ADDENDUM NO. 4
TO
PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS
FOR
CITY OF DENTON, TEXAS
IFB 7027-FOR THE CONSTRUCTION OF NORTH BONNIE BRAE STREET AT SCRIPTURE STREET ROUNDABOUT
April 11, 2019

TO: PROSPECTIVE BIDDERS AND PLAN HOLDERS

The Plans, Specifications and Contract Documents shall be modified as required by the following items:

Item 1-4

The deadline for receiving bids has been revised to 11:00 A.M. CST, Friday April 19, 2019. The Invitation to Bidders has been updated and is included with this addendum.

Item 2-4

Specifications, Proposal: The Proposal form included in the bid documents is hereby replaced in its entirety with the attached Proposal included herein as Attachment 00 42 43_Proposal Form Unit Price. The electronic version included on the City of Denton Purchasing web page at www.cityofdenton.com/en-us/business/solicitations-contracting has similarly replaced.

All items in conflict with this addendum are hereby deleted.

Item 3-4

Proposal Form Section 00 42 43 is hereby replaced in its entirety, included herein as Attachment 00 42 43_Proposal Form Unit Price.

Item 4-5

Technical Specification 5552 Exhibit 2 Technical Specs – Concrete Streetlight Poles is included with this addendum.

Item 5-4

Responses and clarifications to contractor questions received have been addressed and are included with this addendum.

Item 6-4

Construction Plans sheet 1 has been updated and sheet 101B has been added and are included with this addendum.

THIS ADDENDUM IS MADE PART OF THE PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS AND SHALL BE ACKNOWLEDGED ON THE PROPOSAL.

Graham Associates, Inc.

SECTION 00 11 13
INVITATION TO BIDDERS

RECEIPT OF BIDS

Sealed bids for the construction of North Bonnie Brae Street at Scripture Street Roundabout will be received by the City of Denton Purchasing Office:

City of Denton
Purchasing Division
901-B Texas Street
Denton, Texas 76209
940-349-7100

until 11:00 A.M. CST, Friday April 19, 2019, and bids will be opened publicly and read aloud after 11:00 AM D/CST in the Purchasing Conference Room, 2nd Floor, 901-B Texas Street.

GENERAL DESCRIPTION OF WORK

The major work will consist of the (approximate) following: Traffic Control, Paving, Drainage, Sidewalks, Erosion Control, Street Lights, Pavement Markings, Signing and Sanitary Sewer Improvements.

DOCUMENT EXAMINATION AND PROCUREMENTS

The Bidding and Contract Documents may be examined or obtained on-line by visiting the City of Denton's Purchasing Division website at http://www.https://www.cityofdenton.com/en-us/business/solicitations-contracting and clicking on the **"See Open Solicitations"** link to the advertised project folders on the Laserfiche Weblink site. The Contract Documents may be downloaded, viewed, and printed by interested contractors and/or suppliers. **The contractor is required to fill out the Certificate of Interested Parties Form 1295 and the form must be submitted to the Project Manager before the contract will be presented to the City Council. The form can be obtained at https://www.ethics.state.tx.us/tec/1295-Info.htm** .

PREBID CONFERENCE

A prebid conference may be held as described in Section 00 21 13 - INSTRUCTIONS TO BIDDERS at the following location, date, and time:

DATE: Thursday, March 28th, 2019
TIME: 11:00 AM CST
PLACE: 901-B Texas Street
Denton, Texas 76209
LOCATION: City of Denton Purchasing Conference Room

PREBID WALKTHROUGH

After the prebid conference, interested parties may reconvene at McKenna Park at Scripture Street and Bonnie Brae Street, immediately thereafter at approximately 12:00 PM CST for a walkthrough of the project site.

CITY'S RIGHT TO ACCEPT OR REJECT BIDS

City reserves the right to waive irregularities and to accept or reject bids.

INQUIRIES

All inquiries relative to this procurement should be addressed to the following:
Attn: Jamie Cogdell, City of Denton
Email: Jamie.cogdell@cityofdenton.com
Phone: 940-349-7100

ADVERTISEMENT DATES
March 14, 2019
March 21, 2019

END OF SECTION

SECTION 00 42 43
PROPOSAL FORM

UNIT PRICE BID

Bidder's Application

Project Item Information					Bidder's Proposal	
Bidlist Item No.	**Description**	**Specification Section No.**	**Unit of Measure**	**Bid Quantity**	**Unit Price**	**Extended Price**
1	Mobilization	TS-1	L.S.	1		
2	Capital Improvements Signs	TS-2	EA.	4		
3	Erosion Control SWPPP	201.3	L.S.	1		
4	Topsoil Imported (Landscape Mixed Soil)	202.2	S.Y.	4,906		
5	Block Sodding	202.5	S.Y.	2,232		
6	Seeding	202.6	S.Y.	8,650		
7	Preparing R.O.W.	203.3	STA.	19.8		
8	Excavation	203.4	C.Y.	29,722		
9	Remove Existing Paving (Conc.)	203.4	S.Y.	855		
10	Remove Existing Sidewalk (Conc.)	203.4	S.Y.	1,255		
11	Remove Existing Asphalt Paving	203.4	S.Y.	14,073		
12	Remove Existing Sign	203.3	EA.	20		
13	Remove Existing Tree	203.3	EA.	33		
14	Remove Existing Building	203.3	EA.	10		
15	Embankment	203.7	C.Y.	285		
16	Backfill	203.7	STA.	19.8		
17	Lime Slurry (63 LB/SY)	301.2	TON	379.1		
18	12" Lime Treated Subgrade	301.2	S.Y.	12,035		
19	Concrete Pavement 6"	303.2	S.Y.	188		
20	Concrete Pavement 8"	303.2	S.Y.	288		
21	Concrete Pavement 11"	303.2	S.Y.	8,398		
22	3" Type "C" A.C.P.	303.9	S.Y.	2,044		
23	5" Type "B" A.C.P.	303.9	S.Y.	56		
24	8" Type "B" A.C.P.	303.9	S.Y.	1,988		
25	Conc. Street Header	305.1	L.F.	182		
26	Mono Curb	305.1	L.F.	5,174		
27	24" Conc. Curb & Gutter	305.1	L.F.	1,045		
28	18" Rollover Curb	305.1	L.F.	308		
29	10' Shared Use Path (5")	305.2	S.Y.	347		
30	Concrete Sidewalks (4")	305.2	S.Y.	1,008		

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Project Item Information					Bidder's Proposal	
Bidlist Item No.	**Description**	**Specification Section No.**	**Unit of Measure**	**Bid Quantity**	**Unit Price**	**Extended Price**
31	Curb Ramp	305.2	EA.	17		
32	4" Stamped and Stained Concrete	528.2023	S.Y.	522		
33	11" Stamped and Stained Concrete	528.2023	S.Y.	348		
34	Traffic Control - Phase 1	801.1	L.S.	1		
35	Traffic Control - Phase 2	801.1	L.S.	1		
36A	Traffic Control - Phase 3	801.1	L.S.	1		
36B	4 Portable Changeable Message Signs		DAYS	340		
37A	Haul Off Unsuitable Material (To Landfill)	203.4	LOAD	10		
37B	Irrigation Removal & Replacement		L.S.	1	$ 10,000.00	$10,000.00
37C	Asbestos Removal from Building		EA.	10	$ 20,000.00	$200,000.00
38	Sidewalk Retaining Wall	531.2036	L.F.	140		
39	Omitted					
40	Omitted					
41	18" RCP (CL III)	501.6	L.F.	225		
42	21" RCP (CL III)	501.6	L.F.	68		
43	24" RCP (CL III)	501.6	L.F.	319		
44	27" RCP (CL III)	501.6	L.F.	156		
45	30" RCP (CL III)	501.6	L.F.	384		
46	33" RCP (CL III)	501.6	L.F.	362		
47	36" RCP (CL III)	501.6	L.F.	257		
48	4'x3' RCB	501.6	L.F.	159		
49	10' Standard Curb Inlet	502.12	EA.	1		
50	15' Standard Curb Inlet	502.12	EA.	4		
51	10' Recessed Curb Inlet	502.12	EA.	4		
52	4'x4' "Y" Inlet	502.12	EA.	2		
53	Type M Manhole	202.12	EA.	6		
54	"PW" Wingwall	503.12	EA.	1		
55	Trench Safety	504.1	L.F.	1,930		
56	Cement Stabilized Backfill	504.2	C.Y.	6.2		
57	Remove Existing Storm Pipe	496 TXDOT	L.F.	2,153		

SECTION 00 42 43
PROPOSAL FORM

UNIT PRICE BID

Bidder's Application

Project Item Information					Bidder's Proposal	
Bidlist Item No.	**Description**	**Specification Section No.**	**Unit of Measure**	**Bid Quantity**	**Unit Price**	**Extended Price**
58	Remove Existing Inlet	496 TXDOT	EA.	9		
59	Remove Existing Manhole	496 TXDOT	EA.	5		
60	Install Precast Plug	502.12	EA.	1		
61	Asphalt Pavement Repair		L.F.	404		
62A	Water Line Lowering		EA.	4		
62B	Remove & Replace 24" Conc. Curb & Gutter		L.F.	25		
62C	Sidewalk Repair		L.F.	30		
62D	Remove & Replace Guardrail Turndown		EA.	1		
63	Silt Fence	201.5	L.F.	1,952		
64	Inlet Protection	201.14	EA.	11		
65	Erosion Control Log	201.14	EA.	2		
66	Rock Check Dam	201.9	EA.	1		
67	Construction Entrance	201.11	EA.	4		
68	Stone Outlet Sediment Trap	201.12	EA.	2		
69	Pull Box	805.0	EA.	11		
70	Installation of 35' Street Light Pole (Provided by DME)	805.3	EA.	11		
71	2" SCH 40 PVC Conduit	805.3	L.F.	2,024		
72	Installation of 250 Watt Cobrahead Fixture (Provided by DME)	805.3	EA.	11		
73	#8 Bare Street Light Conductor	805.3	L.F.	1,563		
74	#8 Insulated Street Light Conductor	805.3	L.F.	3,126		
75	#6 Bare Street Light Conductor	805.3	L.F.	156		
76	#6 Insulated Street Light Conductor	805.3	L.F.	312		
77	#4 Bare Street Light Conductor	805.3	L.F.	405		
78	#4 Insulated Street Light Conductor	805.3	L.F.	810		
79A	Electric Service - includes panel and transformer	628 TXDOT	EA.	1	$ 11,500.00	$11,500.00
79B	Misc. Electric Items Not Included With Bid Items 69-79A		L.S.	1	$ 10,000.00	$10,000.00
80	Type IB Double Line	804.2	L.F.	668		
81	Type IA Barrier Line	804.2	L.F.	307		
82	Type IA Broken Line	804.2	L.F.	2,307		
83	Type IA Dotted Line	804.2	L.F.	95		

SECTION 00 42 43
PROPOSAL FORM

UNIT PRICE BID

Bidder's Application

Project Item Information					Bidder's Proposal	
Bidlist Item No.	**Description**	**Specification Section No.**	**Unit of Measure**	**Bid Quantity**	**Unit Price**	**Extended Price**
84	Type IB Dotted Line	804.2	L.F.	220		
85	Type IA Broken Line C/R RPM	804.2	EA.	56		
86	Type IB Double Line A/A RPM	804.2	EA.	34		
87	Yield Line, Per Triangle	804.2	EA.	103		
88	Word, White, Per Letter	804.2	EA.	30		
89	Symbol, White, Arrow	804.2	EA.	8		
90	Pedestrian Crosswalk, Type VA	804.2	L.F.	420		
91	Small Sign Assembly	644 TXDOT	EA.	61		
92	Remove Existing Manhole	203.3	EA.	2		
93	8" SDR-26 PVC Sewer Line	501.17	L.F.	913		
94	4" Sewer Service	501.17	EA.	4		
95	4' Dia. Standard Manhole	502.1	EA.	7		
96	5' Dia. Drop Manhole	502.1	EA.	1		
97	Extra Depth for 4' Dia. Manhole	2053-2091	V.F.	4		
98	Extra Depth for 5' Dia. Manhole	2053-2091	V.F.	3		
99	Trench Safety (Depth 0-10 FT)	107.19.3	L.F.	745		
100	Trench Safety (Depth 10-20 FT)	107.19.3	L.F.	168		
101	Temporary Asphalt Pavement Repair	403.1	L.F.	408		
102	Asphalt Pavement Repair		L.F.	70		
					Total Base Bid	
					Total Bid	

RFP # 5552
EXHIBIT 2
Technical Specifications for Supply of Concrete Streetlight Poles

A. PURPOSE
The City of Denton is providing information that will allow prospective suppliers to prepare proposals to supply **Concrete Streetlight Poles**. The products will be received and distributed from the Denton Municipal Electric Pole Yard, located at 1701C Spencer Rd, Denton, TX 76205. Orders will be placed as needed over the contract term.

B. PROPOSALS
Proposals shall be provided using the Exhibit 1 Pricing Sheet, with supporting documentation as required. Additional information clarifying the supplier's product may be attached to the proposal. Pricing shall include all costs to deliver goods as specified in this specification. Any special fees or commissions, and all freight for delivery to the City of Denton Warehouse and unloading costs must be included in the quoted price. Item pricing shall be mutually exclusive, thus the City of Denton reserves the right to choose the best valued item from different vendors.

C. QUALITY CONTROL
The manufacturer shall be responsible for the quality control of the manufacturing processes to assure that all requirements of these specifications are met. However, the purchaser reserves the right to observe, to inspect and to require additional quality control investigations, either by its personnel or an independently employed quality control investigator, at any or all stages of fabrication at the manufacturer's facilities. Failure to adequately maintain fabrication and quality of fabrication until completion shall be grounds for cancellation of the order or any part thereof.

Field failure or field repairs required due to quality control failures or manufacturing procedures shall be the responsibility of the manufacturer.

D. WRITTEN WARRANTY and GUARANTEES
Written guarantees shall include any limitations as to the nature of failure or time limitations. The guarantee shall begin upon receipt of the accepted units, not on the date of manufacture. Guarantees shall indicate whether or not it is made on a full replacement basis or a prorated basis and if prorated then what are the terms. Manufacturer/supplier guarantees that the goods furnished under this specification are of high quality and agrees to replace any goods found to be defective during inspection, installation, or service for a minimum period of 12 months after unit is delivered to Denton. All replacements by the manufacturer/supplier shall be free of charge F.O.B. at the same delivery point called for in the original order. Replacements must be handled in a professional and timely manner and in no case shall a replacement unit take longer than 60 days to arrive in Denton after first being submitted for replacement.

Offeror guarantees that all products quoted and furnished under this agreement will be accepted at any normally used United States approved repair and warranty shop should one be available for the manufacturer's product quoted. The City of Denton will not accept a manufacturer's product that was rejected or substandard and then sold to a broker for either resale or scrap that would not be fully warranted by the original manufacturer.

The offeror must be an approved distributor by the manufacturer of these products, and is authorized to sell the products to the City of Denton. The offeror also guarantees that the City will be represented by the Manufacturer, should an issue arise, and that all manufacturer's warranties will be in effect for the life of the contract.

E. SPECIAL DELIVERY REQUIREMENTS

Delivery of good shall be made within two (2) weeks of receipt of order.

F. ACCEPTABLE MANUFACTURERS

DME will only accept proposals from specific manufacturers listed in the approved manufacturers list below.

1. Lonestar Prestress Mtg., Inc.
2. CPI Concrete Products

For aesthetic and operational reasons, all of the concrete poles of both street pole types shall be the same design as previously utilized on Denton Municipal Electric's electric distribution system.

The City has implemented a pre-approval process for substitution commodities and services. The commodity approval form can be obtained via email (rebecca.hunter@cityofdenton.com). Supporting documentation or samples must be submitted for review by Purchasing, Engineering, field crews, QAG (Quality Assurance Group), and the manager of DME. Testing may be required and may take substantial time to review. Vendors are encouraged to submit forms and samples for consideration on the **next** solicitation for similar items.

There are two types of poles included in this RFP:

1. **35-foot long, square faced pre-stressed white concrete street light poles with each one having a single eight foot long tapered aluminum single arm bracket with attachment hardware**. The resulting contract from this solicitation will supply all the 35-foot long white concrete pole street light poles and single eight-foot aluminum arm brackets required by Denton Municipal Electric throughout the year on an as needed basis.

   The 35-foot long white concrete street light poles shall be designed for mounting a cutoff cobra-head luminarie approximately 29-feet above grade with an 8-foot long tapered aluminum arm bracket. The concrete street pole shall be suitable for a direct soil embedment of 6-feet. The concrete poles are intended for residential streetlight and city park application use and replacement.

2. **20-foot long, pre-stressed exposed aggregate concrete streetlight poles in the Waterford Series style.** The poles shall be suitable for direct embedment into the ground without a special foundation. An exposed river rock aggregate with brown dye (San Jacinto Brown) added to the concrete shall be the finish for these poles. The resulting contract from this solicitation will supply all the 20-foot long exposed aggregrate concrete street light poles required by Denton Municipal Electric throughout the year on an as needed basis.

The dimensions of the required streetlight poles are presented in the attached drawings.
Individual purchase orders will define the number of new commercially 35-foot long white concrete street light poles with tapered aluminum single arm brackets and the 20-foot pre-stressed, Exposed

Aggregate Concrete Streetlight Poles–Waterford Series that are to be furnished periodically throughout the agreement term as the need arises. A purchase agreement will last for a period of three years from the date of award by the City Council of the City of Denton.

The manufacturer shall provide warranties or guarantees of the proposed equipment and material. The bidder shall furnish the City of Denton with such warranties or guarantees upon request by the City of Denton.

TECHNICAL SPECIFICATIONS FOR 35-FOOT CONCRETE POLES AND ALUMINUM ARM:

The 35 foot long white concrete street poles shall meet or exceed the latest applicable American Concrete Institute "Building Code Requirements for Structural Concrete" (ACI 318-Latest Edition), unless otherwise specified. Poles shall be designed in accordance with the Prestressed Concrete Institute "Guide for Design of Prestressed Concrete Poles", and Prestressed Concrete Institute MNL-116, "Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products". The following ASTM Standards shall apply: ASTM C105 Portland Cement; ASTM C494 Admixtures; ASTM C33 or C330 Aggregates; ASTM A615 Reinforced Bars; ASTM A82 Cold Drawn Spiral Wire; ASTM A416 Prestressing Strand, 270K; ASA Aluminum Association #6063-T6; along with all other appropriate National Electric Manufacturers Association Standards or industry standards.

The manufacturer is responsible for poof of compliance with the latest version of the ASTM standards.

<u>The prestressed concrete poles shall have the following construction features:</u>

EMBEDMENT: All poles shall be prestressed concrete and suitable for direct embedment into the ground without special foundations. Poles will typically be buried at a six-foot depth for the 35 foot long pole but that could vary slightly due to soil conditions that are encountered.

SHAPE AND LENGTH: Poles shall be squared in cross-section, with chamfered corners, and shall have a taper of 0.162 inch per foot. Cross-sectional dimensions shall not deviate by more than 3/8 inches. The pole length shall have a nominal overall shaft of 35 feet. The allowable tolerance for overall length shall be +3 inches and –2 inches.

FINISH: The **surface of the pole shall be smooth, uniform and consistent for the entire length of the pole. No cracks will be allowed.** Squared corners and sharp edges shall be tooled to form smooth, chamfered corners and edges. The top surface of the pole shall be troweled until all projections, depressions, and irregularities have been removed and the entire surface has a smooth texture and neat lines. **<u>The pole color shall be Portland White</u>**. All small cavities shall be cleaned, saturated with water and then filled with mortar. A small cavity is defined as one larger than ¼ inch but smaller than ¾ inch in diameter, and opening the side of the damaged area on a 1 to 1 slope using a mechanical grinder, cleaned thoroughly and filled with a high-strength non-shrink concrete repair material. Poles with other defects may be repaired only upon authorization or they will be rejected and must be promptly replaced at the manufacturer's full expense including freight for both the new and rejected pole.

SEALING STEEL STRANDS: The end of each reinforcing strand (in the tip and base) shall be burned back to a minimum depth of ½ inch. The holes left by the removal of the strand shall be thoroughly cleaned of any loose residue. The holes shall then be completely filled with no-shrink grout and smoothed evenly with tip or butt surface.

COVER: The prestressing strands shall have a minimum concrete cover of 1 inch. The centerline axis along the faces of the poles shall be clear of embedded steel except for stirrups, spiral reinforcement and fabrication devices, so that ¾ inch diameter holes may be drilled without interference from the strands.

SWEEP: A straight line joining the edge of the pole at the butt and the edge of the pole at the top shall not vary in distance from the surface of the pole at any point by more than 3/8 inch for each 10 feet of the pole length from the taper design.

HOLE DRILLING: Poles shall be drilled in accordance with the approved drawings. The location of holes shall not deviate by more than 3/8 inch. Holes drilled after removal from molds shall be drilled from both sides of the pole and shall be uniform at the entrance and exit locations. Holes drilled from opposite sides must be in the same plane and be centered on both faces.

ALUMINUM BRACKET: Each pole shall come with a side mounted 8-foot long tapered aluminum single arm bracket that can be bolted to the pole using 5/8" x 6" galvanized machine bolts with flat washers, lock washers and nuts (all hardware shall be provided by the manufacturer). The luminaire support shall be a two inch, ASA schedule #40 per Aluminum Association #6063-T3, IPS aluminum pipe similar to the pictures attached in the Appendix. The arm shall provide a nominal overall luminaire mounting distance from the pole base of not less than 36 feet, which will provide a nominal 30-foot height above grade.

HANDHOLD: Each pole shall come with a 3 inch by 8 inch by 6-inch deep, recessed handhold box with aluminum cover. Two, 1-1/2 inch diameter raceways shall enter the box from below originating on opposites of the pole and one ¾ inch raceway will leave the box from the top. The top raceway will connect the box to the aluminum arm at the pole top. The two bottom raceways will enter the pole 4.5 feet from the pole butt and on opposite sides of the pole from each other. The hand hole shall be centered 8 feet from the pole butt as shown in the Appendix. Handhold shall be large enough to adequately house all wiring, possible fusing and grounding connections.

NAME PLATE: The vendor shall provide a non-corroding identification plate on each pole. The plate shall be located 12 feet from the butt and on the same side of the pole as the light bracket. The identification plate shall have the manufacturer's name, the pole catalog number, and a five-digit pole identification number. Denton Municipal Electric (DME) will provide the vendor with the pole identification numbers after the bid has been awarded.

STRENGHT REQUIREMENTS: The concrete used in the pole shall have a compressive strength at time of shipment of not less than 4,000psi, and a 28-day compressive strength of not less than 7,000psi. The concrete chloride content, including all ingredients, shall be 0.4 pounds per cubic yard or less. All poles shall be capable of withstanding a single point pickup while laying in a horizontal position when being lifted at a point 30% of the overall length down from the tip of the pole.

GROUNDING: A standard ground wire in the hand hole shall be securely bonded to a continuous steel bar running the length of the pole. The ground wire in the hand hole shall be a #6 stranded copper ground wire. The length of the #6 stranded ground wire shall be of sufficient length so that it will be able to be extended out of the hand hole by at least 6 inches so connections can be made.

Material shall comply with the most recent revision of the following ASTM Standards:

CEMENT: Portland cement shall conform to the current specifications for "Portland Cement" (ASTM Designation C 150). Cement shall be stored in a dry, well-ventilated location protected from weather. Color shall be Portland White.

AGGREGATES: Crushed rock aggregates shall meet current requirements of "Specification for Concrete Aggregates" (ASTM Designation C33).

WATER: Water used in mixing concrete shall be clean and free from a deleterious amount of silt, oil, acids, alkalies or organic materials.

STEEL: High-tensile prestressing wire shall conform to the current specifications for "Uncoated Seven–Wire Stress-Relieved Strand for Prestressed Concrete "(ASTM Designation A416), Grade 250 or ASTM A421. The strands shall be protected from physical damage or deterioration.

BAR: Bars for reinforcement shall conform to "Deformed Billet Steel Bars for Concrete Reinforcement" (ASTM Designation A615).

WIRE: Wires for reinforcement shall conform to "Cold-Drawn Steel Wire for Concrete Reinforcement" (ASTM Designation A615).

PLATE STEEL: Plate steel shall conform to "Structural Steel" (ATSM Designation A36).

CURE: The primary cure time shall be of such length that sufficient compression strength of concrete is attained to prevent slippage of the prestressing cables. The cure method shall prevent loss of moisture in the standard. Upon removal of the standard from the mold, it shall be protected from the sun and wind for a period 48 hours for proper curing. The standards shall receive an additional air cure time of 15 days before shipment and installation.

PRESTRESSING: After concrete has attained the required compression strength, the high–tensile prestresssing strand shall be released so that its tension is a maximum of 70% of its ultimate strength at time of stress transfer.

SURFACE TREATMENT: The surface may be exposed from the mold after sufficient concrete curing and the resulting surface shall be uniform in lines and surface texture. Seam marks from concrete mold shall be removed and pole inspected for any voids or imperfections.

BONDING: Reinforcing steel, strand, wire, and studs bolts, anchor lugs or plates shall all be electrically bonded. Arms shall be bonded through the use of this electrical bond and be accessible to the handhold ground wire.

TESTING: Test shall be made and records shall be maintained in accordance with the requirements of Prestressed Concrete Institute MNL-116, "Manual for Quality Control for Plants and Production of Precast Concrete Products".

HARDWARE: All hand hole fasteners must be stainless steel ¼" – 20 x ¾" Allen (Hex) pan head bolt-3/4" long, hot dip galvanized as per ASTM A153 or zinc alloy as per AC41A. All structural steel shall be hot dip galvanized in accordance with ASTM A123 and shall conform to ASTM A36.

TECHNICAL SPECIFICATIONS FOR 20-FOOT PRE-STRESSED EXPOSED AGGREGATE CONCRETE STREETLIGHT POLES:

The 20-foot Pre-stressed Concrete Streetlight Poles – Waterford Series shall meet or exceed the latest applicable ASTM standards. The 20-foot Pre-stressed Concrete Streetlight Poles – Waterford Series shall conform to the latest revisions of ASTM C105, ASTM C494; ASTM C33 or C330, ASTM A615; ASTM A82; ASTM A416 standards.

American Concrete Institute Standard "Building Code Requirements for Reinforce for Reinforce Concrete" (ACI 318 – Latest Edition).

The Prestressed Concrete Institute "Guide for Design of Prestressed Concrete Poles".
The manufacturer is responsible for poof of compliance with the latest version of the ASTM standards.

DESIGN: A registered engineer experienced in concrete pole design shall perform all pole design and structural calculations. The poles shall be designed with an overall length and strengths as specified in the bid proposal. All poles shall be pre-stressed concrete and suitable for direct embedment into the ground without special foundations.

MATERIAL:
a). Concrete used in poles shall have a compressive strength at transfer of not less than 4,000 PSI, and a 28-day compressive strength of not less than 7,000 PSI, unless otherwise specified.
b). Low Alkali Cement; Cement for concrete shall be Low Alkali Type I/II.
c). Chloride Content of the concrete mix, including all ingredients, shall be 0.4 pounds per cubic yard, or less.
d). Corrosion Resistance: All inserts or attachments, if required, shall be of non-corrosive material or galvanized.

STRENGTH REQUIRMENTS: Pole shall be design for wind pressures determined in accordance with ASCE 7-02 for a 3-second gust wind speed of 140 mph. The rated strength is that load which, if applied, in a direction perpendicular to the pole axis two feet below the pole tip and with the bottom of the pole (ten percent of its length plus two feet from the butt) held firm, will produce the first sign of a hairline crack. The ultimate strength is the load at which point failure occurs. All poles shall be capable of withstanding single point pickup from the horizontal position when lifting from a point 30% of the overall length down from the tip.

FINISH: The finish will be exposed river rock aggregate with brown dye added to the concrete (not painted or sprayed on), similar to the Lonestar Prestress Mfg., Inc.'s San Jacinto Brown finish**.**

After poles are removed from the molds, all surfaces are to be water blasted to expose the aggregate. All small cavities shall be cleaned, saturated with water and then filled with mortar. A small cavity is defined as one larger than 1/4 inch but smaller than 3/4 inch in diameter, and less than 3/8 inch deep. Larger non-structural cavities and spalls shall be repaired by opening the side of the damage area on a 1 to 1 slope using a mechanical grinder, cleaning thoroughly and filling with a high-strength non–shrink concrete repair material.

SHAPE AND LENGTH: Poles shall be squared in cross-section, with chamfered corners, and shall have a standard taper of 0.162 inches per foot. Cross-sectional dimensions shall not deviate by more than 3/8 inch. The allowable tolerance for overall length shall be +3 inches and –2 inches. The width of the bottom face of the pole (as it is cast) may be less than the top face.

SEALING STEEL STRANDS: The end of each steel-reinforcing strand (in the top and butt) shall be burned back to a minimum depth of ½ inch. The holes left by the removal of the strand shall be thoroughly cleaned of any residue. The holes shall then be completely filled with non-shrink grout and smoothed evenly with tip or butt surface.

COVER: The pre-stressing strands shall have a minimum concrete cover of 1 inch.

CENTERLINE AXIS: The centerline axis along the faces of the pole shall be clear of embedded steel except for stirrups, spiral reinforcement and fabrication devices, so that ¾ inch diameter holes may be drilled without interference from the strands.

SWEEP: Sweep is the deviation of a pole from straightness. A straight line joining the edge of the pole at the butt and the edge of the pole at the top shall not be distant from the surface of the pole at any point by more than 3/8 inch for each ten feet of length.

HOLE TOLERANCES: Poles shall be drilled in accordance with approved drawings. The location of the holes shall not deviate by more than 3/8 inch. The distance between equipment mounting holes shall not deviate by more than ¼ inch. Holes drilled after removal from molds shall be drilled from both sides of the poles and shall be uniform in entrance and exit. Holes drilled from opposing sides of the pole must be in the same plane and be centered on both faces. Field drilling shall be permitted on the centerline of either axis.

PVC INTERNAL RACEWAY: A PVC conduit for installation of a secondary voltage wire will be cast with the 20ft Pre-stressed Exposed Aggregate Concrete Streetlight Poles – Waterford Series. The conductor entrance will be 24" from the butt of the pole. The PVC conduit shall be a minimum of 1"inch from the entrance to the hand hole box. From the hand hole box to the tenon pipe, the PVC conduit shall a minimum of ½". The PVC conduit shall be off-centered to allow centerline drilling if necessary. The entrance outlets are to be at 45-degree angles. The conductor entrance and hand hole box are to be on the same side of the pole.

HANDHOLE BOX: Each pole shall come with a 3 inch by 8 inch by 6 inch deep, recessed handhold box with a 4 inch by 12 inch aluminum cover. One, 1-inch diameter raceway shall enter the box from below the pole and one 1/2 inch raceway will leave the box from the top. The top raceway will connect the box to the tenon pipe at the pole top. The bottom raceways will enter the pole 2 feet from the pole butt. The handhole shall be centered 6 feet from the pole butt as shown in the Appendix. Handhole shall be large enough to adequately house all wiring, possible fusing and grounding connections. The hand hole box and the conductor entrance are to be on the same side of the pole.

CORNERS: All corners shall be ¾" chamfered.

BIRTHMARK: All poles shall be permanent marked legibly and permanently on the pole face with a metal tag affixed thereto. The metal tag for the face of the pole shall be round, noncorrosive, and tight-fitting and recessed 1/4 inch. Mounting height shall be above the ground line will be specified on the approved drawing. The metal tag shall have the following information:

1. The supplier's code or trademark.
2. Class numeral and numerals showing the length of the pole.
3. Date
4. Weight

RECESSED: On the face of the pole there shall be a recessed area 5 ½" inches by 1 ¾" inches for a DME specified pole tag to be mounted.

TENON PIPE: The hot dipped galvanized tenon pipe shall be, 3"x2-3/4" after weld attachment and 2-3/8"O.D. x 2-1/2" located on the tip of the pole. Per attached drawing.

INSERTS: The inserts shall be 3/8" bolt 1 ½" insert per attached drawing. The inserts shall mount stop sign and street name signs. Per attached drawing.

APPROVED MANUFACTURERS:

Lonestar Prestress Mtg., Inc.
CPI Concrete Products

For aesthetic and operational reasons, all of the concrete poles of both street pole types shall be the same design as previously utilized on Denton Municipal Electric's electric distribution system and will only be accepted from the manufacturers listed above.

APPENDIX A

New 8 foot long tapered aluminum streetlight arm bracket

APPENDIX A

New 8 foot long tapered aluminum streetlight arm bracket

APPENDIX A

35-foot long white concrete streetlight pole w/ 8 foot tapered aluminum arm bracket

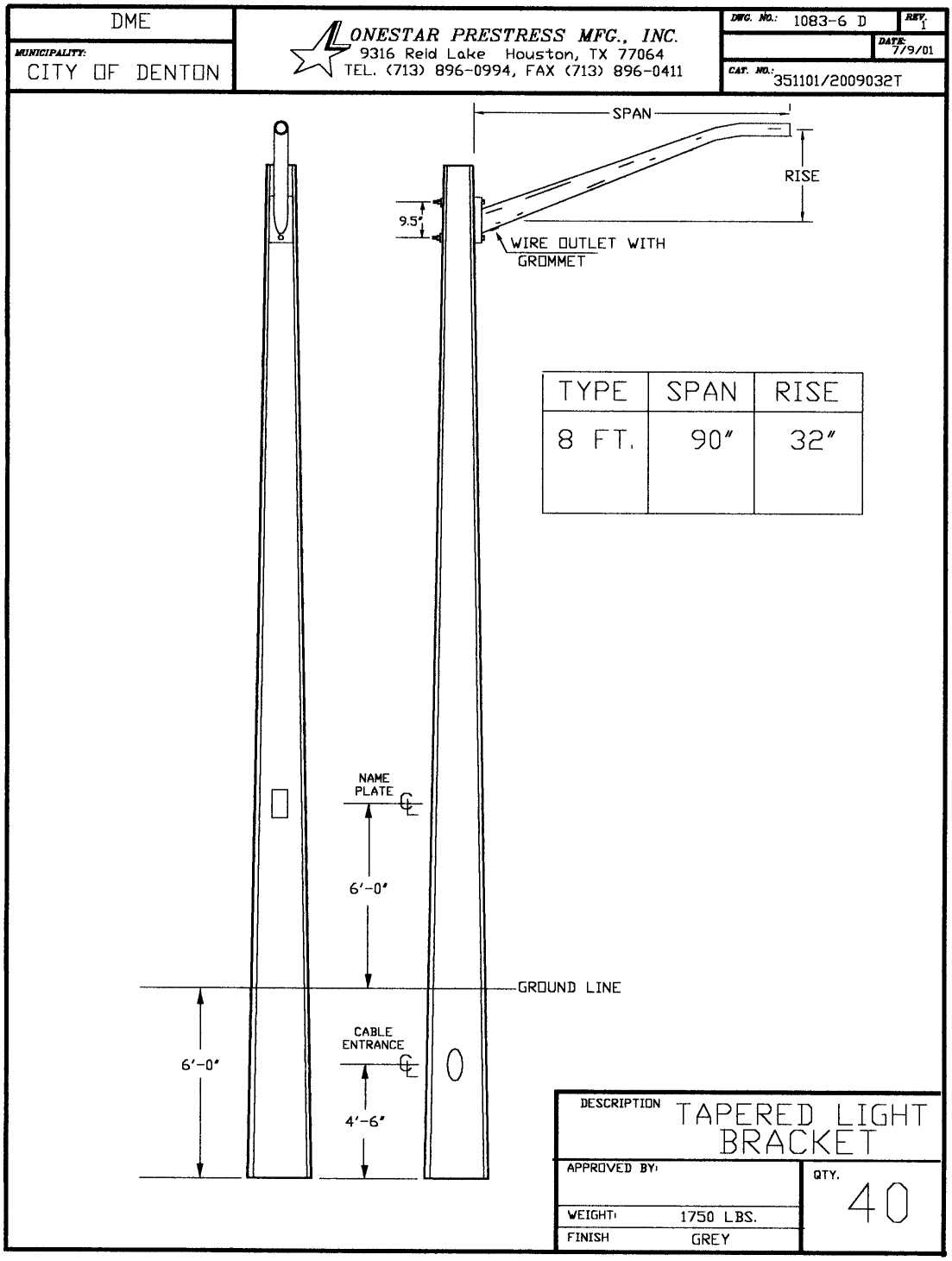
APPENDIX A

Typical 20 ft long (San Jacinto Brown finish) concrete streetlight pole (Exposed aggregate finish)

APPENDIX A

Close-up view of exposed aggregate surface on 20 foot pole and tag provisions

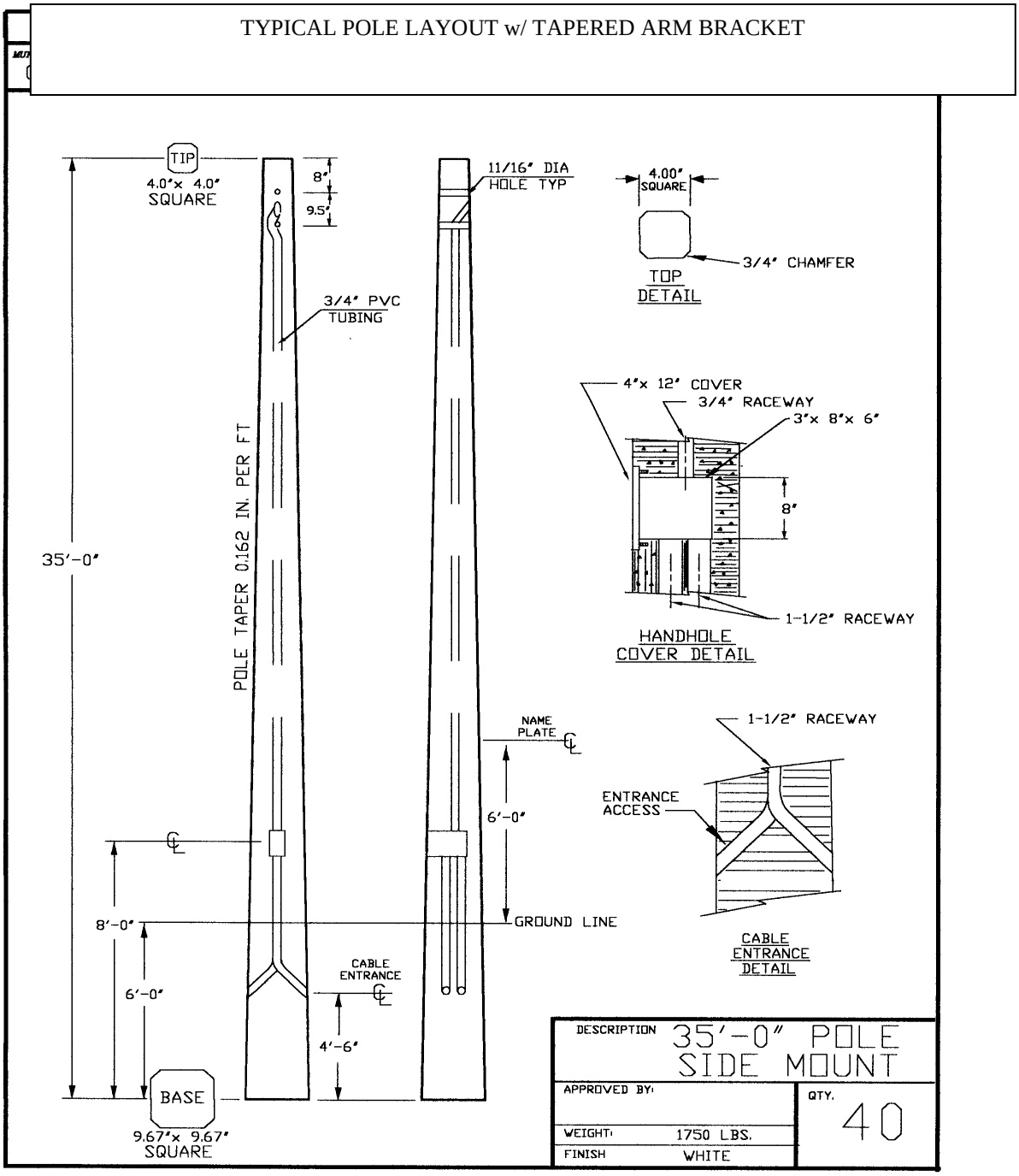
APPENDIX B



35-foot long white concrete streetlight pole w/ 8 foot tapered aluminum arm bracket

APPENDIX B

TYPICAL POLE LAYOUT w/ TAPERED ARM BRACKET



35-foot long white concrete streetlight pole w/ 8 foot tapered aluminum arm bracket

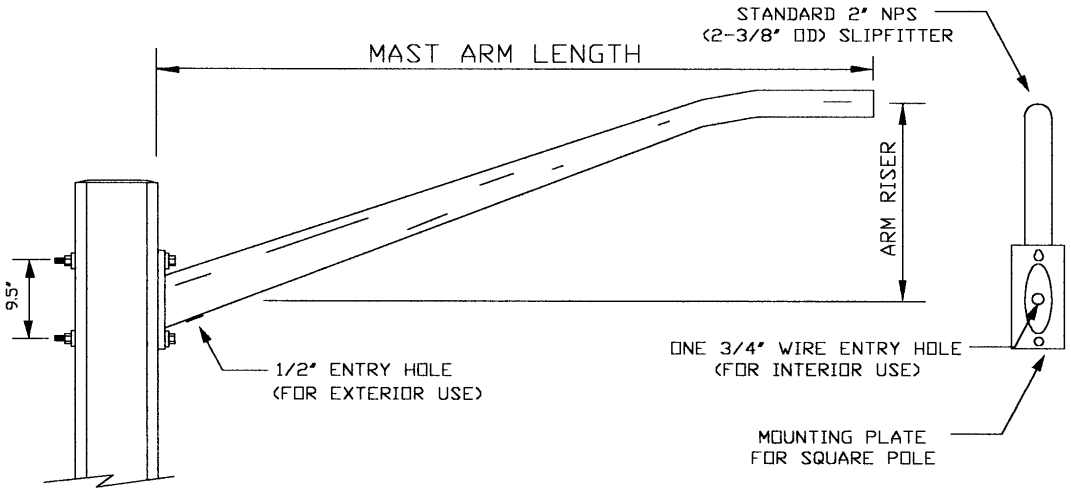
APPENDIX B

ELECTRIC ENGINEERING

CITY OF DENTON

LONESTAR PRESTRESS MFG., INC.
9316 Reid Lake Houston, TX 77064
TEL. (713) 896-0994, FAX (713) 896-0411

DWG. NO.: 1083-6 D REV. 1
DATE: 7/9/01
CAT. NO.:



ALUMINUM TAPERED OVAL MAST ARM
TO MEET THE ANSI C136.13 SPECIFICATIONS
FOR METAL BRACKETS USED ON ROADWAY LIGHTING

DESCRIPTION
STREET LIGHTING
ARM AND MOUNTING

APPROVED BY:

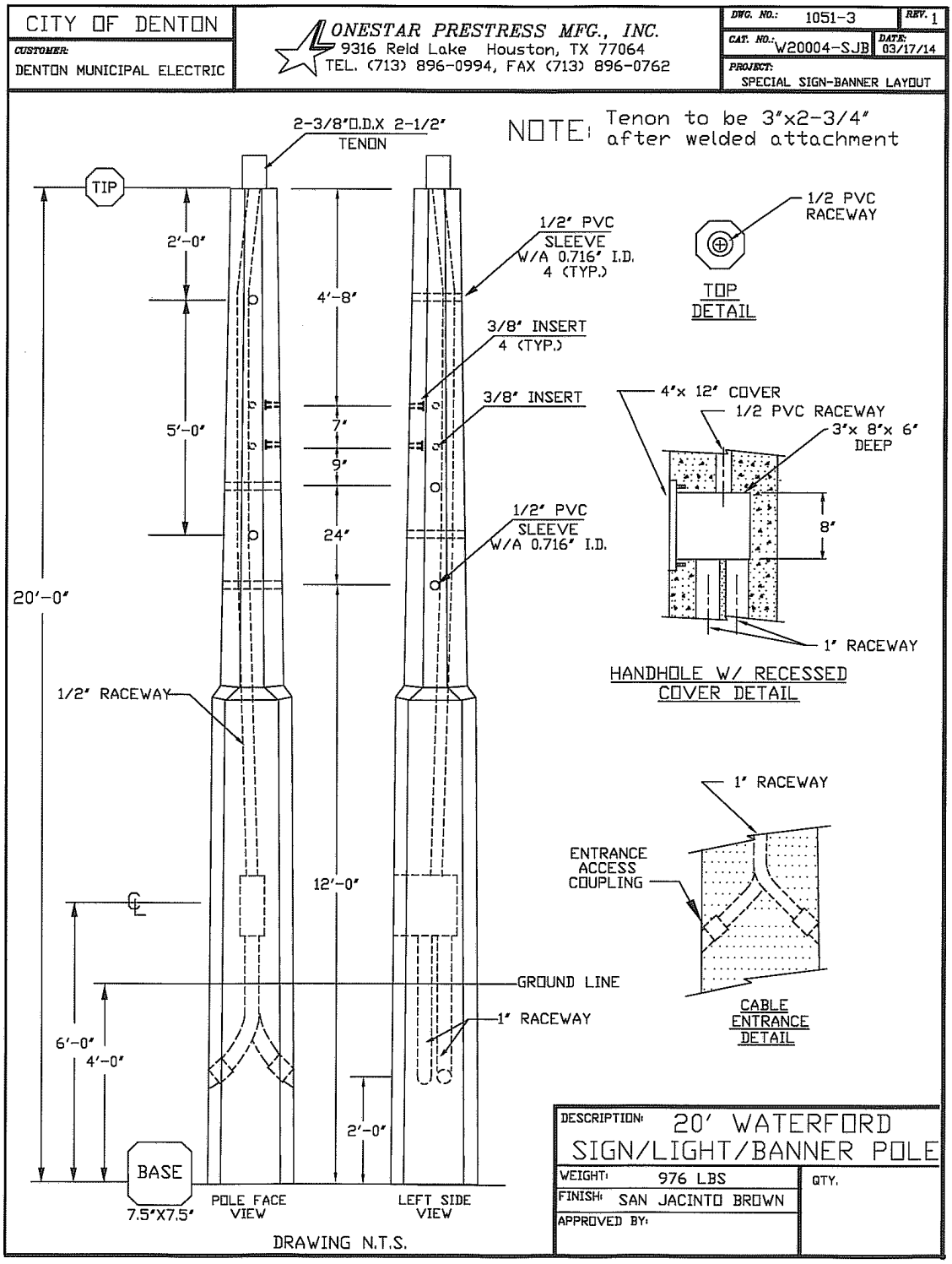
QTY.

WEIGHT:

FINISH

8 foot tapered aluminum arm bracket

APPENDIX B


CITY OF DENTON
CUSTOMER:
DENTON MUNICIPAL ELECTRIC
LONESTAR PRESTRESS MFG., INC.
9316 Reid Lake Houston, TX 77064
TEL. (713) 896-0994, FAX (713) 896-0762
DWG. NO.: 1051-3
REV. 1
CAT. NO.: W20004-SJB
DATE: 03/17/14
PROJECT: SPECIAL SIGN-BANNER LAYOUT
NOTE: Tenon to be 3"x2-3/4" after welded attachment
2-3/8"O.D.X 2-1/2" TENON
TIP
2'-0"
5'-0"
20'-0"
4'-8"
7"
9"
24"
12'-0"
2'-0"
1/2" PVC SLEEVE W/A 0.716" I.D. 4 (TYP.)
3/8" INSERT 4 (TYP.)
3/8" INSERT
1/2" PVC SLEEVE W/A 0.716" I.D.
1/2" RACEWAY
GROUND LINE
1" RACEWAY
6'-0"
4'-0"
BASE
7.5"X7.5"
POLE FACE VIEW
LEFT SIDE VIEW
DRAWING N.T.S.
1/2 PVC RACEWAY
TOP DETAIL
4"x 12" COVER
1/2 PVC RACEWAY
3"x 8"x 6" DEEP
8"
1" RACEWAY
HANDHOLE W/ RECESSED COVER DETAIL
1" RACEWAY
ENTRANCE ACCESS COUPLING
CABLE ENTRANCE DETAIL
DESCRIPTION: 20' WATERFORD SIGN/LIGHT/BANNER POLE
WEIGHT: 976 LBS
FINISH: SAN JACINTO BROWN
APPROVED BY:
QTY.

APPENDIX B

The Waterford Series Special Sign Layout

Quadrant A

Distance From Top			Details
Feet	Inches	Total Inches	

Quadrant B

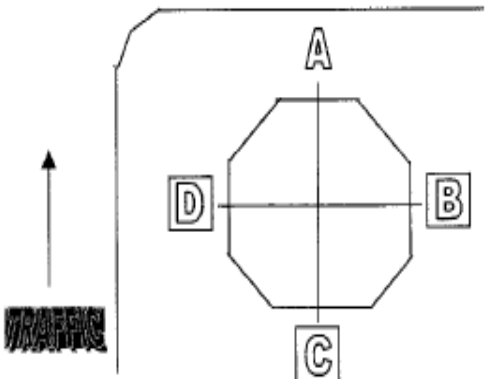
Distance From Top			Details
Feet	Inches	Total Inches	
14	9	177	Street Sign 3/8" Bolt 1.5" Insert
15	4	184	Street Sign 3/8" Bolt 1.5" Insert
18	4	220	Raceway Entrance/1" conduit

Quadrant C

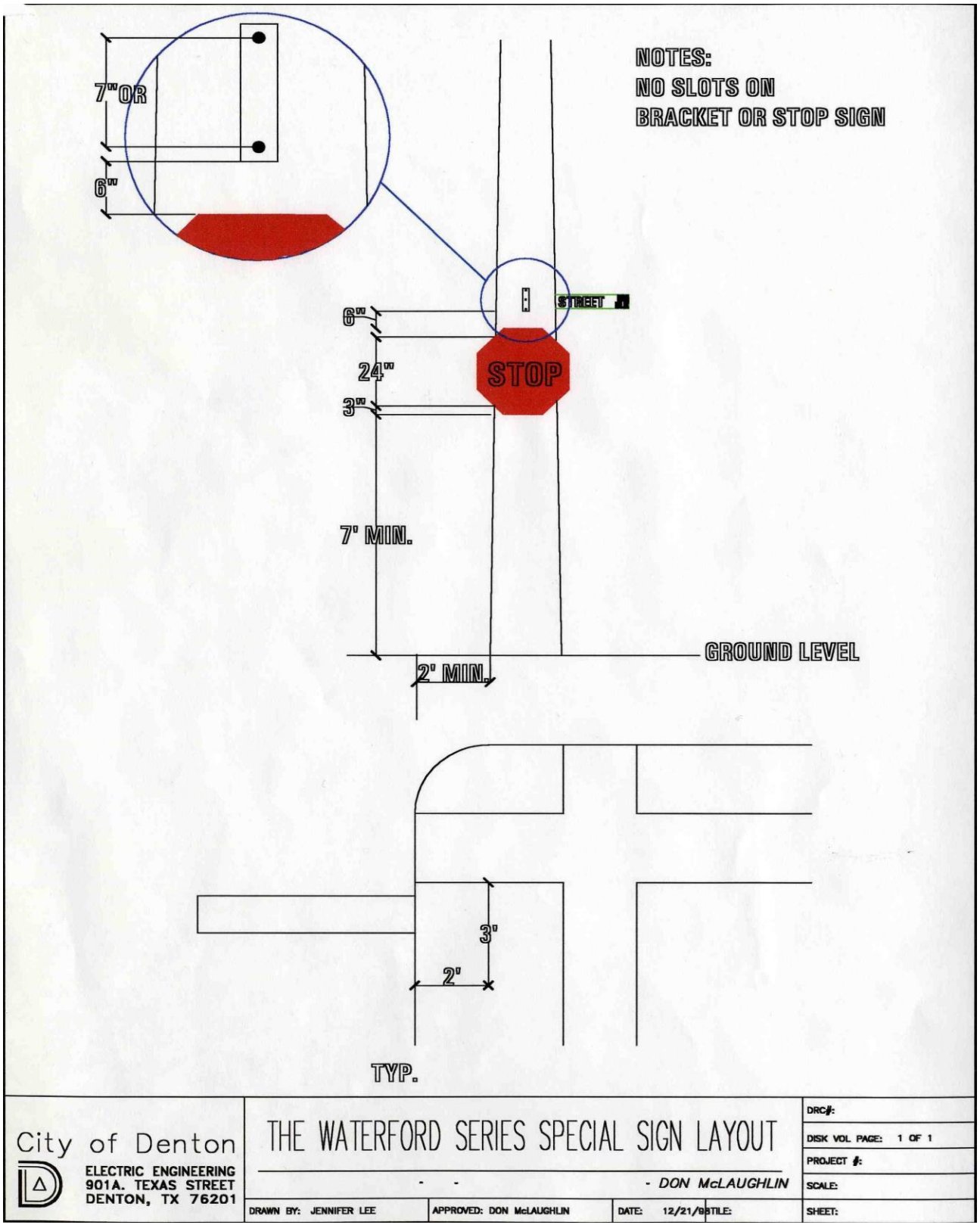
Distance From Top			Details
Feet	Inches	Total Inches	
12		144	Stop Sign/3/8" Bolt 1.5" Insert
14		168	Stop Sign/3/8" Bolt 1.5" Insert
14	9	177	Street Sign 3/8" Bolt 1.5" Insert
15	4	184	Street Sign 3/8" Bolt 1.5" Insert

Quadrant D

Distance From Top			Details
Feet	Inches	Total Inches	



APPENDIX B


NOTES:
NO SLOTS ON
BRACKET OR STOP SIGN
7"OR
6"
STREET
6"
24"
STOP
3"
7' MIN.
GROUND LEVEL
2" MIN.
3"
2"
TYP.
City of Denton
ELECTRIC ENGINEERING
901A. TEXAS STREET
DENTON, TX 76201
THE WATERFORD SERIES SPECIAL SIGN LAYOUT
- DON McLAUGHLIN
DRC#:
DISK VOL PAGE: 1 OF 1
PROJECT #:
SCALE:
SHEET:
DRAWN BY: JENNIFER LEE
APPROVED: DON McLAUGHLIN
DATE: 12/21/98
FILE:

Contractor Questions and Clarifications

1. There are no SPEC Section for the electrical.

   DME only provided specs for the concrete poles, no other specs were provided to the engineer for electrical service.

2. What size and type of pull box are they specifying.

   Detail sheet 101B was added showing detail ED(4)14 with this addendum for the Type A ground box.

3. On Drawing page 52 there is a #2 that states power source, but there is not a #2 on the Legend.

   On Sheet 52 where the location of the #2 is only showing the location of the power source.

4. When they say electrical service, what all do they want, what size service, panel , transformer exc.

   DME never provided, a price will be added to the bid proposal for this item.

5. No detail showing how Street Light Poles are to be anchored or placed? Ie pier size and depth

   The details for the street light poles can be found on sheet 101. The concrete poles are just direct buried in the ground to a depth of 6 foot per detail and per Exhibit 2 – Technical Specifications for Supply of Concrete Streetlight Poles.

CITY OF DENTON

PLANS FOR THE CONSTRUCTION OF:

PAVING AND DRAINAGE IMPROVEMENTS

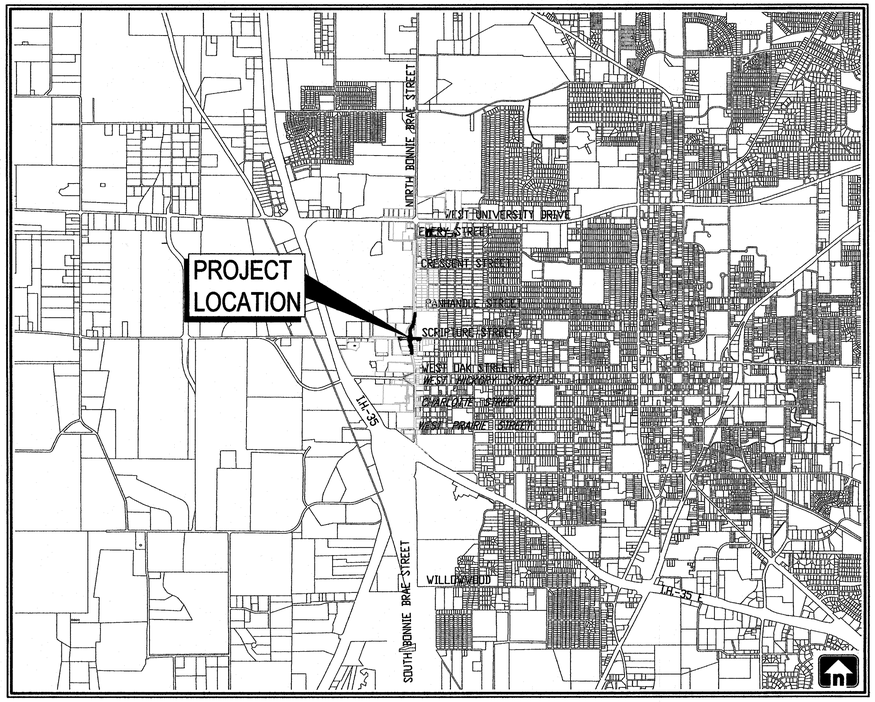
FOR

NORTH BONNIE BRAE STREET

AT SCRIPTURE STREET ROUNDABOUT

CITY OFFICIALS

MAYOR :	CHRIS WATTS
CITY COUNCIL :	GERARD HUDSPETH KEELY G. BRIGGS DON DUFF JOHN RYAN DEB ARMINTOR PAUL MELTZER
CITY ENGINEER :	TODD ESTES, P.E.



VICINITY MAP
N.T.S.

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3-8	QUANTITY SHEETS
9-11	PROJECT LAYOUT AND REMOVAL PLANS
12-13	TYPICAL SECTIONS
14-24	TRAFFIC CONTROL PLANS
25-31	PAVING PLAN/PROFILE SHEETS
1 32	OMITTED
33	INTERSECTION LAYOUTS
1 34	OMITTED
35	DRAINAGE AREA MAP
36-37	RUNOFF, INLET & DRAINAGE COMPUTATIONS
38-44	DRAINAGE PLAN/PROFILES
45-46	DRAINAGE LATERALS
47-49	EROSION CONTROL PLANS
50-52	STREET LIGHT LAYOUT
53-55	STRIPING AND SIGNING PLANS
56-57	SANITARY SEWER IMPROVEMENTS
58-83	TRAFFIC CONTROL DETAILS
84-89	PAVING DETAILS
1 90-91	OMITTED
92	RETAINING WALL DETAILS
93-98	DRAINAGE DETAILS
99-100	EROSION CONTROL DETAILS
101A-101B	STREET LIGHT DETAILS
102-105	PAVEMENT MARKING DETAILS
106-107	WATER LINE DETAILS
108-111	SANITARY SEWER DETAILS

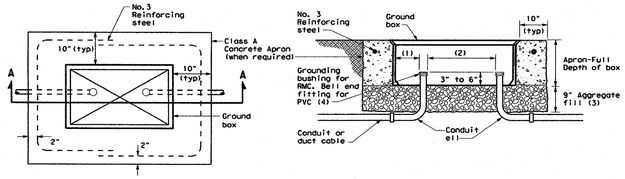
MARCH 2019

Graham Associates, Inc.
CONSULTING ENGINEERS & PLANNERS
600 SIX FLAGS DRIVE, SUITE 500
ARLINGTON, TEXAS 76011 (817) 640-8535
TBPE FIRM: F-1191/TBPLS FIRM: 101538-00

1	03/11/2019	ADDENDUM NO 1
2	03/29/2019	ADDENDUM NO 2
3	04/04/2019	ADDENDUM NO 3
4	04/11/2019	ADDENDUM NO 4

STATE OF TEXAS
JOHN H. LESNAR
92740
LICENSED
PROFESSIONAL ENGINEER
4/11/19

DATE:
FILE:



PLAN VIEW

SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOXES

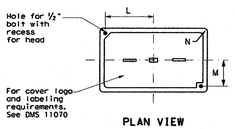
A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.
3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.
4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

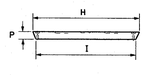
1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.
2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.
3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.
4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.
5. Temporarily seal all conduits in the ground box until conductors are installed.
6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.
7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 ¼	23	13 ¾	13 ½	9 ⅞	5 ⅛	1 ⅜	2
C & D	30 ½	30 ¼	17 ½	17 ¼	13 ¼	6 ¾	1 ⅜	2



PLAN VIEW

END



SIDE

GROUND BOX COVER

Texas Department of Transportation | Traffic Operations Division Standard

ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

710

4 04/11/2019 ADDED SHEET

CITY OF DENTON

STREET LIGHT DETAILS

NORTH BONNIE BRAE STREET
AT SCRIPTURE STREET ROUNDABOUT

Graham Associates, Inc.
CONSULTING ENGINEERS & PLANNERS
600 SIX FLAGS DRIVE, SUITE 500
ARLINGTON, TEXAS 76011 (817) 640-8535
TBPE FIRM: F-1191/TBPLS FIRM: 101538-00

DRAWN BY: JHL	PROJECT NO. 960-1053	SHEET
DATE: 4/11/2019	SHEET 2 OF 2	101B

PLOTTED BY: JOHN LESNAR
PLOTTED ON: 4/11/2019 3:07 PM
FILE NAME: J:\DENTON\BONNIE BRAE (H35E TO UNIVERSITY)\CAD\SHEETS\PHASE 4A\DETAILS\STREET LIGHT DETAILS 2.DWG
SHEET SIZE: D (LANDSCAPE) 1" = 1'