

INVITATION TO BID
Material Storage Tension Structure

The City of St. Charles is accepting bids for the purchase and installation of a Steel Trussed Fabric Tension Structure. The structure will be placed on a concrete block foundation (set by the City to the successful bidder's specifications) at the City's Public Works Annex Facility located at 1425 South Avenue; St. Charles, IL 60174.

Bids will be accepted until 2:30 PM on Monday August 8, 2016.

Questions regarding this project may be sent in writing to Public Services Manager, AJ Reineking at areineking@stcharlesil.gov.

TIMELINE

The City anticipates the following timeline:

Bids Due	August 8, 2016, at 2:30 PM
Government Services Committee Review	August 22, 2016
City Council Approval	September 6, 2016
Notice to Proceed	September 8, 2016

All work shall be completed within the 2016 calendar year.

2-01. RECTANGULAR FABRIC TENSION MEMBRANE COVER AND STEEL TRUSS

References: Except where more stringent requirements are specified, comply with the applicable requirements of the following organizations and standards, for products, materials, and construction methods:

1. Illinois State Building Codes.
2. IBC 2012 Building Code.
3. American Institute of Steel Construction (AISC).
4. American Iron and Steel Institute (AISI).
5. American Society of Civil Engineers (ASCE 7-10 Minimum Design Loads for Buildings and Other Structures).
6. American Welding Society (AWS)
7. Welders must be qualified and tested and certified

2-02. DESCRIPTION

Provide design and construction for a permanent rectangular shape tension membrane covered truss type building. The structure shall meet or exceed the performance criteria of this specification. Site location is 1425 South Avenue, St. Charles, IL 60174.

2-03. PROJECT REQUIREMENTS

The building shall occupy an area of 62 feet wide by 64 feet long with a complete fabric enclosed back and open front. The building roof shall be shaped such as that of the Accu-Steel Integrity style building shown in the drawing. Other styles of building may be accepted upon staff review and approval.

2-04. INTERIOR SPACE

The storage floor area shall be entirely free of columns and roof supports of any type allowing unimpeded unloading of tractor trailer dump trucks and loading of truck spreader vehicles with front-end loading equipment.

Minimum Interior Clearance: 25 feet minimum vertical clearance at the peak of the building not including the above grade concrete walls which will add an additional 6 feet. Sidewall clearance must be as close to vertical as possible from the interior face to the top of the prefabricated concrete block base. Building trusses shall provide ample interior clearance to support loading and unloading material safely.

2-05. VENTILATION

Suitable openings located at the back of the structure near the highest portion of the roof or walls providing adequate ventilation for the square footage of the proposed structure. Each ventilation opening shall be weatherproof.

2-06. BUILDING PRODUCT REQUIREMENTS

The building is to be the Accu-Steel Integrity building or approved equal provided the following minimum required standards are met. Equal manufacturer must be approved by the City prior to submitting a bid, with exceptions reviewed on a case-by-case basis. Bidders must provide the brand of the building being bid at the time the bid is submitted. No substitutions will be allowed after the project is awarded.

1. Membrane used in the building design shall be designed to withstand the corrosive UV light according to the manufacturer warranty.
2. All trusses including the webbing between the trusses must be Hot Dip Galvanized "POST" fabrication. The Hot Dipped Galvanizing must be fully attained inside and outside of the truss and web tubing. Failure to provide this would cause the bid to not be accepted.
3. All bearing plates and other structural members must be hot dipped galvanized "POST" fabrication, no welding shall take place after the galvanized coating is applied. All anchor bolts, bolts and washers etc., shall be stainless steel or Hot Dip Galvanized.

2-07. STRUCTURAL REQUIREMENTS

1. Structure shall be engineered so it is capable of withstanding the loads specified in ASCE 7-10, and the IBC 2012 code without failure or damage. Design must incorporate both balanced and unbalanced loads. Additional rain on snow surcharge loading must also be added to gable shaped (non arch) buildings per ASCE 7-10. Bidder must list the manufacturers name at the time of the bid opening. Upon award of contract, quoted manufacturer must be utilized without substitution.
2. The building system is to be designed to meet a minimum ground snow load of 25 lb/sf. Exposure Category = C.
3. Structure must be capable of maintaining structural integrity in the event of a tear propagating in the fabric, without endangering occupants.
4. Design calculations shall include verification that the web/chord connection design conforms to the requirements of Chapter K of the AISC Steel Design Manual (13th Edition) to address "chord plasticization failure mode".
5. Truss Framework tubing shall be Hot Dip Galvanized as per Building Product requirements stated above. The Hot Dip Galvanizing must meet ASTM 123 as per the building code. Acceptable products:
 - a) Hot Dip Galvanized Product, galvanizing inside and out after fabrication is completed

6. Unless otherwise approved by a licensed architect in the State of Illinois, all purlins used in the building must be a minimum of 2.375 inches and be attached to the truss using a double bolted configuration directly
7. Building must utilize cross cables in each end bay to prevent racking. Main and wind bracing cable assemblies shall be manufactured to the required length and press swaged with metal sleeves. Cable clamps will be allowed on one end. Cables must be a minimum of 3/8"galvanized that is 7 by 19 commercial grade and must be secured to structural welded truss member using a solid bolted or clevis connection and they must be adjustable for proper tensioning with a stainless steel or galvanized, lockable turnbuckle. Cable assemblies attached with open hooks or loops will not be allowed.
8. All tie-down pipe that is used to fasten the cover to the building must be secured by a 12,000 pound lashing winch at every truss. Ratchet strap attachment to the tie down pipe will not be accepted as a main cover tensioning system.
9. Unless approved by a licensed architect in the state of Illinois, each individual truss shall weigh a minimum of 560 pounds.

2-08. FABRIC COVER ATTACHMENT

HDPE Fabric roof material must consist of a single cover unless the length required exceeds 100 feet long. The cover must be securely attached at ends and sides. Field welding is acceptable.

2-09. QUALITY ASSURANCE

Manufacturer's Qualification: The fabricator of the building or building components shall be regularly engaged in the fabrication of this type of building. They must meet the requirements of this Section and shall show evidence of having an adequate manufacturing facility, equipment, and a quality control system. The fabricator must provide evidence that they have produced a minimum of 50 such structures in the previous 12 months before acceptance of this contract. A reference list of 5 salt/anti-skid storage buildings shall be provided with the bid at the time of opening.

Erector's Qualification: The building erector shall be regularly engaged in the erection of fabric covered buildings, meeting the requirements of this Section. The erectors must provide evidence that they have constructed a minimum of 5 such structures with the bid at the time of opening or the bid will not be accepted. The erectors shall be subject to the approval of the Director.

2-10. WARRANTY

- a. Steel Truss Warranty: Truss Framework tubing must be Hot dip Galvanized inside and out of tubing - completely after fabrication. The manufacturer is to

provide a minimum 10+10 year warranty (10 year free of cost + 10 year pro-rata) on the trusses according to the standard manufacturer's warranty.

- b. Fabric Warranty: All membranes used are to be North American made, water and mildew resistant, insect proof, and UV stabilized. They are to withstand extreme climatic variations and contain ultra-violet inhibitors to reduce degradation by the sun's rays. Manufacturer is to provide a minimum 20-year pro-rata warranty on non-fire rated fabric and a 10- year pro-rata warranty on fire rated fabric according to the standard manufacturer's warranty.

The manufacturer shall be given the opportunity to inspect the assembly of the structure prior to substantial completion. It shall be the manufacturer's responsibility to callout any deficiencies that may affect the warranty responsibilities at that time. The City shall in no way be responsible for conducting inspections as they may relate to future warranty claims.

2-11. MATERIALS FABRIC SPECIFICATIONS:

The HDPE fabric must be produced in North America with minimum fabric specification as follows:

(NON-Fire Rated)

Coated Weight		13.0 oz/yd ²	ASTM D3776
Nominal Thickness		24.1	ASTM D5199
Grab Strength		430 lbf	ASTM D751
Tensile Strength		105 lbf/in	ASTM D882
Tongue Tear		110 lbf	ASTM D2261
Mullen Burst		590 psi	ASTM D751
Pinhole Resistance		130 lbf	FAB NR-F-5
Life Cycle Factor	5000 hrs	0.082	ASMT G154
Hydrostatic Resistance		475 psi	ASTM D751MAP1
Flame Spread	Class A		ASTM E84

(Fire Rated)

Coated Weight		oz/yd ²	12.6	ASTM D3776
Warp Construction	tapes/in	Warp	16	ASTM D3775
		Weft	16	
Tensile Grab	lbf	Warp	405	ASTM D751
		Weft	450	
Tear Strength (tongue)	lbf	Warp	79	ASTM D2261
		Weft	106	
Tear Strength (trapezoid)	lbf	Warp	83	

Low Temperature Bend		131 deg F	ASTM D2136
Thickness	mil	24	caliper
Flammability	PASS		UBC Standard 31-1
Flammability	PASS		NFPA 701 L
Flammability	PASS		CAN/ULC-S109-M87 L
Flammability California Fire Marshall	PASS		CACTitle 19 par.1237.1

The stressed membrane structure must be designed to shed snow before the design load is exceeded, or alternatively provide structural capacity to meet or exceed required roof snow load requirements of specified site. The architectural membrane shall be continuous from the base of the structure to the peak and manufactured in such a way that no eave will exist.

2-12. METAL SPECIFICATIONS

The main structure shall consist of a welded truss arches with parallel tubes separated apart by tube webs.

Advantage Series 18 – 2.375 inch Tube, minimum 14 Gauge tube, minimum truss depth of 18 inches out to out, with minimum 1.125 inch 14 Gauge webbing, all Hot dip Galvanized Post fabrication.

All steel tubing used in the structure must have the following minimum structural and mechanical properties (ASTM A-500): Tension Ultimate: 55 KSI and Yield: 50 KSI
 All steel flat bar, cross rods and other steel components shall be fabricated from hot dipped galvanized material to ASTM A123 and must have the following minimum structural and mechanical properties (ASTM A-36): Yield: 36 KSI

2-13. CORROSION PROTECTION

All steel truss tube components, shall be Hot Dip Galvanized after complete fabrication. No welding is permitted after the galvanizing process. "Triple coat" or other "in-line" galvanizing will NOT be accepted on welded members as it does not provide galvanizing on the inside of the tubes and is applied pre fabrication leaving the pipe unprotected from corrosion after fabrication.

2-14 PAINTING

Painting of steel components shall only be utilized if necessary for field repairs and shall not be employed as a factory finish. Should field repair be necessary, a zinc rich field coat shall be used.

2-15. FIELD WELDING

In-Field fabric welding is accepted as a standard method of joining panels, rounding corners, repairing minor cuts or abrasions.

2-16. PERMITS

The successful bidder shall obtain all required permits, and shall furnish shop drawings needed to obtain required permits. The City will waive any fees associated with local permits.

2-17. PRODUCT MANUFACTURERS

The following manufacturer is preapproved and meets or exceeds this Specification.

Accu-Steel, Inc.

P.O. Box 201

Templeton, IA 51463

Phone-1-877-338-6936

2-18. REFERENCES AND STANDARDS

The following publications are for the standards listed below but referred to thereafter by basic letter designation only. They form a part of this specification to the extent referenced thereto: American Institute of Steel Construction (AISC):

A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2011.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2008.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2012.

E. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2010.

F. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2013.

G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010a.

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.

I. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.

J. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; National Fire Protection Association; 2010.

K. SSPC-SP 6 - Commercial Blast Cleaning; Society for Protective Coatings; 2007.

L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

M. SSPC-Paint 22 - Epoxy-Polyamide Paints (Primer, Intermediate, and Topcoat); Society for Protective Coatings; 1982 (Ed.2004).

2-19. COLORS

As selected by the City's Representative from standard Manufacturer's Color charts.

2-20. ADJUSTING

Repair cut, welded, and/or abraded galvanized surfaces with a minimum 2 mil thick coating of cold galvanizing compound (containing 93 percent zinc) applied in accordance with manufacturer's instructions.

CITY OF ST. CHARLES
2 E. MAIN STREET
ST. CHARLES, ILLINOIS 60174

Bid Opening: Monday, August 8, 2016, at 2:30 p.m.

Bidder Information

Company Name: _____ **Telephone:** _____
Address: _____ **Fax:** _____
City, State, Zip: _____ **Email:** _____
Contact Person: _____

BID PRICE: Material Storage Tension Structure \$ _____

Anticipated number of days to complete all work form notice to proceed: _____ **Days**

List any and all deviations from minimum specifications:

I certify that I am acting as an agent for the firm designated below and that the firm will sell to the City of St. Charles the product(s) described herein for the amount specified above. Further, I certify that all exceptions or deviations from the attached detailed specifications are clearly stated in writing and the price quoted shall include all terms specified unless otherwise noted.

Signature of Authorized Representative

PLEASE TYPE OR NEATLY PRINT THE FOLLOWING INFORMATION

Name of Authorized Representative Title

Company Name

Street Address

City State Zip Code

(Area Code) Phone Number