ADDENDUM NO. 2

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
Morning Sun, Iowa

Bids Due and Opened: **4:00 PM, February 19, 2025**

City Clerk
11 East Division St.
PO Box 426
Morning Sun, IA 52640-0073
(319) 868-7936

The Plans and Specifications prepared for this project are hereby modified, amended or clarified as follows:

A. CONTRACT DOCUMENTS:

1. Replace the original **FORM OF PROPOSAL** in its entirety with the enclosed, **REVISED FORM OF PROPOSAL #2**. Contractors will use the enclosed "**REVISED FORM OF PROPOSAL #2"** to submit bids.

   a. Quantities for Class 20 Excavation, Structural Backfill, Structural Concrete, and Reinforcing Steel have been updated.

B. CONSTRUCTION PLANS:

1. Reinforcing quantities have been re-calculated and updated. Replace the following plan sheets with the attached sheets: F1.1, S1.0-S3.1, S4.0, S5.0, and S6.0. Note: Structures on sheets 2.1 and 2.2 DO NOT include hooks or splice lengths for horizontal reinforcing.

D. VALIDITY OF BID:

PLEASE NOTE:
In order for the Bid to be valid, the receipt of Addendum No. 2 must be acknowledged in the appropriate space on the **"REVISED FORM OF PROPOSAL #2"**.

February 12, 2025
Date

Benjamin A. Carhoff, P.E.
Iowa Registration No. 19939
My license renewal date is December 31, 2025

Wastewater Treatment Improvements Project
Morning Sun, Iowa

REVISED FORM OF PROPOSAL #2

NOTE TO BIDDERS: Please do not use the Form of Proposal included in the bound volume of the specifications. Separate copies of this proposal will be furnished to bidders upon application to the Engineer.

BID DUE DATE: **February 19, 2025 @ 4:00 PM**

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

_____

_____

TO: ATTN: Morning Sun City Clerk
Morning Sun City Hall
11 East Division St., PO Box 426
Morning Sun, IA 52640-0073
Phone # (319) 868-7936

LADIES AND GENTLEMEN:

A. The undersigned bidder, having examined the plans, specifications, addenda (if applicable), Instructions to Bidders, the location and sites of proposed work, the nature of the work to be done, extent and conditions of existing structures affecting, or affected by the proposed work, and being fully advised as to the extent and character of the work and all existing local conditions, relative to construction difficulties, hazards, labor transportation, hauling, trucking, plant sites, and other factors affected by or affecting this proposal as outlined in the specifications and plans, and ADDENDA (if applicable). The undersigned bidder hereby acknowledges of receipt of any and all Addenda (if applicable) that may have been issued. _____

HEREBY PROPOSES to furnish all materials, and equipment; and to perform all necessary labor required for the complete **Wastewater Treatment Improvements Project, Morning Sun, Iowa** and all items incidental thereto and to perform all work in accordance with the plans and specifications for said project, including all items of expense and profit.

B. We further propose:

1. To do all extra work which may be required to complete the work contemplated at unit price or lump sums, to be agreed upon prior to starting such work.

2. To execute the "Form of Contract" within ten (10) calendar days following written "Notice

of Award".

3. **To complete all work prior to November 1, 2026.**

C. The undersigned bidder certifies that this proposal is made in good faith, without collusion or connection with any other person bidding on the work.

D. The Bidder has obtained and is familiar with the Statewide Urban Design and Specifications (SUDAS), 2019 Edition (or current revision).

E. The undersigned bidder states that this proposal is made in conformity with the Contract Documents and agrees that, in the event of any discrepancies or differences between any conditions of his proposal and the Contract Documents prepared by Hart-Frederick Consultants P.C., the provisions of the latter shall prevail.

F. The BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum. All contemplated work shall be included in the following Bid Items and no other compensation will be allotted the Contractor. BIDS shall NOT include sales tax and all other applicable taxes and fees, as the City expects the Contractor to obtain the Sales Tax Exemption from the City.

G. The Bidder accepts the provisions of the Contract as to Liquidated Damages in the event of failure to complete the Work within the times specified above, which shall be stated in the Contract.

H. The Bidder acknowledges that estimated quantities are not guaranteed, and solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents. Items marked by " * " are for the purposed of establishing BID Prices only. These items may or may not be incorporated into the Work as warranted by site conditions and as determined by the Engineer.

I. The undersigned bidder certifies that a representative of the Bidder has attended the scheduled pre-bid meeting/inspection or has conducted an independent inspection of the water tower as indicated herein: _____Pre-Bid Meeting, _____Independent Inspection, ____neither.

BID SCHEDULE

ITEM	SPEC.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	EXTENDED PRICE
1		Excavation, Class 10	CY	$	8828.7	$
2		Excavation Class 10, Contractor Furnished	CY	$	8875.9	$
3		Topsoil, Strip, Salvage and Respread	CY	$	2997.0	$
4		Bentonite Soil Seal	CY	$	2134.0	$
5		Sludge Removal	Dry Ton	$	400.0	$
6		Sludge Testing, Analysis and Report	LS	$	1.0	$
7		Excavation, Class 20, Structures	CY	$	2802.6	$
8		Structural Backfill	CY	$	2081.9	$

9		Building Construction, Complete	LS	$	1.0	$
10		Building Plumbing, Complete	LS	$	1.0	$
11		Site Electrical Systems, Complete	LS	$	1.0	$
12		Natural Gas Service Piping, Complete	LS	$	1.0	$
13		Emergency Standby Generator	LS	$	1.0	$
14		Lagoon Aeration Equipment Package	LS	LS	LS	$ 244,280.00
15		Lagoon Aeration Equipment Installation	LS	$	1.0	$
16		Nitrox Reactor Equipment Package	LS	LS	LS	$ 835,620.00
17		Nitrox Reactor Equipment Installation	LS	$	1.0	$
18		Site Piping, Treatment, Trenched, DIP, 12-Inch	LF	$	755.0	$
19		Site Piping, Treatment, Fittings, DIP, 12-Inch	EACH	$	24.0	$
20		Plug Valve, 12-Inch	EACH	$	1.0	$
21		Site Piping, Lagoon Aeration Header and Fittings	LS	$	1.0	$
22		Site Piping, Nitrox Aeration Header and Fittings	LS	$	1.0	$
23		Site Piping, Nitrox Heating System and Fittings	LS	$	1.0	$
24		Cast-In-Place Concrete	CY	$	373.4	$
25		Reinforcing Steel	LBS	$	73131.5	$
26		Influent Structure, Per Plan	EACH	$	2.0	$
27		Flow Reintegration Structure, Per Plan	EACH	$	1.0	$
28		Primary Control Structure (Equipment/Hardware Installation)	LS	$	1.0	$
29		Screen Structure (Equipment/Hardware Installation)	LS	$	1.0	$
30		Flow Division Structure (Equipment/Hardware Installation)	LS	$	1.0	$
31		Quiescent Controls Structure (Equipment/Hardware Installation)	LS	$	1.0	$
32		Valve/Meter Structure, Per Plan	EACH	$	3.0	$
33		Flow Meter, Electromagnetic	EACH	$	2.0	$
34		Effluent Gravity Sewer, Trenched, DIP, 12-Inch	LF	$	613.0	$
35		Effluent Sewer Manhole	EACH	$	2.0	$
36		Connection to Existing Manhole	EACH	$	1.0	$
37		Service Watermain, C-900 PVC, 4-Inch	LF	$	2027.0	$
38		Watermain Fittings DIP, 4-INCH	EACH	$	1.0	$
39		Flushing Hydrant	EACH	$	1.0	$
40		Tapping Valve, 4-Inch	EACH	$	1.0	$
41		Gate Valve, MJ, 4-Inch	EACH	$	1.0	$
42		Service Stub, Type K Copper, 1-Inch	EACH	$	315.0	$
43		Curbstop, 1-Inch	EACH	$	2.0	$
44		Yard Hydrant	EACH	$	1.0	$
45		Granular Surfacing, Class A Roadstone	TON	$	1520.0	$
46		Subdrain, Perf. PE 6-Inch Dia.	LF	$	2238.0	$
47		Culvert, CMP, 24-Inch Dia.	LF	$	126.0	$
48		Pipe Apron, Metal, 24-Inch Dia.	EACH	$	4.0	$
49		Bollard, Per Plan	EACH	$	3.0	$
50		Forcemain Conflict	EACH	$	4.0	$

51		Relocate Forcemain Valve	EACH	$	1.0	$
52		Slope Protection, Wood Excelsior Mat	SQ	$	908.3	$
53		Slope Protection, Macadan Stone Or 'Flexamat'	SY	$	6672.0	$
54		'ScourStop' Flow Transition Mat	SF	$	256.0	$
55		Silt Fence, Installation	LF	$	780.0	$
56		Silt Fence, Removal of Sediment	LF	$	780.0	$
57		Silt Fence, Removal of Device	LF	$	780.0	$
58		Stabilized Construction Entrance	EACH	$	1.0	$
59		Silt Basin	EACH	$	2.0	$
60		Seeding, Urban	ACRE	$	2.3	$
61		Seeding, Native and Wildflower	ACRE	$	1.4	$
62		Fertilizing	ACRE	$	3.7	$
63		Mulching	ACRE	$	3.7	$
64		Seeding, Stabilizing Crop	ACRE	$	3.7	$
65		SWPPP Management	LS	$	1.0	$
66		Mobilization	LS	$	1.0	$
		Total Bid (Items 1-65)				$

BID SUBMITTED BY:

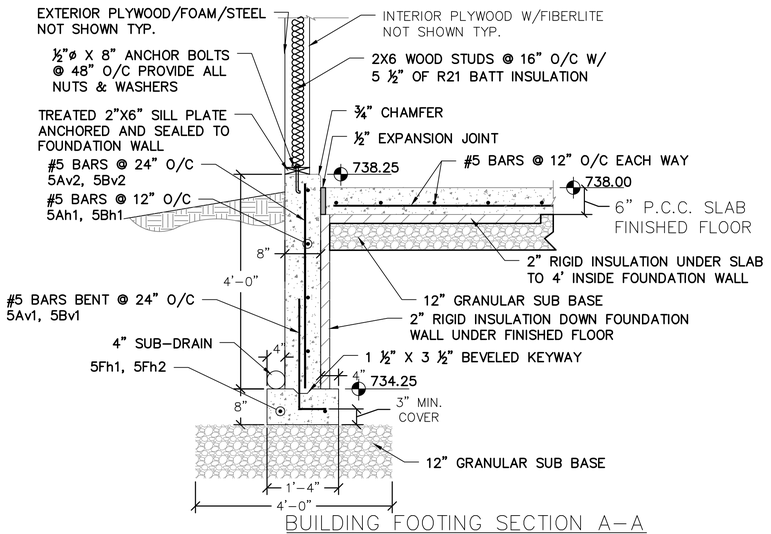
(FIRM) (NAME & TITLE)

(BUSINESS ADDRESS) (CITY, STATE, ZIP)

(PHONE) (FAX)

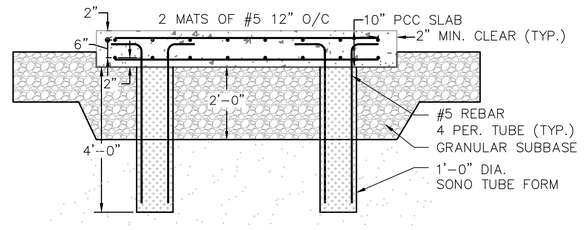
CORPORATE SEAL HERE

PARTNERSHIPS: FURNISH FULL NAME OF ALL PARTNERS



BUILDING FOOTING SECTION A-A

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



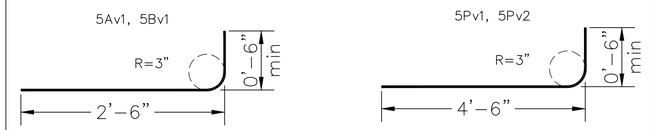
GENERATOR & ELECTRIC GROUND TRANSFORMER PAD DETAIL SECTION D-D

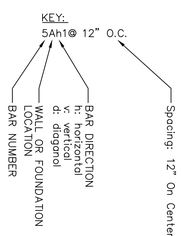
N.T.S.

WALL & FOUNDATION REINFORCING BAR LIST

BAR	LOCATION	SHAPE	LENGTH	NO.	WEIGHT
	BLOWER BUILDING				
5Av1	Wall 'A', Vertical Stem	⌟	3'-0"	22	68.84
5Av2	Wall 'A', Vertical Stem	—	3'-9"	42	164.27
5Ah1	Wall 'A', Horizontal Stem	—	19'-6"	8	162.71
5Fh1	Footing 'A' Horizontal	—	20'-0"	4	83.44
5Bv1	Wall 'B', Vertical Stem	⌟	3'-0"	32	100.13
5Bv2	Wall 'B', Vertical Stem	—	3'-9"	62	242.50
5Bh1	Wall 'B', Horizontal Stem	—	29'-6"	8	246.15
5Fh2	Footing 'B', Horizontal	—	30'-0"	4	125.16
5Sh1	Slab, Horizontal	—	18'-0"	19	356.71
5Sh2	Slab, Horizontal	—	28'-0"	29	846.92
	BLOWER PAD				
5Ph1	Pad, Horizontal	—	3'-8"	40	153.00
	BOILER PAD				
5Ph2	Pad, Horizontal	—	3'-8"	5	19.12
5Ph3	Pad, Horizontal	—	2'-8"	5	13.91
	GENERATOR PAD				
5Ph4	Pad, Horizontal	—	11'-8"	12	146.02
5Ph5	Pad, Horizontal	—	5'-8"	6	35.46
5Pv1	Pier, Vertical	⌟	5'-0"	16	83.44
	TRANSFORMER PAD				
5Ph6	Pad, Horizontal	—	7'-8"	18	143.94
5Pv2	Pier, Vertical	⌟	5'-0"	16	83.44
	TOTAL				2,950.01

BENT BAR DETAILS





ESTIMATED QUANTITIES

ITEM	UNITS		WALL 'A'	WALL 'B'	FOUND 'F'	TOTAL
CONCRETE, STRUCTURAL, CLASS C	CY		3.97	5.93	3.29	13.19
STEEL, REINFORCING	LBS		395.82	488.65	208.60	1,093.07
CLASS 20 ECAVATION	CY					27.15
					BUILDING FOUNDATION ONLY	

NOTES

ALL EXPOSED CORNERS 90 DEGREES AND SMALLER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. TOP BAR TO BE 3" PARALLEL TO TOP OF WALL. BOTTOM REINFORCING STEEL TO BE PARALLEL AND 2" CLEAR OF BOTTOM OF FOOTING. BOTTOM REINFORCING TO BE SUPPORTED BY INDIVIDUAL METAL BAR CHAIRS

REINFORCEMENT SPLICES, IF REQUIRED, TO BE LAPPED 24-INCHES.

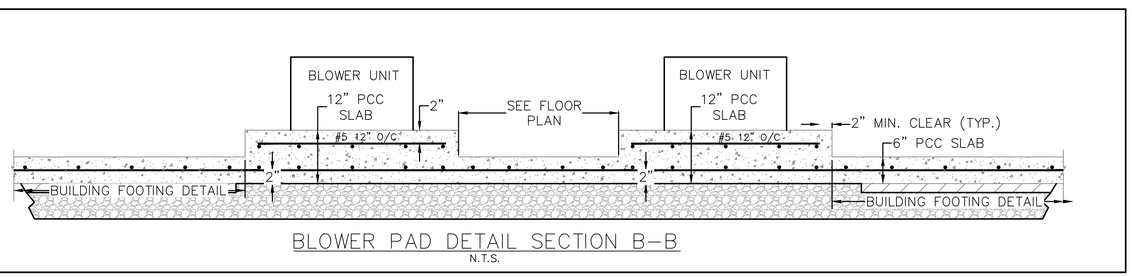
ALL REINFORCING STEEL TO BE ASTM A615-GR60.

ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

CONCRETE TO BE CLASS 'C', 4500 PSI. FLY ASH SUBSTITUTION WILL NOT BE ALLOWED.

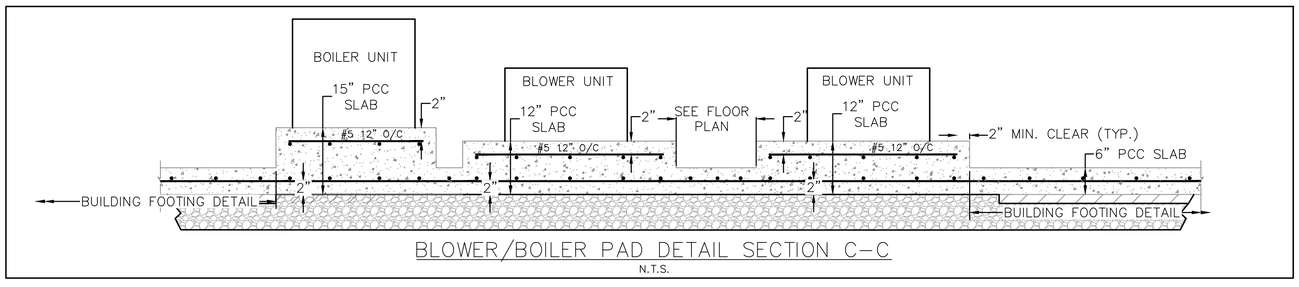
AT CONTRACTORS OPTION, PRECAST SECTIONS FOR CONTROL STRUCTURE WALLS MAY BE USED. PROVIDE SHOP DRAWINGS AND DETAILS FOR CONNECTIONS OF PIPING, VALVES AND WEIR WALLS.

SEE SHEET S1.0 FOR MIX DESIGN AND ADDITIONAL REQUIREMENTS.



BLOWER PAD DETAIL SECTION B-B

N.T.S.



BLOWER/BOILER PAD DETAIL SECTION C-C

N.T.S.

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	2/7/25	Add#2 General corections and update bar designations and lengths

FLD. BK.:

SCALE: 1"=30'

DATE: 7/24/2023

DRN.: ADC/BAC

APP.: BAC

HART-FREDERICK CONSULTANTS P.C.
510 State Street P.O. Box 560 TIFFIN, IOWA 52340-0560
Phone: (319) 545-7215 Fax: (319) 545-7220
www.hart-frederick.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

BLOWER BUILDING
FOUNDATION, SLAB, AND BOLLARD DETAILS

PROJECT NO.: 18212.43

DRAWING NO.: SHEET F1.1 OF 68

DESIGN CRITERIA

1. AS REQUIRED BY THE CITY OF MORNING SUN, IA, ENGINEERING DESIGNED IS BASED ON AND IN ACCORDANCE WITH THE FOLLOWING CODES:

   INTERNATIONAL BUILDING CODE (IBC) 2015

   AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14 AND ACI 350)
   AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-13)

2. DESIGN LOADS:

RISK CATEGORY	III
BACKFILL	
EQUIVALENT FLUID PRESSURE	85 PCF
SEISMIC	
SOIL CLASSIFICATION	D
SPECTRAL RESPONSE ACCELERATION, Ss	0.101 g
SPECTRAL RESPONSE ACCELERATION, S1	0.064 g
SHORT PERIOD DESIGN ACCELERATION, Sds	0.108 g
LONG PERIOD DESIGN ACCELERATION, Sd1	0.102 g
IMPORTANCE FACTOR	1.0
SEISMIC DESIGN CATEGORY	B
SEISMIC FORCE RESISTING SYSTEMS	
ORDINARY REINFORCED CONCRETE SHEAR WALLS	
RESPONSE MODIFICATION FACTOR, R	5.0
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE	
SEISMIC RESPONSE COEFFICIENT, Cs	0.027
ADDED DESIGN BASE SHEAR, V = Cs x W:	
BLOWER BUILDING	2.2 KIPS
FLOW DIVISION STRUCTURE (BELOW GRADE)	<30.0 KIPS
NITROX TANK (BELOW GRADE)	<30.0 KIPS
WIND - PARAMETERS (BLOWER BUILDING)	
BASIC WIND SPEED	120 MPH
EXPOSURE CLASS	C
WIND - MAIN WIND FORCE RESISTING SYSTEM PRESSURES	
WINDWARD DESIGN PRESSURE	16 PSF
LEEWARD DESIGN PRESSURE	9 PSF
ROOF UPLIFT PRESSURE	15 PSF (GROSS) [LC: 1.0WL]
ROOF UPLIFT PRESSURE	5 PSF (NET) [LC: 0.9DL + 1.0WL]
WIND - ELEMENTS AND COMPONENTS	
PER APPLICABLE BUILDING CODE	

1. FLOOR AND ROOF LOADS

MECHANICAL	125 PSF UNREDUCIBLE
SNOW LOADS	
GROUND SNOW LOAD	25 PSF
SNOW EXPOSURE FACTOR	1.0
THERMAL FACTOR	1.0
IMPORTANCE FACTOR	1.1
FLAT-ROOF SNOW LOAD	25 PSF
DESIGN LOAD	25 PSF
RAIN-ON-SNOW SURCHARGE	5 PSF
DRIFTING LOAD	REFER TO PLAN

2. NET ALLOWABLE SOIL BEARING PRESSURES:

SPREAD FOOTINGS	2000 PSF
CONTINUOUS FOOTINGS	2000 PSF

3. MINIMUM FROST PROTECTION DEPTH FROM ADJACENT GRADE:
   EXTERIOR FOOTING ADJACENT TO HEATED AREA -3'-6"

4. SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTHS (f'c) : SEE CONCRETE NOTES.

5. CONCRETE REINFORCING STEEL SHALL BE HIGH STRENGTH NEW BILLET STEEL CONFORMING TO THE FOLLOWING STANDARDS:

DEFORMED BARS	ASTM A615, GRADE 60	Fy = 60 KSI
WELDED WIRE REINFORCING	ASTM A185	Fy = 65 KSI
EPOXY- COATED REINFORCING BARS	ASTM A775	FY = 60 KSI

GENERAL REQUIREMENTS

1. DEFINITIONS:
   A. ENGINEER: REFERENCES OF THE STRUCTURAL DRAWINGS TO 'ENGINEER' MEAN THE STRUCTURAL ENGINEER OF RECORD. OTHER ENTITIES ARE SPECIFICALLY NOTED AS "CONTRACTOR'S ENGINEER" , "MECHANICAL ENGINEER" , ETC.

2. UNDERGROUND UTILITIES: LOCATE EXISTING UTILITIES, AND NOTIFY ENGINEER OF EXISTING UTILITIES OR SUBGRADE CONDITIONS WHICH INTERFERE WITH WORK.

4. USE OF DRAWINGS:
   A. DO NOT SCALE DRAWINGS.
   B. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS AND GENERAL NOTES, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN. DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. DETAILS NOTED AS TYPICAL APPLY TO ALL SIMILAR CONDITIONS. WHERE NOT SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ELSEWHERE ON THE PROJECT.

5. TEMPORARY CONDITIONS:
   A. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS A RESULT OF THE CONTRACTOR'S METHODS AND/OR SEQUENCES.
   B. CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.

6. SUBMITTALS AND SUBSTITUTIONS:
   A. SUBMITTALS:
      1) IF THE CONTRACTOR REQUESTS A CHANGE FROM THE STRUCTURAL DRAWINGS, IT SHALL BE APPROVED AND DESIGNED BY THE ENGINEER OF RECORD PRIOR TO SUBMITTING SHOP DRAWINGS. THE CONTRACTOR SHALL COMPENSATE CARR ENGINEERING FOR THE CHANGES.
      2) CONSTRUCTION DOCUMENTS SHALL NOT BE REPRODUCED FOR USE IN SUBMITTALS.
   B. SUBSTITUTIONS: ENGINEER'S APPROVAL SHALL BE SECURED FOR ALL SUBSTITUTIONS.
   C. NON-CONFORMANCE: NOTIFY THE ENGINEER OF ALL CONDITIONS NOT CONSTRUCTED PER THE CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH CORRECTIVE WORK. SUBMIT REPAIR TO THE ENGINEER FOR ACCEPTANCE. THE CONTRACTOR SHALL COMPENSATE CARR ENGINEERING FOR DESIGN OF THE REPAIR.

7. OSHA STANDARDS:
   A. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. NOTHING SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE CONSTRUED AS ELIMINATING THE NEED FOR THE CONTRACTOR TO COMPLY WITH ALL OSHA REQUIREMENTS. THE CONTRACTOR SHALL ALL NECESSARY BOLTS, ANCHOR BOLTS, STIFFENER PLATES, STABILIZER PLATES, BRIDGING, BRACING, BEARING SEATS, COLUMN SPLICES, ETC., AS WELL AS ALL CLOSURES FOR OPENINGS.
   B. WASHERS OR RINGS SHALL BE WELDED TO STEEL COLUMNS TO PROVIDE FOR SAFETY CABLES. DO NOT PLACE HOLES IN COLUMNS WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.
   C. WHERE THE STRUCTURAL DRAWINGS APPEAR TO CONFLICT WITH OSHA REQUIREMENTS, THE STRUCTURAL DRAWINGS REPRESENT FINAL CONDITIONS ONLY; THE CONTRACTOR SHALL ADD ALL ERECTION FRAMING THAT MAY BE REQUIRED TO COMPLY WITH OSHA.

8. CONSTRUCTION ENGINEERING:
   THE STRUCTURE DEFINED IN THE CONTRACT DOCUMENTS HAS BEEN DESIGNED ONLY FOR LOAD ANTICIPATED ON THE STRUCTURE DURING ITS SERVICE LIFE. PROVIDE ALL REQUIRED ENGINEERING AND OTHER MEASURES TO ACHIEVE THE MEANS, METHODS AND SEQUENCES OF WORK. SUCH ENGINEERING MAY INCLUDE BUT IS NOT LIMITED TO :
   - LAYOUT
   - DESIGN OF FORMWORK, SHORING AND RE-SHORING
   - DESIGN OF CONCRETE MIXES
   - ERECTION PROCEDURES WHICH ADDRESS STABILITY OF THE FRAME DURING CONSTRUCTION OF STEEL WELDING PROCEDURES.
   - DESIGN OF TEMPORARY BRACING OF WALLS FOR WIND, SEISMIC AND/OR SOIL LOADS.
   - SURVEYING TO VERIFY CONSTRUCTION TOLERANCES.
   - EVALUATION OF TEMPORARY LOADS ON STRUCTURES DUE TO EQUIPMENT AND - MATERIALS DURING CONSTRUCTION.
   - STRUCTURAL ENGINEERING TO RESIST ANY OTHER LOADS NOT IDENTIFIED ON THE DESIGN DRAWINGS.

9. COORDINATION:
   A. STRUCTURAL DRAWINGS ARE NOT STAND-ALONE DOCUMENTS AND ARE INTENDED TO BE USED IN CONJUNCTION WITH CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND DRAWINGS FROM OTHER DISCIPLINES. THE CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS INTO SHOP DRAWINGS AND WORK.
   B. COORDINATE DIMENSIONS OF ALL OPENINGS, BLOCKOUTS, DEPRESSIONS, ETC. WITH DRAWINGS FROM OTHER DISCIPLINES. PROJECT SHOP DRAWINGS, AND FIELD CONDITIONS PRIOR TO SHOP DRAWING SUBMITTAL.

10. SPECIAL INSPECTION:
    A. SPECIAL INSPECTION SHALL BE PROVIDED PER IBC 2015 CHAPTER 17. THE LIST BELOW IS A SUMMARY OF THE ITEMS REQUIRING SPECIAL INSPECTION BY THE IBC:
       - SEE SHEET S1.1 FOR INSPECTION SCHEDULE

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS: ACI 117, ACI 301, ACI 305.1, ACI 306.1, ACI 308.1, ACI 315 AND ACI 318 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
2. PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL PENETRATIONS THROUGH CONCRETE BEFORE PLACING. SECURE SUCH SLEEVES TO PREVENT MOVEMENT DURING PLACING OPERATIONS. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS OF PENETRATIONS.
3. CUTTING OF REINFORCING WHICH CONFLICTS WITH EMBEDDED OBJECTS IS NOT ACCEPTABLE.
4. CORE DRILLING CONCRETE IS NOT PERMITTED UNLESS NOTED OTHERWISE OR APPROVED IN WRITING BY THE ARCHITECT. NOTIFY THE ARCHITECT IN ADVANCE OF CONDITIONS NOT SHOWN ON THE DRAWINGS.
5. CONFIRM WITH ARCHITECT THAT MATERIALS TO BE EMBEDDED ARE SUITABLE FOR EMBEDMENT IN CONCRETE.
6. THE OUTSIDE DIAMETER OF EMBEDDED CONDUIT OR PIPE SHALL NOT EXCEED 1/3 OF THE SLAB THICKNESS IN STRUCTURAL SLABS, INCLUDING AT CROSS-OVERS, AND SHALL BE PLACED BETWEEN THE TOP AND BOTTOM REINFORCING WITH A MINIMUM 3" CLEAR COVER. CONDUIT OR PIPE RUNNING PARALLEL TO EACH OTHER SHALL BE SPACED AT LEAST 8" APART AND NO MORE THAN (2) RUNS STACKED VERTICALLY IN THE SLAB. CONDUIT OR PIPE SHALL NOT BE EMBEDDED IN ANY SUPPORTED SLAB LESS THAN 6" THICK. NO EMBEDDED CONDUIT OR PIPE IS ALLOWED IN ANY CONCRETE SLAB ON METAL DECK.
7. NO ALUMINUM SHALL BE ALLOWED IN THE CONCRETE WORK UNLESS COATED TO PREVENT ALUMINUM-CONCRETE REACTION.
8. PROJECTING CORNERS OF BEAMS, WALLS, COLUMNS, ETC., SHALL BE FORMED WITH A 3/4 INCH CHAMFER, UNLESS NOTED OTHERWISE ON ARCHITECTURAL DRAWINGS.
9. ALL SLABS-ON-GRADE, PADS, FILLS AND TOPPINGS SHALL HAVE A MINIMUM OF 6x6 - W2.9xW2.9 WELDED WIRE REINFORCING (WWR) CENTERED IN THE SLAB THICKNESS. LAP WWR MINIMUM 2 PANELS AT EDGES AND ENDS AND PROVIDE ADDITIONAL REINFORCING WHERE SHOWN ON THE DRAWINGS.
10. SLOPE SLABS TO DRAINS OR FOR POSITIVE DRAINAGE IF NO DRAINS ARE PRESENT, AND PROVIDE DEPRESSIONS WHERE SHOWN ON THE STRUCTURAL AND/OR ARCHITECTURAL DRAWINGS, WITHOUT REDUCING THE THICKNESS OF SLAB INDICATED. FOR SLAB-ON-GRADE DEPRESSIONS GREATER THAN 1", REFER TO DETAIL FOR ADDITIONAL REINFORCING.
11. INTERNALLY VIBRATE ALL CAST-IN-PLACE CONCRETE EXCEPT SLABS-ON-GRADE WHICH NEED ONLY BE VIBRATED AROUND UNDER FLOOR DUCTS AND OTHER EMBEDDED ITEMS. VIBRATE TOPS OF COLUMNS.
12. PROVIDE VERTICAL CONTROL JOINTS IN EXPOSED CONCRETE WALLS AT A MINIMUM UNIFORM SPACING NOT TO EXCEED 25'-0". COORDINATE JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS.
13. ALL CONSTRUCTION JOINTS BETWEEN ADJACENT CONCRETE POURS OR BETWEEN CONCRETE AND MASONRY SHALL BE KEYED. JOINTS MUST BE KEPT FREE OF DIRT, DEBRIS, FORM OILS, ETC., TO ASSURE PROPER BOND WITH ADJACENT POUR OR MASONRY CONSTRUCTION.
14. DO NOT PLACE PIPES, DUCTS, REGLETS OR CHASES IN STRUCTURAL CONCRETE OR COMPOSITE FLOOR SYSTEMS WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER THROUGH THE ARCHITECT.
15. CONCRETE SHALL NOT BE PERMITTED TO DROP MORE THAN 5 FEET.
16. THE DESIGN AND ENGINEERING OF FORM WORK, AS WELL AS ITS CONSTRUCTION, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. FORMS SHALL BE DESIGNED TO HAVE SUFFICIENT STRENGTH TO SAFELY WITHSTAND THE LOADS RESULTING FROM PLACEMENT AND VIBRATION OF THE CONCRETE, AND SHALL ALSO BE DESIGNED FOR SUFFICIENT RIGIDITY TO MAINTAIN SPECIFIED TOLERANCES. CONTRACTOR SHALL SUBMIT DETAILED FORM WORK SHOP DRAWINGS TO THE ARCHITECT TO BE REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN CONCEPT ONLY.
17. WATERSTOPS SHALL BE A FLAT RIBBED PVC TYPE. RE: 2/S3.0 FOR SIZE. SUBSTITUTIONS SHALL BE APPROVED BY THE ENGINEER OF RECORD.
18. SUBMIT CONCRETE AND MASONRY LIFT DRAWINGS SHOWING THE LOCATION OF CONSTRUCTION JOINTS, WATERSTOPS AND OTHER TYPES OF JOINTS OTHER THAN SPECIFIED OR SHOWN ON THE DRAWINGS FOR FAVORABLE REVIEW BY THE ENGINEER BEFORE START OF WORK ON FORMS, REINFORCING STEEL, OR PLACING CONCRETE. ANY ADDITIONAL VERTICAL OR HORIZONTAL CONSTRUCTION JOINTS SHALL HAVE A STANDARD KEYWAY AND SHALL BE FAVORABLY REVIEWED BY THE ENGINEER. REFER TO SPECIFICATIONS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. CONSTRUCTION JOINTS SHALL BE ROUGHENED TO 1/4-INCH AMPLITUDE.
19. OPENINGS, PIPE SLEEVES, CONDUITS, INSERTS AND OTHER EMBEDDED ITEMS SHALL BE IN PLACE BEFORE CONCRETE IS PLACED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ARCHITECTURAL, CIVIL, MECHANICAL, ELECTRICAL, LANDSCAPING, HVAC, PLUMBING, INSTRUMENTATION AND OTHER PLANS FOR ITEMS REQUIRING SLEEVES AND EMBEDMENTS IN CONCRETE WHICH ARE NOT INDICATED OR SHOWN ON STRUCTURAL DRAWINGS. NO PIPES OR SLEEVES SHALL PASS THROUGH STRUCTURAL MEMBERS (UNLESS SHOWN ON STRUCTURAL DRAWINGS). COORDINATE WITH EQUIPMENT MANUFACTURERS DRAWINGS FOR ANCHORING DEVICES.
20. UNLESS OTHERWISE NOTED, ALL EXPOSED EDGES AND CORNERS SHALL BE CHAMFERED 3/4-INCH. INTERIOR FLOOR SLABS AND EXTERIOR SIDEWALKS SHALL HAVE TOOLED 3/8-INCH RADIUS CONSTRUCTION JOINT.
21. EACH FACE CONCRETE SHALL BE REINFORCED A MINIMUM OF NO. 5 BARS AT 12-INCHES EACH WAY U.N.O.
22. CONCRETE ENCASE ALL PIPES AND CONDUITS UNDER CONCRETE SLABS AND FOOTINGS WITH TYPE E CONCRETE.
23. MIX - TREATMENT STRUCTURES: (F'c = 4,500 PSI)

COARSE AGGREGATE	100% PASSING 1 1/2" SIEVE
FINE AGGREGATE	100% PASSING 3/8" SIEVE
SLUMP	2" TO 4"
MAXIMUM W/C RATIO	0.45
AIR CONTENT	5.5% TO 7.5%

   WATER REDUCING ADMIXTURES MAY BE USED (CHLORIDE BASED ADMIXTURES NO ALLOWED)

24. MIX - CONTROL BUILDING FOUNDATION: (F'c = 4,000 PSI)

COARSE AGGREGATE	100% PASSING 1 1/2" SIEVE
FINE AGGREGATE	100% PASSING 3/8" SIEVE
SLUMP	2" TO 4"
MAXIMUM W/C RATIO	0.50
AIR CONTENT	NOT APPLICABLE
OTHER REQUIREMENTS	USE WATER REDUCING ADMIXTURE TO ACHIEVE SLUMP SPECIFIED

25. MIX - MISCELLANEOUS SITEWORK: (F'c = 3,000 PSI)

COARSE AGGREGATE	100% PASSING 1/2" SIEVE
FINE AGGREGATE	100% PASSING 3/8" SIEVE
SLUMP	2" TO 6"
MAXIMUM W/C RATIO	0.50
AIR CONTENT	5.5% TO 7.5%

REINFORCING STEEL

FOR CAST-IN-PLACE CONCRETE THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT UNLESS NOTED OTHERWISE:

1.

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3 INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER	2 1/2 INCHES
NO. 6 BARS OR LARGER	2 INCHES
NO. 5 BARS OR SMALLER	
SLABS, WALLS, NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH NO. 11 BARS OR SMALLER	3/4 INCHES

2. DIMENSIONS OF CONCRETE COVER FOR REINFORCEMENT INDICATED ON DRAWINGS ARE TO OUTERMOST REINFORCING BARS. FOR BEAMS OR COLUMNS WITH STIRRUPS OR TIES, CLEAR COVER INDICATED IS TO STIRRUPS OR TIES.
3. BAR SPLICES: SPLICE REINFORCING WHERE INDICATED ON THE DRAWINGS. ALL SPLICES SHALL BE CLASS 'B' AS DEFINED IN ACI 318. IF SPLICE LENGTH IS NOT GIVEN ON THE DRAWINGS, PROVIDE LAP LENGTHS (IN INCHES) AS FOLLOWS:

	4000 PSI CONCRETE	
BAR SIZE	OTHER	TOP
#4	25	33
#5	31	41
#6	37	49
#7	54	71
#8	62	81
#9	70	91
#10	79	102

   LAP LENGTHS ASSUME CLEAR SPACING BETWEEN BARS OF 2 BAR DIAMETERS, AND A MINIMUM COVER OF 1 BAR DIAMETER. FOR DEVELOPMENT LENGTHS, DIVIDE BY 1.3. TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 1'-0" OF FRESH CONCRETE BELOW. MULTIPLY LAP LENGTHS BY 1.35 FOR EPOXY COATED.
4. EPOXY FOR EPOXY DOWELING SHALL BE HILTI RE.500 SD, POWERS PE 1000+, OR SIMPSON SET XP. EMBEDMENT LENGTH SHALL BE AS INDICATED ON THE DRAWINGS. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. SUBMIT SHOP DRAWINGS SHOWING REINFORCING STEEL QUANTITIES AND PLACEMENT. REINFORCING STEEL DESIGNATIONS ON SHOP DRAWINGS SHALL BE INCH-POUND SIZES.
6. ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN CONFORMANCE WITH THE AMERICAN CONCRETE INSTITUTE "DETAILS AND DETAILING OF REINFORCED CONCRETE" (ACI 315) EXCEPT AS OTHERWISE SHOWN, NOTED OR SPECIFIED.
7. PROVIDE ADEQUATE TIES FOR ALL REINFORCING BARS AND STIRRUPS IN CONCRETE SLABS AND BEAMS. REINFORCING BARS TO BE HELD AT CORRECT DISTANCE FROM FORMS BY ADEQUATE CONCRETE BLOCKS, STEEL CHAIRS OR TIES. ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE SECURED IN POSITION WITH TIES OR WELDS PRIOR TO PLACING CONCRETE.
8. UNLESS NOTED OTHERWISE, SUPPORTS FOR REINFORCEMENT SHALL HAVE CLASS 2 PROTECTION AS DEFINED IN THE CRSI MANUAL OF STANDARD PRACTICE.

FOUNDATIONS/SLAB-ON-GRADE

1. CROSS REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS TO ASSURE PROPER DIMENSIONS AND PLACEMENT OF ALL ANCHOR BOLTS, INSERTS, NOTCHES, EDGES IN GRADE BEAMS, FOUNDATION WALLS AND PIERS.
2. FOUNDATION DESIGN BASED ON GEOTECHNICAL ENGINEERING REPORT DATED OCTOBER 12, 2021 BY TERRACON. THIS REPORT IS ON FILE WITH THE ENGINEER.
3. ALL EXCAVATIONS SHALL BE PROPERLY AND SAFELY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE HAS ATTAINED SPECIFIED COMPRESSIVE STRENGTH. CONTRACTOR SHALL BRACE OR PROTECT ALL WALLS BELOW GRADE FROM LATERAL LOADS UNTIL SUPPORTING FLOOR IS COMPLETELY IN PLACE AND HAS ATTAINED FULL STRENGTH. CONTRACTOR SHALL PROVIDE FOR DESIGN, PERMITS, AND INSTALLATION OF SHORING AND/OR SHEETING. BACKFILLING IS NOT PERMITTED FOR FOUNDATION WALLS UNTIL SUPPORTED SLAB ABOVE IS IN PLACE OR THE WALL IS ADEQUATELY BRACED TO RESIST LATERAL LOADS.
4. UNLESS NOTED OTHERWISE, ALL FOOTINGS SHALL BE CENTERED UNDER WALLS, PIERS OR COLUMNS.
5. PROVIDE SAW CUT CONTROL JOINTS IN ALL SLABS-ON-GRADE. LOCATE JOINTS ALONG COLUMN LINES WITH INTERMEDIATE JOINTS SPACED AT A MAXIMUM OF 30 TIMES THE SLAB THICKNESS, UNLESS NOTED OTHERWISE. CONTROL JOINTS SHALL BE CONTINUOUS, NOT STAGGERED OR OFFSET. SLAB PANELS SHALL HAVE A MAXIMUM LENGTH TO WIDTH RATIO OF 1.5 TO 1. PROVIDE ADDITIONAL CONTROL JOINTS AT ALL RE-ENTRANT CORNERS FORMED IN SLAB ON GRADE.
6. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEETING, AND SHORING REQUIRED TO SAFELY RETAIN EARTH BANKS AS REQUIRED.
7. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM SURFACE WATER, GROUND WATER OR SEEPAGE.
8. ALL FOOTINGS SHALL BE PLACED ONTO FIRM UNDISTURBED SOIL OR CONTROLLED COMPACTED FILL AS DIRECTED BY THE SOILS REPORT RECOMMENDATIONS. EXCAVATIONS FOR FOOTINGS SHALL BE INSPECTED AND APPROVED BY THE SOILS TESTING FIRM PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL NOTIFY SOILS TESTING FIRM WHEN EXCAVATION IS READY FOR INSPECTION. TESTING FIRM IS TO SUBMIT LETTER OF COMPLIANCE TO THE OWNER.
9. FOOTING ELEVATIONS SHOWN DESIGNATE A MINIMUM DEPTH OF FOOTINGS WHERE FROST PROTECTION IS ACHIEVED. (REFER TO DESIGN CRITERIA). FOOTINGS, PIERS, AND/OR WALLS SHALL BE LOWERED OR EXTENDED AS REQUIRED TO REACH SOIL MEETING THE DESIGN BEARING PRESSURE.
10. FOOTING BACKFILL AND UTILITY TRENCH BACKFILL WITHIN BUILDING AREA SHALL BE MECHANICALLY COMPACTED IN LAYERS TO THE APPROVAL OF THE SOILS TESTING FIRM.
11. ALL ABANDONED FOOTINGS, UTILITIES, AND OTHER STRUCTURES THAT INTERFERE WITH NEW CONSTRUCTION SHALL BE REMOVED.
13. NO CONCRETE SHALL BE PLACED ONTO OR AGAINST SUBGRADES CONTAINING FREE WATER, FROST, ICE, OR SNOW.
14. DURING WINTER CONSTRUCTION, ALL FOOTINGS SHALL BE PROTECTED FROM FROST PENETRATION UNTIL THE BUILDING IS ENCLOSED AND TEMPORARY HEAT IS PROVIDED.
15. REINFORCING IN WALL FOOTINGS BETWEEN COLUMNS SHALL EXTEND INTO COLUMN FOOTINGS A MINIMUM OF 2'-0".
16. REINFORCING IN FOOTINGS AND GRADE BEAMS SHALL BE ACCURATELY PLACED, SPACED, SUPPORTED AND SECURED BEFORE PLACING CONCRETE.
17. ALL UNACCEPTABLE MATERIAL AND ORGANIC MATERIAL SHALL BE REMOVED FROM BELOW ALL PROPOSED SLABS-ON-GRADE AND THE EXPOSED NATURAL SOIL SHALL BE PROOF ROLLED AND THE COMPACTION VERIFIED BY A QUALIFIED INDEPENDENT SOILS TESTING FIRM PRIOR TO PLACING FILL. AREAS EXHIBITING WEAKNESS SHALL BE REMOVED AND REPLACED BY ACCEPTABLE COMPACTED FILL.
18. ALL SLABS-ON-GRADE SHALL BE PLACED ON MINIMUM 6" WELL COMPACTED GRANULAR MATERIAL.

LICENSED PROFESSIONAL ENGINEER
CHAD M. CARR 17816
IOWA

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Chad M Carr — 02/12/2025
Signature — Date

Chad M. Carr
License No. 17816
My license renewal date is December 31, 2025
Pages or sheets covered by this seal: S1.0 - S3.1

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	**02/12/2025**	**ADDENDUM #2**

FLD. BK.: | SCALE: 1"=30'
DATE: 02/06/2023 | DRN.: WDH | APP.: CMC

CARR ENGINEERING STRUCTURAL SERVICES
CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

GENERAL NOTES

PROJECT NO.: 22-061
DRAWING NO.:
SHEET S1.0 OF 7

STRUCTURAL COMPONENT TESTING AND INSPECTION

1. THE FOLLOWING TESTING AND INSPECTION OF STRUCTURAL COMPONENTS IS REQUIRED AS DETAILED IN CHAPTER 17 OF THE 2015 INTERNATIONAL BUILDING CODE (IBC).
2. SEE ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL SPECIFICATIONS FOR TESTING AND INSPECTION REQUIREMENTS OF NON-STRUCTURAL COMPONENTS.
3. WORK PERFORMED ON THE PREMISES OF A FABRICATOR APPROVED BY THE BUILDING OFFICIAL PER SECTION 1704.2.5.1 OF CHAPTER 17 OF THE 2015 INTERNATIONAL BUILDING CODE NEED NOT BE TESTED AND INSPECTED PER THE TABLE BELOW. THE FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS TO THE BUILDING OFFICIAL AND THE ARCHITECT AND ENGINEER OF RECORD.
4. DUTIES OF THE SPECIAL INSPECTION AGENCY (IBC CHAPTER 17):
   - A. SUBMIT A PROPOSED TESTING AND INSPECTION PROGRAM TO THE OWNER, THE ARCHITECT AND THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF WORK. THE TABLE BELOW SHALL SERVE AS A GUIDELINE FOR THE SCOPE OF THE TESTING AND INSPECTION PROGRAM.
   - B. PERFORM ALL TESTING AND INSPECTION REQUIRED PER APPROVED TESTING AND INSPECTION PROGRAM.
   - C. FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE OWNER, THE ARCHITECT, THE ENGINEER OF RECORD AND THE GENERAL CONTRACTOR. THE REPORTS SHALL BE COMPLETED AND FURNISHED WITHIN 48 HOURS OF INSPECTED WORK.
   - D. SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE SPECIAL INSPECTION AGENCY'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
FOUNDATION PREPARATION				
VERIFY MATERIALS BELOW SHALLOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.		X		1705.6
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.		X		1705.6
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.		X		1705.6
VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X			1705.6
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAVE BEEN PROPERLY PREPARED.		X		1705.6
CONCRETE AND CONCRETE PLACEMENT				
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.		X	ACI 318: 26.11.1.2(b)	
INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT.		X	ACI 318: CH. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
REVIEW OF PROPOSED MIX DESIGN AND SUPPORTING TEST RESULTS.		X		
INSPECTION OF ANCHORS POST-INSTALLED INSTALLED IN HARDENED CONCRETE MEMBERS. A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARD INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN A.	X	 X	 ACI 318: 17.8.2.4 ACI 318: 17.8.2	
VERIFYING USE OF REQUIRED DESIGN MIX.		X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2 1908.2, 1908.3
PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X		ACI 318: 26.4, 26.12	1908.10
INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X		ACI 318: 26.5	1908.6, 1908.7, 1908.8
VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.		X	ACI 318: 26.5.3 - 26.5.5	1908.9
F_F AND F_L SLAB ON GRADE FLATNESS TESTING			ASTM E1155	

ABBREVIATIONS

APPROX	APPROXIMATE, APPROXIMATELY
ARCH	ARCHITECT, -URAL, -URE
BP	BASE PLATE
BLDG	BUILDING
B.D.	BOTTOM OF
BRG	BEARING
C/C	CENTER TO CENTER
CFMS	COLD FORMED METAL STEEL
CLR	CLEAR, -(ANCE)
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CONT	CONTINUOUS
D	DEPTH
DAS	DEFORMED ANCHOR STUD
DEG	DEGREE
DEMO	DEMOLITION
DIM	DIMENSION
DL	DEAD LOAD
DWG	DRAWING
EA	EACH
EF	EACH FACE
EMBED	EMBEDDED
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EQ	EQUAL
EXIST	EXISTING
(E)	EXISTING STRUCTURAL MEMBER
EXP	EXPANSION
EXT	EXTERIOR
f'c	CONCRETE COMPRESSIVE
FND	FOUNDATION
FIN	FINISH
FLR	FLOOR
FR	FRAMING
FT	FOOT
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GYP	GYPSUM BOARD
HORIZ	HORIZONTAL
HDAB	HEAD ANCHOR BOLT
HDAS	HEAD ANCHOR STUD
I.F.	INSIDE FACE
IN.	INCH
JST	JOIST
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
(N)	NEW STRUCTURAL MEMBER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
O.F.	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
PC	PRECAST
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REINF	REINFORCING, -ED, -MENT
REQ'D	REQUIRED
SIM	SIMILAR
SP	SPACE(S)
SPEC	SPECIFICATION(S)
SPEC'D	SPECIFIED
STD	STANDARD
STIFF	STIFFENER
T.O.	TOP OF
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W/WF	WELDED WIRE FABRIC
@	AT
Ø OR DIA	DIAMETER
# OR NO.	NUMBER

SYMBOLS LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
STEP UP =		ELEVATION =	T/X EL (XXX'-X")
SLOPE UP =		REVISION CLOUD =	
MOMENT CONNECTION =		NORTH ARROW =	NORTH
DETAIL SECTION CUT =	DTL# SHT#	GRADE =	
BUILDING SECTION CUT =	DTL# SHT#	STRUCTURAL FILL =	
CONCRETE IN SECTION =		SUBGRADE =	
MASONRY =		BRACE =	
FOOTING SIZE =	F-X	WELDED WIRE FABRIC =	
COLUMN =	C-X	FOOTING STEP =	(-X'-X") (-X'-X")

REVISIONS

REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	**02/12/2025**	**ADDENDUM #2**

FLD. BK.: | SCALE: 1"=30'
DATE: 02/06/2023 | DRN.: WDH | APP.: CMC

CARR ENGINEERING
STRUCTURAL SERVICES

CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

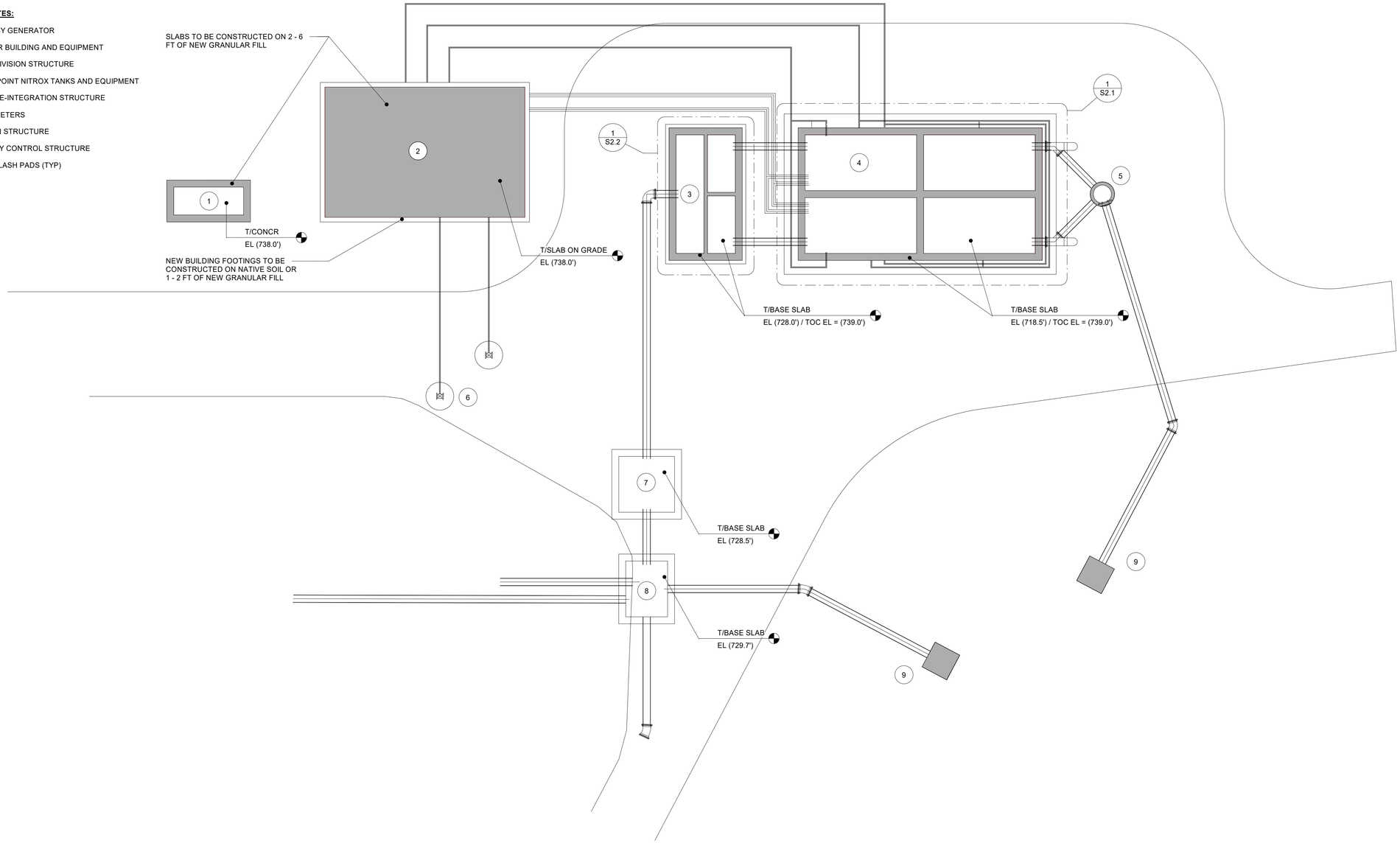
WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

INSPECTION SCHEDULE AND TYPICAL DETAILS

PROJECT NO.: 22-061
DRAWING NO.:
SHEET S1.1 OF 7

KEYNOTES:

1. STANDBY GENERATOR
2. BLOWER BUILDING AND EQUIPMENT
3. FLOW DIVISION STRUCTURE
4. TRIPLEPOINT NITROX TANKS AND EQUIPMENT
5. FLOW RE-INTEGRATION STRUCTURE
6. FLOW METERS
7. SCREEN STRUCTURE
8. PRIMARY CONTROL STRUCTURE
9. 4'X4' SPLASH PADS (TYP)



NORTH

SITE IMPROVEMENTS KEY PLAN

1/8" = 1'-0"

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	**02/12/2025**	**ADDENDUM #2**

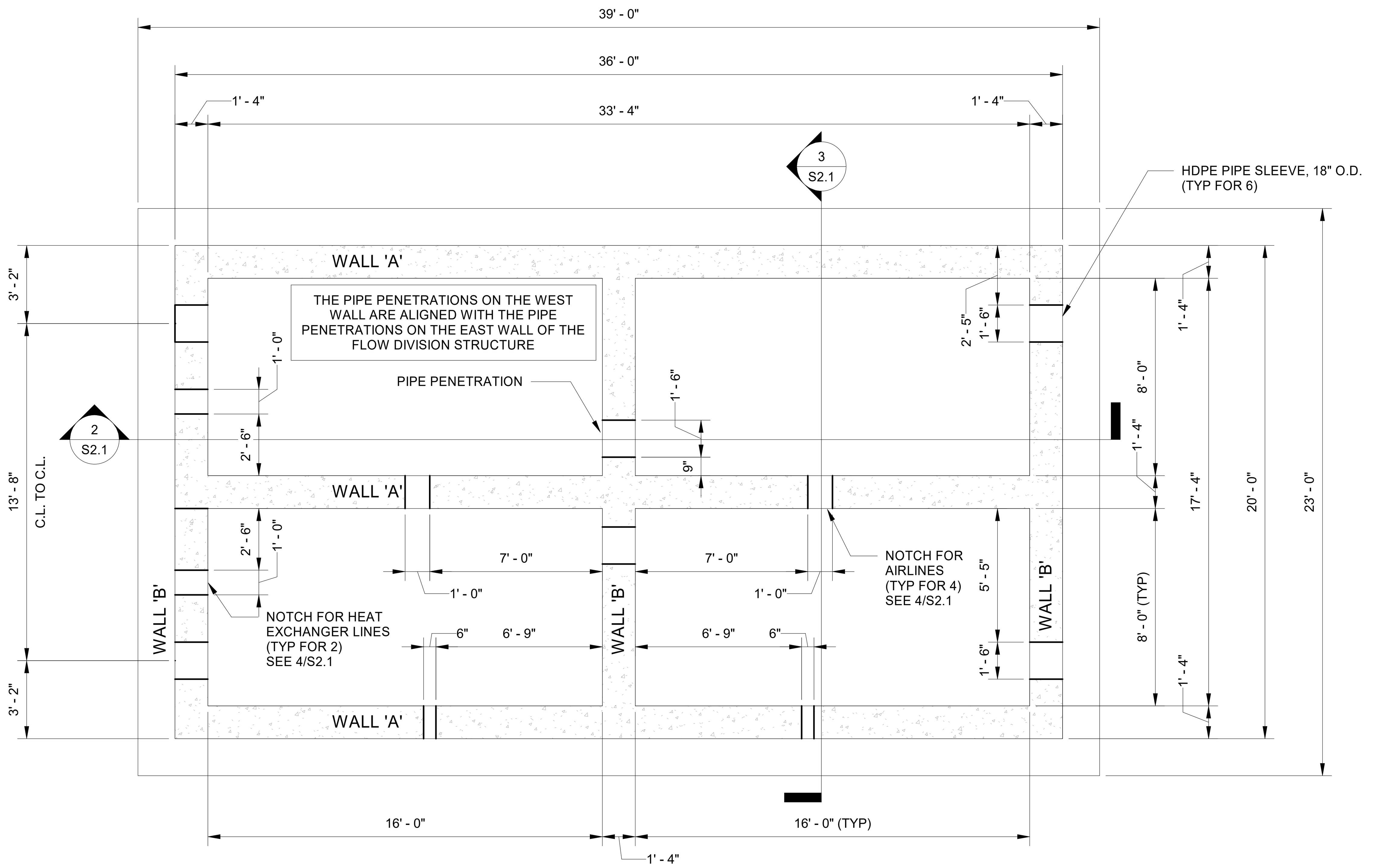
FLD. BK.: | SCALE: 1"=30'
DATE: 02/06/2023 | DRN.: WDH | APP.: CMC

CARR ENGINEERING STRUCTURAL SERVICES
CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

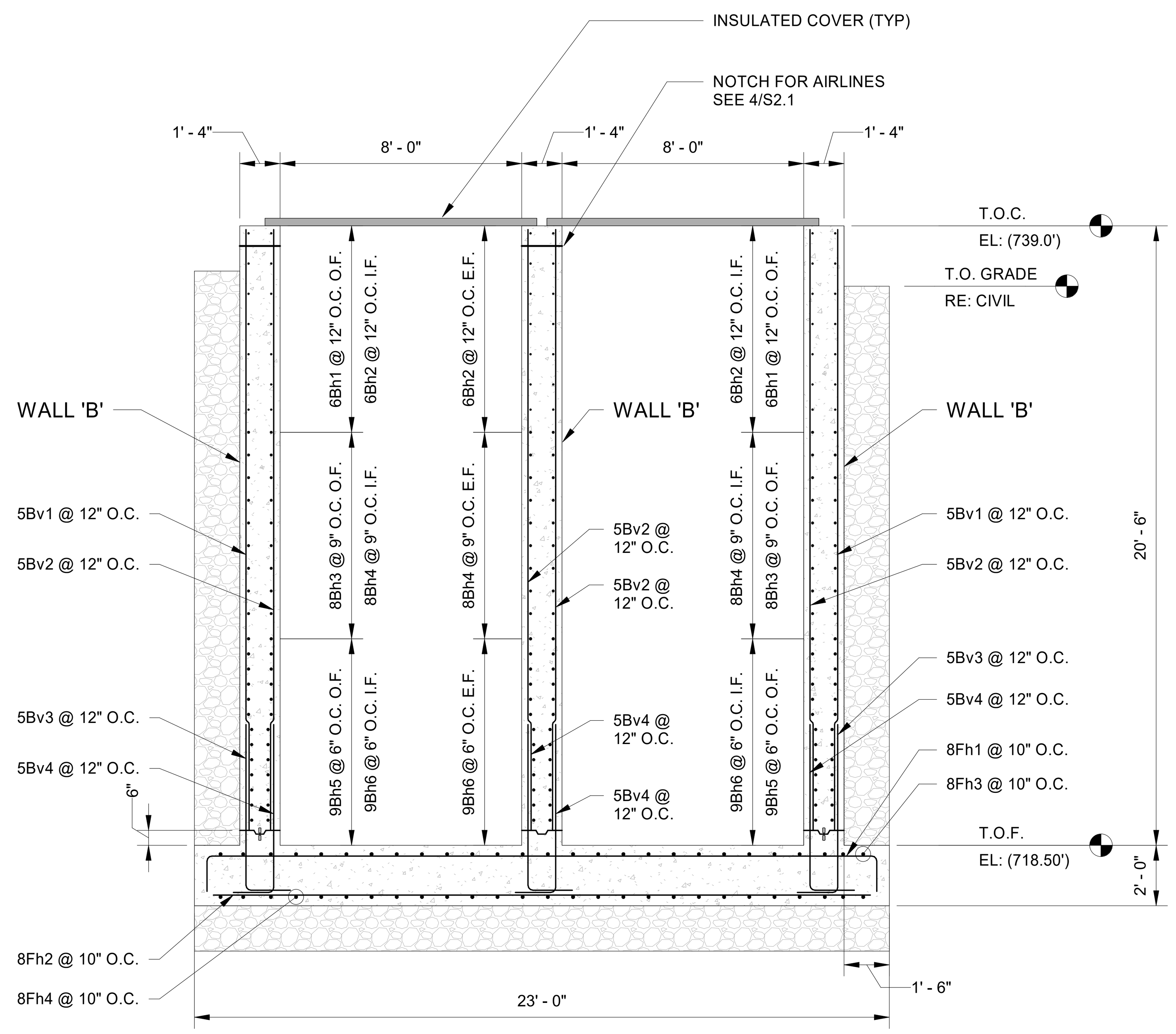
SITE IMPROVEMENTS KEY PLAN

PROJECT NO.: 22-061
DRAWING NO.:
SHEET S2.0 OF 7



1 NITROX REACTOR TANKS STRUCTURE PLAN

1/4" = 1'-0"

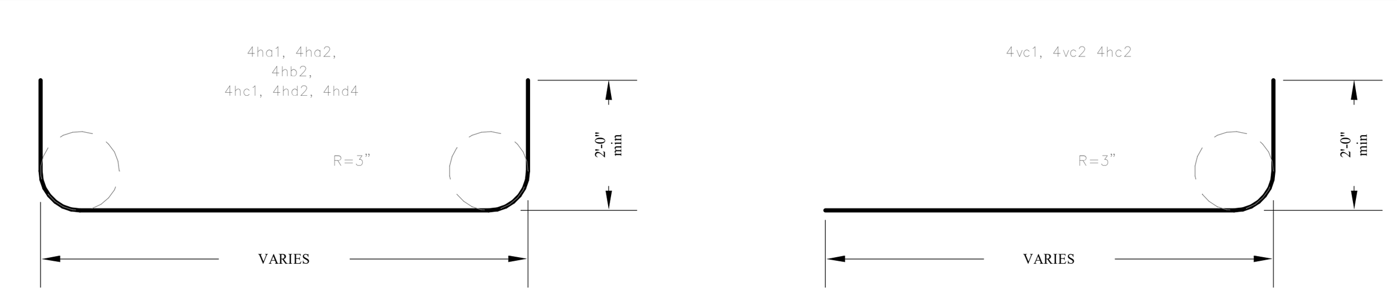


3 NITROX REACTOR SECTION DETAIL (SIDE)

1/4" = 1'-0"

WALL & FOUNDATION REINFORCING BAR LIST					
BAR	LOCATION	SHAPE	LENGTH	NO.	WEIGHT
5Av1	Wall 'A', Exterior Vertical Stem		19'-10"	42	868.8
6Ah1	Wall 'A', Exterior Horizontal Stem		**20'-0"**	14	481.9
5Av2	Wall 'A', Interior Vertical Stem		19'-10"	76	1572.1
6Ah2	Wall 'A', Interior Horizontal Stem		**20'-0"**	28	932.2
5Av3	Wall 'A', Exterior Vertical Dowels		7'-8"	42	335.8
8Ah3	Wall 'A', Exterior Horizontal Stem		**20'-0"**	18	1101.4
5Av4	Wall 'A', Interior Vertical Dowels		7'-8"	76	607.7
8Ah4	Wall 'A', Interior Horizontal Stem		**20'-0"**	36	2130.7
9Ah5	Wall 'A', Exterior Horizontal Stem		**20'-0"**	26	2025.8
9Ah6	Wall 'A', Interior Horizontal Stem		**20'-0"**	52	3919.1
5Bv1	Wall 'B', Exterior Vertical Stem		19'-10"	74	1530.8
6Bh1	Wall 'B', Exterior Horizontal Stem		**36'-0"**	14	732.5
5Bv2	Wall 'B', Interior Vertical Stem		19'-10"	140	2896.1
6Bh2	Wall 'B', Interior Horizontal Stem		**36'-0"**	28	1422.9
5Bv3	Wall 'B', Exterior Vertical Dowels		7'-8"	74	591.7
8Bh3	Wall 'B', Exterior Horizontal Stem		**36'-0"**	18	1674.1
5Bv4	Wall 'B', Interior Vertical Dowels		7'-8"	140	1119.5
8Bh4	Wall 'B', Interior Horizontal Stem		**36'-0"**	36	3252.1
9Bh5	Wall 'B', Exterior Horizontal Stem		**36'-0"**	26	3079.3
9Bh6	Wall 'B', Interior Horizontal Stem		**36'-0"**	52	5982.7
8Fh1	Foundation 'F', Horizontal Stem		23'-4"	46	2865.8
8Fh2	Foundation 'F', Horizontal Stem		21'-8"	46	2661.1
8Fh3	Foundation 'F', Horizontal Stem		39'-8"	27	2859.6
8Fh4	Foundation 'F', Horizontal Stem		37'-8"	27	2715.4
	TOTAL				**47,078.5**

BENT BAR DETAILS



ESTIMATED QUANTITIES

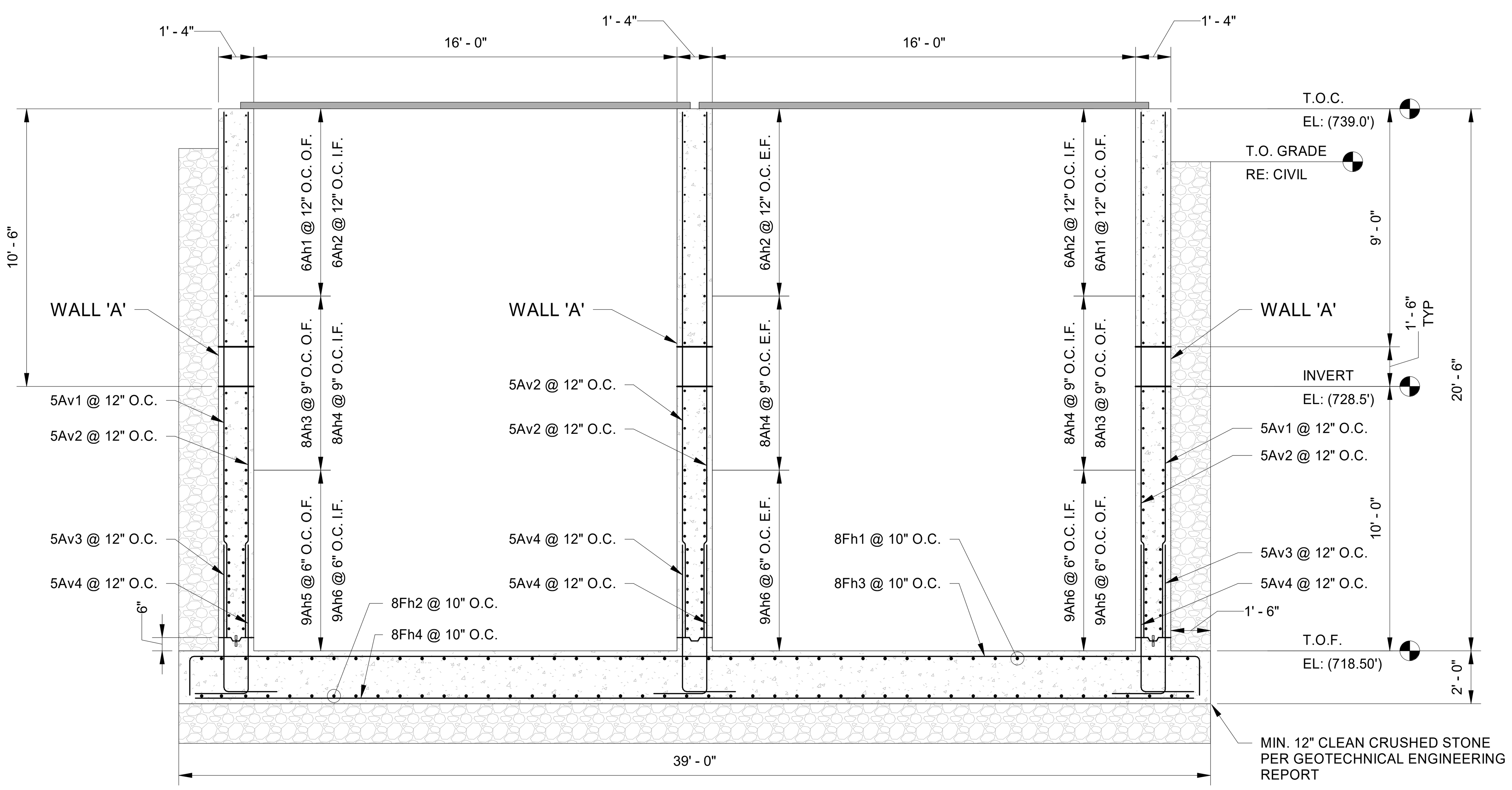
ITEM	UNITS	WALL 'A'	WALL 'B'	FOUND 'F'		TOTAL
CONCRETE, STRUCTURAL, CLASS C	CY	109.3	52.6	66.4		228.3
STEEL, REINFORCING, EPOXY COATED	LBS	13975.5	22281.7	11101.9		47359.1

NOTES:

1. ADDED REINFORCING FOR WALL OPENINGS PER DETAILS 4&5/S3.0 IS NOT INCLUDED IN THIS TABLE.
2. HORIZONTAL BAR LENGTHS ARE BASED ON WALL LENGTH. ADD LENGTHS OF ALL HOOKS AND SPLICES FOR HORIZONTAL REINFORCING TO THIS TABLE.

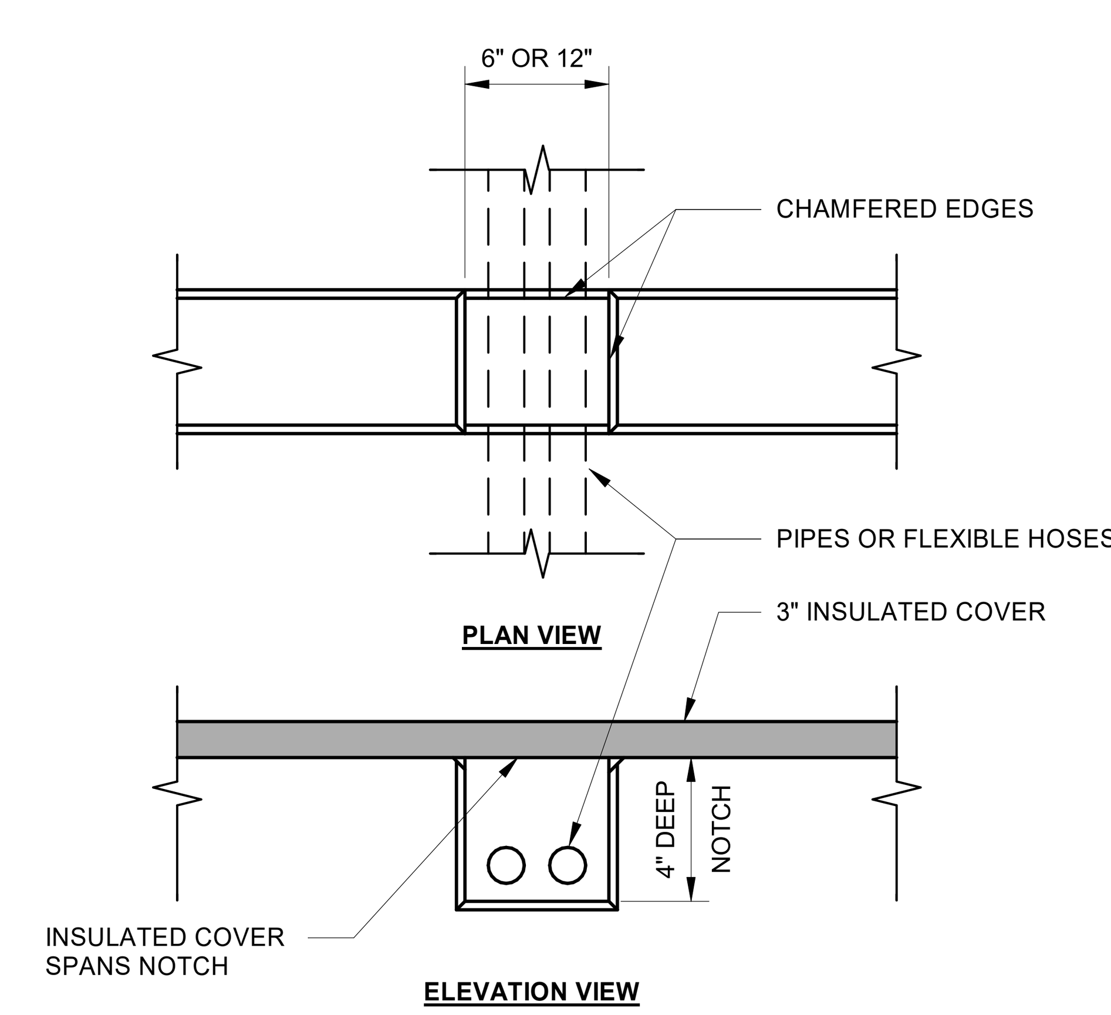
KEY:
4Ah1@ 12" O.C.

- BAR NUMBER
- WALL OR FOUNDATION LOCATION
- BAR DIRECTION h: horizontal v: vertical d: diagonal
- Spacing: 12" On Center



2 NITROX REACTOR SECTION DETAIL

1/4" = 1'-0"



4 NOTCHES FOR AIR AND HEAT EXCHANGER LINES

3/4" = 1'-0"

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	**02/12/2025**	**ADDENDUM #2**

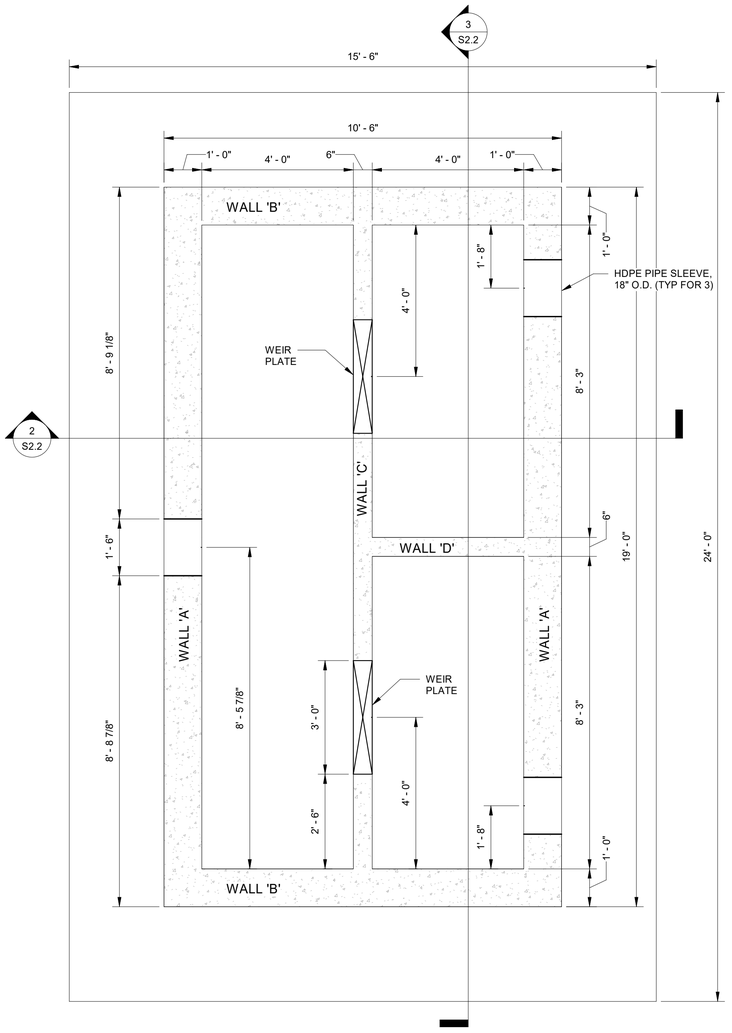
FLD. BK.:
SCALE: 1"=30'
DATE: 02/06/2023
DRN.: WDH
APP.: CMC

CARR ENGINEERING STRUCTURAL SERVICES
CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

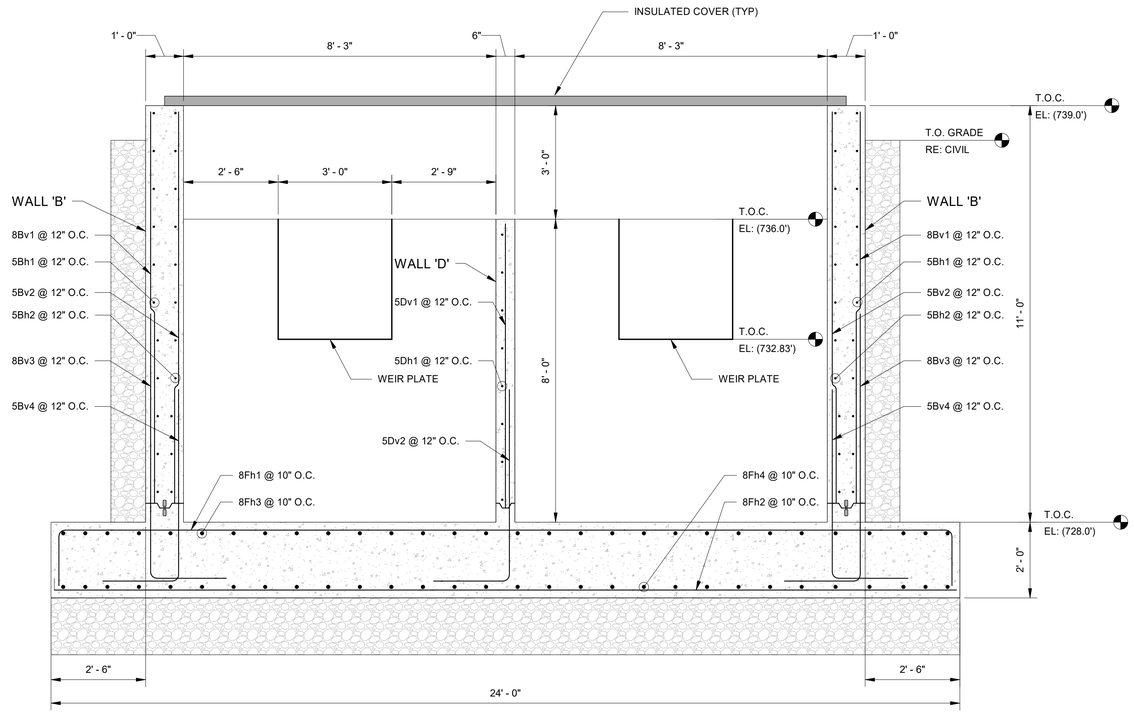
NITROX REACTOR STRUCTURE DETAILS

PROJECT NO.: 22-061
DRAWING NO.:
SHEET S2.1 OF 7



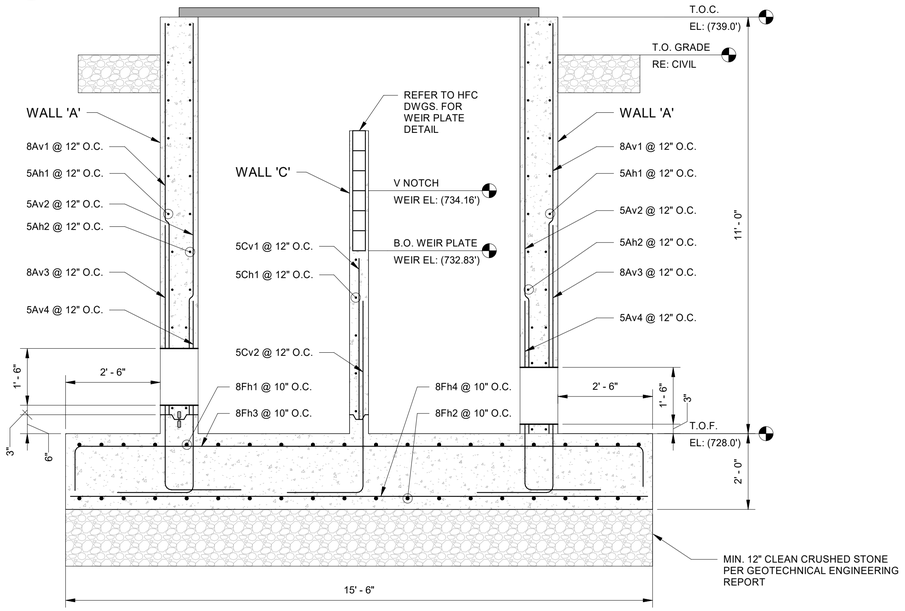
1 FLOW DIVISION STRUCTURE PLAN

1/2" = 1'-0"



3 FLOW DIVISION SECTION DETAIL (SIDE)

1/2" = 1'-0"



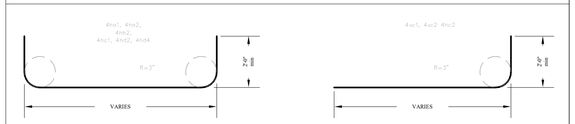
2 FLOW DIVISION SECTION DETAIL

1/2" = 1'-0"

WALL & FOUNDATION REINFORCING BAR LIST

BAR	LOCATION	SHAPE	LENGTH	NO.	WEIGHT
8Av1	Wall 'A', Exterior Vertical Stem		10'-4"	40	1103.6
5Ah1	Wall 'A', Exterior Horizontal Stem		**19'-0"**	22	518.2
5Av2	Wall 'A', Interior Vertical Stem		10'-4"	36	388.0
5Ah2	Wall 'A', Interior Horizontal Stem		**19'-0"**	22	501.0
8Av3	Wall 'A', Exterior Vertical Dowels		9'-0"	40	961.2
5Av4	Wall 'A', Interior Vertical Dowels		7'-0"	36	262.8
8Bv1	Wall 'B', Exterior Vertical Stem		10'-4"	24	662.2
5Bh1	Wall 'B', Exterior Horizontal Stem		**10'-6"**	22	229.5
5Bv2	Wall 'B', Interior Vertical Stem		10'-4"	20	215.6
5Bh2	Wall 'B', Interior Horizontal Stem		**10'-6"**	22	206.5
8Bv3	Wall 'B', Exterior Vertical Dowels		9'-0"	24	576.7
5Bv4	Wall 'B', Interior Vertical Dowels		7'-0"	20	146.0
5Cv1	Wall 'C', Interior Vertical Stem		6'-3"	18	117.3
5Ch1	Wall 'C', Interior Horizontal Stem		**19'-0"**	7	159.4
5Cv4	Wall 'C', Interior Vertical Dowels		7'-0"	18	131.4
5Dv1	Wall 'D', Interior Vertical Stem		7'-6"	5	39.1
5Dh1	Wall 'D', Interior Horizontal Stem		**5'-6"**	8	37.5
5Dv4	Wall 'D', Interior Vertical Dowels		7'-0"	5	36.5
8Fh1	Foundation 'F', Horizontal Stem		27'-7"	20	1473.0
8Fh2	Foundation 'F', Horizontal Stem		23'-10"	20	1272.7
8Fh3	Foundation 'F', Horizontal Stem		19'-0"	30	1521.9
8Fh4	Foundation 'F', Horizontal Stem		15'-3"	30	1221.5
	TOTAL				**11,663.5**

BENT BAR DETAILS

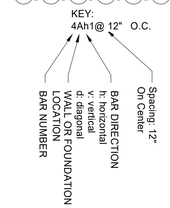


ESTIMATED QUANTITIES

ITEM	UNITS	WALL 'A'	WALL 'B'	WALL 'C'	WALL 'D'	FOUND 'F'	TOTAL
CONCRETE, STRUCTURAL, CLASS C	CY	15.5	6.9	2.5	0.6	27.6	53.1
STEEL, REINFORCING, EPOXY COATED	LBS	3734.8	2036.5	408.1	113.1	5489.1	11781.6

NOTES:

1. ADDED REINFORCING FOR WALL OPENINGS PER DETAILS 4&5/S3.0 IS NOT INCLUDED IN THIS TABLE.
2. HORIZONTAL BAR LENGTHS ARE BASED ON WALL LENGTH. ADD LENGTHS OF ALL HOOKS AND SPLICES FOR HORIZONTAL REINFORCING TO THIS TABLE.



REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	**02/12/2025**	**ADDENDUM #2**

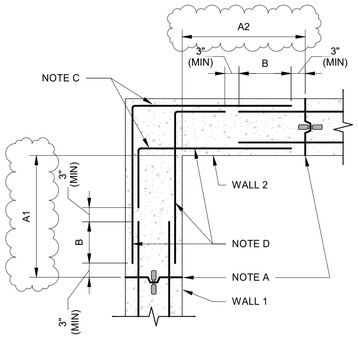
FLD. BK.: | SCALE: 1"=30'
DATE: 02/06/2023 | DRN.: WDH | APP.: CMC

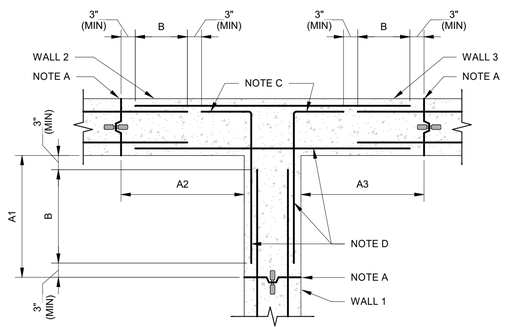
CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

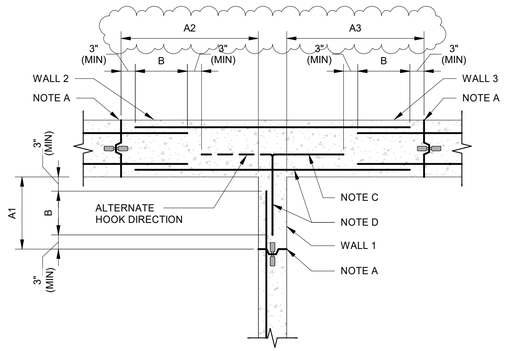
FLOW DIVISION STRUCTURE DETAILS

PROJECT NO.: 22-061
DRAWING NO.:
SHEET S2.2 OF 7





MAIN REINFORCEMENT FOR ALL STRUCTURES



NOTES: SEE S1.0 FOR LAP SPLICE TABLE.

A = VERTICAL CONSTRUCTION JOINT WITH WATERSTOP NEAREST TO WALL CORNER.

A^X = DISTANCE FROM INSIDE CORNER FACE TO NEAREST VERTICAL CONSTRUCTION JOINT IN SIMILARLY NUMBERED WALL. "A" SHALL NOT BE LESS THAN DIMENSIONS INDICATED ON PLAN DRAWINGS; BUT IN ANY CASE SHALL NOT EXCEED 30 FEET.

B = OPTIONAL SPLICE LOCATION UNLESS SPECIFICALLY NOTED ON PLAN DRAWINGS. SPLICE LENGTH SHALL NOT BE LESS THAN THAT AS SHOWN IN THE CONCRETE REINFORCEMENT SPLICE TABLE. USE SPLICE LENGTH FOR THE SMALLER OF THE TWO BARS BEING SPLICED.

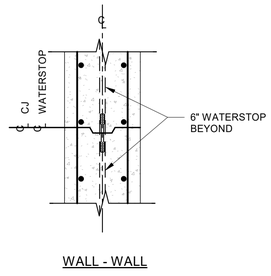
C = STANDARD HOOK.

D = TYPICAL CORNER REINFORCEMENT. SIZE SHALL MATCH LARGEST ADJACENT WALL HORIZONTAL REINFORCEMENT; SPACING SHALL MATCH MINIMUM ADJACENT WALL HORIZONTAL REINFORCEMENT SPACING.

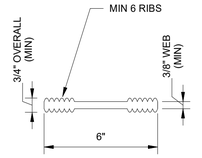
ALL REBAR SPLICE LOCATIONS SHOWN ARE OPTIONAL. THE GENERAL CONTRACTOR SHALL SUBMIT A JOINT LAYOUT PLAN FOR APPROVAL.

1 TYPICAL HORIZONTAL CORNER REINFORCING

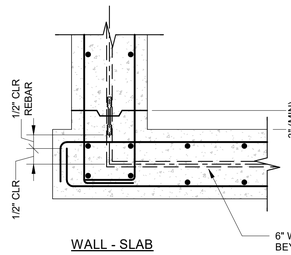
3/4" = 1'-0"



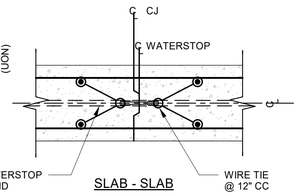
WALL - WALL



WATERSTOP SECTION



WALL - SLAB

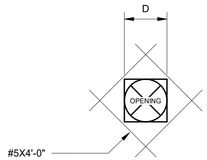


SLAB - SLAB

NOTES:
1. LOCATE WATERSTOP WITH WIRE TIES OR LONGITUDINAL KEY BLOCKING BETWEEN TWO CONTINUOUS CURTAINS OF REINFORCING.
2. AT INTERSECTIONS OF CONSTRUCTION JOINTS, CONNECT WATERSTOP TOGETHER TO FORM CONTINUOUS WATER BARRIER.
3. PROVIDE ROUGHENED SURFACE BETWEEN CONCRETE POURS.
4. REFER TO SPEC'S FOR INSTALLATION & DETAILED PRODUCT REQ'S.

2 CONSTRUCTION JOINT WITH WATERSTOP

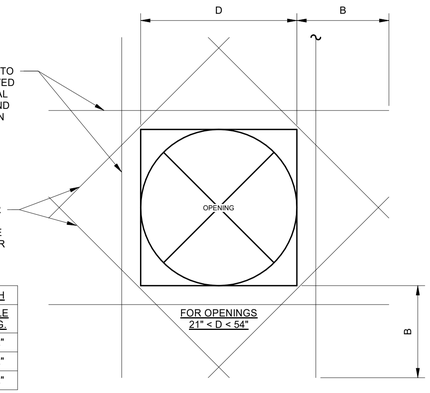
1" = 1'-0"



FOR OPENINGS
12" < D < 21"

EXTRA BARS EQUAL IN TOTAL AREA TO REGULAR REINFORCING INTERRUPTED BY OPENING, PLACE ONE HALF TOTAL AREA TO EACH SIDE OF OPENING AND IN THE SAME TRANSVERSE POSITION AS REGULAR REINFORCING.

ONE EXTRA BAR EACH CORNER PER LAYER OF REGULAR REINFORCING (SEE TABLE BELOW). PLACE IN SAME TRANSVERSE POSITION AS REGULAR REINFORCING.



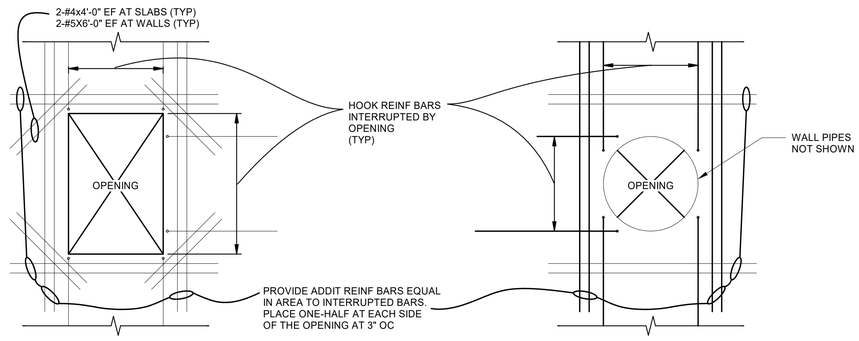
FOR OPENINGS
21" < D < 54"

THICKNESS OF CONCRETE	BAR SIZE	BAR LENGTH RECT. OPNG.	BAR LENGTH CIRCLE OPNG.
<12"	4	3'-0"	D+12"
12" TO 18"	5	3'-0"	D+12"
>18"	6	3'-8"	D+12"

B = THE REQUIRED LENGTH FOR LAPPED SPLICE FOR TOP BARS AS SHOWN IN CONC REINFORCEMENT SPLICE TABLE

3 TYPICAL ADDITIONAL REINFORCING AT OPENINGS

3/4" = 1'-0"



4 ADDITIONAL REINFORCING AT OPENINGS IN TANK AND FLOW STRUCTURE WALLS AND SLABS

3/4" = 1'-0"

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	02/12/2025	ADDENDUM #2

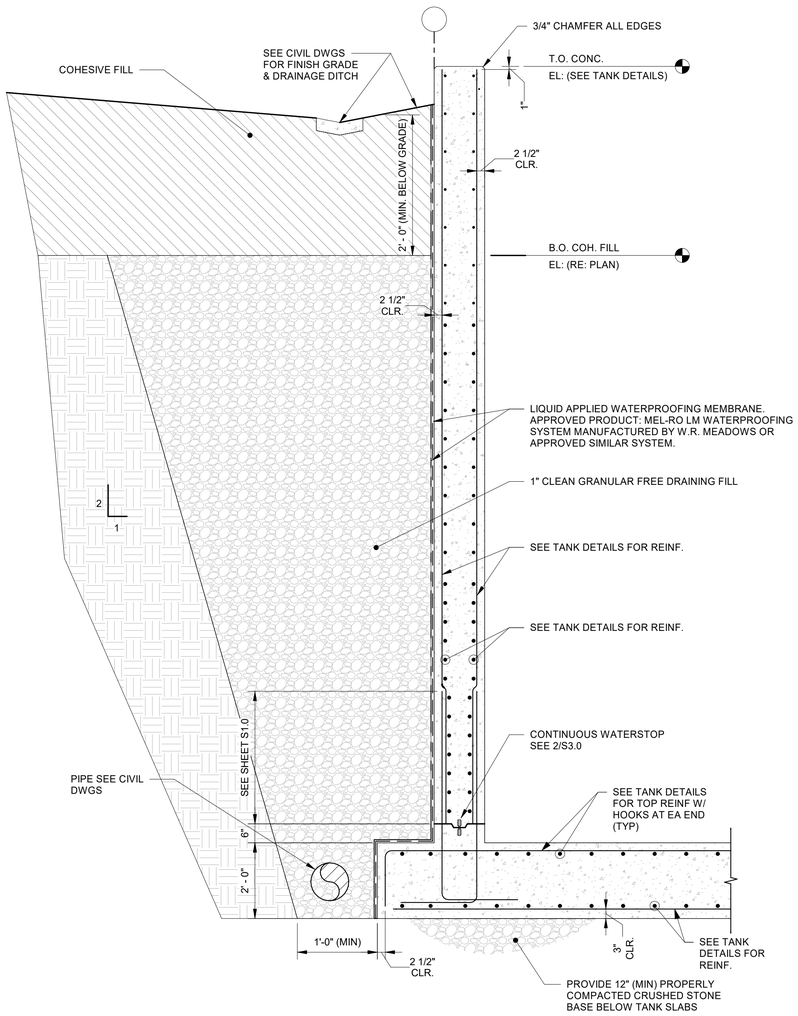
FLD. BK.:
SCALE: 1"=30'
DATE: 02/06/2023
DRN.: WDH
APP.: CMC

CARR ENGINEERING
STRUCTURAL SERVICES
CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

FOUNDATION DETAILS

PROJECT NO.: 22-061
DRAWING NO.:
SHEET S3.0 OF 7



1 TYPICAL WALL BACKFILL AND WATERPROOFING

1/2" = 1'-0"

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	04/01/2023	FOR BIDDING
2	06/11/2023	ADDENDUM #1
3	**02/12/2025**	**ADDENDUM #2**

FLD. BK.:

SCALE: 1"=30'

DATE: 02/06/2023

DRN.: WDH

APP.: CMC

CARR ENGINEERING
STRUCTURAL SERVICES
CARR ENGINEERING, L.L.C.
3294 Fields Drive BETTENDORF, IOWA 52722
Phone: (563) 503-6100
www.carrengineeringllc.com

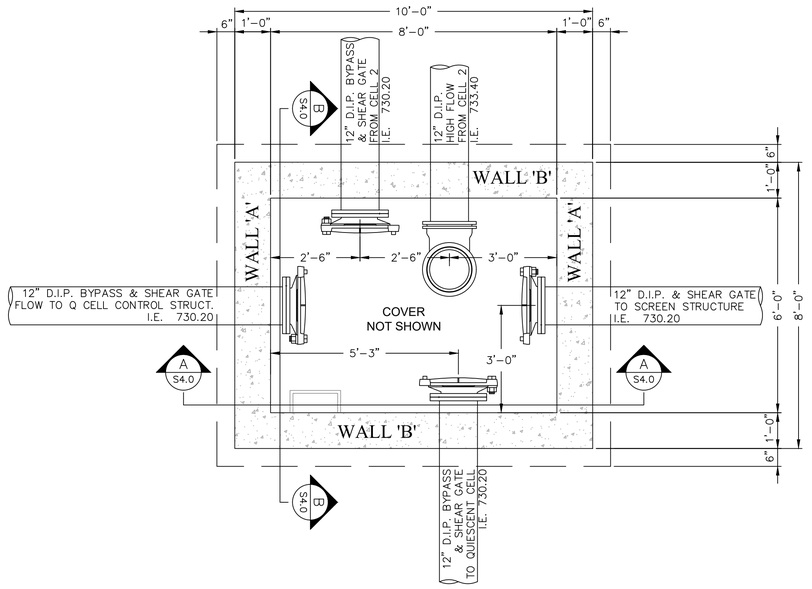
WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

NITROX REACTOR AND FLOW DIVISION
STUCTURE DETAILS

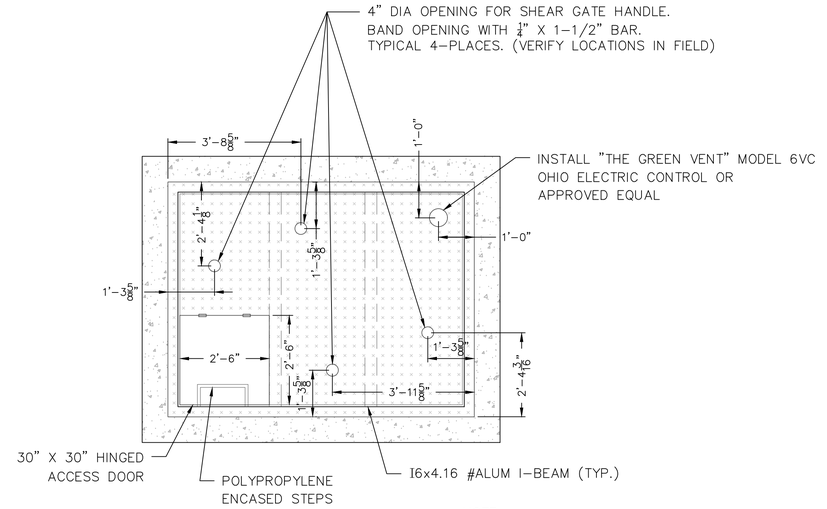
PROJECT NO.: 22-061

DRAWING NO.:

SHEET S3.1 OF 7



PRIMARY CONTROL STRUCTURE PLAN
SCALE: 1/2"=1'-0"



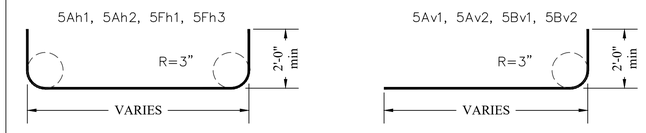
NOTE:
PROVIDE "T" SLAM LOCKS FOR ALL ACCESS DOORS.
ALL MATERIALS TO BE ALUMINUM OR AS SPECIFIED.

LID PLAN FOR PRIMARY CONTROL STRUCTURE
SCALE: 1/2"=1'-0"

WALL & FOUNDATION REINFORCING BAR LIST

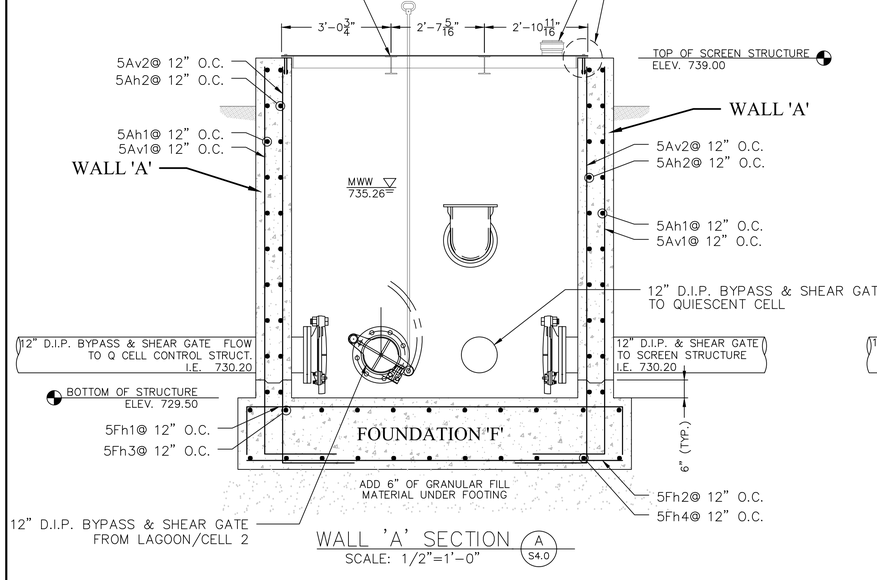
BAR	LOCATION	SHAPE	LENGTH	NO.	WEIGHT
5Av1	Wall 'A', Exterior Vertical Stem		13'-1"	16	218.33
5Ah1	Wall 'A', Exterior Horizontal Stem		11'-8"	20	243.37
5Av2	Wall 'A', Interior Vertial Stem		13'-1"	16	209.33
5Ah2	Wall 'A', Interior Horizontal Stem		10'-4"	20	215.55
5Bv1	Wall 'B', Exterior Vertical Stem		13'-1"	16	218.34
5Bh1	Wall 'B', Exterior Horizontal Stem		9'-8"	20	201.65
5Bv2	Wall 'B', Interior Vertial Stem		13'-1"	16	218.35
5Bh2	Wall 'B', Interior Horizontal Stem		8'-4"	20	173.83
5Fh1	Foundation 'F', Horizontal Stem		14'-8"	9	137.67
5Fh2	Foundation 'F' Horizontal Stem		10'-8"	9	100.13
5Fh3	Foundation 'F', Horizontal Stem		12'-8"	11	145.33
5Fh4	Foundation 'F' Horizontal Stem		8'-8"	11	99.43
	TOTAL				2,190.30

BENT BAR DETAILS

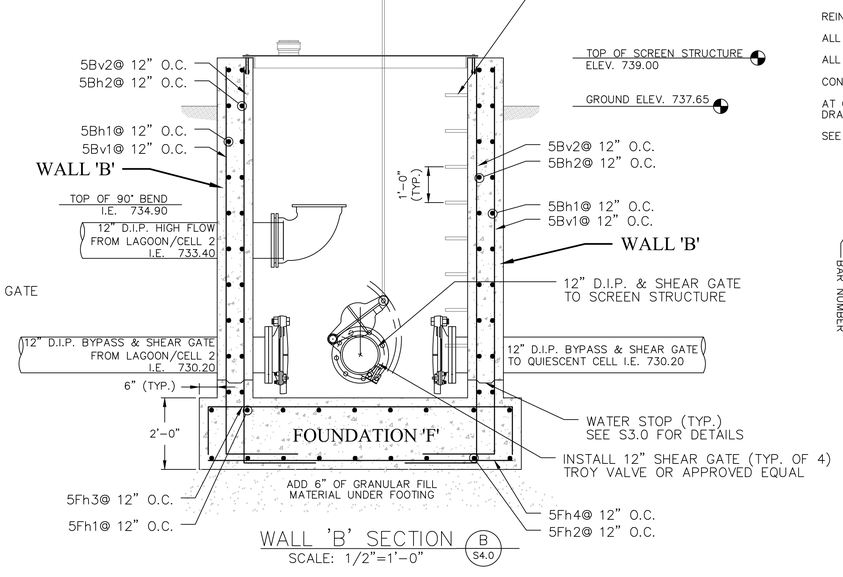


ESTIMATED QUANTITIES

ITEM	UNITS		WALL 'A'	WALL 'B'	FOUND 'F'	TOTAL
CONCRETE, STRUCTURAL, CLASS C	CY		7.04	4.22	7.33	18.59
STEEL, REINFORCING	LBS		895.59	812.15	482.56	2,190.30
CLASS 20 ECAVATION	CY					291.12



WALL 'A' SECTION (A S4.0)
SCALE: 1/2"=1'-0"



WALL 'B' SECTION (B S4.0)
SCALE: 1/2"=1'-0"

NOTES

ALL EXPOSED CORNERS 90 DEGREES AND SMALLER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. TOP BAR TO BE 3" PARALLEL TO TOP OF WALL. BOTTOM REINFORCING STEEL TO BE PARALLEL AND 2" CLEAR OF BOTTOM OF FOOTING. BOTTOM REINFORCING TO BE SUPPORTED BY INDIVIDUAL METAL BAR CHAIRS.

REINFORCEMENT SPLICES, IF REQUIRED, TO BE LAPPED 24-INCHES.

ALL REINFORCING STEEL TO BE ASTM A615-GR60.

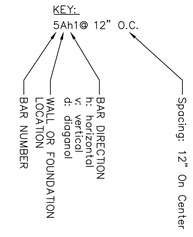
ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

CONCRETE TO BE CLASS 'C', 4500 PSI. FLY ASH SUBSTITUTION WILL NOT BE ALLOWED.

AT CONTRACTORS OPTION, PRECAST SECTIONS FOR CONTROL STRUCTURE WALLS MAY BE USED. PROVIDE SHOP DRAWINGS AND DETAILS FOR CONNECTIONS OF PIPING, VALVES AND WEIR WALLS.

SEE SHEET S1.0 FOR ADDITIONAL REQUIREMENTS.

KEY:



NOTE: SOME OPERATING HANDLES NOT SHOWN FOR CLARITY.

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	2/7/25	Add#2 General corections and update bar designations and lengths

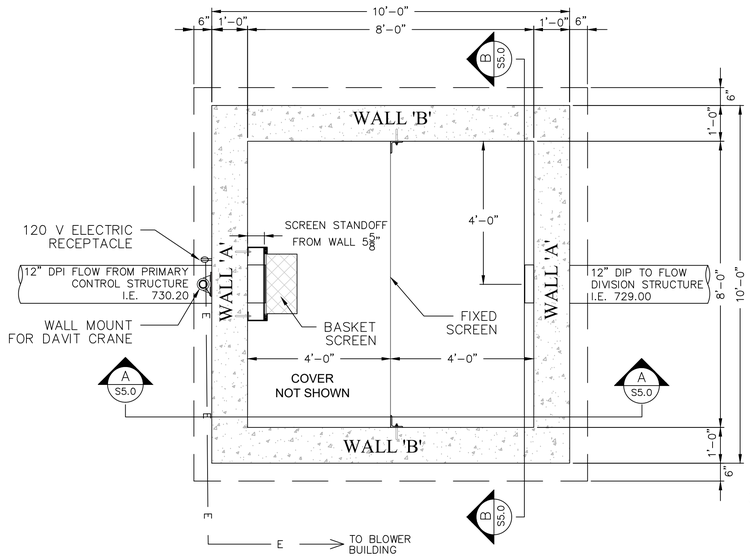
FLD. BK.: | SCALE: 1"=30'
DATE: 7/24/2023 | DRN.: ADC/BAC | APP.: BAC

HART-FREDERICK CONSULTANTS P.C.
510 State Street P.O. Bo 560 TIFFIN, IOWA 52340-0560
Phone: (319) 545-7215 Fa: (319) 545-7220
www.hart-frederick.com

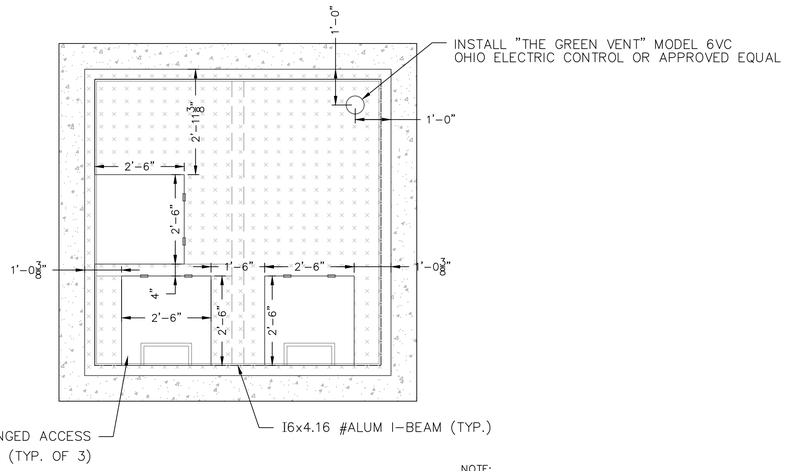
WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

PRIMARY CONTROL STRUCTURE DETAILS

PROJECT NO.: 18212.43
DRAWING NO.:
SHEET S4.0 OF 68



SCREEN STRUCTURE PLAN
SCALE: 1/2"=1'-0"



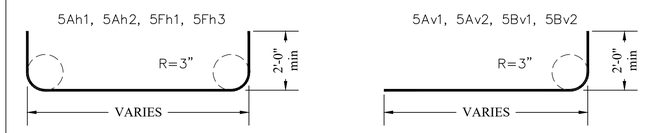
NOTE:
PROVIDE "T" SLAM LOCKS FOR ALL ACCESS DOORS. ALL MATERIALS TO BE ALUMINUM OR AS SPECIFIED.

LID PLAN FOR SCREEN STRUCTURE
SCALE: 1/2"=1'-0"

WALL & FOUNDATION REINFORCING BAR LIST

BAR	LOCATION	SHAPE	LENGTH	NO.	WEIGHT
5Av1	Wall 'A', Exterior Vertical Stem		14'-1"	20	293.78
5Ah1	Wall 'A', Exterior Horizontal Stem		13'-8"	22	313.60
5Av2	Wall 'A', Interior Vertial Stem		14'-1"	20	293.78
5Ah2	Wall 'A', Interior Horizontal Stem		12'-4"	22	283.00
5Bv1	Wall 'B', Exterior Vertical Stem		14'-1"	18	264.40
5Bh1	Wall 'B', Exterior Horizontal Stem		9'-8"	22	221.81
5Bv2	Wall 'B', Interior Vertial Stem		14'-1"	18	264.40
5Bh2	Wall 'B', Interior Horizontal Stem		8'-4"	22	191.22
5Fh1	Foundation 'F', Horizontal Stem		14'-8"	11	168.27
5Fh2	Foundation 'F' Horizontal Stem		10'-8"	11	122.38
5Fh3	Foundation 'F', Horizontal Stem		14'-8"	11	168.27
5Fh4	Foundation 'F' Horizontal Stem		10'-8"	11	122.38
	TOTAL				2,707.28

BENT BAR DETAILS



ESTIMATED QUANTITIES

ITEM	UNITS		WALL 'A'	WALL 'B'	FOUND 'F'	TOTAL
CONCRETE, STRUCTURAL, CLASS C	CY		7.77	6.22	8.96	22.95
STEEL, REINFORCING	LBS		1,184.15	941.83	581.30	2,707.28
CLASS 20 ECAVATION	CY					373.38

NOTES

ALL EXPOSED CORNERS 90 DEGREES AND SMALLER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. TOP BAR TO BE 3" PARALLEL TO TOP OF WALL. BOTTOM REINFORCING STEEL TO BE PARALLEL AND 2" CLEAR OF BOTTOM OF FOOTING. BOTTOM REINFORCING TO BE SUPPORTED BY INDIVIDUAL METAL BAR CHAIRS

REINFORCEMENT SPLICES, IF REQUIRED, TO BE LAPPED 24-INCHES.

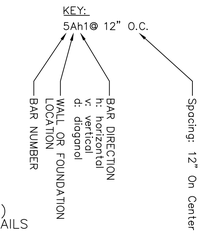
ALL REINFORCING STEEL TO BE ASTM A615-GR60.

ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

CONCRETE TO BE CLASS 'C', 4500 PSI. FLY ASH SUBSTITUTION WILL NOT BE ALLOWED.

AT CONTRACTORS OPTION, PRECAST SECTIONS FOR CONTROL STRUCTURE WALLS MAY BE USED. PROVIDE SHOP DRAWINGS AND DETAILS FOR CONNECTIONS OF PIPING, VALVES AND WEIR WALLS.

SEE SHEET S1.0 FOR ADDITIONAL REQUIREMENTS.



WALL 'A' SECTION (A S5.0)
SCALE: 1/2"=1'-0"

WALL 'B' SECTION (B S5.0)
SCALE: 1/2"=1'-0"

NOTE:
① INFLUENT PIPE TO BE CUT FLUSH WITH BACK OF BASKET TO PREVENT DEBRIS EGRESS.

REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	2/7/25	Add#2 General corections and update bar designations and lengths

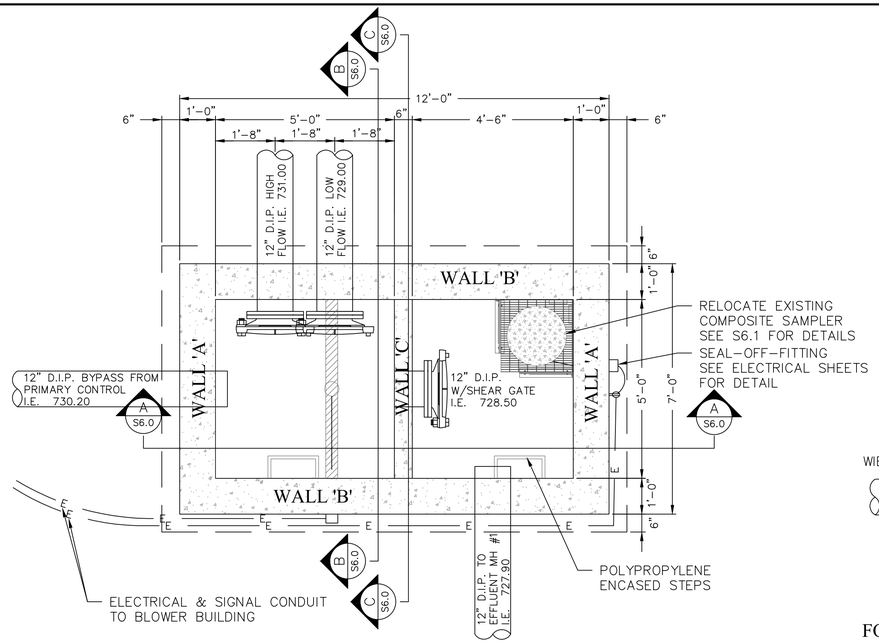
FLD. BK.: | SCALE: 1"=30'
DATE: 7/24/2023 | DRN.: ADC/BAC | APP.: BAC

HART-FREDERICK CONSULTANTS P.C.
510 State Street P.O. Box 560 TIFFIN, IOWA 52340-0560
Phone: (319) 545-7215 Fax: (319) 545-7220
www.hart-frederick.com

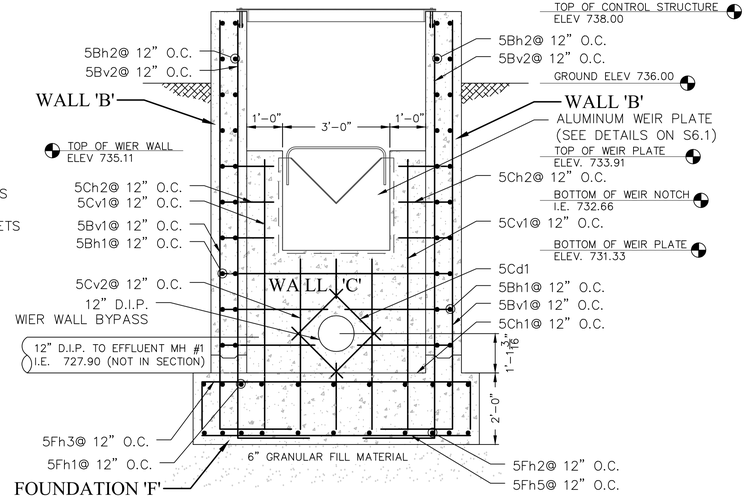
WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

SCREEN STRUCTURE DETAILS

PROJECT NO.: 18212.43
DRAWING NO.: SHEET S5.0 OF 68



CONTROL STRUCTURE PLAN
SCALE: 1/2"=1'-0"

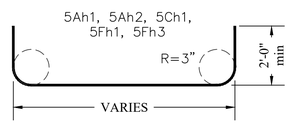


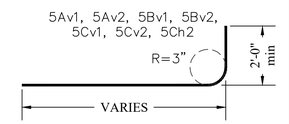
WALL 'C' SECTION C S6.0
SCALE: 1/2"=1'-0"

WALL & FOUNDATION REINFORCING BAR LIST

BAR	LOCATION	SHAPE	LENGTH	NO.	WEIGHT
5Av1	Wall 'A', Exterior Vertical Stem	⌐	13'-8"	16	228.07
5Ah1	Wall 'A', Exterior Horizontal Stem	⌐	10'-8"	20	222.51
5Av2	Wall 'A', Interior Vertial Stem	⌐	13'-8"	15	213.82
5Ah2	Wall 'A', Interior Horizontal Stem	⌐	9'-4"	20	194.69
5Bv1	Wall 'B', Exterior Vertical Stem	⌐	13'-8"	22	313.60
5Bh1	Wall 'B', Exterior Horizontal Stem	⌐	11'-8"	20	243.37
5Bv2	Wall 'B', Interior Vertial Stem	⌐	13'-8"	20	285.09
5Bh2	Wall 'B', Interior Horizontal Stem	⌐	10'-4"	20	215.55
5Cv1	Wall 'C', Shear Gate Vertical Stem	⌐	9'-8"	5	50.41
5Cv2	Wall 'C', Shear Gate Vertial Stem	⌐	7'-0"	3	21.90
5Ch1	Wall 'C', Shear Gate Horizontal Stem	⌐	10'-8"	3	33.38
5Ch2	Wall 'C', Shear Gate Horizontal Stem	⌐	3'-8"	6	22.95
5Cd1	Wall 'C', Shear Gate Diagonal Stem	—	2'-0"	5	10.43
5Fh1	Foundation 'F', Horizontal Stem	⌐	16'-8"	11	191.22
5Fh2	Foundation 'F' Horizontal Stem	—	12'-8"	11	145.33
5Fh3	Foundation 'F', Horizontal Stem	⌐	11'-8"	15	182.53
5Fh5	Foundation 'F' Horizontal Stem	—	7'-8"	15	119.95
	TOTAL				2,694.76

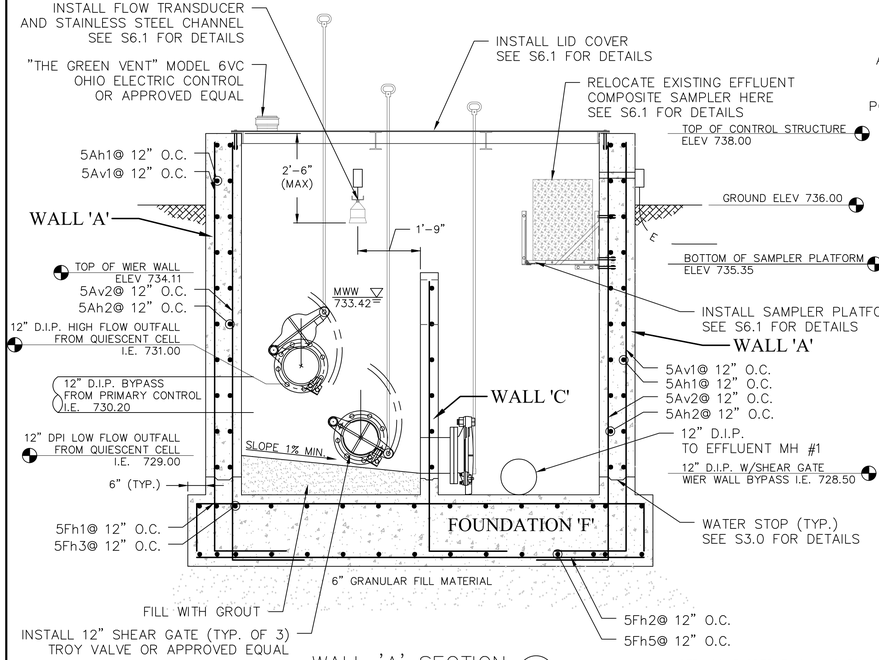
BENT BAR DETAILS





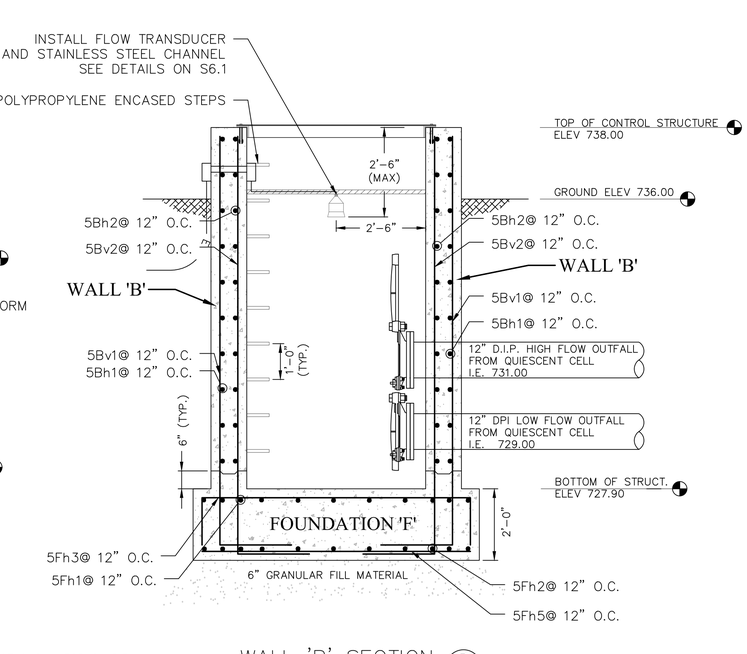
ESTIMATED QUANTITIES

ITEM	UNITS	WALL 'A'	WALL 'B'	WALL 'C'	FOUND 'F'	TOTAL
CONCRETE, STRUCTURAL, CLASS C	CY	3.75	8.98	0.52	7.70	20.85
STEEL, REINFORCING	LBS	859.09	1,057.60	139.06	639.01	2,694.76
CLASS 20 ECAVATION	CY					165.00



WALL 'A' SECTION A S6.0
SCALE: 1/2"=1'-0"

NOTE: SOME OPERATING HANDLES NOT SHOWN FOR CLARITY.



WALL 'B' SECTION B S6.0
SCALE: 1/2"=1'-0"

NOTES

ALL EXPOSED CORNERS 90 DEGREES AND SMALLER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. TOP BAR TO BE 3" PARALLEL TO TOP OF WALL. BOTTOM REINFORCING STEEL TO BE PARALLEL AND 2" CLEAR OF BOTTOM OF FOOTING. BOTTOM REINFORCING TO BE SUPPORTED BY INDIVIDUAL METAL BAR CHAIRS

REINFORCEMENT SPLICES, IF REQUIRED, TO BE LAPPED 24-INCHES.

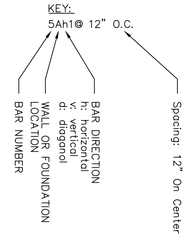
ALL REINFORCING STEEL TO BE ASTM A615-GR60.

ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

CONCRETE TO BE CLASS 'C', 4500 PSI. FLY ASH SUBSTITUTION WILL NOT BE ALLOWED.

AT CONTRACTORS OPTION, PRECAST SECTIONS FOR CONTROL STRUCTURE WALLS MAY BE USED. PROVIDE SHOP DRAWINGS AND DETAILS FOR CONNECTIONS OF PIPING, VALVES AND WEIR WALLS.

SEE SHEET S1.0 FOR ADDITIONAL REQUIREMENTS.



REVISIONS		
REVISION NO.	DATE	DESCRIPTION
1	2/7/25	Add#2 General corections and update bar designations and lengths

FLD. BK.:
SCALE: AS NOTED
DATE: 7/24/2023
DRN.: ADC/BAC
APP.: BAC

HART-FREDERICK CONSULTANTS P.C.
510 State Street P.O. Bo 560 TIFFIN, IOWA 52340-0560
Phone: (319) 545-7215 Fa: (319) 545-7220
www.hart-frederick.com

WASTEWATER TREATMENT IMPROVEMENTS PROJECT
CITY OF MORNING SUN, IOWA

QUIESCENT CELL CONTROL STRUCTURE

PROJECT NO.: 18212.43
DRAWING NO.:
SHEET S6.0 OF 68