

TEXAS TRANSPORTATION COMMISSION

BRAZOS County

MINUTE ORDER

Page 1 of 1

BRYAN District

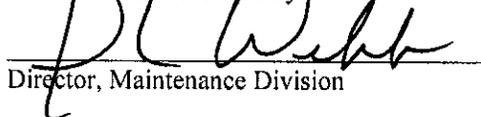
Transportation Code, §201.021, authorizes the transfer and sale of Texas Department of Transportation (department) owned property that is no longer needed to governmental entities with the authority to condemn property. Government Code, Chapter 2166 authorizes the Texas Building and Procurement Commission (TBPC) to condemn property, construct buildings for, and obtain title to land for use by other state agencies.

Under that authority, the department intends to recommend to the governor that 6.484 acres out of a 28.804 acre tract be conveyed to TBPC for the use of the Texas Department of Public Safety (TxDPS) in return for goods and services of equal value. The 6.484 acre tract has an appraised value of \$116,712. The goods and services, consisting of clearing, erection of perimeter fencing of the remaining 22.32 acres, and perpetual use of a radio tower TxDPS will build on the conveyed tract have a deemed value of \$116,712.

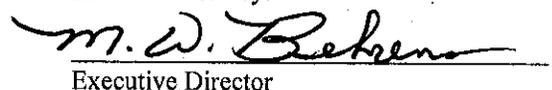
The transaction, if approved by the Office of the Attorney General and the Governor, will convey only the surface estate which is the extent of the department's ownership. A Memorandum of Understanding (MOU) will be executed among TBPC, TxDPS, and the department that articulates the roles and responsibilities of each party to the proposed transaction. The proposed MOU and its five attachments (Survey of the 6.484 acre tract, appraisal, gate specifications, fencing schematic, and radio tower specifications) are attached as Exhibit A.

IT IS THEREFORE ORDERED that the commission recommends to the governor, upon approval by the Attorney General, the conveyance of the subject property to TBPC for the use of TxDPS as described in the MOU.

Submitted and reviewed by:

  
Director, Maintenance Division

Recommended by:

  
Executive Director

**110763 NOV 16 06**

Minute Number      Date Passed

**MEMORANDUM OF UNDERSTANDING  
AMONG  
TEXAS DEPARTMENT OF TRANSPORTATION  
TEXAS DEPARTMENT OF PUBLIC SAFETY AND  
TEXAS BUILDING AND PROCUREMENT COMMISSION  
relating to the conveyance of real property in Brazos County, Texas**

WHEREAS, the Texas Department of Transportation (TxDOT) owns certain real property, further defined herein, in Brazos County, Texas;

WHEREAS, the Texas Department of Public Safety (TxDPS) desires to build a district office in Brazos County, Texas;

WHEREAS, the Texas Building and Procurement Commission (TBPC) is assisting TxDPS in their efforts to acquire land and build a district office in Brazos County, Texas; and

WHEREAS, TxDOT, TxDPS, and TBPC (collectively the Parties) are state agencies that intend to work cooperatively to meet the needs of TxDOT and TxDPS by improving real property currently owned by TxDOT and located in Brazos County and by constructing a TxDPS district office on such property.

NOW THEREFORE, TxDOT, TxDPS and TBPC hereby agree to work cooperatively and in good faith to implement this MOU as follows:

**I. Legal Authority**

**A.** TxDOT is authorized to transfer or sell real property pursuant to Transportation Code § 202.021; and further, when conducting such transfers or sales of TxDOT's real property, TxDOT shall give priority to governmental entities with the authority to condemn property.

**B.** TBPC is authorized to acquire real property to construct buildings for state purposes pursuant to Government Code § 2166.052; to obtain title for the state and retain control of real property acquired for a building site pursuant to Government Code § 2166.054; and to exercise the power of eminent domain to obtain a building site pursuant to Government Code § 2166.055.

**C.** TxDPS is authorized to construct a district office in Brazos County and to expend funds relating thereto, including funds for acquisition of real property. See Government Code § 411.014(a) and General Appropriations Act, SB 1, 79<sup>th</sup> Legislature, R.S. (2005) at pages V-45 and V-46, sections 2 and 2(a).

## II. Purpose and Applicability

**A. Purpose:** This Memorandum of Understanding (MOU) is entered into by the Parties for the purpose of conveying real property from TxDOT to TBPC for construction of a district office for TxDPS. TxDOT intends to transfer 6.484 acres from a 28.8040 acre tract of TxDOT real property to TBPC for the use of TxDPS. TxDOT will retain ownership of the remainder of the 28.8040 acre tract, which consists of 22.32 acres. TxDPS will provide improvements to TxDOT's 22.32 acre tract of real property. The improvements will benefit TxDOT and the improvements are consistent with TxDOT's master plan for the real property.

**B. Applicability:** This MOU is for the limited purpose of a real estate conveyance between TxDOT and TBPC, which shall hold title to the real property for the use and benefit of TxDPS and shall construct a district office on the real property.

## III. Obligations of the Parties

**A.** TBPC will hold title to the real property for the use and benefit of TxDPS. TxDOT will provide the survey, appraisal, and other necessary documents relating to the subject property to effectuate the conveyance. The sealed survey of the 6.484 acre tract and certified appraisal are attached hereto and incorporated herein for all purposes as **Attachment A** and **Attachment B**, respectively.

**B.** TxDOT Commissioners will make a recommendation to the Governor to transfer TxDOT's interest in 6.484 acres in Brazos County, described in **Attachment A**, to TBPC, an entity with the authority to condemn property. TxDOT shall determine the fair value of its property and so advise the Governor.

**C.** TxDPS will provide in-kind services and materials consisting of the erection of perimeter fencing around TxDOT's 22.32 acres, a gate and clearing for the fencing; and construction of a transmission tower for the joint use of TxDPS and TxDOT. These in-kind services and materials will be deemed by all parties to have a fair value of \$116,712, which is the appraised value of the 6.484 acres intended to be conveyed to TBPC for use by TxDPS. The specifications and drawing of the fence plan are attached hereto and incorporated herein for all purposes as **Attachment C** and **Attachment D**, respectively. The general specifications of the transmission tower, which will be built on the property to be conveyed, are attached hereto and incorporated herein for all purposes as **Attachment E**. TxDPS and TxDOT will confer and agree on the detailed specifications for the construction of the radio tower.

## IV. Subject Property and Services

The Parties agree that the real property discussed in this MOU is fully described in **Attachment A**. The property is a 6.484 acre tract of land located in the Moses Baine

MOU: TXDPS, TxDOT, & TBPC

Conveyance of Real Property in Brazos County, Tx

Page 2 of 4

Exhibit A

Survey Abstract No. 3, in Brazos County, Texas, being a portion of a called 28.8040 acre tract of land described in a deed to the State of Texas and recorded in volume 3995, page 222 of the official records of Brazos County, Texas, said 6.484 acre tract being more particularly described by metes and bounds in **Attachment A**.

The Parties agree that the fair value of the real property is \$116,712 pursuant to the appraisal designated as **Attachment B**.

TxDPS agrees to provide to TxDOT in-kind services consisting of clearing the perimeter for fencing, erecting fencing and a gate in accord with TxDOT's specifications and allowing TxDOT to share a radio tower constructed with specifications that will enable TxDOT's use at a site mutually agreeable to TxDOT and TxDPS.. Clearing the perimeter and the fencing of the perimeter of TxDOT's 22.32 acres (see **Attachments C and D**) are deemed to have a value of \$60,000. The value of perpetually sharing the use of the radio tower which is built according to specifications (**Attachment E as an example**) that will enable TxDOT to use the radio tower are deemed to have a value of \$56,712. These in-kind services equal the appraised value (\$116,712) of the property to be conveyed. These values will not be changed to reflect values at the time of actual performance of the transactions and services herein contemplated.

TxDPS will begin to undertake the clearing of the land for the fencing and the erection of the fencing and a gate within 90 days of receiving a notice to proceed from TxDOT. TxDPS may construct the radio tower at its convenience and upon agreement with TxDOT regarding the specifications and location of the radio tower. TxDOT will be responsible for all inspections, maintenance and operation of its equipment on and around the radio tower, including any applicable registrations, permits and licenses.

Each party to this MOU agrees that it shall have no liability whatsoever for the actions and/or omissions of the other party's employees, officers or agents, regardless of where the individual's actions and/or omissions occurred. Each party is solely responsible for the actions and/or omissions of its employees, officers and agents; however, such responsibility is only to the extent required by Texas law. Where injury or property damage result from the joint or concurring acts and/or omissions of the parties, any liability shall be shared by each party in accordance with the applicable Texas law, subject to all defenses, including governmental immunity. These provisions are solely for the benefit of the parties hereto and not for the benefit of any person or entity not a party hereto; nor shall any provision hereof be deemed a waiver of any defenses available by law.

TxDPS, TBPC and TxDOT shall comply with any applicable laws, ordinances, rules and regulations of any governmental body having jurisdiction over the radio tower program, installation and operations.

The Parties understand and agree that completion of the construction of the in-kind services is subject to construction schedules and contractors not yet identified and consummation of the conveyance of the property.

The Parties understand and agree that the real property will be conveyed subject to utility easements and any other existing easements or rights of use and without the mineral estate, which was severed by the grantor to TxDOT's predecessor in title of the surface estate.

**V. Cooperation**

The Parties agree to cooperate with each other to effectuate the conveyance of the real property, described in **Attachment A** and the construction of in-kind services, as shown in **Attachments C, D and E**. The Parties will supply each other with all information required to complete the conveyance of real property from TxDOT to TBPC for the use and benefit of TxDPS.

**VI. Amendments**

The Parties agree that they may amend this MOU in writing upon consent of all Parties. However, the description of the real property to be conveyed and the provision of a fence and transmission tower at the site shall not be amended. The Parties recognize and agree that the specifications, location and details relating to the fence and transmission tower may undergo minor changes depending on site conditions.

**Texas Department of Transportation**

By: \_\_\_\_\_  
Michael W. Behrens  
Executive Director

Date: \_\_\_\_\_

**Texas Department of Public Safety**

By: \_\_\_\_\_  
Col. Thomas A. Davis, Jr.  
Director or his designee

Date: \_\_\_\_\_

**Texas Building and Procurement Commission**

By: \_\_\_\_\_  
Edward L. Johnson  
Executive Director

Date: \_\_\_\_\_

State of Texas/Department of Public Safety  
6.484 Acre Tract  
Moses Baine Survey, Abstract No. 3  
Brazos County, Texas

FN 4174 (jwt)  
June 5, 2006  
SAM, Inc. Job No. 25029-35

### PROPERTY DESCRIPTION FOR TRACT 1

DESCRIPTION OF A 6.484 ACRE TRACT OF LAND LOCATED IN THE MOSES BAINE SURVEY, ABSTRACT NO. 3, IN BRAZOS COUNTY, TEXAS, BEING A PORTION OF A CALLED 28.8040 ACRE TRACT OF LAND DESCRIBED IN A DEED TO THE STATE OF TEXAS AND RECORDED IN VOLUME 3995, PAGE 222 OF THE OFFICIAL RECORDS OF BRAZOS COUNTY, TEXAS (O.R.B.C.TX.), SAID 6.484 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

**BEGINNING** at a ½-inch iron rod found at an interior ell corner in the southeast line of said 28.8040 acre tract, being an angle point in the northwest line of Northwood Subdivision, 10<sup>th</sup> Installment, a subdivision recorded in Volume 958, Page 731, O.R.B.C.TX., said point being the south corner of the tract described herein, from which a ¾-inch iron rod with a Texas Department of Transportation (TxDOT) aluminum cap found, being the southeast corner of said 28.8040 acre tract and in the northwest line of said Northwood Subdivision, 10<sup>th</sup> Installment subdivision, being also the north corner of Lot 11, Block "E" of Norcross Subdivision, a subdivision recorded in Volume 435, Page 109, O.R.B.C.TX., bears S 48°58'18" E, a distance of 543.24 feet;

**THENCE** through the interior of said 28.8040 acre tract, with the west line of this 6.484 acre tract, the following two (2) courses and distances numbered 1 and 2:

- 1) N 48°58'18" W, a distance of 100.10 feet to a 5/8-inch iron rod with a TxDOT aluminum cap set for an angle point, and
- 2) N 5°19'50" W, a distance of 610.07 feet to a 5/8-inch iron rod with a TxDOT aluminum cap set in the north line of said 28.8040 acre tract and in the south right-of-way line of SH 6 (east by-pass), as conveyed to the State of Texas in Volume 276, Page 190 of the Deed Records of Brazos County, Texas (D.R.B.C.TX.), said point being the northwest corner of the tract described herein, from which a TxDOT Type I concrete monument found at an angle point in the north line of said 28.8040 acre tract and in the south right-of way line of SH 6 bears S 84°40'10" W, a distance of 645.39 feet;

**THENCE** with the north line of said 28.8040 acre tract and the south right-of way line of SH 6, the following two (2) courses and distances numbered 3 and 4:

- 3) N 84°40'10" E, a distance of 599.25 feet to a TxDOT Type I concrete monument found at an angle point, and
- 4) S 87°15'42" E, a distance of 68.07 feet to a ¾-inch iron rod with a TxDOT aluminum cap found being the common north corner of said 28.8040 acre tract and a called 4.214 acre tract of land, described in a deed to Gerald and Betty Kirkland and recorded in Volume 2422, Page 176, D.R.B.C.TX., said point being the northeast corner of the tract described herein, from which a TxDOT Type I concrete monument found at an angle point in the north line of said 4.214 acre tract and in the south right-of-way line of SH 6 bears S 87°15'42" E, a distance of 100.20 feet;

State of Texas/Department of Public Safety  
6.484 Acre Tract  
Moses Baine Survey, Abstract No. 3  
Brazos County, Texas

FN 4174 (jwt)  
June 5, 2006  
SAM, Inc. Job No. 25029-35

5) THENCE S 2°33'28" W, with the east line of said 28.8040 acre tract, being the west line of said 4.214 acre tract, a distance of 125.46 feet to a 5/8-inch iron rod with a TxDOT aluminum cap found at an angle point;

6) THENCE S 41°16'32" W, with the east line of said 28.8040 acre tract, being the west line of said 4.214 acre tract, at a distance of 224.72 feet passing a calculated point for the common west corner of said 4.214 acre tract and of said Northwood Subdivision, 10<sup>th</sup> Installment subdivision, and continuing with the northwest line of said Northwood Subdivision, 10<sup>th</sup> Installment subdivision, a total distance of 798.66 feet to the POINT OF BEGINNING, and containing 6.484 acres of land, more or less.

All bearings are based on the Texas State Plane Coordinate System, Central Zone, NAD 83 (93).

This property description is accompanied by a separate plat.

Bearing Basis:

The bearings described herein are Texas State Plane Grid bearings (Texas Central Zone, NAD 83(93). The combined scale factor for this project is 1.00012).

THE STATE OF TEXAS §

COUNTY OF TRAVIS §

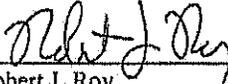
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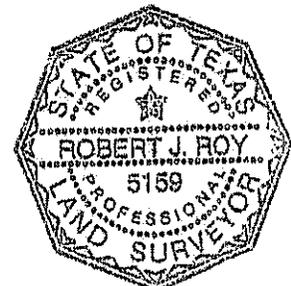
KNOW ALL MEN BY THESE PRESENTS:

That I, Robert J. Roy, a Registered Professional Land Surveyor, do hereby certify that the above description is true and correct to the best of my knowledge and belief and that the property described herein was determined by a survey made on the ground under my direction and supervision.

WITNESS MY HAND AND SEAL at Austin, Travis County, Texas this the 5<sup>th</sup> day of June, 2006 A.D.

SURVEYING AND MAPPING, Inc.  
5508 West Highway 290  
Building B  
Austin, Texas 78735

  
\_\_\_\_\_  
Robert J. Roy  
Registered Professional Land Surveyor  
No. 5159 - State of Texas



GRAPHIC SCALE  
1" = 200'



BRAZOS COUNTY, TEXAS

STATE HIGHWAY NO. 6 (EAST BY-PASS)  
(R.O.W. WIDTH VARIES)

STATE OF TEXAS  
VOL. 276, PG. 190  
D. R. B. C. TX.

LEGEND

- x TYPE I CONCRETE MONUMENT FOUND
- ⊠ TYPE II CONCRETE MONUMENT FOUND
- ⊞ TYPE II CONCRETE MONUMENT SET
- ⊙ 1/2" PIPE FOUND UNLESS NOTED
- 1/2" IRON ROD W/TXDOT ALUMINUM CAP SET UNLESS NOTED
- 1/2" IRON ROD FOUND UNLESS NOTED
- ⊕ 'X' IN CONCRETE FOUND UNLESS NOTED
- FENCE POST FOUND UNLESS NOTED
- ▲ 60 D NAIL FOUND UNLESS NOTED
- △ CALCULATED POINT
- ⊙ CONCRETE MONUMENT POST FOUND
- PROPERTY LINE
- [ ] RECORD INFORMATION
- P.O.B. POINT OF BEGINNING
- P.O.R. POINT OF REFERENCE
- R.O.W. RIGHT-OF-WAY
- N.T.S. NOT TO SCALE
- IRF IRON ROD FOUND
- IRP IRON PIPE FOUND
- P.U.E. PUBLIC UTILITY EASEMENT
- OVERHEAD UTILITY
- O.R.B.C.TX. OFFICIAL RECORDS BRAZOS COUNTY, TEXAS
- D.R.B.C.TX. DEED RECORDS BRAZOS COUNTY, TEXAS
- P.R.B.C.TX. PLAY RECORDS BRAZOS COUNTY, TEXAS
- WIRE FENCE
- CHAIN LINK FENCE UNLESS NOTED
- WOOD FENCE UNLESS NOTED

TRACT 1  
6.484 ACRES OUT OF  
CALLED 28.8040 AC.

Subject

MOSES BAINE SURVEY,  
ABSTRACT NO. 3

15' WIDE SANITARY  
SEWER EASEMENT  
VOL. 406, PG. 686  
D. R. B. C. TX.

STATE OF TEXAS  
CALLED 28.8040 AC.  
VOL. 3995, PG. 222  
D. R. B. C. TX.

25' WIDE UTILITY  
EASEMENT (0.9175 AC.)  
VOL. 3995, PG. 222  
O. R. B. C. TX.

CALLLED 0.143 AC. EASEMENT  
TO CITY OF BRYAN  
VOL. 406, PG. 688  
D. R. B. C. TX.

GERALD AND BETTY KIRKLAND  
CALLED 4.214 AC.  
VOL. 2422, PG. 176  
O. R. B. C. TX.

NORTHWOOD SUBDIVISION  
TOTH INSTALLMENT  
22.95 AC. - SCHOOL SITE  
LOT 1, BLOCK 1  
VOL. 958, PG. 731  
D. R. B. C. TX.

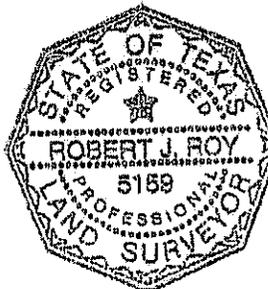
NOTES:

1. THE BEARINGS DESCRIBED HEREIN ARE TEXAS STATE PLANE GRID BEARINGS (TEXAS CENTRAL ZONE, NAD 83(93)). THE COMBINED SCALE FACTOR FOR THIS PROJECT IS 1.00012.
2. IMPROVEMENTS SHOWN HEREON ARE BASED UPON AN ON-THE-GROUND SURVEY BY SAM, INC. THERE MAY BE ADDITIONAL IMPROVEMENTS THAT ARE NOT SHOWN.
3. VISIBLE UTILITIES SHOWN HEREON ARE BASED UPON VISIBLE EVIDENCE FOUND ON THE GROUND. THERE MAY BE ADDITIONAL UTILITIES THAT ARE NOT SHOWN.
4. RECORD INFORMATION ON THIS DRAWING IS BASED ON A PUBLIC RECORDS SEARCH BY THE SURVEYOR AND MAY NOT INCLUDE ALL EASEMENTS OR INSTRUMENTS PERTAINING TO THIS PARCEL.

I HEREBY CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND  
UNDER MY DIRECTION AND SUPERVISION, AND THAT THIS PLAT IS  
TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Robert J. Roy*  
ROBERT J. ROY  
REGISTERED PROFESSIONAL LAND SURVEYOR  
5159, STATE OF TEXAS

JUNE 5, 2006  
DATE



PAGE 3 OF 3  
REF. FIELD NOTE NO. 4174

x:\TXDOT2005\Bryan\DPS Bryan Tract\DGN\DPS TRACT.dgn



5508 West Highway 290,  
Building B  
Austin, Texas 78735  
(512) 447-0575  
Fax: (512) 326-3029

2.5

PARCEL SKETCH  
SHOWING PROPERTY OF  
STATE OF TEXAS/D. P. S.  
6.484 AC. TRACT



Form ROW-A-5  
Rev. 3/2004  
GSD-EPC

**REAL ESTATE APPRAISAL REPORT  
TEXAS DEPARTMENT OF TRANSPORTATION**

Address of Property: South line of SH 6 (East Bypass), SE of Texas Avenue      District: Bryan  
Property Owner: State of Texas      Parcel: Tract 1  
Address of Property Owner: Austin, Texas      CSJ: DPS Site  
Occupant's Name: Vacant      Federal Project No:  
Whole:       Partial:       Acquisition      Highway: SH 6      County: Brazos

**Purpose of the Appraisal**

The purpose of this appraisal is to estimate the market value of the fee simple title to the real property to be acquired, encumbered by any easements not to be extinguished, less oil, gas and sulphur. If this acquisition is of less than the whole property, then any special benefits and/or damages to the remainder property must be included in accordance with the laws of Texas.

**Market Value**

Market value is defined as follows: "Market Value is the price which the property would bring when it is offered for sale by one who desires, but is not obliged to sell, and is bought by one who is under no necessity of buying it, taking into consideration all of the uses to which it is reasonably adaptable and for which it either is or in all reasonable probability will become available within the reasonable future."

**Certificate of Appraiser**

I hereby certify:

That it is my opinion the total compensation for the acquisition of the herein described property is \$116,712 as of June 6, 2006, based upon my independent appraisal and the exercise of my professional judgment;

That on June 6, 2006 (date)(s), I personally inspected in the field the property herein appraised; that I afforded Mr. Allen Schulze, the property owner or the representative of the property owner, the opportunity to accompany me at the time of the inspection;

That the comparables relied upon in making said appraisal were as represented by the photographs contained in the appraisal report and were inspected on June 7, 2006 and other (date)(s);

That I have not revealed and will not reveal the findings and results of such appraisal to anyone other than the proper officials of the Texas Department of Transportation or officials of the Federal Highway Administration until authorized by State officials to do so, or until I am required to do so by due process of law, or until I am released from this obligation by having publicly testified to such findings;

That my compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.

I certify to the best of my knowledge and belief:

That the statements of fact contained in this report are true and correct;

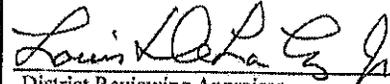
That the reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;

That I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved;

That my analyses, opinions and conclusions were developed, and this report has been prepared in conformity with the appropriate State laws, regulations, and policies and procedures applicable to the appraisal of right of way for such purposes, and that to the best of my knowledge no portion of the value assigned to such property consists of items which are noncompensable under the established law of said State, and any decrease or increase in the fair market value of subject real property prior to the date of valuation caused by the public improvement for which such property is to be acquired, or by the likelihood that the property would be acquired for such improvement, other than that due to the physical deterioration within the reasonable control of the owner, has been disregarded in estimating the compensation for the property.

  
\_\_\_\_\_  
Appraiser Signature  
James B. Dunn, MAI TX-1324788-G  
\_\_\_\_\_  
Certification Number  
Date 6/8/06

To the best of my knowledge, the value does not include any items which are not compensable under State law.

      6/9/2006  
\_\_\_\_\_  
District Reviewing Appraiser      Date



**TABULATION OF VALUES  
 for Engineering, Maintenance, Dredge Disposal Sites,  
 and Surplus Real Property**

County: Brazos

Project No.:

Highway: SH 6 (East Bypass), SE of Texas Avenue

District: Bryan

Acquisition Interest: Fee Simple

ROW CSJ; DPS Site

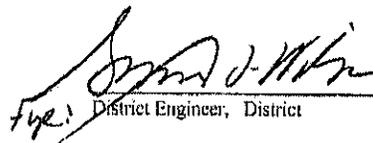
Site or Tract Number	Owner Name	Area in	Component Values			Total Value
			Land Value	Impr. Listed Below	Lease Value	
1	State of Texas	6.484	\$18,000	\$	\$	\$116,712
Item	Type Improvement	Type Construction	Value of Improvement		Retention Value	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
				\$	\$	
					Recommended Value	
					\$116,712	

Appraiser's Name: James B. Dunn

Comments and Conclusions on Values and Variations Within the Appraisal Report: (continuation on reverse)

**Recommended for Approval**

The values indicated hereon have been approved.

  
 District Engineer, District

7/17/06  
 Date

Comments and Conclusions on Values and Variations Within the Appraisal Report (continued): This is a whole taking out of a 28.8040 acre parent tract that is located in Brazos County, in the northern part of the City of Bryan on State Highway 6 just southeast of the Texas Avenue intersection.

The Part To Be Acquired consists of 6.484 acres of land situated on the south line of State Highway 6 access road between Texas Avenue and Woodville Road in the northern section of Bryan, Texas. It is currently unimproved commercial land.

The Sales Comparison Approach was used to value the site. Since the property is unimproved, the Cost and Income Approaches were not applicable.

The Highest & Best Use of the subject, as vacant, is for future commercial use, with additional benefits as a speculative investment. Those uses must be allowable within the current zoning. The Highest & Best Use of the subject, as improved, is not applicable as the subject is considered as vacant land.

Four comparable land sales were used to estimate the value of the subject land.

The appraiser's conclusions appear to be well supported by the market and his estimate of value is recommended for approval.

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**District Reviewing Appraiser's Statement**

The recommended value on this form is my opinion of value for the site or tract and was reached independently based on appraisals and other factual data without collaboration or direction. An on the ground inspection of the site or tract was made and comparables in the area were inspected. I have no direct or indirect present or contemplated future personal interest in such property or in any benefit from the lease of the site or tract. To the best of my knowledge, the value does not include any items which are not compensable under State law.

*Louis DeLaCruz, Jr.*      7/7/2006  
District Reviewing Appraiser      Date

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**FOR DIVISION USE ONLY (IF REQUESTED BY THE DISTRICT)**

**Division Reviewing Appraiser Approval**

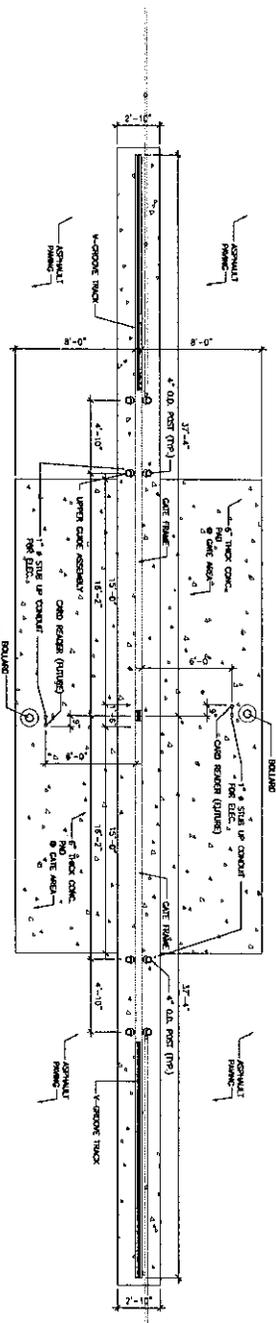
The Total Value on Page 1 of this form is my opinion of value for the site or tract and was reached independently based on appraisals and other factual data including the District reviewer's inspection, analysis and recommendation and on the ground knowledge and without collaboration or direction. I have no direct or indirect present or contemplated future personal interest in such property or in any benefit from the lease of the site or tract. To the best of my knowledge, the value does not include any items which are not compensable under State law.

\_\_\_\_\_  
Division Reviewing Appraiser      Date

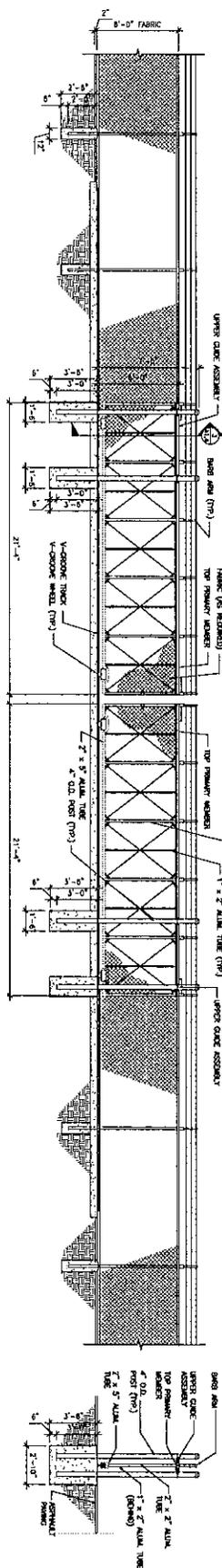
**Recommended for Approval**

The values indicated hereon have been approved.

*D. Webb*      9-19-06  
Director, Right of Way Division      Date  
*Maintenance*

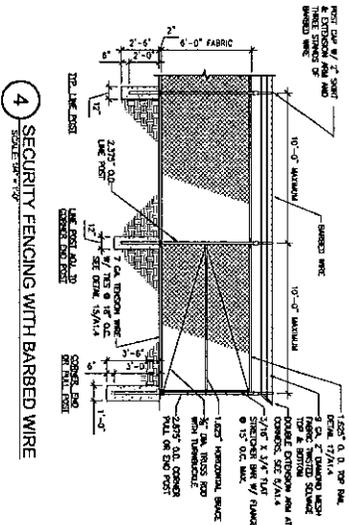


1 PLAN @ SECURITY GATE  
SCALE: 1/8" = 1'-0"

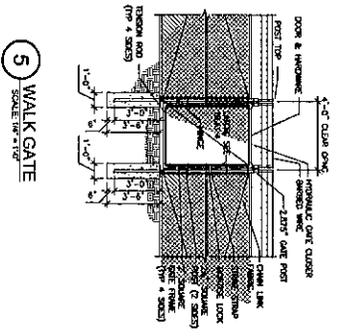


2 STANDARD ROLLING SECURITY GATE  
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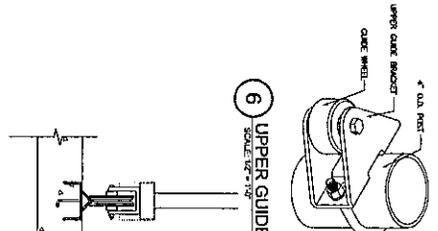
3 GATE SECTION  
SCALE: 1/8" = 1'-0"



4 SECURITY FENCING WITH BARBED WIRE  
SCALE: 1/8" = 1'-0"



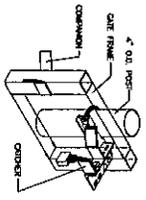
5 WALK GATE  
SCALE: 1/8" = 1'-0"



6 UPPER GUIDE ASSEMBLY  
SCALE: 1/8" = 1'-0"



8 V-GROOVE WHEEL ASSEMBLY  
SCALE: 1/8" = 1'-0"



7 CATCH ASSEMBLY  
SCALE: 1/8" = 1'-0"

NOTE: THIS DRAWING WAS PROVIDED FOR PRECONSTRUCTION ONLY. SHEET SIZE: 24" x 36"

GATE & FENCE DETAILS

Revision:   
 Drawn by:   
 ESP   
 Project No.   
 APPROVED   
 Date:   
 Sheet No.   
**A1.4**

**DALLAS SW AREA ENGINEER AND MAINTENANCE FACILITY**  
 CEDAR HILL DALLAS COUNTY  
 DALLAS DISTRICT

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW.   
 IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.


**Texas Department of Transportation**  
 125 E. 11th Street  
 Austin, Texas 78701-2482  
 (512) 418-3048  
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**SPECIFICATIONS**

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AT TXDPS DISTRICT OFFICE IN  
BRYAN, TEXAS**

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## Section 01000

### GENERAL REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 BIDDER'S REPRESENTATION

- A. Each bidder in submitting his bid proposal represents that he has read and understands the bidding documents, drawings and the specifications, including the portion of the work under other contractors, and has visited the project site, and familiarized himself with the local conditions under which the project is to be performed.
- B. Each bidder represented that he has examined the site's existing conditions and compared it with the drawings and specifications, and satisfied himself of the conditions of delivery, handling, storage of materials, and all other matters that are incidental to the work before submitting his bid or proposal.
- C. Each bidder represents that his bid or proposal is based upon the materials and/or equipment described in the project's drawings and specifications.
- D. Submission of a bid or proposal will be considered as evidence of the bidder's representation. No allowance will be made to the successful contractor by reason of any error or omission on his part due to neglecting the requirements of this article.
- E. Bidders are cautioned to review the latest requirements of Standard TIA/EIA-222. Any deviation from this standard unless specified herein shall be grounds for disqualification.
- F. Bidders are advised to review Motorola R56 Standards and Guidelines for Communications Sites Chapter 6, 7 and Appendix C for grounding details.
- G. Contractor and Sub-Contractor Qualifications – The contractor and or designated sub-contractor shall have a minimum of ten continuous years of experience with radio communication tower erection and removal, repair, painting, installation of antennas and transmission lines, and tower electrical lighting systems. If the contractor is subcontracting the work to a sub-contractor, the sub-contractor shall meet all of the requirements for the contractor listed in the specification herein.
- H. The principal employees cited as the project manager and the crew leader/foreman shall be permanent staff employees of the vendor's firm for a minimum of five years. These individuals shall each have a minimum of ten years experience in all phases of radio communication tower erection and removal, repair, painting, installation of antennas and transmission lines, and tower electrical lighting systems.

- I. Other employees (general repair crew) involved in the tower work shall have a minimum of three years experience in the erection and removal, repair, and painting of radio communication towers.
- J. A minimum of one employee per crew shall be English speaking and able to fully communicate in English by written and oral means.
- K. After bid award, the contractor and any designated sub-contractor shall provide written documentation for the following:
  - Tower training, fall protection and safety plan program per Occupational Safety and Health Administration (OSHA) related to work at a wireless communication site, and any state of Texas requirements.
  - Plan for site hazard assessment, mandated safety meetings including daily safety meeting, fall protection Personal Fall Arrest System (PFAS) and fall restraint techniques, fixed ladder usage, Personal Protection Equipment (PPE) and Occupational Protective Equipment (OPE) and emergency contingency planning (including rescue techniques).
  - How the vendor is providing continued compliance with OSHA training requirements through ongoing training according to the specific area of OSHA regulations.
  - Policies that ensure employees follow the appropriate safety guidelines and the ramifications if they do not follow company policies.
  - Certified tower climbing, safety & rescue training and refresher courses for all of employees who will be working on TxDOT radio communications towers. No employee of the vendor without proper documented certified training shall be permitted to climb or work around TxDOT's towers.
  - Documentation of regular scheduled training and safety meetings with the contractor providing proof of such training and meetings, (dates, times, names of employees attending).
- L. It should be noted, that the vendor is required to have a current copy of their plan, safety and training documentation in company vehicles when they are working at TXDPS tower site.

#### 1.02 GENERAL STIPULATIONS

- A. Each contractor/sub-contractor shall be responsible for the obtainment of all required trade permits under his contract, including the payment of all applicable fees to the governmental authorities with the jurisdiction over the project, if applicable.
- B. The drawings, in many instances, are schematic and do not define exact locations or dimensions. Items furnished may vary in dimensions and other ways from the specific

items called for in the drawings. In such cases, the contractor shall, prior to performing the work, determine the exact position or dimensions by means of field measurements, drawings furnished by the suppliers and/or coordination with other trades.

- C. Information as to existing conditions shown on the drawings reflect the best available data at the time the drawings were prepared, each contractor shall investigate and verify the data in the field prior to submitting his bid or proposal, and prior to start of field construction.
- D. The equipment furnished under these specifications shall be the latest improved model in current production, as offered to commercial trade, and shall be of quality workmanship and material. The bidder represents that all equipment offered under these specifications shall be new. Used, shopworn, demonstrator, prototype, or discontinued models are not acceptable.
- E. All parts not specifically mentioned which are necessary for the unit to be complete and ready for operation, or which are normally furnished as standard equipment shall be furnished by the successful bidder. All parts shall conform in strength, quality and workmanship to the accepted standards of the industry.
- F. The unit(s) provided shall meet or exceed all Federal and State of Texas Safety, Health, Lighting and Noise Regulations, and Standards in effect and applicable to equipment furnished at the time of manufacture.

### 1.03 RELATION OF THE DOCUMENTS

- A. Complementary: The drawing and specifications are complementary and anything included in one, but not in the other shall be provided as if included completely in both. In case of conflict between the documents or within either, the Owner's Representative or his designee shall determine the intent.
- B. Cost Basis: In case of conflicts, the requirement defining the greater quantity and/or the higher quality shall govern unless otherwise directed.
- C. Standard Reference Documents: Various Standards Association documents are included by reference such as ASTM, ACI, AISC, etc. Provisions of each document are basic to the contract unless exceeded by the drawings or specifications.
- D. After completion of the tower, the Contractor shall provide pictures of the completed tower and grounding system via electronic file standard (JPG), or other suitable format, on CD-ROM. Zipped files shall be readable via Microsoft Windows-based operating system. The minimum camera resolution shall be 640 X 480. Copies of the files shall be sent to:

Texas Department of Public Safety  
Attn: Dan Stang, Supervisor, Communications Maintenance  
5805 N. Lamar Boulevard  
Austin, TX 78752-0250

And.....

Texas Department of Public Safety  
Attn: Name, Regional Communication Supervisor  
1003 North Earl Rudder  
Bryan, TX 77802-1709

#### 1.04 CONTRACTOR'S USE OF PREMISES AND ACCESS

- A. Contractor's and designated sub-contractor use of the premises shall be confined to established work and storage areas and approved access routes only, and he shall be responsible for protection and restoration to original conditions of all unaltered areas affected by the work.
- B. Where not otherwise shown, details of work area enclosures, determination of access ways, and other limitations of Contractor's use of existing premises shall be developed with the Owner before commencement of the work and recorded for mutual understanding of the parties, and thereafter, any required or advisable changes shall likewise be developed with the Owner and recorded.
- C. Protections: The Contractor is responsible for the installation of fences, barricades, temporary partitions, etc. with suitable barriers, fences or other safety features as required. These shall be provided for the protection of workers, occupants, the public and the work.
- D. Separate Contractors: Accommodation shall be made for the requirements of separate contractors working on the same project.
- E. All work shall be performed between the hours of 8:00am and 5:00pm, unless otherwise specified, and only on working days observed by TXDPS. These working days are usually Monday through Friday of each week. Only through special arrangements with TXDPS shall work at other times be allowed.
- F. The vendor shall provide all labor and equipment necessary to perform this contract. All employees of the contractor shall be no less than 17 years of age, and shall be experienced in the type of work to be performed. No visitors, wives, husbands or

children of the contractor's employees will be allowed in the workplace during working hours, unless they are bona fide employees of the contractor.

- G. TXDPS is committed to maintaining an alcohol and drug free workplace. Possession, use or being under the influence of alcohol or controlled substances by vendor's employees while in the performance of this service is prohibited. Violation of this requirement shall constitute grounds for termination of this contract. In addition, Contractor's employees shall observe TXDPS's smoking policy.

#### 1.05 SCHEDULE OF VALUES

No later than 10-days following issuance of letter of intent by the Owner, the Contractor shall furnish to the Owner the Schedule of Values listing the names of major subcontractors and the cost breakdown of each subcontractor or trade, separated by labor material and equipment cost for each.

#### 1.06 TEMPORARY FACILITIES

- A. Lighting & Power: The contractor shall provide suitable temporary lighting and power for all trades working on the project, including temporary wires for all poles, lighting fixtures, and power sources for required equipment. TXDPS shall arrange to provide locations and connections for necessary power and will cover costs for same. At the completion of the project, or upon instructions from the Owner, all such temporary wires, poles, etc. shall be removed from the project site.
- B. Water: The contractor shall provide all temporary water requirements for the construction of the project. TXDPS shall provide water tap locations and shall absorb the cost of water consumed. At project completion or upon Owner's instructions all such temporary piping and fittings shall be removed from the project site.
- C. Sanitary: Restroom facilities are available for Contractor's use at TXDPS tower locations.
- D. Trash: A trash dumpster, or an alternate method of trash disposal approved in writing by TXDPS, shall be provided by the contractor to facilitate the collection of construction debris. The site shall be kept in clean and orderly condition.
- E. Field Office: A field office will not be required on these projects. The Contractor's Project Superintendent shall maintain complete project documents, addenda, change orders, field orders and other necessary records within his field vehicle.

#### 1.07 TAXES

The Contractor may claim exemption from payment of applicable State taxes by complying with such procedures as may be prescribed by the State Comptroller of Public Accounts. See PROVISIONS OF CONTRACT, Item 15.

#### 1.08 COOPERATION WITH OTHER CONTRACTORS

Each Contractor shall provide his own facilities to perform his work and shall cooperate with other contractors to facilitate the execution of theirs.

END OF SECTION

SAMPLE

## SECTION 01010

### SUMMARY OF WORK

#### PART 1 - GENERAL

##### 1.01 SUMMARY

A. Project Identifications: Please refer to Site Information Page for each project. Project location, point of contact, project numbers, telephone numbers and other pertinent information may be found on these sheets. There is one sheet for each of the project sites. Project sites are:

##### B. Project Summary:

1. This project consists of the installation of one 300 foot radio tower at a TxDPS location near Bryan, Texas. All foundation, structure, conduit plus the installation of antennae supplied by the Texas Department of Public Safety shall be a part of the project. The completed project shall be a fully functional tower at the Bryan locations.
2. As stated within the bidding instructions, the towers must have a lump sum total cost as represented in a separate Schedule of Values. This is required for final state inventory purposes.
3. Also in the bidding instructions, each drilled shaft foundation diameter requires a unit price per lineal foot. This value may be used additive or deductive as required by the final foundation design determined by TxDPS.
4. The site will be available to the Contractor from the initial start day of the contract until the tower is completed and accepted by the TxDPS.

##### C. Particular Project Requirements:

1. Contractor will have access to the toilet facilities at the site. Staging area will be identified and coordinated with the Owner's Authorized Representative.
2. Contractor shall connect any power requirements of the projects at times coordinated with the Owner's Authorized Representative and the current issue of the NEC. Temporary power as required by the Contractor shall be constructed at his cost by utilizing designated power outlets or connection points available at each TxDPS facility. Temporary power connections shall be removed at the completion of the work.

D. Permits and Fees: Apply for, obtain, and pay for permits, and fees necessary for the proper disposal of all demolition and construction debris required to perform the work. Submit copies to Owner. Acquire other permits, if necessary.

E. Codes: Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices and similar communications to Owner's authorized Representative. TxDPS is not subject to local codes, permits or inspections.

F. Dimensions: Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.

G. Existing Conditions: Notify Owner of existing conditions differing from those indicated on the drawings. Do not remove or alter structural components without prior written approval.

H. Coordination:

1. Coordinate the work of all trades.
2. Verify location of utilities and existing conditions prior to beginning work.
3. The Contractor must provide a written construction schedule detailing when the new radio tower will be ready to be placed in full operation. If there are any changes in the construction schedule, the contractor shall notify the TxDPS representative in writing at least 10-day in advance of implementing the change to the construction schedule. No work at the TxDPS site shall be done without it being detailed in the construction schedule.

I. General Installation Requirements:

Inspect substrates and report unsatisfactory conditions in writing.

4. Do not proceed until unsatisfactory conditions have been corrected.
5. Take field measurements prior to fabrication where practical. Form to required shapes and sizes with true edges, lines and angles. Provide inserts and templates as needed for work of other trades.
6. Install materials in exact accordance with manufacturer's instructions and approved submittals.
7. Install materials in proper relation with adjacent construction.
8. Restore elements damaged during installation. Replace units which cannot be restored at no additional expense to the Owner.
9. Refer to additional installation requirements and tolerances specified under individual specification sections.
10. Take pictures during the project progress submitting them in standard (JPG) or other standard format on CD-ROM. Pictures shall include installation of the drilled shafts, anchor bolt system, tower sections, grounding system including ground enhancement materials, antennas and transmission line(s) and any other suitable picture to detail the history of the

tower installation. The file shall be readable via Microsoft Windows-based operating system. The minimum camera resolution shall be 640 X 480. The files shall be sent to:

Texas Department of Public Safety  
Attn: Dan Stang, Supervisor, Communications Maintenance  
5805 N. Lamar Boulevard  
Austin, TX 78752-0250

And.....

Texas Department of Public Safety  
Attn: Name, Regional Communication Supervisor  
1003 North Earl Rudder  
Bryan, TX 77802-1709

J. Definitions:

Provide: Furnish and install, complete with all necessary accessories, ready for intended use. Pay for all related costs.

11. Approved: Acceptance of item submitted for approval. Not a limitation or release for compliance with the Contract Documents or regulatory requirements. Refer to limitations of 'Approved' in General and Supplementary Conditions.

12. Match Existing: Match existing as acceptable to the Owner.

K. Intent: Drawings and specifications are intended to provide the basis for proper completion of the work suitable for the use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the project shall be included.

L. Writing style: Specifications are written in the imperative mode. Except where specifically intended otherwise, the subject of all imperative statements is the Contractor. For example, 'Provide tile' means 'Contractor shall provide tile.'

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

## Section 01040

### COORDINATION

#### PART 1 - GENERAL

##### PROGRESS SCHEDULE

For general coordination of construction activity at the radio tower site, develop a progress schedule and submit to the Owner's Authorized Representative for review prior to first progress meeting as follows:

Format: Schedule shall be graphic, and entries shall include each entry of the Schedule of Values. Entries shall be grouped and sequenced and repeated as required corresponding to the levels of the tower, and further subdivided into complete sub sets for each tower site. Schedule shall be in the form of a CPM graph.

Submit concept draft of the schedule for review of grouping, sequencing and subdivision, and revise as required for approval.

Update schedule monthly or as necessary.

##### DAILY REPORT

Contractor shall prepare daily Field Reports in format directed and submit to Owner's Representative monthly.

##### RELATIONSHIP BETWEEN TRADES

Require cooperation and coordination between various Trades and Subcontractors whose work is dependent upon one another. Schedule such work so as to prevent delays in dependent work and so that all related work will progress together. Require each Trade or Subcontractor to make necessary provisions for the requirements of such other work. No additional compensation for extra work incurred through the lack of cooperation and coordination between various Trades and Subcontractors will be allowed.

##### ACCEPTANCE OF PRIOR WORK

New Work: Work executed in relation to following work shall be inspected and notice given of any defects, improper workmanship or materials, or other conditions that would affect the satisfactory execution and permanency of such following work. No further work shall be executed until such defects or conditions have been corrected. The absence of any such notifications will be construed as an acceptance by these Trades or Subcontractors of the prior related work, and later claims of defects in this work will not in any way relieve the Prime Contractor from responsibility of the resulting defects and their correction.

## 1.05 MEASUREMENTS

Verify the governing lines, levels and dimensions of the tower site, establish the lines and levels for construction from the data as confirmed.

## 1.06 DOCUMENTS AND STANDARDS AT THE SITE

Drawings, Specifications and Addenda: One copy of the Drawings, Specifications and Addenda shall be kept in good order by the Contractor's superintendent for ready reference. These copies shall not be taken on to the work but utilized as a record set to note any changes authorized during the course of the work. All changes shall be noted on this CHANGE RECORD PRINTS set and it shall be delivered to the Owner at the conclusion of the work. A second set of documents shall be used by the Contractor and his superintendent as the primary working construction set. All Addendum changes shall be noted appropriately on the Drawings and in the Specifications before starting the work.

Shop Drawings, Product Data and Samples: One copy of all approved Shop Drawings and Product Data bearing the Engineer's seal shall be forwarded to the Contractors office on receipt and kept in an orderly file system for ready reference for the duration of the project.

Change Record Prints: The set of Drawings required by the General Conditions to be kept for the Owner at the site shall be marked CHANGE RECORD PRINTS. Do not use this set for construction purposes. Record and date each change made during construction on this set. At the time of Substantial Completion deliver the full set of Change Record Prints to the Owner's Representative. The record Prints will be checked monthly by the Owner to determine that they are current. This will be a requirement for issuance of a Certificate for Payment.

END OF SECTION

## Section 01200

### PROJECT MEETINGS

#### PART 1 - GENERAL

##### GENERAL

Attendance by persons qualified to speak for their organizations on the subjects of specified or called meetings will be required for each party represented.

The TxDPS shall provide a suitable space for job site meetings at each site.

The Owner's Authorized Representative shall be responsible for distributing notes of the meetings with items to be accomplished.

##### PRE-CONSTRUCTION CONFERENCE

This meeting at each site will be called by the tower representative at least six weeks prior to the start of construction for attendance by TxDPS Regional Communication Supervisor, Contractor, (Subcontractors, as required,) or other parties as appropriate. It should be noted that construction shall not start without having a pre-construction meeting to discuss the construction project at each site.

The contractor shall provide in writing the name(s) of all subcontractors with contact information including telephone numbers. Information shall be provided to the TxDPS representatives at the required pre-construction meeting. Failure to provide the information to the TxDPS representatives shall result in any subcontractor that is not on the list not being allowed on TxDPS property. If there are any updates/changes /additions to the list, the contractor shall provide the written information to TxDPS ASAP. Construction on the project cannot start until the information is provided to TxDPS.

During the pre-construction meeting, or shortly thereafter, all buried underground utilities shall be located in the area of tower construction. Construction cannot start without locating any buried underground utilities.

Subjects generally will include organization of the business of the Contract, site access, site layout, know utility lines, contractor's safety plan, use and security, sequence of construction and scheduling, construction concerns, testing of concrete and other subjects of general interest as required.

## PROGRESS MEETINGS

These meetings will be called monthly or on an as needed basis, for attendance by Owner (optional), Engineer, (Consultants, as required,) Contractor, (Subcontractors as required,) and other parties as needed.

Subjects generally will include all aspects of job progress and proposals to regain lost progress or resolve project incongruities, as required.

END OF SECTION

SAMPLE

**Section 01300**

**SHOP DRAWINGS, PRODUCTS DATA AND SAMPLES**

**PART 1 - GENERAL**

**GENERAL**

Submit a complete schedule of required shop drawing submittals in conformance with this specification. No payment applications will be processed until the schedule of shop drawing submittals has been reviewed by the Owner's Representative and in his opinion is in conformance with the contract documents.

Submit shop drawings and product data as required by the contract documents in a form and quality suitable for reproduction. The number of shop drawings and product data submittal shall include seven sets of shop drawings and erection drawings for review and approval. All submittals shall bear the seal of a Registered Professional Engineer licensed in the State of Texas.

Allow up to 30 calendar days for each submittal or resubmittal review. Contractor shall be responsible for allowing proper review time on long lead items, no time extensions will be granted on the basis of Contractor's failure to allow proper review time.

All shop drawings and submittal data shall be in the English language, and all dimensions, weights, capacities, and other measurements shall be expressed in the standard English system of measurements.

The Contractor shall be responsible for the correctness and completeness of the drawings, and for shop fit and field connections.

Shop drawings and submittals shall be sent to:

Texas Department of Public Safety  
Attn: Dan Stang, Supervisor, Communications Maintenance  
5805 N. Lamar Boulevard  
Austin, TX 78752-0250

And.....

Texas Department of Public Safety  
Attn: Name, Regional Communication Supervisor  
1003 North Earl Rudder  
Bryan, TX 77802-1709

## CONTRACTOR RESPONSIBILITIES

Review shop drawings and product data prior to submission. Verify:

Field measurements.

Field construction criteria.

Catalog numbers and other data.

Conformance with submission requirements.

Clear identification of all design deviations from the contract documents (if any).

Signature and sealing of all design deviations from the contract documents by a qualified Registered Professional Engineer.

After checking and verifying all field measurements, and after complying with applicable procedures specified in the General Requirements, Contractor shall submit to Owner's Representative for review in accordance with the accepted schedule of shop drawing submissions, or for other appropriate action, all shop drawings, which will bear a stamp or specific written indication that Contractor has satisfied Contractor's responsibilities under the contract documents with respect to the review of the submission. All submissions shall be identified with a unique sequential number, and referencing the relative specification and, where appropriate, the drawing sheet. The data shown on the shop drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to enable Owner's Representative to review the information as required.

Contractor shall also submit samples and documents for review to Owner's Representative with such promptness as to cause no delay in the work. All samples will have been checked by and accompanied by a specific written indication that Contractor has satisfied Contractor's responsibilities under the contract documents with respect to the review of the submission and will be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which intended.

Before submission of each shop drawing or sample, Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto, and reviewed or coordinated each shop drawing or sample with other shop drawings and samples and with the requirements of the work and the contract documents.

At the time of each submission, Contractor shall give Owner's Representative specific written notice of each variation that the shop drawings or samples may have from the requirements of the contract documents and, in addition, shall cause a specific notation to be made on each shop drawing submitted to Owner's Representative for review of each variation.

Where a shop drawing or sample is required by the specifications, any related work performed prior to Owner's Representative review of the pertinent submission will be at the sole expense and responsibility of the Contractor.

Contractor's responsibility for errors and omissions is not relieved by the Owner's Representative's review of submittals.

## OWNERS REPRESENTATIVE'S RESPONSIBILITIES

Owner's Representative will review with reasonable promptness, shop drawings and samples, but this review will be only for compliance with the information given in the documents and shall not relieve Contractor from the responsibility of complying with the contract documents and shall not extend to means, methods, techniques, sequences, of procedures of constructions, or extend to safety precautions or programs incident thereto. A separate item can not be reviewed without appropriate information on the assembly in which the item functions.

Review of shop drawings, or samples, shall not relieve Contractor from total responsibility for the design and installation of any substitution from the requirements of the contract documents, nor will acknowledgment relieve Contractor from responsibility for errors or omissions in the shop drawings.

Owner's Representative will affix ink stamp and initials or signature, signifying review of submittal and return the submittal with appropriate comments within 15 days after each submittal, or re-submittal. 5" x 5" space shall be provided for Owner's stamp.

## SHOP DRAWINGS

Identify equipment by through description and clear delineation.

Include on the drawings all information required for submission and submit transmittal letter containing required information in accordance with Submission Requirements.

## PRODUCT DATA

Modify the manufacturer's standard schematic drawings to delete or supplement information as applicable. Submit to Owner's Representative with appropriate transmittal form, correct number, etc., if required for submittal purpose and not covered in the basic shop drawing submittal.

For manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other descriptive data:

Clearly mark each copy to identify pertinent materials, products, or models being supplied.

Show dimensions and clearances required for product being supplied.

Show performance characteristics and capacities.

Show wiring diagrams and controls.

Product data shall be submitted in a three-ring binder and properly indexed.

#### SUBMISSION REQUIREMENTS

Submittals shall be transmitted per Owner's Representative instructions. See 1.01 General, above.

All design deviations must be signed and sealed by a qualified professional engineer registered in the State of Texas. Deviations must be approved by Owner's Representative or his designee.

All shop drawings and product data shall contain:

Field dimensions clearly identified as such.

A blank space on each shop drawing, approximately 5" x 5", for an ink stamp of the Owner's Representative.

Contractor's stamp on each item submitted, initialed, or signed, certifying review of submittal, verification of field measurements, and compliance with contract documents.

END OF SECTION

## Section 01700

### PROJECT CLOSEOUT

#### PART 1--GENERAL

##### 1.01 SUBSTANTIAL COMPLETION

- A. Prerequisites: For the Owner to use the tower projects for the purpose and in the manner intended, acceptance by all bodies having jurisdiction must be documented, outstanding deficiencies in the work must be such as may be corrected without interference with the Owner's use for the intended purpose. All work must be cleaned and conditioned as specified. All operable equipment and systems must be tested and balanced, and demonstrated to the Owner as functioning as required.
- B. Preparation: Prior to giving notice of Substantial Completion, the Contractor shall test and inspect the work in detail and compile a deficiency list by or for each trade for each item that fails to meet specification and requires minor correction. Copies of this list shall be given to the Owner's Representative or his designee. The items shall be "worked off" so that all elements are complete and the tower is ready for acceptance by the Owner.
- C. The Contractor shall then contact the Regional Communication Supervisor after the completion of the installation of tower and antenna system. The purpose of this notification is to allow testing of the antenna system by TxDPS. If a failure is noted, the Contractor shall work with Regional Communication Supervisor to resolve and correct any and all problems. System acceptance will occur after a minimum of five consecutive failure free days of operation following installation.
- D. After completion of the tower and installation of the antennas and transmission lines, the Contractor shall sweep each transmission line verifying that there are no abnormalities between 25 MHz and 900 MHz. The sweep test shall be done in the following frequency steps 25 MHz to 50 MHz, 150 MHz to 170 MHz, 700 MHz to 900 MHz. Further divisions of these steps shall be at the option of the contractor. The tests shall be done under the following conditions; open cable, shorted cable, 50-ohm load on cable and with the antenna on the cable. The test with the antenna on the cable shall be within the antenna operating spectrum band. Printed copies and electronic copies of the test results shall be provided to the Regional Communication Supervisor and to the following:

Texas Department of Public Safety  
Attn: Dan Stang, Supervisor, Communications Maintenance  
5805 N. Lamar Boulevard  
Austin, TX 78752-0250

And.....

Texas Department of Public Safety  
Attn: Name, Regional Communication Supervisor  
1003 North Earl Rudder  
Bryan, TX 77802-1709

Package submittal shall also be included in the picture package that is to be submitted at the completion of the antenna project.

## 1.02 FINAL COMPLETION

- A. When Substantial Completion deficiencies have been completed.
- B. When all elements of Item 1.01, C have been accomplished.
- C. The tower(s) will be accepted on a per site basis and full payment as stipulated in the Unit Price per Site for Radio Tower Replacements paid with the submittal of an acceptable Payment Application submitted to the Owner's Representative. 5% retainage shall be withheld until the contract for all towers has been completed. Retainage shall be released when all towers are completed and functional and all manuals, consent of surety, release of liens and other documentation as covered in PROVISIONS OF CONTRACT, Item 28.
- D. All testing reports, manuals, certifications shall be delivered to the Owner with the correct number of copies as stipulated in this specifications.
- E. Warranty: The Contractor shall warrant the equipment to be free from defects in material and workmanship for a period of 12 months from the date of acceptance. The warranty shall include all parts and labor. If the manufacturer's warranty exceeds 12 months, then the manufacturer's standard warranty period shall apply. The Contractor shall have factory-trained personnel available for warranty repair and service within the continental United States.

END OF SECTION

## Section 02372

### DRILLED SHAFT FOUNDATIONS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Provisions established within the Uniform and Supplementary General Conditions of the Contract, General Requirements and the drawings are collectively applicable.

##### 1.02 WORK INCLUDED

- A. Drilled straight shaft cast-in-place steel reinforced concrete foundations. No spread footing or other foundation types will be accepted. Drilled shaft foundation lengths are subject to change based on final tower design loads. Owner's Representative (or his designee) will make the determination of final drilled shaft foundation conditions.

The plans indicate the expected depths and elevations where satisfactory bearing material will be encountered. All bidders shall base their bids on the information provided in the plans and Site Information Pages. Unit prices shall be provided on a per foot basis for each of the drilled shaft diameters provided in the plans.

##### 1.03 RELATED WORK

- A. Section 01300, SHOP DRAWINGS, PRODUCTS DATA AND SAMPLES
- B. Section 03200, CONCRETE REINFORCEMENT
- C. Section 03300, HYDRAULIC CEMENT CONCRETE
- D. Section 05060, WELDING , STRUCTURAL

##### 1.04 REFERENCES

- A. Item 416, DRILLED SHAFT FOUNDATIONS, TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, 2004.

##### 1.05 SUBMITTALS

- A. Submit under provisions of Section 01300
- B. Shop drawings shall indicate details and schedules of shaft foundation installation including reinforcing requirements and quantities.

- C. Submit drilling logs showing identification marks, shaft diameter, bottom elevation, top elevation, length of casing required (if applicable), description of bearing strata, nature and location of obstructions, wall conditions during drilling and concrete placement, and net addition or reduction of shaft lengths for each size shaft relative to the base bid amounts.

#### 1.06 INSPECTION CONTROL

- A. Notify Owner's Representative and local site contact when drilling is to begin.

#### 1.07 DRILLED SHAFT FOUNDATION RECORD

- A. Drilled shafts complete, to depths indicated, including drilling, concrete, temporary steel casing, reinforcement and other costs related to the per linear foot drilled shaft cost are a part of the base bid contract amount. A unit price will also be submitted and will be the basis for the adjustment of final linear footage required for project. An additive or deductive change order will be written to adjust the actual cost of the project.
- B. The Contractor shall keep a complete record showing the actual elevation of the bottom of each drilled shaft and the difference in linear feet between actual and estimated depths. The difference between the accumulated total of lesser and greater depths from the estimated depths shall be used to determine the total amount of variation. Total variation times the Unit Price shall be used to adjust the Contract Amount.
- C. Contractor will not be paid for shafts drilled deeper than authorized by TxDPS.

#### 1.08 UNIT PRICES

- A. Refer to Bid Form
- B. Design Drilled Shaft Quantity: Determined by quantity of shafts indicated in the Contract Documents.
- C. Design Shaft Length: Based on the length as indicated in the Contract Documents.
- D. Actual Shaft Length: Determined by length of shafts identified in Project Record Documents and as approved within any change in final tower design load as determined by the Engineer.
- E. Adjustments in Contract Price will be made due to changes in number and length of shafts, based on unit prices established in the Agreement.

## 1.09 QUALITY ASSURANCE

Contractor Qualifications: Minimum 5 years experience in drilled shaft construction with similar subsurface materials, shaft sizes and special techniques required.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Concrete Materials and Mix: Specified in Section 03300.
- B. Concrete Reinforcement: Specified in Section 03200.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

Verify site conditions will support equipment for performance of shaft placement operations.

### 3.02 PREPARATION

- A. Use placement method which will not cause damage to nearby structures.
- B. Protect structures, vegetation, signage, etc. near the Work from damage.

### 3.03 INSTALLATION

- A. Construct shafts in accordance with Item 416 and as specified herein.
- B. Drill concentric shafts. Drill shaft holes with a power auger foundation drilling rig especially designed for this purpose. Base Bids on drilling to depths shown in the plans. Accurately locate foundation shaft holes, and drill to size and soil strata shown on drawings, or as approved by shop drawing submitted and approved.
- C. Install temporary steel casing, if required, to prevent inflow of water or caving of the side of the excavation. Casing shall be removed during concrete placement.
- D. Clean shaft bottom of loose material immediately after drilling.

- E. Allow inspection of shafts prior to reinforcing steel and concrete placement. Prevent foreign matter from falling into shaft.
- F. Place reinforcing steel in accordance with Section 03200.
- G. Place concrete in accordance with Section 03300. Use equipment designed for vertical placement of concrete. Vibrate concrete in compliance with Item 421.
- H. Place anchor bolt assembly in a manner that holds it proper alignment. Do not allow concrete to disturb placement.
- I. Place concrete through tremie if an inflow of subsurface water occurs. Place concrete to height sufficient to affect seal. Where water infiltration is not occurring, use a hopper to insure that concrete drops cleanly down shaft without bouncing off reinforcing or sides of shaft.

#### 3.04 CONCRETE TESTING

Perform concrete testing under provisions of Item 421 and as modified by Section 03300.

#### 3.05 TOLERANCES

- A. Maximum permissible variation of location: Not more than  $1/24^{\text{th}}$  of shaft diameter or 3", whichever is less.
- B. Shafts out of plumb: Not more than 1.5% of length, nor exceeding 12.5% of shaft diameter or 15", whichever is less.
- C. Shaft diameters at any cross section: Within 1 inch of specified dimensions.

#### 3.06 FIELD QUALITY CONTROL

- A. Accurately record the following information immediately upon completion of drilling:
  - 1. Sizes, lengths, and locations of shafts.
  - 2. Sequence of placement.
  - 3. Final base and top elevations.
  - 4. Deviation from indicated locations.
  - 5. Depth of penetration into substrate.

### 3.07 NON-CONFORMING SHAFT FOUNDATION

- A. Non-conforming Shafts: Shafts that are placed out of position or are damaged.
- B. Provide additional shafts or supplement shafts to meet specified requirements. Consult with Owner's Representative and Engineer before proceeding with any corrective or remedial measures.

END OF SECTION

SAMPLE

## Section 03200

### CONCRETE REINFORCEMENT

#### PART 1 - GENERAL

##### 1.01 MINIMUM SPECIFICATIONS (Latest editions)

- A. Item 440, TxDOT Standard Specifications for Construction of Highways, Streets and Bridges, 2004

##### 1.02 SHOP AND INSTALLATION DRAWINGS

- A. Required for drilled shaft foundations.
- B. All reinforcing steel shall be fabricated in an established reinforcing steel fabricators shop.
- C. All reinforcing steel shall be Grade 60 unless otherwise noted.

##### 1.03 DRAWING PRECEDENCE

Requirements on the following drawings govern this Section and the project for bidding purposes only

- S1.1 Self Supporting Tower Layout Bryan

#### PART 2 - PRODUCTS

##### 2.01 MATERIAL SPECIFICATIONS

Except where shown otherwise, comply with the following:

- A. Bars: ASTM A 615; Grade 60

##### 2.02 INSERTS FOR DRILLED SHAFT FOUNDATIONS REINFORCING

Concrete spacer blocks or steel chairs shall be used at sufficient intervals to insure concentric spacing for the entire length of the cage. The Owner's Representative (or his designee), shall review a submittal of the type of spacer or chair proposed by the Contractor and will approve the submittal for all chairs installed to maintain distance.

## PART 3 - EXECUTION

### 3.01 PLACING (Item 440.8)

- A. General: Accurately positioned and secured against displacement by using annealed wire of not less than No. 16 gauge or suitable clips at intersections and shall be supported in a manner that will keep all metal away from the exposed surfaces.
- B. Cleaning: Metal reinforcement, before being placed, shall be thoroughly cleaned of dirt and excessive loose rust scale, and of coatings that destroy or reduce the bond. Reinforcement appreciably reduced in section shall be rejected. Where there is delay in depositing the concrete, reinforcement shall be reinspected, and when necessary, cleaned.
- C. Built-In Items: Place and fasten all inserts, sleeves, ties, hangers, anchors, bolts, frames and structural steel members required to secure the work of other trades to concrete work. Maintain these in their proper positions during the placement operations.
- D. Inspection: Give 24 hour notice in advance of concrete placement to permit inspection of the preparatory work and to make any required corrections.
- E. Timing: All reinforcement needed in any one section intended for the days pour shall be placed in position before inspection and concrete placement is begun.

END OF SECTION

## PORTLAND CEMENT CONCRETE

### PART 1-GENERAL

#### 1.01 TESTING LABORATORY SERVICES

Two cylinder compression test sets for each 20 cubic yards of concrete at seven (7) days and twenty-eight (28) days. Tests shall be performed by the contractor with documentation provided to TxDPS Regional Communication Supervisor.

#### 1.02 DRAWING PRECEDENCE

Requirements on Structural Drawings govern this Section. Conditions within shop drawings provided by the Contractor and sealed by an engineer registered in the State of Texas shall conform to this section.

#### 1.03 RESPONSIBILITY FOR PERFORMANCE

- A. Rests solely with the Contractor
- B. In the event the requirements of the Contract Documents interfere with providing the specified performance, give notification before proceeding.
- C. Suggestions or advice given by the supervising authority or testing laboratory are not to be considered as directions or permission to violate the specified performance.

#### 1.04 DESIGN RESPONSIBILITY

Supplement the typical mix designs with project mix designs for review before proceeding. Type II cement shall be used when indicated on the plans.

#### 1.05 MINIMUM SPECIFICATIONS (LATEST EDITIONS)

Item 421, PORTLAND CEMENT CONCRETE, TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, 2004.

#### 1.06 TECHNICAL ASSISTANCE

When requested by the Contractor, the admix supplier shall provide (free of charge) a qualified technician to assist in proportioning concrete for optimum use and help in

adjustment of concrete mix to meet job conditions. This recommendation shall be reviewed and approved by the Owner.

## PART 2-PRODUCTS

### 2.01 ADMIXES

#### A. Approved Suppliers, Brands (others require written approval):

1. Master Builder
2. Anti-Hydro Waterproofing Co.
3. Gifford-Hill
4. W. R. Grace
5. Protex Industries
6. Sonneborn Building Products

#### B. Type: Master Builders "Pozzolith 100 series" and "MB-VR" or Gifford-Hill "PSI"

#### C. Performance

1. Air-Entraining: ASTM C 260
2. Water Reducing: (Accelerating or retarding) ASTM C 494

### 2.02 SUPERPLASTICIZER (Contractor's option)

- A. Brief Description: Admixture to temporarily increase slump and workability and reduce segregation and bleed water.
- B. Minimum Specs: ASTM C 494, Type F
- C. Dosage: Per supplies recommendations.
- D. Technical Services: Trained representative to be available at no additional charge.
- E. Approved Brands: "PSI Super" by Gifford-Hill Co., Inc. or approved equal.

### 2.03 COMPONENT MATERIALS

- A. Cement: Portland, ASTM C150, Type I; fly ash prohibited.
- B. Mixing Water: Potable and clean

C. Stone Aggregate: ASTM C33

D. "Fly- Ash"---Not Acceptable

#### 2.04 CONCRETE MIXES

A. Concrete shall be composed of Portland cement, fine and coarse aggregate, water and air entraining agent.

B. Concrete shall be proportioned in accordance with ACI 211.1 to produce concrete with slump, air content, maximum size coarse aggregate and materials designed to minimize bleeding and segregation.

C. Slump at time of placing shall not exceed 7" permissible with superplasticizer.

#### 2.05 MAXIMUM SIZE OF COARSE AGGREGATE

Not more than  $\frac{1}{2}$  of smallest dimension between sides of drilled shaft and reinforcing and no more than  $\frac{1}{2}$  of the minimum clear spacing between reinforcing bars.

### PART 3-EXECUTION

#### 3.01 HANDLING

A. Transportation operations shall conform to ASTM Designation C 94, latest edition of TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, 2004.

B. No water shall be added to mix that will increase the slump beyond what is specified.

C. Retempering of partially hardened concrete will not be permitted.

#### 3.02 INSPECTION

Do not place concrete until drill shaft, reinforcement, ties, inserts and other critical items have been inspected and permission to proceed has been given. Give notification at least 24 hours in advance of placement.

#### 3.03 PLACING PROHIBITED

A. When air temperature in shade is below 40 deg F and if there is reason to expect a temperature drop within 12 hours after placing.

B. During rain, sleet or snow

- C. Into water without the inspection and approval of the Engineer and under conditions satisfactory to him.

### 3.04 PLACING

- A. Handle to minimize separation of coarse aggregate
- B. Use no equipment, which requires more water, cement or fine aggregate than mix design permits or if a reduction in strength will result.
- C. Place concrete continuously, or in quantities so that none is placed with mechanical vibrating equipment.
- D. Thoroughly compact concrete during and immediately after placing with mechanical equipment or suitable tools.

## PART 4-SCHEDULES

### 4.01 CONCRETE STRENGTHS (28 DAY TEST)

Concrete compressive strength shall be 3600 psi.

END OF SECTION

## Section 05060

### STRUCTURAL WELDING

#### PART 1 - GENERAL

##### 1.01 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the abbreviation only.  
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARD

- 1.01 Z49.1-1983 Safety in Welding and Cutting.  
AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT) PUBLICATION
- 1.02 SNT-TC-1A Personnel Qualification and Certification in Nondestructive Testing (August 1984).  
AMERICAN WELDING SOCIETY (AWS) PUBLICATIONS
- A2.4-86 Symbols for Welding and Nondestructive Testing.
- A3.0-85 Welding Terms and Definitions.
- D1.1-86 Structural Welding Code - Steel.

Item 441, STEEL STRUCTURES, TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, 2004.

##### 1.02 GENERAL REQUIREMENTS

- A. The tower(s) shall be designed and installed in accordance with the latest version of ANSI/TIA/EIA—222 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, OSHA and other items in these specifications.
- B. Definitions: Definitions of welding terms shall be in accordance with AWS A3.0.
- C. Symbols: Symbols shall be in accordance with AWS A2.4, unless otherwise indicated.
- D. Safety: Safety precautions during welding shall conform to ANSI Z49.1.

##### 1.03 WELDER, WELDING OPERATOR, AND TACKER QUALIFICATION

- A. Each welder, welding operator, and tacker assigned to work on this contract shall be qualified in accordance with the applicable requirements of AWS D1.1 and as specified in this section.
- B. Certificates: Before assigning any welder, welding operator, or tacker to work under this contract, the Contractor shall submit the names of the welders and their valid certificates, welding operators, and tackers to be employed, and certification that each individual is qualified as specified. The certification shall state the type of welding and positions for which the individual is qualified, the date qualified, and the name of the firm and person certifying the qualification tests. The certification shall be kept on file, and 3 copies shall be furnished. The certification shall be kept current for the duration of the contract.

## PART 2 - PRODUCTS

### 2.01 WELDING EQUIPMENT AND MATERIALS

- A. All welding equipment, electrodes, welding wire, and fluxes shall be capable of producing satisfactory welds when used by a qualified welder or welding operator performing qualified welding procedures. All welding equipment and materials shall comply with the applicable requirements of AWS D1.1.

## PART 3 - EXECUTION

### 3.01 WELDING OPERATIONS:

Requirements: Workmanship and techniques for welded construction shall conform to the requirements of AWS D1.1 and ANSI/TIA/EIA—222 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures.

### 3.02 QUALITY CONTROL

- A. An approved inspection, testing laboratory or certified technical consultant shall do testing. The Contractor shall perform visual and ultrasonic inspection testing to determine conformance. Procedures and techniques for inspection shall be in accordance with applicable requirements of AWS D1.1.

### 3.03 STANDARDS OF ACCEPTANCE

- A. Dimensional tolerances for welded construction, details or welds, and quality of welds shall be in accordance with the applicable requirements of AWS D1.1 and the contract drawings. Nondestructive testing shall be by visual inspection and ultrasonic. The minimum extent of nondestructive testing shall be random 10 percent of welds or joints.

### 3.04 OWNER INSPECTION AND TESTING

- A. In addition to the inspection and tests performed by the Contractor for quality control, the Owner will perform inspection and testing for acceptance to the extent determined by the Owner, or his authorized representative. The costs of such inspection and testing will be borne by the Contractor if unsatisfactory welds are discovered by the Owner, or his authorized representative. The Owner reserves the right to perform supplemental nondestructive tests to determine compliance.

### 3.05 CORRECTIONS AND REPAIRS

- A. When inspection or testing indicates defects in the weld joints, the welds shall be repaired using a qualified welder or welding operator as applicable. Corrections shall be in accordance with the requirements of AWS D1.1 and the specifications. Defects shall be repaired in accordance with the approved procedures. Defects discovered between passes shall be repaired before additional weld material is deposited. Wherever a defect is removed and repair by welding is not required, the affected area shall be blended into the surrounding surface to eliminate sharp notches, crevices, or corners. After a defect is thought to have been removed, and before rewelding, the area shall be examined by suitable methods to insure that the defect has been eliminated.
- B. Repair welds shall meet the inspection requirements for the original welds. Any indication of a defect shall be regarded as a defect, unless reevaluation by nondestructive methods or by surface conditioning shows that no unacceptable defect is present.

END OF SECTION

## Section 05420

### TOWER DESIGN AND ERECTION REQUIREMENTS

#### PART 1 -GENERAL

##### 1.01 GENERAL

The tower shall be designed in accordance with this specification.

#### PART 2 -DESIGN

##### 2.01 DESIGN REQUIREMENTS

The tower(s) shall be designed and installed in accordance with and shall meet or exceed all requirements of the latest version of ANSI/TIA/EIA—222 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, OSHA, and these specifications.

Cold-formed steel structural framing shall be designed and fabricated to conform to AISI Specification for the Design of Cold-Formed Steel Structural Members.

- A. Tower height will be as specified on the attached Site Information Sheet.
- B. Tower shall be self-supporting. The tower shall be a three sided truss configuration.
- C. Tower legs shall be solid rod, diagonals shall be angle.
- D. Design Ice Loading and Wind Speed: the tower(s) shall be designed in accordance with and shall meet or exceed all requirements of the latest version of ANSI/TIA/EIA – 222 **Structural Standards for Steel Antenna Tower and Antenna Supporting Structures**, OSHA, and these specifications. The latest revision of ANSI/TIA Standard 222, which took effect on January 1, 2006, is **Revision G**.
- E. **Lighting:** The lighting system, if required, shall be a dual lighting system. The dual lighting shall consist of a top mounted medium intensity strobe for daytime operations and a red LED beacon with three (3) red LED side lights for nighttime operations. The tower lighting system shall meet the current version of the Federal Aviation Administration (FAA) Advisory Circular AC 70/7460. The lighting system shall operate from 120 VAC +/- 10% 60 Hz and shall include lightning protection on the AC input circuit. The lightning protection circuit shall consist of MOVs, Isolation Transformer & Surge Protectors. The lighting controller shall be of modular construction and shall include the following alarm circuits: Form "C," Power Fail, Photocell, Red Beacon Fail, Strobe Fail & Sidelight Fail. All relays on the strobe circuit board shall be plug in type. A complete service manual shall be included with the strobe control panel. A minimum of one spare flash tube shall be included in the lighting system package. The strobe circuit shall be mounted in a stainless steel NEMA 4 outdoor

housing suitable for mounting adjacent to the tower. Warranty for the strobe panel and associated circuits and components shall be a minimum of 24-months. The tower lighting system shall have factory training classes provided to TxDOT at not cost if requested & and shall provide 24/7 technical support **It should be noted that TxDPS may voluntarily light the tower. If so, information on voluntarily lighting shall be noted on the Site Information Sheet. Voluntarily lighting shall meet the current version of the FAA Advisory Circular AC 70/7460.**

- F. The design shall include provision for an antenna system as described on the Site Information Sheet. There shall be a drawing sheet representing this antenna system included in the final documentation.
- G. Antenna Loading: The tower shall be designed for an effective projected area (EPA) and self-weight based on the worst case of:
  - 1) antenna wind area of 30 square feet and antenna dead load of 300 lbs plus twice the actual installation of antennas, transmission feedlines and other mounted devices as listed on the Site Information Sheet
  - 2) twice the actual installation of antennas, transmission feedlines and other mounted devices as listed on the Site Information Sheet**A detailed listing of the component contributions for the actual installation loading shall be included with the design calculations/shop drawings, as well as an indication of the loading which controlled the tower design.**
- H. Antenna mounting brackets and/or positions shall be detailed individually according to each respective antenna and location by description and drawing included in the final documentations plans.
- I. At a minimum, the top 40 feet configuration of the tower shall be vertical and shall be compatible with the mounting details for the antenna assembly listed in the Site Information Sheet or plans.

## PART 3 -MATERIALS AND FABRICATION

### 3.01 MATERIALS & FABRICATION REQUIRMENTS

#### 3.01a TOWER

- A. Tower legs shall be solid rod, diagonals shall be angle.
- B. All tower components shall be galvanized. Individual pieces of truss-type supports shall be galvanized before assembly. Reaming of holes during assembly is permitted without galvanizing repair at the holes.
- C. Assembly bolts, A325 or A490, Item 447, STRUCTURAL BOLTING TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, 2004, shall be galvanized and shall have lock washers.

- D. All material for railing and handles, 1/4 inch or greater in thickness shall have all sharp burrs and edges removed.
- E. Welded shop splices of solid shapes are permitted with approved welding procedures.
- F. Fabrication tolerances for truss-type towers:

Part	Dimension	Tolerance-inches
Truss Sections	Length (unassembled sections)	+/- 1
	Width	+/- 1/4
	Bolt hole spacing	+/- 1/16

### 3.01b FOUNDATION ANCHOR BOLTS

Anchor bolts shall conform to Item 449, ANCHOR BOLTS, TxDOT Standard Specifications for Construction of Highways, Streets and Bridges, 2004

- A. Anchor bolt number, spacing and size shall be as required by the foundation design.
- B. The base section of the tower shall be assembled before any foundation work is started. The Contractor shall use the base tower section to manufacture a template which will be used to verify the proper placement of the anchor bolt assemblies in the drilled shaft foundations. Any other method of installing the anchor bolts including using a transit and measurement method or any other similar methods is NOT PERMITTED.
- C. A steel template with minimum thickness equal to 0.25 times the bolt diameter shall be supplied for use at the bottom of the anchor bolt cage assembly with the lower nuts tack welded to the template. The width of the template shall be a minimum of 2.0 times the bolt diameter with suitable clearances remaining for foundation reinforcement and concrete placement. A similar template with a minimum 1/4 inch thickness shall be supplied at the top of the anchor bolt cage assembly. Two nuts and two washers shall be supplied for the top of all anchor bolts.
- D. The upper 14 inches of anchor bolts and the top anchor bolt nuts shall be galvanized. If anchor bolts are not galvanized, the upper 14 inches shall be painted with two coats of a zinc-rich coating containing a minimum of 95 percent zinc and meeting Federal Specification DOD-P-21035A. Exposed nuts shall be galvanized or also coated with the same zinc-rich paint if bolts are painted.
- E. Anchor bolts shall be installed in the foundation so that approximately 1/4 inch (6mm) of unthreaded shank is exposed. Grout shall not be used between base plates and foundations.

- F. A minimum of two opposite anchor bolts shall be bonded to the steel reinforcement using heavy duty bronze u-bolt mechanical connectors suitable for installation in concrete or an exothermic welding (Cadweld type bonding). The bonding conductor between the anchor bolts and the reinforcement steel shall be tinned copper 1/0 conductor.

### 3.01c TOWER CLIMBING LADDER

- A. A climbing ladder shall be furnished designed and constructed to meet all applicable OSHA and ANSI standards.
- B. Ladder width shall be 16 inches minimum. The ladder shall be installed on the outside of the tower and on one of the flat faces. Corner leg installation will not be permitted. Leg mounted ladders or climbing pegs on the legs are not permitted. If climbing pegs attached to the tower legs are used during construction, they must be all removed at completion of construction.
- C. The ladder shall be mounted on the outside face of the tower, centered between the tower legs. Before mounting the ladder, the Regional Communication Supervisor shall be contacted to determine where the side mounted antennas are to be mounted and for the mounting location of the tower. The ladder shall be mounted so that there is minimal effect to the antenna radiation pattern(s). In no event shall the ladder come in contact with the ground surface. There should be a minimum of 12 inches between the bottom of the ladder and the ground surface.
- D. The distance between rungs, cleats and steps shall not exceed 12 inches and shall be uniform throughout the length of the ladder.
- E. Design support shall be a minimum of 500 pounds minimum live load. Climbing loads shall not to be applied concurrently with design wind loads.
- F. No attachments shall be allowed within 6 inches of the ladder. Fall arrestor system shall be capable of supporting minimum 500 Lbs live load.
- G. Tower shall be supplied with a safety climbing cable properly installed and meeting all applicable OSHA and ANSI standards. The fall arrestor system shall be composed of a 3/8-inch galvanized or stainless steel cable and a fall protection device (wire grab). If the tower is within 100-miles of the coastal regions of Texas, the fall arrest cable shall be a 3/8-inch stainless steel cable. The fall arrest device shall be a removable device, Tuf-Tug Model TT-WG-500, or TxDPS approved equivalent. **Prior written approval for an alternate device shall be obtained from TxDPS Radio Communication Supervisor. Any alternates shall be compatible with TxDPS existing Tuf-Tug fall protection devices.** The wire grab device shall be removable from the safety cable when not in use. The fall safety system shall be indicated on the appropriate section of the tower shop drawings.

## PART 4—FIELD OPERATIONS

### 4.01 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition and stored off the ground in a well drained location; protected from damage; properly supported on a level platform; and shall be easily accessible for inspection and handling. Damaged items shall be replaced or repaired as determined by the Owner's Representative. The contractor shall not deliver any tower material or start installation of the foundation until receipt of the approved shop and erection drawings and the letter stating such from TxDPS.

### 4.02 ERECTION

- A. Assembly and erection sequences shall be described on the shop drawings. These sequences and procedures are the responsibility of the Contractor and his subproviders.
- B. The TxDPS representative will designate a location for on site staging and assembly.
- C. No assembly or erection shall be allowed until the material has been inspected and approved by the TxDPS representative or his designee. The tower may not be erected until the foundation concrete has attained a compressive strength of 2500 psi, or seven days have passed after concrete placement.
- D. All work crews must contact the TxDPS Regional Communication Supervisor or his/her designee, a minimum of 36 hours prior to commencing any work at a site and receive their approval to work. This includes work done on weekends and holidays.
- E. All work must be visually inspected and approved by either a TxDPS Regional Communication Supervisor or his/her designee prior to the departure of the work crews.

END OF SECTION

## Section 16170

### GROUNDING, ANTENNAS AND FEED LINES

#### PART 1--GENERAL

##### 1.01 SECTION INCLUDES

- A. Grounding electrodes and conductors

##### 1.02 REFERENCES

- A. NFPA 70 of the current revision of the National Electrical Code
- B. NFPA-780---1995
- C. UL96A--1998
- D. Lighting Protection Institute Standard of Practice LPI-175
- E. ANSI T1.313-1997
- F. Current revision of ANSI/TIA/EIA -222.
- G. Motorola R56 Standards and Guidelines for Communications Sites Chapter 6, 7 and Appendix C.  
Note: Soil PH and soil resistivity testing is not a requirement of this specification.
- H. All tower grounding, including the air terminal system, down conductor, grounding ring, grounding rods and radio equipment ground conductor shall be shown on the appropriate sections of the tower shop drawings. Included in the drawings shall be the detailed installation locations of all grounding equipment, including the depths of the grounding rods, grounding ring and the radio equipment grounding conductor.

#### PART 2--PRODUCTS AND INSTALLATION

##### 2.01 TOWER GROUNDING

- A. Intended locations for the following grounding requirements shall be indicated on a separate submittal in shop drawings that indicated the tower intent but focus on the grounding requirements, locations, installation intended and grounding rod location and intended depth. The shop drawings shall be prepared by and sealed by an engineer licensed in the State of Texas.
- B. Provide and install a 2/0 bare tinned stranded copper conductor. The conductor shall be run the length of the tower, down the outside leg, secured every three feet (1 m) with insulated copper tie wire. The grounding wire shall be securely connected to the topmost section of the tower using an exothermic welding (CADWELD type bonding). Additionally, the grounding conductor shall be connected to the

tower leg every 75-feet using exothermic welding (CADWELD type bonding). The base of the grounding conductor shall be connected to the grounding ring using exothermic welding (CADWELD type bonding).

- C. Provide and install a top mounted lightning protection air terminal system on a tower leg opposite any top mounted antenna or tower lighting unit. The air terminal system shall be adjusted so as to allow the tip of the air terminal to be between 10 to 12 inches above the top of the tower, any top mounted antenna(s) or tower lighting system. It shall consist of the following items: ½ x 24-inch copper Class II air terminal with tip consisting of a ¾" sphere (Harger 1218CSTAT, or TxDPS approved equivalent), appropriate length of 2-inch diameter galvanized steel pipe, bronze U-bolt pipe and cable clamps with stainless steel bolts and 2/0 bare tinned copper conductor. The copper air terminal shall extend approximately 22-inches above the top of the galvanized pipe. The copper air terminal shall be secured to the galvanized pipe using a bronze u-bolt vertical pipe and railing base clamp (Harger CPRB1.5/2AT12 or TxDPS approved equivalent). A 2/0 bare tinned stranded copper conductor shall connect to the copper air terminal base using the clamp on the vertical pipe base. The pipe shall be secured to the tower using at least three (3) equally spaced galvanized brackets. The copper conductor shall be secured to the galvanized pipe using equally spaced bronze u-bolt clamps, (FCI GAR3903, Harger CPC1.5/2 or TxDPS approved equivalent) at intervals not to exceed 18-inches. The 2/0 copper conductor shall attach the tower structure adjacent to the 2/0 copper down conductor specified in item B above. All mechanical pipe clamps shall be torqued to manufacturers' specifications. **Information for any alternate air terminal system must be submitted to TxDPS for approval prior to installation.**
- D. A minimum bending radius of 8-inches shall be maintained at all times, applicable to the installation of all grounding conductors for all sizes. All bends, curves and connections shall be toward the ground location, rod or grounding bar (grounded end) of the conductor. Sharp bends shall be avoided at all times.
- E. Each tower leg shall be directly grounded to a minimum 8 foot x 5/8 inch Copper clad grounding rod using bare tinned stranded copper 2/0 conductor. The ground rod shall meet or exceed the requirements of NASI/UIIL 467-1984, CSA and ANSI/NEMA GR-1. The ground rod shall be manufactured from high strength 1035 cold drawn steel. The copper plating thickness shall meet or exceed ANSI / UL 467-1984 (ANSI C33.8-1972). Ground connections to the tower footing plates are not acceptable. The 2/0 grounding conductor shall be protected with 1-inch plastic electrical grade conduit. The plastic electrical grade conduit shall run from near the ground rod connection and shall be extended to within 2 inches of the tower leg connection point. The plastic electrical grade conduit shall be formed so as not have any sharp bends between the ground rod and the tower leg ground connection. The top of the ground rods shall be buried below ground surface at a minimum of 24-inches. Each grounding rod shall be interconnected to a grounding ring using bare tinned stranded copper 2/0 conductor. The grounding ring shall be buried below ground surface at a minimum of 24 inches. The grounding ring shall be a minimum of 36-inches from the tower foundation. All tower-grounding connections shall be connected together using exothermic welding (CADWELD type bonding). Use of split bolt connectors for grounding connections is **not acceptable**. A minimum of two inches of a ground enhancement material such as LORESCO PowerFill, Advanced lightning Technology, Inc (ALT) Ground Enhancement Material Catalog number 3520 or TxDPS approved equal shall surround the entire Grounding system, grounding rods and ring.
- F. Provide and install a sufficient quantity of insulated copper grounding bars to connect each antennas transmission line into the tower grounding system. The insulated copper ground bar shall be a

minimum of ¼ inch x 2 inches x 12 inches with 8 pre-drilled 7/16-inch holes. The insulated copper grounding bar shall be installed in close proximity to the connection between the antenna and its associated transmission line (a smaller insulated ground bars is allowable at this location only), at the base of the tower before the transmission line makes the transition towards the radio equipment building, at the entrance to the radio equipment building and inside the radio equipment room/building. Each insulated grounding bar shall be connected to the tower grounding system using bare tinned stranded copper 2/0 conductor. Each vendor supplied transmission line grounding kit(s), see item L below, shall be connected to the copper grounding bar using # 2 bare tinned copper conductor.

- G. Using the current revision of Motorola R56 design, provide and install a grounding system for interior equipment. The grounding system shall include a bare tinned stranded copper 2/0 conductor that shall be run from the grounding ring into the radio room for connection to the master ground bus bar. Where practical, the equipment grounding cable shall be buried below ground the surface a minimum of 24 inches. Any exception to this installation will be specified on the attached Site Information Page. A minimum 8 foot x 5/8 inch Copper clad grounding rod shall be installed as near as possible to the radio equipment building entrance. It shall be connected to the radio equipment grounding conductor using exothermic welding (CADWELD type bonding). The top of the grounding rod shall a minimum of 24-inches below grade level. The ground rod shall meet or exceed the requirements of NASI/UII 467-1984, CSA and ANSI/NEMA GR-1. The ground rod shall be manufactured from high strength 1035 cold drawn steel. The copper plating thickness shall meet or exceed ANSI / UL 467-1984 (ANSI C33.8-1972). If the radio equipment building is not present at the tower site at the time of ground cable installation, the tower supplier / installation contractor shall leave a minimum of 20 feet of the grounding conductor in a coil adjacent to the proposed radio equipment building site. If the tower supplier / installation contractor is supplying the radio equipment building after the installation of the tower, the tower supplier / installation contractor shall make the installation as specified above.
- H. All metal objects that are located within 15-feet of the external grounding electrode system, or are associated with the communications site equipment, shall be bonded to the external grounding system using bare tinned stranded copper #2 conductors and CADWELDED together. This should include fences, buildings, gates, and other items, devices or structures within 15 feet of the tower.
- I. If ground soil conditions do not permit the installation of the standard ground rods, a 20-foot vertical type or 20-foot horizontal (L-shaped) chemical ground rod system shall be installed at **each** tower leg. Example: Lightning Eliminators Consultants, Inc. (LEC) Chem-Rod, Harger Lightning Protection, Inc., Lyncole XIT Grounding or TxDPS approved equal. The use of either the vertical or L-shaped chemical ground rod will be determined by the TxDPS representative. The chemical grounding rods shall be installed according to the manufacturer instructions. Each tower leg shall be connected to the chemical grounding rod using bare tinned stranded copper 2/0 conductor. Each chemical grounding rod shall be interconnected in a ring using bare tinned stranded copper 2/0 conductor. The grounding ring shall be buried below ground surface at a minimum of 24 inches. The grounding ring shall be a minimum of 36-inches from the tower foundation. All tower-grounding connections shall be connected together using exothermic welding (CADWELD type bonding). Use of split bolt connectors for grounding connections is **not acceptable**. A minimum of two inches of a ground enhancement material such as LORESCO PowerFill, Advanced lightning Technology, Inc (ALT) Ground Enhancement Material Catalog number 3520 or TxDPS approved equal shall surround the entire Grounding system, grounding rods and ring.
- J. The chemical ground rod system shall be installed according to manufacturers' instructions and filled

with appropriate hygroscopic electrolytic salts. A protective vented cover box system shall cover the chemical ground rod. The vented cover shall be bolted to the cover box and shall be easily removable to access the chemical ground rod system. The vented cover box system shall be flush with ground level and not cause any obstruction or trip hazards.

- K. Provide and install four (4) transmission line-grounding kits for each transmission line. Each grounding kit shall be installed according to manufacturer's instructions. The grounding kits shall be installed at the following locations:
- a. In close proximity to the connection between the antenna and its associated transmission line;
  - b. At the bottom of the tower before the transmission line turns towards the equipment building;
  - c. At the entrance of the building;
  - d. In the radio equipment room.
- L. During the installation of the grounding system, a TxDPS representative must approve the depths, hook-ups and installation of ground system components prior to the covering up or finalizing of the work.

Once the grounding system is installed, the contractor shall perform ground system testing using one of the three methods:

- Three-Point/Fall-of-Potential Testing
- Clamp-on Ohmmeter
- Combined Soil Resistivity Testing with Clamp-on Ohmmeter Testing

Written test results detailing ground system resistance shall be provided after completion of the installation of the grounding system. The method of ground system testing shall be noted on the test results. Ground system resistances of less than 10-ohms must be achieved, with 5-ohms or less being the goal. Exceptions may be permitted in unusual circumstances if the impedance goal cannot be met. System Engineering must review such sites. It should be noted that additional ground system grounding devices may need to be added to achieve desired results. If it is determined that additional grounding enhancements are needed to achieve specified results, 10-ohms or less, then the contractor must provide written description of the additional grounding enhancements and why the additional grounding enhancements were needed, for example before and after grounding test results. The contractor will be compensated for the additional grounding by TxDPS.

## 2.02 ANTENNAS AND FEED LINES

The contractor will supply all antennas; antenna transmission feed line(s) and all associated hardware (such as, but not limited to; antenna mounting brackets, grounding kits, coax hangers, adaptors, connectors, weatherproofing kits, ground bars, etc.) to be installed on the tower. The type and brand of antennas, feed lines and associated connectors/hardware shall either be specified on the site information sheet or agreed upon at the pre-construction meeting. Any variance from those items MUST be approved by TxDPS Radio Regional Communication Supervisor. The Contractor shall be responsible

for installing the transmission line, connectors, antenna, feed line support components and equipment grounding cable(s) onto the radio tower and into the equipment building, unless otherwise specified.

- A. The transmission feed lines(s) and ground conductors shall enter the building via a TxDPS approved, Contractor provided cable entry system. The cable entry system shall consist of a radio industry standard entry port panel with an appropriate number of 4 inch entry ports as set forth on the Site Information Sheet. The cable entry boots shall be weatherproofed and shall allow the installation of an appropriate number of transmission lines in each entry port as set forth in the Site Information Sheet. The remaining unused entry ports shall be covered with weatherproof blank entry boots.

The contractor shall provide and install a coaxial cable support system on the tower that shall accept a sufficient number of runs of cable(s) with snap-in hangers or a TxDPS approved substitute. Example: Cable tray, centered upon the face of tower with mounting points for use of "Snap-In Hanger clips". The cable support system shall be installed every three feet. **Information for cable support system must be submitted to TxDPS in writing for approval prior to installation.** Information for the cable support system shall be provided to: Texas Department of Public Safety, Attn: Dan Stang, Supervisor, Communications Maintenance, 5805 North Lamar, Austin, Texas 78752. Stainless steel wrap lock is not permitted. The contractor shall provide all required cable hoisting grip(s) for the transmission line listed in the Site Information Sheet.

There shall be detailed drawings of the proposed tower coaxial cable support system included in the tower shop drawings. This drawing shall include proposed cable hanger/support information. Details for design of this system are available from the Site Information Sheet.

- B. Connectors and grounding kits installed shall be weatherproofed at their juncture with transmission line(s) as follows:

1. Cover juncture with minimum two layers of high grade, all-purpose electrical tape (Scotch Type 88, or TxDPS approved equal).
2. Next cover with a minimum one layer of Scotch 130C Linerless Rubber Splicing Tape or TxDOT approved equal.
3. The third covering shall be a minimum three (3) layers of all-purpose electrical tape (Scotch Type 88, or TxDOT approved equal).
4. Contractor shall provide all weatherproofing material.

D. Cable support from the tower to the building shall be required between the tower and the building. The cable ladder/tray (or Ice Bridge) support shall be of perforated metal type material that shall extend from the tower to the building entry ports. The cable support shall not be connected to the tower or building. Each vertical support pipe as well as the cable support shall be connected to the tower grounding ring using #2 bare tinned copper conductors. Grounding connections to the vertical support pipes shall be exothermic welding (CADWELD type bonding). There shall be a minimum of two grounding connections on the cable ladder, adjacent to the tower and building. Refer to Motorola R56 Standards and Guidelines for Communications Sites Chapter 6 for more specific grounding details.

There shall be a detailed drawing of the proposed cable support system included in the tower shop drawings. Example of an approved cable support system would be a "trapeze type" hanger system with rubber mountings suspending the coax below the ice bridge support. This drawing shall include proposed cable hanger/support information. Information for design of this system is available from the Site Information Sheet.

Any alternative style of cable support or means of handling the transmission cable between the tower and the building where the radio is located, must be approved by TxDOT Radio Operations prior to final drawings are submitted. An example of this would be the use of underground conduit.

E. Prior to tower installation, the Contractor shall contact the TxDPS Regional Communication Supervisor and perform an inventory of all TxDPS supplied items prior to tower erection. This inventory is to determine if all required connectors, antenna jumpers, adapters and normally supplied antenna mounting hardware is available to permit the proper installation of the antennas and transmission line(s). No construction or work shall be begun or performed until all needed components for construction of installation onto the tower are on hand.

F. The Contractor shall provide and install all galvanized antenna mounting brackets to mount the antennas to the tower in accordance with the antenna manufacturers specifications and location upon the tower. The brackets must be approved by a TxDPS Regional Communication Supervisor prior to use. The types of antenna(s) to be installed will be listed on the site information page.

## 2.03 FENCING

A. A 6 foot, chain link style fence shall be installed at tower site.

The coverage area of the fence shall be shown on the Site Information Sheet or be agreed upon at the pre-construction meeting.

B. The fence shall have 3 strands of barb-wire placed upon the top rail with an outward projecting angle mounting bracket to prevent climbing of the fence and access to the inside compound.

C. The gate shall be of an appropriate design for the chain link fence, be at least 4 feet wide with barb-wire placed on top in a manner similar to section B above. The gate shall also, have a method that allows the use of a pad-lock to secure the gate and prevent unauthorized entry to the tower site compound.

D. The fence shall be CADWELDED to the ground ring of the tower at each corner post; it shall have jumpers CADWELDED between each top rail and its adjoining corner post the fence forming a complete positive grounding of the fence. There shall be a Cad-Welded flexible jumper to the gate from the gate support post that allows the opening and closing of the gate.

## PART 3--EXECUTION

### 3.01 EXAMINATION

A. Verify that backfill and compaction or areas under and around the tower have been completed.

### 3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install rod electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- C. Ground area under and around the tower site must be protected from rain or water induced silt run off. Use of sandbags, silt fencing or any TxDPS approved erosion control method may be used to accomplish this. Erosion control shall be exercised whenever an open pit or exposed ground area that is subject to erosion is present during any phase of construction.
- D. Repair or restoration of landscaping and facilities under and adjacent to the tower that were damaged during construction of the tower is required. This includes, but is not limited to, the repair or replacement of utility services, concrete sidewalks, lighting stanchions, drainage systems, pavement, grass, landscaping or a pre-agreed method of restoring the area under and around the tower construction area.

### 3.03 FIELD QUALITY CONTROL

- A. Inspect antennas, feed line connectors, support systems, grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

END OF SECTION