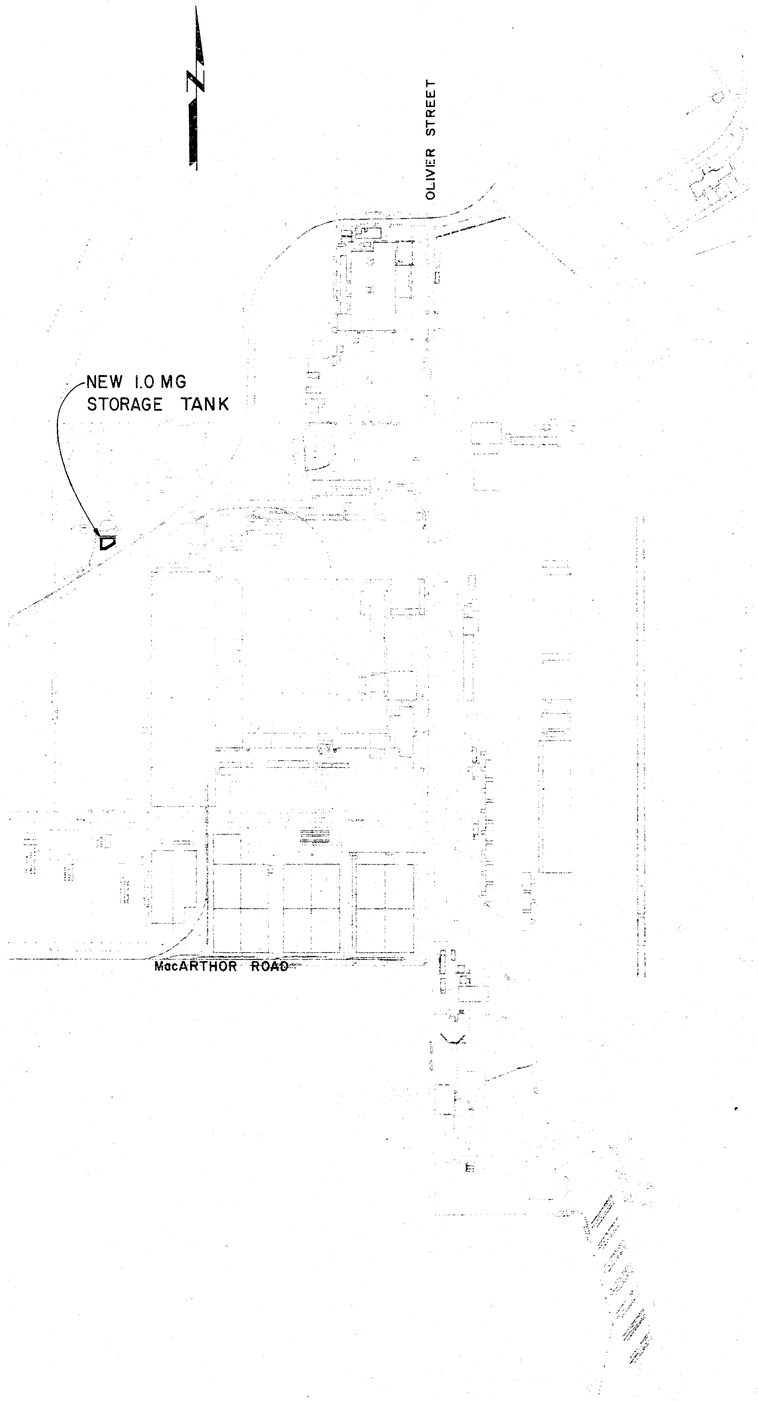


LOCATION MAP

BOEING MILITARY AIRPLANE COMPANY

WICHITA, KANSAS

INDUSTRIAL WASTEWATER TREATMENT PLANT IMPROVEMENTS

1.0 MILLION GALLON WASTEWATER STORAGE TANK

BLACK & VEATCH ENGINEERS-ARCHITECTS

KANSAS CITY, MISSOURI

PROJECT NO. 11903.001

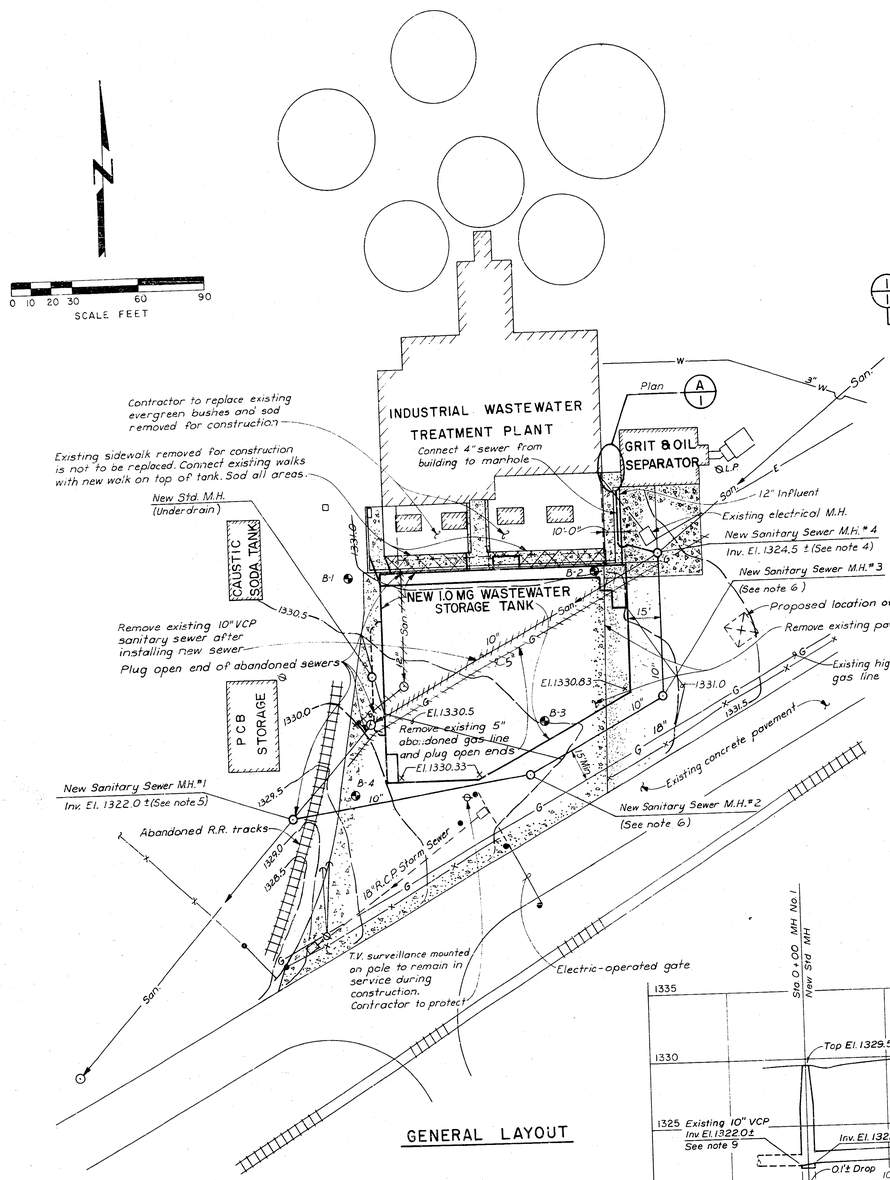
1984

SHEET LIST:

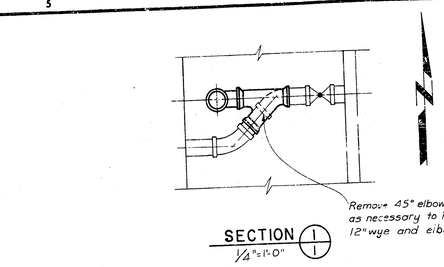
PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

1/10

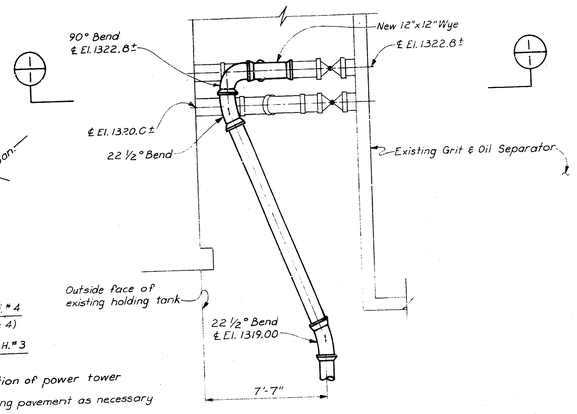
AF 34728



GENERAL LAYOUT

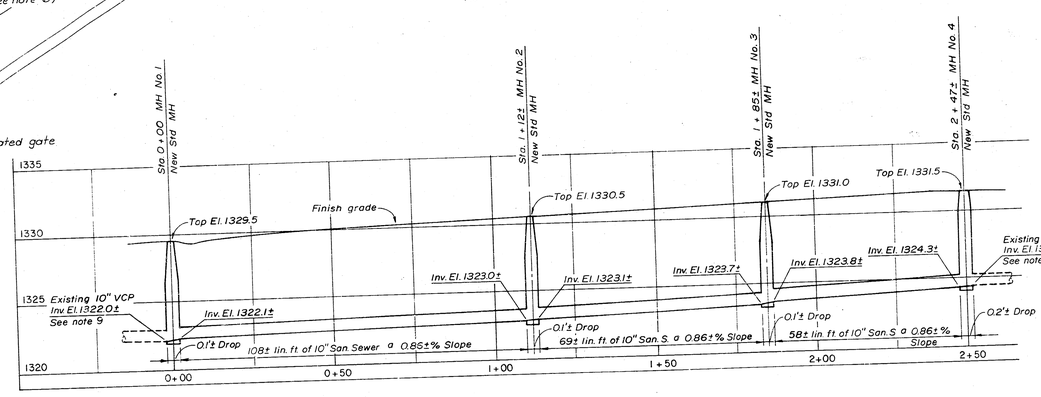


SECTION 1/1 1/4"=1'-0"



Notes:
1. The area between the existing building and the existing grit and oil separation building is congested with electrical duct bank, 4" sewer, small drain lines, small water lines, etc. Extensive hand excavation may be necessary
2. Rotate bends and deflect pipe as necessary to change elevation.

CONNECTION PLAN A/1 1/4" = 1'-0"



NEW SANITARY SEWER PROFILE

Horizontal Scale 1"= 20'-0"
Vertical Scale 1"= 5'-0"

GENERAL NOTES

1. All existing elevations and location of M.H. and pipelines pertaining to new construction shall be verified by the Contractor prior to construction.
2. All concrete pavement, sidewalks, bushes, sod and gravel surfacing removed by Contractor shall be replaced to a equal or better condition.
3. For details of Sanitary Sewer Manholes see Sheet 7.
4. New Sanitary Manhole to be built over existing sewer. Inv. El out to be 0.1 below existing sewer.
5. New Sanitary Manhole to be built over existing sewer Inv. El at 1322.0±. The new incoming sewer Inv. El is to be set 0.1 foot above the existing outgoing sewer.
6. Contractor to provide uniform slope on relocated sewer line between new manhole #1 and #4 with 0.1 foot of fall across manholes #2 and #3.
7. Contractor to saw cut existing concrete pavement at edge of excavation. Provide expansion joint material between new and existing pavement sections and between new pavement and concrete structures.
8. Diversion of flow in the existing Sanitary Sewer during construction is the responsibility of the Contractor. Contractor to provide pumps, piping, etc. as necessary to handle the Sanitary Sewerage until the final relocated sewer is installed and accepted.
9. The invert elevations of the existing sewer is to be determined in the field by the Contractor.
10. The sewer invert elevation on this profile were developed from as built drawings. Final invert elevations and slopes may vary, as determined by the Engineer, after Contractor verifies existing sewer invert at MH No. 1 and MH No. 4.

ABBREVIATIONS

Alum	Aluminum
∠	Angle
@	At
B-102	Beam Number
CI	Cast Iron
C.I.MH	Cast Iron Manhole
℄	Centerline
Conc	Concrete
Crs	Course
Dia	Diameter
El	Elevation
EF	Each Face
EW	Each Way
G	Gas
HDPE	High Density Polyethylene
Inv	Invert
LP	Light Pole
M-	Manhole
M-	Mechanical Joint
M-	Minimum
Max	Maximum
OD	Outside Diameter
PE	Plain End
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete Pipe
Reinf	Reinforcing
San	Sanitary
St	Street
Std	Standard
SS	Stainless Steel
Sq	Square
SE	South East
SW	South West
Typ	Typical
VCP	Vitrified Clay Pipe
WWF	Welded Wire Fabric
W/	With
W	Water

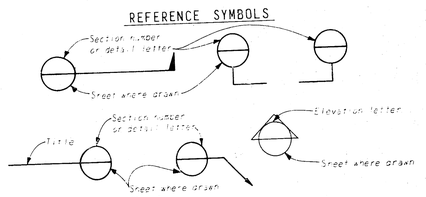
GENERAL SYMBOLS

- New structure
- Existing structure above ground
- Existing structure below ground
- New gravel surfacing
- Existing gravel surfacing
- Existing concrete pavement and sidewalk
- New concrete sidewalk and pavement
- 812 — Existing contour
- 806 — Finish grade contour
- B6 — Grid: test hole and number
- Existing piping
- Existing piping to be removed or abandoned
- New piping
- 805.0 — Finish grade or pavement spot elevation
- Power pole
- Existing chain link fence
- E — Underground electric duct bank

MATERIALS LEGEND

- New Concrete (in section)
- Existing concrete (in section)
- Metal
- Compacted granular fill
- Finish grade

REFERENCE SYMBOLS



DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED MPS
DETAILED SCH
CHECKED RAM
APPROVED
DATE 31Dec 84

Black & Veatch Engineers - Architects Kansas City, Missouri

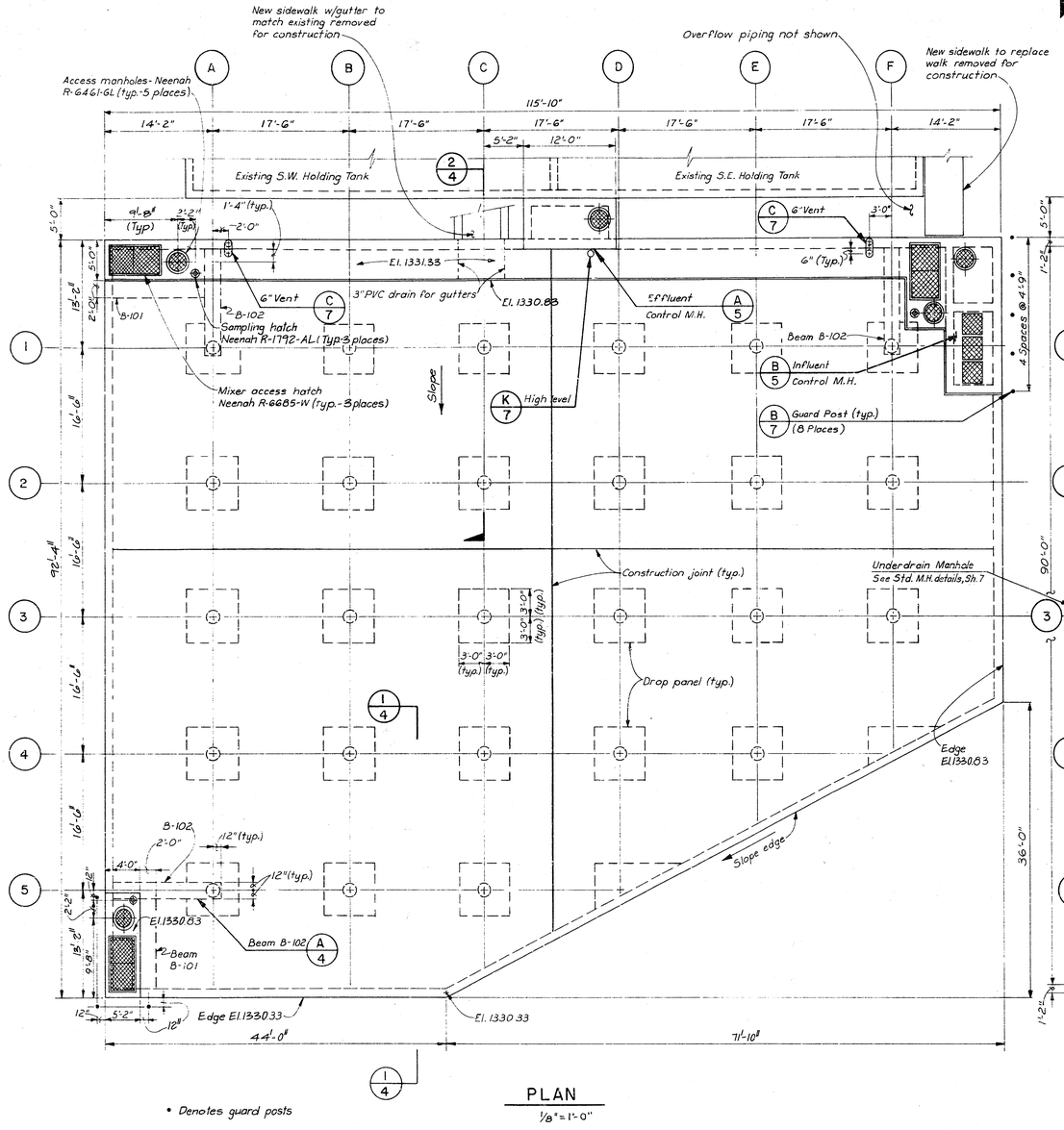
PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
GENERAL LAYOUT
LEGEND

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 1 OF 9 2/10

B&V C-2436 A



DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED MPS
DETAILED SCH
CHECKED RAM
APPROVED
DATE 31 Dec 84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

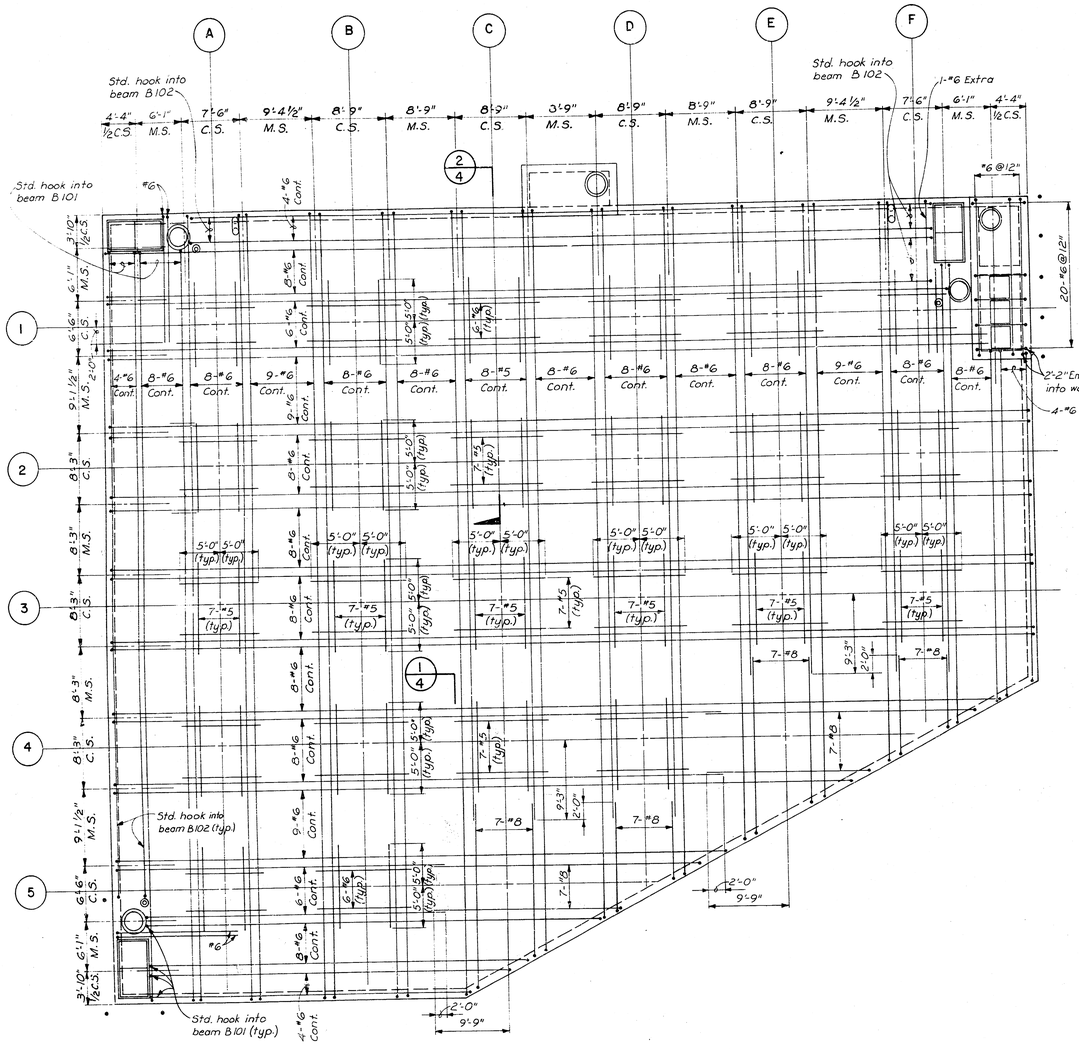
PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
1.0 MG STORAGE TANK
PLAN & SECTIONAL PLAN

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 2 OF 9

B & V - G - 2496 - A

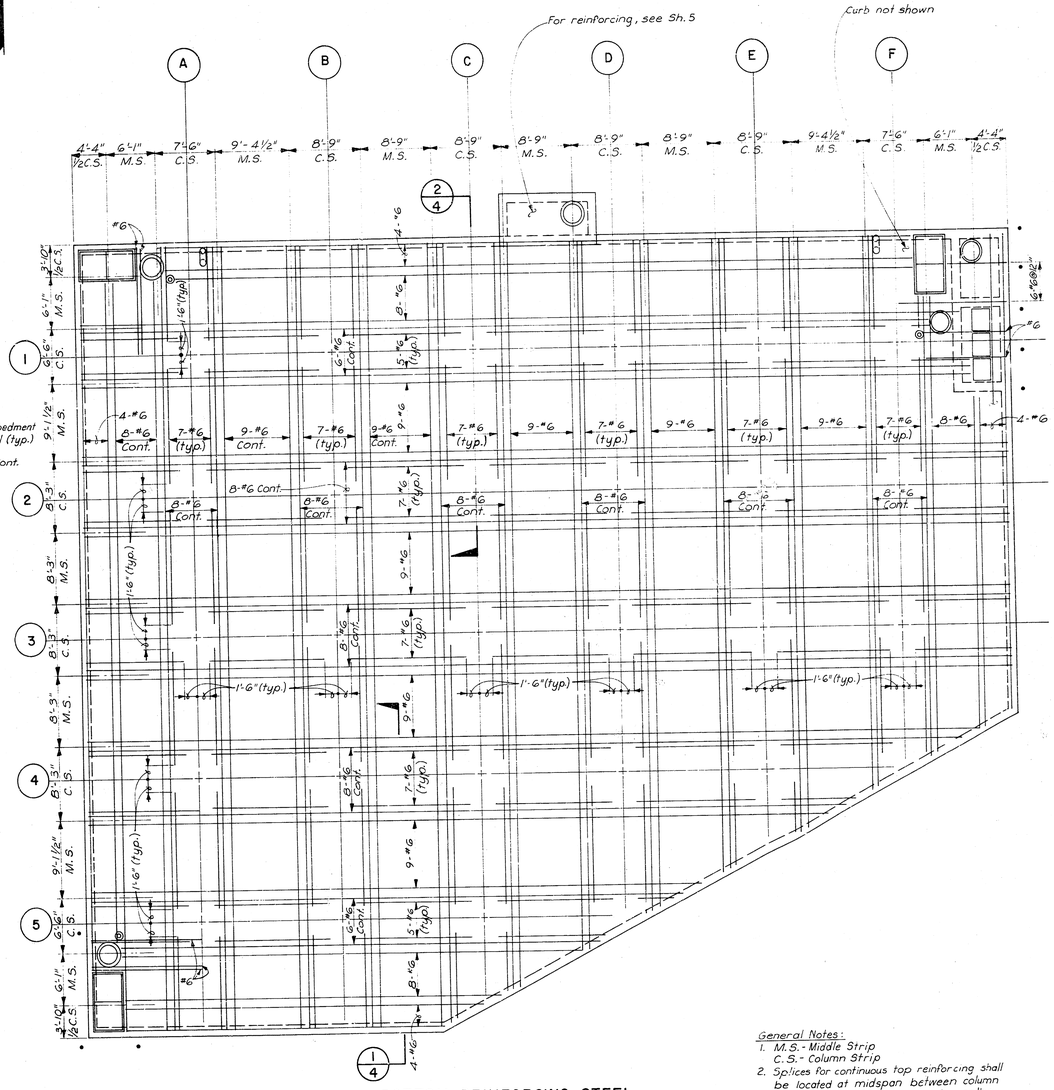


TOP REINFORCING STEEL

ROOF PLAN

1/8"=1'-0"

1/4



BOTTOM REINFORCING STEEL

ROOF PLAN

1/8"=1'-0"

1/4

General Notes:
1. M.S.- Middle Strip
   C.S.- Column Strip
2. Splices for continuous top reinforcing shall be located at midspan between column rows using a 30 bar diameter splice.
3. Splices for continuous bottom reinforcing shall be located at column rows using a Class B tension splice in accordance with ACI 318-83.

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED LWC
DETAILED WJT, SCH
CHECKED RED
APPROVED
DATE 31Oct84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

PROJECT NO. 11903.001

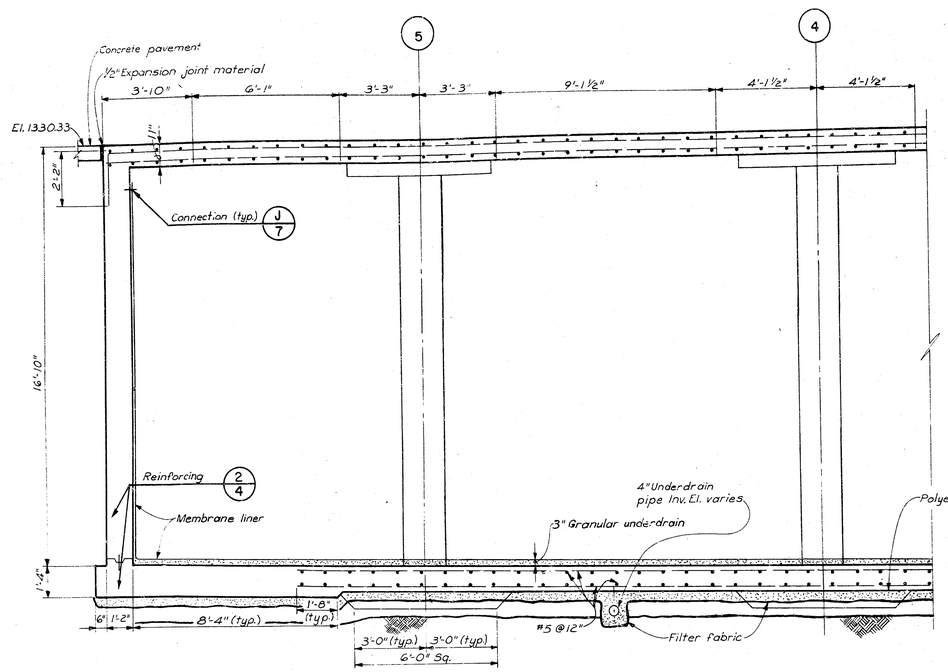
BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
1.0 MG STORAGE TANK
REINFORCING PLANS

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 3 OF 9

4/10

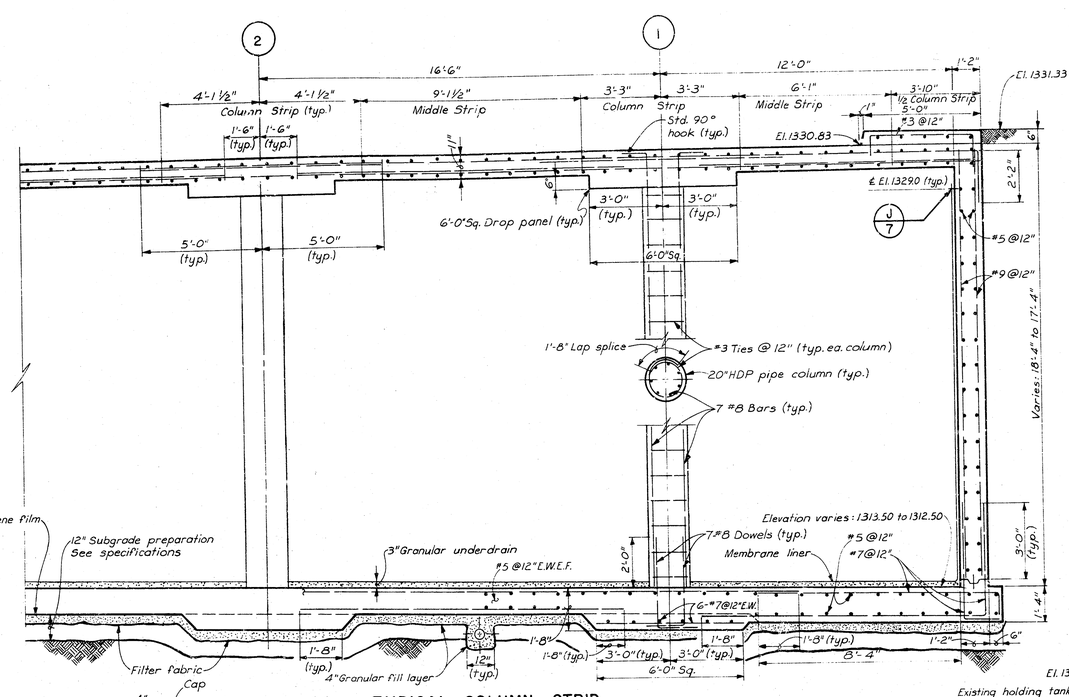
B&V-G-2420-A



TYPICAL MIDDLE STRIP

SECTION 1/2,3

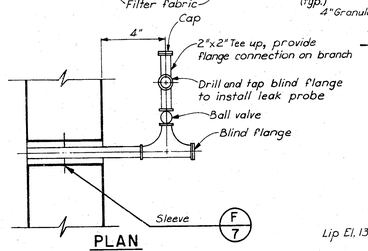
3/8"=1'-0"



TYPICAL COLUMN STRIP

SECTION 2/2,3

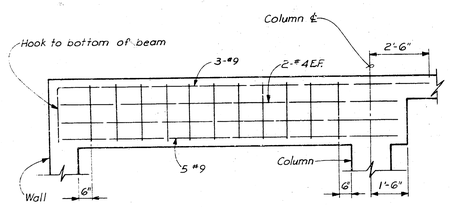
3/8"=1'-0"



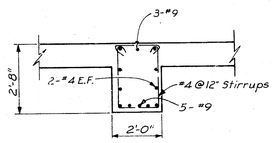
PLAN

LEAK DETECTION PROBE C/2,5

No Scale



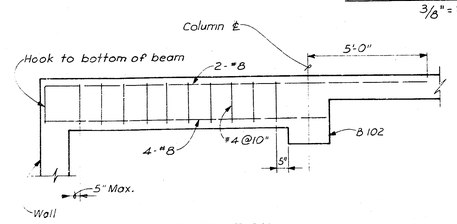
ELEVATION



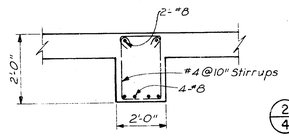
SECTION

BEAM DETAIL B102 A/2

3/8"=1'-0"



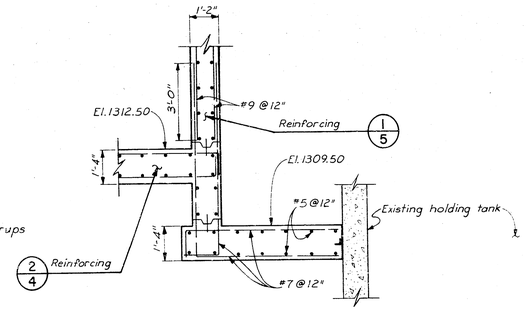
ELEVATION



SECTION

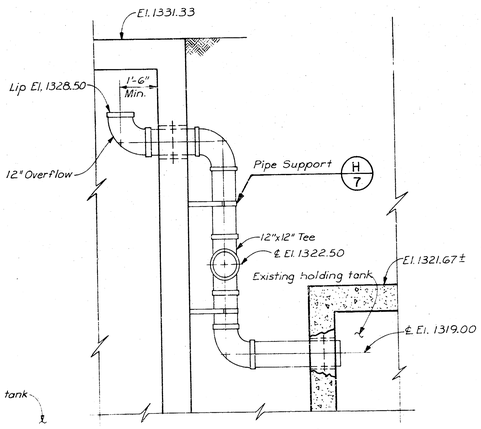
BEAM DETAIL B101 B/2

3/8"=1'-0"



SECTION 3/5

3/8"=1'-0"



SECTION 4/5

3/8"=1'-0"

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED MPS, LWC
DETAILED SCH
CHECKED RAM, RLD
APPROVED
DATE 31 Dec 84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

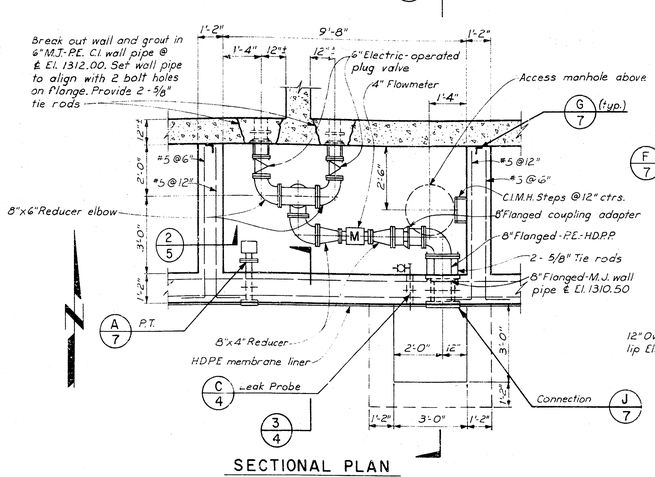
PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
1.0 MG STORAGE TANK
CONCRETE SECTIONS AND DETAILS

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 4 OF 9
5/10

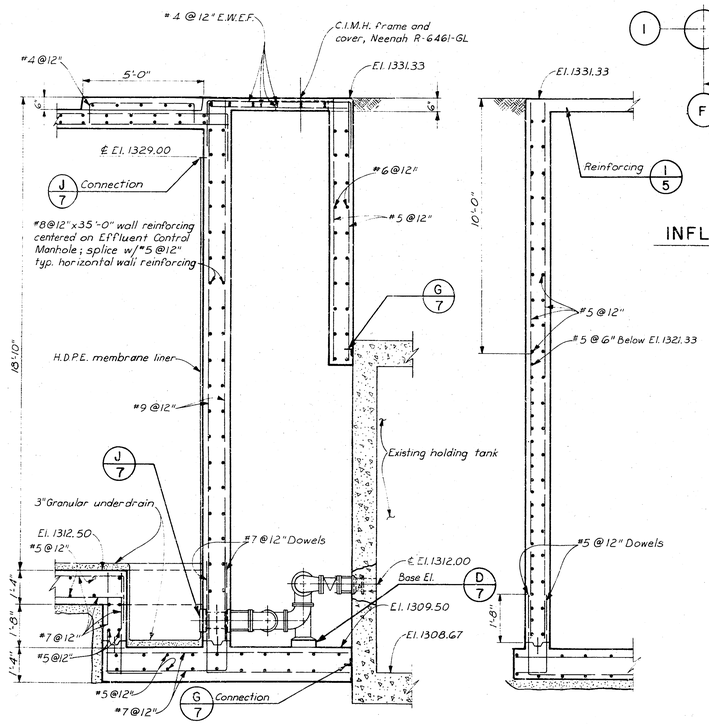
B&V-G-2436-A



SECTIONAL PLAN

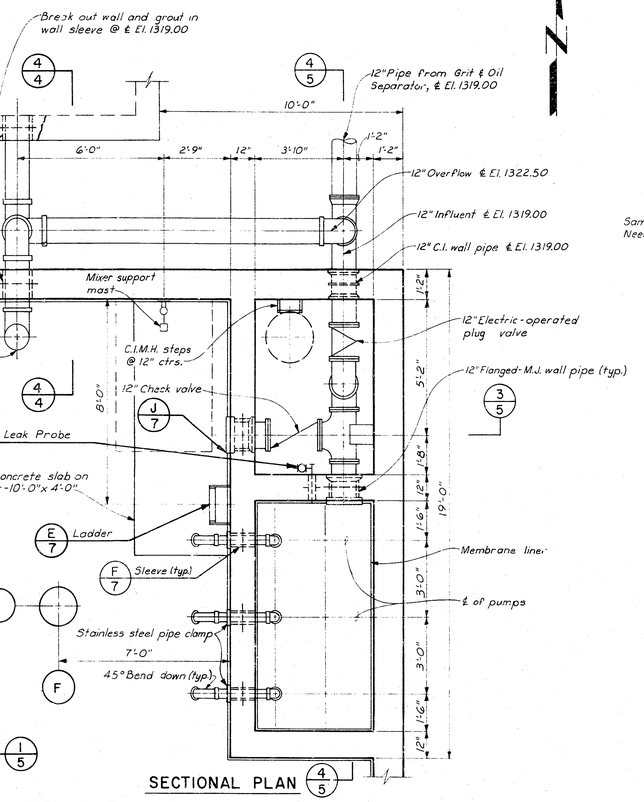
EFFLUENT CONTROL MANHOLE DETAIL A/2

No Scale



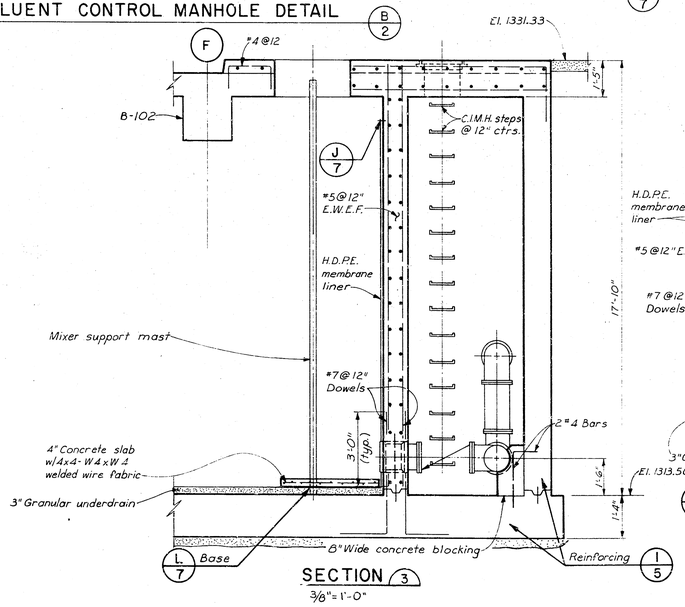
SECTION 1
3/8" = 1'-0"

SECTION 2
3/8" = 1'-0"



SECTIONAL PLAN 4/5

INFLUENT CONTROL MANHOLE DETAIL B/2



SECTION 3
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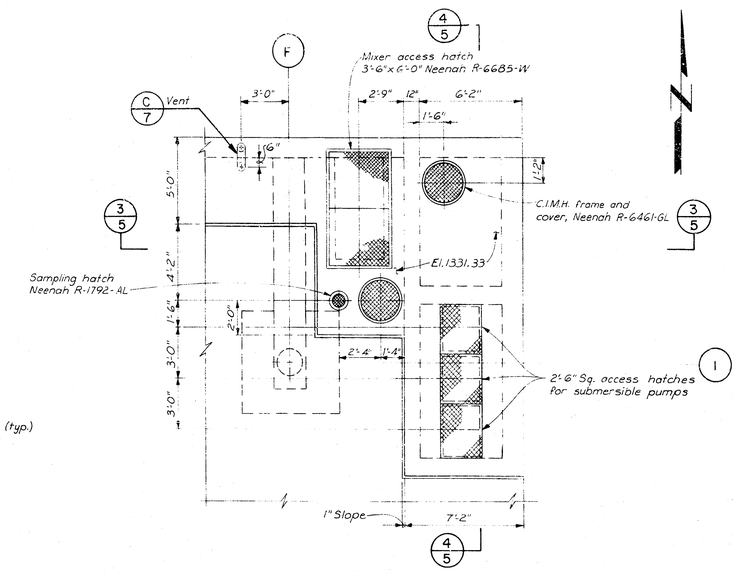


PLAN

INFLUENT CONTROL MANHOLE DETAIL B/2

SECTION 4
3/8" = 1'-0"

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED M.P.S., L.W.C.
DETAILED S.C.H.
CHECKED R.A.M., R.E.D.
APPROVED
DATE 31 Dec 84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

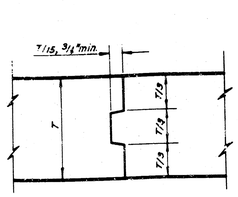
PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
PUMP STATION AND FLOW CONTROL MANHOLES SECTIONS AND DETAILS

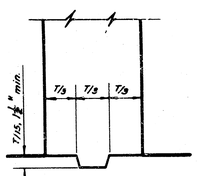
PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 5 OF 9 to 10

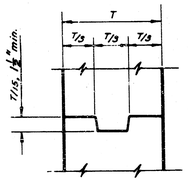
B&V-C-2436-A



SLABS

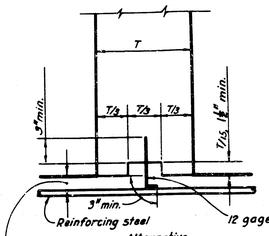


BASE OF WALLS



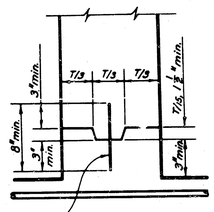
WALLS

JOINTS WITHOUT WATER STOPS

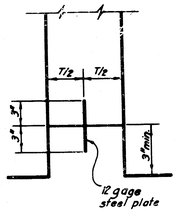


Alternative
T ≧ 12"

This alternative not to be used where required cover is less than 1½".

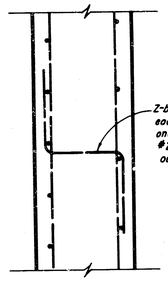


Alternative
T ≧ 12"

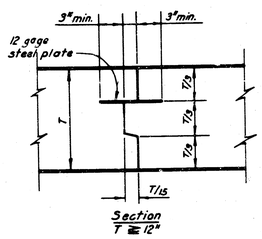


T < 12"

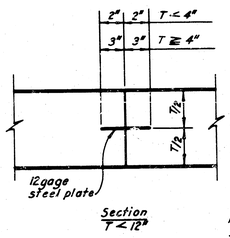
BASE OF WALLS



SPACERS FOR WALL REINFORCEMENT

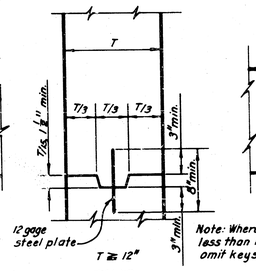


Section
T ≧ 12"



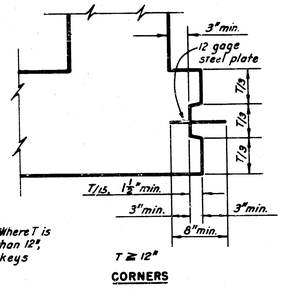
Section
T < 12"

SLABS



T ≧ 12"

WALLS



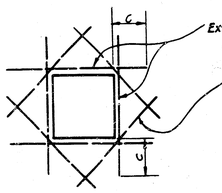
T ≧ 12"

CORNERS

WATERTIGHT JOINTS

TYPICAL CONSTRUCTION JOINTS

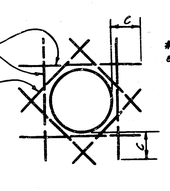
Note: Reinforcing steel is to be carried across all construction joints.



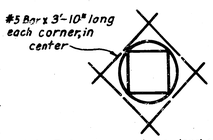
Thickness of Concrete	Bar Size	Bar Length
< 12"	4	3'-0"
12" to 18"	5	3'-0"
> 18"	6	3'-8"

C = The required length for lapped splice for top bars as shown on this sheet.

FOR RECTANGULAR OPENINGS LARGER THAN 21" DIAGONAL



FOR CIRCULAR OPENINGS LARGER THAN 21" DIAMETER



Note: Extra bars not required at sleeves or wall pipes when reinforcement is not cut and O.D. is 10" or less.

FOR OPENINGS 21" AND SMALLER IN DIAMETER OR DIAGONAL

TYPICAL EXTRA REINFORCING AT OPENINGS

BAR SIZE	LENGTH OF LAPPED SPLICES FOR REIN. ORCING IN INCHES		LENGTH OF EMBEDMENT FOR END ANCHORAGE OF REINFORCING WITH STANDARD HOOKS, IN INCHES	
	* TOP BARS	OTHERS	* TOP BARS	OTHERS
3	20	20	14	14
4	23	20	16	16
5	29	20	20	18
6	37	28	26	20
7	50	36	36	22
8	66	47	44	26
9	83	60	55	32
10	106	76	66	41
11	130	93	78	52
14	← Not Permitted →		108	79
18	← Not Permitted →		158	119

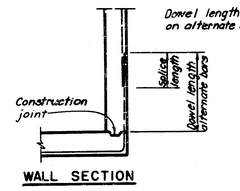
* Top bars are horizontal bars so placed that more than 12" of concrete is cast in the member below the bar. Horizontal bars in walls are to be provided with laps as required for top bars.

Except as otherwise indicated on the plans, embedment lengths for end anchorage and lapped splices shall be not less than (no minus tolerance) shown above. Lapped splices shall not be made at points of maximum stress as determined by the Engineer, and shall not be spaced closer than 6 inches on centers. If splices are staggered so that no more than ½ are spliced in a lap splice length, the splice length can be reduced to 75% of the lengths tabulated above.

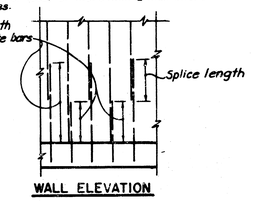
CONCRETE COVER FOR REINFORCEMENT

LOCATION	MINIMUM COVER
Unformed surfaces adjacent to excavation	3"
Formed or top surfaces exposed to weather or saturated air, submerged or in contact with earth	
#6 or larger bars	2"
#5 or smaller bars	1½"
Other locations	
Bars in beams or girders, including stirrups and column spirals or ties	1½"
Slabs, walls and joist	
#14 and #18	1½"
#11 and smaller	¾"

Cover for reinforcing steel shall not be less than the minimum given above (no minus tolerance), and shall not exceed the minimum by more than ½ inch where the concrete thickness is 24 inches or less, or more than ½ inch where the concrete thickness is more than 24 inches.

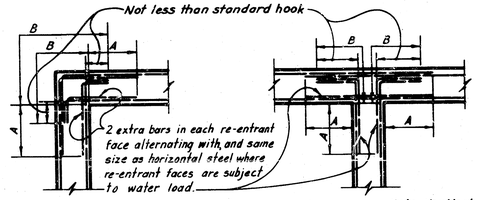


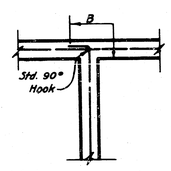
WALL SECTION

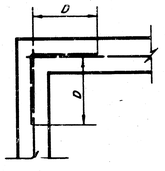


WALL ELEVATION

TYPICAL WALL JOINT REINFORCING DETAILS FOR ALTERNATING DOWEL LENGTHS







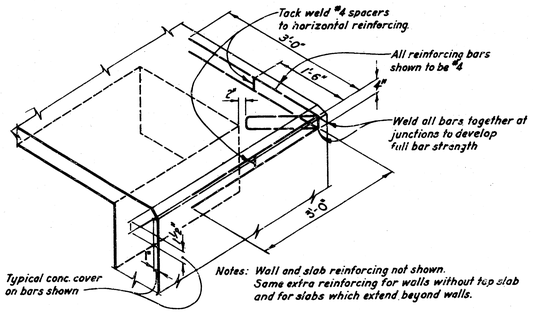
Note: Vertical reinforcing not shown.

A = ½ the clear span distance measured horizontally or 0.4 the clear span or cantilever measured vertically, whichever is the smaller; but in no case less than the required length of lapped splices for top bars as shown on this sheet. The "A" dimension for one-half of the extra bars can be reduced by 30%.

B = Sufficient length to permit bars to extend through the wall to the opposite face and terminate in a standard hook but shall not be less than the length required for embedment of top bars, as shown on this sheet.

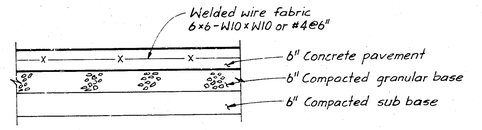
D = not less than the length required for lapped splices for top bars, as shown on this sheet.

TYPICAL CORNER REINFORCING DETAILS



Notes: Wall and slab reinforcing not shown. Same extra reinforcing for walls without top slab and for slabs which extend beyond walls.

EXTRA CORNER REINFORCING AT TOP OF WALLS AND / OR SLABS WHICH ARE TO SUPPORT MASONRY



Notes:
1. Provide sawed joint at 10'-0" on centers
2. Provide ½" Exp. joint material between pavement & new structure.

CONCRETE PAVEMENT SECTION

No Scale

GENERAL NOTE:

Details on this sheet apply to the entire set of plans except where specifically shown otherwise.

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED MPS
DETAILED JLR
CHECKED RAM
APPROVED
DATE 3/12/84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

PROJECT NO. 11903.001

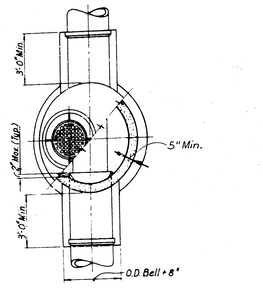
BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS

STANDARD CONCRETE DETAILS

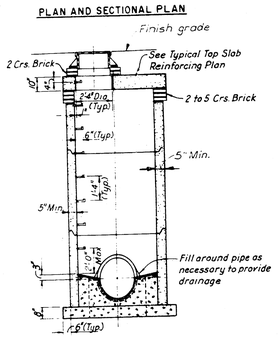
PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 6 OF 9

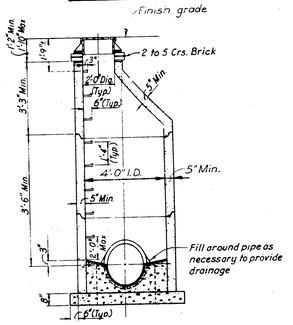
7/10



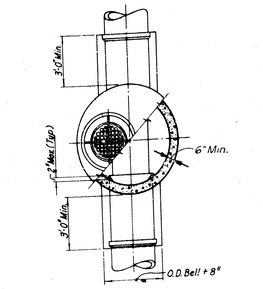
PLAN AND SECTIONAL PLAN



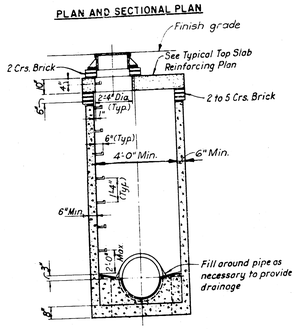
STANDARD SECTION



ALTERNATIVE STANDARD SECTION

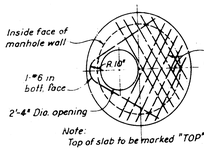


PLAN AND SECTIONAL PLAN

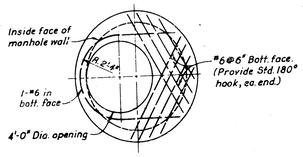


STANDARD SECTION

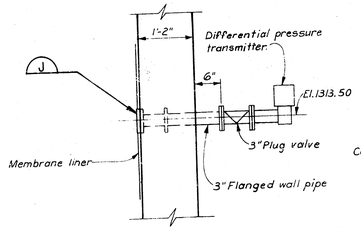
CONCRETE POURED IN PLACE MANHOLE



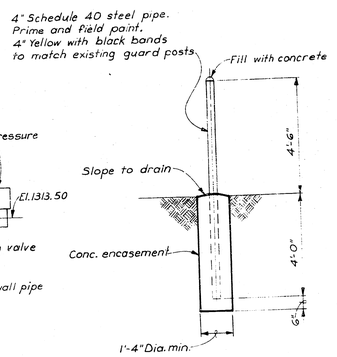
TYPICAL TOP SLAB REINFORCING PLAN



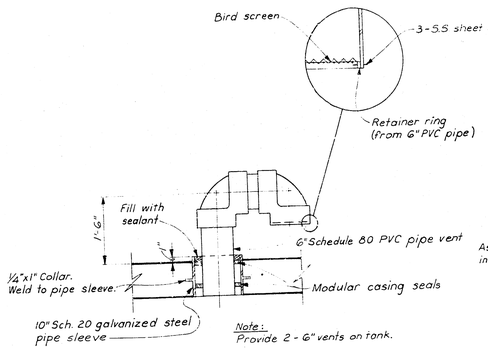
TYPICAL REDUCER SLAB REINFORCING PLAN



DIFFERENTIAL PRESSURE TRANSMITTER DETAIL (A/5)
No Scale

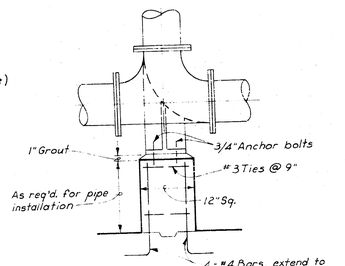


GUARD POST DETAIL (B/2)
No Scale



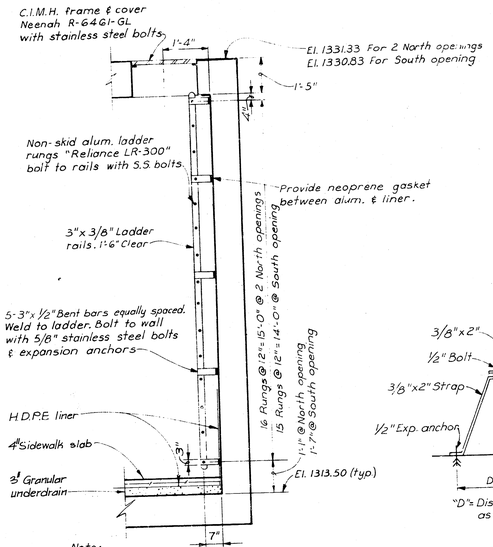
Note: Provide 2 - 6" vents on tank.

VENT DETAIL (C/2,5)
1" = 1'-0"



Note:
1. This support to be used w/ base bends or tees.
2. Slab reinf. not shown.

PIPE SUPPORT DETAIL (D/5)
No Scale

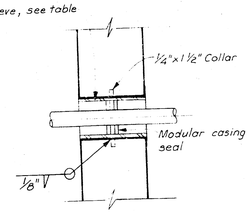


Note: Ladder to be all aluminum construction.

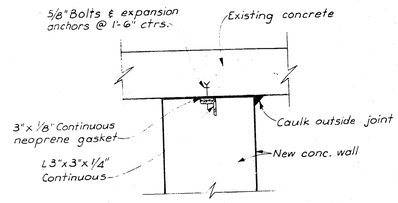
LADDER DETAIL (E/2,5)
No Scale

PIPE SIZE	SLEEVE SIZE
½"	* 2"
¾" & 1"	* 3"
1¼" & 1½"	* 3½"
2" & 2½"	* 4"
3" & 3½"	* 5"
4"	* 6"
Larger than 4"	Pipe O.D. + 2" (1)

* Schedule 40 std. steel pipe
(1) Fabricate with ¼" Plate



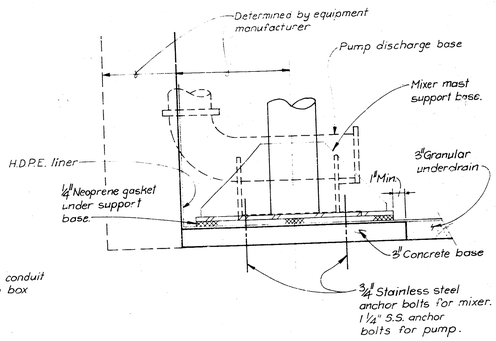
SLEEVE DETAIL (F/4,5)
No Scale



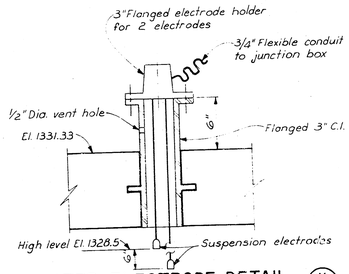
CONNECTION DETAIL (G/5)
No Scale

"D" = Distance out from wall as indicated on drawings.

PIPE SUPPORT DETAIL (H/4)
No Scale



BASE DETAIL (L/2,5)
No Scale



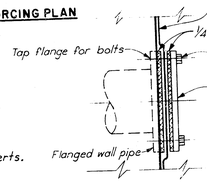
HIGH WATER ELECTRODE DETAIL (K/2)
No Scale

GENERAL MANHOLE NOTES

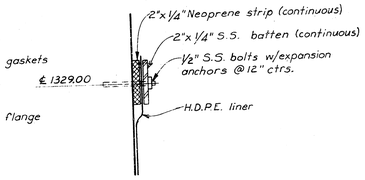
1. All manhole rings to be set in mortar.
2. Any material excavated beneath pipe entering or leaving manholes shall be replaced with concrete; such concrete fill shall extend to the center of the pipe for a distance of at least 3'-0" from face of manhole and shall terminate at a bell.
3. Wall reinforcing in precast manhole circular sections to be ASTM C-76 Class III.
4. Manhole steps in precast manholes to be grouted in with expanding grout.
5. Manhole inverts shown as poured concrete. At contractors option, inverts may be built up using brick and mortar. Provide 1" minimum cement mortar finish, all inverts.

LEGEND

- Concrete poured in place
- Precast concrete
- Brick masonry



PIPE CONNECTIONS



TOP OF WALL

MEMBRANE LINER CONNECTION DETAILS (J/4,5)
No Scale

	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED MPS
DETAILED SCH
CHECKED RAM
APPROVED [illegible]
DATE 31 Dec 64

Black & Veatch
Engineers - Architects
Kansas City, Missouri

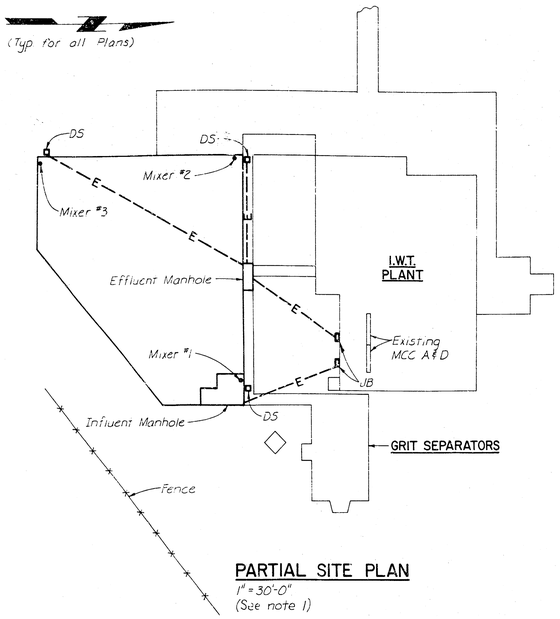
PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
MISCELLANEOUS DETAILS

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

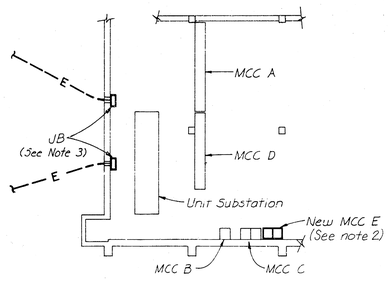
SHEET 7 OF 9 8/10

(Typ for all Plans)



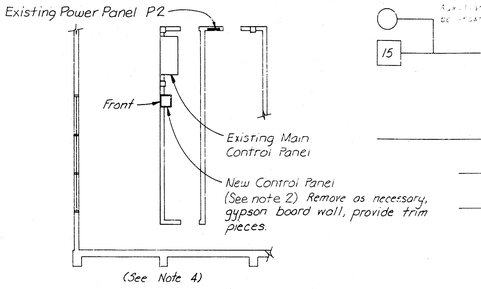
PARTIAL SITE PLAN

1" = 30'-0"
(See note 1)



PARTIAL EQUIPMENT FLOOR PLAN
EL. 1321.67

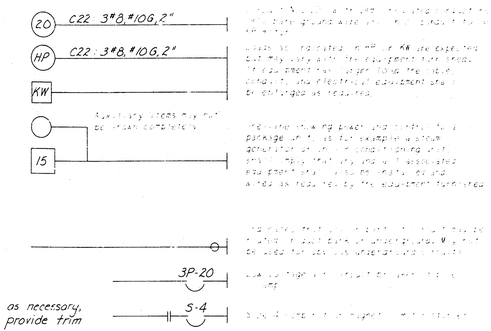
3/32" = 1'-0"



PARTIAL FIRST FLOOR PLAN
EL. 1334.67

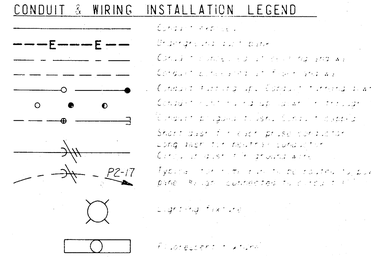
3/32" = 1'-0"

ONE-LINE DIAGRAM LEGEND

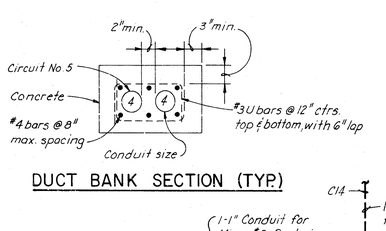


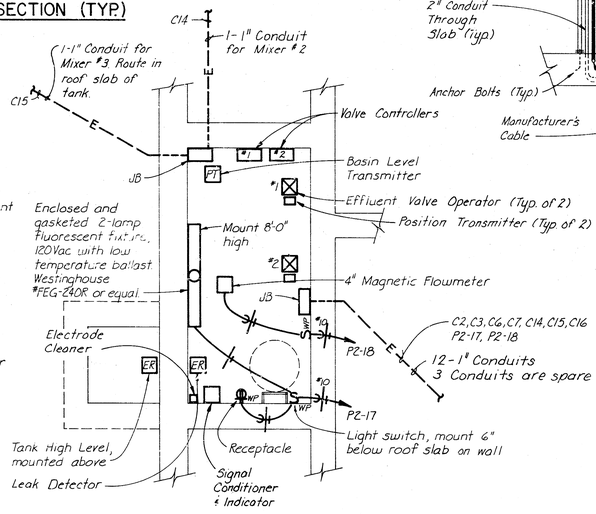
ABBREVIATIONS

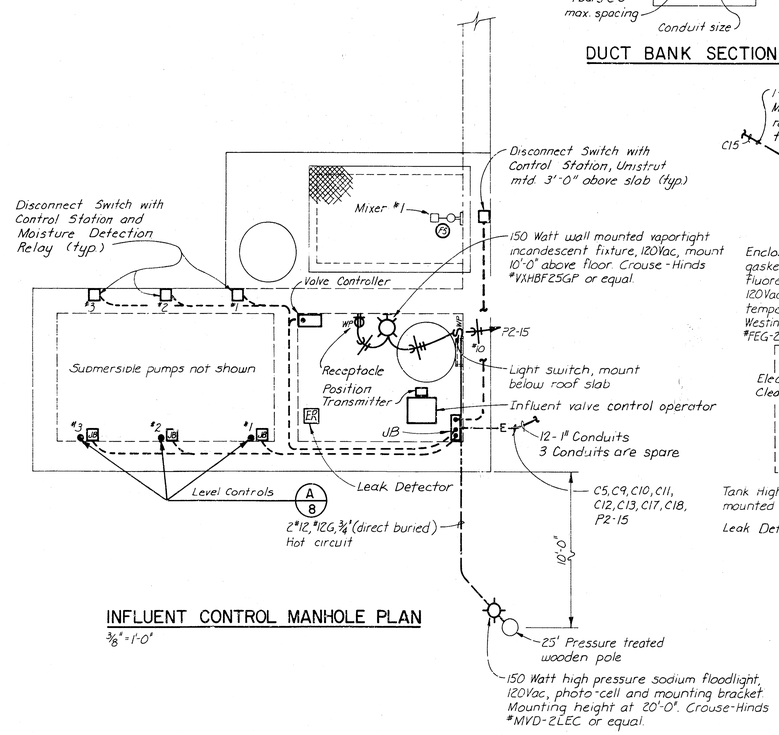
CONDUIT & WIRING INSTALLATION LEGEND



DUCT BANK SECTION (TYP.)





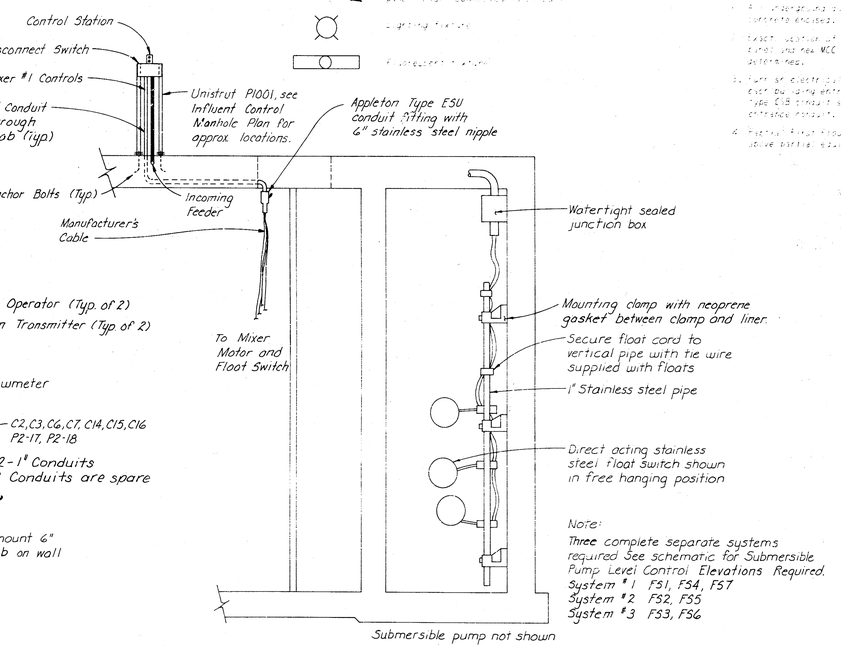


INFLUENT CONTROL MANHOLE PLAN

3/8" = 1'-0"

EFFLUENT CONTROL MANHOLE PLAN

3/8" = 1'-0"



LEVEL CONTROL DETAIL (A/8)

3/8" = 1'-0"

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED JDK
DETAILED REE
CHECKED JAW
APPROVED D.E. Clark
DATE 12-27-84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

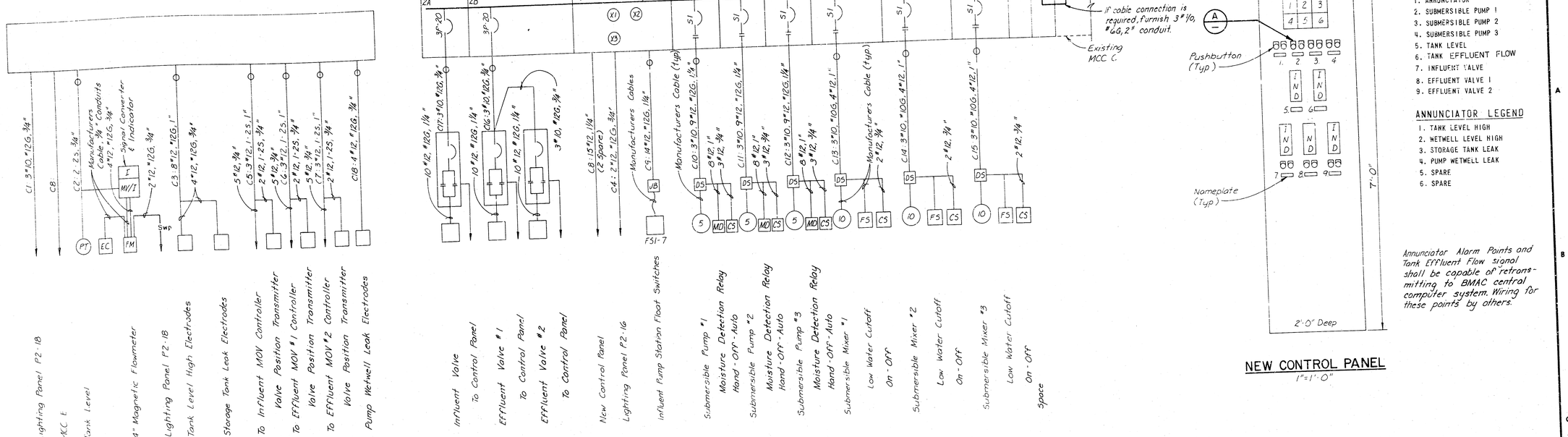
PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
ELECTRICAL
PLAN VIEWS

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 8 OF 9

FILMED FROM THE BEST AVAILABLE COPY



CONTROL PANEL ONE-LINE DIAGRAM

MCC E ONE-LINE DIAGRAM

NAMEPLATE LEGEND

1. ANNUNCIATOR
2. SUBMERSIBLE PUMP 1
3. SUBMERSIBLE PUMP 2
4. SUBMERSIBLE PUMP 3
5. TANK LEVEL
6. TANK EFFLUENT FLOW
7. INFLUENT VALVE
8. EFFLUENT VALVE 1
9. EFFLUENT VALVE 2

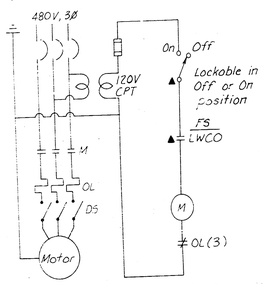
ANNUNCIATOR LEGEND

1. TANK LEVEL HIGH
2. WETWELL LEVEL HIGH
3. STORAGE TANK LEAK
4. PUMP WETWELL LEAK
5. SPARE
6. SPARE

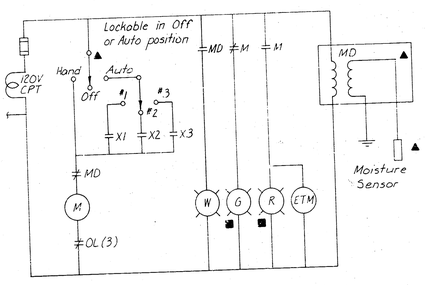
NEW CONTROL PANEL

1"=1'-0"

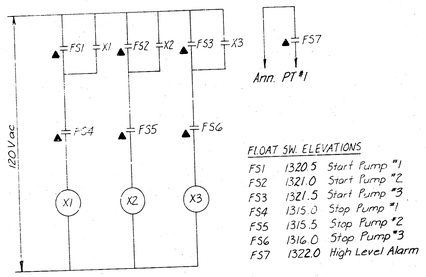
Annunciator Alarm Points and Tank Effluent Flow signal shall be capable of retransmitting to BMAC central computer system. Wiring for these points by others.



SUBMERSIBLE MIXERS (3)



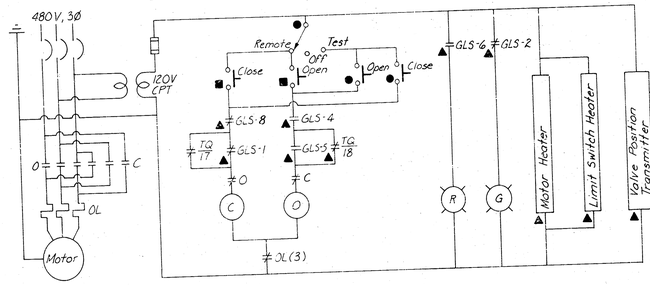
SUBMERSIBLE PUMPS (3)



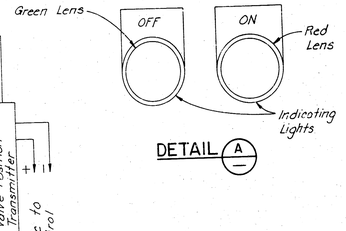
FLOAT SW. ELEVATIONS

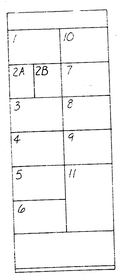
FS1	1320.5	Start Pump #1
FS2	1321.0	Start Pump #2
FS3	1321.5	Start Pump #3
FS4	1315.0	Stop Pump #1
FS5	1315.5	Stop Pump #2
FS6	1316.0	Stop Pump #3
FS7	1322.0	High Level Alarm

SUBMERSIBLE PUMP LEVEL CONTROLS



MOTOR OPERATED VALVES (3)





MOTOR CONTROL CENTER NO. MCC E

MCC LOCATION INDUSTRIAL WASTEWATER PLANT

ENCLOSURE:

NEMA TYPE 1 WITH GASKETED DOORS

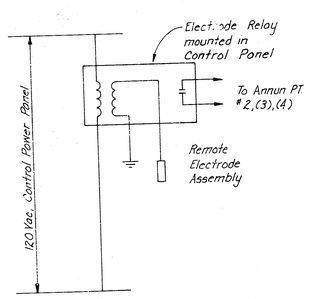
ARRANGEMENT:

SINGLE FACE, FRONT ONLY, MOUNTING UNITS STRAIGHT
NOT ACCESSIBLE FROM REAR
REAR REMOVABLE PLATES
MAIN BUS AT TOP
INCOMING FEEDER ENTERS TOP
OUTGOING FEEDERS ENTER TOP
CONTROL WIRING ENTERS TOP
GROUND BUS

CHARACTERISTICS:

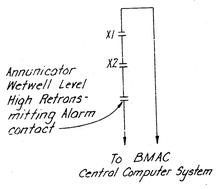
MAIN BUS RATING 600 AMP
BUS BRACING AT 22,000 AMPERE SYMMETRICAL
WIRING NEMA CLASS 2, TYPE B

MCC E FRONT VIEW



ELECTRODE RELAY

(Typ of 3)



PUMP FAILURE ALARM

ROTOR	GLS CONTACT	VALVE POSITION: FULL OPEN 0%	INTERMEDIATE POSITION 95%	FULL CLOSED 100%
1	1			
	2			
	3			
	4			
2	5			
	6			
	7			
	8			

Tq-17 OPENS ON HIGH CLOSING TORQUE
Tq-18 OPENS ON HIGH OPENING TORQUE
—— CONTACT CLOSED

MOTOR OPERATED VALVE SWITCH DEVELOPMENT

DEVICE LEGEND

- ▲ REMOTE MOUNTED FROM STARTER AT EQUIPMENT
- ■ LOCATED ON NEW CONTROL PANEL
- ● LOCATED AT MOTOR OPERATED VALVE CONTROLLER

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED JDK
DETAILED JKE
CHECKED JAW
APPROVED D. E. Clarke
DATE 12-27-84

Black & Veatch
Engineers - Architects
Kansas City, Missouri

PROJECT NO. 11903.001

BOEING MILITARY AIRPLANE CO.
INDUSTRIAL WASTEWATER PLANT IMPROVEMENTS
ELECTRICAL
SCHEMATICS AND ONE-LINES

PAUL E. SCHAFER LICENSED 7101 KANSAS PROFESSIONAL ENGINEER

SHEET 9 OF 9

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