

**CITY OF BROKEN ARROW, OKLAHOMA  
ENGINEERING/CONSTRUCTION DEPARTMENT**

**APPLICATION FOR APPROVAL OF CHANGE OF PLANS**

**Name:** Central Parks Electrical Upgrade

**Contract Number:** 166022

**Location:** Central Park

**Date:** April 12, 2016

**Change Order Number:** 1  
**Change Order Classification:** Minor

**Approval is requested for the following major changes:**

- Total Number of Days Added by this Change Order: 20  
This will take the contract end date to May 20, 2016
- Add into the contract for fencing to be installed around each of the transformers (2). The fence shall consist of 6 foot tall sections of 6 gauge black vinyl coated fencing with black powder coated metal posts and rails. A gate shall be installed at each transformer. See attached plans and specs.
- At the request of the Parks Department the contractor shall provide on-call electrician services during the first two days of the festival as noted in the contractors estimate attached. During the on-call services, a load test shall be performed on each of the transformers and a report generated.

**Which are necessary for the following reasons:**

- Additional days are required for the on-call electrician services per item #3 above.
- This fencing is at the request of Parks Department for the intentions of safety and security of the system.

**Additions to the original contract:**

Item #	Item	Unit	Price	Quantity	Amount
CO1-1	Additional Fencing	LS	\$10,124.97	1.00	\$10,124.97
CO1-2	On-Call Electrician Services	LS	\$1,005.77	1.00	\$1,005.77
<b>Total Additions:</b>					<b>\$11,130.74</b>

**Deletions to the original contract:**

Item #	Item	Unit	Price	Quantity	Amount
					\$0.00
					\$0.00
<b>Total Deletions:</b>					<b>\$0.00</b>

**This Change Order is a Net Overrun:** \$11,130.74

<b>Total Previous Change Orders</b>	\$0.00
<b>Total Cost of Change Orders</b>	\$11,130.74
<b>Original Contract Amount</b>	\$352,596.55
<b>Percent Change In Contract Amount</b>	3.16%

Submitted: \_\_\_\_\_ Const. Manager Date: \_\_\_\_\_  
 Accepted: \_\_\_\_\_ Contractor Date: \_\_\_\_\_  
 Recommended/Approved: \_\_\_\_\_ Director, Engr. & Const. Date: \_\_\_\_\_  
 Approved: \_\_\_\_\_ City Manager Date: \_\_\_\_\_

This change order brings the project up to date on all issues of cost increases and time increases as of: 04/12/16

This change was approved at the City Council/BAMA meeting held on: \_\_\_\_\_  
 Original Clerk---Original Contractor---Original File---Copy to Finance



Third Generation Electrical, Inc.

8620 S. 33rd W. Ave  
Tulsa, OK 74132  
Phone: 918-446-6626  
Fax: 918-446-6617

## Change Order Proposal Request

<b>To: City of Broken Arrow</b>	Date:	4/12/2016
<b>Project: #166022 Central Park</b>	Change Order #	1

**Third Generation Electric is pleased to quote the following scope of work:**

**Scope of Work:** Proposal for fencing around the two transformers  
6" chainlink fence, Black Vinyl coated with painted black galvanized posts.

<b>Labor</b>	<u>Quantity</u>	<u>Units</u>	<u>Unit Rate</u>	<u>Extension</u>
Estimator of C.O.	1	HR	\$60.00	\$60.00
Electrician, foreman	16	HR	\$50.00	\$800.00
Electrician, helper	32	HR	\$35.00	\$1,120.00
Vacuum Excavator	2	days	\$300.00	\$600.00
Labor Direct Subtotal:				\$2,580.00
Burden/Fringes on Labor 26.49% (see schedule)				\$683.44
Indirect Charges on Labor 24.30% (see schedule)				\$629.52
Overhead & Profit 10% on all Labor Costs				\$320.95
<b>Total Labor &amp; Fringes:</b>				<b>\$3,530.47</b>

<b>Materials &amp; Equipment</b>	<u>Quantity</u>	<u>Units</u>	<u>Unit Rate</u>	<u>Extension</u>
N/A				\$0.00
				\$0.00
				\$0.00
Subtotal:				\$0.00
Overhead & Profit 10%				\$0.00
<b>Total Materials &amp; Equipment:</b>				<b>\$0.00</b>

<b>Subcontractor</b>	<u>Quantity</u>	<u>Units</u>	<u>Unit Rate</u>	<u>Extension</u>
Fence Subcontractor	1	QTY	\$5,995.00	\$5,995.00
Subtotal:				\$5,995.00
Overhead & Profit 10%				\$599.50
<b>Total Subcontractor:</b>				<b>\$6,594.50</b>
<b>Total of Above Items:</b>				<b>\$10,124.97</b>
<b>Grand Total:</b>				<b>\$10,124.97</b>



**Burden/Fringe Labor Costs**

Work Comp	6.85 %
General Liability	2.37 %
State Unemployment Ins.	1.42 %
FICA	7.65 %
Umbrella	1.42 %
Health Insurance	6.78 %
<b>Burden Total:</b>	<b>26.49 %</b>

**Indirect Labor Costs**

Fuel for all Equipment	11.00 %
Small Tools	5.00 %
Office Expenses	1.50 %
Safety	2.00 %
Equipment Maintenance	2.40 %
Utilities	2.40 %
<b>Indirect Total:</b>	<b>24.30 %</b>



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## Change Order Proposal Request

<b>To: City of Broken Arrow</b>	Date:	4/13/2016
<b>Project: #166022 Central Park</b>	Change Order #	2

**Third Generation Electric is pleased to quote the following scope of work:**

**Scope of Work:** Electricians on-call for Rooster days

**1. Provide one technician onsite during the festival 11-14, 2016**

- A. Thursday 5-12-2016. 12PM – 5PM, 1 Electrician for 5 hours.
- B. Friday 5-13-2016, 12PM – 5 PM, Electrician for 5 hours.
- C. Saturday 5-14-2016, On-Call, with additional cost through PO

**2. Provide load pull on new system during Rooster day events**

- A. Possibly do one transformer one day and the other the next day
- B. Front PDU, 1 QTY only, Check with Mike Norman (918) 644-6493 for PDU number.

<b>Labor</b>	<u>Quantity</u>	<u>Units</u>	<u>Unit Rate</u>	<u>Extension</u>
Estimator of C.O.	1	HR	\$60.00	\$60.00
Electrician, week hours	10	HR	\$50.00	\$500.00
Electrician, weekend hours	5	HR	\$35.00	\$175.00
Electrician, overtime hours, if need		HR	\$85.00	\$0.00
Labor Direct Subtotal:				\$735.00
Burden/Fringes on Labor 26.49% (see schedule)				\$194.70
Indirect Charges on Labor 24.30% (see schedule)				\$179.34
Overhead & Profit 10% on all Labor Costs				\$91.43
<b>Total Labor &amp; Fringes:</b>				<b>\$1,005.77</b>

<b>Materials &amp; Equipment</b>	<u>Quantity</u>	<u>Units</u>	<u>Unit Rate</u>	<u>Extension</u>
N/A				\$0.00
Subtotal:				\$0.00
Overhead & Profit 10%				\$0.00
<b>Total Materials &amp; Equipment:</b>				<b>\$0.00</b>

<b>Subcontractor</b>	<u>Quantity</u>	<u>Units</u>	<u>Unit Rate</u>	<u>Extension</u>
N/A				\$0.00
Subtotal:				\$0.00
Overhead & Profit 10%				\$0.00
<b>Total Subcontractor:</b>				<b>\$0.00</b>
<b>Total of Above Items:</b>				<b>\$1,005.77</b>
<b>Grand Total:</b>				<b>\$1,005.77</b>



**Burden/Fringe Labor Costs**

Work Comp	6.85 %
General Liability	2.37 %
State Unemployment Ins.	1.42 %
FICA	7.65 %
Umbrella	1.42 %
Health Insurance	6.78 %
<b>Burden Total:</b>	<b>26.49 %</b>

**Indirect Labor Costs**

Fuel for all Equipment	11.00 %
Small Tools	5.00 %
Office Expenses	1.50 %
Safety	2.00 %
Equipment Maintenance	2.40 %
Utilities	2.40 %
<b>Indirect Total:</b>	<b>24.30 %</b>



## **PART 1 – GENERAL**

### **1.01 DESCRIPTION**

- A. Work included: Provide Vinyl coated chain link fence system where shown on the drawings and as needed for a complete and proper installation.
- B. Related work:
  - Section 01510: Site Access.
  - Section 02000: Site Work.
  - Section 03300: Cast-In-Place Concrete.

### **1.02 QUALITY ASSURANCE**

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. ASTM A-120: Zink Coating.
- C. ASTM A-123: Zink Coated Forged Steel.
- D. ASTM F-567: Fence Installation.
- E. ASTM A-392: Class I PVC Coated Fabric.
- F. Polyester Powder:
  - 1. ASTM D-1734 - Flexibility Mandrel Test.
  - 2. ASTM D-2794 - Impact Resistance Test.
  - 3. ASTM B-117 - Salt Spray Resistance Test.
  - 4. ASTM D-2247 - Humidity Resistance Test.
  - 5. ASTM D-822 - Weatherability Test.
  - 6. ASTM D-3363 - Pencil Hardness Test.
  - 7. ASTM D-2454 - Overbake Resistance Test.
  - 8. ASTM D-3359B - Adhesion Crosshatching Test.
  - 9. Epoxy or hybrid paints are not acceptable due to poor weatherability characteristics.

### **1.03 SUBMITTALS**

- A. Comply with pertinent provision of Section 01340 Submittals.
- B. Product data: After the Contractor has received the Owner's Notice to Proceed, submit:
  - 1. Materials list of items proposed to be provided under this Section.
  - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
  - 3. Shop drawings in sufficient detail to show fabrication, installation, anchorage and interface of the work of this Section with the work of adjacent trades.

4. Manufacturer's recommended installation procedures which, when approved by the Owner's Representative, will become the basis for accepting or rejecting actual installation procedures used on the work.
5. Sample of fabric, end, line, gate, frame posts (6" lengths marked as to size); fittings; hardware and accessories; one each.

#### **1.04 PRODUCT HANDLING**

- A. Comply with pertinent provisions of Section 01640 Product Handling.

#### **1.05 WARRANTY**

- A. Record manufacturer's 10 year warranty against rust or corrosion for fabric.

### **PART 2 – PRODUCTS**

#### **2.01 DIMENSIONAL DATA**

- A. General:
  1. Pipe sizes indicated are commercial pipe sizes.
  2. Roll-formed section sizes indicated are the nominal outside dimensions.

#### **2.02 GALVANIZING**

- A. On steel framework and appurtenances, provide galvanized finish with not less than the following weight of zinc per sq. ft.:
  1. Pipe: 1.8 oz., complying with ASTM A120.
  2. H-Sections and square tubing: 2.0 oz. complying with ASTM A123.
  3. Hardware and accessories: Comply with Table I of ASTM A153.
  4. Fabric: 1.2 oz. complying with Class I of ASTM A392.

#### **2.03 FABRIC**

- A. Provide number 6 gage (9 gage wire 0.148" O.D. with Vinyl equals 6 gage) wires, vinyl clad, in accordance with ASTM F-668, Type 28, in 2" mesh where noted on drawings with top and bottom salvages knuckled.
- B. Provide fabric in one piece widths. Full height up to 12'-0".

#### **2.04 POSTS, RAILS AND ASSOCIATED ITEMS**

- A. End, corner, slope and pull posts: Provide at least the following minimum sizes and weights with powder coated finish:
  1. Up to and including 6'-0" fabric height: 2.375" (2-1/2") OD, Schedule 40 Type I round pipe, 3.65 lbs. per lineal foot.
  2. Above 6'-0" to 10'-0" fabric height: 2.875" (3") OD, Schedule 40 Type I round pipe, 5.79 lbs per lineal foot.
  3. Above 10'-0" fabric height: 4.000" (4") OD, Schedule 40 Type I round pipe, 9.10 lbs per lineal foot.



- B. Line posts: Provide minimum sizes and weights as follows:
1. Up to and including 6'-0" fabric height: 1.900" (2") OD, Schedule 40 Type I round pipe, 2.72 lbs. per lineal foot.
  2. Above 6'-0" to 10'-0" fabric height: 2.375" (2-1/2") OD, Schedule 40 Type I round pipe, 3.65 lbs per lineal foot.
  3. Above 10'-0" fabric height: 2.875" (3") OD, Schedule 40 Type I round pipe, 5.79 lbs. per lineal foot.
- C. Gate Posts: Provide gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
1. For 6' wide or less: Use 2.875" (3") OD, Schedule 40 Type I round pipe, 5.79 lbs. per lineal foot.
  2. Over 6 feet wide and up to 13 feet wide: Use 4.000" (4") OD, Schedule 40 Type I round pipe, 9.10 lbs. per lineal foot.
  3. Over 13 feet wide and up to 18 feet wide: Use 6.625" OD, Schedule 40 Type I round pipe, 8.92 lbs per lineal foot.
  4. Over 18 feet wide: Use 8.625" OD, Schedule 40 Type I round pipe, 28.55 lbs per lineal foot.
- D. Top Rails:
1. Use 1.660" OD, Schedule 40 Type I round pipe, 2.27 lbs. per lineal foot.
  2. Provide in manufacturer's longest lengths, with expansion type couplings approximately 6" long for each joint.
  3. Provide means for attaching top rail securely to each gate, pull, slope, line and endpost.
- E. Post Brace Assemblies:
1. Provide at end and gate posts, and at both sides of corner, slope and pull posts with the horizontal brace located at mid-height of the fabric.
  2. Use 1.660" OD pipe 2.27 lbs. per lineal ft. for horizontal brace.
  3. Use 3/8" diameter rod with turnbuckle for diagonal truss.
- F. Tension wire: Provide number 7 gage coiled spring wire at bottom of fabric.
- G. Post Tops:
1. Provide steel, wrought iron or malleable iron designed as weathertight closurecap.
  2. Provide one cap for each post.
  3. Provide caps with openings to permit through passage of top rail.
- H. Stretcher Bars:
1. Provide one-piece lengths equal to full height of fabric, with a minimum cross-section of 3/16" x 3/4".
  2. Provide one stretcher bar for each gate and end post and two for each corner, slope and pull post except where fabric is woven integrally into the post.
- I. Stretcher Bar Bands:
1. Provide steel, wrought iron or malleable iron, spaced not over 15" on centers, to secure stretcher bars to end, corner, pull, slope and gate posts.
  2. Bands may be used also with special fittings for secure end, corner, pull, slope and gate posts.

**2.05 GATES**

A. General:

1. Fabricate gate perimeter frames of tubular or pipe members.
2. Provide additional horizontal and vertical members to assure proper operation of the gate, and for attachment of fabric, hardware and accessories.
3. Space so frame members are not more than 8 feet apart.
4. Fabricate gate frames from:
  - a. 6' to 10' H x 8' W or less, 1.90" (2") OD, Schedule 40 Type I round pipe, 2.72 lbs. per linear foot.
5. All materials shall have powder coated finish.

B. Fabrication:

1. Assemble gate frames by welding with special malleable or pressed steel fittings and rivets for rigid connections.
2. Use same fabric as used in the fence.
3. Install fabric with stretcher bars at vertical edges as a minimum.
4. Attach stretchers to gate frame at not more than 15" on centers.
5. Attach hardware with rivets or by other means which will provide security against removal and breakage.
6. Provide diagonal cross-bracing consisting of 3/8" diameter adjustable length truss rods on gates where required to provide frame rigidity without sag or twist.

C. Gate Hardware:

1. Hinges:
  - a. Pressed or forged steel or malleable iron to suite the gate size; non-lift-off type, offset to permit 180 degree opening.
  - b. Provide 1-1/2 pair of hinges for each leaf over 6 feet in nominal height.
2. Latches:
  - a. Provide heavy duty commercial grade forked type or plunger-bar type to permit operation from either side of the gate.
  - b. Provide padlock eye as integral part of latch.
3. Keeper:
  - a. Provide keeper for vehicle gates, which automatically engages the gate leaf and holds it in the open position until manually released.
4. Double Gates:
  - a. Provide gate stops for double gates consisting of mushroom or flushplate, with anchors.
  - b. Set in concrete to engage the center drop rod or plunger bar.
  - c. Provide heavy duty commercial grade locking device and padlock eyes as an integral part of the latch, requiring one padlock for locking both gate leaves.
5. Rollers and Tracks:
  - a. Roller and assembly shall have a 250 lb. rating per assembly.
  - b. Three assemblies for overhead sliding gate.

## 2.06 MISCELLANEOUS MATERIALS

- A. Wire Ties:
  - 1. For tying fabric to line posts, use number 9 gage wire ties spaced 12" on centers.
  - 2. For tying fabric to rails and braces, use number 9 gage wire ties spaced 24" on centers.
  - 3. For tying fabric to tension wire, use number 11 gage hog rings spaced 24" on centers.
  - 4. Manufacturer's standard wire ties will be acceptable if of equal strength and durability.
- B. Concrete: Comply with provisions of Section 03300 for 3000 psi concrete footings.

## 2.07 ACCESSORIES

- A. Tubular post tops: Weather tight closure caps, 1 top for each post. Provide tops with openings to accommodate top rails. Finish matching framework finish.
- B. Sleeves, stretcher bars, stretcher bar bands, clips, ties, rail ends, fasteners, fittings and accessories: Provide manufacturer's standard complying with CLMI specifications. Finish matching framework finish.

## 2.08 WIRE COATING

- A. Thermally fused and bonded plasticized polyvinyl chloride (PVC) with low temperature plasticizers. No fillers, extenders or extraneous matter, other than the necessary stabilizers and pigments.

## 2.09 POWDER COATING

- A. All polyesters equal to topcoat PE50000 series by Armstrong Products Company.
  - 1. Coating electrostatically sprayed with a film thickness of one to five mils with average of two mils.
  - 2. All coated parts to be cured at a temperature of 400 degrees F for ten minutes.
  - 3. Owner shall approve coating company and inspect parts before shipping.

## PART 3 - EXECUTION

### 3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

### 3.02 INSTALLATION

- A. General:
  - 1. Install posts at a maximum spacing of 10 feet on centers.
  - 2. Install corner or slope posts where changes in line or grade exceed a 30 degree deflection.

- B. Excavating:
1. Drill holes for post footings in firm, undisturbed or compacted soil, strictly adhering to the dimensions and spacing shown.
  2. Post hole dimensions:
    - a. Provide 30" deep by 8" diameter foundations for line posts for 6 foot fabric height and less.
    - b. Provide 36" deep by 8" diameter foundations for line posts for fabric heights exceeding 6 feet.
    - c. Provide 36" deep by 12" diameter foundations for all other posts.
  3. Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site if so directed.
  4. When solid rock is encountered near the surface, drill into rock at least 12" for line posts and at least 18" for end, pull, gate and corner posts. Drill hole at least 1" greater diameter than the largest dimension of the post to be placed.
  5. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed minimum depths specified above.
- C. Setting Posts:
1. Remove loose and foreign materials from sides and bottoms of holes and moisten soil prior to placing concrete.
  2. Center and align posts in holes.
  3. Place concrete around posts in a continuous pour and vibrate or tamp for consolidation.
  4. Check each post for vertical and top alignment and hold in position during placement and finishing operations.
  5. Trowel tops of footings and slope or dome to direct water away from posts.
  6. Extend footings for gate posts to the underside or bottom hinge.
  7. Set keeps, stops, sleeves and other accessories into concrete as required.
  8. Keep exposed concrete surfaces moist for at least seven days after placement, or cure with membrane curing material or other curing method approved by the Owner's Representative.
  9. Grout-in those posts which are set into sleeved holes, concrete constructions, or rock excavations, using non cement grout or other grouting material approved by the Owner's Representative.
- D. Concrete Strength:
1. Allow concrete to attain at least 75% of its minimum 28-day strength before rails, tension wires and/or fabric is installed.
  2. Do not, in any case, install such items in less than seven days after placement of concrete.
  3. Do not stretch and tension fabric and wire, and do not hang gates, until concrete has attained its full design strength.
- E. Rails and Bracing:
1. Install fence with a top rail and bottom tension wire.
  2. Install fence with a top rail and bottom on fence as specified on drawings.

SECTION 02445  
VINYL COATED CHAIN LINK FENCING

3. Install top rails continuously through post caps or extending to radius for curved runs.
  4. Provide expansion couplings as recommended by the fencing manufacturer.
  5. Provide bracing to the midpoint of the nearest line post or posts at all end, corner, slope, pull and gate posts.
  6. Install tension wires parallel to the line of fabric by weaving through the fabric, and tying to each post with not less than number 7 gage galvanized wire, or by securing the wire to the fabric.
  7. Weld all posts, rails and braces at heights over 10'-0".
- F. Installing Fabric:
1. Leave approximately ½" between finish grade and bottom selvage.
  2. Excavate high points in the ground to clear the bottom of the fence.
  3. Place and compact fill to within 1" of the bottom of the fabric in depressions.
  4. Pull fabric taut and tie to posts, rails and tension wires.
  5. Install fabric on the activity (court) side of fence and anchor to framework so that the fabric remains in tension after pulling force is removed.
  6. Install stretcher bars by threading through or clamping to fabric on 4" centers and secure to post with metal bands spaced 15" on centers.
  7. Note: All sports fields or courts fabric shall be installed on the activity side.
- G. Installing Gates:
1. Install gates plumb, level and secure for full opening without interference.
  2. Install ground-set items in concrete for anchorage in accordance with the fence manufacturer's recommendations as approved by the Owner's Representative.
  3. Lubricate and adjust the hardware for smooth operation.
  4. Provide stops for overhead track type gates.
  5. Maximum gate height of 7' in 10' and higher fencing.
- H. Miscellaneous:
1. Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasp pipe and fabric firmly with ends twisted at least two full turns.
  2. Bend ends of wire to minimize hazards to persons and clothing.
  3. Fasteners:
    - a. Install nuts for tension band and hardware bolts on side of fence opposite fabric side.
    - b. Peen the ends of bolts to prevent removal of nuts.
  4. Repair coatings damaged in the shop or field erection, using a hot-applied repair compound applied in accordance with its manufacturer's recommendations as approved by Owner's Representative.

**END OF SECTION**