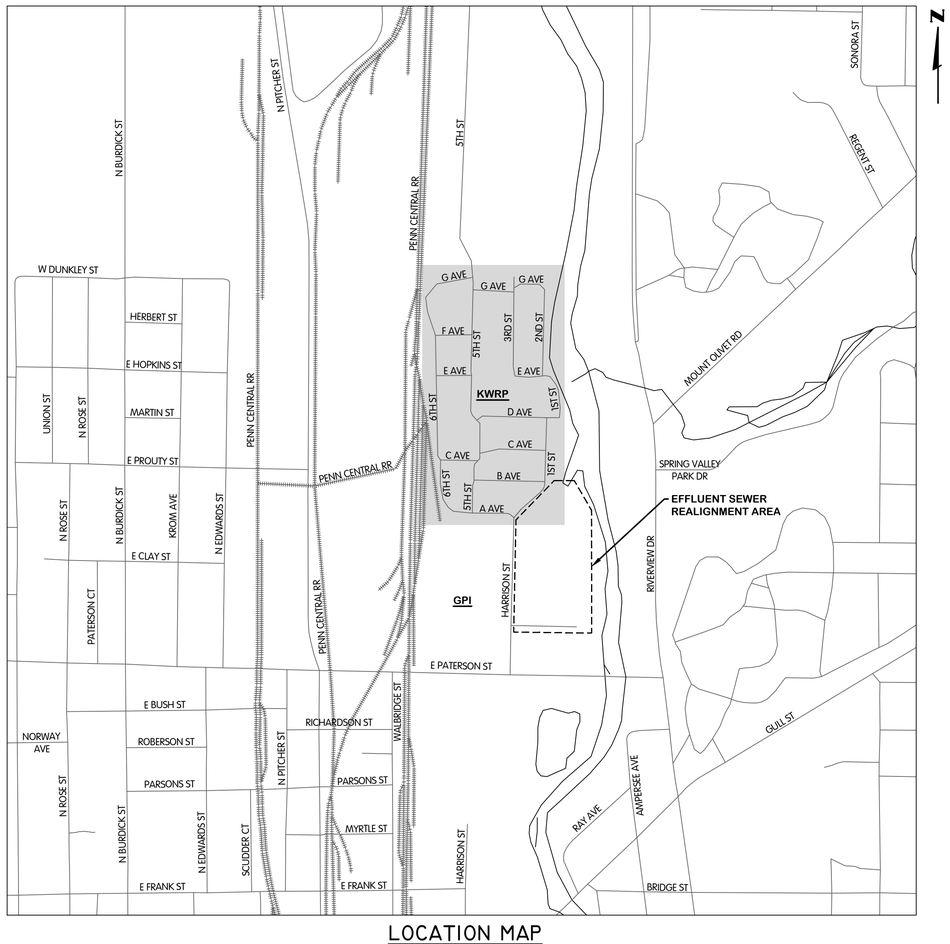

LOCATION MAP

INITIAL AND ULTIMATE SERVICE AREA = 77.89 ACRES

THE CITY OF Kalamazoo

STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-2023

CITY OF KALAMAZOO, MICHIGAN

KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

2023

ADMINISTRATION

JAMES RITSEMA - CITY MANAGER

JAMES J. BAKER, PE - PUBLIC SERVICES DIRECTOR & CITY ENGINEER

JIM CORNELL - WASTEWATER DIVISION MANAGER

STEVE HELMER - TREATMENT OPERATIONS SUPERINTENDENT

CHRIS NELSON - COLLECTIONS AND PLANT MAINTENANCE MANAGER

RYAN STOUGHTON, PE - ASSISTANT CITY ENGINEER - WASTEWATER

MEMBERS OF COMMISSION

DAVID ANDERSON - MAYOR

DON COONEY - VICE MAYOR

JEANNE HESS

CHRIS PRAEDEL

QIANNA DECKER

STEPHANIE HOFFMAN

ESTEVEN JUAREZ

811 Know what's below. Call before you dig.

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DATE: MAY 2023

K:\KAL-7982\00\COV-COVER SHEET
5/11/2023 2:09 PM - CFERRELL
5/11/2023 2:29 PM

TYPICAL EXISTING SYMBOLS AND ABBREVIATIONS

- AERIAL CONTROL POINT
- AERIAL WING POINT
- AIR CONDITIONING UNIT
- AXLE
- BARBEQUE GRILL
- BENCHMARK (1031)
- BOLLARD
- BOLT
- CABLE TV
- CATCH BASIN
- CLEAN OUT
- CONCRETE MONUMENT
- CONIFEROUS TREE
- CONTROL POINT (72)
- CONTROLLER POLE MOUNTED
- CURB INLET
- DECIDUOUS TREE
- DECORATIVE ROCK
- DRAIN TILE
- DRILL HOLE
- DRY WELL
- EP — EDGE OF PAVEMENT
- ELECTRIC MANHOLE
- ELECTRIC METER
- ELECTRIC PULLBOX
- ELECTRIC TRANSFORMER
- ELECTRIC VAULT
- EXISTING BUILDING
- FIRE HYDRANT OR YARD HYDRANT
- FLAG POLE
- FC — FORCE MAIN FLUSHING CONNECTION
- FM — FOUND MONUMENT BOX
- GAS LINE MARKER
- GV — GAS LINE VENT
- GAS MANHOLE
- GAS METER
- GAS TEST STATION
- GAS VALVE
- GAS WELL
- GOLF BALL WASHER
- GUY WIRE
- HEAD STONE
- INLET PROTECTION
- INV — INVERT ELEVATION
- IP — IRON PIN (OR LABELED POST, MARKER ETC.)
- LIGHT, POWER POLE AND TELEPHONE POLE
- LIGHT POLE
- LIGHT POLE BOX
- MB — MAILBOX
- METER PIT
- MINE SPIKE
- MW — MONITORING WELL
- NEWS PAPER BOX
- OT — OIL TANK
- PM — PARKING METER
- PC-2 — PAVEMENT BORING
- PAY PHONE
- PETROLEUM PUMP
- POST
- POWER LINE MARKER
- POWER POLE
- POWER POLE AND TELEPHONE POLE
- RAIL ROAD CROSSING SIGNAL
- RAIL ROAD GATE
- RAIL ROAD FROG
- RAIL ROAD MILE POST
- RAIL ROAD SPIKE
- RAIL ROAD SPIKE SET
- SANITARY MANHOLE (SA)
- SANITARY VALVE
- SA — SANITARY VENT
- SA — SANITARY MARKER
- SATELLITE DISH
- SEPTIC TANK (SEPTIC)
- SHRUB
- SIGN
- SIGNAL
- B-2 — SOIL BORING
- SPIGOT
- SPRINKLER HEAD
- 773.34 — SPOT ELEVATION *POINT OF ELEVATION IS DECIMAL
- S — STORM LINE MARKER
- ST — STORM MANHOLE
- STUMP
- SUPPORT POLE
- T-BAR
- TACKED HUB
- TANK FILLER CAP
- TC - TOP OF CURB ELEVATION (TRAFFIC) G - GUTTER ELEVATION
- TELEPHONE BOOTH (TELEPHONE)
- TEL — TELEPHONE LINE MARKER
- T — TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- TELEPHONE POLE
- TELEPHONE POLE AND LIGHT POLE
- TW — TOP OF WALK
- 602.35 — TOPO GRADE SHOT (THE . OF THE NUMBER SIGNIFIES THE LOCATION OF THE SHOT)
- TOWER
- TPB
- TRAFFIC MANHOLE (TM)
- TRAFFIC PULL BOX
- UNKNOWN BOX (U)
- UNKNOWN MANHOLE (UM)
- UNKNOWN PEDESTAL (?)
- UNKNOWN POLE
- UNKNOWN VALVE (U)
- UNKNOWN WELL (U WELL)
- VT — VAULT
- VENT PIPE
- W — WATER LINE MARKER
- WATER MANHOLE (W)
- WATER MAIN PLUG
- WATER METER
- WM — WATER METER PIT
- WATER WELL (WELL)
- WATER VALVE (W)
- W — WATER VENT
- YARD LIGHT

SERVICE

AA	AERATION AIR
AL	ALUM
C	CABLE (UNDERGROUND)*
CA	COMPRESSED AIR
CL	CHLORINE SOLUTION
CO	COMBINED SEWER
CLG	CHLORINE GAS
DG	DIGESTER GAS
DS	DIGESTED SLUDGE
DW	DILUTION WATER
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
EW	EFFLUENT WATER
E	ELECTRICAL (UNDERGROUND)*
FC	FERRIC/FERROUS CHLORIDE
FD	FOUNDATION DRAIN
FE	FINAL EFFLUENT
FO	FIBER OPTIC
FU	FUEL OIL
G	NATURAL GAS (OFF SITE)
GR	GREASE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IC	IRON CHLORIDE
ML	MIXED LIQUOR
NG	NATURAL GAS (ON SITE)
NPW	NON POTABLE WATER
P	POLYMER
PE	PRIMARY EFFLUENT
PS	PRIMARY SLUDGE
RAS	RETURN ACTIVATED SLUDGE
RD	ROOF DRAIN
RS	RAW SEWAGE
RW	RAW WATER
SA	SANITARY SEWER
SB	SECONDARY BYPASS
SC	SCUM
SE	SECONDARY EFFLUENT
S	SIGNAL (UNDERGROUND)*
SPA	SPARE
ST	STORM SEWER
SM	STEAM
SP	DIGESTER SUPERNATANT
TD	TANK DRAIN
T	TELEPHONE (UNDERGROUND)*
TE	THICKENER EFFLUENT
TS	THICKENED SLUDGE
TWAS	THICKENED WASTE ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE

TOPOGRAPHY LINES:

- CENTER LINE
- FENCE LINE
- PROPERTY LINE (P/L)
- RIGHT OF WAY (R/W)
- PERMANENT EASEMENT
- CONSTRUCTION EASEMENT
- SILT FENCE

UTILITY LINES:

- CABLE (UNDERGROUND)* (C)
- COMBINED SEWER (CO15)
- ELECTRICAL (UNDERGROUND)* (E)
- GAS LINE (G4)
- OVERHEAD WIRES (oh)
- PETROLEUM, OIL, LUBRICANTS (PET)
- SANITARY SEWER (SA10)
- SIGNAL (UNDERGROUND)* (S)
- STORM SEWER (ST18)
- TELEPHONE (UNDERGROUND)* (T)
- WATER LINE (W8)
- LARGE DIAMETER LINES (ANY TYPE) (ST54)
- UTILITY LINE TO BE REMOVED *** (W8)
- UTILITY LINE TO BE ABANDONED (W8)
- PROPOSED UTILITY
- PROPOSED LARGE DIAMETER UTILITY
- PROPOSED TRENCHLESS UTILITY

ALPHA DESIGNATION REFERS TO UTILITY TYPE OR SERVICE TYPES, NUMERICAL DESIGNATION REFERS TO PIPE NOMINAL DIAMETER. LINES WITH NO NUMERICAL DESIGNATION ARE OF UNKNOWN SIZE.

* AERIAL LINES, IF SHOWN, ARE DESIGNATED WITH LOWER CASE LETTERS
** FOR ELLIPTICAL SEWERS, THE VERTICAL DIMENSION (RISE) IS CALLED OUT FIRST FOLLOWED BY THE HORIZONTAL DIMENSION (SPAN). EXAMPLE: 45X35 (RISE X SPAN) THE VERTICAL DIMENSION IS 45", THE HORIZONTAL DIMENSION IS 35".
*** INDICATES THE REMOVAL OF ALL SPECIFIED STRUCTURES AND APPURTENANCES.

PROPOSED SYMBOLS

- ABANDON VALVE BOX
- ABANDON VALVE MANHOLE
- ARV — AIR RELEASE VALVE AND MANHOLE
- BV — BUTTERFLY VALVE AND BOX
- BV — BUTTERFLY VALVE AND MANHOLE
- CB ST-1.1-1 — CATCH BASIN
- CO — CLEAN OUT
- CI ST-1.1-1 — CURB INLET
- FH A — FIRE HYDRANT ASSEMBLY, TYPE A
- FH B — FIRE HYDRANT ASSEMBLY, TYPE B
- FIRE HYDRANT TO BE REMOVED
- FC — FORCE MAIN FLUSHING CONNECTION
- GATE VALVE AND BOX
- GV — GATE VALVE AND MANHOLE
- IV — INSERTING VALVE AND MANHOLE
- METER PIT
- PV — PLUG VALVE AND BOX
- PV — PLUG VALVE AND MANHOLE
- HOLD / PP — POLE TO BE TEMPORARILY SUPPORTED AND PROTECTED BY CONTRACTOR
- REDUCER
- MH SA-1.1-1 — SANITARY MANHOLE
- MH ST-1.1-1 — STORM MANHOLE
- STUMP TO BE REMOVED
- TAPPING SLEEVE VALVE AND BOX
- TAPPING SLEEVE VALVE AND MANHOLE
- TREE TO BE REMOVED

VERTICAL DATUM:

VERTICAL DATUM IS BASED ON '88 NAVD.

NOTE: ACCURACY OF EXISTING ELEVATIONS AND DIMENSIONS IS NOT GUARANTEED. FIELD VERIFY BEFORE CONSTRUCTION.

DRAWING INDEX

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3	G-0.3	GENERAL SUMMARY
REMOVALS		
4	R-1.1	INDUSTRIAL DIVERSION CHAMBER 1 - REMOVALS
5	R-1.2	PARSHALL FLUME - REMOVALS
6	R-1.3	JUNCTION CHAMBER - ABANDONMENT DETAILS
CIVIL		
7	C-0.1	STANDARD CIVIL DETAILS
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9	C-1.1	SITE PLAN AND SHEET KEY
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11	SA-1.1	SANITARY - PLAN & PROFILE STA 0+00 TO 5+00
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STRUCTURAL AND EQUIPMENT		
14	S-0.1	STRUCTURAL DETAILS
15	S-1.1	INDUSTRIAL DIVERSION CHAMBER 1 - PLANS
16	S-1.2	PARSHALL FLUME - PLANS
ELECTRICAL		
17	E-0.1	ELECTRICAL LEGEND
18	E-1.1	ELECTRICAL SINGLE LINE DIAGRAM AND DETAILS
19	E-1.2	INDUSTRIAL DIVERSION CHAMBER 1 - ELECTRICAL PLAN

Richard J. Eshlaman 5-11-2023
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER

THE CITY OF Kalamazoo

CITY OF KALAMAZOO

LEGENDS, INDEX AND GENERAL NOTES

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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SCALE NONE

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

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RGE	CJAF	RGE

STATUS: ISSUE FOR BID

DATE: MAY 2023

SHEET NO.

G-0.1

1 OF 19

K:\KAL-7982\00\01-LEGENDS, INDEX AND GENERAL NOTES
5/11/2023 1:29 PM - CFERRELL
5/11/2023 1:29 PM

Alignment Name: PROPOSED SANITARY
Description:
Station Range: Start: 0+00.00, End: 6+84.00

PI Station	Northing	Easting	Distance	Direction
0+00.00	296,180.59'	12,797,035.30'		
			13.42'	S87°E
0+13.42	296,179.87'	12,797,048.70'		
			44.46'	S86°E
0+57.88	296,176.94'	12,797,093.06'		
			112.56'	S34°E
1+70.44	296,083.86'	12,797,156.35'		
			286.45'	S22°E
4+56.89	295,817.91'	12,797,262.78'		
			194.86'	S1°W
6+51.75	295,623.09'	12,797,259.11'		
			6.65'	S1°W
6+58.40	295,616.43'	12,797,258.99'		
			25.59'	S66°E
6+84.00	295,605.95'	12,797,282.33'		

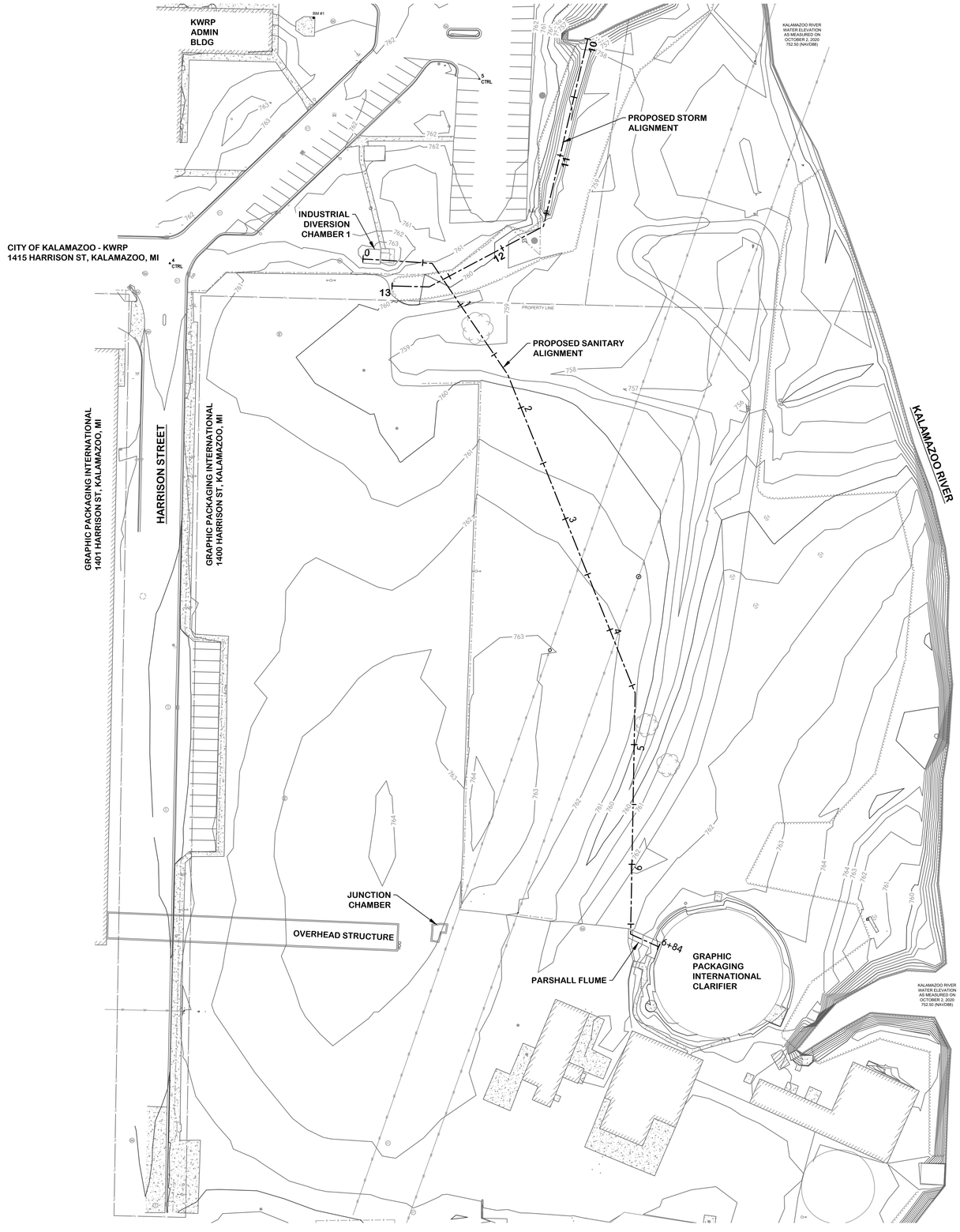
Alignment Name: PROPOSED STORM
Description:
Station Range: Start: 10+00.00, End: 13+00.00

PI Station	Northing	Easting	Distance	Direction
10+00.00	296,364.48'	12,797,223.13'		
			160.87'	S13°W
11+60.87	296,207.93'	12,797,186.12'		
			108.09'	S62°W
12+68.96	296,157.29'	12,797,090.63'		
			31.04'	N89°W
13+00.00	296,158.03'	12,797,059.60'		

SURVEYOR NOTES:

1. Utilities shown are approximate locations derived from actual measurements. They should not be interpreted to be exact locations nor should it be assumed that they are the only utilities in this area.
2. Benchmark #1: Plastic tag stamped "763.76" near the NE corner of overflow chamber East of the Administration Building. ELEVATION:763.30 (NAVD88).
3. Basis of Coordinates: Michigan State Plane South, International feet.
4. Control Point Information:

NO.	NORTHING	EASTING	ELEV		
1	296855.290	12797095.924	760.27	MAG NAIL	NOTE IN PLAN VIEW
2	296626.441	12797089.940	761.54	MAG NAIL	
3	296403.981	12797084.294	761.92	MAG NAIL	
4	296177.009	12796873.824	761.58	MAG NAIL	
5	296331.126	12797132.506	762.99	MAG NAIL	



EXISTING PROJECT AREA
AND SURVEY CONTROL

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

RICHARD ESHLAMAN
ENGINEER
No. 53605
PROFESSIONAL ENGINEER
STATE OF MICHIGAN
5-11-2023

THE CITY OF Kalamazoo

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SCALE 1:50

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RGE	CJAF	RGE

STATUS: ISSUE FOR BID
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SHEET NO.
G-0.2
2 OF 19

K:\KAL-7982\00\02-EXISTING SITE PLAN AND SURVEY CONTROL
5/11/2023 2:49 PM - CFERRELL
5/11/2023 2:29 PM

GENERAL SUMMARY

Item No.	Plan Quantity	Unit	Description	G-0.1	G-0.2	G-0.3	R-1.1	R-1.2	R-1.3	C-0.1	C-0.2	C-0.3	C-1.1	C-1.2	SA-1.1	SA-1.2	ST-1.1	S-0.1	S-1.1	S-1.2	E-0.1	E-1.1	E-1.2
1	1	LS	General Conditions/ Mobilization	1																			
2	1	LS	Audio/Video Recording	1																			
3	3	EA	Tree and Stump Removal 6 inches to 18 inches										3										
4	0.25	AC	Clearing and Grubbing											0.25									
5	1	LS	Reconstruct Industrial Diversion Chamber No. 1				0.45												0.45			0.05	0.05
6	1	LS	Remove, Fill, and Abandon Existing Junction Chamber						1														
7	1	LS	Reconstruct Parshall Flume Structure					0.50												0.50			
8	1	LS	Meter Vault												1								
9	2	EA	5' Diameter Storm Manhole														2						
10	258	LF	30" Diameter HDPE Storm Sewer														258						
11	1	EA	30-inch Concrete Storm Sewer Outlet Headwall														1						
12	15	SY	6"-12" Rip Rap														15						
13	14	LF	12-inch Diameter Class 52 DI Sanitary Sewer (Labor Only)												14								
14	641	LF	24-inch Diameter Class 52 DI Sanitary Sewer (Labor Only)												443	198							
15	3	EA	24-inch Class 52 DI Flanged Tee (Labor Only)								3												
16	1	EA	24-inch x12-inch Class 52 DI MJ Tee (Labor Only)												1								
17	3	EA	24-inch Blind Flange (Labor Only)								3												
18	3	EA	24-inch Flanged 45 Degree Bend (Labor Only)								3												
19	2	EA	24-inch Flanged 11.25 Degree Bend (Labor Only)								2												
20	1	EA	24-inch Flanged 22.5 Degree Bend (Labor Only)								1												
21	9	EA	24-inch Mega-Flange Adapter (Labor Only)								9												
22	9	EA	24-inch Nut & Bolt Gasket Set (NLA 24 304 SS 150# RR FF 1/8 FLG P) (Labor Only)								9												
23	1	EA	24-inch MJ 90 Degree Bend (Labor Only)								1												
24	6	EA	24-inch Megalug F/DI (Labor Only)								6												
25	6	EA	24-inch MJ Bolt & Gasket Package Less Gland (Labor Only)								6												
26	5	EA	12-inch Megalug F/DI								5												
27	5	EA	12-inch MJ Bolt & Gasket Package Less Gland (Labor Only)								5												
28	1	EA	12-inch MJ 90 Degree Bend (Labor Only)												1								
29	3	EA	Type III Sanitary Sewer Manhole (8' Diameter)												3								
30	641	EA	CIPP 24-inch sanitary Sewer												443	198							
31	1	EA	Post-CCTV Inspection of Sewers	1																			
32	206	LF	Remove Chain Link Fence											206									
33	156	LF	6-foot High Chain Link Fence											156									
34	1	EA	Restoration	1																			
35	1	EA	Materials Testing	1																			
36	1	EA	Construction Staking	1																			

Richard A. Eshlaman
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5/31/23

THE CITY OF Kalamazoo

GENERAL SUMMARY

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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RGE	CJAF	RGE

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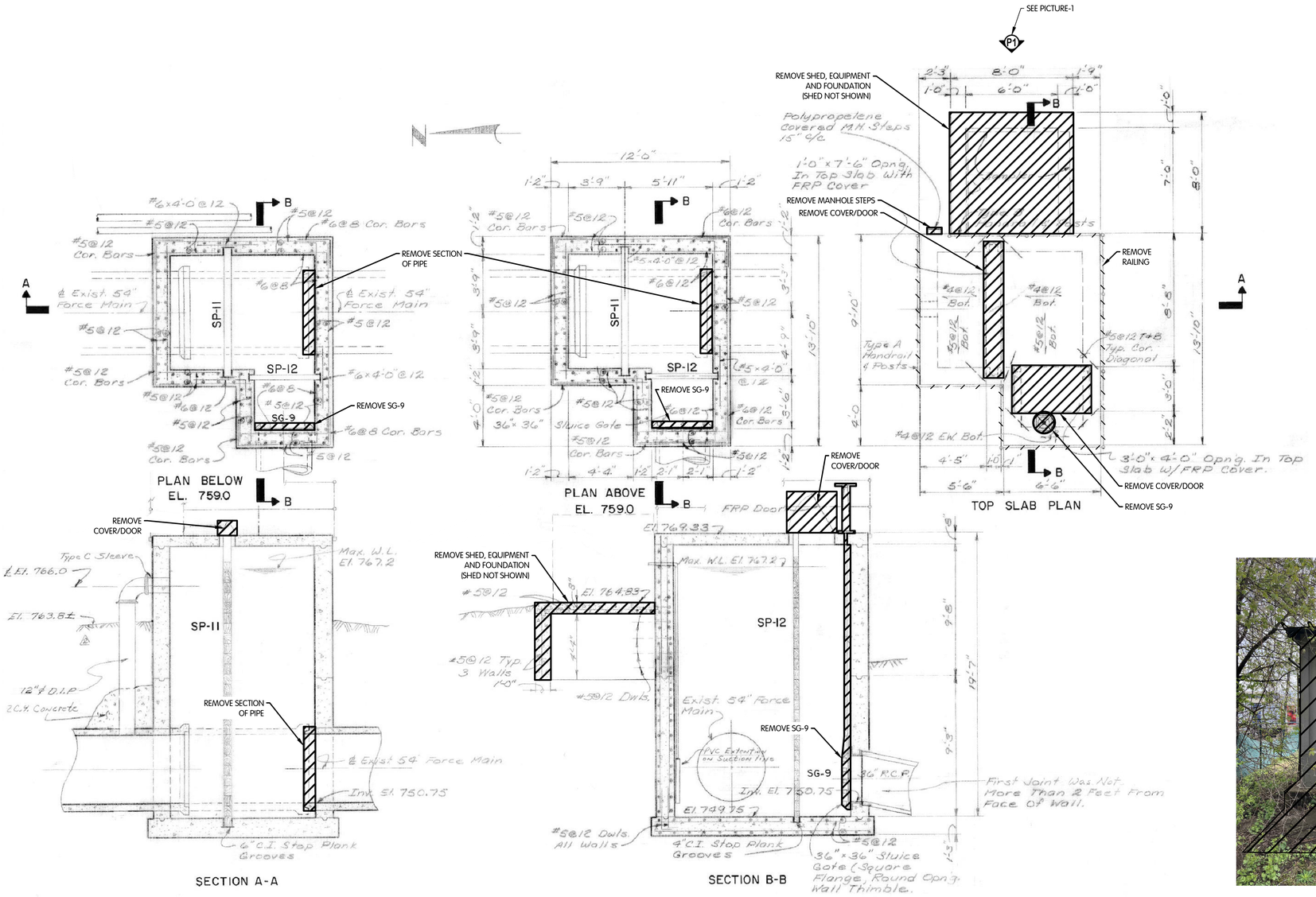
SHEET NO.
G-0.3
3 OF 19

K:\KAL-7982\00\04-GENERAL SUMMARY
5/31/2023 2:29 PM - CFERRELL
5/31/2023 2:29 PM



PICTURE-1

NOTES:
1. ALL ELEVATIONS SHOWN ARE NGVD 29.
2. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING AND NEW CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
3. ESTIMATED SCALE: 1/4"= 1'-0".

Richard D. Eshlaman — 5-11-2023
STATE OF MICHIGAN
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THE CITY OF Kalamazoo

INDUSTRAIL DIVERSION CHAMBER I REMOVALS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	BY
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1	REVISIONS AFTER ISSUED FOR BID	

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SCALE	AS NOTED
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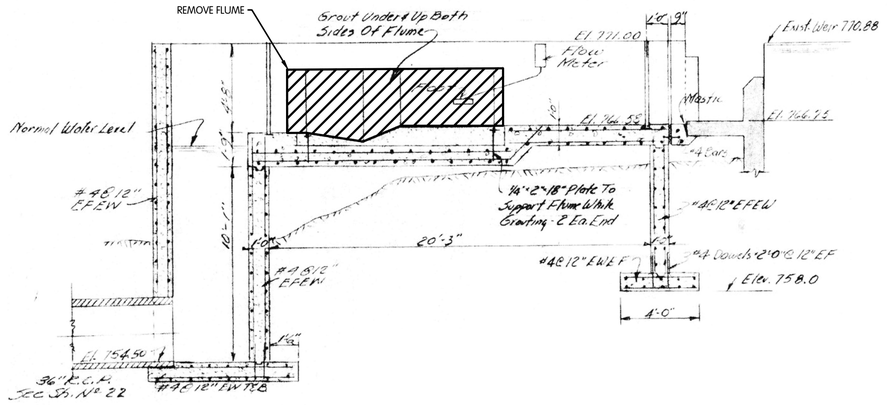
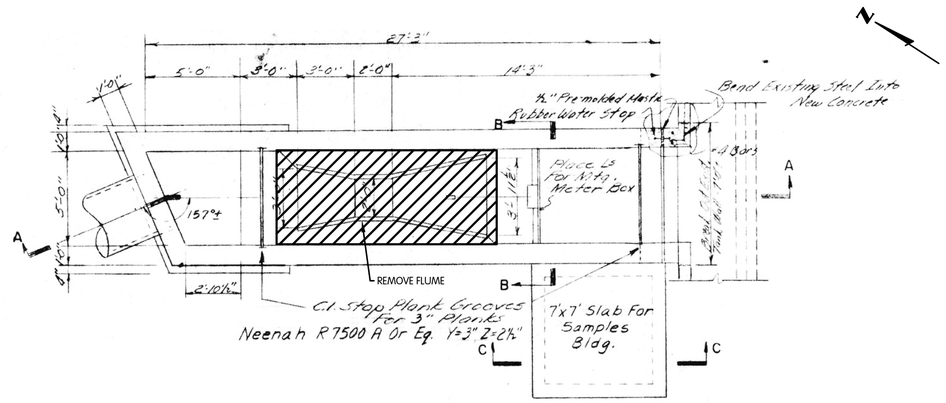
DESIGNED	DRC
DRAWN	CJAF
CHECKED	RGE
STATUS:	ISSUE FOR BID
DATE:	MAY 2023
SHEET NO.	R-1.1
	4 OF 19

KAL-7982000R02-INDUSTRIAL DIVERSION CHAMBER I - REMOVALS
5/11/2023 10:04 AM - CPERRELL
5/11/2023 2:30 PM



SECTION A-A



REMOVAL PLAN VIEW

NOTES:
1. ALL ELEVATIONS SHOWN ARE NGVD 29.
2. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING AND NEW CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
3. ESTIMATED SCALE: 1/4"= 1'-0".

Richard D. Eshlaman
STATE OF MICHIGAN
RICHARD ESHLAMAN
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LICENSED PROFESSIONAL ENGINEER
5-11-2023

THE CITY OF Kalamazoo

PARSHALL FLUME REMOVALS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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SCALE AS NOTED

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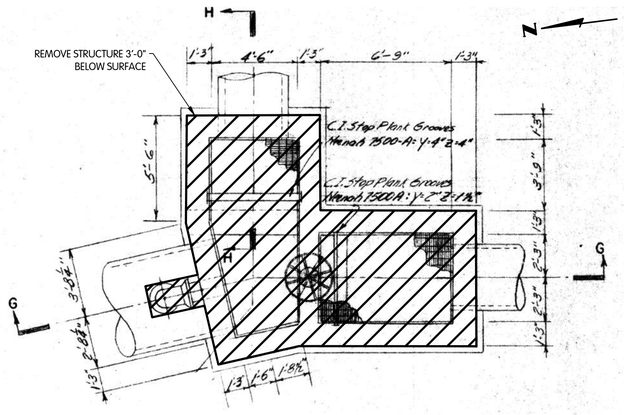
DRC	CJAF	RGE

STATUS ISSUE FOR BID

DATE MAY 2023

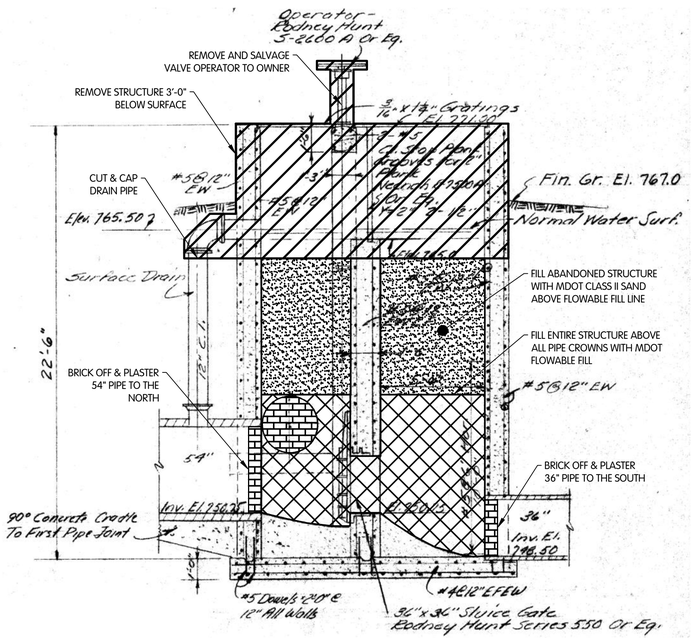
SHEET NO.
R-1.2
5 OF 19

KAL-79820IRO3-PARSHALL FLUME - REMOVALS
5/11/2023 1:46 PM - CFERRELL
5/11/2023 2:30 PM



PLAN VIEW

SECTION H-H



SECTION G-G

NOTES:
1. ALL ELEVATIONS SHOWN ARE NGVD 29.
2. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING AND NEW CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
3. ESTIMATED SCALE: 1/4"= 1'-0".

RICHARD ESHLAMAN
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STATE OF MICHIGAN
LICENSED PROFESSIONAL ENGINEER
5-11-2023

THE CITY OF Kalamazoo

JUNCTION CHAMBER ABANDONMENT DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY

Jones & Henry Engineers, Ltd.
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JOB NO. 017-7982.001

SCALE NONE

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

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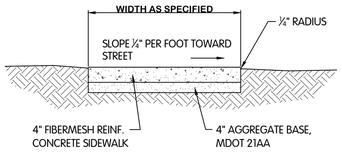
DATE: MAY 2023

SHEET NO.

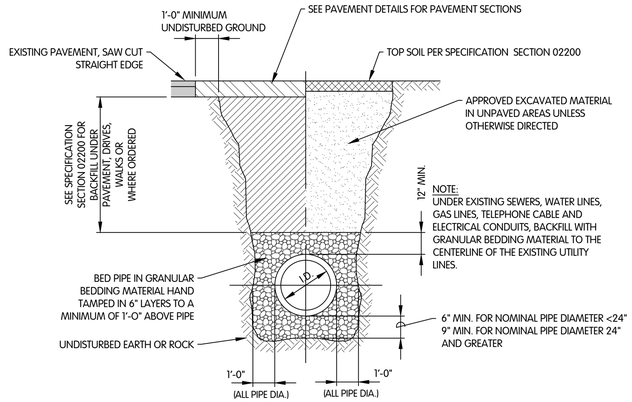
R-1.3

6 OF 19

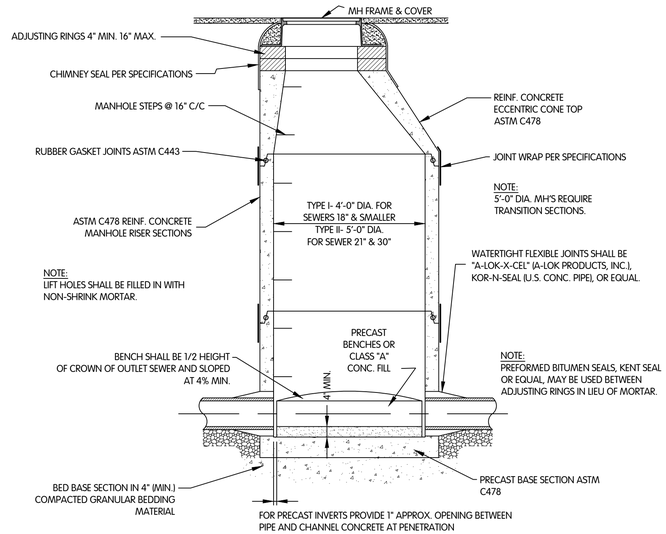
KAL-7982000R01-JUNCTION CHAMBER - ABANDONMENT DETAILS
cjaf 5/11/2023 1:09 PM - CPERRELL
5/11/2023 2:30 PM



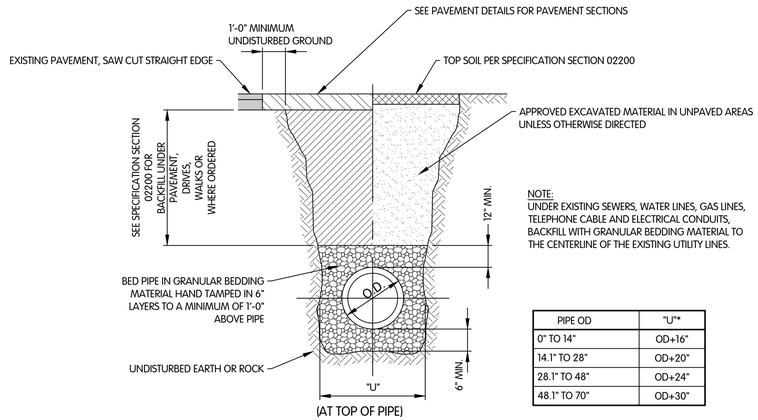
4" CONCRETE SIDEWALK
NTS



TRENCH DETAIL FOR RIGID PIPE (DIP)
NTS



TYPE I & II MANHOLES
NTS



PIPE OD	"U"*
0" TO 14"	OD+16"
14.1" TO 28"	OD+20"
28.1" TO 48"	OD+24"
48.1" TO 70"	OD+30"

TRENCH SCHEDULE

* NOTE:
"U" IS THE MINIMUM WIDTH FOR FLEXIBLE PIPES IN ACCORDANCE WITH ASTM D-2321 AND D-2774.

TRENCH DETAIL FOR FLEXIBLE PIPE
NTS

KAL-79820\IC02-STANDARD CIVIL DETAILS
5/11/2023 1:46 PM - CPERRELL
5/11/2023 2:30 PM

Richard S. Eshlaman 5-11-2023
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER

THE CITY OF Kalamazoo

STANDARD CIVIL DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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SCALE NONE

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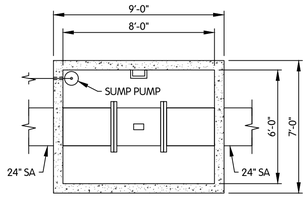
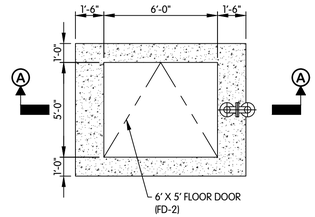
7 OF 19

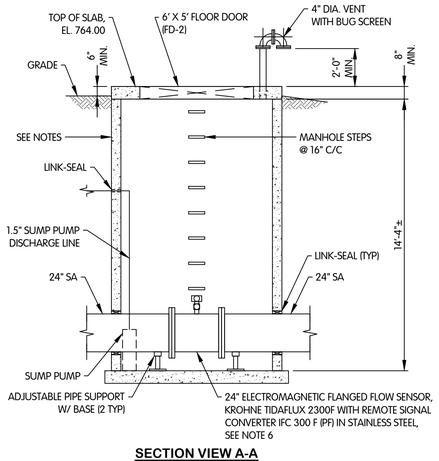


PLAN ELEVATION 759.00



PLAN VIEW

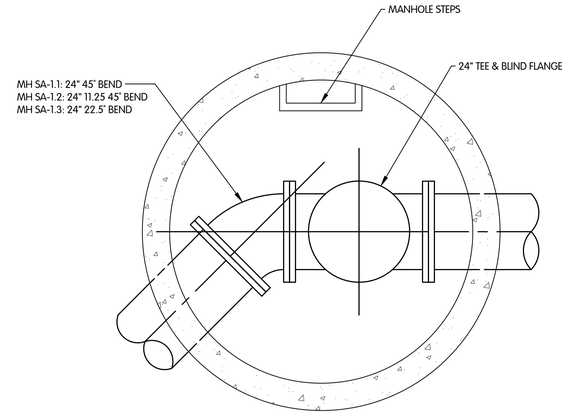
NOTES:
1. LIFT HOLES SHALL BE FILLED IN WITH NON-SHRINK MORTAR.
2. PREFORMED BITUMEN SEALS, KENT SEAL OR EQUAL, MAY BE USED BETWEEN ADJUSTING RINGS IN LIEU OF MORTAR.
3. METER VAULT TO BE A PRECAST CONCRETE STRUCTURE.
4. FILL AROUND STRUCTURE WITH SPECIAL BACKFILL.
5. BED BASE SECTION IN 4" (MIN.) COMPACTED GRANULAR BEDDING MATERIAL.
6. CONTRACTOR TO FIRST INSTALL A SPOOL SECTION THE SAME LENGTH AS THE ELECTROMAGNETIC FLOW SENSOR SO THE LINING CONTRACTOR CAN LINE THROUGH THE METER VAULT. ONCE THE LINING IS COMPLETE, THE CONTRACTOR WILL REMOVE THE SPOOL SECTION, CUT THE LINER AT THE FLANGES AND INSTALL THE ELECTROMAGNETIC FLOW SENSOR.



SECTION VIEW A-A

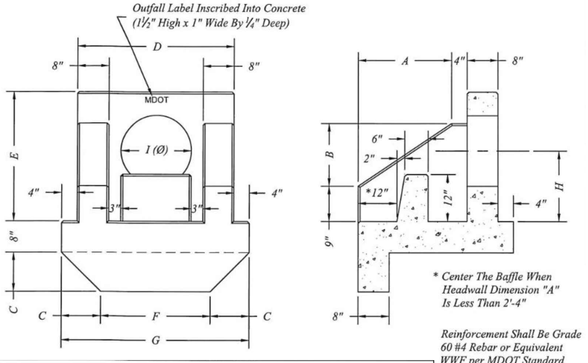
METER VAULT

1/4" = 1'-0"



SECTIONAL PLAN

1/2" = 1'-0"



* Center The Baffle When Headwall Dimension "A" Is Less Than 2'-4"

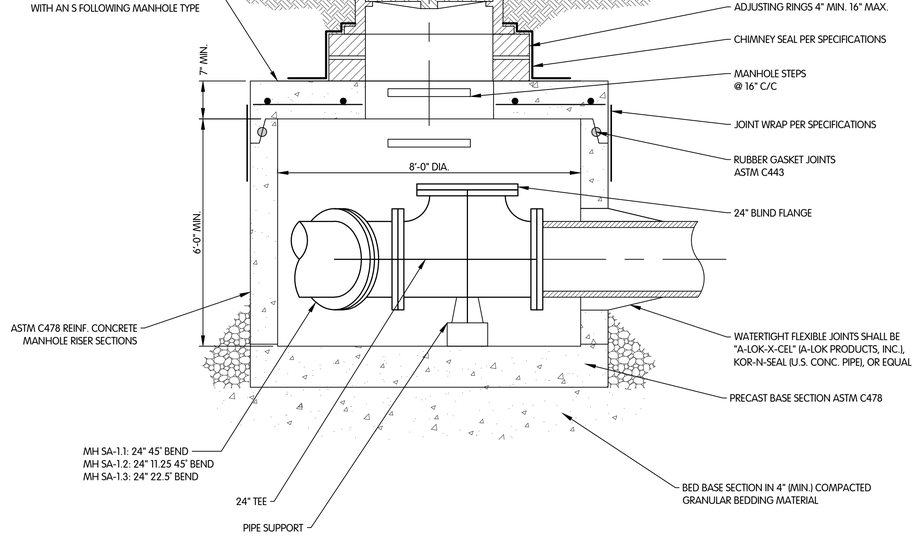
Reinforcement Shall Be Grade 60 #4 Rebar or Equivalent WWF per MDOT Standard Detail R-85-D.

Contractor To Complete Connection Between Pipe and Outlet Headwall w/Mortar Meeting MDOT 2012 Standard Specification for Construction, Section 702.

Outlet Headwall Dimensions										
Dia	A	B	C	D	E	F	G	H	1 (Ø)	Weight
30"	4'-3"	2'-10"	1'-4"	4'-10"	4'-3"	2'-10"	5'-6"	2'-3"	42"	7,380

OUTLET HEADWALL

NTS



NOTES:
1. LIFT HOLES SHALL BE FILLED IN WITH NON-SHRINK MORTAR.
2. PREFORMED BITUMEN SEALS, KENT SEAL OR EQUAL, MAY BE USED BETWEEN ADJUSTING RINGS IN LIEU OF MORTAR.

MANHOLE STRUCTURES SA-1.1, SA-1.2 & SA-1.3

1/2" = 1'-0"

STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-2023

THE CITY OF Kalamazoo

SANITARY AND STORM DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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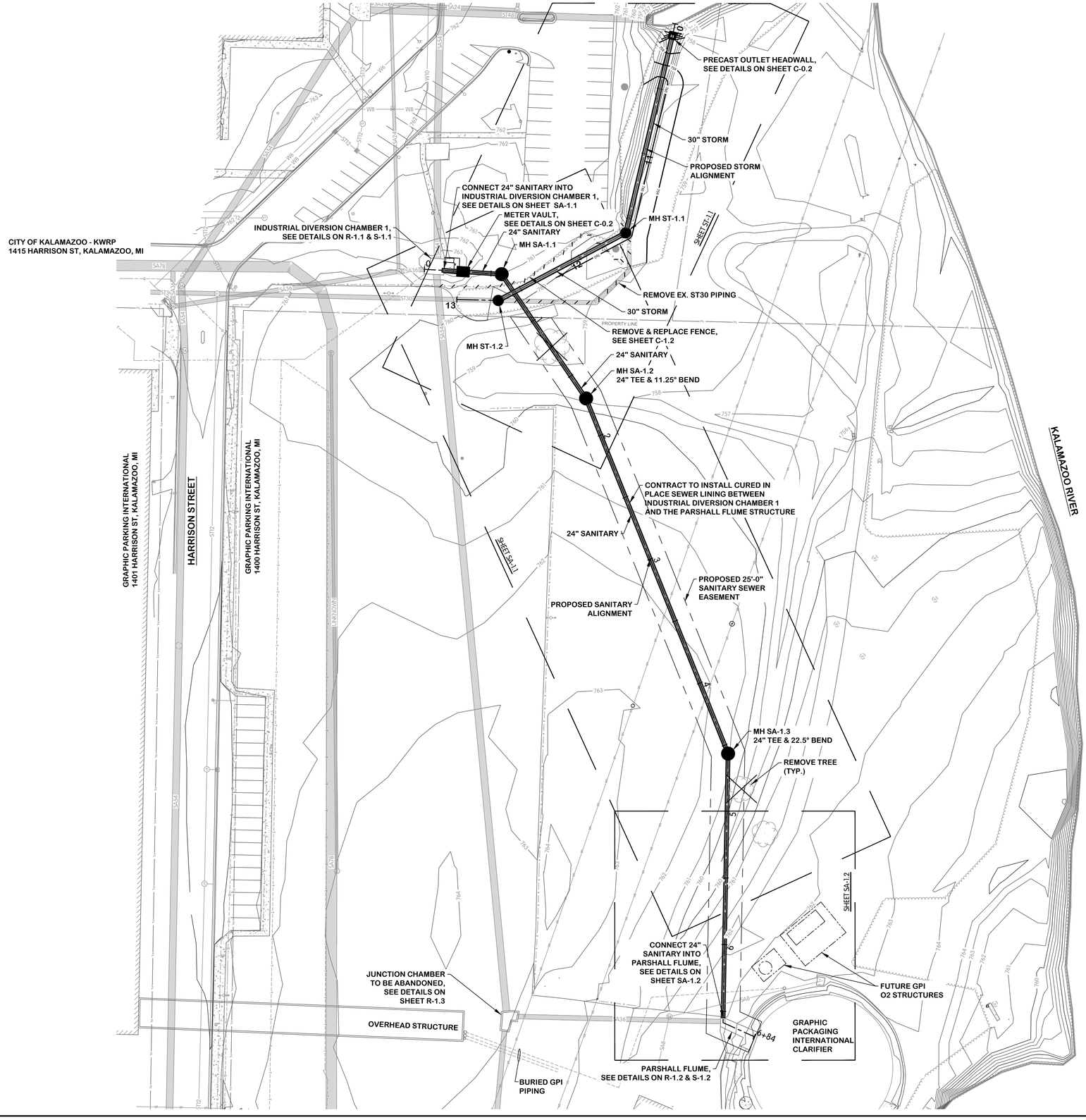
8 OF 19

KAL-7982000\C03-SANITARY AND STORM DETAILS
5/11/2023 11:44 AM - CFERRELL
5/11/2023 2:30 PM



KAL-79820\GIS-SITE PLAN AND SHEET KEY
5/11/2023 2:46 PM - CFERRELL
5/11/2023 2:30 PM

Richard S. Eshlaman
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-23

THE CITY OF Kalamazoo

SITE PLAN AND SHEET KEY

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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SCALE 1:40

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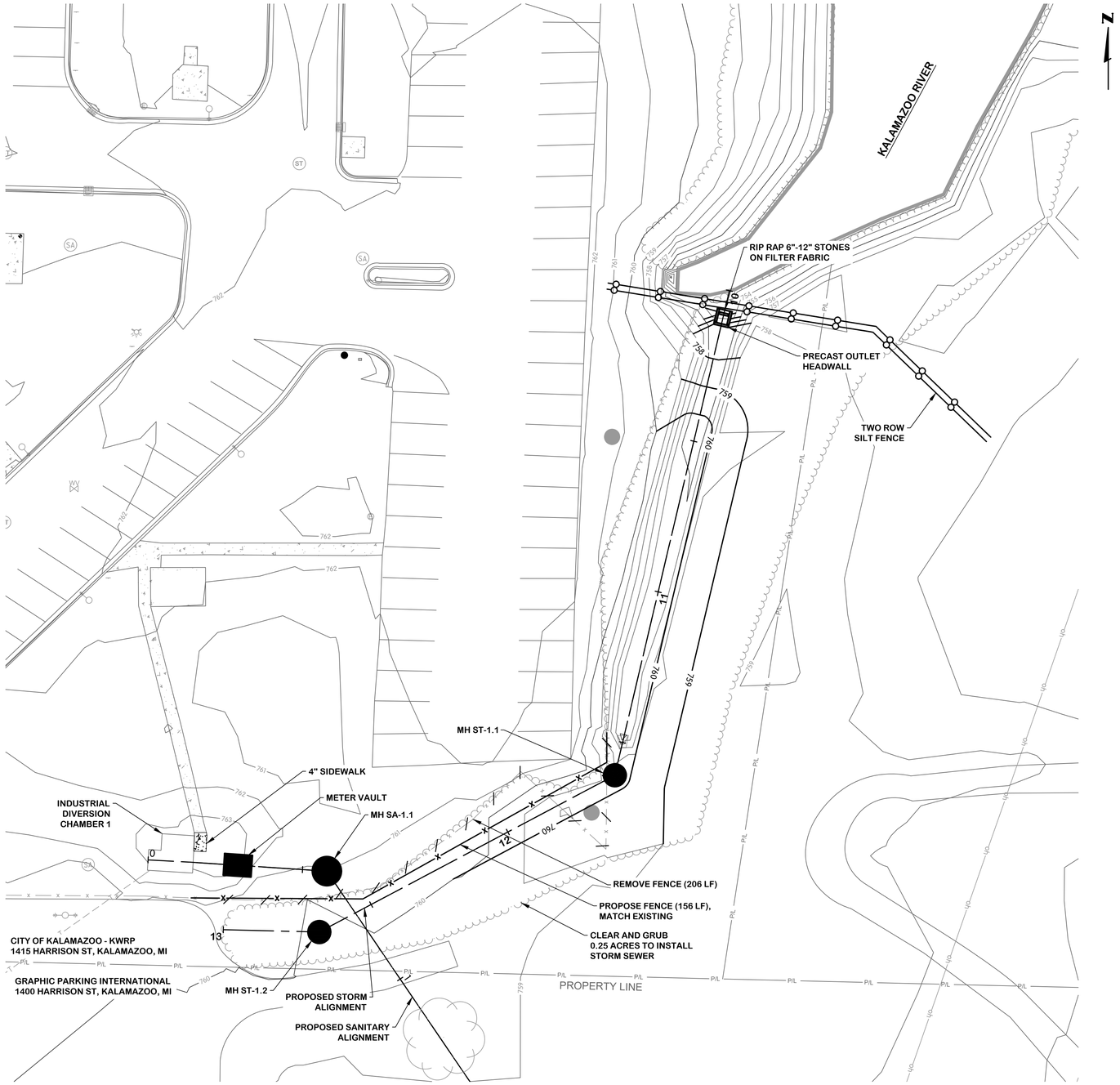
9 OF 19



RICHARD ESHLAMAN
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No. 53605
LICENSED PROFESSIONAL ENGINEER
STATE OF MICHIGAN
5-11-2023

THE CITY OF Kalamazoo

GRADING AND EROSION CONTROL
PARTIAL SITE PLAN

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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SCALE: 1:20

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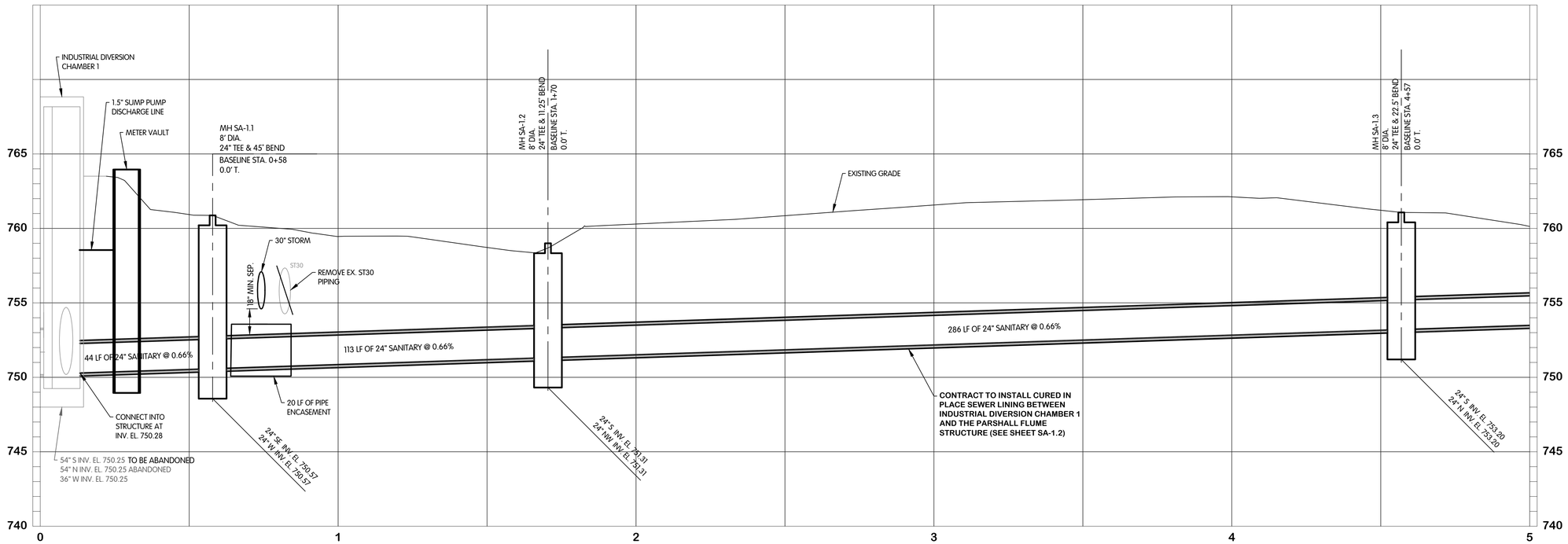
10 OF 19

KAL-7982001C05-GRADING AND EROSION CONTROL- PARTIAL SITE PLAN
5/10/2023 1:20 PM
5/11/2023 2:16 PM
CFERRELL

SANITARY
STA. 0+00 TO 5+00



Richard S. Eshlaman S-1-2023
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER

THE CITY OF Kalamazoo

SANITARY
PLAN AND PROFILE
STA. 0+00 TO 5+00

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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JOB NO. 017-7982.001

SCALE I"=20'H, I"=4'V

THIS LINE SCALES I" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
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STATUS: ISSUE FOR BID

DATE: MAY 2023

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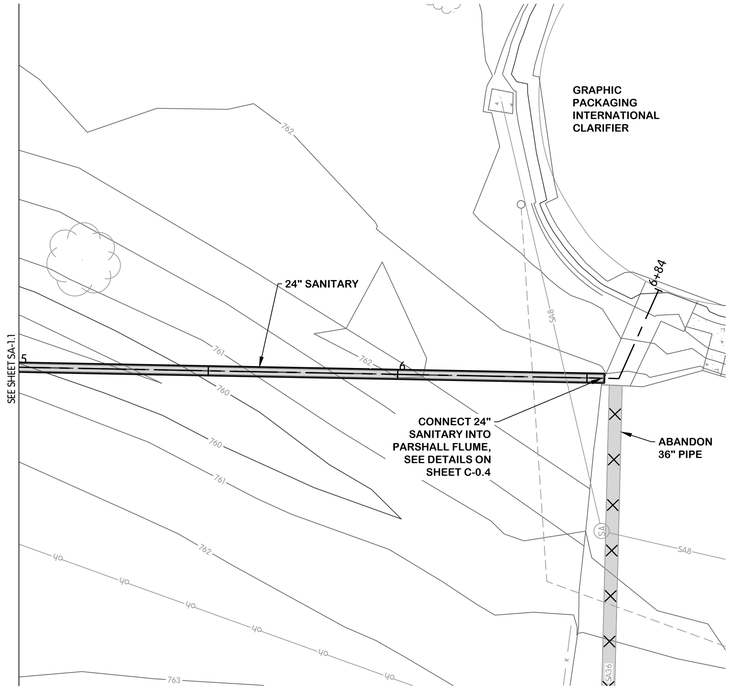
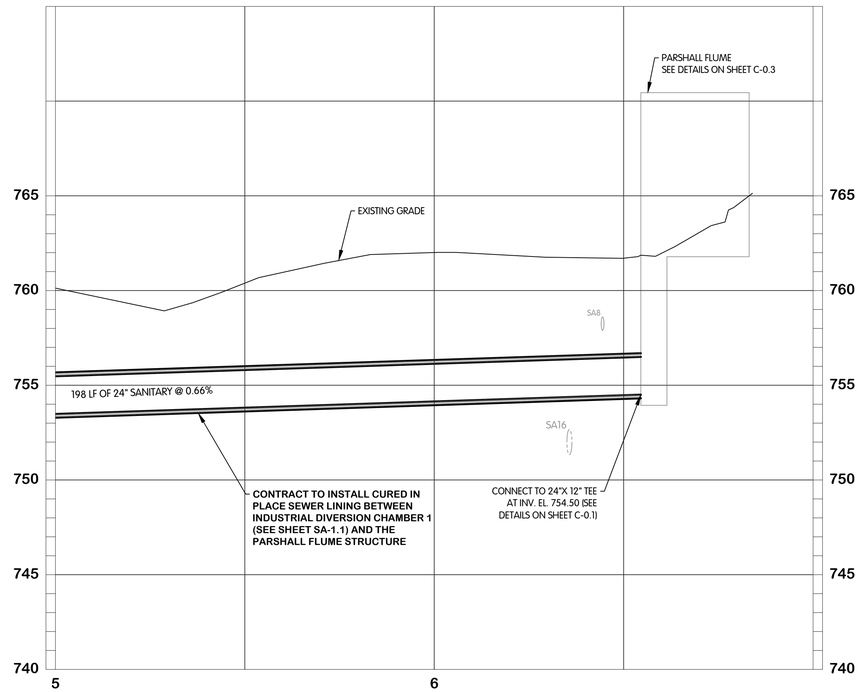
11 OF 19

K:\KAL-79820\DIS\A02-SANITARY - PLAN & PROFILE STA 0+00 TO 5+00
5/11/2023 2:30 PM - CFERRELL
5/11/2023 2:30 PM



SANITARY
STA. 5+00 TO 6+84



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ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
STATE OF MICHIGAN
5-11-2023

THE CITY OF Kalamazoo

SANITARY
PLAN AND PROFILE
STA. 5+00 TO 6+84

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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SCALE	1"=20'H, 1"=4'V
	THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
RGE	CJAF	RGE

STATUS: ISSUE FOR BID
DATE: MAY 2023

SHEET NO.
SA-1.2
12 OF 19

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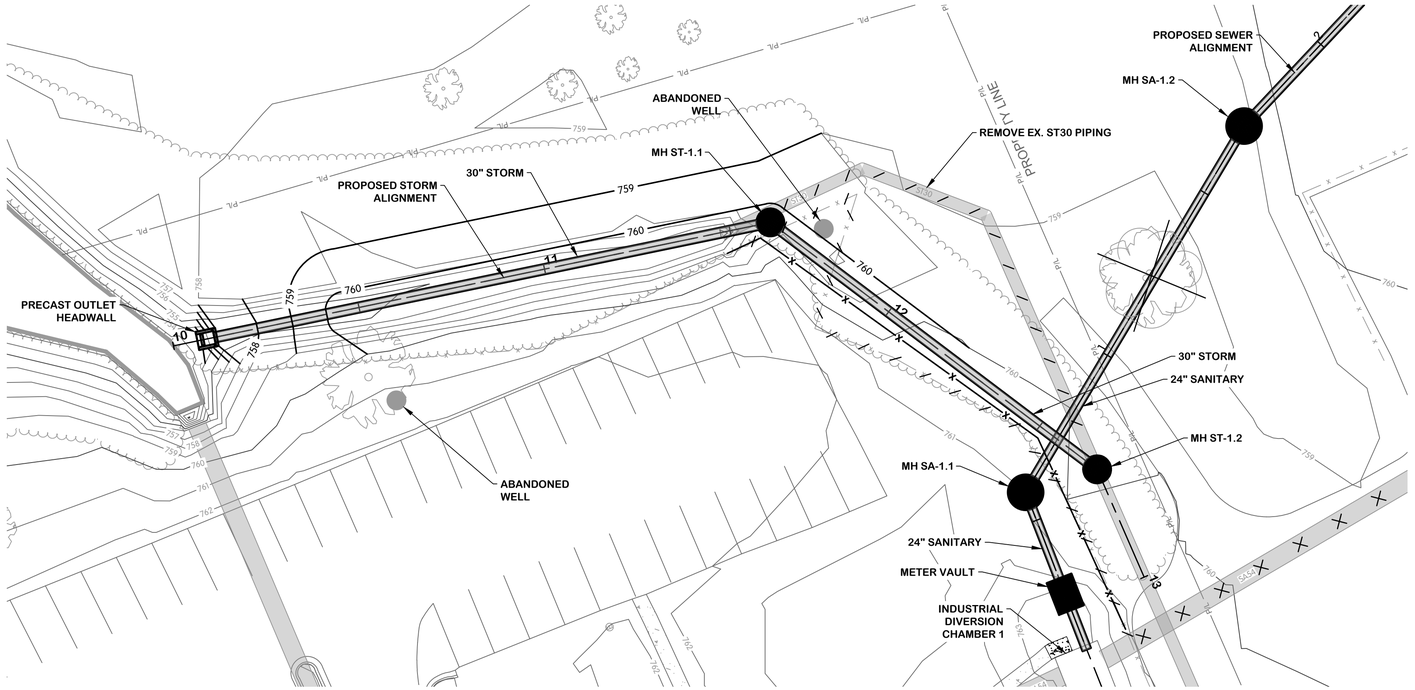
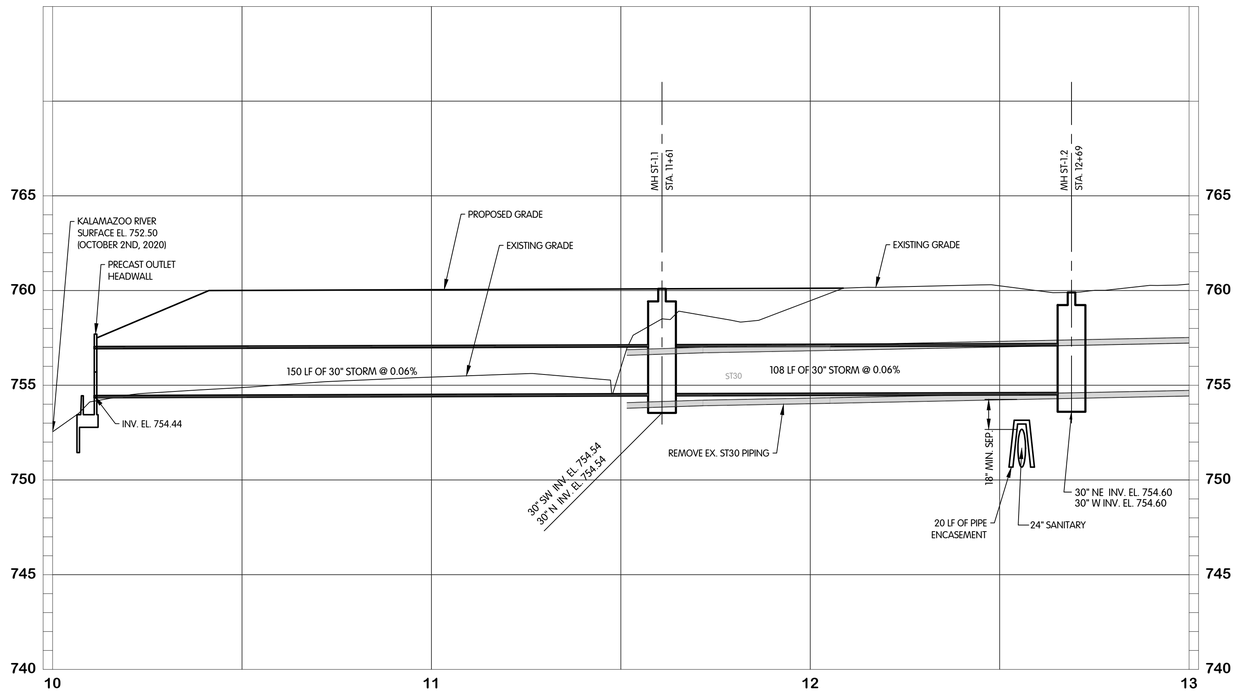
5/11/2023 2:30 PM



STORM
STA. 10+00 TO 13+00



KAL-79820\ST01-STORM - PLAN & PROFILE STA 10+00 TO 13+00
5/11/2023 11:04 AM - CFERRELL
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STATE OF MICHIGAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-23

THE CITY OF Kalamazoo

STORM
PLAN AND PROFILE
STA. 10+00 TO 13+00

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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JOB NO.	017-7982.001
SCALE	1"=20'H, 1"=4'V
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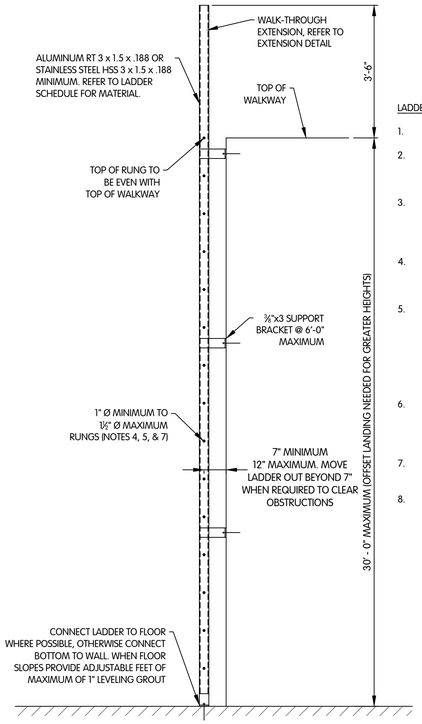
13 OF 19

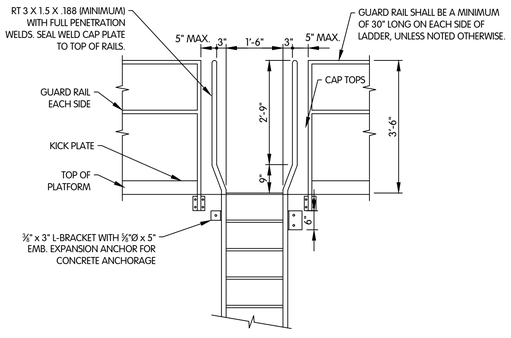


TYPICAL LADDER SECTION

½" = 1'-0"

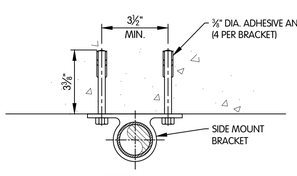
LADDER NOTES:

1. ALL CONSTRUCTION TO BE WELDED.
2. SUPPORT BRACKET FASTENER:
   A. TO CONCRETE, USE ⅜" DIAMETER X 5" EMBEDMENT EXPANSION ANCHORS.
3. EACH RUNG OR STEP SHALL BE CAPABLE OF SUPPORTING A SINGLE CONCENTRATED LOAD OF 300 LBS. APPLIED IN THE MIDDLE OF THE RUNG OR STEP.
4. RUNGS SHALL BE SPACED NOT LESS THAN 10" APART AND NOT MORE THAN 12" APART AS MEASURED BETWEEN THE CENTERS OF THE RUNGS.
5. EACH FIXED LADDER SHALL BE CAPABLE OF RESISTING AT LEAST TWO LOADS OF 300 LBS. EACH CENTERED BETWEEN ANY TWO CONSECUTIVE ATTACHMENTS PLUS ANY ANTICIPATED LOADS DUE TO ICE BUILD-UP, WINDS, AND RIGGING IMPACT LOADS RESULTING FROM THE USE OF LADDER SAFETY DEVICES (IF APPLICABLE).
6. RUNGS SHALL BE CORRUGATED, KNURLED, DIMPLED, OR COATED WITH SKID RESISTANT MATERIAL OR OTHERWISE TREATED TO MINIMIZE SLIPPING. ADHESIVE GRIT TAPE IS NOT ACCEPTABLE.
7. INTERIOR STEEL LADDERS TO BE PAINTED SAFETY YELLOW.
8. LADDERS RUNGS SHALL BE 18" WIDE BETWEEN THE RAILS. LADDER EXTENSION WALK-THROUGH SHALL BE 24" WIDE BETWEEN THE RAILS.

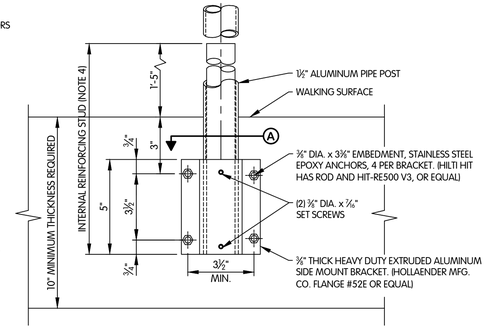


ALUMINUM LADDER TOP EXTENSION DETAIL

½" = 1'-0"



DETAIL A



NOTE:
RAILING POSTS AT CORNERS TO BE LOCATED 6" MIN. FROM CENTER OF POST TO EDGE OF CONCRETE.

TYPE A ALUMINUM RAILING POST

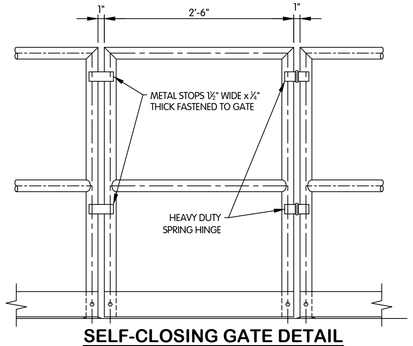
3"=1'-0"

RAILING BASE CONNECTION NOTES:

1. PROVIDE COAL TAR PAINT OR NEOPRENE GASKET BETWEEN ALUMINUM SURFACES IN CONTACT WITH CONCRETE, MASONRY, OR DISSIMILAR METALS.
2. ANCHORS FASTENERS:

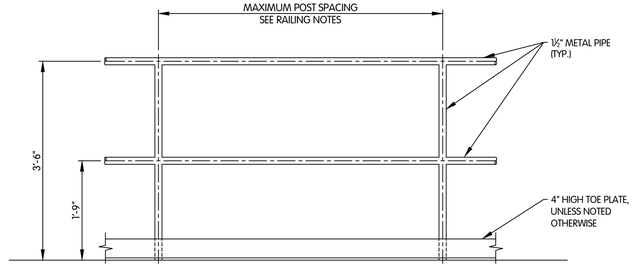
RAILING MATERIAL	FASTENER
CARBON STEEL	ZINC PLATED CARBON STEEL
ALUMINUM	STAINLESS STEEL
STAINLESS STEEL	STAINLESS STEEL

3. POST BRACKET MATERIAL SHALL MATCH POST MATERIAL, UNLESS NOTED OTHERWISE.
4. POST SHALL BE REINFORCED WITH INTERNAL METAL STUD WHEN REQUIRED BY ENGINEERED DESIGN. STUD SHALL BE WELDED TO POST TO ACT AS ONE MEMBER.



SELF-CLOSING GATE DETAIL (TWO RAIL)

1"=1'-0"



GUARD RAILING, STANDARD

¾"=1'-0"

RAILING NOTES:

1. GUARD RAILING SHALL BE STANDARD.
2. MAXIMUM RAILING POST SPACING SHALL BE 5'-0"

WITHOUT STUD	H = 34"	H = 42"
STEEL - SCH. 40	4'-6"	4'-0"
ALUMINUM - SCH. 40	4'-6"	3'-0"
ALUMINUM - SCH. 80	5'-0"	4'-0"
WITH STUD	**H = 34"**	**H = 42"**
STEEL - SCH. 40	5'-0"	5'-0"
ALUMINUM - SCH. 40	5'-0"	5'-0"

3. REFER TO POST BASE CONNECTION DETAILS FOR ADDITIONAL POST SPACING RESTRAINTS AND STUD INSERT REQUIREMENTS.

RICHARD ESHLAMAN ENGINEER No. 53605 — STATE OF MICHIGAN — LICENSED PROFESSIONAL ENGINEER — 5-17-2023

THE CITY OF Kalamazoo

STRUCTURAL DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	BY
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1	REVISIONS AFTER ISSUED FOR BID	

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DATE: MAY 2023

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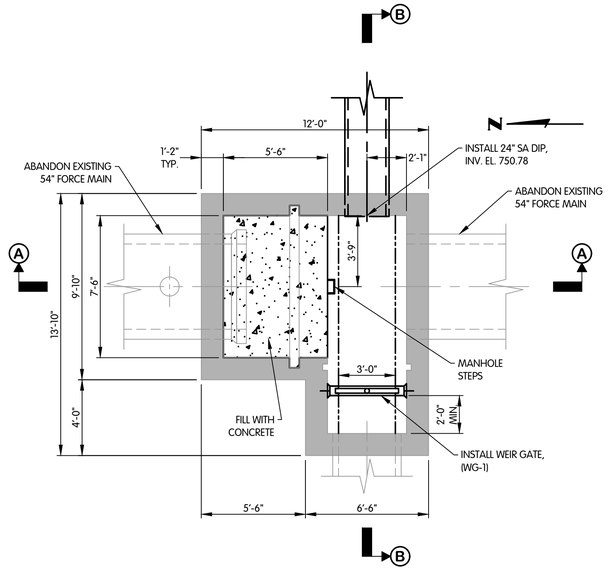
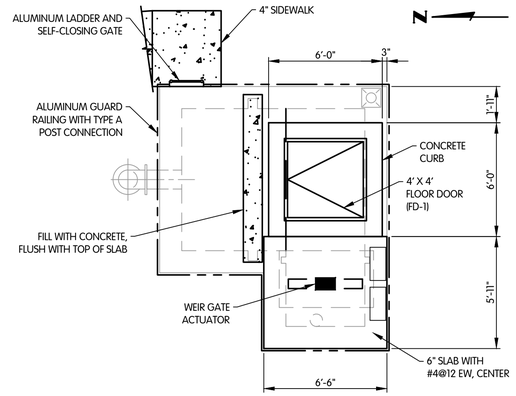
S-0.1
14 OF 19

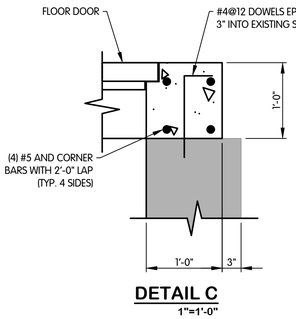
K:\KAL-7982000\50-STRUCTURAL DETAILS\
5/17/2023 2:50 PM - CFERRELL
5/17/2023 2:50 PM



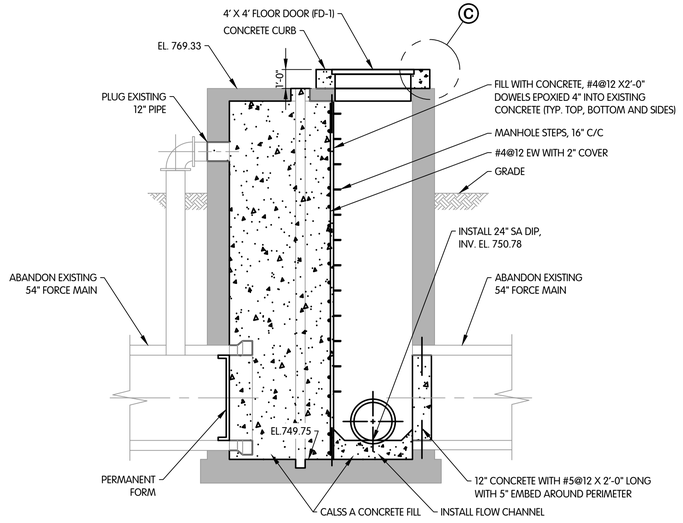
PLAN AT EL. 757.00



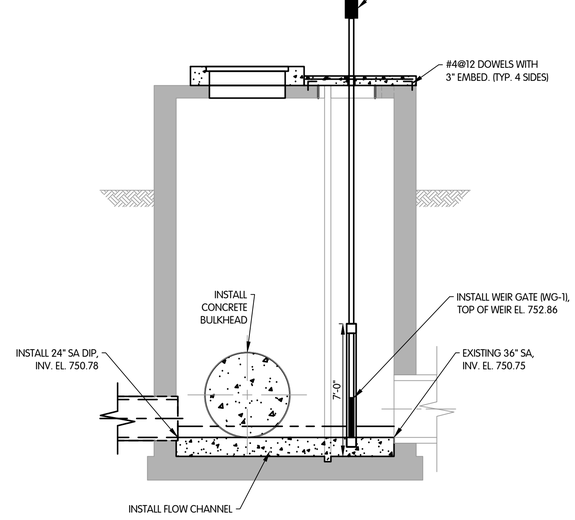
TOP SLAB PLAN



DETAIL C
1"=1'-0"



SECTION A-A



SECTION B-B

NOTES:
1. ALL ELEVATIONS SHOWN ARE NGVD 29.
2. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING AND NEW CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
3. ESTIMATED SCALE: 1/4"= 1'-0".
4. GUARD RAIL AND LADDER NOT SHOWN IN SECTION VIEWS FOR CLARITY.

STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-2023

THE CITY OF Kalamazoo

INDUSTRAIL DIVERSION CHAMBER I SANITARY DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
5			
4			
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1			

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SCALE NONE

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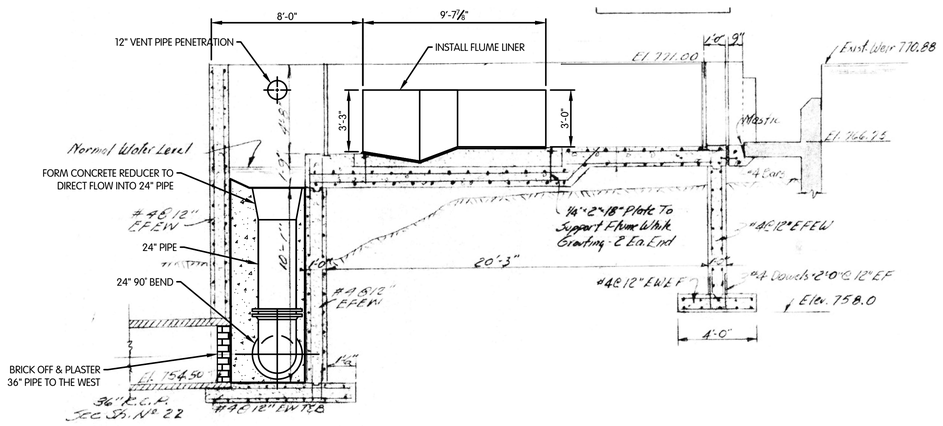
DRC	CJAF	RGE

STATUS: ISSUE FOR BID

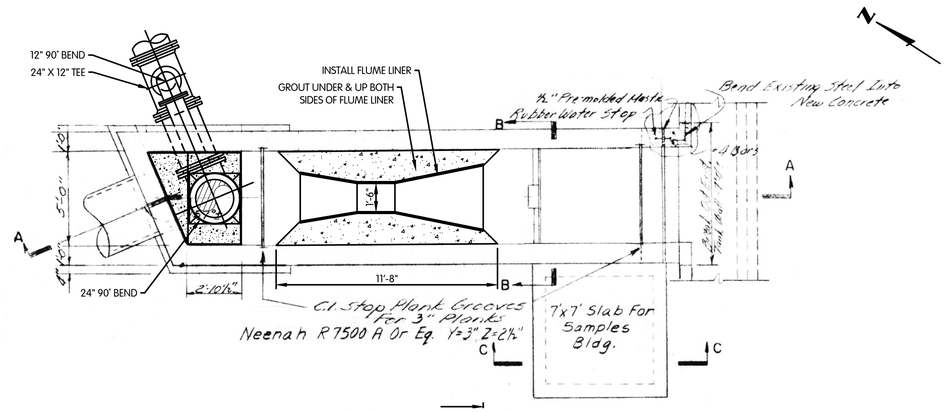
DATE: MAY 2023

SHEET NO.
S-1.1
15 OF 19

KAL-7982001GSAA02-INDUSTRIAL DIVERSION CHAMBER I - PLANS
5/11/2023 10:56 AM - CPERRELL
5/11/2023 2:30 PM



SECTION A-A



PROPOSED PLAN VIEW

NOTES:
1. ALL ELEVATIONS SHOWN ARE NGVD 29.
2. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING AND NEW CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
3. ESTIMATED SCALE: 1/4"= 1'-0".

Richard D. Eshlaman
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-2023

THE CITY OF Kalamazoo

PARSHALL FLUME
SANITARY DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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SHEET NO.

S-1.2

16 OF 19

SINGLE-LINE DIAGRAM LEGEND

30A
FRS-R -30
FUSED DISCONNECT SWITCH.
(SWITCH SIZE, FUSE TYPE AND FUSE SIZE AS SHOWN)

30A
UNFUSED DISCONNECT SWITCH
(SWITCH SIZE AS SHOWN)

40A
THERMAL-MAGNETIC CIRCUIT BREAKER OR MOTOR CIRCUIT PROTECTOR-MCP
(TRIP SIZE AS SHOWN)

CB
HIGH OR MEDIUM VOLTAGE CIRCUIT BREAKER

12470
1000KVA
480Y/277V
LIGHTING OR POWER TRANSFORMER,THREE PHASE UNLESS NOTED OTHERWISE (CONNECTION, SIZE & RATING AS SHOWN)

FULL VOLTAGE NON-REVERSING MOTOR STARTER WITH OVERLOADS (FVNR)

R F
FULL VOLTAGE REVERSING MOTOR STARTER WITH OVERLOADS
(FVR)

S F
TWO SPEED MOTOR STARTER WITH OVERLOADS

VACUUM CONTACTOR

5
THREE PHASE AC MOTOR
(HORSEPOWER AS SHOWN)

600/5 AS AM
CURRENT TRANSFORMER WITH AMMETER SWITCH, AND AMMETER
(RATIO AS SHOWN)

600/5
CURRENT TRANSFORMER WITH SHORTING BLOCK (RATIO AS SHOWN)

VS VM
POTENTIAL TRANSFORMER WITH VOLTMETER SWITCH, AND VOLTMETER

6KV
LIGHTNING ARRESTER
(VOLTAGE RATING AS SHOWN)

TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS)

GROUND CONNECTION

LINE OR LOAD REACTOR

K
KIRK KEY
(DASHED LINES TO INTERLOCKED DEVICES)

DRAWOUT FOR SWITCHGEAR OR MOTOR CONTROL CENTER

POWER FACTOR CORRECTION CAPACITOR - (PFCC) (SIZE PER MOTOR MANUFACTURER RECOMMENDATIONS.)

100E
HIGH OR MEDIUM VOLTAGE FUSED CUTOUT (SIZE AS SHOWN)

4/0
CABLE LIMITER (SIZE AS SHOWN)

G
450KW
800A
STAND-BY GENERATOR
(SIZE AS SHOWN)
WITH FIELD PROTECTION CIRCUIT BREAKER
(TRIP SIZE AS SHOWN)

VFD BP
VARIABLE FREQUENCY DRIVE WITH A BY-PASS OPTION (SHOWN WITH INTEGRAL EXTERNAL DISCONNECT HANDLE)

CP = CONTROL PANEL
SSRVS = SOLID STATE REDUCED VOLTAGE STARTER
(SHOWN WITH INTEGRAL EXTERNAL DISCONNECT HANDLE)

DPM
DIGITAL POWER METER

WHM
WATTHOUR METER

AUTOMATIC TRANSFER SWITCH (ATS)

MANUAL TRANSFER SWITCH (MTS)

SCHEMATIC LEGEND

OPEN CONTACTS
WITH TIME-DELAY CLOSING

CLOSED CONTACTS
WITH TIME-DELAY OPENING

OPEN CONTACTS
WITH TIME-DELAY OPENING

CLOSED CONTACTS
WITH TIME-DELAY CLOSING

FLOW SWITCH
CLOSES ON INCREASE IN FLOW

FLOW SWITCH
OPENS ON INCREASE IN FLOW

LIQUID LEVEL SWITCH CLOSES ON RISING LEVEL

LIQUID LEVEL SWITCH OPENS ON RISING LEVEL

PRESSURE OR VACUUM SWITCH CLOSES ON RISING PRESSURE

PRESSURE OR VACUUM SWITCH OPENS ON RISING PRESSURE

TEMPERATURE SWITCH
CLOSES ON RISING TEMPERATURE

TEMPERATURE SWITCH
OPENS ON RISING TEMPERATURE

LIMIT SWITCH
NORMALLY OPEN

LIMIT SWITCH
NORMALLY OPEN - HELD CLOSED

LIMIT SWITCH NORMALLY CLOSED

LIMIT SWITCH
NORMALLY CLOSED - HELD OPEN

FOOT SWITCH
OPENS BY FOOT PRESSURE

FOOT SWITCH
CLOSES BY FOOT PRESSURE

MUSHROOM HEAD, MAINTAINED ACTION (PUSH-PULL) PUSH BUTTON SWITCH
(SHOWN WITH ONLY 1 CIRCUIT)

ON OFF
XO
2 - POSITION, MAINTAINED ACTION SELECTOR SWITCH

H O A
XOO
OOX
3 - POSITION, MAINTAINED ACTION SELECTOR SWITCH
H - O - A: HAND-OFF-AUTOMATIC
L - O - R: LOCAL-OFF-REMOTE
PCS: PLANT CONTROL SYSTEM
PLC: PROGRAMMABLE LOGIC CONTROLLER

INDICATES ITEMS IN A SEPARATE COMMON ENCLOSURE

XY
CONTACTOR COIL
M - MOTOR STARTER CONTACTOR
MF - MOTOR STARTER FORWARD CONTACTOR
MR - MOTOR STARTER REVERSE CONTACTOR
ML - MOTOR STARTER LOW SPEED CONTACTOR
MH - MOTOR STARTER HIGH SPEED CONTACTOR
SC - MOTOR STARTER STARTING CONTACTOR
RC - MOTOR STARTER RUN CONTACTOR
BP - BYPASS CONTACTOR
CC - CAPACITOR CONTACTOR
LC - LIGHTING CONTACTOR
IC - ISOLATION CONTACTOR
C - GENERAL CONTACTOR

XR
CONTROL RELAY COIL
CR - INSTANTANEOUS CONTROL RELAY
TR - TIME DELAY RELAY

OL
MOTOR STARTER OVERLOAD RELAY N.C. CONTACT

SOLENOID COIL
SV - SOLENOID VALVE

ETM
ELAPSED TIME METER

NORMALLY OPEN MOMENTARY ACTION PUSHBUTTON SWITCH
(SHOWN WITH ONLY 1 CIRCUIT)

NORMALLY CLOSED MOMENTARY ACTION PUSHBUTTON SWITCH
(SHOWN WITH ONLY 1 CIRCUIT)

R
PUSH-TO-TEST PILOT LIGHT WITH COLORED LENS CAP
R - RED
G - GREEN
A - AMBER
W - WHITE
B - BLUE
CL - CLEAR

F
ZERO SPEED SWITCH
(NORMALLY OPEN)

F
ZERO SPEED SWITCH
(NORMALLY CLOSED)

GENERAL ELECTRICAL ABBREVIATIONS

PVC - POLYVINYL CHLORIDE
RGS - RIGID GALVANIZED STEEL
PVC/RGS - PVC COATED RGS

MOTOR STARTER ABBREVIATIONS

FVNR - FULL VOLTAGE, NON-REVERSING
FVR - FULL VOLTAGE REVERSING
TS1W - TWO SPEED, ONE WINDING
TS2W - TWO SPEED, TWO WINDING
TSR1W - TWO SPEED REVERSING, ONE WINDING
TSR2W - TWO SPEED REVERSING, TWO WINDING

ELECTRICAL PLAN LEGEND

G — GROUND WIRE
DIRECT BURIAL CABLE
CONDUIT CONCEALED
CONDUIT EXPOSED
CONDUIT IN CONCRETE DUCT BANK
HOMERUN
CONDUIT TURNS UP
CONDUIT TURNS DOWN
CAPPED CONDUIT (FUTURE USE)
CONDUIT TEE
CADWELD CONNECTION
B — B = BUSWAY
C — C = CABLE TRAY
S — SINGLE POLE TOGGLE SWITCH
S_2 — DOUBLE POLE TOGGLE SWITCH
S_3 — THREE-WAY TOGGLE SWITCH
S_4 — FOUR-WAY TOGGLE SWITCH
S_P — TOGGLE SWITCH WITH GREEN PILOT LIGHT
S_K — KEY-OPERATED SWITCH
5 — SINGLE RECEPTACLE
3 — DUPLEX RECEPTACLE
5 — RECEPTACLE, (SINGLE) 120,30A.OR LARGER
6,8 — RECEPTACLE, (SINGLE) 240V,2POLE
4,6,8 — POWER RECEPTACLE 480V,3PH WITH DISCONNECT SWITCH (SIZE AS SHOWN)
TELEPHONE RECEPTACLE
COMPUTER RECEPTACLE
BOLLARD LIGHT FIXTURE
B 2 — CEILING MOUNTED FIXTURE
C 1 — WALL MOUNTED FIXTURE
D 1 — POLE MOUNTED FIXTURE
A 2 — FLUORESCENT FIXTURE
A 2 — FLUORESCENT TROFFER - GRID CEILING LAY IN
E 1 — EMERGENCY LIGHTING FIXTURE, (2-HEAD SHOWN)
EXIT FIXTURE (WITH DIRECTION ARROW WHERE INDICATED)
MCC — MOTOR CONTROL CENTER (MCC) OR SWITCHGEAR (SWG)
DISTRIBUTION PANEL 480V OR 480Y/277V
LIGHTING PANEL 120/208V OR 120/240V
UPS — UNINTERRUPTIBLE POWER SUPPLY
EPP — EMERGENCY POWER PACK
CP — CONTROL PANEL (SHOWN WITH EXTERNAL DISCONNECT HANDLE)
MAGNETIC MOTOR STARTER 480V, 3 PHASE
MAGNETIC MOTOR STARTER 120V, 1 PHASE
COMBINATION MAGNETIC MOTOR STARTER 480V, 3 PHASE
COMBINATION MAGNETIC MOTOR STARTER 120V, 1 PHASE
S_M — MANUAL MOTOR STARTER 480V, 3 PHASE
S_V — MANUAL MOTOR STARTER 120V, 1 PHASE
DISCONNECT SWITCH (SEE SINGLE LINE DIAGRAM FOR SIZE & TYPE)
½ — SINGLE PHASE AC MOTOR(HORSEPOWER AS SHOWN,DC INDICATES DC MOTOR)

2 — THREE PHASE AC MOTOR(HORSEPOWER AS SHOWN)
MOTOR OPERATED VALVE, 3 PHASE,WITH MAGNETIC STARTER AND CONTROLS
MOTOR OPERATED VALVE, 1 PHASE,WITH MAGNETIC STARTER AND CONTROLS
GROUND ROD WITH CADWELD CONNECTION
PP — PP= POWER POLE, LP = LIGHT POLE
AIR TERMINAL (LIGHTNING PROTECTION)
F — STROBE LIGHT (F=FIRE ALARM, G=GAS ALARM)
R/F — HEAT DETECTOR - RATE OF RISE/FIXED TEMPERATURE
P — SMOKE DETECTOR - (P = PHOTOELECTRIC, I = IONIZATION)
F — PULL STATION - FIRE ALARM
HORN, BELL, OR SIREN
HORN/STROBE COMBINATION
CA — CAPACITOR
CONTROL STATION
JB — BOX - JUNCTION, TERMINAL, PULL OR HAND HOLE
M — ELECTRIC MANHOLE
XF — TRANSFORMER (SEE SINGLE LINE FOR SIZE & TYPE)
LC — LIGHTING CONTACTOR
FT — FLOW TRANSMITTER
LT — LEVEL TRANSMITTER
PT — PRESSURE TRANSMITTER
TT — TEMPERATURE TRANSMITTER
AT — ANALYSIS TRANSMITTER (I.E. OXYGEN, TURBIDITY)
PI — INDICATOR - PRESSURE, FLOW, LEVEL, DENSITY, ANALYSIS
DT — DENSITY TRANSMITTER
ZS — LIMIT (POSITION) SWITCH
PS — PRESSURE SWITCH
TS — TEMPERATURE SWITCH (I.E. MOTOR THERMO PROTECTOR)
CS — CONVEYOR CABLE SWITCH
SS — SPEED SWITCH
FS — FLOW SWITCH
LS — LEVEL SWITCH
NS — MOISTURE SENSOR
OS — TORQUE SWITCH
VS — VIBRATION SWITCH
LC — LOAD CELL
LE — TRANSMITTER SENSING ELEMENT - LEVEL, FLOW, DENSITY, PRESSURE, ANALYSIS
S — SOLENOID
T — THERMOSTAT
H — HEATER IN MOTOR
PC — PHOTOELECTRIC CELL
G — GAS DETECTOR WITH CONTROL PANEL (GAS TYPE AS SHOWN)
T — THERMOCOUPLE
V — PNEUMATIC VALVE OPERATOR
I — CURRENT TO PRESSURE TRANSDUCER

ELECTRICAL NOTES

1. STRUCTURAL MATERIALS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS.
2. ALL ELECTRICAL EQUIPMENT ELEVATIONS SHOWN ARE TO BOTTOM OF DEVICE OR PANEL, UNLESS OTHERWISE NOTED.
3. NUMBER SHOWN (I.E.11735), INDICATES A SPECIFICATION REFERENCE FOR ITEMS OTHER THAN DIVISION 16. THE ELECTRICAL ITEM UNDER THIS REFERENCE IS SUPPLIED BY ANOTHER PART OF THE CONTRACT. UNLESS OTHERWISE NOTED IN THAT SPECIFICATION, THE CONTRACTOR SHALL INSTALL AND WIRE THE ITEM PER THE DRAWINGS AND DIVISION 16 SPECIFICATIONS.
4. CONTROL WIRING SHALL CONFORM TO ALL REQUIREMENTS AS SHOWN ON THE P & ID DRAWINGS WHETHER SHOWN ON THE ELECTRICAL DRAWINGS OR NOT.
5. WHERE LINES ARE SHOWN CONNECTING ELECTRICAL EQUIPMENT, THEY ARE NOT INTENDED AS CONDUIT ROUTING. CONTRACTOR SHALL ROUTE ALL CONDUIT RUNS (SHOWN OR NOT) PER DIVISION 16 SPECIFICATIONS.
6. WP INDICATES WATERPROOF. LETTER ON OR NEXT TO LIGHT FIXTURE INDICATES TYPE, PER SECTION 16510. NUMBER WITH LIGHT FIXTURE OR RECEPTACLE INDICATES CIRCUIT NUMBER.
7. GFCI INDICATES A CIRCUIT BREAKER OR RECEPTACLE WITH A 6 MA GROUND FAULT CIRCUIT INTERRUPTER. GFEPD INDICATES A CIRCUIT BREAKER OR RECEPTACLE WITH A 30 MA GROUND FAULT EQUIPMENT PROTECTION DEVICE.
8. FOR BELOW GRADE CONDUIT PENETRATIONS THROUGH EXISTING EXTERIOR CONCRETE WALLS, PROVIDE TYPE A CONDUIT SLEEVE FOR PVC CONDUIT. FOR RGS OR PVC-COATED RGS CONDUIT, PROVIDE TYPE B CONDUIT SLEEVE THROUGH CONCRETE WALLS, AND TYPE C CONDUIT SLEEVE THROUGH EXISTING CONCRETE WALLS.
9. FOR ABOVE GRADE CONDUIT PENETRATIONS THROUGH EXTERIOR CONCRETE WALLS, PROVIDE TYPE C CONDUIT SLEEVE. FOR MASONRY WALLS PROVIDE TYPE F CONDUIT SLEEVE.
10. FOR CONDUIT PENETRATIONS THROUGH EXISTING CONCRETE FLOORS AND WALLS BETWEEN ADJACENT NON-CLASSIFIED (NON-HAZARDOUS) AREAS, PROVIDE TYPE C CONDUIT SLEEVES FOR ALL CONDUIT TYPES. FOR SIMILAR PENETRATIONS THROUGH CONCRETE FLOORS AND WALLS, PROVIDE TYPE D CONDUIT SLEEVES FOR ALL CONDUIT TYPES.
11. FOR CONDUIT PENETRATIONS THROUGH CONCRETE FLOORS AND WALLS SEPARATING CLASSIFIED (HAZARDOUS) AREAS FROM NON-CLASSIFIED (NON-HAZARDOUS) AREAS, PROVIDE TYPE G CONDUIT SLEEVES. FOR SIMILAR PENETRATIONS THROUGH MASONRY WALLS, PROVIDE TYPE H CONDUIT SLEEVE. FOLLOW MECHANICAL SEAL MANUFACTURER'S RECOMMENDATIONS TO MEET 3-HOUR FIRE RESISTANCE REQUIREMENTS.
12. LEGENDS ARE FOR REFERENCE ONLY AND DOES NOT MEAN THAT ALL ITEMS ARE USED.

STATE OF MICHIGAN
RICHARD ESHLAMAN
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No. 53605
LICENSED PROFESSIONAL ENGINEER
5/11/2023

THE CITY OF Kalamazoo

ELECTRICAL LEGEND

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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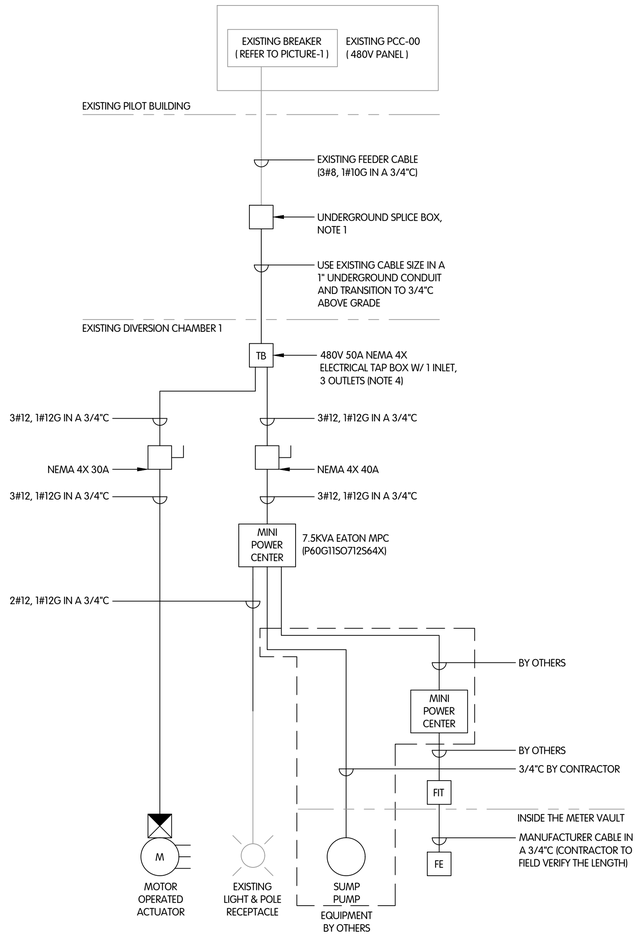
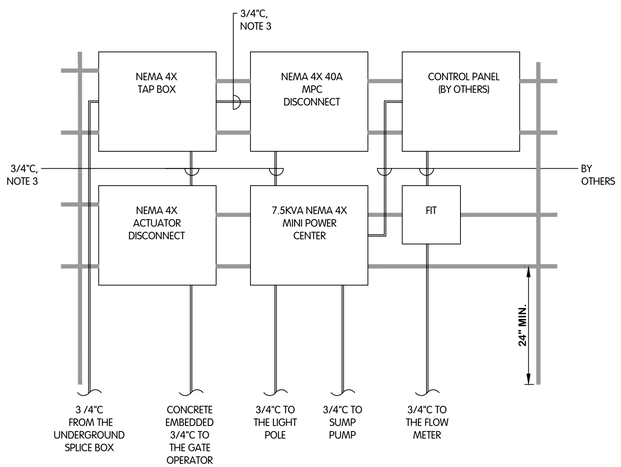
17 OF 19

KAL-7982001E01-ELECTRICAL LEGEND
5/11/2023 2:30 PM CFERRELL
5/11/2023 2:30 PM



ONE-LINE DIAGRAM



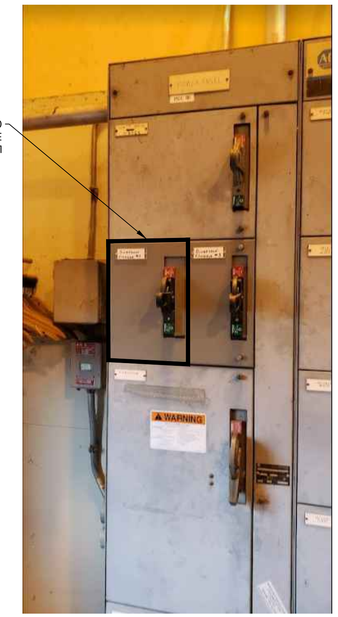
EQUIPMENT RACK DETAIL

NTS

NOTES:

1. CONTRACTOR SHALL EXTEND THE EXISTING FEEDER CABLE USING A SPLICE BOX (BY QUAZITE OF SIZE 11'L X 9"W X 6-3/4"D) AT THE DIVERSION CHAMBER #1 TO THE NEW ACTUATOR.
2. REFER TO PHOTOS ON THIS DRAWING SHEET FOR REFERENCE.
3. CONDUITS ARE SHOWN ONLY FOR DIAGRAMMATIC REFERENCE. CONTRACTOR SHALL INSTALL CONDUITS AS PER APPROVED OUTDOOR INSTALLATIONS.
4. CONTRACTOR SHALL INSTALL A TAP BOX WITH 3 OUTLETS TO FACILITATE WIRING FOR FUTURE FLOW METER/SUMP PUMP OR FLUME THAT IS TO BE PROVIDED AND INSTALLED BY OTHERS THROUGH A MINI POWER ZONE.

480V FEEDER BREAKER IN PCC-00
INSIDE PILOT BUILDING FEEDING THE
INDUSTRIAL DIVERSION CHAMBER 1



PICTURE-1

CONTRACTOR SHALL REMOVE THE
EXISTING JUNCTION BOX, SPLICE THE
CABLES AND EXTEND THE CONDUIT
AND WIRE TO THE NEW TAP BOX

PICTURE-2

Richard A. Eshlaman S-1-2023
STATE OF MICHIGAN
RICHARD
ESHLAMAN
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No.
53605
LICENSED PROFESSIONAL ENGINEER

THE CITY OF Kalamazoo

ELECTRICAL
SINGLE LINE DIAGRAM AND DETAILS

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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STATUS: ISSUE FOR BID

DATE: MAY 2023

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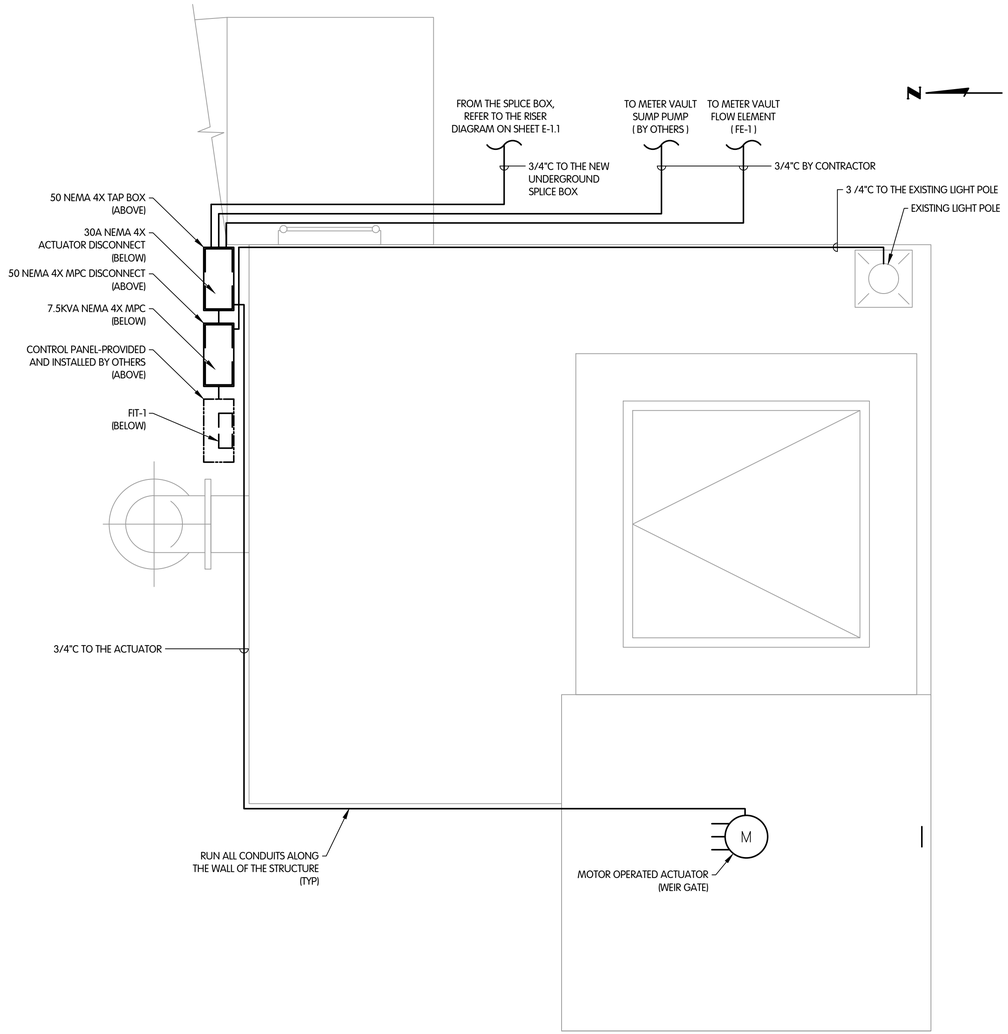
18 OF 19

KAL-79820\DWG\02-ELECTRICAL SINGLE LINE DIAGRAM AND DETAILS
5/11/2023 2:31 PM - CFERRELL



PLAN VIEW

NOTES:
1. CONTRACTOR SHALL INSTALL ALL THE ELECTRICAL EQUIPMENT ON A RACK AGAINST THE WALL OF THE STRUCTURE. REFER TO THE EQUIPMENT RACK DETAIL ON SHEET E-1.1.
2. REFER TO SPEC 16005 SECTION 2.08 AND 3.10 FOR SPLICE BOX/ SPLICING DETAILS.
3. ALL ELEVATIONS SHOWN ARE NGVD 29.
4. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING AND NEW CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
5. ESTIMATED SCALE: 3/4"= 1'-0".

Richard S. Eshlaman
STATE OF MICHIGAN
RICHARD ESHLAMAN
ENGINEER
No. 53605
LICENSED PROFESSIONAL ENGINEER
5-11-2023

THE CITY OF Kalamazoo

INDUSTRIAL DIVERSION CHAMBER I ELECTRICAL PLAN

CITY OF KALAMAZOO, MI - KALAMAZOO/GPI EFFLUENT SEWER REALIGNMENT

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SCALE AS NOTED

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STATUS: ISSUE FOR BID

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19 OF 19

KAL-7982001E03-INDUSTRIAL DIVERSION CHAMBER I - ELECTRICAL PLAN
5/11/2023 1:58 PM - CFERRELL
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