CONTRACT AND SPECIFICATIONS

FOR

HSI BOX HANGAR

CITY OF HASTINGS

HASTINGS, NEBRASKA

Contract No. CH 2026-08

Sealed Proposals Will Be Opened Promptly At
4:00 PM, Wednesday, March 25, 2026

Bid Submitted By: _____

HASTINGS
Nebraska

THIS BID DOCUMENT MUST BE SUBMITTED WITH BID

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CONTRACT AND SPECIFICATIONS
FOR
HSI BOX HANGAR
FOR
CITY OF HASTINGS
HASTINGS, NEBRASKA

Contract No. CH 2026-08

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II. SUPPLEMENTAL SPECIFICATIONS

III. TECHNICAL SPECIFICATIONS

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ADVERTISEMENT FOR BIDS

The City of Hastings, Nebraska, will receive bids for: **HSI Box Hangar CH 2026-08** until 4:00 p.m. at the City of Hastings, 1228 N Denver Ave., Hastings, Nebraska, on **Wednesday, March 25, 2026,** at which time and place all bids will be publicly opened and read aloud. **Brief description of project:** Construction of a new 75' x 60' pre-engineered metal box hangar including: concrete pavement removal, earthwork, grading, concrete paving, sidewalk and curb paving, fence removal and installation, utility hookups and stubouts, and seeding at the Hastings Municipal Airport**.** If you plan on bidding and are not already on our approved bidders list for this project, you are REQUIRED to fill out the Plan Holders Submittal Form that is located on the City website: https://www.cityofhastings.org/bids/.

The Contract Documents, including plans and specifications, are on file at the City of Hastings Offices, 1228 N Denver Avenue, Hastings, Nebraska 68901. Copies of the plans and specifications in electronic (PDF) format may be obtained by visiting the City of Hastings Website: www.cityofhastings.org/bids. A paper copy is available for $75.00, plus sales tax ($5.25), plus shipping.

Each bid shall be accompanied by a certified check, drawn on a solvent bank in the State of Nebraska, or a bid bond in an amount of not less than five percent (5%) of the total bid of all contract construction costs, made payable to the City Treasurer of the City of Hastings, Nebraska, as security that the bidder to whom the contract may be awarded will enter into a contract to build all the improvements in accordance with this notice and give bond in the sum hereinafter provided for the construction of improvements.

No bid shall be withdrawn after opening of bids without the consent of the City of Hastings, Nebraska, for a period of sixty (60) days after scheduled time of closing bids.

Time is of the essence in this contract. In evaluating bid(s) received, the City will consider the timelines of completion of prior construction contracts, existing workload of bidders and available manpower that bidder commits to the project.

The successful bidder will be required to furnish a Performance and Payment Bond in the sum of the full amount of the Contract within ten (10) days of the date of award. No additional time will be allowed the Contractor for providing the Performance and Payment Bond.

DATED AT HASTINGS, NEBRASKA, this 20th day of February 2026.

_____

Tyler Ficken, City Clerk

For City Clerk: Publish and Attach two (2) Proofs of Publication:

February 26, 2026
March 5, 2026

INSTRUCTIONS TO BIDDERS

All proposal information, including any unit price fill in sheets or other required information, shall be submitted on the proposal forms hereto attached. Copies of addenda, if any, shall be signed and attached. City of Hastings does NOT accept faxed or emailed bid returns.

Bidders shall inform themselves of all relevant matters, and, if awarded the contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder might not have fully informed himself, prior to the bidding.

The Bidder bidding on the Specifications herein, who has exceptions to those called for in the Specifications, must so state in the space provided below and/or attach a letter explaining in detail the exceptions taken to those required in the Specifications. This letter of explanation shall become a part of the bid and shall be attached hereto. Failure by the Bidder to outline his exceptions will require the successful Bidder to comply with these Specifications.

EXCEPTIONS TO SPECIFICATIONS:

_____

_____

_____

_____

_____

_____

The City will not assume obligations resulting from losses or damages until acceptance of the equipment.

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the Specifications or other proposed contract documents, he may submit to Purchaser a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addendum duly issued or delivered to each person receiving a set of such documents. The Purchaser will not be responsible for any other explanation or interpretation of the proposed documents.

All addendums must be signed and attached to bid documents.

THIS BID DOCUMENT MUST BE SUBMITTED WITH BID

IF YOU HAVE QUESTIONS OR NEED HELP ON THESE SPECIFICATIONS

CONTRACT NO: CH 2026-08

HSI BOX HANGAR

PLEASE CONTACT ANY OF THE FOLLOWING:

PROJECT QUESTIONS

Matt Kuhr
Airport Manager
City of Hastings
402-984-5223
Email: bidquestions@cityofhastings.org

Lee Vrooman
Director of Engineering
City of Hastings
1228 N Denver Ave
Hastings NE 68901
402-462-3657
Email: bidquestions@cityofhastings.org

GENERAL QUESTIONS OR REQUESTS

Renae Griess
Administrative Assistant – Engineering Dept, City of Hastings
Ph# 402-462-3665
Email: bidquestions@cityofhastings.org

HASTINGS UTILITIES

IMPORTANT SUBMITTAL INSTRUCTIONS

ON HOW TO SUBMIT YOUR BID
FOR
CITY OF HASTINGS
HSI BOX HANGAR
Contract No. CH 2026-08

Your bid MUST be returned by means of hand delivery, USPS, Fed-X, UPS, or other carrier. City of Hastings DOES NOT ACCEPT bids that are faxed or emailed.

ALL the following documents are TO BE SUBMITTED in your bid packet, whether you received your bid invitation electronically, on a CD, DVD, or a HARD COPY by means of hand delivery or the mail carrier service.

More than one bid can be submitted by a supplier for alternate designs or technologies. Each bid shall be supplied in a separate envelope and contain the following documents.

1. **Cover sheet with your company's name filled in**
2. **ALL addendums received – must be acknowledged and signed**
3. **Bid Bond**
4. **If Exceptions, Instructions to Bidders with any exceptions listed**
5. **Proposal Page(s)**

FAILURE TO RETURN REQUIRED BID DOCUMENTS

COULD SUBJECT YOUR BID PROPOSAL TO BE REJECTED

IMPORTANT MAILING (OR HAND DELIVERY) INSTRUCTIONS

Please address your return envelope as shown in the example below. All bids must be sealed in a properly marked envelope.

To hand deliver please drop off between the hours of 8am – noon and 1pm – 5pm Monday-Friday.

Your Return Address

City of Hastings
Attn: Renae Griess
1228 N Denver Avenue
Hastings, NE 68901

This Information MUST BE typed or written in the lower left hand corner of return envelope
OR SIMPLY CUT OUT AND TAPE ON YOUR RETURN ENVELOPE

✂ ✂ ✂ ✂

BID DOCUMENTS ENCLOSED
ATTN: Renae Griess, Administrative Assistant
Contract No: CH 2026-08
City of Hastings – HSI Box Hangar
Bid Opens: Wednesday, March 25, 2026 @ 4:00 pm

If returning Fed-X or similar carrier, please enclose the bid in an "inner" envelope which is sealed. Please make sure BOTH envelopes are properly marked on the OUTSIDE OF THE ENVELOPE as shown in the example above.

One bid per envelope. Bid submittal via email is not allowed. Bids must be checked in to the City of Hastings prior to 4:00 pm deadline.

PROPOSAL FOR

HSI BOX HANGAR

Contract No. CH 2026-08

TO: City of Hastings
1228 N. Denver Ave
Hastings, NE 68901

Bid Opening: March 25, 2026 (Wednesday)
SEALED BIDS MUST BE RECEIVED BY 4:00 P.M. AND WILL BE OPENED PROMPTLY AT THAT TIME

We, the undersigned, being familiar with all parts of these documents, being Notice to Bidders, Bid Proposal Price Sheets, Contract Document Forms, Plans and Specifications, Affidavit, and all other parts of this document, do herein submit our proposal to **Construct a new 75' x 60' pre-engineered metal box hangar at the Hastings Municipal Airport,** for the following price. **THIS PROJECT IS SALES TAX EXEMPT.**

Item #	Qty		Description	Total
1	350	SY	6-Inch Concrete Pavement Class 47B-3500	
2	450	SY	6-Inch Crushed Rock Base Course	
3	50	SY	4-Inch Sidewalk Concrete Pavement Class 47B-3500	
4	75	LF	6-Inch Combination Concrete Class 47B-3500 Curb and Gutter	
5	1	LS	Construction Safety and Security	
6	1	LS	70' x 60' Clear Span Box Hangar	
7	1	LS	Temporary Erosion Control	
8	1	LS	Mobilization	
9	730	SY	Concrete Pavement Removal	
10	80	LF	Waterline Removal	
11	1	LS	Water Hydrant Removal	
12	50	CY	Unclassified Excavation	
13	650	CY	Unsuitable Excavation	
14	200	CY	Subgrade Preparation	
15	20	LF	Chain-Link Fence	
16	80	LF	Fence Removal	
17	60	LF	Concrete Erosion Control Strip	
18	385	SY	4-Inch Topsoil (Obtained on Site or Removed from Stockpile)	
TOTAL				
_____				**$** _____
In Words				

THIS BID DOCUMENT MUST BE SUBMITTED WITH BID

PROPOSAL FOR
HSI BOX HANGAR
Contract No. CH 2026-08

Contractor Proposed Completion Date: _____

Exceptions: No ☐ Yes ☐ (If yes, list on ***"Instructions to Bidders"*** page)

Any modification of bid proposal will be considered non-conformance of the bid. All exceptions to the proposal shall be noted as an exception to the bid.

City of Hastings may at its own discretion delete any project area and / or component prior to award of contract.

In submitting this proposal, it is further understood that the City of Hastings reserves the right to reject any or all proposals and may waive any informalities and may accept the proposal which best suits its needs. It is further understood that this proposal may not be withdrawn for a period of sixty days (60) days after bids are opened.

All proposals shall have original signatures. Electronic time-stamped signatures will be acceptable. Photocopied or printed versions of bid bonds will be accepted without original signatures, however a hardcopy with original signatures must be received by City of Hastings within 5 business days.

OFFICIAL NAME & ADDRESS

Firm Name	Signature
Address	Typed or Printed Name
City, State, Zip	Title
Phone No.	Date
Fax No.	Email Address

ALL BIDS MUST BE CHECKED IN TO THE CITY OF HASTINGS PRIOR TO 4:00 PM DEADLINE

THIS BID DOCUMENT MUST BE SUBMITTED WITH BID

AGREEMENT

THIS AGREEMENT, made and entered into this day of 2026, by and between the City of Hastings, Party of the First Part, hereinafter called the "Purchaser" or "City", and a of (town) in the State of , Party of the Second Part, hereinafter called the "Contractor".

WITNESSETH: THAT,

WHEREAS: The Purchaser has caused the necessary contract documents to be prepared for defining material, equipment, and/or labor to be supplied to the City of Hastings and delivered complete as specified in the accompanying contract documents.

WHEREAS: The Purchaser has advertised for bids from Contractors, has received said bids, analyzed same and duly awarded a contract to the "Contractor", "Party of the Second Part", for material, equipment, and/or labor as hereinafter set forth and as stated more in detail in the Proposal and related contract documents to wit; Notice to Bidders, Instructions to Bidders, Specifications; all of which documents are attached hereto and made a part of this Contract.

NOW, THEREFORE: It is hereby agreed that for the sum of . ($)

to be paid by the Purchaser, within Thirty (30) days after the acceptance of material, equipment, and/or labor by the Purchaser, to the Contractor, the Contractor agrees to furnish all materials, equipment, and/or labor as required by the accompanying specifications, and the aforesaid contract documents, for **HSI Box Hangar CH 2026-08**

All materials, equipment, and/or labor shall be in accordance with the accompanying contract documents and specifications which are as much a part of this Agreement as if repeated verbatim herein.

It is further agreed that the Contractor will start work promptly, furnish the necessary drawings promptly and complete the work in the number of days set forth in the Proposal.

AGREEMENT

IN WITNESS WHEREOF: The Parties of the First and Second Parts have hereto set their hands and seals on the day and year above written.

CITY OF HASTINGS
Party of the First Part

By: _____

Date: _____

ATTEST:

_____
City Clerk

CONTRACTOR
Party of the Second Part

SEAL

_____

By: _____

Title: _____

Date: _____

APPROVED TO FORM:

_____
City Attorney

Note: If executed by one other than President, Partner or the individual Owner, a Power-of-Attorney authorizing execution should accompany this Contract.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned, _____,
as principal, and _____,
a corporation organized and existing under the laws of the State of _____,
and duly authorized to transact business in the State of Nebraska, as surety are held and firmly bound unto the CITY OF HASTINGS, NEBRASKA, a municipal corporation organized and existing under the laws of the State of Nebraska, hereinafter referred to as CITY, in the penal sum of _____ Dollars ($_____),
lawful money of the United States, for the payment of which will and truly be made, we the said principal and the said surety do hereby bind ourselves, our heirs, executors, administrators and assigns, jointly and severally, by these presents as follows:

The condition of this obligation is such that, whereas the principal, by an instrument in writing attached hereto and bearing the date of _____, 20____, has agreed with the CITY to do all work necessary and to furnish all labor, materials, supplies, tools and equipment to

_____

_____

_____

as specified thereby and in the specifications, proposals and contract forming the Contract Documents attached thereto and made a part hereof:

NOW THEREFORE, if the principal shall well and truly in good, sufficient and in a workmanlike manner, and to the satisfaction of the CITY perform and complete the work required, and shall defend, indemnify and save harmless the CITY against all damages, claims, demands, expenses and charges of every kind (including claims of patent infringement) arising from any act, omission or neglect of said principal, his agents, servants or employees, with relation to said work, and shall pay all costs, charges, rentals and expenses for labor, materials, supplies and equipment and deliver the said improvement to the CITY completed and ready for operation and free from all encumbrances or claims for labor, materials or otherwise, and shall pay all other expenses lawfully chargeable to the CITY, and this bond shall also be for the use and benefit of all persons who may perform any work or labor or furnish any material in the execution of said Contract and may be

sued on thereby in the name of any such party claiming the benefit hereof, then this obligation shall be void, otherwise the same shall remain in full force and effect. This obligation shall be in full force and effect for the full guarantee period provided in the specifications contained herein.

PROVIDED FURTHER, that said surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any change, extension of time, alteration or addition to terms of the Contract, to the work or to the specifications.

PROVIDED FURTHER, that if the principal of his, their or its subcontractor or subcontractors fail to duly pay for any labor, materials team, hire sustenance, provisions, provender or any other supplies or materials used or consumed by such contractor of his, their or its subcontractors in performance of the work contracted to be done, the surety will pay the same in any amount not exceeding the sum specified in the bond together with interest as provided by law.

IT WITNESS WHEREOF, said principal and surety have hereunto set their hands and seals at _____ this _____ day of _____, 20____,

This Bond is executed in triplicate counterparts.

_____
Principal

(SEAL)

_____
Street Address

_____
Witness

_____
City, State, Zip

_____
Name of Person Executing

ATTEST:

_____
Surety

_____ By: _____
_____ Title: _____

A F F I D A V I T

State of Nebraska)
) ss.
County of Adams)

I _____ , _____
Name Title

of _____
Firm Name

do hereby certify that all subcontractors, vendors, persons or firms who have furnished labor or material for the _____

_____

_____

have been fully paid and that all taxes have been paid.

_____
Signature

_____
Date

Subscribed and sworn to me this _____ day of _____, 20_____

_____
Notary Public

My commission expires _____.

A signed and notarized copy of affidavit must be in City of Hastings file before final payment may be made.

Copy of forms will be supplied by City of Hastings prior to final payment.

RESET FORM PRINT FORM

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Good Life. Great Service.
DEPARTMENT OF REVENUE

Nebraska Resale or Exempt Sale Certificate
for Sales Tax Exemption

FORM 13

Name and Mailing Address of Purchaser	Name and Mailing Address of Seller
Name	Name
Legal Name	
Street or Other Mailing Address	Street or Other Mailing Address
City State Zip Code	City State Zip Code

Check Type of Certificate

☐ Single Purchase If single purchase is checked, enter the related invoice or purchase order number _____.

☐ Blanket If blanket is checked, this certificate is valid until revoked in writing by the purchaser.

I hereby certify that the purchase, lease, or rental by the above purchaser is exempt from the Nebraska sales tax for the following reason:

Check One ☐ Purchase for Resale (Complete Section A.) ☐ Exempt Purchase (Complete Section B.) ☐ Contractor (Complete Section C.)

Section A—Nebraska Resale Certificate

Description of Property or Service Purchased

I hereby certify that the purchase, lease, or rental of _____ from the seller listed above is exempt from the Nebraska sales tax as a purchase for resale, rental, or lease in the normal course of our business. The property or service will be resold either in the form or condition in which it was purchased, or as an ingredient or component part of other property or service to be resold.

I further certify that we are engaged in business as a: ☐ Wholesaler ☐ Retailer ☐ Manufacturer ☐ Lessor

Description of Product Sold, Leased, or Rented

of _____

My Nebraska Sales Tax ID Number is 01-_____.

If none, state the reason _____,

or Foreign State Sales Tax Number_____ State _____.

Section B—Nebraska Exempt Sale Certificate

The basis for this exemption is exemption category _____ (See the list of Exemption Categories and corresponding numbers on reverse side).

If exemption category 2 or 5 is claimed, enter the following information:

Description of Property or Service Purchased _____ Intended Use of Property or Service Purchased _____

If exemption category 3 or 4 is claimed, enter your Nebraska Certificate of Exemption State ID number. 05-_____

Do **not** enter your Federal Employer ID Number.

If exemption category 6 is claimed, the seller must enter the following information and sign this form below:

Description of Items Sold	Date of Seller's Original Purchase	Was tax paid when purchased by seller? ☐ Yes ☐ No	Was item depreciable? ☐ Yes ☐ No

Section C—For Contractors Only

1. Purchase of building materials or fixtures.

☐ As an Option 1 or Option 3 contractor, I hereby certify that the purchase of building materials and fixtures from the seller listed above are exempt from Nebraska sales tax. My Nebraska Sales or Use Tax ID Number is: _____.

2. Purchases made by an Option 2 contractor under a Purchasing Agent Appointment on behalf of_____ (exempt entity) _____.

☐ As an Option 2 contractor, I hereby certify that the purchase of building materials and fixtures from the seller listed above is exempt from Nebraska sales tax pursuant to the **attached** Purchasing Agent Appointment and Delegation of Authority for Sales and Use Tax, Form 17.

Any purchaser, agent, or other person who completes this certificate for any purchase which is not for resale, lease, or rental in the regular course of the purchaser's business, or is not otherwise exempted from sales and use taxes is subject to a penalty of $100 or ten times the tax, whichever amount is larger, for each instance of presentation and misuse. With regard to a blanket certificate, this penalty applies to each purchase made during the period the blanket certificate is in effect. Under penalties of law, I declare that I am authorized to sign this certificate, and to the best of my knowledge and belief, it is correct and complete.

sign here ▶ _____ Authorized Signature _____ Title _____ Date

_____ Authorized Signature Name (please print)

Do not send this certificate to the Nebraska Department of Revenue. Keep it as part of your records.
Sellers cannot accept incomplete certificates.

The Department is committed to the fair administration of the Nebraska tax laws. It is unlawful to claim an exemption for purchases of property or services that are subject to tax. Sellers are encouraged to notify the Department of any unlawful use of this form.

revenue.nebraska.gov, 800-742-7474 (NE and IA), 402-471-5729

6-134-1970 Rev. 3-2018
Supersedes 6-134-1970 Rev. 10-2014

Instructions

Who May Issue a Resale Certificate. Purchasers are to give the seller a properly completed Form 13, Section A, when making purchases of property or taxable services that will subsequently be resold in the purchaser's normal course of business. The property or services must be resold in the same form or condition as when purchased, or as an ingredient or component part of other property that will be resold.

Who May Issue an Exempt Sale Certificate. Form 13, Section B, may be completed and issued by governmental units or organizations that are exempt from paying Nebraska sales and use taxes. See this list in the Nebraska Sales Tax Exemptions Chart. Most nonprofit organizations are **not** exempt from paying sales and use tax. Enter the appropriate number from "Exemption Categories" (listed below) that properly reflects the basis for your exemption.

For additional information about proper issuance and use of this certificate, please review Reg-1-013, Sale for Resale – Resale Certificate, and Reg-1-014, Exempt Sale Certificate.

Contractors. Contractors complete Form 13, Section C, part 1 or part 2 based on the option elected on the Contractor Registration Database.

To make tax-exempt purchases of building materials and fixtures, Option 1 or Option 3 contractors must complete Form 13, Section C, Part 1. To make tax-exempt purchases of building materials and fixtures pursuant to a construction project for an exempt governmental unit or an exempt nonprofit organization, Option 2 contractors must complete Form 13, Section C, Part 2. The contractor must also attach a copy of a properly completed Purchasing Agent Appointment and Delegation of Authority for Sales and Use Tax, Form 17, to the Form 13, and both documents must be given to the supplier when purchasing building materials. See the contractor information guides and Reg-1-017, Contractors, for additional information. Also, see the Important Note under "Exemption Categories" number 3.

When and Where to Issue. The Form 13 must be given to the seller at the time of the purchase to document why sales tax does not apply to the purchase. The Form 13 must be kept with the seller's records for audit purposes.

Sales Tax Number. A purchaser who is engaged in business as a wholesaler or manufacturer is not required to provide an ID number when completing Section A. Out-of-state purchasers may provide their home state sales tax number. Section B does not require a Nebraska ID number when exemption category 1, 2, or 5 is indicated.

Fully Completed Resale or Exempt Sale Certificate. A fully completed resale or exempt sale certificate is proof for the retailer that the sale was for resale or is exempt. For a resale certificate to be fully completed, it must include: (1) identification of the purchaser and seller, type of business engaged in by the purchaser; (2) sales tax permit number; (3) signature of an authorized person; and (4) the date of issuance.

For an exempt sale certificate to be fully completed, it must include: (1) identification of purchaser and seller; (2) a statement that the certificate is for a single purchase or is a blanket certificate covering future sales; (3) a statement of the basis for exemption, including the type of activity engaged in by the purchaser; (4) signature of an authorized person; and (5) the date of issuance.

Penalties. Any purchaser who gives a Form 13 to a seller for any purchase which is other than for resale, lease, or rental in the **normal** course of the purchaser's business, or is not otherwise exempted from sales and use tax under the Nebraska Revenue Act, is subject to a penalty of $100 or ten times the tax, whichever is greater, for each instance of presentation and misuse. In addition, any purchaser, or their agent, who fraudulently signs a Form 13 may be found guilty of a Class IV misdemeanor.

Exemption Categories

(Insert appropriate number from the list below in Section B)

1. Governmental units, identified in Reg-1-072, United States Government and Federal Corporations; and Reg-1-093, Governmental Units. Governmental units are not assigned exemption numbers.

   Sales to the U.S. government, its agencies, instrumentalities, and corporations wholly owned by the U.S. government are exempt from sales tax. However, sales to institutions chartered or created under federal authority, but which are not directly operated and controlled by the U.S. government for the benefit of the public, generally are taxable.

   Purchases by governmental units that are **not** exempt from Nebraska sales and use taxes include, but are not limited to: governmental units of other states; sanitary and improvement districts; rural water districts; railroad transportation safety districts; and county historical societies.

2. Purchases when the intended use renders it exempt. See Nebraska Sales Tax Exemption Chart.

3. Purchases made by organizations that have been issued a Nebraska Exempt Organization Certificate of Exemption (Certificate of Exemption). Reg-1-090, Nonprofit Organizations; Reg-1-091, Religious Organizations; and Reg-1-092, Educational Institutions, identify these organizations. These organizations are issued a Certificate of Exemption with a state ID number which must be entered in Section B of Form 13.

   Important Note: Nonprofit educational institutions must be accredited regionally or nationally and have their primary campus in Nebraska to be exempt from sales and use tax. Also nonprofit organizations providing any of the types of health care or services that qualify to be exempt must be licensed or certified by the Nebraska Department of Health and Human Services (DHHS) to be exempt from sales and use taxes. There is no sales and use tax exemption prior to these entities being accredited, licensed, or certified. They CANNOT issue either a Resale or Exempt Sale Certificate, Form 13, or a Purchasing Agent Appointment, Form 17, to any retailer or contractor relating to purchases of building materials for construction or repair projects performed prior to being accredited, licensed, or certified. After an entity becomes accredited, licensed, or certified upon completion of the construction project, it may submit a Form 4.

   Nonprofit **health care organizations** that hold a Certificate of Exemption are exempt for purchases for use at their facility, or portion of the facility, covered by the license issued under the Nebraska Health Care Facility Licensure Act. Only specific types of health care facilities and activities are exempt. Purchases of items for use at facilities that are not covered under the license, or for any other activities that are not specifically exempt, are taxable. The exemption is not for the entire organization that offers different levels of health care or other activities, but is limited to the specific type of health care that is exempt. Purchases for non-exempt types of health care are taxable.

4. Purchases of motor vehicles, trailers, semitrailers watercraft, and aircraft used predominately as common or contract carrier vehicles; accessories that physically become part of the common or contract carrier vehicle; and repair and replacement parts for these vehicles. The exemption ID number must be entered in Section B of the Form 13. An individual or business that has been issued a common or contract carrier certificate of exemption may only use it to purchase those items described above prior to the expiration date on the certificate. The certificate of exemption expires every 5 years. (See Nebraska Common or Contract Carrier Information Guide).

5. Purchases of manufacturing machinery and equipment made by a person engaged in the business of manufacturing, including repair and replacement parts or accessories, for use in manufacturing. (See Reg-1-107, Manufacturing Machinery and Equipment Exemption).

6. Occasional sales of used business or farm machinery or equipment productively used by the seller as a depreciable capital asset for more than one year in his or her business. The seller must have previously paid tax on the item being sold. The seller must complete, sign, and give the Exempt Sale Certificate to the purchaser. (See Reg-1-022, Occasional Sales). The Form 13 must be kept with the purchaser's records for audit purposes.

RESET PRINT

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DEPARTMENT OF REVENUE

Purchasing Agent Appointment
and Delegation of Authority for Sales and Use Tax

FORM
17

Section A – Purchasing Agent Appointment

Name and Address of Contractor	Name and Address of Exempt Governmental Unit or Exempt Organization
Name	Name
Street or Other Mailing Address	Street or Other Mailing Address
City State Zip Code	City State Zip Code

Name and Location of Project	Appointment Information
Name	Effective Date (See instructions)
Street Address	Expiration Date
City State Zip Code	Nebraska Exemption Number (Exempt Organizations Only)

Provide the contract name, number, and a description of the project.

The undersigned governmental unit or exempt organization appoints the above-named contractor and the contractor's delegated subcontractors as its agent to purchase and pay for building materials that will be annexed to real estate by them into the tax exempt construction project identified above.

sign here ▶ Authorized Signature of Exempt Governmental Unit or Exempt Organization | Title | Date

Section B — Delegation of Contractor's Authority
A contractor can delegate its authority to its subcontractor.

Name and Address of Subcontractor	Delegation Information for the Project Identified in Section A
Name	Effective Date
Street or Other Mailing Address	Expiration Date
City State Zip Code	Portion of Project

The undersigned contractor hereby delegates authority to the above-named subcontractor to act as the purchasing agent of the named governmental unit or exempt nonprofit organization.

sign here ▶ Signature of Contractor or Authorized Representative | Title | Date

Name and Address of Subcontractor	Delegation Information for the Project Identified in Section A
Name	Effective Date
Street or Other Mailing Address	Expiration Date
City State Zip Code	Portion of Project

The undersigned contractor hereby delegates authority to the above-named subcontractor to act as the purchasing agent of the named governmental unit or exempt nonprofit organization.

sign here ▶ Signature of Subcontractor or Authorized Representative | Title | Date

Name and Address of Subcontractor	Delegation Information for the Project Identified in Section A
Name	Effective Date
Street or Other Mailing Address	Expiration Date
City State Zip Code	Portion of Project

The undersigned contractor hereby delegates authority to the above-named subcontractor to act as the purchasing agent of the named governmental unit or exempt nonprofit organization.

sign here ▶ Signature of Subcontractor or Authorized Representative | Title | Date

SECTION 1 GENERAL CONDITIONS

SECTION 1-1 - DEFINITIONS OF WORDS AND TERMS

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

1.101 Advertisement. The advertisement for work or materials on which bids are to be received.

1.102 Award. The decision of the City to accept the proposal of the lowest responsible bidder for the work, subject to the execution and approval of a satisfactory contract thereof and bond to secure the performance thereof, and to such other conditions as may be specified or otherwise required by law.

1.103 Bid Bond. Insures the owner that the successful bidder will undertake the contract under the terms of the proposal and provide bond(s) as specified in the bidding documents.

1.104 Bidder. Any individual, firm, or corporation formally submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

1.105 Calendar Day. Every day shown on the calendar, including weekends and holidays.

1.106 Change Order. A written order to the Contractor, signed by the Engineer, ordering a change in the work from that originally shown in the plans and specifications.

1.107 City. The word "City" as used in these specifications refers to City of Hastings, Nebraska, Utilities Department.

1.108 Contract. The written agreement executed between the City and the Contractor, covering the performance of the work and the furnishing of labor and materials, by which the Contractor is bound to perform the work and furnish the labor and materials, and by which the City is obligated to compensate him therefore at the mutually established and accepted rate or price.

The contract shall include the "Notice to Bidders", these specifications, the Contractor's Bond, the general and detailed plans, the Proposal, Special Provisions, and Supplemental Agreements.

1.109 Contract Item. An item of work specifically described and for which a price, either unit or lump sum, is provided. It includes the performance of all work and the furnishing of all labor, equipment, and materials described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specification or special provision of the contract.

1.110 Contract Period. The period from the date specified in the contract for the commencement of work to the date specified for its completion, both dates inclusive.

1.111 Contractor. The party of the second part to the contract; the individual, firm, or corporation undertaking the execution of the work under the terms of the contract and acting directly or through his, their, or its agents or authorized employees.

1.112 Easement (Right-of-Way). A right acquired by public authority to use or control property for a designated purpose.

1.113 Engineer. The Director of Engineering, acting either directly or through an assistant or other representative duly authorized by the Director of Engineering, such assistant or representative acting within the scope of the particular duties assigned him, or of the authority given him.

1.114 Extra Work. Work performed by the Contractor in order to complete the contract in an acceptable manner but for which there is no basis of payment provided in the contract.

1.115 Inspector. An authorized representative of the Engineer assigned to make detailed inspection of any or all portions of the work performed and materials furnished by the Contractor.

1.116 Laboratory. The testing laboratory of the City or any other testing laboratory which may be designated by the Engineer.

1.117 Maintenance Bond. Insures the owner of a completed construction project for a specified time against defects and faults in materials, workmanship, and design.

1.118 Notice to Bidders. The provisions, requirements, and instructions pertaining to the work to be awarded, manner and time of submitting proposals, quantities of the major items or work required, as prepared for the information of bidders.

1.119 Performance Bond. The approved form of security, executed by the Contractor and his surety or sureties, guaranteeing complete execution of the contract and all supplemental agreements pertaining thereto and the payment of all legal debts pertaining to the construction of the project.

1.120 Plans. The official plans, profiles, working drawings, and supplemental drawings, or exact reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications.

1.121 Project. The specific section of the street together with all appurtenances and construction to be performed thereon under the contract.

1.122 Proposal. The offer of the bidder, submitted on the prescribed proposal form, to perform the work and to furnish the labor and materials at the prices quoted by the bidder.

1.123 Proposal Form. The approved form on which the City requires formal bids be prepared and submitted.

1.124 Proposal Guaranty. The security furnished by the bidder with his proposal for a project, as a guaranty that he will enter into a contract for the work if his proposal is accepted.

1.125 Right-of-Way. The land area which is reserved or secured by the City for constructing the work or for obtaining material therefore.

1.126 Special Provisions. Special directions, provisions or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications. See Section II Special Provisions.

1.127 Specifications. The general term comprising all the directions, provisions, and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

1.128 Subcontractor. Any individual, firm, or corporation to whom the Contractor, with the written consent of the City, sublets any part of the contract.

1.129 Superintendent. The representative of the Contractor, present on the work at all times during progress, authorized to receive and fulfill instructions from the Engineer and capable of superintending the work efficiently.

1.130 Surety. The corporate body bound with and for the Contractor for the acceptable performance of the contract and the completion of the work, and for payment of all just claims arising therefrom.

1.131 Work. Work shall be understood to mean the furnishing of all labor, materials, equipment, paying all applicable city, state, and federal taxes, and other incidentals necessary or convenient to the successful completion of the project by the Contractor and the carrying out of all the duties and obligations imposed by the contract **if applicable.**

1.132 Working Day. Any day, except Saturdays, Sundays, and Hastings Utilities holidays: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving, Friday after Thanksgiving, ½ Day Christmas Eve, and Christmas Day. Working days for a project area shall be counted consecutively from project starting date.

1.133 Completion of the Work and Formal Acceptance by the City. Whenever the term "completion of the work and formal acceptance by the City" is used, it refers to and means the formal acceptance of the work by the Engineer and the City at the time the Contractor has all work under the contract completed and in place. Release of the final pay estimate shall constitute formal acceptance by the City.

1.134 Final Acceptance of the Work. Whenever the term "final acceptance of the work" is used, it refers to and means the time when the Engineer and City finally accept the work after the expiration of the time for which the Contractor guarantees to keep the work in repair.

1.135 Abbreviations.

A.A.S.H.O.	American Association of State Highway Officials
A.S.M.E.	American Society of Mechanical Engineers
A.S.T.M.	American Society for Testing Materials
A.R.E.A.	American Railway Engineering Association
A.W.S.	American Welding Society

D.O.T.	Department of Transportation, Office of Pipeline Safety
O.S.H.A.	Occupational Safety and Health Administration
A.W.W.A.	American Water Works Association

SECTION 1-2 - PROPOSAL REQUIREMENTS AND CONDITIONS

1.201 Contents of Proposal Forms. Bidders will be furnished with proposal forms which will state the location and description of the contemplated work and will show the estimate of the various quantities and kinds of work to be performed or materials to be furnished, with a schedule of items for which unit bid prices are asked, and the time in which the work must be completed, and the date, time, and place of opening bids. All special provisions and required provisions will be grouped together and bound with or included through reference in the proposal form.

1.202 Interpretation of Quantities in Proposal Forms. The quantities listed in the proposal forms are to be considered as approximate, unless otherwise provided by special provision. It is understood that the quantities of work to be done and materials to be furnished may each be increased, diminished or omitted, as hereinafter provided, without in any way invalidating the unit bid prices, except as provided in Article 1.403.

1.203 Examination of Plans, Specifications, Special Provisions, and Site of Work.. The bidder is required to examine carefully the site, and the proposal, plans, specifications, special provisions, and contract form, for the work contemplated, and it will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of these specifications, the special provisions, and contract. It is mutually agreed that the submission of a proposal shall be considered prima facie evidence that the bidder has made such examination.

1.204 Preparation of Proposal. Bidders shall submit their proposals on blank forms furnished by the Engineer, with the full name and address and the place of business or residence of the bidder. If the bidder is co-partnership, then the signature shall be by a member of the firm, with the names and addresses of each member; and if a corporation, then by an officer of the corporation in the corporate name and with the corporate name and with the corporate seal attached thereto.

All blank spaces in the form shall be fully filled; numbers shall be stated in legible figures and writing when required; the signature shall be longhand; and the complete form shall be without interlineation, alteration or erasure.

No oral, telegraphic, telephonic, faxes, or electronically mailed proposals or modifications will be considered.

When certain alternative prices, for both increasing and decreasing the cost, are required, as called for in the proposal sheet, it must be understood that all materials and workmanship required shall be the best of their respective kinds; and in all cases, shall correspond with similar work herein specified and, if accepted, the work shall be done under the general terms of the specifications.

1.205 Statement of Bidder's Financial Conditions. Any bidder may be required by the City to submit data to satisfy the City that such bidder is prepared to fulfill the contract if it is awarded to him.

1.206 Certified Check, Cashier's Check or Bid Bond. Each bidder must submit with his proposal a certified check, cashier's check or bid bond in the amount of not less than five percent (5%) of the amount bid, drawn to the order to the City of Hastings, Nebraska, guaranteeing the execution of the contract and bond required, within ten (10) days of the notification of award. Any certified check must be issued by a U.S. Commercial Bank.

1.207 Filing of Proposal. The proposal and the supporting proposal guaranty for each project shall be filed in separate but attached envelopes, so marked as to indicate their contents. All proposals shall be filed with the City at the place designated in the notice to bidders, prior to the time advertised for the opening of bids.

1.208 Withdrawal of Proposal. A bidder will be permitted to withdraw his proposal unopened after it has been submitted, if his request for withdrawal is made in writing and delivered personally by the bidder or his authorized representative prior to the time specified for opening bids.

1.209 Public Opening of Proposals. Proposals will be publicly opened and read at the time and place stipulated in the notice to bidders.

1.210 Material Guaranty. The bidder may be required to furnish a complete statement of the origin, composition, and manufacture of any or all materials to be used in the construction of the work, together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

SECTION 1-3 - AWARD OF CONTRACT

1.301 Consideration of Proposals. After the proposals are opened and read, they will be compared on the basis of the summation of the products of the quantities shown in the bid schedule by the unit bid prices. The results of such comparisons will be immediately available to the public.

The right is reserved to reject any and all proposals and to waive technical errors as may be deemed best for the interest of the City.

1.302 Award of Contract. In the award of contract, consideration will be given not only to the prices bid but also the mechanical and other equipment available to the bidder, the financial responsibility of the bidder, and his ability and experience in the performance of like or similar contracts.

The award of alternatives proposed will be selected not only of the price but of the quality of the products provided, availability of replacement parts, repair, connection to future or existing systems, longevity, durability, function, and all other engineering and operational consideration.

Award of contracts will be made as promptly as practical after bids have been opened and read. The City reserves the right to delay the award for such time as is needed for the consideration of the bids, and for the receipt of concurrence in recommended contract awards from other governmental agencies whose concurrence may be required.

1.303 Cancellation of Award. The City reserves the right to cancel the award of any contract at any time before the execution of the said contract by all parties without any liability against the City.

1.304 Return of Proposal Guaranty. Proposal guaranties will be returned to the unsuccessful bidders by mail promptly after the signing of the contract has been made. Return to the successful bidder will be made after the signing of the contract and filing of the contract bond.

1.305 Performance Bond (When Required). The Contractor shall furnish a performance bond with a company having the approval of the City in an amount of one hundred percent (100%) of the contract price guaranteeing complete and faithful performance of the contract, payment of all bills of whatever nature which could become a lien against the property.

In the event that Contractor chooses to submit a bond other than the bond from contained in this package, such submission is done at the risk of the bidder. All such substituted bond forms shall contain indemnification both for performance and warranty as set out more fully in these documents.

1.306 Maintenance Bond (When Required). The Contractor shall furnish a maintenance bond with a company having the approval of the City in an amount of one hundred percent (100%) of the contract price guaranteeing complete and faithful performance of the contract, payment of all bills of whatever nature which could become a lien against the property, and guaranteeing replacement of defective materials and workmanship for a period of three (3) years after completion of the contract.

In the event that Contractor chooses to submit a bond other than the bond from contained in this package, such submission is done at the risk of the bidder. All such substituted bond forms shall contain indemnification both for performance and warranty as set out more fully in these documents.

1.307 Failure to Execute Contract. Failure to execute a contract and file an acceptable performance bond, as provided herein, within ten (10) days from date of award shall be just cause for the annulment of the award and the forfeiture of the certified check, bid bond, or cashier's check to the City, not as a penalty but in liquidation of damages sustained.

SECTION 1-4 - SCOPE OF WORK

1.401 Intent of Plans and Specifications. The intent of the plans and specifications is to provide for the construction and completion of every detail of the work described therein. It shall be understood by the Contractor that he will furnish all labor, materials if applicable, tools, transportation, and supplies required for all or any part of the work to make each item complete in accordance with the spirit of the contract. It is understood that the apparent silence of the specifications as to any detail, or the apparent omission of a detailed description concerning any point, shall be regarded as meaning that only the best general practice is to prevail, and that only materials and workmanship of the best quality are to be used.

For the purpose of design and the preparation of the Engineer's estimate, the City may perform a reasonable amount of exploratory work to gain information relative to surface and subsurface conditions relating to types of soil, moisture content and types and extent of rock strata.

This information, when shown on the plan, represents to the best of the City's knowledge, conditions as of the date the survey was made. The appearance of this information on the plan will not constitute a guarantee that conditions other than those indicated will not be encountered at the time of construction.

The bidder may utilize this information as he sees fit. Any bidder interested in the work is authorized to make whatever additional investigation he considers advisable.

In making such additional investigation, the bidder is directed to the Engineer for information relating to available right-of-way. If there are, at that time, any parcels of land over which the City does not have jurisdiction, right of entry must be secured by the prospective bidder from those authorized to grant such permission.

1.402 Special Work. Any conditions not covered by these standard specifications are stated in the special provisions.

1.403 Increased or Decreased Quantities of Work. The Engineer reserves the right to alter the quantities of contract items for which there are bid prices. Such increases or decreases in quantities shall be made as he considers necessary or desirable without waiving or invalidating any of the provisions of the contract; provided, that all such alterations shall be ordered in writing and that a supplemental agreement shall be executed with the Contractor for the item or items involved, when such alterations involve an increase or decrease of more than twenty percent (20%) of the total cost of the work of any group of the contract calculated from the original proposal quantities and the contract unit prices. The Contractor shall not start on any alteration requiring a supplemental agreement until the agreement setting forth an equitable adjustment of compensation, satisfactory to both parties, shall have been executed by the Engineer and the Contractor.

1.404 Changes in Work - Change Order. The City reserves the right to order the performance of work of a class not contemplated in the proposal but which may be considered necessary to complete satisfactorily the work included in the contract. All change orders must be approved in writing prior to start of work.

a. If applicable unit prices are not contained in the Agreement or if the total net change increases or decreases the total Contract Price more than twenty (20) percent, the City shall, before ordering the Contractor to proceed with desired changes, request an itemized proposal from him covering the work involved in the change after which the procedures shall be as follows:

    1. If the proposal is acceptable, the City will prepare the change order in accordance therewith for acceptance by the Contractor.

    2. If the proposal is not acceptable and prompt agreement between the two parties cannot be reached, the City may order the Contractor to proceed with the work on a cost-plus-limited basis. A cost-plus-limited basis is defined as the net cost of the Contractor's labor,

materials, and insurance plus fifteen (15) percent of said net cost to cover overhead and profit, the total cost not to exceed a specified limit.

b. Each change order shall include in its final form:

1. A detailed description of the change in the work.

2. The Contractor's proposal (if any) or a conformed copy thereof.

3. A definite statement as to the resulting change in the Contract Price and any impacts on project schedule.

4. The statement that all work involved in the change shall be performed in accordance with Contract requirements except as modified by the change order.

1.405 Removal and Disposal of Structures and Obstructions. The Contractor for bridge and culvert work shall remove any existing structure or part of structure that in any way interferes with the new construction. If specific payment for such work has not been provided in the contract, it will be paid for as extra work.

The Contractor shall remove any materials or structures found on the right-of- way which are not to remain in place or which have not been designated for use in the new construction. The removal and disposal of pipe culverts will not be paid for directly, but shall be considered as incidental work, and the cost of such removal and disposal shall be considered to be included in the contract price for other items. Pipe culverts shall be removed by methods that will cause a minimum of damage to the pipe culverts. The removal and disposal of bridges or other masonry or monolithic concrete construction will be paid for. If the contract does not contain an item for such work, it will be paid for as extra work. Whenever City of Hastings Utilities Department requires abandonment of old utility mains or services, the Contractor shall plug or cap all open ends.

1.406 Rights In and Use of Materials Found on the Right-of-Way. Unless stated to the contrary in the contract documents, all materials, such as stone, gravel, sand, timber, and structures or parts of structures, found on the right-of-way of the street or on land acquired for the work, are the property of the City or the City of the fee title to the land, and shall not be used or destroyed by the Contractor without special permission from the Engineer. When the Contractor is permitted to use materials found on the right-of-way, any excavations that he makes below the grade elevation shall be backfilled with other suitable materials so that the finished street will conform to the grade shown on the plans. No extra compensation will be allowed for such backfilling.

When rock excavation is encountered, any portion of rock excavation which would otherwise be deposited in waste areas and not be incorporated in the embankments may be processed and used, royalty free, by the Contractor in any other portion of the construction in which material of that quality would be acceptable. No deduction will be made from excavation quantities for rock so used.

1.407 Right-of-Way. Right-of-Way for the work will be provided without cost to the Contractor. Right-of-way will be made available to the Contractor on or before the date

specified for the commencement of the work, unless a later date for the right-of-way to be made available to the Contractor is designated in the contract documents.

1.408 Railroad Crossings. Whenever the work involves construction with which railroad companies are concerned, the performance of the work is contingent upon arrangements with the railroad companies for the proposed construction. No claims will be allowed for loss or damage caused by failure to complete such arrangements. The Contractor is responsible to pay for any railroad required Contractor's fees.

SECTION 1-5 - CONTROL OF WORK

1.501 Authority of Engineer. The Engineer will decide any questions that arise with reference to the intent of the contract documents and compliance therewith. He will resolve all questions relating to materials, work, progress, disputes and mutual rights between contractors, fulfillment of contract and compensation, in accordance with the provisions of these specifications.

1.502 Plans and Working Drawings. The approved plans will be supplemented by such working drawings as are necessary to adequately control the work. It is mutually agreed that all authorized alterations affecting the requirements and information given in the approved plans shall be in writing.

Working drawings for any structure shall consist of such detailed plans as may be required of the Contractor for the execution of the work. These are not included in the plans furnished by the Engineer. They shall include shop details, erection plans, masonry, and form work. The Engineer's prior approval of the shop details must be obtained before any fabrication work involving these plans is performed. Erection plans, masonry layout diagrams, and plans for cribs, cofferdams, false work, centering and framework, as well as any other working drawings not previously mentioned, may be required of the Contractor and shall be subject to the Engineer's approval.

1.503 Alteration of Plans or of Character of Work. The Engineer shall have the right to make alterations in plans or character of work as may be considered necessary or desirable during the progress of the work to complete satisfactorily the proposed construction. Such alterations shall not be considered as a waiver of any conditions of the contract or invalidate any of the provisions thereof.

1.504 Coordination of Plans, Specifications, Special Provisions and Supplemental Specifications. These specifications, the supplemental specifications, the plans, special provisions, and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complimentary and to describe and provide for a complete work.

1.505 Cooperation of Contractor. The Contractor will be supplied with a minimum of two sets of approved plans and contract assemblies, including special provisions, one set of which the contractor shall keep available on the work at all times.

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Engineer and other contractors in every way possible.

The Contractor shall at all times have on the work, as his agent, a competent superintendent capable of reading and thoroughly understanding the plans and specifications, knowledgeable in the pertinent industry codes and standards, thoroughly experienced in the type of work being performed, who shall receive instructions from the Engineer or his authorized representatives.

The superintendent shall have full authority to execute the orders or directions of the Engineer without delay, and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendent shall be furnished irrespective of the amount of work sublet.

Before starting any work under this Contract, the Contractor shall file with the City a letter signed by an officer of the company (or City, or partner, as the case may be), giving the name, address, and telephone number of the superintendent who is to represent the Contractor in all matters with prosecution of the work and who is to officially receive on behalf of the Contractor, notices or directions issued by the City or its Engineer, and act upon them as required. If, during the life of the Contract, a change in superintendents is made by the Contractor, a new letter shall be filed simultaneously with the change.

1.506 Surveys. Lines and elevations shall be established by the Engineer before the work commences. City of Hastings shall perform all staking on this project. The Contractor shall make efforts to preserve all survey stakes.

All property pins, section corners, right of way monuments, permanent bench marks (brass caps), and all other survey monuments disturbed or removed by the Contractor shall be replaced by a licensed Surveyor at the expense of the Contractor. The Contractor shall take all necessary precaution to maintain in good condition all survey monuments.

The Contractor will insure the Engineer or his representative is present to verify the location of all utilities (highways, railroads, drainage, etc.) uncovered, crossed, or otherwise exposed during the completion of the project. The Contractor shall keep the Engineer or his representative abreast of activities so adequate response by the Engineer or his representative can be made without unduly delaying the construction process. A 24 hour notice may be enforced if sufficient time is not allowed by the Engineer or his representative to conduct all necessary field surveys.

See specification 2.013 for additional information.

1.507 Authority and Duties of Inspector. The City may appoint inspectors to represent the Engineer in the inspection of all materials used in and all work done under the contract. Such inspection may extend to any part of the work and to the preparation of manufacture of the materials to be used. The Inspector will not be permitted to modify in any way the provisions of the contract documents, nor to delay the work by failing to inspect materials and work with reasonable promptness. An inspector is placed on the work to keep the Engineer informed as to its progress and the manner in which it is being done; also, to call the Contractor's attention to any infringements of the contract documents. The Inspector will not act as foreman or perform other duties for the Contractor, not improperly interfere with the management of the work. He will not be authorized to approve or accept any portion of the work. In case of dispute between the Contractor and Inspector as to quality of materials or the manner of performing the work, the Inspector shall have authority to reject materials or suspend the work until the question at issue can be decided by the Engineer. Written notice of the suspension of work will be given to the Engineer and the Contractor.

Upon the failure of Contractor or its Subcontractors to comply with any of the requirements of this Contract (but not limited to quality or safety), the City shall have the authority to stop any portion of the work affected by such failure until such failure is remedied. If the City issues a Stop Work Order, the City shall not be liable for any costs or expenses claimed by Contractor arising out of such issuance. The construction schedule shall not be delayed or extended as a result of the City's issuance of a Stop Work Order.

1.508 Inspection of Work.

a. The Contractor shall notify the City sufficiently in advance of backfilling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the City, the Contractor shall uncover for inspection and recover such facilities, all at his own expense.

b. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work is being performed in conformance with the contract documents. At any time before acceptance of the work, upon request of the Engineer, the Contractor shall remove or uncover such portions of the finished work as the Engineer may direct. After examination has been made, the Contractor shall restore such portions of the work to the standard required by the contract documents.

c. Should it be considered necessary or advisable by the City any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor and material. If such work is found to be defective in any important respect, due to fault of the Contractor or his Subcontractors, the Contractor shall defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent of such costs to cover superintendent's, general expenses and profit, shall be allowed the Contractor and he shall in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

1.509 Removal of Defective Work. Any defective work shall be removed and replaced at the Contractor's expense. Should the Contractor fail or refuse to remove defective work when so ordered by the Engineer, the Engineer shall have authority to order the Contractor to suspend further operations, and may withhold payment on estimates until such defective work has been removed and replaced in accordance with the plans and specifications. Continued failure or refusal on the part of the Contractor to correct defective work promptly shall be sufficient cause for the City to declare the contract in default, and to proceed to have the work completed in accordance with Article 1.808.

1.510 Final Inspection. Upon written notification by the Contractor or his authorized representative that the work is completed, the Engineer shall make a final inspection within 10 days of the completion of all work included in the contract. If the work is found not to be in accordance with the contract documents, the Engineer shall provide the Contractor with a "Punch List" of the particular defects to be remedied.

Once the Engineer and Contractor determines the work is completed a written Notice by the Engineer shall be given to the Contractor within 10 days of the completion of all work items.

1.511 Review By City. The City, its authorized representatives and agents shall at all time have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the City through its authorized representatives or agents.

1.512 Quality Control. The contractor shall make every effort to provide control of the workmanship of the project. This shall include but not be limited to the following construction practices.

1. Concrete surfaces of sidewalks, paving, slab on grade and other related concrete work shall be smooth and constructed to the elevations as shown on the plans or as directed by the Engineer. An acceptable construction tolerance shall be agreed upon before work is to begin. The Contractor shall notify the Engineer 72 hours before any work is to begin which will involve concrete finishing.
2. Lines and grades of all pipes, conduits, casing, grading, etc. shall be constructed according to the plans or as directed by the Engineer. An acceptable construction tolerance shall be agreed upon before any pipeline, conduit installation, casing installation, or grading begins.

SECTION 1-6 - CONTROL OF MATERIALS.

1.601 Source of Supply and Quality Requirements. The materials used on the work shall meet all quality requirements of the contract. In order to expedite the inspection and testing of materials, the Contractor shall notify the Engineer of his proposed sources of materials prior to delivery. At the option of the Engineer, approval of the source or approval of materials at the source prior to delivery may be required. If it is found after trial that sources of supply for previously approved materials do not produce specified products or when conditions are such that the use of unfit materials cannot be prevented except by extraordinary inspection methods, the Contractor shall furnish materials from other sources. Before delivery is started and at any time during the process of preparation and use, the materials shall be subject to the approval of the Engineer. All materials supplied shall be new and undamaged.

1.602 Storage of Materials. The Contractor shall be responsible for the care and storage of materials delivered on the work or purchased for use thereon. Any material that has been delivered on the work and has become damaged before actual incorporation in the work may be rejected by the Engineer even though it may previously have been accepted. Stored materials shall be so located as to facilitate thorough inspection.

1.603 Unacceptable Materials. All materials not conforming to the requirements of the specifications at the time they are to be used shall be considered as unacceptable and all such materials will be rejected and shall be removed immediately from the site of the work unless otherwise instructed by the Engineer. No rejected material, the defects of which have been corrected, shall be used until approval has been given.

1.604 Guarantee. The Contractor shall guarantee the design, equipment, materials, and workmanship furnished under this Contract to be as specified and to be free from defects during the

guarantee period. In addition, the equipment and materials furnished by the Contractor shall be guaranteed to be free from defects in design.

Except as otherwise prescribed by the terms of any special guarantees required by the contract documents, the guarantee period shall begin on the date of formal acceptance by the City and shall end 12 months later.

Upon notification, the Contractor shall promptly make all adjustments, repairs, or replacements which, in the opinion of the Engineer or City, arose out of defects and became necessary during the guarantee period.

The cost of all materials, parts, labor, transportation, supervision, special tools, and supplies required for replacement or repair of parts and for correction of defects shall be paid by the Contractor or by the surety.

This guarantee shall be extended to cover all repairs and replacements furnished under the guarantee, including repair for ditch settlement, and the period of the guarantee for each such repair or replacement shall be 12 months after installation or the end of the project guarantee period, whichever is later, except as otherwise prescribed by the terms of any special guarantees required by the contract documents.

If within 10 days after the City has notified the Contractor of a defect, failure, or abnormality in the work, the Contractor has not started to make the necessary repairs or adjustments, the City is hereby authorized to make the repairs or adjustments or to order the work to be done by a third party, the cost of the work to be paid by the Contractor.

In the event of an emergency where, in the judgment of the City, delay would cause serious loss or damage, repairs or adjustments may be made by the City, or a third party chosen by the City, without advance notice to the Contractor and the cost of the work shall be paid by the Contractor or by the surety.

The acceptance of the installation, or any part of it, shall not act to waive this liability on the part of the Contractor.

1.605 "Or Equal" Clause. Whenever, in any section of the contract documents, plans or specifications, any article, materials, or equipment is defined by describing a proprietary product or by using the name of a manufacturer or vendor, the term "or approval equal", if not inserted, shall be implied. The specified article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard or design, efficiency and quality desired, and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design and efficiency. The Engineer shall determine the acceptability of articles, materials or equipment proposed as equals.

1.606 Shop Drawings. The Contractor shall submit for review and approval all shop drawings as indicated in these specifications before the beginning of construction. Failure to submit shop drawings shall suspend payment of any materials delivered or installed. This includes delivery of materials in storage. These requirements will be strictly enforced.

SECTION 1-7 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1.701 Laws to be Observed. The Contractor shall keep himself fully informed of, and at all times, shall observe and comply with all federal and state laws, all local bylaws, ordinances, and regulations, and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall protect and indemnify the City and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees. It shall be the responsibility of the Contractor to provide all safeguards, safety devices and protective equipment and to take any other needed actions as are reasonably necessary to protect the life and health of employees on the project.

1.702 Work Eligibility Status. Contractor is required and hereby agrees to use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program authorized by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324a, known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of a newly hired employee.

1.703 Fair Labor Standards. The Contractor agrees to comply with all current applicable State, Federal, and City fair labor standards in the execution of the contract. Pursuant to the Title VI Non-Discrimination Program of the City of Hastings Contractor agrees to comply with the provisions set forth by CITY's Title VI Non-discrimination Program, if applicable. A copy of said provisions are as follows:

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

(1) **Compliance with Regulations:** The contractor shall comply with the Regulation relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, and the Federal Highway Administration (hereinafter "FHWA") Title 23, Code of Federal Regulations, Part 200 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

(2) **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin, sex, age, and disability/handicap in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by 49 CFR, section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

(3) **Solicitations for Subcontractors, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's

obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin, sex, age, and disability/handicap.

(4) **Information and Reports:** The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the *(Recipient)* or the FHWA to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to the *(Recipient)*, or the FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.

(5) **Sanctions for Noncompliance:** In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the *(Recipient)* shall impose such contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:

(a.) withholding of payments to the contractor under the contract until the contractor complies, and/or
(b.) cancellation, termination or suspension of the contract, in whole or in part.

(6) **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

The contractor shall take such action with respect to any subcontract or procurement as the *(Recipient)* or the FHWA may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the *(Recipient)* to enter into such litigation to protect the interests of the *(Recipient)*, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

1.704 Permits. The Contractor shall procure and pay for all permits, licenses and bonds necessary for the execution of his work and/or required for municipal, state and federal regulations and laws.

1.705 Restoration of Surfaces Opened by Permit. Upon the presentation of a duly authorized and satisfactory permit from the City, which provides that all necessary repair work will be paid for by the party to whom such permit is issued, the Engineer may authorize the Contractor to allow parties bearing such permits to make openings in the street. The Contractor shall make in an acceptable manner all necessary repairs due to such openings, and such necessary work ordered by the Engineer shall be paid for as provided in these specifications.

1.706 Safety, Health and Sanitation. In the performance of his contract, the Contractor shall comply with all applicable federal, state and local laws governing safety, health and sanitation.

a. The Contractor shall exercise proper precaution at all time for the protection of persons and property and shall be responsible for all damages to persons or property either on or off the

site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes and OSHA shall be observed, and the Contractor shall take or cause to be taken such additional safety and health measures as the City may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America, Inc., to the extend that such provisions are not in conflict with applicable local laws. The Contractor shall comply with the latest edition of Part VI of the Manual on Uniform Traffic Control Devices. The Contractor shall install plastic fence on open holes when directed by the Inspector. The Contractor shall wear hard hats and safety glasses at all times on the construction site.

b. The Contractor shall maintain an accurate record all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the City with reports concerning these matters.

c. The Contractor shall indemnify and hold harmless the City and the Engineer and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense 1) is attributed to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom, and 2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against the City or the Engineer or any of their agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph "c" shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under Workmen's Compensation acts, disability benefit acts or employee benefit acts.

The obligation of the Contractor under this paragraph "c" shall not extend to the liability of the Engineer, his agents or employees arising out of 1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or 2) the giving of or failure to give directions or instructions by the Engineer, his agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

The Contractor shall immediately correct any unsafe conditions identified by the City. In the event the Contractor fails to immediately correct such unsafe conditions, the City may either have the unsafe conditions corrected by others at the Contractor's expense, or direct that the work be stopped in the area of the unsafe condition; however, this right to stop/suspend the work shall not give rise to any duty on the part of the City to exercise this right.

The Contractor waives the right to bring claim for damages against the City or Engineer for the correction of unsafe conditions or work stoppages in connection with the Contractor's Safety, Health, and Accident Prevention Program or such program of another contractor. If such a claim against the City or Engineer is brought by a third party, the Contractor shall indemnify and defend the City or Engineer against such claim. The Contractor shall submit to City of Hastings a current copy of the company safety manual before starting work.

1.707 Claims for Labor and Materials. The Contractor shall indemnify and save harmless the City from all claims for labor and materials furnished under this contract. When requested by the City, the Contractor shall submit satisfactory evidence that all persons, items, or corporation who have done work or furnished materials under this contract, for which the City may have become liable under the laws of the State, have been fully paid or satisfactorily secured. In case such evidence is not furnished or is not satisfactory, an amount will be retained from money due the Contractor which, in additional to any other sums that may be retained, will be sufficient, in the opinion of the City, to meet all claims of the persons, firms, and corporations as aforesaid. Such sum shall be retained until the liabilities as aforesaid are fully discharged or satisfactorily secured.

1.708 Contractor's Insurance Coverage. The Contractor shall not commence work under this Contract until Contractor has obtained all the insurance required under this article. Furthermore, the Contractor shall not allow any sub-contractor to commence work under this Contract until the sub-contractor has obtained the same insurance as is required of the Contractor. The sub-contractor alone shall be responsible for the sufficiency of its own insurance program.

1.708.1 Certificates of Insurance. Certificates of Insurance acceptable to the City shall be filed with the City prior to commencement of the work. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled, or materially altered, until at least 30 days prior written notice has been given to the City. All insurance carried shall conform to the relevant provisions of the respective Project Documents and be with insurance companies which are rated "A, X" or better by Best's Insurance Guide, or other insurance companies of recognized responsibility satisfactory to the City.

1.708.2 Additional Insureds. Insurance coverages furnished under this Contract, with the exception of Workers' Compensation and Employer's Liability, shall include the City of Hastings and their partners, directors, officers, agents, and employees as Additional Insureds on a primary and noncontributory basis, and shall include Products and completed operations with respect to the activities of the Contractor and shall be maintained for the full duration of the project including for a period after completion to include the statute of repose.

Notwithstanding any other provision of these policies, the insurance afforded shall apply separately to each insured, with respect to any claim, suit, or judgment made or brought by or for any other insured, as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount or amounts for which the insurer would have been liable had only one insured been named.

The City shall not by reason of their inclusion under these policies incur liability to the insurance carrier for payment of premium for these policies.

1.708.3 Waiver of Subrogation. The Contractor and their sub-contractor shall require their insurance carriers, with respect to all insurance policies, to waive all rights of subrogation against the City their partners, directors, officers, agents, and employees.

1.708.4 Workers' Compensation and Employer's Liability Insurance. The Contractor shall procure, and shall maintain during the life of this Contract, Workers' Compensation Insurance as required by workers' compensation laws of the State of Nebraska and also of the state in which the sub-contractor is domiciled.

The Contractor shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers' compensation law. The Employer's Liability Insurance shall contain the following limits of liability:

Bodily Injury by Accident	$500,000 each accident
Bodily Injury by Disease	$500,000 each employee
Bodily Injury by Disease	$500,000 policy limit

1.708.5 General Liability Insurance. This insurance shall be written per project on an "occurrence" policy form, including coverage for premises/operations, products/completed operations, broad form property damage, blanket contractual liability, independent contractor's and personal injury, with no exclusions for explosion, sudden and accidental pollution or an absolute or total pollution exclusion, collapse and underground perils. The commercial general liability policy shall also include a severability of interest clause and a cross liability clause in the event more than one entity is "named insured" under the liability policy. If applicable, this policy shall also be endorsed to include railroad protective with limits no less than replacement cost of the value of any real property covered under any rail agreement entered into by the City. If work is being done near a railroad track, the 50' railroad right of way exclusion must be deleted.

Limits of Insurance shall be as follows:

Each Occurrence Limit	$1,000,000
Products/Completed Operations	$2,000,000
General Aggregate Limit	$2,000,000

1.708.6 Contractor's Pollution Liability – (Not Applicable).

1.708.7 Riggers Liability – (Not Applicable).

1.708.8 Automobile Liability Insurance. This insurance shall be written under a Business Auto Policy and shall protect the Contractor and Additional Insureds against claims arising from injuries to members of the public or damage to property of others arising from the use of automobiles whether such automobiles are owned, non-owned, or hired. Automobile insurance shall include Motor Carrier Endorsement Act MCS 90 and transportation pollution coverage if applicable. If work is being done near a railroad track, the 50' railroad right of way exclusion must be deleted.

Limit of Liability	$1,000,000 each accident

1.708.9 Umbrella Liability Policy. This insurance shall protect the Contractor and the Additional Insureds against all claims in excess of the limits provided under the employer's liability, automobile liability, and general liability policies. The liability limits of the umbrella liability policy shall be not less than $5,000,000 per occurrence. This policy shall be an "occurrence" type policy. However, City reserves the right to require higher limits with respect to each project.

1.708.10 Professional Liability – (Not Applicable)

1.708.11 Transportation Insurance – (Not Applicable).

1.708.12 Proof of Carriage of Insurance. Satisfactory certificates of insurance shall be filed with the City prior to starting any construction work on this contract. The certificates shall state that thirty (30) days written notice shall be given to the City before any policy covered thereby is changed or canceled.

1.708.13 Property Insurance (Builder's Risk) – (Not Applicable).

1.709 Indemnification. To the fullest extent permitted by laws and regulations, the Contractor shall defend, indemnify, and hold harmless the City, their officers, directors, partners, consultants, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising out of or resulting from the performance of the work by the Contractor, any sub-contractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by law and regulations regardless of the negligence of any such party.

In any and all claims against the City, or of any of their officers, directors, partners, consultants, agents, or employees by any employee of the Contractor, any sub-contractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, this indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any such sub-contractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts, nor shall this indemnification obligation be limited in any way by any limitation on the amount or type of insurance coverage provided by the City, the Contractor, or any of their sub-contractors.

1.710 Contractor's Responsibility for Utility Property and Services. At points where the Contractor's operations are adjacent to properties of railway, telephone and power companies, or are adjacent to other property, to which damage might result, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The Contractor shall cooperate with the City on any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a

reasonable manner, and that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority. He shall cooperate with the said authority in the restoration of service as promptly as possible.

In no case shall interruption to water service be allowed to exist outside of working hours. Fire hydrants shall be kept accessible to the Fire Department at all times and no materials shall be kept or stockpiled within fifteen (15) feet of any fire hydrant.

The Contractor must cooperate with the utility companies and schedule his work in such a manner as to protect the existing utility facilities until the facilities are abandoned or replacement facilities are completed. In instances where partial grading is necessary before a utility can install its facilities, the Contractor shall consult with the utility and plan the work so that reasonable time can be allowed the utility for completing its work.

Contractor shall exercise particular care at all times to avoid damage to any of City of Hastings Utilities Department's system or other facilities and equipment located at or near the scene of any part of the work, especially such facilities as may be in operation. Any costs for potholing prior to boring are considered subsidiary to the bid.

Contractor specifically acknowledges that it shall be responsible and liable to City of Hastings for all injury or damage to any such existing and operating facilities, including loss of gas or product and all repairs necessitated by any act or omission, resulting in such damages, on the part of the Contractor, his agents or employees, or any subcontractor or subcontractor's agents of employees.

Contractor shall also exercise particular care at all times to avoid damage to underground structures and lines, and specifically recognizes that it shall be held responsible for any injury or damage to unmarked or unidentified underground structures or pipelines, done by Contractor's personnel, or any subcontractor's personnel in connection with performance of the work hereunder.

Please note before beginning any excavation, the Contractor shall be responsible for contacting Diggers Hotline at 1-800-331-5666 or call 811.

1.711 <u>No Waiver of Legal Rights.</u> The City shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment therefore, from showing the true amount and character of the work performed and materials furnished by the Contractor, nor from showing that nay such measurement, estimate, or certificate is untrue or is incorrectly made, nor that the work or materials do not, in fact, conform to the contract. The City shall not be precluded or estopped, notwithstanding any such measurement, estimate or certificate and payment in accordance therewith, from recovering from the Contractor or his sureties, or both, such damage as it may sustain by reason of his failure to comply with the terms of the contract. Neither the acceptance by the City, nor any representative of the City, nor any payment for or acceptance of the whole or any part of the work, not any extension of time, nor any possession taken by the City, shall operate as a waiver of any portion of the contract or of any power herein

reserved, or of any right to damages. A waiver of any breach of the contract shall not be held to be a waiver of any other or subsequent breach.

1.712 Warranty of Title. No material, supplies or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease-purchase or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed, or placed thereon, by him to the City free from any claims, liens or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon.

Nothing contained in this paragraph, however, shall defect or impair the right of persons furnishing materials or labor under any law permitting such persons to look to funds due the Contractor in the hands of the City. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

1.713 Jurisdiction. Any action in court against the Contractor or sureties on his bond, because of damages to property or individual by said Contractor, or his workmen, or because of the violation of any provision of the specifications, or on account of the failure of the Contractor to fully comply with this provision, shall be brought in the District Court of the State of Nebraska in and for Adams County.

1.714 Care of Work.

a. The Contractor shall be responsible for all damages to person or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the City.

b. The Contractor shall provide sufficient competent watchmen, both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.

c. In an emergency affecting the safety of life, limb or property, including adjoining property, the Contractor, without special instructions or authorization from the City, is authorized to act at his discretion to prevent such threatened loss or injury and he shall so act. He shall likewise act if instructed to do so by the City. Any compensation claimed by the Contractor on account of such emergency work will be determined by the City as provided in Section 1.404 hereof.

d. The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations.

e. The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or connected with the demolition and/or site clearance of the work embraced in this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property City, public & private utility companies, or other party before the commencement of any work. The Contractor shall indemnify and save harmless the City from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and from all damages for which the City may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

SECTION 1-8 - EXECUTION AND PROGRESS

1.801 Subletting or Assigning or Contract. The Contractor will not be permitted to sublet, assign, sell, transfer or otherwise dispose of the contract or any portion thereof, or his right, title, or interest therein; or to either legally or equitably assign any of the money payable under his contract, or his claim thereto, without the written consent of his surety and the Engineer. The Contractor will not be relieved of any responsibility through any of the above actions.

a. The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

b. Nothing contained in the Contract shall create any contractual relation between any subcontractors and the City.

1.802 Execution of Work. The proposal for each project will show the project period. The progress of the work shall be at a rate sufficient to complete the project within the project period. If it appears that the rate of progress is such that the project will not be completed within the project period, or if the work is not being executed in a satisfactory and workmanlike manner, the City may order the Contractor to take such steps as it considers necessary to complete the project within the period of time specified, or execute the work in a satisfactory manner.

1.803 Limitation of Operations. The Contractor shall conduct the work at all times in such a manner and in such sequence as will insure the least interference with traffic. He shall have due regard to the location of detours and to the provisions for handling traffic. He shall not open up work to the prejudice of work already started, and the Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional section. The Contractor shall so conduct his operations and maintain the work in such condition that adequate drainage shall be in effect at all times.

1.804 Methods and Equipment. The methods, equipment and appliances used shall produce a satisfactory quality of work, and shall be adequate to maintain the schedule of progress specified. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent property, or other streets will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the contract, the Contractor is free to use any methods or equipment that he

demonstrates, to the satisfaction of the Engineer, will accomplish the contract work in conformity with the requirements of the contract.

1.805 Temporary Suspension of Work. Work shall be suspended wholly or in part when, in the opinion of the Engineer, weather or other conditions are unfavorable to its satisfactory prosecution. Work shall also be suspended at the direction of the Engineer pending settlement or disputes arising out of failure of the Contractor to comply with the provisions of the contract. Written notice of suspension of work shall be given by the Engineer. When the conditions causing suspension no longer exist, such written notice shall be given to the Contractor by the Engineer. Promptly after such written notice, the Contractor shall resume prosecution of the work as provided in Article 1.802.

1.806 Liquidated Damages – (Not Applicable).

1.807 Extension of Project Period or Contract Completion Date. An extension of the project period or contract completion date may be granted only in writing by the City for any of the following reasons:

1. Additional work resulting from a modification of the plans for the project.
2. Delays caused by the City.
3. Other reasons beyond the control of the Contractor, which in the City's judgment would justify such extension.

No extension of project period or contract completion date will be allowed for variations between contract quantities and actual quantities which cannot be predetermined and which amount to less than twenty percent (20%) of the contract quantities unless approved by the Engineer.

1.808 Abrogation. If the Contractor abandons the work under this contract, sublets it or assigns it without the consent of the city, or if he fails to give his personal attention to it, or if it is the Engineer's opinion that he has unnecessarily or unreasonably delays or neglected the work or any part of it, written notice to that effect is to be given to the Contractor by the Engineer. After such notice, no materials or equipment shall be removed from the work. If, within five (5) days thereafter, the Contractor does not take steps which, in the judgment of the Engineer, will insure the satisfactory completion of the work, then the City may declare this contract null and void and the security forfeited and may notify the Contractor in written to discontinue the work or any part of it; thereupon ceases the Contractor's right or possession of the ground and of all materials and equipment thereon. The City then, at its option, may enter upon and take possession of the work with all material, supplies, and equipment remaining thereon and by contract or otherwise, as the City may determine, may complete the work or the part of it designated, and charge the expense thereof to the Contractor using any materials or equipment found on the site. The expense so charged, together with all damages incurred, will be deducted from any funds due to become due under this contract, and should the unexpended balance of these funds be insufficient, the excess shall be at the cost of the Contractor and the sureties on the Contractor's bond. Neither completion of a part of the work not the extension for any reason of the time of the completion of the work is to be considered a waiver of this right to abrogate the contract for abandonment, delay or unsatisfactory work.

1.809 Termination of Contractor's Responsibility. The contract shall be considered completed when the work has been accepted in writing by the City. Such acceptance shall release the

Contractor from all further obligation with respect thereto, except as to conditions and requirements set forth in his bond.

1.810 Assignment or Novation. The Contractor shall not assign or transfer, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the City, provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the City. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms or corporations rendering such labor or services or supplying such materials, tools, or equipment.

1.811 Disputes.

a. All disputes arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of Contract shall within ten (10) days of commencement of the dispute be presented by the Contractor to the City for decision. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime, the Contractor shall proceed with the work as directed. Any claim not presented within the time limit specified in this paragraph shall be deemed to have been waived, except if the claim is of a continuing character and notice of the claim is not given within ten (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt by the City of notice thereof.

b. The Contractor shall submit in detail his claim and his proof thereof. Each decision by the governing body of the City will be in writing and will be mailed to the Contractor by registered or certified mail, return receipt requested, directed to his last known address.

c. If the Contractor does not agree with any decision of the City, he shall in no case allow the dispute to delay the work but shall notify the City promptly that he is proceeding with the work under protest and he may then accept the matter in question from the final release.

SECTION 1-9 - MEASUREMENT AND PAYMENT

1.901 Payments. The City, at its discretion, may include in such monthly estimates payments for materials that will eventually be incorporated in the project, provided that such materials are suitably stored on the site of the project at the time of preparing estimates for payment. Such payment is to be based upon the estimated value thereof as ascertained by the Engineer. Such material when so paid for by the City shall not be removed from the project without consent of the City and, in case of default on the part of the Contractor, the City may use or cause to be used by others these materials in construction of the project.

The City will retain five percent (5%) of the total contract amount for all work completed including change orders.

Payment of the retainage will be made within forty-five (45) days after project is substantially complete, provided the Contractor submits a Letter of Credit for 125% of the uncompleted work. Substantial completion will include water mains passing biological testing and placed into service. Sewer mains shall pass pressure testing and be televised with receipt of the inspection report.

The bid proposal price sheets include any and all work for each project. Any requirement shown in the drawings, but not listed separately in the proposal price sheets, are considered subsidiary to the work. This includes but is not limited to abandonments of existing utilities and any potholing required for utility locates prior to boring.

1.902 Payments Withheld. The City may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect itself from loss on account of:

1. Defective work not remedied.
2. Claims filed or reasonable evidence indicating probable filing of claims.
3. Failure of the Contractor to make payments properly to subcontractors for material or labor.
4. A reasonable doubt that the contract can be completed for the balance then unpaid.
5. Damage to another Contractor.
6. Damage to public or private property.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

1.903 Acceptance, Final Payment, and Release of Liability. If final inspection reveals that all details of the work have been completed to his satisfaction, the Engineer shall tentatively accept the work, in writing, relieving the Contractor of further responsibility for the care and maintenance of the completed work and, provided that all equipment and materials have been removed from the right-of- way, shall also relieve the Contractor of further public liability. As soon as possible after tentative acceptance of the work, the Engineer shall measure the completed work and compute the quantities of work for which payment is to be made. Before final settlement is made, the City shall be satisfied with the completed work. When the Engineer is satisfied that all items of the work have been found to be consistent with the terms of the contract and specifications, a final estimate, including the retained percentage due the Contractor, shall be released for payment. Release of the final estimate shall constitute formal acceptance of the work. Acceptance by the Contractor of the final payment shall constitute release of the City and each of its officers and agents from any additional claim or liability hereunder for any act or negligence of the City or of any other person.

All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

1.904 Payment for Extra Work. The Contractor will receive and accept payment for work performed under this contract as follows:

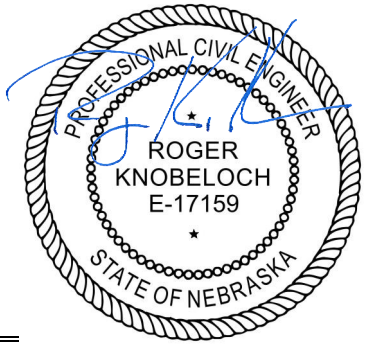
a. Work Performed as Stipulated in the Contract. For all items of work performed which are covered by definite unit prices or lump sum amounts specified in the contract, the Contractor shall receive and accept compensation at the rate specified in the contract.

b. Extra Work. Extra work ordered by the Engineer, of a quality or class not covered by the contract, will be paid for at an agreed price. For extra work ordered by the Engineer and performed on an agreed price basis, the Engineer and the Contractor shall enter into a written agreement before such work is undertaken. This agreement shall describe the extra work that is to be done and shall specify the agreed price or prices therefore.

00 00 01 CERTIFICATIONS

HSI BOX HANGAR
GARVER PROJECT NO. A27-2501091

I hereby certify that the applicable portions of this project plans and specifications were prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of Nebraska.

SEAL AND SIGNATURE	APPLICABLE DIVISION OR PROJECT RESPONSIBILITY
Roger S. Knobeloch, P.E.  Digitally Signed 11/21/2025	Civil Engineer
Quinton D. Smith, P.E.  Digitally Signed 11/21/2025	Electrical Engineer
SEAL AND SIGNATURE	**APPLICABLE DIVISION OR PROJECT RESPONSIBILITY**

GARVER, LLC CERTIFICATE OF AUTHORIZATION:

NE ENGINEERING LICENSE NO. CA3555

Expiration Date: 4/11/2026

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ITEM SS-101 SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

DESCRIPTION

101-1.1 The Contractor shall thoroughly review the approved Construction Safety and Phasing Plan (CSPP) and shall comply with approved CSPP. The Contractor shall certify such compliance by completing the attached SPCD and submitting to the Engineer for approval. No separate payment shall be made for completion of the SPCD.

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Contractor Safety Plan Compliance Documents

Owner Name: **CITY OF HASTINGS**

Airport: **Hastings Municipal Airport**

Project Description: **HSI Box Hangar**

Contractor: _____

Each item listed below corresponds to a specific section of the approved CSPP. The Contractor shall certify that he/she will comply with each section of the approved CSPP. Each certified section with a "no" response must be fully explained in an attachment to the SPCD. The document shall be signed and dated by a principal or owner in the Contractor's company. All other requested information shall be completed by the Contractor and submitted to the Engineer for approval as part of the SPCD.

1. **Section 1 - Coordination:** This project shall be completed in accordance with Section 1 "Coordination" of the approved Construction Safety and Phasing Plan.

Owner: CITY OF HASTINGS	
Contact:	**Phone:**
Engineer:	
Project Manager:	**Phone:**
Project Engineer:	**Phone:**
Construction Observer:	**Phone:**
Materials Testing:	**Phone:**
Contractor:	
Project Manager:	**Phone:**
Superintendent:	**Phone:**
Subcontractors:	**Phone:**
LIST ALL SUBS	

Yes_____No_____

2. **Section 2 - Phasing:** This project shall be completed in accordance with Section 2 "Phasing" of the approved Construction Safety and Phasing Plan.

Yes_____No_____

3. **Section 3 – Areas of Operations Affected by Construction Activity:** This project shall be completed in accordance with Section 3 "Areas of Operations Affected by Construction Activity" of the approved Construction Safety and Phasing Plan.

Yes_____No_____

4. **Section 4 – Protection of Navigational Aids (NAVAIDS):** This project shall be completed in accordance with Section 4 “Protection of Navigational Aids (NAVAIDS)” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

5. **Section 5 – Contractor Access:** This project shall be completed in accordance with Section 5 “Contractor Access” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

6. **Section 6 – Wildlife Management:** This project shall be completed in accordance with Section 6 “Wildlife Management” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

7. **Section 7 – Foreign Object Debris (FOD) Management:** This project shall be completed in accordance with Section 7 “Foreign Object Debris (FOD) Management” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

8. **Section 8 – Hazardous Materials (HAZMAT) Management:** This project shall be completed in accordance with Section 8 “Hazardous Materials (HAZMAT) Management” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

9. **Section 9 – Notification of Construction Activities:** This project shall be completed in accordance with Section 9 “Notification of Construction Activities” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

10. **Section 10 – Inspection Requirements:** This project shall be completed in accordance with Section 10 “Inspection Requirements” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

11. **Section 11 – Underground Utilities:** This project shall be completed in accordance with Section 11 “Underground Utilities” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

12. **Section 12 – Penalties:** This project shall be completed in accordance with Section 12 “Penalties” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

13. **Section 13 – Special Conditions:** This project shall be completed in accordance with Section 13 “Special Conditions” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

14. **Section 14 – Runway and Taxiway Visual Aids:** This project shall be completed in accordance with Section 14 “Runway and Taxiway Visual Aids” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

15. **Section 15 – Marking and Signs for Access Routes:** This project shall be completed in accordance with Section 15 “Marking and Signs for Access Routes” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

16. **Section 16 – Hazard Marking and Lighting:** This project shall be completed in accordance with Section 16 “Hazard Marking and Lighting” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

17. Section 17 – Work Zone Lighting for Nighttime Construction: This project shall be completed in accordance with Section 17 “Work Zone Lighting for Nighttime Construction” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

18. **Section 18 – Protection of Safety Areas, Object Free Areas, Object Free Zones, and Approach / Departure Surfaces:** This project shall be completed in accordance with Section 18 “Protection of Safety Areas, Object Free Areas, Object Free Zones, and Approach / Departure Surfaces” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

19. **Section 19 – Other Limitations on Construction:** This project shall be completed in accordance with Section 19 “Other Limitations on Construction” of the approved Construction Safety and Phasing Plan.

Yes_____No_____

I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, and that I shall comply with the approved Construction Safety and Plan.

Signed: _____
Contractor's Authorized Representative

Date: _____

_____
Print Name and Title of Contractor's Representative

END OF ITEM SS-101

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ITEM SS-110 STANDARD SPECIFICATIONS

GENERAL

110-1.1 The standard specifications of the Nebraska Department of Transportation (NDOT) are bound in a book titled Standard Specifications for Highway Construction. These specifications are referred to herein as "Standard Specifications." The latest edition shall apply. A copy of these "Standard Specifications" may be obtained from the NDOT government website.

INCORPORATION AND MODIFICATION

110-2.1 Certain parts of the Standard Specifications are appropriate for inclusion in these Technical Specifications. Such parts are incorporated herein by reference to the proper section or paragraph number. The individual specification numbers noted herein may be different from those in the latest edition of the "Standard Specifications." The most current specification number shall apply. Each such referenced part shall be considered to be a part of these Contract Documents as though copied herein in full.

- Division 300 – Subgrade Preparation, Foundation Courses, Base Courses, Shoulder Construction, and Aggregate Surface
    - Section 301 – General Requirements
    - Section 305 – Crushed Rock Base Course
- Division 600 – Portland Cement Concrete Pavements
    - Section 601 – General Requirements
    - Section 603 – Concrete Pavement
    - Section 606 – Concrete Curb and Concrete Gutter
    - Section 607 – Concrete Sidewalks, Bikeways, and Median Surfacing
- Division 1000 – Material Details

110-2.2 Certain referenced parts of the Standard Specifications are modified in the Specifications that follow. In case of conflict between the Standard Specifications and the Specifications that follow, the Specifications that follow shall govern.

a. Modify 305.02.1 to reference paragraph 7 and table 1033.08 instead of paragraph 8 and table 1033.09.

110-2.3 Individual material test numbers change from time to time. Use the latest applicable test.

110-2.4 Reference in the Standard Specifications to the “Department” is herein changed to the “Owner”.

MEASUREMENT AND PAYMENT

Payment will be made under:

Item SS-110-3.1	6-Inch Concrete Pavement Class 47B-3500 – per SY
Item SS-110-3.2	6-Inch Crushed Rock Base Course – per SY
Item SS-110-3.3	4-Inch Sidewalk Concrete Pavement Class 47B-3500 – per SY
Item SS-110-3.4	6-Inch Combination Concrete Class 47B-3500 Curb and Gutter – per LF

END OF ITEM SS-110

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ITEM SS-120 CONSTRUCTION SAFETY AND SECURITY

DESCRIPTION

120-1.1 This item covers safety and security for construction of the proposed improvements.

The attention of the bidder is directed to the necessity for careful examination of the entire project site to determine, at the time of bid preparation, the full extent of work to be done under the item "Construction Safety and Security."

The item "Construction Safety and Security" shall include:

1. Lighted Barricades
2. Temporary Signs
3. Airport Security Requirements
4. Airport Safety Requirements

CONSTRUCTION METHODS

120-2.1 Lighted barricades and closed taxiway and runway markers.

a. The Contractor shall furnish, install, maintain, and remove lighted barricades in accordance with details on the plans and as directed by the Engineer. The markers shall be secured to the pavement/ground as shown on the plans and as directed by the Engineer. The lighted barricades shall be constructed and installed as shown on the plans. All lighted barricades shall be constructed in accordance with AC 150/5370-2G Operational Safety on Airports During Construction.

b. All work involved in the furnishing, installation, maintenance, and removal of lighted barricades, barrels will not be measured for separate payment, but will be considered subsidiary to the bid item “Construction Safety and Security.”

120-2.2 Temporary signs. The Contractor shall furnish, install, maintain, and remove temporary signs in accordance with details on the plans and as directed by the Engineer. All temporary signs shall be constructed in accordance with AC 150/5370-2 Operational Safety on Airports During Construction, latest edition. All work involved in the furnishing, installation, maintenance, and removal of temporary signs will not be measured for separate payment but will be considered subsidiary to the bid item "Construction Safety and Security."

120-2.3 Airport security requirements. The Contractor shall abide by the Airport Security requirements that are outlined in the Construction Safety and Phasing Plan (CSPP). Any costs associated with the Airport Security requirements will not be measured for separate payment but will be considered subsidiary to the bid item "Construction Safety and Security."

120-2.4 Airport safety requirements. The Contractor shall abide by the Airport Safety requirements that are outlined in the Construction Safety and Phasing Plan (CSPP). All costs associated with the Airport Safety requirements will not be measured for separate payment but will be considered subsidiary to the bid item "Construction Safety and Security."

MEASUREMENT AND PAYMENT

120-3.1 Construction safety and security will be measured as a lump sum complete item. Work completed and accepted under this item will be paid for at the contract lump sum price bid for "Construction Safety and

Security", which price shall be full compensation for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

Periodic payments will be made under this item in proportion to the amount of work accomplished, as determined by the Engineer.

Payment will be made under:

Item SS-120-3.1	Construction Safety and Security - per Lump Sum

END OF ITEM SS-120

ITEM SS-295 PRE-ENGINEERED METAL HANGARS

DESCRIPTION

295-1.1 Furnish, deliver, and erect the complete pre-engineered metal hangars including foundations; anchor bolts; steel frames; purlins; wall girts; eave girts; exterior and interior wall panels; roof panels; and all miscellaneous framing, trim, fittings, fastening, sealants, glazing and other components to make the steel shell structure conform to these specifications and the contract drawings. Contractor shall also furnish complete foundation design and detailing based on a detailed soils investigation performed by a professional geotechnical engineer, licensed in the state where the construction occurs.

295-1.2 The hangars shall be the design of a manufacturer who is regularly engaged in the fabrication of aircraft hangar buildings and hangar doors. The hangar package shall be supplied as a complete system and furnished by a manufacturer who provides hangar doors and hangar buildings as an integral hangar building package. All materials shall be new, unused, and free from defect. The manufacturer's standard components may be used if quality levels and requirements meet or exceed that required of this specification. If any requirement of this specification conflicts with the manufacturer's standard model referenced below, the more stringent of the requirements shall be provided. The manufacturer's electrical and mechanical components shall meet the requirements as specified in this Section, including the supplemental and technical specifications and the drawings. Any manufacturer's name, trade name, brand name or catalog number used in these specifications is for the purpose of describing and establishing general quality levels. Such references are not intended to be restrictive. Bids will be considered for any brand that meets or exceeds the quality of the specifications listed for any item approved by the City of Hastings. The following building manufacturers are preapproved manufactures. Additional manufacturers may submit qualifications for inclusion in the engineer's preapproved list at least 72 hours prior to the opening of bids.

a. Erect-A-Tube (1-800-624-9219)
b. Steel Span Inc. (1-815-943-9071)
c. Alliance Steel Building Systems (1-405-745-7500)
d. BC Steel Buildings (1-800-227-8335)
e. Ruffin Building Systems (1-800-421-4232)
f. Pinnacle Structures (1-800-201-1534)
g. Mesco Building Solutions (1-800-556-3726)
h. Star Building Systems (1-800-879-7827)
i. Varco Pruden (1-800-505-9062)
j. Cornerstone (1-866-806-7008)

295-1.3 The community hangar shall be a Group III Aircraft Hangar, Type II (000) Construction, per NFPA 409 – Standard on Aircraft Hangars and NFPA 220 – Standard on Types of Building Construction.

295-1.4 Electrical work in this hangar project includes, but is not limited to, empty primary electrical conduits with pullwires, transformer pad and grounding accessories for utility pad mount transformer, complete secondary electrical power service and distribution system and equipment, excavation and backfill for electrical work, foundations and pads for electrical work, racks and support structures, temporary electrical service, feeder and branch circuit power wiring and distribution system, grounding systems, lightning protection systems, interior and exterior lighting and lamps, wiring devices, electrical control systems and interlock wiring, labeling and tagging, and conduit/wiring for all built-in equipment.

295-1.5 Plumbing work in this hangar project includes, but is not limited to:

a. Complete natural gas service connection and distribution system and equipment, excavation and backfill for gas work, radiant heating system, racks and support structures, control systems and labeling and tagging.
b. Trench or floor drain system with sump.

295-1.6 In addition to the description above, the community hangar shall include:

a. 3' pedestrian doors at locations shown in the plans, minimum 2 doors are required
b. Guttering system for collection of rainwater along the building eave with downspouts located on the corners as directed by the Engineer
c. Master keys for the Owner. Coordinate with airport for locks, handles, and key sets.

NOTE: The Contractor shall provide written certification that all aspects of the hangar design and hangar construction meet the requirements of this specification and all applicable federal, state and local codes. The certification forms are included in this specification. Letters accompanying the design certification will be completed and signed by a Professional Engineer registered to practice in the State of Nebraska, and shall be furnished to the Owner before construction begins. The certifications shall be completed by the principal or owner of the Contractor's company and furnished to the Owner at defined milestones for use in processing payment.

QUALITY ASSURANCE

295-2.1 General design criteria.

The community hangar shall be constructed per the requirements of NFPA 409 – Standard on Aircraft Hangars, for a Group III Aircraft Hangar classification, to Type II (000) Construction (maximum 12,000 square foot maximum single fire area). Refer to NFPA 220 – Standard on Types of Building Construction for fire resistance rating requirements for Type II (000) construction.

a. It shall be the Contractor's responsibility to produce and furnish all required construction documents to the appropriate regulatory agencies for their review. It is the Contractor's responsibility to coordinate and furnish all permits, licenses and fees required to construct all aspects of the hangars.
b. It shall be the Contractor's responsibility to furnish all professional certification required to meet all state and local codes and laws.
c. The hangar shall be a manufacturer's full nested steel frame, pre-fabricated metal structure. Overall dimensions may vary to suit manufacturer's standard design.
d. The building shall be designed and fabricated according to AISC and AISI latest specifications.
e. The building shall be designed to support all mechanical equipment. Additional girts or purlins shall be placed in convenient locations for attachment of all mechanical equipment.
f. Combination design loads conditions shall be as required by 2018 International Building Code.
g. The hangar may be "post and beam" for all column lines.
h. For welded connections, comply with AWS "Structural Welding Code". Welders shall be certified.

295-2.2 Structural design loads. Basic design loads as well as deflection limits are as follows:

a. Design Loads

Dead Load of Building (D)	Compute for actual building components used
Dead Load allowance for electrical	5 lbs./sq. ft.
Roof Live Load (R)	In conformance with 2018 International Building Code
Wind Load (horizontal) (W)	In conformance with 2018 International Building Code
Seismic (EQ)	In conformance with 2018 International Building Code

Snow Load(s)	In conformance with 2018 International Building Code
b. Deflection Limits	
(under total load)	L/180
Roof sheets and siding sheets	L/180
Roof and wall framing other than sheets	L/180 or 2" whichever is less
Sidesway at top of sidewall	

295-2.3 Structural member design. Design each member to withstand stresses resulting from combinations of loads that produce maximum ratio of actual allowable stress in that member, as prescribed in 2012 International Building Code.

295-2.4 Mechanical and electrical standards. Mechanical and Electrical work shall be performed in accordance with current editions of the standards listed below. Contractor shall utilize the most current editions of standards, which are current at the time of bid and as recognized by the Authority Having Jurisdiction for the respective standard.

a. Applicable National Fire Protection Association (NFPA) codes, including but not limited to:
   (1) NFPA 70 - National Electrical Code, including specific work requirements listed in Article 513 – Aircraft Hangars.
   (2) NFPA 70E - Standard for Electrical Safety in the Workplace.
   (3) NFPA 72 – National Fire Alarm Code.
   (4) NFPA 101 - Life Safety Code.
   (5) NFPA 220 – Types of Building Construction.
   (6) NFPA 409 – Aircraft Hangars.
   (7) NFPA 780 – Installation of Lightning Protection Systems.
   (8) Internet Website: http://www.nfpa.org
b. Applicable Code of Federal Regulations (CFR) codes, including but not limited to:
   (1) 29 CFR 1910 - Occupational Safety and Health Standards (OSHA)
   (2) 29 CFR 1926 - Safety and Health Regulations for Construction.
   (3) Internet Website: http://www.gpoaccess.gov/cfr/index.html
c. Applicable ANSI and IEEE codes, including but not limited to:
   (1) ANSI/IEEE C2 – National Electric Safety Code
d. NECA 1 – Standard for Good Workmanship in Electrical Construction.
e. Nebraska Life Safety Code as amended
f. Applicable Federal, State, and Local Electrical Codes.
g. Applicable Federal, State, and Local Energy Codes.
h. Applicable Federal, State, and Local Building Codes.
i. Applicable Federal, State, and Local Fire Codes.
j. Applicable City Electrical Code.
k. Applicable City Ordinances pertaining to electrical work.
l. Applicable Federal, State and Local - Environmental, Health and Safety Laws and Regulations.

295-2.5 Plumbing standards. Plumbing work shall be performed in accordance with the current editions of the standards listed below.

a. **Nebraska Plumbing Code (NPC)**
b. **Uniform Plumbing Code (UPC)**

CONSTRUCTION DOCUMENTATION

295-3.1 General certification. The Owner shall not provide review, comment or approve of any Contractor construction documents. The Contractor shall provide written certification that all aspects of the hangar design, hangar construction, and materials meet the requirements of this specification and all applicable federal, state and local codes. The certification forms are included in this specification. The design certification will be completed and signed by a Professional Engineer registered to practice in the State of Nebraska, and shall be furnished to the Owner before construction begins. The construction certifications shall be completed by the principal or owner of the Contractor's company, and furnished to the Owner at defined construction milestones for use in processing payment.

295-3.2 Construction record document. Furnish two (2) complete sets of foundation, structural, electrical and mechanical construction record documents to the Owner, following completion and acceptance of the hangar. These documents shall be for the Owner's records only, and no review, comment or approval shall be made or implied.

295-3.3 Shop drawings. In addition to the above, provide, in reproducible form with prints made by a process approved by the Engineer, shop drawings for major materials where called for and when requested by the Engineer.

Electrical Shop Drawings:

(1) Lockout/Tagout Program and Safety Program.
  a) The Contractor shall provide a complete copy of an electrical energy source Lockout/Tagout Program to the Owner, with copy to the Engineer. The document shall clearly identify the on-site master electricians and their contact information, including office and mobile telephone numbers.
  b) The Lockout/Tagout Program shall comply with Part 1910 – Occupational Safety and Health Standards (OSHA) Subpart S – Electrical, and meet the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), including requirements listed in 1910.331 through 1910.335.
  c) Implementation of the Lockout/Tagout Program and all other related safety requirements are the sole responsibility of the Contractor.
  d) The Contractor shall implement an electrical safety program that complies with NFPA 70E and 29 CFR 1926.
  e) Implementation of the Electrical Safety Program, determining and providing proper Personal Protective Equipment (PPE), training and enforcing personnel to wear the prescribed PPE, conducting work area safety inspections (including correcting deficiencies), and all other related safety requirements are the sole responsibility of the Contractor.
(2) Switchboards, panelboards, surge arresters, and disconnect switches.
(3) Motor starters and contactors including custom control wiring diagrams.
(4) Overcurrent devices including circuit breakers and fuses.
(5) Light fixtures and lamps.
(6) Conductors, cables, boxes, and conduits.
(7) Manholes, handholes, and pull boxes.
(8) Wiring devices and plates.
(9) Grounding system and layout.

295-3.4 Operations and maintenance manuals (O&Ms):

a. O&Ms shall comply with the General and Special Provisions and with the General and Supplemental Conditions. Furnish two (2) complete sets.

b. Securely bind each O&M set in a separate heavy-duty 3-ring, hardcover binder. Group materials by their Specification number. Provide type written index label tabs and a type written label for the spine of the binder, which indicates the included equipment types.

c. Provide complete descriptions, illustrations, specification data, etc., of all materials, fittings, devices, fixtures, special systems, etc., as required by the individual sections of this Division.

d. O&Ms of shop drawings, product data and samples will be accepted only when furnished by the Contractor. Data furnished from subcontractors and material suppliers directly to the Engineer will not be processed.

e. All O&Ms shall provide the following information:

(1) General Contractor.
(2) Sub-Contractor
(3) Distributor and/or Supplier
(4) Sales Agency

f. O&Ms shall not be approved or rejected by the Owner. These documents shall be for the Owner's records only, and no review, comment or approval shall be made or implied.

DELIVERY, STORAGE AND HANDLING

295-4.1 Deliver and store pre-fabricated components, sheets, panels, and other manufactured items so they will not be damaged or deformed. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Store metal sheets or panels so that weather accumulations will drain freely. Do not store sheets or panels in contact with other materials which might cause deflecting.

WARRANTY

295-5.1 General. Any warranties listed in this section shall be in addition to the Owner’s general warranties included in the Contract documents.

295-5.2 Roofing and siding panel finish warranty. Furnish the roofing and siding panel manufacturer’s written warranty, covering failure of the factory-applied exterior finish on metal wall, roof panels, and liner panels within the warranty period.

295-5.3 Warranty period. The warranty period for factory-applied exterior finishes on wall and roof panels shall be 20 years after the date of Substantial Completion.

COORDINATION

295-6.1 The Contractor is responsible for coordinating dimensions and foundation details with the building supplier, reinforcing steel supplier, subcontractors, his forces and any other affected parties to assure a complete, sound and finished project. Contractor shall carefully examine all items of work to be thoroughly familiar with items that require connections and coordination. Notify other tradesman of any deviations or special conditions necessary for the installation of the work. Interference between works of various disciplines shall be resolved by the Contractor prior to installation. Work installed not in compliance with the standards listed and without properly checking and coordinating as specified above shall, if necessary, be removed and properly reinstalled without additional cost to the Owner.

295-6.2 Equipment shall be installed in accordance with manufacturer's recommendation. Make all final electrical connections and coordinate all items with other trades.

295-6.3 Correct unnecessary damage caused due to installation of work, brought about through carelessness or lack of coordination. All openings, sleeves, and holes in slabs to be properly sealed, fire proofed and water proofed.

INSPECTION FEES AND PERMITS

295-7.1 Obtain and pay for all necessary permits and inspection fees required for construction. It shall be the Contractor's responsibility to become familiar with all permits and inspection fees associated with the corporate hangar construction at the site.

295-7.2 Contractor shall coordinate with utility companies and shall be responsible for all underground or aboveground differential costs charged by the utilities for new services to the facility.

MATERIALS

295-8.1 Hot-rolled structural shapes. ASTM A 36 or A 572.

295-8.2 Tubing or pipe. ASTM A 500, Grade B; ASTM A 501; or ASTM A 53.

295-8.3 Members fabricated from plate or bar stock. 42,000 psi minimum yield strength; ASTM A 529, A 570, or A 572.

295-8.4 Members fabricated by cold forming. ASTM A 607, Grade 50.

295-8.5 Galvanized steel sheets. ASTM A 446 with G90 coating; "Class" to suit building manufacturer's standards.

295-8.6 Anchor bolts. A307 non-headed, Grade C.

295-8.7 Concrete. Minimum 3,500 psi compressive strength at 28 days.

295-8.8 Reinforcing steel. ASTM A 615, Grade 60; deformed billet steel bars, unfinished.

295-8.9 Welded wire fabric. ASTM A 185.

295-8.10 Hangar exterior aluminum sign. The unlighted sign to be installed above the aircraft door on the airside exterior of the hangar shall be aluminum and manufactured by Signs by Tomorrow or approved equivalent. Sign shall be installed in accordance with the manufacturer's recommendations.

STRUCTURAL FRAMING COMPONENTS

295-9.1 Steel frames. Hot rolled structural steel shapes or tubing. Factory welded and shop painted. The main structural steel frames may be of post and beam or rigid frame at the Contractor's option. Furnish complete with attached plates, bearing plates, and splice members. Factory drilled for bolted field assembly.

295-9.2 End wall framing. May be post and beam or rigid frame at Contractor's option.

295-9.3 End wall columns. Hot rolled structural shapes or tubing. Shop painted.

295-9.4 Rod bracing. Adjustable, threaded steel rods, ½" diameter minimum; ASTM A 36 or A 572, Grade

D.

a. Secondary Framing: Purlins, eave struts, wall girts, flange and sag bracing; minimum 16 gage rolled formed sections. Shop painted.
b. Base channel, sill angle, end wall structural members (except columns and beams), purlin spacers; minimum 14 gage cold formed steel, galvanized.

295-9.5 Bolts. ASTM A 325 as necessary for design loads and connection details. Shop painted, except provide zinc plated units when in direct contact with panels.

ROOFING AND SIDING

295-10.1 General. Provide manufacturer's standard roofing and siding sheets. Provide flashings, closers, fillers, metal expansions joints, ridge covers, fascias, soffits and other sheet metal accessories, factory formed of same materials and finish as roofing and siding.

295-10.2 Siding sheets.

a. For exterior walls, interior walls, and liner panels, provide Standard 26 Ga. galvalume coated wall sheets by the building manufacturer or approved equal. Exterior and interior wall sheets shall be furnished full height. Exterior wall sheets shall be painted on one side with the painted side facing the exterior of the building; interior wall sheets and liner panels shall not be painted.
b. Exterior wall sheet shall cover all structural members of the building when the building is closed.
c. Exterior trim pieces shall be provided in manufacturer's standard configuration and attachment. Trim finish shall conform to siding finish.
d. Fasteners to be self-drilling sheet metal screws finished to match siding. Fasteners shall have bonded sealing washers.
e. Finish color shall match existing hangars. Owner to select from manufacturer standard colors.

295-10.3 Roof system. All Roofing: Roof sheets shall be standard 26 Ga. galvalume coated panels by the building manufacturer or approved equal. Roof panels shall be painted to match existing hangars. Owner shall select from the manufacturer's standard colors. Panels shall be furnished full length from building eave to ridge purlin. A pre-formed ridge cap shall be provided. Furnish written twenty-year (20) warranty on materials. A minimum one (1) foot roof sheet overhang, beyond the face of the building, shall be provided except where gutters are installed. Gutters shall be installed as shown in the plans to channel water from the roof away from the building.

295-10.4 Liner panels. The interior walls shall include liner panels from the floor to roof.

295-10.5 Interior wall and ceiling finish materials shall meet the requirements of Nebraska Life Safety Code

MISCELLANEOUS MATERIALS

295-11.1 Flexible closure strips. Closed-cell, expanded cellular rubber, self-extinguishing, cut or premolded to match corrugation configuration of roofing and siding sheets. Provide necessary to ensure weathertight construction.

295-11.2 Sealing tape. 100% solids, pressure sensitive grey polyisobutylene compound tape with release paper backing. Not less than ½" wide and 1/8" thick, nonsag, nontoxic, nonstaining and permanently elastic.

295-11.3 Joint sealant. As standard with the building manufacturer.

295-11.4 Door stops. Door stops shall be provided for all pedestrian doors to ensure that adjacent walls are not damaged and locking systems are not affected.

295-11.5 Insulation. 6" thick insulation with white WMP-VR facing on roof, exterior walls, and doors. "R" value shall be R19.

295-11.6 Fire extinguishers, cabinet and accessories. Larsen's Manufacturing Company is specified. Equivalent products of J. L. Industries and Potter Roemer are acceptable.

a. Each installation shall be in accordance with NFPA 10, Standard for Portable Fire Extinguishers, including mounting heights.

b. Extinguisher: Purple K, 20 lb. capacity, UL Rating 120B:C.

c. Cabinet: Architectural Series, Model 2712-SM steel cabinet for surface mounted installation with full wire glass vision panel. Provide cabinet in manufacture's standard white color. Provide with standard brackets. Provide with minimum 3 keys per each lockable cabinet.

d. Sign: Double-sided 4"x18" photo-luminescent sign with text "FIRE EXTINGUISHER", mounted directly above the cabinet with BOTTOM of sign at 80" above finished floor.

e. Installation: Install Cabinet and Extinguisher so that the handle of extinguisher is 48" above finished floor. Fire extinguisher cabinets shall be mounted to a 1 - 5/8" galvanized unistrut which is attached to the concrete floor with galvanized steel mounting bracket and sidewall girt.

SHEET METAL ACCESSORIES

295-12.1 General: Unless otherwise indicated, provide coated steel accessories with coated steel roofing and siding; coating shall be same as adjoining sheets and shall be fully covered by guarantee for adjoining sheets.

HANGAR DOOR

295-13.1 Aircraft hangar door may be either Hydraulic Swing or Bi-fold.

Hydraulic Door

295-13.2 The hangar door shall be an aluminum single-panel hydraulic door as manufactured by Hydroswing, or an approved equal. Door and all operating components shall be as manufactured by the door manufacturer or an approved equal, and shall be integral with hangar building design. Door framing members shall be welded in full size panels. Door frames shall have pre-located top hinges factory located to align with door truss hinges. Structural steel shall be ASTM, A36, A572 or A500 Grade B. Doors shall be hydraulically operated.

295-13.3 The door shall be installed according to manufacturer's installation instructions.

295-13.4 The hydraulic door shall be provided with a minimum 3'-0" x 6'-8" steel entry door, 26 Ga. trim package, weatherstripping, lockset keyed and master keyed.

295-13.5 The door opening for aircraft access shall have a minimum 70'-0" clear width, with a nominal clear height of 20'-0".

295-13.6 Provide door locking mechanism.

295-13.7 Door motors shall be 240 volt, single phase. See the one-line diagram for additional requirements. Submit complete power and control diagrams for door motors, disconnects, starters and open/stop/close control stations.

Bi-Fold Door

295-13.8 Bi-fold doors and all operating components shall be as manufactured by the building manufacturer or an approved equal, and shall be integral with hangar building design. Door framing members shall be welded in full size panels. Door frames shall have pre-located top hinges factory located to align with door truss hinges. Structural steel shall be ASTM, A36, A572 or A500 Grade B. Bi-fold doors shall be motorized.

295-13.9 Bi-fold door shall be installed according to manufacturer's installation instructions.

295-13.10 The Bi-fold door shall be provided with a minimum 3'-0" x 6'-8" steel entry door, 26 Ga. trim package, weatherstripping, lockset keyed and master keyed.

295-13.11 The door opening for aircraft access shall have a minimum 70'-0" clear doors opening with a nominal clear height of 20'-0".

295-13.12 Bi-fold door locking mechanism such as cam handles shall be provided with motor disengaging switches to be installed on the handles in order to prevent the motor from operating if the cam handle is in the lock position. Self-unlock side bifold door locks are an acceptable alternative to a motor disengaging switch.

295-13.13 Door motor(s) shall be 240 volt, 1-phase. See the electrical one-line diagram for additional requirements. Submit complete power and control diagrams for door motor(s), disconnects, starters and open/stop/close control stations for review and approval by the Engineer.

295-13.14 Emergency backup system: The backup system shall include backup tractor fittings, 12 VDC battery backup.

ELECTRICAL EQUIPMENT AND MATERIALS

295-14.1 All materials and equipment used in carrying out this contract shall be new, and shall have UL listing, or listing by other recognized testing laboratory when such listings are available.

ERECTION

295-15.1 General. Erection shall be as specified and in accordance with the erection instructions and drawings furnished by the manufacturer. Finished structure shall be proven weathertight. Dissimilar materials which are not compatible when contacting each other shall be insulated from each other by means of gaskets or insulating compounds. Improper or mislocated drill holes where permitted by the Engineer shall be plugged with an oversize screw fastener and gasketed washer; however, sheets with an excess of such holes or with such holes in critical locations shall not be used. Exposed surfaces shall be kept clean and free from sealants, metal cuttings, and other foreign materials. Stained, discolored or damaged sheets shall be removed from the site.

295-15.2 Framing and structural members. Anchor bolts shall be accurately set by template while the concrete is in a plastic state. Uniform bearing under base plates and sill members shall be provided using a nonshrinking grout when necessary. Members shall be accurately spaced to assure proper fitting of covering. As erection progresses, the work shall be securely fastened to resist the dead load, and wind and erection stresses.

WALL COVERING

295-16.1 Wall covering shall be applied with the longitudinal configurations in the vertical position. Accessories shall be fastened into framing members, except as otherwise approved. Closure strips shall be provided as indicated and where necessary to provide weathertight construction.

295-16.2 Lap for wall panels. Eliminate end laps to greatest extent possible. Where required, end laps shall be made over framing members with fasteners into framing members approximately 2 inches from the end of the overlapping sheet. Side laps shall be laid away from prevailing winds. Side lap distances, end lap distances, joint sealing, and spacing and fastening of fasteners shall be in accordance with the manufacturer's standard practice insofar as the maximum spacings specified are not exceeded and provided such standard practice will result in a structure which will be free from water leaks and meet design requirements. Exposed fasteners shall be installed in straight lines and shall present an orderly appearance. Spacing shall not exceed: 8 inches on center at end laps of covering, 12 inches on center at connection of covering to intermediate supports, and 18 inches on center at side laps of wall coverings except when otherwise approved. Method of applying joint sealant shall conform to the manufacturer's recommendation. Fasteners shall be installed in straight lines within a tolerance of ½ inch in the length of a bay. Fasteners shall be driven normal to the surface and to a uniform depth to properly seat the gasketed washers.

ROOF COVERING

295-17.1 Roof panels. Roof panels shall be fastened to framing members with self-drilling fasteners standard with the manufacturer. Spacing of fasteners shall be in accordance with the manufacturer's written instruction. Interlocking ribs shall be sealed. End laps of covering sheets and joints at accessories shall be sealed. Roof covering shall be applied with the longitudinal configurations in the direction of the roof slope. Closure strips shall be provided and as required to provide weathertight installation.

FIELD PAINTING

295-18.1 Immediately upon detection, abraded or corroded spots on shop-painted surfaces shall be wire brushed and touched up with the same material used for the shop coat. Shop-primed ferrous surfaces exposed on the building and all shop-primed surfaces of doors and windows shall be finish painted for protection. Factory color finished surfaces shall be touched up as necessary with the manufacturer's recommended touch-up paint.

ELECTRICAL

295-19.1 General.

a. Install a new and complete electrical service to the new hangar building. Refer to the Plans for details. Refer to the Specifications, including SS-300, for electrical equipment requirements.

b. Coordinate the new electrical service installation requirements with the Engineer, the Owner and the local electrical utility prior to installation work.

c. Furnish and install all electrical equipment, materials and appurtenances, including but not limited to all labor, equipment, tools, and incidentals necessary to install complete systems for all electrical equipment including power, lighting and equipment connections.

d. Coordinate all electrical work with the building manufacturer and equipment suppliers prior to installation.

e. Provide all electrical facilities required for connection to mechanical equipment and other special equipment. Disconnects shall be provided for all equipment and shall be rated for

the load and for the environment in which they are installed.

f. Hazardous Locations:

(1) The aircraft bay area inside the Hangar building shall be classified as hazardous locations in accordance with NEC Article 513. Refer to the Hangar Notes in the drawing for specific details. The intent is to avoid installing electrical equipment within these classified areas. However, any electrical work installed within classified hazardous areas shall be installed in accordance with NEC for a hazardous location area, including but not limited to explosion-proof rated enclosures, switches, receptacles, conduit seals, etc.

(2) The other rooms or areas inside the Hangar building that are NOT both suitably cut off and ventilated from the hangar bays shall be classified as hazardous location in accordance with NEC Article 513, Class I Division 2, from the floor to a height of 18" above finished floor. The intent is to avoid installing electrical equipment within these classified areas by installing all electrical items in these other areas at least 24" above finished floor.

(3) Adjacent areas in which flammable liquids or vapors are not likely to be released, such as electrical rooms, storage rooms, or other similar locations, shall not be classified where adequately ventilated and where effectively cut off from the hangar itself by walls or partitions. Install all electrical items in these areas at least 24" above finished floor.

g. Exterior Locations: Exterior areas shall be classified as wet locations. The exterior electrical work shall be installed in accordance with NEC for a wet location area. This shall include NEMA 3R enclosures and weatherproof switches, receptacles, etc.

h. Interior Non-Hazardous Locations: Utilize specification grade equipment installed in accordance with NEC.

i. All electrical systems shall be tested to the satisfaction of the Owner/Engineer.

295-19.2 Power.

a. Refer to the electrical one-line diagram in the plans for service and power distribution requirements. Coordinate and provide all appurtenances for a complete installation.

b. Install the underground secondary service feeder with minimum 30" cover.

c. Mark all underground duct and conduit locations by installing a 6" wide detectable warning tape, 12" below grade.

d. Install the new building's main disconnect mounted on an exterior wall surface at 5'-6" above finished grade and clearly labeled as the building disconnect with weatherproof nameplate "MAIN SERVICE DISCONNECT HANGAR".

e. Install the grounding electrode system in accordance with NEC including bonding to the building steel and to the reinforcing steel in the foundation.

f. Install the new main panelboard mounted on an interior wall surface at 5'-6" above finished grade. The panelboard shall be NEMA 1 enclosed, copper bussed, with copper neutral and ground bars. Provide a main circuit breaker panel with circuits indicated and required; refer to the panel schedule in the Plans for circuit descriptions and quantity of branch circuit

breakers. Provide branch circuit breakers for all equipment and loads within and on the new facility. Fill the remainder of the panel with spare circuit breakers unless otherwise noted. Label all breakers and install nameplates and signage on the panel in accordance with NEC and NFPA 70E.

g. Install new transformer, manual transfer switch and panelboard for connection of Owner's backup generator, configured to power the hangar door and specified interior lighting as indicated in the Plans. Coordinate weather proof receptacle type with generator plug. See SS-300 for equipment requirements.

h. Install new surge protective devices as indicated on the Plans. See SS-300 for equipment requirements.

295-19.3 Lighting.

a. Interior Locations in Hangar: Install light fixtures within the aircraft hangar bay above the floor at a minimum height of 21-0" above the finished floor. Provide junction box and conduit pendant mounts for all fixtures. Fixtures shall be totally enclosed, damp location rated, high bay style fixtures, high impact shatter resistant acrylic lens, constructed to prevent escape of sparks or hot metal particles, see schedule on the drawings.

(1) The interior lighting levels shall be designed to meet approximately 30 foot-candles maintained average.

b. Exterior Locations: Install light fixtures on the exterior walls for safety and security lighting. Exterior light fixtures shall be full cutoff type, wet location rated, see schedule on the drawings. Coordinate mounting heights prior to construction and secure fixtures to the building. A load rated 120-277V heavy-duty twist-lock weatherproof photocell with surge arrestor mounted above the roof level facing north shall control all exterior lighting. Coordinate exact location with Engineer prior to installation.

(1) Control exterior lighting loads utilizing a load rated photocell.

c. All fixtures shall be LED type.

295-19.4 Wiring devices.

a. Provide only specification grade wiring devices. Attach weather-proof permanent labels to all switches, receptacles and other disconnects to clearly indicate the panelboard and its circuit number, for instance "LP-01".

b. Light switches that control hangar lighting and door push-button control stations that control hangar bay motorized doors shall be located within a maximum of three horizontal feet of personnel entries at 48" above finished floor, outside the hazardous location. Light switches shall be 120-volt, 20-amp rated.

c. Receptacles within the hangar bay shall be 120-volt, 20-amp, duplex, ground fault circuit interruption type, non-feed through type circuiting, mounted 48" above finished floor, and located on the wall of the bay outside the hazardous location.

d. All receptacles installed in aircraft hangars shall have ground fault circuit interruption protection for personnel.

e. Exterior receptacles shall be the 120-volt, 20-amp, duplex, ground fault circuit interruption

type, weather-proof while-in-use cover, and mounted 48” above finished floor.

295-19.5 Conduits.

a. All conductors shall be installed in conduit. Aluminum conduit shall not be used.

b. Install conduit systems overhead from main disconnect to panelboard and from panelboard to lighting, devices and equipment. The intent is for all conduit systems to avoid penetrating hazardous locations, including the 18” high hazardous location area at the floor.

c. Outdoors, below grade: Use Schedule 40PVC rigid nonmetallic conduit for straight runs underground with select backfill and buried to a depth of not less than 30" to the top. Use rigid steel conduit for all elbows, bends and vertical risers from below grade to above grade.

d. Outdoors, above grade: galvanized rigid steel conduit.

e. Interior Non-Hazardous Locations: Conduit shall be steel and be installed in accordance with NEC requirements.

f. If conduits are installed within hazardous locations, then all the requirements within NEC Article 501 - Class I Locations and Article 513 – Aircraft Hangars apply including but not limited to utilizing only galvanized rigid steel conduit, installing explosion-proof conduit seals in Class I Division 1 and Class I Division 2 locations, installing explosion-proof rated equipment, etc.

295-19.6 Conductors.

a. Service entrance, feeder and branch circuit wiring shall be Type THHN/THWN-2 minimum, 600 volt rated.

b. Branch circuit wiring shall be minimum No. 12 AWG size.

c. Provide copper conductors only. Aluminum conductors shall not be used.

d. Utilize the standard color code for the voltage system. Typically, black (Phase A), red (Phase B), blue (Phase C) white (neutral), green (ground) for a 120/208-volt system. Install color code identification nameplate on the front of the lighting panelboard and the main disconnect switch.

e. Provide weather-proof self-laminating labels to label all conductors within junction boxes and other accessible locations.

295-19.7 Equipment accessories.

a. Provide dedicated disconnect switches for the equipment within the hangar bay, mounted and located adjacent to the unit, clearly labeled, NEMA 12 interior, NEMA 3R exterior, totally enclosed and gasketed, with disconnects located outside hazardous locations.

b. For hangar door power, provide dedicated branch circuit for each door and provide disconnect and/or receptacle as required for final door power connections. The door motor shall not be located above wings and engine enclosures of aircraft and shall be located outside all hazardous location areas.

c. Interior non-hazardous locations, enclosures shall be NEMA 1 unless otherwise noted.

d. Exterior non-hazardous locations, enclosures shall be NEMA 3R.

295-19.8 Accessories and appurtenances.

a. For indoor locations, utilize hot-dipped galvanized steel strut with stainless steel mounting hardware.

b. For outdoor and indoor wet and damp locations, utilize stainless steel strut with stainless steel mounting hardware.

c. Provide conduit clamps with vibra-cushions to support and protect the conduits.

d. Provide end caps on steel struts for protection.

e. Equipment racks, strut support systems, mounting hardware, and other accessories shall be corrosion resistant hot-dipped galvanized steel. Provide a complete equipment rack shop drawing for the electrical equipment showing attachment to building structure, floor anchoring, submitted equipment dimensions, conduits, and appurtenances. Equipment racks and strut support systems shall be adequate in size and strength for the equipment to be installed.

f. Provide outlet boxes and conduit pendants to support all light fixtures.

IDENTIFICATION OF ELECTRICAL EQUIPMENT

295-20.1 Properly identify the following:

a. Main disconnect switch
b. Panelboards and individual devices within it
c. Safety switches and disconnect switches
d. Individually mounted circuit breakers
e. Wiring devices
f. Conductors labeled in all accessible locations
g. Surge protective devices
h. Telecommunication enclosures and boards
i. Ground bars
j. Transformers

295-20.2 Utilize permanent nameplates with engraved lettering. Utilize UL listed wire labels rated for the specific area or environment.

295-20.3 Install all identification and warning nameplates and labels as required by the National Electrical Code.

TEMPORARY LIGHTS AND POWER

295-21.1 Provide a temporary electrical lighting and power distribution system of adequate size to properly serve the following requirements, including adequate feeder sizes to prevent excessive voltage drop. Temporary work shall be installed in a neat and safe manner in accordance with the NEC Article 305, and as required by OSHA and applicable local safety codes. The Contractor will pay for power consumption.

ELECTRICAL TESTING

295-22.1 On completion of work, installation shall be completely operational and entirely free from ground, short circuits, and open circuits. Perform a thorough operational test. Furnish all labor, materials and instruments for above tests.

295-22.2 Prior to final observation and acceptance test, all electrical systems and equipment shall be in satisfactory operating condition, including, but no limited to the following:

a. Electrical Distribution System
b. Electric Motors for All Equipment
c. Electric Lighting

MECHANICAL

295-23.1 The mechanical systems shall be installed in accordance with the current adopted mechanical code of the State of Nebraska as well as any local codes or requirements.

295-23.2 The ventilation system shall conform to the guidelines and requirements as shown in the plans.

295-23.3 The interior heating units shall be installed at the locations shown on the plans or as approved by the Engineer. Coordinate exact equipment locations with the Engineer and avoid structural and other system components. Make utility service connections in coordination with, and to the service provider's requirements in accordance with the facility capacity requirements.

295-23.4 A floor trench drain with sump pit is to be installed in the floor of the hangar as shown in the plans. The trench shall have a total capacity of 375 gallons, and the grates shall be rated for a Class D loading.

FOUNDATION

295-24.1 Hangar foundation slab shall be concrete with thickness and reinforcing as determined by the Contractor's licensed engineer. Final contraction joint layout is the responsibility of the Contractor and shall be as required to ensure the slab on grade does not crack. Contraction joints shall be sealed with an appropriate sealer. See grading plans for slab edge elevations. Hangar foundations shall be designed to accommodate an aircraft weighing 20,000 pounds with a single wheel gear configuration.

295-24.2 See grading plans for slab edge elevations.

FLOOR COATING

295-25.1 Not Required.

GUARANTEE

295-26.1 The building shall be guaranteed against water leaks arising out of or caused by ordinary wear and tear by the elements for a period of five years. Such guarantee shall start upon acceptance of the work or the date the Owner takes beneficial possession, whichever is earlier.

295-26.2 The Contractor shall guarantee that the hangar foundations shall drain incidental surface water across the sloped portion of the floor slab to the exterior edge of the floor slab.

295-26.3 The Contractor shall furnish manufacturer's guarantees for roof and wall panels.

METHOD OF MEASUREMENT

295-27.1 Hangars will be measured for each item completed in-place according to the construction milestones below. Prior to beginning construction, the Contractor Certification for Design shall be completed and submitted to the Engineer.

295-27.2 50% Completion – Fifty percent completion shall be considered construction of the foundation (including footings, slabs and anchor bolt installation), construction of the finished slab, and installation of all underground electrical and mechanical items. Contractor Certification For Construction - 50% Complete shall be completed and submitted to the Engineer at the completion of this work.

295-27.3 95% Completion – Ninety five percent completion shall be considered substantial completion of the complete building, including all siding, roofing, and all electrical and mechanical items. At the completion of this work, the building shall be ready for final inspection and a final punch-list by the Owner and Engineer. Contractor Certification For Construction - 95% Complete shall be completed and submitted to the Engineer at the completion of this work.

295-27.4 100% Completion – Final completion shall be considered complete when the Owner's final punch-list is completed, the building occupancy permit is obtain, and occupancy of the building is available for tenants.

BASIS OF PAYMENT

295-28.1 Hangars constructed and measured as provided above shall be paid for at the unit bid price per each item constructed for each size of hangar constructed. This price shall be full compensation for all work contained required to construct the hangars.

Payment will be made under:

Item SS-295-28.1 70' x 60' Clear Span Box Hangar – per Each

CONTRACTOR CERTIFICATION FOR DESIGN

Owner Name: City of Hastings

Airport: HSI Municipal Airport

Project Description: Box Hangar Construction

Contractor: _____

SS-295 of these contract documents requires certification from the Contractor that he/she will comply with applicable federal, state and local codes and other requirements included in these specifications concerning Hangar design and construction. The following list of certified items includes major requirements for design. However, the list is not comprehensive, nor does it relieve the Contractor from fully complying with all applicable statutory and administrative standards. The certification must be signed by a Professional Engineer registered to practice in the State of Nebraska. Every certified item below must be initialed by a Professional Engineer registered to practice in the State of Nebraska. This certification shall be completed and furnished to the Owner before construction begins. Each certified item with a "no" response must be fully explained in an attachment to this certification.

1. **Article 1.1 - Description:** The design of the hangars has been completed in accordance with all items contained in article 1.1, "Description".

Yes_____No *

2. **Article 2.1 - Quality Assurance:** The design of the hangars has been completed in accordance with all items contained in article 2.1, "Quality Assurance".

Yes_____No *

3. **Article 3.1 – Construction Documentation:** The design of the hangars has been completed in accordance with all items contained in article 3.1, "Construction Documentation".

Yes_____No *

4. **Article 4.1 - Delivery, Storage and Handling:** The design of the hangars has been completed in accordance with all items contained in article 4.1, "Delivery, Storage and Handling".

Yes_____No *

5. **Article 5.1 - Warranty:** The design of the hangars has been completed in accordance with all items contained in article 5.1, "Warranty".

Yes_____No *

6. **Article 6.1 - Coordination:** The design of the hangars has been completed in accordance with all items contained in article 6.1, "Coordination".

Yes_____No *

7. **Article 7.1 – Inspection Fees and Permits:** The design of the hangars has been completed in accordance with all items contained in article 7.1, "Inspection Fees and Permits".

Yes_____No *

8. **Article 8.1 – Materials:** The design of the hangars has been completed in accordance with all items contained in article 8.1, "Materials".

Yes_____No *

9. **Article 9.1 – Structural Framing Components:** The design of the hangars has been completed in accordance with all items contained in article 9.1, "Structural Framing Components".

Yes_____No *

10. **Article 10.1 – Roofing and Siding:** The design of the hangars has been completed in accordance with all items contained in article 10.1, "Roofing and Siding".

Yes_____No *

11. **Article 11.1 – Miscellaneous Materials:** The design of the hangars has been completed in accordance with all items contained in article 11.1, "Miscellaneous Materials".

Yes_____No *

12. **Article 12.1 – Sheet Metal Accessories:** The design of the hangars has been completed in accordance with all items contained in article 12.1, "Sheet Metal Accessories".

Yes_____No *

13. **Article 13.1 –Hangar Door:** The design of the hangars has been completed in accordance with all items contained in article 13.1, "Hangar Doors".

Yes_____No *

14. **Article 14.1 – Electrical Equipment and Materials:** The design of the hangars has been completed in accordance with all items contained in article 14.1, "Electrical Equipment and Materials".

Yes_____No *

15. **Article 15.1 – Erection:** The design of the hangars has been completed in accordance with all items contained in article 15.1, "Erection".

Yes_____No *

16. **Article 16.1 – Wall Covering:** The design of the hangars has been completed in accordance with all items contained in article 16.1, "Wall Covering".

Yes_____No *

17. **Article 17.1 – Roof Covering:** The design of the hangars has been completed in accordance with all items contained in article 17.1, "Roof Covering".

Yes_____No *

18. **Article 18.1 – Field Painting:** The design of the hangars has been completed in accordance with

all items contained in article 18.1, "Field Painting".

Yes_____No *

19. **Article 19.1 – Electrical:** The design of the hangars has been completed in accordance with all items contained in article 19.1, "Electrical".

Yes_____No *

20. **Article 20.1 – Identification of Electrical Equipment:** The design of the hangars has been completed in accordance with all items contained in article 20.1, "Identification of Electrical Equipment".

Yes_____No *

21. **Article 21.1 – Temporary Lights and Power:** The design of the hangars has been completed in accordance with all items contained in article 21.1, "Temporary Lights and Power".

Yes_____No *

22. **Article 22.1 – Electrical Testing:** The design of the hangars has been completed in accordance with all items contained in article 22.1, "Electrical Testing".

Yes_____No *

23. **Article 23.1 – Mechanical:** The design of the hangars has been completed in accordance with all **items** contained in article 23.1, "Mechanical".

Yes_____No *

24. **Article 24.1 – Foundation:** The design of the hangars has been completed in accordance with all items contained in article 24.1, "Foundation".

Yes_____No *

25. **Article 25.1 – Floor Coating:** The design of the hangars has been completed in accordance with all items contained in article 25.1, "Floor Coating".

Yes_____No *

26. **Article 26.1 – Guarantee:** The design of the hangars has been completed in accordance with all items contained in article 26.1, "Guarantee".

Yes_____No *

27. **Engineering Certifications:** Attached to this document are signed letters from registered Professional Engineer, as applicable, that certifies that the design of the hangars has been completed in accordance with these specifications and meets all applicable federal, state and local codes.

Structural Yes_____No *

Electrical Yes_____No *

Mechanical Yes_____No *

* "No" answers are further explained by the enclosed attachments.

I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, that the design of the Hangars meets all applicable federal, state and local codes, and that the attachments, if any, are correct and complete.

Signed: _____
Contractor's Authorized Representative

Date: _____

_____
Typed Name and Title of Contractor's Representative

CONTRACTOR CERTIFICATION FOR CONSTRUCTION - 50% COMPLETE
FOUNDATION AND UNDERGROUND UTILITIES COMPLETE

Owner Name: City of Hastings

Airport: HSI Municipal Airport

Project Description: Box Hangar Construction

Contractor: _____

SS-295 of these contract documents requires certification from the Contractor that he/she will comply with applicable federal, state and local codes and other requirements included in these specifications concerning Hangar construction. The following list of certified items includes major requirements for this aspect of project implementation. However, the list is not comprehensive, nor does it relieve the Contractor from fully complying with all applicable statutory and administrative standards. Every certified item below must be initialed, and the certification must be signed, by a principal or owner of the Contractor's company. This certification shall be completed and furnished to the Owner at the indicated construction milestones, as determined by the Engineer. Each certified item with a "no" response must be fully explained in an attachment to this certification.

1. **Article 1.1 - Description:** The construction of the hangars has been completed in accordance with all items contained in article 1.1, "Description".

Yes_____No *

2. **Article 2.1 - Quality Assurance:** The construction of the hangars has been completed in accordance with all items contained in article 2.1, "Quality Assurance".

Yes_____No *

3. **Article 3.1 – Construction Documentation:** The construction of the hangars has been completed in accordance with all items contained in article 3.1, "Construction Documentation".

Yes_____No *

4. **Article 4.1 - Delivery, Storage and Handling:** The construction of the hangars has been completed in accordance with all items contained in article 4.1, "Delivery, Storage and Handling".

Yes_____No *

5. **Article 5.1 - Warranty:** The construction of the hangars has been completed in accordance with all items contained in article 5.1, "Warranty".

Yes_____No *

6. **Article 6.1 - Coordination:** The construction of the hangars has been completed in accordance with all items contained in article 6.1, "Coordination".

Yes_____No *

7. **Article 7.1 – Inspection Fees and Permits:** The construction of the hangars has been

completed in accordance with all items contained in article 7.1, "Inspection Fees and Permits".

Yes_____No *

8. **Article 8.1 – Materials:** The construction of the hangars has been completed in accordance with all items contained in article 8.1, "Materials".

Yes_____No *

9. **Article 9.1 – Structural Framing Components:** The construction of the hangars has been completed in accordance with all items contained in article 9.1, "Structural Framing Components".

Yes_____No *

10. **Article 10.1 – Roofing and Siding:** The construction of the hangars has been completed in accordance with all items contained in article 10.1, "Roofing and Siding".

Yes_____No *

11. **Article 11.1 – Miscellaneous Materials:** The construction of the hangars has been completed in accordance with all items contained in article 11.1, "Miscellaneous Materials".

Yes_____No *

12. **Article 12.1 – Sheet Metal Accessories:** The construction of the hangars has been completed in accordance with all items contained in article 12.1, "Sheet Metal Accessories".

Yes_____No *

13. **Article 13.1 –Hangar Door:** The construction of the hangars has been completed in accordance with all items contained in article 13.1, "Hangar Doors".

Yes_____No *

14. **Article 14.1 – Electrical Equipment and Materials:** The construction of the hangars has been completed in accordance with all items contained in article 14.1, "Electrical Equipment and Materials".

Yes_____No *

15. **Article 15.1 – Erection:** The construction of the hangars has been completed in accordance with all items contained in article 15.1, "Erection".

Yes_____No *

16. **Article 16.1 – Wall Covering:** The construction of the hangars has been completed in accordance with all items contained in article 16.1, "Wall Covering".

Yes_____No *

17. **Article 17.1 – Roof Covering:** The construction of the hangars has been completed in accordance with all items contained in article 17.1, "Roof Covering".

Yes_____No *

18. **Article 18.1 – Field Painting:** The construction of the hangars has been completed in accordance with all items contained in article 18.1, "Field Painting".

Yes_____No *

19. **Article 19.1 – Electrical:** The construction of the hangars has been completed in accordance with all items contained in article 19.1, "Electrical".

Yes_____No *

20. **Article 20.1 – Identification of Electrical Equipment:** The construction of the hangars has been completed in accordance with all items contained in article 20.1, "Identification of Electrical Equipment".

Yes_____No *

21. **Article 21.1 – Temporary Lights and Power:** The construction of the hangars has been completed in accordance with all items contained in article 21.1, "Temporary Lights and Power".

Yes_____No *

22. **Article 22.1 – Electrical Testing:** The construction of the hangars has been completed in accordance with all items contained in article 22.1, "Electrical Testing".

Yes_____No *

23. **Article 23.1 – Mechanical:** The construction of the hangars has been completed in accordance with all items contained in article 23.1, "Mechanical".

Yes_____No *

24. **Article 24.1 – Foundation:** The construction of the hangars has been completed in accordance with all items contained in article 24.1, "Foundation".

Yes_____No *

25. **Article 25.1 – Floor Coating:** The construction of the hangars has been completed in accordance with all items contained in article 26.1, "Floor Coating".

Yes_____No *

26. **Article 26.1 – Guarantee:** The construction of the hangars has been completed in accordance with all items contained in article 26.1, "Guarantee".

Yes_____No *

* "No" answers are further explained by the enclosed attachments.

50% Completion: I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, the construction was completed in accordance with all applicable federal, state and local codes, and that the attachments, if any, are correct and complete.

Signed: _____ Date:
Contractor's Authorized Representative

_____
Typed Name and Title of Contractor's Representative

CONTRACTOR CERTIFICATION FOR CONSTRUCTION - 95% COMPLETE
BUILDINGS COMPLETE

Owner Name: City of Hastings

Airport: HSI Municipal Airport

Project Description: Box Hangar Construction

Contractor: _____

SS-295 of these contract documents requires certification from the Contractor that he/she will comply with applicable federal, state and local codes and other requirements included in these specifications concerning Hangar construction. The following list of certified items includes major requirements for this aspect of project implementation. However, the list is not comprehensive, nor does it relieve the Contractor from fully complying with all applicable statutory and administrative standards. Every certified item below must be initialed, and the certification must be signed, by a principal or owner of the Contractor's company. This certification shall be completed and furnished to the Owner at the indicated construction milestones, as determined by the Engineer. Each certified item with a "no" response must be fully explained in an attachment to this certification.

1. **Article 1.1 - Description:** The construction of the hangars has been completed in accordance with all items contained in article 1.1, "Description".

Yes_____No *

2. **Article 2.1 - Quality Assurance:** The construction of the hangars has been completed in accordance with all items contained in article 2.1, "Quality Assurance".

Yes_____No *

3. **Article 3.1 – Construction Documentation:** The construction of the hangars has been completed in accordance with all items contained in article 3.1, "Construction Documentation".

Yes_____No *

4. **Article 4.1 - Delivery, Storage and Handling:** The construction of the hangars has been completed in accordance with all items contained in article 4.1, "Delivery, Storage and Handling".

Yes_____No *

5. **Article 5.1 - Warranty:** The construction of the hangars has been completed in accordance with all items contained in article 5.1, "Warranty".

Yes_____No *

6. **Article 6.1 - Coordination:** The construction of the hangars has been completed in accordance with all items contained in article 6.1, "Coordination".

Yes_____No *

7. **Article 7.1 – Inspection Fees and Permits:** The construction of the hangars has been

completed in accordance with all items contained in article 7.1, "Inspection Fees and Permits".

Yes_____No *

8. **Article 8.1 – Materials:** The construction of the hangars has been completed in accordance with all items contained in article 8.1, "Materials".

Yes_____No *

9. **Article 9.1 – Structural Framing Components:** The construction of the hangars has been completed in accordance with all items contained in article 9.1, "Structural Framing Components".

Yes_____No *

10. **Article 10.1 – Roofing and Siding:** The construction of the hangars has been completed in accordance with all items contained in article 10.1, "Roofing and Siding".

Yes_____No *

11. **Article 11.1 – Miscellaneous Materials:** The construction of the hangars has been completed in accordance with all items contained in article 11.1, "Miscellaneous Materials".

Yes_____No *

12. **Article 12.1 – Sheet Metal Accessories:** The construction of the hangars has been completed in accordance with all items contained in article 12.1, "Sheet Metal Accessories".

Yes_____No *

13. **Article 13.1 –Hangar Door:** The construction of the hangars has been completed in accordance with all items contained in article 13.1, "Hangar Doors".

Yes_____No *

14. **Article 14.1 – Electrical Equipment and Materials:** The construction of the hangars has been completed in accordance with all items contained in article 14.1, "Electrical Equipment and Materials".

Yes_____No *

15. **Article 15.1 – Erection:** The construction of the hangars has been completed in accordance with all items contained in article 15.1, "Erection".

Yes_____No *

16. **Article 16.1 – Wall Covering:** The construction of the hangars has been completed in accordance with all items contained in article 16.1, "Wall Covering".

Yes_____No *

17. **Article 17.1 – Roof Covering:** The construction of the hangars has been completed in accordance with all items contained in article 17.1, "Roof Covering".

Yes_____No *

18. **Article 18.1 – Field Painting:** The construction of the hangars has been completed in accordance with all items contained in article 18.1, "Field Painting".

Yes_____No *

19. **Article 19.1 – Electrical:** The construction of the hangars has been completed in accordance with all items contained in article 19.1, "Electrical".

Yes_____No *

20. **Article 20.1 – Identification of Electrical Equipment:** The construction of the hangars has been completed in accordance with all items contained in article 20.1, "Identification of Electrical Equipment".

Yes_____No *

21. **Article 21.1 – Temporary Lights and Power:** The construction of the hangars has been completed in accordance with all items contained in article 21.1, "Temporary Lights and Power".

Yes_____No *

22. **Article 22.1 – Electrical Testing:** The construction of the hangars has been completed in accordance with all items contained in article 22.1, "Electrical Testing".

Yes_____No *

23. **Article 23.1 – Mechanical:** The construction of the hangars has been completed in accordance with all items contained in article 23.1, "Mechanical".

Yes_____No *

24. **Article 24.1 – Foundation:** The construction of the hangars has been completed in accordance with all items contained in article 24.1, "Foundation".

Yes_____No *

25. **Article 25.1 – Floor Coating:** The construction of the hangars has been completed in accordance with all items contained in article 25.1, "Floor Coating".

Yes_____No *

26. **Article 26.1 – Guarantee:** The construction of the hangars has been completed in accordance with all items contained in article 26.1, "Guarantee".

Yes_____No *

* "No" answers are further explained by the enclosed attachments.

95% Completion: I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, the construction was completed in accordance with all applicable federal, state and local codes, and that the attachments, if any, are correct and complete.

Signed: _____ Date:
Contractor's Authorized Representative

_____
Typed Name and Title of Contractor's Representative

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ITEM SS-300 BASIC ELECTRICAL REQUIREMENTS

DESCRIPTION

300-1.1 This item shall consist of furnishing and installing complete electrical systems as defined in the plans and in these specifications. The work includes the installation, connection and testing of new electrical systems, equipment and all required appurtenances to construct and demonstrate proper operation of the completed electrical systems.

300-1.2 The Contractor shall maintain current copies of all referenced and applicable standards on the job site. The Contractor is responsible to make known to the Engineer any conflict between plans and specifications that he observes or of which he is made aware.

EQUIPMENT AND MATERIALS

300-2.1 Standards.

a. Applicable National Fire Protection Association (NFPA) codes, including but not limited to:
   (1) NFPA 70 - National Electrical Code.
   (2) NFPA 70E - Standard for Electrical Safety in the Workplace.
   (3) NFPA 101 - Life Safety Code.
   (4) Internet Website: http://www.nfpa.org
b. Applicable Code of Federal Regulations (CFR) codes, including but not limited to:
   (1) 29 CFR 1910 - Occupational Safety and Health Standards (OSHA)
   (2) 29 CFR 1926 - Safety and Health Regulations for Construction.
   (3) Internet Website: http://www.gpoaccess.gov/cfr/index.html
c. ANSI/IEEE C2 - National Electrical Safety Code.
d. NECA 1 – Standard for Good Workmanship in Electrical Construction.
e. Applicable Federal, State and Local Electrical Codes.
f. Applicable Federal, State and Local Energy Codes.
g. Applicable Federal, State and Local Building Codes.
h. Applicable Federal, State and Local Fire Codes.
i. Applicable City Electrical Code.
j. Applicable City Ordinances pertaining to electrical work.
k. Applicable Federal, State and Local - Environmental, Health and Safety Laws and Regulations.

Contractor shall utilize the most current editions of standards, which are current at time of bid and as recognized by the Authority Having Jurisdiction for the respective standard.

300-2.2 General.

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the Engineer. All equipment and materials shall be new and meet applicable manufacturer's standards. All electrical components and products shall be tested and listed by an OSHA accepted, nationally recognized testing laboratory (NRTL) to conform to the standards indicated in these contract documents and to the industry standards required in the NEC, NEMA, IEEE, UL, and applicable FAA advisory circulars.

b. Manufacturer's certifications shall not relieve the Contractor of the Contractor's responsibility to provide materials in accordance with these specifications and acceptable to the Engineer. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when

directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components or electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with arrows or circles (highlighting is not acceptable). Contractor is solely responsible for delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the Contract Documents plans and specifications. The Engineer reserves the right to reject all equipment, materials or procedures, which, in the Engineer's opinion, does not meet the system design and the standards and codes, specified herein.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

f. After approval of submitted equipment, the Contractor shall supply the following Operation and Maintenance Manual documentation to the Owner. Two (2) complete sets of documentation shall be supplied for each model of equipment. The documentation shall be securely bound in heavy-duty 3-ring binders. The information for each piece of equipment shall be indexed using typewritten label tabs. The spine of each binder shall have a typewritten label, which indicates the included equipment types. The documentation shall include:

(1) Approved Submittals and Shop Drawings
(2) Cable Splicer Qualifications, Type and Voltage
(3) State Contractors License with Electrical Classification
(4) Master, Journeyman and Apprentice Electrician Licenses and Certifications
(5) Lockout/Tagout Program
(6) Installation Manuals
(7) Operation Manuals
(8) Maintenance Manuals
(9) Parts Lists, including recommended spare parts. Recommended spare parts shall be furnished with the respective equipment.
(10) Ground Rod Impedance Test Reports

g. After approval of the O&M Manuals, the Contractor shall provide three (3) complete electronic copies of all documentation in Adobe PDF file format on CD-R (non-rewriteable) discs storage media. The electronic files shall contain searchable text and include a hyperlink index for ease in locating information with the PDF file.

h. All requirements herein Item SS-300 shall be applicable to all referenced sections in these contract documents and applicable to all sections, which reference Item SS-300.

300-2.3 Operation and maintenance data.

Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment. Provide bound hard copies and electronic copies as noted in section 300-2.2.

a. Certificate of Substantial Completion, Release and Contractor's Affidavit, executed copies.

b. Final approved equipment submittals, including product data sheets and shop drawings, clearly labeled.

c. Installation manuals: Description of function, installation and calibration manuals, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.

d. Operations manuals: Manufacturer's printed operating instructions and procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; summer and winter operating instructions; and all programming and equipment settings.

e. Maintenance manuals: Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.

f. Service manuals: Servicing instructions and lubrication charts and schedules, including the names and telephone numbers of personnel to contact for both routine periodic and warranty service for equipment and materials provided under this Specification.

g. Final test reports, clearly labeled, including but not limited to, insulation resistance test reports, ground rod impedance test reports, cable pulling tension values logs, and equipment certification tests.

h. Final certified calibration sheets for all equipment and instruments.

300-2.4 Switches. Main disconnect switches 600 volt or less shall be UL service entrance rated, industrial circuit breaker type, pad-lockable, heavy duty type with neutral and ground kits and poles and ratings as indicated on the drawings and suitable for the application indicated. Exterior switches shall be NEMA 3R rated.

300-2.5 Overcurrent protective devices.

a. Circuit Breakers: Circuit breakers shall be the molded-case type, as indicated, with each pole equipped with inverse time and instantaneous overcurrent tripping devices. Circuit breakers shall be UL listed. Single pole breakers shall be full module size; two poles shall not be installed in a single module. Multi-pole breakers shall be of the common-trip type having a single operating handle, and for sizes of 50 amperes or less may consist of single pole breakers permanently assembled at the factory into a multi-pole unit. Circuit breakers used for motor disconnects and not in sight of the motor controller shall be capable of being locked in the open position. Minimum interrupting rating shall be as shown.

b. Fuses: All fuses shall be Bussman; Gould-Shawmut, or equal. Plug fuses are not acceptable. Cartridge fuses shall be rated at 250 or 600 volts, as applicable, and shall conform to the requirements of UL 198 and NEMA Standard FU-1. 600 volts or less fuses shall be rated at 200,000 Amperes Interrupting Capacity.

300-2.6 Panelboards. Furnish and install panelboards as indicated on the Drawings. Breakers shall be bolted type and have available fault current interrupting capacity as scheduled. Single pole breakers shall be full module size; two poles shall not be installed in a single module. All multi-pole breakers shall be common trip.

a. Panels shall be fully rated; series rated panels are not acceptable.

b. The panels shall be load balanced by measuring the loads and making circuit changes. Record the load readings before and after changes and submit test records. Differences exceeding 20 percent between phase loads, within a panelboard, are not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

c. The panel shall be UL listed, service entrance rated, and fully bussed with copper bussing, copper neutral bussing, and copper ground bar. All bolts used to connect current carrying parts together shall be front accessible. The panel shall have a securely attached metal nameplate listing the manufacturer, shop order number, panel type, voltage, ampacity and short circuit withstand rating. An individual terminal or lug shall be provided for each neutral allowing one wire per terminal.

d. The panel shall be surface mounted with semi-flush locking doors and matching keys. The Contractor shall provide a typed directory and install the same in the holder behind the transparent protective covering in the panels. Provide an exterior nameplate with panel and name, mounted at the top of the panel above the door. Doors shall match enclosures. Indoor surface mounted enclosures shall have pre-punched knockouts. The panels shall be General Electric, Square D, Cutler Hammer, or approved equal.

e. Panelboards and breakers shall conform to the requirements of Fed. Spec. W-P-115.

300-2.7 Surge protective devices.

Provide a surge protective device at the lighting panelboard as indicated in the plans and make all final connections. Lead lengths shall not exceed 18 inches.

SPD Type 2 (building exterior or interior mounted adjacent to panelboard; see plans for locations; coordinate exact installation requirements in the field with the Engineer prior to work):

a. 240/120-volt, 1-phase, 3-wire; connected via dedicated circuit breaker to panelboard.
b. UL 1449 Fourth Edition Type 2 Listed
c. UL 1283 Listed for Type 2
d. Voltage protection rating 700V for 240V systems L-N
e. Surge rating 100,000 amps per phase minimum
f. SCCR: Equal or exceed 200 kA
g. Inominal Rating: 20 kA
h. Undervoltage detection, phase and power loss monitoring
i. LED status indicator lights, audible alarm, transient counter, dry contacts
j. NEMA 1 enclosure
k. 5-year warranty

Provide surge protective devices to protect incoming voltage power circuits serving field equipment. Provide SPD Type 1 UL listed units designed for indoor or outdoor installations, with LED operational status lights and back-nipple mounting. For 120V or 120/240V, furnish units having minimum short circuit rating 25kA. For 277V or 480V, furnish units having minimum short circuit rating 200kA.

300-2.8 Control and timing relays. All relays shall be plug-in type relays and shall be furnished with socket base and all required mounting accessories; provide Allen-Bradley Bulletin 700 Type or approved equal. Provide relays with contacts meeting the ampacity rating requirements as indicated in the plans and as required for the equipment load to be connected and controlled.

300-2.9 Wire.

For ratings up to 600 volts, moisture and heat resistant thermoplastic wire conforming to Commercial Item Description A-A-59544A Type THWN-2 shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the plans or in the proposal.

Service, underground feeder, and underground branch circuit wiring shall be minimum Type THHN/THWN-2 unless otherwise noted.

Indoor feeder and indoor branch circuit wiring shall be minimum Type THHN/THWN-2 unless otherwise noted.

Unless otherwise indicated, conductors No. 10 AWG and smaller shall be solid, and conductors No. 8 AWG and larger shall be stranded.

For electrical work of 600 volts or less, all conductors, terminations, terminal blocks, lugs, connectors, devices and equipment shall be listed, marked, and rated 75 degrees C minimum unless otherwise noted.

Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway. Pull ropes and pull wires shall have sufficient tensile strength for the cable(s) to be pulled and installed. Damaged cable or raceway shall be replaced at no additional cost to the Owner. Calculate and do not exceed the maximum allowable pulling tension or maximum allowable sidewall bearing pressure for all conductors and cables.

Install pull wires in empty raceways. Use a polypropylene plastic line with not less than 200-pound tensile strength. Secure and leave at least 12 inches of slack at each end of pull wire to prevent it from slipping back into the conduit. Cap spare raceways with removable tapered plugs, designed for this purpose.

300-2.10 Conduit. Rigid steel conduit and fittings shall conform to the requirements of Underwriters Laboratories Standard 6, 514, and 1242.

300-2.11 Plastic conduit (for use below grade only). Plastic conduit and fittings-shall conform to the requirements of Fed Spec. W-C-1094 and Underwriters Laboratories Standards UL-651 and shall be one of the following, as shown in the plans:

a. Type I - Schedule 40 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II - Schedule 40 PVC suitable for either above ground or underground use.

c. Type III - Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in conduit.

Plastic conduit adhesive shall be a solvent cement manufactured specifically for gluing the specific type of plastic conduit and fitting.

300-2.12 Tape. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88, respectively, as manufactured by the Minnesota Mining and Manufacturing Company, or an approved equal.

The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70, National Electrical Code.

Copies of the National Electrical Code may be obtained from the National Fire Protection Associations, Inc., One Batterymarch Park, Quincy, Massachusetts 02269.

Concrete. Concrete shall be a commercial grade ready mix with a minimum 28-day compressive strength of 3500 PSI (unless otherwise noted) using 1-inch (25-mm) maximum size course aggregate, as determined by test cylinders made in accordance with ASTM C 31 and tested in accordance with ASTM C 39. Concrete located within one foot of the proposed ground surface shall contain 4 to 6 percent air content.

Mixing Conditions: Concrete shall not be mixed while the air temperature is below 40°F (4°C) without permission of the Engineer. If permission is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F (10°C) nor more than 100°F (38°C). The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his/her expense.

Placing Concrete: All concrete shall be placed during daylight, unless otherwise approved by the Engineer.

Cold Weather Protection: When concrete is placed at temperatures below 40°F (4°C), the Contractor shall provide satisfactory methods and means to protect the mix from injury by freezing. The aggregates, or water, or both, shall be heated to place the concrete at temperatures between 50°F and 100°F (10°C and 38°C). After the concrete has been placed, the Contractor shall provide sufficient protection such as cover, canvas, framework, heating apparatus, etc., to enclose and protect the structure and maintain the temperature of the mix at not less than 50°F (10°C) until at least 60% of the designed strength has been attained.

Reinforcing: All reinforcing steel bars shall conform to ASTM A615, Grade 60.

CONSTRUCTION METHODS

300-3.1 Lockout/tagout program. The Contractor shall provide a complete copy of an electrical energy source Lockout/Tagout Program to the Owner, with copy to the Engineer. The document shall clearly identify the on-site master electricians and their contact information, including office and mobile telephone numbers.

The Lockout/Tagout Program shall comply with Part 1910 – Occupational Safety and Health Standards (OSHA) Subpart S – Electrical, and meet the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), including requirements listed in 1910.331 through 1910.335.

Implementation of the Lockout/Tagout Program and all other related safety requirements are the sole responsibility of the Contractor.

300-3.2 Safety program. The Contractor shall implement an electrical safety program that complies with NFPA 70E and 29 CFR 1926.

Implementation of the Electrical Safety Program, determining and providing proper Personal Protective Equipment (PPE), training and enforcing personnel to wear the prescribed PPE, conducting work area safety inspections (including correcting deficiencies), and all other related safety requirements are the sole responsibility of the Contractor.

All work involved in the preparation and implementation of the safety program will not be measured for separate payment but will be considered subsidiary to the lockout/tagout bid item.

300-3.3 Preconstruction meeting.

A preconstruction meeting will be held with the Airport Engineer and Contractor, prior to any work. Complete submittals and shop drawings will be submitted at this time for review. An equipment procurement schedule will be provided by the Contractor with an anticipated field construction start date. The progress construction schedule will be submitted for review each week and shall outline all installation, testing and demolition work.

300-3.4 Utility services. A new electrical service entrance is required. Refer to the electrical one-line diagram in the Plans for power service and distribution requirements.

300-3.5 General.

The Contractor shall be responsible for coordinating all electrical work with the Utility. The Contractor shall provide temporary service conductors and raceway system. The Contractor shall then provide and connect permanent service conductors and raceway system after the completion.

All secondary conductors and controls, signaling and lighting shown in or on buildings are included in this project. Electrical service shall be extended from the service equipment as indicated.

In general, the various electrical equipment and material to be installed by the various trades under this specification shall be run as indicated, as specified herein, as required by particular conditions at the site, and as required to conform to the generally accepted standards to complete the work in a neat and satisfactory manner. The following is a general outline concerning the running of various systems and is to be expected where the drawings or conditions at the buildings necessitate deviating from these standards.

The drawings and specifications are complementary; any work required by one, but not by the other, shall be performed as though required by both.

The Contractor shall maintain copies of all equipment installation manuals on site during construction.

All conduits shall be run exposed in the equipment rooms or run concealed as indicated.

The construction details of the building are illustrated on the drawings. Each Contractor shall thoroughly acquaint himself with the details before submitting his bid as no allowances will be made because of the Contractor's unfamiliarity with these details.

The electrical plans do not give exact locations, etc., and do not show all the offsets, control lines, junction boxes, and other installation details. Each Contractor shall carefully lay out his work at the site to conform to the job conditions, to conform to details of installation supplied by the manufacturers of the equipment to be installed, and thereby to provide complete operating systems.

The electrical plans show diagrammatically the locations of the various electrical outlets and apparatus and the method of circulating and controlling them. Exact locations of these outlets and apparatus shall be determined by reference to the general plans and to all detail drawings, etc., by measurements at the buildings, and in cooperation with other crafts, and in all cases shall be subject to the approval of the Engineer. The Engineer reserves the right to make any reasonable change in location of any outlet or apparatus before installation, without additional cost to the Owner.

These Specifications and the accompanying Drawings are intended to cover systems which will not interfere with the structure of the buildings, which will fit into the several available spaces, and which will insure complete and satisfactory systems. Each bidder shall be responsible for the proper fitting of his material and apparatus into the buildings.

Should the particular equipment which any bidder proposes to install require other space conditions than those indicated on the Drawings, he shall arrange for such space with the Engineer before submitting his bid. Should changes become necessary because of failure to comply with this clause, the Contractor shall make such changes at the Contractor's expense.

Should the particular equipment which any bidder proposes to install require other installation methods, such as larger light base junction structures, etc., he shall include all such equipment and appurtenances in his bid. Should changes become necessary because of failure to coordinate equipment requirements and comply with this clause, the Contractor shall make such changes at the Contractor’s expense.

The Contractor shall be responsible to see that each party furnishes electrical equipment which meets the electrical requirements specified herein and that all systems work together to produce the specified operation.

Where two or more units of the same kind or class of equipment are required, these shall be products of a single manufacturer; however, the component parts need not be the products of one manufacturer.

Each Contractor shall submit working scale drawings of all his apparatus and equipment which in any way varies from these Specifications and Plans, which shall be checked by the Engineer and approved before the work is started, and interferences with the structural conditions shall be corrected by the Contractor before the work proceeds.

Electrical equipment, such as switchgear, switchboards, panelboards, load centers and other power supply equipment, shall not be used as a common enclosure, pull box or junction box for routing conductors of different systems, unless the equipment is specifically designed for this purpose and indicated as such on the Plans.

All electrical equipment shall be securely mounted as indicated in the plans, as required by the contract specifications, as required by guidelines and codes, and as required by the manufacturer using hardware compliant with the environmental conditions.

Interior components of electrical enclosures shall be securely mounted using appropriate hardware within the enclosure. Adhesives or adhesive tapes/strips are not allowed and are prohibited.

Electrical components, including but not limited to, relays, circuit boards, electronics, etc., shall be installed within approved enclosures.

The Contractor shall keep ends of conduits, including those extending through roofs, equipment and fixtures covered or closed with caps or plugs to prevent foreign material from entering during construction.

Where portions of raceways are known to be subjected to different temperatures, where condensation is a problem, and where passing from interior to exterior of a building, the portion of raceway or sleeve shall be filled with an approved material to prevent the circulation of air, prevent condensation, and prevent moisture entry. Sealing of raceways shall not occur until after the conductors and cables have been installed, tested and accepted by the Engineer.

The Contractor shall install any temporary lines and connections required to maintain electric services and safely remove and dispose of them when complete.

All temporary wiring shall conform to OSHA standards. Remove temporary services when work is complete. Any damage to electrical equipment caused by the Contractor shall be repaired at no cost to the Owner.

All non-current carrying parts and neutrals shall be grounded as indicated on the Drawings or as required by the Codes.

White and/or gray outer finish conductors may only be used as grounded conductors or neutral conductors in accordance with NEC.

Install insulated green equipment grounding conductors with all feeder and branch circuits.

Provide separate insulated equipment grounding conductors from grounding system to each electrical equipment, telecommunication equipment, other special electrical system equipment, and appurtenance item location in accordance with NFPA 70 and other applicable standard requirements.

The bidder shall inspect the site, thoroughly acquaint himself with conditions to be met and work to be accomplished. Failure to comply with this shall not constitute grounds for any additional payments.

Where electrical equipment is installed that causes electrical noise interference with other systems either existing or installed under this contract, the offending equipment shall be equipped with isolating transformers, filters, reactors, shielding, or any other means as required for the satisfactory suppression of the interferences, as determined by the Engineer.

All junction boxes, expansion joints, flexible connections, instruments and similar items requiring servicing or repairs shall be installed in an accessible location.

All salvage and equipment removed by the work shall remain the property of the Owner. Material removed from the project shall be stored on the project site where and as directed. Debris shall be removed from the job site and disposed of by the Contractor.

The Contractor shall maintain his work area clean and orderly at all times. Debris shall be removed promptly. The electrical system shall be thoroughly cleaned inside and outside of all enclosures to remove all metal shavings or other work debris, dust, concrete splatter, plaster, paint and lint.

The Contractor shall do all excavating and backfilling made necessary by electrical work and shall remove all surplus or supply any earth required to establish the proper finished grade.

The Contractor shall do all cutting and patching made necessary by electrical work, but in no case shall he cut through or into any structural member without written permission of the Engineer.

All steel conduits, supports, channels, fittings, nuts, bolts, etc. shall be galvanized, corrosion-resistant type unless otherwise noted.

An approved anti-seize compound shall be used on all threads to prevent equipment and thread damage.

Equipment shall be installed in accordance with manufacturer's recommendation. Make all final electrical connections and coordinate all items with other trades.

Correct unnecessary damage caused due to installation of work, brought about through carelessness or lack of coordination. All openings, sleeves, and holes to be properly sealed, fire proofed and waterproofed. Any water leaks arising from project construction will be immediately corrected to the satisfaction of the Owner and the Engineer.

300-3.6 Power supply equipment. Electrical equipment, such as switchgear, switchboards, panelboards, load centers, and other power supply equipment, shall not be used as a common enclosure, pull box or junction box for routing conductors of different systems, unless the equipment is specifically designed for this purpose and indicated as such on the Plans.

If shown in the plans, the power supply equipment shall be set on concrete housekeeping pads to provide a minimum space of 3-1/2 inches between the equipment and the floor. All equipment shall be secured to the floor or wall in accordance with the manufacturer's recommendations and these contract document requirements.

300-3.7 Duct and conduit. Conduits shall be galvanized rigid steel unless otherwise indicated or specified. Refer to one-line diagram conduit notes for specific requirements.

Conduit runs shall be one trade size continuously with no reducers allowed. Changing of conduit size is only permitted at manholes, handholes, and boxes and conduit bodies used as outlet, device, junction, or pull boxes, including approved, listed fittings with removable covers.

Use an approved, listed adapter/coupling to convert to other types of conduit. Reducer couplings are not allowed.

For underground service entrance, feeder and branch circuit raceways, offsets and bends over 30 degrees and elbows in Schedule 40 PVC conduit runs shall be Schedule 80 PVC conduit. Underground service entrance PVC conduits shall be concrete encased unless otherwise noted. Underground PVC conduits shall be concrete encased under driveways, roadways, parking lots and other paved areas.

Non-encased conduits shall convert to concrete encased ducts under all paved areas and shall extend at least 3 feet beyond the edges of the pavement unless otherwise noted.

The Contractor shall provide a staked centerline or offset for the duct and manhole system - utilizing the drawings and a site inspection of the existing grounds, grades and utility crossings. The Owner and Engineer shall approve the staking plan that shall be indicated on a drawing submitted for approval before starting any excavation for the ducts. The staking plan shall indicate the proposed location, elevation and dimensions of manholes and handholes. The Engineer reserves the right to adjust duct, manhole and handhole locations and elevations before installation at no additional cost to the Owner.

The bottom surface of trenches shall be essentially smooth and free from coarse aggregate.

Install grounding-and-bonding type bushings and bonding jumpers on all service entrance conduits and on all feeder and branch circuit conduits.

Use conduit bushings at each conduit termination. Where No. 4 AWG or larger ungrounded wire is installed, use insulated bushings.

When EMT is allowed, utilize only steel compression fittings. Die-cast and set-screw fittings shall not be used.

Use double lock nuts at each conduit termination. Use weather tight hubs in damp and wet locations. Sealing lock nuts shall not be used.

Grounding continuity to rigid metal conduit shall be accomplished by grounding bushings/adapters with lugs for connection to grounding counterpoise and/or grounding electrode conductor as defined by NEC.

All exposed wiring shall be run in not less than 1/2 inch (12 mm) galvanized rigid steel conduit. All conduits shall be installed to provide for drainage. Conduit shall be attached to wooden structures with galvanized pipe straps and fastened with galvanized wood screws not less than No. 8 nor less than 1-1/4 inches (31 mm) long. There shall be at least two fastenings for each 10-foot (3 m) length.

Existing ducts may require clearing before use. It is the responsibility of the Contractor to locate the existing ducts, identify empty or partially empty conduits and clear the conduits as required. Where new cable is to be installed in existing duct, the full length of the duct shall be cleared of debris by mechanical means before the installation of the new cable. Acceptable methods of clearing existing ducts include "hydro-jetting" and "roto-rooting." All existing cables in each re-used duct shall be replaced for the length of the duct and properly spliced in a method approved by the Engineer. Clearing of existing duct banks or conduits is incidental to the cable pay item.

Dedicated ground rods shall be installed and exothermically welded to the counterpoise wire at each end of a duct bank crossing under pavement.

For concrete markers, the impression of letters shall be done in a manner, approved by the Engineer, to affect a neat, professional appearance. The letters shall be stenciled neatly. After placement, all markers shall be given one coat of high-visibility aviation orange paint, as approved by the Engineer.

300-3.8 Backfill, compaction, and restoration. Refer to the backfill, compaction and restoration requirements within Item P-152 where other compaction requirements are specified (under pavements, embankments, etc.)

Trenches shall be backfilled and compacted in 6" layers to 90% maximum density for cohesive soils and to 100% maximum density for non-cohesive soils, as determined by ASTM D1557. The in-place field density shall be determined in accordance with ASTM D1556, D2167, or D6938.

Backfilling from two directions will not be allowed. No backfilling will be accomplished without the approval of the Engineer or Construction Observer. The Contractor shall ensure all trenches are inspected prior to being covered and prior to encasement. Any uninspected trenches which are prematurely covered shall be exposed for inspection at the Engineer and Owner's convenience at no additional cost to the Owner. The Construction Observer will coordinate with the Contractor for advance scheduling of trench inspection.

Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD) and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

300-3.9 Cable and utility coordination. Underground cable and utilities exist within and adjacent to the limits of construction. An attempt has been made to locate these cables and utilities on the Plans. All existing cable and utilities may not be shown on the Plans and the location of the cables and utilities shown may vary from the location shown on the Plans. Prior to beginning of any type of excavation, the Contractor shall contact the utilities, the airport maintenance staff, FAA field personnel and other organizations as required and make arrangements for the location of the utilities on the ground. The Contractor shall maintain the cable and utility location markings until they are no longer required.

The Contractor shall replace or repair any underground cable or utility that has been damaged by the Contractor during excavation to the satisfaction of the owner of the cable or utility at no additional cost to the Owner.

The Contractor shall be responsible for all coordination work associated with existing and new utilities, their marking, their identification, proposed outages/shutoffs, connections, cutovers, etc.

300-3.10 Wiring. The Contractor shall furnish all labor and materials and shall make complete electrical connections in accordance with the wiring diagram furnished with the project plans. The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70, National Electrical Code.

Provide color-coding for phase identification.

Colors for 240/120V Circuits:

a. Phase A: Black
b. Phase B: Red
c. Neutral: White

All new electrical cable shall be marked using color-coded plastic electrical tape, which is specifically designed for application on polyethylene-jacketed cable. The tape shall be applied as detailed on the Plans. Marking tape shall be Scotch 35 Vinyl Plastic tape or approved equal.

300-3.11 Marking and labeling. Properly identify all electrical equipment.

Wire/Cable Designation Tape Markers:

a. Indoor Dry Locations: UL Recognized Materials, vinyl or vinyl-cloth, self-adhesive, wraparound, self-laminating, cable/conductor markers with computer printer-generated numbers and letters, minimum 1" width. Provide Brady B-427 with thermal transfer print type or approved equal.

b. Outdoor Locations and Indoor Wet and Damp Locations: White polyolefin, non-adhesive, full circle, heat-shrinkable sleeve, cable/conductor markers with computer printer-generated numbers and letters, minimum 1" width. Provide Brady B-342 with thermal transfer print type or approved equal.

Properly identify all electrical equipment, including but not limited to the following:

a. Switchgear, switchboards, and control panels.
b. Main distribution panel and individual devices within it.
c. Panelboards and individual devices within it.
d. Safety switches and disconnects.
e. Contactors and lighting control center, including all branch circuits.
f. Individually mounted circuit breakers.
g. Starters and relays.
h. Transformers.
i. Generators and automatic transfer switches.

Use permanently attached black phenolic plates with 3/8" white engraved lettering on the face of each, attached with minimum two sheet metal screws. Starters and relays connected under this Specification shall be identified whether furnished under this Specification or under other Specifications of this contract. Plates shall be indoor or outdoor rated as required by installation location.

Panelboard identification plates shall indicate panel by identification name, voltage system, ampacity rating and type, AIC rating, and feeder source description.

Identify each receptacle, light switch, junction box, etc. with panelboard identification and circuit number. For all wiring device covers, use hot, stamped, or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

Identify fire alarm junction boxes with red covers and mechanical control junction boxes with blue covers.

Install all identification as required by current adopted editions of the NFPA 70 - National Electrical Code and NFPA 70E - Standard for Electrical Safety in the Workplace.

300-3.12 5 kv and under 600v cable connections.

For under 600V cable connections of voltage powered circuits, splices whether direct buried or within an underground enclosure shall only utilize approved cast splices, employing a plastic mold and using epoxy resin equivalent to that manufactured by 3M Company, or an approved equivalent.

300-3.13 Certification and performance. Equipment and materials covered by FAA Advisory Circulars are referred to by item numbers and approved equipment is listed within the AC 150/5345-53 Airport Lighting Equipment Certification Program's monthly Addendum, which contains a complete and updated listing of the certified equipment and manufacturers and is listed in the FAA Buy American Preference equipment list, which is also updated monthly. The Contractor shall provide and install new certified equipment that works reliably and efficiently with the existing equipment to remain in service. The Contractor shall provide any additional accessories and/or appurtenances required to provide fully functional electrical systems to the satisfaction of the Owner and Engineer, at no additional cost to the Owner.

The Contractor shall ascertain that all lighting system components furnished (including FAA certified and approved equipment) are compatible in all respects with each other and the remainder of the new and

existing systems. Any non-compatible components furnished by the Contractor shall be replaced at no additional cost to the Owner with a similar unit that is approved by the Engineer and compatible with the remainder of the airport lighting system.

300-3.14 As-built drawings. The Contractor shall keep one (1) full-sized set of prints for As-Built Drawings at the site, in good order, and annotated to show all changes made during the construction process.

The Contractor shall locate all underground and concealed work, identifying all equipment, conduit, circuit numbers, motors, feeders, breakers, switches, and starters. The Contractor will certify accuracy by endorsement. As-Built drawings shall be correct in every detail, so Owner can properly operate, maintain, and repair exposed and concealed work.

The As-Built drawings shall indicate all control system labeling and marking.

The Contractor shall store the As-Built drawings on the site. Drawings shall not be rolled. Make corrections, additions, etc., with pencil, with date and authorization of change.

As-Built drawings must be submitted to Engineer before project will be accepted.

Minor deviations from the Plans and Specifications shall be as approved by the Engineer.

Upon completion of the installation, the Contractor shall adjust the systems to the satisfaction of the Engineer.

300-3.15 Testing.

General Electrical Testing: Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification and certify compliance with test parameters. Tests shall be conducted in the presence of the Engineer and shall be to his/her satisfaction. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest. Perform infrared scan tests and inspections of service and power distribution equipment at the respective buildings and provide reports. Electrical equipment will be considered defective if it does not pass tests and inspections. Reports shall include notations of deficiencies, remedial action taken and observations after remedial action.

System and Equipment Testing: All installations shall be fully tested by continuous operation for not less than 24 hours as completed systems prior to acceptance. These tests shall include the functioning of each control not less than 10 times.

Test equipment and instruments utilized by the Contractor shall have been calibrated following the manufacturer's recommended schedule to verify their accuracy prior to performing the testing work. The Contractor shall provide instrument calibration certificates on test equipment when requested by the Engineer. Retesting work due to inaccurate or defective instruments shall be performed by the Contractor to the satisfaction of the Engineer at no additional cost to the Owner.

a. Ground Rod Impedance Testing:

   The enclosed "Ground Rod Impedance Test Report" form shall be used, and testing shall be performed in the presence of the Engineer.

   As-Built drawings shall indicate the location of all installed ground rods. Each ground rod shall have a unique identifier that corresponds with its submitted ground impedance test report.

Three-pole fall-of-potential testers that can measure the ground resistance of a ground rod using auxiliary electrodes (staked testing), such as a Fluke 1621 Earth Ground Tester, shall be used for testing individual dedicated equipment ground rods at fixtures and equipment, or for testing isolated counterpoise ground rods not yet connected to the counterpoise wire.

Clamp-on testers that can measure the ground resistance of a ground rod without using auxiliary ground rods (stakeless testing), such as a Fluke 1630 Earth Ground Clamp Meter or approved equal, shall be used for testing counterpoise ground rods which have already been connected to the counterpoise wire, or ground ring ground rods which have already been connected to the established ground ring system.

Ground impedance test equipment shall be submitted for review and approval by the Engineer prior to performing the tests.

If the ground rod's impedance exceeds 25 ohms, an additional rod shall be driven in a location suitable and approved by the Engineer. However, the additional rod must satisfy the requirements of NEC 250.53 and not be less than 6 feet away from any other ground rod electrode. Additional ground rods shall not be measured for separate payment but shall be considered subsidiary to the counterpoise or respective equipment pay item.

The Contractor shall perform additional tests if required and requested by the Engineer at no additional cost.

The Contractor shall coordinate with the resident Engineer to approve tests daily before proceeding. The Contractor shall fill out a separate test report for each date. Test reports shall be submitted weekly to the Engineer.

300-3.16 Inspection fees and permits. The Contractor shall obtain and pay for all necessary construction permits, licenses, government charges, and inspection fees necessary for prosecution of the Work. Unless otherwise noted, the Contractor shall pay all charges of utility owners for connections for providing permanent service to the Work, ready for subsequent utility account transfer to the Owner after final acceptance.

METHOD OF MEASUREMENT

300-4.1 Electrical infrastructure for the hangar building shall not be measured separately but shall be considered incidental to the items of work listed in specification SS-295.

BASIS OF PAYMENT

300-4.2 Electrical infrastructure for the hangar building shall not be measured separately but shall be considered incidental to the items of work listed in specification SS-295.

MATERIAL REQUIREMENTS

Commercial Item Description A-A-59544	Cable and Wire, Electrical (Power, Fixed Installation)
Fed. Spec. W-C-1094	Conduit and Conduit Fittings; Plastic, Rigid
Fed. Spec. W-P-115	Panel, Power Distribution
Fed. Std. 595	Colors
Underwriters	Rigid Metal Conduit

Laboratories Standard 6	
Underwriters Laboratories Standard 514	Fittings for Conduit and Outlet Boxes
Underwriters Laboratories Laboratories Standard 651	Schedule 40 and 80 Rigid PVC Conduit (for Direct Burial)
Underwriters Laboratories Standard 1242	Intermediate Metal Conduit
CFR 1910	Occupational Safety and Health Regulations
CFR 1926	Safety and Health Regulations for Construction
ANSI/IEEE C2	National Electrical Safety Code
NFPA 70	National Electrical Code (NEC)
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
29 CFR 1910	Occupational Safety and Health Standards (OSHA)
29 CFR 1926	Safety and Health Regulations for Construction
Jaquith Industries, Inc.	The Design, Installation, and Maintenance of In-Pavement Airport Lighting

END OF ITEM SS-300

GROUND ROD IMPEDANCE TEST REPORT

Owner / Sponsor: _____ Engineer: Garver, LLC_____

Airport:_____ Contractor: _____

Project Title: _____ Garver Project Number:_____

Date: _____ Weather / Site Conditions: _____

Fall-of-Potential Style Tester (F):
Manufacturer:_____ Model #: _____

Clamp-On Style Tester (C):
Manufacturer:_____ Model #: _____

Ground Rod #	Test Equipment Style (F or C)	Impedance Value (Ohms)	Ground Rod #	Test Equipment Style (F or C)	Impedance Value (Ohms)

Tested By:	
Engineer Witness:	

Provide signature/date in the fields above.

ITEM C-102 TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL

DESCRIPTION

102-1.1 This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The ~~*RPR*~~ *Contractor* shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust

control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches and a maximum of 34 inches above the ground surface. Posts shall be set no more than 10 feet on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch overlap and securely sealed. A trench shall be excavated approximately 4 inches deep by 4 inches wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

102-3.5 Construction Methods. *Providing the temporary erosion control items and devices shown on the Plans is intended to minimize the erosion of soils during construction. However, the items and devices shown are not intended to represent all of the necessary items or procedures required to be implemented by the Contractor. The plans and specifications show the Engineer's estimate of a minimum effort needed to maintain proper erosion control during construction. Additional effort and materials may be required by the Contractor to minimize the erosion of soils during construction. It shall be the Contractor's responsibility*

to install and maintain all the items shown in the Plans and to coordinate, submit, obtain, and comply with all necessary Federal, State, and local permits.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured ~~as follows:~~ *as one complete item. This work includes obtaining all necessary federal, state, and local permits required to complete this project.*

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 *Temporary erosion control acceptably completed will be paid for at the contract lump sum price bid for "TEMPORARY EROSION CONTROL," which shall be full compensation for furnishing all materials, tools, equipment, labor, and incidentals necessary to complete the work. Periodic payments will be made under this item in proportion to the amount of work accomplished, as determined by the Engineer. This item consists of all erosion control items not listed as a separate pay item in the Unit Price Schedule. Any fines issued to the Owner as a result of the Contractor's insufficient execution of the SWPPP will be assessed to the Contractor. Such deductions shall not be limited to the lump sum price of this item. Payment will be made under:*

Item C-102-5.1 *Temporary Erosion Control—per Lump Sum*

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

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ITEM C-105 MOBILIZATION

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to 10 percent of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4.1 Engineer/RPR field office.

An Engineer/RPR field office is not required.

105-4.2 Contractor's access / haul routes. *The Contractor shall layout, construct, maintain, and repair all access/haul roads needed to construct the work. Prior to beginning construction, the contractor shall document the existing conditions of any proposed haul routes. Documentation methods shall be approved by the Engineer. The existing access roads shown on the plans shall be repaired, as determined necessary by the Engineer, at the close of the project. All such work, including all materials and labor, involved in the layout, construction, maintenance, and repair of the Contractor's access/haul roads will not be measured for separate payment but will be considered subsidiary to the bid item "Mobilization." Temporary pipe culverts shall be installed and maintained as required and shall be of the size as directed by the Engineer. The type of pipe used for temporary pipe shall be at the option of the Contractor. Temporary pipe culverts will not be measured for separate payment, but will be considered subsidiary to the access/haul road. All temporary pipe culverts shall be removed by the Contractor and shall remain his property at the close of the project.*

105-4.3 Contractor's Staging Area. *The areas designated in the plans or by the Engineer as the Contractor's staging area shall be cleared and graded by the Contractor as needed for use by the Contractor in constructing the work on this project. All areas used or otherwise occupied by the Contractor for his operations shall be cleaned, regraded, and seeded, as directed by the Engineer, prior to the final acceptance of the project by the Airport. All work involved in the preparation and restoration of areas used or occupied by the Contractor, including clearing, grubbing, regrading, seeding, and installing and removing fence, will not be measured for separate payment but will be considered subsidiary to the bid item "Mobilization."*

105-4.4 Instrument Control. *The Contractor will be furnished survey baselines and benchmarks to control the work as shown on the Plans. The Contractor shall be responsible for the additional instrument control necessary to layout and construct the work. The Contractor shall provide the instrument control as provided for in Section 50 of the General Provisions. The Contractor's instrument control of the work shall not be measured for separate payment, but will be considered subsidiary to the bid item "Mobilization".*

105-4.5 Location of Underground Utilities. *Prior to performing excavations, the Contactor shall be responsible for performing such spot digging or "potholing" as necessary to verify the location and depth of existing underground utilities. This work shall be in addition to requirements included the General Provisions and plan notes. Spot digging or "potholing" will not be paid separately, but shall be considered subsidiary to the bid item "Mobilization."*

105-4.6 Clean-Up. *From time to time, the Contractor shall clean up the site in order that the site presents a neat appearance and that the progress of work will not be impeded. One such clean up shall immediately precede final inspection.*

Immediately following acceptance of the work by the Owner, the Contractor shall remove all temporary equipment, surplus materials, and debris resulting from his operations, and leave the site in a condition fully acceptable to the Owner.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 50%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, Contractor Final Project Documentation, the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105-6.1 Mobilization – per Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

ITEM P-101 PREPARATION/REMOVAL OF EXISTING PAVEMENTS

DESCRIPTION

101-1.1 This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

101-1.2 *Limits of pavement removal, pavement repair, joint and crack repair, paint and rubber removal, and cold milling are estimated in the plans. Actual limits of these items shall be coordinated with the Engineer prior to construction.*

EQUIPMENT AND MATERIALS

101-2 All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

a. Concrete pavement removal. Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size of 2 inches. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlaying material that is to remain in place, shall be recompacted and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

b. Asphalt pavement removal. Not Used.

c. Repair or removal of Base, Subbase, and/or Subgrade. Not Used.

d. Disposal. *All existing pavement removed shall be disposed of off-site. All hauling will be considered a necessary and incidental part of the work. Its costs shall be considered by the Contractor and included in the contract unit price for the pay items of work involved. No payment will be made separately or directly for hauling on any part of the work.*

101-3.2 Preparation of joints and cracks prior to overlay/surface treatment. Not Used.

101-3.4 Concrete spall or failed asphaltic concrete pavement repair. Not Used.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Not Used.

101-3.7 Maintenance. Not Used.

101-3.8 Preparation of Joints in Rigid Pavement prior to resealing. Not Used.

101-3.8.1 Removal of Existing Joint Sealant. Not Used.

101-3.8.2 Cleaning prior to sealing. Not Used.

101-3.8.3 Joint sealant. Joint material and installation will be in accordance with Item P-605.

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Not Used.

101-3.9.1 Preparation of Crack. Not Used.

101-3.9.2 Removal of Existing Crack Sealant. Not Used.

101-3.9.3 Crack Sealant. Not Used..

101-3.10 Removal of Pipe and other Buried Structures.

a. **Removal of Existing Pipe Material.** Not used.

b. **Removal of Inlets/Manholes.** Not used.

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal. Dowel bar installation shall be incidental to pavement removal.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P-101-5.1	Concrete Pavement Removal - per square yard
Item P-101-5.2	Waterline Removal – per linear foot
Item P-101-5.3	Water Hydrant Removal – per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END OF ITEM P-101

ITEM P-152 EXCAVATION, SUBGRADE, AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature.

152-1.3 Unsuitable excavation. Unsuitable material shall be disposed of *off airport property*. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR. *Undercutting of material unsatisfactory for subgrade foundation, roads, shoulders, or areas intended for turfing shall be considered unsuitable excavation and shall be excavated to the depth specified by the Engineer below the subgrade.*

CONSTRUCTION METHODS

152-2.1 General. ~~Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.~~

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed *of off airport property*. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches, to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot of the stated elevations for ground surfaces, or within 0.04 foot for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of *as described in paragraph 152-1.3* ~~shown on the plans~~.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When *the quality of material varies significantly* ~~selective grading is indicated on the plans~~, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed off the airport**.** This excavated material shall be paid for at the contract unit price per cubic yard for Unsuitable Excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a *necessary part of Unsuitable Excavation* ~~part of the embankment~~. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as Unsuitable Excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans. *All work associated with the excavation, removal, backfill, disposal, and/or stockpiling of existing structures and culverts will not be measured for separate payment but will be considered subsidiary to "Unclassified Excavation".*

152-2.3 Borrow excavation.

There are no borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

Imported material for fill or backfill under pavements shall meet the requirements per the geotechnical report.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of cut areas or areas where existing pavement has been removed. In those areas on which a subbase or base course is to be placed, the top 18 inches of subgrade shall be compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D698**. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods

for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches nor more than 9 inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within 0%-4% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The Contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the Contracto**r** for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D698**. Under all areas to be paved, the embankments shall be compacted to a depth of **18 inches** and to a density of not less than **95%** percent of the maximum density as determined by ASTM **D698**. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches in their greatest dimensions will not be allowed in the top 12 inches of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.9 Proof rolling. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment and after compaction is completed, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80/100/150 psi in the presence of the RPR. Apply a minimum of **25%** coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch or show permanent deformation greater than 1 inch shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 9 inches and to a density of not less than 95 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within 0%-4% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, follow the methods in ASTM D698. Tests for moisture content and compaction will be taken at a minimum of **3,000** S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.11 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. Smoothness. The finished surface shall not vary more than +/- ½ inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

b. Grade. The grade and crown shall be measured on a 50-foot grid and shall be within +/-0.05 feet of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to placed, grade shall not vary more than 0.10 feet from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard shall be computed by the comparison of digital terrain model (DTM) surfaces. The end area is that bound by the original ground line established by *the design survey* ~~field cross-sections~~ and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

In cut sections, the additional cut required to construct the topsoil layer to the plan grade has not been measured and will not be measured for separate payment but will be subsidiary to "Unclassified Excavation". In fill sections, the additional fill required to replace the stripped material has not been measured and will not be measured for payment but will be subsidiary to "Unclassified Excavation".

No allowance has been made in the measurement for shrink/swell. The Contractor shall make his own determination as to the amount of shrink/swell involved in the construction of the embankment.

The Contractor shall make his/her own determination as to the suitability of the excavated material to be placed in embankments and the resulting additional off-site material required for the construction of the embankment. Additional off-site material required for the formation of embankment shall not be measured for separate payment but shall be considered subsidiary to "Unclassified Excavation".

Measurement of unclassified excavation shall be based on ***plan quantities****. These quantities are believed to be correct and shall be utilized for final payment not withstanding any adjustments to the project by written direction of the Engineer. Should the contractor find discrepancies and/or errors, he/she shall bring the discrepancy and/or error to the attention of the Engineer immediately and corrections shall be made to the quantity of excavation to be paid for by change order. It is expressly understood by the contractor that upon disturbance of the existing ground and no notification to the Engineer of possible errors, that the contractor accepts as final payment the quantities of excavation as detailed on the plans and laid out in the bid form.*

No adjustment has been made to the plan quantities for the construction or demolition of existing drainage structures. The Contractor shall make his/her own determination as to the amount of unsuitable excavated material which may be encountered and the resulting additional borrow material required for the construction of the embankment. There will be no adjustment for additional embankment required to construct the project if the excavated material is deemed unsuitable.

152-3.1 The quantity of excavation to be paid for shall be the number of cubic yards measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.2 *Unsuitable excavation shall be measured from the surface of the ground, after stripping has been accomplished, or from the bottom of the planned excavation, to the depth of the excavation as directed by the Engineer. Measurements will be taken by the Engineer, and the volume of excavation will be calculated by the average end area method. The necessary refilling of unsuitable areas will not be measured for separate payment but will be subsidiary to "Unsuitable Excavation". Only that amount of excavation directed by the Engineer will be measured for payment.*

BASIS OF PAYMENT

152-4.1 Unclassified excavation payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 *Unsuitable excavation shall be paid for at the contract unit price bid per cubic yard for "Unsuitable Excavation", which price shall be full compensation for all excavation; for disposal or placement of unsuitable material (in accordance with section 152-1.3), including loading, hauling, spreading, and*

compaction; for compaction and preparation of subgrade; for the refilling, rolling, and compaction of all undercut areas; and for all equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation - per cubic yard
Item P-152-4.2	*Unsuitable Excavation—per cubic yard*
Item P-152-4.3	*Subgrade Preparation – per cubic yard*

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2	Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

ITEM P-605 JOINT SEALANTS FOR PAVEMENTS

DESCRIPTION

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

MATERIALS

605-2.1 Joint sealants. Joint sealant materials shall meet the requirements of **D6690, Type II**.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

605-2.2 Backer rod. The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be 25% ± 5 % larger in diameter than the nominal width of the joint.

605-2.3 Bond breaking tapes. Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least 5°F greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch wider than the nominal width of the joint and shall not bond to the joint sealant.

CONSTRUCTION METHODS

605-3.1 Time of application. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

Prior to beginning the sealing operation, the Contractor shall have the sealant supplier demonstrate, to the satisfaction of the Engineer, the cleaning and installation procedures for the joint sealant to be installed on the project.

605-3.2 Equipment. Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 7 days prior to use on the project.

a. Tractor-mounted routing tool. Provide a routing tool, used for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.

b. Concrete saw. Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

c. Sandblasting equipment. Sandblasting is not allowed.

d. Waterblasting equipment. The Contractor must demonstrate waterblasting equipment including the pumps, hose, guide and nozzle size, under job conditions, before approval in accordance with

paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

e. Hand tools. Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

f. Hot-poured sealing equipment. The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

605-3.3 Preparation of joints. Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

a. Sawing. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

b. Sealing. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by tractor-mounted routing equipment**,** concrete saw, **or** waterblaster as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of ½ inch from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

c. Backer Rod. When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

d. Bond-breaking tape. Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

605-3.4 Installation of sealants. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the RPR before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/4 inch ±1/16 inch below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the RPR. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

605-3.5 Inspection. The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

605-3.6 Clean-up. Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

METHOD OF MEASUREMENT

605-4.1 Joint sealing material shall *not be measured for separate payment, but shall be considered incidental to other items of work.*

BASIS OF PAYMENT

605-5.1 *No separate payment shall be made for the joint sealing, it shall be considered incidental to other items of work.*

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

Advisory Circulars (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids

END ITEM P-605

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ITEM F-162 CHAIN-LINK FENCE

DESCRIPTION

162-1.1 This item shall consist of furnishing and erecting a chain-link fence in accordance with these specifications, the details shown on the plans, and in conformity with the lines and grades shown on the plans or established by the RPR.

162-1.2 *This item shall consist of the removal of the existing fence, salvage and delivery of the above ground materials, and disposal of all concrete.*

MATERIALS

162-2.1 Fabric. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch (50 mm) mesh and shall meet the requirements of **ASTM A392, Class 2.**

162-2.2 Barbed wire. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of **ASTM A121, Class 3, Chain Link Fence Grade**.

162-2.3 Posts, rails, and braces. Line posts, rails, and braces shall conform to the requirements of ASTM F1043 or ASTM F1083 as follows:

- Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D.

Posts, rails, and braces, with the exception of galvanized steel conforming to ASTM F1043 or ASTM F1083, Group 1A, Type A, or aluminum alloy, shall demonstrate the ability to withstand testing in salt spray in accordance with ASTM B117 as follows:

- External: 1,000 hours with a maximum of 5% red rust.
- Internal: 650 hours with a maximum of 5% red rust.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3.

162-2.4 Gates. Not Used.

162-2.5 Wire ties and tension wires. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A824.

All material shall conform to Federal Specification RR-F-191/4.

162-2.6 Miscellaneous fittings and hardware. Miscellaneous steel fittings and hardware for use with zinc-coated steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153. Barbed wire support arms shall withstand a load of 250 pounds applied vertically to the outermost end of the arm.

162-2.7 Concrete. Concrete shall have a minimum 28-day compressive strength of 3000 psi. *Any concrete placed at or above the ground surface shall contain 3-7 percent air content.*

162-2.8 Marking. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating.

CONSTRUCTION METHODS

162-3.1 General. The fence shall be constructed in accordance with the details on the plans and as specified here using new materials. All work shall be performed in a workmanlike manner satisfactory to the RPR. The Contractor shall layout the fence line based on the plans. The Contractor shall span the opening below the fence with barbed wire at all locations where it is not practical to conform the fence to the general contour of the ground surface because of natural or manmade features such as drainage ditches. The new fence shall be permanently tied to the terminals of existing fences as shown on the plans. The Contractor shall stake down the woven wire fence at several points between posts as shown on the plans.

The Contractor shall arrange the work so that construction of the new fence will immediately follow the removal of existing fences. The length of unfenced section at any time shall not exceed 300 feet (90 m). The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence.

162-3.2 Clearing fence line. Clearing shall consist of the removal of all stumps, brush, rocks, trees, or other obstructions that will interfere with proper construction of the fence. Stumps within the cleared area of the fence shall be grubbed or excavated. The bottom of the fence shall be placed a uniform distance above ground, as specified in the plans. When shown on the plans or as directed by the RPR, the existing fences which interfere with the new fence location shall be removed by the Contractor as a part of the construction work unless such removal is listed as a separate item in the bid schedule. All holes remaining after post and stump removal shall be refilled with suitable soil, gravel, or other suitable material and compacted with tampers.

The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.3 Installing posts. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.

The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within seven (7) days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches. After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

162-3.4 Installing top rails. The top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

162-3.5 Installing braces. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.6 Installing fabric. The wire fabric shall be firmly attached to the posts and braced as shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than one inch or more than 4 inches from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of

barbed wire stretched to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches or less.

162-3.7 Electrical grounds. Electrical grounds shall be constructed where a power line passes over the fence **or** at 500 feet (150 m) intervals. The ground shall be installed directly below the point of crossing *and within 50 feet of every end post.* The ground shall be accomplished with a copper clad rod *10* ~~8~~ feet long and a minimum of ¾ ~~5/8~~ inches in diameter driven vertically until the top is 6 inches below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction. The Contractor shall comply with FAA-STD-019, Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment, paragraph 4.2.3.8, Lightning Protection for Fences and Gates, when fencing is adjacent to FAA facilities.

162-3.8 Cleaning up. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. All disturbed areas shall be seeded per T-901.

162-3.9 Fence Removal. *The existing fence material shall not be destroyed during removal without prior approval of the Engineer. Existing fence, including fabric, top rails, fasteners, posts, and other miscellaneous above ground hardware to be removed will not be reused but will delivered to the Owner to a location as directed by the RPR after removal. Construction requirements shall be as shown on the Plans and/or as approved by the RPR.*

Posts shall not be cut off and abandoned in place. Post holes and all disturbed areas shall be filled with material to match the surrounding conditions and tamped flush with the surface. The concrete erosion control strip shall be removed and disposed of off-site.

At the point where fence removal stops and existing fence is to remain, the remaining (existing) fence end section shall be reconstructed/repaired to provide adequate support and security. At these locations, the Contractor shall determine how the fence is to be reconstructed and submit his determination to the RPR for approval. End panels will be required at horizontal and vertical deflections in accordance with the requirements for the new fence.

162-3.10 Erosion Control Strip.

a. Subgrade. *The subgrade shall be excavated or filled to the required grade. Soft and yielding material shall be removed and replaced with suitable material and the entire subgrade shall be thoroughly compacted with approved mechanical equipment.*

b. Forms. *Forms shall be constructed of metal or wood, free from warp, and of sufficient strength to resist springing during the process of depositing concrete. They shall be securely staked, braced, set and held firmly to the required line and grade. Forms shall be cleaned and oiled before concrete is placed against them.*

c. Placing and Finishing. *The concrete shall be deposited in the forms upon the wetted subgrade to such depth that when it is compacted and finished, the top shall be at the required elevation. It shall be thoroughly consolidated and the edges along the form spaded to prevent honeycomb. The top shall then be struck off with a straightedge and tamped or vibrated sufficiently to flush mortar to the surface, after which it shall be finished with a wood float to a smooth and even surface.*

Transverse joints shall be cut with a ½" jointer at each fence post, or as directed by the RPR.

Plastering will not be permitted but minor defects shall be filled with a cement mortar (1 part Portland cement to 2 parts concrete sand) applied with a wood float.

When completed, the concrete shall be properly cured by covering with polyethylene sheets conforming to ASTM C171 or a liquid membrane forming compound conforming to ASTM C309, Type 2, or other methods approved by the Engineer.

d. Backfilling. *After the forms have been removed, the spaces on each side shall be backfilled with suitable material, which shall be firmly compacted by means of approved mechanical equipment and neatly graded.*

e. Expansion Joints. *A space not less than ½" wide shall be left between the sides of the skirt and adjacent pavement or other structure and at 100 foot intervals, as directed. This space shall be filled with approved premolded joint filler meeting the requirements of ASTM D1752.*

METHOD OF MEASUREMENT

162-4.1 Chain-link fence will be measured for payment by the linear foot. Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

162-4.2 *Fence removal will be measured for payment by the linear foot. Measurement will be along the bottom of the fence from center to center of end posts, excluding the length occupied by gate openings.*

162-4.3 *The concrete erosion control strip will be measured by the linear foot measured in the direction of the constructed perimeter fence, complete and accepted.*

BASIS OF PAYMENT

162-5.1 Payment for chain-link fence will be made at the contract unit price per linear foot.

The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor equipment, tools, and incidentals necessary to complete the item.

162-5.2 *Payment for fence removal will be made at the contract unit price per linear foot. Payment shall include removal, salvage, and delivery of all above ground materials; for removal and disposal of the posts and concrete footings; for removal and disposal of concrete erosion control strip; for the backfill of post holes and all disturbed areas; and for all labor, equipment, tools, excavation, and incidentals necessary to complete the work.*

162-5.3 *Payment for concrete erosion control strip will be paid for at the contract unit price bid per linear foot. Payment shall include furnishing materials, including premolded joint filler; constructing the concrete skirt; excavating and backfilling; and furnishing all equipment, labor, and incidentals necessary to complete the work*.

Payment will be made under:

Item F-162-5.1	Chain-Link Fence - per linear foot
Item F-162-5.2	*Fence Removal – per Linear Foot*
Item F-162-5.3	*Concrete Erosion Control Strip – per Linear Foot*

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM A121	Standard Specification for Metallic-Coated Carbon Steel Barbed Wire
ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A392	Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A491	Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A824	Standard Specification for Metallic-Coated Steel Marcelled Tension Wire for Use with Chain Link Fence
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM F668	Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and other Organic Polymer Coated Steel Chain-Link Fence Fabric
ASTM F1043	Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
ASTM F1083	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F1183	Standard Specification for Aluminum Alloy Chain Link Fence Fabric
ASTM F1345	Standard Specification for Zinc 5% Aluminum-Mischmetal Alloy Coated Steel Chain-Link Fence Fabric
ASTM G152	Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G153	Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
ASTM G155	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials

Federal Specifications (FED SPEC)

FED SPEC RR-F-191/3	Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)
FED SPEC RR-F-191/4	Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

FAA Standard

FAA-STD-019	Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment

FAA Orders

5300.38	AIP Handbook

END OF ITEM F-162

ITEM T-905 TOPSOIL

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

MATERIALS

905-2.1 Topsoil. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (75 µm) sieve as determined by the wash test in accordance with ASTM C117..

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 Inspection and tests. Within 10 days following acceptance of the bid, the RPR shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

CONSTRUCTION METHODS

905-3.1 General. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the RPR before the various operations are started.

905-3.2 Preparing the ground surface. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the RPR, to a minimum depth of 4 inches to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

905-3.3 Obtaining topsoil. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the RPR. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the RPR. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoil purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the RPR. The Contractor shall notify the RPR sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 Placing topsoil. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 4 inches after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. after spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the RPR. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

METHOD OF MEASUREMENT

905-4.1 Topsoil obtained on the site shall be measured by the *area in square yards of the specified thickness of topsoil rehandled and placed from the topsoil stockpiled under Item P-152-2.14 as accepted by the RPR. Topsoiling measured for payment shall only be the planned limits of construction.*

905-4.2 Topsoil obtained off the site shall be measured by the number of *square yards at the specified thickness.*

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per *square yard of the specified thickness* for topsoil (obtained on the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

905-5.2 Payment will be made at the contract unit price per *square yard of the specified thickness* for topsoil (obtained off the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905-5.1	4-inch Topsoil (Obtained on Site or Removed from Stockpile) - per square yard

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C117	Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-905

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