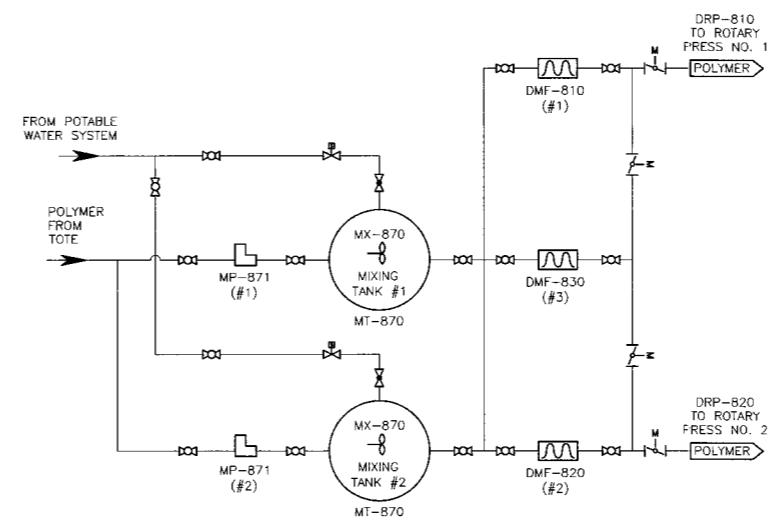
**LIQUID SODIUM BISULFITE FEED SYSTEM**



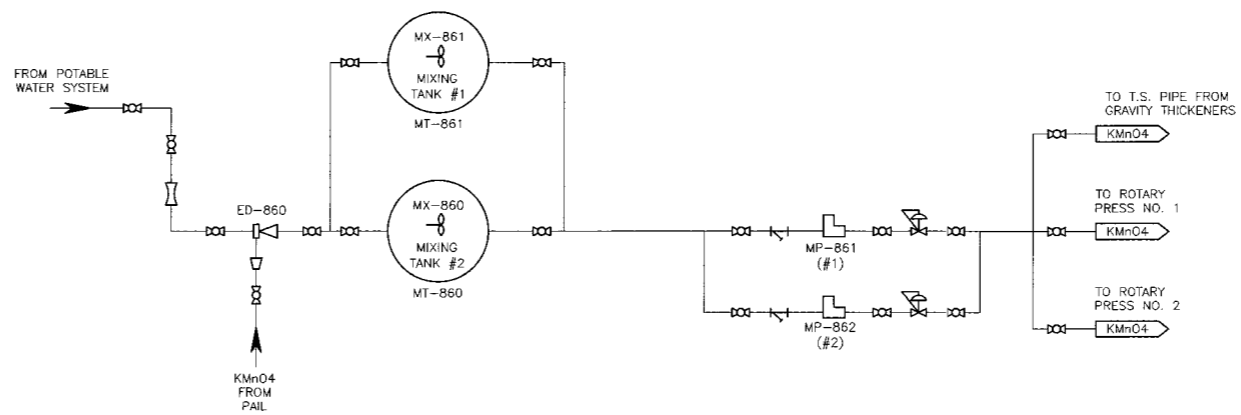
**FERRIC CHLORIDE FEED SYSTEM**

**LEGEND**

- DIRECTION OF FLOW
- ⊙ BLOWER
- ⊙ PUMP
- ⊙ FLOW ELEMENT
- ⊙ PRESSURE ELEMENT
- ⊙ IN-LINE GRINDER
- ⊙ MECHANICAL AERATOR
- ⊙ STOP GATE
- ⊙ SUBMERSIBLE MIXER
- ⊙ MOTOR/DRIVE
- ⊙ BACKPRESSURE VALVE
- ⊙ MOTOR OPERATED PLUG VALVE
- ⊙ PLUG VALVE
- ⊙ MOTOR OPERATED BUTTERFLY VALVE
- ⊙ BUTTERFLY VALVE
- ⊙ GATE VALVE (MOTOR OPERATED)
- ⊙ GATE VALVE
- ⊙ SWING CHECK VALVE
- ⊙ GLOBE VALVE
- ⊙ BALL VALVE
- ⊙ SOLENOID VALVE
- ⊙ STRAINER
- ⊙ BASKET STRAINER
- ⊙ CONCENTRIC REDUCER
- ⊙ CHEMICAL INJECTION POINT
- ⊙ CHEMICAL FEED PUMP
- ⊙ CAMLOCK
- ⊙ VARIABLE FREQUENCY DRIVE
- ⊙ NEEDLE VALVE
- ⊙ FINE BUBBLE AERATION GRID
- ⊙ GRIT CYCLONE AND CLASSIFIER
- ⊙ EDUCATOR
- ⊙ PROGRESSING CAVITY PUMP
- ⊙ SCREW CONVEYOR



**POLYMER FEED SYSTEM**

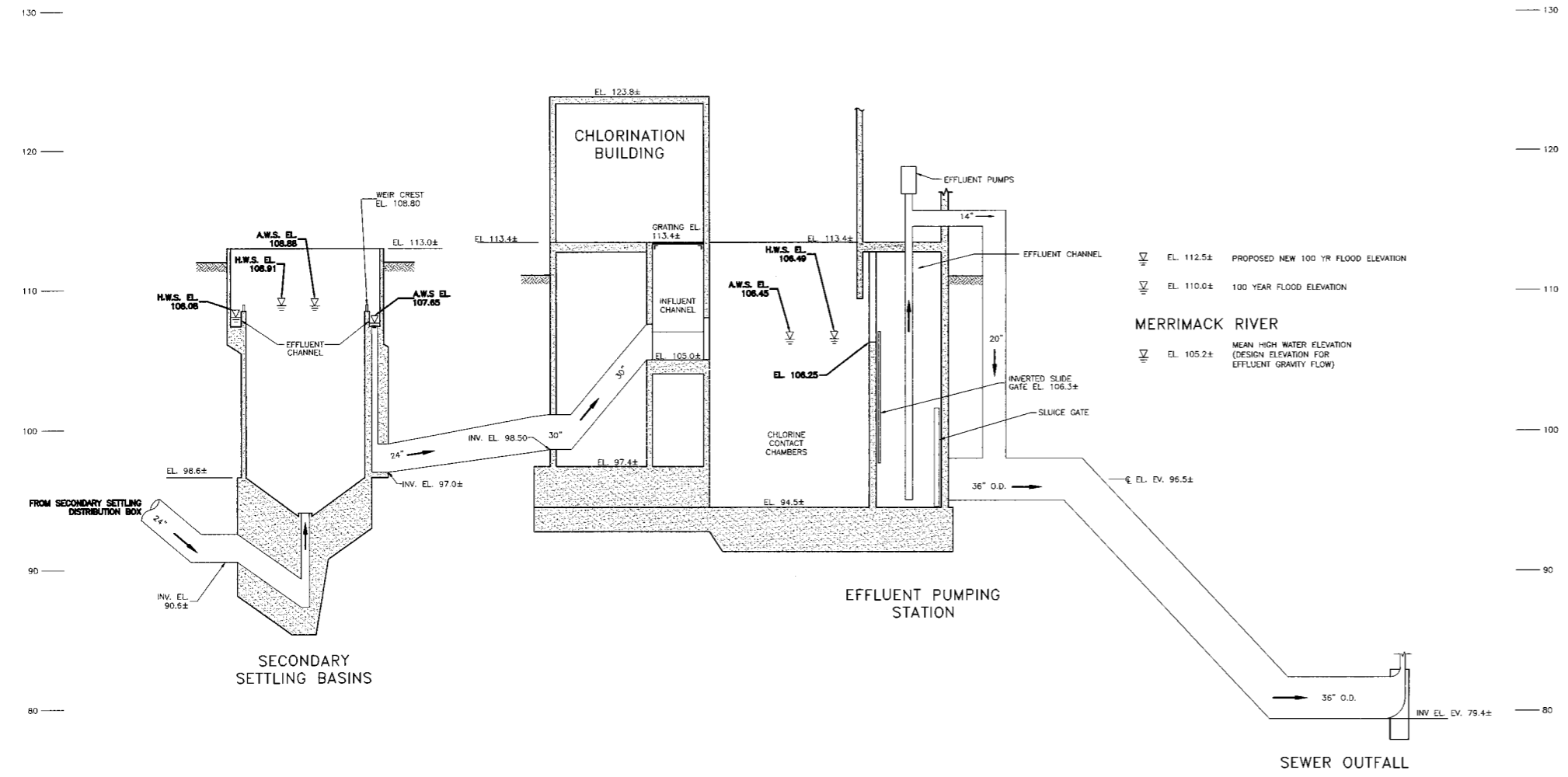
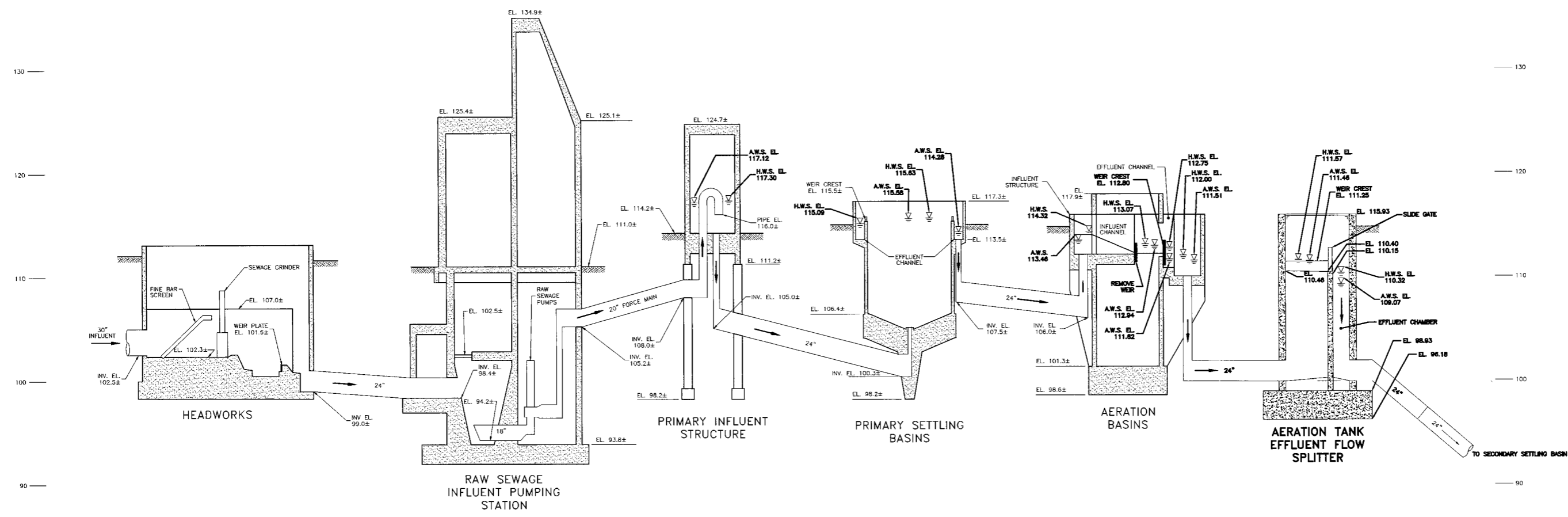


**POTASSIUM PERMANGANATE FEED SYSTEM**

1	05/2014	MJM	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	Description
		A	P	P	R
					O
					V
					E
					D
					DATE

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT					
<b>PROCESS FLOW DIAGRAM CHEMICAL FEED SYSTEMS</b>					
CADD NO.	SCALE:	AS NOTED	CONTRACT:	2090269	DR. BY:
M-1					DRT
					HBD
					CHK. BY:
					DWL
					APP. BY:
					KMN

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**HYDRAULIC DESIGN DATA:**

- ALL HYDRAULIC CONDITIONS WERE APPROXIMATED WITH A COMPUTER AIDED MODELING TOOL. THE HYDRAULIC CONDITIONS WERE APPROXIMATED BY THE VISUAL HYDRAULICS HYDRAULIC MODELING TOOL BY INNOVATIVE HYDRAULICS.
- ALL CONDITIONS SHOWN ON THE HYDRAULIC PROFILE ASSUME THAT ALL AERATION BASINS AND SECONDARY CLARIFIERS ARE ONLINE.
- THE DESIGN AVERAGE WATER SURFACE (A.W.S.) ELEVATION ASSUMES THE FOLLOWING FLOW CONDITIONS  
 INFLUENT = 3.40 MGD  
 RAS = 0.51 MGD
- THE PEAK DESIGN WATER SURFACE (H.W.S.) ELEVATION ASSUMES THE FOLLOWING FLOW CONDITIONS  
 INFLUENT = 9.45 MGD  
 RAS = 1.7 MGD
- MODELING APPROXIMATES THE PEAK HYDRAULIC CAPACITY OF THE WASTEWATER TREATMENT FACILITY AT 16.25 MGD WITH ALL UNITS ONLINE (THIS DOES NOT INCLUDE ANY RECYCLES).

**NOTE:**

- AERATION SYSTEM DRAWINGS DEVELOPED FROM PLANS ENTITLED "UPGRADING EXISTING WASTEWATER TREATMENT FACILITIES - JUNE 1977" BY COFFIN & RICHARDSON. ALL DIMENSIONS SHALL BE FIELD VERIFIED.
- ALL EXISTING ELEVATIONS AND DIMENSIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD.
- ELEVATIONS PROVIDED PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.

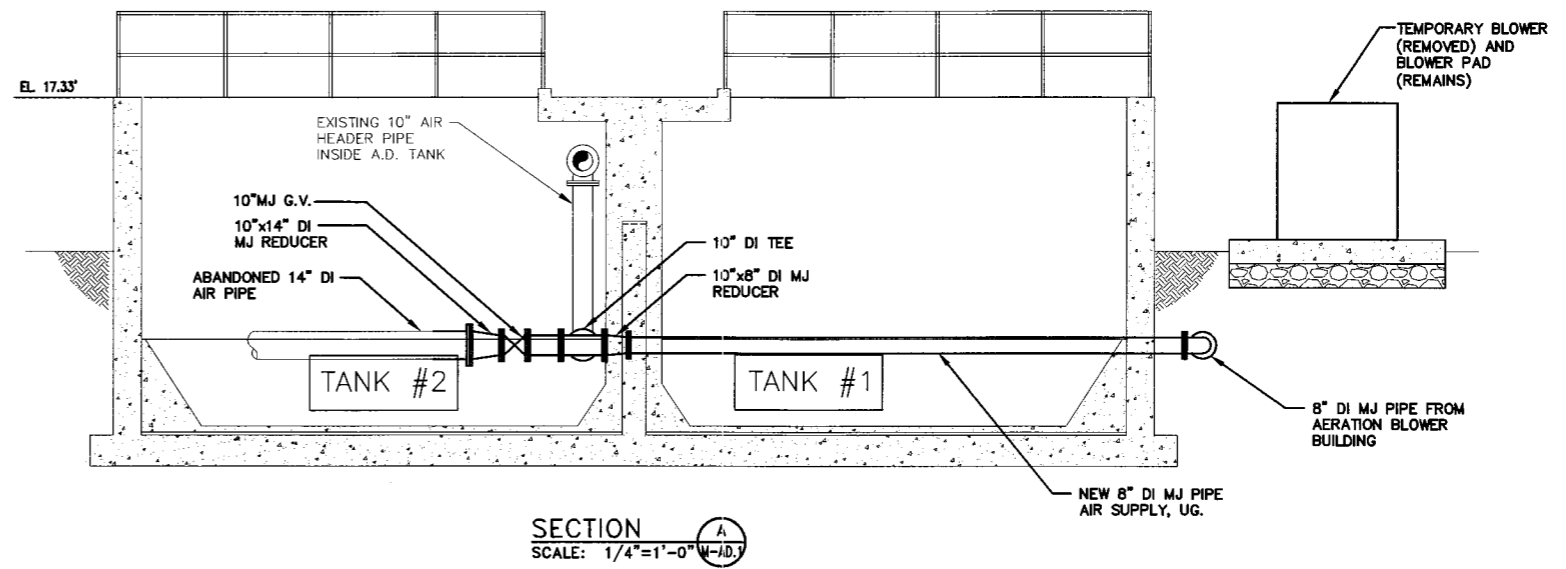
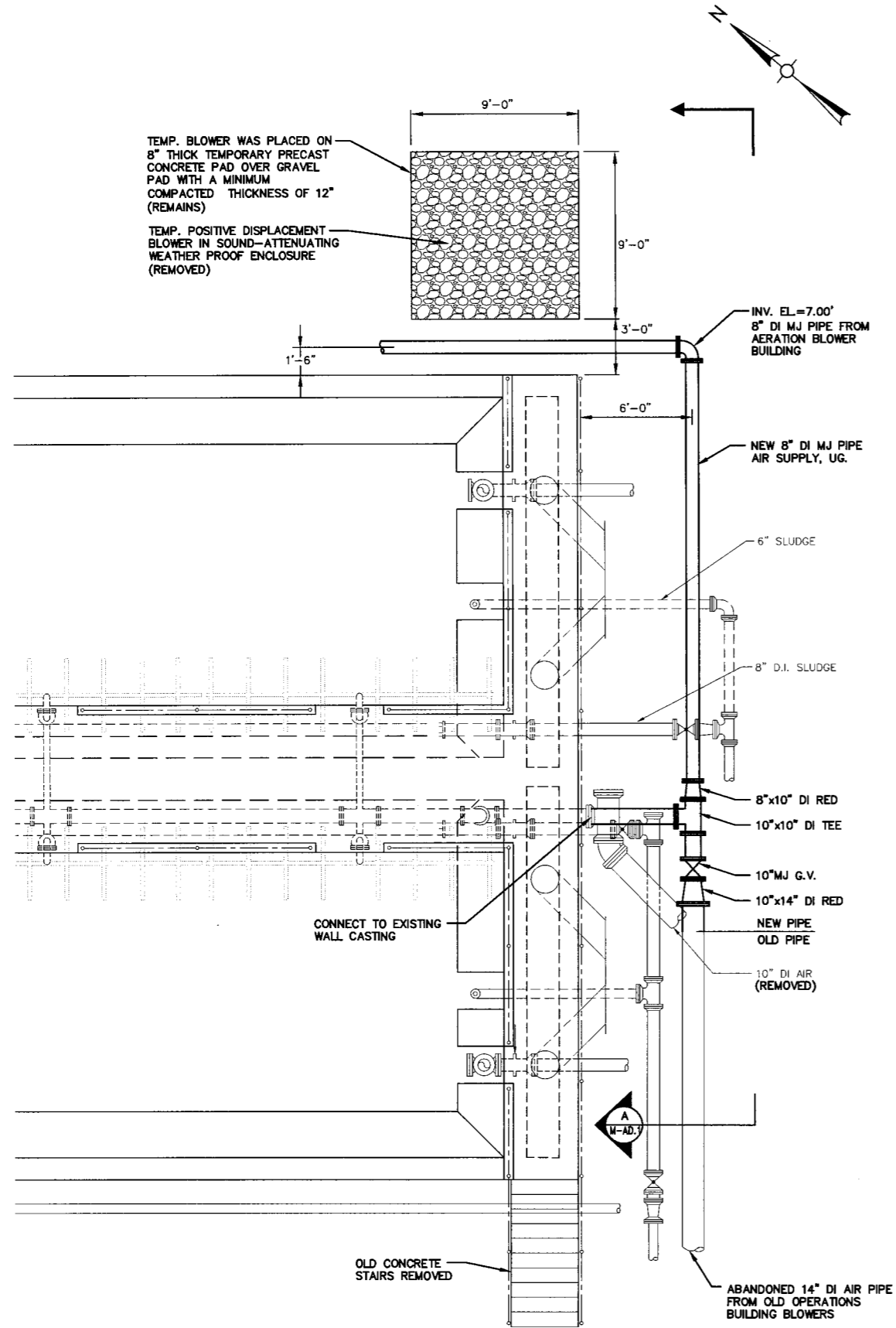
**WASTEWATER TREATMENT FACILITY HYDRAULIC PROFILE**  
 NOT TO SCALE

1	05/2014	MJM	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					REGISTERED PROFESSIONAL ENGINEER
					DATE

CITY OF NEWBURYPORT, MASSACHUSETTS					
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION					
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT					
<b>HYDRAULIC PROFILE</b>					
CADD NO.	SCALE	AS NOTED	CONTRACT	JOB NO.	APP. BY
			2	2090269	KMN
				DCM	CWS
				DCM	DMD
				DCM	CWS

M-2  
 FILE NO. 189-117

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**AEROBIC DIGESTERS -- TEMPORARY AERATION SUPPORT  
PLAN VIEW**

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

**NOTES:**

1. TEMPORARY AIR PIPING SHALL BE SCHEDULE 5 STAINLESS STEEL.
2. NEW POSITIVE DISPLACEMENT DIGESTER BLOWER IN SOUND ATTENUATED, WEATHER PROOF ENCLOSURE SHALL BE INSTALLED ADJACENT TO DIGESTER AS SHOWN AND USED TO PROVIDE TEMPORARY AIR SUPPLY TO AEROBIC DIGESTERS DURING CONSTRUCTION.
3. FOLLOWING COMPLETION OF OPERATIONS BUILDING MODIFICATIONS, TEMPORARY BLOWER TO BE RELOCATED & INSTALLED IN BLOWER ROOM IN PLACE OF ONE EXISTING DIGESTER BLOWER. SEE SHEETS M-OB.3 AND M-OB.8.
4. FOLLOWING REMOVAL OF TEMPORARY AIR PIPING, PROVIDE FLANGE ON NEW 10"x8" TEE.

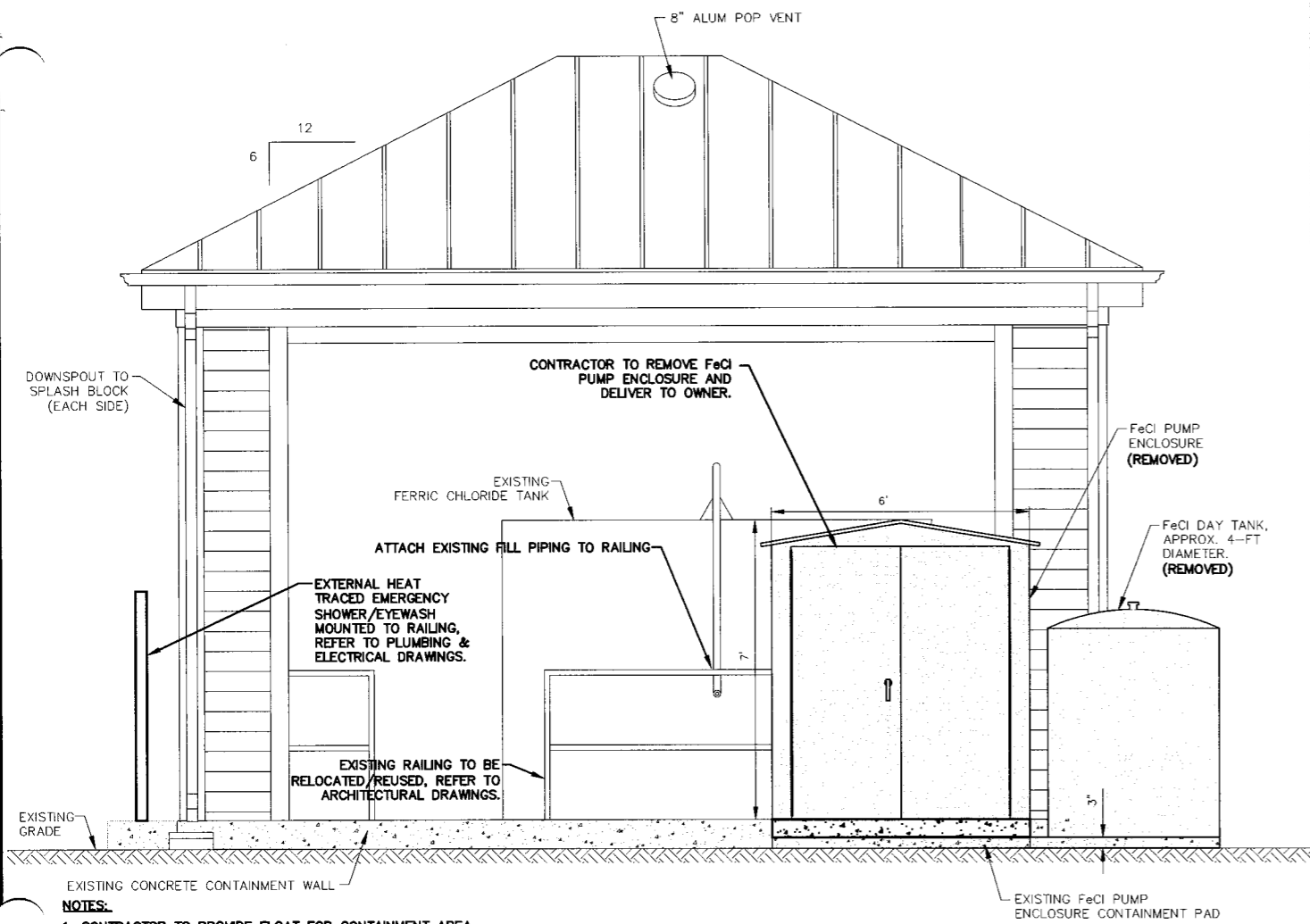
**RECORD DRAWING**

No.	Date	Dr. By	Ck. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING
A P R O V E D					
					DATE
					REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT AEROBIC DIGESTERS TEMPORARY AERATION PROVISIONS
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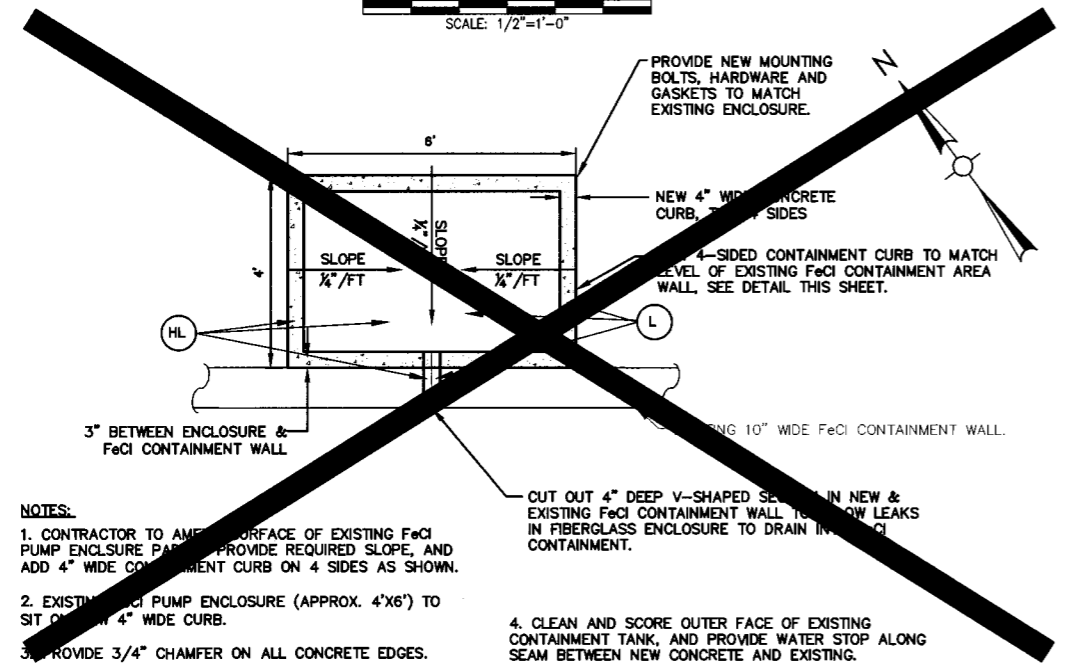
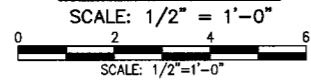
FILE NO. 189-116	CADD NO. -	SCALE: AS NOTED	CONTRACT: 2	JOB NO. 2090269	DRY	DSN BY: HBD	CHK BY: MAS	APP BY: KMN
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**M-AD.7**



- NOTES:**
- CONTRACTOR TO PROVIDE FLOAT FOR CONTAINMENT AREA FILL/LEAK ALARMS, REFER TO ELECTRICAL DRAWINGS.
  - FeCl PUMPS MUST REMAIN OPERATIONAL AT ALL TIMES DURING CONSTRUCTION IN THIS AREA.
  - CONTRACTOR WILL TEMPORARILY DISCONNECT AND RECONNECT FERRIC LINES AS NECESSARY.

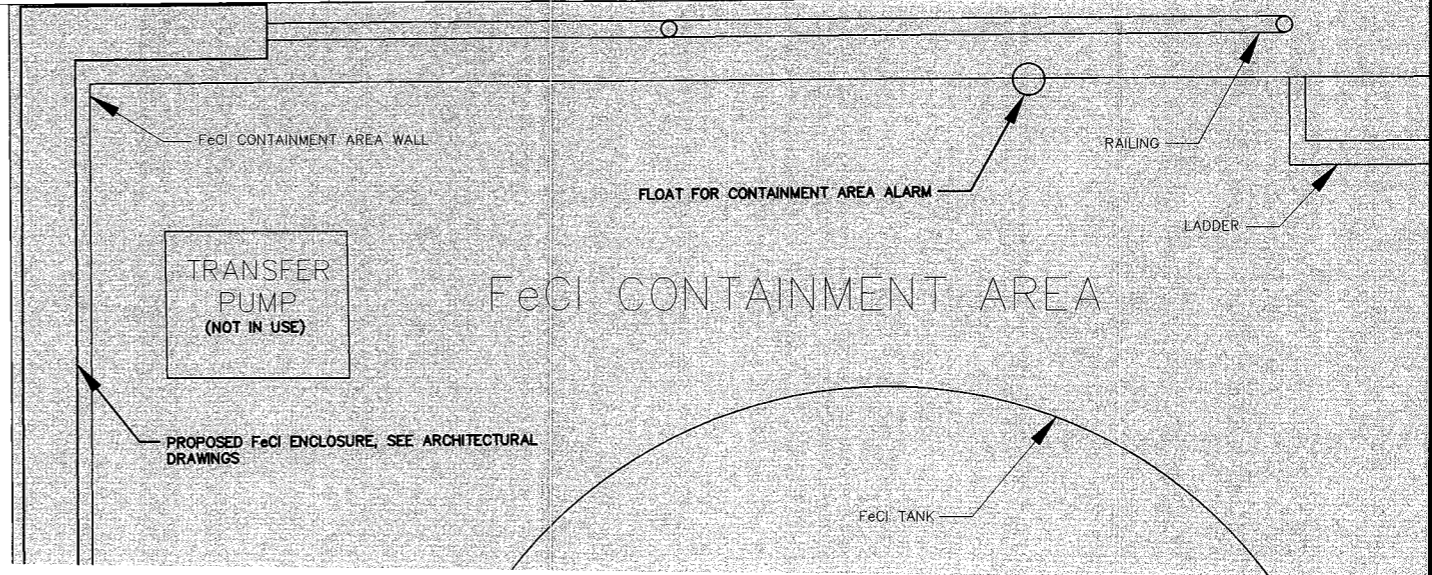
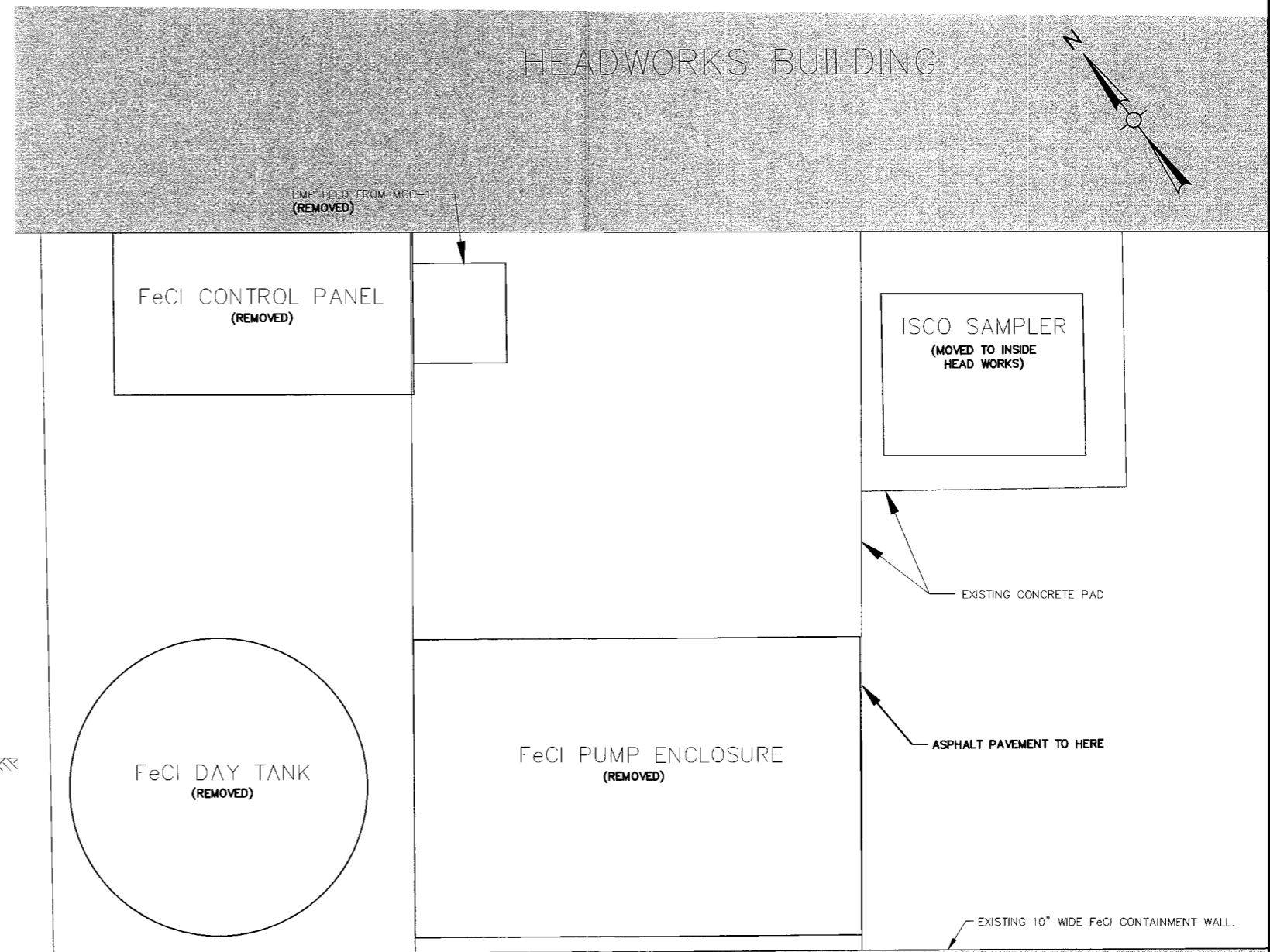
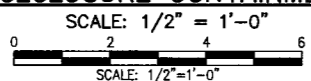
**FERRIC CHLORIDE PUMP ENCLOSURE IMPROVEMENTS  
ELEVATION VIEW**



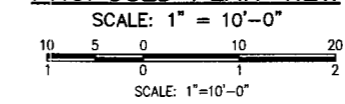
- NOTES:**
- CONTRACTOR TO AMEND SURFACE OF EXISTING FeCl PUMP ENCLOSURE PAD TO PROVIDE REQUIRED SLOPE, AND ADD 4" WIDE CONCRETE CURB ON 4 SIDES AS SHOWN.
  - EXISTING FeCl PUMP ENCLOSURE (APPROX. 4'x6') TO SIT ON 4" WIDE CURB.
  - PROVIDE 3/4" CHAMFER ON ALL CONCRETE EDGES.
  - CLEAN AND SCORE OUTER FACE OF EXISTING CONTAINMENT TANK, AND PROVIDE WATER STOP ALONG SEAM BETWEEN NEW CONCRETE AND EXISTING.

**DELETED WORK**

**FeCl PUMP ENCLOSURE CONTAINMENT PAD DETAIL**



**FeCl PUMP ENCLOSURE AREA  
PROPOSED PLAN VIEW**



CONCRETE LINER WORK (WITH QUANTITIES)				
KEY	DESCRIPTION OF WORKS	TOTAL QUANTITY	UNITS	COMMENTS
HL	HYDROBLAST CLEANING (SLIGHTLY ETCH SURFACE)	50	SF.	DONE IN CONTRACT #1
L	INSTALLED LINER	50	SF.	REFER TO SPEC. SECTION 09900

RECORD DRAWING

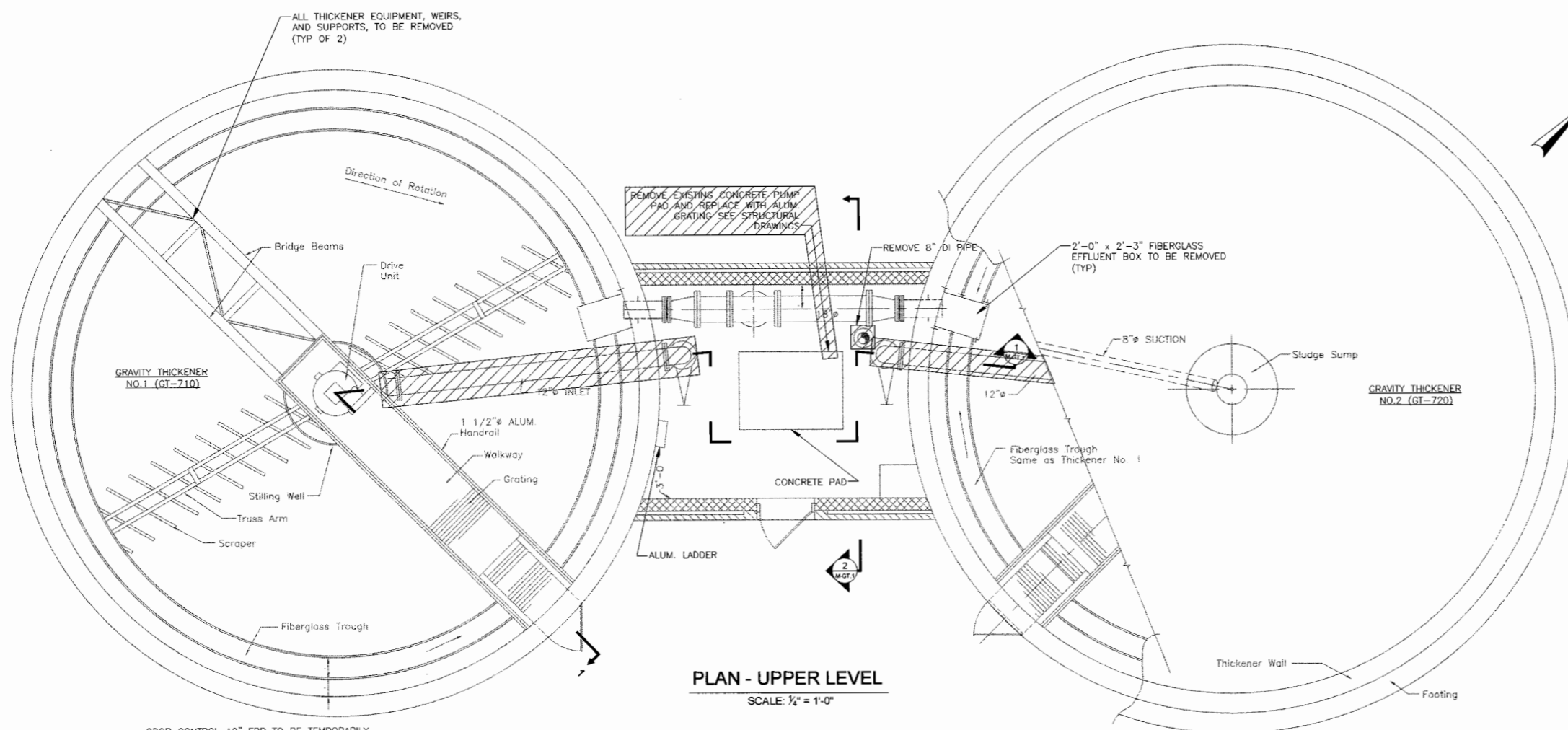
No.	1	Date	05/2014	Dr:By	MJM	Ch:By	ELM	App:By	KMN	Description	RECORD DRAWING
A P P R O V E D											
										REGISTERED PROFESSIONAL ENGINEER	DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

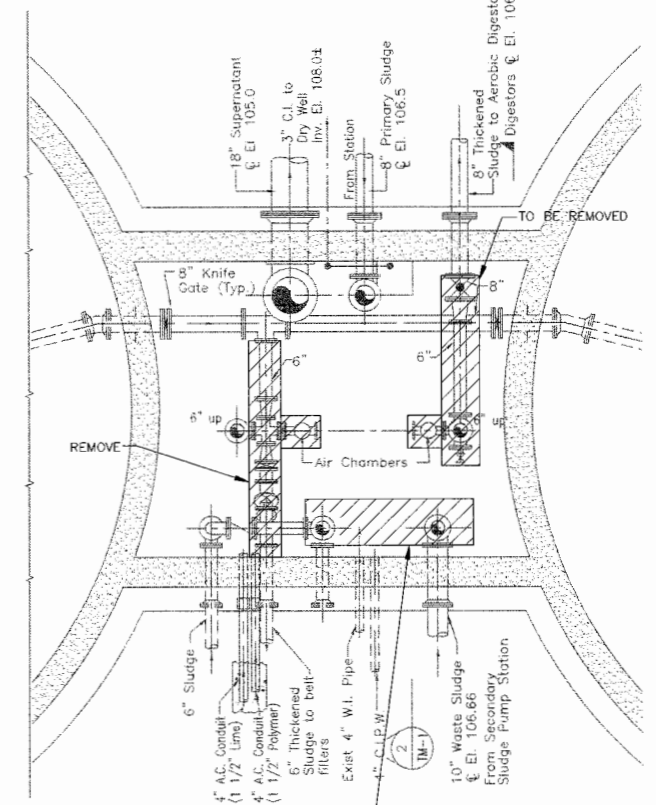
**FERRIC CHLORIDE CONTAINMENT AREA  
PUMP ENCLOSURE IMPROVEMENTS**

SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2  
 DR BY: EAM  
 DSK BY: CNR  
 CHK BY: CNR  
 APP BY: KMN

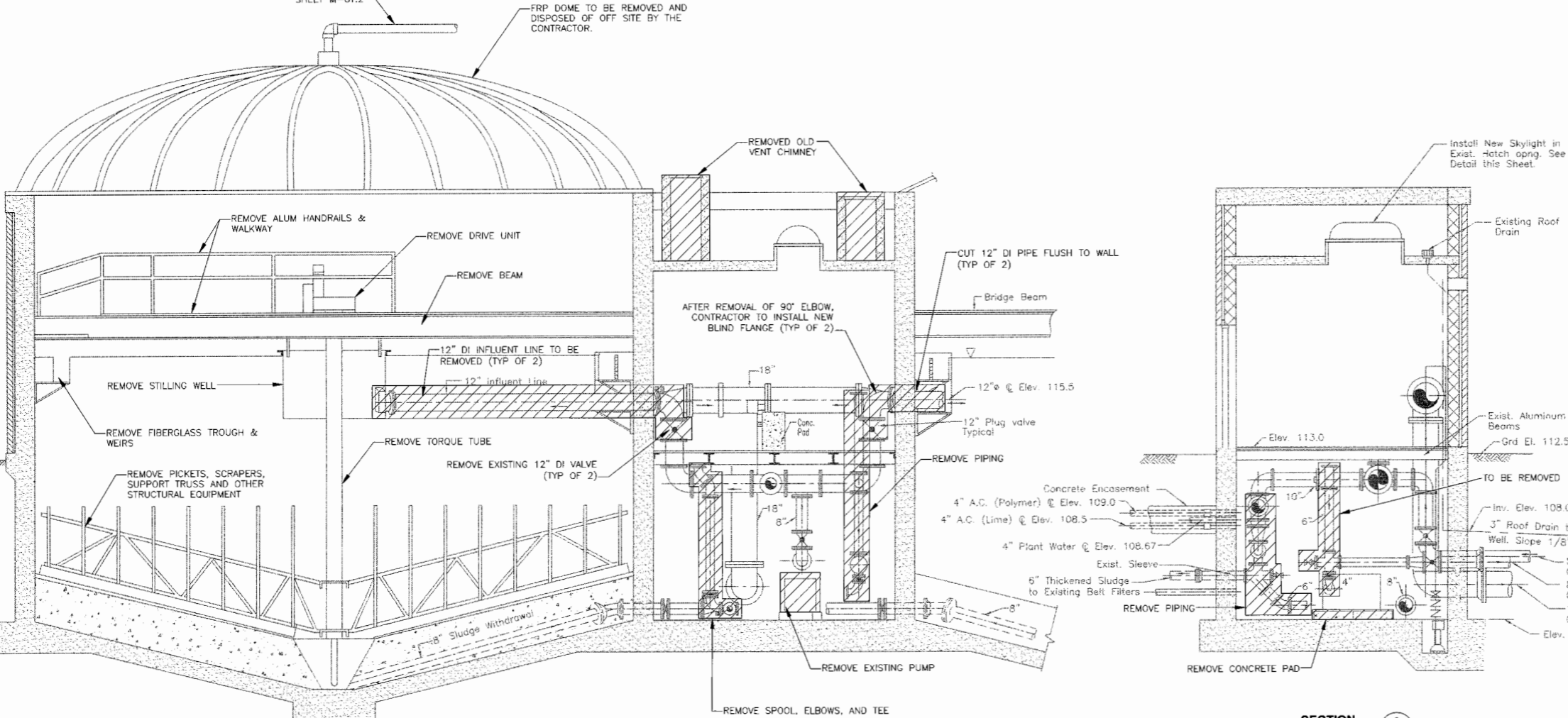




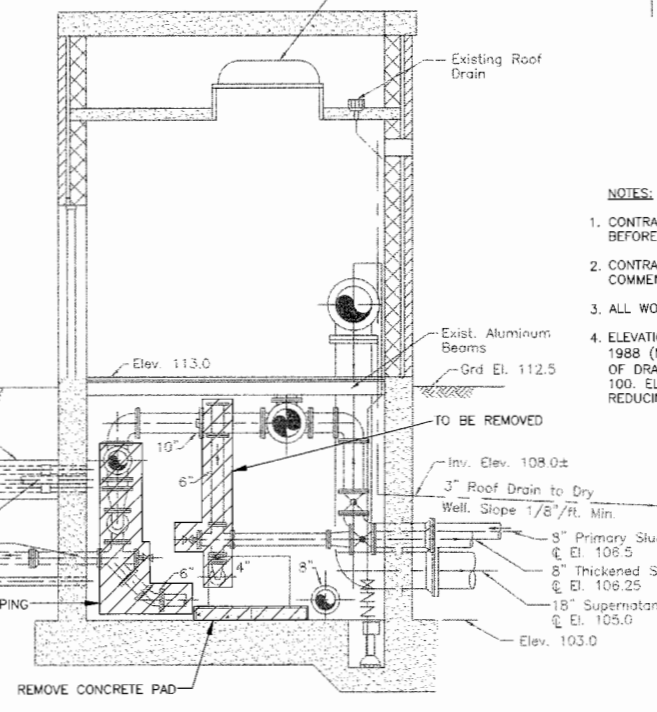
**PLAN - UPPER LEVEL**  
SCALE: 1/4" = 1'-0"



**PLAN - BASEMENT**  
SCALE: 1/4" = 1'-0"



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



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

- NOTES:**
- CONTRACTOR MUST COMPLETE WORK ON THICKENER NO.2 AND RECEIVE APPROVAL FROM THE ENGINEER BEFORE STARTING WORK ON NO. 1 THICKENER.
  - CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCEMENT OF WORK. SEE NOTE SHEET G-2.
  - ALL WORK REPRESENTED ON THIS DRAWING APPLIES TO BOTH GRAVITY THICKENERS
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY - 100.50 FEET.

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WINCHESTER, MA 01890  
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FAX (978) 532-4645

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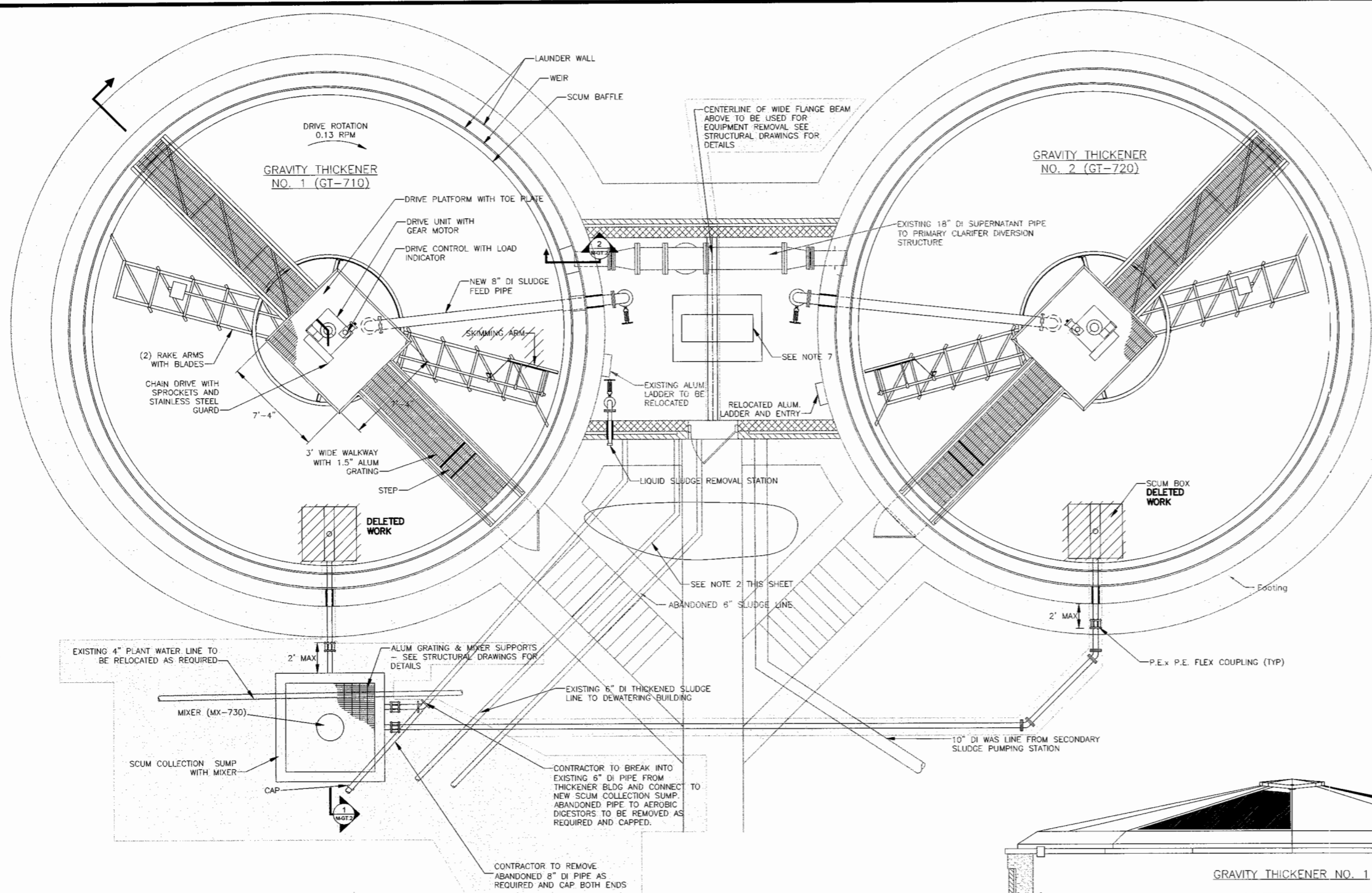
No.	Date	Dr. By	Chk. By	App. By	Description
1	05/20/14	MM	ELM	RWN	RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER  
DATE

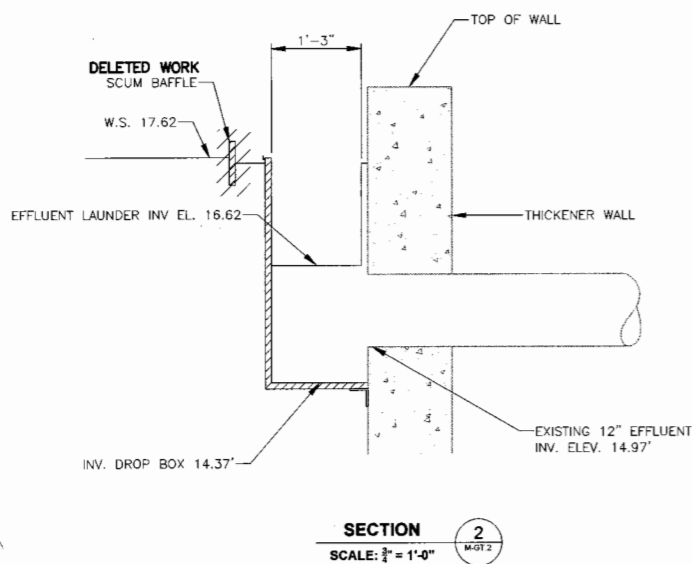
FILE NO.	CADD NO.	SCALE	CONTRACT	JOB NO.	DR. BY	CHK. BY	APP. BY
M-GT.1	189-114	AS NOTED	2090269	2	MRC	RMC	RMC

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
GRAVITY THICKENER AREA  
EQUIPMENT REMOVAL  
SHEET 89 OF 202

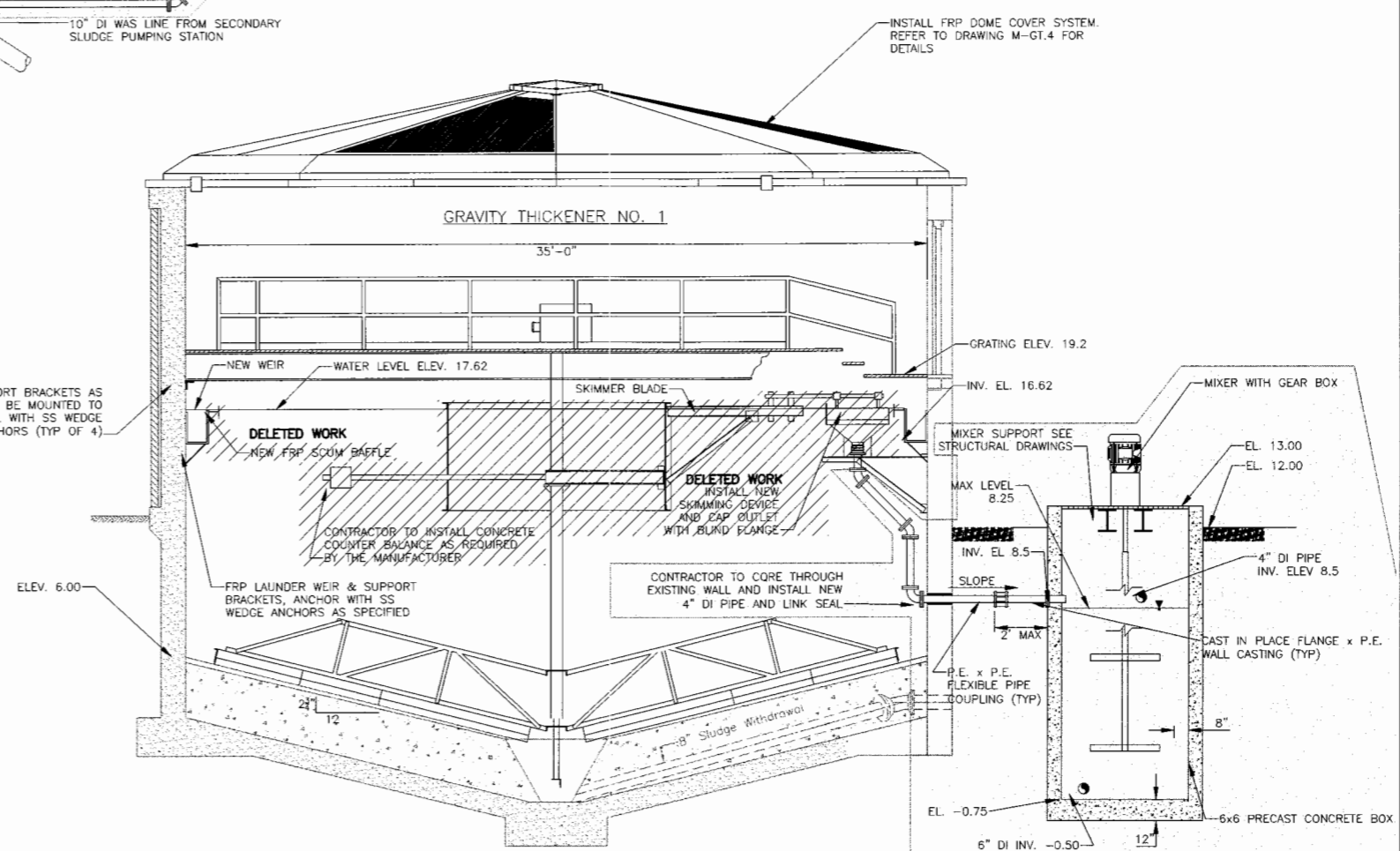
**RECORD DRAWING**



**PLAN-UPPER LEVEL  
GRAVITY THICKENERS**  
SCALE: 1/4" = 1'-0"



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



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

- NOTES:**
- CONTRACTOR TO FIELD VERIFY ALL ELEVATIONS AND DIMENSIONS PRIOR TO START OF WORK.
  - NOT ALL PIPES, CONDUITS, AND ELEVATIONS ARE SHOWN ON THE DRAWINGS. FOR ADDITIONAL INFORMATION REFER TO CONTRACT RECORD DRAWINGS AND FIELD VERIFY AS REQUIRED.
  - THE CONTRACTOR SHALL TEMPORARILY SUPPORT ODOR CONTROL PIPING, UNBOLT CONNECTION TO DOME COVER AND INSTALL BLIND FLANGES AT GT. ONCE WORK IS COMPLETE ON THICKENER NO. 1, RECONNECT TO NEW ODOR CONTROL SYSTEM PIPING AS SHOWN ON SHEET M-GT.1
  - PROVIDE TEMPORARY ODOR CONTROL PIPING TO GT. NO. 1 WHILE WORK IS BEING DONE ON GT. NO. 2.
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.
  - SHADED AREAS INDICATE LIMITS OF FUTURE WORK AND ARE NOT TO BE INCLUDED AS PART OF THE WORK PERFORMED UNDER THIS CONTRACT.
  - OLD PUMP PAD TO BE REMOVED.

WORK TO BE COMPLETED UNDER FUTURE CONTRACT

**INTERSTATE WATER AND WASTEWATER SPECIALISTS**  
16 SCARLETT DRIVE, WINDHAM, MA 01980  
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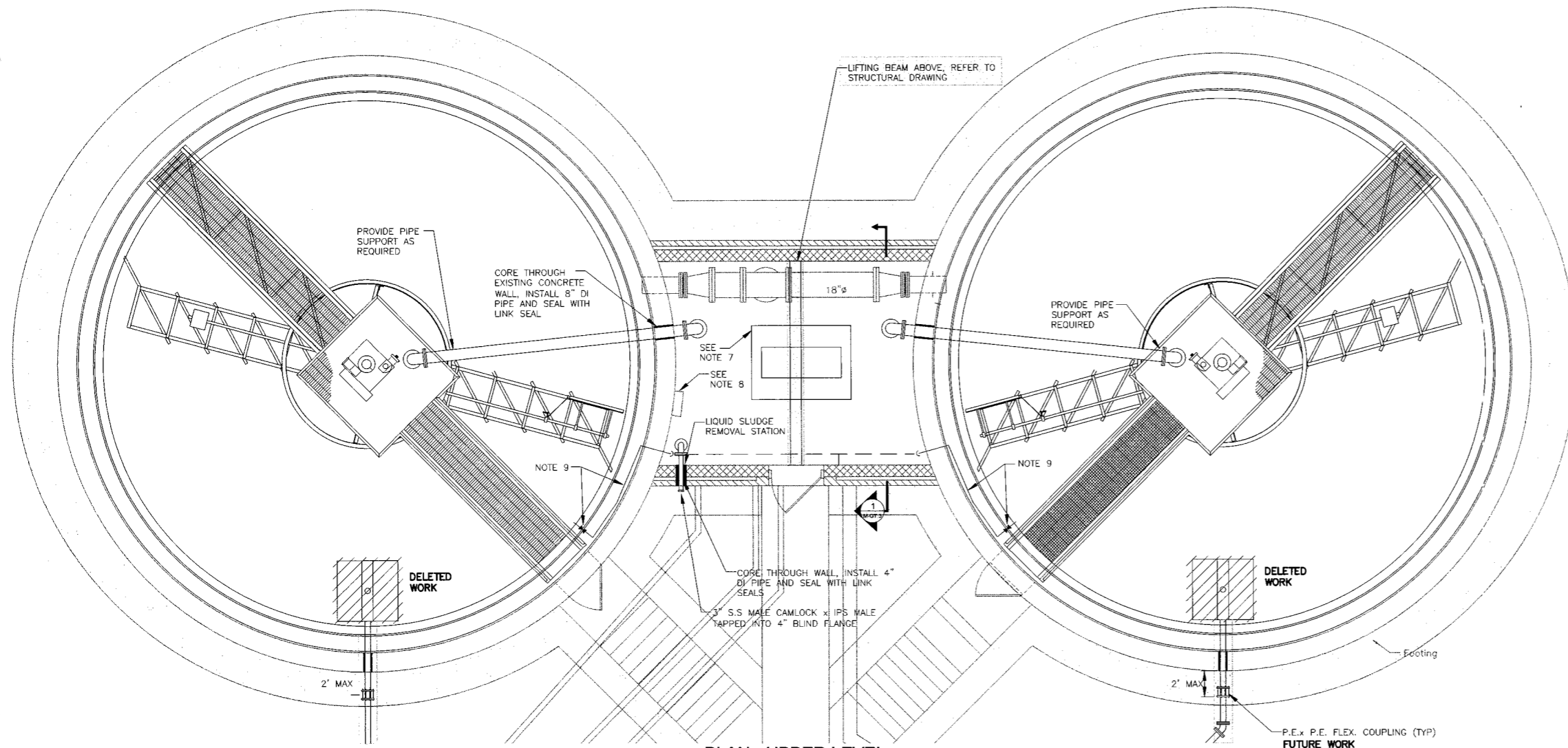
No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	MAM	ELM	KMN	RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER  
DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
GRAVITY THICKENER AREA  
EQUIPMENT INSTALLATION 1  
JOB NO. 2090269  
CONTRACT: 2  
SCALE: AS NOTED  
CADD NO. 189-113

**M-GT.2**  
SHEET 90 OF 202

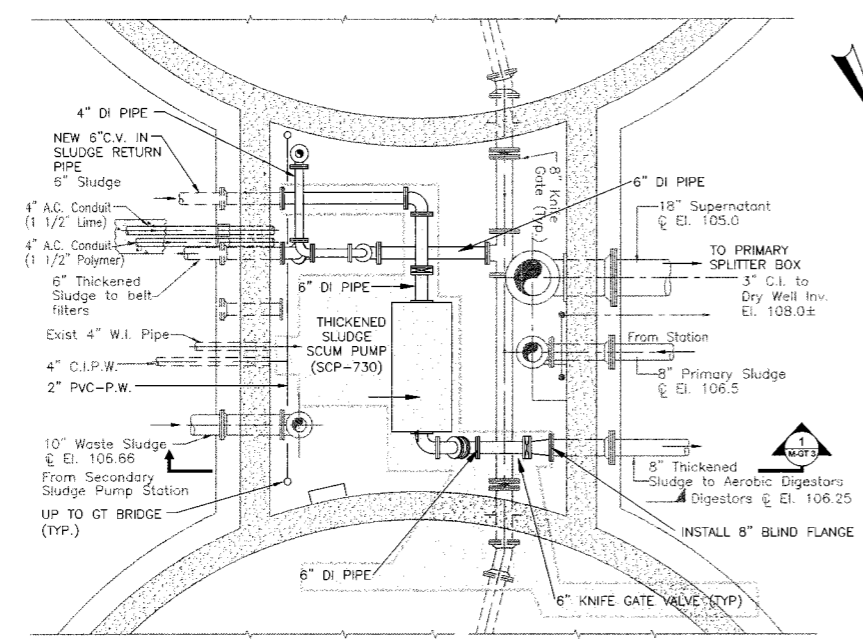
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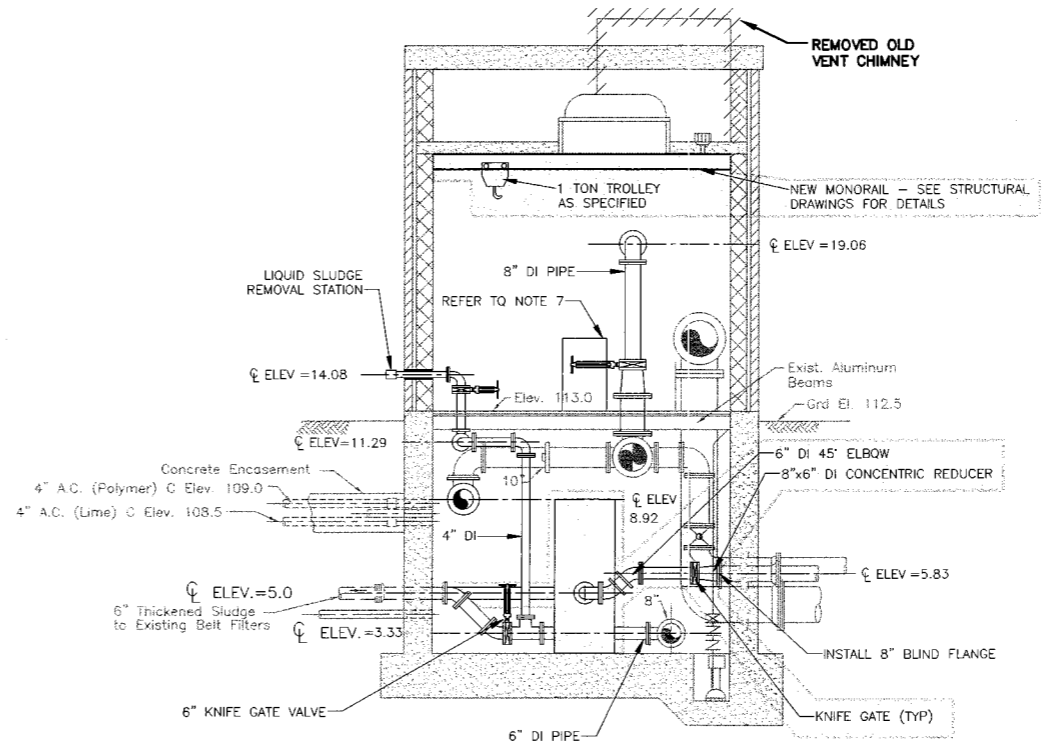
**PLAN - UPPER LEVEL**  
**GRAVITY THICKENER**  
 SCALE: 1/4" = 1'-0"

- NOTES:**
- ALL PIPE FITTINGS SHALL BE VICTAULIC TO ALLOW FLEXIBILITY AND EASE OF MAINTENANCE OF THE FUTURE PUMPING SYSTEM.
  - KNIFE GATE VALVES SHALL BE ROTATED IN SUCH A MANNER AS TO ALLOW EASE OF ACCESS FOR OPERATION AND MAINTENANCE.
  - CONTRACTOR RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS & ELEVATIONS.
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.
  - ALL WORK REPRESENTED ON THIS DRAWING REPRESENTS BOTH GRAVITY THICKENERS.
  - SHADED AREAS INDICATE LIMITS OF FUTURE WORK AND ARE NOT TO BE INCLUDED AS PART OF THE WORK PERFORMED UNDER THIS CONTRACT.
  - TEMPORARY BELT FILTER FEED PUMP TO BE INSTALLED AND PIPED BY OWNER. (NOT USED).
  - EXISTING ACCESS LADDER TO REMAIN.
  - 2" PVC PLANT WATER TO VALVE AND HOSE CONNECTION FOR WASHDOWN. ISOLATION AND DRAIN VALVES AT LOW POINT IN CONNECTOR BASEMENT.

— WORK TO BE COMPLETED UNDER FUTURE CONTRACT



**PLAN - LOWER LEVEL**  
 SCALE: 1/4" = 1'-0"



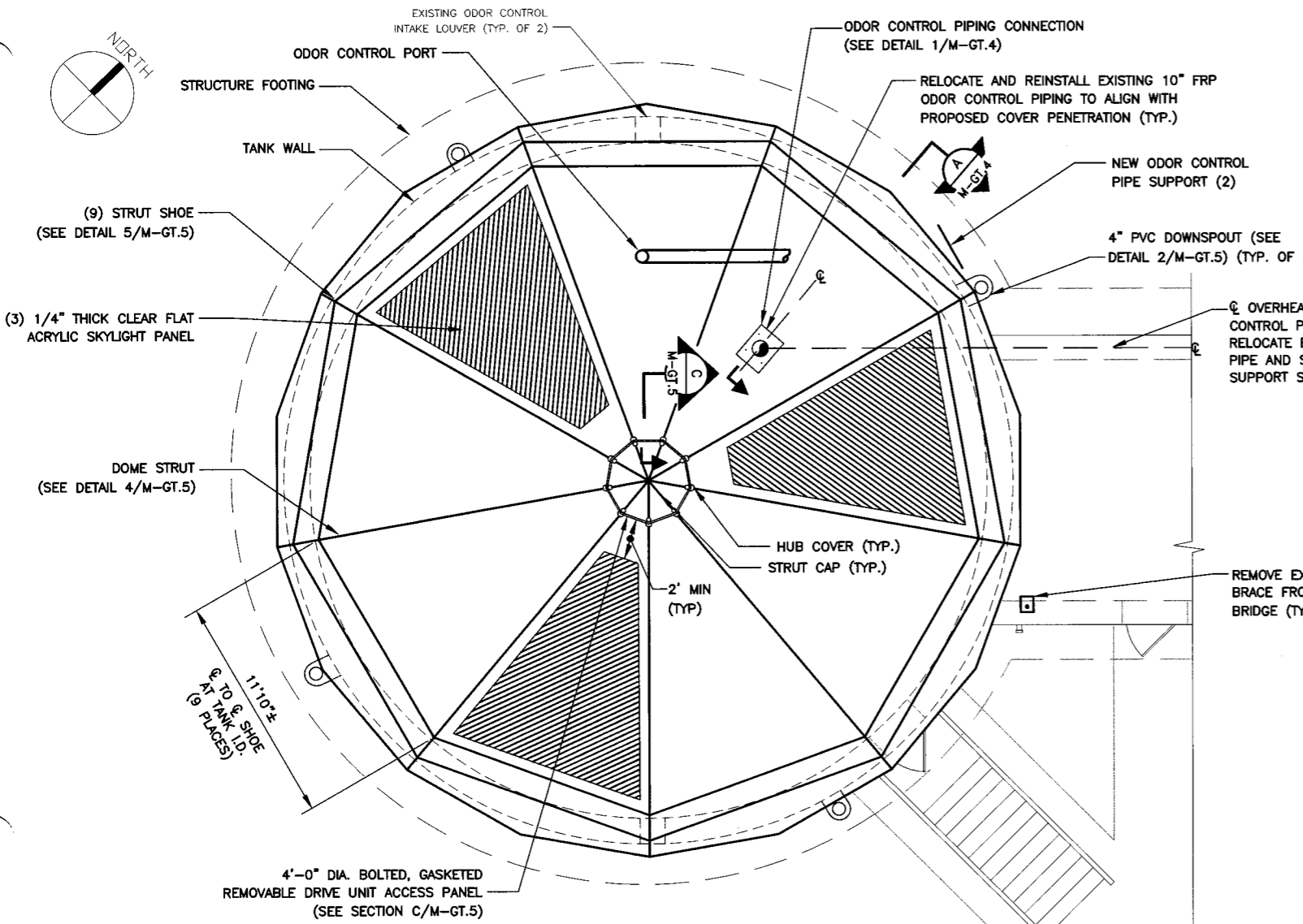
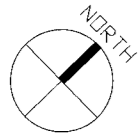
**SECTION 1**  
 SCALE: 1/4" = 1'-0" M-GT.3

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**GRAVITY THICKENER AREA EQUIPMENT INSTALLATION II**

FILE NO.	189-112
CADD NO.	1
SCALE:	AS NOTED
CONTRACT:	2090269
DR BY:	MRC
DSN BY:	RMC
CHK BY:	RMC
APP BY:	RMC

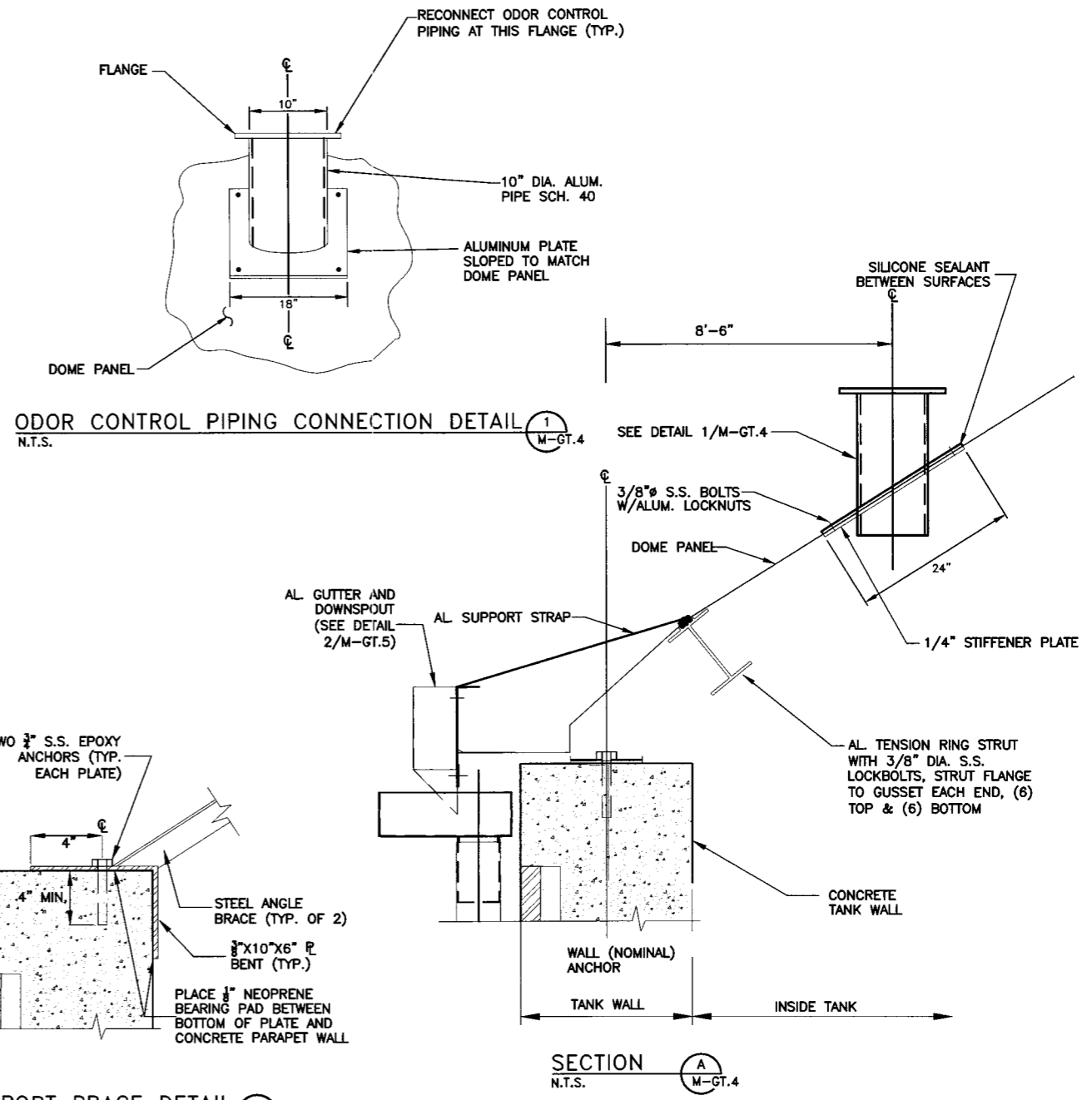
**M-GT.3**

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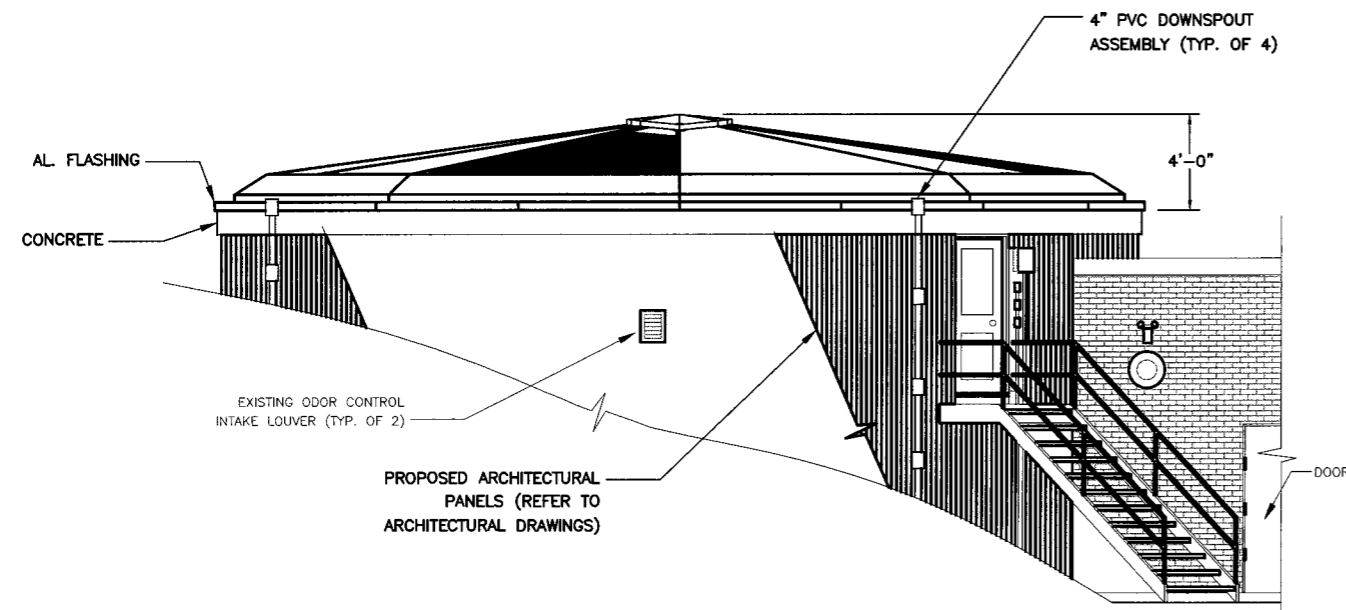


**FRP DOMES INSTALLED**

**PROPOSED GRAVITY THICKENER COVER – PARTIAL PLAN**  
SCALE: 1/4" = 1'



**PIPE SUPPORT BRACE DETAIL**  
N.T.S. M-GT.4



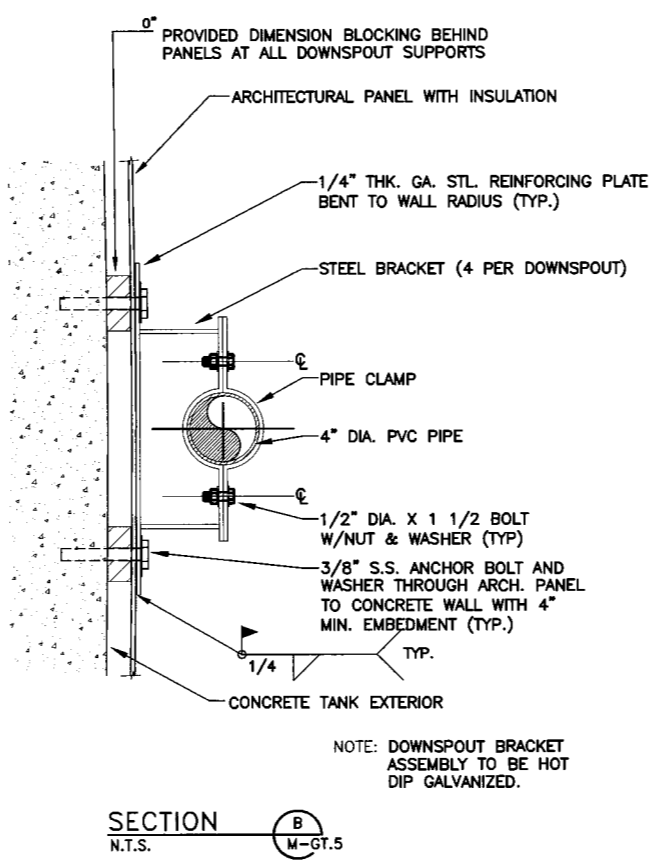
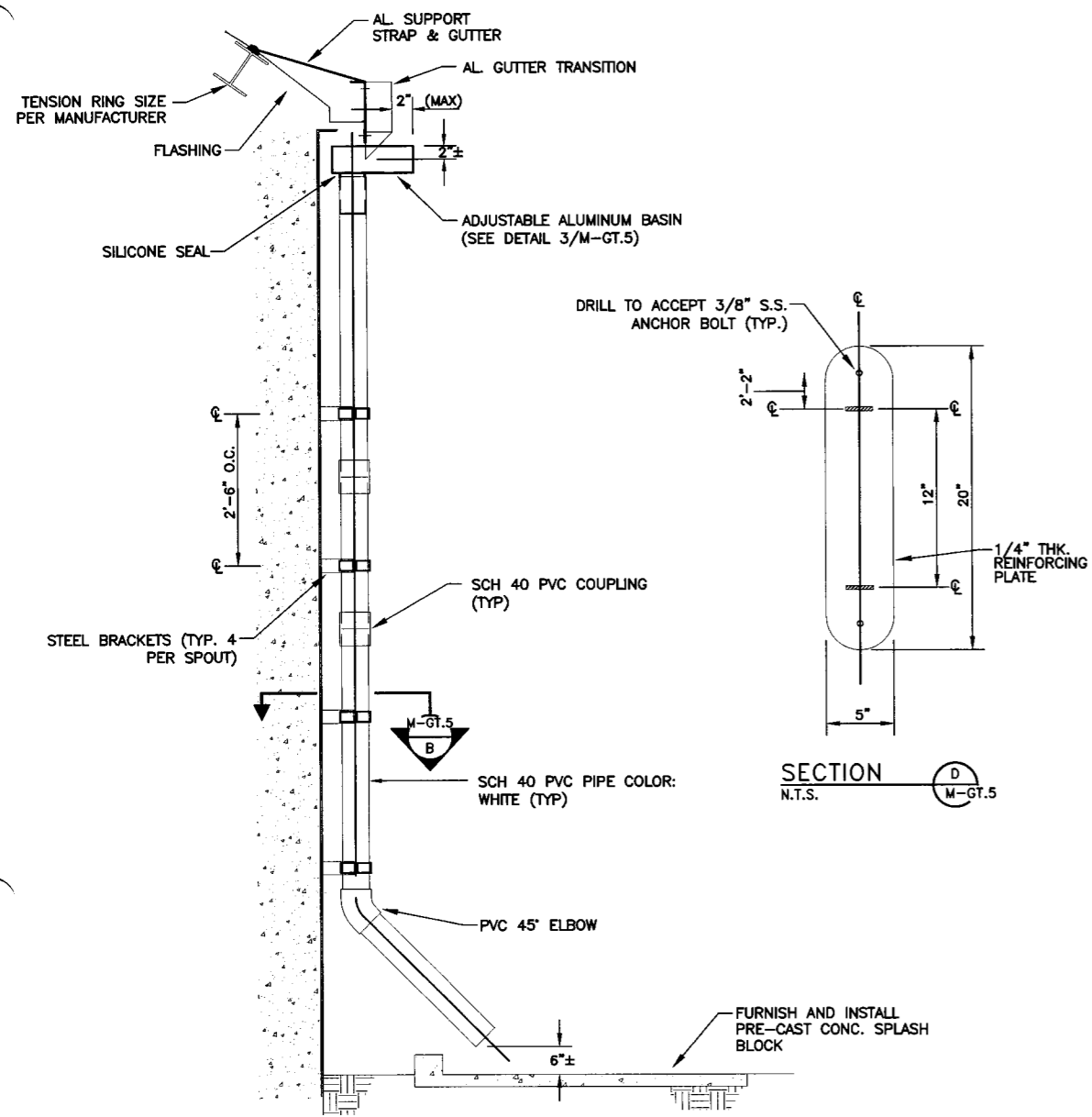
**PROPOSED GRAVITY THICKENER COVER – PARTIAL ELEVATION**  
SCALE: 1/4" = 1'

**NOTES:**

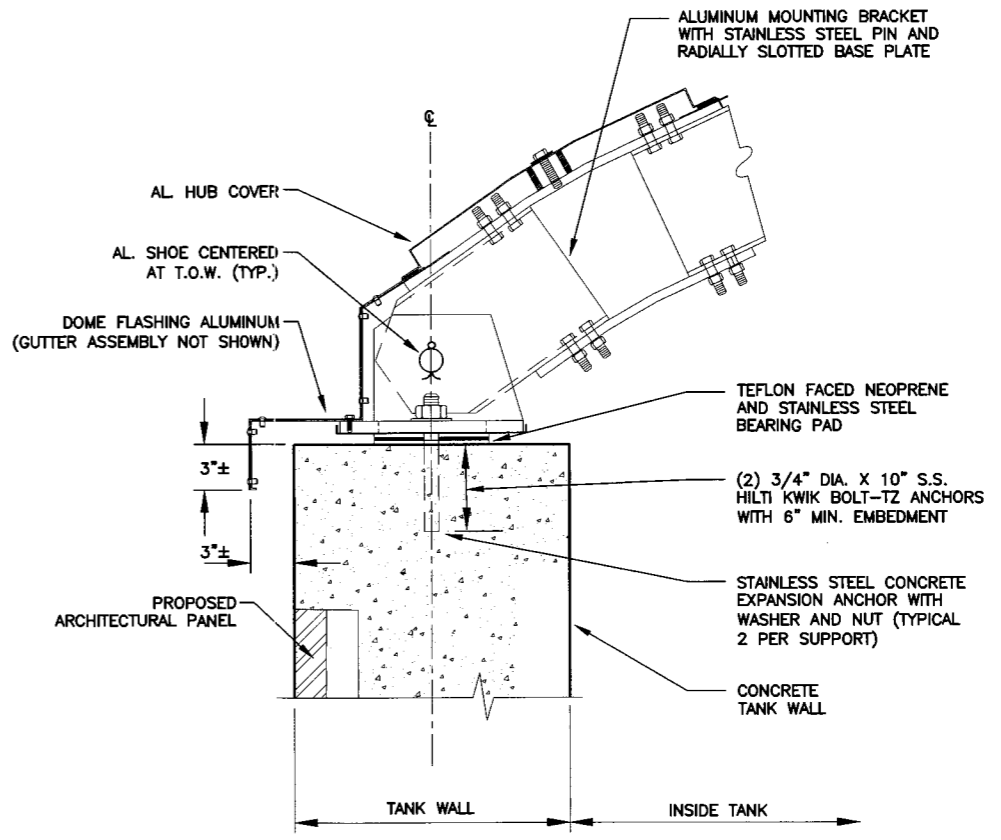
- CONTRACTOR TO FIELD VERIFY ALL ELEVATIONS AND DIMENSIONS PRIOR TO START OF WORK.
- NOT ALL PIPES, CONDUITS, AND ELEVATIONS ARE SHOWN ON THE DRAWINGS. FIELD VERIFY AS REQUIRED. SEE SHEET G-2 FOR CONSTRUCTION NOTES.
- CONTRACTOR TO FURNISH AND INSTALL FIBERGLASS DOME COVER SYSTEM FOR BOTH GRAVITY THICKENERS AS DESCRIBED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS. COVER MUST BE SELF-SUPPORTING.
- COVER SYSTEM CONFIGURATION SHALL BE MIRRORED FOR GRAVITY THICKENER NO. 2.
- ALL COVER SYSTEM COMPONENTS AND ANCHORING MATERIALS TO BE SUPPLIED BY COVER SYSTEM MANUFACTURER. SHOP DRAWINGS FOR COVER SYSTEM TO BE REVIEWED AND CERTIFIED BY A MASSACHUSETTS LICENSED PROFESSIONAL ENGINEER.
- DESIGN LOADS (PER IBC-2009):  
SNOW LOAD 60 PSF  
WIND LOAD 100 MPH
- ALL DETAIL DIMENSIONS SHOWN ARE NOMINAL AND IN INCHES, UNLESS OTHERWISE NOTED.
- ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE WILL BE SEPARATED FROM THE CONCRETE WITH A COATING OR OTHER ISOLATION MATERIAL. REFER TO COVER SPECIFICATIONS.
- REFER TO SHEET M-GT.1 FOR ODOR CONTROL PIPING CONTINUATION.
- EXISTING FIBERGLASS DOME COVERS TO BE REMOVED AND DISPOSED OF OFF SITE BY CONTRACTOR.
- SKYLIGHT PANELS TO BE FACTORY INSTALLED AND SEALED IN AFFECTED PANEL SECTIONS.
- ALL STEEL, NEW AND EXISTING, RELATED TO THE ODOR CONTROL PIPE SUPPORT SHALL BE SAND BLASTED AND RECOATED IN ACCORDANCE WITH SPECIFICATION SECTION 09900.

RECORD DRAWING		Description	
No.	Date	Dr. By	App. By
1	05/2014	MM	ELM
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REGISTERED PROFESSIONAL ENGINEER			DATE

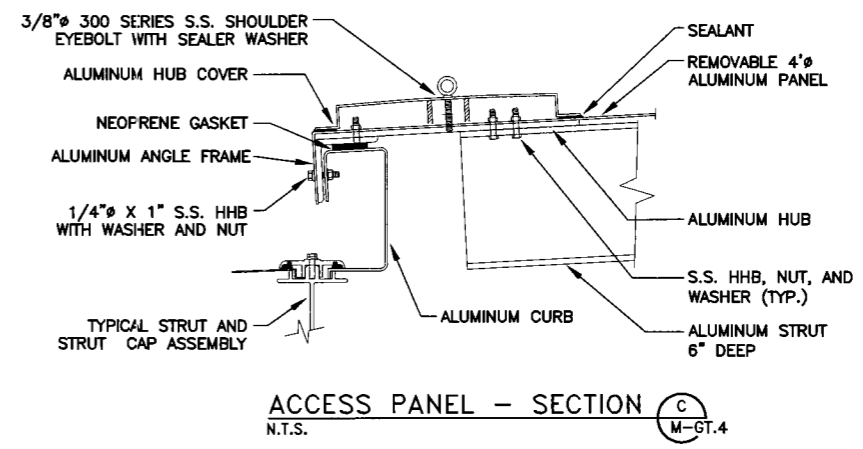
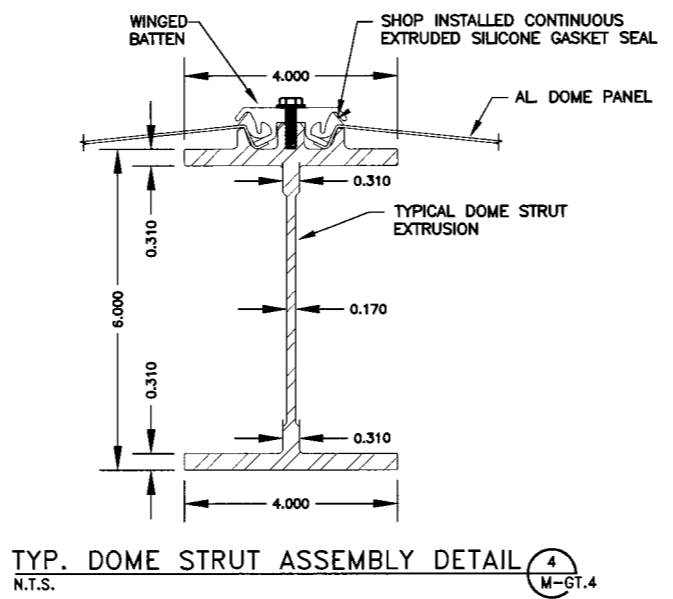
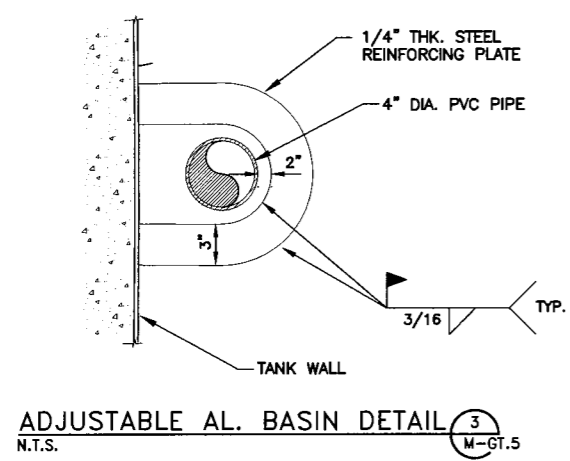
**M-GT.4**



**FRP DOMES INSTALLED**



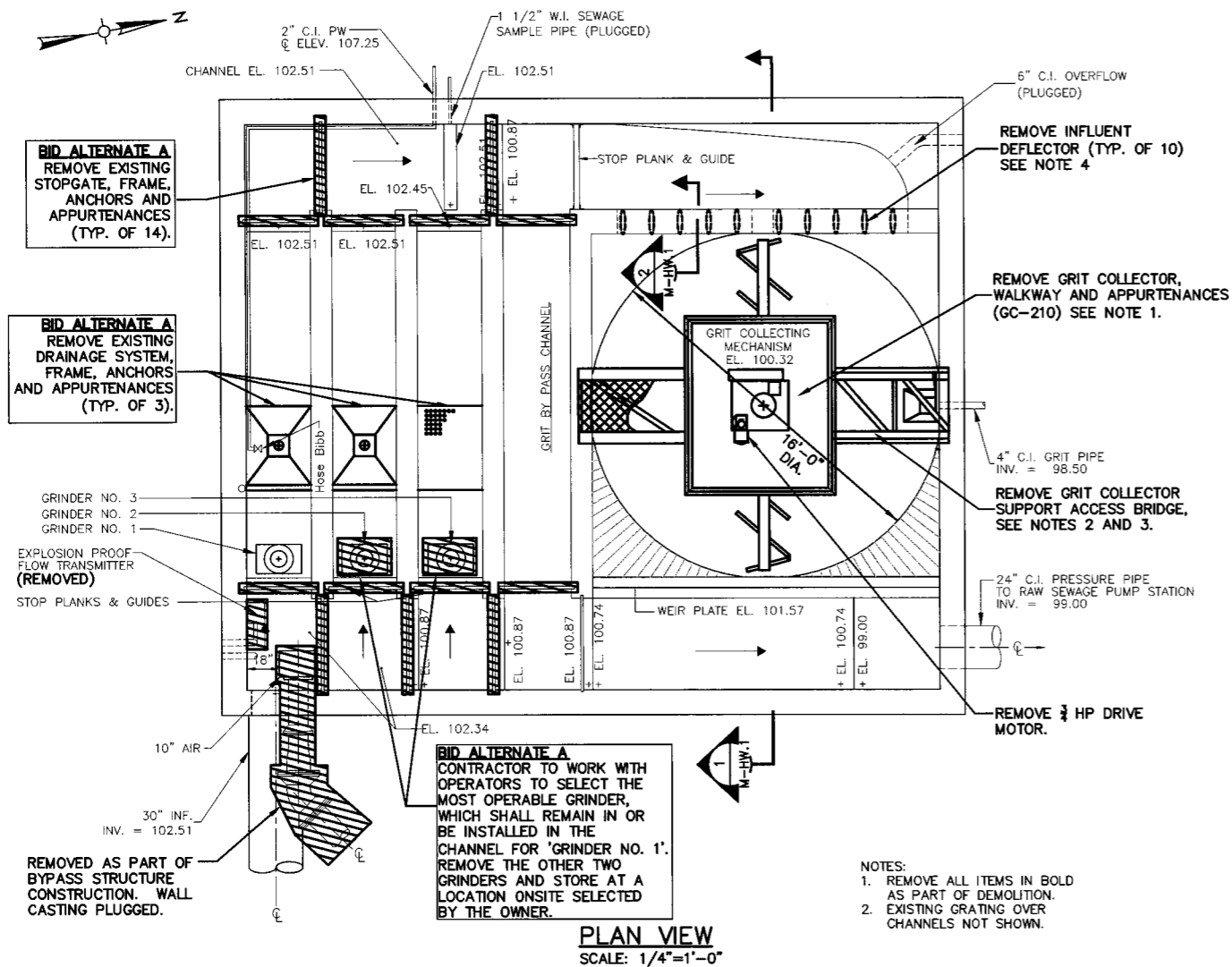
- NOTES:
- REFER TO DOWNSPOUT DETAIL THIS SHEET.
  - PRESSURE-WASH TOP OF WALL AND USE GROUT TO LEVEL SPALLED AREAS PRIOR TO PLACEMENT OF BEARING PADS.



1	05/2014	MM	ELM	KMN	App. By	A	P	R	O	V	E	D	DATE
No.	Date	Dr. By	Chk. By	App. By	Description								
					REGISTERED PROFESSIONAL ENGINEER								

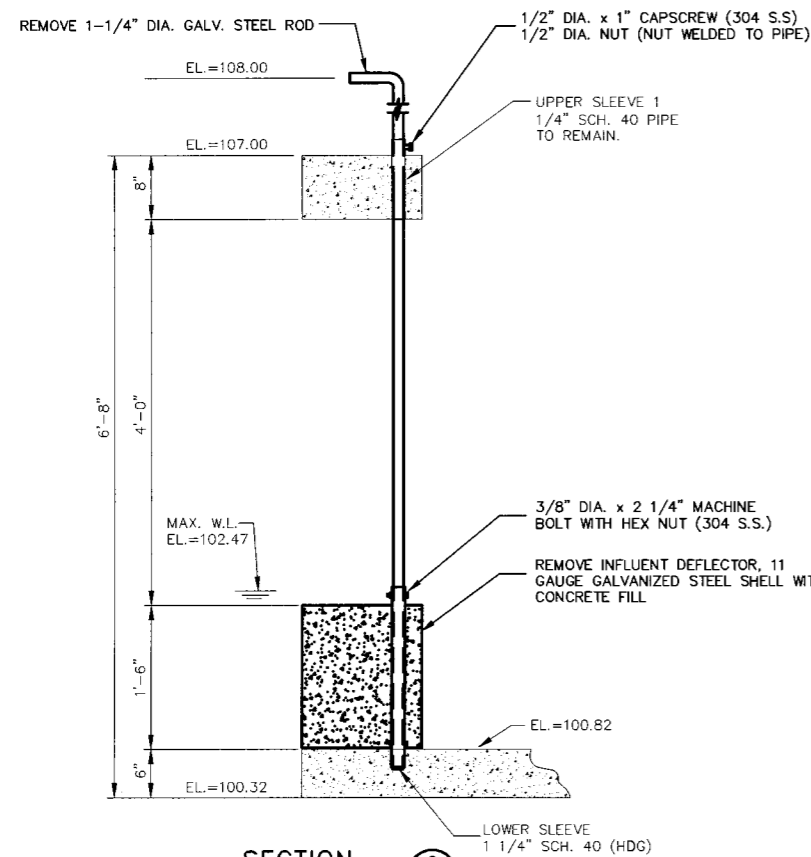
FRP DOMES INSTALLED

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT GRAVITY THICKENER COVER DETAILS	SCALE: AS NOTED	CONTRACT: 2	JOB NO.: 2090269	DR. BY: KKM	CHK. BY: MAS	APP. BY: KMN
CADD NO.:	SCALE:	CONTRACT:	JOB NO.:	DR. BY:	CHK. BY:	APP. BY:
189-110		2	2090269	KKM	MAS	KMN



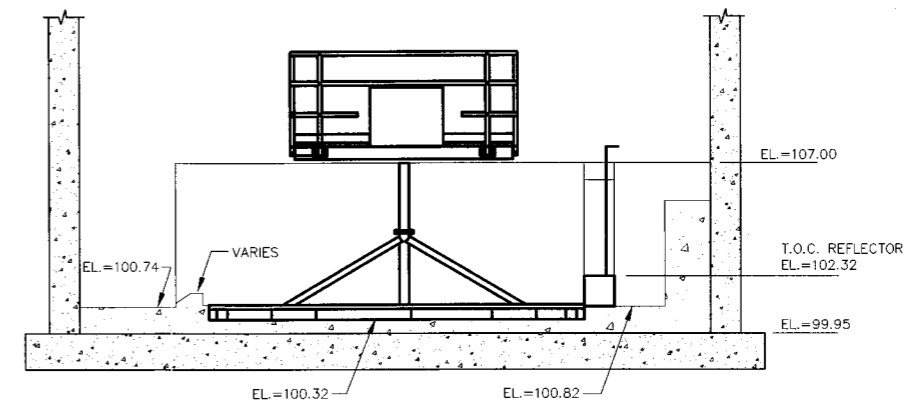
**PLAN VIEW**  
SCALE: 1/4"=1'-0"

- NOTES:
1. REMOVE ALL ITEMS IN BOLD AS PART OF DEMOLITION.
  2. EXISTING GRATING OVER CHANNELS NOT SHOWN.



**SECTION 2**  
SCALE: 1"=1'-0" M-HW.1

NOTE: REMOVE ALL ITEMS IN BOLD AS PART OF DEMOLITION.



**SECTION 1**  
SCALE: 1/4"=1'-0" M-HW.1

NOTE: REMOVE ALL ITEMS IN BOLD AS PART OF DEMOLITION.

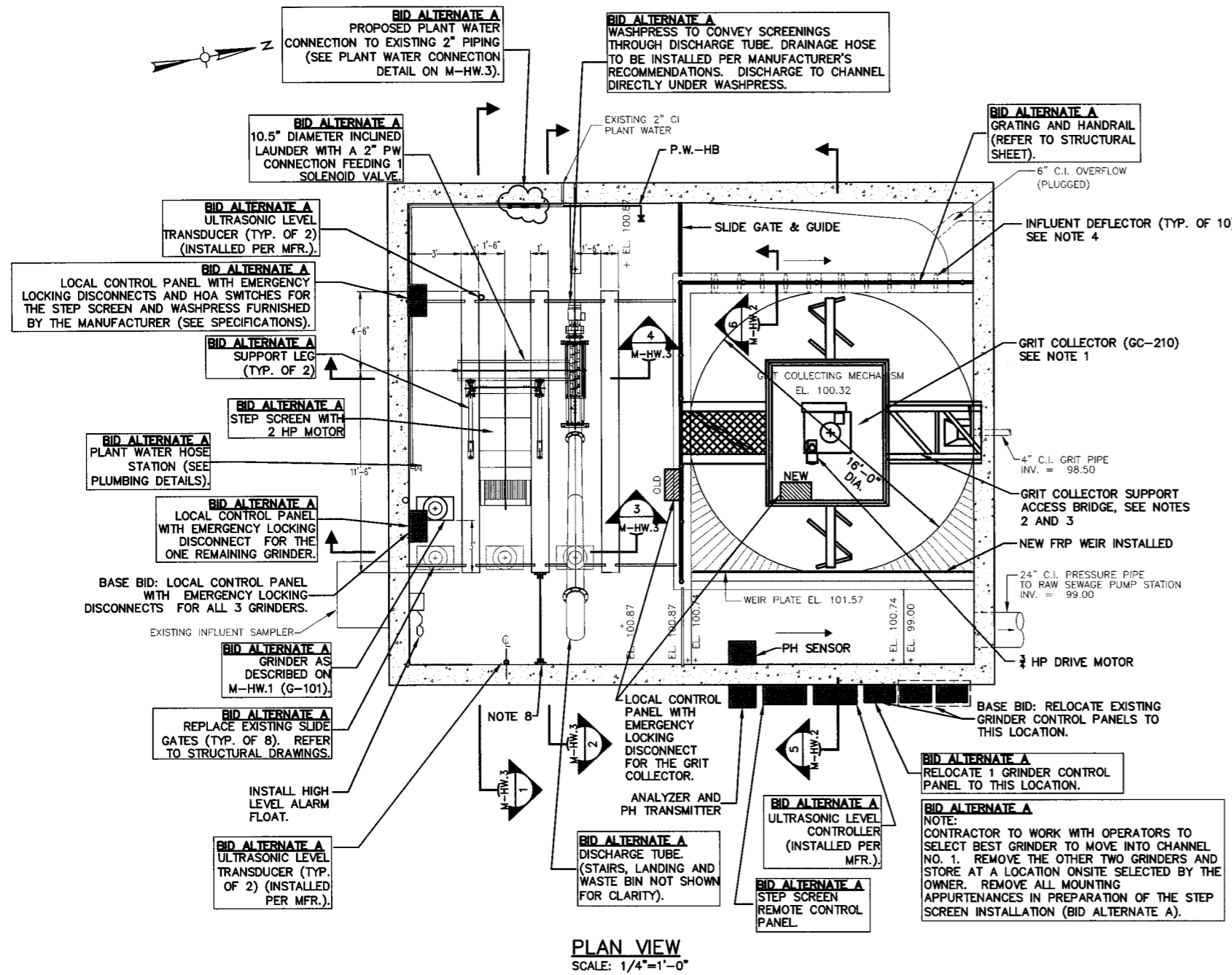
**DEMOLITION NOTES:**

1. REMOVE GRIT COLLECTOR (GC-210) COMPLETE. THIS INCLUDES BUT IS NOT LIMITED TO DRIVE, SHAFT, BLADES, MOTOR, SUPPORT STRUCTURE, CONTROL SWITCHES AND TORQUE OVERLOAD SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 02220.
2. REFER TO STRUCTURAL DRAWINGS FOR CONCRETE AND STRUCTURAL MATERIALS DEMOLITION REQUIREMENTS.
3. ACCESS BRIDGE SHALL BE REMOVED.
4. REMOVE TEN (10) INFLUENT DEFLECTORS.
5. ALL TANK AND CHANNEL DIMENSIONS SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DEMOLITION.
6. IT IS ASSUMED THAT THE GRIT PUMP (GP-221) MAY BE USED TO TRANSFER ALL ACCUMULATED GRIT OUT OFF THE TANK PRIOR TO WORK WITHIN THE STRUCTURE.
7. ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
8. WHERE EQUIPMENT HAS BEEN REMOVED GRIND ANCHOR BOLTS BACK 1/2" BELOW CONCRETE SURFACE AND PATCH WITH 5,000 PSI NON-SHRINK, NON-METALIC GROUT.
9. ALL DEMOLISHED EQUIPMENT AND APPURTENANCES SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH STATE REQUIREMENTS. TRANSPORTATION AND DISPOSAL SHALL BE BY THE CONTRACTOR.
10. REFER TO E DRAWINGS FOR ELECTRICAL DEMOLITION REQUIREMENTS.
11. REFER TO H & P DRAWINGS FOR HVAC AND PLUMBING DEMOLITION REQUIREMENTS.
12. DURING DEMOLITION, CONTRACTOR SHALL TAKE PRECAUTIONS NECESSARY TO PREVENT DEMOLITION MATERIALS FROM ENTERING THE WASTEWATER, AND DAMAGING EXISTING DOWNSTREAM PROCESS EQUIPMENT.
13. DEMOLITION WORK AREA SHALL BE CONTROLLED PER THE CONTRACTOR'S HEALTH AND SAFETY PLAN.
14. DEMOLITION WORK WITHIN THE HEADWORKS REQUIRES VENTILATION IN ACCORDANCE WITH NFPA 820.
15. CONTRACTOR SHALL NOT, AT ANY TIME, OPERATE ANY VALVES OR EQUIPMENT WITHOUT CONCURRENCE OF THE OPERATORS.
16. ALL WORK SHALL BE COORDINATED WITH OWNER AND ENGINEER SO THAT NORMAL OPERATION OF THE WASTEWATER TREATMENT FACILITY IS NOT AFFECTED.
17. PLEASE NOTE THAT GRIT DETRITOR DEMOLITION IS NOT PART OF BID ALTERNATE A. BID ALTERNATE A INCLUDES THE SPECIFIED WORK IN THE INFLUENT CHANNELS.

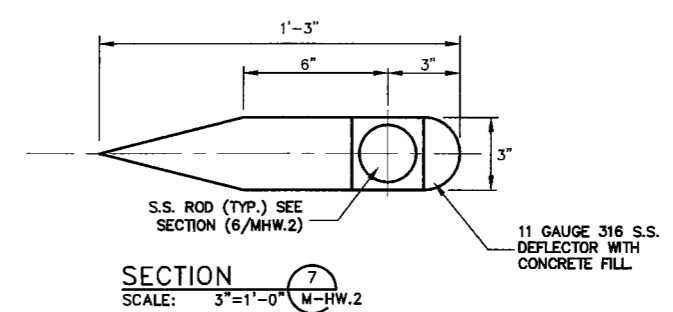
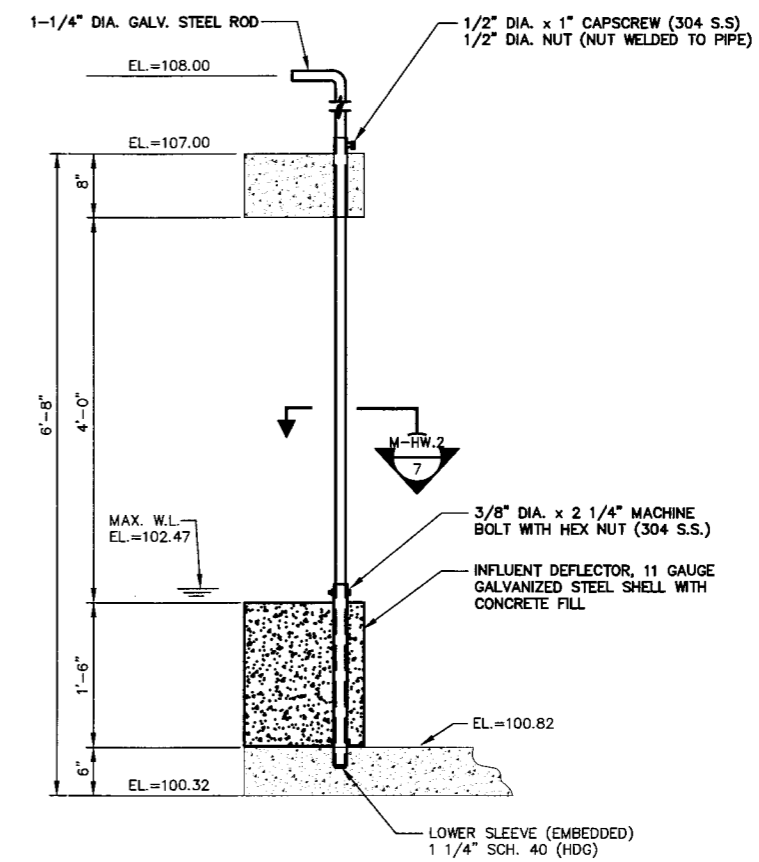
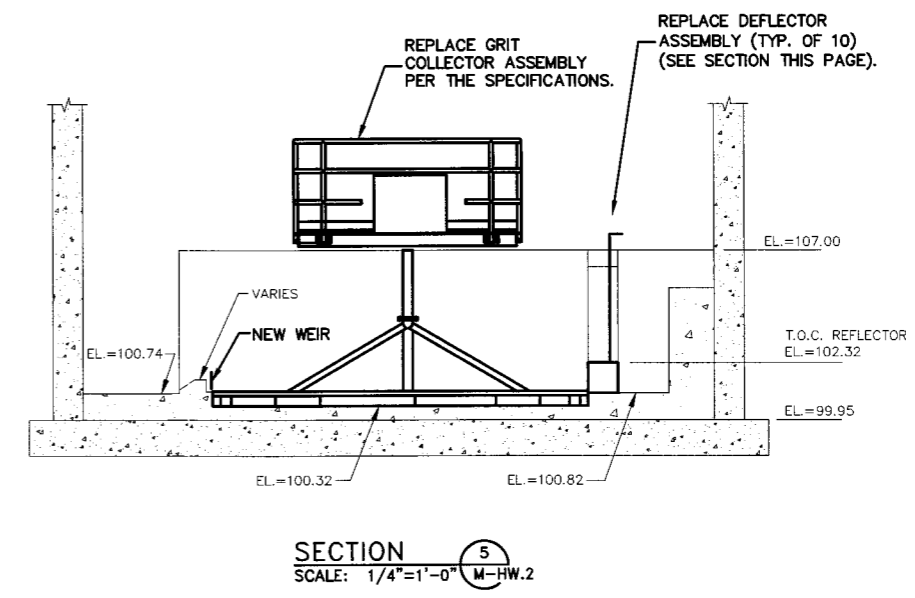
1	05/2014	MJM	ELM	KMN	KMN	RECORD DRAWING
No.	Date	Dr. By	Ck. By	App. By	App. By	Description
		A	P	R	O	V
						E
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REGISTERED PROFESSIONAL ENGINEER  
 DATE

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	SCALE: AS NOTED	CONTRACT: 2090269	JOB NO. 2	DRY BY: DSK	CHK BY: CMP	APP BY: KMN
<b>HEADWORKS DEMOLITION PLAN</b>	SCALE: 1"=1'-0" M-HW.1	CONTRACT: 2090269	JOB NO. 2	DRY BY: DSK	CHK BY: CMP	APP BY: KMN



- NOTES:**
1. REPLACE GRIT COLLECTOR (GC-210) COMPLETE. THIS INCLUDES BUT IS NOT LIMITED TO DRIVE, SHAFT, BLADES, MOTOR, SUPPORT STRUCTURE, CONTROL SWITCHES AND TORQUE OVERLOAD SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 11321.
  2. EQUIPMENT SUPPORT STRUCTURE SHALL BE REPLACED TO SUIT EXISTING TANK STRUCTURE. BRIDGE TO BE FURNISHED BY EQUIPMENT MANUFACTURER AND INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. BRIDGE TO HAVE DESIGN LIVE LOAD OF 200 PSF.
  3. ACCESS BRIDGE SHALL BE REPLACED TO MAINTAIN EQUIPMENT. BRIDGE SHALL EXTEND TO CENTER PLATFORM. REFER TO STRUCTURAL DRAWINGS.
  4. REPLACE TEN (10) INFLUENT DEFLECTORS COMPLETE. CONCRETE SLEEVES AND BUSHINGS SHALL BE REFURBISHED FOR RELIABLE OPERATION.
  5. ALL TANK AND CHANNEL DIMENSIONS SHALL BE VERIFIED BY CONTRACTOR PRIOR TO ORDERING ANY EQUIPMENT. DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
  6. IT IS ASSUMED THAT THE GRIT PUMP (GP-221) MAY BE USED TO TRANSFER ALL ACCUMULATED GRIT OUT OFF THE TANK PRIOR TO WORK WITHIN THE STRUCTURE.
  7. ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
  8. FUTURE SLIDE GATE BY OWNER.



RECORD DRAWING

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1	05/2014	M.M.	Dr. By	M.M.	Elm	K.M.	App. By	A	P	R	O	V	E	D
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REGISTERED PROFESSIONAL ENGINEER														
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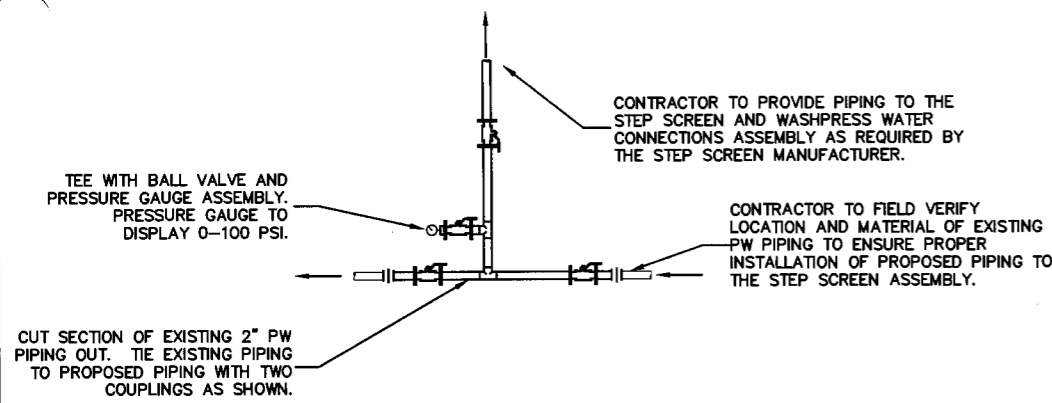
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**HEADWORKS & GRIT SEPARATION**

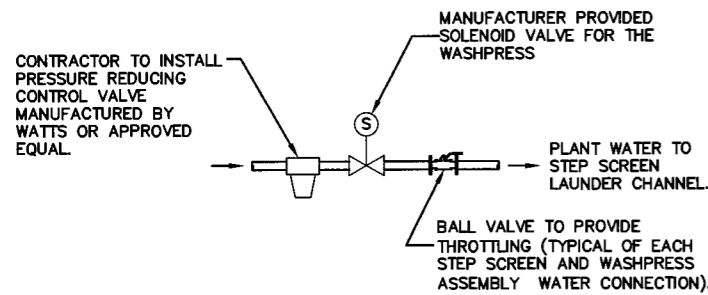
CONTRACT NO. 2090269  
JOB NO. 2  
SCALE: AS NOTED  
DATE: M-HW.1-3

**M-HW.2**  
FILE NO. 189-108  
SHEET 95 OF 202

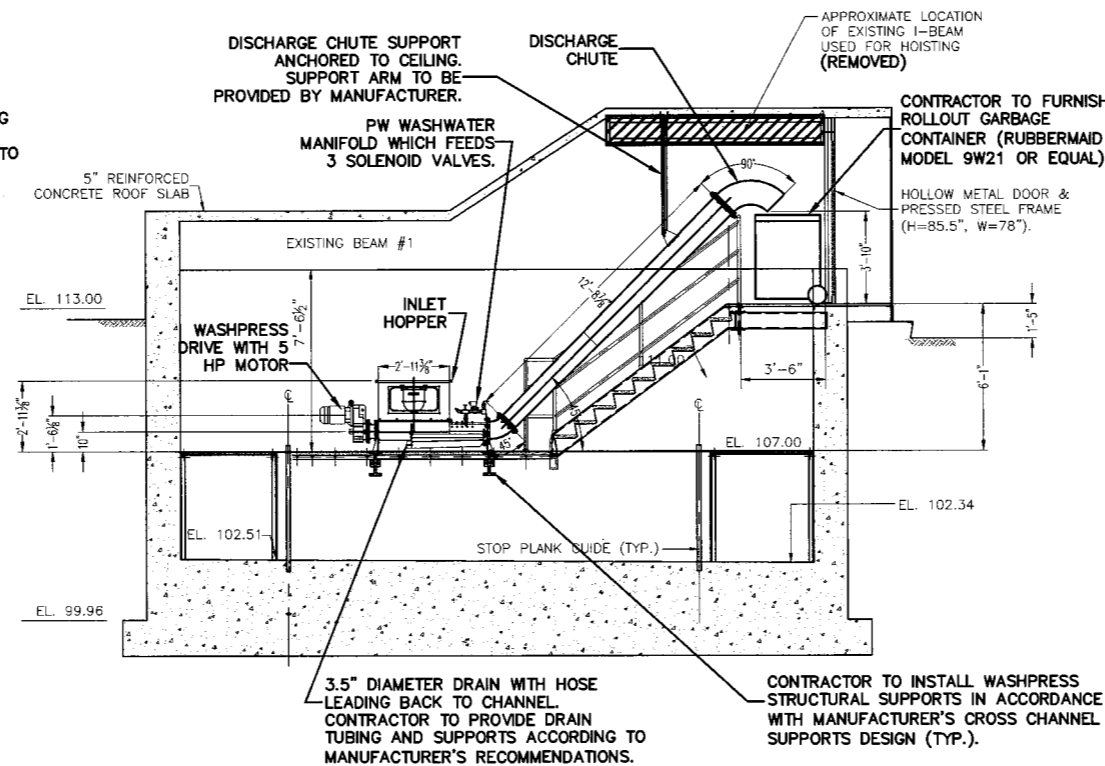
**BID ALTERNATE A**



**DETAIL - PLANT WATER CONNECTION DETAIL**  
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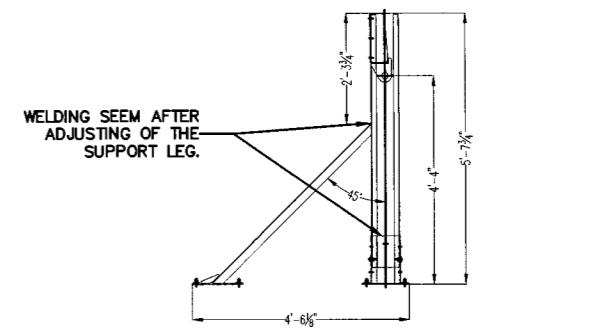


**DETAIL - FLUSHING WATER CONNECTION DETAIL**  
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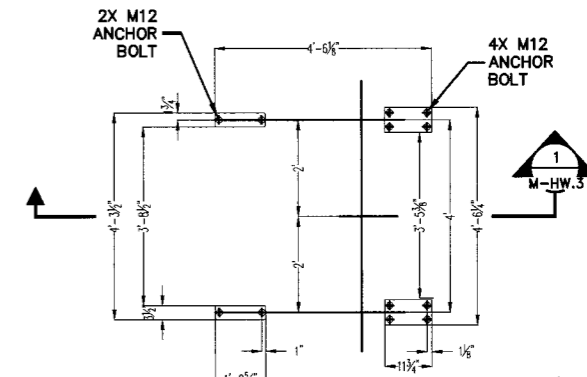


**SECTION 2**  
SCALE: 1/4"=1'-0" M-HW,2

**NOTE:**  
PLANT WATER CONNECTIONS NOT SHOWN.

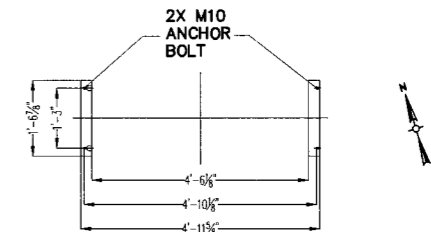


**SECTION 1**  
SCALE: 1/2"=1'-0" M-HW,3

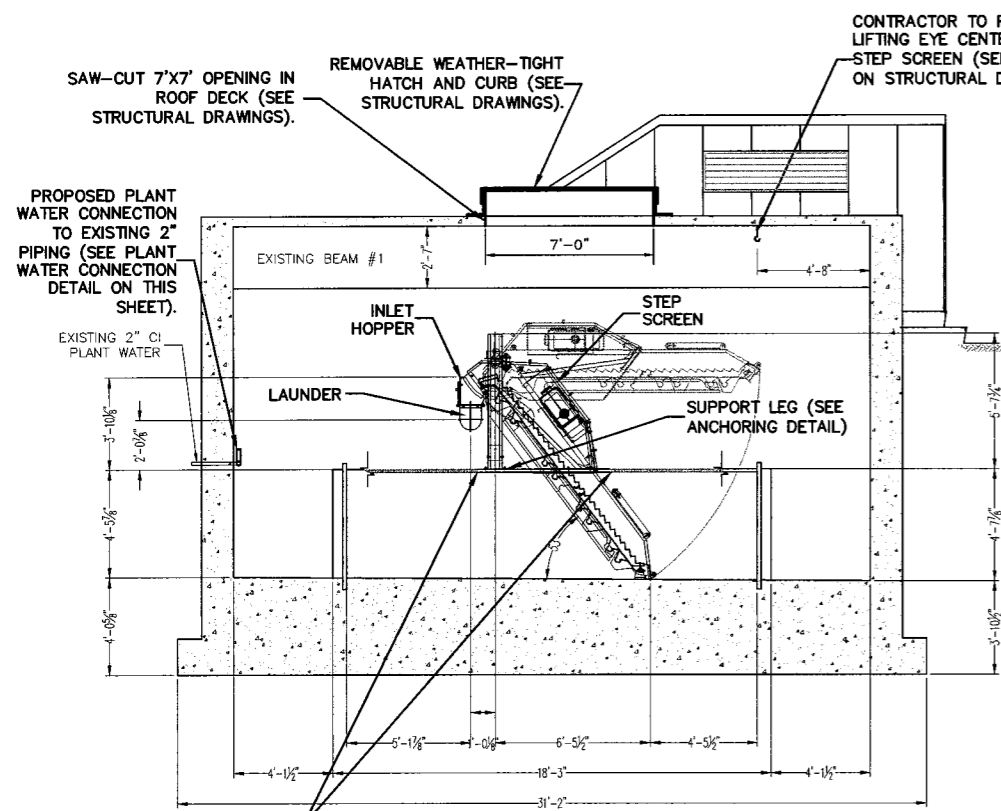


**PLAN**

**DETAIL - DRILLING POINTS FOR STEP SCREEN**  
SCALE: 1/2"=1'-0"

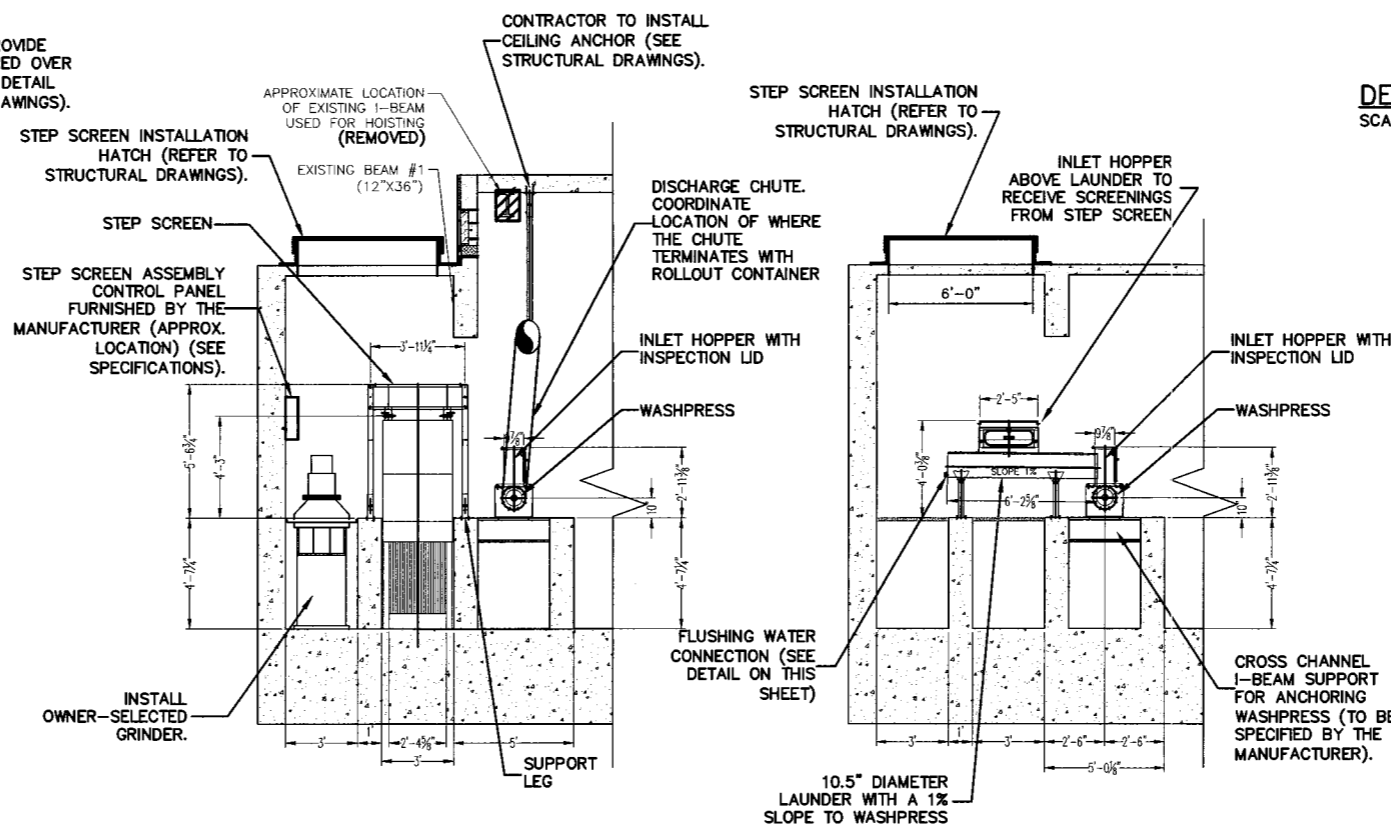


**DETAIL - DRILLING POINTS FOR WASH PRESS**  
SCALE: 1/2"=1'-0"



**SECTION 1**  
SCALE: 1/4"=1'-0" M-HW,2

**NOTE:**  
WASH PRESS NOT SHOWN FOR CLARITY.



**SECTION 3**  
SCALE: 1/4"=1'-0" M-HW,2

**SECTION 4**  
SCALE: 1/4"=1'-0" M-HW,2

**NOTES:**

- STEP SCREEN, LAUNDER CHANNEL, WASHPRESS, AND ASSOCIATED APPURTENANCES ARE BASED ON EQUIPMENT MANUFACTURED BY HUBER TECHNOLOGY. APPROVED EQUALS MAY BE ACCEPTABLE. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROPER INSTALLATION FOR ALL EQUAL EQUIPMENT WHICH MAY HAVE DIFFERENT INSTALLATION REQUIREMENTS.
- ALL ANCHOR BOLTS SHALL BE 304 STAINLESS STEEL.
- ALL MOTORS AND ELECTRICAL ELEMENTS IN THE HEADWORKS BUILDING ARE TO BE CLASS 1 DIVISION 1.
- THE CONTROL PANEL AND INSTRUMENTATION MUST BE WATERPROOF. CONTRACTOR TO CONFIRM CHANNEL WIDTH TOLERANCES TO ENSURE CONFORMANCE WITH MANUFACTURER REQUIREMENTS.
- CONTRACTOR TO CONFIRM ALL DIMENSIONS PRIOR TO CONSTRUCTION TO ENSURE A SUCCESSFUL INSTALLATION OF STEP SCREEN AND WASHPRESS ASSEMBLY.
- CONTRACTOR TO FURNISH AND INSTALL ULTRASONIC LEVEL CONTROLLER WITH DIFFERENTIAL SETPOINTS PER MANUFACTURER'S REQUIREMENTS. MANUFACTURER IS RESPONSIBLE FOR SPECIFYING THE ULTRASONIC LEVEL TRANSMITTERS AND CONTROLLER TO ENSURE COMPATIBILITY WITH THE STEP SCREEN UNIT.
- MANUFACTURER TO SIZE AND PROVIDE DETAILS FOR ALL STRUCTURAL MOUNTING COMPONENTS NEEDED FOR PROPER ANCHORING OF THE STEP SCREEN, WASHPRESS AND DISCHARGE CHUTE. ANCHORING COMPONENTS INCLUDE BUT ARE NOT LIMITED TO: DISCHARGE CHUTE SUPPORT ARM CONNECTING TO CEILING, AND WASHPRESS AND STEP SCREEN CROSS CHANNEL SUPPORTS. MANUFACTURER AND CONTRACTOR TO COORDINATE INSTALLATION OF THE STRUCTURAL COMPONENTS FOR THE STEP SCREEN ASSEMBLY.
- MANUFACTURER IS RESPONSIBLE FOR ENSURING ALL EQUIPMENT AND CONTROLS ARE PROVIDED AND INSTALLED FOR A COMPLETE AND OPERATING SYSTEM.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE INSTALLATION OF ALL COMPONENTS NECESSARY FOR A FULLY FUNCTIONAL STEP SCREEN SYSTEM.
- PLANT WATER SUPPLY PIPING AND SOLENOID VALVES FOR SCREEN AND WASHPRESS HAVE NOT BEEN SHOWN. INSTALL PER STEP SCREEN MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR TO MODIFY EXISTING GRATING TO ALLOW FOR EQUIPMENT AND INSTALLATION AS SHOWN.
- ALL WORK DEPICTED IN THIS DRAWING IS PART OF BID ALTERNATE A.

**RECORD DRAWING**

**Weston & Sampson**  
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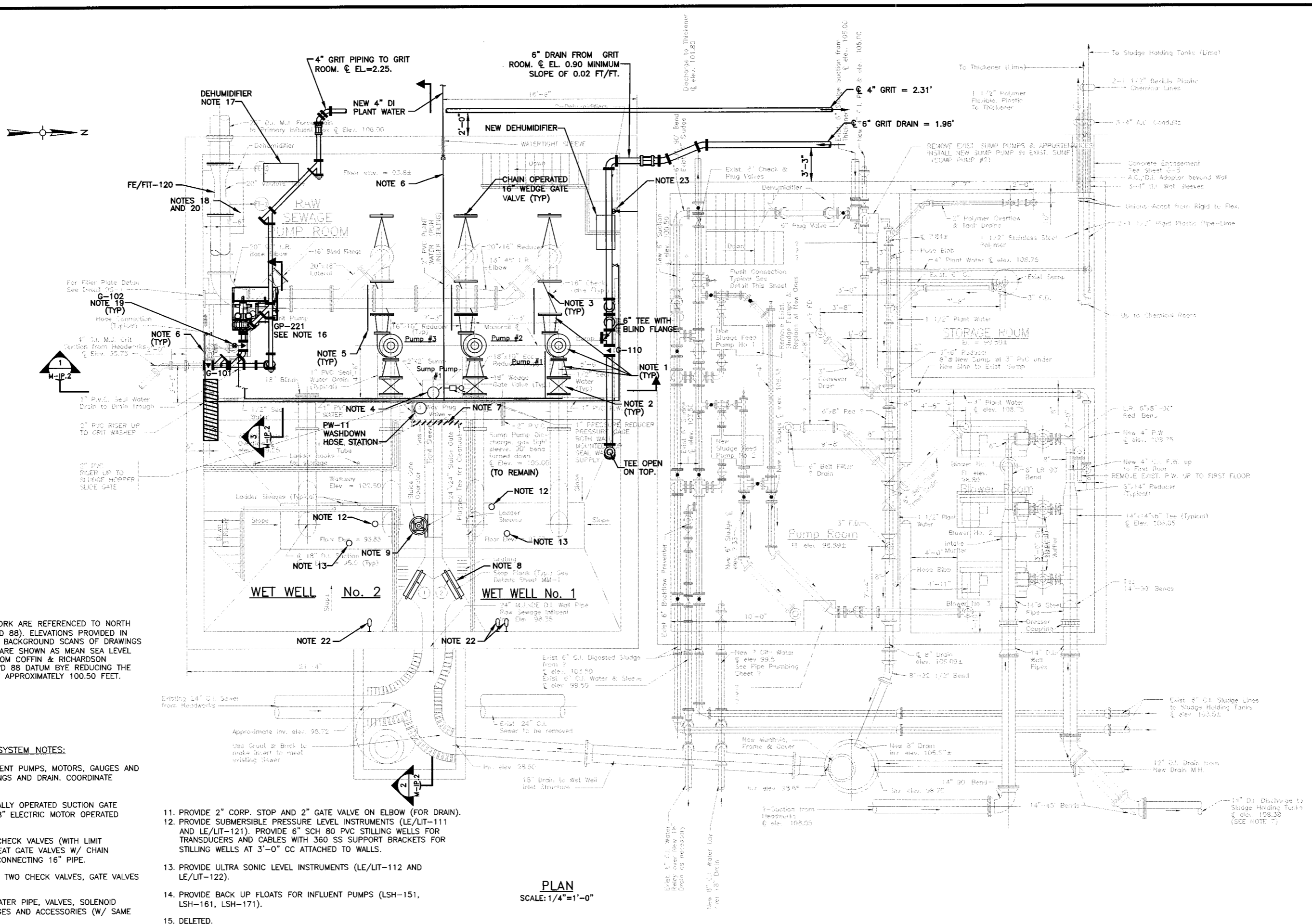
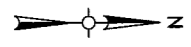
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No.	Date	Dr. By	ELM	CHK. By	KMN	App. By	A	P	R	O	V	E	D	DATE	

REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	SCALE: AS NOTED	CONTRACT: 2090269	DR. BY: MSL	CHK. BY: MAS	APP. BY: KMN
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**M-HW.3**  
FILE NO. 189-107  
SHEET 96 OF 202





**NOTE:**  
 ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.

**WETWELL AND INFLUENT PUMPING SYSTEM NOTES:**

1. REMOVE AND REPLACE THREE INFLUENT PUMPS, MOTORS, GAUGES AND SUCTION/DISCHARGE REDUCER FITTINGS AND DRAIN. COORDINATE REDUCER W/NEW PUMPS.
2. REMOVE THREE EXISTING 18" MANUALLY OPERATED SUCTION GATE VALVES AND REPLACE W/ THREE 18" ELECTRIC MOTOR OPERATED RESILIENT SEAT GATE VALVES.
3. REMOVE AND REPLACE THREE 16" CHECK VALVES (WITH LIMIT SWITCHES), THREE 16" RESILIENT SEAT GATE VALVES W/ CHAIN OPERATORS, 90° ELBOW AND INTERCONNECTING 16" PIPE.
4. REMOVE AND REPLACE SUMP PUMP, TWO CHECK VALVES, GATE VALVES AND DISCHARGE PIPE.
5. REMOVE AND REPLACE PVC SEAL WATER PIPE, VALVES, SOLENOID VALVES, FITTINGS, DRAIN PIPE, GAUGES AND ACCESSORIES (W/ SAME SIZE AS EXISTING).
6. REMOVE AND REPLACE PVC EFFLUENT WATER (PLANT WATER) PIPE, VALVES, FITTINGS, GAUGES, HOSE BIBS AND ACCESSORIES (W/ SAME SIZE AS EXISTING).
7. REMOVE EXISTING AIR BUBBLER SYSTEM.
8. REMOVE AND REPLACE STOP GATES AND GUIDES W/ NEW ALUMINUM STOP GATES AND GUIDES.
9. REMOVE AND REPLACE 24"x24" SLUICE GATE AND FRAME, EXTENSION W/ SUPPORT AND GUIDES, OPERATOR AND STAND.
10. REMOVE AND REPLACE CONCRETE PADS.

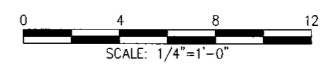
11. PROVIDE 2" CORP. STOP AND 2" GATE VALVE ON ELBOW (FOR DRAIN).
12. PROVIDE SUBMERSIBLE PRESSURE LEVEL INSTRUMENTS (LE/LIT-111 AND LE/LIT-121). PROVIDE 6" SCH 80 PVC STILLING WELLS FOR TRANSDUCERS AND CABLES WITH 360 SS SUPPORT BRACKETS FOR STILLING WELLS AT 3'-0" CC ATTACHED TO WALLS.
13. PROVIDE ULTRA SONIC LEVEL INSTRUMENTS (LE/LIT-112 AND LE/LIT-122).
14. PROVIDE BACK UP FLOATS FOR INFLUENT PUMPS (LSH-151, LSH-161, LSH-171).
15. DELETED.

**GRIT PUMPING SYSTEM NOTES:**

16. THE EXISTING GRIT PUMP (GP-221) REMOVED AND REPLACED WITH NEW PUMP.
17. EXISTING DEHUMIDIFIER UNIT REMOVED AND REPLACED WITH NEW UNIT.
18. INSTALL SECOND GRIT PUMP (GP-222) IN ACCORDANCE WITH SPECIFICATION SECTIONS 11310 AND 11317. (FUTURE WORK)
19. INSTALL MOTOR OPERATED VALVE ACTUATORS AS INDICATED THROUGHOUT THE GRIT PUMPING SYSTEM (SEE FUNCTIONAL DESCRIPTION ON M-OB.16).

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

20. GP-222 TO BE PLACED ON CONCRETE PAD. (FUTURE WORK)
21. SUPPORT PIPING AS NECESSARY.
22. CORE AND SEAL PROPOSED PIPING IN PENETRATIONS THROUGH EXISTING CONCRETE WALLS IN ACCORDANCE WITH DETAIL 6 ON DRAWING M-OB.11.
23. 2" GV WITH PLUG - USED TO DRAIN G.W. AT EXPANSION JOINT (SECTION 11 ON S-OB.9). MAKE PROVISIONS FOR HANDLING G.W. BEFORE OPENING.



**RECORD DRAWING**

1	05/2014	MJM	ELM	KMN	RECORD DRAWING
No.	Date	Dr. By	Chk. By	App. By	Description
		A	P	P	O
		V	E	D	
					DATE

REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INFLUENT PUMPING STATION AND WETWELL**

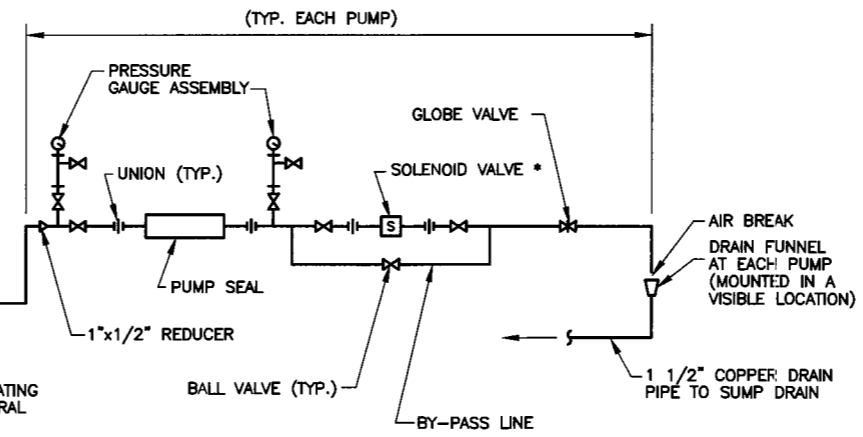
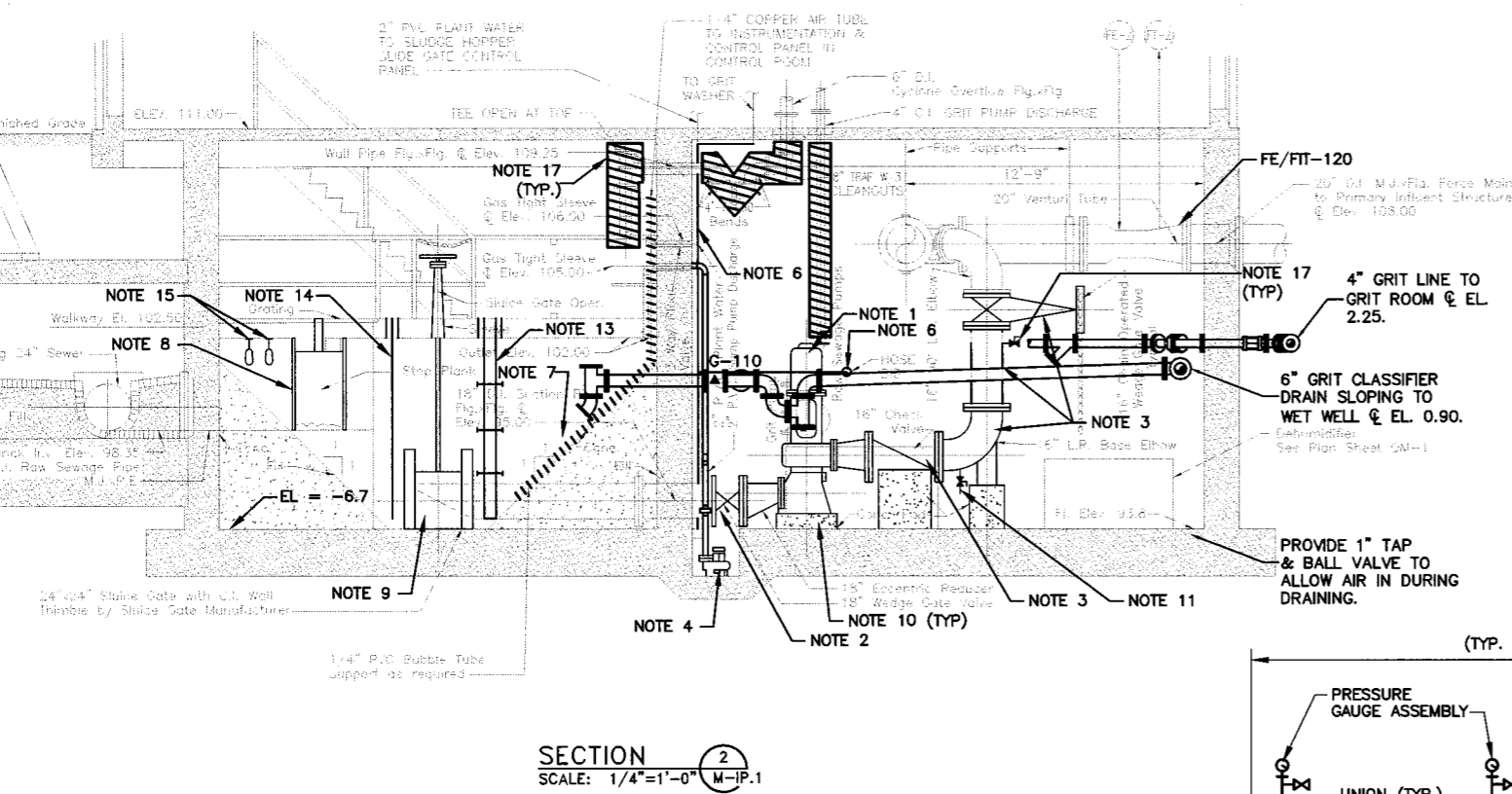
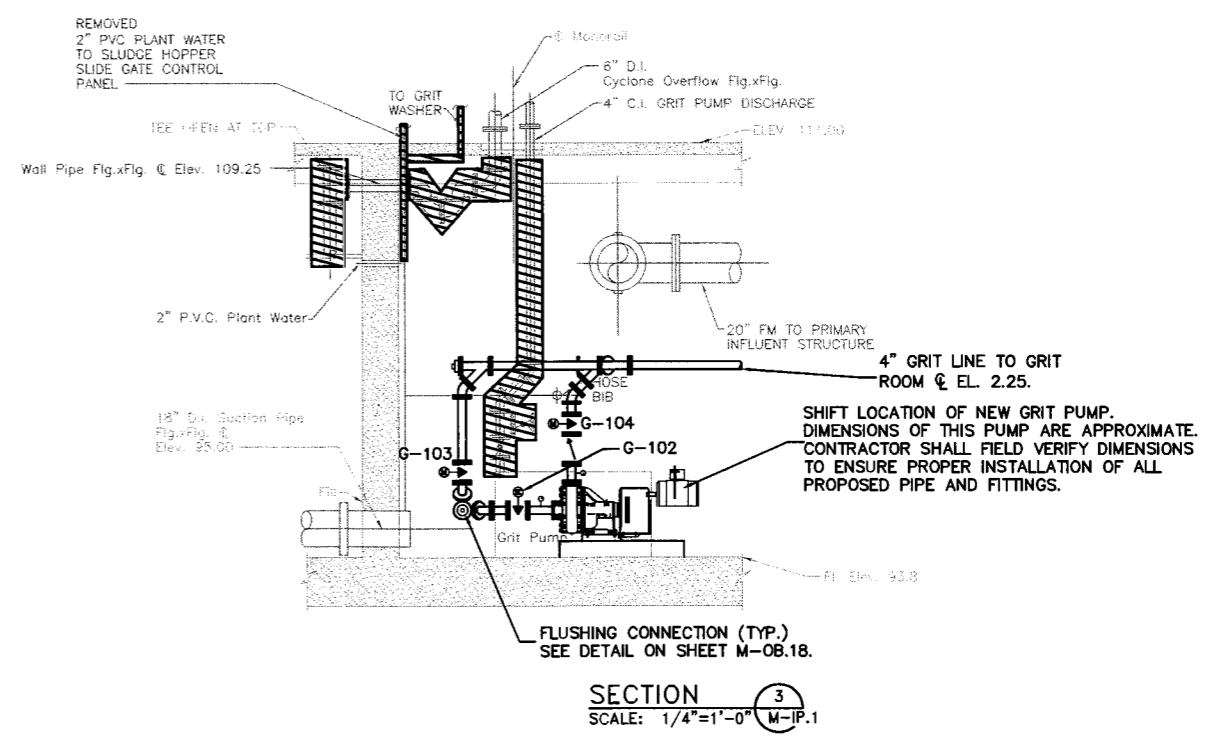
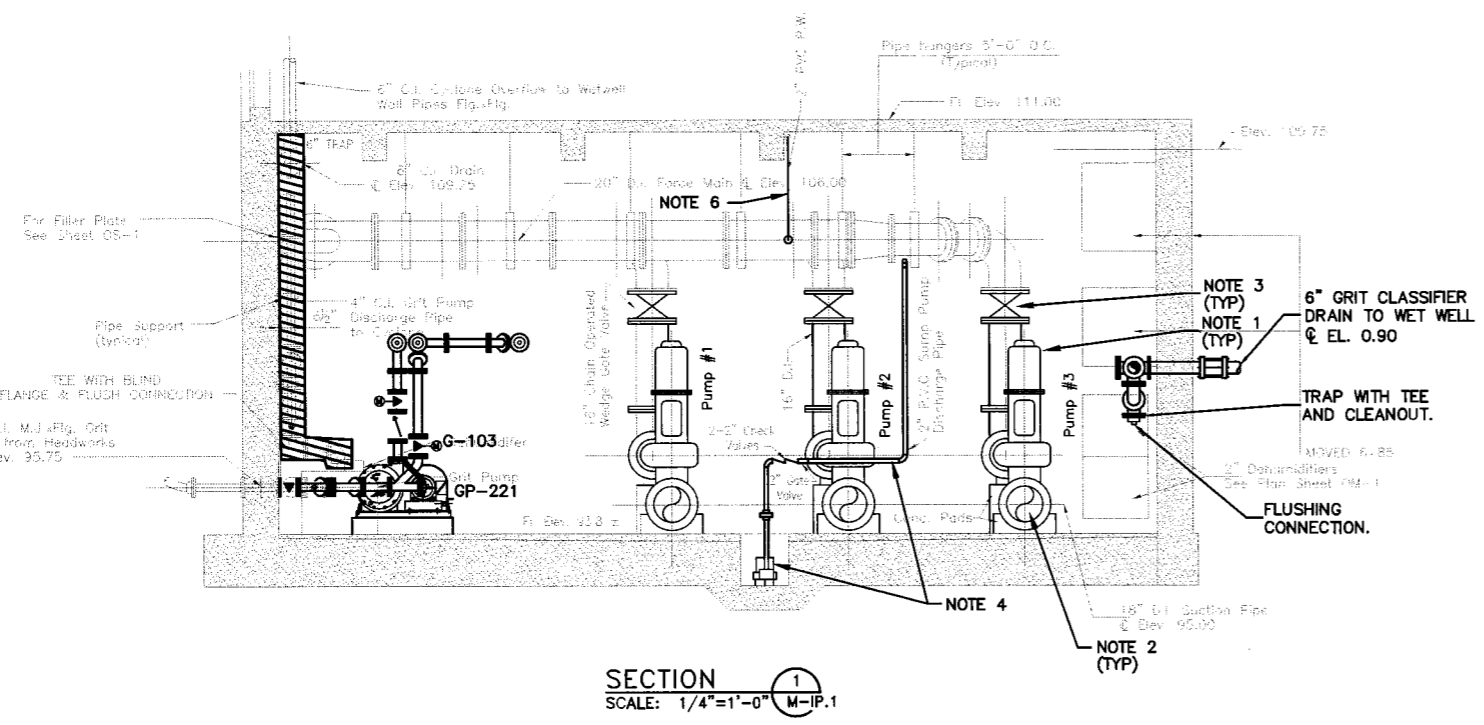
SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO.: 2  
 DR. BY: RWS  
 CHK. BY: CNR  
 APP. BY: KMN

No.	Date	Dr. By	App. By	Description
1	05/2014	MJM	KWN	RECORD DRAWING
A P P R O V E D				
				DATE

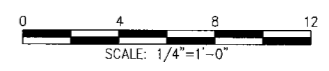
REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INFLUENT PUMPING STATION AND WETWELL - SECTIONS**

FILE NO. **M-IP.2**  
 189-105  
 SHEET 98 OF 202

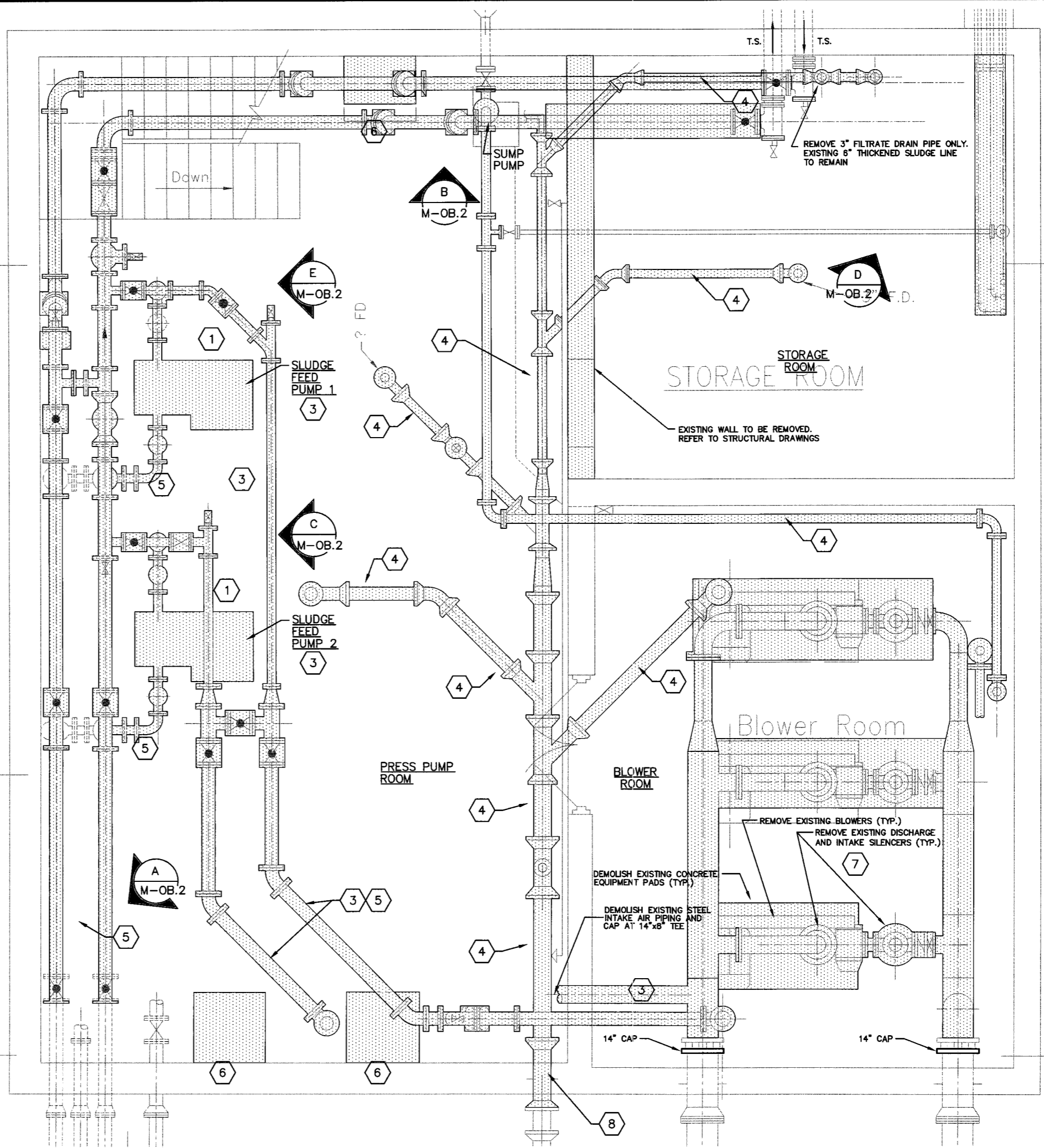
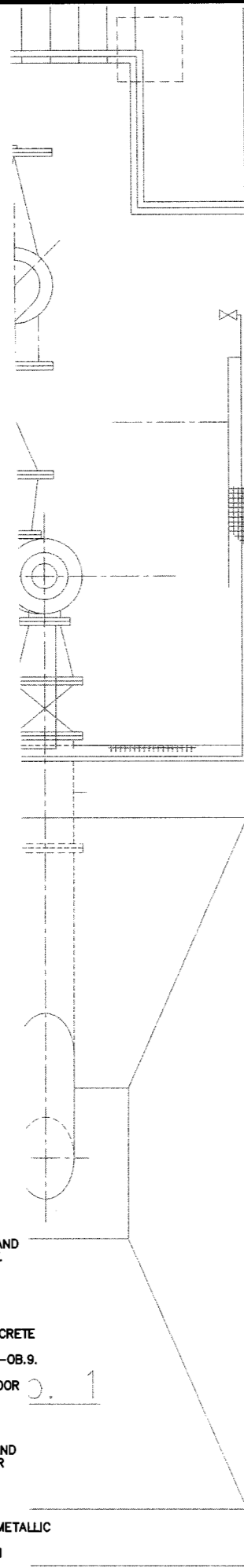


- NOTES:**
- REMOVE AND REPLACE THREE INFLUENT PUMPS, MOTORS, GAUGES AND SUCTION/DISCHARGE REDUCER FITTINGS AND DRAIN. COORDINATE REDUCER W/ NEW PUMPS.
  - REMOVE THREE EXISTING 18" MANUALLY OPERATED SUCTION GATE VALVES AND REPLACE W/ THREE 18" ELECTRIC MOTOR OPERATED RESILIENT SEAT GATE VALVES.
  - REMOVE AND REPLACE THREE 16" CHECK VALVES (WITH LIMIT SWITCHES), THREE 16" RESILIENT SEAT GATE VALVES W/ CHAIN OPERATORS, 90° ELBOW AND INTERCONNECTING 16" PIPE.
  - REMOVE AND REPLACE SUMP PUMP, TWO CHECK VALVES, GATE VALVES AND DISCHARGE PIPE.
  - REMOVE AND REPLACE PVC SEAL WATER PIPE, VALVES, SOLENOID VALVES, FITTINGS, GAUGES AND ACCESSORIES (W/ SAME SIZE AS EXISTING).
  - REMOVE AND REPLACE PVC EFFLUENT WATER (PLANT WATER) PIPE, VALVES, FITTINGS, GAUGES, HOSE BIBS AND ACCESSORIES (W/ SAME SIZE AS EXISTING).
  - REMOVE EXISTING AIR BUBBLER SYSTEM.
  - REMOVE AND REPLACE STOP GATES AND GUIDES W/ NEW ALUMINUM STOP GATES AND GUIDES.
  - REMOVE AND REPLACE 24"x24" SLUICE GATE AND FRAME, EXTENSION W/ SUPPORT AND GUIDES, OPERATOR AND STAND.
  - REMOVE AND REPLACE CONCRETE PADS.
  - PROVIDE 2" GATE VALVE ON ELBOW (FOR DRAIN).
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY APPROXIMATELY 100.50 FEET.
  - PROVIDE SUBMERSIBLE PRESSURE LEVEL INSTRUMENTS (LE/LIT-111 AND LE/LIT-121). PROVIDE 6" SCH 80 PVC STILLING WELLS FOR TRANSDUCERS AND CABLES WITH 360 SS SUPPORT BRACKETS FOR STILLING WELLS AT 3'-0" CC ATTACHED TO WALLS.
  - PROVIDE ULTRA SONIC LEVEL INSTRUMENT (LE/LIT-112 AND LE/LIT-122).
  - PROVIDE BACK UP FLOATS FOR INFLUENT PUMPS (LSH-151, LSH-161, LSH-171).
  - CONTRACTOR TO REMOVE EXISTING GRIT DRAIN AND GRIT PUMP PIPING. INSTALL BLIND FLANGES TO COVER ABANDONED WALL PENETRATIONS. PROVIDE NEW GRIT PUMP PIPING AND DRAIN PIPING AS SHOWN IN THE DRAWINGS.
  - PROVIDE 1" TAP AND BALL VALVE TO ALLOW AIR TO ENTER DURING DRAINING OF PIPE.



**RECORD DRAWING**

EQUIPMENT/PIPING TO BE REMOVED



**NOTES:**

1. CONTRACTOR TO VISIT SITE AND VERIFY QUANTITIES OF REMOVALS AND DEMOLITION WORK. PHOTOGRAPHIC DRAWINGS ARE FOR REFERENCE ONLY.
  2. REMOVAL OF EQUIPMENT IDENTIFIED INCLUDES ASSOCIATED PIPING, PIPING SUPPORTS, ELECTRICAL SYSTEMS, AND APPURTENANCES ASSOCIATED WITH EQUIPMENT.
  3. REMOVE TWO EXISTING SLUDGE FEED PUMPS NO. 1 AND NO. 2, CONCRETE PADS, AND DISCHARGE PIPING. FOR DEMOLITION OF EXISTING CONCRETE PADS, GROUT PADS AND ANCHOR BOLTS, SEE DETAIL 2 ON M-OB.9.
  4. REMOVE EXISTING FLOOR DRAIN PIPING IN PUMP ROOM. EXISTING FLOOR DRAIN PIPING SERVICES FLOOR ABOVE.
  5. REMOVE EXISTING SLUDGE SUCTION PIPING TO EXTENT SHOWN.
  6. REMOVE EXISTING AIR HANDLING UNIT, DEHUMIDIFIERS (TYP OF 3), AND DUCT WORK. DUCT WORK NOT SHOWN. FOR EXTENT OF DEMOLITION, REFER TO BUILDING SERVICES DRAWINGS.
  7. NOT USED.
  8. INFILL EXISTING CONCRETE WALL OPENING WITH NON-SHRINK, NON-METALLIC SULPHATE RESISTANT GROUT. CLEAN AND APPLY WATER STOPS AND BONDING AGENT TO EXISTING CONCRETE SURFACE PRIOR TO INSTALLATION OF GROUT.
- COORDINATE DEMOLITION SHOWN ON THIS DRAWING WITH DEMOLITION OWN ON OTHER CONTRACT DRAWINGS.
10. COORDINATE ISOLATION OF PIPING AND EQUIPMENT WITH OWNER AND ENGINEER PRIOR TO DEMOLITION.
  11. EXISTING POTABLE WATER SYSTEM PIPING IS NOT SHOWN IN THIS VIEW BUT SHOULD BE REMOVED TO WITHIN 6" OF WALL PENETRATIONS.

**OPERATIONS BUILDING BASEMENT - PLAN VIEW**

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

**NOTES:**

1. EXISTING POTABLE WATER SYSTEM PIPING IS NOT SHOWN IN THIS VIEW BUT SHOULD BE REMOVED TO WITHIN 6" OF WALL PENETRATIONS.

**RECORD DRAWING**

**CH2MHILL**

**Weston & Sampson**  
 Pw. Centennial Drive, Peabody, MA 01960  
 (978) 532-1800 (800) 541PSON  
 www.westonandsampson.com

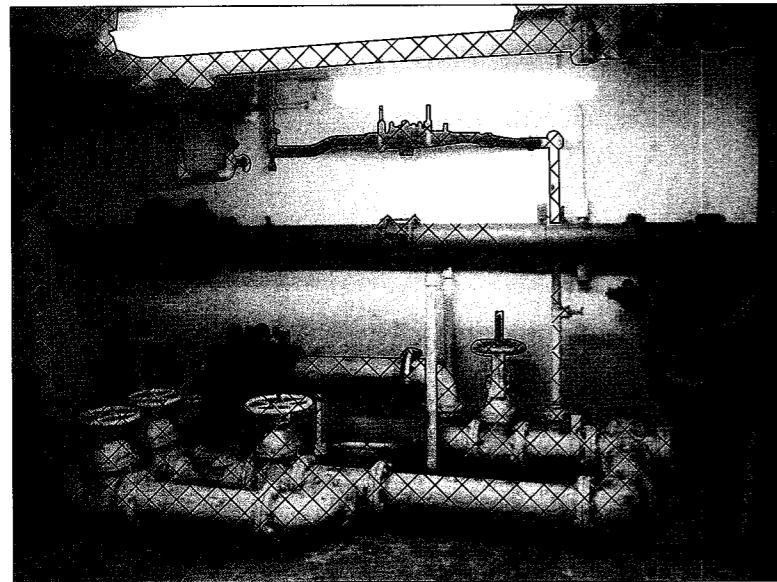
No.	Date	Dr. By	Ch. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
**OPERATIONS BUILDING BASEMENT PLAN  
 DEMOLITION**

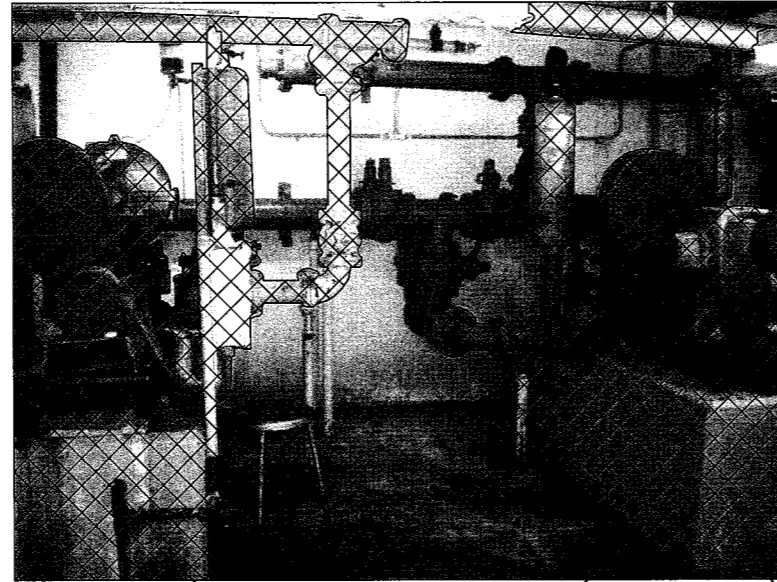
SCALE:	AS NOTED
CONTRACT:	2090269
JOB NO.:	2
DR. BY:	EAM
DSN. BY:	CNR
CHK. BY:	LRT
APP. BY:	KMN

**M-OB.7**  
 FILE NO. 189-104  
 SHEET 99 OF 202



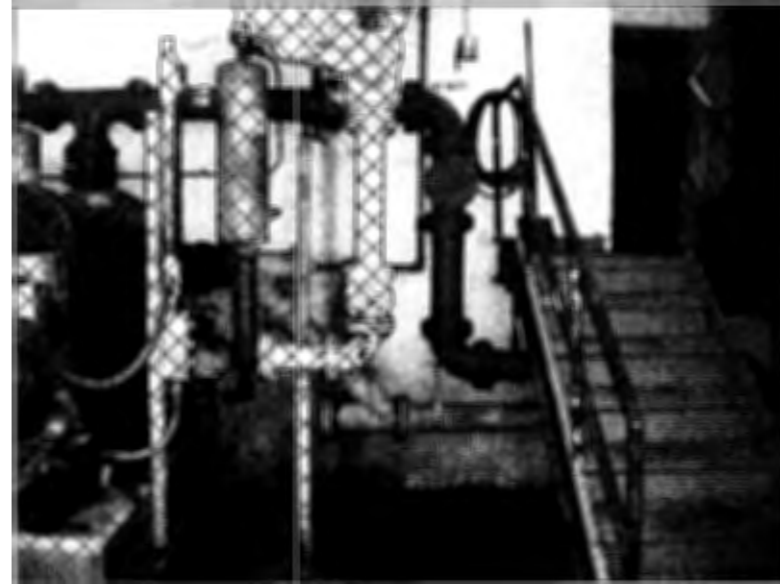
DEMOLISH EXISTING PIPING AND PIPE SUPPORTS AS SHOWN, SEE NOTES

VIEW  
SCALE: NTS  
A  
M-OB.1



SLUDGE FEED PUMP 2  
DEMOLISH SLUDGE FEED PUMPS 1 AND 2, AND ASSOCIATED PIPING (TO EXTENT SHOWN), PIPING SUPPORTS, FITTINGS AND EQUIPMENT PADS, SEE NOTES.

VIEW  
SCALE: NTS  
C  
M-OB.1



SLUDGE FEED PUMP 1  
REFER TO DETAIL FOR SURFACE RESTORATION FOR ALL EQUIPMENT PAD REMOVAL, TYP

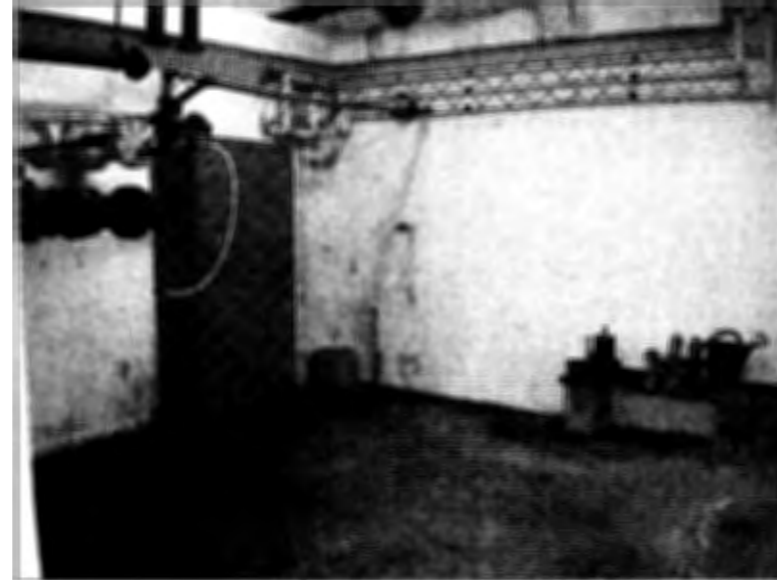
VIEW  
SCALE: NTS  
E  
M-OB.1

REMOVE DEHUMIDIFIER, TYP OF 3



DEMOLISH EXISTING SUMP PUMP AND ASSOCIATED PIPING AND PIPING SUPPORTS, SEE NOTES

VIEW  
SCALE: NTS  
B  
M-OB.1



STORAGE CABINET

EXISTING STORAGE SHELF

VIEW  
SCALE: NTS  
D  
M-OB.1

**NOTES:**

1. COORDINATE ISOLATION OF PIPING AND EQUIPMENT WITH OWNER AND ENGINEER PRIOR TO DEMOLITION.
2. FOR NEW PIPING AND EQUIPMENT LAYOUT, REFER TO DRAWING M-OB.3.
3. FOR DEMOLITION OF EXISTING CONCRETE PADS, GROUT PADS AND ANCHOR BOLTS, SEE DETAIL 2 ON M-OB.9.
4. DEMOLISH WIRING AND ELECTRICAL CONDUITS FOR PRESS FEED PUMPS, SUMP PUMP AND DEHUMIDIFIERS BACK TO SOURCE (NOT SHOWN).
5. DEMOLISH EXISTING CONTROLS FOR PRESS FEED PUMPS, DEHUMIDIFIERS AND SUMP PUMP (NOT SHOWN).
6. CONTRACTOR TO VISIT SITE AND VERIFY QUANTITIES OF REMOVALS AND DEMOLITION WORK. PHOTOGRAPHS ARE FOR REFERENCE ONLY.

**CH2MHILL**

**Weston & Sampson**  
Five Centennial Drive, Peabody, MA 01960  
(978) 532-1900 (800) 5AMPSON  
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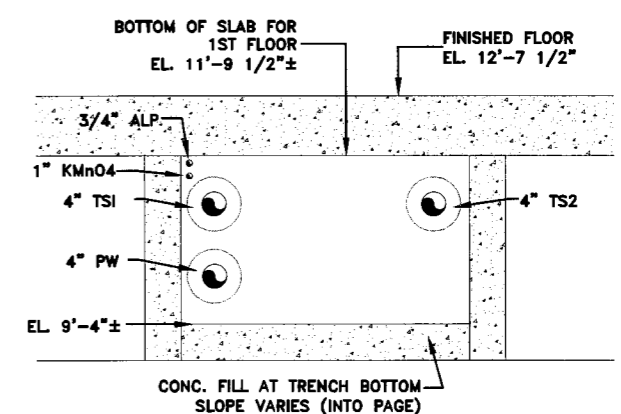
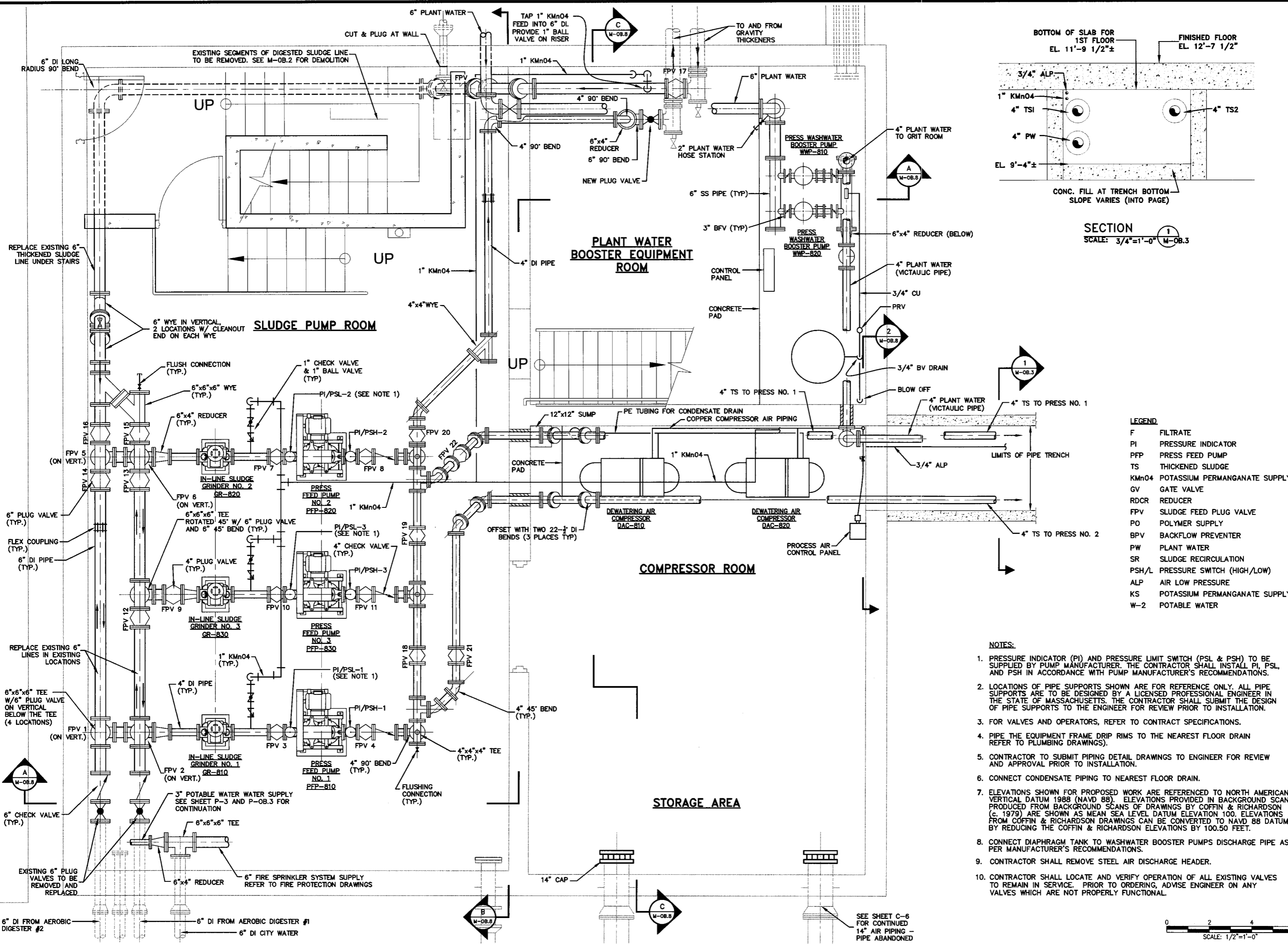
No.	Date	Dr. By	Ch. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING
A P P R O V E D					
					DATE

REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT OPERATIONS BUILDING LOWER LEVEL DEMOLITION VIEWS	SCALE: AS NOTED	CONTRACT: 2090269	DR. BY MRA	CHK. BY JRS	APP. BY KMN
FILE NO. 189-103	DEMO VIEWS	JOB NO. 2	DR. BY MRA	CHK. BY JRS	APP. BY KMN

**M-OB.2**

RECORD DRAWING

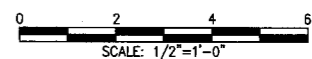


SECTION 1  
SCALE: 3/4"=1'-0" M-OB.3

**LEGEND**

F	FILTRATE
PI	PRESSURE INDICATOR
PFP	PRESS FEED PUMP
TS	THICKENED SLUDGE
KMnO4	POTASSIUM PERMANGANATE SUPPLY
GV	GATE VALVE
RDCR	REDUCER
FPV	SLUDGE FEED PLUG VALVE
PO	POLYMER SUPPLY
BPV	BACKFLOW PREVENTER
PW	PLANT WATER
SR	SLUDGE RECIRCULATION
PSH/L	PRESSURE SWITCH (HIGH/LOW)
ALP	AIR LOW PRESSURE
KS	POTASSIUM PERMANGANATE SUPPLY
W-2	POTABLE WATER

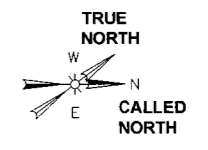
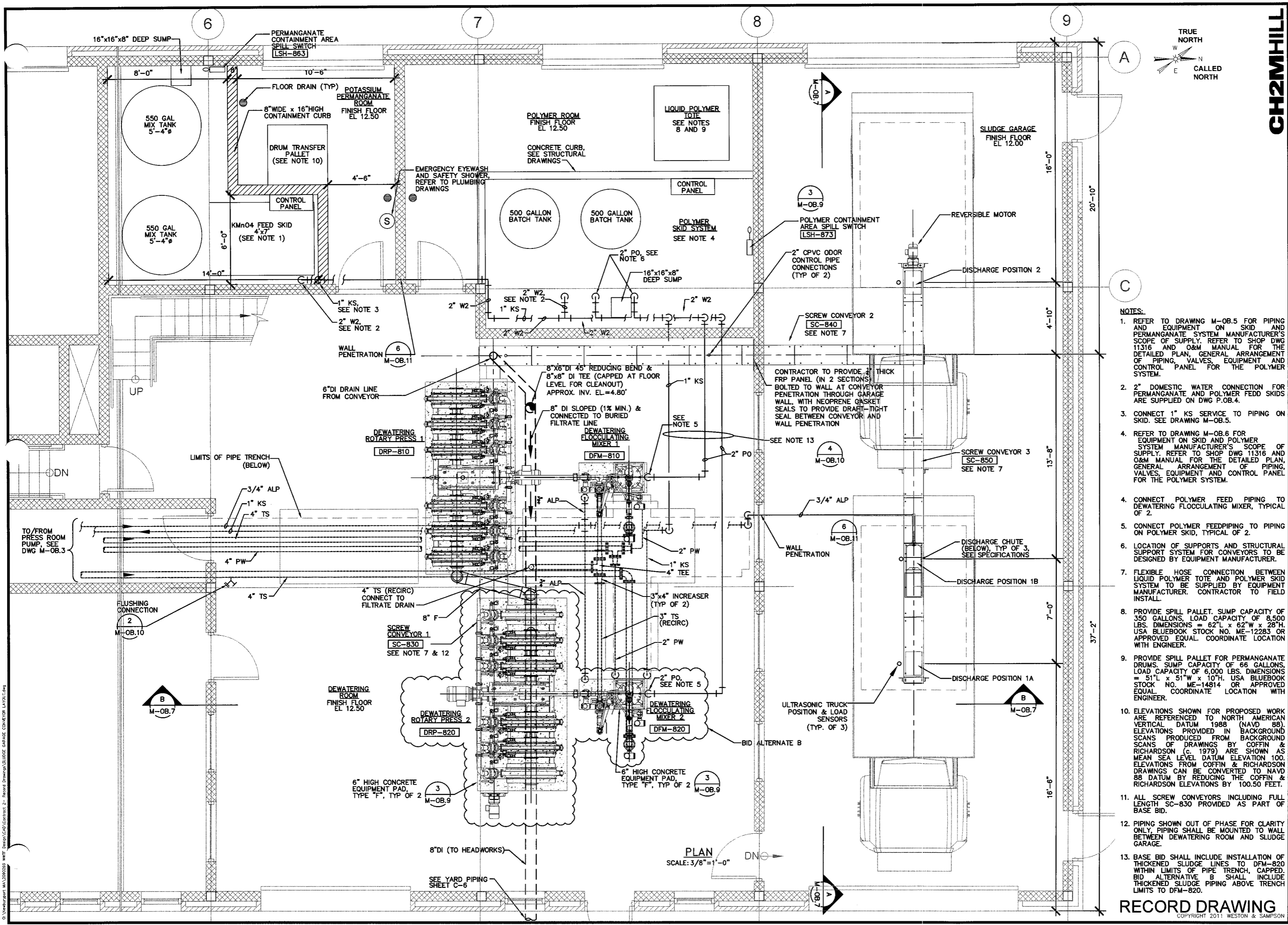
- NOTES:**
1. PRESSURE INDICATOR (PI) AND PRESSURE LIMIT SWITCH (PSL & PSH) TO BE SUPPLIED BY PUMP MANUFACTURER. THE CONTRACTOR SHALL INSTALL PI, PSL, AND PSH IN ACCORDANCE WITH PUMP MANUFACTURER'S RECOMMENDATIONS.
  2. LOCATIONS OF PIPE SUPPORTS SHOWN ARE FOR REFERENCE ONLY. ALL PIPE SUPPORTS ARE TO BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MASSACHUSETTS. THE CONTRACTOR SHALL SUBMIT THE DESIGN OF PIPE SUPPORTS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
  3. FOR VALVES AND OPERATORS, REFER TO CONTRACT SPECIFICATIONS.
  4. PIPE THE EQUIPMENT FRAME DRIP RIMS TO THE NEAREST FLOOR DRAIN (REFER TO PLUMBING DRAWINGS).
  5. CONTRACTOR TO SUBMIT PIPING DETAIL DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
  6. CONNECT CONDENSATE PIPING TO NEAREST FLOOR DRAIN.
  7. ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (C. 1978) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.
  8. CONNECT DIAPHRAGM TANK TO WASHWATER BOOSTER PUMPS DISCHARGE PIPE AS PER MANUFACTURER'S RECOMMENDATIONS.
  9. CONTRACTOR SHALL REMOVE STEEL AIR DISCHARGE HEADER.
  10. CONTRACTOR SHALL LOCATE AND VERIFY OPERATION OF ALL EXISTING VALVES TO REMAIN IN SERVICE. PRIOR TO ORDERING, ADVISE ENGINEER ON ANY VALVES WHICH ARE NOT PROPERLY FUNCTIONAL.



OPERATIONS BUILDING BASEMENT - PLAN VIEW  
SCALE: 1/2"=1'-0"

1	05/2014	MJM	Dr. By	App. By	ELM	CK. By	KMN	RECORD DRAWING						
No.	Date	Dr. By	CK. By	App. By	ELM	CK. By	KMN	Description						
								A	P	R	O	V	E	D
								REGISTERED PROFESSIONAL ENGINEER				DATE		

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING BASEMENT PLAN  
PROPOSED CONDITIONS



- NOTES:**
- REFER TO DRAWING M-OB.5 FOR PIPING AND EQUIPMENT ON SKID AND PERMANGANATE SYSTEM MANUFACTURER'S SCOPE OF SUPPLY. REFER TO SHOP DWG 11316 AND O&M MANUAL FOR THE DETAILED PLAN, GENERAL ARRANGEMENT OF PIPING, VALVES, EQUIPMENT AND CONTROL PANEL FOR THE POLYMER SYSTEM.
  - 2" DOMESTIC WATER CONNECTION FOR PERMANGANATE AND POLYMER FEED SKIDS ARE SUPPLIED ON DWG P.OB.4.
  - CONNECT 1" KS SERVICE TO PIPING ON SKID. SEE DRAWING M-OB.5.
  - REFER TO DRAWING M-OB.6 FOR EQUIPMENT ON SKID AND POLYMER SYSTEM MANUFACTURER'S SCOPE OF SUPPLY. REFER TO SHOP DWG 11316 AND O&M MANUAL FOR THE DETAILED PLAN, GENERAL ARRANGEMENT OF PIPING, VALVES, EQUIPMENT AND CONTROL PANEL FOR THE POLYMER SYSTEM.
  - CONNECT POLYMER FEED PIPING TO DEWATERING FLOCCULATING MIXER, TYPICAL OF 2.
  - CONNECT POLYMER FEEDPIPING TO PIPING ON POLYMER SKID, TYPICAL OF 2.
  - LOCATION OF SUPPORTS AND STRUCTURAL SUPPORT SYSTEM FOR CONVEYORS TO BE DESIGNED BY EQUIPMENT MANUFACTURER.
  - FLEXIBLE HOSE CONNECTION BETWEEN LIQUID POLYMER TOTE AND POLYMER SKID SYSTEM TO BE SUPPLIED BY EQUIPMENT MANUFACTURER. CONTRACTOR TO FIELD INSTALL.
  - PROVIDE SPILL PALLET. SUMP CAPACITY OF 350 GALLONS, LOAD CAPACITY OF 8,500 LBS. DIMENSIONS = 62"L x 62"W x 28"H. USA BLUEBOOK STOCK NO. ME-12283 OR APPROVED EQUAL COORDINATE LOCATION WITH ENGINEER.
  - PROVIDE SPILL PALLET FOR PERMANGANATE DRUMS. SUMP CAPACITY OF 66 GALLONS, LOAD CAPACITY OF 6,000 LBS. DIMENSIONS = 51"L x 51"W x 10"H. USA BLUEBOOK STOCK NO. ME-14814 OR APPROVED EQUAL COORDINATE LOCATION WITH ENGINEER.
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.
  - ALL SCREW CONVEYORS INCLUDING FULL LENGTH SC-830 PROVIDED AS PART OF BASE BID.
  - PIPING SHOWN OUT OF PHASE FOR CLARITY ONLY. PIPING SHALL BE MOUNTED TO WALL BETWEEN DEWATERING ROOM AND SLUDGE GARAGE.
  - BASE BID SHALL INCLUDE INSTALLATION OF THICKENED SLUDGE LINES TO DFM-820 WITHIN LIMITS OF PIPE TRENCH, CAPPED. BID ALTERNATIVE B SHALL INCLUDE THICKENED SLUDGE PIPING ABOVE TRENCH LIMITS TO DFM-820.

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

**CH2MHILL**

**Weston & Sampson**  
Five Centennial Drive, Peabody, MA 01960  
(978) 532-1900 (800) 545PSON  
www.westonandsampson.com

1	05/2014	MJM	Dr. By	App. By	App. By	DATE
		ELM	Dr. By	App. By	App. By	
		KMN	App. By	App. By	App. By	

REGISTERED PROFESSIONAL ENGINEER

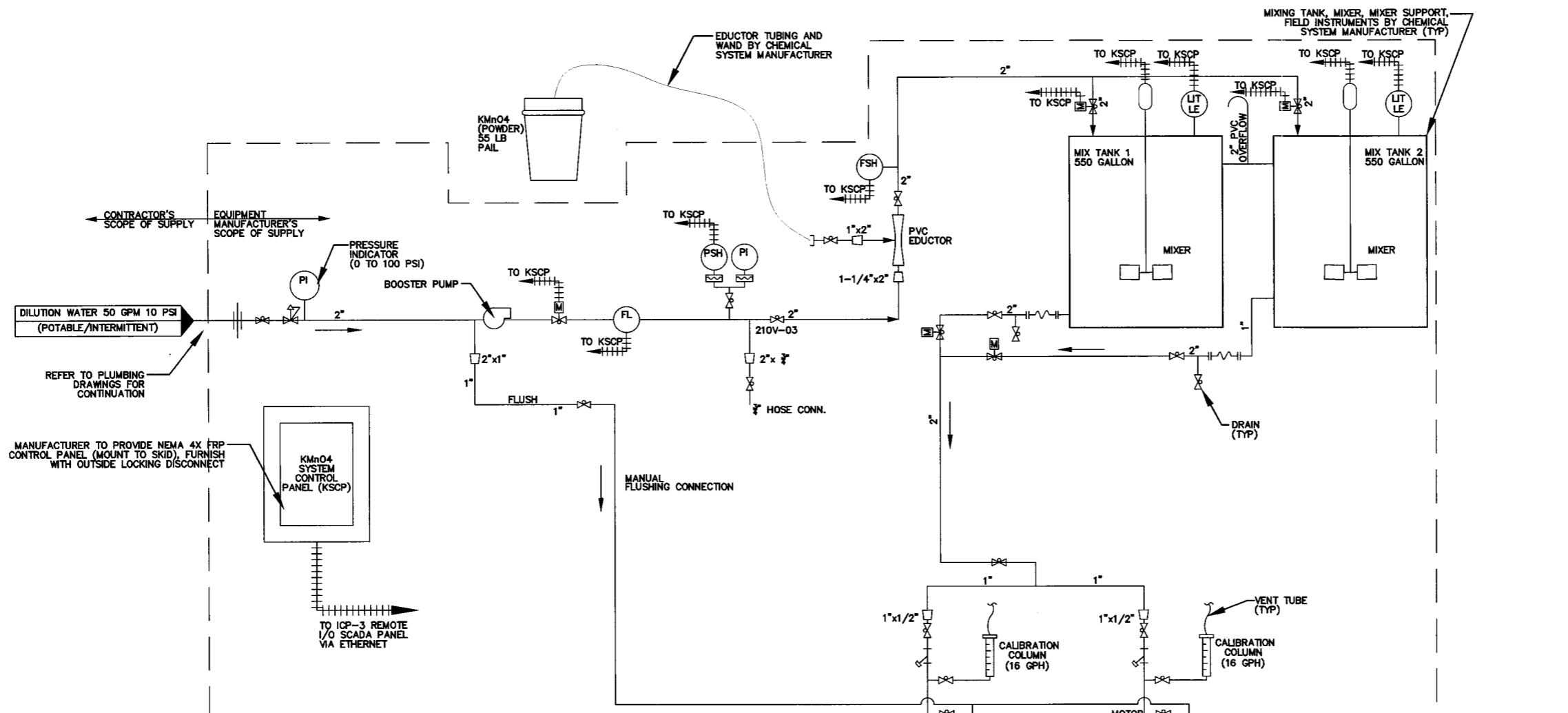
CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING  
GROUND LEVEL PLAN**

CONTRACT NO. 2090269  
SCALE: AS NOTED  
CADD NO. 189-101  
DATE: 189-101

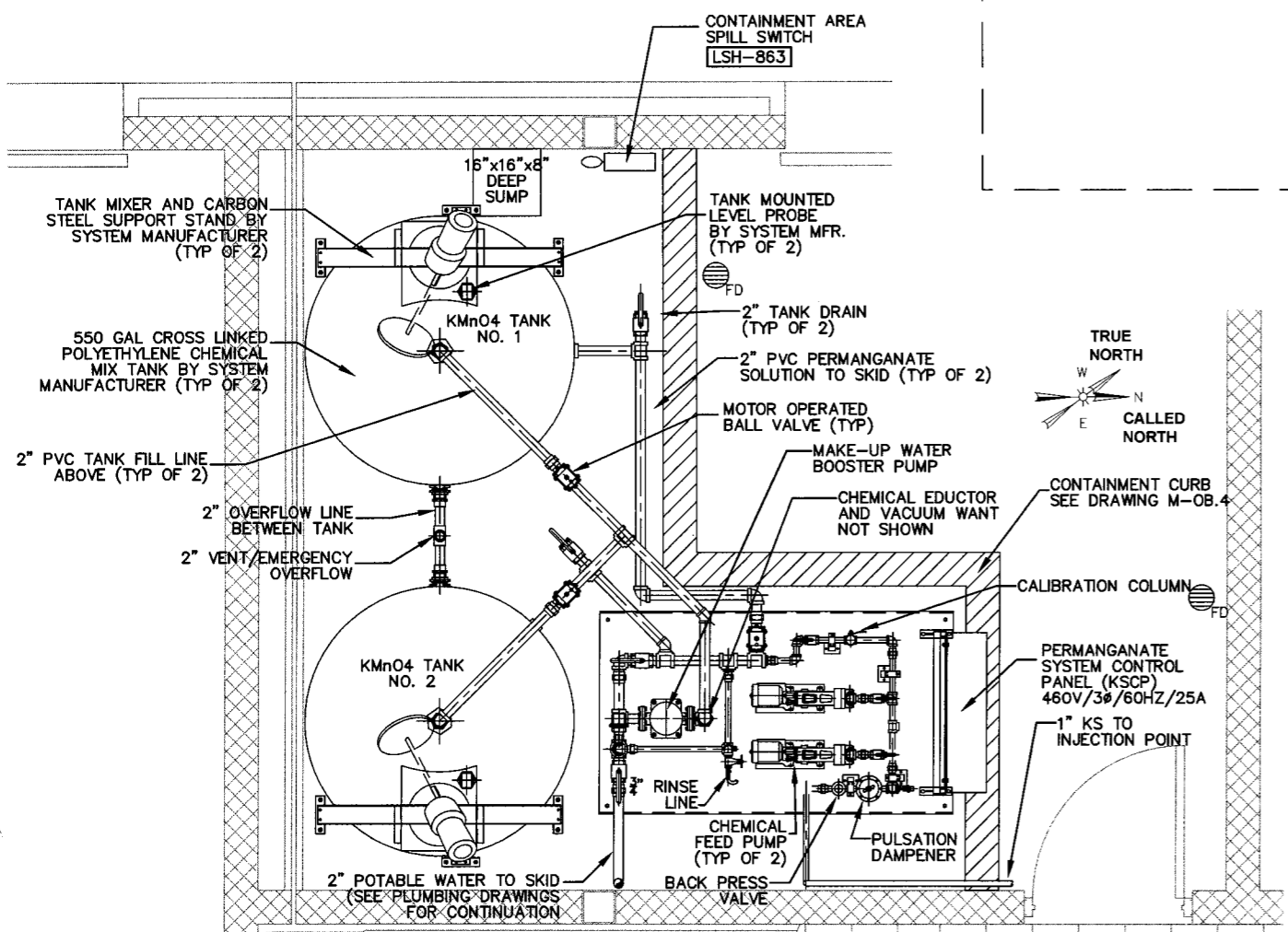
FILE NO. 189-101  
SCALE: AS NOTED  
CONTRACT: 2090269  
JOB NO. 2090269  
DR. BY: TSD  
DSN. BY: CNR  
CHK. BY: LRT  
APP. BY: KMN

**M-OB.4**

**RECORD DRAWING**  
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LEGEND	
	BALL VALVE
	SOLENOID VALVE
	MOTORIZED VALVE
	BALL CHECK VALVE
	PRESSURE REGULATING VALVE
	Y-STRAINER
	GLOBE VALVE
	REDUCER
	FLOW SENSOR ROTOR-X
	PRESSURE TRANSMITTER
	PRESSURE INDICATOR
	FLOW METER
	DISCRETE TO/FROM SCADA
	ANALOG TO/FROM SCADA
	REGULATING VALVE
	UNION
	SNUBBER
	CONTROL WIRING
	VIBRATION ISOLATION COUPLING
	FLOW SWITCH
	PRESSURE SWITCH
	LIMIT SWITCH



- NOTES**
- ALL EQUIPMENT FURNISHED BY THE PERMANGANATE SYSTEM MANUFACTURER SHALL BE "SKID MOUNTED" AND DELIVERED TO THE SITE AS A COMPLETE AND FUNCTIONING SYSTEM.
  - VALVES AND PIPING SHALL BE SUITABLE FOR USE WITH THE PERMANGANATE.
  - STATIC MIXER SHALL BE FURNISHED WITH REMOVABLE ELEMENTS FOR EASE OF MAINTENANCE.
  - VALVES AND FITTINGS TO MATCH PIPE SIZE.
  - ALL ITEMS SHOWN ON THIS DRAWING SHALL BE SUPPLIED BY THE EQUIPMENT MANUFACTURER.
  - CONTRACTOR TO SUBMIT DETAILED PROCESS AND INSTRUMENTATION DRAWING TO THE ENGINEER AS SHOP DRAWING FOR REVIEW AND APPROVAL.
  - CHEMICAL PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD JOINTS UNLESS OTHERWISE SPECIFIED. NO CARBON STEEL OR BRASS FITTINGS SHALL BE USED.
  - MANUAL ISOLATION VALVES SHALL BE PVC TRUE UNION TYPE.
  - PIPE SUPPORTS, FASTENERS AND ANCHOR BOLTS SHALL BE 316 STAINLESS STEEL.
  - SKID MOUNTED EQUIPMENT SHALL BE FURNISHED WITH UNIONS FOR CONNECTION TO PROCESS PIPE.
  - EQUIPMENT AND INSTRUMENT TAG NUMBERS HAVE NOT BEEN SHOWN FOR SKID MOUNTED SYSTEMS. REFER TO SPECIFICATION SECTION 13322 FOR TAG NUMBERS.
  - TANK VENT PIPING NOT SHOWN.
  - CHEMICAL SYSTEM MANUFACTURER TO PROVIDE EQUIPMENT, INSTRUMENTS, TANKS, INTERCONNECTING PIPING, VALVES, SUPPORTS AND APPURTENANCES ON SKID, AND SKID. CONTRACTOR SHALL FURNISH AND INSTALL REMAINING VALVES, PIPING AND APPURTENANCES NECESSARY FOR A COMPLETE AND OPERATING CHEMICAL BATCHING AND FEED SYSTEM.
  - THE FOLLOWING SHALL ALSO BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR: 1) EQUIPMENT INSTALLATION; CONCRETE PADS; ANCHORING TO CONCRETE; PIPING TO APPLICATION POINT(S); INCOMING POWER; MAKE-UP WATER PIPING, VALVES AND SUPPORTS; BACKFLOW PREVENTERS; TANK OVERFLOW AND DRAINS TO FLOOR DRAIN; PIPE SUPPORTS AND ANCHORS.
  - CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS.
  - SEE SHOP DRAWING 11248 AND O&M MANUAL FOR THE DETAILED PLAN, GENERAL ARRANGEMENT OF PIPING, VALVES, EQUIPMENT AND CONTROL PANEL FOR THE PERMANGANATE SYSTEM.

PERMANGANATE SYSTEM DETAIL (NOTE 16)  
N.T.S.

PERMANGANATE SYSTEM SCHEMATIC  
N.T.S.

RECORD DRAWING

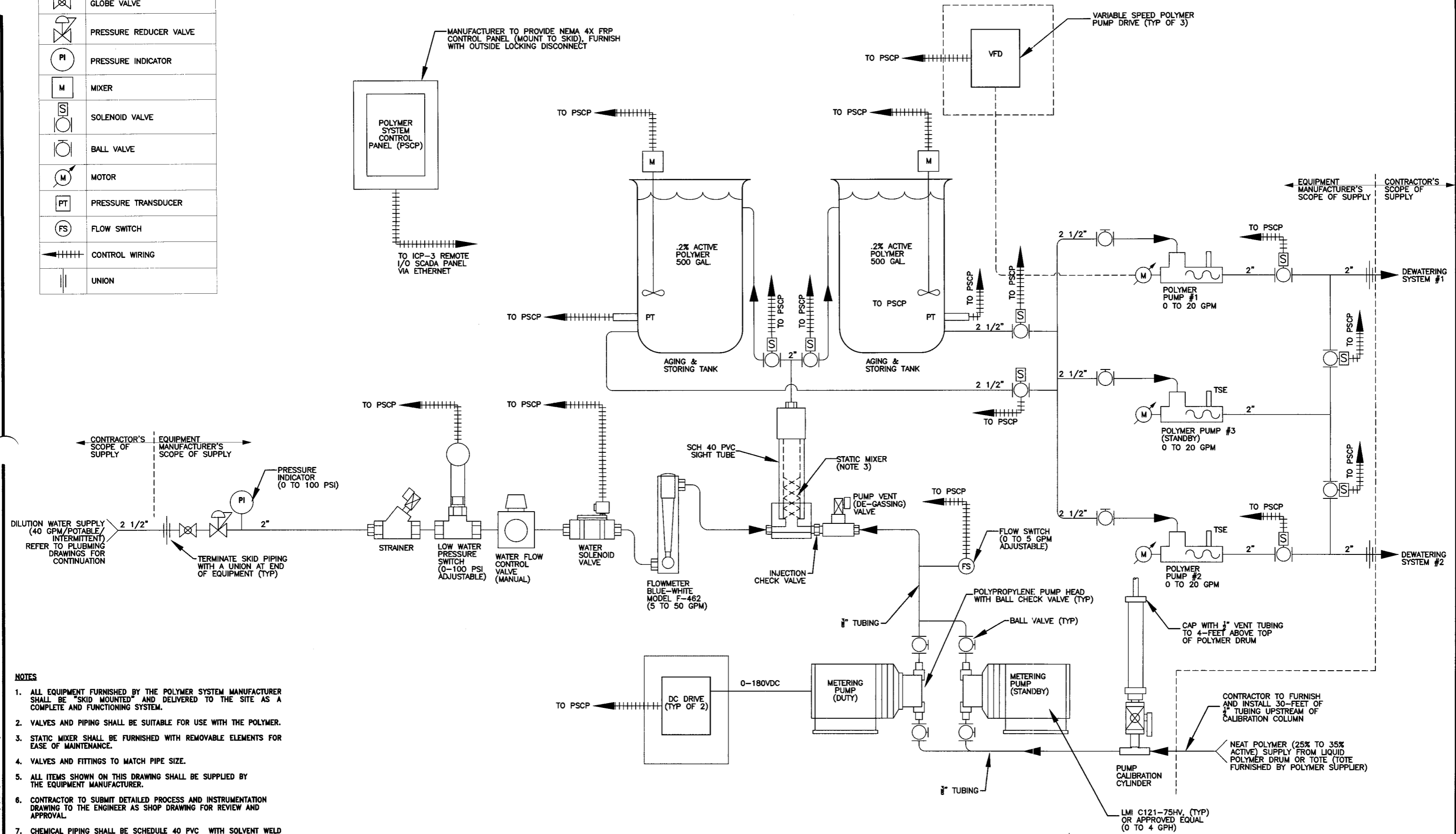
No.	Date	M.M.	Dr. By	Ck. By	App. By	RECORD DRAWING		
						Description	A	P
1	05/2014							

REGISTERED PROFESSIONAL ENGINEER	
DATE	

APP. BY	CHK. BY	DATE
KMN	LRT	

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**PERMANGANATE SYSTEM PROCESS FLOW DIAGRAM**  
 SCALE: AS NOTED  
 CONTRACT NO. 2090269  
 JOB NO. 2  
 DR. BY: TSD  
 DES. BY: MAS  
 APP. BY: KMN

LEGEND	
	GLOBE VALVE
	PRESSURE REDUCER VALVE
	PRESSURE INDICATOR
	MIXER
	SOLENOID VALVE
	BALL VALVE
	MOTOR
	PRESSURE TRANSDUCER
	FLOW SWITCH
	CONTROL WIRING
	UNION



- NOTES**
1. ALL EQUIPMENT FURNISHED BY THE POLYMER SYSTEM MANUFACTURER SHALL BE "SKID MOUNTED" AND DELIVERED TO THE SITE AS A COMPLETE AND FUNCTIONING SYSTEM.
  2. VALVES AND PIPING SHALL BE SUITABLE FOR USE WITH THE POLYMER.
  3. STATIC MIXER SHALL BE FURNISHED WITH REMOVABLE ELEMENTS FOR EASE OF MAINTENANCE.
  4. VALVES AND FITTINGS TO MATCH PIPE SIZE.
  5. ALL ITEMS SHOWN ON THIS DRAWING SHALL BE SUPPLIED BY THE EQUIPMENT MANUFACTURER.
  6. CONTRACTOR TO SUBMIT DETAILED PROCESS AND INSTRUMENTATION DRAWING TO THE ENGINEER AS SHOP DRAWING FOR REVIEW AND APPROVAL.
  7. CHEMICAL PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD JOINTS UNLESS OTHERWISE SPECIFIED. NO CARBON STEEL OR BRASS FITTINGS SHALL BE USED.
  8. MANUAL ISOLATION VALVES SHALL BE PVC TRUE UNION TYPE.
  9. PIPE SUPPORTS, FASTENERS AND ANCHOR BOLTS SHALL BE 316 STAINLESS STEEL.
  10. SKID MOUNTED EQUIPMENT SHALL BE FURNISHED WITH UNIONS FOR CONNECTION TO PROCESS PIPE.
  11. EQUIPMENT AND INSTRUMENT TAG NUMBERS HAVE NOT BEEN SHOWN FOR SKID MOUNTED SYSTEMS. REFER TO SPECIFICATION SECTION 13322 FOR TAG NUMBERS.
  12. CONTRACTOR SHALL FURNISH AND INSTALL ALL COMPRESSION COUPLINGS AND FITTINGS NEEDED FOR TUBING. TUBING AND FITTINGS SHALL BE SUITABLE FOR USE WITH POLYMERS.

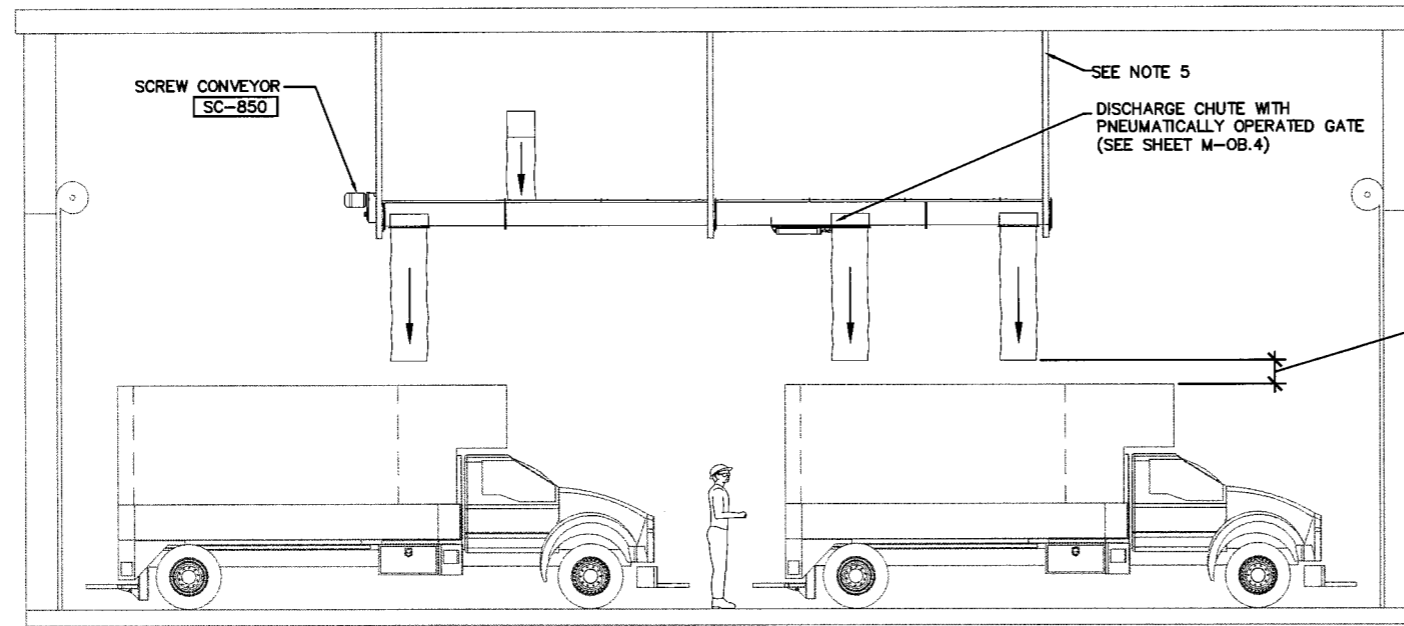
**LIQUID POLYMER SYSTEM SCHEMATIC**  
N.T.S

RECORD DRAWING

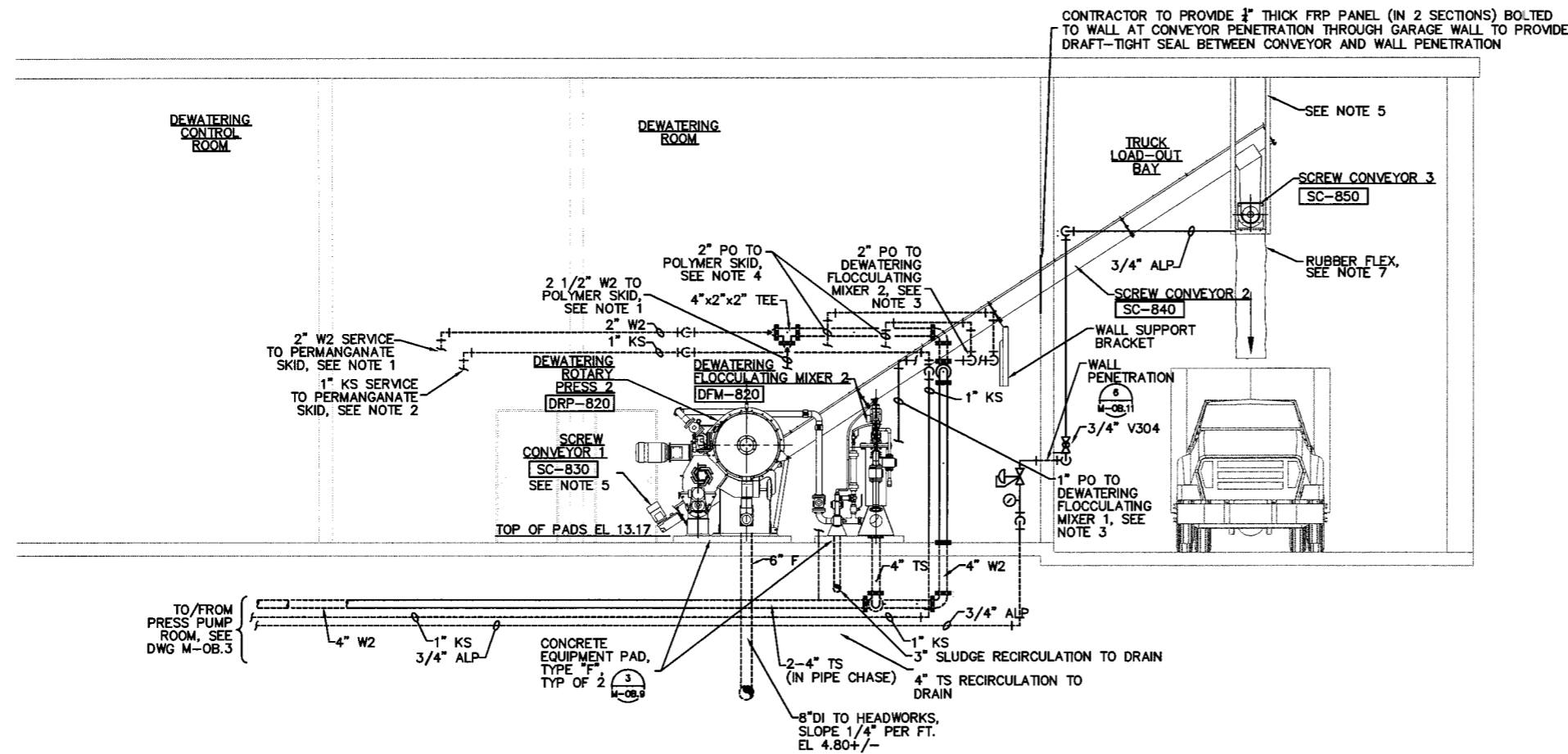
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1 05/2014	App. By: KMN
Dr. By: MWM	Ch. By: ELM
A P P R O V E D	
REGISTERED PROFESSIONAL ENGINEER	

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	FILE NO. 189-99
LIQUID POLYMER SYSTEM PROCESS FLOW DIAGRAM	JOB NO. 2090269
SCALE: AS NOTED	CONTRACT: 2
DR. BY: TSD	CHK. BY: KMN
DATE	DATE





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



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

NOTES:

1. CONTRACTOR TO CONNECT 2" W2 SERVICE TO PIPING ON SKID. SEE DRAWING M-OB.5 AND M-OB.6.
2. CONTRACTOR TO CONNECT 1" KS SERVICE TO PIPING ON SKID. SEE DRAWING M-OB.5.
3. CONTRACTOR TO CONNECT POLYMER FEED PIPING TO DEWATERING FLOCCULATING MIXER, TYPICAL OF 2.
4. CONTRACTOR TO CONNECT POLYMER FEED PIPING TO PIPING ON POLYMER SKID, TYPICAL OF 2. REFER TO DRAWING M-OB.6.
5. LOCATION OF SUPPORTS AND STRUCTURAL SUPPORT SYSTEM FOR CONVEYORS TO BE DESIGNED BY EQUIPMENT MANUFACTURER.
6. ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (c. 1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.
7. TO BE SIZED AND PROVIDED BY SCREW CONVEYOR MANUFACTURER.
8. REFER TO DRAWING M-OB.14 FOR DEWATERING ROOM ODOR CONTROL PIPING.

No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING
A P P R O V E D					
					DATE

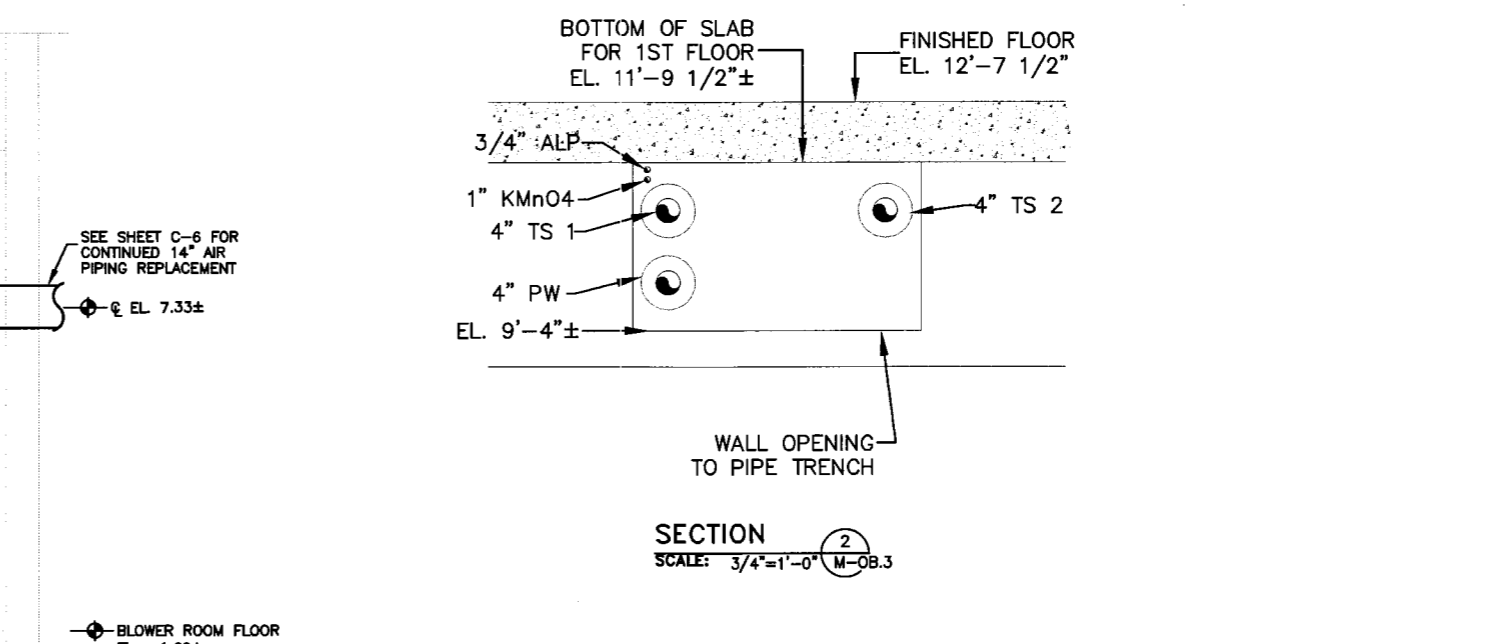
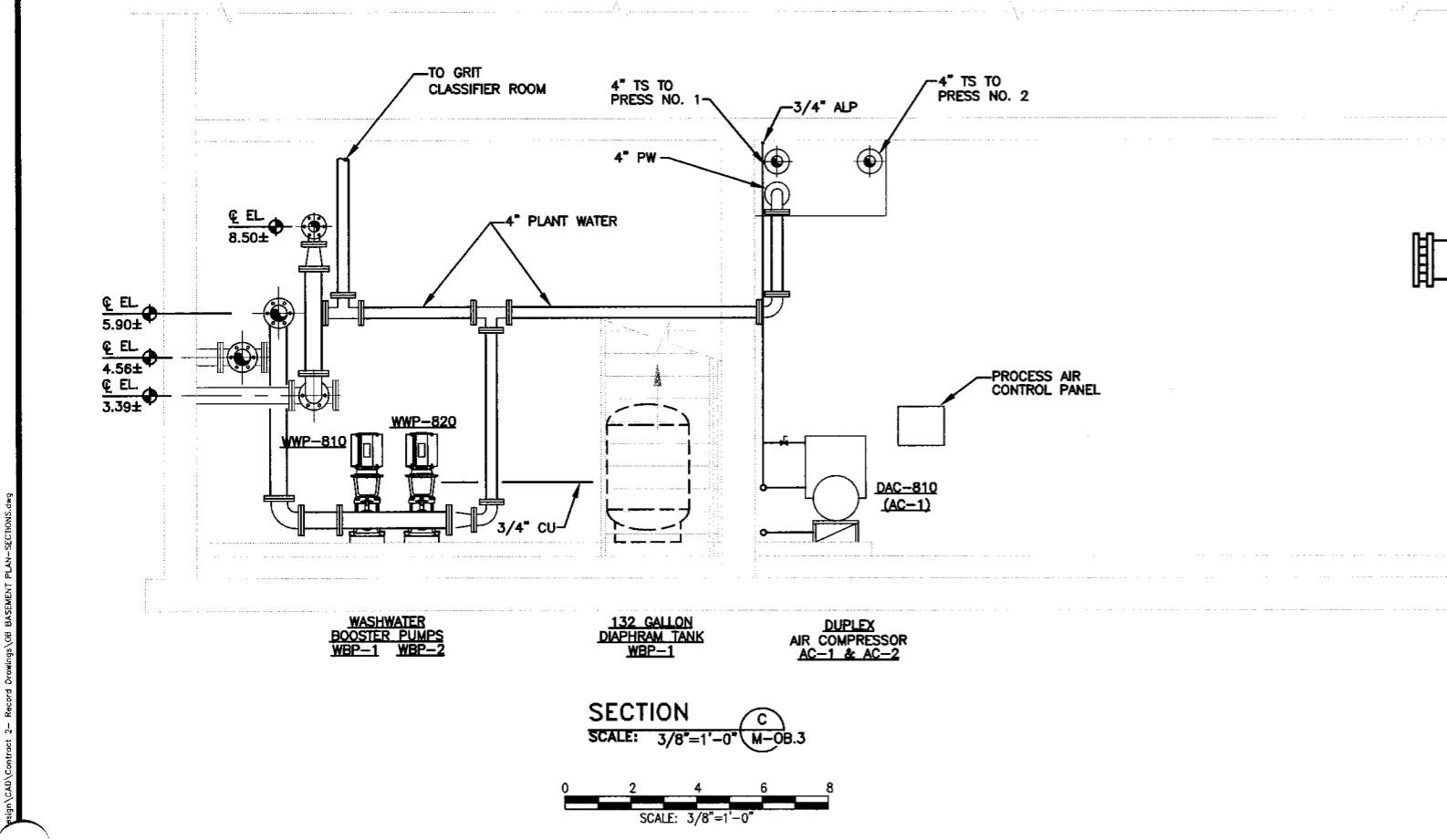
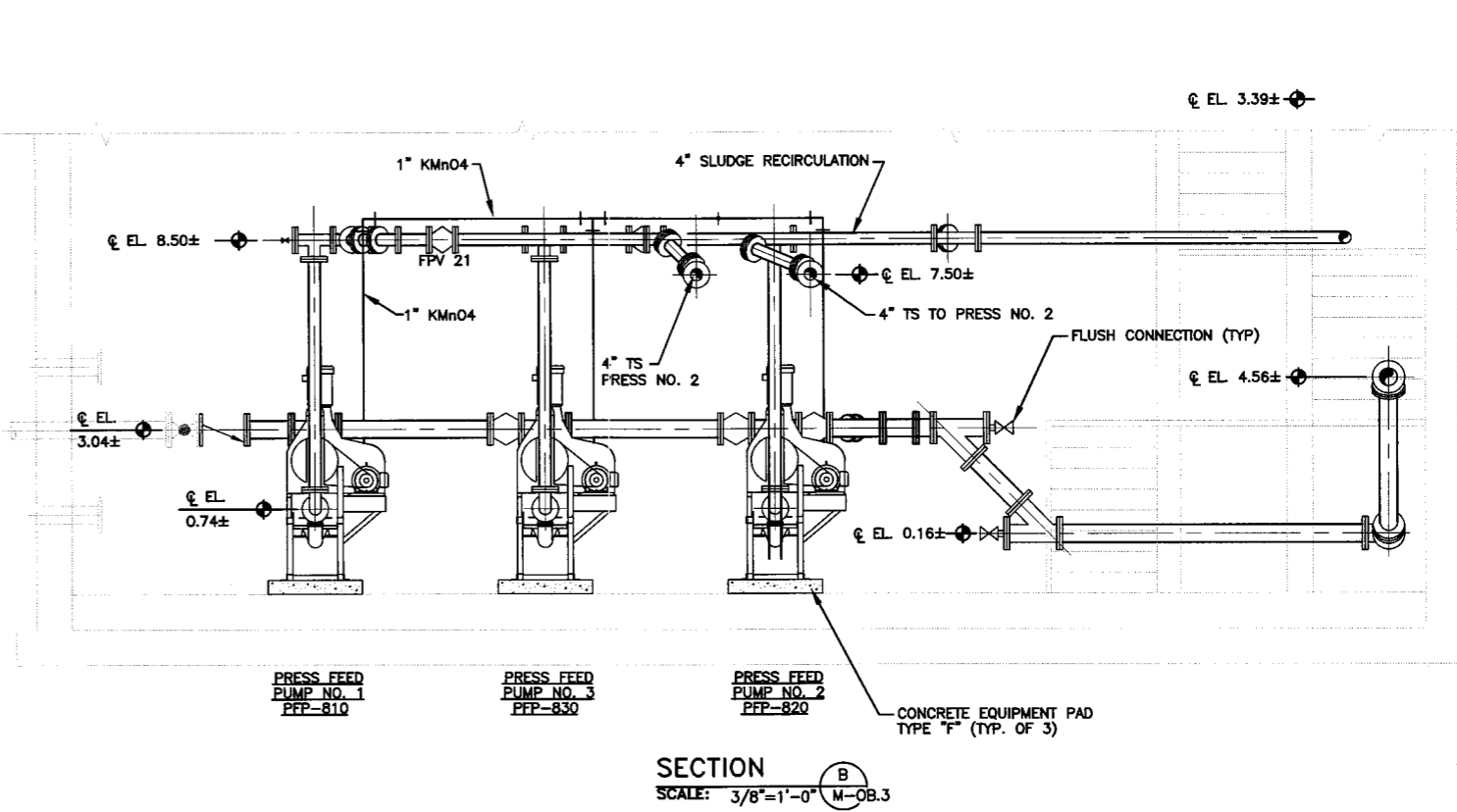
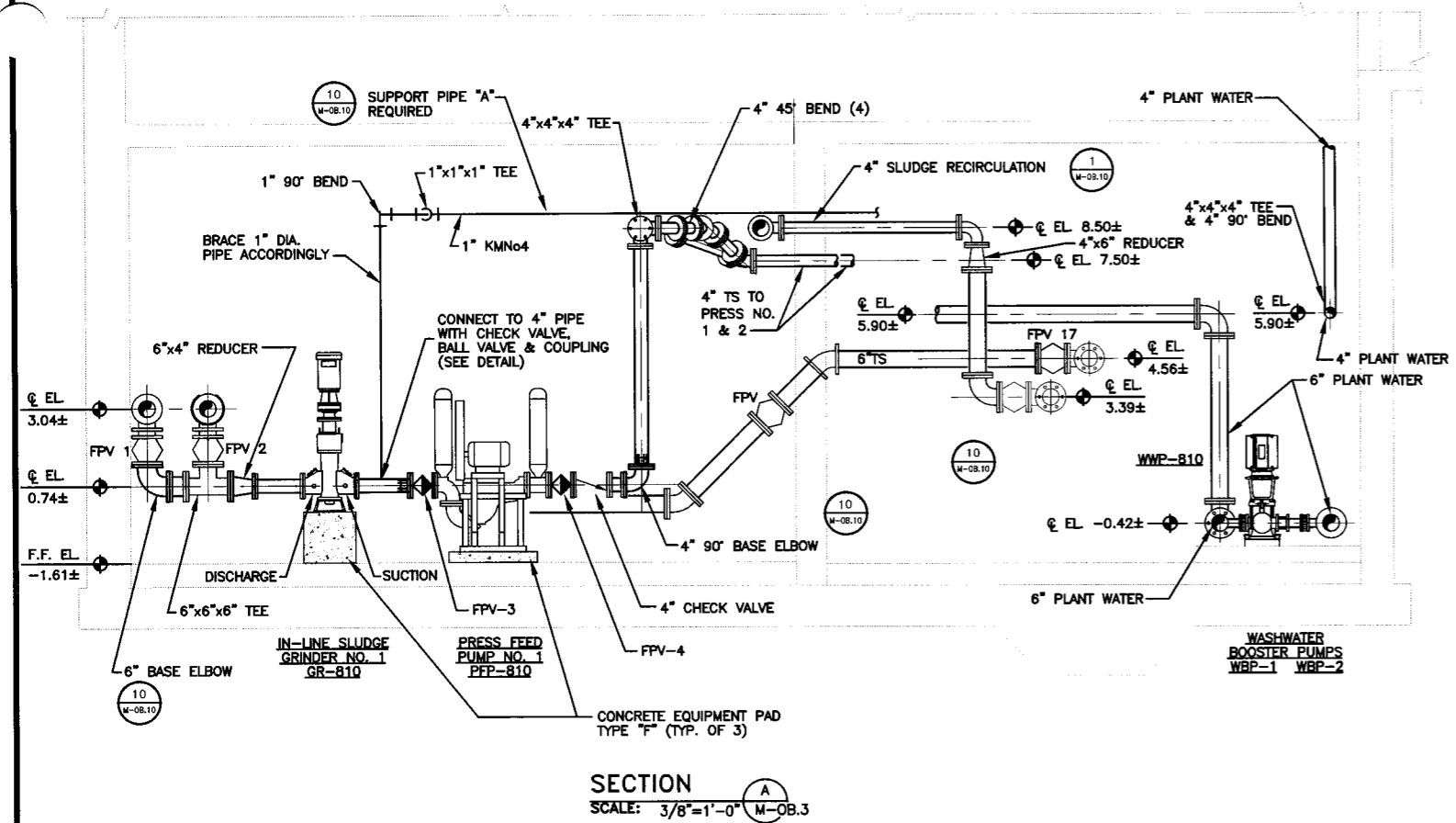
REGISTERED PROFESSIONAL ENGINEER

FILE NO.	189-98
CADD NO.	2090269
SCALE:	AS NOTED
CONTRACT:	2
JOB NO.	2090269
DR. BY	TSJ
DSN BY	CNR
CHK. BY	LRT
APP. BY	KMN

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
DEWATERING ROOM SECTIONS

M-OB.7

D:\Newburyport\MA\2090269\WWT\_Engineering\AutoCAD\Contract 2 - Record Drawings\SLUDGE STORAGE CONVEYOR LAYOUT.dwg

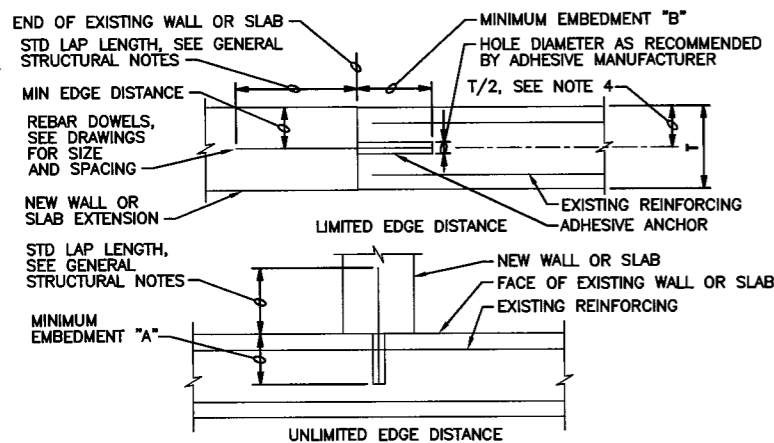


- NOTES:**
- CONTRACTOR SHALL LOCATE AND VERIFY OPERATION OF ALL EXISTING VALVES TO REMAIN IN SERVICE, PRIOR TO ORDERING PIPE AND VALVING. ADVISE ENGINEER ON ANY VALVES WHICH ARE NOT PROPERLY FUNCTIONAL.
  - ALL PIPE SUPPORTS ARE TO BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MASSACHUSETTS. THE CONTRACTOR SHALL SUBMIT THE DESIGN OF PIPE SUPPORTS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
  - FOR VALVES AND OPERATORS, REFER TO CONTRACT SPECIFICATIONS.
  - PIPE THE EQUIPMENT FRAME DRIP RIMS TO THE NEAREST FLOOR DRAIN (NOT SHOWN).
  - CONTRACTOR TO SUBMIT PIPING DETAILER DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
  - ELEVATIONS SHOWN FOR PROPOSED WORK ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ELEVATIONS PROVIDED IN BACKGROUND SCANS PRODUCED FROM BACKGROUND SCANS OF DRAWINGS BY COFFIN & RICHARDSON (C-1979) ARE SHOWN AS MEAN SEA LEVEL DATUM ELEVATION 100. ELEVATIONS FROM COFFIN & RICHARDSON DRAWINGS CAN BE CONVERTED TO NAVD 88 DATUM BY REDUCING THE COFFIN & RICHARDSON ELEVATIONS BY 100.50 FEET.

No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER  
 DATE

CADD NO.	SCALE	AS NOTED	CONTRACT	JOB NO.	DRY BY	DESIGNED BY	CHK. BY	APP. BY
189-97	1	AS NOTED	2	2090269	PJS	CNR	KMN	KMN

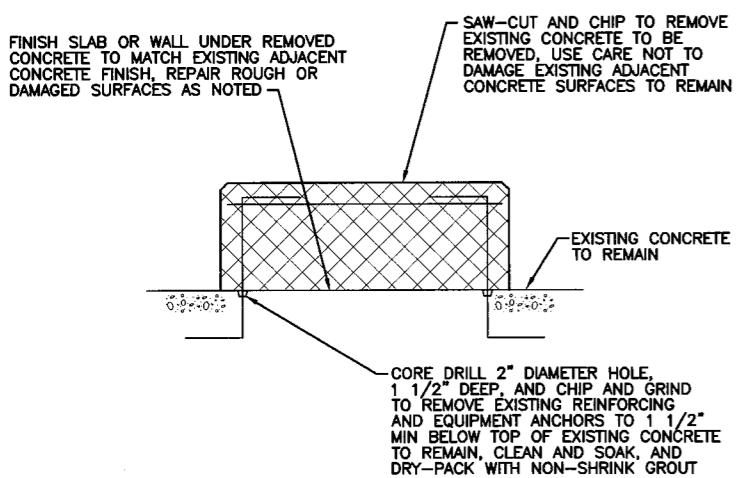


DOWEL SIZE	MINIMUM EDGE DIST	MINIMUM EMBEDMENT A	MINIMUM EMBEDMENT B
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

- NOTES:**
- CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03300, CAST-IN-PLACE CONCRETE.
  - FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
  - USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
  - LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

### ADHESIVE DOWEL 1

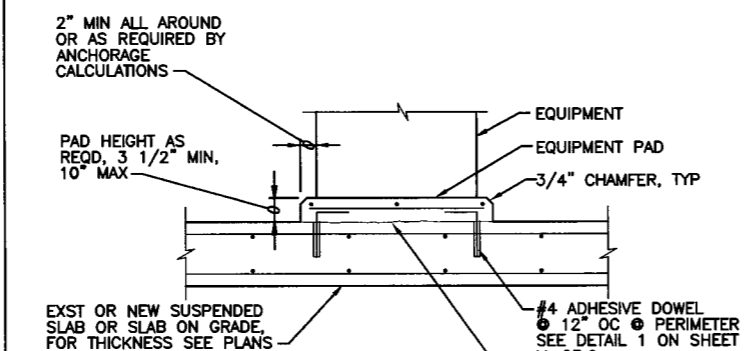
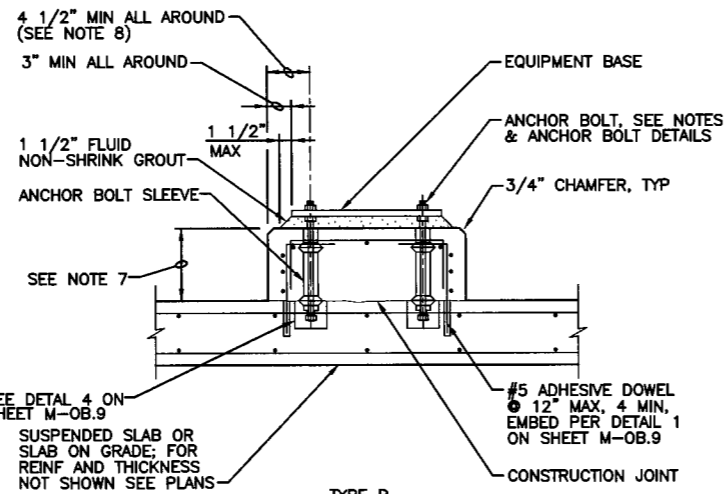
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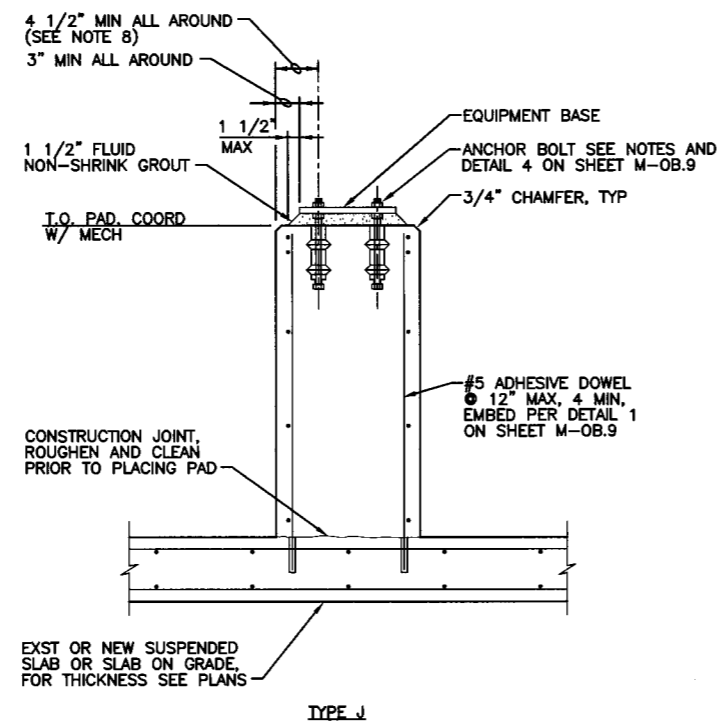
- NOTES:**
- REMOVE CONCRETE OUT TO SOUND CONCRETE.
  - IF CHIPPING INTO THE SURFACE OF THE EXISTING SLAB OR WALL TO REMAIN IS REQUIRED, MAKE EDGES PERPENDICULAR TO THE SURFACE. DO NOT FEATHER EDGES.
  - FILL DEFECTIVE AREA WITH NON-SHRINK GROUT OR AN APPROVED PREPACKAGED PATCHING MATERIAL TO MATCH APPEARANCE OF ADJACENT CONCRETE SURFACES.
  - USE APPROVED BONDING AGENT ON SURFACES TO BE PATCHED PRIOR TO PLACING NON-SHRINK GROUT.
  - DEMONSTRATE METHODS FOR REPAIR USING ACTUAL MATERIALS, METHODS, AND CURING PROCEDURES REQUIRED BY MATERIAL MANUFACTURERS. CONSULT WITH BONDING AGENT MANUFACTURER AND NON-SHRINK GROUT MANUFACTURER ON TECHNIQUES.
  - RESTORE DEMOLISHED CONCRETE PAD AREA FLUSH WITH EXISTING FINISHED FLOOR.

### CONCRETE DEMOLITION 2

SCALE: NTS

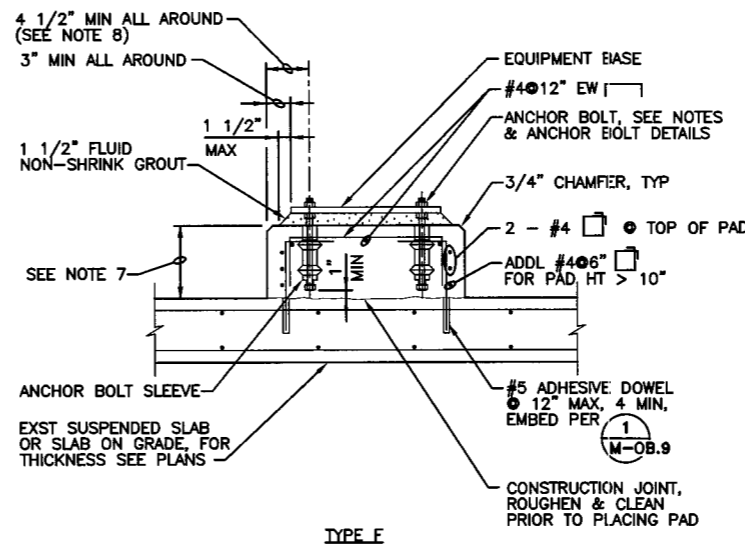


- NOTES:**
- WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS SPECIFIED.
  - CONCRETE PADS FOR ELECTRICAL EQUIPMENT SHALL BE 3 1/2" HIGH, UNLESS NOTED OTHERWISE.



### CONCRETE EQUIPMENT PADS 3

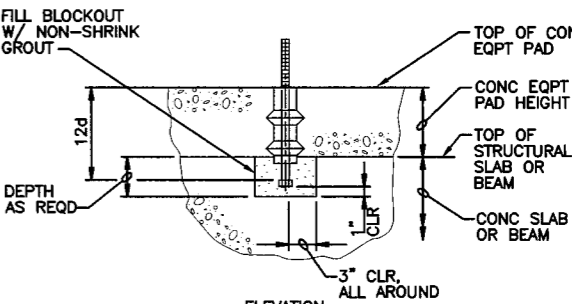
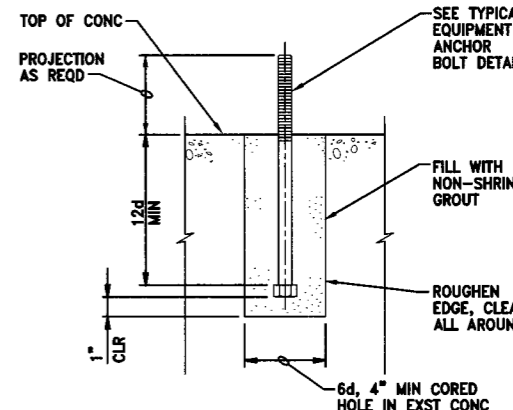
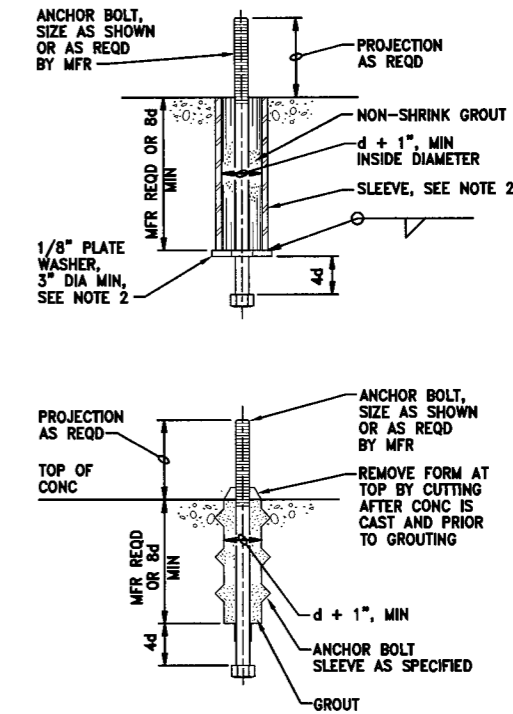
SCALE: NTS



- NOTES:**
- PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
  - THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING THE BASE PLATE, WHILE PAD IS BEING PLACED.
  - ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE MINIMUM ANCHOR BOLT MOVEMENT OF 1/2" IN ALL HORIZONTAL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER.
  - ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER BOLTS ARE ALIGNED. SEE DETAIL 4 ON SHEET M-OB-9.
  - EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE.
  - WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE NON-SHRINK GROUT IS PLACED. WEDGES OR SHIMS THAT ARE LEFT IN PLACE SHALL NOT BE EXPOSED TO VIEW.
  - HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT ABOVE SUPPORTING SLAB (SEE TABLE BELOW). WHERE EQUIPMENT OR PIPING ELEVATION REQUIRE A PAD HEIGHT LESS THAN THE MINIMUM SHOWN, USE TYPE "B" EQUIPMENT PAD WITH BLOCKOUT.
  - EXCEPT AT BFP PUMPS, USE PAD SIZE PER MANUFACTURERS REQUIREMENTS.
  - AT CONTRACTOR'S OPTION, CONCRETE ANCHORS MAY BE USED IN LIEU OF CAST-IN-PLACE ANCHOR BOLTS FOR EQUIPMENT ANCHOR BOLTS LESS THAN 3/4" DIAMETER WHEN APPROVED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER. ANCHORS SHALL BE INSTALLED WITH EDGE DISTANCE IN EACH DIRECTION, NOT LESS THAN 9 BOLT DIAMETERS.

AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	3/4	2	
MIN PAD HT (IN.)	7	8	1 1/2	10	11	12 1/2	15	16 1/2	18	21	24

\* INCREASE PAD HEIGHT WHERE PUMP MANUFACTURER REQUIRES GREATER EMBEDMENT.



- NOTES:**
- FOR CONCRETE EQUIPMENT PAD DETAILS AND NOTES NOT SHOWN SEE 3.
  - MATERIAL TO MATCH BOLT. M-OB-9.

### ANCHOR BOLT DETAILS 4

SCALE: NTS

**Weston & Sampson**  
Five Centennial Drive, Peabody, MA 01960  
(978) 532-1900 (800) 545PSON  
www.westonandsampson.com

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**CH2MHILL**

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No.	Date	Dr. By	Ck. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING

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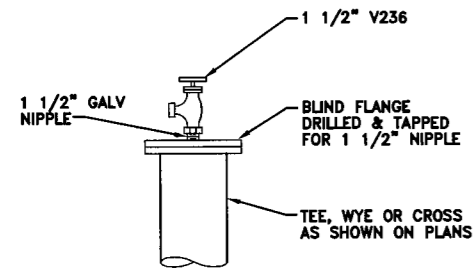
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING DETAILS 1**

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CAOD NO.	SCALE:	CONTRACT:	JOB NO.	DR. BY:	CHK. BY:	APP. BY:
M-OB-9	AS NOTED	2	2090269	CJD	JRS	MJM

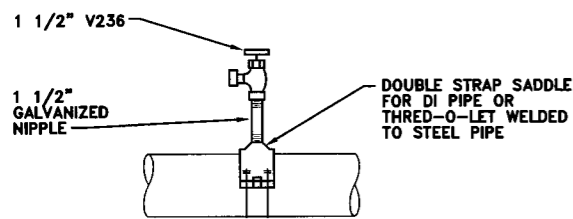
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FILE NO. 189-96  
SHEET 107 OF 202



**TYPE 2 FLUSHING CONNECTION**  
SCALE: NTS

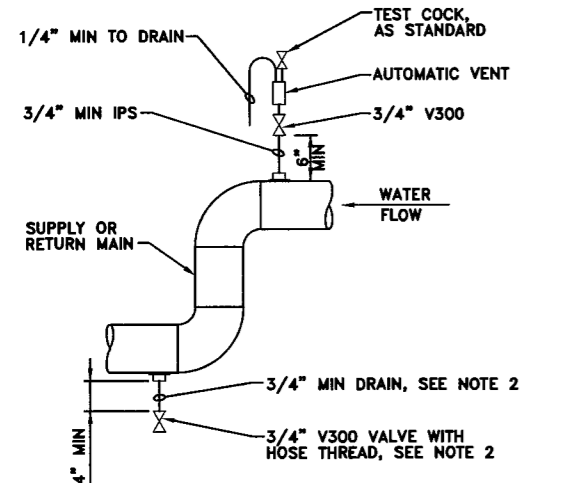
1



**NOTE:**  
1. TAPPING OF FITTINGS ALLOWED AT BOSS ONLY.

**TYPE 1 FLUSHING CONNECTION**  
SCALE: NTS

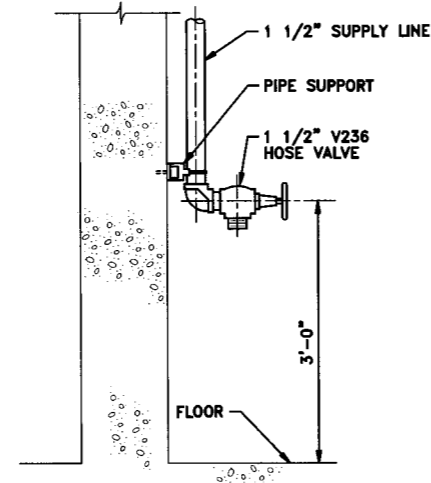
2



**NOTES:**  
1. TYPICAL FOR ALL HIGH POINTS, LOW POINTS AND POCKETS.  
2. LOW POINT DRAINS TO BE 2" MINIMUM ON 6" AND LARGER MAINS.

**PIPING VENTS AND DRAINS**  
SCALE: NTS

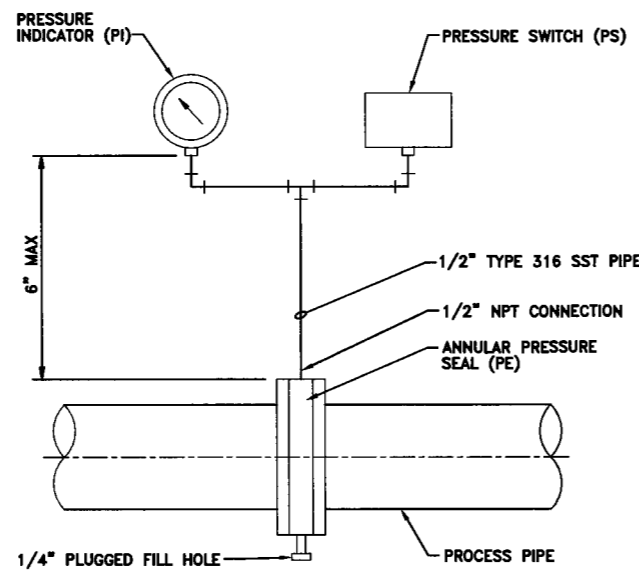
3



**NOTE:**  
1. ROTATE HOSE VALVE 30° OFF WALL.

**INTERIOR HOSE VALVE**  
SCALE: NTS

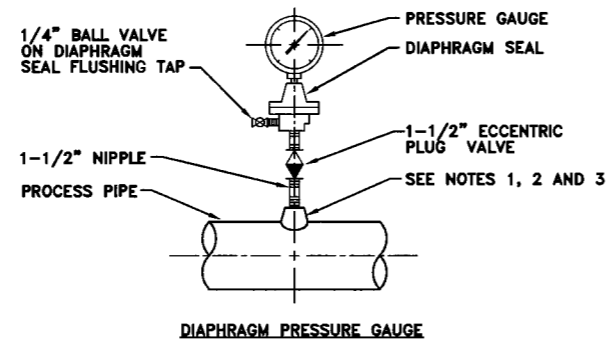
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**NOTE:**  
1. INDICATOR AND SWITCH INSTALLATION SHOWN FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY TO SEAL.

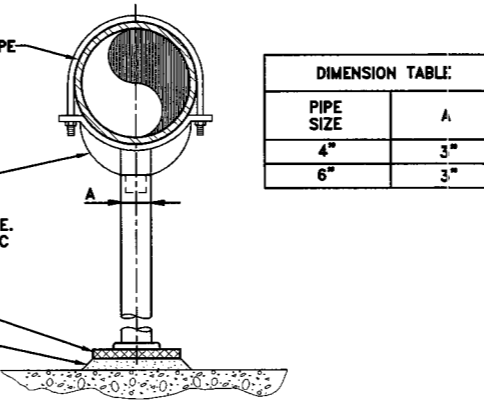
**PRESSURE SWITCH AND INDICATOR WITH ANNULAR SEAL INSTALLATION**  
SCALE: NTS

5



**NOTES:**  
1. FOR STEEL, GALVANIZED STEEL, AND PVC 2 1/2" AND SMALLER USE A BUSHING IN A TEE.  
2. FOR DUCTILE IRON AND FIBERGLASS REINFORCED PLASTIC PIPE, ALL SIZES, USE PIPE SADDLE WITH BUSHING.  
3. FOR STEEL AND STAINLESS STEEL PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THRED-O-LET AS SHOWN.  
4. PROVIDE SNUBBER FOR POSITIVE DISPLACEMENT PUMP INSTALLATIONS.

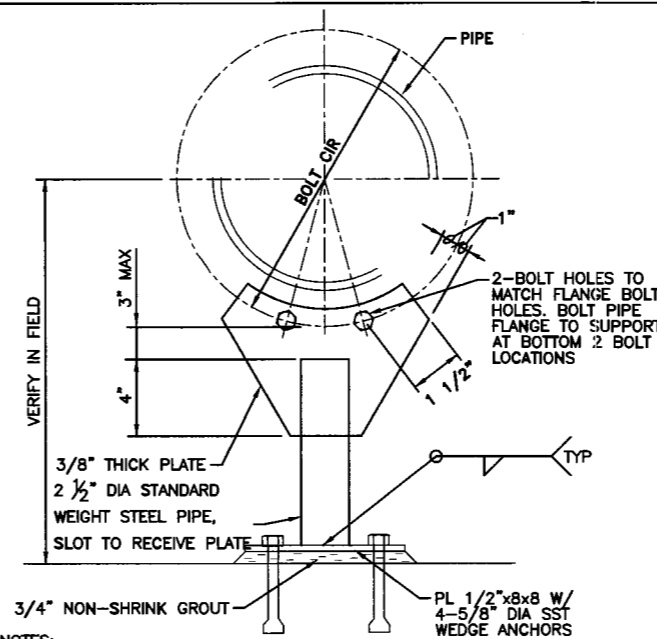
**PRESSURE CONNECTION INSTALLATION**  
SCALE: NTS



DIMENSION TABLE	
PIPE SIZE	A
4"	3"
6"	3"

**PIPE SUPPORT**  
SCALE: NTS

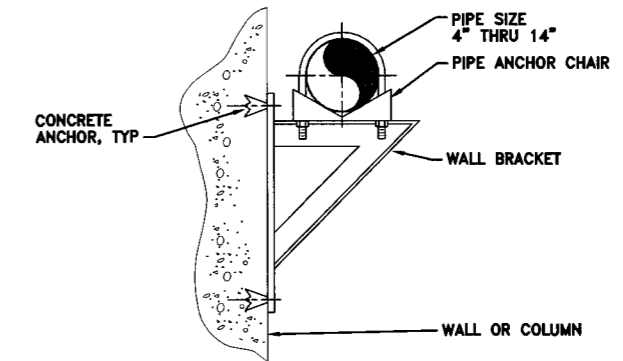
7



**NOTES:**  
1. VERIFY DIMENSIONS WITH PIPE MANUFACTURER BEFORE FABRICATION.  
2. HOT DIP GALVANIZE AFTER FABRICATION.  
3. DO NOT USE ON PIPE EXCEEDING 8-INCHES.

**PIPE SUPPORT**  
SCALE: NTS

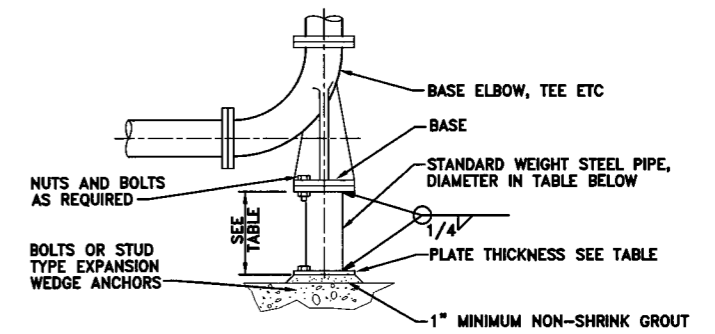
8



**NOTES:**  
1. HOT DIP GALVANIZE AFTER FABRICATION.  
2. WALL BRACKET SHALL BE MEDIUM OR HEAVY DUTY DEPENDING ON PIPE LOAD REQUIREMENTS.

**PIPE SUPPORT - WALL MOUNTED**  
SCALE: NTS

9

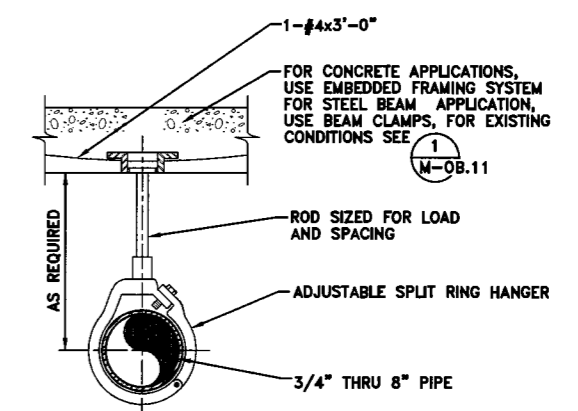
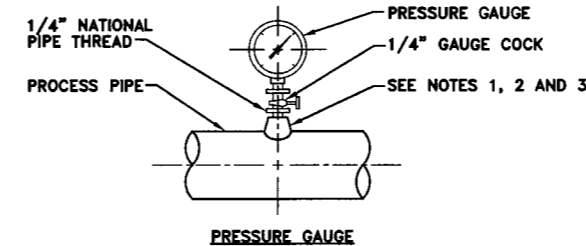


PIPE SIZE	SUPPORT DIAMETER	PLATE		ANCHOR BOLT DIAMETER
		DIAMETER	THICKNESS	
4"	2"	6"	3/8"	3/8"
6"	3"	7"	3/8"	3/8"

**NOTES:**  
1. ALSO USE FOR SUPPORT OF HORIZONTAL TEE OR CROSS.

**BASE BEND**  
SCALE: NTS

10



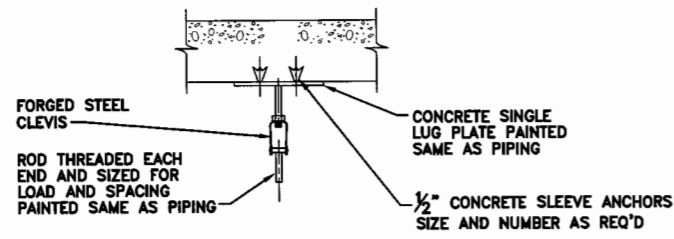
**PIPE HANGER**  
SCALE: NTS

11

No.	Date	Dr. By	Chk. By	App. By	RECORD DRAWING		DATE
					Author	Description	
1	05/2014	MJM	ELM	KMN			

REGISTERED PROFESSIONAL ENGINEER	
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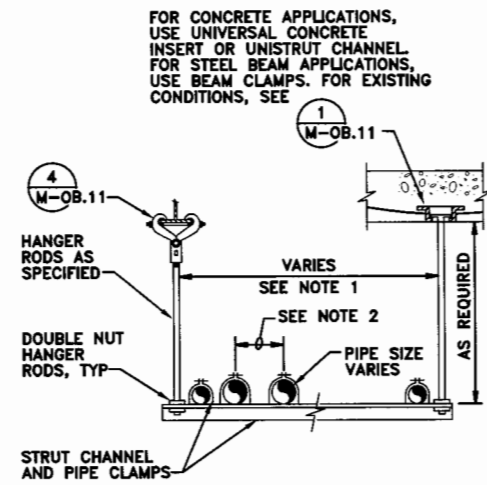
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT OPERATIONS BUILDING DETAILS II	FILE NO. 189-95
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**EXISTING CONCRETE ANCHOR ATTACHMENT ROD HANGING OPTIONS**

SCALE: NTS

1



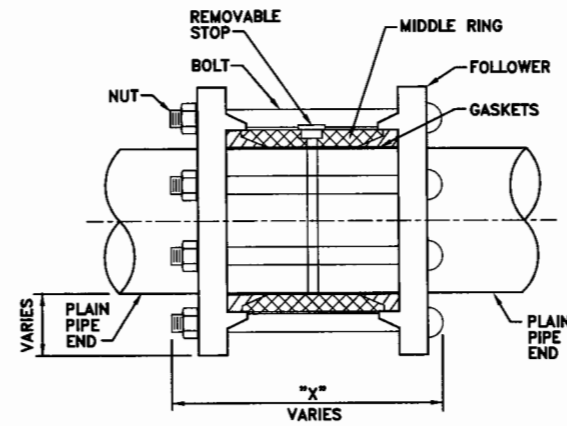
**NOTES:**

1. LENGTH VARIES WITH NUMBER OF PIPES TO BE SUPPORTED, AND SPACING BETWEEN PIPES.
2. SPACING BETWEEN PIPES VARIES ACCORDING TO PIPE SIZES AND SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS.
3. ALLOWABLE SPAN, NUMBER AND SIZE OF SUPPORT RODS, AND LOAD PER MANUFACTURER'S RECOMMENDATIONS.
4. TOTAL LOADING ON HANGER ROD ANCHORS SHALL NOT EXCEED MANUFACTURER'S RECOMMENDED LOADINGS.

**TRAPEZE PIPE HANGER**

SCALE: NTS

5



**COUPLING SPECIFICATIONS FOR STEEL PIPE SIZES 2" THRU 32"**

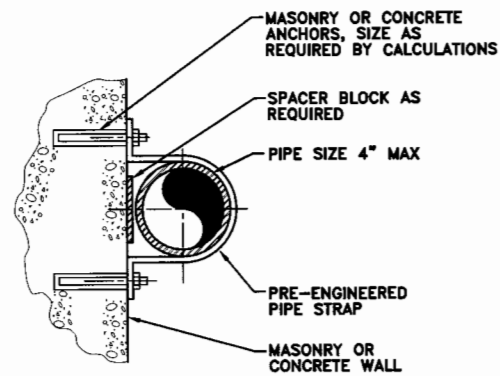
PIPE NOMINAL SIZE (IN)	MIDDLE RING THICKNESS x LENGTH	BOLTS/NUTS (QUANTITY)	REMOVABLE STOPS (QUANTITY)	ENVELOPE DIMENSIONS DIAMETER (Y)	LENGTH (X)
2	1/2 x 7	3	1	6-1/4	9-1/2
4	1/2 x 7	4	1	9	9-1/2
6	1/2 x 7	6	1	11-1/4	9-1/2
8	1/2 x 7	6	1	13-1/4	9-1/2

**NOTE:**  
1. STYLE 38, FLEXIBLE COUPLING (FC) BY PIPING SPECIALTIES, DRESSER, INC. OR APPROVED EQUAL.

**FLEXIBLE COUPLING**

SCALE: NTS

7



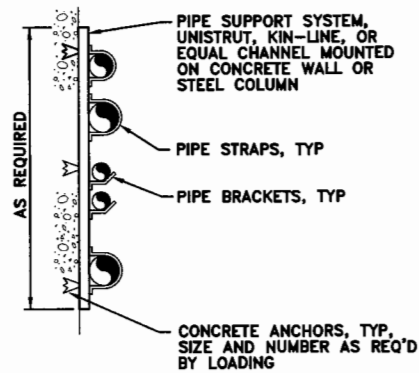
**NOTES:**

1. ONLY FOR VERTICAL PIPES.
2. NOT FOR USE ON CEILINGS OR BOTTOMS OF BEAMS.
3. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED. FABRICATE OVERSIZE STRAP WHERE REQUIRED.

**PIPE SUPPORT**

SCALE: NTS

2

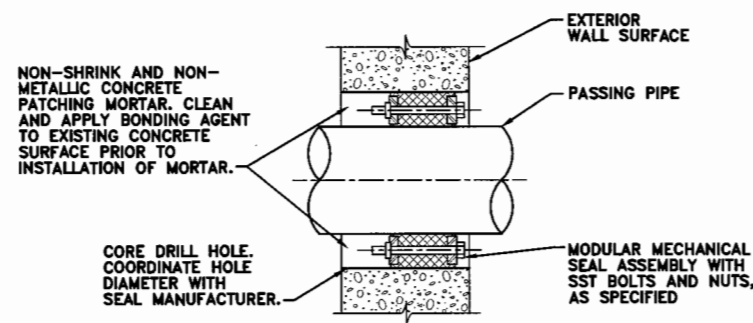


**NOTE:**  
1. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.

**STACKED PIPE SUPPORT WALL SYSTEM**

SCALE: NTS

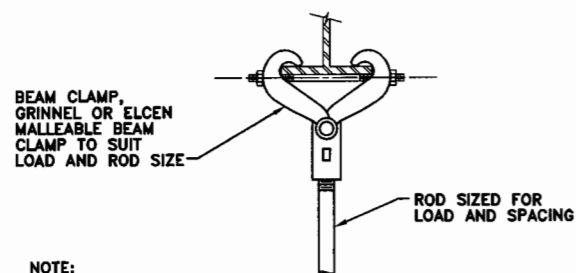
3



**WALL PIPE PENETRATION SEAL**

SCALE: NTS

6



**NOTE:**  
1. TOTAL LOADING OF EACH BEAM CLAMP SHALL NOT EXCEED MANUFACTURER'S RECOMMENDED LOADINGS.

**BEAM CLAMP**

SCALE: NTS

4

RECORD DRAWING

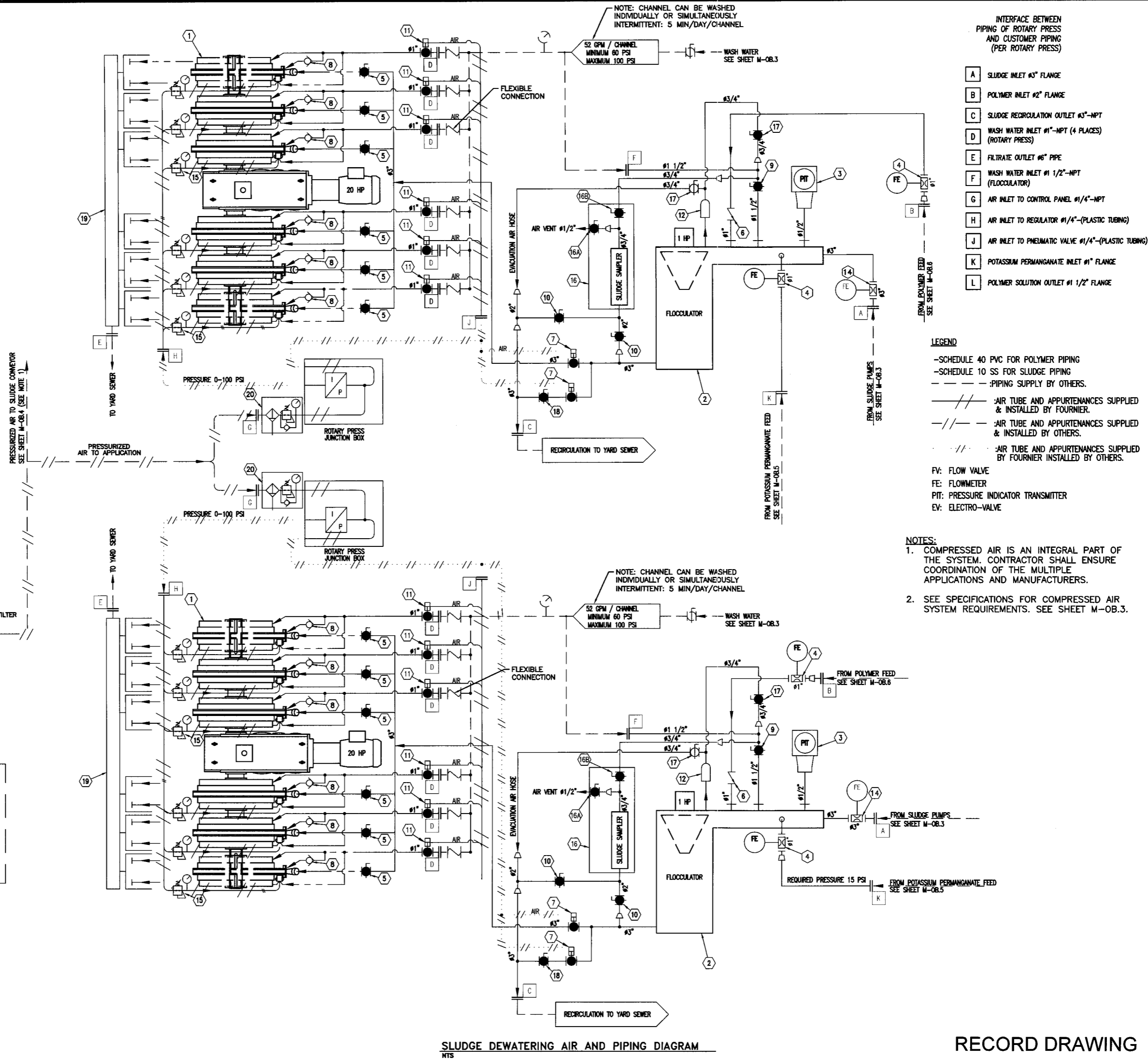
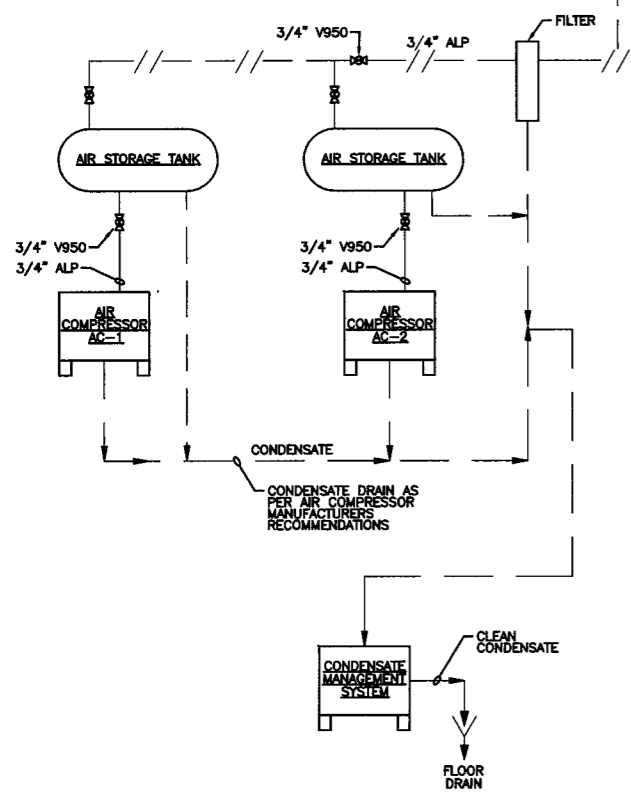
1	05/2014	MJM	Dr. By	ELM	Chk. By	KMN	App. By	DESCRIPTION
No.	Date	Dr. By	Chk. By	App. By	App. By			
A P P R O V E D								REGISTERED PROFESSIONAL ENGINEER
DATE								

FILE NO. 189-94

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
OPERATIONS BUILDING  
DETAILS III

CONTRACT: 2090269  
JOB NO. 2  
SCALE: AS NOTED  
CADD NO. OB DET 3  
DATE: MAR 09 BY: JRS  
DATE: MAR 09 BY: MAW  
DATE: MAR 09 BY: KMN

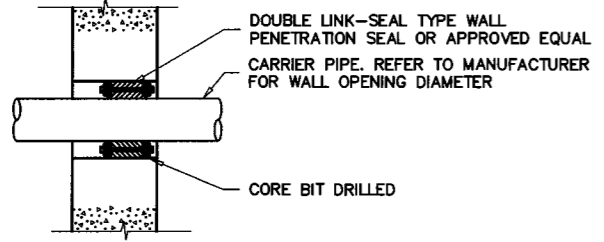
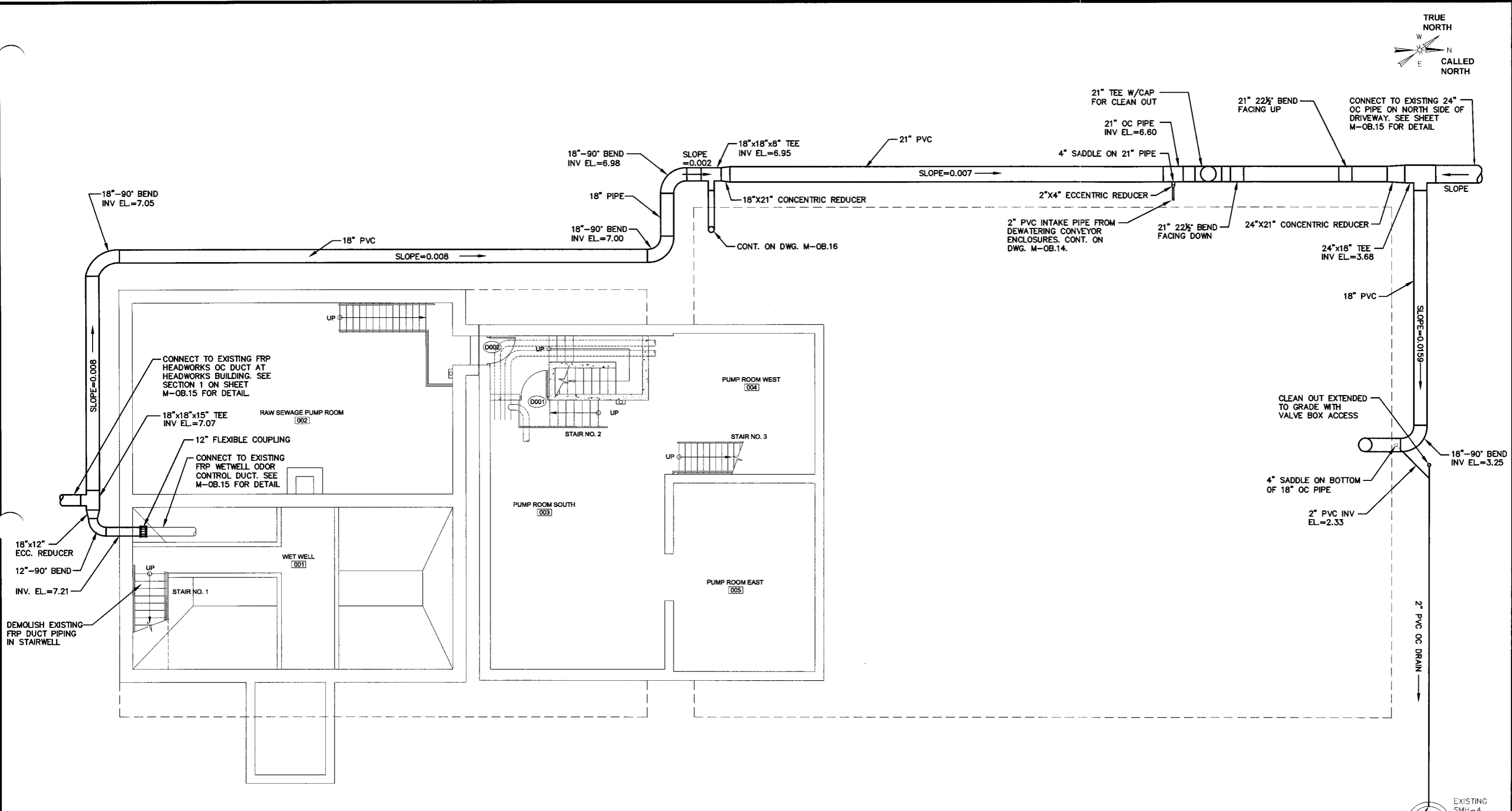
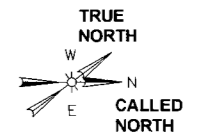
MATERIAL LIST		
ARTICLE ITEM	DESIGNATION	MAT.
1	ROTARY PRESS #4(6)-900/6000CV	
	WITH VARIABLE SPEED MOTOR 20 HP	
2	FLOCCULATOR MODEL #05-300-900	
	WITH VARIABLE SPEED MOTOR 1 HP	
3	PRESSURE TRANSMITTER, 4-20 MA	
4	#1" POLYMER FLOWMETER	
5	BALL VALVE FULL PORT #3" FLANGE	CAST IRON
6	CHECK VALVE #1"-NPT, CLASS 150#	
7	BALL VALVE FULL PORT #3" FLANGE	CAST IRON
	C/A ACTING PNEUMATIC ACTUATOR	
8	CHECK VALVE #3/4"-NPT, CLASS 150#	
9	#1 1/2" NPT BALL VALVE FULL PORT	S.S.
10	#2" NPT BALL VALVE FULL PORT	S.S.
11	#1" PNEUMATIC VALVE	S.S.
12	AIR BLEEDER #2"	PVC
14	#3" SLUDGE FLOWMETER	
15	PRESSURE REGULATOR	
16	SLUDGE SAMPLER	
16A	#1/2" NPT BALL VALVE FULL PORT	S.S.
16B	#3/4" NPT BALL VALVE FULL PORT	S.S.
17	#3/4" NPT BALL VALVE FULL PORT	S.S.
18	#3" NPT BALL VALVE FULL PORT	S.S.
19	MANIFOLD	PVC
20	AIR FILTER REGULATOR	



No.	Date	Dr. By	Ck. By	App. By	Description
1	05/20/14	MJM	ELM	KMN	RECORD DRAWING

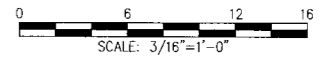
REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT OPERATIONS BUILDING DETAILS IV	SCALE: AS NOTED	CONTRACT: 2090269	JOB NO: 2	DR. BY: TSD	DES. BY: PCP	CHK. BY: CNR	APP. BY: KMN
FILE NO. 189-93							



- NOTES:**
1. PROVIDE MINIMUM 6" CLEARANCE BETWEEN WALL/FLOOR SURFACES AND PIPE FLANGES.

- ODOR CONTROL NOTES:**
1. ALL ODOR CONTROL PIPING SHALL SLOPE CONTINUOUSLY DOWN TO LOW POINT ADJACENT TO AEROBIC DIGESTERS.
  2. ALL ODOR CONTROL PIPE SIZE TRANSITIONS SHALL USE ONLY ECCENTRIC REDUCERS TO MAINTAIN CONSTANT SLOPE AT PIPE INVERT.
  3. ALL ODOR CONTROL PIPING SHALL BE BURIED WITH MINIMUM COVER OF 12 INCHES.
  4. BURIED ODOR CONTROL PIPING SHALL BE PROTECTED WITH CONCRETE SLAB AT ALL ROAD CROSSINGS AND GARAGE ENTRYWAYS. SEE STRUCTURAL DRAWINGS FOR CONCRETE SLAB DETAILS.

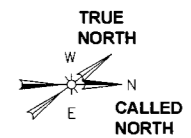


**RECORD DRAWING**

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ODOR CONTROL - LOWER LEVEL PLAN**

SCALE: 3/16"=1'-0"  
 FILE NO. 189-92  
 CONTRACT NO. 2090269  
 JOB NO. 2  
 DRAWN BY: RIC  
 CHECKED BY: HBD  
 APPR BY: MAJ  
 KVN

SHEET 11 OF 202



FOR CONTINUATION  
SEE DWG M-OB.13

RUN 2" CPVC OC PIPE  
ACROSS POLYMER ROOM  
WALL

2" CPVC OC PIPE MOUNTED  
TO WALL. SEE DETAIL THIS  
SHEET FOR CONNECTION TO  
CONVEYOR COVER

TO ROTARY PRESS  
OUTLET BOXES

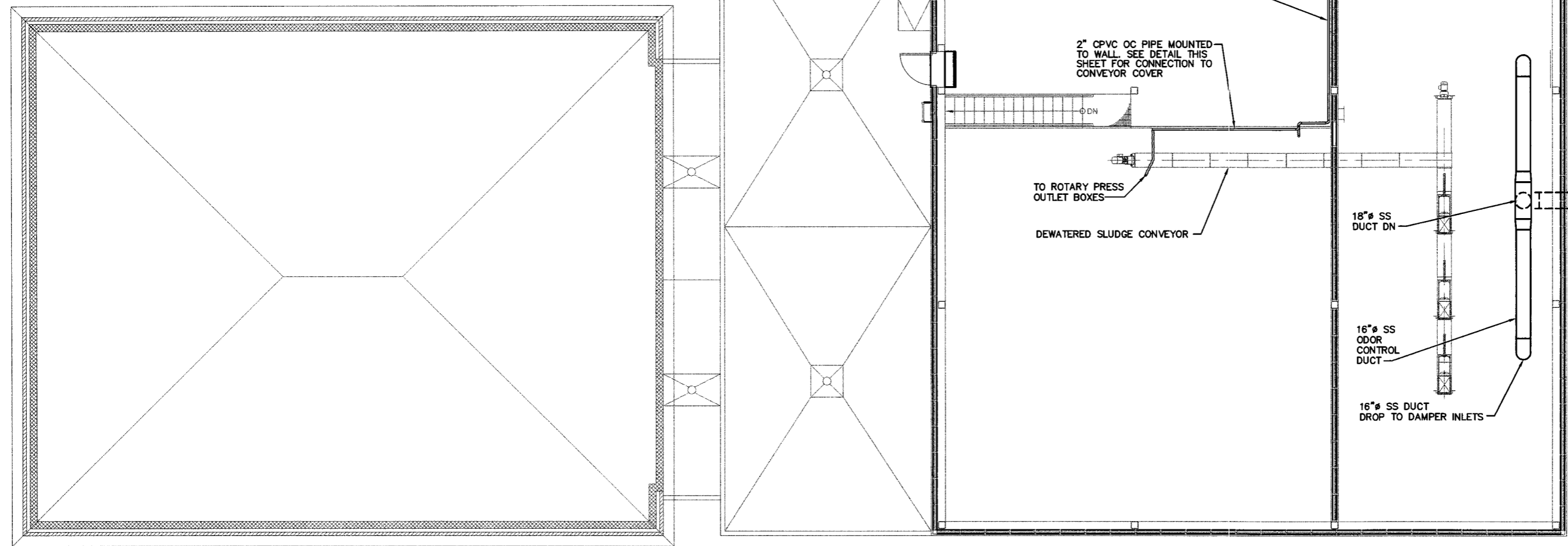
DEWATERED SLUDGE CONVEYOR

18" Ø SS  
DUCT DN

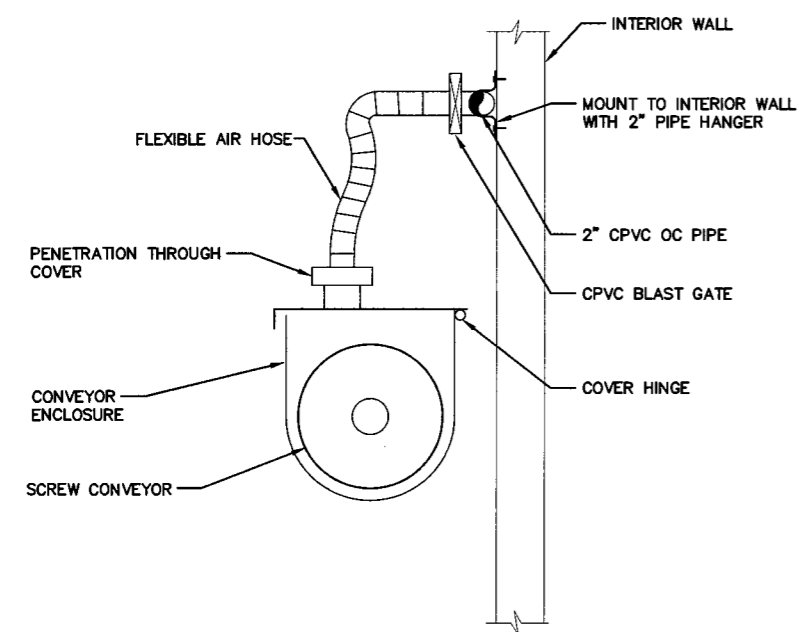
FOR CONTINUATION  
SEE DWG M-OB.13

16" Ø SS  
ODOR  
CONTROL  
DUCT

16" Ø SS DUCT  
DROP TO DAMPER INLETS



**PLAN VIEW**  
SCALE: 3/16"=1'-0"



**SLUDGE CONVEYOR COVER  
CONNECTION DETAIL**  
SCALE: 1 1/2"=1'-0"

**ODOR CONTROL NOTES:**

1. ALL ODOR CONTROL PIPING SHALL SLOPE CONTINUOUSLY DOWN TO LOW POINT ADJACENT TO NORTH WALL OF TRUCK GARAGE.
2. ALL ODOR CONTROL PIPE SIZE TRANSITIONS SHALL USE ONLY ECCENTRIC REDUCERS TO MAINTAIN CONSTANT SLOPE AT PIPE INVERT.
3. ALL ODOR CONTROL PIPING SHALL BE BURIED WITH MINIMUM COVER OF 12 INCHES.
4. BURIED ODOR CONTROL PIPING SHALL BE PROTECTED WITH CONCRETE SLAB AT ALL ROAD CROSSINGS AND GARAGE ENTRYWAYS. SEE STRUCTURAL DRAWINGS FOR CONCRETE SLAB DETAILS.

**Weston & Sampson**  
Pipe, Centennial Drive, Peabody, MA 01860  
(978) 532-1800 (800) 5AMPSON  
www.westonandsampson.com

NO.	DATE	DR BY	CHK BY	APP BY	DESCRIPTION
1	05/2014	MJM	ELM	KMN	RECORD DRAWING

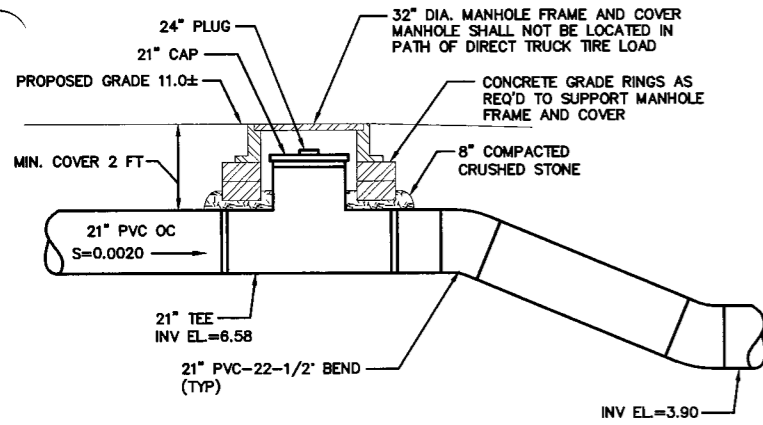
REGISTERED ARCHITECT  
DATE

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ODOR CONTROL - MEZZANINE/CLERESTORY PLAN**  
JOB NO. 2090269  
CONTRACT 2  
AS NOTED  
SCALE: -  
DR BY: DSHBY  
CHK BY: MAJ  
APP BY: KMN  
DRT: HBD

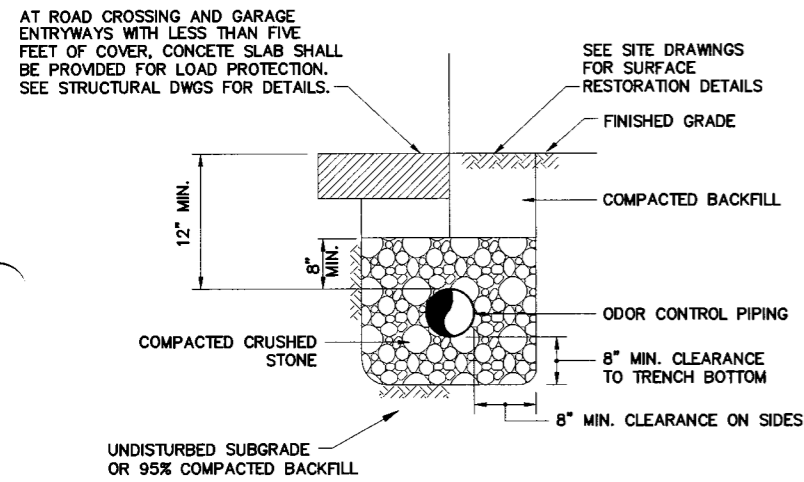
**M-OB.14**  
FILE NO. 189-191  
SHEET 112 OF 202

**RECORD DRAWING**

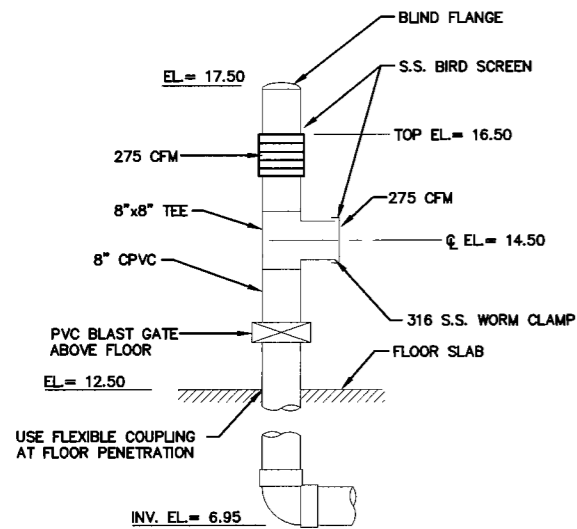




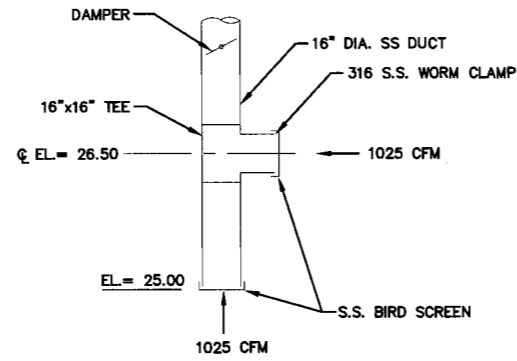
**ODOR CONTROL TEE MANHOLE COVER DETAIL**  
SCALE: 3/8"=1'-0"



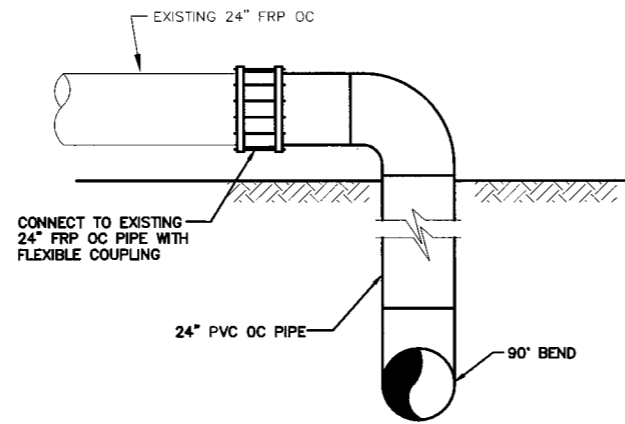
**ODOR CONTROL TRENCH DETAIL**  
N.T.S.



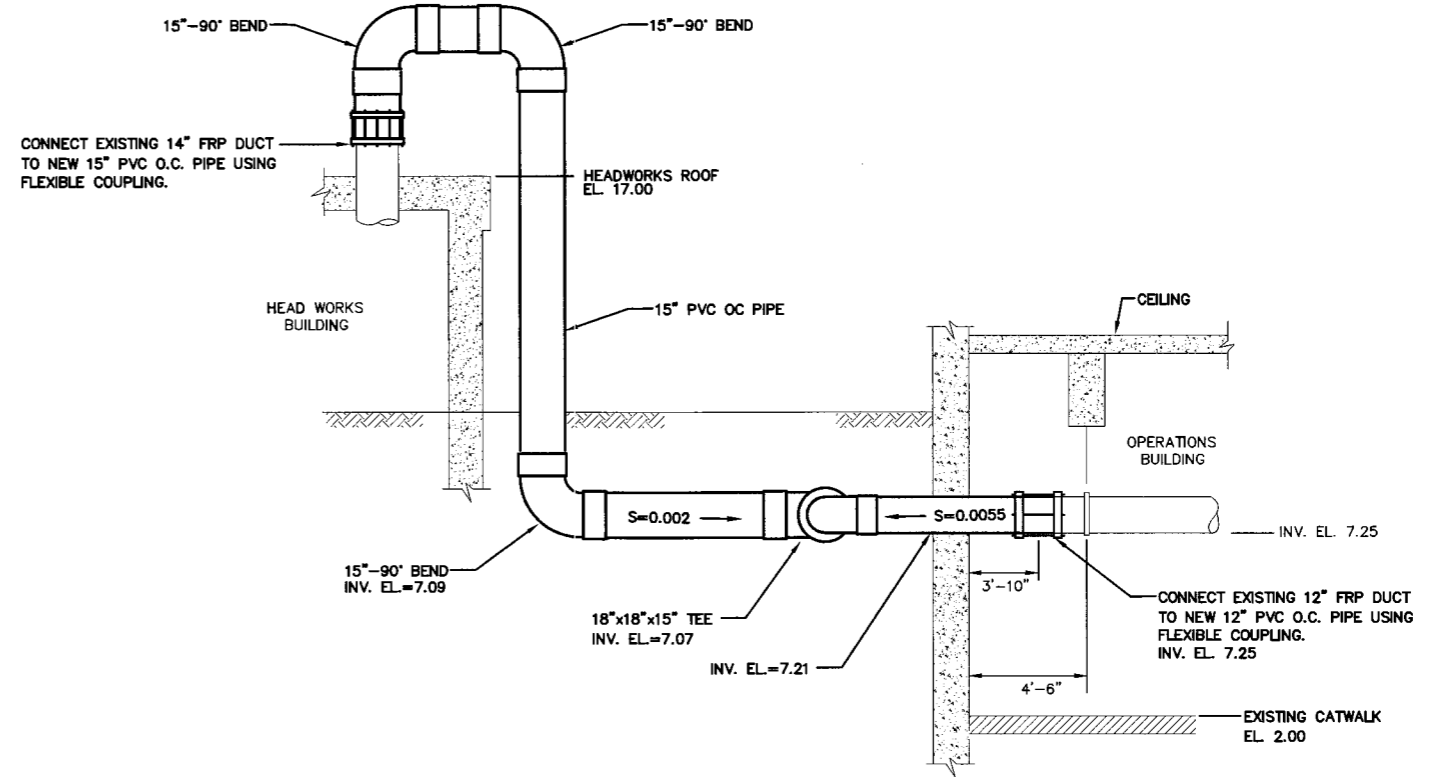
**GRIT WASHER ROOM O.C. PIPE CONNECTION AND RISER DETAIL**  
N.T.S.



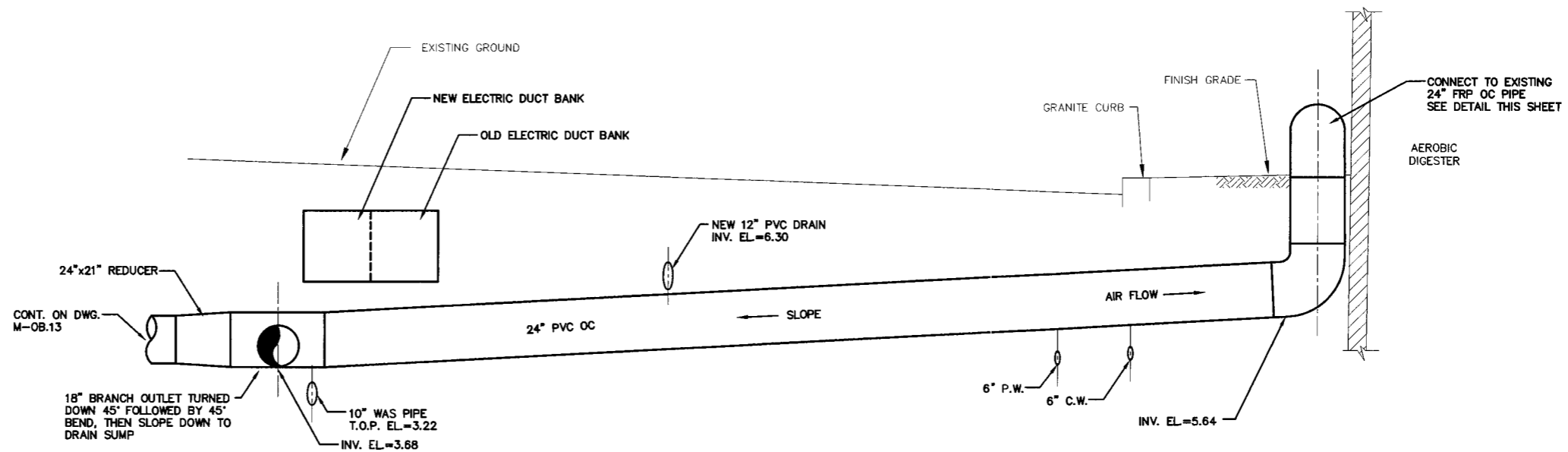
**SLUDGE TRUCK GARAGE O.C. PIPE DROP DETAIL (TYP. OF 2)**  
N.T.S.



**FRP O.C. PIPE CONNECTION DETAIL**  
SCALE: 3/8"=1'-0"



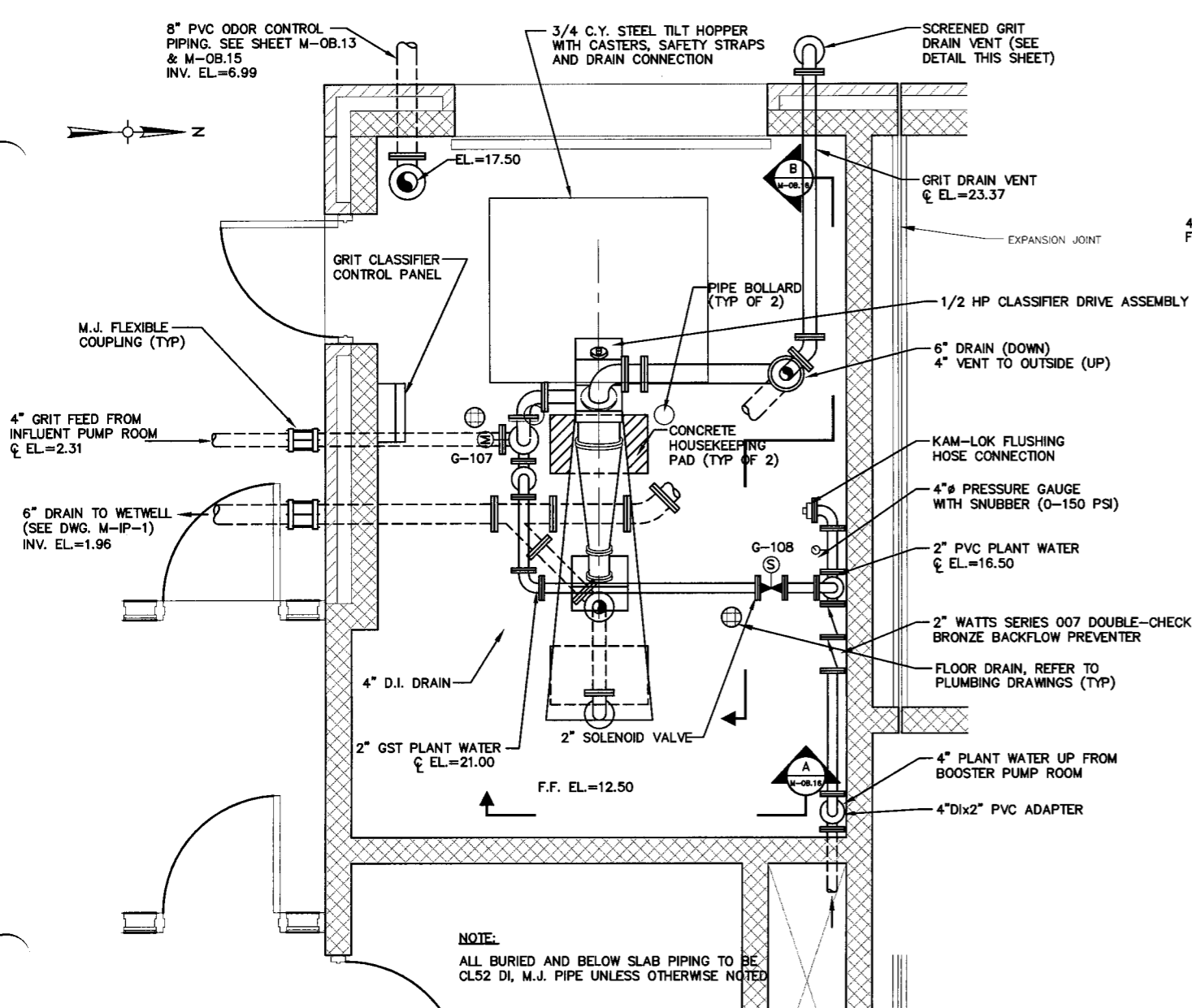
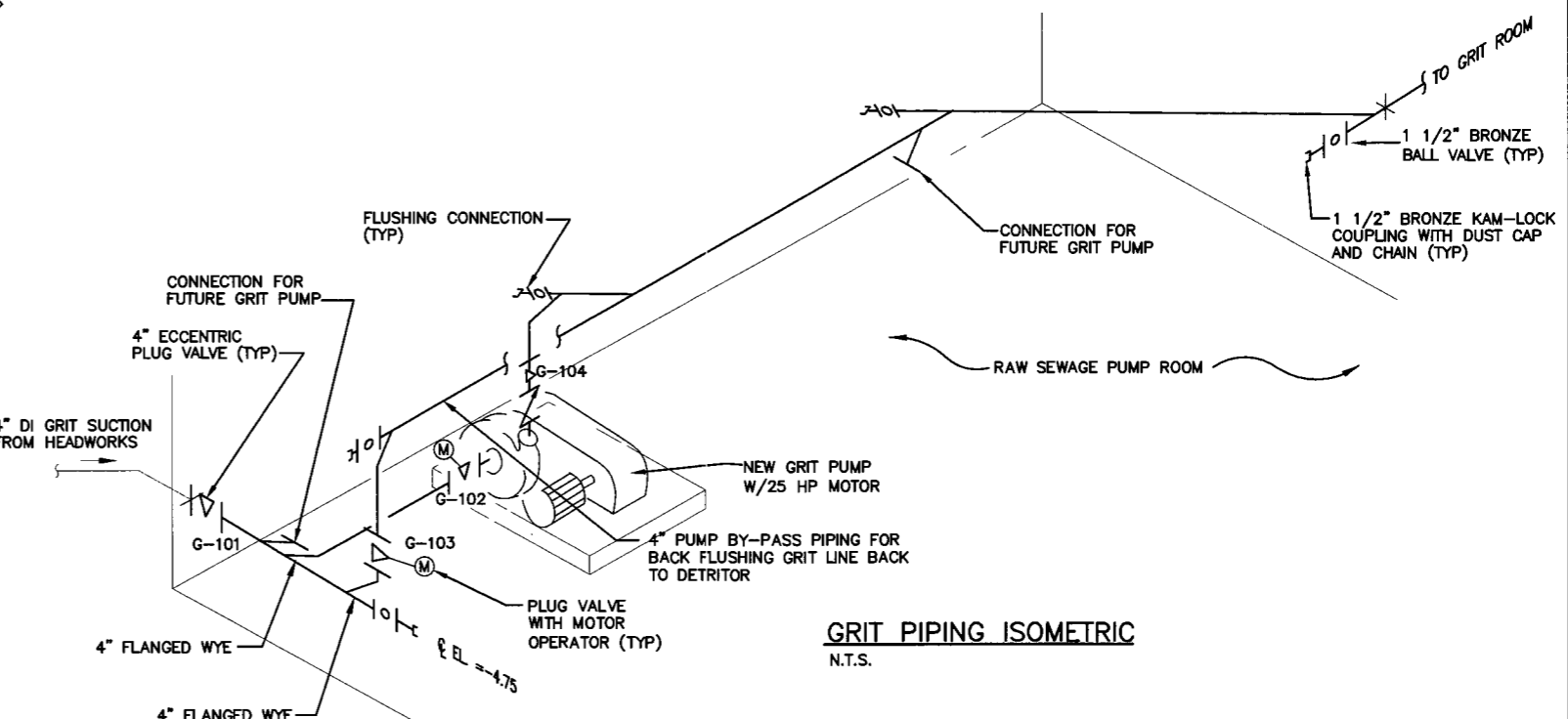
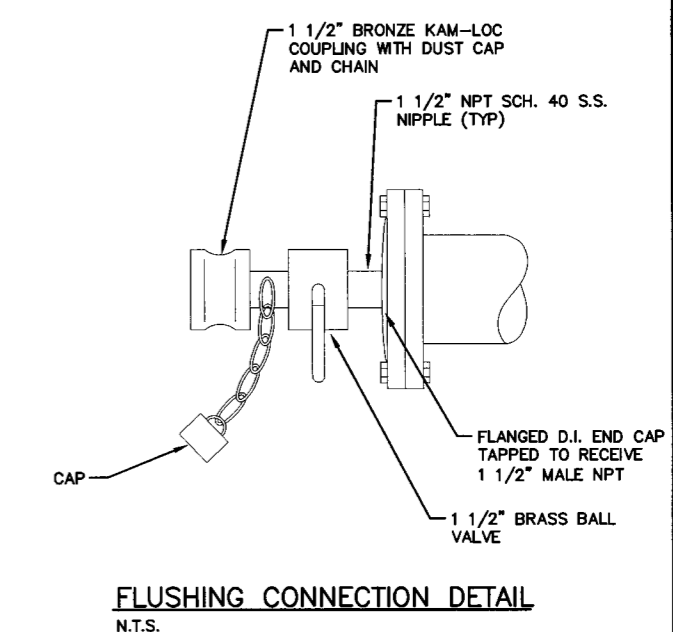
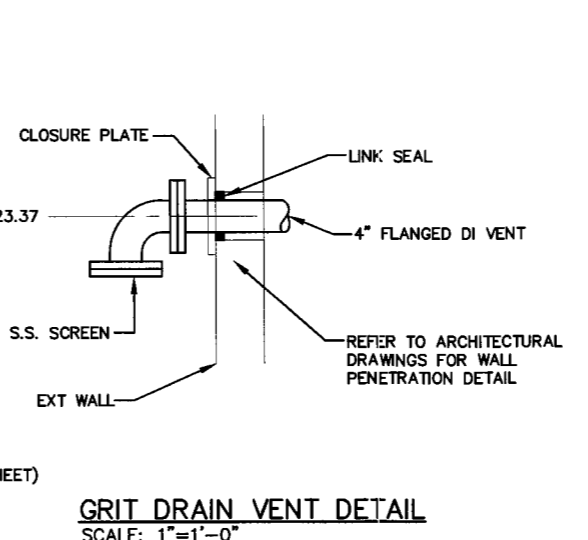
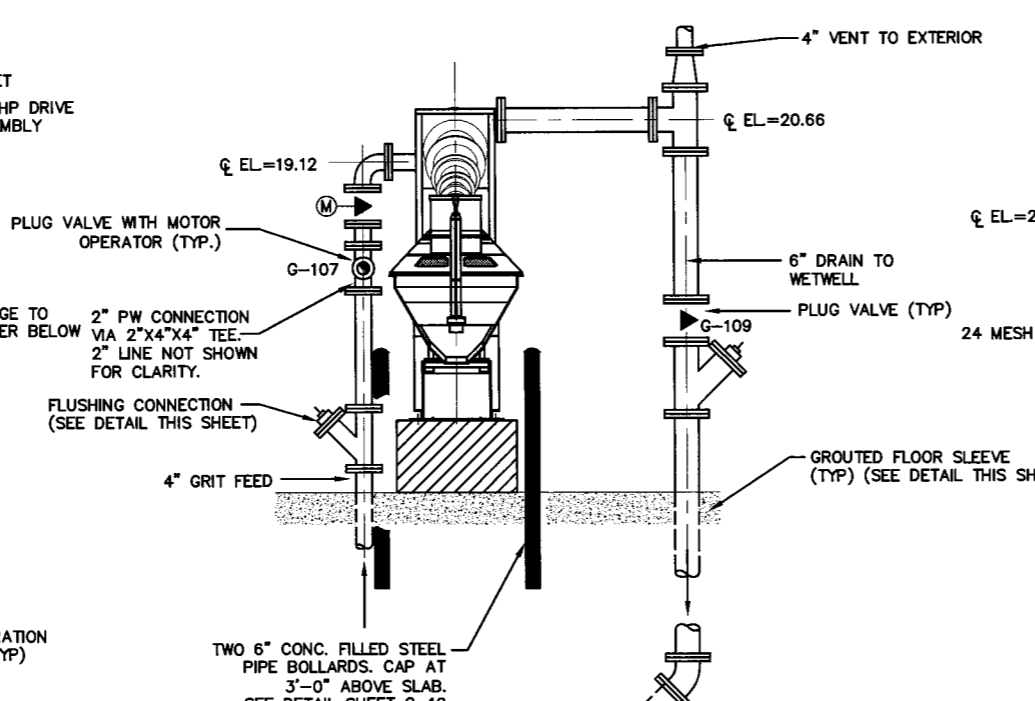
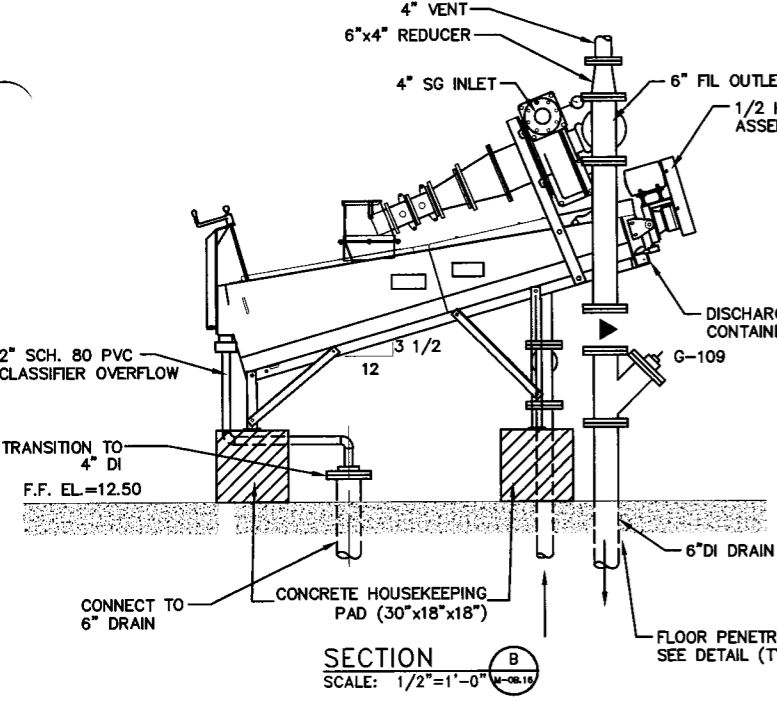
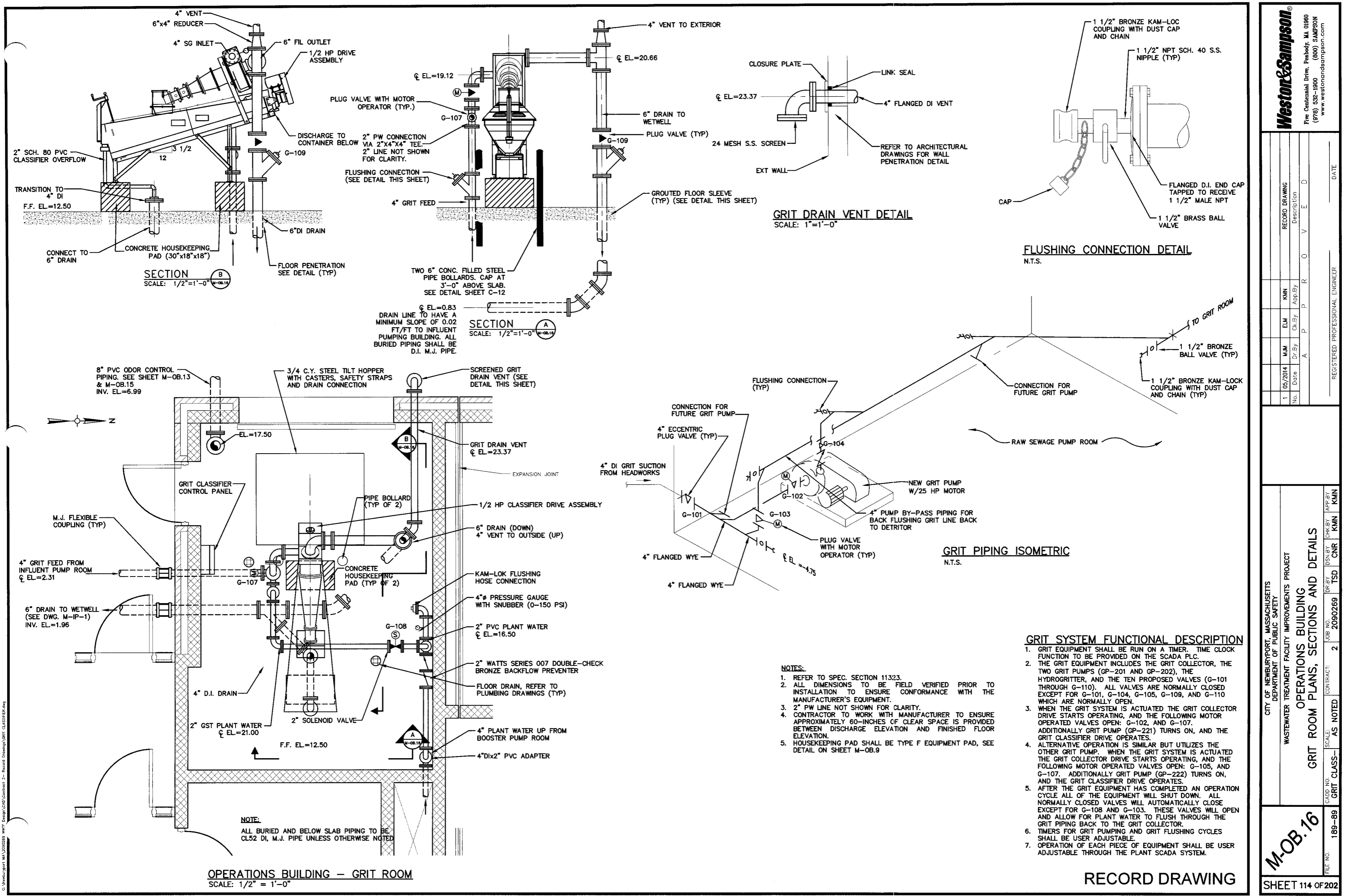
**SECTION 1**  
SCALE: 3/8"=1'-0" (C-17)



**SECTION 2**  
SCALE: 3/8"=1'-0" (C-17)

No.	Date	Dr. By	Ch. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING

SCALE	AS NOTED	CONTRACT	JOB NO.	DR. BY	CHK. BY	APP. BY
		2	2090269	RIC	HBD	MAJ



- NOTES:**
- REFER TO SPEC. SECTION 11323.
  - ALL DIMENSIONS TO BE FIELD VERIFIED PRIOR TO INSTALLATION TO ENSURE CONFORMANCE WITH THE MANUFACTURER'S EQUIPMENT.
  - 2" PW LINE NOT SHOWN FOR CLARITY.
  - CONTRACTOR TO WORK WITH MANUFACTURER TO ENSURE APPROXIMATELY 60-INCHES OF CLEAR SPACE IS PROVIDED BETWEEN DISCHARGE ELEVATION AND FINISHED FLOOR ELEVATION.
  - HOUSEKEEPING PAD SHALL BE TYPE F EQUIPMENT PAD, SEE DETAIL ON SHEET M-OB-9.

- GRIT SYSTEM FUNCTIONAL DESCRIPTION**
- GRIT EQUIPMENT SHALL BE RUN ON A TIMER. TIME CLOCK FUNCTION TO BE PROVIDED ON THE SCADA PLC.
  - THE GRIT EQUIPMENT INCLUDES THE GRIT COLLECTOR, THE TWO GRIT PUMPS (GP-201 AND GP-202), THE HYDROGRITTER, AND THE TEN PROPOSED VALVES (G-101 THROUGH G-110). ALL VALVES ARE NORMALLY CLOSED EXCEPT FOR G-101, G-104, G-105, G-109, AND G-110 WHICH ARE NORMALLY OPEN.
  - WHEN THE GRIT SYSTEM IS ACTUATED THE GRIT COLLECTOR DRIVE STARTS OPERATING, AND THE FOLLOWING MOTOR OPERATED VALVES OPEN: G-102, AND G-107. ADDITIONALLY GRIT PUMP (GP-221) TURNS ON, AND THE GRIT CLASSIFIER DRIVE OPERATES.
  - ALTERNATIVE OPERATION IS SIMILAR BUT UTILIZES THE OTHER GRIT PUMP. WHEN THE GRIT SYSTEM IS ACTUATED THE GRIT COLLECTOR DRIVE STARTS OPERATING, AND THE FOLLOWING MOTOR OPERATED VALVES OPEN: G-105, AND G-107. ADDITIONALLY GRIT PUMP (GP-222) TURNS ON, AND THE GRIT CLASSIFIER DRIVE OPERATES.
  - AFTER THE GRIT EQUIPMENT HAS COMPLETED AN OPERATION CYCLE ALL OF THE EQUIPMENT WILL SHUT DOWN. ALL NORMALLY CLOSED VALVES WILL AUTOMATICALLY CLOSE EXCEPT FOR G-108 AND G-103. THESE VALVES WILL OPEN AND ALLOW FOR PLANT WATER TO FLUSH THROUGH THE GRIT PIPING BACK TO THE GRIT COLLECTOR.
  - TIMERS FOR GRIT PUMPING AND GRIT FLUSHING CYCLES SHALL BE USER ADJUSTABLE.
  - OPERATION OF EACH PIECE OF EQUIPMENT SHALL BE USER ADJUSTABLE THROUGH THE PLANT SCADA SYSTEM.

**Weston & Sampson**  
Five Centennial Drive, Peabody, MA 01960  
(978) 532-1800 (800) 541-5850  
www.westonandsampson.com

1	05/2014	MJM	Dr. By	ELM	Chk. By	KMN	App. By	RECORD DRAWING	Description	DATE
A P P R O V E D										
REGISTERED PROFESSIONAL ENGINEER										

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SAFETY  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**OPERATIONS BUILDING SECTIONS AND DETAILS**  
GRIT ROOM PLANS, SECTIONS AND DETAILS

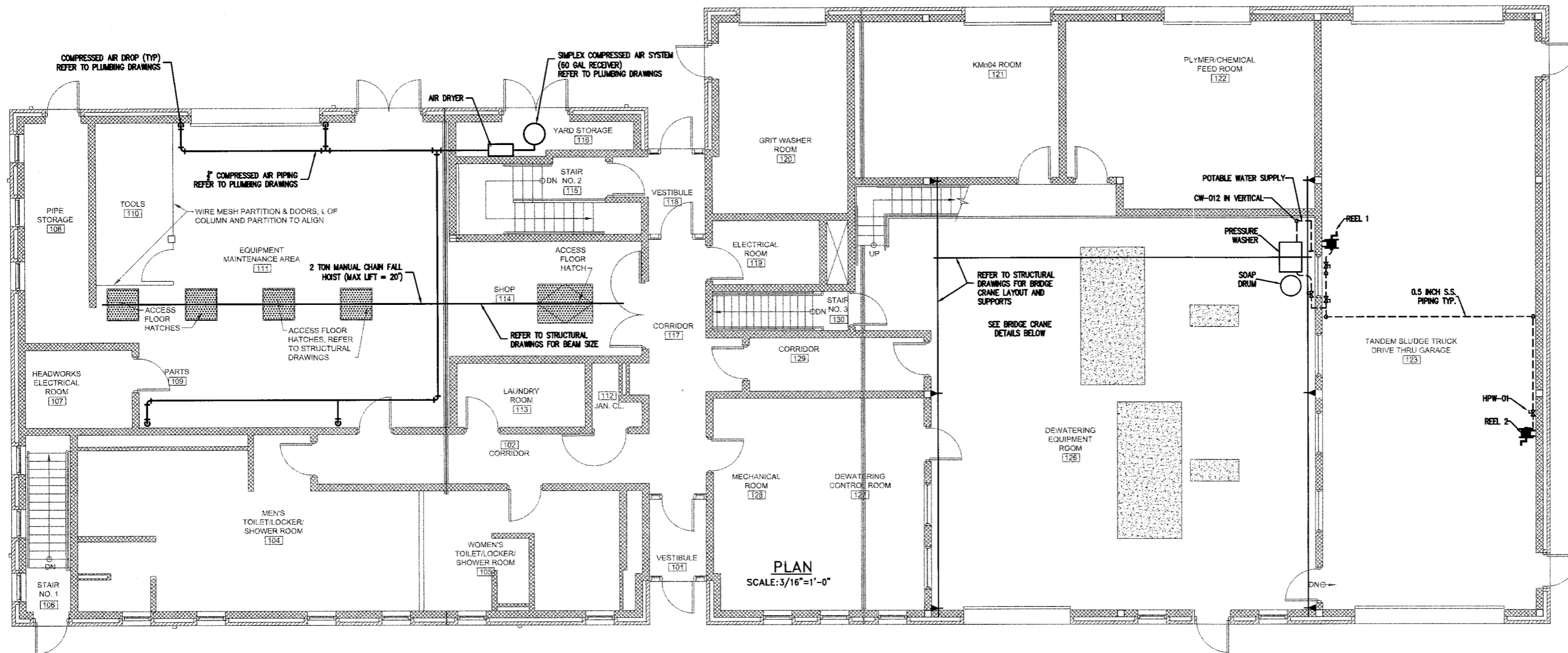
SCALE: AS NOTED  
JOB NO. 2090269  
CONTRACT: 2  
DR. BY: TSD  
CHK. BY: KMN  
APP. BY: KMN

FILE NO. 189-89  
GRIT CLASS-

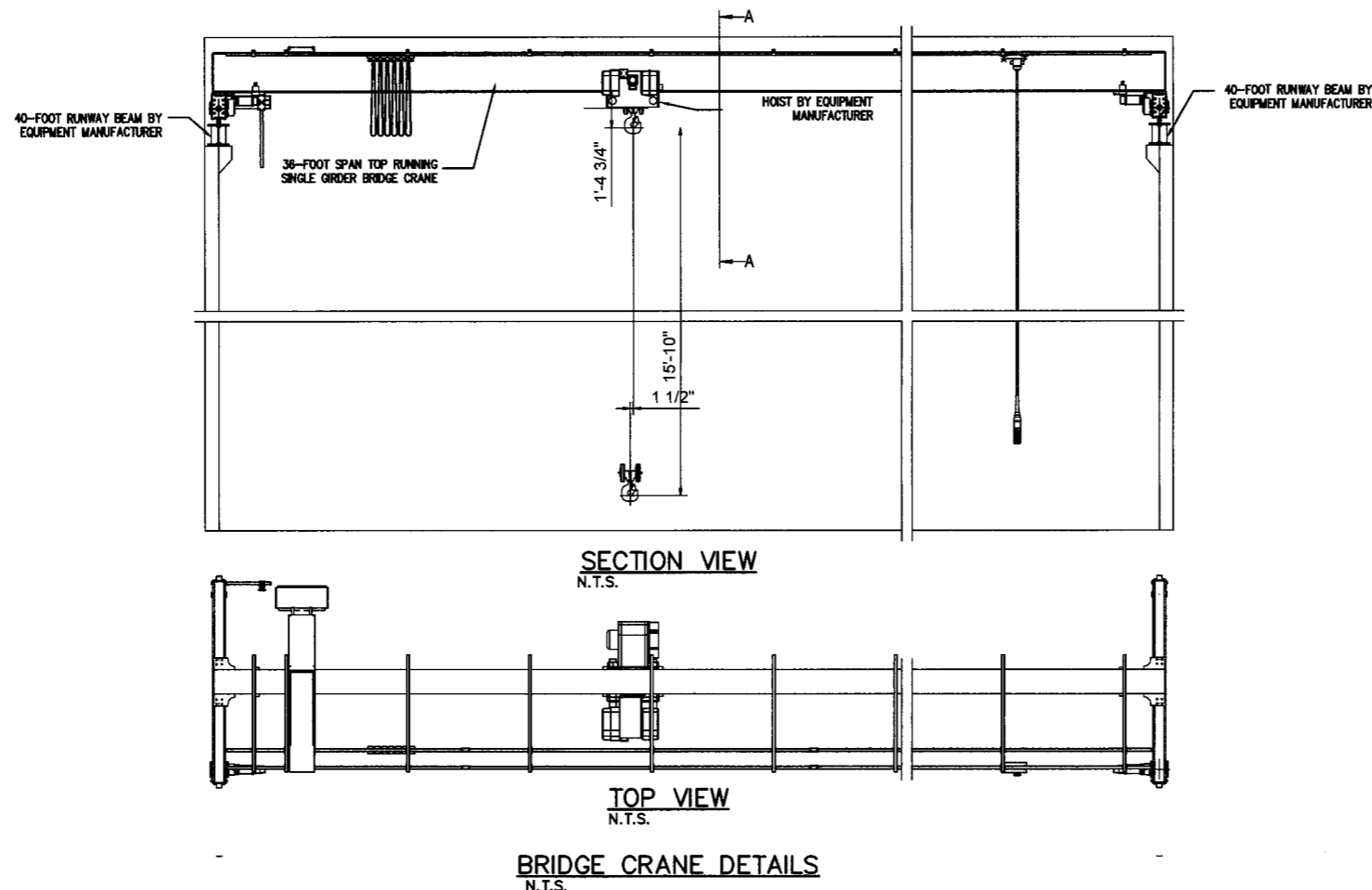
**M-OB.16**

**RECORD DRAWING**

SHEET 114 OF 202



PLAN  
SCALE: 3/16" = 1'-0"



NOTES:  
1. DETAILS/SECTIONS BASED UPON R&M MATERIALS HANDLING 5-TON QXS CRANE.

VEHICLE WASH SYSTEM NOTES:

1. VEHICLE WASH EQUIPMENT AND COMPONENTS ARE SHOWN SCHEMATICALLY ONLY. ALL PIPING AND SYSTEM COMPONENTS ARE NOT SHOWN. ADDITIONAL PIPING/COMPONENTS SHALL BE PROVIDED IN ACCORDANCE WITH THE MNF. RECOMMENDATIONS. CONTRACTOR IS RESPONSIBLE FOR ALL ADDITIONAL PIPING, EQUIPMENT, APPURTENANCES, WIRING AND OTHER MATERIALS NOT SHOWN WHICH ARE NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
2. GENERAL CONTRACTOR SHALL COORDINATE VEHICLE WASH EQUIPMENT LOCATIONS AND PIPE ROUTING WITH OTHER BUILDING AND BUILDING ASSOCIATED COMPONENTS, IN ORDER TO AVOID ANY CONFLICTS AS NEEDED. FOR EXAMPLE PIPING LOCATION SHALL BE ROUTED OVER THE PERSONNEL AND OVERHEAD DOORS AS REQUIRED. FINAL PIPING AND REEL LOCATIONS ARE TO BE COORDINATED IN ADVANCE WITH THE OWNER AND THE ENGINEER.
3. GENERAL CONTRACTOR SHALL PURCHASE AND INSTALL EQUIPMENT AND COORDINATE WORK WITH LICENSED PLUMBING CONTRACTOR (G.C.P.C.) AND A LICENSED ELECTRICAL CONTRACTOR (G.C.E.C.) TO COMPLETE UTILITY CONNECTIONS SHOWN ON THE DRAWINGS AND AS IDENTIFIED IN THE SPECIFICATIONS. UNLESS OTHERWISE SHOWN, ALL PLUMBING AND ELECTRICAL CONNECTIONS/PIPING SHALL BE PERFORMED BY THE G.C.P.C. AND G.C.E.C. IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
4. SEE ELECTRICAL, PLUMBING, AND ARCHITECTURAL DRAWINGS FOR OTHER VEHICLE WASH COMPONENTS AND DETAILS.
5. GCPC SHALL PROVIDE CONNECTIONS FROM THE POWER BEING PROVIDED AS SHOWN ON THE ELECTRICAL DRAWINGS TO THE PRESSURE WASHER SYSTEM AND COMPONENTS AS NEEDED FOR A COMPLETE AND OPERABLE SYSTEM IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
6. GCPC SHALL MAKE CONNECTIONS TO DRAIN LINES AND WATER SUPPLY AS SHOWN ON THE PLUMBING DRAWINGS TO THE PRESSURE WASHER SYSTEM AND COMPONENTS AS NEEDED FOR A COMPLETE AND OPERABLE SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
7. MANUFACTURER MAY RELOCATE VEHICLE WASH SYSTEM COMPONENTS, AS NEEDED. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS SHOWING FINAL COMPONENT AND PIPING LOCATIONS IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. ALL VEHICLE WASH COMPONENTS SHALL FIT IN THE SPACES PROVIDED.
8. ELECTRICAL CHARACTERISTICS (VOLTAGE, AMPS, PHASE, BREAKER/PLUG TYPE, NEUTRAL, EQUIPMENT AND GROUND) FOR ALL EQUIPMENT SHALL BE PHYSICALLY VERIFIED BY THE GENERAL CONTRACTOR BY INSPECTING THE EQUIPMENT, OR OBTAINING ELECTRICAL CHARACTERISTICS FROM THE APPROVED EQUIPMENT MANUFACTURER. THE GENERAL CONTRACTOR SHALL SUBMIT THE RESULTS OF THIS PROCESS TO THE ENGINEER FOR RECORD PURPOSES AND SHALL COORDINATE ELECTRICAL SERVICES WITH DIVISION 16 PRIOR TO INSTALLATION OF BUILDING ELECTRICAL WIRING, CONDUIT OR ASSOCIATED EQUIPMENT. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADJUSTMENTS TO THE ELECTRICAL SERVICE REQUIRED TO SUPPORT THE EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.

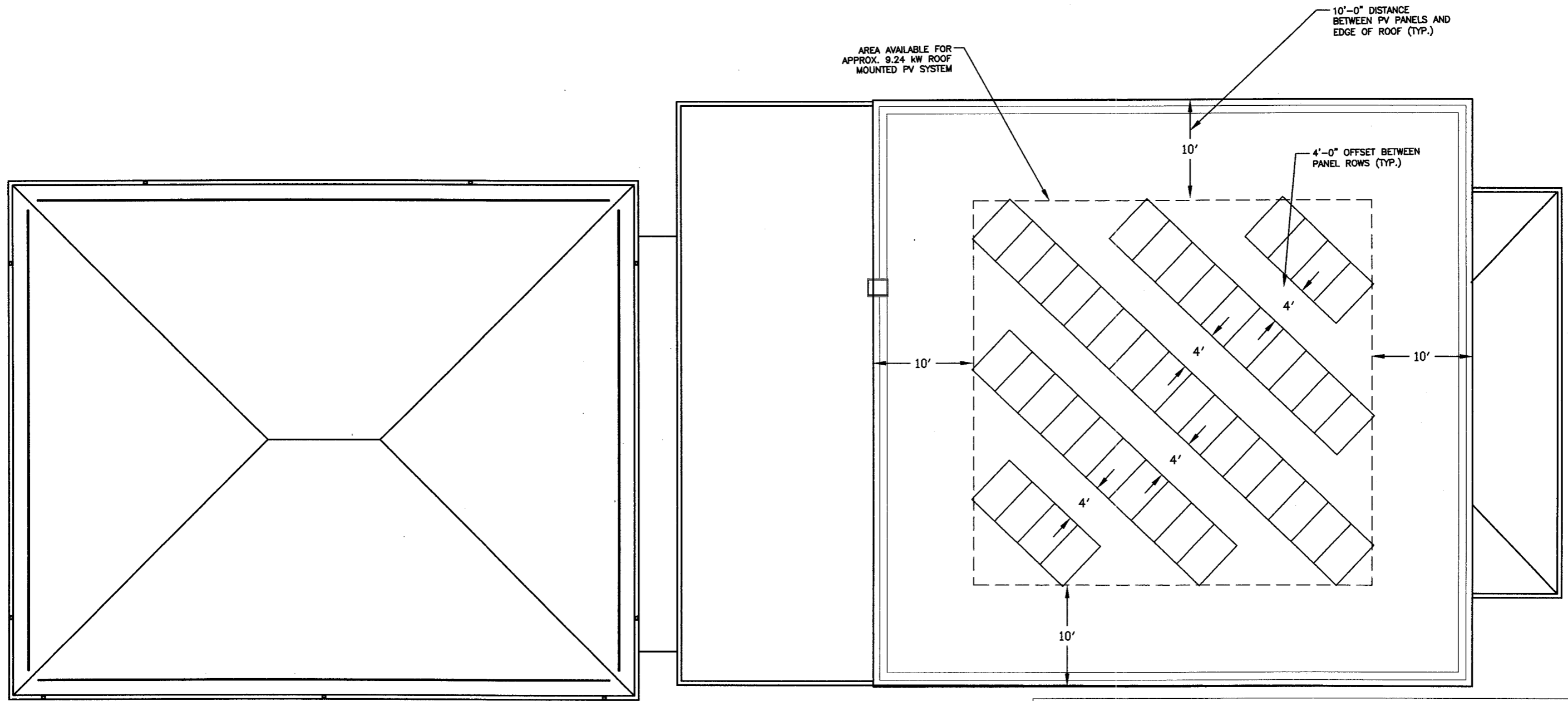
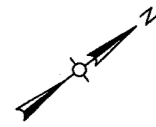
No.	Date	Dr. By	Chk. By	App. By	Description
1	05/2014	MJM	ELM	KMN	RECORD DRAWING
A P P R O V E D					
					DATE
REGISTERED PROFESSIONAL ENGINEER					

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**VEHICLE WASH, SHOP AIR AND LIFTING SYSTEMS**

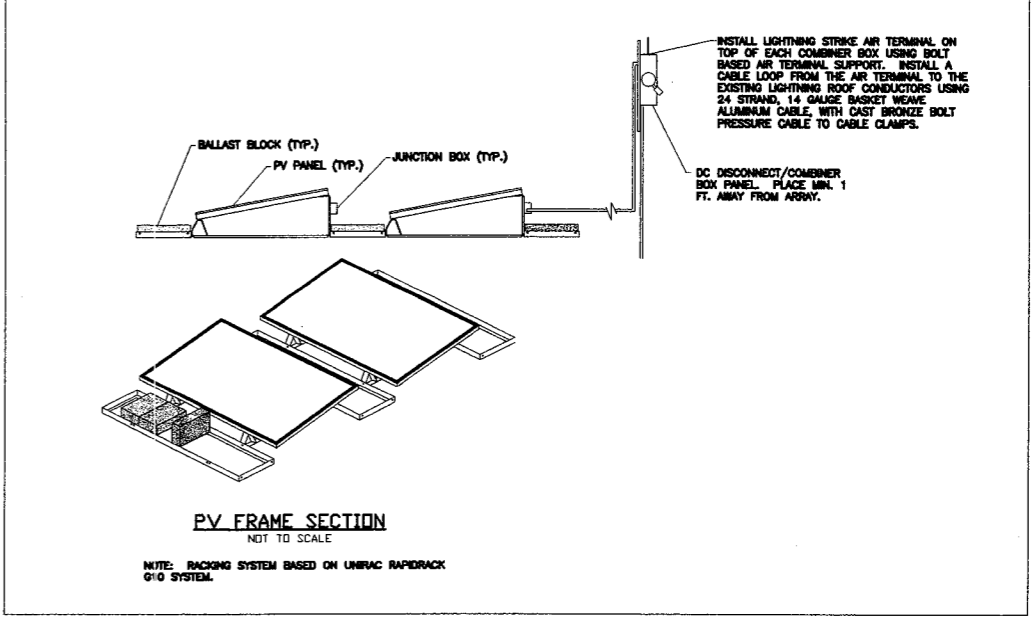
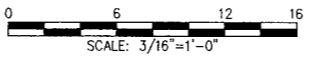
SCALE: AS NOTED  
 CONTRACT: 2090269  
 JOB NO. 2  
 DR. BY: TSD  
 DSN BY: CNR  
 CHK. BY: LRT  
 APP. BY: KMN

FILE NO. 189-88  
 SHEET 115 OF 202

G:\Newburyport\MA\2090269\WWT\Design\DWG\Contract 2 - Record Drawings\14-0817 Lifting and Vehicle Wash.dwg



PLAN - OPERATION BUILDING ROOF MOUNTED PV LAYOUT  
SCALE: 3/16"=1'-0"



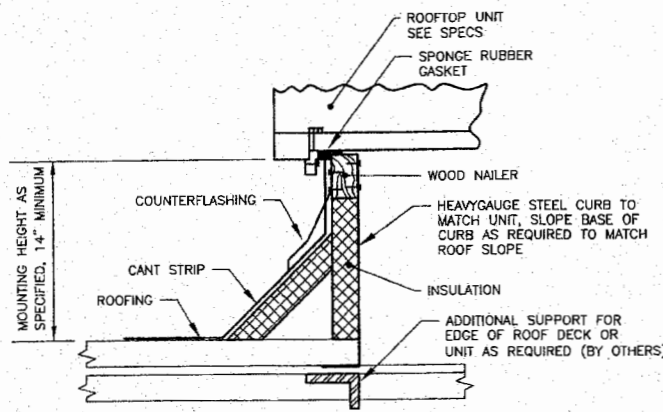
- NOTES:**
- CONTRACTOR IS RESPONSIBLE FOR FINAL SYSTEM LAYOUT BASED ON PV EQUIPMENT SELECTION AND SITE CONSTRAINTS. CONTRACTOR TO COORDINATE WITH ENGINEER FOR SYSTEM APPROVAL.
  - SEE SPECIFICATION 13650 PHOTOVOLTAICS FOR EQUIPMENT INSTALLATION, TESTING, COMMISSIONING AND WARRANTY REQUIREMENTS.
  - ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH OSHA, NFPA STANDARDS, THE ELECTRICAL CODE AND THE LOCAL GOVERNING AUTHORITIES. THE DRAWINGS AND SPECIFICATIONS DO NOT ATTEMPT TO INDICATE ALL WORK REQUIRED BY CODES AND AUTHORITIES.
  - CONTRACTOR IS RESPONSIBLE TO PROVIDE AND SUBMIT, TO THE ENGINEER, ROOF DESIGN CALCULATIONS AND DRAWINGS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN THE COMMONWEALTH OF MASSACHUSETTS, FOR ANY ROOF MOUNT FOUNDATION MODIFICATIONS DUE TO PV SYSTEM LAYOUT OR MOUNTING SYSTEM CHANGES.
  - ALL ELECTRICAL WORK, INCLUDING PANEL INSTALLATION, ASSOCIATED WITH PV SYSTEM ARE TO BE PERFORMED BY THE ELECTRICAL SUBCONTRACTOR.

No.	Date	Dr. By	Ck. By	App. By	Description			
		A	P	R	O	V	E	D
								7-19-11
								DATE

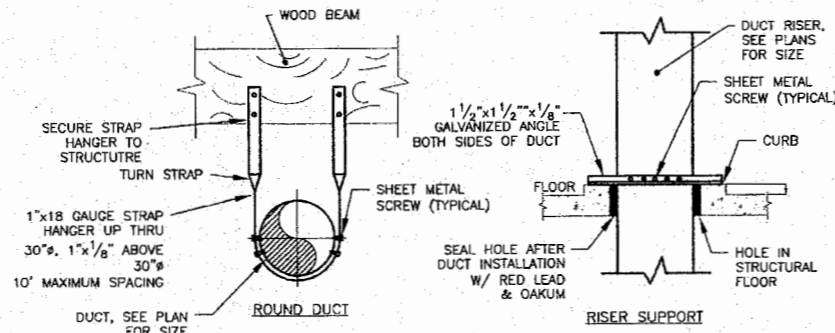
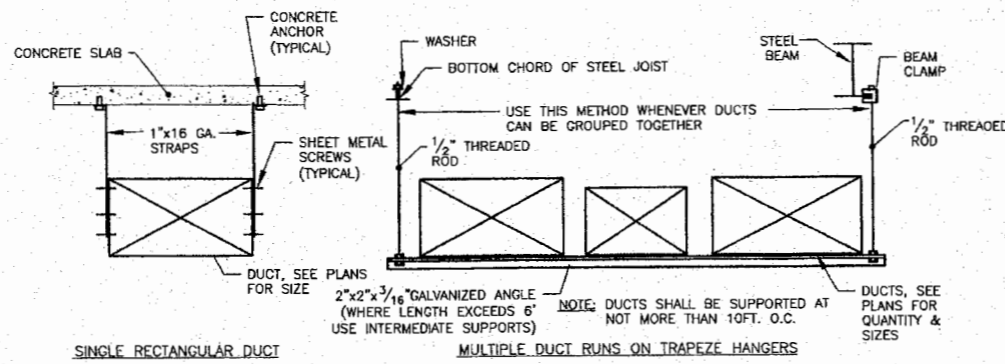
REGISTERED PROFESSIONAL ENGINEER







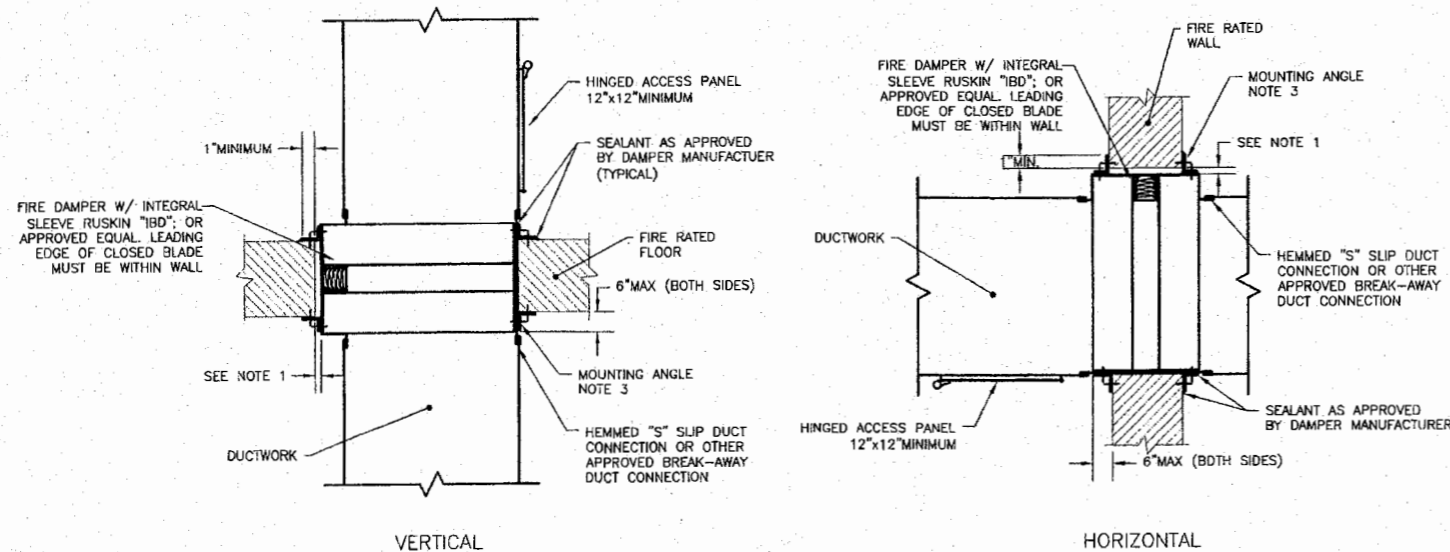
1 ROOFTOP EQUIPMENT CURB DETAIL  
NOT TO SCALE



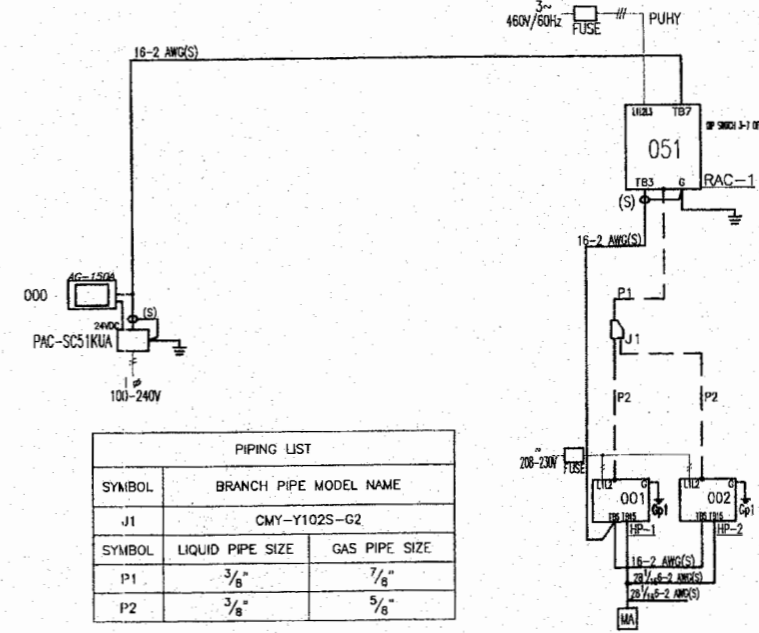
2 HANGER AND SUPPORT DETAILS FOR LOW PRESSURE DUCTWORK (UP THRU 2\"/>

NOTES

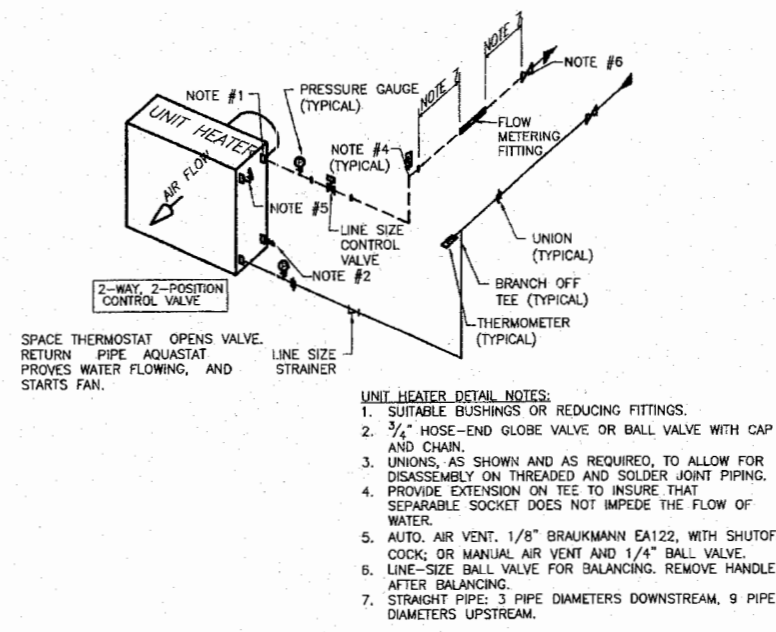
1. THE WALL OPENING SHALL BE A MINIMUM OF 1/8\"/>
2. THE SLEEVE THICKNESS SHALL BE AT LEAST ONE GAUGE THICKER THAN THE DUCT THAT IT CONNECTS TO & A MINIMUM OF 14 GAUGE. DAMPER SLEEVE SHALL NOT EXTEND MORE THAN 6\"/>
3. MOUNTING ANGLES SHALL BE A MINIMUM OF 1 1/2\"/>



3 TYPICAL FIRE DAMPER DETAILS  
NOT TO SCALE



4 HEAT PUMP PIPING & WIRING DIAGRAM  
NOT TO SCALE



4 UNIT HEATER PIPING DETAIL  
NOT TO SCALE

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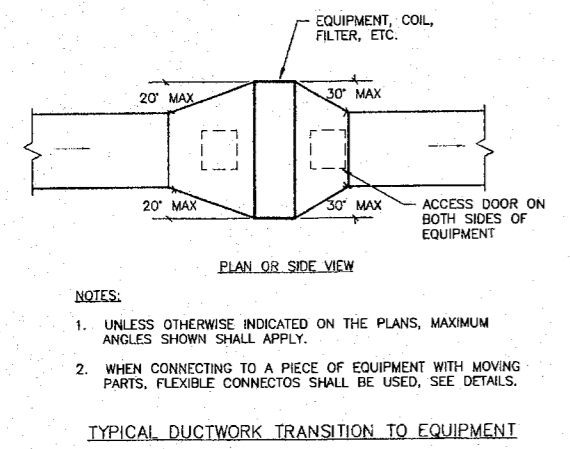
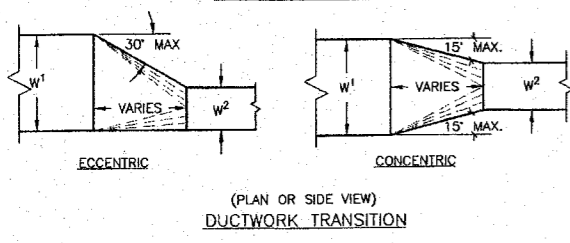
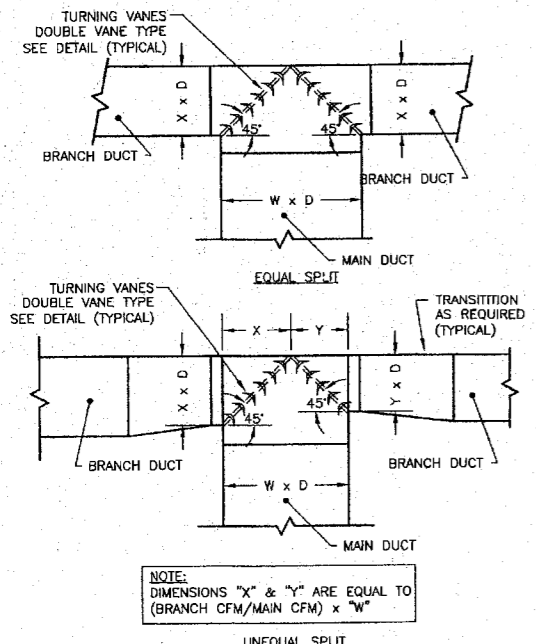
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	CADD NO. 189-85	SCALE: AS NOTED	CONTRACT: 09051.01	JOB NO. 09051.01	DR. BY: MRR	CHK. BY: MRR	APP. BY: MRR

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WEYMOUTH, MA 02189

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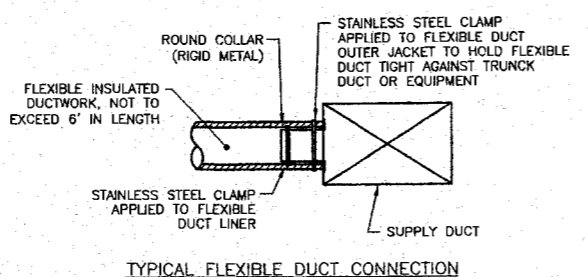
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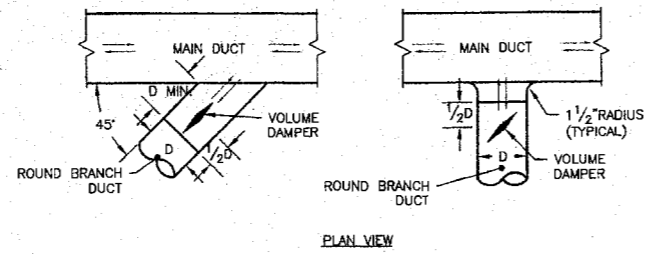


**NOTES:**  
 1. UNLESS OTHERWISE INDICATED ON THE PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.  
 2. WHEN CONNECTING TO A PIECE OF EQUIPMENT WITH MOVING PARTS, FLEXIBLE CONNECTORS SHALL BE USED, SEE DETAILS.

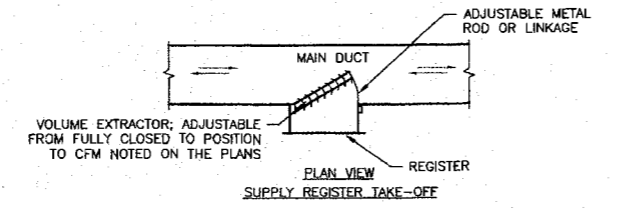
TYPICAL DUCTWORK TRANSITION TO EQUIPMENT



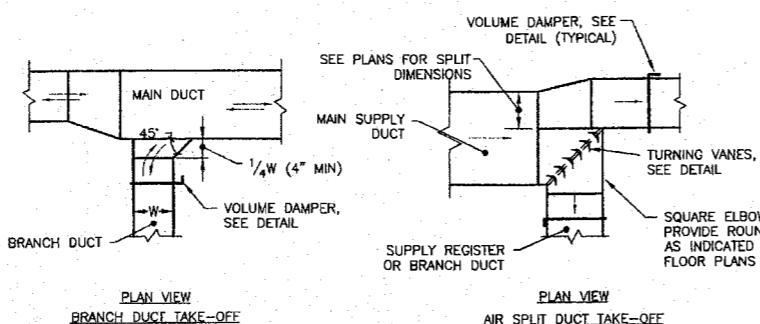
TYPICAL FLEXIBLE DUCT CONNECTION



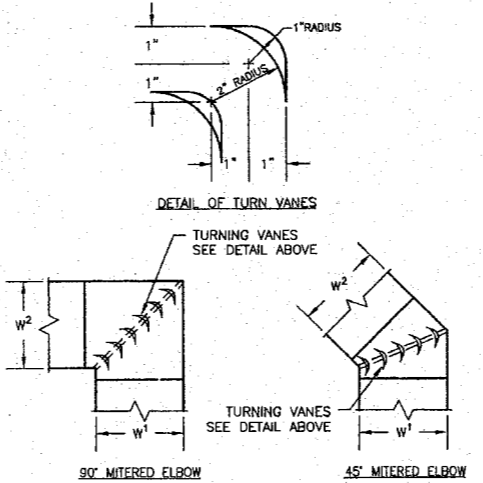
ROUND DUCT TAKEOFFS



SUPPLY REGISTER TAKE-OFF

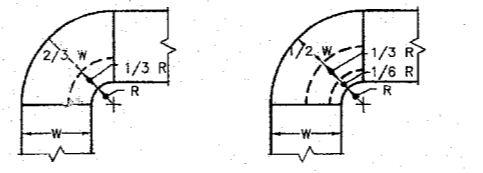


DUCTWORK TAKE-OFFS

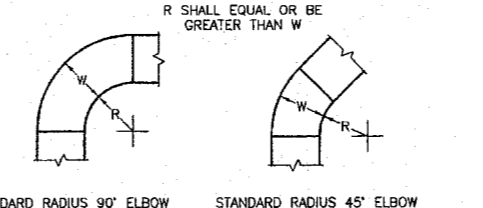


**NOTES:**  
 1. ALL VANED ELBOWS SHALL BE CONSTRUCTED & INSTALLED PER SMACNA STANDARDS.  
 2. WHEN W<sup>1</sup> DOES NOT EQUAL W<sup>2</sup> THE VANES SHALL BE SINGLE VANE TYPE REGARDLESS OF THE W DIMENSION.  
 3. ALL SINGLE VANES SHALL HAVE A 2" RADIUS, A 1/2" MAXIMUM SPACING AND A 3/4" TRAILING EDGE.  
 4. WHEN W<sup>1</sup> EQUALS W<sup>2</sup> AND W<sup>1</sup> IS GREATER THAN 20", VANES SHALL BE DOUBLE VANE TYPE.

MITERED ELBOWS



SHORT RADIUS 90° ELBOWS

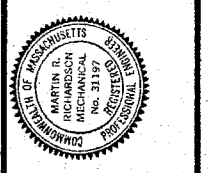


**NOTES:**  
 1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.  
 2. ALL STANDARD RADIUS ELBOWS SHOWN ON THE FLOOR PLANS MAY BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES CONSTRUCTED, SUPPORTED AND FASTENED AS REQUIRED BY SMACNA.

RADIUS ELBOWS

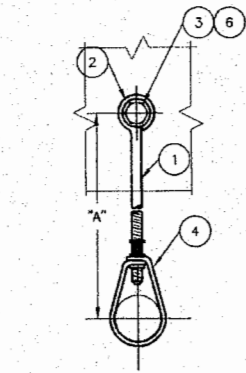
1 TYPICAL DUCTWORK LAYOUT & CONNECTION DETAILS  
 NOT TO SCALE

No.	Date	Dr. By	Chk. By	App. By	Descr. I



CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT HVAC "11" DETAILS "11"	SCALE: AS NOTED	CONTRACT: _____	JOB NO: _____	DATE: _____
DESIGNED BY: _____	CHECKED BY: MRR	DATE: _____	DATE: _____	DATE: _____
DRAWN BY: GI	DATE: _____	DATE: _____	DATE: _____	DATE: _____
FILE NO: H-3	SCALE: AS NOTED	CONTRACT: _____	JOB NO: _____	DATE: _____

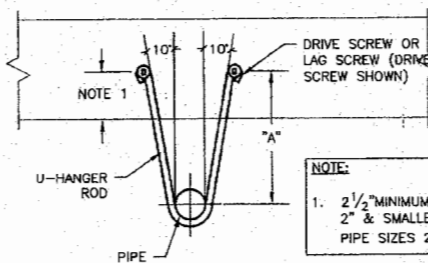
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- COMPONENTS**
- EYE ROD
  - FLAT WASHER
  - HEX HEAD CAP SCREW
  - ADJUSTABLE HANGER RING
  - DROP-IN ANCHOR
  - HEX HEAD LAG SCREW
  - EXPANSION CASE
  - LOCK WASHER
  - HEX NUT

DESIGN DATA FOR EYE ROD HANGER

NOMINAL PIPE SIZE	MINIMUM "A" DIMENSION	ROD DIAMETER
1/2"	4 1/4"	3/8"
3/4"	4 1/4"	3/8"
1"	4 1/4"	3/8"
1 1/4"	4 1/2"	3/8"
1 1/2"	4 3/4"	3/8"
2"	5"	3/8"
2 1/2"	6 1/4"	3/8"
3"	6 3/4"	3/8"
4"	7 1/4"	3/8"
5"	8"	1/2"
6"	9"	1/2"
8"	10 1/2"	1/2"

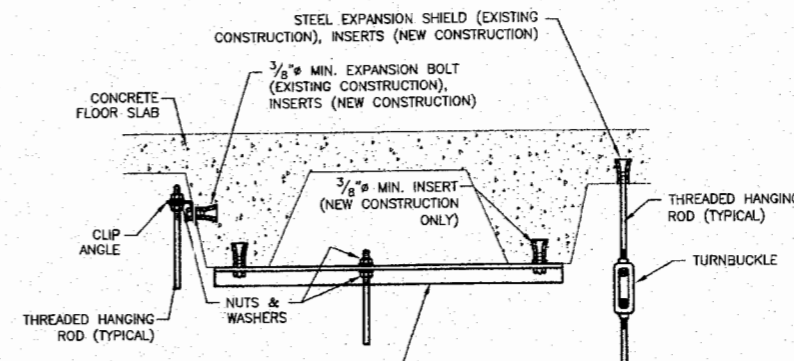


**NOTE:**  
1. 2 1/2" MINIMUM FOR PIPE SIZES 2" & SMALLER, 3" MINIMUM FOR PIPE SIZES 2 1/2" & LARGER

DESIGN DATA FOR U-HANGERS

NOMINAL PIPE SIZE	MINIMUM A DIMENSION	ROD DIAMETER	FASTENERS
1/2"	3 1/4"	5/16"	NO. 16 x 2" DRIVE SCREWS
3/4"	3 1/4"		
1"	3 1/4"		
1 1/4"	3 1/2"		
1 1/2"	3 1/2"		
2"	3 3/4"		
2 1/2"	4 1/2"	3/8"	3/8" x 2 1/2" HEX HEAD LAG SCREWS
3"	4 3/4"	3/8"	3/8" x 2 1/2" HEX HEAD LAG SCREWS
4"	5 1/4"	3/8"	1/2" x 3" HEX HEAD LAG SCREWS
5"	6"	3/8"	1/2" x 3" HEX HEAD LAG SCREWS
6"	6 1/2"	3/8"	1/2" x 3" HEX HEAD LAG SCREWS
8"	7 1/2"	1/2"	5/8" x 3" SQUARE HEAD LAG SCREWS

"U" TYPE PIPE HANGER



GALVANIZED STEEL ANGLE 1 1/2" x 1 1/2" x 1/4" FOR PIPES SMALLER THAN 2", 3" x 3" x 1/4" FOR PIPES 2" & LARGER

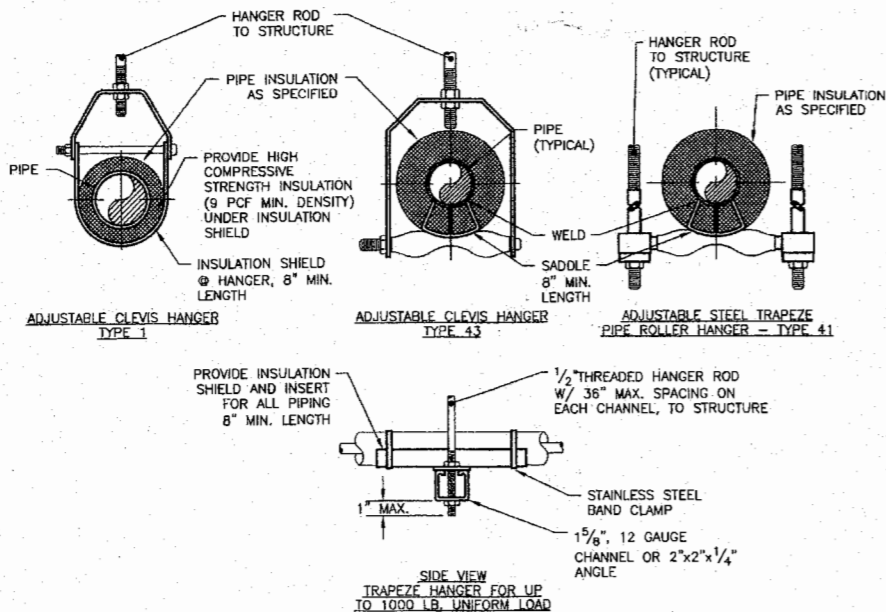
**NOTE:** MINIMUM CONCRETE SLAB THICKNESS OF 4" REQUIRED

TYPICAL METHOD OF SECURING HANGER RODS IN CONCRETE SLABS AND BEAMS

STANDARD FASTENERS FOR EYE ROD HANGERS

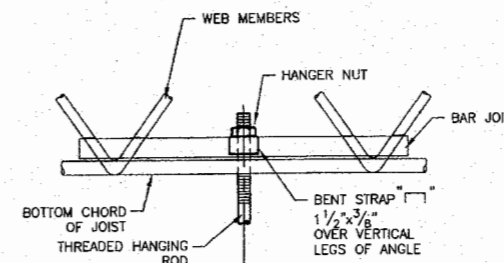
NOMINAL PIPE SIZES	WOOD	BRICK	CONCRETE	STEEL
	ITEMS			
1/2" THRU 2"	3/8" x 2 1/2" HEX HEAD LAG SCREW, 3/8" FLAT WASHER	1/2" EXPANSION CASE, 3/8" x 2" HEX HEAD CAP SCREW, 3/8" FLAT WASHER	3/8" DROP-IN ANCHOR, HILTI HDI 3/8", 3/8" x 1" HEX HEAD CAP SCREW, 3/8" FLAT WASHER	3/8" x 1 1/2" HEX HEAD CAP SCREW, 3/8" HEX NUT, 3/8" LOCK WASHER
2 1/2" THRU 6"	1/2" x 3" HEX HEAD LAG SCREW, 1/2" FLAT WASHER	1/2" EXPANSION CASE, 1/2" x 2 1/2" HEX HEAD CAP SCREW, 1/2" FLAT WASHER	1/2" DROP-IN ANCHOR, HILTI HDI 1/2", 1/2" x 1 1/4" HEX HEAD CAP SCREW, 1/2" FLAT WASHER	1/2" x 2" HEX HEAD CAP SCREW, 1/2" HEX NUT, 1/2" LOCK WASHER
8"	5/8" x 3" HEX HEAD LAG SCREW, 5/8" FLAT WASHER	5/8" EXPANSION CASE, 5/8" x 2 3/4" HEX HEAD CAP SCREW, 5/8" FLAT WASHER	5/8" DROP-IN ANCHOR, HILTI HDI 5/8", 5/8" x 1 1/2" HEX HEAD CAP SCREW, 5/8" FLAT WASHER	5/8" x 2 1/2" HEX HEAD CAP SCREW, 5/8" HEX NUT, 5/8" LOCK WASHER

EYE ROD PIPE HANGER



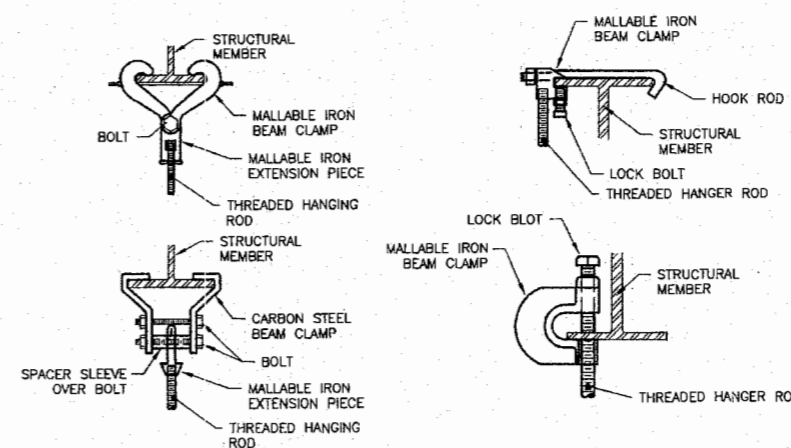
MAXIMUM PIPE HANGER SUPPORT SPACING																		
SIZE (IN)	THRU 3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
SPACING (FT)	7	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32

- NOTES:**
- HANGER SPACINGS LISTED IN THIS TABLE ARE MINIMUM SPACINGS. WHEN LOCAL CODE REQUIREMENTS DIFFER FROM SPACINGS LISTED IN THIS TABLE THE MORE STRINGENT REQUIREMENT SHALL BE USED.
  - FOR TRAPEZE STYLE HANGERS USE THE SPACING REQUIREMENTS OF THE SMALLEST PIPE ON THE TRAPEZE.



**NOTE:** PROVIDE ONE ANGLE ON EACH SIDE OF WEB MEMBERS, REST ON TOP OF BOTTOM CHORD OF JOIST BETWEEN PANEL POINTS. SIZE FOR LOAD

STEEL BAR JOIST PIPE SUPPORT



BEAM CLAMPS FOR PIPE OR EQUIPMENT SUPPORT

1 TYPICAL PIPE HANGER & SUPPORT DETAILS  
NOT TO SCALE

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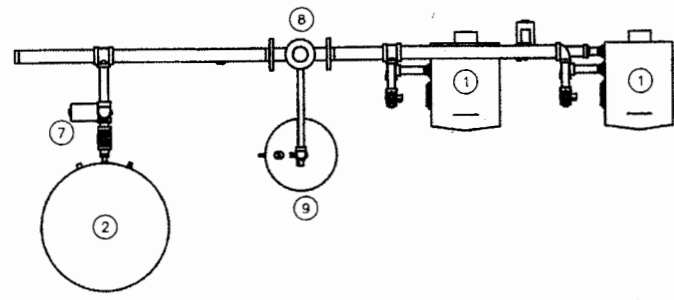
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No. Date Dr. By Cl. By App. By  
Description  
7/16/2011  
REGISTERED PROFESSIONAL ENGINEER

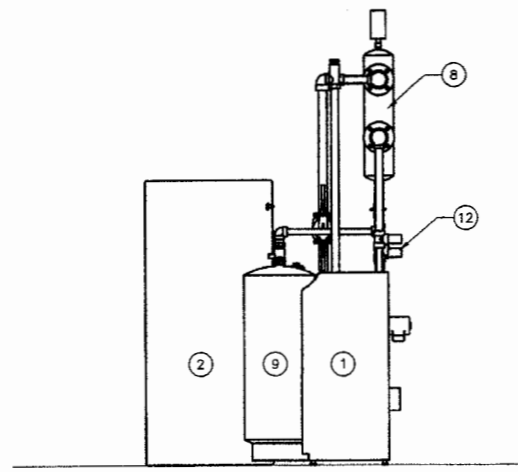


CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
HVAC  
DETAILS "III"  
SCALE: AS NOTED  
CONTRACT: JOB NO. FILE NO. 189-23  
CADD NO. 189-23  
DESIGN: MRR  
CHECK: FRC  
APP. BY: MRR

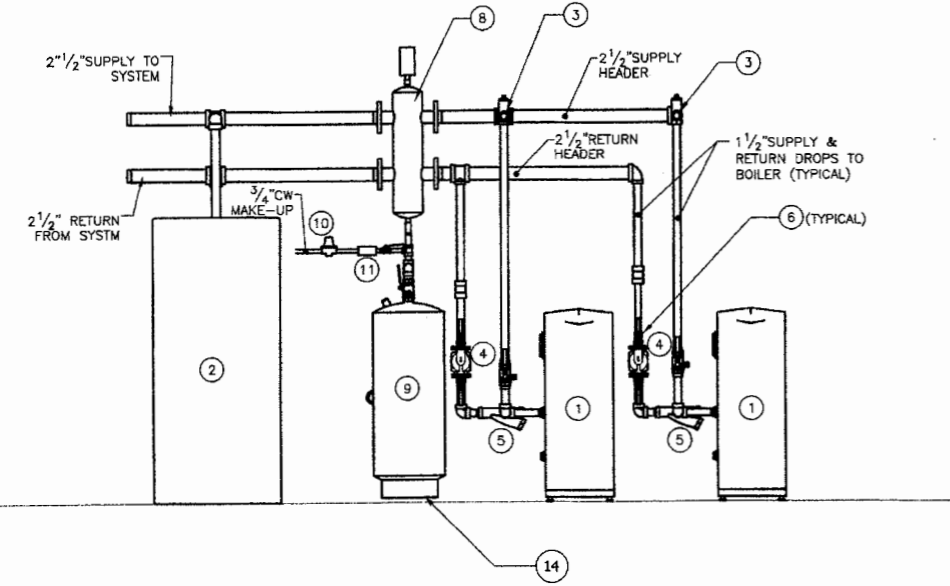




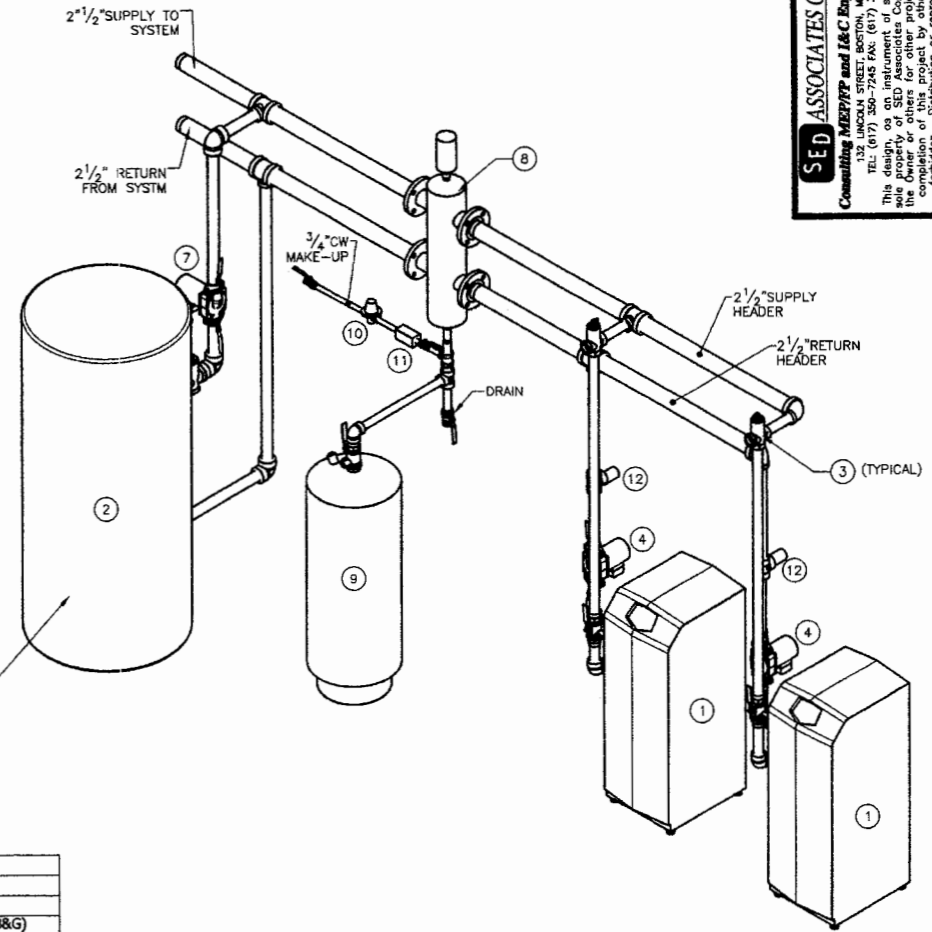
TOP VIEW  
NOT TO SCALE



SIDE VIEW  
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FRONT VIEW  
NOT TO SCALE

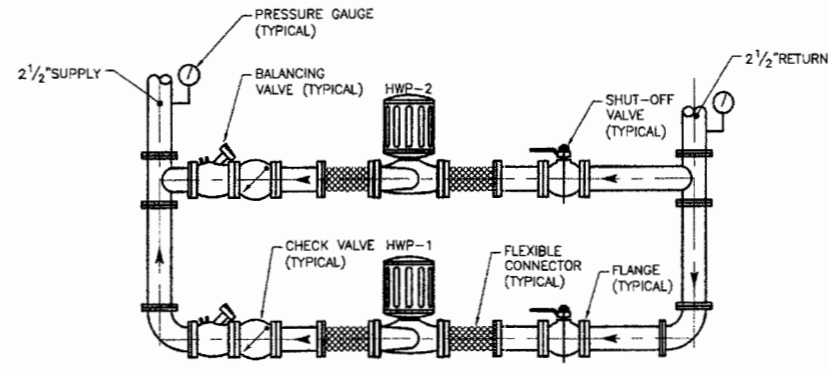


ISOMETRIC VIEW  
NOT TO SCALE

ITEM	QTY	PART NUMBER	DESCRIPTION
12	2	RB-24	LOW WATER CUTOFF (M&M)
11	1	BACKFLOW PREVENTOR	WATTS 9D
10	1	FB38	PRESSURE REDUCING VALVE (B&G)
9	1	D-60V	EXPANSION TANK (B&G)
8	1	PSH-2.5	PRIMARY SECONDARY HEADER (B&G)
7	1	PL55	PUMP (Bell & Gossett)
6	1	SA1.5	STRAIGHT FLOW CHECK
5	4	Y Strainer	
4	2	PL36	PUMP (Bell & Gossett)
3	2	SA1.25	ANGLE FLOW CHECK
2	1	SIT119	LOCHINVAR SQUAIRE INDIRECT WH
1	2	KBN601	LOCHINVAR BOILER

NOTE:  
BOILER PIPING SCHEMATICS ARE BASED ON LOCHINVAR KNIGHT XL BOILERS

**1 BOILER PIPING DIAGRAMS**  
NOT TO SCALE



NOTE:  
COORDINATE EXACT MOUNTING LOCATION IN THE FIELD WITH ALL OBSTRUCTIONS AND MODIFY LOCATION & PIPING TO SUIT FIELD VERIFIED MOUNTING LOCATION

**2 SYSTEM CIRCULATING PUMP PIPING DIAGRAM**  
NOT TO SCALE

**SED ASSOCIATES CORP.**  
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No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER  
Matthew J. Johnson  
DATE: 7/15/2011



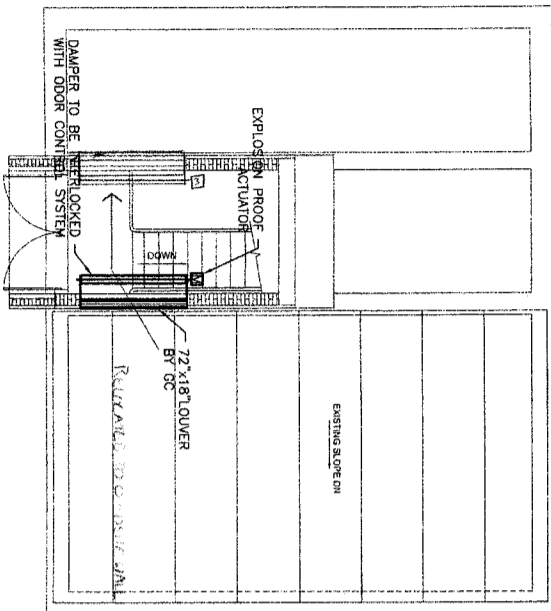
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	SCALE: AS NOTED	CONTRACT: 09051.01	DR BY: GI	CHK BY: MRR	APP BY: -
<b>HVAC</b> <b>BOILER PIPING SCHEMATICS</b>	CADD NO.	JOB NO. 09051.01	DATE: 7/15/2011	FILE NO. 189-82	

H-5

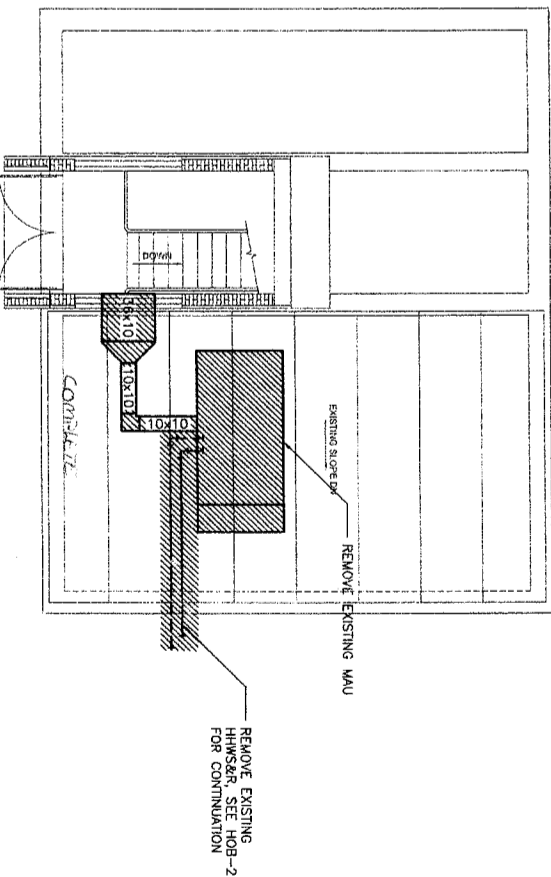
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PROPOSED



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WENKOWITZ, MA 02189

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**H-HW-1**  
SHEET 123 OF 202

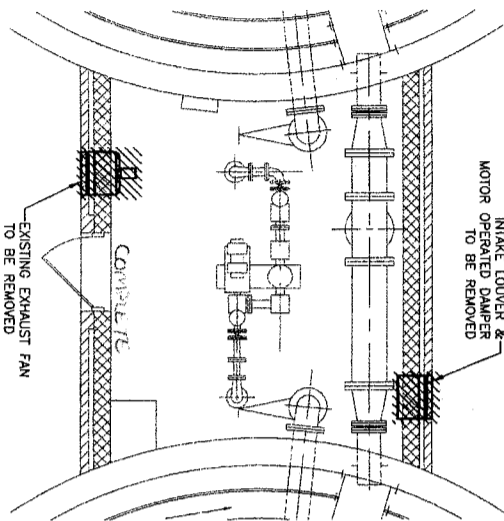
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT							
<b>HEATING &amp; VENTILATION HEADWORKS PLANS</b>							
FILE NO.	CADD NO.	SCALE	CONTRACT	JOB NO.	DR. BY	DSN. BY	CHK. BY
189-80	-	3/16"=1'-0"	-	-	FRC	FRC	MRR
		APP. BY					
		-					



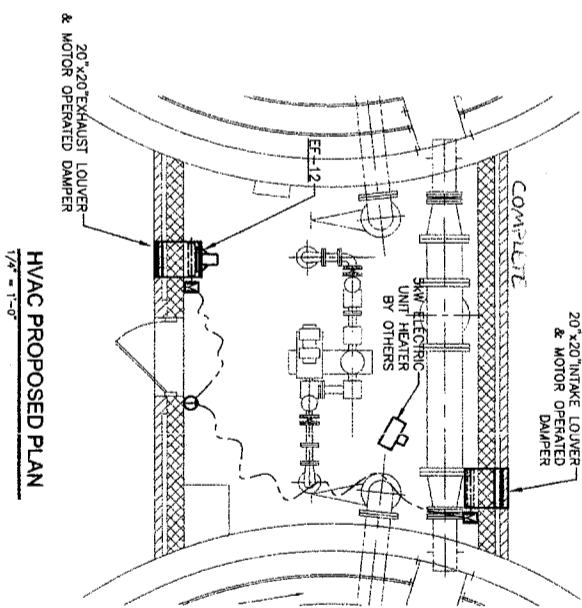
No.	Date	Dr. By	Ck. By	App. By	Description
					A P P R O V E D
					<i>Martin Richardson</i>
					REGISTERED PROFESSIONAL ENGINEER
					7/12/2011 DATE

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AS-BUILT



HVAC DEMOLITION PLAN  
1/4" = 1'-0"



HVAC PROPOSED PLAN  
1/4" = 1'-0"

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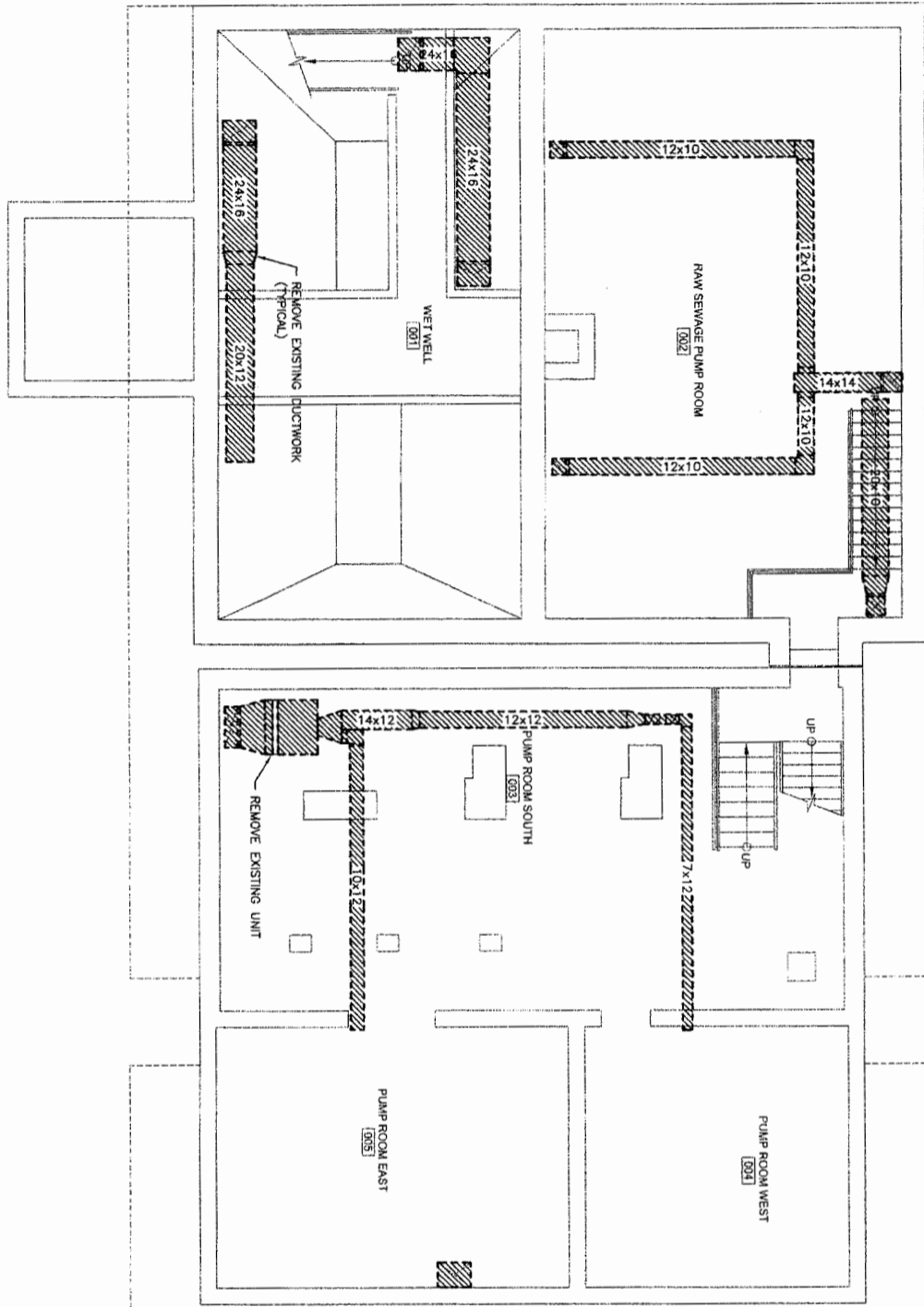
No.	Date	Dr. By	Ck. By	App. By	Description
					A P P R O V E D
					<i>Martin R. Richardson</i>
					REGISTERED PROFESSIONAL ENGINEER
					7/15/2011 DATE

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SHEET 124 OF 202  
 H-GT.1

CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION							
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT							
GRAVITY THICKENER HVAC PLANS							
FILE NO.	CADD NO.	SCALE:	CONTRACT:	JOB NO.	DR. BY	DSA. BY	CHK. BY
189-79		1/4" = 1'-0"			FRC	FRC	MRR
				APP. BY			

As Rour



Department Council

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**H-OB.1**  
SHEET 125 OF 202

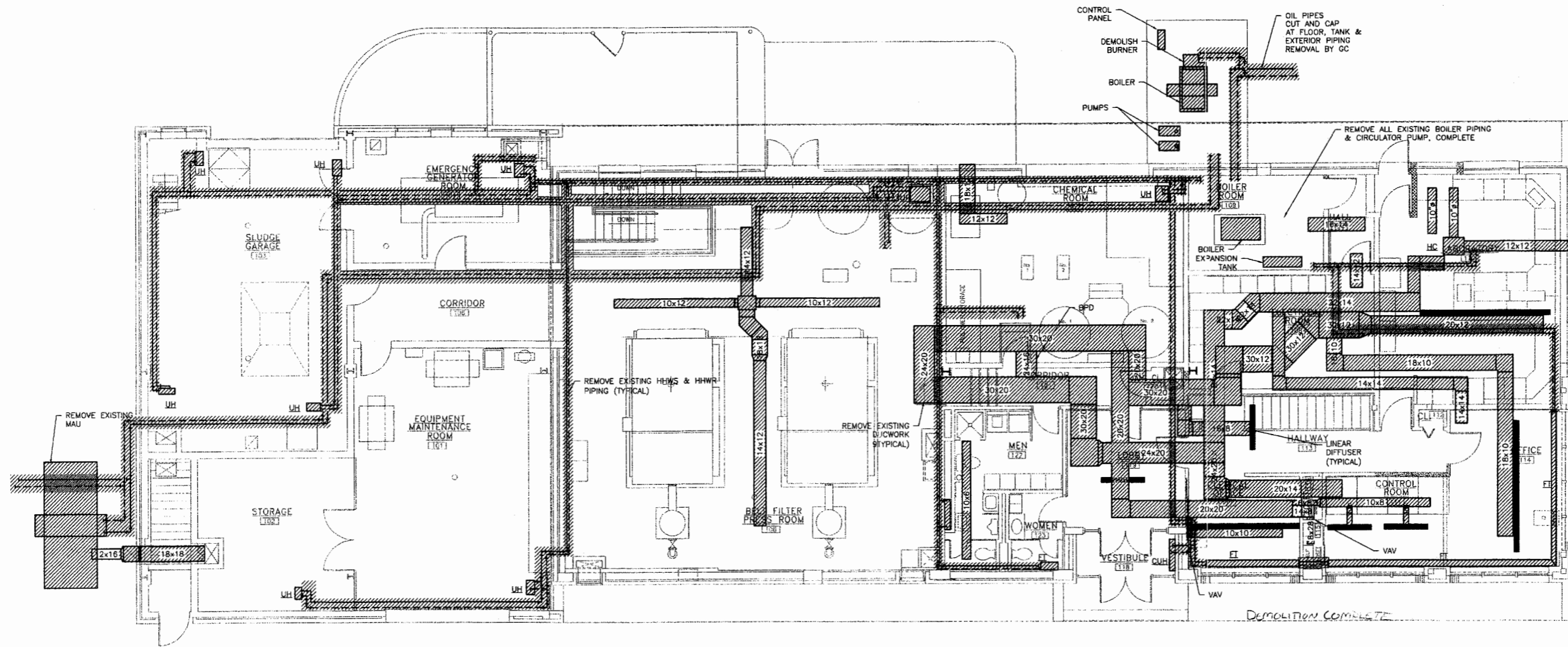
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT							
<b>HEATING &amp; VENTILATION BASEMENT DEMOLITION FLOOR PLAN</b>							
FILE NO.	CADD NO.	SCALE	CONTRACT	JOB NO.	DR. BY	DSN. BY	CHK. BY
189-78	-	3/16"=1'-0"	-	-	FRC	FRC	MRR



No.	Date	Dr. By	Ck. By	App. By	Description
					A P R O V E D
		<i>Martin R. Richardson</i>			
		REGISTERED PROFESSIONAL ENGINEER			
					7/15/2011 DATE

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No.	Date	By	App. By	Description
1	7/15/2011			DATE



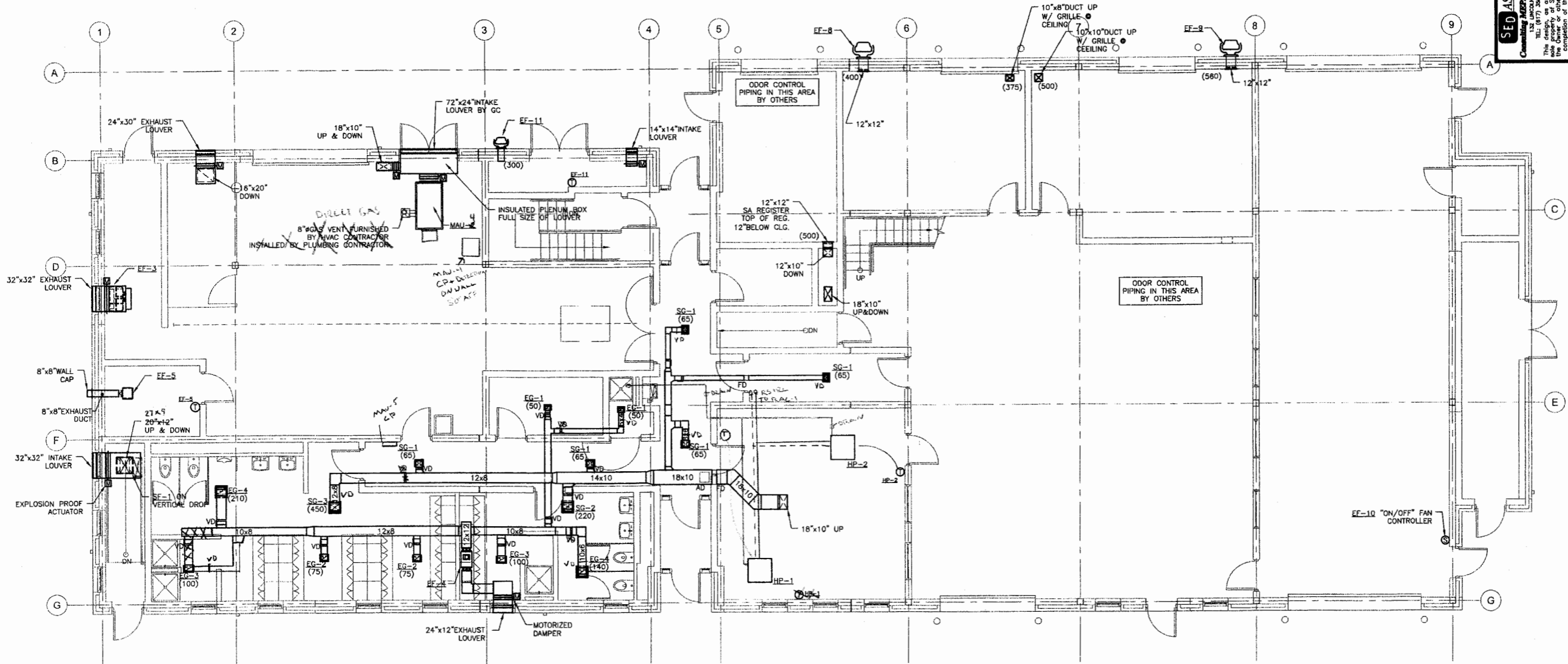
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**HEATING & VENTILATION  
 FIRST FLOOR DEMOLITION PLAN**  
 SCALE: 3/16"=1'-0"  
 CONTRACT: - - - - -  
 JOB NO: - - - - -  
 CADD NO: - - - - -  
 FILE NO: 189-77

**H-OB.2**  
 SHEET 126 OF 202

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 WEMYCLOUTH, MA 02189

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1					A
2					B
3					C
4					D
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9					I
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137					EG
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139					EI
140					EJ
141					EK
142					EL
143					EM
144					EN
145					EO
146					EP
147					EQ
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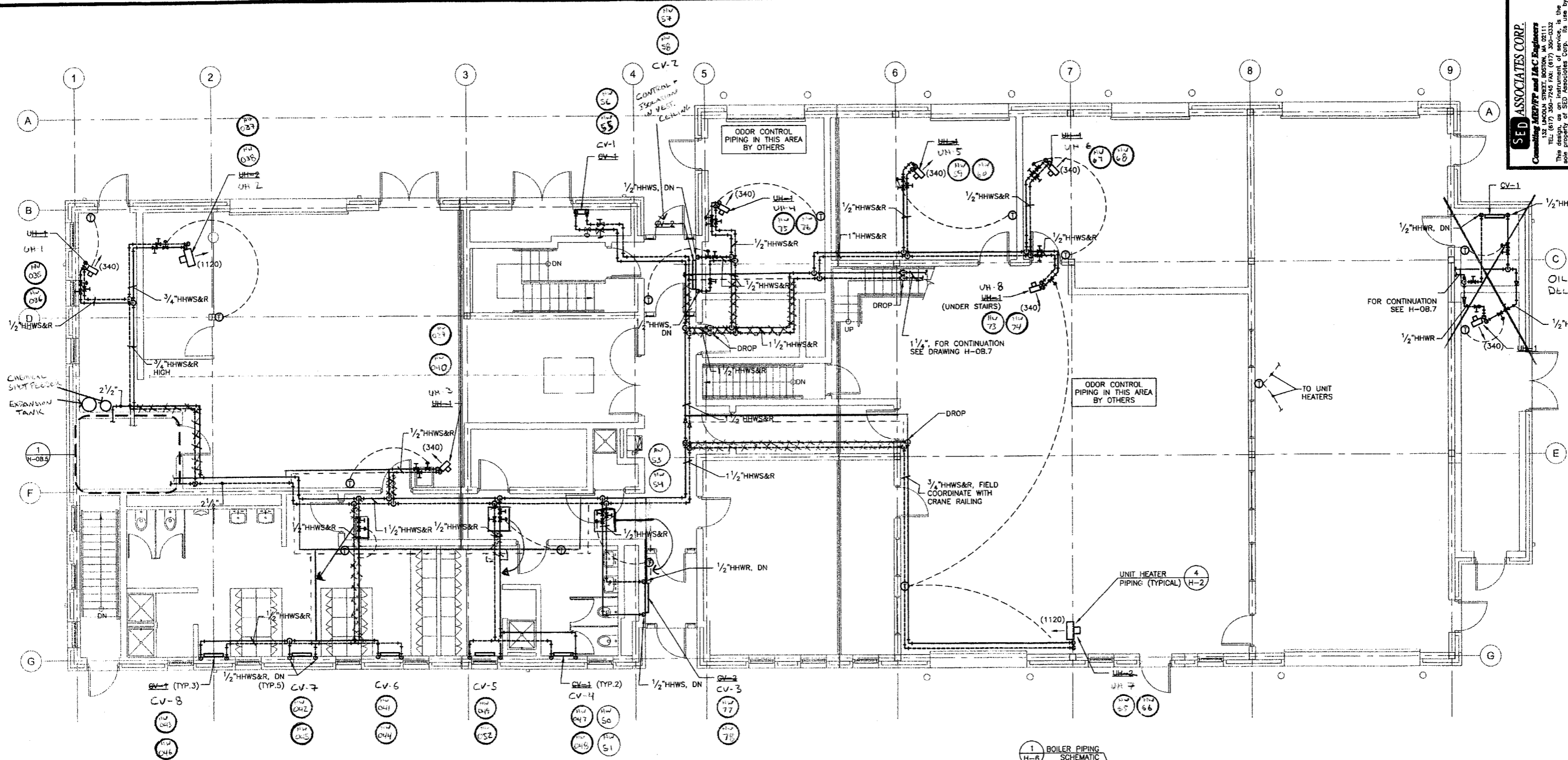
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**HEATING & VENTILATION**  
**FIRST FLOOR PROPOSED PLAN**  
 SCALE: 3/16" = 1'-0"  
 CONTRACT: —  
 JOB NO. —  
 FILE NO. 189-75  
 DRAW NO. —  
 DESIGNED BY: MRR  
 CHECKED BY: MRR  
 APPROVED BY: —  
 DATE: 7/15/11

ENTERPRISE EQUIPMENT CO., INC.  
 276 LIBBEY PARKWAY  
 WEYMOUTH, MA 02190

**H-OB.4**  
 SHEET 128 OF 202

**AS-BUILT**

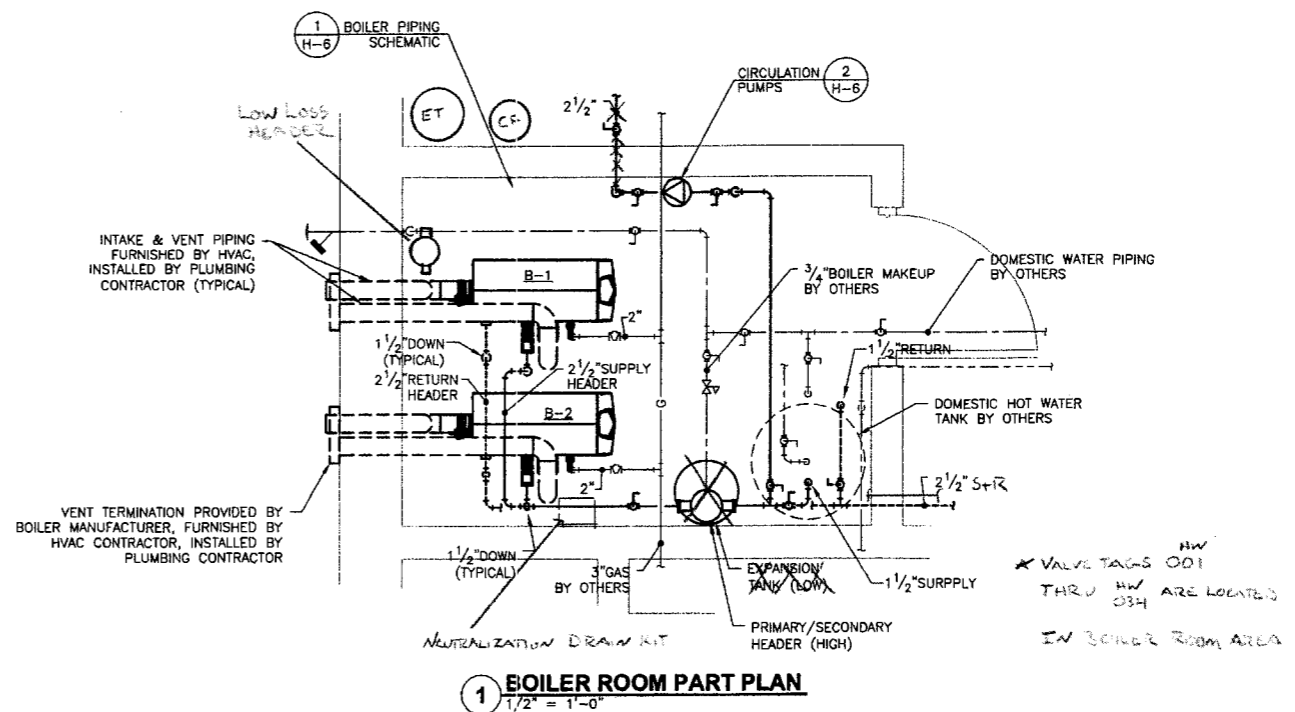




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1					
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**1 BOILER ROOM PART PLAN**  
 1/2" = 1'-0"

CITY OF NEWBURYPOR, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**HEATING PIPING  
 FIRST FLOOR PROPOSED PLAN**

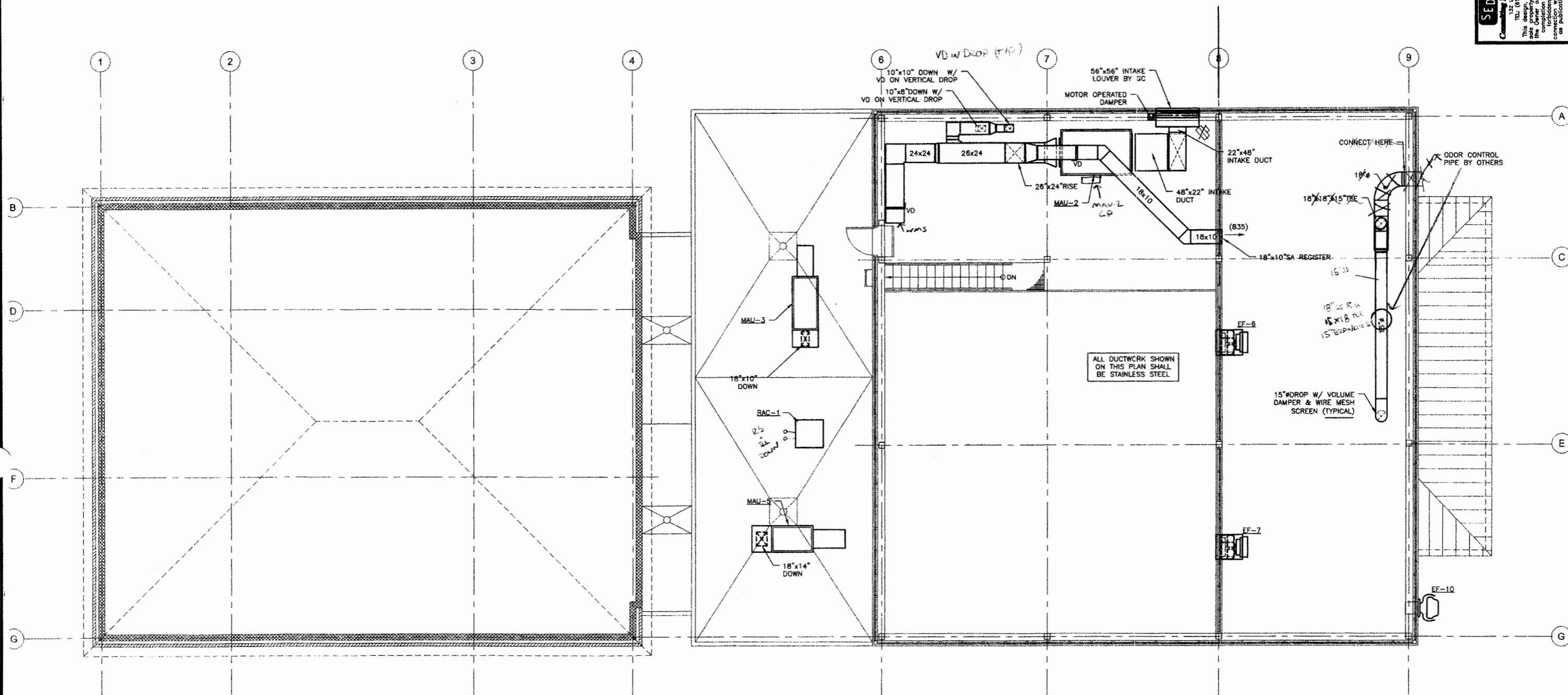
SCALE: 3/16" = 1'-0"  
 CONTRACT: -  
 JOB NO. -  
 DR. BY: FRC  
 CHK. BY: MRR  
 APP. BY: -  
 CAD. NO. 189-74  
 FILE NO. 189-74

**H-OB.5**

SHEET 129 OF 202

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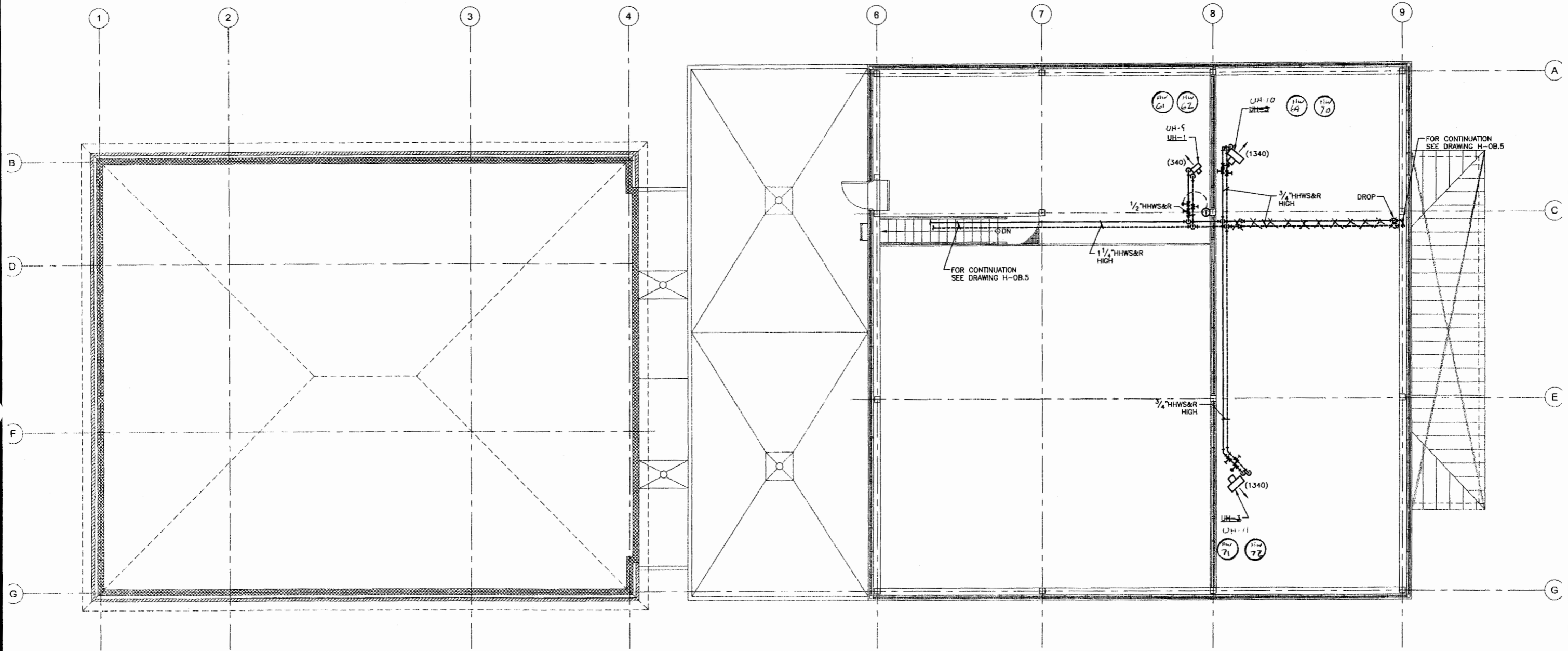
No.	Date	Dr. By	Ck. By	App. By	Description
1					REVISED
2					DATE

*Martin R. Sampson*  
 REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION		SCALE: 3/16" = 1'-0"	CONTRACT: -	JOB NO: -	DR. BY: FRC	CHK. BY: MRR	APP. BY: -
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT							
HEATING & VENTILATION MEZZANINE PROPOSED PLAN							
FILE NO:	189-73	CADD NO.:					

ENTERPRISE EQUIPMENT CO., INC.  
 276 LIBBEY PARKWAY  
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1					A P P R O V E D
					DATE: 7/12/07



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**HEATING PIPING  
 MEZZANINE PROPOSED PLAN**

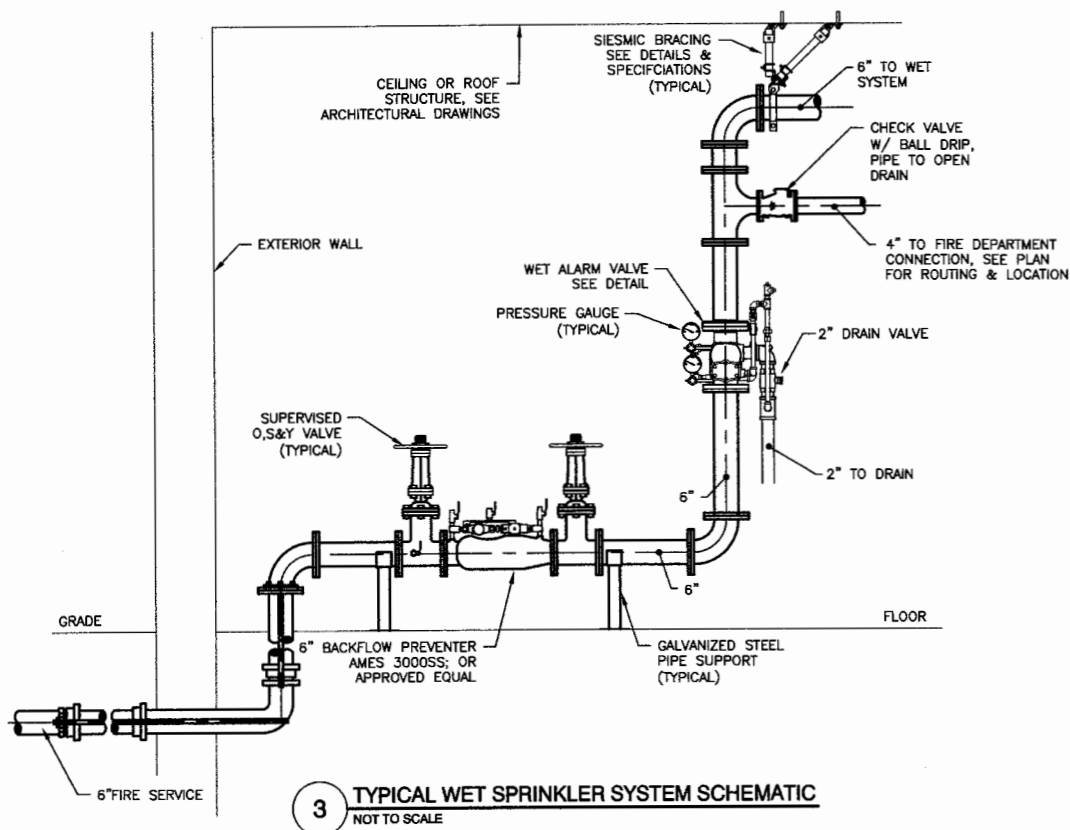
SCALE: 3/16" = 1'-0"  
 CONTRACT: -  
 CADD NO. 189-72  
 DESIGNED BY: FRC  
 CHECKED BY: MRR  
 APP. BY: -

ENTERPRISE EQUIPMENT CO., INC.  
 276 LIBBEY PARKWAY  
 WYMOUTH, MA 02199

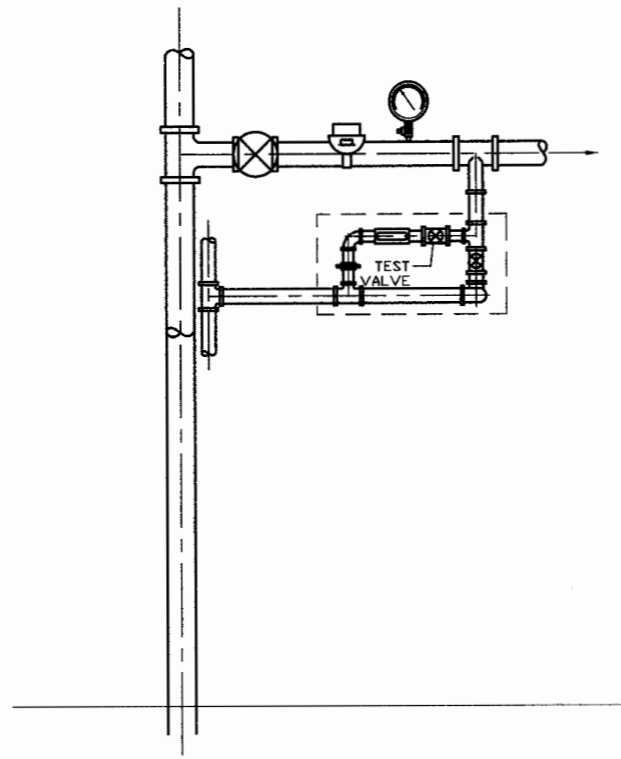
**H-OB.7**  
 SHEET 131 OF 202

AS-BUILT

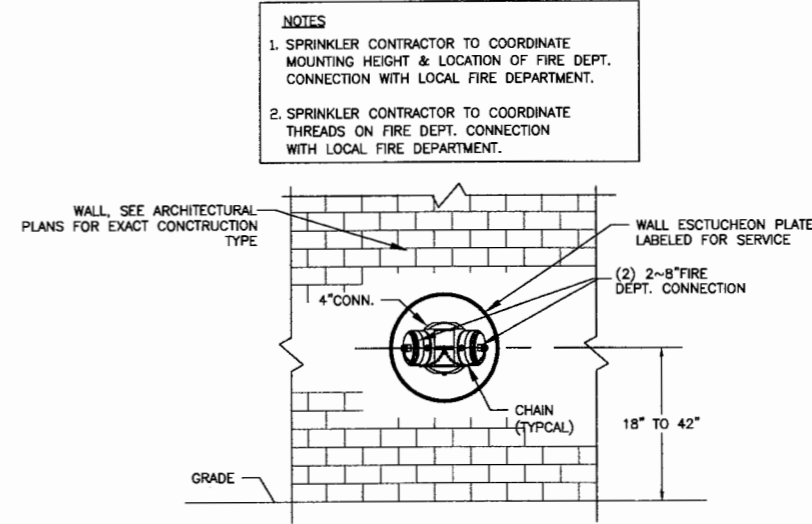




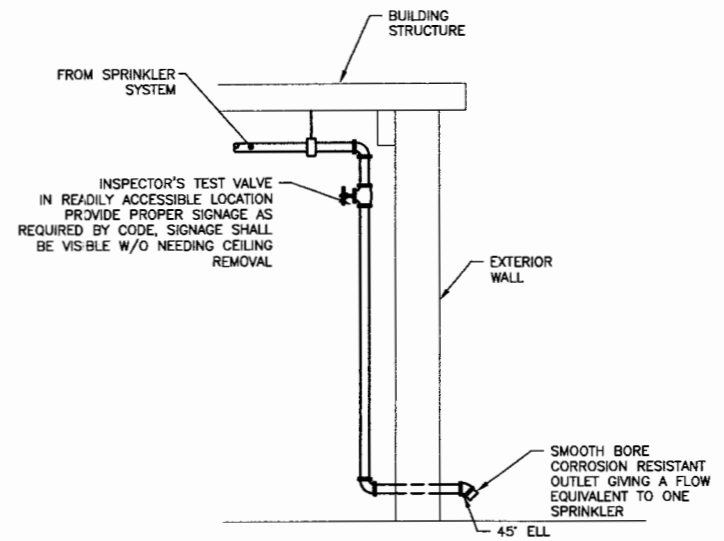
3 TYPICAL WET SPRINKLER SYSTEM SCHEMATIC  
NOT TO SCALE



2 TYPICAL FLOOR CONTROL STATION DETAIL  
NOT TO SCALE

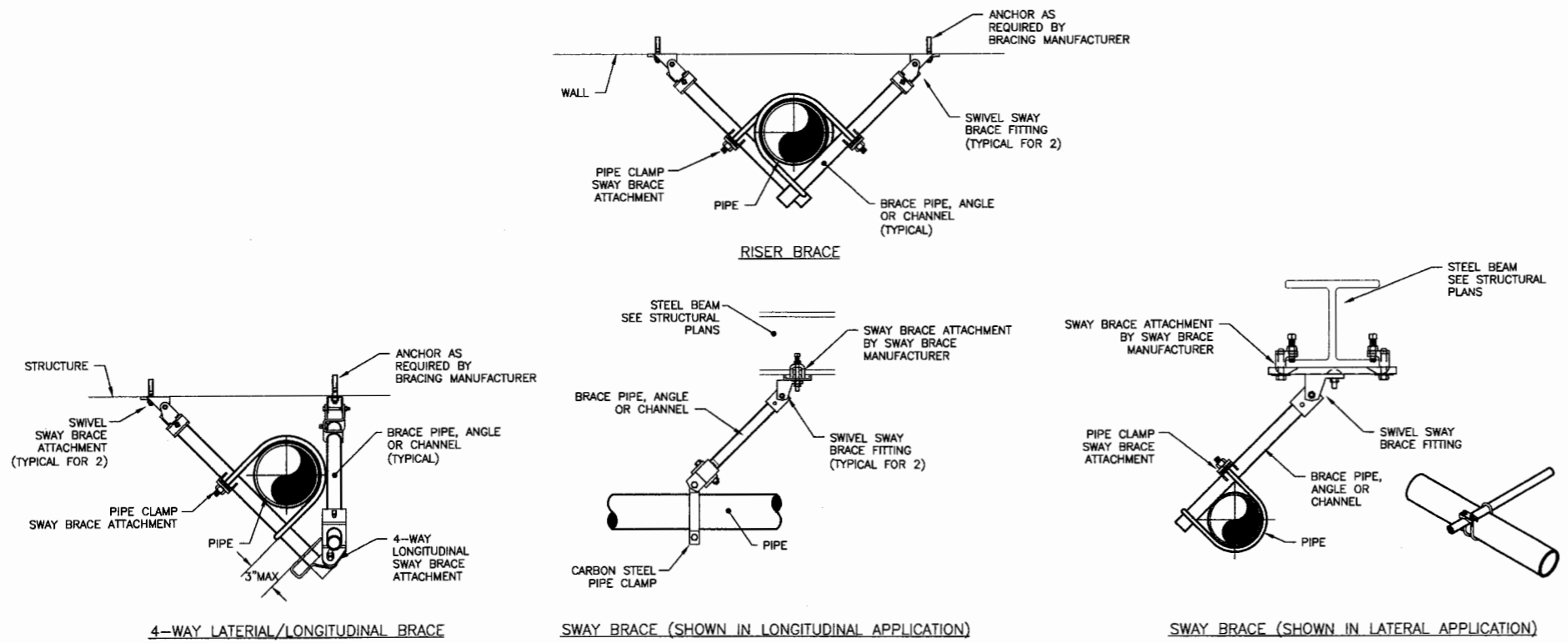


1 FIRE DEPARTMENT SIAMESE CONNECTION DETAIL  
NOT TO SCALE



5 INSPECTOR'S TEST STATION DETAIL  
NOT TO SCALE

NOTE: NOT LESS THAN 4FT OF EXPOSED PIPE IN WARM ROOM BEYOND VALVE WHERE PIPE EXTENDS THROUGH WALL TO OUTSIDE.



- NOTES:
1. ALL COMPONENTS USED IN THE BRACING SYSTEM SHALL BE THE PRODUCT OF ONE MANUFACTURER. SYSTEMS COMPRISING OF COMPONENTS FROM MULTIPLE MANUFACTURERS WILL NOT BE ACCEPTED.
  2. ALL SEISMIC BRACING SHALL BE SIZED IN ACCORDANCE WITH THE BRACING SYSTEM MANUFACTURER'S REQUIREMENTS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODE REQUIREMENTS. SIZING SHALL BE BY THE CONTRACTOR. CALCULATIONS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION.

4 TYPICAL SEISMIC BRACING DETAILS  
NOT TO SCALE

- NOTES
1. SPRINKLER CONTRACTOR TO COORDINATE MOUNTING HEIGHT & LOCATION OF FIRE DEPT. CONNECTION WITH LOCAL FIRE DEPARTMENT.
  2. SPRINKLER CONTRACTOR TO COORDINATE THREADS ON FIRE DEPT. CONNECTION WITH LOCAL FIRE DEPARTMENT.

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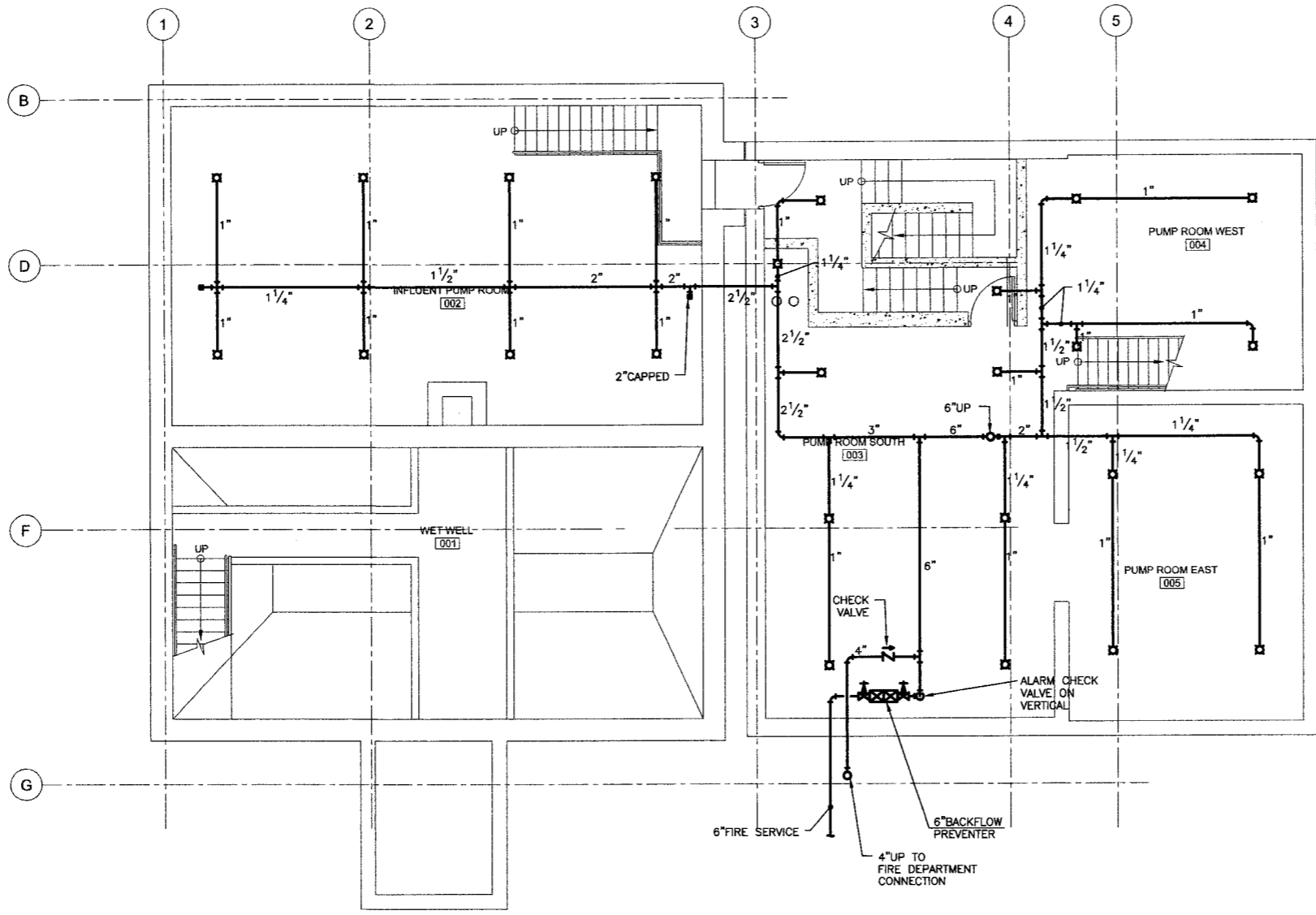
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No.	Date	Dr. By	App. By	Description

7/15/2011 DATE




CITY OF NEWBURYPORIT, MASSACHUSETTIS	DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION	WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	FIRE PROTECTION DETAILS 1
SCALE: 3/16" = 1'-0"	CONTRACT: -	CADD NO. -	JOB NO. -
DESIGN BY: FRC	CHECK BY: MRR	APP. BY: -	DATE: -



**SED ASSOCIATES CORP.**  
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No.	Date	Dr. By	Ck. By	App. By	Description				
		A	B	P	R	O	V	E	D
									
		REGISTERED PROFESSIONAL ENGINEER							
									7/15/2011



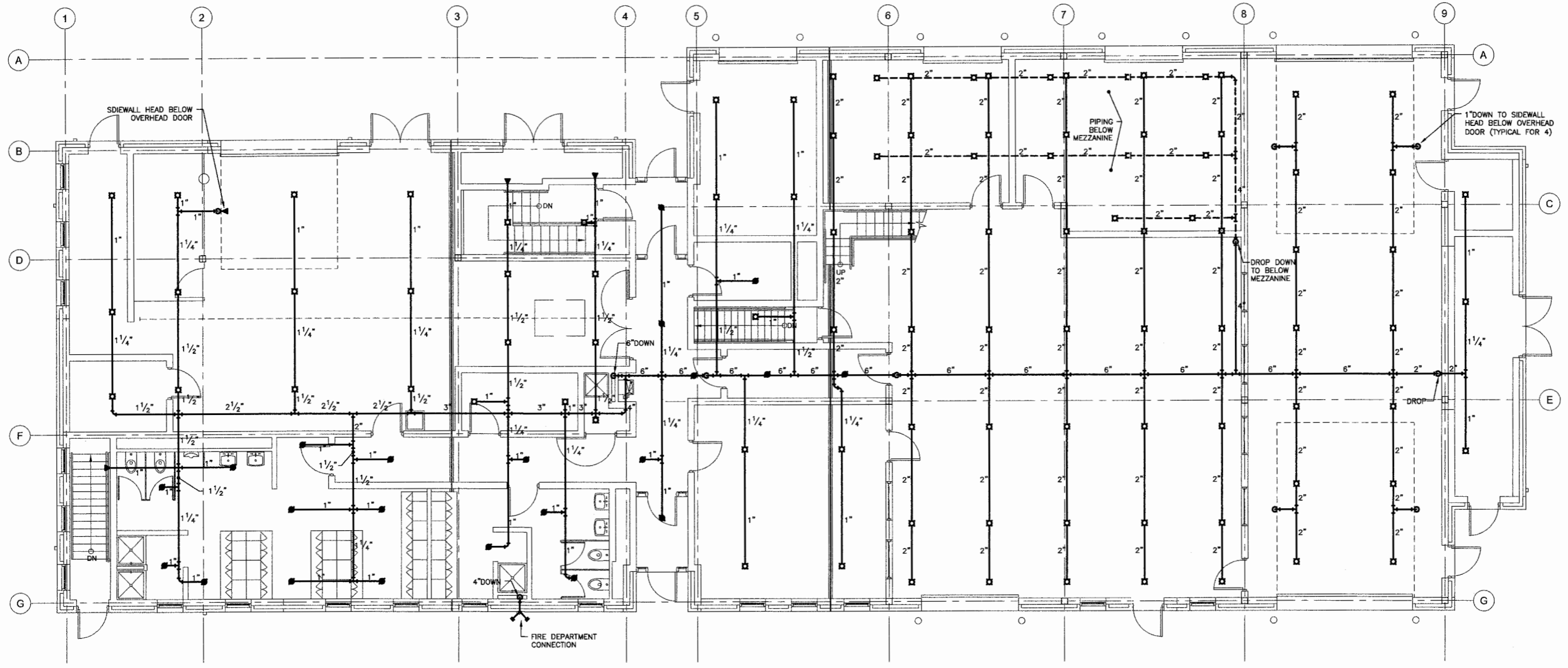
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**FIRE PROTECTION BASEMENT PIPING**

SCALE: 3/16"=1'-0"  
 CADD NO. 189-69  
 FILE NO. 189-69

DR. BY	FRC	CHK. BY	MRR	APP. BY	-
DR. BY	FRC	CHK. BY	FRC	APP. BY	-

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No.	Date	Dr. By	Ch. By	App. By	Description
1					A
2					B
3					C
4					D
5					E
6					F
7					G
8					H
9					I

DATE: 7/15/2011  
 REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**FIRE PROTECTION  
 FIRST FLOOR PIPING**

SCALE: 3/16" = 1'-0"  
 CONTRACT: -  
 JOB NO. -  
 CADD NO. -  
 DR. BY: FRC  
 CHK. BY: MRR  
 APP. BY: -

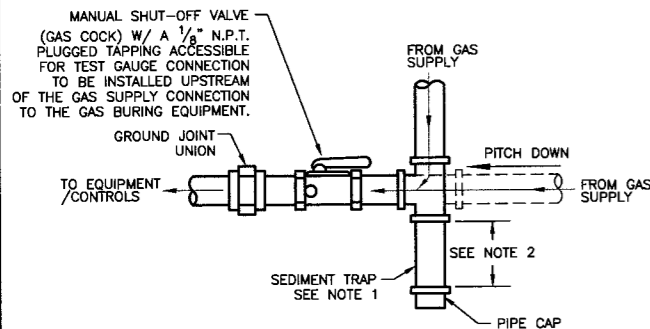
**FOB-2**  
 FILE NO. 189-68  
 SHEET 135 OF 202



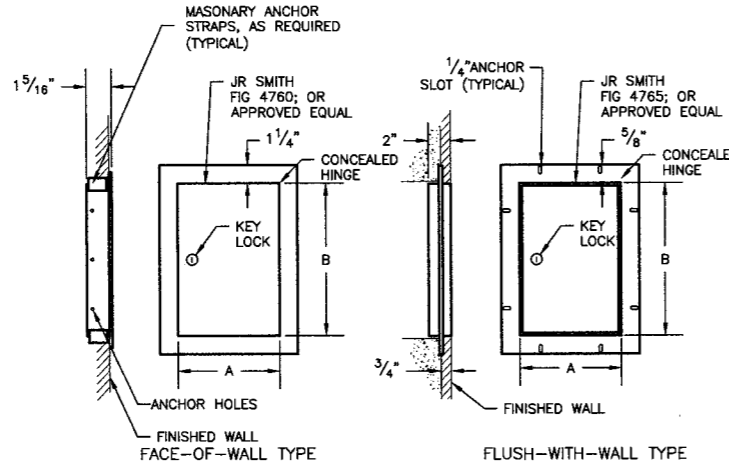




- NOTES:**
- SEDIMENT TRAP SHALL BE PROVIDED FOR ALL GAS BURNING EQUIPMENT/APPLIANCES THAT DOES NOT COME EQUIPPED W/ AN INTEGRAL SEDIMENT TRAP. ILLUMINATING APPLIANCES, RANGES, CLOTHES DRYERS AND OUTDOOR GRILLES NEED NOT BE SO EQUIPPED UNLESS OTHERWISE REQUIRED BY LOCAL CODES AND THE UNIT MANUFACTURER'S RECOMMENDATIONS.
  - SEDIMENT TRAP MINIMUM DIMENSION SHALL BE 3" AS INDICATE UNLESS LOCAL CODES AND/OR UNIT MANUFACTURER REQUIRE A LONGER SEDIMENT TRAP.

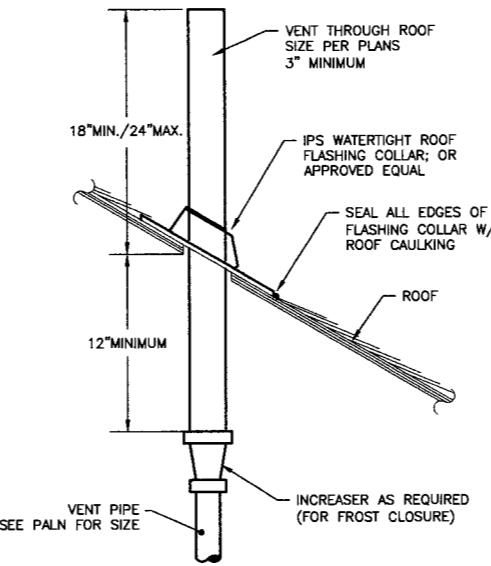


**1 TYPICAL GAS PIPING SEDIMENT TRAP**  
NOT TO SCALE

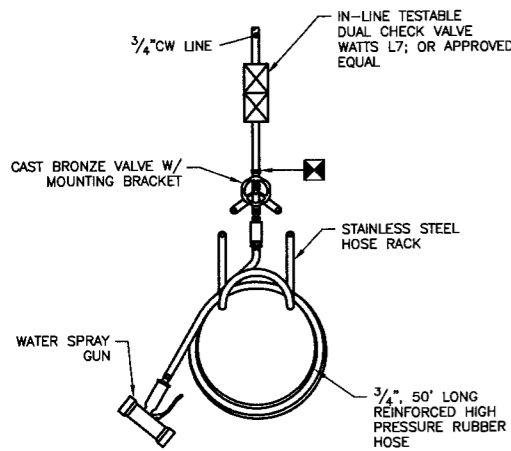


- NOTES:**
- MINIMUM SIZE FOR WASTE PIPE CLEANOUT ACCESS DOOR = 12"x18" ("A" x "B").
  - MINIMUM SIZE FOR DOMESTIC WATER VALVE ACCESS DOOR = 10"x10" ("A" x "B").
  - ACCESS DOOR TO BE OF PRIME COATED STEEL, UNLESS OTHERWISE NOTED.

**2 NON-RATED ACCESS DOOR TYPICAL DETAILS**  
NOT TO SCALE

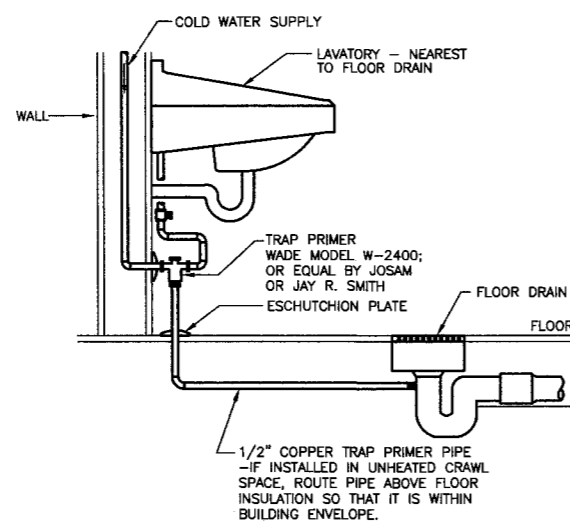


**3 TYPICAL VENT STACK THROUGH PITCHED ROOF**  
NOT TO SCALE

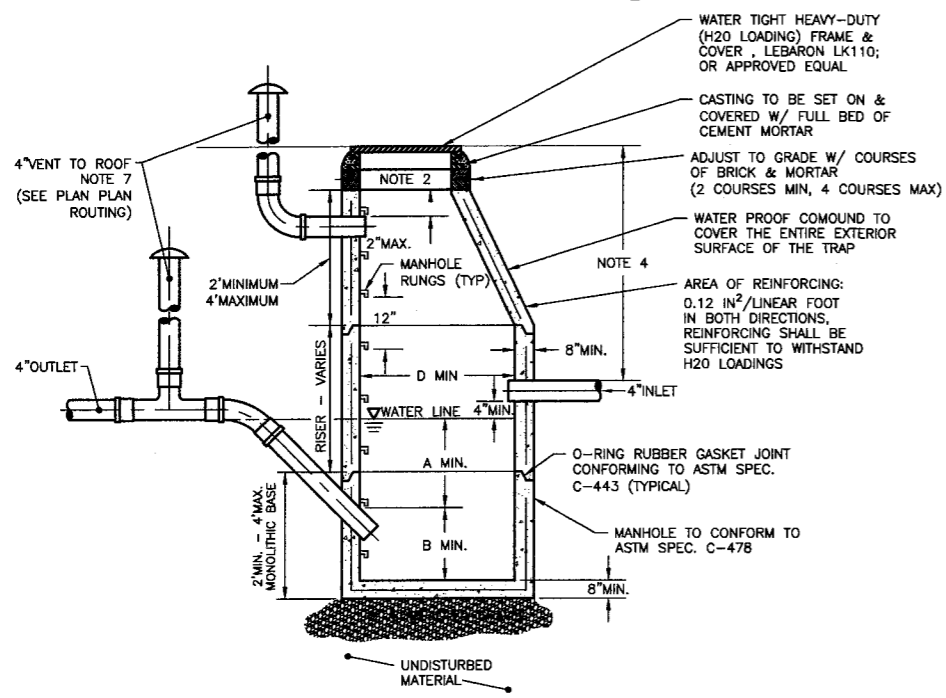


**NOTE:**  
ALL MOUNTING FASTENERS SHALL BE STAINLESS STEEL & PROVIDED BY THE PLUMBING CONTRACTOR

**5 HOSE STATION DETAIL**  
NOT TO SCALE



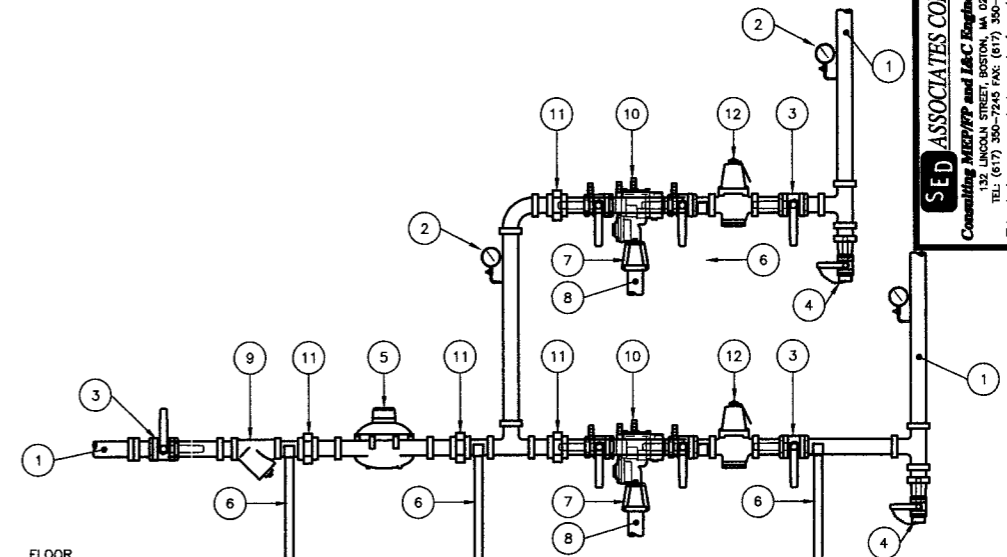
**6 FLOOR DRAIN TRAP PRIMER DETAIL**  
NOT TO SCALE



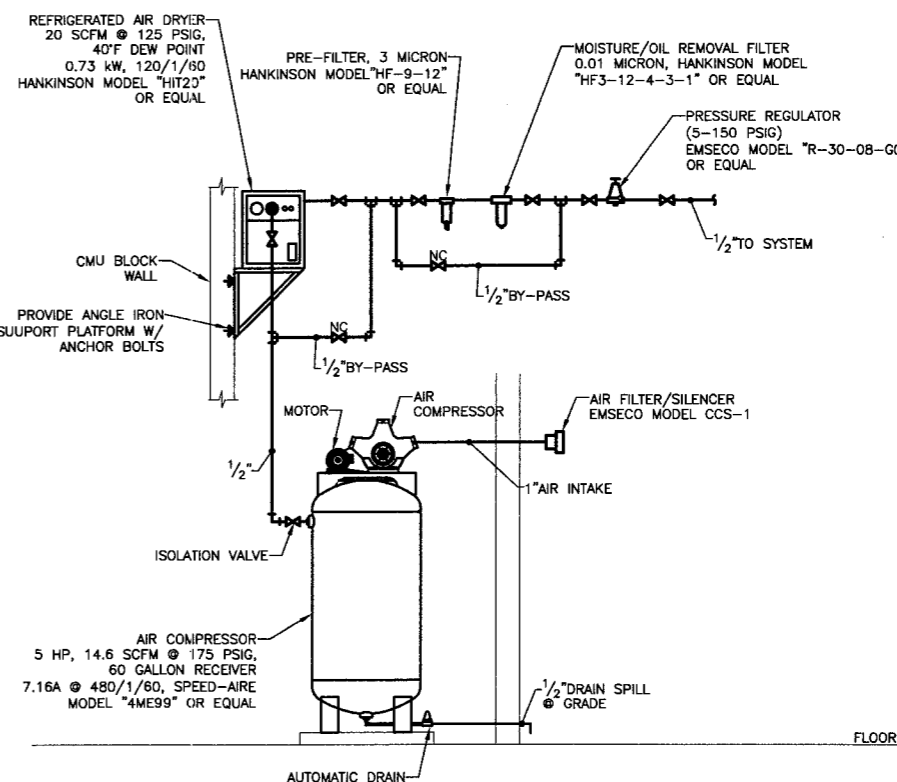
**9 PRE-CAST GASOIL/NE/SAND TRAP DETAIL**  
NOT TO SCALE

- NOTES:**
- BASIN TO BE LOCATED ON THE EXTERIOR OF THE BUILDING WHERE POSSIBLE. COVER TO HAVE A CENTER HOLE. IF BASIN IS LOCATED ON THE INTERIOR OF THE BUILDING, THE COVER SHALL BE A SEALED TIGHT COVER W/ NO CENTER HOLE.
  - THE MANHOLE OPENING SHALL NOT BE LESS THAN 24" IN DIAMETER.
  - THE BASIN SHALL BE SO LOCATED & CONSTRUCTED THAT SURFACE WATER IS EXCLUDED.
  - INLET PIPE SHALL HAVE A MINIMUM GROUND COVER OF 36" TO THE TOP OF THE INLET PIPE.
  - THE BASIN SHALL BE FILLED WITH CLEAN WATER PRIOR TO USING & AFTER BEING EMPTIED FROM PERIODIC CLEANING. BASIN SHALL BE INSPECTED BIANNUALLY AT A MINIMUM.
  - ALL OIL, GASOLINE & SAND MUST BE REMOVED BEFORE CLEANING OUT THE BASIN & SHALL NOT BE DISCHARGED INTO THE SEWER THROUGH OTHER FIXTURES.
  - BOTH VENTS SHALL EXTEND INDEPENDENTLY 18" ABOVE THE ROOF OR AS APPROVED BY THE LOCAL AUTHORITIES.

MINIMUM REQUIRED BASIN DIMENSION						
INLET	D			B		
	A	B	INLET	A	B	
4"	3'-6"	3'-0"	2'-6"	8"	5'-0"	5'-0"
5"	3'-6"	5'-0"	4'-0"	5'-6"	5'-6"	4'-0"
	3'-6"x3'-6"	4'-0"	3'-0"	6'-0"	4'-0"	3'-6"
	3'-6"x3'-6"	3'-6"	3'-0"	6'-0"x6'-0"	3'-0"	2'-6"
	3'-6"x3'-6"	3'-0"	2'-6"	6'-6"	3'-6"	3'-0"
	3'-6"x3'-6"	3'-0"	2'-6"	6'-6"x6'-6"	3'-0"	2'-6"
6"	4'-0"	5'-0"	4'-0"	10"	5'-6"	7'-6"
	4'-0"x4'-0"	4'-0"	3'-0"	8'-0"x6'-0"	5'-6"	4'-6"
	4'-6"	4'-0"	3'-0"	6'-0"	4'-0"	5'-6"
	4'-6"x4'-6"	3'-6"	2'-6"	6'-6"x6'-6"	5'-0"	4'-0"
	5'-0"	3'-6"	2'-6"			
5'-0"x5'-0"	3'-0"	2'-6"				



**4 WATER SERVICE ENTRANCE DETAIL**  
NOT TO SCALE



**7 AIR SERVICE ENTRANCE DETAIL**  
NOT TO SCALE

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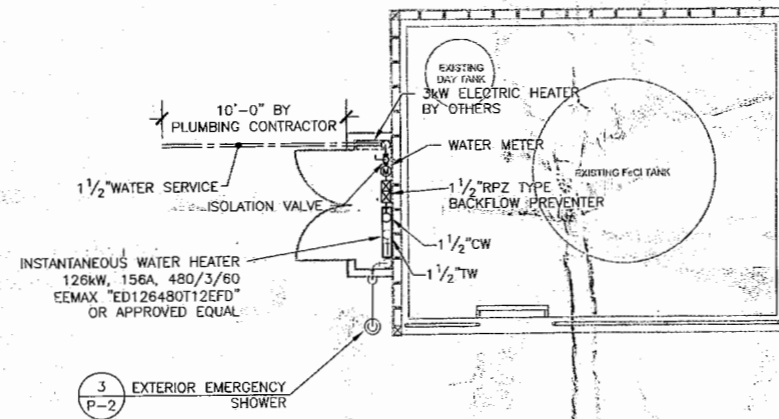
No.	Date	Dr. By	Ck. By	App. By	Description



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DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**PLUMBING DETAILS "11"**  
SCALE: AS NOTED  
CONTRACT: 1  
JOB NO. 09051.00  
DESIGN BY: FRC  
CHECK BY: MRR  
APP. BY: -  
CADD NO. 189-65

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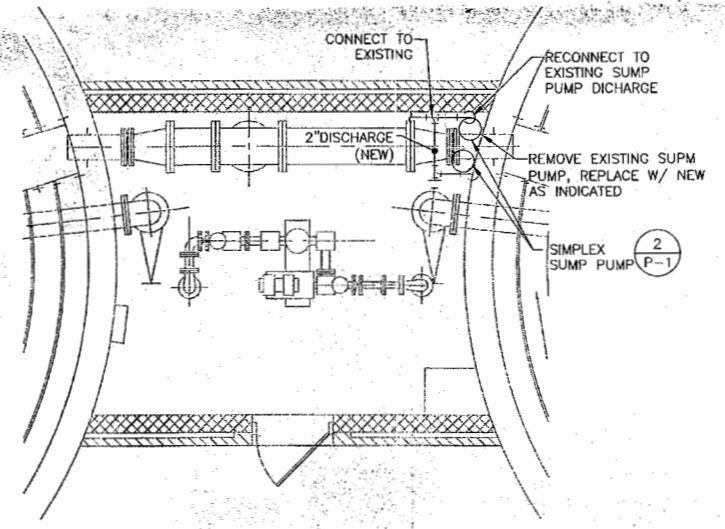
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 PLUMBING  
 FERRIC CHLORIDE AREA

CAUD NO.	189-64	SCALE	3/16" = 1'-0"	CONTRACT	-	JOB NO.	-	DR. BY	FRC	DSK. BY	FRC	CHK. BY	MRR	APP. BY	-
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**PLUMBING PROPOSED PLAN**  
 1/4" = 1'-0"

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GRAVITY THICKENER  
 PLUMBING PLANS

SCALE: 1/4" = 1'-0"  
 CONTRACT: \_\_\_\_\_  
 JOB NO. \_\_\_\_\_

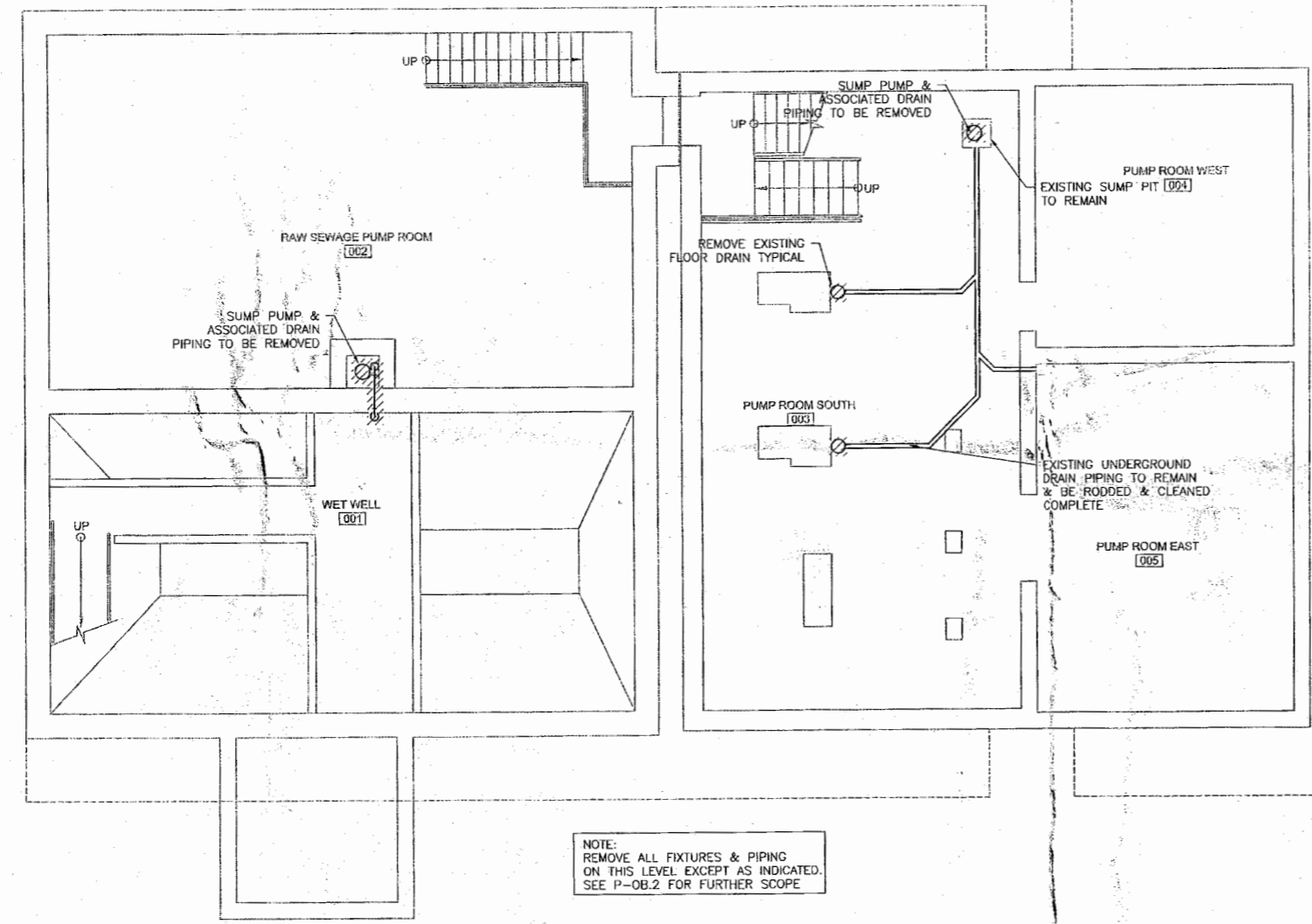
DRBY: FRC  
 DISBY: FRC  
 CHKBY: MRR  
 APPBY: \_\_\_\_\_

FILE NO. 189-63  
 CADD NO. \_\_\_\_\_

P-GT.7  
 SHEET 140 OF 202

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 SEE P-OB.2 FOR FURTHER SCOPE

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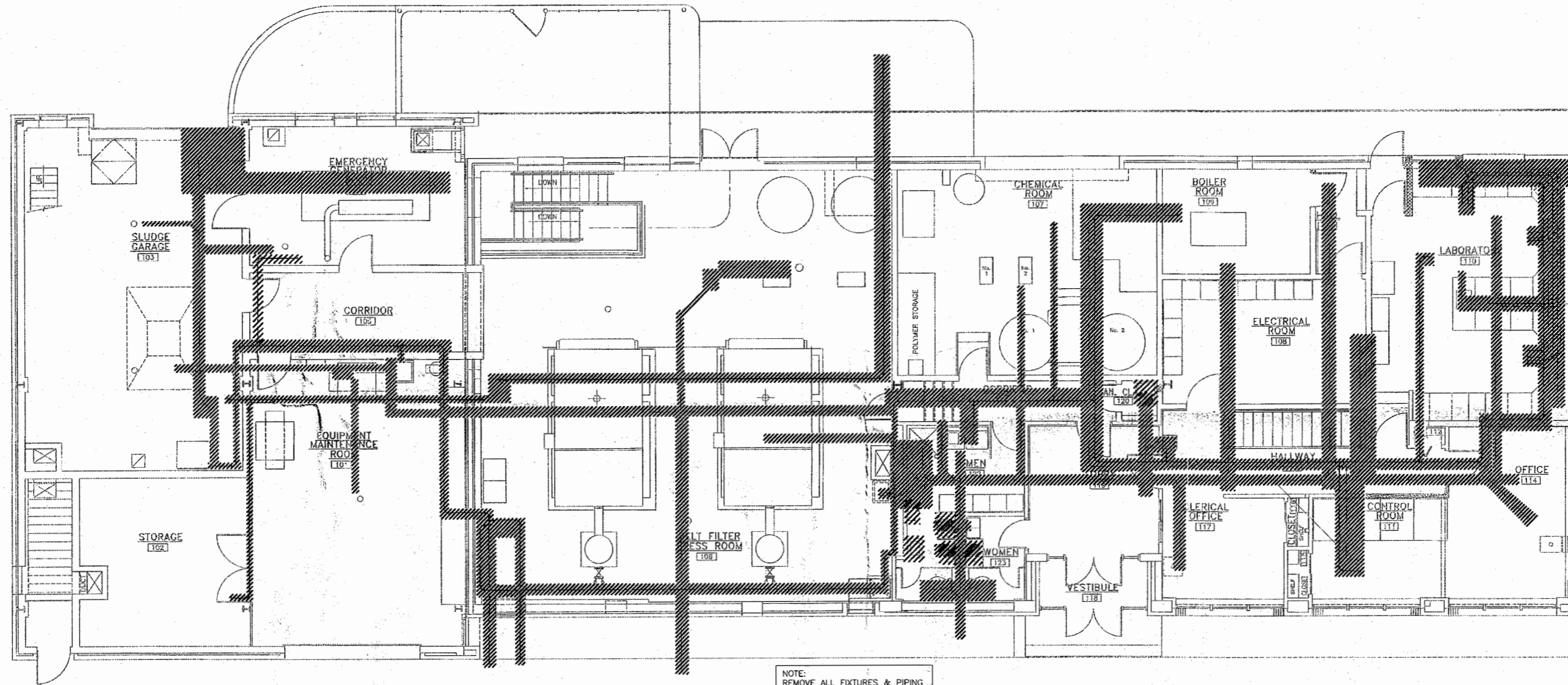
PLUMBING  
 BASEMENT DEMOLITION PLAN

SCALE: 3/16" = 1'-0"  
 CONTRACT: \_\_\_\_\_  
 JOB NO. \_\_\_\_\_  
 CADD NO. \_\_\_\_\_  
 FILE NO. 189-62

P-OB.7  
 SHEET 141 OF 202

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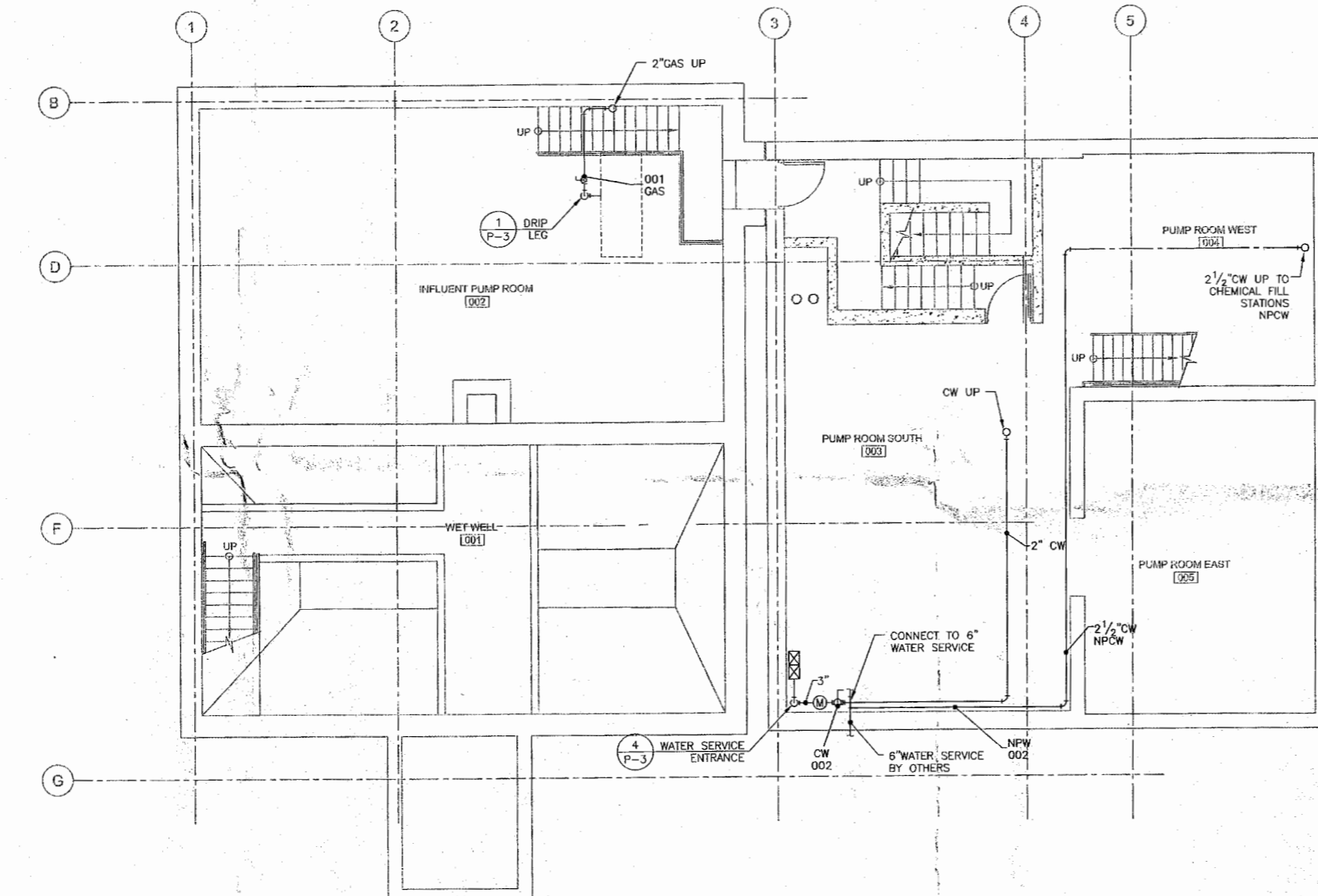
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 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**HEATING & VENTILATION  
 FIRST FLOOR DEMOLITION PLAN**

FILE NO. 189-61  
 CAD NO. —  
 SCALE: 3/16" = 1'-0"  
 CONTRACT: —  
 JOB NO. —  
 DR. BY: FRC  
 CHK. BY: MRR  
 APP. BY: —  
 SHEET 142 of 202



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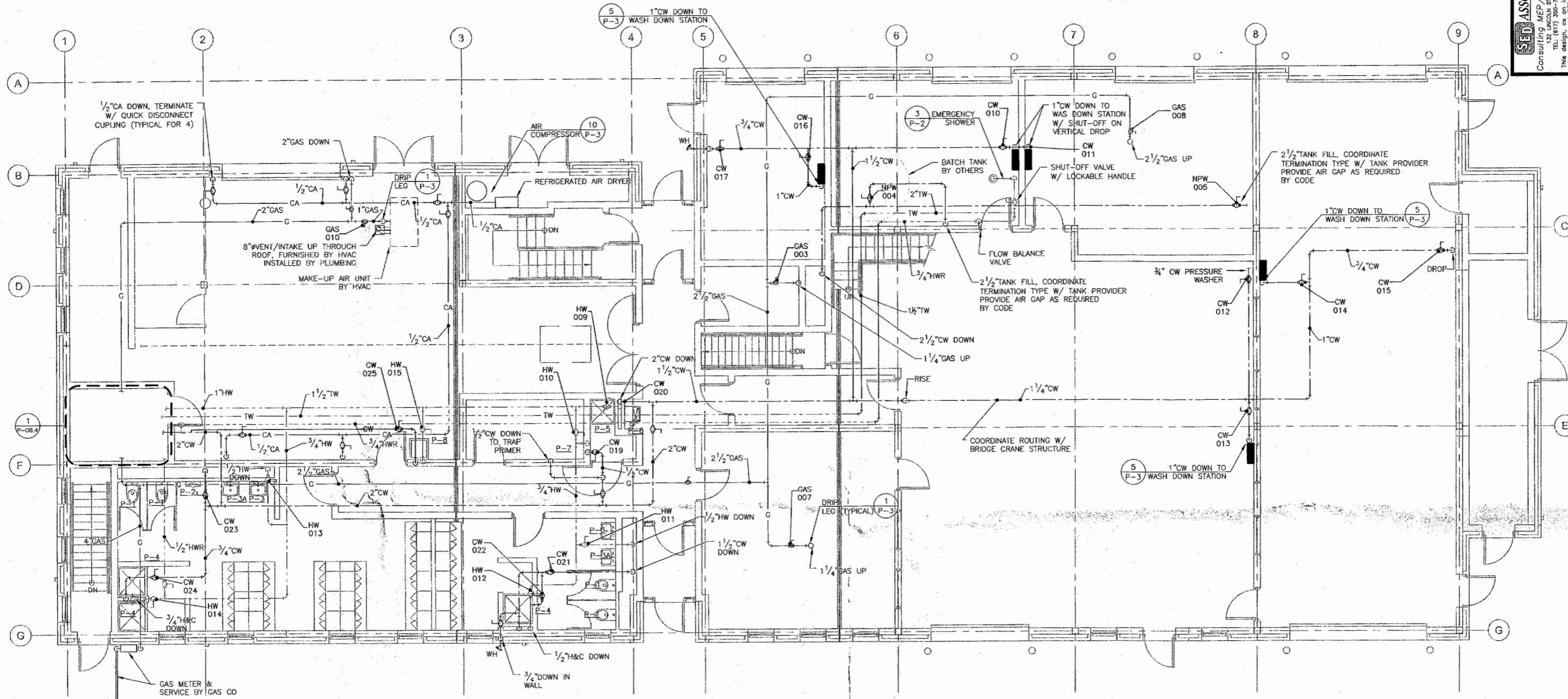
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 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**PLUMBING**  
**BASEMENT DOMESTIC WATER PIPING**

CADD NO. 189-60  
 SCALE 3/16" = 1'-0"  
 CONTRACT: -  
 JOB NO. -  
 DR BY FRC  
 DS BY FRC  
 CK BY MRR  
 APP BY



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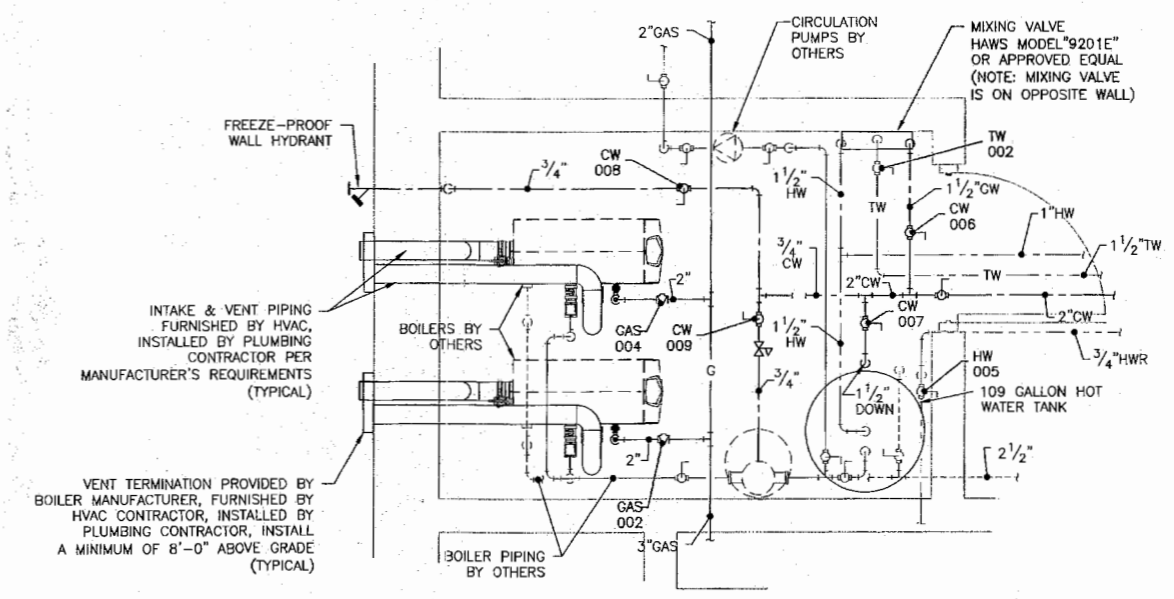
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 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**PLUMBING**  
**FIRST FLOOR DOMESTIC WATER PIPING**  
 SCALE: 3/16" = 1'-0"  
 CONTRACT: \_\_\_\_\_ JOB NO. \_\_\_\_\_  
 DR. BY: FRC | DS. BY: FRC | APP. BY: MRR

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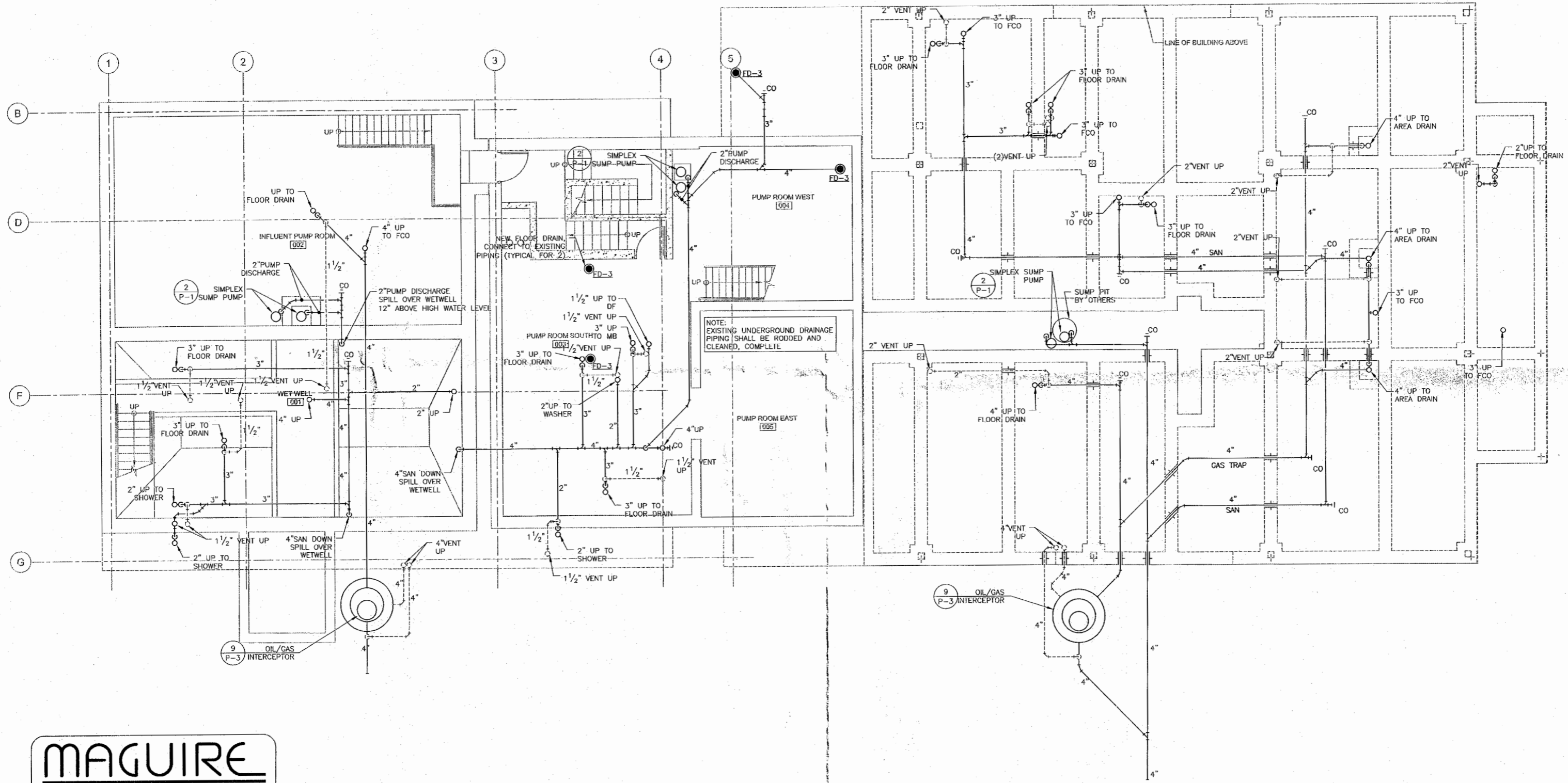


**1 BOILER ROOM PART PLAN**  
 1/2" = 1'-0"



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NOTE:  
 EXISTING UNDERGROUND DRAINAGE  
 PIPING SHALL BE RODDED AND  
 CLEANED, COMPLETE

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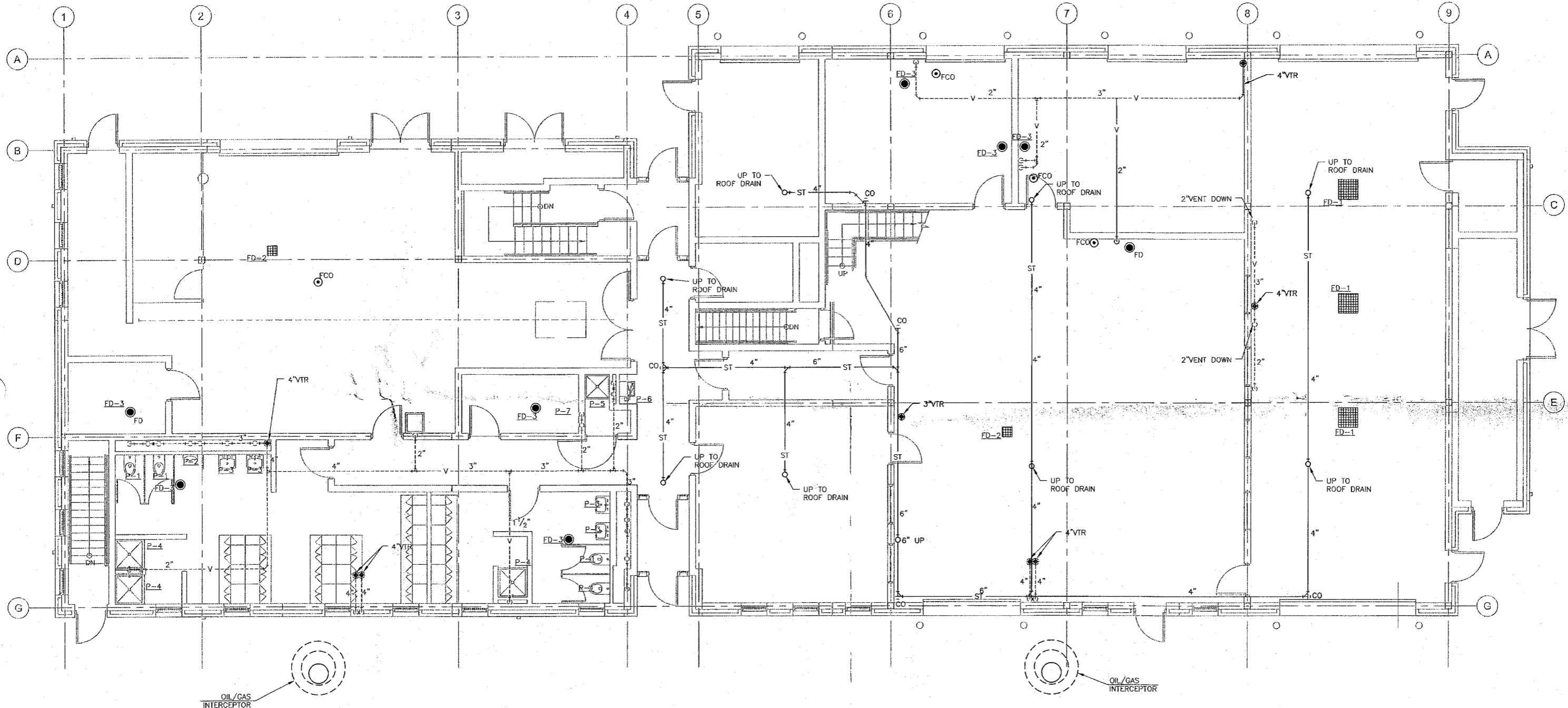
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**PLUMBING**  
**BASEMENT SANITARY/VENT PIPING**  
 SCALE: 3/16" = 1'-0"  
 CONTRACT: -  
 JOB NO. -  
 CADD NO. -  
 FILE NO. 189-58

P-0B.5  
 SHEET 145 OF 202



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**PLUMBING**  
 FIRST FLOOR SANITARY/VENT PIPING  
 SCALE: 3/16" = 1'-0"  
 CONTRACT: \_\_\_\_\_  
 JOB NO.: \_\_\_\_\_  
 DR. BY: FRC  
 USN. BY: FRC  
 CHK. BY: MRR  
 APP. BY: \_\_\_\_\_  
 CADD NO.: 189-57

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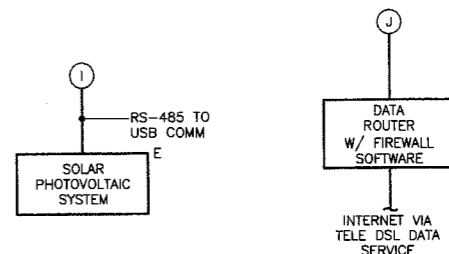
INSTRUMENTATION LOOP DIAGRAMS DEVICE TABLE

FIRST LETTER	SUCCEEDING LETTERS			
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	ANALYSIS		ALARM	
B	BURNER FLAME			
C	CONDUCTIVITY (ELECTRICAL)			CONTROL
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL		
E	VOLTAGE (EMF)		PRIMARY ELEMENT	
F	FLOW RATE	RATIO (FRACTION)		
G	GAUGING DIMENSIONAL		GLASS	
H	HAND (MANUALLY INITIATED)			HIGH
I	CURRENT (ELECTRICAL)		INDICATE	
J	POWER	SCAN		
K	TIME OR TIME SCHEDULE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)	LOW
M	MOISTURE			MIDDLE OR INTERMEDIATE
N				
O			ORIFICE (RESTRICTION)	
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)	
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE	INSTRUMENT LETTER SYMBOL IDENTIFICATION	
R	RADIOACTIVITY		RECORD OR PRINT	
S	SPEED OR FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE	TORQUE		TRANSMIT
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY		VALVE, DAMPER LOUVER	
W	WEIGHT OF FORCE		WELL	
X	TRANSMIT	ALARM		
Y				RELAY OR COMPUTE
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT

NOTE: THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS ON SCHEMATICS.

INSTRUMENT ABBREVIATIONS

A	ALARM OR AMPERES	NAP	NEW ALARM PANEL	W	WIRE
ACP	ALARMS CONTROL PANEL	NO	NUMBER	W/WF	WATER/WASTEWATER FACILITIES
AI	ANALOG PLC INPUT	PC	PERSONAL COMPUTER	WT	WIRING TERMINAL
AIC	AMPERES INTERRUPTING CAPACITY	P	PUMP OR POLE	WTS	WIRING TERMINAL STRIP
BTD	BACK-UP TAPE DRIVE	PF	PULL FUSE	WTF	WASTEWATER TREATMENT FACILITY
CB	CIRCUIT BREAKER	PH	PHASE		
CDD	CASSETTE DISK DRIVE	PLC	PROGRAMMABLE LOGIC CONTROLLER		
CKT	CIRCUIT	PNLBD	PANELBOARD		
CPU	CENTRAL PROCESSING UNIT	PP	POWER PLUG		
CRT	CATHODE RAY TUBE	PR	POWER RECEPTACLE		
CTV	CABLE TELEVISION	PRES	PRESSURE		
DI	DISCRETE PLC INPUT	PS	PRESSURE SWITCH		
E	EXISTING	PTR	PRINTER		
EC	ELECTRICAL CONTRACTOR	R	RELAY		
EFSKTAP	EXISTING FSK TONE ALARM PANEL	RA	RADIO ANTENNA		
E/G	ENGINE/GENERATOR	RAP	RADIO ALARMS PANEL		
EM	EXISTING/MODIFIED	RF	RADIO FREQUENCIES		
EN	ETHERNET COMMUNICATION	RRP	RADIO REPEATER PANEL		
EST	EXISTING SIGNAL TRANSMITTER	SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION		
FDD	FLOPPY DISK DRIVE	SP	SURGE PROTECTED		
FO	FIBER-OPTIC COMMUNICATION	SPS	SEWAGE PUMPING STATION		
I&C	INSTRUMENTATION AND CONTROL	TELE	TELEPHONE		
ICP	INSTRUMENTATION CONTROL PANEL	TEMP	TEMPERATURE		
I/O'S	INPUTS AND OUTPUTS	TM	TELEPHONE MODEM		
KB	KEYBOARD	TVSS	TRANSIENT VOLTAGES SURGE SUPPRESSOR		
KVA	KILO-VOLT-AMPS	UPS	UNINTERRUPTIBLE POWER SUPPLY		
M	COMPUTER MOUSE OR MOTOR	V	VOLTS		
MP	COMPUTER MOUSE PAD	WS	WORKSTATION		
MTS	MANUAL TRANSFER SWITCH				



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 www.westonandsampson.com

ANY REFERENCES TO I&C SUPPLIER, REFER TO MATERIAL AND LABOR WHICH IS DESCRIBED IN SPECIFICATION SECTIONS 13320 AND 13321 AND AS INDICATED ON THE I&C DRAWINGS.

INSTRUMENTATION & CONTROL SYSTEM GENERAL NOTES

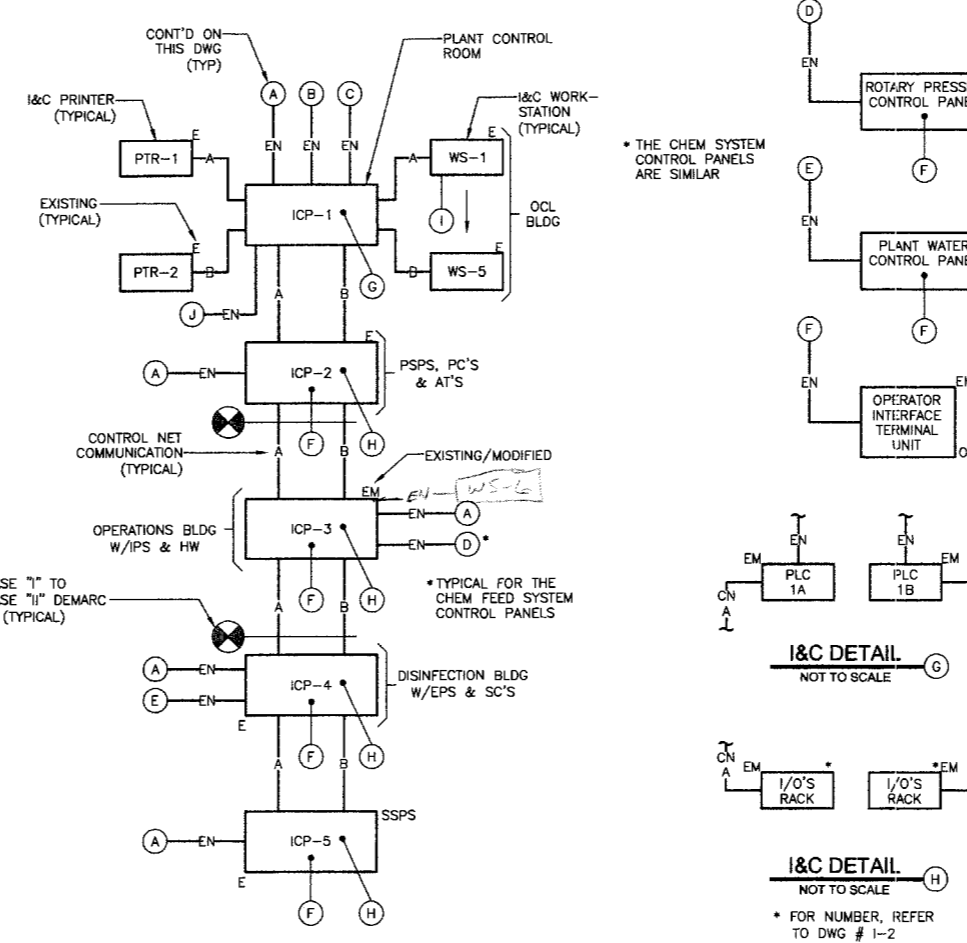
- ALL I&C EQUIPMENT AND INSTALLATION WORK SHALL BE IN STRICT ACCORDANCE WITH THE NATIONAL MASSACHUSETTS STATE AND LOCAL CITY BUILDING AND ELECTRICAL CODES APPLICABLE SECTIONS. ALL I&C EQUIPMENT AND ASSEMBLIES SHALL BE UL LISTED FOR THEIR INTENDED USE. ALL I&C EQUIPMENT SHALL ALSO BE INDIVIDUALLY UL LISTED.
- ALL I&C MATERIAL SHALL BE OF THE HIGHEST QUALITY SPECIFICATION GRADE WHICH HAS BEEN SUCCESSFULLY INSTALLED IN SIMILAR WASTEWATER TREATMENT FACILITIES FOR AT LEAST FIVE PREVIOUS YEARS. THE CONTRACTOR SHALL SUBMIT ALL I&C MATERIAL SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND ACCEPTABILITY PRIOR TO RELEASE AND INSTALLATION.
- ALL I&C ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LOCAL ELECTRICAL INSPECTOR REQUIREMENTS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSPECTOR REQUIREMENTS PRIOR TO ANY ELECTRICAL CONSTRUCTION. ANY MISCOORDINATION REVISIONS SHALL BE PROVIDED BY THE EC AT NO ADDITIONAL COST TO THE OWNER.
- ALL I&C CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE SPECIFIED PROJECT'S CONSTRUCTION PHASING PLAN. THE DESIGN INTENT IS TO FIRST HAVE THE NEW ALARM SYSTEM COMPLETELY UP AND RUNNING AS DEMONSTRATED IN THE FACTORY ACCEPTANCE TESTING (FAT). AFTER THE FAT, THE NEW I&C SYSTEM SHALL BE COMPLETELY INSTALLED AND COMPLETELY UP AND RUNNING PRIOR TO THE DEMOLITION OF ANY OF THE EXISTING SPS FSK TONE TELEPHONE ALARM SYSTEM EQUIPMENT OR WIRING.
- ALL I&C EQUIPMENT INCLUDING PANELS SHALL HAVE ENGRAVED PLASTIC NAMEPLATES. ALL I&C PANELBOARDS CIRCUIT DIRECTORIES SHALL BE TYPED. ALL I&C PANEL WIRING SHALL BE COLOR CODED AND IDENTIFIED BY TYPED ALPHA-NUMERICAL SELF ADHESIVE TAGS.
- THE I&C SUPPLIER SHALL PROVIDE "AS-BUILT" I&C EQUIPMENT DRAWINGS AND ELEMENTARY / INTERCONNECTION WIRING DIAGRAMS ELECTRICAL DRAWINGS. THE DRAWINGS MUST INDICATE BOTH THE FACTORY AND FIELD I&C WIRING. THE I&C SHALL NOT BE CONSIDERED SUBSTANTIALLY COMPLETE UNTIL ALL I&C DRAWINGS HAVE BEEN SUBMITTED, REVIEWED, AND FOUND ACCEPTABLE BY THE ENGINEER. NO ROUGH WIRING SHALL COMMENCE UNTIL THE I&C WIRING DIAGRAMS HAVE BEEN SUBMITTED AND APPROVED BY THE ENGINEER.
- ALL I&C POWER CONDUCTORS SHALL BE COPPER WITH TYPE "THHN/THWN" INSULATION. THE MINIMUM CONDUCTOR SIZE FOR POWER CIRCUITS SHALL BE NO. 12 AWG UNLESS FUSE PROTECTED. RACEWAYS SHALL BE TERMINATED WITH FLEXIBLE RACEWAYS TO EQUIPMENT FOR BOTH VIBRATION ISOLATION AND MAINTENANCE. WHERE INDICATED ON THE DRAWINGS EQUIPMENT WITHIN PANELS SHALL BE INTERCONNECTED WITH ELECTRICAL RACEWAYS IN ORDER TO PROTECT THE OPERATORS.
- ALL I&C MATERIAL AND WIRING SHALL BE FACTORY INSPECTED BY THE ENGINEER AND THE CONTRACTOR PRIOR TO ACCEPTANCE AND PAYMENTS. ALL CIRCUITS AND EQUIPMENT SHALL BE VERIFIED FOR PROPER WIRING AND OPERATION. THE I&C SUPPLIER AND CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIAL (PARTS AND LABOR) FOR ONE YEAR AFTER FINAL WRITTEN ACCEPTANCE BY THE ENGINEER. ALL I&C EQUIPMENT AND WIRING SHALL BE FIELD DEMONSTRATED TO THE ENGINEER WITH ALL CONTROLS, ALARMS, ETC PRIOR TO FINAL ACCEPTANCE.
- THE EQUIPMENT LAYOUTS, CONDUIT/WIRE SIZES AND WIRING DIAGRAM REPRESENT A SUGGESTED DESIGN BASED UPON GENERALLY AVAILABLE I&C EQUIPMENT SIZES AND WIRING REQUIREMENTS. THIS ALSO APPLIES TO EQUIPMENT PROVIDED BY OTHERS BUT WIRED BY THE ELECTRICAL CONTRACTOR. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE ACTUALLY INSTALLED EQUIPMENT. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE ALL EQUIPMENT FIELD WIRING REQUIREMENTS, PRIOR TO ANY CONSTRUCTION. DIFFERING EQUIPMENT WIRING DUE TO INCOMPLETE COORDINATION SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THE I&C SUPPLIER/CONTRACTOR SHALL INCLUDE IN THEIR WORK ALL NECESSARY FIELD SURVEYING OF THE EXISTING WWTFF AND SPS'S EQUIPMENT AND WIRING WHICH IS NECESSARY TO INTERFACE THE NEW I&C TO THE EXISTING I&C.
- I&C EQUIPMENT, BOXES, SWITCHES, RECEPTACLES, PULL/JUNCTION BOXES, PANELS, ETC. SHALL BE PROVIDED WITH NEMA ENCLOSURES AS INDICATED ON THE BUILDING PLAN'S ROOMS OR AS SPECIFIED.
- ALL I&C EQUIPMENT WIRING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL COORDINATE ALL RECOMMENDED FIELD WIRING PRIOR TO ANY ROUGH AND FINAL WIRING TERMINATIONS. ALL I&C EQUIPMENT INSTALLATION AND WIRING SHALL BE CERTIFIED BY THE MANUFACTURER'S REPRESENTATIVES PRIOR TO ENERGIZING BY THE CONTRACTOR.

OCL	OPERATIONS, CONTROL AND LAB BUILDING
AT	AERATION TANK
DISIN	DISINFECTION BUILDING
EPS	EFFLUENT PUMPING STATION
HW	HEADWORKS BUILDING
IPS	INFLUENT PUMPING STATION
LAB	LABORATORY
PC	PRIMARY CLARIFIER
PSLPS	PRIMARY SLUDGE PUMPING STATION
SC	SECONDARY CLARIFIER
SSPS	SECONDARY SLUDGE PUMPING STATION

**I&C SYSTEM SUPPLIER NOTES**

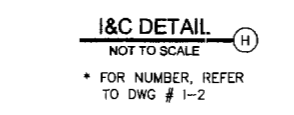
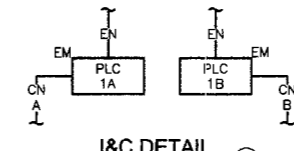
- THE GENERAL CONTRACTOR SHALL CONTACT THE FOLLOWING EXISTING I&C SUPPLIER WHO SHALL PROVIDE A COST TO REVISE THE PHASE "1" HARDWARE AND SOFTWARE AS INDICATED FOR THE PHASE "2" WWTFF CONTRACT.  
 AEC ENGINEERING INC.  
 FREEPORT, MAINE 04032  
 MR FRED GOGUEN (FGOGUEN@AECMAINE.COM)

- I&C DRAWINGS REFERENCE NOTES**
- FOR I&C SYMBOLS, NOTES & DIAGRAMS, REFER TO DWG # 1-0
  - FOR I&C GENERAL DIAGRAMS AND DETAILS, REFER TO DWGS # 1-1 THRU 1-5
  - FOR I&C LOOP DIAGRAMS, REFER TO DWGS # 1-LD.0 THRU 1-LD.5



**I&C SYSTEM OVERALL BLOCK DIAGRAM**  
 NOT TO SCALE

\* ICP-6 IS NOT INDICATED. FOR DETAILS, REFER TO DWG# 1-3  
 \* REFER TO THE DWGS "1-1" THRU "1-5" FOR ADDITIONAL INFORMATION



INSTRUMENT SYMBOLS

- HOA - FUNCTIONAL DESCRIPTION
- HS - FUNCTIONAL IDENTIFICATION
- 4A - LOOP NUMBER
- ICP - LOCATION
- FRONT OF PANEL MOUNTED
- REAR OF PANEL MOUNTED
- FIELD MOUNTED
- INDICATING LIGHT OR ALARM
- CONTRACT WORK DEMARCATION
- OIT OR PC DISPLAY
- INTERLOCK
- INTERLOCK LOCATION
- ELECTRIC MOTOR
- ELECTRONIC SIGNAL CKT
- ELECTRIC POWER CKT
- PROCESS PNEUMATIC PIPING
- PROGRAMMABLE LOGIC CONTROLLER INPUT OR OUTPUT
- EQUIPMENT GROUND
- PLC PROGRAMMING REGISTER
- EXISTING TO NEW WORK DEMARCATION

- INSTRUMENTATION AND CONTROL SYSTEM CONSTRUCTION PHASING NOTES**
- THE GENERAL CONTRACTOR MUST FURNISH AND INSTALL THE NEW/REVISED I&C SYSTEM EQUIPMENT, FIELD INSTRUMENTS, ETC. IN STRICT ACCORDANCE WITH THE PROJECT'S CONSTRUCTION SCHEDULE.
  - THE GENERAL CONTRACTOR MUST PROVIDE A DETAILED "CPM" SCHEDULE WHICH INDICATES ALL MILESTONES, TIME DURATIONS, ETC. FOR ENGINEER/OWNER REVIEW AND APPROVAL.
  - ANY AND ALL I&C OUTAGES MUST BE MINIMIZED PLUS ANY NEW I&C MUST BE OPERATIONAL AFTER 100% FIELD TESTING PRIOR TO THE DEMOLITION OF THE EXISTING AFFECTED I&C SYSTEM.
- I&C PANELS & FIELD INSTRUMENTS NOTES**
- FOR A LIST OF NEW I&C PANELS AND FIELD INSTRUMENTS, REFER TO DWG # 1-1 IN GENERAL. ALL PANELS ARE FURNISHED BY THE GENERAL CONTRACTOR (I.E., I&C SUPPLIER).
- PANELS AND INSTRUMENTS SHALL BE INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR BUT THE PNEUMATIC FLOW TRANSMITTERS SHALL BE PIPED BY THE GENERAL CONTRACTOR.

- I&C SYSTEM CONSTRUCTION PHASING NOTES**
- THE I&C SYSTEM SHALL BE CONSTRUCTED IN TWO PHASES (IE, PHASES "1" & "2").
  - ALL I&C IS PART OF PHASE "1" EXCEPT FOR THE PROCESS BUILDING, HEAD WORKS, AND INFLUENT PUMP STATION WHICH IS ASSOCIATED WITH "ICP-3" & "ICP-6" THAT IS INCLUDED IN PHASE "2".

**Instrumentation & Controls Drawings are Design Drawings with mark-ups to represent As-built conditions.**

No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					7/15/2011
					DATE

**W. R. GOGUEN**  
 REGISTERED PROFESSIONAL ENGINEER

CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**INSTRUMENTATION & CONTROL SYMBOLS, NOTES & ABBREVIATIONS**

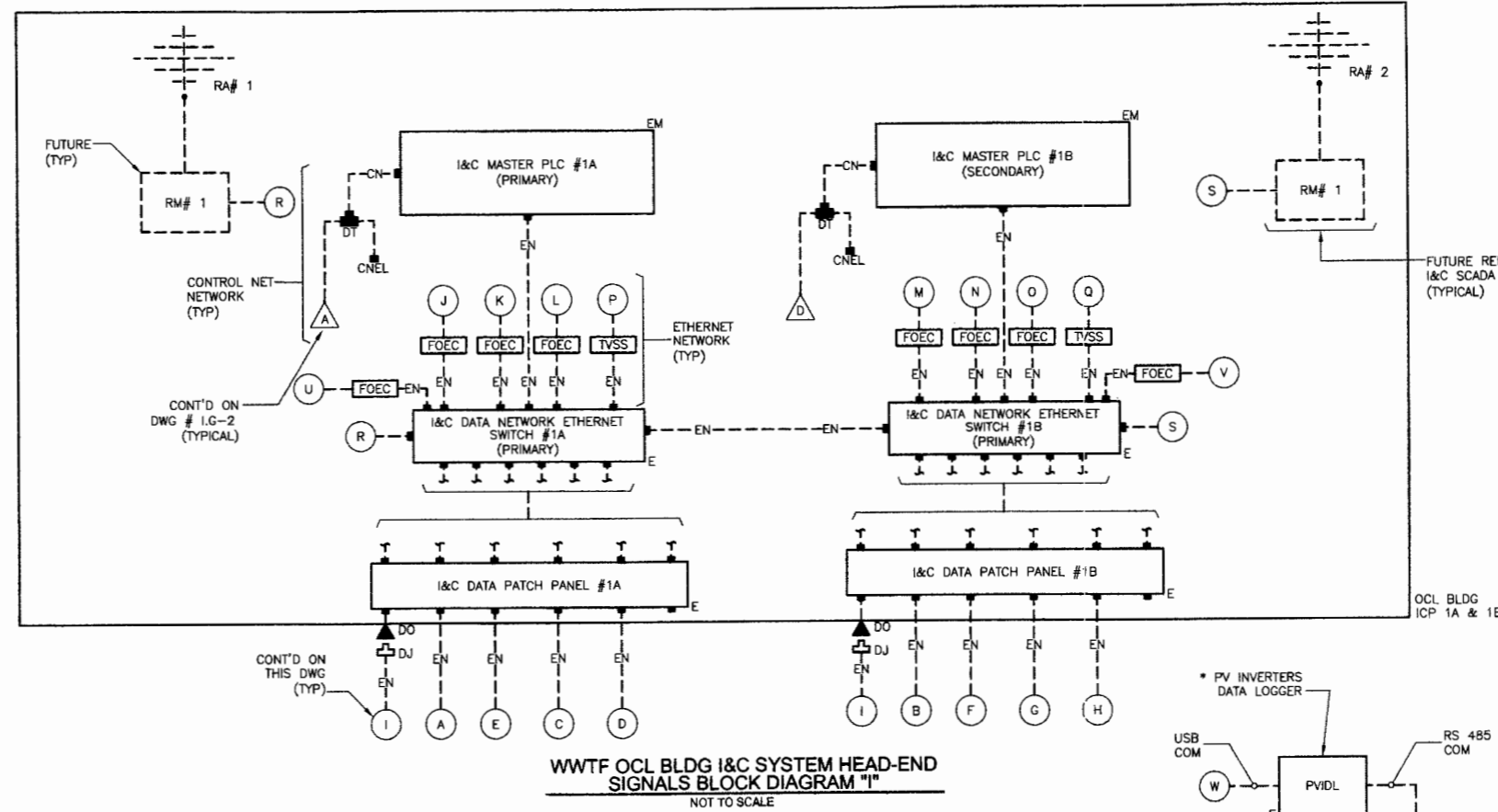
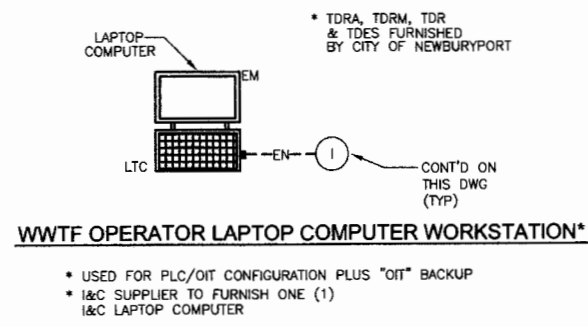
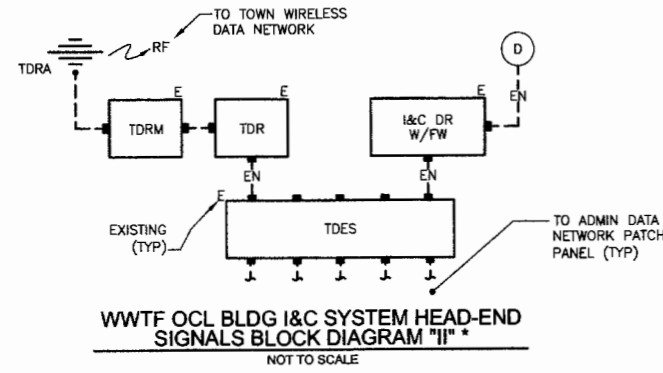
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CART. NO. 0905101 1000 FILE NO. 189-56

**1-0**

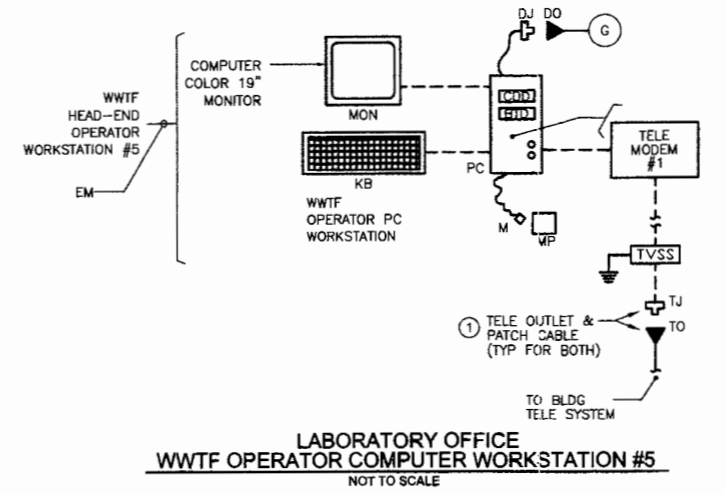
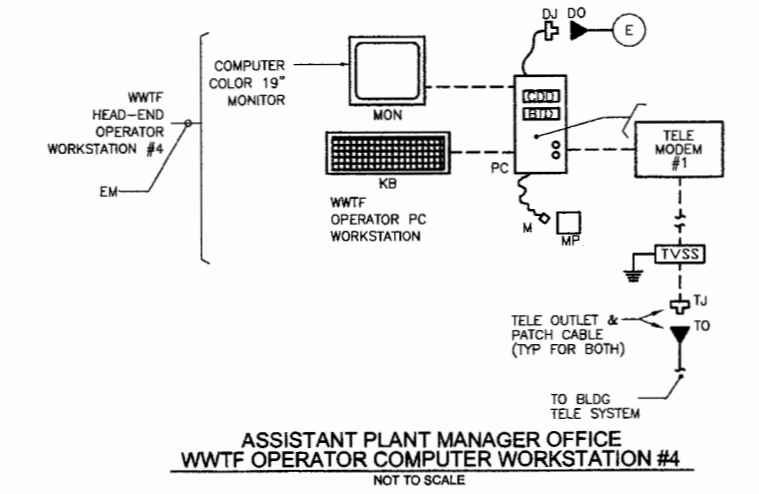
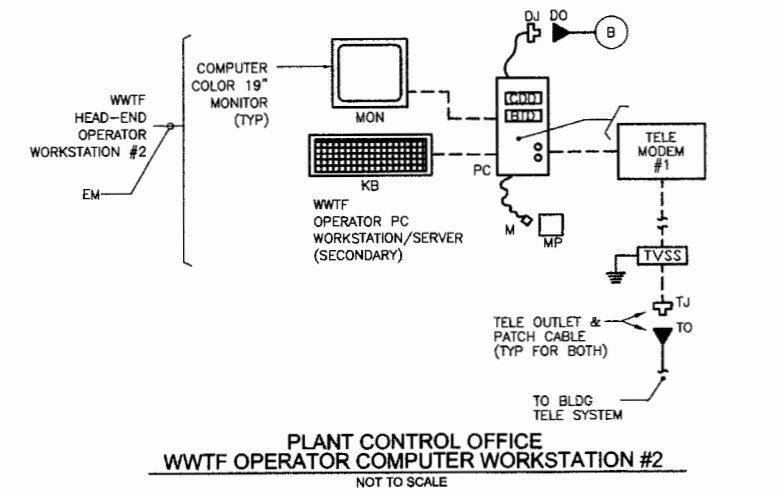
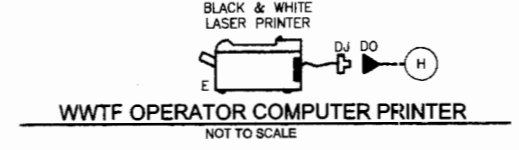
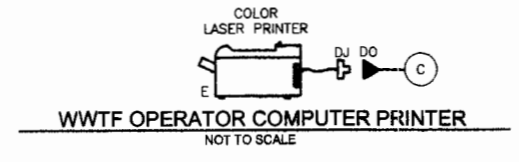
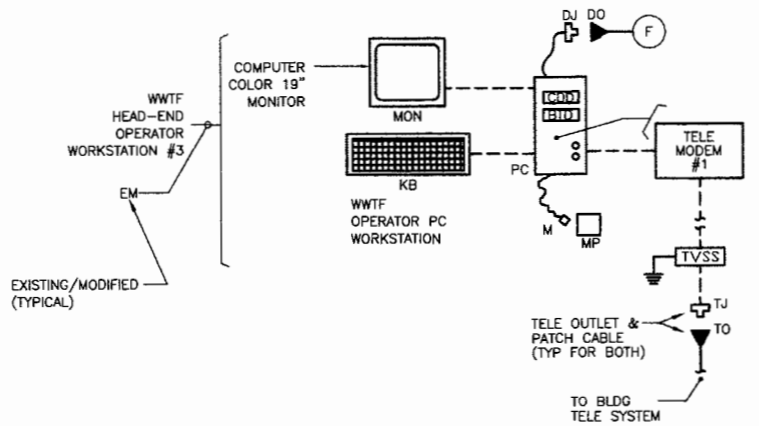
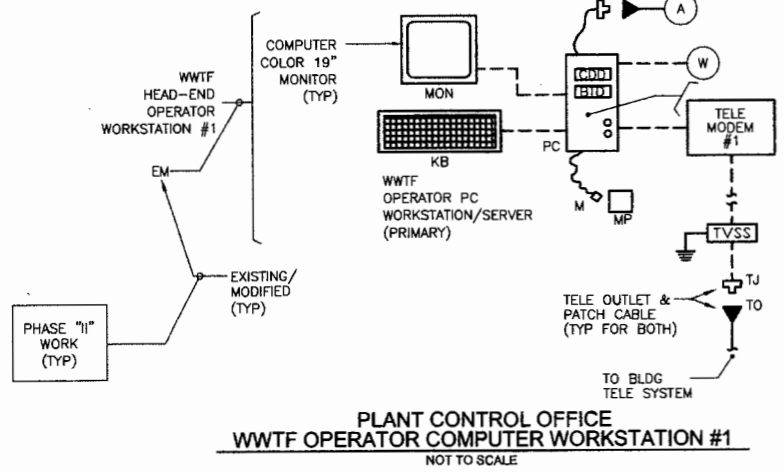
SHEET 147 OF 202

2011/02/11  
 [Signature]



**I&C SYSTEM RISER DIAGRAMS ABBREVIATIONS LIST**

BTD	BACK-UP TAPE DRIVE
CDD	CD READ/WRITE DRIVE
CN	CONTROL NET
CNEL	CONTROL NET END OF LINE
CU	COPPER
DJ	DATA PLUG IN JACK
DO	DATA PLUG IN OUTLET
DT	DATA TAP
EN	ETHERNET
DR	DATA ROUTER
FOEC	FIBER OPTIC ETHERNET CONVERTER
FOCNC	FIBER OPTIC CONTROL NET CONVERTER
FW	FIRE WALL
I&C	INSTRUMENTATION & CONTROL
I/O S	INPUTS AND OUTPUTS
KB	KEYBOARD
ICP	INSTRUMENTATION CONTROL PANEL
OIT	OPERATOR INTERFACE TERMINAL
LTC	LAPTOP COMPUTER
M	MOUSE
MON	FLAT SCREEN COLOR MONITOR
MP	MOUSE PAD
PLC	PROGRAMMABLE LOGIC CONTROLLER
RA	RADIO ANTENNA
RM	RADIO MODEM
SCP	SCADA CONTROL PANEL
SPS	SEWAGE PUMPING STATIONS
TDR	TOWN DATA ROUTER
TDES	TOWN DATA ETHERNET SWITCH
TDRM	TOWN DATA RADIO MODEM
TM	TELEPHONE MODEM
TVSS	TRANSIENT VOLTAGES SURGE SUPPRESSOR



- I&C SYSTEM RISER DIAGRAMS NOTES**
- THE REMOTE ICP PLC I/O RACKS SHALL COMMUNICATE TO THE I&C HEAD-END'S MASTER PLCS VIA COPPER TO FIBER-OPTIC SIGNAL CONVERTERS AND A/B CONTROL NETWORKING COMMUNICATION.
  - THE REMOTE ICP OITS, LTC, ETC. SHALL COMMUNICATE TO THE I&C HEAD-END PC WORKSTATIONS AND PRINTERS VIA COPPER TO FIBER OPTIC SIGNAL CONVERTERS AND ETHERNET NETWORKING COMMUNICATION.
  - THE I&C SUPPLIER SHALL COORDINATE THE SITE COMMUNICATION WITH THE "AS SUPPLIED" I&C EQUIPMENT AND THE ELECTRICAL CONSTRUCTION.
  - THE WWTF I&C SYSTEM SHALL COMMUNICATE TO THE TOWN'S DATA SYSTEM AND HAVE ACCESS TO THE INTERNET VIA A DATA ROUTER WITH FIRE WALL SOFTWARE WHICH IS CONNECTED TO THE TOWN'S WIRELESS DATA NETWORK.
  - THE SLUDGE ROTARY PRESS AND PLANT WATER I&C CONTROL SYSTEMS SHALL INTEGRATE INTO THE WWTF I&C SYSTEM VIA ETHERNET COMMUNICATION. NOTE, THE RP AND PW I&C PANELS ARE SUPPLIED WITH THE PROCESS EQUIPMENT.
  - THE SWITCHBOARD'S POWER METER AND THE ENGINE/GENERATOR SHALL COMMUNICATE WITH THE WWTF I&C SYSTEM VIA THE I&C ETHERNET COMMUNICATION NETWORK. THE WWTF I&C SUPPLIER SHALL LOAD THE PC "WINDOWS" TYPE PM AND EG SOFTWARE ON THE I&C WORK STATIONS IN ORDER TO ENABLE THE ELECTRICAL POWER AND ENG/GEN SYSTEMS TO BE MONITORED BY THE I&C SYSTEM.
  - THE SOLAR PHOTOVOLTAIC SYSTEM SHALL COMMUNICATE WITH THE I&C AS INDICATED. (I&C WORK IS SIMILAR TO ITEM "6").

**PLC/OIT/PC'S REVISED PROGRAMMING NOTES**

1) THE I&C SUPPLIER'S WORK INCLUDES REVISED PROGRAMMING (AS REQUIRED) DUE TO THE NEW AND REVISED I&C LOOP DIAGRAMS, ETC.

PHASE "II" WORK

**I&C SYSTEM RISER DIAGRAMS\***  
NOT TO SCALE

\* PROVIDED FOR GENERAL REFERENCE SINCE PART OF WWTF PHASE "I" CONTRACT

FURNISH AND PROGRAM NEW PC WORKSTATION #6 TO BE LOCATED IN OPERATIONS BLDG CONTROL ROOM (SEE DWG # I-LD.5)

CONTRACT "2" NEW I&C WORK

**I&C SYSTEM PROGRAMMING NOTES**

1) THE GC (I&C SUPPLIER) SHALL REVISE THE I&C SYSTEM'S PROGRAMMING AS REQUIRED FOR THE INDICATED REVISIONS AS PART OF THE CONTRACT "II" WORK.

- I&C DRAWINGS REFERENCE NOTES**
- FOR I&C SYMBOLS, NOTES & DIAGRAMS, REFER TO DWG # I-0
  - FOR I&C GENERAL DIAGRAMS AND DETAILS, REFER TO DWGS # I-1 THRU I-5
  - FOR I&C LOOP DIAGRAMS, REFER TO DWGS # I-LD.0 THRU I-LD.5

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DATE: 7/15/2011

REGISTERED PROFESSIONAL ENGINEER

W. Peter C. Sampson

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INSTRUMENTATION & CONTROL SYSTEM RISER DIAGRAMS "I"**

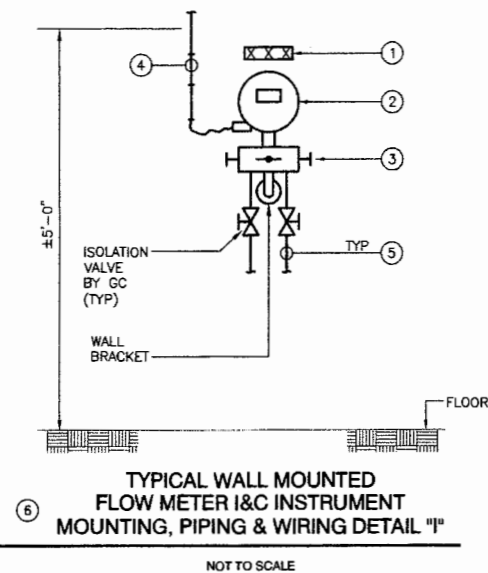
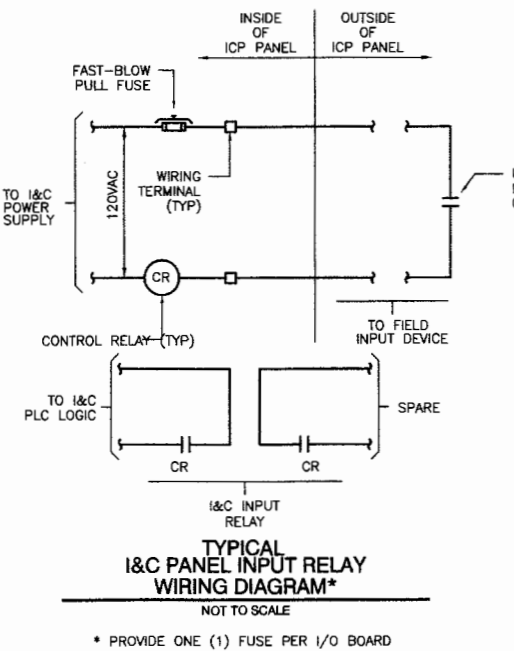
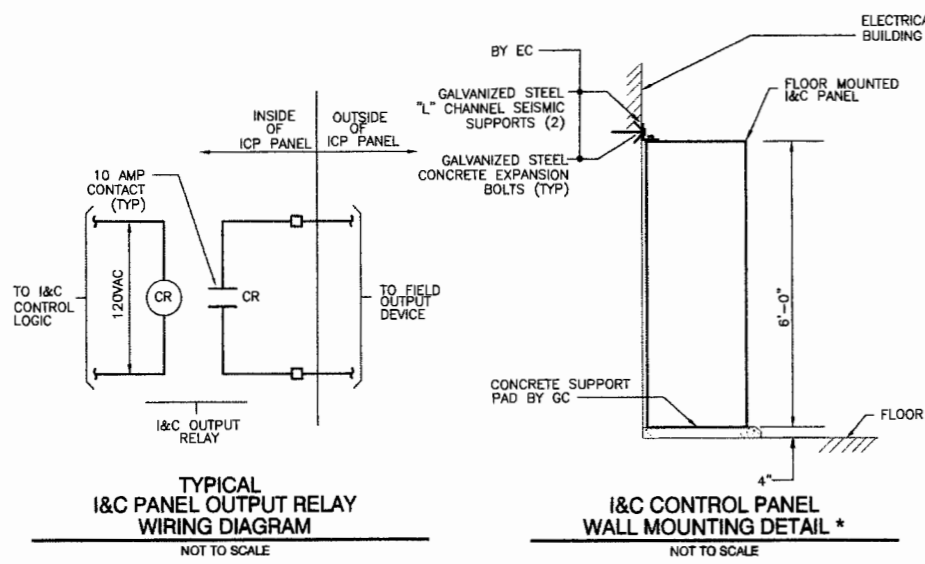
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APPROVED BY: WPE

CASE NO: 0905101 IG01  
FILE NO: 189-55

**SHEET 148 OF 202**

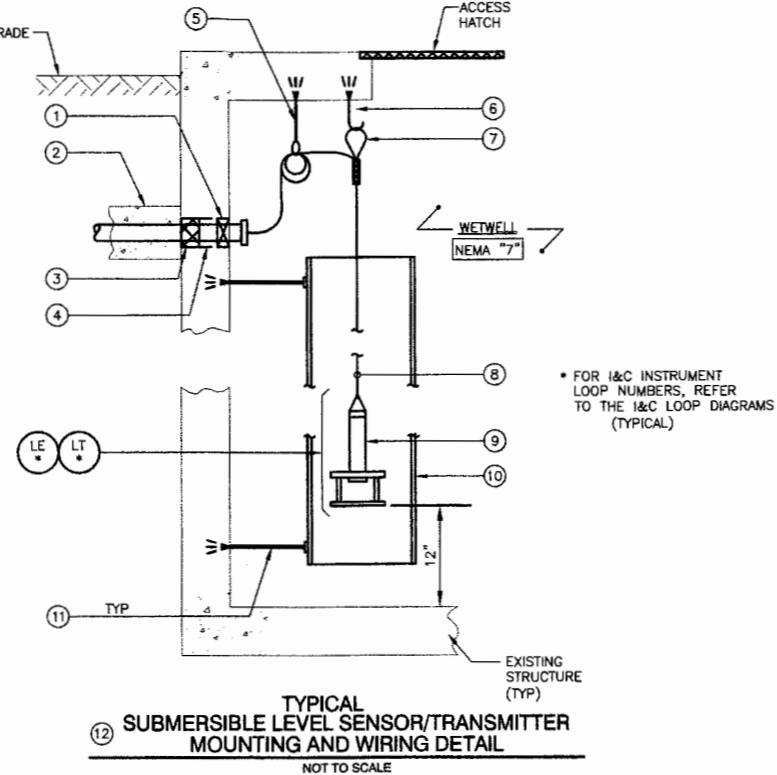




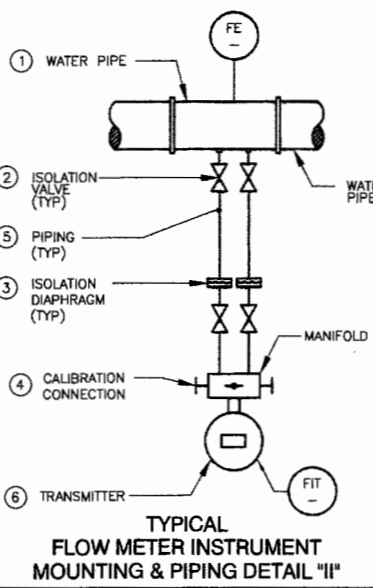


**FLOW METER I&C INSTRUMENT MOUNTING, PIPING AND WIRING DETAIL NOTES**

- ENGRAVED PLASTIC NAMEPLATE (BY GC) WITH FULL INSTRUMENT NAME AND LOOP NUMBER.  
"XXXX XXXX XXXX XXXX"  
"XXXX XXXX XXXX XXXX"
- I&C FIELD INSTRUMENT INDICATING TRANSMITTER INCLUDING PIPE TO WALL TYPE MTO HARDWARE (FURNISHED WITH INSTRUMENT).
- I&C INSTRUMENT ISOLATION MANIFOLD (FURNISHED WITH INSTRUMENT) BY GC.
- ELECTRICAL FIELD WIRING BY THE EC.
- INSTRUMENT FLOW SENSING PIPING BY GENERAL CONTRACTOR.
- GC (I.E., I&C SUPPLIER) WORK INCLUDES COORDINATING THE "AS SUPPLIED" I&C FIELD INSTRUMENT'S INSTALLATION (I.E., PIPING, WIRING, ETC)

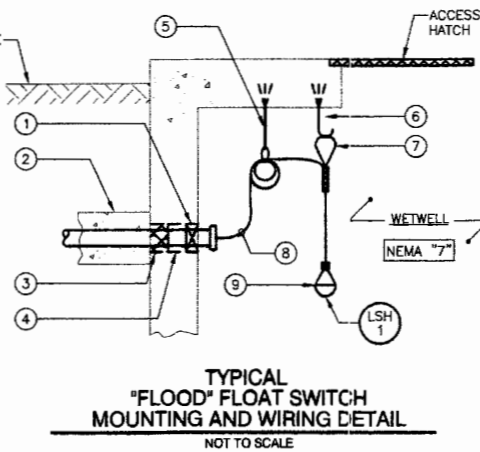


- CONDUIT WALL "LINK SEAL" TYPE SEALING FITTING WITH STAINLESS STEEL HARDWARE BY EC.
- ELECTRICAL CONCRETE ENCASED DUCT-BANK WITH 4" RGS STEEL CONDUITS FOR THE SUBMERSIBLE INSTRUMENT CABLES.
- CONCRETE GROUT FURNISHED/INSTALLED BY THE GENERAL CONTRACTOR.
- ELECTRICAL CORE DRILL BY THE ELECTRICAL CONTRACTOR. EC SHALL FIELD LOCATE TO SUIT.
- EC SHALL FURNISH/INSTALL STAINLESS STEEL CABLES SUPPORT/HARDWARE WITH EYE LOOP. EC SHALL COIL SUFFICIENT CABLE TO ENABLE THE SENSOR TO BE PULL OUT FOR CLEANING, MAINTENANCE.
- EC SHALL FURNISH/INSTALL STAINLESS STEEL CABLES SUPPORT/HARDWARE WITH HOOK. THE HOOK SHALL BE ACCESSIBLE FROM THE ACCESS HATCH.
- EC SHALL FURNISH/INSTALL A STAINLESS STEEL "KELLUM" TYPE CABLE GRIP/SUPPORT.
- EC SHALL INSTALL THE LEVEL SENSOR'S SUBMERSIBLE CABLE WHICH IS FURNISHED WITH THE I&C INSTRUMENT BY THE GC.
- EC SHALL LOCATE THE LEVEL SENSOR ABOVE THE BOTTOM OF THE WETWELL FLOOR IN ORDER TO KEEP OUT OF THE GRIT/SLUDGE.
- GENERAL CONTRACTOR SHALL FURNISH AND INSTALL THE 12" ROUND PVC-80 PIPE STILLING WELL DUE TO THE WETWELL WATER TURBULENCE.
- GENERAL CONTRACTOR SHALL FURNISH AND INSTALL THE STAINLESS STEEL 1/2" SUPPORT RODS, PIPE CLAMPS AND CONCRETE EXPANSION ANCHORS.



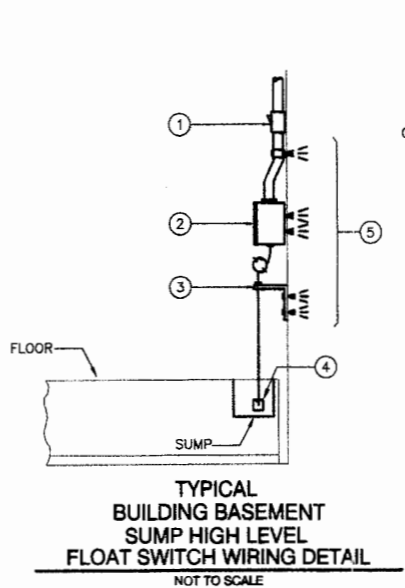
**FLOW METER INSTRUMENT MOUNTING AND PIPING DETAIL NOTES**

- WATER PIPE WHICH IS FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR.
- PRESSURE SENSOR ISOLATION VALVE FURNISHED/INSTALLED BY THE GENERAL CONTRACTOR.
- WASTE WATER PROCESS TO OIL FILLED FLOW TRANSMITTER DIAPHRAGM WHICH IS FURNISHED WITH THE I&C FIELD INSTRUMENT (BY GC)
- CAPPED PIPE CONNECTION FOR THE INSTRUMENT FIELD CALIBRATION OR TESTING.
- 3/8" STAINLESS STEEL FLOW (PRESSURE) PIPING WHICH IS SLOPED AS RECOMMENDED BY THE I&C INSTRUMENT MANUFACTURER.
- FLOW TRANSMITTER WITH LCD DISPLAY INCLUDING "HART" COMMUNICATION FOR LOCAL CONFIGURATION, ETC.
- GC (I.E., I&C SUPPLIER) WORK INCLUDES COORDINATING THE I&C FIELD INSTRUMENT'S INSTALLATION (I.E., PIPING, WIRING, ETC).



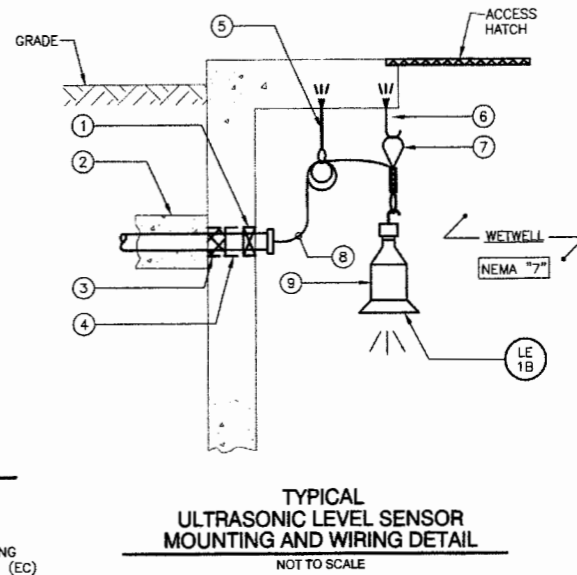
**"FLOOD" FLOAT SWITCH MOUNTING AND WIRING DETAIL NOTES**

- CONDUIT WALL "LINK SEAL" TYPE SEALING FITTING WITH STAINLESS STEEL HARDWARE BY EC.
- ELECTRICAL CONCRETE ENCASED DUCT-BANK WITH 4" RGS CONDUITS FOR THE SUBMERSIBLE CABLES.
- CONCRETE GROUT FURNISHED/INSTALLED BY THE GENERAL CONTRACTOR.
- ELECTRICAL CORE DRILL BY THE ELECTRICAL CONTRACTOR. EC SHALL FIELD LOCATE TO SUIT.
- EC SHALL FURNISH/INSTALL STAINLESS STEEL CABLES SUPPORT/HARDWARE WITH EYE LOOP. EC SHALL COIL SUFFICIENT CABLE TO ENABLE THE SENSOR TO BE PULLED OUT FOR CLEANING, MAINTENANCE.
- EC SHALL FURNISH/INSTALL STAINLESS STEEL CABLES SUPPORT/HARDWARE WITH HOOK. THE HOOK SHALL BE ACCESSIBLE FROM THE ACCESS HATCH.
- EC SHALL FURNISH/INSTALL A STAINLESS STEEL "KELLUM" TYPE CABLE GRIP/SUPPORT.
- EC SHALL INSTALL THE FLOAT SWITCH SUBMERSIBLE CABLE WHICH IS FURNISHED WITH THE I&C INSTRUMENT BY THE GC.
- EC SHALL MOUNT THE FLOAT SWITCH AT THE "FLOOD" ELEVATION AS INDICATED ON THE MECH PROCESS DRAWINGS.



**I&C SUMP FLOAT SWITCH DETAIL NOTES**

- ELECTRICAL CONDUIT & "EYES" SEALING FITTING BY ELECTRICAL CONTRACTOR (EC)
- ELECTRICAL JUNCTION BOX WITH WATER-TIGHT SPLICES BY EC.
- ELECTRICAL CABLE HOLDING BRACKET WITH CABLE GRIP BY ELECTRICAL CONTRACTOR
- FLOAT SWITCH WITH SUBMERSIBLE CABLE BY I&C SUPPLIER. INSTALLED BY ELECTRICAL CONTRACTOR
- STAINLESS STEEL CONCRETE EXPANSION BOLTS BY EC



**ULTRASONIC LEVEL SENSOR/TRANSMITTER MOUNTING AND WIRING DETAIL NOTES**

- CONDUIT WALL "LINK SEAL TYPE" SEALING FITTING WITH STAINLESS STEEL HARDWARE BY EC.
- ELECTRICAL CONCRETE ENCASED DUCT-BANK WITH 4" RGS CONDUITS FOR SUBMERSIBLE INSTRUMENT CABLES.
- CONCRETE GROUT FURNISHED/INSTALLED BY THE GENERAL CONTRACTOR.
- ELECTRICAL CORE DRILL BY THE ELECTRICAL CONTRACTOR. EC SHALL FIELD LOCATE TO SUIT.
- EC SHALL FURNISH/INSTALL STAINLESS STEEL CABLES SUPPORT/HARDWARE WITH EYE LOOP. EC SHALL COIL SUFFICIENT CABLE TO ENABLE THE SENSOR TO BE PULL OUT FOR CLEANING, MAINTENANCE.
- EC SHALL FURNISH/INSTALL STAINLESS STEEL CABLES SUPPORT/HARDWARE WITH HOOK. THE HOOK SHALL BE ACCESSIBLE FROM THE ACCESS HATCH.
- EC SHALL FURNISH/INSTALL A STAINLESS STEEL "KELLUM" TYPE CABLE GRIP/SUPPORT.
- EC SHALL INSTALL THE LEVEL SENSOR'S SUBMERSIBLE CABLE WHICH IS FURNISHED WITH THE I&C INSTRUMENT BY THE GC.
- EC SHALL LOCATE THE LEVEL SENSOR AS RECOMMENDED BY ITS MANUFACTURER.

**I&C FIELD INSTRUMENTS INSTALLATION AND WIRING NOTES**

- ALL "AS SUPPLIED" I&C FIELD INSTRUMENTS SHALL BE INSTALLED AND WIRED IN STRICT ACCORDANCE OF EACH I&C INSTRUMENT MANUFACTURER'S TECHNICAL REQUIREMENTS.
- THE SPS I&C SUPPLIER SHALL BE RESPONSIBLE FOR THIS COORDINATION AND PROVIDE TECHNICAL ADVICE TO THE GENERAL CONTRACTOR AND THE ELECTRICAL CONTRACTOR.

**I&C INSTRUMENTS MOUNTING AND WIRING DETAILS GENERAL NOTES**

- THE I&C DETAILS ARE ONLY INTENDED TO PROVIDE GENERAL MOUNTING AND WIRING DETAILS. EC/GC/I&C SUPPLIER MUST RE-VISE (AS REQUIRED) I&C SUPPLIER MUST RE-VISE (AS REQUIRED) FOR EACH SPECIFIC LOCATION (WETWELL, TANK, ETC)
- THE I&C SUPPLIER'S WORK INCLUDES ALL REQUIRED INSTALLATION SUPERVISION IN ORDER TO PROPERLY LOCATE AND WIRE THE I&C FIELD INSTRUMENTS FOR PROPER OPERATION.
- THE "AS SUPPLIED" INSTRUMENTS SHALL BE COORDINATED WITH BOTH THE EXISTING CONDITIONS PLUS THE NEW CONSTRUCTION.

- I&C DRAWINGS REFERENCE NOTES**
- FOR I&C SYMBOLS, NOTES & DIAGRAMS, REFER TO DWG # I-0
  - FOR I&C GENERAL DIAGRAMS AND DETAILS, REFER TO DWGS # I-1 THRU I-5
  - FOR I&C LOOP DIAGRAMS, REFER TO DWGS # I-LD.0 THRU I-LD.5

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DATE: 7/15/2011  
REGISTERED PROFESSIONAL ENGINEER: W. Peter Evans  
APPROVED BY: [Signature]  
DATE: [Signature]

CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INSTRUMENTATION & CONTROL GENERAL DIAGRAMS AND DETAILS "III"**

SCALE: AS SHOWN  
CONTRACT: 2  
JOB NO. 09051.01  
DESIGNED BY: LMR  
CHECKED BY: DKG  
APP. BY: WPE  
FILE NO. 189-52  
CADD NO. 0905101 IG04

2014/02/11 JTB/REC

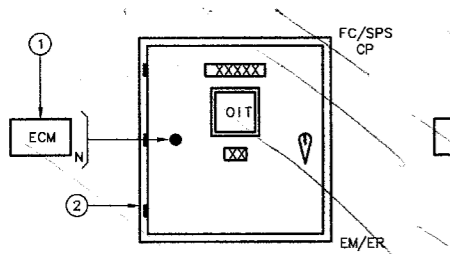
I&C INTERLOCKS SCHEDULE LIST

- 1 ON "HIGH" INFLUENT CHANNEL AUTOMATIC START LAG SEWAGE GRINDER AND TRANS-MIT ALARM.
- 2 SELECTS LEAD AND LAG PRESSURE LEVEL INSTRUMENT. ON A FAILED INSTRUMENT, AUTOMATICALLY TRANSFER TO THE LAG UNIT AND TRANSIT AN ALARM.
- 3 SELECTS LEAD AND LAG ULTRASONIC LEVEL INSTRUMENT. OPERATION SAME AS "1".
- 4 SELECTS THE PRESSURE OR ULTRASONIC LEVEL INSTRUMENTS AS THE PRIMARY LEVEL INSTRUMENT WITH AUTOMATIC TRANSFER TO THE SECONDARY INSTRUMENTS IN THE EVENT OF FAILURE.
- 5 THE LEAD LEVEL INSTRUMENT IS INDICATED UNLESS MANUALLY SELECTED. NOTE, ON A FAILED INSTRUMENT THE LAG LEVEL INSTRUMENT IS INDICATED.
- 6 PUMP IS "READY" WHEN "LOR" SWITCH IS IN "R", "HOA" SWITCH IS IN "A" AND THE "VFD" CONTROLLER IS ENERGIZED.
- 7 AUTOMATICALLY "START/STOP" SEWAGE PUMP FROM EITHER THE PRIMARY OR SECONDARY "PLC" LOGIC INCLUDING THE AUTO/MAN PPS SEQUENCY CONTROLS AND AUTO SYNCH SWITCH-BOARD INTERLOCKS. IN ADDITION, ON WET- WELL FLOOD LEVEL, AUTOMATICALLY START PUMPS VIA ELECTRONIC TIMING RELAYS.
- 8 WHEN THE ALTERNATOR SWITCH IS IN THE "AUTO" POSITION, THE PUMPS SHALL AUTO- MATICALLY ALTERNATE BY EITHER PUMPING CYCLE OR TIME DURATION. WHEN THE SWITCH IS IN THE "MAN" POSITION THE PUMPS SHALL SEQUENCE FROM THEIR SEQUENCE SWITCH POSI- TIONS.
- 9 THE PUMPS SHALL BE AUTOMATICALLY CONTROL- LED FROM THE PLC LOGIC, PUMPS SEQUENCING AND THE AUTO SYNCH SWITCHBOARD INTERLOCKS.
- 10 PUMP "START/STOP" WETWELL ELEVATIONS PLC SET-POINTS.
- 11 ON A "UNSYNCHRONIZED" POWER TRANSFER FROM OR TO THE ENG/GEN, STAGGER START THE WWTf EQUIPMENT FROM THE E/G LOAD STEPS SCHEDULE.
- 12 ON A "UNSYNCHRONIZED" POWER TRANSFER THE SWITCHBOARD SHALL SIGNAL THE WWTf EQUIPMENT TO STOP PRIOR TO ANY POWER INTERRUPTIONS.
- 13 AFTER THE POWER TRANSFER THE WWTf EQUIPMENT SHOULD NOT START UNTIL THE SWBD AND MCC POWER METERS HAVE BEEN RESET FROM AN AC- CEPTABLE POWER SUPPLY CONDITION.
- 14 UPON FAILURE OF THE "PRIMARY" PLC LOGIC CON- TROL THE WWTf EQUIPMENT CONTROLS SHALL SEAM- LESSLY TRANSFER TO THE "SECONDARY" PLC AND TRANSMIT A PLC FAILURE ALARM.
- 15 ON HIGH FERRIC CHLORIDE TANK LEVEL, ENERGIZE THE TANK FILL ALARM HORN/LIGHT. UNIT IS DE- ENERGIZED VIA THE PUSHBUTTON CONTROL STATION.
- 16 AUTOMATIC "START/STOP" AND "SPEED CONTROL" OF THE PRIMARY SLUDGE PUMPS FROM TIME CYCLE AND FLOW SET-POINTS.
- 17 ON HIGH TORQUE SEND A FAIL ALARM. ON HIGH/HIGH TORQUE OR MOTOR OVERLOAD, DE-ENERGIZE THE CLARI- FIER MOTOR.
- 18 AUTOMATIC "SPEED" CONTROL AERATORS FROM EACH TANK'S DISSOLVED OXYGEN SET-POINTS.
- 19 AUTOMATIC "START/STOP" AND "SPEED CONTROL" OF THE SECONDARY SLUDGE PUMPS FROM TIME CYCLE AND FLOW SET-POINTS.
- 20 AUTOMATIC "START/STOP" AND "SPEED CONTROL" OF THE WASTE SLUDGE PUMPS FROM TIME CYCLE, FLOW SET-POINTS AND SLUDGE STORAGE TANK LEVEL.
- 21 AUTOMATIC "START/STOP" AND "SPEED CONTROL" OF THE SCUM PUMP FROM TIME CYCLE AND SLUDGE STO- RAGE TANK LEVEL.
- 22 SELECTS THE "LEAD" AND "LAG" LEVEL INSTRUMENT PLUS ON A FAILED INSTRUMENT AUTOMATICALLY TRANS- FERS TO THE "LAG" UNIT AND TRANSMITS AN ALARM.
- 23 ON "HIGH" LEVEL ENERGIZE THE CHEM FILL STA- TIONS ALARM HORN/LIGHT. WHEN THE SILENCE/ RESET PUSHBUTTON IS OPERATED, THE ALARM SHALL BE DE-ENERGIZED. NOTE, RESET BY THE REORDER LEVEL SET-POINT.
- 24 ON "LOW" DAY TANK LEVEL "START" THE TRANSFER PUMP. ON "HIGH" DAY TANK LEVEL "STOP" THE TRANSFER PUMP. ALSO OPEN THE DAY TANK'S MOV FILLING VALVE.
- 25 SEPTIC PUMP SHALL AUTOMATICALLY "START/STOP" FROM SEPTIC WASTE TANK LEVEL SET-POINTS.
- 26 ON LOW EXPLOSION-PROOF SET-POINT, ENERGIZE THE WETWELL H&V FANS AND OPERATE FOR AN ADJUSTABLE TIME PERIOD UNLESS THE XP SET- POINT REMAINS ACTUATED.
- 27 ON LOW/HIGH PRESSURE, AIR HIGH TEMPERATURE, MOTOR OVERLOAD, MOTOR HIGH TEMPERATURE OR VFD FAULT, DE-ENERGIZE THE BLOWER AND TRANS- MIT A COMMON "FAIL" ALARM.
- 28 ON PLC OR I/O FAILURE, TRANSMIT SIGNAL TO SWITCH VFD MOTOR CONTROLLER TO MANUAL SPEED SET-POINT.
- 29 ENERGIZE CHEMICAL FLASH MIXER WHEN ITS AS- SOCIATED CHEM FEED PUMP OPERATES.
- 30 ON LOW/HIGH PRESSURE OR MOTOR OVERLOAD DE- ENERGIZE PUMP MOTOR. TRANSMIT COMMON ALARM TO I&C SYSTEM.

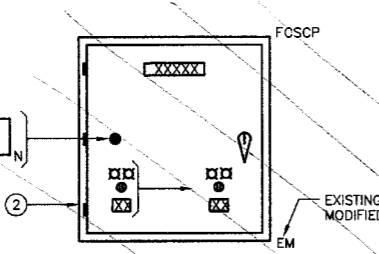
- 31 ON LOW SEPTIC TANK LEVEL STOP BLOWER, AUTO RE-START ON ADJUSTABLE LEVEL SET-POINT.
- 32 ON LOW TANK LEVEL DE-ENERGIZE THE SCUM MIXER. AUTOMATIC RESTART ON ADJUSTABLE TANK LEVEL SET-POINT.
- 33 ON LOW/HIGH PRESSURE, MOTOR OVERLOAD/HIGH TEMPERATURE OR VFD FAULT, DE-ENERGIZE THE BLOWER AND TRANSMIT A COMMON "FAIL" ALARM.
- 34 ON MOTOR HIGH TEMPERATURE, VFD FAULT OR MOTOR OVERLOAD, DE-ENERGIZE THE PUMP MOTOR AND TRANSMIT A COMMON "FAIL" ALARM.
- 35 AUTOMATICALLY START/STOP GRINDER WHEN SLUDGE FEED PUMP STARTS. ALSO STOP GRINDER ON PUMP FAIL AND STOP PUMP ON GRINDER FAIL.
- 36 IN AUTO, THE LEAD WATER BOOSTER PUMP SHALL AUTOMATICALLY START. UPON FAILURE THE LAG PUMP SHALL AUTOMATICALLY START AND A PUMP FAILURE ALARM SHALL BE ENERGIZED.
- 37 IF SLUDGE CONVEYORS FAIL OR STOP OPERATING AUTOMATICALLY STOP THE SLUDGE ROTARY PRES- SES AND TRANSMIT AN ALARM.
- 38 THE MAIN UTILITY AND THE ENGINE/GENERATOR CIRCUIT BREAKERS CANNOT BOTH BE "CLOSED" UNLESS THE TWO POWER SOURCES ARE SYNCHRO- NIZED (I.E. AUTOMATIC SWITCH POSITION).
- 39 ON UPS OR PLC FAILURE ENERGIZE I&C PANEL INDICATING LIGHTS AND TRANSMIT ALARM TO I&C HEAD END. NOTE, IF PLC STOPS FUNCTION- ING SEND PLC LOSS OF COMMUNICATION ALARM.
- 40 ON IOP FAILURE ALARM ENERGIZE THE PANEL'S ALARM HORN FOR AN ADJUSTABLE TIME PERIOD. HORN CAN BE DE-ENERGIZED VIA THE "SILENCE" PUSHBUTTON AND THE ALARM CAN BE "RESET" (AFTER THE ALARM CONDITION STOPS) VIA THE "RESET" PUSHBUTTON WHICH ALSO DE-ENERGIZES THE ILLUMINATED ALARM LIGHT.

I&C INTERLOCKS SCHEDULE NOTES

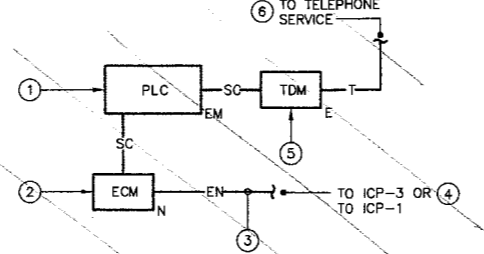
- 1) FOR ADDITIONAL DETAILED PLC LOGIC PROGRAMMING INFORMATION, REFER TO THE SPECIFICATIONS I&C CONTROL STRATEGIES.
- 2) FOR ADDITIONAL DETAILED MCC/VFD CONTROL RELAY- ING INFORMATION, REFER TO THE ELECTRICAL CON- TRACT DRAWINGS.



3 FERRIC CHLORIDE/REMOTE SPS'S CONTROL PANEL ELEVATION  
NOT TO SCALE



3 FERRIC CHLORIDE SYSTEM CONTROL PANEL ELEVATION  
NOT TO SCALE



7 FERRIC CHLORIDE/REMOTE SPS'S CONTROL PANEL WIRING DIAGRAM  
NOT TO SCALE

FERRIC CHLORIDE/REMOTE SEWAGE PUMP STATIONS CONTROL PANEL NOTES

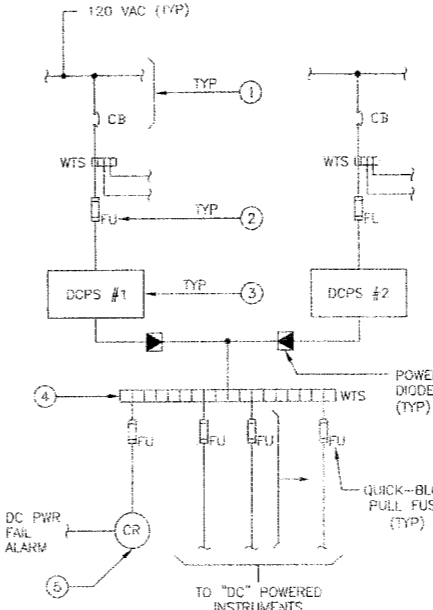
-- SAME NOTES AS THE FECL PANEL --

FERRIC CHLORIDE CONTROL PANEL NOTES

- 1 I&C SUPPLIER SHALL FURNISH/INSTALL A ETHERNET COMMUNICATION MODULE TO ALLOW THE PANEL TO BE INTEGRATED INTO THE PLANT'S I&C SYSTEM.
- 2 EC SHALL FIELD SURVEY THE EXISTING FECL SYSTEM CONTROL PANEL IN ORDER TO REVISE AS INDICATED.
- 3 EC'S WORK INCLUDES ALL REQUIRED PLC & PC REVISED PROGRAMMING INCLUDING FIELD TESTING IN ORDER TO INTEGRATE THE FECL SYSTEM.

FECL/SPS CONTROL PANEL WIRING DIAGRAM NOTES

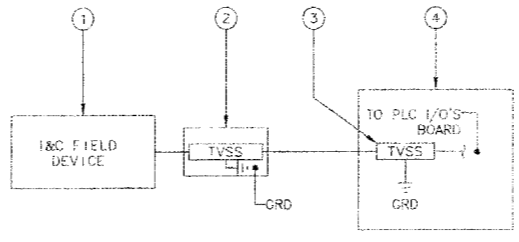
- 1 I&C SUPPLIER SHALL REVIEW THE PLC PROGRAMMING IN ORDER TO INTEGRATE INTO THE PLANT'S I&C SYSTEM.
- 2 I&C SUPPLIER SHALL FURNISH/INSTALL A NEW PLC ETHERNET COMMUNICATION MODULE WHICH COORDINATES WITH THE EXISTING ALLEN/BRADLEY PLC. THE I&C WORK INCLUDES ALL REQUIRED FIELD TESTING AND REMOTE PC/OIT PROGRAMMING.
- 3 EC SHALL FURNISH/INSTALL NEW ETHER- NET UTP CONDUIT/WIRE.
- 4 I&C SUPPLIER SHALL CONNECT TO THE EXISTING "ICP-3" OR "ICP-1" ETHERNET DATA SWITCH.
- 5 EXISTING I&C TELEPHONE DATA MODEM
- 6 NEW TELE EXTENSION LINE FOR THE REMOTE I&C DATA COMMUNICATION.
- 7 I&C'S WORK INCLUDES ALL NECESSARY FIELD SURVEYING, HARDWARE, PRO- GRAMMING, PANEL WIRING, FIELD TEST- TESTING AND RE-CERTIFICATION OF THE EXISTING/MODIFIED I&C EQUIPMENT.



4 TYPICAL I&C PANEL I&C SYSTEM "DC" POWER SUPPLY BLOCK WIRING DIAGRAM  
NOT TO SCALE

PUMPING STATION I&C SYSTEM "DC" POWER SUPPLY BLOCK WIRING DIAGRAM NOTES

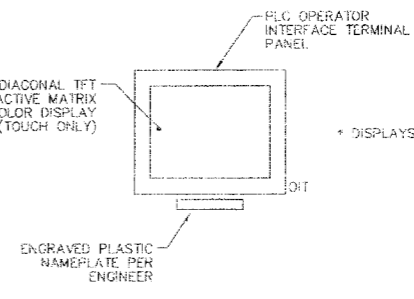
- 1 I&C PANELBOARD'S 120 VAC POWER SUPPLY IN- CLUDING BRANCH CIRCUIT BREAKER.
- 2 "FAST BLOW" INSTRUMENT FUSE WHICH COOR- DINATES WITH THE 120 VAC CIRCUIT BREAKER.
- 3 REDUNDANT ELECTRONIC TYPE "DC" POWER SUPPLY WITH SECONDARY OVER-CURRENT PRO- TECTION. EACH UNIT SHALL BE SIZED FOR THE ENTIRE "DC" LOAD WITH 50% SPARE CAPACITY. UPON THE FAILURE OF A UNIT THE BACK-UP SYSTEM SHALL AUTOMATICALLY TAKE OVER.
- 4 MULTI-LUG "DC" POWER WIRING TERMINAL. TYPE WITH SCREW TYPE TERMINALS.
- 5 "DC" POWER LOSS CONTROL RELAY TO INI- TIALIZE THE "DC" POWER LOSS ALARM AT THE PLC LOGIC CONTROLLER.
- 6 I&C SUPPLIER SHALL COORDINATE WITH THE "AS SUPPLIED" I&C EQUIPMENT, WIRING, ETC.



5 TYPICAL I&C FIELD DEVICE "TVSS" PROTECTION WIRING DIAGRAM  
NOT TO SCALE

I&C FIELD DEVICE "TVSS" PROTECTION WIRING DIAGRAM NOTES

- 1 I&C FIELD DEVICE LOCATED OUTSIDE THE NEW SPS BUILDING. (I.E. "ICP" LOCATION) \*
- \* INCLUDES TRANSMITTERS, FLOAT SWITCHES, INTRUSION SWITCHES, ETC. TYPE FIELD DEVICES.
- 2 I&C "MOV" TYPE TVSS WIRE "IN LINE" PROTECTION DEVICE WHICH IS FUR- NISHED WITH I&C SYSTEM BUT INSTAL- LED AND WIRED BY EC IN AN EC SUP- PLIED JUNCTION BOX.
- 3 I&C "MOV" TYPE TVSS WIRE "IN LINE" PROTECTION DEVICE WHICH IS FUR- NISHED, INSTALLED AND WIRED (I.E. DIN RAIL MOUNTED) BY THE I&C SUP- PLIER (INSIDE "ICP" CONTROL PANEL).
- 4 I&C PANEL SHALL ALSO HAVE POWER SUPPLY TYPE TVSS "MOV" PROTECTORS.
- 5 EC AND I&C SUPPLIER SHALL COOR- DINATE THE I&C FIELD INSTRUMENT'S TVSS PROTECTION WHEN LOCATED OUTSIDE AND WIRED UNDERGROUND.



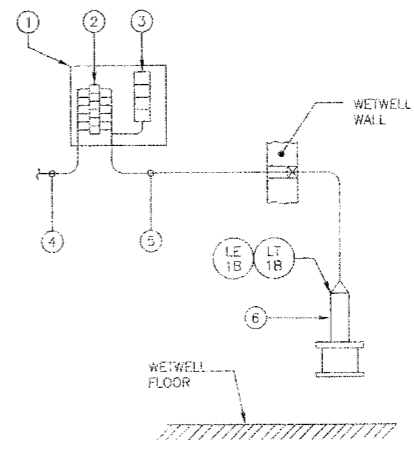
6 TYPICAL PLC OIT DETAIL \*  
NOT TO SCALE

I&C PLC OIT DISPLAYS NOTES

- 1 I&C SUPPLIER SHALL FURNISH, AS A MINIMUM, THE FOLLOWING TYPES OF DISPLAYS. HOWEVER THE ACTUAL NUMBER OF DISPLAYS SHALL BE FIELD DETERMINED FROM THE SOFTWARE SHOP DRAWINGS PRE-SUBMITTAL MEETINGS.
  - A) SCREEN SAVER
  - B) CITY & SITE INFO
  - C) INTRUSION
  - D) SECURITY SIGN-ON
  - E) MAIN OVERVIEW
  - F) ALARMS SUMMARY
  - G) PROCESS AND EQUIPMENT MIMICS
  - H) OPERATOR PROCESS SETPOINTS
  - I) ELECTRICAL SYSTEM MIMIC
- 2 PC WORKSTATION'S DISPLAYS ARE SIMILAR EXCEPT FOR LOGS, E/G MONITORING, ELEC POWER MONITORING, SOLAR PVS MONITORING, ETC.

I&C DRAWINGS REFERENCE NOTES

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- 2) FOR I&C GENERAL DIAGRAMS AND DETAILS, REFER TO DWGS # I-1 THRU I-5
- 3) FOR I&C LOOP DIAGRAMS, REFER TO DWGS # I-LD.0 THRU I-LD.5



7 TYPICAL WETWELL SUBMERSIBLE LEVEL SENSOR/TRANSMITTER WIRING AND PIPING DETAIL  
NOT TO SCALE

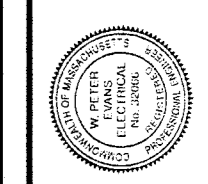
SUBMERSIBLE LEVEL SENSOR/TRANSMITTER WIRING AND PIPING DETAIL NOTES

- 1 LEVEL INSTRUMENT EQUIPMENT RACK FIELD WIRING TERMINAL PANEL.
- 2 SCREW TYPE WIRING TERMINAL STRIP WITH WATERPROOF FIELD WIRING TERMINATIONS.
- 3 INSTRUMENT AIR FILTER WHICH IS FURNISHED WITH INSTRUMENT BUT MOUNTED AND CONNECTED BY EC.
- 4 LEVEL SIGNAL CABLE TO I&C CON- TROL PANEL.
- 5 SUBMERSIBLE LEVEL SIGNAL CABLE WITH AIR PIPING IN ONE ASSEMBLY. CABLE FURNISHED WITH I&C INSTRU- MENT.
- 6 SUBMERSIBLE LEVEL SENSOR AND TRANSMITTER FURNISHED WITH THE I&C SYSTEM.
- 7 EC SHALL COORDINATE WITH THE "AS SUPPLIED" I&C SYSTEM.

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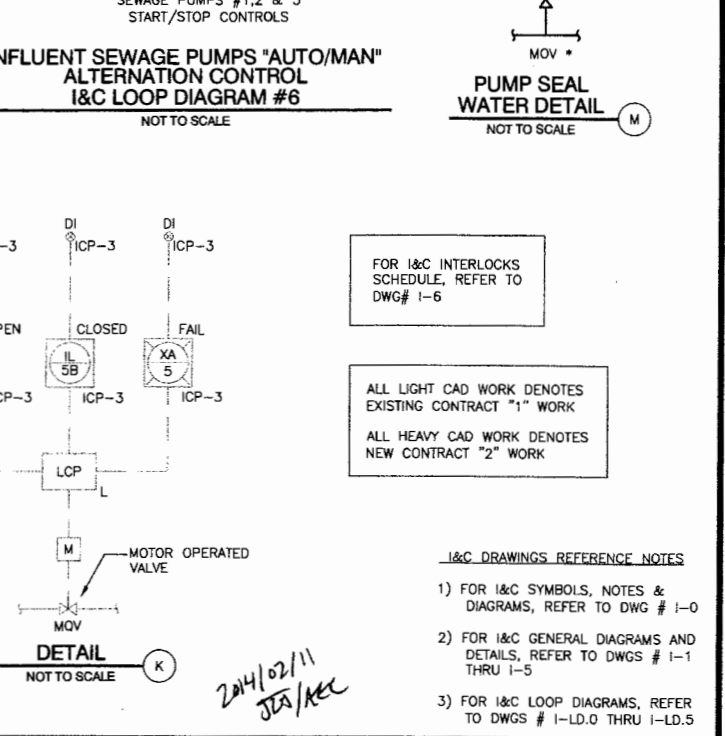
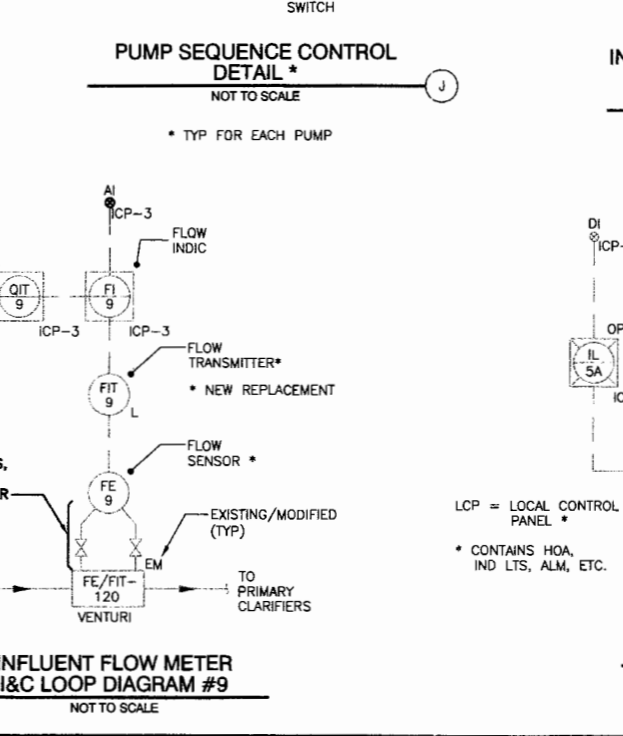
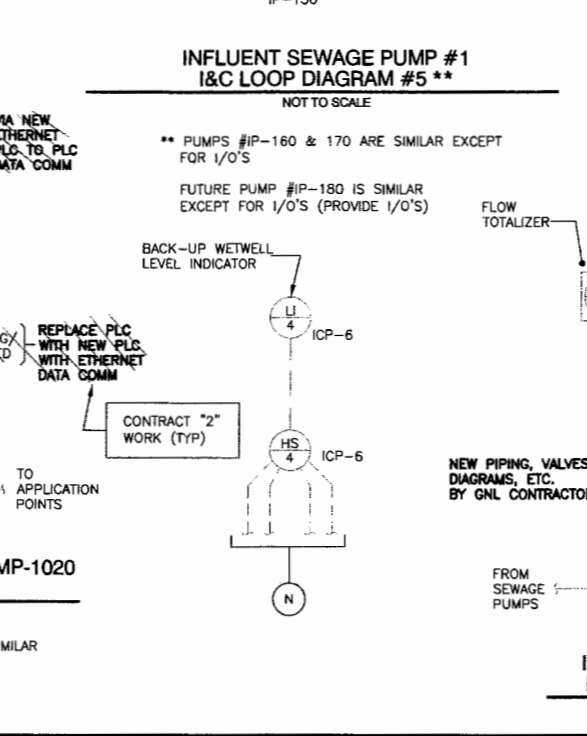
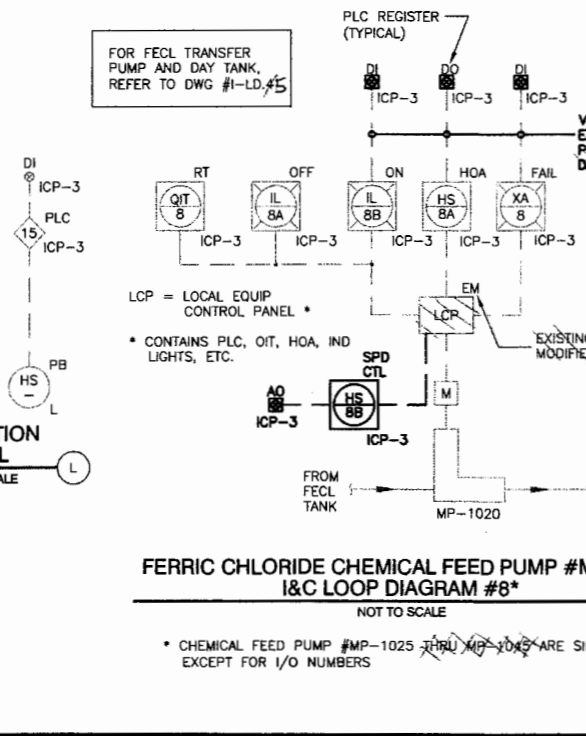
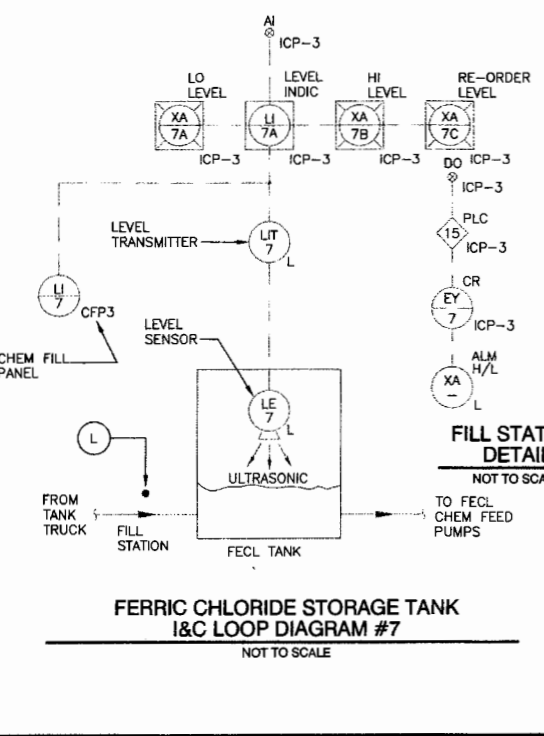
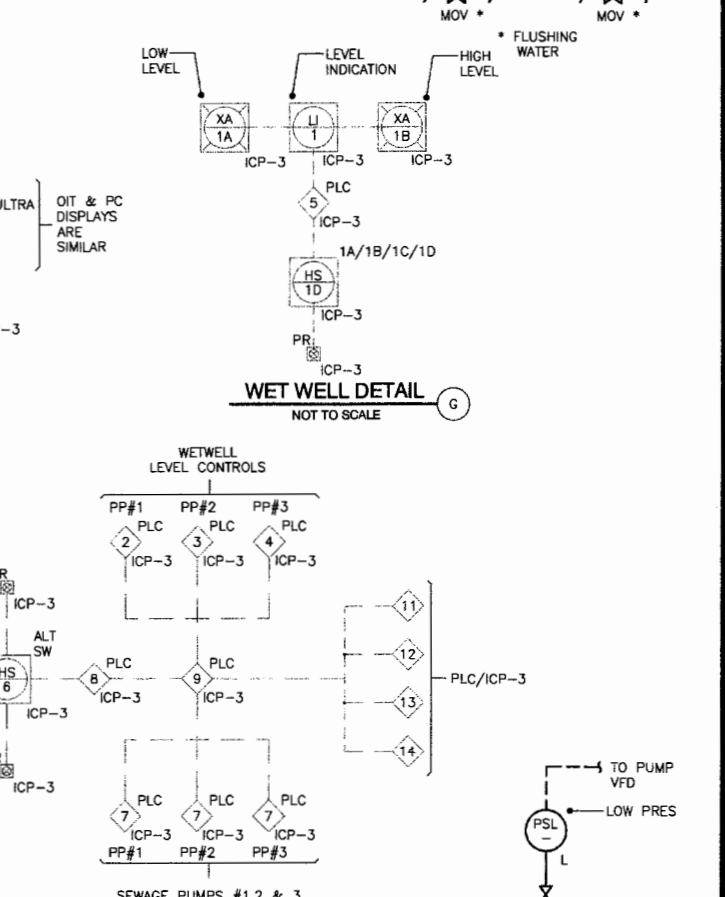
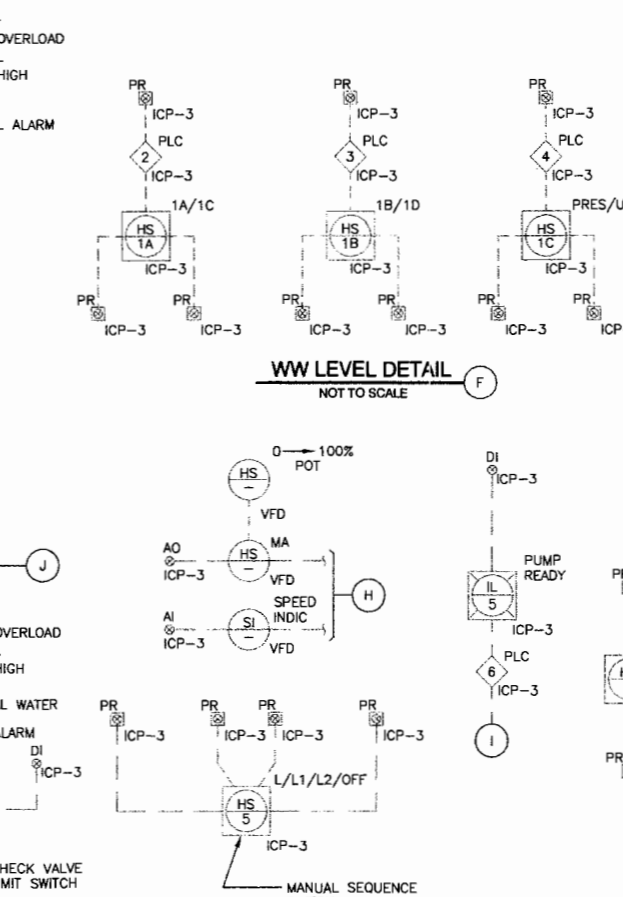
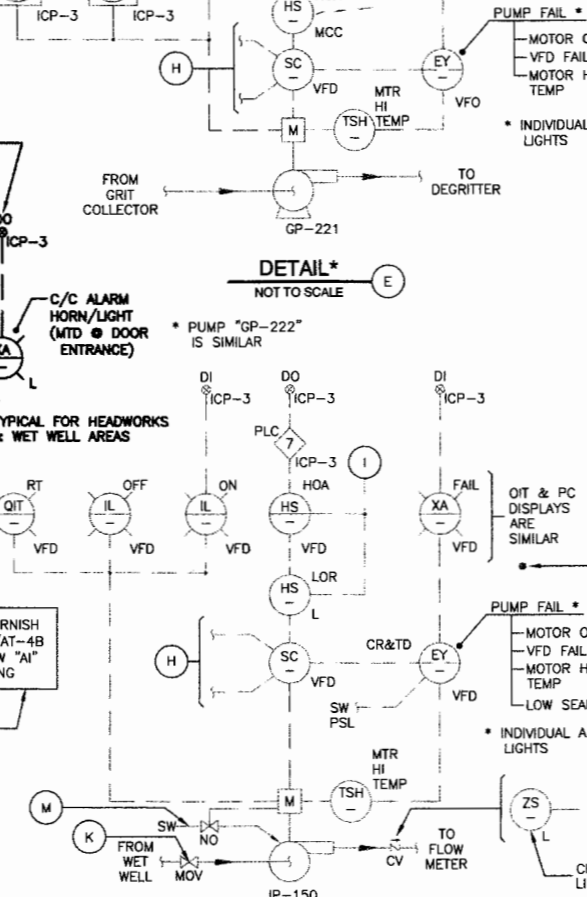
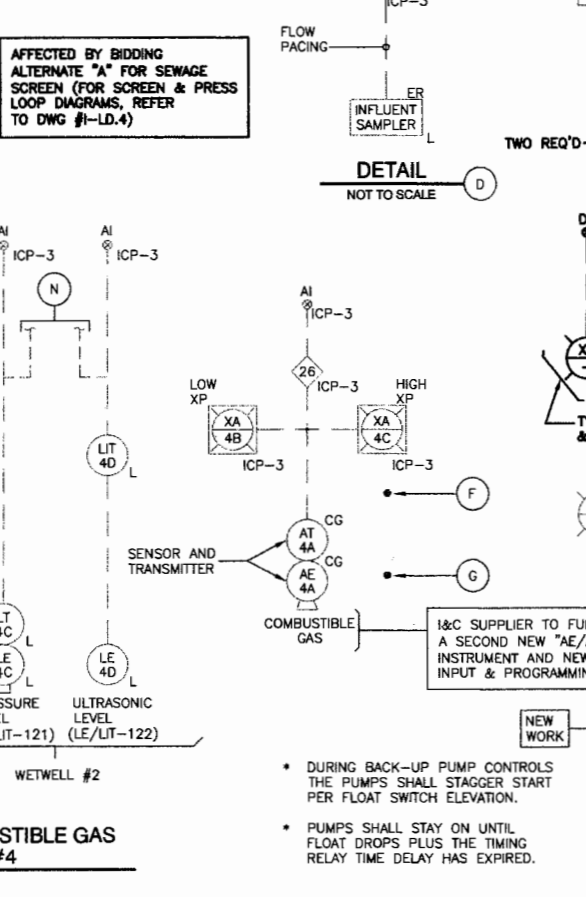
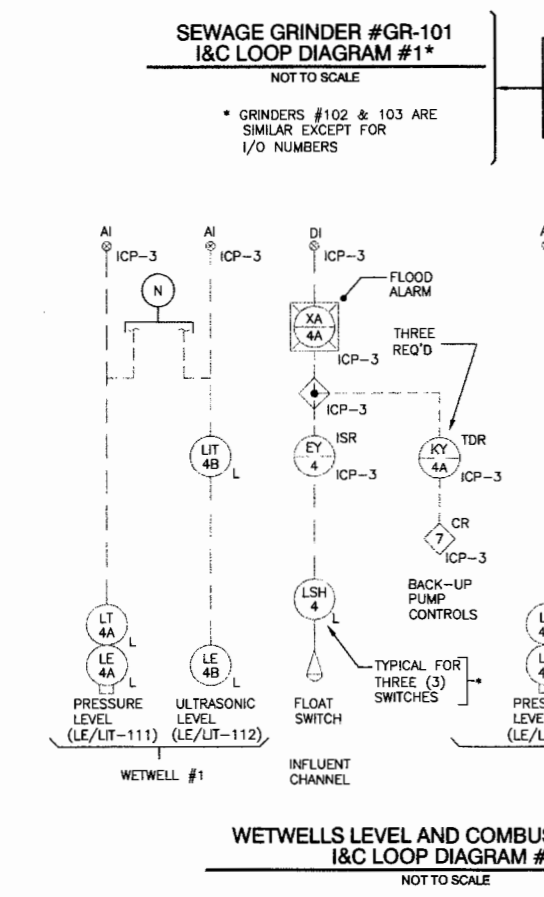
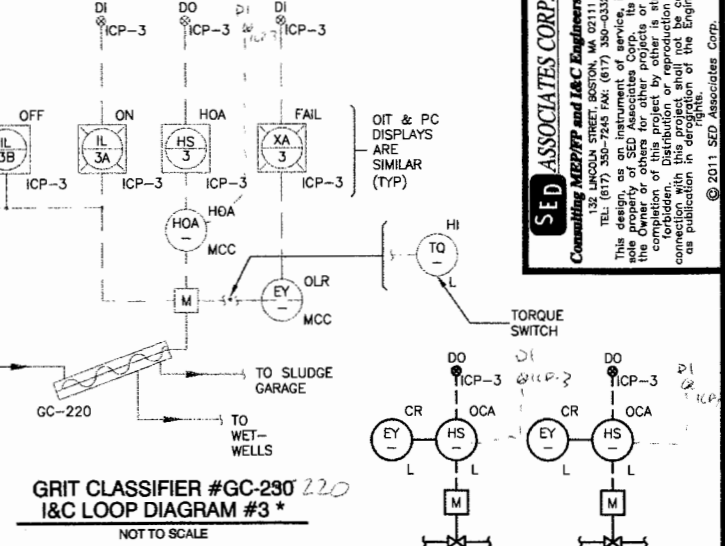
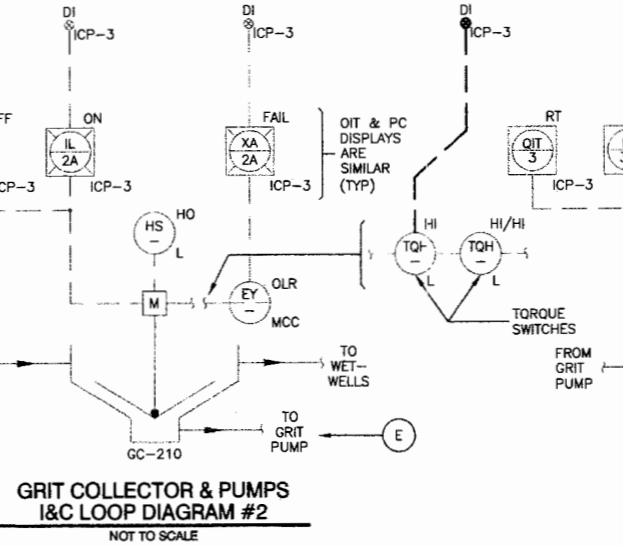
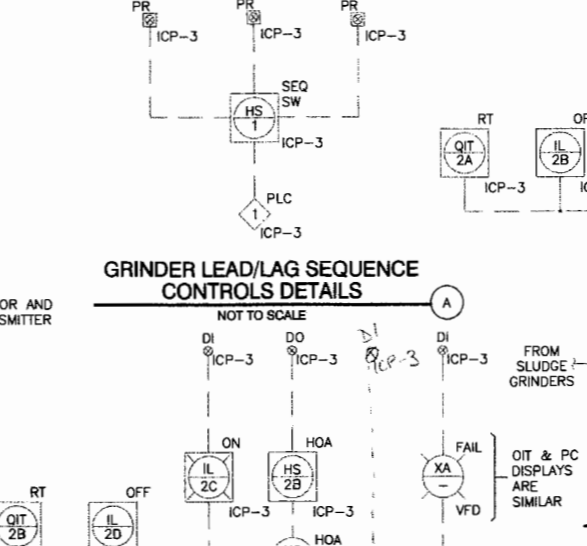
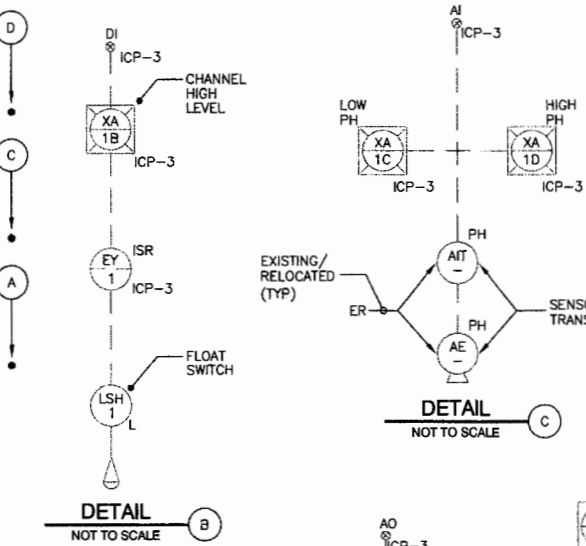
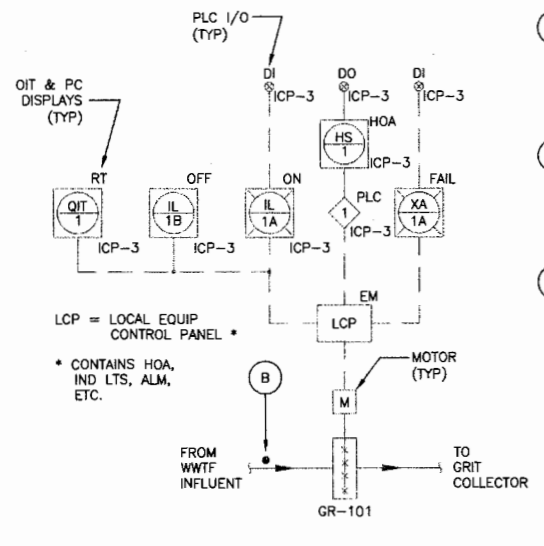
No.	Date	Dr. By	Ch. By	App. By	Description
					A P P R O V E D
					DATE 7/15/2011



CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INSTRUMENTATION & CONTROL "IV"**  
**GENERAL DIAGRAMS AND DETAILS "IV"**  
SCALE: AS SHOWN  
CONTRACT: 0905101 IG05  
JOB NO: 09051.01  
DR BY: ELD  
CHK BY: LMR  
APP BY: WPE

204/0211  
SEA/ACC





**I&C DRAWINGS REFERENCE NOTES**

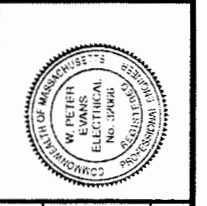
- 1) FOR I&C SYMBOLS, NOTES & DIAGRAMS, REFER TO DWG # I-0
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- 3) FOR I&C LOOP DIAGRAMS, REFER TO DWGS # I-LD.0 THRU I-LD.5

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No.	Date	Dr. By	Ch. By	App. By	Description

DATE: 7/15/2011  
REGISTERED PROFESSIONAL ENGINEER  
W. Peter Crum



CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INSTRUMENTATION & CONTROL LOOP DIAGRAMS "I"**

SCALE: AS SHOWN  
CONTRACT: 2  
JOB NO.: 0905101  
DR BY: ELD  
CHK BY: LMR  
APP BY: WPE

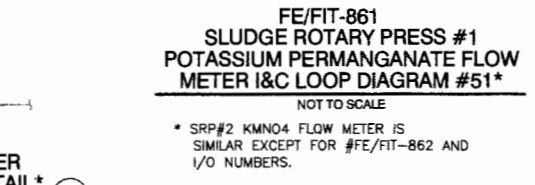
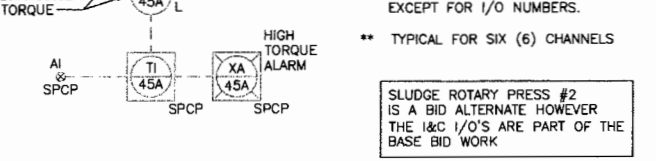
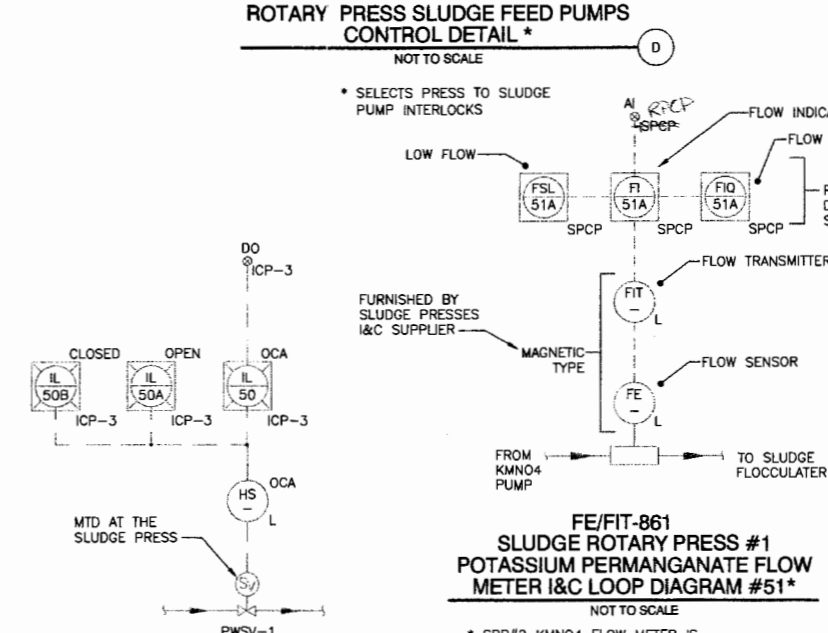
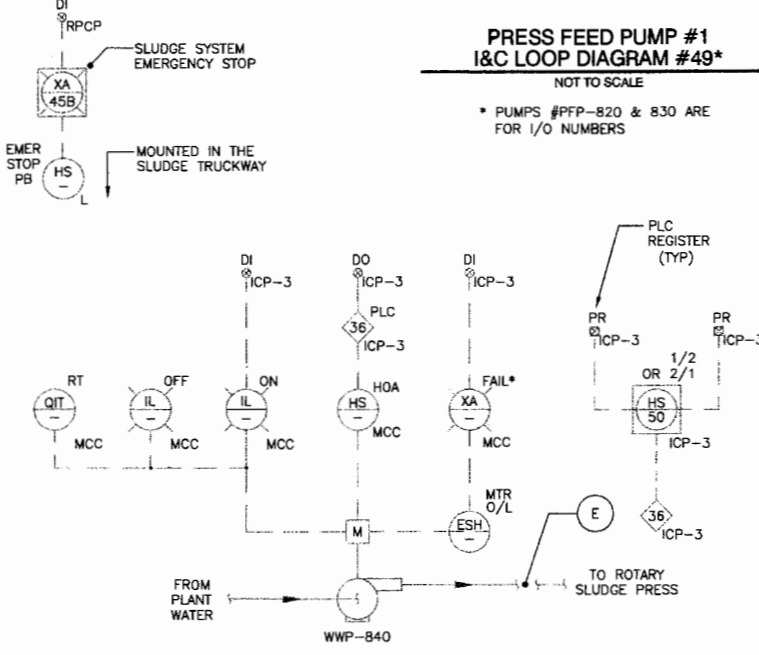
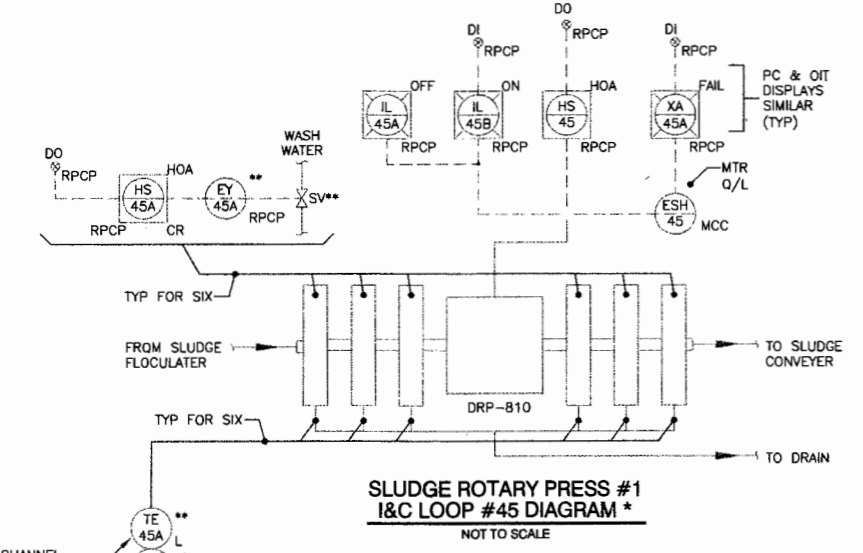
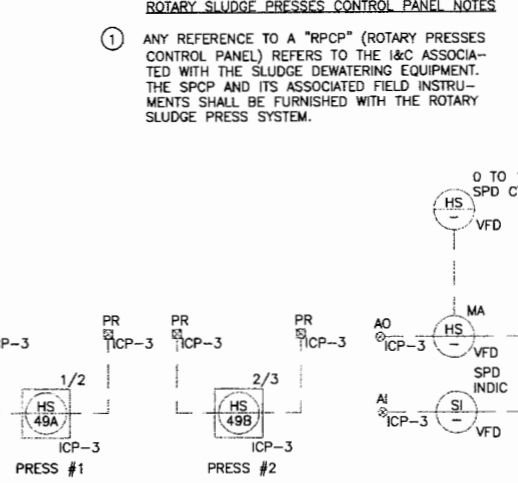
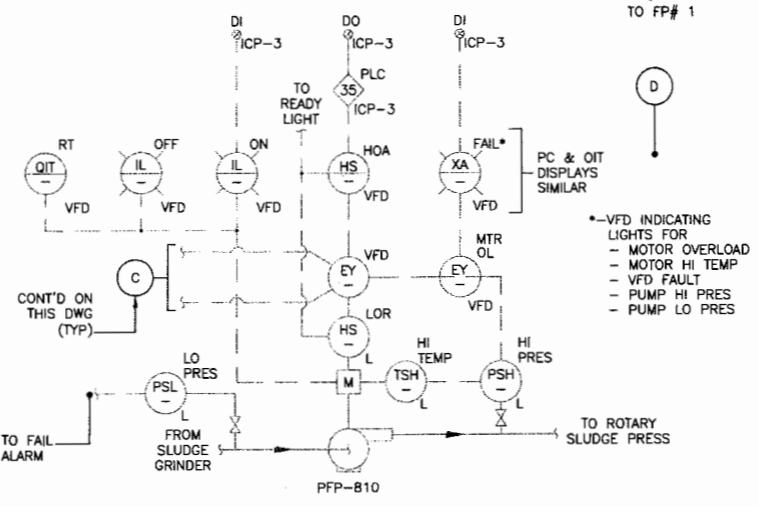
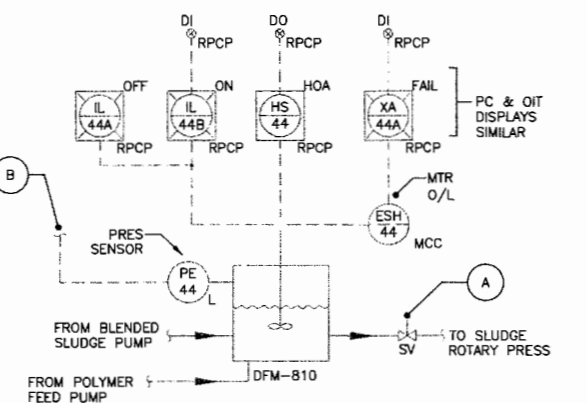
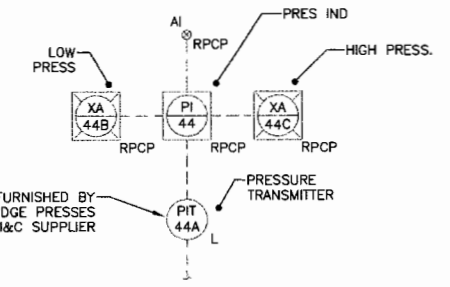
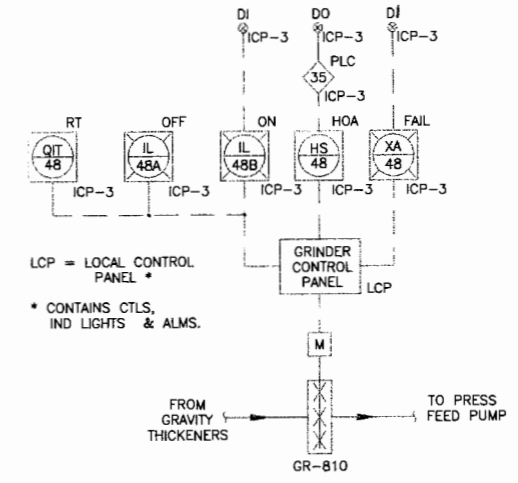
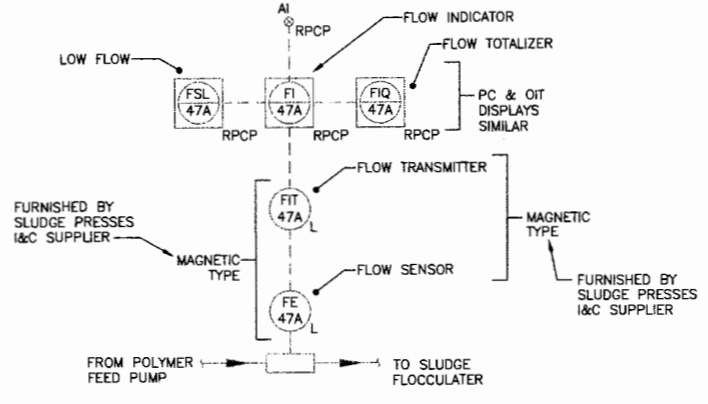
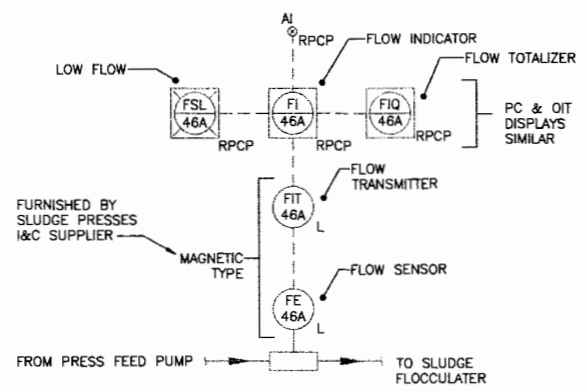
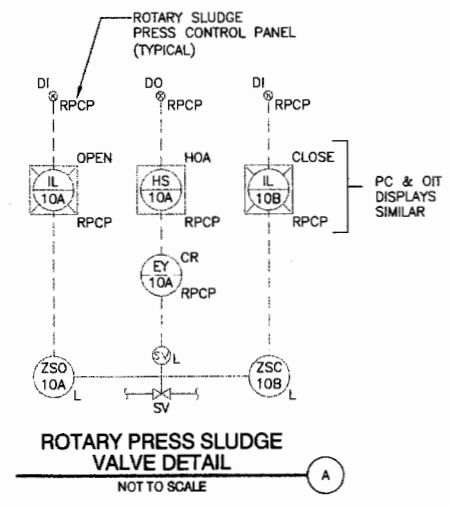
FILE NO.: 189-50  
SHEET 153 OF 202

2011/02/11  
JSA/KEC



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FOR I&C INTERLOCKS SCHEDULE, REFER TO DWG #1-5

ALL LIGHT CAD WORK DENOTES EXISTING CONTRACT "1" WORK

ALL HEAVY CAD WORK DENOTES NEW CONTRACT "2" WORK

**I&C DRAWINGS REFERENCE NOTES**

- 1) FOR I&C SYMBOLS, NOTES & DIAGRAMS, REFER TO DWG # 1-0
- 2) FOR I&C GENERAL DIAGRAMS AND DETAILS, REFER TO DWGS # 1-1 THRU 1-5
- 3) FOR I&C LOOP DIAGRAMS, REFER TO DWGS # 1-LD.0 THRU 1-LD.5

20410211  
 JST/ACE

No.	Date	Dr. By	App. By	Description

DATE: 7/15/2011  
 REGISTERED PROFESSIONAL ENGINEER: W. Peter Egan



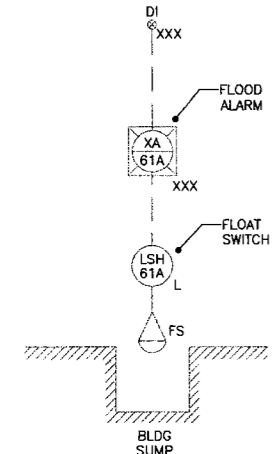
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**INSTRUMENTATION & CONTROL LOOP DIAGRAMS "1"**

CONTRACT: 2  
 SCALE: AS SHOWN  
 JOB NO.: 0905101 LD02  
 DATE: 09/05/01

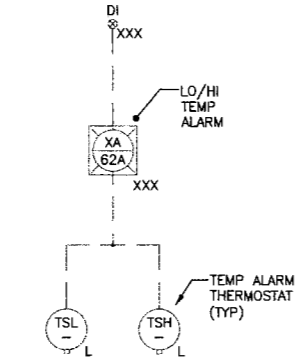
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 SHEET: 155 OF 202





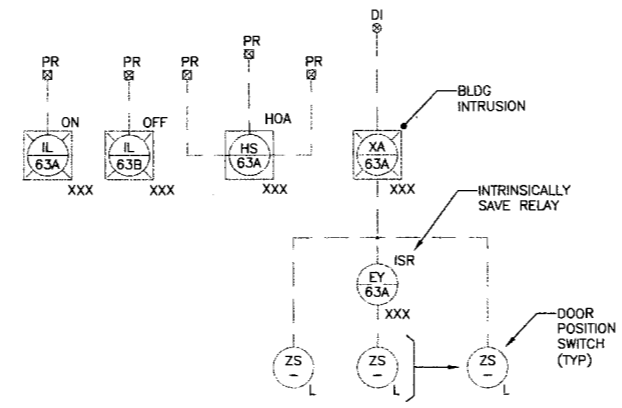
**BUILDING SUMP FLOOD ALARM I&C LOOP DIAGRAM #61\***

NOT TO SCALE  
\* FOR LOCATIONS, LOOP NUMBERS, ETC., REFER TO SCHEDULE (BELOW)



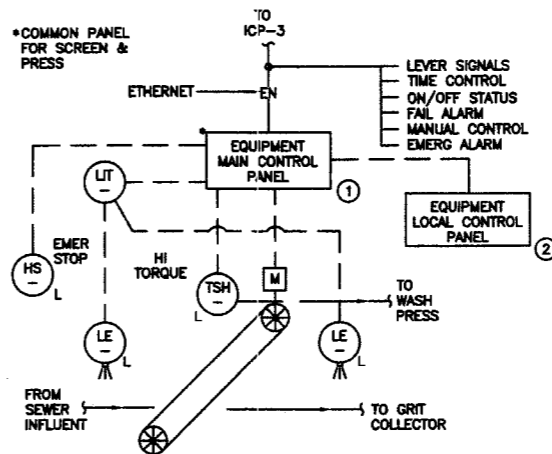
**BUILDING LO/HI TEMP ALARM I&C LOOP DIAGRAM #62\***

NOT TO SCALE  
\* FOR LOCATIONS, LOOP NUMBERS, ETC., REFER TO SCHEDULE (BELOW)



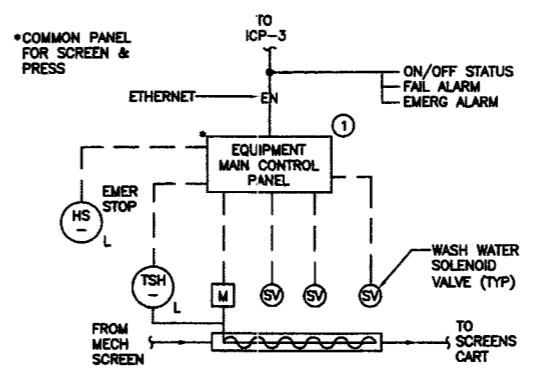
**BUILDING INTRUSION ALARM I&C LOOP DIAGRAM #63\***

NOT TO SCALE  
\* FOR LOCATIONS, LOOP NUMBERS, ETC., REFER TO SCHEDULE (BELOW)



**MECHANICAL FINE SCREEN I&C LOOP DIAGRAM #1A**

NOT TO SCALE



**SCREENINGS WASH PRESS I&C LOOP DIAGRAM #1B**

NOT TO SCALE

- MECHANICAL FINE SCREEN AND WASH PRESS EQUIPMENT CONTROL PANEL NOTES**
- THE MAIN CONTROL PANEL SHALL CONTAIN THE FOLLOWING MAJOR ITEMS
    - PLC CONTROLLER
    - OIT HMI
    - MOTOR CONTROLLERS
    - CONTROL POWER TRANSFORMER
    - ETHERNET COMMUNICATION
  - THE LOCAL CONTROL PANEL SHALL CONTAIN THE FOLLOWING ITEMS
    - HOA SWITCHES FOR SCREEN & PRESS
    - FORWARD/REVERSING SWITCH FOR PRESS
- THE PANELS AND CHANNEL LEVEL INSTRUMENTS SHALL BE FURNISHED WITH THE SCREEN/PRESS PROCESS EQUIPMENT.

**BUILDING SUMP FLOOD ALARMS SCHEDULE**

ICP-3	LSH-61F	OPERATIONS BUILDING BASEMENT * (INFLUENT PPS ROOM)
ICP	LSH-61	HEADWORKS BUILDING (INFLUENT CHANNEL)

**BUILDING LO/Hi TEMP ALARMS SCHEDULE**

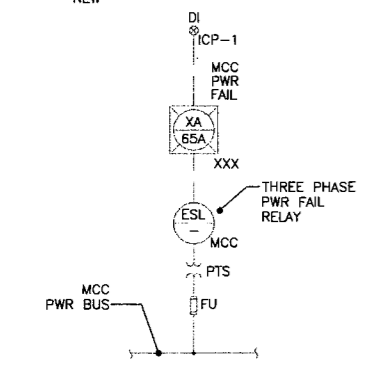
ICP-3	XA-62F	OPERATIONS BUILDING
ICP-3	XA-62H	HEADWORKS BLDG

**BUILDING INTRUSION ALARMS SCHEDULE**

ICP-3	XA-63F	OPERATIONS BUILDING
ICP-3	XA-63G	HEADWORKS BUILDING

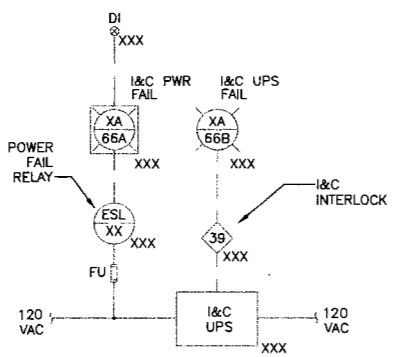
**NEW I&C INSTRUMENTS & PLC "DI'S"**

LSH-61G	(SLUDGE PPS ROOM)
LSH-61H	(SLUDGE PRESS ROOM)



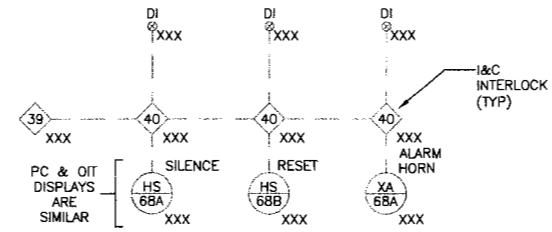
**BUILDING MOTOR CONTROL CENTER POWER FAIL ALARM I&C LOOP DIAGRAM #65\***

NOT TO SCALE  
\* FOR LOCATIONS, LOOP NUMBERS, ETC., REFER TO SCHEDULE (BELOW)



**BUILDING I&C PANEL POWER AND UPS FAIL ALARM I&C LOOP DIAGRAM #66\***

NOT TO SCALE  
\* FOR LOCATIONS, LOOP NUMBERS, ETC., REFER TO SCHEDULE (BELOW)



**I&C PANELS ALARMS AND CONTROLS I&C LOOP DIAGRAM #68\***

NOT TO SCALE  
\* FOR LOCATIONS, LOOP NUMBERS, ETC., REFER TO SCHEDULE (BELOW)

**I&C PANELS ALARMS AND CONTROLS SCHEDULE**

ICP-3	XA-68C	OPERATIONS BUILDING
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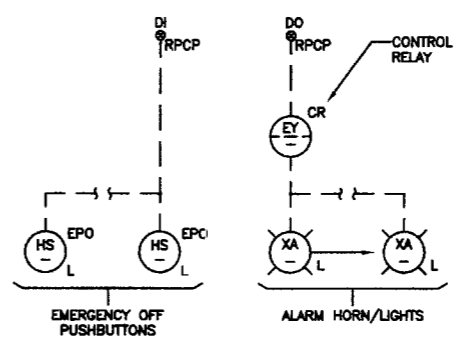
**BUILDING MCC POWER FAIL ALARMS SCHEDULE**

ICP-3	XA-65A	OPS BLDG MCC-1A
ICP-3	XA-65B	OPS BLDG MCC-1B

**I&C PANELS ALARMS AND CONTROLS SCHEDULE**

ICP-3	XA-66C	OPERATIONS BUILDING
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FOR I&C INTERLOCKS SCHEDULE, REFER TO DWG #1-5



**SLUDGE SYSTEM EMERGENCY SHUTDOWN AND ALARM HORN/LIGHTS I&C LOOP DIAGRAM**

NOT TO SCALE

\* BOTH THE "RPCP" AND THE "ICP-3" MUST BE PROGRAMMED TO STOP THE SLUDGE SYSTEM EQUIPMENT UPON ACTUATION OF ANY OF THE "EPO" CONTROL BUILDING STATIONS.

ALL LIGHT CAD WORK DENOTES EXISTING CONTRACT "1" WORK  
ALL HEAVY CAD WORK DENOTES NEW CONTRACT "2" WORK

- I&C DRAWINGS REFERENCE NOTES**
- FOR I&C SYMBOLS, NOTES & DIAGRAMS, REFER TO DWG # 1-0
  - FOR I&C GENERAL DIAGRAMS AND DETAILS, REFER TO DWGS # 1-1 THRU 1-5
  - FOR I&C LOOP DIAGRAMS, REFER TO DWGS # 1-LD.0 THRU 1-LD.5

2014/02/11  
JTA/KAC

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CONTRACT "2"  
BID ALTERNATE "A"  
I&C WORK

No.	Date	Dr. By	Chk. By	App. By	Description	Version	DATE
							7/15/2011

W. Peter Cram  
REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**INSTRUMENTATION & CONTROL LOOP DIAGRAMS "VII"**

SCALE: AS SHOWN  
JOB NO: 09051.01  
CONTRACT: 2  
JOB NO: 09051.01  
DATE: 09/05/11  
APP. BY: WPE  
CHK. BY: DKG  
DES. BY: LMR  
DRY BY: ELD



ELECTRICAL SYMBOLS

Table of electrical symbols and their corresponding descriptions, including simplex wall mtd receptacle, duplex wall mtd receptacle, quadplex wall mtd receptacle, special power receptacle, data wall mounted outlet, etc.

ELECTRICAL DEMOLITION NOTES

- 1) THE ELECTRICAL DEMOLITION WORK GENERALLY INCLUDES THE ELECTRICAL CONTRACTOR TO PERFORM A FIELD SURVEY OF THE AFFECTED PLANT BUILDINGS AND SITE ELECTRICAL SYSTEMS (E - POWER, LIGHTING, TELEPHONE, INTERCOM, FIRE ALARM, DATA, INSTRUMENTATION/CONTROL, ETC) IN ORDER TO REVISE AS INDICATED ON THE ELECTRICAL DRAWINGS. THE EC SHALL PROVIDE ALL NECESSARY DEMOLITION /RELOCATION /RECONSTRUCTION OF ALL AFFECTED ELECTRICAL EQUIPMENT AND WIRING. THIS INCLUDES TEMPORARY PWR, INTERCOM, FIRE ALARM, I&C, ETC OVERHEAD POLE LINES WHILE THE ELECTRICAL SITE WIRING IS DEMOLISHED AND REPLACED. NOTE, THERE ARE LIMITED EXISTING ELECTRICAL DRAWINGS OR WIRING DRAWINGS WHICH ARE NOT "AS-BUILT".

ELECTRICAL GENERAL NOTES

- 1) ALL ELECTRICAL EQUIPMENT AND INSTALLATION WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL MASSACHUSETTS STATE AND LOCAL TOWN BUILDING AND ELECTRICAL CODES APPLICABLE SECTIONS. ALL ELECTRICAL PERMITS AND INSPECTIONS AND ANY ASSOCIATED APPROVAL COSTS SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR.
- 2) ALL ELECTRICAL MATERIAL SHALL BE OF THE HIGHEST QUALITY SPECIFICATION GRADE AND UL LISTED. THE CONTRACTOR SHALL SUBMIT ALL ELECTRICAL MATERIAL SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND ACCEPTABILITY PRIOR TO RELEASE AND INSTALLATION. NO ROUGH WIRING SHOULD BE STARTED UNTIL SPECIFIED WIRING DIAGRAMS HAVE BEEN SUBMITTED AND APPROVED BY THE ENGINEER.

ELECTRICAL ABBREVIATIONS LIST

Table of electrical abbreviations and their meanings, such as ACP AMPERES, AF AMP FRAME, AFF ABOVE FINISHED FLOOR, AIC AMPERES INTERRUPTING CAPACITY, etc.

ELECTRICAL CONSTRUCTION PHASING NOTES

- 1) THE ELEC CONTRACTOR MUST REFER TO THE OVERALL CONSTRUCTION PHASING SPECIFICATIONS FOR ADDITIONAL PHASING REQUIREMENTS.
- 2) THE ELEC CONTRACTOR SHALL COMPLETE A FIELD SURVEY OF THE EXISTING ELECTRICAL SYSTEMS IN EACH BUILDING IN ORDER TO DEVELOP THE ELECTRICAL CONSTRUCTION PHASING.

NOTE, NOT ALL SYMBOLS AND ABBREVIATIONS USED, PROVIDED FOR GENERAL REFERENCE ONLY

CONTRACTS "1" AND "2" ELECTRICAL WORK NOTES

- 1) ELECTRICAL CONTRACTOR SHALL NOTE THE CONTRACT "2" ELEC WORK IS AN EXTENSION OF THE CONTRACT "1" ELEC WORK.
- 2) THE ELEC DWGS HAVE BEEN PREPARED TO INDICATE THE AFFECTED EXISTING CONTRACT "1" ELEC WORK AND THE PROPOSED NEW CONTRACT "2" ELEC WORK.

GENERAL CONTRACTOR'S ELECTRICAL SITE WORK NOTES

- 1) THE GENERAL CONTRACTOR SHALL FURNISH/INSTALL THE FOLLOWING CIVIL CONSTRUCTION WORK WHICH IS ASSOCIATED WITH THE ELECTRICAL SITE WORK. - COMPLETE DETAILED SITE SURVEY OF THE EXISTING ELEC UNDERGROUND WIRING INCLUDING MANHOLES, HANDHOLES, ETC.
- 2) THE GENERAL CONTRACTOR'S WORK ALSO INCLUDES ALL ROUTING OF THE ELECTRICAL UNDERGROUND WIRING WHICH IS COORDINATED WITH THE EXISTING CONDITIONS PLUS THE NEW CONSTRUCTION.

Electrical Drawings are Design Drawings with mark-ups to represent As-built conditions

ELEC DRAWINGS REFERENCE NOTES

- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

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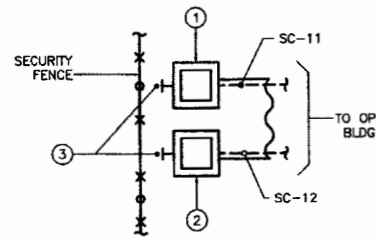
Table with columns: No., Date, Dr. By, Ck. By, App. By, Description. Includes signature of W. Peter Evans, REGISTERED PROFESSIONAL ENGINEER.



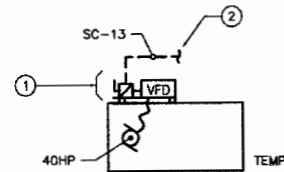
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT. ELECTRICAL GENERAL NOTES, SYMBOLS AND ABBREVIATIONS. CONTRACT: 2. SCALE: AS SHOWN. JOB NO.: 0905101. DATE: 09/05/10. SHEET 159 OF 202



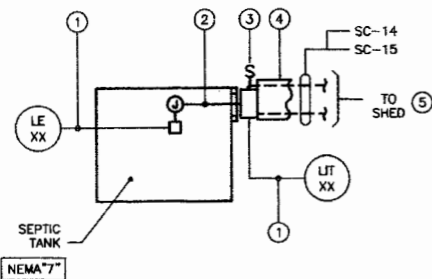




FRONT GATE FUTURE MOTOR OPERATOR WIRING DETAIL 'F' NOT TO SCALE



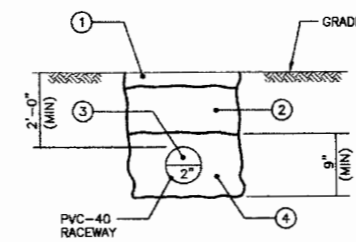
TEMPORARY AIR BLOWER WIRING DETAIL 'G' NOT TO SCALE



SEPTIC TANK I&C LEVEL INSTRUMENTS WIRING DETAIL 'H' NOT TO SCALE

FRONT GATE FUTURE MOTOR OPERATOR WIRING DETAIL 'F' NOTES

- 1 EC SHALL FURNISH/INSTALL A 12" SQUARE X 6" DEEP CAST GALVANIZED SITE JUNCTION BOX FOR THE FUTURE M.O. GATE'S POWER WIRING.
- 2 EC SHALL FURNISH/INSTALL A SIMILAR SITE JUNCTION BOX FOR THE FUTURE M.O. GATE'S SIGNAL AND COMMUNICATION WIRING.
- 3 EC SHALL FURNISH/INSTALL STUBBED OUT AND CAPPED CONDUITS FOR THE FUTURE GATE FIELD WIRING.
- 4 EC/GC SHALL FIELD LOCATE AS DIRECTED BY THE ENGINEER AND OWNER.
- 5 GC SHALL PROVIDE ALL REQUIRED EXCAVATION, SAW CUTTING, CONCRETE, BACK-FILLING, ETC FOR THE ELEC WORK'S CIVIL SITE WORK.



TYPICAL SITE LIGHTING ELECTRICAL DUCTBANK SECTION NOT TO SCALE

TEMPORARY AIR BLOWER WIRING DETAIL 'G' NOTES

- 1 EC SHALL FURNISH/INSTALL TEMPORARY POWER DISCONNECT AND VFD MOTOR CONTROLLER TO OPERATE THE TEMPORARY AIR BLOWER. NOTE, TEMP ELEC EQUIP SHALL BE WEATHER-PROOF OR BE LOCATED IN A WEATHER-PROOF ENCLOSURE.
- 2 EC SHALL PROVIDE TEMPORARY POWER FROM THE DISINFECTION BUILDING AS REQUIRED.
- 3 EC/GC SHALL COMPLETE THE TEMP AIR BLOWER WORK PER THE PROJECT'S COMPLETION SCHEDULE.

SITE LIGHTING DUCTBANK NOTES

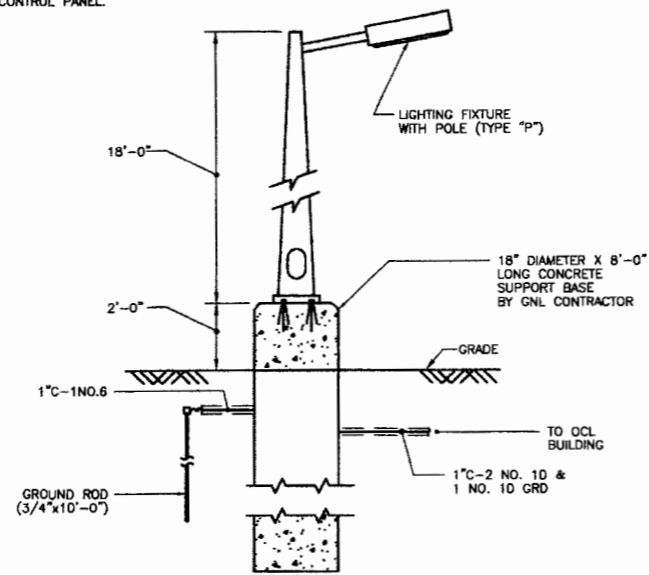
- 1 BACKFILL TO MATCH PROPOSED NEW FINISHED GRADE (I.E., BITUMINOUS PAVEMENT, LOAM/SEED, ETC.)
  - 2 BACKFILL WITH DUCTBANK RUN GRAVEL W/O ANY STONES 72" DIAMETER
  - 3 LIGHTING CONDUCTORS 2 NO. 10 (POWER) & 1 NO. 10 (GRD) PER LIGHTING CIRCUIT
  - 4 COMPACTED SAND RACEWAY BEDDING W/3" MINIMUM COVER
- TYP ALL SITE LTG WIRING

SEPTIC TANK I&C LEVEL INSTRUMENTS WIRING DETAIL 'H' NOTES

- 1 EC SHALL INSTALL AND WIRE THE I&C INSTRUMENT (ULTRASONIC TYPE) WHICH IS EXISTING FROM CONTRACT "1". DUE TO THE NEMA 7" TANK ENVIRONMENT, THE EC SHALL LOCATE THE LEVEL TRANSMITTER 5'-0" AWAY FROM THE TANK PLUS FURNISH/INSTALL THE REQUIRED EXPLOSION-PROOF SEALING FITTINGS.
- 2 EC SHALL FURNISH/INSTALL 1" WITH LV CABLE (AS REQ'D). EC SHALL FIELD LOCATE BOTH THE INSTRUMENT AND WIRING AS DIRECTED BY THE I&C SUPPLIER.
- 3 EC SHALL FURNISH/INSTALL A LOCAL POWER TOGGLE TYPE DISC SWITCH AND ASSOCIATED WIRING.
- 4 EC SHALL FURNISH/INSTALL THE FOLLOWING POWER AND SIGNAL WIRING TO THE DI BLDG'S 120/208 VOLT PANELBOARD AND I&C CONTROL PANEL.

- POWER : 1" - 3 NO. 12" -  
 - SIGNAL : 1" - 1 @ 2/C NO. 16 SH

- 5 EC'S WORK INCLUDES ALL REQUIRED CORING, SEALING FITTINGS, CONDUITS ROUTING AND CONNECTIONS TO THE EXISTING ELECTRICAL AND I&C EQUIPMENT.
- 6 THE GC'S WORK INCLUDES THE FIELD SURVEY AND DEMOLITION OF THE EXISTING TANK PNEUMATIC LEVEL BUBBLER PIPING, SUPPORTS, ETC FROM THE TANK BACK TO THE EXISTING OPERATIONS BUILDING.
- 7 EC/GC SHALL COMPLETE THE NEW TANK I&C WORK PER THE PROJECT'S COMPLETION SCHEDULE.



PARKING/ACCESS ROAD AREA LIGHT FIXTURE MOUNTING AND WIRING DETAIL 'E' NOT TO SCALE DWG# E-1

LIGHTING FIXTURE MOUNTING/WIRING DETAIL NOTES

- 1 EC SHALL FURNISH AND WIRE THE SITE LTG POLES AND LIGHTING FIXTURES. GC SHALL UN-LOAD AND INSTALL UNITS.
- 2 GC SHALL FURNISH/INSTALL ALL EXCAVATION, BACK-FILL, CONCRETE BASE, ETC. GC SHALL FIELD LOCATE PER THE CIVIL SITE DWGS. GC HAS OPTION TO FURNISH POURED IN PLACE OR PRE-CAST LIGHTING SUPPORT BASES.
- 3 EC SHALL FURNISH/INSTALL THE LIGHTING POLE GROUNDING CONDUIT/WIRE.
- 4 EC/GC SHALL COORDINATE WITH THE EXISTING SITE CONDITIONS AND NEW CONSTRUCTION.

EXISTING/DEMOLISHED ELECTRICAL DUCTBANK SECTION NOT TO SCALE

EXISTING/DEMOLISHED ELECTRICAL DUCTBANK SECTION NOT TO SCALE

EXISTING/DEMOLISHED ELECTRICAL DUCTBANK SECTION NOT TO SCALE

EXISTING/DEMOLISHED ELECTRICAL DUCTBANK SECTION NOT TO SCALE

EXISTING/DEMOLISHED ELECTRICAL DUCTBANK SECTION NOT TO SCALE

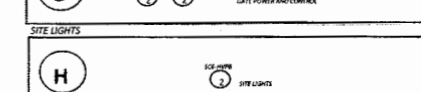
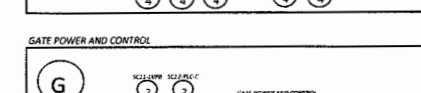
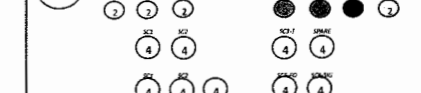
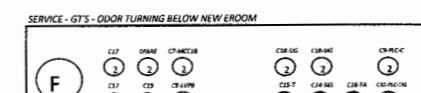
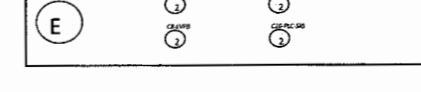
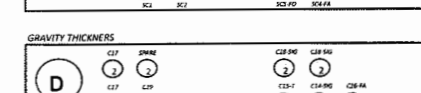
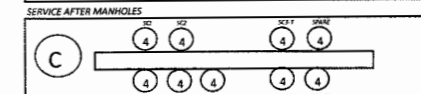
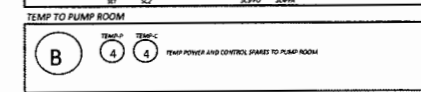
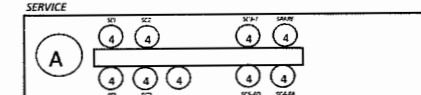
ELECTRICAL DUCTBANK SECTION NOT TO SCALE

EXISTING/DEMOLISHED ELECTRICAL DUCTBANK SECTION NOT TO SCALE

NEW ELECTRICAL DUCTBANK SECTION NOT TO SCALE

ELECTRICAL DUCTBANKS WORK NOTES

- 1 EXISTING ELEC POWER COMPANY HIGH VOLTAGE PRIMARY SERVICE CONDUITS TO BE DEMOLISHED.
- 2 EXISTING POWER, CONTROL AND SIGNAL WIRING. EC TO FIELD SURVEY IN ORDER TO DEMOLISH.
- 3 EXISTING DUCTBANK WITH NEW POWER, FIRE ALARM, TELEPHONE AND I&C SITE WIRING. FOR DETAILS, REFER TO THE SITE CONDUIT/WIRE SCHEDULE.
- 4 NEW DUCTBANK WITH NEW POWER, FIRE ALARM, TELEPHONE AND I&C SITE WIRING. FOR DETAILS, REFER TO THE SITE CONDUIT/WIRE SCHEDULE.



ELEC DRAWINGS REFERENCE NOTES

- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
- 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
- 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.

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No.	Date	Dr. By	Ch. By	App. By	Description
1					V E E D
2					P R O
3					A
4					

7/15/2011 DATE

REGISTERED PROFESSIONAL ENGINEER



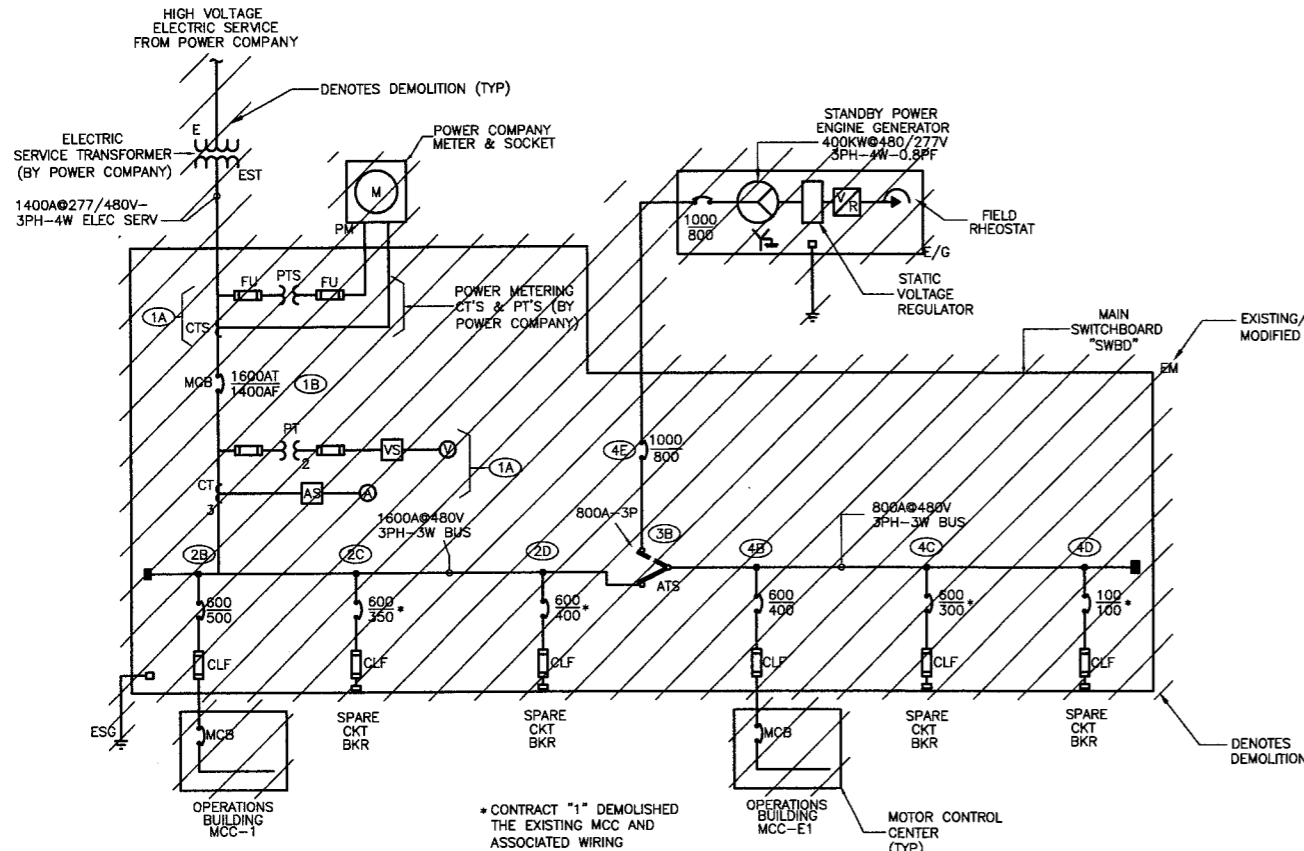
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL PROPOSED  
 SITE PLAN "1" AND DETAILS**

SCALE: AS SHOWN CONTRACT: 0905101

DATE: 09/05/10 EGI2

FILE NO: 189-42

RICHARDSON ELECTRICAL AS-BUILT



**NEWBURYPORT WWTF  
EXISTING POWER DISTRIBUTION SYSTEM  
SINGLE LINE RISER DIAGRAM\***  
NOT TO SCALE

\* NOT "AS-BUILT" CONDITIONS

**EXISTING POWER DISTRIBUTION SYSTEM  
SINGLE LINE DIAGRAM NOTES**

- |  |   |
|--|---|
| <p>① THE ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING POWER DISTRIBUTION SYSTEM'S EQUIPMENT AND ASSOCIATED WIRING. NOTE, THE INDICATED DIAGRAM IS NOT "AS BUILT".</p> <p>② EC'S WORK GENERALLY INCLUDES THE FOLLOWING WITH REGARDS TO PROJECT CONSTRUCTION PHASING IN ORDER TO KEEP THE WWTF OPERATIONAL DURING ITS SELECTIVE DEMOLITION AND RECONSTRUCTION:</p> <ul style="list-style-type: none"> <li>- TEMPORARY WOODEN POLES AND OVERHEAD WIRING IN ORDER TO TAKE THE UNDERGROUND DUCTBANKS OUT OF SERVICE.</li> <li>- TEMPORARY POWER DISTRIBUTION, MOTOR CONTROL, LIGHTING, RECEPTACLES, ALARMS, ETC. INCLUDING ASSOCIATED WIRING IN ORDER TO KEEP THE WWTF BUILDINGS &amp; EQUIPMENT OPERATIONAL.</li> </ul> | <p>③ EC CAN USE THE EXISTING OUTDOOR SWITCHGEAR FOR THE TEMPORARY CONSTRUCTION POWER IF A POWER METER IS INSTALLED FOR ACCOUNTING FOR THE TEMP CONSTRUCTION POWER.</p> <p>④ EC CAN USE THE EXISTING OUTDOOR SWITCHGEAR FOR THE TEMPORARY POWER TO THE AFFECTED WWTF BUILDINGS. NOTE, SINCE THE POWER IS FOR THE WWTF EQUIPMENT OPERATION, NO SEPARATE POWER METER IS REQUIRED.</p> <p>⑤ EC AND GC MUST COMPLETE A DETAILED CONSTRUCTION PHASING PLAN WHICH CLEARLY INDICATES THE SCOPE OF WORK, TIME DURATIONS, POWER SHUTDOWNS, ETC. NOTE ALL POWER SHUTDOWNS MUST BE SCHEDULED WITH REVIEW/APPROVAL BY THE OWNER AND ENGINEER.</p> <p>⑥ EC SHALL CONTACT THE POWER COMPANY AS SOON AS POSSIBLE AFTER CONTRACT AWARD IN ORDER TO DEMOLISH THE EXISTING ELECTRICAL POWER SERVICE.</p> |
|--|---|

**ENGINE/GENERATOR CONTRACTOR'S  
SCOPE OF WORK NOTES**

- ① THE CONTRACTOR'S ENGINE/GENERATOR SCOPE OF WORK IS AS FOLLOWS:

**ELECTRICAL CONTRACTOR**

- DISCONNECT AND DEMOLISH ALL E/G ELECTRICAL WIRING AND "MAKE SAFE". EC SHALL DEMOLISH THE E/G'S BATTERY CHARGER (SEPARATELY WALL MOUNTED).

**PLUMBING CONTRACTOR**

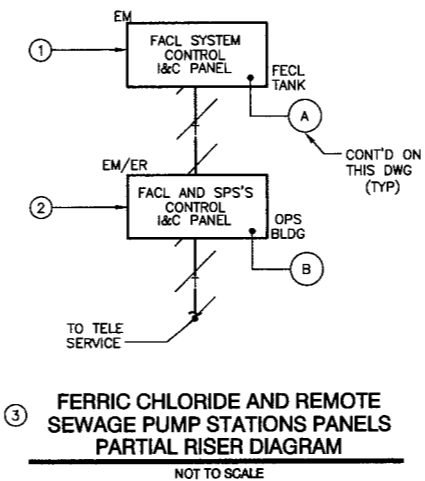
- DISCONNECT AND DEMOLISH ALL FO PIPING AND DISPOSE OF ANY FUEL OIL IN THE FO PIPING AND ENGINE/GENERATOR

**HVAC CONTRACTOR**

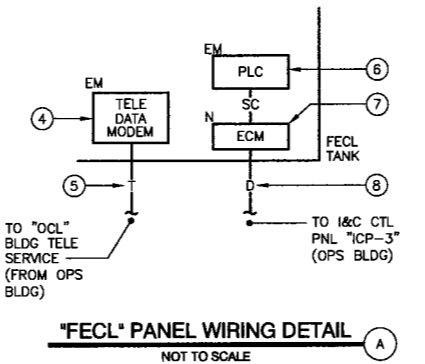
- DISCONNECT & DEMOLISH ALL E/G DUCT WORK INCLUDING INSULATION PLUS DEMOLISH THE E/G'S COMPLETE EXHAUST SYSTEM AND INSULATION.

**GENERAL CONTRACTOR**

- DEMOLISH THE ENG/GEN AND TRUCK OFF SITE. NOTE, THE E/G HAS HAZARDOUS MATERIALS (IE - CRANKCASE OIL, ANTI FREEZE, ETC) WHICH MUST BE PROPERLY DISPOSED PER THE APPLICABLE STATE AND FEDERAL ENVIRONMENTAL REQUIREMENTS. GC SHALL PROVIDE WRITTEN CERTIFICATION ON THE E/G'S DISPOSAL.



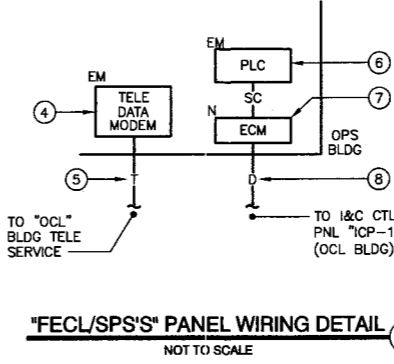
**FERRIC CHLORIDE AND REMOTE  
SEWAGE PUMP STATIONS PANELS  
PARTIAL RISER DIAGRAM**  
NOT TO SCALE



**'FECL' PANEL WIRING DETAIL**  
NOT TO SCALE

**FERRIC CHLORIDE AND REMOTE SPS PANELS  
PARTIAL RISER DIAGRAM NOTES**

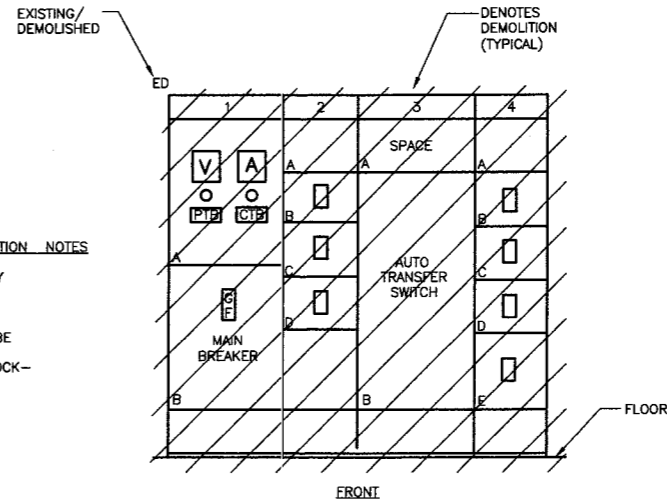
- ① EC SHALL FIELD SURVEY IN ORDER TO REVISE THE PANEL'S COMMUNICATION FIELD WIRING. NOTE, THE I&C SUPPLIER SHALL FIELD SURVEY AND REVISE THE PANEL'S INTERIOR EQUIPMENT AND WIRING AS INDICATED.
- ② -- SIMILAR TO NOTE # 1 --
- ③ THE ELEC AND I&C WORK OF THE EXISTING I&C CONTROL PANELS SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE PROJECT'S CONSTRUCTION PHASING REQUIREMENTS IN ORDER TO MAINTAIN THE WWTF OPERATIONS.
- ④ EC SHALL FIELD SURVEY THE EXISTING TELE DATA MODEM IN ORDER TO RE-WIRE AS SHOWN.
- ⑤ EC SHALL FURNISH/INSTALL NEW TELEPHONE SERVICE AND WIRING (1" - 1 @ 4 PR NO 24 CAT "6") FOR THE I&C DATA COMMUNICATION. EC SHALL COORDINATE WITH THE OWNER AND THE TELEPHONE UTILITY COMPANY IN ORDER TO CONNECT TO THE EXISTING TELEPHONE UTILITY COMMUNICATION CIRCUIT.
- ⑥ THE I&C SUPPLIER SHALL FIELD SURVEY THE PLC IN ORDER TO REVISE THE PLC'S REMOTE DATA COMMUNICATION.
- ⑦ THE I&C SUPPLIER SHALL FURNISH/INSTALL INCLUDE PANEL WIRE A NEW ETHERNET COMMUNICATION MODULE.
- ⑧ EC SHALL FURNISH/INSTALL NEW DATA WIRING (1" - 1 @ 4 PR 24 UTP CAT "6") IN BOTH BUILDINGS (OPS AND OCL).



**'FECL/SPS'S' PANEL WIRING DETAIL**  
NOT TO SCALE

**EXISTING 480 VOLT MAIN SWITCHBOARD ELECTRICAL ELEVATION NOTES**

- ① THE ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING SWITCHBOARD IN ORDER TO SELECTIVELY DEMOLISH.
- ② THE WORK AT THE EXISTING SWITCHBOARD MUST BE COMPLETED IN STRICT ACCORDANCE WITH ALL NEC AND OSHA ELECTRICAL ARC FLASH SAFETY AND LOCK-OUT PROCEDURES.



**EXISTING 480V  
MAIN SWITCHBOARD ELEVATION**  
NOT TO SCALE

**ELEC DRAWINGS REFERENCE NOTES**

- ① FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- ② FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- ③ FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-FV.2

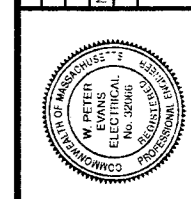
**SED ASSOCIATES CORP.**  
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 132 LINCOLN STREET, BOSTON, MA 02111  
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No.	Date	Dr. By	Ck. By	App. By	Description

W. Peter Evans  
REGISTERED PROFESSIONAL ENGINEER

7/15/2011  
DATE



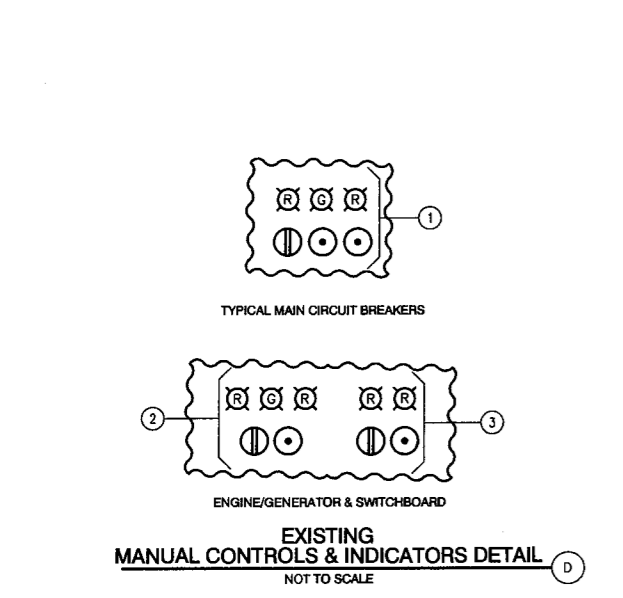
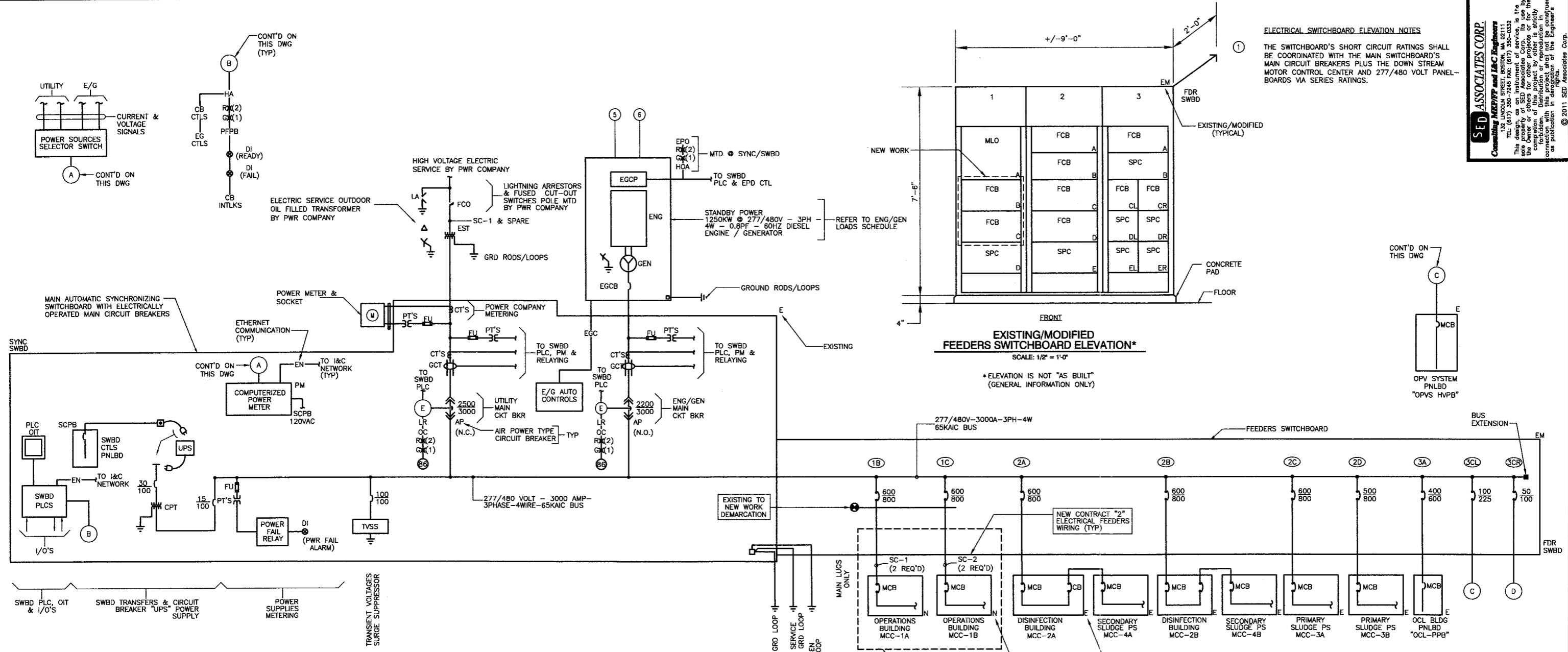
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**ELECTRICAL SYSTEMS RISER DIAGRAMS #1**

SCALE: AS SHOWN  
 JOB NO. 09051.01  
 CONTRACT: 2

CADD NO. 0905101 E3  
 DR BY: ELD  
 CHK BY: DCK  
 APP BY: WPE

FILE NO. 189-41  
**SHEET 162 OF 202**



**EXISTING ENGINE/GENERATOR LOADS STEPS SCHEDULE**

STEP NUMBER	DESCRIPTION	HP	KVA	KW
# 1	LTG, RECPS, HVAC, ETC	N/A	400	320
# 2	INFLUENT PPS #1-#2 GRIT PPS #1-#2	100	107	89
# 3	AERATOR BLOWER #1	100	99	88
# 4	AERATOR BLOWER #2	100	99	88
# 5	AERATOR BLOWER #3	100	99	88
# 6	AERATOR BLOWER #4	100	99	88
# 7	PLANT WATER PPS #1-#2	80	83	71
# 8	DIGESTER BLWRS #1-#2	80	83	71
# 9	ODOR BLOWER	50	52	44
# 10	SLUDGE PRESS #1-#2	40	43	36
# 11	EFFLUENT PPS #1-#2	40	43	36
TOTALS			1207	1019

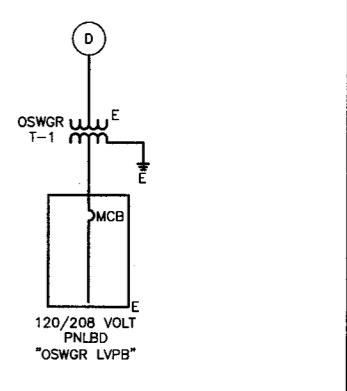
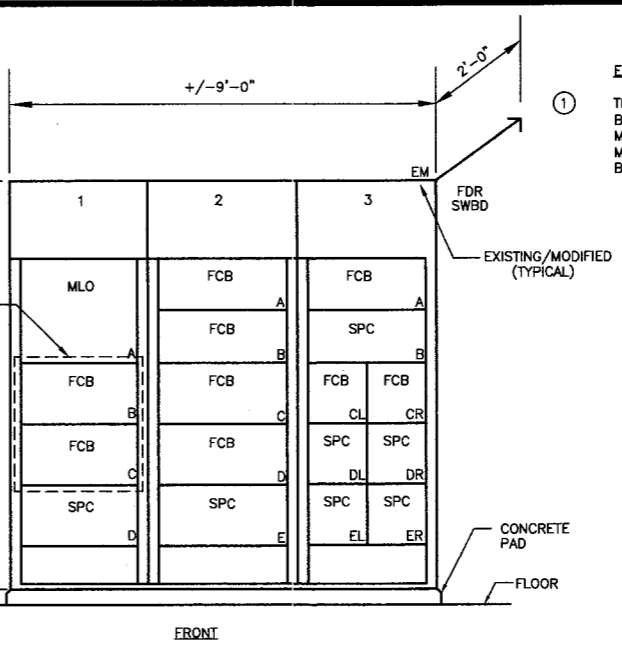
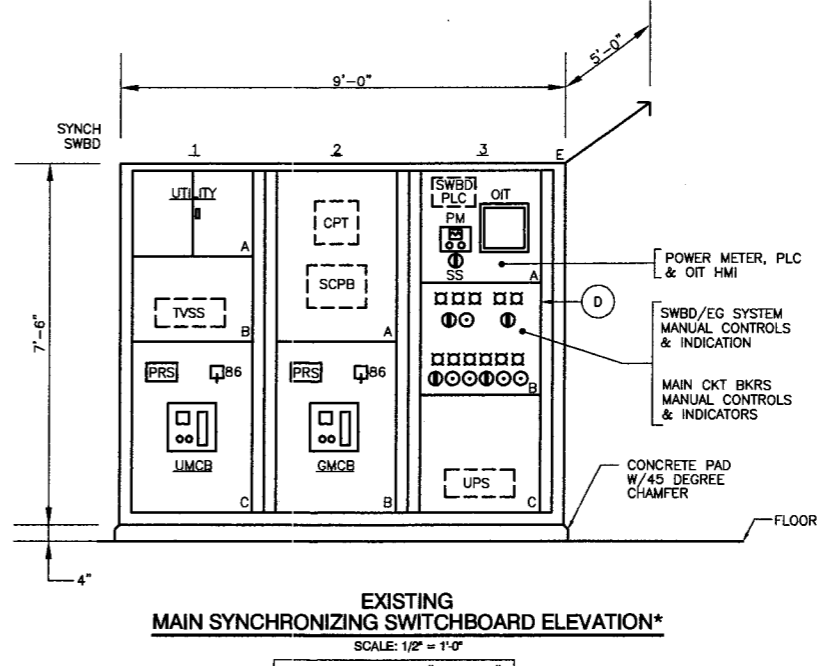
**EXISTING ELECTRICAL SERVICE LOADS SUMMARY**

EQUIPMENT	CONN KVA	DEMAND KVA
1) MOTOR CONTROL CENTER # 1A	278	212
2) MOTOR CONTROL CENTER # 1B	228	172
3) MOTOR CONTROL CENTER # 2A	188	146
4) MOTOR CONTROL CENTER # 2B	152	120
5) MOTOR CONTROL CENTER # 3A	128	101
6) MOTOR CONTROL CENTER # 3B	105	82
7) OCL BLD PNLBD	160	120
TOTALS	1239	953

- CIRCUIT BREAKERS AND ENG/GEN CONTROLS & INDICATORS DETAIL NOTES**
- 1) CKT BKR "CLOSE/OPEN/TRIPPED" LED INDICATING LIGHTS AND "LOCAL/REMOTE" SEL SW AND "OPEN/CLOSE" PUSHBUTTONS
  - 2) ENG/GEN "ON/OFF/FAIL" LED INDICATING LIGHTS AND "HAND/OFF/AUTO" SEL SW & EMERGENCY OFF MUSHROOM PUSHBUTTON
  - 3) ENG/GEN & SWBD SYSTEM "HAND/OFF/AUTO" SEL SW "MANUAL/AUTO" LED INDICATING LIGHTS AND POWER FAIL PUSHBUTTON

- E/G LOADS SCHEDULE NOTES**
- 1) PROCESS PUMPS MOTOR STARTERS ARE "VFD" ELECTRONIC ("VARIABLE SPEED DRIVES") TYPES WITHOUT "FVNR" BYPASSING.
  - 2) KVA LOADS ARE BASED UPON NEC FULL LOAD AMPERES.
  - 3) KW LOADS ARE BASED UPON 0.8 PF FOR STEP # 1 AND 0.9 PF FOR THE WATER PUMPS.
  - 4) ENG/GEN SUPPLIER MUST PROVIDE ENG/GEN VOLTAGE STARTING CALCS WHICH VERIFIES "PROPOSED" E/G SIZING WITH "AS SUPPLIED" PUMP STATION EQUIPMENT.
  - 5) THE INFLUENT, EFFLUENT AND AERATORS SHALL BE STAGGER STARTED ON POWER RESTORATION.

- LOADS SUMMARY NOTES**
- 1) DEMAND LOADS BASED UPON ACTIVE AND STANDBY PUMP STATION EQUIPMENT (ONLY).
  - 2) +/- 1491 AMPERES @ 277/480 VOLTS 3 PHASE
  - 3) +/- 1147 AMPERES @ 277/480 VOLTS 3 PHASE



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**WESTON & SAMPSON REGISTERED PROFESSIONAL ENGINEER**  
W. Peter Cronin  
7/15/2011 DATE

**CITY OF NEWBURYPORT, MASSACHUSETTS**  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**ELECTRICAL SYSTEMS RISER DIAGRAMS "11"**

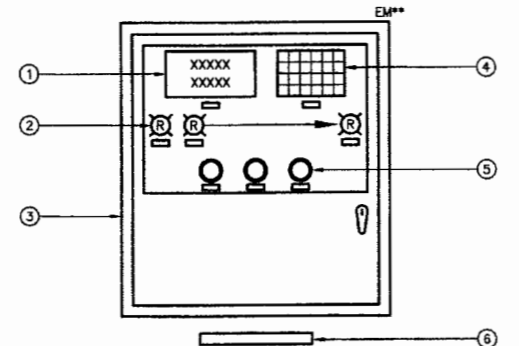
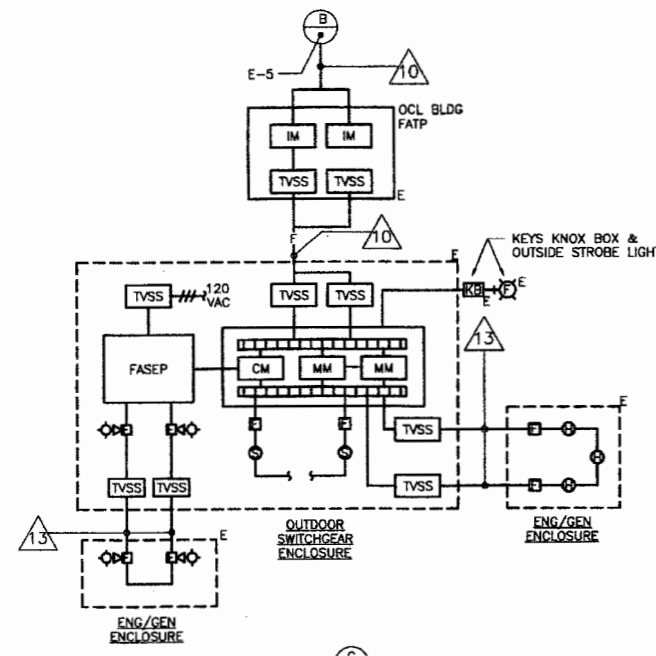
SCALE: AS SHOWN  
JOB NO. 0905101  
CONTRACT: 2  
CADD NO. 0905101 E4  
FILE NO. 189-40

**E4**

**SHEET 163 OF 202**



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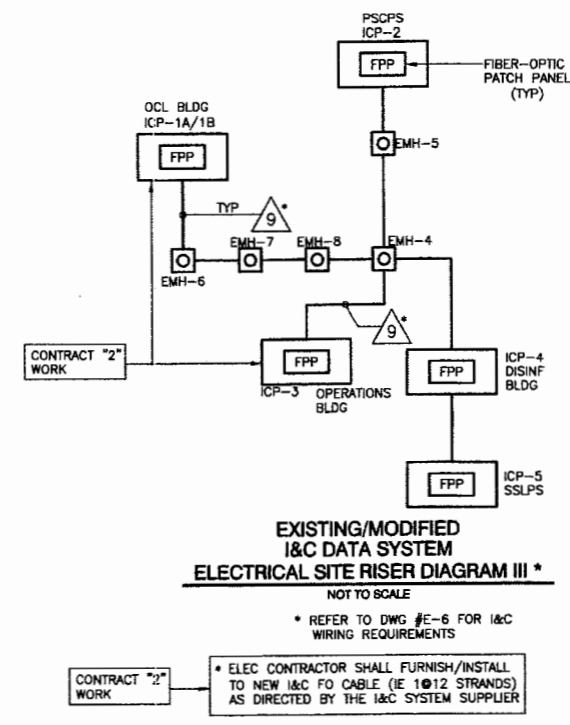


- FIRE ALARM CONTROL PANEL NOTES**
- 1 LCD ALPHANUMERIC DISPLAY WHICH IS PROGRAMMED PER ENGINEER AND FIRE DEPARTMENT REQUIREMENTS
  - 2 RED LED ZONES INDICATING LIGHTS WHICH MATCH THE FRONT ENTRANCE ANNUNCIATOR ZONE LIGHTS WITH ENGRAVED PLASTIC NAMEPLATES
  - 3 RED PAINTED STEEL FIRE ALARM CONTROL PANEL (SIZE AS REQUIRED BY FA SUPPLIER) WITH KEY LOCKED FRONT PANEL
  - 4 ALPHANUMERIC DIGITAL KEYPAD FOR FACP PROGRAMMING, ETC.
  - 5 PROGRAMMED FACP PUSHBUTTONS FOR "SILENCE", "RESET" & "TEST". FA SUPPLIER SHALL PROGRAM CONTROLS AS REQUIRED BY ENGINEER AND FIRE DEPT. "RESET" PB MAY BE PROGRAMMED TO AUTOMATICALLY BYPASS FAILED FA FIELD DEVICE TO ALLOW THE FA SYSTEM TO BE RESET UNTIL THE FA O&M CONTRACTOR CORRECTS THE PROBLEM.
  - 6 ENGRAVED RED NAMEPLATE WITH WHITE LETTERS WHICH READS "FIRE ALARM CONTROL PANEL"
  - 7 ELEVATION IS ONLY PROVIDED AS A GENERAL INDICATION OF THE FACP PANEL REQUIREMENTS. FA SUPPLIER SHALL FIELD DETERMINE FACP'S MODULES, ETC.

**⑦ FIRE ALARM CONTROL PANEL ELEVATION**  
 NOT TO SCALE

CONTRACT "2" WORK

\*\* THE FA SYSTEM'S WORK INCLUDES UPDATING (REVISING) THE FA CONTROL PANEL'S SOFTWARE PROGRAMMING



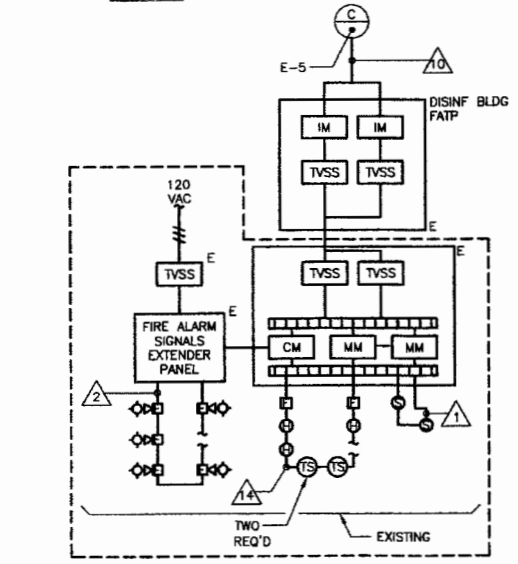
**EXISTING/MODIFIED I&C DATA SYSTEM ELECTRICAL SITE RISER DIAGRAM III \***  
 NOT TO SCALE

\* ELEC CONTRACTOR SHALL FURNISH/INSTALL TO NEW I&C FO CABLE (IE 10/12 STRANDS) AS DIRECTED BY THE I&C SYSTEM SUPPLIER

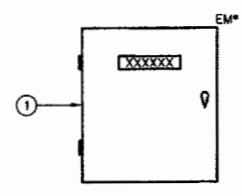
**I&C SYSTEM SUPPLIER CONTACT INFORMATION**

THE CONTRACT "1" AND "2" I&C SYSTEM SUPPLIER CONTACT INFORMATION IS AS FOLLOWS:

"AEC ENGINEERING INC."  
 "FREEPORT, MAINE 04032"  
 "MR FRED GOGUEN"  
 "1-207-865-4190 X 301"  
 "FGOGUEN@AECMAINE.COM"



**SECONDARY SLUDGE PUMPING STATION BUILDING**  
 NOT TO SCALE

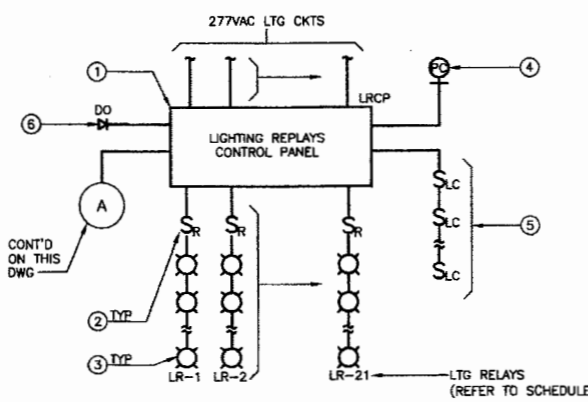


**② FA "AS-BUILT" PLANS CABINET DETAIL**  
 NOT TO SCALE

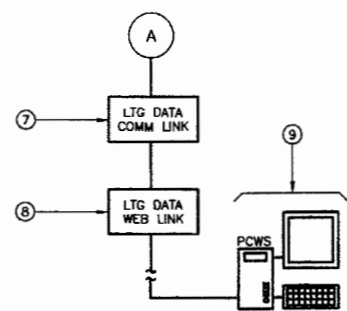
- FA AS-BUILT PLANS CABINET DETAIL "A" NOTES**
- 1 EC SHALL FURNISH/INSTALL FA PLANS CABINET AS REQUIRED BY CITY FIRE DEPT. CABINET SHALL CONTAIN AS A MINIMUM:
    - FA SHOP DWGS
    - FA WIRING DIAGRAMS
    - FA OPERATING INSTRUCTIONS
    - FA PROGRAMMING "CD" DISK
    - FA CERTIFICATION AND TESTING FORMS
    - FA BLDG PLAN DWGS WITH ALL FA DEVICES AND FIELD WIRING.

CONTRACT "2" WORK

\* THE FA SYSTEM'S WORK INCLUDES UPDATING (REVISING) THE FA SYSTEM'S DOCUMENTATION



**⑩ LIGHTING SYSTEM CONTROLS WIRING DIAGRAM "I"**  
 NOT TO SCALE



**⑩ LIGHTING SYSTEM CONTROLS WIRING DIAGRAM "II"**  
 NOT TO SCALE

- LIGHTING SYSTEM CONTROLS WIRING DIAGRAMS NOTES**
- 1 LIGHTING RELAYS CONTROL PANEL WITH THE FOLLOWING MINIMUM FEATURES:
    - MECHANICALLY HELD 120/277 VAC POWER RELAYS
    - NETWORKABLE VIA LOCAL AREA NETWORK
    - PROGRAMMING VIA EITHER LAP TOP OR DESK TOP COMPUTER WITH LTG CONTROL SOFTWARE
    - DATA LOGGING WITH PC TRANSFER
    - CONTROL BY EITHER COMPUTERIZED (NETWORKED) REMOTE LIGHTING CONTROL STATIONS AND OUTSIDE MOUNTED PHOTO-CELL
    - NON VOLATILE MEMORY
    - REMOTE ETHERNET TCP/IP DATA COMMUNICATION WITH LGT DATA AND WEB LINK COMM MODULES
  - 2 EQUAL TO WATT STOPPER "LIC" PANEL
  - 3 THREE POSITION (HOA) 20A TOGGLE TYPE LINE VOLTAGE OVER-RIDE SWITCH WHICH ARE MOUNTED BELOW THE LRCP
  - 4 LIGHTING FIXTURES, FOR NUMBER, LOCATION, CONTROLS, ETC REFER TO THE ELECTRICAL LIGHTING PLANS DRAWINGS.
  - 5 OUTSIDE MOUNTED PHOTO-ELECTRIC CELL WHICH IS FIELD LOCATED BY THE EC
  - 6 LOW VOLTAGE COMPUTERIZED TWO POSITION CONTROL STATIONS. FOR NUMBER AND LOCATION REFER TO THE LGT DWGS
  - 7 DATA PLUG IN OUTLET MOUNTED ON THE LRCP FRONT COVER FOR THE LAP TOP COMPUTER CONNECTION FOR PROGRAMMING.
  - 8 LGT DATA COMMUNICATION LINK MODULE FOR REMOTE LRCP TO PC COMMUNICATION (EQUAL TO WATT STOPPER DATA COM LINK (EC TO MOUNT IN I&C "CP-3" PANEL)
  - 9 LGT DATA COMMUNICATION LINK MODULE FR REMOTE LRCP TO PC ETHERNET COMMUNICATION (EQUAL TO WATT STOPPER WEB LINK NETWORK APPLIANCE) (EC NOT MOUNT IN THE "CP-3" PANEL)
  - 10 I&C WORK STATION (TYPICAL) WITH LGT CONTROL SOFTWARE. (EQUAL TO WATT STOPPER "WIN CONTROL SOFTWARE")
  - 11 ALTERNATE ACCEPTABLE LGT CONTROL SYSTEM SUPPLIERS ARE HUBBELL, LIGHTOLIER OR DOUGLAS. HOWEVER ALL HARDWARE AND SOFTWARE MUST MEET OR EXCEED THE DESIGN, CONSTRUCTION AND PERFORMANCE OF THE SPECIFIED WATT STOPPER INC SYSTEM.

**OPERATIONS BUILDING LIGHTING RELAYS PANEL SCHEDULE**

RELAY	LIGHTING CONTROLLED
<b>BASEMENT FLOOR</b>	
LR-1(a)	INFLUENT PUMPS ROOM
LR-2(b)	SEWAGE WET WELL ROOM
LR-3(c)	PUMPS/BLOWERS ROOMS
LR-4(d)	BASEMENT STAIR
<b>FIRST FLOOR</b>	
LR-5(a)	EQUIP MAINTENANCE RM
LR-6(b)	EQUIP MAINTENANCE RM
LR-7(d)	MEN'S LOCKER ROOM
LR-8(e)	WOMEN'S LOCKER ROOM
LR-9 (f)	MAIN CORRIDOR
LR-10(g)	GRIT WASHER ROOM
LR-11(h)	DEWATERING CONTROL RM
LR-12(i)	DEWATERING EQUIP RM
LR-13(j)	SLUDGE TRUCK WAY RM
LR-14(i)	KMNO4 CHEMICAL ROOM
LR-15(m)	POLYMER CHEMICAL ROOM
LR-16(n)	OUTSIDE ENTRANCE DOORS
LR-17(o)	OUTSIDE BUILDING WALLS
LR-18(a)	MEZZANINE STORAGE ROOM
<b>MISCELLANEOUS</b>	
LR-19(a)	HEADWORKS ROOM
LR-20(a)	FECI TANK ROOM
LR-21(a)	OUTSIDE PARKING
LR-22	SPARE
LR023	SPARE
LR-24	SPARE

**Lighting Relay control panel**

Relay	Control	Notes
LR-1	120/277V	Stalwart
LR-2	120/277V	Stalwart
LR-3	120/277V	Stalwart
LR-4	120/277V	Stalwart
LR-5	120/277V	Stalwart
LR-6	120/277V	Stalwart
LR-7	120/277V	Stalwart
LR-8	120/277V	Stalwart
LR-9	120/277V	Stalwart
LR-10	120/277V	Stalwart
LR-11	120/277V	Stalwart
LR-12	120/277V	Stalwart
LR-13	120/277V	Stalwart
LR-14	120/277V	Stalwart
LR-15	120/277V	Stalwart
LR-16	120/277V	Stalwart
LR-17	120/277V	Stalwart
LR-18	120/277V	Stalwart
LR-19	120/277V	Stalwart
LR-20	120/277V	Stalwart
LR-21	120/277V	Stalwart
LR-22	120/277V	Stalwart
LR-23	120/277V	Stalwart
LR-24	120/277V	Stalwart

- ELEC DRAWINGS REFERENCE NOTES**
- 1 FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
  - 2 FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
  - 3 FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.

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 (978) 682-9900 (900) 846900  
 www.westonandsampson.com

DATE: 7/15/2011

W. Weston

REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**ELECTRICAL SYSTEMS RISER DIAGRAMS "IV"**

CADD NO: 0905100.EG26  
 SCALE: AS SHOWN  
 CONTRACT: 2

DATE: 0905101

RE BY: ELD  
 DESIGNED BY: LMR  
 CHECKED BY: LMR  
 APPR BY: WPE

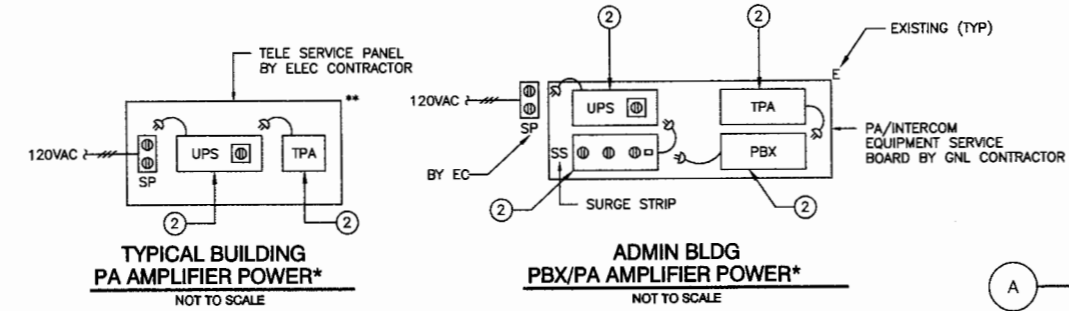
FILE NO: 189-38

**E-6**

SHEET 165 OF 202

RICHARDSON ELECTRICAL AS-BUILT

- TYPICAL INTERCOM TELEPHONE & PUBLIC ADDRESS WIRING TYPES**
- 1) BLDG TELEPHONE INSTRUMENT  
3/4"C-1 @ 4 PAIR NO 24 CAT "3" UTP
  - 2) BLDG TELE PA PAGING LOUD SPEAKER  
3/4"C-1 @ 2/C NO 16SH AUDIO
  - 3) BLDG TO BLDG TELEPHONE SERVICE  
4"C-1 @ 9 PAIR NO 24 CAT "3" UTP
  - 4) TELE SERVICE TO INTERCOM PBX  
4"C-1 @ 25 PAIR NO 24 CAT "3" UTP
  - 5) BLDG TO BLDG I&C DATA COM  
4"C-2 @ 12 STRAND FO CABLE
  - 6) TOWN WIRELESS DATA SERVICE  
TO DATA SERVICE BOARD  
2"C-1 @ COAXIAL CABLE
  - 7) I&C SPS SCADA DATA FUTURE  
SERVICE TO ICP-1A & 1B  
2"C W/NYLON PULL STRING
  - 8) DATA OUTLET 3/4"C-1 @ 4  
PR NO.24 UTP CAT "5E"
  - 9) BLDG TO BLDG I&C DATA COM  
4"C-1 @ 12 STRAND FO CABLE

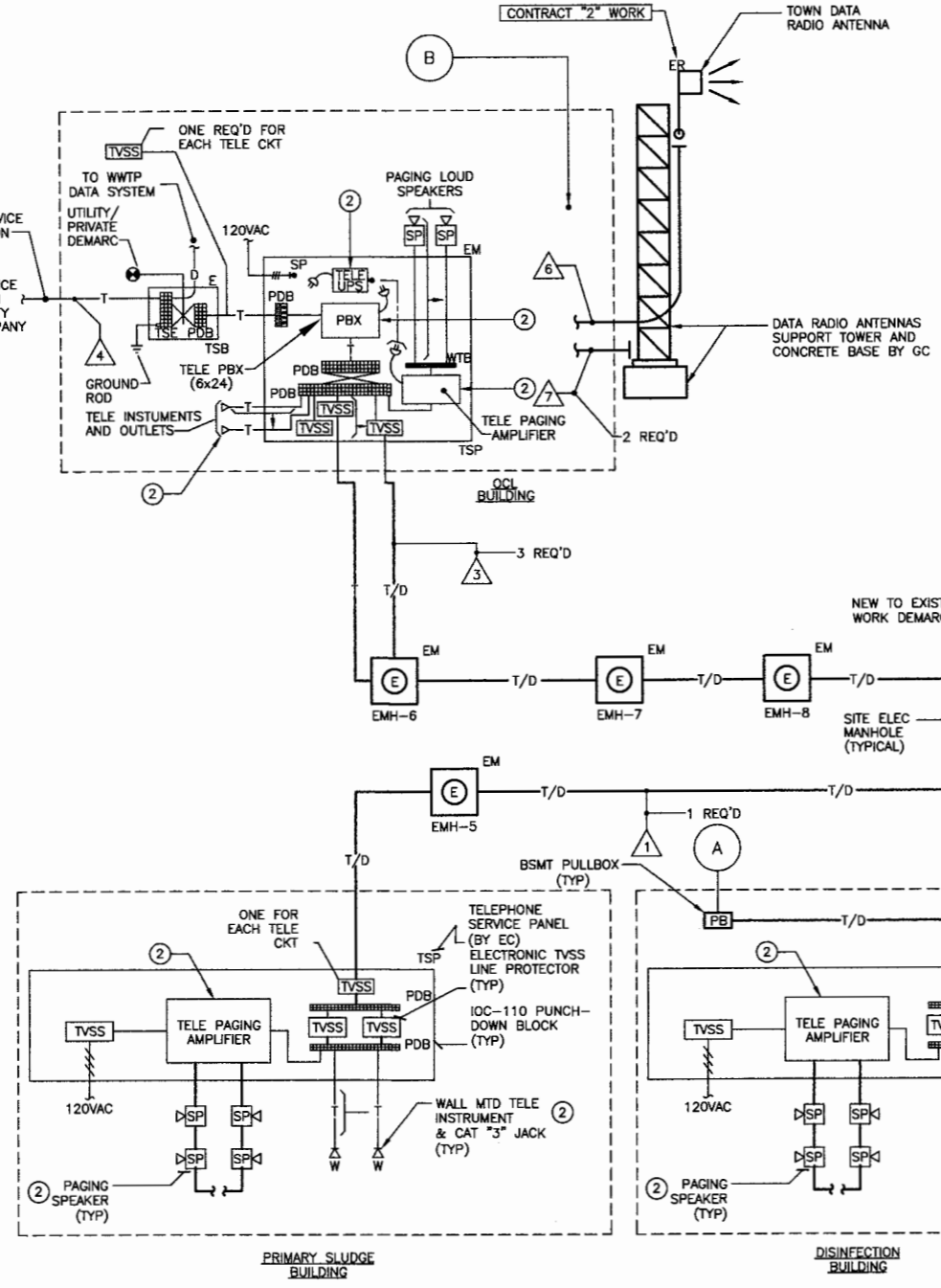


\*\* EXISTING FOR ALL BLDGS EXCEPT NEW FOR THE OPERATIONS BUILDING.

\* APC UPS (NEWBURYPORT STD) (1/2 HOUR BATTERY OPERATION)

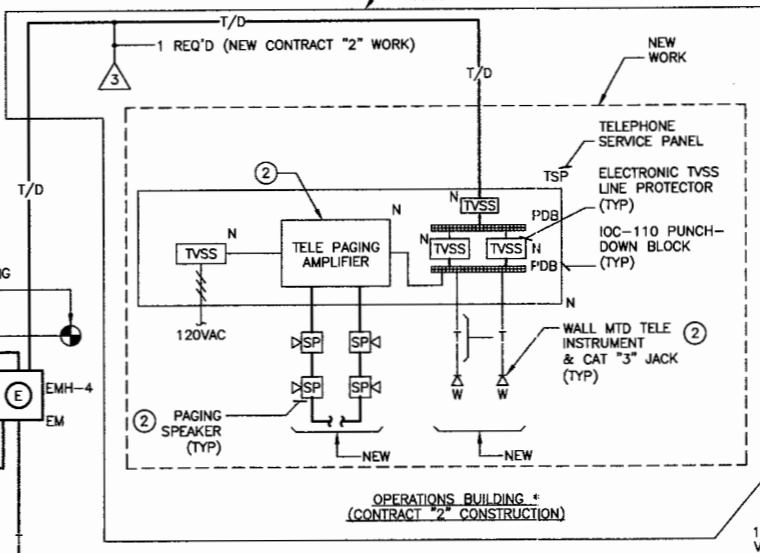
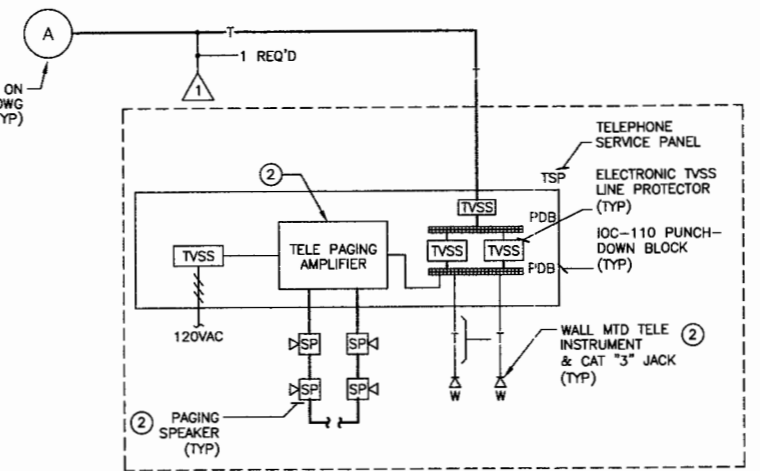
- TELEPHONE/INTERCOM/PAGING OPERATIONS**
- A) TELEPHONE -**
- 1) CONNECTION TO EXISTING CITY "CENTREX" OR TELEPHONE SERVICE AT OPS BLDG
  - 2) CONNECTION TO NEW INTERCOM "PBX" TO ALLOW FOR LIMITED INTERCOM TO OUTSIDE TELEPHONE ACCESS.
- B) INTERCOM -**
- 1) BUILDING TO BUILDING VOICE COMMUNICATION VIA ANALOG TYPE INTERCOM INSTRUMENTS
  - 2) BUILDING TO PLANT TELEPHONE VOICE COMMUNICATION VIA ANALOG TYPE INTERCOM INSTRUMENTS
  - 3) BUILDING TO OUTSIDE TELEPHONE VOICE LIMITED ACCESS COMMUNICATION (IE - PROGRAMMABLE PER EXTENSION) VIA ANALOG TYPE INTERCOM INSTRUMENTS
- C) PUBLIC ADDRESS SPEAKERS -**
- 1) INTERCOM TO BUILDING PAGING COMMUNICATION VIA INTERCOM INSTRUMENTS
  - 2) INTERCOM TO ALL BUILDINGS PAGING COMMUNICATION VIA INTERCOM INSTRUMENTS

- TYPICAL I&C FIBER-OPTIC CABLE INSTALLATION DETAIL**  
NOT TO SCALE
- I&C FO CABLE INSTALLATION DETAIL NOTES**
- 1) EC SHALL FIELD SURVEY THE EXISTING UNDERGROUND SITE CONDUITS IN ORDER TO DETERMINE THE EXISTING CONDITIONS WHICH CAN AFFECT THE INSTALLATION OF NEW I&C SCADA FIBER OPTIC CABLES.
  - 2) EC SHALL FURNISH/INSTALL OUTDOOR RATED 12 STRAND FIBER OPTIC CABLES. FOR BIDDING THE EC SHOULD PRICE THE FOLLOWING FO CABLES WHICH WILL BE ADJUSTED WITH THE "AS SUPPLIED" I&C SYSTEM REQUIREMENTS.
- "MOHAWK/CDT" (CABLE DESIGN TECHNOLOGY) "MODEL" M9X367"**
- FO CABLES SHALL BE LOOSE TUBE, GEL FILLED WITH METALLIC ARMOR WITH 50/125 MM GLASS (850/1300/MM WAVE LENGTH) AND 3.5/1.25 MAX ATTENUATION (dB/KM).
- 3) EC PRIOR TO FO CABLES RELEASE AND/OR INSTALLATION SHALL COORDINATE WITH THE "AS SUPPLIED" I&C SYSTEM. EC SHALL ADJUST THE FO CABLES AS REQUIRED.

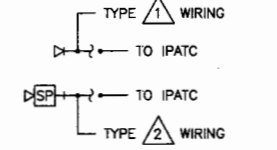


**EXISTING/MODIFIED TELEPHONE, DATA, & PUBLIC ADDRESS SYSTEM ELECTRICAL SITE RISER DIAGRAM "I1"**  
NOT TO SCALE

\* THE I&C DATA SYSTEM SHALL UTILIZE THE SAME SITE DUCTBANKS AND MANHOLES. EC SHALL REFER TO THE I&C DWGS FOR THE I&C FO CABLES REQUIREMENTS, EC SHALL FURNISH/INSTALL THE I&C FIBER OPTIC CABLES.



\* THE GRAVITY THICKENER BLDG TELE SERVICE IS PART OF THE CONTRACT "2" CONSTRUCTION



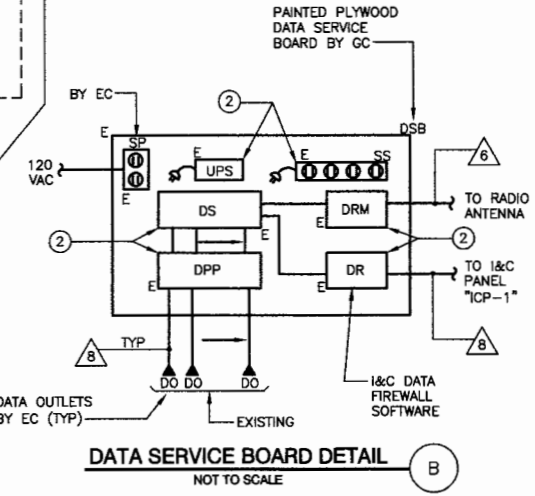
**TYPICAL BUILDING INTERCOM & SPEAKER WIRING \*\***  
NOT TO SCALE

\*\* EXISTING FOR ALL BLDGS

- TELEPHONE SYSTEM WORK NOTES**
- 1) THE EC'S TELEPHONE SYSTEM WORK INCLUDES NEW TELEPHONE CABLE FROM THE OPS BUILDING TO THE OCL BUILDING.
  - 2) THE EC'S TELE WORK ALSO INCLUDES THE RE-USED TELE COMMUNICATION FOR THE FECL AND FECL/SPS CONTROL PANELS.

- ELEC DRAWINGS REFERENCE NOTES**
- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
  - 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
  - 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.

- TELE AND DATA RISER DIAGRAM NOTES**
- 1) EC SHALL FURNISH/INSTALL THE TELE & DATA HORIZONTAL PREMISE WIRING AS INDICATED. IN GENERAL, THE EC'S WORK IS AS FOLLOWS:
    - BUILDING'S TELE/DATA OUTLETS, UTP CABLES AND TERMINATION EQUIPMENT (TELE PUNCHDOWN BLOCKS AND DATA PATCH PANELS).
    - BUILDING'S TELE SERVICE PANELS WITH POWER SUPPLIES INCLUDING TVSS CABLES PROTECTORS, PANELS SIZED LARGE ENOUGH FOR THE TELE PAGING AMPLIFIERS.
    - SITE TELE MULTI-PAIR COMMUNICATION CABLES AND I&C DATA FIBER OPTIC CABLES. ALL SITE CABLES SHALL BE WATER-PROOF TYPES WHICH ARE SUITABLE FOR INSTALLATION IN WET DUCTBANKS AND MANHOLES. \*
  - 2) EC SHALL INSTALL AND WIRE THE FOLLOWING TELE AND OFFICE DATA EQUIPMENT WHICH IS FURNISHED BY THE TOWN'S IT DEPARTMENT:
    - TELEPHONE UPS POWER SUPPLIES
    - TELEPHONE PBX SWITCH
    - TELEPHONE PAGING AMPLIFIERS
    - TELEPHONE INSTRUMENTS
    - TELEPHONE PAGING SPEAKERS
    - DATA ETHERNET ROUTER
    - DATA ETHERNET SWITCH
    - DATA RADIO MODEM
    - DATA UPS POWER SUPPLY
  - 3) THE TELE AND DATA HORIZONTAL PREMISE SYSTEM SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE APPLICABLE TELECOM "BISCI" TECHNICAL STANDARDS. THE EC'S T/D SUPPLIER SHALL BE A BISCI RCDD WHOSE WORK INCLUDES THE FOLLOWING:
    - BISCI INTERCONNECTION WIRING DIAGRAMS
    - BISCI INSTALLATION SUPERVISION
    - BISCI FIELD TESTING AND CERTIFICATION
  - 4) EC SHALL CONTACT THE VERIZON TELE UTILITY COMPANY AS SOON AS POSSIBLE AFTER CONTRACT AWARD IN ORDER TO COORDINATE THE WWTF'S NEW TELEPHONE VOICE SERVICE.
  - 5) ALL TELE/DATA FIELD CABLING SHALL BE BOTH COLOR CODED AND HAVE ALPHA-NUMERIC CONDUCTOR IDENTIFICATION WHICH WILL BE DOCUMENTED ON THE T/D INTERCONNECTION WIRING DIAGRAMS SHOP DRAWINGS.
  - 6) ALL TELE/DATA CABLES SHALL BE SEGREGATED FROM OTHER WIRING WITH MANHOLE PVC PULL-BOXES AND FLEXIBLE CONDUIT. IN BUILDINGS ALL TELE/DATA WIRING SHALL BE INSTALLED IN CONDUIT RACEWAYS UNLESS INSTALLED ABOVE HUNG CEILING IN THE OCL BUILDING.



**DATA SERVICE BOARD DETAIL**  
NOT TO SCALE

**SED ASSOCIATES CORP.**  
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CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT

**ELECTRICAL SYSTEMS RISER DIAGRAMS "V"**

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

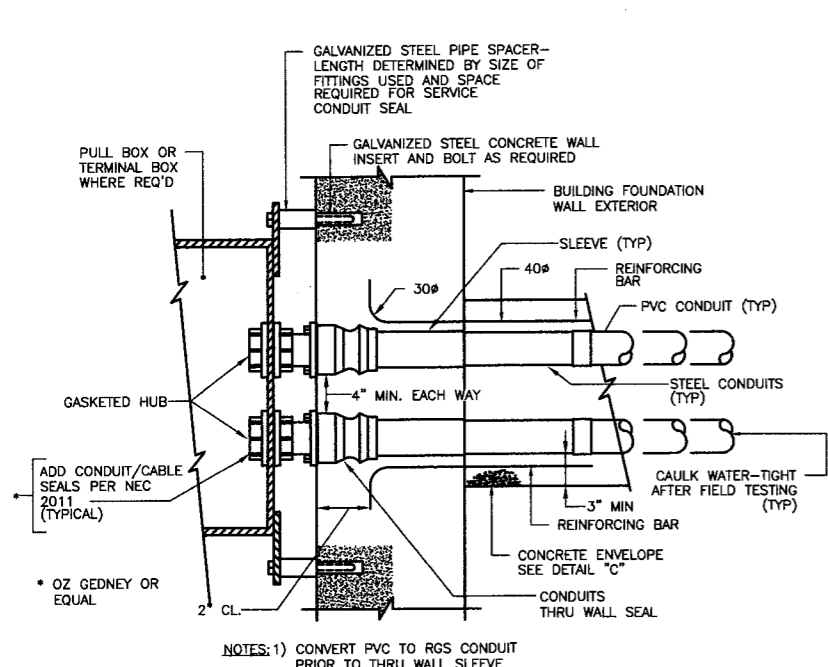
CONTRACT: 2  
JOB NO.: 0905101  
AS SHOWN

DATE: 7/15/2011

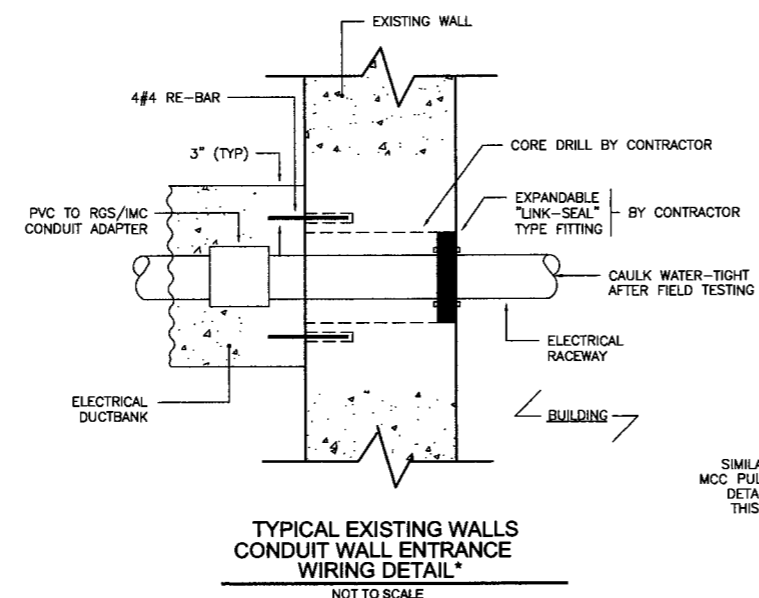
FILE NO.: 189-37

SHEET 166 OF 202

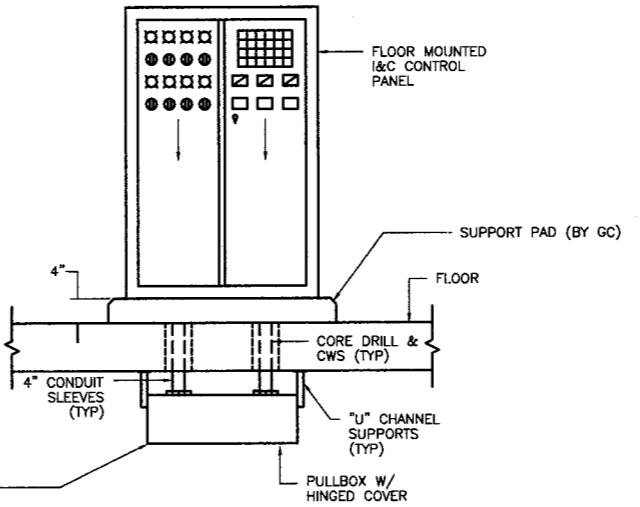




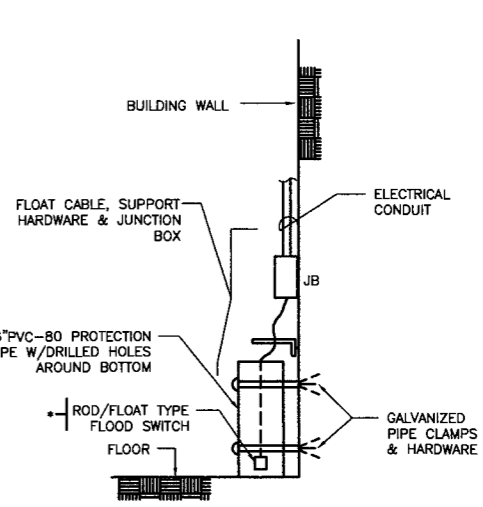
**TYPICAL NEW WALLS CONDUITS WALL ENTRANCE SEALS (CWS) WIRING DETAIL\***  
NOT TO SCALE



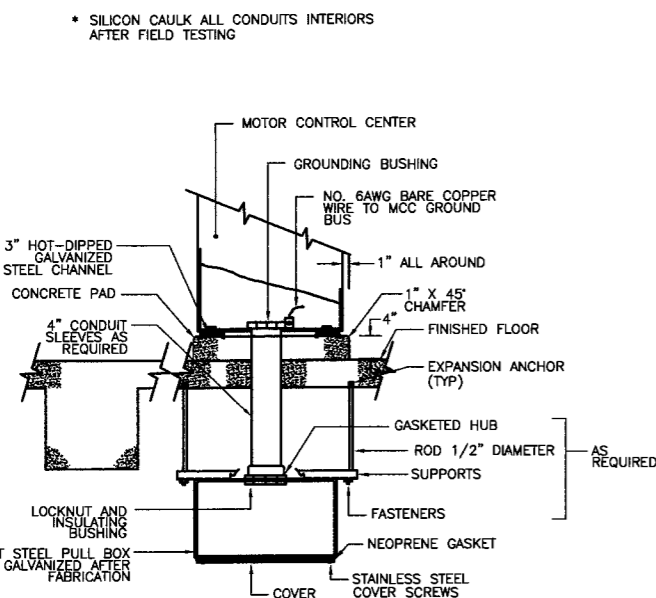
**TYPICAL EXISTING WALLS CONDUIT WALL ENTRANCE WIRING DETAIL\***  
NOT TO SCALE



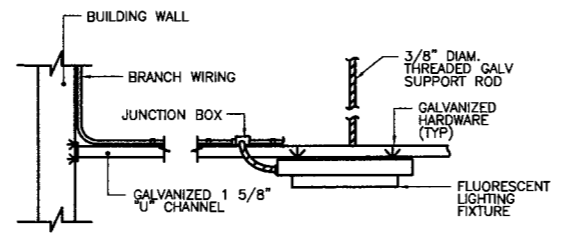
**TYPICAL I&C PANEL MOUNTING AND WIRING DETAIL\***  
NOT TO SCALE



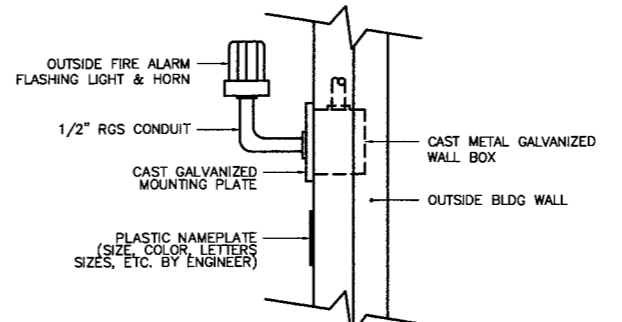
**TYPICAL FLOOR LEAK FLOAT SWITCH MOUNTING AND WIRING DETAIL**  
NOT TO SCALE



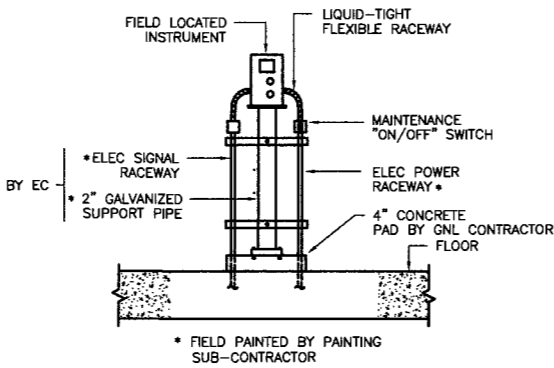
**TYPICAL MOTOR CONTROL CENTER PULLBOX DETAIL**  
NOT TO SCALE



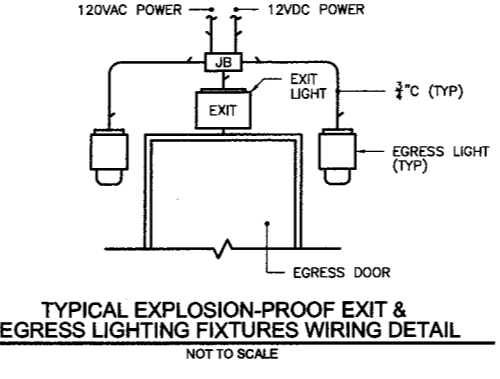
**TYPICAL EXPOSED MOUNTED FLUORESCENT LIGHTING FIXTURE MOUNTING AND WIRING DETAIL\***  
NOT TO SCALE



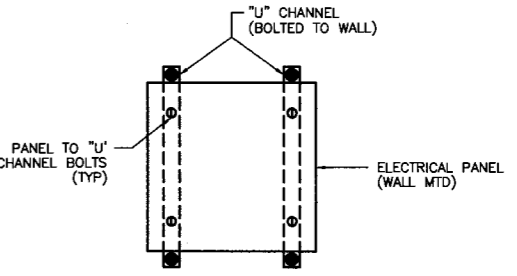
**TYPICAL FIRE ALARM WARNING HORN/LIGHTS WIRING DETAIL\***  
NOT TO SCALE



**TYPICAL FLOOR FIELD INSTRUMENT MOUNTING AND WIRING DETAIL\*\***  
NOT TO SCALE



**TYPICAL EXPLOSION-PROOF EXIT & EGRESS LIGHTING FIXTURES WIRING DETAIL**  
NOT TO SCALE



**TYPICAL ELECTRICAL PANEL WALL MOUNTING DETAIL ①**  
NOT TO SCALE

- MCC PULL BOX DETAIL NOTES**
- FOR THE MCC WITHOUT A BASEMENT, LOCATE THE MCC PULLBOX ABOVE THE UNIT.
  - PULL BOXES AND 4" SLEEVES NUMBERS SHALL BE FIELD DETERMINED BY THE ELEC CONTRACTOR WITH A MINIMUM OF 25% FUTURE CAPACITY.
  - AFTER FIELD TESTING, ALL CONDUITS SHALL BE CAULKED GAS-TIGHT.
  - TYPICAL FOR THE I&C CONTROL PANEL "ICP-3" AND THE ROTARY SLUDGE PRESS PANEL "RSCP"

- I&C PANEL MTS AND WIRING DETAIL NOTES**
- FOR THE I&C PANEL WITHOUT BASEMENTS, LOCATE THE PULL BOX ABOVE THE PANEL.
  - PULL BOXES AND 4" SLEEVES SIZES AND NUMBERS SHALL BE FIELD DETERMINED BY THE CONTRACTOR WITH A MINIMUM OF 25% FUTURE EXPANSION.
  - AFTER FIELD TESTING, ALL CONDUITS SHALL BE CAULKED GAS-TIGHT.

- ELECTRICAL GENERAL DETAILS NOTES**
- THE GENERAL ELECTRICAL DETAILS ARE INTENDED TO APPLY TO ALL BUILDINGS, SITE, ETC AREAS. EC SHALL ADJUST AS REQUIRED THE MATERIALS, ENCLOSURES, ETC PER EACH ROOM OR AREAS "NEMA" RATING AS INDICATED ON THE DWGS.
  - EC'S WORK INCLUDES ALL COORDINATION WITH THE FOLLOWING PRIOR TO ANY ELEC EQUIPMENT RELEASE AND/OR ROUGH WIRING.
    - EXISTING BUILDING AND SITE CONDITIONS
    - "AS SUPPLIED" PROJECT EQUIPMENT
    - NEW GENERAL CONSTRUCTION
    - INTER-DISCIPLINE OF OTHER CONSTRUCTION TRADES

\*\* ADJUST MATERIAL PER ROOM'S NEMA CLASSIFICATION  
\*\* ADJUST WIRING FOR EXISTING/MODIFIED BUILDING INSTALLATIONS.

- ELECTRICAL EQUIPMENT SEIZMIC NOTES**
- EC SHALL FURNISH/INSTALL SEIZMIC ELECTRICAL EQUIPMENT SUPPORTS FOR THE MCCS, ICP, ETC FLOOR MOUNTED EQUIPMENT.
  - THE SEIZMIC SUPPORTS SHALL BE IN COMPLIANCE WITH THE APPLICABLE MASS STATE BLDG CODE REQUIREMENTS.
  - IN GENERAL THE FLOOR MOUNTED ELEC EQUIP SEIZMIC SUPPORTS SHALL BE TOP OF EQUIP TO WALL AND BOTTOM OF EQUIP TO FLOOR GALVANIZED STEEL SUPPORTS AND HARDWARE.

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
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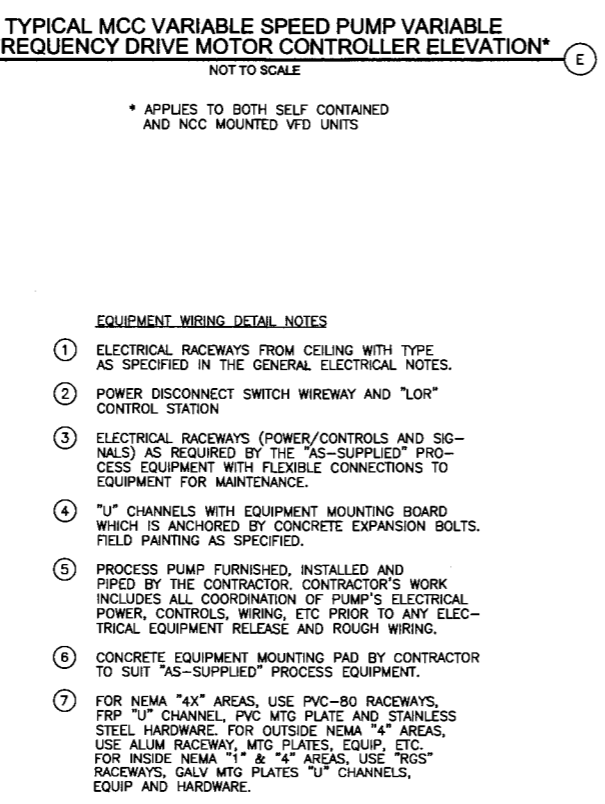
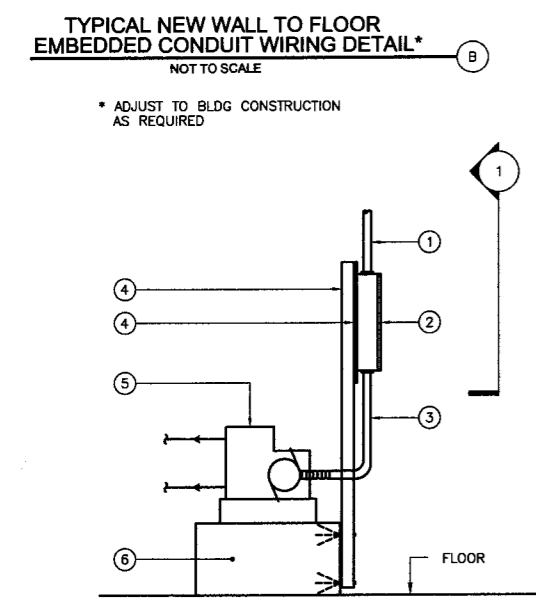
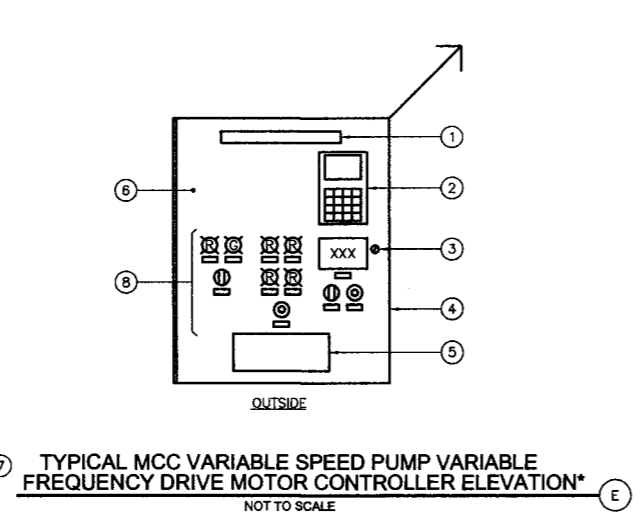
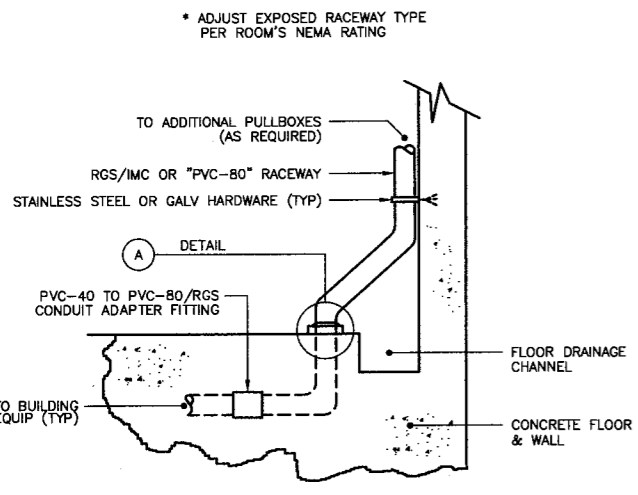
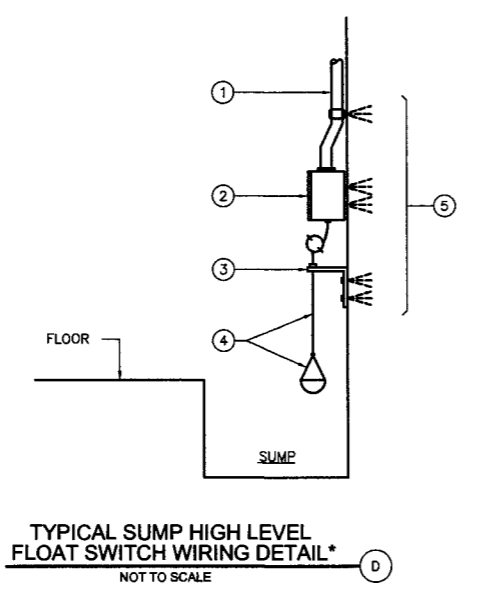
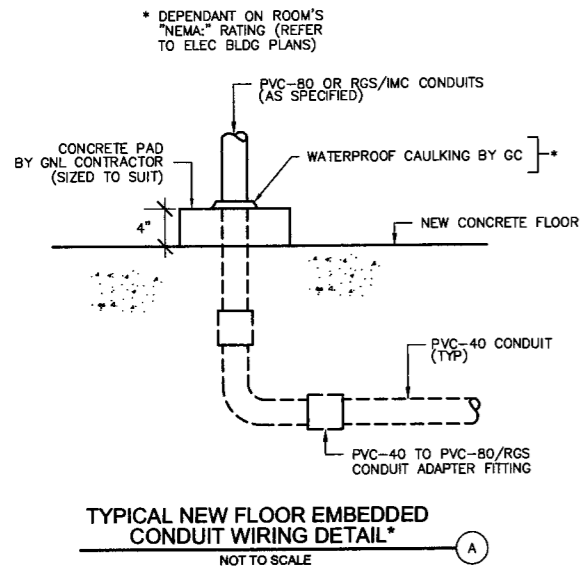
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No.	Date	Dr. By	Chk. By	App. By	Description	Date



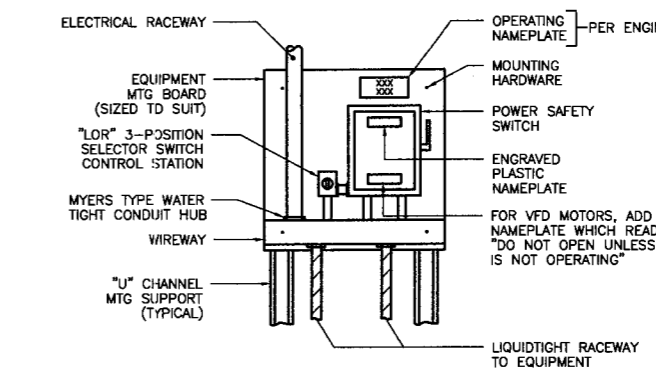
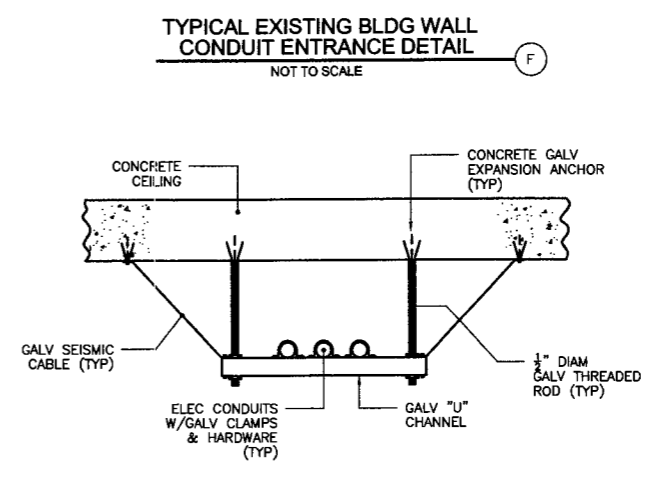
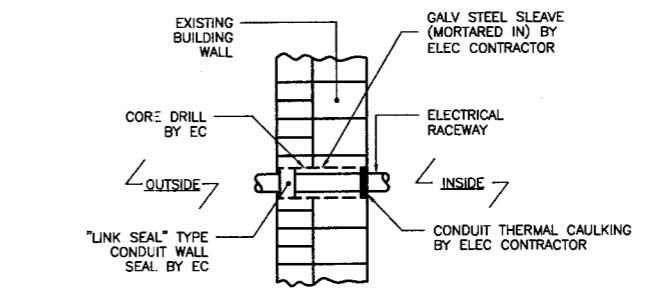




- SUMP FLOAT SWITCH WIRING DETAIL NOTES**
- ELECTRICAL RACEWAYS FROM CEILING WITH TYPE AS SPECIFIED IN THE GENERAL ELECTRICAL NOTES.
  - ELECTRICAL JUNCTION BOX WITH TYPE AS SPECIFIED IN THE GENERAL ELECTRICAL NOTES WITH STAINLESS STEEL HARDWARE.
  - ELECTRICAL CABLE SUPPORT BRACKET WHICH MATCHES THE RACEWAYS MATERIAL AS SPECIFIED IN THE GENERAL ELECTRICAL NOTES. BRACKET BY CONTRACTOR.
  - I&C HIGH LEVEL FLOAT SWITCH AND CABLE FURNISHED WITH THE I&C EQUIPMENT BUT MOUNTED AND WIRED BY THE CONTRACTOR.
  - STAINLESS STEEL CONCRETE EXPANSION BOLTS BY CONTRACTOR.
  - ADJUST MATERIAL TO ROOM'S NEMA RATING

- TYPICAL VARIABLE SPEED PUMP VFD ELEVATION NOTES**
- EQUIPMENT ENGRAVED PLASTIC NAMEPLATE. USE FULL EQUIPMENT NAME "SODIUM HYPOCHLORITE CHEMICAL FEED PUMP NO 1". SUBMIT TO ENGINEER A NAMEPLATE SCHEDULE FOR APPROVAL.
  - VFD HUMAN MACHINE INTERFACE (HMI) MODULE WITH ALPHA NUMERIC LCD DISPLAY AND DIGITAL KEYPADS. HMI DISPLAYS SHALL BE PROGRAMMED AS DIRECTED BY THE ENGINEER TO INDICATE ON/OFF, PUMP SPEED AND ALARMS. (MTD OUTSIDE PNL)
  - ELAPSED TIME DIGITAL METER (NON-RESETTABLE)
  - PAINTED STEEL ENCLOSURE SIZED TO SUIT TO HOUSE VFD AND OTHER REQUIRED PUMP MOTOR CONTROLS. VFD SUPPLIER SHALL DESIGN FOR FAN COOLING. NOTE - STAINLESS STEEL ENCLOSURE FOR NEMA "4X" AREAS.
  - ENGRAVED PLASTIC NAMEPLATE FOR OPERATING THE VFD HMI IN ORDER TO DISPLAY THE ON/OFF CONDITION, PUMP SPEED, STROKE POSITION AND ALARMS. NOTE, ACCESS TO VFD CONFIGURATION PARAMETERS SHALL BE SECURITY ACCESS CODE CONTROLLED.
  - VFD SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND 100% TESTED PRIOR TO SHIPMENT TO SITE. CONTRACTOR SHALL PROVIDE TESTING CERTIFICATE. ALL FACTORY WIRING WHICH INTERCONNECTS TO FIELD WIRING SHALL BE TERMINATED TO LABELED SCREW TYPE WIRING TERMINALS.
  - THE VFD SHALL BE FACTORY LABELED WITH A "UL" LISTING CERTIFICATE AS A COMPLETE FACTORY ASSEMBLED AND TESTED VFD UL LISTED ASSEMBLY.
  - PUMP LOCAL ON/OFF, ALARMS & SPEED CONTROLS & INDICATORS.
  - ELECTRONIC "SOFT START" MOTOR STARTERS ARE SIMILAR EXCEPT NO SPEED CONTROLS OR INDICATORS

- ELECTRICAL DETAILS GENERAL NOTES**
- ALL CONDUITS ENTERING ELECTRICAL EQUIPMENT FROM THE PROCESS AREAS SHALL BE CAULKED WATER AND GAS TIGHT AFTER FIELD TESTING.
  - ALL MISCELLANEOUS EQUIPMENT AND RACEWAYS SUPPORTS SHALL BE FURNISHED AND INSTALLED BY THE EC AS FOLLOWS PER AREA:
    - A) FOR INSIDE NEMA "1" AND "4" AREAS USE HOT DIPPED GALVANIZED CHANNELS AND HARDWARE
    - B) FOR OUTSIDE NEMA "4" AREAS USE ALUMINUM CHANNELS AND STAINLESS STEEL HARDWARE
    - C) FOR INSIDE NEMA "4X" AREAS USE FRP CHANNELS AND STAINLESS STEEL HARDWARE.
  - ELEC CONTRACTOR'S WORK INCLUDES ALL NECESSARY COORDINATION WITH THE "AS-SUPPLIED" EQUIPMENT AND EXISTING BUILDING / SITE CONDITIONS PRIOR TO ANY ELECTRICAL EQUIPMENT RELEASE AND ROUGH WIRING.
  - ALL ELECTRICAL EQUIPMENT AND WIRING INSTALLATION SHALL BE INSTALLED WITH SEISMIC BRACING, CABLES, ANCHORS, ETC.
  - ALL CONDUITS ENTERING BUILDING FROM OUTSIDE SITE WIRING SHALL BE CAULKED WATER AND GAS TIGHT AFTER FIELD TESTING.



**ELEC CONTRACTOR INSTALLATION NOTE**

ALL ELECTRICAL EQUIPMENT AND ASSOCIATED WIRING SHALL BE FURNISHED, INSTALLED AND WIRED IN STRICT ACCORDANCE WITH ALL APPLICABLE MANUFACTURER'S TECHNICAL REQUIREMENTS. CONTRACTOR'S WORK INCLUDES ALL NECESSARY COORDINATION WITH MANUFACTURERS.

- ELECTRICAL GENERAL DETAILS NOTES**
- THE GENERAL ELECTRICAL DETAILS ARE INTENDED TO APPLY TO ALL BUILDINGS, SITE ETC AREAS. EC SHALL ADJUST AS REQUIRED THE MATERIALS, ENCLOSURES, ETC PER EACH ROOM OR AREAS "NEMA" RATING AS INDICATED ON THE DWGS.
  - EC'S WORK INCLUDES ALL COORDINATION WITH THE FOLLOWING PRIOR TO ANY ELEC EQUIPMENT RELEASE AND/OR ROUGH WIRING.
    - EXISTING BUILDING AND SITE CONDITIONS
    - "AS SUPPLIED" PROJECT EQUIPMENT
    - NEW GENERAL CONSTRUCTION
    - INTER-DISCIPLINE OF OTHER CONSTRUCTION TRADES

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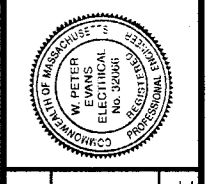
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No.	Date	Dr. By	App. By	Description

W. Peter Evans  
REGISTERED PROFESSIONAL ENGINEER

DATE: 7/15/2011

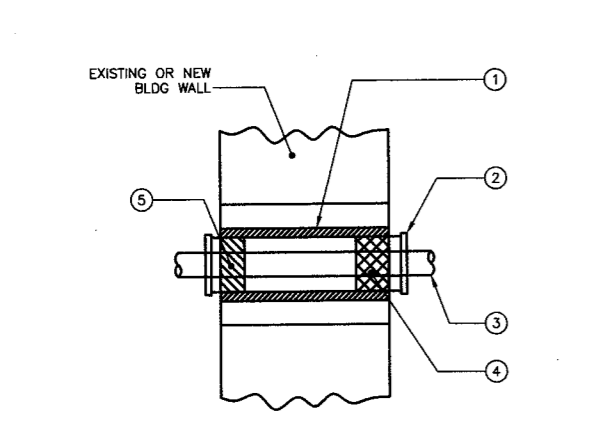


CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL GENERAL DIAGRAMS AND DETAILS "I11"**  
 SCALE: AS SHOWN  
 CONTRACT: 2  
 JOB NO.: 09051.01  
 DRAWN BY: ELD  
 CHECKED BY: LMR  
 APPR BY: WPE  
 CAD: NO. 0905101.EG33  
 SHEET NO. 189-34

No.	Date	Dr. By	Ck. By	App. By	Description

7/15/2011 DATE

W. Peterson REGISTERED PROFESSIONAL ENGINEER

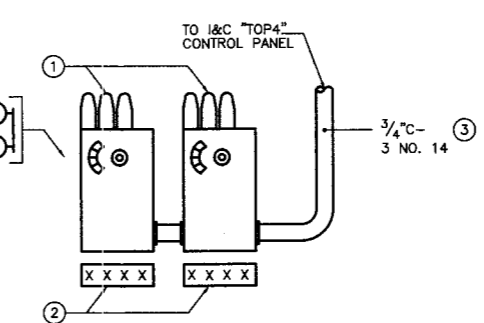
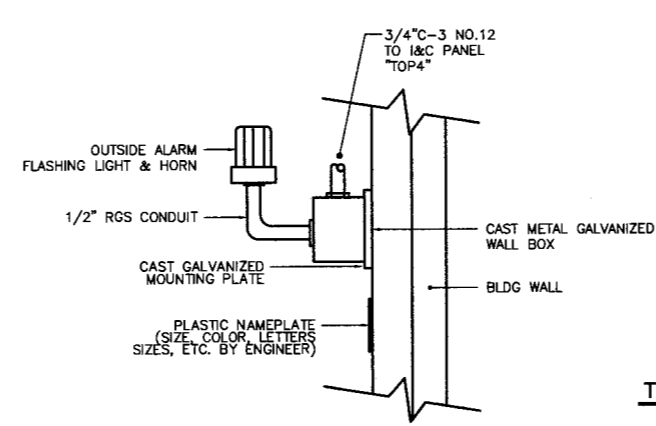
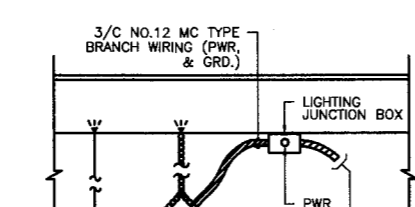
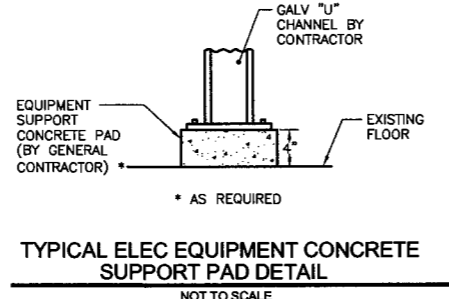


**TYPICAL FIRE RATED ELECTRICAL AND I&C CONTROL ROOMS WALL PENETRATION WIRING DETAIL**  
 NOT TO SCALE

\* REFER TO THE ARCHITECTURAL DWGS FOR THE ROOM'S FIRE RATING

**FIRE RATED WALL ELECTRICAL WIRING DETAIL NOTES**

- MASONRY OR CONCRETE BUILDING WALL CORE DRILL WITH CONCRETE MORTAR SEALING AROUND "RGS" CONDUIT SLEEVE.
- OVERSIZED (I.E.-5") "RGS" CONDUIT SLEEVE WITH INSULATED BUSHINGS (BOTH ENDS)
- "RGS" CONDUIT RACEWAY (AS REQUIRED) FOR PWR, CTL, SIGNAL, ETC. WIRING.
- UL LISTED 2-HOUR FIRE STOPPING CAULKING (AS REQUIRED).
- "DUC-SEAL" TYPE WATER/GAS CAULKING (AS REQUIRED)
- ALL CORE DRILLING, RACEWAYS, CAULKING, ETC. FIRE STOPPING SHALL BE FURNISHED/INSTALLED BY EC (I.E. CONTRACT # HG-341.02-ELECTRICAL)

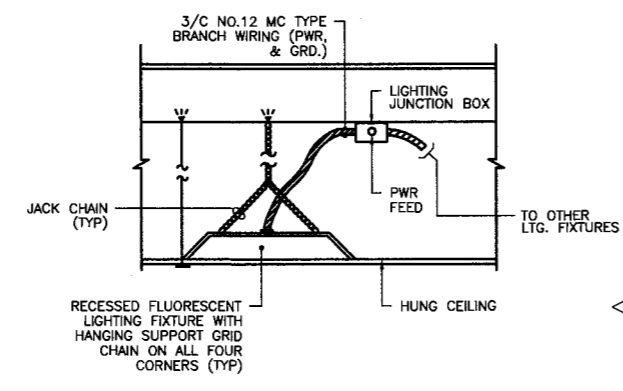


**ELECTRICAL SUBSTATION ROOM "LO/Hi" TEMP ALARM THERMOSTATS WIRING DETAIL**  
 NOT TO SCALE

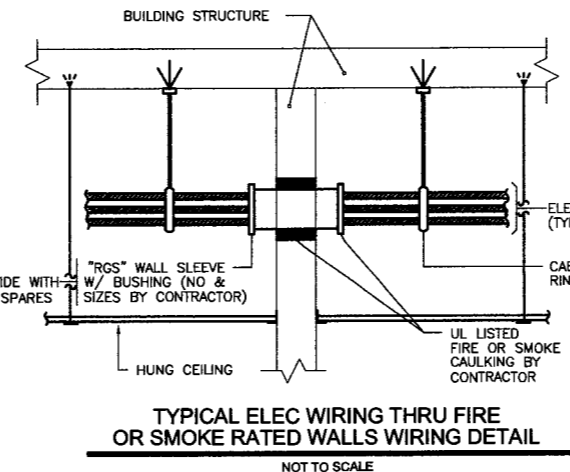
**TEMP ALARM THERMOSTATS WIRING DETAIL NOTES**

- ROOM TEMP "LO/Hi" TEMP ALARM THERMOSTATS (DAYTON # 2E728/2E206 OR EQUAL) WHICH ARE FURNISHED/INSTALLED/WIRED BY CONTRACTOR (IE-CONTRACT # 341.02-ELECTRICAL).
- ENGRAVED PLASTIC NAMEPLATES FURNISHED/INSTALLED BY CONTRACTOR AS RECOMMENDED BY ENGINEER.
- I&C ALARMS CONDUIT/WIRE FURNISHED/INSTALLED BY CONTRACTOR. CONTRACTOR'S WORK INCLUDES ALL NECESSARY COORDINATION PRIOR TO ANY ROUGH WIRING.

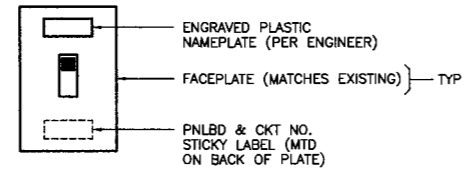
\* ELECTRICAL MCC ROOM THERMOSTATS ARE SIMILAR.



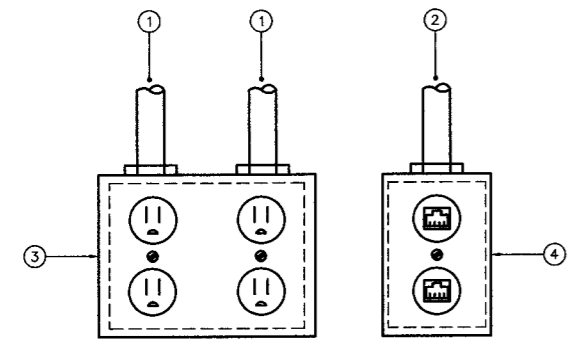
**RECESSED LIGHTING FIXTURE TYPICAL WIRING AND MOUNTING DETAIL**  
 NOT TO SCALE



**TYPICAL ELEC WIRING THRU FIRE OR SMOKE RATED WALLS WIRING DETAIL**  
 NOT TO SCALE



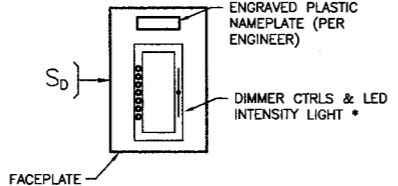
**TYPICAL LTG CONTROL SWITCH DETAIL**  
 NOT TO SCALE



**TYPICAL WORKSTATION POWER AND TELE/DATA OUTLETS AND WIRING DETAIL**  
 NOT TO SCALE

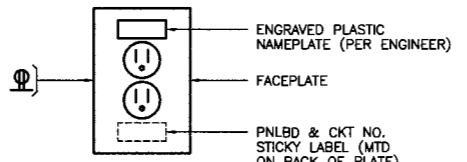
**OFFICE OUTLETS DETAIL NOTES**

- POWER OUTLET TYPE "RGS" POWER BRANCH WIRING (EXPOSED ON BUILDING WALL)
- TELE CATEGORY "3" AND DATA CATEGORY "5E" UTP CABLES WITH RGS RACEWAY (EXPOSED ON BUILDING WALL).
- TWO GANG POWER OUTLET BOX WITH QUADPLEX SURGE PROTECTED GROUNDING OUTLET WITH STAINLESS STEEL FACEPLATE (COLOR BY ARCHITECT)
- TELE / DATA OUTLET WITH "RJ-11" TELE AND "RJ-45" DATA PLUG-IN JACKS WITH STAINLESS STEEL FACEPLATE (COLOR BY ARCHITECT). NOTE: FACEPLATE MUST BE SIMILAR TO DUPLEX RECEPTACLE TYPE.

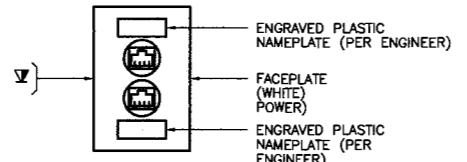


**TYPICAL LIGHTING DIMMER LTG CONTROL SWITCH DETAIL**  
 NOT TO SCALE

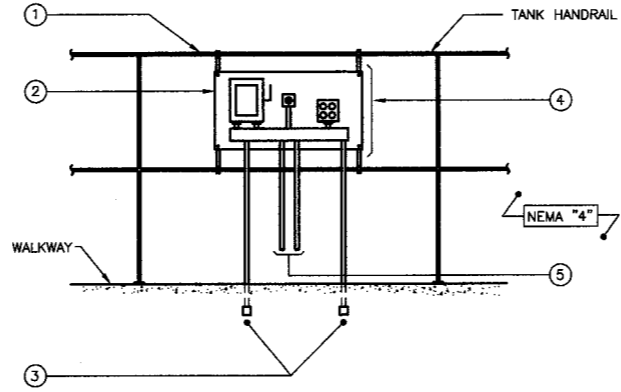
\* LUTRON "MAESTRO" 1000 WATT DIMMER SWITCH (COORD W/ DIMMING BALLASTS)



**TYPICAL RECEPTACLE DETAIL**  
 NOT TO SCALE



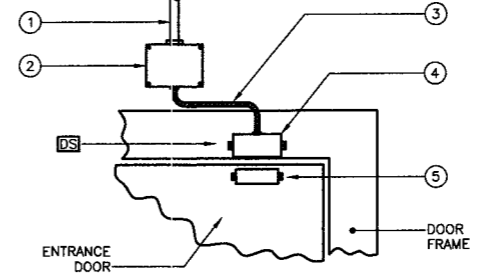
**TYPICAL TELE/DATA JACK DETAIL**  
 NOT TO SCALE



**TYPICAL OUTDOOR PROCESS TANK HANDRAIL ELEC EQUIP MOUNTING/WIRING DETAIL**  
 NOT TO SCALE

**OUTDOOR TANK EQUIPMENT DETAIL NOTES**

- ALUMINUM "U" CHANNELS AND STAINLESS STEEL "U" BOLTS HARDWARE AS REQUIRED
- ALUMINUM EQUIPMENT MOUNTING PLATE (SIZED TO SUIT CONTRACTOR)
- ALUMINUM TO PVC RACEWAYS AS REQ'D
- ELEC EQUIPMENT (I.E.- WIREWAY, DISC SWITCH, CONTROL STATION AND RECPTS) WITH ALUMINUM NEMA "4" ENCLOSURES
- ALUM LIQUID-TIGHT FLEXIBLE METAL RACEWAYS TO EQUIPMENT, FIELD DEVICES AS REQUIRED.
- CONTRACTOR SHALL FURNISH/INSTALL ALL ITEMS INCLUDING COORDINATION WITH TANK HANDRAILS, "AS-SUPPLIED" EQUIP, FIELD WIRING, ETC.



**TYPICAL INTRUSION DOOR SWITCH MOUNTING/WIRING DETAIL**  
 NOT TO SCALE

**INTRUSION DOOR SWITCH DETAIL NOTES**

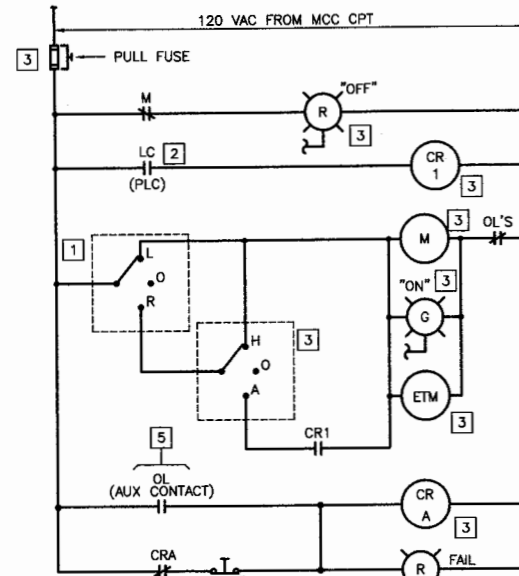
- ELECTRICAL CONDUIT/WIRE AS INDICATED ON POWER/LIGHTING BUILDING PLANS DWGS.
- ELECTRICAL JUNCTION BOX WITH WIRE SPLICES AS RECOMMENDED BY SWITCH MANUFACTURER.
- LIQUID-TIGHT RACEWAY WHICH COORDINATES WITH "AS-SUPPLIED" MAGNETIC DOOR SWITCH
- HEAVY DUTY TYPE MAGNETIC DOOR SWITCH MOUNTED IN GALV CAST METAL ENCLOSURE.
- HEAVY DUTY TYPE MAGNET MOUNTED IN GALV CAST METAL ENCLOSURE.
- CONTRACTOR SHALL FURNISH/INSTALL ALL ITEMS INCLUDING COORDINATION WITH TANK HANDRAILS, "AS-SUPPLIED" EQUIP, FIELD WIRING, ETC. ALSO ADJUST WIRING FOR HAZARDOUS WIRING LOCATIONS.

**ELECTRICAL GENERAL DETAILS NOTES**

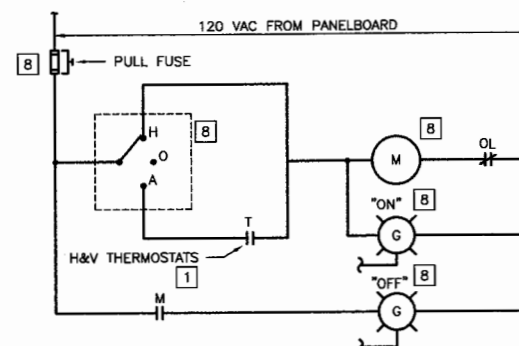
- THE GENERAL ELECTRICAL DETAILS ARE INTENDED TO APPLY TO ALL BUILDINGS, SITE ETC AREAS. EC SHALL ADJUST AS REQUIRED THE MATERIALS, ENCLOSURES, ETC PER EACH ROOM OR AREAS "NEMA" RATING AS INDICATED ON THE DWGS.
- EC'S WORK INCLUDES ALL COORDINATION WITH THE FOLLOWING PRIOR TO ANY ELEC EQUIPMENT RELEASE AND/OR ROUGH WIRING.
  - EXISTING BUILDING AND SITE CONDITIONS
  - "AS SUPPLIED" PROJECT EQUIPMENT
  - NEW GENERAL CONSTRUCTION
  - INTER-DISCIPLINE OF OTHER CONSTRUCTION TRADES

**ELEC DRAWINGS REFERENCE NOTES**

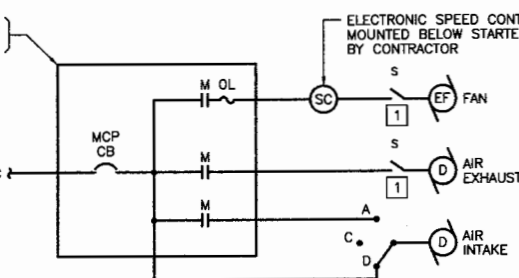
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
- FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
- FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.



TYPICAL PROCESS MOTOR WIRING DIAGRAM (CONSTANT SPEED)  
 NOT TO SCALE

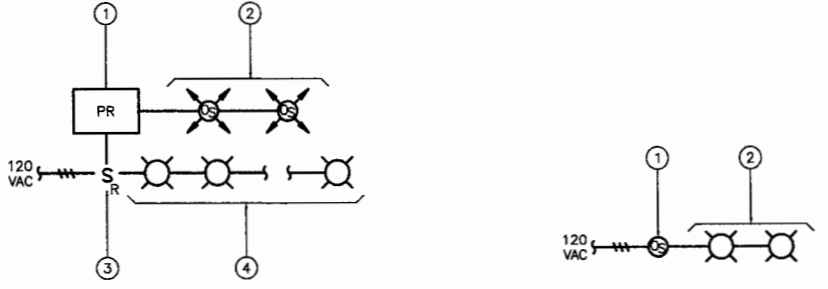


TYPICAL H&V MOTOR WIRING DIAGRAM  
 NOT TO SCALE



TYPICAL H&V MOTOR WIRING DIAGRAM  
 NOT TO SCALE

\* APPLIES TO SINGLE PHASE MOTORS ONLY. (THREE PHASE MOTORS ARE MCC VFD SPEED CONTROLLER)



PUMPS/ELEC ROOM LIGHTING CONTROL DIAGRAM "II"  
 NOT TO SCALE

PUMPS/ELEC ROOM LIGHTING CONTROL DIAGRAM "II" NOTES

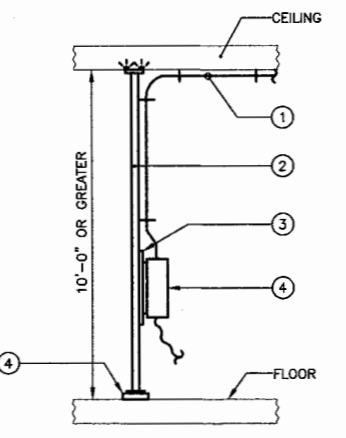
- 1 EC SHALL FURNISH/INSTALL LTG CONTROL POWER RELAY WHICH IS MOUNTED IN AN ELECTRICAL HINGED ENCLOSURE EQUAL TO A WATT STOPPER "B120E-P"
- 2 EC SHALL FURNISH/INSTALL OCCUPANCY SENSORS (DUAL SENSING) AND ASSOCIATED WIRING. EQUAL TO A WATT STOPPER "DT-300"
- 3 EC SHALL FURNISH/INSTALL A THREE POSITION TOGGLE TYPE (20A @ 120VAC) LTG CONTROL OVER-RIDE SWITCH AND ASSOCIATED WIRING.
- 4 EC SHALL FURNISH/INSTALL ROOM LTG FIXTURES AND ASSOCIATED WIRING.
- 5 EC'S WORK INCLUDES FIELD SETTING, TESTING AND OWNER TRAINING. ALL SETTINGS PER TOWN ADVISEMENT.

TYPICAL ROOM LIGHTING CONTROL DIAGRAM "I"  
 NOT TO SCALE

TYPICAL ROOM LIGHTING CONTROL DIAGRAM "I" NOTES

- 1 EC SHALL FURNISH/INSTALL OCCUPANCY SENSOR/SWITCH AND ASSOCIATED WIRING. EQUAL TO A WATT STOPPER "WA-200"
- 2 EC SHALL FURNISH/INSTALL ROOM LTG FIXTURES AND ASSOCIATED WIRING.
- 3 EC'S WORK INCLUDES FIELD SETTING, TESTING AND OWNER TRAINING. ALL SETTINGS PER TOWN ADVISEMENT.

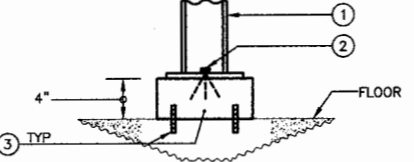
CONTROL DEVICES LOCATION SCHEDULE			
1	LOCATED AT OR NEAR MOTOR	5	LOCATED AT THE LOCAL EQUIPMENT CONTROL PANEL "LCP"
2	LOCATED AT THE NEW INSTRUMENTATION CONTROL PANEL (ICP)	6	LOCATED AT THE H&V ATC CONTROLS
3	LOCATED AT THE MOTOR CONTROL CENTER "MCC" OR "VFD"	7	LOCATED AT CHLORINE CONTACT TANK
4	LOCATED AT THE VARIABLE FREQUENCY MOTOR CONTROLLER "VFD"	8	LOCATED AT THE EQUIPMENT MOTOR STARTER



TYPICAL VERTICAL CONDUIT SUPPORT WIRING DETAIL  
 NOT TO SCALE

VERTICAL CONDUIT SUPPORT WIRING DETAIL NOTES

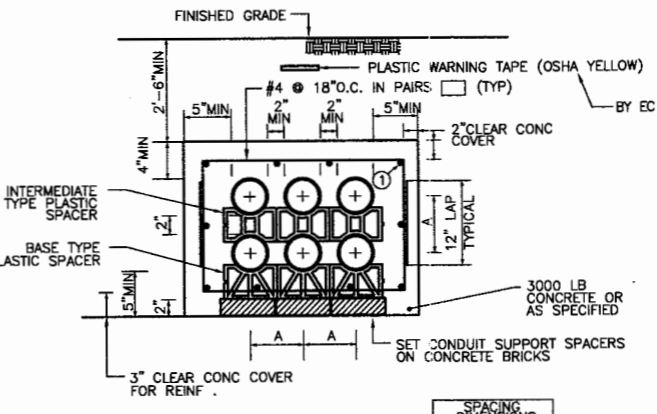
- 1 EC SHALL FURNISH/INSTALL HORIZONTAL CONDUIT WHICH IS EITHER DIRECTLY ATTACHED TO THE CEILING OR TRAPEZE SUPPORTED ON "U" CHANNEL RACKS.
- 2 DOUBLE (BACK TO BACK) "U" CHANNEL VERTICAL CONDUIT SUPPORT WITH HARDWARE. NOTE, ADJUST THE MATERIAL TO SUIT THE ROOM'S NEMA RATING.
- 3 ELECTRICAL EQUIPMENT MOUNTING PLATE (SIZED TO SUIT). ADJUST MATERIAL (SEE NOTE "2").
- 4 ELECTRICAL EQUIPMENT (IE, POWER DISC SWITCH, PANELS, ETC). FOR DETAILS, REFER TO THE ELEC DRAWINGS FOR SPECIFIC REQUIREMENTS.
- 5 4" HIGH CONCRETE SUPPORT PAD (KEEPS AWAY FROM FLOOR WATER).
- 6 EC SHALL COORDINATE TO BOTH THE EXISTING BLDG CONDITIONS AND THE NEW CONSTRUCTION.



TYPICAL ELECTRICAL EQUIPMENT SUPPORTS CONCRETE PAD DETAIL  
 NOT TO SCALE

ELECTRICAL EQUIPMENT SUPPORTS CONCRETE PAD DETAIL NOTES

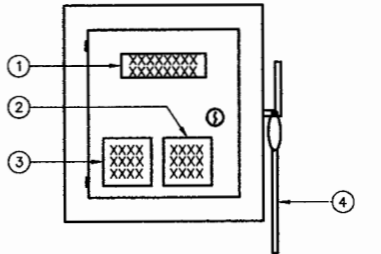
- 1 EC SHALL FURNISH/INSTALL "U" CHANNEL SUPPORTS AS REQUIRED.
- 2 EC SHALL CONCRETE EXPANSION BOLTS (AS REQUIRED)
- 3 GC SHALL FURNISH/INSTALL CONCRETE SUPPORT PADS AND GALV DOWELS (DRILLED INTO FLOOR AND ANCHORED WITH EPOXY ANCHORS).
- 4 EC/GC SHALL COORDINATE TO BOTH THE EXISTING BLDG CONDITIONS AND THE NEW CONSTRUCTION.



TYPICAL ELECTRICAL UNDERGROUND DUCTBANK DETAIL  
 NOT TO SCALE

DUCTBANK NOTES

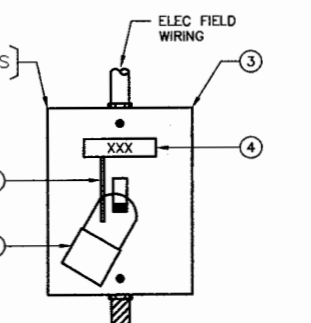
- 1 REINFORCEMENT ONLY REQUIRED UNDER PAVEMENT
- 2 PROVIDE EXPANSION FITTINGS EVERY 100'-0" ON CENTER
- 3 SAW-CUTTING, EXCAVATION, CONCRETE, BACKFILL, ETC BY GNL CONTRACTOR
- 4 RACEWAYS AND SPACERS BY SPEC #16010



TYPICAL ELECTRICAL EQUIPMENT LABELING DETAIL  
 NOT TO SCALE

TYPICAL ELECTRICAL EQUIPMENT LABELING DETAIL NOTES

- 1 EC SHALL FURNISH/INSTALL ENGRAVED PLASTIC NAMEPLATE WITH THE FOLLOWING ITEMS:  
 - EQUIPMENT'S FULL NAME  
 - EQUIPMENT'S ALPHA/NUMERIC TAG  
 - FOR POWER EQUIPMENT, LIST THE POWER SUPPLY LOCATION
- 2 NEC ELECTRICAL SHOCK HAZARD WARNING LABEL (POWER EQUIPMENT ONLY)
- 3 OSHA ARC FLASH HAZARD WARNING LABEL WHICH CLEARLY INDICATES THE SPECIFIC PPE LEVEL, PROTECTIVE GEAR REQUIREMENTS, ETC.
- 4 OSHA LOCK OUT / TAG OUT INSTRUCTIONS WITH PICTURES THAT IS ENCASED IN PLASTIC. NOTE, THEY MUST MATCH THE EXISTING SIMILAR UNITS (ALREADY INSTALLED).
- 5 THIS DETAIL APPLIES TO ALL ELEC POWER DISTRIBUTION EQUIPMENT, MOTOR CONTROL EQUIPMENT, TERMINAL PANELS, JUNCTION BOXES, CONTROL STATIONS, ETC.
- 6 EC SHALL COORDINATE WITH THE "AS SUPPLIED" ELECTRICAL PROJECT EQUIPMENT.



TYPICAL TOGGLE TYPE POWER DISCONNECT ELEVATION DETAIL  
 NOT TO SCALE

TYPICAL TOGGLE TYPE POWER DISCONNECT ELEVATION DETAIL NOTES

- 1 FACE PLATE LOCKING MECHANISM FOR THE LOCK OUT SWITCH.
- 2 OSHA COMPLIANT LOCK OUT FURNISEHD/INSTALLED BY THE OWNER.
- 3 TOGGLE TYPE EQUIPMENT POWER DISCONNECT SWITCH BY EC.
- 4 ENGRAVED PLASTIC NAMEPLATE WITH EQUIPMENT NAME AND TAG BY ELEC CONTRACTOR.
- 5 EC SHALL FIELD LOCATE NEAR THE EQUIPMENT TO ALLOW THE OPERATORS TO HAVE ACCESS FOR EQUIPMENT MAINTENANCE.

ELECTRICAL GENERAL DETAILS NOTES

- 1 THE GENERAL ELECTRICAL DETAILS ARE INTENDED TO APPLY TO ALL BUILDINGS, SITE, ETC AREAS. EC SHALL ADJUST AS REQUIRED THE MATERIALS, ENCLOSURES, ETC PER EACH ROOM OR AREAS "NEMA" RATING AS INDICATED ON THE DWGS.
- 2 EC'S WORK INCLUDES ALL COORDINATION WITH THE FOLLOWING PRIOR TO ANY ELEC EQUIPMENT RELEASE AND/OR ROUGH WIRING.  
 - EXISTING BUILDING AND SITE CONDITIONS  
 - "AS SUPPLIED" PROJECT EQUIPMENT  
 - NEW GENERAL CONSTRUCTION  
 - INTER-DISCIPLINE OF OTHER CONSTRUCTION TRADES

ELEC DRAWINGS REFERENCE NOTES

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- 2 FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
- 3 FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.

No.	Date	Dr. By	Ck. By	App. By	Description
1					P
2					O
3					V
4					E
5					D



CITY OF NEWBURYPOR, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
 ELECTRICAL DIAGRAMS AND DETAILS "V"  
 GENERAL DIAGRAMS AND DETAILS "V"  
 SCALE: AS SHOWN CONTRACT: 0905101 JOB NO: 09051.01 DR BY: ELD DSNBY: DKG CHK BY: LMR APP BY: WPE

NEWBURYPORT WWTF UPGRADE LIGHTING FIXTURES SCHEDULE
Table with columns: FIXT TYPE, LAMP TYPE & WATTS, DESCRIPTION, MANUFACTURER/ MODEL.

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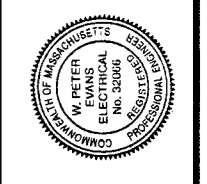
- LIGHTING FIXTURES SCHEDULE NOTES -
1) ALL LAMPS SHALL BE SUPPLIED WITH THE LIGHTING FIXTURES.
2) ALL FLUORESCENT LAMPS SHALL BE 3500K 'COOL WHITE' COLOR.
3) ALL FLUORESCENT LAMPS SHALL BE LOW MERCURY ENVIRONMENTAL FRIENDLY TYPES.
4) ALL FLUORESCENT BALLASTS SHALL BE HIGH EFFICIENCY ELECTRONIC TYPES WITH 0.9 BALLAST FACTORS, < 10 % TOTAL HARMONIC DISTORTION AND SUITABLE FOR THE HIGH PERFORMANCE 'SUPER T-8' FLUORESCENT LAMPS.
5) ALL LIGHTING FIXTURES (LAMPS, BALLASTS, EFFICIENCIES, ETC) SHALL BE COMPLIANT WITH THE POWER COMPANY ENERGY EFFICIENCY STANDARDS IN ORDER TO OBTAIN ENERGY SAVING REBATES. EC'S WORK INCLUDES APPLYING FOR THE REBATES WITH THE 'AS SUPPLIED' LIGHTING FIXTURES.
6) EC SHALL COORDINATE THE 'AS SUPPLIED' LIGHTING FIXTURES WITH BOTH THE EXISTING BUILDING'S CONDITIONS PLUS THE NEW CONSTRUCTION PRIOR TO RELEASE AND/OR ROUGH CONSTRUCTION.
7) EC SHALL FURNISH AND INSTALL THE SPECIFIED LIGHTING FIXTURES. THE LISTED MANUFACTURERS AND CATALOG NUMBERS ARE PROVIDED TO SET A DESIGN, CONSTRUCTION AND PERFORMANCE STANDARD. ACCEPTABLE 'OR EQUAL' LIGHTING MANUFACTURERS ARE LITHONIA, DAY-BRITE, LIGHTOLIER OR GARDCO.
8) EC (LIGHTING SUPPLIER) WORK INCLUDES VERIFYING ALL PROPOSED LIGHTING FIXTURE'S CATALOG NUMBERS WHICH MUST PROVIDE ALL OF THE SPECIFIED FEATURES, OPTIONS, ETC.
9) FIXTURE TYPES 'A, B, C, D, EXW, G, K, M5, M6, P & Q MUST BE SUITABLE FOR OPERATION IN COLD AND HOT ENVIRONMENTS.
10) ALL OUTDOOR LIGHTING FIXTURES SHALL BE 'DARK SKY FRIENDLY' AS CERTIFIED BY THE INTERNATIONAL DARK SKY ASSOCIATION.
11) ALL LIGHTING FIXTURES SHALL BE 'ENERGY STAR' STAR WHERE AVAILABLE.
12) ALL FLUORESCENT FIXTURES SHALL HAVE LOAD RATED QUICK DISCONNECT WIRE CONNECTORS AS REQUIRED BY THE NEC 2008 CODE FOR BALLAST MAINTENANCE.
13) FIXTURE TYPES 'K' AND 'P' ARE COMPLEMENTARY 'LOOK ALIKE' TYPES.
14) THE EMERGENCY EGRESS LIGHTING FIXTURES SHALL BE BLACK IN COLOR.
15) EC SHALL FURNISH AND INSTALL THE WORK LIGHTS WHICH ARE LOCATED IN THE BUILDINGS.

ELEC DRAWINGS REFERENCE NOTES
1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC-1 THRU E-PV.2.

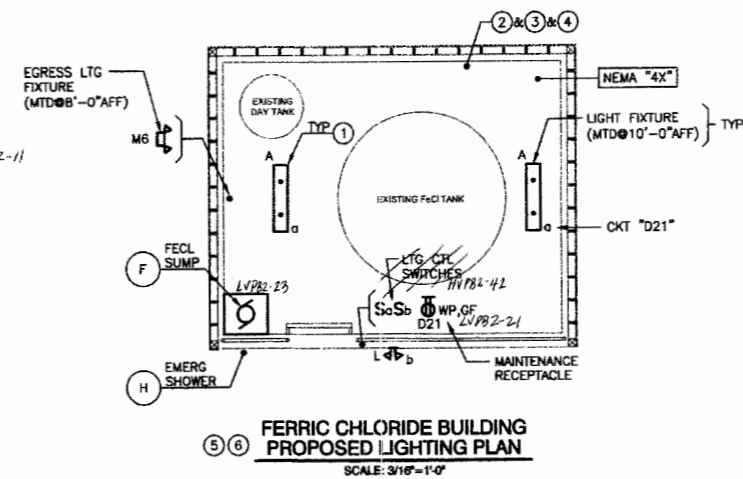
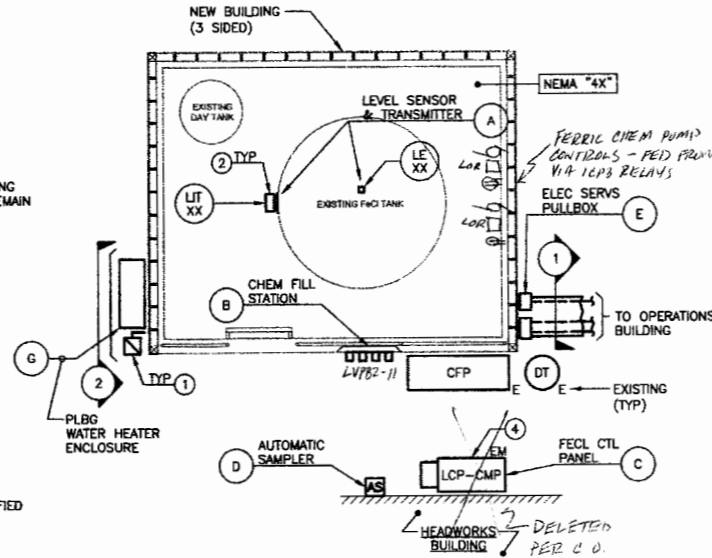
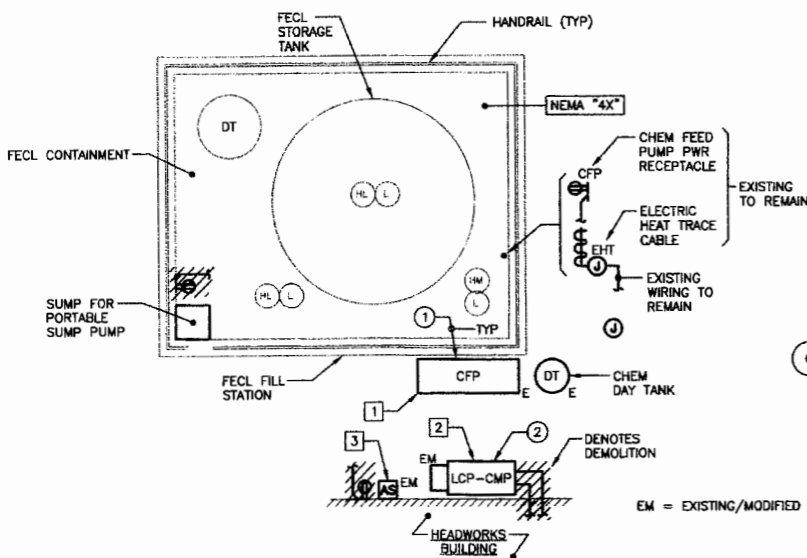
SED ASSOCIATES CORP.
Consulting MECHANICAL and LAC ENGINEERS
132 LINCOLN STREET, BOSTON, MA 02111
TEL: (617) 580-7248 FAX: (617) 580-0332

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(978) 530-1900 (800) 541-8800
www.westonsampson.com

Table with columns: No., Date, Dr. By, App. By, Description, Date. Includes signature of W. Peter Evans.



CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT
ELECTRICAL GENERAL SCHEDULES "1"
JOB NO.: 09051.01
CONTRACT: 2
SCALE: AS SHOWN
CADD NO.: 0905101 E13
JOB NO.: 189-31
FILE NO.
DATE: 7/16/2011
REGISTERED PROFESSIONAL ENGINEER



**FECL BLDG AND SITE WIRING NOTES**

- EC SHALL FURNISH/INSTALL THE FOLLOWING TYPES OF ELECTRICAL WIRING:
  - USE TYPE "PVC-80" RACEWAYS WITHIN THE FECL BUILDING INSTALLED EXPOSED. NOTE: F/1 EXPANSION FITTINGS AS REQUIRED.
  - USE TYPE "ALUM" RACEWAYS OUTSIDE THE FECL BUILDING INSTALLED EXPOSED
  - USE TYPE "PVC-40" RACEWAYS IN THE UNDERGROUND ELECTRICAL DUCTBANKS.

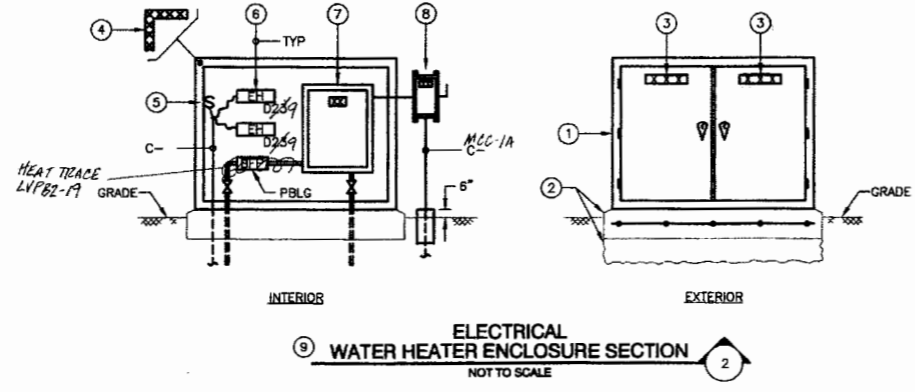
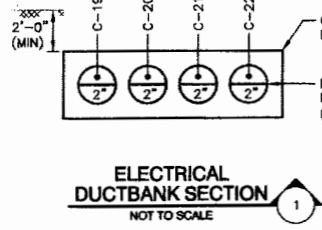
CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "08-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "08-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "08-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "08-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "08-LVPB-3"

No.	Date	Dr. By	Chk. By	App. By	Description



CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL FERRIC CHLORIDE BUILDING POWER/LIGHTING DEMOLITION/PROPOSED PLANS**

SCALE: AS SHOWN  
CONTRACT: 0905101 EFC1  
JOB NO. 0905101 EFC1  
DATE: 7/15/2011  
FILE NO. 189-30  
DRAWN BY: LMR  
CHECKED BY: DKG  
APP. BY: WPE



- ELECTRICAL WATER HEATER ENCLOSURE SECTION NOTES**
- EC SHALL FURNISH/INSTALL A PAINTED ALUMINUM OUTDOOR ENCLOSURE WHICH IS SIZED 8" X 8" W X 2" DP (MINIMUM). IT SHALL BE RATED NEMA "3R". UNIT SHALL BE EQUAL TO A PC INC TYPE ENCLOSURE.
  - GC SHALL FURNISH/INSTALL CONCRETE SUPPORT PAD (8" W X 2" DP X 1.5" H) WITH REINFORCEMENT AND 6" OF GRAVEL FOR WATER DRAINAGE. FOR TYPICAL CONCRETE PADS CONSTRUCTION DETAILS, REFER TO THE STRUCTURAL DRAWINGS.
  - LARGE ENGRAVED NAMEPLATES PER THE ENGINEER OR OWNER.
  - ENCLOSURE SHALL HAVE 1" THICK SOLID INSULATION ON ALL SIDES PLUS THE ENCLOSURE BOTTOM.
  - EC SHALL FURNISH/INSTALL A POWER DISC TOGGLE TYPE SWITCH.
  - EC SHALL FURNISH/INSTALL TWO UTILITY TYPE HEATERS (500W @ 120V). HEATERS SHALL BE EQUAL TO MARLEY-Q-MARK MODEL # WH500.
  - PLBG CONTRACTOR SHALL FURNISH/INSTALL THE ELECTRIC WATER HEATER (126KW @ 480V-3PH).
  - EC SHALL FURNISH/INSTALL A FUSED PWR DISC SAFETY SWITCH (RATED NEMA "4X") WITH PAINTED ALUMINUM ENCLOSURE.
  - EC/GC/PC SHALL FIELD LOCATE AS REQ'D. EC SHALL FIELD WIRE ENCLOSURE AS INDICATED.

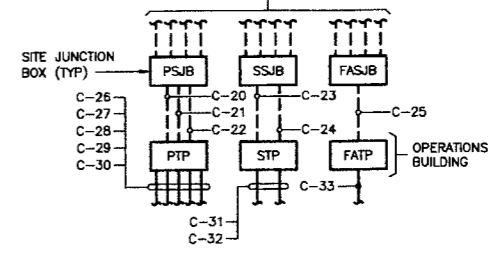
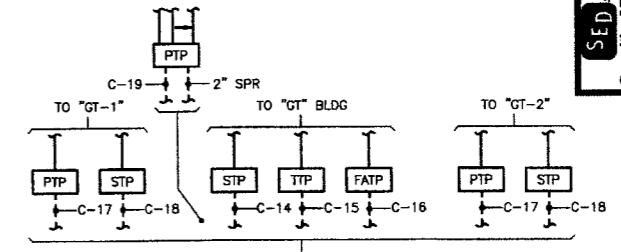
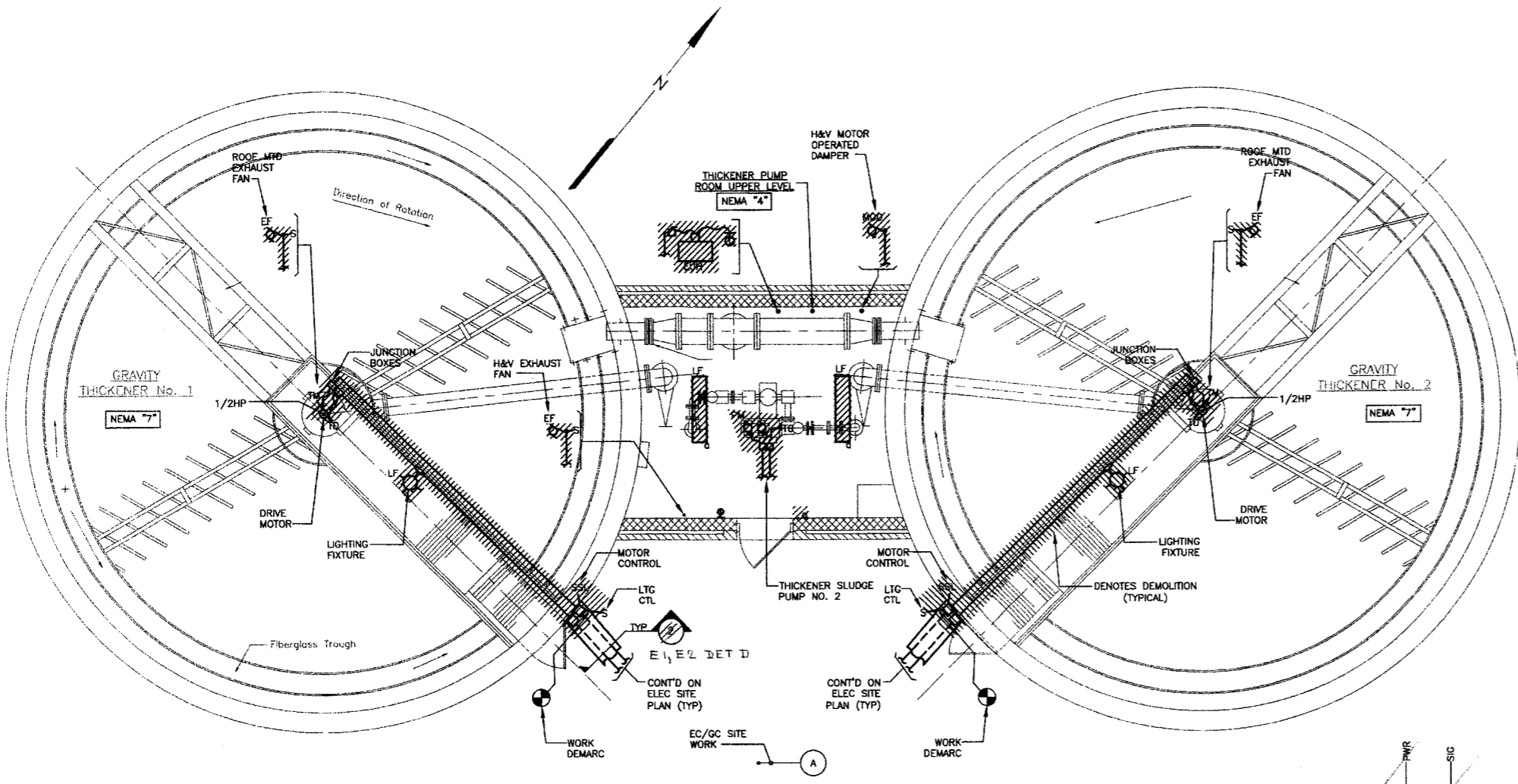
- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

RICHARDSON ELECTRICAL AS-BUILT



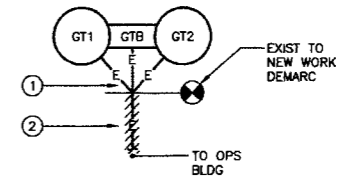
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 TEL: (617) 352-7246 FAX: (617) 352-0513  
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**'GT' BLDG TO 'OPS' BLDG WIRING DIAGRAMS**  
 NOT TO SCALE

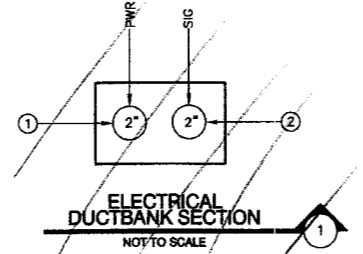
\* FIELD LOCATED BY ELEC CONTRACTOR



**GRAVITY THICKENERS EC/GC SITE WORK DETAIL**  
 NOT TO SCALE

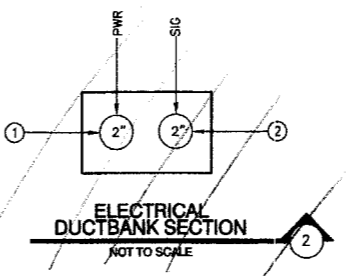
- GRAVITY THICKENERS EC/GC SITE WORK DETAIL "A" NOTES**
- EC/GC SHALL FIELD SURVEY IN ORDER TO DETERMINE THE EXISTING ELEC DUCTBANK LOCATIONS.
  - EC SHALL REMOVE THE WIRES WHILE THE GC SHALL DEMOLISH THE EXISTING ELEC DUCTBANKS TO THE EXISTING OPERATIONS BUILDING. FOR THE LENGTHS OF THE EXIST ELEC DUCTBANKS, REFER TO THE ELEC AND CIVIL SITE PLANS.
  - EC AND GC SHALL PROVIDE TEMPORARY ELEC SERVICES TO THE GT BLDG AS REQUIRED TO KEEP THE WWTF OPERATIONAL DURING THE DEMOLITION AND RE-CONSTRUCTION.

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2



**ELECTRICAL DUCTBANK SECTION "1" NOTES**

- EC SHALL FIELD SURVEY AND IDENTIFY THE EXISTING POWER AND CONTROL/ALARM WIRES. NOTE, EC SHALL CONNECT THE NEW EQUIP, LTG, RECPTS, ETC TO THE EXISTING WIRES FOR THE PHASE "1" PROJECT WORK.
- EC SHALL FIELD SURVEY AND IDENTIFY THE SIGNAL WIRES. NOTE, EC SHALL NOT CONNECT THE NEW SIGNAL WIRES TO THE EXISTING WIRES SINCE THEY ARE PART OF THE PHASE "1" PROJECT CONSTRUCTION.



**ELECTRICAL DUCTBANK SECTION "2" NOTES**

- EC SHALL FIELD SURVEY AND IDENTIFY THE EXISTING POWER AND CONTROL/ALARM WIRES. NOTE, EC SHALL CONNECT THE NEW EQUIP, LTG, RECPTS, ETC TO THE EXISTING WIRES FOR THE PHASE "1" PROJECT WORK.
- EC SHALL FIELD SURVEY AND IDENTIFY THE SIGNAL WIRES. NOTE, EC SHALL NOT CONNECT THE NEW SIGNAL WIRES TO THE EXISTING WIRES SINCE THEY ARE PART OF THE PHASE "1" PROJECT CONSTRUCTION.

RICHARDSON ELECTRICAL AS-BUILT

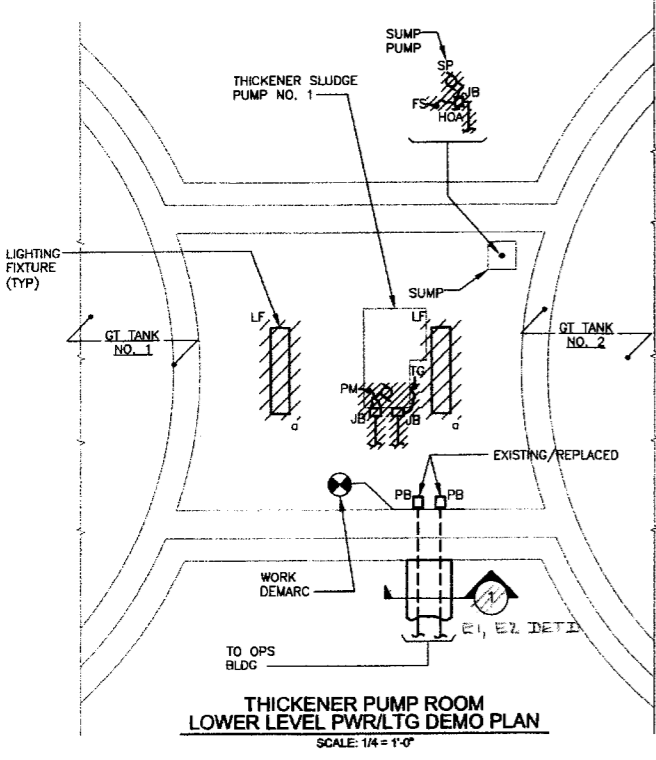
**GRAVITY THICKENERS POWER/LIGHTING DEMO PLAN**  
 SCALE: 1/4" = 1'-0"

**ELECTRICAL TEMPORARY WORK NOTES**

- EC SHALL FURNISH/INSTALL TEMPORARY ELEC EQUIPMENT AND WIRING IN ORDER TO KEEP THE EXISTING AERATORS OPERATING WHEN THE PSUPS ELEC EQUIPMENT AND WIRING IS DEMOLISHED AND REPLACED.
- EC'S WORK INCLUDES AS A MINIMUM TEMP MOTOR STARTERS, POWER DISCONNECTS, OVERHEAD POLE MOUNTED TEMP WIRING, TEMP POWER SUPPLY FROM THE EXISTING MAIN OUTDOOR SWITCHBOARD, ETC.
- IN GENERAL, THE EXISTING WWTF EQUIPMENT WILL BE MANUALLY OPERATED DURING THE DEMOLITION AND RECONSTRUCTION. FOR DETAILS, REFER TO THE CONSTRUCTION PHASING SPECIFICATIONS.
- THE NEW GT FACILITY EQUIPMENT, LIGHTING AND RECEPTACLES SHALL REMAIN CONNECTED TO THE EXISTING OPERATIONS BUILDING MCC, PNLBQ, I&C, ETC UNTIL THE PROJECT'S PHASE "1" CONSTRUCTION.

**GRAVITY THICKENERS NO'S 1 & 2 POWER AND LIGHTING DEMO PLANS NOTES**

- ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING ELECTRICAL EQUIPMENT & WIRING IN ORDER TO DEMOLISH, REPLACE AND RE-REVERSE AS INDICATED. NOTE, THERE ARE LIMITED ELECTRICAL DRAWINGS (NOT AS BUILT) FOR REFERENCE.
- EC SHALL NOTE THE POWER SUPPLY FOR THE EQUIPMENT, LIGHTING, RECEPTACLES, ETC IS LOCATED IN THE OPERATIONS BUILDING'S MOTOR CONTROL CENTER NO 1 & 1E.
- EC SHALL COMPLETE THE DEMO AND PROP ELEC WORK PER THE CONSTRUCTION PHASING REQUIREMENT IN ORDER TO KEEP THE WWTF OPERATIONAL AT ALL TIMES. NOTE, THE REPLACED EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED FOR A WEEK PRIOR TO ANY DEMOLITION AND RECONSTRUCTION OF ANY OTHER SIMILAR EQUIPMENT UNITS.
- EC SHALL FIELD SURVEY THE EXISTING SITE TO BLDG ELEC WIRING IN ORDER TO DEMO/REPLACE. EC MUST ASSUME THE EXISTING WIRING IS NOT LABELED OR DOCUMENTED.
- EC'S WORK INCLUDES ALL NECESSARY TECHNICAL ASSISTANCE TO THE GC AND THEIR EQUIPMENT SUPPLIER DURING THE EQUIP FIELD TESTING, ETC.
- EC SHALL FIELD SURVEY THE EXISTING LIGHTING FIXTURES AND RECEPTACLES INCLUDING ASSOCIATED WIRING IN ORDER TO DEMOLISH AND REPLACE.



**THICKENER PUMP ROOM LOWER LEVEL PWR/LTG DEMO PLAN**  
 SCALE: 1/4" = 1'-0"

No.	Date	D-By	Ch-By	App-By	Description	
						A
W. Peter Evans REGISTERED PROFESSIONAL ENGINEER						



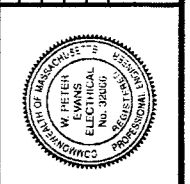
CITY OF NEWBURYPOR, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION					
<b>ELECTRICAL GRAVITY THICKENER POWER/LIGHTING DEMO PLAN</b>					
CADD NO.	SCALE	DATE	JOB NO.	CONTRACT	DR BY
0905101 EGT11	AS SHOWN	2	109051.01	2	ELD
FILE NO.	189-28				APP BY
					WPE

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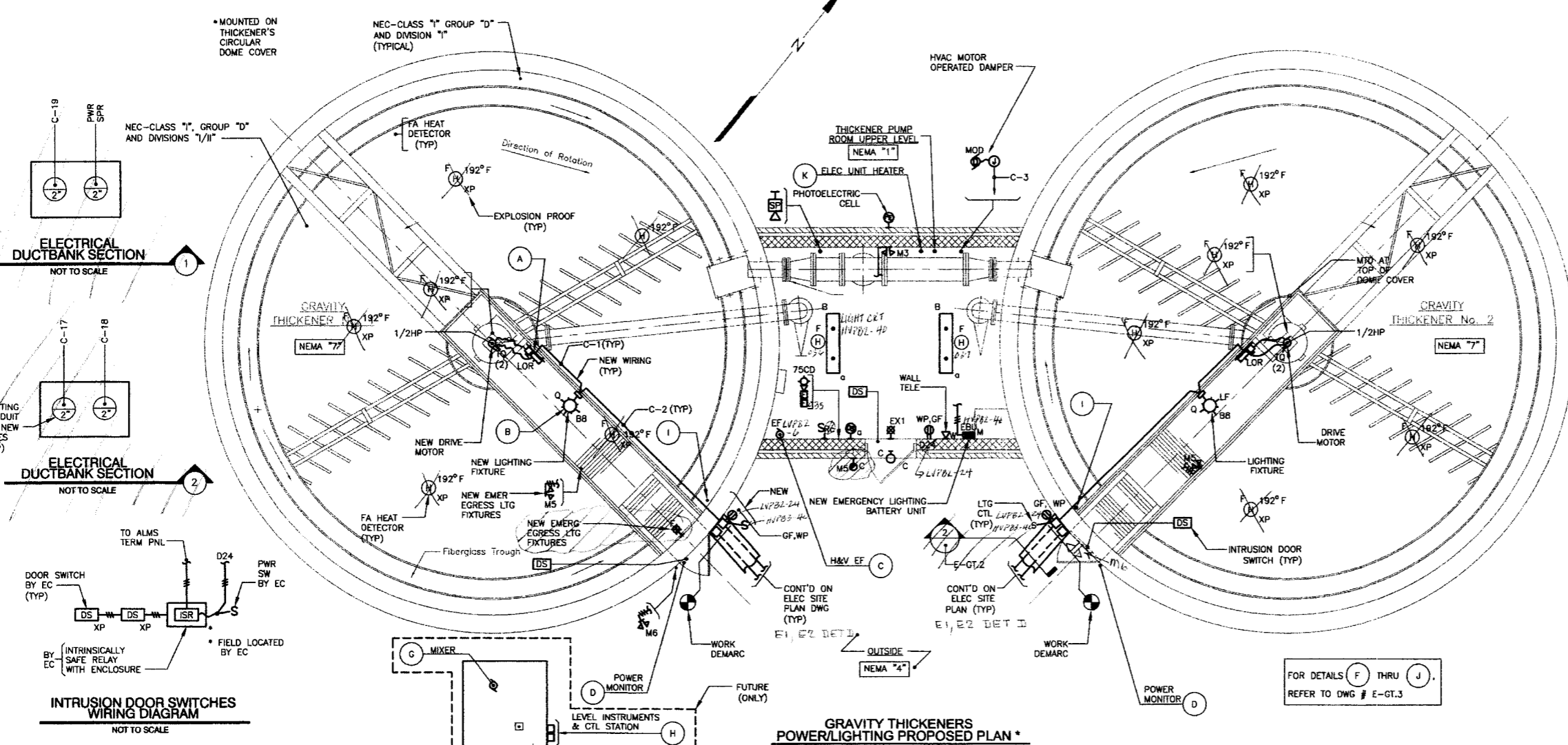
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No.	Date	Dr. By	Ch. By	App. By	Description				
		A	P	R	C	O	V	E	D

DATE: 7/15/2011  
 REGISTERED PROFESSIONAL ENGINEER: W. Paul Egan

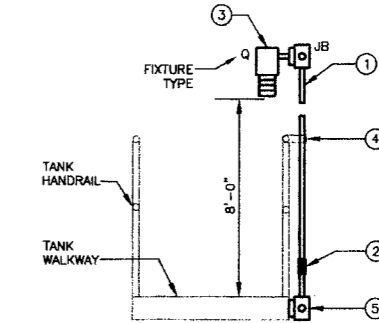


CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL GRAVITY THICKENER POWER/LIGHTING PROPOSED PLAN**  
 SCALE: AS SHOWN CONTRACT: 2  
 CASE NO. 0905101 EGT21 FILE NO. 189-27  
 DATE: 09/05/10  
 DRAWN BY: LMR  
 CHECKED BY: WPE  
 DESIGNED BY: ELD  
 APPROVED BY: WPE

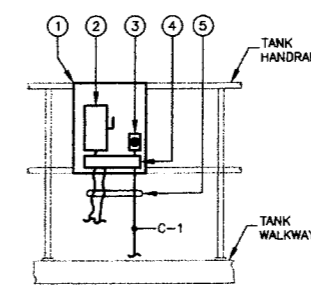


**OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES**

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"



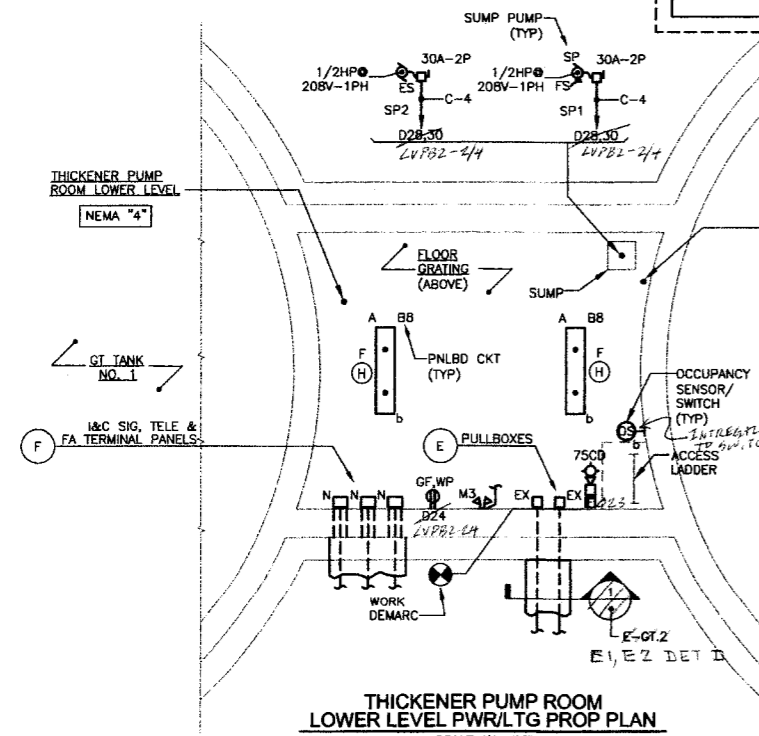
- THICKENER WALKWAY LIGHTING WIRING DETAIL NOTES**
- EC SHALL FURNISH/INSTALL A 2" ALUM CONDUIT FOR THE FIXTURE MOUNTING & SUPPORT.
  - EC SHALL FURNISH/INSTALL A EYS SEALING FITTING AS REQUIRED BY THE ELEC CODE.
  - EC SHALL FURNISH/INSTALL A NEW LIGHTING FIXTURE AND ASSOCIATED WIRING.
  - EC SHALL FURNISH/INSTALL STAINLESS STEEL "U" BOLTS, PLATES, ETC FOR ATTACHMENT TO THE WALKWAY HANDRAIL.
  - EC SHALL FURNISH/INSTALL CAST ALUMINUM JUNCTION BOX (SIZED TO SUIT) WITH ALL WATER-TIGHT WIRING CONNECTIONS.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" THICKENER EQUIPMENT, WALKWAY, ETC.



- THICKENER DRIVE UNIT WIRING DETAIL NOTES**
- EC SHALL FURNISH/INSTALL ALUMINUM MOUNTING PLATE (FIELD SIZED TO SUIT) WITH STAINLESS STEEL "U" BOST HARDWARE.
  - EC SHALL FURNISH/INSTALL CAST ALUMINUM NEMA "7" POWER DISCONNECT SAFETY SWITCH.
  - EC SHALL FURNISH/INSTALL A NEMA "7" "LOR" CONTROL STATION MOUNTED IN A CAST ALUM ENCLOSURE.
  - EC SHALL FURNISH/INSTALL A NEMA "7" ALUMINUM WIREWAY (FIELD SIZED TO SUIT).
  - EC SHALL FURNISH/INSTALL ALUMINUM RACEWAYS WHICH ARE FIELD ROUTED TO SUIT.
  - EC SHALL COORDINATE ALL ELEC EQUIPMENT AND ASSOCIATED WIRING WITH THE "AS SUPPLIED" NEW THICKENER EQUIPMENT. THE MATERIAL AND INSTALLATION SHALL BE SUITABLE FOR THE NOTED HAZARDOUS LOCATION.

- GRAVITY THICKENER BUILDING ELECTRICAL SERVICES NOTES**
- THE "GT" BUILDING SHALL OBTAIN THE FOLLOWING ELEC SERVS FROM THE OPERATIONS BUILDING.
    - 277/480 VOLT POWER
    - 120/208 VOLT POWER
    - FIRE ALARM
    - TELEPHONE
  - EC SHALL FURNISH/INSTALL A ENGRAVED PLASTIC NAMEPLATE WHICH READS AS FOLLOWS:
 

"ELECTRICAL POWER SUPPLIES"  
 FROM THE OPERATIONS BUILDING"
  - EC SHALL PROVIDE ENGRAVED NAMEPLATES WHICH DENOTES POWER DISCONNECT "X" OF "X".

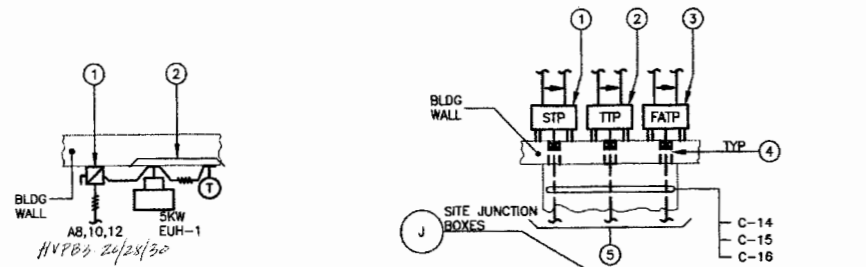


- GRAVITY THICKENERS NO'S 1 & 2 POWER AND LIGHTING PROPOSED PLAN NOTES**
- ELECTRICAL CONTRACTOR SHALL SELECTIVELY DEMO AND REPLACE THE INDICATED ELEC EQUIPMENT AND ASSOCIATED WIRING.
  - EC SHALL ADD NEW EMERGENCY EXIT AND EGRESS LIGHTING FIXTURES AND ASSOCIATED WIRING.
  - EC SHALL FURNISH/INSTALL WATERPROOF SPLICES FOR THE NEW TO EXISTING EQUIPMENT POWER AND CONTROL/ALARM FIELD WIRING IN THE BASEMENT PULLBOXES.
  - EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH BOTH THE EXISTING CONDITIONS AND THE NEW CONSTRUCTION. NOTE, ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT OF THE AIR BLOWER EQUIPMENT, ETC.
  - EC SHALL COMPLETE THE DEMO AND PROP ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WWTF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE, THE REPLACED EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED FOR A WEEK PRIOR TO ANY DEMOLITION AND RECONSTRUCTION OF THE OTHER SIMILAR UNITS.
  - EC SHALL SELECTIVELY REPLACE THE EXIST LIGHTING FIXTURES AND CONTROLS WITH HIGH EFFICIENCY UNITS AND AUTOMATIC LIGHTING CONTROLS.
  - EC SHALL SELECTIVELY REPLACE THE EXISTING PWR RECEPTACLES WITH NEW "GF" TYPE UNITS.
  - ALL LIGHTS SWITCHES PE DS TO BE LINE VOLTAGE, NO RELAY PANEL CONTROL.
- GT DRIVE POWER MONITOR WIRING DETAIL "D" NOTES**
- EC SHALL MOUNT AND WIRE THE POWER MONITOR WHICH IS FURNISHED WITH THE EQUIP BY THE GENERAL CONTRACTOR.
  - EC SHALL FURNISH/INSTALL ALUM "U" CHANNELS, MOUNTING PLATE AND S/S HARDWARE INCLUDING ASSOCIATED WIRING WHICH IS FIELD ROUTED BY ELEC CONTRACTOR.
- POWER & I&C PULL BOXES WIRING DETAIL "E" NOTES**
- EC SHALL FURNISH/INSTALL NEW GALV PULL BOXES (SIZED TO SUIT).
  - EC SHALL FURNISH/INSTALL SCREW TYPE FIELD WIRING TERMINAL STRIPS WITH A MINIMUM OF 25% SPARE CAPACITY.
  - EC TO COORDINATE WITH THE EXIST BLDG CONDITIONS AND NEW ELECTRICAL WIRING.

MOUNTED IN A/C UPPER BUCKET ABOVE  
 MOTOR STARTER

RICHARDSON ELECTRICAL AS-BUILT

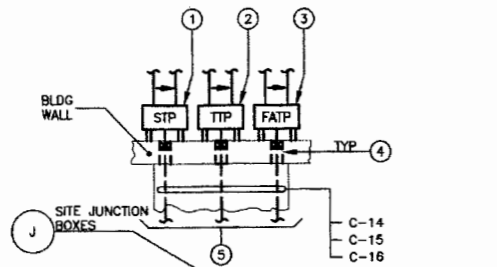




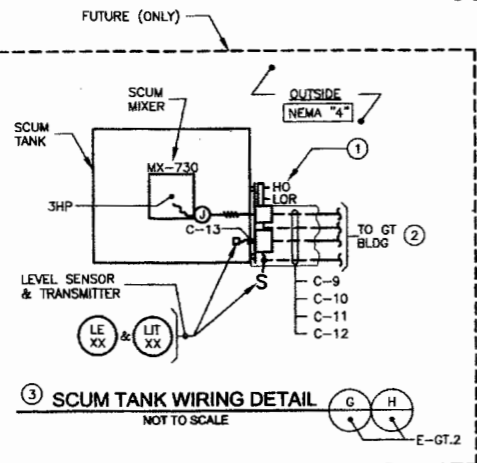
3 ELECTRIC UNIT HEATER WIRING DETAIL NOT TO SCALE

ELECTRIC UNIT HEATER WIRING DETAIL "K" NOTES

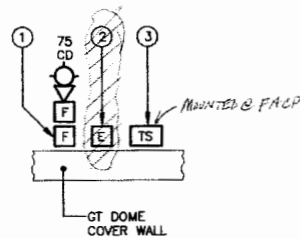
- EC SHALL FURNISH/INSTALL A FUSED (15/30A-3P) POWER DISC SAFETY SWITCH.
- EC SHALL FURNISH/INSTALL ELEC UNIT HEATER AND THERMOSTAT. REFER TO SCHEDULE FOR DETAILS.
- EC SHALL FIELD LOCATE TO SUIT THE EXISTING CONDITIONS AND NEW CONSTRUCTION.



6 GT BUILDING I&C, TELE & FA TERMINAL PANELS WIRING DETAIL NOT TO SCALE



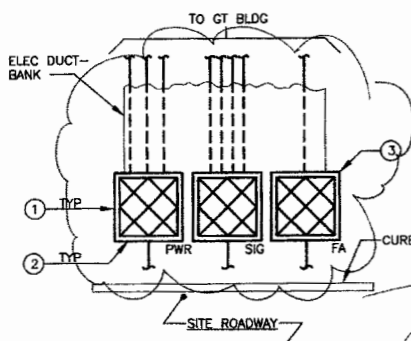
3 SCUM TANK WIRING DETAIL NOT TO SCALE



4 GT FIRE ALARM AND EMERGENCY ASSISTANCE WIRING DETAIL NOT TO SCALE

GT FIRE ALARM AND EMERGENCY ASSISTANCE WIRING DETAIL "I" NOTES

- EC SHALL FURNISH/INSTALL FIRE ALARM MANUAL PULL STATION AND HORN/STROBE AND ASSOCIATED WIRING.
- EC SHALL FURNISH/INSTALL AN EMERGENCY ASSISTANCE PUSHBUTTON AND ASSOCIATED WIRING.
- EC SHALL FURNISH/INSTALL A KEY OPERATED FA CONTROL STATION TO TEST THE FIRE ALARM HEAT DETECTORS DUE TO THEIR HIGH INACCESSIBLE GT DOME ROOF LOCATION.
- EC TO FIELD LOCATE TO SUIT THE NEW GRAVITY THICKENER DOME COVER.



5 GT TO OPS BLDG SITE WIRING DETAIL NOT TO SCALE

GT TO OPS BUILDING SITE WIRING DETAIL "J" NOTES

- EC SHALL FURNISH/INSTALL CAST GALV IRON SITE WATERPROOF JUNCTION BOXES WITH CHECKERED COVERS AND STAINLESS STEEL SCREWS.
- EC SHALL FURNISH/INSTALL EXTEND AND CAP THE CONDUITS WHICH WILL BE EXTENDED TO THE NEW PROCESS (OPS) BLDG.
- GC SHALL FURNISH/INSTALL 3" OF CONCRETE ALL AROUND THE SITE JUNCTION BOXES.
- GC/EC TO FIELD LOCATE TO SUIT THE EXISTING SITE CONDITIONS.

\* FOR GT BLDG TO OPS BLDG WIRING, REFER TO THE WIRING DIAGRAM ON THIS DRAWING.

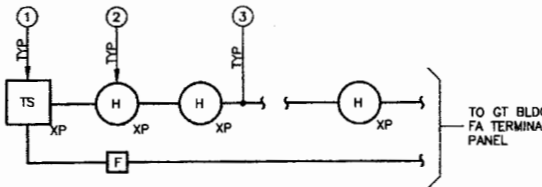
COORDINATED TO NOT EXTEND EXISTING CONDUITS BUT TO ELIMINATE BOXES AND RUN NEW CONDUIT THE ENTIRE RUN AND ADD ADDITIONAL SPACES.

GT BUILDING I&C/TELE/FA TERMINAL PANELS WIRING DETAIL "F" NOTES

- EC SHALL FURNISH/INSTALL A GALV HINGED I&C SIGNALS TERMINAL PANEL (SIZED TO SUIT) WITH WIRING TERMINAL STRIPS.
- EC SHALL FURNISH/INSTALL A TELE TERMINAL PANEL WITH PUNCH DOWN BLOCKS, TVSS PROTECTORS, ETC.
- EC SHALL FURNISH/INSTALL A FA TERMINAL PANEL WITH WIRING TERMINAL STRIPS, TVSS PROTECTORS, ETC.
- EC SHALL CORE DRILL AND FURNISH/INSTALL CONDUIT WALL SEALS. EC TO FIELD LOCATE WHICH SUITS THE EXIST BLDG CONDITION AND NEW CONSTRUCTION.
- EC/GC SHALL CONSTRUCT A NEW ELECTRICAL DUCTBANK WHICH TERMINATES WITH 12"X12"X12" CAST GALV SITE JUNCTION BOXES WHICH ARE WATERPROOF. EC SHALL FURNISH/INSTALL 3" OF CONCRETE ALL AROUND THE SITE JUNCTION BOXES. THE BOXES SHALL BE LOCATED ADJACENT TO THE WWTF ACCESS ROAD HEADING TOWARDS THE OPERATIONS BLDG.
- EC/GC SHALL COORDINATE WITH EXISTING SITE AND BLDG CONDITIONS.

SCUM TANK WIRING DETAILS "G" & "H" NOTES

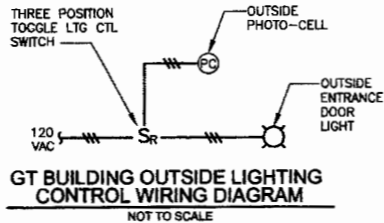
- EC SHALL FURNISH/INSTALL ALUM "U" CHANNELS, MOUNTING PLATE, WIREWAY, CONTROL STATIONS, POWER DISCONNECT SWITCHES AND ASSOCIATED WIRING. EC SHALL ALSO MOUNT AND WIRE THE I&C INSTRUMENTS WHICH ARE FURNISHED BY THE GENERAL CONTRACTOR.
- EC/GC SHALL FURNISH/INSTALL A NEW ELEC DUCTBANK FROM THE SCUM TANK TO THE GT BUILDING'S BASEMENT. GC SHALL FIELD ROUTE WHICH COORDINATES WITH THE EXIST SITE AND NEW CONSTRUCTION.
- EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT, EXISTING CONDITIONS AND NEW CONSTRUCTION.



4 TYPICAL GRAVITY THICKENER FA HEAT DETECTORS WIRING DIAGRAM NOT TO SCALE

GRAVITY THICKENER FA HEAT DETECTORS WIRING DIAGRAM NOTES

- EC SHALL FURNISH/INSTALL KEY OPERATED FA TEST STATION.
- EC SHALL FURNISH/INSTALL FA HEAT DETECTORS.
- EC SHALL FURNISH/INSTALL FA FIELD WIRING.
- EC SHALL TERMINATE THE FA WIRING AT THE FA TERMINAL PANEL INCLUDING FIELD TESTING TO VERIFY PROPER OPERATION. THE FUTURE PHASE "H" WORK WILL EXTEND AND CONNECT TO THE NEW PROCESS (OPS) BUILDING FA CONTROL PANEL.



4 GT BUILDING OUTSIDE LIGHTING CONTROL WIRING DIAGRAM NOT TO SCALE

ELECTRIC HEATER SCHEDULE NOTES -

- ELECTRIC HEATERS SHALL BE FURNISHED AND INSTALLED BY SPECIFICATION # 16010.
- HEATER SUPPLIER SHALL VERIFY CATALOG NUMBERS WHICH PROVIDES THE SPECIFIED OPTIONS, FEATURES, CONTROLS, ETC.
- IF ANY ALTERNATE "OR EQUAL" HEATER ARE PROPOSED, THE EC SHALL PROVIDE A COMPARISON TO VERIFY "OR EQUAL" HEATER MEET OR EXCEED THE DESIGN, CONSTRUCTION AND PERFORMANCE OF THE SPECIFIED UNITS.
- ELECTRIC HEATER SHALL BE REMOTELY CONTROLLED BY THE THERMOSTATS SUPPLIED WITH THE HEATERS
- EC SHALL MOUNT AND WIRE THE HEATERS IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- THE HEATER SHALL HAVE A CORROSION RESISTANT PAINTED FINISH WHICH IS SUITABLE FOR INSTALLATION IN A SEWAGE WASTEWATER TREATMENT FACILITY.

GRAVITY THICKENER BUILDING ELECTRIC UNIT HEATER SCHEDULE		
TAG	DESCRIPTION	MANUFACTURER
EUH-1	HORIZONTAL UNIT HEATER RATED 5 KW @ 480 VOLTS 3 PHASE WITH METAL SHEATH HEATING ELEMENTS, TOTALLY ENCLOSED/BALANCED FAN, BUILT-IN THERMAL OVERLOAD, INTERNAL CONTACTOR, INTERNAL 480 TO 120 VAC CONTROL TRANSFORMER, WALL MOUNTING BRACKET, REMOTE THERMOSTATE W/LOCKING COVER, AND MANUAL RESET THERMAL LIMIT UNIT SHALL BE CORROSION RESISTANT PAINTED CONSTRUCTION.	MARLEY "Q" MARK # MUH-05-4 W/ SPECIFIED ACCESSORIES AND CONTROLS

GRAVITY THICKENERS BUILDING CONDUIT AND WIRE SCHEDULE						
CONDUIT NUMBER	CONDUIT SIZE	NO. OF WIRES	WIRE SIZE	FROM	TO	COMMENTS
C-1	1.0"	3	10	GT DRIVE PWR SWITCH AND CONTROL STATION	GT WALKWAY JUNCTION BOX	POWER GROUND CONTROL
C-2	1.5"	7	10	GT WALKWAY JUNCTION BOX	GT STAIRS JUNCTION BOX	POWER GROUND CONTROL
C-3	0.75"	2	14	H&V MOTOR OPERATED DAMPER	H&V EF MOTOR STARTER	POWER GROUND
C-4	0.75"	3	12	PLBG SLUMP PUMP POWER DISC SWITCH	GTB POWER PULL BOX	POWER GROUND
C-5	0.75"	2	12	H&V EF MOTOR STARTER	GTB POWER PULL BOX	POWER GROUND
C-6	0.75"	1 @ 2/C	16 SH	GT DRIVE POWER MONITOR PANEL	GTB SIGNAL TERMINAL PANEL	SIGNAL
C-7	0.75"	2	12	GT DRIVE POWER MONITOR PANEL	GTB POWER PULL BOX	POWER GROUND
C-8	0.75"	4	12	B5MT FLOOD FLOAT SWITCH	GTB CTL/ALM TERMINAL PANEL	ALARM GROUND
C-9	1.0"	3	12	SCUM MIXER POWER WIREWAY	GTB POWER PULL BOX	POWER GROUND CONTROLS
C-10	1.0"	4	14	SCUM MIXER POWER WIREWAY	GTB CTL/ALM TERMINAL PANEL	SCUM PUMP CONTROL
C-11	1.0"	1 @ 2/C	16 SH	SCUM TANK LEVEL TRANSMITTER	GTB SIGNAL TERMINAL PANEL	LEVEL SIGNAL
C-12	1.0"	2	12	SCUM TANK LEVEL SENSOR	SCUM TANK LEVEL TRANSMITTER	LEVEL SIGNAL
C-13	1.0"	SEE	NOTE # 2	SCUM TANK LEVEL SENSOR	SCUM TANK LEVEL TRANSMITTER	LEVEL SIGNAL
C-14	2.0"	SEE	NOTE # 3	GTB SIGNAL TERMINAL PANEL	ELEC SITE SIGNAL JUNCT BOX	PROCESS SIGNALS
C-15	2.0"	SEE	NOTE # 3	GTB TELEPHONE TERMINAL PANEL	ELEC SITE TELE JUNCT BOX	TELEPHONE SERVICE
C-16	2.0"	SEE	NOTE # 3	GTB FIRE ALARM TERMINAL PANEL	ELEC SITE FA JUNCT BOX	FIRE ALARM SERVICE
C-17	2.0"	8	10	GT TANK POWER TERMINAL PANEL	GT SITE POWER JUNCTION BOX	POWER GROUND CTLS AND ALMS
C-18	2.0"	2 @ 2/C	16 SH	GT TANK SIGNAL TERMINAL PANEL	GT SITE SIGNAL JUNCTION BOX	TORQUE SIGNALS
C-19	2.0"	12	10	GT BLDG POWER TERMINAL PANEL	GT SITE POWER JUNCTION BOX	POWER GROUND CTLS AND ALMS
C-20	2.0"	9	10	GT SITE POWER JUNCTION BOX	OPERATIONS BLDG GT POWER TERM PNL	POWER GROUND CTLS AND ALMS
C-21	2.0"	10	10	GT SITE POWER JUNCTION BOX	OPERATIONS BLDG GT POWER TERM PNL	POWER GROUND CTLS AND ALMS
C-22	2.0"	EMPTY	W/ PULL STRING	GT SITE POWER JUNCTION BOX	OPERATIONS BLDG GT POWER TERM PNL	POWER
C-23	2.0"	4 @ 2/C	16 SH	GT SITE SIGNAL JUNCTION BOX	OPERATIONS BLDG GT SIGNAL TERM PNL	TORQUE SIGNALS
C-24	2.0"	SEE	NOTE # 3	GT SITE SIGNAL JUNCTION BOX	OPERATIONS BLDG GT SIGNAL TERM PNL	TELEPHONE SERVICE
C-25	2.0"	SEE	NOTE # 3	GT SITE SIGNAL JUNCTION BOX	OPERATIONS BLDG GT SIGNAL TERM PNL	FIRE ALARM SERVICE
C-26	1.0"	3	12	OPERATIONS BLDG GT POWER TERM PNL	MOTOR CONTROL CENTER "OB-MCC-1A"	POWER GROUND CTL AND ALM
C-27	1.0"	3	12	OPERATIONS BLDG GT POWER TERM PNL	MOTOR CONTROL CENTER "OB-MCC-1B"	POWER GROUND CTL AND ALM
C-28	1.0"	5	10	OPERATIONS BLDG GT POWER TERM PNL	PANELBOARD "OB-HVPB-2"	POWER GROUND
C-29	1.0"	8	10	OPERATIONS BLDG GT POWER TERM PNL	PANELBOARD "OB-LVPB-2"	POWER GROUND
C-30	1.0"	1 @ 12/C	14	OPERATIONS BLDG GT POWER TERM PNL	I&C CONTROL PANEL "ICP-3"	ALARMS
C-31	1.5"	4 @ 2/C	16 SH	OPERATIONS BLDG GT SIGNAL TERM PNL	I&C CONTROL PANEL "ICP-3"	TORQUE SIGNALS
C-32	1.0"	SEE	NOTE # 3	OPERATIONS BLDG GT SIGNAL TERM PNL	TELE SERVICE PANEL	TELEPHONE SERVICE
C-33	1.0"	SEE	NOTE # 3	OPERATIONS BLDG GT FIRE ALRM TERM PNL	FIRE ALARM CTL PNL "OB-FACP"	FIRE ALARM SERVICE

CONDUIT & WIRE SCHEDULE NOTES

- EC SHALL COORDINATE ALL EQUIPMENT WIRING WITH THE "AS SUPPLIED" EQUIPMENT PRIOR TO ANY ROUGH WIRING.
- EC SHALL FURNISH/INSTALL LOW VOLTAGE SIGNAL CABLE AS RECOMMENDED BY THE I&C INSTRUMENT MANUFACTURER.
- EC SHALL FURNISH/INSTALL LOW VOLTAGE TELE AND FA CABLES AS INDICATED ON THE TELE AND FA RISER DIAGRAMS.

RICHARDSON ELECTRICAL AS-BUILT

ELEC DRAWINGS REFERENCE NOTES

- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC-1 THRU E-FV-2

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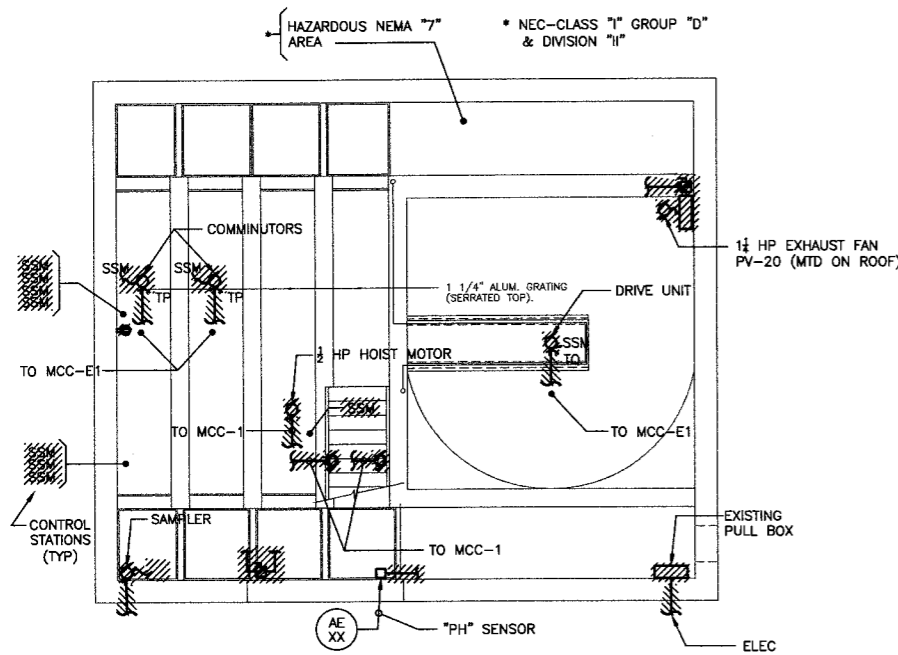
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CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRIC GRAVITY THICKENER WIRING DETAILS, DIAGRAM AND SCHEDULES**

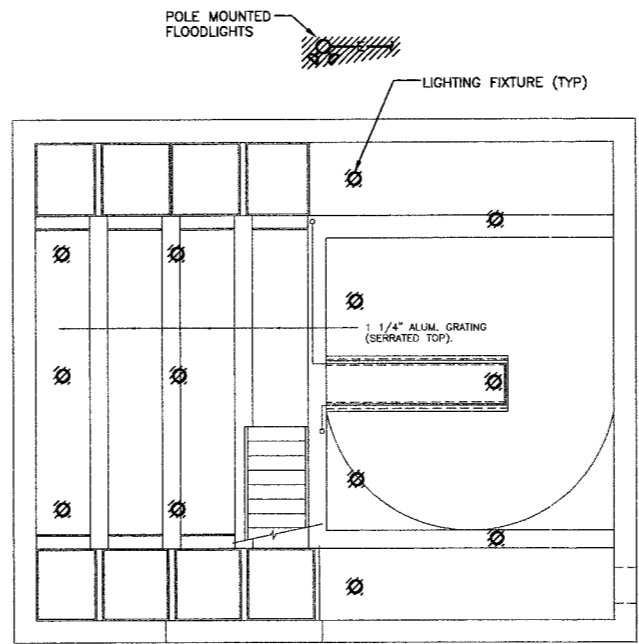
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 JOB NO: 0905101  
 DRAWN BY: ELD  
 CHECKED BY: LMR  
 DESIGNED BY: LMR  
 APP. BY: DKR  
 DATE: 7/15/2011  
 FILE NO: 189-26



**HEADWORKS BUILDING LOWER LEVEL  
POWER DEMOLITION PLAN**  
SCALE: 3/16"=1'-0"

\* THE ELECTRICAL WORK IS AFFECTED BY APPENDIX "A". FOR DETAILS, REFER TO DWG #M-HW.2 AND THE APPLICABLE SPECS.  
\* DWG NOT "AS-BUILT" (INFORMATION FROM EXISTING DWGS)

- HEADWORKS BUILDING ELECTRICAL POWER DEMOLITION PLANS NOTES**
- ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING ELECTRICAL EQUIPMENT AND WIRING (WHICH IS NOT FULLY INDICATED) IN ORDER TO DEMOLISH AS INDICATED. THE DEMOLITION WORK MUST BE COORDINATED WITH THE OVERALL PROJECT CONSTRUCTION PHASING AND SEWAGE BYPASS PUMPING WORK.
  - ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING PROCESS, HVAC, PLEB, ETC EQUIPMENT AND ASSOCIATED WIRING IN ORDER TO SELECTIVELY DEMOLISH. ALL OPENINGS SHALL BE BLANKED BY THE EC WITH GALV STEEL PLATES. THE PLATES SHALL BE FIELD PAINTED BY THE PAINTING CONTRACTOR. NOTE, THE GC SHALL REPAIR ALL WALL OPENINGS AND DAMAGE CAUSED BY THE ELEC DEMOLITION.
  - ELEC CONTRACTOR SHALL FIELD SURVEY THE AFFECTED RECEPTACLES AND ASSOCIATED WIRING IN ORDER TO DEMOLISH. THE EXISTING CONCEALED ELECTRICAL RACEWAYS SHALL BE BLANKED OFF AFTER THE EXISTING WIRES ARE REMOVED. NOTE, THE LTG CONTROL SWITCHES CONTAIN MERCURY WHICH MUST BE PROPERLY DISPOSED PER THE REGULATIONS.
  - ELEC CONTRACTOR MUST ASSUME THERE IS ARE LIMITED ELEC DRAWINGS WHICH ARE AVAILABLE FROM THE ENGINEER AFTER THE CONTRACT AWARD. NOTE, THE EXISTING DRAWINGS ARE NOT "AS BUILT".
  - ELEC CONTRACTOR'S WORK INCLUDES THE POWERING & WIRING OF A TEMPORARY SPS BYPASS PUMPING SYSTEM AS SPECIFIED IN THE OTHER APPLICABLE SPECIFICATIONS.
  - THE ELEC DEMO WORK IS AFFECTED BY THE BID ALTERNATE "A". EC MUST REFER TO THE BID ALTERNATE "A" ELECTRICAL NOTES.



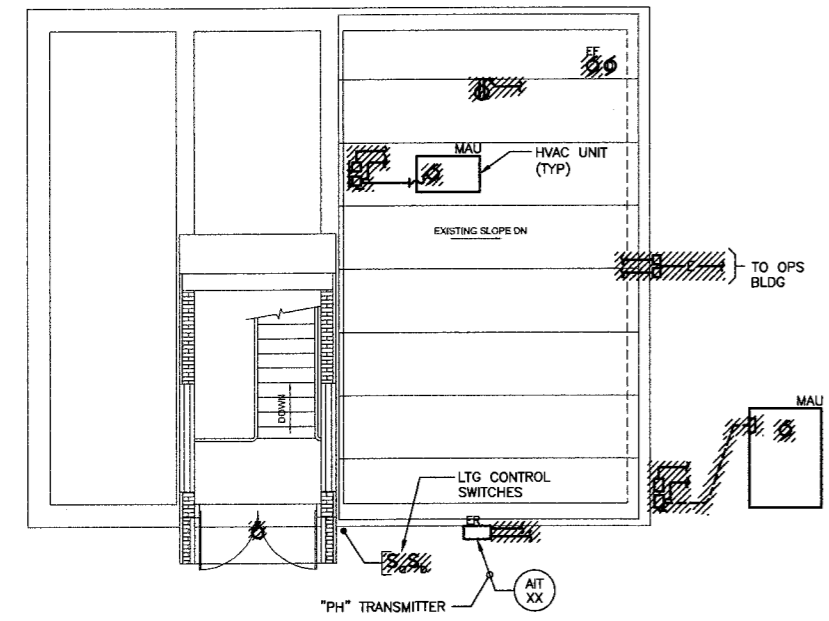
**HEADWORKS BUILDING LOWER LEVEL  
LIGHTING DEMOLITION PLAN\***  
SCALE: 3/16"=1'-0"

\* DWG NOT "AS-BUILT" (INFORMATION FROM EXISTING DWGS)

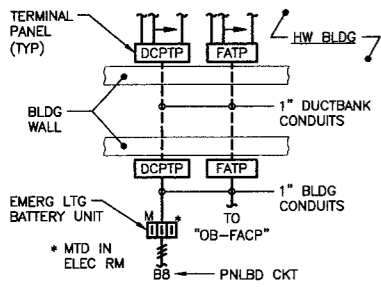
- HEADWORKS BUILDING LIGHTING DEMOLITION PLANS NOTES**
- ELEC CONTRACTOR SHALL FIELD SURVEY THE EXIST LIGHTING FIXTURES, RECEPTACLES AND WIRING (WHICH IS NOT INDICATED) IN ORDER TO DEMOLISH.
  - ELEC CONTRACTOR SHALL FIELD SURVEY EXISTING LTG'S PANELBOARD CIRCUITS AND BRANCH WIRING IN ORDER TO DEMOLISH. NOTE, THE PANELBOARDS ARE LOCATED IN THE EXISTING OPERATIONS BUILDING.
  - ELEC CONTRACTOR SHALL NOTE THAT EXIST ELECTRICAL DEVICES AND WIRING INDICATED ON THE DRAWINGS ARE NOT "AS-BUILT". INFORMATION INDICATED WAS OBTAINED FROM A/A/E GENERAL INSPECTION WALK-THRU INSPECTIONS. CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NECESSARY.
  - ELEC CONTRACTOR SHALL NOTE THE LTG/RGCS BRANCH WIRING IS NOT INDICATED DUE TO THE LACK OF "AS-BUILT" DRAWINGS. FOR BIDDING, THE CONTRACTOR'S SHALL FIELD INSPECT ANY EXISTING CONDITIONS PRIOR TO THE BID SUBMITTAL (IF REQUIRED). DIFFERING FIELD CONDITIONS SHALL NOT BE THE BASIS OF ANY EXTRA COSTS.
  - ELEC CONTRACTOR SHALL DEMO THE EXIST LTG CONTROLS (IE - SWITCHES & WIRING) AND REPLACE WITH NEW AS INDICATED ON THE PROPOSED LTG BLDG PLANS.
  - ELEC CONTRACTOR MUST ASSUME THE EXIST LIGHTING HAS PCB BALLASTS PLUS THE FLUORESCENT LAMPS AND SWITCHES CONTAIN MERCURY WHICH ARE HAZARDOUS MATERIAL. EC SHALL PROPERLY DISPOSE. PROVIDE DISPOSAL INFORMATION FOR PROPER DOCUMENTATION.
  - EC SHALL FURNISH/INSTALL PROVIDE GALVANIZED STEEL BLANKING PLATES FOR ANY REMAINING LTG FIXTURE OPENINGS WHICH ARE FIELD PAINTED BY THE PAINTING CONTRACTOR.
  - EC SHALL REMOVE ALL EXISTING LTG CONDUCTORS IN CONCEALED (CONCRETE WALLS/FLOORS) TO REMAIN LTG BRANCH WIRING.

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**HEADWORKS BUILDING UPPER LEVEL  
POWER/LIGHTING DEMOLITION PLAN**  
SCALE: 3/16"=1'-0"



**HW BLDG TO OPS BLDG  
WIRING DIAGRAM**  
NOT TO SCALE

HEADWORKS BUILDING CONDUIT AND WIRE SCHEDULE						
CONDUIT NUMBER	CONDUIT SIZE	NO. OF WIRES	WIRE SIZE	FROM	TO	COMMENTS
C-1	1.0"	3	12	SEWAGE GRINDER PWR/CTL WIREWAY	HW BLDG POWER TERMINAL PANEL	POWER GROUND CONTROLS
		1	12			
		6	14			
C-2	0.75"	4	14	INFLUENT CHANNEL FLOOD FLOAT SWITCH	HW BLDG POWER TERMINAL PANEL	FLOOD ALARM GROUND
		1	14			
C-3	1.0"	3	12	GRIT COLLECTOR MOTOR JUNCTION BOX	GRIT COLLECTOR PWR/CTL WIREWAY	POWER GROUND ALARMS
		1	12			
		6	12			
C-4	1.0"	3	12	GRIT COLLECTOR PWR/CTL WIREWAY	HW BLDG POWER TERMINAL PANEL	POWER GROUND CTLS AND ALMS
		1	12			
		1 @ 12/C	14			
C-5	0.75"	2	12	I&C "PH" INSTRUMENT TRANSMITTER	HW BLDG POWER TERMINAL PANEL	POWER GROUND
		1	12			
C-6	1.0"	SEE	NOTE # 2	I&C PH INSTRUMENT SENSOR	I&C "PH" INSTRUMENT TRANSMITTER	PH SIGNAL
C-7	1.0"	2 @ 2/C	16 SH	I&C PH INSTRUMENT TRANSMITTER	HW BLDG POWER TERMINAL PANEL	PH SIGNAL
C-8	1.0"	3	12	MECH SCREEN MOTOR JUNCTION BOX	MECH SCREEN CTL/PWR WIREWAY	POWER GROUND ALARMS
		1	12			
		6	14			
C-9	1.0"	3	12	MECH SCREEN CTL/PWR WIREWAY	HW BLDG POWER TERMINAL PANEL	POWER GROUND ALARMS
		1	12			
		6	14			
C-10	1.0"	2 @ 12/C	14	MECH SCREEN LOCAL CONTROL PANEL	HW BLDG POWER TERMINAL PANEL	CONTROLS
C-11	1.0"	6	14	WASH PRESS SOLENOID VALVES	WASH PRESS LOCAL CONTROL PNL	CONTROLS GROUND
		1	14			
C-12	1.0"	3	12	WASH PRESS MOTOR JUNCTION BOX	WASH PRESS CTL/PWR WIREWAY	POWER GROUND CTLS AND ALMS
		1	12			
		6	14			
C-13	1.0"	3	12	WASH PRESS CTL/PWR WIREWAY	HW BLDG POWER TERMINAL PANEL	POWER GROUND CTLS AND ALMS
		1	12			
		6	14			
C-14	1.0"	2 @ 2/C	14	WASH PRESS LOCAL CONTROL PANEL	HW BLDG POWER TERMINAL PANEL	CONTROLS
C-15	1.0"	SEE	NOTE # 2	SCREEN LEVEL SENSOR # 1	SCREEN LEVEL SENSOR # 2	LEVEL SIGNAL
C-16	1.0"	SEE	NOTE # 2	SCREEN LEVEL SENSOR # 2	SCREEN LEVEL TRANSMITTER	LEVELS SIGNALS
C-17	0.75"	2	12	SCREEN LEVEL TRANSMITTER	HW BLDG POWER TERMINAL PANEL	POWER GROUND
		1	12			
C-18	1.0"	2 @ 2/C	16 SH	SCREEN LEVEL TRANSMITTER	HW BLDG SIGNAL TERINAL PANEL	LEVEL SIGNAL
C-19	0.75"	4	14	INTRUSION DOOR SWITCH	"ISR" RELAY ENCLOSURE	INTRUSION ALARM
		1	14			

HEADWORKS BUILDING CONDUIT AND WIRE SCHEDULE						
CONDUIT NUMBER	CONDUIT SIZE	NO. OF WIRES	WIRE SIZE	FROM	TO	COMMENTS
C-19	0.75"	4	14	INTRUSION DOOR SWITCH	"ISR" RELAY ENCLOSURE	INTRUSION ALARM
		1	14			
C-20	0.75"	4	14	"ISR" RELAY ENCLOSURE	HW BLDG POWER TERMINAL PANEL	INTRUSION ALARM
		1	14			
C-21	0.75"	2	12	"ISR" RELAY ENCLOSURE	HW BLDG POWER TERMINAL PANEL	POWER GROUND
		1	12			
C-22	2.0"	4 @ 2/C	16 SH	HW BLDG SIGNAL TERMINAL PANEL	OPS BUILDING SIGNAL HW TERMINAL PNL	LEVEL/PH SIGNALS
		SEE	NOTE # 3			
C-23	1.0"	4 @ 2/C	16 SH	OPS BUILDING SIGNAL HW TERMINAL PANEL	I&C CONTROL PANEL "ICP-3"	LEVEL & PH SIGNALS
C-24	1.0"	SEE	NOTE # 3	OPS BUILDING SIGNAL HW TERMINAL PANEL	LIGHTING RELAYS PANEL "OB-LRCP"	LTG CONTROL DATA SIGNALS
C-25	2.0"	6	10	HW BLDG POWER TERMINAL PANEL	OPS BUILDING POWER HW TERMINAL PNL	POWER GROUND CTLS AND ALMS
		2 @ 12/C	14			
C-26	2.0"	3	10	HW BLDG POWER TERMINAL PANEL	OPS BUILDING POWER HW TERMINAL PNL	POWER GROUND CTLS AND ALMS
		2 @ 12/C	14			
C-27	2.0"	6	10	HW BLDG POWER TERMINAL PANEL	OPS BUILDING POWER HW TERMINAL PNL	POWER GROUND CTLS AND ALMS
		1 @ 12/C	14			
C-28	1.0"	3	12	HW BLDG POWER TERMINAL PANEL	GRINDER CONTROL PANEL	POWER GROUND CTLS AND ALMS
		1	12			
		1 @ 12/C	14			
C-29	1.0"	6	10	HW BLDG POWER TERMINAL PANEL	PANELBOARD "OB-LVPB-2"	POWER GROUND
		1	10			
C-30	1.0"	1 @ 12/C	14	HW BLDG POWER TERMINAL PANEL	I&C CONTROL PANEL "ICP-3"	CONTROLS, STATUS AND ALARMS
C-31	1.0"	3	12	HW BLDG POWER TERMINAL PANEL	SEWAGE SCREEN CONTROL PANEL	POWER GROUND CTLS AND ALMS
		1	12			
		2 @ 12/C	14			
C-32	1.0"	3	12	HW BLDG POWER TERMINAL PANEL	SCREENS WASH PRESS CONTROL PANEL	POWER GROUND CTLS AND ALMS
		1	12			
		2 @ 12/C	14			

- CONDUIT & WIRE SCHEDULE NOTES**
- EC SHALL COORDINATE ALL EQUIPMENT WIRING WITH THE "AS SUPPLIED" EQUIPMENT PRIOR TO ANY ROUGH WIRING.
  - EC SHALL FURNISH/INSTLL LOW VOLTAGE CABLES AS REQUIRED BY THE AS SUPPLIED I&C INSTRUMENTATION.
  - EC SHALL FURNISH/INSTALL LOW VOLTAGE CABLES AS REQUIRED BY THE LIGHTING CONTROL SYSTEM.

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

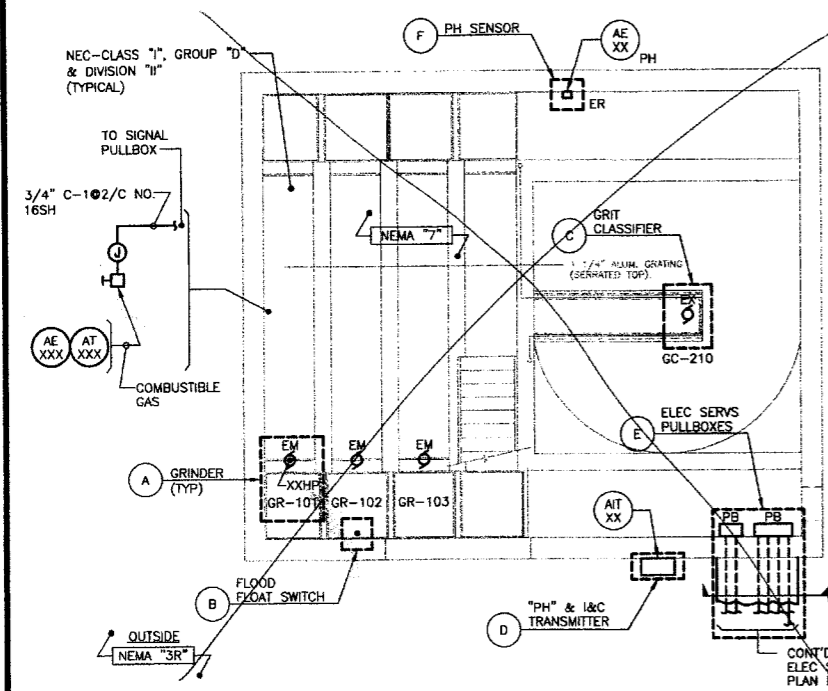
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A P P R O V E D  
W Peter Evans 7/15/2011  
REGISTERED PROFESSIONAL ENGINEER



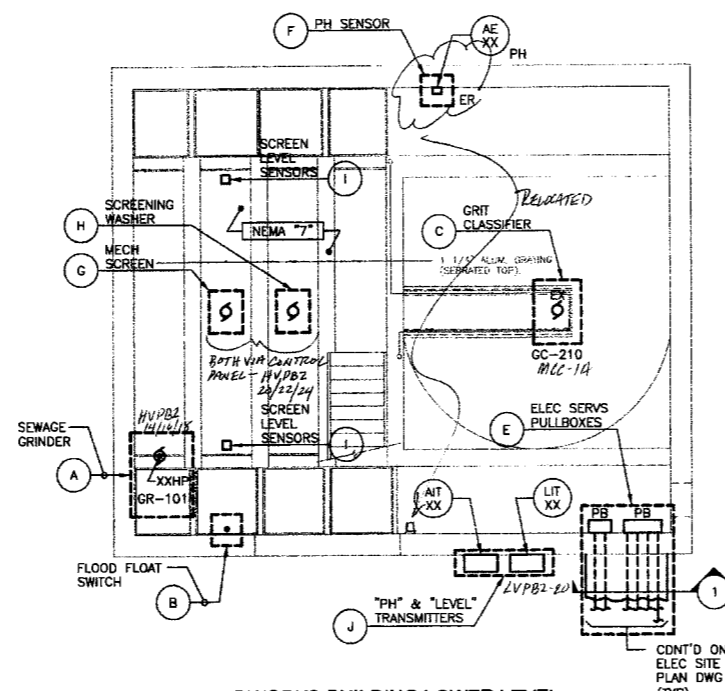
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL HEADWORKS BUILDING POWER/LIGHTING DEMO/PROP PLANS**  
CADD NO. 0905101 EHW1  
SCALE: AS SHOWN  
CONTRACT: 2  
JOB NO. 0905101  
DRY BY ELD  
DSN BY LMR  
CHK BY DSK  
APP BY WPE  
FILE NO. 189-25  
**E-HW.7**  
SHEET 178 OF 202

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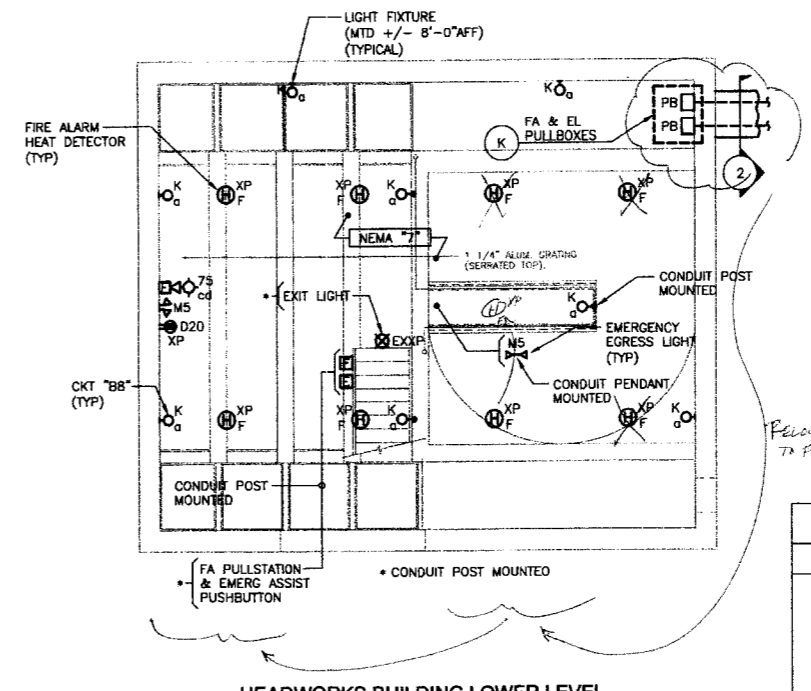
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**HEADWORKS BUILDING LOWER LEVEL POWER PROPOSED PLAN \***  
 SCALE: 3/16"=1'-0"  
 \* BASE BID ELECTRICAL WORK



**HEADWORKS BUILDING LOWER LEVEL POWER PROPOSED PLAN \*\***  
 SCALE: 3/16"=1'-0"  
 \*\* BID ALTERNATE "A" ELECTRICAL WORK

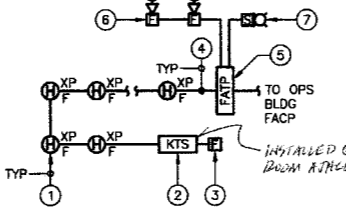


**HEADWORKS BUILDING LOWER LEVEL LIGHTING PROPOSED PLAN \*\***  
 SCALE: 3/16"=1'-0"  
 \*\* INCLUDES FIRE ALARM SYSTEM

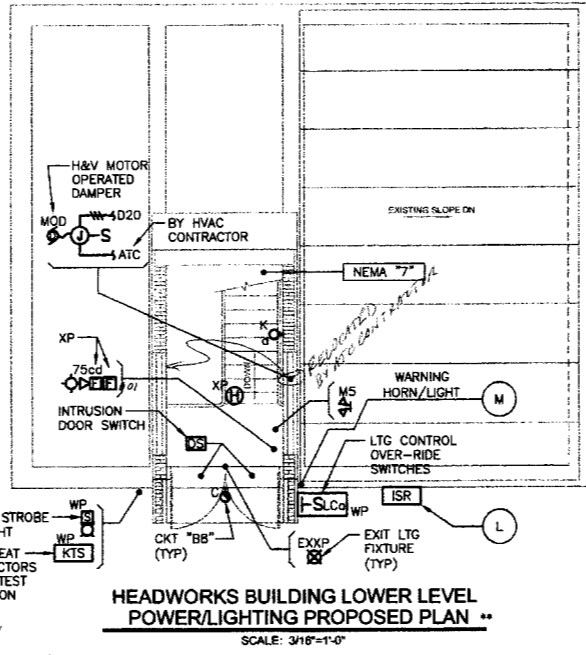
**OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES**

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

- HEADWORKS BUILDING POWER PROPOSED PLANS NOTES**
- ELECTRICAL CONTRACTOR SHALL FURNISH/INSTALL NEW ELECTRICAL EQUIPMENT (AS INDICATED) AND ITS ASSOCIATED WIRING. ALL NEW ELEC EQUIPMENT AND WIRING SHALL BE COORDINATED WITH THE "AS SUPPLIED" PROJECT EQUIP AND NEW CONSTRUCTION PRIOR TO ANY ELEC EQUIP RELEASE AND/OR ROUGH WIRING.
  - ALL ELEC EQUIPMENT, FIELD DEVICES AND WIRING SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH EACH ROOM OR AREAS NOTED "NEMA" RATING. ALL EQUIPMENT AND INSTALLATION SHALL BE SUPPLIED/INSTALLED IN ACCORDANCE WITH THE LATEST NEC 2011 CODE REQUIREMENTS.
  - EC SHALL FURNISH/INSTALL WATER-PROOF SPLICES FOR ALL NEMA "3R", "4", "4X" OR "7" ROOMS OR AREA'S ELECTRICAL WIRING TERMINATIONS.
  - EC SHALL FIELD LOCATE ALL ELEC EQUIPMENT WHICH COORDINATES AS SPECIFIED. THE ELEC EQUIPMENT LAYOUT SHALL BE FURNISHED BY THE EC (IE - TO SCHEDULE DRAWING) FOR ENGINEER REVIEW/APPROVAL.
  - EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH "AS SUPPLIED" EQUIPMENT AND THE NEW CONSTRUCTION. NOTE, ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT/REPAIR OF THE PROCESS EQUIPMENT, ETC.
  - EC SHALL COMPLETE THE NEW ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WWTF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE, THE NEW EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED PRIOR TO ANY DEMOLITION AND RECONSTRUCTION OF THE OTHER SIMILAR UNITS.
  - ALL I&C INSTRUMENTS AND ASSOCIATED FIELD WIRING SHALL BE INSTALLED AND WIRED IN STRICT COMPLIANCE WITH EACH INSTRUMENT'S MANUFACTURERS TECHNICAL REQUIREMENTS.



- HW BUILDING FIRE ALARM WIRING DIAGRAM NOTES**
- EC SHALL FURNISH/INSTALL EXPLOSIONPROOF FA HEAT DETECTORS AND ASSOCIATED WIRING.
  - EC SHALL FURNISH/INSTALL A KEY OPERATED TESTING SWITCH FOR FIELD TESTING THE HEAT DETECTORS WHICH ARE MOUNTED OVER THE OPEN WATER.
  - EC SHALL F/I THE MANUAL FA PULL STATION.
  - EC SHALL F/I THE FA FIELD WIRING WHICH IS FIELD ROUTED BY THE EC TO SUIT.
  - EC SHALL F/I A FA TERMINAL PANEL WHICH IS SIZED TO SUIT AND FIELD LOCATED BY THE ELECTRICAL CONTRACTOR.
  - EC SHALL F/I FA HORN/LIGHT SIGNALING DEVICES AND ASSOCIATED WIRING.
  - EC SHALL F/I INSTALL OUTSIDE FA STROBE LIGHT WITH LARGE ENGRAVED PLASTIC NAME-PLATE PER THE CITY FIRE DEPARTMENT.
  - EC WITH THEIR FA SUPPLIER SHALL COORDINATE WITH THE EXISTING FA SYSTEM WHICH IS BEING EXPANDED INTO THE NEW CONTRACT "2" CONSTRUCTION WORK.

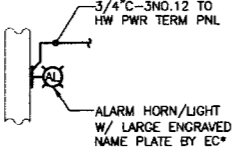


- HEADWORKS BUILDING LIGHTING PROPOSED PLANS NOTES**
- ELECTRICAL CONTRACTOR SHALL FURNISH/INSTALL NEW ELECTRICAL LIGHTING FIXTURES, CONTROLS AND ASSOCIATED WIRING.
  - EC SHALL FURNISH/INSTALL RECEPTACLES AND LIGHTING AS INDICATED INCLUDING THE ASSOCIATED BRANCH WIRING (WHICH IS NOT INDICATED). RECEPT/LETG BRANCH WIRING SHALL BE AS SPECIFIED AND DESCRIBED ON THE ELECTRICAL GENERAL NOTES INCLUDING APPLICABLE WIRING DETAILS AND DIAGRAMS.
  - EC SHALL FURNISH/INSTALL THE FIRE ALARM FIELD DEVICES AND ASSOCIATED WIRING (WHICH IS NOT INDICATED). FA FIELD WIRING SHALL BE AS SPECIFIED, DETAILED, ETC ON THE FA SYSTEM RISER DIAGRAM DRAWINGS.
  - EC SHALL FURNISH/INSTALL ALL LIGHTING/FIRE ALARM EQUIPMENT INCLUDING ASSOCIATED FIELD WIRING IN STRICT ACCORDANCE WITH EACH ROOM OR AREA'S "NEMA" RATING.
  - EC SHALL FIELD LOCATE THE LIGHTING (BOTH HORIZONTAL AND VERTICAL) AFTER THE MAIN EQUIPMENT, PIPING AND DUCTWORK HAS BEEN INSTALLED. HOWEVER, THE EC SHALL COORDINATE THE LIGHTING WITH THE OTHER TRADES PRIOR TO ANY NEW CONSTRUCTION.
  - EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH THE NEW EQUIPMENT AND CONSTRUCTION. NOTE, ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT/MAINTENANCE OF THE PROCESS EQUIPMENT, ETC. EC SHALL GROUP THE CONDUITS WITH A MINIMUM 12" SEPARATION BETWEEN THE LINE AND LOW VOLTAGE WIRING. EC SHALL PROVIDE A LAYOUT OF THE PROPOSED LIGHTING, FIRE ALARM EQUIPMENT INCLUDING THE CONDUITS ROUTING PRIOR TO ANY EQUIPMENT RELEASE AND/OR ROUGH WIRING.
  - EC SHALL COMPLETE THE PROP ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WWTF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE, THE NEW EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED PRIOR TO FINAL ACCEPTANCE.

- HEADWORKS BUILDING SEWAGE MECHANICAL SCREEN AND SCREENINGS WASHER EQUIPMENT BID ALTERNATE "A" NOTES**
- ELECTRICAL CONTRACTOR SHALL PROVIDE A "BASE" BID COST WHICH PROVIDES THE ELECTRICAL WORK IN THE HEADWORKS BUILDING FOR THE EXISTING SEWAGE GRINDERS RE-WIRING PLUS THE NEW LTG RECEPTACLES, ETC. THE BASE WORK ALSO INCLUDES THE RE-WIRING OF THE EXISTING I&C INSTRUMENTS, THE WIRING OF THE NEW I&C INSTRUMENT PLUS THE NEW FIRE ALARM, ETC.
  - EC SHALL PROVIDE A SEPARATE ADDITIONAL ELEC WORK COST FOR THE BID ALTERNATE "A" WHICH INCLUDES RE-WIRING ONE (1) EXISTING SEWAGE GRINDER PLUS THE WIRING OF THE SCREENING WASHER SCREEN AND THE SCREENINGS WASH PRESS EQUIPMENT AS INDICATED ON THE ELECTRICAL WIRING DETAILS.

FOR WIRING DETAILS (A) THRU (L), REFER TO DWG # E-HW.3

FOR DUCTBANK SECTIONS "1" AND "2", REFER TO DWG # E-HW.3



**HEADWORKS ENTRANCE DOOR ALARM HORN/LIGHT WIRING DETAIL**  
 NOT TO SCALE

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

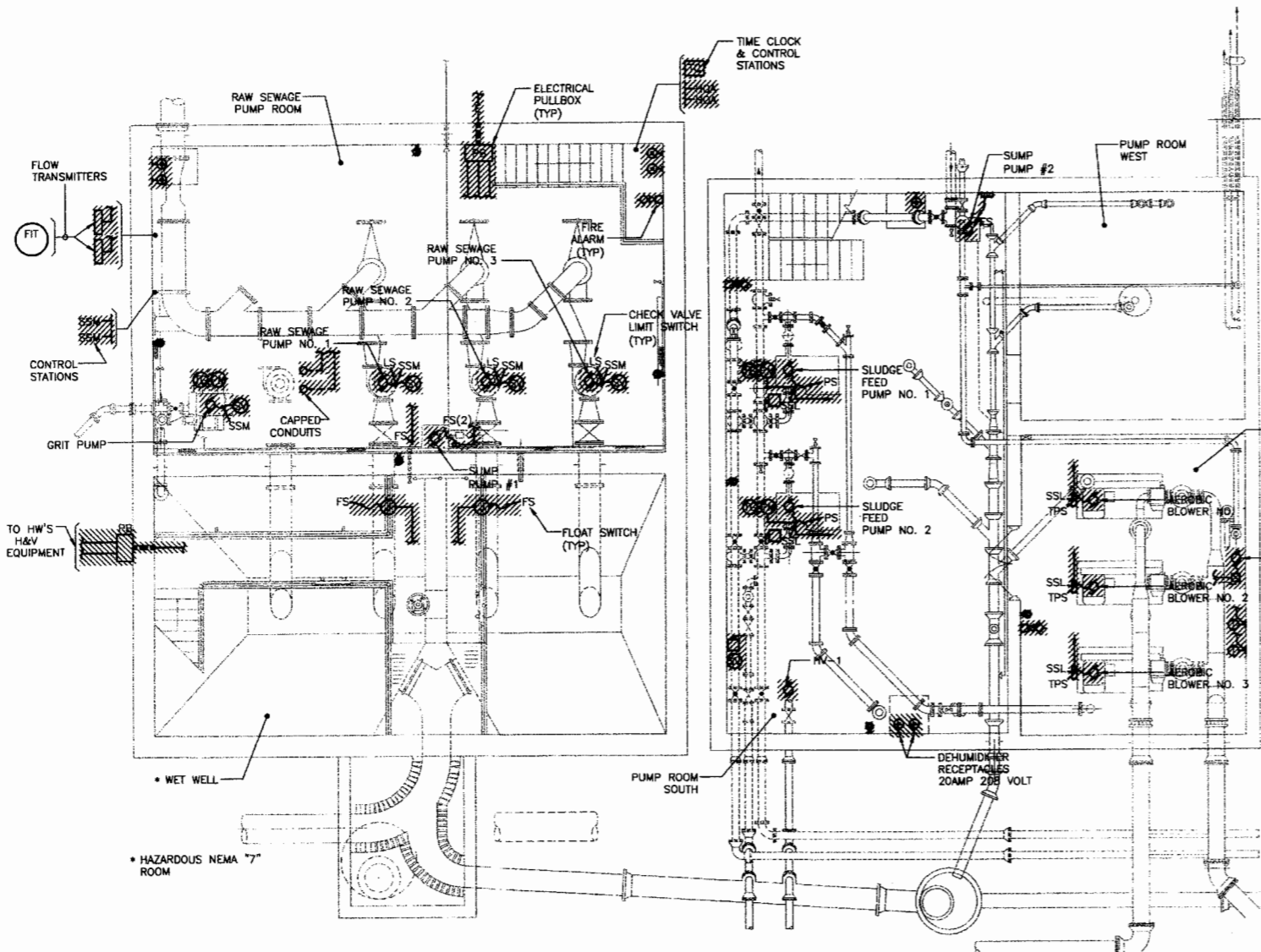
RICHARDSON ELECTRICAL AS-BUILT

DATE: 7/15/2011  
 REGISTERED PROFESSIONAL ENGINEER  
 W. Peter...  
 No. Date: Dr. By: App. By: Description: A F R O V E E D



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL HEADWORKS BUILDING PWR/LTG PROPOSED PLANS**  
 SCALE: AS SHOWN  
 CONTRACT: 2  
 JOB NO.: 09051.01  
 ELD  
 CSN BY: LMR  
 CHK BY: DCK  
 APP BY: WPE

**E-HW.2**  
 SHEET 179 OF 202

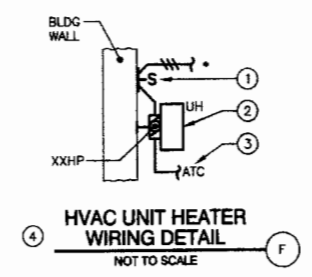


**OPERATIONS BUILDING BASEMENT DEMOLITION POWER PLAN**  
SCALE: 3/16"=1'-0"

\* DWG IS NOT "AS-BUILT" (EXISTING DRAWINGS INFORMATION ONLY)

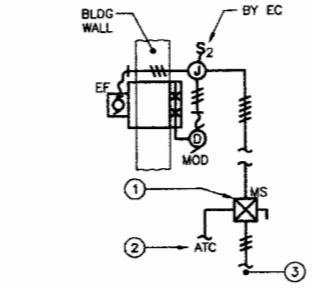
**OPERATIONS BUILDING BASEMENT FLOOR ELECTRICAL POWER DEMOLITION PLANS NOTES**

- ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING ELEC EQUIPMENT AND WIRING (WHICH IS NOT FULLY INDICATED) IN ORDER TO DEMOLISH AS INDICATED ON THE POWER DEMO BLDG PLAN. NOTE, THE DEMOLITION WORK MUST BE COORDINATED WITH THE OVERALL PROJECT CONSTRUCTION PHASING AND SEWAGE BYPASS PUMPING WORK.
- ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING PROCESS, HVAC, PLBG, ETC EQUIPMENT AND ASSOCIATED WIRING IN ORDER TO SELECTIVELY DEMOLISH. ALL OPENINGS SHALL BE BLANKED BY THE EC WITH GALV STEEL PLATES. THE PLATES SHALL BE FIELD PAINTED BY THE PAINTING SUB-CONTRACTOR. NOTE, THE GC SHALL REPAIR ALL WALL OPENINGS AND DAMAGE CAUSED BY THE ELEC DEMOLITION.
- ELEC CONTRACTOR SHALL FIELD SURVEY THE AFFECTED RECEPTACLES AND ASSOCIATED WIRING IN ORDER TO DEMOLISH. THE EXISTING CONCEALED ELECTRICAL RACEWAYS SHALL BE BLANKED OFF AFTER THE EXISTING WIRES ARE REMOVED.
- ELEC CONTRACTOR MUST ASSUME THERE IS ARE LIMITED EXISTING ELECTRICAL DRAWINGS WHICH CAN BE OBTAINED FROM THE ENGINEER AFTER THE CONTRACT AWARD. NOTE, THE DRAWINGS ARE NOT "AS BUILT".
- NOTE, THE EXISTING RAW SEWAGE PUMPS MAY REQUIRE TEMPORARY POWER, MOTOR CONTROLLERS, WIRING, ETC DURING THE PROJECT'S PHASED CONSTRUCTION.



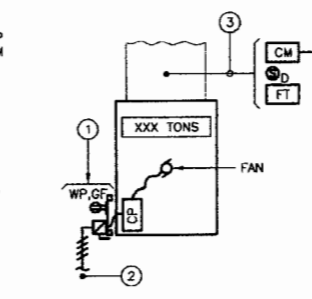
**HVAC UNIT HEATER WIRING DETAIL "F" NOTES**  
NOT TO SCALE

- EC SHALL FURNISH/INSTALL PWR TOGGLE TYPE DISC SWITCH
  - HVAC CONTRACTOR SHALL F/I THE HOT WATER UNIT HEATER.
  - HVAC CONTRACTOR SHALL F/I THE ATC EQUIPMENT AND WIRING.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.
- \* FOR CIRCUITS, REFER TO PANELBOARD "OB-LVPB-1" SCHEDULE



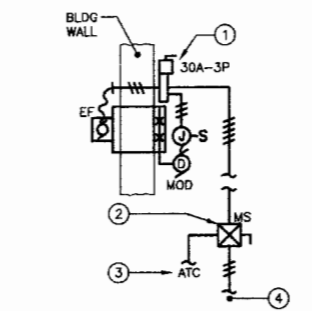
**SINGLE PHASE HVAC EXHAUST FAN WIRING DETAIL "G" NOTES**  
NOT TO SCALE

- EC SHALL FURNISH/INSTALL EXHAUST FAN MOTOR STARTER. EC TO FIELD LOCATE IN THE ELEC ROOM.
- HVAC CONTRACTOR SHALL F/I THE ATC EQUIPMENT AND WIRING.
- EC SHALL REFER TO THE BLDG PLAN DWGS FOR THE PANELBOARD CIRCUIT NUMBER AND THE PNLBD SCHEDULES.
- EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



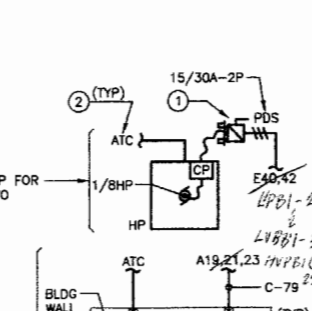
**HVAC MAKE-UP AIR UNIT WIRING DETAIL "H" NOTES**  
NOT TO SCALE

- EC SHALL FURNISH/INSTALL "U" CHANNELS, MTC PLATE, ETC. GC SHALL FURNISH/INSTALL CONCRETE SUPPORT POSTS (AS REQUIRED). EC SHALL ALSO F/I 15/30A-3P PWR DISC SWITCH, RECEPTACLE AND ASSOCIATED WIRING.
- FOR THE "OB-HVPB-1" PANELBOARD CIRCUIT, REFER TO THE PNLBD SCHEDULE.
- EC SHALL FURNISH/INSTALL OUCT MOUNTED SMOKE DETECTOR, TEST STATION AND CONTROL MODULE. EC TO FIELD LOCATE TO SUIT.
- EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



**THREE PHASE HVAC EXHAUST FAN WIRING DETAIL "I" NOTES**  
NOT TO SCALE

- EC SHALL FURNISH/INSTALL WIRE-WAY, POWER DISC SAFETY SWITCH AND PWR TOGGLE TYPE DISC SWITCH AND ASSOCIATED WIRING.
- EC SHALL FURNISH/INSTALL EXHAUST FAN MOTOR STARTER. EC TO FIELD LOCATE IN THE ELEC ROOM.
- HVAC CONTRACTOR SHALL F/I THE ATC EQUIPMENT AND WIRING.
- EC SHALL REFER TO THE BLDG PLAN DWGS FOR THE PANELBOARD CIRCUIT NUMBER AND THE PNLBD SCHEDULES.
- EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

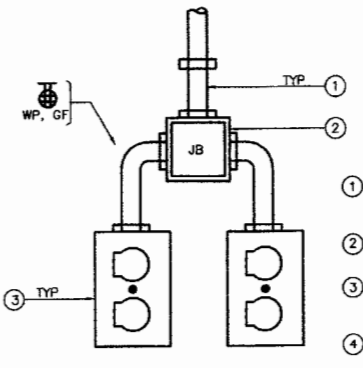


**THREE PHASE HVAC EXHAUST FAN WIRING DETAIL "J" NOTES**  
NOT TO SCALE

- EC SHALL FURNISH/INSTALL PWR DISC SWITCH (MTC ABOVE THE CEILING) PLUS ASSOC WIRING.
- HVAC CONTRACTOR SHALL F/I THE ATC EQUIPMENT AND WIRING.
- EC SHALL CORE DRILL AND F/I CONDUITS WALL SEAL, ETC.
- EC SHALL F/I POWER DISC SAFETY SWITCH AND RECEPTACLE.
- EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



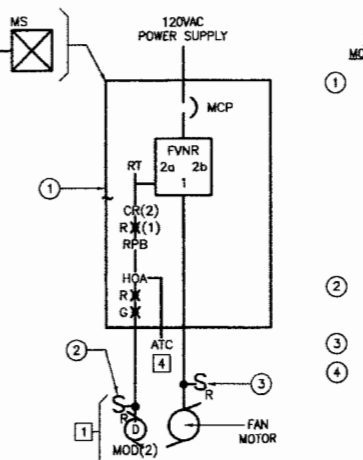
**HVAC HEAT PUMPS WIRING DETAIL "K" NOTES**  
NOT TO SCALE



**POWER RECEPTACLE WIRING DETAIL "A" NOTES**  
NOT TO SCALE  
\* TYPICAL FOR ALL NEMA "4/4X" POWER RECEPTACLES

- RECEPTACLES BRANCH WIRING AS SPECIFIED FOR PANELBOARD CIRCUIT REFER TO DWGS.
- ELECTRICAL JUNCTION BOX AS REQUIRED.
- DUPLEX WATER-TIGHT NEMA "4" RATED RECEPTACLE WITH CAST GALV OUTLET BOX
- EC SHALL FIELD LOCATE THE RECEPTACLES AND WIRING TO SUITE THE EXIST BLDG CONDITIONS AND NEW CONSTRUCTION.

OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES	
CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"



**TYPICAL SINGLE PHASE HVAC FAN MOTOR STARTER RISER DIAGRAM**  
NOT TO SCALE

- EC SHALL FURNISH/INSTALL COMBINATION MOTOR STARTER WITH THE FOLLOWING MINIMUM ITEMS:
  - "MCP" CIRCUIT BREAKER
  - "FVNR" MOTOR CONTACTOR
  - ADJUSTABLE ELECTRONIC OVERLOAD RELAY
  - RUNNING TIME METER
  - LED INDICATING LIGHTS
  - CONTROL RELAYS
  - RESET PUSHBUTTON
  - CONTROL POWER FUSES
- "HOA" POWER DISC SWITCH AND MOTORIZED INTAKE AND EXHAUST DAMPER
- "HOA" POWER DISC SWITCH
- EC SHALL COORDINATE WITH THE "AS SUPPLIED" PROJECT EQUIPMENT AND NEW CONSTRUCTION.

FOR THE HVAC WIRING DETAILS, REFER TO DWG # E-OB.11

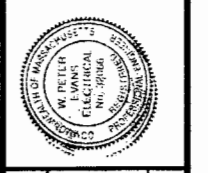
- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

**SED ASSOCIATES CORP.**  
Consulting MEP/FP and I&C Engineers  
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TEL: (617) 552-7245 FAX: (617) 552-0322  
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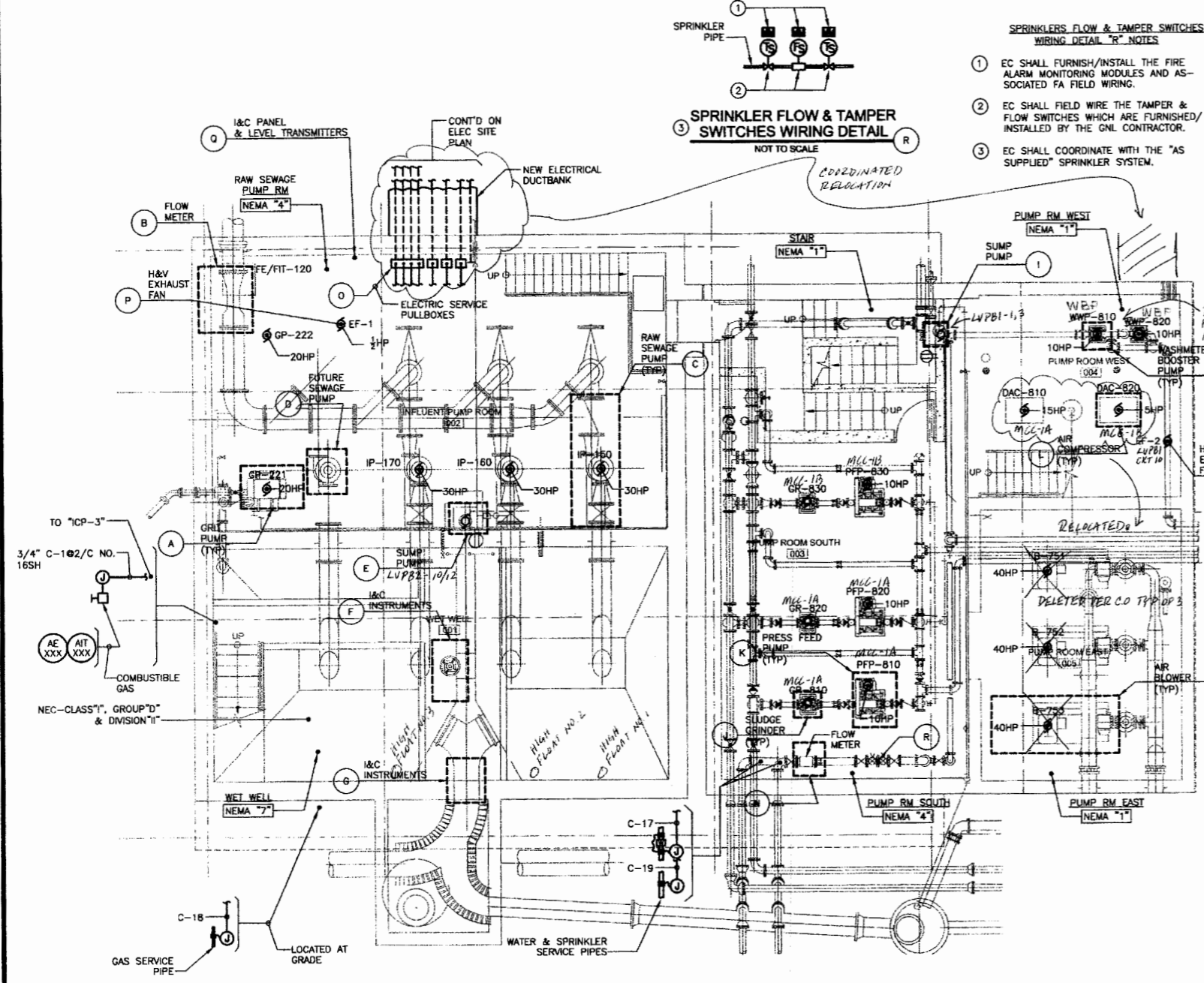
No.	Date	Dr. By	Ch. By	App. By	Descr.

W. Peter Evans  
REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING BASEMENT DEMOLITION POWER PLAN**  
SCALE: AS SHOWN  
CONTRACT: 2 P9051.01  
JOB NO. 0905101 E0B1  
FILE NO. 189-22  
DATE: 7/15/2011

RICHARDSON ELECTRICAL AS-BUILT



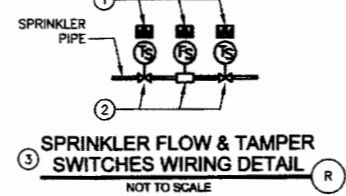
**OPERATIONS BUILDING BASEMENT PROPOSED POWER PLAN**  
 SCALE: 3/16"=1'-0"

**OPERATIONS BUILDING POWER PROPOSED PLAN NOTES**

- 1 ELECTRICAL CONTRACTOR SHALL FURNISH/INSTALL NEW POWER DISTRIBUTION, MOTOR CONTROL, ETC EQUIPMENT AND ASSOCIATED WIRING. ALL NEW ELEC EQUIPMENT AND WIRING SHALL BE COORDINATED WITH THE "AS SUPPLIED" PROJECT EQUIP AND NEW CONSTRUCTION PRIOR TO ANY ANY ELEC EQUIP RELEASE AND/OR ROUGH WIRING.
- 2 ALL ELEC EQUIPMENT, FIELD DEVICES AND WIRING SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH EACH ROOM OR AREAS NOTED "NEMA" RATING.
- 3 EC SHALL FURNISH/INSTALL WATER-PROOF SPLCES FOR ALL NEMA "3R", "4", "4X" OR "7" ROOMS OR AREA'S ELECTRICAL WIRING TERMINATIONS.
- 4 EC SHALL FIELD LOCATE ALL ELEC EQUIPMENT WHICH COORDINATES AS SPECIFIED. THE NEW ELEC ROOM'S EQUIPMENT LAYOUT SHALL BE FURNISHED BY THE EC (IE - TO SCALE DRAWING) FOR ENGINEER REVIEW/APPROVAL.
- 5 EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH "AS SUPPLIED" EQUIPMENT AND THE NEW CONSTRUCTION. NOTE: ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT/REPAIR OF THE PROCESS EQUIPMENT, ETC. VIA POWER AND CONTROL PLUGS AND RECEPTACLES.
- 6 EC SHALL COMPLETE THE NEW ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WPCF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE: THE NEW EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED PRIOR TO ANY DEMOLITION AND RECONSTRUCTION OF THE OTHER SIMILAR UNITS.
- 7 ALL I&C INSTRUMENTS AND ASSOCIATED FIELD WIRING SHALL BE INSTALLED AND WIRED IN STRICT COMPLIANCE WITH EACH INSTRUMENT'S MANUFACTURERS TECHNICAL REQUIREMENTS.

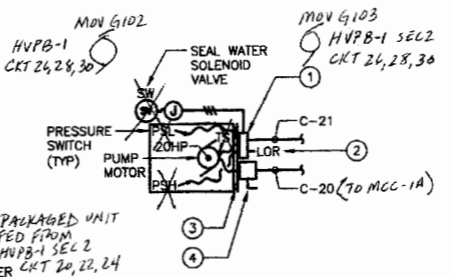
FOR WIRING DETAILS (D) THRU (O)  
 REFER TO ELEC DWG # E-08.12

OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES	
CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

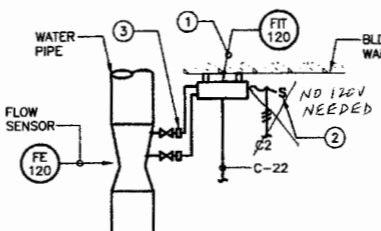


- SPRINKLERS FLOW & TAMPER SWITCHES WIRING DETAIL "R" NOTES**
- 1 EC SHALL FURNISH/INSTALL THE FIRE ALARM MONITORING MODULES AND ASSOCIATED FIA FIELD WIRING.
  - 2 EC SHALL FIELD WIRE THE TAMPER & FLOW SWITCHES WHICH ARE FURNISHED/INSTALLED BY THE GNL CONTRACTOR.
  - 3 EC SHALL COORDINATE WITH THE "AS SUPPLIED" SPRINKLER SYSTEM.

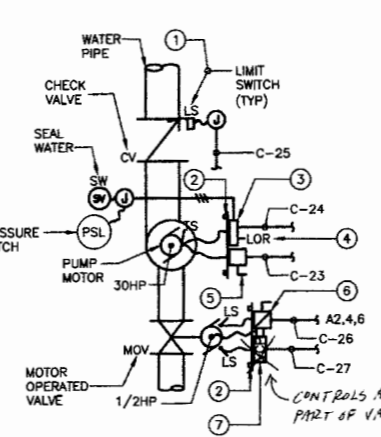
\* NOT SHOWN \*  
 MOV (G-105) AND MOV (G-102)  
 BOTH 480V 3PH



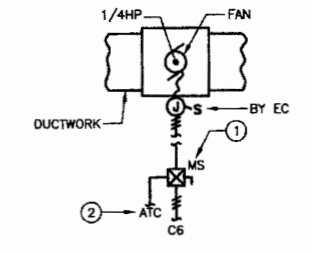
- GRIT PUMP WIRING DETAIL "A" NOTES**
- 1 EC SHALL FURNISH/INSTALL GALV STEEL WIRE WAY (SIZED TO SUIT)
  - 2 EC SHALL FURNISH/INSTALL "LOR" CONTROL STATION. FOR WIRING, REFER TO THE PUMP CONTROL ELEMENTARY WIRING DIAGRAM.
  - 3 EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS AND GALV MOUNTING PLATE (SIZED TO SUIT) FOR THE ELEC EQUIP SUPPORTS.
  - 4 EC SHALL FURNISH/INSTALL GALV PAINTED STEEL POWER DISC SAFETY SWITCH.
  - 5 EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



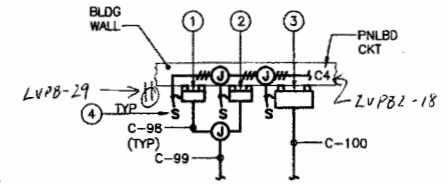
- SEWAGE FLOW METER WIRING DETAIL "B" NOTES**
- 1 EC SHALL MOUNT AND WIRE THE I&C FLOW TRANSMITTER WHICH IS FURNISHED BY THE GNL CONTRACTOR.
  - 2 EC SHALL FURNISH/INSTALL POWER DISC TOGGLE TYPE SWITCH FOR THE I&C INSTRUMENT MAINTENANCE.
  - 3 GNL CONTRACTOR SHALL FURNISH/INSTALL NEW SENSOR TO TRANSMITTER PIPING, VALVES, ISOLATION DIAPHRAGMS, ETC.
  - 4 EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



- INFLUENT SEWAGE PUMP WIRING DETAIL "C" NOTES**
- 1 EC SHALL MOUNT AND WIRE THE "CV" POSITION LIMIT SWITCH WHICH IS FURNISHED BY THE GC.
  - 2 EC SHALL FURNISH/INSTALL GALV STEEL MTG PLATE (SIZED TO SUIT) TO SUPPORT THE ELEC EQUIPMENT.
  - 3 EC SHALL FURNISH/INSTALL GALV STEEL HINGED WIRE WAY (SIZED TO SUIT).
  - 4 EC SHALL FURNISH/INSTALL "LOR" CONTROL STATION.
  - 5 EC SHALL FURNISH/INSTALL GALV PAINTED STEEL POWER DISC SAFETY TYPE SWITCH.
  - 6 EC SHALL FURNISH/INSTALL GALV PAINTED STEEL FUSED POWER DISC SAFETY TYPE SWITCH. EC TO COORDINATE THE FUSE SIZE WITH THE "MOV" EQUIPMENT SUPPLIER.
  - 7 EC SHALL MOUNT AND WIRE THE "MOV" LOCAL CONTROL PANEL WHICH IS FURNISHED BY THE GENERAL CONTRACTOR.
  - 8 EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



- H&V EXHAUST FAN "EF-1" WIRING DETAIL "P" NOTES**
- NOT TO SCALE
- \* "EF-2" IS SIMILAR EXCEPT POWERED BY MCC-1A & LOCAL SAFETY DISC SWITCH
- H&V EXHAUST FAN WIRING DETAIL "P" NOTES**
- 1 EC SHALL FIELD FURNISH AND INSTALL AN EF FAN MOTOR STARTER WHICH IS NEMA "4" RATED. EC SHALL FIELD LOCATE IN THE PUMPS ROOM TO SUIT.
  - 2 HVAC CONTRACTOR SHALL FURNISH AND INSTALL ALL HVAC ATC CONTROLS AND WIRING WHICH IS IN CONFORMANCE WITH THE APPLICABLE ELEC CDS REQUIREMENTS.
  - 3 EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



- I & C PANEL AND LEVEL TRANSMITTERS WIRING DETAIL "Q" NOTES**
- NOT TO SCALE
- I&C PANEL AND LEVEL TRANSMITTERS WIRING DETAIL "Q" NOTES**
- 1 EC SHALL INSTALL/WIRE THE ULTRASONIC LEVEL TRANSMITTER # 1 WHICH IS EXISTING FROM CONTRACT "1"
  - 2 EC SHALL INSTALL/WIRE THE ULTRASONIC LEVEL TRANSMITTER # 2 WHICH IS EXISTING FROM CONTRACT "1"
  - 3 EC SHALL INSTALL/WIRE THE I&C CONTROL PANEL "CP-6" WHICH IS EXISTING FROM CONTRACT "1"
  - 4 EC SHALL FURNISH/INSTALL TOGGLE TYPE POWER DISCONNECT SWITCHES WITH ENGRAVED NAMEPLATES.
  - 5 EC SHALL FIELD LOCATE TO SUIT THE EXISTING CONDITIONS AND NEW CONSTRUCTION.

- ELEC DRAWINGS REFERENCE NOTES**
- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

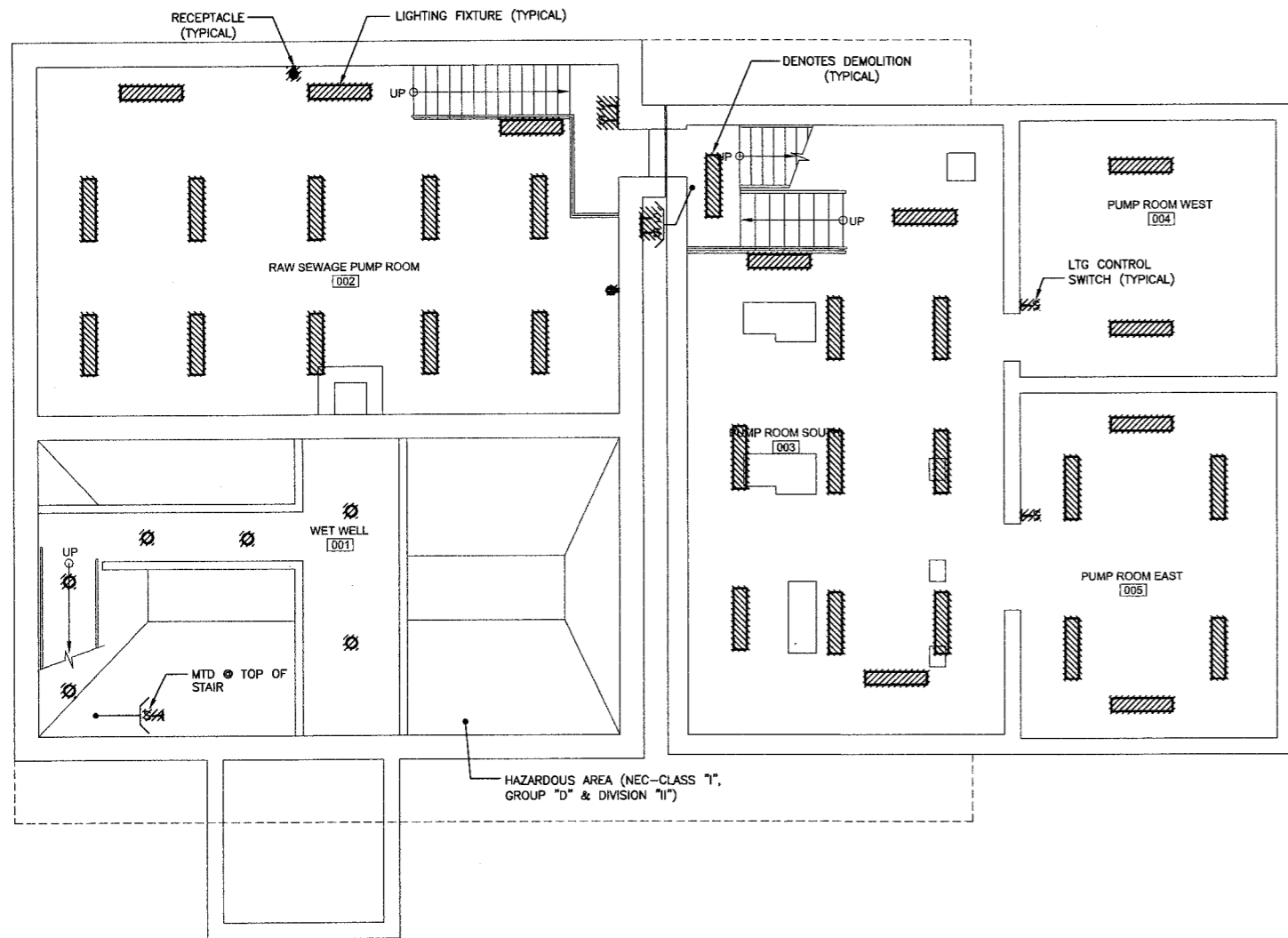
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1					
2					
3					



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
**ELECTRICAL OPERATIONS BUILDING BASEMENT PROPOSED POWER PLAN**

SCALE: AS SHOWN  
 CONTRACT: 2  
 JOB NO: 09051.01  
 DR BY: FLD  
 DESIGNED: LMR  
 CHECKED: DKG  
 APPROVED: WPE

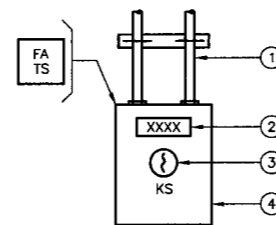
FILE NO: 189-21  
 SHEET 182 OF 202



OPERATIONS BUILDING  
BASEMENT DEMOLITION LIGHTING PLAN \*  
SCALE: 3/16"=1'-0"

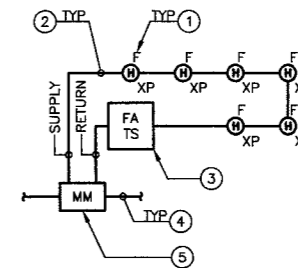
\* DWG IS NOT "AS BUILT" (EXISTING  
DRAWINGS INFORMATION ONLY)

- OPERATIONS BUILDING BASEMENT FLOOR  
LIGHTING DEMOLITION PLAN NOTES**
- 1 ELEC CONTRACTOR SHALL FIELD SURVEY THE EXIST LIGHTING FIXTURES, RECEPTACLES AND WIRING (WHICH IS NOT INDICATED) IN ORDER TO DEMOLISH.
  - 2 ELEC CONTRACTOR SHALL FIELD SURVEY EXISTING THE LTG PANELBOARD CIRCUITS AND BRANCH WIRING IN ORDER TO DEMOLISH.
  - 3 ELEC CONTRACTOR SHALL NOTE THAT EXIST ELECTRICAL DEVICES AND WIRING INDICATED ON THE DRAWINGS ARE NOT "AS-BUILT". INFORMATION INDICATED WAS OBTAINED FROM AN A/E GENERAL INSPECTION WALK-THRU INSPECTIONS. THE ELECTRICAL CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NECESSARY.
  - 4 ELEC CONTRACTOR SHALL NOTE THE LTG/RCPIS BRANCH WIRING IS NOT INDICATED DUE TO THE LACK OF "AS-BUILT" DRAWINGS. FOR BIDDING, THE CONTRACTOR'S SHALL FIELD INSPECT ANY EXISTING CONDITIONS PRIOR TO THE BID SUBMITTAL (IF REQUIRED). DIFFERING FIELD CONDITIONS SHALL NOT BE THE BASIS OF ANY EXTRA COSTS TO THE OWNER.
  - 5 ELEC CONTRACTOR SHALL DEMO THE EXIST LTG CONTROLS (IE - SWITCHES & WIRING) AND REPLACE WITH NEW AS INDICATED ON THE PROPOSED LTG BLDG PLANS.
  - 6 ELEC CONTRACTOR MUST ASSUME THE EXIST LIGHTING HAS PCB BALLASTS PLUS THE FLUORESCENT LAMPS AND SWITCHES CONTAIN MERCURY WHICH ARE HAZARDOUS MATERIAL. EC SHALL PROPERLY DISPOSE. PROVIDE DISPOSAL INFORMATION FOR PROPER DOCUMENTATION.
  - 7 EC SHALL FURNISH/INSTALL PROVIDE GALVANIZED STEEL BLANKING PLATES FOR ANY REMAINING LTG FIXTURE OPENINGS WHICH ARE FIELD PAINTED BY THE PAINTING SUB CONTRACTOR.
  - 8 EC SHALL REMOVE ALL EXISTING LTG CONDUCTORS IN CONCEALED (CONCRETE WALLS/FLOORS) TO REMAIN LTG BRANCH WIRING.



⑤ WET WELL FA HEAT DETECTORS  
TESTING STATION WIRING DETAIL  
NOT TO SCALE

- WET WELL FA HEAT DETECTORS  
TESTING STATION WIRING DETAIL NOTES**
- 1 EC SHALL FURNISH/INSTALL FA FIELD WIRING FROM THE FA HEAT DETECTORS TO THE FA TESTING STATION. FOR DETAILS, REFER TO THE WIRING DIAGRAM.
  - 2 EC SHALL FURNISH/INSTALL ENGRAVED PLASTIC NAME-PLATE (RED WITH WHITE LETTERS) WHICH READS "WET WELL FIRE ALARM HEAT DETECTORS TESTING STATION".
  - 3 EC SHALL FURNISH/INSTALL KEY OPERATED KEY STATION. THE KEY SHALL BE KEPT INSIDE THE FA CONTROL PANEL FOR FA SYSTEM O&M TESTING.
  - 4 EC SHALL FURNISH/INSTALL GALV STEEL OUTLET BOX AND COVER WHICH IS PAINTED RED.
  - 5 EC SHALL FIELD LOCATE AS DIRECTED BY THE CITY FIRE DEPARTMENT.



⑥ WET WELL FIRE ALARM HEAT  
DETECTORS WIRING DIAGRAM  
NOT TO SCALE

- WET WELL FIRE ALARM HEAT DETECTORS  
WIRING DIAGRAM NOTES**
- 1 EC SHALL FURNISH/INSTALL FIRE ALARM HEAT DETECTOR FOR FIRE DETECTION IN THE WET WELL. NOTE, THERE ARE NO FIRE PROTECTION SPRINKLERS IN THIS BUILDING AREA DUE TO EXTENSIVE METAL CORROSION.
  - 2 EC SHALL FURNISH/INSTALL ALUMINUM CONDUIT WITH FIRE ALARM WIRING AS RECOMMENDED BY THE FA SYSTEM SUPPLIER. EC SHALL FIELD ROUTE TO SUIT.
  - 3 EC SHALL FURNISH/INSTALL A KEY OPERATED FA TEST STATION IN ORDER FOR THE FA O&M TESTING FIRM TO FIELD TEST THE WET WELL HEAT DETECTORS SINCE SOME OF THEM ARE NOT EASILY ACCESSIBLE IN THE OPEN WATER WET WELL PROCESS AREA. EC SHALL FIELD LOCATE THIS NEMA "1" FA FIELD DEVICE.
  - 4 EC SHALL FURNISH/INSTALL FA ADDRESSABLE CIRCUIT FIELD WIRING AS REQUIRED.
  - 5 EC SHALL FURNISH/INSTALL A FA ADDRESSABLE MONITORING MODULE FOR THE WET WELL HEAT DETECTORS.
  - 6 EC SHALL COORDINATE WITH THE CITY FIRE DEPARTMENT PRIOR TO ANY EQUIPMENT RELEASE AND/OR ROUGH WIRING.

**ELEC DRAWINGS REFERENCE NOTES**

- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

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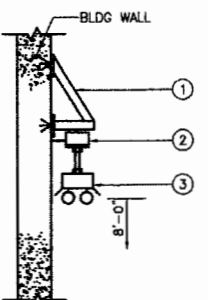
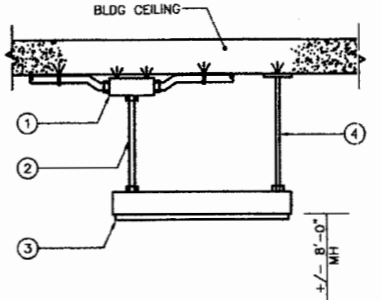
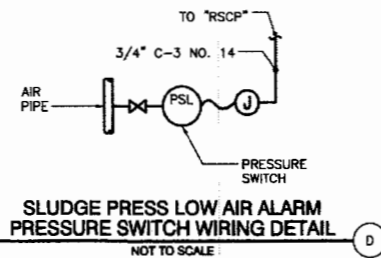
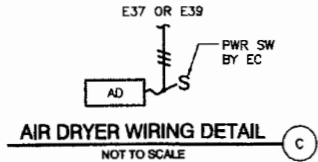
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					7/15/2011 DATE



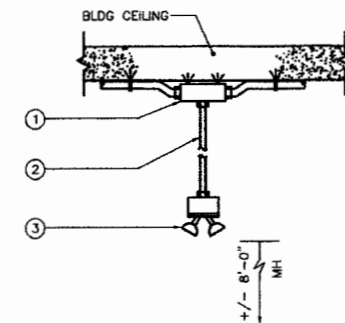
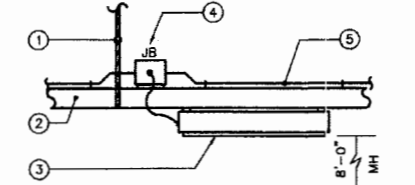
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT ELECTRICAL OPERATIONS BUILDING BASEMENT DEMOLITION LIGHTING PLAN	SCALE: AS SHOWN	DR. BY: ELD	CHK. BY: LMR	APP. BY: WPE
CADD NO.: 0905101 E0B3	CONTRACT: 2	JOB NO.: 09051.01	DATE: 7/15/2011	REGISTERED PROFESSIONAL ENGINEER

**E-OB-3**  
FILE NO. 189-20  
SHEET 183 OF 202



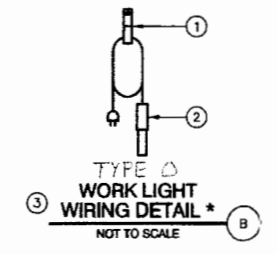
- 5 TYPICAL LIGHTING FIXTURE WIRING SECTION**  
NOT TO SCALE
- TYPICAL LIGHTING FIXTURE WIRING SECTION "1" NOTES**
- 1 CAST GALV JUNCTION BOX FOR WIRING AND SUPPORTING THE LTG FIXTURE BY ELEC CONTRACTOR
  - 2 GALV RIGID STEEL CONDUIT WITH SWIVEL CONNECTORS BY EC.
  - 3 EC SHALL FURNISH/INSTALL LIGHTING FIXTURE. FOR DETAILS, REFER TO THE LTG FIXTURES SCHEDULE.
  - 4 GALV STEEL 3/8" THREADED ROD BY THE EC.
  - 5 EC SHALL FIELD LOCATE AND WIRE WHICH SUITS THE EXIST BLDG CONDITIONS AND NEW CONSTRUCTION.

- 4 TYPICAL LIGHTING FIXTURE WIRING SECTION**  
NOT TO SCALE
- TYPICAL LIGHTING FIXTURE WIRING SECTION "3" NOTES**
- 1 "ALUMINUM U" CHANNEL LTG FIXTURE SUPPORT FRAME WITH STAINLESS STEEL HARDWARE.
  - 2 CAST ALUM ELECTRICAL JUNCTION BOX AND LIGHTING BRANCH WIRING.
  - 3 CEILING MOUNTED TYPE LIGHTING FIXTURE.
  - 4 EC SHALL FIELD LOCATE AS REQUIRED WHICH COORDINATES WITH THE EXISTING BUILDING CONDITIONS PLUS THE NEW CONSTRUCTION.



- 6 TYPICAL LIGHTING FIXTURE MOUNTING AND WIRING SECTION**  
NOT TO SCALE
- LIGHTING FIXTURE MOUNTING AND WIRING SECTION "2" NOTES**
- 1 3/8" GALVANIZED THREADED ROD AND HARDWARE
  - 2 GALVANIZED STEEL "U" CHANNEL WITH WALL TO WALL ATTACHMENTS
  - 3 NON-METALLIC LIGHTING FIXTURE WITH STAINLESS STEEL HARDWARE
  - 4 CAST GALVANIZED STEEL JUNCTION BOX WITH LTG FIXTURE WATER-TIGHT POWER CORD AND FITTINGS.
  - 5 GALVANIZED STEEL LIGHTING BRANCH WIRING CONDUIT AND HARDWARE.
  - 6 EC SHALL FIELD LOCATE AS REQUIRED WHICH COORDINATES WITH THE EXISTING BUILDING AND NEW CONSTRUCTION.

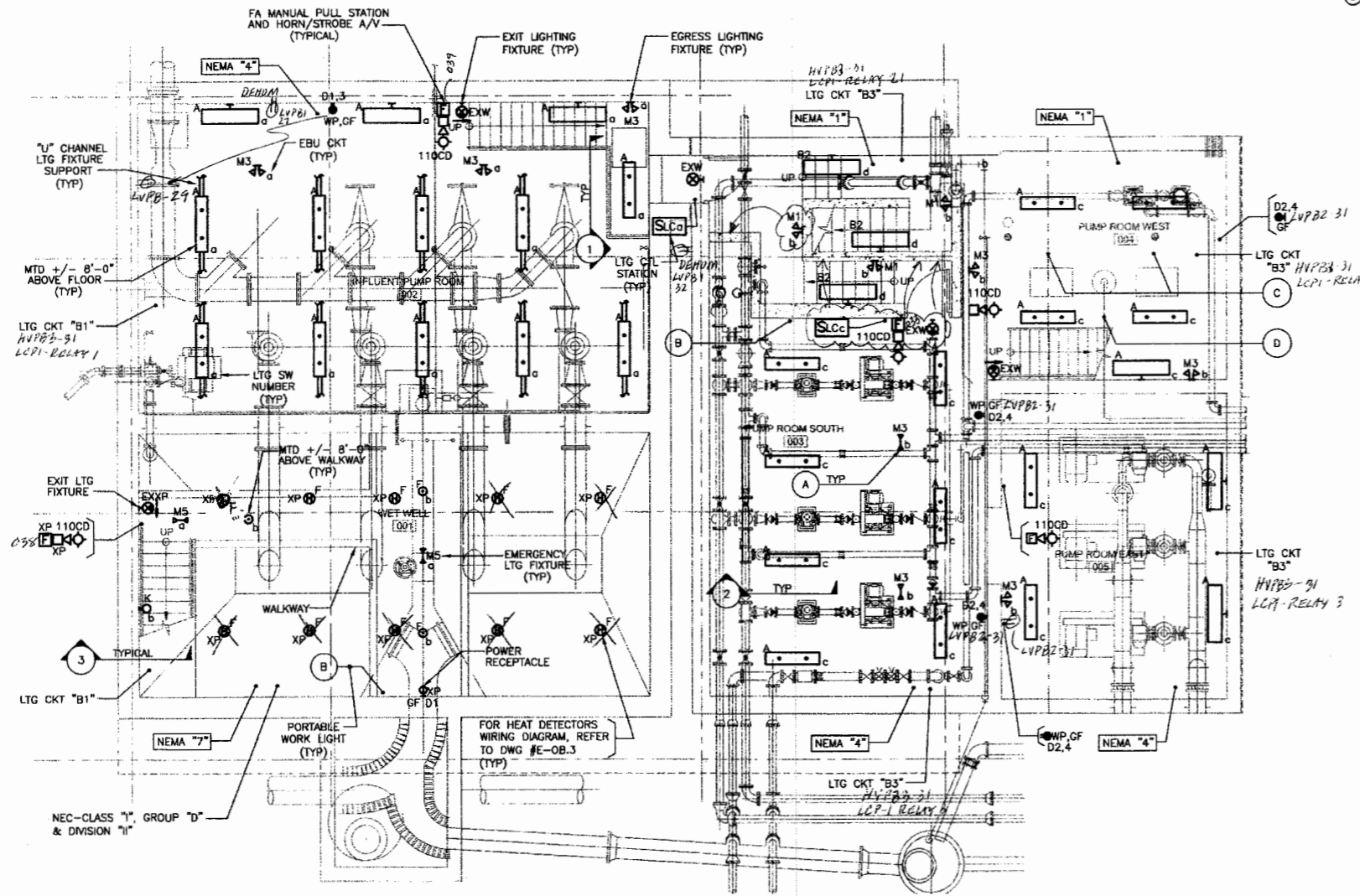
- 4 TYPICAL CEILING EGRESS LIGHTING FIXTURES WIRING DETAIL**  
NOT TO SCALE
- TYPICAL EGRESS LIGHTING FIXTURE WIRING DETAIL "A" NOTES**
- 1 CAST ALUM ELECTRICAL JUNCTION BOX AND LIGHTING BRANCH WIRING.
  - 2 RIGID GALVANIZED STEEL LTG CONDUIT FIXTURE SUPPORT.
  - 3 CEILING MOUNTED TYPE EGRESS LIGHTING FIXTURE.
  - 4 EC SHALL FIELD LOCATE AS REQUIRED WHICH COORDINATES WITH THE EXISTING BUILDING CONDITIONS PLUS THE NEW CONSTRUCTION.



- WORK LIGHT AND HOLDER WIRING DETAIL "B" NOTES**
- 1 PAINTED ALUMINUM HOLDER WITH S/S HARDWARE BY EC.
  - 2 PORTABLE WORK LIGHT BY EC.
  - 3 EC SHALL FURNISH TWO FIRST FLOOR WORK LIGHTS AND HOLDERS. EC SHALL FIELD LOCATE AS DIRECTED BY THE PLANT OPERATORS.

- EC SHALL FURNISH/INSTALL SIMILAR WORK LIGHTS IN
- a) ONE (1) IN HEADWORKS BLDG (RATED NEMA "7")
  - b) TWO (2) ON FIRST FLOOR OF OPERATIONS BUILDING
- FIELD LOCATED BY EC PER ENGINEER

- ELEC DRAWINGS REFERENCE NOTES**
- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2



**OPERATIONS BUILDING BASEMENT PROPOSED LIGHTING PLAN\***  
SCALE: 3/16"=1'-0"

- \* INCLUDES FA SYSTEM
- \* BUILDING HAS SPRINKLERS FIRE PROTECTION IN ALL ROOMS EXCEPT FOR THE WET WELL
- \* LTG IS RELAY CONTROLLED BY "OB-LRCP" (MTD IN ELEC ROOM)

- OPERATIONS BUILDING LIGHTING PROPOSED PLAN NOTES**
- 1 ELECTRICAL CONTRACTOR SHALL FURNISH/INSTALL NEW ELECTRICAL LIGHTING FIXTURES, CONTROLS AND ASSOCIATED WIRING.
  - 2 EC SHALL FURNISH/INSTALL RECEPTABLES AND LIGHTING AS INDICATED INCLUDING THE ASSOCIATED BRANCH WIRING (WHICH IS NOT INDICATED). RCPTS/LTG BRANCH WIRING SHALL BE AS SPECIFIED AND DESCRIBED ON THE ELECTRICAL GENERAL NOTES INCLUDING APPLICABLE WIRING DETAILS AND DIAGRAMS.
  - 3 EC SHALL FURNISH/INSTALL THE FIRE ALARM PANEL FIELD DEVICES AND ASSOCIATED WIRING (WHICH IS NOT INDICATED). FA FIELD WIRING SHALL BE AS SPECIFIED, DETAILED, ETC ON THE FA SYSTEM RISER DIAGRAM DRAWINGS.
  - 4 EC SHALL FURNISH/INSTALL ALL LIGHTING/FIRE ALARM EQUIPMENT INCLUDING ASSOCIATED FIELD WIRING IN STRICT ACCORDANCE WITH EACH ROOM OR AREA'S "NEMA" RATING.
  - 5 EC SHALL FIELD LOCATE THE LIGHTING (BOTH HORIZONTAL AND VERTICAL) AFTER THE MAIN EQUIPMENT, PIPING AND DUCTWORK HAS BEEN INSTALLED. HOWEVER, THE EC SHALL COORDINATE THE LIGHTING WITH THE OTHER TRADES PRIOR TO ANY NEW CONSTRUCTION.
  - 6 EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH THE NEW EQUIPMENT AND CONSTRUCTION. NOTE: ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT/MAINTENANCE OF THE PROCESS EQUIPMENT, ETC. EC SHALL GROUP THE CONDUITS WITH A MINIMUM 12" SEPARATION BETWEEN THE LINE AND LOW VOLTAGE WIRING. EC SHALL PROVIDE A LAYOUT OF THE PROPOSED LIGHTING, FIRE ALARM EQUIPMENT INCLUDING THE CONDUITS ROUTING PRIOR TO ANY EQUIPMENT RELEASE AND/OR ROUGH WIRING.
  - 7 EC SHALL COMPLETE THE PROP ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WPCF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE: THE NEW EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED PRIOR TO FINAL ACCEPTANCE.

OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES	
CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

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W. Peter Egan  
REGISTERED PROFESSIONAL ENGINEER

7/15/2011 DATE



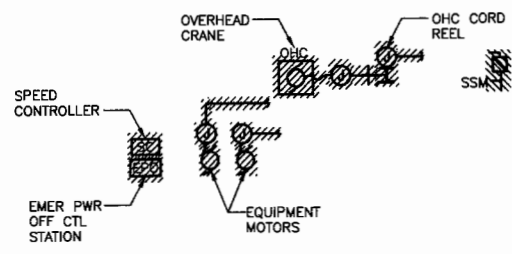
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DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING BASEMENT PROPOSED LIGHTING PLAN**

SCALE: AS SHOWN  
CONTRACT: 0905101 EOB4  
JOB NO.: 0905101  
DATE: 7/15/2011

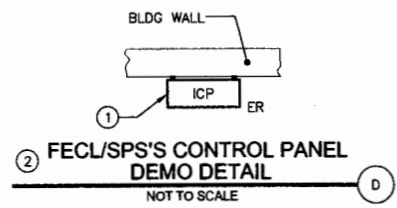
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RICHARDSON ELECTRICAL AS-BUILT

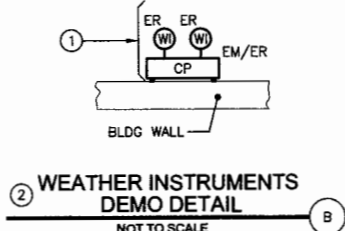


**MEZZANINE LEVEL POWER DEMO DETAIL (A)**  
NOT TO SCALE



**FECL/SPS'S CONTROL PANEL DEMO DETAIL (D)**  
NOT TO SCALE

- FECL/SPS CONTROL PANEL DEMO DETAIL "D" NOTES**
- EC SHALL FIELD SURVEY AND RELOCATE TO THE NEW CONTROL ROOM. NOTE, PANEL REQUIRES TEMP WIRING AS REQUIRED IN ORDER TO REMAIN OPERATIONAL.
  - EC TO COORDINATE WITH THE CONSTRUCTION PHASING AS REQUIRED.

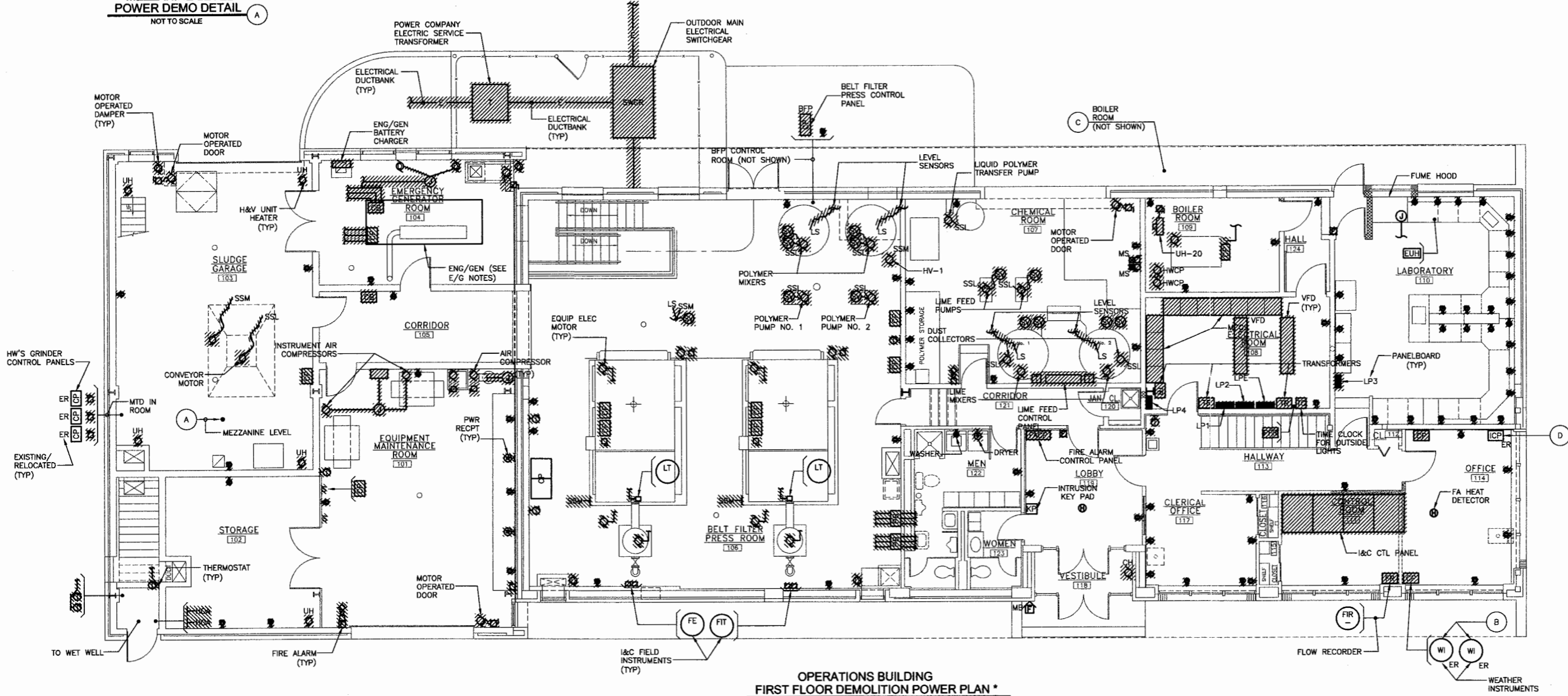


**WEATHER INSTRUMENTS DEMO DETAIL (B)**  
NOT TO SCALE

- WEATHER INSTRUMENTS DEMO DETAIL "B" NOTES**
- EC SHALL FIELD SURVEY, RE-VISE AND RELOCATE THE TWO WEATHER INSTRUMENTS. NOTE, THE ROOF HAS THE TWO SENSORS WHICH MUST BE RELOCATED.
  - EC TO COORDINATE WITH THE CONSTRUCTION PHASING AS REQUIRED.

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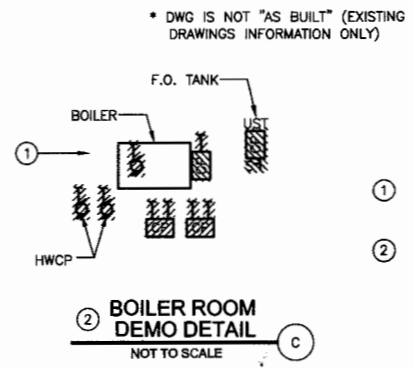
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**OPERATIONS BUILDING FIRST FLOOR DEMOLITION POWER PLAN \***  
SCALE: 3/16"=1'-0"

**OPERATIONS BUILDING FIRST FLOOR ELECTRICAL POWER DEMOLITION PLAN NOTES**

- ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING ELECTRICAL EQUIPMENT AND ITS ASSOCIATED WIRING (WHICH IS NOT FULLY INDICATED) IN ORDER TO DEMOLISH AS INDICATED ON THE POWER DEMO BLDG PLAN. NOTE, THE DEMOLITION WORK MUST BE COORDINATED WITH THE OVERALL PROJECT CONSTRUCTION PHASING AND SEWAGE BYPASS PUMPING WORK.
- ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING PROCESS, HVAC, PLBG, ETC ELEC EQUIPMENT AND ITS ASSOCIATED WIRING IN ORDER TO SELECTIVELY DEMOLISH.
- ELEC CONTRACTOR SHALL FIELD SURVEY THE EXISTING TELEPHONE SERVICE, EQUIPMENT, OUTLETS AND ASSOCIATED WIRING IN ORDER TO DEMOLISH AS INDICATED ON THE PWR BLDG PLANS.
- ELEC CONTRACTOR SHALL FIELD SURVEY THE EXIST ENGINE/GENERATOR IN ORDER TO DISCONNECT AS INDICATED ON THE POWER DEMO BLDG PLANS. EC SHALL ELECTRICALLY DISCONNECT AND MAKE SAFE WHILE THE GENERAL CONTRACTOR DEMOLISHES AND PROPERLY DISPOSES OF THE E/G UNIT. NOTE, THE E/G UNIT CONTAINS HAZARDOUS MATERIAL (IE-ANTI-FREEZE, CRANKCASE OIL, ETC).
- ELEC CONTRACTOR SHALL FIELD SURVEY THE AFFECTED RECEPTACLES AND ASSOCIATED WIRING IN ORDER TO DEMOLISH.
- ELEC CONTRACTOR MUST ASSUME THERE ARE LIMITED AVAILABLE ELECTRICAL DRAWINGS WHICH CAN BE OBTAINED FROM THE ENGINEER AFTER CONTRACT AWARD.
- ELEC CONTRACTOR'S WORK INCLUDES THE POWERING & WIRING OF A TEMPORARY SPS BYPASS PUMPING SYSTEM AS SPECIFIED IN THE OTHER APPLICABLE SPECIFICATIONS.
- EC MUST CONTACT THE POWER UTILITY COMPANY AS SOON AS POSSIBLE AFTER CONTRACT AWARD IN ORDER TO COORDINATE ITS DEMOLITION AND REMOVAL. NOTE, ALL TEMPORARY POWER SHALL BE OBTAINED FROM THE EXISTING NEW MAIN OUTDOOR SWITCHGEAR VIA TEMPORARY WOODEN POLES AND OVERHEAD POWER CABLES (AS REQUIRED).



**BOILER ROOM DEMO DETAIL (C)**  
NOT TO SCALE

- \* DWG IS NOT "AS BUILT" (EXISTING DRAWINGS INFORMATION ONLY)
- BOILER ROOM DEMO DETAIL "C" NOTES**
- EC SHALL FIELD SURVEY AND DEMOLISH THE EQUIPMENT & WIRING AS INDICATED.
  - EC TO COORDINATE WITH THE CONSTRUCTION PHASING AS REQUIRED.

**ELECTRICAL TEMPORARY WORK NOTES**

- EC SHALL FURNISH/INSTALL TEMPORARY ELEC EQUIPMENT AND WIRING IN ORDER TO KEEP THE EXISTING WWTF FACILITIES OPERATING WHEN THE EXISTING ELECTRICAL EQUIPMENT AND WIRING IS DEMOLISHED AND REPLACED.
- EC'S WORK INCLUDES AS A MINIMUM TEMP POWER DISTRIBUTION, MOTOR STARTERS/CONTROLLERS, POWER DISCONNECTS, CONTROL STATIONS, OVERHEAD POLE MOUNTED TEMP WIRING, TEMP POWER SUPPLY FROM THE NEW MAIN OUTDOOR SWITCHBOARD, ETC AND TEMPORARY EQUIPMENT/LIGHTING/RECEPTACLES, ETC WIRING.
- IN GENERAL THE EXISTING WWTF EQUIPMENT WILL BE MANUALLY OPERATED DURING THE DEMOLITION AND RECONSTRUCTION. FOR DETAILS, REFER TO THE CONSTRUCTION PHASING SPECIFICATIONS.
- THE TEMPORARY WORK INCLUDES THE FOLLOWING
  - TEMPORARY TANKS AIR BLOWER
  - TEMPORARY SLUDGE DEWATERING

**ENGINE/GENERATOR DEMOLITION GENERAL CONTRACTOR WORK NOTES**

- AFTER THE EC SHALL DEMOLISHED THE E/G ELEC WIRING PLUS THE HVAC/PLBG CONTRACTORS HAVE DEMOLISHED THE E/G H&V AND PLBG SERVICES, THE GENERAL CONTRACTOR SHALL DEMOLISH THE EXISTING DIESEL FUELED ENG/GEN.
- SINCE THE ENG/GEN CONTAINS HAZARDOUS (IE - CRANK CASE OIL, ANTI FREEZE, ETC), THE GC SHALL PROPERLY DISPOSE OF THE E/G UNIT PER THE APPLICABLE STATE AND FEDERAL REGULATIONS. GC SHALL PROVIDE WRITTEN CERTIFICATIONS THAT THE E/G WAS PROPERLY DEMOLISHED.

**ELEC DRAWINGS REFERENCE NOTES**

- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

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					7/15/2011 DATE



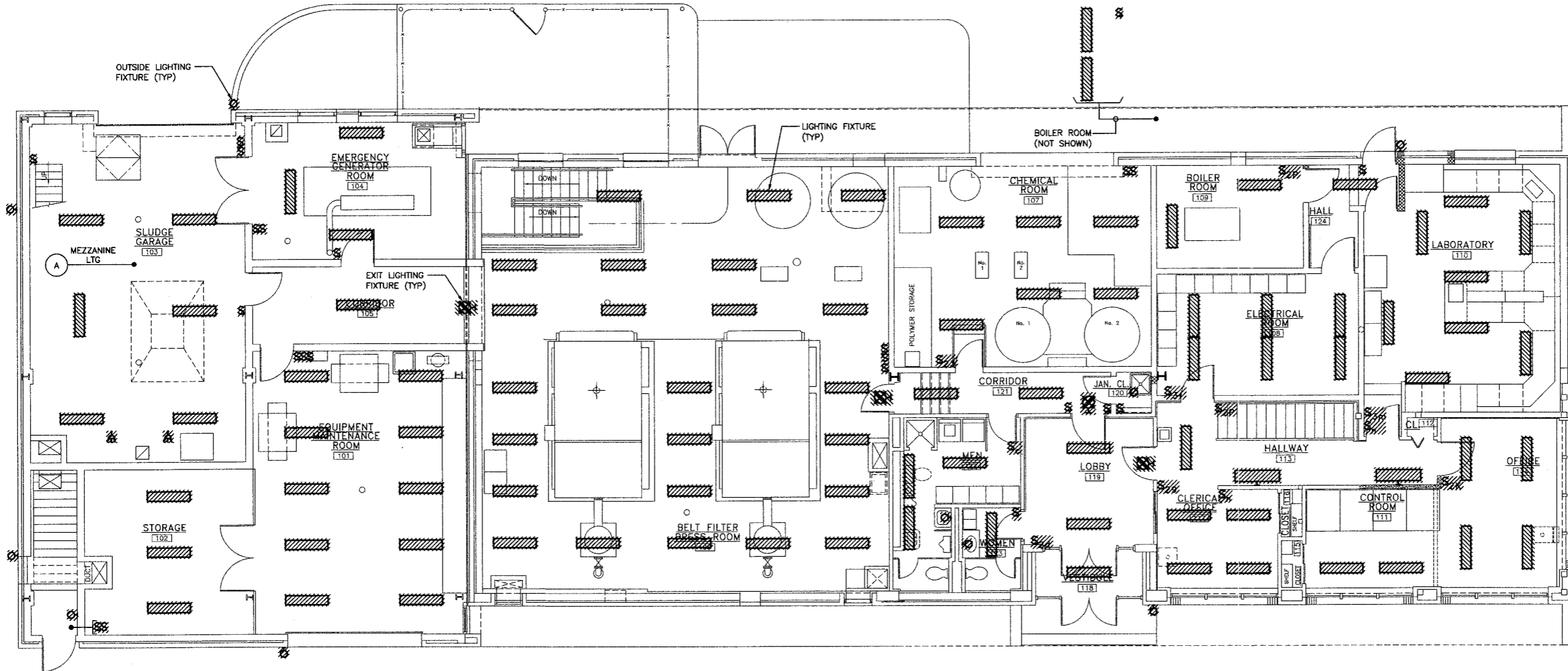
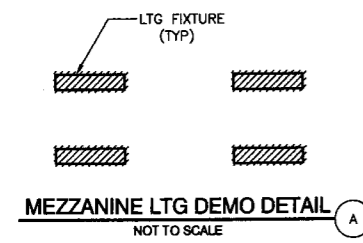
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DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING FIRST FLOOR DEMOLITION POWER PLAN**  
SCALE: AS SHOWN  
CADD NO. 0905101 E0B5  
CONTRACT: 2  
JOB NO. 0905101  
DRY BY: ELD  
CHK BY: DCK  
APP BY: WPE  
FILE NO. 189-18  
**E-OB.5**  
SHEET 185 OF 202





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**OPERATIONS BUILDING  
 FIRST FLOOR DEMOLITION LIGHTING PLAN**  
 SCALE: 3/16"=1'-0"

**OPERATIONS BUILDING BASEMENT FLOOR  
 LIGHTING DEMOLITION PLAN NOTES**

- ① ELEC CONTRACTOR SHALL FIELD SURVEY THE EXIST LIGHTING FIXTURES, RECEPTACLES AND WIRING (WHICH IS NOT INDICATED) IN ORDER TO DEMOLISH.
- ② ELEC CONTRACTOR SHALL FIELD SURVEY EXISTING THE LTG PANELBOARD CIRCUITS AND BRANCH WIRING IN ORDER TO DEMOLISH.
- ③ ELEC CONTRACTOR SHALL NOTE THAT EXIST ELECTRICAL DEVICES AND WIRING INDICATED ON THE DRAWINGS ARE NOT "AS-BUILT". INFORMATION OBTAINED FROM A/E GENERAL INSPECTION WALK-THRU INSPECTIONS. THE ELECTRICAL CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NECESSARY.
- ④ ELEC CONTRACTOR SHALL NOTE THE LTG/RCP'S BRANCH WIRING IS NOT INDICATED DUE TO THE LACK OF "AS-BUILT" DRAWINGS. FOR BIDDING, THE CONTRACTOR'S SHALL FIELD INSPECT ANY EXISTING CONDITIONS PRIOR TO THE BID SUBMITTAL (IF REQUIRED). DIFFERING FIELD CONDITIONS SHALL NOT BE THE BASIS OF ANY EXTRA COSTS TO THE OWNER.
- ⑤ ELEC CONTRACTOR SHALL DEMO THE EXIST LTG CONTROLS (IE - SWITCHES & WIRING) AND REPLACE WITH NEW AS INDICATED ON THE PROPOSED LTG BLDG PLANS.
- ⑥ ELEC CONTRACTOR MUST ASSUME THE EXIST LIGHTING HAS PCB BALLASTS PLUS THE FLUORESCENT LAMPS AND SWITCHES CONTAIN MERCURY WHICH ARE HAZARDOUS MATERIAL. EC SHALL PROPERLY DISPOSE. PROVIDE DISPOSAL INFORMATION FOR PROPER DOCUMENTATION.
- ⑦ EC SHALL FURNISH/INSTALL PROVIDE GALVANIZED STEEL BLANKING PLATES FOR ANY REMAINING LTG FIXTURE OPENINGS WHICH ARE FIELD PAINTED BY THE PAINTING SUB CONTRACTOR.
- ⑧ EC SHALL REMOVE ALL EXISTING LTG CONDUCTORS IN CONCEALED (CONCRETE WALLS/FLOORS) TO REMAIN LTG BRANCH WIRING.

**ELECTRICAL TEMPORARY WORK NOTES**

- ① EC SHALL FURNISH/INSTALL TEMPORARY ELEC EQUIPMENT AND WIRING IN ORDER TO KEEP THE EXISTING WWTF FACILITIES OPERATING WHEN THE EXISTING ELECTRICAL EQUIPMENT AND WIRING IS DEMOLISHED AND REPLACED.
- ② EC'S WORK INCLUDES AS A MINIMUM TEMP POWER DISTRIBUTION, MOTOR STARTERS/CONTROLLERS, POWER DISCONNECTS, CONTROL STATIONS, OVERHEAD POLE MOUNTED TEMP WIRING, TEMP POWER SUPPLY FROM THE NEW MAIN OUTDOOR SWITCHBOARD, ETC AND TEMPORARY EQUIPMENT/LIGHTING/RECEPTACLES, ETC WIRING.
- ③ IN GENERAL THE EXISTING WWTF EQUIPMENT WILL BE MANUALLY OPERATED DURING THE DEMOLITION AND RECONSTRUCTION. FOR DETAILS, REFER TO THE CONSTRUCTION PHASING SPECIFICATIONS.
- ④ THE TEMPORARY WORK INCLUDES THE FOLLOWING
  - TEMPORARY TANKS AIR BLOWER
  - TEMPORARY SLUDGE DEWATERING

**ELEC DRAWINGS REFERENCE NOTES**

- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					DATE 7/15/2011

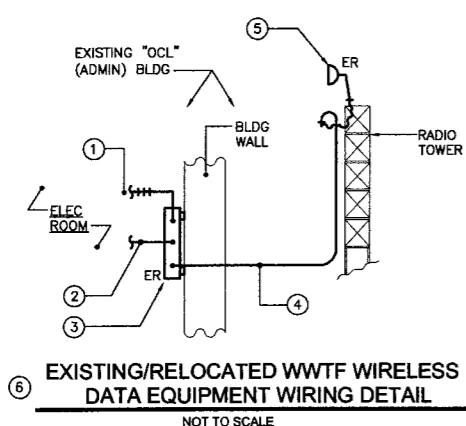
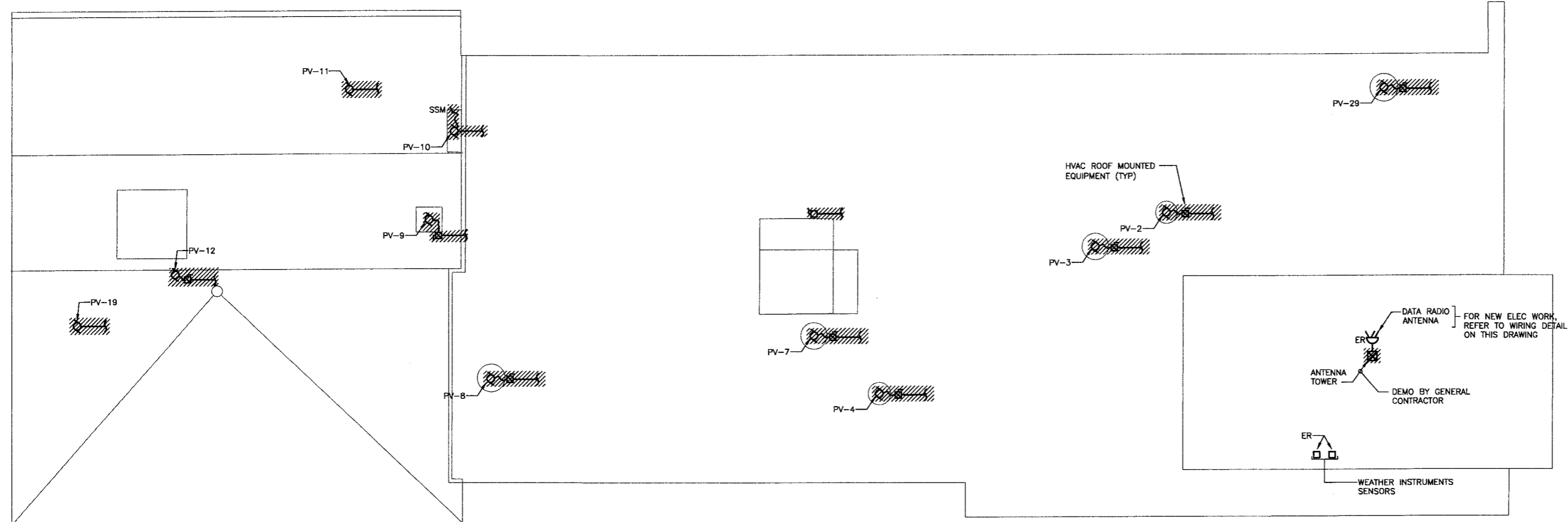
W. Peter Evans  
 REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING  
 FIRST FLOOR DEMOLITION LIGHTING PLAN**  
 SCALE: AS SHOWN  
 CONTRACT: 2  
 JOB NO. 0905101  
 ELD  
 DSK BY LMR  
 DCK BY WPE  
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- WWTF WEATHER STATION PANEL WIRING DETAIL NOTES**
- 1 EC SHALL FURNISH/INSTALL NEW 3/4" C WITH 3 NO 12 WIRES. EC TO CONNECT TO EXISTING DATA EQUIPMENT 120 VAC CRT (LOCATED IN THE ELEC ROOM).
  - 2 THE CITY'S DATA DEPT OR THEIR DATA CONTRACTOR SHALL FURNISH/INSTALL LV DATA WIRING AS REQUIRED.
  - 3 EC SHALL RELOCATE THE EXISTING DATA EQUIP (IN THE OPS BLDG) TO THE EXIST OCL (ADMIN) BUILDING. NOTE, EC SHALL FIELD LOCATE IN BOTH BLDGS FROM TECH ASSISTANCE BY THE CITY'S DATA DEPT.
  - 4 EC SHALL FURNISH/INSTALL 1.5" C WITH LV RADIO CABLES AS REQ'D. EC SHALL FIELD ROUTE TO THE EXIST RADIO TOWER.
  - 5 EC SHALL MOUNT AND WIRE THE EXISTING RELOCATED DATA ANTENNA WITH TECH ASSISTANCE BY THE CITY'S DATA DEPT.
  - 6 IF NECESSARY THE BIDDING EC'S SHALL VISIT THE EXISTING OCL BLDG TO DETERMINE THE EXISTING CONDITIONS.

**OPERATIONS BUILDING ROOF DEMOLITION POWER PLAN**  
 SCALE: 3/16"=1'-0"

- OPERATIONS BUILDING ROOF LEVEL ELECTRICAL POWER DEMOLITION PLAN NOTES**
- 1 ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE EXISTING ROOF MOUNTED EQUIPMENT & WIRING (WHICH IS NOT FULLY INDICATED) IN ORDER TO DEMOLISH AS INDICATED. NOTE, THE DEMOLITION WORK MUST BE COORDINATED WITH THE OVERALL PROJECT CONSTRUCTION PHASING AND SEWAGE BYPASS PUMPING WORK.
  - 2 ELEC CONTRACTOR MUST ASSUME THERE ARE NO LIMITED AVAILABLE ELECTRICAL DRAWINGS WHICH ARE AVAILABLE FROM THE ENGINEER AFTER THE CONTRACT AWARD.

- ELEC DRAWINGS REFERENCE NOTES**
- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

No.	Date	Dr. By	Chk. By	App. By	Description
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					DATE
					7/15/2011
					REGISTERED PROFESSIONAL ENGINEER
					W. Peter Evans

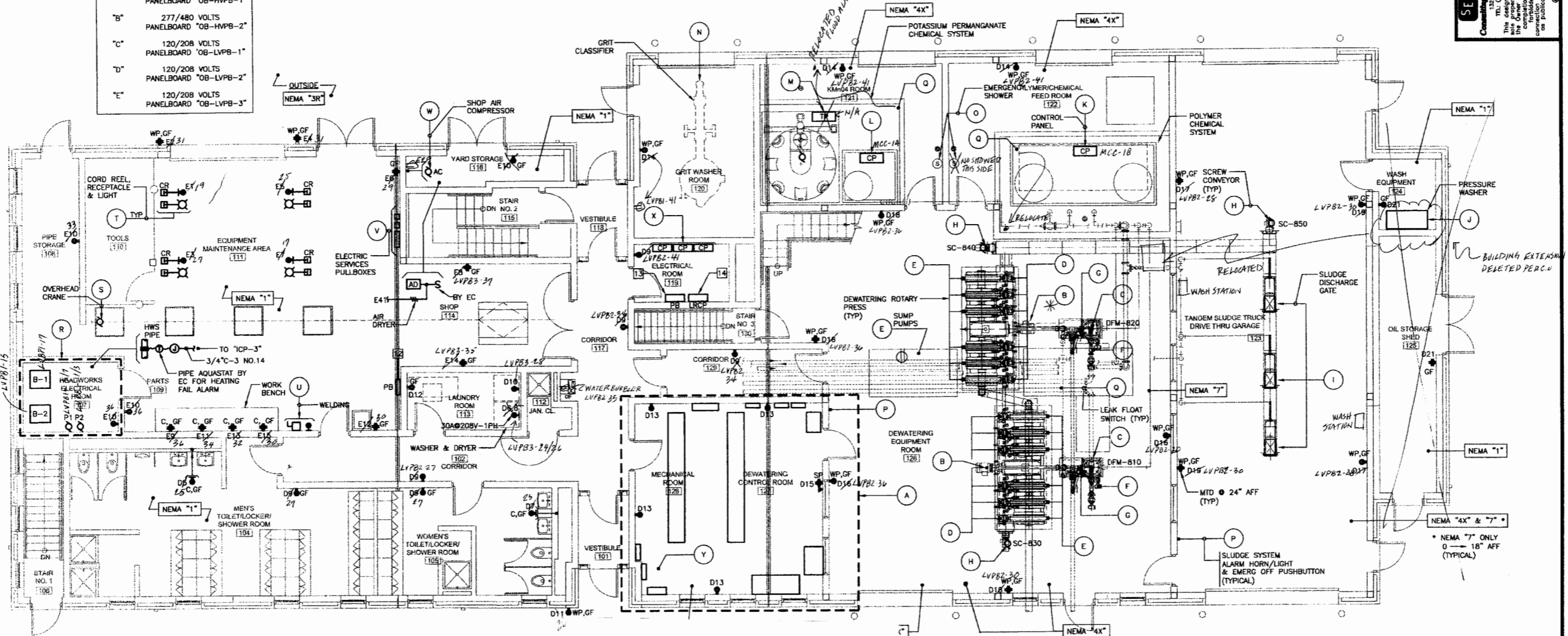


CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT ELECTRICAL OPERATIONS BUILDING ROOF POWER DEMOLITION PLAN	SCALE: AS SHOWN	CONTRACT: 0905101 E088	JOB NO. 09051.01	DR BY ELD	DSN BY LMR	CHK BY DCK	APP BY WPE
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CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

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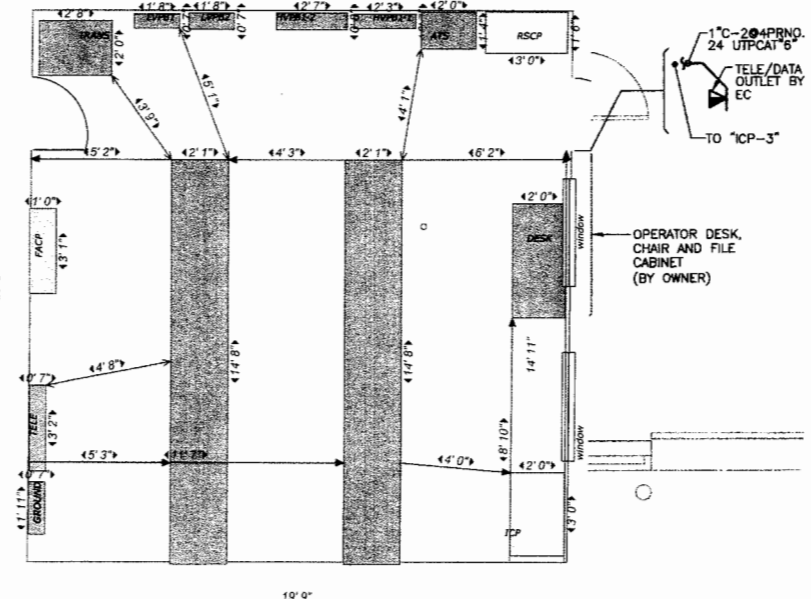
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**OPERATIONS BUILDING  
 FIRST FLOOR PROPOSED POWER PLAN**  
 SCALE: 3/16"=1'-0"

**OPERATIONS BUILDING  
 POWER PROPOSED PLAN NOTES**

- ELECTRICAL CONTRACTOR SHALL FURNISH/INSTALL NEW POWER DISTRIBUTION, MOTOR CONTROL, ETC EQUIPMENT AND ASSOCIATED WIRING. ALL NEW ELEC EQUIPMENT AND WIRING SHALL BE COORDINATED WITH THE "AS SUPPLIED" PROJECT EQUIP AND NEW CONSTRUCTION PRIOR TO ANY ELEC EQUIP RELEASE AND/OR ROUGH WIRING.
- ALL ELEC EQUIPMENT, FIELD DEVICES AND WIRING SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH EACH ROOM OR AREAS NOTED "NEMA" RATING.
- EC SHALL FURNISH/INSTALL WATER-PROOF SPLICES FOR ALL NEMA "3R", "4", "4X" OR "7" ROOMS OR AREA'S ELECTRICAL WIRING TERMINATIONS.
- EC SHALL FIELD LOCATE ALL ELEC EQUIPMENT WHICH COORDINATES AS SPECIFIED. THE NEW ELEC ROOM'S EQUIPMENT LAYOUT SHALL BE FURNISHED BY THE EC (IE - TO SCALE DRAWING) FOR ENGINEER REVIEW/APPROVAL.
- EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH "AS SUPPLIED" EQUIPMENT AND THE NEW CONSTRUCTION. NOTE, ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT/REPAIR OF THE PROCESS EQUIPMENT, ETC. VIA POWER AND CONTROL PLUGS AND RECEPTACLES.
- EC SHALL COMPLETE THE NEW ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WWTF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE, THE NEW EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED PRIOR TO ANY DEMOLITION AND RECONSTRUCTION OF THE OTHER SIMILAR UNITS.
- ALL I&C INSTRUMENTS AND ASSOCIATED FIELD WIRING SHALL BE INSTALLED AND WIRED IN STRICT COMPLIANCE WITH EACH INSTRUMENT'S MANUFACTURERS TECHNICAL REQUIREMENTS.
- The Electrical Contractor shall refer to drawing # M-OB.4 for the permanganate room equipment layout and adjust the electrical work to suit the mechanical drawings layout.



ELECTRICAL EQUIPMENT LIST	
1	277/480 VOLT MOTOR CONTROL CENTER "OB-MCC-1A"
2	277/480 VOLT MOTOR CONTROL CENTER "OB-MCC-1B"
3	277/480 VOLT PANELBOARD "OB-HVPB-1"
4	120/208 VOLT DRY TYPE TRANSFORMER "OB-T-1"
5	120/208 VOLT PANELBOARD "OB-LVPB-1"
6	120/208 VOLT PANELBOARD "OB-LVPB-2"
7	AUTOMATIC TRANSFER SWITCH
8	I&C CONTROL PANEL "ICP-3"
9	ROTARY SLUDGE PRESS #1 CONTROL PANEL
10	FIRE ALARM CONTROL PANEL "OB-FACP" & FA FIBER OPTIC PATCH PANEL "OB-FAPP"
11	TELEPHONE SERVICE PANEL "OB-TSP"
12	120/208 VOLT PANELBOARD "OB-LVPB-3"
13	277/480 VOLT PANELBOARD "OB-HVPB-2"
14	LIGHTING RELAYS CONTROL PANEL "OB-LRCP"
15	GROUNDING TERMINAL PANEL "GTP"

FOR WIRING DETAILS (A)  
 THRU (Y) . REFER TO DWG #  
 E-OB.13 THRU E-OB.15

DELETE the final wiring connections to the rotary sludge press # 2 (i.e., DRP-820) equipment with regards to its wiring details. Empty conduits with nylon pull strings which are terminated with junction boxes (at the sludge press) shall be furnished/installed by the Electrical Contractor. Note, all other electrical equipment, wiring, etc associated with the sludge press shall remain as the electrical base work.

**ELEC DRAWINGS REFERENCE NOTES**

- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

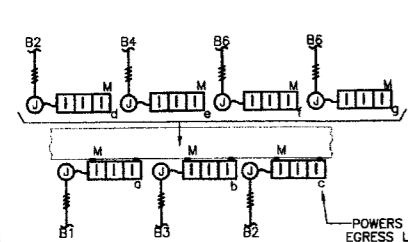
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 REGISTERED PROFESSIONAL ENGINEER

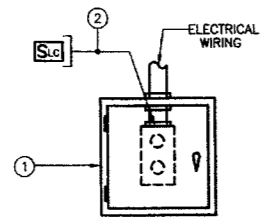


CITY OF NEWBURYPORT, MASSACHUSETTS  
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 CADD NO. 0905101 E089  
 CONTRACT: 2  
 JOB NO. 09051.01  
 DESIGNED BY: LMR  
 CHECKED BY: DKG  
 APPROVED BY: MPE  
 SHEET 189 OF 202

RICHARDSON ELECTRICAL AS-BUILT



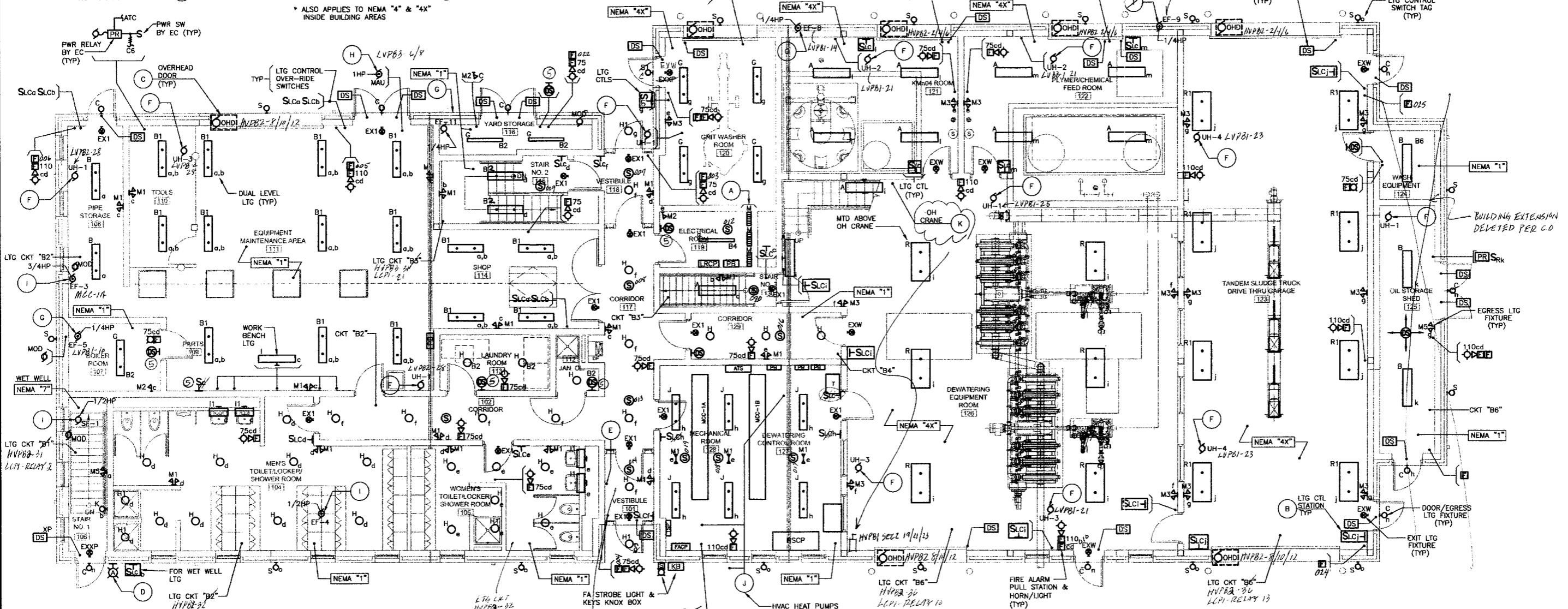
**EMERGENCY LIGHTING UNITS WIRING DETAIL (A)**  
NOT TO SCALE



**TYPICAL OUTSIDE LIGHTING CONTROL STATION WIRING DETAIL (B)**  
NOT TO SCALE

- TYPICAL OUTSIDE LIGHTING CONTROL STATION WIRING DETAIL "B" NOTES**
- EC SHALL FURNISH/INSTALL FRP OR PVC NEMA "4X" ENCLOSURE WITH HINGED TRANSPARENT COVER.
  - EC SHALL FURNISH/INSTALL COMPUTERIZED NETWORKED LIGHTING CONTROL SWITCH. SWITCH SHALL BE PROGRAMMED PER THE ENGINEER AND OWNER.
  - EC SHALL FURNISH/INSTALL AN ENGRAVED PLASTIC NAMEPLATE PER THE ENGINEER.

\* ALSO APPLIES TO NEMA "4" & "4X" INSIDE BUILDING AREAS



**OPERATIONS BUILDING FIRST FLOOR PROPOSED LIGHTING PLAN**  
SCALE: 3/16"=1'-0"

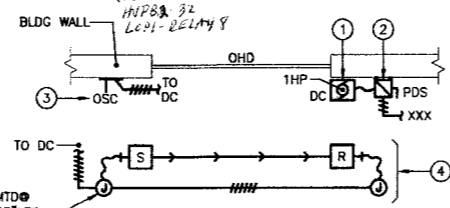
- INCLUDES FIRE ALARM AND HVAC EQUIPMENT WIRING
- LTG IS RELAY CONTROLLED BY "OB-LRPC" (MTD IN ELEC ROOM)

**OPERATIONS BUILDING LIGHTING PROPOSED PLAN NOTES**

- ELECTRICAL CONTRACTOR SHALL FURNISH/INSTALL NEW ELECTRICAL LIGHTING FIXTURES, CONTROLS AND ASSOCIATED WIRING.
- EC SHALL FURNISH/INSTALL RECEPTACLES AND LIGHTING AS INDICATED INCLUDING THE ASSOCIATED BRANCH WIRING (WHICH IS NOT INDICATED). ROFTS/LTG BRANCH WIRING SHALL BE AS SPECIFIED AND DESCRIBED ON THE ELECTRICAL GENERAL NOTES INCLUDING APPLICABLE WIRING DETAILS AND DIAGRAMS.
- EC SHALL FURNISH/INSTALL THE FIRE ALARM PANEL, FIELD DEVICES AND ASSOCIATED WIRING (WHICH IS NOT INDICATED). FA FIELD WIRING SHALL BE AS SPECIFIED, DETAILED, ETC ON THE FA SYSTEM RISER DIAGRAM DRAWINGS.
- EC SHALL FURNISH/INSTALL ALL LIGHTING/FIRE ALARM EQUIPMENT INCLUDING ASSOCIATED FIELD WIRING IN STRICT ACCORDANCE WITH EACH ROOM OR AREA'S "NEMA" RATING.
- LINE VOLTAGE

- EC SHALL FIELD LOCATE THE LIGHTING (BOTH HORIZONTAL AND VERTICAL) AFTER THE MAIN EQUIPMENT, PIPING AND DUCTWORK HAS BEEN INSTALLED. HOWEVER, THE EC SHALL COORDINATE THE LIGHTING WITH THE OTHER TRADES PRIOR TO ANY NEW CONSTRUCTION.
- EC SHALL FIELD ROUTE THE WIRING WHICH COORDINATES WITH THE NEW EQUIPMENT AND CONSTRUCTION. NOTE, ALL ELEC WIRING SHALL ALLOW FOR THE REPLACEMENT/MAINTENANCE OF THE PROCESS EQUIPMENT, ETC. EC SHALL GROUP THE CONDUITS WITH A MINIMUM 12" SEPARATION BETWEEN THE LINE AND LOW VOLTAGE WIRING. EC SHALL PROVIDE A LAYOUT OF THE PROPOSED LIGHTING, FIRE ALARM EQUIPMENT INCLUDING THE CONDUITS ROUTING PRIOR TO ANY EQUIPMENT RELEASE AND/OR ROUGH WIRING.
- EC SHALL COMPLETE THE PROP ELEC WORK PER THE CONSTRUCTION PHASING SCHEDULE SINCE THE WWTF MUST REMAIN OPERATIONAL AT ALL TIMES. NOTE, THE NEW EQUIPMENT MUST BE FULLY FIELD TESTED AND OPERATED PRIOR TO FINAL ACCEPTANCE.

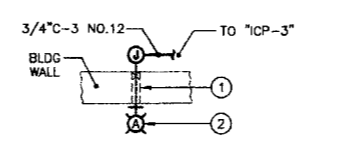
8. The Electrical Contractor shall furnish/install three (3) type "B" lighting fixtures @ 8'-0" above the platform (spaced evenly). The lights shall be controlled by a manual switch mounted at the climbing ladder. Connect to the truckway's lighting circuit (before the lighting contactor). Note, EC shall refer to drawing # S-OB.5 for the catwalk location.



**MOTORIZED OVERHEAD DOOR WIRING DETAIL (C)**  
NOT TO SCALE

**OVERHEAD DOOR WIRING DETAIL "C" NOTES**

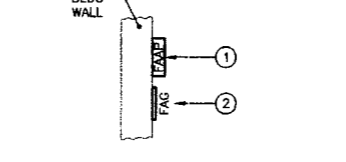
- OH DOOR CONTROLLER BY GC.
- 15/30A-3P PWR DISC SWITCH BY EC.
- DOOR CONTROLS BY GC BUT MTD/WIRED BY ELEC CONTRACTOR (EC)
- DOOR SAFETY PHOTO-ELECTRIC SENDER AND RECEIVER



**WET WELL ENTRANCE ALARM HORN/LIGHT WIRING DETAIL (D)**  
NOT TO SCALE

**ENTRANCE DOOR WIRING DETAIL "D" NOTES**

- EC TO CORE DRILL AND F/I CONDUIT WALL SEAL FOR ELEC WIRING.
  - EC SHALL FURNISH/INSTALL ALARM HORN/LIGHT WITH NAMEPLATE.\* (EQUAL TO EDWARDS #51A-N5-40W)
- \* NAMEPLATE PER ENGINEER (TYPICAL)



**FA ANNUNCIATOR & GRAPHIC WIRING DETAIL (E)**  
NOT TO SCALE

**FIRE ALARM WIRING DETAIL "E" NOTES**

- EC SHALL FURNISH/INSTALL FA ANNUNCIATOR PANEL.
- EC SHALL FURNISH/INSTALL FA COLOR GRAPHIC IN GLASS FRAME.

FOR DETAILS (F) THRU (K) REFER TO DWG #E-OB.1

OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES	
CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

**ELEC DRAWINGS REFERENCE NOTES**

- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

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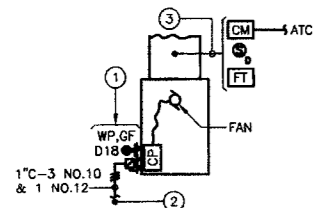
W. Peter Cran  
REGISTERED PROFESSIONAL ENGINEER



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DES BY: LMR  
ELD: DKG

**E-OB.10**  
SHEET 180 OF 202

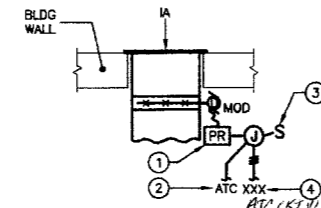
RICHARDSON ELECTRICAL AS-BUILT



**HVAC MAKE-UP AIR UNIT WIRING DETAIL 'A'**  
NOT TO SCALE

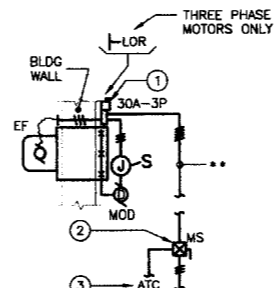
\* "MAU" PNLBD CKTS AS FOLLOWS:  
MAU-2 CKT "A13,15,17"  
MAU-3 CKT "A7,9,11"  
MAU-5 CKT "E40,42"

- EC SHALL FURNISH/INSTALL "U" CHANNELS, MTO PLATE, ETC. GC SHALL FURNISH/INSTALL CONCRETE SUPPORT POSTS (AS REQUIRED). EC SHALL ALSO F/I 15/30A-3P PWR DISC SWITCH, RECEPTACLE AND ASSOCIATED WIRING.
- FOR THE "OB-HVPB-1" PANELBOARD CIRCUITS, REFER TO THE PNLBD SCHEDULE.
- EC SHALL FURNISH/INSTALL DUCT MOUNTED SMOKE DETECTOR, TEST STATION AND CONTROL MODULE. EC TO FIELD LOCATE TO SUIT.
- EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



**HVAC M.O. DAMPER WIRING DETAIL 'B'**  
NOT TO SCALE

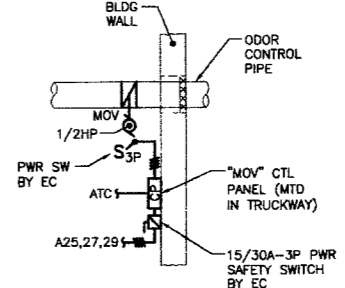
- EC SHALL FURNISH/INSTALL POWER RELAY IN A GALV HINGED ENCL-SURE. NOTE, EC SHALL COORDINATE THE COIL VOLTAGE WITH THE HVAC ATC CONTROL SYSTEM.
- HVAC ATC CONTRACTOR SHALL F/I ALL ATC EQUIPMENT AND WIRING.
- EC SHALL F/I A LOCAL POWER TOGGLE TYPE DISC SWITCH.
- EC SHALL REFER TO THE BLDG PLAN FOR THE PANELBOARD CIRCUITS.
- EC SHALL COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



**SINGLE PHASE HVAC EXHAUST FAN WIRING DETAIL 'C'**  
NOT TO SCALE

\* FOR THREE FANS, THE MOTOR STARTERS ARE LOCATED IN THE MOTOR CONTROL CENTER  
\*\* 1"Ø W/4 NO.12 W/5 NO.14 FROM "EF" TO "MCC" FOR THREE PHASE "EF'S"

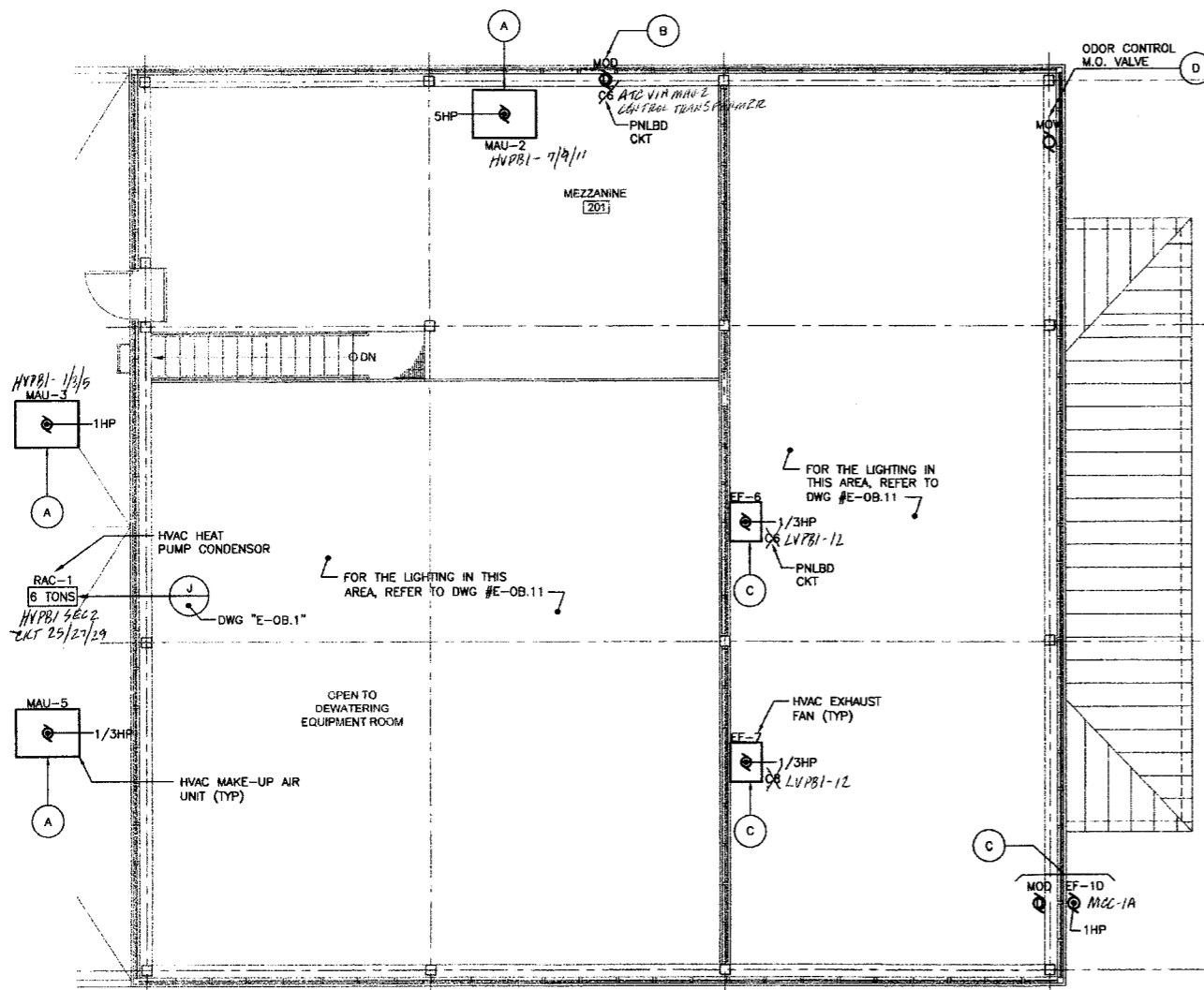
- EC SHALL FURNISH/INSTALL WIRE-WAY, POWER DISC SAFETY SWITCH AND PWR TOGGLE TYPE DISC SWITCH AND ASSOCIATED WIRING.
- EC SHALL FURNISH/INSTALL EXHAUST FAN MOTOR STARTER. EC TO FIELD LOCATE IN THE ELEC ROOM.
- HVAC CONTRACTOR SHALL F/I THE ATC EQUIPMENT AND WIRING.
- EC SHALL REFER TO THE BLDG PLAN DWGS FOR THE PANELBOARD CIRCUIT NUMBER AND THE PNLBD SCHEDULES.
- EC SHALL COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" HVAC EQUIPMENT & NEW CONSTRUCTION.



**ODOR PIPE M.O. VALVE WIRING DETAIL 'D'**  
NOT TO SCALE

**SED ASSOCIATES CORP.**  
Consulting ELECTRICAL and HVAC Engineers  
1111 Main Street, Suite 200  
Tel: (617) 300-7248 FAX: (617) 300-5332  
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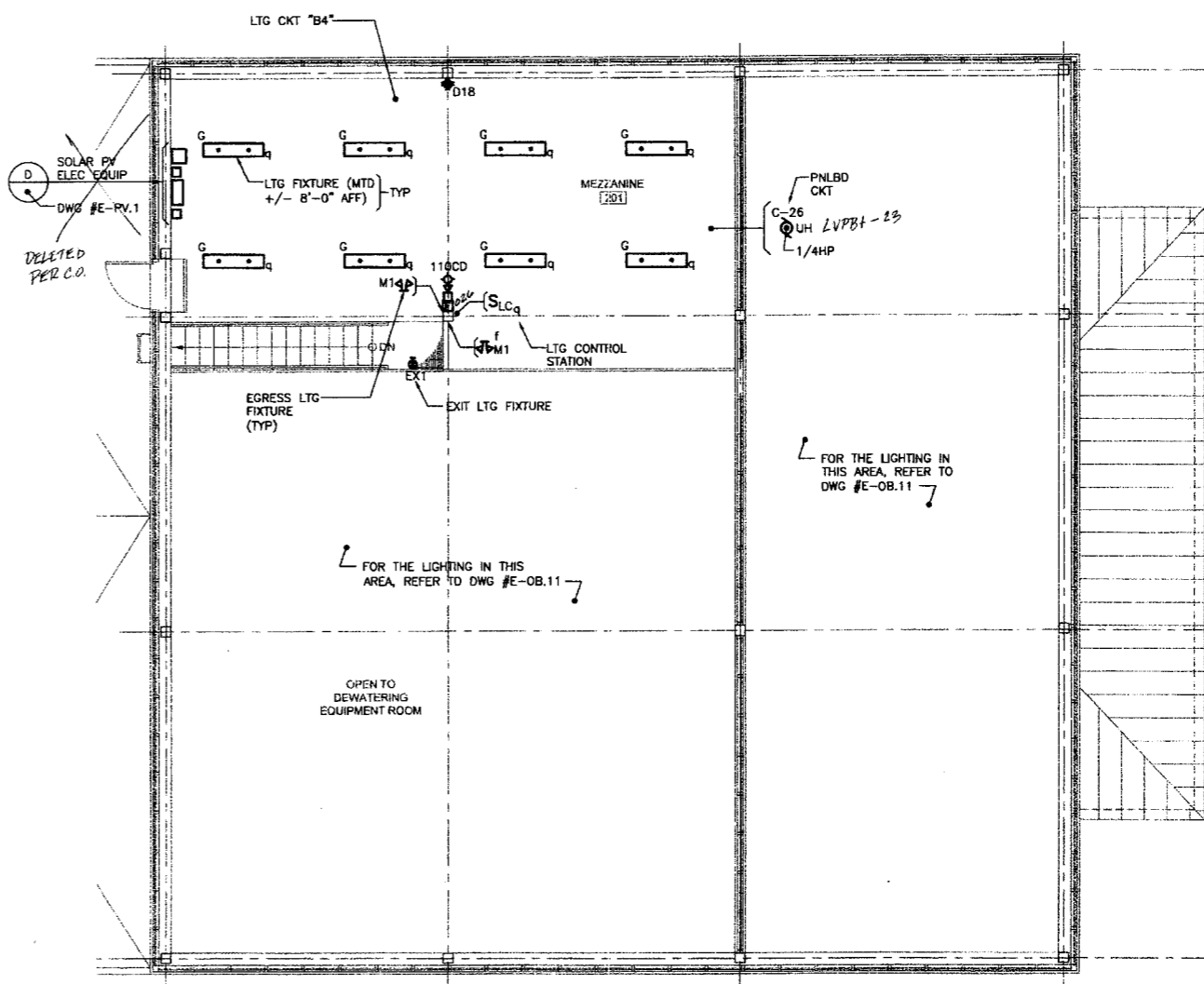
**Weston & Sampson**  
Five Cranialia Drive, Peabody, MA 01960  
(978) 682-1900 (800) 5AMPSON  
www.westonsampson.com



**OPERATIONS BUILDING MEZZANINE LEVEL PROPOSED POWER PLAN \***  
SCALE: 3/16"=1'-0"

\* INCLUDES HVAC EQUIP WIRING  
FOR THE POWER PLAN NOTES, REFER TO THE DWG #E-OB.9

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"



**OPERATIONS BUILDING MEZZANINE LEVEL PROPOSED LIGHTING PLAN \***  
SCALE: 3/16"=1'-0"

\* INCLUDES FIRE ALARM SYSTEM  
\* LTG CONTROLLED BY RELAYS CONTROL PANEL "OB-LRCP"  
FOR THE LIGHTING PLAN NOTES, REFER TO THE DWG #E-OB.10

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

No.	Date	Dr. By	Chk. By	App. By	Description
1					
2					
3					
4					
5					

W. P. Evans  
REGISTERED PROFESSIONAL ENGINEER  
7/15/2011 DATE



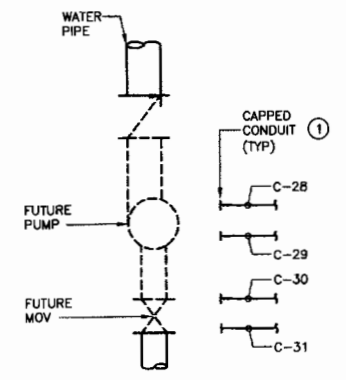
CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING MEZZANINE LEVEL DEMO/PROP POWER & LIGHTING PLANS**  
SCALE: AS SHOWN  
CONTRACT: 2  
JOB NO.: 09051.01  
JOB NO.: 09051.01  
DATE: 08/05/11  
DRAWN BY: LMR  
CHECKED BY: DCK  
APP. BY: WPE

**E-OB.7.1**  
FILE NO. 189-12  
SHEET 191 OF 202

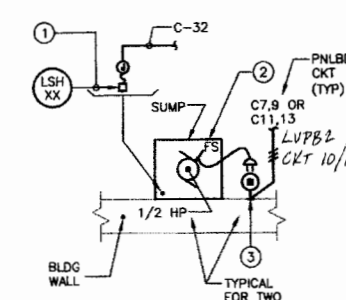
RICHARDSON ELECTRICAL AS-BUILT

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 TEL: (617) 300-7246 FAX: (617) 300-3332  
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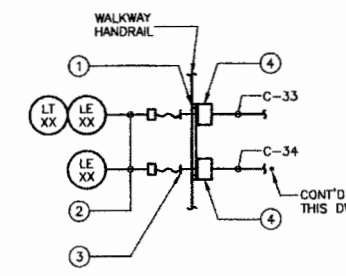
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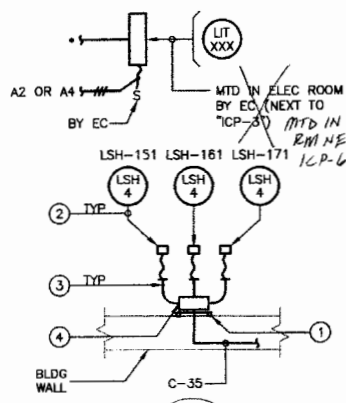
**INFLUENT SEWAGE PUMP WIRING DETAIL**  
 NOT TO SCALE



**PLBG SUMP PUMP WIRING DETAIL**  
 NOT TO SCALE



**WETWELL I&C FIELD INSTRUMENTS WIRING DETAIL**  
 NOT TO SCALE



**INFLUENT CHANNEL I&C INSTRUMENTS WIRING DETAIL**  
 NOT TO SCALE

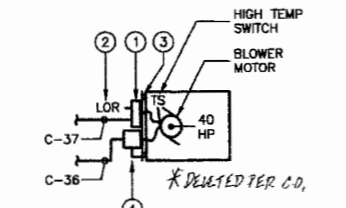
- INFLUENT SEWAGE PUMP WIRING DETAIL "D" NOTES**
- EC SHALL FURNISH/INSTALL NEW EMPTY ELECTRICAL RACEWAYS WITH NYLON PULL STRINGS. THE CAPPED FUTURE CONDUITS SHALL TERMINATE AT THE CEILING ABOVE THE FUTURE SEWAGE PUMP.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- PLUMBING SUMP PUMP WIRING DETAIL "E" NOTES**
- EC SHALL MOUNT AND WIRE THE I&C FLOAT SWITCH WHICH IS FURNISHED BY THE GNL CONTRACTOR.
  - EC SHALL FIELD WIRE THE PLBG SUMP PUMP SUBMERSIBLE CABLE WHICH IS FURNISHED WITH THE SUMP PUMP.
  - EC SHALL FURNISH/INSTALL A POWER RECEPTACLE AS REQUIRED FOR THE "AS SUPPLIED" PLBG SUMP PUMP.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

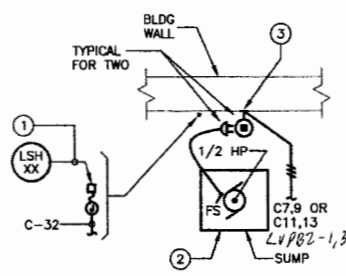
- WET WELL I&C FIELD INSTRUMENTS WIRING DETAIL "F" NOTES**
- EC SHALL FURNISH/INSTALL ALUM "U" CHANNELS AND ALUM MOUNTING PLATE (SIZED TO SUIT) TO SUPPORT THE EQUIPMENT.
  - EC SHALL MOUNT AND WIRE THE I&C FIELD INSTRUMENTS. THE LEVEL SENSORS SHALL BE FIELD LOCATED BY THE I&C SUPPLIER WHICH PROVIDES MAINTENANCE ACCESS. THEIR MOUNTING HEIGHTS IN THE WET WELL SHALL BE AS INDICATED ON THE MECH PROC DWGS.
  - EC SHALL FURNISH/INSTALL 2" ALUM CONDUITS WITH INSULATED BUSHINGS FOR THE SENSOR'S SUBMERSIBLE CABLES INCLUDING S/S "KELLUM" CABLE SUPPORTS.
  - EC SHALL FURNISH AND INSTALL A ALUM TERMINAL BOX (SIZED TO SUIT) INCLUDING WATER-TIGHT CABLE WIRING TERMINAL STRIPS.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- INFLUENT CHANNEL I&C INSTRUMENTS WIRING DETAIL "G" NOTES**
- EC SHALL FURNISH/INSTALL ALUM "U" CHANNELS AND ALUM MOUNTING PLATE (SIZED TO SUIT) TO SUPPORT THE EQUIPMENT.
  - EC SHALL MOUNT AND WIRE THE I&C FIELD INSTRUMENTS. THE LEVEL SENSORS SHALL BE FIELD LOCATED BY THE I&C SUPPLIER WHICH PROVIDES MAINTENANCE ACCESS. THEIR MOUNTING HEIGHTS IN THE WET WELL SHALL BE AS INDICATED ON THE MECH PROC DWGS.
  - EC SHALL FURNISH/INSTALL 2" ALUM CONDUITS WITH INSULATED BUSHINGS FOR THE SENSOR'S SUBMERSIBLE CABLES INCLUDING S/S "KELLUM" CABLE SUPPORTS.
  - EC SHALL FURNISH AND INSTALL A ALUM TERMINAL BOX (SIZED TO SUIT) INCLUDING WATER-TIGHT CABLE WIRING TERMINAL STRIPS.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

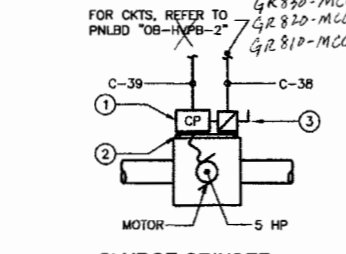
RELOCATED OUT OF CHANNEL AND INTO WETWELL 112 (SEE E-OB-2)



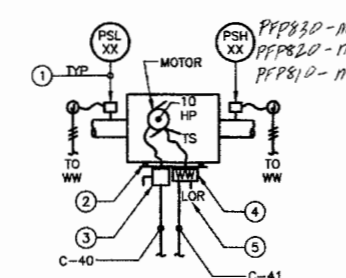
**DIGESTOR AIR BLOWER WIRING DETAIL**  
 NOT TO SCALE



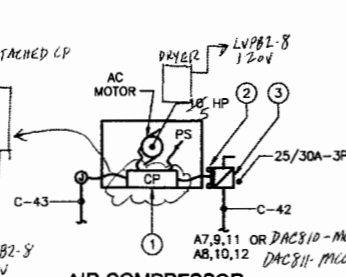
**PLBG SUMP PUMP WIRING DETAIL**  
 NOT TO SCALE



**SLUDGE GRINDER WIRING DETAIL**  
 NOT TO SCALE



**PRESS FEED PUMP WIRING DETAIL**  
 NOT TO SCALE



**AIR COMPRESSOR WIRING DETAIL**  
 NOT TO SCALE

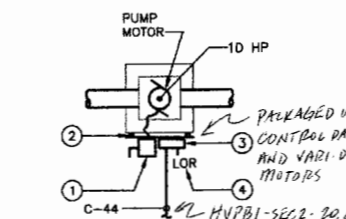
- DIGESTOR AIR BLOWER WIRING DETAIL "H" NOTES**
- EC SHALL FURNISH/INSTALL GALV STEEL WIRE WAY (SIZED TO SUIT)
  - EC SHALL FURNISH/INSTALL "LOR" CONTROL STATION. FOR WIRING, REFER TO THE PUMP CONTROL ELEMENTARY WIRING DIAGRAM.
  - EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS AND GALV MOUNTING PLATE (SIZED TO SUIT) FOR THE ELEC EQUIP SUPPORTS.
  - EC SHALL FURNISH/INSTALL GALV PAINTED GALV STEEL POWER DISC SAFETY SWITCH.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- PLUMBING SUMP PUMP WIRING DETAIL "I" NOTES**
- EC SHALL MOUNT AND WIRE THE I&C FLOAT SWITCH WHICH IS FURNISHED BY THE GNL CONTRACTOR.
  - EC SHALL FIELD WIRE THE PLBG SUMP PUMP SUBMERSIBLE CABLE WHICH IS FURNISHED WITH THE SUMP PUMP.
  - EC SHALL FURNISH/INSTALL A POWER RECEPTACLE AS REQUIRED FOR THE "AS SUPPLIED" PLBG SUMP PUMP.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

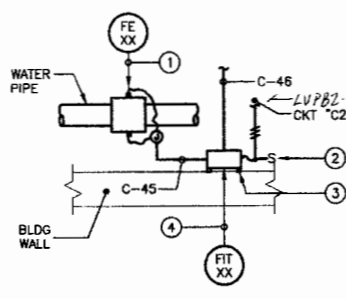
- SLUDGE GRINDER WIRING DETAIL "J" NOTES**
- EC SHALL MOUNT AND WIRE THE GRINDER CONTROL PANEL WHICH IS FURNISHED BY THE GC.
  - EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS AND GALV STEEL MTG PLATE (SIZED TO SUIT) TO SUPPORT THE ELEC EQUIPMENT.
  - EC SHALL FURNISH/INSTALL A PWR DISC FUSED SAFETY SWITCH (20/30A-3P). EC SHALL COORDINATE THE FUSE SIZE WITH THE GRINDER EQUIPMENT SUPPLIER.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- PRESS FEED PUMP WIRING DETAIL "K" NOTES**
- EC SHALL FIELD WIRE THE PRE-SURE SWITCHES WHICH ARE FURNISHED/INSTALLED BY THE GC.
  - EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS AND GALV STEEL MTG PLATE (SIZED TO SUIT) TO SUPPORT THE ELEC EQUIPMENT.
  - EC SHALL FURNISH/INSTALL A PWR DISC PAINTED GALV STEEL SAFETY SWITCH (30A-3P).
  - EC SHALL FURNISH/INSTALL A GALV STEEL HINGED WIRE WAY (SIZED TO SUIT).
  - EC SHALL FURNISH/INSTALL A "LOR" CONTROL STATION FOR PUMP MAINTENANCE.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

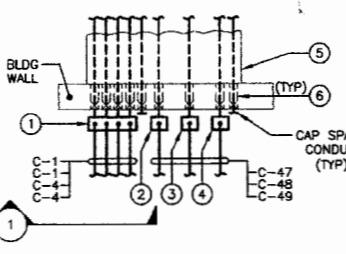
- AIR COMPRESSOR WIRING DETAIL "L" NOTES**
- EC SHALL FIELD WIRE THE A/C INTEGRAL CONTROL PANEL. EC SHALL COORDINATE ITS FIELD WIRING TO SUIT.
  - EC SHALL FURNISH/INSTALL A PWR DISC PAINTED GALV STEEL FUSED SAFETY SWITCH. EC SHALL COORDINATE THE FUSE SIZE WITH THE A/C MANUFACTURER.
  - EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS AND GALV STEEL MTG PLATE (SIZED TO SUIT) TO SUPPORT THE ELEC EQUIPMENT.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



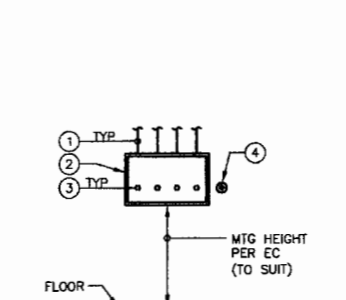
**WASH WATER BOOSTER PUMP WIRING DETAIL**  
 NOT TO SCALE



**I&C FLOW METER WIRING DETAIL**  
 NOT TO SCALE



**ELECTRICAL PWR/FA/TELE/I&C SERVICES WIRING DETAIL**  
 NOT TO SCALE



**POWER SERVICE PULLBOX WIRING SECTION**  
 NOT TO SCALE

**OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES**

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

- WASH WATER BOOSTER WIRING DETAIL "M" NOTES**
- EC SHALL FURNISH/INSTALL A PWR DISC PAINTED GALV STEEL SAFETY SWITCH.
  - EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS AND GALV STEEL MTG PLATE (SIZED TO SUIT) TO SUPPORT THE ELEC EQUIPMENT.
  - EC SHALL FURNISH/INSTALL A GALV STEEL HINGED WIRE WAY (SIZED TO SUIT).
  - EC SHALL FURNISH/INSTALL A "LOR" CONTROL STATION FOR PUMP MAINTENANCE.
  - EC SHALL COORDINATE WITH EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- I&C FLOW METER WIRING DETAIL "N" NOTES**
- EC SHALL FIELD WIRE THE FLOW SENSOR WHICH IS FURNISHED/INSTALLED BY THE GC.
  - EC SHALL FURNISH/INSTALL A PWR DISC TOGGLE TYPE (20A-1P @ 120 VAC) SWITCH FOR EQUIP MAINTENANCE.
  - EC SHALL FURNISH/INSTALL GALV STEEL "U" CHANNELS TO SUPPORT THE I&C EQUIPMENT.
  - EC SHALL MOUNT AND WIRE THE FLOW TRANSMITTER WHICH IS FURNISHED BY THE GNL CONTRACTOR.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- ELECTRICAL PWR/FA/TELE SERVICES WIRING DETAIL "O" NOTES**
- EC SHALL FURNISH/INSTALL POWER SERVICE PULLBOX WHICH IS SIZED TO SUIT BY THE EC.
  - EC SHALL FURNISH/INSTALL FIRE ALARM SERVICE PULLBOX, SIMILAR TO ITEM "1".
  - EC SHALL FURNISH/INSTALL TELE SERVICE PULLBOX, SIMILAR TO ITEM "1".
  - EC SHALL FURNISH/INSTALL I&C SERVICE PULLBOX, SIMILAR TO ITEM "1".
  - NEW ELEC DUCTBANK BY GC/EC. FOR DETAILS, REFER TO ELEC SITE PLAN DRAWING.
  - EC SHALL FIELD LOCATE, FURNISH CORE DRILLS AND CONDUIT WALL SEALS.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

- POWER SERVICE PULLBOX WIRING SECTION "1" NOTES**
- EC SHALL FURNISH/INSTALL POWER CONDUITS TO THE MCCS. EC SHALL FIELD ROUTE PLUS F/I CORING, CONDUIT SEALS AND ADDITIONAL PULLBOXES (AS REQUIRED).
  - EC SHALL FURNISH/INSTALL GALV STEEL PULLBOX WHICH IS SIZED TO MEET THE APPLICABLE NEC CODE REQUIREMENTS FOR THE ELEC CABLES PULLING, ETC.
  - EC SHALL FURNISH/INSTALL CONDUITS/CABLES SEALING FITTING PER THE NEC 2011 REQUIREMENTS. EQUAL TO OZ GEONEY SEALING FITTINGS.
  - EC SHALL PROVIDE A SPARE POWER CONDUIT WHICH IS CAPPED.
  - EC SHALL COORDINATE WITH THE EXISTING BLDG CONDITION, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.

FOR DETAILS LOCATION, REFER TO DWG # E-OB.02

- WIRING DETAILS GENERAL NOTES**
- EC'S WORK INCLUDES ALL REQUIRED COORDINATION OF THE "AS SUPPLIED" PROJECT WITH REGARDS TO POWER SUPPLIES, VOLTAGE, PHASE, ETC WITH THE ELECTRICAL EQUIPMENT INCLUDING THE ELECTRICAL ROUGH WIRING.
  - EC SHALL LOCATE ALL FIELD ELEC EQUIPMENT AND ASSOCIATED WIRING IN ORDER TO ALLOW THE EQUIPMENT TO BE MAINTAINED AND/OR REPLACED.
  - EC SHALL FURNISH ALL ELEC EQUIP WITH "NEMA" ENCLOSURE PER EACH ROOM'S "NEMA" RATINGS. NOTE, THIS INCLUDES THE EQUIP'S "U" CHANNELS, MOUNTING PLATES, ETC.
  - THE GC'S WORK INCLUDES ALL CONCRETE PADS TO SUPPORT THE FLOOR MOUNTED ELECTRICAL EQUIPMENT.

- EQUIPMENT WIRING NOTES \***
- THE EC SHALL FIELD LOCATE ALL ELEC EQUIP WHICH COORDINATES WITH THE EXISTING BLDG CONDITIONS PLUS THE PROPOSED NEW EQUIPMENT PRIOR TO ANY ROUGH WIRING.
  - ANY PROPOSED NEW ELEC EQUIP WHICH DOES NOT FIT INTO THE EXISTING BLDG SPACES PLUS COORDINATES WITH THE PROPOSED NEW CONSTRUCTION SHALL BE CONSIDERED UNACCEPTABLE.

- EQUIPMENT LOCATIONS NOTES**
- THE EC SHALL REFER TO THE I&C, MECH PROCESS, HVAC, PLBG AND ARCH DRAWINGS FOR THE LOCATIONS OF THE NON ELECTRICAL EQUIPMENT INCLUDING I&C FIELD INSTRUMENTS.
  - EC SHALL NOT COMPLETE ANY ROUGH ELEC WIRING UNTIL THIS SPECIFIED CONSTRUCTION COORDINATION HAS BEEN SUCCESSFULLY COMPLETED.

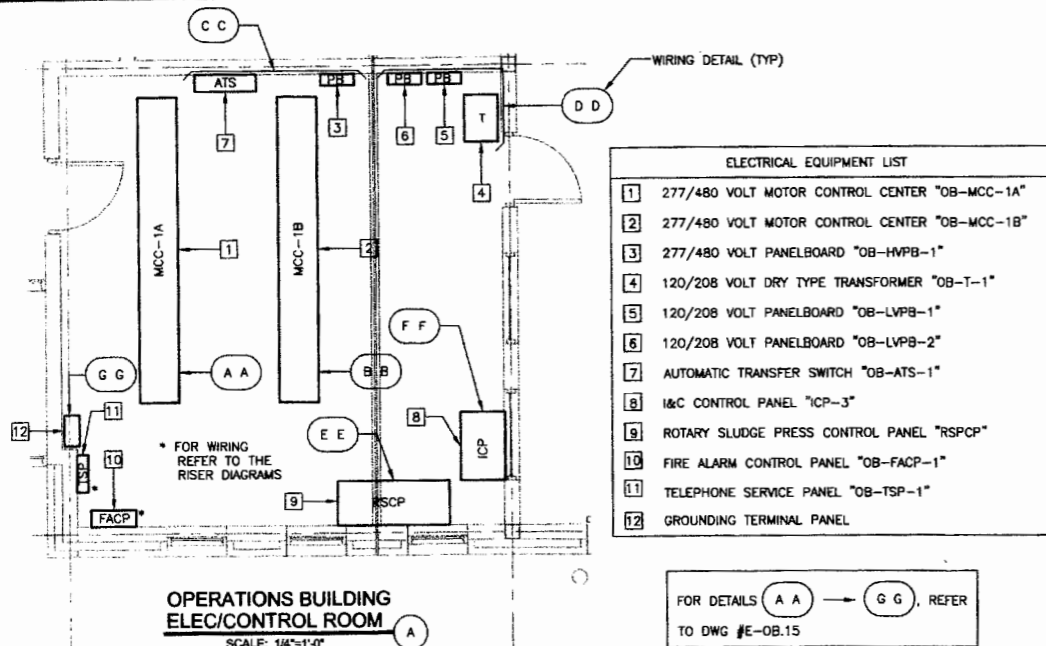
- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

No.	Date	Dr. By	Ch. By	App. By	Description



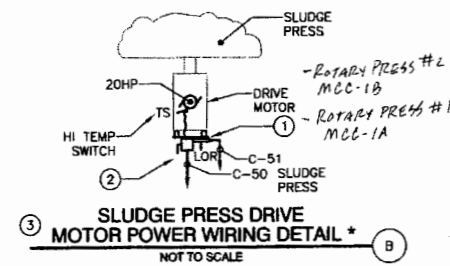
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC WORKS, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING WIRING DETAILS "1"**  
 SCALE: 1/8" = 1'-0"  
 CONTRACT: 2 09051.01  
 DRAWN BY: LMR  
 CHECKED BY: WPE  
 DATE: 189-9-11  
**E-OB.12**  
**SHEET 192 OF 202**

RICHARDSON ELECTRICAL AS-BUILT

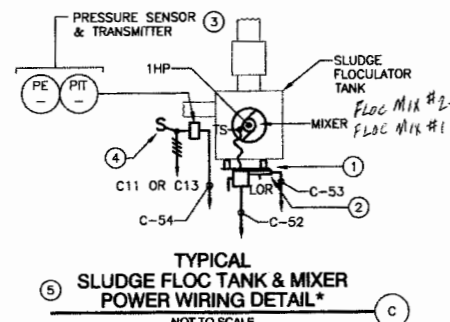


ELECTRICAL EQUIPMENT LIST	
1	277/480 VOLT MOTOR CONTROL CENTER "OB-MCC-1A"
2	277/480 VOLT MOTOR CONTROL CENTER "OB-MCC-1B"
3	277/480 VOLT PANELBOARD "OB-HVPB-1"
4	120/208 VOLT DRY TYPE TRANSFORMER "OB-T-1"
5	120/208 VOLT PANELBOARD "OB-LVPB-1"
6	120/208 VOLT PANELBOARD "OB-LVPB-2"
7	AUTOMATIC TRANSFER SWITCH "OB-ATS-1"
8	I&C CONTROL PANEL "CP-3"
9	ROTARY SLUDGE PRESS CONTROL PANEL "RSPCP"
10	FIRE ALARM CONTROL PANEL "OB-FACP-1"
11	TELEPHONE SERVICE PANEL "OB-TSP-1"
12	GROUNDING TERMINAL PANEL

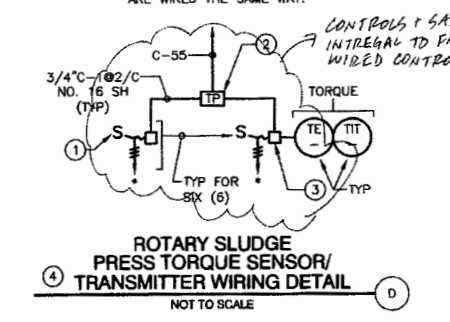
FOR DETAILS (A A) → (G G), REFER TO DWG #E-OB.15



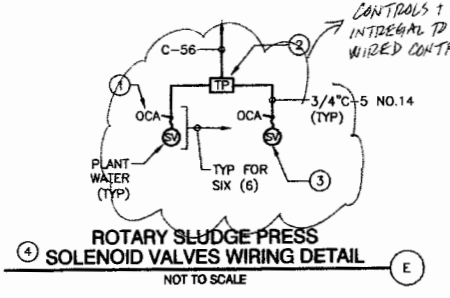
- SLUDGE PRESS DRIVE MOTOR WIRING DETAIL "B" NOTES**
- ELEC SUB-CONTRACTOR SHALL FURNISH/INSTALL NEW "ALUM" "U" CHANNEL FRAME AND "ALUM" MOUNTING PLATE WHICH SUPPORTS THE POWER DISC SWITCH AND CONTROL STATION. HARDWARE SHALL BE STAINLESS STEEL.
  - ELEC SUB-CONTRACTOR SHALL FURNISH/INSTALL ALUM NEMA "4X" POWER DISC SWITCH AND "LOR" MAINTENANCE CONTROL STATION AND ASSOCIATED WIRING.
  - EC'S WORK INCLUDES COORDINATION WITH BOTH THE EXISTING BLDG/WIRING CONDITIONS AND PROPOSED NEW CONSTRUCTION. EC SHALL NOTE THE EQUIPMENT IS LOCATED IN A WET AND CORROSIVE ENVIRONMENT.



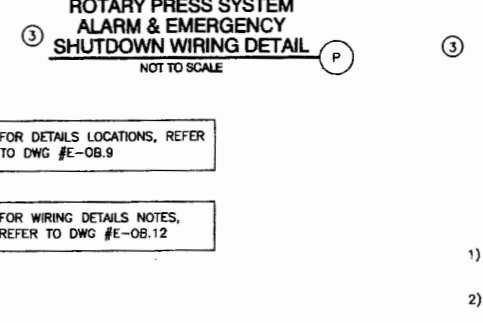
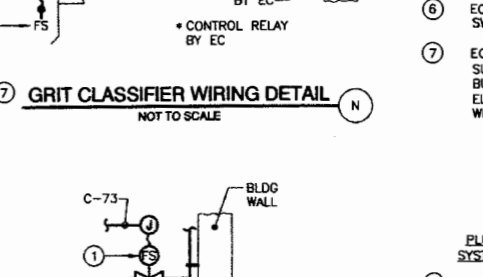
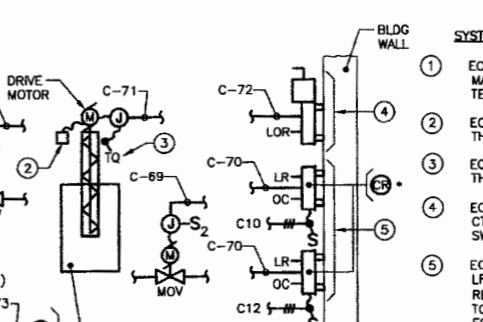
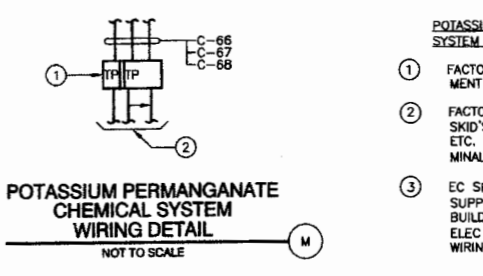
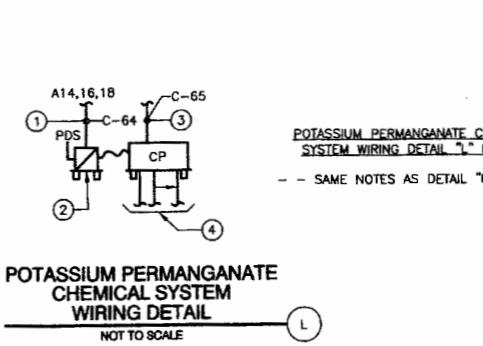
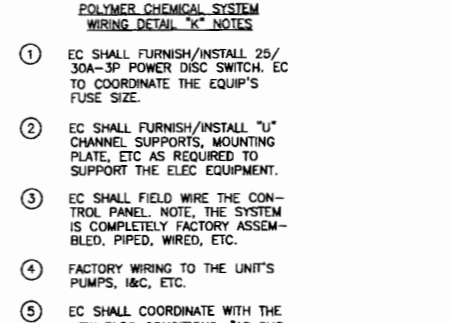
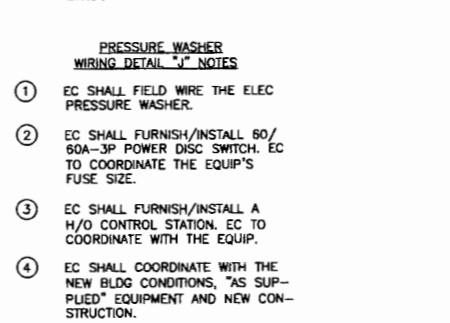
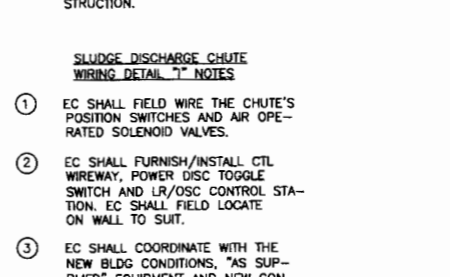
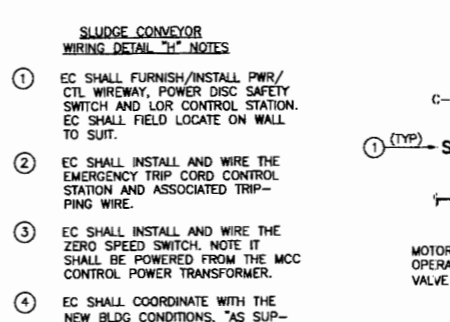
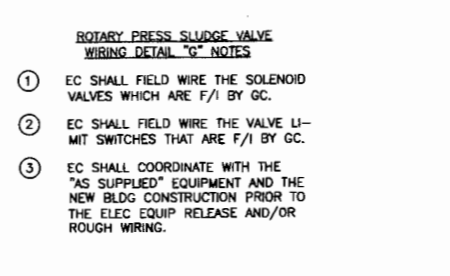
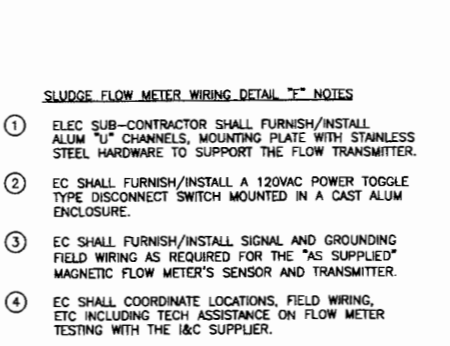
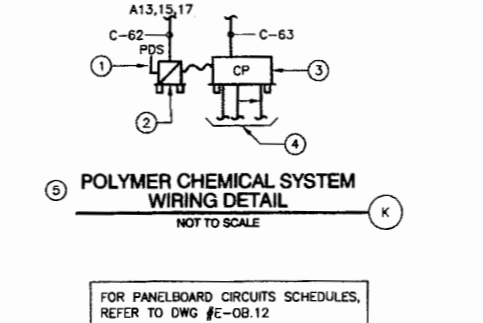
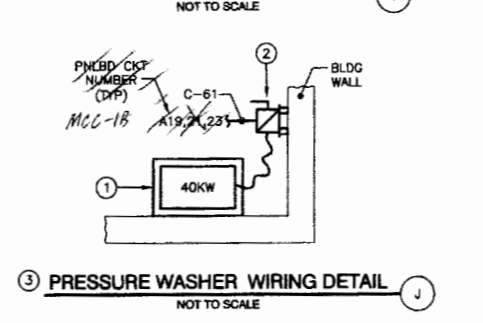
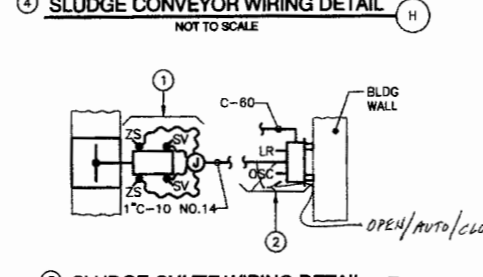
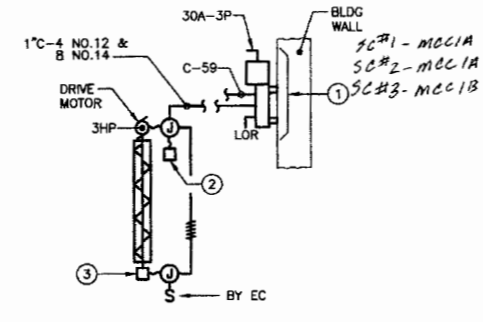
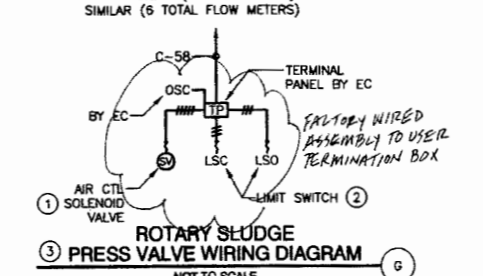
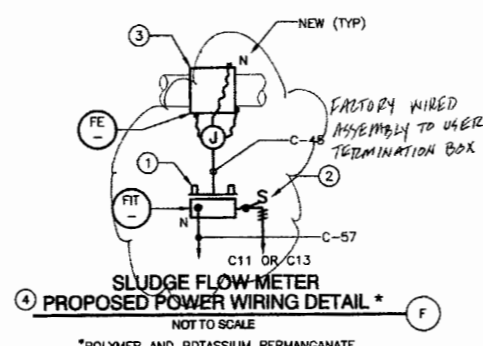
- SLUDGE FLOC TANK AND MIXER WIRING DETAIL "C" NOTES**
- ELEC SUB-CONTRACTOR SHALL FURNISH/INSTALL NEW "ALUM" "U" CHANNEL FRAME AND "ALUM" MOUNTING PLATE WHICH SUPPORTS THE POWER DISC SWITCH AND CONTROL STATION. HARDWARE SHALL BE STAINLESS STEEL.
  - ELEC SUB-CONTRACTOR SHALL FURNISH/INSTALL ALUM NEMA "4X" POWER DISC SWITCH AND "LOR" MAINTENANCE CONTROL STATION AND ASSOCIATED WIRING.
  - EC SHALL MOUNT AND WIRE THE TANK PRESSURE SENSOR/ TRANSMITTER WHICH IS FURNISHED WITH THE OFFICE EQUIPMENT.
  - EC SHALL FURNISH/INSTALL A POWER "ON/OFF" TOGGLE SWITCH AND ASSOCIATED POWER AND SIGNAL WIRING.
  - EC'S WORK INCLUDES COORDINATION WITH BOTH THE EXISTING BLDG/WIRING CONDITIONS AND PROPOSED NEW CONSTRUCTION. EC SHALL NOTE THE EQUIPMENT IS LOCATED IN A WET AND CORROSIVE ENVIRONMENT.



- SLUDGE PRESS TORQUE INSTRUMENTS WIRING DETAIL "D" NOTES**
- EC SHALL FURNISH/INSTALL A PWR DISC TOGGLE SWITCHES AND WIRING.
  - EC SHALL FURNISH/INSTALL TERMINAL PANEL (SIZED TO SUIT). EC TO FIELD LOCATE.
  - EC SHALL MOUNT/WIRE THE TORQUE INSTRUMENTS WHICH ARE FURNISHED WITH THE ROTARY SLUDGE PRESS.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



- SLUDGE PRESS SOLENOID VALVES WIRING DETAIL "E" NOTES**
- EC SHALL FURNISH/INSTALL "OPEN/ CLOSE/AUTO" CONTROL STATIONS AND FIELD WIRING.
  - EC SHALL FURNISH/INSTALL TERMINAL PANEL (SIZED TO SUIT). EC TO FIELD LOCATE.
  - EC SHALL WIRE THE SOLENOID VALVE WHICH IS FURNISHED/INSTALLED BY THE GENERAL CONTRACTOR.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



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**REGISTERED PROFESSIONAL ENGINEER**  
W. Peter Evans  
No. Date Dr. By Ch. By App. By  
7/15/2011

**CITY OF NEWBURYPORT, MASSACHUSETTS**  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING WIRING DETAIL "I"**

**ELEC DRAWINGS REFERENCE NOTES**

- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
- FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
- FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

RICHARDSON ELECTRICAL AS-BUILT



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				A P R O V E D
				DATE
				7/15/2011

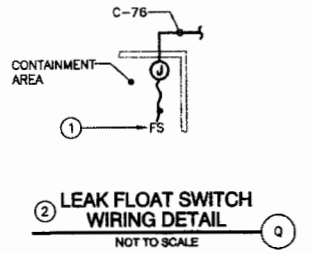
W. Peter Brown  
REGISTERED PROFESSIONAL ENGINEER



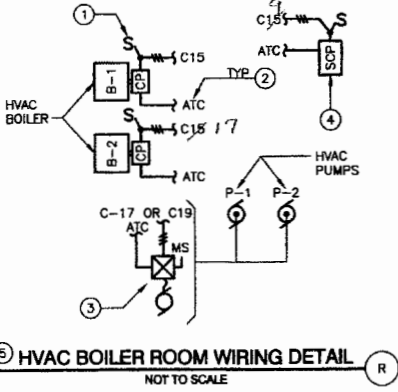
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING  
 WIRING DETAILS "III"**

CAAD NO.	0905101 EOB14
SCALE	AS SHOWN
CONTRACT	2 09051.01
DR. BY	ELD
CHK. BY	LMR
APP. BY	DCK
WFE	

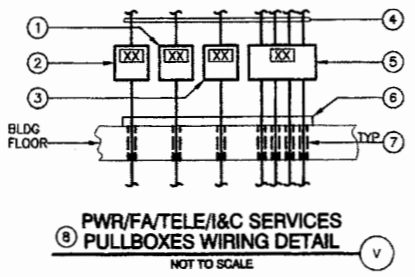
**E-OB.14**  
 SHEET 194 OF 202



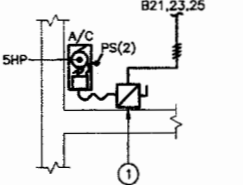
- LEAK FLOAT SWITCH  
WIRING DETAIL "Q" NOTES**
- EC SHALL FURNISH/INSTALL THE LEAK FLOAT SWITCH AND ASSOCIATED FIELD WIRING. EC SHALL FIELD LOCATE TO SUIT.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



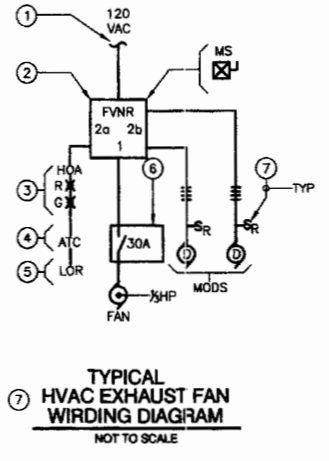
- HVAC BOILER ROOM EQUIPMENT  
WIRING DETAIL "R" NOTES**
- EC SHALL FURNISH/INSTALL THE POWER DISC TOGGLE TYPE SWITCH AND ASSOCIATED WIRING.
  - HVAC CONTRACTOR SHALL FURNISH/INSTALL THE ATC EQUIPMENT AND ASSOCIATED ATC WIRING.
  - EC SHALL FURNISH/INSTALL THE PUMP'S MOTOR STARTERS AND ASSOCIATED WIRING.
  - EC SHALL INSTALL AND PWR WIRE THE BOILERS SYSTEM CONTROL PANEL WHICH IS FURNISHED BY THE HVAC CONTRACTOR.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



- PWR/FA/TELE/I&C SERVICES PULLBOXES  
WIRING DETAIL "V" NOTES**
- EC SHALL FURNISH/INSTALL THE FA PULL BOX (SIZED TO SUIT) WITH ENGRAVED NAMEPLATE.
  - EC SHALL FURNISH/INSTALL TELE PULL BOX (SIMILAR TO ITEM # 1)
  - EC SHALL FURNISH/INSTALL I&C PULL BOX (SIMILAR TO ITEM # 1)
  - EC SHALL FURNISH/INSTALL THE ELEC FIELD WIRING. EC MUST FIELD ROUTE TO SUIT.
  - EC SHALL FURNISH/INSTALL PWR PULL BOX (SIMILAR TO ITEM # 1)
  - GC SHALL FURNISH/INSTALL A 4" HIGH CONCRETE BASE TO PROTECT THE CONDUITS FROM FLOOR WATER.
  - EC SHALL CORE DRILL AND F/1 THE CONDUIT FLOOR SEALS. EC TO FIELD LOCATE AS REQUIRED.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



- SHOP AIR COMPRESSOR  
WIRING DETAIL "W" NOTES**
- EC SHALL FURNISH/INSTALL A FUSED DISC SAFETY SWITCH (20/30A-3P). EC TO COORDINATE THE FUSE SIZE.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



- HVAC EXHAUST FAN WIRING DIAGRAM NOTES**
- FOR CIRCUITS, REFER TO THE PANELBOARD SCHEDULES.
  - COMBINATION MOTOR STARTER WITH "FVNR" STARTER, ELEC OI, TRIP, CONTROLS, INDICATORS, ETC BY EC
  - HAND-OFF-AUTO SEL SWITCH AND LED ON/OFF INDICATING LIGHTS (MTD IN MOTOR STARTER)
  - HVAC AUTOMATIC TEMP CONTROLS AND WIRING BY HVAC CONTRACTOR.
  - LOCAL-OFF-REMOTE SEL SWITCH (MTD AT HVAC FAN) BY EC.
  - POWER DISC SAFETY SWITCH BY EC.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIP & NEW CONSTRUCTION.

- WIRING DETAILS GENERAL NOTES**
- EC'S WORK INCLUDES ALL REQUIRED COORDINATION OF THE "AS SUPPLIED" PROJECT WITH REGARDS TO POWER SUPPLIES, VOLTAGE, PHASE, ETC WITH THE ELECTRICAL EQUIPMENT INCLUDING THE ELECTRICAL ROUGH WIRING.
  - EC SHALL LOCATE ALL FIELD ELEC EQUIPMENT AND ASSOCIATED WIRING IN ORDER TO ALLOW THE EQUIPMENT TO BE MAINTAINED AND/OR REPLACED.
  - EC SHALL FURNISH ALL ELEC EQUIP WITH "NEMA" ENCLOSURE PER EACH ROOM'S "NEMA" RATINGS. NOTE, THIS INCLUDES THE EQUIP'S "U" CHANNELS, MOUNTING PLATES, ETC.
  - THE GC'S WORK INCLUDES ALL CONCRETE PADS TO SUPPORT THE FLOOR MOUNTED ELECTRICAL EQUIPMENT.

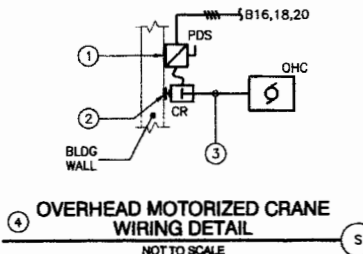
- EQUIPMENT LOCATIONS NOTES**
- THE EC SHALL REFER TO THE I&C, MECH PROCESS, HVAC, PLBG AND ARCH DRAWINGS FOR THE LOCATIONS OF THE NON ELECTRICAL EQUIPMENT INCLUDING I&C FIELD INSTRUMENTS.
  - EC SHALL NOT COMPLETE ANY ROUGH ELEC WIRING UNTIL THIS SPECIFIED CONSTRUCTION COORDINATION HAS BEEN SUCCESSFULLY COMPLETED.

- EQUIPMENT WIRING NOTES \***
- THE EC SHALL FIELD LOCATE ALL ELEC EQUIP WHICH COORDINATES WITH THE EXISTING BLDG CONDITIONS PLUS THE PROPOSED NEW EQUIPMENT PRIOR TO ANY ROUGH WIRING.
  - ANY PROPOSED NEW ELEC EQUIP WHICH DOES NOT FIT INTO THE EXISTING BLDG SPACES PLUS COORDINATES WITH THE PROPOSED NEW CONSTRUCTION SHALL BE CONSIDERED UNACCEPTABLE.
- \* TYPICAL FOR ALL BUILDINGS.

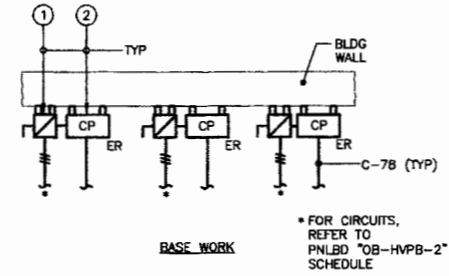
**OPERATIONS BUILDING  
PANELBOARDS CIRCUITS SCHEDULES**

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "0B-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "0B-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "0B-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "0B-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "0B-LVPB-3"

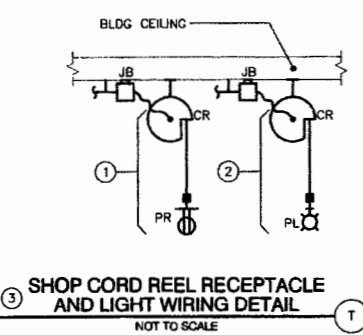
- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-2 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-OB.1 THRU E-OB.3



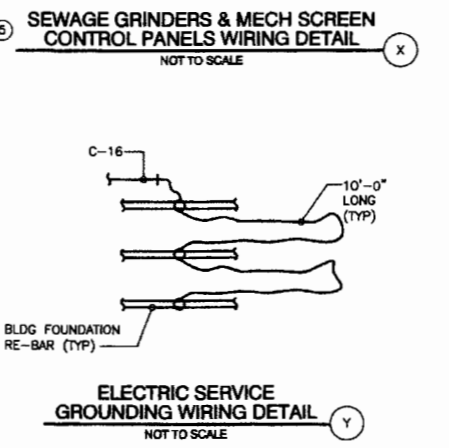
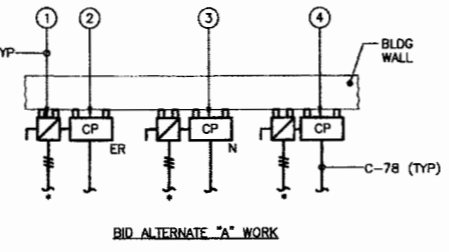
- OVERHEAD MOTORIZED CRANE  
WIRING DETAIL "S" NOTES**
- EC SHALL FURNISH/INSTALL THE FUSED POWER DISCONNECT SWITCH (15/30A-3P). EC SHALL COORDINATE THE FUSE SIZE.
  - EC SHALL MOUNT/WIRE THE CABLE REEL WHICH IS FURNISHED WITH THE MOTORIZED CRANE. EC TO FIELD LOCATE PER THE CRANE SUPPLIER'S RECOMMENDATIONS.
  - EC SHALL INSTALL THE REEL'S CABLE & CONNECT TO THE CRANE'S POWER CONNECTIONS.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



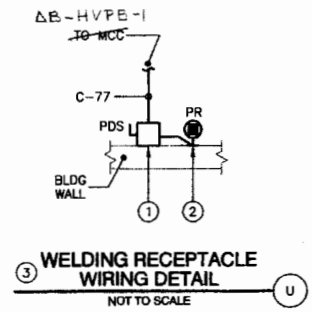
- SEWAGE GRINDERS & MECH SCREEN  
WIRING DETAIL "X" NOTES**
- EC SHALL FURNISH/INSTALL NEW 15/30A-3P POWER DISCONNECT SAFETY SWITCH.
  - EC SHALL RELOCATE & RE-WIRE THE EXISTING SEWAGE GRINDERS CONTROL PANELS.
  - EC SHALL INSTALL & WIRE THE MECH SCREEN CONTROL PANEL WHICH IS FURNISHED BY THE GC.
  - EC SHALL INSTALL & WIRE THE WASH PRESS CONTROL PANEL WHICH IS FURNISHED BY THE GC.
  - EC TO FIELD LOCATE THE CONTROL PANELS AND DISC SWITCHES PLUS COORDINATE WITH THE "AS SUPPLIED" PROJECT EQUIPMENT.



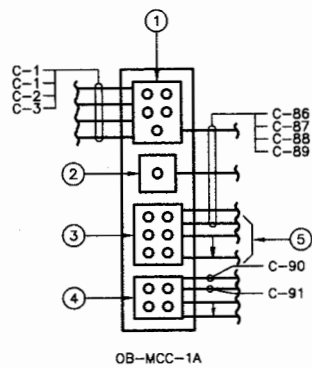
- SHOP CORD REEL RECEPTACLE AND LIGHT  
WIRING DETAIL "T" NOTES**
- EC SHALL FURNISH/INSTALL THE RECEPTACLE REEL AND RECEPTACLE UNIT SHALL BE INDUSTRIAL DUTY WITH 50' (12/3) POWER CORD AND GFI RECEPTACLE. EQUAL TO WOODHEAD INC MODEL 92433-3070G/.
  - EC SHALL FURNISH/INSTALL THE LTG CABLE REEL AND LIGHT UNIT SHALL BE INDUSTRIAL DUTY WITH 50' (12/3) POWER CORD AND 1.3W FLUORESCENT LAMP. EQUAL TO WOODHEAD INC MODEL 9228-86.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.



- WELDING RECEPTACLE AND SWITCH  
WIRING DETAIL "U" NOTES**
- EC SHALL FURNISH/INSTALL THE POWER DISC SWITCH (60A-3P).
  - EC SHALL FURNISH/INSTALL THE POWER RECEPTACLE (60A-3PH-4W-4P @ 480VAC). EC TO COORDINATE WITH THE "AS SUPPLIED" WELDER.
  - EC SHALL COORDINATE WITH THE "AS SUPPLIED" EQUIPMENT AND THE NEW BLDG CONSTRUCTION PRIOR TO THE ELEC EQUIP RELEASE AND/OR ROUGH WIRING.

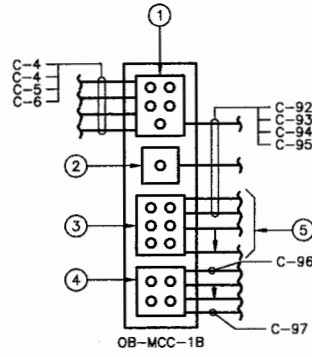


RICHARDSON ELECTRICAL AS-BUILT



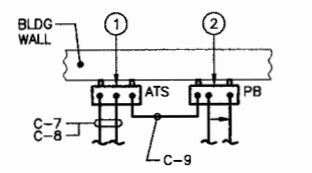
**MOTOR CONTROL CENTER "1A" WIRING DETAIL**  
NOT TO SCALE AA

- MOTOR CONTROL CENTER "OB-MCC-1" WIRING DETAIL "AA" NOTES**
- EC SHALL FURNISH/INSTALL IN-COMING PWR PULLBOX WHICH IS SIZED TO SUIT BY THE EC.
  - EC SHALL FURNISH/INSTALL LOW VOLTAGE/FIBER OPTIC PULL BOX (SIMILAR TO ITEM "1")
  - EC SHALL FURNISH/INSTALL PWR/CTL/ALRM PULL BOX (SIMILAR TO ITEM "1")
  - EC SHALL FURNISH/INSTALL SIGNAL PULL BOX (SIMILAR TO ITEM "1")
  - EC SHALL FURNISH/INSTALL FIELD WIRING AS REQUIRED VIA THE WIRING DETAILS, ETC.
  - EC SHALL COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



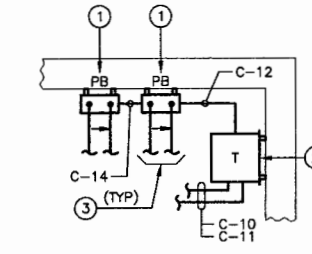
**MOTOR CONTROL CENTER "1B" WIRING DETAIL**  
NOT TO SCALE BB

- MOTOR CONTROL CENTER "OB-MCC-1B" WIRING DETAIL "BB" NOTES**  
-- SAME NOTES AS DETAIL "AA" --



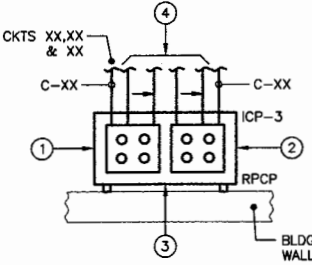
**AUTOMATIC TRANSFER SWITCH WIRING DETAIL**  
NOT TO SCALE CC

- AUTOMATIC TRANSFER SWITCH WIRING DETAIL "CC" NOTES**
- EC SHALL FURNISH/INSTALL AUTOMATIC TRANSFER SWITCH AND ASSOCIATED WIRING.
  - EC SHALL FURNISH/INSTALL THE PANELBOARD AND ASSOCIATED WIRING.
  - EC SHALL FIELD LOCATE PLUS COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



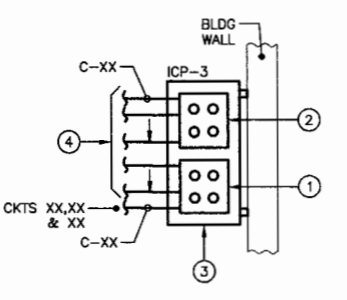
**PANELBOARDS & TRANSFORMER WIRING DETAIL**  
NOT TO SCALE DD

- PANELBOARDS AND TRANSFORMER WIRING DETAIL "DD" NOTES**
- EC SHALL FURNISH/INSTALL THE 120/208 VOLT PANELBOARDS AND ASSOCIATED FIELD WIRING.
  - EC SHALL FURNISH/INSTALL THE TRANSFORMER AND ASSOCIATED FIELD WIRING.
  - EC SHALL FURNISH/INSTALL THE FIELD WIRING AS REQUIRED PER THE WIRING DETAILS, LTG/RCPT BRANCH CIRCUITS, ETC.
  - EC SHALL FIELD LOCATE PLUS COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



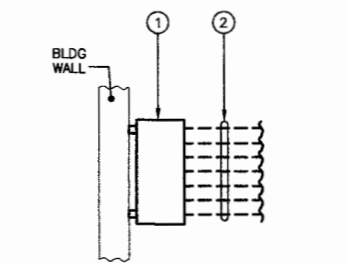
**ROTARY PRESS CONTROL PANEL WIRING DETAIL**  
NOT TO SCALE EE

- ROTARY SLUDGE PRESS CONTROL PANEL WIRING DETAIL "EE" NOTES**
- EC SHALL FURNISH/INSTALL A LINE VOLTAGE PULL BOX WHICH IS SIZED TO SUIT BY THE EC.
  - EC SHALL FURNISH/INSTALL A LOW VOLTAGE PULL BOX WHICH IS SIZED TO SUIT BY THE EC.
  - EC SHALL INSTALL AND WIRE THE EQUIPMENT CONTROL PANEL. THE PANEL IS FURNISHED BY THE GC.
  - EC SHALL FIELD WIRE PER THE WIRING DETAILS, RISER DIAGRAMS, ETC.
  - EC SHALL FIELD LOCATE PLUS COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



**I&C CONTROL PANEL WIRING DETAIL**  
NOT TO SCALE FF

- PLANT I&C CONTROL PANEL WIRING DETAIL "FF" NOTES**
- EC SHALL FURNISH/INSTALL A LINE VOLTAGE PULL BOX WHICH IS SIZED TO SUIT BY THE EC.
  - EC SHALL FURNISH/INSTALL A LOW VOLTAGE PULL BOX WHICH IS SIZED TO SUIT BY THE EC.
  - EC SHALL INSTALL AND WIRE THE EQUIPMENT CONTROL PANEL. THE PANEL IS FURNISHED BY THE GC.
  - EC SHALL FIELD WIRE PER THE WIRING DETAILS, RISER DIAGRAMS, ETC.
  - EC SHALL FIELD LOCATE PLUS COORDINATE WITH THE NEW BLDG CONDITIONS, "AS SUPPLIED" EQUIPMENT AND NEW CONSTRUCTION.



**ELECTRIC SERVICE GROUNDING WIRING DETAIL**  
NOT TO SCALE GG

- ELECTRIC SERVICE GROUNDING WIRING DETAIL "GG" NOTES**
- EC SHALL FURNISH/INSTALL A MULTI-LUG GROUNDING PANEL AS A COMMON POINT OF GROUNDING FOR THE ELECTRICAL POWER SYSTEM.
  - EC SHALL FURNISH/INSTALL GROUNDING CONDUITS AS INDICATED ON THE MCC POWER RISER DIAGRAMS, WIRING DETAILS, ETC.
  - EC SHALL FIELD LOCATE AND COORDINATE AS REQUIRED.

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- WIRING DETAILS GENERAL NOTES**
- EC'S WORK INCLUDES ALL REQUIRED COORDINATION OF THE "AS SUPPLIED" PROJECT WITH REGARDS TO POWER SUPPLIES, VOLTAGE, PHASE, ETC WITH THE ELECTRICAL EQUIPMENT INCLUDING THE ELECTRICAL ROUGH WIRING.
  - EC SHALL LOCATE ALL FIELD ELEC EQUIPMENT AND ASSOCIATED WIRING IN ORDER TO ALLOW THE EQUIPMENT TO BE MAINTAINED AND/OR REPLACED.
  - EC SHALL FURNISH ALL ELEC EQUIP WITH "NEMA" ENCLOSURE PER EACH ROOM'S "NEMA" RATINGS. NOTE, THIS INCLUDES THE EQUIP'S "U" CHANNELS, MOUNTING PLATES, ETC.
  - THE GC'S WORK INCLUDES ALL CONCRETE PADS TO SUPPORT THE FLOOR MOUNTED ELECTRICAL EQUIPMENT.

- EQUIPMENT LOCATIONS NOTES**
- THE EC SHALL REFER TO THE I&C, MECH PROCESS, HVAC, PLBG AND ARCH DRAWINGS FOR THE LOCATIONS OF THE NON ELECTRICAL EQUIPMENT INCLUDING I&C FIELD INSTRUMENTS.
  - EC SHALL NOT COMPLETE ANY ROUGH ELEC WIRING UNTIL THIS SPECIFIED CONSTRUCTION COORDINATION HAS BEEN SUCCESSFULLY COMPLETED.

- EQUIPMENT WIRING NOTES \***
- THE EC SHALL FIELD LOCATE ALL ELEC EQUIP WHICH COORDINATES WITH THE EXISTING BLDG CONDITIONS PLUS THE PROPOSED NEW EQUIPMENT PRIOR TO ANY ROUGH WIRING.
  - ANY PROPOSED NEW ELEC EQUIP WHICH DOES NOT FIT INTO THE EXISTING BLDG SPACES PLUS COORDINATES WITH THE PROPOSED NEW CONSTRUCTION SHALL BE CONSIDERED UNACCEPTABLE.
- \* TYPICAL FOR ALL BUILDINGS.

OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES	
CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-2 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-0B.1 THRU E-0T.3

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No.	Date	Dr. By	Ch. By	App. By	Description	DATE
						7/15/2011

*W. Peter Evans*  
REGISTERED PROFESSIONAL ENGINEER

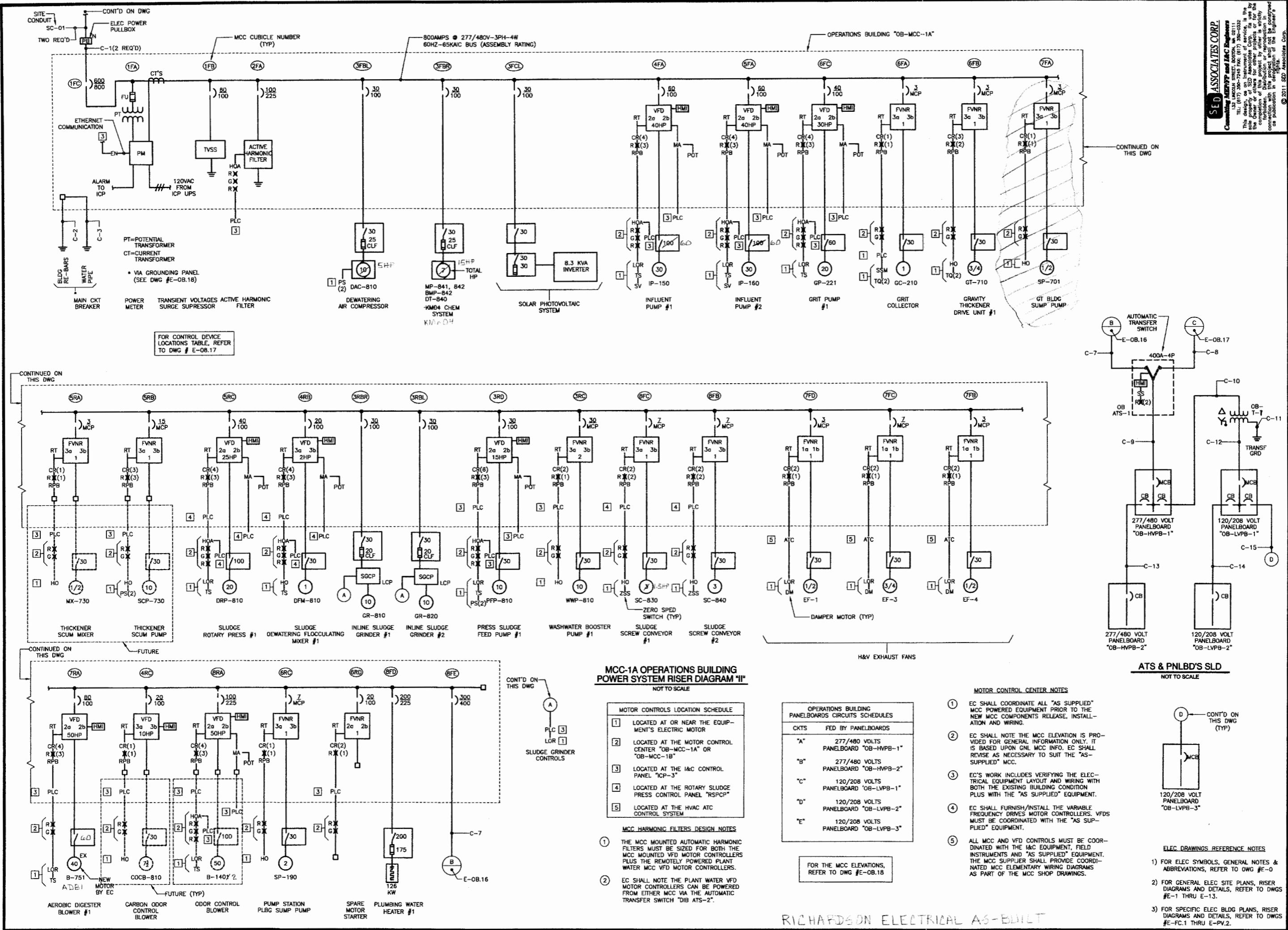


CITY OF NEWBURYPOR, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING WIRING DETAILS "IV"**

SCALE: AS SHOWN  
JOB NO. 09051.01  
CONTRACT: 2  
DR. BY: ELD  
BSN. BY: LMR  
CHK. BY: DGK  
APP. BY: WPE

**SED ASSOCIATES CORP.**  
 Consulting Electrical and Mechanical Engineers  
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**MCC-1A OPERATIONS BUILDING POWER SYSTEM RISER DIAGRAM "I"**  
 NOT TO SCALE

**MOTOR CONTROLS LOCATION SCHEDULE**

1	LOCATED AT OR NEAR THE EQUIPMENT'S ELECTRIC MOTOR
2	LOCATED AT THE MOTOR CONTROL CENTER "OB-MCC-1A" OR "OB-MCC-1B"
3	LOCATED AT THE I&C CONTROL PANEL "ICP-3"
4	LOCATED AT THE ROTARY SLUDGE PRESS CONTROL PANEL "RSPCP"
5	LOCATED AT THE HVAC ATC CONTROL SYSTEM

- MCC HARMONIC FILTERS DESIGN NOTES**
- 1 THE MCC MOUNTED AUTOMATIC HARMONIC FILTERS MUST BE SIZED FOR BOTH THE MCC MOUNTED VFD MOTOR CONTROLLERS PLUS THE REMOTELY POWERED PLANT WATER MCC VFD MOTOR CONTROLLERS.
  - 2 EC SHALL NOTE THE PLANT WATER VFD MOTOR CONTROLLERS CAN BE POWERED FROM EITHER MCC VIA THE AUTOMATIC TRANSFER SWITCH "DIB ATS-2".

**OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES**

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

FOR THE MCC ELEVATIONS, REFER TO DWG #E-OB.18

**MOTOR CONTROL CENTER NOTES**

- 1 EC SHALL COORDINATE ALL "AS SUPPLIED" MCC POWERED EQUIPMENT PRIOR TO THE NEW MCC COMPONENTS RELEASE, INSTALLATION AND WIRING.
- 2 EC SHALL NOTE THE MCC ELEVATION IS PROVIDED FOR GENERAL INFORMATION ONLY. IT IS BASED UPON OHL MCC INFO. EC SHALL REVISE AS NECESSARY TO SUIT THE "AS-SUPPLIED" MCC.
- 3 EC'S WORK INCLUDES VERIFYING THE ELECTRICAL EQUIPMENT LAYOUT AND WIRING WITH BOTH THE EXISTING BUILDING CONDITION PLUS WITH THE "AS SUPPLIED" EQUIPMENT.
- 4 EC SHALL FURNISH/INSTALL THE VARIABLE FREQUENCY DRIVES MOTOR CONTROLLERS. VFDs MUST BE COORDINATED WITH THE "AS SUPPLIED" EQUIPMENT.
- 5 ALL MCC AND VFD CONTROLS MUST BE COORDINATED WITH THE I&C EQUIPMENT, FIELD INSTRUMENTS AND "AS SUPPLIED" EQUIPMENT. THE MCC SUPPLIER SHALL PROVIDE COORDINATED MCC ELEMENTARY WIRING DIAGRAMS AS PART OF THE MCC SHOP DRAWINGS.

**ELEC DRAWINGS REFERENCE NOTES**

- 1 FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
- 2 FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
- 3 FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PP.2.

No.	Date	Dr. By	Ca. By	App. By	Description

DATE: 7/15/2011  
 REGISTERED PROFESSIONAL ENGINEER: [Signature]  
 PROJECT: [Project Name]



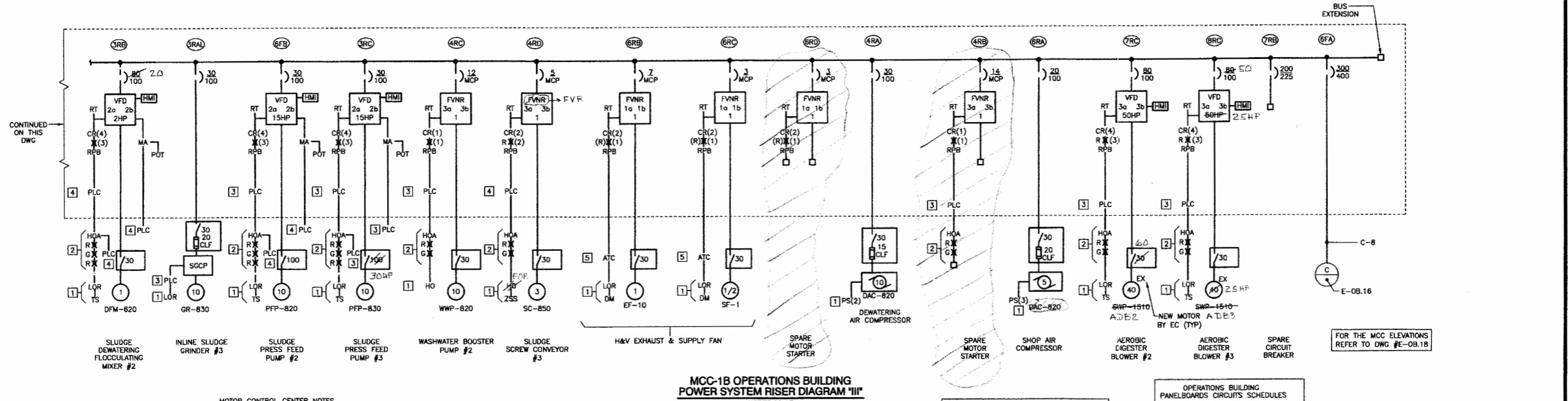
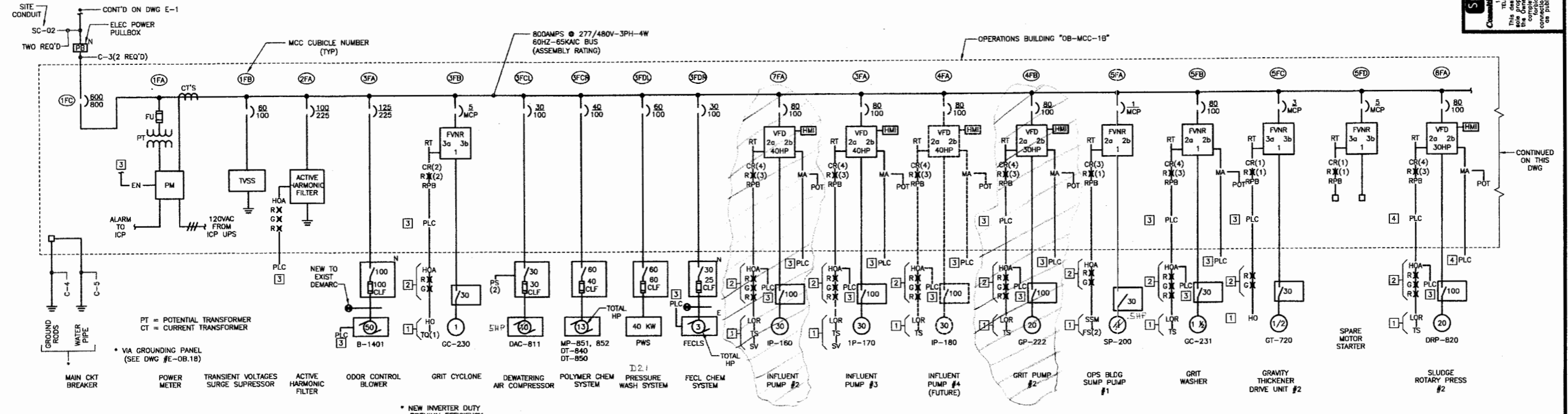
CITY OF NEWBURYPORT, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING MCC RISER DIAGRAMS & DETAILS "I"**

SCALE: AS SHOWN  
 CONTRACT: 2  
 JOB NO: 09051.01  
 DATE: 09/05/10  
 DRAWN BY: LMR  
 CHECKED BY: DGR  
 APPR'D BY: WPE

RICHARDSON ELECTRICAL AS-BUILT

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- MOTOR CONTROL CENTER NOTES**
- 1 EC SHALL COORDINATE ALL "AS SUPPLIED" MCC POWERED EQUIPMENT PRIOR TO THE NEW MCC COMPONENTS RELEASE, INSTALLATION AND WIRING.
  - 2 EC SHALL NOTE THE MCC ELEVATION IS PROVIDED FOR GENERAL INFORMATION ONLY. IT IS BASED UPON GNL MCC INFO. EC SHALL REVISE AS NECESSARY TO SUIT THE "AS-SUPPLIED" MCC.
  - 3 EC'S WORK INCLUDES VERIFYING THE ELECTRICAL EQUIPMENT LAYOUT AND WIRING WITH BOTH THE EXISTING BUILDING CONDITION AND WITH THE "AS SUPPLIED" EQUIPMENT.
  - 4 EC SHALL FURNISH/INSTALL THE VARIABLE FREQUENCY DRIVES MOTOR CONTROLLERS. VFDs MUST BE COORDINATED WITH THE "AS SUPPLIED" EQUIPMENT.
  - 5 ALL MCC AND VFD CONTROLS MUST BE COORDINATED WITH THE I&C EQUIPMENT, FIELD INSTRUMENTS AND "AS SUPPLIED" EQUIPMENT. THE MCC SUPPLIER SHALL PROVIDE COORDINATED MCC ELEMENTARY WIRING DIAGRAMS AS PART OF THE MCC SHOP DRAWINGS.

- MCC HARMONIC FILTERS DESIGN NOTES**
- 1 THE MCC MOUNTED AUTOMATIC HARMONIC FILTERS MUST BE SIZED FOR BOTH THE MCC MOUNTED VFD MOTOR CONTROLLERS PLUS THE REMOTELY POWERED PLANT WATER MCC VFD MOTOR CONTROLLERS.
  - 2 EC SHALL NOTE THE PLANT WATER VFD MOTOR CONTROLLERS CAN BE POWERED FROM EITHER MCC VIA THE AUTOMATIC TRANSFER SWITCH "DIB ATS-2".

**MOTOR CONTROLS LOCATION SCHEDULE**

1	LOCATED AT OR NEAR THE EQUIPMENT'S ELECTRIC MOTOR
2	LOCATED AT THE MOTOR CONTROL CENTER "OB-MCC-1A" OR "OB-MCC-1B"
3	LOCATED AT THE I&C CONTROL PANEL "ICP-3"
4	LOCATED AT THE ROTARY SLUDGE PRESS CONTROL PANEL "RSPCP"

**OPERATIONS BUILDING PANELBOARDS CIRCUITS SCHEDULES**

CKTS	FED BY PANELBOARDS
"A"	277/480 VOLTS PANELBOARD "OB-HVPB-1"
"B"	277/480 VOLTS PANELBOARD "OB-HVPB-2"
"C"	120/208 VOLTS PANELBOARD "OB-LVPB-1"
"D"	120/208 VOLTS PANELBOARD "OB-LVPB-2"
"E"	120/208 VOLTS PANELBOARD "OB-LVPB-3"

- ELEC DRAWINGS REFERENCE NOTES**
- 1 FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
  - 2 FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
  - 3 FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.

DATE: 7/15/2011

REGISTERED PROFESSIONAL ENGINEER

*W. Peter Egan*

No.	Date	Dr. By	Chk. By	App. By	Description



CITY OF NEWBURYPOR, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
 WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING  
 MCC RISER DIAGRAMS & DETAILS "II"**

SCALE: AS SHOWN

CONTRACT: 0905101

CADD NO. E0817

DESIGN BY: ELD

CHECK BY: LMR

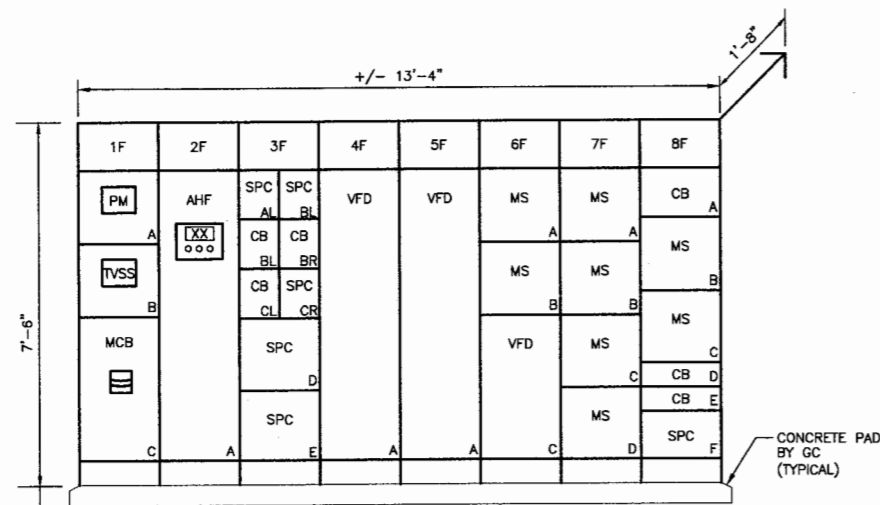
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APPROVED BY: WPE

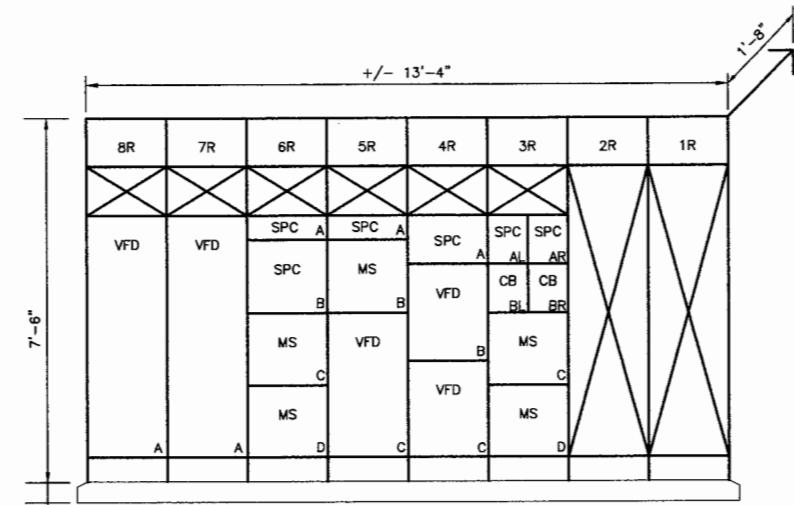
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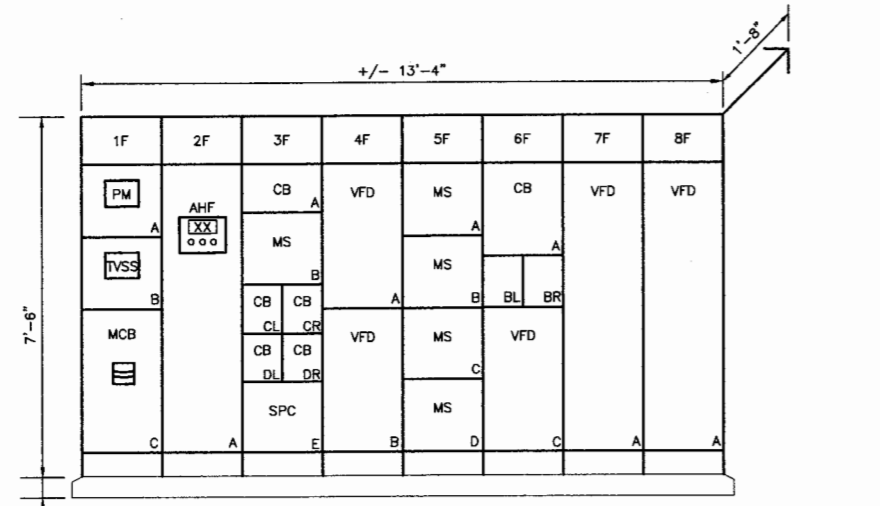
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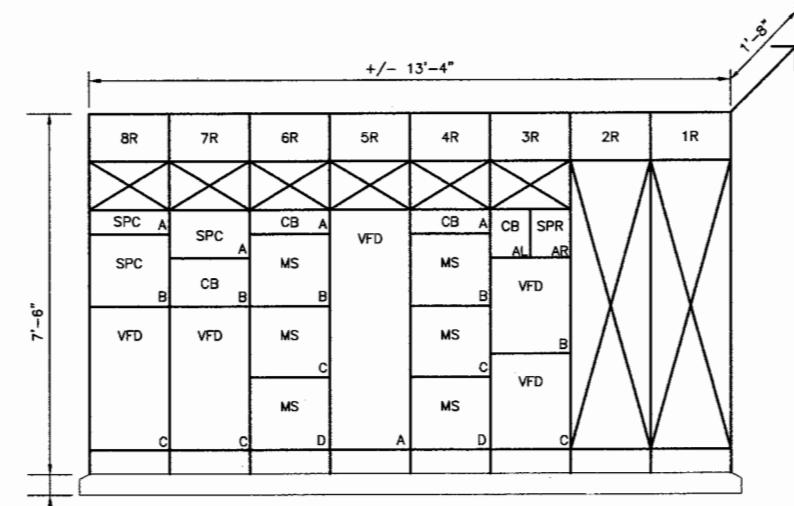
**OB-MCC-1A (FRONT)**  
**MOTOR CONTROL CENTER ELEVATION**  
 NOT TO SCALE



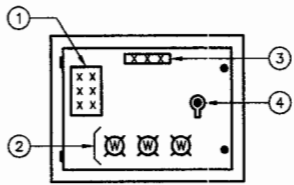
**OB-MCC-1A (REAR)**  
**MOTOR CONTROL CENTER ELEVATION**  
 NOT TO SCALE



**OB-MCC-1B (FRONT)**  
**MOTOR CONTROL CENTER ELEVATION**  
 NOT TO SCALE

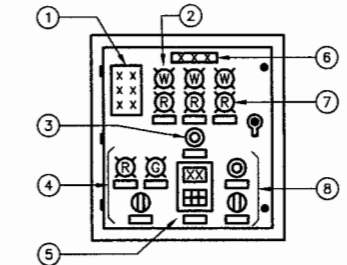


**OB-MCC-1B (REAR)**  
**MOTOR CONTROL CENTER ELEVATION**  
 NOT TO SCALE



**TYPICAL MCC CIRCUIT BREAKER CUBICLE ELEVATION DETAIL**  
 NOT TO SCALE

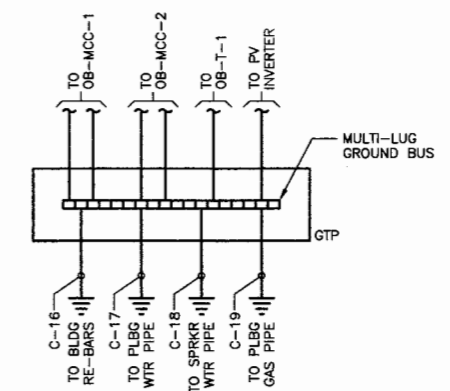
- TYPICAL MCC CIRCUIT BREAKER ELEVATION DETAIL NOTES**
- WARNING LABELS FOR ELECTRICAL SHOCK AND ARC FLASH WITH ALL PPE OPERATING INSTRUCTIONS PLUS SHORT CIRCUIT "AIC" RATINGS WITH DATE PER NEC 2011.
  - WHITE FLASHING LED LIGHTS FOR THE ARC FLASH HAZARD TO VERIFY THE DOWN STREAM POWER IS DE-ENERGIZED.
  - ENGRAVED NAMEPLATE WITH FULL EQUIPMENT NAME AND TAG.
  - CIRCUIT BREAKER OPERATING HANDLE WITH PROVISIONS FOR OSHA COMPLIANT "LOCK OUT"
  - ALL MCC CUBICLES POWER DISCONNECT HANDLES SHALL HAVE OSHA COMPLIANT "LOCK OUTS".



**TYPICAL MCC VFD MOTOR CONTROLLER CUBICLE ELEVATION DETAIL**  
 NOT TO SCALE

- TYPICAL MCC VFD MOTOR CONTROLLER CUBICLE ELEVATION DETAIL NOTES**
- WARNING LABELS FOR ELECTRICAL SHOCK AND ARC FLASH WITH ALL PPE OPERATING INSTRUCTIONS PLUS SHORT CIRCUIT "AIC" RATINGS WITH DATE PER NEC 2011.
  - WHITE FLASHING LED LIGHTS FOR THE ARC FLASH HAZARD TO VERIFY THE DOWN STREAM POWER IS DE-ENERGIZED.
  - ALARMS "RESET" PUSHBUTTON
  - "HOA" SELECTOR SWITCH WITH LED RED AND GREEN LIGHTS
  - VFD DIGITAL HMI WITH LCD DISPLAY AND KEYPAD
  - ENGRAVED NAMEPLATE WITH FULL EQUIPMENT NAME AND TAG.
  - RED LED ALARM INDICATING LIGHTS WITH NAMEPLATES
  - "HA" SELECTOR SWITCH AND 0 TO 100 % SPEED CONTROL POTENTIOMETER
  - THE MCC OTHER MOTOR STARTERS, ETC ARE SIMILAR BUT ADJUSTED TO SUIT THE MCC RISER DIAGRAM REQUIREMENTS.

- MOTOR CONTROL CENTERS ELEVATIONS NOTES**
- EC SHALL COORDINATE ALL "AS SUPPLIED" MCC POWERED EQUIPMENT PRIOR TO THE NEW MCC COMPONENTS RELEASE, INSTALLATION AND WIRING.
  - EC SHALL NOTE THE MCC ELEVATIONS ARE PROVIDED FOR GENERAL INFORMATION ONLY. THEY ARE BASED UPON GNL MCC INFO. EC SHALL REVISE AS NECESSARY TO SUIT THE "AS-SUPPLIED" MCC.
  - EC'S WORK INCLUDES VERIFYING THE ELECTRICAL EQUIPMENT LAYOUT AND WIRING WITH BOTH THE EXISTING BUILDING CONDITION PLUS WITH THE "AS SUPPLIED" EQUIPMENT.
  - EC SHALL FURNISH/INSTALL THE VARIABLE FREQUENCY DRIVES MOTOR CONTROLLERS. THE VFDs MUST BE COORDINATED WITH THE "AS SUPPLIED" EQUIPMENT.
  - ALL MCC AND VFD CONTROLS MUST BE COORDINATED WITH THE I&C EQUIPMENT, FIELD INSTRUMENTS AND "AS SUPPLIED" EQUIPMENT. THE MCC SUPPLIER SHALL PROVIDE COORDINATED MCC ELEMENTARY WIRING DIAGRAMS AS PART OF THE MCC SHOP DRAWINGS.
  - FOR VFD HARMONIC MITIGATION, THE MCC WITH THE VFD MOTOR CONTROLLERS SHALL HAVE AN ACTIVE HARMONIC FILTER. THE FILTER SELECTION SHALL BE VERIFIED BY THE EC'S POWER SYSTEM HARMONIC STUDY.



**GROUND TERMINAL PANEL WIRING DIAGRAM**  
 NOT TO SCALE

MOTOR CONTROL CENTER ELEVATIONS ABBREVIATIONS LIST	
AHF	ACTIVE HARMONIC FILTER
CB	CIRCUIT BREAKER
MCB	MAIN CIRCUIT BREAKER
MS	MOTOR STARTER
SPC	SPACE
TVSS	TRANSIENT VOLTAGES SURGE SUPPRESSOR
VFD	VARIABLE FREQUENCY DRIVE

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG #E-0
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS #E-FC.1 THRU E-PV.2.

No.	Date	Dr. By	Ck. By	App. By	Description

W. Peter Evans REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION	SCALE: AS SHOWN	CONTRACT: 2	JOB NO. 09051.01	DESIGNED BY: DGM	APPROVED BY: MPE
<b>ELECTRICAL OPERATIONS BUILDING MCC RISER DIAGRAMS &amp; DETAILS "11"</b>					
CADD NO. 0905101	SCALE: AS SHOWN	CONTRACT: 2	JOB NO. 09051.01	DESIGNED BY: LMR	APPROVED BY: DGM

FILE NO. 189-5  
**E-OB.18**  
 SHEET 198 OF 202



**PANELBOARD "OB-HVPB-1" SCHEDULE**  
277/480 V - 400 A - 3 PH - 4 W - 35K AIC - 42 P  
SURFACE MOUNTED : 300AT / 400AF MAIN CIRCUIT BREAKER

POLE NO.	LOAD	KVA	CB	POLE NO.	LOAD	KVA	CB
1	PANELBOARD	66.6	125A-2	1P #1 M.O. VALVE	1.2	20A	3P
3	"OB LV PB 1"		3P				
5	(TRANSFORMER T-1)						
7	HVAC "MAU-1 & 3"	2.2	20A-8	1P #2 M.O. VALVE	1.2	20A	3P
9	"		3P				
11	"		12				
13	HVAC "MAU-2"	5.5	20A-14	1P #3 M.O. VALVE	1.2	20A	3P
15	"		16				
17	"		18				
19	HVAC "RAC-1"	10.5	30A-20	FILTER RM O.H. CRANE	5.0	20A	3P
21	"		22				
23	"		24				
25	SPARE		26	SPARE		20A	3P
27	"		28	"		20A	3P
29	"		30	"		20A	3P
31	SPARE		32	SPARE		40A	3P
33	"		34	"		20A	3P
35	"		36	"		20A	3P
37	SPARE		38	PANELBOARD	47.4	200A	3P
39	"		40	"OB-HVPB-2"			
41	"		42	"			

CONNECTED LOAD "KVA" = 140.8

**PANELBOARD "OB-LVPB-2" SCHEDULE**  
120/208 V - 225 A - 3 PH - 4 W - 10K AIC - 42 P  
SURFACE MOUNTED : 110AT / 225AF MAIN CIRCUIT BREAKER

POLE NO.	LOAD	KVA	CB	POLE NO.	LOAD	KVA	CB
1	RCP-BSMT FLR	0.4	20A	2	RCP-BSMT FLR	0.6	20A
3	RCP-BSMT FLR	0.4	20A	4	RCP-BSMT FLR	0.6	20A
5	RCP-FIRST FLR	1.0	20A	6	RCP-CLOTHES DRYER	5.0	30A
7	RCP-FIRST FLR	1.0	20A	8	"	2P	
9	RCP-FIRST FLR	0.8	20A	10	RCP-WASHER MACH	1.2	20A
11	RCP-OUTSIDE	0.4	20A	12	RCP-COUNTER	1.0	20A
13	RCP-ELEC RM	0.8	20A	14	RCP-FILTERS RM	0.8	20A
15	RCP-ELEC RM	0.8	20A	16	RCP-MEZZ & ROOF	0.8	20A
17	RCP-TRUCK WAY	0.8	20A	18	HW BLDG-RCPS	0.4	20A
19	RCP-TRUCK WAY	0.8	20A	20	HW BLDG-RCPS	0.4	20A
21	FECI BLDG-LTG	0.8	20A	22	HW BLDG-RCPS INSTRUM	0.2	20A
23	FECI BLDG-ELEC HTRS	1.0	20A	24	GT BLDG-RCPS	0.4	20A
25	FECI BLDG-AUTO SAMP	1.2	20A	26	GT/BLDG-EF/MOD	1.0	20A
27	FECI-RCPS	0.5	20	28	GT-SUMP PPS	2.2	20A
29	ODOR BLWR LTG	0.2	20A	30	"	2P	
31	ODOR BLWR RCP	0.4	20A	32	SPARE		20A
33	ODOR BLWR HTR	1.0	20A	34	"		20A
35	SPARE		20A	36	SPARE		20A
37	SPARE		20A	38	SPARE		20A
39	SPARE		20A	40	SPARE		20A
41	SPARE		20A	42	SPARE		20A

CONNECTED LOAD "KVA" = 26.9

**PANELBOARD "OB-HVPB-1" SCHEDULE NOTES -**  
1) PANELBOARD SHALL BE SERIES RATED WITH THE MCC FEEDER CIRCUIT BREAKERS.  
2) PANELBOARD BRANCH CIRCUITS ARE NOTED AS "A"  
3) PANELBOARD SHALL HAVE GROUND BUS, SIDE PIANO HINGE, ENGRAVED NAMEPLATE, TYPED CIRCUITS DIRECTORY AND NEC ELECTRICAL SHOCK AND OSHA ARC FLASH WARNING LABELS.

**PANELBOARD "OB-LVPB-2" SCHEDULE NOTES -**  
1) ALL RECEPTACLE CIRCUIT BREAKERS SHALL BE "GFI" TYPES  
2) PANELBOARD BRANCH CIRCUITS ARE NOTED AS "D"  
3) PANELBOARD SHALL HAVE GROUND BUS, SIDE PIANO HINGE, ENGRAVED NAMEPLATE, TYPED CIRCUITS DIRECTORY AND NEC ELECTRICAL SHOCK AND OSHA ARC FLASH WARNING LABELS.

**PANELBOARD "OB-HVPB-2" SCHEDULE**  
277/480 V - 225 A - 3 PH - 4 W - 35K AIC - 42 P  
SURFACE MOUNTED : 200AT / 225AF MAIN CIRCUIT BREAKER

POLE NO.	LOAD	KVA	CB	POLE NO.	LOAD	KVA	CB
1	LTG-BASEMENT FLR	1.2	20A	2	LTG-FIRST FLOOR	1.5	20A
3	LTG-BASEMENT FLR	1.2	20A	4	LTG-FIRST FLOOR	1.5	20A
5	LTG-OUTSIDE	1.5	20A	6	LTG-FIRST FLOOR	1.5	20A
7	LTG-OUTSIDE	1.5	20A	8	LTG-HW & GT BLDGS	2.0	20A
9	SLUDGE GRINDER #1	5.5	20A-10	10	SLUDGE GRINDER #3	5.5	20A
11	"		3P	12	"		3P
13	"		14	"			
15	SLUDGE GRINDER #2	5.5	20A-16	16	MAINT RM O.H. CRANE	2.0	20A
17	"		3P	18	"		3P
19	"		20	"			
21	M.O. DOORS #1	3	3.0	22	MECH SCREEN	3.0	20A
23	"		3P	24	"		3P
25	"		26	"			
27	M.O. DOORS #4	3	3.0	28	SCREEN WASH PRESS	5.0	20A
29	"		3P	30	"		3P
31	"		32	"			
33	SPARE		34	GT BLDG ELEC HEATER	5.0	20A	
35	"		36	"		20A	3P
37	"		38	"		20A	3P
39	SPARE		20A	40	SPARE		20A
41	SPARE		20A	42	SPARE		20A

CONNECTED LOAD "KVA" = 47.4

**PANELBOARD "OB-LVPB-3" SCHEDULE**  
120/208 V - 225 A - 3 PH - 4 W - 10K AIC - 42 P  
SURFACE MOUNTED : 150AT / 225AF MAIN CIRCUIT BREAKER

POLE NO.	LOAD	KVA	CB	POLE NO.	LOAD	KVA	CB
1	RCP-MAINT SHOP	0.6	20A	2	RCP-MAINT SHOP	0.6	20A
3	RCP-MAINT SHOP	0.6	20A	4	RCP-MAINT SHOP	0.6	20A
5	RCP-MAINT SHOP	0.6	20A	6	RCP-MAINT SHOP	0.6	20A
7	RCP-MAINT SHOP	0.6	20A	8	RCP-MAINT SHOP	0.6	20A
9	RCP-WORK BENCH	1.0	20A	10	RCP-MAINT SHOP	0.6	20A
11	RCP-WORK BENCH	1.0	20A	12	RCP-MAINT SHOP	0.6	20A
13	RCP-WORK BENCH	1.0	20A	14	RCP-MAINT SHOP	0.6	20A
15	RCP-WORK BENCH	1.0	20A	16	SPARE		30A
17	SPARE		20A	18	SPARE		20A
19	SPARE		20A	20	SPARE		20A
21	SPARE		20A	22	SPARE		20A
23	SPARE		20A	24	SPARE		20A
25	SPARE		30A	26	SPARE		40A
27	SPARE		2P	28	SPARE		2P
29	SPARE		30A	30	SPARE		40A
31	SPARE		30A	32	SPARE		50A
33	SPARE		20A	34	SPARE		20A
35	SPARE		20A	36	SPARE		20A
37	AIR DRYER #1	1.0	20A	38	SPARE		20A
39	AIR DRYER #2	1.0	20A	40	HVAC "MAU #4 & 5"	1.5	20A
41	AIR DRYER #3	1.0	20A	42	"		2P

CONNECTED LOAD "KVA" = 15.1

**PANELBOARD "OB-LVPB-3" SCHEDULE NOTES -**  
1) ALL 20A RECEPTACLE CIRCUIT BREAKERS SHALL BE "GFI" TYPES.  
2) PANELBOARD BRANCH CIRCUITS ARE NOTED AS "E"  
3) PANELBOARD SHALL HAVE GROUND BUS, SIDE PIANO HINGE, ENGRAVED NAMEPLATE, TYPED CIRCUITS DIRECTORY AND NEC ELECTRICAL SHOCK AND OSHA ARC FLASH WARNING LABELS.

**PANELBOARD "OB-HVPB-2" SCHEDULE NOTES -**  
1) PANELBOARD SHALL BE SERIES RATED WITH THE MCC FEEDER CIRCUIT BREAKERS.  
2) PANELBOARD BRANCH CIRCUITS ARE NOTED AS "B"  
3) PANELBOARD SHALL HAVE GROUND BUS, SIDE PIANO HINGE, ENGRAVED NAMEPLATE, TYPED CIRCUITS DIRECTORY AND NEC ELECTRICAL SHOCK AND OSHA ARC FLASH WARNING LABELS.

**PANELBOARD "OB-LVPB-1" SCHEDULE**  
120/208 V - 400 A - 3 PH - 4 W - 10K AIC - 42 P  
SURFACE MOUNTED : 300AT / 400AF MAIN CIRCUIT BREAKER

POLE NO.	LOAD	KVA	CB	POLE NO.	LOAD	KVA	CB
1	I&C CTL PNL "CP-3"	1.2	20A	2	I&C FIELD INSTRUMS	0.5	20A
3	I&C CTL PNL "CP-3"		20A	4	I&C FIELD INSTRUMS	0.5	20A
5	I&C CTL PNL "CP-3"	0.4	20A	6	H&V EF-2, 5 & 6	1.2	20A
7	PLBG SUMP PPS (PRI)	3.3	30A-8	8	H&V EF-7 & 8	1.0	20A
9	"		2P	10	H&V EF-9, 11 & 12	0.8	20A
11	PLBG SUMP PPS (PRI)	3.3	30A-12	12	GRIT MOV'S	1.0	20A
13	"		2P	14	MISC EQUIPMENT	0.6	20A
15	BOILER & HWCP #1	1.0	20A	16	FIRE ALARM CTL PNL	1.0	20A
17	BOILER & HWCP #2	1.0	20A	18	TELE SERVICE PNL	0.8	20A
19	BOILER CTL PNL & ATC	1.0	20A	20	RSCP CTL PANEL	1.2	20A
21	HW UH'S #1 & 2	0.8	20A	22	HW UH'S #7 & 8	0.8	20A
23	HW UH'S #3 & 4	0.8	20A	24	HW UH'S #9 & 10	0.8	20A
25	HW UH'S #5 & 6	0.8	20A	26	HW UH'S #11 & 12	0.8	20A
27	SPARE		30A	28	SPARE		40A
29	SPARE		20A	30	SPARE		20A
31	SPARE		20A	32	SPARE		20A
33	SPARE		30A	34	SPARE		30A
35	"		2P	36	"		2P
37	PANELBOARD	26.9	110A-38	PANELBOARD	15.1	150A	3P
39	"OB-LVPB-2"		3P	"OB-LVPB-3"			
41	"		42	"			

CONNECTED LOAD "KVA" = 66.6

**PANELBOARD "OB-LVPB-1" SCHEDULE NOTES -**  
1) PROVIDE "ON" LOCKS FOR ENGINEER DESIGNATED CIRCUIT BREAKERS.  
2) PANELBOARD BRANCH CIRCUITS ARE NOTED AS "C"  
3) PANELBOARD SHALL HAVE GROUND BUS, SIDE PIANO HINGE, ENGRAVED NAMEPLATE, TYPED CIRCUITS DIRECTORY AND NEC ELECTRICAL SHOCK AND OSHA ARC FLASH WARNING LABELS.

**OPERATIONS BUILDING  
DRY TYPE TRANSFORMER SCHEDULE**

TAG NO	KVA	PRIMARY VOLTS	SECONDARY VOLTS	PHASE	WIRE NO	TYPE	EQUIPMENT SERVED
OB-T-1	75	480	120/208	3	4	1	120/208 PNLBDS

**TRANSFORMER TYPE :**  
1 VENTILATED 115 DEGREE C RISE HIGH EFFICIENCY WHICH MEETS FEDERAL AND/OR MASS STATE HIGH EFFICIENCY STANDARDS.

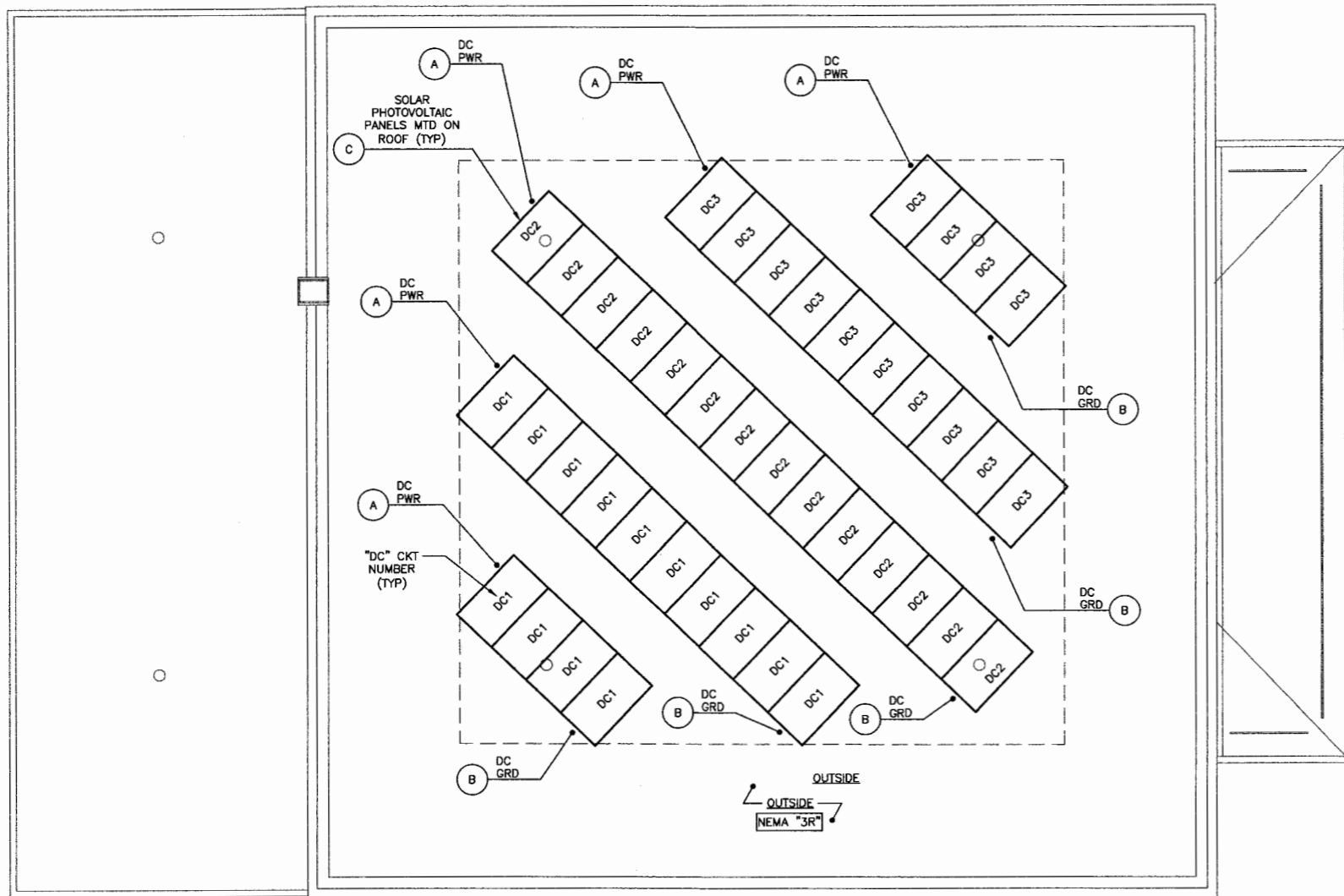
**OB-HVPB-1 (sec 1)**  
277 / 480V 3PH 4W FED FROM OB-HVPB-1 VIA TRANSFORMER

NO.	LOAD	KVA	CB	NO.	LOAD	KVA	CB
1	Influent pump no 1			1	Influent pump no 1		
2	Influent pump no 2			2	Influent pump no 2		
3	Influent pump no 3			3	Influent pump no 3		
4	Influent pump no 4			4	Influent pump no 4		
5	Influent pump no 5			5	Influent pump no 5		
6	Influent pump no 6			6	Influent pump no 6		
7	Influent pump no 7			7	Influent pump no 7		
8	Influent pump no 8			8	Influent pump no 8		
9	Influent pump no 9			9	Influent pump no 9		
10	Influent pump no 10			10	Influent pump no 10		
11	Influent pump no 11			11	Influent pump no 11		
12	Influent pump no 12			12	Influent pump no 12		
13	Influent pump no 13			13	Influent pump no 13		
14	Influent pump no 14			14	Influent pump no 14		
15	Influent pump no 15			15	Influent pump no 15		
16	Influent pump no 16			16	Influent pump no 16		
17	Influent pump no 17			17	Influent pump no 17		
18	Influent pump no 18			18	Influent pump no 18		
19	Influent pump no 19			19	Influent pump no 19		
20	Influent pump no 20			20	Influent pump no 20		
21	Influent pump no 21			21	Influent pump no 21		
22	Influent pump no 22			22	Influent pump no 22		
23	Influent pump no 23			23	Influent pump no 23		
24	Influent pump no 24			24	Influent pump no 24		
25	Influent pump no 25			25	Influent pump no 25		
26	Influent pump no 26			26	Influent pump no 26		
27	Influent pump no 27			27	Influent pump no 27		
28	Influent pump no 28			28	Influent pump no 28		
29	Influent pump no 29			29	Influent pump no 29		
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34	Influent pump no 34			34	Influent pump no 34		
35	Influent pump no 35			35	Influent pump no 35		
36	Influent pump no 36			36	Influent pump no 36		
37	Influent pump no 37			37	Influent pump no 37		
38	Influent pump no 38			38	Influent pump no 38		
39	Influent pump no 39			39	Influent pump no 39		
40	Influent pump no 40			40	Influent pump no 40		
41	Influent pump no 41			41	Influent pump no 41		
42	Influent pump no 42			42	Influent pump no 42		

MAIN  
MAIN  
MAIN

**OB-HVPB-1 (sec 2)**  
277 / 480V 3PH 4W FED FROM OB-HVPB-1 (SEC 1)

NO.	LOAD	KVA	CB	NO.	LOAD	KVA	CB
1	Washer			1	Washer		
2	Washer			2	Washer		
3	Washer			3	Washer		
4	Washer			4	Washer		
5	Washer			5	Washer		
6	Washer			6	Washer		
7	Washer			7	Washer		
8	Washer			8	Washer		
9	Washer			9	Washer		
10	Washer			10	Washer		
11	Washer			11	Washer		
12	Washer			12	Washer		
13	Washer			13	Washer		
14	Washer			14	Washer		
15	Washer			15	Washer		
16	Washer			16	Washer		
17	Washer			17	Washer		
18	Washer			18	Washer		



**OPERATIONS BUILDING ELECTRICAL PHOTOVOLTAIC SYSTEM POWER PROPOSED PARTIAL ROOF PLAN**  
SCALE: 3/16"=1'-0"

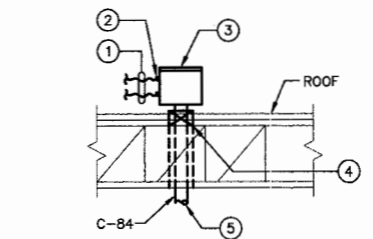
**SOLAR PHOTOVOLTAIC SYSTEM GENERAL AND ELECTRICAL WORK NOTES**

**GENERAL CONTRACTOR "SPV" WORK**

- 1 GC SHALL FURNISH/INSTALL THE "SPV" PV PANELS INCLUDING THEIR ROOF SUPPORTS.
- 2 GC SHALL FURNISH THE "SPV" INVERTER WHICH INCLUDES THE SPV DATA MODEM AND SOFTWARE FOR THE REMOTE SPV MONITORING.
- 3 GC'S SPV SUPPLIER'S WORK INCLUDES THE FOLLOWING:
  - COMPLETE SPV SHOP DRAWINGS INCLUDING WIRING DIAGRAMS.
  - SPV INSTALLATION SUPERVISION.
  - SPV START-UP AND FIELD TESTING INCLUDING CERTIFICATION. WORK INCLUDES THE REMOTE MONITORING.

**ELECTRICAL CONTRACTOR "SPV" WORK**

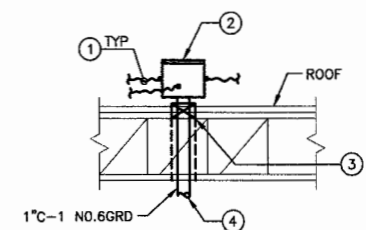
- 1 EC SHALL FIELD WIRE (PWR, GRD & MONITORING) THE PV PANELS AND THE SPV INVERTER.
- 2 EC SHALL FURNISH/INSTALL THE SPV AC AND DC FUSED POWER DISCONNECT SWITCHES AND THE SPV DC BUS PANEL.
- 3 EC SHALL FURNISH/INSTALL ALL OF THE SPV PWR/GRD/MONITORING FIELD WIRING (AS REQUIRED).
- 4 EC SHALL PROVIDE TECHNICAL ASSISTANCE FOR THE SPV START-UP AND FIELD TESTING.



**6 PV CELLS WIRING DETAIL A**  
NOT TO SCALE

**PV CELLS WIRING DETAIL "A" NOTES**

- 1 EC SHALL FURNISH/INSTALL HARD USE HIGH TEMPERATURE 600 VOLT DC POWER CABLES WITH OUTDOOR RATED WEATHER-PROOF CONNECTORS. CABLES SHALL BE INSTALLED UNDER AND PROTECTED BY THE PV CELLS.
- 2 EC SHALL FURNISH/INSTALL WATERPROOF CABLES TO BOX CONNECTORS (SIZED TO SUIT BY EC).
- 3 EC SHALL FURNISH/INSTALL A GALV CAST JUNCTION BOX (SIZED TO SUIT). NOTE, BOX SHALL BE LABELED PER NEC REQUIREMENTS.
- 4 GENERAL CONTRACTOR SHALL FURNISH/INSTALL CONDUIT/ROOF SEALING.
- 5 EC SHALL FURNISH/INSTALL DC POWER CONDUITS WHICH ARE FIELD ROUTED AS REQUIRED AND PER NEC REQUIREMENTS.
- 6 EC SHALL COORDINATE THE ELEC EQUIP LOCATION, WIRING, ETC WITH THE "AS SUPPLIED" EQUIPMENT AND NEW BUILDING CONSTRUCTION PRIOR TO RELEASE AND/OR ROUGH CONSTRUCTION.

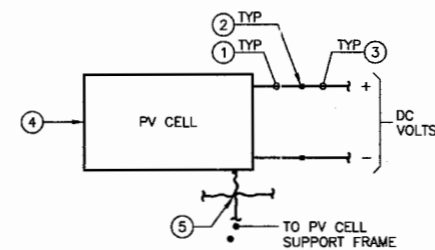


**5 PV CELLS GROUNDING DETAIL B**  
NOT TO SCALE

**PV CELLS GROUNDING DETAIL "B" NOTES**

- 1 EC SHALL FURNISH/INSTALL BARE COP-PER GROUNDING CABLES AS DETAILED ON "C". EC SHALL FIELD ROUTE TO SUIT.
- 2 EC SHALL FURNISH/INSTALL A GALV CAST JUNCTION BOX (SIZED TO SUIT). NOTE, BOX SHALL BE LABELED PER NEC REQUIREMENTS.
- 3 GENERAL CONTRACTOR SHALL FURNISH/INSTALL CONDUIT/ROOF SEALING.
- 4 EC SHALL FURNISH/INSTALL DC GROUNDING CONDUITS WHICH ARE FIELD ROUTED AS REQUIRED AND PER NEC REQUIREMENTS.
- 5 EC SHALL COORDINATE THE ELEC EQUIP LOCATION, WIRING, ETC WITH THE "AS SUPPLIED" EQUIPMENT AND NEW BUILDING CONSTRUCTION PRIOR TO RELEASE AND/OR ROUGH CONSTRUCTION.

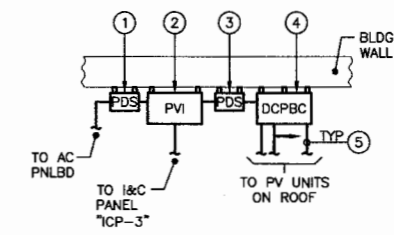
FOR THE SOLAR PV SYSTEM WIRING DIAGRAMS, REFER TO DWG #E-PV.2



**6 TYPICAL PV CELLS WIRING DETAIL C**  
NOT TO SCALE

**PV CELLS WIRING DETAIL "C" NOTES**

- 1 DC POWER CABLES WITH WEATHERPROOF CONNECTORS WHICH ARE FURNISHED BY THE ELEC CONTRACTOR.
- 2 EC SHALL FURNISH/INSTALL WEATHER-PROOF DC CABLES CONNECTORS WHICH COORDINATE WITH THE "AS SUPPLIED" PV CELLS.
- 3 EC SHALL FURNISH/INSTALL HARD SERVICE HIGH TEMPERATURE DC POWER CABLES (I.E., 1/C NO 10 SIZE). EC SHALL INSTALL THE DC CABLES CLOSE TOGETHER AS RECOMMENDED BY THE NEC.
- 4 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL THE PV CELLS AND ASSOCIATED ROOF SUPPORTS. EC SHALL FIELD WIRE INCLUDING GROUNDING.
- 5 EC SHALL FURNISH/INSTALL GROUNDING CABLES (I.E., 1/C NO 6) WITH WEATHER-PROOF BOLTED CONNECTORS.
- 6 EC SHALL COORDINATE THE ELEC EQUIP LOCATION, WIRING, ETC WITH THE "AS SUPPLIED" PV EQUIP AND NEW BUILDING CONSTRUCTION PRIOR TO RELEASE AND/OR ROUGH CONSTRUCTION.



**6 SOLAR PV ELECTRICAL EQUIPMENT POWER WIRING DETAIL D**  
NOT TO SCALE

\* DETAIL DOES NOT INDICATE THE SOLAR PV GROUNDING OR MONITORING WIRING (REFER TO SYSTEM DIAGRAMS) DWG "E-08.11"

**SOLAR PV ELECTRICAL EQUIPMENT WIRING DETAIL "D" NOTES**

- 1 EC SHALL FURNISH/INSTALL FUSED AC POWER DISC SAFETY SWITCH.
- 2 EC SHALL INSTALL/WIRE THE PV INVERTER WHICH IS FURNISHED BY THE GENERAL CONTRACTOR.
- 3 EC SHALL FURNISH/INSTALL FUSED DC POWER DISC SAFETY SWITCH
- 4 EC SHALL FURNISH/INSTALL THE DC POWER BUS PANEL WITH POWER DIODES PLUS DC FUSES. PANEL SHALL COORDINATE WITH THE "AS SUPPLIED" SOLAR PV EQUIPMENT.
- 5 EC SHALL FURNISH/INSTALL THE AC AND DC SOLAR PV SYSTEM FIELD WIRING. NOTE, EC SHALL ALSO FURNISH/INSTALL THE REQUIRED GROUNDING AND MONITORING WIRING.
- 6 EC SHALL COORDINATE WITH THE "AS SUPPLIED" SOLAR PV EQUIPMENT SINCE THERE ARE VARIATIONS PER EACH MANUFACTURER.

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No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					7/15/2011 DATE
					REGISTERED PROFESSIONAL ENGINEER



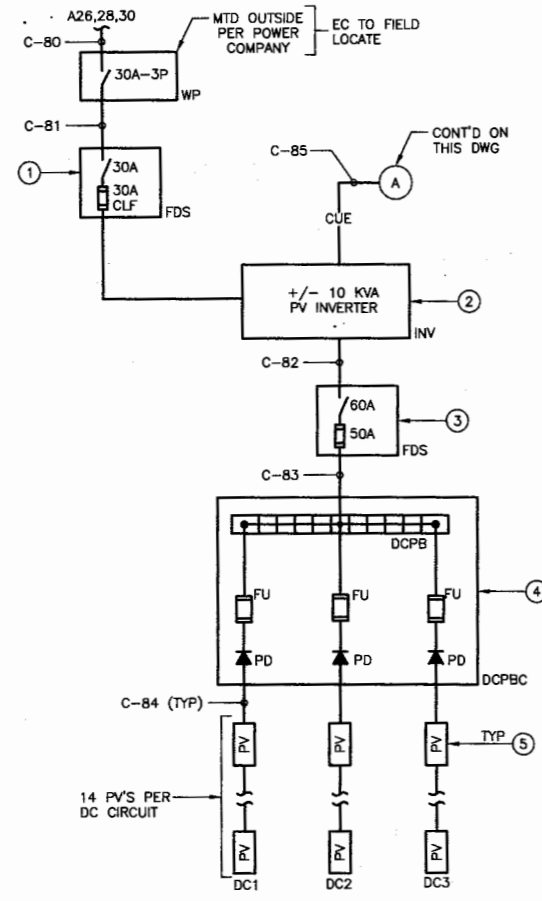
CITY OF NEWBURYPORT, MASSACHUSETTS DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT	SCALE: AS SHOWN	CONTRACT: 2	JOB NO. 09051.01	DRY BY: ELD	CHK BY: LMR	APP BY: WPE
<b>ELECTRICAL OPERATIONS BUILDING PV SYSTEM POWER PLAN</b>	SCALE: AS SHOWN	CONTRACT: 2	JOB NO. 09051.01	DRY BY: ELD	CHK BY: LMR	APP BY: WPE

**E-PV.7**  
SHEET 201 OF 202

- ELEC DRAWINGS REFERENCE NOTES**
- 1) FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - 2) FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - 3) FOR SPECIFIC ELEC BLDG PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2

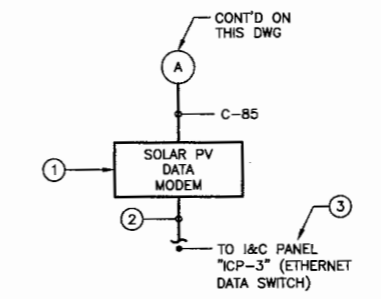


- OPERATIONS BUILDING SOLAR PHOTOVOLTAIC SYSTEM ELECTRICAL DESIGN BASIS**
- THE PHOTOVOLTAIC SYSTEM ELECTRICAL DESIGN IS BASED UPON THE FOLLOWING ELECTRICAL PARAMETERS:
    - PV CELLS MODEL # ES-A AS MANUFACTURED BY EVERGREEN SOLAR INC. 42 REQ'D
    - POWER = 210 WATTS (EACH)
    - DC VOLTS = 18.3
    - DC OPEN CKT VOLTS = 22.8
    - PV INVERTER MODEL # IG PLUS 10.0-3 WYE 277 AS MANUFACTURED BY FRONIUS INC. ONE REQ'D
    - POWER = 10.2 THRU 13.8 KW (12 KW NOMINAL)
    - DC VOLTS = 230 THRU 500
    - MAX DC VOLTS = 600
    - AC VOLTS = 277/480
    - PHASE / WIRE = 3 / 4
    - HARMONIC DISTORTION = < 3 %
    - COMPLIANCE = UL 1741 & NEC ARTICLE 690
    - EFFICIENCY = 96 %
    - TEMPERATURE = - 4 TO + 122 F
  - PV SYSTEM CAPACITY AND WIRING
    - FOURTEEN (14) PV CELLS PER DC SERIES CIRCUIT (256.2 DC VOLTS)
    - THREE PV CELLS DC SERIES CIRCUITS CONNECTED IN PARALLEL 8820 WATTS
  - THE PV SYSTEM SUPPLIER SHALL BE RESPONSIBLE FOR THE COMPLETE SYSTEM (PV CELLS, PV INVERTER, PV MONITORING) INCLUDING THE FOLLOWING WORK ITEMS:
    - COMPLETE SHOP DRAWINGS WITH POINT TO POINT WIRING INTER-CONNECTION DIAGRAMS
    - INSTALLATION SUPERVISION OF THE PV SYSTEM
    - PROGRAMMING, START-UP, FIELD TESTING AND CERTIFICATION
    - OWNER TRAINING INCLUDING O&M MANUAL
  - ELECTRICAL CONTRACTOR SHALL COORDINATE THE ELECTRICAL POWER DISTRIBUTION AND WIRING TO THE "AS SUPPLIED" INVERTER PRIOR TO ANY ELECTRICAL EQUIPMENT RELEASE AND/OR ROUGH WIRING.

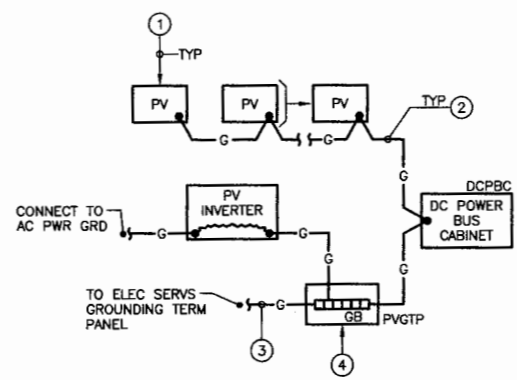


**OPERATIONS BUILDING SOLAR PHOTO VOLTAIC SYSTEM POWER WIRING DIAGRAM**  
NOT TO SCALE

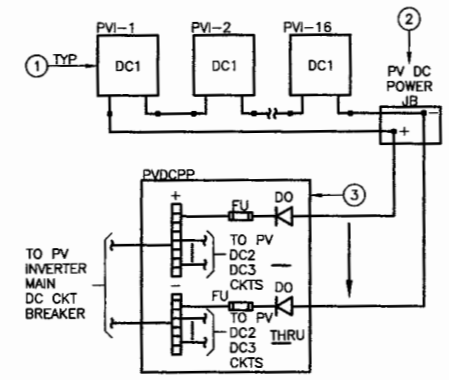
- OPERATIONS BUILDING PHOTO VOLTAIC SYSTEM NOTES**
- PV INVERTER AC OUTPUT MAIN DISC SWITCH MOUNTED IN A GALV PAINTED HINGED ENCLOSURE.
  - PV DC TO AC INVERTER WHICH IS MOUNTED IN A PAINTED STEEL HINGED ENCLOSURE.
  - PV INVERTER DC INPUT DISC SWITCH MOUNTED IN A GALV PAINTED HINGED ENCLOSURE.
  - PV CELLS DC BUS WITH OVER-CURRENT FUSES MOUNTED IN A GALV HINGED ENCLOSURE.
  - SOLAR PHOTOVOLTAIC CELL WHICH IS OCL BUILDING ROOF MOUNTED.
  - NOT USED
  - I&C SYSTEM RS485 TO USB COMMUNICATION NETWORK FOR THE PV MONITORING PC WORKSTATION SOFTWARE. NOTE, THE PV MONITORING SOFTWARE SHALL BE FURNISHED WITH THE PV SYSTEM AND LOADED ONTO THE I&C SYSTEM NETWORK WITH SCREENS (SOFTWARE) NAVIGATION.
  - THE GENERAL CONTRACTOR SHALL FURNISH THE COMPLETE SOLAR PHOTOVOLTAIC SYSTEM INCLUDING THE FOLLOWING:
    - SOLAR PHOTOVOLTAIC CELLS
    - CELLS GALVANIZED STEEL SUPPORTS
    - AC OUTPUT CIRCUIT BREAKER
    - PV INVERTER
    - DC INPUT CIRCUIT BREAKER
    - DC BUSS WITH FUSES PANEL
    - PC WORKSTATION SOFTWARE
  - THE SUPPLIER'S WORK INCLUDES SHOP DWGS, INSTALLATION SUPERVISION, START-UP, FIELD TESTING, CERTIFICATION, O&M MANUALS, STATE CERTIFICATION, ETC.
  - EC SHALL INSTALL AND WIRE THE PV ELECTRICAL EQUIPMENT.
  - PV SUPPLIER SHALL INSTALL THE PV PC SOFTWARE INCLUDING ASSOCIATED START-UP, TESTING, ETC WORK.
- SOLAR PHOTOVOLTAICS MONITORING AND COMMUNICATION NOTES**
- THE SOLAR PV SYSTEM SHALL BE MONITORED VIA A LOCAL AREA PV DATA NETWORK WHICH COMMUNICATES TO THE MASS STATE PV MONITORING STATION VIA AN INTERNET WEB IP DATA CONNECTION.
  - EC SHALL FURNISH/INSTALL ALL REQUIRED "RS-485" DATA COMMUNICATION WIRING WITHIN THE BUILDINGS AND SITE AS INDICATED INCLUDING THE DATA CABLE TVSS MOV PROTECTORS DUE TO LIGHTNING, ETC.
  - THE GC'S I&C SYSTEM SUPPLIER'S PV DATA WORK INCLUDES LOADING THE PV PC SOFTWARE ON THE I&C WORKSTATION INCLUDING DEVELOPING SCREEN NAVIGATION, ETC. THE I&C SUPPLIER'S WORK INCLUDES ALL NECESSARY WORK IN OBTAINING THE IP ADDRESS AND REMOTE COMMUNICATION TO THE MASS STATE MONITORING STATION.



**OPERATIONS BUILDING SOLAR PHOTO VOLTAIC SYSTEM MONITORING WIRING DIAGRAM**  
NOT TO SCALE



**OPERATIONS BUILDING SOLAR PHOTO VOLTAIC SYSTEM GROUNDING WIRING DIAGRAM**  
NOT TO SCALE



**OPERATIONS BUILDING SOLAR PHOTO VOLTAIC SYSTEM PV CELLS DC POWER WIRING DIAGRAM**  
NOT TO SCALE  
\* DETAIL IS TYPICAL FOR THE TWO "PV" SYSTEMS

- OPERATIONS BUILDING SOLAR PV SYSTEM MONITORING WIRING DIAGRAM NOTES**
- THE GC SHALL FURNISH THE SPV DATA MODEM WHICH SHALL BE MOUNTED AND WIRED IN THE I&C PANEL "ICP-3" BY THE I&C SUPPLIER.
  - THE I&C SUPPLIER SHALL FIELD WIRE THE SPV MODEM WITH 1 @ 4 PR NO 24 UTP (CAT 6) CABLE TO THE PANEL'S DATA SWITCH.
  - THE I&C SUPPLIER SHALL INTEGRATE THE SPV SYSTEM INTO THE I&C SYSTEM TO ALLOW IT TO BE BOTH LOCALLY AND REMOTELY MONITORED BY ITS WEB BASED SOFTWARE.
  - THE WORK SHALL BE COORDINATED WITH THE "AS SUPPLIED" SPV SYSTEM EQUIPMENT.
- OPERATIONS BUILDING SOLAR PV SYSTEM GROUNDING WIRING DIAGRAM**
- THE GC SHALL FURNISH/INSTALL THE PV PANELS AND THEIR ASSOCIATED ROOF SUPPORTS.
  - THE EC SHALL FURNISH/INSTALL THE SPV SYSTEM'S GROUNDING AS INDICATED.
  - THE EC SHALL FURNISH/INSTALL 1" WITH 1 NO 6 GROUND CABLE TO THE ELEC SERVS GROUNDING PANEL (LOCATED IN THE MAIN ELECTRICAL ROOM).
  - EC SHALL FURNISH/INSTALL A PV GROUND TERMINAL PANEL WITH COPPER MULTI-LUG BUS, PANEL SHALL BE FIELD LOCATED BY THE EC AT THE SPV SYSTEM EQUIPMENT.
  - THE SPV ELEC WORK SHALL BE COORDINATED WITH THE "AS SUPPLIED" SPV SYSTEM EQUIPMENT.
- OPERATIONS BUILDING SOLAR PV SYSTEM DC POWER WIRING DIAGRAM NOTES**
- PV CELLS WHICH ARE ROOF MOUNTED, FOR NUMBER AND LOCATION REFER TO THE ROOF PV POWER PLAN.
  - PV ROOF MOUNTED DC POWER JUNCTION BOX WITH WATERPROOF CABLE TO CONDUCTOR SPLICE VIA FACTORY SUPPLIED WIRE TERMINATOR KITS.
  - ELECTRICAL ROOM MOUNTED PV DC POWER PANEL WITH POWER DIODE, OVER-CURRENT FUSE AND MULTI-LUG WIRE TERMINAL CONNECTORS. NOTE, PANEL IS FURNISHED WITH THE PV POWER SYSTEM BY GC.
  - EC SHALL COORDINATE THE DC POWER AND GROUNDING WIRING, ETC WITH THE "AS SUPPLIED" PV POWER SYSTEM.

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No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D
					7/15/2011 DATE
					REGISTERED PROFESSIONAL ENGINEER



CITY OF NEWBURYPORT, MASSACHUSETTS  
DEPARTMENT OF PUBLIC SERVICES, SEWER DIVISION  
WASTEWATER TREATMENT FACILITY IMPROVEMENTS PROJECT  
**ELECTRICAL OPERATIONS BUILDING PV SYSTEM WIRING DIAGRAMS**

SCALE: AS SHOWN  
CONTRACT: 0905101 EPV2  
JOB NO.: 09051.01  
DR. BY: ELD  
DSN. BY: LMR  
CHK. BY: DDK  
APP. BY: WPE

- ELEC DRAWINGS REFERENCE NOTES**
- FOR ELEC SYMBOLS, GENERAL NOTES & ABBREVIATIONS, REFER TO DWG # E-1
  - FOR GENERAL ELEC SITE PLANS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-1 THRU E-13.
  - FOR SPECIFIC ELEC BLDG PLNS, RISER DIAGRAMS AND DETAILS, REFER TO DWGS # E-FC.1 THRU E-PV.2