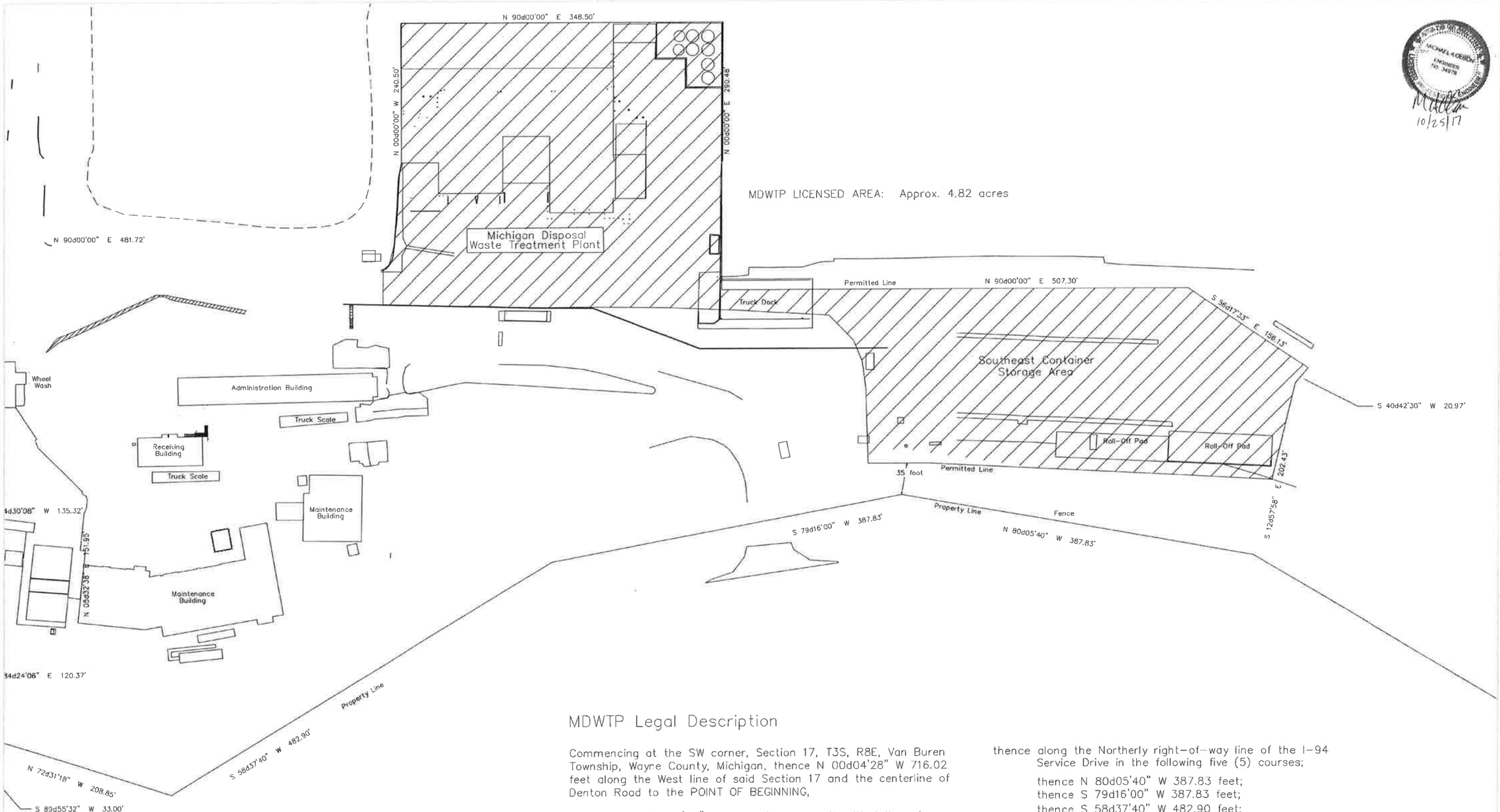


MDWTP Legal Description

Commencing at the SW corner, Section 17, T3S, R8E, Van Buren Township, Wayne County, Michigan, thence N 00d04'28" W 716.02 feet along the West line of said Section 17 and the centerline of Denton Road to the POINT OF BEGINNING,

thence N 00d04'28" W 78.05 feet along the West line of said Section 17 and the centerline of Denton Road;
thence N 84d24'06" E 120.37 feet;
thence N 05d32'38" E 151.95 feet;
thence N 84d30'08" W 135.32 feet;
thence N 00d04'28" W 290.01 feet; along the West line of said Section 17 and the centerline of Denton Road;
thence N 90d00'00" E 481.72 feet;
thence N 00d00'00" W 240.50 feet;
thence N 90d00'00" E 348.50 feet;
thence S 00d00'00" E 290.48 feet;
thence N 90d00'00" E 507.30 feet;
thence S 56d17'33" E 156.13 feet;
thence S 40d42'30" W 20.97 feet;
thence S 12d57'56" W 202.43 feet;

thence along the Northerly right-of-way line of the I-94 Service Drive in the following five (5) courses;

thence N 80d05'40" W 387.83 feet;
thence S 79d16'00" W 387.83 feet;
thence S 58d37'40" W 482.90 feet;
thence N 72d31'18" W 208.85 feet;
thence S 89d55'32" W 33.00 feet to the POINT OF BEGINING, being a part of the SW 1/4 of said Section 17 T3S, R8E, containing 14.08 acres of land, more or less, being subject to easements of record within Denton Road right-of-way.

MDWTP LICENSED AREA

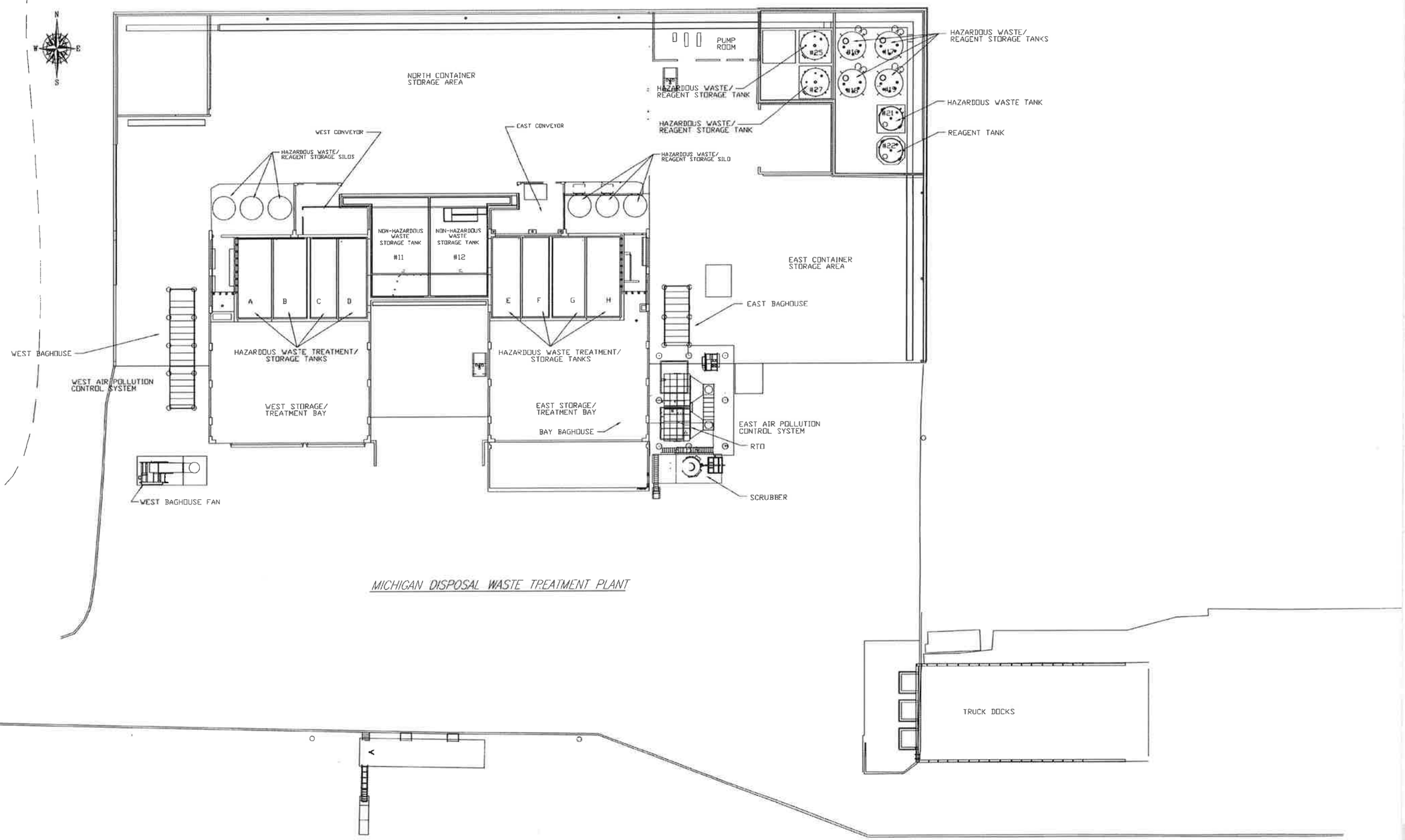
10/25/17

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

SURVEYED PROPERTY DESCRIPTION

A0



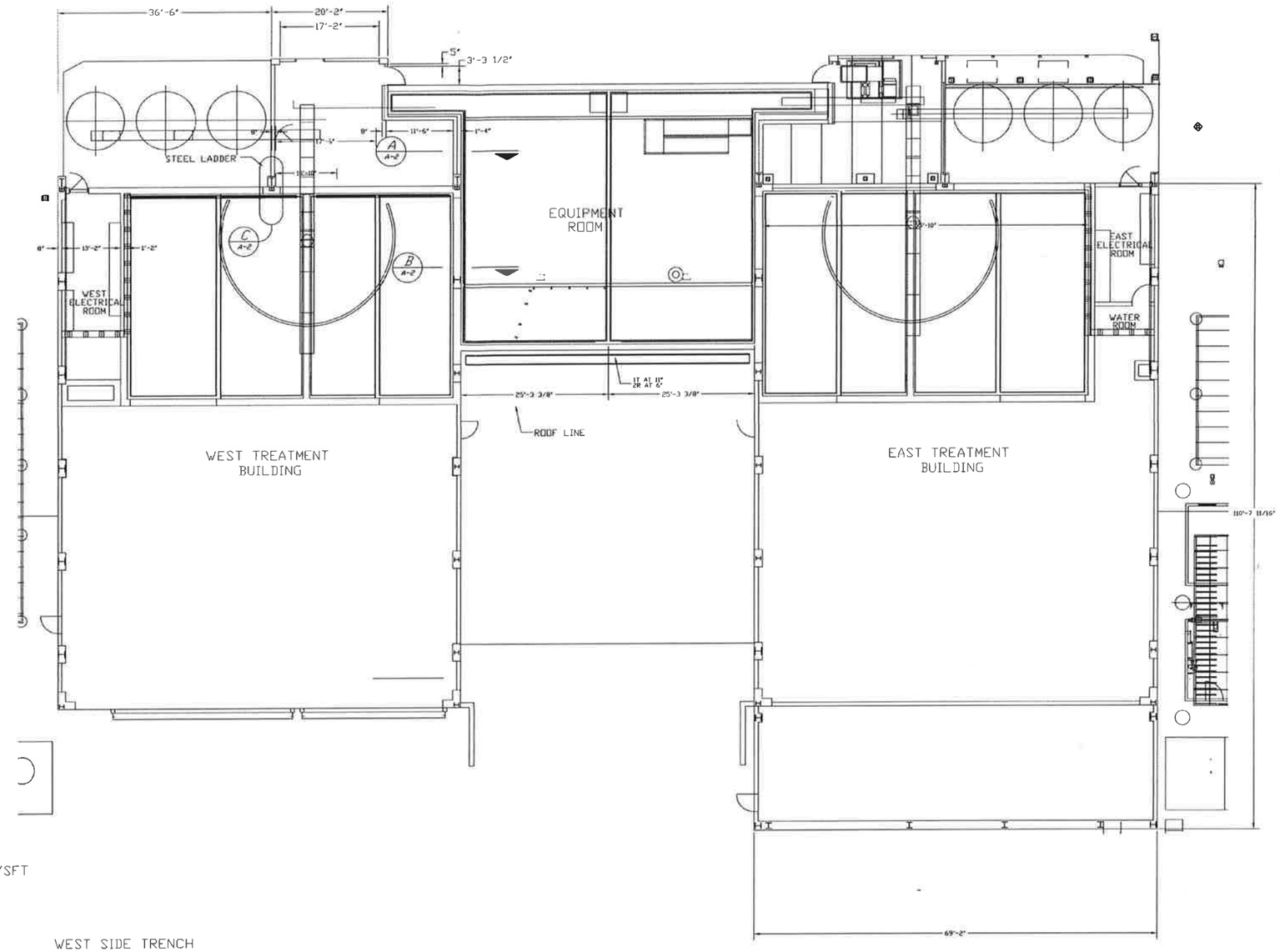
STATE OF MICHIGAN
MICHAEL A OLSON
ENGINEER
No. 36979
10/25/17

usecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

FACILITY DRAWING

A1



WASTE TREATMENT BAYS

BASIS OF DESIGN

CONTAINMENT VOLUME

NUMBER OF CONTAINERS: 200
TOTAL STORAGE VOLUME = 11,000 gallons
10% OF STORAGE VOLUME = 1,100 gallons

PRECIPITATION VOLUME

24 hr, 25 year STORM EVENT = 3.6 inches/SFT
AREA = 0 SFT
PRECIPITATION VOLUME = 0 gallons

CONTAINMENT DESIGN

CONTAINMENT LENGTH = 51' - 4"
CONTAINMENT WIDTH = 67' - 4"
FLOOR SLOPE = 0.11"/12"
CONTAINMENT DEPTH = 0' - 2.7"

CONTAINMENT CAPACITY = 5,815 gallons

WEST SIDE TRENCH
WIDTH OF TRENCH = 2' - 6"
LENGTH OF TRENCH = 8' - 0"
DEPTH OF TRENCH = 4' - 6"
VOLUME OF TANK PADS = 673 gallons

CONTAINER FOOTPRINT = 2.96 sq. feet
NUMBER OF CONTAINERS = 200
AVERAGE CONTAINER DEPTH IN CONTAINMENT = 2.7 inches

CONTAINER VOLUME DISPLACED IN CONTAINMENT = 996 gallons

NET CONTAINMENT VOLUME = 4,819 gallons

EXCESS SECONDARY CONTAINMENT VOLUME = 3,719 gallons (East)
EXCESS SECONDARY CONTAINMENT VOLUME = 4,392 gallons (West)

GROUND FLOOR PLAN

STATE OF MICHIGAN
MICHAEL A OLSON
ENGINEER
No. 34978
LICENSED PROFESSIONAL ENGINEER
10/25/17

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
TREATMENT BUILDING
GROUND FLOOR PLAN

A2

STATE OF MICHIGAN
MICHAEL A. OLSON
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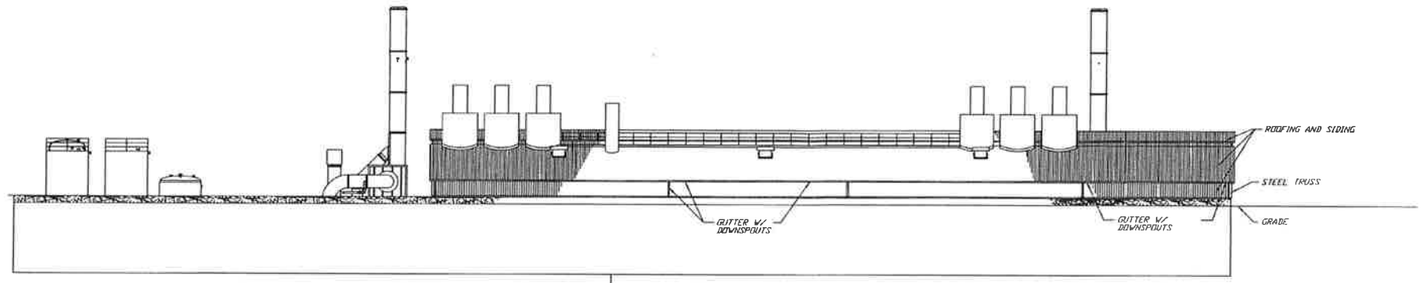
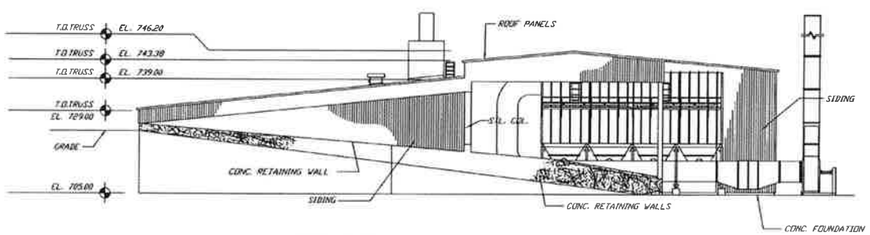
No. 34978
LICENSED PROFESSIONAL ENGINEER
10/25/17

US ecology



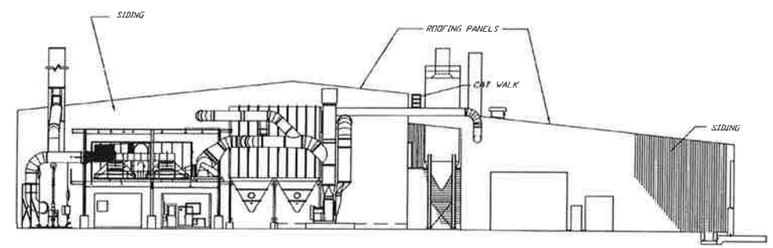
NORTH ELEVATION

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



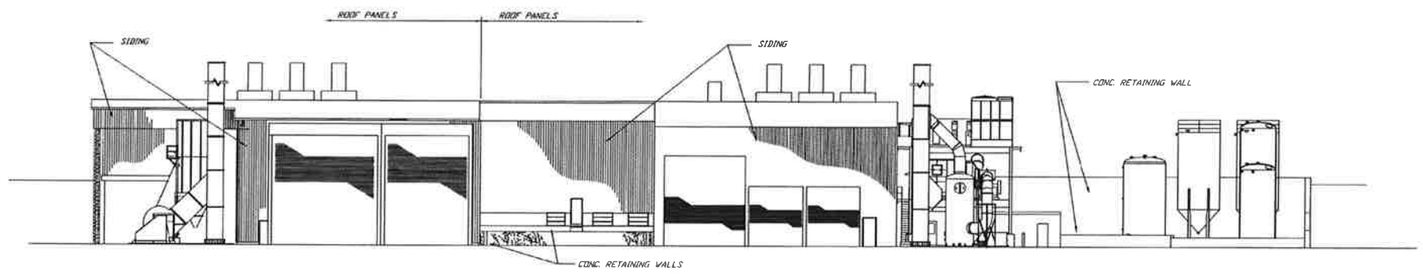
WEST ELEVATION

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



EAST ELEVATION

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



SOUTH ELEVATION

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

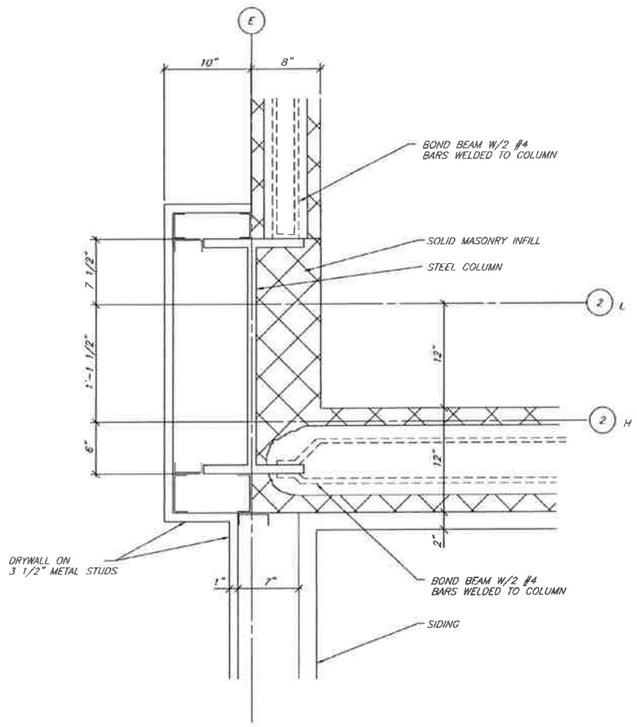
NOTES:

1) Bollards, handrails, piping, etc have been omitted for clarity.

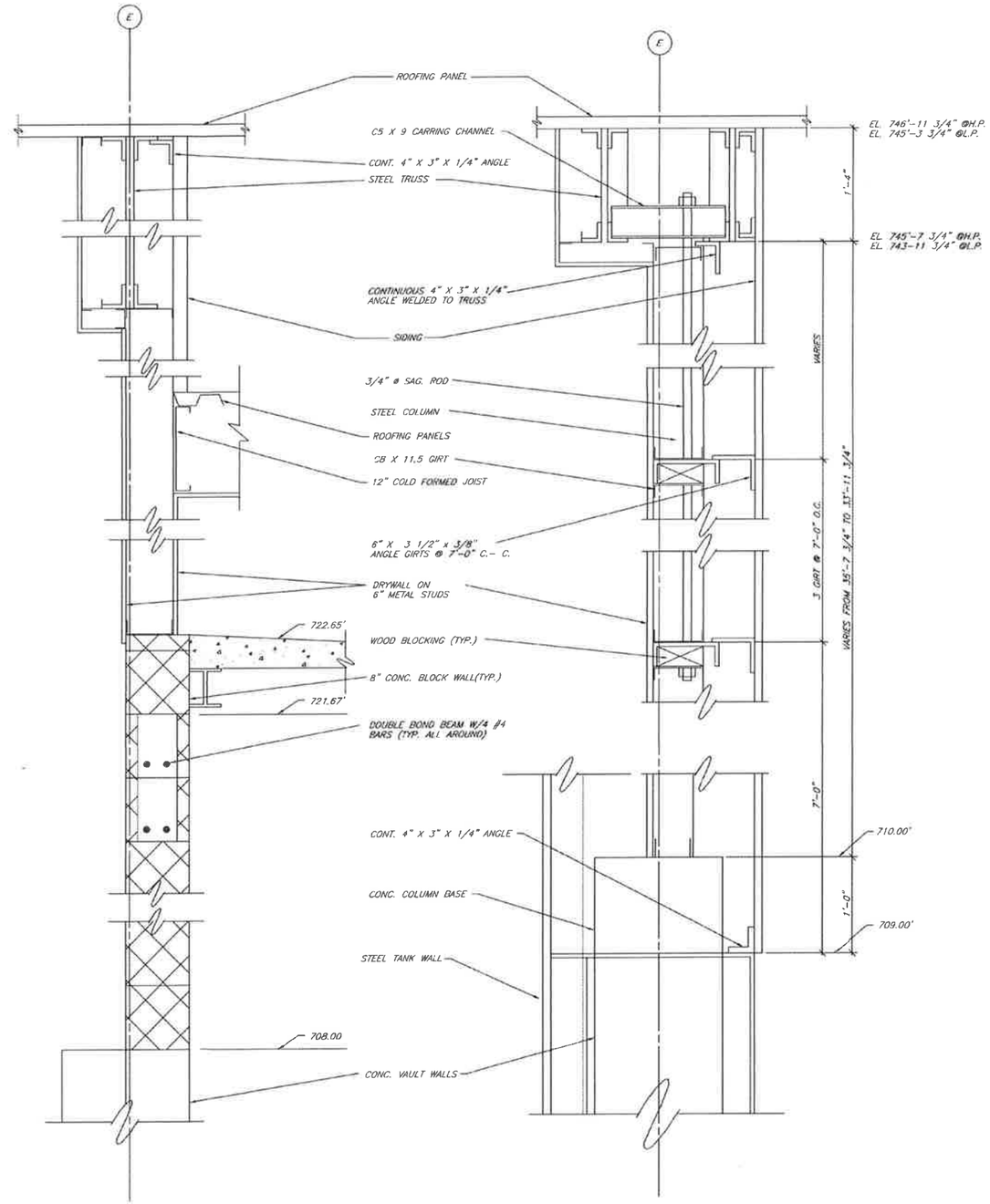
MONROE LITERAL WASTE TREATMENT PLANT

ARCHITECTUAL ELEVATIONS

A3



PLAN VIEW "C" OF INTERSECTION OF
BOND BEAM W/ STEEL COLUMN 2E



Section A A-3

Section B A-3

STATE OF MICHIGAN
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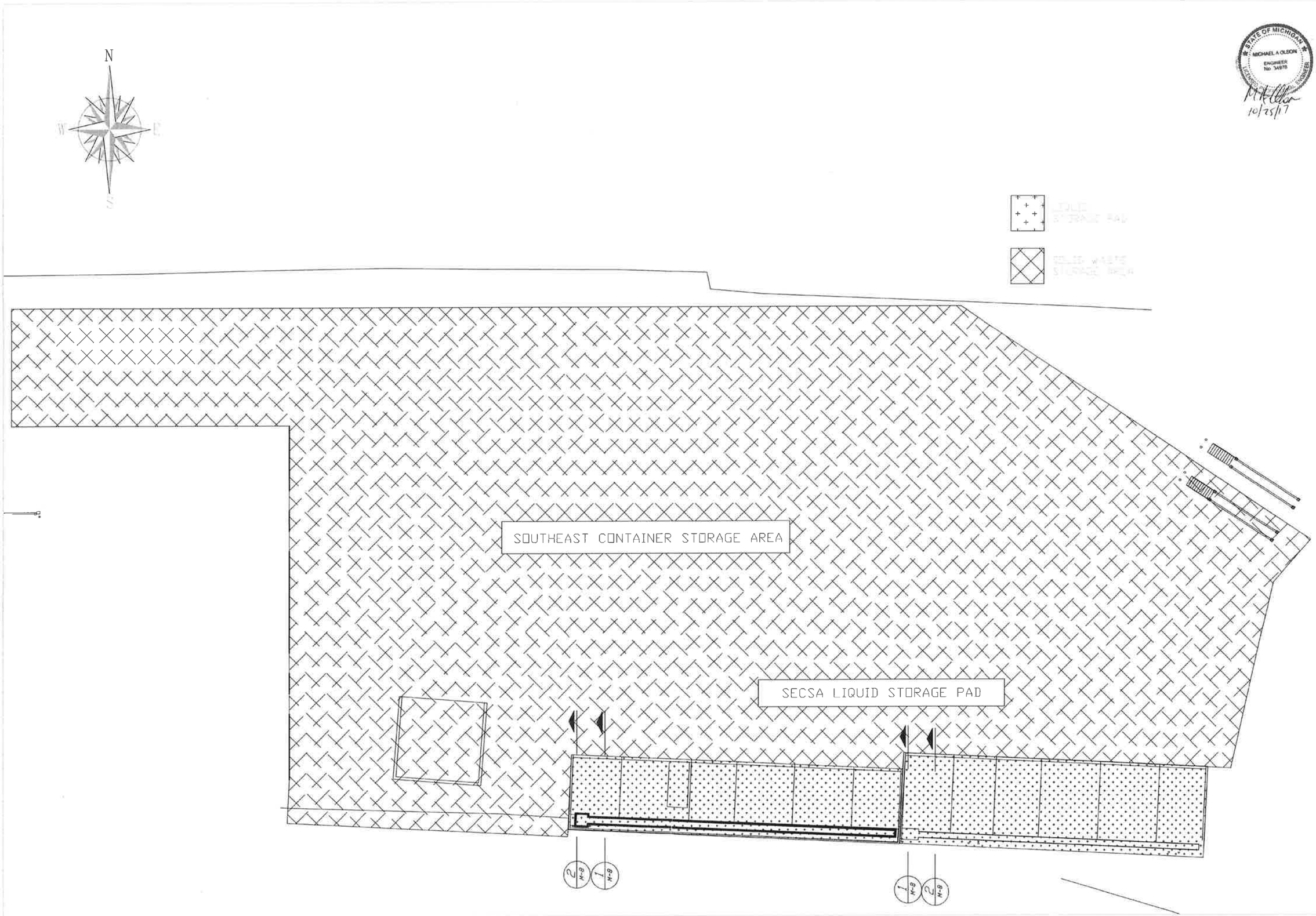
LICENSED PROFESSIONAL ENGINEER
10/25/17

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
WASTE TREATMENT & SITE GRADE BAS
ARCHITECTURAL SECTIONS

A4



STATE OF MICHIGAN
MICHAEL A. OLSON
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No. 34978
LICENSED PROFESSIONAL ENGINEER
10/25/17

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
SOUTHEAST CONTAINER STORAGE AREA

WASTE STORAGE LOCATIONS

A5

N

LIQUIDS STORAGE BUILDING

BASIS OF DESIGN

CONTAINMENT VOLUME
NUMBER OF CONTAINERS: 44 double stacked 330 gal totes
TOTAL STORAGE VOLUME = 14,520 gallons
10% OF STORAGE VOLUME = 1,425 gallons

PRECIPITATION VOLUME
24 hr, 25 year STORM EVENT = 3.6 inches/SFT
AREA = 0 SFT
PRECIPITATION VOLUME = 0 gallons

CONTAINMENT DESIGN
CONTAINMENT LENGTH = 18' - 11"
CONTAINMENT WIDTH = 11' - 11"
CONTAINMENT DEPTH = 8' - 2"
GROSS CONTAINMENT CAPACITY = 13,797 gallons

CONTAINER FOOTPRINT = 13 sq. feet
NUMBER OF CONTAINERS = 22
AVERAGE CONTAINER DEPTH IN CONTAINMENT = 0 inches
CONTAINER VOLUME DISPLACED IN CONTAINMENT = 0 gallons

NET CONTAINMENT CAPACITY = 13,797 gallons
EXCESS SECONDARY CONTAINMENT CAPACITY = 12,345 gallons

TRAILER STORAGE PAD

BASIS OF DESIGN

CONTAINMENT VOLUME
NUMBER OF CONTAINERS: 100 double stacked 330 gal totes in van trailers
TOTAL STORAGE VOLUME = 33,000 gallons
10% OF STORAGE VOLUME = 3,300 gallons

PRECIPITATION VOLUME
24 hr, 25 year STORM EVENT = 3.6 inches/SFT
AREA = 3,850 SFT
PRECIPITATION VOLUME = 8,640 gallons

CONTAINMENT DESIGN

TRENCH LENGTH = 30' - 0"	CURBED AREA LENGTH = 67' - 6'
TRENCH WIDTH = 2' - 0"	CURBED AREA WIDTH = 27' - 6'
TRENCH DEPTH = 4' - 0"	CURBED AREA DEPTH = 0' - 6'
TRENCH CAPACITY = 1,795 gallons	CURBED AREA CAPACITY = 6,946 gallons

TRAILER STORAGE PAD LENGTH = 59' - 3"
TRAILER STORAGE PAD WIDTH = 33' - 0"
TRAILER STORAGE PAD DEPTH = 3" (6" CURB)
TRAILER STORAGE PAD CAPACITY = 3,657 gallons

CONTAINER FOOTPRINT = 0 sq. feet
NUMBER OF CONTAINERS = 50 (single stacked)
AVERAGE CONTAINER DEPTH IN CONTAINMENT = 0 inches (inside storage)
CONTAINER VOLUME DISPLACED IN CONTAINMENT = 0 gallons
NET CONTAINMENT VOLUME = 12,398 gallons
EXCESS SECONDARY CONTAINMENT VOLUME = 458 gallons

LIQUID STORAGE PAD

BASIS OF DESIGN

CONTAINMENT VOLUME
NUMBER OF CONTAINERS: 584 double stacked 330 gal totes
TOTAL STORAGE VOLUME = 192,720 gallons
10% OF STORAGE VOLUME = 19,272 gallons
LARGEST CONTAINER = 6,060 gallons (30 cubic yard roll-off)

PRECIPITATION VOLUME
24 hr, 25 year STORM EVENT = 3.60 inches/SFT
AREA = 6,960 SFT
PRECIPITATION VOLUME = 15,620 gallons

CONTAINMENT DESIGN

WEST TRENCH LENGTH = 118 FEET	EAST TRENCH LENGTH = 112 FEET
WEST TRENCH WIDTH = 2'	EAST TRENCH WIDTH = 2'
WEST TRENCH DEPTH = 4'-6"	EAST TRENCH DEPTH = 4'-6"
WEST TRENCH CAPACITY = 8,214 gallons	EAST TRENCH CAPACITY = 7541 gallons
WEST CONTAINMENT AREA = 560 SFT	WEST CONTAINMENT AREA = 2,435 SFT
WEST CONTAINMENT AREA SLOPE = 0.0%	WEST CONTAINMENT AREA SLOPE = 2.3%
WEST AVERAGE CONTAINMENT AREA DEPTH = 8 inches	WEST AVERAGE CONTAINMENT AREA DEPTH = 3 inches
WEST CONTAINMENT AREA SLOPE VOLUME = 2,792 gallons	WEST CONTAINMENT AREA SLOPE VOLUME = 7,590 gallons
EAST CONTAINMENT AREA = 560 SFT	EAST CONTAINMENT AREA = 3,192 SFT
EAST CONTAINMENT AREA SLOPE = 0.0%	EAST CONTAINMENT AREA SLOPE = 2.3%
EAST AVERAGE CONTAINMENT AREA DEPTH = 8 inches	EAST AVERAGE CONTAINMENT AREA DEPTH = 5 inches
EAST CONTAINMENT AREA SLOPE VOLUME = 2,792 gallons	EAST CONTAINMENT AREA SLOPE VOLUME = 9,950 gallons

GROSS TOTAL CONTAINMENT VOLUME = 38,879 gallons

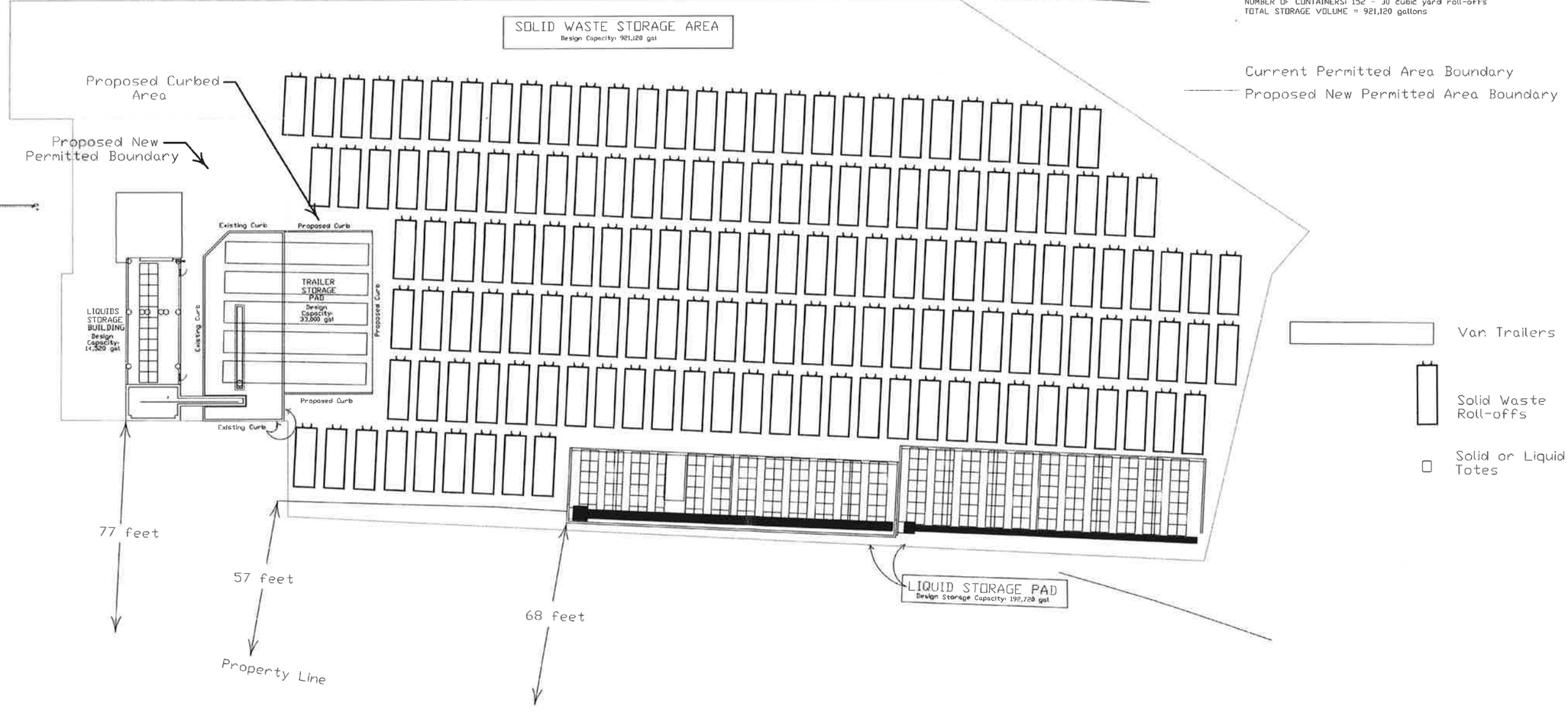
CONTAINER FOOTPRINT = 0 feet
NUMBER OF CONTAINERS = 292 (Single Stacked)
AVERAGE CONTAINER DEPTH IN CONTAINMENT = 0 inches
CONTAINER VOLUME DISPLACED IN CONTAINMENT = 0 gallons
NET CONTAINMENT VOLUME = 38,879 gallons
EXCESS SECONDARY CONTAINMENT = 3,987 gallons

STATE OF MICHIGAN
MICHAEL A OLSON
ENGINEER
No 34078
LICENSED PROFESSIONAL ENGINEER
10/23/17

US ecology

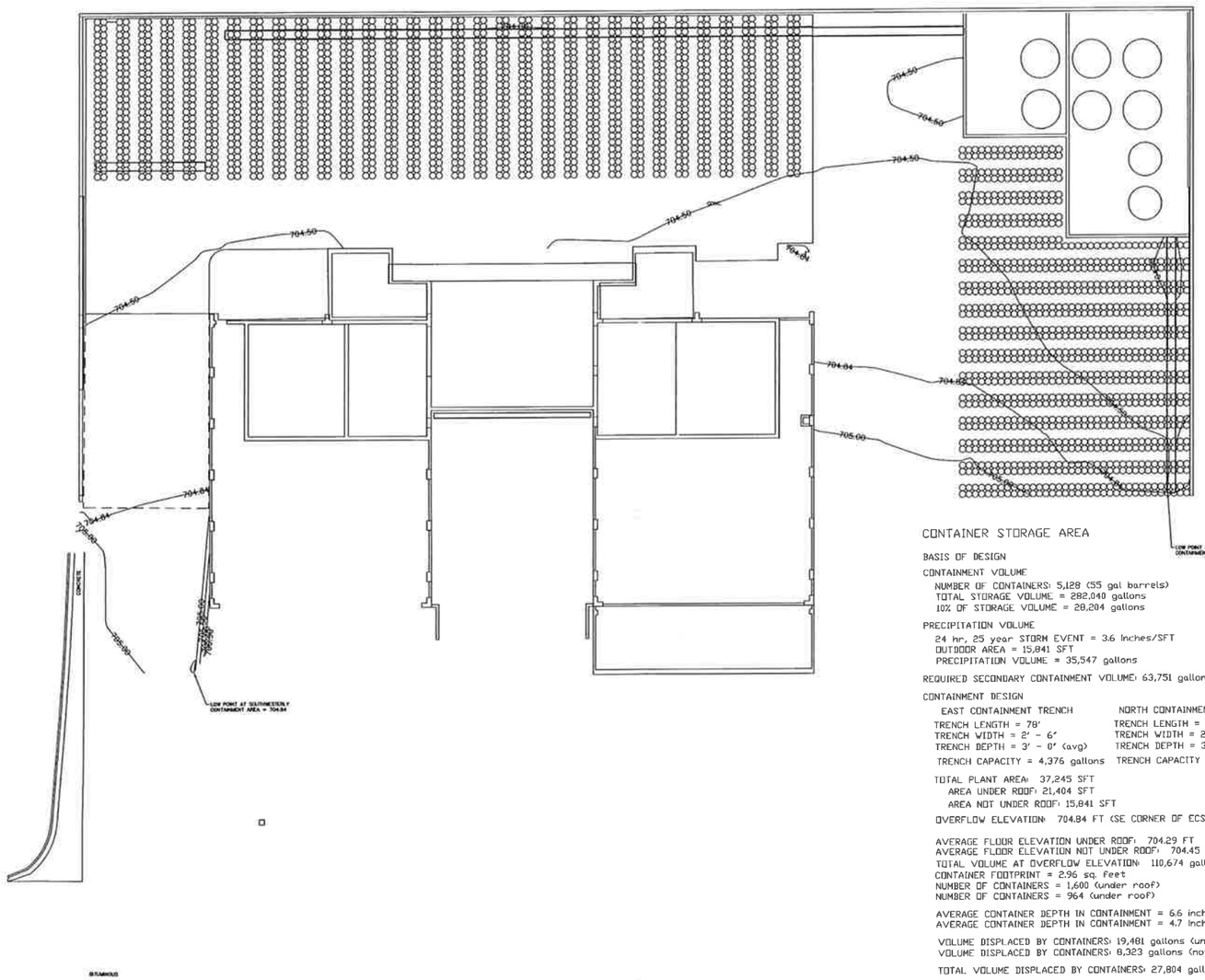
SOLID WASTE STORAGE AREA

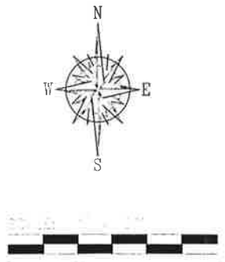
BASIS OF DESIGN
NUMBER OF CONTAINERS: 152 - 30 cubic yard roll-offs
TOTAL STORAGE VOLUME = 921,120 gallons



MICHIGAN DISPOSAL WASTE TREATMENT PLANT
SOUTHEAST CONTAINER STORAGE AREA
PROPOSED DESIGN CHANGES

A6





CONTAINER STORAGE AREA

BASIS OF DESIGN

CONTAINMENT VOLUME

NUMBER OF CONTAINERS: 5,128 (55 gal barrels)
TOTAL STORAGE VOLUME = 282,040 gallons
10% OF STORAGE VOLUME = 28,204 gallons

PRECIPITATION VOLUME

24 hr, 25 year STORM EVENT = 3.6 inches/SFT
OUTDOOR AREA = 15,841 SFT
PRECIPITATION VOLUME = 35,547 gallons

REQUIRED SECONDARY CONTAINMENT VOLUME: 63,751 gallons

CONTAINMENT DESIGN

EAST CONTAINMENT TRENCH	NORTH CONTAINMENT TRENCH	NCSA AUXILLARY TRENCH
TRENCH LENGTH = 78'	TRENCH LENGTH = 229' - 9"	TRENCH LENGTH = 38'-7"
TRENCH WIDTH = 2' - 6"	TRENCH WIDTH = 2' - 6"	TRENCH WIDTH = 2' - 6"
TRENCH DEPTH = 3' - 0" (avg)	TRENCH DEPTH = 3' - 0" (avg)	TRENCH DEPTH = 2' - 0"
TRENCH CAPACITY = 4,376 gallons	TRENCH CAPACITY = 12,8899 gallons	TRENCH CAPACITY = 1,443 gallons

TOTAL PLANT AREA: 37,245 SFT
AREA UNDER ROOF: 21,404 SFT
AREA NOT UNDER ROOF: 15,841 SFT

OVERFLOW ELEVATION: 704.84 FT (SE CORNER OF ECSA)

AVERAGE FLOOR ELEVATION UNDER ROOF: 704.29 FT
AVERAGE FLOOR ELEVATION NOT UNDER ROOF: 704.45 FT
TOTAL VOLUME AT OVERFLOW ELEVATION: 110,674 gallons
CONTAINER FOOTPRINT = 2.96 sq. feet
NUMBER OF CONTAINERS = 1,600 (under roof)
NUMBER OF CONTAINERS = 964 (under roof)

AVERAGE CONTAINER DEPTH IN CONTAINMENT = 6.6 inches (under roof)
AVERAGE CONTAINER DEPTH IN CONTAINMENT = 4.7 inches (under roof)

VOLUME DISPLACED BY CONTAINERS: 19,481 gallons (under roof)
VOLUME DISPLACED BY CONTAINERS: 8,323 gallons (not under roof)

TOTAL VOLUME DISPLACED BY CONTAINERS: 27,804 gallons

NET CONTAINMENT VOLUME = 82,870 gallons

EXCESS SECONDARY CONTAINMENT VOLUME = 19,119 gallons

10/25/17

STATE OF MICHIGAN
MICHAEL D. COON
LICENSED PROFESSIONAL ENGINEER
No. 34373

US ecology
49350 N. I-94 SERVICE DRIVE, BELLEVILLE, MI 48111
TEL: (800) 592-5489

REVISIONS
A
B
C
D
E

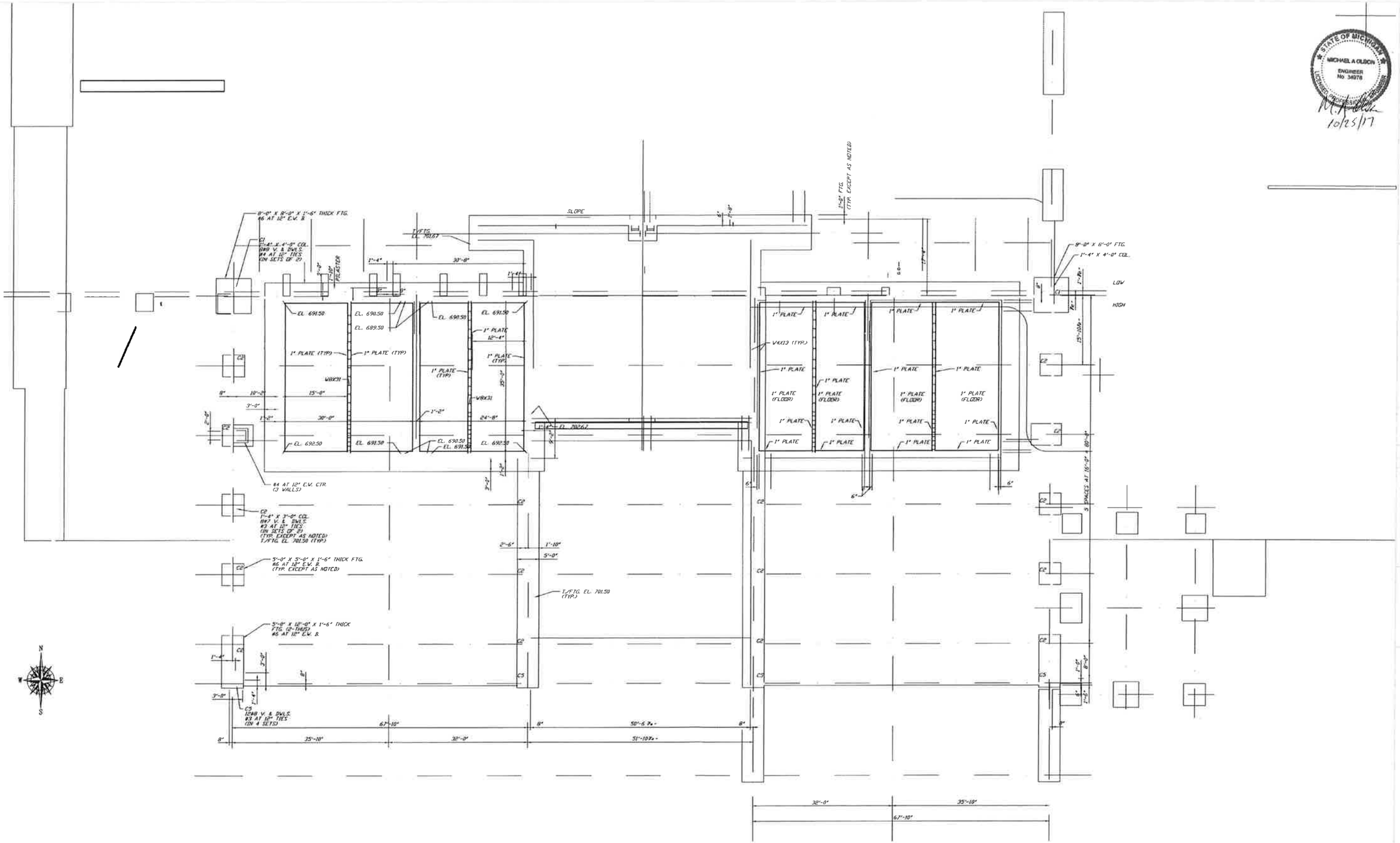
FILENAME:
SCALE: 1"=20'
DRN BY: CAG

PROJ. FILE
DATE: 10/25/17
SHEET ___ OF ___

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
CONSTAINER STORAGE AREAS

TOPOGRAPHICAL SURVEY

A7



Notes

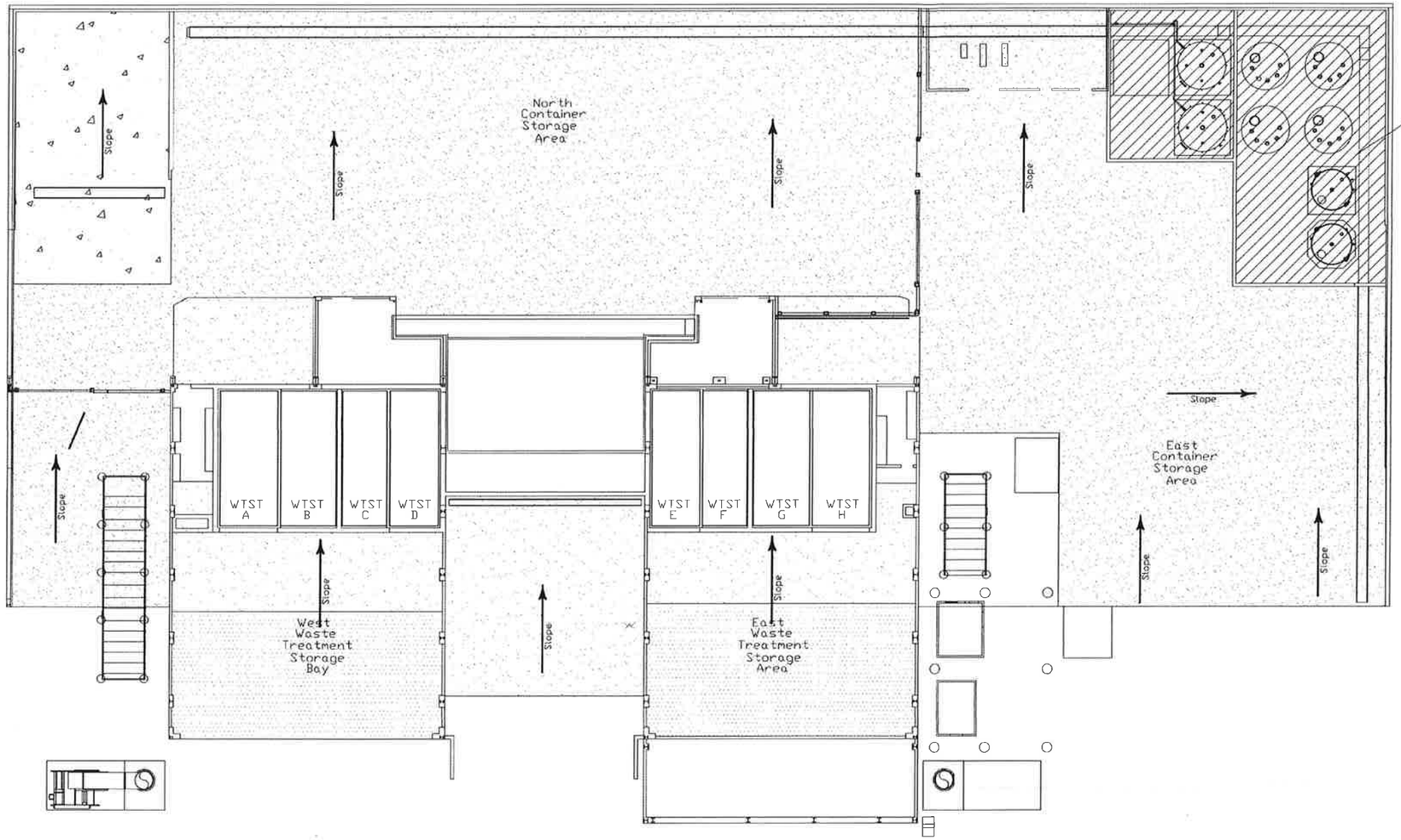
1) "1" Plate" denotes plate that is nominally 1" thick.
A minimum 3/4" plate was installed.

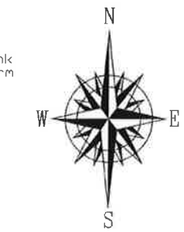
STATE OF MICHIGAN
MICHAEL A. OLSON
ENGINEER
No. 34078
10/25/17

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
WASTE TREATMENT & STORAGE BLDG.
FOUNDATION PLAN

C1





STATE OF MICHIGAN
MICHAEL A OLSON
ENGINEER
No. 34978
LICENSED PROFESSIONAL ENGINEER
10/25/17

REAGENT TANK FARM AREA

BASIS OF DESIGN

CONTAINMENT VOLUME

NUMBER OF CONTAINERS: 2
TOTAL STORAGE VOLUME = 40,000 gallons
10% OF STORAGE VOLUME = 4,000 gallons/20,943 gallons (largest tank)

PRECIPITATION VOLUME

24 hr, 25 year STORM EVENT = 3.6 inches/SFT
AREA = 1,159 SFT
PRECIPITATION VOLUME = 2,601 gallons

CONTAINMENT DESIGN

CONTAINMENT LENGTH = 37' - 5"
CONTAINMENT WIDTH = 31' - 0"
CONTAINMENT DEPTH = 3' - 5"
CONTAINMENT CAPACITY = 29,647 gallons

NUMBER OF TANK PADS = 3
WIDTH OF TANK PADS = 14 feet
LENGTH OF TANK PADS = 14 feet
HEIGHT OF TANK PADS = 1 foot avg
VOLUME OF TANK PADS = 4,398 gallons

NET CONTAINMENT VOLUME = 25,249 gallons

EXCESS SECONDARY CONTAINMENT VOLUME = 1,705 gallons

WASTE TANK FARM AREA

BASIS OF DESIGN

CONTAINMENT VOLUME

NUMBER OF CONTAINERS: 6
TOTAL STORAGE VOLUME = 114,300 gallons
10% OF STORAGE VOLUME = 11,500 gallons/20,700 gallons (largest tank)

PRECIPITATION VOLUME

24 hr, 25 year STORM EVENT = 3.6 inches/SFT
AREA = 2,587 SFT
PRECIPITATION VOLUME = 5,805 gallons

CONTAINMENT DESIGN

CONTAINMENT LENGTH = 68' - 8"
CONTAINMENT WIDTH = 37' - 8"
CONTAINMENT DEPTH = 2' - 6"
CONTAINMENT CAPACITY = 48,380 gallons

NUMBER OF TANK PADS = 2
WIDTH OF TANK PADS = 12 feet
LENGTH OF TANK PADS = 12 feet
HEIGHT OF TANK PADS = 1 foot avg
VOLUME OF TANK PADS = 2,155 gallons

NET CONTAINMENT VOLUME = 46,225 gallons

EXCESS SECONDARY CONTAINMENT VOLUME = 19,720 gallons

Elastoliner Coating

Epoxy Coating

Mastertop Coating

Xypex Coating

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

IMPERVIOUS COATING LOCATIONS

C2

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
SKID HEAST CONTAINER STORAGE AREA
EAST LIQUID CONTAINER STORAGE PAD

C3

STATE OF MICHIGAN
MICHAEL A OLSON
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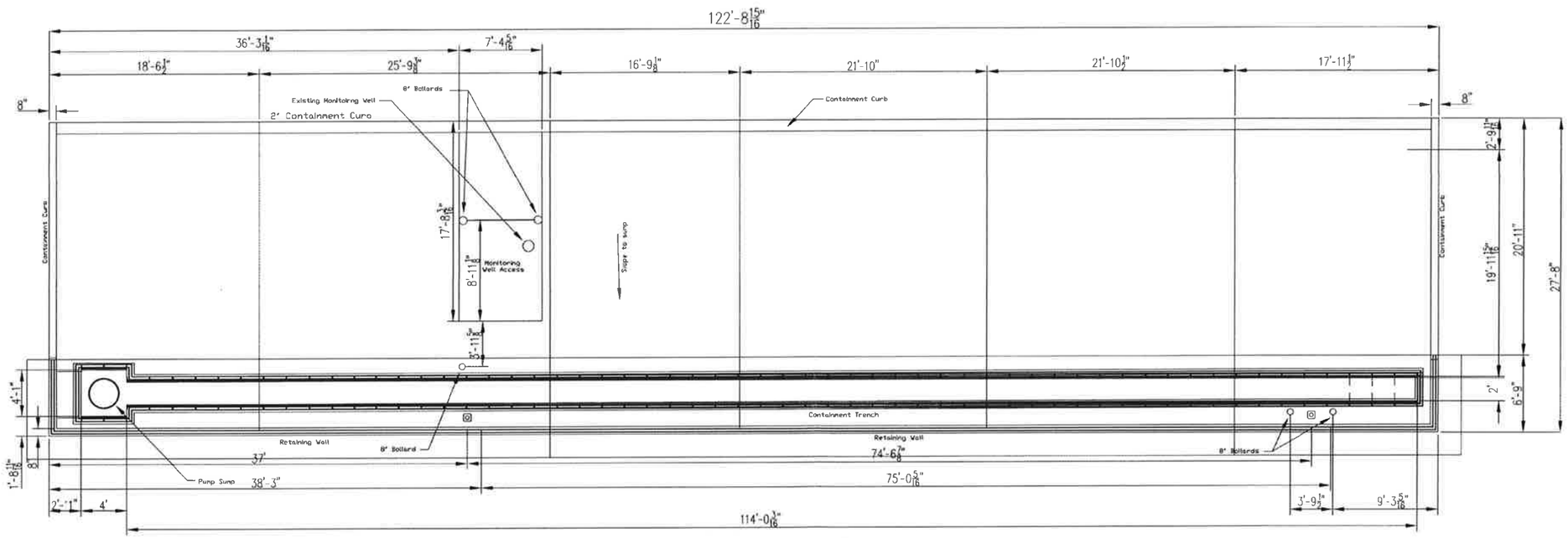
No 34975
LICENSED PROFESSIONAL ENGINEER

M. A. Olson
10/25/17

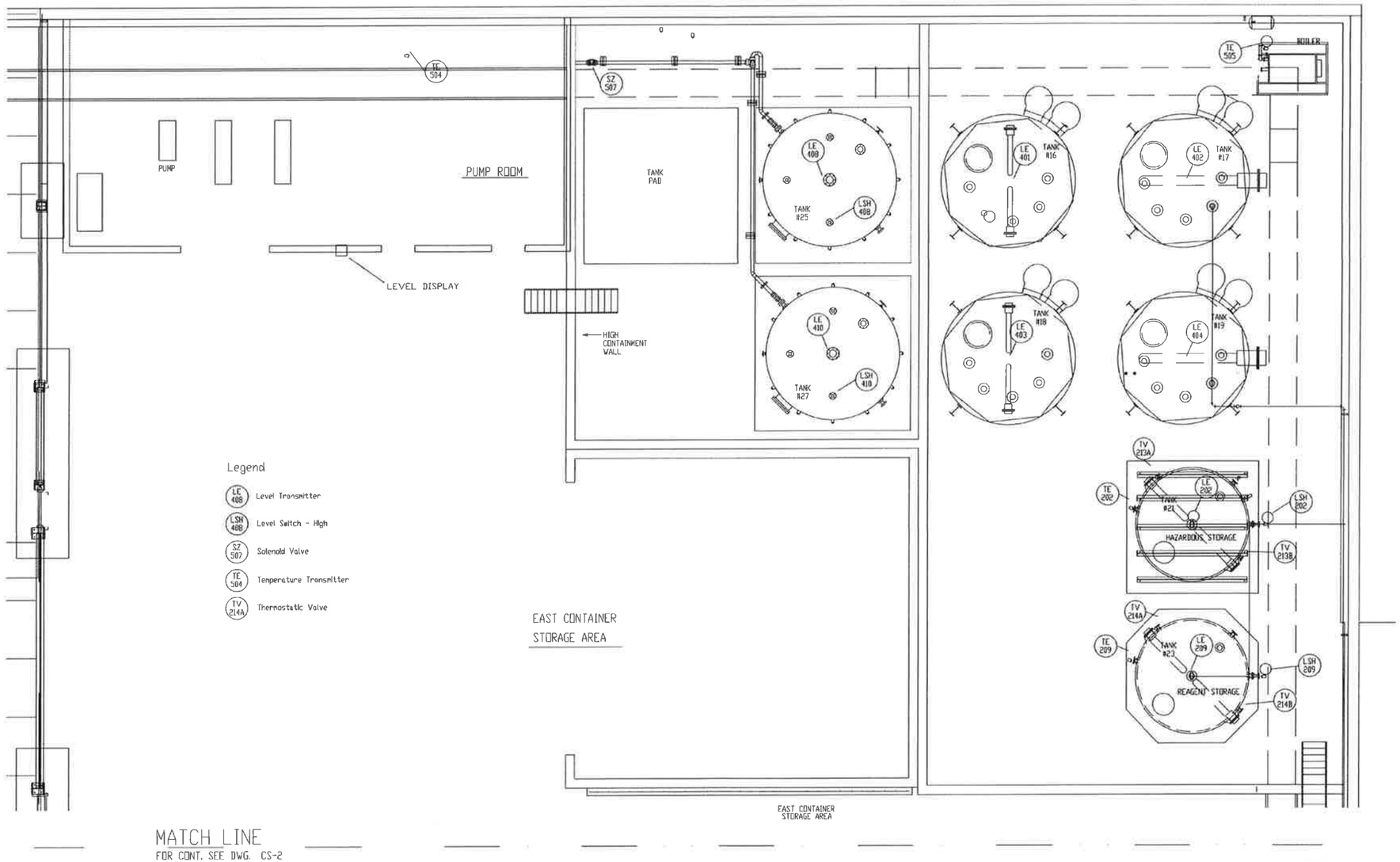
US ecology



West Container Storage Pad Details

MILHEAN DISPOSAL WASTE TREATMENT PLANT
SOUTHEAST CONTAINER STORAGE AREA
WEST LIQUID CONTAINER STORAGE AREA

C4



ENLARGED CONTROL PLAN
SCALE: 1/4"=1'-0

LEGEND:
- DIGITAL DEVICE
- ANALOG DEVICE
- OPERATOR STATION

STATE OF MICHIGAN
MICHAEL A OLSON
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10/25/17

US ecology

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
ANY TOWN, MICH.
CONTROL PLAN

CS1

US ecology
49350 N. I-94 SERVICE DRIVE, BELLEVILLE, MI 48111
TEL. (800) 592-5283

REVISIONS		
A	11/17/04	Truck Dock Update
B	6/22/05	Removed proposed capacity from tank farm
C		
D		
E		

FILENAME:

SCALE: 1"=40'-0"

DRN. BY: CAG

PROJ. FILE
Lic

DATE: 4/27/04

SHEET ___ OF ___

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

OVERALL MECHANICAL PLAN

M1

M:\Civil\Projects\DMSEG Site2\CAD\MSC\Gibson\PIMM.dwg, M-1, 10/9/2017 1:49:47 PM, dwg, MDL.Lic PSP.pc3

STATE OF MICHIGAN
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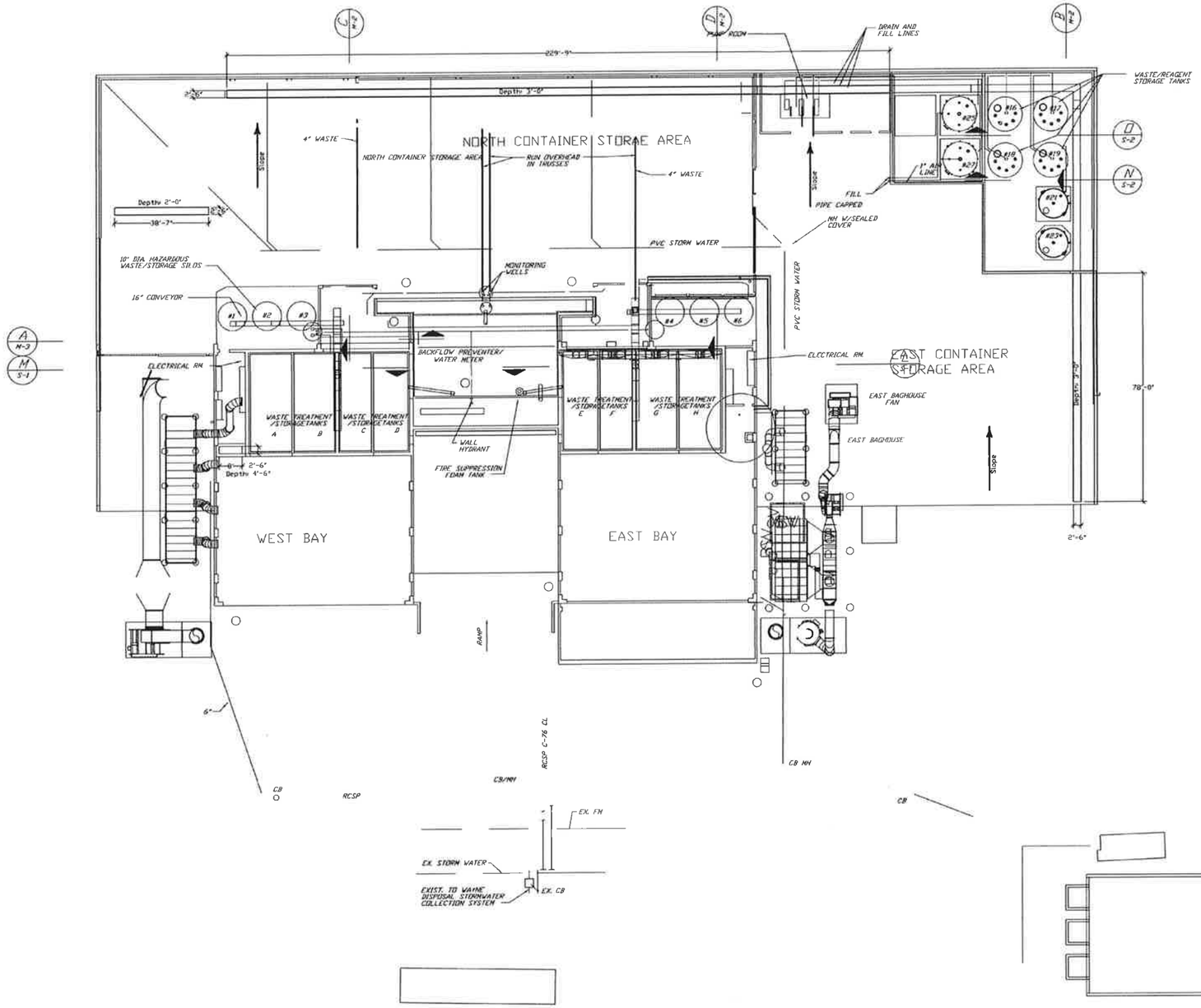
No. 34978
LICENSED PROFESSIONAL ENGINEER
10/25/17



SECONDARY CONTAINMENT TRENCH CONSTRUCTION

NORTH CONTAINER STORAGE AREA - MAIN
Formed rebar reinfored concrete w/Xypex coating and waterstop

NORTH CONTAINER STORAGE AREA - AUXILLARY
Formed rebar reinfored concrete w/Xypex admix and TPV waterstop

EAST CONTAINER STORAGE AREA
Formed rebar reinfored concrete w/Xypex coating and waterstop

WEST BAY CONTAINER STORAGE AREA
Formed rebar reinfored concrete w/Xypex admix and TPV waterstop

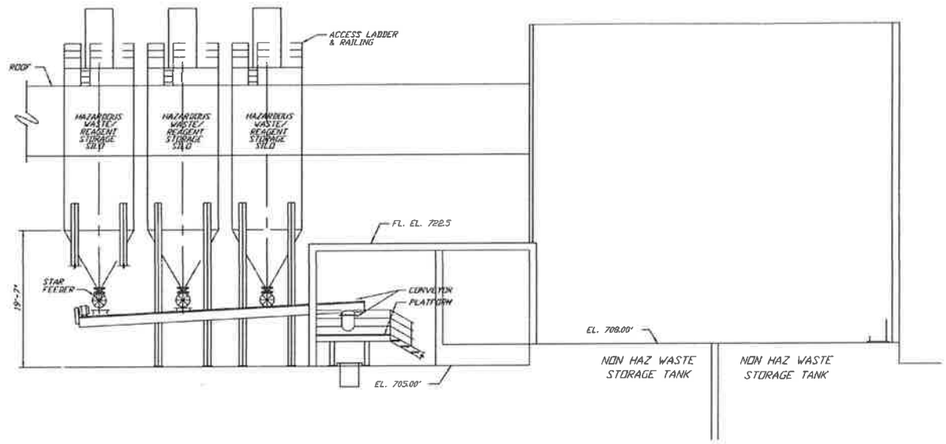
LOCATION PLAN
SCALE: 1/16" = 1'-0"

LEGEND

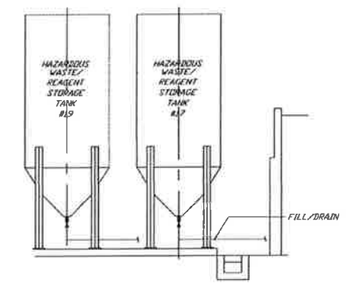
MICHIGAN DISPOSAL WASTE TREATMENT PLANT

STATE OF MICHIGAN
MICHAEL A OLSON
ENGINEER
No. 34978
LICENSED PROFESSIONAL ENGINEER
M. A. Olson
10/25/17

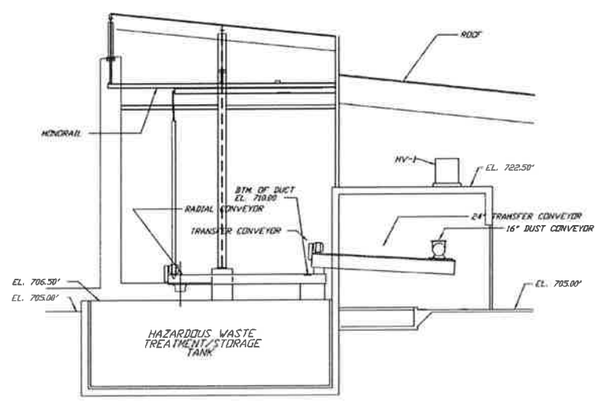
US ecology



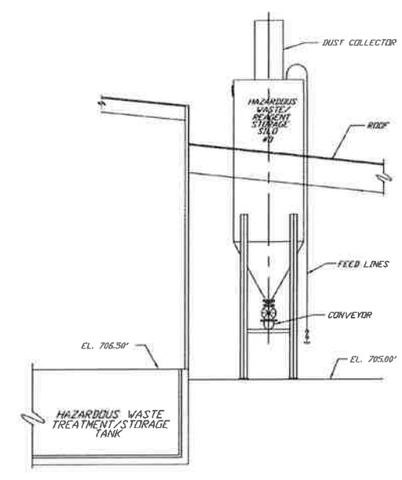
SECTION A
SCALE: 1/8" = 1'-0"
M-2



SECTION B
SCALE: 1/8" = 1'-0"
M-2



SECTION C
SCALE: 1/8" = 1'-0"
M-2



SECTION D
SCALE: 1/8" = 1'-0"
M-2

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

TANK SECTIONS

M3

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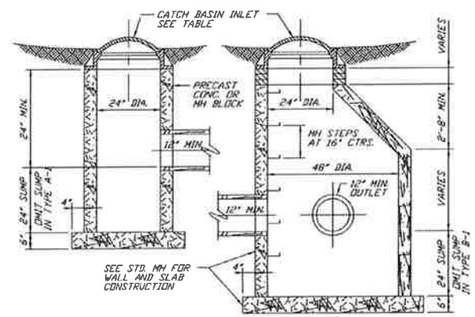
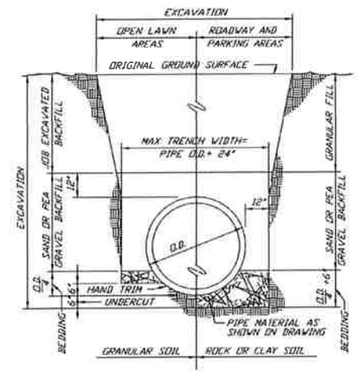
MANHOLE FRAME & COVER & CATCH BASIN INLETS				
TYPE		MANUFACTURER OR EQUAL		TYPE OF COVER OR INLET
		EAST JORDAN	NEENAH	
MH	ALL	1120	R-1764	SANITARY-SELF SELF-SEALING STORM-VENTED
CB	TYPE A CURB	7000-11-M1	R-3070	FLAT GRATE WITH VERT. OPEN BACK
CB	TYPE B CURB	7060	R-3034-B	FLAT GRATE WITH ROLL BACK
CB	PAVEMENT/ SHOULDER	1020-M1	R-2060-D	FLAT GRATE
CB	OPEN AREA	1020-01	R-2560-D	BEEHIVE GRATE 4" HIGH
CB	GUTTER	5100	R-3239	CONCAVE INLET



NOTE:
TYPE A-1 EQUAL TO TYPE "A" EXCLUDING 24" SUMP BUT ADD ON BOTTOM CONC. FILLET.

NOTE:
TYPE B-1 EQUAL TO TYPE "B" EXCLUDING 24" SUMP BUT ADD ON BOTTOM CONC. FILLET.

CATCH BASINS



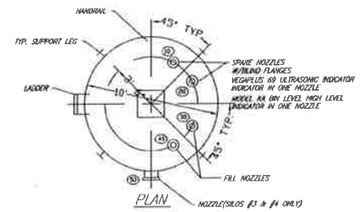
TRENCH EXCAVATION AND BACKFILL

NO SCALE

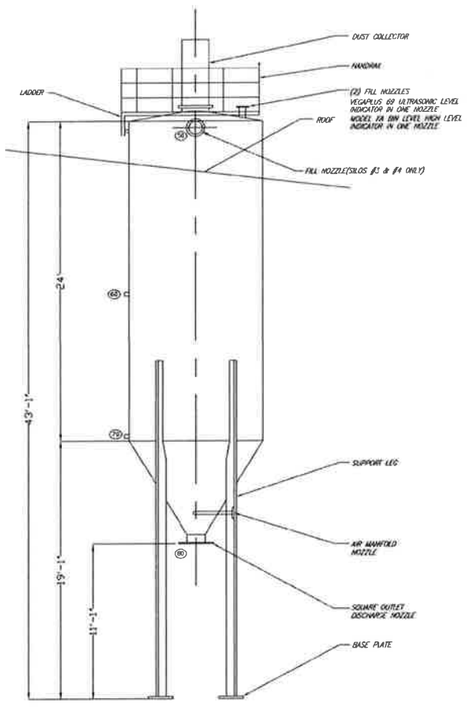
MICHIGAN DISPOSAL WASTE TREATMENT PLANT

STORM WATER SCHEDULES & DETAILS

M4



PLAN



HAZARDOUS WASTE/REAGENT STORAGE SILO

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

SPECIFICATIONS

1) Manufacturer: Imperial Calumet Industries
2) Model: 60-113-10x43-1 High
3) Maximum Material Density: 113 lb/cft
4) Capacity: 2026 cft
5) Maximum Tonnage: 116.5 tons
6) Maximum Operating Pressure: 6 oz/sq in
7) Maximum Operating Vacuum: 0.4 oz/sq in

CONSTRUCTION

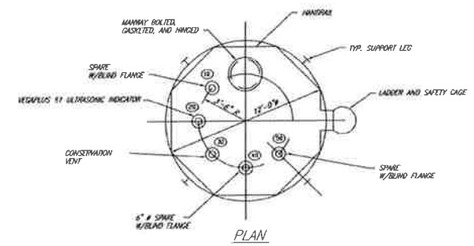
Roof
0.25 inch steel
Exterior Coating: Direct-To-Metal Paint
Interior Coating: None

Sides
0.25 inch steel
Exterior Coating: Direct-To-Metal Paint
Interior Coating: None

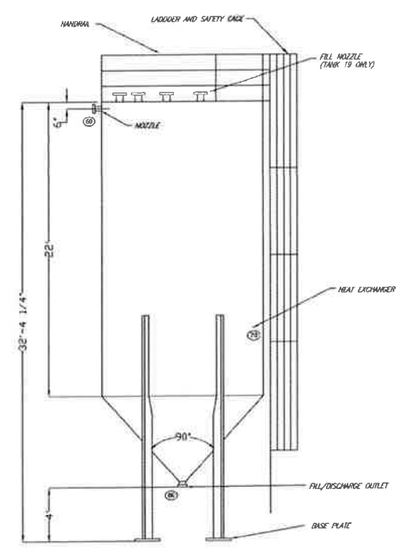
Cone
0.25 inch steel
Exterior Coating: Direct-To-Metal Paint
Interior Coating: None

Fitting Schedule

Item	Qty	Size	Rating	Description/Service	Material
10	1	5	125	Flange - Level Transmitter	Steel
20	1	5	125	Flange - High Level Switch	Steel
30	1	5	125	Flange - Spare	Steel
40	1	5	125	Flange - Spare	Steel
50	1	6	125	Flange - Fill	Steel
60	1	3	125	Nipple - Spare	Steel
70	1	3	125	Nipple - Spare	Steel
80	1	16	125	Flange - Discharge	Steel



PLAN



20,000 GAL. WASTE/REAGENT STORAGE TANK

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

SPECIFICATIONS

1) Manufacturer: Imperial Calumet Industries
2) Model: 15-63-12X32-4-DH4-CH
3) Maximum Material Density: 63 lb/cft
4) Capacity: 2770 cft
5) Maximum Tonnage: 87.3 tons
6) Maximum Operating Pressure: 6 oz/sq in
7) Maximum Operating Vacuum: 0.4 oz/sq in

CONSTRUCTION - TANKS 16 & 17

Roof
0.25 inch steel
Interior Coating: 40 mils Carboline 4300
Exterior Coating: None

Sides
0.25 inch steel
Interior Coating: 40 mils Carboline 4300
Exterior Coating: None

Cone
0.25 inch steel
Interior Coating: 40 mils Carboline 4300
Exterior Coating: None

CONSTRUCTION - TANKS 18 & 19

Roof
0.25 inch steel
Interior Coating: 25 mils Blone TL-45-S
Exterior Coating: None

Sides
0.25 inch steel
Interior Coating: 25 mils Blone TL-45-S
Exterior Coating: None

Cone
0.25 inch steel
Interior Coating: 25 mils Blone TL-45-S
Exterior Coating: None

Fitting Schedule

Item	Qty	Size	Rating	Description/Service	Material
10	1	6	125	Flange - Spare	Steel
20	1	6	125	Flange - Level Transmitter	Steel
30	1	6	125	Flange - Conservation Vent	Steel
40	1	6	125	Flange - Spare	Steel
50	1	6	125	Flange - Spare	Steel
60	1	6	125	Nipple - Spare	Steel
70	1	16	125	Flange - Heater	Steel
80	1	6	125	Flange - Fill/Discharge	Steel

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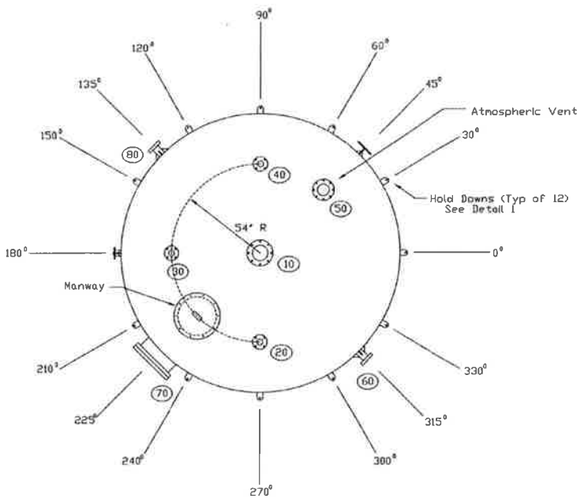
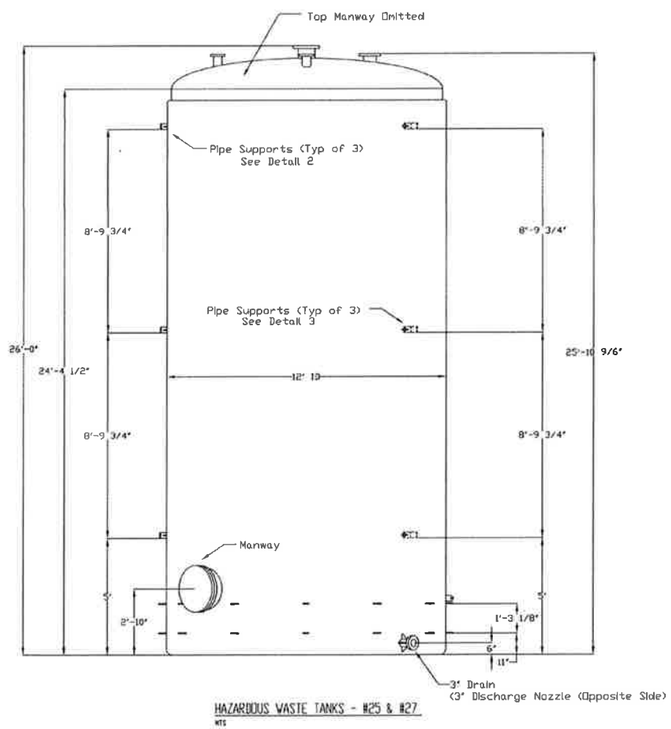
MIDWESTERN INDUSTRIAL WASTE TREATMENT FACILITY
TANK FARM
SILO 1 to 6, VERTICAL TANKS 16 to 19

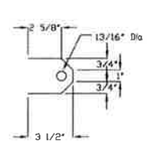
M5



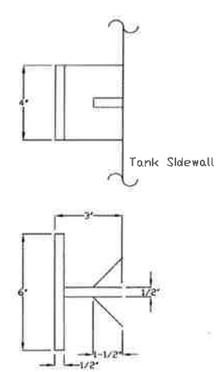


HAZARDOUS WASTE TANKS - #25 & #27
NTS

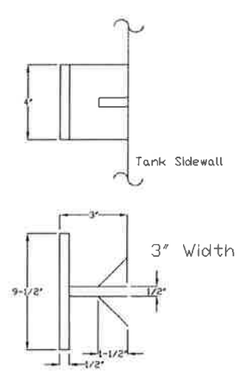
Fitting Schedule					
Item	Qty	Size	Rating	Description/Service	Material
10	1	8	125	H.L. Flange - Level Transmitter	FRP
20	1	3	125	H.L. Flange - Spare	FRP
30	1	3	125	H.L. Flange - Fill	FRP
40	1	3	125	H.L. Flange - High Level Switch	FRP
50	1	6	125	H.L. Flange - Overfill/Vent	FRP
60	1	3	125	H.L. Flange w/Plate Gusset - Drain	FRP
70	1	20	125	Manway Assembly	FRP
80	1	3	125	H.L. Flange w/Plate Gusset - Outlet	FRP
80	1	3	125	H.L. Flange w/Plate Gusset - Outlet	FRP



Hold Down Detail 1
NTS



Pipe Support Detail 2
NTS



Pipe Support Detail 3
NTS

SPECIFICATIONS

1) Capacity: 20,943 U.S. Gallons
2) Specific Gravity: Design: 1.2 maximum

LAMINATE CONSTRUCTION

Resin System
Premium Grade Derakane 441-400 Vinyl Ester Resin throughout
Double Nexus Synthetic Veil In Corrosion Barrier
BPO/DMA Catalyst System
U.V. Absorber In Exterior Resin Layer

Dome Top:

0.040 inch Double Nexus Veil In Inner Layer
0.100 inch Corrosion Barrier: Chop
0.192 inch Structural Layer: Chop

0.332 inch Total

Sidewall Top Section:

0.040 inch Double Nexus Veil In Inner Layer
0.100 inch Corrosion Barrier: Chop
0.150 inch Structural Layer: Helical Winding w/Str. Wind &/or 1 1/2 oz when req'd

0.290 inch Total

Sidewall Bottom Section:

0.040 Double Nexus Veil In Inner Layer
0.100 inch Corrosion Barrier: Chop
0.140 inch Structural Layer: Chop & (1) Ply Uni-Directional - 48" LG.
0.260 inch Structural Layer (taper to 0.180 inch); Helical Winding w/str. wind &/or 1 1/2 oz when req'd.

0.540 inch Total (0.810 inch at bottom knuckle & first 12" of sidewall. Tapers to 0.290 inch at top of straight wall.

Flat Bottom:

0.040 inch Double Nexus Veil In Inner Layer
0.100 inch Corrosion Barrier; Chop
0.130 inch Structural Layer; Chop and Woven Roving

0.270 inch Total

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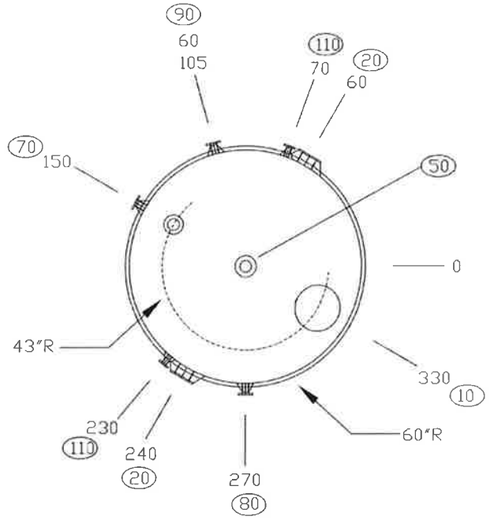
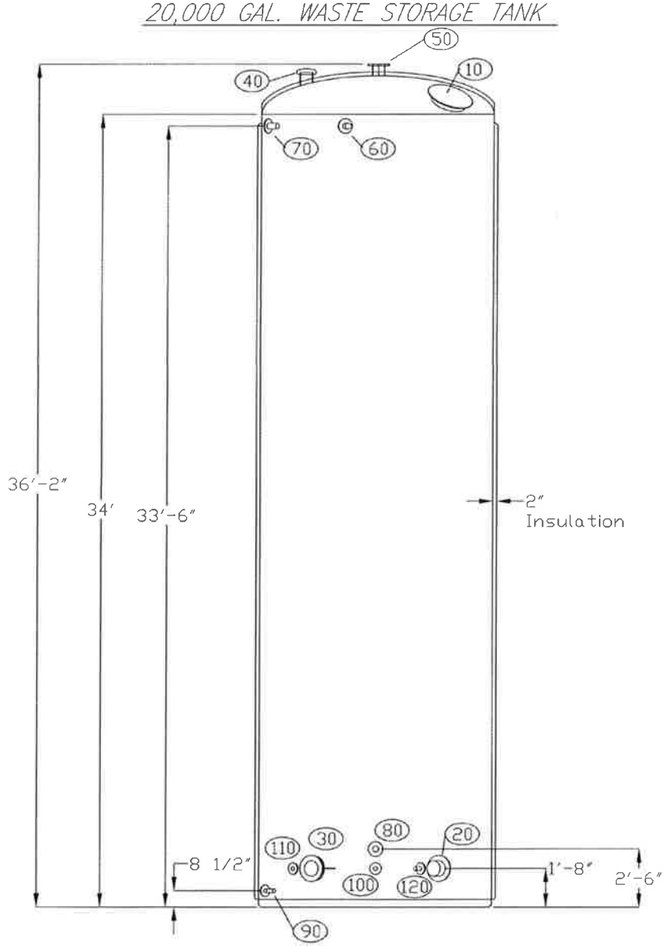
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
TAKA TANK

HAZARDOUS/REAGENT TANK - #25 & #27

M6



20,000 GAL. WASTE STORAGE TANK



20,000 GAL. WASTE STORAGE TANK

SPECIFICATIONS

1) Capacity: 18,000 U.S. Gallons
2) Specific Gravity: Design: 1.54 maximum

LAMINATE CONSTRUCTION

Resin System
- Premium Grade Co-Rezyn VE-8300 Vinyl Ester Resin throughout
- Double Nexus Synthetic Veil In Corrosion Barrier
- Co/MEK Peroxide with post cure
- U.V. Absorber In Exterior Resin Layer

Dome Top:

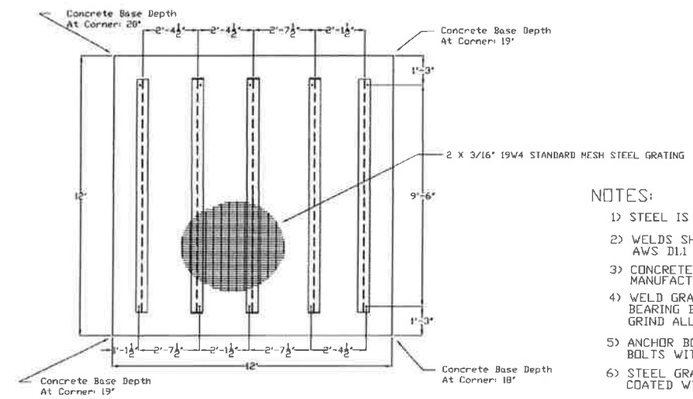
0.328 inch Total

Sidewall Top Section:

0.384 inch Total

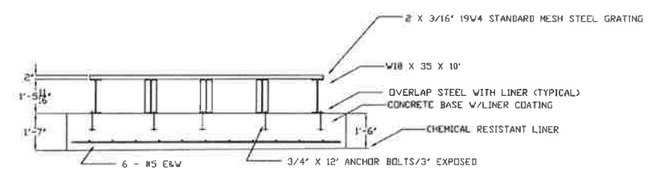
Flat Bottom:

0.265 inch Total



NOTES:

1) STEEL IS ASTM A992
2) WELDS SHALL BE E70XX IN ACCORDANCE WITH AWS D1.1
3) CONCRETE PAD MUST BE LEVEL PER TANK MANUFACTURER'S SPECIFICATIONS.
4) WELD GRATING TO W18X35 AT EVERY THIRD BEARING BAR WITH A 3/16" X 1" FILLET WELD. GRIND ALL EDGES AND HIGH SPOTS.
5) ANCHOR BOLTS SHALL BE ASTM A301 HEX HEAD BOLTS WITH HEAVY HEX NUT.
6) STEEL GRATING AND EXPOSED STEEL BEAMS SHALL BE COATED WITH ELASTOLINER COATING.



Fitting Schedule

Item	Qty	Size	Rating	Description/Service	Material
10	1	24		Manway Assembly	FRP
20	1	8	50	H.L. Flange - w/Conical Gusset/Heater	FRP
30	1	8	50	H.L. Flange - w/Conical Gusset	FRP
40	1	6		Mushroom Vent	FRP
50	1	6	75	H.L. Flange - w/Conical Gusset/Level transmitter	FRP
60	1	3	125	H.L. Flange - w/Conical Gusset/Level switch	FRP
70	1	3	125	H.L. Flange - w/Conical Gusset/Fill	FRP
80	1	3	125	H.L. Flange - w/Conical Gusset/Discharge	FRP
90	1	2	125	H.L. Flange - w/Conical Gusset/Drain	FRP
100	1	2	125	H.L. Flange - w/Conical Gusset	FRP
110	1	2	125	H.L. Flange - w/Conical Gusset/Thermcouple	FRP
120	1	2	125	H.L. Flange - w/Conical Gusset	FRP

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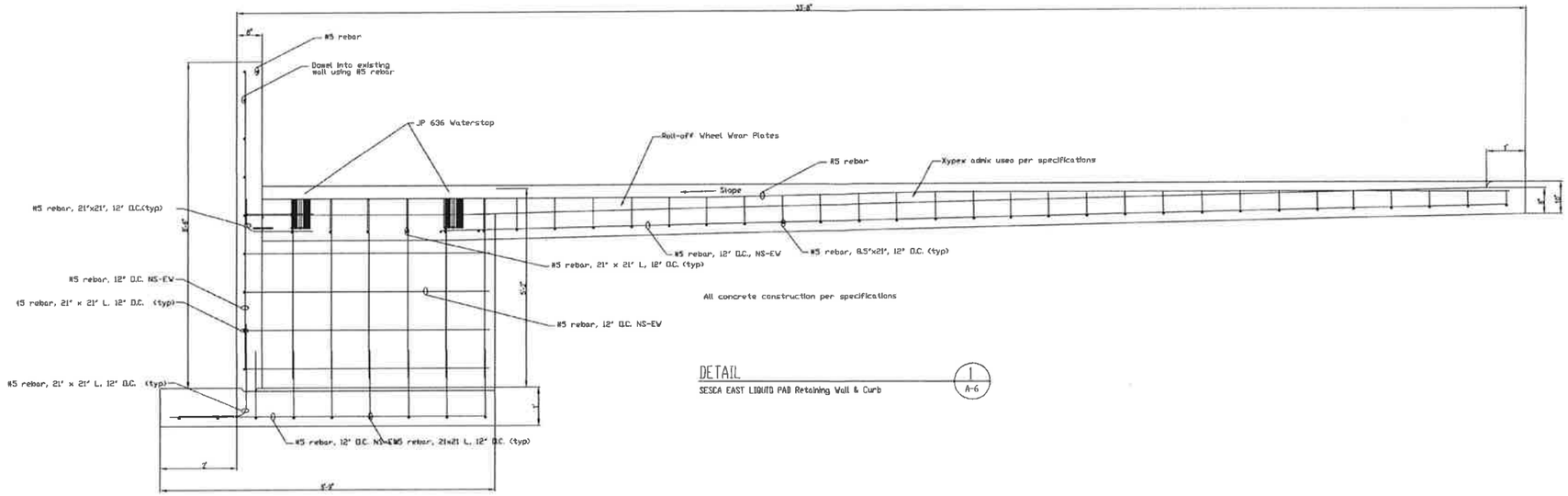
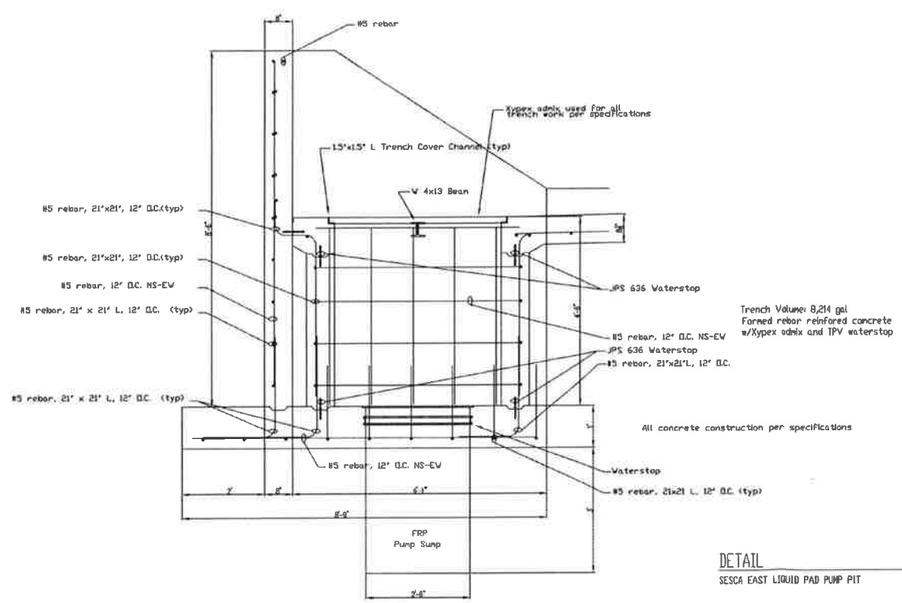
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
TANK FARM
HAZARDOUS WASTE TANK 21

M7



DETAIL 1 / A-6

SESCA EAST LIQUID PAD Retaining Wall & Curb



DETAIL 2 / A-6

SESCA EAST LIQUID PAD PUMP PIT

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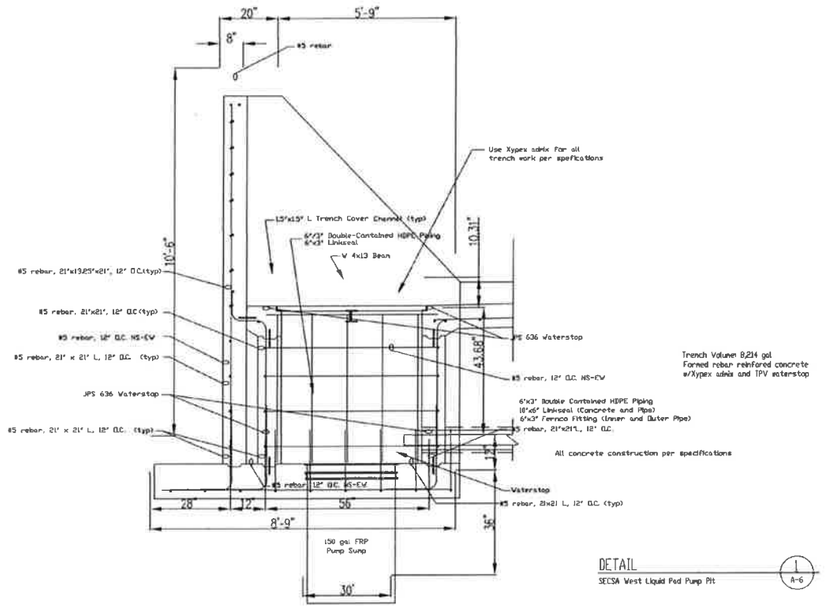
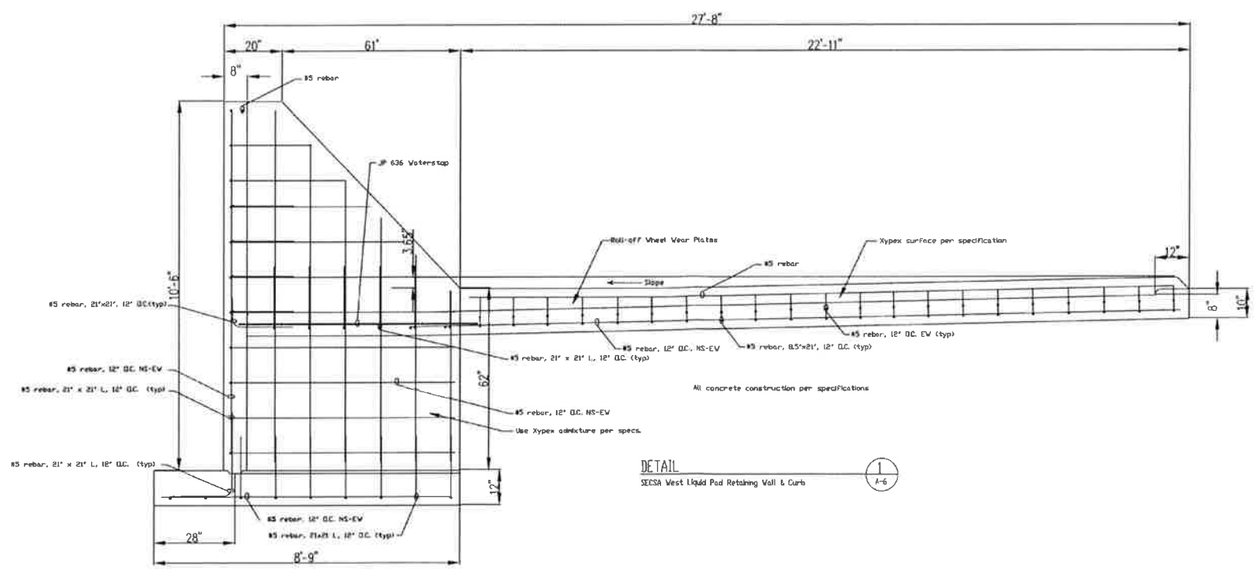
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
SOUTHEAST CONTAINER STORAGE AREA
SECSA EAST PAD SECTIONSNS

M8



DETAIL 1 A-6

SECSA West Liquid Pad Pump Pit



DETAIL 1 A-6

SECSA West Liquid Pad Retaining Wall & Curb

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MICHIGAN DISPOSAL WASTE TREATMENT PLANT
SOUTHEAST CONTAINER LIBRARY AREA
SECSA LIQUID PAD SECTIONS

M9

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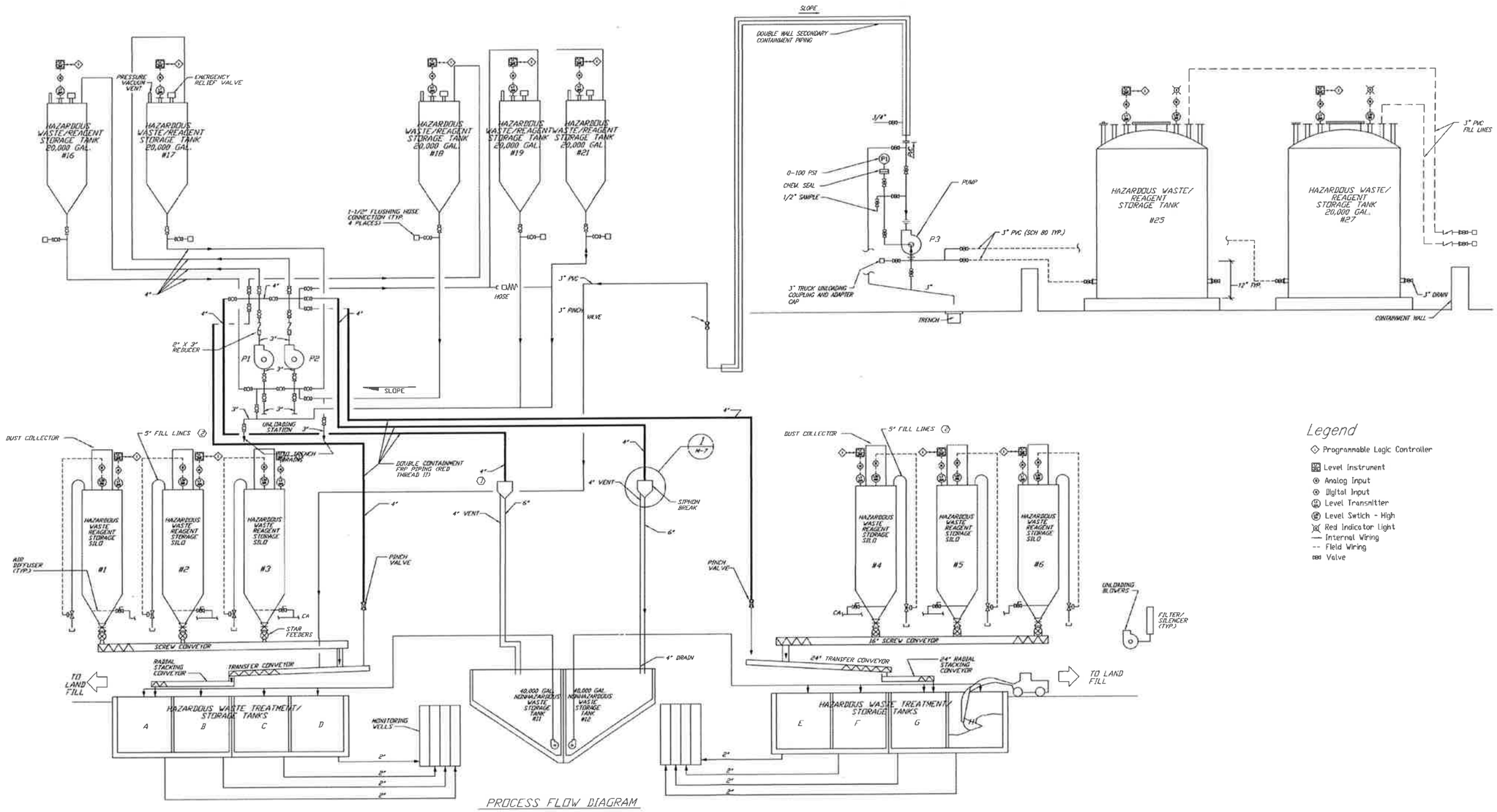


PROCESS FLOW DIAGRAM

Legend

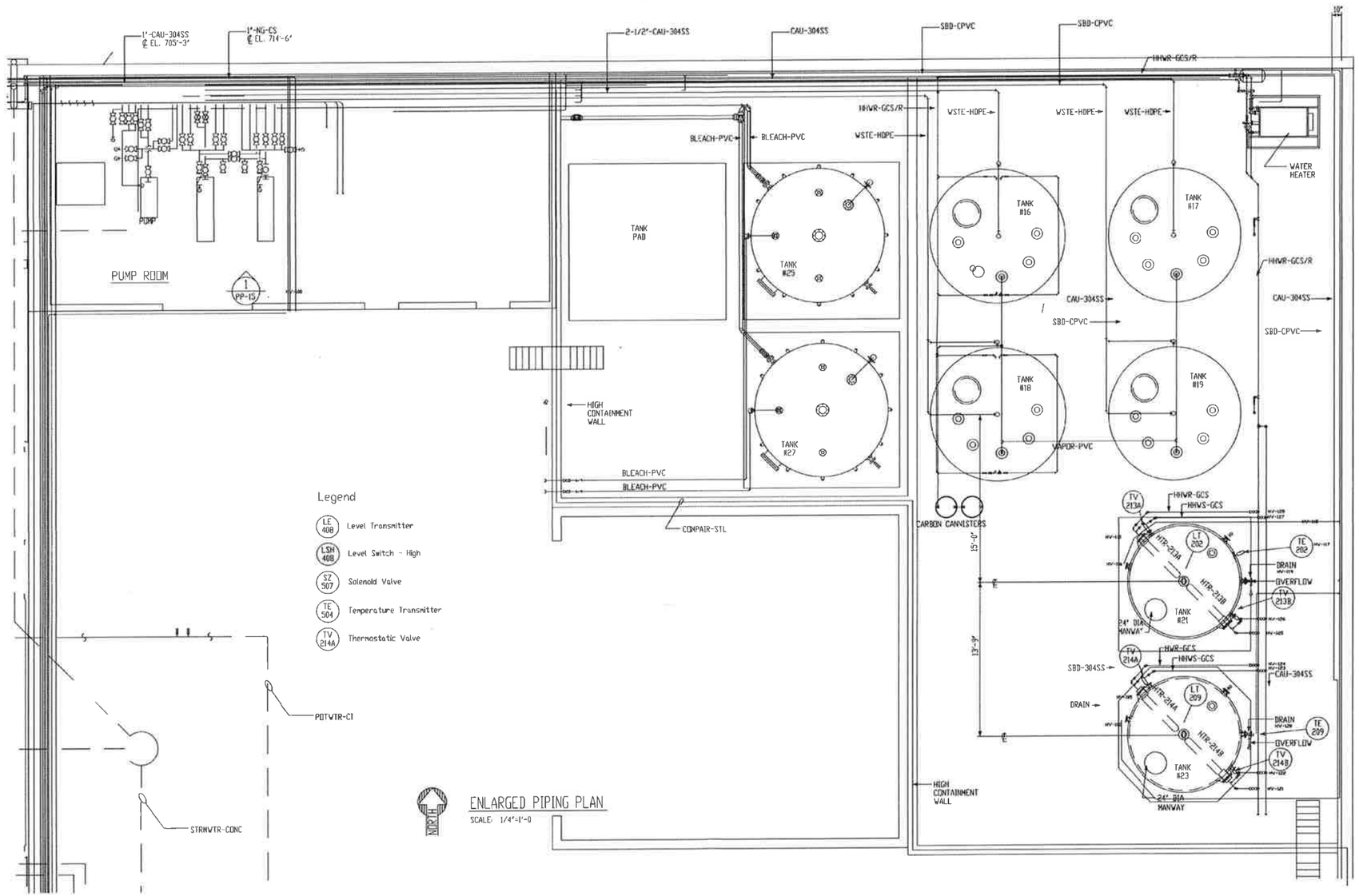
- Programmable Logic Controller
- Level Instrument
- Analog Input
- Digital Input
- Level Transmitter
- Level Switch - High
- Red Indicator Light
- Internal Wiring
- Field Wiring
- Valve

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

WASTE TREATMENT P&ID

PP-1



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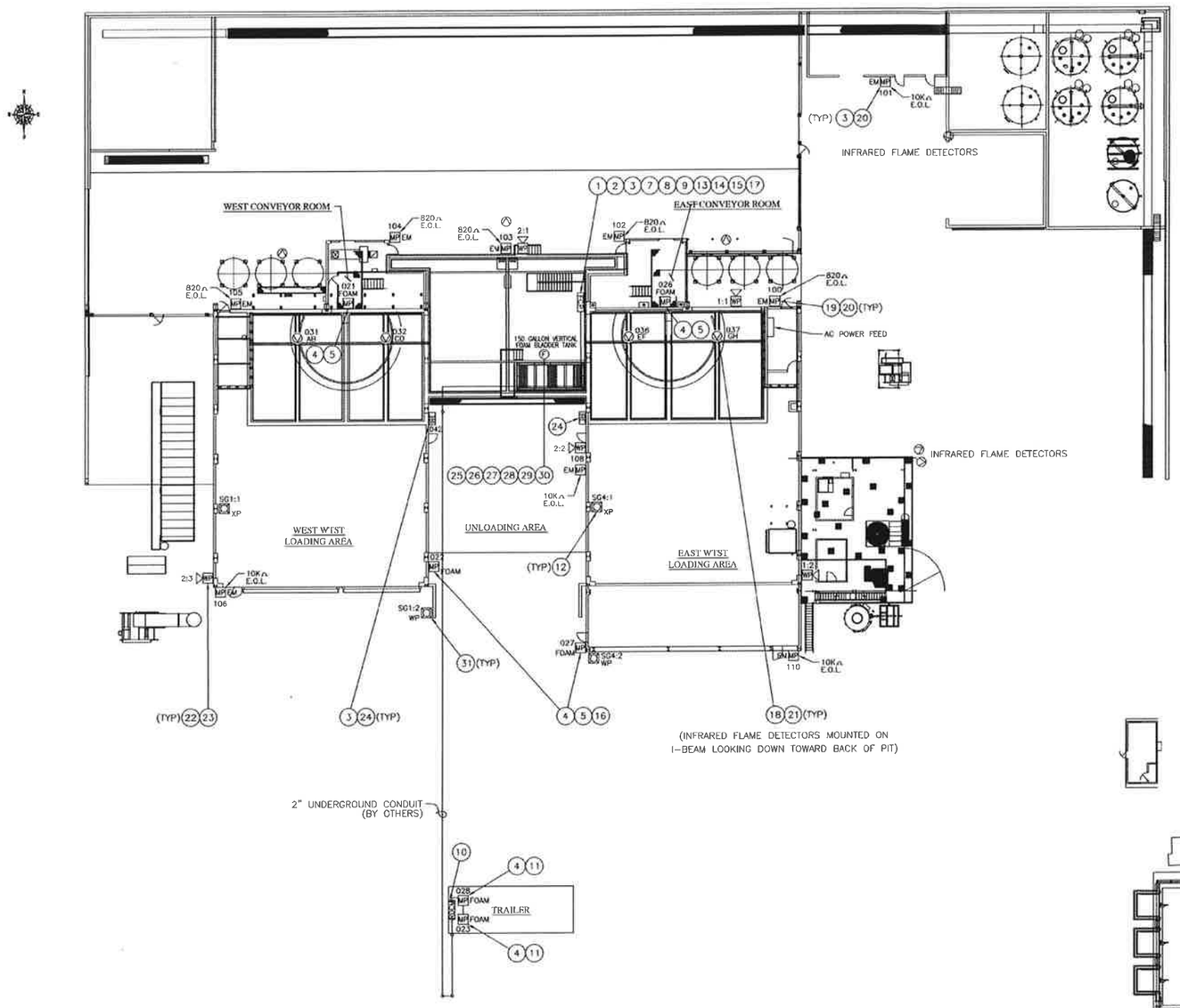
MICHIGAN DISPOSAL WASTE TREATMENT PLANT

TANK FARM PIPING PLAN

PP2



MICHIGAN DISPOSAL WASTE TREATMENT PLANT
PARTIAL PLAN VIEW - DEVICE LAYOUT

MATERIAL LIST

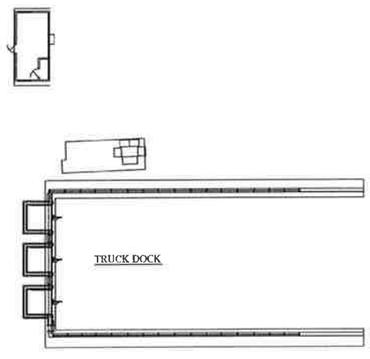
ITEM	PART NO.	VENDOR	DESCRIPTION	QTY.	REMARKS
1	74-600000-001	FENWAL	FENWALNET 6000 CONTROL PANEL WITH BLUE ENCLOSURE	1	
2	89-300022-001	FENWAL	MULTIZONE POWER SUPPLY	1	
3	70-407018-001	FENWAL	AI MONITOR MODULE, N.O. (NON-SILICONE)	22	
4	30-330002-001	FENWAL	ADDRESSABLE MANUAL PULL STATION, SERIES 3300, SELECTABLE LABEL	6	
5	84-100009-002	KIDDE	SGB-32C OUTDOOR WEATHERPROOF BACKBOX	4	
6	06-220023-001	FENWAL	IN LINE RESISTOR/DIODE ASSEMBLY	2	
7	FCPS-24FSR	FIRE-LITE	REMOTE POWER SUPPLY, 24 VOLT, 8 AMP	1	
8	42"H x 60"W x 12"D	HEALEY	CONTROL PANEL ENCLOSURE, 42"H x 60"W x 12"D	1	
9	38"H x 56"W	HEALEY	BACKPLATE, 38"H x 56"W	1	
10	74-600000-C05	FENWAL	REMOTE DISPLAY/CONTROL MODULE IN BLUE ENCLOSURE	1	
11	84-100008-001	KIDDE	SGB-32G OUTDOOR BACKBOX	2	REV. 9
12	FLBC-S-050-C-UL	CLEFORD & SNELL	EXPLOSION PROOF STROBE	22	
13	12CE75	EMBASSY	BATTERY, 7.5 AH, 12 VDC	2	
14	12CE18	EMBASSY	BATTERY, 18.0 AH, 12 VDC	2	
15	12CE33	EMBASSY	BATTERY, 33.0 AH, 12 VDC	4	
16	STI-3150	STI	WEATHER STOPPER, WITHOUT HORN, WITH SPACER	2	
17	800T-H31A	ALLEN-BRADLEY	KEY SWITCH	2	
18	007240-001	DET-TRONICS	Q1116 UNIVERSAL AIR SHIELD ASSEMBLY	4	SUPPLIED BY CUSTOMER
19	70-407002-001	FENWAL	AI MONITOR MODULE, N.O.	5	
20	29-320000-280	FENWAL	MANUAL PULL STATION	9	
21	008100-001	DET-TRONICS	X3301A4N11W1 MULTISPECTRUM INFRARED FLAME DETECTOR	4	SUPPLIED BY CUSTOMER
22	55200-AW	EDWARDS	QUODRONIC HORN/SIREN, WEATHERPROOF	5	
23	349	EDWARDS	WEATHERPROOF BACK BOX	5	(WP HORN/SIREN)
24			NEMA 12 ENCLOSURE (FOR IR FLAME DETECTORS)	2	SUPPLIED BY CUSTOMER
25	068789	ANSUL	2" WATER INLET BALL VALVE	1	
26	074200	ANSUL	2" CONCENTRATE ISOLATION BALL VALVE	1	
27	403782	ANSUL	2" SWING CHECK VALVE	1	
28	416495	ANSUL	55 GALLON 3X3 LOW VISC. AR-AFFF	3	
29	433907	ANSUL	FLOWMAX CL PROPORTIONER	1	
30	403491	ANSUL	2" HYDRAULIC CONCENTRATE BALL VALVE	1	
31			WEATHER PROOF STROBE W/WEATHER PROOF BACKBOX	2	SUPPLIED BY CUSTOMER

REV. 9

SYMBOLS

SCALE: NONE

- FCP — FN6000 FIRE ALARM/SUPPRESSION SYSTEM CONTROL PANEL
- RDCM — REMOTE DISPLAY CONTROL MODULE
- MP FOAM — AFFF MANUAL PULL STATION (WEATHER PROOF WHERE REQUIRED)
- MP EM — EMERGENCY MANUAL PULL STATION (YELLOW)
- WP — COMMON ALARM SIREN (WEATHERPROOF)
- (F) — 150 GALLON VERTICAL FOAM BLADDER TANK
- IRE — INFRARED FLAME DETECTOR A.I. ENCLOSURE
- INFRARED FLAME DETECTOR
- XP — ALARM STROBE (EXPLOSION PROOF)
- WP — ALARM STROBE (WEATHER PROOF)



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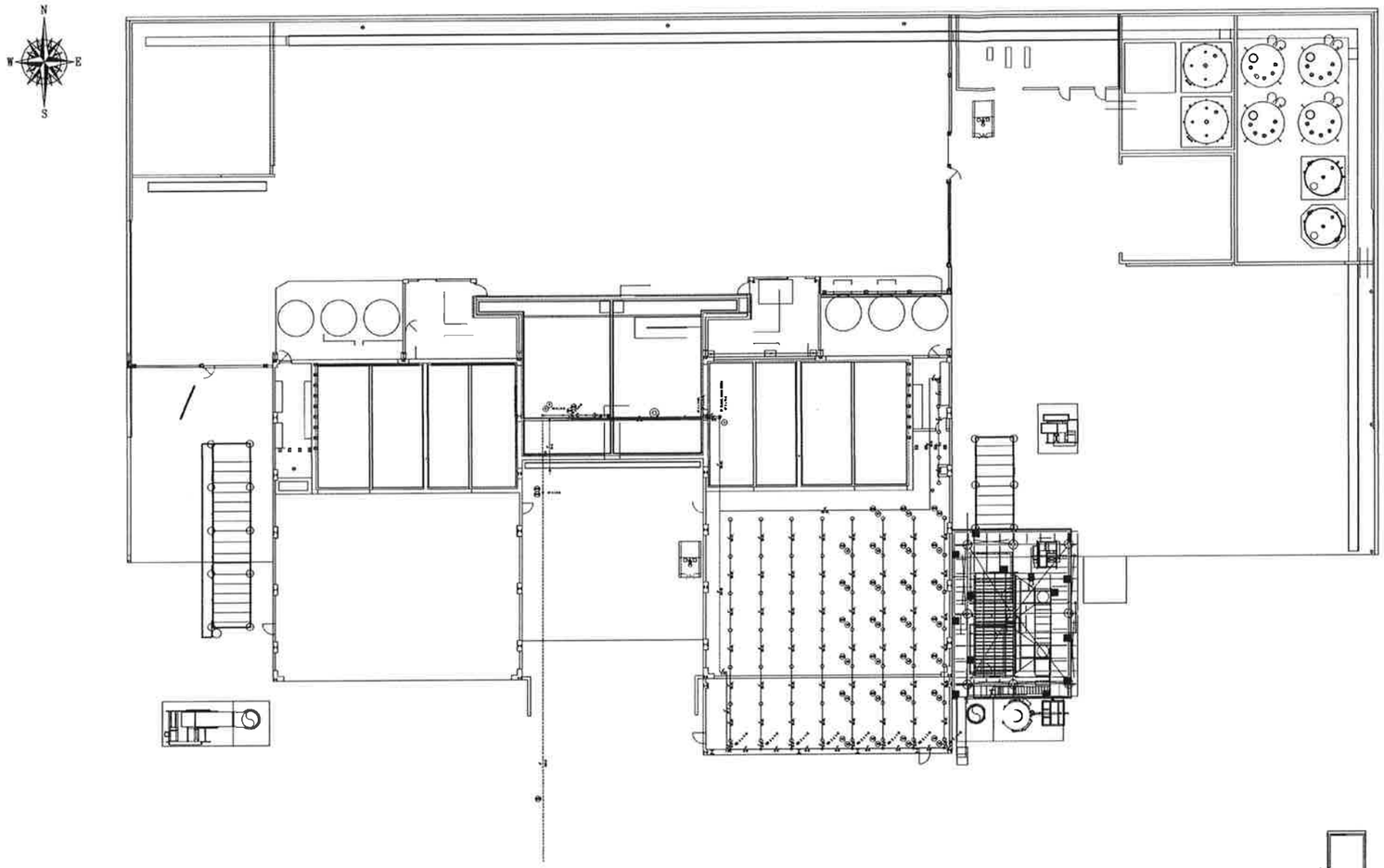
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
WASTE TREATMENT AND STORAGE BLDG.
AFFF FIRE SUPPRESSION SYSTEM

PP3



MICHIGAN DISPOSAL WASTE TREATMENT PLANT
BAY PLAN VIEW
SCALE 1" = 10'-0" NORTH

– GENERAL NOTES –

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LEGEND

1 – VFP CONTRACT TO START AT 8" FLANGED WATER SERVICE CONNECTION (BY OTHERS)
2 – 8" FLANGED OS&Y VALVE W/ TAMPER SWITCH
3 – 8" AMES MODEL 2000SS DOUBLE CHECK BACKFLOW
4 – 8" VICTAULIC FIRELOCK #002 TEE
5 – 8" VICTAULIC FIRELOCK #001 90 ELL
5a – 8" VICTAULIC #744 FIRELOCK FLANGE
6 – 4" VICTAULIC #705W BUTTERFLY VALVE
7 – 8" VICTAULIC #717R CHECK VALVE W/ DRAIN
8 – 8" FLANGED 90 ELL
9 – 8" PIPE STANDS
10 – 4" RELIABLE MODEL DDX DRY PIPE VALVE ASSEMBLY W/ DRAIN, FLOW & PRESSURE SWITCHES
11 – 8" AFFF VARIABLE RANGE FLOW PROPORTIONER
12 – 2 1/2" FLUSHING CONNECTION
13 – SPARE HEAD CABINET
14 – STROBE / HORN ALARM
15 – 4"x 2 1/2"x 2 1/2" FIRE DEPT. CONN.
16 – 4" FIRELOCK GROOVED CHECK VALVE TO FDC
17 – 4" RELIABLE DDX DELUGE VALVE
18 – 6" RELIABLE MODEL D DRY VALVE
19 – AIR COMPRESSOR FOR MODEL D DRY VALVE

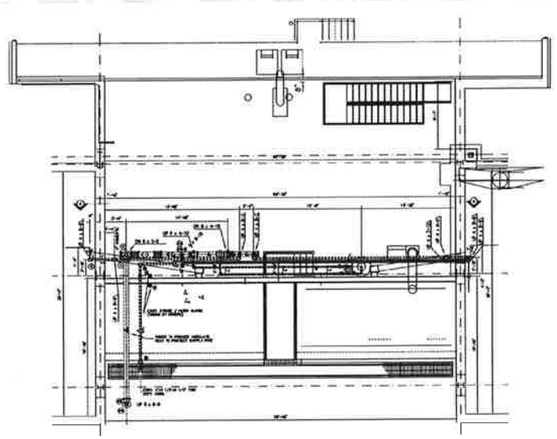
SYSTEM DESIGN SUMMARY	
CALCULATED AREA:	SOUTH EAST REMOTE AREA 3
OCCUPANCY:	EXCEM FIX
HAZARD:	ORDINARY 2
AREA / SPRINKLER	87.47 SQ.FT. (MAX.)
DENSITY:	.20 GPM / SQ. FT.
AREA OF OPERATION:	1000 SQ.FT.
# HEADS FLOWING:	21
SYSTEM DEMAND:	437.53 GPM @ 49.393PSI @ CITY SUPPLY
INSIDE HOSE:	0 GPM
OUTSIDE HOSE:	250 GPM
SPRINKLER HEAD:	RELIABLE MODEL 'F-1' SSU
ORIFICE:	1/2
K FACTOR:	5.6
TEMPERATURE:	DEGREE 150F

TYPICAL HANGER
NO SCALE

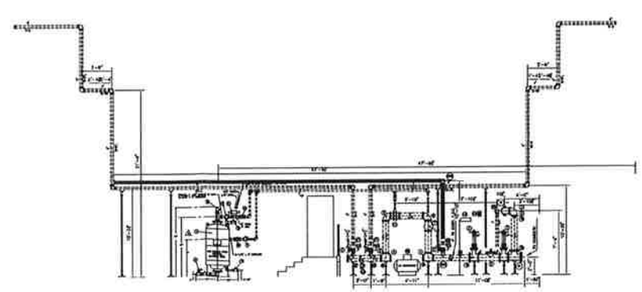
1 3/8 All Thread Rod
1 3/8 Ring
1 3/8 Top Beam Clamp
(1/2" Thread for 6" Pipe)

TYPICAL HANGER
NO SCALE

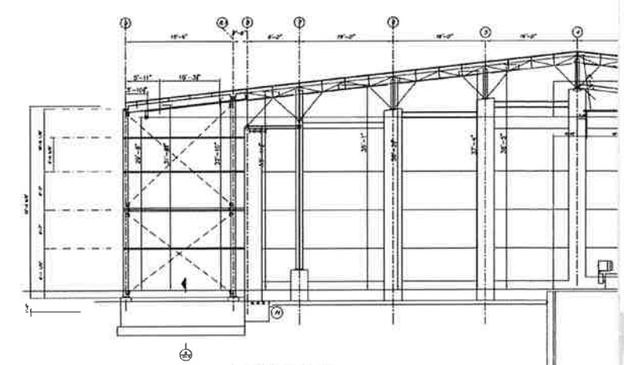
1 3/8 All Thread Rod
1 3/8 Ring
1 3/8 Wide Mouth Top Beam Clamp
(1/2" Thread for 6" Pipe)



EXIST. RISER PLAN VIEW
SCALE 1" = 10'-0" NORTH



ELEVATION "A-A"
SCALE 1" = 8'-0" NORTH



ELEVATION "B-B"
SCALE 1" = 8'-0" NORTH

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MICHIGAN DISPOSAL WASTE TREATMENT PLANT
EAST WASTE TREATMENT & STORAGE BAY
DRY SPRINKLER SYSTEM SECTION & DETAIL

PP4

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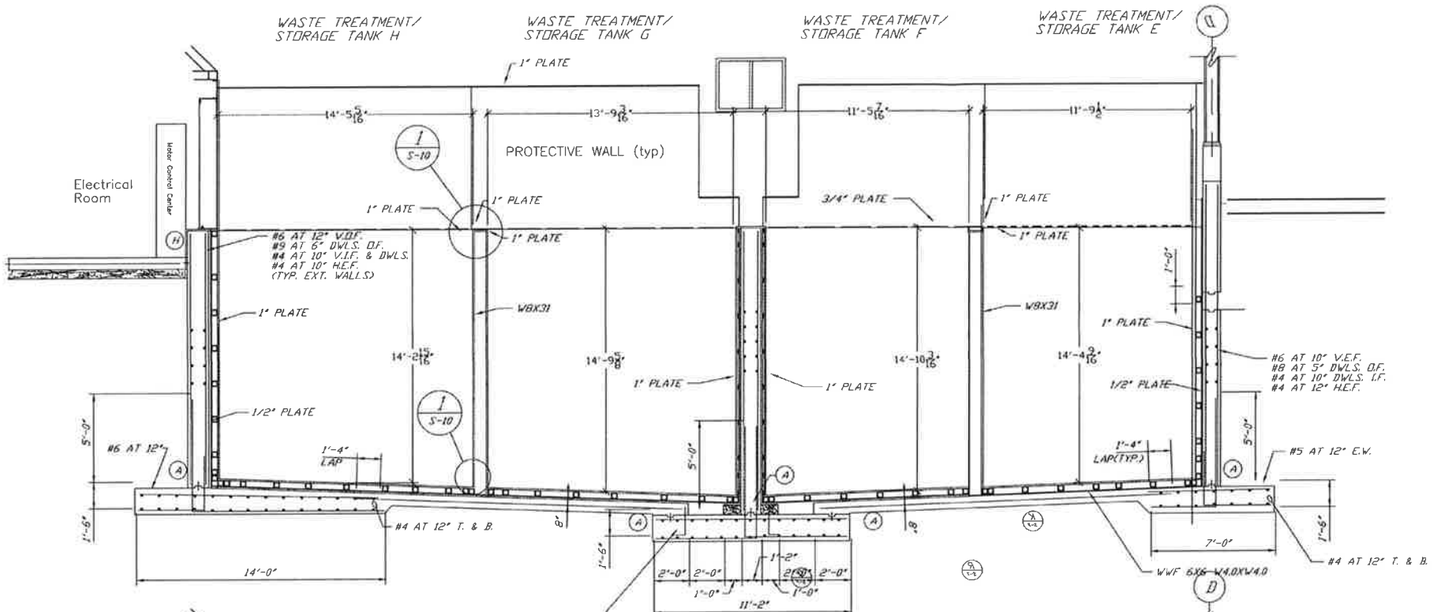
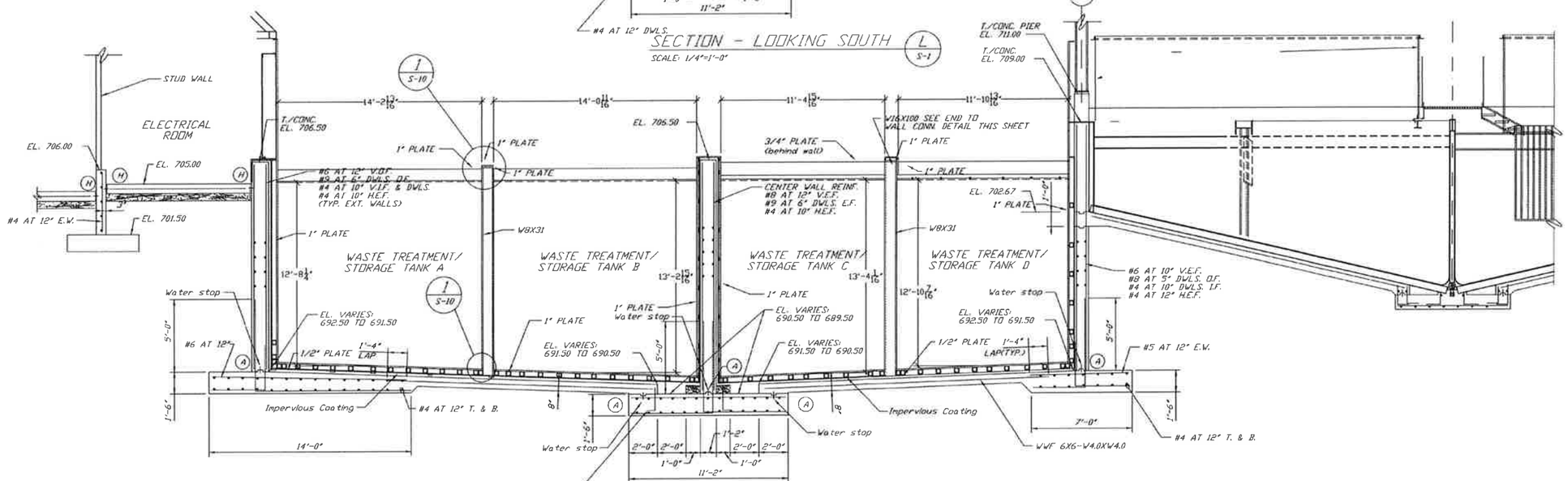


SECTION - LOOKING SOUTH (L / S-1)

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



SECTION - LOOKING NORTH (M / M-2)

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

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
WASTE TREATMENT & STORAGE TANKS
STRUCTURAL CROSS SECTIONS

S1

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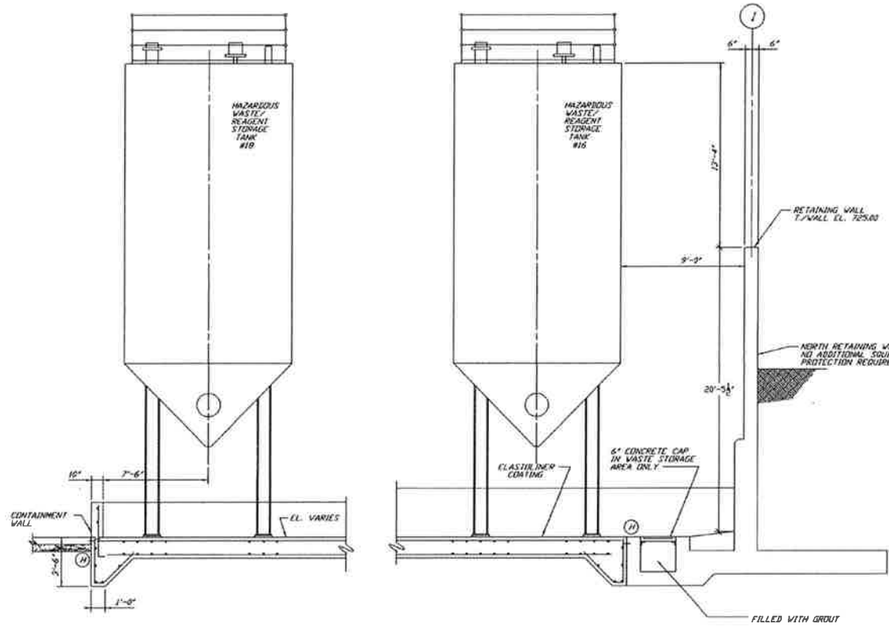
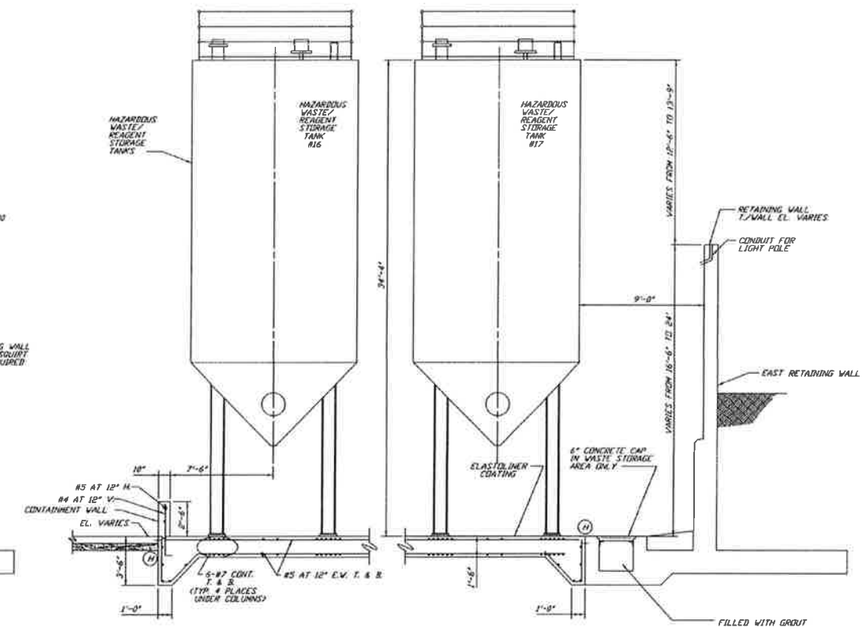


SECTION N
SCALE: 1/4" = 1'-0"
N-2



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

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

TANK FARM ELEVATION

S2