ADDENDUM NO. 1

TO

REQUEST FOR QUALIFICATIONS FOR

DESIGN SERVICES RELATED TO BEARDSLEY PUMP STATION
COMPREHENSIVE UPGRADE

RFQ#6164

PREPARED BY:
WRIGHT-PIERCE
169 Main Street, 700 Plaza Middlesex
Middletown, CT 06457
Tel: 860-343-8297
Fax: 860-343-9504

Addendum No. 1 to the
Request for Qualifications for
Design Services related to Beardsley Pump Station
Comprehensive Upgrade
RFQ#6164

Due February 25, 2016 at 2:00 pm

The following changes and additional information are hereby made part of the Request for Qualifications.

This Addendum consists of 50 pages and consists of the following:

ATTACHMENTS

- Plans for Beardsley Pump Station By Whitman & Howard Inc. Dated April 1970
  - ST-1, Site & Grading Plan
  - A-1, First Floor Plan and Interior Elevations, Sheet 3 of 17 (Noted as RECORD PLAN)
  - A-2, Elevations, Sheet 4 of 17 (Noted as RECORD PLAN)
  - A-3, Wall Sections, Sheet 5 of 17 (Noted as RECORD PLAN)
  - A-4, Door and Window Details, Sheet 6 of 17 (Noted as RECORD PLAN)
  - A-5, Roof Framing & Misc Details, Sheet 7 of 17 (Noted as RECORD PLAN)
  - S-1, Foundation Plan, Sections & Details, Sheet 8 of 17
  - S-3, Sections & Details, Sheet 10 of 17
  - S-4, Plans, Section & Details, Sheet 11 of 17 (Noted as RECORD PLAN)
  - M-1, Mechanical Plans & Details, Sheet 12 of 17
  - HVP-1, Heating, Ventilation & Plumbing Plans, Sections & Details, Sheet 13 of 17
  - HVP-2, Heating, Ventilation & Plumbing Plans, Plans & Details, Sheet 14 of 17
  - HVP-3, Heating, Ventilation & Plumbing Plans, Sections & Details, Sheet 15 of 17
  - HVP-4, Heating, Ventilation & Plumbing Plans, Diesel Generator & Misc Details, Sheet 16 of 17
  - E-1, Electrical and Chlorination Details, Sheet 17 of 17

- SSES Phase I, Beardsley Pump Station Evaluation for the Town of Trumbull, CT; March 2015
  Note: Sections taken from the above noted report provides information regarding the existing conditions of the Beardsley Pump Station. Prospective Bidders may not rely upon or make any claim against Owner or Owners Project Representative (Wright-Pierce), or any of their officers, directors, members, partners, employees, agents, or consultants, with respect to:
  - the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
  - any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

- Site Visits were performed on Tuesday February 9, 2016 at 11am and Tuesday February 16, 2016 at 11am. Sign-In Sheets from the site visits have been enclosed.

QUESTION AND ANSWERS

Q1: Please confirm whether or not the Town intends to pursue Clean Water Funding through Connecticut DEEP for this project.

A1: Town intends to pursue funding if the Program is still available.

Q2. Will the Facilities Plan/Evaluation prepared by the OPR be made available for reference?

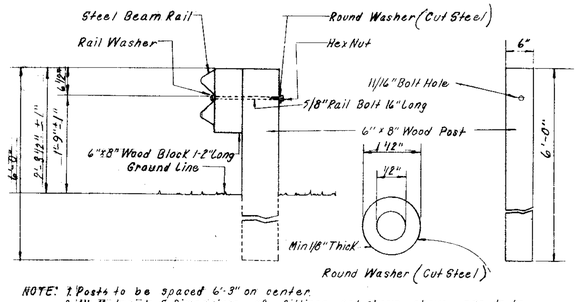
A2: Plans and Beardsley Evaluation Report as previously noted have been included for reference in Addendum No. 1.

Q3: We would like a clarification on Schedules A & B as included in the RFQ. Are there any constraints associated with these tables and is the intent to use these to satisfy Item 10 of the General Requirements (List of projects performed for CT municipalities in the last 10 years)?

A3: The intent is the Tables would satisfy Item 10 of the General Requirement.

Q4: What is "Executive Order 11-369" as related to designing around flood elevations? I believe reference was made to this at the site walk for Beardsley Pump Station.

A4: Executive Order 11-369 was incorrectly reference. Executive Order (EO) 13690 amends EO 11988 and defines the floodplain -elevation to be either 2 feet, or 3 feet above the base flood elevation depending on the criticalness of the function. NEIWPCC is preparing to update their standards (TR-16) to address the new storm resiliency requirement required by EO 13690.

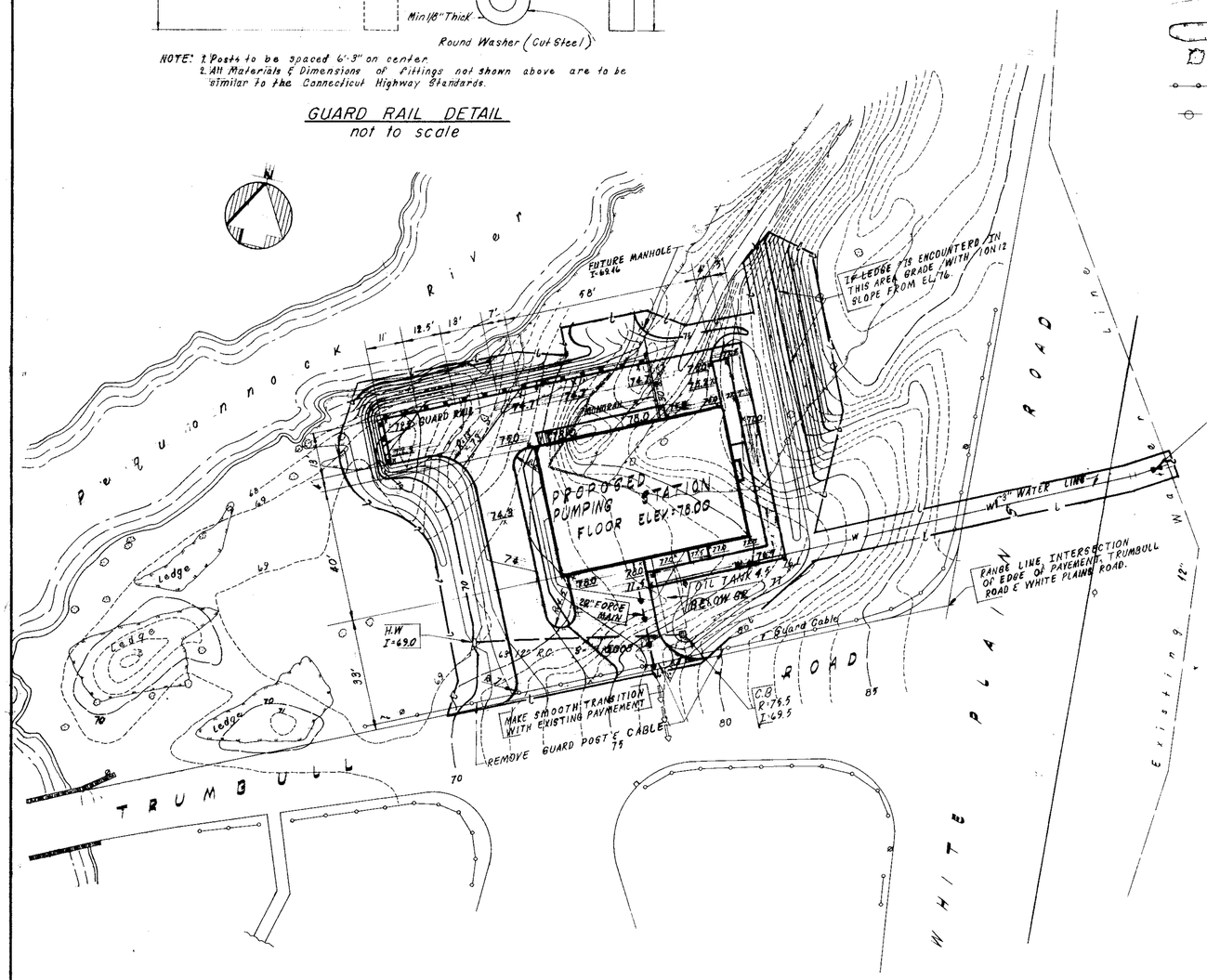


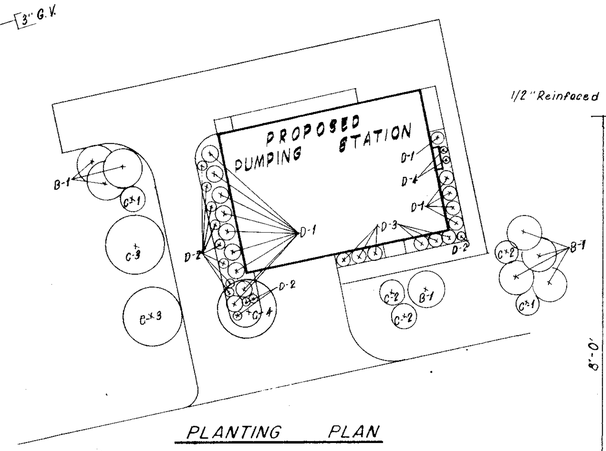
NOTE: 1. Posts to be spaced 6'-3" on center.
2. All Materials & Dimensions of Fittings not shown above are to be similar to the Connecticut Highway Standards.

GUARD RAIL DETAIL
not to scale

LEGEND

EXISTING		PROPOSED
75.5 x	SPOT GRADE	75.5 x
	CONTOUR	
	LEDGE	
	TREE	
	GUARD CABLE	
	POWER POLE	
	BIT. CONC. PAVEMENT	
	TREE OR SHRUB SECTION	
	R.C. DRAIN	
	LIMIT OF WORK	



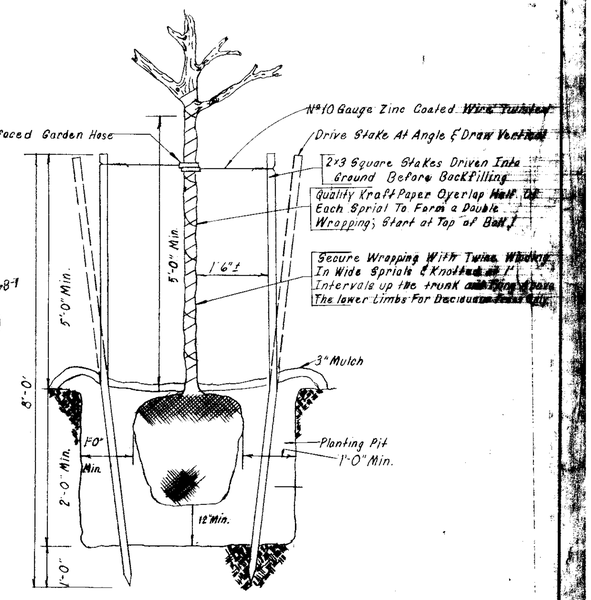


PLANTING PLAN

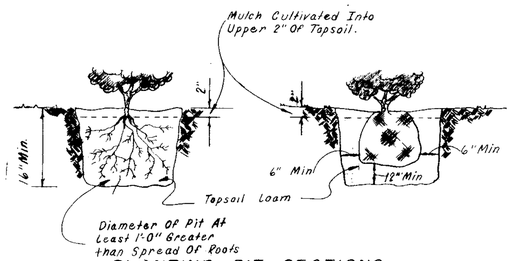
PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE
TREES			
B-1	PINUS STROBUS	EASTERN WHITE PINE	8'-10'
C-1	BETULA PENDULA (CLUMP)	EUROPEAN WHITE BIRCH (CLUMP)	10'-12'
C-2	CORNUS FLORIDA	FLOWERING DOGWOOD	8'-10'
C-3	ACER PLATANOIDES SUMMERSHADE PI. #148	SUMMERSHADE MAPLE	10'-12'
C-4	TILIA CORDATA GREENSPIRE PI. #2086	GREENSPIRE LIDEN	10'-12'
SHRUBS			
D-1	JUNIPERS CHINENSIS PFITZERIANA	PFITZER JUNIPER	2 1/2'-3'
D-2	COTONEASTER ADPRESSA PRAECOX	EARLY COTONEASTER	15"-18"
D-3	KALMIA LATIFOLIA	MOUTAIN LAUREL	18"-20"
D-4	PYRACANTHIA COCCINEA LALANDI	LALAND FIRETHORN	3'-4'

NOTES:
1. All plants to be balled & burlapped.
2. All plant beds to receive a minimum 3" thick mulch of pine bark (shredded type)
3. All plants & planting to be in accordance with the American Association of Nurserymans Standards.
4. All disturbed areas not occupied by paving, walks, structures, etc. shall receive 4" Loam & Seed



TREE PLANTING & STAKING DETAIL
not to scale



PLANTING PIT SECTIONS
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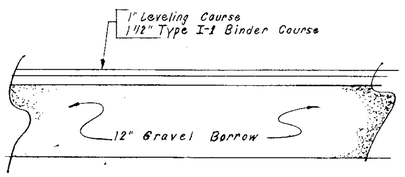

TYPICAL PAVING SECTION
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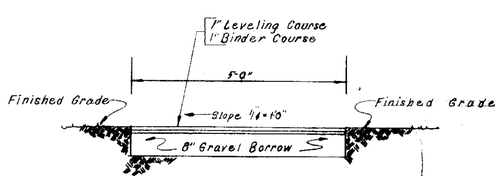


TYPICAL SIDEWALK SECTION
scale 1/2"=1'-0"

ST-1

SEWAGE PUMPING STATION
TRUMBULL, CONN.
SITE & GRADING PLAN

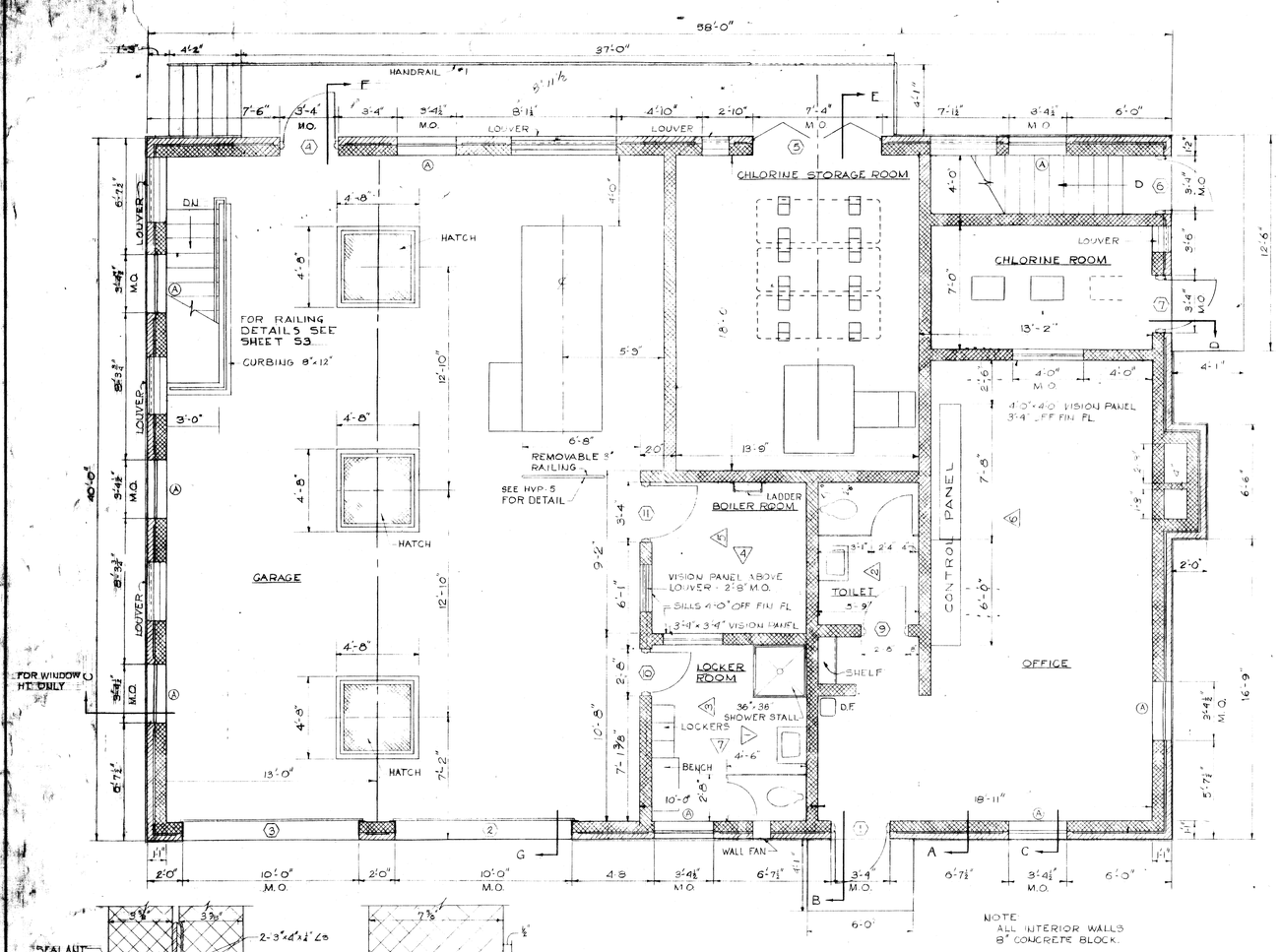
NO.	DESCRIPTION	DATE
	REVISIONS	

STATE OF CONNECTICUT JAMES T. McDONOUGH NO. 6770 REGISTERED PROFESSIONAL ENGINEER

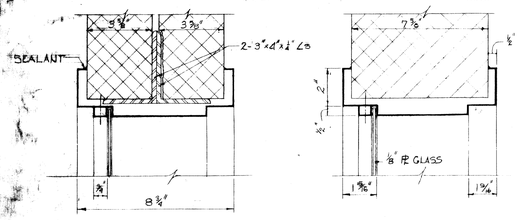
WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY NWD	SCALE 1"=20'	DATE APRIL, 1967
DRAWN BY DFP	APPROVED James T. McDonough	
CHECKED BY DLH	JOB NO. 8-011	SHEET 2 OF 17 SHEETS

W. P. C. - CONN. - 132 CONTRACT



FLOOR PLAN (EL. 78.00)
SCALE: ¼"=1'-0"



HEAD #1
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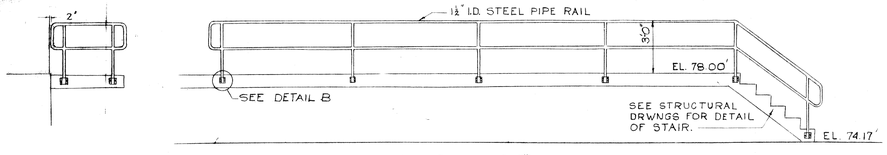
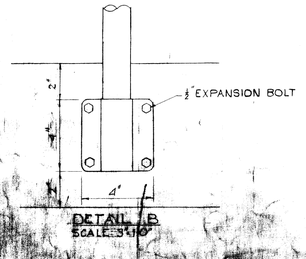
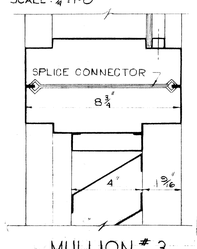
JAMB & SILL #2
SCALE: 3"=1'-0"



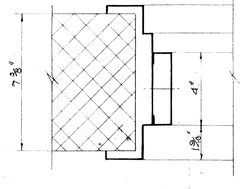


DETAIL B
SCALE: 3"=1'-0"



HANDRAILING #1
SCALE: ½"=1'-0"

MULLION # 3
SCALE: 3"=1'-0"



JAMB & SILL # 4
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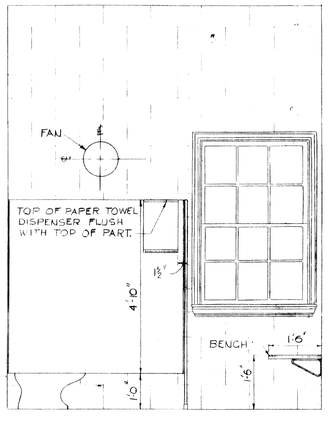

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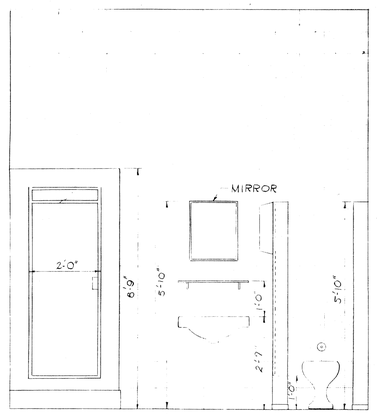

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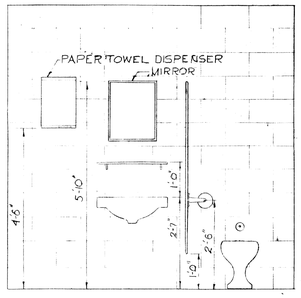

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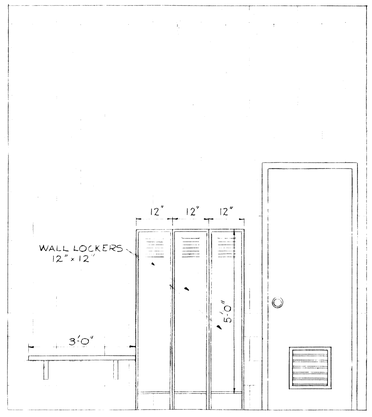

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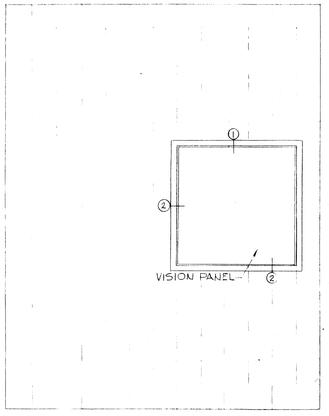

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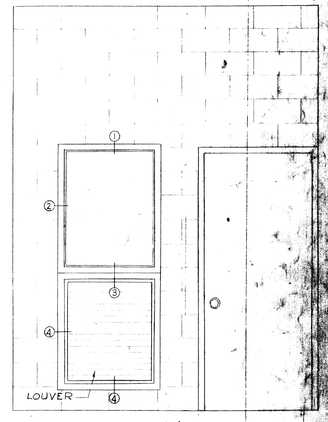

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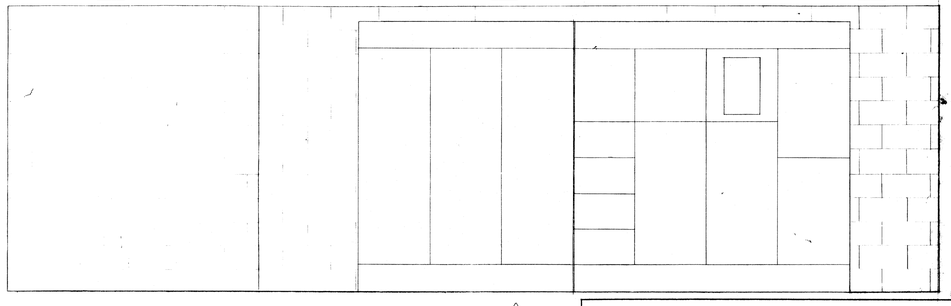


6

INTERIOR ELEVATIONS
SCALE: ½"=1'-0"

RECORD PLAN

A-1

SEWAGE PUMPING STATION
TRUMBULL, CONN.
FIRST FLOOR PLAN AND INTERIOR ELEVATIONS

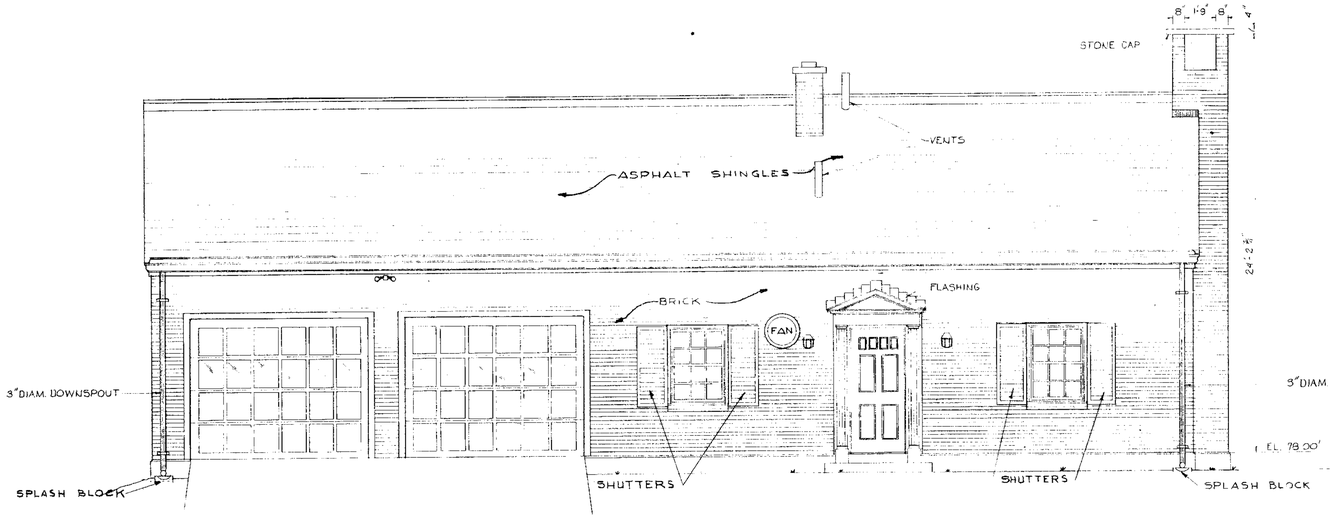
NO.	DESCRIPTION	DATE
	REVISIONS	

STATE OF CONNECTICUT · JAMES T. McDONOUGH · NO. 6776 · REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

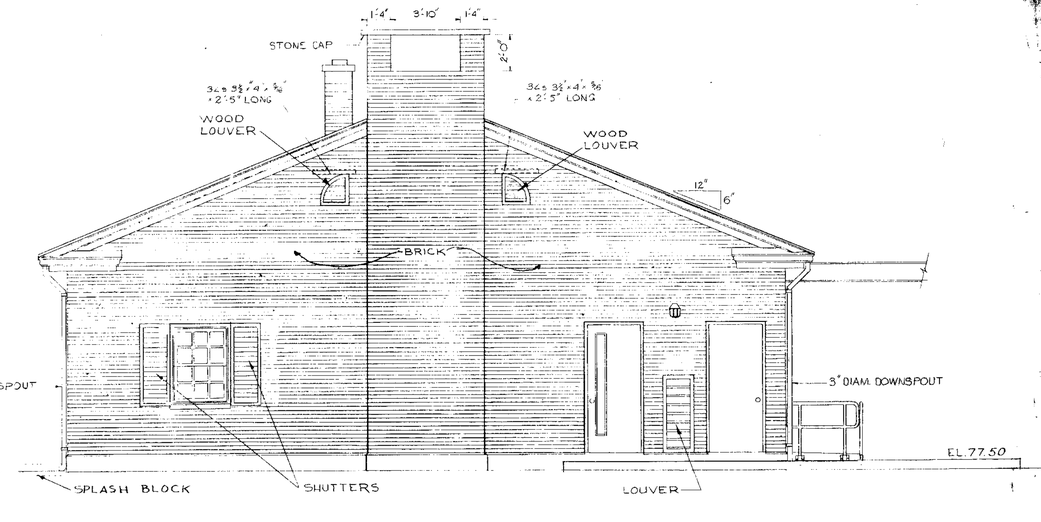
DESIGNED BY A.R.T.	SCALE AS NOTED	DATE APRIL 70
DRAWN BY P.R.	APPROVED	
CHECKED BY G.I.C.	JOB NO. 8-011	SHEET 3 OF 17 SHTS.

W.P.C. CONN. -32 CONTRACT 1



FRONT ELEVATION

SCALE ¼"=1'-0"



RIGHT SIDE ELEVATION

SCALE ¼"=1'-0"

REAR ELEVATION

SCALE ¼"=1'-0"

LEFT SIDE ELEVATION

SCALE ¼"=1'-0"

BOUND COPY

A-2

SEWAGE PUMPING STATION

TRUMBULL, CONN.

ELEVATIONS

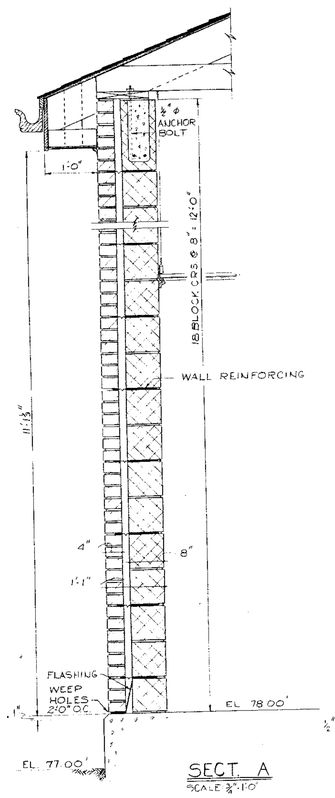
NO.	DESCRIPTION	DATE
1	Added Louvers	11/58

REVISIONS

STATE OF CONNECTICUT JAMES T. MacDONOUGH NO. 6770 REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY A.R.T.	SCALE AS NOTED	DATE APRIL
DRAWN BY A.R.T.	APPROVED	
CHECKED BY G.T.C.	JOB NO. 5-045	SHEET 2 OF 17



SECT A
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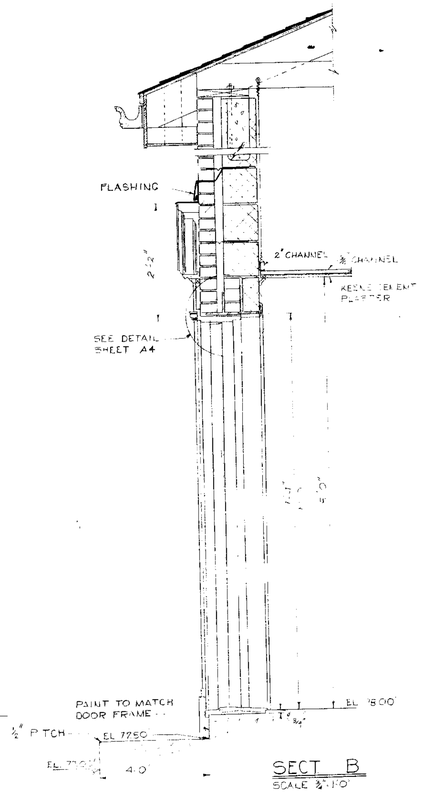
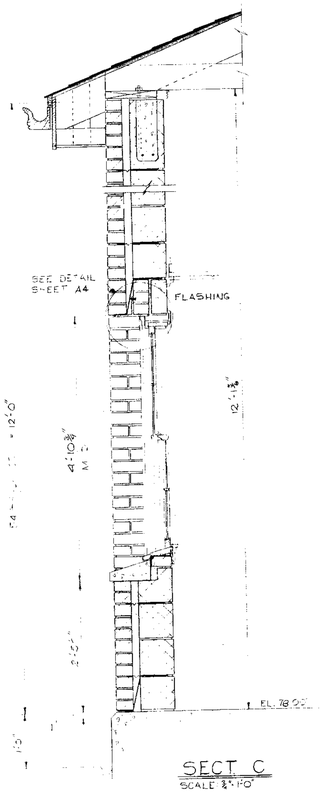


SECT B
SCALE ¾"-1'0"



SECT C
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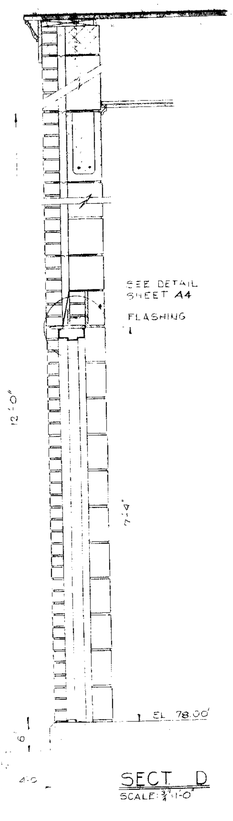

SECT D
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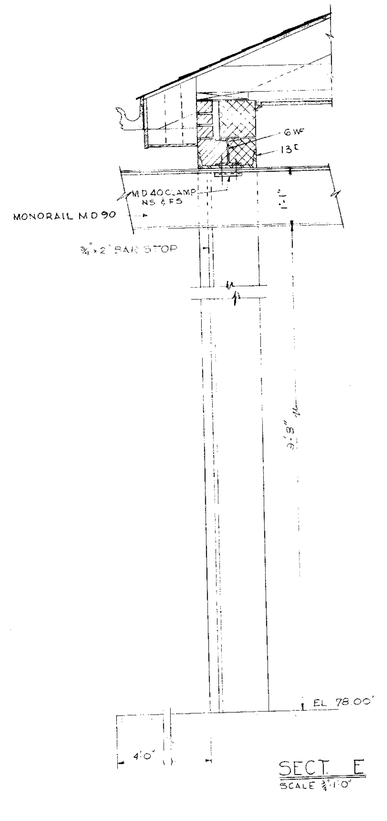

SECT E
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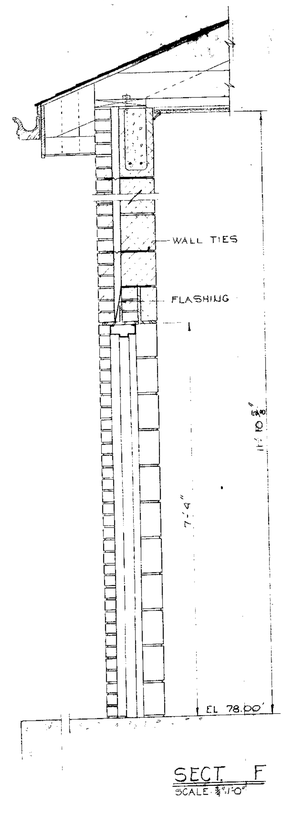

SECT F
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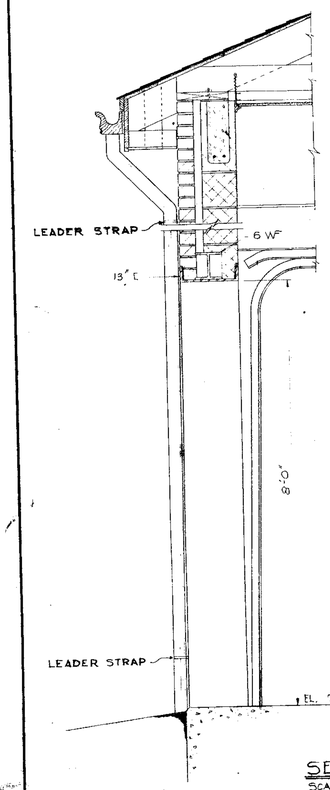
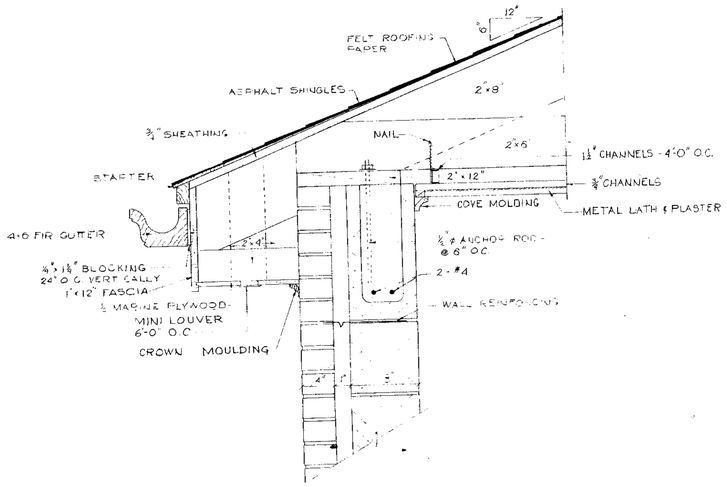


SECT G
SCALE: ¾"-1'0"



EAVE DETAIL
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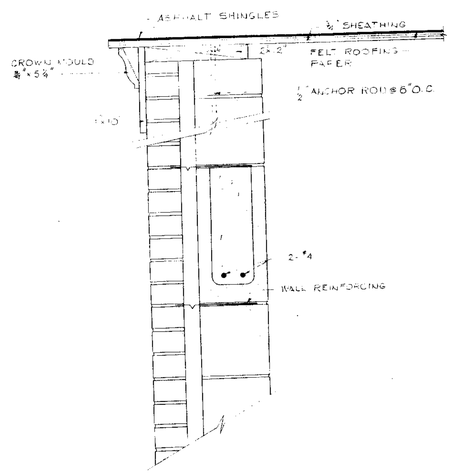

GABLE END DETAIL
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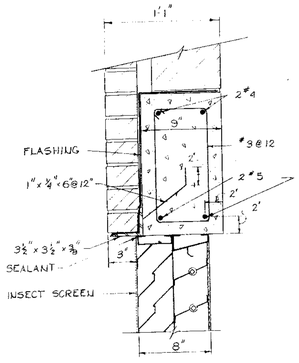


GENERATOR LOUVER DETAIL
SCALE: 1½"-1'-0"

NO.	DESCRIPTION	DATE
	REVISIONS	

A-3

SEWAGE PUMPING STATION

TRUMBULL, CONN.

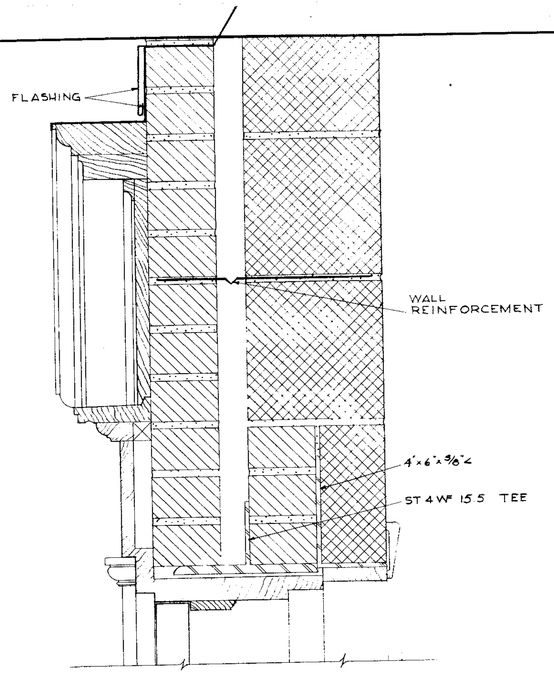
WALL SECTIONS

STATE OF CONNECTICUT JAMES T. McDONOUGH NO. 6770 REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY A.R.T.	SCALE AS NOTED	DATE APRIL '70
DRAWN BY P.R.	APPROVED James T. McDonough	
CHECKED BY G.T.C.	JOB NO. 8-011	SHEET 5 OF 17 SHEETS

W.P.C. - CONN. - 132 CONTRACT



HEAD 1
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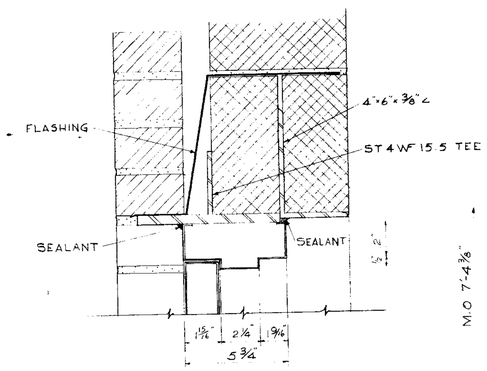

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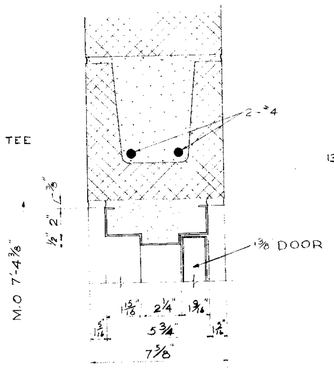

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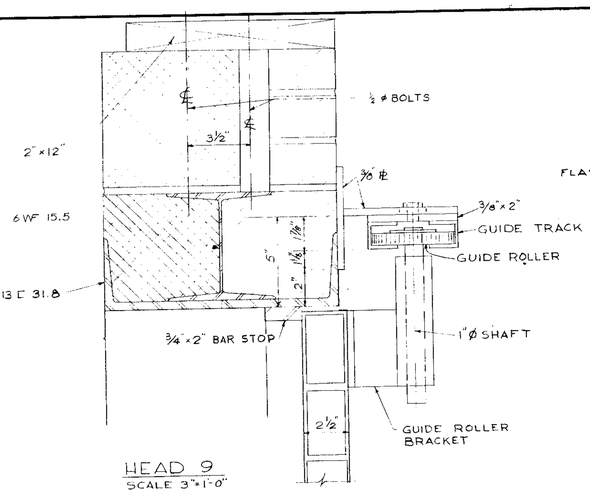

HEAD 9
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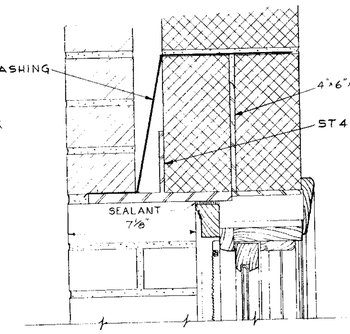

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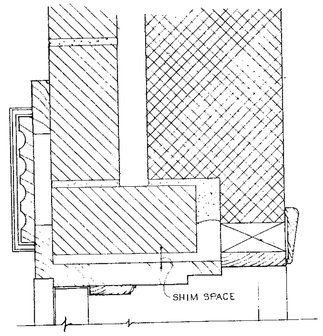
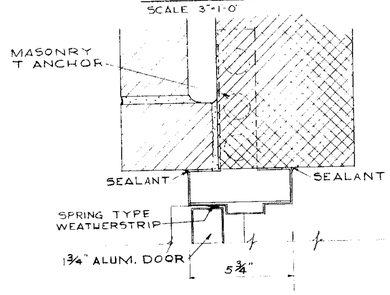
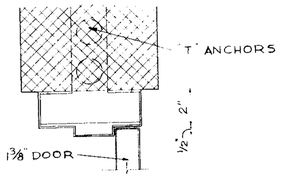


JAMB 2





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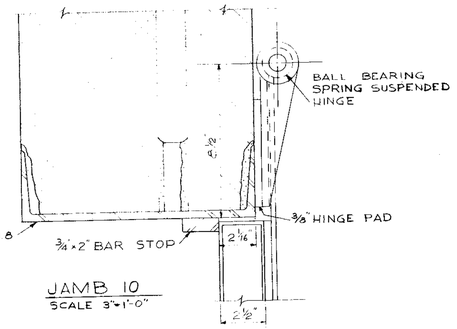

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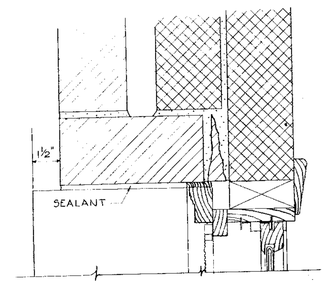

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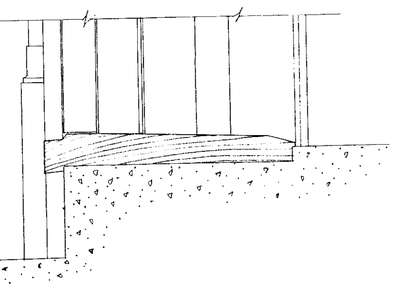

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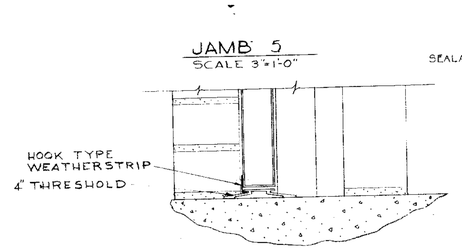

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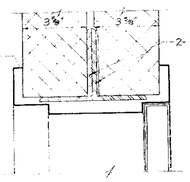
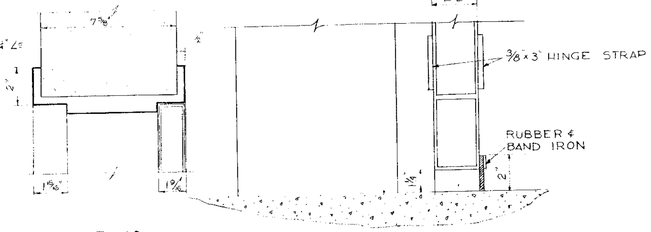
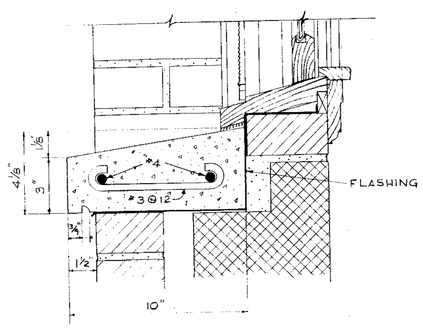


HEAD 17
SCALE 3"=1'-0"



JAMB 18
SCALE 3"=1'-0"

SILL 11
SCALE 3"=1'-0"



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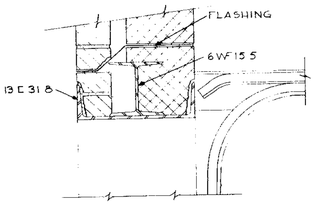

HEAD 15
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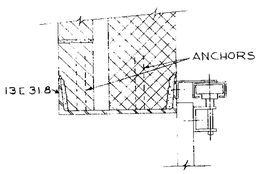
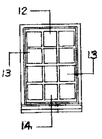


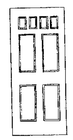
JAMB 16
SCALE 1½"=1'-0"

DOOR SCHEDULE

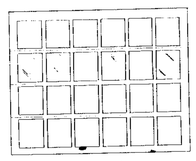
No.	SIZE	TYPE	MATERIAL	FRAME HEAD	FRAME JAMB	FRAME SILL	REMARKS
1	3'-0"x7'-0"x1¾"	A	WOOD	1	2	3	
2	10'-0"x8'-0"x1¾"	B	WOOD	15	16		
3	10'-0"x8'-0"x1¾"	B	WOOD	15	16		
4	3'-0"x7'-2"x1¾"	C	ALUM	4	5	6	
5	7'-4"x10'-9"x2½"	D	ALUM	9	10	11	GLASS LITE 12"x12"
6	3'-0"x7'-2"x1¾"	C	ALUM	4	5	6	
7	3'-0"x7'-2"x1¾"	E	ALUM	4	5	6	GLASS LITE 6"x60"
8	OMIT						
9	2'-4"x6'-8"x1⅜"	F	STEEL	17	18		12"x12" LOUVER
10	2'-4"x6'-8"x1⅜"	F	STEEL	17	18		12"x12" LOUVER
11	3'-0"x7'-2"x1⅜"	G	STEEL	7	8		



WINDOW Ⓐ
SEE PLAN FOR LOCATION

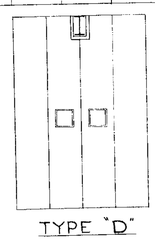


TYPE "A"



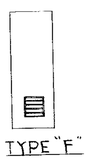
TYPE "B"

TYPE "C"



TYPE "D"

TYPE "E"



TYPE "F"

TYPE "G"

WINDOW DETAILS

NO.	DESCRIPTION	DATE
	REVISIONS	

A-4

SEWAGE PUMPING STATION

TRUMBULL, CONN.

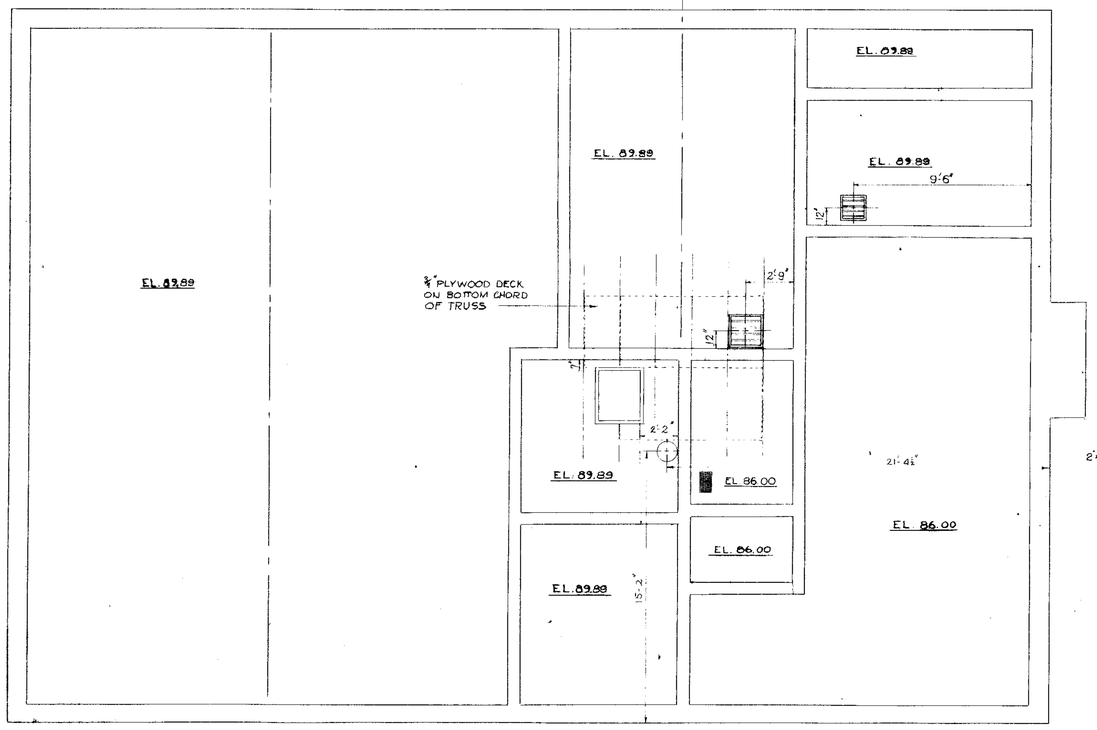
DOOR AND WINDOW DETAILS

STATE OF CONNECTICUT JAMES T. McDONOUGH No. 6770 REGISTERED PROFESSIONAL ENGINEER

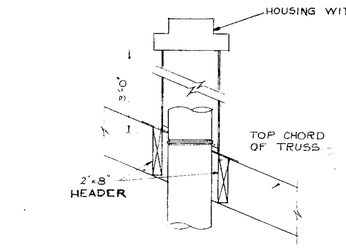
WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

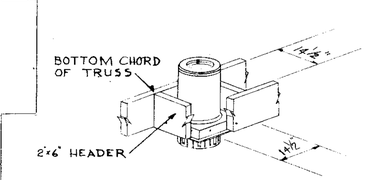
DESIGNED BY A.R.T.	SCALE AS NOTED	DATE APRIL 70	
DRAWN BY A.R.T.	APPROVED James T. McDonough		
CHECKED BY G.T.C.	JOB NO. 8-011	SHEET 6 OF 17 SHEETS	

W.P.C. - CONN. - 132 CONTRACT

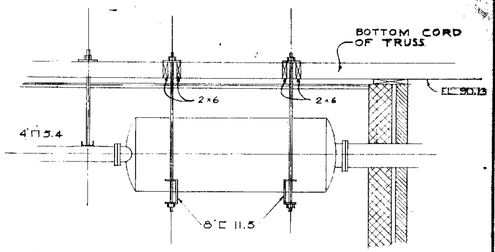


REFLECTED CEILING PLAN
SCALE: ¼"=1'-0"

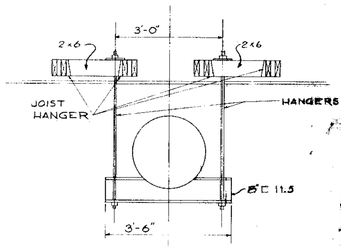




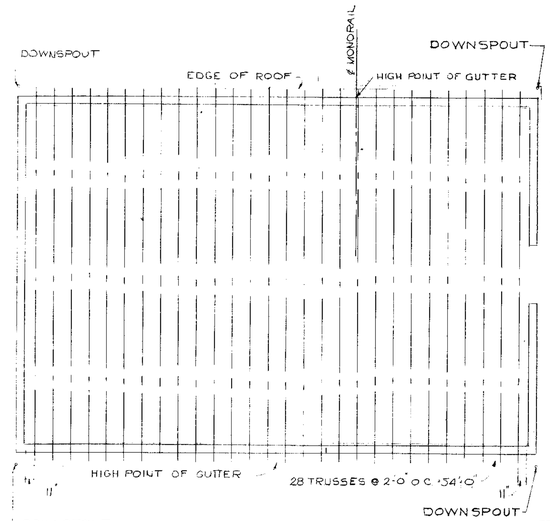
STARTER & SUPPORT ASSEMBLY



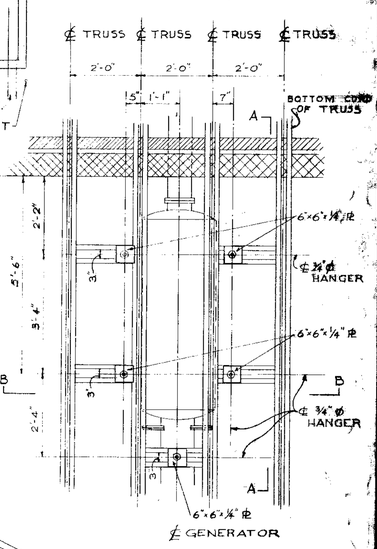
SECTION A-A
SCALE ½"=1'-0"

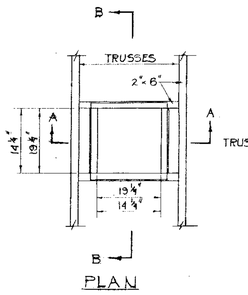


SECTION B-B
SCALE ½"=1'-0"

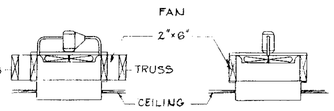


ROOF FRAMING PLAN
SCALE: ⅛"=1'-0"



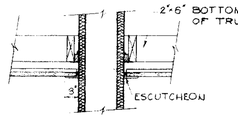


PLAN

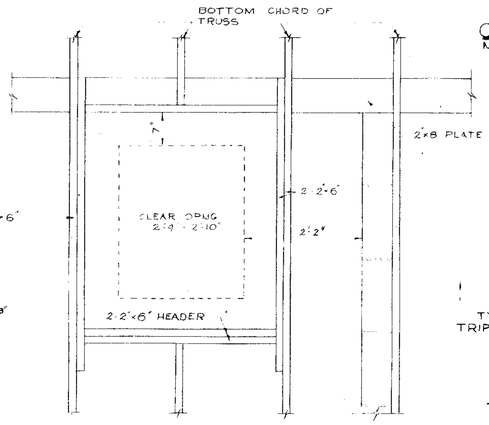


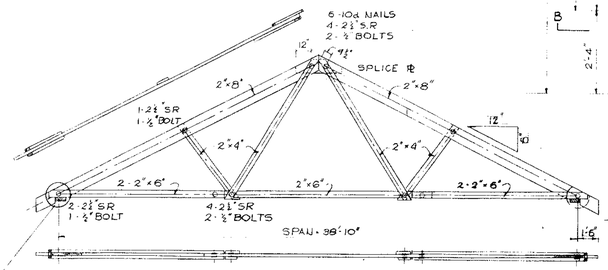
SECTION A-A

SECTION B-B



CHIMNEY DETAIL
NO SCALE

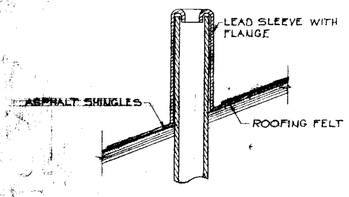




DETAIL of TYPICAL TRUSS
NO SCALE

SILENCER SUPPORT DETAIL
SCALE ½"=1'-0"

CEILING FAN DETAILS
SCALE: ¾"=1'-0"



VENT PIPE DETAIL
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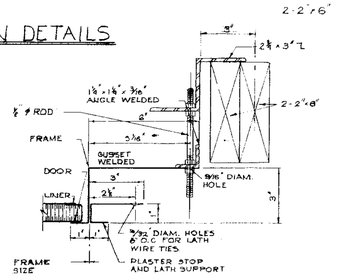
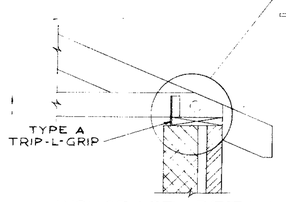


HATCH DETAIL
SCALE: 3"=1'-0"



ANCHORAGE DETAIL

CEILING FRAMING DETAIL FOR HATCH
SCALE: ¾"=1'-0"

RECORD PLAN

A-5

SEWAGE PUMPING STATION

TRUMBULL, CONN.

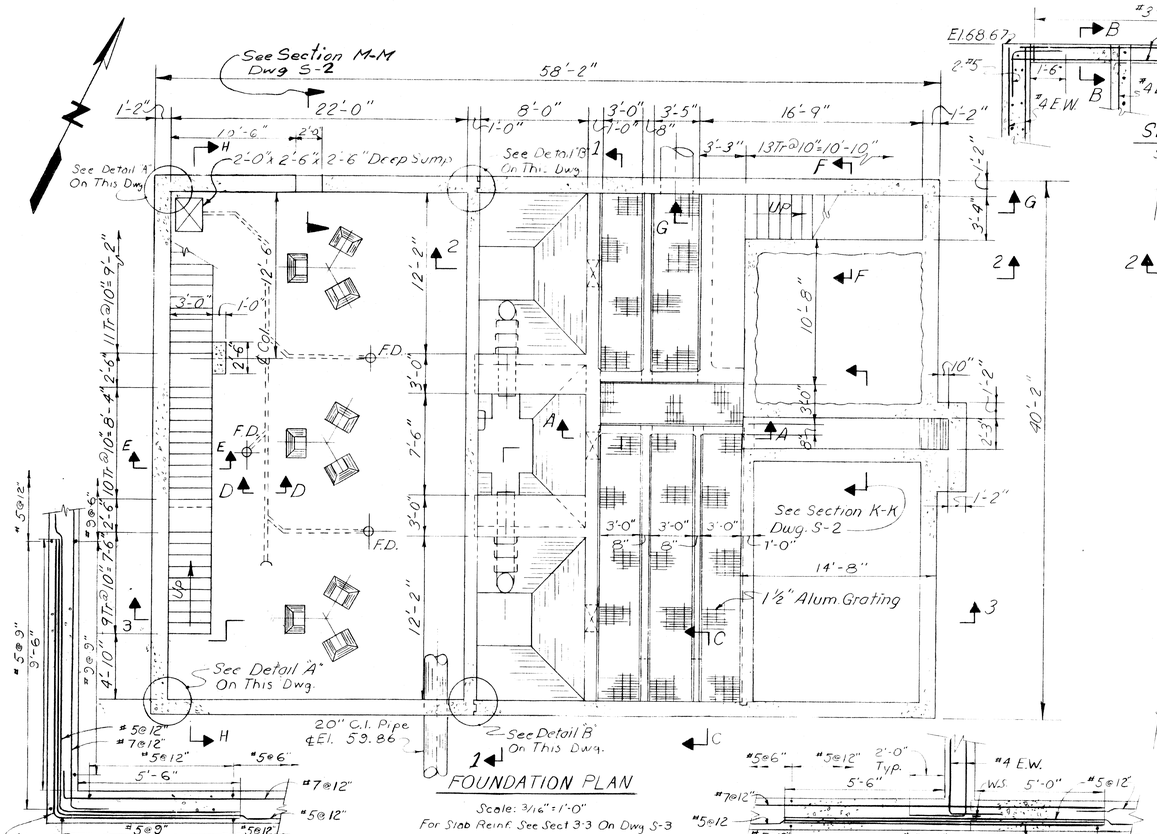
ROOF FRAMING AND MISC DETAILS

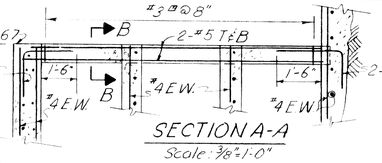
NO.	DESCRIPTION	DATE
	REVISIONS	

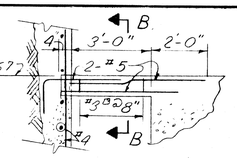
STATE OF CONNECTICUT — JAMES T. McDONOUGH — NO. 6770 — REGISTERED PROFESSIONAL ENGINEER

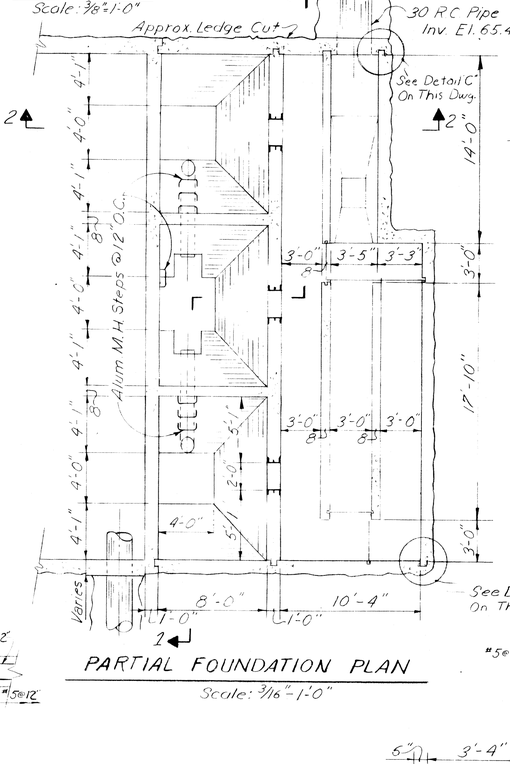
WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

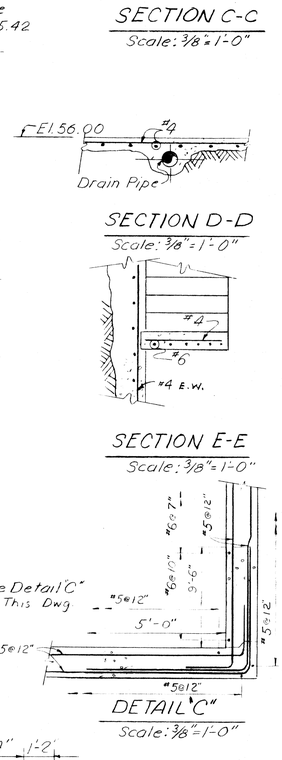
DESIGNED BY A.R.T.	SCALE AS NOTED	DATE APRIL 20
DRAWN BY P.R.	APPROVED James T. McDonough	
CHECKED BY G.T.C	JOB NO. 8-01	SHEET 7 OF 17

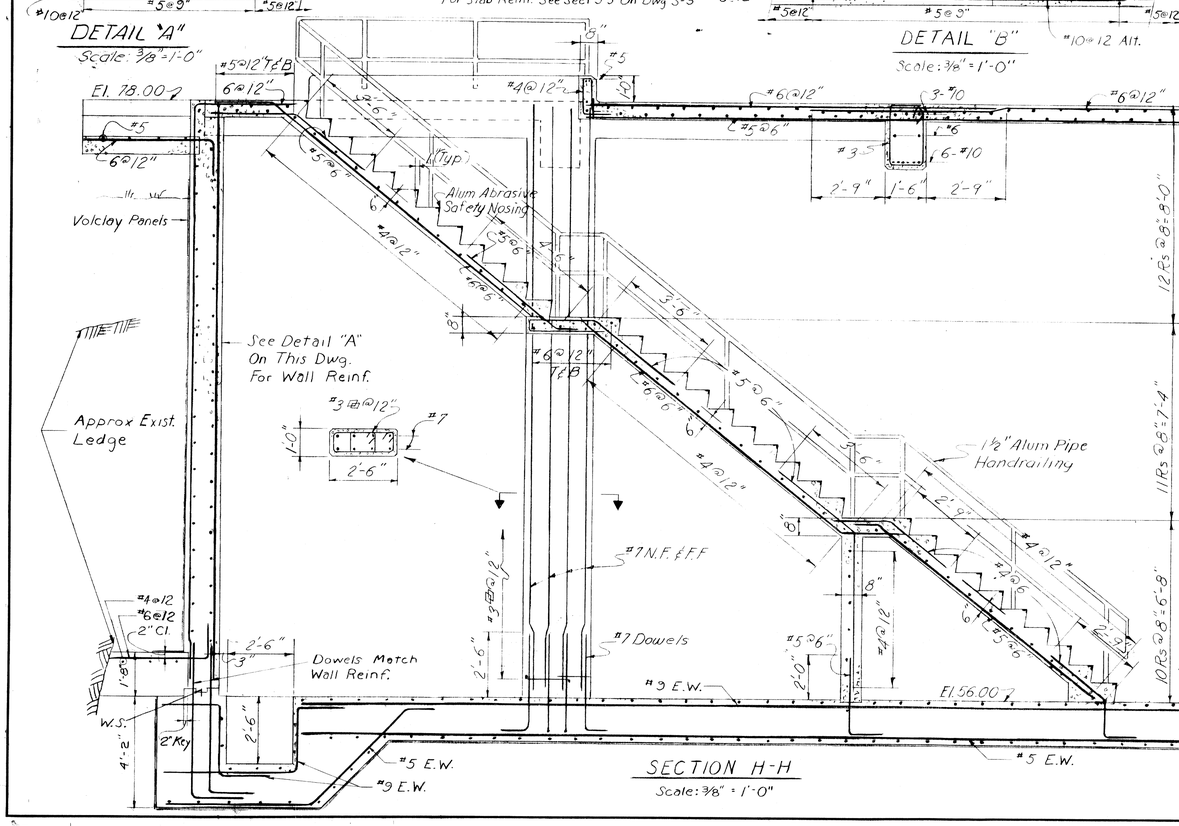


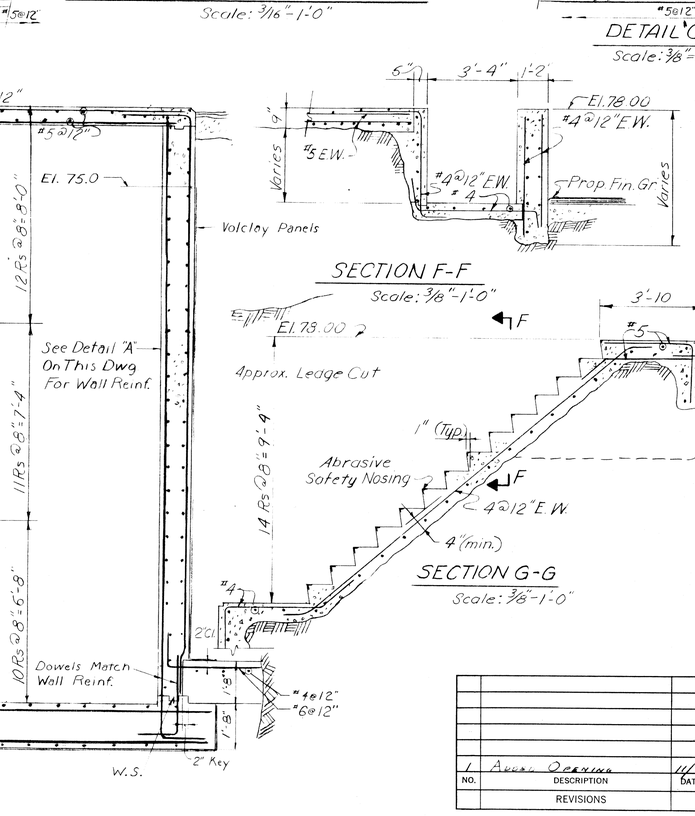












GENERAL NOTES

1. These notes shall apply to concrete and steel throughout the structure, as applicable.

2. Structural drawings shall be used in conjunction with Architectural, Mechanical, Electrical, Plumbing, Heating & Ventilating drawings and Specifications and drawings shall be referred to for size and location of openings for Vents, Pipes, Ducts, etc.

3. It is assumed that the structure shall bear on ledge. The excavation of ledge shall be cut level, stepped or serrated as directed by the Engineers. All loose material shall be removed and all seams shall be cleaned and filled with concrete or grout.

4. Concrete slab poured on earth shall have a vapor barrier to be placed in the largest practical sheets. Vapor barrier to be 4 mil. "Ioistop" as manufactured by American Sisalkraft Corp. or approved Equal.

5. All structural concrete shall have a minimum 28-day compressive strength of 3000 p.s.i.

6. Reinforcing steel shall comply w/A.S.T.M. A-615 Grade 40. Reinforcing splices shall be a minimum of 30 bar diameters, except as noted on the plans, and shall conform to the provisions of ACI 318.63, except as to minimum lap. Reinforcement cover shall comply with the specifications unless otherwise noted on the drawings.

7. Construction joints, in walls and slabs, shall be keyed and shall be approximately 30'-0" apart maximum in either direction.

8. Water stops are not necessarily shown at every joint detail; but where they are shown it is intended that they be complete and continuous throughout that particular structure to the elevations specified.

9. It is not intended that structural steel anchors shall come in contact with non-ferrous metal. In case this occurs, the steel shall be covered with a heavy coating of alkali-resistant bituminous paint at the point of contact.

10. All exterior surfaces of concrete foundation walls shall be damp-proofed from top of ledge to 6" below finished grade.

11. Provide additional steel in both faces around all openings with a dimension greater than 12". Steel shall be equal in diameter to the largest bar in the face concerned, having a minimum size of #5 unless otherwise noted on the drawings.

12. Provide pipe sleeves at all pipe locations indicated on the drawings.

13. Granular backfill on all sides of the structure shall be placed and compacted simultaneously.

14. Provide all necessary chairs, chair bars, Spacers, etc., wired securely to hold reinforcing in position. These Accessories shall be plastic booted where Concrete is to be Exposed.

15. Before depositing concrete on or against ledge the surface of ledge shall be thoroughly cleaned with wire brushes, air blasted, and then saturated with water. The surface of ledge shall be slushed with a coating of cement grout against which the concrete shall be placed before the grout has attained its initial set.

REFERENCE NOTES:

1. For location of structure see Dwg. ST-1
2. For reference Dwgs see Index ___ Sh. 1
3. For numbered sections see Dwg. S-3

S-1

SEWAGE PUMPING STATION

TRUMBULL, CONN.

FOUNDATION PLAN, SECTIONS, & DETAILS

NO.	DESCRIPTION	DATE
1	Addn. Ordered	11/70
	REVISIONS	

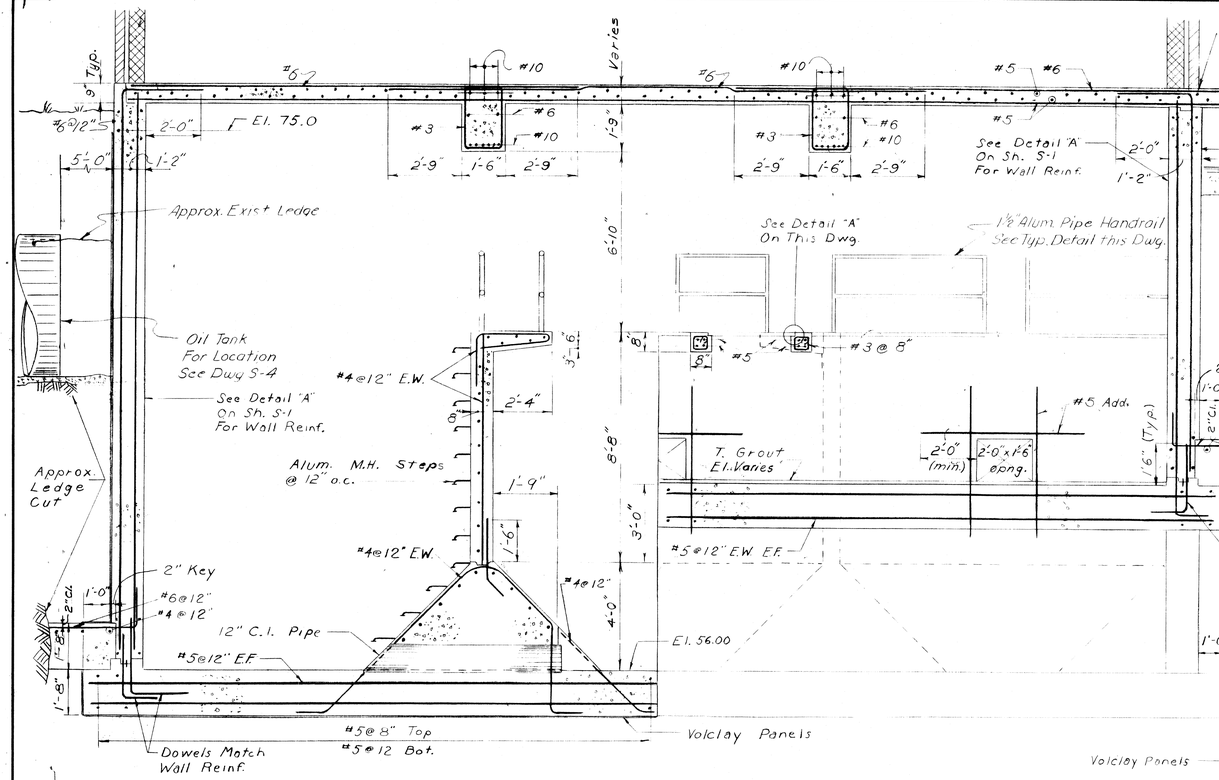
STATE OF CONNECTICUT — JAMES T. McDONOUGH — NO. 6776 — REGISTERED PROFESSIONAL ENGINEER

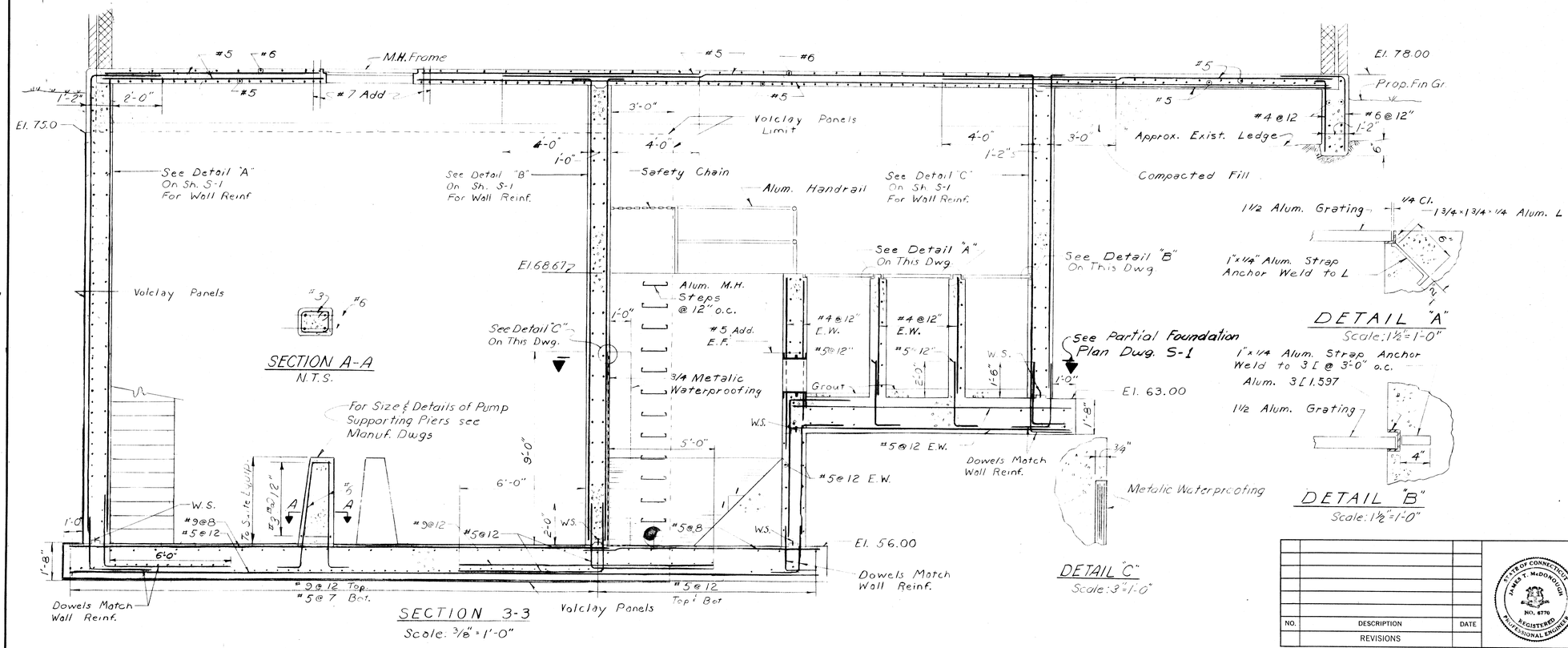
STATE OF CONNECTICUT — REGISTERED PROFESSIONAL ENGINEER — No. 7846

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY Z.G.	SCALE AS NOTED	DATE APRIL, 1970
DRAWN BY R.S.	APPROVED A. Chiaravalotti	
CHECKED BY Z.G.	JOB NO. 8-011	SHEET 8 OF 17 SHEETS

W.P.C. - CONN. - 132 CONTRACT No. 16





NOTES:
1. For General Notes & Reference Dwgs see Dwg S-1
2. For Location of Numbered Sections see Dwg S-1 & S-2

S-3

SEWAGE PUMPING STATION

TRUMBULL, CONN.

SECTIONS AND DETAILS

NO.	DESCRIPTION	DATE
	REVISIONS	

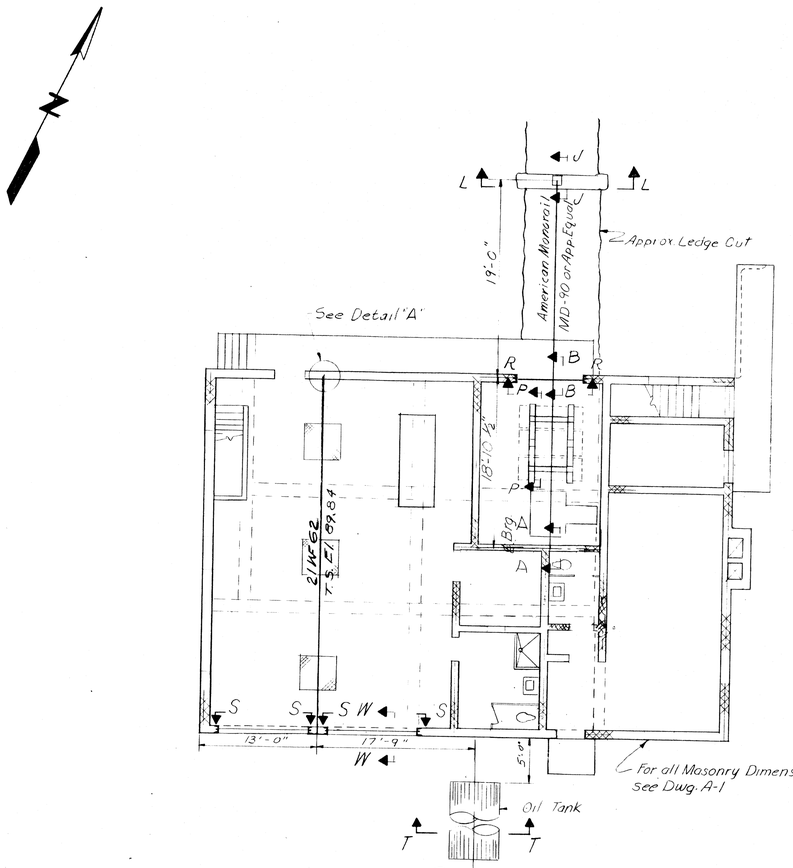
STATE OF CONNECTICUT JAMES T. McDONOUGH No. 6770 REGISTERED PROFESSIONAL ENGINEER

STATE OF CONNECTICUT ANTHONY CHIARAVALLOTTI No. 7611 REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

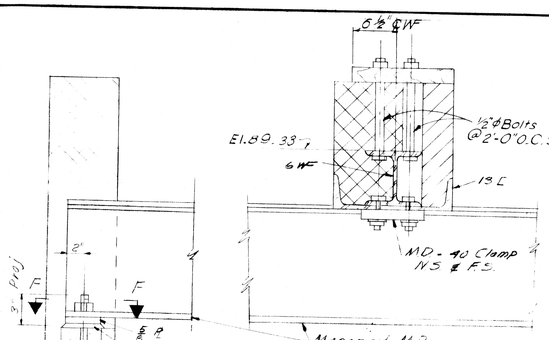
DESIGNED BY Z.G.	SCALE AS NOTED	DATE APRIL, 1970	
DRAWN BY B.T.	APPROVED A. Chiaravalloti		
CHECKED BY Z.G.	JOB NO. 8-011	SHEET 10 OF 17 SHEETS	

W.P.C. - CONN. -132 CONTRACT № 6



PLAN

Scale: 3/16"=1'-0"

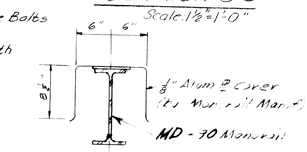


SECTION A-A

Scale: 1½"=1'-0"

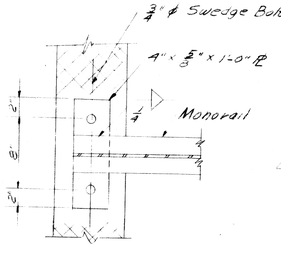
SECTION B-B

Scale: 1½"=1'-0"



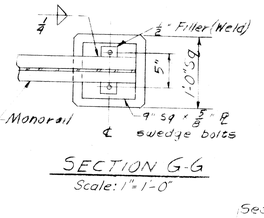
SECTION D-D

Scale: 1"=1'-0"



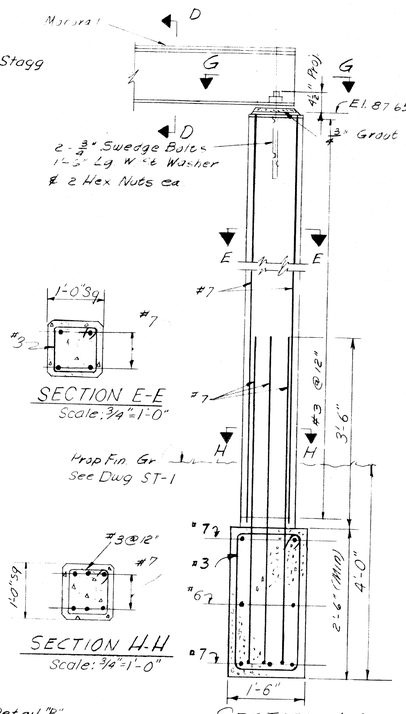
SECTION F-F

Scale: 1½"=1'-0"



SECTION G-G

Scale: 1"=1'-0"



SECTION E-E

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

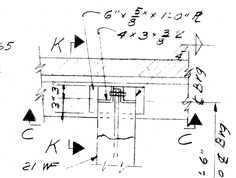
Prop Fin. Gr
see Dwg. ST-1

SECTION H-H

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

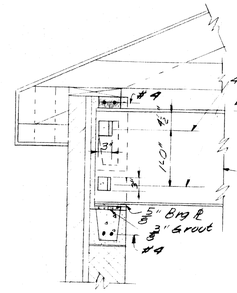
SECTION J-J

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



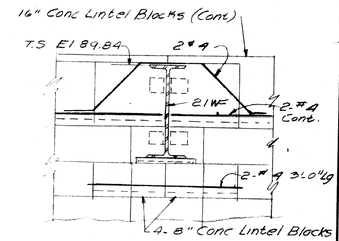
DETAIL "A"

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



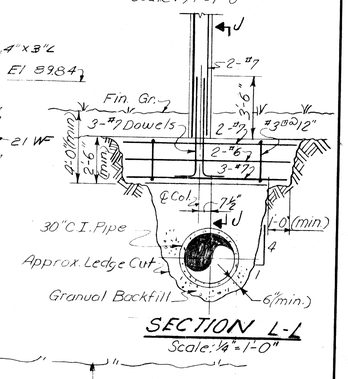
SECTION K-K

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



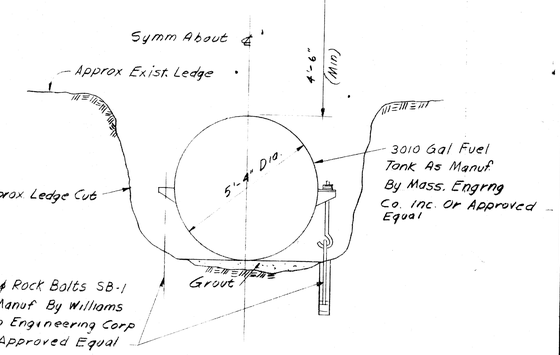
SECTION C-C

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



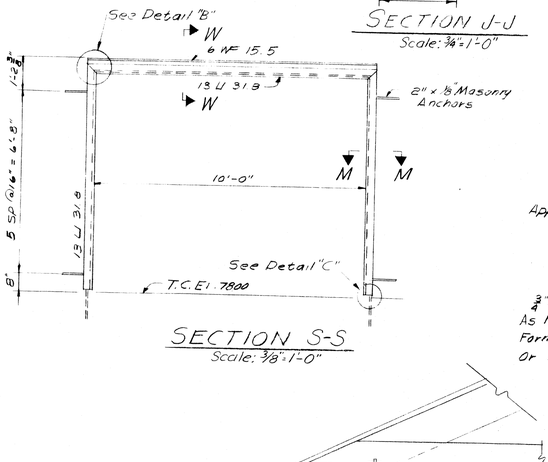
SECTION L-L

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



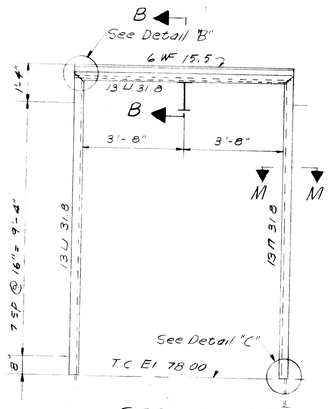
SECTION T-T

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



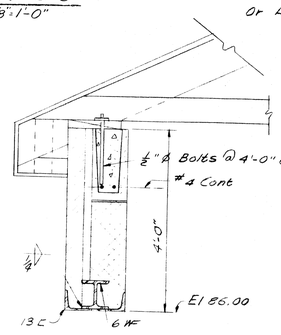
SECTION S-S

Scale: 3/16"=1'-0"



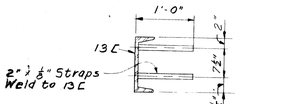
SECTION R-R

Scale: 3/16"=1'-0"



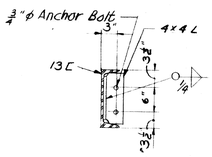
SECTION - W-W

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



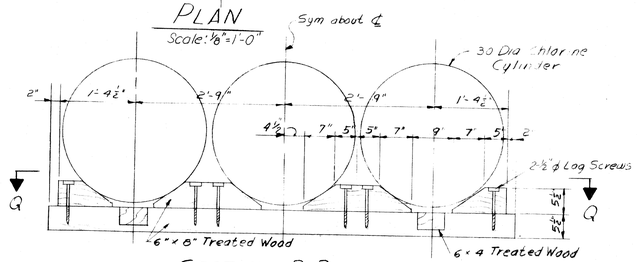
SECTION M-M

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



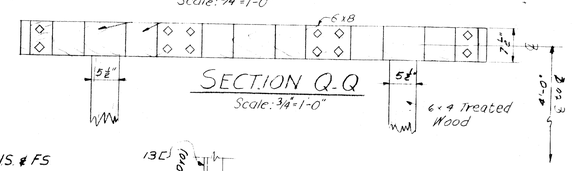
SECTION N-N

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



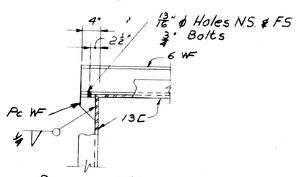
SECTION P-P

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



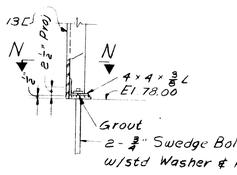
SECTION Q-Q

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



DETAIL "B"

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



DETAIL "C"

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

NOTE:

1. For General Notes & Reference Dwgs: see Dwg. S-1

S-4

SEWAGE PUMPING STATION

TRUMBULL, CONN.

PLAN, SECTIONS, & DETAILS

NO.	DESCRIPTION	DATE
	REVISIONS	

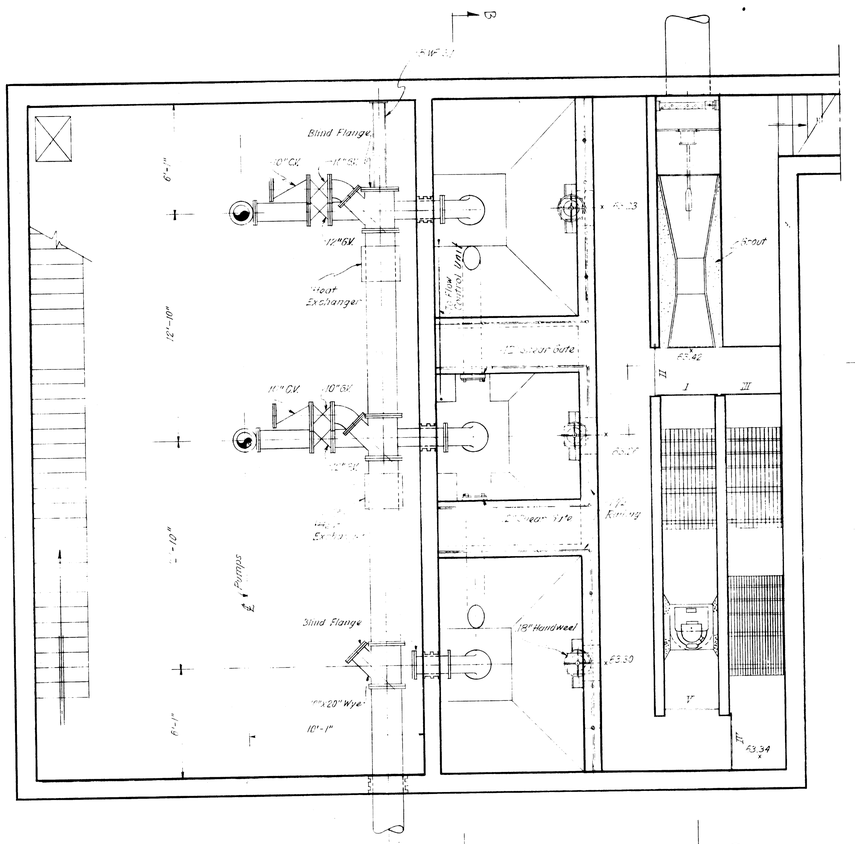
STATE OF CONNECTICUT JAMES T. McDONOUGH NO. 8770 REGISTERED PROFESSIONAL ENGINEER

STATE OF CONNECTICUT ANTHONY CHIARAVALLOTTI No. 7845 REGISTERED PROFESSIONAL ENGINEER

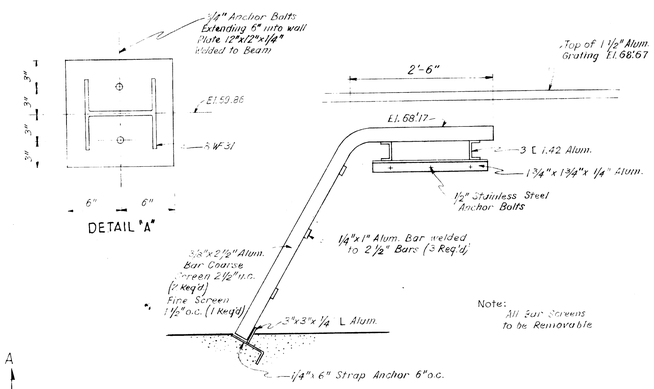
WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY Z.G.	SCALE AS NOTED	DATE: APRIL, 1970
DRAWN BY R.J.P.	APPROVED A. Chiaravalloti	
CHECKED BY Z G	JOB NO. 8-011	SHEET 11 OF 17 SHEETS

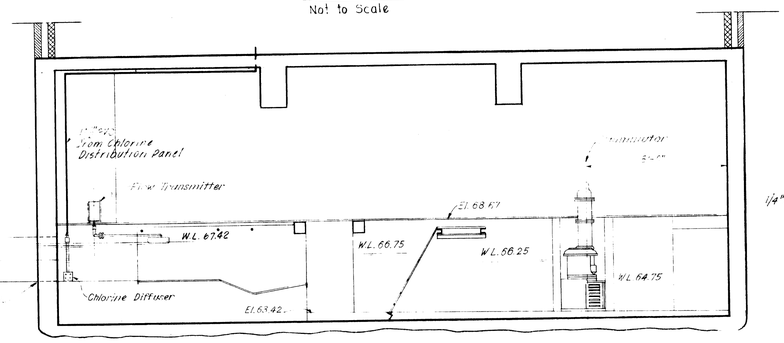
W.P.C. - CONN. -132 CONTRACT Nº 16



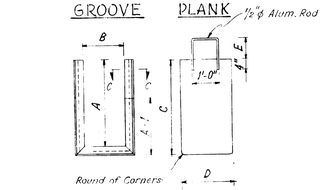
PLAN OF BASEMENT AND HEADWORKS
Scale 1/4" = 1'-0"



BAR SCREEN
Not to Scale

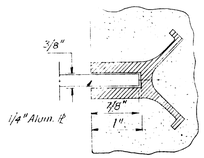


SECTION C-C
Scale 1/4" = 1'-0"

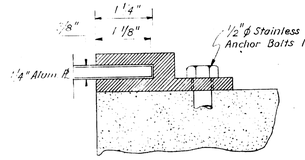


STOP PLANK SCHEDULE

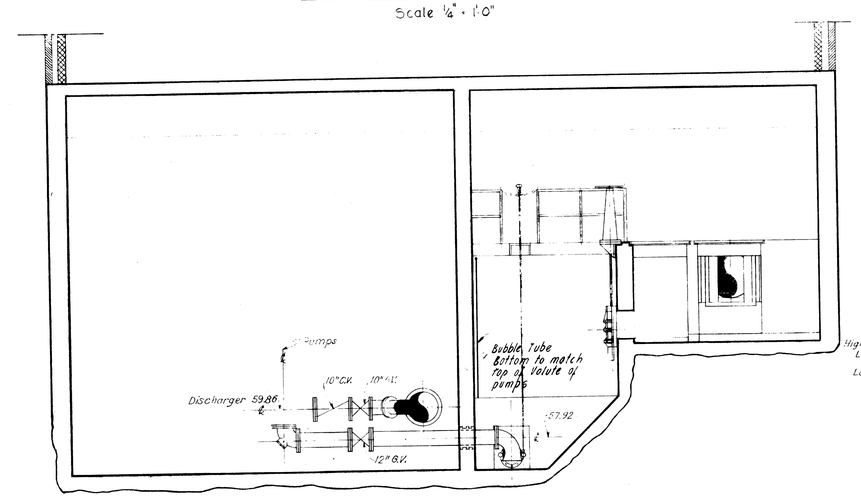
No.	Type	A	A-1	B	C	D	E
I	W-1	5'-1"	—	3'-0"	4'-7"	3'-2¼"	6"
II	T-1	5'-1"	—	3'-0"	4'-7"	3'-1¾"	6"
III	T-1 & W-1	5'-1"	10'-1"	3'-0"	4'-7"	3'-2"	6"
IV	T-1 & W-1	5'-2"	9'-8"	3'-0"	4'-1"	3'-2"	1'-0"
V	T-1	5'-2"	—	3'-0"	4'-1"	3'-1¾"	1'-0"



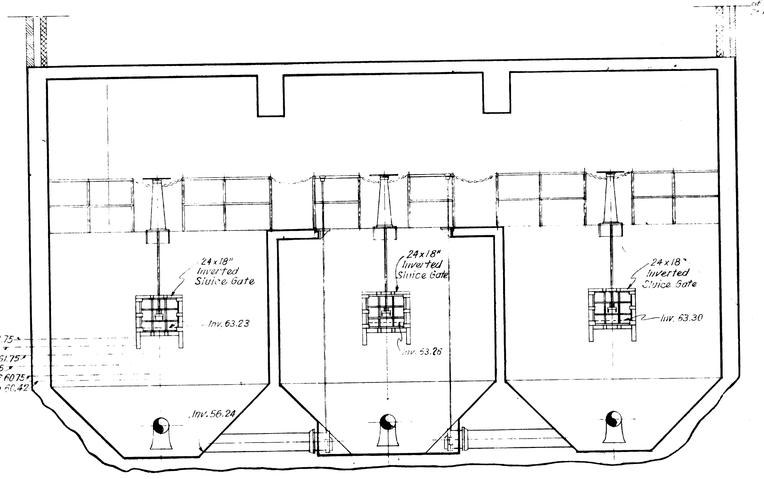
TYPE-T-1
SECTION C-C
Not to Scale



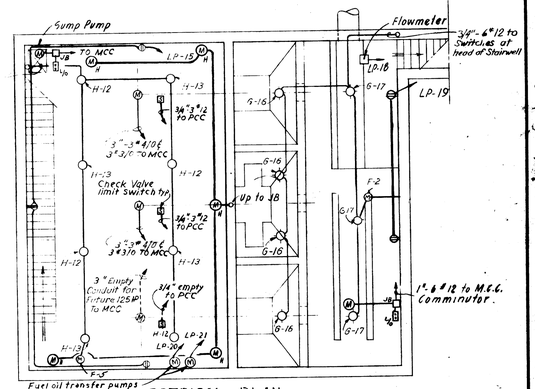
TYPE-W-1
SECTION C-C
Not to Scale



SECTION A-A
Scale 1/4" = 1'-0"



SECTION B-B
Scale 1/4" = 1'-0"



ELECTRICAL PLAN
BASEMENT AND HEADWORKS
Scale 1/8" = 1'-0"
See Sheet 18 for Legend

M-1

SEWAGE PUMPING STATION
TRUMBULL, CONN.
MECHANICAL PLAN AND DETAILS

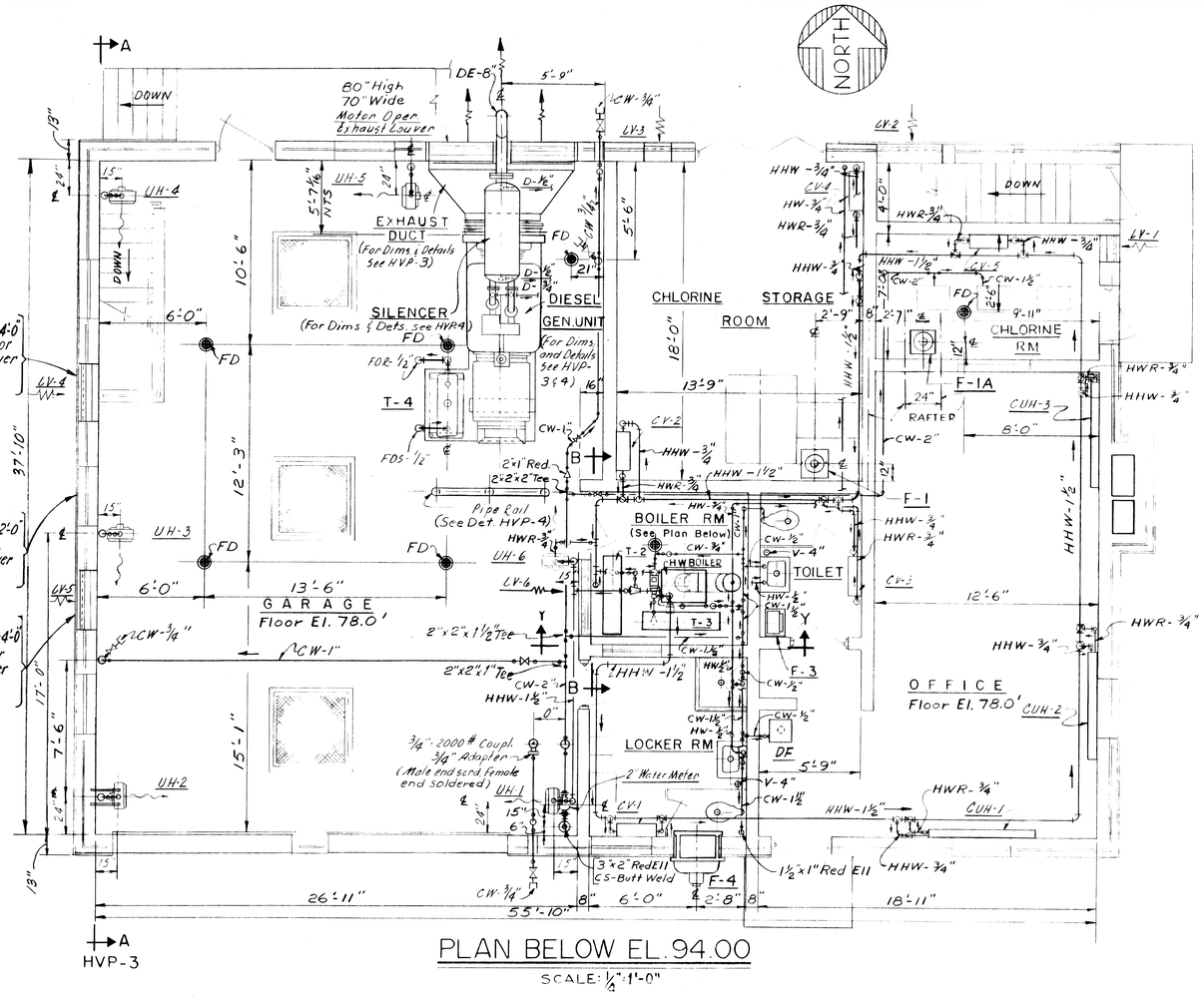
NO.	DESCRIPTION	DATE
1	Added Fan Motor	11/70
	REVISIONS	

STATE OF CONNECTICUT JAMES T. McDONOUGH NO. 6770 REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY G.D.G.	SCALE AS SHOWN	DATE APRIL 1970
DRAWN BY V.P.A.	APPROVED James T. McDonough	
CHECKED BY G.D.G.	JOB NO. 8-011	SHEET 12 OF 17 SHEETS

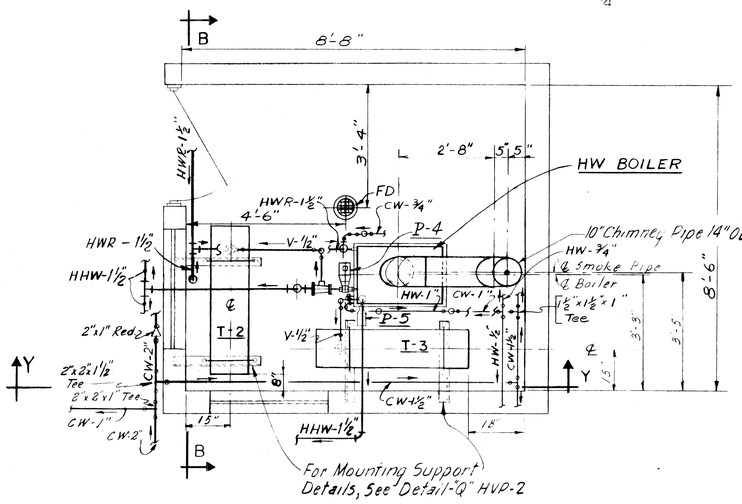
W.P.C. - CONN. -132 CONTRACT NO.



A
HVP-3

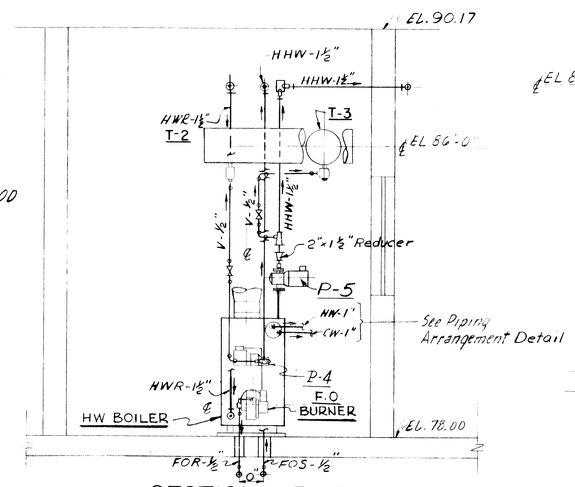
PLAN BELOW EL. 94.00

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



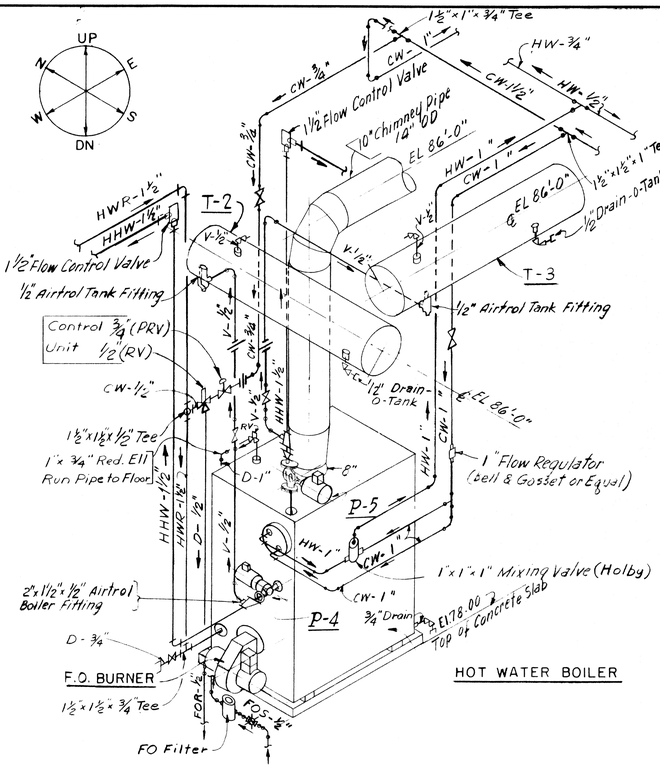
PLAN - BOILER ROOM

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



SECTION B - B

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



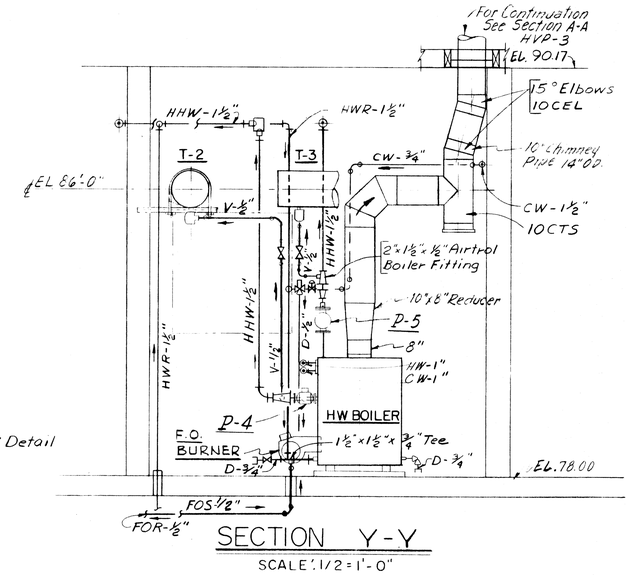
PIPING ARRG'T AT HOT WATER BOILER

LEGEND:

- PRESSURE REDUCING VALVE (PRV)
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- FIRE SAFETY VALVE
- RELIEF VALVE (RV)
- MONOFLOW TEE — Install in 1½" HHW loops for return piping from HW - Heating Equipt.
- ANGLE VALVE
- CO — CLEAN OUT
- FD — FLOOR DRAIN
- V — VENT PIPING
- D — DRAIN PIPING
- CW — CITY WATER
- HW — HOT WATER
- HHW — HOT HEATING WATER
- HWR — HOT WATER RETURN
- FOS — FUEL OIL SUPPLY PIPING
- FOR — FUEL OIL RETURN PIPING
- DE — DIESEL ENGINE EXHAUST
- P — PUMP
- T — TANK
- UH — UNIT HEATER
- CUH — CABINET UNIT HEATER
- CV — HEAT CONVECTOR
- PI — PRESSURE INDICATOR
- LI — LEVEL INDICATOR
- DF — DRINKING FOUNTAIN
- F — FAN
- LV — INTAKE LOUVER
- E — EXHAUST DUCT
- INSTRUMENT LINES

NOTES:

1- All Piping 1½" and below is shown diagrammatically, run to suit Field conditions.
2 Cast Iron Drain Pipe elevations are Invert elevations.
3 Piping Symbols are in accordance with the "ANS" Graphical Symbols for Fittings, Valves & Piping.
4 Install ½" Vents in high points of Pipe Lines & ¾" Drains in low points of Piping, Vents and Drains are not shown on plans and shall be the responsibility of the Contractor.
5 All Pipe Thread Connections should be made by Teflon Tape applied to the Male Threads.
6 Sufficient Unions shall be provided in all screwed and soldered lines, to allow easy removal of Piping or Equipment
7 Install Sleeves 4" above floor at vertical penetrations of Ducts and Piping thru floor and platforms
8 All Underground Piping shall be Tarcoated or Saran wrapped.
9 For wall & ceiling bracket arrangement of Unit Heaters, see Mfg's Info. Sheet. Bottom EL. of UH. shall be 8'-0" above finished floor, except as noted.



SECTION Y-Y

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

HVP-1

SEWAGE PUMPING STATION

TRUMBULL, CONN.

HEATING, VENTILATING & PLUMBING PLANS, SECTIONS & DETAILS

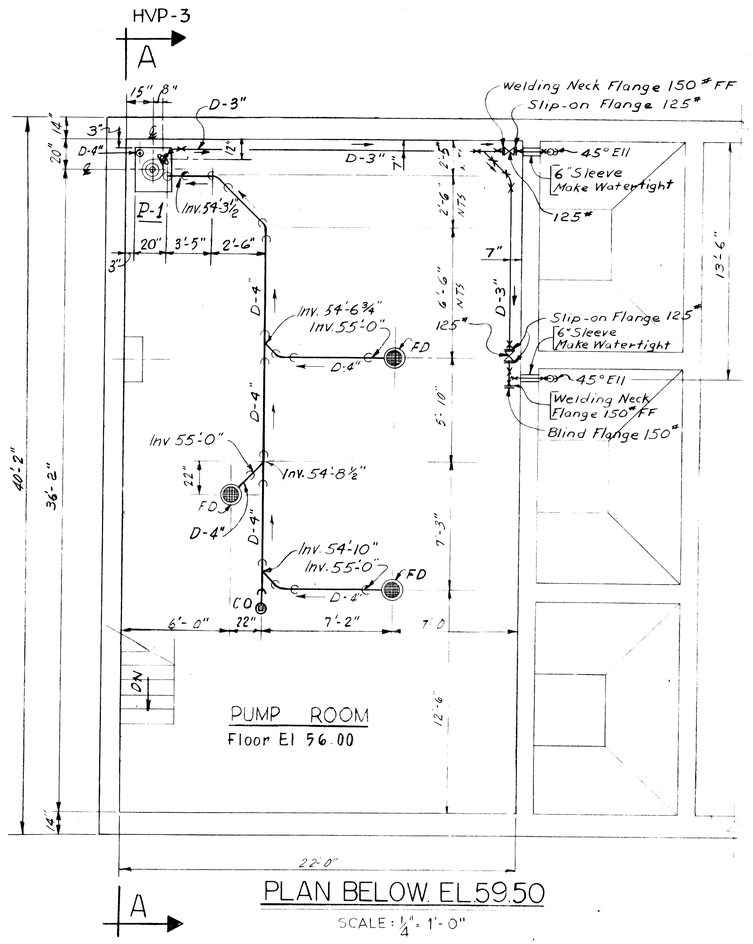
NO.	DESCRIPTION	DATE
2	Add HW Service, Wet Well	12/70
1	Add CW Service & FD, Chlorine Rm	12/70
	REVISIONS	

STATE OF CONNECTICUT JAMES T. McDONOUGH NO. 6770 REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

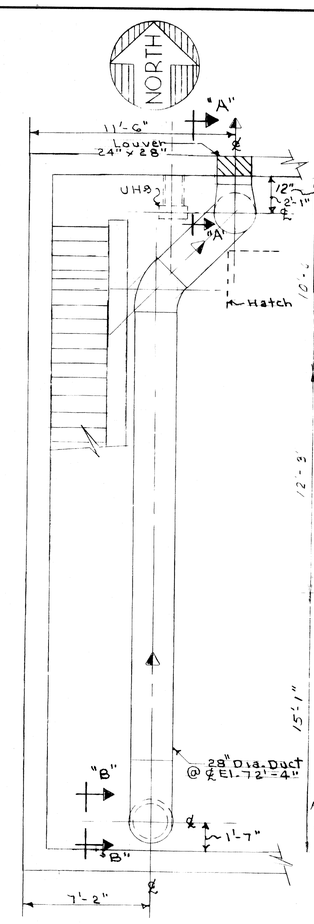
DESIGNED BY H.B.	SCALE AS SHOWN	DATE APRIL 1970	
DRAWN BY F.S.D.	APPROVED James T. McDonough		
CHECKED BY H.B.	JOB NO. 8-011	SHEET 13 OF 17 SHEETS	

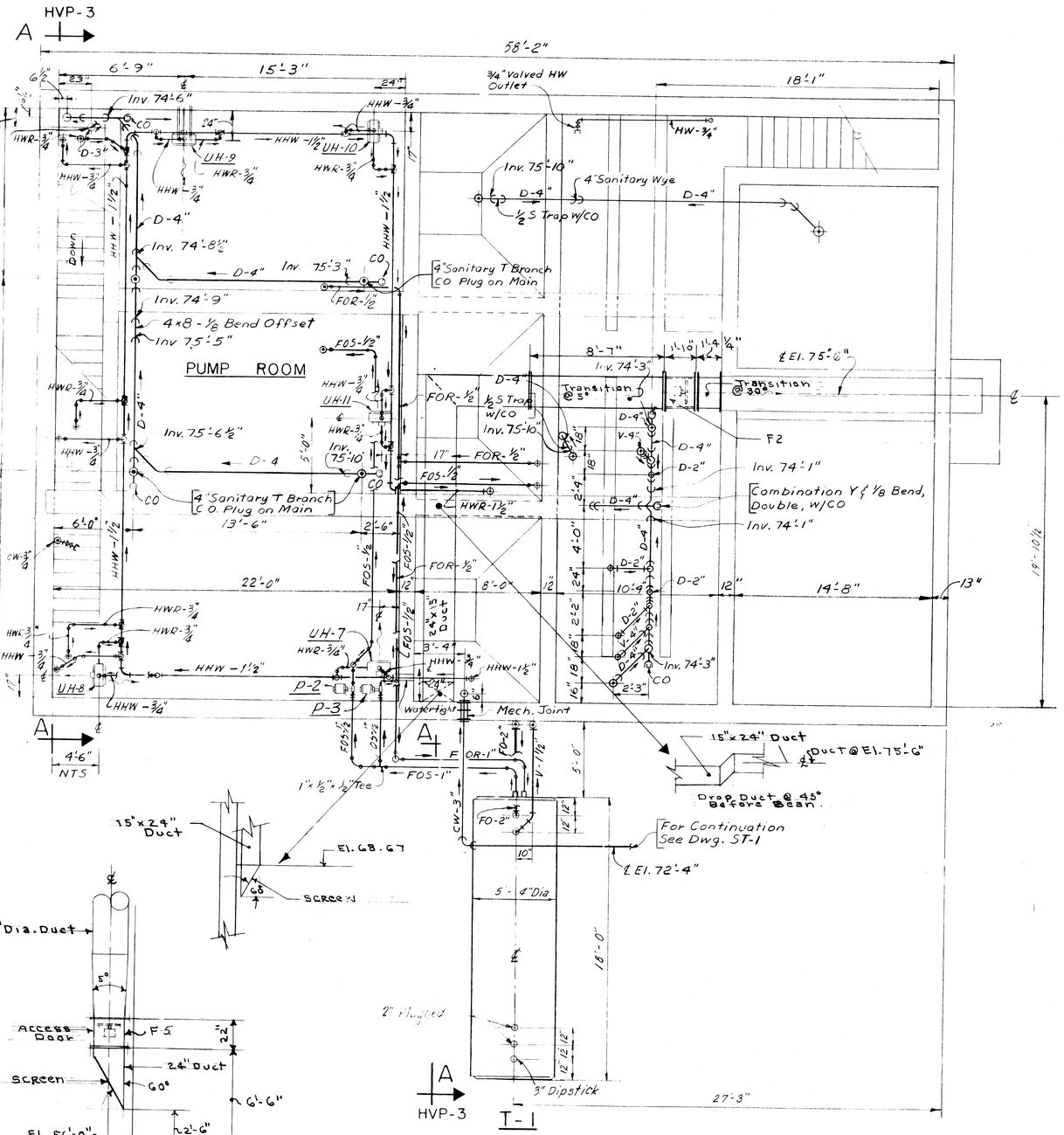
W. P. C. - CONN. -132 CONTRACT No. 16

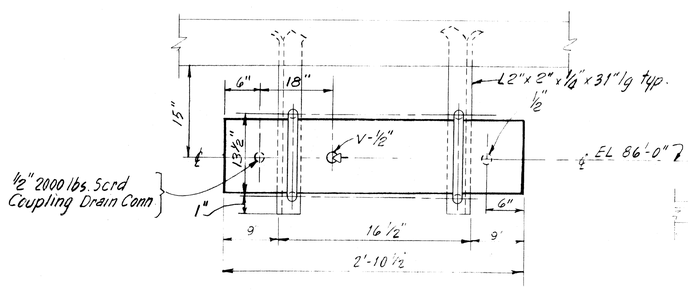


PLAN BELOW EL 59.50

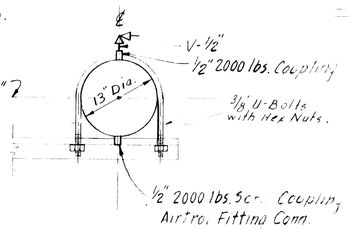
SCALE: ¼" = 1'-0"







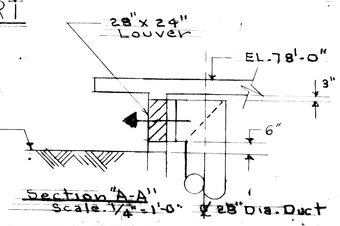
PLAN



DETAIL - "Q"

TYPICAL MOUNTING & SUPPORT DETAILS FOR T-2 & T-3

SCALE: NONE



PLAN BELOW EL 77.00

SCALE: ¼" = 1'-0"

For Legend & Notes, See Dwg. HVP-1

HVP-2

NO.	DESCRIPTION	DATE
	REVISIONS	
4	Add HW Outlet, Wet Well	12/70
3	Add Floor Drain, Chlorine Rm	12/70
2	Add Fan & Ductwork in Pump Room	11/70
1	Add Fan & Ductwork in Wet Well	11/70

SEWAGE PUMPING STATION

TRUMBULL, CONN

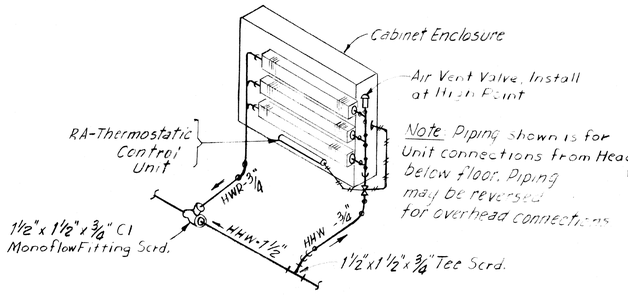
HEATING, VENTILATING & PLUMBING PLANS & DETAILS

STATE OF CONNECTICUT — JAMES T. McDONOUGH — NO. 6770 — REGISTERED PROFESSIONAL ENGINEER

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

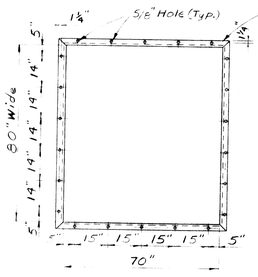
DESIGNED BY	SCALE	DATE
H. B.	AS SHOWN	APRIL, 1970
DRAWN BY F.S.D.	APPROVED James T. McDonough	
CHECKED BY H. B.	JOB NO. 8-011	SHEET 14 OF 17 SHEETS

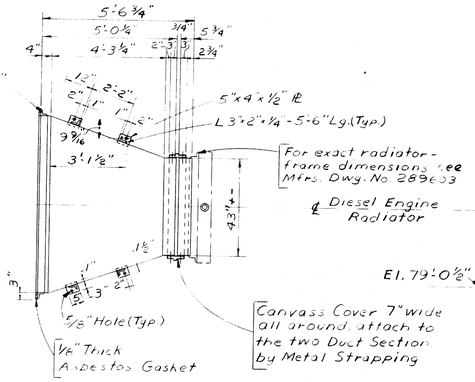
W.P.C. - CONN. - 132 CONTRACT No. 16



CONVECTOR DETAIL "B" (TYP)

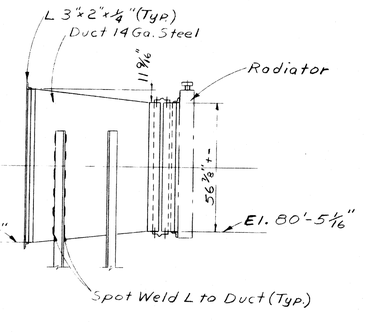
SCALE: NONE





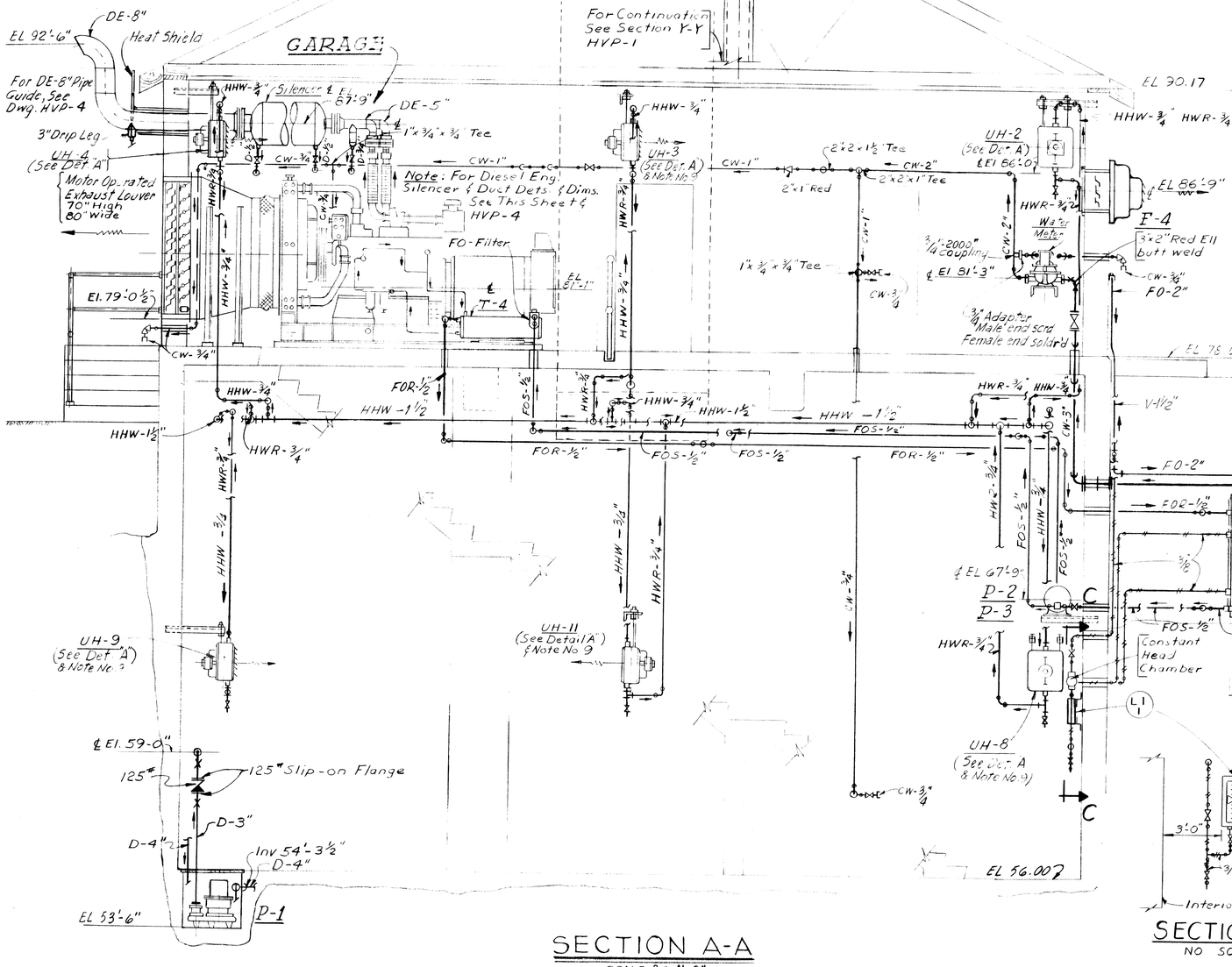
PLAN

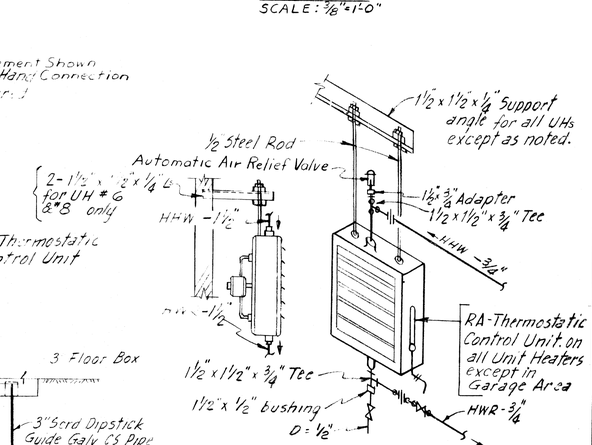
SCALE: 3/8" = 1'-0"



EXHAUST DUCT DETAIL

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





For Legend and Notes, See Dwg. HVP-1

HVP-3

NO.	DESCRIPTION	DATE
	REVISIONS	

SEWAGE PUMPING STATION

TRUMBULL, CONN.

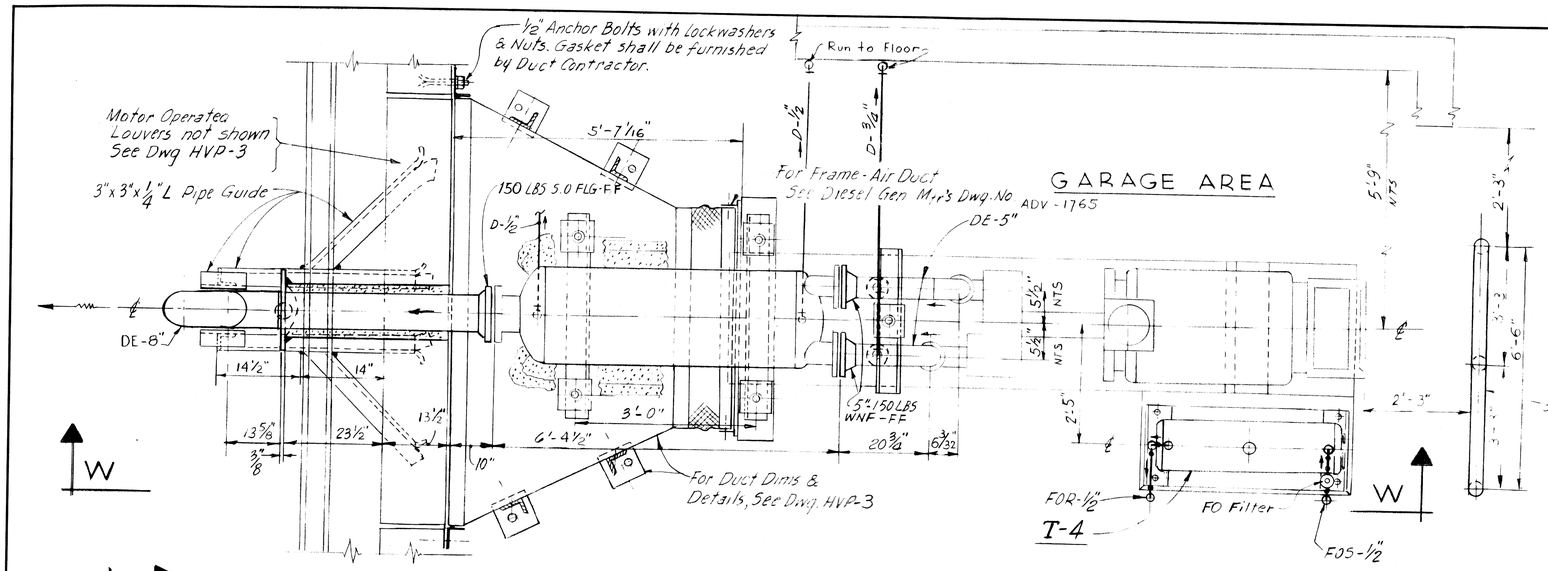
HEATING, VENTILATING & PLUMBING SECTIONS & DETAILS

JAMES T. McDONOUGH No. 8770 REGISTERED PROFESSIONAL ENGINEER STATE OF CONNECTICUT

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY H.B.	SCALE AS SHOWN	DATE APRIL, 1970
DRAWN BY F.S.D.	APPROVED James T. McDonough	
CHECKED BY H.B.	JOB NO. 8-011	SHEET 15 OF 17 SHEETS

W. P. C. - CONN. - 132 CONTRACT No. 16



NOTE:
For Legend and Notes, See Dwg. HVP-1

NO.	DESCRIPTION	DATE
	REVISIONS	

HVP-4

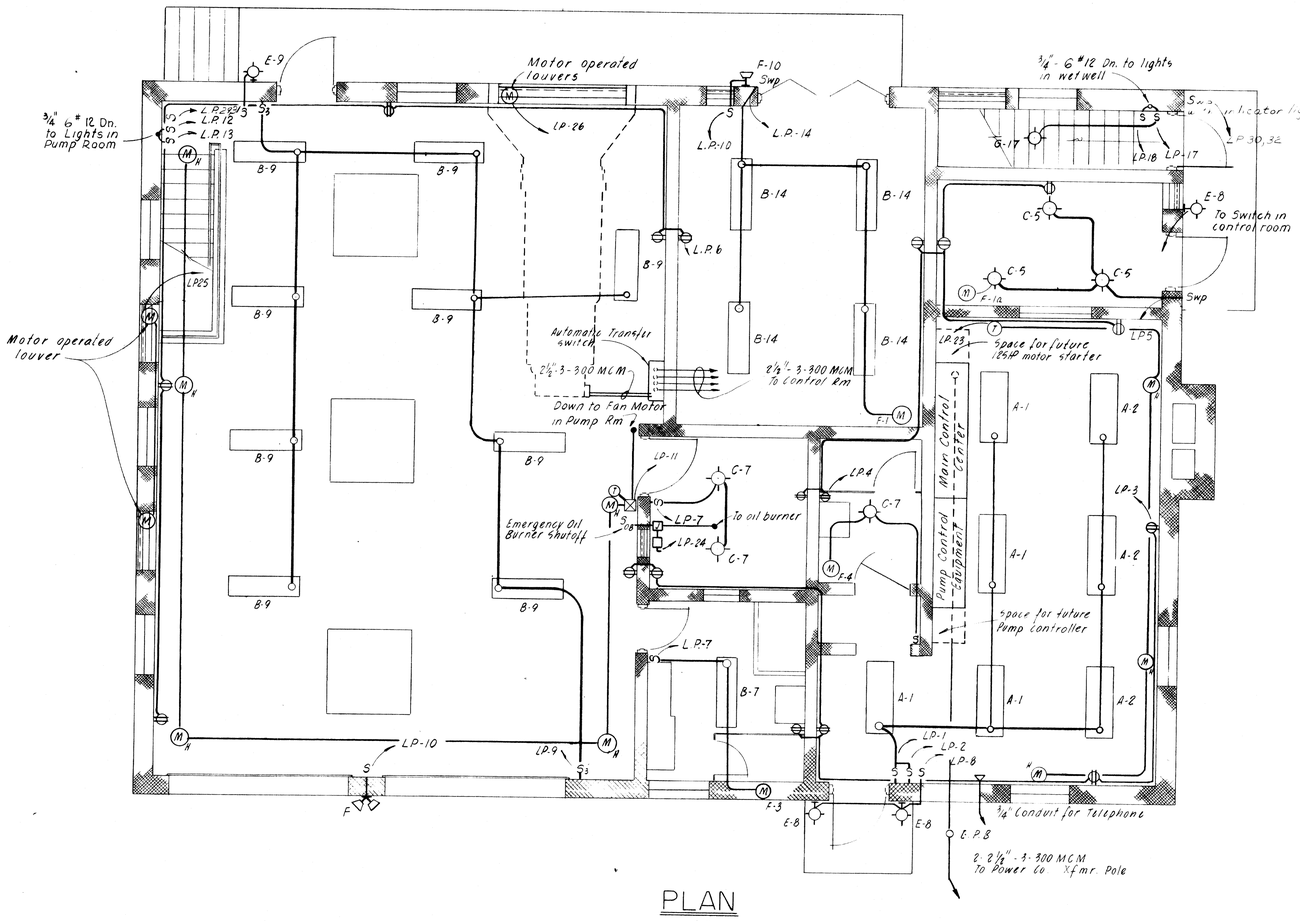
SEWAGE PUMPING STATION
TRUMBULL, CONN.
HEATING, VENTILATING & PLUMBING
DIESEL GENERATOR & MISC. DETAILS

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY H.B	SCALE AS SHOWN	DATE APRIL 1970
DRAWN BY F.S.D.	APPROVED James T. McDonough	
CHECKED BY H.B.	JOB NO. 8-011	SHEET 16 OF 17 SHEETS

STATE OF CONNECTICUT JAMES T. McDONOUGH NO. 6770 REGISTERED PROFESSIONAL ENGINEER

W.P.C. – CONN. -132 CONTRACT Nº 16



PLAN

Scale 1/4" = 1'-0"

FIXTURE SCHEDULE

Type	Style	Number	Watts	Quantity	Mounting
A	Benjamin	CT 4144-4	4-40	7	Surface underside of hung ceiling
B	Benjamin	FL 1034-4U FL 144	3-40	14	Surface
C	Crouse-Hinds	VXHF 15 GRD	150	6	Ceiling
E	Appleton	VPOBW10G	200	4	Wall
F	Steber	S-5001 S-5002	150 2-150	1 1	Wall with Par 38 Projected floodlight
G	Benjamin	7612 CX	150	8	Ceiling
H	Crouse Hinds	VMVH2A175G RD22	BT-28 175	8	Mercury color improved lamp mounted 13'0" above finish floor

LEGEND:

- F ... Incandescent ceiling lighting fixture & outlet
- A ... Flourescent ceiling lighting fixture & outlet
- ... Incandescent wall mounted lighting fixture & outlet
- ... Mercury Pendant lighting fixture & outlet
- ... Duplex convience outlet (14" Mounting height)
- S ... Single pole switch (4'-0" Mounting height)
- S_3 ... Three pole switch (4'-0" Mounting height)
- LP/1 ... Homerun to lighting panel in switchboard (Incl. Circuit Number)
- —— Circuit run in conduit (Concealed in walls or ceilings where possible)
- ... Telephone Outlet (14" Mounting Height)
- M_{F-1} ... Fan Motor of Exhaust Fans & Intake Fans
- T ... Thermostat connect to Fan Motor of unit heater
- Swp Weatherproof switch (4'-0" Mounting height)
- ⊠ Magnetic Contactor 20 amp, 1 pole
- M_H Fan motor of hot water heating units
- Disconnect switch unfused
- O_{EPB} Electrical Pull Box

Pump Control Center			Main Control Center			
			7	5	3	1
15	14	13	8.			
			9.	6	4	2
			10.			
			11.			
			12.			

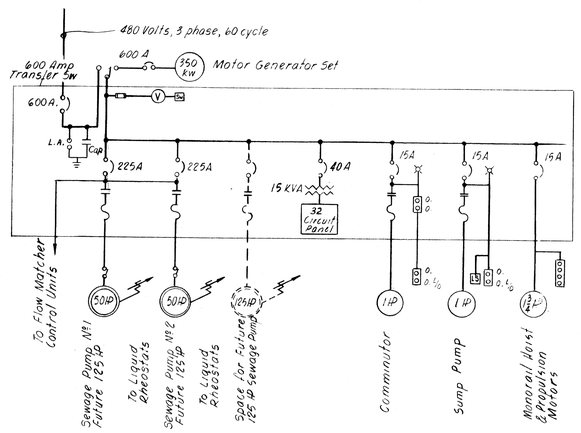
1. Power Co. Metering
2. Main Air Circuit Breaker
3. Flow Meter
4. Sewage Pump No 1
5. Lighting Panel
6. Sewage Pump No 2
7. Sump Pump
8. Space
9. Comminutor
10. Monorail
11. Lt. XFMR Breaker
12. Lt. Panel XFMR
13. Pump Controller No 1
14. Pump Controller No 2
15. Sequence Controller

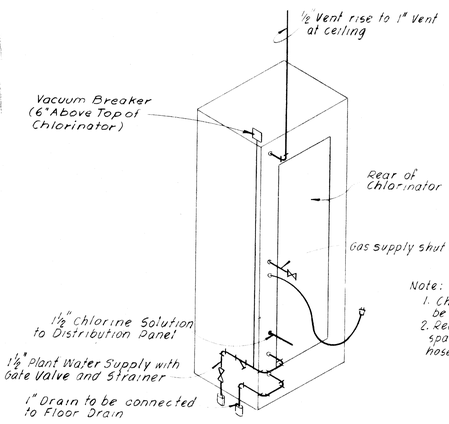
220/110, 1 phase, 3 wires

Lighting, Control Rm	1	2	Lighting, Control Rm
Receptacles	3	4	Receptacles
Lighting & Fan Motor Chlorinator Rm	5	6	"
Lighting & Fan Motors	7	8	Lighting, Entrance
Lighting, Garage	9	10	Lighting, Outside Spotlight
Fan Motors of Unit htrs	11	12	Lighting, Pump Rm
Lighting, Pump Rm	13	14	Lighting, Chlorine Storage Rm
Receptacles	15	16	Lighting, Wetwell
Lighting, Wetwell	17	18	Magnetic, Flowmeter
Receptacles	19	20	Fuel oil transfer Pump No 1
Fuel Oil transfer Pump No 2	21	22	Spare
Fan Motors of Unit htrs	23	24	Oil burner
Intake motor operated louver	25	26	Exhaust motor operated louver
Spare	27	28	Spare
Fan No. 5	29	30	Fan No. 2
	31	32	

S N

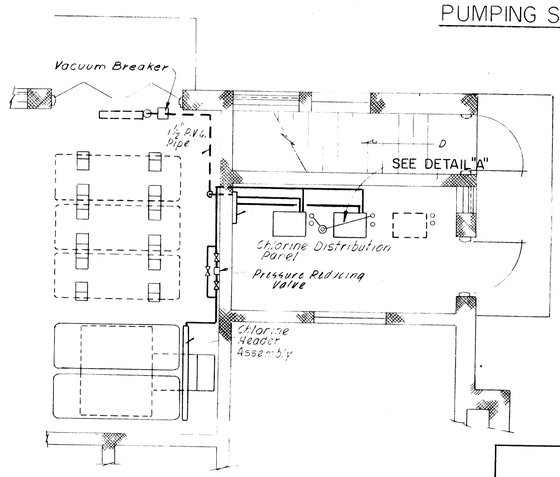
PUMPING STATIONS, LIGHTS, FANS, ETC.





Note:
1. Chlorine Solution Line to be P.V.C. pipe
2. Rear of Chlorinator and floor space behind it to be clear of pipe, hoses etc.

DETAIL "A"



Notes:
1. For Electrical details of Pump Room & Headworks see sheet No 12.
2. All electrical equipment and wiring is shown diagramatically, exact location & methods of support to be determined in the field

CHLORINE PIPING DETAIL

Scale 1/4" = 1'-0"

NO.	DESCRIPTION	DATE
2	Added Vacuum Breakers	12/70
1	Added Fan Motors	11/70
	REVISIONS	

E-1

SEWAGE PUMPING STATION

TRUMBULL, CONN.

ELECTRICAL & CHLORINATION DETAILS

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS
89 BROAD ST. BOSTON, MASS.

DESIGNED BY K.F.R.	SCALE AS SHOWN	DATE APRIL, 1970
DRAWN BY J.C.S.	APPROVED James T. McMonagle	
CHECKED BY K.F.R.	JOB NO. 8-011	SHEET 17 OF 17 SHEETS

JAMES T. McMONAGLE No. 6770 REGISTERED PROFESSIONAL ENGINEER

W. P. C. - CONN. -132 CONTRACT No-16

SSES PHASE I - BEARDSLEY PUMP STATION EVALUATION

for the

TOWN OF TRUMBULL, CT

FINAL REPORT
March 2015

WRIGHT-PIERCE
Engineering a Better Environment

SECTION 1

INTRODUCTION

1.1 BACKGROUND

The Town of Trumbull is responsible for the operation and maintenance of an extensive wastewater collection system, which includes over 130 miles of sanitary sewers (including gravity mains, siphons, and force mains), 12 pump stations and approximately 9,000 individual service connections. The Town has an inter-municipal agreement with the City of Bridgeport to send its wastewater to the City's West Side Water Pollution Control Facility (WPCF) for treatment prior to discharge to the Pequonnock River.

The Town's sewer collection system can be roughly divided into two "sides" which are loosely termed as the *gravity side* and the *pumped side*. The *gravity* side of town is also referred to as the west side collects wastewater from the western third of the sewer service area. Flow from the *gravity* side is collected in a 24-inch interceptor running north to south through town west of and roughly parallel to Main Street. This interceptor discharges to Bridgeport through a metered connection located in a meter pit at the corner of Sunnydale Road and Lealand Street along the southern portion of the Town line.

The *pumped* side of the collection system is also commonly referred to as the east side and generally occupies the eastern two-thirds of the Town's sewer service area. Flow from this side of the system is collected in various interceptors that culminate in a 30-inch interceptor that brings the flow to the wet well of the main pump station located at 119 White Plains Road, more commonly called the "Beardsley Pump Station." Flow from the east side of the Town is pumped through approximately 9,000 feet of 20-inch diameter force main into the City of Bridgeport for discharge into its collection system.

During rainfall events and periods of high groundwater, the Town of Trumbull's sewer system collects excess rainwater and groundwater. These excess flows cause capacity restrictions in the system and sanitary sewer overflows (illegal discharges to waterways). As a result of these overflows, the State of Connecticut Department of Environmental Protection issued the Town of Trumbull a Notice of Violation (NOV) on July 17, 2008. That NOV required the Town to address the overflows and to:

- Perform an Infiltration and Inflow (I/I) Study;
- Perform a Sanitary Sewer Evaluation Survey (SSES); and
- Develop a plan to implement the corrective actions identified in the previous two items.

As a result of the information gathered and evaluated during the Inflow and Infiltration (I/I) Study completed in February 2011, Wright-Pierce had identified the highest priority areas for future rehabilitation work. The priority list was organized based on the magnitude of the I/I issues within various sewer sheds, as well as the location of a particular sewer shed (i.e. *pumped* versus *gravity* side of the system). Areas draining to the Beardsley Pump Station were considered one of the highest priorities in order to mitigate the overflows in that area.

In addition to the past overflow events at this station, operators have also reported other concerns at the station related to reliability, wet well size and other operational concerns. Given that this pump station is over 40 years old, there is concern that the electrical and mechanical equipment is approaching the end of its practical service life and will require an upgrade to ensure reliable future operation. The evaluation of this station will allow the Town to determine if there are viable strategies for increasing operational capacity to aid in mitigating the potential for future overflows, as well as ensuring that the Town has enough capacity to handle flows in the future. Increasing the operational capacity of the station, if feasible, is likely the most expedient means for reducing sanitary sewer overflows at the Beardsley Pump Station. Concurrent to this effort, the WPCA is continuing its efforts to identify and evaluate I/I sources in this portion of the collection system.

1.1.1 Beardsley Pump Station

Beardsley Pump Station

The pump station is located on an approximately 90'x115' area adjacent the Pequonnock River in Trumbull, just north of the Beardsley Zoo. Access to the site is gained through a driveway off White Plains Road (Rt. 127); the pump station site is set lower than the roadway. The pump station site is gated off and is sheltered from the road by shrubbery and the surrounding wooded area. Beardsley Pump Station was originally designed by Whitman & Howard, Inc. in 1972, and at the time, was referred to as Pumping Station No. 17. It was intended to have a design capacity of approximately 10 mgd when outfitted with three centrifugal pumps. The station has had periodic upgrades since it was first constructed and currently consists of the following major components:

- 40'x50' two-story dry-pit pump station building constructed from reinforced concrete with brick face veneer, including two bay garage, boiler room, control/office space, locker room/bathroom, chlorine storage room and metering pump room (both converted to storage)
- Three 8'x12' cast-in-place concrete wet wells
- Primary inlet channel with coarse (2-inch) manual bar rack followed by a 3 hp Franklin Miller grinder
- Secondary inlet channel with a coarse (2-inch) manual bar rack in series with a 1-inch bar rack for screenings
- Two Allis Chalmers centrifugal sewage pumps rated for 3,700 gpm at 55' TDH each, with space for a third pump in the dry-pit
- 350 kW Cummins emergency generator located in the garage
- FloMatcher brand flow pacing and pump control system
- Electrical MCC panels
- Heating and Ventilation system
- 3000-gallon exterior below-grade diesel fuel tank for the generator and the boiler
- Fire alarm and annunciation system

- Connection to potable water

Having been maintained for over 40 years by the Trumbull Water Pollution Control Authority (WPCA) staff, much of the equipment is approaching the end of its useful life. The equipment is no longer reliable and will not be able to continue to meet the existing demands of the system, let alone any future demands. The station should be upgraded in order to ensure reliable future operation and prevent future overflow events at this station.

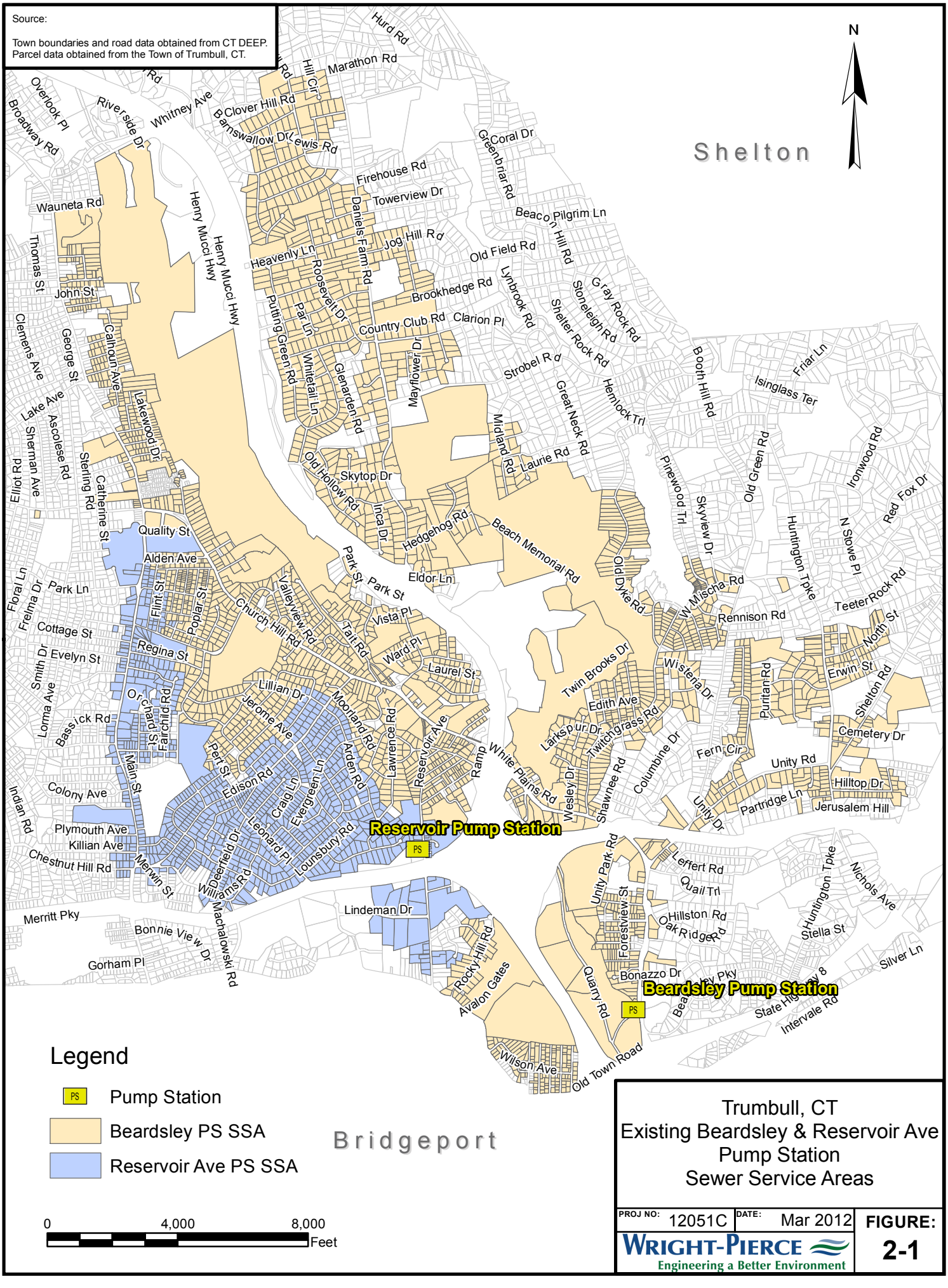
SECTION 2

FLOW ANALYSIS

2.1 EXISTING FLOWS TO THE BEARDSLEY PUMP STATION

The Beardsley Pump Station collects flows from a sewer shed comprised of approximately 2,900 acres of sewered, mostly residential parcels located along both sides of Route 25, north and south of the interchange with Route 15. According to a general review of the GIS-based tax assessor information and the sewer shed area provided by the Town, there are a total of approximately 2,805 existing parcels within the Beardsley Pump Station Service Area. This sewer shed area also contains a number of commercial and light industrial properties, mainly concentrated south of Route 15 and along White Plains Road. In addition, the Beardsley Pump Station collects flows the Reservoir Avenue Pump Station sewer shed, as well as the Pinewood Lake, Merritt and Hawley Pump Station sewer sheds. The existing Beardsley Pump Station sanitary sewer service area is depicted in **Figure 2-1**.

In order to confirm the existing average flow rates to the station, Wright-Pierce utilized the flow totalizer data for the November 2010 through November 2011 period, which was obtained from the WPCA. These numbers were also cross-checked with the flows utilized in the February 2011 Inflow and Infiltration Evaluation (also conducted by Wright-Pierce). Additionally, as part of this evaluation, pump draw-down tests were performed in order to confirm the existing pump capacities. Based on these test results, Pump No. 1 has a capacity of approximately 2,555 gpm while Pump No. 2 had a capacity of approximately 1,950 gpm. Together they have a combined capacity of 3,115 gpm. According to the WPCA staff, the pumps were running at 80% speed during the time of the drawdown test, which would mean that the full speed (100%) combined capacity would be under 3,900 gpm (5.6 mgd). These tests are detailed further in Section 3.


Source:
Town boundaries and road data obtained from CT DEEP.
Parcel data obtained from the Town of Trumbull, CT.
N
Shelton
Bridgeport
Reservoir Pump Station
Beardsley Pump Station
PS
Legend
Pump Station
Beardsley PS SSA
Reservoir Ave PS SSA
0
4,000
8,000
Feet
Trumbull, CT
Existing Beardsley & Reservoir Ave
Pump Station
Sewer Service Areas
PROJ NO: 12051C
DATE: Mar 2012
FIGURE: 2-1
WRIGHT-PIERCE
Engineering a Better Environment
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The flow totalizer data is collected daily during the week (with the exception of weekends and holidays) by WPCA personnel. The existing average flows to the station vary seasonally. The 2010-2011 pump station flow data shows an increase in flow during wet months (late winter and spring months) and a decrease in flow towards the end of the summer months. The increase in flows during wet weather months is mainly attributed to the infiltration and inflow (I/I) sources within the sewer shed area. It should be noted that the 2010-2011 winter season was a period of record snow falls for the State of Connecticut and correspondingly high snow melt. Overall, 2011 has set a record for highest yearly rainfall in Connecticut since 1905 (when the data records begin), with 66.97 inches being recorded at Hartford's Bradley International Airport.

Table 2-1 below is a summary of the estimated average, minimum and maximum flows to the station from 2010-2011 flow totalizer data. The Adjusted Maximum Daily Flow was calculated based on previous metering work, which is further detailed below.

TABLE 2-1
TRUMBULL WPCA- SSES PHASE I
EXISTING FLOWS[1] TO BEARDSLEY PUMP STATION

Annual Average Daily Flow	2,046,923 gpd
Minimum Daily Flow	862,900 gpd
Maximum Daily Flow	6,668,800 gpd
Adjusted Maximum Daily Flow[2]	9,928,800 gpd

[1] Calculated Flows based on flow totalizer data collected five times a week for 12 months.
[2] Maximum Daily Flow plus additional metered flows (see text for discussion).

The station's meter measured a maximum flow to the station in 2011 of 6,668,800 gallons per day (6.7 mgd), which is approximately 1.06 mgd more than the capacity of the both pumps combined as calculated during the drawdown tests or 119% of the station's current pumping capacity.

Based on data collected during the flow monitoring that took place during the Infiltration and Inflow Study conducted by Wright-Pierce earlier in 2010 (see Report dated February 2011), it was observed that during high-flow events, not all of the wastewater reaches the pump station and, as such, is not recorded at the station. For instance, during March 29, 2010 and April 1,

2010, flow meter #001 from the I/I study (located upstream of the Beardsley Pump Station) recorded 24.86 million gallons, while the flow meter at the Beardsley Pump Station recorded only 15.08 million gallons for the same time period. Thus, at least 9.78 million gallons of flow was never recorded at the pump station over a three day period (and was presumably discharged into the river). This three day total averages out to approximately 3.26 million gallons per day that was not recorded at the pump station during this particular high-flow event. A By-pass Report was entered into the file for March 30, 2011 for the Beardsley Pump Station at this time.

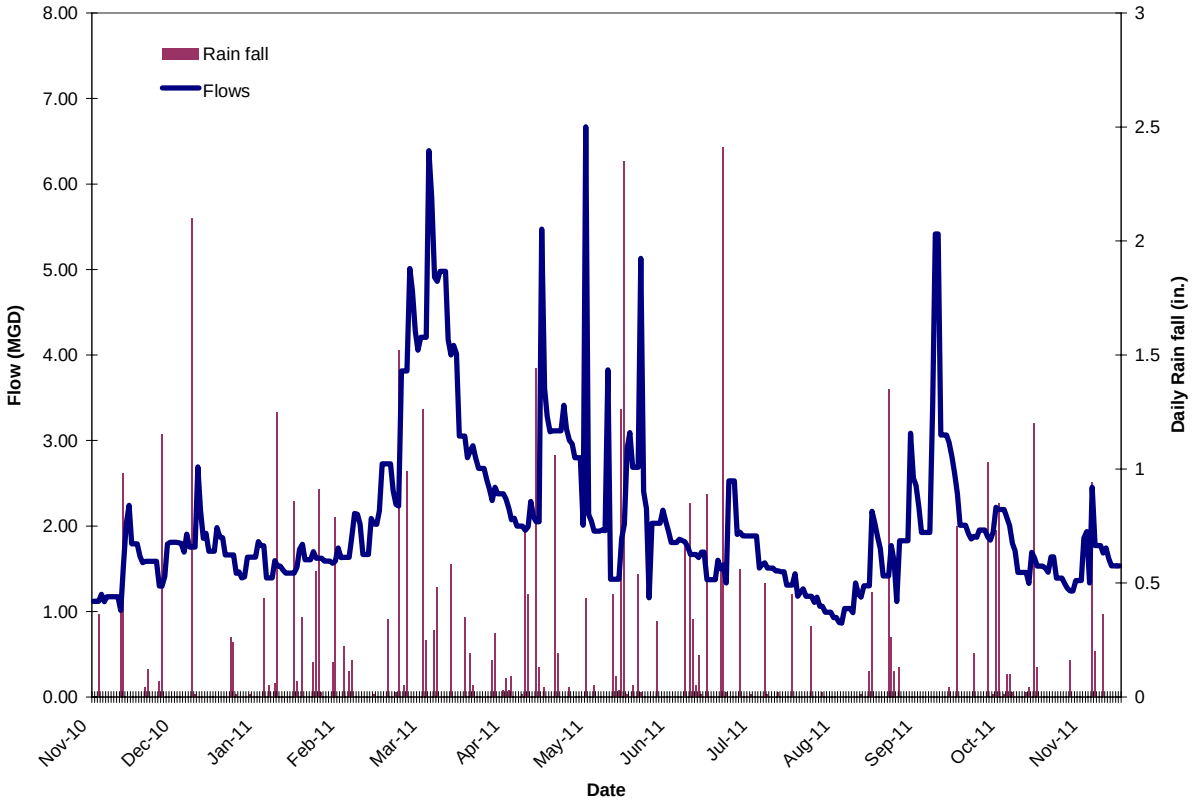
Other By-pass reports for this pump station during 2010 and 2011 that are on file include:

- March 13, 2010: Insufficient capacity during wet weather (3.31-inch rain event)
- March 7, 2011: Insufficient capacity during wet weather (1.26-inch and 0.25"-inch rain events)
- August 28, 2011: Weather related (1.35-inch and 0.26-inch rain events)

An Adjusted Maximum Daily Flow to the station is 9,928,800 gallons per day and was calculated based on the Maximum Daily Flow determined from the data recorded at the station with the addition of the 3.26 mgd and included in **Table 2-1** above. This is approximately 4.3 mgd more than the current capacity of the both pumps operating together as calculated during the drawdown tests. This maximum daily flow equates to 177% of the station's current pumping capacity.

Based on the 2010-2011 totalizer data represented in graphical form in **Figure 2-2** below, the daily flows to the station varied from 862,900 gallons per day to 6,668,800 gallons per day. As noted from the graph, there were several high flow events that occurred during this period of time. The maximum daily flow recorded at the pump station during this period was 6,668,800 gallons per day. However, a review of the station's flow charts (in addition to the totalizer data) indicates that there have been numerous instances where the pumps have been running at maximum capacity for extended periods of time, especially during wet weather. Therefore, it is reasonable for the 2010-2011 data to provide a conservatively high estimate of the existing flows to the station, since the years 2010 and 2011 were both years of extreme amounts of precipitation compared to historical rainfall for the State of Connecticut.

FIGURE 2-2
PUMP STATION INFLUENT FLOWS
BEARDSLEY PUMP STATION



Peak flows to the station were estimated utilizing the data obtained in 2010 from the I/I Study. Flow Meter #001 recorded a peak flow of 11.3 mgd on March 30, 2010. This peak was taken as representative of the peak rainfall events of 2010-2011 season, as well, with over 5 inches of rain falling during this period of 3 days. As a comparison, note that Connecticut received 8 inches of rain during Hurricane Irene during August 27-28, 2011.

Repeated instances of reported by-passes and overflows, as discussed, indicate that flows to the Beardsley Pump Station have already exceeded its design capacity at this point in time.

SECTION 3

BEARDSLEY PUMP STATION EVALUATION

3.1 INTRODUCTION

In addition to the past overflow events at the Beardsley Pump Station as outlined in Section 1, there are also reported concerns at the station related to equipment reliability, wet well size and configuration, force main size and other operational concerns. Given that this pump station is over 40 years old, there is concern that the electrical and mechanical equipment is approaching the end of its practical service life and will require an upgrade to ensure reliable future operation. An evaluation of this station allows the Town to determine if there are viable strategies for increasing operational capacity to aid in mitigating the potential for future overflows, as well as ensuring that these portions of the conveyance system have sufficient capacity to handle flows in the future.

This section describes the existing conditions at the Beardsley Pump Station.

3.2 PROCESS

3.2.1 Pumping Equipment and Dry Well

Existing Pumps No. 1 (Left) and No. 2 (Right)

The existing pump station is equipped with two (2) centrifugal Allis Chalmers sewage pumps rated for 3700 gpm at 55' TDH each, located in the dry well. The flow and TDH information was obtained from the documentation in the operation and maintenance manuals. These pumps are the original pumps installed in 1970's. The staff noted that the motors were replaced about 15 years ago. The impellers were also replaced at that time with the maximum size available in an effort to increase the pumping capacity. The pumps have been very reliable over their 40 year service life, but the replacement repair parts will become more

difficult to find and require extended delivery time. It is assumed that these pumps will become subject to increasing repair needs, and parts will become more difficult to acquire and more costly as they continue to age.

The pump station has a 7-day chart recorder and a totalizing flow meter, which also reads (but does not record) instantaneous flows. The system operators hand-write the flow totals taken from the digital flow meter daily at the start of their work day; however, since they do not work on weekends, weekend data is typically unavailable. The chart recorder was not calibrated to show the correct flows, but using the digital output on the flow recorder, a conversion factor was calculated to determine flow rates from the graphs. The graph recording multiplied by a factor to provide the actual flow rate in MGD.

Flow Chart Recorder (left) and Totalizing

It should be noted that as pumps age, the impellers and volute become worn, reducing the overall efficiency of the pumping capacity of the pumps; therefore, actual pump flows are likely less than original design capacities. Wright-Pierce conducted draw-down tests on July 28, 2011, between approximately 10:00 and 10:30 AM, to check the existing capacity of the individual pumps. Based on these tests, Pump No. 1 has a capacity of approximately 2,555 gpm while Pump No. 2 had a capacity of approximately 1,950 gpm. Together they have a combined capacity of 3,115 gpm. WPCA staff noted that the pumps were running at 80% speed during the drawdown tests. This translates to full speed capacities near 3,100 gpm for Pump 1, approximately 2,400 gpm for Pump 2, and a combined capacity of under 3,900 gpm. Based on the draw-down tests, it appears that the pump impellers and/or volutes are somewhat worn,

resulting in slightly lower capacity and more inefficient operation of the pumps. Due to the age of the pumps and motors, full replacement of the pumps with new premium efficient motors is likely the most cost-effective solution.

The pump station is equipped with 12-inch isolation gate valves installed on each of the pump suction lines. In addition, 10-inch spring loaded check valves and 10-inch isolation gate valves are located on the existing 10-inch pump discharge piping. Although the valves and check valves are operating properly, the equipment is about 40 years old and at the end of its useful life.

10-inch Gate Valve on Discharge Line

10-inch Check Valve on Discharge Line

Both pumps discharge headers combine into a single 20-inch force main equipped with an ultrasonic flow meter inside the drywell. The 20-inch force main exits the south end of the station and is located along the old service road to the Beardsley Zoo. The force main then continues along Rt. 127 near the Pequonnock River and crosses under Routes 25 and 8 as it passes into Bridgeport. The force main terminus is located approximately 9,000 feet downstream from the Beardsley Pump Station and discharges to a manhole in the vicinity of the intersection of Indian Avenue and Chopsey Hill Road. Please refer to **Figure 3-1** for the existing force main route. Based on our discussions with the Town, the force main is in good working condition but, as discussed in Section 2, undersized, creating a hydraulic bottleneck in the system.

The Beardsley Sanitary Pump Station currently has no connection on the existing discharge force main to allow for by-pass pumping. At the time this pump station was designed, it was not standard practice to provide for a by-pass pumping connection. However, current practice is to provide a separate location for the connection of suction and discharge piping for either an electric or diesel powered portable by-pass pump in the event of a complete failure of the pump station. Depending on the proposed upgrade project construction sequence, this connection may also be necessary to allow the station to be removed from service during the replacement of the existing pumps and piping systems.

SOURCES:
STREET MAP PROVIDED BY ESRI.
TOWN BOUNDARIES OBTAINED FROM CT DEEP.

Beardsley Pump Station Force Main Location

Monroe
Shelton
Easton
Trumbull
Stratford
Bridgeport
Fairfield
Westport

0 0.5 1 2 Miles

Beardsley Pump Station Force Main Route

PS
Stonebridge Ln
Oak Ln
Ash Cir
Trumbull Rd
Quarry Rd
Old Town Rd
Trojan Dr
Beverly
Evers St
E Main St
Jennings Ave
Huntington Tpke
Virginia Ave
Beardsley Zoo
Bunnells Pond
Peequonnock
Camp Pl
Oman St
Brookside Ave
Oakleaf St
Fiske Ave
Rainbow Rd
Reservoir Ave
Clover Hill Ave
Voight Ave
Fiske St
Old Town Rd
Wilson Ave
Mcadoo Ave
Lansing Ave
Lane Ave
Marshall Ave
Trumbull Ave
Sylvan Ave
Old Town Rd
Seltsam Rd
Grandview Ave
Sylvan St
City View Ave
Yaremich Dr
Marigold Ave
Soundview Ave
Calvert Pl
Westmere St
Oakdale St
Hollywood Ave
Dayton Rd
Hillcrest Rd
Soundview Ave
Platt St
Omega Ave
Division St
Ortega Ave
Houston Ave
Balsam Ave
Alba Ave
Carlson Ave
Clifton Pl
Lansing Pl
Victory Ave
Woodlawn Ave
Rita Ave
Dodd Ave
Lakeview Ave
Park View Ave
Lansing St
Evans St
Scott Ave
Edwards St
Wilkins Ave
Moffitt St
Polk St
Saunders Ave
Earl Ave
Indian Ave
Roberts St
Eric St
Chamberlain
25
8
127

0 250 500 1,000 1,500 2,000 Feet

Trumbull, CT

Beardsley Pump Station
Force Main

PROJ NO: 12051C | DATE: Mar 2012 | FIGURE: 3-1

WRIGHT-PIERCE
Engineering a Better Environment

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3.2.2 Wet Wells

30-inch influent Pipe

The wet well area can be accessed through a separate doorway behind the office by descending a staircase to a heated, ventilated space. Flow enters the wetwell via a 30-inch reinforced concrete pipe, which travels through a Parshall flume, formerly used for flow monitoring. The flow the splits into two channels; the primary channel includes a bar rack and grinder. The secondary channel was originally designed to act as a by-pass channel should the primary channel need to be taken out of service. However, increased flows have required the operators to utilize the by-pass channel as an additional full-service channel. The secondary channel contains a 2-inch bar screen, followed by a 1-inch bar screen. Both channels combine and a common channel disperses the influent equally between the three wet well. Each wet well is 12 feet, 8 inches deep.

2-inch Bar Screen


Franklin Miller Grinder (3 hp)

At the time of our site visit, all three wet wells were in operation. There was some grease, rags and other debris accumulation on the wet well wastewater surface. WPCA staff report that the wet wells are cleaned four times a year. This seems sufficient to mitigate the grease buildup that can contribute to odor generation and corrosion within the wet well.

The upper section of the wet well walls (located above the wastewater level) was visually inspected for any cracks or any signs of concrete corrosion or exposed rebar. At the time of the site visit, no corrosion or cracks were observed in the wet well.

Electrical, instrumentation and HVAC equipment for this space is discussed in subsequent sections.

Wet wells

3.3 CIVIL

3.3.1 Civil Site

The Beardsley Pump Station is located just north of the Beardsley Zoo, off state road Route 127; security measures are necessary to protect the pump station and equipment from vandalism.

Driveway entrance to pump

Locked gates at the head of the driveway are intended to prevent unauthorized vehicle access to the site. There is no other fencing. The pump station is surrounded by a wooded area, which provides good screening of the site from the road. Signs of graffiti along the back side of the building were noted.

The existing paved areas around the provide parking spaces for multiple vehicles. Based on our discussions with WPCA staff, the current driveway access and parking is adequate for the station. The existing driveway and parking area is in average condition, with areas where cracks and deformations have formed. Other maintenance access roads are also routed through the pump station site for use by Bridgeport Parks and Recreation.

Since the pump station site is adjacent to the Pequonnock River, it was necessary to verify the station's proximity to the 100-year floodplain. Using FEMA maps, it has been determined that the building itself is not in the 100-year floodplain, but the western portion of the properties is. Any infrastructure place in the 100-year floodplain is required to be protected from the 100-year flood by either flood proofing the structure or elevating it above the flood elevation.

Access road to the northern part of Beardsley Park

Flow to the station is conveyed by gravity through an 20-inch cast iron sanitary sewer pipe from a manhole located behind the pump station. During sustained wet weather events, this manhole has been reported to overflow.


Pump Station Influent Manhole

3.4 STRUCTURAL

The station is an approximately 58'x40' two-story structure with a separate wet well and dry well below grade. The existing centrifugal pumps are located in the dry well approximately 22 feet below grade, beneath the garage area. The pump room is accessed via a staircase at the back of the garage. The pump room is very large and has sufficient space for additional pumps to be installed.

Based on the visual observations during site visits, the reinforced concrete pump room walls are in fair condition. There are, however, at least two visible cracks on the wall adjoining the wet wells. These cracks appear to be leaking sewage from the wet wells. The operators noted that the cracks are not new, but the leaks are a recent development within the past nine to twelve months from the writing of this report.

3.5 ARCHITECTURAL

The Beardsley Pump Station in Trumbull, Connecticut is an approximately 40-foot wide by 58-foot long structure built in 1972. It is a masonry walled building with approximately 12-foot high walls and a wood framed pitched roof. Below grade it has a wet side with wet wells and influent channels and a dry side pump room. It has one story at grade with office space, garage space, toilet/shower facilities and storage space. Overall the building has been well maintained and architecturally is in great shape for its age. See **Figure 3-2** below for views of the building exterior. In heavy flow events the wet side channel area will flood. Except for office space for the director, this building is the only space for Trumbull wastewater staff. Because of this, some architectural upgrades are proposed to provide for staff needs.

FIGURE 3-2
BUILDING PHOTOS

Beardsley Pump Station - Front View

Beardsley Pump Station - Rear View

Beardsley Pump Station - West Wall

Beardsley Pump Station - East Wall

Due to the age of the building a thorough hazardous materials survey including for asbestos and lead must be completed to identify materials that will need to be abated prior to construction activities.

3.5.1 Evaluation of Architectural Features

Exterior:

Walls The un-insulated masonry backup and brick veneer walls are in good condition.

Caulking Most of the caulking is severely degraded. *Roofing* The existing shingle roofing is at the end of its life span. *Attic Vents* Attic venting is by vented vinyl soffits and painted wood gable vents.

Roof trim The original roof edge trim was wood with wood gutters at the eaves. When the gutters were replaced with aluminum gutters the eave trim was also wrapped in aluminum a vented soffit was provided.

Windows The existing windows are single pane, double hung wood windows. Expanded metal screens for vandal resistance are on the exterior of the windows and in good condition.

Doors The original doors are aluminum doors and show signs of use over the years. The door to the below grade wet side area has been replaced with a

hollow metal door and frame and is in good conditions but needs paint. The main entry door has been replaced with a residential style entry door and is in fair condition. The monorail door to the original Chlorine Storage Room is a bi-fold style door and does not meet egress codes.

OH Doors The overhead doors are in poor condition.

Louvers The louvers are mill finish aluminum and in good condition.

Stairs/ Landings There is a cast in place concrete loading dock and a cantilevered cast in place concrete platform behind the building. The concrete is in fair condition. The platform has a face mounted guardrail that exhibits a lot of pealed paint and surface corrosion. The platform also has no guardrail on two sides at the monorail. The loading dock has residential style precast concrete steps to access the loading dock from the lower grade. They do not meet current code and have appeared to have sunken into the ground so the first step down from the loading dock is too high and the first step up from the ground is too low. The loading dock does not have a guardrail on the open side.

Monorail There is an exterior monorail on the rear of the building at the original Chlorine Storage Room which exhibits a lot of pealed paint and surface corrosion.

Insulation According to the record drawings there is no insulation in the cavity walls. In the attic there is thin fiberglass batt insulation that is matted down.

Ground Floor Interior:

Walls The existing wall finishes are painted concrete block and in fair condition. The paint is in good condition however the walls in the garage need cleaning. The first course of concrete block at the existing Locker Room exhibits significant water damage.

Doors Existing doors are painted hollow metal doors and frames and in good condition. The doors to the bathrooms do not meet code requirements for width (these will be replaced as part of bathroom upgrades).

Windows There are two interior hollow metal windows in the boiler room. *Tile Floors* The floors in the office, the bathroom and the locker room are vinyl tile floors. The tile in the office and bathroom is in fair condition but is showing its age. The tile in the locker room has failed due to repeated water damage.

Concrete Floors The rest of the spaces have sealed concrete floors and are in good condition.

Ceilings The existing ceilings are lath and plaster ceilings and in good condition. Above the Office and Toilet room the ceilings are suspended approximately 4' below the bottom of the trusses. Over the rest of the spaces the ceilings are directly applied to the underside of the trusses.

Monorails There is one interior steel monorail in the garage and one in the original Chlorine Room. Both appear to be in good condition. The hoist in the original Chlorine Room is motorized and reportedly in good condition. The hoist in the Garage is manual and therefore makes it difficult to lift the pumps from the pump room below.

Hatches There are 3 hatches in the garage floor over the three pump locations in the pump room below. They are heavy, H20 loading, unassisted hatches. The hinge pins have been removed and each leaf of each hatch has to be completely removed when pumps need to be lifted. The hatches have no safety grates or netting.

Attic Access The attic access does not meet OSHA requirements and must be reconfigured.

Below Grade/Wet Side:

Walls Due to repeated overflowing, the surface of the existing cast-in-place concrete walls has deteriorated. The surface of the concrete has flaked off in many areas.

Metals The channels are covered with aluminum grating and there are also aluminum handrails. The grating appears in good condition.

Below Grade Pump Room:

Walls The walls are painted concrete and exhibit some pealing. *Floors* The floors are sealed concrete and are in good condition

Ceiling The ceiling is painted concrete and is in good condition.

Stairs The stairs are cast-in-place concrete with an aluminum combination guardrail/handrail. The stairs and guardrail/handrail are in good condition.

3.5.2 Code Concerns

The below grade pump room is classified as Class I/Div 2 per NFPA 820. This requires ventilation during occupied times and explosion proof equipment. Currently the pump room is open to the garage above through the open stair between the two spaces. If the garage and pump room are not separated, the ventilation will need to be sized to ventilate both the garage and the pump room and all of the equipment in the garage will need to be explosion proof.

The stairs to the pump room do meet the code minimum clear width for existing stairs but the tread mounted guardrail cuts into this clear space which is not allowed.

The maximum egress travel distance the code allows for a one exit space is exceeded in the pump room for areas required to meet the requirements of the code for new construction or modifications. The space is not being modified or changing in use; and therefore, code allows the space to remain as is.

3.6 HEATING AND VENTILATION

3.6.1 Wet Well

The wet well side of the pump station is electrically classified as Class I, Div. I explosion proof in accordance with NFPA (National Fire Protection Association) No. 820 "Fire Protection in Wastewater Treatment and Collection Facilities," Table 4.2, 16a. Presently, the wet well is ventilated by an up-blast type roof exhaust fan which was installed approximately six years ago

and an intake louver in the entry stairwell. The space was originally ventilated by an in-line duct mounted fan located in the wet well which was converted to an air intake.

3.6.2 Dry Well

The dry well side of the pump station is electrically classified as Class I, Div. 2 explosion proof in accordance with NFPA 820, Table 4.2, 17a. Presently the electrical equipment within this space does not meet Class I, Div. 2 explosion proof requirements.

The unit heaters in the dry well are not used presently due to the fact that waste heat from the water cooling system for the existing wastewater pump motors over heat the space. The space ventilation system consists of an in-line duct mounted exhaust fan, makeup air enters the space through the entry stair case. The system is not used because the exhaust louver is at grade in the rear of the building and when the creek floods, water will enter the building through the louver. Because of this, the louver has been blocked off.

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3.6.3 Garage and Boiler Room

Presently the Garage has unit heaters in place but are not used due to the fact that waste heat from the dry well pump motors maintain space temperature at an acceptable level for a Garage space. Ventilation for the space consists of supply and exhaust louvers for the emergency generator cooling system.

The boiler was replaced approximately 6 years ago with a Burham cast iron hot water boiler. The boiler has a tank-less hot water coil providing domestic hot water to the facility.

3.6.4 Office/Locker Room/Toilet

The Office is heated by three hot water cabinet unit heaters and the Locker Room is heated by a hot water wall mounted convector. There is no air conditioning for this space. The Locker Room and Toilet both have exhaust fans.

3.6.5 Chlorine Rooms

Both the old Chlorine Storage Room, and Chlorine Room are heated by wall mounted hot water convectors, and ventilated by two roof exhaust fans and two intake louvers.

3.7 INSTRUMENTATION

There are three wet wells located in a below-grade room that receive the influent flow via an influent channel. There is an ultrasonic transducer (MultiRanger Plus) and bubbler level measurement system in the center and right-most wet wells used for wet well level measurement. There is a high level float in the center wet well used to alarm a high wet well level. There are not any level-measuring instruments in the left-most wet well. The influent channel contains a Parshall flume which was previously used for metering the influent flow. Use of the flume for influent metering has been discontinued. The wet well room does not have any permanent gas detection instruments.

The pump room contains a sump with a submersible pump and high and low level floats for sump pump control and a pump room flood alarm. There is a Dynasonics Ultra TFX flow indicating transmitter on the common pump discharge; the flow element is a pipe strap-on type and appears to use transit time technology for flow rate measurement. The control panels for the pumps are located in the office area. There aren't permanent gas detection instruments in the pump room.

The office/electrical equipment area houses the bulk of the pump station control panels. There is a sequence control panel that has on its exterior the following instruments: H/O/A selector switch for each pump; a base pump selector switch; a wet well level indicator. The interior of the sequence control panel contains the following: wet well level indicator; wet well level control selector switch (1/2); a switch to select either the bubbler system or the ultrasonic transducer (bubbler/sonic). The two pumps use FlowMatcher control systems to vary pump speed in response to measured wet well level when called to run. The bubbler level measurement system tubing is piped to load cells in the FlowMatcher panels; the load cells contain an electrolyte. As the level of the electrolyte varies in response to wet well level, the resistance through a circuit that includes the electrolyte varies, which in turn varies the pump motor speed. Level switches in the sequence control panel, activated from either the ultrasonic or bubbler level system, are used to start/stop the pumps based on measured level in the selected wet well.

There is a flow chart recorder for the Sunnydale and Lealand gravity meter in the office. The flow rate signal is received via a telephone line connection; a Pribusin IUC-7X-RXC telephone receiver converts the received signal to a 4-20 mA DC signal for the chart recorder input signal. There is a control panel for the channel grinder currently installed in the influent channel. The Dynasonics flow indicating transmitter is the primary pump station flow measurement instrument; the Parshall flume is used for backup.

Alarms at this station are connected to a leased-line telephone telemetry alarm system to communicate a pump station alarm condition. Only a general alarm is annunciated. Town staff must visit the station to determine the nature of the alarm(s) that triggered annunciation of the general alarm.

The Town of Trumbull does not have town wide SCADA system in place. Instead, a common alarm at each of the individual stations is dialed out through an alarm service. Operators must report to the particular station to determine the nature of the alarm(s), and to record pump run times, flows, etc. are desired.

The Town indicated its interest in obtaining a SCADA system for the pump station that, at a minimum, would provide discrimination of the alarms at each station and therefore better enable staff to determine if an immediate response is required, or if a delayed response is acceptable. In addition to the above, a SCADA system would also provide real-time monitoring of pump station operations from a central location or locations, and could also provide a means to remotely view, and record/trend process variables such as wet well levels and flow rates, and can compute flow totals from flow rate measurements. The SCADA system could compute and store pump run times, and this information could be used to determine when pump maintenance should be initiated. By collecting and storing operations information from the wastewater pumping stations, a SCADA system can enable the operators to spend more of their time reviewing and analyzing the pump stations operations and performance, and less time collecting and organizing that data. The configuration of a SCADA system is very flexible in allowing differing levels of monitoring and control to individuals based on need.

3.8 ELECTRICAL

Due to the age of the existing electrical equipment, any upgrade to the station should include removal of all existing electrical equipment including, but not limited to, the existing electrical service, main disconnect switch, fire alarm system, lighting, generator, oil tank, existing pump controls, wires and conduits. A summary of the state of the existing electrical systems is outlined below.

3.8.1 Building Power

The existing utility service is provided by United Illuminating (UI) pole mounted transformers. The 600 amp, 480/277, 60 Hz 3 phase, 4 wire, service runs below grade into an existing Motor Control Center (MCC) Main Breaker, located in the pump building control room area. Power is then routed through an existing 600 amp Automatic Transfer Switch (ATS) near the generator located in the Garage Area. The load side of the ATS then connects to the remaining sections of the motor control center for building power distribution.

The MCC provides power to the facility two 125 hp pumps, grinder, sump pump, monorail, and FloMatcher control systems, as well as a step down transformer for associated 208/120 volt panel loads. The 208/120 volt panel provides power to the facility lighting and HVAC systems, control panels, garage door openers, and miscellaneous instrumentation. The MCC is a General Electric 7100 series and was installed in the mid 1980's. The MCC appears to be in good condition but is approaching 26 years in age. The FloMatcher control units use water piping to monitor flows for electrolyte control, and is adjacent to the existing motor control center. Normally it is not good practice to have water piping near electrical equipment due to possible failure or rupture.

3.8.2 Emergency Power

350 kW Emergency Generator

An on site 350 kW, 480/277, 60 hz, 3 phase Cummings Diesel Generator provides standby power to the facility. The Automatic Transfer Switch (ATS) transfers Back-up Power to the site upon a power loss. Once Normal Power is restored the ATS transfers the load back to the utility power source. The unit has a local day tank and a 3,000 gallon below grade storage tank located outside of the building. At the time of the site visit, the generator appeared to be in fair condition; however, the unit is approaching 40 years in age, as it was originally installed in 1972. Recently, WPCA staff have informed us the generator has malfunctioned and, as replacement parts are difficult to acquire, a portable generator has been installed on site adjacent to the garage to supply emergency power to the site should the need arise.

During the preliminary design phase, it will be important to consider the location of the emergency generator in relation to the 100-year floodplain.

3.8.3 Building Lighting and Wiring Devices

The Control Room area lighting consists of surface mounted ceiling fluorescent fixtures that appear to be in fair condition. The garage area utilizes industrial fluorescent fixtures that appear to be in fair condition. Most outside access doors have exterior lighting as well, and they appear to be in fair condition.

Class 1 Division 1 lighting is installed within the wet well area. The dry well area has industrial globe type incandescent lighting. Per NFPA 820, the dry well is classified as a Class 1 Division 2 area if not ventilated at 6 air changes per hour or more. It was undetermined if the fixture was indeed rated Class 1 Division 2 as the dry well space is currently not ventilated. The wet well lighting and dry well lighting appear to be in fair to poor condition due to the corrosive atmosphere.

The light switches appear to be in fair condition in the garage and office areas, and fair to poor condition in the wet well and dry well areas due to the corrosive atmosphere. Per NFPA 820, the dry well is classified as a Class 1 Division 2 area if not continuously ventilated at 6 air changes per hour or more. It was undetermined if these devices are indeed rated for the classified area.

3.8.4 Alarm Systems

There is no Fire Alarm system within the station, however there is a building alarm system in the control room and heat and smoke detectors throughout the building.

3.8.5 Noted Code Violations

As mentioned, the dry well area electrical devices should be rated for Class 1 Division 2 areas if the space is not continuously ventilated for six air changes per hour or more. The pump disconnects are rated for the area; however, the rating on the heaters, lighting, switches, sump pump, and receptacles could not be determined. Also, one of the pumps has a quick plug disconnect that is not rated for Division 2 areas.

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BY _____ DATE _____ CHCKD. BY _____ DATE _____

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Engineering a Better Environment

SHEET NO. 1 OF _____

PROJECT NO. _____

PROJECT Sign-In Sheet 2/9/16

BOOK NO. _____

Tuesday February 9th 11am Site Meeting
Beardsley Pump Station Upgrade

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KELLY BOYD	PURCHASING TOWN OF TRUMBULL	
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BY _____ DATE _____ CHCKD. BY _____ DATE _____

WRIGHT-PIERCE
Engineering a Better Environment

SHEET NO. 1 OF _____

PROJECT NO. _____

PROJECT February 16, 2016 11am

BOOK NO. _____

Beardsley Pump Station Comprehensive Upgrade

Sign-In Sheet

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