

**Tubular Steel Distribution Line Structures
Bid No. 2013-3**



**Lehi City Corporation
Power Department**

RESPONSES ARE DUE PRIOR TO:

September 19, 2013

5:00 P.M. MDT

Preferred method is to submit electronically to:

www.bidsync.com

Responses may be mailed or hand-delivered to:

Lehi City Purchasing Department

Attn: Alyson Alger

Bid No. 2013-3

153 North 100 East

Lehi, UT 84043

**Lehi City Corporation
Power Department**

Tubular Steel Distribution Line Structures

REFERENCE NUMBER: Bid No. 2013-3
BID TITLE: "2100 North Overhead Distribution Line"
BID LOCATION: Lehi City, Utah

SUBMISSION DEADLINE: September 19, 2013
SUBMISSION TIME: 5 p.m. MDT
SUBMISSION PLACE: Lehi City Purchasing Office
153 North 100 East
Lehi, Utah 84043

BID DESCRIPTION: This is a contract for the purchase and delivery of tubular steel poles for the Lehi City Power 2100 North 12.47 kV Double Circuit Overhead Distribution Line Project.

BID CONTACT: Rob Littlefield
Lehi City Power Department
Power Engineer and Planner
801-616-2068

BIDDERS: Carefully read all instructions, requirements and specifications. Fill out all forms properly and completely. Submit your bid with appropriate supplements and/or samples. Please submit bids through Bidsync.com or mail to the Lehi City Purchasing Office address above by the submission deadline. Bids received after September 19, 2013 at 5 p.m. MDT will not be considered.

Additional instructions for submitting bid:

- A. It is the responsibility of the Supplier to "Log In" through BidSync. For assistance contact BidSync at 1-800-990-9339.
- B. Questions regarding this bid should be submitted through BidSync. The Supplier may also contact Rob Littlefield, Power Engineer and Planner (see "Bid Contact" above).
- C. The recommended method to submit your bid is through BidSync. By using alternate methods of delivery, supplier bears all risks if documents are not received at the Purchasing Office prior to the submission deadline. Supplier should call to verify the purchasing agent has received the hard-copy bid prior to the bid closing.

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SECTION 1: SCOPE OF WORK AND BID PRICING

1.1 SCOPE OF WORK

Lehi City Power Department is seeking bids for the purchase and delivery of tubular steel distribution line structures for the Lehi City Power 2100 North 12.47 kV Double Circuit Overhead Distribution Line project. Products and materials include 4 Custom Steel Poles and 34 Wood Pole Equivalent Steel Poles as described in the Unit Pricing Form and the Purchase Specifications included herein.

Contractors should submit bids by September 19, 2013, at 5 p.m. MDT. Bid documents and specifications for Bid No. 2013-3, "2100 North Overhead Distribution Line," can be found online at lehi-ut.gov/business/rfp or on BidSync.com.

1.2 BID PRICING

The Bidder shall provide all products and materials as described in the Scope of Work above and the supplementary documents provided herein. The total cost for the tubular steel distribution line structures, as noted on the Unit Pricing Form, is: \$_____.

The City reserves the right to reject any and all bids and to waive any formality in the bids received, to accept or reject any or all of the items in the bid, and award the contract in whole or in part, if it is deemed in the City's best interest. The City reserves the right to negotiate any and all elements of the bids, if any such action is deemed in the best interest of the City.

Bids shall be binding upon the Contractor for sixty (60) calendar days from submission deadline. A Bidder may withdraw or modify their bid any time prior to the submission deadline by written request, signed by the same authorized officer or agent who signed the original bid.

SIGNATURE OF BIDDER

By _____

Title _____

Address _____

Date _____

SECTION 2: GENERAL INFORMATION

2.1 BID RESPONSE

The Bidder must submit a complete and concise response to the Request for Bid (RFB), demonstrating the ability to meet the requirements of this RFB. Each bid shall be accompanied by a transmittal letter signed by an authorized representative of the Bidder. The contents of the bid submitted by the successful Bidder may become part of any contract awarded as a result of this solicitation.

2.2 BID SHALL BE BINDING SUBJECT TO ACCEPTANCE

Bids shall be binding upon the Contractor for sixty (60) calendar days from submission deadline. A Bidder may withdraw or modify their bid any time prior to the submission deadline by written request, signed by the same authorized officer or agent who signed the original bid.

2.3 ADDENDUM TO THE RFB

In the event that it becomes necessary to revise this RFB in whole or in part an addendum will be provided to all Consultants on record as having received this RFB. A statement issued in an addendum shall have the effect of modifying a portion of the bid documents when the statement in the addendum specifies a section, paragraph or text and states that it is to be so modified.

2.4 AWARD OF CONTRACT

Upon completion of the evaluation process, Owner may negotiate with and award the contract to the Bidder whose bid is determined to be most advantageous to the Owner. AWARD OF CONTRACT MAY BE MADE WITHOUT DISCUSSION AFTER BIDS ARE RECEIVED. Bids will be awarded to the lowest responsible Bidder. The contract will incorporate the provisions of this RFB (including any addenda).

2.5 RIGHT TO REJECT

The Owner reserves the right to reject any and all bids and to waive any formality in bids received, to accept or reject any or all of the items in the bid, and award the contract in whole or in part, if it is deemed in the Owner's best interest. The Owner reserves the right to negotiate any and all elements of the bid, if such action is deemed in the best interest of the Owner.

SECTION 3: UNIT PRICING FORM

Pole Description and Pricing

Indicate the unit price and total price for each type of pole listed below. Price should include shipment and delivery charges.

Description	Qty.	Structure Weight (lbs.)	Anchor Bolt Weight (lbs.)	Unit Price	Total Price
Custom Steel Poles					
Self-Supporting Dead-end Structure <i>Height: 43 ft.; Class: Custom</i>	4	_____	_____	_____	_____
Subtotal Custom Poles	4				_____
Wood Pole Equivalent Steel Poles (LD's)					
Direct Embedded Tangent Pole <i>Height: 55 ft.; Class: LD5</i>	17	_____	N/A	_____	_____
Direct Embedded Tangent Pole <i>Height: 55 ft.; Class: LD6</i>	6	_____	N/A	_____	_____
Direct Embedded Tangent Pole <i>Height: 55 ft.; Class: LD7</i>	7	_____	N/A	_____	_____
Direct Embedded Tangent Pole <i>Height: 55 ft.; Class: LD8</i>	2	_____	N/A	_____	_____
Direct Embedded Tangent Pole <i>Height: 90 ft.; Class: LD9</i>	2	_____	N/A	_____	_____
Subtotal LD Poles	34				_____
TOTAL ALL	38				_____

Shipment and Delivery

Estimated time for delivery: _____

SECTION 4: PURCHASE SPECIFICATION

TUBULAR STEEL DISTRIBUTION LINE STRUCTURES

PART 1 - SCOPE

- 1.1. This specification outlines minimum requirements for the design, design loadings, material, fabrication, protective coating and inspection of tubular steel structures for the Lehi City Power 2100 North 12.47 kV Double Circuit Overhead Distribution Line project.

PART 2 - DESIGN

- 2.1. Stress calculations shall be based upon an elastic analysis. The effects of deflection shall be included in the analysis.
- 2.2. Allowable stresses in structures and their components shall be in accordance with ANSI/NEMA Standard No. TT1-Tapered Tubular Steel Structures and ASCE's Design of Steel Transmission Pole Structures.
- 2.3. Structure geometry shall be in accordance with information included on the "Structure Drawings."
- 2.4. Anchor bolts are, when required, considered to be part of the structure, and shall be designed and supplied as required. Allowable bond stresses are to be as described in ANSI/NEMA publication TT1-Tapered Tubular Steel Structures. The compressive strength of the concrete is assumed to be 3000 psi unless otherwise specified. Anchor bolts, number, lengths, and coordinates shall be determined by the Supplier.
- 2.5. The allowable shear for bolts will be $0.65 \times$ proof load, where the proof load is calculated from proof stress values given in ASTM. For allowable values for combined shear and tension use ACSE 2.2.7.3.

PART 3 - LOADINGS

- 3.1. Structure loadings have been specified to fully encompass the requirements of the National Electrical Safety Code as well as any unique climactic or other loading conditions which may be applicable. A one degree foundation rotation shall be incorporated into the design of each structure. As a minimum, the following loading conditions shall be considered:
 - A. NESC Heavy.
 - B. NESC High Wind.

3.2. Additional loading conditions that may require consideration are:

A. 60° F Deflection

3.3. Simultaneous Application of Loads: The vertical, transverse and longitudinal loads previously specified relate to loadings on the wires and structures. The vertical, transverse and longitudinal load components on the supporting structure should be considered as acting simultaneously.

3.4. Deflection Limits: When pole top deflections exceed five percent of the pole height above ground, **based on the design ground line for direct embedded poles**, when NESC heavy loads (with overload factors) are applied, the pole shall be redesigned to reduce the pole top deflection or be pre-cambered. If the pole is to be pre-cambered, the pole shall be plumb (no deflection) for the camber load case included on the drawing for the pole. The deflection of poles that are to be pre-cambered shall not exceed seven percent of the pole height (NESC heavy loadings with overload factors) prior to pre-cambering.

3.5. The actual loading requirements are specified on the "Structure Drawings" which are included as part of this specification.

PART 4 - MATERIALS

4.1. General: All material shall comply with the applicable requirements of ASTM unless otherwise specified.

4.2. Steel Properties: The impact properties in the longitudinal direction of material which is essential to the strength of the structure shall be determined in accordance with the Charpy "V" notch test described in ASTM A370 and shall meet the requirements of Table 1, below. The absorbed energy requirements for subsized test specimens shall be in accordance with ASTM A370 and A673, Table 1.

TABLE 1

Specified Yield KSI	Plate Thickness or Bar Diameter Inches	Absorbed Energy Ft-lb	Temperature Degrees F
<42	□½	None	Required
	>½	15	+40
□42	□½	15	0
	>½	15	-20

- 4.3. Heat lot testing shall be used to determine whether the product meets the impact property requirements. Steel used in galvanized structures shall have silicon content less than 0.06% for plates less than 1-1/4" thick; for thicknesses greater than 1-1/4" silicon shall be 0.15 to 0.3%.
- 4.4. Poles (including embedded sections), Ground Sleeves, Bearing Plates, Arms, Arm Attachment Plates and Conductor Brackets: Material shall conform with the applicable ASTM specification(s) as specified by the Owner. If not specified, any combination of the following structural steels may be used:
- A. ASTM A36
 - B. ASTM A572
 - C. ASTM A588.
 - D. ASTM A871.
 - E. The steel shall conform to the latest revisions of the ASTM specifications and have ASTM minimum yield strength equal to or greater than the value used in the design calculations.
- 4.5. Base Plate: Material shall conform to ASTM A588, A871, ASTM A633 GrE, or ASTM A36 (latest revisions). The ASTM yield strength of the material used shall be equal to or greater than values used in the design calculations.
- 4.6. Ground Sleeves: Direct embedded poles shall include a ground sleeve. The ground sleeve shall be made of the same material as the pole, be 3/16 inch thick, and extend from three feet below the ground line to one foot above the ground line, unless otherwise indicated on the drawings.
- 4.7. Bearing Plate: Direct embedded poles shall include a bearing plate. The bearing plate shall be made of the same material as the pole, be 3/8 inch thick, and have a diameter two inches greater than the pole diameter.
- 4.8. Anchor Bolts and Nuts: Material shall conform to ASTM A615 (72) grade 75 "Standard Specifications for Deformed Billet Steel Bars for Concrete Reinforcement" with an ASTM minimum yield strength equal to or greater than the value used in the design calculations. The top 24 inches of these bolts shall be galvanized to ASTM A153. Anchor bolt nuts shall meet the impact requirements of Section 4.2. Anchor bolt nuts shall have a proof load equal to or greater than the yield strength of the anchor bolt. Anchor bolts shall be shipped pre-caged.
- 4.9. Other Bolts and Nuts: Galvanizing shall not be used for bolts having an ultimate strength over 130 KSI. Nuts may be galvanized. Impact tests are not required for heat treated nuts and bolts. Bolts shall be ASTM A307, ASTM A325, ASTM A490, ASTM A449, or ASTM A354.

- 4.10. Weld Material: The material used for making welds shall be compatible with the parent material, as defined by American Welding Society D1.1 (latest revision) and shall meet the impact requirements of Section 4.2 for the lowest test temperature of the plates being joined.

PART 5 - FABRICATION

- 5.1. All fabrication shall be completed by skilled workers in accordance with the AISC Code of Standard Practice, NEMA Standard Publication No. TT1 (latest revision) for Tapered Tubular Steel Structures and in accordance with the best current practices.
- 5.2. All fabrication errors, including any detail drawings errors, shall be corrected at the expense of the Manufacturer.
- 5.3. It will be the manufacturer's responsibility for all transportation expenses, delay expenses to the contractor, as well as the expenses for correcting errors. The Manufacturer shall not make corrections on the site, unless otherwise approved by the Engineer.
- 5.4. All structures shall be fabricated from standard rolled and tapered tubular shapes. Care will be given to insure an aesthetically pleasing structure which fulfills the loading requirements.
- 5.5. Anchor bolts shall have rolled threads with a major diameter as required ± 0.015 . All anchor bolts shall have a minimum of 12" of threads, be galvanized for the top 24" of the anchor bolt, and be supplied with two ASTM A563 heavy hex nuts. Anchor bolt assemblies shall be supplied with steel checking templates (top and bottom) for each foundation. Templates shall designate the bisector of the line angle by means of a V notch or weld bead 1" to 2" long. (In the case of tangent poles, the mark will be perpendicular to the line direction.)
- 5.6. Vangs shall typically be designed as thru-vangs. The thru-vangs shall have fillet welds on all sides of the vang on the outside of the pole.
- 5.7. Fabrication shall be performed in accordance with the latest revision and the provisions of the AISC Manual of Steel Construction and shall be in conformance with the requirements of ANSI/NEMA Standard No. TT1 (latest revision). Fabrication tolerances are shown in Appendix A.
- 5.8. Welding shall be performed by certified operators using procedures in accordance with American Welding Society's Specification D1.1 - Latest Revision and the requirements of ANSI/NEMA Standard No. TT1 (latest revision). Unless otherwise specified, welds will be of the following configuration:
- A. Base plate to pole shaft welds (over 3/16" shaft plate thickness): Welds will be 100 percent penetration and fusion.

- B. Circumferential welds on the pole shaft: Welds are 100 percent penetration and fusion.
- C. Longitudinal weld in female slip joint areas plus 6", and within 6" of tee joints or circumferential welds: Welds are 100 percent penetration and fusion.
- D. Longitudinal welds other than those covered in C. above: Welds are 80 percent minimum penetration.
- E. Arm to Bracket Welds shall be partial penetration groove welds with fillet overlay.
- F. Attachment Welds shall be full fusion fillets with partial penetration.
- G. All other welds shall be a combination of fillet and bevel welds as required by design and shall be indicated on shop fabrication drawings.

PART 6 - FINISHES

- 6.1. All structure components shall be hot dip galvanized or self-weathering steel. Anchor bolts shall be hot dip galvanized.
 - A. Galvanizing of anchor bolts shall be performed in accordance with the following specifications; as applicable:
 - 1. ASTM A-123 - Zinc (Hot-Dip Galvanized) coatings on products fabricated from rolled, pressed and forged steel shapes, plates, bars and strips.
 - 2. ASTM A-143 - Safeguarding against embrittlement of hot-dip galvanized structural steel products and procedure for detecting embrittlement.
 - 3. ASTM A-153 - Zinc coating (hot-dip) on iron and steel hardware.
 - 4. ASTM A-376 - Measuring coating thickness by magnetic field or eddy current (electromagnetic) test methods.
 - 5. ASTM A-384 - Safeguarding against warpage and distortion during hot-dip galvanizing of steel assemblies.
 - 6. ASTM A-780 - Repair of damaged hot-dip galvanized coatings.
 - B. Deformed anchor bolts shall be galvanized for the entire length of the anchor bolt.
- 6.2. Embedded sections of direct embedded poles and ground sleeves shall be coated with 16 mils of Corrocote II Classic polyurethane. Bearing plates of direct embedded poles shall not be coated. The coating shall extend as indicated on the drawings from the bottom of the pole to two feet above the ground line.

PART 7 - QUALITY CONTROL

- 7.1. The Manufacturer will be responsible for all quality control. This includes design, drawings, materials and fabrication. The Manufacturer shall have a quality control manual and it shall be available for review by the Engineer.
- 7.2. The Owner shall be allowed free access to the Supplier's facilities for inspection of the structures at any time. The Supplier shall monitor the fabrication process in accordance with the requirements of ANSI/NEMA Standard No. TT1 (latest revision).
- 7.3. Records of all inspections, inspector qualifications, welder certifications, equipment calibrations, and material certifications shall be maintained by the quality assurance department for a minimum of five years.
- 7.4. The Supplier shall provide the Purchaser with the following test and inspection records:
 - A. Material Certification.
 - B. Welding Procedures.
 - C. Welder Certification.
 - D. Types of Inspections.
 - E. Inspector Certification.
 - F. Results of inspection for compliance with Section 10 of ANSI/NEMA TTI-83.
- 7.5. Component parts shall be inspected for dimensional compliance to determine conformity with the detailed drawings and established tolerances. Any structure type that is of unique or complex design, or both, will be checked assembled prior to shipment.

PART 8 - PACKING AND SHIPPING

- 8.1. Packing
 - A. Materials and Procedures: All packing materials shall be suitable for their intended purpose under normal shipping conditions. Selection of load carrying packing material shall take into account the abrasion resistance and strength requirements of the particular load.
 - B. Anchor Bolts: Anchor bolts shall be identified appropriately.

- C. Shafts: Due precaution shall be taken when handling and loading tubular steel members to prevent damage to the shafts or their finishes. Shaft sections shall be properly blocked and secured to minimize movement during shipment. Blocks and straps shall be properly padded to minimize abrasion of the shaft finish.

Spliced shaft segments shall be properly identified so that the sections for each structure can be segregated upon arrival at their destination. If shafts have slip joints, flanged splices or field butt-weld splices which have been pre-fit prior to shipment, the individual sections shall be match-marked so that they can be oriented properly and reassembled in the field. Plate edges of sections that have been prepared for field welding shall be suitably covered and protected during shipment and until they are assembled in the field. Each section of the shaft shall carry its individual identification. Nesting a smaller shaft section within larger diameter tubes is not recommended.

- D. Crossarms: Crossarms shall be bundled and packed individually for shipment. They shall be properly identified and marked for attachment to the structure in their correct location.
- E. Hardware: All necessary hardware for assembling structures shall be securely packed and marked. The hardware container shall be adequately secured to minimize damage during shipment.

- 8.2. Shipping: Any shipping damage or shortages shall be reported to the manufacturer and carrier. Arrangements shall be made for inspection of the damaged material prior to unloading by the carrier and other parties concerned. Unloading shall be carried out with due precautions for protecting the structures and their finishes.

PART 9 - ASSEMBLY AND ERECTION

- 9.1. Anchor Bolts: Anchor bolts shall be shipped in advance of the structures.
- 9.2. Shaft Assembly: The Supplier shall specify the type of shaft assembly to be provided.
- 9.3. Assembly: The poles shall be designed so that assembly of the poles can be performed on the ground and the poles raised into position in one piece.
- 9.4. Erection: The pole shall be capable of being picked up from a single point with a nylon or padded cable choker and swung into position for erection. The balance point shall be identified. After erecting, proper plumbing of the poles, or raking where a deadend or angle exist, shall be accomplished by adjusting the anchor bolt nuts.

PART 10 - CLIMBING LADDERS

- 10.1. Each pole shall have ladder clips attached in accordance with the structure drawings.
- 10.2. The spacing of the clips will be determined based on the style and length of the ladders furnished. Typical ladder length is four feet.

PART 11 - DRAWINGS AND DESIGN CALCULATIONS

- 11.1. The following drawings and design calculations shall accompany the Bidders proposal:
 - A. General arrangement drawings showing the overall dimensions and relative locations of all arms and brackets to be attached to the steel structures. The drawings shall also include estimated weights for the structures and attached arms and brackets.
 - B. Anchor bolt cage drawings showing the overall dimensions, number and size of anchor bolts, and arrangement of the anchor bolt cages for the steel structures. The drawings shall also include estimated weights for the anchor bolt cages (bolts and templates).
 - C. Preliminary design calculations for the steel structures.
- 11.2. Within thirty (30) days of the date of the Purchase Order, the Manufacturer shall submit a set of fabrication specifications, erection instructions and drawings to the Engineer for approval. The drawings shall include accurate dimensional information and fabrication details for the anchor bolt cages and poles, and all arms and brackets to be attached to the pole, as applicable. Three sets of drawings shall be submitted.
- 11.3. Within 30 days of the date of the Purchase Order, the Manufacturer shall also submit a set of final design calculations for the poles to the Engineer for review and approval. The design calculations shall include all data required for design of the augured pier foundations for the poles.

APPENDIX A: SUMMARY OF TOLERANCES

QUALITY ASSURANCE MANUAL AND SPECIFICATION

A. Shafts

1. Shaft Length (one section).....	±1"
2. Formed angles.....	3°
3. Circumference:	
male end	+3/32, -15/32"
female end	+11/32, -7/32"
other	+11/32, -7/32"
4. Straightness in shaft.....	1/8" in 10' (ASTM A-6)
5. Twist of middle sections:	
3 section poles	6°
4 section poles	3°
6. Location	
Ladder clip groups or steps.....	1/2"
Ladder clips within a group.....	1/8"
Other attachments.....	1/4"
7. Angular Location – all.....	2° to primary end
8. Baseplate perpendicular to shaft.....	1/8" per 5'
9. Pole centered on baseplate	1/4"
10. Lifting hole diameter.....	1/8"
11. Arm mounting vang	
Outside spacing between vang	+0, -1/8"

B. Base Plates

1. Overall length or width	1/4"
2. Bolt hole diameter	1/16"
3. Bolt hole location	3/32"
4. Drain hole diameter	1/4"
5. Drain hole location.....	1/4"

C. Anchor Bolts

1. Length	+1", -0
2. Threaded length.....	+1", -0
3. Galvanized length	+6", -0

D. Arm Assemblies

1. Length	1"
2. Location.....	1/4"
3. Diameter	1/4"
4. Circumference.....	9/32"

- E. Vangs and other attachments
 - 1. Overall length or width 3/32"
 - 2. Holes or slot diameter
 - Burned..... 1/16"
 - Not burned..... +1/16, -0"
 - 3. Location..... 1/16"
 - 4. Angles..... 2°
 - 5. Vang straightness
 - Up to 3/4" thick 1/4"
 - Over 3/4" thick..... 1/8"

- F. Arm brackets
 - Inside spacing between legs..... +3/16", -1/16"