Chamlin & Associates
ENGINEERS • SURVEYORS • PLANNERS

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Professional Design Firm License No. 184-001717

September 28, 2023

TO: Contractors & Suppliers

SUBJECT: Illinois Valley Community College
Salt Storage Facility
ADDENDUM NO. 3

This Addendum shall consist of the following items:

1. **Specification Section – Fabric Building 2.3.7:** added point 'A' to end of 2.3.7: Chamlin & Associates will provide anchor bolt engineered calculations for the selected building manufacturer upon receipt of stamped building drawings and calculations that specifically show baseplate locations and associated reactions. The Contractor will then provide and install said anchor bolts.
2. **Plan Sheet S1 Note 1:** remove the following ~~ALL ANCHORS SHALL BE CAST IN PLACE (DRILLING AND GROUTING IS NOT ACCEPTABLE).~~ (See attached)
3. **Clarification**: Drilled and epoxied anchors will be acceptable for this project. The Contractor will provide and install anchors engineered by Chamlin & Associates as noted in the revised specifications above. For bidding purposes, the Contractor shall include in his bid: (40) 0.75" diameter by 16" long Hilti HAS-R 304 SS threaded rods with 12" effective embedment and associated Hilti HIT-HY 200-R V3 epoxy.
4. Bid date and time remain as originally scheduled.
5. It is anticipated that the Notice of Award will be issued at the October 12, 2023, board meeting.

This Addendum is also posted at our website: **www.chamlin.com**

Please be advised that this Addendum must be acknowledged on the Bid Form. Failure to do so may result in rejection of your Bid.

Sincerely,

CHAMLIN & ASSOCIATES, INC.

David A. Hall, P. E.

DAH:mrc

cc: File No. 02472.00
Enclosure

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SECTION – FABRIC BUILDING

1.0.0. GENERAL

1.1.0. The purpose of this bid is for the purchase, delivery, and installation on site of a ClearSpan, or equal, 40' X 50' Custom Fabric Building, following the design specifications listed below.

1.2.0. As equal manufacturer must be approved by addendum minimum of 7 days prior to bid opening. Building must be fabricated in the U.S.A. and be manufactured by 1 company with a minimum of 8 years documented experience manufacturing the specified building model under 1 business name.

Manufacturers having an equal product may submit information to the Owner for inclusion in the approved list of manufacturers. Information shall demonstrate structures of similar size and shape, demonstrate materials and method of construction.

Basis of Design: **Clearspan Fabric Structures International, Inc. South Windsor, Ct**

In accordance with Specification Section – Fabric Building, Article 1.2.0, the following prefabricated membrane structure manufacturer is added as an 'As-Equal' for the project:

Heritage Structures Inc., 6267 County Rd 400 N, McLeansboro, IL 62859.
Span-Tech Fabric Building Systems, P. O. Box 2000, Hwy 16 W, Houghton, IA 52631.

1.3.0. **IL STATE ENGINEER STAMPED DRAWINGS ARE REQUIRED FOR THE BUILDING**

1.4.0. **Building to be installed on concrete walls per the drawings.**

1.5.0. The workmanship of all materials and components of the structure shall be commensurate with the functional requirements of the items.

1.6.0. Building prefabrication shall be performed under factory conditions in a plant specifically arranged for this type of work. Contractor shall provide adequate space, equipment, personnel, and technical ability to coordinate the assembly and factory prefabrication of all major components of the work and all necessary operation in the packing, shipping and installation procedures. No fabrication shall be done unless the materials have been tested and approved.

2.0.0. GENERAL DESIGN REQUIREMENTS:

2.1.0. Warranty: 50-year on Frame & 15-year on Fabric.

2.1.1. The membrane shall be tensioned over the framework.

2.1.6. The interior of the structure below the main trusses shall be clear span free of any structural support members and shall provide unobstructed floor space.

2.1.7. No exterior purlins, guy ropes or cables shall be used for anchoring the structures.

2.1.8. Building to be engineered to 25 psf ground snow load and 100mph, vult wind speed: See Section 2.4.2. and 2.4.3. for details. Risk Category 1 required for importance factor and calculations.

2.2.0. DESIGN REQUIREMENTS-STRUCTURAL FRAME:

2.2.1. Purlin Spacing: To provide for structural stability and to provide for installation of accessory items, the main structural trusses shall be laterally braced by tubular purlins at intervals required by the truss design.

2.2.2. Wind and Frame Bracing: The structure shall be appropriately stabilized with wind bracing cable as well as any required secondary node restraint assemblies so as to efficiently transfer wind, snow and seismic induced stresses to the foundation/anchoring system. The end bays of the structure shall be designed to be X – braced early during installation to allow for permanent stability of the frames during installation.

2.2.3. Connecting Joints: Connections between structural elements shall be designed so as to transfer the compressive and tensile forces present in a given joint. A minimum of Grade 5 bolts shall be used at each truss chord joint. Primary axial steel, secondary purlins and end wall frame connections shall be made with a minimum of Grade 5 hex bolts, carriage bolts and self drilling screws.

2.2.4. Mechanical Equipment Interface: The main structural roof trusses shall allow for installation of electrical and mechanical equipment based on collateral loads. Likewise, the structure shall accept penetrations through the membrane for access doors and mechanical services with minimal modification.

2.2.7. All hardware needed to assemble buildings to be supplied by vendor / contractor.

2.3.0. DESIGN REQUIREMENTS – MEMBRANE CLADDING SYSTEM:

2.3.1 Membrane: The roof membrane shall form a weather tight shell over the structural frame. In order to provide for a good finished appearance and to ensure weather tightness, the membrane shall be assembled and tensioned, in a manner to minimize wrinkles in hot and cold temperatures.

2.3.2. The gable wall membrane cladding shall be manufactured and connected to form one piece to the adjacent end wall and roof cladding.

2.3.3. Roof membrane horizontal stretch shall be maintained with horizontal purlins requiring no ongoing maintenance.

2.3.4. Base Tensioning System: The membrane cladding will be provided with a mechanical tensioning system that allows the membrane to be fully tensioned around the structure perimeter. The system will be designed such that the membrane can be tightly and neatly secured over the structural frame and such that the system has remaining range of adjustment.

2.3.5. Membrane Seal at Openings and Base: The Dealer supplying the structure will provide all materials and methods necessary to fully tension and seal the membrane material around all doors, ventilation and other opening as well as around the structure perimeter below the main tensioning system. This seal shall provide a neat and finished appearance and eliminate any loose membrane cladding that would otherwise be damaged by flapping or abrasion. When a membrane base skirt is required, this shall be supplied and attached at the base perimeter to allow a reasonable seal against air and water intrusion.

2.3.6. The membrane shall not be designed to function as a structural member such that, should any damage to or penetrations of the membrane occur, the integrity of the structural framework shall not be affected.

2.3.7. The Contractor shall provide drawings and calculations acceptable to the Engineer of the Record, meeting the provisions of the applicable State Building Code. The Contractor shall bear all costs for production of drawings and associated structural calculations.

Contractor shall make all revisions and corrections to those documents required for approval and shall resubmit as required to obtain approvals.

A. Chamlin & Associates will provide anchor bolt engineered calculations for the selected building manufacturer upon receipt of stamped building drawings and calculations that specifically show baseplate locations and associated reactions. The Contractor will then provide and install said anchor bolts.

2.4.0. ENGINEERED DESIGN CRITERIA:

2.4.1. The structure shall be designed using methodology as per ASCE 7 standard referenced from the applicable building code. Primary and secondary framing shall comply with current issues of ISC, AISI, NEMA and ASTM specification, as applicable.

Structural members shall be designed using Allowable Stress Design (ASD) or Load Resistance Factored Design (LRFD) for the design loads given below. Wind load factors and coefficients used in design of structural members must be in accordance with the applicable ASCE 7 guidelines.

2.4.2 Snow Loads: The structure shall be designed based upon a minimum ground snow load of 25 pounds per square foot (Psf). Risk Category I to be used for all calculations.

2.4.3. Wind Loads: The structure shall be capable of withstanding an ultimate wind speed (3-second gust) from any direction of 100 miles per hour. The design wind pressure shall be based on an exposure category of "C" and appropriate wind load factors and coefficients in accordance with the applicable referenced ASCE 7 guidelines. In no event shall the wind load used in the design of the main wind force resisting system be less than 10 pounds per square foot multiplied by the area of the building or structure projected on a vertical plane that is normal to the wind direction.

2.4.5. Design Loads: The design shall be based as a minimum on the following design loads. Each member shall be designed to withstand stresses resulting from combinations of design loads that produce maximum percentage of actual to allowable stress in that member as per referenced ASCE 7 standard from applicable building code.

D = Dead Load + Collateral Load
S = Symmetrical Snow or Live Load (Balanced or Unbalanced)
Ws = Wind with internal suction
Wp = Wind with internal pressure
E = Earthquake

2.5.0. OPERATION AND USE:

2.5.1. The main structure frame shall be designed to provide a minimum of 50-year operational use period with appropriate inspection and maintenance. Owner's manual to be provided.

2.5.2 The structure shall be capable of being assembled, operated and dismantled in all ambient temperatures between -20 °F and 120 °F.

2.5.3. The structure shall be capable of being erected on concrete and of accepting differential settlement of up to 1 ½% between truss positions.

2.6.0. MATERIALS:

2.6.1. All materials used in the structure shall be new, without defects and free of repairs. The quality of the materials used shall be such that the structure is in conformance with the performance requirements specified herein.

2.6.2. Cladding Membrane: The structure shall be clad with a **flame retardant** polyethylene fabric manufactured by an approved and reputable supplier with demonstrated long-term performance. The polyethylene membrane fabric shall be waterproof and free from defects. All roofs, walls, end walls and connecting sections shall be weather tight.

The material shall be selected from the manufacturer's standard colors for the sidewalls and roof panels. The material scrim and coating must be UV stabilized and must carry a minimum 10-year manufacturer's warranty. The minimum fabric specification is as follows:

Total Fabric Weight	12.0 oz/yd² (407 g/m²) +/- 5%

Coating Thickness	4 mil average, each side
Finished Thickness	23 mils (ASTM D5199)
Grab Tensile Strength	355 lbs (ASTM D5034)
Strip Tensile Strength	270 lbs/in (ASTM D5035)
Tongue Tear Strength	115 lbs (ASTM D2261)
Trapezoidal Tear	95 lbs (ASTM D-4533)
Mullen Burst	675 psi (ASTM D3786)
Cold Crack Resistance	-60 °C (ASTM D2136)
UV Resistance & Weathering	>90% retention after 2000 hrs. ASTM G151

2.6.3. Metal: The main structure shall consist of welded truss arches with parallel tube chords separated apart by webbing. Parallel tube cords are made from triple coated, in-line galvanized structural steel tubing, cold-formed and induction welded of modified grade carbon steel, providing a finished tubular product with exceptional mechanical and corrosion resistant properties.

2.6.4. Tolerances: all dimensional tubing tolerances are in accordance with ASTM A500, Section 10.

2.6.5. Tubing shall be manufactured using steel conforming to ASTM A568 and ASTM A1011. Finished steel tubing used in the structure must have the following minimum structural and mechanical properties based on standard ASTM A500:

Tension Ultimate: 55 KSI and Yield: 50 KSI

2.6.6. Corrosion Protection: All steel tube components, trusses, purlins, fastening tubes shall be coated, on the exterior, with a gloss finishing providing a corrosion resistance of 1800 hours as per ASTM B117-90;

2.6.7. Coatings: Zinc conforms to ASTM B6, Standard Specifications for Zinc, High Grade (1.1.3.) and Special High Grade (1.1.2.).

a. Exterior: In-line galvanized to a normal coating zinc weight of 0.6 oz/ft^2. Chromate conversion coating applied over the galvanized surface to provide additional corrosion protection. Clear organic polymer applied as the top surface coat to retard oxidation, enhance surface appearance and provide a primer for subsequent painting or powder coating processes as desired.

b. Interior: Full zinc based organic coating applied to 100% of the interior surface as a corrosion barrier.

2.7.0. Hardware:

2.7.1. Bolts: Bolts subject to extreme stress and wear shall be structural bolts of Grade 5 and plated/ galvanized that has been upgraded with a corrosion resistant topcoat finish. All bolts shall be installed and securely torqued so to prevent change in tightness. Those subject to removal or adjustment shall not be swaged, peened, staked or otherwise installed.

2.7.2. Membrane Tensioning Hardware: The fabric membrane shall be tensioned with load rated hardware. Hardware shall allow full and free rotation at the foundation connection to avoid fatigue of threaded assemblies.

2.7.3. Membrane Tensioning Webbing: The membrane shall be tensioned with load-tested tie-downs.

2.7.4. Cable Assemblies: Main and wind bracing cable assemblies shall be manufactured to the required length and press swaged with metal sleeves. The cables are manufactured using preformed galvanized cables, sized with appropriate safety factors.

3/16" dia.	=	4,200 lbs.
¼" dia.	=	7,000 lbs.
5/16" dia.	=	9,800 lbs.
3/8" dia.	=	14,400 lbs.
½" dia.	=	22,800 lbs.

2.7.5. Other Fasteners: Non-structural fasteners such as wood screws, Tek screws, etc., shall be standard commercial quality.

2.7.6. Exterior Trim: The aluminum alloy used in the extrusion shall meet or exceed 6063-T5.

2.7.7. Piece marking and Identification: all individual parts or bundles and packages of identical parts are to be clearly marked for identification. Bolts, nuts, washers and fasteners shall be packaged according to type, size and length. Shipping documentation shall include a list showing the description, quantity and piece mark of the various parts, components and elements.

2.7.8. Material Delivery: The building system materials shall be delivered to the project site during normal working hours on weekdays. (6:30am to 3:30pm). 24 hours advanced notice for delivery is required. Installation contractor will provide adequate workmen and equipment to promptly unload, inspect and accept material delivery.

2.7.9. Handling: At no time shall materials be dropped, thrown or dragged over the transport equipment or the ground. Damage to any piece under its own or superimposed weight shall be cause for repair or replacement by the vendor or contractor.

2.7.10. Short, damaged or excess materials: Installation contractor shall inspect, count and verify quantities based on the shipping documents.

3.0.0. REFERENCES AND STANDARDS:

3.1.0. The following publications are for the standards listed below but referred to within the document by basic letter designation only. They form a part of this specification to the extent referenced thereto:

3.1.1. American Institute of Steel Construction (AISC):

S326-78 Design, Fabrication and Erection of Structural Steel Buildings
S329-85 Structural Joints Using ASTMA325 or A490 Bolts

3.1.2. American Iron and Steel Institute (AISI):
SG 503-76 The Design of Fabrication of Cold-Formed Steel Structures

3.1.3. American Society for Testing and Materials (ASTM):
A 36-89 Structural Steel
A 307-89 Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
A 325-89 High-Strength Bolts for Structural Steel Joints
A 500 A-90 Standard Specification for Cold Formed Welded And Seamless Carbon Steel Structural Tubing in Rounds and Shapes
A 563 Rev A-89 Carbon and Alloy Steel Nuts
A 687-89 High-Strength Non-Headed Steel Bolts and Studs

3.1.4. American Society of Civil Engineers (ASCE) Minimum Design Loads for Building and Other Structures. Latest edition as required by State Code.
ASCE 7-98 American Society of Civil Engineers
ASCE 7-02 American Society of Civil Engineers
ASCE 7-05 American Society of Civil Engineers
ASCE 7-10 American Society of Civil Engineers

3.1.5. Canadian Standards Association
CAN/CSA-S16.1 Limit States Design of Steel Structures

FRU88X-6 400

MEMBRANE STRUCTURE FABRIC WITH ARMORKOTE™

INTERTAPE POLYMER GROUP®

TECHNICAL DATA SHEET

DESCRIPTION

Nova-Shield® brand FRU88X-6 400 is a flame-retardant, heavyweight fabric for applications requiring UV stability, such as membrane structures and alternate daily landfill covers. The scrim is produced in a special weaving pattern to enhance thickness, flatness, abrasion resistance, and tear properties. The flame-retardant proprietary coating is used to enhance abrasion resistance, flex resistance, seam strength, UV resistance and longevity.

FABRIC SPECIFICATIONS

Weave:	Woven clear HDPE scrim using natural FR/UV tapes
Coating:	LDPE, 4 mil average each side (95 g/m²/side)
Color:	White, blue, green, grey, sandstone and other colors available upon request
Weight:	12.4 oz/yd² (407g/m²) +/- 5 %

Thickness: 23 mil (0.59 mm) ASTM D1777

ROLL SPECIFICATIONS

Cores:	4 inch I.D. or 5 inch I.D. available
Width:	Up to 144 inches (-0, +0.5) as ordered
Length:	Minimum 250 yds/roll; up to 1000 yds/roll

These values are typical data and are not intended as limiting specifications.

PERFORMANCE PROPERTIES

The following data are typical values based on ASTM standard tests. This data should not be considered specification.

Grab Tensile ASTM D5034	Warp 360 lb 1598 N / Weft 350 lb 1555 N
Strip Tensile (N/5cm) ASTM D5035	Warp 275 lb/in (2444)/Weft 250 lb/in (2222)
Tongue Tear ASTM D2261	Warp 120 lb 533 N / Weft 110 lb 489 N
Trapezoidal Tear ASTM D4533	Warp 100 lb 444 N / Weft 90 lb 400 N
Mullen Burst ASTM D3786	675 psi / 4657 kPa
Accelerated UV Weathering[1] ASTM G154	>90 % strength retention after 2000 hrs exposure @ 0.77 W/m²/nm, or 1200 hrs exposure @ 1.35 W/m²/nm
Accelerated Natural Weathering ASTM G90	>80 % strength retention after 5 Florida Standard Years[2]
Low Temperature Bend ASTM D2136	-60°C

[1] Q.U.V [A-340 Lamps]; 8 hrs UV @ 60°C; 4hrs condensation @ 50°C [2] 1333 MJ

FR PERFORMANCE

This product meets the requirements of NFPA 701 – 2010 (Method 1 and Method 2), 2004 (Method 1 and Method 2), 1989 (large and small scale) and 1996 (tests 1 and 2), CAN/ULC S109-M87 (small and large scale), CAN/ULC S102-03, CAN/ULC S102.2-03, ASTM E84-00a (Class 1), UBC31-1, California Fire Marshal (F-51405).

ipg intertape polymer group

100 Paramount Drive, Suite 300 | Sarasota, FL 34232 | USA
Customer Service: 800.565.2000
www.itape.com | info@itape.com

EFFECTIVE: 3/14

NovaShield BRAND

Chamlin & Associates, Inc.
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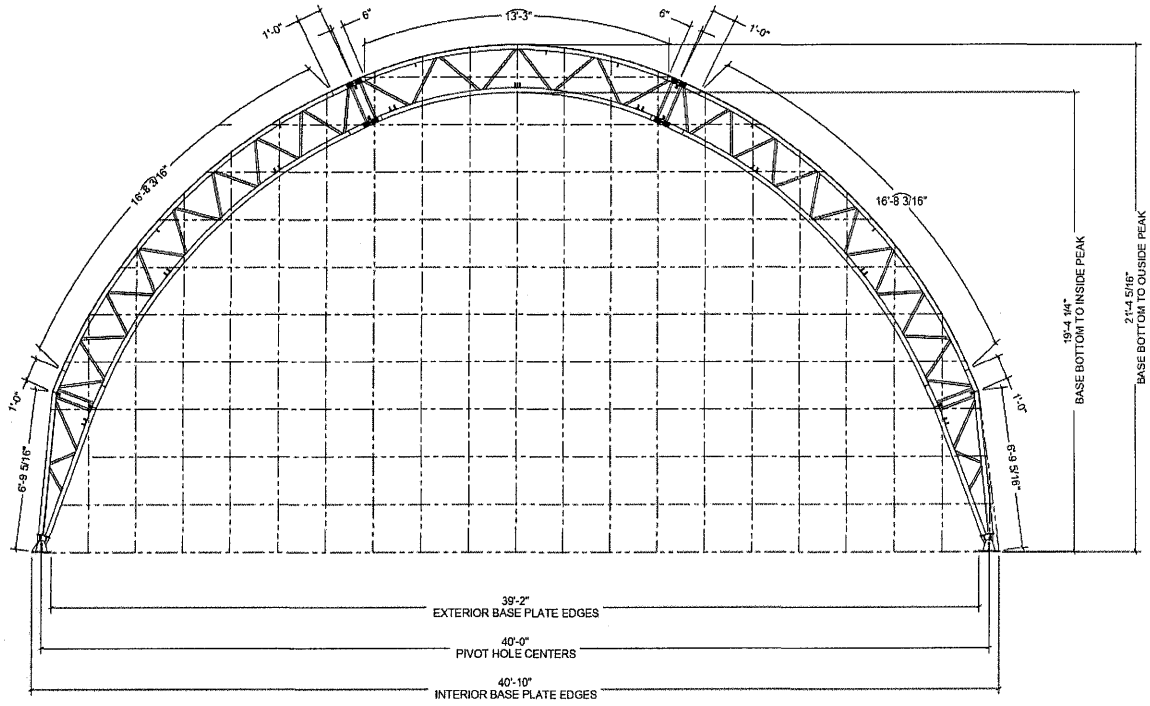
(Phone) 815-223-3344 (Fax) 815-223-3348

FRONT PROFILE (DIMENSIONS)
• GRID REPRESENTS 24" SQUARES

OVER-THE-TOP: 65'-1 15/16" (781 15/16")



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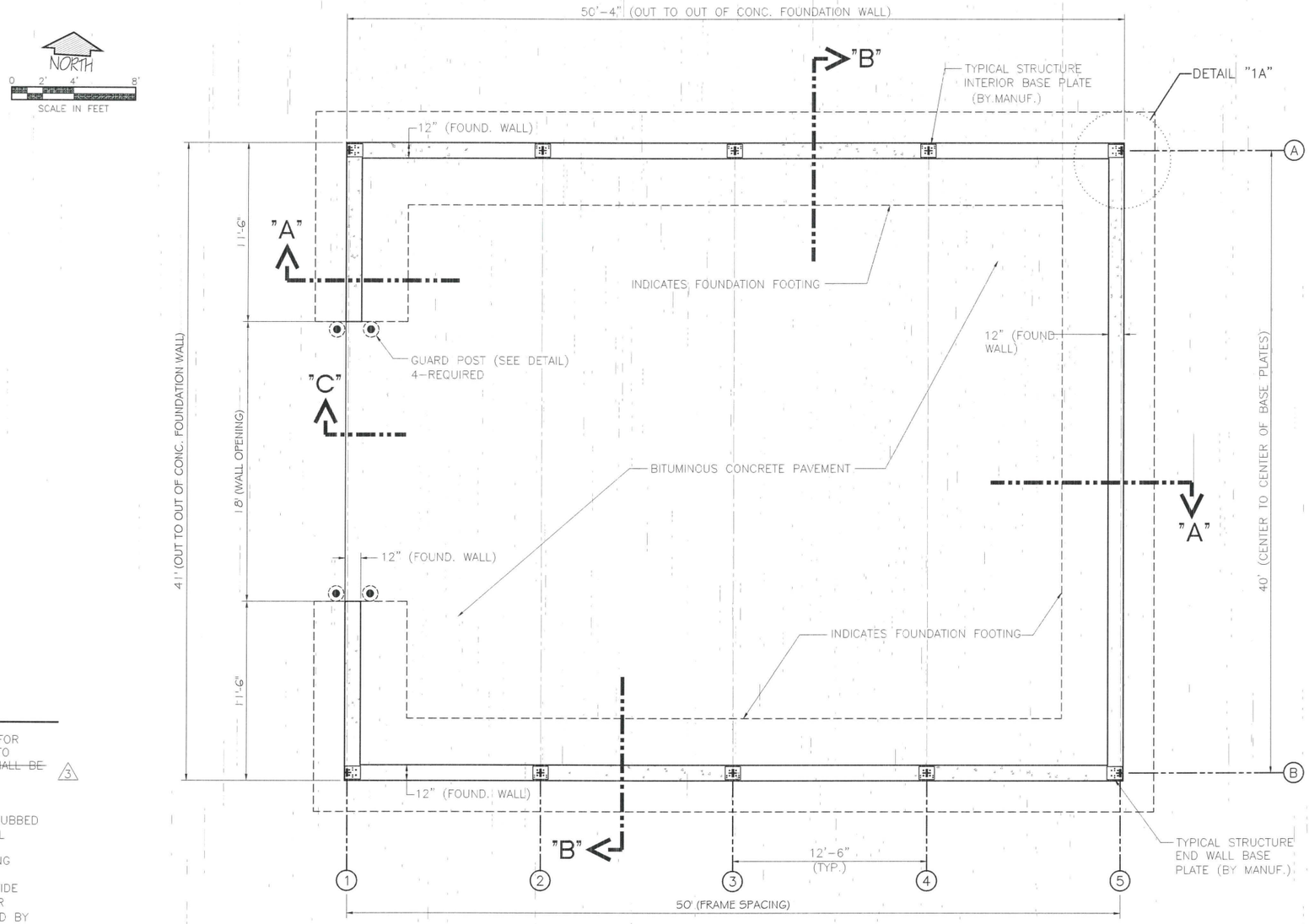

FOUNDATION LAYOUT PLAN

NOTES:

1. THE CONCRETE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING BUILDING FRAMING BASE PLATE LOCATIONS TO ASSURE ANCHOR BOLT INSTALLATION. ~~ALL ANCHORS SHALL BE CAST IN PLACE (DRILLING AND GROUTING IS NOT ACCEPTABLE).~~ △3
2. ALL EXTERIOR EXPOSED CONCRETE WALLS SHALL BE RUBBED W/ CARB. STONE AND SAND MIXTURE FINISH THAT WILL PROVIDE A CONSISTENT SAND FINISH TEXTURE TO THE SATISFACTION OF THE ENGINEER. REMOVE ALL REMAINING MATERIALS FROM FORM TIES AND PROPERLY FILL ALL REMAINING VOIDS/HONEYCOMBE AREAS IN WALLS. PROVIDE INTERIOR WALL SEALER AS MANUFACTURED BY "RHOMAR INDUSTRIES" "MET-CON 3000 (APPLY AS RECOMMENDED BY MANUF.).
3. PROVIDE ADJUSTABLE LOUVERS IN THE EAST END WALL (VERIFY EXACT LOCATION IN THE FIELD WITH ENGINEER). SEE SPECS FOR ADDITIONAL INFORMATION.
4. ALL REBAR SHALL BE EPOXY COATED.
5. REFER TO PROJECT SPECIFICATIONS FOR DESIGN DATA AND MATERIAL REQUIREMENTS.
6. COORDINATE WITH PREFABRICATED MEMBRANE STRUCTURE DRAWINGS. ANY CONFLICTS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.
7. CONTRACTOR SHALL VERIFY 2000 PSF ALLOWABLE BEARING CAPACITY DURING EXCAVATION.

DRAWN BY: FDAP	REVISIONS			
CHECKED BY: JLS	LEVEL	BY	DATE	DESCRIPTION
DATE: 09/2023	△3		09/27/2023	ADDENDUM 3

Chamlin & Associates

PERU MORRIS
OTTAWA MENDOTA
ILLINOIS

IVCC SALT STORAGE FACILITY
ILLINOIS VALLEY COMMUNITY COLLEGE
OGLESBY, ILLINOIS

BUILDING LAYOUT PLAN

BIDDING PLANS

CURRENT AS OF: 09/18/2023
SCALE: AS NOTED
SHEET S1
FILE NO.: 2472.00 Y-
OF 6