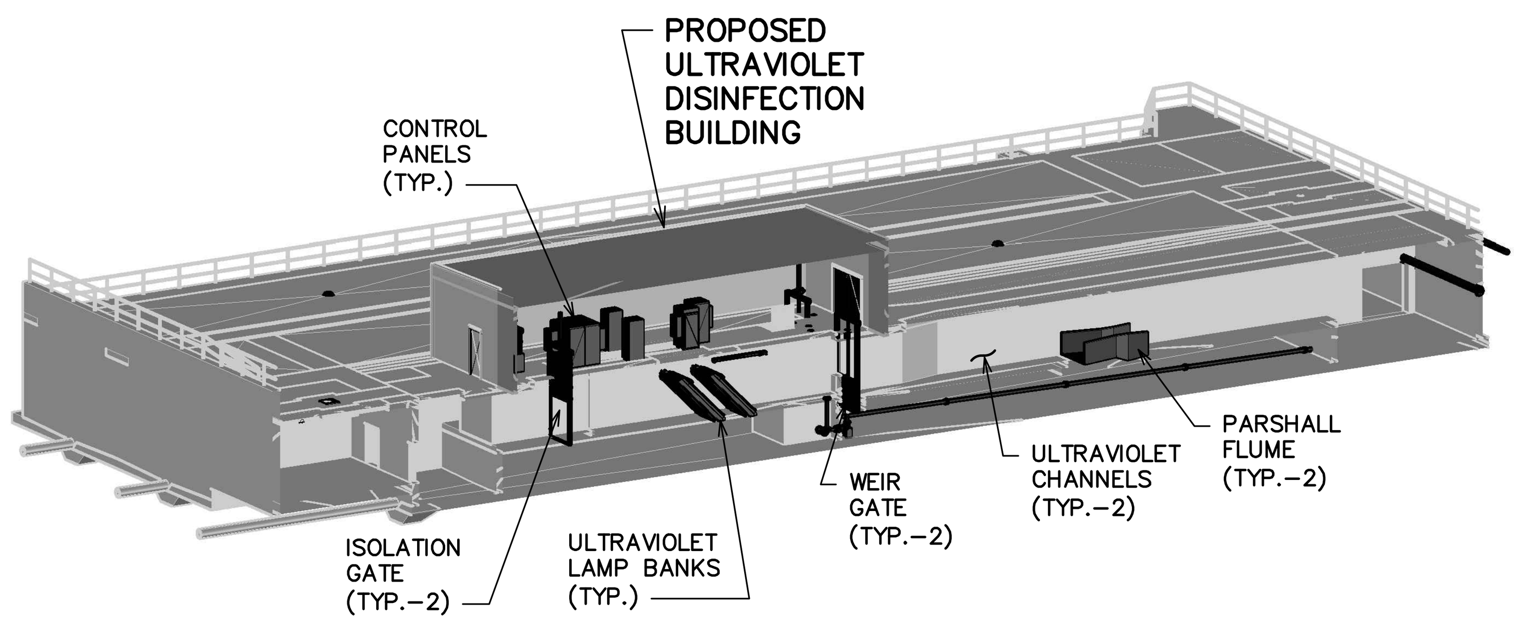
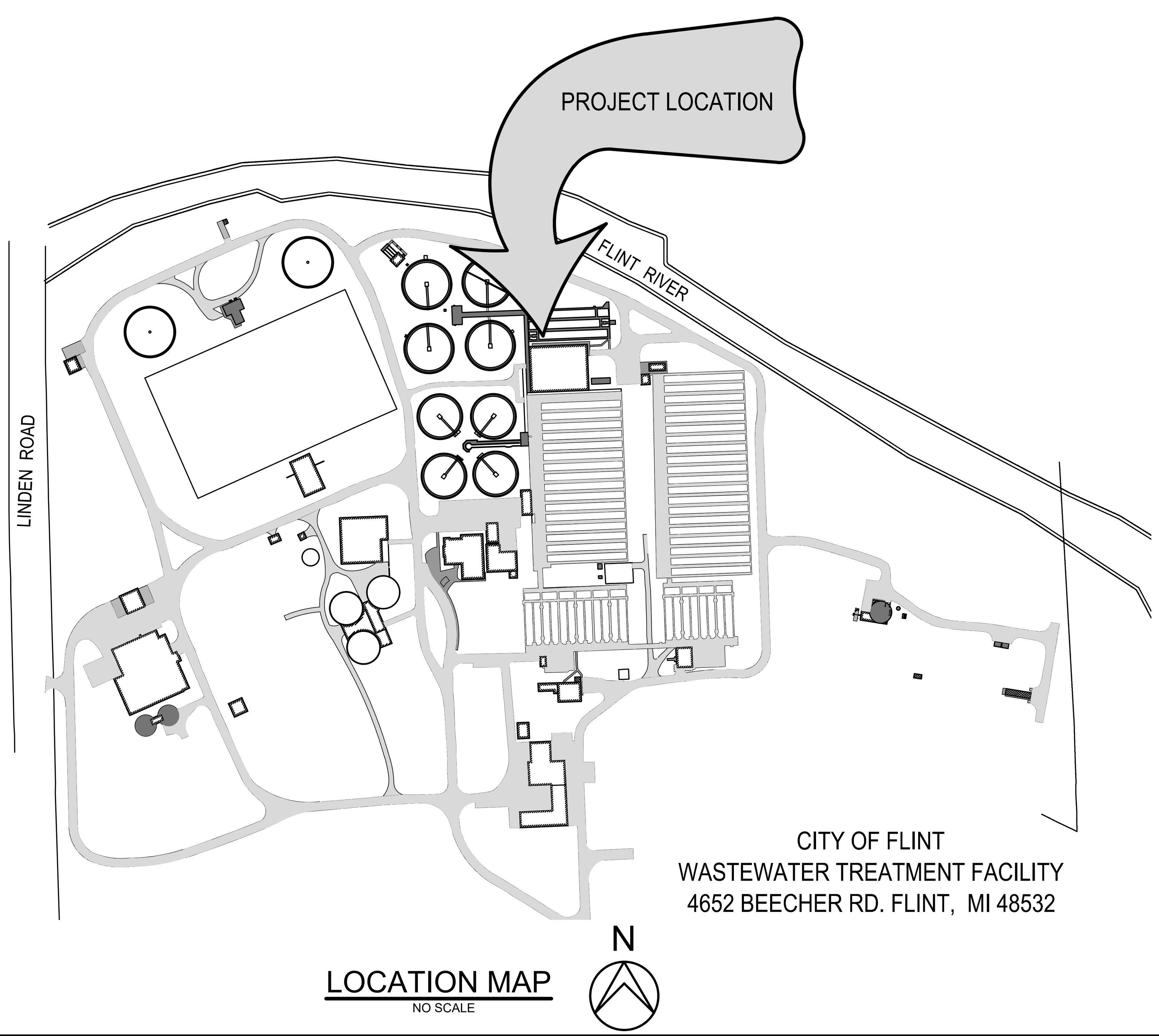




LOCATION MAP
NO SCALE

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY PERMIT NO. ________ DATE ________	SEAL	HUBBELL, ROTH & CLARK, INC. JOB NO. 20190265 PREPARED UNDER THE SUPERVISION OF: TREVOR S. WAGENMAKER REGISTERED PROFESSIONAL ENGINEER MICHIGAN REGISTRATION NO. ____

CITY OF FLINT

WATER POLLUTION CONTROL FACILITY
ULTRAVIOLET DISINFECTION PROJECT

CITY OF FLINT, MICHIGAN
PUBLIC UTILITIES DEPARTMENT

JOB NO. 20190265
SRF NO. 5696-01

ISSUED FOR BIDS
5-15-2020

CITY ADMINISTRATION

JEANETTE BEST - WPCF SUPERINTENDENT
ROB BINCSIK - PUBLIC WORKS DIRECTOR
INEZ M. BROWN - CITY CLERK

PREPARED BY:

HRC 100 YEARS
CONSULTING ENGINEERS SINCE 1915
WADE TRIM

555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824

PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 338-2592
WEB SITE: http: / / www.hrc-engr.com

CITY COUNCIL

SHELDON NEELEY - MAYOR
ERIC MAYS - FIRST WARD
MAURICE DAVIS - SECOND WARD
SANTINO J. GUERRA - THIRD WARD
KATE FIELDS - FOURTH WARD
JERRI WINFREY-CARTER - FIFTH WARD
HERBERT WINFREY - SIXTH WARD
MONICA GALLOWAY - SEVENTH WARD
ALLAN GRIGGS - EIGHTH WARD
EVA WORHTING - NINTH WARD

4/10/2020 1:40 PM
HRC_OLW.ctb
V:\201902\20190265\Index.dwg
Roberts Tom

LIST OF DRAWINGS

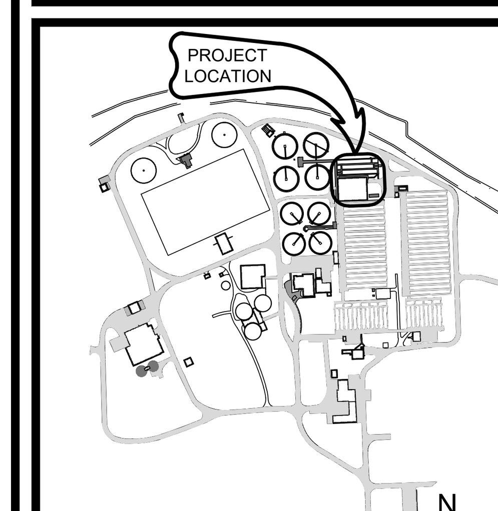
CITY of FLINT
EST. 1855
MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http://www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	



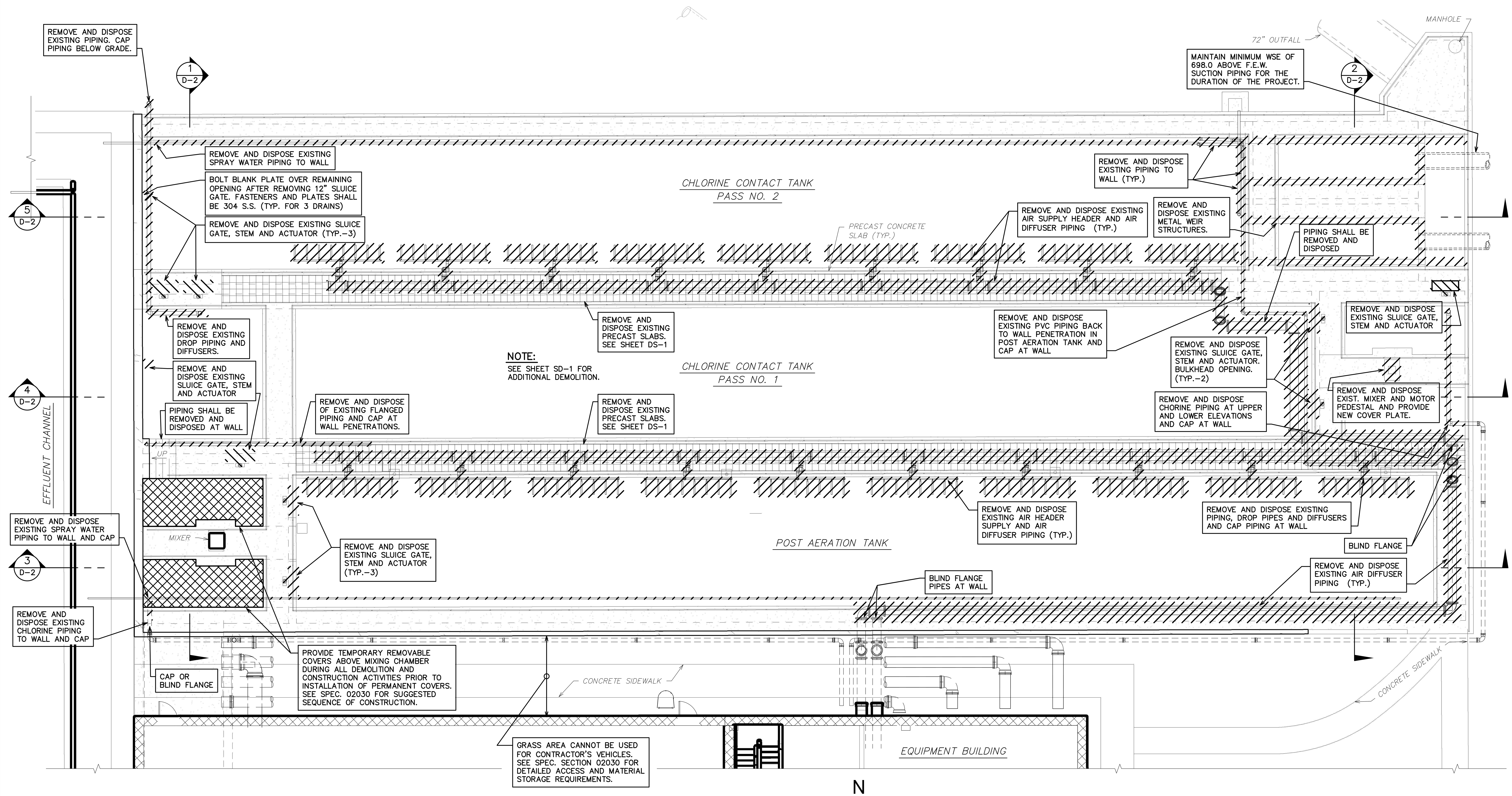
FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

INDEX SHEET

HRC JOB NO. 20190265	SCALE NONE
DATE April 2020	SHEET NO. INDEX OF



PLAN VIEW

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

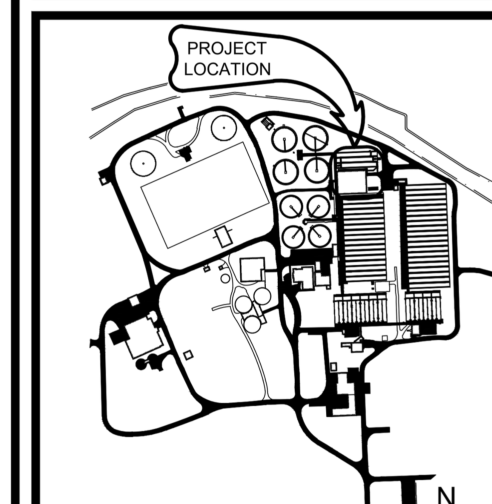
NOTE:

SEE SPECIFICATIONS FOR SEQUENCE OF CONSTRUCTION FOR DEMOLITION WORK.

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

4-8-2020	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	



FLINT WPCF

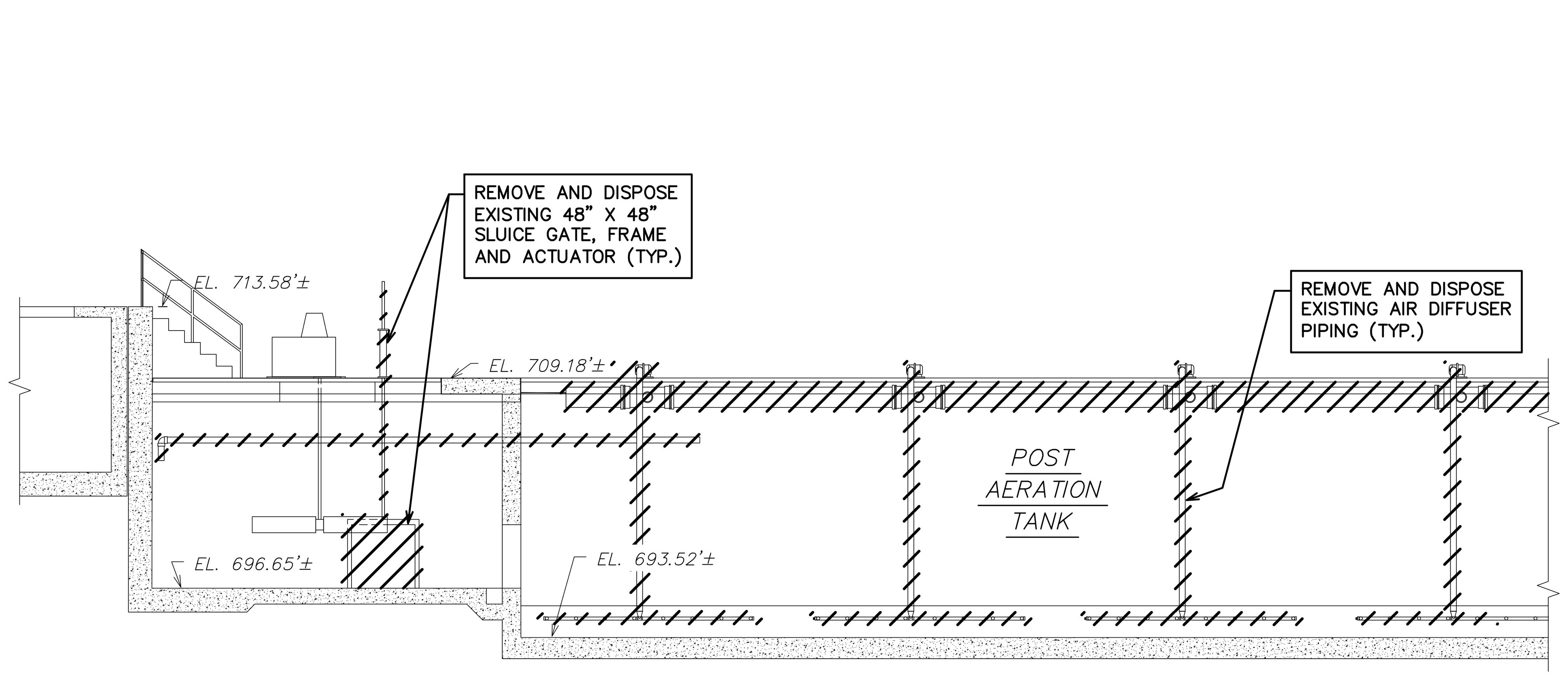
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

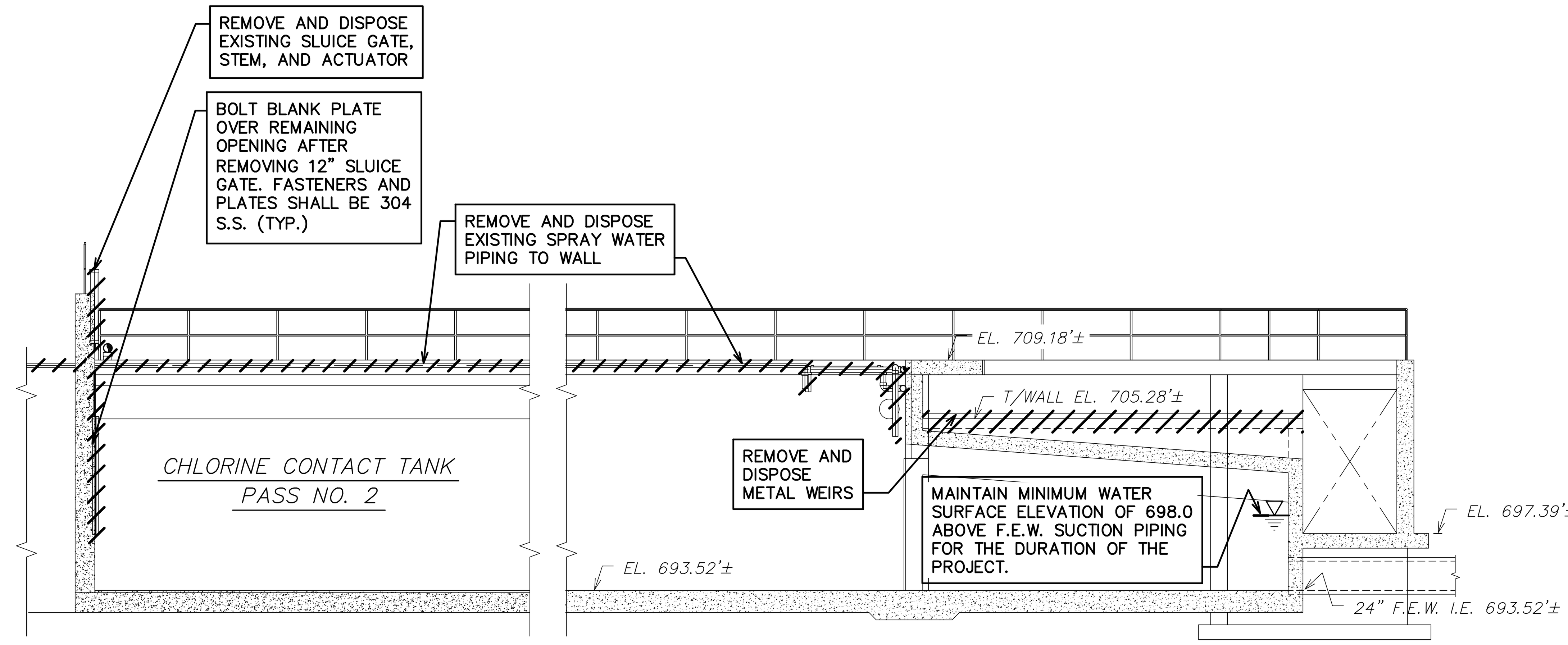
POST AERATION AND CHLORINE CONTACT TANKS EXISTING PLAN AND DEMOLITION

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. D-1 OFP-1

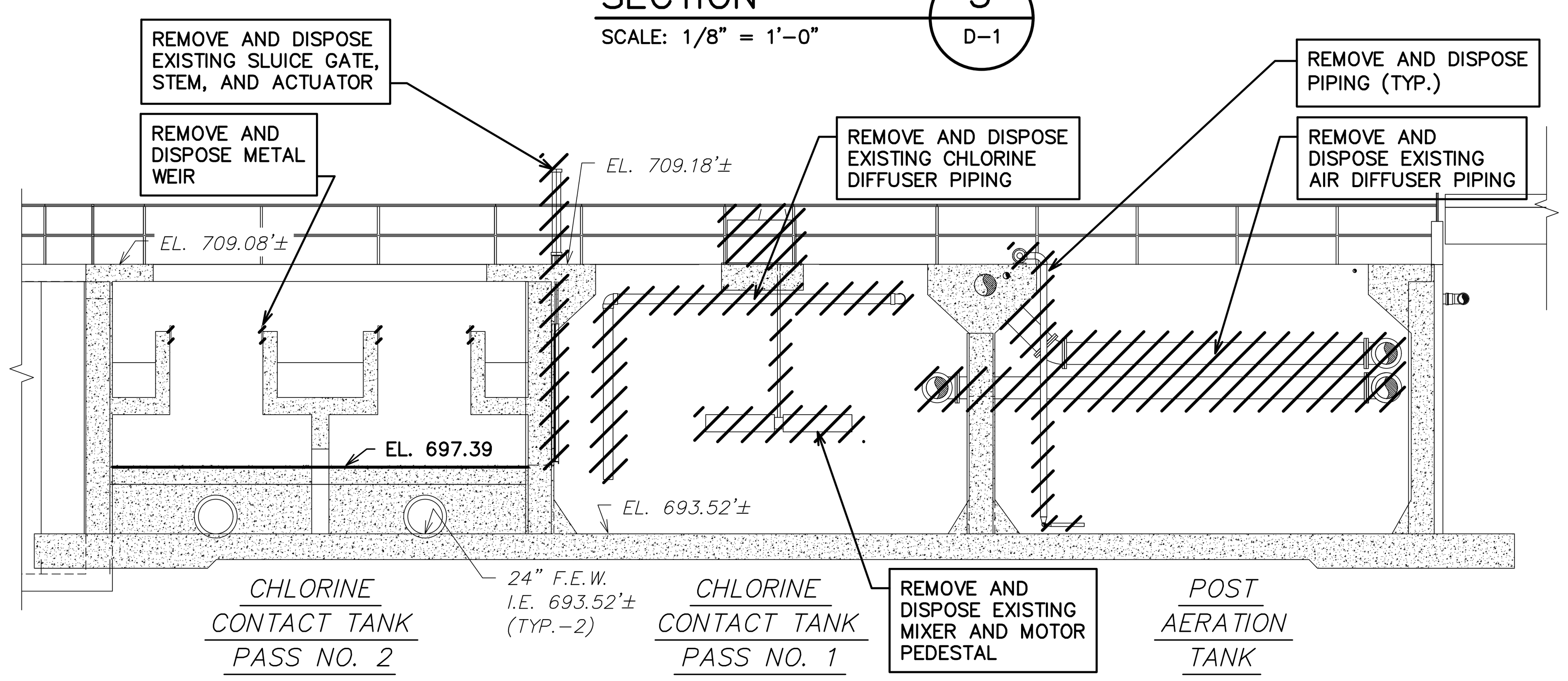
4/8/2020 7:22 AM
HRC_OLW.ctb
V:\201902\20190265\P\WPCF UV Design\Orthos\DWGs\D01_plot.dwg
Roberts Tom



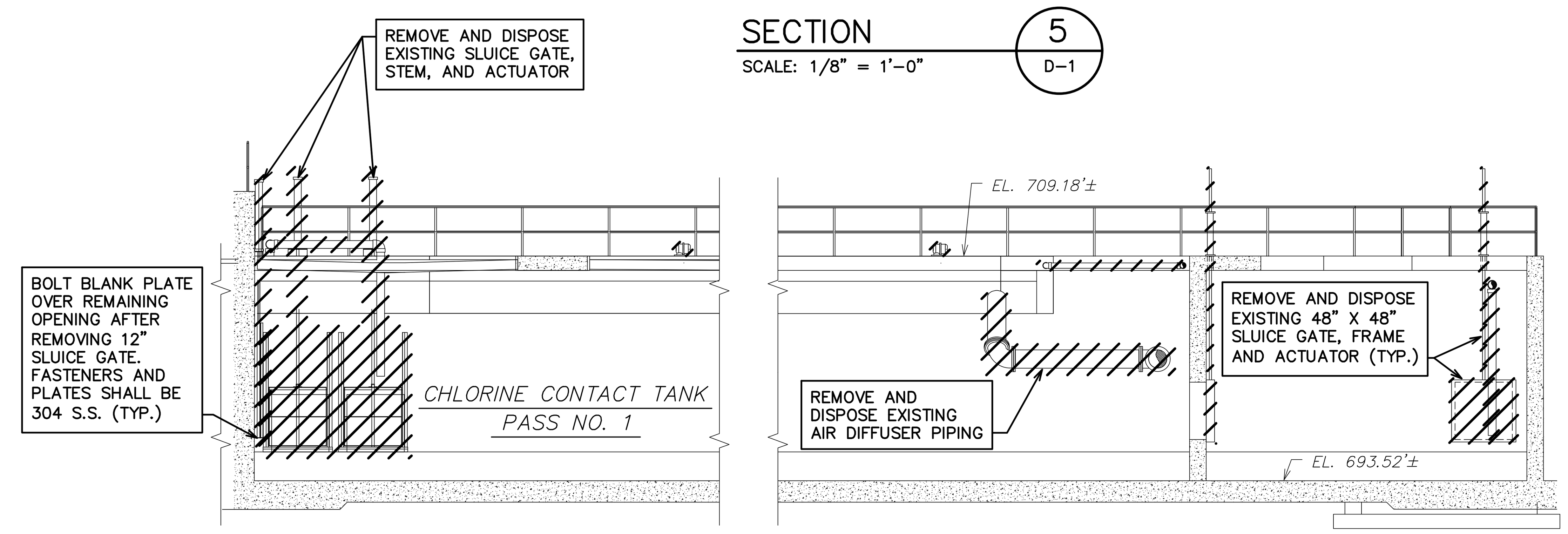
SECTION 3
SCALE: 1/8" = 1'-0"
D-1



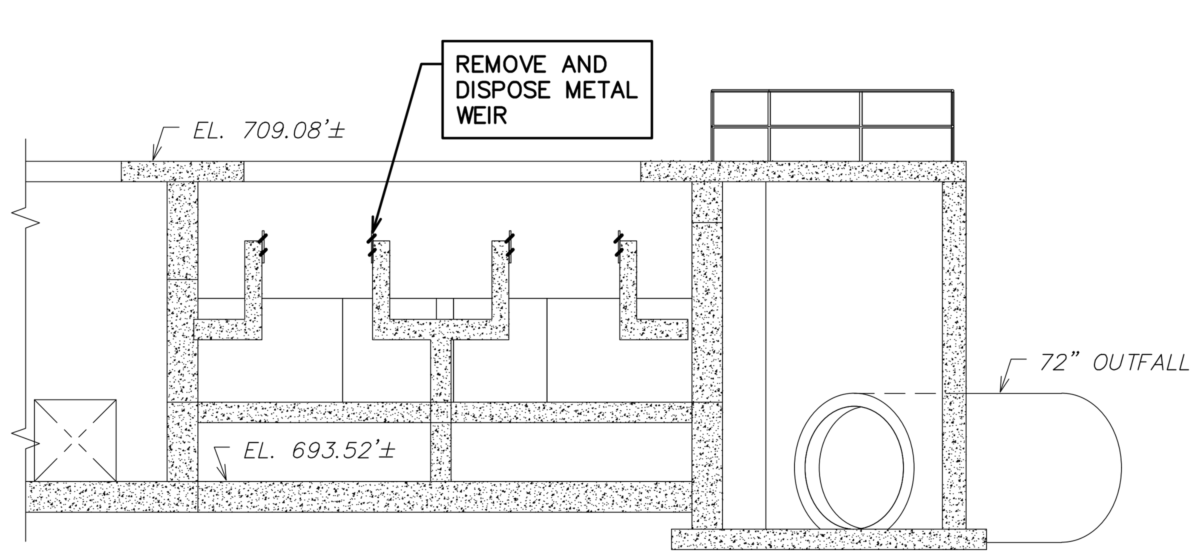
SECTION 5
SCALE: 1/8" = 1'-0"
D-1



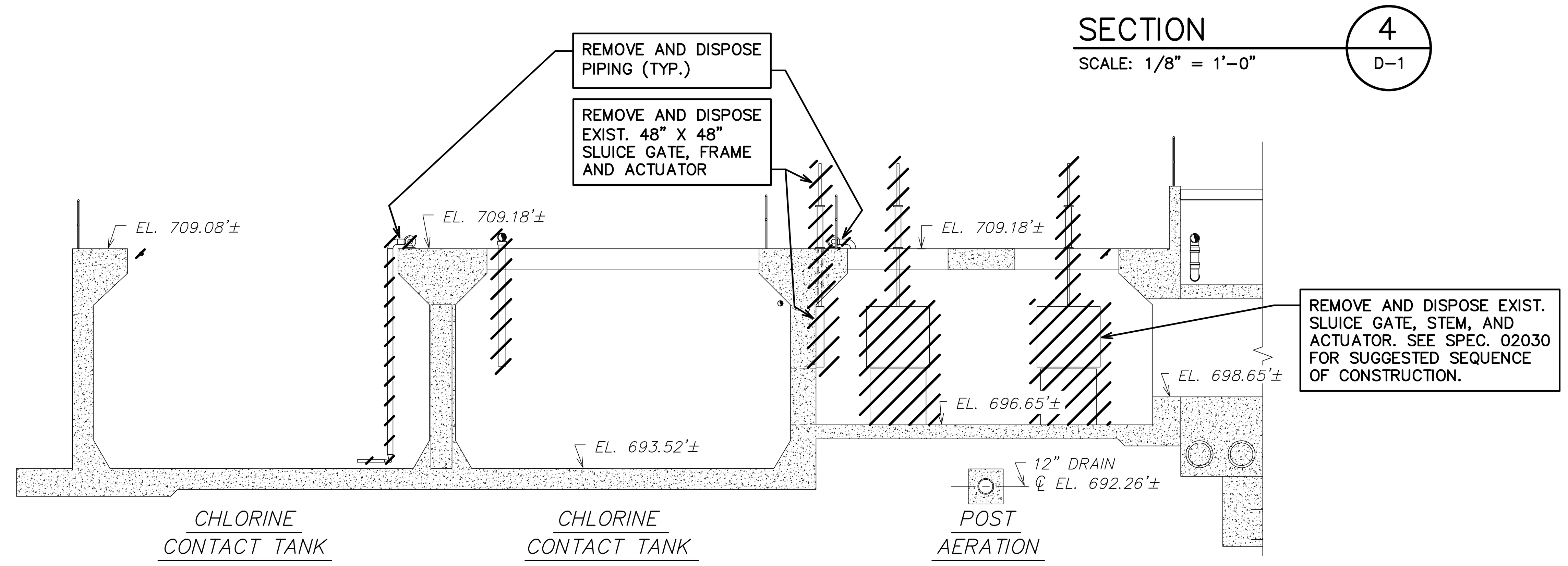
SECTION 2
SCALE: 1/8" = 1'-0"
D-1



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



SECTION 6
SCALE: 1/8" = 1'-0"
D-1



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

1/8" = 1'-0" 0 2 4 8 16 FEET

NOTICE:

ALL ELEVATIONS SHOWN ON THIS DRAWING ARE NAVD 88 DATUM. ALL TOPOGRAPHICAL ELEVATIONS HAVE BEEN TAKEN FROM LASER SURVEY. INTERIOR ELEVATIONS AND ELEVATIONS OF BURIED ITEMS HAVE BEEN TAKEN FROM RECORD DRAWINGS, WHERE AVAILABLE, AND ADJUSTED TO MATCH NAVD 88 DATUM. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE ELEVATIONS SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.

CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	

PROJECT LOCATION

FLINT WPCF

N

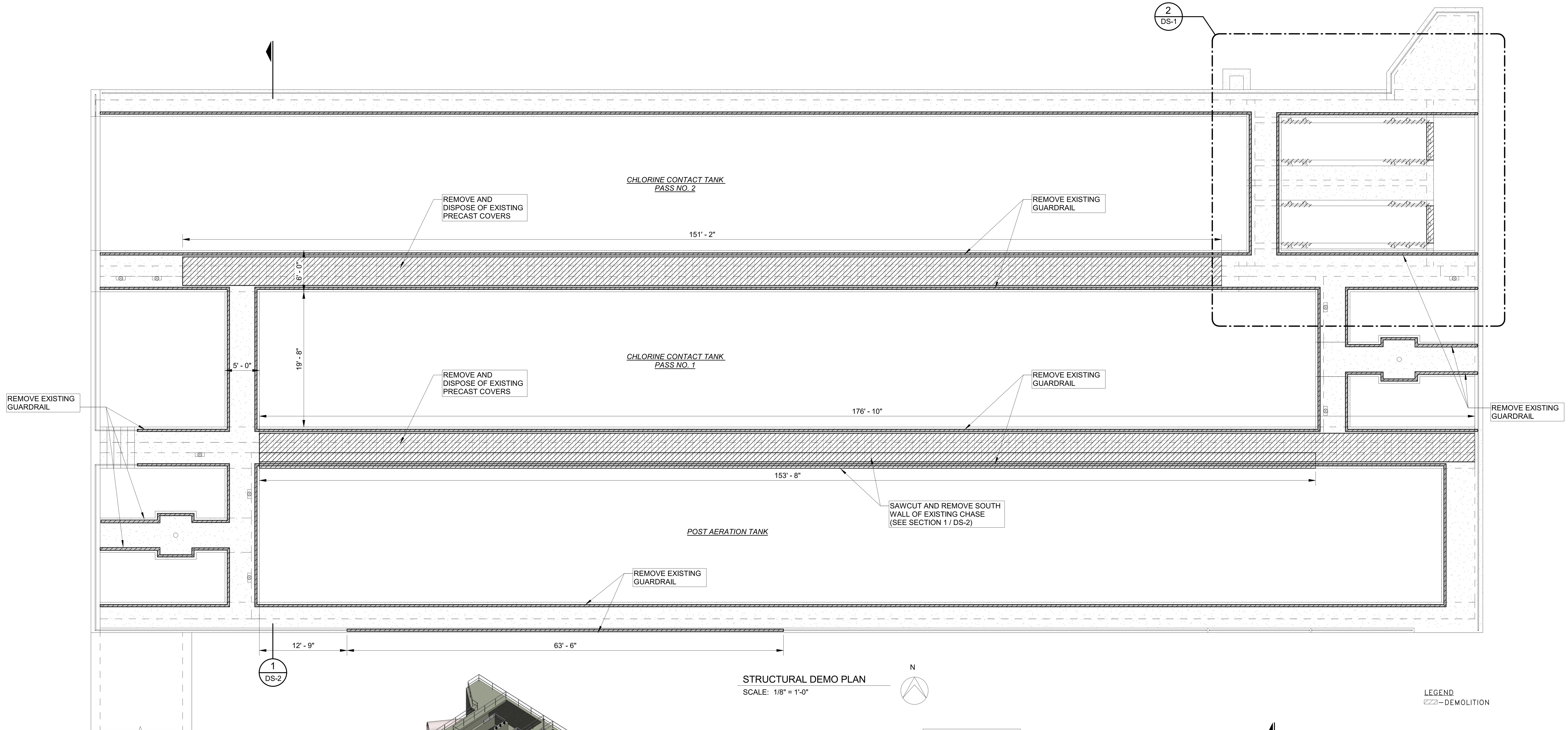
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

POST AERATION AND CHLORINE CONTACT TANKS EXISTING AND DEMOLITION SECTIONS

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. D-2 OF

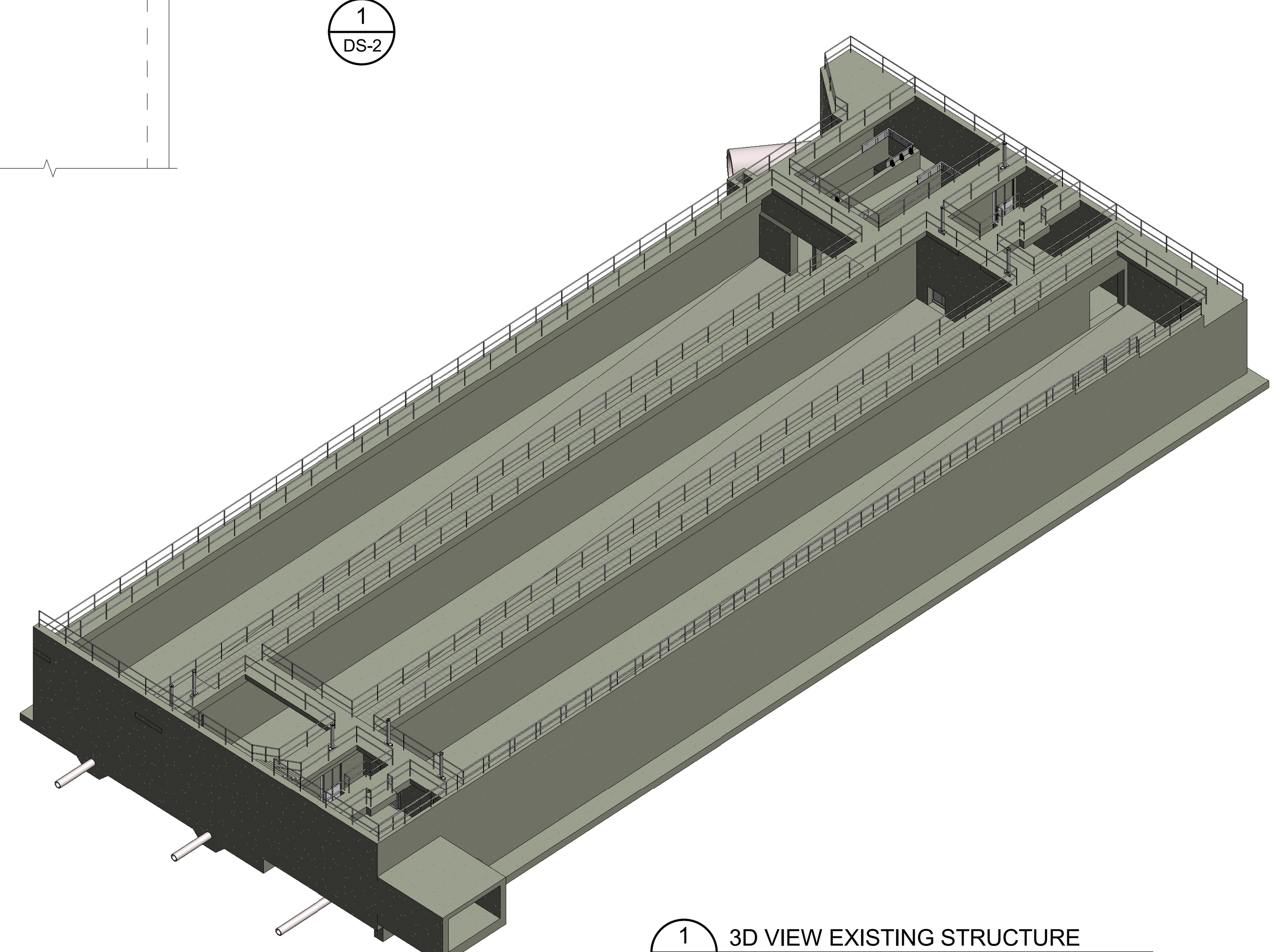
PLOTTED 5/6/2020 3:31:31 PM



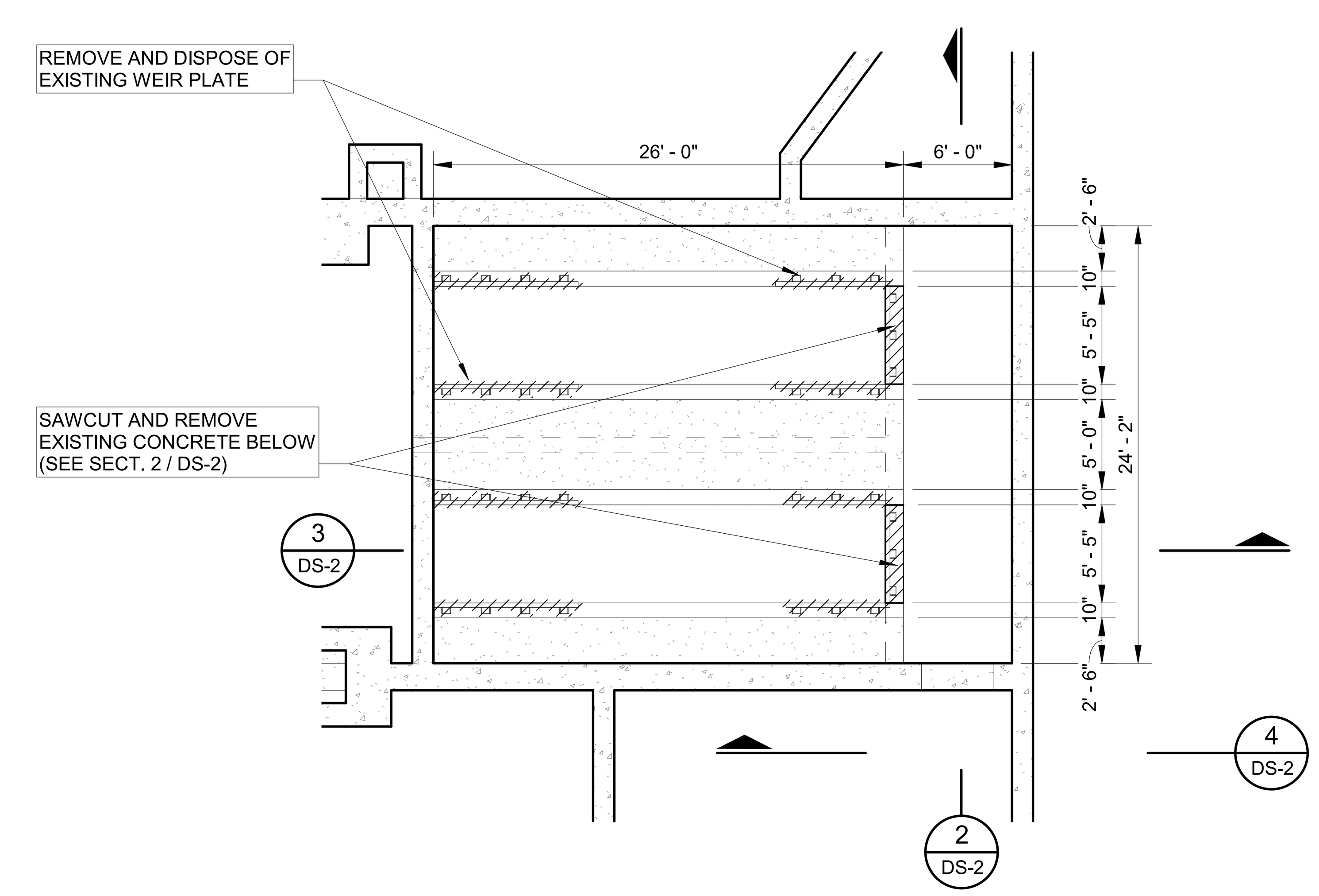
STRUCTURAL DEMO PLAN
SCALE: 1/8" = 1'-0"

N

LEGEND
DEMOLITION



1 3D VIEW EXISTING STRUCTURE
SCALE:



2 EFFLUENT PLAN
DS-1
SCALE: 1/8" = 1'-0"

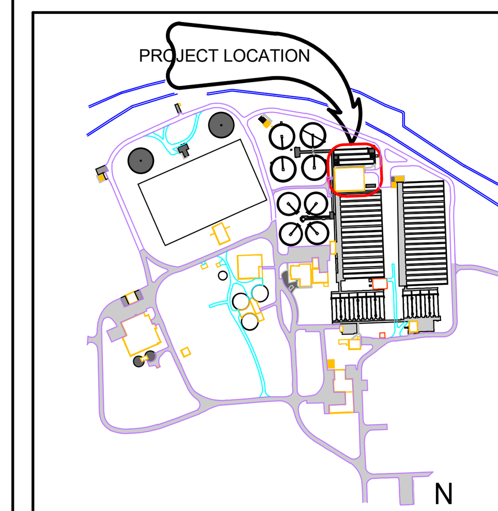
N

LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
P.O. BOX 824
48303 - 0824
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue,
Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

5/7/2020	Final EGLE Submittal
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



KEY PLAN

PROJECT TITLE

CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

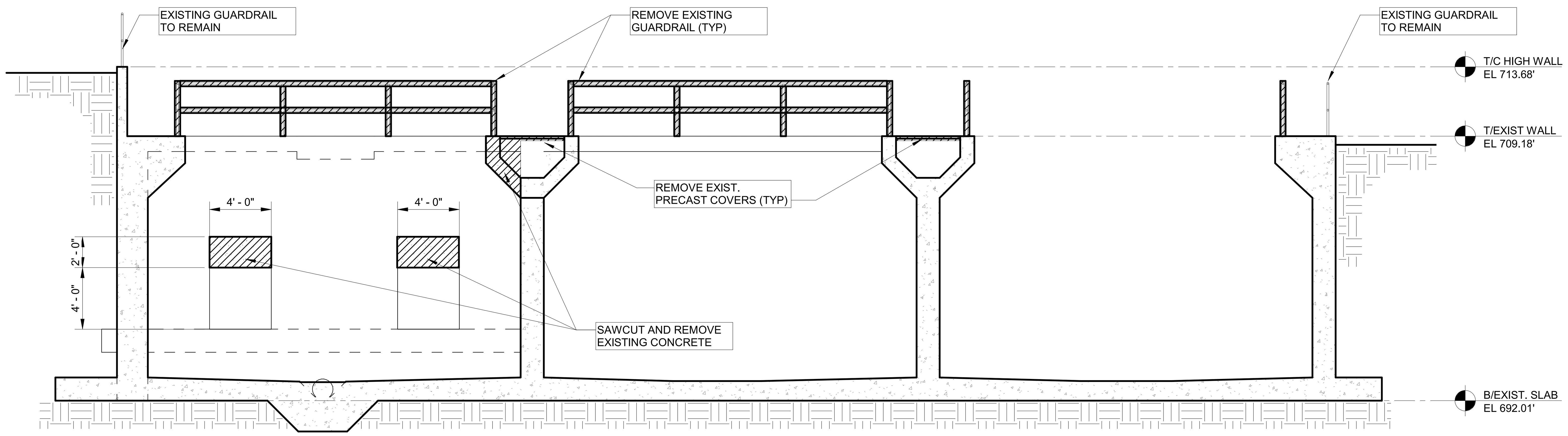
SHEET TITLE

STRUCTURAL DEMO PLAN

WT JOB NO. HRC2002.01F	SCALE
DATE 5-7-2020	SHEET NO. DS-1 OF

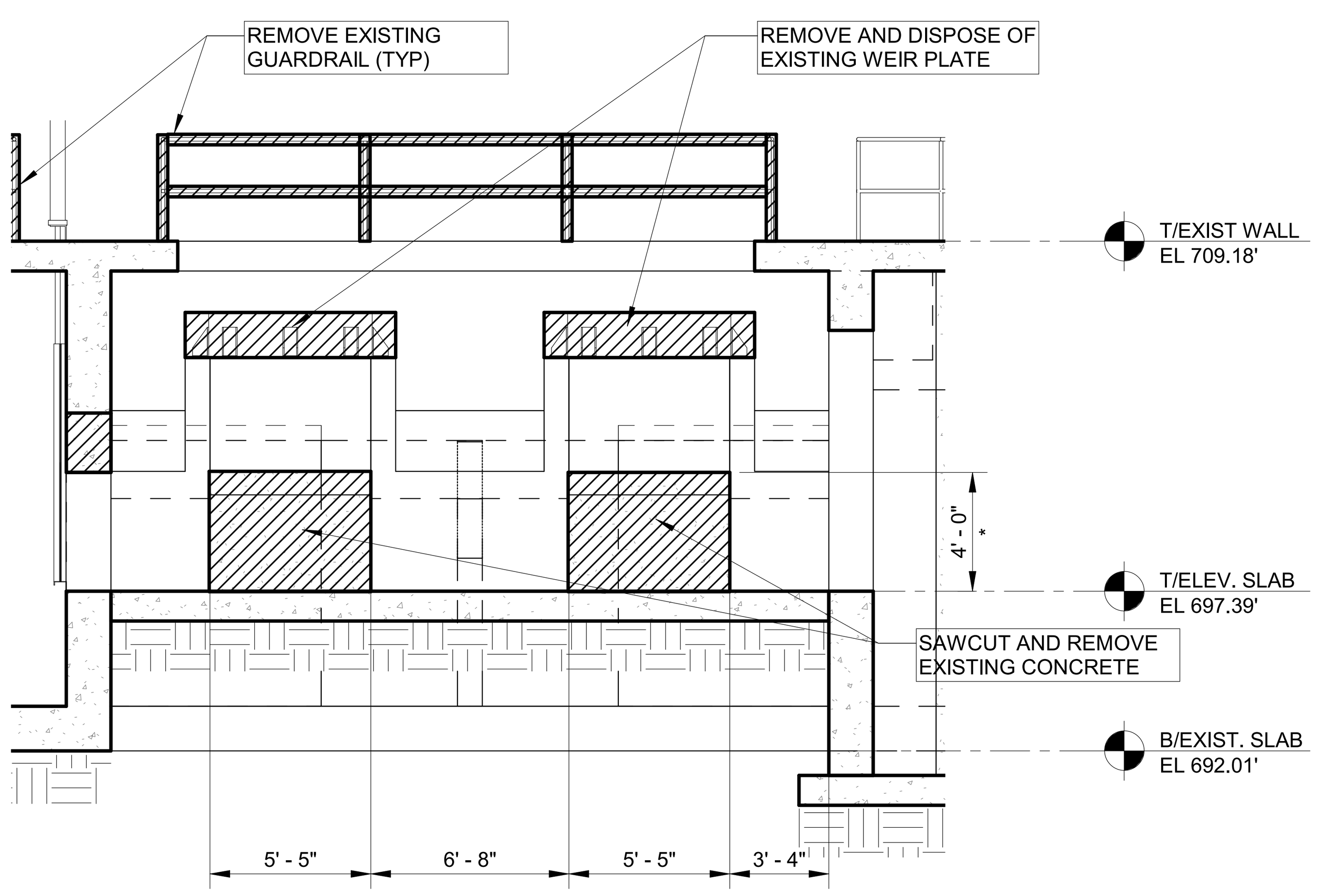
V:\0997041\Flint UV_Struct R17-Geolocated.rvt

PLOTTED 5/6/2020 3:31:32 PM

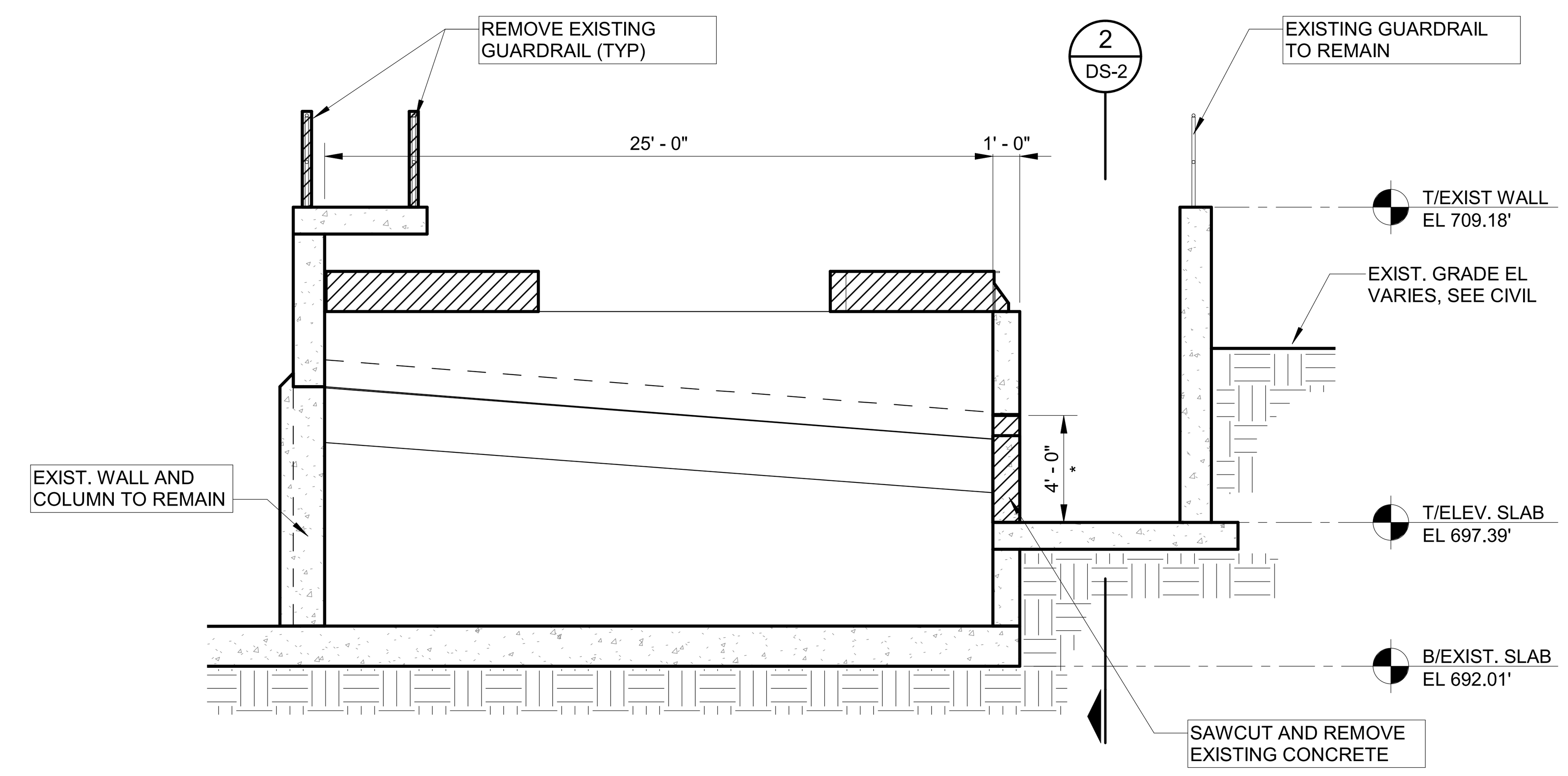


1 DS-1 DEMO SECTION
SCALE: 3/16" = 1'-0"

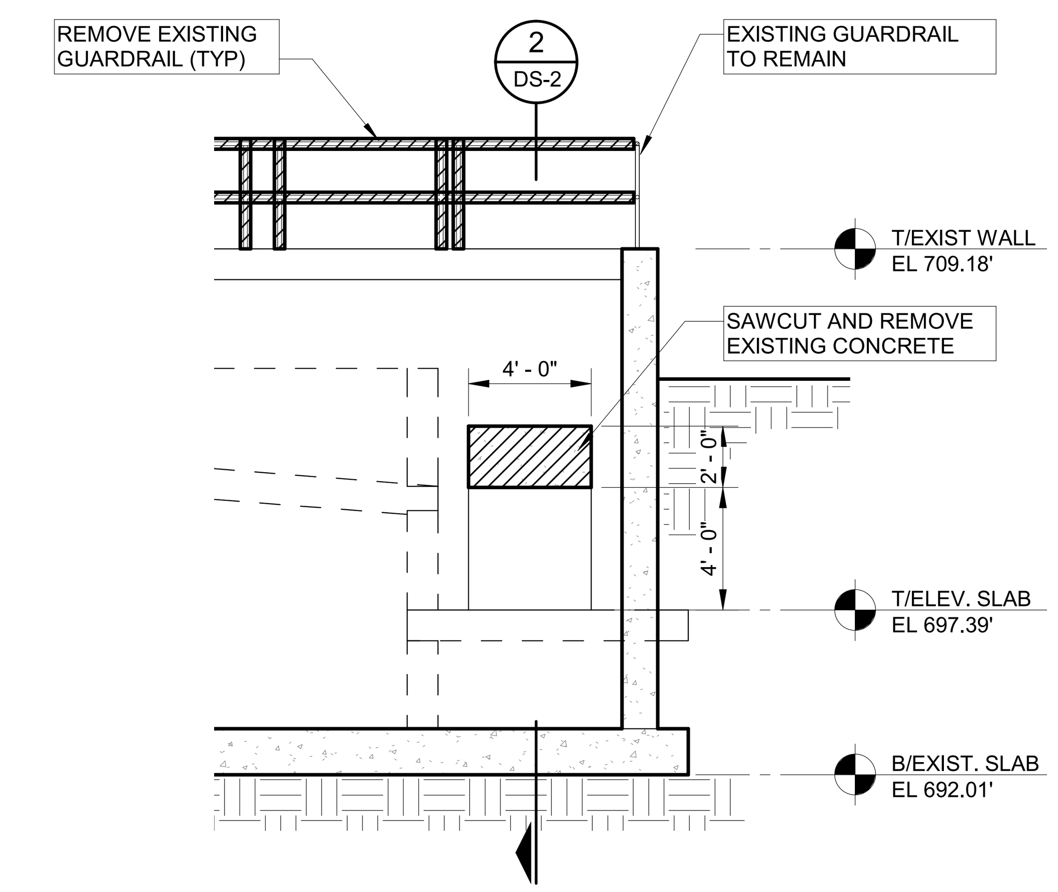
LEGEND
DEMOLITION



2 DS-1 DEMO SECTION
SCALE: 3/16" = 1'-0"



3 DS-1 DEMO SECTION
SCALE: 3/16" = 1'-0"



4 DS-1 DEMO SECTION
SCALE: 3/16" = 1'-0"

V:\0597041\Flint UV_Struct R17-Geolocated.rvt

CITY of FLINT EST. 1855 MICHIGAN

LOGO

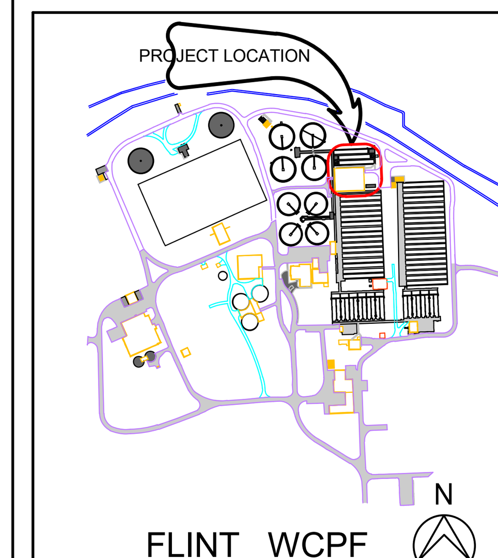
HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
P.O. BOX 824
48303 - 0824
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue,
Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



KEY PLAN

PROJECT TITLE

CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE

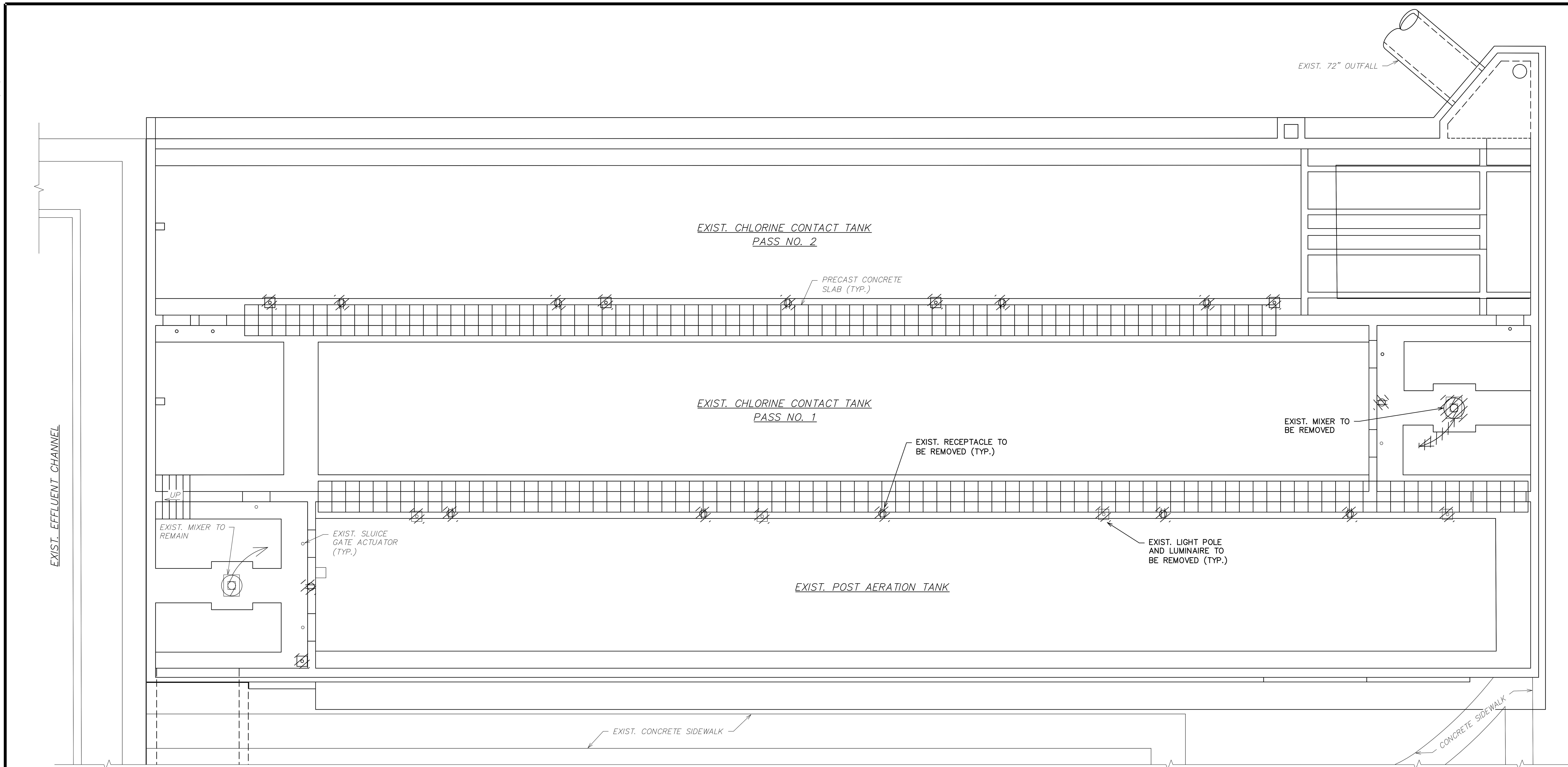
STRUCTURAL DEMO SECTIONS / DETAILS

WT JOB NO. HRC2002.01F

SCALE

DATE 5-7-2020

SHEET NO. DS-2 OF



PLAN VIEW

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

N

ELECTRICAL DEMOLITION NOTES:

(APPLIES TO ALL DWGS. WHERE APPLICABLE)

1. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING ELECTRICAL INSTALLATION PRIOR TO SUBMITTING A BID.
2. ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER.
3. ALL ELECTRICAL DEMOLITION WORK SHALL INCLUDE REMOVING OF EXISTING LIGHTING FIXTURES, DISCONNECT SWITCHES, WIRE, CONDUIT, BOXES, ETC., AS INDICATED ON THE DRAWINGS AND SHALL BE BY THIS CONTRACTOR.
4. REMOVE ALL CONDUIT, WIRE, HANGERS, CLAMPS, ETC., THAT ARE NOT BEING REUSED UNLESS CONCEALED ABOVE CEILINGS OR IN WALLS, WHICH MAY BE ABANDONED AND LEFT IN PLACE. CONDUIT IN FLOOR SLAB SHALL BE CUT FLUSH WITH SLAB AND PLUGGED WITH NON SHRINK GROUT.
5. REMOVE ALL WIRE IN EXISTING CONCEALED ABANDONED CIRCUITS. EXISTING CONCEALED CONDUITS (IF APPLICABLE) MAY BE RE-USED FOR NEW WIRING.
6. EXISTING CONDUITS AND BRANCH CIRCUIT WIRING MAY BE REUSED WHERE APPLICABLE. IF CONDUIT AND WIRING IS NOT REUSED IT SHALL BE REMOVED.
7. ALL OPENINGS CREATED BY REMOVAL OF CONDUITS THROUGH EXISTING WALLS OR FLOORS SHALL BE SEALED TO MATCH EXISTING.
8. REVISE ALL EXISTING LIGHTING PANEL DIRECTORIES AND MCC NAMEPLATES TO REFLECT ALL REVISIONS TO BRANCH CIRCUIT BREAKERS IN THE EXISTING PANELS AND MCC'S.
9. VERIFY REMOVAL OF ALL EXISTING POWER AND CONTROL WIRING WITH THE OWNER PRIOR TO START OF DEMOLITION WORK.
10. ALL SALVAGED ELECTRICAL EQUIPMENT SHALL BECOME THE PROPERTY OF THE OWNER AND SHALL BE STORED AT AN ON SITE LOCATION OR DISPOSED OF AS DIRECTED BY THE OWNER.
11. ALL EXISTING PANELBOARDS, LIGHTING FIXTURES, WIRING DEVICES, TELEPHONE OUTLETS, ETC., SHALL REMAIN IN THEIR EXISTING LOCATIONS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
12. REMOVE EQUIPMENT AS SHOWN, INCLUDING ALL ASSOCIATED CONDUIT AND WIRE.
13. ALL ABANDONED EXPOSED CONDUIT SHALL BE REMOVED.
14. ALL EXISTING LIGHTING FIXTURES, WIRING DEVICES, ELECTRICAL EQUIPMENT, PANELS, ETC. SHALL REMAIN IN THEIR EXISTING LOCATIONS, UNLESS OTHERWISE NOTED ON THE PLANS.

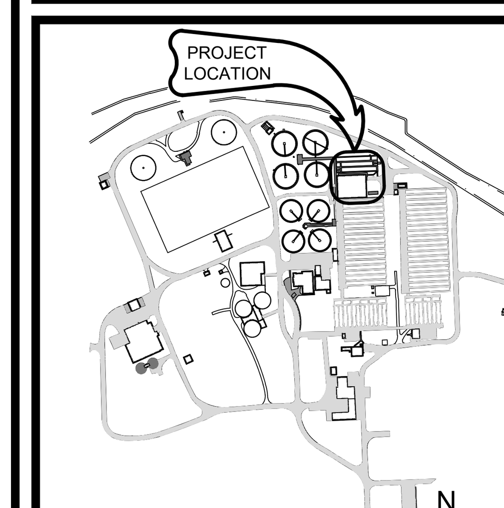
CITY of FLINT
EST. 1855
MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http: // www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

POST AERATION AND CHLORINE CONTACT TANKS EX. ELECT. PLAN AND DEMO

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. DE-1 OF 1

PLOTTED 5/6/2020 3:31:32 PM

GENERAL NOTES

1. DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON PREVIOUS CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING W/FIELD MEASUREMENTS ALL DIMENSIONS AND ELEVATIONS FOR FABRICATION AND/OR MODIFICATIONS OR ADDITIONS BEING MADE UNDER THIS CONTRACT. ANY DISCREPANCIES SHALL BE PRESENTED TO THE OWNER AND ANY DESIGN CONFLICTS SHALL BE RESOLVED WITH OWNER PRIOR TO FABRICATIONS OR CONSTRUCTION OF IMPACTED ITEMS.

2. MATERIALS FOR THE FOLLOWING FACILITY COMPONENTS SHALL BE AS INDICATED BELOW UNLESS NOTED OTHERWISE:
   A. COVERS OVER UV CHANNEL . . . FRP
   B. GRATING OVER UV CHANNEL . . . STAILNESS STEEL
   C. SLIP-RESISTANT FLOOR PLATE . . . ALUMINUM
   B. COVER SUPPORT FRAMING . . . GALV STEEL

3. ALL EXISTING DIMENSIONS AND ELEVATIONS SHOWN WITH THE ± SYMBOL, ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.

4. ALL DIMENSIONS OR ELEVATIONS MARKED WITH AN ASTERISK "*" SHALL BE DETERMINED OR VERIFIED WITH EQUIP. MFR. CERTIFIED SHOP DRAWINGS OR FIELD MEASUREMENTS OF EXISTING CONSTRUCTION BEFORE FABRICATION AND CONSTRUCTION.

5. ALL ADHESIVE ANCHORING SYSTEMS FOR POST-INSTALLED ANCHORS AND/OR REINFORCING DOWELS IN CONCRETE OR MASONRY SHALL BE "HIT-HY 200 ADHESIVE ANCHORING SYSTEM" BY HILTI AT SIZE AND SPACING INDICATED ON DRAWINGS.

CODES AND LOADS

1. ALL STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:

   A. CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES - AMERICAN CONCRETE ASSOCIATION ACI 350 (2006)

2. DESIGN LOADS (GENERAL)
   A. ELEVATED SLAB & SLABS ON GRADE - LIVE LOADS - 150 PSF
   B. ELEVATED PLATFORM LIVE LOADS - 150 PSF
   C. SNOW LOADS, PER ASCE 7-05 (OCCUPANCY CATEGORY III)
      1. GROUND SNOW LOAD - 30 PSF
      2. SNOW EXPOSURE FACTOR - Ce = 0.9
      3. SNOW THERMAL FACTOR - Ct = 1.0
      4. SNOW IMPORTANCE FACTOR - I = 1.1
      5. FLAT ROOF SNOW LOAD - Pf = 21.0 PSF

   D. WIND LOADS
      1. BASIC WIND SPEED (3-SECOND)=120 MPH
      2. WIND EXPOSURE CATEGORY C
      HEIGHT AND EXPOSURE FACTOR: 1.4

   E. LATERAL EARTH PRESSURES DRAINED CONDITION
      1. ACTIVE PRESSURE - Pa = 40.0 PSF; Ka = 0.32
      2. AT REST PRESSURE - Po = 60.0 PSF; Ko = 0.48
      3. PASSIVE PRESSURE - Pp = 375 PSF; Kp = 3.12
   F. LATERAL EARTH PRESSURE - UNDRAINED CONDITION
      1. ACTIVE PRESSURE - Pa = 84.0 PSF
      2. AT REST PRESSURE - Po = 94.0 PSF
      3. PASSIVE PRESSURE - Pp = 267 PSF

   G. 100 YEAR FLOOD ELEVATION - GRADE

DEMOLITION

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING STRUCTURES, WHICH ARE TO REMAIN, DURING DEMOLITION WORK. ALL DAMAGE SHALL BE REPAIRED TO THE COMPLETE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

2. WHEN REMOVING EXISTING CONCRETE BY CUTTING OR CHIPPING THE CONTRACTOR SHALL ONLY REMOVE REINFORCING BARS WHICH CANNOT BE BENT INTO AREAS WHERE NEW CONCRETE WOULD COMPLETELY COVER THEM.

3. IF FRACTURE OF ADJACENT CONCRETE OCCURS DURING DEMOLITION/ ALTERATION WORK, THE REPAIR SHALL BE WITH AN ENGINEER APPROVED PRESSURE INJECTED EPOXY, TO THE COMPLETE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

4. CONTRACTOR SHALL PROVIDE WRITTEN PLAN AND DESCRIPTION OF ALL DEMOLITION, MODIFICATION, OR ALTERATION WORK ON EXISTING STRUCTURES FOR REVIEW AND ACCEPTANCE PRIOR TO BEGINNING WORK.

5. ANY REMAINING EXPOSED REINFORCING STEEL AFTER DEMO SHALL BE COATED WITH CORROSION INHIBITING COMPOUND. USE SIKA ARMATEC 110 EPOCEM OR APPROVED EQUAL.

MASONRY

1. HOLLOW CONCRETE BLOCK (MASONRY UNITS) SHALL CONFORM TO ASTM C90, GRADE N (MEDIUM WEIGHT) WITH A MINIMUM COMMPRESSIVE STRENGTH OF 1900 PSI ON THE NET AREA (f'm=1,500 PSI)

2. ALL MORTAR SHALL BE TYPE N AND COMPLY WITH ASTM C476, WITH MINIMUM COMPRESSIVE STRENGTH AT 2500 PSI.

3. REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60.

4. VERTICAL REINFORCEMENT TO BE CONTINUOUS AND LAPPED A MINIMUM OF 48 BAR DIAMETERS.

5. DOWEL ALL VERTICAL REINFORCEMENT FROM FOUNDATIONS AS SHOWN ON DRAWINGS.

6. PROVIDE A MINIMUM OF 1/2" GROUT BETWEEN REINFORCING AND MASONRY UNITS.

7. MASONRY REINFORCING :
   A. ALL WALLS SHALL HAVE (1) - #5 VERTICAL BAR IN SOLID GROUTED CORE SPACED AT 16" O.C.
   B. PROVIDE (1) - #6 VERTICAL BAR IN CORNERS.
   C. PROVIDE (2) - #5 VERTICAL BAR ON EACH SIDE OF DOORS AND WINDOW OPENINGS.

CAST-IN-PLACE CONCRETE

1. THE DETAILING, BENDING, AND PLACING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI STANDARD 350-06/350R-06 CODE AND ACI DETAILING MANUAL, SP-66 (94). FIELD BENDING WILL NOT BE PERMITTED UNLESS APPROVED BY ENGINEER

2. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.

3. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI @ 28 DAY UNLESS OTHERWISE NOTED

4. STEEL REINFORCING SHALL NOT BE SPLICED AT POINTS OTHER THAN SHOWN ON THE PLANS, EXCEPT AS APPROVED BY THE ENGINEER, UNLESS NOTED OTHERWISE.

5. WATERSTOPS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS, CONTROL JOINTS AND EXPANSION JOINTS (UNLESS NOTED OTHERWISE).

6. ALL STIRRUPS AND TIES SHALL BE CLOSED TYPE WITH 135 DEGREE HOOKS, U.N.O.

7. ALL COLD JOINTS IN CONCRETE STRUCTURES SHALL HAVE A CONTINUOUS WATERSTOP CREATING A WATERTIGHT JOINT AS DETAILED. WHERE NOT SPECIFIED ALL COLD JOINTS SHALL HAVE A HYDROPHILIC WATERSTOP PER SPECIFICATIONS.

8. THE LENGTH OF ALL LAP SPLICES SHALL BE AS SPECIFIED IN "REINFORCING TENSION SPLICE TABLE" ON THIS SHEET UNLESS OTHERWISE INDICATED IN DRAWINGS. WHEN BARS OF DIFFERENT SIZE ARE BEING LAPPED, THE LENGTH SHALL BE THE SPECIFIED LAP LENGTH OF THE LARGER BAR.

9. BOTTOM AND TOP REINFORCING BARS FOR ALL DISCONTINUOUS ENDS OF BEAMS AND SLABS SHALL HAVE HOOKS AND SPLICES CONFORMING TO ACI MANUAL OF STANDARD PRACTICE.

10. ALL NEW TO EXISTING CONCRETE SHALL HAVE A CONTINUOUS HYDROPHILIC RUBBER WATERSTOP (TYP. U.N.O.)

11. ALL FILLET AND TOPPING CONCRETE SHALL BE HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 6000 PSI. FILLET CONCRETE, SHALL BE PLACED TO PRODUCE CONTOURS INDICATED ON PLANS, AND SHALL RECEIVE SMOOTH FLOAT FINISH.

12. CONCRETE COVER OVER REINFORCEMENT SHALL BE 2 INCHES MINIMUM, UNLESS NOTED OTHERWISE, AND 3-INCHES MINIMUM WHERE CAST AGAINST EARTH.

PRECAST CONCRETE

1. DESIGN OF PRECAST MEMBERS (ROOF PLANKS) SHALL CONFORM TO ACI 318-14 AND SHALL BE PRESTRESSED TO SUSTAIN THE SUPERIMPOSED LOADS INDICATED.

2. ALL PRECAST, PRESTRESSED ROOF PLANKS SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT RELEASE OF PRESTRESS CABLES AND 5000 PSI AT 28 DAYS.

3. PROVIDE 1/2" THICK BEARING PADS WHERE INDICATED.

4. ALL PRE-STRESSED STRANDS SHALL BE UNCOATED, 7 WIRE LOW RELAXATION STRANDS CONFORMING TO ASTM A4 16.

5. PRECAST MANUFACTURER SHALL DESIGN PRECAST HOLLOW CORE ROOF PLANK SYSTEM INCLUDING ALL REQUIRED STEEL HANGERS, WHICH SHALL BE HOT DIPPED GALVANIZED STEEL. DESIGN CALCULATION FOR ALL PRECAST MEMBERS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN AND SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION.

METALS

STEEL

1. STRUCTURAL STEEL AND MISCELLANEOUS METALS DESIGN SHALL CONFORM TO THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC/ANSI 360.

2. ALL STRUCTURAL STEEL W AND WT SHAPES SHALL CONFORM TO ASTM A-992, GRADE 50. MISCELLANEOUS METALS SHALL CONFORM TO ASTM A-36.

3. BOLTS SHALL BE A MINIMUM 3/4" DIAMETER, ASTM A325N, TYPE 1, GALVANIZED, UNLESS NOTED OTHERWISE. PROVIDE COMPATIBLE A563 GRADE DH, HEAVY HEX NUTS, AND F436 GRADE 1 WASHERS.

4. ALL GALVANIZED STEEL SHALL BE HOT-DIP GALVANIZED CONFORMING TO ASTM A123, UNO.

5. ALL STAINLESS STEEL BEAMS AND MISCELLANEOUS SHAPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A1637 TYP 316/316L GRADE A OR BETTER, HOT ROLLED AND ANNEALED FINISH.

FIBER REINFORCED PLASTICS

1. FRP COVER PANEL SHALL BE 3-INCH DEEP COMPOSOLITE (OR APPROVED EQUAL). ALL EXPOSED SIDES, ENDS, AND OPENINGS SHALL BE CAPPED WITH A CONTINUOUS 3 1/2" X 2" X 1/4" FRP CHANNEL.

2. CONNECTIONS FOR FRP MEMBERS, INCLUDING FRP COVER SHALL BE TYPE A 316 STAINLESS STEEL PLATES, ANGLES AND FASTENERS.

STRUCTURAL ABBREVIATIONS

ALT	ALTERNATE	HPC	HIGH PERFORMANCE COATING
ALUM	ALUMINUM	HK	HOOK
B	BOTTOM	HT	HEIGHT
BLDG	BUILDING	ID	INSIDE DIAMETER
BM	BEAM	IE	INVERT ELEVATION
BSMT	BASEMENT	IF	INSIDE FACE
CJ	CONSTRUCTION JOINT	IN	INCHES
CL	CENTERLINE	INT	INTERIOR
CLR	CLEAR	JT	JOINT
COL	COLUMN	KIP	THOUSAND POUNDS
CONC	CONCRETE	KSI	KIPS PER SQUARE INCH
CONST	CONSTANT	KB	KNEE BRACE
CONSTR	CONSTRUCTION	L	LENGTH
CONT	CONTINUOUS	LP	LOW POINT
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LGHT	LENGTH
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM
COR	CORNER	MIN	MINIMUM
CY	CUBIC YARD	MCP	MULTIPLE CORROSION PROTECTION
DBR	DOWEL BAR REPLACEMENT	MO	MASONRY OPENING
DET	DETAIL	NA	NOT APPLICABLE
DIA	DIAMETER	NF	NEAR FACE
DIAG	DIAGONAL	NS	NEAR SIDE
DISC	DISCONTINUOUS	NTS	NOT TO SCALE
DWLS	DOWELS	NIC	NOT IN CONTRACT
EJ	EXPANSION JOINT	OC	ON CENTER
EE	EACH END	OD	OUT SIDE DIAMETER
EF	EACH FACE	OF	OUT SIDE FACE
ES	EACH SIDE	OPNG	OPENING
EQ	EQUAL	PSF	POUNDS PER SQ. FEET
EW	EACH WAY	PSI	POUNDS PER SQUARE INCH
EA	EACH	PT	PRESSURE TREATED
EL	ELEVATION	REINF	REINFORCEMENT
EX	EXISTING	RE	REFER TO
EXT	EXTERIOR/ EXTENSION	REM	REMOVABLE
FC	FILLET CONCRETE	SHTS	SHEETS
FD	FLOOR DRAIN	SIM	SIMILAR
FF	FAR FACE	SJ	SLAB CONTROL JOINT
FS	FAR SIDE	SS	STAINLESS STEEL
FIN	FINISH	STIR	STIRRUPS
FL	FLOOR	STRUCT	STRUCTURAL
FND	FOUNDATION	T/	TOP
FT	FEET	TERS	TEMPORARY EARTH RETENTION SYSTEM
GALV	GALVANIZED	THK	THICK
GR	GRADE	TOS	ELEVATION TOP OF STRUCTURAL STEEL
GVW	GROSS VEHICLE WEIGHT	TYP	TYPICAL
H	HORIZONTAL	UNO	UNLESS NOTED OTHERWISE
HC	HOLLOW CORE	V	VERTICAL
HP	HIGH POINT	W	WIDTH
		WP	WORK POINT

REINFORCING TENSION SPLICE TABLE

BAR SIZE	TENSION LAP LENGTH	* TOP BARS
#3	16"	22"
#4	20"	29"
#5	24"	36"
#6	29"	43"
#7	42"	63"
#8	48"	72"
#9	54"	81"
#10	61"	91"
#11	67"	101"

NOTES

1. ABOVE TABLE IS FOR NORMAL WEIGHT CONCRETE; f'c=5,000 PSI AND REINFORCING STEEL; fy=60,000 PSI.

2. ALL SPLICES SHALL BE CONSIDERED TENSION SPLICES USING LAP LENGTHS IN TABLE ABOVE UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS.

3. LENGTHS ARE BASED ON LAP CLASS B SPLICES WITH CENTER TO CENTER SPACING OF BARS EQUAL TO OR GREATER THAN 6 DIAMETERS.

4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST UNDER THEM.

5. USE TENSION LAP LENGTHS FOR HORIZ & VERT. WALL BARS.

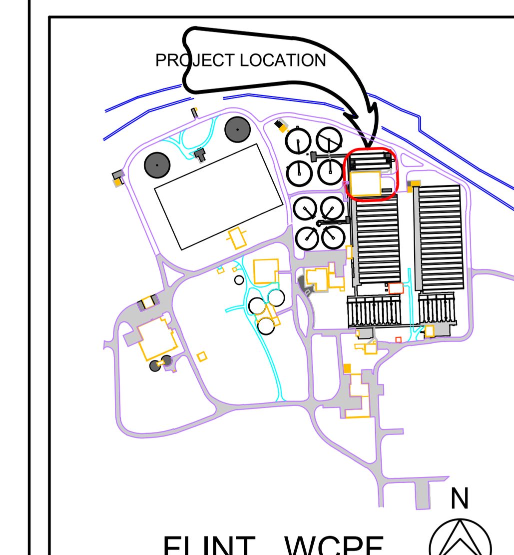
LOGO

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
www.hrcengr.com
WEB SITE: http: / / www.hrcengr.com

WADE TRIM
500 Griswold Avenue,
Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



KEY PLAN

PROJECT TITLE

CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

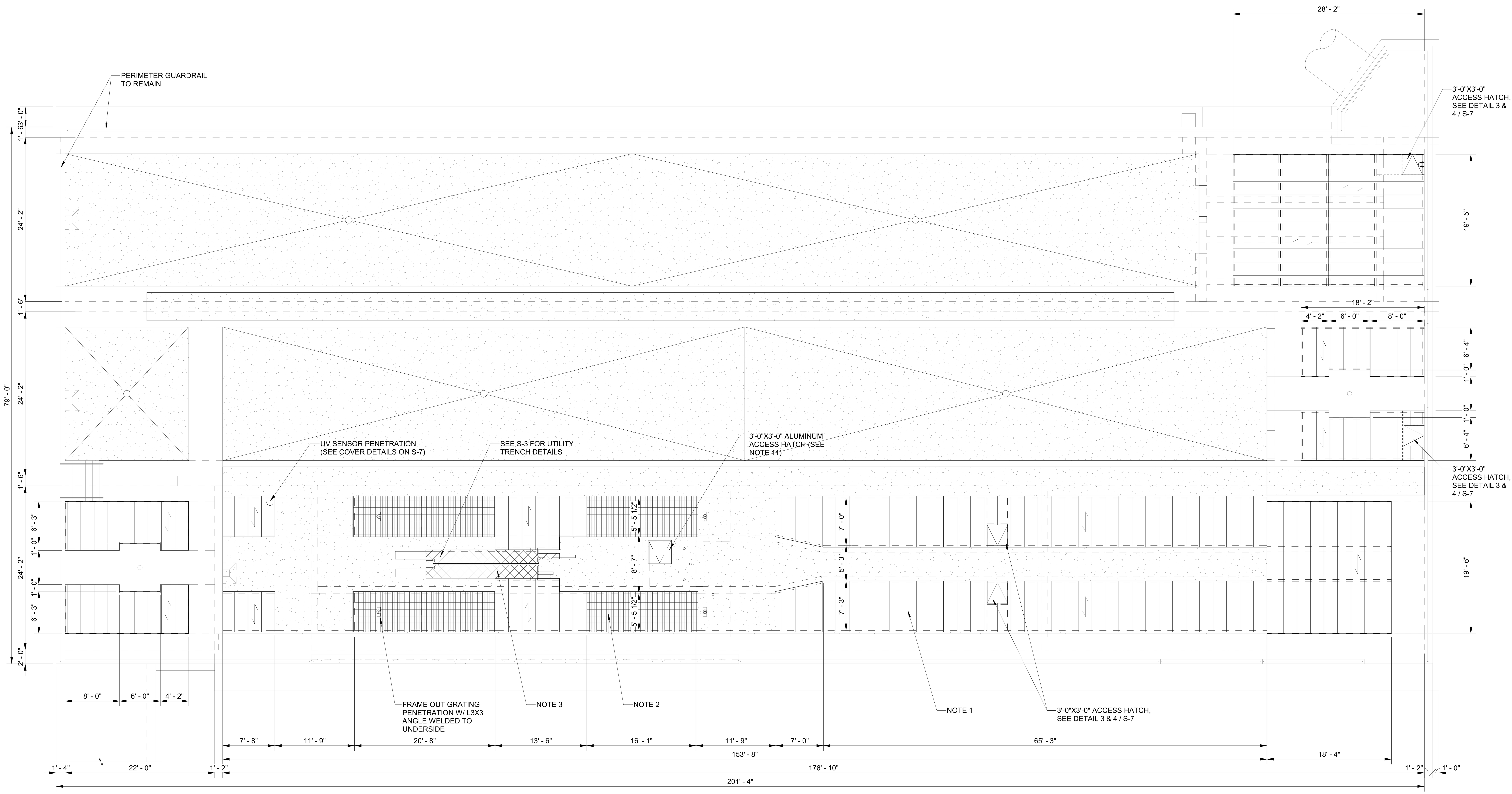
SHEET TITLE

GENERAL NOTES, LOADS, AND ABBREVIATIONS

WT JOB NO. HRC2002.01F	SCALE
DATE 5-7-2020	SHEET NO. S-0 OF

V:\d0997041\Flint UV_Struct R17-Geolocated.rvt

PLOTTED 5/6/2020 3:31:33 PM



COVER PLAN (EL 709.18-FT)

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

N

NOTES:

1. INDICATES 2'-0" WIDE X 3" THICK FRP COVER PANEL. SEE S-7 FOR SUPPORT DETAILS.
2. INDICATES 2" THICK STAINLESS STEEL BAR GRATING. SEE DETAIL 5 / S-8 FOR SUPPORT DETAILS.
3. INDICATES 5/16" ALUMINUM SLIP-RESISTANT CHECKERED FLOOR PLATE. SEE DETAIL 4 / S-8 FOR SUPPORT DETAILS.
4. HINGE SIDE OF HATCH → REPRESENTS HATCH IN FRP COVER SYSTEM. TYPICAL HATCH IS 3'-0"X3'-0" UNLESS OTHERWISE NOTED.
5. CONNECTIONS FOR FRP MEMBERS INCLUDING FRP "COVER" PANELS SHALL BE TYPE A316 STAINLESS STEEL (UNLESS NOTED OTHERWISE).
6. FRP "COVER" PANELS SHALL BE 3" DEEP COMPOSOLITE PANELS BY STRONGWELL OR APPROVED EQUAL.
7. ALL FRP MEMBERS SHALL BE EXTREN 625 SERIES BY STRONGWELL OR APPROVED EQUAL.
8. ALL FRP COMPOSITE PANELS SHALL BE CONSTRUCTED USING POLYESTER FIRE RETARDANT RESIN WITH ULTRA VIOLET PROTECTION.
9. ALL FRP COVERS SHALL RECEIVE A MEDIUM GRIT, NON-SLIP COATING TO THE EXPOSED TOP SURFACE BY THE FRP SUPPLIER (UNLESS NOTED OTHERWISE).
10. ACCESS HATCH SHALL BE DESIGNED FOR 300 PSF LIVE LOAD. ROUTE FRAME DRAINAGE LINE TO ADJACENT CHANNEL.

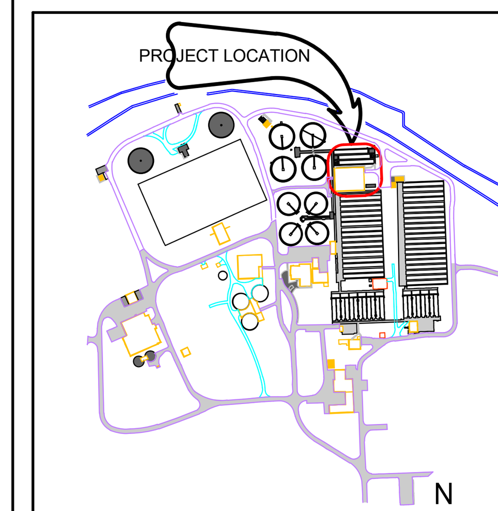
V:\d0997041\Flint UV_Struct R17-Geolocated.rvt

LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
www.hrcengr.com
WEB SITE: http: / / www.hrcengr.com

WADE TRIM
500 Griswold Avenue, Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

5/7/2020	Final EGLE Submittal
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



FLINT WCPF

KEY PLAN

PROJECT TITLE

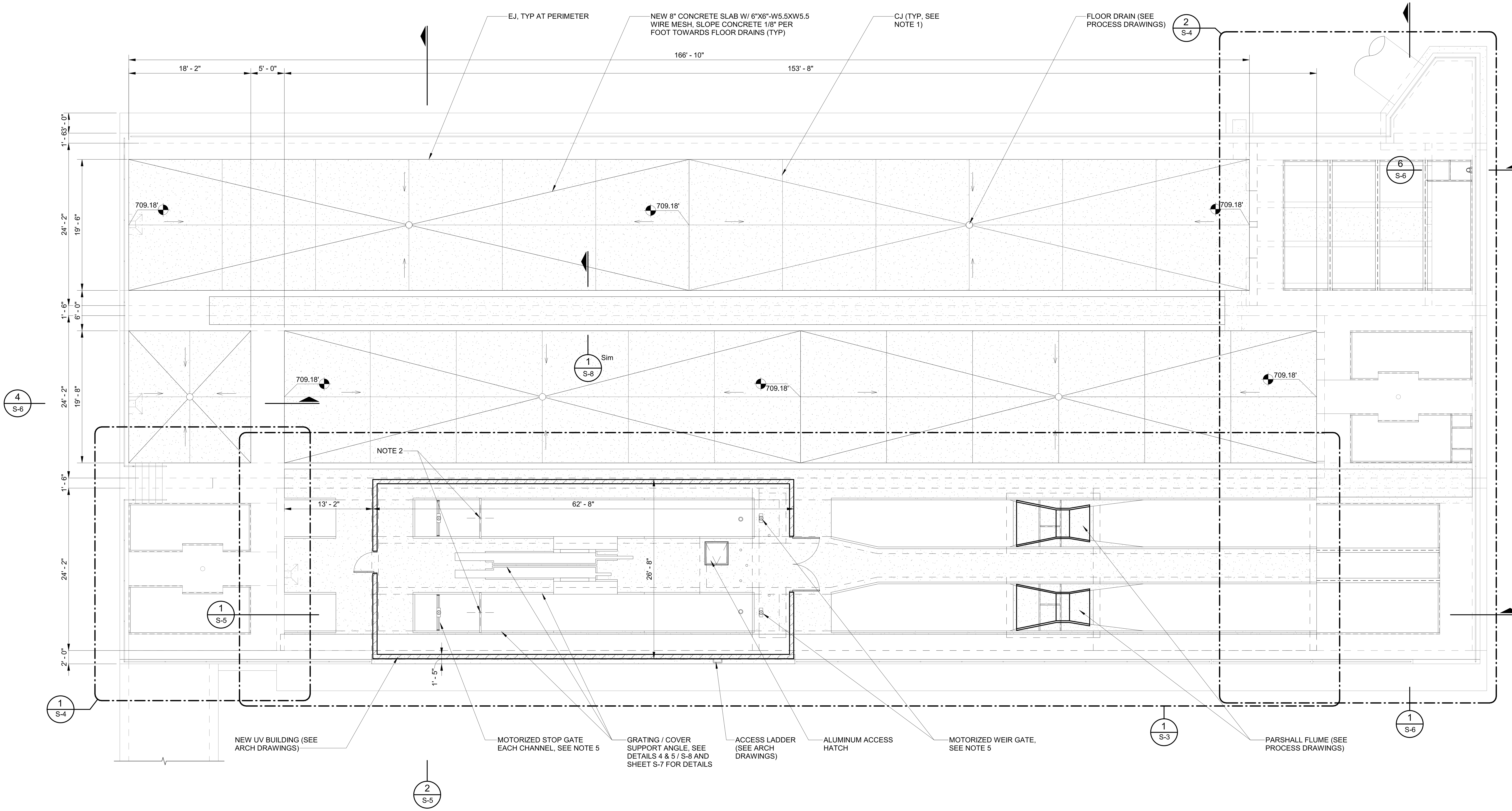
CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE

COVER PLAN

WT JOB NO.	SCALE
HRC2002.01F	
DATE 5-7-2020	SHEET NO. S-1 OF



OVERALL PLAN (EL 709.18-FT)
SCALE: 1/8" = 1'-0"

N

NOTES:

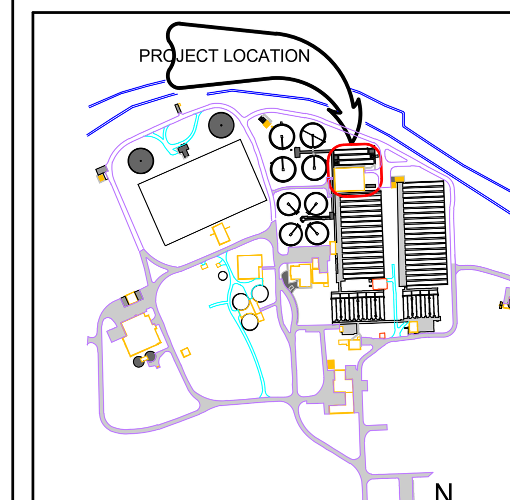
1. CJ STANDS FOR CONSTRUCTION JOINT OR CONTROL JOINT. USE CONTROL JOINT SPACING OF 15-FT MAX AND CONSTRUCTION JOINT SPACING OF 40 FT MAX. SEE DETAILS 12 & 13 / S-9 FOR TYPICAL JOINT DETAILS.
2. EYE SUPPORT FOR FUTURE ALGAE SCREEN, CENTERED IN CHANNEL, SUPPORTED FROM PRECAST HOLLOW CORE ROOF PLANKS. SEE DETAIL 9 ON S-8 AND ROOF PLAN ON A-2.
3. PRECAST CONCRETE ROOF PLANKS SHALL BE DESIGNED FOR THE FOLLOWING SUPERIMPOSED LOADS (LOADS IN ADDITION TO THE DEAD WEIGHT OF THE PANELS):
   A. DEAD LOADS - 15 LBS PER SQUARE FOOT
   B. ROOF LIVE LOAD - 30 LBS PER SQUARE FOOT
   C. EYE SUPPORT LOADS - 500 LB @ LOCATIONS INDICATED, SEE NOTE 2.
4. PRECAST MANUFACTURER SHALL DESIGN PRECAST HOLLOW CORE ROOF PLANK SYSTEM. EYE SUPPORT OR ANY ADDITIONAL STEEL CONSTRUCTION RELATING TO THE ROOF SYSTEM SHALL BE TYPE 316 STAINLESS STEEL OR GALVANIZED. DESIGN CALCULATIONS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN.
5. PROVIDE 7" WIDE X 3" DEEP BLOCKOUT IN WALLS & BASE SLAB FOR GATE INSTALLATION. CONTRACTOR TO COORDINATE BOX OUT LOCATIONS WITH MFR. APPROVED SHOP DRAWINGS. SEE SHEET P-5 FOR ADDITIONAL DETAILS.

CITY of FLINT
MICHIGAN
LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue, Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

5/7/2020	Final EGLE Submittal
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



FLINT WCPF
KEY PLAN

PROJECT TITLE

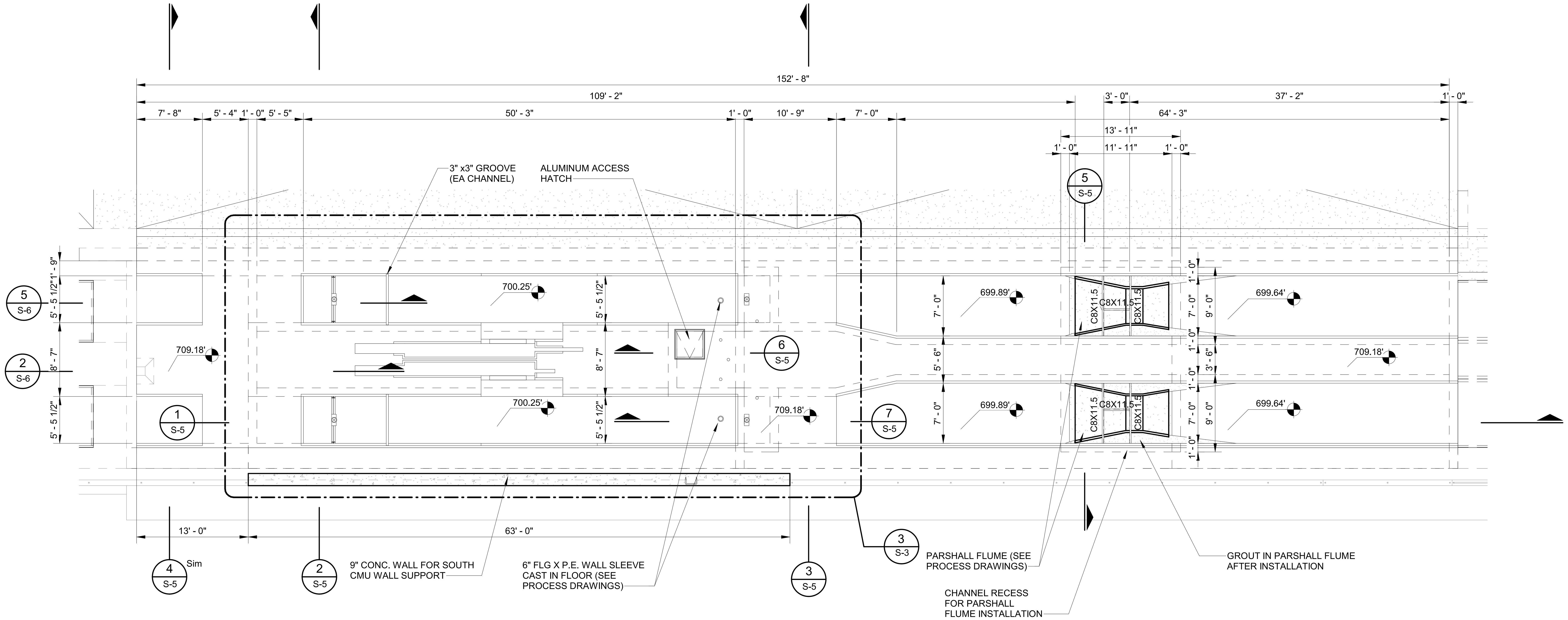
CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

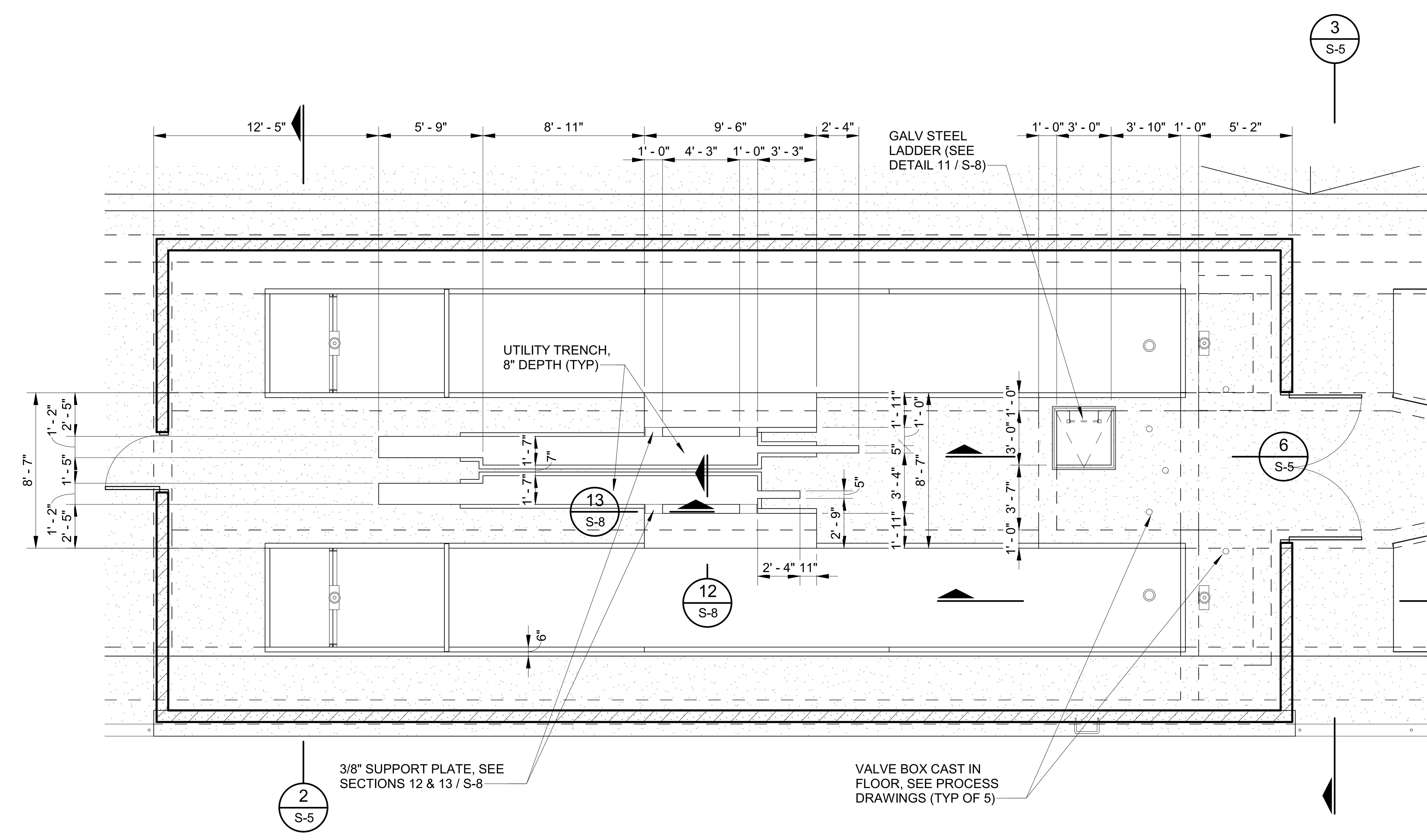
SHEET TITLE

OVERALL PLAN

WT JOB NO. HRC2002.01F	SCALE
DATE 5-7-2020	SHEET NO. S-2 OF



1 S-2 CHANNEL PLAN
SCALE: 1/8" = 1'-0"



3 S-3 UTILITY TRENCH DETAIL
SCALE: 3/16" = 1'-0"

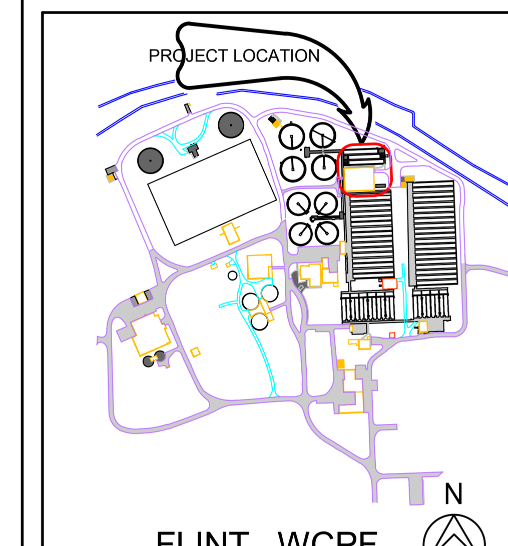
LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
P.O. BOX 824
48303 - 0824
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue,
Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



KEY PLAN

PROJECT TITLE

CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

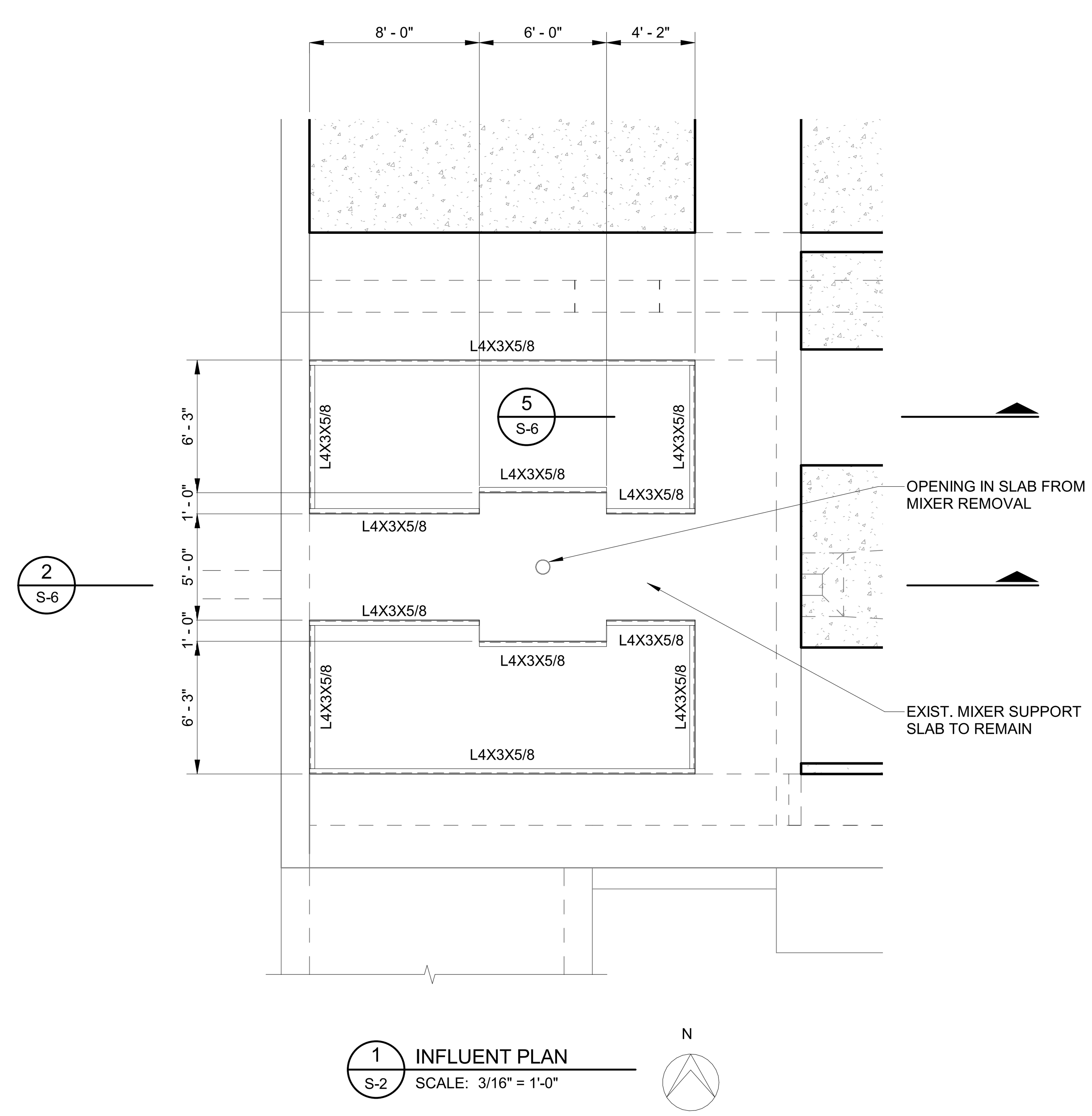
SHEET TITLE

CHANNEL PLAN

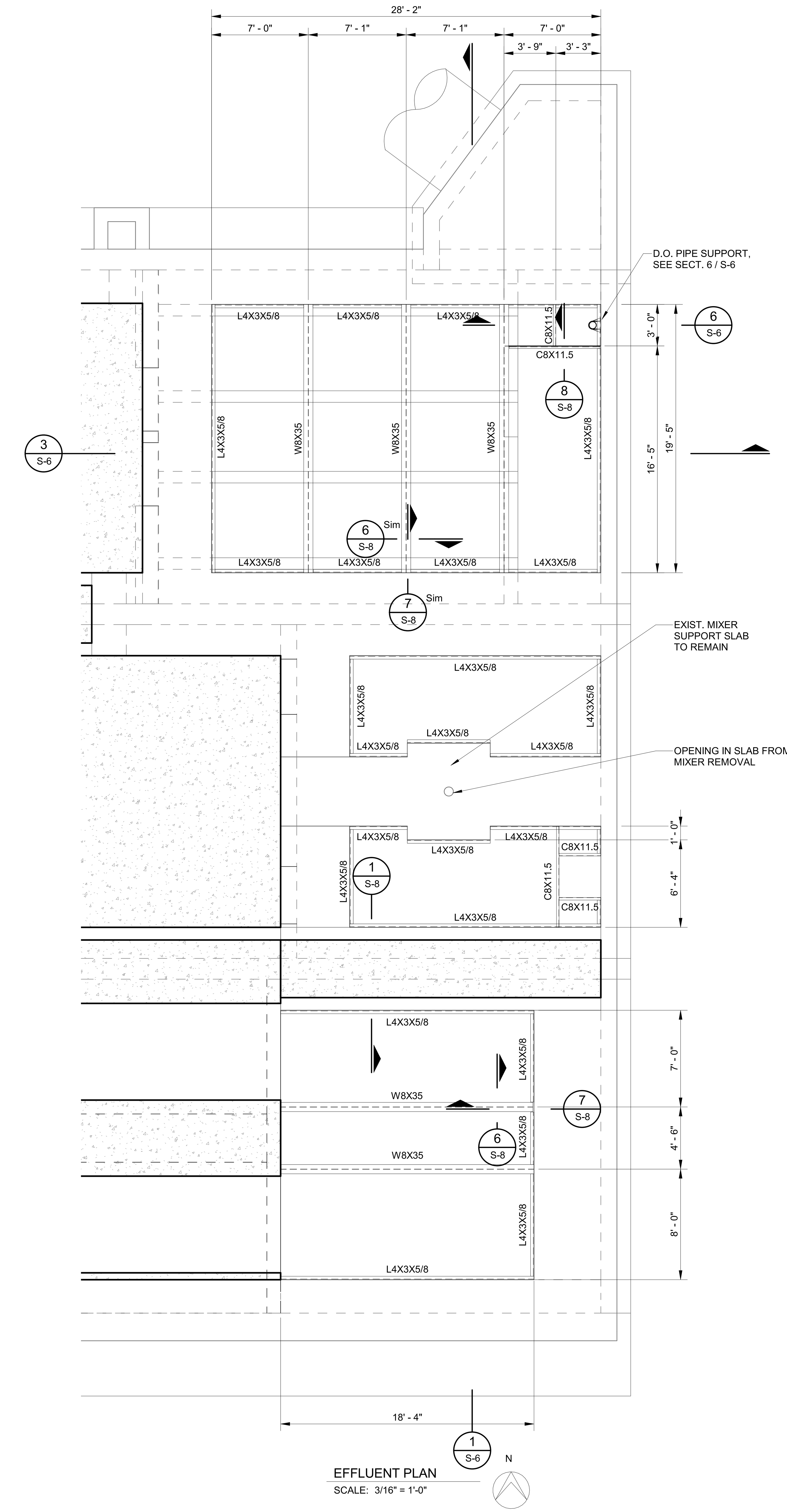
WT JOB NO.	SCALE
HRC2002.01F	
DATE 5-7-2020	SHEET NO. S-3 OF

NOTES:

1. SEE DETAIL 7 / S-7 AND DETAILS 6 & 7 / S-9 FOR FRAMING SUPPORT DETAILS.
2. DESIGN LIVE LOAD = 150 PSF.
3. ALL STEEL SUPPORT FRAMING TO BE HOT-DIP GALVANIZED.
3. SEE S-1 FOR PLAN OF COVER SYSTEM AND SHEETS S-7 AND S-9 FOR COVER DETAILS.



1 S-2 INFLUENT PLAN
SCALE: 3/16" = 1'-0"



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

LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
www.hrcengr.com
WEB SITE: http: / / www.hrcengr.com

WADE TRIM
500 Griswold Avenue, Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER

KEY PLAN
PROJECT LOCATION
FLINT WCPF

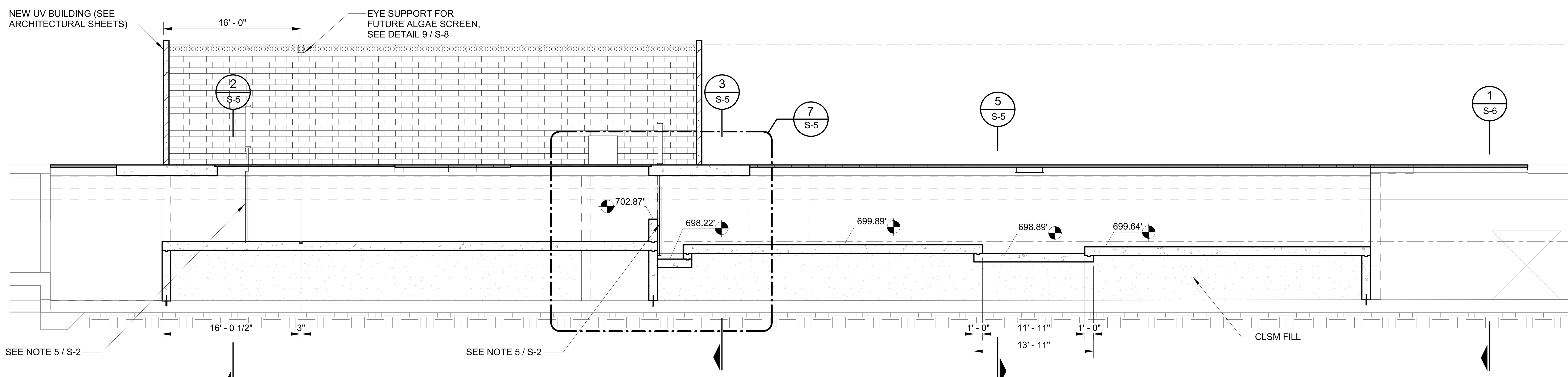
PROJECT TITLE
CITY OF FLINT
FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE
INFLUENT / EFFLUENT PLAN

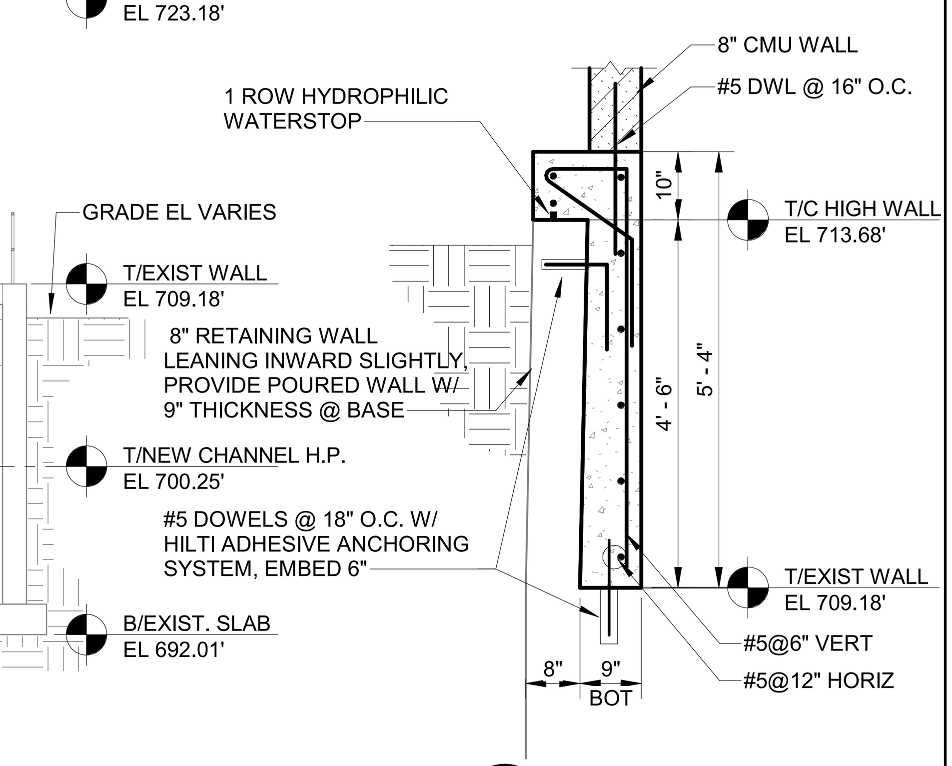
WT JOB NO. HRC2002.01F
SCALE
DATE 5-7-2020
SHEET NO. S-4 OF

PLOTTED 5/6/2020 3:31:35 PM

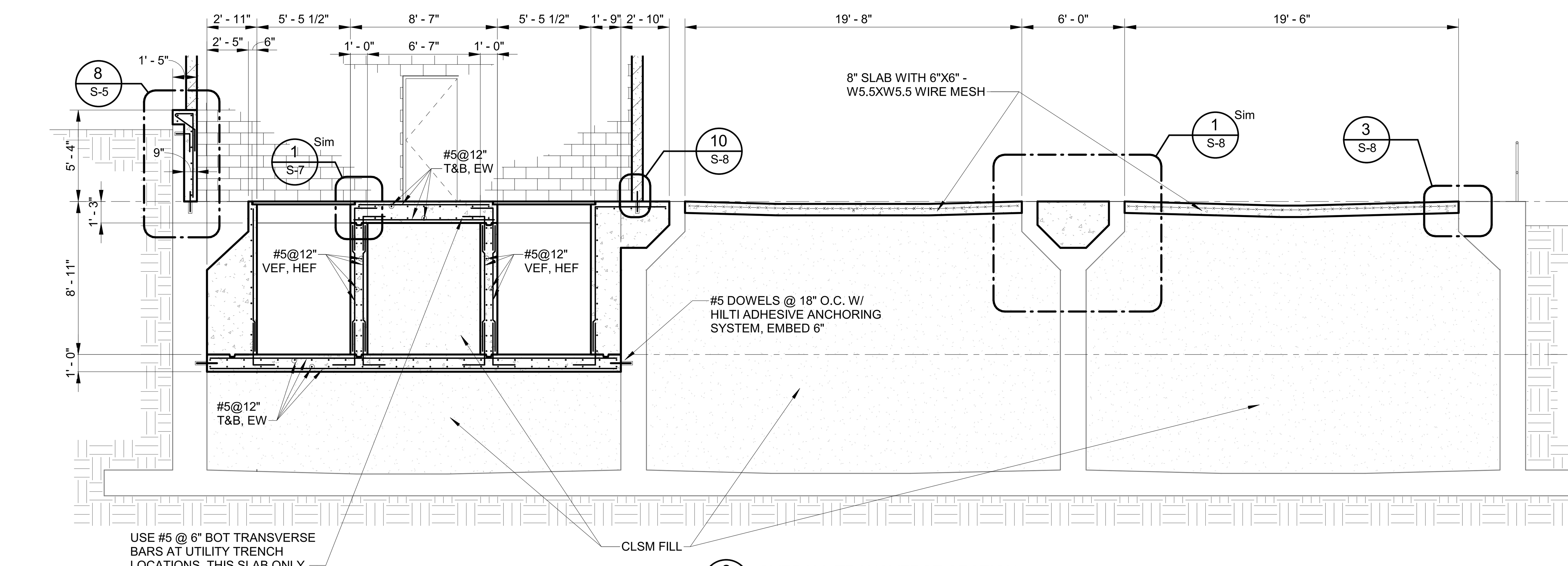
PLOTTED 5/6/2020 3:31:36 PM



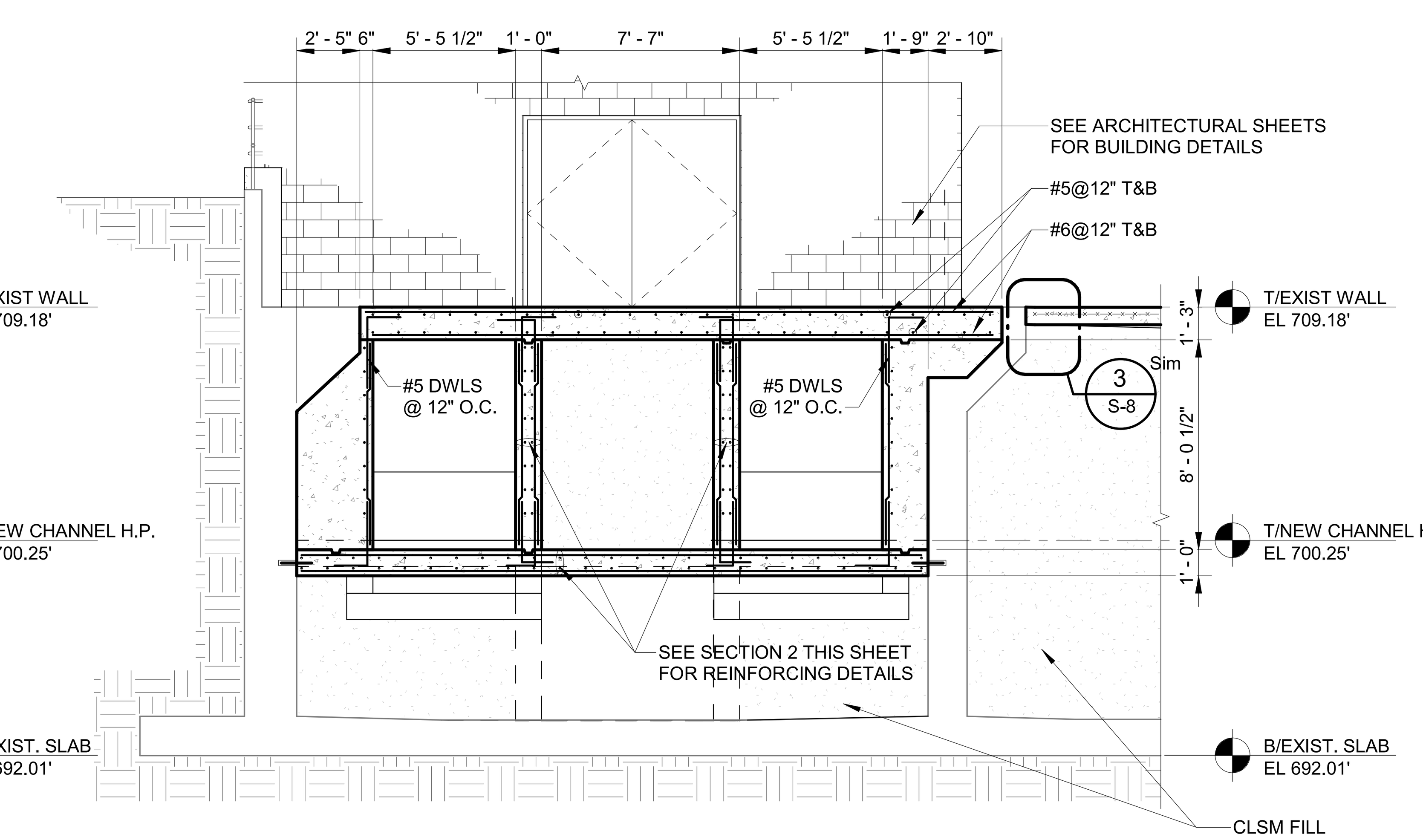
1 S-2 OVERALL LONGITUDINAL SECTION
SCALE: 1/8" = 1'-0"



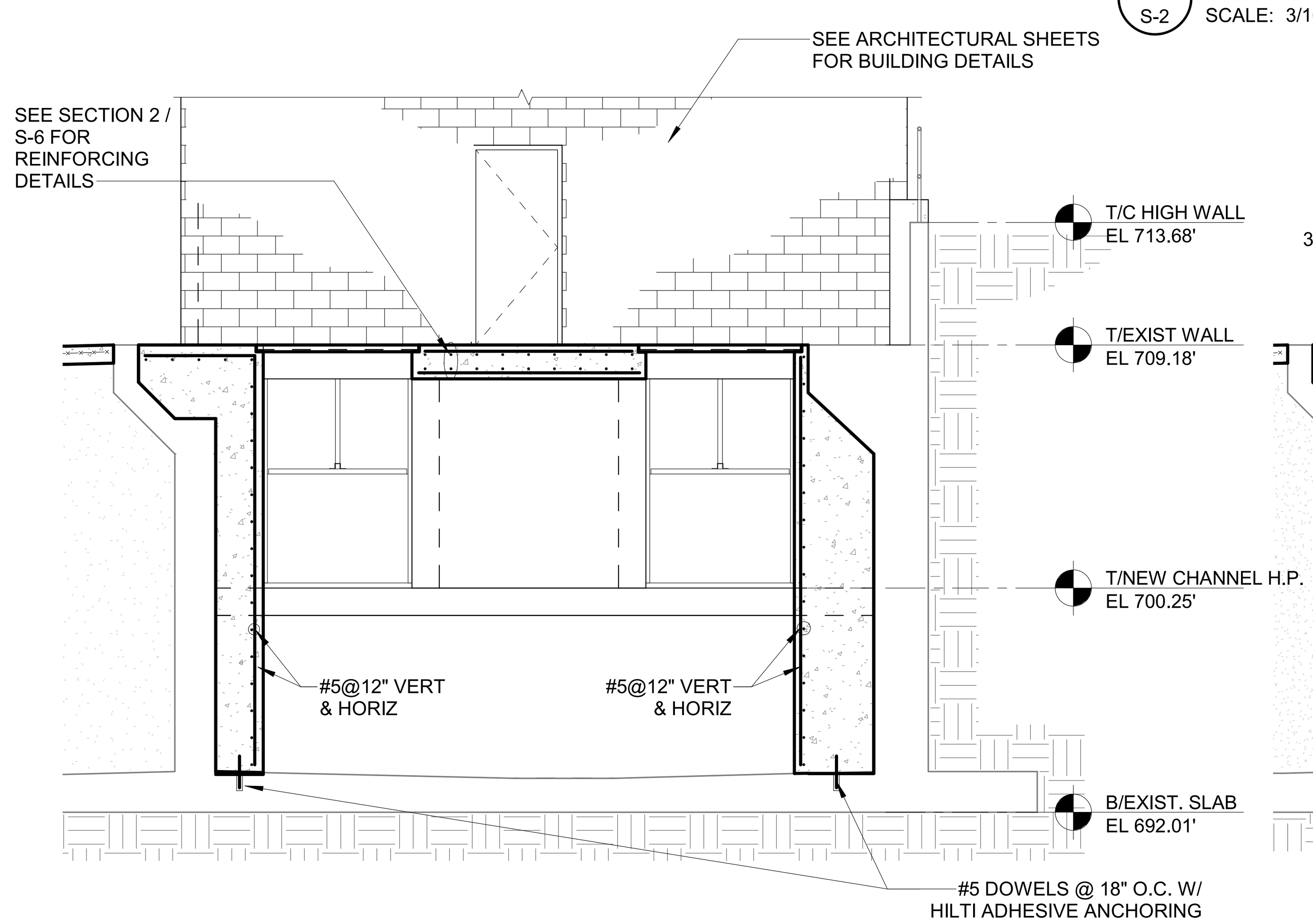
8 S-5 WALL DETAIL
SCALE: 1/2" = 1'-0"



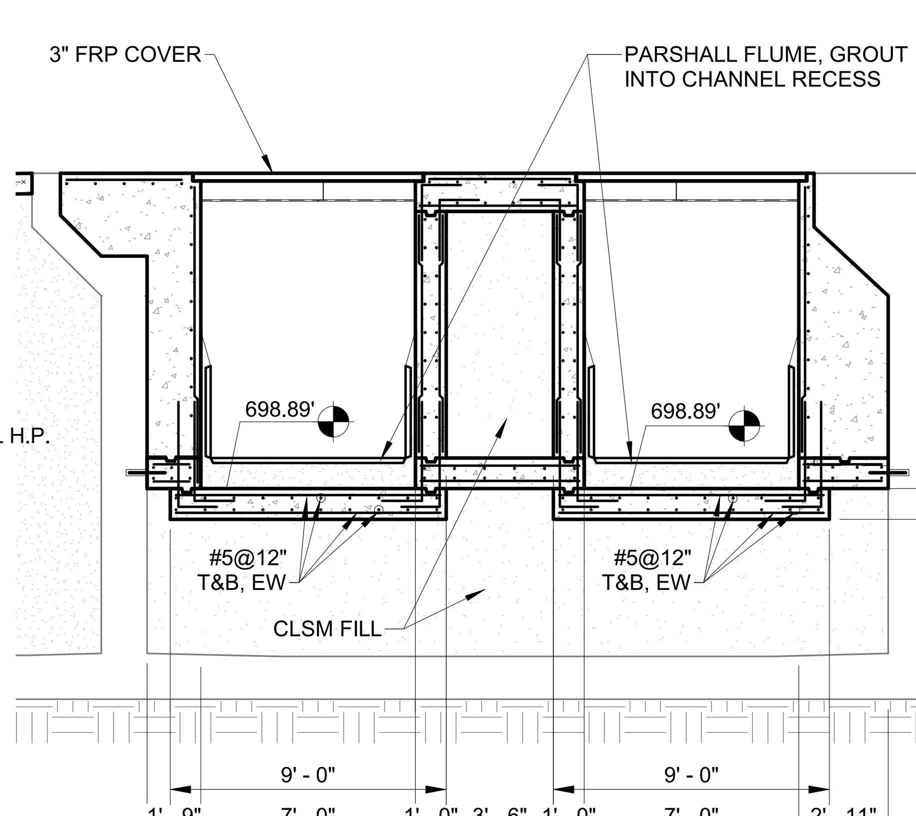
2 S-2 OVERALL TRANSVERSE SECTION
SCALE: 3/16" = 1'-0"



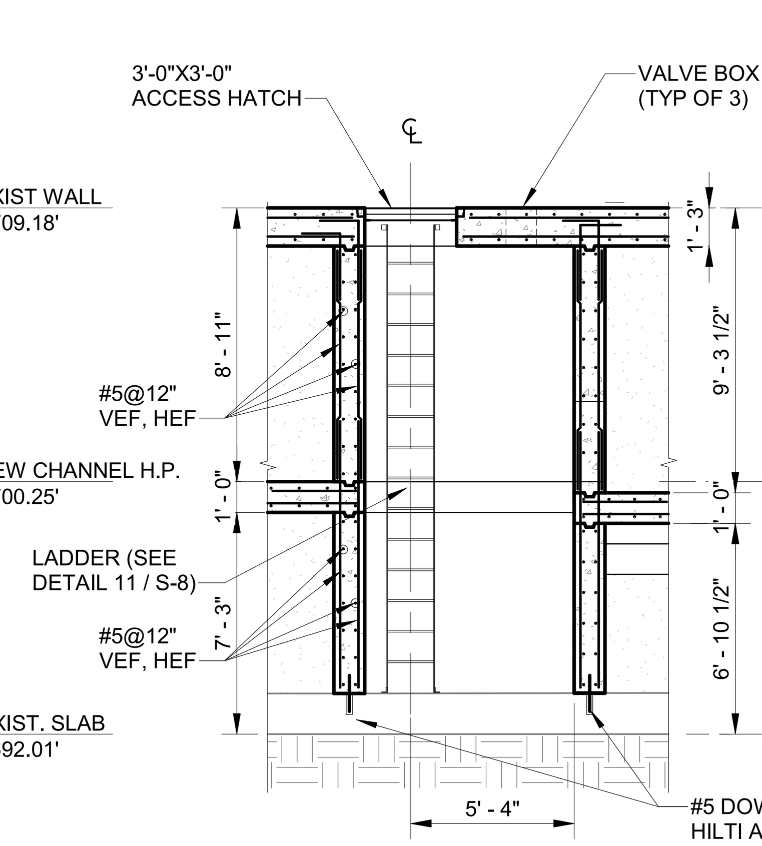
3 S-3 CHANNEL SECTION
SCALE: 3/16" = 1'-0"



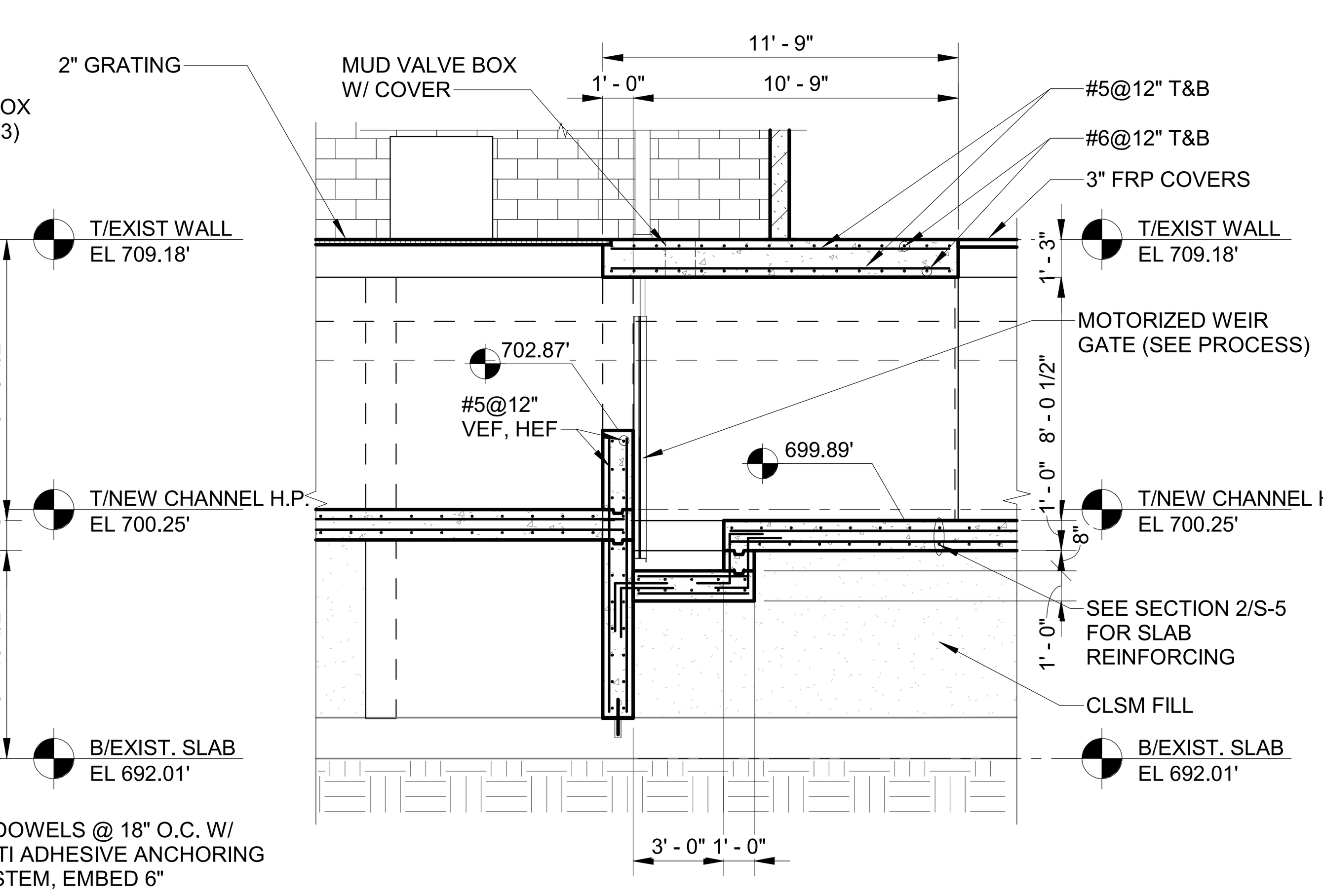
4 S-3 CHANNEL SECTION
SCALE: 3/16" = 1'-0"



5 S-3 FLUME SECTION
SCALE: 3/16" = 1'-0"



6 S-3 SECTION
SCALE: 3/16" = 1'-0"



7 S-3 BUILDING SUPPORT FRAMING
SCALE: 3/16" = 1'-0"

V:\0599704\Flint UV_Struct R17-Geolocated.rvt

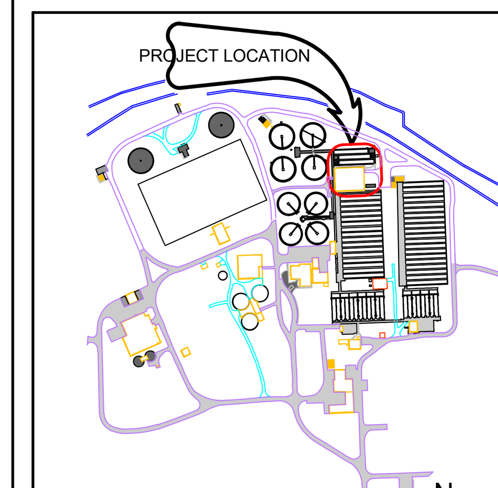
LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
www.hrcengr.com
WEB SITE: http: / / www.hrcengr.com

WADE TRIM
500 Griswold Avenue, Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



FLINT WCPF

KEY PLAN

PROJECT TITLE

CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE

CHANNEL SECTIONS

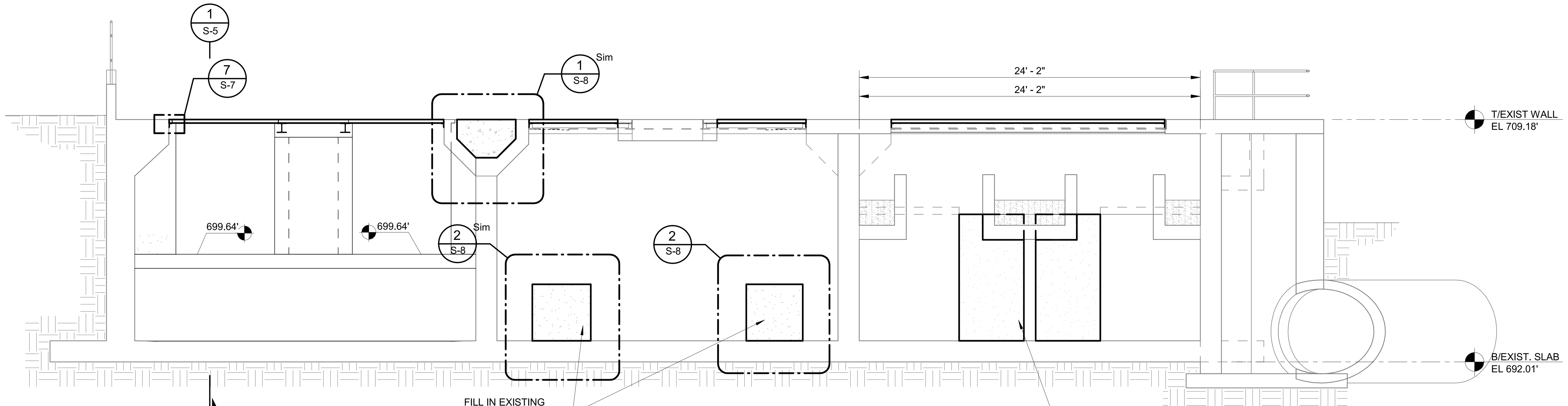
WT JOB NO. HRC2002.01F

SCALE

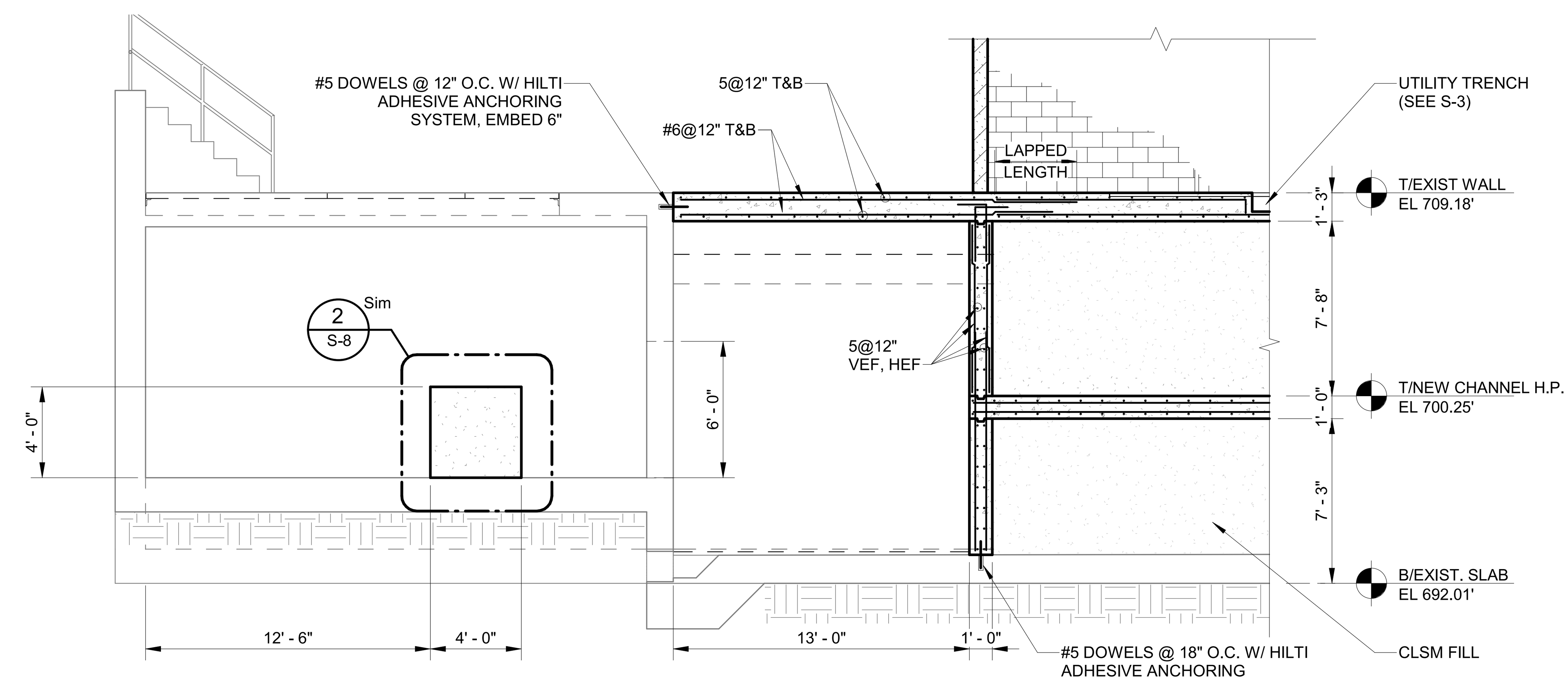
DATE 5-7-2020

SHEET NO. S-5

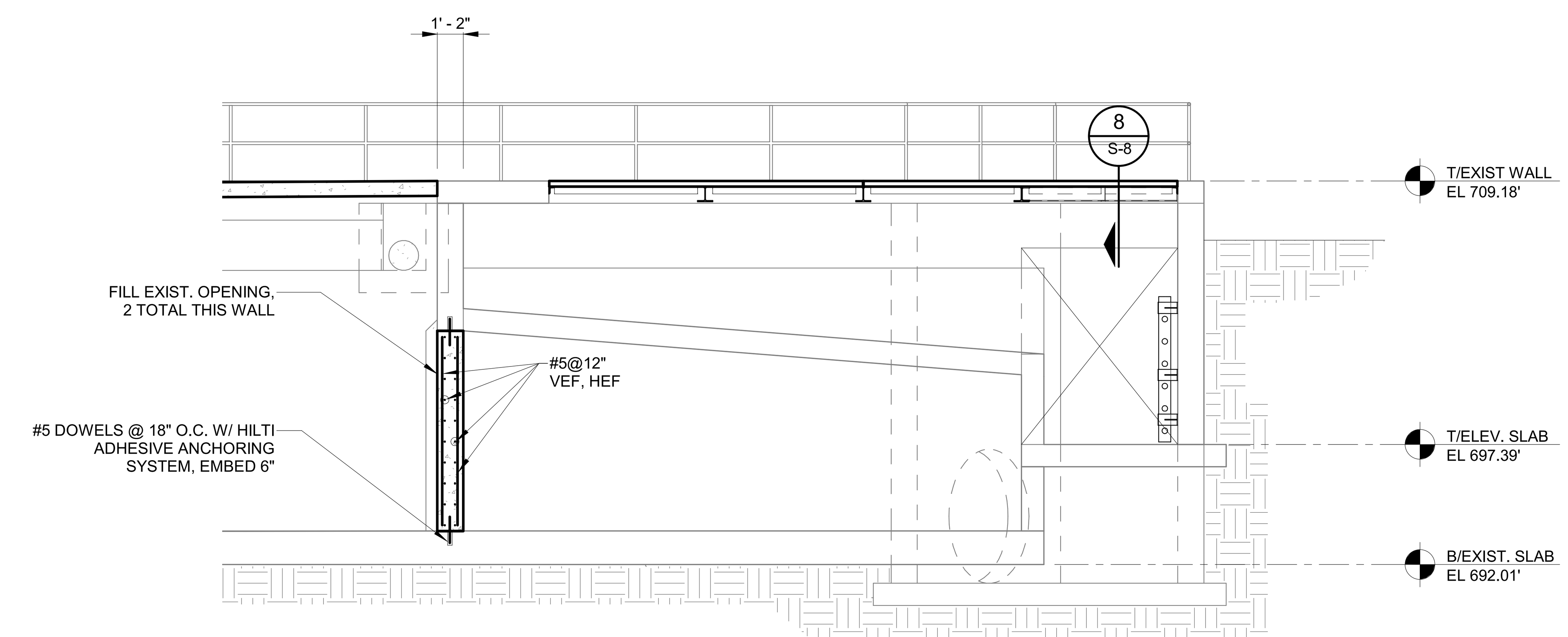
OF



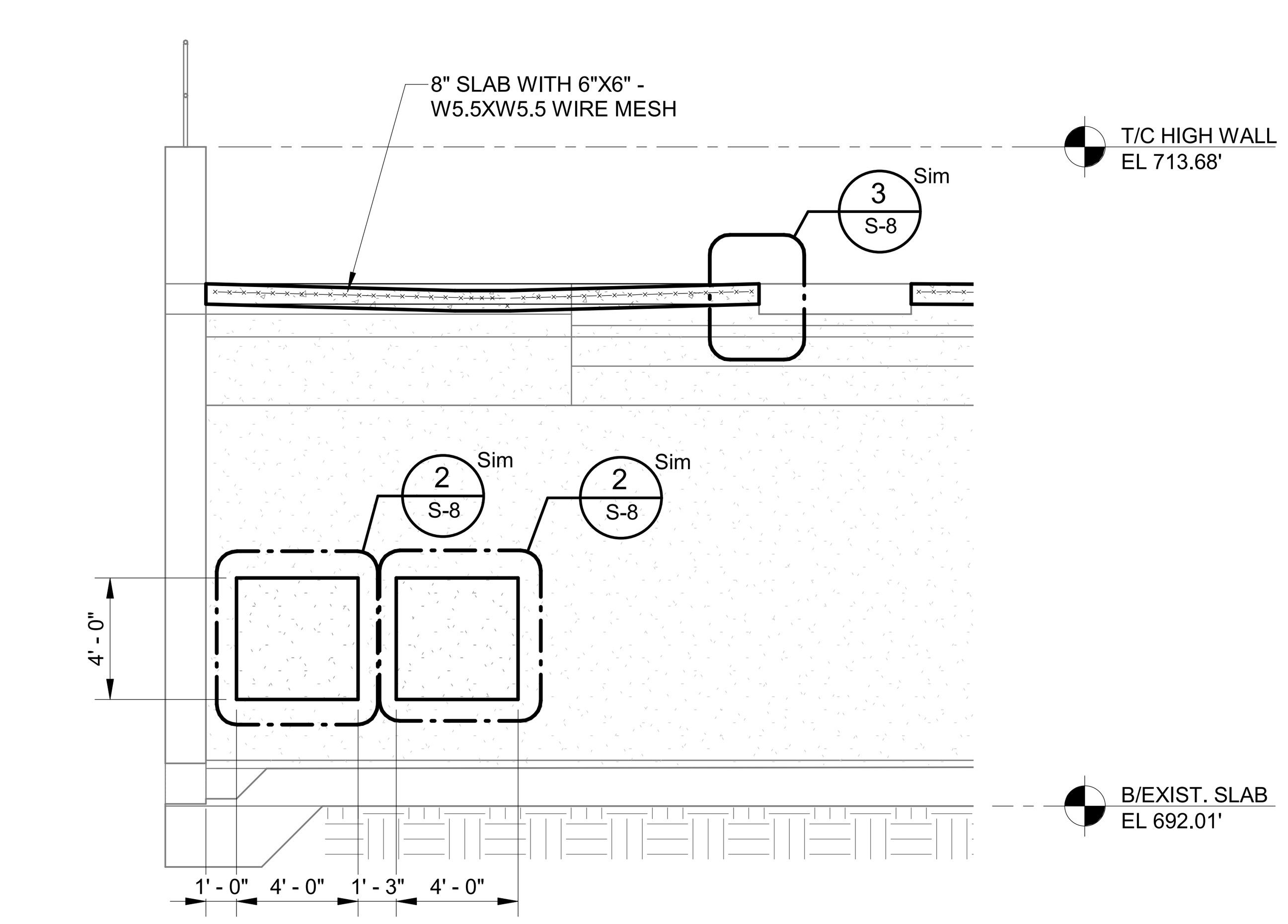
1 S-2 EFFLUENT SECTION
SCALE: 3/16" = 1'-0"



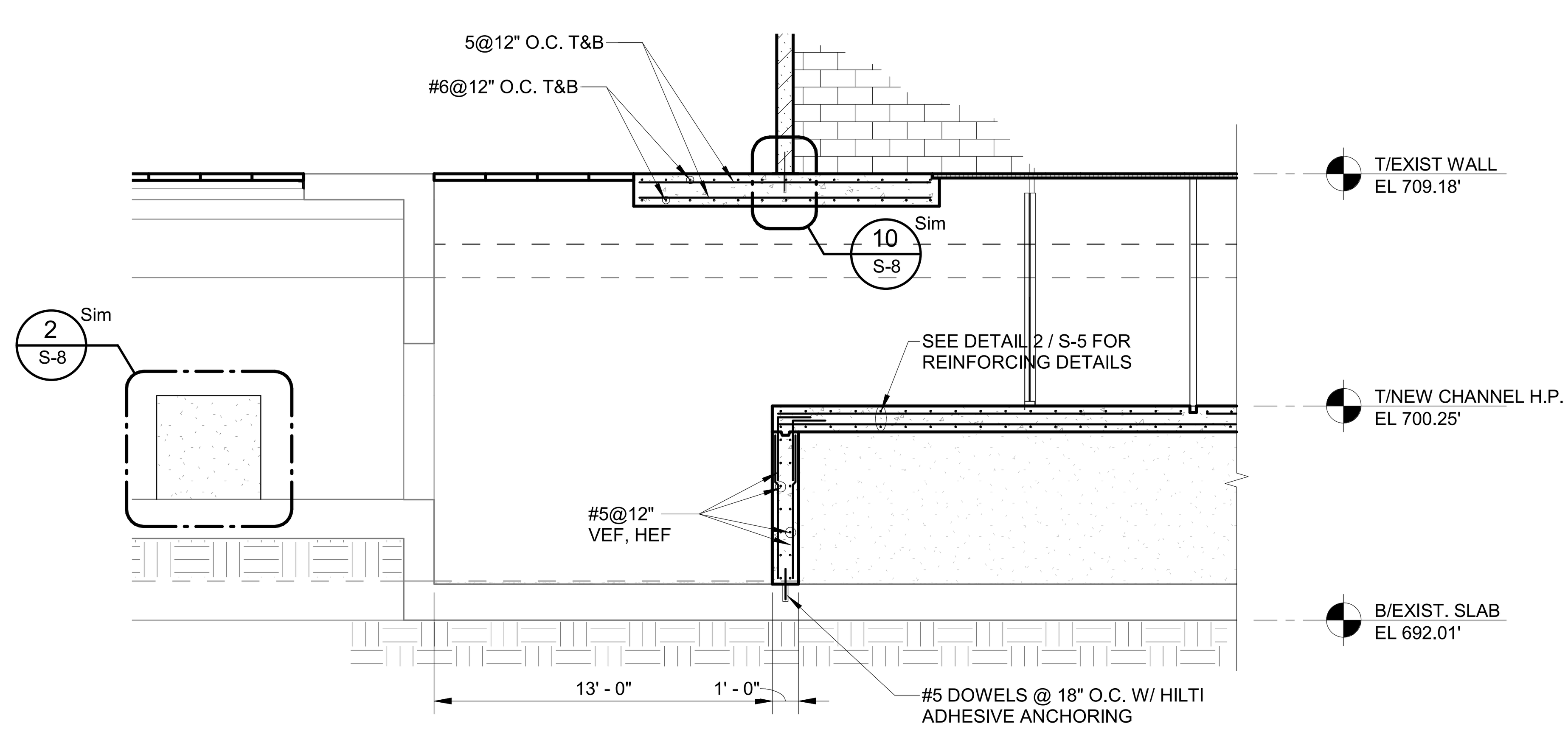
2 S-3 INFLUENT SECTION
SCALE: 3/16" = 1'-0"



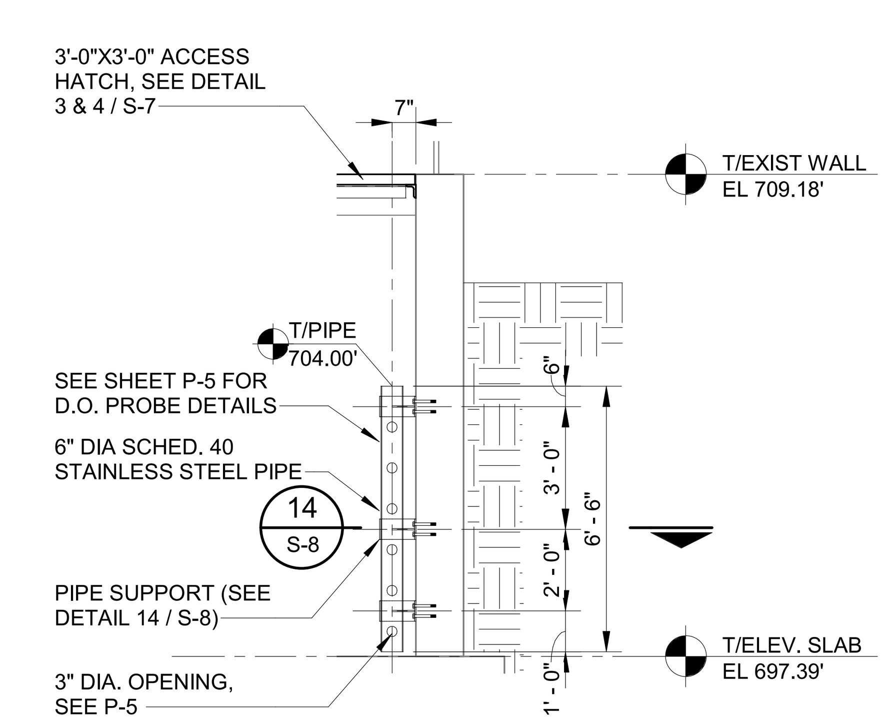
3 S-4 EFFLUENT SECTION
SCALE: 3/16" = 1'-0"



4 S-2 SECTION
SCALE: 3/16" = 1'-0"



5 S-3 INFLUENT CHANNEL SECTION
SCALE: 3/16" = 1'-0"



6 S-2 D.O. PROBE SUPPORT DETAIL
SCALE: 1/4" = 1'-0"

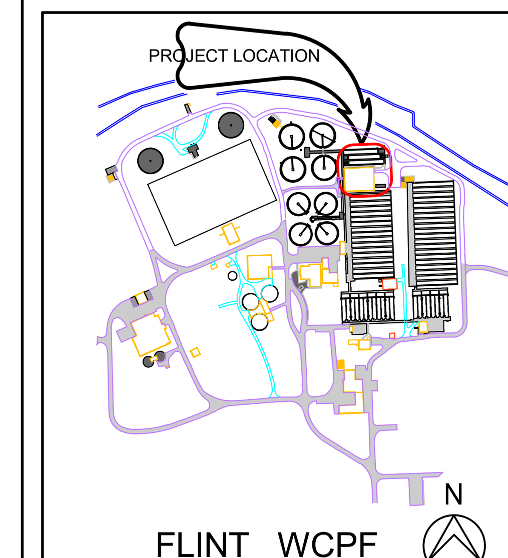
LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue,
Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



FLINT WCPF

KEY PLAN

PROJECT TITLE

CITY OF FLINT

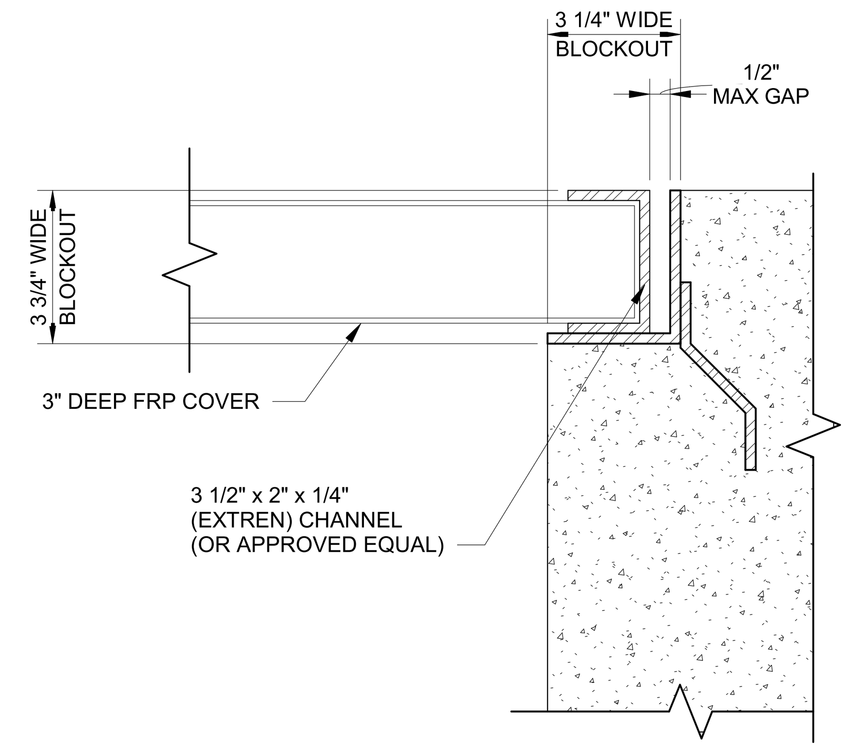
FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE

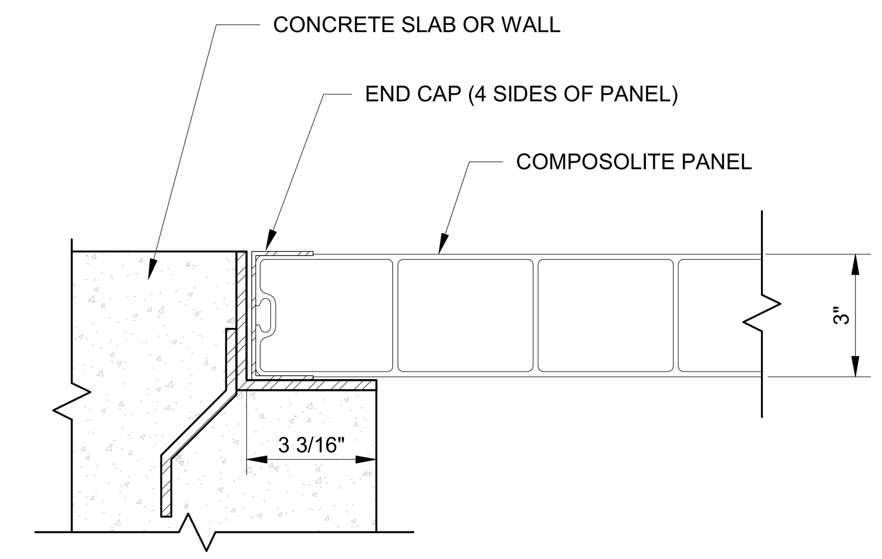
INFLUENT / EFFLUENT SECTIONS

WT JOB NO.	SCALE
HRC2002.01F	
DATE 5-7-2020	SHEET NO. S-6 OF

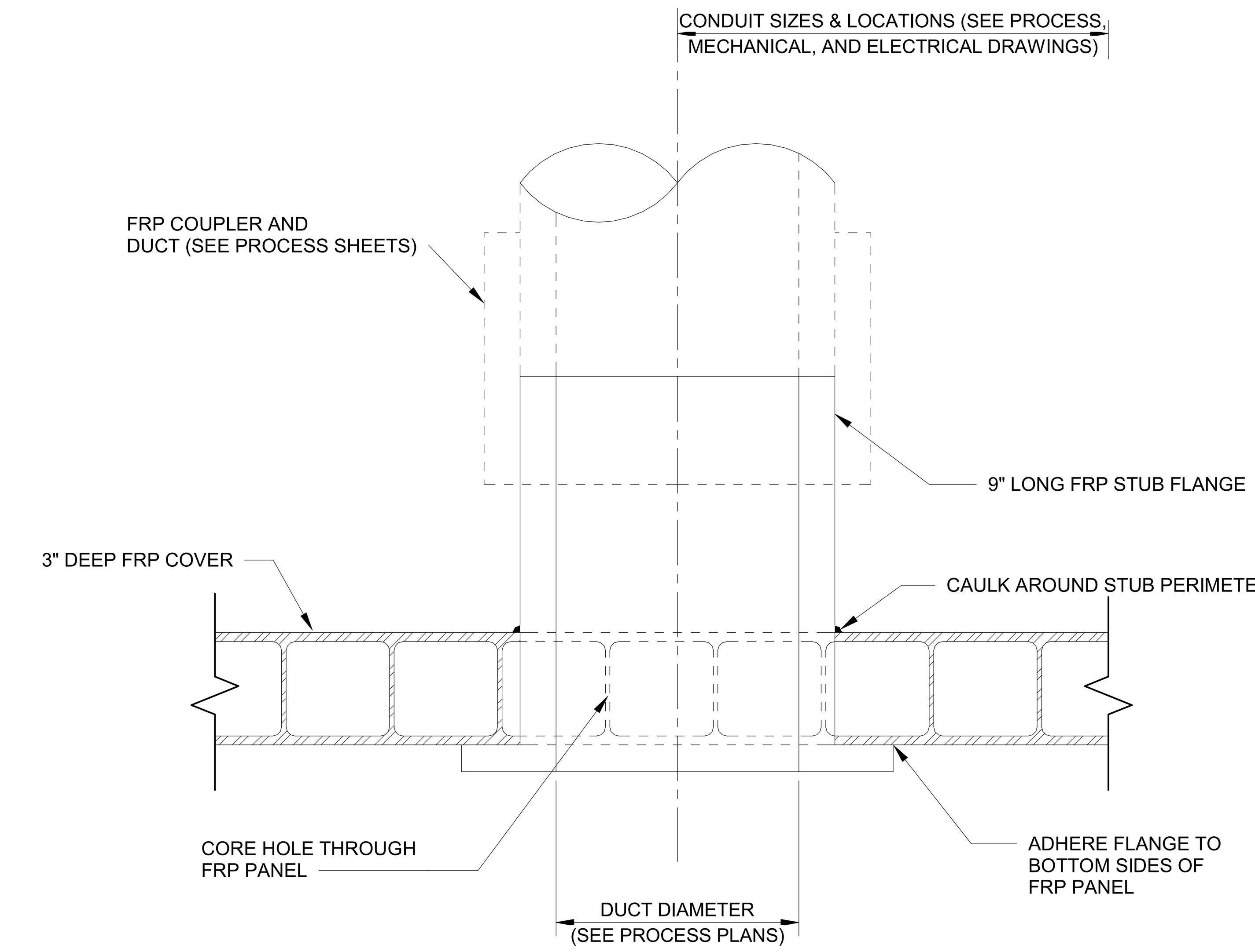
PLOTTED 5/6/2020 3:31:38 PM



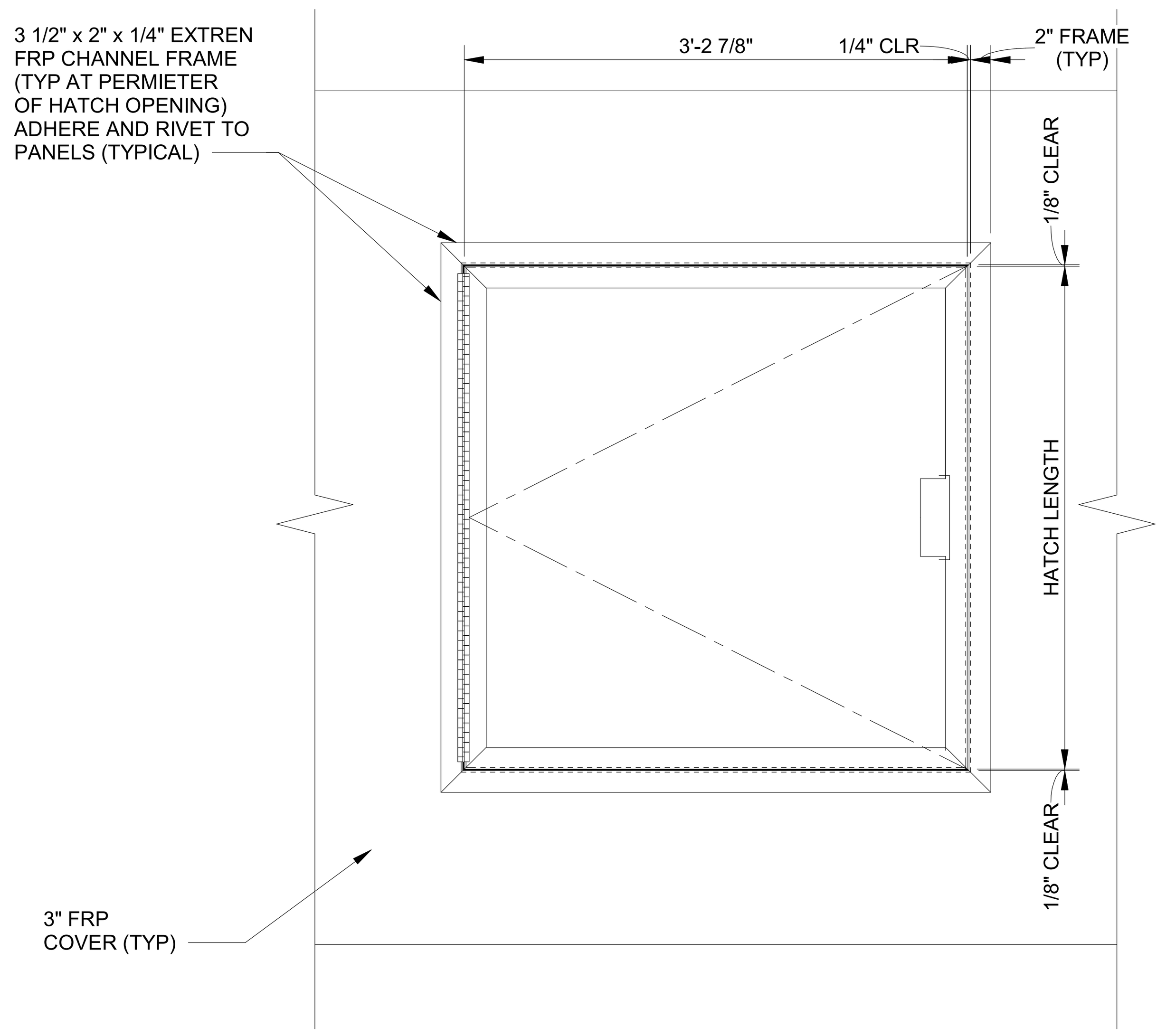
1 S-5 FRP COVER BEARING END DETAIL
SCALE: 3" = 1'-0"



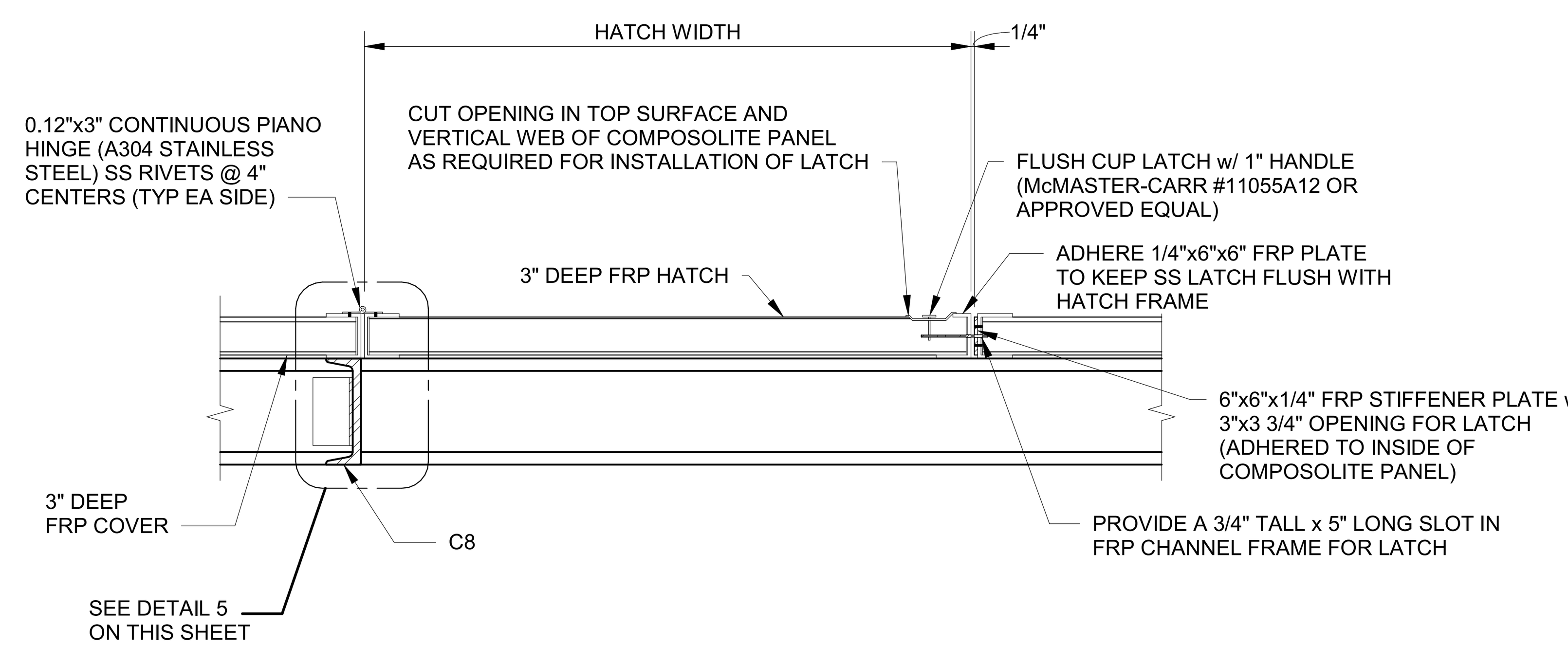
2 FRP COVER SIDE DETAIL
SCALE: 3" = 1'-0"



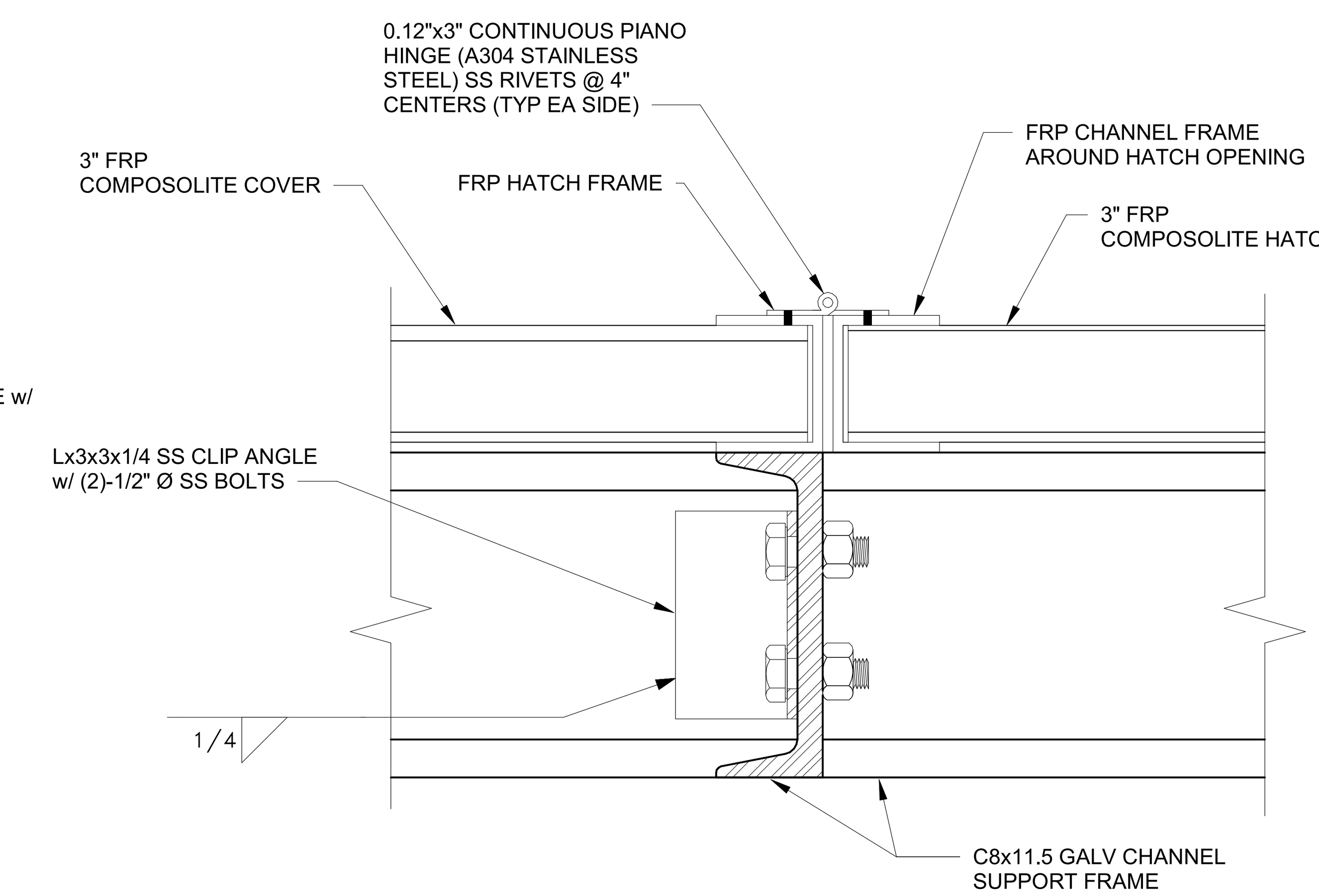
6 FRP COVER PENETRATION DETAIL
SCALE: 3" = 1'-0"



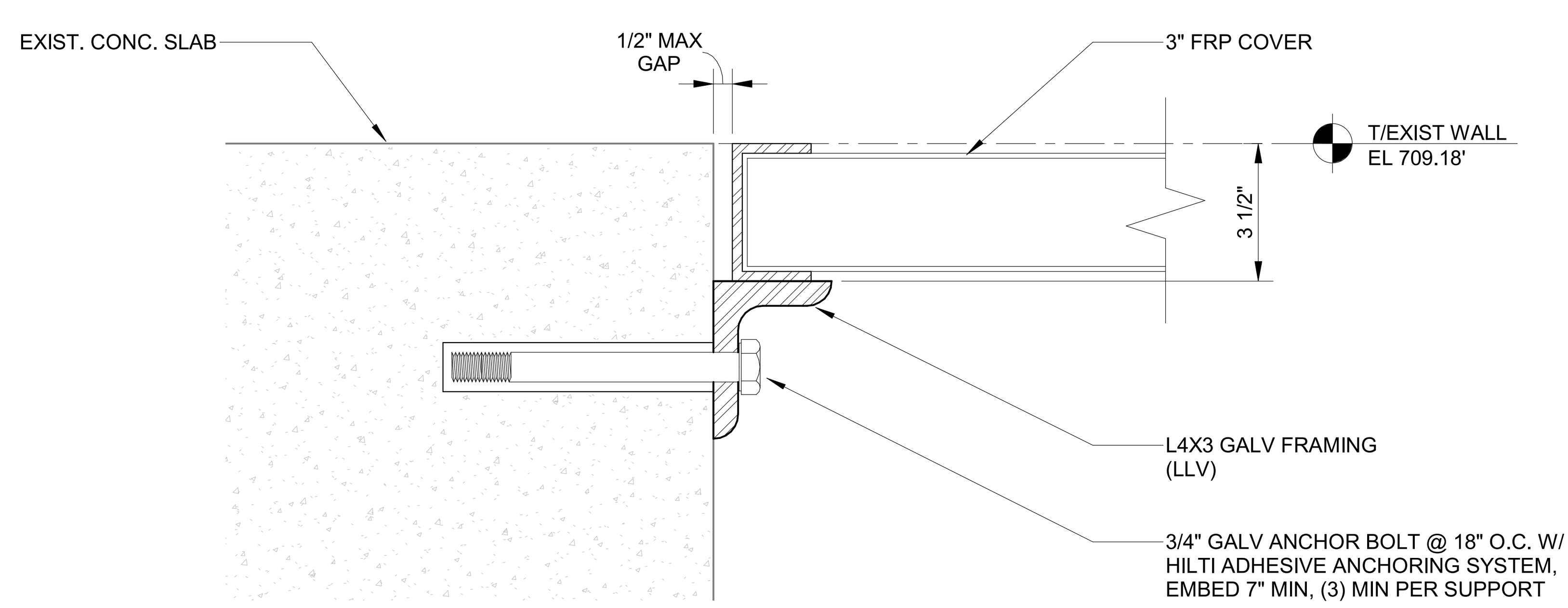
3 FRP COVER HATCH PLAN VIEW
SCALE: 1" = 1'-0"



4 FRP COVER HATCH SECTION VIEW
SCALE: 1" = 1'-0"



5 FRP COVER HATCH HINGE DETAIL
SCALE: 3" = 1'-0"



7 S-6 COVER SUPPORT @ EXIST. CONCRETE
SCALE: 3" = 1'-0"

V:\0997041\Flint UV_Struct R17-Geolocated.rvt

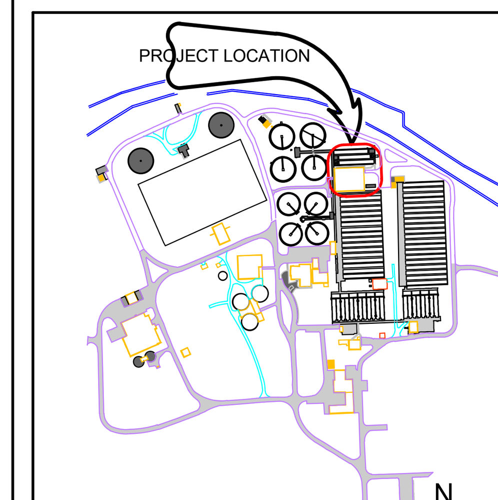
LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
P.O. BOX 824
48303 - 0824
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue,
Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



FLINT WCPF
KEY PLAN

PROJECT TITLE

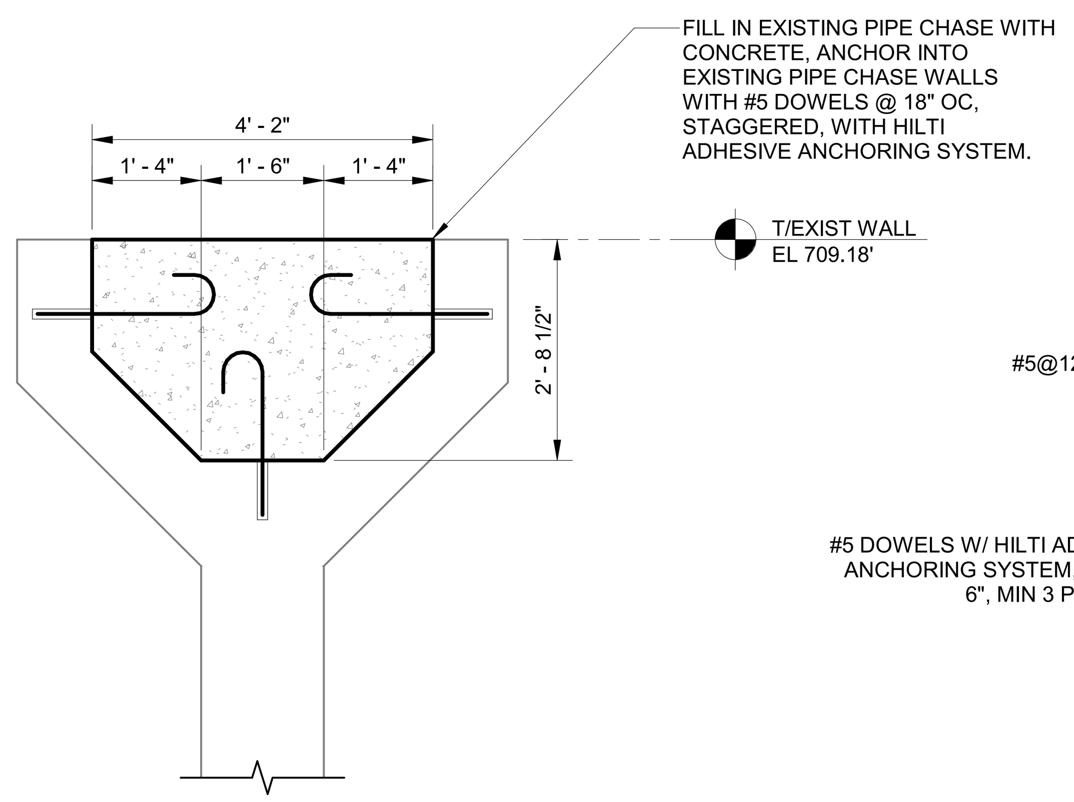
CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

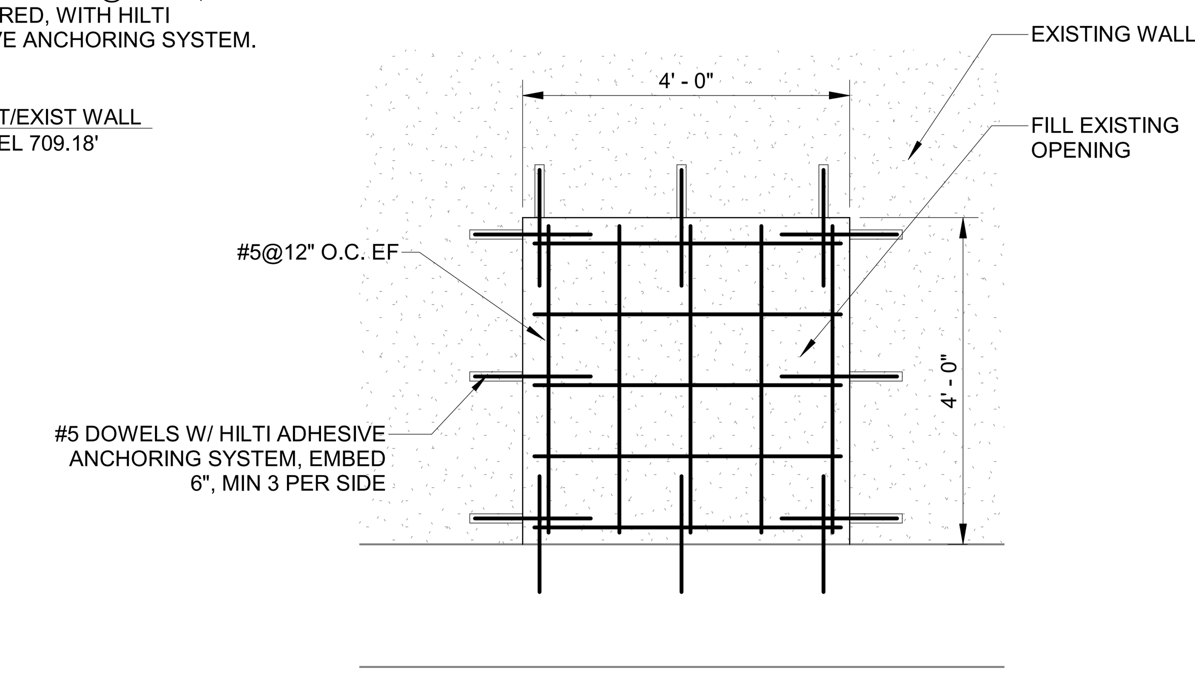
SHEET TITLE

COVER DETAILS

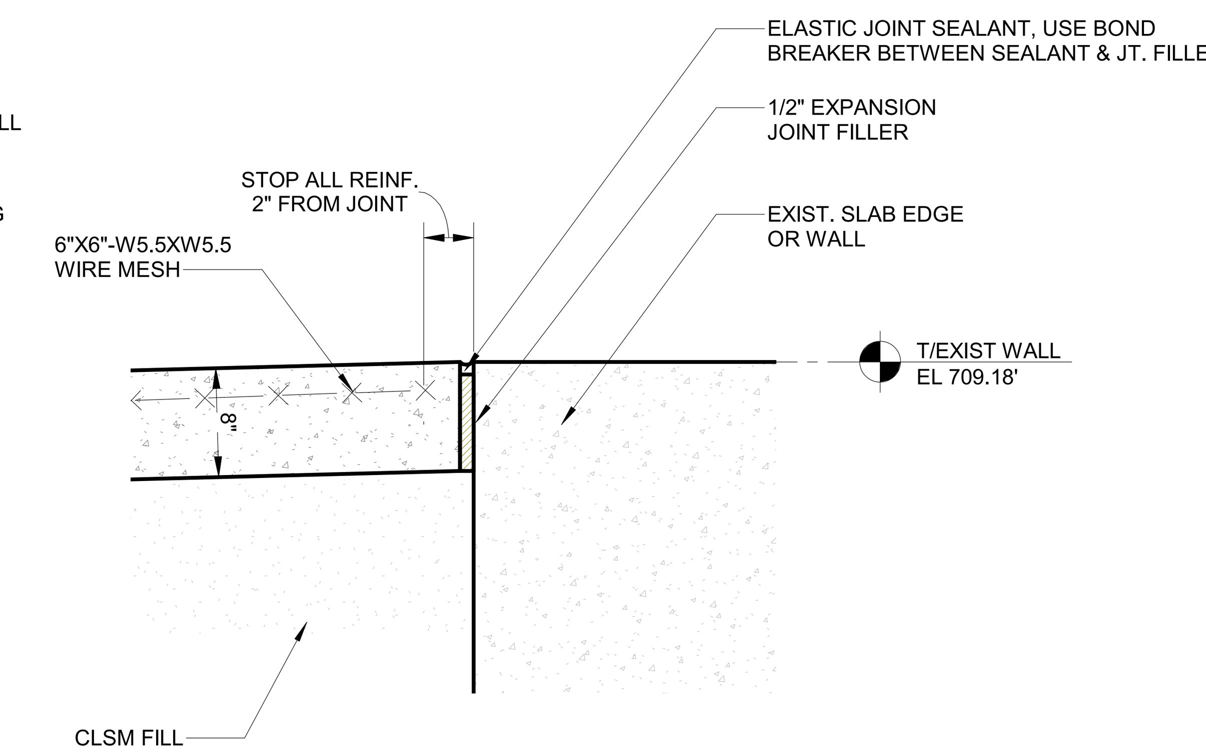
WT JOB NO. HRC2002.01F	SCALE
DATE 5-7-2020	SHEET NO. S-7 OF



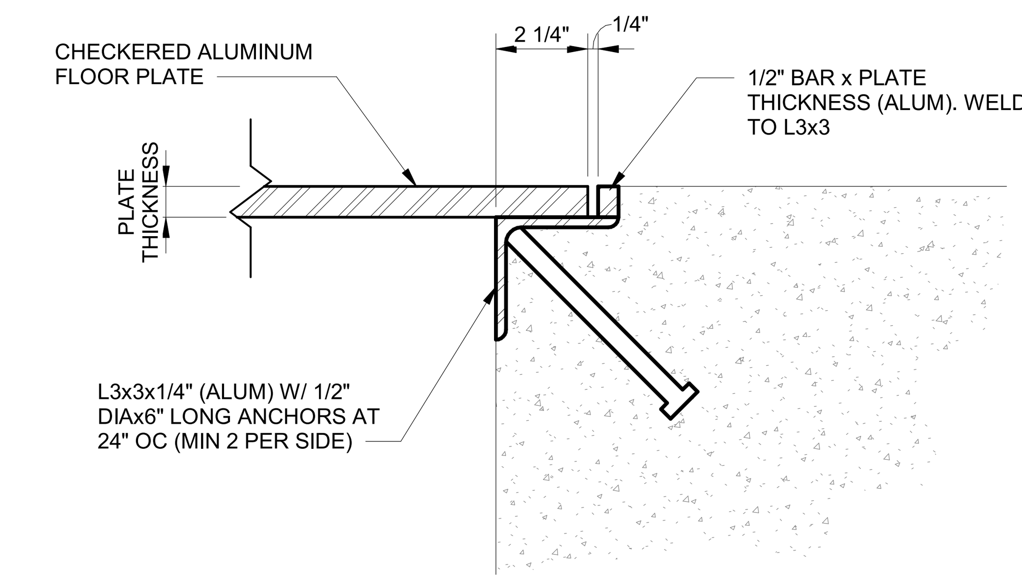
1 PIPE CHASE DETAIL
S-2 SCALE: 1/2" = 1'-0"



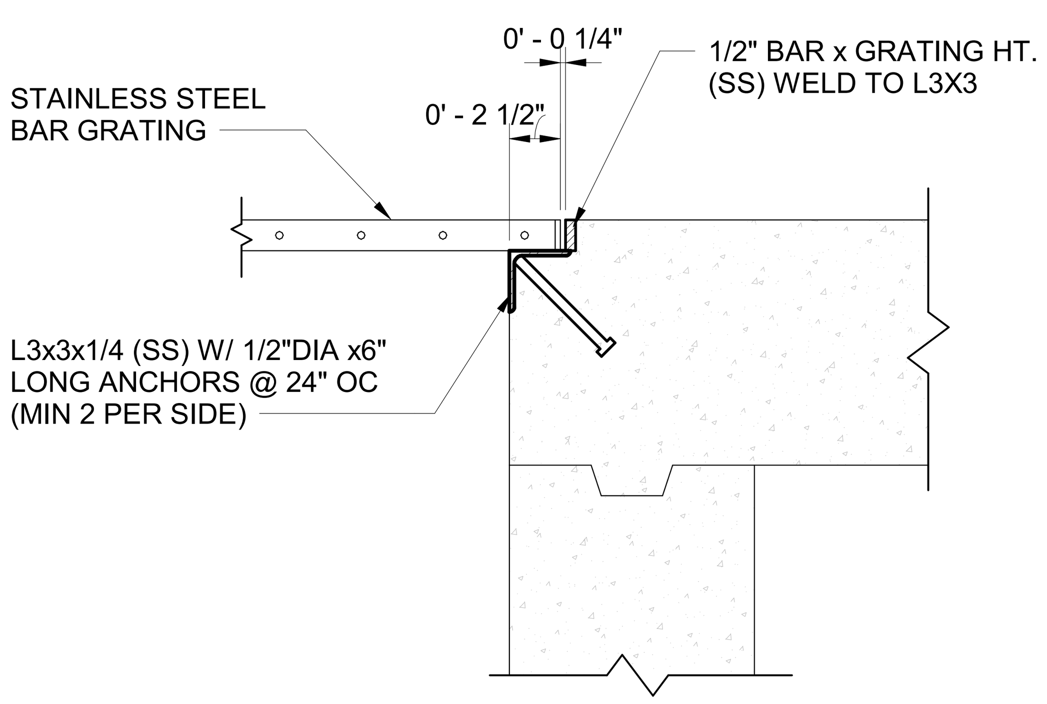
2 OPENING FILL DETAIL
S-6 SCALE: 1/2" = 1'-0"



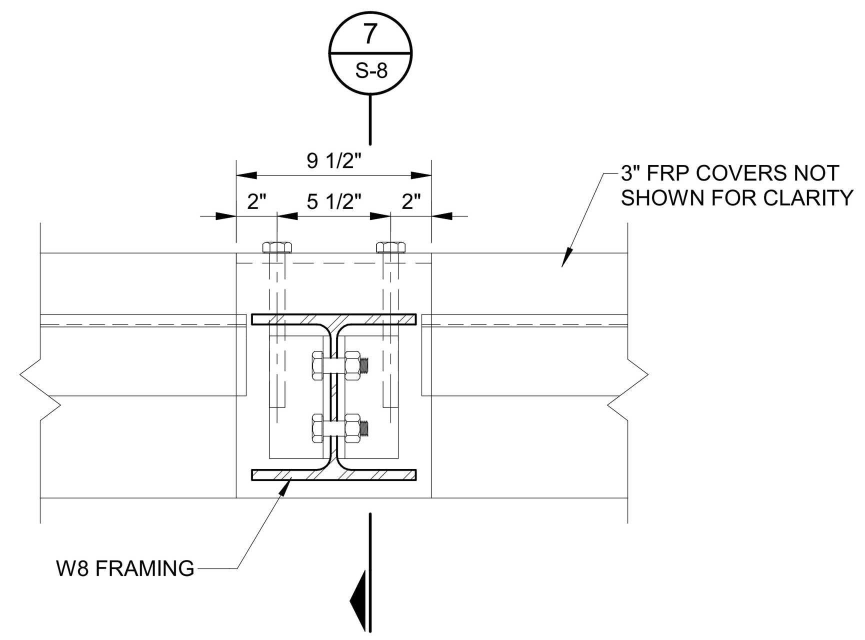
3 PROPOSED SLAB JOINT DETAIL
S-5 SCALE: 1" = 1'-0"



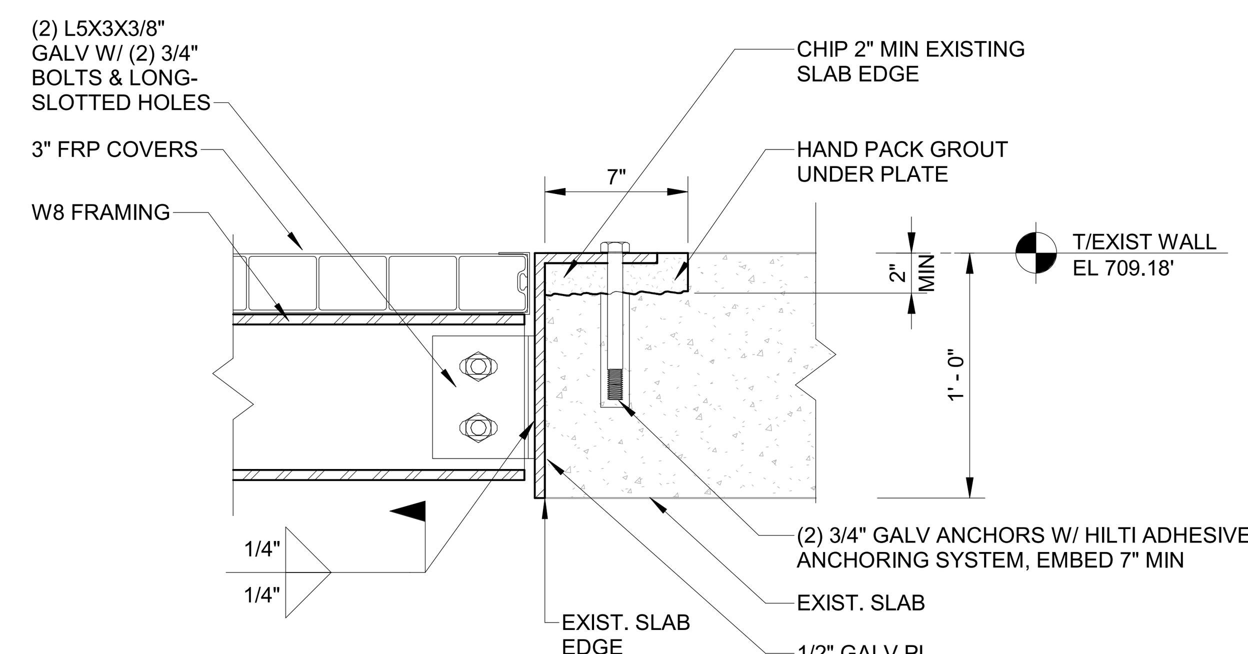
4 TYPICAL CHECKERED PLATE FRAME
SCALE: 3" = 1'-0"



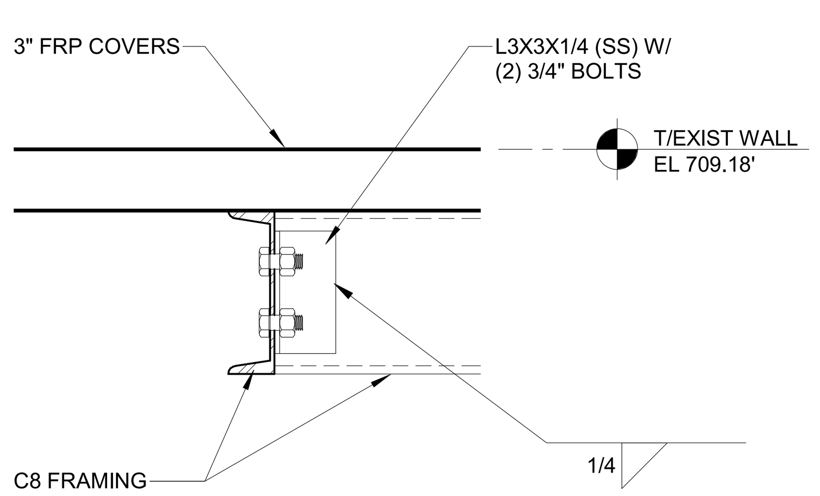
5 TYP. STAINLESS STEEL GRATING CURB ANGLE DETAIL
SCALE: 1 1/2" = 1'-0"



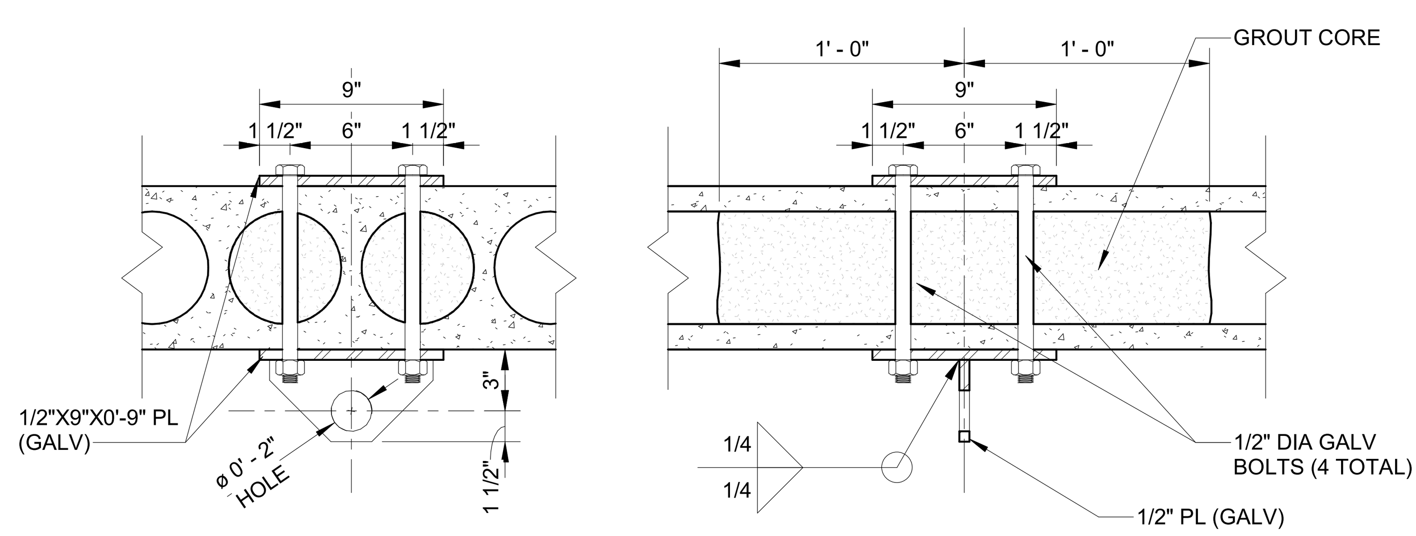
6 WF SUPPORT DETAIL
S-4 SCALE: 1 1/2" = 1'-0"



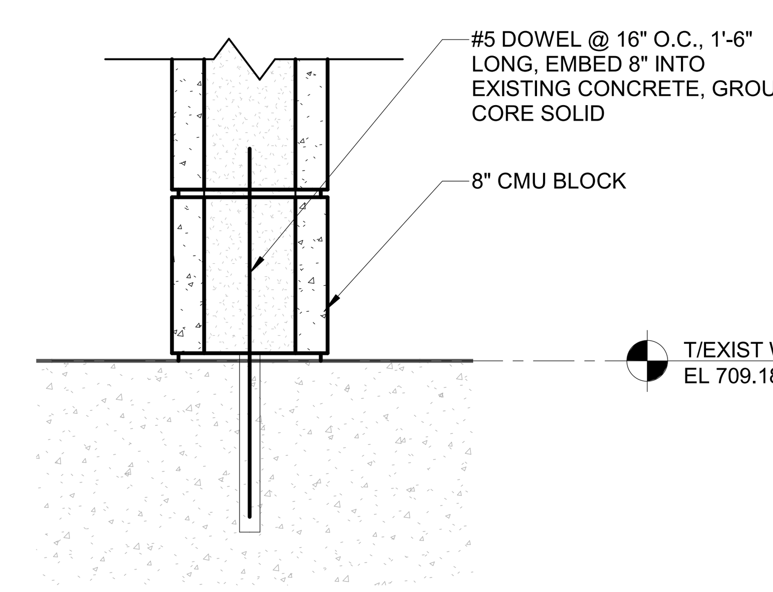
7 WF SUPPORT DETAIL
S-4 SCALE: 1 1/2" = 1'-0"



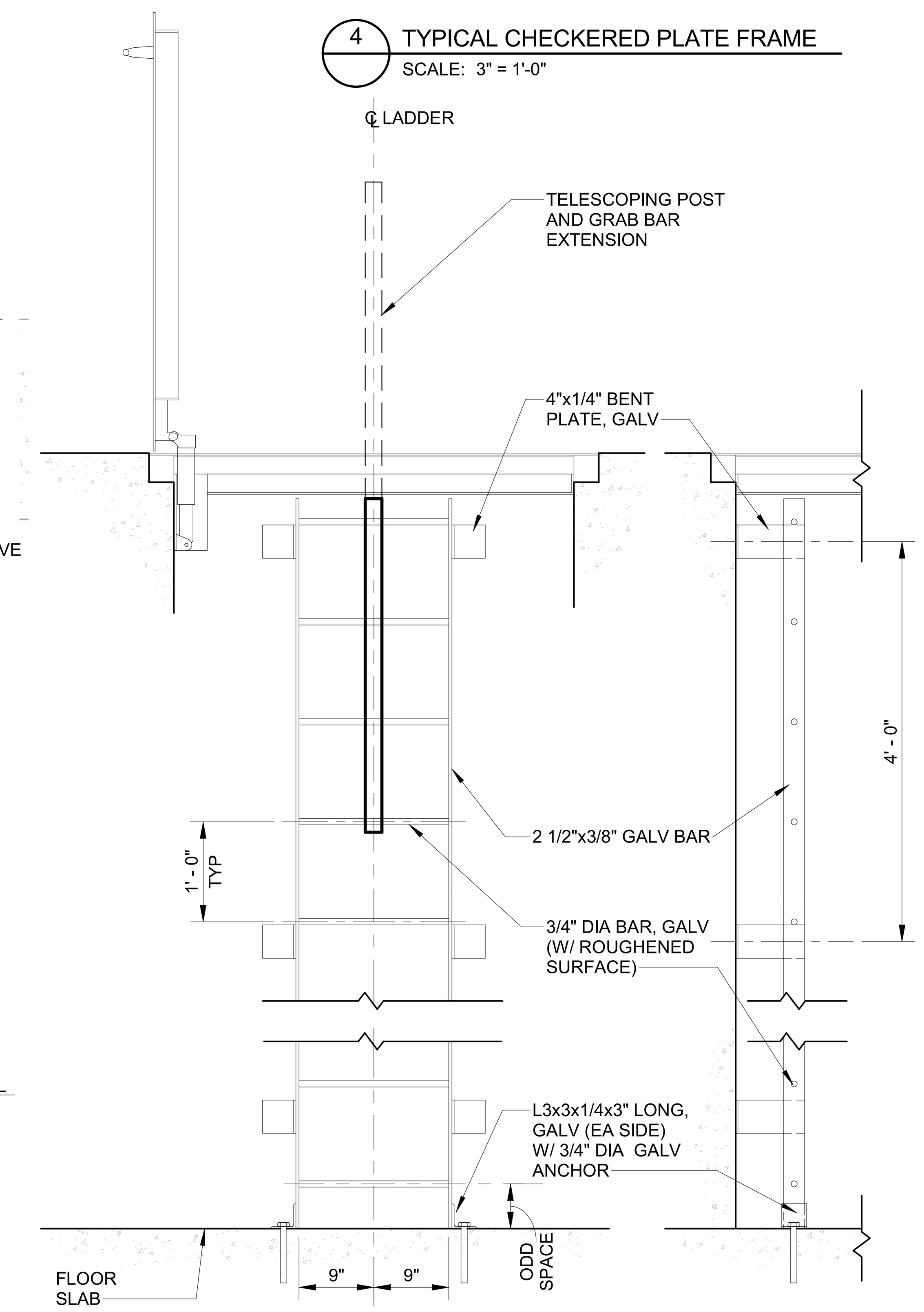
8 C-TO-C CONNECTION DETAIL
S-4 SCALE: 1 1/2" = 1'-0"



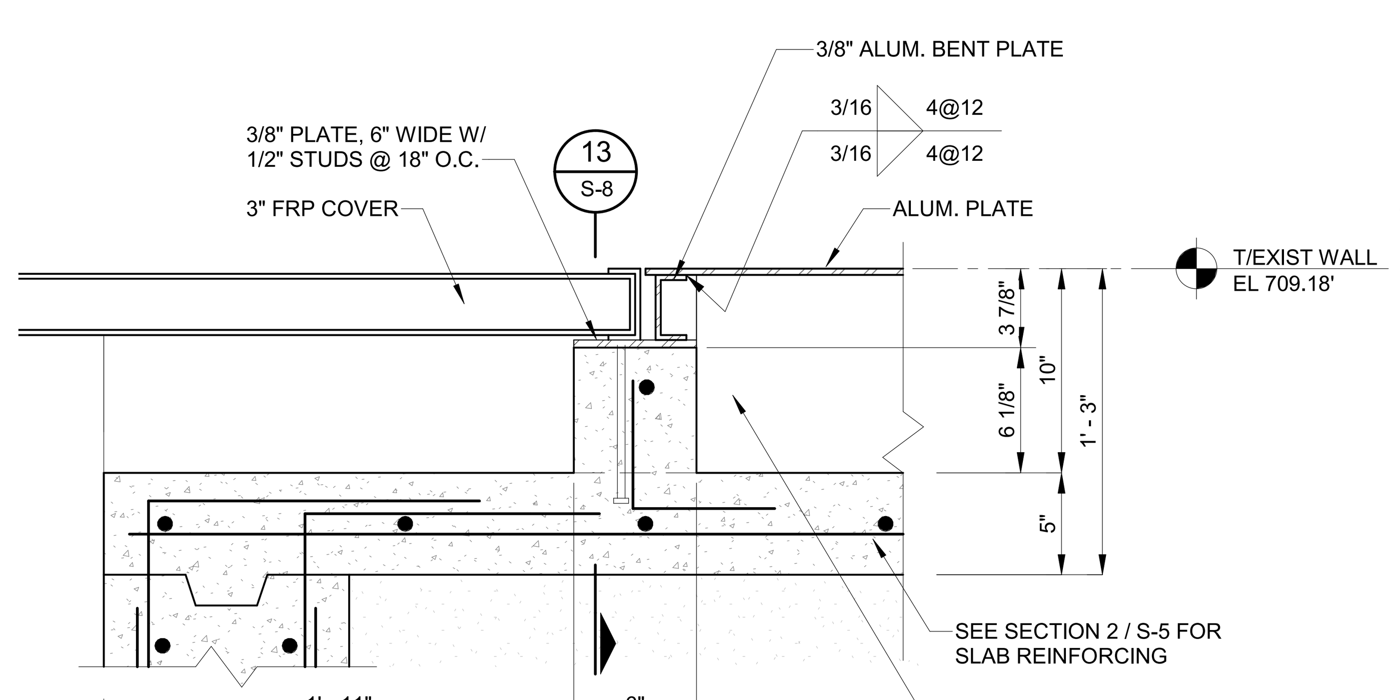
9 EYE SUPPORT DETAIL
S-5 SCALE: 1 1/2" = 1'-0"



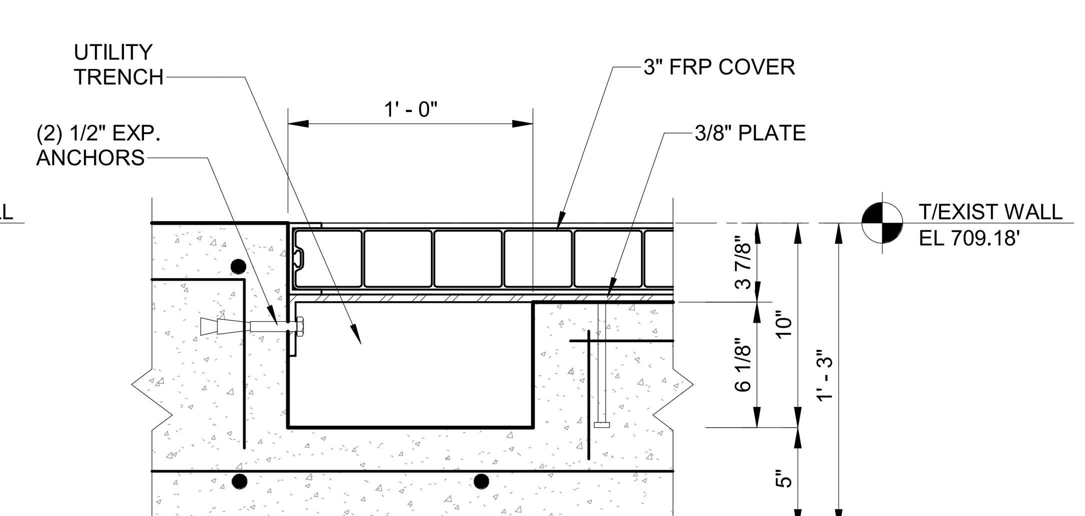
10 CMU WALL CONNECTION DETAIL
S-5 SCALE: 1 1/2" = 1'-0"



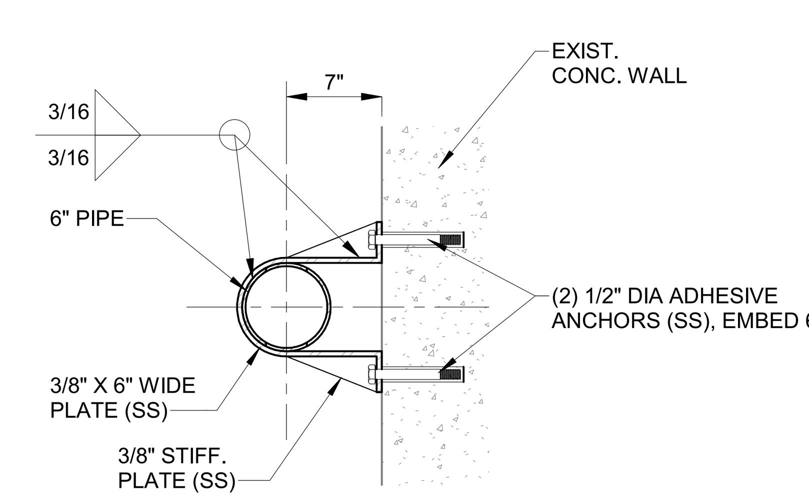
11 LADDER DETAIL
SCALE: 3/4" = 1'-0"



12 TRENCH DETAIL
S-3 SCALE: 1 1/2" = 1'-0"



13 TRENCH DETAIL
S-3 SCALE: 1 1/2" = 1'-0"



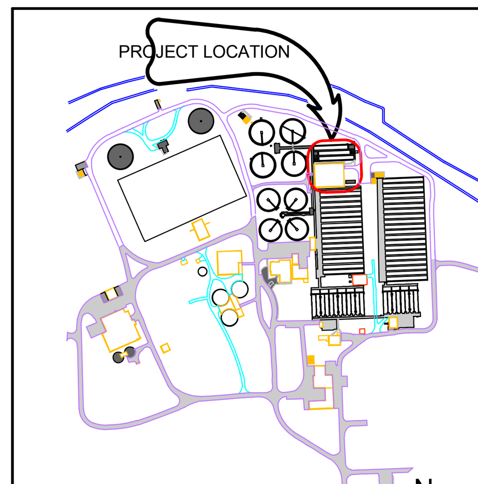
14 D.O. PROBE SUPPORT DETAIL
S-6 SCALE: 1" = 1'-0"

LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
P.O. BOX 824
48303 - 0824
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue, Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

5/7/2020	Final EGLE Submittal
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



KEY PLAN

PROJECT TITLE

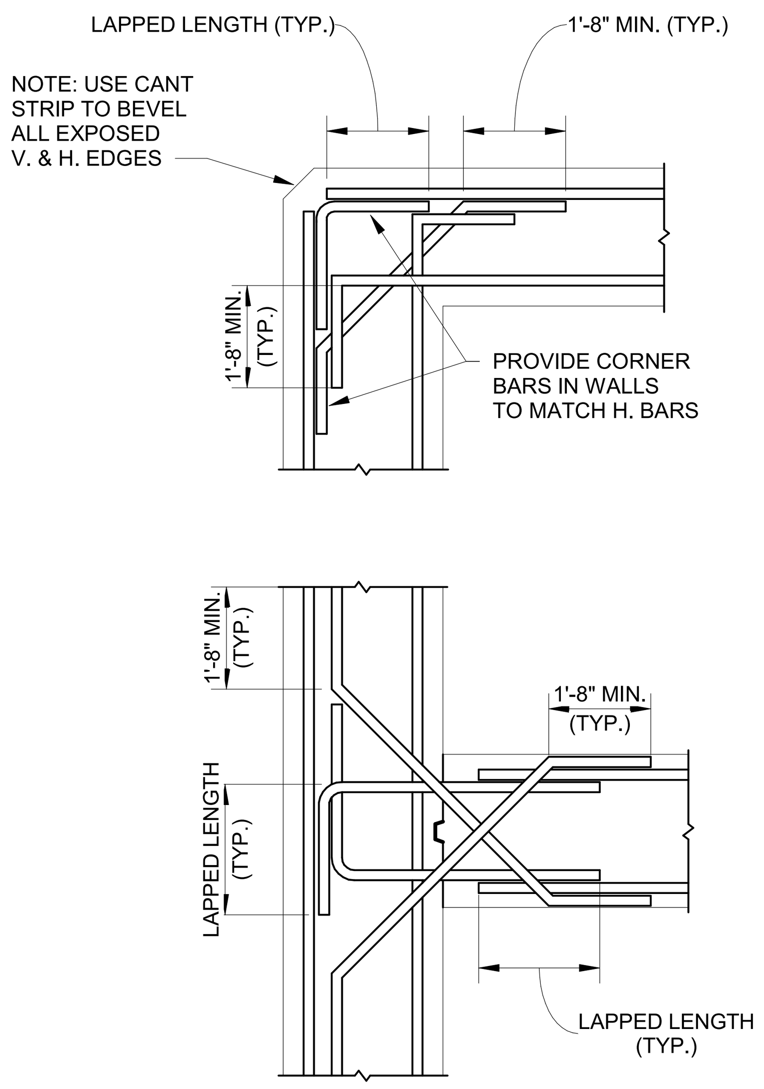
CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE

DETAILS

WT JOB NO. HRC2002.01F	SCALE
DATE 5-7-2020	SHEET NO. S-8 OF

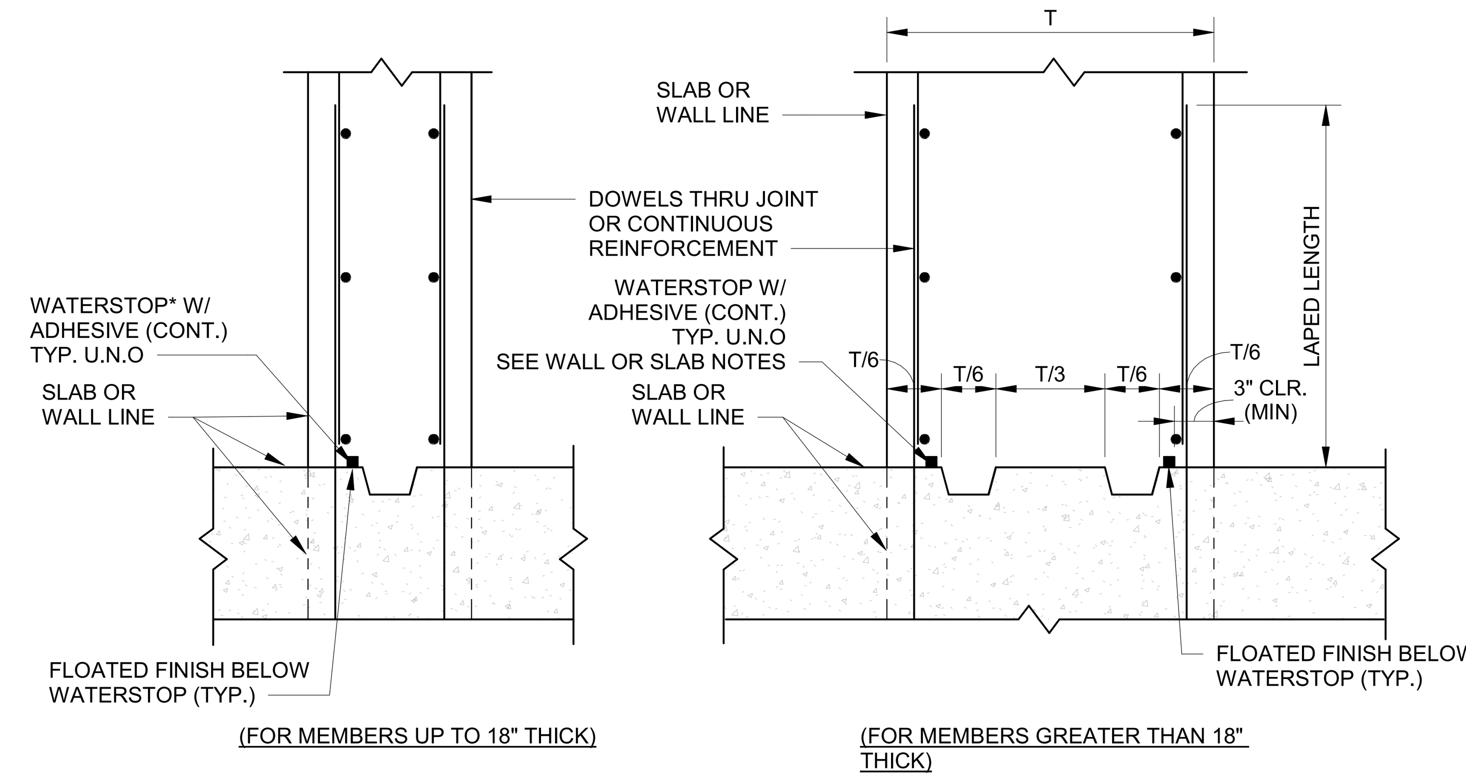


SECTIONAL PLAN OF WALLS DETAIL

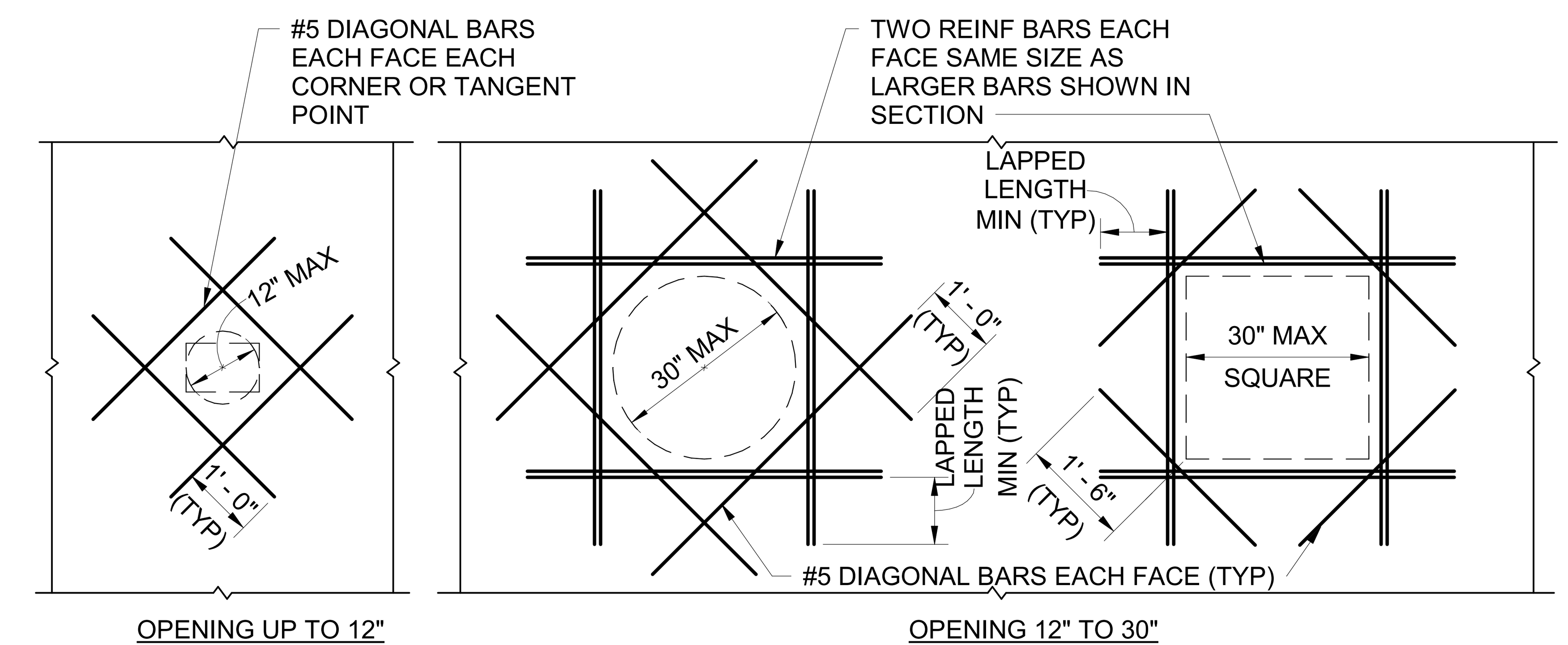
1 TYPICAL REINFORCEMENT DETAIL
SCALE: 3/8" = 1'-0"

WALL OR SLAB JOINT NOTES:

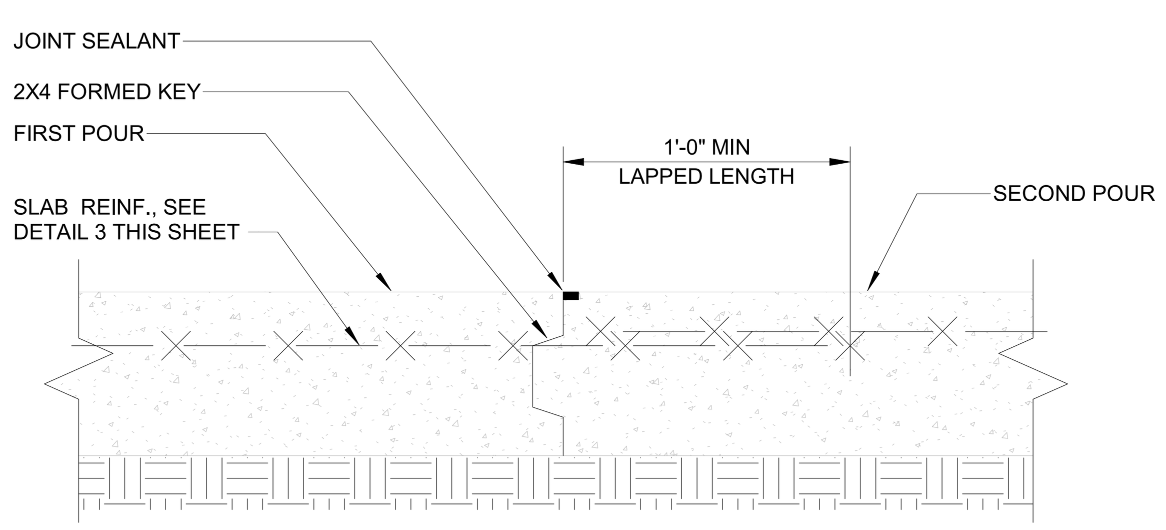
1. ALL UNFORMED SURFACES WHERE WATERSTOP IS BE ADHERED, SHALL HAVE A FLOATED FINISH.
2. ALL KEYWAYS SHALL BE CONSTRUCTED USING WOOD FORM EMBEDDED IN PLASTIC CONCRETE AND REMOVED AFTER CURING.



2 STANDARD WALL TO WALL OR WALL TO SLAB JOINT DETAIL
SCALE: 1" = 1'-0"

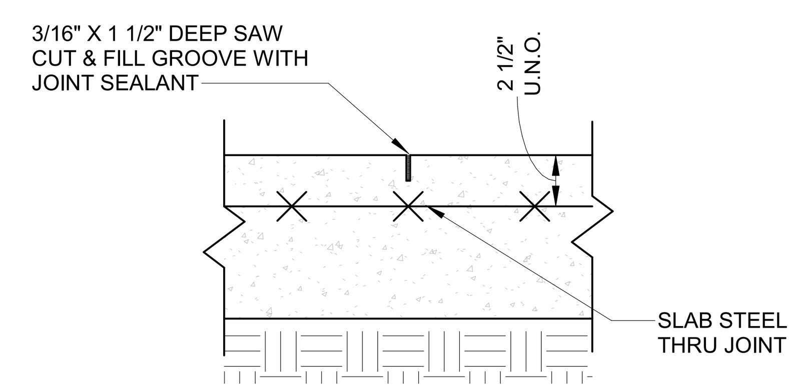


3 REINF. DETAILS FOR SMALL OPENINGS
SCALE: 1/2" = 1'-0"



4 SLAB-TO-SLAB CONSTRUCTION JOINT
SCALE: 1 1/2" = 1'-0"

NOTES:
1. SAW CUT TO BE MADE FROM 4 TO 20 HOURS AFTER EACH POUR.
2. FOR SLAB ON GRADE ONLY.



5 SLAB CONTROL JOINT DETAIL
SCALE: 1 1/2" = 1'-0"

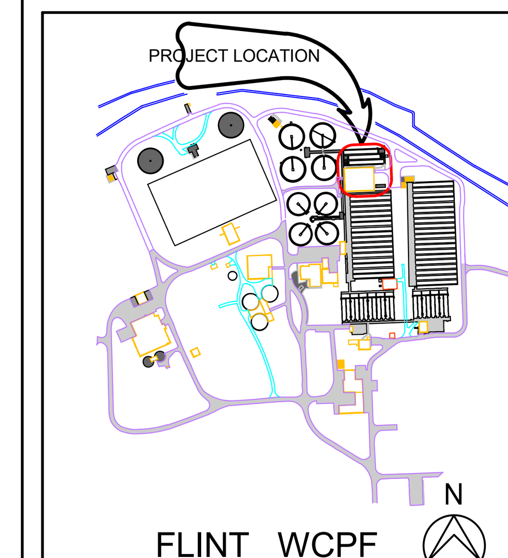
LOGO

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
P.O. BOX 824
48303 - 0824
www.hrcengr.com
WEB SITE: http://www.hrcengr.com

WADE TRIM
500 Griswold Avenue, Suite 2500
Detroit, MI 48226
313.961.3650
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5/7/2020	Final EGLE Submittal

DESIGNED	T. BURKE
DRAWN	T. BURKE
CHECKED	J. WHITE
APPROVED	T. WAGENMAKER



FLINT WCPF
KEY PLAN

PROJECT TITLE

CITY OF FLINT

FLINT WCPF ULTRAVIOLET DISINFECTION DESIGN

SHEET TITLE

TYP DETAILS

WT JOB NO. HRC2002.01F	SCALE
DATE 5-7-2020	SHEET NO. S-9 OF

SPECIFICATIONS:

GENERAL REQUIREMENTS:

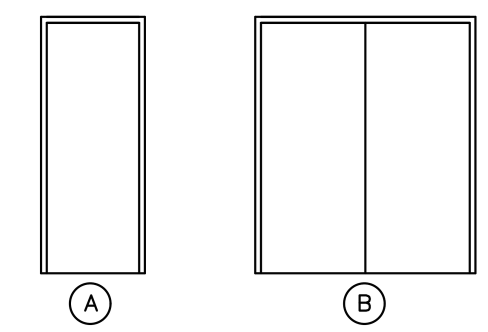
1. CONTRACTOR SHALL COORDINATE ALL WORK PRIOR TO INSTALLATION OR FABRICATION OF ANY COMPONENTS. ALL OPENINGS SHALL ALSO BE COORDINATED.
2. ALL WORK MUST CONFORM TO ALL STATUTES OF THE MICHIGAN BUILDING CODE (EDITION IN EFFECT AT THE TIME OF PERMIT), ALL STATE, COUNTY AND LOCAL ORDINANCES, CURRENT BARRIER FREE REGULATIONS, MIOSHA STRUCTURAL GUIDELINES, ASTM STANDARD TESTING PROCEDURES, OWNER'S PRACTICES AND GENERALLY ACCEPTED DESIGN PRACTICES. IF DISCREPANCIES IN DRAWING APPEAR, WORK MUST BE DONE PER CODE. CITY WILL COVER THE COST OF BUILDING, ELECTRICAL, MECHANICAL, AND PLUMBING PERMITS. CONTRACTOR MUST STILL APPLY FOR THE PERMITS.
3. EXISTING CONDITIONS OF BUILDING SHOWN ON CONSTRUCTION DOCUMENTS ARE ILLUSTRATIVE OF CONDITIONS VISIBLE TO ARCHITECT AND BASED ON EXISTING DRAWINGS. ALL EXISTING DIMENSIONS, CONDITIONS, SIZES & LOCATIONS ARE TO BE FIELD VERIFIED.
4. CONTRACTOR SHALL PROVIDE NEW OPENINGS AND SUPPORTS AS NOTED. FINAL OPENING DIMENSIONS, CONNECTION SIZES, CLEARANCES, ETC. MUST BE COORDINATED DURING CONSTRUCTION WITH APPROVED COMPONENTS. SEAL TIGHT ALL OPENINGS (ROOF, WALL AND CEILING), EQUIPMENT AND/OR PENETRATIONS – FROM AIR AND MOISTURE.
5. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND APPROVED MANUFACTURERS.
6. ALL INSTALLATIONS TO BE COORDINATED WITH EXISTING CONDITIONS FOR PROPER SIZE, LOCATION AND PROVISIONS REQUIRED TO INSTALL COMPONENTS.
7. PIPING & CONDUIT HANGERS AND SUPPORT LOCATION ARE NOT SHOWN ON DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE PIPING AND CONDUIT HANGERS AND SUPPORTS NECESSARY AS REQUIRED PER CODE.
8. CONTRACTOR SHALL PROVIDE ALL REQUIRED TRANSITIONS, FITTINGS AND APPURTENANT CONNECTIONS.
9. CONFIRM ANY COLOR SELECTIONS WITH OWNER. COLORS TO COORDINATE WITH EXISTING BUILDINGS ON SITE.
10. PREVENT GALVANIC ACTION AND OTHER FORMS OF CORROSION BY INSULATING METALS OR OTHER MATERIALS FROM DIRECT CONTACT WITH INCOMPATIBLE MATERIALS.
11. SHOP DRAWINGS AND PRODUCT DATA – THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND PROJECT ENGINEER, SHOP DRAWINGS & PRODUCT DATA SUBMITTALS FOR ALL PRODUCTS AND COMPONENTS TO BE USED ON THIS PROJECT. MAINTAIN ONE COPY OF ALL APPROVED SUBMITTALS AT THE SITE FOR THE OWNER'S REFERENCE.
12. "RECORD" DRAWINGS – THE CONTRACTOR SHALL MAINTAIN A SET OF "AS-BUILT" PRINTS, MARKED UP AT THE SITE, CONTAINING ALL "AS-BUILT" INFORMATION. TURN SET OVER TO ENGINEER UPON COMPLETION OF THE WORK.
13. INSTALL ALL MATERIALS IN COMPLIANCE W/ MFR. RECOMMENDATIONS AND CODE REQUIREMENTS.
14. CONTRACTOR MUST VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO START OF DEMOLITION AND MAKE EVERY EFFORT TO PROTECT THEM OR RELOCATE AS REQUIRED.
15. ALL PERMANENT WOOD BLOCKING, SHEATHING, FRAMING, ETC. UTILIZED IN CONSTRUCTION TO BE FIRE RETARDANT TREATED.
16. CONTRACTORS TO REFER TO ENTIRE SET OF DRAWINGS AND SPECIFICATIONS FOR FULL SCOPE OF WORK. CROSS COORDINATION BETWEEN CIVIL, PROCESS, MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS IS REQUIRED.

FIRE EXTINGUISHERS:

1. FIRE EXTINGUISHERS & ACCESSORIES: DRY CHEMICAL TYPE, UL299, HEAVY DUTY STEEL CYLINDER W/ PRESSURE GAGE; RECHARGEABLE UNIT; TYPE 20-A-120-B:C; PAINTED FINISH, COLOR RED. ALL COMPONENTS TO BE CORROSION RESISTANT PROVIDE STAINLESS STEEL MOUNTING BRACKETS & ALUM. WALL SIGNAGE (WHITE GOTHIC LETTERS ON RED BACKGROUND), BRADY SIGNAGE NO. 43294, 14X10, ALUM. PROVIDE WITH SIGNAGE ABOVE EXTINGUISHER. EXACT LOCATIONS TO BE DETERMINED BY FIRE MARSHALL & OWNER IN FIELD. PROVIDE (1) EXTINGUISHER WALL MOUNTED ON BLDG. INTERIOR ADJACENT TO EACH EXTERIOR MANDOOR WITH SIGNAGE ABOVE EXTINGUISHER AT BUILDING – TOTAL OF (2) FIXTURES.

DOOR SCHEDULE

DOOR NO.	DOOR LOCATION	SIZE (WXH)	TYPE	SILL DTL.	JAMB DTL.	HEAD DTL.	INT.	EXT.	MATERIAL DOOR	MATERIAL FRAME	HWDR. SET	LABEL	REMARKS
01	UV	3'-0" X 7'-2"	A	S1	J1	H1		o	STL	STL	1		SEE NOTES BELOW
02	UV	(2) 4'-0" X 7'-2"	B	S1	J1	H1		o	STL	STL	2		



NOTES:

1. SEE SECTION 08710 FOR DOOR HARDWARE.
2. SEE SECTIONS 08114 & 08115 FOR STEEL DOORS & FRAMES.
3. ALL FRAMES ARE 2" HIGH PROFILE, JAMS AND HEADS (U.N.O.).
4. PAINT DOORS AND FRAMES PER SPEC SECTION 09900.

DOOR AND WINDOW NOTES:

1. FIELD VERIFY ALL DOOR & WINDOW OPENING DIMENSIONS PRIOR TO FABRICATION.
2. ALL DOOR FRAMES SHALL BE GROUTED SOLID.
3. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON DOORS, FRAMES, WINDOWS AND HARDWARE.

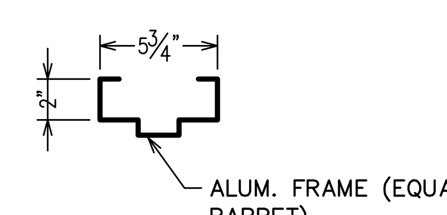
ROOM FINISH SCHEDULE

ROOM NO.	ROOM DESCRIPTION / ROOM NAME	FLOOR: CONCRETE (SEALED)	FLOOR: PAINTED	BASE: NONE	BASE	CEILING: UNFINISHED	CEILING: PAINTED	CEILING	WALLS: NORTH	WALLS: SOUTH	WALLS: EAST	WALLS: WEST	CEILING HEIGHT (V.I.F)	REMARKS
100	U.V. ROOM	X		X		X			A	A	A	A	VARIES	ALL EXPOSED STEEL TO BE PAINTED

REMARKS: WALL TYPES:
A. = PAINT
B. = UNFINISHED

NOTES:

1. ALL FRAMES SHALL BE 2" HEAD & 2" JAMBS UNLESS SPECIFICALLY NOTED OTHERWISE.
2. BACKCOAT FRAMES PER SPECIFICATIONS PRIOR TO INSTALLATION.



TYP. FRAME CONFIGURATION

SCALE: NO SCALE

FINISH NOTES:

1. AT GRADE LEVEL, PAINT EXPOSED CMU, PRECAST CEILINGS, EXPOSED STRUCTURAL STEEL, ANGLES, ETC.
2. PROVIDE CONCRETE FLOOR SEALER FOR BLDG. INTERIOR FLOOR SURFACES, CURBS ETC. SEALER SHALL BE EUCO-GUARD 100 BY EUCLID CHEMICAL COMPANY OR ENGINEER APPROVED EQUAL.
3. SEE SECTION 09900 FOR PAINTING REQUIREMENTS.
4. EXTERIOR SIDE OF CMU WALLS TO BE SEALED PER SPEC SECTION 07181.

BUILDING DATA

APPLICABLE CODES:
2015 MICHIGAN BUILDING CODE (MBC)
2017 NATIONAL ELECTRIC CODE (NEC) WITH MICHIGAN AMENDMENTS.
2015 MICHIGAN MECHANICAL CODE
2015 MICHIGAN PLUMBING CODE
2015 MICHIGAN UNIFORM ENERGY CODE

TRAVEL DISTANCE (1016):
F-2 AREAS:
- DISTANCE TO AN EXIT ACCESS DOES NOT EXCEED 75 FEET FOR AREAS CONSTRUCTED UNDER THIS WORK WITH 1 EXIT.

ACCESSIBILITY (1103)
THIS BUILDING IS EXEMPT FROM ACCESSIBILITY REQUIREMENTS UNDER 1103.2.9. BUILDING IS AN UNOCCUPIED STRUCTURE FOR PROCESS EQUIPMENT, PART OF A SEWAGE TREATMENT SYSTEM. DOOR HARDWARE SHALL BE PROVIDED AS SPECIFIED AND INSTALLED IN ACCORDANCE WITH DIVISION 8 SPECIFICATIONS.

OCCUPANCY GROUP (306.3): FACTORY INDUSTRIAL F-2, LOW HAZARD OCCUPANCY

CONSTRUCTION TYPE (TABLE 601): IIB UNSPRINKLED

ALLOWABLE HEIGHT/AREA:

	MAXIMUM	PROVIDED
FOOTPRINT AREA	23,000 S.F.	1,369 S.F.
HEIGHT	55' (3 STORIES)	14'-3" (1 STORY)

FLOOR AREA – GROSS S.F. (1002.1)

OCCUPANCY LOAD: OCCUPANCY CLASSIFICATION PER TABLE 1004.1.2 IS MECHANICAL EQUIPMENT, 300 GROSS S.F. PER OCCUPANT.

		NO. OF OCCUPANTS
U.V. ROOM	1369/300 =	5

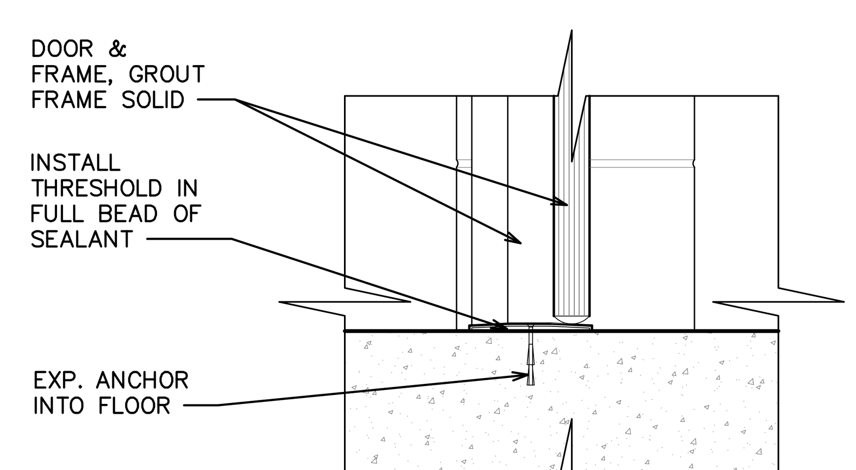
OCCUPANT LOAD MAY BE REDUCED BY CODE OFFICIAL TO REFLECT ACTUAL OCCUPANCY. BUILDING IS A NORMALLY UNOCCUPIED SPACE USED TO HOUSE PROCESS EQUIPMENT.

ENERGY CODE REQUIREMENTS (ASHRAE 90.1: 2013): SEMI-HEATED

	REQ'D	PROVIDED
ROOF INSULATION	R-30	R-30
MASS WALLS	CORE INSUL.	COMPLIES

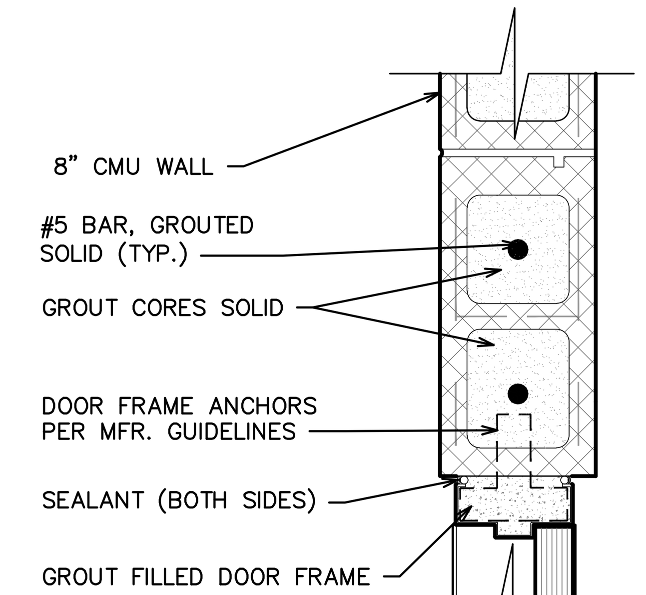
(PER EX. B, FILL UNGROUTED CORES W/ MAT'L HAVING MAX. THERMAL CONDUCTIVITY OF 0.44 BTU-IN/H-FT2-F

NOTE: FOR ALL WALL OPENINGS:
1. PROVIDE DOUBLE COURSE CMU BOND BEAM HEADER, MIN. 8" BEARING AT EACH END.



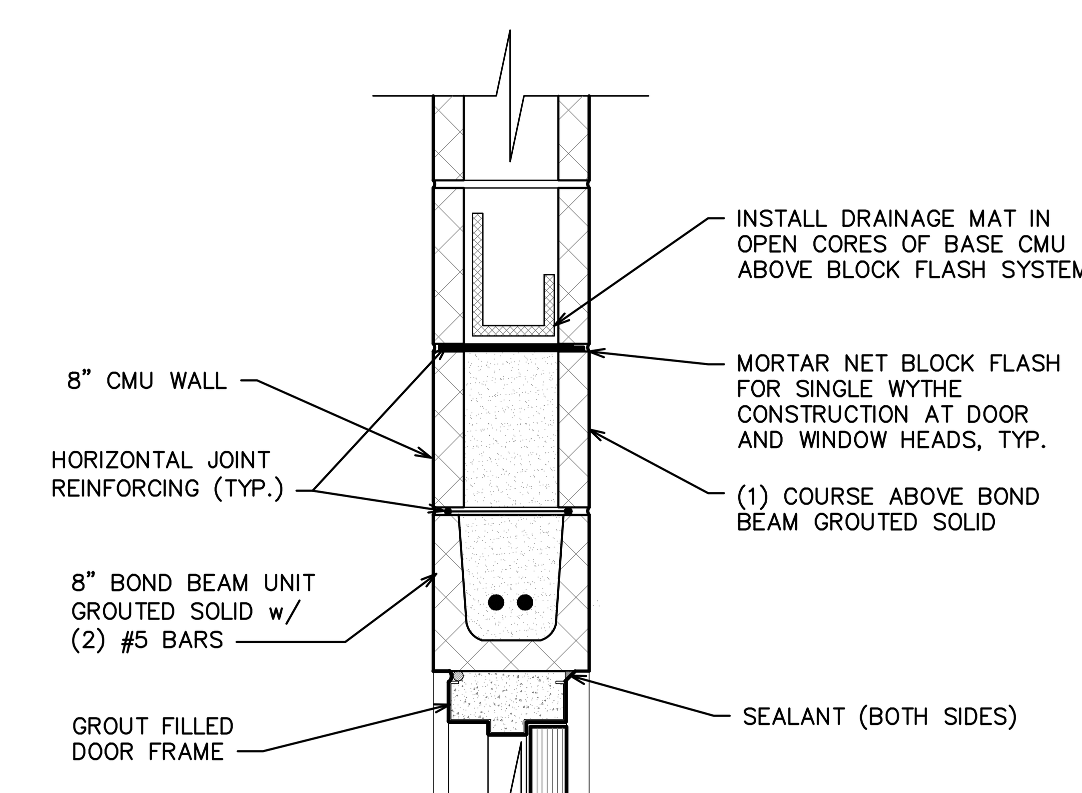
SILL DETAIL S1

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



JAMB DETAIL J1

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



HEAD DETAIL H1

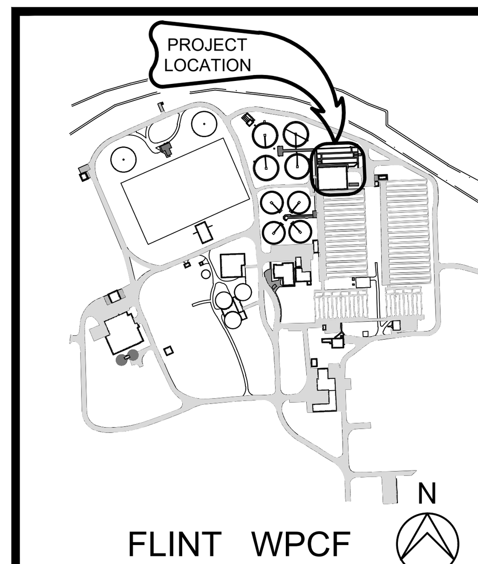
SCALE: 1 1/2" = 1'-0"

CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

04-10-20	FINAL EGLE SUBMITTAL
02-07-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	A.M.M.
DRAWN	S.T.S.
CHECKED	A.M.M.
APPROVED	D.W.M.



FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

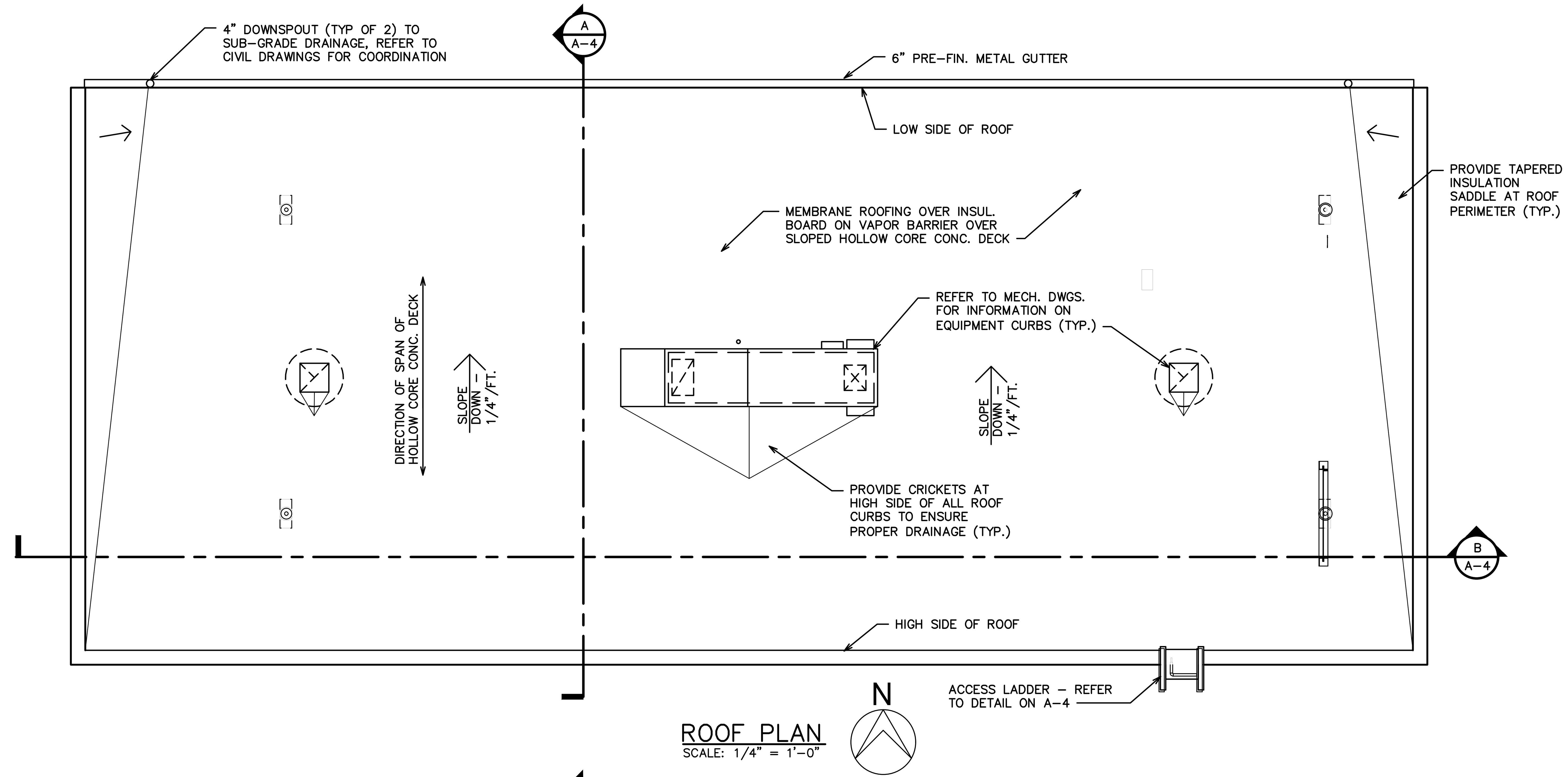
UV DISINFECTION BUILDING NOTES, SCHEDULES & DETAILS

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. A-1 OF

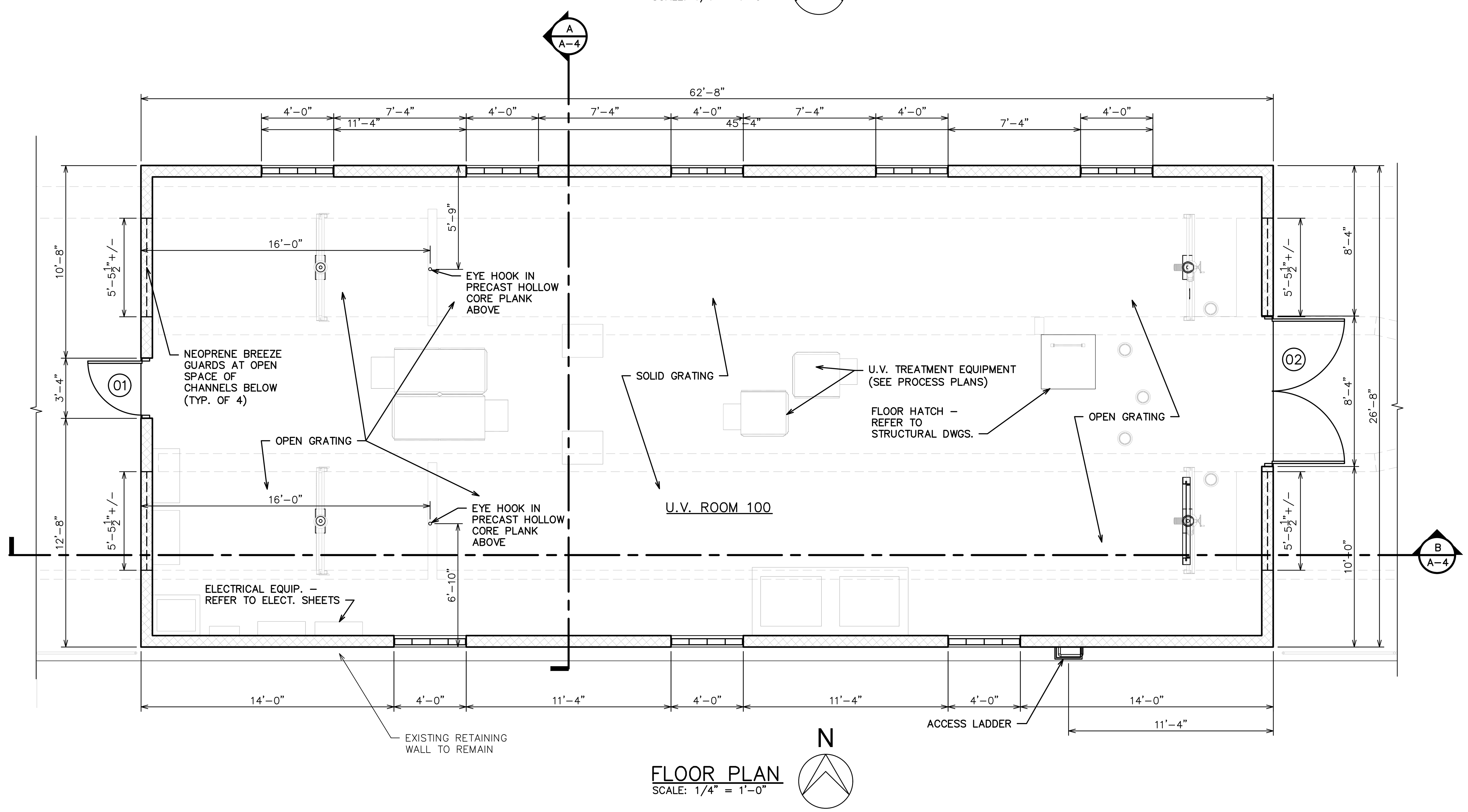
4/10/2020 2:34 PM
HRC_OLW.ctb
V:\201902\20190265\A\Sheets\a01plot.dwg
Sack, Steven

ROOFING NOTES:

1. ONLY MAJOR ROOF PENETRATIONS & EQUIP. ARE SHOWN. THE ROOF PLAN REPRESENTS THE GENERAL WORK AREA ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS, OPENINGS, ETC. PRIOR TO BEGINNING WORK, WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN ON THIS PLAN OR REF DWGS.
2. PROVIDE WALKWAY PADS FROM ROOF LADDER TO AND AROUND ALL H&V UNITS, FANS, ROOF DRAINS, ETC. IN THE MOST DIRECT ROUTE OF TRAVEL.
3. NEW METAL PERIMETER EDGING SHALL BE INSTALLED. METALS FOR NEW FLASHING SHALL BE AS SPECIFIED IN SECTION 07620.
4. PROVIDE NEW FABRICATED FLASHINGS AT PENETRATIONS PER ROOFING MANUFACTURER REQUIREMENTS FOR WARRANTY COVERAGE SPECIFIED. PROVIDE PRE-FABRICATED ROOF CURBS FOR ALL NEW OPENINGS LARGER THAN 8" DIAM.
5. ALL CURBS SHALL EXTEND A MIN. OF 8" CLEAR ABOVE TOP OF ROOFING TO UNDERSIDE OF FLASHING. INSTALL NEW MEMBRANE UP AND OVER CURBS, FASTEN TO INSIDE FACE OF CURBS PER ROOFING MFR. STANDARD DETAIL. (TYP.)
6. PROVIDE MIN. 1/4" PER FT. SLOPE AT ENTIRE ROOF AREA (U.N.O.).
7. ROOF SADDLES ARE TO HAVE A MIN. SLOPE OF 1/2" PER FT. SLOPE (U.N.O.).
8. PROVIDE CRICKETS ON HIGH SIDE OF ALL CURBED ITEMS. MIN 1/2" PER FOOT (U.N.O.) PER ROOFING MANUFACTURERS WARRANTY REQUIREMENTS.
9. PROVIDE MINIMUM R-30 INSULATION AT ALL ROOF AREAS.



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



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

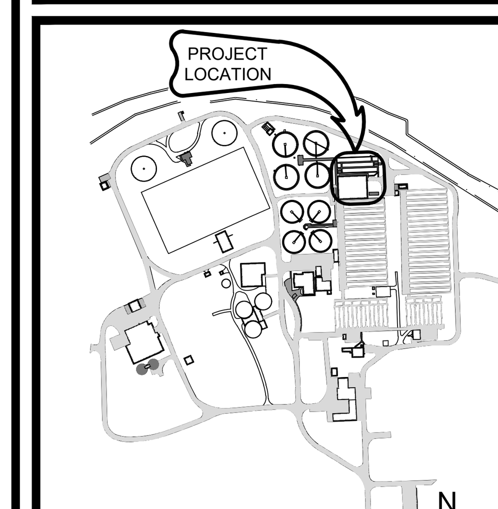
CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
04-10-20	FINAL EGLE SUBMITTAL
02-07-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET

DESIGNED	A.M.M.
DRAWN	S.T.S.
CHECKED	A.M.M.
APPROVED	D.W.M.



FLINT WPCF

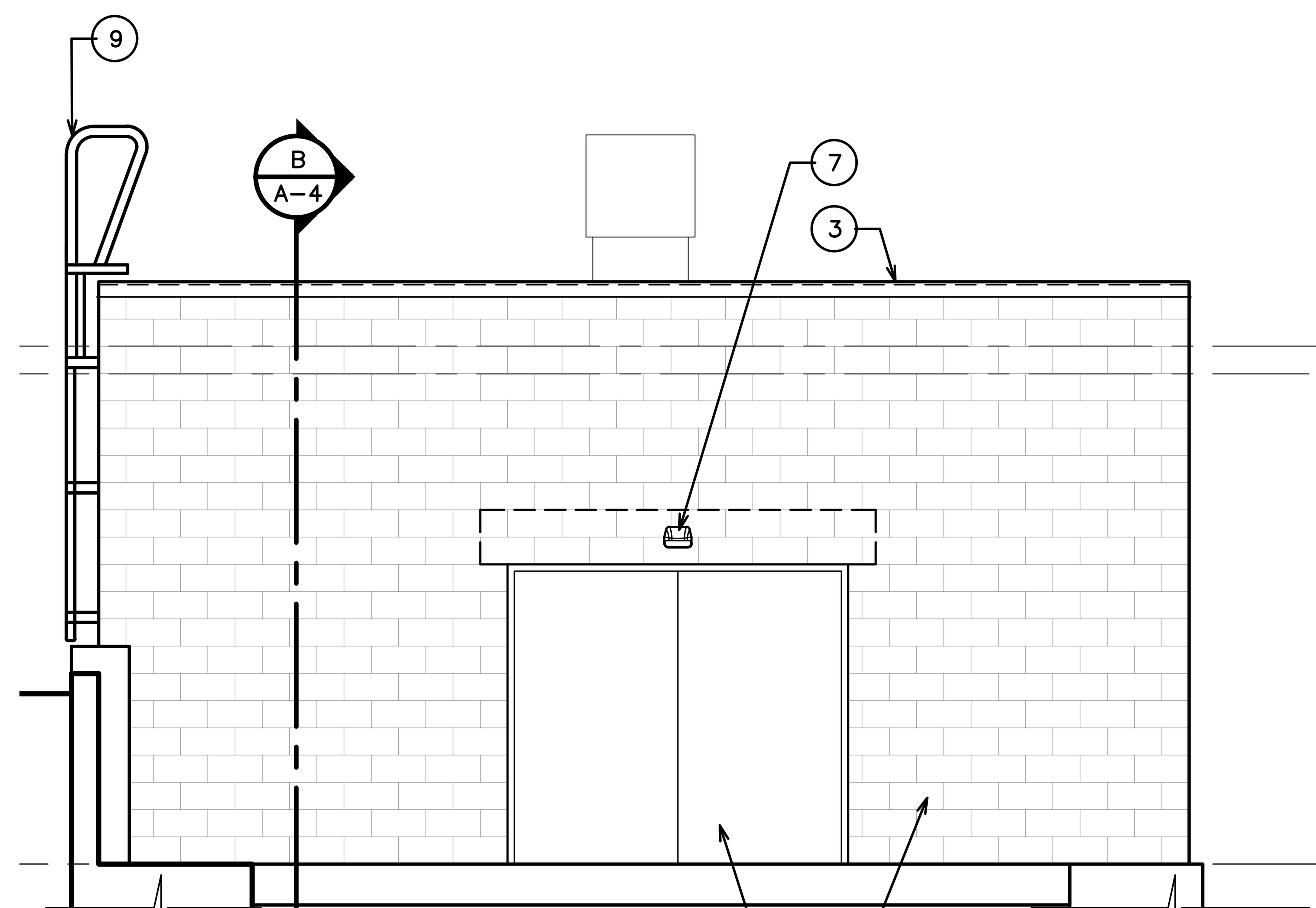
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

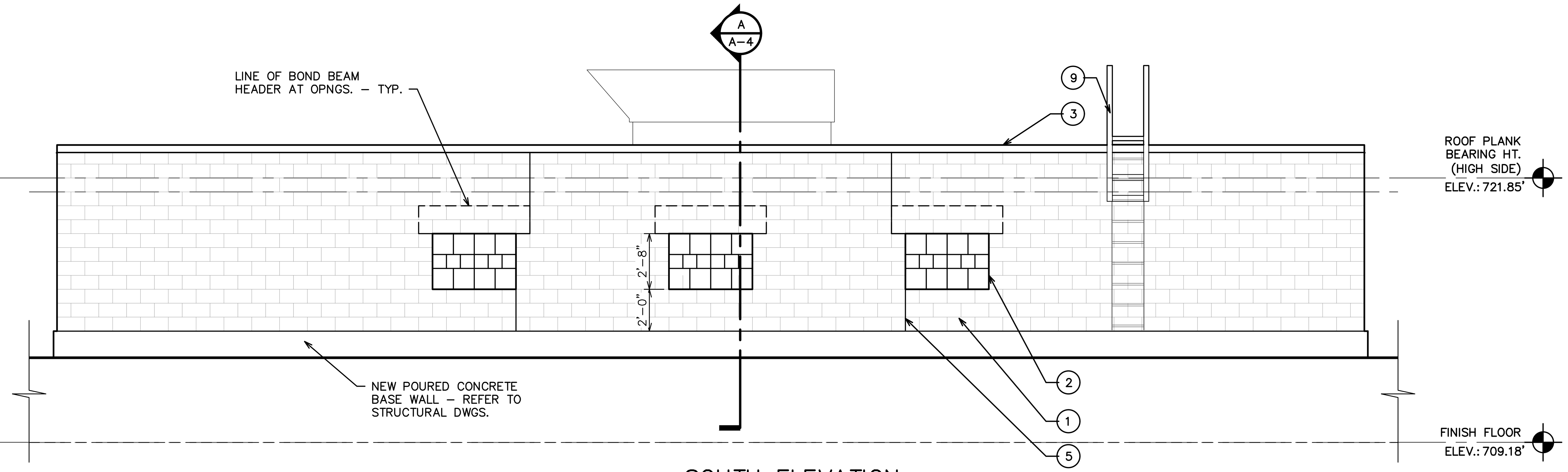
UV DISINFECTION BUILDING
FLOOR PLAN & ROOF PLAN

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE April 2020	SHEET NO. A-2 OF

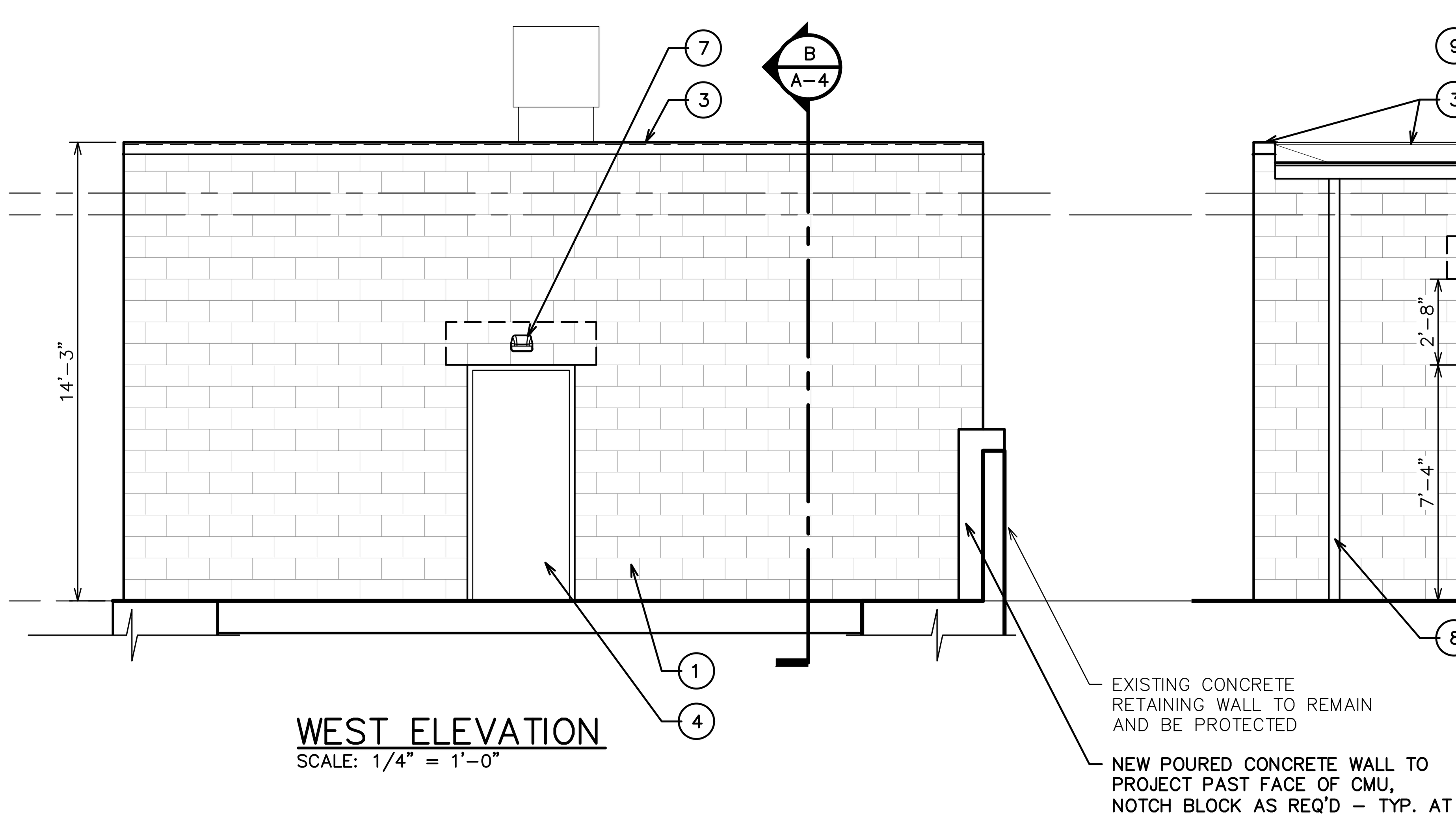
4/10/2020 2:40 PM
HRC_OLW.ctb
V:\201902\20190265\A\Sheets\a02plot.dwg
Sack, Steven



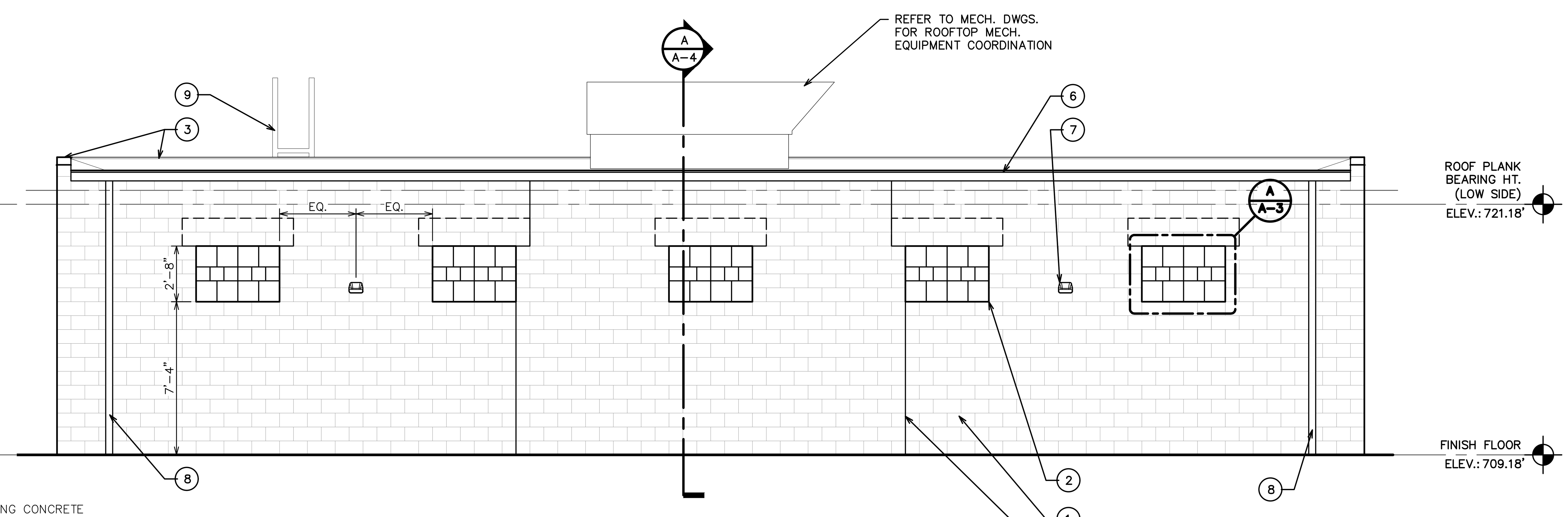
EAST ELEVATION
SCALE: 1/4" = 1'-0"



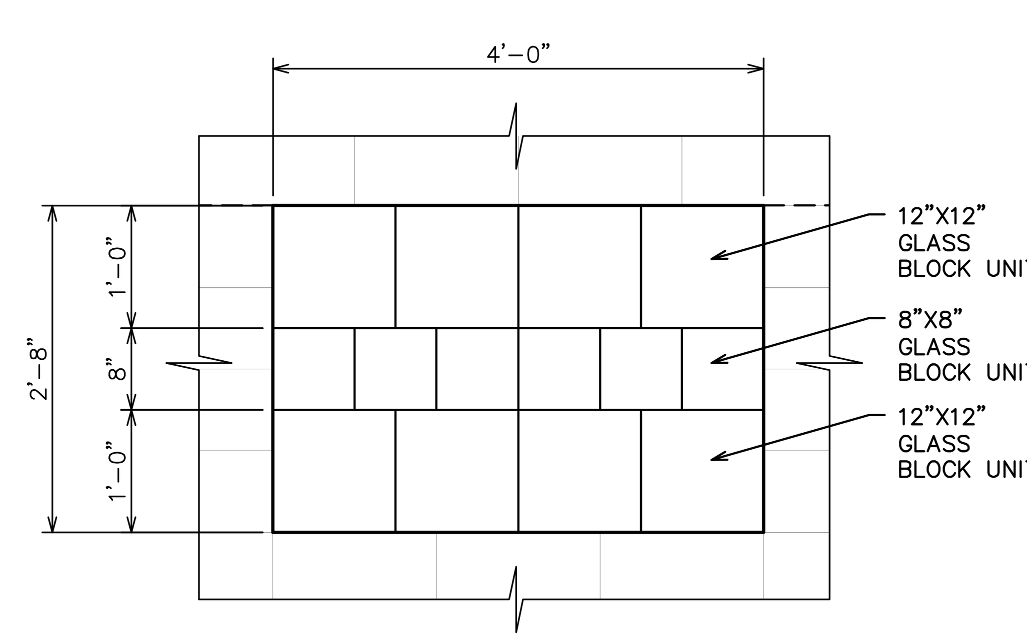
SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



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



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



WINDOW DETAIL A
A-3
SCALE: 3/4" = 1'-0"

ELEVATION NOTES

1	SMOOTH FACED INTEGRALLY COLORED CMU WALL
2	GLASS BLOCK WINDOW – 12"X12" & 8"X8" UNITS
3	PRE-FIN. METAL PARAPET CAP W/ CONCEALED CLEATS & HEMMED EDGE
4	PAINTED STEEL DOOR AND FRAME
5	MASONRY CONTROL JOINT
6	6" PRE-FIN. METAL GUTTER
7	EXTERIOR LIGHTS – REFER TO ELECTRICAL DWGS.
8	4" PRE-FIN. METAL DOWNSPOUT TO CONCRETE SPLASH BLOCK AT GRADE
9	GALV. AND PTD. STEEL ROOF LADDER, REFER TO DETAIL, SHEET A-4

SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

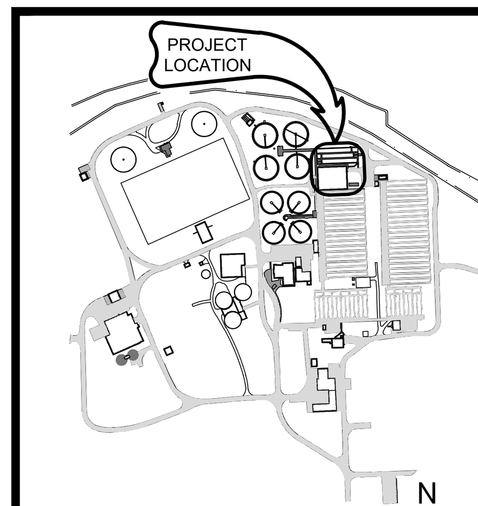
PROVIDE WATER REPELLANT COATING AT EXTERIOR SIDE OF ALL CMU WALLS – REFER TO SPECIFICATIONS FOR INFORMATION.

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
04-10-20	FINAL EGLE SUBMITTAL
02-07-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET

DESIGNED	A.M.M.
DRAWN	S.T.S.
CHECKED	A.M.M.
APPROVED	D.W.M.



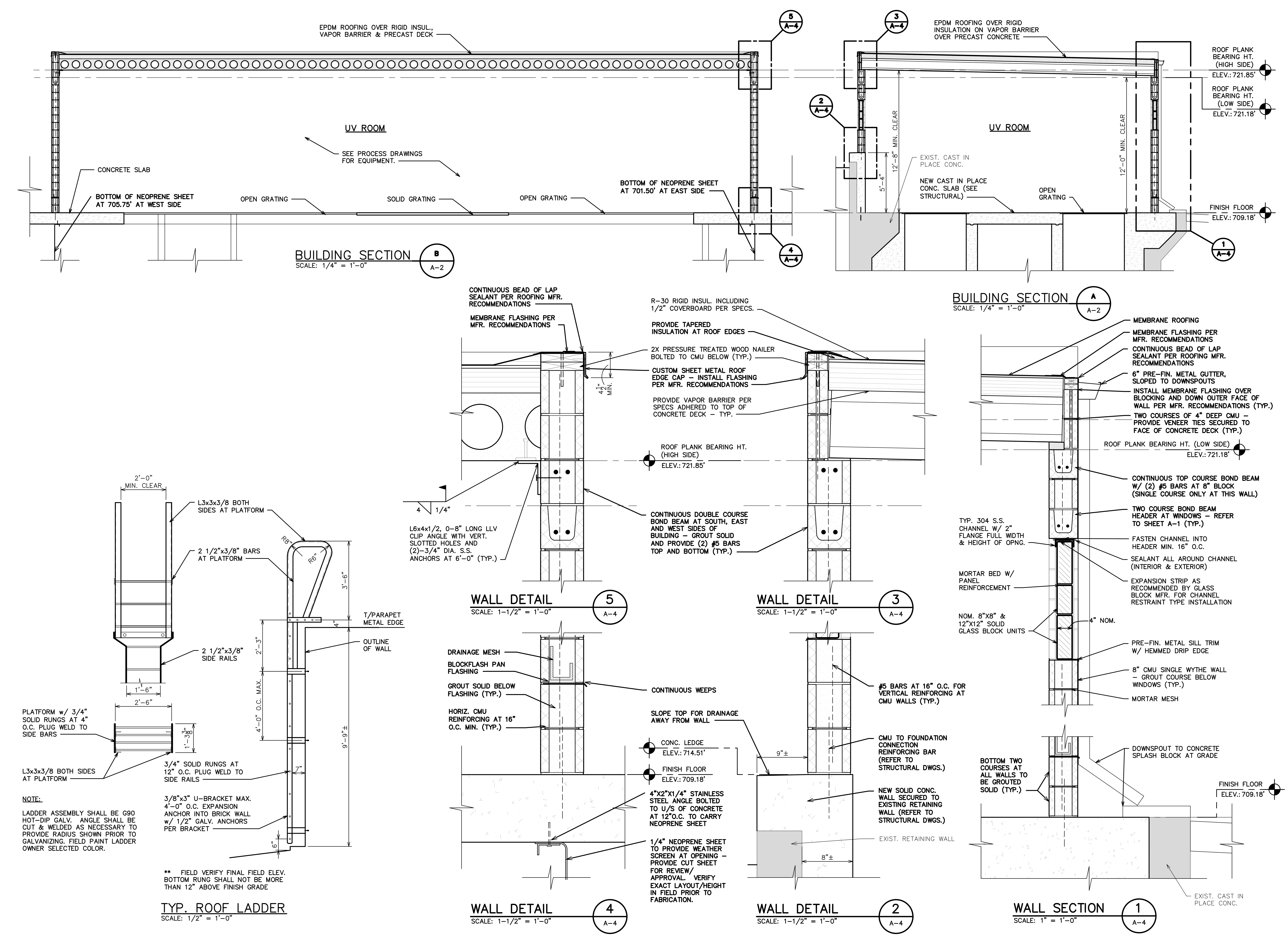
FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

UV DISINFECTION BUILDING ELEVATIONS

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE	SHEET NO.
April 2020	A-3 OF



CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
04-10-20	FINAL EGLE SUBMITTAL
02-07-20	DRAFT SUBMITTAL
12-19-19	DRAFT OWNER REVIEW SET

DESIGNED	A.M.M.
DRAWN	S.T.S.
CHECKED	A.M.M.
APPROVED	D.W.M.

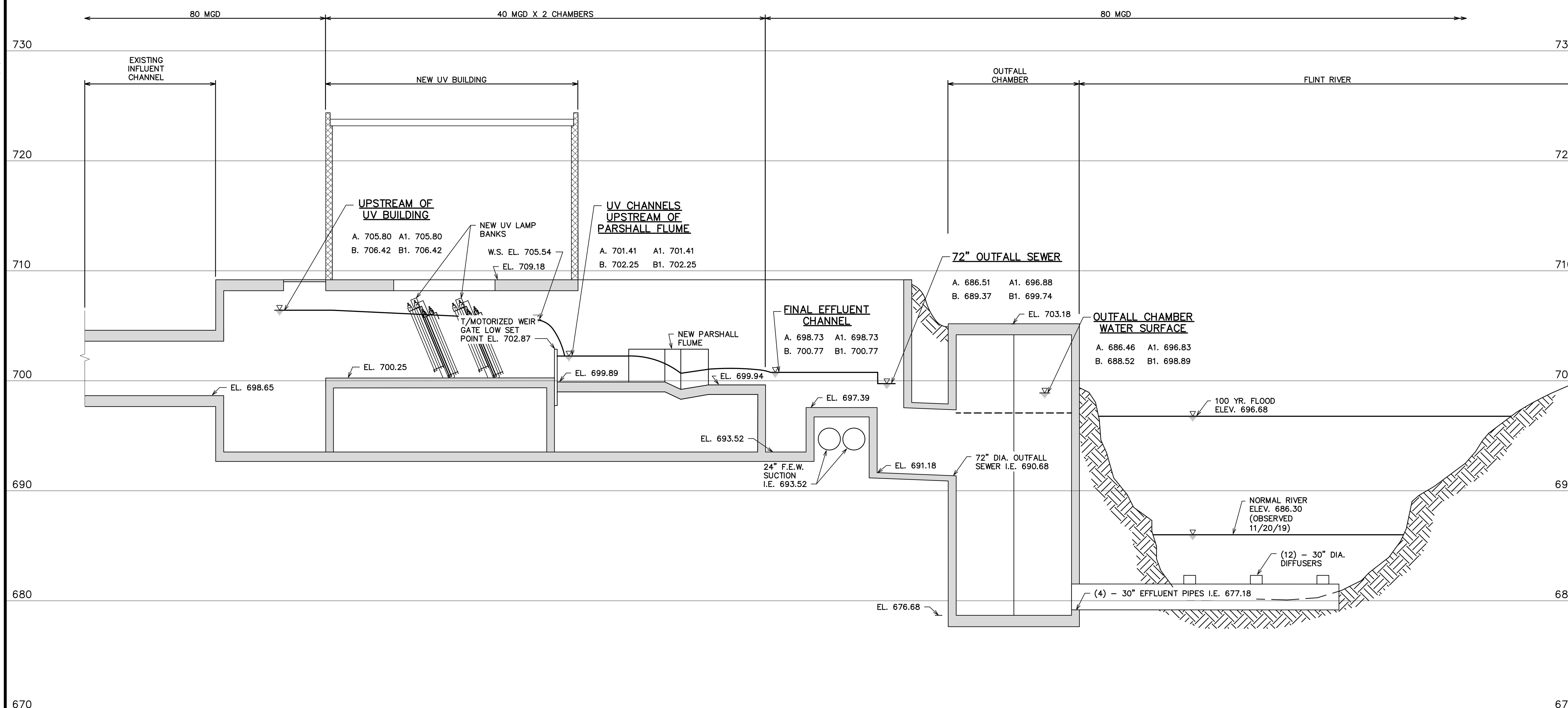
PROJECT LOCATION
N
FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

UV DISINFECTION BUILDING SECTIONS & DETAILS

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. A-4 OF



HYDRAULIC PROFILE

SCALE:
HORIZ. N.T.S.
VERT. 1" = 5'-0"

HYDRAULIC PROFILE

	NORMAL RIVER EL. 686.30	100 YEAR FLOOD EL. 696.68
AVG FLOW = 20 MGD	A. XXX.XX	A1. XXX.XX
PEAK FLOW = 80 MGD	B. XXX.XX	B1. XXX.XX

* WSE DURING 80 MGD @ 100 YEAR FLOOD EL. 696.68 SHOWN ON PROFILE.

CITY of FLINT EST. 1855 MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	

PROJECT LOCATION
FLINT WPCF
N

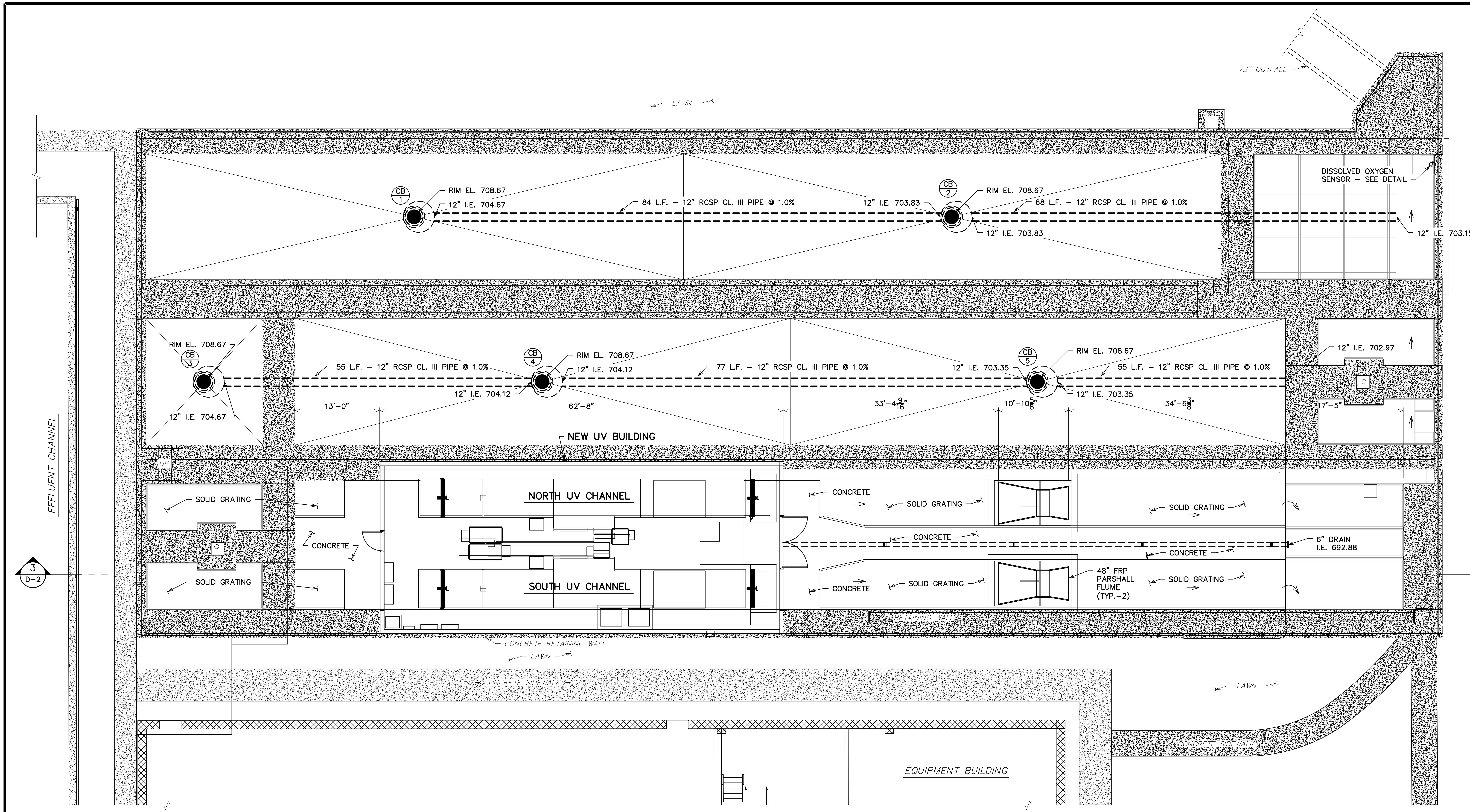
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

PROCESS LEGEND AND HYDRAULIC PROFILE

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. P-1 OF

5/7/2020 8:45 AM
HRC_OLW.ctb
V:\201902\20190265\P\WPCF UV Design\Orthos\DWGs\P01_plot.dwg
Roberts Tom



PLAN VIEW

SCALE: 1/8" = 1'–0"

N

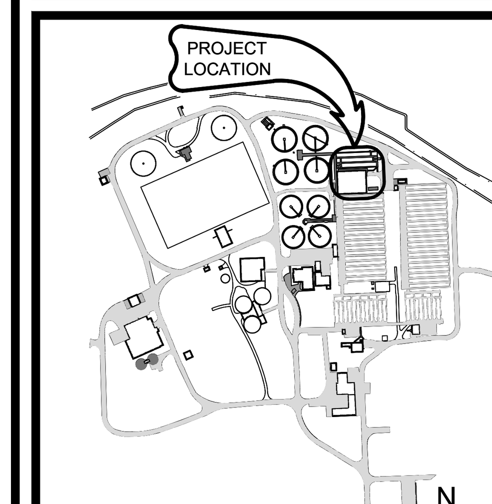
CITY of FLINT
EST. 1855
MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5–7–20	FINAL EGLE SUBMITTAL
2–7–20	DRAFT SUBMITTAL
12–19–19	DRAFT OWNER REVIEW SET

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	



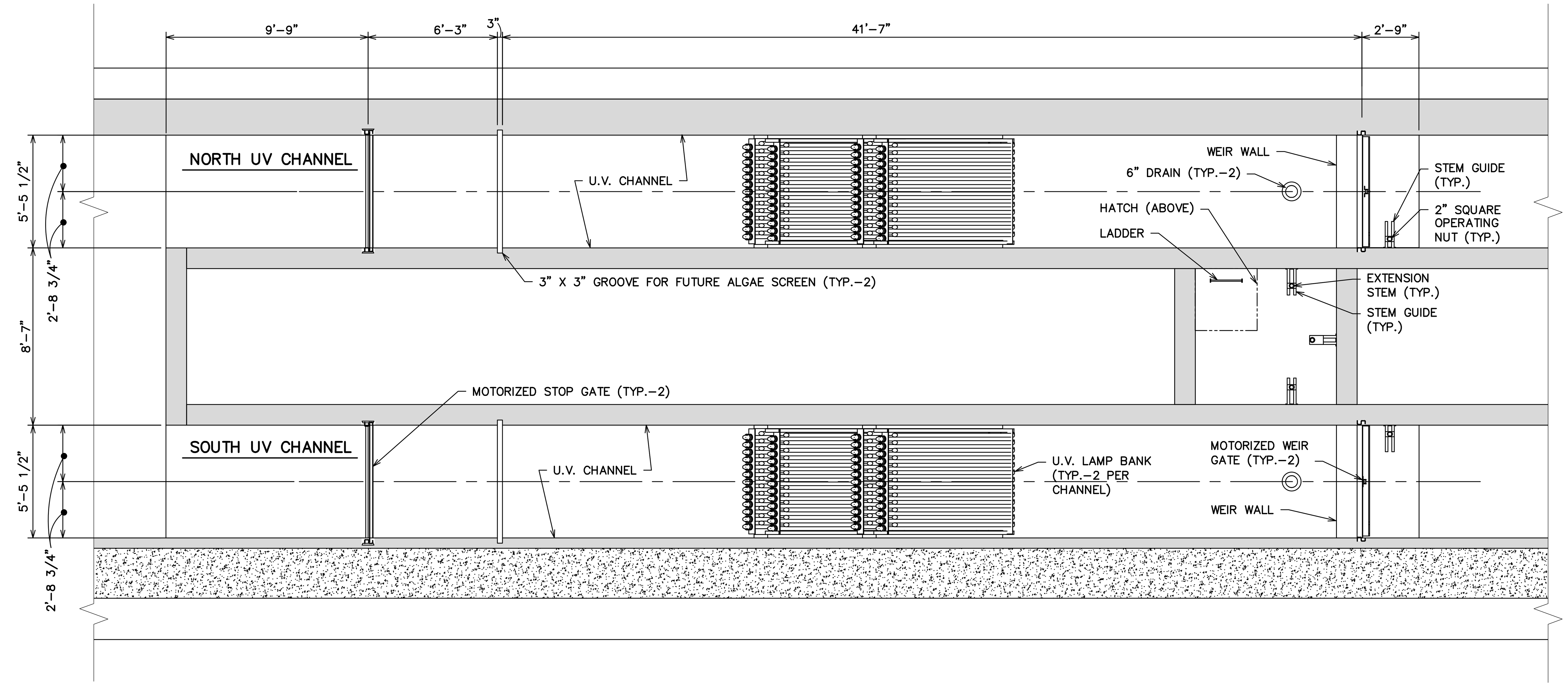
FLINT WPCF

CITY OF FLINT

**FLINT WPCF
ULTRAVIOLET
DISINFECTION
DESIGN**

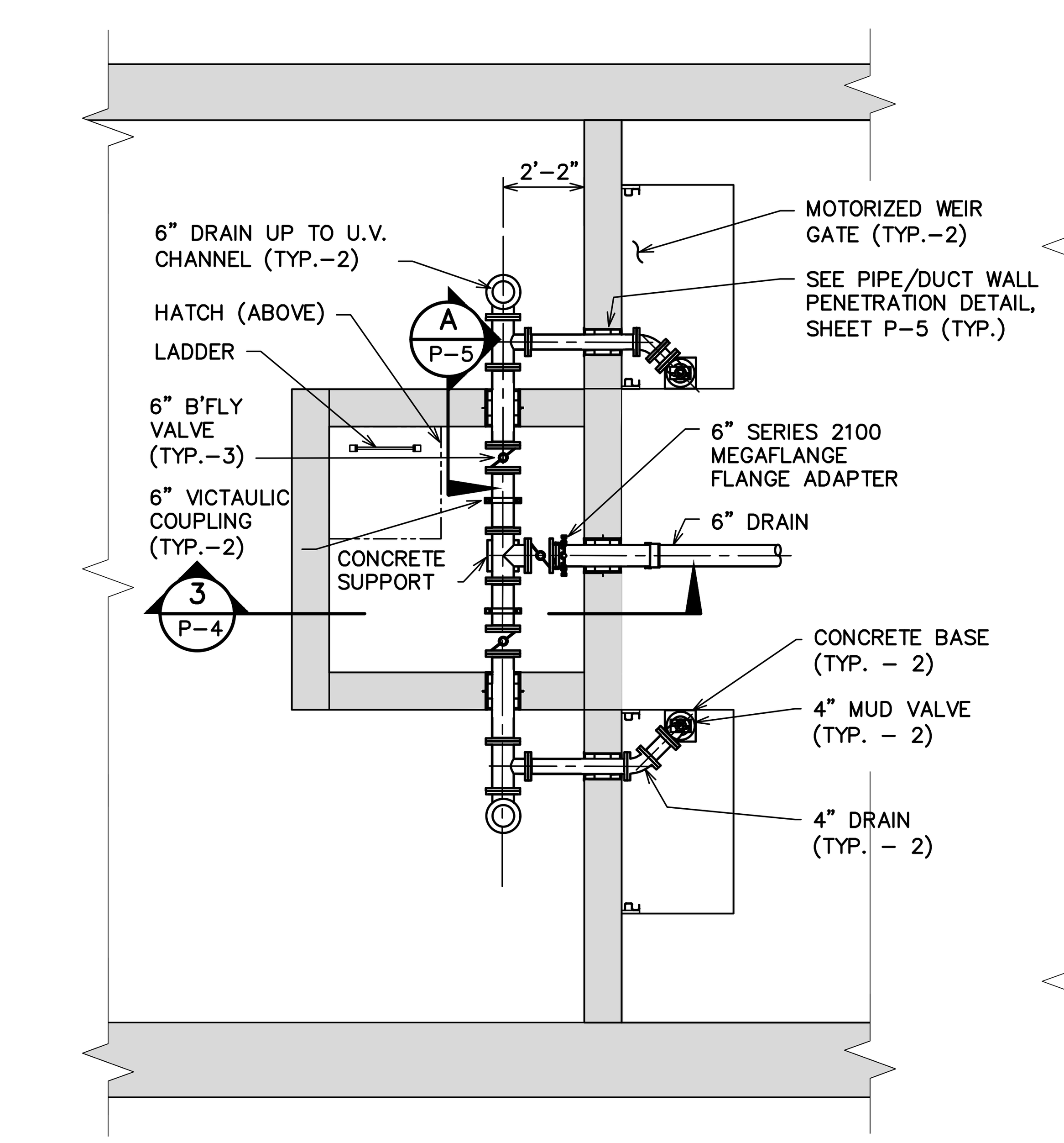
NEW UV
CHANNEL PLAN

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. P–2 OF



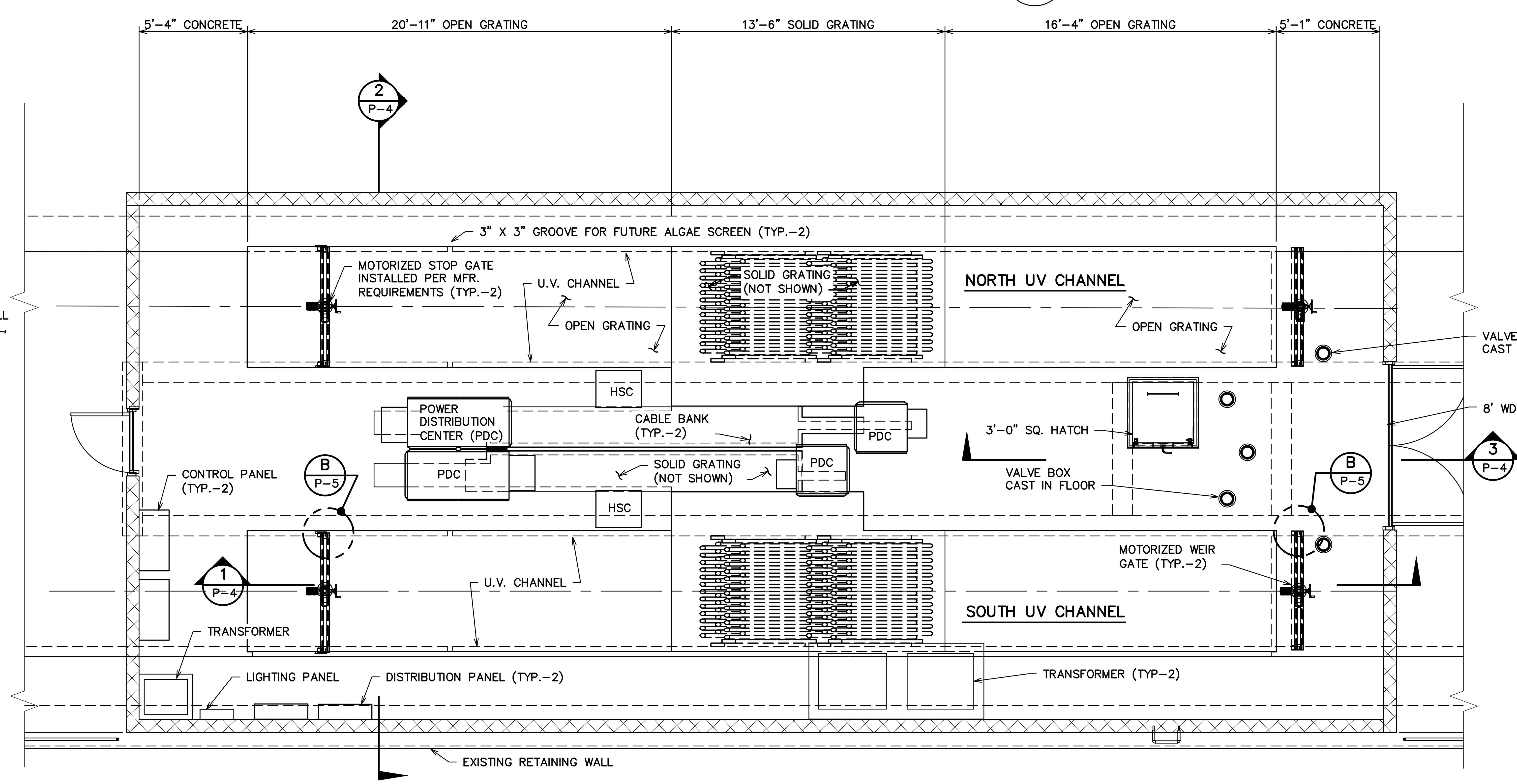
SECTIONAL PLAN @ EL. 701.02

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



SECTIONAL PLAN @ EL. 694.52

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



SECTIONAL PLAN @ EL. 709.18

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

1/4" = 1'-0" 0 1 2 4 8

SCALE IN FEET

FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

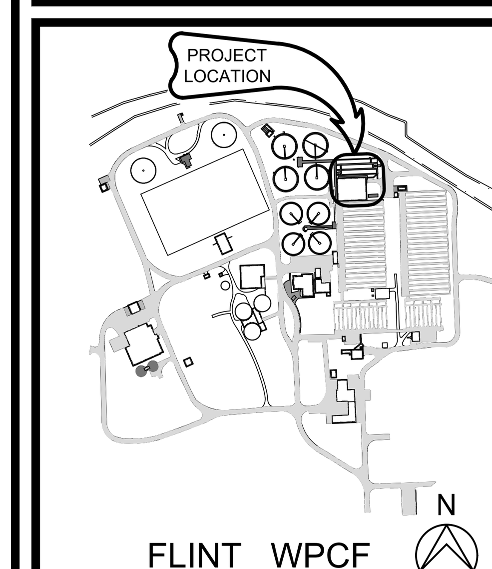
CITY of FLINT MICHIGAN 1855

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5-7-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	

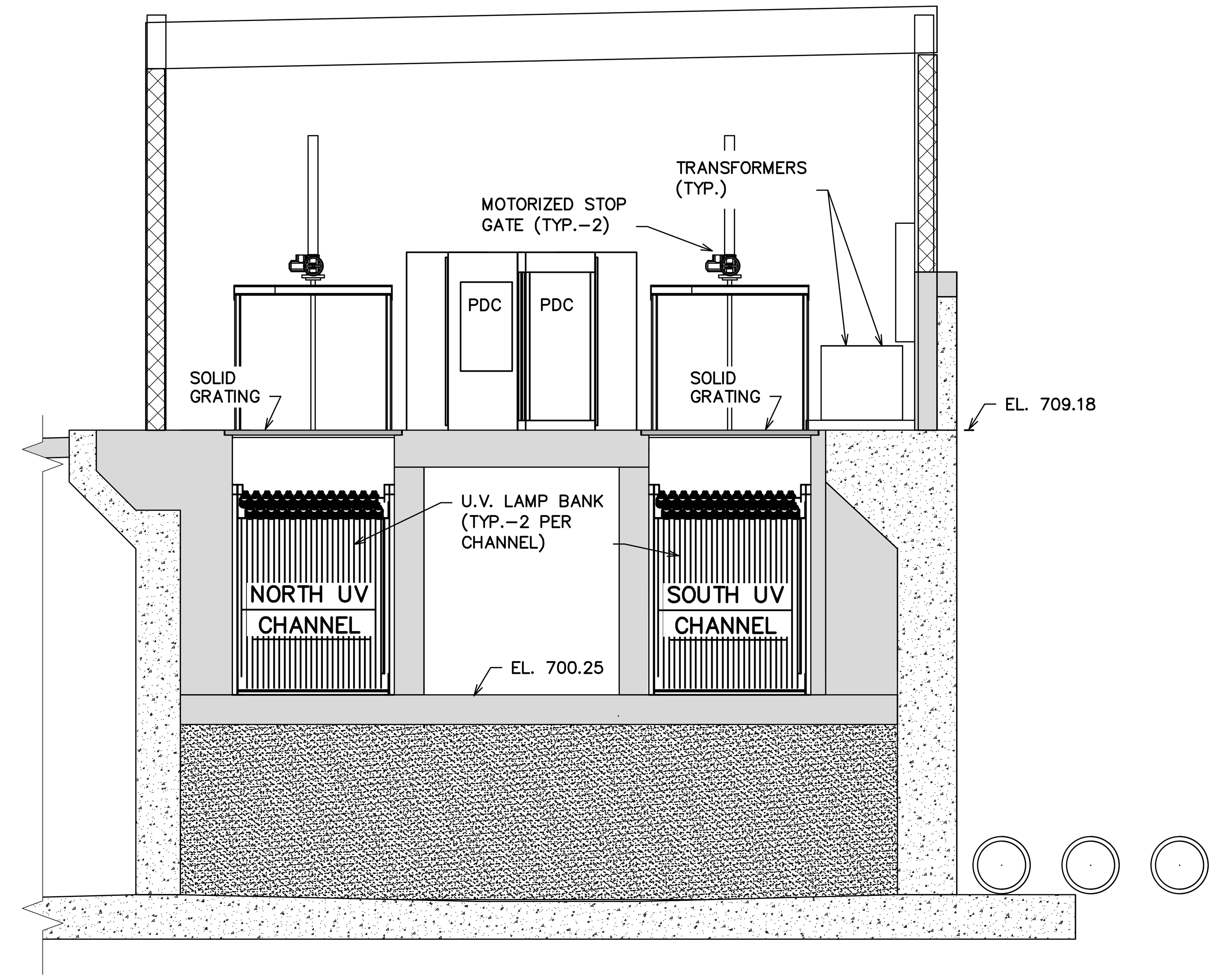


CITY OF FLINT

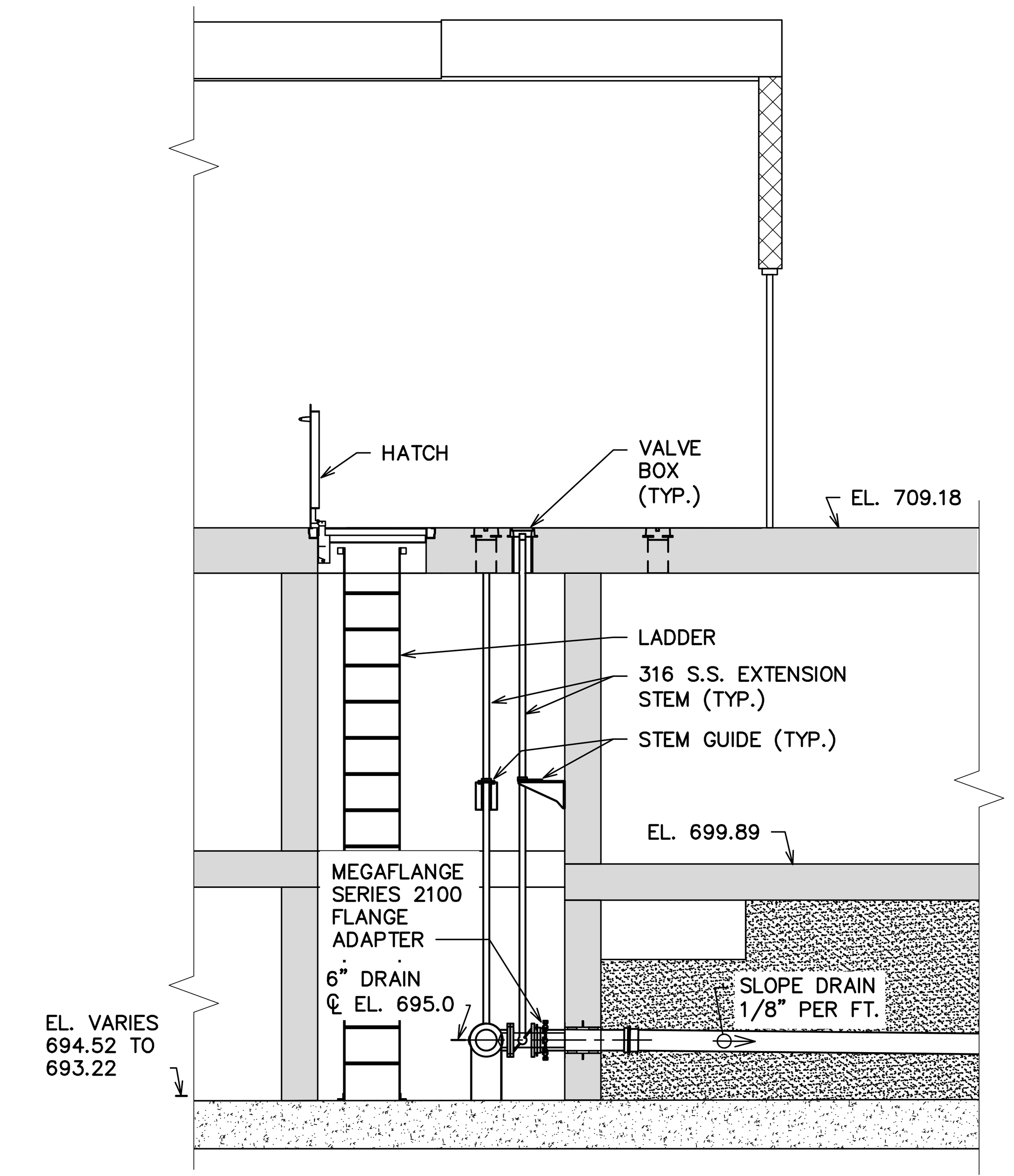
FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

NEW UV BUILDING PLANS

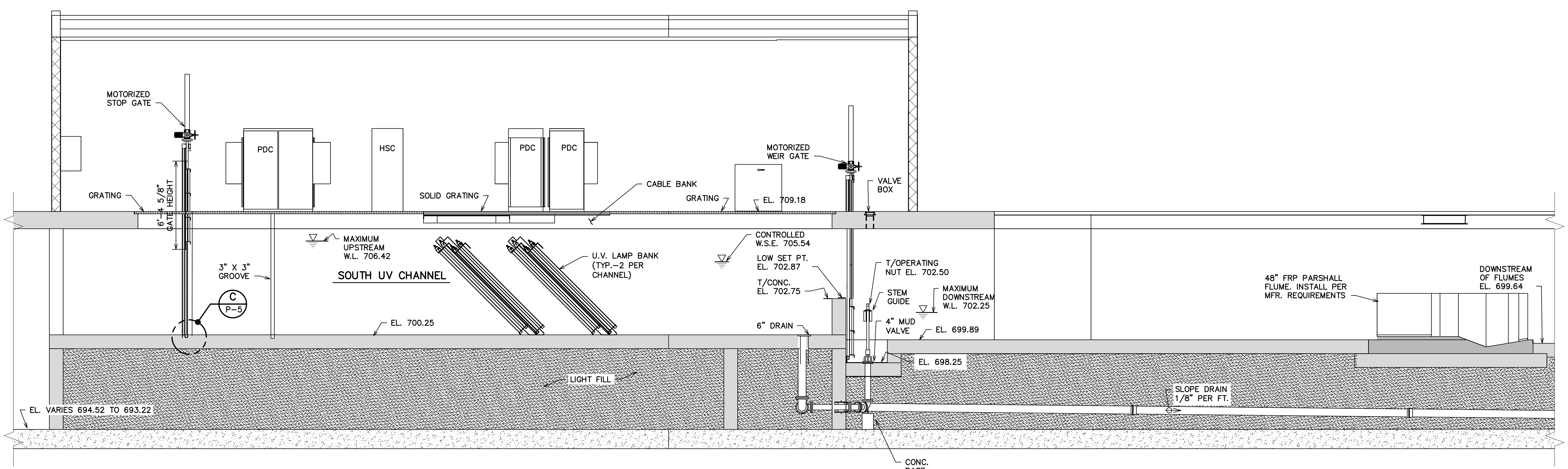
HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. P-3 OF



SECTION 2
SCALE: 1/4" = 1'-0"
P-3



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



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

1/4" = 1'-0" 0 1 2 4 8
SCALE IN FEET

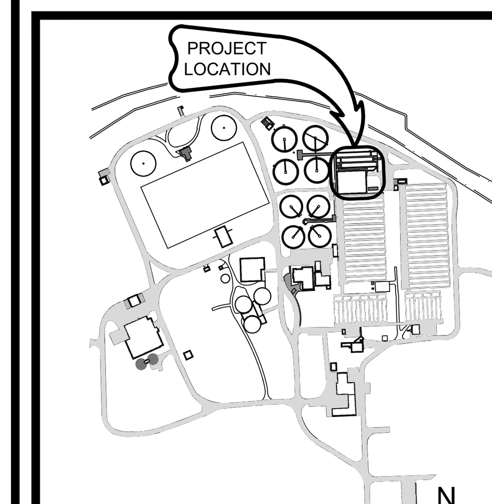
FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5-7-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	



CITY OF FLINT

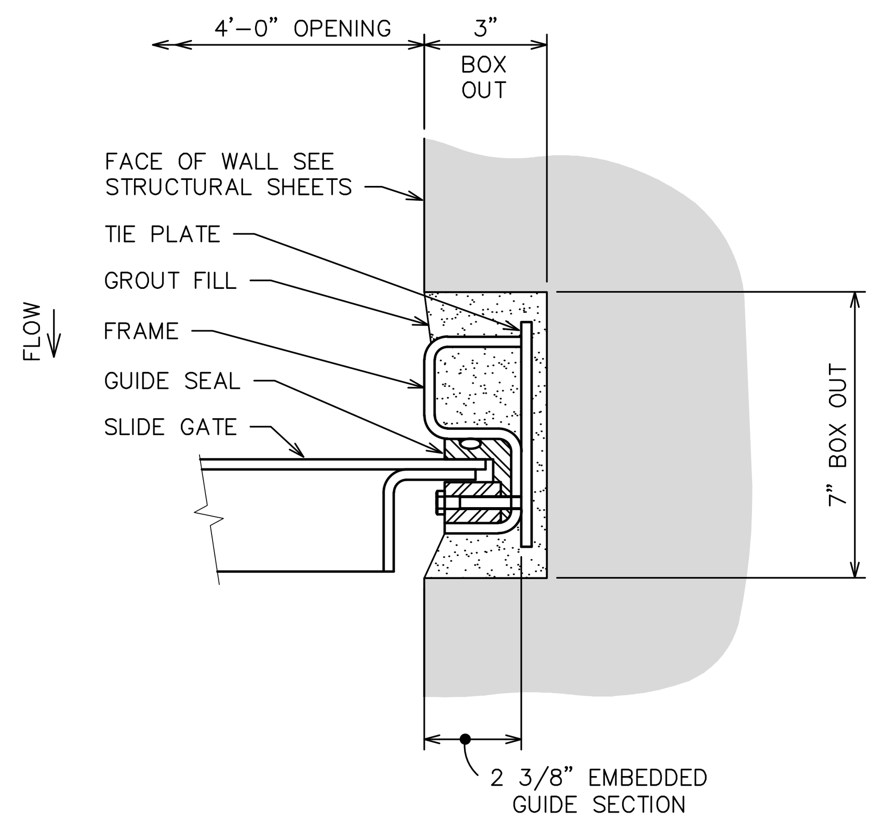
FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

NEW UV BUILDING SECTIONS

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE: April 2020	SHEET NO. P–4 OF

VALVE AND GATE SCHEDULE						
MARK	SIZE	TYPE	OPERATOR	STEM	EMBEDDMENT	DESCRIPTION
V-1	6"	BF	N	E	-	NORTH UV CHANNEL DRAIN
V-2	6"	BF	N	E	-	SOUTH UV CHANNEL DRAIN
V-3	6"	BF	N	E	-	NORTH-SOUTH COMMON DRAIN
V-4	4"	MV	N	NR	-	NORTH UV CHANNEL SUMP PIT DRAIN
V-5	4"	MV	N	NR	-	SOUTH UV CHANNEL SUMP PIT DRAIN
V-6	70"x108"	SG	EM	NR	WALL EMBEDDED	NORTH UV CHANNEL ISOLATION GATE
V-7	70"x108"	SG	EM	NR	WALL EMBEDDED	SOUTH UV CHANNEL ISOLATION GATE
V-8	70"x54"	SG	EM	R	WALL EMBEDDED	NORTH UV CHANNEL MODULATING WEIR GATE
V-9	70"x54"	SG	EM	R	WALL EMBEDDED	SOUTH UV CHANNEL MODULATING WEIR GATE

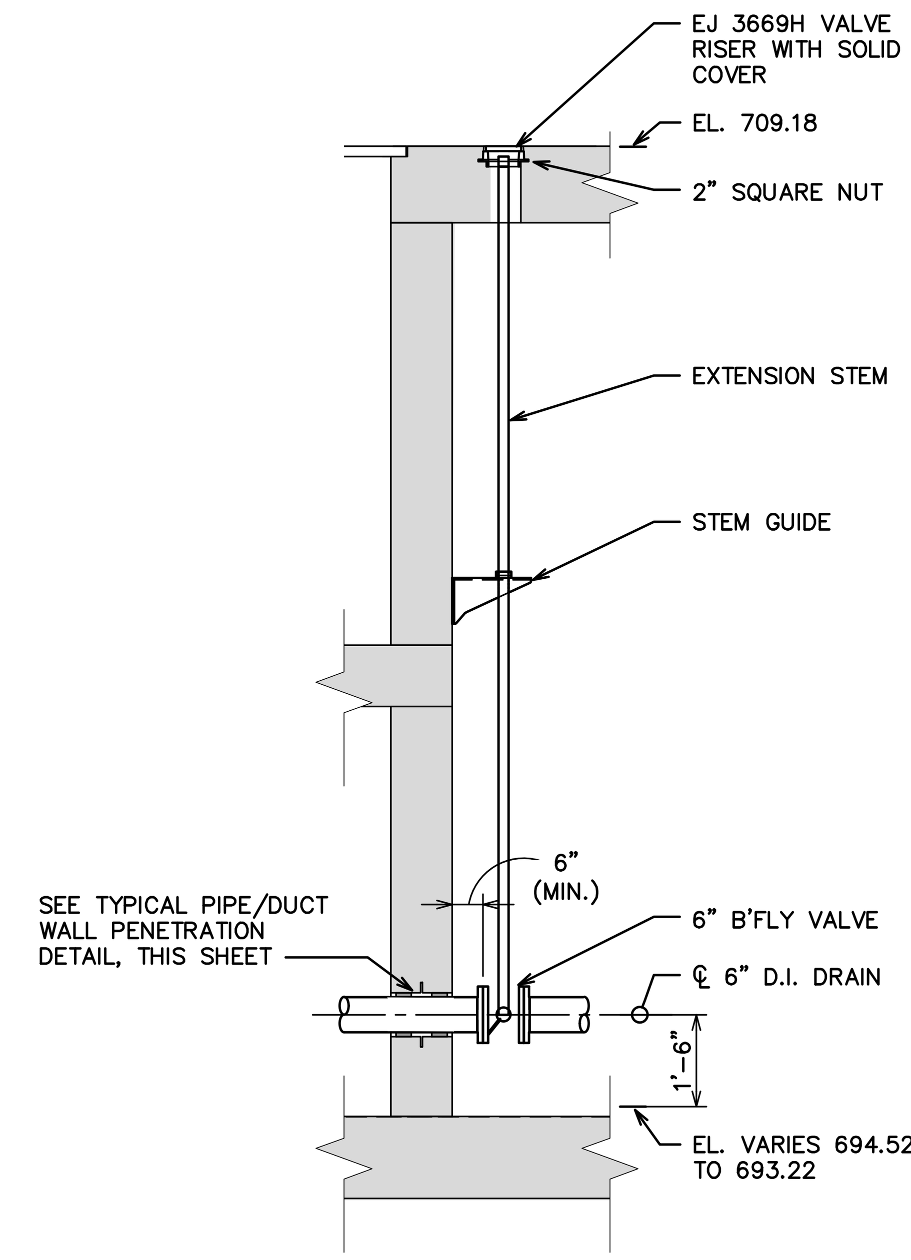
VALVE TYPES		OPERATOR TYPES		STEM	
BF	BUTTERFLY VALVE	EM	ELECTRIC MOTOR - WATERTIGHT	E	EXTENSION STEM
MV	MUD VALVE	N	OPERATING NUT	R	RISING STEM
SG	SLUICE GATE			NR	NON-RISING STEM



PLAN VIEW

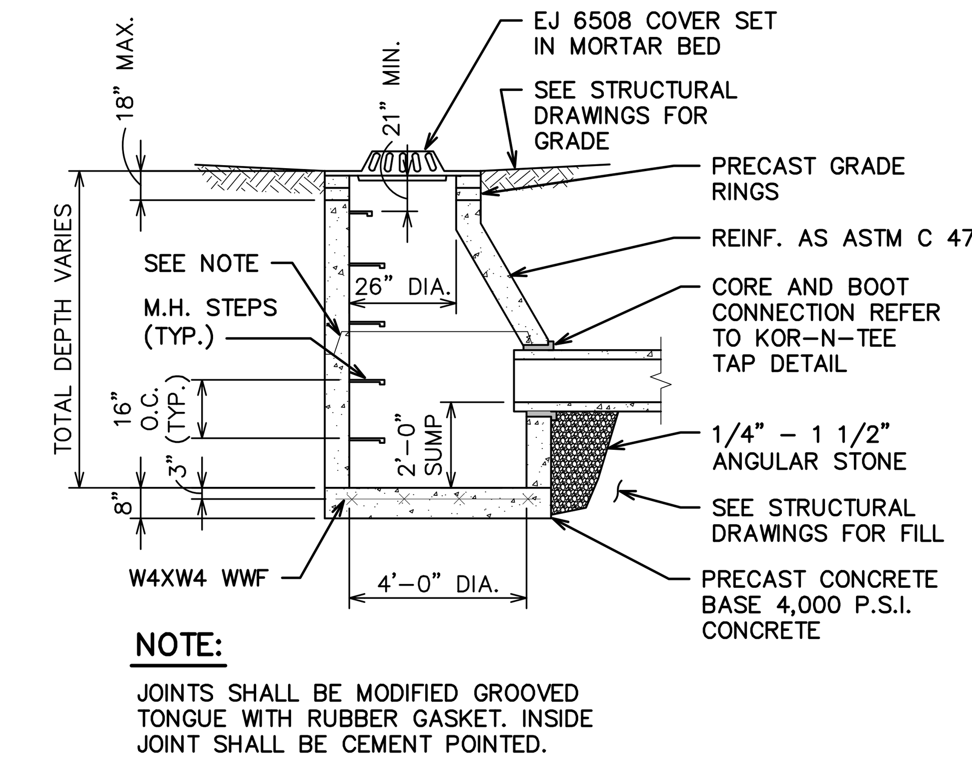
SLIDE GATE AND WEIR GATE
WALL EMBEDMENT DETAIL (B / P-3)

SCALE: 3" = 1'-0"



BUTTERFLY VALVE DETAIL (A / P-3)

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

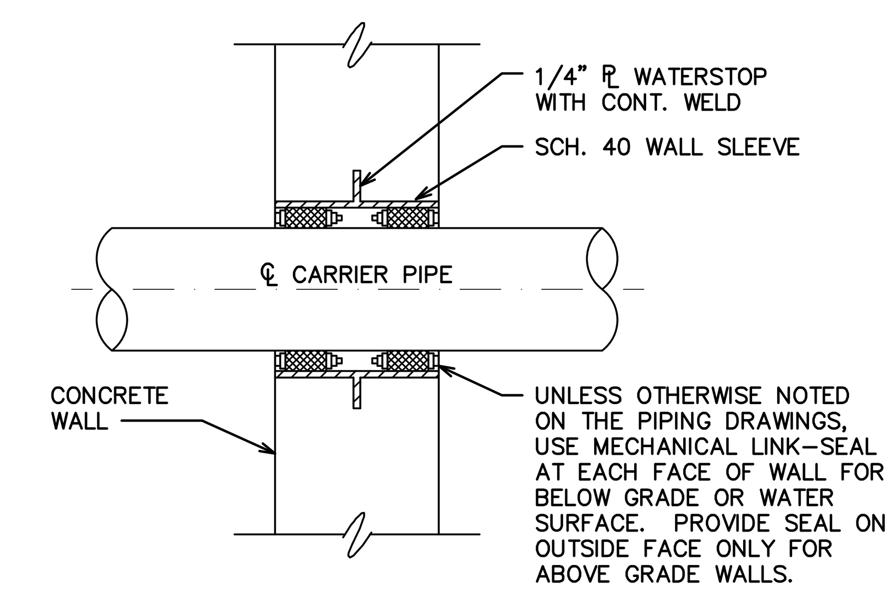


NOTE:

JOINTS SHALL BE MODIFIED GROOVED TONGUE WITH RUBBER GASKET. INSIDE JOINT SHALL BE CEMENT POINTED.

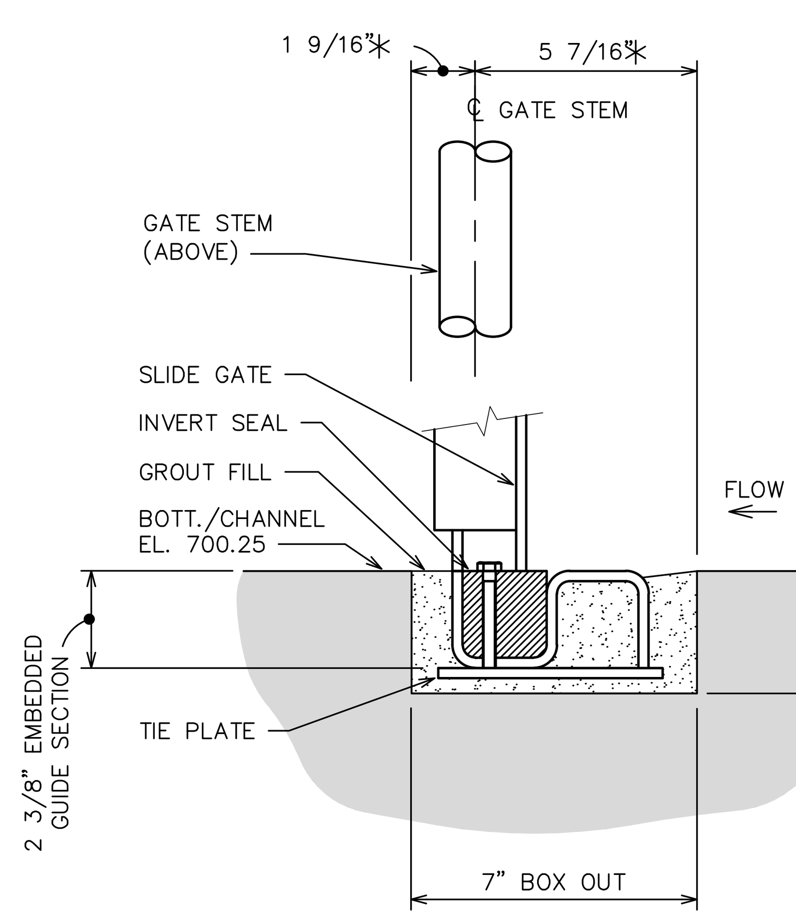
PRECAST CATCH BASIN DETAIL

NO SCALE



TYPICAL PIPE/DUCT WALL
PENETRATION DETAIL

NO SCALE



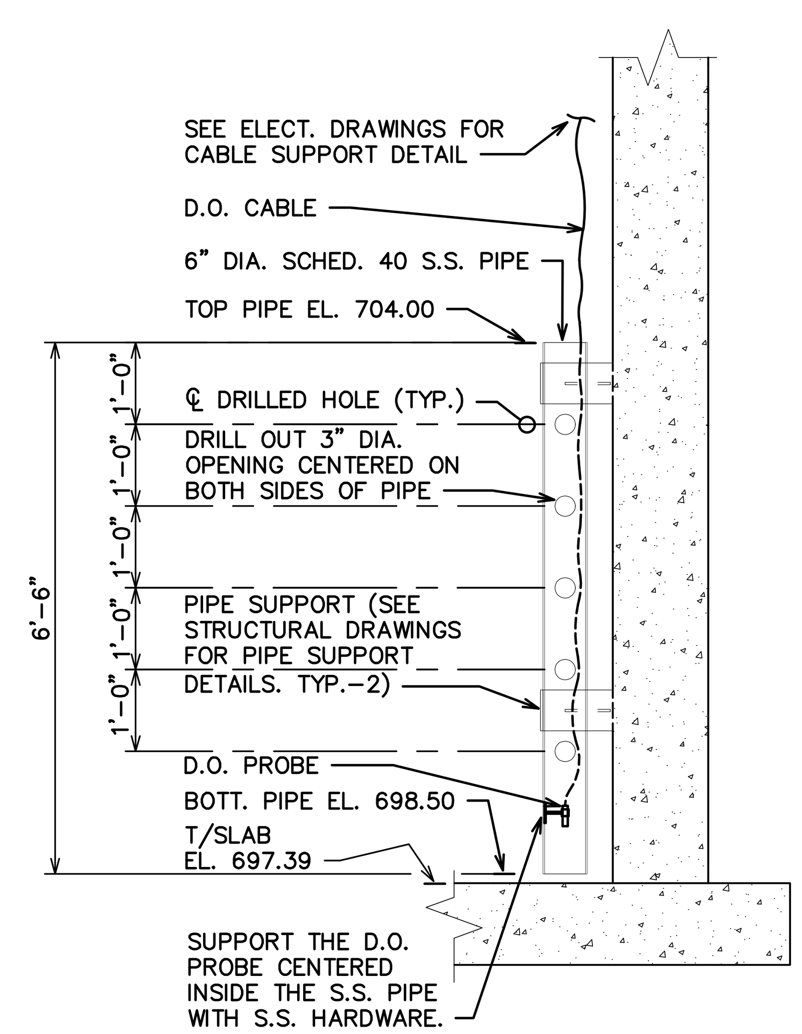
NOTE✱ :

THE CONTRACTOR SHALL COORDINATE LOCATIONS OF BOX OUTS AND GATE STEM OPENINGS IN CONCRETE SLAB ABOVE WITH MFR. APPROVED SHOP DRAWINGS.

ELEVATION

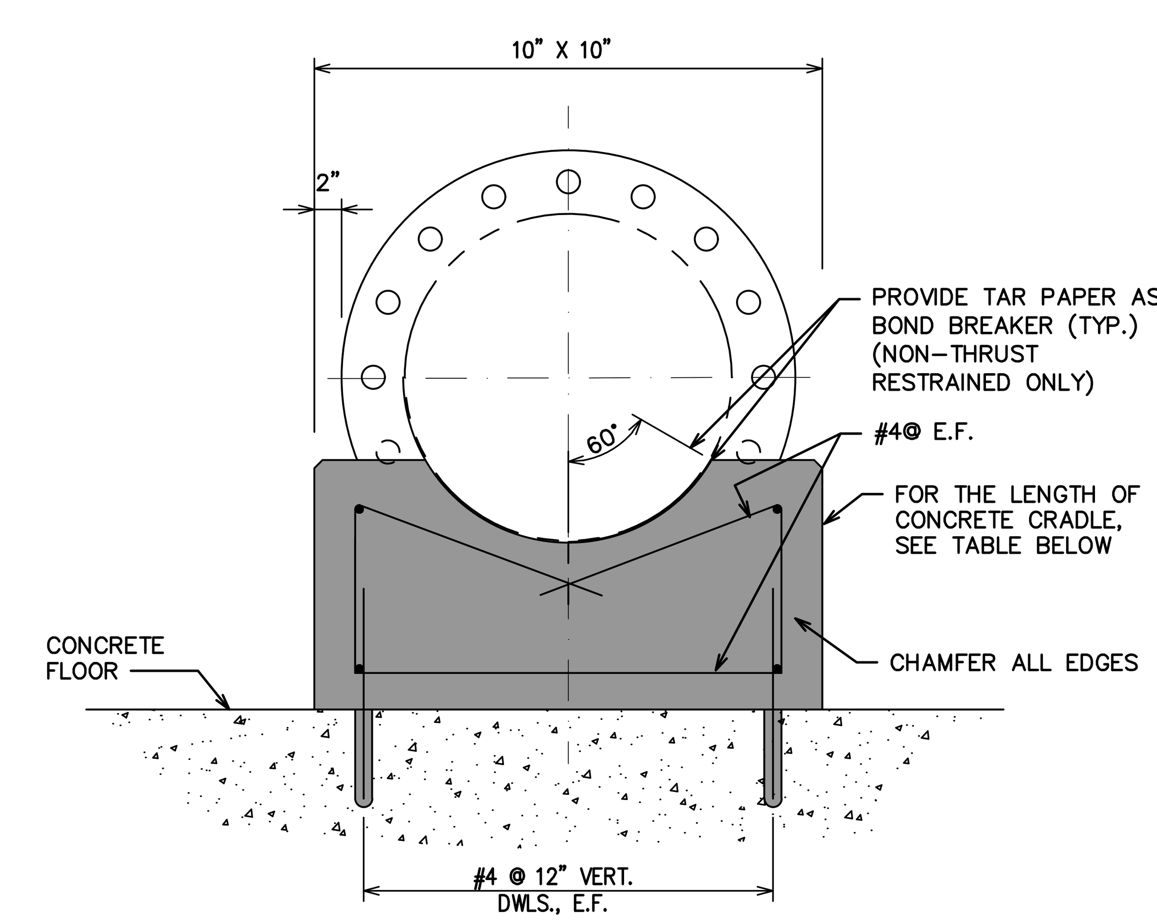
SLIDE GATE FLOOR
EMBEDMENT DETAIL (C / P-4)

SCALE: 3" = 1'-0"



D.O. PROBE GUIDE DETAIL

SCALE 1/2" = 1'-0"



CONCRETE PIPE CRADLE

NO SCALE

CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

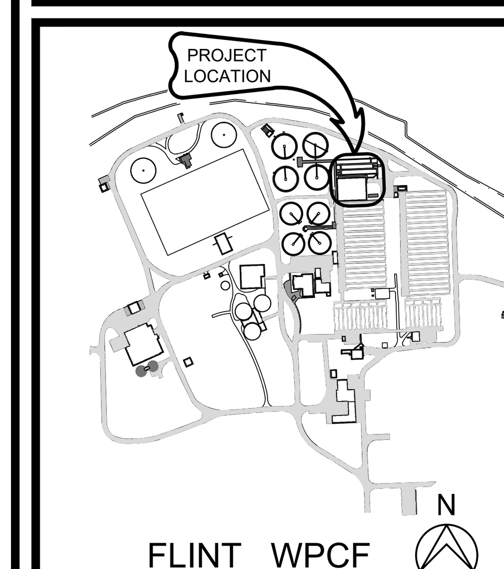
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM

555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5-7-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	J.M.B.
DRAWN	T.W.R.
CHECKED	T.S.W.
APPROVED	



FLINT WPCF

CITY OF FLINT

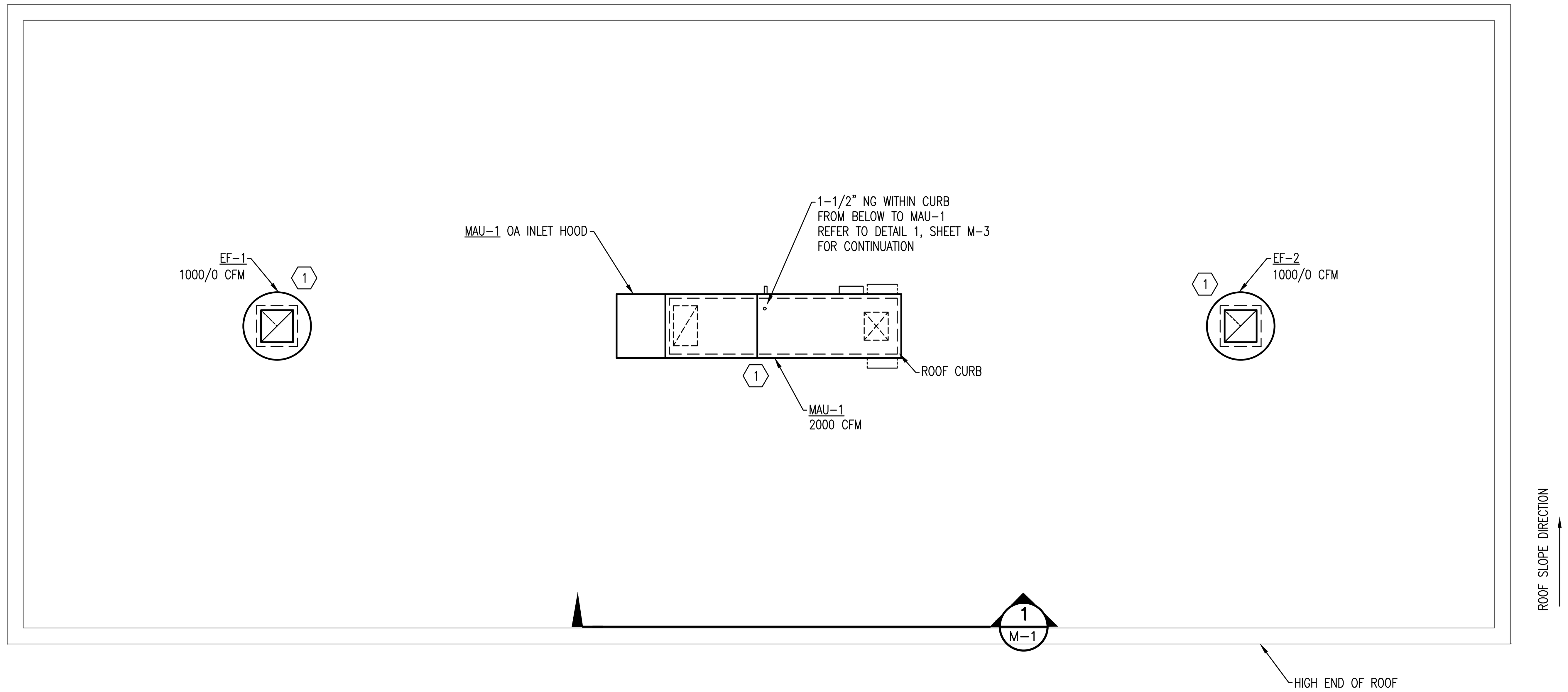
FLINT WPCF
ULTRAVIOLET
DISINFECTION
DESIGN

DETAILS

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE April 2020	SHEET NO. P-5 OF

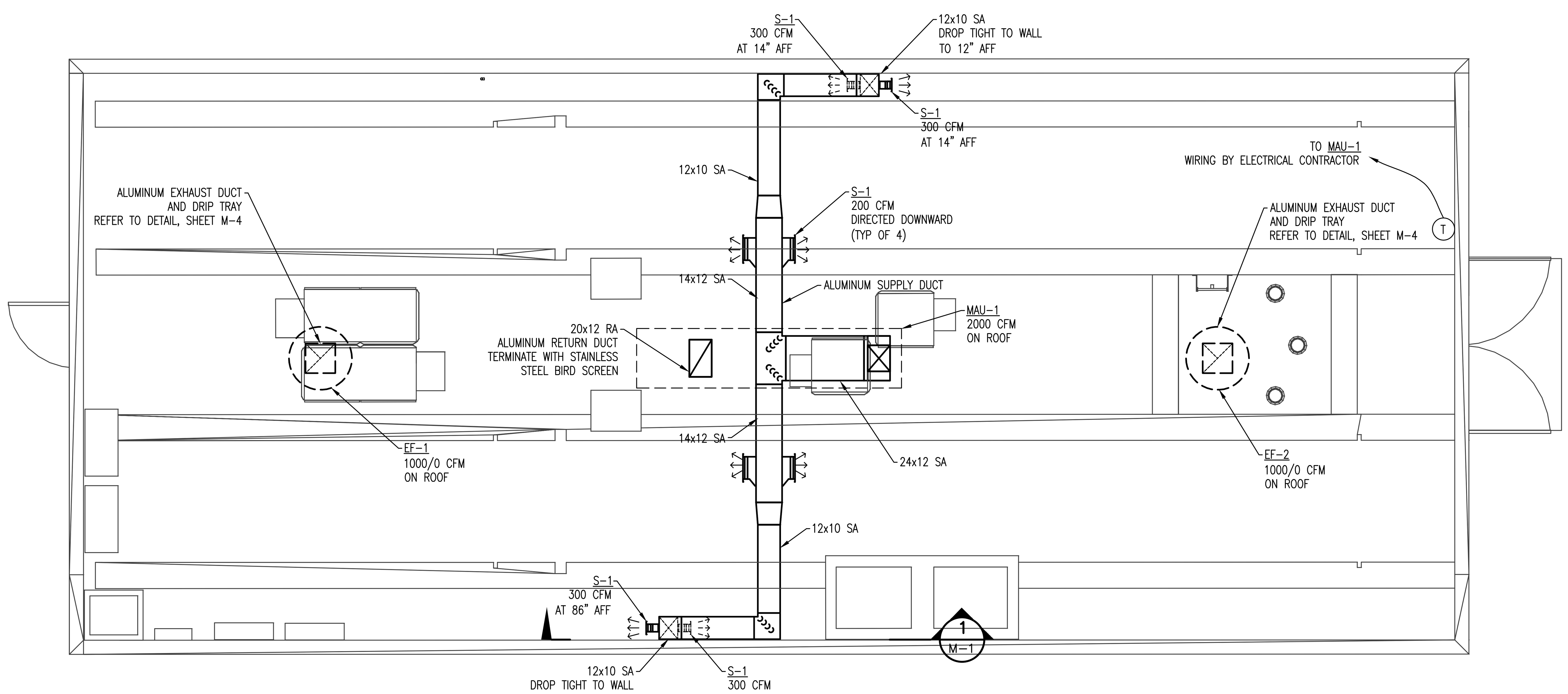
5/7/2020 10:55 AM
HRC_OLW.ctb
V:\201902\20190265\P\WPCF UV Design\Orthos\DWGs\P05_plot.dwg
Roberts Tom

4/7/2020 2:53 PM
HRC_OLW.ctb
F:\Projects\HRC017\Cadd\Mech\HRC017 – UV Building – HVAC – Model.dwg
John Grush



HVAC ROOF PLAN

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



HVAC FLOOR PLAN

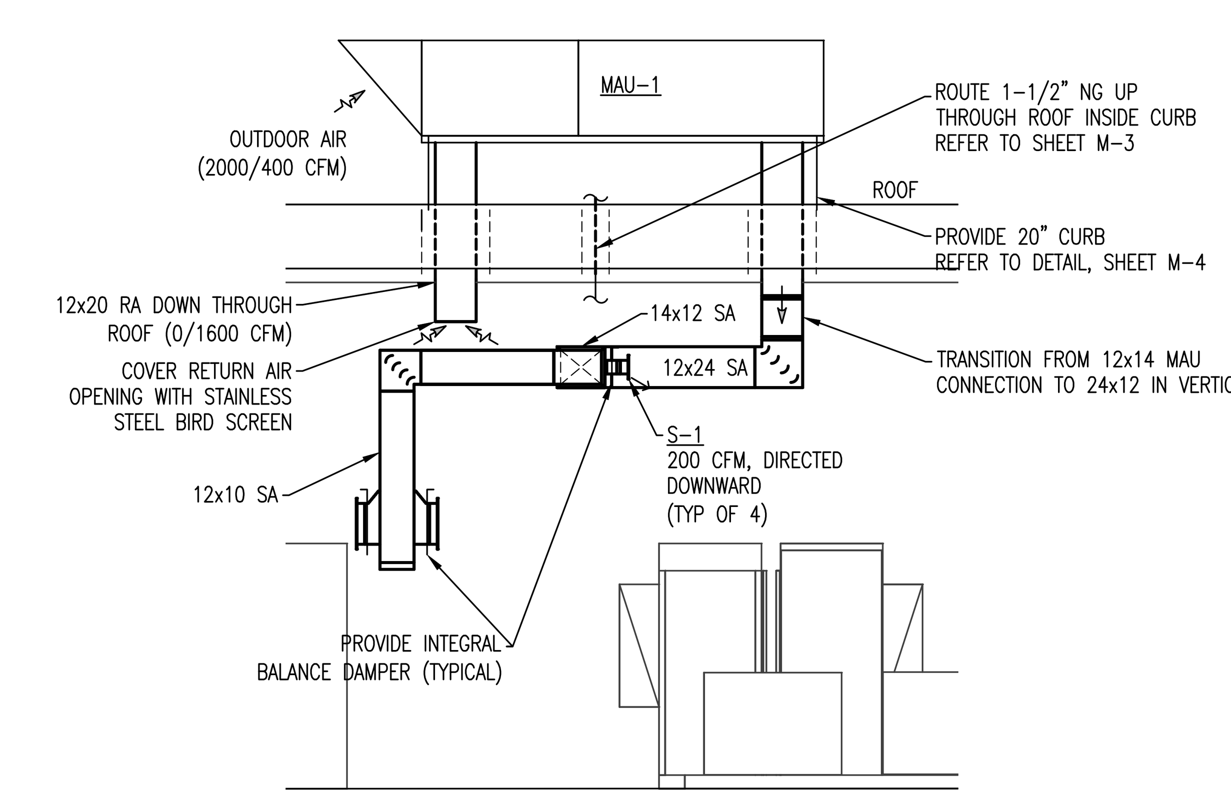
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. DRAWINGS ARE SCHEMATIC IN NATURE. NOT ALL WORK IS SHOWN. ASSUME ADDITIONAL FITTINGS, OFFSETS, ACCESSORIES, ETC. ARE REQUIRED.
2. FIELD VERIFY ALL DIMENSIONS.
3. ANCHORS FOR HANGING EQUIPMENT MUST BE APPROVED BY THE PRECAST CONCRETE ROOF PLANK MANUFACTURER.
4. ALL DUCTWORK SHALL BE ALUMINUM.
5. REFER TO ARCHITECTURAL PLANS AND DETAILS FOR ROOF CONSTRUCTION.

PLAN NOTES: (DENOTED ON SHEET BY #)

1. PROVIDE SLOPED CURB. VERIFY ROOF SLOPE WITH ARCHITECTURAL TRADES BEFORE RELEASING UNIT FOR PRODUCTION.



1 M-1 SECTION

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

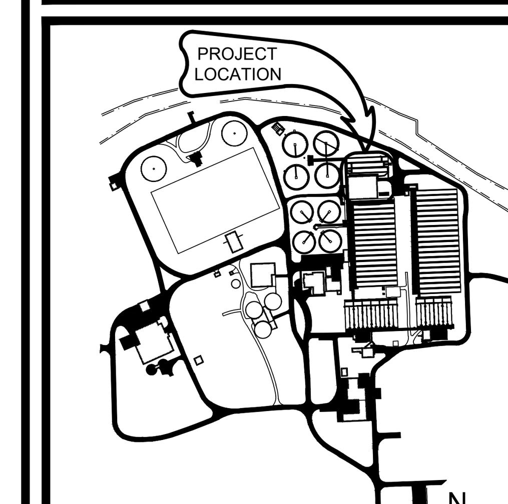
CITY of FLINT EST 1855 MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-2020	FINAL EGLE SUBMITTAL
2-7-2020	DRAFT SUBMITTAL
12-20-2019	DRAFT OWNER REVIEW SET

DESIGNED	SRT
DRAWN	JPG
CHECKED	EJS
APPROVED	



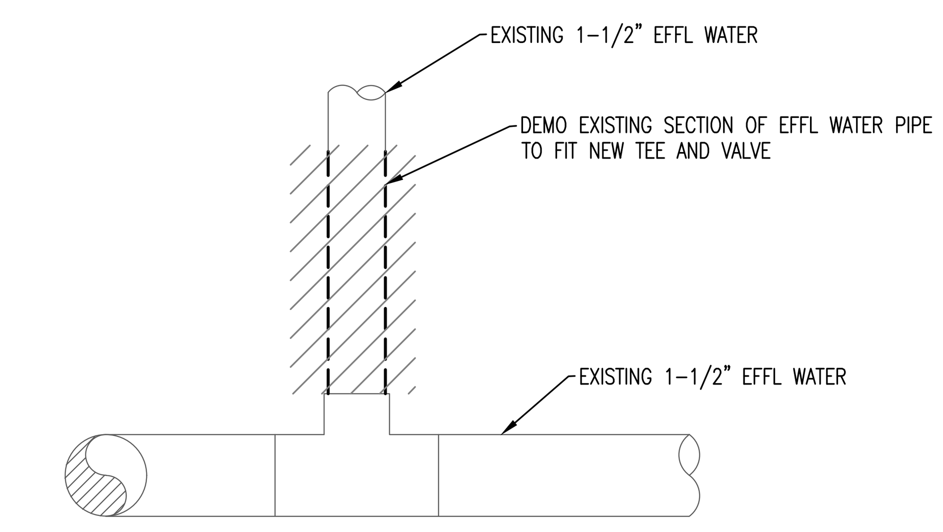
FLINT WPCF

CITY OF FLINT

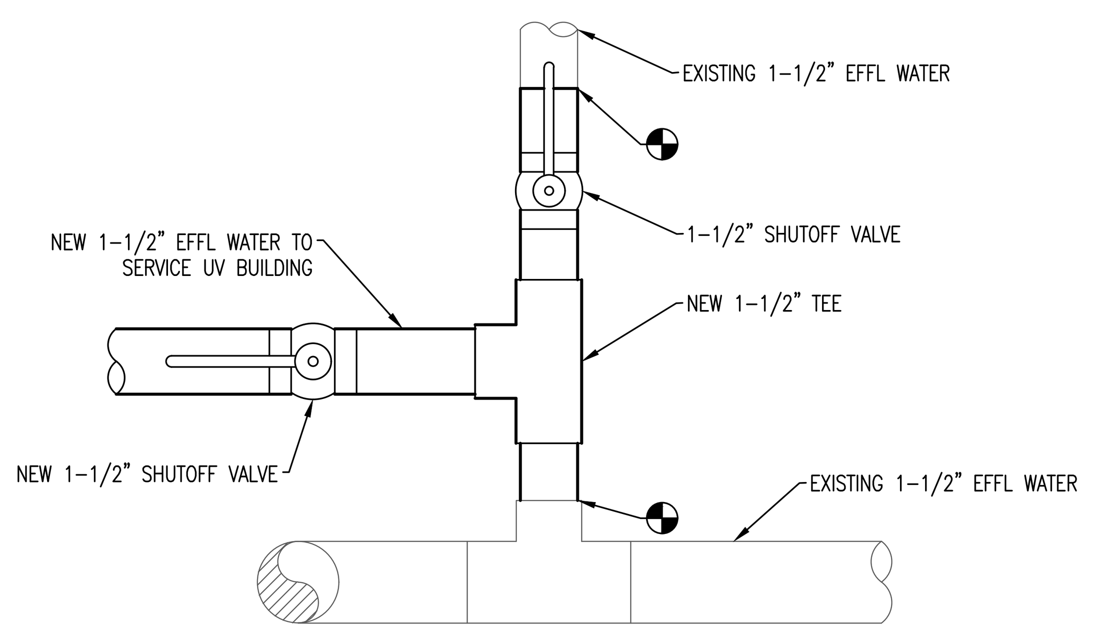
FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

NEW UV BUILDING HVAC FLOOR AND ROOF PLANS

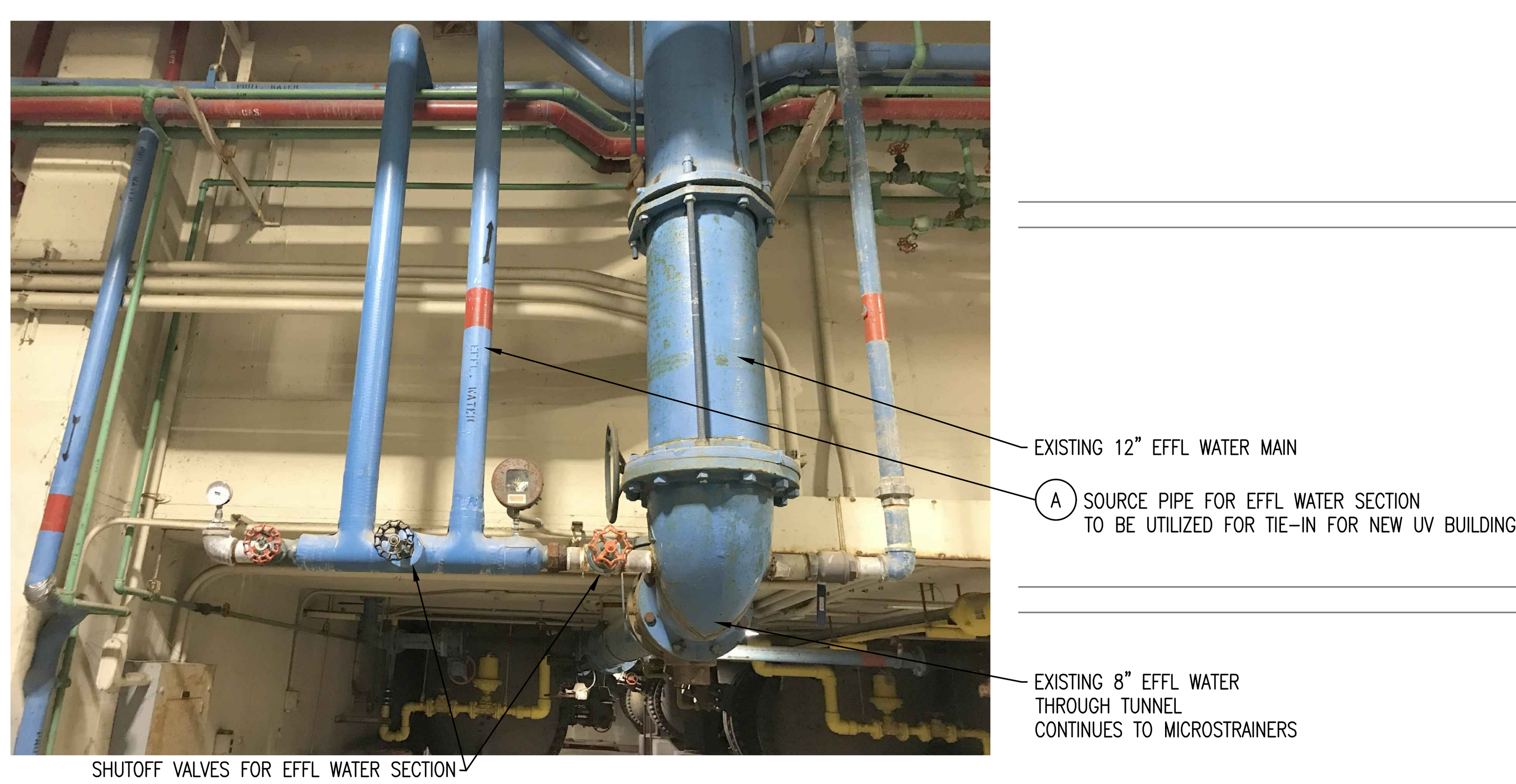
HRC JOB NO.	SCALE
20190265	AS NOTED
DATE April 2020	SHEET NO. M-1 OF



1 M-2 EXISTING DETAIL
SCALE: NOT TO SCALE

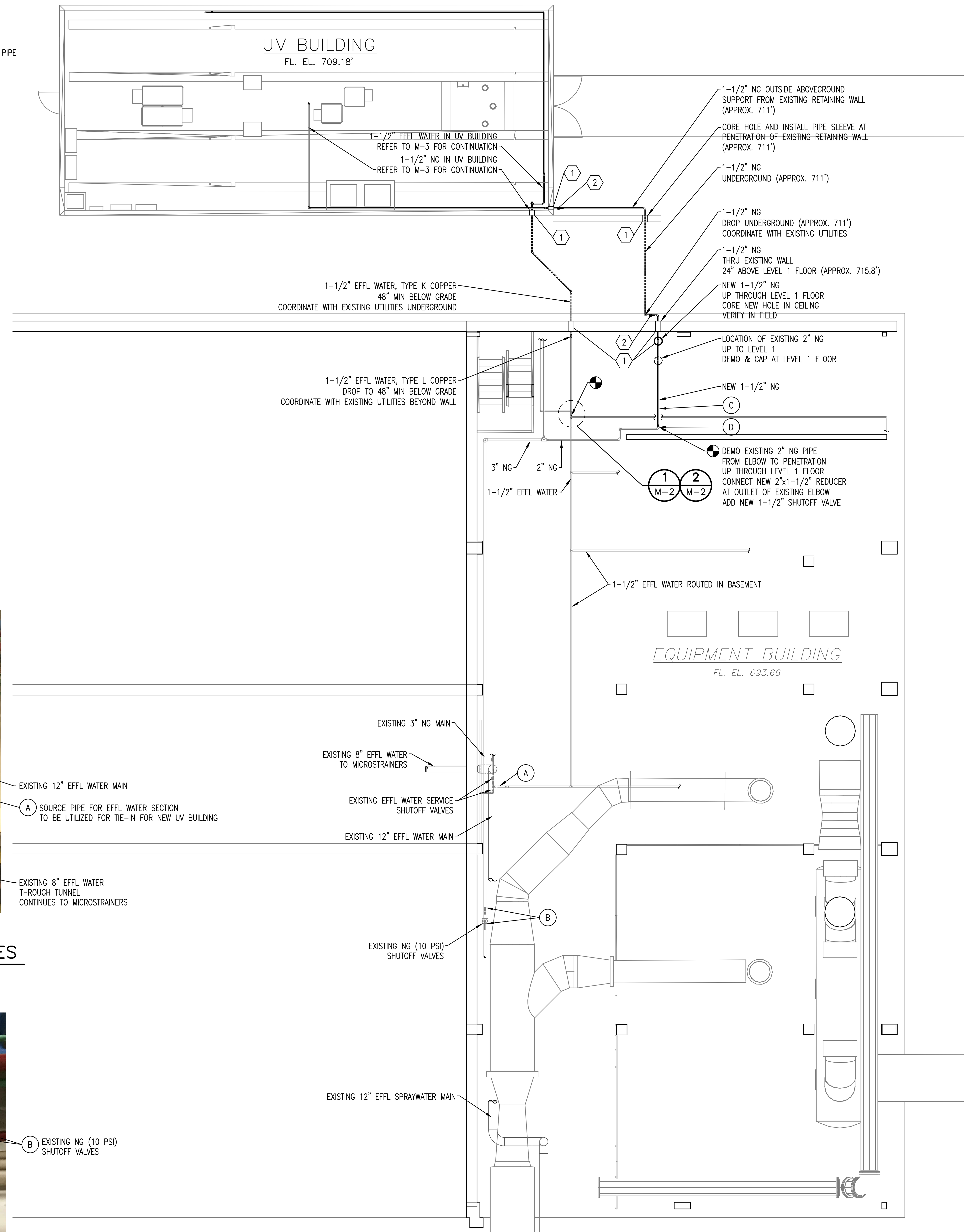


2 M-2 NEW DETAIL
SCALE: NOT TO SCALE



3 M-2 EFFL WATER EXISTING SHUT-OFF VALVES

4 M-2 NG EXISTING SHUT-OFF VALVES



BASEMENT AND UNDERGROUND PLUMBING PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

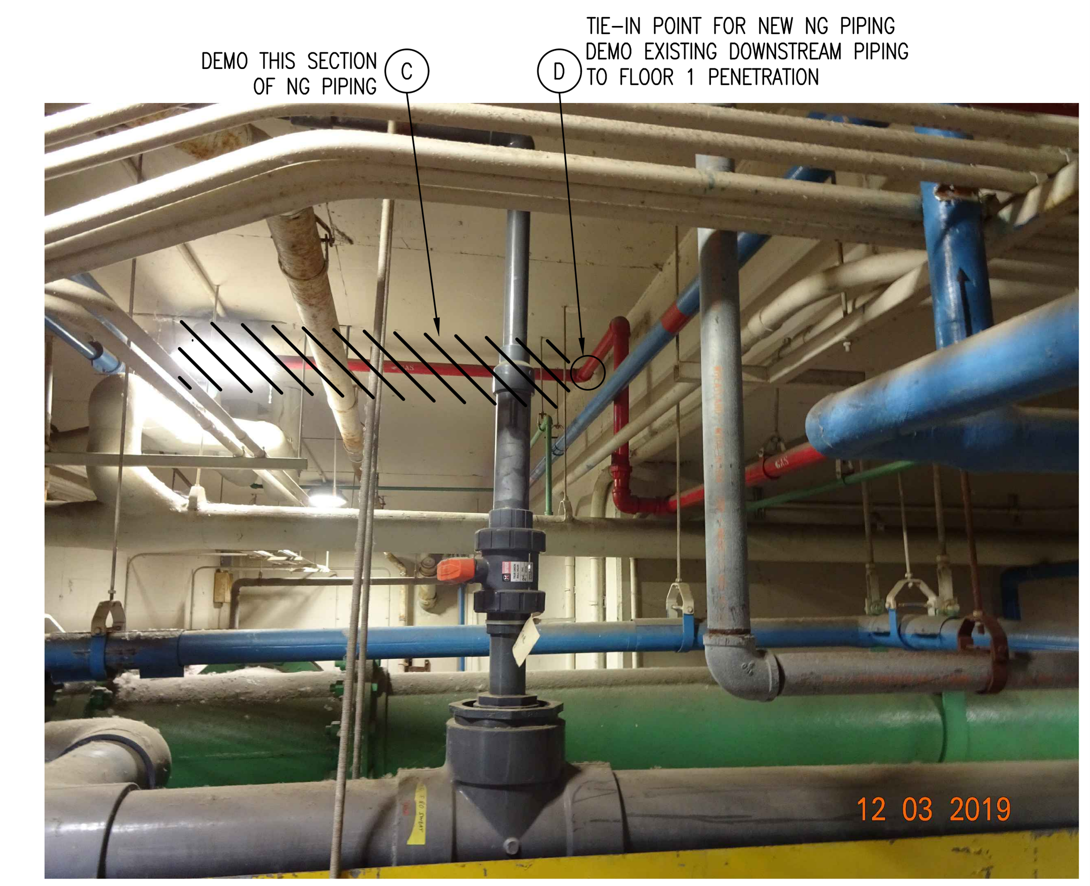
1. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING PIPING INSTALLATION AND UTILITIES (EFFLUENT WATER AND NATURAL GAS) PRIOR TO SUBMITTING BID.
2. DRAWINGS ARE SCHEMATIC IN NATURE. NOT ALL WORK IS SHOWN. ASSUME ADDITIONAL FITTINGS, OFFSETS, ACCESSORIES, ETC. ARE REQUIRED.
3. FIELD VERIFY ALL DIMENSIONS.
4. COORDINATE ALL NEW UNDERGROUND PIPING WITH NEW AND EXISTING UNDERGROUND UTILITIES BEFORE INSTALLATION. SEE DRAWINGS D-1, D-2, P-2, P-3, P-4.
5. ANCHORS FOR HANGING EQUIPMENT MUST BE APPROVED BY THE PRECAST CONCRETE ROOF PLANK MANUFACTURER.
6. ALL EXPOSED PIPING TO BE PAINTED BY GENERAL TRADES PER SPECIFICATION SECTION 09900-PAINTING.

PLAN NOTES: (DENOTED ON SHEET BY #)

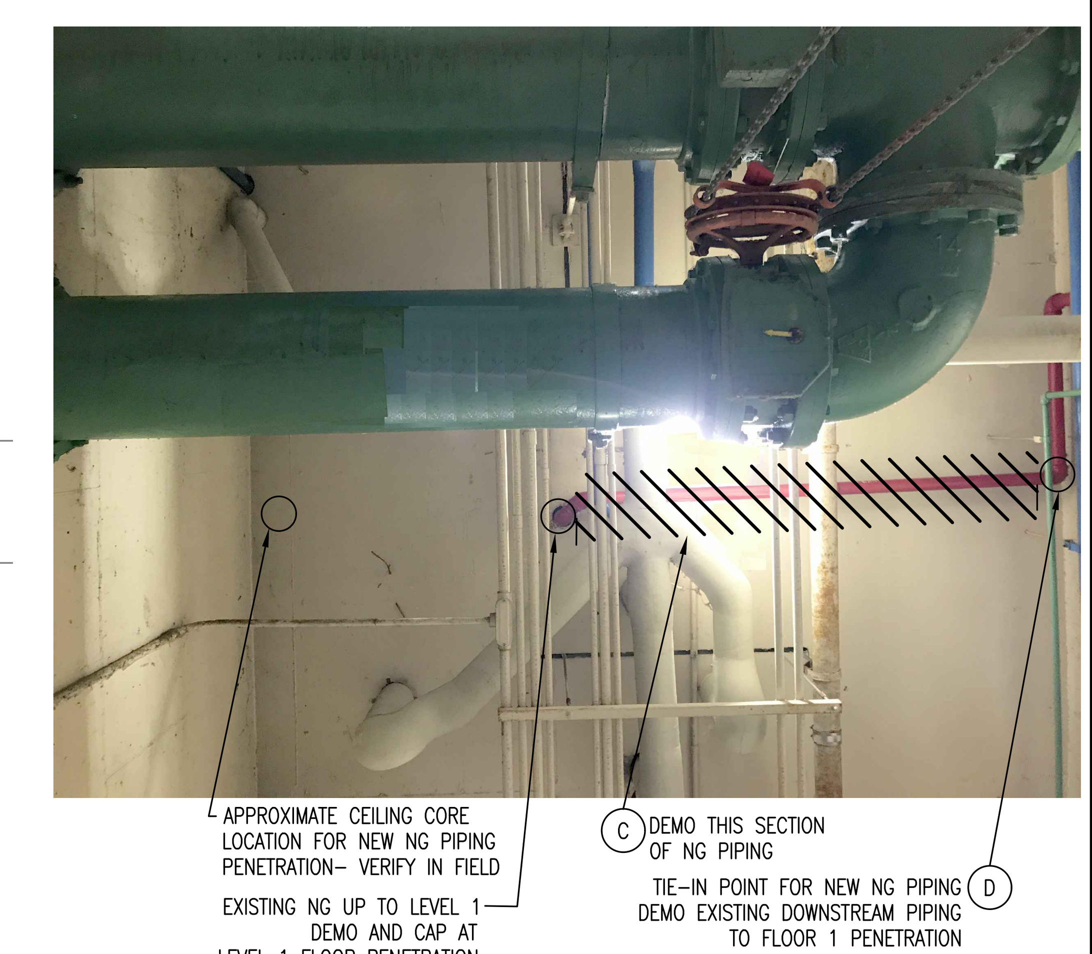
1. SEE WALL AND FLOOR PENETRATION DETAILS ON SHEET M-4.
2. 1-1/2" NG EMERGENCY SHUTOFF VALVE OUTSIDE AND ABOVE GRADE NEXT TO BUILDING. PROVIDE WEATHERPROOF IDENTIFICATION TAG.

LEGEND AND ABBREVIATIONS

≀	PIPE CONTINUES
◐	NEW TO EXISTING TIE-IN POINT
EFFL	EFFLUENT
FL. EL.	FLOOR ELEVATION
MAU	MAKE-UP AIR UNIT
NG	NATURAL GAS



5 M-2 NG TIE-IN LOCATION- VIEW #1



6 M-2 NG TIE-IN LOCATION- VIEW #2

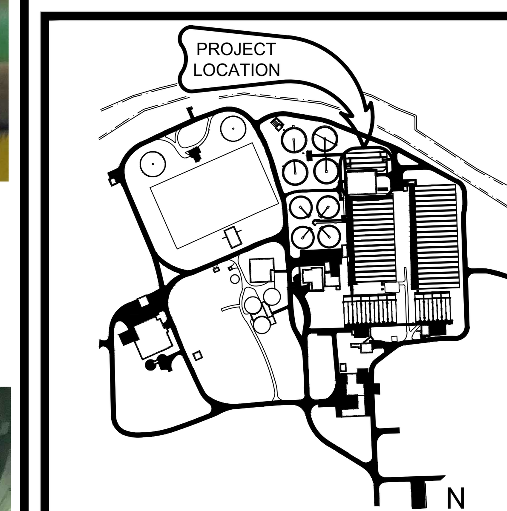
CITY of FLINT MICHIGAN EST 1855

HRC HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE BLOOMFIELD HILLS, MICH.
P.O. BOX 824 48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-2020	FINAL EGLE SUBMITTAL
2-7-2020	DRAFT SUBMITTAL
12-20-2019	DRAFT OWNER REVIEW SET

DESIGNED	SRT
DRAWN	JPG
CHECKED	EJS
APPROVED	



FLINT WPCF

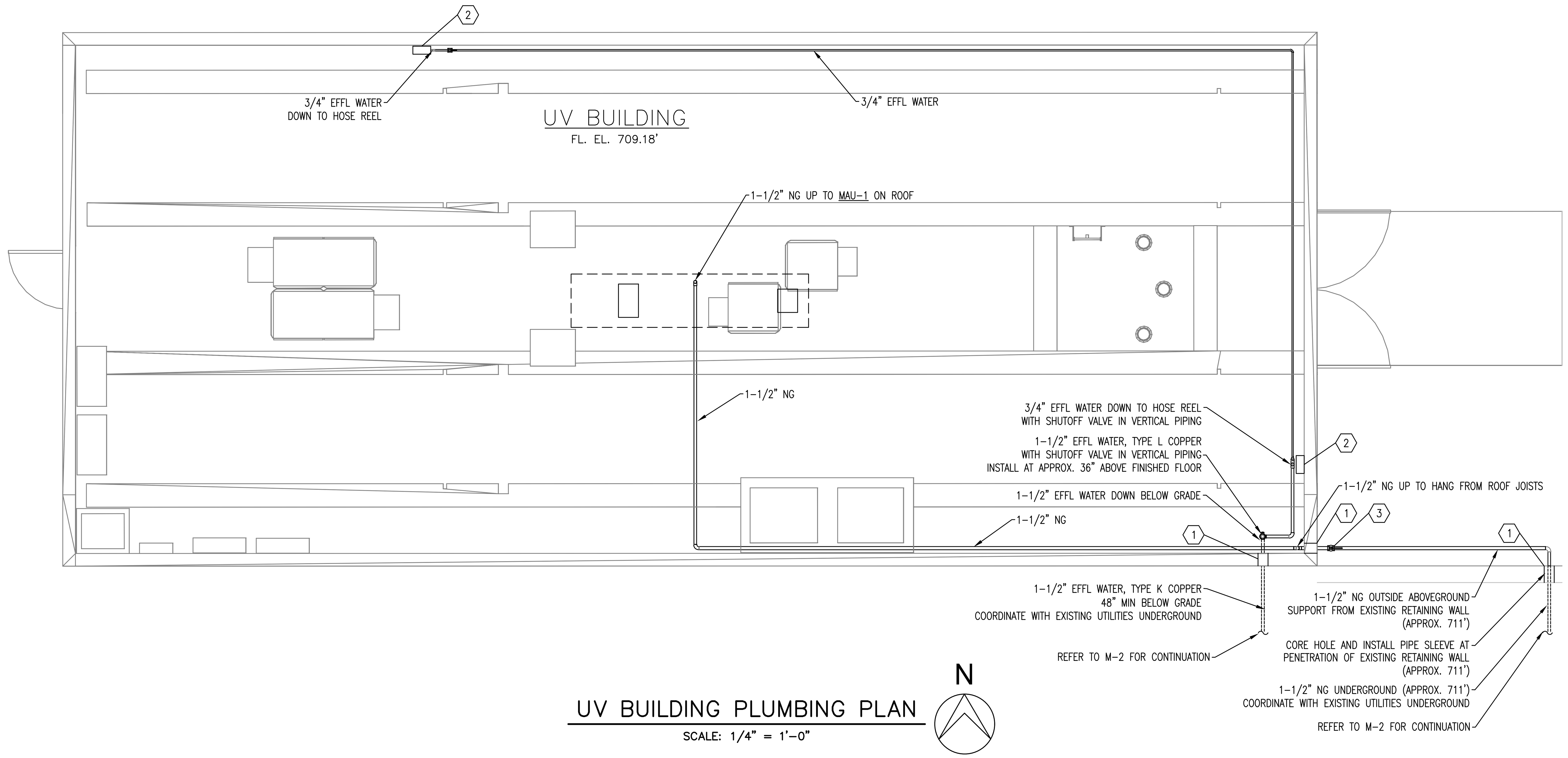
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

UV AND EQUIPMENT BUILDING PLUMBING UNDERGROUND AND BASEMENT PLAN

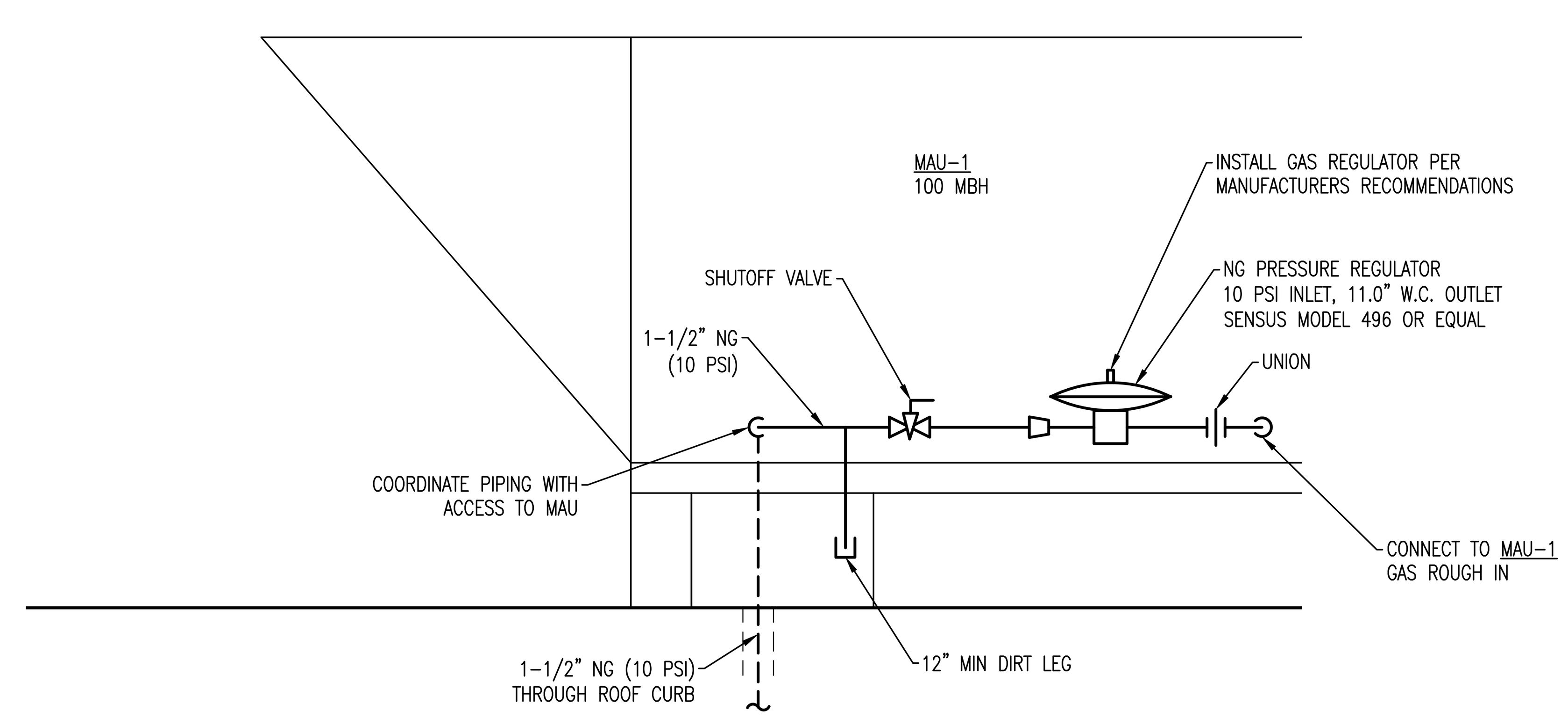
HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. M-2 OF x

4/7/2020 3:26 PM
HRC_OLW.ctb
F:\Projects\HRC017\Cadd\Mech\HRC017 – UV Building – Plumbing – Model.dwg
John Grush



UV BUILDING PLUMBING PLAN

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



1 M-3 MAU-1 GAS PIPING SCHEMATIC

SCALE: NOT TO SCALE

NOTES:

1. ALL EXPOSED PIPING TO BE PAINTED BY GENERAL TRADES PER SPECIFICATION SECTION 09900-PAINTING.
2. SUPPORT GAS PIPING SECURELY WITH DURABLOK (OR EQUAL) SUPPORTS AS NECESSARY FOR A RIGID INSTALLATION.

GENERAL NOTES:

1. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING PIPING INSTALLATION AND UTILITIES (EFFLUENT WATER AND NATURAL GAS) PRIOR TO SUBMITTING BID.
2. DRAWINGS ARE SCHEMATIC IN NATURE. NOT ALL WORK IS SHOWN. ASSUME ADDITIONAL FITTINGS, OFFSETS, ACCESSORIES, ETC. ARE REQUIRED.
3. FIELD VERIFY ALL DIMENSIONS.
4. COORDINATE ALL NEW UNDERGROUND PIPING WITH NEW AND EXISTING UNDERGROUND UTILITIES BEFORE INSTALLATION. SEE DRAWINGS D-1, D-2, P-2, P-3, P-4.
5. ANCHORS FOR HANGING EQUIPMENT MUST BE APPROVED BY THE PRECAST CONCRETE ROOF PLANK MANUFACTURER.
6. ALL EXPOSED PIPING TO BE PAINTED BY GENERAL TRADES PER SPECIFICATION SECTION 09900-PAINTING.

PLAN NOTES: (DENOTED ON SHEET BY #)

1. SEE WALL AND FLOOR PENETRATION DETAILS ON SHEET M-4.
2. PROVIDE WALL MOUNTED HOSE REEL AS SPECIFIED IN SPECIFICATION SECTION 15110 2.1.E.
3. 1-1/2" NG EMERGENCY SHUTOFF VALVE OUTSIDE AND ABOVE GRADE NEXT TO BUILDING. PROVIDE WEATHERPROOF IDENTIFICATION TAG.

LEGEND AND ABBREVIATIONS

≀	PIPE CONTINUES
◒	NEW TO EXISTING TIE-IN POINT
EFFL	EFFLUENT
FL. EL.	FLOOR ELEVATION
MAU	MAKE-UP AIR UNIT
NG	NATURAL GAS

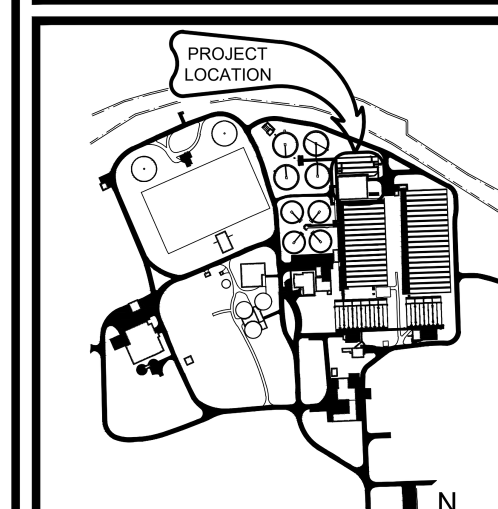
CITY of FLINT EST 1855 MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE BLOOMFIELD HILLS, MICH.
P.O. BOX 824 48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-2020	FINAL EGLE SUBMITTAL
2-7-2020	DRAFT SUBMITTAL
12-20-2019	DRAFT OWNER REVIEW SET

DESIGNED	SRT
DRAWN	JPG
CHECKED	EJS
APPROVED	



FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

UV BUILDING PLUMBING PLAN

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. M-3 OF x

EXHAUST FAN SCHEDULE

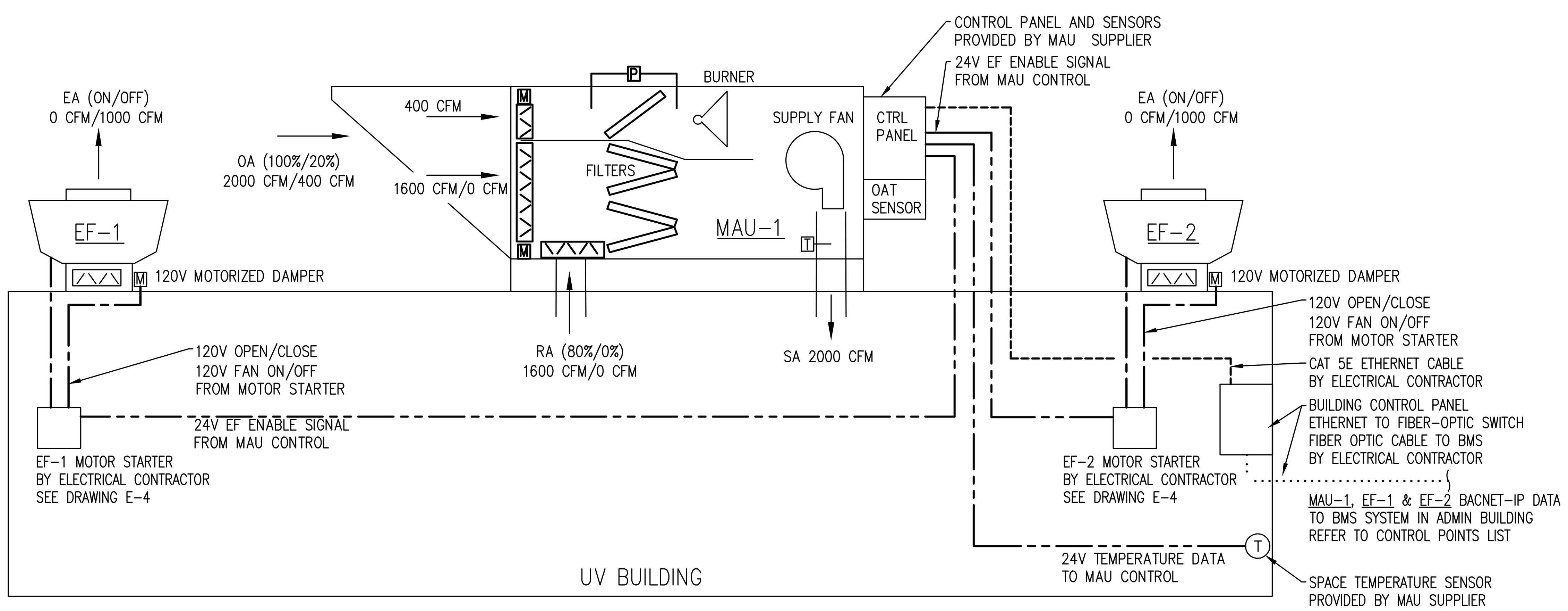
MARK	SERVES	TYPE	MATERIAL	COATINGS	MANUF	MODEL	AIRFLOW (CFM)	SP (IN WC)	FAN RPM	BEARINGS	dBA	MOTOR BHP	MOTOR HP	MOTOR TYPE	VFD	MOTORIZED DAMPER	OVERALL DIMENSIONS (IN)	ROOF/WALL OPENING (IN)	CURB TYPE	CURB MATERIAL	PRE-WIRED DISCONNECT	ELECT V / PH / Hz	WEIGHT (LBS)	NOTES
EF-1	UV BUILDING	UPBLAST	ALUMINUM	PHENOLIC EPOXY	COOK	120ACRUB R3B	1,000	0.1	1,055	200 K	54	0.09	1/4	TEFC - SE	NO	115 V	30.2 DIAM x 46 H	15.5x15.5	13.5" H, SLOPED	AL, INSULATED	YES	115/1/60	104	1, 2
EF-2	UV BUILDING	UPBLAST	ALUMINUM	PHENOLIC EPOXY	COOK	120ACRUB R3B	1,000	0.1	1,055	200 K	54	0.09	1/4	TEFC - SE	NO	115 V	30.2 DIAM x 46 H	15.5x15.5	13.5" H, SLOPED	AL, INSULATED	YES	115/1/60	104	1, 2

1. INCLUDE DAMPER TRAY IN CURB.
2. PROVIDE INSULATED DAMPER EQUAL TO RUSKIN TED50XT WITH ACTUATOR. ACTUATOR TO BE TWO POSITION, POWER-OPEN AND SPRING-CLOSED.

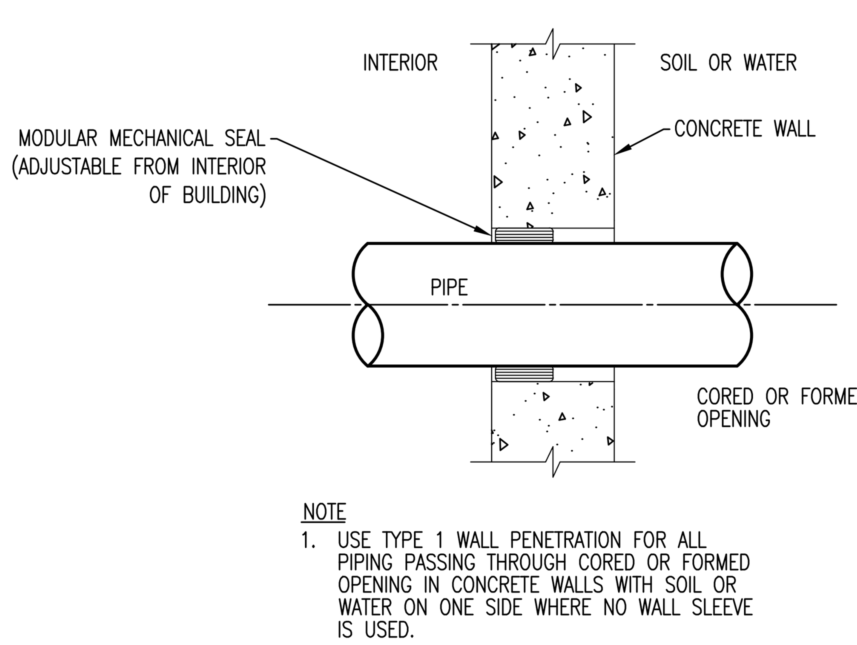
MAKEUP AIR UNIT SCHEDULE

UNIT INFORMATION						FAN DATA									HEATING (20% OA)					ELECTRICAL				
MARK	AREA SERVED	MANUF	MODEL	TYPE	CONFIGURATION	SUPPLY AIR (CFM)	SUPPLY AIR (ACHR)	MIN OA (% OF SA)	ESP (IN WC)	TSP (IN WC)	FAN TYPE	FAN RPM	BHP	MOTOR HP	FUEL TYPE	PRESS (IN WC)	TEMP RISE	BURNER EFF	(MBH)	V / PH / Hz	MCA	FLA	WEIGHT (LBS)	NOTES
MAU-1	UV TREATMENT BUILDING	ABSOLUTAIRE	AA3000-HBX	DIRECT FIRED	EXTERIOR HORIZONTAL ON CURB	2,000	6	20%	0.5	1.75	FC	1432	1.17	1.5	NAT GAS	5.0-14.0	45	100%	100	480/3/60	4.75	4.2	1,500	1, 2, 3, 4, 5

1. CONSTANT VOLUME (CV), 2 POSITION 20% OA / 80% RA OR 100% OA, DOUBLE WALL INSULATED CABINET, 20 GAUGE STAINLESS STEEL INTERIOR, EPOXY PAINT EXTERIOR, HINGED ACCESS DOORS, OA INLET HOOD WITH RAIN SHIELD AND BIRD SCREEN, MOTORIZED OA INLET DAMPER, HEAVY DUTY BLOWER WITH EXTENDED GREASE LINES, CORROSION DUTY TEFC MOTOR, MODULATING CAST ALUMINUM NATURAL GAS BURNER, THROUGH-CURB GAS PIPING CONNECTION, DIRECT SPARK IGNITION FOR GAS MANIFOLD, FILTER SECTION FOR 2 INCH ALUMINUM MESH FILTERS, DIRTY FILTER INDICATOR, FACTORY MOUNTED NON-FUSED DISCONNECT SWITCH.
2. FURNISH WITH 20 INCH SLOPED AND INSULATED ALUMINUM ROOF CURB.
3. FURNISH WITH UNIT MOUNTED CONTROL PANEL IN NEMA 4X ENCLOSURE WITH COMPONENTS LISTED IN SPECIFICATION SECTIONS 15622 AND 15960. ALL UNIT MOUNTED SENSORS, CONTROLLERS AND ACTUATORS INSTALLED AND WIRED AT FACTORY.
4. INCLUDE OPTIONS AS REQUIRED FOR MAU ENABLE/DISABLE FOR EF-1 AND EF-2 BASED ON OA TEMPERATURE. REFER TO SPECIFICATION SECTIONS 15622 AND 15960.
5. INCLUDE NEMA 4 WALL MOUNTED ROOM TEMPERATURE SENSOR EQUIVALENT TO JOHNSON CONTROLS SERIES A19.

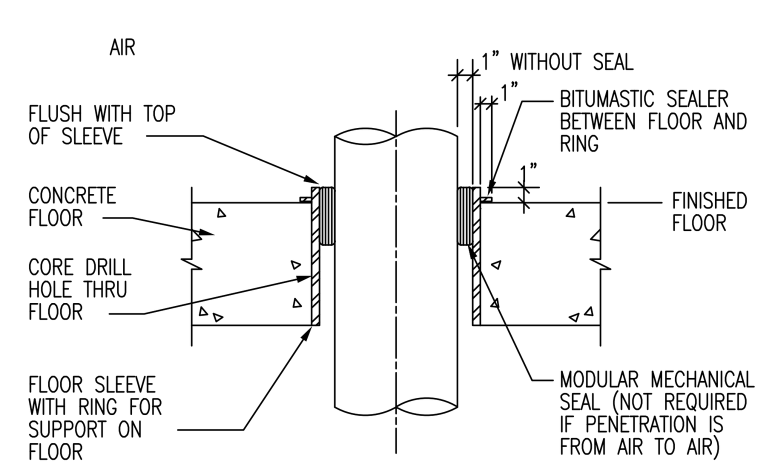


CONTROLS SCHEMATIC
SCALE: NOT TO SCALE



NOTE
1. USE TYPE 1 WALL PENETRATION FOR ALL PIPING PASSING THROUGH CORED OR FORMED OPENING IN CONCRETE WALLS WITH SOIL OR WATER ON ONE SIDE WHERE NO WALL SLEEVE IS USED.

WALL SLEEVE DETAIL – TYPE 1
SCALE: NOT TO SCALE



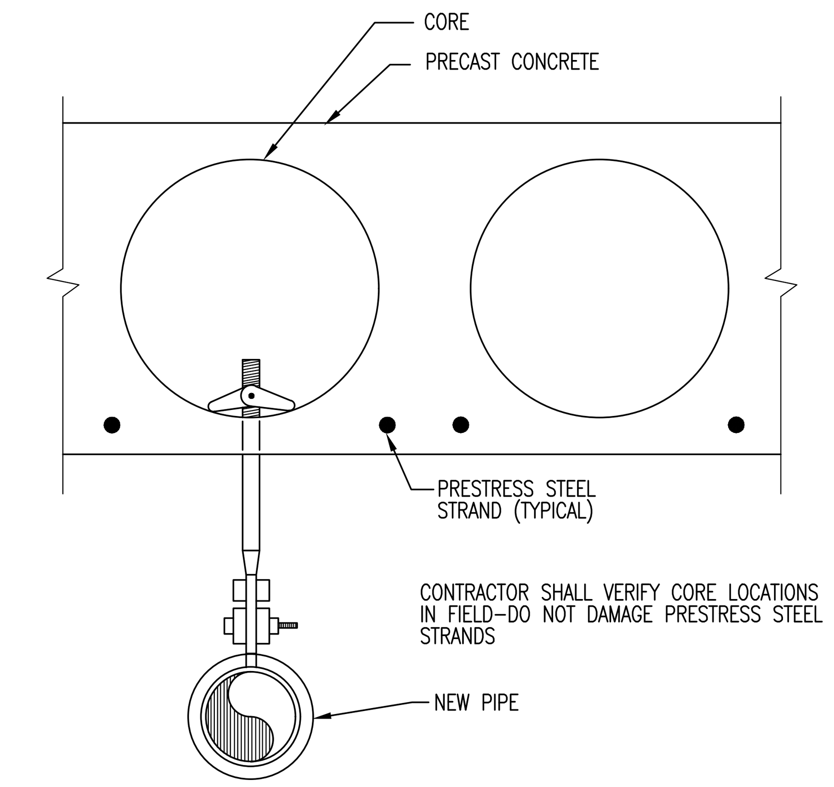
NOTE
1. USE TYPE 2 FLOOR SLEEVE FOR ALL PIPING PASSING THROUGH CORED HOLE IN EXISTING NON-FIRE RATED CONCRETE FLOORS.

FLOOR SLEEVE DETAIL – TYPE 2
SCALE: NOT TO SCALE

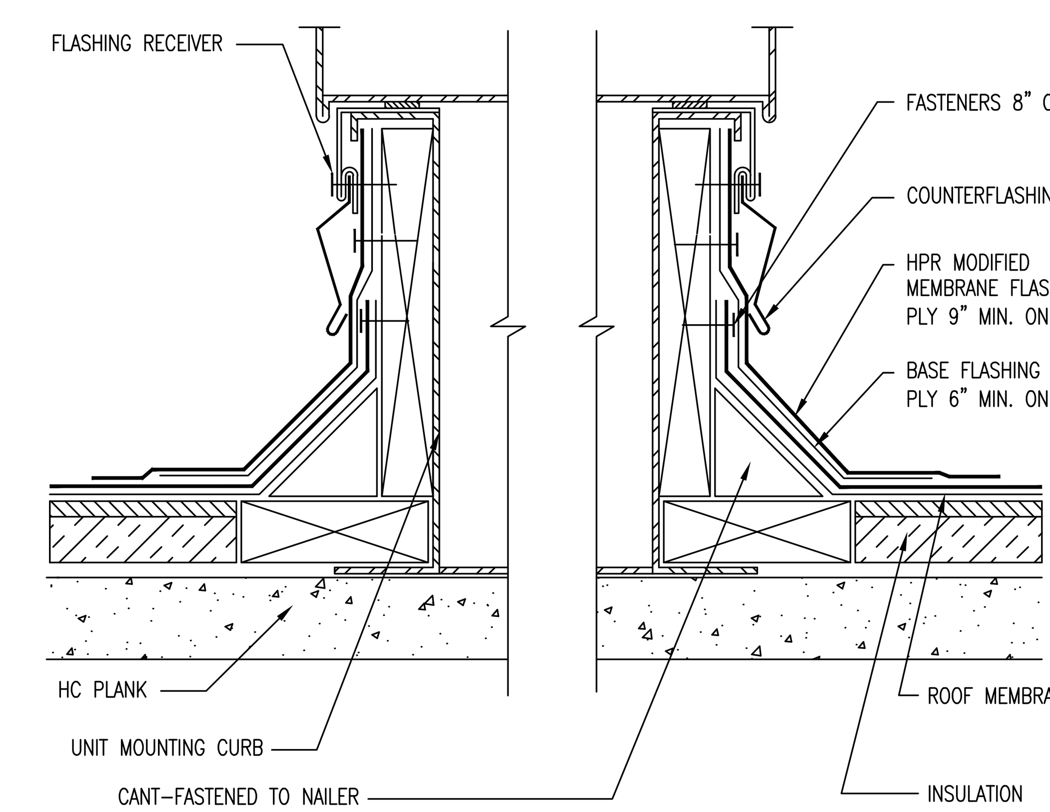
DIFFUSER, REGISTER & GRILLE SCHEDULE

MARK	TYPE	MANUF	MODEL	CFM	FACE SIZE (IN)	NECK SIZE (IN)	INTEGRAL VOLUME DAMPER	FINISH	FRAME	NOTES
S-1	SIDEWALL SUPPLY	TITUS	DL	SEE PLANS	20.7x6.5	18x4	YES	#01 ALUM	SURFACE MT	1

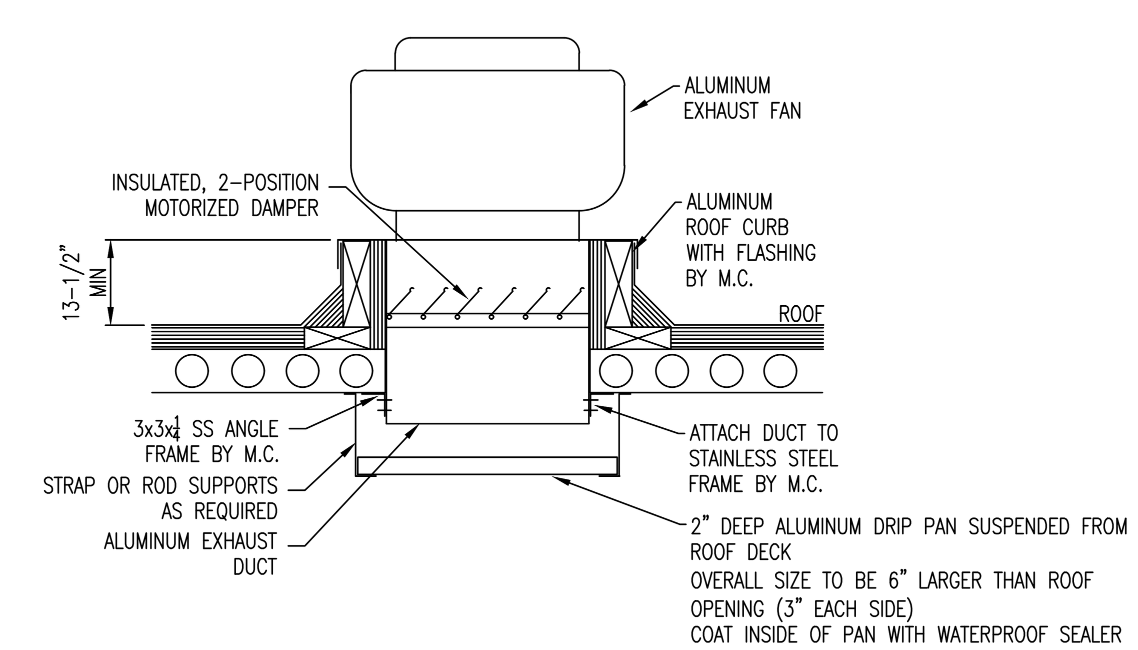
1. ALUMINUM CONSTRUCTION AND FINISH.



PRECAST CONCRETE PIPE HANGER DETAIL
SCALE: NOT TO SCALE



ROOF CURB AT MAU-1
SCALE: NOT TO SCALE



ROOF EXHAUST FAN WITH DRIP PAN DETAIL
SCALE: NOT TO SCALE

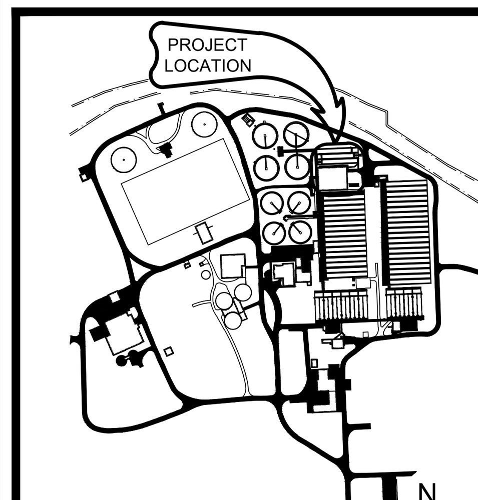
CITY of FLINT
EST 1855
MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http: / / www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-2020	FINAL EGLE SUBMITTAL
2-7-2020	DRAFT SUBMITTAL
12-20-2019	DRAFT OWNER REVIEW SET

DESIGNED SRT
DRAWN JPG
CHECKED EJS
APPROVED



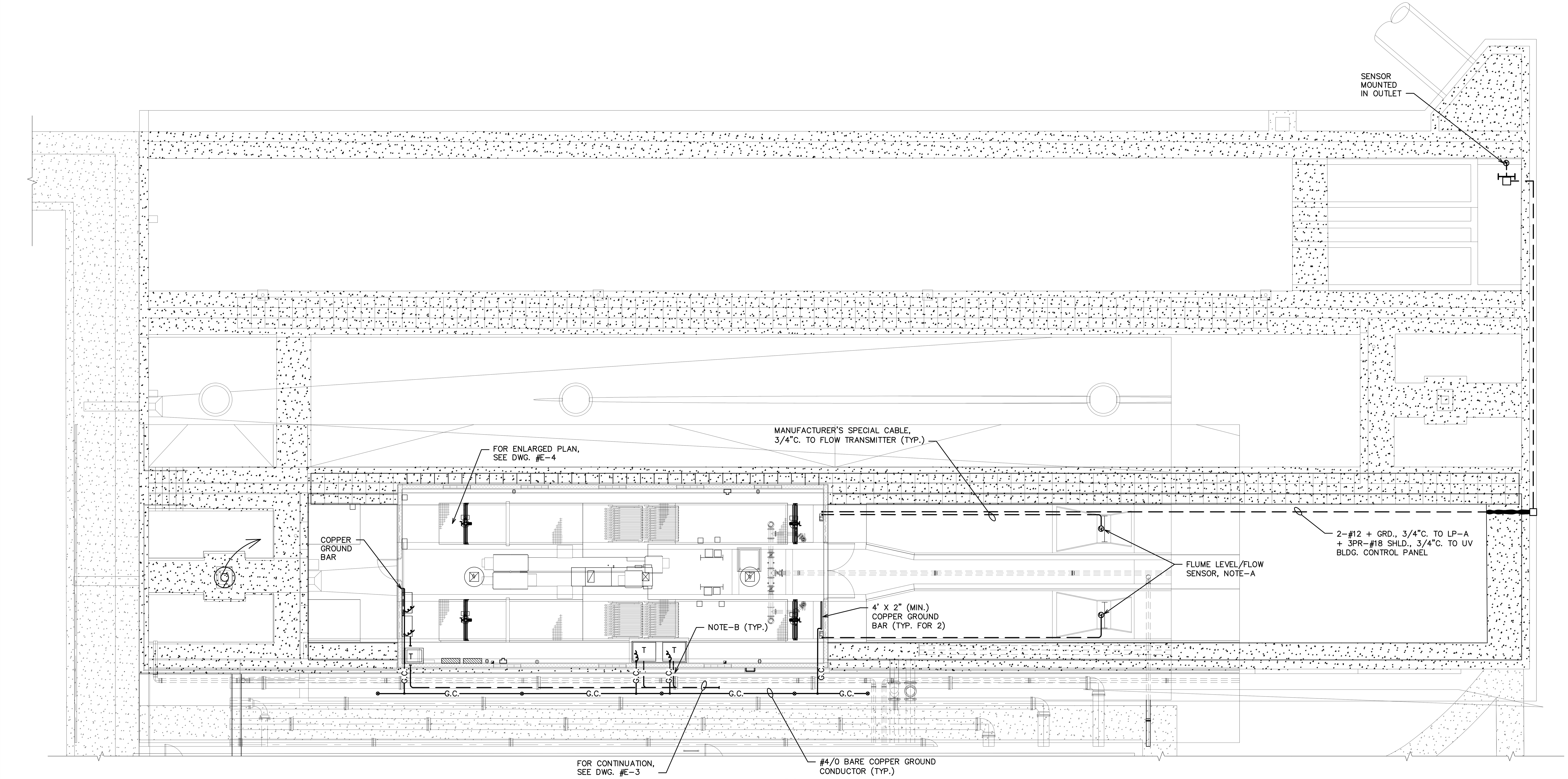
FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

NEW UV BUILDING SCHEDULES AND DETAILS

HRC JOB NO. 20190265
SCALE AS NOTED
DATE April 2020
SHEET NO. M-4 OF



PLAN VIEW

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

ELECTRICAL LEGEND

	LIGHTING FIXTURE PENDANT OR CEILING MOUNTED	CP	CONTROL PANEL	P.V.C.	SCHED. 40 POLYVINYL CHLORIDE CONDUIT
	LIGHTING FIXTURE WALL OR STANCHION MOUNTED		120 V. DUPLEX RECEPTACLE	R.G.S.	RIGID GALVANIZED STEEL
	LIGHTING FIXTURE	J.B.	JUNCTION BOX	A.F.F.	ABOVE FINISHED FLOOR
E	EMERGENCY LIGHTING FIXTURE, TYPE "EM" OR "EMXP"	P.B.	PULL BOX	W.T.	WATERTIGHT (NEMA 4)
	EXIT LIGHT	T	THERMOSTAT	W.T.X.	WATERTIGHT, CORROSION RESISTANT (NEMA 4X)
S	SINGLE POLE SWITCH		MOTOR, 1 PHASE	W.P.	WEATHERPROOF (NEMA 3R)
	COMBINATION STARTER (THREE PHASE)		MOTOR, 3 PHASE	X.P.	EXPLOSIONPROOF (NEMA 7)
P	MANUAL STARTER (SINGLE PHASE; P = PILOT LIGHT)		CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALL	C.	CONDUIT
F	DISCONNECT SWITCH (F=FUSED)		CONDUIT RUN CONCEALED IN OR BELOW FLOOR SLAB	MCC	MOTOR CONTROL CENTER
	SELECTOR SWITCH		CONDUIT RUN EXPOSED	GRD.	GROUND CONDUCTOR
	PUSHBUTTON STATION (SEE WIRING DIAG'S FOR TYPE)		DISTRIBUTION PANEL POSITION NUMBER	I.S.	INTRINSICALLY SAFE
FS	FLOW SWITCH		MCC POSITION NUMBER	VFD	VARIABLE FREQUENCY CONTROLLER
PS	PRESSURE SWITCH		CONDUIT SEALING FITTING	C.B.	CIRCUIT BREAKER
ZS	LIMIT SWITCH	—GC—	BUILDING GROUND CONDUCTOR	C.P.	CONTROL PANEL
S	SOLENOID VALVE OPERATOR		COPPER GROUND ROD, 3/4" DIA. X 10'-0" LONG	LPA-6	LIGHTING PANEL LPA CIRCUIT 6 (OTHER PANELS SIMILAR)
	LIGHTING PANELBOARD	—RGS—	DIRECT BURIAL R.G.S. CONDUIT	30/3	30 AMP, 3 POLE (OTHER SIZES SIMILAR)
	DISTRIBUTION PANELBOARD	—PVC—	DIRECT BURIAL POLYVINYL CHLORIDE CONDUIT		EQUIPMENT, ETC. TO BE REMOVED

NOTES:

A. FLUME LEVEL SENSOR SHALL BE MOUNTED IN CHANNEL BELOW COVER/PANEL. SEE MOUNTING DETAIL DWG. #E-9.

B. CORE DRILL THROUGH EXISTING CONCRETE RETAINING WALL FOR NEW CONDUIT AND GROUND CONDUCTOR INSTALLATION.

C. GROUND CONDUCTOR TO BE ROUTED IN NEW FLOOR SLAB WHERE POSSIBLE.

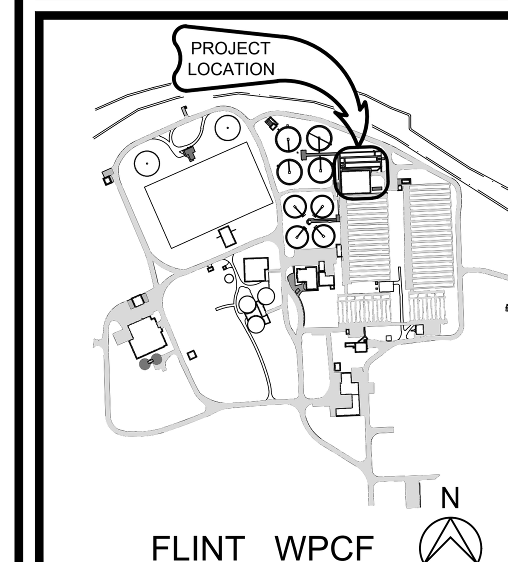
CITY of FLINT MICHIGAN 1855

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	

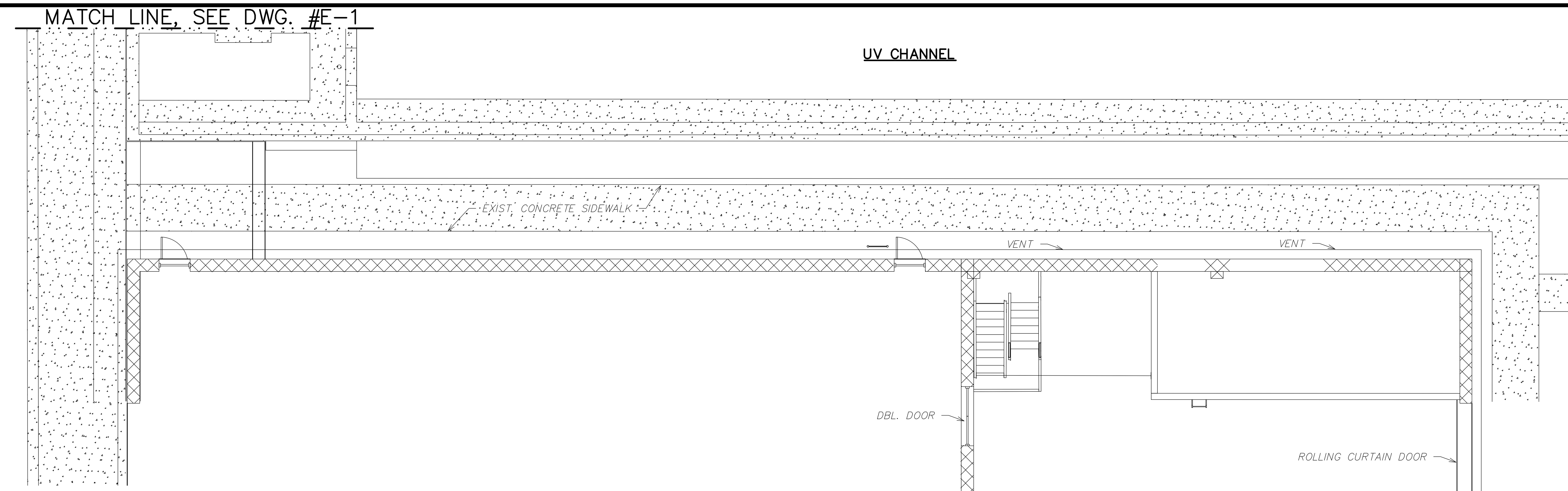


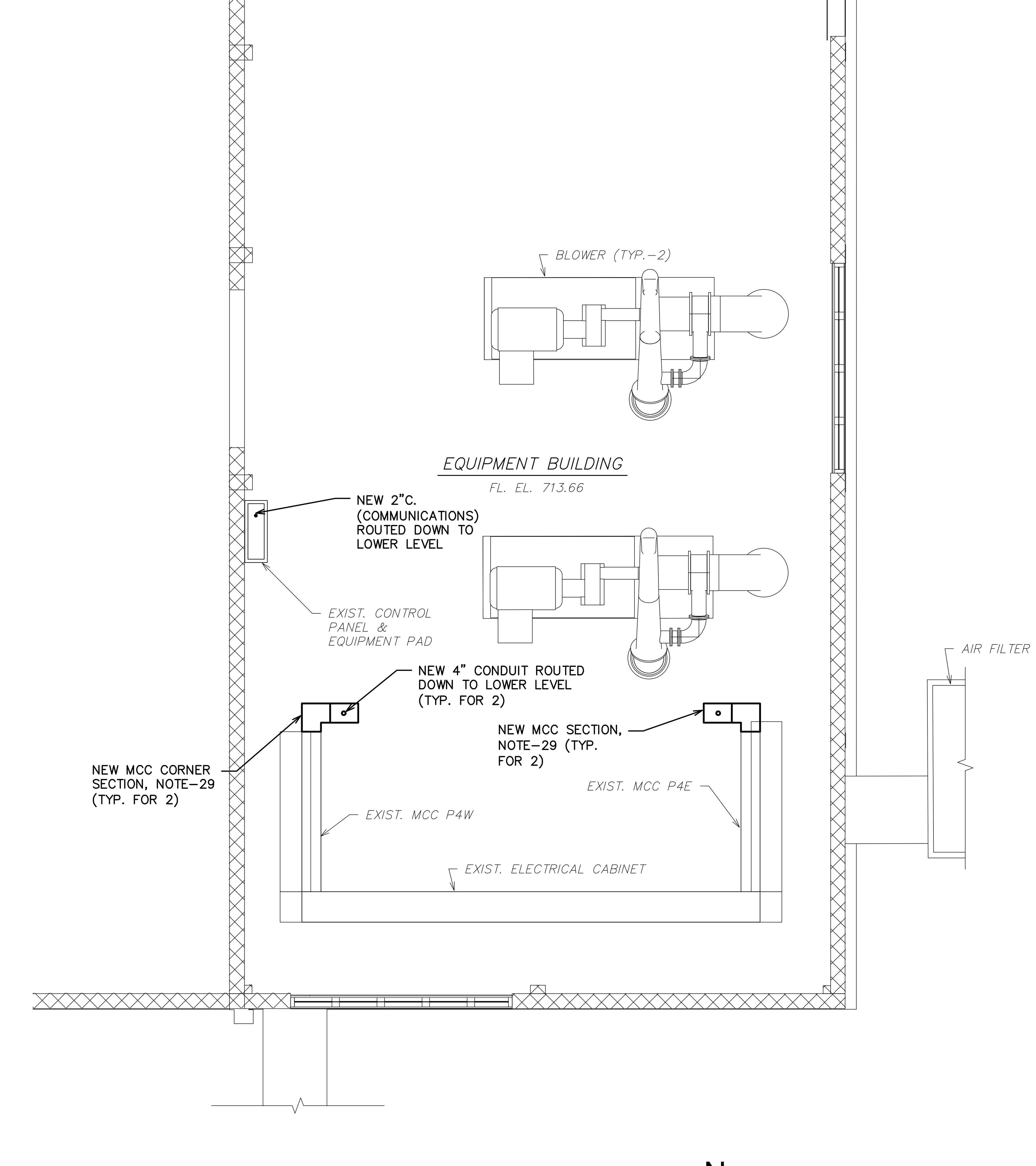
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

UV CHANNELS ELECTRICAL PLAN

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. E-1 OFP-1





FLOOR PLAN EL. 713.66

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

GENERAL NOTES:

(APPLIES TO ALL DWGS.)

1. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING ELECTRICAL INSTALLATION AND UTILITIES (ELECTRICAL AND TELEPHONE) PRIOR TO SUBMITTING HIS BID.
2. OTHER PROJECTS ARE, OR MAY BE, UNDER CONSTRUCTION AT THIS SITE, AND THIS CONTRACTOR SHALL COORDINATE WITH THEM SO AS NOT TO DELAY THEIR SCHEDULES OR IMPEDE THEIR WORK.
3. COORDINATE ALL NEW ELECTRICAL UNDERGROUND WORK WITH NEW AND EXISTING UNDERGROUND UTILITIES BEFORE INSTALLATION.
4. ALL EMPTY CONDUITS AND/OR EMPTY DUCTS IN DUCT BANKS SHALL BE PROVIDED WITH A FISH LINE.
5. ALL DIRECT BURIED CONDUITS SHALL BE 30" BELOW GRADE (MIN.), AND SHALL SLOPE (MINIMUM 3" PER 100') TO MANHOLES, HANDHOLES, CABLE VAULTS, OR OTHER STRUCTURES.
6. ALL UNDERGROUND CONDUITS SHALL BE P.V.C., EXCEPT WHERE ENTERING MANHOLES, HANDHOLES, BUILDINGS, LIGHT POLE BASES, AND TRANSFORMER PAD. UNDERGROUND CONDUITS AND/OR DUCTS SHALL BE RIGID GALVANIZED STEEL WITHIN 10'-0" OF THE STRUCTURE. ALL CONDUITS AND/OR DUCTS UNDER BUILDINGS SHALL BE RIGID GALVANIZED STEEL.
7. PROVIDE WATERTIGHT HUBS AT CONDUIT ENTRANCES TO ALL ENCLOSURES MOUNTED OUTDOORS AND AT ALL WATERTIGHT (NEMA TYPE 4 & 4X) ENCLOSURES MOUNTED INDOORS. ALL NEMA TYPE 4 & 4X ENCLOSURES, EXCEPT THOSE IN CORROSIVE AREAS, SHALL BE EQUIPPED WITH A DRAIN/BREATHER FITTING.
8. EXPANSION OR EXPANSION/DEFLECTION FITTINGS SHALL BE PROVIDED FOR ALL CONDUITS CROSSING BUILDING EXPANSION JOINTS.
9. ALL POWER FEEDERS SHALL BE RUN IN INDIVIDUAL CONDUITS, FROM SOURCE TO LOAD, AS INDICATED IN SCHEDULES, WIRING DIAGRAMS, OR BY HOME RUNS ON THE PLANS.
10. ALL CONDUITS SHALL BE ROUTED TO AVOID OPENINGS IN FLOORS, ROOFS, AND WALLS. LADDERS UP WALLS SHALL NOT BE CROSSED BY EXPOSED CONDUIT RUNS. PROVIDE THE MINIMUM CLEAR SPACE REQUIRED BY ALL GOVERNING CODES BETWEEN HANDRAILS AND ALL ELECTRICAL ENCLOSURES AND RACEWAYS, WHICH IN NO CASE SHALL BE LESS THAN 1 1/2" CLEAR.
11. ALL CONDUITS FOR 480VAC POWER FEEDERS, BRANCH CIRCUITS, AND INSTRUMENTATION SHALL BE RUN EXPOSED OVERHEAD, UNLESS SHOWN OTHERWISE ON THE PLANS.
12. ALL ELECTRICAL FLOOR MOUNTED EQUIPMENT SUCH AS MOTORS, CONTROL PANELS, AND METALLIC SUPPORT RACKS SHALL HAVE A #2 (UNLESS OTHERWISE NOTED BARE GROUND CONDUCTOR TIE BETWEEN THE MOTOR FRAME, ENCLOSURE, OR SUPPORT LEG AND THE BUILDING GROUND SYSTEM.
13. GROUND CONDUCTOR SPLICING AND BONDING SHALL BE ACCOMPLISHED BY THE USE OF EXOTHERMIC WELDING.
14. PROVIDE A GREEN GROUND CONDUCTOR IN ALL SYSTEMS CONDUITS, EXCEPT INSTRUMENT SIGNAL AND ALARM CONDUITS, INCLUDING BRANCH CIRCUIT CONDUITS FOR LIGHTING AND RECEPTACLES. GROUND CONDUCTOR SIZING SHALL BE PER N.E.C. TABLE 250-95 (MINIMUM) WHERE NOT SIZED ON THE DRAWINGS.
15. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS OF ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES WITH MECHANICAL PIPING AND DUCTWORK BEFORE INSTALLATION.
16. ALL THREADED MECHANICAL CONNECTIONS ON ELECTRICAL EQUIPMENT (CONDUIT, COUPLINGS, JUNCTION BOXES, ETC.) INSTALLED WITHIN WET AREAS, HAZARDOUS AREAS, OR OUTDOORS SHALL BE COATED WITH ANTI-SEIZE COMPOUND PRIOR TO INSTALLATION.
17. ALL WALL AND RACK MOUNTED CONTROL STATIONS, RECEPTACLES, AND LIGHTING SWITCHES SHALL BE 4'-0" A.F.F., UNLESS NOTED OTHERWISE ON THE PLANS.
18. ALL WALL AND RACK MOUNTED DISCONNECT SWITCHES, CONTROL PANELS, AND LIGHTING PANELS SHALL BE 5'-6" TO TOP, ABOVE FINISHED FLOOR.
19. ALL WEATHERPROOF (W.P.) DUPLEX RECEPTACLES SHALL BE INSTALLED SUCH THAT COVER DOORS OPEN UPWARD.
20. ALL PENETRATIONS OF FIRE WALLS OR FLOORS SHALL BE SEALED AFTER INSTALLATION OF CONDUIT WITH A FIRE RETARDANT SEALANT THAT IS RATED THE SAME AS THE FIRE WALL OR FLOOR.
21. ALL WALL MOUNTED ELECTRICAL EQUIPMENT SHALL HAVE A 1/2" (MINIMUM) AIR SPACE BETWEEN WALL AND EQUIPMENT (PROVIDE NON-CORROSIVE SPACERS OR BRACKETS AS REQUIRED).
22. ALL FLOOR OR PAD MOUNTED ELECTRICAL ENCLOSURES SHALL BE SPACED 1" OUT FROM EXTERIOR WALLS (MINIMUM).
23. FOR ALL 120 VAC LIGHTING AND RECEPTACLE CIRCUITS, RUN 2-#12 (MINIMUM) + #12 GRD., 3/4"C. TO THE LIGHTING PANELBOARD INDICATED, UNLESS NOTED OTHERWISE. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR BRANCH CIRCUIT WIRING.
24. 4-20 MA, INSTRUMENT SIGNAL AND DC TOTALIZED PULSE CABLES, MAY BE RUN WITH OTHER INSTRUMENT SIGNAL CABLES IN THE INSTRUMENT CONDUIT SYSTEM. INSTRUMENT SIGNALS SHALL NOT BE RUN IN THE SAME CONDUIT WITH ANY OTHER TYPE OF ALARM, CONTROL AND/OR POWER WIRING.
25. DC ALARM WIRING SHALL BE #14 AWG AND MAY BE RUN WITH OTHER ALARM WIRING IN THE ALARM CONDUIT SYSTEM. ALARM WIRING SHALL NOT BE RUN IN THE SAME CONDUIT WITH ANY OTHER TYPE INSTRUMENT SIGNAL, CONTROL, OR POWER WIRING, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
26. 120VAC CONTROL AND GRAPHIC WIRING SHALL BE #14 AWG MINIMUM AND MAY BE RUN IN THE SAME CONDUIT WITH ASSOCIATED POWER WIRING. 120VAC CONTROL AND GRAPHIC WIRING SHALL NOT BE RUN IN THE SAME CONDUIT WITH ANY OTHER TYPE INSTRUMENT SIGNAL, ALARM, OR UNASSOCIATED CONTROL OR POWER WIRING, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
27. IN AREAS WHERE ELECTRICAL WORK DISTURBS EXISTING SOD, GROUND SHALL BE REGRADED AS REQUIRED AND SOD SHALL BE REPAIRED OR REPLACED, AS REQUIRED, TO RETURN THE SITE TO A CONDITION MEETING OR EXCEEDING THAT PRIOR TO THE BEGINNING OF WORK.
28. ALL SALVAGED MATERIALS SHALL BE TURNED OVER TO THE OWNER OR DISPOSED OF AS DIRECTED BY THE OWNER.
29. NEW MCC HORIZONTAL BUS SHALL BE 1200A TO MATCH EXISTING AND VERTICAL BUS SHALL BE 300A MINIMUM TO ALLOW CONNECTION OF NEW CIRCUIT BREAKERS.
30. CONNECT NEW FIBER OPTIC CABLE TO EXISTING FIBER OPTIC BREAK-OUT ENCLOSURE. ALL FIBER OPTIC STRANDS SHALL BE TESTED TO VERIFY OPERATION.

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	

PROJECT LOCATION

FLINT WPCF

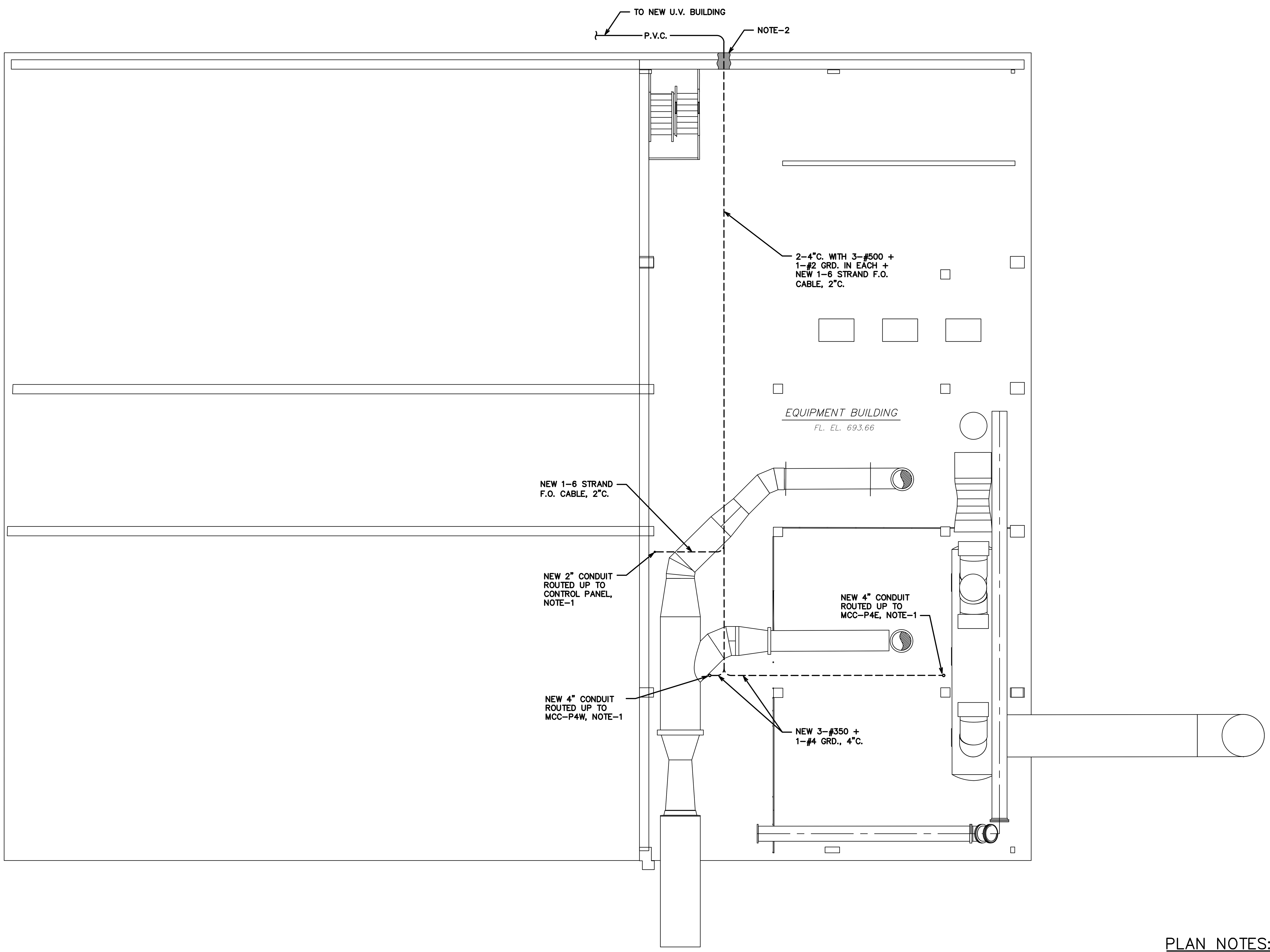
N

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

EQUIPMENT BUILDING ELECTRICAL FLOOR PLAN EL. 713.66

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. E-2 OF



FLOOR PLAN EL. 693.66

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

N

PLAN NOTES:

1. CORE DRILL CEILING AS REQUIRED. SEAL AROUND CONDUIT WITH NON-METALLIC, NON-SHRINK GROUT TO MATCH EXISTING.
2. CORE DRILL EXISTING WALL. SEAL AROUND CONDUITS, WATERTIGHT, WITH NON-METALLIC, NON-SHRINK GROUT TO MATCH EXISTING.
3. COORDINATE EXACT CONDUIT ROUTING WITH EXISTING AND NEW EQUIPMENT AND PIPING.

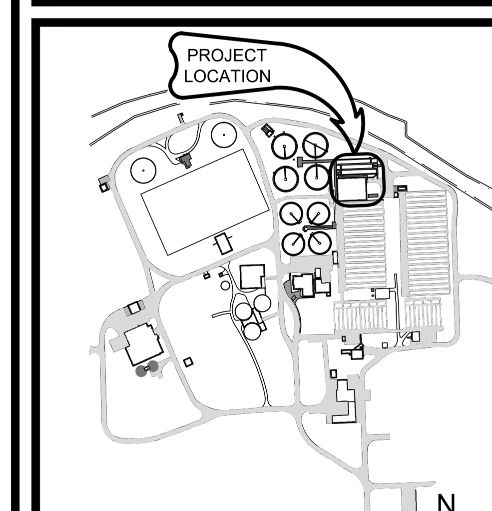
CITY of FLINT 1855 MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http://www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



FLINT WPCF

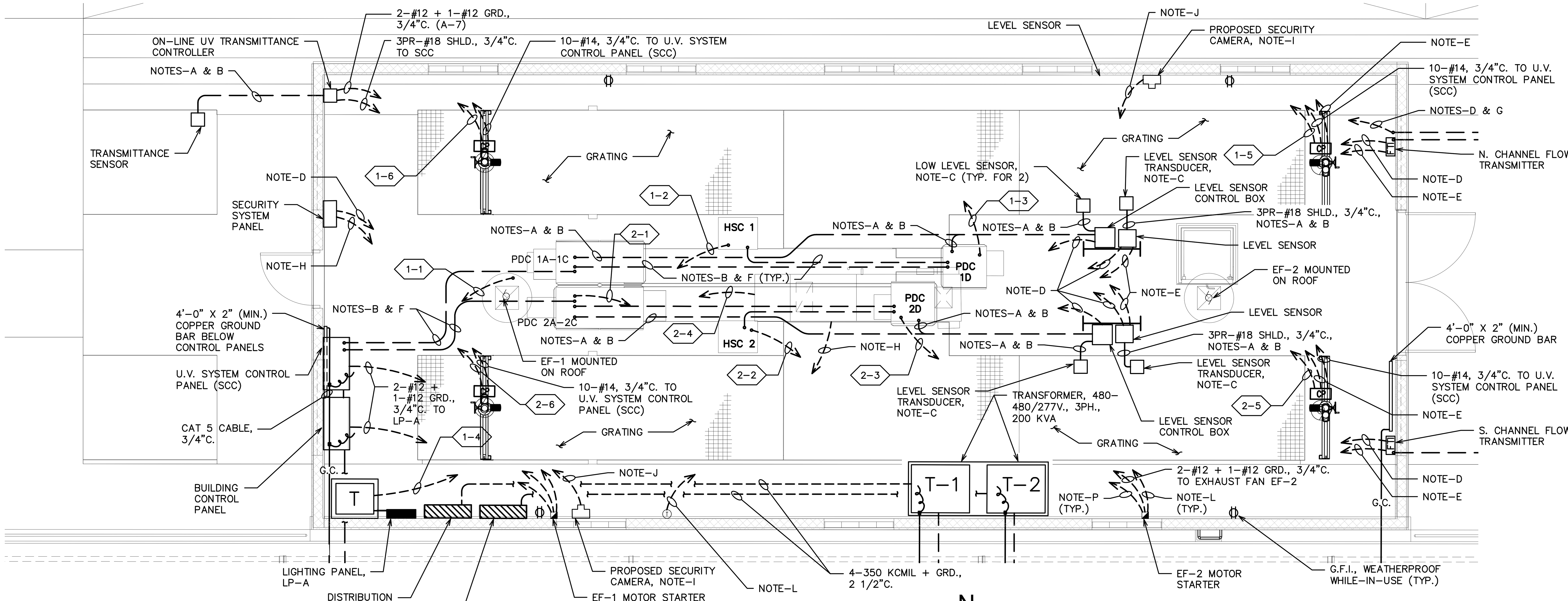
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

EQUIPMENT BUILDING
ELECTRICAL
FLOOR PLAN EL. 693.66

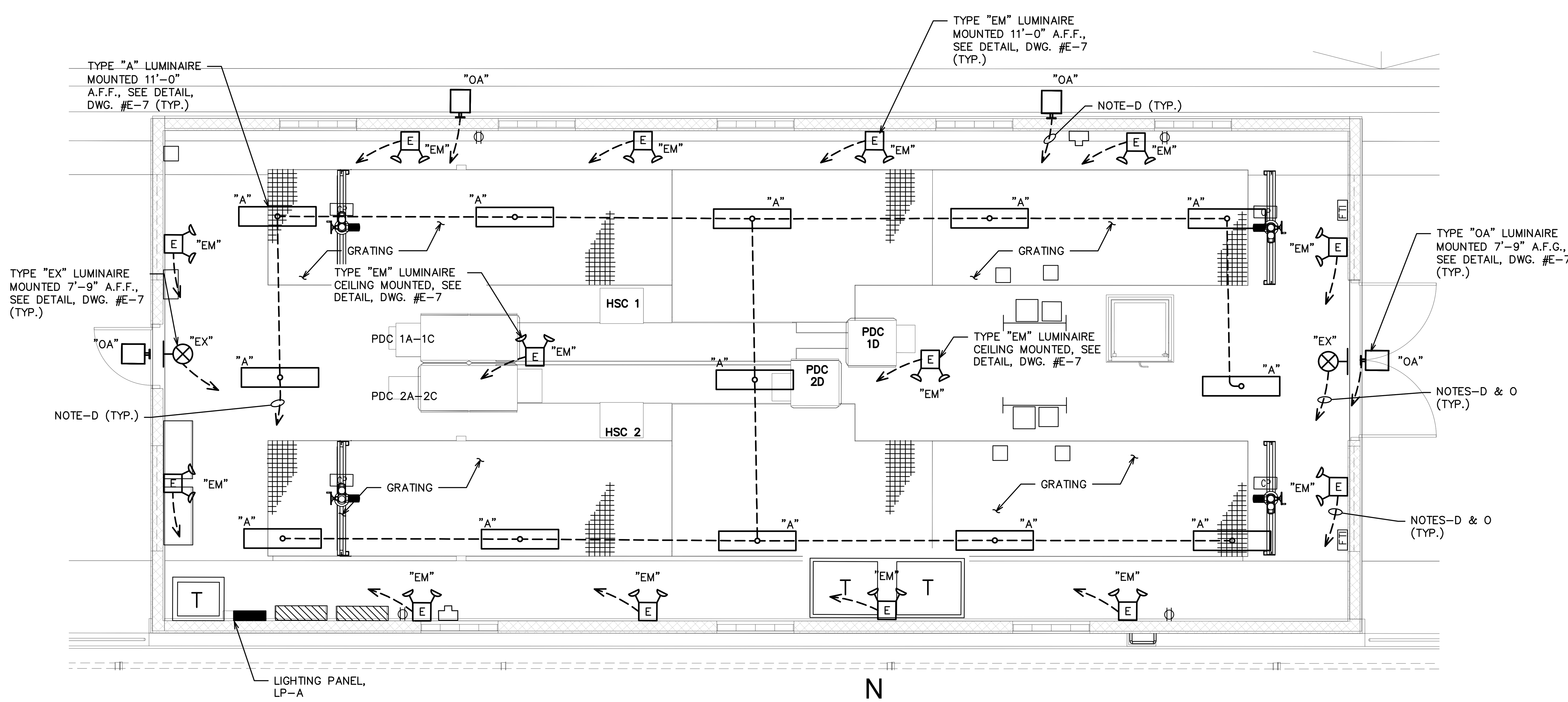
HRC JOB NO.	SCALE
20190265	AS NOTED
DATE April 2020	SHEET NO. E-3 OF

4/10/2020 12:55 PM
HRC_OLW.ctb
\\hrc-engr\General\V8\201902\20190265\E\e03plot.dwg
Roskelley, Michael J.



ELECTRICAL POWER PLAN

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



ELECTRICAL LIGHTING PLAN

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

NOTES:

A. MANUFACTURER'S SPECIAL CABLE, 3/4"C.

B. CONDUIT ROUTED IN FLOOR SLAB AND BELOW REMOVABLE DECKING.

C. MOUNTED IN CHANNEL, COORDINATE LOCATION WITH MANUFACTURER'S REQUIREMENTS.

D. 2-#12 + 1-#12 GRD., 3/4"C. TO LP-A.

E. 3PR-#18 SHLD., 3/4"C. TO SCC.

F. BELDEN 3106A CABLE, 3/4"C.

G. 3PR-#18 SHLD., 3/4"C. TO BUILDING CONTROL PANEL.

H. CAT 5E CABLE, 3/4"C. TO BUILDING CONTROL PANEL.

I. CAMERA TO BE INSTALLED BY SECURITY SYSTEM PROVIDER.

J. INSTALL 3/4"C. EMPTY WITH PULL ROPE TO PROPOSED CAMERA LOCATION.

K. SECURITY SYSTEM PANEL FURNISHED BY SECURITY SYSTEM PROVIDER, INSTALLED BY CONTRACTOR.

L. 2-#14, 3/4"C. TO MAKE-UP AIR UNIT MAU-1.

M. CONDUITS FOR UV EQUIPMENT, INSTALLED IN FLOOR CHASE SHALL BE LIQUID TIGHT, FLEXIBLE METAL CONDUIT.

N. COORDINATE FINAL CONDUIT ROUTING IN FLOOR CHASE WITH UV EQUIPMENT CABLES AND HOSES.

O. EMERGENCY AND EXIT LIGHTS TO BE CONNECTED TO UN-SWITCHED HOT LEG OF BUILDING LIGHTING CIRCUITS.

P. 2-#12 + 1-#12 GRD., 3/4"C. TO LP-A.

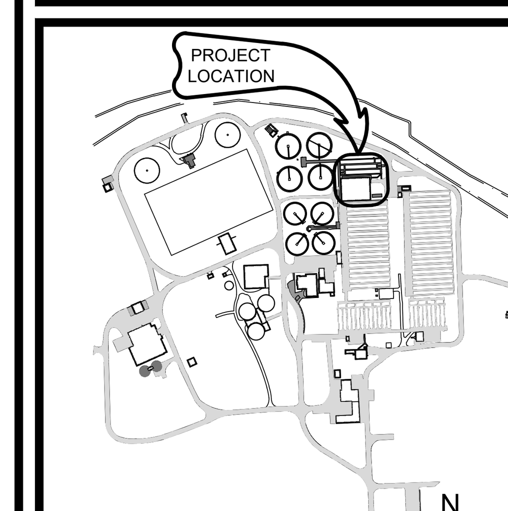
CITY of FLINT
EST. 1855
MICHIGAN

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



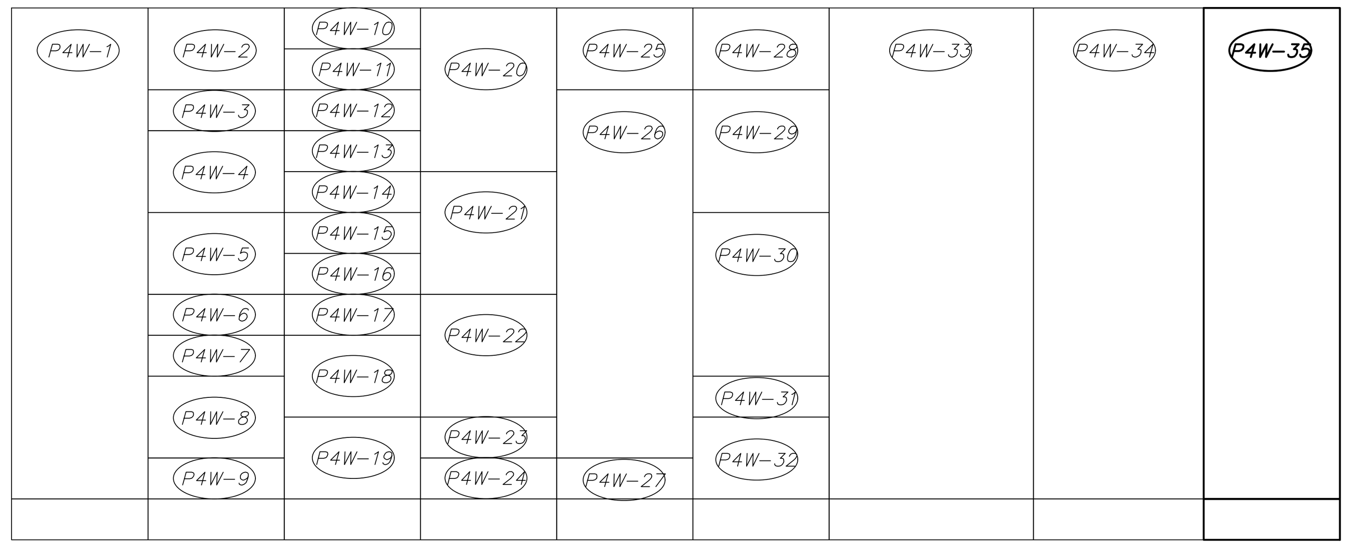
FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

UV BUILDING ELECTRICAL POWER AND LIGHTING PLANS

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE April 2020	SHEET NO. E-4 OF

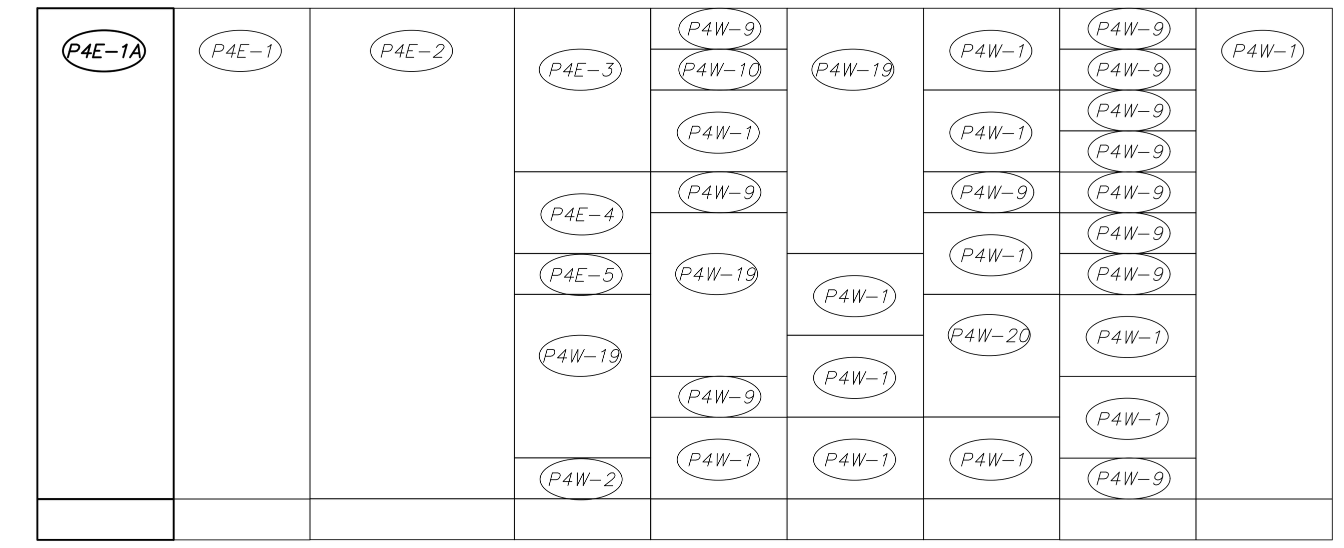


EXIST. MCC "P4W" ELEVATION

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

NOTE:

IN EACH NEW MCC BREAKER, PROVIDE AND INSTALL DEVICENET SYSTEM ACCESSORY TO MONITOR CIRCUIT BREAKER AND INSTALL 2-#14 FROM EACH CIRCUIT BREAKER TO THE MCC PLC.



EXIST. MCC "P4E" ELEVATION

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

EXIST. MOTOR CONTROL CENTER "MCC-P4W" SCHEDULE

480 V., 3PH., 3 WIRE, 1200 AMP. MAIN BUS AND GROUND BUS

NAMEPLATE ENGRAVING ** POS. No.	DESCRIPTION	DESIG.	* CONN. LOAD	CONN. AMPS	MCP * BRKR.	STARTER SIZE	STARTER TYPE	CONTROL DEVICES	WIRE AND CONDUIT	REMARKS
P4W-1	MAIN BREAKER									
P4W-2	EXHAUST FAN EF-3	EF-3								
P4W-3	BATTERY B MIXED LIQUOR FINAL TANK INFL. CHANNEL AIR VALVE ACTUATOR									
P4W-4	METERING UNIT									
P4W-5	CHLORINE AERATION TANK & ROADWAY LIGHTING									
P4W-6	SPACE									
P4W-7	DEVICENET PORT									
P4W-8	GT4 INCINERATOR C.P. CIRCUIT BREAKER									
P4W-9	SPACE									
P4W-10	SO_2 BUILDING FEEDER									
P4W-11	SUMP PUMP #12									
P4W-12	WELDER PLUG									
P4W-13	BATTERY B MIXED LIQUOR CHANNEL AIR VALVE ACTUATOR									
P4W-14	OVERHEAD DOOR OPERATOR #2									
P4W-15	BATTERY B MIXED LIQUOR CROSS CHANNEL AIR VALVE ACTUATOR									
P4W-16	MICROSTRAINER BYPASS NORTH MCC									
P4W-17	FINAL EFFLUENT WATER BOOSTER PUMP #1 & #2									
P4W-18	BLOWER #5 AUX. OIL PUMP									
P4W-19	EXHAUST FAN EF-4	EF-4								
P4W-20	DEVICENET REDUNDANT POWER SUPPLY									
P4W-21	BLOWER BYPASS VALVE OPERATOR #5									
P4W-22	MICROSTRAINER BACK WASHWATER PUMP #2									
P4W-23	SPACE									
P4W-24	LIGHTING PANEL L-21	L-21								
P4W-25	EXHAUST FAN EF-5	EF-5								
P4W-26	FINAL EFFLUENT PUMP #2									
P4W-27	DISTRIBUTION PANEL									
P4W-28	MICROSTRAINER BACKWASH WATER STRAINER #1 KINNY STRAINER #1									
P4W-29	MICROSTRAINER BACK WASHWATER PUMP #3									
P4W-30	LOW PRESSURE SPRAY WATER PUMP #2									
P4W-31	DUPLEX SUMP PUMP SP-2	SP-2								
P4W-32	CHLORINE MIXER #2 WEST									
P4W-33	RETURN ACTIVATED SLUDGE PUMP #2									
P4W-34	RETURN ACTIVATED SLUDGE PUMP #3									
P4W-35	UV BUILDING-TRANSFORMER DISTRIBUTION PANEL DP-1	T-1	200 KVA	187A.	300A.				3-350KCMIL + 1-#4 GRD., 4"C.	
	TOTAL CONNECTED LOAD									

EXIST. MOTOR CONTROL CENTER "MCC-P4E" SCHEDULE

480 V., 3PH., 3 WIRE, 1200 AMP. MAIN BUS AND GROUND BUS

NAMEPLATE ENGRAVING ** POS. No.	DESCRIPTION	DESIG.	* CONN. LOAD	CONN. AMPS	MCP * BRKR.	STARTER SIZE	STARTER TYPE	CONTROL DEVICES	WIRE AND CONDUIT	REMARKS
P4E-1A	UV BUILDING-TRANSFORMER DISTRIBUTION PANEL DP-2	T-2	200 KVA	155A.	300A.				3-350KCMIL + 1-#4 GRD., 4"C.	
P4E-1	PLC SECTION									
P4E-2	RETURN ACTIVATED SLUDGE PUMP #1									
P4E-3	TRICKLING FILTER LIFT STATION FEEDER									
P4E-4	SPACE									
P4E-5	SPACE									
P4E-6	MICROSTRAINER BACK WASHWATER PUMP #1									
P4E-7	SPACE									
P4E-8	OVERHEAD DOOR OPERATOR #2									
P4E-9	CHLORINE CONTACT TANK AIR VALVE ACTUATOR									
P4E-10	SPACE									
P4E-11	SPACE									
P4E-12	LOW PRESSURE SPRAY WATER PUMP #1									
P4E-13	SPACE									
P4E-14	EXHAUST FAN EF-7	EF-7								
P4E-15	FINAL EFFLUENT PUMP #1									
P4E-16	BLOWER #6 AUXILIARY OIL PUMP									
P4E-17	DTS INCINERATOR C.P. CIRCUIT BREAKER									
P4E-18	SPACE									
P4E-19	EXHAUST FAN EF-1	EF-1								
P4E-20	SPACE									
P4E-21	SPACE									
P4E-22	MICROSTRAINER BACKWASH WATER STRAINER #2 KINNY STRAINER #2									
P4E-23	BLOWER BYPASS VALVE OPERATOR #6									
P4E-24	SPACE									
P4E-25	OVERHEAD CRANE									
P4E-26	SPACE									
P4E-27	SPACE									
P4E-28	DUPLEX SUMP PUMP	SP-1								
P4E-29	SUPPLY FAN SF-3	SF-3								
P4E-30	MICROSTRAINER BYPASS SOUTH MCC									
P4E-31	LIGHTING PANEL L-5	L-5								
P4E-32	CHLORINE MIXER #1 EAST									
P4E-33	METERING UNIT									
P4E-34	SUPPLY FAN SF-2	SF-2								
P4E-35	MAIN CIRCUIT BREAKER									
	TOTAL CONNECTED LOAD									

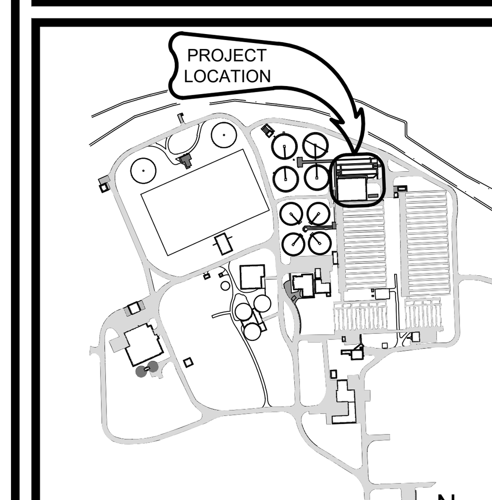
CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED R.H.Waters
DRAWN B.B.Hetchler
CHECKED R.H.Waters
APPROVED



FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

ELECTRICAL MCC SCHEDULES

HRC JOB NO. 20190265
SCALE AS NOTED
DATE April 2020
SHEET NO. E-5 OF

4/10/2020 12:56 PM
HRC_OLW.ctb
\\hrc-engr\General\V8\201902\20190265\E\e05plot.dwg
Roskelley, Michael J.

DISTRIBUTION PANEL "DP-1" SCHEDULE

480 V., 3PH., 4 WIRE, 300 AMP, MAIN BREAKER, NEUTRAL AND GROUND BUS

NAMEPLATE ENGRAVING ✳			CONN. LOAD	CONN. AMPS	OVERCURRENT PROTECTION		WIRE AND CONDUIT	REMARKS
POS. No.	DESCRIPTION	DESIG.			BRKR. TRIP	POLES		
1-1	POWER DISTRIBUTION CENTER 1A-1C	PDC 1A-1C	82.1 KVA	99	150	3	4-#1/0 + 1-#6 GRD., 2 1/2"C.	
1-2	POWER DISTRIBUTION CENTER 1D	PDC -1D	27.4 KVA	34	45	3	4-#8 + 1-#10 GRD., 3/4"C.	
1-3	HYDRAULIC SYSTEM CENTER HSC-1	HSC-1	2.5 KVA	3	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
1-4	TRANSFORMER	LP-A	30 KVA	36	45	3	3-#8 + 1-#10 GRD., 3/4"C.	
1-5	WEIR GATE		5 HP	7.6	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
1-6	SLIDE GATE		5 HP	7.6	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
1-7	SPARE				45	3		
1-8	SPARE				15	3		
1-9	SPACE							
1-10	SPACE							
1-11	SPACE							
1-12	SPACE							
TOTAL CONNECTED LOAD				187.2				

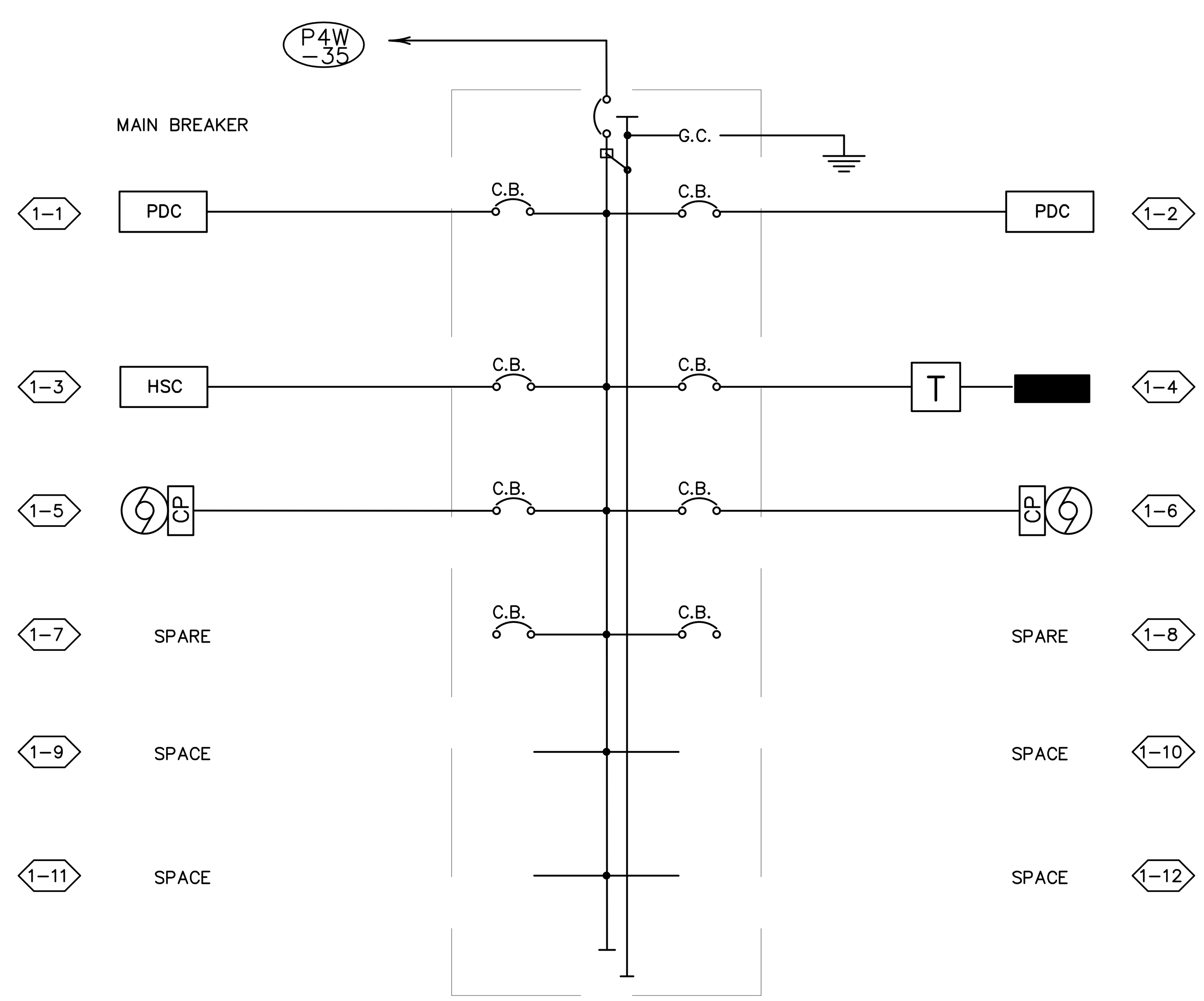
✳ SEE NAMEPLATE DETAIL ON DWG. #E-9, NAMEPLATES FOR SPARES SHALL BE BLANK

DISTRIBUTION PANEL "DP-2" SCHEDULE

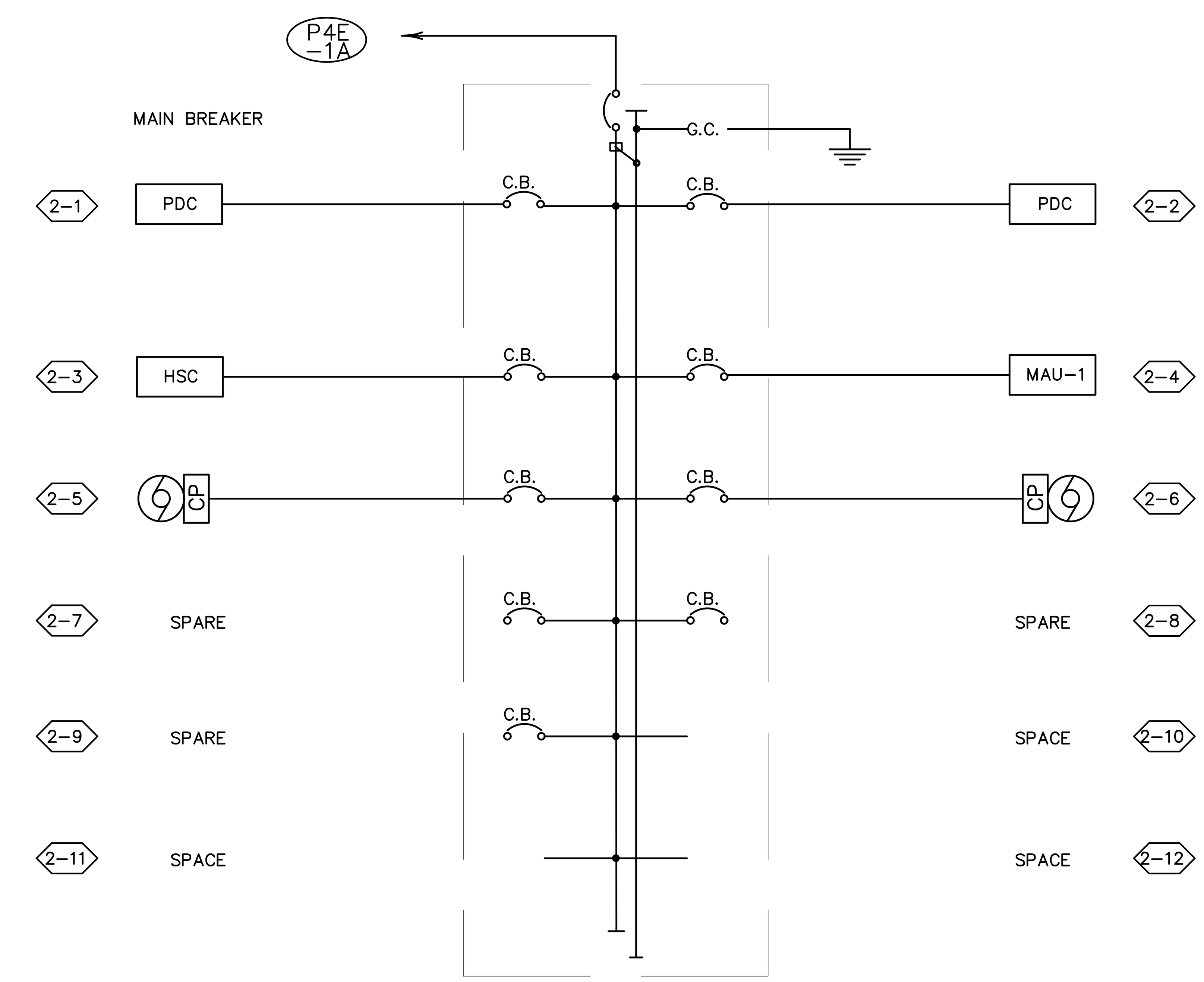
480 V., 3PH., 4 WIRE, 300 AMP, MAIN BREAKER, NEUTRAL AND GROUND BUS

NAMEPLATE ENGRAVING ✳			CONN. LOAD	CONN. AMPS	OVERCURRENT PROTECTION		WIRE AND CONDUIT	REMARKS
POS. No.	DESCRIPTION	DESIG.			BRKR. TRIP	POLES		
2-1	POWER DISTRIBUTION CENTER 2A-2C	PDC 2A-2C	82.1 KVA	99	150	3	4-#1/0 + 1-#6 GRD., 2 1/2"C.	
2-2	POWER DISTRIBUTION CENTER 2D	PDC -2D	27.4 KVA	34	45	3	4-#8 + 1-#10 GRD., 3/4"C.	
2-3	HYDRAULIC SYSTEM CENTER HSC-2	HSC-2	2.5 KVA	3	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
2-4	MAKE-UP AIR UNIT #1	MAU-1	1.5 HP	4.2	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
2-5	WEIR GATE		5 HP	7.6	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
2-6	SLIDE GATE		5 HP	7.6	15	3	3-#12 + 1-#12 GRD., 3/4"C.	
2-7	SPARE				125	3		
2-8	SPARE				45	3		
2-9	SPARE				15	3		
2-10	SPACE							
2-11	SPACE							
2-12	SPACE							
TOTAL CONNECTED LOAD				155.4				

✳ SEE NAMEPLATE DETAIL ON DWG. #E-9, NAMEPLATES FOR SPARES SHALL BE BLANK



ONE-LINE DIAGRAM
DISTRIBUTION PANEL "DP-1"



ONE-LINE DIAGRAM
DISTRIBUTION PANEL "DP-2"

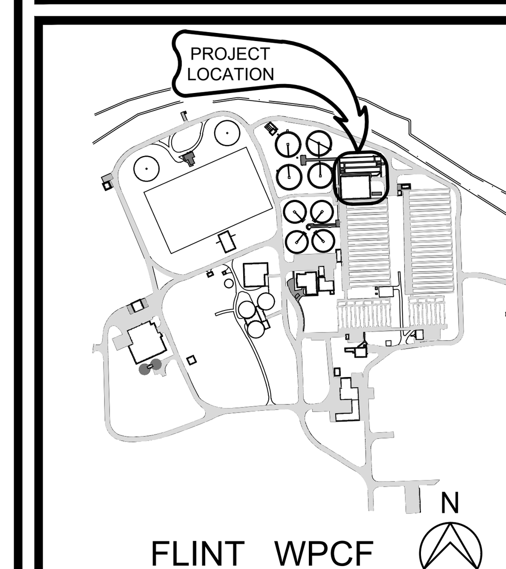
CITY of FLINT MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5-7-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Woters
DRAWN	B.B.Hetchler
CHECKED	R.H.Woters
APPROVED	



CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

ELECTRICAL
DISTRIBUTION PANEL SCHEDULES AND ONE-LINE DIAGRAMS

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. E-6 OF

4/10/2020 12:56 PM
HRC_OLW.ctb
\\hrc-engr\General\V8\201902\20190265\E\e07plot.dwg
Roskelley, Michael J.

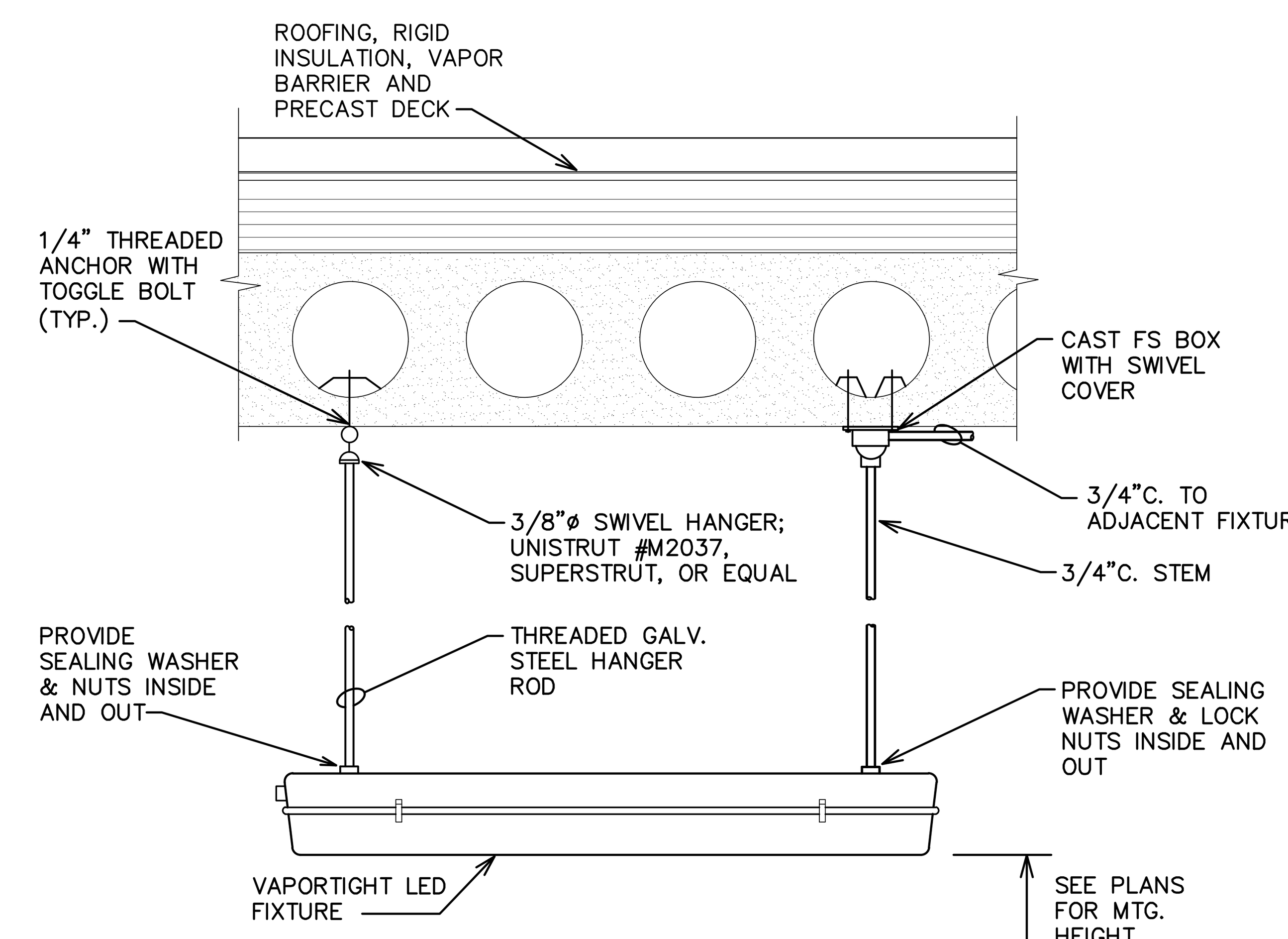
LIGHTING PANEL "LP – A" SCHEDULE

208Y/120V., 3PH., 4W., WITH 100 AMP. MAIN BREAKER, NEUTRAL BUS & GRD. BUS

CIRC. NO.	BRKR. SIZE	ITEM SERVED	LOAD (WATTS)		
			PH. X	PH. Y	PH. Z
1	20A,1P	FLOW TRANSMITTER – N. CHANNEL	120	–	–
3	20A,1P	FLOW TRANSMITTER – S. CHANNEL	–	120	–
5	20A,1P	D.O. TRANSMITTER	–	–	120
7	20A,1P	UV TRANSMITTANCE METER	50	–	–
9	20A,1P	LEVEL SENSOR – N. CHANNEL	–	36	–
11	20A,1P	LEVEL SENSOR – S. CHANNEL	–	–	36
13	20A,1P	LEVEL CONTROL BOX – N. CHANNEL	72	–	–
15	20A,1P	LEVEL CONTROL BOX – S. CHANNEL	–	72	–
17	15A,1P	EXHAUST FAN EF–1	–	–	700
19	20A,1P	SPARE		–	–
21	20A,1P	SPARE	–		–
23	20A,1P	SPARE	–	–	
25	20A,1P	SPARE		–	–
27	20A,1P	SPARE	–		–
29	20A,1P	SPARE	–	–	
31		SPACE		–	–
33		SPACE	–		–
35		SPACE	–	–	
37		SPACE		–	–
39		SPACE	–		–
41		SPACE	–	–	
2	20A,1P	UV SCC PANEL	1800	–	–
4	20A,1P	UV BUILDING CONTROL PANEL	–	1500	–
6	20A,1P	SECURITY SYSTEM PANEL	–	–	1000
8	20A,1P	RECEPTACLES – N. WALL	500	–	–
10	20A,1P	RECEPTACLES – S. WALL	–	500	–
12	20A,1P	RECEPTACLES – EXTERIOR	–	–	750
14	20A,1P	LIGHTS – UV BUILDING OUTDOOR	51	–	–
16	20A,1P	LIGHTS – UV BUILDING, EMERGENCY & EXIT	–	670	–
18	15A,1P	EXHAUST FAN EF–2	–	–	700
20	20A,1P	SPARE		–	–
22	20A,1P	SPARE	–		–
24	20A,1P	SPARE	–	–	
26	20A,1P	SPARE		–	–
28	20A,1P	SPARE	–		–
30	20A,1P	SPARE	–	–	
32		SPACE		–	–
34		SPACE	–		–
36		SPACE	–	–	
38		SPACE		–	–
40		SPACE	–		–
42		SPACE	–	–	
		TOTAL CONNECTED LOAD	2593	2898	3306

LIGHTING FIXTURE SCHEDULE

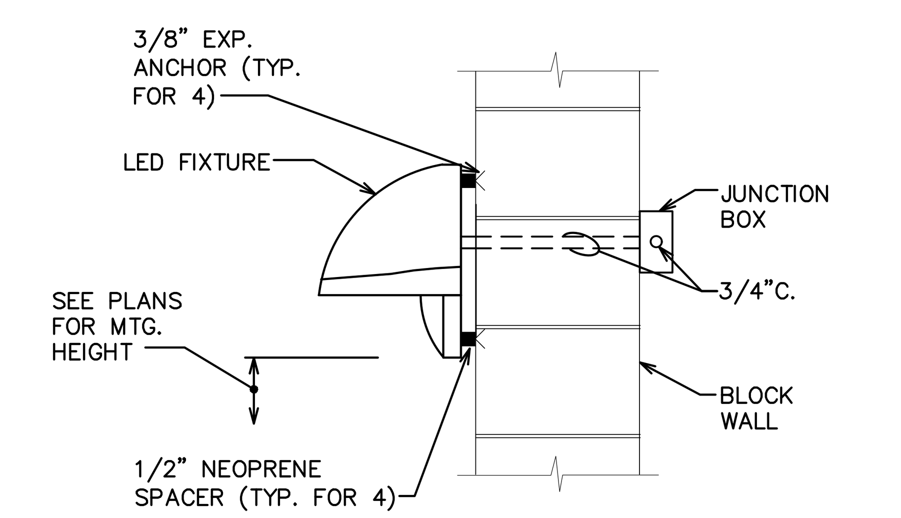
TYPE	LAMP	OPERATING VOLTAGE	DESCRIPTION	MFR. CAT. NO.
"A"	33 WATT LED 4000K, 4250 LUMENS	120V.	PENDANT MOUNTED, ENCLOSED & GASKETED FIBERGLAS HOUSING, RIBBED FROSTED ACRYLIC LENS, LONG LIFE LEDS, TOOL–LESS ENTRY, REMOVABLE GEAR TRAY, MIN. 2.5KV SURGE SUPPRESSOR, INTEGRAL OCCUPANCY SENSOR, UL LISTED, IP66 & WET LOCATION RATED, RoHS COMPLIANT, ALL HARDWARE SHALL BE STAINLESS STEEL, MINIMUM OF 60,000 HOURS L80 AT 55 DEG. C., NO ACTIVE COOLING, MINIMUM 5 YEAR WARRANTY ON ALL PARTS.	COLUMBIA: LXEM4–40LW–RFA–EU–OCM OR APPROVED EQUAL
"OA"	12.6 WATT LED 5000K, 1132 LUMENS	120V.	WALL MOUNTED OUTDOOR LED FIXTURE, DECORATIVE DIE CAST ALUMINUM, FULL CUTOFF, TYPE III DISTRIBUTION, BRONZE POLYSTER POWDER COAT FINISH, UL LISTED FOR WET LOCATIONS, PHOTOCELL, MINIMUM 5 YEAR WARRANTY ON ALL PARTS.	HUBBELL: LNC–5LU–5K–3–1–PCU OR APPROVED EQUAL
"EM"	(2) 5W, D.C., LED	120V.	EMERGENCY LIGHTING UNIT WITH TWO (2) HEADS (12 VDC) WITH BATTERY AND CHARGER, NEMA–4X, CORROSION RESISTANT HOUSING, VANDAL–RESISTANT UV STABILIZED POLYCARBONATE COVER, MAINTENANCE FREE NICKEL CADMIUM BATTERIES; THERMALLY PROTECTED FOR 90 M. OPERATION MIN., NON–AUDIBLE ADVANCED DIAGNOSTICS, WET LOCATION RATED.	EMERGI–LITE SURVIVE–ALL SERIES SV: W12SV40N–2LI–D (–SMC) CHLORIDE, DUAL–LITE OR APPROVED EQUAL
"EX"	LED	120V.	LED EXIT SIGN LISTED TO UL924 AND SHALL BE OF MOLDED POLYVINYL CHLORIDE WITH MOUNTING FOR CEILING OR WALL AS INDICATED ON DRAWINGS. THE SIGN SHALL HAVE DUAL CIRCUITS FOR 120V./277V., CHARGER THAT IS FULL AUTOMATIC, SOLID STATE, TEMPTER COMPENSATED AND SHORT CIRCUIT PROTECTED ALONG WITH NICKEL–CADMIUM BATTERY. THE UNIT SHALL HAVE A SELF–TESTING/ SELF–DIAGNOSTICS AND SHALL HAVE A SINGLE "SERVICE REQUIRED" LED LIGHT VISIBLE TO THE USER	EMERGI–LITE SURVIVE–ALL SERIES SVX: WW–SVX–1/2–R–D–4X–2CKT, CHLORIDE OR DUAL–LITE



TYPE "A" PENDANT MOUNTING DETAIL

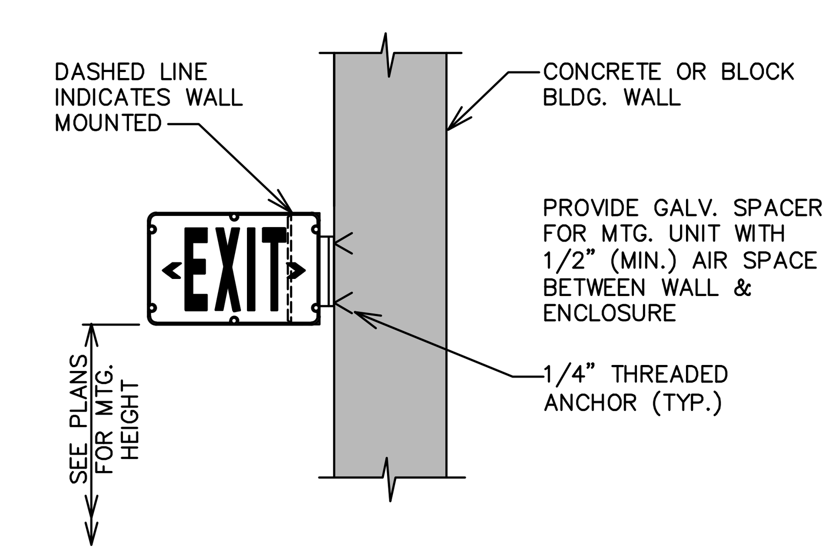
N.T.S.

(COORDINATE ANCHOR/TOGGLE BOLT LOCATION WITH CEILING CELL LOCATIONS)



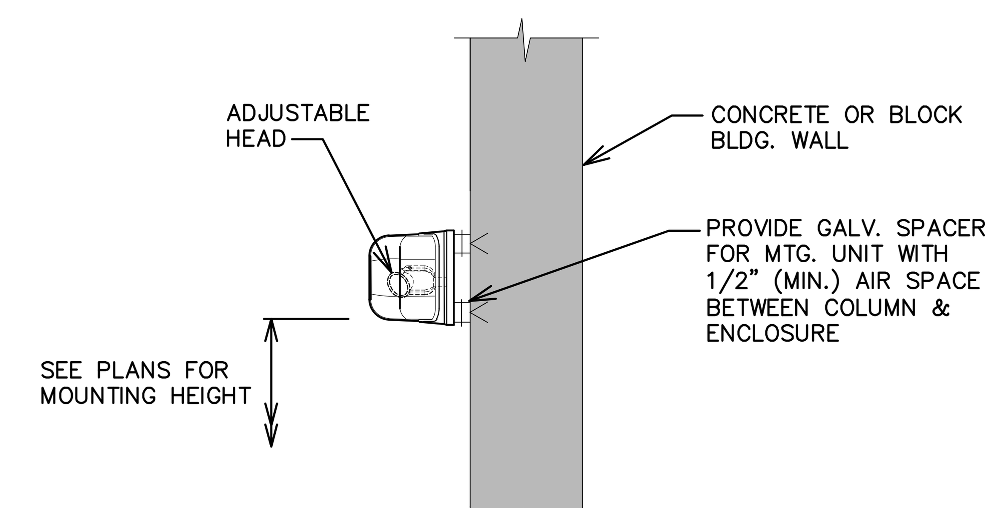
TYPE "OA" MOUNTING DETAIL

N.T.S.



EXIT LTG. FIXTURE TYPE "EX" MOUNTING DETAIL

N.T.S.



EMERGENCY LIGHTING FIXTURE TYPE "EM" MOUNTING DETAIL

N.T.S.

(CEILING MOUNT SIMILAR)

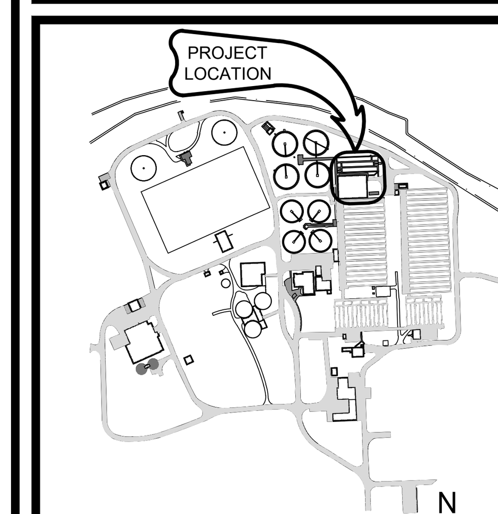
CITY of FLINT
EST. 1855
MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http: // www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4–8–20	FINAL EGLE SUBMITTAL
2–7–20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



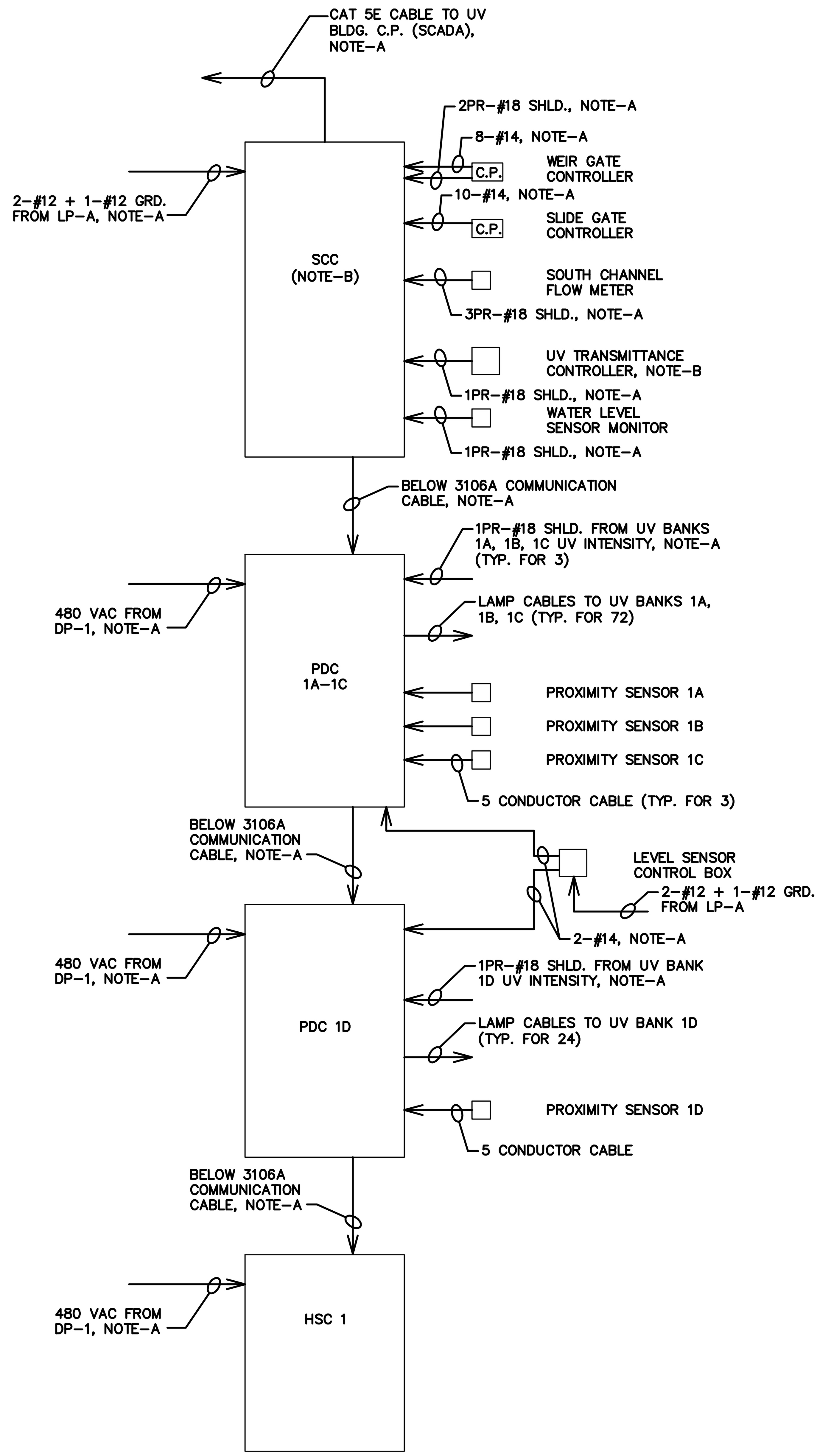
FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

ELECTRICAL LIGHTING FIXTURE DETAILS AND SCHEDULES

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. E–7 OF



SOUTH UV CHANNEL CONNECTION DIAGRAM

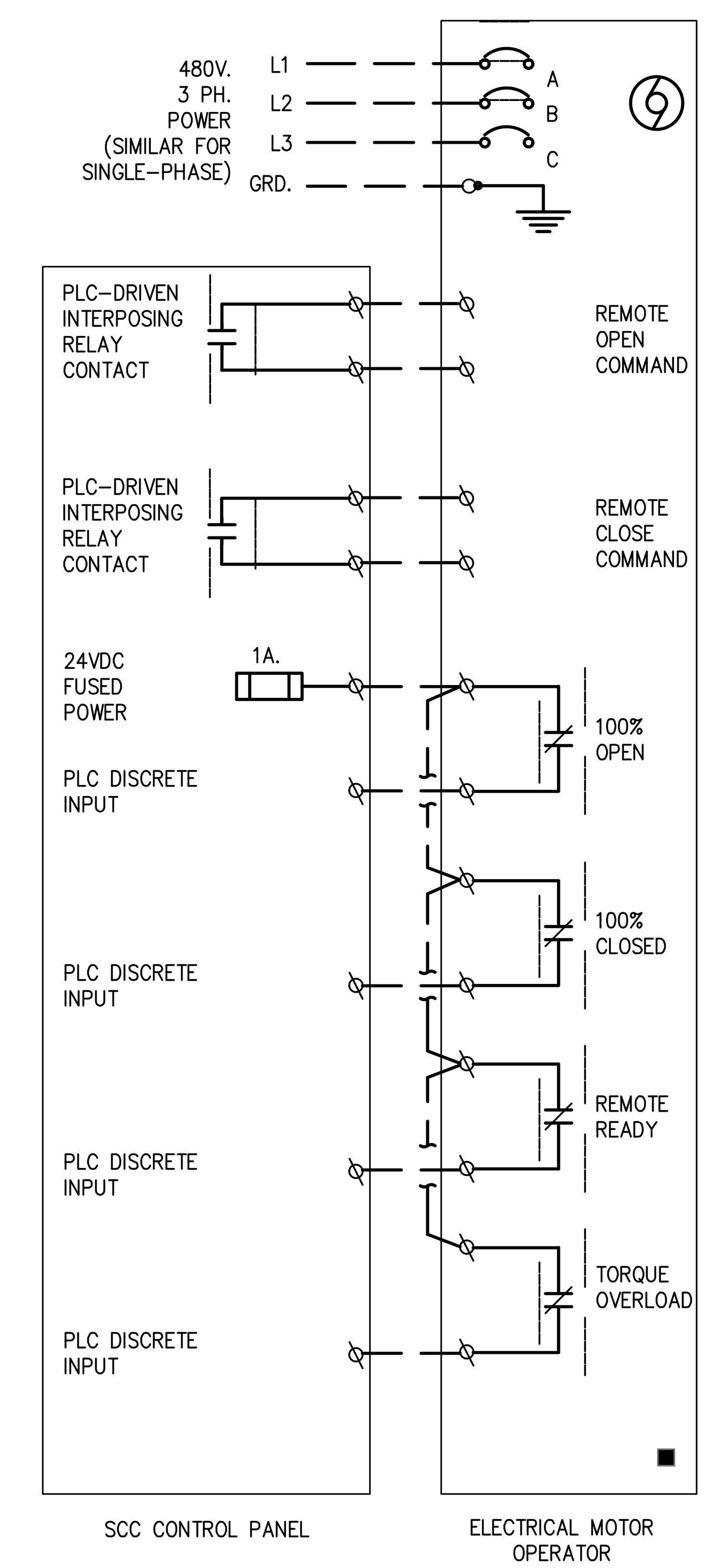
(SIMILAR FOR NORTH UV CHANNEL)

NOTES:

A. EQUIPMENT PROVIDED SEPARATE FROM PACKAGE SYSTEM.

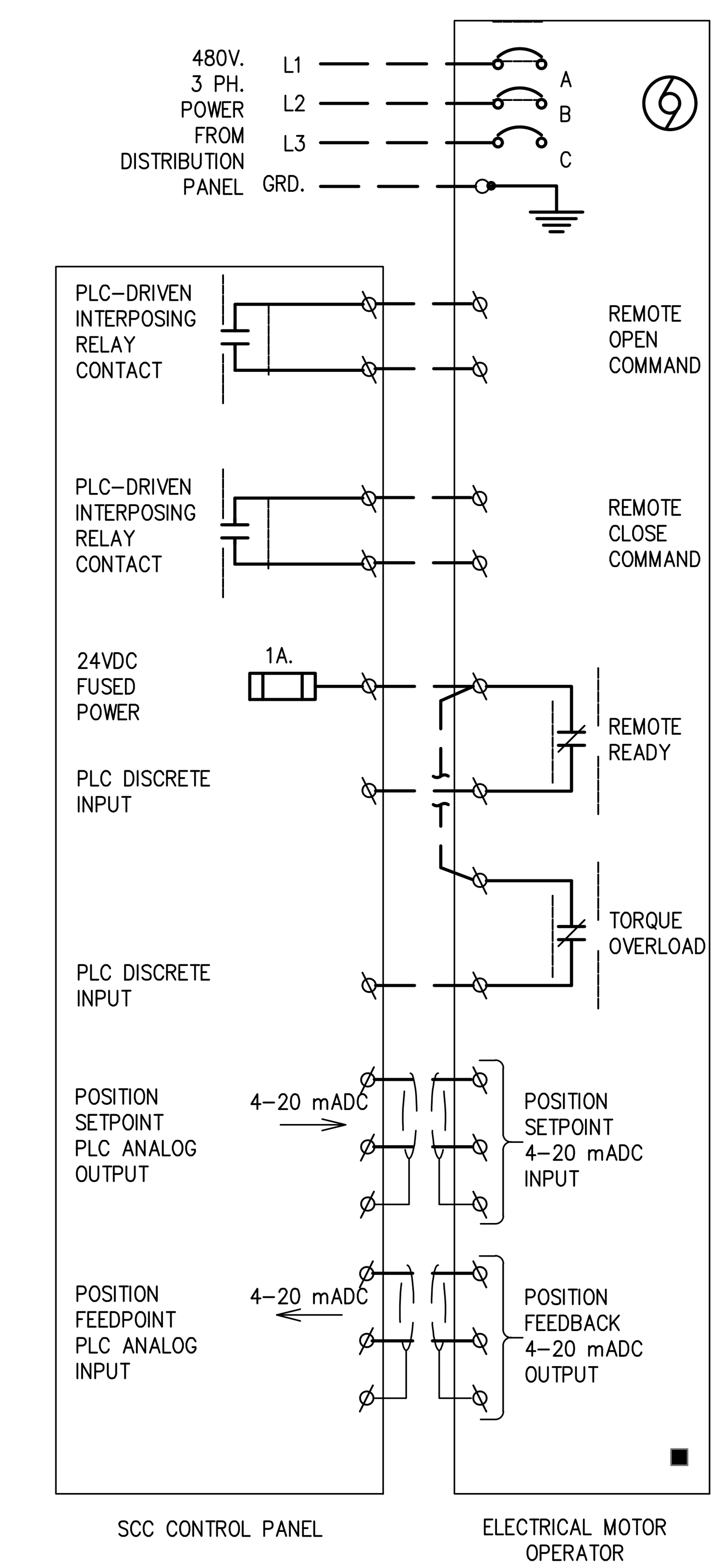
B. ONLY ONE DEVICE REQUIRED FOR BOTH CHANNELS.

C. FURNISH AND INSTALL #8 GROUNDING BONDING CONDUCTOR FROM EACH PDC TO THE UV BANK PER MANUFACTURER'S REQUIREMENTS.



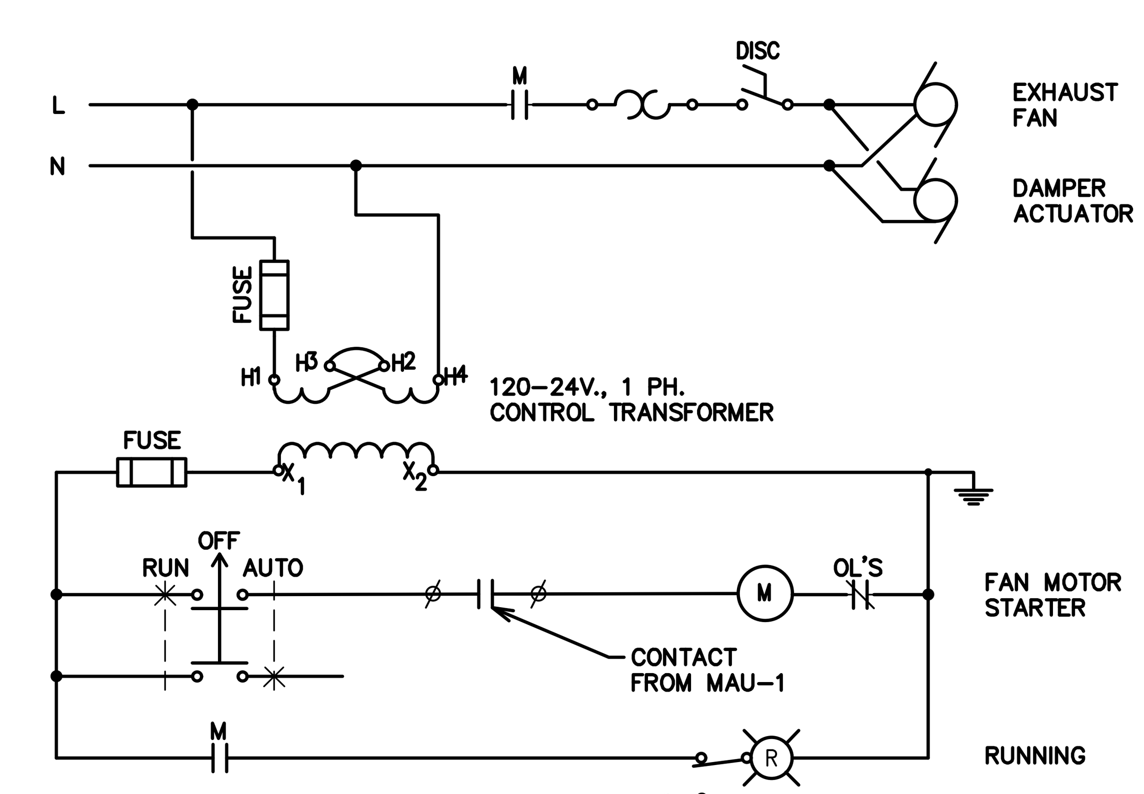
SLIDE GATE OPERATOR CONNECTION DIAGRAM

NO SCALE



WEIR GATE OPERATOR CONNECTION DIAGRAM

NO SCALE



EXHAUST FAN EF-1 MOTOR STARTER WIRING DIAGRAM

(EF-2 SIMILAR)

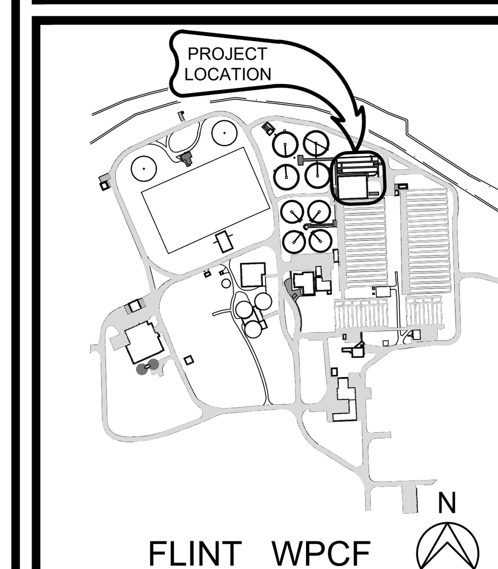
CITY of FLINT
EST 1855
MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
5-7-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



FLINT WPCF

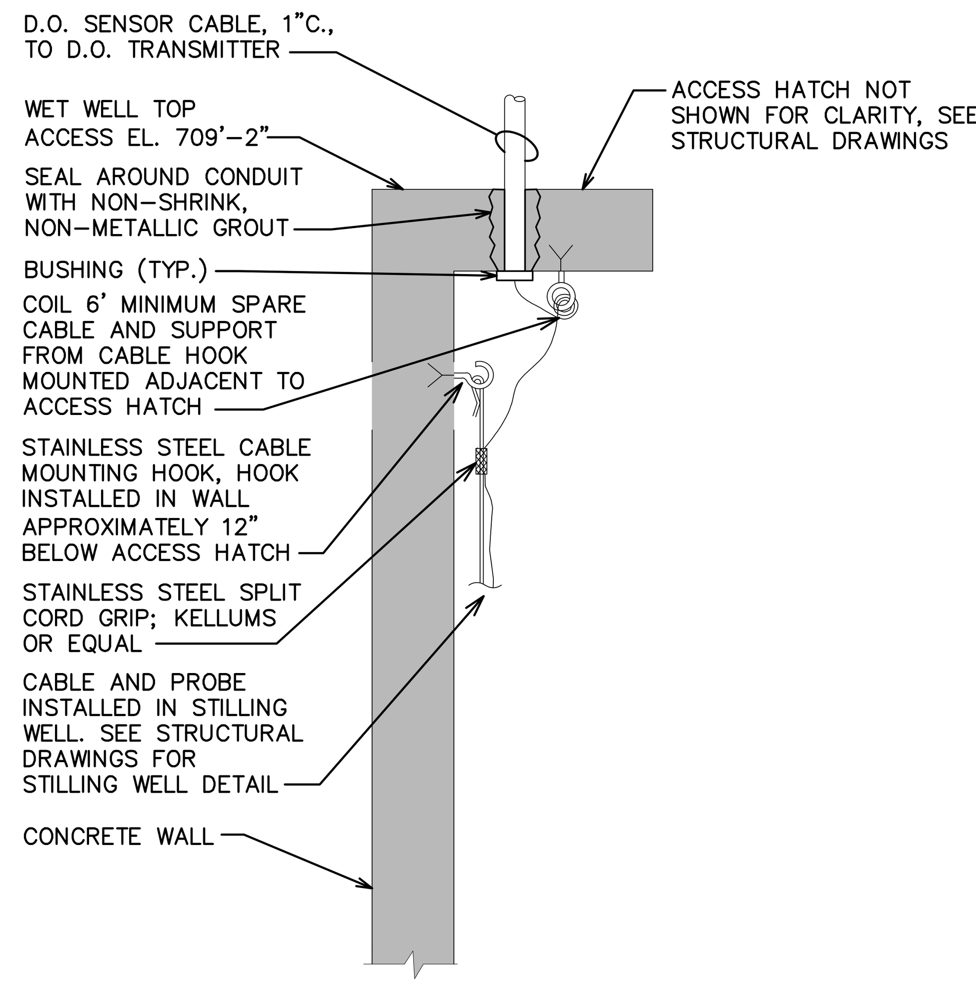
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

ELECTRICAL DIAGRAMS

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE April 2020	SHEET NO. E-8 OF

4/10/2020 1:38 PM
HRC_OLW.ctb
V:\201902\20190265\E\e09plot.dwg
Roskelley, Michael J.

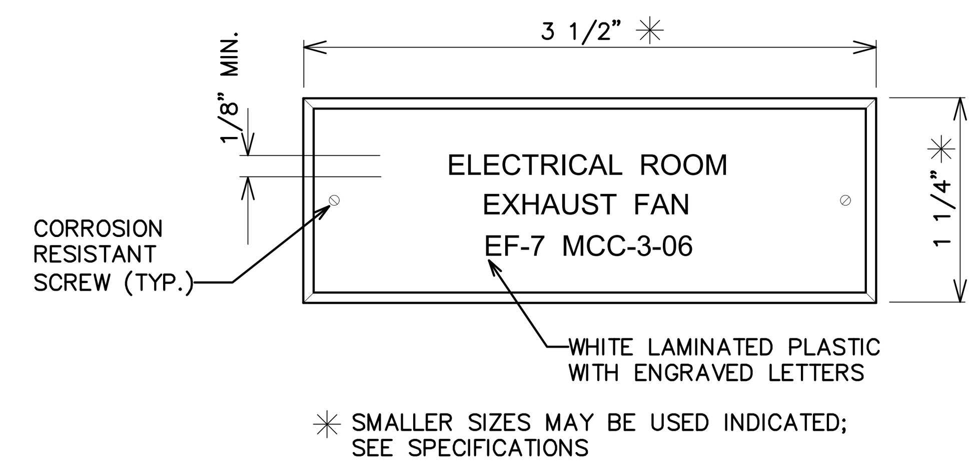


DISSOLVED OXYGEN (D.O.) CABLE MOUNTING DETAIL

N.T.S.

NOTES:

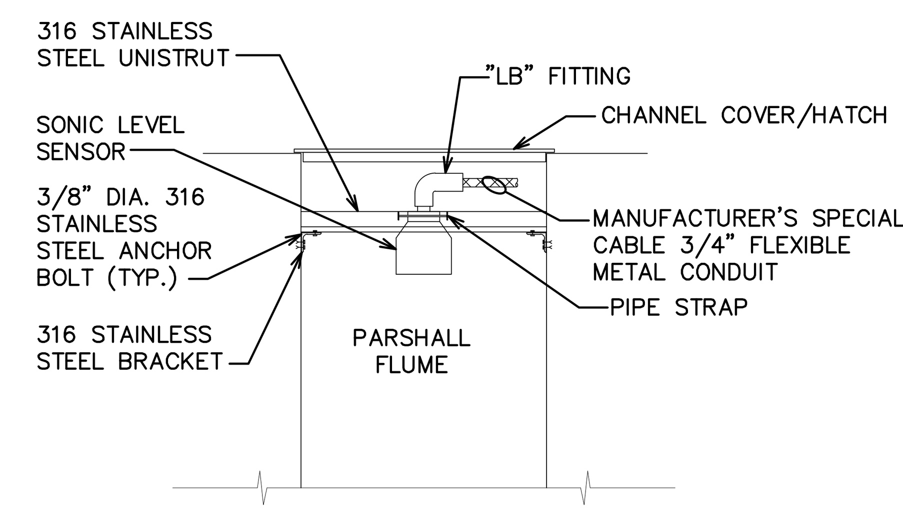
1. ALL MOUNTING HARDWARE (NUTS, BOLTS AND WASHERS) SHALL BE 3/8" DIA. (MIN.) SERIES STAINLESS STEEL



✳ SMALLER SIZES MAY BE USED INDICATED; SEE SPECIFICATIONS

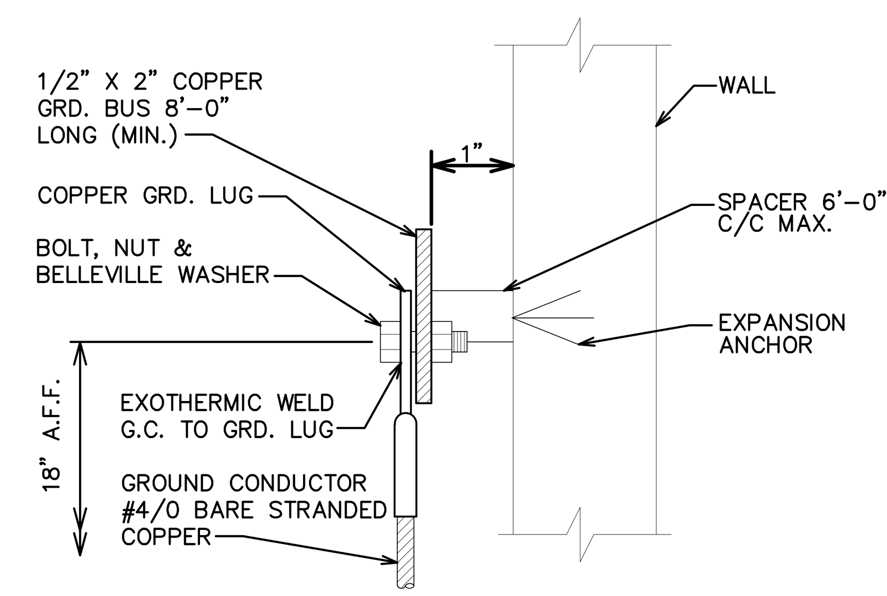
NAMEPLATE DETAIL

FULL SCALE



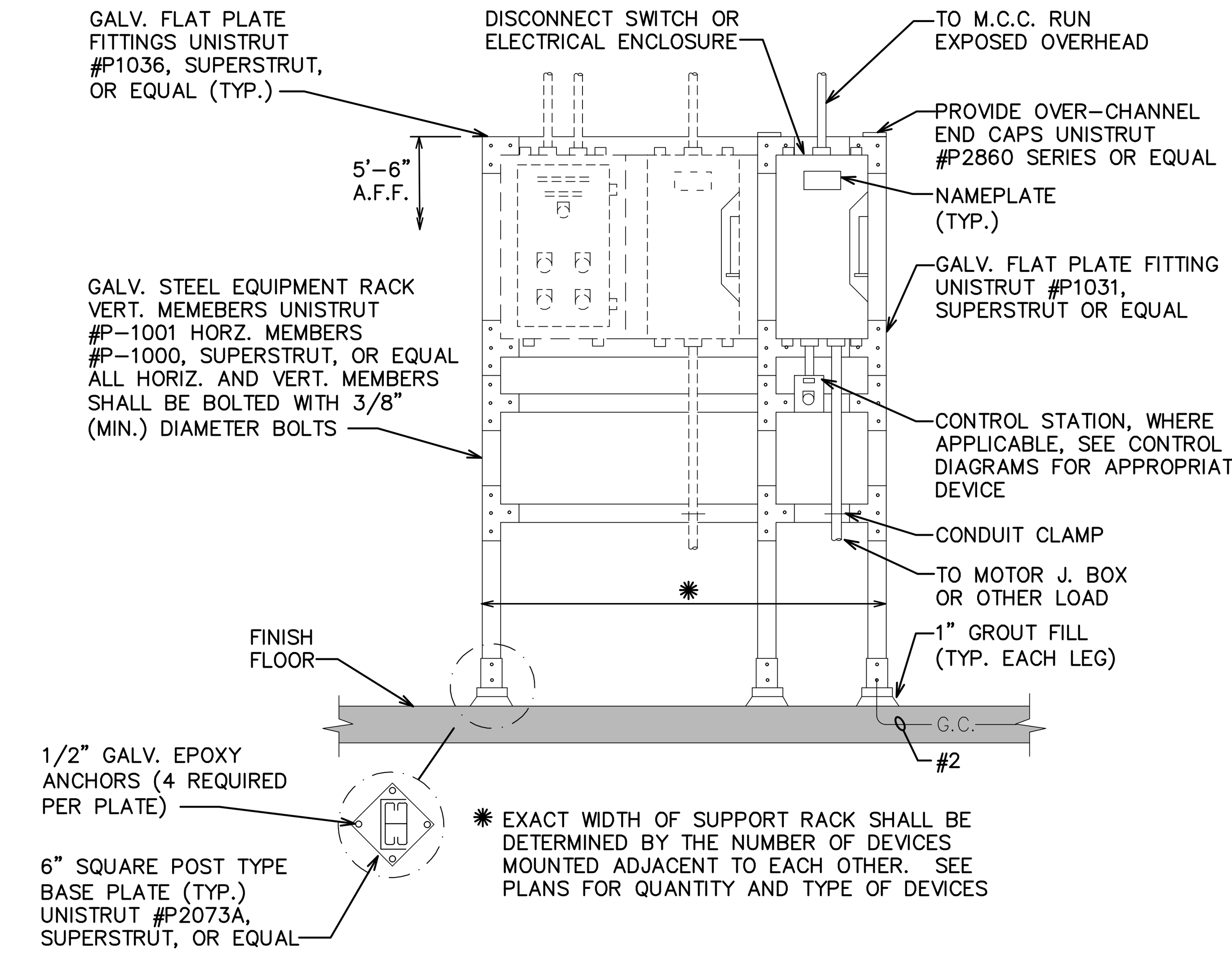
SONIC FLOW SENSOR MOUNTING DETAIL

N.T.S.
(ALL MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL)
(INSTALL SENSOR PER MANUFACTURER'S REQUIREMENT)
(INSTALL SENSOR JUST BELOW HATCH/COVER)



GROUND BUS DETAIL

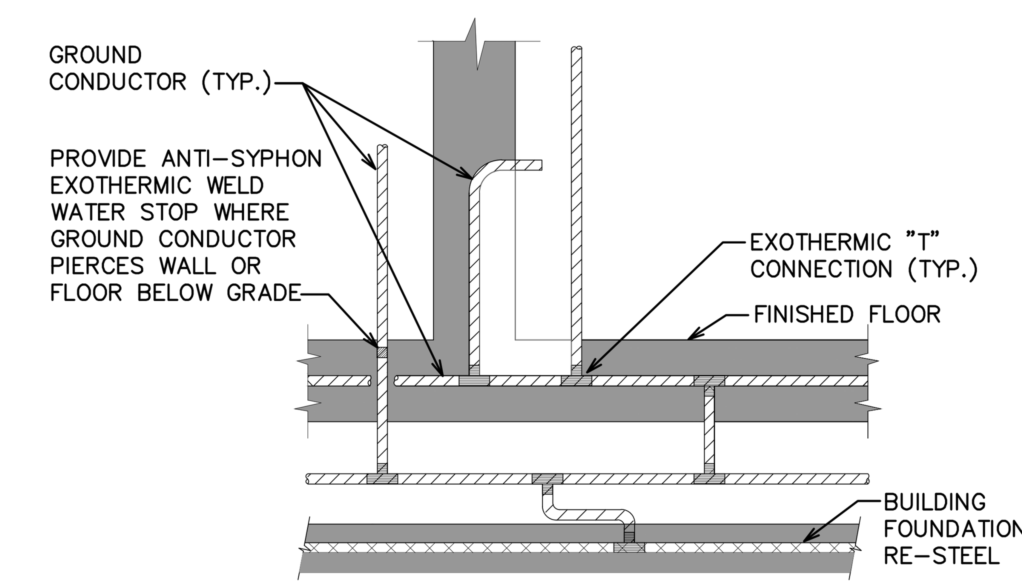
N.T.S.



✳ EXACT WIDTH OF SUPPORT RACK SHALL BE DETERMINED BY THE NUMBER OF DEVICES MOUNTED ADJACENT TO EACH OTHER. SEE PLANS FOR QUANTITY AND TYPE OF DEVICES

EQUIPMENT SUPPORT RACK ON CONCRETE SLAB DETAIL

N.T.S.



GROUND CONDUCTOR DETAIL

N.T.S.

NOTES:

a. ALL FLOOR OR WALL MOUNTED EQUIPMENT SUCH AS CONTROL PANELS, DISC. SWITCHES, LIGHTING PANELS, POWER DISTRIBUTION PANELS, AND LIGHTING TRANSFORMERS (INCLUDING PACKAGE EQUI[PMENT FURNISHED AND INSTALLED BY OTHERS) SHALL HAVE A GROUND CONDUCTOR TIE BETWEEN THE EQUIPMENT AND THE GROUND MAT

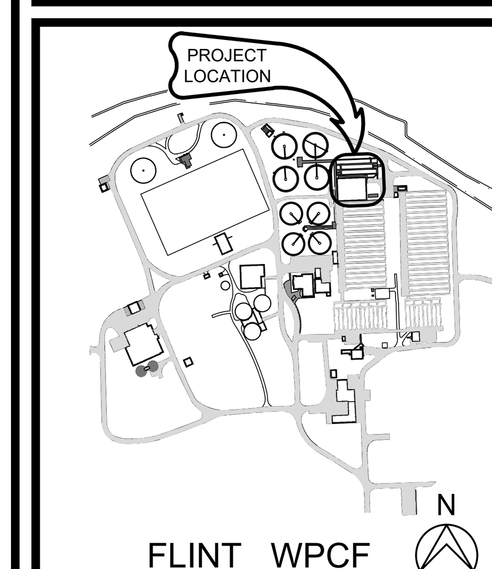
b. MINIMUM GROUND CONDUCTOR SIZES:
#4/0 – GROUND LOOP IN OR BELOW FLOOR SLAB AND ALL MAJOR RISERS.
#1/0 – RISERS TO COLUMNS
#2 – 480 VOLT EQUIPMENT
#6 – 120 VOLT EQUIPMENT

CITY of FLINT 1855 MICHIGAN

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL
DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



FLINT WPCF

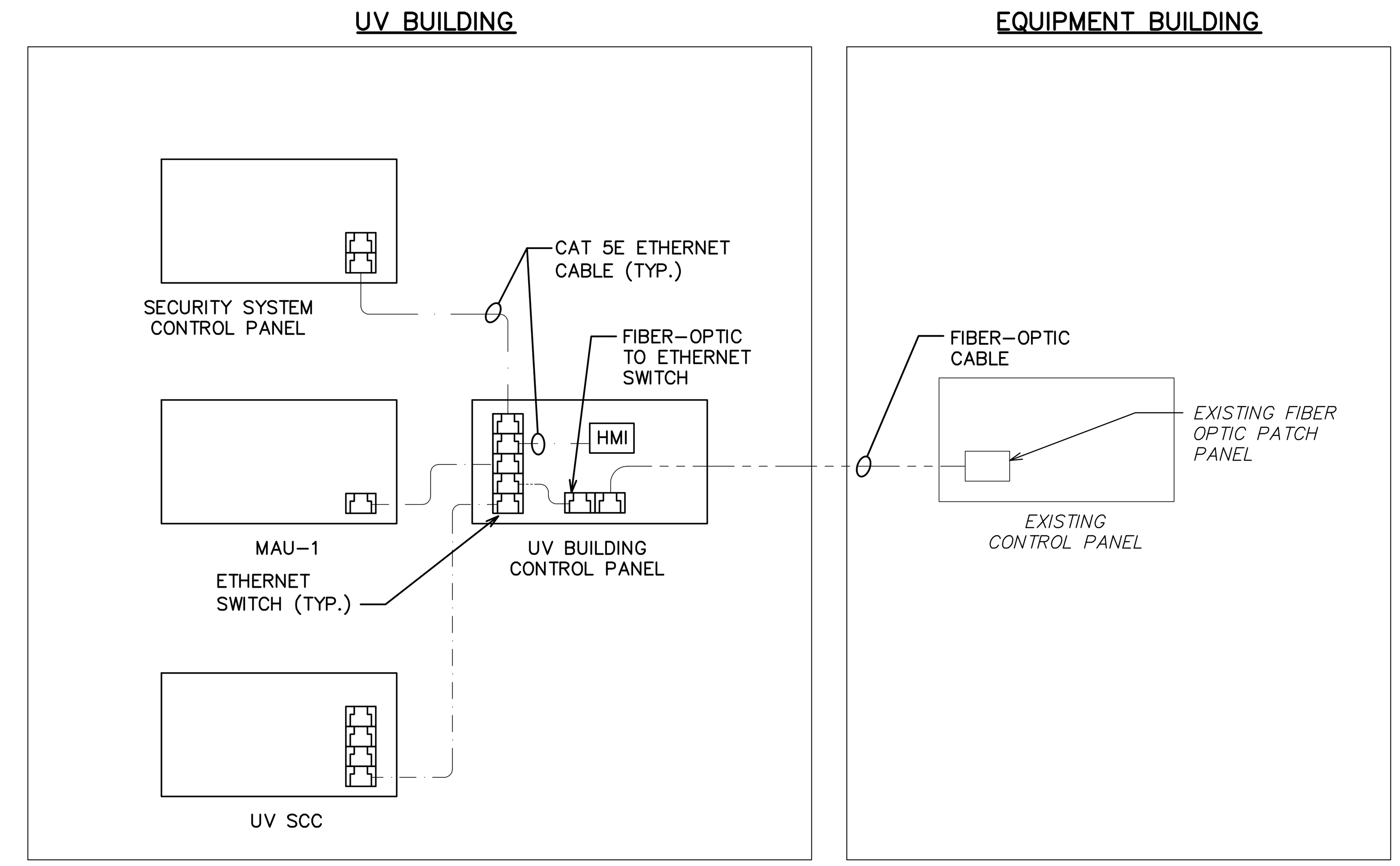
CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

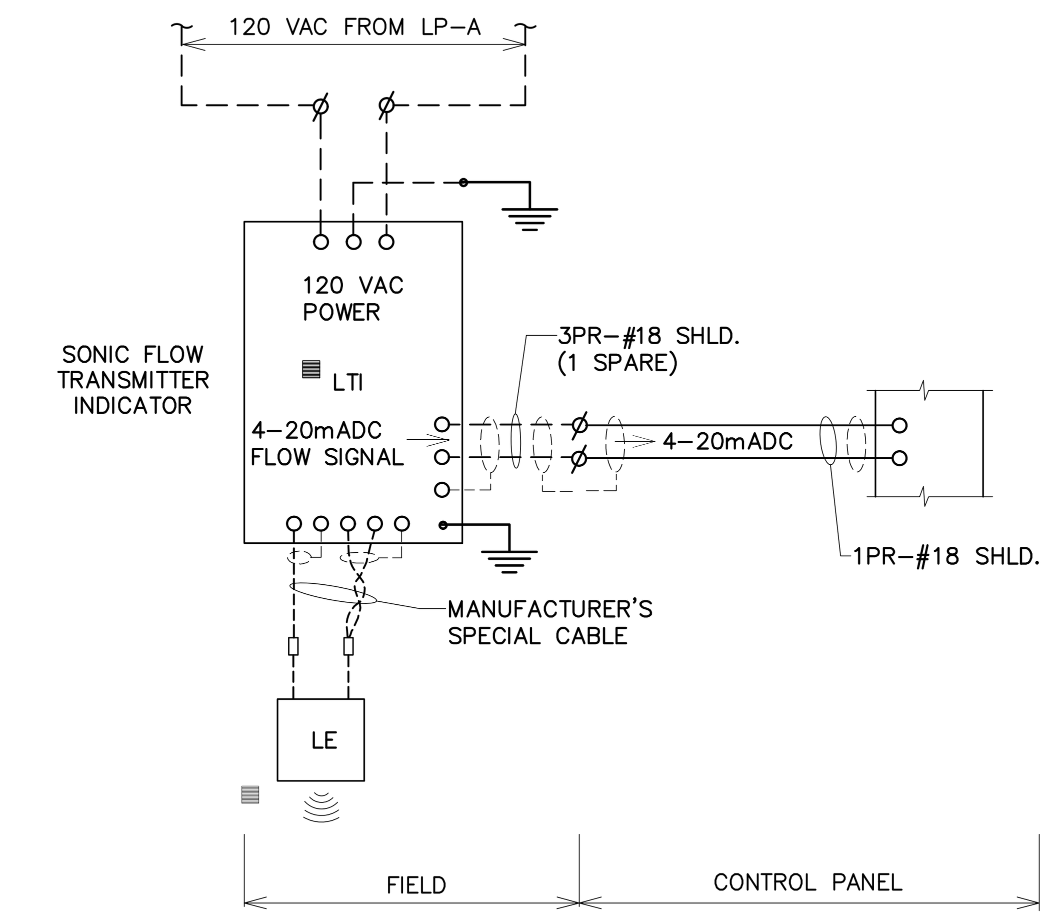
ELECTRICAL EQUIPMENT MOUNTING & DETAILS

HRC JOB NO.	SCALE
20190265	AS NOTED
DATE: April 2020	SHEET NO. E-9 OF

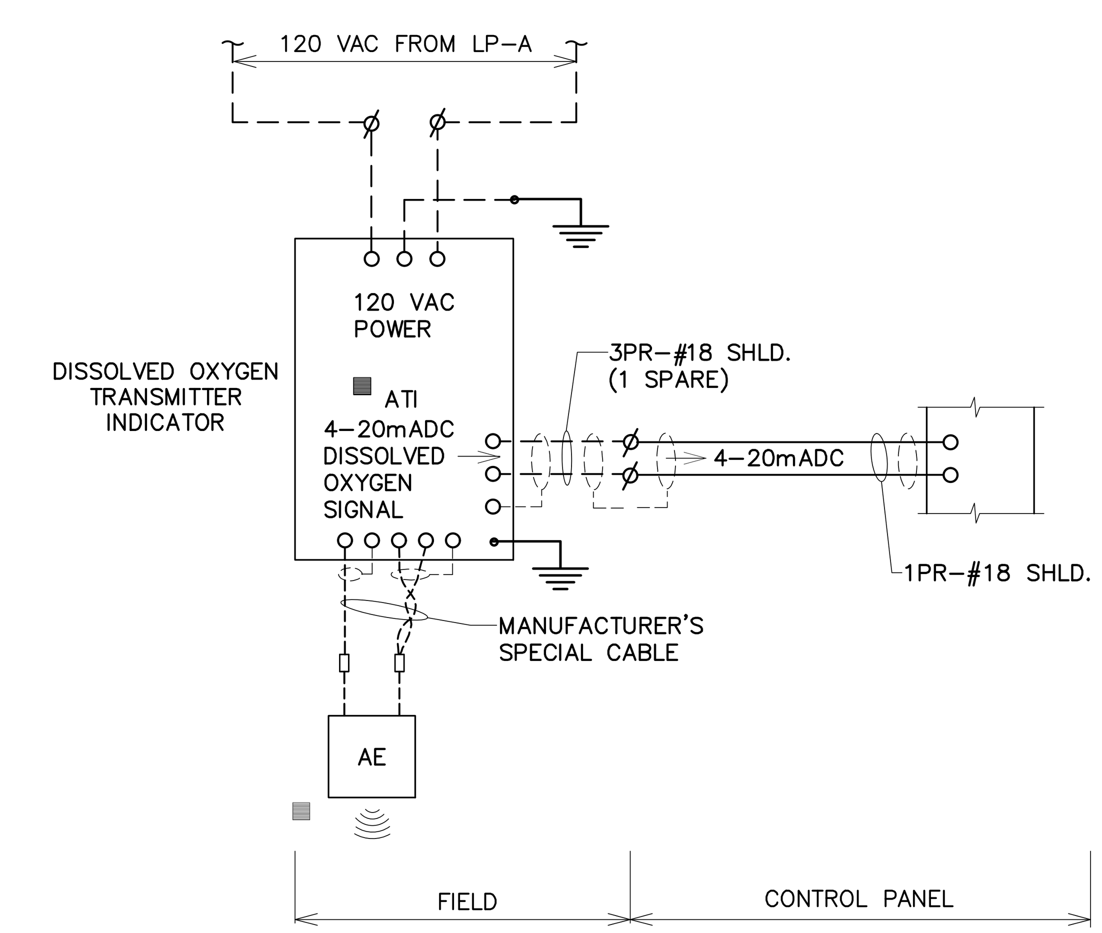
4/10/2020 12:57 PM
HRC_OLW.ctb
\\hrc-engr\General\V8\201902\20190265\E\01plot.dwg
Roskelley, Michael J.



COMMUNICATIONS RISER DIAGRAM
NO SCALE



FLUME FLOW TRANSMITTER TYPICAL WIRING DIAGRAM
NO SCALE



DISSOLVED OXYGEN TRANSMITTER TYPICAL WIRING DIAGRAM
NO SCALE

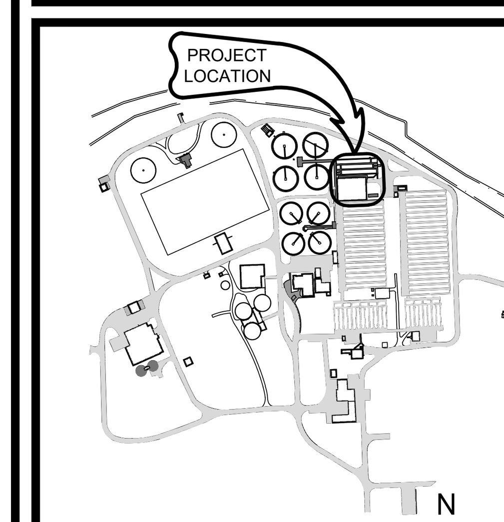
CITY of FLINT MICHIGAN

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 454-6359
WEB SITE: http:// www.hrcengr.com

WADE TRIM
555 South Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555/800.841.0342
FAX: 810.235.4975
www.wadetrim.com

DATE	ADDITIONS AND/OR REVISIONS
4-8-20	FINAL EGLE SUBMITTAL
2-7-20	DRAFT SUBMITTAL

DESIGNED	R.H.Waters
DRAWN	B.B.Hetchler
CHECKED	R.H.Waters
APPROVED	



FLINT WPCF

CITY OF FLINT

FLINT WPCF ULTRAVIOLET DISINFECTION DESIGN

INSTRUMENTATION WIRING AND RISER DIAGRAMS

HRC JOB NO. 20190265	SCALE AS NOTED
DATE April 2020	SHEET NO. I-1 OF