

Updated 8/01/07

STATE PROJECT

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

1. Use pen and ink to complete all paper Bids.
2. As a minimum, the following must be received prior to the time of Bid opening:

For a Paper Bid:

a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Offer, Agreement & Award form, e) a Bid Guaranty, and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

For an Electronic Bid:

a) a completed Bid using Expedite® software and submitted via the Bid Express™ web-based service, b) a Bid Guaranty (as described below) or a faxed copy of a Bid Bond (with original to be delivered within 72 hours), and c) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

3. Include prices for all required items in the Schedule of Items. (“Zero is not considered a Bid price.”)
4. Include a Bid Guaranty. Acceptable forms are:
 - a. a properly completed and signed Bid Bond on the Department’s prescribed form (or on a form that does not contain any significant variations from the Department’s form as determined by the Department) for 5% of the Bid Amount or
 - b. an Official Bank Check, Cashier’s Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors.
5. If a paper Bid is to be sent, Federal Express overnight delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta. Other means, such as U.S. Postal Service’s Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

6. Complete the DBE Proposed Utilization form in the proper amounts, and deliver to the Civil Rights Office, or fax to (207)624-3431 by 4:30 PM on bid opening day.

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207)624-3410.

For complete bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, Revision of December 2002.

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled, and allow for an electronic downloading of bid packages from our website, while continuing to maintain a planholders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments, must provide an email address to Diane Barnes or Mike Babb at the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via <http://www.BIDX.com>. For information on electronic bidding contact Larry Childs at Larry.Childs@maine.gov.

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open

PIN:

Town:

Date of Bid Opening:

Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed

PIN:

Town:

Date of Bid Opening:

Name of Contractor:

This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open

PIN:

Town:

Name of Contractor:

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____, of the City/Town of _____ and State of _____

as Principal, and _____ as Surety, a

Corporation duly organized under the laws of the State of _____ and having a usual place of

Business in _____ and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of _____ for payment which Principal and Surety bind

themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of

Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a

part herein, to enter into a written contract for the construction of _____

_____ and if the Department shall accept said bid

and the Principal shall execute and deliver a contract in the form attached hereto (properly

completed in accordance with said bid) and shall furnish bonds for this faithful performance of

said contract, and for the payment of all persons performing labor or furnishing material in

connection therewith, and shall in all other respects perform the agreement created by the

acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full

force, and effect.

Signed and sealed this _____ day of _____ 20_____

WITNESS:

WITNESS

PRINCIPAL:

By _____

By: _____

By: _____

SURETY:

By _____

By: _____

Name of Local Agency: _____

NOTICE

Bidders:

Please use the attached “Request for Information” form when faxing questions and comments concerning specific Contracts that have been Advertised for Bid. Include additional numbered pages as required. Questions are to be faxed to the number listed in the Notice to Contractors. This is the only allowable mechanism for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.



STATE OF MAINE
DEPARTMENT OF ADMINISTRATIVE & FINANCIAL SERVICES
DIVISION OF PURCHASES
BURTON M. CROSS BUILDING, 4TH FLOOR
9 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0009

JOHN ELIAS BALDACCI
GOVERNOR

REBECCA M WYKE
COMMISSIONER

BETTY M. LAMOREAU
DIRECTOR

July 2, 2007

Dear State of Maine Bidder:

As you may be aware, the State of Maine is implementing a new integrated financial, procurement and cash management system called AdvantageME. AdvantageME includes a synchronized Vendor Self Service (VSS) application. When we go live, we invite you to register in VSS so that you can receive and respond to our solicitations and receive awards (contracts and/or purchase orders) from the state.

The AdvantageME system will go live on July 5, 2007, and the VSS application will be available for new vendor registration at noon on that date. In the meantime, you're welcome to use the link below to access the text and video demos we have prepared to assist you in registering as a vendor with the State of Maine.

<http://www.maine.gov/purchases/vendorinfo/vss.htm>

We are also establishing a help desk, which will be available to you when the system goes live. On or after July 5, you can contact the help desk by telephone at (207) 624-7889 or by email at VSS.helpdesk@maine.gov.

We look forward to doing business with you through AdvantageME.

Sincerely,

A handwritten signature in cursive script that reads "Betty M. Lamoreau".

Betty M. Lamoreau, Director

**STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS**

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bids for a **Radio Communications Tower** project in the City of **Hallowell**" will be received from contractors at the Reception Desk, Maine DOT Building, Child Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on October 3, 2007, and at that time and place publicly opened and read. Bids will be accepted from contractors prequalified by the Department of Transportation for similar projects. All other Bids may be rejected. **MDOT provides the option of electronic bidding. We now accept electronic bids for those bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Please note: the Department will accept a facsimile of the bid bond; however, the original bid bond must then be received at the MDOT Contract Section within 72 hours of the bid opening. During this transition, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.**

Description: Maine State Project No. 014277.00, PIN 14277.00

Location: In Kennebec County, project is located on Granite Hill in Hallowell, Maine.

Outline of Work: Installation of reinforced concrete slab, prefabricated shelter, generator, radio tower and equipment, and other incidental work.

Contractor's bid package must include a list of 3 examples of successful completion of similar turn-key projects. This list shall include names, addresses and phone numbers of the owner for who the work was performed for.

For general information regarding Bidding and Contracting procedures, contact Scott Bickford at (207)624-3410. Our webpage at http://www.maine.gov/mdot/contractor-consultant-information/contractor_cons.php contains a copy of the schedule of items, Plan Holders List, written portions of bid amendments (not drawings), and bid results. **For Project-specific information fax all questions to Project Manager, Joel Kittredge at (207)624-3431.** Questions received after 12:00 noon of Monday prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. Hearing impaired persons may call the Telecommunication Device for the Deaf at (207) 624-3007.

Plans, specifications and bid forms may be seen at the Maine DOT Building in Augusta, Maine. They may be purchased from the Department between the hours of 8:00 a.m. to 4:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 16 State House Station, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207)624-3536 between the hours of 8:00 a.m. to 4:30 p.m. Bid Book \$10 (\$13 by mail), Single Sheets \$2, payment in advance, all non-refundable.

Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of \$12,000 payable to Treasurer, State of Maine as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

This Contract is subject to all applicable Federal Laws.

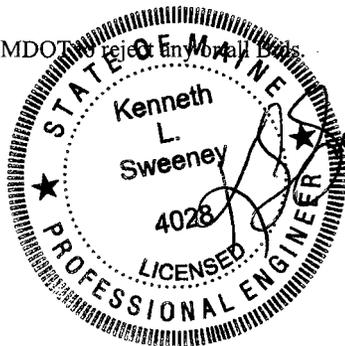
All work shall be governed by "State of Maine, Department of Transportation, Standard Specifications, Revision of December 2002", price \$10 [\$13 by mail], and Standard Details, Revision of December 2002, price \$20 [\$25 by mail]

Standard Detail up dates can be found at:

http://www.maine.gov/mdot/contractor-consultant-information/contractor_cons.php

The right is hereby reserved to the MDOT to reject any or all bids.

Augusta, Maine
September 19, 2007



KENNETH L. SWEENEY
DEPUTY CHIEF ENGINEER

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at <http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php> It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

_____ Date

_____ Signature of authorized representative

_____ (Name and Title Printed)

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 014277.00

PROJECT(S): 014277.00

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
SECTION 0001 PROJECT ITEMS						
0010	642.91 PERIMETER FENCE & GRAVEL LAYER ACCEPTED	LUMP	LUMP			
0020	643.97 RADIO COMMUNICATIONS TOWER - SELF-SUPPORTING - ERECTED	LUMP	LUMP			
0030	643.971 RADIO COMMUNICATIONS TOWER - FIELD INSPECTION & ACCEPTANCE	LUMP	LUMP			
0040	643.972 RADIO COMMUNICATIONS TOWER - INSPECTION & FINAL ACCEPTANCE	LUMP	LUMP			
0050	643.973 RADIO COMMUNICATIONS TOWER-INSPECTION & ACCEPTANCE TRAINING	LUMP	LUMP			
0060	643.974 STATE OWNED ANTENNAS - INSTALLED	LUMP	LUMP			
0070	643.98 EMERGENCY POWER GENERATOR SYSTEM - INSTALLED	LUMP	LUMP			
0080	643.981 EMERGENCY POWER GENERATOR -FIELD INSPECTION & ACCEPTANCE	LUMP	LUMP			

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 014277.00

PROJECT(S): 014277.00

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0090	643.982 EMERGENCY POWER GENERATOR - INSPECTION & ACCEPTANCE TESTING	LUMP	LUMP			
0100	643.983 EMERGENCY POWER GENERATOR - INSPECTION & FINAL ACCEPTANCE	LUMP	LUMP			
0110	643.99 COMMUNICATIONS EQUIPMENT SHELTER: MODULAR, PREFABRICATED, PRE-OUTFITTED	LUMP	LUMP			
0120	643.991 COMMUNICATIONS EQUIPMENT SHELTER - FIELD INSPECTION & ACCEPTANCE	LUMP	LUMP			
0130	643.992 COMMUNICATIONS EQUIPMENT SHELTER - INSPECTION & FINAL ACCEPTANCE	LUMP	LUMP			
0140	643.993 COMMUNICATIONS EQUIPMENT SHELTER - INSPECTION & ACCEPTANCE TRAINING	LUMP	LUMP			
0150	644.91 RADIO COMMUNICATION SITE, EARTH, GROUND & LIGHTNING PROTECTION SYSTEM, INSTALLED	LUMP	LUMP			
0160	644.92 RADIO COMMUNICATION SITE, EARTH, GROUND & LIGHTNING PROTECTION SYSTEM, FIELD INSPECTED	LUMP	LUMP			

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 014277.00

PROJECT(S): 014277.00

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0170	644.93 RADIO COMM. SITE, EARTH, GROUND & LIGHTNING PROTECTION SYSTEM, FINAL ACCEPTANCE	LUMP	LUMP			
0180	645.91 COMMUNICATIONS EQUIPMENT SHELTER, REFURBISHED	LUMP	LUMP			
0190	645.92 COMMUNICATIONS EQUIPMENT SHELTER, REFURBISHED - INSPECTION & ACCEPTANCE, FIELD INSPECTION	LUMP	LUMP			
0200	645.93 COMMUNICATIONS EQUIPMENT SHELTER, REFURBISHED - INSPECTION & ACCEPTANCE, FINAL ACCEPTANCE	LUMP	LUMP			
0210	645.94 COMMUNICATIONS EQUIPMENT SHELTER, REFURBISHED - INSPECTION & ACCEPTANCE, TRAINING	LUMP	LUMP			
0220	656.75 TEMP SOIL EROS AND WATER POLL CONTROL	LUMP	LUMP			
0230	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____ a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No. **14277.00** for a **Radio Communication Tower** in the City of **Hallowell**, County of Kennebec, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **December 28, 2007**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002 and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

\$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN: 14277.00 – Radio Communication Tower, in the City of Hallowell, State of Maine, on which bids will be received until the time specified in the “Notice to Contractors” do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached “Schedule of Items”.

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached “Schedule of Items” in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items”, which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier’s check, certificate of deposit or U. S. Postal Money Order in the amount given in the “Notice to Contractors”, payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the Standard Specifications Revision of December 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor’s Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted.
documents referenced herein.

This award consummates the Contract, and the

Office of Information Technology

Date

By: Richard B. Thompson
Chief Information Officer

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____ a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No. **14277.00** for a **Radio Communication Tower** in the City of **Hallowell**, County of Kennebec, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **December 28, 2007**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002 and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

\$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN: 14277.00 – Radio Communication Tower, in the City of Hallowell, State of Maine, on which bids will be received until the time specified in the “Notice to Contractors” do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached “Schedule of Items”.

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached “Schedule of Items” in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items”, which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier’s check, certificate of deposit or U. S. Postal Money Order in the amount given in the “Notice to Contractors”, payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the Standard Specifications Revision of December 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor’s Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted.
documents referenced herein.

This award consummates the Contract, and the

Office of Information Technology

Date

By: Richard B. Thompson
Chief Information Officer

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and (Name of the firm bidding the job) a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at (address of the firm bidding the job)

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No. 1224.00, for the Hot Mix Asphalt Overlay in the town/city of West Eastport, County of Washington, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before November 15, 2003. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is (Place bid here in alphabetical form such as One Hundred and Two dollars and 10 cents)
\$ (repeat bid here in numerical terms, such as \$102.10) Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the Standard Specifications Revision of December 2002 (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN 1234.00 West Eastport, Hot Mix Asphalt Overlay,

State of Maine, on which bids will be received until the time specified in the “Notice to Contractors” do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached “Schedule of Items”.

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached “Schedule of Items” in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items”, which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier’s check, certificate of deposit or U. S. Postal Money Order in the amount given in the “Notice to Contractors”, payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer’s “Notice to Commence Work” as stated in Section 107.2 of the Standard Specifications Revision of 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor’s Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

(Sign Here)
(Signature of Legally Authorized Representative of the Contractor)

(Print Name Here)
(Name and Title Printed)

(Witness Sign Here)
Witness

Date

G. Award.

Your offer is hereby accepted. documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

(Witness)

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **and the State of** _____, as principal,
and _____,
a corporation duly organized under the laws of the State of _____ and having a
usual place of business _____,
as Surety, are held and firmly bound unto the Treasurer of the State of Maine in the sum
of _____ **and 00/100 Dollars (\$** _____ **)**,
to be paid said Treasurer of the State of Maine or his successors in office, for which
payment well and truly to be made, Principal and Surety bind themselves, their heirs,
executors and administrators, successors and assigns, jointly and severally by these
presents.

The condition of this obligation is such that if the Principal designated as Contractor in
the Contract to construct Project Number _____ in the Municipality of
_____ promptly and faithfully performs the Contract, then this
obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State
of Maine.

Signed and sealed this _____ day of _____, 20.....

WITNESSES:

SIGNATURES:

CONTRACTOR:

Signature.....

.....

Print Name Legibly

Print Name Legibly

SURETY:

Signature

.....

Print Name Legibly

Print Name Legibly

SURETY ADDRESS:

NAME OF LOCAL AGENCY:

ADDRESS

.....

.....

.....

.....

TELEPHONE.....

.....

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **and the State of** _____, as principal,
and _____
a corporation duly organized under the laws of the State of _____ and having a
usual place of business in _____,
as Surety, are held and firmly bound unto the Treasurer of the State of Maine for the use
and benefit of claimants as herein below defined, in the sum of
_____ **and 00/100 Dollars (\$** _____ **)**
for the payment whereof Principal and Surety bind themselves, their heirs, executors and
administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in
the Contract to construct Project Number _____ in the Municipality of
_____ promptly satisfies all claims and demands incurred for all
labor and material, used or required by him in connection with the work contemplated by
said Contract, and fully reimburses the obligee for all outlay and expense which the
obligee may incur in making good any default of said Principal, then this obligation shall
be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a
Subcontractor of the Principal for labor, material or both, used or reasonably required for
use in the performance of the contract.

Signed and sealed this _____ day of _____, 20 .. .

WITNESS:

SIGNATURES:

CONTRACTOR:

Signature.....

.....

Print Name Legibly

Print Name Legibly

SURETY:

Signature.....

.....

Print Name Legibly

Print Name Legibly

SURETY ADDRESS:

NAME OF LOCAL AGENCY:

.....

ADDRESS

.....

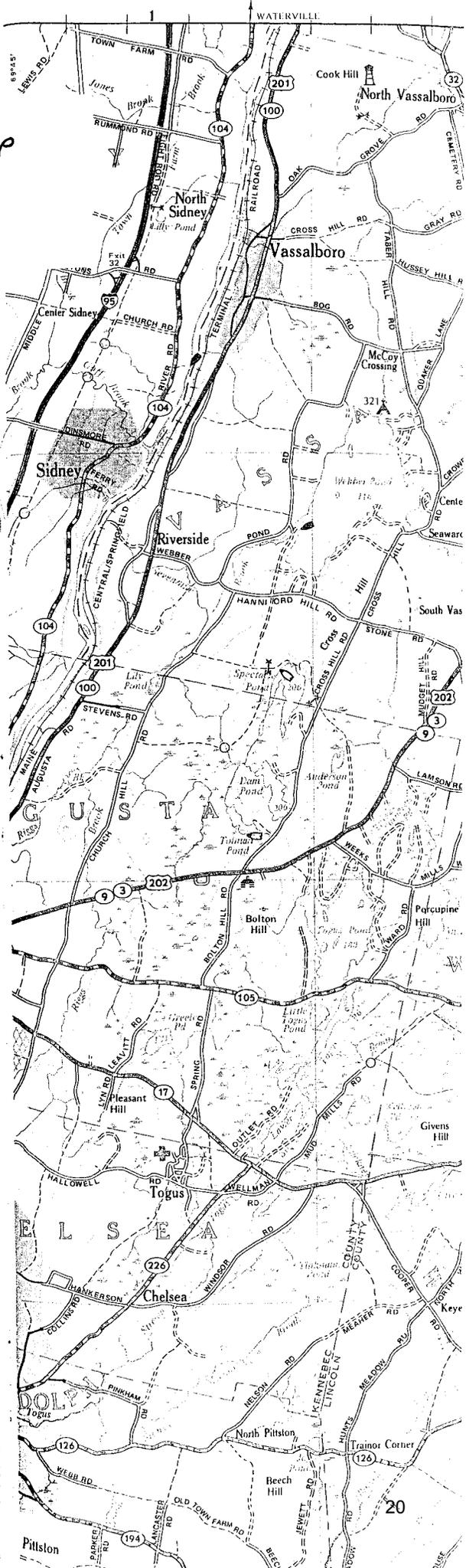
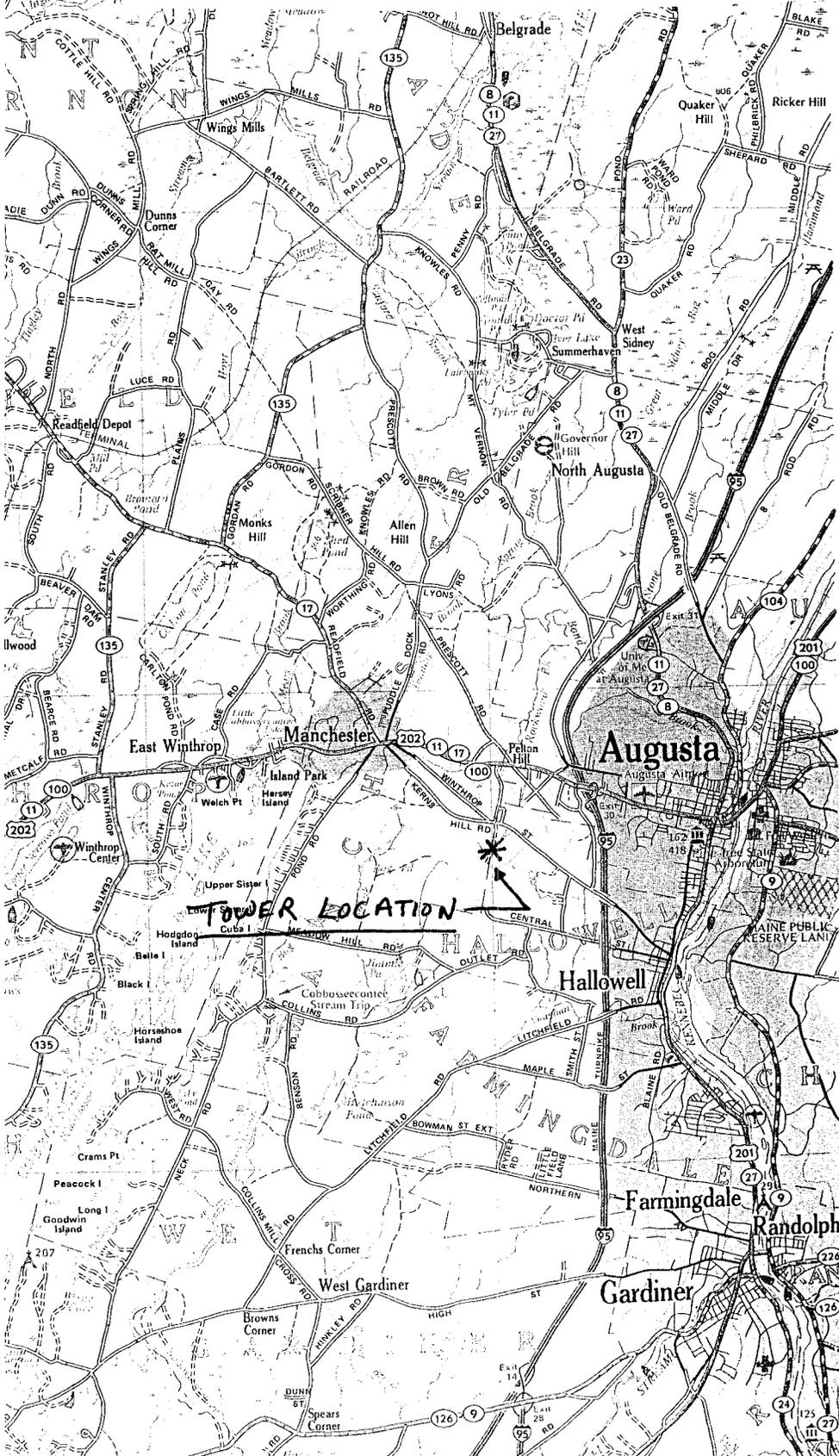
.....

TELEPHONE

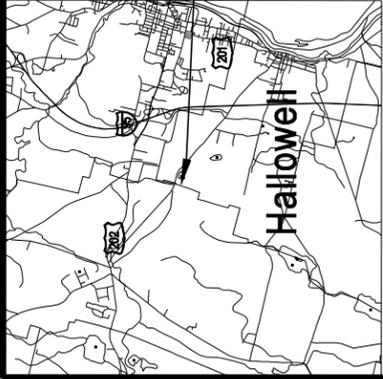
.....

GRANITE HILL LOCATION MAP

PIN 14277.00



TOWER LOCATION with an arrow pointing to a star symbol near the intersection of I-95 and I-104.



GRID NORTH 2007

NOTES:

1. Purpose of Survey: A standard boundary survey to assist in the placement of a new radio tower on land currently owned by the State of Maine.
2. Title Reference of Surveyed Parcel:
 - a) Deed from the Maine Turnpike Authority to the State of Maine, dated August 7, 1967 and recorded in Book 1459, Page 761 in the Kennebec County Registry of Deeds.
3. Plan References:
 - a) Maine Turnpike Authority map entitled "Radio Tower Lot" dated April, 1956
 - b) Maine Turnpike Authority "Plan entitled "Plan for Radio Building Granite Hill Hallowell, Maine" dated March, 1956.
4. Current Tax Map Reference: Property of interest is shown on Hallowell Tax Map 19, Lot 021 on maps current to the date of this plan.
5. Basis of Bearings: U.S. State Plane NAD 83 1996
6. Road Information: Access to tower is off Beacon Road which intersects the Winthrop Road.
7. Area Information: Property is being used as a radio tower site. Total Area: Approx. 0.3 acres
8. Power Line Easement Information: Approximate location shown as described in deed as referenced in Note 2(a) above and shown on plan referenced in Note 3(a) above.
9. The point of beginning appears to be 701 feet from the edge of the right of way of Winthrop Road assuming a 3 rod width.
10. The chain link fence surrounding the property is apparently intended to represent the deed description.

LEGEND:

- OTHER DEVIANT BOUNDARY LINE (APPROX.)
- EDGE OF PAVEMENT
- EXISTING RADIO TOWER
- EDGE OF GRAVEL DRIVE/YARD
- CAPPED IRON ROD SET XX/XX/07 PLS #1341 TO BE SET
- 6" WIDE BOUNDARY LINE OF SURVEYED PARCEL
- STEEL POLE
- UTILITY POLE
- CHAIN LINK FENCE
- TREE LINE
- N/F NOW OR FORMERLY OF TOWN OF HALLOWELL TAX MAP
- TM KENNEBEC COUNTY REGISTRY OF DEEDS BOOK/PAGE



To the best of my knowledge and belief, this survey conforms to the Standards of Practice promulgated by the Maine Board of Licensure for Professional Land Surveyors, 02-360 CMR Chapter 90 Part 2

Peter A. Belanger
Professional Land Surveyor #1341
Chief Land Surveyor, MaineDOT



REVISIONS

DESCRIPTION	DATE

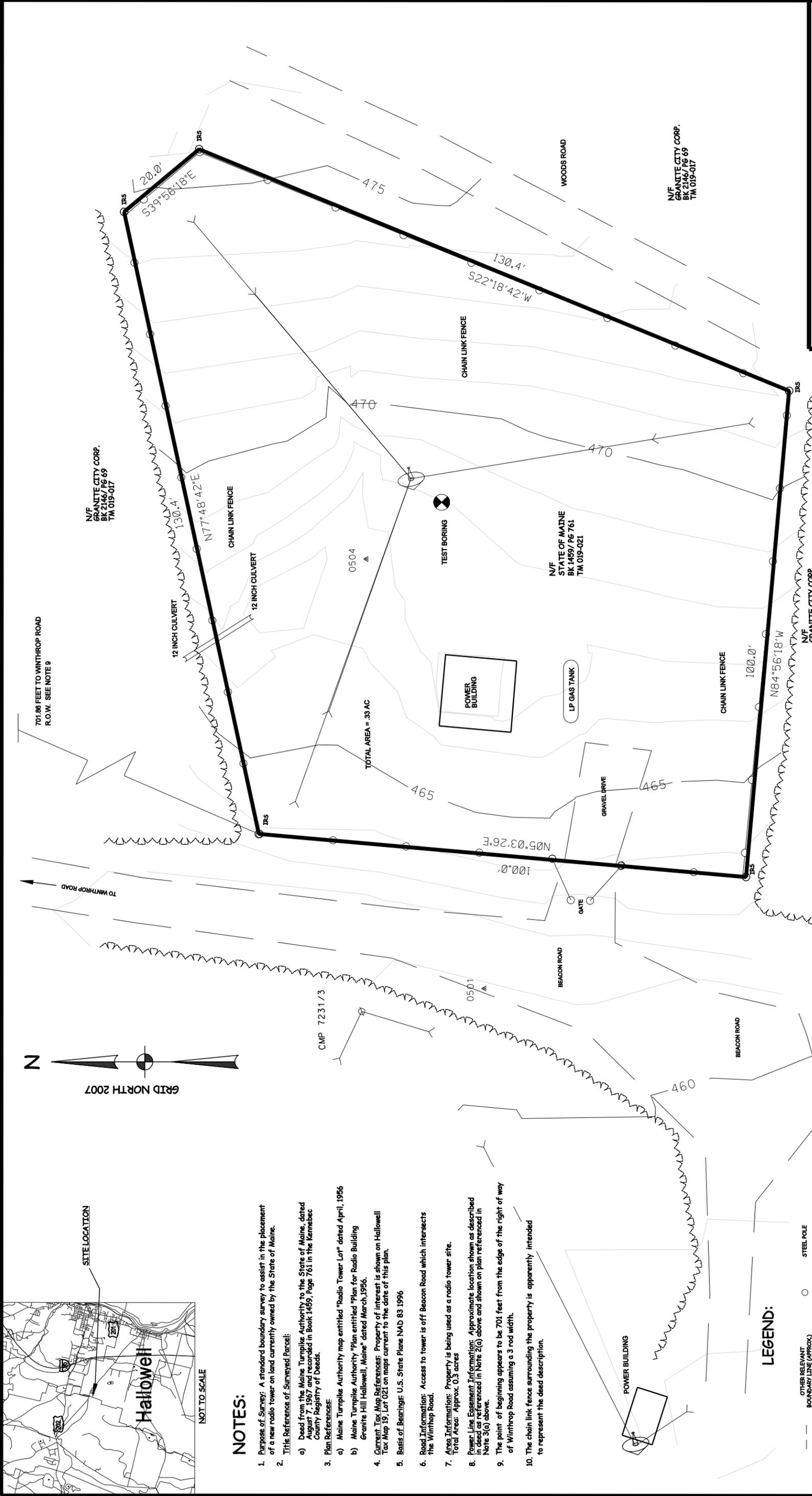
STATE OF MAINE
REGISTRY OF DEEDS

COUNTY RECEIVED _____ at _____ h _____ m _____ and recorded in Plan Book _____, Page _____ Attest: _____ REGISTER

STATE OF MAINE
BOUNDARY SURVEY OF LAND OF THE
LOCATED AT
BEACON ROAD, HALLOWELL, MAINE
KENNEBEC COUNTY

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016
DOT FILE NO. 6-412

STATE OF MAINE
PIN 014277.00
DATE: 01-02-07
FIELD WORK: MAD
COMPUTATIONS: MAD
SCALE: 1" = 20'
SHEET NO. 1 OF 1 SHEET
MAPPING: MAD



SPECIAL PROVISION

SECTION 102.3

**EXAMINATION OF DOCUMENTS, SITE AND OTHER INFORMATION
(Geotechnical Information)**

Geotechnical Information pertaining to this project has been collected and assembled. Bidders and Contractors are obligated to examine and, if necessary, obtain geotechnical information. Geotechnical Information is available at the Maine Department of Transportation office on Child Street, Augusta, Maine. Geotechnical Information will be provided to interested parties who request this information. Requests for this information should be directed to the Project Manager as outlined in the "Notice to Contractors".

The Department shall not be responsible for Bidder's and Contractor's interpretations of, or estimates or conclusions drawn from, the Geotechnical Information. Data provided may not be representative of the subsurface conditions between the boring locations.

This section does not diminish the duties imposed upon parties in Section 102 or in any other sections.

NOTICE TO CONTRACTORS - PREFERRED EMPLOYEES

Sec. 1303. Public Works; minimum wage

In the employment of laborers in the construction of public works, including state highways, by the State or by persons contracting for the construction, preference must first be given to citizens of the State who are qualified to perform the work to which the employment relates and, if they can not be obtained in sufficient numbers, then to citizens of the United States. Every contract for public works construction must contain a provision for employing citizens of this State or the United States. The hourly wage and benefit rate paid to laborers employed in the construction of public works, including state highways, may not be less than the fair minimum rate as determined in accordance with section 1308. Any contractor who knowingly and willfully violates this section is subject to a fine of not less than \$250 per employee violation. Each day that any contractor employs a laborer at less than the wage and benefit minimum stipulated in this section constitutes a separate violation of this section. [1997, c. 757, §1 (amd).]

GRANITE HILL
14277.00
8-14-07

SPECIAL PROVISION
SECTION 104.3.8.B.1
(State of Maine Wage Rates Apply)

104.3.8.B.1 State Wage Rate

Wages. This Project is not being constructed with federal funds and is not subject to the jurisdiction of the Davis-Bacon or other Federal Act that requires the Secretary of Labor to establish the minimum wages and benefits. The State of Maine minimum wage and benefits apply to the construction of this Radio Tower Project (PIN 14277.00). See the provisions in 26 MRSA §§ 1304 to 1313. Federal wage rates do not apply.

State of Maine
 Department of Labor
 Bureau of Labor Standards
 Technical Services Division
 Augusta, Maine 04333-0045
 Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRSA §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid laborers and workers employed on the below titled project.

Title of Project ----- Granite Hill Radio Communications Tower

Location of Project -- Hallowell, Maine in Kennebec County

**2007 Fair Minimum Wage Rates
 Building 2 Kennebec County
 (other than 1 or 2 family homes)**

<u>Occupation Title</u>	Minimum			<u>Occupation Title</u>	Minimum		
	<u>Wage</u>	<u>Benefit</u>	<u>Total</u>		<u>Wage</u>	<u>Benefit</u>	<u>Total</u>
Asbestos Abatement Wrkr	\$13.50	\$0.73	\$14.23	Ironworker - Reinforcing	\$18.00	\$10.00	\$28.00
Assembler - Metal Bldg	\$12.00	\$3.32	\$15.32	Ironworker - Structural	\$17.25	\$4.10	\$21.35
Backhoe Loader Operator	\$14.00	\$2.24	\$16.24	Laborers/Helper/Tender	\$12.00	\$1.53	\$13.53
Boilermaker	\$19.75	\$4.21	\$23.96	Laborer - Skilled	\$13.00	\$0.66	\$13.66
Boom Truck Operator	\$16.50	\$2.66	\$19.16	Loader Op - Front End	\$14.75	\$2.28	\$17.03
Bricklayer	\$21.00	\$2.72	\$23.72	Mechanic - Maintenance	\$18.60	\$2.84	\$21.44
Bulldozer Operator	\$16.00	\$2.87	\$18.87	Mechanic - Refrigeration	\$20.19	\$4.48	\$24.67
Cable Splicer	\$20.25	\$3.35	\$23.60	Millwright	\$18.00	\$4.10	\$22.10
Carpenter	\$16.00	\$2.63	\$18.63	Oil/Fuel Burner Serv & Instr	\$18.00	\$5.29	\$23.29
Carpenter - Acoustical	\$13.00	\$2.15	\$15.15	Painter	\$12.50	\$0.00	\$12.50
Carpenter - Rough	\$13.25	\$2.41	\$15.66	Paperhanger	\$13.00	\$0.00	\$13.00
Cement Mason/Finisher	\$15.00	\$0.95	\$15.95	Paver - Bituminous	\$14.88	\$1.27	\$16.15
Commun Equip Installer	\$19.50	\$4.24	\$23.74	Pile Driver Operator	\$19.00	\$5.55	\$24.55
Concrete Mixing Plant Op	\$14.55	\$3.70	\$18.25	Pipe/Stm/Sprkler Fitter	\$18.00	\$4.15	\$22.15
Concrete Pump Operator	\$18.50	\$2.38	\$20.88	Pipelayer	\$20.75	\$5.45	\$26.20
Crane Operator =>15 Tons	\$19.50	\$4.70	\$24.20	Plumber (Licensed)	\$19.50	\$3.78	\$23.28
Crusher Plant Operator	\$14.48	\$3.27	\$17.75	Plumber Hlpr/Trainee (Lic)	\$12.50	\$1.59	\$14.09
Diver	\$21.00	\$0.75	\$21.75	Roller Operator - Earth	\$12.43	\$4.49	\$16.92
Driller - Well	\$13.00	\$1.94	\$14.94	Roofer	\$14.46	\$2.23	\$16.69
Dry-Wall Applicator	\$20.00	\$0.36	\$20.36	Screed Operator	\$15.50	\$3.42	\$18.92
Dry-Wall Taper & Finisher	\$18.00	\$3.26	\$21.26	Sheet Metal Worker	\$17.02	\$3.18	\$20.20
Electrician	\$19.42	\$6.16	\$25.58	Sider	\$14.00	\$0.60	\$14.60
Electrician Hlpr (Licensed)	\$13.00	\$2.37	\$15.37	Stone Mason	\$16.24	\$2.04	\$18.28
Elevator Constrctr/Installer	\$40.32	\$14.77	\$55.09	Tile Setter	\$16.75	\$2.93	\$19.68
Excavator Operator	\$14.75	\$2.36	\$17.11	Truck Driver - Light	\$13.25	\$0.98	\$14.23
Fence Setter	\$12.50	\$1.08	\$13.58	Truck Driver - Medium	\$11.38	\$0.71	\$12.09
Floor Layer	\$15.00	\$1.35	\$16.35	Truck Driver - Heavy	\$10.00	\$2.10	\$12.10
Glazier	\$13.67	\$1.97	\$15.64	Truck Driver - Tractor Trailer	\$12.95	\$2.10	\$15.05
Insulation Installer	\$15.50	\$2.27	\$17.77				

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

Apprentices - The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

Posting of Schedule - Posting of this schedule is required in accordance with 26 MRSA §1301 et. seq., by any contractor holding a State contract for construction valued at \$50,000 or more and any subcontractors to such a contractor.

Appeal - Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates with the Secretary of State.

Determination No: B2-078-2007
 Filing Date: August 15, 2007
 Expiration Date: 12-31-2007

A true copy
 Attest: 
 William A. Peabody
 Director
 Bureau of Labor Standards

State of Maine
 Department of Labor
 Bureau of Labor Standards
 Technical Services Division
 Augusta, Maine 04333-0045
 Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRSA §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid laborers and workers employed on the below titled project.

Title of Project ----- Granite Hill Radio Communications Tower

Location of Project -- Hallowell, Maine in Kennebec County

**2007 Fair Minimum Wage Rates
 Heavy & Bridge Kennebec County**

<u>Occupation Title</u>	<u>Minimum Wage</u>	<u>Minimum Benefit</u>	<u>Minimum Total</u>	<u>Occupation Title</u>	<u>Minimum Wage</u>	<u>Minimum Benefit</u>	<u>Minimum Total</u>
Asphalt Raker	\$12.50	\$0.23	\$12.73	Insulation Installer	\$17.25	\$5.09	\$22.34
Backhoe Loader Operator	\$14.00	\$2.24	\$16.24	Ironworker - Reinforcing	\$20.15	\$10.00	\$30.15
Boilermaker	\$18.75	\$3.57	\$22.32	Ironworker - Structural	\$20.00	\$4.66	\$24.66
Boom Truck Operator	\$16.50	\$2.66	\$19.16	Laborers/Helper/Tender	\$12.00	\$0.42	\$12.42
Bricklayer	\$21.00	\$2.62	\$23.62	Laborer - Skilled	\$13.00	\$1.72	\$14.72
Bulldozer Operator	\$16.00	\$2.87	\$18.87	Line Erector, Power	\$18.01	\$3.88	\$21.89
Cable Splicer	\$18.50	\$3.56	\$22.06	Loader Op, Front-End	\$15.75	\$1.52	\$17.27
Carpenter	\$16.50	\$1.84	\$18.34	Mechanic - Maintenance	\$16.00	\$4.42	\$20.42
Carpenter - Rough	\$16.50	\$1.95	\$18.45	Millwright	\$16.50	\$5.62	\$22.12
Cement Mason/Finisher	\$15.00	\$0.76	\$15.76	Painter	\$28.92	\$15.53	\$44.45
Commun Equip Installer	\$21.25	\$2.60	\$23.85	Paver - Bituminous	\$14.88	\$1.27	\$16.15
Commun Trans Erectr	\$18.00	\$4.00	\$22.00	Pile Driver Operator	\$19.00	\$5.07	\$24.07
Concrete Pump Operator	\$15.40	\$9.40	\$24.80	Pipe/Stm/Sprkler Fitter	\$21.13	\$5.67	\$26.80
Crane Op =>15 Tons	\$19.50	\$4.71	\$24.21	Pipelayer	\$18.50	\$2.41	\$20.91
Crusher Plant Operator	\$14.48	\$3.27	\$17.75	Plumber (Licensed)	\$20.00	\$3.80	\$23.80
Diver	\$21.00	\$10.67	\$31.67	Pump Installer	\$15.50	\$1.48	\$16.98
Driller - Rock	\$14.25	\$2.65	\$16.90	Roller Op - Pavement	\$15.00	\$3.36	\$18.36
Electrician, Licensed	\$21.00	\$4.08	\$25.08	Sheet Metal Worker	\$15.45	\$3.18	\$18.63
Electrician Hlpr (Licensed)	\$15.50	\$3.31	\$18.81	Truck Driver - Light	\$13.25	\$0.98	\$14.23
Excavator Operator	\$16.13	\$2.42	\$18.55	Truck Driver - Medium	\$12.85	\$2.06	\$14.91
Fence Setter	\$13.00	\$1.64	\$14.64	Truck Driver, Heavy	\$11.50	\$0.95	\$12.45
Hot Top Plant Operator	\$17.33	\$6.98	\$24.31	Truck Driver, Tractor Trlr	\$12.95	\$2.10	\$15.05

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

Apprentices - The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

Posting of Schedule - Posting of this schedule is required in accordance with 26 MRSA §1301 et. seq., by any contractor holding a State contract for construction valued at \$50,000 or more and any subcontractors to such a contractor.

Appeal - Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates with the Secretary of State.

Determination No: HB-026-2007
 Filing Date: August 15, 2007
 Expiration Date: 12-31-2007

A true copy
 Attest: 
 William A. Peabody
 Director
 Bureau of Labor Standards

BLS 424HB (R2007) (Heavy & Bridge Kennebec)

GRANITE HILL
14277.00
8-14-07

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK

The Scope of work for the project consists of complete construction, installation, testing and commissioning of a radio tower, refurbishing an existing building, radio equipment/generator building, emergency generator, and perimeter fence on Granite Hill as shown in the project plans and outlined in the special provisions.

**GRANITE HILL
PIN 14277.00
8-14-07**

Special Provision
Section 107.1.1
Time
Contract Completion Date

With the exception of the documentation, all contractor's physical work at the site shall be completed by November 16, 2007.

The Contract Completion Date is December 28, 2007.

SPECIAL PROVISION**SECTION 656**

Temporary Soil Erosion and Water Pollution Control

The following is added to Section 656 regarding Project Specific Information and Requirements.

Project Specific Information and Requirements

The following information and requirements apply specifically to this Project. The temporary soil erosion and water pollution control measures associated with this work shall be addressed in the SEWPCP.

1. This project is considered **SENSITIVE** as defined by the MDOT BMP Manual. However, due to the topography and drainage characteristics of the project area, no natural resources should be affected by the work.
2. Newly disturbed earth shall be mulched by the end of each workday. Mulch shall be maintained on a daily basis.
3. Dust control items other than those under *Standard Specification, Section 637 – Dust Control*, if applicable, shall be included in the plan.
4. Permanent seeding shall be done in accordance with *Standard Specification, Section 618 - Seeding* unless the Contract states otherwise.
5. Demolition debris (including debris from wearing surface removal, building removal, saw cut slurry, dust, etc.) shall be contained and shall not be allowed to discharge to any resource. All demolition debris shall be disposed of in accordance with *Standard Specifications, Section 202.03 Removing Existing Superstructure, Structural Concrete, Railings, Curbs, Sidewalks and Bridges*. Containment and disposal of demolition debris shall be addressed in the Contractor's SEWPCP.
6. **CLEARING LIMIT LINES SHALL BE MINIMIZED.** Clearing shall be minimized as shown on the design plans. Areas to be cleared shall be discussed at the preconstruction field review.

STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:

http://www.maine.gov/mdot/contractor-consultant-information/ss_standard_details_updates.php

<u>Detail #</u>	<u>Description</u>	<u>Revision Date</u>
504(15)	Diaphragms	12/30/02
507(04)	Steel Bridge Railing	2/05/03
526(33)	Concrete Transition Barrier	8/18/03
645(06)	H-Beam Posts – Highway Signing	7/21/04
645(09)	Installation of Type II Signs	7/21/04
626(09)	Electrical Junction Box for Traffic Signals and Lighting	2/25/05
604(01)	Catch Basins	11/16/05
604(05)	Type “A” & “B” Catch Basin Tops	11/16/05
604(06)	Type “C” Catch Basin Tops	11/16/05
604(07)	Manhole Top “D”	11/16/05
604(09)	Catch Basin Type “E”	11/16/05
606(02)	Multiple Mailbox Support	11/16/05
606(07)	Reflectorized Beam Guardrail Delineator Details	11/16/05
609(06)	Vertical Bridge Curb	11/16/05
504(23)	Hand-Hold Details	12/08/05
609(03)	Curb Type 3	6/27/06
609(07)	Curb Type 1	6/27/06
535(01)	Precast Superstructure - Shear Key	10/12/06
535(02)	Precast Superstructure - Curb Key & Drip Notch	10/12/06

535(03)	Precast Superstructure - Shear Key	10/12/06
535(04)	Precast Superstructure - Shear Key	10/12/06
535(05)	Precast Superstructure - Post Tensioning	10/12/06
535(06)	Precast Superstructure - Sections	10/12/06
535(07)	Precast Superstructure - Precast Slab & Box	10/12/06
535(08)	Precast Superstructure - Sections	10/12/06
535(09)	Precast Superstructure - Sections	10/12/06
535(10)	Precast Superstructure - Sections	10/12/06
535(11)	Precast Superstructure - Sections	10/12/06
535(12)	Precast Superstructure - Sections	10/12/06
535(13)	Precast Superstructure - Sections	10/12/06
535(14)	Precast Superstructure - Stirrups	10/12/06
535(15)	Precast Superstructure - Plan	10/12/06
535(16)	Precast Superstructure - Reinforcing	10/12/06
535(17)	Precast Superstructure - Notes	10/12/06
801(01)	Drives on Sidewalk Sections	2/06/07
801(02)	Drives on Non-Sidewalk Sections	2/06/07

SUPPLEMENTAL SPECIFICATION

(Corrections, Additions, & Revisions to Standard Specifications - Revision of December 2002)

SECTION 101

CONTRACT INTERPRETATION

101.2 Definitions

Closeout Documentation Replace the sentence “A letter stating the amount.... DBE goals.” with “DBE Goal Attainment Verification Form”

Add “Environmental Information Hazardous waste assessments, dredge material test results, boring logs, geophysical studies, and other records and reports of the environmental conditions. For a related provision, see Section 104.3.14 - Interpretation and Interpolation.”

Add “Fabrication Engineer The Department’s representative responsible for Quality Assurance of pre-fabricated products that are produced off-site.”

Geotechnical Information Replace with the following: “Boring logs, soil reports, geotechnical design reports, ground penetrating radar evaluations, seismic refraction studies, and other records of subsurface conditions. For a related provision, see Section 104.3.14 - Interpretation and Interpolation.”

SECTION 102

DELIVERY OF BIDS

102.7.1 Location and Time Add the following sentence “As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments form, the completed Schedule of Items, 2 copies of the completed Agreement, Offer, & Award form, a Bid Bond or Bid Guarantee, and any other Certifications or Bid Requirements listed in the Bid Book.”

102.11.1 Non-curable Bid Defects Replace E. with “E. The unit price and bid amount is not provided or a lump sum price is not provided or is illegible as determined by the Department.”

SECTION 103

AWARD AND CONTRACTING

103.3.1 Notice and Information Gathering Change the first paragraph to read as follows: “After Bid Opening and as a condition for Award of a Contract, the Department may require an Apparent Successful Bidder to demonstrate to the Department’s satisfaction that the Bidder is responsible and qualified to perform the Work.”

SECTION 104

GENERAL RIGHTS AND RESPONSIBILITIES

104.3.14 Interpretation and Interpolation In the first sentence, change “...and Geotechnical Information.” to “...Environmental Information, and Geotechnical Information.”

Delete the entire Section 104.5.9 and replace with the following:

104.5.9 Landscape Subcontractors The Contractor shall retain only Landscape Subcontractors that are certified by the Department's Environmental Office Landscape Unit.

SECTION 105 GENERAL SCOPE OF WORK

Delete the entire Section 105.6 and replace with the following:

105.6.1 Department Provided Services The Department will provide the Contractor with the description and coordinates of vertical and horizontal control points, set by the Department, within the Project Limits, for full construction Projects and other Projects where survey control is necessary. For Projects of 1,500 feet in length, or less: The Department will provide three points. For Projects between 1,500 and 5,000 feet in length: The Department will provide one set of two points at each end of the Project. For Projects in excess of 5,000 feet in length, the Department will provide one set of two points at each end of the Project, plus one additional set of two points for each mile of Project length. For non-full construction Projects and other Projects where survey control is not necessary, the Department will not set any control points and, therefore, will not provide description and coordinates of any control points. Upon request of the Contractor, the Department will provide the Department's survey data management software and Survey Manual to the Contractor, or its survey Subcontractor, for the exclusive use on the Department's Projects.

105.6.2 Contractor Provided Services Utilizing the survey information and points provided by the Department, described in Subsection 105.6.1, Department Provided Services, the Contractor shall provide all additional survey layout necessary to complete the Work. This may include, but not be limited to, reestablishing all points provided by the Department, establishing additional control points, running axis lines, providing layout and maintenance of all other lines, grades, or points, and survey quality control to ensure conformance with the Contract. The Contractor is also responsible for providing construction centerline, or close reference points, for all Utility Facilities relocations and adjustments as necessary to complete the Work. When the Work is to connect with existing Structures, the Contractor shall verify all dimensions before proceeding with the Work. The Contractor shall employ or retain competent engineering and/or surveying personnel to fulfill these responsibilities.

The Contractor must notify the Department of any errors or inconsistencies regarding the data and layout provided by the Department as provided by Section 104.3.3 - Duty to Notify Department If Ambiguities Discovered.

105.6.2.1 Survey Quality Control The Contractor is responsible for all construction survey quality control. Construction survey quality control is generally defined as, first, performing initial field survey layout of the Work and, second, performing an independent check of the initial layout using independent survey data to assure the accuracy of the initial layout; additional iterations of checks may be required if significant discrepancies are discovered in this process. Construction survey layout quality control also requires written documentation of

the layout process such that the process can be followed and repeated, if necessary, by an independent survey crew.

105.6.3 Survey Quality Assurance It is the Department's prerogative to perform construction survey quality assurance. Construction survey quality assurance may, or may not, be performed by the Department. Construction survey quality assurance is generally defined as an independent check of the construction survey quality control. The construction survey quality assurance process may involve physically checking the Contractor's construction survey layout using independent survey data, or may simply involve reviewing the construction survey quality control written documentation. If the Department elects to physically check the Contractor's survey layout, the Contractor's designated surveyor may be required to be present. The Department will provide a minimum notice of 48 hours to the Contractor, whenever possible, if the Contractor's designated surveyor's presence is required. Any errors discovered through the quality assurance process shall be corrected by the Contractor, at no additional cost to the Department.

105.6.4 Boundary Markers The Contractor shall preserve and protect from damage all monuments or other points that mark the boundaries of the Right-of-Way or abutting parcels that are outside the area that must be disturbed to perform the Work. The Contractor indemnifies and holds harmless the Department from all claims to reestablish the former location of all such monuments or points including claims arising from 14 MRSA § 7554-A. For a related provision, see Section 104.3.11 - Responsibility for Property of Others.

SECTION 106 QUALITY

106.4.3 Testing Change the first sentence in paragraph three from "...maintain records of all inspections and tests." to "...maintain original documentation of all inspections, tests, and calculations used to generate reports."

106.6 Acceptance Add the following to paragraph 1 of A: "This includes Sections 401 - Hot Mix Asphalt, 402 - Pavement Smoothness, and 502 - Structural Concrete - Method A - Air Content."

Add the following to the beginning of paragraph 3 of A: "For pay factors based on Quality Level Analysis, and"

106.7.1 Standard Deviation Method Add the following to F: "Note: In cases where the mean of the values is equal to either the USL or the LSL, then the PWL will be 50 regardless of the computed value of s."

Add the following to H: "Method C Hot Mix Asphalt: $PF = [55 + (\text{Quality Level} * 0.5)] * 0.01$ "

SECTION 107 TIME

107.3.1 General Add the following: "If a Holiday occurs on a Sunday, the following Monday shall be considered a Holiday. Sunday or Holiday work must be approved by the Department,

except that the Contractor may work on Martin Luther King Day, President's Day, Patriot's Day, the Friday after Thanksgiving, and Columbus Day without the Department's approval."

107.7.2 Schedule of Liquidated Damages Replace the table of Liquidated Damages as follows:

<u>From More Than</u>	<u>Up to and Including</u>	<u>Amount of Liquidated Damages per Calendar Day</u>
\$0	\$100,000	\$100
\$100,000	\$300,000	\$200
\$300,000	\$500,000	\$400
\$500,000	\$1,000,000	\$575
\$1,000,000	\$2,000,000	\$750
\$2,000,000	\$4,000,000	\$900
\$4,000,000	and more	\$1,875

SECTION 108 PAYMENT

108.4 Payment for Materials Obtained and Stored First paragraph, second sentence, delete the words "...Delivered on or near the Work site at acceptable storage places."

SECTION 109 CHANGES

109.1.1 Changes Permitted Add the following to the end of the paragraph: "There will be no adjustment to Contract Time due to an increase or decrease in quantities, compared to those estimated, except as addressed through Contract Modification(s)."

109.1.2 Substantial Changes to Major Items Add the following to the end of the paragraph: "Contract Time adjustments may be made for substantial changes to Major Items when the change affects the Critical Path, as determined by the Department"

109.4.4 Investigation / Adjustment Third sentence, delete the words "subsections (A) - (E)"

109.5.1 Definitions - Types of Delays

B. Compensable Delay Replace (1) with the following; "a weather related Uncontrollable Event of such an unusually severe nature that a Federal Emergency Disaster is declared. The Contractor will only be entitled to an Equitable Adjustment if the Project falls within the geographic boundaries prescribed under the disaster declaration."

109.7.2 Basis of Payment Replace with the following: "Equitable Adjustments will be established by mutual Agreement for compensable items listed in Section 109.7.3- Compensable Items, based upon Unit or Lump Sum Prices. If Agreement cannot be reached, the Contractor shall accept payment on a Force Account basis as provided in Section 109.7.5 - Force Account Work, as full and complete compensation for all Work relating to the Equitable Adjustment."

109.7.3 Compensable Items Replace with the following: “The Contractor is entitled to compensation for the following items, with respect to agreed upon Unit or Lump Sum Prices:

1. Labor expenses for non-salaried Workers and salaried foremen.
2. Costs for Materials.
3. A 15 % markup on the totals of Items 1 and 2 of this subsection 109.7.3 for home office overhead and profit of the Contractor, its Subcontractors and suppliers, and any lower tier Subcontractors or suppliers, with no mark-ups on mark-ups.
4. Cost for Equipment, based on Blue Book Rates or leased rates, as set forth in Section 109.7.5(C), or the Contractor’s Actual Costs if determined by the Department to be lower.
5. Costs for extended job-site overhead.
6. Time.
7. Subcontractor quoted Work, as set forth below in Section 109.7.5 (F).”

109.7.5 Force Account Work

C. Equipment

Paragraph 2, delete sentence 1 which starts; “Equipment leased....”

Paragraph 6, change sentence 2 from “The Contractor may furnish...” to read “If requested by the Department, the Contractor will produce cost data to assist the Department in the establishment of such rental rate, including all records that are relevant to the Actual Costs including rental Receipts, acquisition costs, financing documents, lease Agreements, and maintenance and operational cost records.”

Add the following paragraph; “Equipment leased by the Contractor for Force Account Work and actually used on the Project will be paid for at the actual invoice amount plus 10% markup for administrative costs.”

Add the following section;

“F. Subcontractor Quoted Work When accomplishing Force Account Work that utilizes Subcontractors, the Contractor will be allowed a maximum markup of 5% for profit and overhead on the Subcontractor’s portion of the Force Account Work.”

SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE

Delete the entire Section 110.2.3 and replace with the following:

110.2.3 Bonding for Landscape Establishment Period The Contractor shall provide a signed, valid, and enforceable Performance, Warranty, or Maintenance Bond complying with the Contract, to the Department at Final Acceptance.

The bond shall be in the full amount for all Pay Items for work pursuant to Sec 621, Landscape, payable to the “Treasurer - State of Maine,” and on the Department’s forms, on exact copies thereof, or on forms that do not contain any significant variations from the Department’s forms as solely determined by the Department.

The Contractor shall pay all premiums and take all other actions necessary to keep said bond in effect for the duration of the Landscape Establishment Period described in Special Provision 621.0036 - Establishment Period. If the Surety becomes financially insolvent, ceases to be licensed or approved to do business in the State of Maine, or stops operating in the United States, the Contractor shall file new bonds complying with this Section within 10 Days of the date the Contractor is notified or becomes aware of such change.

All Bonds shall be procured from a company organized and operating in the United States, licensed or approved to do business in the State of Maine by the State of Maine Department of Business Regulation, Bureau of Insurance, and listed on the latest Federal Department of the Treasury listing for “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies.”

By issuing a bond, the Surety agrees to be bound by all terms of the Contract, including those related to payment, time for performance, quality, warranties, and the Department’s self-help remedy provided in Section 112.1 - Default to the same extent as if all terms of the Contract are contained in the bond(s).

Regarding claims related to any obligations covered by the bond, the Surety shall provide, within 60 Days of Receipt of written notice thereof, full payment of the entire claim or written notice of all bases upon which it is denying or contesting payment. Failure of the Surety to provide such notice within the 60-day period constitutes the Surety’s waiver of any right to deny or contest payment and the Surety’s acknowledgment that the claim is valid and undisputed.

SECTION 202 REMOVING STRUCTURES AND OBSTRUCTIONS

202.02 Removing Buildings Make the following change to the last sentence in the final paragraph, change “...Code of Maine Regulations 401.” to “...Department of Environmental Protection Maine Solid Waste Management Rules, 06-096 CMR Ch. 401, Landfill Siting, Design and Operation.”

SECTION 203 EXCAVATION AND EMBANKMENT

203.01 Description Under b. Rock Excavation; add the following sentence: “The use of perchlorate is not allowed in blasting operations.”

SECTION 502
STRUCTURAL CONCRETE

502.05 Composition and Proportioning; TABLE #1; NOTE #2; third sentence; Change "...alcohol based saline sealer..." to "alcohol based silane sealer...". Add NOTE #6 to Class S Concrete.

502.0502 Quality Assurance Method A - Rejection by Resident Change the first sentence to read: "For an individual subplot with test results failing to meet the criteria in Table #1, or if the calculated pay factor for Air Content is less than 0.80....."

502.0503 Quality Assurance Method B - Rejection by Resident Change the first sentence to read: "For material represented by a verification test with test results failing to meet the criteria in Table #1, the Department will....."

502.0505 Resolution of Disputed Acceptance Test Results Combine the second and third sentence to read: "Circumstances may arise, however, where the Department may"

502.10 Forms and False work

D. Removal of Forms and False work 1., First paragraph; first, second, and third sentence; replace "forms" with "forms and false work"

502.11 Placing Concrete

G. Concrete Wearing Surface and Structural Slabs on Precast Superstructures Last paragraph; third sentence; replace "The temperature of the concrete shall not exceed 24° C [75° F] at the time of placement." with "The temperature of the concrete shall not exceed 24° C [75° F] at the time the concrete is placed in its final position."

502.15 Curing Concrete First paragraph; replace the first sentence with the following; "All concrete surfaces shall be kept wet with clean, fresh water for a curing period of at least 7 days after concrete placing, with the exception of vertical surfaces as provided for in Section 502.10 (D) - Removal of Forms and False work."

Second paragraph; delete the first two sentences.

Third paragraph; delete the entire paragraph which starts "When the ambient temperature...."

Fourth paragraph; delete "approved" to now read "...continuously wet for the entire curing period..."

Fifth paragraph; second sentence; change "...as soon as it is possible to do so without damaging the concrete surface." to "...as soon as possible."

Seventh paragraph; first sentence; change "...until the end of the curing period." to "...until the end of the curing period, except as provided for in Section 502.10(D) - Removal of Forms and False work."

502.19 Basis of Payment First paragraph, second sentence; add "pier nose armor" to the list of items included in the contract price for concrete.

SECTION 503 REINFORCING STEEL

503.06 Placing and Fastening Change the second paragraph, first sentence from: "All tack welding shall be done in accordance with Section 504, Structural Steel." to "All tack welding shall be done in accordance with AWS D1.4 Structural Welding Code - Reinforcing Steel."

SECTION 504 STRUCTURAL STEEL

504.09 Facilities for Inspection Add the follow as the last paragraph: "Failure to comply with the above requirements will be consider to be a denial to allow access to work by the Contractor. The Department will reject any work done when access for inspection is denied."

504.18 Plates for Fabricated Members Change the second paragraph, first sentence from: "...ASTM A 898/A 898 M..." to "...ASTM A 898/A 898 M or ASTM A 435/A 435 M as applicable and..."

504.31 Shop Assembly Add the following as the last sentence: "The minimum assembly length shall include bearing centerlines of at least two substructure units."

504.64 Non Destructive Testing-Ancillary Bridge Products and Support Structures Change the third paragraph, first sentence from "One hundred percent..." to "Twenty five percent..."

SECTION 535 PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.02 Materials Change "Steel Strand for Concrete Reinforcement" to "Steel Strand." Add the following to the beginning of the third paragraph; "Concrete shall be Class P conforming to the requirements in this section. 28 day compressive strength shall be as stated on the plans. Coarse aggregate...."

535.05 Inspection Facilities Add the follow as the last paragraph: "If the above requirements are not met, the Contractor shall be considered to be in violation of Standard Specification 104.2.5 – Right to Inspect Work. All work occurring during a violation of this specification will be rejected."

535.26 Lateral Post-Tensioning Replace the first paragraph; "A final tension..." with "Overstressing strands for setting losses cannot be accomplished for chuck to chuck lengths of 7.6 m [25 ft] and less. In such instances, refer to the Plans for all materials and methods. Otherwise, post-tensioning shall be in accordance with PCI standards and shall provide the anchorage force noted in the Plans. The applied jacking force shall be no less than 100% of the design jacking force."

SECTION 603
PIPE CULVERTS AND STORM DRAINS

603.0311 Corrugated Polyethylene Pipe for Option III Replace the Minimum Mandrel Diameter Table with the following:

Nominal Size US Customary (in)	Minimum Mandrel Diameter (in)	Nominal Size Metric (mm)	Minimum Mandrel Diameter (mm)
12	11.23	300	280.73
15	14.04	375	350.91
18	16.84	450	421.09
24	22.46	600	561.45
30	28.07	750	701.81
36	33.69	900	842.18
42	39.30	1050	982.54
48	44.92	1200	1122.90

SECTION 604
MANHOLES, INLETS, AND CATCH BASINS

604.02 Materials Add the following:

“Tops and Traps	712.07
Corrugated Metal Units	712.08
Catch Basin and Manhole Steps	712.09”

SECTION 605
UNDERDRAINS

605.05 Underdrain Outlets Make the following change:

In the first paragraph, second sentence, delete the words “metal pipe”.

SECTION 606
GUARDRAIL

606.02 Materials Delete the entire paragraph which reads “The sole patented supplier of multiple mailbox...” and replace with “Acceptable multiple mailbox assemblies shall be listed on the Department’s Approved Products List and shall be NCHRP 350 tested and approved.” Delete the entire paragraph which reads “Retroreflective beam guardrail delineators...” and replace with “Reflectorized sheeting for Guardrail Delineators shall meet the requirements of Section 719.01 - Reflective Sheeting. Delineators shall be fabricated from high-impact, ultraviolet and weather resistant thermoplastic.

606.09 Basis of Payment First paragraph; delete the second and third sentence in their entirety and replace with “Butterfly-type guardrail reflectorized delineators shall be mounted on all W-beam guardrail at an interval of every 10 posts [62.5 ft] on tangents sections and every 5 posts [31.25 ft] on curved sections as directed by the Resident. On divided highways, the delineators shall be yellow on the left hand side and silver/white on the right hand side. On two-way

roadways, the delineators shall be silver/white on the right hand side. All delineators shall have retroreflective sheeting applied to only the traffic facing side. Reflectorized guardrail delineators will not be paid for directly, but will be considered incidental to the guardrail items.”

SECTION 609 CURB

609.04 Bituminous Curb f., Delete the requirement “Color Natural (White)”

SECTION 615 LOAM

615.02 Materials Make the following change:

<u>Organic Content</u>	<u>Percent by Volume</u>
Humus	“5% - 10%”, as determined by Ignition Test

SECTION 618 SEEDING

618.01 Description Change the first sentence to read as follows: “This work shall consist of furnishing and applying seed” Also remove “,and cellulose fiber mulch” from 618.01(a).

618.03 Rates of Application In 618.03(a), remove the last sentence and replace with the following: “These rates shall apply to Seeding Method 2, 3, and Crown Vetch.”

In 618.03(c) “1.8 kg [4 lb]/unit.” to “1.95 kg [4 lb]/unit.”

618.09 Construction Method In 618.09(a) 1, sentence two, replace “100 mm [4 in]” with “25 mm [1 in] (Method 1 areas) and 50 mm [2 in] (Method 2 areas)”

618.15 Temporary Seeding Change the Pay Unit from Unit to Kg [lb].

SECTION 620 GEOTEXTILES

620.03 Placement Section (c)

Title: Replace “Non-woven” in title with “Erosion Control”.

First Paragraph: Replace first word “Non-woven” with “Woven monofilament”.

Second Paragraph: Replace second word “Non-woven” with “Erosion Control”.

620.07 Shipment, Storage, Protection and Repair of Fabric Section (a)

Replace the second sentence with the following: “Damaged geotextiles, as identified by the Resident, shall be repaired immediately.”

620.09 Basis of Payment

Pay Item 620.58: Replace “Non-woven” with “Erosion Control”

Pay Item 620.59: Replace “Non-woven” with “Erosion Control”

SECTION 621 LANDSCAPING

621.0036 Establishment Period In paragraph 4 and 5, change “time of Final Acceptance” to “end of the period of establishment”. In Paragraph 7, change “Final Acceptance date” to “end of the period of establishment” and change “date of Final Acceptance” to “end of the period of establishment”.

SECTION 626 HIGHWAY SIGNING

626.034 Concrete Foundations Add to the following to the end of the second paragraph: “Pre-cast and cast-in-place foundations shall be warranted against leaning and corrosion for two years after the project is completed. If the lean is greater than 2 degrees from normal or the foundation is spalling within the first two years, the Contractor shall replace the foundation at no extra cost.”

SECTION 627 PAVEMENT MARKINGS

627.10 Basis of Payment Add to the following to the end of the third paragraph: “If allowed by Special Provision, the Contractor may utilize Temporary Bi-Directional Yellow and White(As required) Delineators as temporary pavement marking lines and paid for at the contract lump sum price. Such payment will include as many applications as required and removal.”

SECTION 637 DUST CONTROL

637.06 Basis of Payment Add the following after the second sentence of the third paragraph: “Failure by the Contractor to follow Standard Specification or Special Provision - Section 637 and/or the Contractor’s own Soil Erosion and Pollution Control Plan concerning Dust Control and/or the Contractor’s own Traffic Control Plan concerning Dust Control and/or visible evidence of excessive dust problems, as determined by the Resident, will result in a reduction in payment, computed by reducing the Lump Sum Total by 5% per occurrence per day. The Department’s Resident or any other representative of the Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item. Additional penalties may also be assessed in accordance with Special Provision 652 - Work Zone Traffic Control and Standard Specification 656 - Temporary Soil Erosion and Water Pollution Control.”

SECTION 639 ENGINEERING FACILITIES

639.04 Field Offices Change the forth to last paragraph from: “The Contractor shall provide a fully functional desktop copier...” to “...desktop copier/scanner...”

SECTION 652

MAINTENANCE OF TRAFFIC

652.2.3 Flashing Arrow Board Delete the existing 5 paragraphs and replace with the following: Flashing Arrow Panels (FAP) must be of a type that has been submitted to AASHTO's National Transportation Product Evaluation Program (NTPEP) for evaluation and placed on the Maine Department of Transportation's Approved Products List of Portable Changeable Message Signs & Flashing Arrow Panels.

FAP units shall meet requirements of the current Manual on Uniform Traffic Control Devices (MUTCD) for Type "C" panels as described in Section 6F.56 - Temporary Traffic Control Devices. An FAP shall have matrix of a minimum of 15 low-glare, sealed beam, Par 46 elements capable of either flashing or sequential displays as well as the various operating modes as described in the MUTCD, Chapter 6-F. If an FAP consisting of a bulb matrix is used, each element should be recess-mounted or equipped with an upper hood of not less than 180 degrees. The color presented by the elements shall be yellow.

FAP elements shall be capable of at least a 50 percent dimming from full brilliance. Full brilliance should be used for daytime operation and the dimmed mode shall be used for nighttime operation. FAP shall be at least 2.4 M x 1.2 M [96" x 48"] and finished in non-reflective black. The FAP shall be interpretable for a distance not less than 1.6 km [1 mile].

Operating modes shall include, flashing arrow, sequential arrow, sequential chevron, flashing double arrow, and flashing caution. In the three arrow signals, the second light from the arrow point shall not operate.

The minimum element on-time shall be 50 percent for the flashing mode, with equal intervals of 25 percent for each sequential phase. The flashing rate shall be not less than 25 nor more than 40 flashes per minute. All on-board circuitry shall be solid state.

Primary power source shall be 12 volt solar with a battery back-up to provide continuous operation when failure of the primary power source occurs, up to 30 days with fully charged batteries. Batteries must be capable of being charged from an onboard 110 volt AC power source and the unit shall be equipped with a cable for this purpose.

Controller and battery compartments shall be enclosed in lockable, weather-tight boxes. The FAP shall be mounted on a pneumatic-tired trailer or other suitable support for hauling to various locations, as directed. The minimum mounting height of an arrow panel should be 2.1 M [7 feet] from the roadway to the bottom of the panel.

The face of the trailer shall be delineated on a permanent basis by affixing retro-reflective material, known as conspicuity material, in a continuous line as seen by oncoming drivers.

A portable changeable message sign may be used to simulate an arrow panel display."

652.2.4 Other Devices Delete the last paragraph and add the following:
"652.2.5 Portable Changeable Message Sign Trailer mounted Portable Changeable Message Signs (PCMS) must be of a type that has been submitted to AASHTO's National

Transportation Product Evaluation Program (NTPEP) for evaluation and placed on the Maine Department of Transportations' Approved Products List of Portable Changeable Message Signs & Flashing Arrow Panels. The PCMS unit shall meet or exceed the current specifications of the Manual on Uniform Traffic Control Devices (MUTCD), 6F.55.

The front face of the sign should be covered with a low-glare protective material. The color of the LED elements shall be amber on a black background. The PCMS should be visible from a distance of 0.8 km [0.5 mile] day and night and have a minimum 15° viewing angle. Characters must be legible from a distance of at least 200 M [650 feet].

The message panel should have adjustable display rates (minimum of 3 seconds per phase), so that the entire message can be read at least twice at the posted speed, the off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed. Each message shall consist of either one or two phases. A phase shall consist of up to eight characters per line. The unit must be capable of displaying at least three lines of text with eight characters per line. Each character shall be 457 mm [18"] high. Each character module shall use at least a five wide and seven high pixel matrix. The text of the messages shall not scroll or travel horizontally or vertically across the face of the sign.

Units shall automatically adjust their brightness under varying light conditions to maintain legibility.

The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Message must be changeable with either a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes.

PCMS units shall have the capability of being made programmable by means of wireless communications. PCMS units shall also be fully capable of having an on-board radar system installed if required for a particular application.

PCMS' primary power source shall be solar with a battery back-up to provide continuous operation when failure of the primary power source occurs. Batteries must be capable of being charged from a 110 volt AC power source. The unit must also be capable of being operated solely from a 110 volt AC power source and be equipped with a cable for this purpose.

The PCMS shall be mounted on a trailer in such a way that the bottom of the message sign panel shall be a minimum of 2.1 M [7 ft] above the roadway in urban areas and 1.5 M [5 ft] above the roadway in rural areas when it is in the operating mode. PCMS trailers should be of a heavy duty type with a 51 mm [2"] ball hitch and a minimum of four leveling jacks (at each corner). The sign shall be capable of being rotated 360° relative to the trailer. The face of the trailer shall be delineated on a permanent basis by affixing retro-reflective material, known as conspicuity material, in a continuous line as seen by oncoming drivers."

652.3.3 Submittal of Traffic Control Plan In item e. change "A list of all certified flaggers..." to "A list of all the Contractor's certified flaggers..."

In the last paragraph add the following as the second sentence: “The Department will review and provide comments to the Contractor within 14 days of receipt of the TCP.”

652.3.5 Installation of Traffic Control Devices In the first paragraph, first sentence; change “Signs shall be erected...” to “Portable signs shall be erected..” In the third sentence; change “Signs must be erected so that the sign face...” to “Post-mounted signs must also be erected so that the sign face...”

652.4 Flaggers Replace the first paragraph with the following; “The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer. Flaggers shall wear safety apparel meeting ANSI 107-1999 Class 2 risk exposure and clearly identify the wearer as a person, shall be visible at a minimum distance of 300 m [1000 ft], and shall wear a hardhat with retroreflectivity. For nighttime conditions, Class 3 apparel should be considered, retroreflective or flashing SLOW/STOP paddles shall be used, and except in emergency situations the flagger station shall be illuminated to assure visibility.”

Second paragraph, first sentence; change “...have sufficient distance to stop before entering the workspace.” to “...have sufficient distance to stop at the intended stopping point.” Third sentence; change “At a spot obstruction...” to “At a spot obstruction with adequate sight distance,...”

Fourth paragraph, delete and replace with “Flaggers shall be provided as a minimum, a 10 minute break, every 2 hours and a 30 minute or longer lunch period away from the work station. Flaggers may only receive 1 unpaid break per day; all other breaks must be paid. Sufficient certified flaggers shall be available onsite to provide for continuous flagging operations during break periods. Breaker flaggers will not be paid for separately, but shall be considered incidental to the appropriate pay item.”

652.8.2 Other Items Replace the last paragraph with the following: “There will be no payment made under any 652 pay items after the expiration of the adjusted total contract time.”

SECTION 653 POLYSTYRENE PLASTIC INSULATION

653.05 Placing Backfill In the second sentence; change “...shall be not less than 150 mm [6 in] loose measure.” to “...shall be not less than 250 mm [10 in] loose measure.” In the third sentence; change “...crawler type bulldozer of not more than 390 kg/m² [80 lb/ft²] ground contact pressure...” to “...crawler type bulldozer of not more than 4875 kg/m² [2000 lb/ft²] ground contact pressure...”

653.06 Compaction In the last sentence; change “...not more than 390 kg/m² [80 lb/ft²] ground contact...” to “...not more than 4875 kg/m² [2000 lb/ft²] ground contact...”

SECTION 656

TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL

656.5.1 If Pay Item 656.75 Provided Replace the second paragraph with the following: "Failure by the Contractor to follow Standard Specification or Special Provision - Section 656 and/or the Contractor's own Soil Erosion and Pollution Control Plan will result in a reduction in payment, computed by reducing the Lump Sum Total by 5% per occurrence per day. The Department's Resident or any other representative of the Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item."

SECTION 701

STRUCTURAL CONCRETE RELATED MATERIALS

701.10 Fly Ash - Chemical Requirements Change all references from "ASTM C311" to "ASTM C114".

SECTION 703

AGGREGATES

703.05 Aggregate for Sand Leveling Change the percent passing the 9.5 mm [3/8 in] sieve from "85 - 10" to "85 - 100"

703.06 Aggregate for Base and Subbase Delete the first paragraph: "The material shall have..." and replace with "The material shall have a minimum degradation value of 15 as determined by Washington State DOT Test Method T113, Method of Test for Determination of Degradation Value (March 2002 version), except that the reported degradation value will be the result of testing a single specimen from that portion of a sample that passes the 12.5 mm [½ in] sieve and is retained on the 2.00 mm [No. 10] sieve, minus any reclaimed asphalt pavement used."

703.07 Aggregates for HMA Pavements Delete the forth paragraph: "The composite blend shall have..." and replace with "The composite blend, minus any reclaimed asphalt pavement used, shall have a Micro-Deval value of 18.0 or less as determined by AASHTO T 327. In the event the material exceeds the Micro Deval limit, a Washington Degradation test shall be performed. The material shall be acceptable if it has a value of 30 or more as determined by Washington State DOT Test Method T 113, Method of Test for Determination of Degradation Value (March 2002 version) except that the reported degradation value will be the result of testing a single composite specimen from that portion of the sample that passes the 12.5mm [1/2 inch] sieve and is retained on the 2.00mm [No 10] sieve, minus any reclaimed asphalt pavement used."

703.18 Common Borrow Replace the first paragraph with the following: "Common borrow shall consist of earth, suitable for embankment construction. It shall be free from frozen material, perishable rubbish, peat, and other unsuitable material including material currently or

previously contaminated by chemical, radiological, or biological agents unless the material is from a DOT project and authorized by DEP for use.”

703.22 Underdrain Backfill Material Change the first paragraph from “...for Underdrain Type B...” to “...for Underdrain Type B and C...”

SECTION 706 NON-METALLIC PIPE

706.06 Corrugated Polyethylene Pipe for Underdrain, Option I and Option III Culvert Pipe Change the first sentence from “...300 mm diameters to 900 mm” to “...300 mm diameters to 1200 mm” Delete, in it’s entirety, the last sentence which begins “This pipe and resins...” and replace with the following; “The manufacturing plants of polyethylene pipe shall be certified by the Eastern States Consortium. Polyethylene pipe shall be accepted based on third party certification by the AASHTO’s National Transportation Product Evaluation Program.”

SECTION 709 REINFORCING STEEL AND WELDED STEEL WIRE FABIC

709.03 Steel Strand Change the second paragraph from “...shall be 12mm [½ inch] AASHTO M203M/M203 (ASTM A416/A416M)...” to “...shall be 15.24 mm [0.600 inch] diameter AASHTO M203 (ASTM A416)...”

SECTION 710 FENCE AND GUARDRAIL

710.03 Chain Link Fabric Add the following sentence: “Chain Link fabric for PVC coated shall conform to the requirements of AASHTO M181, Type IV-Class B.”

710.07 Guardrail Posts Section b. change “...AASHTO M183/M183M...” to “...AASHTO M 270M/M 270 Grade 250 (36)...”

SECTION 712 MISCELLANEOUS HIGHWAY MATERIALS

712.06 Precast Concrete Units In the first paragraph, change “...ASTM C478M...” to “...AASHTO M199...” Delete the second paragraph and replace with the following; “Approved structural fibers may be used as a replacement of 6 x 6 #10 gauge welded wire fabric when used at an approved dosage rate for the construction of manhole and catch basin units. The material used shall be one of the products listed on the Maine Department of Transportation’s Approved Product List of Structural Fiber Reinforcement.” Delete the fifth paragraph and replace with the following; “The concrete mix design shall be approved by the Department. Concrete shall contain 6% air content, plus or minus 1½% tolerance when tested according to AASHTO T152. All concrete shall develop a minimum compressive strength of 28 MPa [4000 psi] in 28 days when tested according to AASHTO T22. The absorption of a specimen, when tested according to AASHTO T280, Test Method “A”, shall not exceed nine percent of the dry mass.”

Add the following:

“712.07 Tops, and Traps These metal units shall conform to the plan dimensions and to the following specification requirements for the designated materials.

Gray iron or ductile iron castings shall conform to the requirements of AASHTO M306 unless otherwise designated.

712.08 Corrugated Metal Units The units shall conform to plan dimensions and the metal to AASHTO M36/M36M. Bituminous coating, when specified, shall conform to AASHTO M190 Type A.

712.09 Catch Basin and Manhole Steps Steps for catch basins and for manholes shall conform to ASTM C478M [ASTM C478], Section 13 for either of the following material:

- (a) Aluminum steps-ASTM B221M, [ASTM B211] Alloy 6061-T6 or 6005-T5.
- (b) Reinforced plastic steps Steel reinforcing bar with injection molded plastic coating copolymer polypropylene. Polypropylene shall conform to ASTM D 4101.

712.23 Flashing Lights Flashing Lights shall be power operated or battery operated as specified.

- (a) Power operated flashing lights shall consist of housing, adapters, lamps, sockets, reflectors, lens, hoods and other necessary equipment designed to give clearly visible signal indications within an angle of at least 45 degrees and from 3 to 90 m [10 to 300 ft] under all light and atmospheric conditions.

Two circuit flasher controllers with a two-circuit filter capable of providing alternate flashing operations at the rate of not less than 50 nor more than 60 flashes per minute shall be provided.

The lamps shall be 650 lumens, 120 volt traffic signal lamps with sockets constructed to properly focus and hold the lamp firmly in position.
The housing shall have a rotatable sun visor not less than 175 mm [7 in] in length designed to shield the lens.

Reflectors shall be of such design that light from a properly focused lamp will reflect the light rays parallel. Reflectors shall have a maximum diameter at the point of contact with the lens of approximately 200 mm [8 in].

The lens shall consist of a round one-piece convex amber material which, when mounted, shall have a visible diameter of approximately 200 mm [8 in]. They shall distribute light and not diffuse it. The distribution of the light shall be asymmetrical in a downward direction. The light distribution of the lens shall not be uniform, but shall consist of a small high intensity portion with narrow distribution for long distance throw and a larger low intensity portion with wide distribution for short distance throw. Lenses shall be marked to indicate the top and bottom of the lens.

(b) Battery operated flashing lights shall be self-illuminated by an electric lamp behind the lens. These lights shall also be externally illuminated by reflex-reflective elements built into the lens to enable it to be seen by reflex-reflection of the light from the headlights of oncoming traffic. The batteries must be entirely enclosed in a case. A locking device must secure the case. The light shall have a flash rate of not less than 50 nor more than 60 flashes per minute from minus 30 °C [minus 20 °F] to plus 65 °C [plus 150 °F]. The light shall have an on time of not less than 10 percent of the flash cycle. The light beam projected upon a surface perpendicular to the axis of the light beam shall produce a lighted rectangular projection whose minimum horizontal dimension shall be 5 degrees each side of the horizontal axis. The effective intensity shall not have an initial value greater than 15.0 candelas or drop below 4.0 candelas during the first 336 hours of continuous flashing. The illuminated lens shall appear to be uniformly bright over its entire illuminated surface when viewed from any point within an angle of 9 degrees each side of the vertical axis and 5 degrees each side of the horizontal axis. The lens shall not be less than 175 mm [7 in] in diameter including a reflex-reflector ring of 13 mm [½ in] minimum width around the periphery. The lens shall be yellow in color and have a minimum relative luminous transmittance of 0.440 with a luminance of 2854° Kelvin. The lens shall be one-piece construction. The lens material shall be plastic and meet the luminous transmission requirements of this specification. The case containing the batteries and circuitry shall be constructed of a material capable of withstanding abuse equal to or greater than 1.21 mm thick steel [No. 18 U.S. Standard Gage Steel]. The housing and the lens frame, if of metal shall be properly cleaned, degreased and pretreated to promote adhesion. It shall be given one or more coats of enamel which, when dry shall completely obscure the metal. The enamel coating shall be of such quality that when the coated case is struck a light blow with a sharp tool, the paint will not chip or crack and if scratched with a knife will not powder. The case shall be so constructed and closed as to exclude moisture that would affect the proper operation of light. The case shall have a weep hole to allow the escape of moisture from condensation. Photoelectric controls, if provided, shall keep the light operating whenever the ambient light falls below 215 lx [20 foot candles]. Each light shall be plainly marked as to the manufacturer's name and model number.

If required by the Resident, certification as to conformance to these specifications shall be furnished based on results of tests made by an independent testing laboratory. All lights are subject to random inspection and testing. All necessary random samples shall be provided to the Resident upon request without cost to the Department. All such samples shall be returned to the Contractor upon completion of the tests.

712.32 Copper Tubing Copper tubing and fittings shall conform to the requirements of ASTM B88M Type A [ASTM B88, Type K] or better.

712.33 Non-metallic Pipe, Flexible Non-metallic pipe and pipe fittings shall be acceptable flexible pipe manufactured from virgin polyethylene polymer suitable for transmitting liquids intended for human or animal consumption.

712.34 Non-metallic Pipe, Rigid Non-metallic pipe shall be Schedule 40 polyvinylchloride (PVC) that meets the requirement of ASTM D1785. Fittings shall be of the same material.

712.341 Metallic Pipe Metallic pipe shall be ANSI, Standard B36.10, Schedule 40 steel pipe conforming to the requirements of ASTM A53 Types E or S, Grade B. End plates shall be steel conforming to ASTM A36/A36M.

Both the sleeve and end plates shall be hot dip galvanized. Pipe sleeve splices shall be welded splices with full penetration weld before galvanizing.

712.35 Epoxy Resin Epoxy resin for grouting or sealing shall consist of a mineral filled thixotropic, flexible epoxy resin having a pot life of approximately one hour at 10°C [50°F]. The grout shall be an approved product suitable for cementing steel dowels into the preformed holes of curb inlets and adjacent curbing. The sealant shall be an approved product, light gray in color and suitable for coating the surface.

712.36 Bituminous Curb The asphalt cement for bituminous curb shall be of the grade required for the wearing course, or shall be Viscosity Grade AC-20 meeting the current requirements of Subsection 702.01 Asphalt Cement. The aggregate shall conform to the requirements of Subsection 703.07. The coarse aggregate portion retained on the 2.36 mm [No. 8] sieve may be either crushed rock or crushed gravel.

The mineral constituents of the bituminous mixture shall be sized and graded and combined in a composite blend that will produce a stable durable curbing with an acceptable texture.

Bituminous material for curb shall meet the requirements of Section 403 - Hot Bituminous Pavement.

712.37 Precast Concrete Slab Portland cement concrete for precast slabs shall meet the requirements of Section 502 - Structural Concrete, Class A.

The slabs shall be precast to the dimension shown on the plans and cross section and in accordance with the Standard Detail plans for Concrete Sidewalk Slab. The surface shall be finished with a float finish in accordance with Subsection 502.14(c). Lift devices of sufficient strength to hold the slab while suspended from cables shall be cast into the top or back of the slab.

712.38 Stone Slab Stone slabs shall be of granite from an acceptable source, hard, durable, predominantly gray in color, free from seams which impair the structural integrity and be of smooth splitting character. Natural color variations characteristic of the deposit will be permitted. Exposed surfaces shall be free from drill holes or indications of drill holes. The granite slabs in any one section of backslope must be all the same finish.

The granite slabs shall be scabble dressed or sawed to an approximately true plane having no projections or depressions over 13 mm [½ in] under a 600 mm [2 ft] straightedge or over 25 mm [1 in] under a 1200 mm [4 ft] straightedge. The arris at the intersection of the top surface and exposed front face shall be pitched so that the arris line is uniform throughout the length of the installed slabs. The sides shall be square to the exposed face unless the slabs are to be set on a radius or other special condition which requires that the joints be cut to fit, but in any case shall be so finished that when the stones are placed side by side no space more than 20 mm [¾ in] shall show in the joint for the full exposed height.

Liftpin holes in all sides will be allowed except on the exposed face.

SECTION 717
ROADSIDE IMPROVEMENT MATERIAL

717.03 C. Method #3 - Roadside Mixture #3 Change the seed proportions to the following:

Crown Vetch	25%
Perennial Lupine	25%
Red Clover	12.5%
Annual Rye	37.5%

717.05 Mulch Binder Change the third sentence to read as follows:

“Paper fiber mulch may be used as a binder at the rate of 2.3 kg/unit [5 lb/unit].”

SECTION 720
STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND
TRAFFIC SIGNALS

720.08 U-Channel Posts Change the first sentence from “..., U-Channel posts...” to “..., Rib Back U-Channel posts...”

SECTION 722
GEOTEXTILES

722.01 Stabilization/Reinforcement Geotextile Add the following to note #3; “The strengths specified in the columns labeled”<50%” and “≥ 50%” refer to the elongation at which the geotextile material was tested. For example; if a fabric is tested at 15% elongation then it must meet or exceed the minimum strength shown in the “<50%” column. Submittals must include the percent elongation at which the material was tested.”

722.02 Drainage Geotextile Add the following to note #3; “The strengths specified in the columns labeled”<50%” and “≥ 50%” refer to the elongation at which the geotextile material was tested. For example; if a fabric is tested at 15% elongation then it must meet or exceed the minimum strength shown in the “<50%” column. Submittals must include the percent elongation at which the material was tested.”

722.01 Erosion Control Geotextile Add the following note to Elongation in the Mechanical Property Table; “The strengths specified in the columns labeled”<50%” and “≥ 50%” refer to the elongation at which the geotextile material was tested. For example; if a fabric is tested at 15% elongation then it must meet or exceed the minimum strength shown in the “<50%” column. Submittals must include the percent elongation at which the material was tested.”



Issued Date: 04/12/2007

Radio Communications Supv
 Maine Dept of Transportation
 State House Station 16
 Augusta, ME 04333

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Antenna Tower
 Location: Augusta, ME
 Latitude: 44-18-29.97 N NAD 83
 Longitude: 69-49-58.65 W
 Heights: 199 feet above ground level (AGL)
 666 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure is marked and/or lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, a med-dual system - Chapters 4,8(M-Dual),&12.

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part I)
- Within 5 days after the construction reaches its greatest height (7460-2, Part II)

See attachment for additional condition(s) or information.
 This determination expires on 10/12/2008 unless:

- (a) extended, revised or terminated by the issuing office.
- (b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is subject to review if an interested party files a petition that is received by the FAA on or before May 12, 2007. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted in triplicate to the Manager, Airspace and Rules Division - Room 423, Federal Aviation Administration, 800 Independence Ave., Washington, D.C. 20591.

This determination becomes final on May 22, 2007 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review. For any questions regarding your petition, please contact Office of Airspace and Rules via telephone -- 202-267-8783 - or facsimile 202-267-9328.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact Donna O'Neill, at (816)329-2525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2006-ANE-977-OE.

Signature Control No: 481191-100015058

(DNH)

Kevin P. Haggerty

Manager, Obstruction Evaluation Service

Attachment(s)

Additional Information

Frequency Data

Map(s)

7460-2 Attached

Additional information for ASN 2006-ANE-977-OE

The proposed construction would be located approximately 1.70 nautical miles (NM) southwest of the Augusta State Airport (AUG), Augusta, ME. The proposed construction is identified as an obstruction under the standards of 14 CFR, part 77, as applied to the Augusta State Airport as follows:

Section 77.23(a)(3): A height that increases a minimum instrument flight altitude within a terminal area (TERPS criteria); penetrates 40:1 departure surface for Runway 26 and would require an increased climb gradient of 250 ft. per nautical mile. Without a survey to 2C accuracy, it would also increase the minimum descent altitude (MDA) for the GPS Runway 8 and VOR/DME Runway 8 approaches.

Section 77.23(a)(5): The surface of a takeoff and landing area of an airport or any imaginary surface established under 77.25, 77.28, or 77.29; would exceed the conical surface by 163 ft.

The proposal was circularized on January 22, 2007, to all known aviation interests and to non-aeronautical interests that may be affected by the proposal. No letters of objection were received as a result of the circularization.

Aeronautical study disclosed that the proposed structure would affect the IFR procedure as described above.

However, procedurally it would be shielded by another obstacle of equal height and there would be no change necessary to the IFR procedures providing a survey to 2C accuracy is provided. As a condition of this determination the proponent must submit a survey to 2C accuracy within 5 days of the structure reaching its greatest height. The preferred format for this survey, to be completed by a certified land surveyor, is provided below.

Study for possible visual flight rules (VFR) effect disclosed that the proposed structure would have no effect on any existing or proposed arrival or departure VFR operations or procedures. The proposed structure would be located approximately 1,800 ft. south and 926 ft. west of two existing, taller antenna towers (675 ft. AMSL and 666 ft. AMSL) and within an area of six other existing towers that range in height from 496 ft. AMSL to 675 ft. AMSL. It would lie within and on the downwind leg for Category C, D, and E Runway 17/35 traffic pattern airspace, but would be more than 1,000 ft. below the altitude aircraft would normally be operating. It would be at the beginning of final approach for Runway 8. However, Category C, D, and E aircraft rarely, if ever, operate on a 2,700 ft. runway. Therefore, it would not conflict with airspace required to conduct normal VFR traffic pattern operations at AUG or any other known public use or military airports. At 199 ft. AGL, the proposed structure would not have a substantial adverse effect on VFR en route flight operations.

The proposed structure would be appropriately obstruction marked and/or lighted to make it more conspicuous to airmen should circumnavigation be necessary.

The cumulative impact of the proposed structure, when combined with other proposed and existing structures, is not considered to be significant. Study did not disclose any adverse effect on existing or proposed public-use or military airports or navigational facilities, nor would the proposal affect the capacity of any known existing or planned public-use or military airport.

Therefore, it is determined that the proposed construction would not have a substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on any air navigation facility and would not be a hazard to air navigation.

However, harmful interference to the Augusta (AUG), ME, RTR may exist if the proponent's equipment meets only the minimum FCC requirements. As a condition of this determination we require a minimum spurious emissions tolerance at the dB levels specified below from the proponent's equipment within the 118-137 MHz frequency band:

150-165 MHz @335w (118-137Mhz -73dB)

This Determination of No Hazard is granted provided the following condition is adhered to:

Upon receipt of notification from the Federal Communication Commission that harmful interference is being caused by the licensee's transmitter, the licensee shall either immediately reduce the power to the point of no interference, cease operation, or take such immediate corrective action as is necessary to eliminate the harmful interference.

Our study has also disclosed that the proposed structure would lie in very close proximity to an instrument flight rule (IFR) surface. In order to ensure there is no IFR impact, a 2C survey is required. Please submit the survey within 5 days after the structure has reached its greatest height. This survey, conducted by a certified professional engineer, architect, or surveyor, should be submitted on official letterhead using the format below:

Reference Aeronautical Study Number: 2006-ANE-977-OE

"I certify that the latitude _____ and longitude _____ are within +/- 50 feet horizontally; and the site elevation _____ ft. MSL, is within +/- 20 feet vertically. With a structure height of _____ ft. AGL, the overall height is _____ ft. AMSL. The horizontal datum (coordinates) are in terms of the North American Datum of 1983 (NAD 83). The vertical datum heights are in terms of the North American Vertical Datum of 1988, and are determined to the nearest foot."

(IF NAD 83 IS NOT AVAILABLE, IDENTIFY THE DATUM USED)

"SIGNED": _____
(Professional Engineering Title - REQUIRED)
(With seal imprint or professional license number)

"PRINTED": _____

Frequency Data for ASN 2006-ANE-977-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
150	165	MHz	335	W

PCL XL error

Subsystem: USERSTREAM

Error: MissingData

Operator: ReadImage

Position: 1271

PROJECT
STATE OF ME/YANKEE MICROWAVE
JOB NO.
 0602-42
SITE NAME
 AUGUSTA, ME
SIZE
 12'W X 18'L X 9'H

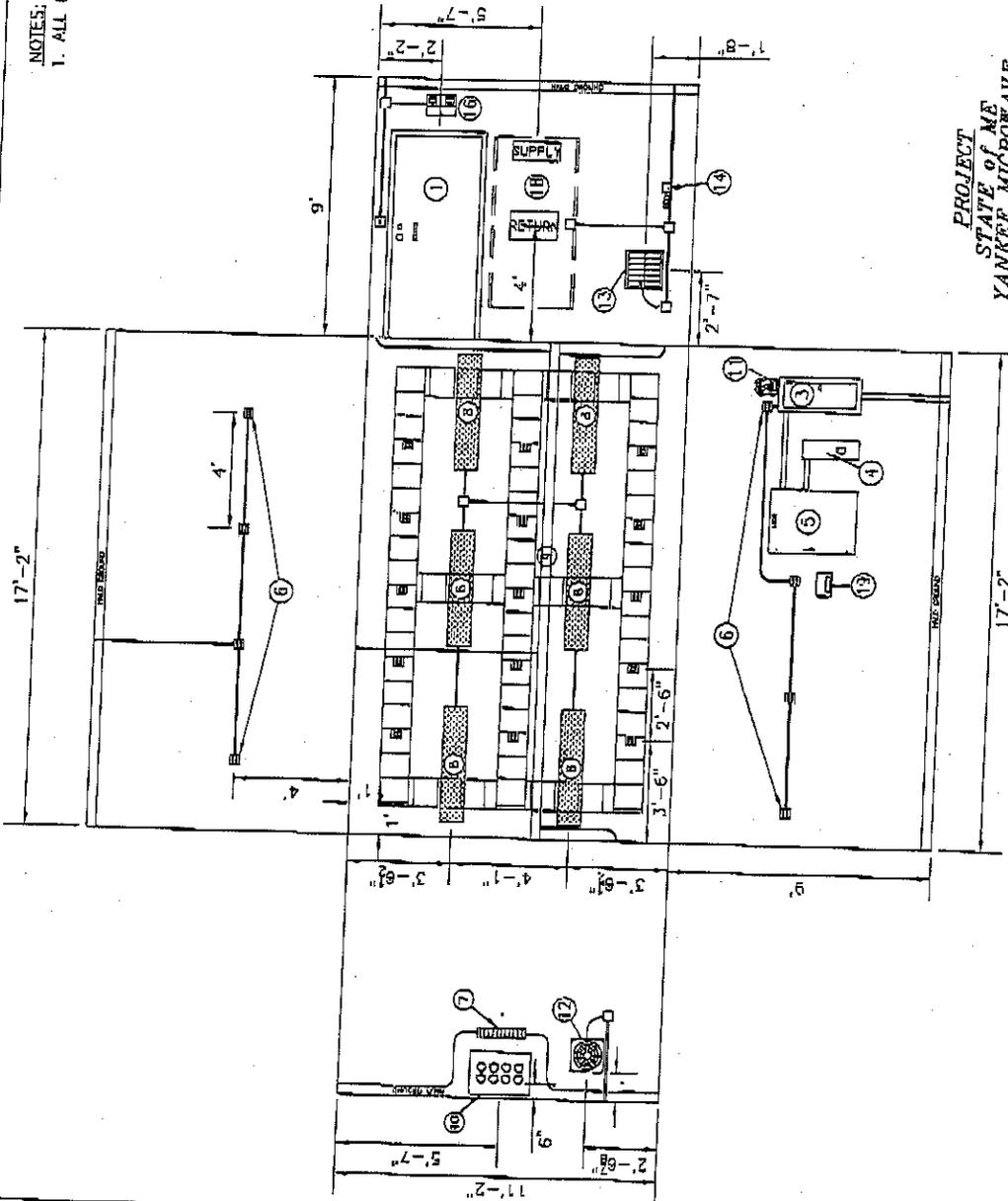
<u>DRAWING TITLE</u>	<u>DRAWING NUMBER</u>
DRAWING INDEX	AGB7616 PAGE 1 OF 7
INTERIOR LAYOUTS	AGB7616 PAGE 2 OF 7
ELEVATION VIEWS	AGB7616 PAGE 3 OF 7
GENERAL NOTES	AGB7616 PAGE 4 OF 7
BUILDING CONSTRUCTION DETAILS	AGB7616 PAGE 5 OF 7
BUILDING CONSTRUCTION DETAILS	AGB7616 PAGE 6 OF 7
BUILDING CONSTRUCTION DETAILS	AGB7616 PAGE 7 OF 7
BUILDING SKID ASSEMBLY	15B1218 PAGE 1 OF 1
BUILDING FOUNDATION ASSEMBLY	S15B1218 PAGE 1 OF 1

H. Raymond H. Security
 4-10-06

BUILDINGS, INC.	
THERMO BOND	
P.O. Box 445 Elk Point, SD	
Scale: NONE	Title: DRAWING INDEX
Date: 4/4/06	Revised: _____
Drawn By: BR	Revised Number: AGB7616
Approved By: _____	Page: 1 of 7

NOTES:

1. ALL DIMENSIONS ARE INSIDE DIMENSIONS.



PROJECT
STATE OF ME
YANKER MICROWAVE
JOB NO.
0602-42
SITE NAME
AUGUSTA, ME

NO.	QTY.	DESCRIPTION
19	1	HVAC THERMOSTAT #B403-019
18	1	HVAC BARD 2 TON W/5KW HEAT #WAZ12-A05PKKK1
17	2	300 WATT EXTERIOR LIGHT WITH MOTION DETECTOR
16	1	EMERGENCY LIGHT #4P408
15	15	QUAD TWISTLOCK RECEPTACLE 15AMP CEILING MOUNTED
14	1	2E206 VENTILATION THERMOSTAT
13	1	16" INTAKE DAMPER WITH HOOD & FILTER
12	1	12" EXHAUST FAN W/ HOOD
11	1	SURGE ARRESTOR ATLANTIC SCIENTIFIC #11214
10	1	1-8 PORT 4" WAVEGUIDE ENTRY #B576
9	A/R	4" SO. WIRE RACEWAY WITH COVER
8	6	4" 2 BULB FLUORESCENT LIGHT
7	1	MASTER GROUND BAR, GB14420B
6	8	COMPLEX RECEPTACLES, 110V., 20A.
5	1	200 A. FSC0 AUTOMATIC TRANSFER SWITCH #100220FDC W/194E
4	1	200 A. DISCONNECT, CUTLER HAMMER EC2739 W/
3	1	200A. 120/240V. SINGLE PHASE, 42 POSITION DISTRIBUTION PANEL W/2000A. MAIN BREAKER #C142B200X
2	1	LIGHT SWITCH, SPEC GRADE
1	1	3' X 7' STEEL INSULATED DOOR AND FRAME W/ BAKED ON ENAMEL PAINT (PLYCO SERIES BB) W/S.S. BALL BEARING HINGES W/NOX REMOVABLE PINS, SCHLAGE PASSAGE AND DEADBOLT PADLOCK FASP & GLEN JOHNSON H7D

LIST OF MATERIAL

THERMO BOND
BUILDINGS, INC.
P.O. Box 445 Elk Point, SD

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Scale: 1/4" = 1'

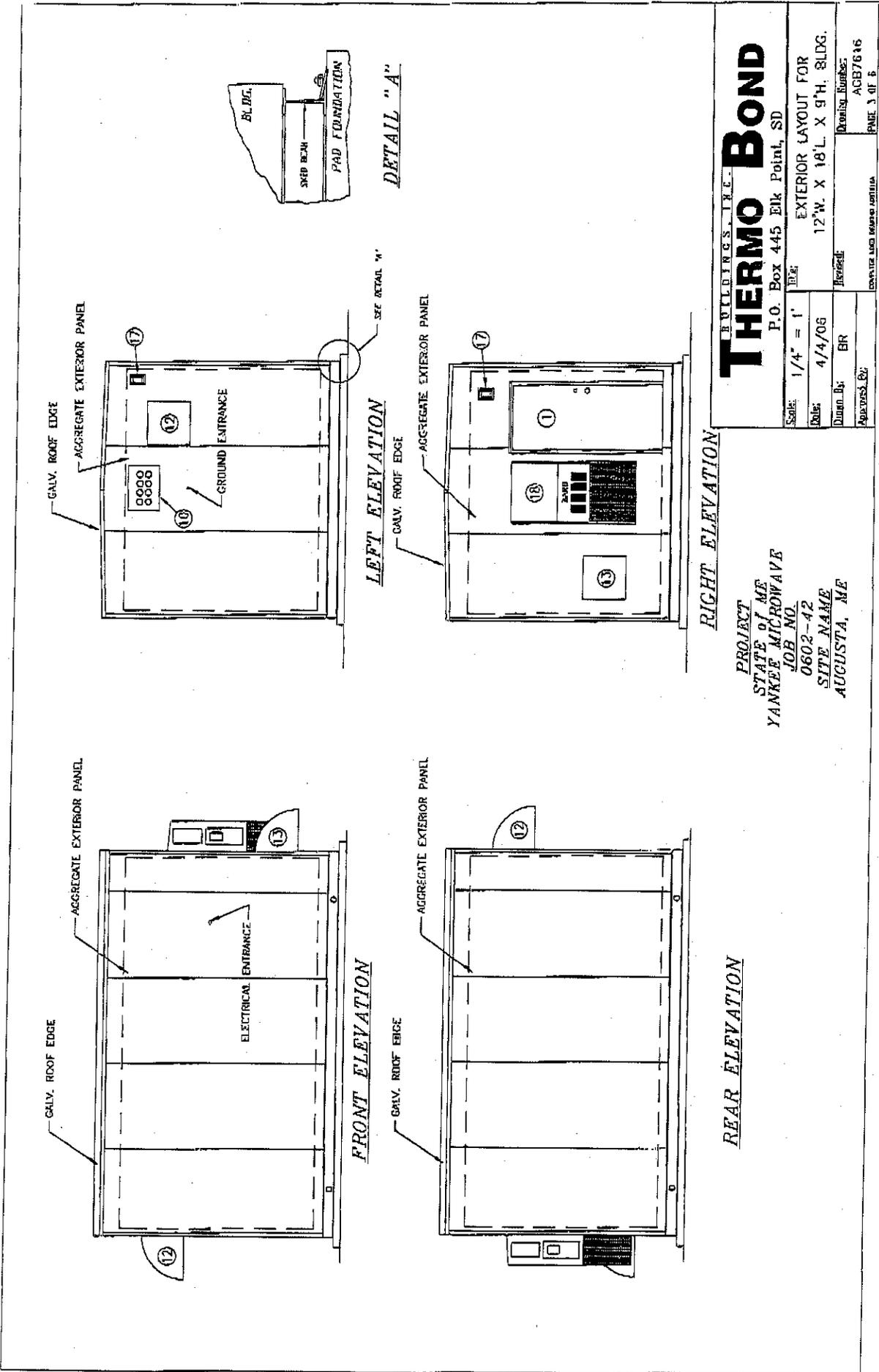
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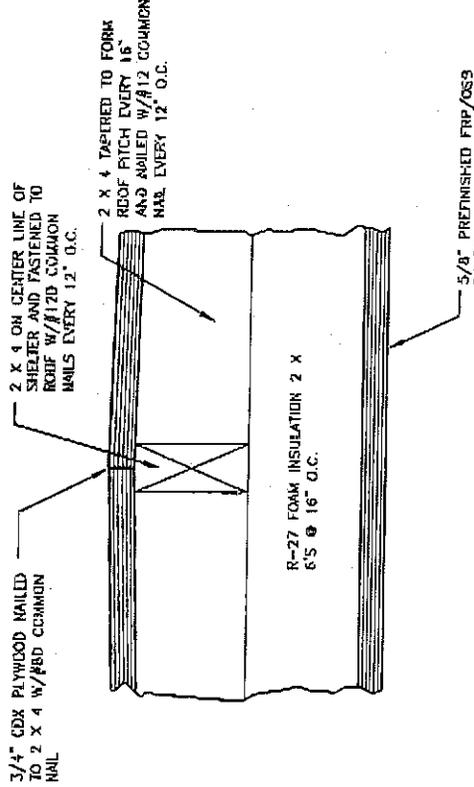
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Checked By: [Signature]

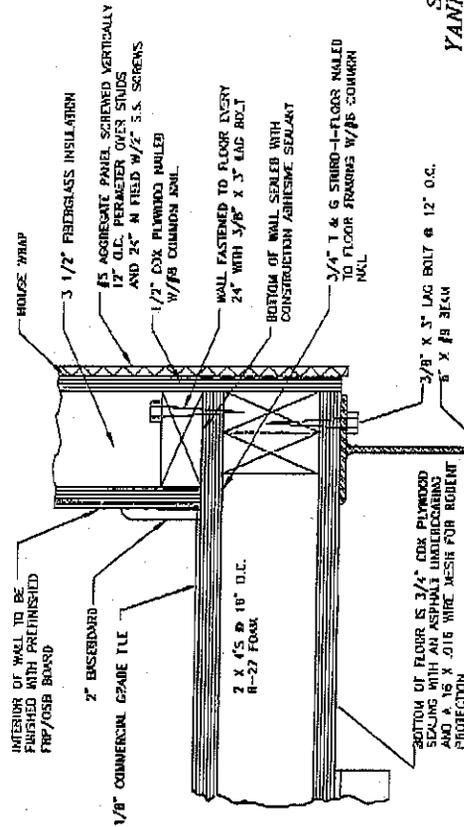
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Sheet Number: PAGE 2 OF 7

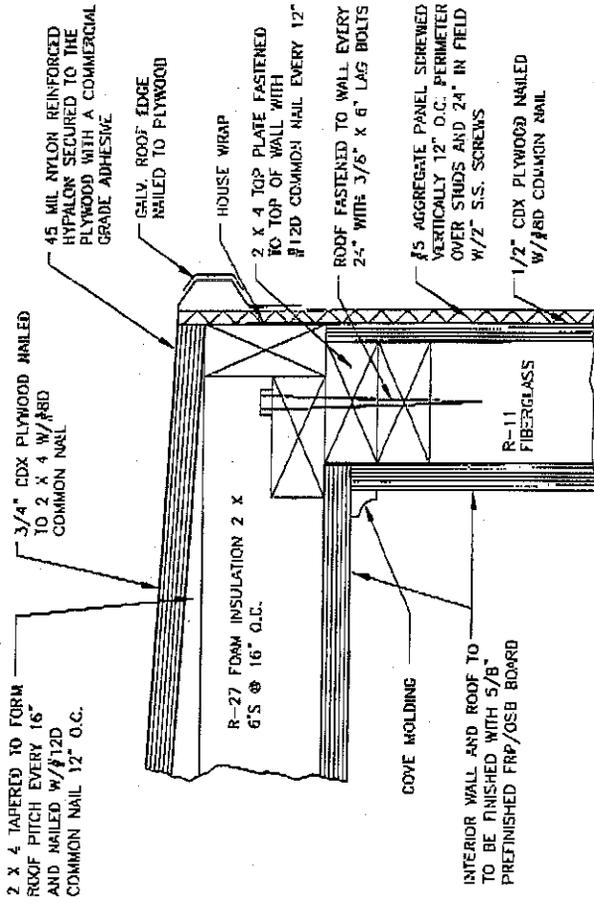




ROOF SLOPE DETAIL



WALL TO FLOOR DETAIL



WALL TO ROOF DETAIL

NOTES:

1. ALL PLYWOOD SHALL BE NAILED EVERY 6" AROUND PERIMETER AND EVERY 12" IN FIELD.
2. HOUSE WRAP TO BE INSTALLED 1/8" BELOW SHEETING AND EXTEND TO TOP OF TOP PLATE. ALL SEAMS TO BE LAPPED 6" AND TAPED W/ SEAM TAPE.
3. ALL SCREW HOLES THROUGH PANELS FILLED WITH POLYURETHANE CAULK PRIOR TO SCREW BEING INSTALLED.

B U I L D I N G S , I N C .

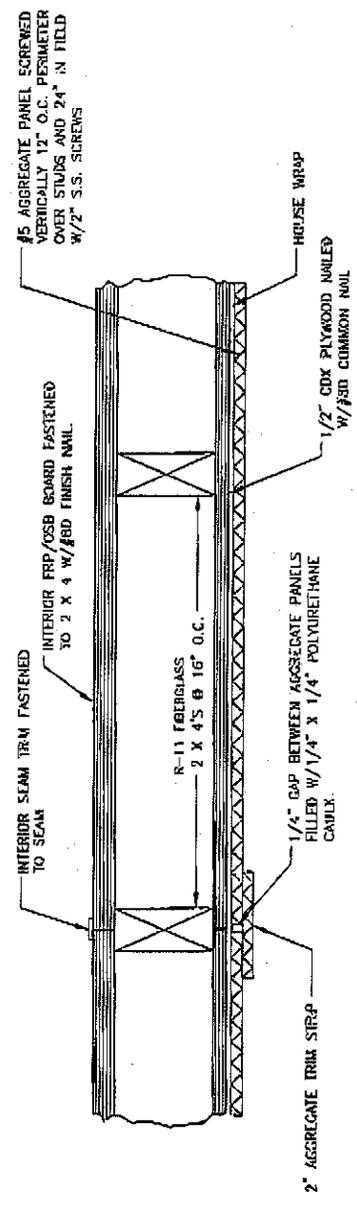
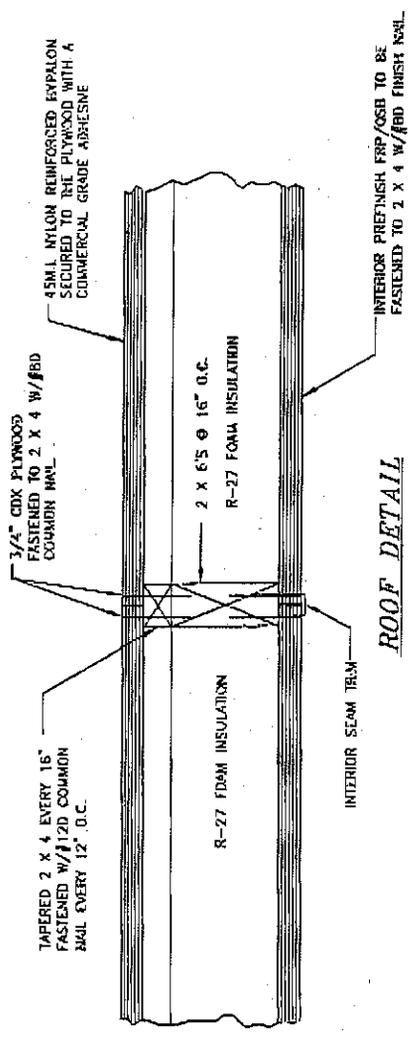
Thermo Bond

P.O. Box 445 Elk Point, SD

Scale	ADONE	Title	BUILDING CONSTRUCTION DETAILS
Date	4/4/06	Release	
Quantity	BR	Drawn By	AGB7616
Checked By		Project Lead	AGB7616

Page 5 of 7

PROJECT
STATE OF ME
YANKEE MICROWAVE
JOB NO.
0602-42
SITE NAME
AUGUSTA, ME

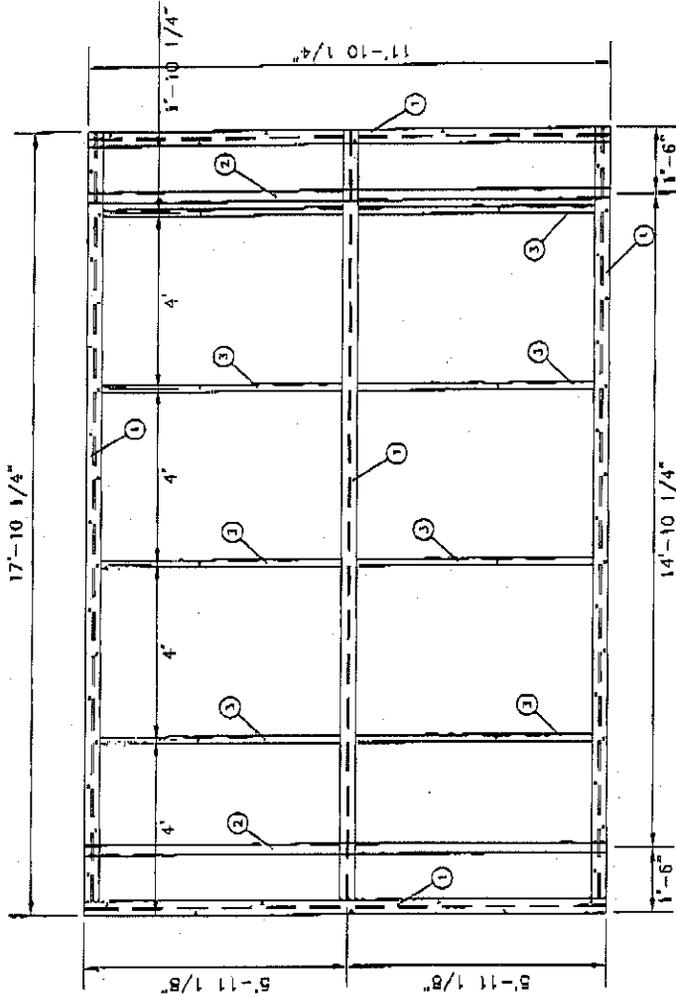


PROJECT
 STATE of ME
 YANKEE MICROWAVE
 JOB NO. 0602-42
 SITE NAME AUGUSTA, ME

NOTES:

1. ALL PLYWOOD SHALL BE NAILED EVERY 6" AROUND PERIMETER AND EVERY 12" IN FIELD.
2. HOUSE WRAP TO BE INSTALLED 1/8" BELOW SHEETING AND EXTEND TO TOP OF TOP PLATE. ALL SEAMS TO BE LAPPED 6" AND TAPED W/SEAM TAPE.
3. ALL SCREW HOLES THROUGH PANELS FILLED WITH POLYURETHANE CAULK PRIOR TO SCREW BEING INSTALLED.

THERMO BOND		BUILDING, INC.	
P.O. Box 445 Elk Point, SD			
SCOPE	NONE	TITLE	BUILDING CONSTRUCTION DETAILS
DATE	4/4/06	PROJECT	
DRAWN BY	BR	DRAWING NUMBER	AG37616
APPROVED BY		PROJECT ADDRESS	AGUSTA, ME
			PAGE 7 OF 7

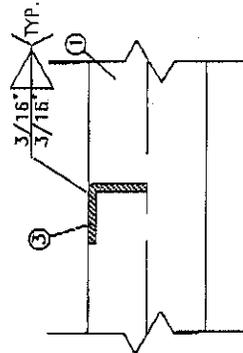


3/8" = 1' SCALE
TOP VIEW

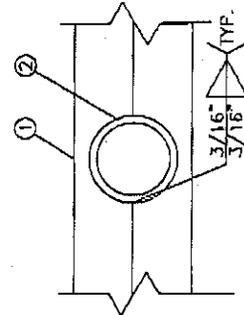
WELDED ASSEMBLY

NOTES:
1. FINISH: PAINTED WITH RUST PREVENTATIVE PAINT.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS SHOWN ON THIS DRAWING SHALL HAVE THE FOLLOWING TOLERANCE:
FRACTION ± 1/8"
ANGLE ± 2'



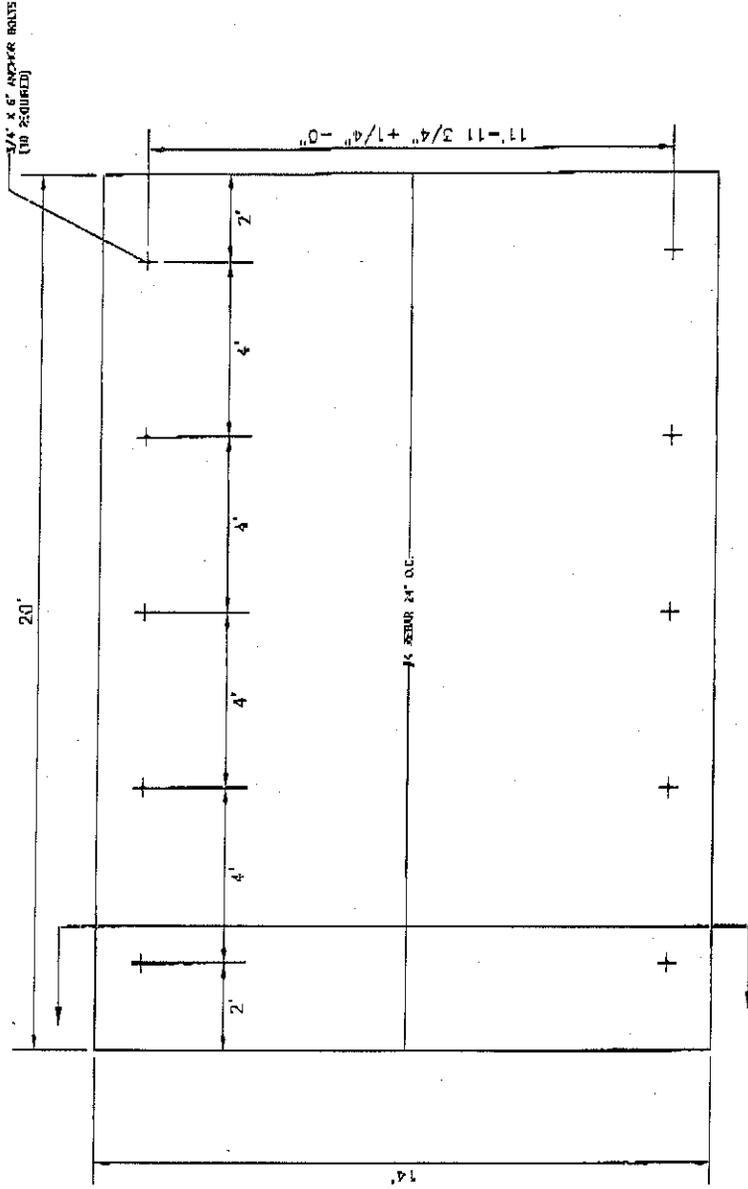
3" = 1' SCALE
SECTION "A-A"



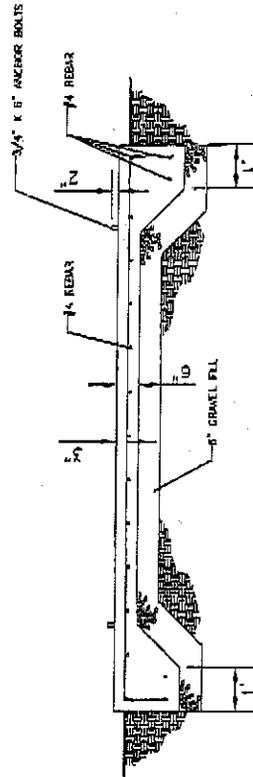
3" = 1' SCALE
SECTION "B-B"

NO.	QTY.	DESC.	DESCRIPTION	WEIGHT
3.	12	15B7002	ANGLE, SUPPORT (2 X 2 X 1/4)	138.54
2.	3	15B6020	PIPE SUPPORT (3" NOM. SCH 40)	179.74
1.	3	15B6020	BEAM SUPPORT (W6 X 9)	686.48

BUILDINGS, I.E.	
THERMO BOND	
P.O. Box 445 Elk Point, SD	
Scale:	AS NOTED
Title:	BOX BUILDING SKID ASSEMBLY FOR 12' X 18' BUILDING
Drawn By:	BR
Checked:	
Approved By:	
Drawn:	15B1218
Checked:	15B1218
Approved:	15B1218



PLAN VIEW



SECTION "A-A"

NOTES:

- 1. CONCRETE SHALL ATTAIN A MINIMUM ULTIMATE COMPRESSION STRENGTH OF 4000 PSI WITHIN 28 DAYS.
- 2. ALL WIRE MESH TO HAVE A MINIMUM OF 2" CONCRETE COVER.

THERMO BOND

BUILDINGS, INC.

P.O. Box 445 Elk Point, SD

Scale: 3/8" = 1'
Date: 1/4/06
Title: SLAB BUILDING FOUNDATION FOR 12' X 18' BUILDING

Drawn By: BR
Checked: SENSEC
Drawing Number: S15B1218

Approved By: [Signature]
Date Used: [Blank]
Page: 1 of 1

SECTION 1

Special Provision

Specification for a Radio Communications Self-Supporting Tower

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1. General

1.1 Introduction

This specification covers the requirements for designing, furnishing, installing and commissioning a 180' galvanized-steel, lattice-type self-supporting tower structure and associated components. The tower will be used to support radio communications antennas. The tower and associated components shall be new, of current production and as specified herein.

1.2 Description of Major Work Elements

- A. Design, Furnish & Install:
 - 1. Tower Antenna Support Structure.
 - 2. Tower Reinforced Concrete Foundation.
 - 3. Antenna and feedline
 - 4. Cable Bridge/Ice Shield
 - 5. Fall arrest system
- B. All site planning, preparation and development.
- C. All engineering design certification and documentation.
- D. Provide design and specifications stamped by a Maine licensed Professional Engineer of:
 - 1. Tower Design.
 - 2. Foundation Design.
- E. Determine the percent of the tower "design load" capacity the anticipated "initial load" (MSCommNet load including the City of Augusta load) represents.
- F. Other work as specified elsewhere in this document.

1.3 Qualifications

- A. General
 - 1. The Contractor shall have demonstrated experience in design, furnishing and installing communications tower(s) on a turn-key basis.
 - 2. The Contractor shall have demonstrated experience as one-source responsible for tower warranty, parts, and service.

B. Tower

1. The manufacturer shall have no less than 5 contiguous years in the fabrication of communications type towers.
2. All field-work associated with the tower shall be performed by a contractor having no less than 5 years experience in the erection of communications type poles or towers.

C. Foundation

1. All work associated with the tower foundation shall be performed by a contractor having no less than 5 years experience in the erection of communications type poles or towers.

D. Cable Bridge/Ice-Shield

1. The manufacturer shall have no less than 5 contiguous years in the fabrication of cable bridge/shields.

1.4 Regulatory Requirements

A. Unless specified otherwise in this section, materials and installation shall conform to the applicable requirements of:

1. Local & National Codes.
2. Maine Electrical Code.
3. Electronics Industries Association (EIA/TIA).
4. American Society for Testing & Materials (ASTM).
5. American Concrete Institute (ACI).
6. American National Standards Institute (ANSI).
7. Federal Aviation Administration (FAA).
8. American Institute of Steel Construction (AISC).
9. American Iron and Steel Institute (AISI).
10. Occupational Safety & Health Administration (OSHA).
11. National Fire Protection Association (NFPA).
12. Institute of Electrical & Electronics Engineers (IEEE).
13. Underwriters Laboratories (UL)
14. Motorola R-56 or approved equal
15. Federal Communications Commission (FCC)

1.5 Quantities & Locations

The single 180' tower shall be located as shown on the site plans.

2. Products

2.1 Tower

2.1.1 General

- A. The tower and accessories shall be new and of current fabrication.
- B. All structural members and associated hardware shall be manufactured of steel and hot-dipped galvanized at the manufacturer's facility.

2.1.2 Physical & Structural

- A. Height of the tower shall be one hundred eighty feet (180').
- B. The top 60 feet shall not be tapered.
- C. The tower shall be of the self-support, lattice-type.
- D. Legs shall be of solid-rod or solid-angle-iron design. Hollow-tube designs are not acceptable.
- E. Wind and ice loading shall be per TIA 222-G, Class III, latest edition for this location with all antennas, feedlines, waveguides, and other appurtenances, as stated in this section, installed.

2.1.3 Appurtenance Design Load

- A. The tower shall be **designed** to support the following load.

Please Note: "Design load" allows for future expansion and will be different than the "initial load" and different than the "contractor installed" load.

- B. Land Mobile Radio (LMR) Antennas
 - 1. Design shall be based on six (6) LMR antennas mounted at the top level supported by heavy-duty, 6-foot side arms, spaced at 60° azimuth intervals.
 - 2. Design shall be based on six (6) LMR antennas mounted 30 feet below the top supported by heavy-duty, 6-foot side arms, spaced at 60° azimuth intervals.
 - 3. The antenna shall be of the 620 series fiberglass-whip omni-directional antenna as manufactured by Radio Frequency Systems (RFS) or equivalent (800-437-3045 or www.rfsworld.com).

4. Each antenna fed by 7/8 inch foam dielectric, coaxial feedline.

C. Microwave Antennas

1. Design load shall be based on four (4), 8-foot diameter, non-radomed, solid-parabolic microwave dish design antennas; centerline-mounted 10-feet below top level; plus two (2), 8 foot diameter, non-radomed, solid-parabolic microwave dish antennas, centerline mounted 40 feet below the top level.
2. Design load shall account for worst-case azimuth for all antennas on the tower, protected by a falling-ice shield. Each antenna fed by 2¼ inch elliptical waveguide or air-dielectric coaxial feedline.

Other Load Considerations

Cable Ladder, as necessary.

Safety Climbing System, as necessary.

Climbing bolts or pegs, as necessary.

Grounding bussbars, as necessary.

Lighting components, as necessary.

2.2 Antenna Systems – State of Maine

The contractor shall furnish all antennas, side arms, pipe mounts, stabilizing bars, radomes, feedlines and related accessories, and mounting hardware necessary for a complete and fully functional installation.

Note: Not all design load or system anticipated load antennae will be installed at this time. Refer to Diagram B below, the “Contractor Installed” Antenna Systems, to determine the Contractors’ antenna installation requirements

2.2.1 VHF Antenna Systems

Installed VHF antennas shall be as specified in the accompanying Granite Hill Diagram B, “Contractor Installed” Antenna Systems.

All antenna mounts and associated mounting hardware shall be manufactured of steel and hot-dipped galvanized at the manufacturer’s facility.

2.2.2 Antenna Feedlines & Accessories

2.2.2.1 Main Cable

Main antenna feedlines shall be foam-dielectric coaxial transmission cable as manufactured by the Andrew Corporation, or approved equivalent.

The diameter of the feedline shall be 7/8" minimum.

All main line connectors shall be as appropriate to the size of feedline cable being supplied.

Main feedline connectors shall be female type 'N', silver-plated.

Each main feedline shall be furnished with a cable entry port boot.

2.2.2.2 Transition Cables

Transition jumper cables from the main antenna feedlines to the station and antennas shall be furnished as required.

The cables shall be of the flexible type.

All transition cable connectors shall be as required.

Transition cable connectors shall be type 'N', silver-plated.

2.2.2.3 Interconnect Cables

Field-installed interconnect cables between stations and filtering/coupling devices shall be of the double-shielded type.

All interconnecting cable connectors shall be male type 'N', silver-plated.

2.3 Antenna Systems- City of Augusta

Antennas, feedlines and accessories for the City of Augusta will be as supplied by the City of Augusta. Specific requirements will be as determined by the City of Augusta in cooperation with the State and the Contractor. Antenna systems installed for the City of Augusta shall be quoted and billed separately.

2.4 Antenna Support Side Arms - LMR

- A. Although the design load specifies 6 foot side arms, the side arms initially installed shall be six (6) foot side arms for the four State agency antennas and three (3)-foot side arms for the six City of Augusta antennas . They shall be designed to support the antennas specified in Diagram B, “Contractor Installed” Antenna Systems.
- B. All side arms shall be identical in, type, fabrication and finish.
- C. All side arms shall include antenna pipe mounts.

2.4.1 Cable Ladder

The structure shall be equipped with a cable ladder for each of two (2) structure legs in the tapered portion.

A single ladder is permissible in the non-tapered portion.

The ladder design shall allow for supporting cables on both sides of the ladder.

Ladder width shall not be less than 18-inches.

2.4.2 Climbing Devices

2.4.2.1 Ladder

The structure shall be equipped with a climb ladder.

The ladder shall be equipped with a safety-cable climbing system.

The safety-cable system shall be such as to protect two (2) persons while climbing the tower.

2.4.2.2 Bolts or Pegs

The structure shall be equipped with climbing bolts or pegs on each leg.

Bolts or pegs shall not be furnished below 12-feet above ground level.

2.4.3 Ground Strap Bussbar

- A. A copper ground bussbar and associated mounting hardware shall be furnished and installed at the base of the structure to facilitate connection of the antenna feedline and waveguide ground-straps.

2.4.4 Lighting & Painting

The structure shall be lit and/or painted in accordance with FCC/FAA requirements, as necessary.

2.5 Foundation

- A. All foundation design, materials and construction practices shall be as required per State of Maine Professional Engineer stamped drawings and specifications for the tower foundation.

2.6 Cable Bridge/Ice-Shield

2.6.1 General

- A. An elevated cable bridge ice-shield shall support, and protect from falling ice, LMR antenna feed lines and microwave antenna waveguides from the equipment shelter to the tower.
- B. All structural members and associated hardware shall be manufactured of steel and hot-dipped galvanized at the manufacturer's facility.

2.6.2 Physical & Structural

- A. The bridge shall be no less than 18-inches in width.
- B. The Bridge shall span the length between the equipment shelter and the tower.
- C. All antenna feedlines and waveguides shall be supported below the ice-shield.
- D. The height of the bridge above ground shall be such to allow, to the greatest extent, for straight horizontal runs of feedlines and waveguides.
- E. The bridge shall use support posts along its length as needed to preserve its support and falling-ice protection properties.
- F. Impact Load: Capable of withstanding the impact of 20-lbs from a 180-foot height without affecting system operation.

2.7 General Site Access Information

CTA = Contractor to Assess

SITE	ACCESS
Granite Hill	-Level gravel road off State Highway

2.8 Delivery & Storage of Materials

2.8.1 General

The contractor shall be responsible for all aspects of shipment, transportation, and delivery of materials and equipment to their final destination, as necessary. State personnel shall be excluded from performing any of these activities unless otherwise approved by the State.

The contractor shall be responsible for coordinating, unloading, inspecting, accepting and storing all material and equipment deliveries, as necessary. State personnel shall be excluded from performing any of these activities.

All claims necessary as a result of damage or loss during shipment shall be the responsibility of the contractor.

All stored materials and equipment shall remain the responsibility of the contractor until installed and accepted by the State. Acceptance is described in Section 12.

2.9 Decommissioning & Disposal

All decommissioning and disposal shall be done in accordance with Federal and State of Maine laws, regulations and policies. The State of Maine actively encourages recycling. Certain materials including metals, batteries, and fencing materials shall be disposed of in a manner that ensures they are not placed in solid waste landfills.

Tower steel will be recycled. The State may wish to reuse certain assets such as radio equipment and generators, in such cases the designated equipment shall be delivered to the State in Augusta or other specified location. The contractor shall present documentation as necessary to confirm proper disposal.

No site, system or part thereof will be decommissioned until all communications needs have been cleared from those parts of the infrastructure to be decommissioned.

2.9.1 Description of Major Work Elements

2.9.1.1 Performed by State

The following work will be performed by the State:

A. Acquisitions:

- Perform site acquisition activities, as required.

B. Ownership:

- Conduct property title/deed searches.

C. Surveying

- Perform boundary and topographical site surveys.

D. Zoning:

- Assist contractor with zoning approval process, as required, when deemed by the State.

E. Permitting:

- Assist contractor with permitting process, as required, when deemed by the State.
- Note: The State has obtained Hallowell Planning Board approval for the changes/additions to the Granite Hill site structures, permit to be issued upon submission of the tower drawing.
- The State's Geotech report is included elsewhere in this Request for Bid.

F. Leases:

- Secure site leases, as required.

G. Environmental Impact Studies.

2.9.1.2 Performed by Contractor

Unless otherwise noted, the following work is required by the contractor:

A. Design, Furnish & Install:

- Towers.
- Tower Lighting.
- Tower Foundations.
- Cable Bridges.

B. Furnish & Install:

- Tower Painting and/or lighting as required.
- Antenna and Antenna Support Side Arms.
- Cable Ladders.
- Safety-Cable Climb System.

- Ground Bussbars and associated hardware.
- Grounding of tower to the earth ground grid system
- Grounding of cable bridge to the earth ground grid system.
- Pipe Bollards
- Signage

C. All site planning, clearing, preparation and development, as required.

- Sediment Control see SP 656 SEWPCP

D. All engineering design certification and documentation.

E. Planning, Zoning & Permitting

- Prepare all site planning documents necessary for zoning and permitting, as required.
- State to review and approve all planning documents prior to zoning and permitting.
- Obtain all zoning approvals, as required.
- Obtain all site permitting, as required. Fees will be borne by the State.
- Coordinate all permitting inspections, as required.

F. Soil Borings & Geological Tests

- Conduct all necessary tests for the design.
- Department to review and approve statement-of-work prior to tests.
- Provide test results to the Department.

G. Design & Construction

- Prepare all pre-stamped drawings and specifications necessary for the designs and construction, as applicable.
- State shall review and approve pre-stamped drawings and specifications prior to zoning, permitting and ordering.
- Provide State of Maine PE stamped drawings and specifications to the Department.

H. Utility Services

- All commercial utility service relocations and/or improvements necessary for the installation.

I. Access

- All access road improvements and clearing as necessary for delivery of all materials.

- All access road repairs after the delivery. Road shall be restored to its pre-installation condition, as approved by the Department.

J. Premises

- To the greatest applicable and practical extent, the contractor shall restore the premises to its pre-installation condition.
- Removing all rubbish and debris associated with site preparation, unpacking of shipping materials, and/or the installation, from the premises.

K. Other work as needed to ensure a complete installation whether or not specified or shown elsewhere in this document.

L. Decommission existing site structures consisting of

- The existing tower
- Existing antennas

The Contractor will coordinate the disposition of all items with the State of Maine Program Management Office prior to the removal or disposal of any item from the site.

2.9.2 Site Specific

SITE	TOWER TYPE	CABLE BRIDGE	PIPE BOLLARDS	OTHER WORK
Granite Hill	180-Foot SS	Yes	Yes	As specified

2.10 Installation

The contractor shall organize and implement a formalized installation model to plan, prepare, install, configure, test, optimize, certify, document, and release to the State all furnished components of this Contract throughout the Contract Term. The contractor shall staff its installation team with individuals sufficiently skilled and experienced in the various functions needed to execute the duties for this contract.

The contractor will not be responsible for relocating any third-party or tenant communications or communication related equipment to any of the towers and/or shelters to be furnished under this contract.

The contractor shall be responsible for:

- The installation of the tower and components.
- Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
- Installing the tower and components in accordance with the professional engineer's design, as applicable and as approved by the Department.
- Fulfilling all FAA requirements including but not limited to tower lighting, signage and filing FAA construction notices
- Neat and professional workmanship.

Coordination with other trades, as necessary

2.10.1 Radio Communications Tower

2.10.1.1 General

Install all materials in accordance with State of Maine PE stamped drawings and specifications.

Contractor to provide written certification to State that tower was installed in accordance with a State of Maine PE stamped drawings and specifications.

Prior to installation, the Contractor shall coordinate the exact site placement and/or orientation of the following items with the Department:

1. Tower Foundation.
2. Tower.
3. VHF antennas as specified.
4. Cable ladder and other accessories.
5. Cable Bridge/Ice-Shield.
6. Antenna Side Arms.
7. Ground Strap Bussbar
8. Fall arrest system

2.10.1.2 Orientation

A visible and permanent weather-resistant marker shall be embedded into the foundation.

The marker shall indicate the direction of 'True North'.

The size, type, and location of the marker shall be coordinated with the State.

2.10.2 Foundation

Construction in accordance with State of Maine PE stamped drawings and specifications (see attached geotechnical design report).

Contractor to provide written certification to the Department that foundation was constructed in accordance with a State of Maine PE stamped drawings and specifications.

2.10.3 Antenna Support Side Arms

Install all materials in accordance with the State's specifications, if any, and manufacturer's instructions as approved by the Department. Reference "Contractor Installed" Antenna Systems.

2.10.4 Cable Bridge/Ice Shield

Install all materials in accordance with the State's specifications, if any, and manufacturer's instructions.

Except as otherwise noted, the height and placement of the cable bridge shall be such as to allow, to the greatest extent, for straight runs of feedlines and waveguides.

2.10.5 Climbing Devices

Climb ladder and climbing bolts or pegs shall not be installed lower than 12-feet AGL.

2.10.6 Signage

Size, contents and location of the signs shall be coordinated with the State.

2.10.7 Ground Strap Bussbar

Install all materials in accordance with the State's specifications.

2.10.8 Antenna systems

The contractor shall install all State and City of Augusta antennas as indicated.

Reference Diagram B: "Contractor Installed" Antenna Systems below.

Antenna installations indicated as furnished by and for the City of Augusta, shall be quoted as an option and, if accepted billed separately.

2.10.9 Grounding

2.10.9.1 General

The contractor shall be responsible for providing all materials and labor for the installation of grounding, and lightning and power surge protection devices in accordance with the manufacturer's recommendations, the State's standards, or the contractor's practices. Refer to Section 5 "Specification for a Radio Communications Site Earth Ground and Lightning Protection System".

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83).

In the event certain aspects of the recommendations, the standards, or the practices are in conflict, then the most stringent shall prevail.

2.10.9.2 Certification

Contractor shall provide written certification to State that grounding was performed in accordance with the State's standards, manufacturer's recommendations, and/or the contractor's practices as specified in the General section above.

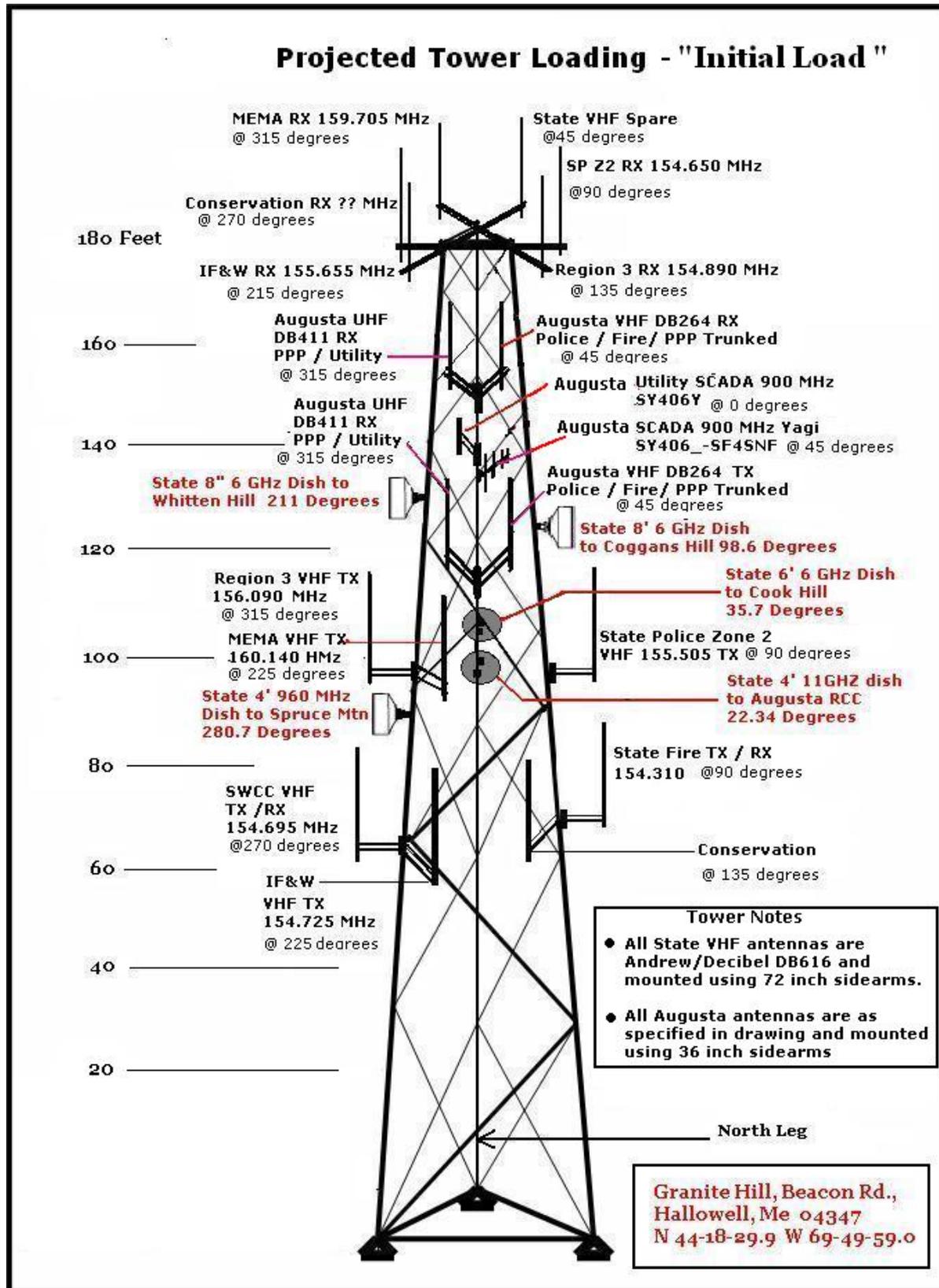
2.11 Granite Hill MSCommNet Anticipated Load Tower Diagram

The following diagrams illustrate different phases of the antenna loading of the Granite Hill tower as follows:

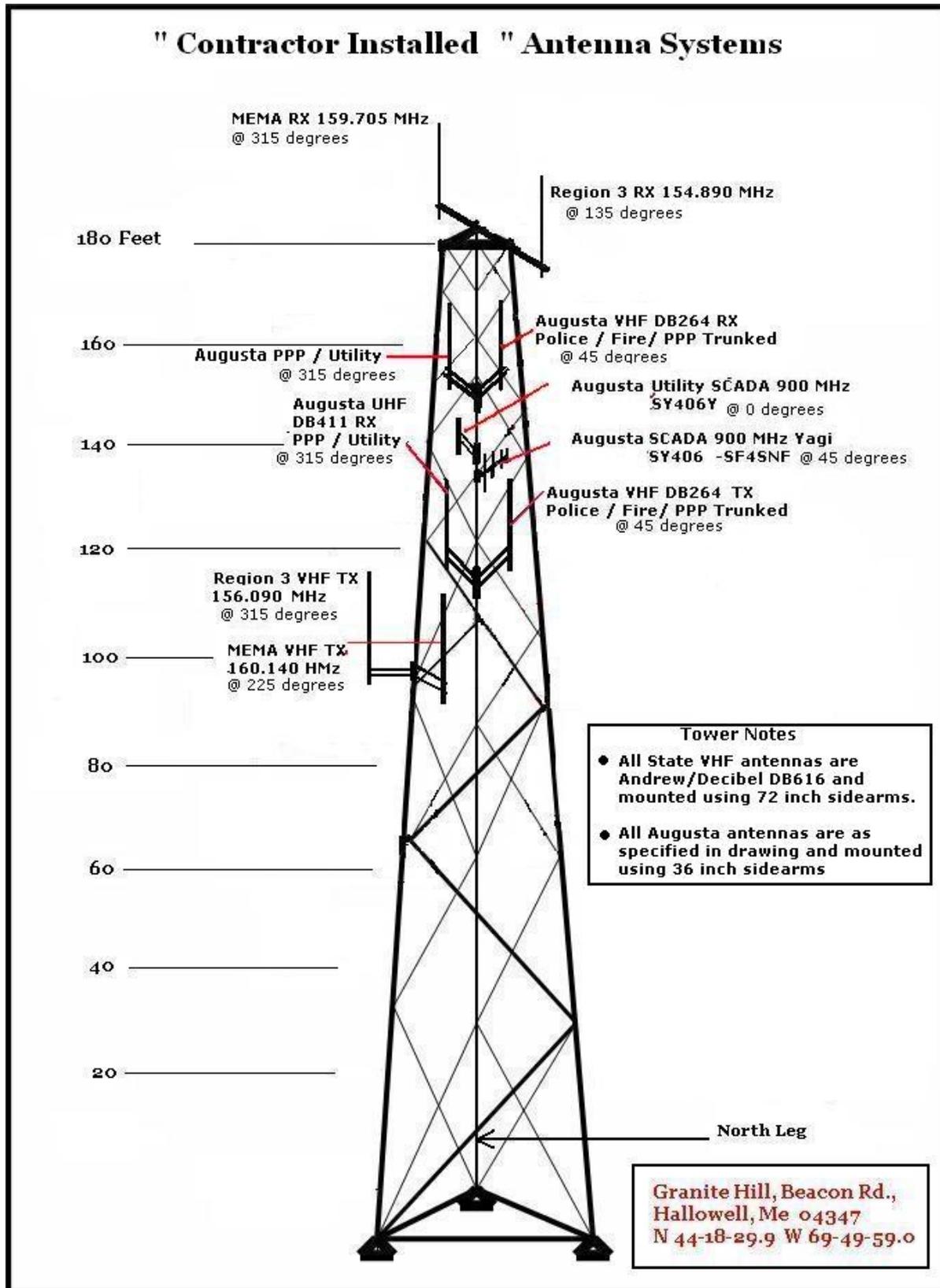
Diagram A: Projected Tower Loading – "Initial Load": illustrates the load subsequent to the implementation of the MSCommNet System and includes City of Augusta antenna load.

Diagram B: "Contractor Installed" Antenna Systems: illustrates the load to be installed by the Contractor.

Projected Tower Loading - "Initial Load "



" Contractor Installed " Antenna Systems



2.12 Inspection & Acceptance

2.12.1 Field Inspection

- A. After installation of all the components furnished under this section, the Contractor along with the Department, at its discretion, shall perform a field inspection to verify that the installation of the components furnished under this contract has been performed and completed in accordance with the following, as applicable.
 - 1. The professional engineer's design.
 - 2. The manufacturer's instructions and recommendations.
 - 3. The contract specifications.
 - 4. The contractor's installation practices and standards as approved by the Department.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the inspection.
- C. Prior to the commencement of this activity, the contractor shall deliver a preliminary field inspection plan to the Department for review and approval.
- D. At the conclusion of this activity, the contractor shall present to the Department written certification that the inspection performed was in accordance with, and that the results of the inspection were in compliance with, the approved field inspection plan.
- E. The Department's signature on the certification shall constitute acceptance by the Department of the inspection.

2.12.2 Final Acceptance

- A. General
 - 1. After acceptance of all the inspections and all the tests conducted under this section, the contractor shall present to the Department written certification that the activities were performed in accordance with, and that the results were in compliance with, the approved plans.
 - 2. This certification shall include the original signed copy of the individual inspection and test certifications previously accepted by the Department.
 - 3. Final acceptance will be deemed final when the Department's signature appears on this certification.

4. The City of Augusta may, at the State's discretion, participate in the inspections, testing and final acceptance of the City's antenna systems and related installations.
- B. Post-Final Acceptance Documentation
1. After final system acceptance, the contractor shall deliver to the Department, in both printed and electronic form, the following documents, on a per-site basis, in one consolidated package.
 - a. Copies of all signed certifications.
 - b. Copies of all approved inspection and test plans.

2.13 Warranty

- A. The Contractor shall warrant the tower, their workmanship and all aspects of the installation for a period of one year after final acceptance by the State.
- B. The Contractor shall include a copy of the manufacturer's standard commercial warranty for all furnished tower and associated components in their response.

2.14 Training

- A. The Contractor shall conduct a single, on-site, hands-on training session for selected Department personnel.
- B. The training location and schedule shall be by mutual agreement between the Department and Contractor.
- C. The session shall be conducted after final acceptance.
- D. The contents of the session shall include familiarizing the Department with special structure attributes, recommended inspection procedures, recommended maintenance procedures, ground connections, etc.

2.15 Documentation

2.15.1 With the Contractor's Bid

- A. The Contractor's bid shall include specification sheets for the following items on this basis.
 1. Tower
 2. Accessories
 3. Manufacturer's loading data for built tower.

2.15.2 Post-Contract Award

A. General

1. Thorough documentation of all major tower components, and their respective installations, will be required from the Contractor. This documentation will be comprised of both factory-provided and field-generated documents and/or manuals.
2. Every document exchanged between Department and Contractor shall be in paper and/or electronic form, as mutually agreed. Electronic documents shall use the latest version of the application software or by a mutually agreed version. The following applications are preferred:
 - a. Text - Microsoft Word
 - b. Spreadsheets - Microsoft Excel
 - c. Databases - Microsoft Access
 - d. Scanned documents - Adobe Acrobat
 - e. Simple Diagrams & Charts - Microsoft Visio or Excel
 - f. Large Drawings – mutually agreed software program
 - g. Schedules - Microsoft Project
3. The Department shall approve the contents and organization of all field-generated documents supplied by the contractor.
4. Costs associated with documentation shall be clearly and individually identified in the pricing section of the response.

B. Factory Provided – Technical & Service Manuals

1. All factory-provided documentation shall be available on CD media.
2. All factory available manuals shall be provided for the major components installed under this contract.
3. The following sets of manuals are to be furnished prior to project closeout on a per-site basis:
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets

C. Field Generated - As-Built

1. All field-generated documentation shall be prepared in a format suitable for storage in loose-leaf 3-ring binders. This documentation shall also be supplied on CD media.

2. All field-generated drawings shall be prepared using a mutually agreed software program.
3. The following documentation shall be provided. Specification or catalog cut sheets for each of the major items illustrated in the documents shall be included with the submittals to the Department.
 - a. Tower & foundation – top view diagram.
 - b. Tower – side elevation view diagram with tower sections identified.
 - c. Foundation – side elevation view diagram illustrating both above and below grade portions.
 - d. A site plan illustrating the installed location of the components supplied under this contract relative to other existing major site components (e.g., shelters, fences, towers, etc.). Plan shall be to scale; and the new and existing components shall be contrasted by the use of a gray scale.
 - e. The site plan shall identify the interconnection between the tower legs or accessories to the site electrical ground grid system.
4. The following sets of field-generated documentation are to be furnished prior to project closeout:
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets

3. Measurement of Payment

3.1.1 Method of Measurement

ITEM #	DESCRIPTION
643.97	Radio Communication Tower, Self-Supporting, Erected
643.971	Radio Communication Tower---Inspection and Acceptance, Field Inspection
643.972	Radio Communication Tower---Inspection and Acceptance, Final Acceptance
643.973	Radio Communication Tower---Inspection and Acceptance, Training
643.974	State owned Antennas---installed

3.1.2 Basis of Payment

The accepted Radio Communication Tower items will be paid for at the contract lump sum prices which will include payment for all respective items as called for in the contract,

designed, delivered, stored, constructed, installed, tested, documented, all clearing, preparation, demolition, removal, site restoration, materials, labor, equipment, training and incidentals necessary to complete the work.

Payment will be made under:

ITEM #	DESCRIPTION	UNIT
643.97	Radio Communication Tower, Self-Supporting, Erected	LS
643.971	Radio Communication Tower---Inspection and Acceptance, Field Inspection	LS
643.972	Radio Communication Tower---Inspection and Acceptance, Final Acceptance	LS
643.973	Radio Communication Tower---Inspection and Acceptance, Training	LS
643.974	State owned Antennas---installed	LS

END OF DOCUMENT

SECTION 2

Special Provision

Specification for

The Installation of a Communications Equipment Shelter Modular, Pre-Fabricated, Pre-Outfitted

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2. General

1.1 Introduction

This specification covers the requirements for installing and commissioning a modular, pre-fabricated, pre-outfitted telecommunications-type shelter and other associated components. The shelter shall be provided by the State. Drawings of the building are appended to this specification.

The Contractor is responsible to move the building to the Site, provide a foundation connect utilities, integrate into the site (grounds, foundations, cable bridge, connection to existing building, etc.) and retrofit the antenna feeder entry to a 24 port entrance.

The Contractor will be requested to install a single equipment rack for the State.

1.2 Description of Major Work Elements

A. Design, Furnish & Install:

1. Shelter Foundation (14' x 20').
2. Other Shelter Components as Specified.

B. Transport Shelter from its' storage location to the site

C. Install a 12' x 18' Shelter, Shelter ground and electrical service and ancillary equipment.

D. All site planning, preparation and development.

E. All engineering design certification and documentation.

F. Provide a Shelter Foundation Design and specifications stamped by a Maine licensed Professional Engineer.

G. Other work as specified elsewhere in this document.

1.3 Qualifications

A. General

1. The Contractor shall have demonstrated experience in design, furnishing, and installing communication shelters on a turn-key basis.
2. The Contractor shall function as one-source responsible for shelter warranty, parts and service.

B. Shelter

1. The manufacturer shall have no less than 5 contiguous years in the installation of communications type shelters.
2. All field-work associated with the shelter shall be performed by a contractor having no less than 5 years experience in the installation of pre-fabricated communications equipment shelters.

C. Foundation

1. All work associated with the shelter foundation shall be performed by a contractor having no less than 5 years experience in the installation of pre-fabricated communications equipment shelters.

1.4 Regulatory Requirements

A. Unless specified otherwise, materials and installation shall conform to the applicable requirements of:

1. Local & National Codes.
2. Maine Electrical Code.
3. American Concrete Institute (ACI).
4. American Institute of Steel Construction (AISC).
5. American Iron and Steel Institute (AISI).
6. American National Standards Institute (ANSI).
7. American Society for Testing & Materials (ASTM).
8. Electronics Industries Association (EIA/TIA).
9. Institute of Electrical & Electronics Engineers (IEEE).
10. National Fire Protection Association (NFPA).
11. Occupational Safety & Health Administration (OSHA).
12. Underwriters Laboratories (UL)
13. Motorola R-56 standard or approved equal.

1.5 Products

1.5.1 Cable Entry Panel

The Contractor shall upgrade existing cable entry panel to the following:

Size: 3 each 8 port (24 port total) PEEP

As manufactured by Polyphaser (8 PEEP-M) or equivalent and supplied by Tessco Technologies.

Furnish exterior UV-protected weather-boots for all ports. Include nine (9) spare port boots.

Furnish pre-punched, solid-copper ground bussbar for the interior and exterior sides of the entry panel.

1.5.2 Termination Backboard

Size: 4-feet x 8-feet x 3/4 inches. Material: plywood sheet, 1-hour fire retardant rated.

Furnish backboard with 3-inch standoffs.

Painting: gray or black, fire retardant.

1.5.3 Heat/Smoke/CO Detection & Fire Suppression

1.5.3.1 Heat

The shelter shall be equipped with heat detectors, as needed, spaced for maximum coverage.

Detectors shall be equipped with a dry-contact, form-C (NO/NC) closure alarm.

Combination heat, smoke and CO detectors are not acceptable.

1.5.3.1 Smoke

The shelter shall be equipped with smoke detectors spaced for maximum coverage.

Detectors shall be of the photoelectric and ionization type.

Detectors shall be equipped with a dry-contact, form-C (NO/NC) closure alarm.

Combination heat, smoke and CO detectors are not acceptable.

1.5.3.2 Carbon Monoxide (CO)

The shelter shall be equipped with carbon monoxide detectors spaced for maximum coverage.

Detectors shall be equipped with a dry-contact, form-C (NO/NC) closure alarm.

Combination heat, smoke and CO detectors are not acceptable.

1.5.3.3 Suppression

The shelter shall be equipped with one (1) wall-mounted fire extinguisher.

Type: Class ABC all purpose dry chemical.

Size: 10 lbs.

1.5.4 Ground System

The Contractor shall provide the necessary items to meet the R-56 ground standards as described in the Site Ground Specification (Section 5).

1.5.5 Interior Partition

The Contractor shall provide a new partition as follows and as approved by the Department:

The interior of the shelter shall be partitioned with a moveable wire divider. The divider shall be furnished with a 36 inch wide (minimum,) locking sliding gate (preferred) or door. The height shall be a close to the ceiling as practical and shall be of sufficient height to prevent access from one area to the other. The exact location of the divider will be coordinated with the Department,

1.5.6 Foundation

A. Foundation materials shall conform to the requirements of State of Maine Department of Transportation Standard Specifications, Revision of December 2002. Foundation design, plans and drawings shall be stamped by a professional engineer licensed in the State of Maine.

1. Dimensions: Shall be 14' x 20'.

2. Materials: Class A concrete.

3. Pad shall be constructed in such a manner as allow water to drain away from the foundation center and off the pad without collecting *i.e.* sloped downward from shelter centerline for drainage. All foundation edges shall be chamfered.

4. The building will be mounted to the foundation in such a fashion as to prevent rodents entering, and shall provide for ventilation of, the under building area.

B. Contractor to provide written certification to Department that foundation was constructed in accordance with a State of Maine PE stamped drawings and specifications.

1.6 Delivery & Storage of Materials

- A. The contractor shall be responsible for all aspects of shipment and/or transportation of materials to their destination.
- B. The contractor shall be responsible for coordinating, unloading, inspecting, accepting and storing all material deliveries.
- C. All stored materials shall remain the responsibility of the contractor until final acceptance by the Department.

1.7 Description of Major Work Elements

1.7.1 Performed by State

The following work will be performed by the State:

- A. Acquisitions:
 - Perform site acquisition activities, as required.
- B. Ownership:
 - Conduct property title/deed searches.
- C. Surveying
 - Perform boundary and topographical site surveys.
- D. Zoning:
 - Assist contractor with zoning approval process, as required, when deemed by the State.
- E. Permitting:
 - Assist contractor with permitting process, as required, when deemed by the State.
 - Note: The State has obtained Hallowell Planning Board approval for the changes/additions to the Granite Hill site structures, permit to be issued upon submission of the tower drawing.
 - The State's Geotech report is included elsewhere in this Request for Bid.
- F. Leases:
 - Secure site leases, as required.
- G. Environmental Impact Studies.

1.7.2 Performed by the Contractor

The contractor shall be responsible for:

1. Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
2. All workmanship shall conform to applicable standards and prevailing practices as approved by the Department.
3. Delivery of all materials to the site.
4. Transporting the State furnished equipment shelter from the Department of Conservation facility at Bolton Hill, Augusta to the Granite Hill site (approximate 10 mile distance).
5. Restoring the site to its original pre-installation condition.
6. All access road improvements and clearing as necessary for delivery as approved by the Department.
7. All access road repairs after delivery. Road shall be restored to original pre-installation condition as approved by the Department.
8. All commercial electric utility service necessary for the installation as approved by the Department.
9. Removing all rubbish and debris associated with all aspects of the installation.
10. The installation of the shelter and components.
11. Installation of the interior partition.
12. Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
13. Installing the shelter and components in accordance with the professional engineer's design, as applicable and as approved by the department.
14. Neat and professional workmanship.
15. Coordination with other trades, as necessary.
16. Design, Furnish & Install:
 - Shelter Foundation.
 - Additional Electrical & Lighting as required.
17. Furnish & Install:
 - Shelter accessories.

- Grounding materials and bonding hardware.
- Connection of accessories to the shelter's ground system.
- Connection of shelter to earth ground grid system.

18. Install Shelter

19. All site planning, clearing, preparation and development, as required.

20. All engineering design certification and documentation.

21. Design & Construction

- Prepare all pre-stamped drawings and specifications necessary for the designs and construction, as applicable.
- Department to review and approve pre-stamped drawings and specifications prior to zoning, permitting, and ordering.
- Provide State of Maine PE stamped drawings and specifications to the Department.

22. Utility Services

- All commercial utility service relocations and/or improvements necessary for the installation.

23. Access

- All access road improvements and clearing as necessary for delivery of all materials.
- All access road repairs after the delivery. Road shall be restored to its pre-installation condition.

24. Premises

- To the greatest applicable and practical extent, the contractor shall restore the premises to its pre-installation condition. See SP 656 SEWPCP
- Removing all rubbish and debris associated with site preparation, unpacking of shipping materials, and/or the installation, from the premises.

25. Other work as needed to ensure a complete installation whether or not specified or shown elsewhere in this document.

1.8 Installation

1.8.1 General

- A. Prior to installation, the contractor shall coordinate the exact site placement and/or orientation of the following items with the Department:
1. Shelter Foundation.
 2. Shelter.

1.8.2 Shelter

Install all materials in accordance with State of Maine PE stamped drawings and specifications.

Contractor to provide written certification to the Department that shelter was installed in accordance with a State of Maine PE stamped drawings and specifications.

1.8.3 Foundation

Construct in accordance with State of Maine PE stamped drawings and specifications.

Contractor to provide written certification to the Department that foundation was constructed in accordance with a State of Maine PE stamped drawings and specifications.

1.8.4 Anchoring

The shelter shall be anchored to the foundation in such a manner as to withstand displacement in prevailing high wind conditions as indicated in the technical specifications TIA-222-G, Class III.

1.8.5 Locations & Placement

The exact location of all shelter components and/or accessories shall be coordinated with the Project Management Office of the State's Radio Project Office and the Department before ordering.

At a minimum, where practical and available, shelters shall be placed at least 20-feet from site towers to minimize exposure to falling ice.

1.8.6 Grounding & Surge Protection

1.8.6.1 General

The contractor shall be responsible for providing all materials and labor for the installation of grounding, and lightning and power surge protection devices in accordance with the manufacturer's recommendations, the Department's standards, or the contractor's practices.

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83).

In the event certain aspects of the recommendations, the standards, or the practices are in conflict, then the most stringent shall prevail.

1.8.6.2 Certification

Contractor shall provide written certification to the Department that grounding was performed in accordance with the State's standards, manufacturer's recommendations, or the contractor's practices as specified in the General section above.

1.8.6.3 Grounding

A. General

1. Connection to the site's earth ground grid system (EGGS) shall be required.
2. All bonded welds shall be of the exothermal-type.
3. Wire conductors size shall be no less than 2/0 AWG.
4. Wire conductors shall be bare, tinned, solid copper.

B. Shelter

1. Ground the shelter to the EGGS.
2. Conductors shall be weld-bonded to the closest EGGS ground rod.
3. Conductors shall be weld-bonded to the tower leg.
4. Ground automatic transfer switch to the EGGS.

1.9 Inspection & Acceptance

1.9.1 Field Inspection

- A. After installation of all the components furnished under this section, the contractor along with the Department, at its discretion, shall perform a field inspection, to verify that the installation of the components furnished under this contract has been performed and completed in accordance with the following, as applicable.
 - 1. The professional engineer's design.
 - 2. The manufacturer's instructions and recommendations.
 - 3. The Department's specifications.
 - 4. The Contractor's installation practices and standards as approved by the Department.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the inspection.
- C. Prior to the commencement of this activity, the contractor shall deliver a preliminary field inspection plan to the Department for review and approval.
- D. At the conclusion of this activity, the contractor shall present to the Department written certification that the inspection performed was in accordance with, and that the results of the inspection was in compliance with, the approved field inspection plan.
- E. The Department's signature on the certification shall constitute acceptance by the Department of the inspection.

1.9.2 Final Acceptance

- A. General
 - 1. After acceptance of all the inspections and all the tests. Conducted under this section, the contractor shall present to the Owner written certification that the activities were performed in accordance with, and that the results were in compliance with, the approved plans.
 - 2. This certification shall include the original signed copy of the individual inspection and test certifications previously accepted by the Owner.
 - 3. Final acceptance will be deemed final when the Owner's signature appears on this certification.

B. Post-Final Acceptance Documentation

1. After final system acceptance, the contractor shall deliver to the Owner, in both printed and electronic form, the following documents, on a per-site basis, in one consolidated package.
 - a. Copies of all signed certifications.
 - b. Copies of all approved inspection and test plans.

1.10 Warranty

- A. The Contractor shall include a copy of the manufacturer's standard commercial warranty for all furnished shelter and associated components in their response (excluding generator which is covered in the generator section).
- B. The Contractor shall warrant all work and Contractor supplied materials not covered by a manufacturer's warranty for a period of one year.

1.11 Training

- A. The contractor shall conduct a single, on-site, hands-on training session for selected Department personnel.
- B. The training location and schedule shall be by mutual agreement between the Department and contractor.
- C. The session shall be conducted after final acceptance.
- D. The contents of the session shall include familiarizing the Department with special structure attributes, recommended inspection procedures, recommended maintenance procedures, ground connections, etc.
- E. Costs associated with the training defined in this section shall be clearly and individually identified in the pricing section of the response.

1.12 Documentation

1.12.1 With the Contractor's Bid

- A. The Contractor's bid shall include a catalog or specification sheet for this site as described in Section 2.1.

1.12.2 Post-Contract Award

A. General

1. Thorough documentation of all major shelter components, and their respective installations, will be required from the Contractor. This documentation will be comprised of both factory-provided and field-generated documents and/or manuals.
2. Every document exchanged between Department and contractor shall be in paper and/or electronic form, as mutually agreed. Electronic documents shall use the latest version of the application software or by a mutually agreed version. The following applications are preferred:
 - a. Text - Microsoft Word
 - b. Spreadsheets - Microsoft Excel
 - c. Databases - Microsoft Access
 - d. Scanned documents - Adobe Acrobat
 - e. Simple Diagrams & Charts - Microsoft Visio or Excel
 - f. Large Drawings – mutually agreed software program
 - g. Schedules - Microsoft Project
3. The Department shall approve the contents and organization of all field-generated documents supplied by the contractor.
4. Costs associated with documentation shall be clearly and individually identified in the pricing section of the response.

B. Factory Provided – Technical & Service Manuals

1. All factory-provided documentation shall be available on CD media.
2. Manuals shall be provided for the following components on a per-site basis:
 - a. All available manufacture's manuals for the building and major components.
3. The following sets of manuals are to be furnished prior to project closeout on a per-site basis:
 - a. Five (5) complete paper-form sets

- b. Five (5) complete electronic-form sets

C. Field Generated - As-Built

1. All field-generated documentation shall be prepared in a format suitable for storage in loose-leaf 3-ring binders. This documentation shall also be supplied on CD media.
 2. All field-generated drawings shall be prepared using a mutually agreed software program.
 3. The following documentation shall be provided on a per-site basis. Specification or catalog cut sheets for each of the major items illustrated in the documents shall be included with the submittals to the Department.
 - a. Shelter & foundation – top view diagram.
 - b. Foundation – side elevation view diagram illustrating both above and below grade portions.
 - c. Shelter – 4-sided elevation view diagram.
 - d. Shelter – interior layout w/list of materials.
 - e. A site plan illustrating the installed location of the components supplied under this contract relative to other existing major site components (e.g., towers, fences, generators, etc.). Plan shall be to scale; and the new and existing components shall be contrasted by the use of a gray scale.
 - f. The site plan shall identify the interconnection between the shelter or accessories to the site electrical ground grid system.
 4. The following sets of field-generated documentation are to be furnished prior to project closeout:
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets
- D. Costs associated with the post-contract award documentation defined in this section shall be clearly and individually identified in the pricing section of the response.

1.13 MEASUREMENT AND PAYMENT

1.13.1 Method of Measurement.

Method of Measurement: The following items will be paid for by the lump sum:

ITEM #	DESCRIPTION
643.99	Communications Equipment Shelter, Modular, Pre-fabricated, Pre outfitted, Set
643.991	Communications Equipment Shelter, Inspection and Acceptance, Field Testing
643.992	Communications Equipment Shelter, Inspection and Acceptance, Final Acceptance
643.993	Communications Equipment Shelter, Inspection and Acceptance, Training

1.13.2 Basis of Payment.

The accepted Communications Equipment Shelter items will be paid for at the contract lump sum prices which will include payment for all respective items as called for in the contract, designed, delivered, stored, placed, constructed, installed, tested, documented, all clearing, demolition, remediation, preparation, materials, labor, equipment, training and incidentals necessary to complete the work.

Payment will be made under:

ITEM #	DESCRIPTION	UNIT
643.99	Communications Equipment Shelter, Modular, Pre-fabricated, Pre outfitted, Set	LS
643.991	Communications Equipment Shelter, Inspection and Acceptance, Field Testing	LS
643.992	Communications Equipment Shelter, Inspection and Acceptance, Final Acceptance	LS
643.993	Communications Equipment Shelter, Inspection and Acceptance, Training	LS

END OF DOCUMENT

SECTION 3

Special Provision

Specification for an Emergency Power Generator System

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1. General

1.1 Introduction

This specification identifies the requirements for designing, furnishing, installing and commissioning an emergency power generator system and associated components. The generator will be used to support radio communications equipment and as specified herein. The system and associated components shall be new, and of current production.

1.2 Description of Major Work Elements

- A. Design, Furnish & Install:
 - 1. Emergency Power Generator 25KW with electric start
 - 2. Fuel Tank, and Fuel Tank Foundation
 - 3. Fuel Line
- B. Grounding:
 - 1. Connection of generator to the earth ground grid system.
 - 2. Connection of transfer switch to the earth ground grid system.
 - 3. Connection of fuel sub-system to the earth ground grid system.
- C. All site planning, preparation and development.
- D. All engineering design certification and documentation.
- E. Provide design and specifications stamped by a Maine licensed Professional Engineer of:
 - 1. Generator Mounting Design
- F. Other work as specified elsewhere in this document.

1.3 Qualifications

- A. General
 - 1. The Contractor shall have demonstrated experience in furnishing, installing, testing and fully commissioning systems on a turn-key basis.
 - 2. The Contractor shall have demonstrated experience as one-source responsible for generator warranty, parts, and service.
- B. Contractor
 - 1. The Contractor shall have been in the furnishing, installation and servicing of emergency power

generator systems for no less than 5 contiguous years.

2. The Contractor shall be the generator manufacturer's authorized distributor.

C. Generator

1. The manufacturer shall have been in the manufacture of motor-driven generators for no less than 5 contiguous years.

2. All field work associated with the generator shall be performed by a contractor having no less than 5 contiguous years of experience in the installation of emergency power generators.

D. Automatic Transfer Switch

1. The manufacturer shall have been in the manufacture of automatic transfer switches for no less than 5 contiguous years.

1.4 Regulatory Compliance

The generator system shall meet or exceed all of the requirements of:

1. NFPA 110 (most recent edition).
2. Local and National Codes.
3. Underwriters Laboratory (UL).
4. Occupational Safety & Health Administration (OSHA)

1.5 Quantities & Locations

Site: Granite Hill

a. Generator

- Size: 25KW
- Installation: interior as approved by the Department.

b. Transfer Switch

- Provided by State.
- Installation: By State, pre-installed inside Communications Equipment Shelter

c. Fuel

- Type: Liquid Propane (LP)

Tank Capacity: Refer to chart in the installation section of this document.

- Tank Installation: Above Ground as approved by the Department.

2. Products

2.1 Power Generator

2.1.1 General

The generator system shall be new and of current production.

The generator shall be rated for industrial/commercial use.

Generators manufactured by Onan/Cummins are preferred.

2.1.2 Output Requirements

- 120/240 VAC.
- Single-Phase.
- Three -wire.
- 60 Hertz.
- Full single-phase output @ 1.0 pf.
- Voltage regulation +/- 2% of rated voltage for constant load between no-load and full-load.
- Frequency regulation 0.5 % from steady state no-load to steady state rated-load.
- Single Step Load Pickup 100% of rated output power, less applicable derating factors, with the engine and generator at operating temperature.
- The generator shall be equipped with an integral UL listed, thermal-magnetic type rated, main output circuit breaker.

2.1.3 Engine

2.1.3.1 General

- The engine shall be of the propane internal combustion type.
- The engine shall be of the stationary type.
- The engine shall be mounted on a heavy-duty steel skid base.
- The engine shall be mounted on vibration isolators or dampers that are either integral or external to the skid base.
- The engine shall be equipped with a thermostatically-controlled engine block heater.

- Maximum rated speed: 1,800 RPM.

2.1.3.2 Starting System

- Shall be electric, 12 VDC negative ground, sourced from gel cell, maintenance free type storage batteries.
- Batteries shall be mounted to the generator unit, insulated from both the generator and the floor.
- A float/equalize battery charger shall be mounted to the generator unit.
- The charger shall be of a constant voltage/current limiting design and sized appropriately.
- At a minimum, the charger shall be equipped with the following:
 1. On/Off Switch
 2. DC Voltmeter
 3. DC Ammeter
 4. Equalizer-Charger Timer
- The equalizer timer shall provide for a minimum of 12-hours of equalization time.
- Upon termination of the equalization cycle, the charger shall automatically revert to float charging.

2.1.3.3 Lubricating Oil System

- Shall be capable of using both petroleum and synthetic motor oils.
- Shall include an oil level dipstick.
- Oil filter shall be of the replaceable type.
- System shall provide a low oil pressure visual indicator on the generator's control panel.
- Indicator shall remain active until reset by service personnel.
- Activation of the low oil pressure indicator shall trigger a dry-contact, form-C (NO/NC) alarm output.

2.1.3.4 Lubricating Level Maintaining System

- Shall be equipped with an automatic oil level maintaining system.
- The system shall include an oil supply tank.
- The tank shall be sized to supply oil for 15-days of continuous operation.
- The tank shall include a see-thru oil level gauge.

- The tank shall include a shutoff valve.
- Shall be equipped with an integral, dry-contact, form-C (NO/NC) alarm for low oil level before shutdown.
- Shall be equipped with an integral, dry-contact, form-C (NO/NC) alarm for low oil level shutdown.

2.1.3.5 Cooling System

- Shall be either air-cooled, or liquid-cooled using a fan radiator. Liquid-cooled engines are preferred.
- For liquid-cooled engines, the radiator should be mounted to the generator unit and in such a way that the fan's airflow is drawn over the engine.
- System shall provide a high temperature visual indicator on the generator's control panel.
- Indicator shall remain active until reset by service personnel.
- Activation of the high temperature indicator shall trigger a dry-contact, form-C (NO/NC) alarm output.
- The generator unit shall be equipped with the necessary ducts, flanges, adapters, and/or other hardware to allow ducting of heated air to the outside.
- The generator unit shall be equipped with the necessary controls to activate motorized ventilation louvers or dampers.

2.1.3.6 Exhaust System

- A critical muffler shall be supplied with the unit.
- The connection between the muffler and the exhaust manifold shall be of the flexible type.
- The muffler shall be equipped with a condensation trap with a manual drain valve.
- The muffler shall have thermal insulation.
- The exhaust/manifold shall be shrouded

2.1.3.7 Fuel System

- Aspirated air shall be filtered through a replaceable dry-element filter.
- The system shall include all necessary accessories for full functionality including, but not limited to fuel lines, gauges, level-sensors, valves, fittings, filters, piping, insulation, wiring, and pumps, as necessary.

- For propane fueled systems, fuel lines from storage tank shall be of sufficient size to meet the engine's vaporization requirements in ambient outside temperatures as low as -30F.

2.1.4 Engine Controls & Alarms

2.1.4.1 Control Panel

- All controls, indicators, meters and alarms specified herein shall be consolidated into a control panel capable to being installed at a remote location.
- One remote panel shall be furnished for installation within the shelter's radio room.
- One remote panel shall be furnished for installation within the shelter's generator room.

2.1.4.2 Run/Stop Switch

- A manual run/stop switch shall be provided.
- This switch shall be capable of being controlled remotely.

2.1.4.3 Gauges & Meters

- The unit shall be equipped with the following:
 1. Oil pressure gauge.
 2. Temperature gauge.
 3. Charge rate ammeter.
 4. Running time meter.
 5. Analog output-frequency meter.

2.1.4.4 Governor

- The unit shall be equipped with a governor to maintain speed regulation to within 5% from no-load to full-load output.
- The governor shall maintain frequency regulation to within +/- 0.25% of rated frequency under steady state load conditions.
- The governor shall be of the mechanical or electronic-type.

2.1.4.5 Over Crank Control

- The control unit shall provide a minimum of 3 cranking cycles of no less than 10 seconds before shutdown and activation of the over crank alarm.

- The control unit shall be equipped with the capability of manually-resetting the over crank alarm.
- The control unit shall be equipped with the capability of remotely-resetting the over crank alarm.

2.1.4.6 Automatic Shutdown

- The unit shall be equipped for automatic engine shutdown for the following conditions:
 1. Over Crank.
 2. Over Speed.
 3. Under Speed.
 4. Frequency regulation beyond design tolerances.
 5. Voltage regulation beyond design tolerances.
 6. Low Oil Pressure.
 7. High Temperature.

2.1.4.7 Fault Reset

- The unit shall be equipped with a manual reset switch to allow engine restart after any fault condition shutdown.
- The unit shall be equipped with means to activate the manual fault reset switch remotely.

2.1.4.8 Condition Indicators

- At a minimum, the following visual indicators shall be available on each control panel furnished:
 1. Generator running.
 2. Over Crank shutdown.
 3. Over Speed shutdown.
 4. Under Speed shutdown.
 5. Low oil pressure shutdown.
 6. High temperature shutdown.
 7. Low fuel level.

2.1.4.9 Alarms

- A generator running condition shall activate a dry-contact, form-C (NO/NC) alarm.
- A second dry-contact, form-C (NO/NC) alarm shall be activated, at a minimum, by any one of the following alarm conditions:
 1. Over Crank shutdown.
 2. Over Speed shutdown.
 3. Under Speed shutdown.
 4. Low oil pressure shutdown.
 5. High temperature shutdown.
 6. Low fuel level.

2.1.5 Main Fuel Storage Tank

2.1.5.1 General

The tank shall be new and of current production.

2.1.5.2 Size & Type

The size of the tank shall be as per table in the Installation Section.

Tank shall be suitable for exterior, above-ground installations.

Cylindrical shaped tanks are preferred.

All fixed installation fuel tanks shall be of the horizontal type.

Tank manufacture shall be as required by local, state and/or federal codes.

Tanks shall include warning and information signs on all sides as required by codes, laws, and/or the Department.

2.1.5.3 Features & Accessories

The storage tank features and accessories are as follows:

- Shall be equipped with a lockable fuel cap.
- Shall be equipped with a tank-mounted fuel gauge.
- Fuel gauge levels shall also be monitored from an interior on-site location such as an equipment shelter.

- The tank shall be equipped with a low fuel level sensor.
- A low fuel level condition shall activate a visual indicator on the generator's control panel.
- Indicator shall remain active until reset by service personnel.
- Activation of the low level indicator shall trigger a dry-contact, form-C (NO/NC) alarm output. Contacts shall be remoted to an interior on-site location.
- The tank shall include all necessary accessories for full functionality including, but not limited to fuel lines, gauges, level sensors, valves, fittings, filters, piping, insulation, wiring, and pumps, as necessary.
- The fuel line to the engine shall be equipped with a manually-controlled, emergency fuel-shutoff valve. The valve shall comply with all applicable codes.
- For propane-fueled systems, fuel lines to the engine shall be of sufficient size to meet the engine's vaporization requirements in ambient outside temperatures as low as -30F.

2.2 Switchgear - Transfer, Bypass & Isolation

2.2.1 General

The transfer switch will be an existing new 200 amp unit furnished by the state. The contractor will be responsible for all work required to provide a completed installation.

Bypass and isolation switchgear shall allow the system to be serviced and tested without disrupting power to the critical loads.

3. Execution

3.1 Description of Major Work Elements

3.1.1 Performed by State

The following work will be performed by the State:

- A. Acquisitions:
 - Perform site acquisition activities, as required.
- B. Ownership:
 - Conduct property title/deed searches.
- C. Surveying
 - Perform boundary and topographical site surveys.

D. Zoning:

- Assist contractor with zoning approval process, as required, when deemed by the State.

E. Permitting:

- Assist contractor with permitting process, as required, when deemed by the State.
- Note: The State has obtained Hallowell Planning Board approval for the changes/additions to the Granite Hill site structures, permit to be issued upon submission of the tower drawing.
- The State's Geotech report is included elsewhere in this Request for Bid.

F. Leases:

- Secure site leases, as required.

G. Environmental Impact Studies.

3.1.2 Performed by Contractor

A. Design, Furnish & Install:

- Emergency Power Generator.
- Generator Fuel Tank Foundation.
- Fuel Sub-system.

B. Install:

- Transfer Switchgear connections.
- Bypass & isolation switchgear.
- Monitoring & Control Sub-System
- Connection of generator to the earth ground grid system.
- Connection of transfer switch to the earth ground grid system.
- Connection of fuel sub-system to the earth ground grid system, if applicable.

C. All site planning, clearing, preparation and development, as required.

D. All engineering design certification and documentation.

E. Planning, Zoning & Permitting

- Prepare all site planning documents necessary for zoning and permitting, as required.
- Department to review and approve all planning documents prior to zoning and permitting.
- Obtain all zoning approvals, as required.

- Obtain all site permitting, as required. Fees will be borne by the State.
- Coordinate all permitting inspections, as required.
- Note: The State has obtained Hallowell Planning Board approval for the changes/additions to the Granite Hill site structures, permit to be issued upon submission of the tower drawing”.

F. Design & Construction

- Prepare all pre-stamped drawings and specifications necessary for the designs and construction, as applicable.
- Department to review and approve pre-stamped drawings and specifications prior to zoning, permitting and ordering.
- Provide State of Maine PE stamped drawings and specifications to Department. Obtain all site permitting, as required. Fees will be borne by the State.

G. Utility Services

- Coordinate commercial utility service relocations and/or improvements necessary for the installation.

H. Access

- All access road improvements and clearing as necessary for delivery of all materials.
- All access road repairs after the delivery. Road shall be restored to its pre-installation condition. Refer to SP 656 SEWPCP for more information.

I. Premises

- To the greatest applicable and practical extent, the contractor shall restore the premises to its pre-installation condition.
- Removing all rubbish and debris associated with site preparation, unpacking of shipping materials, and/or the installation, from the premises.

J. Other work as needed to ensure a complete installation whether or not specified or shown elsewhere in this document.

3.2 Delivery & Storage of Materials

- A. The contractor shall be responsible for coordinating, unloading, inspecting, accepting and storing all material deliveries.

- B. All claims necessary as a result of damage or loss during shipment shall be the responsibility of the Contractor.
- C. All stored materials shall remain the responsibility of the contractor until final acceptance by the Department. Final acceptance is described later in this document.

3.3 Installation

3.3.1 Site Specific

SITE	Genset	Genset Install	Xfer Switch	Fuel	Fuel Tank	Tank Install
Granite Hill	25 KW continuous	In refurbished shelter	Connect State Provided	LP	1000 Gal	Above Ground

3.3.2 General

The contractor shall be responsible for:

- The installation, wiring, testing and commissioning of the system.
- Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
- Installing the system components in accordance with the professional engineer’s design, as applicable and as approved by the Department.
- Neat and professional workmanship.
- Coordination with other trades, as necessary.
- Filling of the fuel tank(s)
- Removing all rubbish and debris associated with all aspects of the installation.
- All commercial electric utility improvements necessary for the installation
- All engineering design certification and documentation.

Prior to installation, the Contractor shall coordinate the exact site placement of the following items with the Department:

- Generator.
- Fuel line from existing propane tank to equipment shelter.

- Automatic Transfer Switch. The switch shall be installed inside of the equipment shelter.

3.3.3 Generator

The generator shall be installed inside an existing, newly refurbished 11' x 11' (approx.) shelter.

Prior to installation, the contractor shall coordinate the exact placement of the generator and accessories with the Project Management Office of the State's Radio Project Office.

3.3.3.1 Alarms

All Form C (NO/NC) dry contact alarms shall be terminated at a demarcation point inside the shelter.

3.3.3.2 Fuel Tank

All fuel tanks furnished by the contractor shall be installed in an above ground exterior location. The tank shall be full of fuel at the completion of testing.

The contractor shall be responsible for the tank's foundation design and construction, as necessary.

Prior to installation, the contractor shall coordinate the exact site placement of the fuel tank and accessories with the Project Management Office of the State's Radio Project Office.

The installation of the tank and construction of foundation shall be in accordance with local, state and/or federal codes, as applicable and approved by the Department.

The foundation shall be of a pad design.

The foundation shall be made of reinforced concrete.

The top of the foundation shall be elevated above grade.

The foundation design shall include pipe bollards to protect the tank from vehicle caused damage.

The foundation design shall securely anchor an empty tank in wind load per TIA/EIA 222, Class III latest edition for this location.

Control, sensor and/or alarm wiring, as applicable, to/from generator shall be run inside rigid, weatherproof conduit.

Fuel lines to/from generator shall be insulated.

3.3.3.3 Engine Exhaust

Prior to installation, the contractor shall coordinate the exact placement of the exhaust with the Department.

The exterior exhaust pipe (EEP) shall penetrate an exterior wall. Roof penetrations are prohibited.

The EEP shall be oriented vertically.

The EEP shall clear the roof overhang by a minimum of 1-foot in all applicable directions.

The EEP shall extend a minimum of 2-feet above the roof line.

The EEP shall be furnished with a rain cap.

3.3.4 Grounding & Surge Protection

3.3.4.1 General

The contractor shall be responsible for providing all materials and labor for the installation of grounding, and lightning and power surge protection devices in accordance with the manufacturer's recommendations, the Department's standards, or the contractor's practices. Refer to section 5 "specification for a **Radio Communications Site Earth Ground and Lightning Protection System**.

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83).

In the event certain aspects of the recommendations, the standards, or the practices are in conflict, then the most stringent shall prevail.

Unless otherwise noted, the contractor shall assume the existence of a transient voltage surge suppression (TVSS) device at the main electrical service entrance at all sites.

3.3.4.2 Certification

Contractor shall provide written certification to Department that grounding was performed in accordance with the State's standards, manufacturer's recommendations, or the contractor's practices as specified in the General section above.

3.3.5 Foundation Pad –Fuel Tank

- A. Generator fuel tank foundation shall be reinforced concrete.
- B. Fuel lines to/from generator shall:
 - 1. Be installed in a protective device approved by the Department.
 - 2. Exterior fuel line above grade shall be insulated.

3.4 Inspection, Testing & Acceptance

3.4.1 Field Inspection

- A. After installation of all the components furnished under this section, the contractor along with the Department shall perform a field inspection, on a per-site basis, to verify that the installation of the components furnished under this contract has been performed and completed in accordance with the Department's specifications; the contractor's installation practices and standards; and that workmanship has been performed in a neat and professional manner.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the inspection.
- C. Prior to the commencement of this activity, the contractor shall deliver a preliminary field inspection plan to the Department for review and approval.
- D. At the conclusion of this activity, the contractor shall present to the Department written certification that the inspection performed was in accordance with, and that the results of the inspection was in compliance with, the approved field inspection plan.
- E. The Department's signature on the certification shall constitute the Department's acceptance.

3.4.2 Testing

- A. After installation of all the components furnished under this section, the Contractor along with the Department shall perform the test(s) described herein, on a per-site basis, to demonstrate that the emergency power generator system has been properly configured and optimized, and that it is operating fully and correctly.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the test(s).
- C. This test(s) shall be performed after the inspection defined earlier in this section has been accepted.
- D. Prior to the commencement of this activity, the Contractor shall deliver a preliminary test plan to the Department for review and approval.

- E. At the conclusion of this activity, the Contractor shall present to the Department written certification that the test(s) performed were in accordance with, and that the results of the test(s) were in compliance with, the approved test plan.
- F. The Department's signature on the certification shall constitute the Department's acceptance.
- G. Costs associated with the test(s) defined in this section shall be clearly and individually identified in the pricing section of the response.

3.4.3 Final Acceptance

A. General

- 1. After acceptance of all the inspections and all the tests conducted under this section, the Contractor shall present to the Department written certification that the activities were performed in accordance with, and that the results were in compliance with, the approved plans.
- 2. This certification shall include the original copy of the individual inspection and test certifications previously accepted by the Department.
- 3. Final acceptance will be deemed final when the Department's signature appears on this certification.

B. Post-Final Acceptance Documentation

- 1. After final system acceptance, the contractor shall deliver to the Department, in both printed and electronic form, the following documents, on a per-site basis, in one consolidated package.
 - a. Copies of all signed certifications.
 - b. Copies of all approved inspection and test plans.

3.5 Warranty

A. System

- 1. The entire system, less genset batteries, shall be warranted to be free from defects in material and workmanship for a period of two (2) years after final acceptance.
- 2. The warranty shall include all costs for labor and materials, inclusive of travel.
- 3. Costs associated with the warranty defined in this section shall be clearly and individually identified in the pricing section of the response.

B. Batteries

- 1. The batteries shall have a 5-year pro-rata warranty provided by the battery manufacturer.

3.6 Preventive Maintenance

- A. Preventive maintenance shall be performed on the system during the warranty period.
- B. The preventive maintenance shall adhere to the manufacturers suggested schedule and, at a minimum, include all maintenance required by the manufacturer to prevent the warranty from being voided.

3.7 Training

- A. The Contractor shall conduct a single, on-site, hands-on training session for selected Department personnel.
- B. The training location and schedule shall be by mutual agreement between the Department and Contractor.
- C. The session shall be conducted after final acceptance.
- D. The contents of the session shall include demonstrations on the location, proper operation, and visual checks of all mechanical and electrical elements of the system.

3.8 Documentation

3.8.1 With the Contractor's Bid

- A. The Contractor's bid shall include a catalog or specification sheet for the generator.

3.8.2 Post-Contract Award

- A. General
 - 1. Thorough documentation of all generator, transfer switch, gauges and switches, and any auxiliary components, and their respective installations, will be required from the Contractor. This documentation will be comprised of both factory-provided and field-generated documents and/or manuals.
 - 2. Every document exchanged between Department and Contractor shall be in paper and electronic form, as appropriate. Electronic documents shall use the latest version of the application software or by a mutually agreed version. The following applications are preferred:
 - a. Text - Microsoft Word
 - b. Spreadsheets - Microsoft Excel
 - c. Databases - Microsoft Access
 - d. Scanned documents - Adobe Acrobat
 - e. Simple Diagrams & Charts - Microsoft Visio or Excel
 - f. Large Drawings – mutually agreed software program

- g. Schedules - Microsoft Project
 - 3. The Department shall approve the contents and organization of all field-generated documents supplied by the Contractor.
- B. Factory Provided – Technical & Service Manuals
- 1. All factory-provided documentation shall be available on CD media.
 - 2. Manuals shall be provided for the Generator
 - 3. The following sets of manuals are to be furnished prior to project closeout.
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets
- C. Field Generated - As-Builts
- 1. All field-generated documentation shall be prepared in a format suitable for storage in loose-leaf 3-ring binders. This documentation shall also be supplied on CD media.
 - 2. All field-generated drawings shall be prepared using a mutually agreed software program.
 - 3. The following documentation shall be provided. Specification or catalog cut sheets for each of the major items illustrated in the diagrams shall be included with the submittals to the Department.
 - a. Interconnection power wiring schematic diagram(s).
 - b. Interconnection control wiring schematic diagrams(s).
 - c. Alarm wiring schematic diagram(s).
 - d. Interconnection ground wiring schematic diagram(s).
 - e. Wiring between generator, transfer switch and electrical distribution panel(s).
 - f. A simple floor plan illustrating the installed location of the equipment supplied under this contract relative to other existing major components (e.g., doors, HVAC units, electrical distribution panels, etc.). Plan shall be approximately to scale; and the new and existing components shall be contrasted by the use of a gray scale.
 - g. A detailed inventory of each major equipment component installed. This shall include model and serial numbers
 - 4. The following sets of field-generated documentation is to be furnished prior to project closeout on this site:
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets

4. MEASUREMENT AND PAYMENT

4.1.1 Method of Measurement:

ITEM #	DESCRIPTION
643.98	Emergency Power Generator System, Installed
643.981	Emergency Power Generator System----Inspection and Acceptance, Field Inspection
643.982	Emergency Power Generator System----Inspection and Acceptance, Testing
643.983	Emergency Power Generator System---Inspection and Acceptance, Final Acceptance

4.1.2 Basis of Payment

The accepted Communications Equipment Shelter items will be paid for at the contract lump sum prices which will include payment for all respective items as called for in the contract, designed, delivered, stored, placed, constructed, installed, tested, documented, all clearing, demolition, remediation, preparation, materials, labor, equipment, training and incidentals necessary to complete the work.

Payment will be made under:

ITEM #	DESCRIPTION	UNIT
643.98	Emergency Power Generator System, Installed	LS
643.981	Emergency Power Generator System ----Inspection and Acceptance, Field Inspection	LS
643.982	Emergency Power Generator System ----Inspection and Acceptance, Testing	LS
643.983	Emergency Power Generator System ----Inspection and Acceptance, Final Acceptance	LS

END OF DOCUMENT

SECTION 4

Special Provision

Specification for a Communications Site Perimeter Fence

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1. Perimeter Fence System

1.1 Fence

1.1.1 General

The fence and associated components shall be new and of current fabrication. Used, re-rolled and/or re-galvanized materials are not acceptable.

The fence and associated components shall be industrial or commercial-grade rated.

Unless otherwise noted, all components and associated hardware shall be fabricated of steel and hot-dipped galvanized at the manufacturer's facility.

1.1.2 Physical & Structural

The fence shall be of the chain-link type.

The height of the fence shall be eight (8)-feet excluding the security barrier.

1.1.3 Posts

Post height: as required.

Post insertion: below frost line if loose soil or anchored if ledge.

Post-type: tubular, high-strength (Schedule 40).

1.1.4 Chain-link Fabric

Weave: 2-inch diamond-mesh pattern.

Wire Size: 9 AWG, minimum.

Top and bottom selvage edges shall be twisted and barbed.

1.2 Gate

1.2.1 Physical

Swing-type, twin-leaf.

Leaf Width: 5-feet

Fabric: same as fence.

Gate-leaf frame members shall be welded together.

1.2.2 Hinges

Hinges shall use vandal resistant, non-removable hinge pins.

Hinges shall allow for 180-degree swing for each gate-leaf from closed to open position.

1.2.3 Latch

Latch shall be of a horizontal-bar design. Drop-rod or plunger-bar type designs are not acceptable.

Latch shall be of a vandal-resistant design.

Latch shall permit operation from either side of gate.

Padlock hasp shall be an integral part of latch.

1.2.4 Keeper

Device to secure gate-leaf in the full-open position.

One (1) keeper per gate-leaf.

Auto-engage.

Manual release.

Devices of an in-ground, drop-rod or plunger-bar type design are not acceptable.

1.3 Security Barrier

1.3.1 General

The fence system shall include a top-mounted security barrier made of barbed-wire. The security barrier wire and tape shall be fabricated of galvanized or stainless steel.

1.3.2 Barbed-Wire

Barrier shall be comprised of 3-lines of barbed-wire.

The length of the barrier shall span the perimeter of the fence including the gate.

Barbed-wires shall be supported by 45-degree top-mounted extension arms tilted outward.

Each barbed-wire shall be fabricated of two (2) individual wire strands, at a minimum.

Barb clusters shall be of a 4-point design and spaced evenly on 3-inch centers.

1.4 Signage

Information, notice, and/or warning signs shall be furnished for each side of the fence perimeter.

At a minimum, signs shall meet the following:

- Industry Standards
- Municipal or Local Codes
- Specific requirements of the State

1.5 Perimeter Fence System

1.5.1 Description of Major Work Elements

1.5.1.1 Performed by State

The following work will be performed by the State:

A. Acquisitions:

- Perform site acquisition activities, as required.

B. Ownership:

- Conduct property title/deed searches.

C. Surveying

- Perform boundary and topographical site surveys.

D. Zoning:

- Assist contractor with zoning approval process, as required, when deemed by the State.

E. Permitting:

- Assist contractor with permitting process, as required, when deemed by the State.
- Note: The State has obtained Hallowell Planning Board approval for the changes/additions to the Granite Hill site structures, permit to be issued upon submission of the tower drawing.

- The State's Geotech report is included elsewhere in this Request for Bid.

1.5.1.2 Performed by Contractor

A. Furnish & Install:

- Fence.
- Gate.
- Security Barrier.
- Grounding of fence system to the earth ground grid system.
- Gravel layer within fence perimeter.
- Signage.

B. All site planning, clearing, preparation and development, as required.

C. All engineering design certification and documentation.

F. Design & Construction

- Prepare all pre-stamped drawings and specifications necessary for the designs and construction, as applicable.
- State to review and approve pre-stamped drawings and specifications prior to zoning, permitting and ordering.
- Provide State of Maine PE stamped drawings and specifications to State.

G. Utility Services

- All commercial utility service relocations and/or improvements necessary for the installation.

H. Access

- All access road improvements and clearing as necessary for delivery of all materials.
- All access road repairs after the delivery. Road shall be restored to its pre-installation condition.

I. Premises

- To the greatest applicable and practical extent, the contractor shall restore the premises to its pre-installation condition.

- Removing all rubbish and debris associated with site preparation, unpacking of shipping materials, and/or the installation, from the premises.

J. Other work as needed to ensure a complete installation whether or not specified or shown elsewhere in this document.

1.5.1.3 Site Specific

Contractors shall assume that 480 linear feet will be required to encircle the tower, shelter and fuel tank.

The fence shall be installed two feet inside the marked property boundary lines on all sides.

The Gravel Layer and weed barrier shall extend beyond the fence to the property line

SITE	PERIMETER	GRAVEL LAYER
Granite Hill	Encircle tower, shelter & fuel tank	Yes

1.5.2 Installation

1.5.2.1 General

The contractor shall be responsible for:

- The installation of the fence system and components.
- The installation of the gravel layer.
- Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
- Installing the fence and components in accordance with the manufacturer's instructions and recommendations.
- Installing the fence and gravel components in accordance with the State's specifications, practices and standards.
- Installing the fence and gravel components in accordance with the professional engineer's design, as applicable.
- Installing the fence and gravel components in accordance with local, state and/or federal codes, as applicable.

- Removing the existing perimeter fence.
- Neat and professional workmanship.
- Coordination with other trades, as necessary.

1.5.2.2 Fence

Install all materials in accordance with the manufacturer's drawings, specifications, instructions and recommendations.

Fence posts shall be ground-anchored in concrete.

Fence posts shall be weather-tight capped.

Contractor to provide written certification to State that fence was installed in accordance with the manufacturer's drawings, specifications, instructions and recommendations.

1.5.2.3 Gate

Install all materials in accordance with the manufacturer's drawings, specifications, instructions and recommendations.

1.5.2.4 Security Barrier

Install all materials in accordance with the manufacturer's drawings, specifications, instructions and recommendations.

1.5.2.5 Buffer Zone

At a minimum, where practical and available, a 10-foot buffer zone between the fence and the tower/shelter shall be maintained.

1.5.2.6 Gravel Layer

6" (nominal) depth ¾" crushed stone gravel layer over the entire area within the property boundary.

Gravel layer shall be preceded with a weed barrier layer.

1.5.2.7 Signage

Size, contents and location of the signs shall be coordinated with the State.

1.5.3 Grounding

1.5.3.1 General

The fence grounding shall be integrated into the site ground system.

A ground rod shall be installed at intervals for each 25 linear feet of fence and at all corners and gates. This ground rod shall be installed from the closest fence post to the site ground. The fence shall be electrically connected so that it forms a single electrical unit.

Exothermic welds shall be used to connect each fence post to its associated ground rod and to the site ground system. All gates shall be connected to grounded components using exothermic welds and stranded copper wire.

All exothermic welds on fence posts shall be treated with cold galvanizing spray.

The contractor shall be responsible for providing all materials and labor for the installation of grounding, and lightning and power surge protection devices in accordance with the manufacturer's recommendations, the State's standards, or the contractor's practices.

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83).

In the event certain aspects of the recommendations, the standards, or the practices are in conflict, then the most stringent shall prevail. Refer to Section 5 "Specification for a Radio Communications Site Earth Ground and Lightning Protection System.

1.5.3.2 Certification

Contractor shall provide written certification to State that grounding was performed in accordance with the State's standards, manufacturer's recommendations, or the contractor's practices as specified in the General section above.

1.5.4 Warranty

The Contractor shall warrant workmanship and all materials provided for a period of one year.

1.5.5 Field Inspection

- A. After installation of all the components furnished under this section, the contractor along with the Department, at its discretion, shall perform a field inspection, to verify that the installation of the components furnished under this contract has been performed and completed in accordance with the following, as applicable.
 - 1. The manufacturer's instructions and recommendations.
 - 2. The Department's specifications including testing and certifying the site's earth ground grid system meets R-56 requirements.
 - 3. The Contractor's installation practices and standards as approved by the Department.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the inspection.
- C. Prior to the commencement of this activity, the contractor shall deliver a preliminary field inspection plan to the Department for review and approval.
- D. At the conclusion of this activity, the contractor shall present to the Department written certification that the inspection performed was in accordance with, and that the results of the inspection was in compliance with, the approved field inspection plan.
- E. The Department's signature on the certification shall constitute acceptance by the Department of the inspection.

1.5.6 Final Acceptance

- A. General
 - 1. After acceptance of all the inspections and all the tests. Conducted under this section, the contractor shall present to the Owner written certification that the activities were performed in accordance with, and that the results were in compliance with, the approved plans.
 - 2. This certification shall include the original signed copy of the individual inspection and test certifications previously accepted by the Owner.
 - 3. Final acceptance will be deemed final when the Owner's signature appears on this certification.

1.5.7 Measurement of Payment

1.5.7.1 Method of Measurement:

The following items will be paid for by the lump sum

ITEM #	DESCRIPTION
642.91	Perimeter Fence and Gravel Layer Accepted

1.5.7.2 Basis of Payment:

The accepted radio communications site Perimeter Fence and Gravel Layer. Installed items will be paid for at the contract lump sum prices which will include payment for all respective items called for in the contract designed, delivered, stored, placed, constructed, installed, tested, inspected, accepted, documented, all clearing demolition, remediation, site work, materials, labor, equipment and incidentals required to complete

ITEM #	DESCRIPTION	UNIT
642.91	Perimeter Fence and Gravel Layer Accepted	LS

END OF DOCUMENT

SECTION 5

Special Provision

Specification for a Radio Communications Site Earth Ground and Lightning Protection System

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1. Grounding & Lightning Protection

This document describes the requirements and standards of grounding for communications facilities for the State of Maine. This Standard is to be used, in conjunction with engineering judgment, for the design, modification, retrofit, installation and maintenance of communications site ground systems associated with this project.

The ground system shall consider site-specific information such as cost, site location, relative lightning risk, soil conditions, existing communications facilities, adjacent communication facilities and other pertinent information to design the optimum ground system for each site.

1.1 General

All metallic objects in the communications facility which enclose electrical conductors, or that are likely to have electrical currents flow in them, shall be grounded.

These objects include, but are not limited to the following: towers, transmission lines, conduits, raceways, structural and architectural steel components, shelters, generators, fuel-storage systems, fences, solar arrays and equipment cabinets and racks.

Grounding shall be adequate for personnel safety, fire hazard reduction, protection of the equipment and protection of the equipment's electronic performance from circuit faults, electrostatic discharge and lightning. All electrical and electronic equipment within the building shall be grounded.

The internal building ground system shall be a single point ground system with a single point connecting to the external ground system. This is to assure electrical isolation from fault currents and for electrical noise reduction.

The interior building ground system and exterior site ground system shall be integrated into a common, single-point ground system.

2. Description of Major Work Elements

- A. Design, furnish and install the site ground system.
- B. The Contractor shall use this specification in conjunction with the grounding portions contained in the other special provisions of this request for bid to provide a complete, common, single point ground system for the entire site.

2.1 References

2.1.1 State Standards

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83).

In the event that certain grounding practices, methods or standards are in conflict with the standards adopted by the State, then the most stringent shall prevail.

2.1.2 Other Government and Industrial Standards

The following is a list of government and industrial grounding standards listed in the order of governing precedence:

- National Fire Protection Association (NFPA) 780 Lightning Protection Code
- National Electrical Code NFPA 70
- Institute of Electrical and Electronics Engineers Emerald Book - Powering and Grounding Sensitive Electronics Equipment

Practices, methods and/or standards contained in these documents can be used to compliment or supplement the standards adopted by the State.

2.2 Undesirable Methods and Materials

2.2.1 Ufer Grounds

Ufer or concrete-encased grounding systems are prohibited for use in MSCommNet, especially as part of the tower or building foundation, for use on new construction of communications facilities.

2.2.2 Aluminum

Aluminum conductors are forbidden for use on new construction of communications facilities.

2.2.3 Chemical Grounds

Methods of acquiring lower ground resistance by adding ionized salts (soil doping) and other chemicals are unacceptable for new construction of communications facilities. The only acceptable method of lowering the ground resistance is addition of ground rods and ground radials.

2.3 External Grounding Design and Installation

2.3.1 Grounding

An earth electrode subsystem shall be installed for each communications facility. For each site, the earth electrode subsystem shall consist of a buried external site ground system of a bare copper conductor connected to ground rods as required to obtain the overall grounding resistance goals.

2.3.2 Ground Resistance

The integrated, common, single-point ground system shall be designed to achieve a ground resistance of 5-ohms or less.

2.3.3 Grounding for Building, Architectural, and Structural Steel

All building, architectural, and structural steel shall be electrically grounded and connected into a single electrically-conductive unit. Acceptable grounding connection methods include clamps, bolting, exothermic welds and welding.

The building structural steel system shall be connected to the grounded conductor of the incoming AC supply system at the service entrance, and to the main cold-water piping and sewer systems, if the building is provided with water or sewer service and continuous metallic piping is used.

2.3.4 Site Ground System

Each facility shall be provided with an interconnected buried ground system for all structures. These structures include but are not limited to the following: building, sheds, towers, fuel tanks, generators, generator supports, fences and other structures.

This ground system shall be connected to the building's (or any other structure's) structural steel system and to any electrical and metallic piping systems that cross it. Connection shall occur at the nearest point to the intersection between the ground system and the item being connected.

The system shall be continuously connected into one electrical system. The ground shall be buried at a minimum distance of 24 inches from the foundation, and shall be buried at a minimum depth of 30 inches or below the frost line, which ever is greater. In hard rock locations, the 30 inches deep grounding wire installation requirement is waived.

2.3.5 Ground Test Well

A buried ground test well shall be furnished and placed at an exterior site location near the cable entry panel of the shelter.

The test well will be used for:

- Periodic soil resistivity and ground system resistance checks.
- Connection node for future expansion of the ground system.

The well shall:

- rise no less than two (2) inches and no more than four (4) inches above grade.
- be no less than six (6) inches in width.
- be protected inside a weatherproof non-corrosive metal or plastic-type conduit or pipe.
- be capped with a screw-type top.
- be furnished with a weatherproof identification sign.
- be placed at a location coordinated with the State.

2.3.6 Grounding for Lightning Protection

Lightning rods (air terminals) shall be connected to the tower.

2.3.7 Tower Grounding

The antenna tower shall be connected to the site ground system. The preferred attachment method for grounding conductors to the tower is by an exothermic weld attached near the base of each tower leg.

All grounding cables and wires attached to the tower, transmission lines, ice bridges and other exterior appurtenances shall be installed leading in a constantly descending manner with no sharp bends or loops. This tower ground shall be connected to the site ground system.

2.3.8 Guy Wire Grounding

A ground rod shall be installed at each guy anchor. This guy wire ground shall be connected to the site ground. A single ground cable shall be clamped to each guy wire above the anchor plate. This cable shall be installed in a constantly descending direction with no sharp bends or loops.

2.3.9 Fence Grounding

A ground rod shall be installed at intervals for each 25 linear feet of fence and at all corners and gates. This ground rod shall be installed from the closest fence post to the site ground. The fence shall be electrically connected so that it forms a single electrical unit.

Exothermic welds shall be used to connect each fence post to its associated ground rod and to the site ground system. All gates shall be connected to grounded components using exothermic welds and stranded copper wire.

All exothermic welds on fence posts shall be treated with cold galvanizing spray.

2.3.10 Grounding for AC Service

The commercial AC service and any generators shall connect the AC grounds and neutrals to the site ground. This connection to the site ground shall be adjacent to the master ground buss-bar.

All AC power metal equipment parts, such as enclosures, raceways or conduits, and equipment grounding conductors, and all earth grounding electrodes shall be connected into a continuous electrically conductive system.

2.3.11 Grounding for Telephone Services

The commercial telephone service ground shall be connected to the site ground. This connection to the site ground system shall be adjacent to the ground bar.

All telephone equipment's metal parts, such as enclosures, raceways or conduits, and equipment grounding conductors, and all earth grounding electrodes shall be connected into a continuous electrically conductive system.

2.3.12 Transmission Lines

The outer conductor of all coaxial transmission lines and waveguides shall be bonded to the tower at:

- its highest practical point on the tower
- midpoints along the length of the transmission lines and waveguides in accordance with the State's standards.
- the lowest point on the tower
- to the ground bar at the point of entrance to the building.

A common ground point consisting of a copper grounding bar shall be provided to ground the transmission lines at the entrance to the building. This ground bar shall be bonded to the nearest external ground point on the site ground system with two 6" copper straps. These straps shall be connected to the internal building ground bar.

This can be achieved by use of internal and an external ground bar connected with copper straps or a commercially available transmission line entrance assembly.

2.3.13 Other Grounding

All other metallic items at each communications site shall be grounded. These include but are not limited to the following items: metal hatches and doors, metal downspouts, roofing and siding, all metal fuel-storage tanks, telephones, electrical and other utility equipment, generators and supports, solar photovoltaic panel supporting structures, and exterior and interior cable trays and ice shields.

2.4 Internal Building Grounding

2.4.1 Ground Bar

A connection to the site ground system shall enter the building at a single point and terminate at a master ground bar. At a minimum, the ground bar shall be pre-drilled, be 18-inches in width, be 8-inches in height, and be .25-inches in thickness.

This ground bar shall be installed adjacent to the AC ground system, and shall consist of a single copper bar with attachment points for internal building grounding. The copper bar shall be connected to the external ground system by exothermic welds, brazing, or welding.

All internal equipment shall be connected to this master ground bar. This includes the telephone system, the electrical system, and RF systems connected via the internal ground bus.

2.4.2 Internal Building Ground Halo

An internal building ground halo system shall be installed to allow low impedance ground connections to individual pieces of equipment.

The internal building halo system may be constructed of 3/4" or 1" copper pipe bus network or of green insulated #2/0 AWG stranded copper wire.

This system shall be isolated from building steel and other electrical conductors such as metallic water pipes, conduits or structural steel.

The internal building ground halo shall be connected to the site ground system at a single point at the master ground bar.

2.4.3 Connection to Equipment

All stand-alone equipment shall be connected to the internal building ground bus. Care shall be taken to minimize the length of the connection to the internal building ground bus.

2.4.4 Connection to Electronic Equipment Racks

All electronic equipment racks, console cabinets, and transmitter cabinets shall be connected to the internal building ground bus using #2/0 AWG stranded copper wire.

2.4.5 Transmission Lines

The outer conductor of all coaxial transmission lines and waveguides shall be bonded to the tower at the lowest point on the tower and to the ground bar at the point of entrance to the building.

A common ground point consisting of a copper grounding bar shall be provided to ground the transmission lines at the entrance to the building. This ground bar shall be bonded to the nearest external ground point on the site ground system with two 6" copper straps.

2.4.6 Roof Mounted Antennas

The steel structure used to support roof-mounted antennas shall be connected to the nearest point on the site ground system.

Each building roof-mounted antenna shall be individually grounded to the master ground buss bar.

2.5 Grounding Components

2.5.1 Ground Rods

All ground rods shall be made of copper or copperclad steel and shall be a minimum of 5/8 inch in diameter and 10 feet in length.

In soils where there is difficulty driving ground rods, 3/4 inch diameter ground rod shall be used.

Sections of ground rods may be coupled together using exothermic welds or threaded connectors.

Connection from the ground rod to the site ground system conductor shall employ an exothermic weld.

Ground rods shall be driven using the proper tool to prevent deformation of the rod.

The top of each ground rod shall be driven to the depth of the site ground system.

Ground rods shall be driven to a minimum depth of 10 feet below the site ground system conductor.

In soil conditions where it is practical, ground rods shall be driven to 20 feet below the site ground system conductor.

In low conductivity soils, ground rods shall be driven as deep as practical to provide a satisfactory ground resistance.

Ground rods shall be located a minimum of 30 inches from foundation walls, concrete tower piers or concrete footings. Ground rods shall be approximately equally spaced along the site ground system.

At sites located on solid rock, or where the subsurface layer is solid rock, where ground rods cannot be installed using conventional methods, a star-shaped ground made up of #2/0 AWG bare copper conductor shall be installed in place of a ground rod.

The number and length of individual conductors in this ground system shall be configured to obtain the grounding resistance goal.

The ground system shall be buried as deeply as practical for the soil conditions.

2.5.2 Ground Wire, Cable Strap and Pipe

Wire for buried ground conductors surrounding buildings (main ground wire) and other structures shall be #2/0 AWG at a minimum according to NFPA 780 Lightning Protection Code, 1992 Edition Table 3-5.

All other grounding wire and connection wire shall consist of bare or green insulated #2/0 AWG or #6/0 AWG copper conductors (bonding ground wire).

In general, solid wire is to be used in locations where there is no movement between the connections, and stranded wire is to be used where movement is expected.

For low impedance signal grounds, copper strap and copper pipe is preferred. An internal copper pipe ground bus is acceptable.

2.5.3 Lightning Rods

Lightning rods (air terminals) shall consist of solid copper rod with a minimum diameter of 5/8 inches and a minimum length of 18 inches.

The lightning rod shall extend above all tower mounted systems such as tower lights, antennas and tower mounted preamps, which require protection.

The "area of protection" is defined by a 30° cone which extends downward from the top of the lightning rod.

All antennas, buildings and other structures within the communications site shall be protected from lightning according to NFPA 780 Lightning Protection Code, 1992 Edition. Lightning rods shall extend a minimum of 18 inches above device to be protected.

All lightning rods shall be connected to the steel supporting tower or connected to #2/0 AWG wire and connected to the site ground system.

2.5.4 Ground Connectors

Exothermic welds shall be used for all ground connections exposed to the elements. In places where exothermic welds are not possible, brazing, silver solder and bolted clamps are acceptable under authorization from the State of Maine.

Ground connections shall be according to tower manufacturers' guidelines.

All clamps, connectors, bolts, washers, nuts, and other hardware used in the grounding system shall be copper or bronze, except that nuts, bolts, and washers may be stainless steel.

Dissimilar metal mechanical connections shall be made with components specifically designed to reduce the likelihood of galvanic corrosion.

Dissimilar metal connections are permissible only when connecting the ground system to other systems and appropriate methods to alleviate galvanic corrosion have been made.

2.5.5 Underground Ground Connectors

All buried ground connections shall use exothermic welding techniques except where it presents a specific hazard such as connections to fuel tanks.

All underground metallic structures such as tanks, water lines, sewer lines, and armored cable shall be connected to the grounding system with bare copper cable with a minimum size of #2/0 AWG.

Appropriate measures shall be taken to prevent corrosion.

2.5.6 Rack Mounted Equipment

All electronic equipment racks shall be provided with a single copper bar, with attachment points for grounding electronic equipment.

All equipment shall have a low-impedance connection to the rack ground bar.

The rack shall be connected to the rack ground bar, and the rack ground bar shall be connected to the internal building ground system or ground bus.

2.5.7 Fuel Tanks and Generators

All fuel tanks and generators shall be grounded in accordance with the State's standards.

2.5.8 Dissimilar Metals

All ground systems shall consist of copper components.

No aluminum shall be used within any grounding system.

Connection to racks and other systems where the connection is to a dissimilar metal shall be made with components specifically designed to reduce the likelihood of galvanic corrosion.

All screws and hardware used on racks and other electronic connections shall be constructed from similar metals or from stainless steel.

Where interconnection between copper ground system components or buswork and aluminum equipment cabinets or frames is unavoidable, such connections shall be made by using prepared bimetallic strips or by a tinplate to the copper surface where it contacts aluminum.

All dissimilar metal grounding connections (aluminum-tin, copper-zinc galvanizing) in exterior locations shall be painted with waterproof sealing compound (Perma-tex or equal) for at least 2 inches on each side of the dissimilar metal connection.

2.6 Surge Protection

This Section describes the standards for transient voltage surge suppression (TVSS) equipment for the proposed new System.

These standards are to be used in conjunction with engineering judgment for the design, modification, retrofit, installation and maintenance of communications AC power systems, RF equipment, microwave equipment, and other equipment associated with the new System.

The system designers shall consider site-specific information such as cost, site location, relative lightning risk, and power distribution facilities at existing State and local government site communications facilities to be shared by State, adjacent communication facilities and other pertinent information to design the optimum AC Power Surge Protection system for each site.

2.6.1 Overview

All electronic equipment within the new System shall be protected with transient voltage surge suppression (TVSS) systems. This is to assure that there are no equipment faults due to power line fluctuations or lighting events.

Contractor shall also provide TVSS systems for all transmission lines, waveguides and data and telephone lines, or any other electrical conductors that extend off of the premises (such as tower lighting) of the

communications facility. These systems shall, to the extent possible, be located at the point of entry into the equipment area or equipment shelter.

Contractor shall design an appropriate TSSV system for each application. Documentation shall be provided to demonstrate that the proposed system provides adequate TVSS protection for each application.

2.6.2 References

2.6.2.1 State Standards

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83).

In the event that certain grounding practices, methods or standards are in conflict with the standards adopted by the State, then the most stringent shall prevail.

2.6.2.2 Other Government and Industrial Standards

The following is a list of government and industrial grounding standards listed in the order of governing precedence:

- National Electrical Code
- Institute of Electrical and Electronics Engineers Emerald Book - Powering and Grounding Sensitive Electronics Equipment
- IEEE/ANSI C62.41-199, C62.45-1992, c62.1 and C62.11
- Underwriters Laboratories UL 1449, UL 1283, UL 489 and UL198

Practices, methods and/or standards contained in these documents can be used to compliment or supplement the standards adopted by the State.

2.6.3 Undesirable Methods and Materials

2.6.3.1 Aluminum

Aluminum conductors are forbidden for use on new construction of communications facilities.

2.6.3.2 Sacrificial Components

To the extent that is possible TVSS systems shall not rely on components that cease to function after a single TVSS event. In systems that use this type of technology the system shall have adequate front panel notification that the failed component requires replacement.

Systems with sacrificial components shall be designed to withstand multiple TVSS events equivalent to 10 years of typical service without component replacement.

2.6.4 TVSS Equipment Location

To the extent possible, all TVSS equipments shall be located as close as possible to the AC mains entrance or the building entrance of telephone or data lines after demark point. TVSS equipment on transmission lines and waveguides shall be incorporated into the transmission line or waveguide entry port ground bus panel.

2.6.5 Physical Conditions

2.6.5.1 Environmental Conditions

Equipment shall function properly under the following environmental conditions:

- Temperature: -10°C to +50°C
- Storage: -40°C to +65°C
- Humidity: 5% to 95% non-condensing
- Altitude: up to 15,000 ft. (4,267 meters).

2.6.6 Operating Requirements

2.6.6.1 Maximum Continuous Operating Voltage

The TVSS system shall be able to provide continuous operation of electrical service when voltage conditions vary within $\pm 15\%$ of normal line voltage.

2.6.6.2 Operating Frequency

The operating frequency shall be $60\text{Hz} \pm 5\%$.

2.6.6.3 Protection Modes

Protection shall be provided for all electrical configuration modes, Line-to-Line, Line-to Neutral, Line-to-Ground and Neutral-to-Ground protection as appropriate for WYE or Delta line configurations.

For telco and transmission line TVSS devices, these devices shall be in-line and shall prevent any equipment-damaging TVSS event from entering the building.

2.6.6.4 Transmission Line and Waveguide TVSS

These devices shall be an inline device that presents a VSWR of no more than 1.1:1 to the RF circuit and an insertion loss of no more than 0.05 dB.

The devices shall be sufficient to protect all downstream equipment from any TVSS event. In cases where a tower top amplifier is used the system shall provide adequate protection for this amplifier and associated equipment.

If there are any TVSS devices that are tower-mounted they shall provide remote control, alarm and test functions to the main facility.

2.6.6.5 Tower Lighting Protection

All tower lighting circuits shall have TVSS devices to protect the building equipment from any TVSS event that can enter in the tower lighting circuits.

These devices shall be located within 2 feet of the tower lighting entry point or wall penetration.

All tower lighting cables shall be run in dedicated conduits to the entry/exit point. They shall not be bundled with other cabling.

3. Field Inspection

- A. After installation of all the components furnished under this section, the contractor along with the Department, at its discretion, shall perform a field inspection, to verify that the installation of the components furnished under this contract has been performed and completed in accordance with the following, as applicable.
 1. The professional engineer's design.
 2. The manufacturer's instructions and recommendations.
 3. The Department's specifications including testing and certifying the site's earth ground grid system meets R-56 requirements.
 4. The Contractor's installation practices and standards as approved by the Department.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the inspection.
- C. Prior to the commencement of this activity, the contractor shall deliver a preliminary field inspection plan to the Department for review and approval.

- D. At the conclusion of this activity, the contractor shall present to the Department written certification that the inspection performed was in accordance with, and that the results of the inspection was in compliance with, the approved field inspection plan.
- E. The Department's signature on the certification shall constitute acceptance by the Department of the inspection.

3.1 Final Acceptance

A. General

1. After acceptance of all the inspections and all the tests. Conducted under this section, the contractor shall present to the Owner written certification that the activities were performed in accordance with, and that the results were in compliance with, the approved plans.
2. This certification shall include the original signed copy of the individual inspection and test certifications previously accepted by the Owner.
3. Final acceptance will be deemed final when the Owner's signature appears on this certification.

4. Measurement of Payment

4.1 Method of Measurement:

The following items will be paid for by the lump sum

ITEM #	DESCRIPTION
644.91	Radio Comm. Site Earth Ground and Lightning Protection System, Installed
644.92	Radio Comm. Site Earth Ground and Lightning Protection System, Field Inspected
644.93	Radio Comm. Site Earth Ground and Lightning Protection System, Final Acceptance

4.2 Basis of Payment:

The accepted radio communications site earth ground and lightning protection system item will be paid for at the contract lump sum prices which will include payment for all respective items called for in the contract designed, delivered, stored, placed, constructed, installed, tested, inspected, accepted, documented, all clearing demolition, remediation, site work, materials, labor, equipment and incidentals required to complete

ITEM #	DESCRIPTION	UNIT
644.91	Radio Comm. Site Earth Ground and Lightning Protection System, Installed	LS
644.92	Radio Comm. Site Earth Ground and Lightning Protection System, Field Inspected	LS
644.93	Radio Comm. Site Earth Ground and Lightning Protection System, Final Acceptance	LS

END OF SECTION

SECTION 6

Special Provision

Specification for Refurbishing an Existing Shelter and Equipping it for an Emergency Power Generator Installation

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1. General

1.1 Introduction

This specification covers the requirements for designing, furnishing, repairing, refurbishing, installing and commissioning an existing 11 foot x 11 foot telecommunications-type shelter and installing an emergency power generator and other associated components.

1.2 Description of Major Work Elements

1.2.1 Performed by the State:

A. Acquisitions:

- Perform site acquisition activities, as required.

B. Ownership:

- Conduct property title/deed searches.

C. Surveying

- Perform boundary and topographical site surveys.

D. Zoning:

- Assist contractor with zoning approval process, as required, when deemed by the State.

E. Permitting:

- Assist contractor with permitting process, as required, when deemed by the State.
- Note: The State has obtained Hallowell Planning Board approval for the changes/additions to the Granite Hill site structures, permit to be issued upon submission of the tower drawing.
- The State's Geotech report is included elsewhere in this Request for Bid.

F. Leases:

- Secure site leases, as required.

Environmental Impact Studies.

1.2.2 Performed by Contractor

Unless otherwise noted, the following work is required by the contractor:

- A. Design, Furnish, Repair, Refurbish & Install:
 - 1. Shelter (11' 6" x 11' 6").
 - 2. Other Shelter Components as Specified.
 - 3. Shelter Foundation
- B. All site planning, preparation and development.
- C. All engineering design certification and documentation.
- D. Provide Shelter Roof and Foundation design and specifications stamped by a Maine licensed Professional Engineer.
- E. Other work as specified elsewhere in this document.

1.2.3 Qualifications

- A. General
 - 1. The Contractor shall have demonstrated experience in design, furnishing, and installing communication shelters on a turn-key basis.
 - 2. The Contractor shall have demonstrated experience in furnishing and installing generators on a turn-key basis.
 - 3. The Contractor shall function as one-source responsible for shelter warranty, parts and service.
- B. Shelter
 - 1. The manufacturer shall have no less than 5 contiguous years in the fabrication of communications type shelters.
 - 2. All field-work associated with the shelter shall be performed by a contractor having no less than 5 years experience in the installation of pre-fabricated communications equipment shelters.
- C. Foundation
 - 1. All work associated with the shelter foundation shall be performed by a contractor having no less than 5 years experience in the installation of pre-fabricated communications equipment shelters.

D. Generator

1. Refer to qualifications in the generator specifications under Section 3.

1.2.4 Regulatory Requirements

A. Unless specified otherwise, materials and installation shall conform to the applicable requirements of:

1. Local & National Codes.
2. Maine Electrical Code.
3. American Concrete Institute (ACI).
4. American Institute of Steel Construction (AISC).
5. American Iron and Steel Institute (AISI).
6. American National Standards Institute (ANSI).
7. American Society for Testing & Materials (ASTM).
8. Electronics Industries Association (EIA/TIA).
9. Institute of Electrical & Electronics Engineers (IEEE).
10. National Fire Protection Association (NFPA).
11. Occupational Safety & Health Administration (OSHA).
12. Underwriters Laboratories (UL)
13. Motorola R-56 standard or approved equal.

2. Products

2.1 Shelter

2.1.1 General

- A. The existing shelter external dimensions are approximately 11' 6" X 11' 6".
- B. The shelter foundation is constructed of cement
- C. The shelter walls are constructed of cement block
- D. The shelter roof is wood frame, galvanized steel covered.
- E. The shelter will be refurbished and used to house an emergency power generator.
- F. A drawing of the shelter construction details is available.

- G. Unless otherwise noted, at a minimum, the shelters shall meet all of the applicable ANSI/NFPA/TIA standards for communications equipment shelters.

2.1.2 Construction

2.1.2.1 Shelter Base

The existing shelter foundation and floor will be inspected, repaired and upgraded if necessary to support the building and installed generator.

2.1.2.2 Floor

Cement to be remediated as necessary and finished with a maintenance free, slip and oil resistant finish as approved by the Department.

The existing floor will be inspected to insure it is sufficient to support the proposed generator and shall be upgraded as necessary to meet the minimum published specifications of the generator manufacturer.

2.1.2.3 Roof

The Contractor shall be responsible for inspection and repair of roof trusses and decking and replacement of existing metal roof with a Standing Seam Metal Roofing material installed to manufacturer standard/industry practice.

2.1.2.4 Rain Trough

The Contractor shall install a Rain Trough to guide water away from door/front step.

2.1.2.5 Ceiling

To be replaced.

Insulation: R-Value = 27, minimum.

Finish: Maintenance free, fiberglass reinforced plastic laminate or similar.

Interior Height: 8-feet, nominal.

Pitch: none.

Fire Retardant: 1-hour rated, minimum.

2.1.2.6 Walls

To be refurbished

Interior Finish: maintenance free, as approved by the Department.

Exterior Finish: natural stone aggregate, similar in color and texture to the site communications equipment shelter as approved by the Department. Thermo Bond Buildings “buff” exterior panels and accessories or equivalent are acceptable.

Fire retardant: 1-hour rated, minimum.

Bullet Resistance: none.

2.1.2.7 Inter-building electric power service and communications cabling

The contractor shall provide an above ground conduit between the Generator Shelter and the Communications Equipment Shelter.

The conduit shall provide for routing electric power from the equipment shelter to the generator building electric service panel and from the generator to the equipment shelter transfer switch.

An additional above ground conduit shall be provided between the buildings for a 25 pair 22 gauge communications cable.

Both conduits shall be constructed entirely of stainless or galvanized steel. All service runs shall be continuous.

The contractor shall terminate the Communications cable on the termination backboard of both buildings.

All wiring shall be per applicable electrical codes and owner standards.

2.1.2.8 Electric Service

The contractor shall provide electric service to the building.

2.1.2.9 Interior Electrical Service Wiring

The Contractor shall remove all interior electrical components and replace with new. The work includes, but is not limited to: electric service sub panel, electric outlets, lighting fixtures, detectors, switches and timers.

All electrical wiring shall be in conduit and/or raceways, as required.

All conduit, raceways, and outlet or junction boxes shall be exposed and attached to the interior surfaces of the shelter.

All conduit, raceways, fittings, and hardware shall be of galvanized or stainless steel.

Service wiring raceways shall be separate and isolated and from any communications or antenna cable trays.

All service runs shall be continuous

All wiring shall be per applicable electrical codes and owner standards.

2.1.2.10 Surge Protection - Service Entrance

Transient Voltage Surge Suppressor (TVSS)

Liebert Corporation Model Type SS Hybrid or equivalent.

Dry-contact, form-C (NO/NC) closure alarm.

2.1.2.11 Utility Outlets

Quad receptacles.

Rating 20 amp

Wall-mounted, 24-inches above finished floor.

As needed, 4-feet on-center spaced evenly on all walls.

2.1.3 Lighting

2.1.3.1 Interior

Lighting shall be via fluorescent light fixtures appropriate for cold temperature operation (building is unheated).

Fixtures shall be 48-inches in length.

Fixtures shall use dual straight tube bulbs.

Fixtures shall protect bulbs via wire guard or translucent cover.

Fixtures shall be furnished on both sides of the generator set.

As needed to provide a minimum of 150 foot-candles of illumination at floor level.

Interior, wall-mounted, 1-hour timed light switch.

2.1.3.2 Interior - Emergency

Integrated, solid-state design emergency light fixture for each doorway.

Self-contained in single, interior, wall-mountable housing.

Medium to heavy-duty industrial-use rated.

1-hour operation rated, minimum.

10-year operating life rated.

Dual light beams lamps.

Sealed maintenance-free rechargeable battery.

Battery viewport.

Automatic battery charger.

Low battery cutoff.

Voltmeter.

Indicators: 1) On; 2) Charging.

Test Switch, externally accessible.

Dry-contact, form-C (NO/NC) closure alarm.

2.1.3.3 Exterior

Light fixture for each exterior doorway.

Bulb: Halogen, standard screw-base, 150 watt rated, minimum.

Bulb Life: 10,000-hour rated, minimum.

Shatter/tamper resistant lens.

Remote activated by key fob or garage-door-opener type device.

Interior, wall-mounted, 1-hour timed light switch.

2.1.4 Door - Exterior

2.1.4.1 Fabrication

Door: galvanized or stainless steel, welded fabrication.

14-gauge, minimum.

36-inches x 6-feet, 8 inches.

Poly-urethane insulation.

Gasket sealed.

Frame: hi-strength, galvanized or stainless steel, welded.

2.1.4.2 Accessories

Lockset: stainless steel; replaceable cores; keyed the same as the site equipment shelter.

Interior pull handle.

Anti-prying exterior plate, hi-strength, galvanized or stainless steel.

Vandal resistant, non-removable hinge pins.

Hydraulic-damper closer with sliding passage set.

Wind check or chain.

Overdoor exterior drip awning, galvanized or stainless steel, or aluminum.

Intrusion sensor with a dry-contact, form-C (NO/NC) closure alarm.

2.1.5 Air Conditioning System

Not required.

2.1.6 Heating System

Single unit electric with internal thermostat. The unit will be sufficient to provide warmth to service personnel. It is not intended for continuous operation. The unit will be connected to a one hour timed switch that will automatically turn the unit off after one hour.

2.1.7 Building Ventilation System

2.1.7.1 Design

12-inch motorized fan, minimum.

Wall-mounted controls.

Programmable/adjustable start-up cycle timer.

Programmable/adjustable run cycle timer.

Dual, parallel thermostats, manually adjustable.

2.1.7.2 Intake

Mechanically activated louver/damper.

Galvanized or stainless steel, or aluminum weather hood.

Galvanized or stainless steel, or aluminum screen to prevent insect or rodent intrusion.

Filtered.

2.1.7.3 Exhaust

Gravity-type louver/damper.

Galvanized or stainless steel, or aluminum weather hood.

Galvanized or stainless steel, or aluminum screen to prevent insect or rodent intrusion.

2.1.8 Generator Cooling

The room shall be equipped with the necessary intakes, exhausts, ducts, flanges, adapters, and associated hardware to provide adequate cooling of a generator specified in section 3.

All components will meet or exceed the minimum requirements of the generator manufacturer.

If motorized louvers and/or dampers are used they shall be equipped to be controlled by the generator.

2.1.9 Communication Cable Termination Backboard

Size: 4-feet x 4-feet x 3/4 inches.

Location: In proximity to the inter-building communications cabling conduit.

Material: plywood sheet, 1-hour fire retardant rated.

Furnish backboard with 3-inch standoffs.

Painting: gray or black, fire retardant.

2.1.10 Heat/Smoke/CO Detection & Fire Suppression

2.1.10.1 Heat

The shelter shall be equipped with heat detectors, as needed, spaced for maximum coverage.

Detectors shall be equipped with a dry-contact, form-C (NO/NC) closure alarm.

Combination heat, smoke and CO detectors are not acceptable.

2.1.10.2 Smoke

The shelter shall be equipped with smoke detectors spaced for maximum coverage.

Detectors shall be of the photoelectric and ionization type.

Detectors shall be equipped with a dry-contact, form-C (NO/NC) closure alarm.

Combination heat, smoke and CO detectors are not acceptable.

2.1.10.3 Carbon Monoxide (CO)

The shelter shall be equipped with carbon monoxide detectors spaced for maximum coverage.

Detectors shall be equipped with a dry-contact, form-C (NO/NC) closure alarm.

Combination heat, smoke and CO detectors are not acceptable.

2.1.10.4 Suppression

The shelter shall be equipped with one (1) wall-mounted fire extinguisher.

Type: Class ABC all purpose dry chemical.

Size: 10 lbs.

3. Installation

3.1 Delivery & Storage of Materials

- A. The contractor shall be responsible for all aspects of shipment and/or transportation of materials to their destination.
- B. The contractor shall be responsible for coordinating, unloading, inspecting, accepting and storing all material deliveries.
- C. All stored materials shall remain the responsibility of the contractor until final acceptance by the Department.

3.2 General

- A. Refurbishment of the existing building shall include but not be limited to:
 - Inspect and evaluate and certify entire shelter for structural soundness.
 - Upgrade existing floor to as necessary to support the generator.
 - Refurbish, recondition/replace existing roof as approved by the Department.
 - Install generator ventilation louvers in two building walls, Install ducting as required and seal existing 8"X16" wall vent.
 - Remove existing cement generator base
 - Remove existing generator and transfer switch
 - Remove existing electrical wiring
 - Replace building electrical service entrance with sub panel connected to the equipment building entrance panel.
 - Replace inside wiring and install lighting and power outlets to spec.
 - Install building ventilation system.
 - Replace door and door lock.
 - Install R-56 compliant grounding and connect to site ground
 - Replace existing ceiling and install ceiling insulation rated at R-27 with maintenance free, fire retardant materials compatible with generator and as approved by the Department.
 - Refinish inside and outside
 - Smoke CO2 and Heat detectors installed and wired to site alarm system.
 - Outside area lighting.

- B. Prior to installation, the contractor shall coordinate with and receive approval of the Department of all proposed work.
- C. The contractor shall be responsible for:
1. Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
 2. All workmanship shall conform to applicable standards and prevailing practices as approved by the Department.
 3. Delivery of all materials to the site.
 4. Restoring the site to its original pre-installation condition.
 5. All access road improvements and clearing as necessary for delivery as approved by the Department.
 6. All access road repairs after delivery. Road shall be restored to original pre-installation condition as approved by the Department.
 7. All commercial electric utility service necessary for the installation as approved by the Department.
 8. Removing all rubbish and debris associated with all aspects of the installation.
 9. The installation of the shelter and components.
 10. Providing all materials, labor and tools to ensure a complete installation whether or not specified or shown.
 11. Installing the shelter and components in accordance with the professional engineer's design, as applicable and as approved by the department.
 12. Neat and professional workmanship.
 13. Coordination with other trades, as necessary.
 14. Design, Furnish & Install:
 - Shelter Foundation Upgrades as required with the Departments approval.
 - Electrical & Lighting.
 - HVAC Systems.
 - Building Ground System

15. Furnish & Install:

- Shelter accessories.
- Grounding materials and bonding hardware.
- Connection of accessories to the shelter's ground system.
- Connection of shelter to earth ground grid system.

16. All site planning, clearing, preparation and development, as required.

17. All engineering design certification and documentation.

18. Design & Construction

- Prepare all pre-stamped drawings and specifications necessary for the designs and construction, as applicable.
- Department to review and approve pre-stamped drawings and specifications prior to zoning, permitting, and ordering.
- Provide State of Maine PE stamped drawings and specifications to the Department.

19. Utility Services

- All commercial utility service relocations and/or improvements necessary for the installation.

20. Access

- All access road improvements and clearing as necessary for delivery of all materials.
- All access road repairs after the delivery. Road shall be restored to its pre-installation condition.

21. Premises

- To the greatest applicable and practical extent, the contractor shall restore the premises to its pre-installation condition. See SP 656 SEWPCP
- Removing all rubbish and debris associated with site preparation, unpacking of shipping materials, and/or the installation, from the premises.

22. Other work as needed to ensure a complete installation whether or not specified or shown elsewhere in this document.

3.2.1 Shelter

Install all materials in accordance with State of Maine PE stamped drawings and specifications.

Contractor to provide written certification to the Department that shelter was refurbished in accordance with a State of Maine PE stamped drawings and specifications.

3.2.2 Foundation

Refurbish in accordance with State of Maine PE stamped drawings and specifications.

Contractor to provide written certification to the Department that foundation was constructed in accordance with a State of Maine PE stamped drawings and specifications.

3.2.3 Locations & Placement

The shelter will remain in its present location.

3.2.4 Electrical

3.2.4.1 Outlets

Utility wall duplex outlets can be doubled to a single circuit breaker.

All outlets shall be labeled with its associated circuit breaker or labeled with its circuit number.

3.2.4.2 Lighting

All interior and exterior lighting shall be dispersed between 2 circuit breakers, at a minimum.

Interior emergency lighting shall be mounted above each entry door.

3.2.4.3 Interior Wiring

All wiring shall be per applicable electrical codes.

All electrical wiring shall be in conduit and/or raceways, as required.

All conduit, raceways, fittings, and hardware shall be of galvanized or stainless steel.

All conduit, raceways, and outlet or junction boxes shall be exposed and attached to the interior surfaces of the shelter.

Service wiring raceways shall be separate and isolated from any communications or antenna cable trays.

All service wiring runs shall be continuous.

3.2.4.4 Switchgear - Interior Service

Bypass and isolation switchgear, as needed.

Switchgear shall allow for service and testing without disrupting power to critical loads.

3.2.5 Alarms

All dry-contact alarms shall be terminated at a demarcation point inside the shelter.

3.3 Grounding & Surge Protection

3.3.1 General

The contractor shall be responsible for providing all materials and labor for the installation of grounding, and lightning and power surge protection devices in accordance with the manufacturer's recommendations, the Department's standards, or the contractor's practices.

The State has adopted Motorola's "STANDARDS & GUIDELINES FOR COMMUNICATIONS SITES" document, latest edition, to serve as its standard for the grounding of communications structures and equipment. This document is sometimes referred to as the "R56 Manual" and is available from Motorola as hard copy (part # 6881089E50-B) and in CD (part # 9880384V83). Refer to section 5 "specification for a **Radio Communications Site Earth Ground and Lightning Protection System**."

In the event certain aspects of the recommendations, the standards, or the practices are in conflict, then the most stringent shall prevail.

3.3.2 Interior Perimeter Halo

Tinned-bare solid-copper conductor no less than No. 2 AWG. Furnish insulated standoffs as required.

3.3.3 Certification

Contractor shall provide written certification to the Department that grounding was performed in accordance with the State's standards, manufacturer's recommendations, or the contractor's practices as specified in the General section above.

3.3.4 Grounding

A. General

1. Connection to the site's earth ground grid system (EGGS) shall be required.
2. All bonded welds shall be of the exothermal-type.
3. Wire conductors size shall be no less than 2/0 AWG.
4. Wire conductors shall be bare, tinned, solid copper.

B. Shelter

1. Ground the shelter to the EGGS.
2. Conductors shall be weld-bonded to the closest EGGS ground rod.
3. Conductors shall be weld-bonded to the tower leg.

C. Generator

1. Ground generator to the EGGS.
2. Ground exterior fuel tank to the EGGS.
3. Ground automatic transfer switch to the EGGS.

3.4 Inspection & Acceptance

3.4.1 Field Inspection

- A. After installation of all the components furnished under this section, the contractor along with the Department, at its discretion, shall perform a field inspection, to verify that the installation of the components furnished under this contract has been performed and completed in accordance with the following, as applicable.
 1. The professional engineer's design.
 2. The manufacturer's instructions and recommendations.
 3. The Department's specifications.
 4. The Contractor's installation practices and standards as approved by the Department.
- B. The Contractor shall provide all items, instrumentation, materials, equipment, and personnel necessary to conduct the inspection.
- C. Prior to the commencement of this activity, the contractor shall deliver a preliminary field inspection plan to the Department for review and approval.

- D. At the conclusion of this activity, the contractor shall present to the Department written certification that the inspection performed was in accordance with, and that the results of the inspection was in compliance with, the approved field inspection plan.
- E. The Department's signature on the certification shall constitute acceptance by the Department of the inspection.

3.4.2 Final Acceptance

A. General

- 1. After acceptance of all the inspections and all the tests. Conducted under this section, the contractor shall present to the Owner written certification that the activities were performed in accordance with, and that the results were in compliance with, the approved plans.
- 2. This certification shall include the original signed copy of the individual inspection and test certifications previously accepted by the Owner.
- 3. Final acceptance will be deemed final when the Owner's signature appears on this certification.

B. Post-Final Acceptance Documentation

- 1. After final system acceptance, the contractor shall deliver to the Owner, in both printed and electronic form, the following documents, on a per-site basis, in one consolidated package.
 - a. Copies of all signed certifications.
 - b. Copies of all approved inspection and test plans.

3.5 Warranty

- A. The Contractor shall include a copy of the manufacturer's standard commercial warranty for all furnished shelter and associated components in their response (excluding generator which is covered in the generator section).
- B. The Contractor shall warrant for one year workmanship and all items provided by the Contractor.
Training
 - A. The contractor shall conduct a single, on-site, hands-on training session for selected Department personnel.
 - B. The training location and schedule shall be by mutual agreement between the Department and contractor.

- C. The session shall be conducted after final acceptance.
- D. The contents of the session shall include familiarizing the Department with special structure attributes, recommended inspection procedures, recommended maintenance procedures, ground connections, etc.
- E. Costs associated with the training defined in this section shall be clearly and individually identified in the pricing section of the response.

3.6 Documentation

3.6.1 With the Contractor's Bid

- A. The Contractor's bid shall include a catalog or specification sheet for this site as described in Section 2.1.

3.6.2 Post-Contract Award

A. General

1. Thorough documentation of all major shelter components, and their respective installations, will be required from the Contractor. This documentation will be comprised of both factory-provided and field-generated documents and/or manuals.
2. Every document exchanged between Department and contractor shall be in paper and/or electronic form, as mutually agreed. Electronic documents shall use the latest version of the application software or by a mutually agreed version. The following applications are preferred:
 - a. Text - Microsoft Word
 - b. Spreadsheets - Microsoft Excel
 - c. Databases - Microsoft Access
 - d. Scanned documents - Adobe Acrobat
 - e. Simple Diagrams & Charts - Microsoft Visio or Excel
 - f. Large Drawings – mutually agreed software program
 - g. Schedules - Microsoft Project
3. The Department shall approve the contents and organization of all field-generated documents supplied by the contractor.
4. Costs associated with documentation shall be clearly and individually identified in the pricing section of the response.

B. Factory Provided – Technical & Service Manuals

1. All factory-provided documentation shall be available on CD media.
2. Manuals shall be provided for the following components on a per-site basis:
 - a. All available manufacture's manuals for the building and major components.
3. The following sets of manuals are to be furnished prior to project closeout on a per-site basis:
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets

C. Field Generated - As-Built

1. All field-generated documentation shall be prepared in a format suitable for storage in loose-leaf 3-ring binders. This documentation shall also be supplied on CD media.
2. All field-generated drawings shall be prepared using a mutually agreed software program.
3. The following documentation shall be provided on a per-site basis. Specification or catalog cut sheets for each of the major items illustrated in the documents shall be included with the submittals to the Department.
 - a. Shelter & foundation – top view diagram.
 - b. Foundation – side elevation view diagram illustrating both above and below grade portions.
 - c. Shelter – 4-sided elevation view diagram.
 - d. Shelter – interior layout w/list of materials.
 - e. A site plan illustrating the installed location of the components supplied under this contract relative to other existing major site components (e.g., towers, fences, generators, etc.). Plan shall be to scale; and the new and existing components shall be contrasted by the use of a gray scale.
 - f. The site plan shall identify the interconnection between the shelter or accessories to the site electrical ground grid system.
4. The following sets of field-generated documentation are to be furnished prior to project closeout:
 - a. Five (5) complete paper-form sets
 - b. Five (5) complete electronic-form sets

D. Costs associated with the post-contract award documentation defined in this section shall be clearly and individually identified in the pricing section of the response.

4. MEASUREMENT AND PAYMENT

4.1 Method of measurement.

Method of Measurement: The following items will be paid for by the lump sum:

ITEM #	DESCRIPTION
643.99	Communications Equipment Shelter, Repaired, Reconditioned, Refurbished, Set
643.991	Communications Equipment Shelter, Inspection and Acceptance, Field Testing
643.992	Communications Equipment Shelter, Inspection and Acceptance, Final Acceptance
643.993	Communications Equipment Shelter, Inspection and Acceptance, Training

4.2 Basis of payment.

The accepted Communications Equipment Shelter items will be paid for at the contract lump sum prices which will include payment for all respective items as called for in the contract, designed, delivered, stored, placed, constructed, installed, tested, documented, all clearing, demolition, remediation, preparation, materials, labor, equipment, training and incidentals necessary to complete the work.

Payment will be made under:

ITEM #	DESCRIPTION	UNIT
643.99	Communications Equipment Shelter, Repaired, Reconditioned, Refurbished , Set	LS
643.991	Communications Equipment Shelter, Inspection and Acceptance, Field Testing	LS
643.992	Communications Equipment Shelter, Inspection and Acceptance, Final Acceptance	LS
643.993	Communications Equipment Shelter, Inspection and Acceptance, Training	LS

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