

PROJECT MANUAL

AIRCRAFT FUELING FACILITY REPLACEMENT

WINONA MUNICIPAL AIRPORT

WINONA, MINNESOTA



**STATE PROJECT NO. A8501-73
TKDA PROJECT NO. 23576**



An employee-owned company promoting affirmative action and equal opportunity.

**SECTION 00 01 03
PROJECT DIRECTORY**

PROJECT

**WINONA MUNICIPAL AIRPORT
AIRCRAFT FUELING FACILITY REPLACEMENT**

CIVIL ENGINEER
ELECTRICAL ENGINEER
STRUCTURAL ENGINEER
MECHANICAL ENGINEER

TKDA
3311 East Old Shakopee Road
Suite 300
Bloomington, MN 55425
651.292.4400
FAX 651.292.0083

Issue Date: October 7, 2026

Bid Date: October 28, 2026

END OF SECTION

DOCUMENT 00 01 05
CERTIFICATION

CIVIL ENGINEERING – FOR TKDA

I hereby certify that the plans and specifications for Civil Engineering Work were prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Date: October 7, 2026

Signature: 

Printed Name: Jeffrey Pearson

License No. 45087

ELECTRICAL ENGINEERING – FOR TKDA

I hereby certify that the plans and specifications for Electrical Engineering Work were prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Date: October 7, 2026

Signature: 

Printed Name: Kyle West

License No. 60559

MECHANICAL ENGINEERING – FOR TKDA

I hereby certify that the plans and specifications for Mechanical Engineering Work were prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Date: October 7, 2026

Signature: 

Printed Name: David Lund

License No. 58146

STRUCTURAL ENGINEERING – FOR TKDA

I hereby certify that the plans and specifications for Structural Engineering Work were prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Date: October 7, 2026

Signature: 

Printed Name: Craig W. Bursch

License No. 40415

END OF DOCUMENT

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Minnesota Department of Labor and Industry
Construction Type: Highway and Heavy, Region 6
Effective: 2025-11-03

END OF DOCUMENT

**SECTION 00 01 15
SCHEDULE OF DRAWINGS**

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP Number: A8501-73
TKDA Project Number: 23576

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END OF DOCUMENT

DOCUMENT 00 11 11
NOTICE OF CALL FOR BIDS (Non-Federal)

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP No. A8501-73
TKDA Project No. 23576
Bids Close At: 2:00pm on October 28, 2026

NOTICE TO CONTRACTORS

Electronic Bid Submission for the project listed above will be received by the City of Winona, via QuestCDN <https://questcdn.com/> until the official time and date as displayed in QuestCDN Online.

This project provides for:

This project provides for construction of a new Fueling Facility at the Winona Municipal Airport (ONA) in the City of Winona, Minnesota. The project includes a 10,000 gallon jet fuel tank, a 10,000 gallon aviation gas tank, and aircraft fueling system with self-serve card reader. Work also includes the demolition of existing, construction of concrete slabs on grade, electrical services, and restoration improvements associated with installation of the new facility.

Bids shall be submitted electronically via QuestCDN. No other Bid Form is acceptable.

Consistent with Minnesota Statute, Section 473.144, the City of Winona may not accept a bid or proposal for a contract or execute a contract in excess of \$100,000 with any business unless said business is in compliance with certain requirements concerning affirmative action plans. Evidence of compliance must be submitted within two (2) City business days following the opening of bids. Bids will be considered non-responsive if the compliance requirements are not met. Compliance requirements are outlined in the project specification.

NONDISCRIMINATION IN EMPLOYMENT

Refer to Contract and Labor Provisions in the specifications for requirements.

**NOTICE OF REQUIREMENTS FOR
AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

1. The bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area are as follows:

<u>GOALS FOR MINORITY PARTICIPATION IN EACH TRADE</u>		<u>GOALS FOR FEMALE PARTICIPATION IN EACH TRADE</u>	
State Requirements:	15.0%	State Requirements:	9.0%

These goals are applicable to all contractors' construction work (whether or not it is Federal or Federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area,

the contractor also is subject to the goals for both its Federally involved and non-federally involved construction.

The contractor's compliance with the executive order and the regulations in 41 CFR Part 60-4 and Minnesota Statutes Section 473.144 and Minnesota Rules, Part 5000.3520 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3 (a) and Minnesota Rules, Part 5000.3540, and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the executive order, the regulations in 41 CFR Part 60-4, Minnesota Statutes Section 473.144 and Minnesota Rules, Part 5000.3520. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall provide written notification to the Director, OFCCP, and the Compliance Division of the Minnesota Department of Human Rights, within ten (10) working days of award of any construction subcontract (in excess of \$10,000 for OFCCP reporting) at any tier for construction work under the contract resulting from the solicitation. The notification must list the name, address and telephone number of the subcontractor, employer identification number, estimated dollar amount of the subcontract, estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.
4. As used in this notice, and in the contract resulting from this solicitation, the "covered area" is Winona County.

BID SECURITY

Each bid shall be accompanied by a "Bid-Security" in the form of a certified check made payable to the City of Winona in the amount of not less than five percent (5%) of the total bid, or a surety bond in the same amount, payable to the City of Winona, with the surety company thereon duly authorized to do business in the State of Minnesota. Such Bid Security to be a guarantee that the bidder will not, without the consent of the City of Winona, withdraw its bid for a period of (90) days after the opening of bids, and, if awarded the Contract, will enter into a contract with the City of Winona, and in connection therewith, give Payment and Performance Bonds as required by law and on forms furnished to the Contractor by the City of Winona. In the event the Bidder fails to enter into a Contract, the amount of the certified check will be retained or the bond enforced by the City of Winona.

The Bid Security of the three (3) lowest bidders will be retained until the contract is executed, but in no event longer than (90) days, provided that the Bid Security of the lowest responsible bidder shall be retained in any event until the contract is executed and Payment and Performance Bonds furnished as herein provided.

The bid of the lowest responsible bidder will be accepted on or before the expiration of (90) days after the date of the opening of bids. The City of Winona, however, reserves the right to reject any or all bids and to waive any minor irregularities, informalities or discrepancies.

AVAILABILITY OF CONSTRUCTION DOCUMENTS

Plans and specifications are on file for inspection at QuestCDN Online as indicated below and at the Minnesota Builders Exchange and Dodge Construction Network.

Digital copies of the drawings and specifications are available at www.questcdn.com. Documents may be downloaded for a non-refundable fee of \$22.00 by entering Quest Project No. 10388052 on the Project Search page. Please contact QuestCDN at (952) 233-1632 or info@questcdn.com for assistance and free membership registration. Hard copy drawings and specifications will not be made available to Bidders.

**WINONA MUNICIPAL AIRPORT
AIRCRAFT FUELING FACILITY REPLACEMENT**

ISSUE DATE: OCTOBER 7, 2026

Bid documents for this project may be viewed for no cost at QuestCDN Online.

For this project, bids will **ONLY** be received electronically. Contractors submitting an electronic bid will be charged an additional \$42.00, or other fee as determined by QuestCDN, at the time of bid submission via the online electronic bid service QuestCDN Online.

Dated at Winona, Minnesota, the 7th day of October, 2026.

By: Monica Hennessy Mohan, City Clerk

Publication:

Winona Post: October 7, 2026

Quest CDN: October 7, 2025

END OF DOCUMENT

DOCUMENT 00 21 11
INFORMATION FOR BIDDERS

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP No. A8501-73
TKDA Project No. 23576

INFORMATION FOR BIDDERS

The Specifications hereto attached, including therein, drawings incorporated by reference otherwise, and including therewith a complete set of forms of Bid Form, Bid Bond, Contract and Payment and Performance Bonds, are furnished for the convenience of Bidders and are not to be detached, filled out or executed. Separate copies of Bid Forms will be furnished for the purpose of submission of bids. In submitting a Bid, Bidders shall comply with the following instructions, which shall control as to the submission of bids.

Consistent with Minnesota Statute 473.144, the Owner may not accept a bid or proposal for a contract or execute a contract in excess of \$100,000 with any business unless said business is in compliance with certain requirements concerning affirmative action plans. Evidence of compliance must be submitted within (1) one Owner business day following opening of bids. Bids will be considered non-responsive if the compliance requirements are not met. Compliance requirements are included in the Federal Contract and Labor Provisions Section - 00 83 11.

1. METHODS OF AWARD

The OWNER shall award a contract to the lowest responsible total Bidder provided said low Bidder has made a good faith effort to meet the DBE contract goal. The Owner, however, reserves the right to reject any or all bids and to waive any minor irregularities, informalities or discrepancies.

2. QUALIFICATIONS OF BIDDER

OWNER may make such investigations, as it deems necessary to determine the ability of Bidder to perform work. Upon request by the Owner, Bidder shall furnish all qualification information and data for this purpose as OWNER may request. Owner reserves the right to reject any bid if evidence submitted by, or investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract and to complete work contemplated therein. Conditional bids will not be accepted.

In addition to any determination of Bidder's responsibility made by the Owner, each Bidder, contractor, and subcontractor must comply and swear under oath that the company/business meets the Minimum Criteria to be a responsible contractor as defined in Document 00 83 11 - Federal Contract and Labor Provisions.

3. DETERMINATION OF APPROVED EQUALS AS TO EQUIPMENT AND MATERIALS

Certain types of equipment and kinds of material are described in the specifications by means of trade names and catalog numbers and/or manufacturer's names. In each instance where this occurs, it is not intended to exclude from consideration such types of equipment and kinds of material bearing other trade names, catalog numbers and/or manufacturer's names, capable of accomplishing the purpose of the types of equipment and/or of kinds of material specifically indicated. Such types of equipment and kinds of material may be acceptable to the Owner.

The types of equipment and kinds of material to be used, if not specifically indicated in the specifications, must be approved in writing by the Engineer.

4. **ADDENDA**

No oral interpretation will be made to any Bidder as to the meaning of the specification or of the Drawings incorporated therein by reference or otherwise. Every request for such an interpretation shall be made in writing to TKDA, 3311 East Old Shakopee Road, Suite 300, Bloomington, Minnesota 55425-1361.

Any inquiry received seven (7) or more calendar days prior to the time for opening of bids will be considered. Every interpretation by the Engineer shall be in the form of an Addendum which will be filed online at QuestCDN at least three (3) calendar days before the date for opening bids.

It shall be the Bidder's responsibility to make inquiry as to the addenda issued. Please refer to Section 00 11 11, Notice of Call for Bids, for further instruction regarding downloading materials from QuestCDN. All bids shall be considered and the contract awarded to the successful Bidder upon the basis of all such addenda whether or not they are in fact received by the Bidder.

5. **INSPECTION OF SITE**

Each Bidder shall inspect the site of the proposed work, the structure and construction area of the proposed work, any obstacles that may be encountered and all other relevant matters and conditions in the area of the proposed work, to inform himself of the conditions under which the work is to be performed.

It shall be understood that the Bidder's Bid is submitted on the basis of such inspection.

Bidders interested in inspecting aspects of the site not available to the public shall contact the City of Winona Public Works Director.

6. **PRE-BID CONFERENCE**

The Engineer will review the Contract Documents with Bidders and Subcontractors, respond to contractor and subcontractor questions regarding the bidding documents, OWNER's "Disadvantaged Business Enterprises Program" and to help identify potential DBE subcontractors.

A pre-bid conference will be held at 2:30pm on Thursday, October 15th, 2026, remotely via computer, tablet, or smartphone at <https://tinyurl.com/ONAfuelingfacility> and by conference call at 1-651-300-3371 and use ID 237346358#.

The Engineer will review the Contract Documents with Bidders and Subcontractors and respond to contractor and subcontractor questions regarding the bidding documents.

7. **SUBCONTRACTING**

No part of the work shall be subcontracted except with the consent of the Owner. All subcontractors shall be contractors of recognized standing having a record of satisfactory performance. Bidder shall submit the following information, if available, within one (1) Owner business day following the opening of bids concerning all subcontractor and supplier bids received by Bidder: names and addresses of potential subcontractors and suppliers, and whether the potential subcontractors or suppliers are DBEs or non-DBEs.

8. **TIME OF COMPLETION**

The Owner requires that construction be completed within the time limits specified in the Summary of Work Section - 01 11 00. Failure to conform to the Project Schedule will result in the assessment of liquidated damages specified therein and may determine that the Contractor is non-responsive and may not be awarded future contracts.

9. COMPLETION OF BID FORM

All blank spaces in the Bid Form shall be filled in by ink or by typewriter and any alteration, correction or deletion must be initialed as approved by the Bidder, or in the case of a corporate Bidder, by its duly authorized officer prior to the opening of bids.

The Bidder shall include as part of verification of compliance with Article 15 - Responsible Contractor Verification of Compliance included in Document 00 83 11 - Federal Contract and Labor Provisions, a list of all of its first-tier subcontractors that it intends to retain for work on the project.

It is mandatory for each Bidder to bid all lump sum and unit prices included on the Bid Form. Where the specifications or Bid Form call for alternates, the Bidder shall submit a single Bid Form, which shall include bid amounts for each alternate. If a discrepancy occurs on the Bid Form between the unit price and the total, the unit price figure shall govern.

Bidder shall **not** include on the Bid Form any condition not contemplated by and included in the Drawings and Specifications and Bid Form. Conditional bids will not be accepted.

10. EXECUTION OF BID FORM

The Bid Form, if signed by individual or partnership Bidders, shall be signed by Bidder or Bidders individually; if signed for a corporate Bidder, by the duly authorized officer or officers of a corporate Bidder signing for and on behalf of the corporation; or, if signed by an attorney-in-fact for a Bidder, power of attorney evidencing authority of the individual signing shall accompany the Bid Form.

11. BID SECURITY

Together with Bidder's Bid Form, Bidder shall submit Bid Security in the form of a certified check made payable to the City of Winona in the amount of not less than five percent (5%) of the total bid, or a surety bond on the form furnished by the Owner in the same amount, running to the Owner, with the surety company thereon duly authorized to do business in the State of Minnesota.

The Bid Security shall be given to guarantee that the Bidder will not, without consent of the Owner, withdraw the Bid for a period of ninety (90) days after the opening of bids and if awarded a contract upon said Bid Form shall enter into a contract with the Owner and in connection therewith give Payment and Performance Bonds as required by law and in a form as set forth in the Specifications.

The Bid Securities of the three (3) lowest responsible Bidders shall be retained by the Owner until the contract is executed, but in no event longer than ninety (90) days after the opening of bids. The Bid Security of the successful Bidder shall in any event be retained until a contract is executed. The Bid Securities, in the form of a check, of the other Bidders shall be returned five (5) days after the opening of bids.

12. SUBMISSION OF BID PROPOSAL

The Bidder shall submit all bid requirements, before bid closing at 2:00 PM CT on October 28, 2026, via the vBid system on QuestCDN.com as indicated in the Notice of Call for Bids. This includes the Bid Form together with the Bid Security.

13. WITHDRAWAL OF BID PROPOSAL

No Bid Proposal shall be withdrawn except with the consent of the Owner for a period of ninety (90) days after the date set for opening of bids or until a contract is let and executed by the successful Bidder.

14. SUPPORTING DATA

The Bidders shall, on request by the Owner, submit prior to awarding of a contract any or all of the following:

- a. Such catalogs, photographs, drawings, specifications, descriptive information and other details as to special equipment or materials the Bidder proposes to furnish for the work, to permit evaluation on the merits thereof and determination whether such special equipment or materials comply with the specifications.
- b. A properly executed affidavit of non-collusion.
- c. A statement of Bidder's qualifications.
- d. A statement setting forth all items of work which the Bidder proposes to subcontract and the names of the subcontractors to whom such items will be contracted.
- e. A listing of products to be used in construction.

To assist the Contractor, the following summary of supporting data and contract submittals is given. This list is not necessarily complete, and items specified elsewhere must be submitted as required even though not included in the summary.

<u>ITEM</u>	<u>WHEN REQUIRED</u>
Responsible Contractor Verification	With bid proposal
Affirmative Action Certificate of Compliance	Within 2 business days of opening bids
List of Subcontractors	Within 3 weeks of "Letter of Intent to Award Contract" date and prior to letting of contract
Affidavit of Non-Collusion	Within 3 weeks of "Letter of Intent to Award Contract" date and prior to letting of contract
Shop Drawings & Submittals	Within 3 weeks of "Letter of Intent to Award Contract" date and prior to letting of contract
Construction Contract	Within 10 days of notice of contract award
Payment & Performance Bond	Within 10 days of notice of contract award
Equal Opportunity Compliance Report	Within 30 days of contract award.

The deadline for submittal of all Supporting Data shall be three (3) weeks after issuance of the Owner's Letter of Intent, unless indicated otherwise above. The Owner's Engineer shall complete his review of shop drawings within five (5) working days of receipt of last submittal.

15. SCOPE OF BIDDING

The intent of the drawings and specifications is to prescribe a complete project of work or improvement. The Contract shall be based upon and include by reference the drawings and specifications, and all addenda as hereinafter provided, and all bids must be based upon a full compliance therewith.

16. AFFIRMATIVE ACTION AND EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

Refer to Federal Contract and Labor Provisions for requirements.

17. PAYMENT AND PERFORMANCE BONDS

A 100% Payment Bond and 100% Performance Bond as required by law and in the form specified by the Owner shall be provided for this Project.

Use Document 00 61 13 - Payment and Performance Bonds Form.

END OF DOCUMENT

**DOCUMENT 00 41 10
BID FORM**

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP No. A8501-73
TKDA Project No. 23576

**BID FORM
FOR PUBLIC AIRPORT CONSTRUCTION**

To: City of Winona, Minnesota, Owner
ATTN: Brian DeFranh
Public Works Director / City Engineer
207 Lafayette Street
Winona, MN 55987

Proposal of

NAME

ADDRESS

CONTACT PERSON

PHONE

Pursuant to the Notice of Call for Bids, for work at the Winona Municipal Airport, to furnish all necessary machinery, equipment, tools, labor and other means of construction and deliver materials and to do and perform all work at rates and at a total price or prices as hereinafter set forth and in accordance with drawings and specifications, and addenda thereto on file in the office of the aforesaid Owner and the office of

TKDA
Engineering, Architecture, Planning
3311 East Old Shakopee Road, Suite 300
Bloomington, MN 55425

for construction of the Aircraft Fueling Facility Relocation project at Winona Municipal Airport located in Winona County, Minnesota.

- A. In submitting this Bid Form, the undersigned Bidder understands and agrees that the Information For Bidders control and, without limiting the foregoing, that this Bid Form is based upon the following undertakings:
1. That Bidder has inspected the site of the work, existing construction in the areas of the proposed work, and has informed himself as to the condition thereof as the same bears on the work to be performed.
 2. That Bidder has received and examined the Contract Documents, and has informed himself of all addenda thereto, and of the forms of Construction Contract and Payment and Performance Bonds to be furnished in the event it is the successful Bidder and is awarded the contract.
 3. The Bid Form will be will be opened electronically by QuestCDN at 2:00 PM on the 28th day of October, 2026, and only Bid Forms received by QuestCDN no later than the time indicated will be considered.

4. Certain types of equipment and kinds of material are described in the specifications by means of trade names and catalog numbers and/or manufacturer's names. In each instance where this occurs, it is not intended to exclude from consideration such types of equipment and kinds of material bearing other trade names, catalog numbers and/or manufacturer's names, capable of accomplishing the purpose of the types of equipment or kinds of material specifically indicated.
 - a. Such types of equipment and kinds of material to be used, if not as specifically indicated in the specifications, must be approved in writing by the Design Consultant and agreed upon by the Owner. No substitution will be allowed after the award of the contract except in unusual circumstances such as supplier's strikes, etc.
 - b. Bidders acknowledge that they are familiar with the requirements of Section 01 61 00 – Common Project Requirements, and that this Bid Form is submitted in strict accord with its requirements, and other requirements of these documents.
5. The Owner shall award a Contract to the lowest responsible Bidder, provided said low Bidder has made a good faith effort to meet the TGB contract goal. The Owner however, reserves the right to reject any or all bids and to waive any minor irregularities, informalities or discrepancies.
6. That this Bid Form and the Bid Security submitted herewith may not, except with consent of the heresaid Owner, be withdrawn for a period of ninety (90) days after the day set for the opening of bids.
7. Within one (1) Owner business day following the opening of the bids, all Bidders who wish to remain in competition for the contract will be required to submit the following information:
 - a. Names of TGB subcontractors, suppliers, etc., to be used on the project, in accordance with the paragraph entitled "Utilization of Targeted Group Businesses" found in Document 00 21 10 – Information for Bidders.
 - b. A description of the work each TGB is to perform.
 - c. The dollar value of each proposed TGB subcontract, purchase, etc.
 - d. Certification forms as applicable for certification unless subcontractor has been certified by the Minnesota Department of Administration.
- B. The undersigned Bidder agrees, if the successful Bidder, to execute the Contract in form as set forth in the Contract Documents and to furnish the required Payment and Performance Bonds in form as set forth in the Contract Documents. The Design Consultant or the Owner will notify the Bidder to begin execution of the Contract and preparation of bonds and insurance requirements.
- C. The undersigned Bidder further agrees to begin work on receipt of executed contract and to prosecute said work so as to complete the same as specified in Section 01 11 00 – Summary of Work. Failure to conform to the Project Schedule may determine that the Contractor is non-responsive and may not be awarded future City of Winona contracts.
- D. The undersigned Bidder further agrees to guarantee performance of all work in accordance with the Contract Documents and in a good and workmanlike manner, and to renew or repair any work which may be rejected due to defective materials or workmanship prior to final completion and acceptance of the material and installation by the Owner.
- E. Prior to the award of the Contract, on request by the Owner, the undersigned Bidder further agrees to submit any and all of the following:
 1. Such catalogs, photographs, drawings, specifications, descriptive information and other details as to special equipment or materials Bidder proposes to furnish for the work, to permit a valuation of the merits thereof and determination whether such special equipment or materials comply with the specifications.
 2. A properly executed affidavit of non-collusion.

3. A statement of Bidder's qualifications.
 4. A statement setting forth all items of work, which the Bidder proposes to subcontract, and names of the subcontractors.
 5. A listing of products to be used in construction.
- F. The undersigned Bidder agrees to be bound by the provisions of Minnesota Statute, Section 181.59, and Title VI of the Civil Rights Act of 1964, 78 Stat, 252, 42 U.S.C. 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally- assisted programs of the Department of Transportation issued pursuant to such Act.
- G. Following is a presentation of the undersigned bidder's bid for all work to be performed, to carry out the aforementioned construction project including, where required, alternate bids: it being understood that this bid contemplates all machinery, equipment, tools, labor, and other means of construction and all materials and times specified in accordance with the drawings and specifications and all addenda thereto.
1. Quantities of work shown hereafter are approximate only, are subject to increase or decrease, and where increased or decreased within the limits specified in the specifications will be performed at the unit prices quoted hereafter.
 2. At the opening of the Bids, totals only will be read, but the comparison of bids by the Owner will be based on the correct summation of item totals obtained from the extension of unit bid prices as provided by the Contract Documents. Where there is a discrepancy between the extension and a unit bid price, the unit bid price shall govern.
 3. The undersigned Bidder proposes to do all unclassified work required to complete the contemplated improvement, at unit price or lump sum payment to be agreed upon in writing prior to starting such work as provided by the specifications.
- H. The undersigned Bidder understands that pursuant to Minnesota law, although the City of Winona is a tax exempt agency, the Bidder shall be responsible for the payment of all applicable sales and use taxes pertaining to the completion of this project, including Minnesota State sales tax.
- I. The undersigned Bidder understands that by signing this Bid Form it is being submitted by an owner or duly authorized officer of the company, and swears under oath that the company/business meets the Minimum Criteria to be a responsible contractor as defined in Document 00 83 10 – Non-Federal Contract and Labor Provisions.

For completion of the Aircraft Fueling Facility Relocation project as set forth in the specifications, related documents and Addenda, and as indicated on the Drawings, for the sum listed hereinafter.

The bidder must complete the following Schedule of Prices. Bidder must fill in unit prices in numerals, make extensions for each item and total.

SCHEDULE OF PRICES

See Electronic Bid Form

SPEC. OR ITEM NO.	ITEM DESCRIPTION AND UNIT OF MEASURE	APPROX. QUAN.	UNIT OF MEASURE
01 55 26-1	TRAFFIC CONTROL	1	LS
01 71 13-1	MOBILIZATION	1	LS
02 41 00-1	REMOVE EXISTING FUEL SYSTEM	1	LS
02 41 13-1	REMOVE CONCRETE PAVEMENT	117	Sq Yd
02 41 13-2	REMOVE ASPHALT PAVEMENT	165	Sq Yd
02 41 13-3	REMOVE & SALVAGE CHAIN LINK FENCE	133	Ln Ft
02 41 13-4	MISCELLANEOUS REMOVALS	500	UNIT
03 30 00-1	CONCRETE FOUNDATION - FUEL TANKS	1	LS
26 05 00-1	ELECTRICAL WORK	1	LS
31 23 00-1	GRANULAR MATERIAL (CV)	435	Cu Yd
31 23 00-2	WATER	3.6	MGAL
31 25 00-1	SILT FENCE	550	Ln Ft
32 02 00-2	6" AGGREGATE BASE COURSE (MNDOT CLASS V)	282	Sq Yd
32 02 00-3	TACK COAT	14	GAL
32 02 00-4	PLANT MIXED ASPHALT PAVEMENT (MNDOT 2360)	64	TN
32 17 23-3	PAVEMENT MARKING	62	Sq Ft
32 17 23-4	OBLITERATE PAVEMENT MARKINGS	67	Sq Ft
32 31 00-1	INSTALL SALVAGED CHAIN LINK FENCE	123	Ln Ft
32 31 00-2	INSTALL SALVAGED GATE	1	Ea
32 39 14-1	STEEL GUIDE POST	54	Ea
40 05 00-1	10,000 GAL STORAGE TANK - AVGAS	1	UNIT
40 05 00-2	10,000 GAL STORAGE TANK - JET-A	1	UNIT
40 05 00-3	DISPENSING SYSTEM - AVGAS	1	LS
40 05 00-4	DISPENSING SYSTEM - JET-A	1	LS
40 05 00-5	TANK VALVES & MONITORING EQUIPMENT	1	LS
40 05 00-6	MECHANICAL PIPING	1	LS
40 05 00-7	AUTOMATIC TANK GAUGING SYSTEM EQUIPMENT & NSTALLATION	1	LS
40 05 00-8	PAYMENT TERMINAL EQUIPMENT & INSTALLATION	1	LS

FIRST-TIER SUBCONTRACTORS LIST

SUBMIT WITH PRIME CONTRACTOR BID FORM SUBMITTAL

A prime contractor or subcontractor shall include in its verification of compliance consistent with Article 12 – Responsible Contractor Verification of Compliance included in Document 00 83 10 – Non-Federal Contract and Labor Provisions a list of all of its first-tier subcontractors that it intends to retain for work on the project.

FIRST-TIER SUBCONTRACTORS NAMES* Legal name of company/business as registered with the Secretary of State Mailing Address of companies/businesses/home office

***Provide additional pages if necessary**

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance and/or not listed on the original list of all first-tier subcontractors submitted with its original responsible/Bid Form submittal, the contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with Article 12 – Responsible Contractor Verification of Compliance included in Document 00 83 10 – Non-Federal Contract and Labor Provisions, within 14 days of retaining the additional subcontractor(s).

I affirm under oath that by submitting this bid that all prime and subcontractors party to this bid are in compliance with each of the minimum criteria in Minnesota Statutes, section 16C.285, subdivision 3.

Signed: _____

Printed Name: _____

Title: _____

Date: _____

BID SECURITY

Enclosed herewith is Bid Security in the form of

Cross out
one) a) Certified check in the amount of
)
) _____ Dollars
) (\$_____) payable to the City of Winona.
)

) b) Bid Bond in the amount of
)
) _____ Dollars
) (\$_____) payable to the City of Winona as obligee.

The amount of the Bid Security being at least five percent (5%) of the total Bid amount of this Bid Form as required by the Notice of Call for Bids and by the Information for Bidders.

ACKNOWLEDGEMENT

WITNESS Our Hands and seals this _____ day of _____, 20__.

Individual)
or)
Partnership)
Execution)
) Co-partners doing business under the name and style of:
)
)
)
)
) A Corporation of the State of

Corporate)
Execution)
) By _____
) **Owner or Duly Authorized Officer of the Company/Business**
)
) Title _____

Corporate)
Seal)
) By _____
) **Owner or Duly Authorized Officer of the Company/Business**
)
) Title _____

END OF DOCUMENT

DOCUMENT 00 43 00
BID BOND

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP No. A8501-73
TKDA Project No. 23576

BID BOND

KNOWN MEN BY THESE PRESENTS that we,

_____ as principal, and

_____ as surety, are

held and firmly bound unto the City of Winona as obligee, in the sum
of _____

(\$ _____) Dollars, lawful money of the United States of America, for payment of which
sum well and truly to be made we bind ourselves, our heirs, executors, administrators, successors and
assigns, jointly and severally and firmly by these presents.

The condition of this obligation is such that whereas the principal has submitted the accompanying Bid,
dated (_____), for construction work at the Southwest Minnesota Regional Airport.

NOW, THEREFORE, if the aforesaid principal shall not withdraw its Bid for a period of ninety (90) days
after the opening of bids, and if awarded a contract upon said Bid Form, shall enter into a contract with
the City of Winona and give Payment and Performance Bonds as required by law and in the form
specified by the City of Winona, then this obligation shall be null and void; otherwise the principal and
surety will pay unto the obligee, the sum of

\$ _____

not as a penalty, but as liquidated damages sustained by the City of Winona as a result of such failure.

Signed and dated this _____ day of _____, 20__.

Surety

Principal

Attorney-in-Fact

INDIVIDUAL AND CO-PARTNERSHIP ACKNOWLEDGMENT

STATE OF MINNESOTA)

) SS

COUNTY OF _____)

On this _____ day of _____, 20__, before me, a Notary Public within and for said County, personally appeared _____ to me known to be the person described in and who executed the foregoing instrument and acknowledged that he (she) executed the same as his (her) own free act and deed.

Notary

Seal

CORPORATE ACKNOWLEDGMENT

STATE OF MINNESOTA)

) SS

COUNTY OF _____)

On this _____ day of _____, 20__, before me, a Notary Public within and for said County, personally appeared _____ and _____ to me personally known, who, being each by me duly sworn did say that they are respectively the _____ and _____ of _____ the Corporation named in the foregoing instrument, and that the seal affixed to said instrument is the corporate seal of said corporation and that said instrument was signed and sealed on behalf of said corporation by authority of its Board of Directors, and they acknowledged said instrument to be the free act and deed of said corporation.

Notary

Seal

AFFIX HERE ACKNOWLEDGMENT OF CORPORATE SURETY

The City of Winona has prescribed the form of this bond.

NOTICE OF CORPORATE SURETIES: The surety issuing the Bond shall be satisfactory to the City of Winona be licensed to issue Bonds in the State of Minnesota, shall be rated by A.M. Best an A- (minus) or better, and shall be within the limits set by the Treasury Department as the net limit on any single risk for surety, or if co-sureties are utilized, the amount of each Bond shall be within the total of such limits set for a surety or any such co-sureties. There shall be no affiliation between the Contractor and any bonding agencies or agents used.

Full Name of Surety Company

Home Office Address

Name of Attorney-In-Fact

Name of Local Agency

Address of Local Agency

END OF DOCUMENT

DOCUMENT 00 52 11
CONSTRUCTION CONTRACT

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP No. SP8501-73
TKDA Project No. 23576

CONSTRUCTION DOCUMENT

THIS AGREEMENT effective this _____ day of _____, 20____, between the City of Winona, a public corporation of the State of Minnesota, herein called "Owner" and _____, herein called "Contractor".

WITNESSETH:

That the Contractor, in consideration of the payment of the contract price of _____ (\$_____) dollars, agrees to furnish all materials (except such as are specified to be furnished by Owner, if any), all necessary machinery, equipment, tools, labor and other means of construction and do and perform all the necessary work and labor for the full completion of the Work:

AIRCRAFT FUELING FACILITY RELOCATION
WINONA MUNICIPAL AIRPORT
WINONA, MN

a public airport under the operation, direction, and control of the Owner, the work to be performed in accordance with approved Contract Documents and for the price and compensation set forth above and as specified in the Proposal Form of the Contractor which is hereto attached and hereby made a part of this agreement. All of said Work and payments therefore will be pursuant to and in accordance with the Contract Documents, which are incorporated by reference and are made a part of this agreement.

The Contractor agrees to utilize the following Disadvantaged Business Enterprises (DBEs).

[Insert DBE names and dollar value]

Contractor agrees that the Work shall be done and performed in a good and workmanlike manner, that all materials and labor shall be in strict conformity in every respect with the Contract Documents and shall be subject to inspection and approval of Owner through its duly authorized Architect/Engineer, and, in case of any material or labor supplied which shall be rejected by Owner as defective or unusable, then such rejected material shall be removed and replaced with approved material, and the rejected labor shall be done anew to the satisfaction and approval of the Owner through its Architect/Engineer, at no additional cost or expense to the Owner.

Contractor further agrees that Contractor will commence the Work hereunder upon receipt of the Notice to

Proceed and will complete the Work to the satisfaction and approval of the Owner as specified in the Contract Documents.

It is further agreed that delay caused by matters over which Contractor has no control shall be excused and the time for completion extended to the extent that the Owner may find and determine such condition to have delayed completion within the time limit through no fault of the Contractor, but the judgment of the Owner in respect thereto shall be final and conclusive upon the parties. Contractor agrees that neither it nor its subcontractors shall have any claim for damages against the Owner or its agents arising from delays in the Work. Contractor understands that its sole remedy for a delay, if any, is an extension of time pursuant to the terms of the Contract Documents.

It is further understood and agreed that no claim for extra work done or materials furnished by the Contractor will be allowed except as provided by the Contract Documents nor shall the Contractor do any work or furnish any materials not covered by the Contract Documents and by this Construction Contract unless such work is first ordered in writing as provided in the Contract Documents. Any extra work or materials done or furnished by the Contractor without written order first being given as provided in the Contract Documents shall be at the Contractor's risk, cost and expense, and Contractor agrees in such event that Contractor will make no claim for compensation for such extra work or materials.

It is further agreed that in no event shall the contracting officers of the Owner be personally liable or responsible in any manner to the Contractor, Subcontractors, material men, laborers, or to any other person or persons whomsoever for any claim, demand, damages, actions, or causes of action or any kind of character arising out of or by reason of the execution of this Agreement or the performance and completion of the work and improvement provided herein.

Contractor certifies he is not disqualified or debarred from entering into or receiving a Minnesota Department of Transportation contract, or a municipal State-aid or County State-aid contract administered by the Department of Transportation as agent of a municipality or county pursuant to Minnesota Statute 161.36. Further contractor agrees he shall not utilize either directly or indirectly and contractor, corporation, partnership, or business however organized, which is disqualified or debarred from entering into or receiving contract as stated above. This restriction applies regardless of whether the disqualified or disbarred party acts in the capacity of a general contractor, a subcontractor, or as an equipment or material supplier.

It is further agreed that the Contractor will abide by all Provisions of Section 00 83 11, Contract and Labor Provisions. The contractor shall include the provisions of Section 00 83 11, Contract and Labor Provisions, 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 Sponsor (Owner) or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: 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 Sponsor (Owner) to enter into such litigation to protect the interests of the Sponsor (Owner) and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

CITY OF WINONA

City Attorney or Firm

By: _____

By: _____

Title: _____

Title: _____

STATE OF MINNESOTA)

) SS

COUNTY OF _____)

This instrument was acknowledged before me on this _____ day of _____, 20__, by _____ as the authorized representative of the City of Winona.

Notary Public

CONTRACTOR

By: _____

By: _____

Title: _____

Title: _____

**CONTRACTOR
INDIVIDUAL AND CO-PARTNERSHIP ACKNOWLEDGMENT**

STATE OF MINNESOTA)

) SS

COUNTY OF _____)

This instrument was acknowledged before me on this _____ day of _____, 20__, by _____.

Notary Public

**CONTRACTOR
CORPORATE ACKNOWLEDGMENT**

STATE OF MINNESOTA)

) SS

COUNTY OF _____)

This instrument was acknowledged before me on this _____ day of _____, 20__, by _____ and _____, as the authorized representative(s) of _____.

Notary Public

END OF DOCUMENT

DOCUMENT 00 61 13
PERFORMANCE AND PAYMENT BONDS

Project Location: Winona Municipal Airport
Project Name: Aircraft Fueling Facility Replacement
SP No. A8501-73
TKDA Project No. 23576

PART A: PERFORMANCE BOND

KNOWN ALL MEN BY THESE PRESENTS, that we _____, Contractor,
as Principal, whose address is _____ and
_____, as Surety, are held and firmly bound
unto the City of Winona in the amount of
\$ _____,

for the faithful performance of the contract as hereinafter set forth.

For the payment of this well and truly to be made, we jointly and severally bind our representatives, our successors and ourselves firmly by these presents.

The condition of this obligation is such that whereas the Principal has entered into a contract with the City of Winona for the construction of the project referenced above, which contract is on file in the office of the City of Winona, the regularity and validity of which is hereby affirmed;

NOW, THEREFORE, if the Principal shall faithfully complete the contract according to its terms and shall save the City of Winona harmless from all cost and charges that may accrue on account of the doing of the work specified and shall pay all costs of enforcement of the terms of the bond, if action is brought thereon, including reasonable attorney's fees, costs, and disbursements, in any case in which such action is successfully maintained or successfully appealed, and shall comply with the laws of the state appertaining to such contract, then this obligation shall be void but otherwise it shall remain in full force and effect pursuant to Minnesota Statutes, Chapter 574.

PART B: PAYMENT BOND

KNOWN ALL MEN BY THESE PRESENTS, that the aforesaid Principal and Surety are held and firmly bound unto the City of Winona in the additional amount of
\$ _____,

for payment of all claims, costs and changes as hereinafter set forth.

For the payment of this well and truly to be made we jointly and severally bind our representatives, our successors and ourselves firmly by these presents.

The condition of this obligation is such that whereas the Principal has entered into the contract more particularly described in Part A hereof; the regularity and validity of which is hereby affirmed;

The condition of this obligation is such that whereas the Principal has entered into a contract with the City of Winona for the construction of the project referenced above, which contract is on file in the office of the City of Winona the regularity and validity of which is hereby affirmed;

**WINONA MUNICIPAL AIRPORT
AIRCRAFT FUELING FACILITY REPLACEMENT**

ISSUE DATE: OCTOBER 7, 2026

NOW, THEREFORE, if the Principal shall pay as they may become due all just claims for work done, and for furnishing labor and materials engaged under, or to perform the contract, and all taxes incurred under Minnesota Statutes, Section 290.92 or Chapter 297A, and shall pay all costs of enforcement of the terms of the bond, if action is brought thereon, including reasonable attorney's fees, costs, and disbursements, in any case in which such action is successfully maintained or successfully appealed; and shall comply with the laws of the state pertaining to such contract, then this obligation shall be void but otherwise it shall remain in full force and effect pursuant to Minnesota Statutes, Chapter 574.

DATED _____, 20__

Principal

By _____
Title

Surety

By _____
Attorney-in-Fact

INDIVIDUAL AND CO-PARTNERSHIP ACKNOWLEDGMENT FOR PRINCIPAL

STATE OF MINNESOTA)
COUNTY OF _____) SS

On this _____ day of _____, 20__, before me personally appeared _____, to me known to be the person described in and who executed the foregoing bond, and acknowledged that he/she executed the same as his/her free act and deed.

(Seal)

Notary Public

CORPORATE ACKNOWLEDGMENT FOR PRINCIPAL

STATE OF MINNESOTA)
) SS
COUNTY OF _____)

On this _____ day of _____, 20____, before me appeared _____ and _____, to me personally known, who, being by me duly sworn, did say that they are respectively _____ and _____ of _____ a corporation; that the seal affixed to the foregoing instrument is the corporate seal of the corporation, and that said instrument was executed in behalf of the corporation by authority of its Board of Directors; and they acknowledged said instrument to be the free act and deed of the corporation.

(Seal)

Notary Public

AFFIX HERE ACKNOWLEDGMENT OF CORPORATE SURETY

The City of Winona has prescribed the form of this bond.

NOTICE TO CORPORATE SURETIES: The surety issuing the Bonds shall be satisfactory to the City of Winona, be licensed to issue Bonds in the State of Minnesota, shall be rated by A.M. Best as A-(minus) or better, and shall be within the limit set by the Treasury Department as the net limit on any single risk for the surety, or if co-sureties are utilized, the amount of each Bond shall be within the total of such limits set for a surety and any such co-sureties. There shall be no affiliation between the Contractor and any bonding agencies or agent used.

Full Name of Surety Company

Home Office Address

Name of Attorney-in-Fact

Name of Local Agency

Address of Local Agency

END OF DOCUMENT

**DOCUMENT 00 62 00
CERTIFICATES AND OTHER FORMS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Forms used in the administration of the Contract Documents.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 22 15 – Measurement and Payment
- C. Section 01 26 00 – Contract Modification Procedures
- D. Section 01 33 00 – Submittal Procedures
- E. Section 01 61 00 – Common Product Requirements
- F. Section 01 70 00 – Execution and Closeout Procedures

1.3 FORMS

- A. The following list of forms follow this Section.
 - 1. 00 62 12 Submittal Transmittal Form
 - 2. 00 62 36 DBE Utilization Information (if applicable)
 - 3. 00 62 76 Application for Payment
 - 4. 00 62 77 Application for Payment Backup Sheet

1.4 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for use of forms for submittals.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF DOCUMENT

SUBMITTAL TRANSMITTAL FORM

To: Consultant

Attn: _____
Address _____

From: _____

Address _____

Contact: _____

Owner: City of Winona

Project: _____

Airport: _____

Date: _____

Previous Submission Date: _____

Owner Project No.: _____

Consultant Project No: _____

Attached is the following submittal for your review as required by the Contract Documents.

- We understand a separate transmittal form is required for each specification section for which a submittal is required.
- If a submittal contains material not applicable for review, all text which is not applicable shall be deleted prior to submission.
- We further understand that submittals not dated and signed in compliance with the Contract Documents will be returned without a review and must be resubmitted.
- Submit separate transmittals for multiple submittals.

SHOP DRAWING SUBMITTAL () (List of Drawings:_____)

Submitted ___ reproductions in compliance with Section 01 33 00, Submittal Procedures, and the following:

Section: _____
Article & Paragraph: _____
Description of Item: _____
Manufacturer: _____
Supplier's Name: _____ Telephone Number: _____

PRODUCT DATA, QUALITY CONTROL, AND NON-TRANSPARENCY SUBMITTALS ()

Submit ___ copies in compliance with Section 01 33 00, Submittal Procedures, and the following:
(If reviewer will be unable to photo copy this submittal, submit total of 7 copies).

Section: _____
Article & Paragraph: _____
Description of Item: _____
Manufacturer: _____
Supplier's Name: _____ Telephone Number: _____

SAMPLES ()

Submit ___ samples in compliance with Section 01 33 00, Submittal Procedures, and the following:

Section: _____
Article & Paragraph: _____
Description of Item: _____
Manufacturer: _____
Supplier's Name: _____ Telephone Number: _____

Submitted by:

Contractor's Name and Address: _____

Signature: _____ Date: _____

Application for Payment

Owner: _____
Project: _____

Airport: _____
Owner Project No.: _____

Application No.: _____
Request For: (Partial, Semi-Final, Final)
(Circle one)
Date of Issuance: _____
Contract Date: _____
Consultant Commission No.: _____

Contractor's Application for Payment

Original Contract Sum:	\$
Unit Price Adjustment:	\$
Net Change by Previous Change Orders authorized to date:	\$
Contract Sum to Date:	\$
Value of Work Completed this Application:	\$
Total Value of Work Completed to Date:	\$
Percentage Retained _____%	\$
Value of Work Completed to Date Less Retainage:	\$
Total of Applications Previously Certified:	\$
Amount Due This Application:	\$
Balance to Finish, including Retainage:	\$

CERTIFICATION OF CONTRACTOR:

I hereby certify that the Work performed and the material supplied to date, as shown on this application for payment represents the actual value of accomplishment under the terms of the Contract dated above, between the Owner and Contractor and all authorized changes thereto.

(Contractor) _____ By: _____ Date _____

(Address) _____

CERTIFICATION OF CONSTRUCTION COORDINATOR:

This is to certify that in accordance with the terms of the Contract, the Contractor is entitled to a _____ payment at the amount requested.

(Construction Coordinator) _____ By: _____ Date _____

CERTIFICATION OF ARCHITECT/ENGINEER:

This is to certify that in accordance with the terms of the Contract, the Contractor is entitled to a _____ payment at the amount requested.

(Architect/Engineer) _____ By: _____ Date _____

CITY OF WINONA:

Recommended for Payment By: _____ Date _____

Recommended for Payment By: _____ Date _____

Approved for Payment By: _____ Date _____

Contractor: _____

Application for Payment

Owner: _____

Project: _____

Airport: _____

Owner Project No.: _____

Application No.: _____

Application Date: _____

Period to: _____

Page: ____ of ____

A	B	C											D	E	F	G	H	I	J
		As-Bid Qty.	U/M	As-Bid Units	As-Bid Unit Cost	As-Bid Scheduled Value	Previous Qty. Utilized	Qty. This Request	Total Qty. Utilized	Unit Adjustments			Work Completed (D+E)		Stored Materials		Total Complete to Date (D+E+F+G)	%	Balance to Finish
Section No.	Description of Work									Qty. Unit Adjust.	Revised Unit Qty.	Revised Schedule of Values	From Previous Appl.	This Period	Materials Stored Previous Billed	Materials Presently Stored This Period			

DOCUMENT 00 63 00
CLARIFICATION AND MODIFICATION FORMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Forms used in the administration of the Contract Documents.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 22 15 – Measurement and Payment
- C. Section 01 26 00 – Contract Modification Procedures
- D. Section 01 33 00 – Submittal Procedures
- E. Section 01 61 00 – Common Project Requirements
- F. Section 01 70 00 – Execution and Closeout Procedures

1.3 FORMS

- A. The following list of forms follow this Document.
 - 1. 00 63 25 Substitution Request Form

1.4 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for use of forms for submittals.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF DOCUMENT

SUBSTITUTION REQUEST FORM

To: TKDA
3311 E Old Shakopee Road, Suite 300
Bloomington, MN 55425
Attention: _____

Date: _____

Owner:
Project: _____
Airport: _____

Consultant Project No: _____

Specification Section Number and paragraph: _____

Drawing and details affected: _____

Proposed Substitution: _____
Manufacturer _____
Product (model, pattern, etc.): _____

WHY IS SUBSTITUTION BEING SUBMITTED? (Select one of the following):

- ☐ Pre-Bid Substitution (Prior Approval) Bid Date: _____
☐ Specified product is not available. Explain. _____
☐ Cost savings to Owner. Indicate comparative cost analysis. _____
☐ Other. Explain. _____

EFFECTS OF PROPOSED SUBSTITUTION Answer the following questions and attach explanations.

Does substitution affect dimensions indicated on Drawings?
(NO) (YES, explain)

Does substitution affect Work of other Sections?
(NO) (YES, explain)

Does substitution require modifications to design, changes to Drawings, or revisions to specifications to be incorporated into the Project?
(NO) (YES, explain)

Attach list of at least 3 projects where proposed substitution has been used within past 12 months. Include name, address, and telephone number of Owner and Architect.

CONTRACTOR'S / BIDDER'S REPRESENTATION

Undersigned accepts responsibility for coordination of proposed substitution and accepts all additional costs resulting from the incorporation of proposed substitution into the Project per Section 01 25 00.

SUBMITTED BY:

For Architect's use:

Accepted ☐ Not Accepted ☐
No Action Required ☐
Submission: Incomplete ☐
Too Late ☐
Reviewed by/date: _____
Comments: _____

Contractor/Subcontractor's signature and date: _____

**DOCUMENT 00 65 00
CLOSEOUT FORMS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Forms used in the administration of the Contract Documents.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 22 15 – Measurement and Payment
- C. Section 01 26 00 – Contract Modification Procedures
- D. Section 01 33 00 – Submittal Procedures
- E. Section 01 61 00 – Common Project Requirements
- F. Section 01 70 00 – Execution and Closeout Procedures

1.3 FORMS

- A. The following list of forms follow this Section.
 - 1. 00 65 16 Certificate of Substantial Completion
 - 2. 00 65 19 Certificate of Final Completion

1.4 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for use of forms for submittals.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF DOCUMENT

Certificate of Substantial Completion

Owner:

Project: _____
Airport: _____

Date of Issuance: _____

Contract Date: _____
Consultant Project No.: _____

Contractor: _____

Project or designated portion shall include: _____

The work performed under this contract has been reviewed by the Architect/Engineer and Construction Coordinator, and found to be substantially complete. The Date of Substantial Completion of the project or portion thereof designated above is hereby established as of {Date} _____, which is also the date of commencement of applicable warranties and guarantees required by the Contract Documents.

DEFINITION OF DATE OF SUBSTANTIAL COMPLETION

The Date of Substantial Completion of the work or designated portion thereof is the date certified by the Architect/Engineer and Construction Coordinator when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the Consultant and verified by the Contractor is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all work, in accordance with the Contract Documents. The date of commencement of warranties and guarantees for items on the attached list will be the date of final payment unless otherwise agreed to in writing by previous correspondence.

CONSULTANTS

Design Consultant _____ By _____ Date _____

Construction Coordinator _____ By _____ Date _____

CONTRACTOR

The Contractor will complete or correct the work on the list of items attached hereto within 30 calendar days from the date of Substantial Completion. The list of items to be completed or corrected is appended hereto as Attachment A.

Contractor _____ By _____ Date _____

OWNER

The Owner accepts the work or designated portion thereof as substantially complete on _____.

Title _____ By _____ Date _____

Title _____ By _____ Date _____

Certificate of Final Completion

Owner: _____
Project: _____
Airport: _____

Date of Issuance: _____

Contract Date: _____
Consultant Project No.: _____

Contractor: _____

CONTRACTOR

The undersigned contractor does hereby certify that he has performed and completed all work in connection with and pursuant to the terms of the contract for the above referenced project, and does hereby certify the final payment request is true, correct, and complete, and makes claim for full and final payment in accordance with the terms of the contract.

Contractor: _____

By: _____

Title: _____

STATE OF MINNESOTA) SS
COUNTY OF _____)

On this _____ day of _____, 20__, before me, a Notary Public within and for said County, personally appeared _____ to me known to be the person described in and who executed the foregoing instrument and acknowledged that he (she) executed the same as his (her) own free act and deed.

(Corporate Acknowledgement)

_____ and _____ to me personally known, who, being each by me duly sworn, each did say that they are respectively the _____ and _____ of the _____ corporation named in the foregoing instrument, and that the seal affixed to said instrument is the corporate seal of said corporation by authority of its _____ and said _____ acknowledged said instrument to be the free act and deed of said corporation.

(Notary Seal)

Signature: _____
My Commission as Notary Public in
_____ County
Expires _____, _____

DESIGN CONSULTANT/CONSTRUCTION COORDINATOR

It is hereby certified that a final examination has been made of the above noted contract; that the contract has been completed; that the entire amount of work shown in the final payment request has been performed; and the total value of the work performed in accordance with, and pursuant to, the terms of the contract is as shown in the final payment request.

DESIGN CONSULTANT

Firm Name: _____

Date: _____

By: _____

Title: _____

CONSTRUCTION COORDINATOR

Firm Name: _____

Date: _____

By: _____

Title: _____

OWNER

In accordance with the foregoing, work under said contract is accepted as fully complete and said final payment as requested is approved for payment.

By: _____

Date: _____

Title: _____

**DOCUMENT 00 72 00
GENERAL CONDITIONS**

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE
CONSTRUCTION CONTRACT
5. SUBCONTRACTORS
6. CHANGES IN THE WORK

**ARTICLE
1.
GENERAL PROVISIONS**

1.1. BASIC DEFINITIONS

1.1.1. THE CONTRACT DOCUMENTS

The Contract Documents shall consist solely of the following and shall form and are part of the Contract:

- The Construction Contract;
- The Bid Proposal Form submitted by the Contractor;
- The Project Manual prepared by Owner and made available to potential bidders;
- Any and all Addenda issued prior to the submission of bids; and,
- The Drawings identified in the Project Manual or Addenda.

1.1.2. THE PROJECT

The Project is the entire improvement proposed by Owner to be constructed in part or in whole pursuant to the Construction Contract.

1.1.3. WORK

The Work includes all labor, all materials, and all items of equipment and services provided as called for by the Contract Documents.

1.1.4. SUBSTANTIAL COMPLETION

Substantial Completion is that stage in the progress of the Work when the Work is sufficiently complete in accordance with the Contract Documents that Owner can utilize the Work for its intended use. Prior to granting Substantial Completion, Operation and Maintenance Manuals as called for in the Project Manual must be completed and submitted to the Architect/Engineer.

1.1.5. FINAL COMPLETION

Final Completion is that stage in the Work when the Work is complete, all corrections have been made, all submittals provided, all systems tested and functioning properly, and Owner has determined that there is no unfinished Work.

1.1.6. DAY

A day is a calendar day consisting of 24 hours and extending from midnight to midnight.

1.1.7. ARCHITECT/ENGINEER

Architect/Engineer shall mean the Architect and/or Engineer or Design Consultant identified in the Project Manual.

1.1.8. CONSTRUCTION CONTRACT SUM

The value indicated on the bid proposal from the Contractor.

1.2. CORRELATION AND INTENT OF DOCUMENTS

1.2.1. The Contract Documents are mutually complimentary, and what is called for by any one shall be as binding as if called for by all. The intention of the documents is to include all labor and materials, equipment, and transportation necessary for the proper execution of the Work. Materials or work described in words which have a well-known technical or trade meaning shall be held to refer to such recognized standards. In case of a conflict in the Contract Documents, the following documents shall govern in the following order over the remaining Contract Documents: the Construction Contract, the General Conditions, the State and Local Contract Provisions, Division 00 General Project Requirements, the Specifications (Divisions 01 through 48), the details of Drawings, and Drawings.

1.2.2. Neither the Contractor nor any Subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, or other documents prepared for the Project. The Drawings, Specifications, and other documents prepared by the Architect/Engineer, including copies furnished to the Contractor, are for use solely with respect to this Project.

ARTICLE

2.

OWNER

2.1. DEFINITION

2.1.1. Owner shall mean the City of Winona, a public corporation of the State of Minnesota, or its authorized representative.

ARTICLE

3.

CONTRACTOR

3.1. DEFINITION

3.1.1. The Contractor is the person or entity undertaking the execution of the Work under the terms of the Contract Documents.

3.2. ASSIGNMENT

3.2.1. No assignment by the Contractor of any principal construction contract, or any part thereof, will be recognized except upon the written approval of Owner and the surety. Such assignment shall specify the purpose for which the assignment is given.

3.3. REVIEW OF CONTRACT DOCUMENTS AND INSPECTION

3.3.1. Execution of the Construction Contract by the Contractor is a representation that the Contractor has thoroughly reviewed all of the Contract Documents and has diligently and carefully inspected the site of the proposed Work, any structure involved and other construction area(s) of the Work, and any obstacles that may be encountered. Any site information is included for informational purposes only. Neither Owner nor the Architect/Engineer make any representation regarding the accuracy or completeness of this information.

3.3.2. The Contractor shall carefully study and compare all Drawings, Specifications, and other instructions and shall at once report to the Architect/Engineer any error, inconsistency or omission.

3.3.3. The Contractor shall take no advantage of any error or omission in the Contract Documents but shall immediately notify the Architect/Engineer of the error or omission, and the Architect/Engineer shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the Contract Documents.

3.3.4. The Contractor shall lay out all Work from dimensions given on the Drawings. Before ordering any material or doing any work, the Contractor shall take measurements and verify dimensions of existing work that affects the Work or to which the Work is to be fitted. Contractor alone shall be responsible for the correctness of all measurements. No extra charge or compensation will be allowed on account of difference between actual measurements and dimensions indicated on the Drawings. Before starting any operation, the Contractor shall examine existing work, or work performed by others, to which the Work adjoins or is applied and will report to Architect/Engineer any conditions that will prevent satisfactory accomplishment of the Construction Contract. Failure to notify Architect/Engineer of deficiencies or faults in preceding work will constitute acceptance of it and waiver of any claim of its unsuitability.

3.4. SUPERVISION

3.4.1. The Contractor shall provide sufficient supervision to the Work, using Contractor's best skill and attention.

3.5. CONTRACTOR'S SUPERINTENDENT

3.5.1. The Contractor shall keep at the Work, during progress and at all times when workers are on site, a competent superintendent, and any necessary assistants, all satisfactory to and approved by Owner. The superintendent shall not be changed except with the consent of Owner unless the superintendent is no longer employed by the Contractor. The superintendent shall represent the Contractor and all directions given to the superintendent shall be binding as if given to the Contractor. Should the Contractor at any time fail to keep a competent superintendent at the Work, the Contractor will be notified by the Engineer, and/or Architect of such noncompliance. Should the Contractor fail to respond to the notification of noncompliance, the Engineer, and/or Architect may suspend Contractor's work activities until correction is made. Any maintenance and/or other costs incurred by the Owner due to suspension of work activities due to noncompliance, shall be deducted from monies due or to become due the Contractor.

3.6. SUBMITTALS

3.6.1. The Contractor shall furnish for review the submittals specified in the Contract Documents. The Work shall be in accordance with reviewed submittals.

3.7. PREMIUM TIME

3.7.1. It is anticipated and expected that Contractor may be required to conduct certain operations, such as major service connections or revisions to existing construction and utilities such as water and electric, for work in high demand areas as determined by Owner during hours that will be beyond normal working hours. It is expressly understood that all costs and wages required by such premium time for Work necessary beyond normal working hours is to be included in the Construction Contract Sum, and no claim for extra compensation will be considered. Project specific premium time requirements are included in the Project Manual.

3.8. SETS OF DRAWINGS

3.8.1. The Architect/Engineer will furnish the Contractor one (1) electronic set of the Drawings and Specifications. Contractor shall be responsible for the cost associated with any reproductions.

3.9. DRAWINGS AND SPECIFICATIONS ON THE WORK

3.9.1. The Contractor shall keep one copy of all Drawings and Specifications related to the Work in good order, available to the Architect/Engineer. The Contractor shall be responsible for recording each and every change, modification, or deletion to the Work as part of Contractor's Work.

ARTICLE

4.

ADMINISTRATION OF THE CONSTRUCTION CONTRACT

4.1. DETAIL DRAWINGS AND INSTRUCTIONS

4.1.1. The Architect/Engineer will furnish, with reasonable promptness, additional instructions, by means of drawings or otherwise necessary for the proper execution of the Work. All such drawings and instruction shall be consistent with the Contract Documents, the full and true development thereof, and reasonably inferable therefrom. The Contractor shall do no Work without proper drawings or instructions. In giving such additional instructions, the Architect/Engineer shall have the authority to make minor changes in the Work not involving extra cost and not inconsistent with the purpose in the Work.

4.2. AUTHORITY OF THE ARCHITECT/ENGINEER

4.2.1. The Architect/Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished and Work performed and as to the manner of performance and rate of progress of said Work. The Architect/Engineer shall decide all questions which may arise as to the interpretation of any or all Contract Documents relating to the Work, and all questions as to the acceptable fulfillment of the Construction Contract on the part of the Contractor. The Architect/Engineer shall also review and determine the quantity and quality of the work performed and materials furnished which are to be paid for under an Application for Payment of the Construction Contract.

4.2.2. In case of a dispute arising between Contractor and one or more separate Contractors engaged in the same or adjacent areas as to the respective rights of each under the Contract Documents, the Architect/Engineer shall determine the matter at issue and shall define the respective rights of the various interests involved in order to secure satisfactory results and the proper completion of all parts of the Work. Their decision shall be final and binding on all parties concerned.

4.2.3. The Architect/Engineer shall have the right, as the Work progresses, to alter the plans or the specified coordination of two or more concurrent contracts, subject only to the limitations specified in Article 7.

4.2.4. The Architect/Engineer shall have the right and authority to suspend the Contractor's operation, wholly or in part, for such period or periods of time as they may deem necessary because of unsuitable weather or site conditions or other conditions which they consider unfavorable for the prosecution of the Work, or because of work being done under other contracts in the same or adjacent areas, or for such time as may be necessary because of the failure of the Contractor to comply with the provisions of the Construction Contract. Such "Suspension of Work Order" shall be in writing and will state the reason for such suspension, the effective date, and the operations suspended. Any Work done by the Contractor in violation of such "Suspension of Work Order" will be considered as unauthorized work which shall be at the sole expense of the Contractor. A "Resumption of Work Order" will be issued by the Architect/Engineer when, in the Architect/Engineer's opinion, the conditions which justified the suspension no longer exist. Any delay caused by such a suspension shall be subject to the limitation contained in Document 00 72 01 AC 150/5370-10H 80-08

4.2.5. In addition to the above, the Architect/Engineer shall have such other rights and powers as are specified elsewhere in the Contract Documents. The decisions and determinations of the Architect/Engineer involving additional or deductive costs shall be subject to review by Owner and to Owner's approval before becoming effective.

ARTICLE

5.

SUBCONTRACTORS

5.1. DEFINITION

5.1.1. Subcontractor shall mean the individual, partnership, limited liability company, corporation or other entity having a direct or indirect contract with the Contractor for the furnishing of labor, materials, or items of equipment called for by the Contract Documents.

5.2. SUBCONTRACTING

5.2.1. The Contractor shall promptly provide to Owner a list of the names, addresses, email addresses, and telephone numbers of all Subcontractors it intends to use to complete the Work. As Subcontractor(s) are added or replaced, the Contractor shall provide the names, addresses, email address and telephone numbers of the Subcontractor(s). The list shall include the aspect of the Work that the Contractor intends to subcontract to each proposed Subcontractor. Owner has the right to object to any of the proposed Subcontractors. If Owner does object to one or more of the proposed Subcontractors, the Contractor must identify replacements that are acceptable to Owner. The Contractor is fully responsible to Owner for all acts and omissions of Subcontractors and/or the persons either directly or indirectly employed by them. Nothing contained in the Contract Documents shall create any contractual relation between any Subcontractor and Owner. Subcontractors shall have remedies only against the Contractor, not Owner.

5.3. RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

5.3.1. The Contractor agrees to bind every Subcontractor by the terms of the Contract Documents so far as applicable to the Subcontractor's work.

5.4. PAYMENTS TO SUBCONTRACTORS AND SUPPLIERS

5.4.1. The Contractor agrees to notify each and every Subcontractor and supplier that they may seek payment only from the Contractor or from the surety on the payment bond furnished by the Contractor, not from Owner.

5.4.2. Each subcontract entered into for any part of the Work shall include the following term:

Subcontractor agrees that it has no right to and will not seek payment directly from Owner.
Subcontractor agrees that it will only seek payment from the Contractor, or, failing that, from the surety on the payment bond provided by the Contractor.

ARTICLE

6.

CHANGES IN THE WORK

6.1. CHANGES

6.1.1. The Architect/Engineer shall have authority to make minor changes in the Work, not involving extra cost, and not inconsistent with the purposes of the Project. Except in an emergency endangering life or property, no extra work or change in the Work involving extra cost shall be made without written order from Owner countersigned by the Architect/Engineer, and no claim for an addition to the Construction Contract Sum shall be valid unless so ordered. The Contractor is obligated to comply with any change requested by Owner. The Contractor agrees that the requirement of a written order as a condition to the validity of a claim will not be waived by Owner. In no event shall Contractor undertake extra work or a change in work involving additional cost without the written authorization of the Architect/Engineer, and Owner.

6.1.2. If the change requires an adjustment to the Construction Contract Sum, the adjustment shall be based on one of the following methods:

6.1.2.1. By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. A lump sum for an increase in the Contract Sum may contain a reasonable allowance for the Contractor's overhead and profit as described in Section 6.1.2.5. In instances where the Change Order results in a decrease in the Contract Sum, overhead and profit shall be decreased using the same percentages as those described in Section 6.1.2.5.

6.1.2.2. By unit prices stated in the Construction Proposal Form or subsequently agreed upon. Unit prices shall cover all of the Contractor's costs for labor, materials, equipment, and related services including such costs for subcontracted work and the Contractor's overhead and profit.

6.1.2.3. By cost to be determined in a manner agreed upon by the parties and mutually acceptable fixed or percentage fee.

6.1.2.4. The cost of a change determined under Sections 6.1.2.2., or 6.1.2.3. shall include all costs listed in Section 6.2.1. directly related to the change and the Contractor will itemize these costs and provide appropriate supporting data as may be necessary to establish their correctness. All indirect costs whether incurred on or off site shall be included in the Contractor's overhead. Cost of additional builder's risk insurance and performance bond coverage related to the change shall be pro rata to the builder's risk insurance and bond line values stated in the schedule of values.

6.1.2.5. In the case of Work priced in accordance with Sections 6.1.2.2. and 6.1.2.3., the percentage for overhead and profit shall include cost of safety measures (including those imposed by OSHA), warranty costs, office overhead, office supervision and administration, general insurance, use or replacement of tools, shop burden, inefficiencies, cumulative impacts, as-builts, testing, commissioning, parking, clean-up and debris removal and other general overhead items. The percentage for overhead and profit on labor shall be no more than fifteen percent (15%) of the cost of Work accomplished directly by the Contractor. A reasonable allowance for overhead and profit for Work accomplished by the Subcontractors shall be five percent (5%) of that portion of the Work. No additional markups for overhead and fees will be allowed within the agreed costs for labor, equipment, materials and insurances.

6.2. PRICING FOR CHANGES

6.2.1. Lump sum proposals, and actual cost of Work are to be based upon the following as a minimum, the detailed breakdown shall include and indicate the items enumerated below. The Contractor shall submit an itemized list of quantities with the applicable unit costs and extended price for each, in such a form and detail as required by the Architect/Engineer.

6.2.1.1. Labor costs: The itemized cost by each trade involved, showing the hourly rates for each, and the hours required for the change. Labor rates shall be the same for extra and credit computations and shall be the actual rate paid workman, in accordance with the hourly wage of collective bargaining agreements.

6.2.1.2. Burden on labor: The cost shall be only the actual cost of mandatory fringe benefits required by established agreements, statutory taxes on labor, worker's or workmen's compensation, insurance on labor as affected by payroll, unemployment taxes, and insurances, including FICA and FUTA. Any inclusion of Contractor supervisory or administrative personnel regarding a change shall be at the hourly rates that are documentable and auditable. These hourly rates shall remain in effect throughout the duration of the Project. The burden on labor shall not include any costs noted as general overhead. The burden on labor may be indicated as a dollar/cents addition to the hourly rate or may be expressed as a percentage of the extended hourly rate costs. If required by the Owner or Architect/Engineer, the Contractor shall provide a detailed breakdown to justify the labor burden.

6.2.1.3. Materials: The cost of materials used, including transportation charges, at their actual cost to the Contractor or Subcontractor, plus fifteen percent (15%) of the sum of the materials for overhead and profit. Upon request, the Contractor (or Subcontractor) shall submit evidence to substantiate the costs. Said costs shall be quoted at trade discount prices, with quantity discounts also applied where the quantities warrant.

6.2.1.4. Applicable taxes: Minnesota State sales tax on materials and any applicable local tax. Sales tax is not subject to overhead and fees markups.

6.2.1.5. Equipment rental: Equipment other than small tools required for additional work shall be paid for based on one hundred percent (100%) of the Blue Book rental rate applicable to the Project area of said equipment with no percentage added. Third party rental rates shall be at actual invoice amounts without overhead and profit. Rental charges of equipment rented from the Contractor shall remain in effect throughout the duration of the Project. In no event shall rental rates of Contractor-owned equipment be higher than the Blue Book rental rates for the same or comparable equipment in the Project area.

6.2.1.6. Bond: Additional bond at a pro rata as established for the Project.

6.2.1.7. Builder's Risk Insurance: Additional builder's risk insurance at a pro rata as established for the Project.

6.2.1.8. Cost changes shall be computed by determining the basic costs enumerated under clause 6.2.1 (as further specified under this subsection), to which the appropriate overhead and profit figure may be added, and finally adding the sales tax on materials.

6.2.1.9. Subcontractors shall compute their costs the same way and are subject to the same conditions of what may be included in the cost and the same maximum percentages for overhead and profit. The general contractor agreement with the Owner shall take precedence to any subcontract agreement.

6.2.1.10. Subcontractor Overhead and Profit: Subcontractors are allowed a total of five percent (5%) of the work performed by their sub-subcontractors.

6.2.2. The Contractor shall include with all lump sum proposals for changes in the Work a detailed cost breakdown for each component of Work, indicating quantities, unit prices, and costs used in computing the value of any change, and shall submit same to the Architect/Engineer within 14 days after receipt of proposal request. Breakdowns are to include breakdowns from Subcontractors.

6.2.3. All labor expenditures for Work performed at actual cost on a time and materials basis shall be approved and signed daily by Architect/Engineer. The Contractor shall present an application for payment to the Architect/Engineer prior to any payment requests by the Architect/Engineer to the Owner.

6.2.4. If the adjustment pursuant to Sections 6.1.2 and 6.2.1 cannot be agreed upon, Contractor shall promptly proceed with the Work involved upon receipt of a written order from Owner. The cost of such Work will then be determined by the Architect/Engineer after consultation with Owner, on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in the case of an increase in the Contract Sum, an allowance for overhead and profit as provided in Section 6.1.2.5. Pending final approval of the cost, and once a Change Order is fully executed, the Contractor can include the amount of the Change Order on the next Application for Payment. The amount of credit to be allowed by the Contractor to Owner for any deletion or change which results in a net decrease in cost will be the amount of actual net decrease as confirmed by the Architect/Engineer. When both additions and credits are involved in any one change, the allowances for overhead and profit shall be computed only on the basis of net increase, if any.

6.3. UNIT PRICES--INCREASED OR DECREASED QUANTITIES OF WORK.

6.3.1. The Architect/Engineer, shall have the right, as the Work progresses, to make alterations in the plans involving increases or decreases in the quantities of any or all items or to eliminate any one or more items, but not involving changes in the type or character of the Work, subject, however, to the following limitations.

6.3.2. Wherever the statement is made in the Contract Documents that these provisions shall not apply to any specific item or items, this shall be interpreted to mean that Owner reserves the right to increase or decrease the quantity of such item or items in any amount deemed necessary by the Architect/Engineer for the proper completion of the Project, without any adjustments in the Construction Contract unit prices, and the following provisions governing adjustments in contract prices shall not apply to such item or items.

6.3.3. If it is found that the quantity of any item required to complete the Project is less than the proposal quantity but is 80 percent or more thereof, or is greater than the proposal quantity but does not exceed 120 percent thereof, payment will be made at the Construction Contract prices for the quantity of Work actually performed.

6.3.4. If it is found that the quantity of any item required to complete the Project will be less than 80 percent or more than 120 percent of the base bid quantity of the item, a revised basis of payment for that item may be established by agreement at the discretion of Owner. A request by either party to the Architect/Engineer accompanied by evidence to support the claim, subject to the following limitations:

6.3.4.1. In the case of a decrease in quantity, the adjustment in payment will be considered only insofar as the following:

1. The adjustment justifies and increases the pro-rata share of fixed expenses chargeable to that item,
 2. The total payment for the decreased quantity will not exceed that which would be made for 80 percent of the proposal quantity at the Construction Contract price.
 3. There will be no allowance for anticipated profit in any Work not performed. However, if Mobilization is included in the proposal, it shall be understood that the Contractor's fixed expenses are compensated for in full under that item and no adjustments will be made in the basis of payment due to quantity underruns regardless of the amount of underrun.
- 6.3.4.2. In the case of an increase in quantity, the adjustment in price, if any, would apply only to that Work performed which is in excess of 120 percent of the base bid quantity and no allowance will be considered for losses sustained or profits accrued on the Work completed up to and including 120 percent of the base bid quantity for which payment is to be made at the Contract unit price.

END OF DOCUMENT

**DOCUMENT 00 73 10
SUPPLEMENTARY CONDITIONS**

1.1. ADDITIONAL DEFINITIONS

1.1.1. Owner and/or Commission shall mean the City of Winona, a public corporation of the State of Minnesota, or its authorized representative.

1.1.2 Architect, Engineer, Design Consultant and/or Construction Coordinator refers to TKDA, 3311 E Old Shakopee Road, Suite 300, Bloomington, Minnesota.

1.2 WORKING DAY

1.2.1 A working day shall be understood to be a calendar day on which conditions not under the control of the Contractor will permit construction operations to proceed with the Contractor's normal working force engaged in performing the controlling item or items of work for the entirety of the Contractor's normal daily work schedule. Fractional working days in increments of 1/4 day will be assessed proportionately.

1.2.2 Conditions considered to be beyond the Contractor's control are those which could not be foreseen at the time of bidding or are beyond the power of the Contractor to control or prevent. These conditions include:

1. Periods of inclement weather conditions or other unfavorable site conditions which, in the opinion of the Engineer, are unsuitable for construction operations.
2. Strikes not caused by improper acts or omissions by the Contractor.
3. Delays caused by the Owner to facilitate airport operations other than those specified herein.
4. Delays caused by non-completion of work being done by other contractors or utility owners, or other unforeseeable interference not the fault of the Contractor.
5. Delays directly attributable to the performance of increased quantities of work only if the total quantity for an item exceeds 120% of the proposal quantity.
6. Extraordinary delays in the delivery of materials of a nature beyond the power of the Contractor to foresee and forestall.

1.2.3 Conditions considered to be under control of the Contractor are those which could be foreseen at the time of bidding or were in his power to control or prevent. These conditions or circumstances include:

1. Delays caused by conditions on the project that could be foreseen or anticipated prior to time of bid opening. These conditions shall include the curing of concrete, drying of paint, setting of bituminous courses, and other foreseeable construction sequencing delays.
2. Delays due to the Contractor's failure to provide sufficient forces and equipment to maintain satisfactory progress in completing the progress-controlling items of work.
3. Delays due to slow delivery of materials from the supplier or fabricator when the material was available in warehouse stock, or when delivery was delayed for reasons of priority, late ordering, financial considerations, or other causes within the power of the Contractors to avoid.
4. Delays caused by plant and equipment failure of less than four hours duration, or at any time when the delay is due to the Contractor's failure to provide and maintain the equipment in good mechanical condition, or to provide for immediate emergency repairs.

1.2.4 The Engineer will furnish the Contractor a weekly statement which will show the daily expenditure of Working Days. Any contention by the Contractor as to improper or excessive assessment of working days shall be submitted in writing to the Engineer within 5 days upon receipt of the charges. The Contractor shall list specific dates and reasons for justifying reduced charges. Whenever the Contractor's contentions are found to be valid a corrected statement of

working day charges will be issued. The Engineer shall have sole final authority in the determination of all working days charges.

1.3 MATERIALS

1.3.1 All materials shall be new except as otherwise provided in the Contract Documents. Terms such as recycle, reinstall, relocate, install salvaged, etc. indicate that existing materials will be reused.

1.4 PREMIUM TIME

1.4.1 It is anticipated that the Contractor will be required to work extended hours (more than 8 hrs. per day and 5 days per week) to complete the work within the specified time limits. Also, certain construction activities must be completed within the hours specified in the SUMMARY OF WORK SECTION - 01 11 00.

1.5 CHANGES IN THE WORK

1.5.1 Article 7 of the GENERAL CONDITIONS shall be modified by the deletion of paragraph 7.1.2.5 and all references thereto.

1.5.2 Section 7.2 Article 7.2.1 of the GENERAL CONDITIONS shall be revised as follows:

7.2.1 Lump sum proposals, and actual cost of Work are to be based upon the following:

7.2.1.1 Labor: The direct job cost of labor including health and welfare benefits, pension and other fringes plus forty-nine percent (49%) of the sum of said items to cover jobsite supervision, property damage and liability insurance, worker's compensation insurance premiums, unemployment insurance contributions, and social security taxes.

7.2.1.2. Materials: The cost of materials used and accepted by the Engineer including transportation charges, plus fifteen percent (15%) of the sum of the materials.

7.2.1.3. Equipment Rental: Equipment other than small tools required for additional work shall be paid for based on one hundred percent (100%) of the rates included in the latest edition of the Rental Rate Bluebook for Construction Equipment, published by Primedia Information, Inc., as agreed upon prior to the use of said equipment with no percentage added.

7.2.1.4. Applicable taxes: Minnesota State sales tax on materials and any applicable local tax.

7.2.1.5. Bond: Additional bond at a pro rata as established for the project.

7.2.1.6. Contractor Overhead and Profit: Contractors allowance for overhead and profit shall not exceed ten percent (10%) of the cost of Work accomplished directly by the Contractor. Contractor's overhead and profit for Work accomplished by Subcontractors shall not be more than ten percent (10%) of the first \$10,000 and two percent (2%) of the balance.

7.2.1.7. Subcontractor Overhead and Profit: Subcontractors allowance for overhead and profit shall not exceed five percent (5%) of the cost of Work accomplished directly by the Subcontractor or Work performed by their subcontractors.

1.6 TIME OF COMPLETION

1.6.1 It is the desire of the City of Winona and the intent of these specifications to complete construction of this project in the shortest possible time period consistent with maintaining quality in the finished product.

1.6.2 Upon receipt of Notice to Proceed the Contractor shall begin construction operations and continuously and effectively prosecute the work with the least possible delay so as to complete work in accordance with the SUMMARY OF WORK SECTION - 01 11 00, Article 1.5 PROJECT SCHEDULE taking into consideration all restrictions and limitations to construction procedures hereinafter specified.

1.7 LIQUIDATED DAMAGES

1.7.1 If the Contractor should fail to complete the work within the time limits specified above in Article 1.5, the Contractor will be assessed daily charges as follows:

SCHEDULE OF LIQUIDATED DAMAGES

<u>ORIGINAL CONTRACT AMOUNT</u>		<u>CHARGE PER</u>
<u>FROM MORE THAN</u>	<u>TO AND INCLUDING</u>	<u>CALENDAR DAY</u>
<u>(\$)</u>	<u>(\$)</u>	<u>(\$)</u>
0	25,000	300
25,000	100,000	400
100,000	500,000	900
500,000	1,000,000	1,200
1,000,000	2,000,000	1,500
2,000,000	5,000,000	2,500
5,000,000	10,000,000	3,000
10,000,000	-----	3,500

1.7.2 Charges if any will be based on calendar day basis.

1.7.3 If work and clean-up of any construction site is not complete so that airport pavements are available to use by aircraft as specified in the Summary of Work Section - 01 11 00, Article 1.9B Construction Schedule, and the Special Project Procedures Section - 01 35 13, Article 1.5 Traffic Provisions and Airport Security, the Contractor will be assessed a charge of \$5,000 for each one-half hour or portion thereof after the specified time limit that airfield pavements must remain closed to use by aircraft because of construction operations.

1.7.4 These assessments, if any, will be cumulative and will be deducted from payment due the Contractor, not as a penalty, but as liquidated damages for breach of contract.

1.8 MINIMUM WAGE RATES

1.8.1 The prevailing minimum wage rate (basic rate plus fringe rate) for radio car operators on this project is thirty-five (\$35.00) dollars per hour.

1.9 EXPLOSIVES

1.9.1 The use of explosives on this project will not be permitted.

1.10 DEBARRED, DISQUALIFIED AND SUSPENDED CONTRACTORS

1.10.1 Contractor agrees it shall not utilize either directly or indirectly any contractor, corporation, partnership, or business however organized, which is disqualified or debarred from entering into or receiving a Minnesota Department of Transportation contract, or a municipal state-aid or county state-aid contract administered by the Department of Transportation as agent of a municipality or county pursuant to Minnesota Statute 161.36. This restriction applies regardless of whether the disqualified or debarred party acts in the capacity of a general contractor, a subcontractor, or as an equipment or material supplier.

1.10.2 IT IS YOUR RESPONSIBILITY to avoid using a debarred, disqualified or suspended person or business as a subcontractor or material supplier on a contract awarded by the City of Winona.

To determine if any names have been added to this list please refer to the following website for the master list: <http://www.mmd.admin.state.mn.us/debarredreport.asp>.

Note: This project may receive State of Minnesota financial assistance.

1.11 SUBSTANTIAL COMPLETION

In Section 1.1 of the GENERAL CONDITIONS, insert the following sentence to the end of Sub-article 1.1.4:

“Prior to granting Substantial Completion, Operation and Maintenance Manuals as called for in the Project Manual must be completed and submitted to the Engineer/Architect/Construction Manager.”

END OF DOCUMENT

DOCUMENT 00 73 16
INSURANCE REQUIREMENTS

PART 1 - CONTRACTORS' AND SUBCONTRACTORS' INSURANCE

- A. The Contractor shall not commence Work under this Contract nor shall Contractor allow any Subcontractor to commence Work until all insurance hereinafter required has been procured and such insurance is approved by the Owner. Insurance shall be placed with companies rated A- or higher by A.M. Best during the term of this Construction Contract. Insurance as hereinafter provided shall be kept intact and in force throughout the term of this Construction Contract. The insurance shall be in a form satisfactory to the Owner and copies of policies or certificates evidencing such coverage shall be furnished upon the Owner's request during the duration of the Construction Contract.
- B. The Contractors shall furnish four copies of an insurance certificate to the Owner or its designated representative using the most current standard ACORD form as evidence of the required insurance. The certificate shall indicate that at least 15 days' prior written notice will be given to the Owner in the event of cancellation, nonrenewal or any material change in the policies. The insurance certificate must be signed and dated by an authorized representative of the insurance company.
- C. The Contractor agrees to obtain, maintain, and pay for all insurance, as set forth below, that will insure for liability for all damages or injury to any person or any property in any manner connected with or resulting from the Work provided for in this Construction Contract or resulting from the use by the Contractor, Subcontractors, or any of their agents and employees, of materials, equipment, or other property whether owned by the Owner, the Contractor, Subcontractors, or third parties. All of Contractor's insurance shall be primary by endorsement to the policy or policies, and the Owner shall have all the same rights and coverages as the Contractor under the insurance policies.
- D. The Contractor agrees to provide the insurance, as set forth below, for the benefit of the Owner, including all liabilities, losses, suits, claims, judgments, fines or demands against the Owner (hereinafter "the Claim"), regardless of the Owner's fault. The insurance policies shall not limit or delete the Owner's coverage in any way based upon the Owner's acts or omissions. The insurance shall include coverage for the Owner's legal fees and costs for investigation and defense of the Claim and any legal fees and costs incurred by the Owner. The Contractor shall be responsible for all deductibles.
- E. The Contractor shall submit insurance renewals to the Owner's Contract Manager or its designated representative. Renewals must include Project Name, Project Location, and the Owner Contract Number. Renewals submitted without this information will be returned.
- F. The Contractor waives any subrogation rights against the Owner on all claims and insurance policies by endorsement.
- G. Failure to provide insurance as required herein shall be a material breach of this Construction Contract, entitling the Owner to terminate this Construction Contract for cause.

PART 2 - WORKERS' COMPENSATION INSURANCE

- A. The Contractor shall procure and shall maintain during the life of this Construction Contract workers' compensation insurance for all employees working on this Project as required by statute and shall also require that all Subcontractors and sub-subcontractors maintain the same coverage and limits of workers' compensation insurance for their employees. Workers' compensation insurance policies shall also provide employer's liability insurance with a limit of at least \$500,000 each accident, \$500,000 Disease Policy Limit and \$500,000 Disease each employee. This may be adjusted up or down by the Owner.
- B. The Contractor shall be responsible for ensuring Subcontractors and sub-subcontractors maintain the insurance requirements outlined within. Upon request, the contractor will be required to provide evidence of such.

PART 3 - CONTRACTORS' COMPREHENSIVE GENERAL LIABILITY INSURANCE

- A. The Contractor shall procure and maintain throughout the term of the Construction Contract comprehensive general liability insurance covering personal injury including bodily injury and property damage liability with a combined single limit of \$2,000,000 for each occurrence and aggregate. The policy shall contain an endorsement for cross liability and severability of interest coverage.
- B. The comprehensive general liability insurance and umbrella liability insurance if applicable, shall name the Contractor as insured and shall also name the **Architect/Engineer, Construction Coordinator, and the Owner** as additional insureds and shall provide contingent liability for the operations of Subcontractors and sub-subcontractors by endorsement to the policy or policies. The insurance shall cover completed operations and products liability as well as broad form contractual liability. Completed operations coverage shall be maintained for a minimum of five years.
- C. The property damage liability portion of the policy shall not contain any exclusions with reference to damage due to blasting, collapse, or underground facilities.
- D. In lieu of the Owner, Architect/Engineer and Construction Coordinator being named as additional insureds on the Contractor's comprehensive general liability insurance, the insurance may provide liability coverage for the benefit of the Owner, Architect/Engineer, and Construction Coordinator by means of Owner's Protective Liability Policy, issued in the name of the Owner, subject to the Owner's review and approval of such policy.
- E. The Contractor shall also require that all Subcontractors and sub-subcontractors maintain the same coverage and limits of insurance outlined within.

PART 4 - COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE

- A. The Contractor shall provide comprehensive automobile liability insurance covering bodily injury and property damage with a combined single limit of \$2,000,000 for each occurrence or as specified by applicable Owner Ordinance.
- B. Comprehensive automobile liability insurance shall provide coverage for all automobiles owned by the Contractor and all hired and non-owned vehicles. The Contractor shall also require that all Subcontractors and sub-subcontractors maintain the same coverage and limits of insurance. The Contractor shall also provide contingent automobile liability insurance for the operations of Subcontractors and sub-subcontractors to ensure coverage as described in this paragraph.
- C. The Contractor shall be responsible for ensuring Subcontractors and sub-subcontractors maintain insurance requirements outlined within.

PART 5 - BUILDERS RISK INSURANCE

- A. Builder's Risk Insurance will not be provided by the Owner on this project.

PART 6 – OWNER'S RIGHT TO REVIEW

- A. The Owner reserves the right to review, modify, reject or accept any required policies of insurance, including limits, coverages, or endorsements, herein from time to time throughout the life of this Construction Contract. The Owner reserves the right, but not the obligation, to review and reject any insurer providing coverage because of its poor financial condition, or failure to operate legally.

END OF DOCUMENT

DOCUMENT 00 83 10
NON-FEDERAL CONTRACT AND LABOR PROVISIONS

ARTICLE

1.

NON-DISCRIMINATION

1.1. Pursuant to Minn. Stat. Section 181.59, the Contractor agrees:

1.1.1. That, in the hiring of common or skilled labor for the performance of any work under any contract, or any subcontract, no Contractor, material supplier, or vendor, shall, by reason of race, creed, or color, discriminate against the person or persons who are citizens of the United States or resident aliens who are qualified and available to perform the work to which the employment relates;

1.1.2. That no Contractor, material supplier, or vendor, shall, in any manner, discriminate against, or intimidate, or prevent the employment of any person or persons identified in paragraph 1.1 of this section, or on being hired, prevent, or conspire to prevent, the person or persons from the performance of work under any contract on account of race, creed, or color;

1.1.3. That a violation of this section is a misdemeanor; and

1.1.4. That this contract may be canceled or terminated by the City of Winona, and all money due, or to become due under the contract, may be forfeited for a second or any subsequent violation of the terms or conditions of this contract.

1.2. The proposed contract shall be under and subject to Executive Order No. 11246 of September 24, 1965, as amended, and to the equal opportunity clause, mandated by the regulations promulgated pursuant thereto. The proposed contract must incorporate the terms set forth in Article 2. The bidder or proposer must supply all the information required by the bid or proposal form.

1.3. The City of Winona, in accordance with Title VI of the Civil Rights Act of 1964, 78 stat, 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that all bidders will be afforded full opportunity to submit bids and will not be discriminated against on the grounds of race, color or national origin in consideration for an award. In addition, bidders will not be discriminated against on the basis of age, sex, religion or disability.

ARTICLE

2.

TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

2.1. Compliance with Regulations. The Contractor shall comply with the Regulations relative to nondiscrimination in Federally assisted programs of the Department of Transportation (hereinafter "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made part of this Construction Contract.

2.2. Nondiscrimination. The Contractor, with regard to the work performed by it during the Construction Contract, shall not discriminate on the grounds of race, color or national origin 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 Section 21.5 of the Regulations, including employment practices when the Construction Contract covers a program set forth in Appendix B of the Regulations.

2.3. 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

Construction Contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

2.4. 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 sponsor or the Federal Aviation Administration 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 sponsor or the Federal Aviation Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

2.5. Sanctions for Noncompliance. In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Construction Contract, the sponsor shall impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:

- a. Withholding of payments to the Contractor under the Construction Contract until the Contractor complies, and/or
- b. Cancellation, termination, or suspension of the Construction Contract, in whole or in part.

2.6. Incorporations of Provisions. The Contractor shall include the provisions of paragraphs 2.1 through 2.6 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 sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: 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 sponsor to enter into such litigation to protect the interest of the sponsor and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE

3.

AFFIRMATIVE ACTION

3.1. It is hereby agreed between the parties that Minnesota Statute 473.144 and Minnesota Rules, parts 5000.3400 to 5000.3600 are incorporated into any contract between these parties based upon this specification or any modification of it. A copy of Minnesota Statutes Section 473.144 and Minnesota Rules, parts 5000.3400 to 5000.3600 is available upon request from the Owner. Failure by a Contractor to implement an affirmative action plan or make a good faith effort may result in suspension or revocation of its Workforce Certificate of Compliance (Minn. Stat. Section 363A.36, Subd. 3).

3.2. Under Minnesota Statutes Section 473.144, the Owner may not accept any bid or proposal for a contract or execute a contract for goods or services in excess of \$100,000 with any business having more than forty (40) full-time employees on a single working day in Minnesota during the previous twelve (12) months, unless the business has an affirmative action plan for the employment of minority persons, women, and the disabled that has been approved by the Commissioner of the Minnesota Department of Human Rights.

3.2.1. The Contractor shall provide written notification to the Compliance Division of the Minnesota Department of Human Rights within ten (10) working days of award of any construction subcontract at any tier for construction work under the Construction Contract resulting from the solicitation. The notification must list the name, address and telephone number of the Subcontractor, employer identification number, estimated dollar amount of the subcontract, and the geographical area in which the Construction Contract is to be performed.

3.3. The Contractor's compliance with Minn. Stat. Section 473.144 and Minn. Rules, Part 5000.3530 shall be based on its implementation of the equal opportunity clause, specific affirmative action obligations required by part 5000.3540, and its efforts to meet the goals established for the geographical

area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Construction Contract and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the Construction Contract, Minn. Stat. Section 473.144 and Minn. Rules, Part 5000.3530. Compliance with the goals will be measured against the total work hours performed.

3.3.1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area are as set out in the Notice for Bids.

ARTICLE

4.

AFFIRMATIVE ACTION FOR DISABLED WORKERS

4.1. The Contractor shall not discriminate against any employee or applicant for employment because of physical or mental disability in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled individuals without discrimination based upon their physical or mental disability in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship.

4.2. The Contractor agrees to comply with the rules of the Minnesota Department of Human Rights issued pursuant to the Minnesota Human Rights Act.

4.3. In the event of the Contractor's non-compliance with the requirements of this clause, actions for non-compliance may be taken by the Owner in accordance with this Construction Contract, applicable Minnesota Statutes and the rules and relevant orders of the Minnesota Department of Human Rights issued pursuant to the Minnesota Human Rights Act.

4.4. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Commissioner of the Minnesota Department of Human Rights. Such notices shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment, qualified disabled employees and applicants for employment, and the rights of applicants and employees.

4.5. The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Minnesota Statutes. Section 473.144 and applicable Minnesota Rules, and is committed to take affirmative action to employ and advance in employment physically and mentally disabled individuals.

ARTICLE

5.

EQUAL PAY

5.1 The State of Minnesota has recognized that disparity in salaries between male and female employees working the same job position and having the same circumstances is a significant state concern and should be avoided. In furtherance of the State's goal of eliminating disparities in salary, the State has adopted equal pay compliance requirements, including certification by the Minnesota Department of Human Rights. The parties agreed that the State's goal of preventing disparity in salaries is important and will work to implement the State's goals, including following the requirements of Minn. Stat. Section 363A.44.

5.2 Under Minnesota Statutes Section 363A.44, the Owner may not enter into a contract in excess of \$500,000 with a business that has 40 or more full-time employees in this state or a state where the business has its primary place of business on a single day during the prior 12 months, unless the business has an equal pay certificate or it has certified in writing that it is exempt.

5.3 If applicable, the Contractor shall obtain an equal pay certificate from the Minnesota Department of Human Rights before entering into a contract with the Owner. The Contractor shall provide to the Owner the equal pay certificate or written certification that the Contractor is exempt from Minnesota Statutes Section 363A.44.

5.4 The Contractor agrees that the Commissioner of Human Rights for the State of Minnesota may void a contract if the contract is found to have been entered into without being in compliance of Minnesota Statutes Section 363A.44. If the Commissioner determines that this contract has been entered into without being in compliance with Minnesota Statutes Section 363A.44, then the Owner may terminate this contract.

5.5 The Contractor agrees that if the Owner receives notice of suspension, revocation, termination or expiration of the Contractor's equal pay certificate, the Owner may abridge or terminate this contract.

ARTICLE

6.

STANDARD STATE EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

6.1 The Contractor must implement the specific Affirmative Action standards provided in paragraphs 6.4.1 through 6.4.15 of this article. The goals set forth in the solicitation from which this Construction Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization, the Contractor must reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor must make substantially uniform progress toward its goals in each craft during the period specified.

6.2 Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Minnesota Statutes Sections 363A.36 and 473.144, or the rules adopted under the Minnesota Human Rights Act.

6.3 In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the Contractor during the training period and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained according to training programs approved by the Minnesota Department of Human Rights, the Minnesota Department of Labor and Industry, or the United States Department of Labor.

6.4 The Contractor shall take specific affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications must be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

6.4.1 Make a good faith effort to maintain a working environment free of harassment, intimidation and coercion at all sites and in all facilities at which the Contractor's employees are assigned to work. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment with specific attention to minority or female individuals working at such sites or in such facilities.

6.4.2 Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available and maintain a record of the organization responses.

6.4.3 Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If the individual was sent to the union hiring hall for referral and was not referred

back to the Contractor by the union, or if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

6.4.4 Provide immediate written notification to the Commissioner of the Minnesota Department of Human Rights when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

6.4.5 Develop on-the-job training opportunities and/or participate in training programs for the areas which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the State of Minnesota. The Contractor shall provide notice of these programs to the sources compiled under 6.4.2 above.

6.4.6 Disseminate the Contractor's Equal Employment Opportunity policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its Equal Employment Opportunity obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company Equal Employment Opportunity policy on bulletin boards accessible to all employees at each location where construction work is performed.

6.4.7 Review at least annually, the company's Equal Employment Opportunity policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, lay-off, termination, or other employment decisions including specific review of these items with on-site supervisory personnel such as superintendents, general foremen, etc., prior to the first day of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.

6.4.8 Disseminate the Contractor's Equal Employment Opportunity policy externally by including it in any advertising in the news media, specifically including minority and female news media and providing written notification to and discussing the Contractor's Equal Employment Opportunity policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

6.4.9 Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one (1) month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above describing the openings, screening procedures and tests to be used in the selection process.

6.4.10 Encourage present minority and female employees to recruit other minority persons and women and where reasonable, provide after school, summer and vacation employment to minority and female youth, both on the site and in other areas of a Contractor's work force.

6.4.11 Conduct at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, such opportunities.

6.4.12 Ensure that seniority practices, job classifications, work assignments and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the Equal Employment Opportunity policy and the Contractor's obligations under these specifications are being carried out.

6.4.13 Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

6.4.14 Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.

6.4.15 Conduct a review at least annually, of all supervisors' adherence to and performance under the Contractor's Equal Employment Opportunities policies and affirmative action obligations.

6.5 Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations 6.4.1 through 6.4.15. The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 6.4.1 through 6.4.15. of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be defense for the Contractor's non-compliance.

6.6 A goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide Equal Employment Opportunity and to take affirmative action for all minority groups, both male and female and all women, both minority and non-minority. Consequently, the Contractor may be in violation of part 5000.3520 if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women, generally, the Contractor may be in violation of part 5000.3520 if a specific minority group of women is under-utilized).

6.7 The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, creed, religion, sex, national origin, marital status, status with regard to public assistance, disability, or age.

6.8 The Contractor shall not enter into any subcontract with any person or firm debarred from government contracts under the Federal Executive Order 11246 or a local Human Rights Ordinance or whose Workforce Certificate of Compliance has been suspended or revoked pursuant to Minnesota Rules, parts 5000.3400 to 5000.3600 or Minnesota Statutes Section 363A.36.

6.9 The Contractor shall carry out such sanctions for violation of these specifications and of the Equal Employment Opportunity clause including suspension, termination and cancellation of existing contracts as may be imposed or ordered pursuant to Minnesota Statutes, Section 363A.36 and its implementing rules. Any Contractor who fails to carry out such sanctions shall be in violation of these specifications and Minnesota Statutes Section 363A.36.

6.10 The Contractor in fulfilling its obligations under these specifications, shall implement specific affirmative action steps at least as extensive as those standards prescribed in paragraph 6.4., so as to achieve maximum results from its efforts to ensure Equal Employment Opportunity. If the Contractor fails to comply with the requirements of Minn. Stat. Section 473.144, its implementing rules, or these specifications, the commissioner of the Department of Human Rights shall proceed in accordance with part 5000.3570.

6.11 The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company Equal Employment Opportunity policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Minnesota Department of Human Rights and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation (if any) employee identification number when assigned, social security number, race, sex, status (for example, mechanic, apprentice trainee, helper, or laborer),

dates of changes in status, hours worked per week in the indicated trade, rate of pay and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form, however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

6.12 Nothing herein provided in this part shall be construed as a limitation upon the application of other state or federal laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents.

**ARTICLE
7.
TARGETED GROUP BUSINESSES**

NOT REQUIRED ON THIS CONTRACT

**ARTICLE
8.
PAYROLL REPORTS**

8.1 The Contractor shall maintain and submit weekly certified payroll reports for all personnel employed on the project for any week in which contract work is performed. The payroll reports shall set out accurately and completely the name, address and last 4 digits of each person's social security number of each such worker, his/her correct labor classification, daily and weekly number of hours worked, hourly rates of wages paid, fringe benefits (identify if part of hourly wage rate or is paid into an approved plan, fund, or program), gross amount earned, deductions made, net amount paid, and days and dates worked. Contractor or subcontractors name and address, and detailed information regarding approved apprenticeship or trainee programs (if applicable). The Contractor is responsible for the submission of copies of payrolls by all Subcontractors.

Reports shall be submitted to the Owner project representative in electronic format, using the following MnDOT forms (or an approved by the Owner project representative acceptable equivalent, such as MyLCM, LCPtracker or Elations Systems):

8.1.1 Prevailing Wage Payroll Report:
<http://www.dot.state.mn.us/const/labor/documents/forms/prevailing-wage-payroll.xls>

8.1.2 Prime Contractor-Subcontractor's Statement of Compliance:
<http://www.dot.state.mn.us/const/labor/documents/forms/prime-contractor-subcontractor-statement-compliance.pdf>

Examples of the above referenced forms and instructions on how to complete them are available at: <http://www.dot.state.mn.us/const/labor/forms.html>.

8.2 Each payroll submitted shall be accompanied by a "statement of compliance", signed by the Contractor or Subcontractor or his/her agent who pays or supervises the payment of the workers employed under the Construction Contract and shall certify the following:

8.2.1 That the payroll for the payroll period contains the information required above and that such information is correct and complete; and

8.2.2 That each worker employed on the Construction Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions; and

8.2.3 That each worker has been paid not less than the applicable wage rates and fringe benefits or cash equivalent for the classification of work performed.

8.3 The Contractor or Subcontractor shall make the records pertaining to the payroll reports required above available for inspection, copying or transcription by authorized representatives of Owner within ten (10) days of request, and shall permit such representatives to interview employees during working hours on the job. Contractor or subcontractor employees that are interviewed shall acknowledge such interview in writing for the project records. If the Contractor or Subcontractor fails to submit the required records or to make them available, the Owner may take such action as may be necessary to cause the suspension of any further payment due under the terms of the Construction Contract until such time as the Contractor/Subcontractor has satisfactorily remedied and corrected all identified issues.

8.4 The Contractor shall post a Notice of Employees of Wage Rates and Overtime Requirements in a place that is accessible to all workers on the project work site. The Notice is to include the name, address, and telephone number of the Owner project representative responsible for reviewing certified payroll reports for compliance.

8.5 Contractor or subcontractors found to have disregarded their obligation to employees, or to have committed aggravated or willful violations while performing work on the Owner's projects covered by applicable State of Minnesota prevailing wage rates, may be subject to contract termination and debarment from future Owner's contracts for up to three (3) years. In addition, Contractor payments may be withheld in sufficient amounts to satisfy liabilities for unpaid wages and liquidated damages that result in non-compliance with wage rate determinations.

ARTICLE

9.

MINIMUM WAGE RATES

9.1 In accordance with Minnesota law, employees may not be permitted or required to work longer than the prevailing hours of labor unless the employee is paid for all hours in excess of the prevailing hours at the rate of at least one and one-half times the employee's basic rate of pay. Prevailing hours of labor are defined as eight (8) hours per day or forty (40) hours per week.

9.2 The minimum wage rate per hour to be paid for each classification of work shall be the local prevailing rate including fringe benefits as defined in Minn. Stat. Sections 177.41 - 177.44.

ARTICLE

10.

EMPLOYEE RIGHT TO KNOW REQUIREMENTS

10.1 Contractor shall comply with all requirements of the Minnesota Employee Right-to-Know Act of 1983, and shall require its Subcontractors to also comply with that Act. In addition, Contractors shall submit Material Safety Data Sheets to the Architect/Engineer at least 72 hours before the use of any material defined as hazardous materials under the Employee Right-to-Know Act.

10.2 The Contractor shall contact the Architect/Engineer if the Contractor has any questions regarding compliance with the Act or regarding the Material Safety Data Sheets. In the event of a hazardous material emergency, Contractor shall immediately notify the Owner.

ARTICLE

11.

ASSIGNMENT OF WORK

11. In order to effect close cooperation between management and labor and thereby to minimize occasion for labor dispute which might result in delays in progress of work or work stoppages, and in consideration of adherence thereto by labor employed upon or in connection with project work, by their union representatives and by the membership of Building and Construction Trades Council, the following procedures shall govern the work of Contractor and Subcontractors hereunder and shall be adhered to in allocation of any and all phases of project work:

11.1.1 Procedural rules and regulations of National Joint Board for Settlement of Jurisdictional Disputes in Building and Construction Industry, dated September 1963, and

amendments thereto, if any from time to time adopted, shall govern Contractor and Subcontractors and labor and their union representatives in jurisdictional work disputes.

11.1.2 A pre-job conference or conferences shall be held well in advance of actual work performance, between representatives of all Contractors and Subcontractors on the project work and labor employed thereon and their representatives in affiliated local unions of the Building Trades Council at which employers shall endeavor through such pre-job conference or conferences to arrive at agreement with labor and their representatives as to assignment of work as to which there is the possibility of disagreement.

11.1.3 In the event of strike or lockout in the building industry rising out of jurisdictional dispute, construction upon the project work shall not be halted, but will continue with the understanding that all settlements of such jurisdictional dispute, between Contractors and/or Subcontractors and labor and their representatives in any affiliated local union of the Building Trades Council, made pursuant to the aforementioned procedural rules and regulations of the National Joint Board for Settlement of Jurisdictional Disputes in the Building and Construction Industry, shall apply retroactively to the date of referral, by Contractor, Subcontractor, labor or their representatives, of such dispute for decision pursuant to said procedural rules and regulations.

ARTICLE

12.

RESPONSIBLE CONTRACTOR VERIFICATION OF COMPLIANCE

12.1 IMPLEMENTATION Minn. Stat. §16C.285, Subd. 7. Any prime contractor or subcontractor or motor carrier that does not meet the minimum criteria in Article 12.2 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project.

12.2 MINIMUM CRITERIA Minn. Stat. §16C.285, Subd. 3. "Responsible Contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:

12.2.1 The Contractor (i) is in compliance with workers' compensation and unemployment insurance requirements; (ii) is in compliance with the Department of Revenue and the Department of Employment and Economic Development registration requirements if it has employees; (iii) has a valid federal tax identification number or a valid Social Security number if an individual; and (iv) has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative.

12.2.2 The Contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14 or 181.722, and has not violated United States Code, title 29, section 201 to 219, or United States Code, title 40, section 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:

- (i) repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of \$25,000 or more within the three-year period, provided that a failure to pay is "repeated" only if it involves two or more separate and distinct occurrences of underpayment during the three-year period;
- (ii) has been issued an order to comply with the Commissioner of Labor and Industry that has become final;
- (iii) has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;
- (iv) has been found by the Commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;
- (v) has been issued a ruling or finding of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become

final or have been upheld by an administrative law judge or the Administrative Review Board; or

(vi) has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction.

Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties.

12.2.3 The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order.

12.2.4 The contractor or related entity has not, more than twice during the three-year period before submitting verification, had a Workforce Certificate of Compliance under section 363A.36 revoked or suspended based on provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office.

12.2.5 The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet Targeted Group Business (TGB), Disadvantaged Business Enterprise (DBE), or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting verification.

NOTE: Any violations, suspensions, revocations, or sanctions, as defined in sub-Articles 12.2.2 through 12.2.5, occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.

12.2.6 The contractor or related entity is not currently suspended or debarred by the federal government or the State of Minnesota or any of its departments, commissions, agencies, or political subdivisions that have authority to debar a contractor.

12.2.7 All subcontractors and motor carriers that the contractor intends to use to perform the project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in sub-Article 12.2.

12.3 SUBCONTRACTOR VERIFICATION Minn. Stat. §16C.285, Subd. 5. A prime contractor or subcontractor shall include in its verification of compliance under sub-Article 12.4 a list of all its first-tier subcontractors that it intends to retain for work on the project.

12.3.1 Prior to execution of a construction contract, and as a precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with sub-Article 12.2.7. Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in sub-Article 12.2 prior to execution of a construction contract with each subcontractor.

12.3.2 If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with sub-Article 12.2.7, within 14 days of retaining the additional subcontractors

12.3.3 A prime contractor shall submit to the contracting authority upon request copies of signed verifications of compliance from all subcontractors of any tier and motor carriers pursuant to sub-

Article 12.2.7. A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept a verification of compliance with actual knowledge that it contains a false statement.

12.4 VERIFICATION OF COMPLIANCE Minn. Stat. §16C.285, Subd. 4.

12.4.1 A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in sub-Article 12.2, with the exception of sub-Article 12.2.7, at the time that it responds to the solicitation document.

12.4.2 A contracting authority may accept a signed statement under oath as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. A prime contractor, subcontractor or motor carrier that fails to verify compliance with any one of the required minimum criteria or makes a false statement under oath in a verification of compliance shall be ineligible to be awarded a construction contract on the project for which the verification was submitted.

12.4.3 A false statement under oath verifying compliance with any of the minimum criteria shall render the prime contractor or subcontractor or motor carrier that makes the false statement ineligible to be awarded a construction contract on the project and may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor or motor carrier that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria.

12.4.4 A verification of compliance need not be notarized. An electronic verification of compliance made and submitted as part of an electronic bid shall be acceptable verification of compliance under this sub-Article 12.4 provided that it contains an electronic signature.

12.5 Motor Carrier Verification

12.5.1 A prime contractor or subcontractor shall obtain annually from all motor carriers with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in sub-Article 12.2 prior to execution of a construction contract with each motor carrier.

12.5.2 A prime contractor or subcontractor shall require each such motor carrier to provide it with immediate written notification in the event that the motor carrier no longer meets one or more of the minimum criteria in sub-Article 12.2 after submitting its annual verification.

12.5.3 A motor carrier shall be ineligible to perform work on a project covered by sub-Article 12.5 if it does not meet all minimum criteria in sub-Article 12.2.

12.5.4 Upon request, a prime contractor or subcontractor shall submit to the contracting authority the signed verifications of compliance from all motor carriers providing for-hire transportation of materials, equipment, or supplies for a project.

END OF DOCUMENT

**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1.1 Summary
 - 1.2 Related Requirements
 - 1.3 Work Covered by Contract Documents
 - 1.4 Contract Method
 - 1.5 Project Schedule
 - 1.6 Contractor's Use of Premises
 - 1.7 Work by Owner or Others
 - 1.8 Restricted Work and Special Project Requirements
 - 1.9 Owner Occupancy
 - 1.10 Partial Owner and Tenant Occupancy
 - 1.11 Owner Provided Products

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and other Division 1 Specifications apply to this section.
- B. Document 00 72 00 - General Conditions: Relations of Contractor - Subcontractors.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this Contract comprises Aircraft Fueling Facility Relocation, located at Winona Municipal Airport in Winona, MN.

This project includes the removal of the existing Jet-A and Avgas underground tanks and fueling systems and the installation of two new 10,000-gallon storage tanks and Jet-A and Avgas distribution system. Work also includes the construction of concrete slabs on grade, electrical services, and restoration improvements associated with installation of the new facility.
- B. Construction includes fuel tank and system removal, concrete removal, asphalt pavement removal, electrical removal, electrical installation, concrete foundation slab, storage tank and mechanical fuel system installation, guide posts, pavement markings, and mechanical and electrical commissioning.

1.4 CONTRACT METHOD

- A. Construct the Work under a unit price contract.

1.5 PROJECT SCHEDULE

- A. Receive Bids: October 28, 2026
- B. City Council Conditional Award: November 2, 2026
- C. Notice to Proceed: Dependent upon review and approval of properly executed Contract Documents as well as grant processing.
- D. Start Construction: May 3, 2027
- E. Interim Completion Dates: **See Article 1.8B Construction Schedule**
- F. Substantial Completion: August 30, 2027
- G. Clean-up and Restoration of Contractors Site: Not more than [30 days] after Substantial Completion.

- H. Final Completion: Not more than [60 days] after Substantial Completion.
- I. Failure to conform to the Project Schedule may determine that the Contractor is non-responsive and may not be awarded future City of Winona contracts.
- J. Working days shall exclude Sundays and Holidays.

1.6 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit use of the premises for Work, for storage, and for access to allow for continuous operation of the airport. Refer to the Traffic Control Section - 01 55 26 for Traffic Provisions.
- B. Coordinate use of premises under direction of the Engineer.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.
- D. Refer to the Special Project Procedures Section - 01 35 13 for Contractor's Site.
- E. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated or as designated by the Engineer. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1.7 WORK BY OWNER OR OTHERS

- A. List below indicates items furnished and installed by Owner or under separate contract.
 - 1. Items noted on Drawings as Not In Contract (N.I.C.).
- B. Contact Owner's Project Manager for information and identification of related projects.
- C. Work involving other contracts may be in progress during construction under this contract. The Contractor shall coordinate his work with others in order to expedite the orderly progress and completion of all work in the areas involved.
- D. The Contractor shall assume all liability, financial or otherwise in connection with his contract and shall save the Owner and Engineer harmless from all damages and claims arising from any delay, inconvenience, or loss experienced by him because of the presence and operations of other contractors working within the same general area or at other locations on Airport Property.

1.8 RESTRICTED WORK AND SPECIAL PROJECT REQUIREMENTS

- A. Refer to the Special Project Procedures Section - 01 35 13 for additional requirements.
- B. Construction Schedule. It is not the intent of this section of the specification to provide a detailed construction schedule for the Contractor's operations but rather to provide limitations and restrictions within which the Contractor shall schedule his work. In general, construction operations shall be scheduled so as to cause the least interference with airport operations subject to the following restrictions:
 - 1. Construction operations shall be scheduled consecutively and concurrently as necessary to enable the completion of work in an efficient manner within the specified time limits.
 - 2. Contractor may begin setup of Contractor's Site and stockpiling materials upon Notice to Proceed. These activities shall not be counted as working days for the purposes of time of completion.
 - 3. Demolition of the existing aircraft fueling facility must not commence until the temporary fueling is in place and operational.
- D. Special Project Requirements.
 - 1. Portions of work for this project are located inside the AOA. It is essential that during the performance of this contract, airport security be maintained. Refer to Section 01 35 13 - Special Project Procedures for security requirements.

2. Fence and gate removal and installation shall be coordinated so that airport security is maintained at all times.
3. Movement of construction operations within the AOA shall be restricted to the designated haul routes and project construction limits shown. Construction equipment shall not operate within "restricted areas" except upon approval of the Engineer. The speed limit for all construction vehicles within the AOA is 15 miles per hour.
4. Construction equipment used at the construction sites shall be limited to a height of 20-feet unless specifically approved by the Engineer on a case-by-case basis. When approved, equipment in excess of 20-feet shall be equipped with a red light and orange/white checkered flag, and shall be subject to operational restrictions imposed by the Engineer.
5. Construction equipment used at the Contractor's Site shall be limited to a height of 70-feet unless specifically approved by the Engineer on a case-by-case basis. All such equipment shall be equipped with a red light and orange/white checkered flag, and shall be subject to operational restrictions imposed by the Engineer.
6. Upon suspension of construction operations, "restricted areas" shall be in the following condition:
 - a. All clean-up and removal of equipment, materials, and personnel shall have been completed.
 - b. Exposed granular or aggregate base surfaces shall have been leveled and compacted. Water shall have been applied to the surface as directed by the Engineer.
 - c. All surfaces affected by the construction operations shall have been cleaned by sweeping.
7. Stockpiling of materials (topsoil, excavation, granular, aggregate base, etc.) and temporary storage of equipment at or adjacent to the construction sites shall be allowed only as directed by the Engineer. Non-mobile equipment may be stored at specific locations designated by the Engineer.
8. Dumping of materials on existing pavements shall not be allowed.
9. Electrical construction operations, including temporary installations, shall be coordinated with other construction operations so that all airport lighting systems remain operational, unless specified or as directed by the Engineer.

1.9 OWNER OCCUPANCY

- A. Owner and Tenants of the public space will occupy the premises of the existing building and surrounding area during the entire construction period for conduct of normal operations. Cooperate in scheduling operations to minimize conflict and to facilitate Owner and Tenant of public usage.

1.10 PARTIAL OWNER AND TENANT OCCUPANCY

- A. Schedule and substantially complete designated portions of Work for Owner and Tenant's occupancy prior to Substantial Completion of entire work.
- B. Execute Certificate of Substantial Completion for each designated portion of Work prior to Owner occupancy, Contractor shall:
 1. Allow access for Owner personnel.
 2. Insure operation of mechanical and electrical systems.
 3. Maintain security.
- C. Following occupancy, Owner will provide for occupied areas:
 1. Operation of mechanical and electrical systems.
 2. Maintenance.

3. Security.

1.11 OWNER PROVIDED PRODUCTS

- A. Owner and Tenant Responsibilities:
 1. Inspect deliveries jointly with Contractor.
 2. Arrange for replacement of damaged, defective, or missing items.
- B. Contractor Responsibilities:
 1. Receive and unload products at site.
 2. Inspect deliveries jointly with Owner, record shortages and damaged or defective items.
 3. Handle products at site, including uncrating and storage.
 4. Protect products from damage.
 5. Assemble, install, connect and adjust products.
 6. Provide installation inspections required by Owner.
 7. Repair or replace items damaged by Contractor.
 8. Return products to Owner upon completion of project.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

**SECTION 01 22 00
UNIT PRICES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Schedule of quantities and amounts for Unit Prices included on Bid Form, purchase or installation of designated project elements.
- B. Costs included in Unit Prices.
- C. Contractor Responsibilities.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 29 73 - Schedule of Values.
- C. Specification Sections Listed on Bid Form.

1.3 SCHEDULE OF UNIT PRICES

- A. Refer to individual Specification Sections for description of Unit Prices involving such Section.

1.4 ITEMS INCLUDED IN UNIT PRICES

- A. Required product or material.
- B. Delivery to site, unloading, uncrating, protection, and storage.
- C. Labor and equipment required under unit price.
- D. Applicable overhead, profit, benefits, bond, insurance, taxes, etc., and all other costs associated with that unit price. All other miscellaneous costs shall be included in the Base Bid.
- E. Differences in quantity will result in add or deduct changes to the Total Bid costs and will be adjusted on the basis of the Unit Price listed on the Bid Form.
 - 1. All unit prices shall have the same price for additional work as deducted work.

1.5 CONTRACTOR RESPONSIBILITIES

- A. Coordinate all Unit Price usage with the Engineer.
- B. The Engineer shall monitor quantity of unit prices utilized.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 22 15
MEASUREMENT AND PAYMENT**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Administrative and procedural requirements governing Contractor's Applications for Payment.

1.2 SCHEDULE OF PRICES

- A. The Schedule of Prices included in the Bid Form shall become the Schedule of Values.

1.3 APPLICATIONS FOR PAYMENT

- A. **Payment Application Times:** Date for each progress payment on or before the 15th day of each month. Period of Work covered by each Application for Payment is the period ending the last day of the previous month.
- B. **Payment Application Forms:** Forms to be provided by the Engineer.
- C. **Application Preparation:** The Engineer will prepare the Application for Payment to reflect both work completed to date and work completed since the last payment application. The values of work completed will be based on unit prices included in the Bid Form.
- D. **Application Review:** Review prepared application for Payment with Engineer and advise of modifications, if any.
- E. **Transmittal:** Submit five executed copies of each Application for Payment to Engineer for further processing.
- F. **Initial Application for Payment:** Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following.
 - 1. Subcontractors and Material List.
 - 2. Construction Progress Schedule (preliminary if not final).
 - 3. Submittal Schedule (preliminary if not final).
 - 4. Copies of building permits.
- G. **Application for Payment at Substantial Completion:** Following issuance of Certificate of Substantial Completion, the Engineer will prepare an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- H. **Application for Payment at Final Completion:** Upon satisfactory completion of all Work including required submittals, the Engineer will prepare an Application for Final Payment which will reflect the final costs of the Work.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 25 00
SUBSTITUTION PROCEDURES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Substitutions.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Bidding Requirements: Pre-bid substitutions.

1.3 SUBSTITUTIONS

- A. For a period of up to 7 days prior to bid date, Design Consultant will consider written requests from Contractor, manufacturers, and suppliers for substitution of Products.
- B. Submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
 - 1. Comparison of the qualities of the proposed substitution with that specified.
 - 2. Changes required in other elements of the work because of the substitution.
 - 3. Availability of maintenance service, and source of replacement materials.
- C. Engineer, Construction Coordinator, and Owner shall be the judge of the acceptability of the proposed substitution.
- D. A request for a substitution constitutes a representation that person submitting request:
 - 1. Has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified.
 - 2. Will provide the same warranties or bonds for the substitution as for the Product specified.
 - 3. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.
 - 4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
- E. Engineer, Construction Coordinator, and Owner will review requests for substitutions with reasonable promptness, and notify all bidders by addendum the decision regarding the proposed substitution.
- F. Requests for substitution received after bidding will not be considered except in such cases where it is necessary to make a substitution due to strikes, lockouts, bankruptcy, discontinuance of a product, etc.
 - 1. Requests for such substitutions of materials after award of a contract for the above stated reasons shall be made in writing to the Design Consultant, Construction Coordinator, and Owner and shall be made within 10 days of date that Contractor determines that a material, product or equipment specified cannot be obtained.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Administrative requirements for processing Contract modifications.
- B. Documentation of change in Contract Sum and Contract Time.
- C. Change Procedures.
- D. Execution of Change Orders.
- E. Correlation of Contractor Submittals.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Document 00 63 25 – Substitution Request Forms: Product options and substitutions.
- C. Document 00 72 00 – General Conditions: Requirements for Changes in the Work, in Contract Sum/Price, and in Contract Time.
- D. Section 01 26 01 – Contract Modification Forms.
- E. Section 01 29 73 – Schedule of Values: Schedule of Prices in the Bid Form Document - 00 41 11 shall become the Schedule of Values.
- F. Section 01 33 00 – Submittal Procedures: Progress Schedules and Applications for Payment.
- G. Section 01 70 00 – Execution and Closeout Procedures: Project Record Documents.

1.3 SUBMITTALS

- A. Submit name of the individual authorized to receive change documents, sign change documents, and be responsible for informing others in Contractor's employ of changes to the Work.
- B. Change Procedures Forms: Owner change procedures forms are identified as follows: Forms are included in Section 01 26 01 – Contract Modification Forms.
 - 1. 01 26 13 Request for Interpretation
 - 2. 01 26 39 Field Order
 - 3. 01 26 53 Proposal Request Form
 - 4. 01 26 63 Change Order Form

1.4 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

- A. Document each quotation for an increase or decrease change in cost or time with sufficient data to allow Engineer and Owner to evaluate the quotation. The documentation, at a minimum, should include:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.

1.5 CHANGE PROCEDURES

- A. Requests for Interpretation (RFI):

1. In the event the Contractor requires clarification of design intent or requires other Project-related information, the Contractor shall deliver, in writing, an RFI to the Engineer, on an RFI form, numbered as specified by the Engineer. The Engineer shall log RFI and forward it to the appropriate consultant for response. Upon receipt of response, the Engineer shall forward same, in writing, to the Contractor.
 2. The Design Consultant will reply in writing in a timely manner.
 3. The Design Consultant's reply does not relieve the Contractor of any contractual responsibility to the Owner and is not an authorization for extra cost.
- B. Field Order (FO):
1. From time to time the Engineer may issue information or direct changes in the Work to the Contractors in the form of a Field Order. Changes which, in the opinion of the Engineer, are consistent with the Contract Documents and do not involve an extension of contract cost or time, do not require a proposal from the Contractor.
 2. Field Order is signed by the Engineer and Owner. If the Contractor determines that the changes ordered are minor, are consistent with the Contract Documents, within the contract sum, and do not involve an extension of time, then the Contractor shall sign the Field Order, return all copies to the Engineer, and promptly execute the work.
 3. If the Contractor contends that a change in contract sum is involved, the Contractor shall notify the Engineer in writing within (14) days of Owner signature date. Changes in the work will be authorized if a change in the contract sum or time is warranted.
 4. The Engineer shall log Field Orders and transmit them to the Contractor and all parties.
- C. Proposal Request (PR):
1. When the Engineer or Owner desires to receive quotations for additional or reduced work, or when work which may impact cost and time is required, the Consultant will issue such information on a Proposal Request form. The Engineer will transmit Proposal Requests to the Contractor and subsequently receive the Contractor's proposal.
 2. The Proposal Request includes a detailed description of the proposed change with supplementary or revised drawings and specifications as necessary to indicate the scope of the proposed change.
 3. The Proposal Request is signed by the Engineer, and Owner. The Contractor shall prepare and submit an itemized quotation for the changes in the contract sum or contract time and return them within (14) days of the Owner's signature date.
 4. Refer to the General Conditions, Article 7- Changes in the Work for the requirements of itemized pricing.
 5. If the Proposal Request and quotation are acceptable and conforms to the intent of the Contract Documents, it may be incorporated into a Change Order.
 6. No work is authorized until the Change Order is approved by the Owner.
- D. Change Order (CO):
1. The Engineer and Design Consultant will prepare a Owner Change Order, which directs the Contractor to execute the proposed changes in the work as indicated on the Change Order form.
 2. The Change Order is signed by the Engineer, Design Consultant and by the Contractor indicating agreement with the adjustments in the contract sum and time.
 3. The Owner Project Manager will review the Change Order as recommended by the Engineer and Design Consultant and will approve or disapprove the Change Order based on the guidelines set forth under the Owner's Change Management Policy. Owner Project Manager will forward signed Change Order copies to the Contractor, Engineer, and Design Consultant, which authorizes the execution of the work.
 4. On certain designated projects, other agencies may be required to sign the Change Order after the Owner approval. These signatures are not required prior to the Contractor commencing the work.

1.6 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: The Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.7 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price/Time.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of work affected by the change, and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 26 01
CONTRACT MODIFICATION FORMS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Forms used in the administration of the Contract Documents.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 22 15 – Measurement and Payment
- C. Section 01 26 00 – Contract Modification Procedures
- D. Section 01 33 00 – Submittal Procedures
- E. Section 01 61 00 – Common Project Requirements
- F. Section 01 70 00 – Execution and Closeout Procedures

1.3 FORMS

- A. The following list of forms follow this Section.
 - 1. 01 26 13 Request for Interpretation
 - 2. 01 26 39 Field Order
 - 3. 01 26 53 Proposal Request
 - 4. 01 26 63 Change Order

1.4 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for use of forms for submittals.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

Request for Interpretation

Owner: City of Winona

Project: Aircraft Fueling Facility Relocation

Airport: Winona Municipal Airport (ONA)

RFI No.: _____

Date of Issuance: _____

Owner Project No.: _____

Contract Date: _____

Consultant Project No.: _____

Action Required by:

☐ Owner ☐ Contractor ☐ Consultant ☐ Construction Coordinator ☐ Others

Reference:

Drawing: _____

Detail: _____

Specification Section: _____ Article: _____ Paragraph: _____

Description of the Request:

Request From:

Respond by:

By: _____

The above question and subsequent reply does not relieve the Contractor of any contractual responsibilities to the Owner under the Contract. If the Contractor contends that an increase in contract sum or time is involved, the Contractor must notify the Construction Coordinator in writing, for issuance of a Field Order or Proposal Request.

Reply:

Reply From:

Reply Date:

By: _____

Reply From Construction Coordinator:

Reply Date:

By: _____

CC: _____

Field Order

Owner: City of Winona

Project: Aircraft Fueling Facility Replacement

Airport: Winona Municipal Airport (ONA)

Field Order No.: _____

Date of Issuance: _____

Owner Project No.: _____

Contract Date: _____

Consultant Project No.: _____

Initiated by:

☐ Owner ☐ Consultant ☐ Construction Coordinator ☐ Others

Reason for Field Order:

You are hereby directed to promptly execute this Field Order that directs changes to the Work.

This Field Order is not valid until signed by the Owner. Signature of the Contractor acknowledges changes directed as defined in this Field Order.

If the Contractor contends that a change in Contract Sum or Time is involved, Contractor must notify Construction Coordinator and submit documentation, in writing, within fourteen (14) days of the Owner's signature date. Changes in the Work will be authorized by Change Order only, if a change in Contract Sum or Contract Time is involved.

Failure to notify the Construction Coordinator within (14) days of the Owner's signature date as to change in Contract cost or time, will result in no cost or time change to the Contract.

Field Order Description:

Attachments:

Number of Copies: ☐ Owner ☐ Contractor ☐ Consultant ☐ Construction Coordinator ☐ Others

Recommended by Design Consultant

Design Consultant:

By: _____ Title: _____

Date: _____

Accepted by Contractor

Contractor:

By: _____ Title: _____

Date: _____

Recommended by Construction Coordinator

Construction Coordinator:

By: _____ Title: _____

Date: _____

Approved by Owner

By: _____ Title: _____

Date: _____

Proposal Request

Owner: City of Winona

Project: Aircraft Fueling Facility Replacement

Airport: Winona Municipal Airport (ONA)

Owner Contract No.: _____

Proposal Request No.: _____

Date of Issuance: _____

Contract Date: _____

Consultant Project No.: _____

Initiated by:

☐ Owner ☐ Consultant ☐ Construction Coordinator ☐ Others

Reason for Proposal Request:

Proposal Request Description:

Attachments:

--

Contractor to submit an itemized quotation for changes in the Contract Sum and/or Time incidental to the modifications to the Contract Documents described in this Proposal Request. Submit fully defined proposal breakdown within (14) days of the date of the Owner's signature. Proposal Request is not valid unless signed by Owner.

This is not a Change Order, or a direction to proceed with the Work. A Change Order must be issued and signed by Owner to allow the Proposal Request work to proceed.

Refer to Specifications for requirements and procedures for submitting an itemized proposal for Changes to the Work.

Recommended by Design Consultant

Design Consultant:

By: _____ Title: _____

Date: _____

Requested by Owner

By: _____ Title: _____

By: _____ Title: _____

Date: _____

Recommended by Construction Coordinator

Construction Coordinator:

By: _____ Title: _____

Date: _____

Acknowledged by Contractor

Contractor:

By: _____ Title: _____

Date: _____

Change Order

Owner: City of Winona

Project: Aircraft Fueling Facility Relplacement

Airport: Winona Municipal Airport (ONA)

Owner Contract No.: _____

Change Order No.: _____

Date of Issuance: _____

Contract Date: _____

Contractor is directed to make the following changes in this Contract as described on the attached page(s)

Not valid until signed by the Owner. Signature of the Contractor indicates agreement herewith, including any adjustment in the Contract Sum or Contract Time.

Original Contract Sum:	\$
Unit Price Adjustments Previously Approved:	\$
Net Change by Previously Authorized Change Orders:	\$
Contract Sum prior to this Change Order:	\$
Amount of this Change Order: (Increased)(Decreased)(Unchanged)	\$
New Contract Sum including this Change Order:	\$
Contract Time will be (Unchanged)(Increased)(Decreased)	(No. of ____days)
The Date of Substantial Completion as of the Date of this Change Order:	

Accepted by Contractor	
Company Name:	
By:	Date:
Title:	

Accepted by Consultant	
Company Name:	
By:	Date:
Title:	

Approved by Owner	
By:	
Title:	
Date:	

Reason for Change:

No.	FO/PR	Description:	Add/Deduct	Amount
			TOTAL	

Attachments:

**SECTION 01 31 10
SAFETY REQUIREMENTS AND COORDINATION**

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 GENERAL

- A. Contractor is first and foremost responsible for its company's "safety program" related to this project. Contractor will coordinate and cooperate with the Owner and its Consultants to ensure that project safety is of utmost importance. Contractor will also coordinate and cooperate with all other project contractors working within or adjacent to this project. Contractor-to-Contractor communication regarding safety is requested and encouraged.
- B. Contractor shall take all necessary precautions for the safety of employees and the public, and shall comply with all applicable provisions of the Owner, Federal, State, and local laws, ordinances, regulations, and requirements. Contractor shall erect and properly maintain necessary safeguards for said protection as required by the conditions and progress of the project. Contractor shall post all danger related advisory signs, warning against the hazards of construction activities.
- C. Contractor shall exercise extreme care to maintain and ensure that all fire safety precautions are being enforced and achieved throughout the construction process. This shall include, at a minimum, sufficient devices, watchmen, stand-by helpers, or other precautions required to support all construction activities. This would apply to the use of welding, brazing, sweating, and testing procedures that would cause fire or other related hazards.
- D. Contractor shall enforce the Owner's and its Consultants instructions regarding Contractor related signs, advertisements, fire, and smoking.
 - 1. **All Owner occupied building areas and sign designated areas are considered no-smoking zones.**
- E. Contractor shall give special attention regarding the maintenance and cleanliness of the project site, both interior and exterior areas as well as adjacent runways, taxiways, aprons, job site roadways and pedestrian walkways. All debris as it accumulates, shall be removed daily from the job site by truck or appropriate vehicle. All trucks removing debris from the job site shall have a full canvas bed covering.

1.3 SAFETY REQUIREMENTS OVERVIEW AND PURPOSE

- A. To ensure comprehensive safety requirements and coordination for all participants involved in this project.
- B. To provide a job site with safe and healthful working conditions for all project personnel.
- C. To provide a safe environment for all airport operations and the public.
- D. To promote safety awareness among all construction and project personnel.
- E. To provide safe and sound equipment and tools, maintained in good condition.
- F. To prevent damage to buildings and property.
- G. To comply with Occupational Safety and Health Act (OSHA) Local, State, and Federal standards.

1.4 PROJECT SAFETY OBJECTIVES

- A. To eliminate injuries to the Public, Consultants, Contractors and Subcontractors, and Owner personnel.
- B. To create an awareness of job site safety with all construction personnel and adherence to the requirements of the Owner, OSHA, and other governmental related requirements.

- C. To reduce workers' compensation insurance losses to a minimum.

1.5 ORGANIZATIONAL STRUCTURE FOR SAFETY ADMINISTRATION

- A. Contractor's Project Managers
 - 1. Implement and direct Contractor's "safety program" for construction personnel protection and accident prevention for the project.
- B. Contractor's Superintendents and Foremen
 - 1. Instruct and supervise workers in good safety practices for all phases of the project and its operations.

1.6 DUTIES AND RESPONSIBILITIES

- A. Contractor's Project Manager
 - 1. The Contractors' and Subcontractors' project managers have the responsibility to ensure that their respective companies' "safety program" is implemented on the project, in keeping with this safety requirements section.
 - 2. The Contractor's project manager will submit four (4) copies of the Contractor's "safety program" manual to the Engineer for review.
 - 3. The Contractors' and Subcontractors' project managers shall actively support project safety to all subordinates, with deeds, decisions, and directives as may be required.
 - 4. The Contractors' and Subcontractors' project managers may delegate authority to others under their supervision to expedite and facilitate their companies' "safety program".
- B. Contractor's Superintendents and Foremen
 - 1. All Contractor and Subcontractor personnel who supervise workers have the duty and responsibility to actively support project safety with the diligence equal to that applied for reasons of production. Conditions of work and the work environment, which are recognized as hazards to the safety and health of employees, must receive full consideration in the planning and supervision of work activities.
 - 2. Contractor and Subcontractor supervisors shall fully instruct new employees reporting for work regarding job site safety and the tasks to which they will be assigned. Construction personnel shall be advised of any particular hazards at the work place and precautions shall be taken by the Contractor and Subcontractors.
 - 3. Contractor and Subcontractor supervisors must coordinate their work activities and the direction of the workers in such a manner that the safety of any person or crew is not jeopardized by the work activities of others.
 - 4. Contractor and Subcontractor supervisors have the duty to assign persons to specific jobs on the basis of their work experience and physical condition.
 - 5. Specific duties of Contractor and Subcontractor Project Managers, Superintendents, and Foremen are as follows:
 - a. Hold safety meetings weekly and discuss job safety.
 - b. Train and motivate workers in good safety practices.
 - c. Make sure that workers have suitable personal protective equipment for the work to be performed, and that the equipment is properly used.
 - d. Make sure all public protective barriers are in place at all times.
 - e. Make sure that the Contractor's operations are organized to provide minimum interface with the Public, and for those work items that do interface with the Public, provide proper traffic control and protection.
 - f. Cooperate with the Owner Staff and its Consultants to ensure a safe site.
 - g. Investigate every safety incident, which occurs under Contractors' or Subcontractors' supervision, and make prompt reports. Provide first reports of accident or injury to the project Engineer as requested.
 - h. Participate in all safety meetings and know the Contractors' "safety program".
 - 6. Ensure OSHA compliance and be involved in all inspections. Collect OSHA follow up reports and forward copy to the Engineer.
 - 7. Conduct safety inspections at the job site.

C. Contractor's Employees

1. Contractor employees shall:
 - a. Work according to good safety practices, as posted, instructed and discussed.
 - b. Keep the work area and job site clean. Housekeeping is an individual responsibility.
 - c. Refrain from unsafe acts that may endanger oneself or others.
 - d. Report any unsafe conditions or unsafe personnel acts to supervisors immediately.
 - e. Use all available personal protection equipment where and when required.
 - f. Report all injuries to one's supervisor.
 - g. Be aware at all times that "you" are working in a Public environment, and that extra precautions are necessary.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 31 19
PROJECT MEETINGS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Meeting requirements and procedures
- B. Preconstruction meeting
- C. Progress meetings
- D. Pre-installation meetings

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 33 00 – Submittal Procedures: Progress Schedules, Shop Drawings, Product Data, and Samples
- C. Section 01 70 00 – Execution and Closeout Procedures

1.3 MEETING REQUIREMENTS AND PROCEDURES

- A. The Engineer shall schedule and administer preconstruction meetings, progress and specialty meetings throughout the progress of the work.
 - 1. Prepare agenda for meetings.
 - 2. Distribute written notice of each meeting in advance of meeting date.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings.
 - 5. Record the minutes; include all significant proceedings and decisions.
 - 6. Reproduce and distribute copies of minutes within three days after each meeting:
 - a. To all participants in the meeting.
 - b. To all parties affected by decisions made at the meeting.
- B. Representative of contractors, subcontractors, and suppliers attending the meeting shall be qualified and authorized to act on behalf of the company/entity each represents.

1.4 PRECONSTRUCTION CONFERENCES

- A. Schedule in conjunction with the Notice to Proceed and prior to on-site commencement of work.
- B. Location: A central site, convenient for all parties, designated by the Engineer.
- C. Attendance:
 - 1. Owner Representative.
 - 2. Engineer and Subconsultants.
 - 3. Contractor's Project Manager and Superintendent.
 - 4. Major Subcontractors.
 - 5. Others as Appropriate.
- D. Agenda: The agenda may include but not necessarily be limited to the following:
 - 1. Submission of executed bonds and insurance certificates.
 - 2. Distribution of Contract Documents.
 - 3. Safety
 - 4. Contract and Labor Provisions
 - 5. Designation of personnel representing the parties in Contract.
 - 6. Traffic Provisions
 - 7. Project Construction Schedules
 - 8. Contractor's Operations
 - a. Contractors Representative
 - b. Supervisory Personnel

- c. Subcontractors
- d. Suppliers
- 9. Critical work sequencing.
- 10. Major equipment deliveries and priorities.
- 11. Project Coordination.
 - a. Designation of responsible personnel.
- 12. Procedures and processing of:
 - a. Field Orders
 - b. Proposal requests
 - c. Request for Information
 - d. Submittals
 - e. Change Orders
 - f. Applications for Payment
 - g. Contract closeout procedures
- 13. Procedures for maintaining Record Documents.
- 14. Use of premises:
 - a. Office, work, and storage areas.
- 15. Construction facilities, controls, and construction aids.
 - a. Environmental procedures.
- 16. Temporary Utilities.
- 17. Security procedures.

1.5 PROGRESS MEETINGS

- A. The Engineer will designate the time, date and location for periodic progress meetings, as required by the progress of the work.
- B. Location of the meetings: A central site, convenient for all parties, designated by the Project Engineer.
- C. Attendance:
 - 1. Owner Representative.
 - 2. Engineer and Subconsultants.
 - 3. Contractor's Project Manager and Superintendent.
 - 4. Subcontractors as appropriate to the agenda.
 - 5. Suppliers as appropriate to the agenda.
 - 6. Others
- D. Agenda: The agenda may include but not necessarily be limited to the following:
 - 1. Review, approval of minutes of previous meeting.
 - 2. Review of work progress since previous meeting.
 - 3. Field observations, problems, conflicts.
 - 4. Problems which impede Construction Schedule.
 - 5. Review of off-site fabrication, delivery schedules.
 - 6. Corrective measures and procedures to regain projected schedule.
 - 7. Revisions to Construction Schedule.
 - 8. Plan progress, schedule, during succeeding work period.
 - 9. Traffic Provisions
 - 10. Airport Security
 - 11. Coordination of schedule.
 - 12. Review submittal schedules; expedite as required.
 - 13. Maintenance of quality standards.
 - 14. Review proposed change for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts of the Project.
 - 15. Other business.
- E. Project Engineer will document and distribute minutes of the construction progress and specialty meetings.

1.6 PRE-INSTALLATION MEETING

- A. When required in individual specification sections or as determined necessary by the Engineer, a pre-installation meeting will be held prior to commencing work. The Engineer will designate the time, date and location for this meeting.
- B. Attendance is required of parties directly effecting, or affected by, work of the specific section.
- C. Parties will be notified in advance of meeting date.
- D. Agenda. The agenda may include but not necessarily be limited to the following:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
 - 3. Agenda items listed in individual specification sections.
 - 4. Installation schedule
 - 5. Review environmental procedures.
- E. The Engineer will record minutes and distribute copies to participants, and those affected by decisions made.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Procedure for submitting, reviewing, and resubmitting Procedures.
 - 2. Subcontractor/Supplier List.
 - 3. Construction Progress Schedules.
 - 4. Schedule of Values.
 - 5. Estimated Applications for Partial Payment.
 - 6. Products List.
 - 7. Shop Drawings and Product Data.
 - 8. Samples.
 - 9. Field Samples.
 - 10. Re-submittal.
 - 11. Manufacturer's Instructions.
 - 12. Contractor Mark-up Record Documents.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 11 00 - Summary of Work.
- C. Section 01 40 00 - Quality Requirements: Testing Laboratory Reports; Manufacturer's field service reports.
- D. Section 01 61 00 – Common Project Requirements: Contractor's list of products.
- E. Section 01 70 00 – Execution and Closeout Procedures: Closeout submittals.
- F. Section 01 78 23 - Operating and Maintenance Data: Owner operating instructions and maintenance manuals.

1.3 SUBMITTAL PROCEDURES

- A. Engineer will provide a listing of shop drawings, product data, samples and design mixes required for the project.
- B. Deliver submittals to the Engineer.
 - 1. Subcontractors and suppliers shall forward all their submittals to the Contractor.
- C. Use Document 00 62 12 – Submittal Transmittal Form.
 - 1. Attach separate transmittal to each submittal. Do not combine multiple transmittals on to one form.
- D. Coordinate each submittal with requirements of the Work and the Contract Documents.
- E. Submit four (4) copies of initial progress schedules within 14 working days after date of Notice to Proceed. After review by Engineer, revise and resubmit as required.
- F. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- G. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.
- H. Contractor shall review, stamp and sign Shop Drawings, Product Data, and Samples prior to submission.
- I. Begin no fabrication or work which requires submittals until return of submittals with the Engineer review stamp.

- J. The Engineer may hold submittals in cases where partial submission cannot be reviewed until the complete submission has been received or where correlated items have not yet been received. When the Engineer holds such submittals, the Engineer will advise the Contractor that the items submitted will not be reviewed until all related information has been received.
- K. Submittal Schedule: Provide a Submittal Schedule for Product Data, Shop Drawings, and Samples to the Engineer coordinated with Construction Progress Schedule for submittals and Engineer's review period.
 - 1. Coordinate submittals of related items.
 - 2. Updates: Submit a revised Submittal Schedule when changes occur and identify those changes since previous submittal schedule.
 - 3. Provide submittal schedule within 14 days after date of Notice to Proceed from the Engineer.

1.4 SUBCONTRACTOR/SUPPLIER LIST

- A. Contractor to submit a list of all subcontractors and suppliers for each item of Work.
- B. Include company names, addresses, telephone numbers, facsimile numbers, name(s) of key contacts and any other pertinent information.
- C. Order the list according to the Table of Contents of this Project Manual.
- D. Names and models of products to be used in Project may be included as part of this list and/or submitted separately at a later date.
 - 1. Comply with the requirements of Section 01 61 00 – Common Project Requirements.

1.5 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit four (4) copies of progress schedule at least five (5) days prior to the pre-construction conference.
- B. Submit Critical Path Method (CPM) format or other format approved by the Engineer for each major trade or operation, identifying first workday of each week.
 - 1. Contractor will assemble submittals from subcontractors and suppliers into an overall project schedule and submit it to the Engineer for review.
- C. Show complete sequence of construction by specification section activity(s), identifying work of separate stages and other logically grouped activities.
 - 1. Show projected percentages of completion for each item of Work as of time of each Application for Payment.
- D. Submit a revised Construction Progress Schedule with each Application for Payment, if significant changes to the Schedule have occurred since the previous application. At a minimum, submit a revised and updated Construction Progress Schedule once every two (2) months or as requested by the Engineer.
 - 1. Show changes occurring since previous submission of Schedule, including the following:
 - a. Major changes in scope of Work.
 - b. Activities modified since previous submission.
 - c. Revised projections of progress and activities completion.
- E. Submit a Shop Drawing, Product Data, and Sample Schedule for required submittals within 14 days from date of the Notice to Proceed.
 - 1. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates. Identify long lead-time submittals for manufacture or fabrication. Include a period for Design Consultant review of all submittals.

1.6 SCHEDULE OF PRICES

- A. The Schedule of Prices is included in the Bid Form.
- B. Engineer will revise Application for Payment to list approved Change Orders.

1.7 ESTIMATED APPLICATIONS FOR PARTIAL PAYMENT

- A. Submit one (1) copy of the Estimated Application for Payment within 14 days of date of Notice to Proceed. Form and content may be on Contractor's letterhead.
 - 1. Estimated applications for partial payment will be used by the Owner only to anticipate Contractor partial payments for the duration of the project.
 - 2. Submit an estimated amount of the next month's billing by the 25th of each month.
- B. Identify by Project Title, Owner Contract Number, and the Engineer's project number.
- C. Coordinate estimated partial payments with total Contract sum.

1.8 PRODUCTS LIST

- A. The Products List shall include the following items for each major Specifications Section: Comply with requirements of Section 01 61 00.
 - 1. Numerical Specification Section number and Section Name.
 - 2. Brand names of materials and equipment included under each Specification Section.
 - 3. Name, address, phone number and contact person of material Supplier and Subcontractor who is furnishing and installing each major product being incorporated into the Work.
- B. The order of the list is to be that of the Table of Contents of the Project Manual. Identify each line item with the number and title of the respective Specifications Section.
- C. This list may be combined with or be an expansion of the Subcontractor/Supplier List which may be submitted at an earlier date as required.

1.9 SHOP DRAWINGS AND PRODUCT DATA

- A. Shop Drawings are technical drawings and data that have been specially prepared for this Project, including but not limited to the following items:
 - 1. Fabrication and installation drawings.
 - 2. Setting diagrams.
 - 3. Shopwork manufacturing instructions.
 - 4. Templates.
 - 5. Patterns.
 - 6. Schedules.
 - 7. Design mix formulas.
 - 8. Contractor's engineering calculations.
 - 9. Standard information prepared without specific reference to the Project is not considered to be shop drawings.
 - 10. Submit Shop Drawings in the form of one (1) original and two (2) opaque reproductions. After review, reproduce and distribute as specified below.
- B. Product Data includes standard printed information on manufactured products that has not been specially-prepared for this Project, including but not limited to the following items:
 - 1. Manufacturer's product specifications and installation instructions.
 - 2. Standard color charts.
 - 3. Catalog cuts.
 - 4. Roughing-in diagrams and templates.
 - 5. Standard wiring diagrams.
 - 6. Printed performance curves.
 - 7. Standard product operating and maintenance manuals.
 - 8. Submit product data in four (4) copies, unless otherwise specified.
 - a. Engineer will retain two (2) copies
 - b. Contractor will be returned two (2) copies.
 - c. Submit one additional copy of product data for Structural, Mechanical, and Electrical Work.
 - d. Contractor will be responsible for providing copies to subcontractors and suppliers requiring copies.
 - 9. Clearly mark each copy of product data to identify information being submitted, and delete information which does not apply to the Project. Supplement standard information as necessary. Show dimensions and other selected characteristics.

- C. Contractor shall determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with specifications.
- D. The Contractor remains responsible for details, completeness, and accuracy, for confirming and correlating all quantities and dimensions, for selection of fabrication process, and for techniques of assembly relating to all submittals and for performing the Work in a safe manner.
 - 1. In submitting shop drawings, product data, cuts and samples, the Contractor represents that he has determined and verified all field measurements, materials, catalog numbers and similar data and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- E. The Contractor shall not be relieved of responsibility for any deviation from the Contract Documents, or any errors and omissions in shop drawings or product data by the Engineer's review and stamping thereof.
- F. Submittal Procedures:
 - 1. Submittals: Use the Submittal Transmittal Form. Refer to Document 00 62 12 for forms.
 - a. The Project title and number.
 - b. The date of submission and the dates of any previous submissions.
 - c. The names of:
 - 1) Contractor
 - 2) Subcontractor
 - 3) Supplier
 - 4) Manufacturer
 - d. Identification of the product, with the pertinent specification section number and Drawing and detail numbers.
 - e. Field dimensions, clearly identified as such.
 - f. Relation to adjacent or critical features of the Work or materials.
 - g. Applicable standards, such as ASTM or Federal Specification numbers.
 - h. Identification of deviations from Contract Documents.
 - i. Identification of revisions on resubmittals.
 - j. A 5 inch x 3 inch blank space for Contractor and Design Consultant stamps.
 - k. Contractor's stamp, initialed or signed, certifying to review of submittals, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and Contract Documents.
 - 1) Shop drawings and product data submitted without Contractor's stamp will not be reviewed and will be returned to the Contractor for approval and resubmission.
- G. After the Engineer's review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
- H. Distribute copies of Shop Drawings and Product Data which carry the Engineer's review stamp to:
 - 1. Job site file.
 - 2. Record Documents file.
 - 3. Subcontractors.
 - 4. Supplier or Fabricator.
- I. The Contractor shall furnish copies of approved shop drawings and product data to other separate contractors as may be necessary to coordinate their work or otherwise upon their request.
- J. Maintain one copy of approved shop drawings and product data at the site with the Record Drawings.

1.10 SAMPLES

- A. Samples are physical examples or work, including but not limited to the following items:
 - 1. Partial sections of manufactured or fabricated work.
 - 2. Small cuts or containers of materials.

3. Complete units of repetitively-used materials.
4. Swatches showing color, texture and pattern.
5. Color range sets.
6. Units of work to be used for independent inspection and testing.

B. Submit

1. Full range of manufacturer's standard colors, textures, and patterns for Engineer's selection. Submit samples for selection of finishes such that adequate time is allowed for Design Consultant to review initial samples, and for final sample to be submitted for acceptance before ordering material.
2. Samples to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.

C. Include identification on each sample, giving full information.

D. Submit the number specified in respective Specification Sections. The Engineer will retain one sample. Reviewed samples, which may be used in the Work, are indicated in the Specification Section.

E. Distribute samples, which carry the Design Consultant review stamp as directed by the Engineer.

1.11 FIELD SAMPLES

- A. Field samples or Mock-Ups are special forms of samples, which are too large or otherwise inconvenient for handling in the manner specified for transmittal of sample submittals.
- B. Provide field samples of finishes at Project as required by individual Specification Sections. Install sample complete and finished.
1. Acceptable samples in place may be retained in completed Work.

1.12 CERTIFICATES AND QUALIFICATIONS

- A. When specified in individual Specification Sections, submit certifications or qualifications by manufacturer or installer to the Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certifications may use recent or previous test reports on a material or product, but must be acceptable to the Engineer.
1. Certifications or test reports may not exceed 8 years of age prior to the start of construction.

1.13 MANUFACTURER'S INSTRUCTIONS

- A. When required in individual Specification Sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing in quantities specified for product data.

1.14 PROCEDURE FOR REVIEWING

- A. For submittals where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return promptly; generally within 14 calendar days from date of receipt.
1. Additional time will be required for the following submittals:
 - a. Structural Steel
 - b. Curtain Walls and/or windows
 - c. Doors and Hardware
 2. Compliance with specified characteristics is the Contractor's responsibility.
 3. On submittals for information, closeout documents, record documents or other submittals for similar purposes, no action will be taken.
- B. Action Stamp: The Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken.

1. "No Exceptions Taken": Where submittals are marked "No Exceptions Taken" that part of the Work covered by the submittal may proceed, provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 2. "Correct as Noted": When submittals are marked "Correct as Noted", that part of the Work covered by the submittal may proceed, provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 3. "Rejected" or "Revise and Resubmit": Returned for Resubmittal. When submittal is marked "Rejected": Complete and/or make corrections noted and "Resubmit", "Revise and Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Rejected: Submit Specified Item" or "Revise and Resubmit", to be used at the Project site, or elsewhere where Work is in progress.
 4. "Not Reviewed": Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Not Reviewed".
- C. Review by the Engineer of submittals is not an authorization for Change Order. Any item requiring Change Order shall follow procedures described elsewhere in the Contract Documents.

1.15 RESUBMITTAL

- A. For submittals noted "Rejected ", materials will be returned from the Engineer to the Contractor.
- B. The Contractor shall make corrections required by the Engineer and shall resubmit as soon as possible. The Contractor shall direct specific attention to revisions.

1.16 RECORD DOCUMENTS UPDATE

- A. The Contractor shall maintain current, accurate, monthly updates of the Contractor Mark-up Record Documents in the field office. The Contractor shall make these available to the Owner and the Engineer upon request.
- B. Refer to Section 01 70 00 – Execution and Closeout Procedures and for additional requirements for Contractor Mark-up Record Documents.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 35 13
SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1.1 Summary
 - 1.2 Related Requirements
 - 1.3 Emergencies
 - 1.4 Construction Operations
 - 1.5 Security of Existing Facilities
 - 1.7 Airport Security
 - 1.8 Interruptions to Existing Facilities
 - 1.10 Geotechnical Information
 - 1.11 Existing Underground Utilities
 - 1.12 NPDES Permit
 - 1.13 Disposal of Waste Materials
 - 1.14 Temporary Sanitary Facilities
 - 1.15 Environmental Protection
 - 1.20 Water
 - 1.21 Permits
 - 1.22 Builder's Risk Insurance
 - 1.23 Engineer's Field Office
 - 1.24 Haul Routes
 - 1.25 Temporary Site for Contractor
 - 1.26 Temporary Site Lighting
 - 1.27 Clean-up
 - 1.28 Dewatering

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Document 00 72 00 - General Conditions: Relations of Contractor - Subcontractors.

1.3 EMERGENCIES

- A. Fire Emergencies: Report all fires, smoke smells, etc. to Local Fire Department.
 - 1. Telephone Reporting: 9-1-1

1.4 CONSTRUCTION OPERATIONS

- A. **General.** The Contractor shall acquaint himself with the operations of the airport at all times insofar as such operations may be affected by work under this contract. Contractors shall carry on their work, including temporary work and storage of tools, machinery, equipment, by

such means and restricted to such areas as specified so as to cause the least possible interference with or hazard to the operation of the airport. In addition, special care shall be exercised by the Contractor at all times when operating within the Air Operations Area (AOA) which consists of all areas of the airport located within the perimeter security fence.

- B. **Temporary Work Suspension.** Under certain wind, visibility, security, emergency or other changing conditions, it may be necessary, in the interest of safety, and when so ordered by the Airport Manager, for the contractor to temporarily suspend operations on short notice. When temporarily suspending work for the day or for other reasons, the contractor shall clear the construction site as follows:
1. Remove all personnel, equipment, and uninstalled materials except that specifically approved by the Airport Manager. Equipment allowed to remain shall be parked at locations designated by the Construction Coordinator/Engineer.
 2. Sweep and clean all debris caused by construction operations from roadways, sidewalks, runways, taxiways, aprons, or other paved areas.
 3. Work may be resumed as soon as conditions will permit.
- C. **Safety During Construction.** The Contractor shall inform all construction personnel as to the proper routes, speeds and procedures for transporting equipment and materials to the construction site; and to all restrictions to movement of equipment or personnel within the air operations area. On a daily basis and more often if necessary the Contractor shall advise personnel of any changes in airport operations that may further restrict his movement. All construction personnel working on this project during nighttime hours shall wear reflective safety vests.

1.5 SECURITY OF EXISTING FACILITIES

- A. Security of existing facilities must be maintained at all times. When entrance into secure building areas is required at any time by workers, it must be coordinated in advance with the Owner and Lessee and strict limitations will be set and enforced as to where Contractor personnel can go.

1.6 AIRPORT SECURITY

- A. **General.** It is essential that during the performance of this contract, airport security be maintained and that construction operations within the Air Operations Area conform to the Owner's security requirements.

Construction operations on this project shall be restricted as specified in Section 01 11 00, Summary of Work. Coordination of construction activities with airport operations shall be subject to the approval of the Airport Manager.

Construction operations shall comply with the requirements of the FAA Construction Safety and Phasing Plan (CSPP) developed by the Engineer for this project. The CSPP identifies project limits, equipment heights, and overall operational safety on the airfield as identified in FAA Advisory Circular 150/5370-2G, Operational Safety on Airports During Construction, and within the Project Manual. Bidders may contact the Owner to obtain a copy of the CSPP. A copy of the CSPP and FAA Final Determination Letter will be provided to the Contractor upon completion of FAA's review.

- B. **Construction Vehicles.** All Contractor's and Sub-contractor's vehicles entering the Air Operations Area must have the company name or logo measuring 50 square inches or larger, on the vehicle, prominently displayed on each side of the vehicle for easy recognition. The operation of these vehicles shall be restricted to the construction site and designated haul route. Any delivery vehicles without proper identification shall be met at the access gate and escorted to and from the construction site by an authorized vehicle.

All construction and delivery vehicles (dump trucks, low-boys, fuel trucks, supervisors' vehicles, etc.) entering the Air Operations Area and all non-mobile vehicles (rollers, backhoes, and dozers) inside Air Operations Area shall be identified by a 3' x 3' orange/white checkered flag. The flags shall be mounted on the vehicle in a manner approved by the Engineer so as to be visible above the vehicle and not interfere with operation of the vehicle. All mobile vehicles (radio car,

supervisory vehicles, etc.) shall be identified with roof mounted amber lights. In addition, all delivery vehicles, operating at the construction site at night shall be identified with roof mounted flashing amber lights. Flashing amber lights shall be of the "non-strobe" type with minimum 50-candle power illumination and operating at 90 flashes per minute.

1.7 INTERRUPTIONS TO EXISTING FACILITIES

- A. The Airport will remain in full and continuous operation during the construction period except as specifically noted in Section 01 11 00, Summary of Work, Section 01 55 26, Traffic Control, and herein.
- B. All construction activities must be accomplished in such a manner as to permit normal operations within the existing facilities and roadway system at all times. Major areas to be remodeled within existing facilities will be made available upon written request by the Contractor to the Owner.
 - 1. Such request shall be made with adequate lead-time so that the Owner and Tenant can make necessary adjustments to their operations.
 - 2. These areas must be temporarily enclosed from the remainder of the existing facilities in order that access and all services to the existing facilities can be maintained at all times.
- C. All work, including the abandonment or relocation of existing mechanical or electrical utilities, the relocation of existing mechanical or electrical systems or components, or the connection of new mechanical or electrical systems or components to existing facilities, which will cause interruptions to the operations of the existing building and roadway system must be scheduled for times other than normal working hours.
 - 1. The Contractor shall schedule and coordinate its work to minimize the required interruptions, and shall notify the Owner in writing at least ten (10) working days prior to each intended interruption, indicating the estimated duration of the interruption.

1.8 GEOTECHNICAL INFORMATION

- A. The location of soil borings taken for this project are shown on the drawings. Copies of soil boring logs are included in the Appendix of the Project Manual. These boring logs are included for informational purposes only, and the actual conditions encountered during construction may vary substantially.

1.9 EXISTING UNDERGROUND UTILITIES

- A. All areas of the airport contain existing underground utilities such as sewer, water, gas, electric power and control cables, telephone, etc. The plans, generally, show the approximate location of such lines in the vicinity of this construction where they are known to exist. However, before trenching or digging of any kind is started in any given area, the Contractor shall notify the Engineer and the various utility companies including FAA Tech Ops SSC Manager (Tech Ops SSC Manager contact information can be obtained from the Management Operations Control Center (MOCC) at 1-800-322-8879) so that utility locations can be more exactly located and protected. Recorded underground utilities can be located by contacting GOPHER STATE ONE CALL (1-800-252-1166) at least 48-hours prior to the start of construction operations.
- B. If the Contractor discovers any utilities not shown on the plan, he shall immediately notify the Engineer who shall determine whether any adjustment, modification or relocation is necessary. Immediately upon beginning construction in any area the Contractor shall expose existing underground utilities at locations where the proposed construction will cross or connect to the existing facilities. Elevations of the existing facilities will be obtained by the Engineer who will determine if any adjustments or modifications to proposed construction is necessary.
- C. When performing construction operations in the vicinity of existing utility lines, the Contractor shall exercise extreme caution and observe all applicable laws, ordinances, and regulations.
- D. The Contractor shall employ special equipment or construction methods and hand labor if necessary to accomplish the work adjacent to utilities without damage thereto whether or not the utilities are shown on the drawings. Any damage to existing utilities caused by the Contractor's operations shall be repaired by the Contractor. If the damaged utilities were as shown on the

drawings or properly located by their Owners in the field any damage caused by the Contractor's operations shall be repaired at no cost to the Owner. Otherwise the Contractor will be reimbursed for repair costs in accordance with Document 00 72 00, Article 7.

- E. The Contractor shall provide a minimum of 72 hours' notice to the Engineer to arrange for water "shutoffs" necessary to complete watermain connections to existing mains.
- F. The Contractor shall provide 72 hours' notice to utility owners prior to construction that will expose or cross below their facilities. Contractor shall provide protection of these utilities in a manner acceptable to the utility owner.
- G. Contractor shall coordinate with utility owners prior to any adjustment to private utilities including Xcel Energy Electric, Century Link Communications, and Center Point Energy Natural Gas.
- H. All costs incurred conforming to the above shall be considered incidental to other contract items and no direct compensation will be made therefore.

1.10 NPDES PERMIT

- A. The Contractor's work on this project may be governed by a NPDES/SDS permit issued by the Minnesota Pollution Control Agency (MPCA). The Contractor shall comply with all regulations and permit requirements, and adhere to the Storm Water Pollution Prevention Plan included in the Construction Documents. If a permit has been issued for this project, it will be included in the Appendix, or provided by request to the Engineer.
- B. Penalties or fines assessed by permitting agencies, if any, shall be paid by the Contractor with no cost to the Owner. Restoration required as a result of permit violations are the responsibility of the Contractor, with no cost to the Owner.

1.11 DISPOSAL OF WASTE MATERIALS

- A. All waste or salvaged materials resulting from the performance of contract work, not required in the final work and not otherwise hereinafter provided for, shall become the property and responsibility of the Contractor and shall be retained, sold, or disposed of by him. The Contractor shall be entirely responsible for locating the required disposal areas, and shall make all his own arrangements, comply with all applicable laws, ordinances, and regulations and shall be subject to any imposed restrictions for handling and disposing of all waste materials removed from the airport.
- B. The disposal of waste materials as described herein will not be measured for separate payment but will be considered incidental to the cost of other contract items.

1.12 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with State, Federal and Local codes and regulations.
- B. All costs associated with Temporary Sanitary Facilities shall be incidental to other contract work and no additional payment will be made therefore.

1.13 ENVIRONMENTAL PROTECTION

- A. **General.** Pollution of natural resources of air, land, and water by operations under this contract shall be prevented, controlled, and abated in accordance with the rules, regulations, and standards adopted and established by the Minnesota Pollution Control Agency.
- B. **Erosion Control.** The Contractor shall schedule and conduct his operations so as to minimize erosion of soils and prevent sediment from entering the storm sewer system or washing to other low areas. The Contractor shall incorporate all permanent erosion control features into the work at the earliest practicable time. The Contractor shall install temporary erosion control measures, as shown in the Plans or as directed by the Engineer, before commencing any land-disturbing activities, and maintain them until permanent features are completed. Details of temporary

protection required as a minimum on this project are shown in the drawings. The Contractor shall submit to the Engineer for approval details of any additional temporary measures proposed for use.

- C. **Dust Control.** Water or calcium chloride solution shall be used as a dust palliative and shall be applied at such locations and times and in such amounts as directed by the Engineer. Water and calcium chloride solution, applied as directed, shall be incidental to construction operations.
- D. **Solid Waste:** Collected sediment, asphalt and concrete millings, floating debris, paper plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with MPCA disposal requirements.
- E. **Hazardous Materials:** The Contractor shall exercise care and diligence in maintaining applicable safety precautions in executing the work in areas containing hazardous material. Contractors and subcontractors shall comply with all regulations, codes, and laws for the necessary protection of their workers and for the protection of the Owner, Tenants, and the public when making alterations to work in areas containing hazardous material.

If the Contractor or subcontractor perceives that a material may be hazardous and will affect the work, Contractor shall notify the Owner to have the material tested. The Contractor shall remove and dispose of the material if required.

- F. **Storing Hazardous Materials:** Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.
- G. **Concrete Washout:** All liquids and solid wastes generated by concrete washout operations must be contained in accordance with the MPCA and the EPA concrete washout guidance. See the Storm Water Pollution Prevention Plan (SWPPP) in the Appendix.
- H. **Spill Response and Reporting:** Spills of petroleum products or other hazardous materials shall be reported and mitigated.
- I. **Watermain Flushing:** Water discharged during flushing of watermain shall not be discharged to storm sewers or the ground surface, but must be discharged to sanitary sewer. This may require pumping or trucking water to a designated manhole.
- J. **Dewatering Electrical Manholes:** Where water must be pumped out of electrical or communications manholes, the water shall be visually inspected for petroleum odor or petroleum sheen by the Contractor prior to pumping. If there is no petroleum odor or sheen present, the Engineer will direct the Contractor to discharge the water into a turfed area (unless impracticable, then discharge can be made to a storm sewer). If a petroleum odor or sheen is present, the water shall be sampled and tested by the Owner's environmental consultant. Based on test results, the water shall be pumped and disposed of by a Dewatering Contractor. If additional water enters the manhole, the water must be visually inspected by the Contractor and the Owner's representative as described above prior to re-pumping of manhole.

To the extent that water can be disposed of to the turf or storm sewer, this work shall be considered incidental and no compensation will be made therefor. Dewatering Contractor costs shall be measured and paid for in accordance with Section 00 72 00, Article 7 and Section 00 73 11, Article 1.5, Changes in the Work.

- K. **Vehicle Washing:** External washing of trucks and other construction vehicles must be limited to a defined area of the site as approved by the Engineer. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.
- L. **Hydrostatic Testing:** Water used for hydrostatic testing of storm sewers, sanitary sewers, and other facilities shall be discharged to sanitary sewer unless the Owner or Engineer specifically authorizes discharge to storm sewer or the ground surface. If discharge is to storm sewer or

ground surface, the Minnesota Pollution Control Agency (MPCA) must be notified in writing at least 10 days in advance of such discharge.

- M. All costs of complying with the above shall be considered incidental to the cost of other contract items and no direct compensation will be made therefore except as otherwise specifically provided in the Specifications.

1.14 WATER

- A. Water required for use on this project is not available from the Owner on-site.

1.15 PERMITS

- A. The Contractor shall procure all permits and licenses, and shall pay all charges, fee, and taxes arising from the prosecution of the work, and give all notices necessary and incidental to the due and lawful prosecution of the work.
- B. The Contractor shall provide the Architect/Engineer with a copy of all permits.
- C. All permits must be approved prior to start of construction.

1.16 ENGINEERS' FIELD OFFICE.

- A. The Engineer's field office will not be required on this project.

1.17 HAUL ROUTES

- A. The haul routes designated on the drawings shall be used for the movement of Contractor's equipment, materials, or vehicles on airport property unless otherwise specifically approved by the Engineer. These routes are generally located along existing bituminous or concrete surfaced roadways.
- B. The Contractor shall be responsible for the clean-up, maintenance and repair of haul roads during the construction period. All haul roads shall be kept in a condition satisfactory to the Engineer during construction and shall be restored to their original or better condition upon completion of construction operations.
- C. The Contractor shall provide efforts necessary to control tracking of excavated materials from the construction site onto the designated haul roads and public roadways. These efforts may include, but not necessarily be limited to, additional sweepers, speed bumps, compressed air cleaning of vehicles, etc.
- D. The hauling of materials or equipment on airport roadways shall comply with the regulations governing the operation of vehicles on the highways of Minnesota, as prescribed in the Highway Traffic Regulations Act.
- E. Maintaining haul roads on this project shall be considered incidental to construction operations and no compensation will be made therefor.

1.18 TEMPORARY SITE FOR CONTRACTOR

- A. A site available for use by the Contractor for construction operations associated with this project is shown on the drawings. Access to the site shall be as shown on the drawings. The use of this site is subject to approval by the Engineer and to restrictions specified hereinafter. The Contractor shall submit to the Engineer a plan of his proposed use of this site.
- B. The Contractor shall be responsible for providing telephone communication at his temporary office and for all costs of obtaining electrical power, if desired, at this site for the duration of its use. The Contractor shall provide temporary lights at this site whenever vehicles or other equipment are being operated therein during nighttime hours. The Contractor shall install temporary fencing and erosion control devices at the Contractors site as shown on the drawings or as directed by the Engineer. Access to the site shall be through the gate shown on the

drawings. The Contractor's Site Access Gate shall remain locked whenever construction activities are not in progress.

- C. The Contractor's site shall be kept in a condition satisfactory to the Engineer. Special attention to dust control will be required when wind and weather conditions cause excessive blowing of dust. In this regard the Contractor shall apply water to the affected sites as directed by the Engineer. The Contractor shall provide dumpsters, trash barrels and sanitary facilities at the site.
- D. The use of the Contractor's site is restricted to construction operations associated with this project or upon specific approval by the Owner to those associated with other construction projects on airport property. The use of this site for operations in conjunction with off-airport construction will not be permitted.
- E. Construction staff working on the project shall park their private automobiles at the Contractor's site and shall be transported to the construction site in properly identified Contractor's vehicles. Personal vehicles will not be permitted within the Air Operations Area. The use of Contractor's sites as temporary living quarters for construction employees will not be allowed.
- F. All temporary installations shall be removed and the site(s) restored to their original condition or better as determined by the Engineer. Failure to complete this work will result in liquidated damages being assessed in accordance with Section 01 11 00, Article 1.6.
- G. Measurement and payment for use of the Contractor's site shall be considered incidental to construction operations and no direct compensation will be made therefore.

1.19 CLEAN-UP

- A. Clean-up of the construction site and haul routes both within and outside the Air Operations Area shall be performed on a continuous basis whenever construction operations are in progress. When construction activities are in progress within the Air Operations Area, the Contractor will continuously monitor and inspect both the area around the site and the haul route for debris. All debris, including mud, dirt, sand, loose aggregate, foreign objects, rubber deposits and other contaminants generated by the construction, shall be removed promptly and completely as practical. In this regard the Contractor shall have on site a "Tymco Model 600" or approved equal recirculating air sweeper with dust control. Auxiliary pick-up type sweepers will be required if so directed by the Engineer because of the Contractor's operations or as necessary to maintain site and haul routes in acceptable condition. In all instances the Contractor shall follow directions of the Engineer with regards to operation of the sweeping equipment. The cost of this item will be considered incidental to construction operations and no direct compensation will be made therefore.

1.20 DEWATERING

- A. General. Groundwater may be encountered in utility excavations in portions of the project area. Approximate groundwater levels are shown on the soil borings included in the Appendix. Groundwater levels may vary substantially due to subsequent construction, dewatering of adjacent projects, and seasonal and climatic variations. It is the contractor's responsibility to make his own determination of the necessity and magnitude of dewatering.

Excavations shall be kept dry during the installation of sanitary sewer, lift stations, storm sewer, and other facilities included in this project. The Contractor shall furnish all pumps, power, piping, supplies and equipment required for this purpose. Dewatering systems shall be maintained until backfilling is complete.

- B. Dewatering Plan. If dewatering is proposed, the Contractor shall submit a dewatering plan in accordance with the requirements of Section 01 33 00. Special precautions shall be taken near roadways, streets, buildings, and other structures so dewatering does not cause settlement damage.

The dewatering plan shall include specifics on well types and locations, a schematic in plan and profile view of wells or headers, the proposed power sources for wells, the discharge points for

dewatering operations, and the Contractor's estimate related to dewatering effort required and the time between start of dewatering and time of construction.

Should the Contractor propose an operation that requires wells or headers placed below existing surface elevations, the dewatering plan shall include measures proposed, including trenching and backfill of dewatering components, to minimize disruption to and impact on areas abutting the project. Discharge piping crossing active roadways shall be constructed below grade.

Where well points or deep wells are used for dewatering the trenches and excavations, the groundwater level shall be lowered to two-feet below bottom of excavation (including any required subcuts).

- C. Regulatory Requirements. Dewatering flow shall be pumped to existing drainage ditches or storm sewers unless contaminants are detected. At no time shall water with a petroleum sheen of free product be discharged to the surface, to the storm sewer system, or to the sanitary sewer system. At no time shall dewatering flow be discharged to the ground surface where it will create a nuisance or damage public or private property.

Most temporary dewatering projects require a Water Appropriations Permit from the Minnesota Department of Natural Resources (MnDNR). A permit is generally not required for small projects meeting all the following criteria: (1) anticipated daily discharge less than 10,000 gallons per day; (2) anticipated annual discharge less than 1,000,000 gallons; and (3) duration not more than one year. A project which exceeds any of the aforementioned thresholds, but is not anticipated to exceed 50,000,000 gallons per year, is subject to the conditions of MnDNR General Permit Number 1997-0005, Water Appropriation General Permit for Temporary Projects. A project-specific DNR Water Appropriations Permit is required for any project with anticipated discharge of more than 50,000,000 gallons per year.

An application for use of General Permit Number 1997-005 must be submitted at least 15 business days in advance of the desired dewatering system start-up. The Contractor shall provide detailed project information to the Owner's environmental consultant (Terracon Consultants, Inc.), who will prepare and submit the application to MnDNR. A \$100 application fee is required. An additional water use reporting fee may also be required based on volume of dewatering. The Contractor is responsible for all fees.

The Contractor shall provide metering equipment capable of measuring dewatering discharge, accurate to within 10%, under all flow conditions. Actual discharge volumes shall be submitted to Terracon for preparation of annual reports to MnDNR, for monthly reports to the MPCA, or for quarterly reports to the MCES.

All other permits necessary for the construction or operation of the dewatering wells shall be obtained by and at the expense of the Contractor. Other permits which may be required include those required by the Minnesota Department of Health for the construction of the dewatering wells.

The dewatering wells shall be abandoned in accordance with the Water Well Construction Code, Division of Environmental Health, and Minnesota Department of Health when authorized by the Engineer.

- D. Measurement and Payment. Dewatering shall be considered incidental to the construction to which it applies, and no separate compensation will be made therefore.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 BASIS OF PAYMENT

- A. Except as specifically provided hereinafter, all costs associated with this Section shall be considered incidental to other construction operations, and no direct compensation will be made therefor.

END OF SECTION

**SECTION 01 42 00
REFERENCES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Specification format and content.
 - 2. Quality assurance.
 - 3. Reference standards.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Related Documents: The Contract Documents, as defined in Section 01 11 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": The term "approved," when used in conjunction with Design Consultant or Construction Coordinator, action on Contractor's submittals, applications, and requests, is limited to Design Consultant's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Design Consultant or Construction Coordinator, requested by Design Consultant or Construction Coordinator, and similar phrases.
- D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.
- J. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

1.4 SPECIFICATION FORMAT AND CONTENT

- A. Specification Format: Specifications are organized into Divisions and Sections based on Construction Specifications Institute (CSI) 48-Division format and Master Format numbering system.

- B. Specification Content: This Specification uses certain conventions in use of language and intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and context of Contract Documents so indicates.
 2. Imperative and streamlined language is used generally in Specifications. Requirements expressed in imperative mood are to be performed by Contractor. At certain locations in text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by Contractor, or by others when so noted.
 - a. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.5 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes. Such standards are made a part of Contract Documents by reference.
- B. Conform to reference standard by date of issue current on original date of issue indicated on Contract Documents.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at Project Site during submittals, planning, and progress of specific Work, until Final Acceptance.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Construction Coordinator before proceeding.
- F. Neither the contractual relationship, duties, and responsibilities of the parties in Contract nor those of Construction Coordinator shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.6 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of the date of the Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Design Consultant for a decision before proceeding.
 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Construction Coordinator for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

1.7 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. State Government Agencies: The following state government agencies develop standards referenced in the Contract Documents:
 1. State of Minnesota: Adoption of the Minnesota State Building Code.
- C. Additional Abbreviations. The use of the following abbreviations in the specifications is hereby defined.

A.A.S.H.T.O.	American Association of State Highway and Transportation Officials
A.I.A.	American Institute of Architects
A.C.I.	American Concrete Institute
A.I.E.E.	American Institute of Electrical Engineers
A.N.S.I.	American National Standards Institute
A.S.C.E.	American Society of Civil Engineers
A.S.M.E.	American Society of Mechanical Engineers
A.S.T.M.	American Society of Testing and Materials
A.W.S.C.	American Welding Society Code
A.W.W.A.	American Water Works Association
Fed. Spec.	Federal Specifications
N.B.F.U.	National Board of Fire Underwriters
N.B.S.	National Bureau of Standards
N.E.C.	National Electrical Code
- D. MnDOT. Wherever reference is made hereinafter to Minnesota Department of Transportation (MnDOT) specifications, it shall refer to the Minnesota Department of Transportation Standard Specification for Highway Construction, 2018 edition, including all current supplements, unless otherwise noted in the Special Provisions.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Administrative and procedural requirements for quality assurance and quality control.
- B. Owner provided testing and laboratory services coordinated by Construction Coordinator.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 70 00 – Execution and Closeout Procedures: Close out submittals.
- D. Individual Specification Sections: Inspections and tests required, and standards for testing.

1.3 REFERENCES

- A. ANSI/ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- B. ANSI/ASTM E329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

1.4 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Engineer.

1.5 SUBMITTALS

- A. Submit three (3) copies of proposed Contractor Quality Control Plan to the Engineer within five (5) days after date of Notice to Proceed.
- B. Submit three (3) copies of Final Contractor Quality Control Plan to the Engineer within (2) days after receipt of proposed Contractor Quality Control Plan review from the Engineer.
- C. Contractor Quality Control Plan: Indicate the following.
 - 1. Quality Control Organization: In chart form, showing relationship of Quality Control organization to other elements of Contractor's organization.
 - 2. Names and qualifications of personnel in Quality Control organization, including Contractor Quality Control Representative, inspectors, Independent Testing and Inspection Laboratory, and Independent HVAC Test and Balance Agency.
 - 3. Procedures for reviewing coordination drawings, shop drawings, certificates, certifications, or other submittals.
 - 4. Testing and inspection schedule, keyed to Construction Schedule, indicating tests and inspections to be performed, names of persons responsible for inspection and testing for each segment of Work including preparatory, initial, and follow-up.
 - 5. Proposed forms to be used including Contractor's Daily Report, Contractor Test and Inspection Report and Non-Compliance Check-Off List.

- D. Independent Testing and Inspection Laboratory: Submit the following:
1. Name.
 2. Address.
 3. Telephone number.
 4. Name of full-time registered engineers.
 5. Responsible officer.
 6. Copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by inspection.
- E. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
- F. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
 2. Description of test and inspection.
 3. Identification of applicable standards.
 4. Identification of test and inspection methods.
 5. Number of tests and inspections required.
 6. Time schedule or time span for tests and inspections.
 7. Entity responsible for performing tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.

1.6 SELECTION AND PAYMENT

- A. Owner will employ and pay for services via the Engineer of an independent testing laboratory to perform specified construction-in-place inspection and testing.
- B. Contractor to pay for required preconstruction testing.
- C. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor shall pay for all retesting required when initial testing shows that products or procedures are defective, or do not meet the requirements of the applicable specifications.

1.7 LABORATORY REPORTS

- A. Reports include: Date issued, Project title and Owner Contract Number, name of inspector, date and time of sampling or inspection, identification of product and Specification Section, location in the Project, type of inspection or test, date of test, results of tests, and conformance with Contract Documents.
1. When requested by the Engineer, provide interpretation of test results.
- B. After each inspection and test, promptly submit three (3) copies of laboratory report and distribution as follows:
1. Engineer, Contractor and Owner Project Manager: (1) copy each.

1.8 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume any duties of Contractor.

- D. Laboratory has no authority to stop Work.

1.9 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location adequate samples of materials proposed to be used, which require testing, together with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide access to Work.
- C. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. Notify the Engineer 24 hours prior to expected time for operations requiring inspection and testing services.

1.10 NON-COMPLIANCE CHECK-OFF LIST

- A. Maintain check-off list of Work that does not comply with Contract Documents, stating specifically what is non-complying, date faulty Work was originally discovered, and date Work was corrected. No requirement to report deficiencies corrected same day it was discovered.
 - 1. Submit copy of Non-Compliance Check-Off List of non-complying work items to the Engineer on a weekly basis or as requested.

1.11 COMPLETION AND INSPECTION OF WORK

- A. Prior to final acceptance by Owner, submit a certification signed by Contractor to Engineer stating that all Work has been inspected and all Work, except as specifically noted, is complete and in compliance with Contract Documents.
- B. Contractor Mark-up Record Documents: By Contractor Quality Control Representative. Ensure that Contractor Mark-up Record Documents required in Section 01 70 00 – Execution and Closeout Procedures, are marked to show any deviations, which have been made during the course of construction and are kept current on a daily basis.
- C. Upon completion of the Work, certify the accuracy of the Contractor Mark-up Record Documents and submit to the Engineer.

1.12 SPECIAL STRUCTURAL TESTING AND INSPECTIONS REQUIREMENTS

- A. Special Structural Testing and Inspections are required by the 2006 IBC, Chapter 17 – Special Inspections.
- B. Owner will employ and pay for a special inspector (or inspectors) as required by IBC.
- C. Duties and responsibilities of the special inspector(s) shall be as outlined in IBC.
- D. Contractor to coordinate special structural testing and inspection services.
- E. Testing and Inspection services are intended to assist in determining compliance of the work with requirements specified. These services do not relieve the Contractor of responsibility for compliance with the requirements of the Contract Documents.
- F. Schedule of special structural testing and inspections to be completed before the work.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 SPECIAL STRUCTURAL TESTING AND INSPECTIONS SCHEDULE

- A. Complete the attached schedule prior to submittal for building permit.

- B. The parties involved shall complete and sign the Special Structural Testing and Inspection Schedule.
 - 1. Completed schedule is an element of the construction documents and after permit issuance, becomes part of the building department approved plans and specifications. The completed schedule shall include the following:
 - a. Specific listing of the items requiring inspection and testing.
 - b. Referenced specification section and article which defines the applicable standards by which to judge conformance with the approved plans and specifications in accordance with IBC. Specification section should also include the degree or basis of inspection and testing; i.e., intermittent/will-call or full-time/continuous.
 - c. Frequency of reporting, i.e., intermittent, weekly, monthly, per floor, etc.
 - d. Parties responsible for performing the inspection and testing work.
 - e. Required acknowledgments by each designated party.

END OF SECTION

Special Structural Testing and Inspection
Program Summary Schedule

Project Name: _____ Project no.: _____
Location: _____ Permit: _____(1)

Technical (2)		Description (3)	Type of Inspector (4)	Report Frequency (5)	Assigned Firm (6)
Section	Article				

Note: This schedule shall be filled out and included in the Special Structural Testing and Inspection Program.

- (1) Permit number to be provided by the Building Official.
- (2) Reference to the specific technical scope section in the program.
- (3) Use descriptions per IBC Chapter 17, as adopted by Minnesota State Building Code.
- (4) Special Inspector – Technical, Special Inspector – Structural.
- (5) Weekly, monthly, per test/inspection, per floor, etc.
- (6) Firm contracted to perform services.

ACKNOWLEDGEMENTS

Each appropriate representative shall sign below:

Owner:	Firm:	Date:
Contractor:	Firm:	Date:
Architect:	Firm:	Date:
SER:	Firm:	Date:
SI-S:	Firm:	Date:
SI-T:	Firm:	Date:
TA:	Firm:	Date:
F:	Firm:	Date:

If requested by engineer/architect of record or Building Official, the individual names of all prospective special inspectors and the work they intend to observe shall be identified.

Legend: SER = Structural Engineer of Record SI-T= Special Inspector – Technical
TA = Testing Agency SI-S = Special Inspector – Structural F = Fabricator

Accepted for the Permits and Inspections Department By: _____ Date: _____

SECTION 01 55 26
TRAFFIC CONTROL

PART 1 - GENERAL

1.1 INDEX

- 1.2 Landside Specifications Which Apply
- 1.3 Definitions
- 3.1 Landside Maintenance of Traffic (MnDOT 1404 and Traffic Control (MnDOT 2563)
- 3.2 Airside Maintenance of Traffic and Traffic Control
- 3.3 Basis of Payment

1.2 SPECIFICATIONS WHICH APPLY

- A. The Minnesota Department of Transportation (MnDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2020 EDITION, DIVISION II CONSTRUCTION DETAILS, AND DIVISION III MATERIALS shall apply to sitework on this project except as modified hereinafter.
- B. Items indicated on the Bid Form are specified in the specification sections indicated on the Bid Form. Measurement and payment for pay items will only be made as indicated in the corresponding specification sections. If a similar or identical item is called out in a specification section other than the one indicated on the Bid Form, that item is not included in the quantities indicated on the Bid Form, and is considered part of the lump sum quantity for the corresponding division, and no additional compensation will be made for that item.

1.3 DEFINITIONS

- A. All references to the Commissioner, Department, MnDOT, the State, or the Engineer shall be construed to refer to the Southwest Minnesota Regional Airport or its authorized representative.
- B. All references to Right of Way shall be construed to refer to the project limits shown on the drawings.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 LANDSIDE MAINTENANCE OF TRAFFIC (MnDOT 1404) AND TRAFFIC CONTROL (MnDOT 2563)

All traffic control devices shall conform and be installed in accordance to:

- "Minnesota Manual on Uniform Traffic Control Devices" (MNMUTCD);
- Part 6, "Field Manual for Temporary Traffic Control Zone Layouts" (Field Manual);
- The Speed Limits in Work Zones Guidelines;
- *The Minnesota Flagging Handbook*;
- *The MnDOT Standard Signs and Markings Manual*;

And the provisions of MnDOT Standard Specification Section 1404 and 1710, the Plan, and these Special Provisions.

The Contractor shall furnish, install, maintain, and remove all traffic control devices required to provide safe movement of vehicular traffic through the Project during the life of the Contract from the start of Contract operations to the final completion thereof. The Engineer will have the right to modify the requirements for traffic control as deemed necessary due to existing field conditions. The roadways and parking facility drive lanes shall be kept open to traffic at all times, except as modified below.

Traffic control devices include, but are not limited to, cones, barricades, signs, flashers, and

drums as required, and sufficient barricade weights to maintain barricade stability.

A. TRAFFIC CONTROL

1. If traffic control layouts are not present in the Plan, or if the Contractor modifies the layout or sequence from the Plan, the Contractor shall submit the proposed traffic control layout to the Engineer, for approval, at least seven (7) days prior to the start of construction. The Contractor does not need to submit layouts that can be found in the Field Manual. All other layouts that are not found in the plan shall be submitted. At least 24 hours prior to placement, all traffic control devices shall be available on the Project for inspection by the Engineer. The Contractor shall modify his/her proposed traffic control layout and/or devices as deemed necessary by the Engineer.
2. The Contractor shall be responsible for the immediate repair or replacement of all traffic control devices that become damaged, moved or destroyed, of all lights that cease to function properly, and of all barricade weights that are damaged, destroyed, or otherwise fail to stabilize the barricades. The Contractor shall further provide sufficient surveillance of all traffic control devices at least once every 24 hours.

The Contractor shall furnish names, addresses, and phone numbers of at least two (2) individuals responsible for the placement and maintenance of traffic control devices. These individuals shall be "on call" 24 hours per day, seven days per week during the times any traffic control devices, furnished and installed by the Contractor, are in place. The required information shall be submitted to the Engineer at the Pre-construction Conference.

3. Contractor shall provide traffic control layouts and traffic control for all the work described in Section 01 11 00 SUMMARY OF WORK.
4. The Contractor shall inspect, on a daily basis, all traffic control devices, which the Contractor has furnished and installed, and verify that the devices are placed in accordance with the **Traffic Control Layouts**, these Special Provisions, and/or the MN MUTCD. Any discrepancy between the placement and the required placement shall be immediately corrected.

The Contractor shall be required to respond immediately to any call from the Engineer or his designated representative concerning any request for improving or correcting traffic control devices. **If the Contractor is negligent in correcting the deficiency within one hour of notification the Contractor shall be subject to an hourly charge assessed at a rate of**

\$250.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.

The Contractor is required to meet the traffic control device quality standards as determined in the Field Manual. The Contractor shall immediately replace traffic control devices that are deemed unacceptable. Signs that are dirty and result in a noticeable loss of reflectivity at night are also considered unacceptable and shall be cleaned or replaced. The Contractor shall be required to respond immediately to any call from the Engineer or his designated representative concerning the notification of unacceptable traffic control devices. **If the Contractor is negligent in correcting the deficiency within one day of notification the Contractor shall be subject to a daily charge assessed at a rate of \$500 for each day or any portion thereof with which the Engineer determines that the Contractor has not complied.**

If, at any time, the Contractor fails to, in a timely manner, properly furnish, install, maintain or remove any of the required traffic control devices, the Department reserves the right to correct the deficiency. **Each time the Department takes such corrective action, the costs thereof, including mobilization, plus \$500 will be deducted from monies due or coming due the Contractor.**

B. GENERAL REQUIREMENTS

1. All portable sign assemblies shall be perpendicular to the ground. No traffic control device (signs, channelizing devices, arrowboards, etc.) shall be weighted so they become hazardous to motorists and workers. The approved ballast system for devices mounted on temporary portable supports is sandbags, unless it is designed, crash tested, and approved for the specific device. During freezing conditions, the sand for bags shall be mixed with a de-icer to prevent the sand from freezing. The sandbags shall be placed and maintained at the base of the traffic control device to the satisfaction of the Engineer.
2. All temporary rigid signs shall be fabricated with an approved retroreflective sheeting material of the appropriate color, and be listed under the Approved/Qualified Products List (APL/QPL) for either "Sheeting for Rigid Temporary Work Zone Signs, Delineators, and Markers (Type IX and XI)" or "Sheeting for Rigid Permanent Signs, Delineators, and Markers (Type IX and XI)". Signs remaining in place that still apply during temporary operations need no change in sign sheeting.

Signs shall have an easily identifiable marking on the face to make the identification of approved retroreflective sign sheeting on temporary rigid signs in the field easier. This marking verifies that the sign sheeting has been approved for temporary rigid signs. Temporary rigid signs 4 square feet and under in size and all barricades and route markers will be exempt from this marking. The appropriate marking shall be used for each type of the approved sheeting types. Refer to the instructions for the marking of temporary signs that are on the APL or directly at the following link:

<http://www.dot.state.mn.us/products/signing/pdf/typelabel.pdf>

The sheeting materials APL/QPL, including the retroreflective sheeting types, is located at <http://www.dot.state.mn.us/products/signing/sheeting.html>

3. The Contractor shall provide protective devices necessary to protect traffic from excavations, drop-offs, falling objects, splatter or other hazards that may exist during construction. This work shall be incidental. The Contractor will not be allowed to suspend material, equipment, tools and personnel over traffic unless a lane closure is established below. All costs associated with the lane closure will be considered incidental.
4. The Contractor will not be permitted to park vehicles or construction equipment so as to obstruct any traffic control device. The parking of workers' private vehicles will not be allowed within the Project limits unless so approved by the Engineer.
5. High Visibility Apparel

All workers within the road Right-of-Way who are exposed to either traffic or to construction equipment shall wear reflectorized high-visibility safety apparel.

High-visibility safety apparel means personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and meets the minimum performance Class 2 requirements of the ANSI/ISEA 107 – 2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear".

Additional Requirements: ANSI/ISEA 107-2004 Class 3 Requirements (Class 2 Vest with Class E Long Pants)

- Flaggers– In addition to an ANSI Class 2 vest, shirt, or jacket, flagger shall wear high visibility Class E long pants and a hat.
- Nighttime and Low Light Conditions – All workers working at night or in low light conditions shall wear high visibility Class E long pants in addition to an ANSI Class 2 vest, shirt, or jacket and retro-reflective headgear.

All high visibility apparel must be worn in the manner for which it was designed. All apparel worn on the torso must be closed in the front to provide contiguous 360 degree visibility. If a worker's high-visibility apparel becomes faded, worn, torn, dirty, or defaced, reducing the conspicuity of the apparel, the apparel shall be removed from service and

replaced with new apparel.

The Contractor will be subject to a non-compliant charge for failure to adhere to the clothing requirements as listed above. Non-compliance charges, for each incident, will **assessed at a rate of \$500.00 per incident** that the Engineer determines that the Contractor has not complied.

6. Night Work

When work will be performed between the official hours of sunset and sunrise, all appropriate practices for night work will apply.

The Contractor shall provide sufficient numbers of light plants to illuminate the work area as determined by the Engineer. All costs incurred to provide such light plants shall be incidental.

The Contractor shall provide a sufficient amount of 2-inch wide highly reflective vehicle marking tape to be applied to Contractor vehicles and equipment. This tape shall be considered incidental and shall be on the Approved Products List for "Conspicuity Vehicle Sheeting (Type VII)" as found at:

<http://www.dot.state.mn.us/products/signing/sheeting.html>. Vehicle examples to be marked with tape are Contractor rollers, paver, millers and other equipment normally found in the lane closure.

The State will **assess monetary deductions in the amount of \$1000.00 for each Calendar Day** or portion thereof, that the Contractor fails to provide sufficient numbers of light plants as described in this Section B-6. As light plants may be dedicated or otherwise made available to the Project, this assessment will be chargeable even if reasons beyond the control of the Contractor such as breakdowns, late delivery of materials, weather delays, or other unanticipated problems cause the work to be accomplished in non-daylight hours.

7. Channelizers – Type B (Projects Requiring drums per MnDOT Standard Plate No. 8000J) The Contractor shall:

- Provide all drums with 4 inch sheeting material per the Standard Plate, or
- Provide all drums with 6 inch fluorescent orange and white sheeting material, with no gap between sheeting layers.

C. VEHICLE WARNING LIGHT SPECIFICATION

1. All Contractors', subcontractors' and suppliers' mobile equipment, operating within the limits of the Project with potential exposure to passing traffic, shall be equipped with operable warning lights which meet the appropriate requirements of the SAE specifications. This would include closed roads that are open to local traffic only and all Southwest Minnesota Regional Airport parking facilities. This also includes any vehicle which enters the traveled roadway at any time. The SAE specification requirements are as follows:

Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles-SAE Specification J845

Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles - SAE Specification J595

Lights shall be mounted so that at least one light is visible at all times from a height of 3.5 feet and from a 60 foot radius about the equipment. In order to meet the 360 degree at 60 foot radius requirements supplemental lighting may be used. All supplemental lights must be SAE Class 1 certified. This specification is to be used for both day and night time operations. All costs incurred to provide warning lights shall be at no cost to the Owner. These warning lights shall also be operating and visible when a vehicle

decelerates to enter a construction work zone and again when a vehicle leaves the work zone and enters the traveled traffic lane.

Non-compliance with the above requirements will be **assessed a rate of \$100 per incident** that the Engineer determines that the contractor has not complied.

D. FLAGGER TRAINING AND REQUIREMENTS

1. Any person acting as a flagger on this Project shall have attended a training session taught by a Contractor's qualified trainer. The Contractor's qualified trainer shall have completed a "MnDOT Flagger Train the Trainer Session" in the five years before the start date of this Contract and shall be on file as a qualified flagger trainer with the Department. The Flagger Trainer's name and Qualification Number shall be furnished by the Contractor at the pre-construction meeting. The Contractor shall provide all flaggers with the MnDOT Flagger Handbook and shall observe the rules and regulations contained therein. This handbook shall be in the possession of all flaggers while flagging on the Project. The Contractor shall obtain handbooks from MnDOT. Flaggers shall not be assigned other duties while working as authorized flaggers. The "Checklist for Flagger training" form shall be furnished to the Engineer any time a new flagger reports to work on the Project. The "Checklist for Flagger Training" form is found at: <http://www.dot.state.mn.us/const/wzs/documents/flaggertrainingchecklist.pdf>
2. The Contractor shall furnish Flaggers as required to adequately control traffic. Flaggers shall conform to the requirements set forth in the MN MUTCD. All costs incurred to provide such Flaggers shall be incidental.
3. The Contractor shall provide two-way radios for Flaggers.

Flaggers shall wear high visibility retroreflective safety vests, pants and hats at all times while actively flagging on the Project. High visibility apparel shall also comply with current Minnesota OSHA Rules 5207.0100 and 5207.1000. The Flaggers clothing shall be considered incidental.

The Contractor shall keep the separation distance between the last sign in the "flagger ahead" signing sequence and the actual flagger to the amount shown in the Field Manual, whenever it is practical. The maximum separation distance allowed from the signs to the flagger shall be ½ mile. The Contractor shall use multiple flagger signing set-ups or continuously move the signing for moving flagging operations to keep within the distance limit. The "flagger ahead" signing sequence shall not be in place when flagging operations are not in effect.

All signs associated with the flagging operation must be removed or covered when flagging operations are not present.

The Contractor will be subject to a non-compliant charge for failure to adhere to the requirements listed in this Section D. These requirements include: providing two-way radios for flaggers, properly attired flaggers, and distance limit between the flagger and the last sign in the flagger sequence, and removing or covering flagger signs when flagging operations are not present. **Non-compliance charges, for each incident will be assessed at a rate of \$500 per incident that the Engineer determines that the Contractor has not complied.** The charges may be assessed equally, separately, and may be assessed concurrently.

The Contractor shall coordinate the flagging operations in a manner that causes as little delay to the traveling public as possible, and at no time shall the delay exceed 5 minutes. In the event that the Contractor is unable to meet the maximum delay requirements, operations shall shut down until such time a new traffic control plan is developed which does meet the maximum delay requirement.

If hauling operations create hazards for the traveling public, the Contractor will be required to provide additional flaggers, as directed by the Engineer. All costs incurred to provide the additional flaggers shall be incidental.

E. MAINTENANCE AND STAGING OF TRAFFIC CONTROL

1. The Contractor shall maintain, at all times, the existing traffic movements at all intersections/locations.
2. The Contractor shall maintain a lane width of not less than 10 feet in each direction. In no case shall traffic be allowed or forced onto the shoulders as a result of the Contractor's operations without prior approval of the Engineer.
3. As each phase is completed, the Contractor shall install the final signing and pavement markings required to safely open that road to traffic. This work shall be completed on or before the date of opening as approved by the Engineer.
4. The Contractor shall maintain a lane width of not less than 10-feet for all traffic flows to be maintained as depicted in the plans.

3.2 AIRSIDE MAINTENANCE OF TRAFFIC AND TRAFFIC CONTROL

A. GENERAL. Southwest Minnesota Regional Airport will remain in full and continuous operation during the construction period except as specifically provided for hereinafter.

B. ADDITIONAL AIRPORT OPERATIONAL RESTRICTIONS

1. Construction operations shall comply with the requirements of the FAA Construction Safety and Phasing Plan (CSPP) developed by the Engineer for this project. The CSPP identifies project limits, equipment heights, and overall operational safety on the airfield as identified in FAA Advisory Circular 150/5370-2G, Operational Safety on Airports During Construction, and within the Project Manual. Bidders may contact the Engineer to obtain a copy of the CSPP. A copy of the CSPP and FAA Final Determination Letter will be provided to the Contractor upon completion of FAA's review.
2. Construction operations on this project shall be restricted as specified in Section 01 11 10, Summary of Work. Coordination of construction activities with airport operations shall be approved by the Airport Manager.

C. TRAFFIC CONTROL. The Contractor shall provide flagmen as necessary to control construction traffic within the Air Operations Area and as directed by the Engineer. Whenever vehicle crossings of active taxiways are required, or when construction operations are in progress within "restricted areas", flagmen will be required.

D. TEMPORARY FENCE, SIGNS AND DELINEATORS. The Contractor shall furnish, install and maintain temporary fences, signs, barricades, warning lights, and traffic cones at the construction site, access gates, and along haul routes as directed by the Engineer or described hereinafter.

All signs shall be in accordance with the current edition of MnDOT's Manual on Uniform Traffic Control Devices. Construction fence shall be 48-inch high "blaze orange" plastic fence. Channelizing Devices shall be Carsonite "Rubber Duckie" SMD-300, 18" length, orange post, yellow reflective band, or traffic cones. Barricades shall be MnDOT Type III standard (5' high x 6' long) supplemented with two flashing red lights. Traffic cones shall be 36-inch reflectorized style. Construction flagging shall consist of 9-inch x 12-inch red colored pennants of strong 4 mil vinyl sewn onto reinforced polypropylene cording. Construction flagging shall be installed approximately 3-feet above the ground and shall be securely attached to supports spaced at a maximum distance of 50-feet apart or as directed by the

Engineer. Concrete J-Barriers shall be in accordance with the details shown in Appendix A. In addition, a red reflectorized strip facing towards roadway, shall be attached along the top of each concrete J-barrier and three flashing beacons shall be attached to the top of the barriers at locations approved by the Engineer.

Construction Delineators shall be OTW Safety (model AR10x96) or Neubert Aero Corporation (model 9670) Low Profile Airport Barricade (or approved equal) with red lights in accordance with the detail shown in the Plans. Barricade sections shall be connected end-to-end where shown in the Plans or directed by the Engineer. Where not connected, barricades shall be placed with a maximum 12-foot space between sections.

Temporary light units shall be mounted on Low Profile Airport Barricade Sections. Each barricade section shall be furnished with two (2) steady burning or flashing red lights. Barricades shall be filled full with water and weighted with sandbags as directed.

The following approximate quantities will be required:

Delineation Drums: 4 EA

Low Profile Barricades: 397 LF

'CONSTRUCTION VEHICLES ONLY' sign

Signs, delineators, barricades, and fences shall be located as directed or shown on the drawings and installed in a manner approved by the Engineer

Upon completion of the project, or when no longer required, temporary signs, cones, fences, and barricades shall be removed and any damage to existing surfaces shall be repaired.

- E. TEMPORARY LIGHTING AND FLAGGING.** All flood lighting and power for night operations and all lights, flags, barricades, etc., required for Contractor's equipment and construction operations shall be furnished by the Contractor. Approved floodlights and warning lights shall be mandatory at all construction sites whenever operations are in progress after sunset or before sunrise as determined by daily weather reports. Under no circumstances shall vehicle lights be used as a substitute for proper lighting. Floodlights shall be shielded if necessary to prevent glare affecting flight crews.

3.2 BASIS OF PAYMENT

- A.** All costs associated with this section shall be made as a lump sum payment and include all traffic control required to complete the Project as shown in the Plans and specified in these Special Provisions. Payment includes all costs associated with furnishing, installing, maintaining, relocating and subsequently removing traffic control devices (including flaggers) as required. No additional measurement for payment will be made for individual activities and devices that constitute Traffic Control. Traffic control layouts or devices not shown in the plan or stated in these Special Provisions are included in the lump sum traffic control item. No measurement will be made of the various items that constitute traffic control but all such work will be construed to be included in the contract unit lump sum and shall be considered compensation in full for all materials, equipment, and labor required to provide traffic control as specified.

Payment will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01 55 26-1	Traffic Control	Lump Sum

END OF SECTION

**SECTION 01 61 00
COMMON PROJECT REQUIREMENTS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Products List.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Bidding Requirements: Pre-bid substitutions.
- C. Summary of Work Section - 01 11 00.

1.3 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a specification section shall be of the same construction and be interchangeable.
- D. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.

1.4 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.5 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surface in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.

- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for pre-bid substitution for any manufacturer not specifically named.
- C. Products Specified by Naming Several Manufacturers: Products of named manufacturers meeting specifications: No options, no substitutions allowed.
- D. Products Specified by Naming Only One Manufacturer: No options, no substitutions allowed.

1.7 PRODUCTS LIST

- A. Within (10) days after Notice to Proceed date, submit complete list of major products proposed for use on the project, with name of manufacturer, trade name, and model number of each product.
- B. Comply with requirements of the Submittal Procedures Section - 01 33 00.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Closeout Procedures.
 - 2. Final Closeout Submittals.
 - 3. Final Cleaning.
 - 4. Contractor Mark-up "As built" Documents.
 - 5. Product Guarantees and Warranties.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 11 00 - Summary of Work.
- C. Project close-out forms:
 - 1. Use Section 00 65 16 - Certificate of Substantial Completion.
 - 2. Use Section 00 65 19 - Certificate of Final Completion.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

- A. Comply with requirements and provisions of the General Conditions of the Contract for issuance of Certificate of Substantial Completion.
- B. Owner will occupy designated portion of Project for the purpose of installation of equipment and conduct of business, under provisions stated in Certificate of Substantial Completion.
- C. When Contractor considers the Work in compliance with requirements for Substantial Completion, submit to the Engineer:
 - 1. A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
 - 3. Provide final cleaning prior to inspection by Engineer and Owner. Comply with all requirements of Section 01 74 23, Final Cleaning.
- D. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or follows, the date of Substantial Completion, verify 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise the Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- E. Inspection Procedure for Substantial Completion: Within a reasonable time after receipt of request for inspection, the Engineer, accompanied by Owner, and Contractor, shall conduct a preliminary inspection for Substantial Completion.
 - 1. The Engineer will prepare a list of items to be completed or corrected, indicating items which must be completed or corrected before Work can be determined to be substantially complete.

2. Contractor shall take necessary action to promptly complete and correct items on the list.
- F. When items on the punch list for Substantial Completion have been completed or corrected, Contractor shall return punch list to the Engineer indicating action taken for each item, those items completed and reasons for not completing remaining items, and shall request an inspection for Substantial Completion. Engineer will then establish a date for inspection. Engineer will prepare the Certificate of Substantial Completion following inspection and advise Contractor of construction that must be completed or corrected before the certificate will be issued.
- G. Results of completed inspection will form the basis of requirements for final acceptance.

1.4 CLOSEOUT PROCEDURES

- A. Comply with requirements and provisions of the General Conditions of the Contract for Certificate of Final Acceptance and Application for Final Payment.
- B. When Contractor considers Work is complete, Contractor shall have completed the following:
 1. Final cleaning requirements, including touch-up painting.
 2. Submit Contractor's Marked-up as built drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 3. Deliver tools, spare parts, extra stock, and similar items to Owner's designated location.
 4. Arrange with the Engineer for the Owner to make final changeover of permanent lock cores and keying with Owner.
 5. Advise the Owner's personnel of changeover in security provisions.
 6. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 7. Equipment and systems were tested in the Owner's presence and Owner has signed off for final acceptance.
 8. All Items on punch list for Substantial Completion have been fully completed or corrected.
 9. All Work has been completed in compliance with Contract Documents and is ready for final inspection.
- C. When the Engineer finds the Work is acceptable under the Contract Documents, the Engineer will request that Contractor submit closeout submittals and documentation.
- D. The Engineer will issue a final Change Order reflecting adjustments to Contract Sum not previously made by Change Order.

1.5 FINAL CLOSE OUT SUBMITTALS

- A. When the Engineer has determined that the Work is acceptable under the Contract Documents and the Contract fully performed, Contractor shall prepare and submit the final Application for Payment to the Engineer together with the following:
 1. Signed copy of Certificate of Substantial Completion.
 2. Completion of punch list items.
 3. Contractor's Mark-up as built Documents.
 4. Extra stock items.
 5. Operational and Maintenance Manuals: Training to the Owner's maintenance personnel.
 6. Warranties and Guarantees Manual.
 7. Asset spreadsheet.
 8. Test and Balance Reports.
 9. Original IC 134 forms for the Contractor and Subcontractors.
 10. Certificate of Final Acceptance.
 11. Contractor/Subcontractor "Certified Weekly Payroll Reports".
 12. Certification of Fire Alarm Testing.
- B. Deliver final closeout submittals to the Engineer.

1.6 FINAL CLEANING

- A. General: Comply with the requirements of Section 01 74 23 - Final Cleaning.
 - 1. The General Conditions require general cleaning during construction.

1.7 CONTRACTOR MARK-UP AS BUILT DOCUMENTS

- A. Project as built documents required include:
 - 1. Contractor's Marked-up copies of Contract Drawings.
 - a. Maintain at Project Site for Owner:
 - 1) One (1) copy of As built Documents including Drawings, Specifications, Addenda, Change Orders, and other Modifications to the Contract, plus Engineer's clarifications, or other written instructions, reviewed submittals, and test reports to record actual construction conditions.
 - 2. Marked-up copies of Specifications with Addenda and Contract Modifications.
 - 3. Civil Engineering Work: Provide certified As-Built Documents per requirements of Civil Sections.
- B. Specific as built document requirements that expand requirements of this section are included in individual Specification Sections.
- C. Maintenance of Documents: Store as built documents in field office apart from Contract Documents used for construction. Do not permit Project as built Documents to be used for construction purposes. Maintain and protect as built documents from damage in a clean, dry, legible condition. Make documents available at all times for inspection by the Owner and Engineer.
- D. Contractor's Marked-up As built Drawings:
 - 1. During construction, maintain one set of prints of Contract Drawings and Shop Drawings for Project As built Document purposes.
 - a. Mark these Drawings to indicate actual installation where installation varies from installation shown originally. Give particular attention to information on concealed elements, which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:
 - 1) Dimensional changes to Drawings.
 - 2) Revisions to details shown on Drawings.
 - 3) Depths of foundations below first floor.
 - 4) Locations and depths of underground utilities.
 - 5) Revisions to routing of piping and conduits.
 - 6) Revisions to electrical circuitry.
 - 7) Actual equipment locations.
 - 8) Duct size and routing.
 - 9) Locations of concealed internal utilities.
 - 10) Changes made by Contract Modification.
 - 11) Details not on original Contract Drawings.
 - b. Mark completely and accurately record prints of Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
 - c. Mark as built sets with red erasable colored pencil; use other colors to distinguish between changes for different categories of Work at same location.
 - d. Mark important additional information, which was either shown schematically or omitted from original Drawings.
 - e. Note construction change directive numbers, alternate numbers, Contract Modification, RFI's, Field Orders, numbers and similar identification.
 - f. Responsibility for Markup and Supervision: Contractor Quality Control Representative; as specified in Section 01 45 29, Testing Laboratory Services. Where feasible, individual or entity who obtained record data, whether individual or entity is installer, subcontractor, or similar entity, is required to prepare mark-up on as built drawings.
 - 1) Accurately record information in an understandable Drawing technique.

- 2) Record data as soon as possible after it has been obtained. In case of concealed installations, record and check mark-up prior to concealment.
 - 3) Contractor Quality Control Representative: Affix signature and certify accuracy of as built drawings.
2. Preparation of Marked-up Drawings: Immediately prior to inspection for Final Acceptance, review completed marked-up record Drawings with the Engineer. When authorized, prepare a full set of corrected marked-up Drawings.
 - a. Incorporate changes and additional information previously marked on print sets. Identify and date each Drawing; include printed designation "CONTRACTOR MARKED-UP ASBUILT DRAWINGS" in a prominent location on each Drawing.
 - b. Incorporate changes and additional information.
3. Copies and Distribution: After completing preparation of Marked-up As Built Drawings, print one (1) set of entire as built Drawing set and send the copy and the original to the Engineer. The Engineer will distribute as follows:
 - a. Original will be kept by the Engineer.
 - b. One (1) set will be delivered by the Engineer to the Owner's Facilities Trades Manager (Trades Building).
 - 1) The Engineer to send copy of all signed as built receipt transmittals from the above parties to the Owner's Project Manager for verification that the above process has been accomplished.
 - c. Contractor must use the appropriate means to duplicate the original redlines providing clean and legible markings.
4. Organize copies into manageable sets. Bind each set with durable paper cover sheets, with appropriate identification, including titles, dates and other information on cover sheets.
 - a. Organize and bind all original marked-up as built prints maintained during construction in the same manner.

1.8 PRODUCT GUARANTEES AND WARRANTIES

- A. Submit Guarantees and Warranties required for specific Products or Work as specified in each individual Specification Section.
- B. Form of Submittals:
 1. Bind in commercial quality 8-1/2 x 11 inches, three-hole, D-Ring binders with durable plastic covers. Quantity: Two (2) hard copies and Three (3) CDs.
 2. Cover: Identify each binder with typed or printed title "GUARANTEES AND WARRANTIES" with title of Project and Owner Contract Number; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
 3. Table of Contents: Neatly typed, in sequence of Table of Contents of Project Manual, with each item identified with number and title of Specification Section in which specified, and name of Product or Work item.
 4. Separate each guarantee and warranty with index tab sheets keyed to Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer with name, address, and telephone number of responsible principal.
 5. Contractor shall submit to the Engineer, three (3) copies electronically formatted computer CD-ROM disks with the entire Guarantee and Warranties documents manual scanned and CSI format indexed onto each disk, with summary index on page one. This is to include all guarantees and warranties with both start and end dates. Submit with hard copy binder per sections above. Format on high density extended life CD-ROM disks. Program software to be Word and/or Adobe Acrobat Reader compatible. CD-ROM disks to be readable, unlocked, and download capable for Owner retrieval and storage.
- C. Preparation of Submittals:
 1. Obtain guarantees and warranties executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten (10) days after completion of applicable item of

Work. Except for items put into use with Owner's approval, leave date of beginning of time of warranty until the date of final acceptance is determined.

2. Verify that documents are in proper form, contain full information, and are notarized.
3. Co-execute submittals when required.
4. Retain guarantee and warranty until time specified for submittal.

D. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's approval, submit documents within fourteen (14) days after acceptance.
2. Make other submittals within fourteen (14) days after Date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within fourteen (14) days after acceptance

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01 71 13
MOBILIZATION**

PART 1 **DESCRIPTION.** This item shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all Contractor offices and buildings or other facilities necessary for work on the Project; and for all other work and operations which must be performed, or costs incurred, before beginning work on the various items on the project site.

NOTE: See Special Provisions Section 01 35 20 for project-specific revisions and additions to this standard specification.

PART 2 **MATERIALS.** Not Applicable.

PART 3 **CONSTRUCTION REQUIREMENTS**

A. **Demobilization.** This item shall include the costs associated with the preparation and execution of project closeout documentation, including, but not necessarily limited to, certification that identification badges have been returned or accounted for, project information requested by the Engineer, DBE/TGB Utilization Summary, Certificate of Substantial Completion, Request for Final Payment, change orders (if applicable), Certificate of Final Acceptance, and Minnesota State Form IC 134. This project closeout shall be within 6 months after substantial completion of construction. If included on the bid proposal, payment for Bid Item No. 01 71 13-2 Demobilization at the contract lump sum shall be included in the final payment and shall be compensation in full for all costs associated with project closeout documentation.

PART 4 **METHOD OF MEASUREMENT.** Not Applicable.

PART 5 **BASIS OF PAYMENT.** Based on the lump sum contract price for Mobilization, partial payments will be made as follows:

- (1) When 5 percent or more of the original contract amount is earned, 30 percent of the amount bid for Mobilization will be paid.
- (2) When 10 percent or more of the original contract amount is earned, 50 percent of the amount bid for Mobilization will be paid.
- (3) When 25 percent or more of the original contract amount is earned, 60 percent of the amount bid for Mobilization will be paid.
- (4) When 50 percent or more of the original contract amount is earned, 100 percent of the amount bid for Mobilization will be paid.
- (5) In all items above, the original contract amount shall be the total value of all contract items, including the mobilization item, but the percentage earned in each case shall be exclusive of the mobilization item.
- (6) When the amount bid for the mobilization item exceeds 5 percent of the total original contract amount, the Owner reserves the right to withhold (on any partial estimate) the portion in excess of 5 percent until 95 percent or more of the original contract amount is earned.
- (7) The total sum of all payments shall not exceed the original contract amount bid for the mobilization item, regardless of the fact that the contractor may have, for any reasons, shut down its work on the project or moved equipment away from the project and then back again.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the Contract.

Payment will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01 71 13-1	Mobilization	Lump Sum

SPECIAL PROVISIONS

01 71 13-1 Mobilization. This item shall include costs associated with the mobilization and demobilization of this project.

Payment for Bid Item No. 01 71 13-1 Mobilization, at the contract unit price shall be compensation in full for all costs associated with mobilizing and demobilizing of construction operations.

END OF SECTION

**SECTION 01 71 29
FIELD ENGINEERING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Surveying work by the Engineer.
- B. Surveying work by the Contractor.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 70 00 – Execution and Closeout Procedures.

1.3 SUBMITTALS

- A. Submit name, address and telephone number of Surveyor before starting survey work.
- B. On request, submit documentation verifying accuracy of survey work.
- C. Submit certificate signed by Surveyor certifying that elevations and locations of improvements are in conformance with Contract Documents.

1.4 QUALITY CONTROL

- A. Construction Surveyors: A qualified Construction Surveyor with experience in airport construction and acceptable to the Engineer.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain complete, accurate log of Control and Survey work as it progresses.
- B. Submit Project Record Documents under Provisions of Section 01 70 00.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 INSPECTION

- A. The Engineer has established horizontal and vertical control points (bench marks and base lines) at the site of the work. These are as described and indicated on the drawings.
- B. Verify locations of survey control points prior to starting work. Promptly notify the Engineer of any discrepancies discovered.

3.2 SURVEY REFERENCE POINTS

- A. The Engineer will locate survey control and reference points.
- B. The line and marks so established shall constitute the field control by and in accordance with which the Contractor shall establish other necessary controls, detail dimensions, and measurements as required for proper layout and performance of the work.
- C. Protect survey control points prior to starting site work; preserve survey control and permanent reference points during construction. Make no changes without prior written notice to approval from the Engineer.
- D. Promptly report to the Engineer the loss or destruction of any survey control or reference point or relocation required because of construction activities, changes in grades or other reasons. Relocate immediately all dislocated survey control points based on original survey control.

3.3 SURVEY REQUIREMENTS

- A. Provide field engineering services. Utilize recognized civil engineering survey practices.

- B. Provide all labor, equipment, and material required in laying out any part of the work and shall assume full responsibility for all measurements made by him from the stakes and marks so established.
- C. Engineer shall make checks as the work progresses to verify lines and grades established by the Contractor and to determine the conformance of completed portions of the work with the requirements of contract specifications and drawings. Such checking by the Engineer or his representatives shall not relieve the Contractor of his responsibility to perform all work in accordance with the contract drawings and specifications and the lines and grades given therein. In the event that location or limit marks as established by the Contractor are found to be inaccurate or inadequate, work shall be suspended until corrections have been made to the satisfaction of the Engineer.
- D. Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. Unless waived in each specific case, quantity surveys made by the Contractor shall be made under the direction of the Engineer. The Engineer will make original and final surveys and make computations to determine the quantities of work performed or finally in place.
- E. Copies of survey data recorded by the Contractor in laying out the work or verifying construction compliance and/or quantities shall be furnished to the Engineer.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: This Section includes required recycling and recovery of the following waste materials and applies to listed waste materials produced during the Work:
 - 1. Land Clearing Debris: Solid waste generated solely from land clearing operations, such as stumps and trees.
 - 2. Concrete and Masonry: Clean concrete, brick, rock, and masonry.
 - 3. Metals: Metal scrap including iron, steel, copper, brass, and aluminum.
 - 4. Untreated Wood: Unpainted, untreated dimensional lumber, timber beams, engineered wood products, plywood, oriented strand board, Masonite, particleboard, wood shipping pallets, and crates.
 - 5. Gypsum Wallboard Scrap: Excess drywall construction materials including cuttings, other scrap, and excess materials.
 - 6. Paper and Cardboard: Discarded office refuse including unwanted files, correspondence, etc. Clean, corrugated cardboard used for packaging, etc.
- B. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
 - 1. Mixed Solid Waste: Solid waste commonly collected as a municipal service, exclusive of waste materials listed above.
- C. Related Sections:
 - 1. General and Supplementary Conditions of the Contract.
 - 2. Drawings and general provisions of each prime Contract.

1.2 DEFINITIONS

- A. Waste Materials are defined as large and small pieces of listed materials which are excess to contract requirements and generally include materials to be recycled and/or recovered from existing construction and items of trimmings, cuttings and damaged goods resulting from new installations, which can not be effectively used in the Work.
- B. Recycling is defined as the process of collecting and preparing recyclable materials and reusing them in their original form or in manufacturing processes that do not cause the destruction of recyclable materials in a manner that precludes further use.
- C. Recovery is defined as any process that reclaims materials, substances, energy, or other products contained within or derived from waste on-site. It includes waste-to-energy, composting, and other processes.

1.3 SUBMITTALS

- A. Construction Waste Management Plan: Prior to start of construction, submit a Construction Waste Management Plan for approval indicating how Contractor proposes to collect, segregate, recycle, and recover at least 75% of construction wastes and debris generated by the Work.
 - 1. Submit documentation indicating compliance with regulations specified under "Quality Assurance" article below. Include a list of recycling facilities to which indicated recyclable materials will be sent for recycling.
 - 2. Identify materials that are not recyclable, or otherwise recoverable, that must be disposed of in a landfill or other acceptable means under governing State of Minnesota and local regulations.
 - 3. List permitted landfills and/or other disposal means to be employed.
 - 4. Indicate instances where compliance with requirements of this specification does not appear to be possible and request resolution from the Owner.

- B. Delivery Receipts: Provide delivery receipts for waste materials salvaged and sent to permitted waste materials processors or recyclers within 48 hours of delivery.
 - 1. Indicate the location and name of firm accepting recyclable waste materials, types of materials, net weights of each type, date of delivery and value of materials.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable requirements of the State of Minnesota and applicable local ordinances and regulations concerning management of construction, demolition, land clearing, inert, and yard trash debris and subsequent modifications and amendments to same.
- B. Disposal Sites, Recyclers, and Waste Materials Processors: Use only facilities properly permitted by the State and by local authorities where applicable.
- C. Pre-Construction Waste Management Conference: Prior to beginning work at the site, schedule and conduct a conference to review the Construction Waste Management Plan and discuss procedures, schedules and specific requirements for waste materials recycling and disposal. Discuss coordination and interface between Contractor and other construction activities. Identify and resolve problems of compliance with requirements. Record minutes of the meeting, identifying conclusions reached and matters requiring further resolution. Maintain waste management as an agenda item at future construction meetings.
 - 1. Attendees: Contractor and related Contractor personnel associated with work of this section, including personnel in charge of the waste management program; Engineer; Architect; material suppliers where appropriate; and such additional Owner personnel as Owner deems appropriate.
 - 2. Plan Revision: Make revisions to Construction Waste Management Plan agreed upon during the meeting and incorporate resolutions agreed to be made subsequent to the meeting. Submit revised plan to Architect for approval.
- D. Implementation:
 - 1. Designate an on-site party responsible for instructing workers and implementing Construction Waste Management Plan.
 - 2. Distribute copies of Construction Waste Management Plan to job site foreman and each subcontractor. Include waste management and recycling in worker orientation.
 - 3. Provide on-site instruction on appropriate separation, handling, recycling, and recovery methods to be used by all parties at the appropriate stages of the work at the site.
 - 4. Include waste management and recycling discussion in pre-fabrication meetings with subcontractors and fabricators. Also include discussion of waste management and recycling in regular job meetings and job safety meetings conducted during the course of work at the site.

1.5 STORAGE AND HANDLING

- A. Site Storage: Remove materials for recycling and recovery from the work location to approved containers or storage area as required. Failure to remove waste materials will be considered cause for withholding payment and termination of Contract.
- B. Position containers for recyclable and recoverable waste materials at a designated location on the Project Site. If materials are sorted on site, provide separate collection containers or storage areas for not less than the following materials:
 - 1. Concrete and masonry.
 - 2. Metals.
 - 3. Untreated lumber.
 - 4. Gypsum wallboard scrap.

- 5. Paper and cardboard.
- C. Change-out loaded containers for empty containers, as demand requires.
- D. Handling: Deposit indicated recyclable, and recoverable materials in storage areas or containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.
- E. If the contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycle containers. In such case, request resolution by the Construction Quality Manager for disposal of the contaminated material. Directions from the Construction Quality Manager do not relieve the Contractor of responsibility for compliance with all legal and regulatory requirements for disposal, nor shall such directions cause a request for modification of the Contract.

1.6 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Transport recyclable and recoverable waste materials from the Work Area to containers and carefully deposit in the containers without excess noise and interference with other activities, to minimize noise and dust.
 - 1. Do not place recyclable waste materials on the ground adjacent to a container.
- B. Existing Conditions: Coordinate with "Information to Bidders" and "Supplementary Conditions".

1.7 WASTE MANAGEMENT PLAN

- A. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this project, describe methods for preparing salvaged materials before incorporation into the work.
 - 2. Salvaged Materials for Sale: For Materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on project site where materials separation will be located.
- B. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
 - 1. Total quantity of waste.
 - 2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
 - 3. Total cost of disposal (with no waste management).
 - 4. Revenue from salvaged materials.
 - 5. Revenue from recycled materials.
 - 6. Savings in hauling and tipping fees by donating materials.

7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type Of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 WASTE MANAGEMENT

- A. General: Implement waste management procedures in accordance with approved Construction Waste Management Plan. Maintain procedure throughout the life of this Contract.
- B. Source Separation On- or Off-Site: Either separate, store, protect, and handle at the project site all identified recyclable and recoverable waste products to prevent contamination of materials and maximize recyclability and recoverability of materials. Or mix all identified recyclable and recoverable waste products for separation off-site.
- C. Arrange for the regular collection, transport from the site, and delivery to respective approved recycling centers of indicated recyclable waste materials. Maintain records accessible to the Architect for verification of construction waste materials recycling and recovery.
- D. Delivery Receipts: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent contamination of materials. Keep and maintain records of deliveries to recycling facilities and pickups of waste materials at the site by others as specified above.

3.2 RECYCLABLE WASTE MATERIALS HANDLING

- A. General: The following paragraphs supplement handling requirements for the materials identified for classification and recycling listed in Part 1 "Summary" article above.
- B. Landclearing Debris: Pile wood debris from landclearing in a clean storage area free from large amounts of dirt and other non-wood materials. Chip smaller size tree limbs on site and use as plant mulch. Cut larger tree limbs and trunks into 16 inch lengths and advertise as green firewood if hardwood or softwood suitable for burning. Transport other wood including tree roots to a County waste and recycling center.
- C. Concrete and Masonry: Free of metals, woods and other contaminants. If possible during demolition, crush existing concrete and concrete masonry units on-site into aggregate size. Store crushed material on-site in clean area to avoid contamination from other materials or building processes. Reuse on-site crushed material for fill, for stabilizing soils, or as base and sub base materials. If crushing on site is impractical, store material during demolition processes on site in clean, uncontaminated area. Transport concrete and masonry materials to a certified concrete recycler as needed.
- D. Metals: Cut items to lengths and sizes to fit within the container provided when necessary. Where there is sufficient quantity of a specific recyclable waste item (for example; salvaged metal roofing or duct work), make special arrangements for items to be bundled, banded or tied, and stack in a designated location for a special pick-up. Coordinate special arrangements with the Construction Quality Manager.
- E. Untreated Wood: Salvaged wood materials to be free of metals, concrete, gypsum wallboard, insulation, and other contaminating materials. Stack dimensional wood into like piles. For example, store 2x4s with other 2x4s, and 2x6s with other 2x6s. Also, if quantity is sufficient, separate piles into lengths of 4-foot increments. Reuse lumber on site as studs, backing, blocking or other uses where appropriate. Stack non-dimensional

wood in piles for possible reuse on-site or transport off-site. Depending on size of lumber, recycle or chip wood for plant mulch. If wood materials cannot be used on site, transport to a certified wood recycler or reuse center.

- F. Gypsum Wallboard Scrap: Separate gypsum wallboard from other wastes. Dispose of waste gypsum wallboard off-site at a gypsum reclamation or recycling facility, or on-site as a soil amendment.
- G. For on-site application as a soil amendment, incorporate waste gypsum wallboard in landscape areas under construction, at a rate of 50 pounds per 1000 square feet, or approximately one ton per acre.
 - 1. Material must be unpainted gypsum wallboard from new construction, ground to reduce material to a fine particle size (70% passing a 100 mesh screen), and must be fully incorporated into the soil surface.
- H. Paper and Cardboard: Classify and handle waste paper goods as follows:
 - 1. Bond Paper: General office quality paper used for specifications, correspondence, copiers, PC laser printers, and FAX machines. Collect in separate container at each workstation and deposit loose in appropriate recycle container as required.
 - 2. Newsprint: Newspapers and tabloid style advertising (slick finish magazines and advertising materials are not typically recyclable). Collect in single location and deposit as required in appropriate recycle container.
 - 3. Diazo Prints (drawings): Set up single location for collection. Roll together to minimize space. Deposit as required in appropriate recycle container.
 - 4. Cardboard and paper board cartons and boxes: Knock down, fold flat, and deposit in appropriate recycle container.
- I. Other Items: Where recyclability classification of any given waste material is unclear, verify with the owners designated representative.

END OF SECTION

**SECTION 01 74 23
FINAL CLEANING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Administrative and procedural requirements for final cleaning prior to Substantial Completion.
- B. Final cleaning of project is required for Certificate of Final Acceptance.
- C. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.
 - 1. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
 - 2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 70 00 - Execution and Closeout Procedures: Specific requirements for cleaning.
- C. Individual Specifications Sections: Specific cleaning for product or work.

1.3 DESCRIPTION

- A. Execute all Final Cleaning prior to inspection for Substantial Completion.
- B. Cleaning for Final Acceptance: After Owner acceptance, immediately clean-up area after correction or completion of work.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

- A. Use materials which will not create hazard to health or property, and which will not damage surfaces.
- B. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide substantial and final cleaning operations when advised. Employ experienced workers and professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.
- B. Complete following cleaning operations before requesting inspection for Substantial Completion.
 - 1. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas.
 - 2. Remove spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
 - 3. Remove tools, construction equipment, machinery and surplus material from Project Site.
 - 4. Remove snow and ice to provide safe access to building.
 - 5. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

6. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
 7. Broom clean concrete floors in unoccupied spaces.
 8. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
 9. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 10. Remove labels that are not permanent labels.
 11. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
 12. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.
 13. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 14. Replace all air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.
 15. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
 16. Leave Project thoroughly clean and ready for occupancy.
 17. Hepa vacuum all surfaces including, but not limited to ceiling, floor, walls and any equipment located within the space.
 18. Scrub and seal concrete floor.
 19. For Spaces with installed Telecommunications equipment, utilize the services of cleaning personnel, under the direct Supervision of an individual who is licensed or certified for either the design or installation of Low voltage systems.
- C. Engage an experienced licensed exterminator to make a final inspection, and rid project of rodents, insects, and other pests. Comply with regulations of local authorities having jurisdiction.
- D. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1.1 Summary
 - 1.2 Related Requirements
 - 1.3 Quality Assurance
 - 1.4 Operation and Maintenance Manuals
- B. Format and content of manuals.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 70 00 – Execution and Closeout Procedures: Closeout Procedures, Project Record Documents.
- D. Individual Specifications Sections: Specific Requirements for Operation and Maintenance Data.

1.3 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Upon completion, O & M Manuals and electronic files will be sent to the Engineer for review and approval. Engineer will forward one (1) hard copy approved manuals and electronic files to the Owner.

1.4 OPERATION AND MAINTENANCE MANUALS

Note: Contractor shall submit to the Engineer one hard copy and one electronic copy of the Operation and Maintenance manual. Electronic copies shall be furnished with the entire Operation and Maintenance manual CSI format indexed, with summary index on page one. Submit with one (1) hard copy binders per sections below. Program software shall be Word and/or Adobe Acrobat Reader compatible

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Hard Copy Format:
 - 1. Prepare data in the form of an indexed instructional manual - one copy is required.
 - 2. Binders: Commercial quality, 8-1/2 x 11 inch, three-hole, D-ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings. (Quantity (1) one)
 - 3. Cover: Identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUALS;" identify title of Project, the Owner project number, and identify all subject matter and contents.
 - 4. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
 - 5. Text: Manufacturer's published data, or print data on 20-pound paper.
 - 6. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
 - 7. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, in three parts as follows:

- a. Part 1: Directory, listing names, addresses, and telephone numbers of the Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - b. Part 2: Operation and maintenance instructions, arranged by system and subdivided by CSI Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - 1) Significant design criteria.
 - 2) List of equipment.
 - 3) Parts list for each component.
 - 4) Operating instructions.
 - 5) Maintenance instructions for equipment and systems.
 - 6) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - c. Part 3: Project documents and certificates, including the following:
 - 1) Shop drawings and product data.
 - 2) Air and water balance reports.
 - 3) Certificates.
- C. Manual Contents (each volume) (in general include information in the manual for all equipment and/or material on the project that has replacement parts, PM requirements, etc.)
 1. Table of Contents: Provide title of Project and Owner Contract Number; names, addresses, and telephone numbers of the Engineer, Sub consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
 2. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
 3. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
 4. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
 5. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
 6. Warranties: Bind in copy of each.
- D. Manuals/Sections for General Construction, Materials, and Finishes:
 1. Include information in the manual for all equipment and/or material per CSI section on the project that has replacement parts, PM requirements, etc.
 2. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured Products.
 3. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 4. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
 5. Additional Requirements: As specified in individual Product specification Sections.
 6. Provide a listing in Table of Contents for design data, with tabbed flysheet and space for insertion of data.
- E. Manuals/Sections for Mechanical, Electrical, and other Technical Equipment and Systems:
 1. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
 2. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

3. Include color-coded wiring diagrams as installed.
4. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions.
5. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
6. Provide servicing and lubrication schedule, and list of lubricants required.
7. Include manufacturer's published operation and maintenance instructions.
8. Include sequence of operation by controls manufacturer.
9. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
10. Provide control diagrams by controls manufacturer as installed.
11. Provide Contractor's coordination drawings, with color-coded piping diagrams as installed.
12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
13. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
14. Include test and balancing reports as specified in the Testing, Adjusting, and Balancing Section.
15. Additional Requirements: As specified in individual Product specification Sections.
16. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 02 41 00
DEMOLITION**

PART 1 DESCRIPTION

A. SUMMARY

1. Section Includes demolition and removal of existing system/s and/or work as shown and as required for the new work.
2. Related Sections. See Section 31 23 00 for earth work and fill materials. Also see Section 26 05 00 to coordinate electrical requirements. Coordinate the work.

B. PROJECT/SITE CONDITIONS

1. Asbestos and PCB Hazards. If the Contractor encounters materials to be removed and handled:
 - suspected of containing asbestos or polychlorinated biphenyls (PCB's), and
 - which have not been rendered harmless,the Contractor shall not proceed further but shall consult with the Owner for further directions. The Contractor shall not handle hazardous material as part of this work.
2. Contaminated Soils. When suspected hazardous materials are encountered during tank removal operations, comply with applicable regulations, laws, and ordinances concerning testing, removal, handling, and protection against exposure or environmental pollution. Burning of removed materials is not permitted on project site. Notify the Owner and the Minnesota Duty Officer if contamination is found.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 MATERIALS Not Applicable.

PART 3 CONSTRUCTION REQUIREMENTS

- A. PROTECTION. Protect all work which is indicated to remain, including buildings, pavements, curbs, turf, plantings, etc., on the site and adjacent.

B. DEMOLITION

1. GENERAL. Unless scheduled, indicated or directed otherwise, materials resulting from demolition shall become the Contractor's property. It shall be the Contractor's option to salvage any of the other demolition materials provided that all work and operations are conducted in a lawful manner and the work is not delayed beyond the completion date specified. Removed materials, which are not scheduled, indicated or directed to be salvaged, which have commercial value may be sold; the Contractor shall verify procedures with the Owner prior to conducting such transactions.

The method used for demolition, shall be that deemed most practicable by the Contractor, considering all applicable factors except that explosives shall not be used. The Contractor shall be responsible for determining the exact restrictions imposed by law, codes, ordinances, and similar, and shall do the work so as to comply with these. Also note Minnesota Pollution Control Regulation No. APC 17 and conform to all applicable requirements therein.
2. TANKS AND PIPING. Make all necessary arrangements with utility companies and the Owner and disconnect, plug or cap all utilities as required by applicable regulations or as directed. Drain, clean and remove all underground tanks and piping as shown and as required by applicable regulations, laws, and ordinances. Drain, clean and remove all aboveground fueling cabinets, piping, card readers, etc. as shown and as required. Any captured fuel shall be disposed of or captured and reintroduced to the new commissioned system at the direction of the Owner.

Removal and disposal of the underground storage tanks (USTs) shall be done in accordance with Minn. Rules Chap 7150, 40 CFR 280 Part G, the MN Fire Code Ch. 5704.2.14, and the rules set by the OSHA, MPCA, and the EPA. The Contractor shall also follow the best practices outlined in API RP 1604, NFPA 241, and PEI 1700 for all UST removal activities. The Contractor shall give notice to the MPCA and the local fire marshal. Contractors shall maintain records and documentation required by law for activities connected to the removal of the USTs.

Tanks shall be cleaned and purged before removal. Storage and disposal of liquids and sludge obtained shall comply with the regulations set by the MPCA. Tanks shall be hauled and disposed of in accordance with the regulations set by the MPCA. Do not crush USTs on airport property.

All excavated soils connected with the removal of the USTs shall be stockpiled and stored on plastic sheeting and covered with plastic sheeting until testing for contamination is completed. Soil exhibiting potential contamination shall be stored separately from uncontaminated soil. The Contractor shall accommodate the third party environmental testing company for sample collection of soils in the area where the USTs are removed.

The Contractor shall notify the MPCA when the tanks are removed and complete all forms for the closure of the UST.

Contractor shall submit to the Owner copies of their documentation and their subcontractors for documents created in connection with the removal of the USTs.

The Contractor and/or their subcontractors tasked with the removal of the USTs shall be MPCA certified for removal of UTSs. Certification for UST removal shall be current. The Contractor shall also submit to the Owner and the Engineer the following documentation at the time of their bid:

- Proof of liability insurance coverage, bonding, or liquid company assets
- Project history for three most recent UST jobs
- List of employees that are MPCA-certified to perform/supervise UST projects
- If applicable, a list of companies that will be subcontracted

- C. SHORING. Furnish all labor and material for safely supporting the surrounding area as may be necessary during the execution of the work. The Contractor shall have full responsibility for all shoring.
- D. DEBRIS. All removed work, not otherwise indicated, shall become the Contractor's property, and shall be removed from the sites and disposed of in a lawful manner.
- E. RESTORATION. All disturbed areas, including excavations, soils, concrete, and asphalt shall be restored to a condition that matches the surrounding conditions.

PART 4 METHOD OF MEASUREMENT. The work described in this section will be included in a single lump sum.

PART 5 BASIS OF PAYMENT. Payment for the work described in this section at the contract lump sum price shall be considered compensation in full for providing all labor, material, equipment administrative costs and other incidental items for the complete construction as shown and specified. Payment will be made in accordance with the following schedule.

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
02 41 00-1	Remove Existing Fuel System	Lump Sum

Restoration of bituminous asphalt in removal areas shall not be included in this payment item. The pavement section shall match the detail in the drawings and be paid under the corresponding Section 32 02 00 unit prices.

PART 6 REFERENCES.

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
2. API RP 1604 - Removal and Disposal of Used Underground Petroleum Storage Tanks.
3. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
7. NFPA 241- Safeguarding Construction, Alteration and Demolition Operations.
8. PEI RP 1700 - Tank Closure & Removal
9. Minnesota Administrative Rules Chapter 7150
10. 40 CFR Part 280 Subpart G
11. MN Fire Code - 5704.2.14.1
12. 29 CFR 1926
13. 29 CFR 1910

END OF SECTION

**SECTION 02 41 13
MISCELLANEOUS REMOVALS**

PART 1 GENERAL

- A. Description. This work shall consist of the removal, in part or wholly, and satisfactory disposal of miscellaneous pavements, curbs, gutters, signs, fences, guard rail, underground piping, utility line, minor structures and electrical items other than buildings as shown on the plans and described herein. The work shall include the salvaging of designated materials and the backfilling of the resulting trenches, holes, and depressions.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

- B. Equipment And Material Required For Reinstallation, Revisions, And Alterations. Any equipment and material required in addition to salvaged equipment and material for reinstallation of equipment, for revisions, for alterations, etc., shall be furnished as described in the applicable specification sections contained herein.

PART 2 MATERIALS. Not Applicable.

PART 3 CONSTRUCTION REQUIREMENTS

A. Non-Electrical Removal

1. Removal Operations. Those structures and other facilities that are to be removed shall be as indicated on the plans or as designated by the Engineer. All removal operations that may endanger new construction shall be completed prior to construction of the affected work. All materials that have been designated for salvage shall be removed in a manner that will not result in unwarranted damage.

Where a portion of an existing pavement, structure, or facility is to be retained for use, that portion shall not be damaged during the removal operations. In the event the Contractor damages a structure, pavement, or other existing facility outside of the removal limits designated by the Engineer, the Contractor shall replace such damaged work as directed by the Engineer and at no expense to the Owner.

- a. Concrete Pavement, Curb, Curb and Gutter. In removing concrete pavement, curb, curb and gutter, and other similar structures, the removal shall be to an existing joint, unless otherwise shown on the plans or directed by the Engineer. If the removal is to a point where no joint exists, the structure shall be sawed along the removal lines with a concrete saw to the full depth of the concrete before breaking of the concrete. All necessary fracturing of the concrete pavement prior to removal shall be accomplished with self-propelled hydraulic or air-ram demolition hammers; the design and operation of which will be subject to the approval of the Engineer. The use of "gravity type" pavement breakers will not be permitted without specific approval by the Engineer.

When breaking or removing concrete pavement adjacent to pavement that is to remain, the Contractor shall utilize extra caution so as to prevent damage to the remaining pavement. The presence of steel dowel bars or deformed tie bars may require some hand labor or special equipment to facilitate proper removal of concrete adjacent to existing pavement joints.

Existing tie bars or dowels protruding from the pavement to remain, and which are to be incorporated into the new work as shown on the drawings, shall be cleaned of all bonded concrete and protected from damage during the removal operations. Those tie bars and dowels which are not required in the new work shall be cut off flush with the edge of the existing pavement.

Existing electrical circuits embedded in the pavement, if any, shall be cut clean at the removal line.

- b. Bituminous Pavement. When removing bituminous pavement where the cut will be exposed in the finished work, the pavement shall be sawed along the removal lines to the full depth of the pavement prior to removal operations. The edge of the pavement to remain shall be vertical and on a true line at the time the adjoining pavement is constructed.
 - c. Fuel Lines and Fuel Tanks. Before removing underground fuel lines or fuel tanks, the Contractor shall make certain that all connections are properly closed off and that the tanks or lines are completely purged of all fuel and fumes. It shall also be the Contractor's responsibility to take such other precautionary measures as may be necessary to comply with all governmental regulations regarding such work.
 - d. Fence. In removing all types of fence, the fence fabric or wire shall be neatly coiled and securely tied so as to facilitate handling. Posts shall be pulled from the ground. Removal of concrete from fence posts, if any, will not be required.
 - e. Underground Pipes. All underground piping located beneath proposed pavements or within 4 feet of finished grade elsewhere or as noted on the plans, shall be removed. The ends of pipes which are to remain shall be plugged at points designated on the plans.
 - f. Guard Rail. The plate beam portions of guard rail shall be disassembled and the posts shall be removed from the ground.
 - g. J-Barrier. Existing J-Barrier to be removed and salvaged may be used as traffic control devices as called for on the drawings or as directed by the Engineer. The J-Barrier shall be returned to their original location as indicated on the drawings upon completion of each associated phase of construction.
 - h. Signs. All designated signs shall be removed completely, including sign panel, supports, and all concrete footings. Sign panels and supports shall be disassembled.
 - i. Minor Structures. All minor structures designated on the plan for removal shall be removed entirely, including the footing, unless specifically noted otherwise.
2. Disposal. All materials designated for salvage shall be delivered in an undamaged condition to the Owner's storage yard or stockpiled at locations shown on the drawings or designated by the Engineer. Materials designated for salvage which are in poor condition and cannot, in the opinion of the Engineer, be reused, materials not designated for salvage, and all debris resulting from the removal operations shall be disposed of by the Contractor in accordance with the provisions of Section 01 35 13, Article 1.14, Disposal of Waste Materials.

All concrete pavement, other concrete items, and bituminous pavement removed shall be disposed of off the airport property unless otherwise specified in Section 01 35 20 "Special Provisions". Crushing of the concrete or bituminous at the construction site will not be permitted. Crushing of the concrete or bituminous at the Contractor's site will not be permitted unless specifically allowed by the Special Provisions or approved by the Engineer.

3. Backfilling Depressions. All depressions resulting from the removal operations shall be backfilled and compacted in accordance with the requirements specified hereinafter for embankment, subgrade, or base material, dependent on its location with respect to the new work.

B. Electrical Removal

1. GENERAL. Removal, salvage, abandonment, and disposal of items described in this section, shall be accomplished as hereinafter specified. Backfill, compaction, and restoration of holes left by removals shall be as described in Articles mentioned below. The reinstallation of lighting equipment and associated items described in the Section, shall be accomplished as hereinafter specified, and also as specified for new equipment of like kind which is described in applicable specification sections contained herein.

All equipment removed, salvaged, and to be reinstalled shall be stored in a suitable building under control of the Contractor, until the time it is to be reinstalled. All equipment and material removed, salvaged, and not scheduled to be reinstalled shall be delivered to the Owner, on the site, where directed by the Engineer; where such equipment is designated to be disposed of, it shall be removed from the premises.

Salvage shall consist of removing all dirt and checking the parts in general. Any defective parts shall be called to the attention of the Engineer. The Contractor shall remove the defective part or

parts and replace them with replaceable parts furnished by the Owner when so directed by the Engineer. Special care shall be taken in removing the transformers. Only hand methods of removal will be approved.

The Contractor shall furnish and install new lamps and any additional hardware required, such as screws, bolts, washers, nuts, etc., and they shall be in accordance with FAA approved equipment. The Contractor shall also furnish pre-installation plywood cover required for the base installation.

Items to be disposed of shall be disposed of as described in the Special Project Procedures.

2. REMOVE RUNWAY EDGE AND THRESHOLD LIGHTS. After de-energizing the runway edge light circuit, remove and dispose of the runway edge and threshold lights shown on the plans. The removal of runway edge and threshold lights shall include exposing the series cables and cutting the cable, removing and disposing of the light, base, concrete envelope and conduit stubs, and repairing the ground surface to match the adjacent surface.
 - a. Cable ends, entering manholes, shall be removed.
3. REMOVE TAXIWAY EDGE LIGHTS. When existing taxiway edge lights are removed, their lighting circuits shall be re-established, so that remaining lights are operational by nightfall. Lights within a circuit shall not be removed until the Contractor has developed a plan for restoring the circuit's continuity. See Article 3.14.
 - a. Stake-Mounted Edge Light. Remove and dispose of mounted edge lighting as shown or noted on the plans. The removal shall consist of removing the complete light; that is, fixture assembly, fittings, mounting assembly, stake, and transformer. Cut cables below grade.
 - b. Base-Mounted Edge Light. Remove base mounted fixtures as shown or noted on the plans or as directed by the Engineer.

The removal shall consist of removing complete light; that is, fixture assembly, fittings, mounting assembly, transformer, metal light base, and concrete pad or encasement.

Removal work includes restoring disturbed areas to their original condition.
4. REMOVE HANDHOLE. Remove and dispose of electric handholes and cable or conduit attached to them. After removal, repair the ground surface to match the adjacent surface.
5. REMOVE RUNWAY SURFACE CONDITION SENSOR (RUNWAY SENSOR). Disconnect cable from the remote field units at each sensor's handhole. Refer to the plans for disposition of the cable. Where new sensor is to be installed at an existing location the Kerf area shall be cleaned thoroughly.
 - a. Remove and dispose of sensors, their handholes, and the cable and conduit between them. After removing the handholes and their concrete pads, repair the ground surface to match the adjacent surface.
6. REMOVE ELECTRIC MANHOLES. Make an inventory of circuits passing through each manhole to be removed and make provision for maintaining critical circuits.
 - a. Expose cables, conduits, and duct banks entering manholes to be removed. De-energize live circuits entering the manholes and cut off cables, conduits, and duct banks outside of the manholes.
 - b. Remove cast frames, their covers, and the covers of steel frames. Deliver them to the Owner on the site where directed. Remove and dispose of electric manholes and the duct stubs attached to them. After removal, repair the ground surface to match the adjacent surface.
7. REMOVE DUCT BANKS. Make an inventory of circuits in the duct banks to be removed, and make provisions for maintaining critical circuits.
 - a. Expose duct banks and remove cables from them. Cut duct banks off at their manholes, where manholes are to remain and remove the duct banks. Grout duct holes in the manhole wall so that they are watertight.
 - b. After duct bank removal, repair the ground surface to match the adjacent surface.
8. REMOVE CONDUIT. Removal and disposal of non-encased single cell conduits including attachments to light bases and manholes shall be considered incidental to construction.
9. REMOVE SEMI-FLUSH LIGHTS. The existing semi-flush lights shall be removed including the transformer and turned over to Owner. The existing light bases shall be removed as part of concrete removal and disposed of off-site.

10. REMOVE AND SALVAGE RUNWAY EDGE LIGHTS. Remove and salvage spliced and edge lights where shown on the plans. The edge light circuit where disrupted shall be maintained during construction.
 - a. After temporarily de-energizing the circuit, remove and salvage the runway lights, adaptor plates, light bases, and transformers.
 - b. Remove and dispose of the concrete pad surrounding each base. Remove all remaining concrete from the bases.
11. REMOVE AND SALVAGE WIND CONE. Remove and salvage wind cone where shown on plans. Salvage wind cone, obstruction lights, disconnect, mounting pole, frangible coupling, handhole, and power adaptor. Dispose of concrete foundation, and repair the ground surface to match adjacent surface.
12. REMOVE AND SALVAGE TAXI GUIDANCE SIGNS. After de-energizing the circuits, remove and salvage taxi guidance signs, their transformers, and mounting hardware. Remove and dispose of the concrete pads and transformer bases. The removal of taxi guidance signs and pads shall include exposing the series cables and cutting the cable, removing and disposing concrete pads, and repairing the ground surface to match the adjacent surface.
 - a. The other end of the cables feeding the taxi guidance signs shall also be exposed below grade and cut. Cable ends entering manholes and transformer bases shall be removed. Recircuit the gap in the series circuit as shown on the drawings. The recircuiting may involve installing a new segment of cable or just plugging connectors together.
13. REMOVE AND SALVAGE REIL. Remove and salvage REIL where shown on plans. Salvage flasher head, power supply and mounting hardware. Dispose of underground junction boxes, concrete pad and concrete foundation, repair the ground surface to match adjacent surface.
14. EXISTING CABLE
 - a. Underground Cables. Underground cables serving equipment to be removed, shall be rerouted, reconnected, or removed, and if in trenches and no longer required for operation, and are within the limits of construction they shall be removed, and if in duct or conduit and no longer required for operation, they shall be removed, neatly coiled and delivered to the Owner.
 - b. Removal and Disposal of Existing Cables. Cables to be removed shall become the Contractor's property to be disposed of off-site.
15. MAINTENANCE OF CRITICAL CIRCUITS. Lighting circuits necessary for the operation of the runways and their associated taxiways shall be maintained during reconstruction. Any interruption or "outage" time required, for the purpose of making revisions or connections, shall be done at the convenience of the Owner and the time of doing the work shall be arranged beforehand with him. Install and maintain such temporary wiring as may be necessary to maintain the existing circuits, using the present facilities when available and remove such temporary wiring after it has served its purpose. The Contractor shall cooperate with the Owner in the maintenance of these circuits.
 - a. Provide protection of temporary wiring from vehicles by direct burial, barriers, ramps, etc., as required. Sandbag exposed temporary wiring against jet blast. Provide signs above temporary wiring, warning personnel of danger.

PART 4 METHOD OF MEASUREMENT

No measurement will be made of any removals that are not required nor of any removals that are specifically designated as being covered by other contract items.

A. Non-Electrical

1. Concrete Pavement. The removal of Portland cement concrete pavements will be measured by area in square yards, to the nearest square yard, regardless of thickness.
2. Bituminous Pavements. If the proposal includes an item for bituminous pavement removal, measurement will be by area in square yards regardless of thickness. Otherwise, the removal of bituminous or asphaltic concrete pavements will not be measured for separate payment, but will be included in the common excavation quantity.
3. Combination Pavements. When the pavement is comprised of a combination of different paving materials such as a bituminous or asphaltic concrete surface on a Portland cement concrete

base, the entire structure will be considered as "pavement" and removal will be measured by area in square yards regardless of the thickness.

4. Curb or Curb and Gutter. The removal of concrete curb or curb and gutter will be measured by length in feet along the top of the curb regardless of the type encountered. Separate measurements for curb and curb and gutter will be made only if separate items are included in the proposal.
5. Fence. The removal of fence, including gates, will be measured by length in feet along the bottom of the fence. The existing fence line fabric and posts shall be salvaged for reinstallation. Payment at the appropriate contract unit price shall be compensation in full for removing, salvaging and storing the fence, line posts, and components.
6. Guard Rail. The removal of guard rail will be measured by length in feet along the top of the rail from center-to-center of end posts removed.
7. J-Barrier. The removal and salvage of existing J-Barrier shall be measured by the number of units moved and include the removal, salvage, and reinstallation of each J-Barrier.
8. Minor Structures. The removal of minor structures will be measured separately as shown in the proposal by length, area, volume, or number of units of each type of structure removed, including all appurtenances not otherwise designated to remain.
9. Manholes. The removal of storm or sanitary sewer manholes shall be measured by length in feet from the top of the casting to the lowest invert or to the limits shown on the drawings. The removal of watermain manholes shall include the removal of the manhole, valve, and all piping inside the manhole.
10. Underground Piping. The removal of underground pipes of each type included in the proposal will be measured by length in feet. The removal of pipes not listed in the proposal and all necessary plugging of pipes or manholes to remain shall be considered as incidental to the cost of other contract items.
11. Backfilling Depressions. Backfill material for depressions resulting from the removal operations shall not be measured for payment, but shall be considered incidental to removal operations.

B. Electrical

The quantity of units to be paid for shall be the counted number of each of the electrical items removed and verified by the Engineer. Each unit specified to be disposed of shall be measured complete when it has been removed, taken off site and properly disposed of, disturbed areas restored, and where necessary, its circuit properly restored.

The complete removal and salvage of field circuit cables, the removal and disposal of underground conduits, the revisions, reconnections, and rerouting of altered field circuits, all testing and any other miscellaneous items, all as specified and/or shown on the plans shall not be counted or measured for direct payment, but shall be considered incidental work, included in the above counted or measured unit items.

PART 5 BASIS OF PAYMENT

Payment for the accepted quantities of removal items at the appropriate contract prices per unit of measure shall be compensation in full for all costs of removing the materials or designated portions thereof, for disposing of the materials removed and the salvaging of any parts as specified, and for the performance of all other work specified herein or that may be necessary to comply with applicable laws, ordinances, and regulations. Sawing of concrete or bituminous pavement shall be incidental unless a bid item for sawing is provided in the proposal.

Payment for miscellaneous removals will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
02 41 13-	Remove (Item)	Lin. Ft.
02 41 13-	Remove (Item)	Sq. Ft.
02 41 13-	Remove (Item)	Sq. Yd.

02 41 13-	Remove (Item)	Cu. Yd.
02 41 13-	Remove (Item)	Each
02 41 13-	Remove (Item)	Lump Sum
02 41 13-	Remove and Salvage (Item)	Lin. Ft.
02 41 13-	Remove and Salvage (Item)	Sq. Ft.
02 41 13-	Remove and Salvage (Item)	Sq. Yd.
02 41 13-	Remove and Salvage (Item)	Cu. Yd.
02 41 13-	Remove and Salvage (Item)	Each
02 41 13-	Remove and Salvage (Item)	Lump Sum

SPECIAL PROVISIONS

02 41 13-4 Miscellaneous Removals. Portions of this project may contain buried debris or remnants of earlier site developments. If the above or similar items are encountered, they shall be removed to the limits designated by the Engineer and disposed of off airport property. To the extent that these items are not covered by other bid items or incidentals, they shall be measured for payment as extra work.

Payment to the Contractor for Bid item No. 02 41 13.1-4 Miscellaneous Removals, shall be on an "actual cost of work" basis in accordance with the provisions of Document 00 72 00, Article 6. For convenience and comparison of bids, the unit price and extended dollar amount for these modifications have been included in the proposal.

END OF SECTION

**SECTION 03 11 00
CONCRETE FORMING**

PART 1 - GENERAL

The General Conditions, Supplementary General Conditions, And Special Conditions apply to each and every section of the specifications. Refer also to other related sections of the specifications.

PART 2 - SCOPE

Under this heading shall be included the furnishing and installation of concrete and cement work including all labor, materials, and incidentals.

PART 3 - FORMWORK

Formwork shall be suitable and adequate for the purpose and shall be as specified.

PART 4 - REINFORCING STEEL

Reinforcing Steel shall be as specified.

PART 5 – PLACING CONCRETE

No concrete which has commenced to set and no retempered concrete shall be used. Coordinate this work with the electrical work. Work to be embedded shall be securely fastened in place.

Spaces to be filled with concrete shall be cleaned free of debris and foreign materials. Forms shall be treated with suitable release agent or dampened. Subgrades shall be dampened or shall have 6 mil poly film to retain the moisture in the mix and also to function as a vapor barrier. Construction joints shall be cleaned, dampened, and slushed with neat cement grout.

Concrete shall be placed as soon as practicable after mixing. It shall be deposited in such manner as to cause no separation or segregation of the ingredients. Concrete shall not be dropped any considerable distance (not over four feet) through space. It shall not be deposited in large quantities at once place and permitted to run or be worked any considerable distance, but shall be deposited in its final position as nearly as practicable. Concrete shall be rammed, spaced and agitated by suitable tools so as to produce a thoroughly compacted concrete of maximum density; and so that the concrete will present a smooth, finished, unbroken mortar surface without exposed stone when the forms are removed.

PART 6 - FINISH

Formed surfaces shall have tie holes and defects patched. Chip off any fins exceeding 1/4" in height. Concrete surfaces which indicate that forms have bulged 1/2" or more shall be cut back and repaired to the approval of the Engineer. Tops of grade beams and footings shall be troweled smooth.

END OF SECTION

**SECTION 03 21 00
REINFORCING STEEL**

PART 1 - GENERAL

The General Conditions, Supplementary General Conditions, and Special Conditions apply to each and every section of the specifications. Refer also to other related sections of the specifications.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 - SCOPE

Under this heading shall be included the furnishing and placing of all reinforcement for concrete construction and accessories for reinforcement.

PART 3 - SHOP DRAWINGS

Shop drawings and setting diagrams shall be submitted for approval as per Supplementary General Conditions. Shop drawings shall show lengths, complete bending details, and locations of all bars. Approval shall be obtained before proceeding with the work.

PART 4 - REINFORCING STEEL

Reinforcing Steel, except as otherwise specified, shall be deformed bars rolled from new billet stock, and shall conform to the requirements of the "Standard Specifications for Deformed Billet-Steel Bars for Concrete Reinforcement", ASTM A615, Grade 60. Sizes, details, and locations of bars shall be as shown on the drawings and as may be specified herein.

Epoxy coated reinforcing steel bars shall be same grade as non-coated reinforcing. Coating shall be an epoxy powder coating in strict conformance with either ASTM A775 or A934.

Reinforcing steel shall be clean and shall be free from paint, oil, grease, mortar, dirt, mill scale, rust, etc. A thin film of rust may be permitted at the discretion of the Engineer.

PART 5 - MARKING

All bars shall be tagged and marked as to location to facilitate placing of the steel in the field. Tags and markings shall be weather resistant.

PART 6 - BENDING

All bars shall be bent cold to the dimensions required before placing. Bars containing kinks or short bends shall not be used.

PART 7 - PLACING

All reinforcement shall be accurately placed to the dimensions shown on the drawings and shall be secured in place by bar supports, spacers, chairs, wiring, and nails. Bars shall be located so as to have the thicknesses of concrete covering shown on the drawings and if not shown, coverage shall be not less than 3" for footings, 2" for piers and foundation walls, and 1" elsewhere.

Exposed reinforcing steel shall be sufficient cause for the rejection of all concrete in which the exposed bar occurs. Bars shall be secured to supports and spacers and shall be wired to cross bars as may be required to keep bars in proper positions. Use epoxy coated steel wire ties to fasten epoxy coated steel reinforcement. In all cases, bars shall be free from dry or partially set mortar and other foreign matter.

Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963.

The placing of concrete in any section before the steel for the entire section has been placed is prohibited. Where there is delay in placing concrete, a neat square joint shall be made and the reinforcing

steel shall be cleaned of cement and other foreign material before proceeding.

PART 8 - LAP FOR BARS

Lap for bars shall be as shown on the drawings.

END OF SECTION

**SECTION 03 30 00
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

- A. Related Documents. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Summary.
1. Section Includes furnishing and installing cast-in-place concrete and cement work including all labor, materials, and incidentals. Work includes removal of all formwork release agents and application of floor sealants where required, unless specified to be performed by the finishing contractor.
 2. Related Sections.
 - a. Concrete Forming: Section 03 11 00
 - b. Reinforcing Steel: Section 03 21 00
- C. References. The current editions of the following publications shall govern all work performed hereunder, unless otherwise specified. No provision of any referenced standard or specification shall be effective to change the duties or responsibilities of the Parties as specifically defined by the Contract Documents.
1. American Society for Testing and Materials (ASTM)
 - a. A820/A820M Standard Specification for Steel Fibers for Fiber-Reinforced Concrete
 - b. C33/C33M Standard Specification for Concrete Aggregates
 - c. C94/C94M Standard Specification for Ready-Mixed Concrete
 - d. C150/C150M Standard Specification for Portland Cement
 - e. C494/494M Standard Specification for Chemical Admixtures for Concrete
 - f. C595/C595M Standard Specification for Blended Hydraulic Cements
 - g. C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - h. C1077 Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
 2. American Concrete Institute (ACI)
 - a. ACI 318 Building Code Requirements for Structural Concrete
- D. Submittals.
1. Statistical History. Submit field or laboratory test records used to document that proposed mixture will achieve the required average compressive strength and other specified requirements in Article 2.02 for each class of concrete. Field test records must be from concrete supplied from the same production facilities proposed for the work. Test data shall be from concrete mixtures containing similar materials proposed for the work.
 2. Mix Designs. Submit properties of mix design for each class of concrete including:
 - a. Specified compressive strength, f'_c
 - b. Documentation of strength test results of similar concrete mixtures indicating the standard deviation in accordance with ACI 318.
 - c. Required average compressive strength, f'_{cr}
 - d. Average compressive strength of proposed mixtures
 - e. Placement method
 - f. Slump or slump flow
 - g. Air content
 - h. Density
 - i. Water/Cement ratio
 - j. Maximum aggregate size
 - k. Sources and designations of ingredient materials proposed for use, including:
 - 1) Cementitious Materials
 - 2) Aggregates, including combined aggregate gradation per 2.01B
 - 3) Admixtures

- 4) Water
- 5) Fibers, color pigments and other additions
- 3. Certifications
 - a. Each applicable supplier shall provide a signed certification that delivered materials conform to the applicable ASTM Specification/s.
 - b. Submit documentation indicating installer, manufacturer and testing agency meet the qualifications in Article 1.06.

E. Project/Site Conditions.

- 1. Cold Weather. When daily low temperatures are below freezing and/or when it is likely that temperatures will be below freezing within seven days of the concrete placement, provide protection, heat, and/or heated materials so as to maintain the concrete at 45 degrees Fahrenheit to 65 degrees Fahrenheit for the complete seven-day curing period. Provide sufficient thermometers, controls, and supervision to assure that these requirements are being met. Maintain the protection so that concrete does not cool at more than 20 degrees Fahrenheit per 24 hours. Heating devices used shall not blow or radiate intense heat directly at concrete or formwork. Heating devices used shall not discharge products of combustion into enclosures. Maintain the required curing as specified elsewhere in this Section.
- 2. Hot Weather. When weather conditions are such that excessive drying and/or premature set is liable to occur, provide wind screens, shading, and/or cooled materials so as to prevent these and to provide good finishing conditions, as applicable. If crushed ice is used, it must be 100% melted before discharge of the materials from the mixer.
- 3. Hot Weather Conditions
 - a. Hot weather concreting shall comply with the previously cited ACI 305 Standard. In order to achieve the concreting results herein specified, the Contractor shall plan in advance as to the methods or procedures necessary to give total protection and workability of concrete during hot weather construction. Such methods or procedures shall have the approval of the Owner.
 - b. During mixing and placing, concrete temperature shall be maintained at less than 85 degrees F to reduce the concrete temperatures. Ice may be used in the mixing water in quantities up to 50 percent of the specified water provided that all the ice be melted when mixing is complete.
 - c. Transport trucks shall be dispatched to avoid delays and the Work shall be organized to use the concrete promptly to prevent unnecessary additional mixing at Worksite.
 - d. When necessary, arrangements for installation of windbreaks, shading, spraying, sprinkling or wet covering of a light color shall be made in advance of placement, and such protective measures shall be taken as quickly as concrete hardening and finishing operations will allow.
- 4. Cold Weather Conditions
 - a. Cold weather concreting shall comply with the previously cited ACI 306 standard, whenever temperatures are at 40 degrees F or below. Methods and procedures to protect concrete from freezing and to maintain temperatures above the designated minimum for the time required shall be made well in advance by the Contractor. Such methods and procedures shall have the approval of the Owner.
 - b. Concrete when placed in weather less than 40 degrees F shall have an internal temperature of not less than 50 degrees F and not more than 80 degrees F.
 - c. Concrete Work, which has been damaged by freezing, will be rejected and shall be immediately removed and be replaced by the Contractor at their expense.
 - d. To avoid the possibility of flash set when either aggregate or water is heated to a temperature in excess of 100 degrees F, water and aggregate should be mixed prior to the additional of the cement.
 - e. To prevent thermal shock at the end of the curing period or at the time of form removal, the concrete shall be protected so the temperature drop is gradual and shall not exceed 40 degrees F in 24 hours.
 - f. All equipment, enclosure, protection, heating and method of carrying on the Work shall be subject to the Owner's approval, but the responsibility for the Work and its protection shall be the Contractor's.

F. Quality Assurance.

1. Installer Qualifications. Installer shall employ an on-site supervisor of the finishing crew who is qualified as an ACI Certified Concrete Flatwork Technician for flatwork placing and finishing.
2. Testing Agency Qualifications. Independent testing agency shall meet the requirements of ASTM C1077.
 - a. Personnel conducting field tests for acceptance shall be certified as ACI Concrete Field Testing Technician Grade I
 - b. Personnel conducting laboratory tests for acceptance shall be certified as ACI Concrete Strength Testing Technician or ACI Concrete Laboratory Testing Technician – Grade I
 - c. Test results for the purpose of acceptance shall be certified by a Professional Engineer licensed in the state of the Project and employed by the Testing Agency.
3. Pre-Installation Conference. Conduct conference at Project site to comply with requirements in Division 01 Section “Project Management and Coordination.”
 - a. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including:
 - 1) Architect
 - 2) Structural Engineer
 - 3) Contractor
 - 4) Installer (Concrete Contractor)
 - 5) Pumping Contractor
 - 6) Manufacturer (Ready-Mix Producer)
 - 7) Independent Testing Agency

PART 2 - PRODUCTS

A. Materials.

1. Cementitious Materials. Use materials meeting the following requirements:
 - a. Portland Cement. ASTM C150 and/or ASTM C595
 - b. Fly Ash. ASTM C618
2. Normal Weight Aggregate. ASTM C33.
 - a. Combined aggregate gradation shall be optimized to be well graded so that each standard sieve size within the gradation range (except the first and last size in the range) retains between 8% and 18% of the total mass of aggregate.
 - b. Coarse aggregate shall be crushed such that a minimum of 70% of the particles have at least two fractured faces per ASTM D5821.
3. Water. ASTM C1602
4. Chemical Admixtures
 - a. Air Entraining. ASTM C260
 - b. Water Reducing, accelerating and retarding. ASTM C494.
 - c. Admixtures for flowing concrete. ASTM C1017
 - d. Admixtures with no standard designation shall be used only with the permission of the Structural Engineer when its use for specific properties is required.
 - e. Chloride based admixtures are prohibited from use in concrete that is in contact with permanent steel forms, concrete containing embedded aluminum, or concrete that is visually exposed.
5. Curing and Sealing Compound, where permitted, shall be non-dissipating and conform to ASTM C1315, Type I, Class A (non-yellowing).
 - a. If curing compound is to be used on surfaces to receive further finish that is applied by adhesive, the Contractor shall determine suitability and shall obtain written confirmation from the adhesive manufacturer that the proposed curing compound will not interfere with the adhesive bond.
 - b. Furnish the manufacturer's usage instructions with the curing compound.
 - c. Acceptable Products:
 - 1) MasterKure CC 250 SB as made by BASF
 - 2) Diamond Clear by Euclid Chemical Co., Cleveland, OH
 - 3) 'Dress & Seal by L & M Construction Chemicals, Omaha, NE
 - 4) Or pre-approved equal

B. Concrete Mixtures

1. Prepare Design Mixtures for each class of concrete on the basis of laboratory trial mixtures or field test data, or both according to ACI 318, Chapter 5. Design mixtures shall meet all requirements listed in Table 2.02.
2. The Installer and Manufacturer shall coordinate to establish properties of the fresh concrete to facilitate placement and finishing with minimal segregation and bleeding. Factors shall include but are not limited to slump or slump flow, set time, method of placement, rate of placement, hot and cold weather placement, curing, and concrete temperature.

Table 2.02 – Concrete Mixtures

Mix	Application	Exposure Classes for Freeze/Thaw & Corrosion	Min f'_c (psi)	Nominal Maximum Aggregate Size ¹	Air Content % ^{2,3}	Maximum water/ cm Ratio ⁴	Max Water-Soluble Chloride Ion Content ⁵	Cementitious Materials	Admixture, Fiber, & Other Requirements ⁷
1	Exterior Footings	F1 – moderate C1 - moderate	4500 psi	1-1/2 inch	6%	0.45	0.3	Fly Ash up to 20%	None

Concrete Mixture Footnotes

1. A smaller nominal maximum aggregate size may not be used without the approval of the engineer.
2. If no air entrainment is required, Contractor, installer and manufacturer may choose to include air entrainment to improve placement and finishing characteristics. Air content of concrete for slabs with hard trowel finish shall not exceed 3%.
3. Air content indicated in the table is for concrete with matching nominal maximum aggregate size indicated. If smaller maximum aggregate size is selected, air content shall be adjusted upwards in accordance with ACI 318 Table 4.4.1.
4. Maximum water/cm is the maximum ratio of water to cementitious materials as measured by weight.
5. Water-soluble chloride content, measured as percent by weight of cement, which is contributed from the ingredients including water, aggregates, cementitious materials, and admixtures shall be determined on the concrete mixture by ASTM C1218 at age between 28 and 42 days.
6. See Article 2.01D for restrictions on use of chloride based admixtures.

PART 3 - EXECUTION

A. Field Quality Assurance.

1. Testing. Owner shall engage a qualified testing agency to perform concrete fieldtests and prepare test reports.
2. Concrete Field Tests
 - a. Concrete Test Samples. Samples for concrete tests shall be taken in accordance with ASTM C172.
 - b. Compressive Strength Tests on concrete:
 - 1) Samples for concrete compressive strength tests of each class of concrete placed each day shall be taken not less than once per day, nor less than once for the first 25 cubic yards of concrete placed on each 8 hour shift and every 75 cubic yards of concrete thereafter, nor less than once for each 4000 square foot surface area for slabs and walls. If the total volume of concrete for a class is such that the frequency of testing required is less than five tests, then samples shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.
 - 2) Acceptance of concrete shall be based on strength test results of cylinders which have been molded and standard-cured in accordance with ASTM C31 and tested at 28 days in accordance with ASTM C39. Strength test results are the average of two specimens.

- 3) When strength cylinders are made, tests of air content, temperature and density shall be made and recorded with the strength results.
 - 4) Strength of each concrete class shall be deemed satisfactory when both of the following criteria are met:
 - (a) Every average of any three consecutive compressive strength tests equals or exceeds the specified compressive strength.
 - (b) Any individual compressive strength test result does not fall below the specified compressive strength by more than 500 psi, or by more than 10 percent of the specified strength when the specified strength is greater than 5000 psi.
 - 5) If required by the building official, additional cylinders shall be molded from the same samples as the lab-cured cylinders and field-cured in accordance with ASTM C31. Protection and curing procedures must be improved if the strength of field-cured cylinders is less than 85% of the lab-cured cylinders.
 - 6) When compressive strength tests indicate low strength, follow procedure in ACI 318 chapter 5.6.5 Investigation of low-strength test results.
 - 7) In situations where the Contractor needs to verify strength of concrete prior to removal of shoring or formwork, additional cylinders shall be cast and identified as field cured cylinders to monitor early age strength of the concrete. The strength results of field cured cylinders are not recognized for determining the acceptability of the concrete furnished for the work. Contractor is responsible for coordinating field cured cylinders, and as such these cylinders may be cast by Contractor's personnel provided they are certified as an ACI Concrete Field Testing Technician Grade I.
 - c. Air Content. Testing for air content shall be done according ASTM C231 each time a set of cylinders is cast for strength testing.
 - 1) Air content of air-entrained concrete when sampled from the transportation unit at the point of discharge shall be within a tolerance of plus or minus 1.5% of the specified value.
 - 2) One jobsite adjustment of air entrainment is permitted under the provisions of ASTM C94 if air content is below the specified value.
 - 3) In cases where the placement method can cause significant differences in fresh concrete characteristics from the point of discharge to the point of placement (i.e. pumping) the requirements for the concrete at the point of discharge from the transportation unit should be established between the manufacturer and the installer. Notify the Engineer of any changes in concrete requirements in these cases.
 - d. Temperature. Testing for concrete temperature shall be done according to ASTM C1064 each time a set of cylinders is cast for strength testing.
 - e. Density. Testing for density shall be done according to ASTM C138 each time a set of cylinders is cast for strength testing.
 - f. Chloride. Testing for chloride content shall be done according to ASTM C1218 at age between 28 and 42 days for each set of cylinders cast.
 - g. Test results shall be reported to the Architect, Structural Engineer, Concrete Producer and Installer within 48 hours of testing.
- B. Preparatory Work. Spaces to be filled with concrete shall be clean and free of debris and foreign materials. Forms shall be treated with a suitable release agent. Subgrades shall be dampened to retain the moisture in the mix. Construction joints shall be cleaned, dampened, and slushed with neat cement grout. Provide expansion joint material as shown.
1. Coordinate this work with the mechanical and electrical work. Work to be embedded shall be securely fastened in place.
- C. Construction, Expansion, and Isolation Joints. Provide joints where indicated on the Drawings. Provide additional construction joints as required based on manpower and scheduling requirements. Slab locations indicated as contraction joints may be installed as construction joints at the contractor's option.
1. Check drawings for locations where construction joints are not permitted. Unless specifically shown on the drawings, do not provide control joints in floor slabs that are required to receive resilient flooring and/or carpet.

If not otherwise noted, joints in structural members shall be at or near mid-span.

Take special care to maintain uniform elevation on both sides of floor construction joints; correct by grinding if necessary.

- D. Placing Concrete. Measure, batch, deliver, and provide delivery ticket for each batch of concrete in accordance with ASTM C94.

1. Place concrete only during suitable weather conditions or with suitable protection. Concrete shall not be placed on frozen soil.

Concrete shall be placed as soon as practicable after mixing. No concrete which has commenced to set and no retempered concrete shall be used.

Concrete shall be deposited in such manner as to cause no separation or segregation of the ingredients. Concrete shall not be dropped any considerable distance (not over 4 feet) through space. It shall not be deposited in large quantities at one place and permitted to run or be worked any considerable distance, but shall be deposited in its final position as nearly as practicable.

Concrete shall be rammed, spaded, and agitated by suitable tools so as to produce a thoroughly compacted concrete of maximum density; and so that the concrete will present a smooth, finished, unbroken mortar surface without exposed stone or honeycombing when the forms are removed. Use power vibrators wherever applicable and provide a spare vibrator at the site when starting each concrete placement operation.

- E. Finishes.

1. Troweled Concrete shall be screeded, floated, and troweled. The finished surface shall be free from trowel marks and uniform in texture and appearance. Provide a troweled finish on all interior slabs unless otherwise noted.
 - a. Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, note more than 1/8 inch over any 10-foot floor dimension, including areas over beams. All floors shall be measured immediately after placing of concrete and after concrete cures. Surfaces not complying shall be diamond ground to meet these strict tolerances
2. Broom Finish shall be applied to all exterior surfaces. Final finishing shall be with broomed to produce non-slip surfaces. Direction of final floating or brooming shall be at right angles to the pedestrian traffic unless otherwise directed. Provide broom finish on all exterior surfaces.
3. Formed Surfaces, General. Remove all formwork release agents, ready for final finishing by other Sections.
4. Formed Surfaces that will be concealed in the final work shall have tie holes and defects patched. Chip off any fins exceeding 1/4 inch in height. Concrete surfaces which indicate that forms have bulged 1/2 inch or more shall be cut back and repaired to the approval of the Architect/Engineer.

- F. Contraction Joints. Provide contraction joints as shown or as approved. The joints shall form rectangles with a length to width ratio of no more than 1.5. Sawing joints shall be properly timed so that shrinkage cracking has not yet occurred, but the concrete has set sufficiently so that the sawing cuts a straight, clean groove.

- G. Curing. Curing operations shall commence as soon as it is practical without damaging the concrete surface. Curing shall not stain the concrete. Use one of the following methods for curing. The method used shall be appropriate to each situation. Curing methods and maintenance thereof shall be subject to the Architect/Engineer's approval.

1. Water Curing. Water shall either flow continuously over concrete, be ponded, or be applied with a fog or mist. In areas with a vapor barrier below a granular base, only misting is acceptable. Newly placed concrete shall be kept damp on all surfaces for a minimum of seven full days following the completion of each concrete placement, except as allowed for sealer application.
2. Curing Compound. Apply according to manufacturer's instructions. Apply the number of coats required by the manufacturer for dustproofing and sealing.
 - a. Curing compound shall not be used on surfaces to receive additional concrete and/or cement mortar applied finishes, or areas to receive paint or a concrete sealer; these areas shall be water cured.

- b. Conform to requirements specified elsewhere in this Section under “MATERIALS, Curing & Sealing Compound,” if using curing compound on surfaces to receive adhesive applied finishes, and/or similar.
- H. Joint Sealing. Seal over expansion joint filler, as shown. Seal sawed or formed contraction joints. Use hot-applied and/or epoxy sealer where shown and/or specified, otherwise use elastomeric type.
 - 1. Use epoxy filler in joints in floors where resilient flooring will be installed, if any. At expansion joints cut back the joint filler so that the sealer will be approximately square in cross section. At control joints, except for epoxy filler, insert back-up to a depth approximately equal to the width of the joint. Use back-up material suitable for the sealer (hot or cold) to be used. Do not use back-up in joints to receive epoxy filler.

Fill the joints with sealer; hold the hot-applied sealer slightly below the concrete surface. Elastomeric and epoxy sealers shall be flush with the surrounding surface; tool smooth. Avoid misplacement of any sealer, and clean off any misplaced sealer.
- I. Protection of Concrete. Freshly placed concrete shall be protected from damage from other construction activities such as soil compacting and pile driving. Soil within 100 feet of freshly poured concrete shall not be compacted until after the concrete has been cured a minimum of 48 hours. Do not drive piles within 100 feet of concrete that has been placed within 48 hours.

PART 4 – METHOD OF MEASUREMENT

- A. The work described in this section will be included in a single lump sum.

PART 5 – BASIS OF PAYMENT

- A. Payment for the work described in this section at the contract lump sum price shall be considered compensation in full for providing all labor, material, equipment administrative costs and other incidental items for the complete construction as shown and specified including excavation, subgrade, and concrete. Payment will be made in accordance with the following schedule.

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
03 30 00-1	Concrete Foundation – Fuel Tanks	Lump Sum

END OF SECTION

SECTION 10 14 53
TRAFFIC SIGNAGE

PART 1 **DESCRIPTION.** Work to be included under this section of specifications consists of fabrication and installation of new signs and the modification of existing signs and supports, all as described hereinafter and as shown on the drawings.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 **MATERIALS.** All materials required for this work shall conform to the requirements of MnDOT Standard Specifications for Highway Construction 2564 except as noted on the plans or described hereinafter.

- A. Signs. All signs shall consist of reflective sheeting bonded to aluminum sign panels.
 - 1. Sign Faces and Legends. Sign face material for all sign panels shall be reflective sheeting conforming to the requirements of MnDOT 2564.2F3.
Sign legend material shall conform to the requirements of MnDOT 2564.2F4.
 - 2. Sign Panels. Panels shall be either sheet aluminum or extruded aluminum meeting the requirements of MnDOT 3352.2A1 and as specified hereinafter or noted on the drawings.
- B. Flanged Channel Sign Posts shall have a nominal weight of 3.0 lbs./ft. before punching and exclusive of galvanizing, anchor plates or other attachments. All posts shall be galvanized and otherwise conform to the requirements of MnDOT 3401.
- C. H-Beam Posts. Steel for H-beam supports and base plates shall meet the requirements of ASTM A 36. The minimum section for H-beam supports is W4x13 unless noted otherwise on drawings. Weld base plate to H-beam and galvanize after welding.
- D. Overhead Standards. Supports for overhead signs shall be standard design of manufacturer, experienced in fabricating similar supports. Supports shall be designed and constructed to safely support dead loads of signs, plus wind load. Wind loading shall be in accordance with UBC latest edition for a basic wind speed of 80 mph. Submit design calculations for approval before fabrication. Supports shall be fabricated from "Corten" or other approved weathering steel. Support supplier shall furnish all required anchor bolts.
- E. Concrete. Concrete shall conform to the requirements of ASTM C 94. It shall contain between 4% and 6% entrained air and have a minimum compressive strength of 4000 psi at 28 days. The maximum water to cement ratio shall not exceed 0.45. Cement shall be Type 1 meeting ASTM C 150. The coarse aggregate shall meet CA-60 gradation as defined in MnDOT Specification 3137, Table 3137-2. Slump shall not exceed 4 inches. Accelerators shall not be used unless specifically permitted by the Engineer.
- F. Steel. Reinforcing bars shall be deformed bars conforming to the requirements of ASTM A 615, Grade 60. Anchor bolts for attaching sign supports to concrete footing shall meet ASTM A 307 (min.), upper 8-inch galvanized after fabrication.

All metal reinforcement shall be clean and free from paint, oil, grease, mortar, dirt, mill scale, etc. A thin film of rust may be permitted at the discretion of the Engineer. Anchor bolts used to anchor signs to sidewalk pavement shall be dual wedge type such as Super Kwik-Bolts, manufactured by McCulloch Industries, Inc., or approved equal.
- G. Mounting Hardware. Bolts, nuts, clips, rivets, and washers for assembling new signs and mounting signs on sign posts shall be stainless steel. Provide nylon washers under fastener heads to protect the surface of the reflective sheeting.
- H. Inspection and Testing. The Contractor shall furnish a certified statement from the manufacturer that materials and fabrication comply with the above specifications. Also, all

materials shall be subject to inspection at the time of delivery and only those materials approved by the Engineer shall be installed.

PART 3 **CONSTRUCTION REQUIREMENTS.** Signs shall be flat, with shape, colors, legend, fabrication, and installation conforming to the requirements of the Minnesota Manual on Uniform Traffic Control Devices and of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. All signs and posts shall be fabricated of new material unless noted otherwise.

- A. Restrictions. Refer to the provisions of Section 01 35 13, Article 1.5 Traffic Provisions and Airport Security of the Project Manual.

The Contractor shall perform no work on the job site until all underground utilities are located in accordance with Section 01 35 13, Article 1.15 of the Project Manual. Any damage to existing utilities caused by the Contractor's operations shall be repaired by the Contractor in accordance with Article 1.15. Damaged electrical or communications cable will generally be required to be replaced between handholes rather than be spliced underground.

All existing directional signs shall remain in place until their respective replacement signs are available, on site, ready for installation. If the legend on an existing sign is pertinent to traffic and the sign is to be replaced with a new sign whose legend is similar, down time for the sign shall not extend beyond the eight hour period from 8:00 A.M. to 4:00 P.M., unless a suitable replacement sign is provided by the Contractor at its own expense. Existing regulatory signs scheduled for replacement shall not be removed until the companion replacement sign has been installed.

If, in the opinion of the Engineer, the message on a sign panel is not pertinent to existing traffic, the Contractor shall delay installation of that panel until such time as the message does become pertinent or, in lieu thereof, the panels(s) in question may be installed blank with the non-pertinent portions of the demountable legend left off. Said uninstalled panels or portions of legend shall be stored in accordance with the provisions of Section 02209.3D4 found hereinafter. Should it be necessary for panels and/or demountable legend to remain uninstalled beyond the final acceptance date, the Engineer may permit the Contractor to turn over certain panels and/or legends, prepunched and ready for installation, to the Owner. The Owner will then assume the responsibility for maintaining and installing said panels and/or legends after acceptance of the work. Otherwise, the Contractor shall store, maintain, and ultimately install all sign panels, legends, and borders as specified, at the Contractor's expense, with no direct compensation being made for delay.

- B. Types. Signs shall be of one of the types described as follows:
1. Directional Signs. These signs consist of signs which contain information that in general is pertinent only to traffic at the project site. Such signs are detailed and identified on the Plan drawings or on the sign plates included in the Project Manual.
 2. Regulatory and Warning Signs. These signs consist of standard highway regulatory and warning signs (Series R and Series W as shown in the MnDOT Standard Signs Manual). Details are shown on the special drawings included in the Project Manual or on the Plan drawings.
 3. Security Signs. These signs relate to airport access and aviation security, and are detailed on the special drawings included in the Project Manual or on the Plan drawings.
 4. Miscellaneous Signs. Other signs not included in the above categories shall be provided in accordance with the details included in the Project Manual or on the Plan drawings.
- C. Color. Sign faces shall be made of reflectorized sheeting conforming to MnDOT 2564.2F3. Colors shall be in accordance with the MnDOT Standard Signs Manual, or as shown on the details included in the Project Manual or on the Plan drawings.

D. Fabrication.

1. Preparation of the Sign Panels. The aluminum sign surfaces shall be thoroughly cleaned and treated, prior to application of reflectorizing material, to provide a satisfactory base for the sign face material. No chromate type chemical conversion treatment is allowed.

The chemicals or detergents used for cleaning or treating the metal shall be applied in strict accordance with the directions of the manufacturer. Sufficient laboratory facilities to test and control the concentration of the solutions used shall be maintained at the treatment plant. A log of the concentration of treating solutions shall be maintained.

Metal shall not be handled between cleaning operations nor between cleaning operations and the application of reflective sheeting except by a device or clean canvas gloves. There shall be no opportunity for treated metal to come in contact with greases, oils, or other contaminants prior to the application of reflective sheeting.

Fabrication of all metal parts shall be accomplished in uniform and workmanlike manner. All fabrication including cutting and punching of holes, excluding mounting holes for demountable letters, numerals, symbols and borders, shall be completed prior to metal degreasing and application of reflective sheeting. Metal panels shall be cut to size and shape and shall be free of buckles, warpage, dents, cockles, burrs, and defects resulting from fabrication. The surface of all signs shall be flat. The fabricator shall use only extrusions that are flat. Extrusions showing any sign of warping shall be rejected.

Signs assembled from extruded sections shall not contain more than one 6-inch wide extrusion.

2. Application of Reflective Sheeting. Reflective sheeting shall be applied to properly treated base panels with mechanical equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer. Overlap splices shall be ordered for all continuous applications through squeeze roll applicators. Sign faces comprising two or more pieces or panels of reflective sheeting must be carefully matched for color and brilliance at the time of sign fabrication to provide uniform appearance and brilliance, both day and night. Alternate, successive width sections of either sheeting or panels must be reversed and consecutive in accordance with recommendations of sheeting manufacturer, to insure that corresponding edges of similar brightness and color lie adjacent on finished sign. Non-conformance may result in non-uniform shading and an undesirable contrast between immediately adjacent widths of applied sheeting.

No splices shall be permitted on signs screen processed with transparent color. Sheeting applied to extruded sections shall extend over the edges and down side legs a minimum of 3/16-inch.

The type styles for all directional signs shall be Helvetica Medium, or as shown on the detail drawings. Letter sizes shall be as shown on the detail drawings.

3. Application of Legend and Border. Unless otherwise noted on the plans, legends and border for directional signs shall be demountable. When mounting the legend and border, insert 1/16-inch plastic spacers between the legend/border and sign panel at all attachment locations. Attachment for mounting shall be aluminum blind rivets or other devices approved by the Engineer.

Direct applied message and borders for traffic control signs shall be reflective sheeting or non-reflective film applied directly to clean, dust-free reflective sheeting background panels in a manner specified by the sheeting manufacturer.

4. Packaging and Shipment. Signs and components shall be packaged in accordance with accepted commercial standards and shall be delivered in a manner that will insure their arrival at the destination in undamaged condition. Signs shall be stored

and shipped on edge. Packaged signs permitted to become wet during storage or shipment will be rejected.

- E. Location. Locate the signs as shown on the plans and in accordance with the Manual on Uniform Traffic Control Devices. Sign locations indicated on the plans are approximate only and final determination of sign locations will be made in the field by the Engineer. In general, signs shall be placed so as to provide a minimum horizontal clearance of 2-feet from the sign edge to the face of curb or edge of roadway shoulder. Regulatory and warning signs shall have a vertical clearance to the bottom of the signs of 7.5-feet, unless otherwise shown in the drawings. Specific clearances other than the above shall be as noted on the drawings or as directed by the Engineer.
- F. Installation. Install all signs on new posts or supports unless otherwise indicated on the plans.
1. Directional Signs. Install directional signs on new support structures, posts or on salvaged supports as noted on the drawings. Replace existing 4# posts with 3# posts. Exact height on new supports shall be determined in the field so as to insure that all minimum clearances shown on the drawings are obtained.

Concrete footings for sign supports shall be shown on the plans. Footings shall be cast-in-place to the required shape. Stripping forms and backfilling shall not proceed until 24 hours after placement of concrete. Existing sign supports and columns used in the new construction shall be cleaned and painted with cold galvanizing compound, as manufactured by ZRC Inc. or approved equal.
 2. Regulatory and Warning Signs. Regulatory and warning signs shall be mounted on new flanged channel sign posts or attached to existing structures as noted on the drawings. All flanged channel posts shall be of two piece design consisting of an extension post segment bolted to a driven stub post. The Contractor shall determine the required post lengths. Posts shall be plumb above ground and shall be located and oriented as directed by the Engineer. Any post that is bent or otherwise damaged to the extent that, in the opinion of the Engineer, it is not acceptable, shall be removed from the site and replaced by the Contractor at its own expense.

Posts shall be installed 42-inches in the ground. After driving, the top of the post shall have substantially the same cross-sectional dimensions as the body of the post. No battered heads will be accepted. No additional compensation will be made for setting posts that cannot be driven.

Signs to be installed on concrete walk shall have the flanged channel post securely bolted to the walk as shown on the plans.
 3. Security Signs. Security signs shall be mounted on fence as shown in the details. Mounting hardware shall be included with each sign. Signs shall be installed on either or both sides of the fence as shown in the plans or as directed. Signs shall be installed plumb with the top of the sign six feet above ground. Where fence installation is not feasible, security signs shall be post mounted as described above under "Regulatory and Warning Signs."
- G. Removals. The Contractor shall remove existing regulatory and directional signs including any concrete footings and supports as noted on the drawings. Sign panels and supports not required for reuse on this project shall be salvaged and delivered to the Owner's maintenance storage yard. Salvaged signs shall be shipped and stored as described above. All concrete and other debris shall be disposed of in accordance with Section 01 35, 13, Article 1.13, Disposal of Waste Materials.
- H. Restoration. All areas disturbed by sign construction and/or removal shall be restored to their original condition or better. After removal of concrete footings, if any, backfill cavities with granular material and construct surfacing to match the adjacent area.

END OF SECTION

SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

A. Section Includes

1. This section covers basic electrical requirements under Division 26 for providing labor, materials, tools, equipment, supplies, and services necessary for the proper completion of all electrical work as shown on the Project Drawings and specified herein. In general, this consists of supply and installation of conduit raceway systems, pull boxes, and conductors for the installation of electrical systems, including lighting and controls, power distribution, security systems (SAACS, CCTV), fire alarms, tele/data network communications, facilities monitoring systems, and the removal of existing electrical equipment and wiring; grounding of electrical systems as required by applicable codes and as indicated in the contract documents; supply and installation of convenience and special purpose devices with required boxes, conduit raceway systems, and branch circuit conductors; and any other work as hereinafter specified. Electrical work shall be completed with all wiring, conduit, fittings, equipment, and connections as specified or required for a complete operational project.
2. The omission of express reference to any items necessary for, or reasonably incidental to, a complete installation shall not be construed as releasing the Contractor from providing such items. These items include, but are not limited to, anchors, bolts, nuts, brackets, sleeves, and minor offsets for conduits, cable trays, etc. required for unforeseen obstructions.
3. There may be equipment and materials provided under different divisions that may require composite work crews based upon trade jurisdictions. The Contractor and Subcontractors are responsible to review the entire project's contract documentation to identify where these composite crews are required and include any associated costs with these efforts in their bid.
4. The Division 26 Contractor shall be responsible for coordination with the appropriate utility companies to provide temporary and/or permanent utility services as required. This work shall be coordinated with the Construction Manager and scheduled so as to not impact the progress of the project.
5. The Division 26 Contractor shall coordinate with the airport staff and airline representatives to arrange for the temporary and permanent installation of Remote Equipment Cabinets serving Radio/Wi-Fi communication services to aircraft and staff. Remote Equipment Cabinets and associated systems shall remain operational during the entire construction phase of the project. Refer to the construction drawings for additional information.
6. The Division 26 Contractor shall be responsible for verifying all quantities of materials for the project. Any quantities indicated are for reference only.
7. The Division 26 Contractor shall be responsible for coordination with the airport staff and airline representatives prior to performing any work.
8. The entire electrical system, including all sub-systems, shall be guaranteed against defects in materials and installation for a minimum of one year. Any malfunctions which occur within the guarantee period shall be promptly corrected without cost to the Owner.

B. Related Sections

1. Divisions 0 and 1 are included for all work under Division 26 - Electrical, and are an integral component of this Specification section. Section 26 05 05, Basic Materials and Methods, shall supersede any specified conditions that are at variance with other Divisions. Division 0 and 1, along with Section 26 05 00, Basic Electrical Requirements, and all Addendum items issued prior to the Agreement execution, form a part of and apply to all contracts and subcontracts relating to Division 26 work. Copies shall be provided to Subcontractors receiving other Sections of Division 26.
2. All Specification Sections referenced are for Contractor convenience only and shall not relieve the Contractor of responsibilities stated in other Sections, even if these Sections are not listed. The Contractor shall be responsible for all information contained in the Contract Documentation.

C. Permits, Licenses, and Fees

1. All temporary or permanent permits and licenses required for the Division's work to be performed

shall be the Contractor's responsibility when bidding on the work to be performed. All associated fees and expenses required shall be paid for by the Contractor.

2. Contractor and Subcontractor personnel shall be badged while working within a secured area. Refer to Specification Section 01 35 13, Special Project Procedures.

D. State and Local Sales Taxes

1. The Contractor shall include any and all State and Local Sales Tax in their bid and are required to maintain accurate records of these taxes and furnish these records to THE OWNER upon request.

E. Definitions

1. Where the terms "Shall Be" or "Shall Provide" are used in Division 26 Specifications and/or Construction Drawings, it shall mean that the "Electrical Contractor or Subcontractor shall furnish and install".
2. Construction Drawings and Specifications are intended to complement each other. Any items indicated on the Drawings and not referenced in the Specification, or vice versa, shall be put into effect as referenced or shown. If/when there is a conflict between these documents, the greatest quantity or more expensive work shall govern.
3. Equipment layout, conduit, cable tray, accessories, lighting, etc. are diagrammatic except where specific dimensions are indicated or referenced.

F. Submittals

1. Shop Drawings shall be submitted for approval of all equipment listed in the following sections:
 - a. Shop drawings shall first be checked by the Contractor for space/dimensional considerations, performance characteristics, and general conformance to these plans and/or specifications, and shall be so stamped. Shop Drawings not stamped as specified will be returned to the Contractor without action. The Contractor's stamp shall include corporate name and address, the name or initials of the checker, and the date. When submitting Shop Drawings containing catalog information for project items and items not associated with the project, those items shall be clearly marked as to which pertain and which do not, in order for the Engineer to clearly and easily distinguish.
2. The Contractor shall ensure that Shop Drawings are either in compliance with the contract documents or that any deviations from the contract documents are clearly identified, and verify that submitted equipment will fit within the designated locations. Any conflicts shall be brought to the Engineer's attention and resolved prior to any equipment being ordered. The Engineer shall make every effort to work with the Contractor to resolve issues; however, products and materials selected to be used for the project are the Contractor's sole responsibility. The contract drawings and specifications' intent and requirements are to be adhered to at all times and are not waived or superseded. Contract documents shall take priority over Shop Drawings. Comments made by the Engineer during the review process will not constitute a Change Order. Should the Contractor feel that these comments require a Change Order, the Contractor shall respond with a Request for Information and follow the procedures identified in the contract documents for changes.
3. Shop drawing submittals shall be grouped according to specification section or categories and shall be labeled with the proper name of the project and specification section. Partial submittals of a group or category will not be reviewed (e.g., submit all panels, all lighting fixtures, etc.).
4. Shop drawing shall include manufacturer's name and address, equipment or material descriptive names, and catalog number. Shop drawings shall indicate dimensions, voltage and current characteristics, test or conformance data, construction, and rough-in information of all equipment or material to be used.
5. The Contractor shall submit at least the number of Shop Drawings for each item as directed by the General Contractor and per Specification Section 01 33 00, Submittal Procedures, unless otherwise noted. In addition, an electronic format of the Shop Drawings shall be submitted to the Engineer per the requirements stated in this Specification. The Engineer will retain one (1) copy, and the Architect and Construction Manager shall each retain one (1) copy. The remaining copies shall be returned to the General Contractor. The Contractor shall retain four (4) copies of the Shop Drawings, which shall be utilized for the Operation and Maintenance Manuals as specified.
6. Substitutions for specified equipment, devices and/or materials, shall be made to the Engineer in

writing a minimum of seven (7) calendar days prior to the Bid opening. Any written request for substitution shall contain a detailed explanation as to why the request is being made, and a comparison between the specified item and the requested substituted. Confirmation shall be indicated that this item meets the dimensional requirements and electrical requirements for the project, along with any other potential variances. Should substitutions be accepted by the Engineer, it shall in no way relieve the Contractor of the responsibility to provide equipment, devices, or materials which adhere to the intent of the contract documents and the minimum quality established. The Contractor shall be responsible for all additional costs associated as a result of the substitution, including those of any other Engineering, Contractor, and/or Architectural requirements. The Contractor shall compensate the Architect and Engineer for any additional costs that may be incurred.

7. The Contractor shall not purchase any devices, equipment, or material, start fabrication, or perform any installation prior to receiving approved signed Shop Drawings from the Engineer.
8. Shop Drawings shall be submitted with an index identifying the cross-reference to the governing specification sections and/or drawing numbers with a description of the products to be included. Shop Drawings shall be submitted within thirty (30) calendar days from the Notice to Proceed date. Items with critical delivery dates shall be identified to not impact the project schedule. Shop Drawings for those items shall be issued immediately and the Engineer shall be notified with the requested approval date to avoid delays. The Contractor shall allow for ten (10) calendar days required for the Engineer to review the submittals and schedule accordingly.
9. Shop Drawings shall include the following information: the first page of each Shop Drawing labeled with the Project Name; Architect, Engineer, and Contractor names; Specification Section number and title identifying the cross-reference of the product to the Specification; contact names, postal address, e-mail address, and telephone numbers for the Subcontractor, the Manufacturer, and the local Supplier and Representative; capacities, performance, and operating efficiencies; physical arrangement, having all dimensions and minimum service clearances; shipping weights, lifting points, and operating weights; wiring diagram indicating the "Point-to-Point" configuration for all electrical circuits, and clearly indicated connection points between systems.
10. Devices and equipment that are to be provided shall have local representation with qualified service technicians and replacement parts to provide complete coverage for trouble shooting, service, and repair.
11. The Contractor shall provide four (4) copies identifying a complete list of devices, equipment materials, and Subcontractors being proposed for this project to the Engineer a minimum of ten (10) calendar days from the award of contract or from the written notice to proceed. Should this list not be submitted accordingly, it will be expected that all items will be completed exactly as specified.
12. Payment request cost breakdowns shall adhere to the established Schedule of Values to be used for the "Application and Certification for Payment" as defined in the General Conditions of the Specifications. The Contractor shall identify the various categories of Division 26 work according to the "Cost Breakdown" schedule. Items shall identify materials and labor with the approved overhead and profit separately. Cost breakdown shall be submitted on AIA document G703, "Application and Certificate for Payment". The Contractor shall comply with the Engineer's review comments and make any requested vendor or subcontractor corrections or changes.
13. The Contractor shall comply with the Engineer's review comments, making requested corrections or changes of the vendor or Subcontractor.
14. Electronic Shop Drawings shall be submitted to the Engineer in Adobe Acrobat "PDF" format. A manufacturer's website address or general product catalog will not be accepted, and any such generic information used for the submittal will be rejected without review. It will be the Contractor's responsibility to customize each submittal. The submittal shall allow for copying and pasting all graphics within the PDF file; text shall be preserved and searchable, allowing for the copy and paste functions within the PDF format (do not rasterize text or otherwise convert to graphics); the save function shall be enabled so that PDF files can be copied and moved; "Embedded Page Thumbnail" functions shall be included to provide miniature previews of each page within the PDF document to allow for a quick selection between pages and view adjustment;

submittals of a document containing more than ten (10) pages shall include a Table of Contents with the bookmark feature within the PDF.

15. Samples of any and all proposed equipment or system components shall be submitted for examination/approval as requested.
16. On-site instructions and manuals shall be provided to Owner-designated personnel during the operation and maintenance of any and all electrical systems.
17. Prior to project completion, one (1) hard copy and four (4) USB flash drive copies of the Operation and Maintenance manuals shall be delivered to the Engineer. Manuals shall be made with hard cover post type binders such as Federal 'Super-Lok.' Large sheets shall be neatly folded and installed with post hole reinforcements such that sheets will unfold without need to open binder posts. Manuals shall include index, section tabs, all approved shop drawings, installation, operation and maintenance instructions packed with equipment, parts lists, and any other data as necessary and/or appropriate for the user to have.

G. Reference Standards

1. Requirements of standards, tests, or recommended methods of trade, industry, or governmental organizations which are considered to be the minimum requirements shall be complied. The reference to Codes and Standards shall not allow for a lower grade/quality of construction; where the contract documents indicate a higher quality of workmanship and/or materials which exceed those referenced, the contract documents shall take precedence.
 - a. ANSI – American National Standards Institute.
 - b. ASTM – American Society of Testing and Materials.
 - c. CBM – Certified Ballast Manufacturers.
 - d. FAA – Federal Aviation Administration.
 - e. FCC – Federal Communications Commission.
 - f. FM Global – Factory Mutual.
 - g. ICEA – Insulated Cable Engineers Association.
 - h. IEEE – Institute of Electrical and Electronics Engineers.
 - i. IES – Illuminating Engineering Society.
 - j. Intertek ETL Semko – Product Testing and Certification, ETL Listed Mark Product Directory.
 - k. NEMA – National Electrical Manufacturers Association.
 - l. UL – Underwriters Laboratories, Inc.
 - m. IBC – International Building Code.
 - n. IRI – Industrial Risk Insurance.
 - o. NEC – National Electrical Code.
 - p. NBFU – National Board of Fire Underwriters.
 - q. NBS – National Bureau of Standards.
 - r. NFPA – National Fire Protection Association.
 - s. OSHA – Occupational Safety and Health Administration.
 - t. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers.
 - u. ADA – Americans with Disabilities Act.
 - v. State and Local Electrical Installation Codes.
 - w. State and Local Building Codes and Ordinances.
 - x. State and Local Fire Codes and Regulations.
 - y. State Elevator Code.
 - z. Uniform Federal Accessibility Standards.
 - aa. State Board of Health.
2. The installation of materials, equipment, and devices for this project shall meet or exceed the latest revision of the associated codes, ordinances, and regulations. Should a Contractor or Subcontractor notice that the contract documents are not in compliance with the governing codes and regulations, they shall notify the Engineer in writing of such variances, and the Engineer will respond in writing. The Contractor takes full responsibility for any work performed with the knowledge that it is not in compliance with associated codes, and does not notify the Engineer. The Contractor also takes full responsibility for all associated costs attributed to correcting any non-compliant work performed.
3. The Contractor shall ascertain the existence of, and comply with, any interpretations and/or

enforcement policies of local enforcement agencies or individuals peculiar to this area or to this particular installation.

H. Project/Site Conditions

1. The Contractor and Subcontractors shall perform a site inspection to become thoroughly familiar with the existing site conditions and limitations affecting the performance of their work prior to submitting a proposal. No extra compensation will be allowed for any misunderstanding as to the exact scope of work to be performed or a lack of knowledge of any existing condition that could have been discovered or reasonably anticipated prior to the bid.

I. Environmental Requirements

1. No asbestos or PCB containing materials of any type shall be used on this project, except in applications where acceptable substitutions have not been found for asbestos materials, such as in high temperature applications. Should a product containing asbestos materials be used on this project for the reason stated, this product shall be clearly identified in the Shop Drawings with a letter of explanation provided to the Engineer for review indicating the reason for use, and the acceptability of the material and its use in accordance with Federal, State, and Local regulations. No products containing asbestos materials shall be allowed to be used on this project without complying with these requirements.

J. Temporary Office

1. A temporary office, shop, and storage space shall be provided as required for the operations of the project. This space shall not constitute a fire hazard. The Architect shall locate the space for use.

K. Temporary Light and Power

1. General:
 - a. Temporary light and power shall be provided for use by all trades.
 - b. Energy costs shall be paid by the Owner.
 - c. These temporary systems shall be installed and/or removed as soon as the project dictates.
 - d. The lighting requirement shall be established on a watt density of 0.5 watts per square foot.
2. Products:
 - a. All products shall be in adherence to the Division 26 requirements of the Specification.
 - b. Materials/products need not be new, but shall be electrically and mechanically safe.
 - c. The materials/products shall remain the property of the Contractor.
 - d. Light fixtures shall have basket protective lamps.
 - e. Light fixtures used for the illumination of site fence shall be weathertight devices mounted on the fence.
 - f. Circuits for receptacle use shall have ground fault circuit interrupter protection.
 - g. Temporary equipment exposed to weather must be suited for its use.

L. Storage of Material and Equipment

1. Electrical materials and equipment shall be stored at the site in trailers, temporary buildings, or substantially completed structures if they provide adequate weather protection. The use of completed structures for storage must have the approval of the Contractor Superintendent and the Engineer.

M. Basis of Payment

1. In preparing a bid, the Contractor shall include the cost of all work described in this Section and as indicated on the Drawings on a Lump Sum Basis.

N. Allowances

1. Refer to Specification Section 01 21 00 for Allowances related to Division 26 work and coordinate as required.

O. Electrical Room Access

It is essential that airport security is maintained during the performance of this contract, and that construction operations within the Electrical Rooms are restricted as follows:

1. Access into the electrical rooms must be scheduled with the city of Marshall.

2. A Marshall Representative shall be present at all times while the contractor is working within the Electrical Room.
3. Contractor shall have an approved lockout/tagout procedure before working on any electrical equipment or field circuits.

PART 2 - PRODUCTS

A. Restrictions

1. Metal clad cable (MC) and BX cables are not allowed except for light fixture whips.
2. Aluminum flexible metal conduit is not allowed.
3. Flexible metallic conduit is allowed only for a maximum six (6) foot connection to vibrating equipment, ceiling mounted light fixtures, or ceiling mounted devices, unless specifically noted otherwise.
4. Flexible Metal Conduit shall be permitted as the final connection to recessed light fixtures – maximum length is six (6) feet.
5. Liquid-tight Flexible Conduit is permitted as a replacement to Flexible Metal Conduit. It shall be required as the final connection to:
 - a. Motors between motor terminal boxes and feeder conduit.
 - b. Equipment subject to vibration, where one or more of the following conditions exist:
 - i. Exterior location.
 - ii. Moist or humid atmospheres where condensation may occur.
 - iii. Corrosive atmosphere.
 - iv. Subject to water spray.
 - v. Subject to dripping oil, grease, or water.
 - c. Maximum length three (3) feet.
 - d. Provide separate grounding conductor in each instance.

PART 3 - EXECUTION

A. Temporary Lighting and Power

1. Execution
 - a. Main service equipment shall be sized to meet the requirements of the temporary loads of the project.
 - b. Lighting and Power shall be extended to all areas of the project as required. The lighting shall not interfere with aircraft parking at adjacent gates.
 - c. Electrical distribution shall be provided to loads such as panels, cranes, hoistways, elevators, temporary heating, welders, etc.
 - d. The Contractor shall maintain the temporary lighting and power systems for proper operations, including the replacement of lamps.

B. Regulatory Requirements

1. The Contractor shall be responsible for the initiation, maintaining, and supervising all safety precautions required in association with his work, including regulations of the Occupational Safety and Health Administration (OSHA) and other governing agencies.

C. Environmental Requirements

1. No asbestos containing materials of any kind shall be removed by the Contractor or Subcontractors. The Contractor shall stop work immediately and notify THE OWNER should asbestos-containing materials be suspected.
2. Any work being conducted around asbestos or asbestos-containing materials by the Trades shall take extra caution to not disturb. Work shall be halted and THE OWNER notified should it appear that this is not possible.
3. No PCB-containing materials of any kind shall be disposed of by the Contractor or Subcontractors. Should materials containing PCB be discovered, the Contractor shall place those items into containers provided by THE OWNER. The proper disposal of the PCB materials will be the responsibility of THE OWNER.

D. Inspections

1. The Contractor shall be responsible for coordinating regular inspections as required by any and all governing agencies. The associated fees for the inspections by these regulatory agencies shall be paid by the Contractor.

E. Coordination

1. The Contractor shall review the Drawings and Specifications of all other Divisions and Trades for coordinating the information and work layout so that it will not interfere with these other Trades. All dimensions and conditions shall be verified, including wall elevations, ceiling heights, sections footings and foundation elevations, beam depths, ductwork and piping, etc. with the architectural, mechanical, and structural documents. Should conflicts occur where a resolution could not be reached by the trades impacted on the project, the Engineer or Architect shall be notified and a resolution shall be reached. Where work needs to be replaced due to a failure to perform this coordination and verify all conditions pertaining to the project, this replacement work shall be executed at no additional cost to the Owner. This shall apply to on-site work and shop fabrication work.
2. The General Contractor shall leave all chases and openings in floors, walls, ceilings, and partitions as shown on the construction documents to allow for the installation of electrical systems (except in pre-poured concrete floors and wall panels). The Electrical Contractor shall provide to the General Contractor all information for the locations and dimensions of the chases and openings required, with the necessary requirements for the proper installation of sleeves and other equipment. This information shall be provided to the General Contractor in a timely manner so as to not cause delays in the project schedule.
3. The installation of wiring systems, equipment, etc. shall be grouped and organized to present a neat appearance and reflect a high quality of workmanship while avoiding any blockage to passageways.
4. The Drawings and Specifications indicate that the conduit systems shall be installed concealed. Where this is not possible, conduits shall be installed as close as possible to the ceiling and/or wall, parallel and perpendicular with adjacent structural and architectural elements.
5. The Contractor shall coordinate his work with the work of the other trades to avoid conflicts. Conduit, busduct, cable tray, duct, etc. shall be installed as necessary to accommodate the building structure and components of the other trades, providing a reasonable quantity of offsets as necessary, at no additional cost to the owner.
6. Measurements for the proper installation of work shall be taken at the building site without scaling the drawings.

G. Service Interruptions

1. The Contractor shall schedule all work in a manner as to not present any disturbances to any services to any portion of the buildings without coordinating with the owner. Electrical systems being modified and requiring a shutdown shall be scheduled with the owner per the requirements of Section 01 35 13, Special Project Procedures. Required shutdowns shall be scheduled to take place outside of normal working hours, unless the owner agrees to allow a shutdown during normal working hours or unless specifically indicated elsewhere in the construction documents. Normal working hours are considered to be between the hours of 7:00 AM and 5:30 PM.
2. The Contractor shall schedule a meeting with the owner and the Engineer regarding the shutdown schedule. The owner has the final determination of accepting the shutdown schedule as provided as it relates to the required services that will need to be in operation and the availability of equipment. The owner has the option to reject the shutdown schedule at any point in time based upon operational considerations. The Contractor shall provide a detailed Method of Procedure (MOP) document specifying the date and time of the service interruption, and the exact electrical equipment that will be shutdown. This MOP document shall be in accordance with the requirements of Section 01 35 13, Special Project Procedures.
3. The Contractor shall be responsible for the notification of the Construction Coordinator and the owner's Electrical Trades staff thirty (30) minutes prior to the interruption commencing. The Contractor is required to receive clearance to proceed with the shutdown from THE OWNER and the Construction Coordinator. At that time, the Contractor may proceed with the shutdown, taking the equipment offline at the scheduled time. Upon the electrical equipment being taken off line,

the Contractor shall wait to receive confirmation from THE OWNER confirming that there were no unexpected equipment interruptions. THE OWNER will give approval to proceed with the scheduled work after this confirmation has been completed.

4. The Contractor shall work with THE OWNER, the Construction Coordinator, and the Engineer for the scheduling of electrical interruptions for individual pieces of equipment that affect occupied area of the building. The Contractor shall coordinate with THE OWNER and the Engineer after the work has been completed to ensure that equipment functions are proper upon the re-energizing of the equipment.
5. Upon the restoration of the electrical service following an interruption, the Contractor shall be responsible to perform a complete inspection of all areas that were affected and shall be responsible for returning all automatically controlled equipment to the original operating condition that existed prior to the interruption.

H. Protection

1. The Contractor shall cover all openings and equipment where set to prevent obstruction to conduit systems, breakage, misuse, or disfigurement of equipment. Upon the uncrating or receipt of equipment at the project site, the Contractor shall immediately cover all openings for protection and shall remain covered until the permanent connections are completed.
2. The Contractor shall be responsible for providing weather tight protection for the electrical equipment prior to the building being completely sealed weather tight from the elements and prior to electrical equipment being installed, in order to prevent moisture, water, dirt, dust and debris from entering the equipment. This protection system shall apply to the conduit system where protection shall be installed to prevent the infiltration of water, which could migrate into the electrical equipment.
3. The Contractor shall be responsible for the protection from damage and any damage that occurs to electrical equipment or materials until the final acceptance of the entire building/project by THE OWNER and the Engineer. The Contractor shall keep all equipment and materials clean until the final inspection and acceptance. The Contractor shall repair or replace all damaged equipment at no additional cost to THE OWNER.
4. Prior to Substantial Completion of the entire project and it is decided to occupy a portion of the building, an agreement will be reached for the transfer of responsibilities for the protection and housekeeping requirements from the Contractor to THE OWNER.

I. Cleaning

1. The Contractor shall maintain the premise areas free from the accumulations of waste materials, rubbish and debris caused by the execution the work. At the end of the day the area shall be broom swept clean and all waste materials disposed of properly. At the completion of the project the contractor shall remove all equipment, tools, scaffolding, surplus materials, waste materials, debris and rubbish from and about the premises. The premises shall be broom clean unless otherwise indicated stricture requirements are specified. In the case where there is a dispute regarding cleaning, THE OWNER has the right to remove the rubbish materials and charge the Contractor the associated costs.
2. The Contractor shall remove the labels from the exterior of the light fixtures and other equipment.
3. Prior to the energizing of the electrical equipment, the equipment enclosures shall be vacuumed and wiped down clean; this includes switchgear, panel boards, transformers, relay cabinets, special systems cabinets and racks, etc. This cleaning operation shall be repeated again at the time of substantial completion.

J. Installation Procedures

1. The installation of equipment and materials shall be in compliance with the manufacturer's recommendations and instructions, along with the latest version of the N.E.C.A standards.
2. The required access for maintenance and service of equipment and materials shall be adhered for the installation of the equipment and materials. The Contractor shall be responsible for the coordination of the final locations of equipment requiring access panels and doors, as well as adequate space for the removal of all parts that will require replacement or servicing.
3. The Contractor shall maintain an accurate set of legible "As Built/Record Drawings" identifying all changes or deviations from the construction documents, underground locations and elevations for

feeders, special systems, and empty conduits with reference to the building lines, curbs, walkways and other permanent points of reference. The Contractor shall identify the location of concealed and exposed above ground conduit feeders, special systems, busducts and cable trays. Record drawings shall be made available to the Engineer at any point during the project for review. The Engineer may recommend the withholding of payment if the record drawings are not being maintained to satisfaction. The record drawings shall be submitted at the completion of the project and will become a part of the Operational and Maintenance Manuals, which will be submitted to THE OWNER and the Engineer.

K. Start-Up of Systems, Guarantee, and Instructions

1. All work and materials shall be guaranteed by the Contractor for a minimum period of one (1) year, except where a longer period is identified elsewhere, after the completion of work as evident by the issuing of the Certification of Substantial Completion.
2. During this warranty period the Contractor shall correct any and all defects as a result of poor workmanship, faulty work performed, or materials. Corrections shall be made immediately by the Contractor at no additional cost to THE OWNER to the complete satisfaction of THE OWNER, the Engineer, and the Architect. Such rectification and repairs shall include all damages to the finishes or furnishings of the building resulting from the original defects or the corrective repairs.
3. The guaranty agreement shall not be applied to damages occurring after the final acceptance or as a result from fire, wind, violence, abuse, or carelessness by other Contractors or their employees.
4. Prior to start-up, all equipment shall be lubricated, filled, charged, etc. in accordance with the manufacturer's recommendations.
5. The Contractor shall perform a functional test of all electrical systems verifying all modes of operations insuring the equipment operates correctly prior to the Final Inspection. These tests shall be documented and a copy shall be provided to the Engineer indicating the date of the tests, the persons conducting the tests, and the test results. Upon completion of the tests, the Contractor shall notify the Engineer in writing that all systems are functioning correctly.
6. Once proper operation has been verified for each system, the Contractor shall provide instructions to THE OWNER's designated personnel in the correct operation for each system immediately prior to the acceptance of these systems by THE OWNER. The Contractor shall provide a form for signature by THE OWNER representatives which identifies the systems operated, the date the instructions were provided, and a complete list of those present both from THE OWNER, the Engineer, and the Contractor. A copy of this form shall be given to THE OWNER, the Engineer, and the Architect, and shall be included in the Operation and Maintenance Manuals.

L. Final Inspection

1. Once the Contractor has determined that all systems are complete and operational, a request for final inspection by the Engineer shall be requested. This final inspection is required of all the electrical and special systems before final acceptance or final payment. The Contractor shall provide a list of items remaining to be completed prior to requesting an inspection by the Engineer. The Engineer shall schedule an inspection to review the work performed and the proper operations of the equipment. A Punch List will be developed, identifying items to be corrected or completed prior to the Project Closeout. Should the Engineer discover that the work is not completed enough to perform the inspection, the Contractor shall provide compensation for all of the Engineers costs associated with the failure of the inspection. The Contractor shall make all necessary completions of work and request a final inspection by the Engineer. Upon receipt of the Punch List from the Engineer, the Contractor shall complete all associated work. A copy of the Punch List indicating all work has been completed, initialed by the foreman of the crew that performed the corrective work for each item, shall be provided to the Engineer. The Engineer shall schedule an inspection to verify that the Punch List has been completed. The Contractor shall accompany the Engineer during the inspections and perform all operations of the equipment for the Engineer to witness.

M. Operation and Maintenance Manuals

1. Prior to requesting Final Payment, the Contractor shall assemble and deliver one (1) copy of the

Owner's Manual to the Engineer that includes the descriptions of the operations and maintenance of all equipment, systems, and materials furnished under Division 26 - Electrical. The Engineer will review this proposed version of the Owner's Manual for completeness and for compliance with the Contract Documents. This manual shall be returned to the Contractor with the Engineer's comments. After receiving this copy, the Contractor shall review the comments made and either incorporate them into the final version of the Owner's Manual, or contact the Engineer and explain why the comments requested cannot be incorporated.

2. The Contractor shall submit the Owner's Manual in the formats, forms, and quantities as directed by the General Contractor and in accordance with Specification Section 01 78 23, Operation and Maintenance Data. In addition, one complete copy of the Owner's Manual shall be provided directly to the Engineer in the following formats:
 - a. A hard copy of the information within a hard cover three-ring binder(s) with index according to the Specification Section numbers. The cover of each manual shall be labeled with project name, date of completion, and the Electrical Contractor's name, address, and telephone number. Refer to the Shop Drawing portion of this Specification for additional requirements for submitting hard copies of information which shall be adhered to.
 - b. An Electronic copy of the Owner's Manual, submitted in an Adobe Acrobat PDF format, including all items as indicated and in accordance with the requirements established in this Specification for the submittal of Shop Drawings.
3. The Owner's Manual shall include, but not be limited to, the following:
 - a. Under the First Tab:
 - i. A complete list of equipment with the names, addresses, and telephone numbers of the Contractors, Subcontractors and Suppliers for each item.
 - b. Under the Second Tab:
 - i. The Shop Drawing index.
 - c. Under the Third Tab:
 - i. The Schedules of Warranties for all equipment.
 - ii. Copies of the final approved Shop Drawings.
 - iii. Operating Instructions for the Equipment.
 - iv. Wiring and installation instructions for all equipment.
 - v. Recommended maintenance schedules and procedures for all equipment.
 - vi. Recommended trouble shooting procedures for all equipment.
 - vii. Parts List for all equipment.
 - viii. Settings/adjustments/ calibrations for systems as required.
 - ix. Local equipment supplier/representative name, address, telephone numbers.
 - x. The test reports indicated in each Section of the Specifications, including factory test reports and field test reports.
 - xi. Copy of all required Certification documents for each required piece of equipment. (A copy of the certification shall be included with the Shop Drawing for that specific piece of equipment or work that was certified.)
 - d. Refer to each Section of the Division 26 Specification for any additional requirements.
 - e. Clearly distinguish between the information on the Shop Drawings and the associated equipment installed, along with any other literature for those items that apply to the project and those pieces of information that do not. The items that do not pertain to this project shall be crossed out or deleted.
4. Provide the number of Owner's Manuals as specified in Specification Section 01 78 23, Operation and Maintenance Data. Provide color copies of all colored originals. Deliver the final approved Owner's Manual to THE OWNER as specified in Section 01 78 23 and to the Engineer directly. Refer to Section 01 78 23, Operation and Maintenance Data, for any additional requirements.

N. Instruction of THE OWNER Employees

1. Provide the services of competent instructors who will provide full and complete instruction in the care, adjustment, and operations of all parts of the electrical systems, special systems, and equipment to THE OWNER's employees who will have charge over the equipment.
2. The instructors shall be thoroughly familiar and knowledgeable with all parts of the installation of

which they are to provide instruction. They shall have a complete knowledge of the operating theory and practical operation and maintenance work. Factory-trained instructors shall be utilized whenever possible.

3. Instructions shall be given during the regular work week, providing a minimum of sixteen (16) hours of training for the electrical equipment. This instruction is required for all three (3) shifts of personnel. A minimum of two (2) training sessions for each electrical system/component shall be provided. These instruction sessions shall be scheduled at 6:00 AM and at 2:30 PM to allow for all three (3) shifts to attend. Instruction sessions shall be video recorded at the direction of THE OWNER, when required. Refer to individual Specification Sections for the requirements of Instruction on the Special Systems.
4. All instruction materials shall be documented and submitted prior to the commencement of the training sessions. This material shall be included in the Operations and Maintenance Manuals.
5. A detailed cost breakout of the instruction and the instruction materials shall be provided. This cost breakout shall distinguish between each system and equipment. A separate line item shall be provided for the recording of the training sessions.

PART 4 - METHOD OF MEASUREMENT

A. Electrical Work

1. Electrical distribution work shall be measured by lump sum. Work shall include all electrical work to provide a fully functional and operational system as called for in the construction documents.

PART 5 - BASIS OF PAYMENT

- A. Payment for the following Bid Item Numbers at the appropriate contract lump sum price shall be compensation in full for all costs associated with removal of existing electrical and providing electrical distribution as shown on the drawings and specified herein:

<u>Item No.</u>	<u>Description</u>
26 05 00-1	Electrical Work

Restoration of bituminous asphalt in removal areas shall not be included in this payment item. The pavement section shall match the detail in the drawings and be paid under the corresponding Section 32 02 00 unit prices.

END OF SECTION

SECTION 26 05 05
BASIC MATERIALS AND METHODS

PART 1 - GENERAL

A. Related Sections

1. Section 26 05 00 Basic Electrical Requirements
2. Section 26 05 03 Basic Electrical Requirements - Demolition
3. Section 26 05 19 Wires and Cables
4. Section 26 05 26 Grounding and Grounding Bonding
5. Section 26 05 33 Raceways
6. Section 26 05 33.16 Boxes for Electrical Systems
7. Section 26 24 16 Panelboards and Cabinets
8. Section 26 27 26 Wiring Devices
9. Section 26 28 00 Disconnect Switches
10. Section 26 28 16 Overcurrent Protective Devices
11. Section 27 05 28: Voice/Data Raceway System

B. Materials

1. All materials shall be new, as specified or approved, and in original packaging.
2. Products catalog numbers specified shall be verified with vendors prior to ordering material.
3. All materials shall be Underwriters Laboratories "UL" labeled unless special fabrication of material is required.
4. Special fabricated material shall be fabricated using Underwriters Laboratories "UL" labeled components and procedures.
5. The Contractor shall schedule delivery and provide for receipt, handling, storage and protection of material.
6. The Contractor shall replace any materials which are damaged due to delivery, handling, storage or lack of protection at no additional cost to THE OWNER.
7. Material provided shall be in accordance with local union requirements.
8. Where the word "provide" is used, it shall require the Contractor to furnish and install material complete for a fully functioning and operational system.

C. Tests

1. All work shall be tested in accordance with industry accepted standards and the manufacturer's recommendations.
2. Competent personnel familiar with the test equipment and the systems operations shall perform all tests.
3. Before beginning any tests, a thorough visual inspection shall be made to detect any potential issues including connection problems, damaged components, poor workmanship, inappropriate overcurrent protection, debris, etc.
4. Testing apparatus shall have current certification and calibration documentation or demonstrated to be accurate within reasonable limits.
5. If testing procedures employed by the Contractor are not satisfactory to the Engineer, then an outside agency will be employed to conduct the tests at the Contractor's expense.
6. Document the test results and provide the Engineer with the following:
 - a. Date of Test
 - b. Test Type
 - c. Test Instruments Used
 - d. Test Results
 - e. Failures, If Any
 - f. Corrective Measures Taken
 - g. Test Results after Corrective measures taken
7. All test results shall be submitted to the Engineer and THE OWNER Electrical Representative for review within 5 working days of tests being performed. All testing documentation shall be included in the O&M Manual.
8. Tests Required (As Applicable)

- a. Feeders - Insulation resistance tests, phase to ground, phase to phase, with megger applying a test potential of at least 500 Volts D.C.
 - b. Systems - Factory representative's letter certifying proper operation of systems as per Contract Documents.
 - c. Distribution Equipment such as Transformers, Switchboards, Panelboards, etc. – Test for electrical continuity, phasing and safe operation prior to energizing.
 - d. IR scanning of Switchboards, Panelboards, transformers, ATS's and etc., as noted in the individual sections.
- D. Work Progress
1. The Contractor shall provide tools, material, manpower and equipment to keep progress with the project schedule.
 2. Problems shall be brought to the Engineer's and THE OWNER Electrical Representatives attention immediately.
- E. People Protection
1. The Contractor shall be legally responsible for all means and methods used throughout the construction phases of the Project.
 2. The Electrical Contractor shall install guards and barriers at electrical equipment to limit the approach of unauthorized personnel.
 3. No work shall be done on energized equipment.
 4. The Contractor shall provide protective padding for any equipment mounted less than 6'-0" in walking areas.
- F. Sleeves, Openings, Cutting, Patching, and Drilling
1. The Contractor is responsible for all openings, cutting, patching and drilling.
 2. Sleeve openings shall be with rigid pipe and set 1" minimum above finish floor.
 3. Penetrations through existing structural floors and walls shall be made with core drill.
 4. Exact locations of penetrations shall be verified with the Structural Engineer such that structural integrity is maintained.
 5. X-Ray or packometer tests shall be required on structural floors prior to drilling.
 6. Cutting and patching in finished spaces shall be such that the surface is restored to original condition.
- G. Fire Stopping
1. At penetrations through fire-rated wall, ceiling, floor, roof or other fire-rated/smoke barrier construction, completely seal void with a UL listed firestop system. The fire rating of the area shall be maintained.
 2. Fire stopping shall conform to any additional requirements indicated in the Division 7 Specification.
 3. Submit Manufacturer's product and installation system data for review prior to the installation.
- H. Mounting Height of Devices
1. Unless otherwise shown or noted, position devices in structural course work such that a minimum of course work is cut/affected. Refer to Specification Section 26 05 33.16, Boxes, for additional requirements.
- I. Hangers and Supports
1. Provide all hangers and supports such that they are suitable in strength and anchorage to load imposed.
 2. Anchorage shall be by cast-in-place concrete type where possible.
 3. Expanding type masonry anchors are acceptable when cast-in-place cannot be used.
 4. Other anchor methods must be approved by the Engineer.
 5. Conduit banks shall be supported as follows:
 - a. Structural channel as appropriate for load.
 - b. 3/8" minimum rod support.
 - c. Conduit supports shall occur maximum 10'-0" on center.
 - d. All conduit shall be strapped to channel.

6. In all areas where supports and hangers are subjected to vibration, spring type lock washers shall be used.
7. Individual conduit runs shall be supported by steel fasteners, such as caddy clips, suspended ring hangers or from dedicated support wires as application dictates.
 - a. Do not support conduit from the suspended ceiling grid or the associated wire support system.
 - b. Twisted bailing wire will not be acceptable. Use support wires rated for at least 150% of the load they will support.
8. Support for panelboards, terminal cabinets, transformers and other similar equipment shall be made by providing adequate interior wall studs or exterior structural channel.
9. Lighting fixtures, conduits and other electrical equipment shall not be supported from ductwork, piping or other systems.

PART 2 - PRODUCTS

A. Manufacturers

1. Fire Stopping
 - a. Bio-Fireshield, Inc.
 - b. Chase Technology CTC PR-855
 - c. Flame Stop, Inc.
 - d. Nelson Flameseal System
 - e. 3M Brand fire Barrier Penetration System
2. Hangers and Supports
 - a. B-Line
 - b. Caddy
 - c. Kindorff
 - d. Unistrut
3. Cable Ties
 - a. Cable ties shall be UV Stabilized Nylon 6/6 type with stainless steel locking barbs. Ties shall be Panduit, Hellermann Tyton, Nelco, or an approved equivalent.
4. Laminated Plastic Nameplates
 - a. Inscription shall be symmetrical to the centerline of plates.
 - b. Labels shall be similar and equal to Trophy House, Minneapolis, Minnesota, or Seton Name Plate Corporation, New Haven, Connecticut.
 - c. Self-adhesive embossed tape labels are not acceptable.
5. Stainless Steel Plates
 - a. Stainless steel plates shall be Type 302 satin finish. Inscription shall be engraved 1/4" high and filled with black.
6. Wire Markers
 - a. Wire markers shall be printable sleeves sized for the conductor size and specified information to be printed on label. Labels shall be as manufactured by Brady Manufacturing, T&B, Panduit or Ideal.
7. Conduit Markers
 - a. Vinyl, self-adhesive, pre-printed ANSI sized pipe markers, color coded per control system with 1/2" high letters pre-printed for the systems. Label adhesive shall be suitable for adhering to galvanized steel conduit.

PART 3 - EXECUTION

A. Identification of Electrical Items

1. The Contractor shall identify all electrical equipment with engraved 1/4" white letters on black Norplex-Micarta plates. Inscriptions shall indicate the name, voltage, phase, wires, feeder size, feeder source and location of source, and the device number for the following. Refer to the appendix at the end of this section for samples.
 - a. Switchboards and switches within.
 - b. Distribution boards and switches/devices within.

- c. Dry type transformers and panelboards (in finished areas, plate shall be behind door).
- d. Power distribution pull boxes, terminal cabinets, systems control cabinets, motor switches and transfer switches.
- e. Any equipment which falls under the general intent of this section.
- 2. The Electrical Contractor shall identify all electrical equipment with engraved 1/4" white letters on black Norplex-Micarta plates. Inscription shall indicate the equipment being controlled, its motor name, its motor number and include the panelboard source and source location, and circuit number for the following. Refer to the appendix at the end of this section for samples.
 - a. Motor control devices, VFDs, disconnects, power distribution pull boxes, terminal cabinets, systems control cabinets, motor switches and transfer switches.
 - b. Any equipment which falls under the general intent of this section.
- 3. Nameplates shall be attached to the equipment or device surfaces with two self-tapping chrome-headed screws or rivets. Self-sticking adhesive backed nameplates will not be accepted unless installing self-tapping chrome-headed screws or rivets will damage equipment (i.e. certain VFDs, UPSs or electronic components).
- 4. In Unfinished spaces, lighting switches, receptacles shall be identified by a self-adhesive label with a white back ground and black lettering (non-micarta or plastic type). Label shall have fed from source and circuit number. Label adhesive shall be suitable for adhering to galvanized steel coverplates and boxes. Clean dirt, oxidization, and oil from receptacle and switch covers prior to installing. Verify with the Engineer for approval of self-adhesive labels.
- 5. Wire markers on conductors in junction boxes, pull boxes, panelboards and device outlets.
- 6. Conduit markers shall be mounted on all conduits within 2'-0" of junction boxes or panels and on conduit every 25'-0" on center. Where conduits pass through rooms, there shall be a minimum of (1) label on each conduit in each room. Clean dirt, oxidization, and oil from conduit prior to applying labels. Paint junction box covers with enamel spray paint. Colors for junction box covers and conduit labels to be as follows:
- 7. Conduit markers shall be installed on conduit prior to installation of any conductors or cabling. Notify the Engineer and THE OWNER Electrical representative for inspection of labeled conduit system prior to installation of any conductors or cables.
- 8. All new/relocated feeders, multi-phase branch circuits, and branch circuits over 20A shall have conduit markers installed indicating the load that is served and the source which it is fed from. Examples: THE OWNER-EMC-3-480 F/F EMC-2 or CFP-1 F/F EMA-208. Labels shall meet the requirements of the conduit labels indicated above, be the same color scheme as the system contained and shall be spaced the same along the conduit route.
- 9. All low voltage cables shall be bundled and labeled as to their function within terminal cabinets, wireways and cable trays.
- 10. All terminals in terminal cabinets shall be labeled as to their function by typewritten terminal directories.
- 11. Provide typed electrical, communication and special system cabinet directories on the inside covers.
- 12. Electrical equipment that is connected to the building emergency system shall be labeled as specified herein and in addition, shall be clearly labeled "Emergency System."
- 13. Branch circuit conductors shall be identified as follows:
 - a. In outlet boxes, branch circuit conductors shall be identified by the following:
 - i. Conductors shall be marked with printed sleeve markers indicating panelboard and circuit number (i.e., "LP1092-1 #4").
 - ii. The inside of the box shall be marked either on the side or back of the box, with a black indelible "magic marker" to indicate the panelboard and circuit numbers of the conductors contained within the box (i.e., "LP1092-1 #4").
 - b. In junction boxes and pullboxes, branch circuit conductors shall be identified by the following:
 - i. Conductors shall have printed sleeve markers indicating panelboard and circuit number (i.e., "HP1243-1 #3,5,7").
 - ii. The inside of the box and cover shall be marked with a black indelible "magic marker" to indicate the panel and circuit numbers for the conductors contained within the box (i.e.,

"HP1243-1 #3,5,7").

- c. Conductors in panelboards, switchboards, and other similar electrical enclosures shall be identified with printed sleeve markers indicating the load served by that conductor (i.e., "Vestibule #103 Lights"). Control circuit conductors shall be identified at the originating and terminating ends with matching labeling.
 - d. In manholes/handholes conductors shall be identified by means of plastic fiber, Norplex-Micarta, or non-corrosive metal tags to indicate circuit number or system as well as termination point (panelboard, fire alarm cabinet, rack, etc.) and manhole/handhole fed through prior to current location. Tags shall be attached to conductors/cables with a minimum of (2) cable ties.
- B. Branch Circuit Numbers
- 1. Branch circuitry shall match circuit numbers as shown on the drawings and as scheduled. Any required deviation shall be indicated on the as-built drawings.
- C. Fire Stopping
- 1. Provide and install separate Underwriters Laboratories "UL" listed fire stop systems for each penetration type and rating to be sealed. Refer to the Architectural plans for fire rated construction types.
 - 2. Where large openings (e.g. cable tray penetration, floor slot, etc.) are required to be fire stopped, provide pre-printed signage adjacent to opening to read as follows: "Warning-Through-Penetration Firestop System - Do Not Disturb".
 - 3. Where conduit for future use, floor slots, cable trays, etc., are required to be fire stopped, provide a fire stop system that can be removed and replaced without difficulty such as nonhardening putty or pillows.
 - 4. Provide waterproof mechanical compression type floor penetration fire stop systems for floor penetrations in areas where the floor would be subject to cleaning with water or in areas likely to become wet.

END OF SECTION

**SECTION 26 05 19
WIRES AND CABLES**

PART 1 - GENERAL

- A. Section Includes
 - 1. Building wire
 - 2. Category horizontal copper cables
- B. Related Sections
 - 1. Section 26 05 05 Basic Materials and Methods
 - 2. Section 26 05 33 Raceways
 - 3. Section 26 05 33.16 Boxes
- C. Submittals
 - 1. Provide Shop Drawings for all wire and cable systems in accordance with the requirements indicated in Specification Section 26 05 00, Basic Electrical Requirements.
- D. Coordination
 - 1. Coordinate work as indicated in Specification Section 26 05 00, Basic Electrical Requirements.
- E. Quality Assurance
 - 1. Building wire and cable systems shall be labeled or listed by Underwriter's Laboratory "UL".

PART 2 - PRODUCTS

- A. Manufacturers – Building Wire
 - 1. Aetna
 - 2. American Insulated Wire
 - 3. Circle / Cerro
 - 4. Encore
 - 5. Essex
 - 6. General Cable
 - 7. Prysmian
 - 8. Southwire
 - 9. United Copper Industries
- B. Manufacturers – Category horizontal copper cabling
 - 1. Belden
 - 2. Build Berk-Tek
 - 3. Commscope
 - 4. General
 - 5. Superior Essex
- C. Building Wire
 - 1. Description: Single conductor insulated wire.
 - 2. Conductor: 98% Commercially pure copper conductors. Aluminum conductors are prohibited from being used.
 - 3. Instrumentation cables: PVC outer jacket, 90°C, PVC insulation on individual copper conductors. Foil shield and drain wire.
 - 4. The installation of conductors in flexible conduit for terminal connections to rotating, vibrating or moveable equipment shall be stranded wire.
 - 5. Insulation Voltage Rating: 600 Volts.
 - 6. Insulation: ANSI / NFPA 70, 90 Degree C, Type THHN, THWN, XHHW – 2.
 - a. In areas where cables are subject to ambient temperatures over 90 Degrees F or heat producing equipment in light fixtures, etc. provide insulation suited for the application.
 - b. Conductor's size # 8 and larger shall be stranded. Conductor's size smaller than #8 shall be solid. Control wiring size # 14 or smaller shall be stranded (unless otherwise noted in other

Specification Sections).

- c. For applications that are considered wet or damp Type XHHW -2 – two conductors shall be used.

D. Wiring and Cable Connections

- 1. Joints and splices in branch circuit conductors shall be made with spring lock style connectors.
 - a. Ideal
 - b. 3M
- 2. Joints and splices in feeder conductors shall be made with pressure type metal connectors and insulated with heat shrink plastic jacket or tape. Split bolts shall not be used for splicing without prior written approval from the Engineer and THE OWNER Electrical Department. Splices shall be done utilizing a Burndy AMS series butt-end splice kit or approved equivalent by IlSCO & Blackburn or T & B.
- 3. For all underground splices (manholes / handholes) a waterproof splice shall be utilized. Splices shall use 3M Brand 82-A1 series epoxy – type splice, Burndy UGS series heat shrink sleeve type splice, or approved equivalent.

E. Category horizontal copper cabling

- 1. Category 6 Unshielded Twisted Pair (UTP), outside plant rated.

PART 3 - EXECUTION

A. Examination

- 1. The Electrical Contractor shall verify that all mechanical work that could potentially damage wires and cables has been completed.
- 2. Confirm that the interior of building has been protected from the weather.

B. Preparation

- 1. Prior to the installation of wires and cables completely and thoroughly swab raceways.

C. Installation

- 1. Install products in accordance with the National Electrical Code “NEC” and the manufacturer's instructions.
- 2. The minimum size wire allowed for the installation of Lighting and Power circuits is # 12 AWG.
- 3. The installation of multiple conductors within a single raceway shall be pulled together at the same time.
- 4. The use of appropriate wire pull lubricant for wires # 4AWG and larger.
- 5. Flexible metal cable assemblies shall be used only where specifically approved within the Specifications, having a maximum length of Seventy-two (72”) inches for the final connections to ceiling mounted devices similar to light fixtures, occupancy sensors, speakers, fire alarm devices, etc. the length shall be only as long as required for the proper connection. Excess lengths of cable shall not be coiled up or allowed to hang loose.
- 6. Control Circuit wiring shall not be smaller than # 14 AWG.
- 7. Conductor surfaces shall be cleaned prior to the installation of connectors or lugs.
- 8. Neatly trim and lace all wiring located within panelboards, equipment, and boxes.
- 9. Splices, taps, and terminations shall be performed to carry the full ampacity of the conductors with no perceptible increase in temperature.
- 10. For the installation of parallel 3 – phase runs the conductors of all three phases with the associated ground and neutral shall be pulled at the same time within each conduit / raceway. The grouping of single phase or two phases in a single conduit / raceway is prohibited.

D. Identification

- 1. Identification
 - a. 120 / 208 Volt Color Code:
 - i. Phase A – Black
 - ii. Phase B – Red
 - iii. Phase C – Blue
 - iv. Neutral – White

- v. Ground – Green
- b. 277 / 480 Volt Color Code:
 - vi. Phase A – Brown
 - vii. Phase B – Orange
 - viii. Phase C – Yellow
 - ix. Neutral – Gray
 - x. Ground – Green
- c. Control wires / cables shall be identified at both ends as to its function.
- d. Spare conductors / cables shall be properly identified as “Spare”.

END OF SECTION

SECTION 26 05 26
GROUNDING AND GROUNDING BONDING

PART 1 - GENERAL

- A. Section Includes:
 - 1. Building Grounding Systems
- B. Related Sections:
 - 1. Section 26 05 05 Basic Materials and Methods
 - 2. Section 26 05 33 Raceways
 - 3. Section 26 05 19 Wires and Cables
- C. System Description:
 - 1. Provide complete grounding system as shown on the drawings and described herein.
 - 2. All metallic conduits, supports, cabinets, non-current carrying parts of the equipment shall be solidly grounded to form a continuous permanent and effective grounded system.
 - 3. All wireways, cable trays,, metal enclosures, and similar parts of the electrical systems installation described shall be grounded.
 - 4. Neutrals shall be bonded to the grounding system only at the building service entrance and when establishing a separately derived system such as at the secondary side of transformers.
 - 5. All service and building grounding conductors shall be terminated at the main ground bus in the main electrical room.

PART 2 - PRODUCTS

- A. Manufacturers:
 - 1. AMPACT – Amp Special Industries
 - 2. Burndy
 - 3. CADWELD – Erico Products, Inc.
 - 4. ITT Blackburn
 - 5. Ilsco
 - 6. Lyncole
- B. Materials:
 - 1. All grounding conductors exposed to the elements or in direct contact with the earth shall be tin coated copper.

PART 3 - EXECUTION

- A. Installation:
 - 1. Connections of grounding conductors to water mains or large members shall be made by means of acceptable welding techniques such as “Cadweld” process {exothermic}, or other approved welding techniques.
 - 2. Special attention by the Contractor is required for metallic building components and mechanical piping which must be grounded in an approved method in accordance with the National Electrical Code “NEC”.
 - 3. Motors over 150 Volts to Ground shall be bonded to the conduit system, with a separate ground wire.
 - 4. All roof mounted antennas and antenna masts shall be grounded or bonded to the lightning protection system.
 - 5. Grounding Conductor: The Electrical Contractor shall provide a continuous grounding conductor for each feeder serving several panelboards.
 - 6. Insulated Equipment Grounding Conductor: The Electrical Contractor shall provide a separate green insulated equipment grounding conductor for each single and three phase feeder and each branch circuit with a three phase protective device. Install the required grounding conductor in the common conduit with related phase and neutral conductors. Where parallel feeders are installed in more than one raceway, provide a green insulated equipment grounding conductor in each

raceway.

7. Label all ground conductors with either the grounding source or destination. Labels shall be engraved on plastic laminate material and attached to the conductors with a minimum of Two (2) plastic tie wraps.

END OF SECTION

**SECTION 26 05 33
RACEWAYS**

PART 1 - GENERAL

A. Section Includes

1. Wireway
2. Conduit
 - a. Metallic Conduit
 - b. Flexible Conduit
 - c. Conduit Couplings and Fittings
 - d. Related Conduit components

B. Related Sections

1. Section 26 05 00 (16010) Basic Electrical Requirements
2. Section 26 05 05 (16050) Basic Materials and Methods

C. Submittals

1. Provide Shop Drawings for all Raceways in accordance with the requirements indicated in Specification Section 26 05 00.

PART 2 - PRODUCTS

A. Manufacturers

1. Wireway
 - a. Hoffman Electric
 - b. Isoduct
 - c. Square D Square Duct
 - d. States Electric
 - e. Hubbell – Wiegmann
2. Conduit
 - a. Metallic
 - 1) Allied
 - 2) Wheatland
 - 3) Republic
 - 4) V. A. W. of America
 - 5) Western
 - 6) Cal Pipe
3. Conduit Couplings and Fittings
 - a. Appleton
 - b. Crouse – Hinds
 - c. Kellems
 - d. O. Z.
 - e. Red Dot
 - f. T & B
 - g. V. A. W. of America
4. Related Conduit Components
 - a. Appleton
 - b. Crouse – Hinds
 - c. Kellems
 - d. O. Z.
 - e. T & B

B. Materials

1. Construction shall be completed as per Underwriter's Laboratories Standard UL 870 for wireways, auxiliary gutters and associated fittings.
2. Wireway

- a. A painted steel enclosed wireway with hinged removable cover, which can be used as either hinge cover or set screw cover, shall be used.
- b. Shall be fabricated such that the entire length of Wireway and Fittings permit lay-in wiring applications.
- c. Cross sectional area shall be 6" x 6" unless noted otherwise.
- d. Maintenance of electrical and mechanical continuity of Wireway section shall be by threaded screws at each fitting.
- e. Complete product line shall be used for fittings, couplings, hangers, offsets, etc.
- f. Side knockouts shall be provided.
- g. Provide closure ends.
3. Raintight Wireway
 - a. Same as Wireway above except the construction is Raintight and the cover is gasketed.
 - b. Cover is removed from side with screws.
 - c. Finish shall be corrosion resistant.
4. Metallic Conduit: Rigid threaded, Intermediate threaded, Electrical Metallic Tubing
 - a. All metal conduits shall be hot dip galvanized.
 - b. Colored conduit shall have a dye infused coloring {not painted or powder coated} and shall be utilized for the Systems below with the color as indicated.
 - 1) Fire Alarm – Red
 - 2) Temperature Control – Blue
5. Flexible Conduit: Steel and Liquid tight.
 - a. Liquid – tight conduit shall be metallic type.
6. Conduit Couplings and Fittings.
 - a. Rigid and Intermediate: Steel threaded type.
 - b. Electrical Metallic Tubing: Steel set screw type, except in damp locations, use steel Raintight compression type.
 - c. Steel Flexible: Steel set screw type.
 - d. Liquid Tight: Steel compression type.
 - e. Conduit Bodies: Maleable iron type.
 - f. Conduit Seals: Malleable iron type with cement seal material , typical of EY style fittings. Provide oversize fittings.
 - g. All metal conduit couplings and fittings are to be hot dip galvanized. Aluminum fittings and connectors shall not be used.
 - h. PVC coated are not acceptable.
 - i. Diecast fittings shall not be allowed.
7. Related Conduit Components
 - a. Where required, provide cable strain relief, grounding connectors, expansion fittings.

PART 3 - EXECUTION

A. Installation

1. Wireway
 - a. All hangers shall be mounted at a frequency not to exceed five (5') feet on center.
 - b. Coordinate location in ceiling space with structure and Division 15 Trades such that accessibility is maintained.
 - c. Routing shall be parallel to building construction.
 - d. Install complete with all related appurtenances included.
2. Raintight Wireway
 - a. Mounting shall be as indicated on the Drawings with hanger and support frequency not to exceed five (5') feet on center.
 - b. Routing shall be parallel to building construction.
 - c. Touch up all areas where paint has been chipped, scratched, etc. to prevent corrosion.
3. Conduit
 - a. All wiring to be encased in conduit.
 - b. Electrical Metallic Tubing conduit shall be used for all raceways where not restricted by this Specification Section or specifically otherwise noted.

- c. EMT conduit shall be used inside the terminal building and above ceilings. Where exposed in public spaces, conduits and conduit supports shall be painted to match existing decorative structural steel. De-grease, wipe dry, clean conduits, primer paint and two coats of finish color.
- d. Rigid or Intermediate Conduit shall be used for the following conditions unless specifically noted otherwise:
 - 1) In exterior masonry walls.
 - 2) In wet locations.
 - 3) When exposed below five (5') feet A. F. F. in public spaces.
 - 4) As the National Electrical Code "NEC" dictates.
- e. Rigid Non-Metallic Conduit shall only be used below grade as allowed in the Specifications and for special service applications such as corrosive or wet environments.
 - 1) For installations below grade where conduit is one (1") inch and larger rigid steel elbows shall be utilized. Steel elbows shall be wrapped or coated with corrosion protection tape.
 - 2) Transitions from below grade to above grade shall be rigid metal conduit.
 - 3) Non-metallic conduit bending equipment shall be used as recommended by the manufacturer. The use of blow torches is prohibited.
- f. Provide conduit seals within 18 inches of grade. Provide cement seal material installed inside of conduit seal. Provide conduits seal at boundary of classified area.
- g. Flexible Steel Conduit shall only be used for transformer connections with a maximum length of three (3') feet. Ceiling mounted devices {i.e. recessed light fixtures, fire alarm devices, occupancy sensors, speakers, etc.} drop lengths shall not exceed six (6') feet from junction boxes. Exceptions will be allowed where required in existing walls, cabinetry, and ticket counters, or where EMT is not workable. Provide an internal copper grounding conductor within flexible conduits
- h. Flexible Liquid Tight Conduit shall only be used on all motor, VFD, and vibrating equipment connections with a maximum length of six (6') feet.
 - 1) Use minimum ½" size.
 - 2) Use grounding type fittings.
 - 3) Provide grounding conductor.
- i. Where Flexible Steel and Liquid Tight Conduit is allowed to be used, provide sufficient length to ensure flexibility of connections, minimum of eighteen (18") inches and a maximum of seventy-two (72") inches. Maximum length allowable is seventy-two (72") inches; however, it shall only be as long as required for the connection. Excess conduit shall not be coiled up or hanging loose.
- j. Vertical conduit runs shall be supported every floor for conduits less than 2 ½" and every other floor for runs 2 ½" and greater.
 - 1) Cable supports as per the National Electrical Code (NEC).
- k. All conduits in finished areas shall be concealed in building construction. The Electrical Contractor shall be put on notice that it is the intent of these Specifications that conduit be concealed in new poured concrete and block walls where it is considered to be the finished surface. Surface mounted conduit is not allowed in areas where exposed the exposed concrete and / or block walls are the finished surface {exception: electrical rooms, mechanical rooms, and garages}. Review the use of surface conduit with the Engineer / Architect.
- l. Where conduit is run exposed, it shall conform to the following:
 - 1) Approval is given by the Engineer, unless shown exposed.
 - 2) Routed parallel and perpendicular with the building construction.
 - 3) Installed in a workmanlike manner.
- m. At building expansion joints provide conduit expansion couplings with ground fittings.
- n. Conduit shall not be routed through structural beams, slabs, or columns unless specifically noted in the Construction Documents or approved in writing by the Structural Engineer.
- o. Maintain adequate clearance from heat generating pipes or equipment.
- p. Conduit shall not be mounted on mechanical or other equipment which vibrates except at the point of connection.
- q. Colored conduit shall only be used for the Systems indicated. In areas where colored conduit is emptied as a result of demolition / remodel it shall only be reused for the Systems it is was

- approved for as indicated within these Specifications.
- r. Underground conduit systems shall be installed to provide proper drainage away from electrical equipment where there is a probability of water entering the conduit system.
4. All Raceways
- a. Provide nylon pull cords in all empty raceways for future use. Raceways containing only # 10 AWG Ground conductor for tracing purposes shall be considered as empty.
5. Prohibited Items
- a. Aluminum Flexible Conduit and Non-Metallic conduit systems are prohibited from being used inside of buildings unless specifically permitted elsewhere in this Specification and with approval from the owner.
 - b. Thinwall indenter, set screw die cast, or slip-on metallic fittings are prohibited from being used.

END OF SECTION

SECTION 26 05 33.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

A. Section Includes

1. Pull and Junction Boxes
2. Outlet Boxes

B. Related Sections

1. Section 26 05 00 Basic Electrical Requirements.
2. Section 26 05 05 Basic Materials and Methods.

C. Submittals

1. Provide Shop Drawings for all Boxes in accordance with the requirements indicated in Specification Section 26 05 00, Basic Electrical Requirements.

PART 2 - PRODUCTS

A. Manufacturers

1. Pull and Junction Boxes - Metallic
 - a. Hoffman
 - b. O. Z.
 - c. Square D
 - d. States Electric
 - e. Hubbell – Wiegmann
2. Outlet Boxes - Metallic
 - a. Appleton
 - b. Bell
 - c. Raco
 - d. Steel City

B. Materials

1. Pull and Junction Boxes.
 - a. Code gauge galvanized steel in concealed and unfinished spaces, prime painted steel in finished spaces.
 - b. Cover shall be secured with screws.
 - c. Provide gasketing where dust or moisture may exist.
 - d. Cast Malleable Iron boxes shall be used in vapor tight or explosion proof environments.
 - e. NEMA 4X stainless steel boxes shall be used for exterior locations.
 - f. NEMA 7 for boxes installed near fueling area.
 - g. Provide conduit seals at all outdoor equipment.
2. Outlet Boxes - Metallic
 - a. All outlet boxes shall be equipped with outlet boxes approved for the application.
 - b. All outlet boxes shall be sized as per the National Electrical Code "NEC".
 - c. Boxes shall either be pressed steel with knockouts or Cast Malleable Iron with threaded hubs.
 - d. Boxes shall be of high conductive metal to maintain maximum electrical continuity unless noted otherwise.
 - e. Sectional boxes shall not be used.
 - f. Boxes installed indoors and concealed shall be pressed steel with knockouts.
 - g. Boxes installed in exposed runs shall be of the types adapted to the surface work and for which acceptable plates and covers are available.
 - 1) Covers and / or plates shall conform substantially to the outlet of the boxes with no projecting edges or corners.
 - h. Cast Malleable Iron boxes or fittings of vapor tight or explosion proof types shall have suitable mounting lugs of feet cast integral with the fitting body.

- i. Conduit fittings {"LB", "C", "T"} or approved types for the location may be utilized as required to facilitate the pulling of conductors.
- j. Minimum outlet box size shall be Four (4") inch square except where specifically otherwise noted or when installed in masonry.
 - 1) Provide a 3 ¾" deep box for masonry construction.
 - 2) Provide extension rings to meet the requirements of finish materials.
 - 3) All boxes shall have covers installed if not in use.
- k. Provide tile rings for outlets and switch boxes installed in glazed tile walls or in wood case work.

PART 3 - EXECUTION

A. Installation

- 1. Pull and Junction Boxes
 - a. Review locations with the Engineer prior to installation.
 - b. Provide boxes to facilitate the pulling or splicing of conductors.
 - c. Install boxes to allow for maximum flexibility.
 - d. Mount boxes with ½" space behind in damp locations.
 - e. Install grounding bushings with bonding conductor on all feeder conduits entering box. Ground bushings and Bonding conductors are not required on branch circuit conduits.
- 2. Outlet Boxes
 - a. Heights are given from the center of the outlet box to finished floor "AFF", directly below the outlet's installed location.
 - b. Exterior outlet heights are given from the center of the outlet box to the floor inside adjacent door, or if not door, from first floor above grade "AG" unless otherwise noted.
 - c. All outlet boxes shall be installed plumb level and not more than 1/8" back from finished surface.
 - d. For the reduction of sound transmission outlet boxes shall not be installed in walls and/or partitions back to back.
 - e. Arrange outlets symmetrically where several occur in the room.
 - f. The Electrical Contractor shall verify the swing of doors prior to switches being located and installed. If placement of switch is behind open door, verify and confirm location of switch with the Architect / Engineer.
 - g. Installation of devices shall utilize the screw terminals of the device, "back – stabbing" of the device for wire termination is not allowed.
 - h. Receptacles to be installed with Ground terminal opening on top when mounted vertical and Neutral mounted on top with Ground terminal on left when installed horizontal.
 - i. The Electrical Contractor shall provide the appropriate device / plaster ring and coverplate as required for the installation of all outlet boxes.
 - j. The location of lighting outlets as indicated shall be coordinated with the Architectural and Mechanical Construction Documents prior to installation.
 - k. The Electrical Contractor shall verify the heights of all outlets located above wall-mounted equipment to assure the location of the outlets are installed above the top of the equipment.
 - l. Outlets to be installed in exposed concrete brick or block wall the height and horizontal positions of the outlet shall be adjusted to bring one side and the top or bottom of the outlet box at a mortar joint.
 - m. Switches, Receptacles, Thermostats, and similar devices shall be installed in locations to provide the maximum protection against mechanical damage.
 - n. Surface boxes used on the exterior of a building or on the site, shall be rated for outdoor use and weather-tight. Provide 1/8" diameter weep hole to drain moisture from boxes.

END OF SECTION

SECTION 26 05 53
BASIC ELECTRICAL IDENTIFICATION AND LABELING

PART 1 - GENERAL

A. General Requirements

1. Shop Drawings: Require a complete list of identification labels. The list shall be updated and verified with the Engineer prior to manufacture of these labels to reflect changes made during the construction of the project.

B. Laminated Plastic Nameplates

1. Identification labels for equipment or devices shall be black-white-black laminated plastic plates. Characters shall be cut through the black to show the white of the plate. Inscriptions shall be symmetrical to the centerline of plates.
2. Labels shall be similar and equal to Trophy House, Minneapolis, Minnesota, or Seton Name Plate Corporation, New Haven, Connecticut.
3. Laminated plastic nameplates shall be attached to the equipment or device surfaces with two self-tapping chrome-headed screws or rivets. Self-sticking adhesive backed nameplates will not be accepted.

C. Stainless Steel Plates

1. Stainless steel plates shall be Type 302 satin finish. Inscriptions shall be engraved 1/4-inch high and filled with black.

D. Wire Markers

1. Wire markers shall be adhesive write-on tape with clear adhesive over-wrap, as manufactured by Brady Manufacturing, T & B, Panduit, or Ideal.

E. Embossed Tape

1. Embossed adhesive tape shall not be used.

F. Exterior Underground and Direct Buried Lines

1. Buried plastic tape shall be of inert plastic 3-inches wide, red colored with the words "Caution Buried Electrical Lines" repeatedly printed along the length of the tape. Tape shall be Panduit or equal.
2. Provide buried plastic tape approximately 12-inches below finished grade and directly over buried lines for future digging precautions. Where below slab-on-grade locate buried plastic tape approximately 9 inches below top of slab.
3. Where conduits or ducts enter a manhole, hand-hole or above grade cabinet, each shall be permanently identified by means of plastic fiber, laminated plastic, or non-corrosive metal tags to indicate circuit numbers (i.e.: "H4-2, 4, 6") contained in that duct. Tags shall be fastened to conduits or ducts via a minimum of (2) nylon cable ties. Cable ties shall be UV Stabilized Nylon 6/6 type cable ties with stainless steel locking barbs.

G. Conduit Markers

1. ANSI sized, vinyl, self-adhesive, conduit markers color coded per control systems with a minimum of 1/2 inch high pre-printed letters. For larger conduits, labels and text shall be sized according to ANSI pipe labeling standards.

H. Identification Equipment

1. Certain items of equipment, controls, and switchplates are to be labeled with identifying words, names, numbers or characters. Hand printing shall not be used. Such identification shall be as specified below:
 - a) Motor or heater control devices – manual motors switches, motor toggle switches, pushbuttons, thermostats, etc., shall be identified with a laminated plastic nameplate. All nameplate inscriptions shall indicate the equipment being controlled, i.e., "Toilet Exh, Range Hood Exh, Heater, A.C. Unit #1, H.W. Pump #2, etc., as described in the Motor Starter and Control Schedule, and the branch circuit source, i.e., "Panel L1-2".
 - b) Motor or heater disconnects and starters – each safety switch, toggle switch, or starter shall

be identified with a laminated plastic nameplate. Nameplate inscriptions shall indicate the equipment being controlled, its motor number as listed in The Motor Starter and Control Schedule and its motor number as listed in the appropriate schedule on the mechanical drawings, i.e., "Toilet Exh (Mot #4, PRV-1), Heater (Mot #7, UH-3), A.C. Unit #1 (Mot #12, RTU-2)", etc., and to include the branch circuit source, i.e., "Panel L1-2".

- c) Call bell pushbuttons, door release pushbuttons, alarm pushbuttons, etc. shall be identified with laminated plastic nameplates. Nameplate inscriptions shall indicate the function of the device, i.e., "Call Bell, Door Release, Silent Alarm."
- d) Switchboards, Motor Control Centers and Panelboards – a laminated plastic nameplate shall be provided on the outside of each panelboard in mechanical and electrical equipment rooms and on the inside of the door of each panelboard located in other finished areas. Inscriptions shall indicate the panel name, voltage phase, wires, feeder size, and feeder source, i.e.: "Panel L1, 120/208-3PH-4W, 2-inches – 3#2 & 1#8 GRD THHN, fed from Panel H1."
- e) Dry-Type Transformers – A laminated plastic nameplate shall be provided which shall indicate the name of the transformer, and primary feeder size and source, i.e., "TF-1, 1¼-inches - #1 & 1#8 GRD, fed from Panel H1."
- f) Bus Duct – A laminated plastic nameplate shall be provided every 50 feet along the length of the bus duct which shall indicate the name of bus duct, voltage, phase and neutral, bus size, and MCM & 1 #1/0 GRD, fed from MSB-1." Provide minimum 1/2" high lettering for bus plugs. Indicate the load or device served. Place nameplates on the bottom of bus plugs.
- g) Each disconnect switch or circuit breaker in switchboards or motor control centers, or individually mounted shall be identified with a laminated plastic nameplate. Inscriptions shall indicate the device served, i.e., "Panel L1, HVAC Unit #1, Capacitors," etc.
- h) Time switches, contractor cabinets, automatic lighting controls, shall be identified with laminated plastic nameplates. Inscriptions shall indicate the equipment controlled, i.e., "Parking Lot Lights, Night Lights, Ext. Security Lights, Night Set Back Control," etc.
- i) See standard drawing details for examples of labels; refer to Specification Section 26 05 05.

I. Identification – Emergency Equipment

- 1. Electrical equipment that is connected to the building emergency system shall also be labeled.

J. Identification – Conductors

- 1. Branch circuit conductors shall be identified as follows: In outlet boxes, branch circuit conductors shall be identified by one of the following options:
 - a) Option A – with full wrap self-adhesive wire markers to indicate panelboard circuit number (i.e.: "L1-2").
 - b) Option B – The inside of the box shall be marked either on the side or back of the box, with a black indelible "magic marker" to indicate the panelboard and circuit numbers of the conductors contained in the box (i.e.: "H4-2, 4, 6").
 - c) Option C- In unfinished areas mark the outside of the box or the conduit to the box with a black indelible "magic marker" to indicate the panelboard and circuit numbers of the conductors contained in the box (i.e.: "H4-2, 4, 6").
 - d) In junction boxes and pullboxes, branch circuit conductors shall be identified by one of the following options:
 - e) Option A – With full wrap self-adhesive wire markers to indicate panelboard and circuit number (i.e.: "L1-2").
 - f) Option B – In unpainted areas outside of the box cover shall be marked with a black indelible "magic marker" to indicate circuit numbers of conductors contained in box (i.e.: "H4-2, 4, 6"). Mark inside of box cover in painted areas.
 - g) Option C – A tag shall be attached by string to each group of conductors that enter the pull box or junction box (i.e.: one tag per conduit). Tags shall be marked with a black indelible felt tip pen to indicate the circuit numbers of the conductors (i.e.: "L1-2, 4, 6").

K. Panelboard Directories

- 1. Install typewritten circuit directories to indicate the branch load types and areas served in panelboards. Provide new directories in existing panels where circuits have been modified, added or deleted. Include on the directory the date the directory is installed and the Electrical

Contractors company name. Transparent pockets shall be provided in panelboards for directories to be placed in. Self shall leave old directory for existing panelboards in pocket behind new directory.

L. Inscriptions

1. Inscription characters on the switchboard, panelboards, metering, terminal cabinets and fuse storage cabinet shall be a minimum of 1/4-inch high. Inscription characters on other identification plates shall be minimum 1/8-inch high.

M. Conduits and Junction Boxes

1. All conduits for systems indicated shall be identified within 3-feet of junction boxes, 25-feet on continuous runs of conduit, and a minimum of 1 marker per room using conduit markers. Paint junction box covers with enamel spray paint for any system not having colored conduit specified. Colors for junction box covers and conduit labels to be as follows:

System	Junction Box Cover Color	Conduits/Raceway
120/240 Volt System	Gray	Gray/Black Letters "120/240 Volt System"

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 26 24 16
PANELBOARDS**

PART 1 - GENERAL

A. Related Sections

1. Section 26 05 00 Basic Electrical Requirements.
2. Section 26 05 05 Basic Materials and Methods.
3. Section 26 05 33 Raceways
4. Section 26 05 19 Wires and Cables
5. Refer to Panel Schedules on the Drawings.

B. References

1. NEMA – The Association of Electrical and Medical Imaging Equipment Manufacturers:
 - a. NEMA AB 1 – “Molded Case Circuit Breakers”.
 - b. NEMA KS 1 – “Enclosed Switches”.
 - c. NEMA PB 1 – “Panelboards”.
 - d. NEMA PB 1.1 – “Instructions for the Safe Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less”.

C. Submittals

1. Provide Shop Drawings for all Panelboards in accordance with the requirements indicated in Specification Section 26 05 00, Basic Electrical Requirements.
2. Shop Drawings shall include:
 - a. Bussing ampacity, and material.
 - b. Withstanding rating.
 - c. Overcurrent protection device sizes and types.
 - d. Surge Suppressor and Rating.
 - e. Controller.
 - f. Power supply and control bus.
 - g. Enclosure.
 - h. Switch inputs.
3. Include drawings indicating how surge suppressor connects to the bus.
4. Provide an electronic version in excel format of the panelboards directories upon the completion of the Project.

D. Description of System

1. Provide panelboards of sizes and type with Bolt on circuit breakers as indicated on the Drawings, with overcurrent protective devices, contactors, as scheduled on the Drawings.
2. Panelboards shall have Main Circuit Breakers and feed thru lugs for branch circuit panelboards.
3. Where there are multiple panelboard tubs on a common feeder a main circuit breaker shall only be required on the first tub providing the additional tubs are directly adjacent to the first tub having the main circuit breaker. Where Additional panelboard tubs are installed in a separate room or away from the first tub having the main circuit breaker than these additional tubs shall also have main circuit breakers installed.

E. Spare Parts

1. Keys: Furnish all keys to the owner.
2. Handle ties: Furnish handle ties suitable for disconnecting means of multiwire branch circuits. Provide sufficient quantity for multiwire circuits as shown on the drawings, and three (3) spares of each size.

PART 2 - PRODUCTS

A. Manufacturers

1. Eaton / Cutler Hammer
 - a. ABB / GE Company
 - b. Square D / Schneider Electric
 - c. Siemens

B. Panelboards

1. General:
 - a. Provide panelboards as indicated on the Drawings.
 - b. Deadfront.
 - c. Integrated equipment rating for components to withstand shall be as indicated on the Drawings and at a minimum of the following:
 - i. Minimum 10,000 RMS symmetrical amperes for panelboards rated 240, and 120/240 Volts.
 - d. Bussing:
 - i. Copper phase sequenced bussing, ampere rating as indicated on the Drawings.
 - ii. Full size neutral bus when indicated on the Drawings.
 - iii. Main Lugs or main device as indicated on the Drawings.
 - iv. Sub feed or feed through lugs as indicated on the Drawings.
 - v. Separate non-insulated copper ground bus including main grounding lug, and terminals for minimum of 50 percent of circuits including spares.
 - e. Enclosure:
 - i. Galvanized steel back box with primed and painted Gray enamel front covers.
 - ii. NEMA 1 rating.
 - iii. Gutters to meet National Electrical Code "NEC" required for bending spaces with increased gutter size for large feeders passing through gutters.
 - iv. Provide cabinet front with concealed trim clamps, continuous piano hinges (door – in-door construction is prohibited), and flush lock.
 - f. Circuit Breakers:
 - g. Main circuit breaker and branch circuits sized as indicated on the Drawings.

PART 3 - EXECUTION

A. Installation

1. Install panelboards complete with accessories as indicated on the Drawings and in accordance with the manufacturers published instructions and recommendations.
2. Provide a minimum of three (3) one-inch empty conduits from each flush mounted panelboard up into accessible ceiling space for future use.
3. Provide concrete housekeeping pad 6 inches thick for outdoor panelboards.
4. Provide hot dip galvanized strut rack for all outdoor panelboards.
5. Install panelboards at 6' – 0" above finished floor to top of panelboard.
6. Directory:
 - a. Typed circuit directory.
 - b. Place directory in clear plastic case attached to inside of panelboard door.
 - c. Provide replacement directory cards where new loads are added to existing panelboards.

END OF SECTION

**SECTION 26 28 00
DISCONNECT SWITCHES**

PART 1 - GENERAL

- A. Section Includes
 - 1. Fused Disconnect Switches
- B. Related Sections
 - 1. Section 26 05 00 Basic Electrical Requirements.
 - 2. Section 26 05 05 Basic Materials and Methods.
 - 3. Section 26 28 16 Overcurrent Protective Devices.
 - 4. Refer to Equipment Schedules on the Drawings.
- C. Submittals
 - 1. Provide Shop Drawings for all Disconnect Switches in accordance with the requirements indicated in Specification Section 26 05 00, Basic Electrical Requirements.

PART 2 - PRODUCTS

- A. Manufacturers
 - 1. Acceptable Manufacturers:
 - a. Eaton / Cutler Hammer
 - b. General Electric
 - c. Square D / Schneider Electric
 - d. Siemens
 - e. Killark
 - f. Crouse Hinds
 - 2. Other manufacturers approved in accordance with Specification Section 01 61 00, Common Project Requirements.
- B. Materials
 - 1. All Disconnect Switches shall be NEMA heavy duty Type H. D., horsepower rated, and Underwriters Laboratories "UL" listed.
- C. Components
 - 1. Enclosures – Disconnect Switches located on the Interior shall be NEMA 1 general purpose enclosures. Disconnect Switches located on the Exterior shall be NEMA 4X stainless steel, unless noted otherwise.
 - 2. Enclosures – Disconnect switches located outdoors at fueling area shall be NEMA 7 rated for explosion proof Class 1, Division 2, Group C,D areas.
 - 3. Switch Mechanism – Disconnect Switches shall have quick make and quick break operating handle. Switch handle and mechanism shall be integral with box, not the cover.
 - 4. Disconnect Switch shall be pad lockable in both the On and Off position.
 - 5. Disconnect Switch shall have a dual cover interlock to prevent the unauthorized opening of the door when the Disconnect Switch is in the On position.
 - 6. Disconnect Switch shall have switch blades that are fully visible in the Off position when the door is open.
 - 7. Disconnect Switch shall be dead-front construction with permanent arc suppressors hinged or attached otherwise to permit easy access to the line side lugs without the removal of the arc suppressor.
 - 8. Disconnect Switch Lugs shall be UL listed for Copper and / or Aluminum cables and front removable. All current carrying parts shall be plated by electrolytic process.
 - 9. Disconnect Switch shall be either Fusible or Non-fusible as indicated on the Drawings.
 - 10. Disconnect Switch shall have Rejection type pressure fuse clips for Class RK1 and RK5 fuses.
 - 11. Disconnect Switch shall have Pressure fuse clips for Class J fuses.
 - 12. Disconnect Switch shall have auxiliary disconnect contacts for Control Circuits.
 - 13. Disconnect Switch shall have Identification nameplate.

14. Disconnect Switch shall be suitable for use as service equipment and so labeled.

D. Fuses

1. Acceptable manufacturers:
 - a. Eaton / Bussmann
 - b. Mersen
 - c. Littlefuse

PART 3 - EXECUTION

A. Installation

1. Disconnect Switch shall be installed as indicated in the Construction Documents.
2. Provide conduit seals at the boundary of the classified area.
3. Label Disconnect Switch with identification nameplate indicating equipment being served, and the distribution power source in accordance with the Specifications.
4. Disconnect Switch shall be installed in an accessible location as convenient to the equipment being served as possible.
5. Disconnect Switches located on exterior walls shall be installed on Fire Rated $\frac{3}{4}$ " exterior grade plywood backing at least the size of the disconnect switch.

END OF SECTION

**SECTION 31 23 00
EXCAVATION AND EMBANKMENT**

PART 1 DESCRIPTION. This work shall consist of excavating, removing and satisfactorily disposing of materials, and the construction of embankments within the limits of work as required to prepare the site in accordance with these specifications, and in conformity with the dimensions and typical sections shown on the plans and with lines and grades as directed by the Engineer.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 MATERIALS.

- A. Excavation Material. All excavated materials shall be classified as Common Excavation, Subgrade Excavation, or Rock Excavation.
1. Common Excavation. Common Excavation shall consist of all excavation materials encountered, which are not classified herein as Rock Excavation or Subgrade Excavation, regardless of character of material encountered; and shall include excavations classified as Subgrade Excavation when a separate item is not included in the proposal.
 2. Subgrade Excavation. Subgrade Excavation shall consist of all excavations made below the top of the final graded surface to the width and depths shown on the plans or as directed by the Engineer, and the materials encountered are not classified as Rock Excavation.
 3. Rock Excavation. Rock Excavation shall consist of materials that, in the opinion of the Engineer, cannot be removed without drilling and blasting or without the use of rippers, together with boulders and detached rock having a volume of one cubic yard or more.
- B. Granular Material. Granular material for embankments or subcut backfill shall consist of sound, durable particles of sand, gravel, crushed rock, or crushed stone. The material shall be obtained from sources selected by the Contractor, who shall make all necessary agreements with the property owners from whom he proposes to obtain the material. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted to specified densities. The use of crushed concrete or bituminous materials will not be permitted.

The material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The material shall meet the gradation specified in the table below.

Granular Gradation Requirements

Sieve designation	Percent Passing
3 inch (75 mm)	100
3/4 inch (19.0 mm)	70-100
No. 10 (2 mm)	20-100
No. 40 (425 µm)	5-60
No. 200 (75 µm)	0-10

The portion of the material passing the #40 sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than 6 when tested in accordance with AASHTO T 89 and T 90, respectively. Also, the specific gravity determined by AASHTO T 100 shall be not less than 2.3 and not more than 2.9.

- C. Unsuitable Material. All material designated by the Engineer to be unsuitable for use on airport property.
- D. Contaminated or Impacted Soil/Bedrock.
1. Site Conditions. If the project site is identified as containing isolated contaminated or impacted soils/bedrock, the soil or bedrock may contain one or a combination of petroleum products, glycol, or other contaminants. Soil borings of the site may also indicate the presence of contaminants in fill materials placed in the past, of which the origin and composition may not be known.
 2. Definitions. For purposes of this section, soils and bedrock will be classified as "Contaminated", "Impacted", or "Non-Impacted." This classification will be based on testing of representative samples of the soil performed by a certified testing laboratory retained by the Contractor. The City, at its option and own expense, may have additional tests performed to verify the results of the Contractor's testing program.

"Contaminated Soil/Bedrock": Soil/bedrock containing a given contaminant at or above the level which the Contractor's selected off-site disposal facility, which is permitted to accept and place such material, requires to be placed specifically within a landfill cell. The limit will vary depending upon the type or types of contaminants identified in the material. The limits for accepting a given contaminant may vary from one disposal facility to another, based on their permit requirements to accept these materials.

"Impacted Soil/Bedrock": Soil/bedrock which is determined to contain a given contaminant at a level which the Contractor's selected off-site disposal facility, which is permitted to accept and place such material, does not require to be placed specifically within a landfill cell, but will accept as daily cover material. The limit will vary depending on the type or types of contaminants identified in the material, and may vary from one disposal facility to another, based on their permit requirements to accept these materials. Historically, soils containing petroleum or glycol compounds at less than saturation levels have generally been acceptable for use as cover material. However, actual limits will be established by the disposal facility in conjunction with reviewing agencies and may differ from those described above.

"Non-Impacted Soil/Bedrock": Soil/bedrock which, when tested for specific parameters, shows no detection of the parameters under analysis, based on the selected laboratory's minimum detection limits. The parameters analyzed shall include, at a minimum, diesel range organics (DRO), total petroleum hydrocarbons (TPH) as jet fuel, and RCRA metals and glycols. In the case of metals analysis, soils/bedrock will be considered non-impacted if visual, olfactory, PID observations, and laboratory results show no evidence of impacts as judged by the Engineer's environmental consultant.

- E. Regular Embankment. Regular embankments (embankments located outside of future pavements) shall be constructed of materials salvaged from project excavations to the extent available. Regular embankment materials shall be inorganic, non-expansive mineral soils. Organic soils and highly-plastic silts and clays shall not be used. Acceptable soil types for regular embankment material include SP, SP-SM, and SM, except that SM soils containing more than 30% by weight of material passing the #200 sieve shall not be utilized in future building areas. To the extent sufficient regular embankment soils are not available from the excavation, the Contractor shall furnish borrow material from off-site sources at the bid unit prices. Borrow material shall be Granular Material as defined in Article 31 23 00.2B unless a bid item for Common Borrow is provided in the Contract.
- F. Common Borrow. When a bid item for Common Borrow is provided in the Contract, or when directed by the Engineer, borrow material for regular embankment, not available from on-site excavation, shall

be furnished by the Contractor from sources not on airport property. The Contractor shall make all necessary agreements with the property owners from whom he/she obtains the material.

Regular embankment materials shall be natural, inorganic, non-contaminated, non-decayable, competent soils. Such soils may include gravel, sand, or clays with Unified Soil Classification System (ASTM D2488) classifications of GW, SP, SM, or CL. The material must be approved by the Engineer, exhibit a plasticity index less than 15 percent, and must be easily compactable to the required density.

The Contractor shall provide soil test reports indicating soil type and properties for Engineer approval prior to delivery to the airport. The contractor shall furnish borrow material from off-site sources at the bid unit prices. The contract unit price for borrow materials includes the cost of source preparation, excavation, testing, delivery, placement, compaction, and final finishing.

- G. Topsoil Borrow. When specifically required by the plans and specifications or directed by the Engineer, borrow material for topsoil shall be furnished by the Contractor from sources not on airport property. The Contractor shall make all necessary agreements with the property owners from whom he/she obtains the material.

The topsoil material furnished shall be obtained from the soil horizons normally designated as "A" or "B" as defined by the Soil Science Society of America or shall be obtained from alluvial deposits. Texture of the topsoil shall be according to the engineering definitions of particle size, and its composition shall be within the following limitations: Clay 5-30%; Silt 10-70%; and Sand 10-70%. Texture shall be determined in accordance with AASHTO T 88. When tested in accordance with current standard procedures of the University of Minnesota, Soils Science Department, Soils Testing Laboratory, the topsoil shall have nutrient values as follows: Organic Matter 3-20%; extractable phosphorous 1.6 pounds per acre-inch minimum; exchangeable potassium 13.8 pounds per acre-inch minimum; and pH 6.1-7.8. The Contractor shall submit samples for testing prior to approval of the source.

- H. Calcium Chloride Solution. If the proposal includes an item for calcium chloride solution, it shall be applied in accordance with MNDOT Specification 2131 as directed by the Engineer.

PART 3 CONSTRUCTION REQUIREMENTS

- A. General. The Engineer shall have complete control over the excavation, moving, placing and disposition of all material and shall determine the suitability of materials to be placed in the embankment or subgrade. Suitable material taken from excavation shall be used in embankments, subgrades, and for backfilling subcuts as indicated on the plans or as directed by the Engineer. Material taken from excavation which is suitable for use in embankment, but is in excess of the needs of this contract, shall be removed from the airport, unless the Special Provisions require that this material be stockpiled in designated areas for use in future projects. Excavated materials which are not suitable for use in embankments, as determined by the Engineer, shall be removed from the site and disposed of in accordance with Section 01 35 13, Special Project Procedures, Disposal of Waste Materials.

Topsoil shall not be used in subgrades or in embankments, except as required for new turf areas as shown on the drawings.

The Contractor shall inform and satisfy himself/herself as to the character, quantity, and distribution of all materials to be excavated. No payment will be made for any excavated material which is used for purposes other than those designated.

The existing subgrade is sensitive to moisture. Therefore, the Contractor shall conduct excavation, backfill and grading operations in such a manner so as to minimize the possibility for infiltration of storm water into subgrade materials. Temporary pumps of adequate capacity to remove any storm water that begins to accumulate shall be available at all times. In areas where groundwater level is above the bottom of subgrade excavation, groundwater shall be lowered by dewatering such that excavation and embankment are done in dry conditions.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained on account of rain, freezing weather, or other unsatisfactory conditions at the site. No frozen materials shall be placed in embankments and no work shall be done on frozen ground or subgrades. Snow, if any, shall be removed before proceeding with the work.

All excavations and embankments shall be maintained in a well-drained condition at all times. This shall include the installation of planned drainage facilities concurrently with the embankment construction or the installation of temporary drainage facilities as approved by the Engineer. No material shall be stockpiled in a manner that will restrict surface drainage.

If it is necessary to interrupt existing surface drainage, storm sewers, or subdrains, the Contractor shall provide and maintain at no direct cost to the Owner, temporary facilities as approved by the Engineer. These temporary facilities shall remain in place until the permanent facilities are operative or until they are no longer required.

- B. Equipment. The Contractor may use any type of earthmoving equipment suitable for and capable of accomplishing the required work. Compaction equipment of suitable types and in quantities satisfactory to the Engineer shall be in continuous operation during construction of embankments and subgrades. The compacting equipment shall be of such design, weight, and quantity as to obtain the specified density in each case. Suitable watering equipment shall be at hand at all times and shall be used as directed by the Engineer in the construction of subgrades and embankments.
- C. Subgrade Soils Identification. Prior to beginning excavation operations in areas where subgrade correction is anticipated, the Engineer may request inspection holes to be excavated. The Contractor shall provide a backhoe and operator to make a vertical excavation in the subgrade soils to enable the Engineer to determine the required depth of subgrade correction. The location of the inspection holes shall be as directed by the Engineer. The depth shall be 10 feet or to rock, whichever is less. If the depth of subgrade correction is less than the depth of the inspection holes, they shall be backfilled in accordance with the provisions of Section 31 23 00.3.M of the Specifications.
- D. Unsuitable Material. All materials designated by the Engineer as unsuitable for use on this project shall be removed from the airport property and disposed of in accordance with Section 01 35 13, Special Project Procedures, Article 1.13 and the following: Disposal of unsuitable or surplus excavated soils off the airport property shall be in accordance with a satisfactory Disposal Plan. This Disposal Plan shall constitute the Contractor's proposal for acceptable disposition of surplus materials off the airport property in compliance with applicable environmental regulations, permit requirements, disposal site restrictions, and any requirements or limitations imposed by the Contract. The Disposal Plan shall include copies of relevant permits and agreements with disposal site operators. A satisfactory Disposal Plan shall be submitted to the Engineer prior to starting the disposal operations.
- E. Materials Selection. The subgrade beneath concrete pavements shall be subcut below finished grade to the depths shown on the drawings and to such additional depth as designated by the Engineer to remove unsuitable materials. Backfill shall consist of suitable materials (SP and SP-SM) salvaged from grading operations or with granular materials furnished from an off-site source. Granular material salvaged from grading operations shall be placed in the lower portions of the subgrade.

The subgrade beneath bituminous pavements shall be subcut to a minimum depth of 1-foot below the aggregate base course and to such additional depth as shown on the drawings or as designated by the Engineer to remove unsuitable material. Backfill shall consist of granular material salvaged from the grading operations or furnished from an off-site source.

Placement of salvaged materials and off-site granular material in the same area, simultaneously, will not be permitted.

The Contractor will not be permitted to blend unsuitable on-site soils with suitable salvaged materials or borrow for use on the project.
- F. Use of On-Site Materials. Use of acceptable material found on or adjacent to this project, which was not required to be excavated or removed, will not be authorized for use. Over-excavation of areas adjacent to pavements to obtain suitable material for embankment construction will not be permitted.

- G. Excess Material. Material taken from excavation which is suitable for use in embankment, but in excess of the needs of this project, shall, unless otherwise required by the Special Provisions, be removed from airport property and disposed of in accordance with Section 01 35 13, Special Project Procedures, Article 1.13 and in accordance with a satisfactory disposal plan as described in paragraph D, Unsuitable Material, above.
- H. Contaminated or Impacted Soil/Bedrock. If the project site is determined to contain contaminated or impacted soil/bedrock, the following section applies.

Based on available information listed in the following section, and prior to beginning excavation operations, the Contractor shall establish and conduct a testing program to identify the locations of contaminated or impacted soil so that it can be properly characterized for off-site disposal. The Contractor shall notify the Engineer of the testing program schedule so that notification may be made to the Engineer's environmental consultant. The Contractor shall also perform material testing, if any, as required by owners and/or operators of the selected disposal site(s) for either non-impacted or impacted materials.

All testing shall be performed by a qualified Independent Testing Laboratory or environmental consultant approved by the Engineer. Copies of the proposed testing program and all test results shall be provided to the Engineer. The Contractor's testing program shall include screening and sampling for laboratory analysis of excavated soils in areas of existing fill or other suspected impacted areas. This screening shall include visual and odor observations, as well as soil headspace measurements using a photoionization detector (PID) for petroleum compounds. Laboratory analysis of soil samples may be required for classifying non-petroleum impacts, if encountered.

1. Description of Work.
 - a. Extent of Work: The work shall be performed as indicated throughout this section and on the Drawings.
 - b. Description and Additional Definitions: This work shall consist of furnishing all materials, tools, equipment, transportation, and labor necessary for the management of impacted and contaminated materials (soil, groundwater/surface water and petroleum product) encountered during earthwork activities.
2. Soil Management Submittal Log: A soil management submittal log shall be used by the Engineer to track the progress of soil management submittals during the project. The log will be presented to the Contractor at applicable construction progress meetings.
3. Testing and Disposal Plan. Prior to beginning grading operations, the Contractor and the Contractor's qualified independent testing laboratory or environmental consultant must establish a Testing and Disposal Plan and conduct the testing program to identify impacted or contaminated soil so that it can be properly disposed. The Contractor's qualified independent testing laboratory or environmental consultant shall also perform testing, if any, as required by the owners or operators of the selected disposal sites. All testing shall be performed by a qualified independent testing laboratory or environmental consultant approved by the Engineer. Copies of the testing program, all testing results and selected disposal sites shall be provided to the Engineer in a "Testing and Disposal Plan" prior to conducting any work on-site.

The "Testing and Disposal Plan" shall, at a minimum, contain the following information prior to beginning any on-site work:

- a. Identification of Project Site: General site history (i.e. known areas of soil contamination from UST releases, fueling areas, dumping, or no known history that would suggest soil impacts);
- b. Summary of Existing Information Used to Establish the Testing Program: (i.e. soil borings, impacts previously found, etc.) Identify the type of information available and how it will be used to establish the testing program or how it will be considered in dealing with soil testing, field screening, permitting, anticipated schedule, estimated quantities, etc.;
- c. Testing Program Details: Identify selected locations and method(s) of sampling (i.e. a grid for conducting geoprobe borings, soil borings, test pits, trenching, etc.); specify field screening methods and material sample collection for laboratory analysis. Indicate parameters requested for laboratory analysis of the sampled material. Reference that the analysis is

being conducted as required by the off-site disposal site(s) and for obtaining disposal permits by characterizing impacts in the soil or bedrock;

- d. Permit Application: Include all permit applications for the selected disposal sites of impacted and non-impacted soils and other materials such as rock, concrete, asphalt, etc., as appropriate. Review of permits needed (State, County, Township, private landowner, etc.);
- e. Specific Permit Approvals or Private Landowner Acceptance: Provide finalized private landowner acceptance letter(s) and appropriate governmental and/or landfill permits prior to any off-site disposal. Bidders should be aware that Dakota County may impose more stringent limitations on material disposal than would be required by the Minnesota Pollution Control Agency (MPCA);
- f. Field Screening: Describe ongoing assessment of soils and bedrock that are excavated (for verification of impacted and non-impacted). Identify personnel conducting the testing, frequency of field screening (based on volume of excavation, etc.), and locations (i.e. grid), screening instrument(s), calibration of instrument(s), method of screening, data collection and reporting, and documentation: testing personnel must be on-site to conduct tests required by the disposal site wherever soil is excavated for off-site disposal;
- g. Asbestos-Contaminated Soils: Describe the actions to be taken to identify soils contaminated with asbestos-containing debris, residue, or fragments originating from asbestos-containing coatings, coverings, or insulation. Identification of asbestos-contaminated soil must be made by a competent person, provided by the Contractor, and trained and licensed as an asbestos inspector.
- h. Manifests: Tracking of soil or bedrock hauled off-site (volume of non-impacted and disposal location). The Contractor shall provide monthly summaries of this information to the Engineer; and,
- i. Contingency Plan: Actions to be taken if unexpected environmental conditions are encountered such as piping, asbestos, tanks, drains, drums, other types of impacts identified, etc. Identify emergency contacts and phone numbers, cleaning/liquid removal, temporary storage on-site if needed, management and disposal processes, and approvals.

If not already included in the "Testing and Disposal Plan", provide the following information, as necessary, to the Engineer prior to beginning any on-site work:

- Minnesota Department of Commerce (MDC) Petrofund Board Contractor Registration Number for excavation contractors removing impacted materials.
- MnDOT hazardous-waste-transport license number for hauler transporting petroleum product, if any.
- Name, location, MPCA Certification Form(s), and permit(s) of MPCA-approved site and any other required permit from local, county, or other regulatory agencies for disposal of all impacted soil, bedrock, etc.
- Name, location, permit(s) and approvals of sites for disposal of all non-impacted soil, bedrock, etc.

4. Post-Excavation Submittals: The Contractor shall submit the following information to the Engineer subsequent to completion of work:
 - a. Impacted/Contaminated Disposal Sites. Name and location of the disposal site. The approved waste profile sheet along with any other permit required from local, county, or other regulatory agencies, for disposal of all impacted and contaminated soil or bedrock.
 - b. Non-Impacted Disposal Sites. Name and location of the disposal site. A letter from the disposal site acknowledging acceptance of the soil.
 - c. Manifests for disposal of any hazardous or non-hazardous materials from the project site including the name of the product recycler (if applicable). Include a summary cover letter totaling the volume/weight of material with manifests as an attachment.
 - d. Manifests for disposal and treatment of impacted/contaminated soil including the name and location of the disposal and treatment site. Include a summary cover letter totaling the volume/weight of material with manifests as an attachment.
 - e. Documentation confirming treatment of impacted soil (if applicable).
 - f. Documentation indicating final use of impacted soil.

- g. Documentation indicating the final use of non-impacted soil
 - h. Free product disposal documentation (if applicable) including name of disposal facility, gallons removed, etc.
 - i. Location map of MSP reuse area (if applicable) for impacted and non-impacted material showing boundaries of reuse. Include an explanation of how the material is being reused (fill under structures, road base, etc.).
5. Safety Plan: The Contractor shall submit a site-specific Construction Safety Plan to be implemented and enforced by the Contractor throughout the project. This Safety Plan shall include all applicable OSHA requirements as they relate to worker safety during the construction period. The Safety Plan shall specifically address practices and procedures for worker safety at petroleum impacted sites, including but not limited to, explosive vapor monitoring and contingencies.
6. Codes and Standards for Quality Assurance. The Contractor shall complete the construction work with the greatest degree of safety possible and in accordance with appropriate state and local guidelines, and all applicable federal, state, and local statutes, laws, regulations, ordinances, and codes and accepted industry practices. The Contractor's work shall comply with proper codes/standards relating to construction and management of impacted materials. In case of discrepancy, the most stringent code shall govern. Codes/Standards are as follows, but are not limited to:
- a) Federal Regulations, 40 CFR Part 280/281.
 - b) Minnesota Pollution Control Agency (MPCA) Guidelines and Reporting Requirements.
 - c) Metropolitan Council Environmental Services (MCES) Guidelines and Requirements.
 - d) Minnesota Department of Natural Resources (MNDNR) Guidelines and Requirements.
 - e) NFPA 30, 1987, "Flammable and Combustible Liquids Code".
 - f) Uniform Fire Code, 1988 Edition.
 - g) Minnesota Department of Health.

The contractor shall obtain necessary local, county, state, or federal permit(s), license(s), or approvals required to perform the work included in this contract prior to commencing the work and at no additional cost to the CITY. The Contractor shall notify the Local Fire Marshall and Airport Manager 20 days prior to commencing the work.

7. On-Site Disposal and Reuse of Excavated Materials. If testing performed by the Contractor's qualified testing representative indicates detection of petroleum or glycol compounds that meet the definition of "impacted soil", the material shall be classified as "impacted soil" as defined in Section 31 23 00.2.D. Petroleum or glycol impacted soils shall be utilized as fill within the project limits whenever possible. The Engineer may require the Contractor to dispose of otherwise suitable non-impacted soils off the Airport, so as to maximize on-site use of suitable impacted soils. Utilization of impacted soils as project fill shall be subject to the following restrictions:
- a) Soil shall be otherwise suitable for embankment construction, as described in Section 31 23 00.3.E.
 - b) Impacted soil shall be placed in locations directed by the Engineer;
 - c) Impacted soil shall not be placed beneath planned building foundations, or within 10 feet of planned underground utilities;
 - d) Impacted soil shall be placed at least 10 feet above normal groundwater elevation, as determined by the Engineer; and
 - e) The Engineer may direct that impacted soil be placed in 6-inch maximum lifts, or be blended with other materials.

If testing performed by the Contractor's qualified testing representative indicates detection of petroleum or glycol compounds that meet the definition of "contaminated soil", the material shall be classified as "contaminated soil" as defined in Section 31 23 00.2.D. Petroleum or glycol contaminated soils shall not be used as fill within the project limits and must be disposed of off-site at a permitted disposal facility.

Soils impacted with compounds other than petroleum or glycol-based (i.e. chlorinated solvents, semi-volatile organic compounds, etc.) that are identified in laboratory data as being above the laboratory detection limit, may be reused as backfill if acceptable for

construction at the project site, upon the approval of the Engineer. If these compounds are identified, a determination will be made as to whether the soils impacted with these compounds can be reused within the project site limits. If the soils impacted with these compounds cannot be reused at the site, the Contractor shall dispose of them at an approved off-site disposal facility.

Soils that are identified to be impacted with asbestos, industrial waste or hazardous waste shall not be reused at the project site. The Contractor shall be responsible for identifying the limits of these types of impacted soil and arrange for the proper off-site disposal at an approved facility.

If impacted/contaminated material is encountered during excavation, the Engineer may direct the Contractor to stockpile the material for further determination of on-site reuse.

8. Off-Site Disposal of Excavated Materials. If testing performed by the Contractor's qualified testing representative indicates non-impacted areas of soil based on soil headspace measurements and laboratory analysis indicated no detections, the material will be considered non-impacted. Proper disposal of excess or unsuitable non-impacted material from the site to off-site disposal sites shall be the Contractor's responsibility and shall be disposed of in accordance with all applicable laws, ordinances, and regulations affecting the selected disposal site. The Contractor shall be responsible for compliance with all applicable laws, ordinances, and regulations for handling, transporting, and disposing of these materials, including any restrictions imposed by owners or operators of the disposal site(s). The Contractor shall provide written evidence to the Engineer of the disposal site property owner's acceptance of these materials prior to removing the material from the project site. All costs for off-site disposal of non-impacted material shall be incidental to Common Excavation or Subgrade Excavation.

If testing performed by the Contractor's qualified testing representative indicates areas of impacted/contaminated soil or bedrock, the material will be considered either "impacted soil/bedrock" or "contaminated soil/bedrock", as defined in Article 31 23 00.2.D, and the Contractor shall immediately notify the Engineer who will perform surveys and review the areas. Excavation of these soils shall begin only upon receipt of authorization from the Engineer.

Impacted/contaminated materials that are confirmed by the Engineer, and materials containing other compounds at levels that would require disposal at a State-permitted disposal facility, shall be removed from the airport and disposed of in accordance with Section 01 35 13, Special Project Procedures, Article 1.13. The Contractor shall be responsible for compliance with all applicable laws, ordinances and regulations of the Minnesota Pollution Control Agency (MPCA), and any other applicable local or county requirements for handling and disposing of these materials, including any restrictions imposed by Owners of selected disposal site(s). The Contractor should be aware that the County may impose more stringent limitations for this disposal than would be required by the MPCA.

If impacted/contaminated material is encountered during excavation, the Engineer may direct the Contractor to stockpile the material for further determination of off-site disposal.

The Contractor shall be responsible for obtaining the necessary permits and approvals prior to the disposal of this material and shall provide the permits/approvals and written documentation to the Engineer as to the method of disposal of this material and acceptance by owners of selected disposal site(s), as required by the Testing and Disposal Plan described above.

9. Product/Petroleum Handling. If encountered, the Contractor shall not discharge petroleum product or petroleum impacted dewatering water to the sanitary or storm sewer system. Any petroleum product recovered during dewatering or directly from the excavation shall be transferred into the appropriate storage container(s) for subsequent off-site disposal.

Similar pumpable liquids (petroleum, water, petroleum/water mixtures, etc.) shall be bulked together. Pumpable liquids shall be analyzed and segregated by the Contractor prior to being

transported to the designated location or the treatment, storage, and disposal (TSD) facility. The Contractor will be responsible for any testing required for characterizing the product for appropriate disposal.

The Contractor shall be responsible for obtaining all required permits for proper disposal of product materials. Off-spec petroleum shall be the property of the airport, but the Contractor shall retain the rights to the salvage value of the product. The contractor shall be responsible for providing all documentation on the MPCA-approved product disposal/recycling facility selected by the Contractor and Manifests for the disposal of pumpable product liquids.

The Contractor shall provide approved containers, vehicles, equipment, labor, signs, labels, and manifests, necessary for the accomplishment of the work, including materials necessary for cleaning up spills that may occur from transferring product into the transports.

- I. Excavation. Excavation shall be performed at such places as are indicated on the drawings to the lines, grades, and elevations shown or as directed by the Engineer. No excavation shall be started until the Engineer has taken cross-section elevations and measurements of the existing ground surface. If the Contractor excavates below the designated lines, he/she shall replace such excavations at his/her own expense with materials and methods approved by the Engineer. All materials encountered of whatever nature within the limits indicated shall be removed and disposed of as directed by the Engineer.

Excavation operations adjacent to concrete pavement shall be performed in a manner that will prevent undercutting of the concrete pavement that is to remain in place, except as shown on the plans. If any undercutting of the existing concrete pavement should occur, backfilling shall be accomplished as directed by the Engineer in a manner that will assure uniform support for the existing pavement.

Excavations in rock shall be made so as to secure uniformity of grade and cross-section, and shall be conducted so as to provide drainage and not leave depressions that cannot be drained. In accordance with Section 00 73 10, Non-Federal Supplementary Conditions, Article 1.9, blasting operations are not permitted unless specifically authorized by the Engineer in Section 01 35 20 "Special Provisions".

The excavated materials shall be handled in such a manner as to allow the selected materials to be properly placed in the embankment and subgrades in accordance with the requirements of the plans and specifications and the directions of the Engineer. These materials shall be deposited within the designated areas as directed by the Engineer.

Topsoil shall be stripped from all areas where embankments are to be placed or where the depth of excavation is less than the thickness of the existing topsoil. So far as available, sufficient topsoil shall be salvaged from the stripping and excavation operations to provide the topsoil covering indicated on the drawings.

In excavation areas where pavements are to be placed, the subgrade shall be excavated to the depths shown on the plans and to such additional depths as the Engineer directs in order to remove unsuitable soils. Upon completion of this subcutting, if any, the top 12 inches of the in-place material shall be compacted to 95 percent of the Maximum Density as specified in Section 31 23 00.3M below. Scarification will be required only if necessary to obtain the specified compaction. The subcut shall be backfilled as described in Embankment Construction.

If, at the time of excavation, it is not possible to place certain material in its proper section of the permanent construction, it shall be temporarily stockpiled in approved areas for later use.

- J. Embankment Construction. Grading operations shall be conducted and the various soil strata placed so as to produce a soil structure as shown by the typical section. All materials entering the

embankment, whether placed beneath proposed pavements or in other portions of the embankment, shall be reasonably free of organic matter and other objectionable material.

After the topsoil has been stripped in areas on which embankments are to be constructed, the ground shall be scarified and broken up with approved equipment to a minimum depth of 6 inches and compacted to the density of embankments in that area.

Before placing embankment on an existing slope steeper than 4 horizontally to 1 vertically, the Contractor shall construct steps in the slope with the back surface being as nearly vertical as practicable and with the horizontal cuts being made as close together as the slope permits, but with no step being less than 12 inches in width. All work required by this provision shall be considered as incidental work for which no direct compensation will be made.

Embankments shall be formed in successive horizontal layers starting in the deepest portion of the fill. As placement progresses, layers shall be constructed approximately parallel to the finished grade line.

The loose depth to which layers may be placed shall be limited by the effective depth of the compaction equipment used on the material being compacted. Each layer shall be compacted to the density specified hereinafter before additional material is placed above it. In general, the loose depth for layers consisting of plastic soils shall not exceed 8 inches whereas the loose depth may be increased to not more than 12 inches when the embankment material is of granular nature with not more than 15% by weight passing a No. 200 sieve. Under certain conditions, the Engineer may permit variations from the above.

All subcuts shall be backfilled with selected materials obtained from excavation to the extent of its availability or with granular materials provided by the Contractor. All backfill shall be placed as described herein for other embankments.

Unless otherwise directed by the Engineer, the more granular material shall be placed near the top of embankments under paved areas. The least granular material shall be placed in the outer slopes or in the deeper portions of embankments.

No stone or salvaged bituminous material exceeding 3 inches in greatest dimension will be permitted in the upper 6 inches of the embankment or within 18 inches of a structure. No stone exceeding 6 inches in greatest dimension will be permitted in the upper 12 inches of the embankment.

Stones or rock fragments larger than 2 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade or finished surface.

The material in the layers shall have proper water content before rolling to obtain the prescribed compaction. Wetting or drying of the material and manipulation to secure uniform moisture content throughout the layer will be required. Should the material be too wet to permit proper compaction or rolling, all work on portions of the embankment thus affected shall be delayed until the material has dried to the required moisture content. Sprinkling shall be done with pressure distributors or other approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times. Samples of all embankment materials for testing, both before and after placement and compaction, will be taken at frequent intervals. From these tests, corrections, adjustments, and modifications of methods, materials, and moisture content will be made.

During construction of the embankments, the Contractor shall route his equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment.

The Contractor shall be responsible for the stability of all embankments made under the contract and shall at his/her own expense replace any portion which cannot be properly compacted or which, for any reason, has lost its density and cannot be recompacted.

Holes resulting from removal of manholes, tree stumps, and other structures shall have sides broken down, if necessary, to flatten out the slopes and then shall be filled with acceptable materials compacted in place to the density required for embankments.

The Engineer will take all samples and make tests to determine various soil classifications and characteristics. Test holes shall be filled by the Contractor with suitable material properly compacted.

Grading operations shall be scheduled so as to permit adequate time for the Engineer to obtain cross-sections and perform required testing on subcut areas prior to and during backfilling. Placement of material salvaged from grading operations in any area simultaneously with material furnished from an off-site source will not be permitted.

- K. Grade Stakes. The Contractor shall provide grade stakes (blue tops or hubs) for the finished surface on all areas on which base is to be placed. Unless otherwise specified in Section 01 35 20 "Special Provisions" or herein, grade stakes shall be located at a minimum of 25-foot intervals transversely, 50-foot intervals longitudinally, and at locations where changes in grade occur, such as crown points and grid drain lines. Turf area grade stakes shall be located at a minimum of 50-foot intervals both transversely and longitudinally.
- L. Topsoil Surface Tolerance. Prior to placing topsoil on graded areas with transverse slopes flatter than 2.0 percent, the finished surface shall be within 0.05 feet of the proposed elevation.
- M. Embankment Compaction. All embankments shall be compacted to the Maximum Densities specified hereinafter and within the limits shown on the drawings.
 - 1. Cohesive Soils. At the time of compaction, the moisture content of the embankment material shall not be less than 80 percent or more than 110 percent of Optimum Moisture, unless otherwise permitted by the Engineer. Moisture content shall be uniformly distributed throughout the layer to be compacted, and adequate to allow the specified density to be achieved throughout the layer. Maximum Density and Optimum Moisture shall be determined in accordance with ASTM D 698, Procedure A.

Embankments beneath proposed or future pavements, including a 1 to 1-1/2 slope down and outward from 4 feet beyond the edge of proposed pavement or from the outside edge of any surfaced shoulder, embankments beneath proposed or future buildings, embankments beneath runway safety areas and taxiway safety areas, and other portions of embankments that are adjacent to structures shall be compacted to 95 percent of Maximum Density. Other portions of the embankment shall be compacted to 90 percent of Maximum Density. Unsuitable materials placed in portions of the embankment outside the safety areas, as shown on the drawings, or in other disposal areas, shall be compacted until there is no evidence of further consolidation or to the satisfaction of the Engineer.

- 2. Noncohesive Soils. Each layer of the embankment beneath proposed or future pavements including subcuts within a 1 to 1-1/2 slope down and outward from 4 feet beyond the edge of proposed pavement or from the outside edge of any surfaced shoulder, and embankments below proposed or future buildings shall be compacted to 100 percent of Maximum Density. Embankments beneath runway safety areas and taxiway safety areas shall be compacted to at least 95 percent of Maximum Density, and other portions of the embankment shall be compacted to at least 90 percent of Maximum Density. Maximum Density and Optimum Moisture shall be determined in accordance with ASTM D 1557, Procedure B. Unsuitable materials placed in portions of the embankment outside the safety areas, as shown on the drawings, or in other disposal areas, shall be compacted until there is no evidence of further consolidation or to the satisfaction of the Engineer.

3. Compaction Equipment. The use of vibratory compaction equipment adjacent to or within 10 feet of existing or new pavements will not be permitted except as directed by the Engineer.
- N. Compaction Testing. Field density tests of the compacted materials shall be made in accordance with ASTM D 1556 or ASTM D 2922 as directed by the Engineer.

Generally, one density test will be taken for each 1000 cubic yards of material placed. However, the location and frequency of testing will be designated by the Engineer.

- O. Surface Requirements. All excavation and embankment areas shall be finished in reasonably close conformity with the established lines and grades, subject to the following tolerances, and shall be left in such condition that it will drain readily and effectively. After grading operations are complete, all loose stones larger than 2 inches in their greatest dimension shall be removed from the surface and disposed of as directed by the Engineer.

In those areas upon which a subbase, base, or surface course is to be placed, the finished surface when tested with a 16-foot straight edge applied parallel and at right angles to the centerline shall show no deviation in excess of 1/2-inch and shall not vary more than 0.05 feet from the proposed elevations as determined from the grades and typical sections shown on the drawings or provided by the Engineer. Prior to placing topsoil, the final surface in all other areas shall be within 0.10 feet of proposed elevations. Any deviation in excess of these amounts shall be corrected by loosening, adding or removing materials, recompacting, and reshaping.

Earthwork finishing and topsoil covering operations shall be conducted concurrently with the grading operations so as to permit completion of turf establishment and other erosion control items at the earliest practicable time. At the time the topsoil covering is placed, the subsoil shall be in a loose friable condition for a uniform depth of at least 3 inches, and there shall be no erosion rills or washouts in the subsoil surface. Whenever the subsoil has been compacted by equipment operations, has dried out, or has excessive amounts of erosion rills, the subsoil shall be scarified to a depth of 3 inches as directed by the Engineer in order to comply with the above requirement for subsoil condition.

Upon completion of earthwork finishing operations, topsoil shall be placed as shown by the sections and details in the plans and as directed by the Engineer. Topsoil obtained from stripping operations on the site shall not contain more than 4% material retained on the #4 sieve or any other objectionable material. In general, preparation of the seed/sod bed shall be as described in Section 32 92 00 "Turf Establishment."

PART 4 METHOD OF MEASUREMENT

- A. Earthwork Quantities. Earthwork quantities will be computed by the average end area method utilizing cross sections at intervals shown on the drawings. No adjustments will be made for minor irregularities caused by pavement fillets, tapers, or similar features.
- B. Excavation. All excavation will be measured by volume in cubic yards, to the nearest cubic yard, of the material in its original position. Volumes will be computed to the lines approved by the Engineer by the method of average end areas. Only those quantities of excavation which have been placed in finished and accepted work or in designated disposal or waste areas will be measured for payment.

All approved cuts or subcuts, except sod and topsoil stripping under fills, will be included. Removal of sod or topsoil or scarifying of the existing subgrade prior to constructing embankments will not be measured for payment, but will be considered incidental to embankment construction.

Suitable subcut backfill materials, approved for use by the Engineer, which are obtained within the grading area will be measured and paid for as Subgrade or Common Excavation.

Unless the proposal includes an item for removal, bituminous pavement removal will be measured as Common Excavation. The volume of concrete pavement which has been removed and paid for under Section 02 41 13 will not be included in the measurement of excavation.

- C. Granular Material. Granular material which is obtained from an off-site source will be measured by volume in cubic yards. The basis of measurement will be either Vehicular Measure (VM) of material delivered or Compacted Volume (CV) as indicated in the Proposal. Compacted Volume will be determined by cross-section measure of the material as placed in the work, based on the required placement dimensions shown on the plans or designated by the Engineer.
- D. Contaminated or Impacted Soil/Bedrock. On-site use of impacted soil shall be incidental to Common Excavation or Subgrade Excavation. No additional compensation will be made for special handling, stockpiling, re-handling, placement in specific locations as described above or as directed by the Engineer, or compaction of impacted material.
- On-site use or off-site disposal of non-impacted soil/bedrock shall be incidental to Common Excavation or Subgrade Excavation, as described elsewhere in this specification.
- Off-site disposal of impacted/contaminated materials will be measured according to an in-place volume survey (survey conducted by Owner) or by volume/weight as hauled by the Contractor. The method of measurement will be determined at the discretion of the Engineer.
- E. Topsoil Borrow. Topsoil borrow will be measured by volume in cubic yards based on vehicular measure of the material delivered to the site.
- F. Water. Water applied on the grading work, as directed by the Engineer, will be measured by volume in gallons to the nearest 1000 (M) gallons.

PART 5 **BASIS OF PAYMENT**. Payment for the items as measured above will be made at the appropriate contract unit prices. Such payment shall be full compensation for all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified herein.

- A. General. All excavation will be paid for only once from its original position in cuts to its final position in embankments or waste areas. If it is necessary to temporarily stockpile certain excavation materials in order to place it in its proper position, no additional payment will be made for the double handling of such material.

The quantities for subgrade and rock excavation, granular material, topsoil borrow, and water included in the proposal are estimates only and could vary substantially from actual quantities required to complete construction. Also, depending on materials encountered, the ratio between subgrade excavation and granular material required for backfill, as indicated by the proposal quantities, could change considerably. Therefore, the provisions of Section 00 72 00, General Conditions, Article 7.3 shall not apply to these items and no additional compensation will be allowed should these variations occur.

- B. Contaminated or Impacted Soil/Bedrock. If the Contractor is directed by the Engineer to stockpile impacted/contaminated material to be hauled off-site at a later date, all necessary costs for removing, loading, stockpiling, re-handling, and placement (or disposal) of material shall be included in the bid items for Impacted Soil Disposal or Contaminated Soil Disposal as described below.

Impacted soil/bedrock which is removed from the Airport and disposed of off-site as described above and as authorized by the Engineer will be measured for payment by volume in cubic yards (cross-section measured in its original position) for payment under Bid Item No. 31 23 00-9 "Impacted Soil Disposal". This payment shall be in addition to the applicable payment for Common Excavation or Subgrade Excavation. Payment for Bid Item No. 31 23 00-9 "Impacted Soil Disposal" shall be compensation in full for all costs of handling, transporting, and disposing of these materials; except that disposal fees paid to disposal facilities shall be compensated for separately under Bid Item No. 31 23 00-11 "Disposal Facility Charges" as described below.

Contaminated soil/bedrock which is removed from the Airport and disposed of off-site as described above and as authorized by the Engineer will be measured for payment by volume in cubic yards

(cross-section measured in its original position) for payment under Bid Item No. 31 23 00-10 "Contaminated Soil Disposal". This payment shall be in addition to the applicable payment for Common Excavation or Subgrade Excavation. Payment for Bid Item No. 31 23 00-10 "Contaminated Soil Disposal" shall be compensation in full for all costs of handling, transporting, and disposing of these materials; except that disposal fees paid to disposal facilities shall be compensated for separately under Bid Item No. 31 23 00-11 "Disposal Facility Charges" as described below.

Disposal fees paid by the Contractor to permitted off-site disposal facilities for Impacted or Contaminated Soil, which is disposed of at those facilities as authorized by the Engineer, will be reimbursed under Bid Item No. 31 23 00-11 "Disposal Facility Charges". The Contractor shall pay all such charges when they become due, and shall then submit copies of paid invoices and other documentation to the Engineer. The Contractor will be paid the actual costs of approved invoices, plus an additional allowance to cover administration, general superintendence, and other overhead expenses not otherwise recoverable. Such additional allowance shall be a percentage of the total of all invoices paid to disposal facilities for this work, not to exceed:

1. 10% of the first \$10,000.00
2. 2% on the next \$50,000.00
3. 0% on the balance in excess of \$60,000 .00

For convenience and comparison of bids, the unit price and extended dollar amount of \$5,000 for Disposal Facility Charges have been included in the proposal.

Cost associated with testing and inspection conducted by the Contractor required for development of the Testing and Disposal Plan, off-site disposal and/or treatment of excavated soil, or other materials shall be considered incidental and no direct compensation will be made therefor. Cost associated with testing performed by the Contractor's qualified testing representative shall also be considered incidental and no direct compensation will be made. Any delays to the Contractor's operations to allow for inspection or laboratory testing of soils or surveys shall be considered incidental and no direct compensation will be made therefor.

- C. Topsoil. Topsoil stripping beneath embankments will be paid for as subgrade excavation (0.5-foot Allowance). Topsoil stripping beneath temporary roads shall be considered incidental. Topsoil material required in conjunction with earthwork finishing operations shall be salvaged from grading operations to the extent suitable material is available. Topsoil borrow material shall be utilized upon approval by the Engineer if sufficient material cannot be salvaged. All costs to salvage and stockpile topsoil shall be incidental to common or subgrade excavation. Topsoil borrow, if required will be measured by volume in cubic yards based on plan thickness (5-inch for sod/6-inch for seed unless a different thickness is designated in the Plans or Special Provisions) and area dimensions approved by the Engineer. Payment for Bid Item No. 31 23 00-6 "Topsoil Borrow (VM)" at the contract unit price per cubic yard shall be compensation in full for all costs of furnishing and placing this material.

Payment for Bid Item No. 31 23 00-12 "Topsoil Placement" at the contract unit price per square yard shall be compensation in full for all costs of placing salvaged topsoil to the plan thickness (5-inch for sod/6-inch for seed unless a different thickness is designated in the Plans or Special Provisions).

- D. Water. Included for payment under Bid Item No. 31 23 00-7 is only the quantity of water required in conjunction with grading operations, aggregate base construction, concrete base construction, and dust control. Water required for turf establishment is included for separate payment under Bid Item No. 32 92 00-3. All other water required on-site shall be considered incidental to other construction operations with no direct compensation.
- E. Calcium Chloride Solution. Payment for Bid Item No. 31 23 00-8 "Calcium Chloride Solution" at the current unit price per gallon shall be compensation in full for all costs of furnishing and applying this material.

F. Contaminated or Impacted Groundwater and Other Liquids. Treatment or off-site disposal of contaminated or impacted groundwater, petroleum product, or other liquid contaminants will be considered Extra Work and will be paid for under the provisions of Section 00 72 00, Article 7, and Section 00 73 10, Article 1.5, "Changes in the Work", unless a bid item for such treatment or disposal is included in the Special Provisions.

G. Payments. Payment will be made on the basis of the following schedules:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
31 23 00-1	Granular Material (CV)	Cu. Yd.
31 23 00-2	Water	1000 (M) Gallons

END OF SECTION

**SECTION 31 25 00
SEDIMENT CONTROL**

PART 1 **DESCRIPTION.** This work shall consist of furnishing, installing, maintaining, and removing temporary sediment control devices as shown on the drawings and in accordance with the specifications.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 **MATERIALS**

- A. **Silt Fence.** Silt fence for this project shall meet the requirements of MnDOT 3886 Type Machine Sliced or Type Heavy Duty as shown in Table 3886-1 of Section 3886 in the MnDOT Standard Specifications for construction, and as modified by the details shown on the Plan drawings. Silt fence shall be installed at the locations shown on the drawings, and at other locations as directed by the Engineer.
- B. **Geotextile.** Geotextile shall be uniform in texture and appearance and shall have no defects, flaws, or tears that would affect its physical properties. It shall contain sufficient ultraviolet ray (U.V.) inhibitors and stabilizers to provide a minimum 2-year service life from outdoor exposure.
- C. **Posts.** Standard metal T-posts, minimum 5 feet long, with a welded plate shall be used in conjunction with the machine sliced and heavy duty installations.
- D. **Zip Ties.** Geotextile used in Machine Sliced and Heavy Duty applications shall be fastened to posts using plastic zip ties with a minimum tensile strength of 50 pounds.
- E. **Storm Drain Inlet Protection Devices.** Inlet protection devices, for use at catch basins, manholes, curb inlets, and other inlets to the storm sewer system, shall be of one of the types included on the MnDOT Materials Engineering Section's Approved Products List, or as shown on the Plan Drawings. Devices listed below, or others listed on the Approved Products List or approved by the Engineer, may be utilized. The Contractor shall submit shop drawings of devices proposed for use to the Engineer for approval prior to starting installation.
 - 1. **Sediment Control Inlet Hat.** Sediment control inlet hats shall be a polyethylene hat-like structure covering the inlet with small weep holes on the side providing a filtering function of the storm water runoff and a large opening above the weep holes for emergency overflow.
 - 2. **Silt Fence Ring.** Silt fence shall meet the requirements of MnDOT's 3886 Type Heavy Duty. Silt fence shall be placed in a circular configuration around the inlet to form a minimum 5-foot diameter zone of protection. The lower edge of the silt fence shall be embedded in a trench as described under 31 25 00.3A "Silt Fence Installation" below.
 - 3. **Rock Log Ring.** Geotextile fabric shall be placed under the inlet grate and Rock Logs as described below shall be placed around the perimeter of the inlet. Rock Log sections shall be butted tightly together and secured with wire ties or other means. Rock Logs may be stacked two or more high as necessary to prevent stormwater from overtopping the rock log ring.
 - 4. **Silt Fence Ring and Rock Filter Berm or Rock Log Combination.** Silt fence shall meet the requirements of MnDOT's 3886 Type Heavy Duty. Silt fence shall be placed in a circular configuration around the inlet to form a minimum 5-foot diameter zone of protection. Rock Logs (as described below) or Rock Filter berms shall line the outside toe of the silt fence. Rock Filter berms, if utilized, shall be constructed of MnDOT 3882 Type 9 Mulch, to the dimensions indicated on the Plans.
 - 5. **Filter Bag Insert.** Filter bag inserts shall consist of a replaceable reinforced filter bag suspended from a retainer ring, or frame that fits within a grate or it shall consist of a geosynthetic filter bag suspended from a rebar or steel rods. The filter bag that is

suspended from a frame shall be constructed of a polypropylene filter geotextile fabric with a minimum weight of 4 ounce/square yard, a minimum flow rate of 145 gallon/minute/square foot, a minimum permittivity of 2 per second, and designed for a minimum silt and debris capacity of 2 cubic feet. The filter bag shall be reinforced with an outer polyester mesh fabric. The filter bag shall be suspended from a galvanized steel ring or frame utilizing a stainless steel band and locking clamp. The frame shall be designed with an overflow feature. Overflow capacity shall be at a minimum equal to the design flow capacity of the structure's grate opening.

When the filter bag insert is the type suspended from the grate the geosynthetic fabric shall meet the requirements of MnDOT Specification 3886 for Machine Sliced silt fence, and the bag's minimum silt and debris capacity shall be 2 cubic feet. All edges and seams shall be minimum double stitched. The filter bag insert shall have overflow holes (oval, edge heat sealed 4 by 6 inch holes) cut into all four panel sides.

- F. Rock Log. Rock Logs consist of aggregate encased in a porous fabric bag. Aggregate shall conform to the requirements of MnDOT Specification 3137, Class A, B, C or D, with a gradation in accordance with Table 3137-1 CA-1 through CA-5. The aggregate shall be washed before being placed in the rock bag. The casing material for the rock shall be between 4 feet and 10 feet in length and between 4 inches and 6 inches in diameter when filled with rock. The casing material shall have a minimum grab tensile strength of 130 pounds and a minimum Mullen Burst Strength of 175 psi.
- G. Sandbags. Sandbags shall consist of a woven polypropylene fabric sewn together with double stitching. The polypropylene fabric shall meet or exceed the following:

Grab Tensile Strength
ASTM D 4632 420 N, min.
UV Stability
ASTM D 4355 70% min.

Overall size of the sandbag shall be at least 14 x 26 inches.
- H. Hay or Straw Bales. Bales used for bale checks shall consist of grain straw, hay, or cuttings of agricultural grasses meeting the requirements of MnDOT Type 1 Mulch as described in MnDOT Specification 3882. Bales shall be densely packed, rectangular shaped, and have a minimum nominal size of 14 by 18 by 36 inches. Bales shall be tightly wrapped with two strands of twine or wire.
- I. Mulch. Mulch for temporary stabilization of disturbed areas or material stockpiles shall be MnDOT Type 5 Hydromulch as described in MnDOT Specification 3884.

PART 3 CONSTRUCTION REQUIREMENTS.

- A. Silt Fence Installation. Installation of silt fence shall be coordinated with grading operations. No grading or other soil disturbing activities will be permitted in areas tributary to proposed silt fence until the silt fence is installed. Silt fence shall be constructed in reasonably close conformity with the location and elevations shown on the drawings. Actual alignment and/or location shall be as directed by the Engineer.

The Heavy Duty type silt fence system shall be hand installed with the salvaged edge on top. The bottom edge of the geotextile shall be placed into a 6-inch deep by 4-inch wide trench with the bottom edge of the geotextile wrapping back up to the soil surface. The trench shall be backfilled and tamped for compaction. Posts shall be installed adjacent to the back face of the geotextile with the nipples facing away from the geotextile fabric. Posts shall be embedded a minimum of 2 feet into the ground and installed a maximum of 6 feet apart for general use and 4 feet apart in ditch check applications. Geotextile fabric shall be secured at each post with three plastic zip ties inserted through the geotextile within the top 8 inches of the fabric, puncturing holes vertically a minimum of 1 inch apart.

For Machine Sliced type silt fence, the geotextile shall be inserted by machine in a slit in the soil 8 to 12 inches deep with the salvaged edge on top. The slit shall be created such that a soil-slicing blade slightly displaces soil upward as the blade slices through the soil. Directly behind the slicing blade, the geotextile shall be mechanically inserted down into the soil slit such that 8 to 12 inches of the geotextile is below the ground surface. Soil slicing and installation is a simultaneous operation, achieving consistent placement and depth. No turning over (plowing) of the soil is allowed for the slicing method. Compact the soil immediately adjacent to the geotextile by operating the wheels of a tractor or skid steer on each side of the geotextile a minimum of two times. Posts shall be installed adjacent to the back face of the geotextile with the nipples facing away from the geotextile fabric. Posts shall be embedded a minimum of 2 feet into the ground and installed a maximum of 6 feet apart for general use and 4 feet apart in ditch check applications. Geotextile fabric shall be secured at each post with three plastic zip ties inserted through the geotextile within the top 8 inches of the fabric, puncturing holes vertically a minimum of 1 inch apart.

- B. Storm Drain Inlet Protection. The Contractor shall install temporary sediment control devices in conformity with the details, typical sections, and elevation controls shown in the Contract. The actual installation location of temporary sediment control devices may be slightly adjusted from that indicated in the Plan to better accommodate the actual field conditions and increase the effectiveness of a device.

The Contractor must protect storm drain inlets with sediment capture devices prior to soil disturbing activities that would result in sediment laden storm water runoff entering the inlet. The Contractor shall provide effective storm drain inlet protection over the life of the Contract until all sources with potential for discharging to an inlet have been paved or stabilized. As the Contractor's operations change, the storm drain inlet Best Management Practice for sediment control must be modified by the Contractor to ensure proper effectiveness for sediment capture.

The Contractor is responsible for preventing or minimizing the potential for unsafe conditions, flooding, or siltation problems. For example, devices must be regularly cleaned out and emergency overflow must be an integral part of the device to reduce the flooding potential; and devices must be placed such that driving hazards or obstructions are not created. Sediment deposited in and/or plugging drainage systems will be the responsibility of the Contractor and shall be removed at no additional expense to Owner.

- C. Ditch Checks. Ditch Checks shall be constructed of Silt Fence, Silt Fence in combination with Hay or Straw Bales, or other materials as detailed in the Plans. Where bales are used, they shall be embedded in the ground a minimum of 4 inches and staked with two 2 inch by 2 inch wood stakes per bale. The length of ditch checks shall be sufficient to prevent water from flowing around the end of the ditch check, as detailed in the Plans or as directed by the Engineer.
- D. Material Stockpiles. Temporary stockpiles of soil, topsoil and other materials shall have silt fence or other sediment control devices in place. If material stockpiles are expected to remain on Airport property for an extended period (30 days or more, or as directed by the Engineer), the Contractor shall apply MnDOT Type 5 Hydromulch to stockpiles for temporary stabilization.
- E. Workmanship and Corrective Action. Performance of the work shall be controlled by the Contractor so that the materials installed and the workmanship practices are of good quality. When the quality falls below the threshold level defined below, the Contractor shall take immediate action to correct the situation and prevent it from reoccurring. As indicated below, the Contractor shall correct unacceptable workmanship to qualify for payment.

For silt fence, corrective action is required when:
Improper geotextile used

Insufficient geotextile embedment
Insufficient compaction of soil
Soil turned over and/or loosened due to inadequate equipment for sliced type
Inadequate fastening of geotextile, posts, etc.
Incorrect post spacing

For bale checks, corrective action is required when:

Bale is not embedded in ground
Bale is not properly staked down

For storm drain inlet protection, corrective action is required when:

Inlet opening is not protected
Emergency overflow is not provided where required
Device is not cleaned out

F. Maintenance.

1. General. The Contractor shall maintain all temporary sediment control devices until the Engineer directs them to be removed. Maintenance consists of keeping the devices functioning properly such that sediment is not discharged from the site. The Contractor shall repair or replace plugged, torn, displaced, damaged, or nonfunctioning devices to the satisfaction of the Engineer.
2. Temporary Sediment Control Devices. The Contractor shall remove sediment from devices such as bale barriers, silt fences, ditch checks and storm drain inlet protection devices when the sediment reaches one-third of the height of the device and reshape the area to the Plan grades. If sediment removal causes damage to a device or the device is non-functional, the Contractor shall replace the device. Sediment removal shall occur within 24 hours of discovery or as soon as field conditions allow access. Removal of sediment shall be incidental work for which no direct compensation will be made.
3. Storm Drain Inlet Protection Devices. The Contractor shall clean, remove sediment or replace storm drain inlet protection devices on a routine basis such that the devices are fully functional for the next rainstorm event. Removal and disposal of trapped sediment in inlet protection devices shall be incidental to the Project. Sediment deposited in and/or plugging drainage systems is the responsibility of the Contractor and shall be removed at no expense to the Owner.

- G. Removal of Temporary Devices. Temporary sediment control devices shall remain in service until the Engineer, in consultation with the Watershed District or other regulatory agencies, determines that the site has been permanently re-stabilized. The Contractor shall remove all temporary sediment control devices within 30 days after being directed to do so by the Engineer. All removed materials become the property of the Contractor and shall be disposed of off the Airport property.

The Contractor shall spread accumulated sediment to form a suitable surface for turf establishment or dispose of the sediment elsewhere. The Contractor shall shape the area to permit natural drainage. All work shall be done to the satisfaction of the Engineer.

PART 4 METHOD OF MEASUREMENT.

- A. Silt Fence. Silt Fence will be measured by the linear foot furnished and acceptably installed, maintained and removed. Measurement will be along the base of the fence from outside to outside of the end posts for each section of fence.
- B. Storm Drain Inlet Protection. Storm Drain Inlet Protection may be measured and paid either on a per-inlet basis, or as a Lump Sum, as provided in the Bid Proposal.
1. Each Storm Drain Inlet. Storm Drain Inlet Protection will be measured by the number of individual inlets properly protected over the life of the Contract without regard to the various types or number of devices used at each storm drain inlet.

2. Lump Sum. Storm Drain Inlet Protection will be measured by Lump Sum. Lump Sum shall be considered to include all materials and labor as necessary to provide proper inlet protection over the life of the contract regardless of quantities required. Under this provision, no measurement will be made of any individual device or inlet location.
- C. Bale Check with Silt Fence. Bale Check with Silt Fence will be measured by the linear foot furnished and acceptably installed, maintained and removed.
- D. Sandbags and Rock Logs. Sandbags and Rock Logs used in the construction of sediment control devices will not be measured for individual payment but will be included in the Lump Sum or Unit Price bid items to which they apply.
- E. Mulch. Mulch used for temporary stabilization of material stockpiles will not be measured for payment but will be incidental work.

PART 5 BASIS OF PAYMENT.

- A. Payment for sediment control items at the appropriate contract unit price or Lump Sum price shall be compensation in full for all costs of all labor, materials, equipment, and other incidentals necessary to complete the work as specified, including the costs of maintenance and removal as required by the Contract.

Payment will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
31 25 00-1	Silt Fence	Linear Foot

END OF SECTION

**SECTION 32 02 00
SITWORK**

PART 1 - GENERAL

1.1 INDEX

- 1.1 Index
- 1.2 Specifications Which Apply
- 1.3 Definitions
- 3.1 Aggregate Base (MnDOT 2211)
- 3.2 Concrete Pavement (MNDOT 2301)
- 3.3 Bituminous Tack Coat (MnDOT 2357)
- 3.4 Plant Mixed Asphalt Pavement (MnDOT 2360)
- 3.5 Concrete Curbing (MnDOT 2531)

1.2 SPECIFICATIONS WHICH APPLY

- A. Minnesota Department of Transportation (MnDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2025 EDITION, DIVISION II CONSTRUCTION DETAILS, & DIVISION III MATERIALS shall apply to sitework on this project except as modified hereinafter.
- B. Items indicated on the Bid Form are specified in the specification sections indicated on the Bid Form. Measurement and payment for pay items will only be made as indicated in the corresponding specification sections. If a similar or identical item is called out in a specification section other than the one indicated on the Bid Form, that item is not included in the quantities indicated on the Bid Form, and is considered part of the lump sum quantity for the corresponding division, and no additional compensation will be made for that item.

1.3 DEFINITIONS

- A. All reference to the Commissioner, Department, MnDOT, the State, or the Engineer shall be construed to refer to Owner, or its authorized representative.
- B. All reference to Right-of-Way shall be construed to refer to project limits shown on the drawings.

PART 2 - PRODUCTS

NOT USED

PART 3 – EXECUTION

3.1 CONCRETE PAVEMENT (MnDOT 2301)

All work for Concrete Pavement shall be performed in accordance with MnDOT Standard Specification Section 2301 except as modified and/or supplemented hereinafter:

- A. The incentive/disincentives for aggregate quality, well-graded aggregate, and water/cement ratio as specified in MnDOT 2301.5 shall not apply.
- B. Concrete curing membrane shall be a MnDOT approved poly-alpha methylstyrene curing membrane.
The membrane cure shall be placed within 1/2 hour of concrete placement or once the bleed water has disappeared unless otherwise directed by the Engineer. Failure to comply with these provisions will result in a price reduction for the concrete item involved in accordance with MnDOT 1503.
- C. Expansion joints shall be installed where the pavement abuts any other structures within or abutting the pavement. In all cases, expansion joints shall be formed by placing material in the form before the concrete is poured. Expansion joint material shall be a closed-cell polyethylene foam listed on the MNDOT Approved Product List at:
<http://www.dot.state.mn.us/products/concrete/preformedjointfillers.html>.
- D. Construction joints and contraction joints shall be sealed with silicone sealant meeting the requirements 2377. Sealant shall be DOWSIL 890-SL, Crafc0 #34903SL or approved equal as

listed on the MNDOT Approved Product List

at: <https://www.dot.state.mn.us/products/crackandjointmaterials/moisturecuredpolymericjointsealers.html>

E. Bid Item shall be included as follows:

1. **ITEM 32 02 00-1 "CONCRETE PAVEMENT, 8" (3A42AF)"** shall include providing 8-inch concrete pavement as indicated on contract drawings. Measurement and payment shall be at contract unit price per square yard and shall be considered compensation in full for all materials, equipment, and labor required to construct concrete pavement, dowels, joints, and treatments as specified.

3.2 AGGREGATE BASE (MNDOT 2211)

All work for Aggregate Base shall be performed in accordance with MnDOT Standard Specification Section 2211 except as modified and/or supplemented hereinafter:

A. Compaction shall be achieved by the "Quality Compaction Method" described in MnDOT 2211.3.D.2.

B. Bid Items shall be included as follows:

1. **ITEM 32 02 00-2 6" AGGREGATE BASE, CLASS 5** shall include Class 5 aggregate base as indicated on the construction drawings. Measurement and payment shall be at the contract unit price per square yard and shall be considered compensation in full for all materials, equipment, and labor required to provide the aggregate base as specified. Aggregate Base Class 5 may contain Recycled Asphalt Pavement in accordance with MnDOT 3138.

3.3 BITUMINOUS TACK COAT (2357)

All work for bituminous tack coat shall be in accordance with MnDOT 2357 except as modified and or supplemented herein:

- A. **ITEM 32 02 00-3 "BITUMINOUS TACK COAT"** shall include applying bituminous tack coat as required for the construction of bituminous paving section. Bituminous Tack Coat application rate shall be approximately 0.05 Gal/SY. Measurement and payment shall be made at contract unit price per gallon of Tack Coat applied.

3.4 PLANT MIXED ASPHALT PAVEMENT (2360)

MnDOT Standard Specification 2360 is hereby modified &/or supplemented to include following:

- A. Mix Designation Numbers for the bituminous mixtures on this Project are as follows:¹
1. Type SP9.5 Wearing Course – SPWEA340C
- B. Use of up to 20% Reclaimed Asphalt Pavement (RAP) shall be allowed for the bituminous mixtures on this project. Use of Recycled Asphalt Shingles (RAS) shall not be allowed.
- C. Compaction shall be by the Standard Density Method.
- D. Basis of Payment-Payment for the accepted quantities of asphalt mixture used in each course at the Contract prices per unit of material shall be considered compensation in full for all costs of constructing the asphalt surfacing as specified, including the costs of furnishing and incorporating any asphalt binder, mineral filler, hydrated lime, or anti-stripping additives permitted or required.

Contractor is responsible to complete yield checks and monitor thickness determinations so the constructed dimensions correspond with the required Plan dimensions throughout the entire length of the Project. Pay factors shall not exceed 100%.

E. Bid Items shall be included as follows:

1. **ITEM 32 02 00-4 PLANT MIXED ASPHALT PAVEMENT, TYPE SP 9.5 – WEARING 3C**, by type as listed on the Bid Form, shall include all materials, equipment, and labor required to manufacture, procure and pave the asphalt wearing course pavement as specified. Measurement and payment shall be at the contract unit price per ton of asphalt paved. Haul tickets will be collected on site at the time of paving. The contractor shall only be paid for asphalt for which haul tickets are collected.

3.5 CONCRETE CURBING (2531)

All work for concrete curbing shall be in accordance with MnDOT 2531 except as modified and or supplemented herein:

A. Bid Items shall be included as follows:

1. **ITEM 32 02 00-5 CONCRETE CURB AND GUTTER**, by type as listed on the Bid Form, shall include all materials, equipment, and labor required to provide curb and gutter to the specified lines, grade and minimum thickness specified in the Plans, including but not limited to: forming, joint filler material, furnishing and placing concrete, concrete compaction by vibration, concrete curing and protecting the completed work from damage. Measurement and payment shall be at the contract unit price per lineal foot of curb and gutter placed.

END OF SECTION

**SECTION 32 17 23
PAVEMENT MARKINGS**

PART 1 **DESCRIPTION.** This work shall consist of furnishing and applying pavement markings and reflective pavement markers for control and guidance of traffic in accordance with these specifications and at locations shown in the plans, or as directed by the Engineer.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 **MATERIALS**

A. Pavement Markings

1. Paint. All paint shall meet the requirements of Acrylic Waterborne Paint, Federal Specification TT-P-1952E Type I. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.
2. Colors. Colors of all markings shall be as designated on the drawings. The following colors, as specified in Federal Standard No. 595, may be used:
White (37925)
Red (31136)
Yellow (33538 or 33655)
Black (37038)
Pink (1 part Red 31136 to 2 parts White 37925)
Green (34108)
3. Type. All markings shall be reflectorized, except as follows:
-Black paint used for outlining markings shall not be reflectorized.
-Taxiway shoulder markings shall not be reflectorized.
4. Reflective Media. Reflective media shall consist of glass beads meeting the requirements of Federal Specification TT-B-1325D. All reflectorized markings shall have Type III glass beads, except Type I Gradation A glass beads shall be used only with red or pink paint and at such other markings as may be designated in the plans or Special Provisions.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.
5. Application Rates. Waterborne paint shall be applied at a rate of 115 square feet per gallon maximum. Glass beads Type III shall be applied at a rate of 10 pounds per gallon minimum. Type III glass beads shall not be used on red or pink markings. Glass beads Type I – Gradation A shall be applied at a rate of 7 pounds per gallon minimum. On red or pink paint, the application rate for Type 1 Gradation A glass beads shall be reduced by 2 pounds per gallon.

B. Snowplowable Reflective Pavement Markers

1. Reflective Pavement Markers. The markers shall be snowplowable reflective pavement markers consisting of a glass-faced plastic reflector assembly glued into a metal housing, and designed to be installed in a slot cut into pavement.

The markers shall be Stimsonite Model 96LP-AG as manufactured by Ennis Paint, Inc. or approved equal.

Taxiway centerline markers shall be two-way reflective and green in color in accordance with FAA guidelines.
2. Epoxy. Epoxy adhesive for gluing markers into pavement slots shall meet the requirements of AASHTO Designation M237, Type IV, and as recommended by the

marker manufacturer. Low temperature epoxy shall be used when ambient temperature at time of installation is lower than 45° F.

PART 3 CONSTRUCTION REQUIREMENTS

A. Pavement Markings

1. Weather Limitations. The painting shall be performed only when the existing surface is dry and clean, when the atmospheric temperature is above 45° F., and when the weather is not excessively windy, dusty, or foggy. Paint shall not be applied when the relative humidity is above 85 percent, nor when pavement temperature is greater than 120° F.
2. Traffic Provisions. Attention is called to the provisions of Section 01 35 13, Special Project Procedures, Traffic Provisions and Airport Security, of these specifications.

Whenever pavement markings are applied in the presence of traffic, the Contractor shall furnish and place without extra compensation all necessary warning and directional signs to maintain traffic and shall provide traffic cones to keep from crossing the uncured markings. Traffic cones shall be the type that will not cause damage to the vehicle if accidentally struck.

3. Equipment. Application equipment shall consist of a self-propelled machine capable of applying the paint under pressure at a controlled temperature through nozzles equipped with remotely controlled cutoff mechanisms and suitable line guides that will produce clean cut lines and prevent excessive paint drift. Except where the use of portable sprayers is specifically approved by the Engineer, the marking material shall be applied with truck-mounted traveling units properly equipped to apply the paint stripes as required. Where two or more lines are to be applied at closely controlled spacing, the machine shall be equipped to apply those stripes simultaneously. For application of skip lines, the spray unit shall include an automatic feed control device capable of being set to produce the specified stripe to gap ratio.

Paint tanks on the traveling unit shall have provisions for continuous agitation and mixing of the marking material during application. If necessary to maintain uniform flow and application, the paint tank shall be equipped with heating facilities capable of heating and automatically controlling the paint temperature within acceptable limitations as recommended by the paint manufacturer.

4. Flood Lighting. A flood lighting system approved by the Engineer shall be utilized whenever pavement markings are being applied after sunset or before sunrise. Vehicle lights shall not be considered adequate for this purpose.
5. Preparation of Pavement Surface. At the time of applying the marking material, the application area shall be dry and free of all contamination including laitance, oil, dirt, grease, curing compound and other matter that might adversely affect adhesion or durability of the marking material. Cleaning shall be accomplished with rotary brooms, air blast, hand brooms, scrapers, or whatever combination of equipment that is necessary to produce a clean surface without damage.

Curing compound on new concrete pavements shall be removed by water blasting or other methods approved by the Engineer. Particular care shall be taken to remove vegetation and soil from the areas to be edge striped. Should other methods fail, hand scraping or brushing will be required to secure an acceptable surface. The Contractor shall protect joints such that existing joint sealant material is not dislodged or damaged.

6. Obliteration of Markings. The obliteration of existing pavement markings that do not coincide with the final pavement markings and the obliteration of temporary markings shall be accomplished by water blasting or other methods approved by the Engineer. The Contractor shall protect joints such that existing joint sealant material is not dislodged or damaged. The Contractor shall repair any damage to the pavement,

surface texture, or joint sealant caused by obliteration operations at their own expense. Method of repair shall be acceptable to the Engineer.

7. Layout. On those sections of pavements where no previously applied figures, markings, or stripes are available to serve as a guide, suitable layouts and lines of proposed stripes shall be spotted in advance of the paint application. Control points shall be spaced at such intervals as will insure accurate location of all markings.
8. Application. Markings shall be applied at the locations and to the dimensions and spacing indicated on the plans or as specified. Paint shall not be applied until the layouts and condition of the existing surface have been approved by the Engineer.

The paint shall be thoroughly mixed in accordance with the manufacturer's instructions and applied to the surface of the pavement at its original consistency without the addition of thinner. The paint shall be applied at the rate specified in Article 2A above. If the paint is applied to small, irregular areas, by brush, the surface shall receive two coats; the first coat shall be thoroughly dry before the second coat is applied. Paint containers shall not be opened until required for use.

New asphalt pavement shall be allowed to cure for at least three days before application of permanent paint markings, unless a shorter period is approved by the Engineer. Paint may be applied to concrete pavement upon completion of the curing period. However, a period of several weeks shall elapse between application of a bituminous seal coat and the marking of the pavement. The paint shall not bleed excessively, curl, or discolor when applied to the surface; and in the event that this occurs, the Contractor shall remove the deficient markings and repaint such areas at his own expense.

When reflective markings are specified, the reflective media shall be applied to the painted surface immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Article 2A above. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment should be performed. All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until Authorized by the Engineer.

The finished markings shall be accurate and neat in appearance. The edges of the markings shall not vary from a straight line by more than 1/2 inch in 50 feet.

Marking dimensions and spacings shall be within the tolerances listed below:

<u>Dimension or Spacing</u>	<u>Tolerance</u>
36 inches or less	± 1/2 inch
Greater than 36 inches to 6 feet	± 1 inch
Greater than 6 feet to 60 feet	± 2 inches
Greater than 60 feet	± 3 inches

Any skips or apparent thin spots shall be repainted. All pavement markings not conforming to the requirements of the contract shall be removed and replaced or otherwise repaired to the satisfaction of the Engineer.

9. Test Strip. Prior to the full application of airfield markings, the Contractor shall produce a test strip in the presence of the Engineer. The test strip shall include the application of a minimum of 5 gallons of paint and application of 35 lbs of Type I/50 lbs of Type III glass beads. The test strip shall be used to establish thickness/darkness standard for all markings. The test strip shall cover no more than the maximum area prescribed in Article 2.A (e.g., for 5 gallons of waterborne paint shall cover no more than 575 square feet).

10. Retro-reflectance.

Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 readings shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

Minimum Retro-Reflectance Values

Material	Retro-reflectance mcd/m ² /lux		
	White	Yellow	Red
Initial Type I	300	175	35
Initial Type III	600	300	35
Initial Thermoplastic	225	100	35
All materials, remark when less than ¹	100	75	10

¹ Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance.

11. Surface Painted Holding Position Signs. Surface Painted Holding Position Signs (SPHPS) consisting of white text on a red background, shall be applied in two separate operations. The red background shall be allowed to cure for a minimum of 24-hours before painting the white inscriptions. During the period when SPHPS on active taxiways are missing the white inscriptions, the airport must issue a Notice to Airmen (NOTAM) notifying pilots of the non-standard markings.
12. Protection. After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from disfiguration by spatter, splashes, spillage or drippings of paint.
13. Certification. The Contractor shall furnish a certified report on the quality of materials shipped to the project. This report shall not be interpreted as a basis for final acceptance. When required, all emptied containers shall be returned to the paint material storage area or made available for checking by the Engineer. The Contractor shall make accurate accounting of the paint materials used in the accepted work.
14. Clean Up. The work site shall be cleared of all waste material at the end of each work period. Upon completion of all pavement markings, all unused materials, equipment and other debris shall be removed from the site and the entire job left clean and acceptable to the Engineer.

B. Snowplowable Reflective Pavement Markers

1. Weather Limitations. Marker installation shall be performed only when the existing surface is dry and clean, when the atmospheric temperature is above 45° F, relative humidity is 80 percent or lower, and when the weather is not excessively windy, dusty, or foggy. If low-temperature epoxy is used, minimum temperature shall be as recommended by the manufacturer.
2. Traffic Provisions. Refer to the Traffic Provisions/Airport Security article included in Section 01 35 13, Special Project Procedures of the Project Manual.

Taxiways and aprons shall be closed to aircraft traffic to permit installation of markers. Marker installation shall be completed and epoxy given adequate curing time such that pavements can be re-opened to traffic by the time specified in the Traffic Provisions.

Taxiways and apron pavements in which slots have been cut, but markers have not yet been installed, may be re-opened to traffic provided the slots are limited to the width required for marker installation and no more than 2 inches in depth.

3. Layout. Markers shall be installed at locations shown on the Plan drawings. Markers will be installed adjacent to existing or proposed pavement markings and shall be oriented parallel to those markings. Marker locations may be adjusted slightly to maintain the proper clearance from joints, cracks, and pavement markings as shown on the Plan drawings.
4. Equipment. The saw for cutting the pavement slot shall be capable of cutting the slot to the depth and width recommended by the marker manufacturer in a single plunge cut, using an array of diamond concrete saw blades as recommended by the marker manufacturer.
5. Flood Lighting. A flood lighting system approved by the Engineer shall be utilized whenever pavement markers are being installed after sunset or before sunrise. Vehicle lights shall not be considered adequate for this purpose.
6. Preparation of Pavement Surface. At the time of applying the markers, the application area shall be dry and free of all contamination including laitance, oil, dirt, grease, curing compound and other matter that might adversely affect adhesion of the marking material. Cleaning shall be accomplished with rotary brooms, air blast, hand brooms, scrapers, or whatever combination of equipment that is necessary to produce a clean surface without damage.
7. Installation. Markers shall be applied using the epoxy recommended by the manufacturer. In installing the marker assembly, be sure all four leveling lugs are resting directly on the pavement, and the leading edges of the rails are below the pavement surfaces. Protect markers from traffic until the epoxy completely hardens.
8. Clean Up. The work site shall be cleared of all waste material at the end of each work period. Upon completion of installation of all pavement markers, all unused materials, equipment and other debris shall be removed from the site and the entire job left clean and acceptable to the Engineer.

PART 4 METHOD OF MEASUREMENT.

A. Pavement Markings

Pavement marking and obliteration of markings as specified and shown on the plans or directed by the Engineer will be measured by areas in square feet or included in Lump Sum bid items as indicated in the Schedule of Prices. Where marking or obliteration is paid by Lump Sum, the Lump Sum will include all markings or obliterations shown on the plans; additional markings or obliterations directed by the Engineer will be measured for payment under the appropriate unit price bid items per square foot. Area measurements will be based on plan dimensions and in the case of broken or striated markings will include only the actual painted area. Gaps between broken lines or striations will not be measured for payment.

B. Snowplowable Reflective Pavement Markers

Pavement markers as specified and shown on the Plans or directed by the Engineer will be counted for payment under the per-each bid item as indicated in the Schedule of Prices.

PART 5 BASIS OF PAYMENT.

A. Pavement Markings

Payment for pavement marking at the appropriate contract unit or Lump Sum price shall be full compensation for furnishing all materials, for all preparation, layout and application of the materials, and for all labor, equipment, tools, and incidentals necessary to

complete the work as specified. Traffic control shall be paid for in accordance with the provisions of Section 01 35 13 Special Project Procedures, or shall be incidental.

If the Schedule of Prices does not include a bid item for Obliterate Pavement Markings, the obliteration of existing markings not compatible with the proposed markings will be incidental.

B. Snowplowable Reflective Pavement Markers

Payment for pavement markers at the appropriate contract price per each shall be full compensation for furnishing all materials, for all preparation, layout and application of the materials, and for all labor equipment, tools, and incidentals necessary to complete the work as specified. Traffic control shall be paid for in accordance with the provisions of Section 01 35 13, Special Project Procedures, or, if no Bid Item is provided, it shall be incidental.

Payment will be made in accordance with the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
32 17 23-1	Pavement Marking	Lump Sum
32 17 23-2	Obliterate Pavement Markings	Lump Sum
32 17 23-3	Pavement Marking	Sq. Ft.
32 17 23-4	Obliterate Pavement Markings	Sq. Ft
32 17 23-5	Reflective Pavement Markers	Each

END OF DOCUMENT

**SECTION 32 31 00
CHAIN LINK FENCE**

PART 1 **DESCRIPTION.** This work consists of furnishing and constructing new chain link fence and gates all as shown on the drawings and in accordance with these specifications.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 **MATERIALS.** Fabric, posts, hardware, and fittings for chain link fence shall conform to the requirements of AASHTO M 181 unless modified hereinafter.

- A. Chain Link Fence Fabric. The fabric shall be woven with nine (9) gauge aluminum coated steel (ASTM A 491) or galvanized steel (ASTM A 392, Class 2) wire. The fabric shall be woven in a 2-inch mesh with both top and bottom selvage to be twisted and barbed. The fabric height shall be as noted on drawings and in the Schedule of Prices.
- B. Barbed Wire. The fabricated barbed wire shall consist of three (3) strands of 12-1/2 gauge galvanized or aluminum coated steel wire with four-point 14 gauge full round barbs at 5-inch spacing. Galvanizing shall conform to the requirements of ASTM A 121 for Class 3 coating. Aluminum coated barbed wire shall conform to the requirements of ASTM A 585, Type I or II.
- C. Posts and Framework. All posts and framework shall be Type I or Type II round posts.

Type I round post shall be hot dipped galvanized produced to conform to ASTM F 1083 standard weight (Schedule 40). Galvanizing shall be in accordance with ASTM A 123.

Type II round post shall be manufactured from steel conforming to ASTM A 569, cold rolled, welded and have a minimum yield strength of 50,000 psi, given corrosion protection by an exterior triple coating consisting of 1.0 ± 0.1 ounce per square foot zinc applied after welding, 30 ± 15 micrograms chromate, 0.5 ± 0.2 mils clear polymer coating. The inside surface shall be given corrosion protection. The internal coating shall be applied after welding and shall protect the metal from corrosion when subjected to the salt spray test of ASTM B 117 for 300 hours with the end point of 5% Red Rust. The external coating shall meet the following requirements:

<u>ASTM</u>	<u>Exposure Time</u>	<u>End Point</u>
Salt spray (fog) B 117	1,000 hours	5% Red Rust
Water (fog) D 1735	500 hours	1st Red Rust

Posts shall conform to the following weights and dimensions:

	<u>FENCE HEIGHT</u>	
	<u>72" AND OVER</u>	<u>UNDER 72"</u>
<u>TERMINAL POSTS</u>		
Type I	2.875" O.D., 5.79 #/'	2.375" O.D., 3.65 #/'
Type II	2.875" O.D., 4.64 #/'	2.375" O.D., 3.12 #/'

LINE POSTS

Type I	2.375" O.D., 3.65 #/	1.90" O.D., 2.72 #/
Type II	2.375" O.D., 3.12 #/	1.90" O.D., 2.28 #/

TOP RAIL

Type I	1.66" O.D., 2.27 #/	1.66" O.D., 1.35#/
Type II	1.66" O.D., 1.84 #/	1.66" O.D., 1.35#/

- D. Tension Wire shall be galvanized or aluminum coated 7 gauge coil spring steel wire. Tension wire shall be attached to terminal posts with tension bands/clamps and to the chain link fabric with tie wires (hog rings).
- E. Appurtenances. Post tops, extension arms, stretcher bars and other required fittings and hardware shall be of good commercial quality steel or malleable iron or wrought iron and shall be galvanized in accordance with the requirements of ASTM A 153. All galvanizing shall be done after fabrication.
1. Post Tops shall consist of ornamental tops or combination tops with barbed wire supporting arms, as specified. The top shall be provided with a hole suitable for the through passage of the top rail or tension wire. The post tops shall fit over the outside of posts and shall exclude moisture from posts.
 2. Barbed Wire Supporting Arms when specified to be furnished, shall be at an angle of approximately 45° or vertical as specified, and shall be fitted with clips or other means for attaching three strands of barbed-wire. With 45° arms the top wire shall be approximately 12-inches horizontally from the fence line and the other wires spaced uniformly between the top of the fence fabric and the outside strand. Barbed-wire arm shall be of sufficient strength to withstand a weight of 250 pounds applied at the outer strand of barbed-wire.
 3. Stretcher Bars, Bands, Clips. Stretcher bars shall be ¼-inch x ¾-inch flat steel bars. Bands or clips of adequate strength shall be provided in sufficient number for attaching the fabric and stretcher bars to all terminal posts at intervals not exceeding 15-inches. Tension and brace bands shall be formed from flat or beveled steel and shall have a minimum thickness after galvanizing of 0.108 inch; and minimum width of 7/8-inch. Bands shall be galvanized or aluminum coated. Attachment shall be with 5/16 inch x 1-1/4 inch galvanized carriage bolts and nuts.
 4. Tie Wires for line posts and top rail shall be 9 gauge galvanized steel or 0.179-inch min. aluminum alloy conforming to ASTM B 211, Alloy 1100-H18.
 5. Tie Wires for tension wire shall be 12-1/2 gauge galvanized or aluminized steel hog rings.
- F. Gates. Gates shall be swing or sliding as specified, complete with latches, stops, keepers, hinges, or rollers and roller tracks, and when so specified, with provision for three strands of barbed wire above the fabric. Unless noted otherwise the height shall match that of the adjacent fence. Gate frames shall be made of Schedule 40 steel pipe of the size shown in the detail drawings. If no size is shown, the gate frame shall be minimum 1.900" O.D. pipe weighing 2.72 lbs./lin.ft. Gate frames shall be welded at all corners or assembled with suitable malleable iron fittings. Welds shall be painted with zinc-based paint. Where corner fittings are used gates shall have truss rods of 5/16-inch minimum nominal diameter to prevent sag or twist. Gate leaves shall have vertical intermediate bracing as required, spaced so that no members are more than 8 feet apart. Gate leaves 10 feet or over shall have a horizontal brace or one 3/8-inch minimum diagonal truss rod. When barbed wire top is specified the end members of the gate frames shall be extended one foot above the top horizontal member to which 3 strands of barbed wire, uniformly spaced, shall be attached by use of bands, clips or hook bolts. Shop drawings demonstrating the adequacy of bracing shall be submitted for approval.
- Gate fabric shall be the same type as used in the fence construction. The fabric shall be attached securely to the gate frame at intervals not exceeding 15 inches.

Gate hinges shall be of adequate strength for gate, and with large bearing surfaces for clamping in position. The hinges shall not twist or turn under the action of the gate. The gates shall be capable of being opened and closed easily by one person.

Gate latches, stops and keepers shall be provided for all gates. Latches shall have a plunger-bar arranged to engage the center stop, except that for single gates of openings less than 10 feet wide a forked latch may be provided. Latches shall be arranged for locking. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger bar of the latch of double gates. No stop is required for single gates. Keepers shall consist of a mechanical device for securing the free end of the gate when in the full open position.

Gate posts for single swing gates up to six (6) feet in width and double swing gates up to 12 feet wide shall be 2.875" O.D. pipe weighing 5.79 lbs./lin.ft. Gate posts for single swing gates six (6) feet to 12 feet wide and double swing gates 12 feet to 24 feet wide shall be 4.000" O.D. pipe weighing 9.11 lbs./lin.ft. For double swing gates 24-feet or more in width, posts shall be 6.625" O.D. pipe weighing not less than 18.97 lbs./lin.ft. The concrete post anchorage for the 6.625" O.D. posts shall be 24 inches in diameter.

Gates of the various types shall be as follows:

1. Standard Gates. This type of gate shall be of double swing design and shall be fitted with suitable hardware including pivot hinges, latches (plunger bar type), center rests and stops. Latches shall be arranged for locking with padlocks.
2. Crash Gates. This type of gate shall be of double swing design and shall be fitted with suitable hardware to provide for operation as a crash gate for emergency use. The nominal opening width for double swing crash gates shall be 32 feet. Gate posts shall be 6.625" O.D. pipe weighing not less than 18.97 pounds per foot.
3. Cantilever Sliding Gate. This type of gate shall be of either single or double gate design as noted on the drawings.

The gates shall be all-welded back frame and double post type construction as shown on the detailed drawings shown on the plans or included in the Project Manual. Each gate shall slide between four caster assemblies mounted on 4.000" O.D. or 6.625" O.D. steel posts as shown on the detail drawings or as recommended by manufacturer and approved by the Engineer. Gate posts shall be set in concrete to a depth of 4' 6" or as recommended by manufacturer and approved by the Engineer. The concrete shall be 16 inches in diameter for 4.000" posts or 24 inches in diameter for 6.625" posts, and extend 4 inches below the bottom of the post or as recommended by manufacturer and approved by the Engineer. Foundations are subject to change pending receipt of final loading information from gate manufacturer.

The nominal opening width for either single or double cantilever sliding gates shall be as noted on the drawings.

Preapproved manufacturers – Manufacturers of TYMETAL Security Gates and Perimeter Solutions, 678 Wilbur Avenue, Greenwich, NY 12834 USA, (888-978-4283), <https://www.tymetal.com/> or approved equal cantilever gate manufacturer. All manufacturers must meet the Buy American Provisions in Section 00 83 11 FEDERAL CONTRACT AND LABOR PROVISIONS.

Technical information demonstrating conformance with the requirements of this specification for an alternative cantilever gate manufacturer must be submitted to the Engineer for approval within 3 weeks of "Letter of Intent to Award Contract" date and prior to letting of the contract as shown in Section 00 21 11 – INFORMATION FOR BIDDERS.

4. Walk Gates. This type of gate shall be of single swing design. Unless otherwise noted on the drawings, the nominal opening width for walk gates shall be 4 feet.

- G. Gate Operator Assembly shall consist of housed equipment and all ancillary equipment for complete master (and slave where shown) gate control. In general, the equipment shall be as follows:
1. Motor. Minimum 1 HP, 460 volt, 3 phase heavy duty, overload protected.
 2. Motor Starter shall be full voltage minimum NEMA size 0.
 3. Disconnecting means for incoming power.
 4. Limit Switches for start/stop control.
 5. Terminal Blocks for terminating field connections.
 6. Drive and Output shall be by means of a metal rail passing between a pair of solid aluminum wheels with polyurethane treads. The transfer of power from operator to gate shall be by hydraulic motors turning the aluminum drive wheels, chain or belt drive is not acceptable. The gate velocity shall not be less than two (2) feet per second.
 7. Control Power. Provide control power transformer 460 to 120VAC, 0.25KVA.
- H. Receivers shall be capable of operating gate controller with pulse from existing remote handheld transmitters. Equipment supplier shall verify exact frequency with airport personnel. Existing receivers are Linear Model DR. Provide Linear Model EXAGT antenna and coaxial cable for receivers as recommended by manufacturer.
- I. Digital Loop Detectors shall be solid state with automatic tuning, pulse and presence operating modes and SPDT relay contact outputs. Separate detectors shall be utilized for each loop. Detector shall be Delta Model 816.
- J. Loop Detector Conductors for embedded saw cut loop detectors shall be No. 16 AWG, stranded nickel or silver plated copper conductors, insulated with minimum 0.010 inch extruded Telfon conforming to the latest requirements of Federal Specification Mil-W-16878D (Type E).
- K. Pushbutton Stations shall be heavy duty oiltight/watertight with 3 pushbuttons (open, stop, close), equal to Square D Type K, Class 9001.
- L. HOA Selector Switch shall be heavy duty oiltight/watertight switch with (hand/manual, off, automatic), equal to Square D Type K, Class 900T.
- M. Padlocks of high quality shall be furnished for each access door or housing of gate operator assembly. Locks shall be keyed to existing used by airport electrician.
- N. Concrete. Concrete shall conform to the requirements of ASTM C94. It shall contain between 4% and 6% entrained air and have a minimum compressive strength of 4000 psi at 28 days. The maximum water to cement ratio shall not exceed 0.45. Cement shall be Type 1 meeting ASTM C 150. The coarse aggregate shall meet CA-60 gradation as defined in MnDOT Specification 3137, Table 3137-2. Slump shall not exceed 4-inches. Accelerators shall not be used unless specifically permitted by the Engineer.

PART 3 CONSTRUCTION REQUIREMENTS

- A. General. The fence shall be erected in accordance with the plans and Special Provisions.

The Contractor shall perform no work on the job site until all underground utilities are located in accordance with Section 01 35 13, Special Project Procedures, Existing Underground Utilities, of the Project Manual. Any damage to existing utilities caused by the Contractor's operations shall be repaired by the Contractor in accordance with Section 01 35 13, Special Project Procedures, Existing Underground Utilities, of the project manual. Damaged electrical or communications cable will generally be required to be replaced between handholes rather than be spliced underground.

The fence shall follow the general contour of the ground surfaces. Minor irregularities shall be eliminated by grading to a minimum width of 3 feet centered on fence. Trees, brush, stumps, and other obstructions shall be removed for a minimum width of 12 feet centered on the fence. Any holes resulting from clearing or removal operations shall be filled with suitable soil properly compacted and acceptable to the Engineer. Materials

resulting from clearing, removals, grading, etc., shall be disposed of in accordance with Section 01 35 13, Special Project Procedures, of the Project Manual.

The fence shall be of the type and height shown on the plans and listed in the Schedule of Prices. Type A fence shall have fabric mounted on a framework which includes top rail. Type B fence shall be similar to Type A with the addition of three strands of barbed wire and supporting arms set at a 45° angle. Type C fence shall have a tension wire in place of the top rail. Type D fence shall be similar to Type C with the addition of three strands of barbed wire and supporting arms set at a 45° angle.

Airport security fence shall be Type A or Type B, with bottom tension wire, unless a different fence type is designated in the plans or Special Provisions.

The finished fence shall be plumb, taut, true to line and ground contour and complete in every detail.

- B. Post Installation. Corner posts, pull posts, end posts and gate posts shall be installed at locations shown on the Plans or designated by the Engineer. Posts shall be set in concrete to a minimum depth of 36 inches and shall be centered in the concrete. Concrete shall extend not less than 4 inches below bottom of post in each case. Diameter of concrete shall be not less than 8 inches for line posts, 16 inches for corner, pull, and end posts, and as specified in Article 32 31 00.32.F for gate posts. Tops of concrete bases shall be finished smooth, slightly above ground surface and sloped to drain. Holes for post bases shall be dug to exact size of concrete where practicable. Where earth will not stand properly, larger holes shall be dug, and forms used for post bases. After concrete has set up sufficiently hard, remove the forms, backfill with earth tamped into place and leveled to conform to the required grade.

After posts have been installed and concrete has hardened so that it will not be damaged, install top rail and bracing.

Line posts, except those adjacent to pull, end, corner or gate posts, may at the Contractor's option be driven provided that posts of sufficient extra length are furnished to allow drive setting at least four feet into the ground. The tops of the posts shall be protected against damage. Any posts which are damaged during installation shall be removed and replaced at the Contractor's expense. Also, if any posts are unstable after driving, they shall be removed and reset in concrete at the Contractor's expense.

Line posts shall be spaced uniformly and not over 10 feet 0 inches on centers. Where practical, pull posts shall be spaced to provide a braced post at all points where: a) the vertical alignment deflects by more than 20 degrees, b) post anchorage is necessary to counteract wire uplift, and c) an abrupt grade change on short runs cannot be avoided by shaping the ground to a uniform contour. Pull posts shall not be over 500 feet from corner and/or end posts, and shall be uniformly spaced, 500 feet apart or less. The top rail shall have sleeve rail couplings spaced a maximum of 20 feet apart. Every 5th coupling shall contain a heavy spring to take up expansion and contraction of top rail. Top rail shall pass through post tops and be rigidly fastened to corner, end, angle and pull posts.

Bracing shall be provided for end, angle, corner, pull and gate posts, placed midway between top rail and the ground and running to the first line post in each case. Truss from the first line post back to the bottom of braced post using 3/8-inch round rod and turnbuckle.

- C. Fabric Installation. The fence fabric shall be tightly stretched and fastened to top rail and all posts. Care shall be taken not to stretch the wire so tightly that it will break in cold weather or pull posts out of line. Fastening to top rail and line posts shall be with metal bands, clips or heavy wire as shown. Spacing of fastenings shall not exceed 14 inches on centers on posts and 24 inches on centers on top rail. Hog rings shall be spaced 18 inches on center along tension wire. Fastening to end and corner posts shall be with stretcher bars, clamps and bolts. Top selvage shall be dressed slightly above top rail and bottom shall be not more than 2 inches above the ground. Fabric shall be spliced by

pulling ends together and twisting in a spiral connecting link or picket so as to make a continuous piece of fabric between end, corner and gate posts as the case may be.

The barbed wire shall be stretched to the proper tension and fastened securely in the slots of the extension arms with heavy wire pins. The top strand of the barbed wire shall be located approximately 12 inches above the height of the fence fabric.

When the barbed wire security fence is to be added to existing chain link fences, the existing post tops shall be removed and new extension arms installed. Details for addition of the barbed wire security top to existing gates will be subject to approval by the Engineer.

- D. Gate Installation. Gates shall be attached in such a manner that they cannot be lifted off the supports or otherwise easily removed. Gates shall open in the direction shown on the drawings. Gate stops of a type approved by the Engineer shall be provided. All gates shall be adjusted for proper operation.
- E. Gate Operator Assembly. shall be installed on concrete base 18" above grade as detailed on plans.

All control equipment (timer to close, motor contactor, max. run timer, etc.) shall be counted inside housing and wired to terminal blocks. The housing shall be of ample size to house all equipment without crowding.

Provide open/close/stop pushbutton for manual operation and provide a switch for deactivation of automatic system.

Receiver antenna shall be mounted external to housing.

- F. Loop Detector Conductors. Saw cut loop detectors shall be installed per Mn/DOT 2565.3 and as detailed on MnDOT Standard Plate No. 8130D (included in Appendix A).
- G. Gate Operation.

- 1. Gates shall operate as scheduled on plans, where more than one gate operator is shown or required to open and close gates, a master unit shall be assigned. The master unit shall house all control equipment for complete master/slave control and associated interlocking controls.

The automatic gate supplier shall provide a prewired interfact panel complete with control power transformer, open/close/stop buttons, terminal blocks and space for detectors and radio receiver. Under this control provide a NEMA 4 control cabinet, detectors, receiver, power and control wiring as required and shown on drawings for a complete installation.

- 2. All gates shall open to a maximum between fence gate posts and remain there until vehicle, or last train of vehicles has passed over the loop. Gate will close after detector loses detection of vehicle(s).

Limit switches shall be properly adjusted for both "fully opened" and "fully closed" positions. If the gate is in the process of closing and an opening signal is received, the gate shall instantly stop, and then start to reopen to "fully open" position.

Adjustable time delay relays, of suitable range, shall be incorporated into the control system as follows:

After gate receives an "opening" signal and opens to the full open position, but no "closing" signal is received, after a fixed time delay the gate will automatically close.

After a vehicle leaves the "closing" loop, there shall be a fixed time delay before the gate starts to close. If another vehicle enters the closing loop, the time delay shall be restarted.

Slide gates shall reverse and open upon contact of safety edge.

All final adjustments of limits etc., shall be by the gate operator assembly supplier.

- H. Existing Gate Operators shall be removed and delivered to Owner's Electric Shop, concrete bases shall be disposed of.
- I. Tests. Each gate operator shall be fully tested as a completed unit prior to acceptance and shall include the functioning of each control not less than 10 times. Check entire system per manufacturer's recommendations prior to energizing.
- J. Electrical Grounds. Electrical grounds consisting of copper coated steel rods having a nominal diameter of 5/8-inch or more and a minimum length of 8 feet shall be installed along each fence line at the locations staked by the Engineer.

Ground rods shall be driven to an elevation approximately flush with the ground surface, at points directly below or adjacent to the fence wire, and each ground rod shall be connected to the fence with a solid No. 6 gage copper wire. The ground wire shall be attached to the ground rod and to the fence wires with approved type metal clamps in such a manner that each longitudinal fence wire is electrically grounded. No more than one connection will be required on woven wire and chain link fabric, that being near the bottom at each ground rod.

Electrical grounds are to be installed at locations established in accordance with the following requirements:

1. An electrical ground shall be installed on each fence line at the approximate point of crossing of each electric power line and two grounds shall be installed at each gate opening, one on each side of the opening and as close to the gate post as practicable.
2. Additional grounds shall be installed on each fence line as necessary to maintain a desired maximum spacing between grounds of 1,500 feet on fences where steel posts are used and 1,000 feet on fences where wood posts are used.
3. A minimum of one electrical ground shall be installed on each separate section of fence. A separate section of fence shall be defined as a run on which the electrical continuity has not been broken by gates, terminal posts, etc.
4. On each separate section of fence, the spacing of electrical grounds shall be as uniform as practicable and such that a ground will be located within a distance from each end not greater than one-half the desired maximum spacing interval.

PART 4 METHOD OF MEASUREMENT.

Fence of the various heights and types shall be measured in feet from outside to outside of end posts and corner posts as the case may be and shall be the length of fence actually constructed and accepted minus the spaces occupied by gates.

Special fittings, sleeves, anchor bolts, etc., required to secure the fencing to walls or other structures shown on the drawings will not be measured for payment but shall be considered as incidental to fence construction.

Gates of the various types shall be measured in units for each gate installed and accepted. The distance between centers of gate posts will be considered as the width of the gate in each case.

Automatic Gate Installation includes gate operator assemblies, vehicle detectors, receivers and all other equipment required for a complete operational system.

All items necessary for complete operation, such as raceway and conductors, trenching, restoration, grounding, testing, removal of existing gates, etc., shall be considered incidental and included in counted items as applicable.

The quantity of units to be paid for under this section shall be the counted number of each of the following completed units furnished, installed and accepted.

Electrical grounds will be measured by the number of ground rods and connections furnished and installed completely in place.

PART 5 **BASIS OF PAYMENT.** Payment for chain link fence, gates and automatic gate installation at the appropriate contract unit price shall be compensation in full for all costs of furnishing and installing all materials as specified except those which the contract specifically designates as having been included for payment under separate items.

Payment for Electrical Grounds at the appropriate contract unit price shall be compensation in full for all costs of furnishing and installing the grounds as specified.

Payment will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
32 31 00-1	Install Salvaged Chain Link Fence	Lin. Ft.
32 31 00-2	Install Salvaged Gate	Each

END OF DOCUMENT

SECTION 32 39 14
GUIDE POSTS (BOLLARDS)

PART 1 **DESCRIPTION.** This work shall consist of furnishing and installing guide posts (bollards) at the locations shown in the plans or as designated by the Engineer in accordance with these specifications.

NOTE: See Section 01 35 20 Special Provisions for project-specific revisions and additions to this standard specification.

PART 2 **MATERIALS**

- A. Steel Posts.** The steel posts shall be Schedule 40 Steel Pipe conforming to the requirements of ASTM A 53, Grade B. All posts shall receive a shop coat of primer. Primer shall be organic zinc-rich primer, and shall be Zinc Clad IV manufactured by Sherwin-Williams, Tnemec 90-97 manufactured by Tnemec Company, Inc., or approved equal.
- B. Concrete.** Concrete for setting or filling steel posts shall conform to the requirements of ASTM C 94. It shall contain between 4% and 6% entrained air and have a minimum compressive strength of 4000 psi at 28 days. The maximum water to cement ratio shall not exceed 0.45. Cement shall be Type 1 meeting ASTM C 150. The coarse aggregate shall meet CA-60 gradation as defined in MnDOT Specification 3137, Table 3137-2. Slump shall not exceed 4 inches. Accelerators shall not be used unless specifically permitted by the Engineer.
- C. Joint Sealers.** The joint sealant shall conform to FAA P-605. The sealant for expansion joints shall be a hot poured, low-modulus elastic-type sealer conforming to the requirements of ASTM 6690.
- D. Preformed Joint Filler.** Preformed filler material for expansion joints shall be a non-extruding and resilient bituminous type conforming to the requirements of ASTM D1751.
- E. Guide Post Sleeve.** Guide post sleeves shall be polyethylene thermoplastic (HDPE) tubes having ultra-violet resistance and anti-static properties, nominal thickness shall be 0.25 inches. Color shall be OSHA yellow unless otherwise noted. Sleeves shall be sized for pipe diameters. Guide post sleeves shall be manufactured by Ideal Shield, or approved equal.

PART 3 **CONSTRUCTION REQUIREMENTS.** Posts shall be installed at the locations, intervals and lines shown on the plan or designated by the Engineer.

The Contractor shall perform no work on the job site until all underground utilities are located in accordance with Section 01 35 13, Special Project Procedures, of the Project Manual. Any damage to existing utilities caused by the Contractor's operations shall be repaired by the Contractor. Damaged electrical or communications cable will generally be required to be replaced between handholes rather than be spliced underground.

Post holes may be dug by hand or mechanical methods to the depth required to place the post top at the specified height above the ground surface. The foundation shall be thoroughly tamped and compacted to provide firm, uniform bearing before setting the post.

Steel posts shall be set in concrete, filled with concrete and painted as specified above. Guide post sleeves shall be installed with manufacturers neoprene adhesive tape; no screws, glue or clamping will be acceptable. Guide post sleeves shall be installed per manufacturers installation guidelines and shall match the height of the guide post.

Where guide posts are installed in existing concrete pavement, the pavement shall be core-drilled full depth to a nominal diameter 2 inches greater than the guide post diameter. After installation of the guide post, the annular space shall be sealed with hot-pour sealant conforming to MnDOT Specification 3725.

If installation by core-drilling is not feasible due to utility conflicts, the Contractor shall notify the Engineer, who may direct the Contractor to relocate the guide post or install a surface-mounted guide post.

When complete, the posts shall be rigid, plumb and within 1/2-inch of the required alignment. Post tops shall be within 1/2-inch of the designated elevation or grade.

Bituminous and concrete surfaces removed for post installation shall be replaced. All concrete and bituminous rubble and surplus excavated material shall be disposed of by the Contractor in accordance with Section 02 41 13, Miscellaneous Removals.

PART 4 **METHOD OF MEASUREMENT.** Guide posts of each type (steel or wood) will be measured separately by the number of posts properly installed.

PART 5 **BASIS OF PAYMENT.** Payment for the construction of guide posts at the appropriate contract unit prices shall be compensation in full for all costs of furnishing and installing the posts as specified, including concrete footings, concrete fill for steel posts, painting, guide post sleeve, core drilling, and removing and patching bituminous or concrete surfacing.

Payment will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
32 39 14-1	Steel Guide Post	Each

END OF SECTION

SECTION 40 05 00
MECHANICAL EQUIPMENT AND DESIGN

1. THE GENERAL CONDITIONS AND SPECIAL CONDITIONS apply to each and every section of the specifications.
2. RELATED WORK. Electrical work required under this section shall be performed in accordance with the Electrical Specification sections (Division 26).
3. SUBMITTALS AND SHOP DRAWINGS shall be submitted on the mechanical equipment and piping system components as per the General and Special Conditions, and as specified hereinafter.
4. BASIS OF PAYMENT
Provide a cost breakdown for each of the following items:
 - A. Mechanical Construction, Lump Sum
Costs shall include the following items:
 1. Furnish and install the above-ground 10,000-gallon UL 2085 double-walled Jet-A fuel tank and contained dispensing equipment
 2. Furnish and install the above-ground 10,000-gallon UL 2085 double-walled Avgas fuel tank and contained dispensing equipment
 3. Furnish and install storage tank and dispensing equipment accessories, which include but are not limited to: floating suction, emergency vent, high-level alarm, product level gauge, manway, cable check inspection opening, normal vent, water thief/water draw-off pump, overfill prevention valve, and all associated piping, valves, and hoses shown in the Drawings and called for in this section.
5. DESIGN ENGINEERING AND CONTRACTOR QUALIFICATIONS
As minimum qualifications, the Contractor shall be a licensed fueling Contractor in the state of Minnesota and shall have successfully completed at least three (3) similar aviation fueling installations within the past five (5) years. The Contractor shall retain the services of design engineering professionals as required to provide an installation that is in compliance with all local, state, and federal governing authorities.
6. EQUIPMENT
The equipment furnished and installed by the Contractor shall be by manufacturers with experience and currently engaged in equipment supply for the aviation fuel storage and handling industry.
7. GENERAL
 - A. The Drawings depict the general character of the work to be performed by the Contractor. It is the Contractor's responsibility to include all ancillary and incidental work required for construction and systems provided though they may not be shown on the Drawings or covered in the specifications. The Owner will not provide additional payment for work that is required for the new construction to be a complete, functional system complying with all governing codes and regulations.
 - B. Contractor shall provide all accessories, fittings, unions, isolation valves, thermal relief, check valves, strainers, etc., necessary to protect and facilitate routine maintenance of the system.
8. PAINTING AND LABELING
 - A. See Drawing m0.02 for painting and labeling requirements.
 - B. All equipment shall be furnished with the manufacturer's standard paint system, i.e., primer and topcoat, hot dip galvanized, or furnished in stainless steel. The specified paint system

shall be used where compatible with stored and dispensed media and compliance with NFPA 407.

- C. Tank signage shall include all labeling shown in Drawings and as required by the UL 2085 rating. Signage for the operation and identification of the loading and dispensing system shall conform to all governing code requirements.

9. PRESSURE TESTING AND SUPPORT REQUIREMENTS

- A. Contractor shall test storage tank and piping per the manufacturer's recommendations and governing code requirements.
- B. All equipment and piping shall be pressure tested and cleaned of construction debris upon completion of construction to ensure start-up and commissioning can proceed without interruption or damage to equipment.

10. FUELING SYSTEM

- A. The Contractor shall provide a fueling system for each fuel type listed in the project. The fueling system shall have the storage tank, fuel dispensing control panel, and enclosed fuel dispensing equipment delivered as a unitary package to the project site. The fueling system shall come prewired and pre-plumbed from the factory within the boundaries of the packaged systems. The system shall have a single electrical connection for powering the equipment within the enclosed fueling systems. A 208V three phase power feed will be provided for each individual enclosed fueling system. The fueling system provider shall furnish a power panel to power the individual circuits for the equipment within the fueling systems. Provide any step-down transformers for circuits that do not operate on 208V three phase power. The fueling systems shall have their own standalone control panels designed by the fueling system manufacturer. Fueling system control panel shall be integrated with the fuel management/payment system and separate tank gauging system. The fueling system shall be provided with a single electrical connection for controls wiring within the enclosed fueling systems. Specific requirements for components and individual pieces of equipment are outlined in the proceeding paragraphs of this specification. The Contractor may supply an alternative system to the described fueling system in the Drawings and this specification. If an alternative solution is proposed by the Contractor at the time of bid, the Contractor is responsible for providing a fully functional system without additional information for the system, control panel, or mechanical system by the Engineer or the Owner. The Contractor shall be responsible for any additional engineering and design costs associated with any alternative solutions proposed during the time of bid.
- B. Manufacturer: Provide one of the following:
 - 1. Fuel Tech Inc.
 - 2. EnviroSafe Tank
 - 3. Acterra Group
 - 4. Semler Industries
 - 5. Core Engineering Solutions
 - 6. Westmor Industries
 - 7. Engineer Approved Equal

11. JET-A STORAGE TANK

- A. Storage tank shall be aboveground 10,000-gallon double-wall Jet-A tank. Dimensions shall be approximately 8'-6" x 27'-6". Tank shall be double wall complying with UL2085 with epoxy coated interior and meet requirements of EI 1541, UFCSTDA-IT-F-1 and UFC SEC. 7702.3.4.3
- B. The above ground double-wall storage tank shall be factory assembled and delivered to the site with all required accessories including joining pieces and materials for field assembly.

- C. Tank shall be furnished with support saddles with the supports attached to the tank at the factory. Tank shall be sloped toward the sump drain line at a minimum of 1:20. Tank shall come with an access ladder for accessing the interior of the tank.
- D. Tanks shall be installed per NFPA 30 Chapter 22, A4A Spec 103, PEI RP 200 and PEI RP 1300.
- E. Normal and emergency venting of the tanks shall be sized, designed, and installed per API 2000 and NFPA 30 and shall be the responsibility of the tank manufacturer.
- F. Manufacturer: Provide the following.
 - 1. Modern Welding
 - 2. Highland Tank
 - 3. Hughes Tank Company
 - 4. O'Day Equipment
 - 5. Engineer approved equal

12. AVGAS STORAGE TANK

- A. Storage tank shall be aboveground 10,000-gallon double-wall Avgas tank. Dimensions shall be approximately 8'-6" x 27'-6". Tank shall be double-wall complying with UL2085 with epoxy coated interior and meet requirements of EI 1541, UFCSTDA-IT-F-1 and UFC SEC. 7702.3.4.3
- B. The above ground double-wall storage tank shall be factory assembled and delivered to the site with all required accessories including joining pieces and materials for field assembly.
- C. Tank shall be furnished with support saddles with the supports attached to the tank at the factory. Tank shall be sloped toward the sump drain line at a minimum of 1:20. Tank shall come with an access ladder for accessing the interior of the tank.
- D. Tanks shall be installed per PEI RP 200, A4A Spec 103, and PEI RP 1300.
- E. Normal and emergency venting of the tanks shall be sized, designed, and installed per API 2000 and NFPA 30 and shall be the responsibility of the tank manufacturer.
- F. Manufacturer: Provide the following.
 - 1. Modern Welding
 - 2. Highland Tank
 - 3. Hughes Tank Company
 - 4. O'Day Equipment
 - 5. Engineer approved equal

13. STORAGE TANK ACCESSORIES AND EQUIPMENT

- A. The Jet-A and Avgas storage tanks shall be equipped with the following items.
 - 1. Floating pump suction with check cable (no aluminum piping)
 - 2. Normal pressure/vacuum vent with flame arrestor
 - 3. Primary and secondary emergency vents
 - 4. Tank level monitoring (electronic)
 - 5. Interstitial monitoring (electronic)
 - 6. 90% overfill / 10% low-level alarms
 - 7. 95% overfill / 5% low-level protection valve
 - 8. High water detection
 - 9. Weighted Pressure-vacuum vent
 - 10. Water draw-off point with hand pump
 - 11. Mechanical Level Indicator (clock gauge type or Engineer approved equal)
 - 12. 24-inch diameter manway
 - 13. Top-of-tank access for all regularly serviced and inspected components. Catwalks, platforms, guard rails/kickplates, and ladders shall comply with all applicable OSHA regulations. See the Drawings for the general extents of the access areas to the tank top.

- B. Provide all hardware, seals, gaskets, and fittings as required for complete and functional installation. All equipment and piping shall be compatible for use with Jet-A and Avgas fuels where required. Tanks shall be labeled per the Minnesota State Fire Code and the appropriate NFPA 407 and 704 signage. Provide tank instrumentation per the Drawings and the specifications. All level sensors and electrically powered tank instrumentation shall be suitable for a Hazardous Area Classified as Class 1 Division 1 per the National Electric Code. Contractor shall install all instrumentation per the National Electric Code.

14. JET-A AND AVGAS UNLOAD AND DISPENSING SYSTEM

The new Jet-A and Avgas unload systems will function such that the delivery vehicle will convey fuel from the delivery vehicles to the tanks. The tanks shall receive fuel so long as the tanks are not at their high liquid level setpoint. If a tank reaches its high liquid level, the dedicated overfill shutoff valve will close, the tank will have lights indicating that it cannot receive more fuel, and an alarm will sound.

The new Jet-A and Avgas dispensing and recirculation systems will function such that during normal operation, if a tank reaches its low liquid level during a fueling event, the respective solenoid valves would close, the dispensing pump will stop functioning, the light showing low liquid level would be illuminated, and an alarm would sound.

Fuel flow for recirculation shall be at maximum pump flow. Fuel flow to the overwing dispensing reel shall be limited to 30 gpm at the nozzle. Fuel pressure to the underwing/single point dispensing reel shall be limited to 45 psi at the nozzle. Systems shall be capable of delivering both a set number of gallons or a set dollar amount of fuel, input by the customer at the card reader, and be designed as to minimize pressure shocks due to sudden stoppages of flow. Jet-A fueling systems shall have two means of limiting the pressure to the aircraft's fuel tank. This may include a Hose End Control Valve (HECV) at the nozzle and a pressure control valve at the hose reel.

Relaxation Chamber: Where required to meet the minimum relaxation period of 30 seconds between the filter system and the dispensing hose reels, furnish and install a new relaxation chamber directly downstream of the filter vessel that is rated for operation at the maximum pump flow rate of the system. Provide with air eliminator and pressure relief ports, manual sump drain. All internal components and coating shall be rated for use with the relevant aviation fuel. Provide the relaxation chamber with the accessories described in ATA Spec 103 Sec 2.4.11.

Coalescer-Separator Filter Vessels: Furnish and install new filter vessels with interior epoxy coating suitable for relevant aviation fuel. Filter vessel shall be fabricated out of carbon steel. Epoxy coating shall comply with EI 1541. Filter vessel shall be designed with a design pressure of 150 psig with a minimum metal design temperature of -25°F and be built and designed per ASME BPVC Sec VIII and EI 1596. Vessels shall have an ASME U stamp. Horizontal or vertical configuration is allowed and shall include lifting lugs, drain (with electric heater for cold weather regions), water defense system capable of stopping fuel flow or alerting operator when actuated by a high water volume (include "press-to-test" automatic test capabilities). The water defense system may be float-operated or electric.

Provide filter vessel with coalescing and separating filter cartridges designed for use with aviation fuels at the flow rate and pressure provided by the system pump. Filter elements shall comply with the requirements of A4A Std. 103, EI 1581 and EI 1590. Flow bypass piping shall be downstream of the filter vessel and relaxation chamber. Provide the filter vessel with the following accessories.

- Pressure Relief Valve
- Differential Pressure Gauge (accuracy to +/- 2 psid)
- Sampling Probes and connections (Millipore upstream and downstream) with dust caps or plugs
- Manual Drain Valve
- Heated Water Sump

- Sump Fuel Recovery Unit
- Sight Glass
- Spring loaded closed valves
- Water defense system

Pumps: Furnish and install new positive-displacement pumps with internal components suitable for the relevant aviation fuel. The pumps shall include an internal pressure bypass set to no higher than 30% above the operating pressure in the case of a no-flow event. One pump shall be used to provide flow for recirculation and aircraft refueling, with flow bypass piping being used to control the flowrate to each system as necessary. All fuel flow shall pass through the filter and have a minimum 30 sec relaxation period during all transfer events. Pump motors shall be explosion-proof motors.

Hose Reels: Hoses, nozzles, and reels shall be in accordance with PEI RP 1300 Sec 7 and NFPA 407. Underwing/single point hose reels shall have primary pressure control upstream of the reel and secondary pressure control at the nozzle. Hose lengths shall be sized to prevent fueling within 5 feet of nearby buildings per IFC Chapter 23 and shall include electric rewind. Hoses shall comply with EI 1529 Grade 2 Type C. Hoses shall be marked with a band, color change, or similar method at 50 feet of extension and shall include the language "Second Operator Required" on the mark. Provide AvGas hose 60 feet in length and Jet-A hoses 100 feet in length.

Fueling Nozzles: Provide fueling nozzles with 100 mesh strainers. Swivel retention devices shall be equipped with two levels of redundancy (collar lock rings, retention screws, etc.). Provide dust covers for all fueling nozzles.

Static Bonding Cable: Provide static bonding cables and cable reel that conform to NFPA 407 Section 4.1.2. Provide both clamp and plug connections for bonding. Conductive hoses do not negate the use of a static bonding cable. Static bonding cable reel shall be provided at each truck unloading spot and for each aviation fueling dispenser. The length of the cable in each cable reel shall be no less than the longest dispensing hose for each fueling system. For truck unloading stations, a minimum of 50 feet of cable shall be provided.

Meters: Furnish and install dedicated flow meters for fuel dispensing operations. Meters shall be sized according to the applicable flow rates and pressures they will operate under and be suitable for the relevant aviation fuel. Meters shall communicate with the pay station and the remote monitoring system. Provide air elimination directly upstream of each meter sized appropriately for the applicable flow rates.

Sump Saver Cabinet: Provide 50-gallon storage, 14-gauge stainless steel construction, elevated on 36" tall legs with minimum 4" square base plates. Provide sump saver with threaded 1/2" stainless steel bottom drainpipe with isolation valve and plug; 8" diameter top access hatch.

Remote Fill Box/Spill Container: Provide one (1) free standing remote fill box/spill container for each fuel type. Remote fill box shall have a lockable lid/door, weather tight enclosure, drain connections with stainless steel drain valve(s), stainless steel shut off valves at offload connections, and stainless-steel dry-disconnect connections with dust caps. Spill box shall have a containment volume of 5 gallons or more and shall be UL listed. Provide Morrison Brothers Fig. 715S or approved equal. Provide labels on each connection indicating the type of fuel. See Drawings for location and quantity of remote fill box/spill containers.

Electrical Equipment: All electrical equipment within the electrical classification areas shall be in accordance with NFPA 70, Article 515. See the electrical Drawings for the hazardous area classification boundaries. At a minimum, provide equipment rated for Class 1, Division 1, Groups C&D area. All electrical wiring for powering equipment within the enclosed fueling system shall be routed to a single point electrical power connection.

Control Panel: The Avgas 100LL and Jet-A fueling systems shall have their own standalone control panels to control the operation of the fueling equipment. Control panels shall be capable

of integration with the Automatic Tank Gauging System and QTPod Fuel Management system. Control panels shall be built to UL 508A UL 698A and bear the UL Listing on the control panel. Control panels shall be built in a UL certified panel shop. All electrical wiring for controlling equipment within the enclosed fueling system shall be routed to a single point electrical controls connection.

Signage: Provide appropriate and conspicuous signage for connection locations, system operation instructions, locations of emergency shutoffs and spill cleanup kits.

Fire Extinguishers: Provide 40B:C fire extinguishers compliant with current A4A Spec 103 as shown on plans. At a minimum provide one fire extinguisher per fuel dispensing location. All fire extinguishers shall be provided with a shatter proof cabinet.

Lighting: For pumping and fueling handling equipment placed in a covered or enclosed area on the unitary turkey fueling system, provide lighting with light fixtures that are rated for the hazardous area where the light fixtures are installed.

15. PIPING SYSTEM

Fabrication and Installation: All new piping shall be designed, fabricated, examined, and tested per ASME B31.3. All welded connections shall be fabricated by welders meeting the requirements and qualifications stated in ASME B31.3. Examine all welds using approved methods such as radiographic or ultrasonic examination by qualified individuals. All piping shall be pressure tested per ASME B31.3. Entire piping system shall be protected from snow accumulation. All stainless steel piping and fittings shall either be pickled or be treated with a passivation process after fabrication is completed.

Labeling: Label all new piping per ASME A13.1.

Pipe: ASTM A312, Type 304, seamless stainless-steel pipe. Schedule 40S, welded with threaded connections as required at equipment and valves 2" and smaller; flanged connections as required at equipment and valves 2-1/2" and larger. Piping and fittings shall be pickled/pacified after welding.

Fittings: Fittings shall be ASTM A403 Type WP304, seamless or welded conforming to ASME B16.9 and MSS-SP 43, butt welding type. ASTM A182 Type F304 with dimensions conforming to ASME B16.11, socket welding type; for welded joints; and ASME B16.11, threaded type for threaded joints with a minimum pressure class of Class 3000. Integrally Reinforced Forged Branch Outlet Fittings (aka O-Lets) shall conform to MSS SP 97.

Flanges: Where required to connect to flanged equipment or valves, use ASME 150 weld-neck type flanges conforming to ANSI B16.5, Grade I or II. Flange material shall be ASTM A182 Type F304. Flange bore, drilling and facing shall match that of the flanged valves or equipment to which the pipe connects.

Bolting: Heavy hex machine bolts or studs, alloy steel per ASTM A193 GR B7. Service finished heavy hex nuts, alloy steel per ASTM A194 GR 2H. Fasteners shall be PTFE coated.

Valves: Valves shall conform to the following specifications.

- A. General Requirements: Valve bodies shall be made from stainless steel. Cast stainless steel valves shall be made from ASTM A351 Gr. CF8M. Forged valve bodies shall be made from ASTM A182 Type F304.
- B. Ball Valves 2-1/2 Inches and Smaller:
 - 1. Type: Two-piece or three-piece, lever operated, full port, blowout-proof stem, adjustable packing gland, and stuffing box ring.
 - 2. Rating: Minimum of 600-psig WOG or approved equal.
 - 3. Connections: Threaded or socket weld.
 - 4. Materials: 316 stainless steel ball and stem, stainless steel lever and nut, RPTFE seats and stuffing box ring.
 - 5. Approvals: API 607, API 608, ASME B16.34.

- C. Ball Valves 3 to 4 inches:
 - 1. Type: Full port with lockable lever operator (except where motor actuator is required).
 - 2. Rating: ASME 150.
 - 3. Connections: Flanged.
 - 4. Materials: 316 stainless steel ball and stem, RPTFE seats. Graphite packing.
 - 5. Approvals: API 607, API 608, ASME B16.34.
- D. Butterfly Valves 3 to 4 inches:
 - 1. Type: High performance double or triple off-set, one-piece lug type design with lockable lever operator. Bi-directional sealing with blow-out proof stem. ANSI 70-2 Class IV or higher leakage class classification.
 - 2. Rating: ASME 150.
 - 3. Connections: Lug.
 - 4. Materials: 316 stainless steel body, disc, and stem, RPTFE seats. Graphite packing
 - 5. Approvals: API 607, API 609, ASME B16.34.
- E. Check Valves:
 - 1. Type: Swing check, with bolted bonnet.
 - 2. Rating: ASME 150.
 - 3. Material: Steel per ASTM A351, Type CF8M.
 - 4. Connections: Raised face flange.
 - 5. Approvals: ASME B16.34.
- F. Solenoid Valves:
 - 1. Type: Normally Closed, Hung Piston Solenoid Valve with integral thermal relief and manual override.
 - 2. Rating: ASME 150.
 - 3. Material: FKM and PTFE Seals
 - 4. Connections: Raised face flange.
 - 5. Approvals: UL, cUL or CSA Listed. Explosion Proof rated for Class 1, Group D.
 - 6. Voltage: 120VAC, 1 PH.
 - 7. Electrical: NEMA 7 and/or 9. Class H coils
- G. Overfill Prevention Valve:
 - 1. Morrison Brothers Figure 9095 Series or approved equal with integral pressure relief and anti-siphon functions. Furnish with test mechanism.
- H. Pressure Relief Valves:
 - 1. Pressure Setting: Factory set to the pressure indicated on the Drawings.
 - 2. Type: Conventional Spring Type. Top-guided design with pressure-tight cap, ball bearing pivot between disc and spring to correct for misalignment and compensate for spring side thrust.
 - 3. Connections: Threaded or ASME CL 150 Raised Face Flange.
 - 4. Material: 316 stainless steel nozzle and disc, stainless steel spring, and stainless-steel valve body.
 - 5. Approvals: ASME BPVC Section VIII and XIII, UV Stamped for Liquid Applications.
- I. Control Valve: Single seated, Line pressure operated, diaphragm actuated, pilot controlled valve intended for aviation fuel service. All valve functions shall be factory tested prior to shipment. ASME Class 150 flanged construction. Stainless steel control pilots, tubing, fittings, speed control. Include closing speed control and in-line pilot strainer. Explosion proof solenoid control valves as required per the Drawings. Main valve body shall be cast stainless steel type 304 or 316. Control valves include pressure control valves, flow control valves, and set-stop valves. Set-stop valves shall be a two-stage type set-stop valves.
 - 1. Manufacturers:
 - a. Cla Val
 - b. OCV Control Valve (Aquestia)
 - c. Engineer approved equal

- J. Fire Safety Valve
 - 1. Type: Spring loaded valve that will close in the event of fire. Pilot pallet to reduce effort to open against tank pressure in blocked line. Stem guide with center pivot design to maximize flow.
 - 2. Features: Flanged, Stainless Steel body, Stainless steel wetted parts, spring and overlay on pallet and valve seat. Fusible link set to break at 212°F.
- K. Thermal Relief Check Valves: Provide ball check spring check valve with a minimum cracking pressure as stated on the Drawings. Valve body and internals shall be Type 304 or 316 stainless steel with elastomers compatible with the fuels being dispensed at the airport. Provide with NTP threaded connections.
 - 1. Manufacturers:
 - a. Swagelok
 - b. Apollo
 - c. Engineer approved equal

Piping Specialties:

- A. Flexible Metal Hoses: Type: Flexible stainless steel annular hose with stainless steel braid. Connectors shall have minimum live length as recommended by the manufacturer for maximum misalignment of 1 inch (not to be interpreted by Contractor as allowable misalignment, connector must not be misaligned on installation).
 - 1. Pressure Rating: 200 psig minimum.
 - 2. Material: ANSI Type 316 stainless steel.
 - 3. Connection: Flanged, ASME 150 pound.
- B. Differential Pressure Gauge:
 - 1. Manufacturer: Gammon Technical or approved equal.
 - 2. Type: Gammon Gauge with Peak Hold and Range of 0-30 psi.
 - 3. Material: Stainless Steel.
- C. Strainer: Furnish and install strainers as shown on the Drawings. At a minimum, strainers should be installed upstream of all pumps. Provide pump inlet strainers with #60 mesh basket screen, fuel resistant elastomers, pressure taps, and basket differential pressure gauge kit with isolation valves. Strainer body and lid shall be cast (ASTM A351) or forged (ASTM A182) Type 304 or 316 stainless steel.
- D. Pressure Gauge: Complete assembly shall include a ball-valve isolation at the main connection to process, pulsation dampener, and a gauge. Gauge shall be glycerin filled, factory calibrated, 316 stainless steel bourdon tube, tip and socket; 1% accuracy, friction mounted adjustable pointer, overload stop, black figures on white dial; 4-1/2 inch dial face; phenolic turret style case, shatterproof glass window with gasket. Discharge range as shown on the Drawings or as directed by the Engineer. Provide pressure gauges on the inlets and outlets of all pumps and filter vessels. Provide pressure gauges at the inlet of each hose reel.

16. SYSTEM STARTUP

New tanks shall be soak tested per EI 1540 prior to system startup. At a time set by the Contractor and agreed by the Owner, arrange to place equipment in operation. Qualified service technicians must be on site at the time of startup to assist in equipment startup and make necessary adjustments to prove satisfactory operation prior to turning facility over to Owner. Qualified service technicians shall also provide training to the operations and maintenance personnel.

New fuel handling hoses shall undergo an 8-hour soak test (at a minimum temperature of 59°F) with the aviation fuel being handled by the fuel hose followed by draining and inspecting the fuel for contamination. Repeat until no signs of contamination are found. Refer to the Joint Inspection Group (JIG) Bulletin No. 35 for further details. Do not re-introduce fuel into the system that was used for the soaking of new fuel hoses. Dispose of used fuel properly.

All equipment shall be operated for testing. Any irregularities, faulty equipment, etc., shall be repaired or replaced prior to final inspection and acceptance. After testing, all equipment shall be freshly lubricated, filters replaced, strainers cleaned of debris, and installation completely finished prior to acceptance.

The Contractor shall provide onsite training to the Owner's employees and the staff of the Fixed Based Operators (FBO) on the operation and maintenance of the fueling system.

The Contractor shall provide onsite services in their bid onsite for the setup configuration of the fuel payment system, and tank gauging system.

17. SYSTEM CONTROL NARRATIVE/SEQUENCE OF OPERATIONS

General

- A. The fueling system controls shall have a means of turning off the fuel system pumps during a no-flow scenario that exceeds 60 seconds. Means of measuring a no-flow situation may include individual flow switches within the system or utilizing the flow meters. The fueling system shall shutdown the pump if a no-flow condition is detected.

Jet-A Dispensing

- A. The operator will park the aircraft near the Jet-A dispensing reels.
- B. Card reader: The operator will swipe a card to take the card reader out of standby mode, select "Jet-A" and follow the on-screen prompts.
- C. Dispensing Cabinet: The operator will then return to the dispensing reel and connect the static bonding reel to the aircraft.
- D. When the permissive from the card reader is present, press the dispensing button, the solenoid valves on the selected dispensing piping will be energized to open the valves. When dispensing fuel, if the tank reaches the low liquid level set point and activates the low-level set point on the tank, the solenoid valves will close, an amber low light on the fuel system control panel will be illuminated showing the tank has reached its low liquid level set point, and the pump will be de-energized.
- E. Upon the completion of the fueling the operator presses the stop button on the card reader, or releases the deadman switch, the dispensing pump shall stop.
- F. When the emergency stop button is pressed, the solenoid valves on both tanks will be de-energized to close the valves and the pumps will be de-energized. The e-stop alarm horn and red alarm light will activate and will remain on until the emergency stop button is reset. The pumps will not be allowed to turn on and the solenoid valves will not be allowed to open until the emergency stop button is reset.

AvGas Dispensing

- A. The operator will park the aircraft near the AvGas dispensing reels.
- B. Card reader: The operator will swipe a card to take the card reader out of standby mode, select "AvGas (100LL)" and follow the on-screen prompts.
- C. Dispensing Equipment: The operator will then return to the dispensing reel and connect the static bonding reel to the aircraft.
- D. When the permissive from the card reader is present, press the dispensing button, the solenoid valves on the selected dispensing piping will be energized to open the valves. When dispensing fuel, if the tank reaches the low liquid level set point and activates the low-level set point on the tank, the solenoid valves will close, an amber low light on the fuel system control panel will be illuminated showing the tank has reached its low liquid level set point, and the pump will be de-energized.

- E. Upon the completion of the fueling the operator presses the stop button on the card reader, or releases the deadman switch, the dispensing pump shall stop.
- F. When the emergency stop button is pressed, the solenoid valves on both tanks will be de-energized to close the valves and the pumps will be de-energized. The e-stop alarm horn and red alarm light will activate and will remain on until the emergency stop button is reset. The pumps will not be allowed to turn on and the solenoid valves will not be allowed to open until the emergency stop button is reset.

Recirculation

- A. The Operator shall select the recirculation option on the control panel for the fuel system (Jet-A or Avgas) requiring recirculation and filtering. The operator then press the start button to initiate the recirculation event.
- B. The solenoid valves involved in the recirculation circuit shall open while all the other solenoid valves exclusively used in the flow path for dispensing shall remain closed.
- C. The control system shall prevent any dispensing activities while the system is recirculating the fuel.
- D. The recirculation system shall run for a set time or when the fuel recirculation system stop button is pressed. During the recirculation a red indicating light shall illuminate to notify the operator that the fueling system is in the recirculation mode.

18. FUEL MANAGEMENT SYSTEM AND SELF-SERVE PAYMENT KIOSK

- A. Provide a fuel management system to allow 24-hour self-service fueling of the Jet-A fuel and Avgas systems. The fuel management system shall include one credit card terminal to be located as shown on the Contract Drawings, and software that is web based and accessible from any computer or device with an internet or cellular connection. The system shall be capable of being programmed for a separate account associated with fuel transaction with the Fixed Based Operator (FBO). The system shall include the following features:
- B. Fuel Terminal (i.e., credit card reader):
 - 1. Operation: Configure the system as follows:
 - a. Prompt the operator to confirm that appropriate bonding is complete between the fueling system and the aircraft.
- C. Prompt the operator to enter the aircraft tail number.
- D. Operating instructions: Provide clearly visible operating instructions. Instructions must have the ability to indicate the locations of the emergency shut-off devices.
- E. Processor: Intel Atom Processor with 4GB RAM and 120 GB Memory via SSD. Communications to Card networks and to fuel management software via either wired ethernet, Wi-Fi or cellular connectivity.
- F. Display – 7” full color display with 1000 nit brightness, anti-glare, anti-reflective coating and light sensor for dimming functionality in lower light conditions.
- G. Card reader: Insert style fully encrypting card reader that creates a unique encryption key for each card swipe.
- H. Thermal receipt printer (60 mm) with option for low paper warning.
- I. Construction: Stainless Steel with powder coat finish.
- J. Keypad: Backlit, capacitive touch keypads.
- K. Dimensions: Terminal Width: 20 “, Depth: 9.5”, Height: 67”
- L. Power requirements: 110 VAC, 60 Hz, 200 watts.
- M. Operating temperatures: Negative 40 to 130 degrees F.

- N. Hose controls: Up to 8 hose control points with the ability to expand to 64.
 - O. Pulser compatibility: 1:1 to 1000:1.
 - P. Pump control relays: Include as required.
 - Q. Encryption of card data: The system shall fully encrypt bank card track data upon swipe utilizing 3DES and DUKPT encryption. This card data shall not be stored on the self-serve device during normal operation in order to prevent against any breach or compromise of card holder data.
 - R. In the event that communications are lost, transaction data may be temporarily stored until connection is restored, at which point all transactions will push to the cloud based application and then to the card processor.
 - S. Manufacturer and Model Number:
 - 1. QT Petroleum on Demand (QT POD), model M4000 Pro
 - 2. Gas Boy, Islander Primer
 - 3. Dover Fueling Systems
 - a. PetroVend AX7
 - b. PetroVend 200 Fuel Island Terminal
 - c. PetroVend 300E Fuel Island Terminal
 - 4. Syntech Fuel Master
 - 5. Engineer and Owner Approved Equal
 - T. High Visibility Display:
 - 1. Construction: Aluminum case with powder coated finish.
 - 2. Dimensions: 20" high x 16" wide x 4" deep.
 - 3. Operating temperatures: Negative 30 to 130 degrees F.
 - 4. Display: Solid state 2.3" bright red bar segment LED digits.
 - 5. Mounting location: Top of dispensing cabinet.
 - 6. Manufacturer: QT Petroleum on Demand (QT POD), model MultiDisplay™ (phone 303-444-3590).
 - U. Outdoor Cover: Provide protective outdoor cover for the kiosk.
 - V. Fuel Management Software:
 - 1. Provide a subscription based, fuel management web application that is accessible from any computer or device with an internet or cellular connection to set prices, manage private accounts, perform unit configuration, monitor inventory and view transaction data.
 - 2. At a minimum, the software shall be capable of the following tasks:
 - a. Account management
 - b. Invoicing
 - c. Basic discounting
 - d. Fuel type blocking
 - e. Access schedules
 - f. Remote retrieve sales
 - g. Purchases
 - h. Sales activity
 - i. Sales summary
 - j. Transaction detail log
 - 3. Manufacturer:
 - a. QT Petroleum on Demand (QT POD), model Siteminder
 - b. Veeder Root Ekos
 - c. Dover Fueling Solutions DX Control
 - d. Syntech Fuel Master
 - e. Owner and Engineer Approved Equal
19. TANK GAUGING SYSTEM

- A. Provide a tank gauging system that will monitor the following variables and shall be capable of the following functions:
 - 1. Tank Level for each storage tank included in the project.
 - 2. High Level Alarm
 - 3. Low Level Alarm
 - 4. Output to activate remote alarm light and alarm horn for overfill prevention of the storage tanks
 - 5. Alarm and monitoring of the interstitial leak detection sensor
 - 6. Remote access to tank data via an internet connection
 - 7. Integration of tank level data with a fuel management system
- B. Tank level instrumentation and devices: Provide and install tank level instrumentation compatible with the tank gauging system. The following instruments and devices shall be provided at a minimum.
 - 1. Level transmitter (quantity of one (1) per storage tank for the project)
 - 2. High level switch (quantity of one (1) per storage tank for the project)
 - 3. Low level switch (quantity of one (1) per storage tank for the project)
 - 4. Interstitial leak detection sensor (quantity of one (1) per storage tank for the project)
 - 5. Overfill alarm light and horn (quantity of one for the system)
- C. Manufacturer and Models: Provide a tank gauging system from one of following manufacturers:
 - 1. Veeder Root (TLS450Plus or Engineer approved equal)
 - 2. Franklin Electric (EVO 600 or Engineer approved equal)
 - 3. Engineer approved equal

20. CODE COMPLIANCE

- A. All equipment shall be new and shall bear the Underwriters Laboratories (UL) label as applicable.
- B. The system furnished shall comply with all Federal Aviation Administration regulations related to fuel storage and handling.
- C. Installation shall comply with NFPA 407 "Standard for Aircraft Fuel Servicing."
- D. Installation shall comply with NFPA 30 "Flammable and Combustible Liquids Code."
- E. NFPA 704 "Standard System for the Identification of the Hazards of Materials for Emergency Response."
- F. Piping Installation shall be designed, supported, fabricated, and tested per ASME B31.3 "Process Piping" and ASME PCC-2 "Repair of Pressure Equipment and Piping."
- G. Installation shall comply with PEI RP1300 "Aviation Fueling Systems."
- H. Installation shall comply with PEI RP 600 "Recommended Practice for Overfill Prevention for Shop-Fabricated Aboveground Tanks."
- I. Installation shall comply with the requirements of the State Fire Marshal and local Authority Having Jurisdiction (AHJ).
- J. The installation, wiring, etc., shall comply with all requirements of the National Electrical Code (NEC) for the revision year currently adopted by the State of Minnesota and the local AHJ.
- K. National Electric Safety Code
- L. International Fire Code – IFC w/local amendments.
- M. Minnesota State Fire Code – 2020
- N. Rules and Regulations of the National Fire Protection Association - NFPA
- O. American National Standards Institute - ANSI
- P. Occupational Safety and Health Act – OSHA

- Q. Energy Institute EI 1540 "Design, construction, commissioning, maintenance and testing of aviation fueling facilities."
- R. Energy Institute EI 1541 "Requirements for internal protective coating systems used in aviation fuel handling systems."
- S. Energy Institute EI 1581 Specifications and laboratory qualification procedures for aviation fuel filter/water separator."
- T. Energy Institute EI 1583 "Laboratory tests and minimum performance levels for aviation fuel filter monitors."
- U. Energy Institute EI 1590 "Specifications and qualification procedures for aviation fuel microfilters."
- V. Energy Institute EI 1596 Energy Institute EI 1581 Specifications and laboratory qualification procedures for aviation fuel filter/water separator."
- W. Airlines for America (A4A) Specification 103 "Standard for Jet Fuel Quality Control at Airports."
- X. NIST Handbook 44 "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices"
- Y. Rules and regulations enforced by the Minnesota Department of Commerce - Weights and Measures Division
- Z. Underwriters Laboratories UL 142 "Steel Aboveground Tanks for Flammable and Combustible Liquids."
- AA. Underwriters Laboratories UL 2085 "Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids."
- BB. Underwriters Laboratories UL 508A "Standard for Industrial Control Panels."
- CC. Underwriters Laboratories UL 698A "Industrial Control Panels Relating to Hazardous (Classified) Locations."
- DD. American Petroleum Institute API 2000 Venting Atmospheric and Low-pressure Storage Tanks

END OF SECTION

APPENDIX A
Standard Drawings

Not Used

APPENDIX B

Soil Borings

Geotechnical Evaluation Report

Winona Airport Fueling Replacement

106 East Galewski Drive
Winona, Minnesota

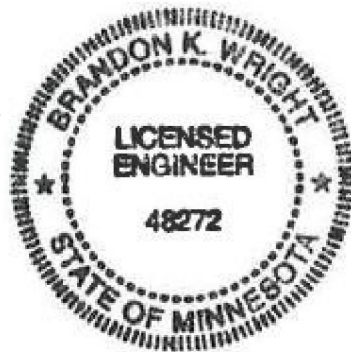
Prepared for

TKDA

Professional Certification:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Brandon K. Wright, PE
Senior Manager, Senior Engineer
License Number: 48272
April 6, 2026



Braun Intertec Corporation

Project 10008258_001

April 6, 2026

Project 10008258_001

Jeff Pearson

TKDA

3311 E Old Shakopee Road
Bloomington, MN 55425

Re: Geotechnical Evaluation Report
Winona Airport Fueling Replacement
106 East Galewski Drive
Winona, Minnesota

Dear Mr. Pearson:

We are pleased to present this geotechnical evaluation report for the proposed Fueling Replacement project at the Winona Airport in Winona, Minnesota.

Thank you for making Braun Intertec Corporation (Braun Intertec) your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please contact Brandon Wright at 608.399.4148 (bwright@braunintertec.com).

Sincerely,

Braun Intertec Corporation



Brandon K. Wright, PE

Senior Manager, Senior Engineer



Ray A. Huber, PE

Principal Engineer



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Appendix

Soil Boring Location Sketch
Fence Diagram
Log of Boring Sheets ST-1 and ST-2
Descriptive Terminology of Soil

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1.0 Introduction

1.1 Project Description

This geotechnical evaluation report addresses the proposed fuel tank replacement at the Winona Airport located at 106 Galewski Road in Winona, Minnesota. The project will include removal of the existing underground fuel storage tank(s), backfilling their former location with structural fill, and installation of two above grade tanks. The new tanks will be 10,000 gallons each and will have be 10 1/2 feet in diameter. We assumed the tank pads will need a bearing pressure of up to 2,000 pounds per square foot (psf).

1.2 Site Conditions

The existing fuel tank location can be seen in [Figure 1-1](#) below. The area is located outside of the security fence and is . The project area is within 30 feet of the terminal building. Current grades range from 658 to 659 feet in the general area.

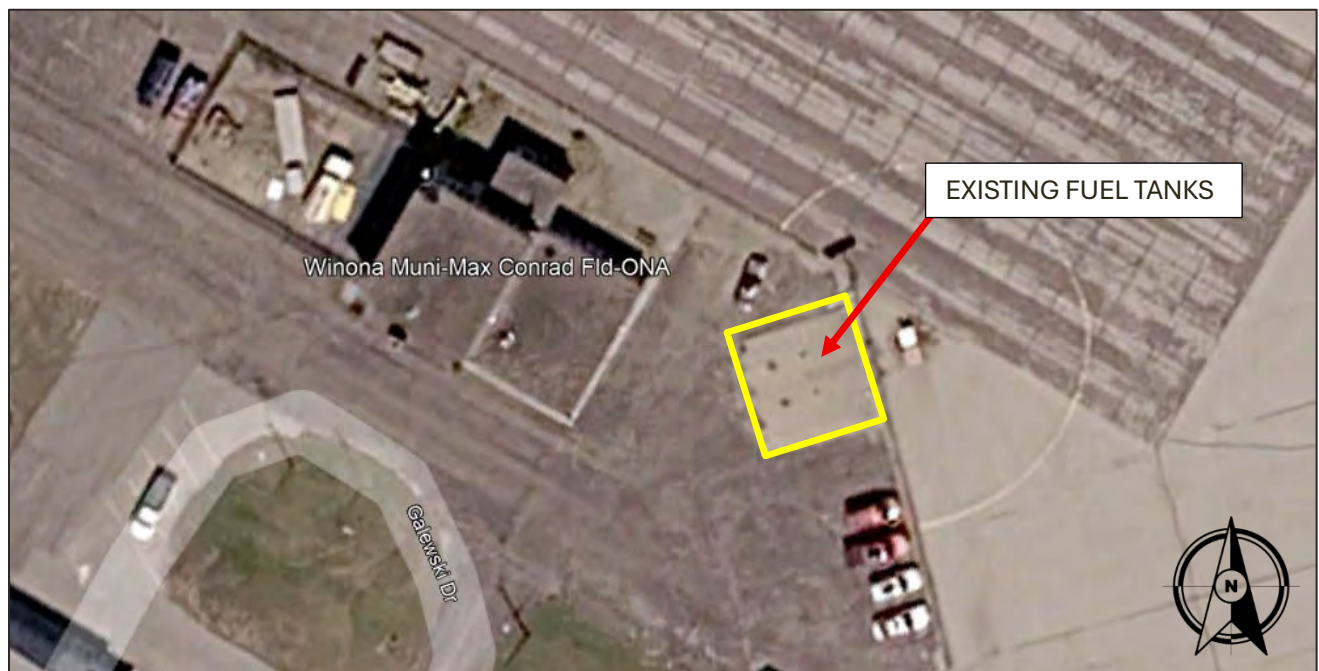


Figure 1-1. Aerial Photograph of the Site

Figure from Google Earth™.



1.3 Background Information and Reference Documents

We reviewed the following information:

- Current and historical aerial photographs of the site via Google Earth™.
- Communications with TKDA regarding project details.

We have described our understanding of the proposed construction and site to the extent others reported it to us. Depending on the extent of available information, we may have made assumptions based on our experience with similar projects. If we have not correctly recorded or interpreted the project details, the project team should notify us. New or changed information could require additional evaluation, analyses, and/or recommendations.

1.4 Scope of Services

We performed our scope of services for the project in accordance with our Proposal QTB224269 to TKDA, dated October 29, 2025, and authorized on December 5, 2025. The following list describes the geotechnical tasks completed in accordance with our authorized scope of services.

- Reviewing the background information and reference documents previously cited.
- Staking and clearing the exploration location of underground utilities. We selected and staked the boring locations. We acquired the surface elevations and locations with GPS technology. The Soil Boring Location Sketch included in the Appendix shows the approximate locations of the borings.
- Performing two standard penetration test (SPT) borings, denoted as ST-1 and ST-2 to nominal depths of 26 feet below grade across the site.
- Performing laboratory testing on select samples to aid in soil classification and engineering analysis.
- Preparing this report containing a boring location sketch, logs of soil borings, a summary of the soils encountered, results of laboratory tests, and recommendations for structure and pavement subgrade preparation and the tank slabs, utilities, and pavements.

We performed this geotechnical evaluation concurrently with a Limited Environmental Site Assessment.

2.0 Results

2.1 Geologic Overview

We based the geologic origins used in this report on the soil types, in-situ and laboratory testing, and available common knowledge of the geological history of the site. Because of the complex depositional history, geologic origins can be difficult to ascertain. We did not perform a detailed investigation of the geologic history of the site.



2.2 Boring Results

Table 2-1 provides a summary of the soil boring results, in the general order we encountered the strata. Please refer to the Log of Boring sheets in the [Appendix](#) for additional details. The Descriptive Terminology sheets in the [Appendix](#) include definitions of abbreviations used in the table below.

Table 2-1. Subsurface Profile Summary*

Strata	Soil Type – ASTM Classification	Range of Penetration Resistances	Commentary and Details
Pavement Section	NA	NA	- Overall thickness ranges from 8 to 14 inches. - Bituminous thickness 4 inches. - Apparent aggregate base ¹ is 4 to 9 inches.
Fill ²	SP, SM	7 to 27 BPF	- Below the pavement materials, the borings encountered fill. - We believe the fill is associated with installation of the existing tanks. - The fill was composed of poorly graded sand, poorly graded sand with silt, and silty sand. - Moisture condition is considered moist above the water table to wet below the water table.
Alluvial	SP	4 to 18 BPF	- Beneath the fill, the borings encountered alluvial soil composed of poorly graded sand with trace amounts of gravel. - General penetration resistance of testing indicates the alluvial sand is very loose to medium dense. - Moisture condition is considered wet.

*Abbreviations are defined in the attached Descriptive Terminology sheets.

¹We did not perform gradation analysis on the apparent aggregate base material encountered as part of the pavement section, in accordance with our scope of work. Therefore, we cannot conclusively determine if the encountered material satisfies a particular specification, and it should not be assumed it is suitable for reuse.

²For simplicity in this report, we define existing fill to mean existing, uncontrolled, or undocumented fill.

2.3 Groundwater

Table 2-2 summarizes the depths where we observed groundwater; the attached Log of Boring sheets in the [Appendix](#) also include this information and additional details.

Table 2-2. Groundwater Summary

Locations	Surface Elevation (ft)	Measured or Estimated Depth to Groundwater (ft)	Corresponding Groundwater Elevation* (ft)
ST-1	658.0	10 1/2	647 1/2
ST-2	658.2	10	647 1/2

*Groundwater elevations have been rounded up to the nearest 1/2-foot.



At the time of our observation, the groundwater surface elevation was about elevation 647 1/2 feet. With the site being within close proximity to the Mississippi River, the groundwater elevation will fluctuate rapidly with changes in the stage and flow rate of the river. Because of this, we recommend the seasonal high groundwater elevation be assigned the 100-year flood elevation.

2.4 Laboratory Test Results

Table 2-3 presents the results of our laboratory tests.

Table 2-3. Laboratory Classification Test Results

Location	Sample Depth (ft)	Classifications	Moisture Content (w, %)	Percent Passing a #200 Sieve
ST-1	7 1/2	FILL: Poorly Graded Sand	5	4
	15	Poorly Graded Sand	16	2
ST-2	5	FILL: Poorly Graded Sand	3	2
	15	Poorly Graded Sand	14	2

3.0 Recommendations

3.1 Basis for Recommendations

Underneath the existing pavement, the soil borings encountered sandy fill soils to a depth of 11 1/2 feet, and very loose to medium dense native sandy soils to the termination of the borings. Groundwater was observed at depths of 10 to 10 1/2 feet, which corresponds to elevation 647 1/2 feet, which is at the anticipated bottom of existing fuel tank elevation.

Following removal of the existing tanks, the on-site fill and alluvial sandy soils can be used as replacement backfill. Imported material will be needed to replace the volume of the existing tanks occupied. Imported materials should be composed of sand or gravel soils with little to no fines.

A dewatering plan will be needed for excavations and earthwork that is needed below the water table.

3.2 Site Grading and Subgrade Preparation

3.2.1 Stripping and Grubbing

Initial site preparations should include removal of the existing pavement from the construction areas. Removals will also include the existing underground storage tanks.

A representative from Braun Intertec should monitor that stripping operations remove all unsuitable materials. Soils removed during site stripping operations could be used for final site grading outside the proposed building and pavement areas. The contractor should separate these materials to avoid incorporation of the organic matter from on-site materials to be reused as engineered fill.



3.2.2 Excavated Slopes

Based on the borings, we anticipate on-site soils in excavations will consist of sandy fill over alluvial sandy soils. These soils are typically considered Type C Soil under OSHA (Occupational Safety and Health Administration) guidelines. OSHA guidelines indicate unsupported excavations in Type C soils should have a gradient no steeper than 1.5H:1V. Slopes constructed in this manner may still exhibit surface sloughing. OSHA requires an engineer to evaluate slopes or excavations over 20 feet in depth.

An OSHA-approved qualified person should review the soil classification in the field. Excavations must comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches." This document states that excavation safety is the responsibility of the contractor. The project specifications should reference these OSHA requirements.

3.2.3 Excavation Dewatering

Project planning should include temporary sumps and pumps for excavations above elevation 647 feet. However, any excavation that extends below elevation 647 feet should anticipate the need for dewatering. In the sand soils present at this site, well points or deep wells will be required for dewatering. A licensed dewatering contractor should review our report and provide recommendations for dewatering.

3.2.4 Engineered Fill Materials and Compaction

Table 3-1 below contains our recommendations for engineered fill materials.

Table 3-1. Engineered Fill Materials

Locations To Be Used	Possible Soil Type Descriptions	Gradation	Additional Requirements
- Below tank pad - Below pavements	GW, GP, SW, SP, SP-SM	100% passing 2-inch sieve 12% passing #200 sieve	< 2% Organic Content (OC)

We recommend spreading engineered fill in loose lifts of approximately 12 inches thick. We recommend compacting engineered fill in accordance with the criteria presented below in Table 3-2. The project documents should specify relative compaction of engineered fill, based on the structure located above the engineered fill, and vertical proximity to that structure.

Table 3-2. Compaction Recommendations Summary

Reference	Relative Compaction, percent (ASTM D698 – Standard Proctor)	Moisture Content Variance from Optimum, percentage points
		< 12% Passing #200 Sieve (typically SP, SP-SM)
Within top 3 feet of pavement surface elevation	100	As needed to achieve compaction
More than 3 feet below top of pavement elevation	98	As needed to achieve compaction



The project documents should not allow the contractor to use frozen material as engineered fill or to place engineered fill on frozen material. Frost should not penetrate under foundations during construction.

We recommend performing density tests in engineered fill to evaluate if the contractors are effectively compacting the soil and meeting project requirements.

3.2.5 Special Inspections of Soils

We recommend including the site grading and placement of engineered fill within the building pad under the requirements of Special Inspections, as provided in Chapter 17 of the International Building Code, which is part of the Minnesota State Building Code. Special Inspection requires observation of soil conditions below engineered fill or footings, evaluations to determine if excavations extend to the anticipated soils, and if engineered fill materials meet requirements for engineered fill and compaction condition of engineered fill. A licensed geotechnical engineer should direct the Special Inspections of site grading and engineered fill placement. The purpose of these Special Inspections is to evaluate whether the work is in accordance with the approved geotechnical report for the project. Special Inspections should include evaluation of the subgrade, observing preparation of the subgrade (surface compaction or dewatering, excavation oversizing, placement procedures, and materials used for engineered fill, etc.) and compaction testing of the engineered fill.

3.3 Fuel Storage Tank Pad

3.3.1 Subgrade Preparation

Based on the soil borings and proposed grade, we anticipate that the subgrade soils will consist of medium dense silty sands. Prior to placement of the mat foundation, we recommend surface compacting the exposed that foundation subgrade with a large vibratory compactor with a minimum dynamic force of 50,000 pounds. We recommend a minimum of two overlapping passes in each of 2 perpendicular directions.

3.3.2 Bearing Capacity

We recommend sizing spread footings to exert a net allowable bearing pressure of 2,000 pounds per square foot (psf), including all transient loads. This value includes a safety factor of at least 3 with regard to bearing capacity failure.

3.3.3 Settlement

We estimate that this stress will induce total and differential settlements in the underlying soils of about 1 1/2 and 3/4 inches, respectively.



3.4 Pavements

3.4.1 Pavement Subgrade Preparation

We recommend the following steps for pavement and exterior slab subgrade preparation, understanding the site will have a grade change of 1/2-foot, or less. Note that project planning may require additional subcuts to limit frost heave.

1. Have a geotechnical representative observe the excavated subgrade to evaluate if additional subgrade improvements are necessary.
2. Moisture condition and surface compact the subgrade with at least) passes of a large roller with a minimum drum diameter of 3 1/2 feet. The surface compacted subgrade should be compacted to at least 100 percent of standard Proctor density.
3. Place pavement engineered fill to grade and compact in accordance with [Section 3.2.4](#) to bottom of pavement and exterior slab section.
4. Proofroll the pavement or exterior slab subgrade as described in [Section 3.4.2](#).

3.4.2 Pavement Subgrade Proofroll

After preparing the subgrade as described above after placement of the aggregate base, we recommend proofrolling the subgrade soils with a fully loaded tandem-axle truck. We also recommend having a geotechnical representative observe the proofroll. Areas that fail the proofroll indicate soft or weak areas that will require additional soil correction work to support pavements.

The contractor should correct areas that display excessive yielding or rutting during the proofroll, as determined by the geotechnical representative. Viable options for subgrade correction include moisture conditioning and recompaction, subcutting and replacement with soil or crushed aggregate, chemical stabilization, and/or geotextiles. We recommend performing a second proofroll after the aggregate base material is in place, and prior to placing concrete pavement.

3.4.3 Pavement Loading and Design Sections

Pavements at this location are anticipated to be exposed to light-duty loading, including passenger cars only. We assumed this would result in less than 35,000 Equivalent Single Axel Loads (ESAL) over the service life of the pavement.

In addition, we assumed the subgrade would be composed of sand or gravel soils as recommended for backfill in [Section 3.2.4](#). Based on this, we assumed an R-value of 50 and a modulus of subgrade reaction (k) of 200 pci. [Table 3-3](#) below provides recommended pavement sections, based on the soils support and traffic loads.



Table 3-3. Recommended Pavement Sections

Material	Bituminous Pavement Material Thicknesses	Concrete Pavement Material Thickness
Minimum bituminous thickness (inches)	3 1/2	---
Minimum concrete thickness (inches)	---	5
Minimum aggregate base thickness (inches)	8	6

3.4.4 Pavement Materials

Appropriate mix designs are critical to the performance of flexible bituminous pavements. We can provide recommendations for pavement material selection during final pavement design.

We recommend specifying concrete for pavements that has a minimum 28-day compressive strength of 4,500 psi, and a modulus of rupture (Mr) of at least 650 psi. We recommend specifying 4.5 to 7.5 percent entrained air for exposed concrete to provide resistance to freeze-thaw deterioration. We also recommend using a water/cement ratio of 0.42 or less for concrete exposed to deicers.

We assumed the concrete pavement sections in [Table 3-3](#) will have edge support. We recommend placing an aggregate base below the pavement to provide a suitable subgrade for concrete placement, reduce faulting and help dissipate loads. Appropriate mix designs, panel sizing, jointing, doweling and edge reinforcement are critical to performance of rigid pavements. We recommend you contact your civil engineer to determine the final design or consult with us for guidance on these items.

3.4.5 Performance and Maintenance

We based the above bituminous pavement on a 20-year performance life and the concrete pavement on a 35-year performance. This is the amount of time before we anticipate the pavement will require reconstruction. This performance assumes routine maintenance, such as seal coating and crack sealing. The actual pavement life will vary depending on variations in weather, traffic conditions, and maintenance.

Many conditions affect the overall performance of the exterior slabs and pavements. Some of these conditions include the environment, loading conditions and the level of ongoing maintenance. We recommend developing a regular maintenance plan for filling cracks in exterior slabs and pavements to lessen the potential impacts for freezing weather distress due to frost heave or warm weather distress due to wetting and softening of the subgrade.

3.5 Underground Utilities

3.5.1 Subgrade Stabilization

Earthwork activities associated with utility installations located inside the building area should adhere to the recommendations in [Section 3.1](#).



3.5.2 Corrosion Potential

Based on our experience, the soils encountered in the borings are moderately corrosive to metallic conduits, but only marginally corrosive to concrete. We recommend specifying non-corrosive materials or providing corrosion protection, unless project planning chooses to perform additional tests to demonstrate the soils are not corrosive.

3.5.3 Utility Trench Backfill

Utility trench backfill should adhere to the recommendations in [Section 3.1.5](#).

4.0 Procedures

4.1 Penetration Test Borings

We drilled the penetration test borings with a truck-mounted core and auger drill equipped with hollow-stem auger. We performed the borings in general accordance with ASTM D6151 taking penetration test samples at 2 1/2- or 5-foot intervals in general accordance with ASTM D1586. The boring logs show the actual sample intervals and corresponding depths.

We sealed penetration test boreholes meeting the Minnesota Department of Health (MDH) Environmental Borehole criteria with an MDH-approved grout. We will forward/forwarded a sealing record (or sealing records) for those boreholes to the MDH Well Management Section.

4.2 Exploration Logs

4.2.1 Log of Boring Sheets

The [Appendix](#) includes Log of Boring sheets for our penetration test borings. The logs identify and describe the penetrated geologic materials and present the results of penetration resistance and other in-situ tests performed. The logs also present the results of organic vapor screening, laboratory tests performed on penetration test samples, and groundwater measurements. The [Appendix](#) also includes a Fence Diagram intended to provide a summarized cross-sectional view of the soil profile across the site.

We inferred strata boundaries from changes in the penetration test samples and the auger cuttings. Because we did not perform continuous sampling, the strata boundary depths are only approximate. The boundary depths vary away from the boring locations, and the boundaries themselves may occur as gradual rather than abrupt transitions.

4.2.2 Organic Vapor Screening

An environmental technician examined soil samples from the borings for staining, odors, and other apparent signs of contamination. In addition, the environmental technician screened the soil samples for the presence of organic vapors using a photoionization detector (PID). The boring logs in the [Appendix](#) include the PID results.



4.2.3 Geologic Origins

We assigned geologic origins to the materials shown on the logs and referenced within this report, based on: (1) a review of the background information and reference documents cited above, (2) visual classification of the various geologic material samples retrieved during the course of our subsurface exploration, (3) penetration resistance and other in-situ testing performed for the project, (4) laboratory test results, and (5) available common knowledge of the geologic processes and environments that have impacted the site and surrounding area in the past.

4.3 Material Classification and Testing

4.3.1 Visual and Manual Classification

We visually and manually classified the geologic materials encountered based on ASTM D2488. When we performed laboratory classification tests, we used the results to classify the geologic materials in accordance with ASTM D2487. The [Appendix](#) includes a chart explaining the classification system we used.

4.3.2 Laboratory Testing

The exploration logs in the [Appendix](#) note most of the results of the laboratory tests performed on geologic material samples. The remaining laboratory test results follow the exploration logs. We performed the tests in general accordance with ASTM procedures.

4.4 Groundwater Measurements

The drillers checked for groundwater while advancing the penetration test borings, and again after auger withdrawal. We then filled the boreholes or allowed them to remain open for an extended period of observation, as noted on the boring logs.

5.0 Qualifications

5.1 Variations in Subsurface Conditions

5.1.1 Material Strata

We developed our evaluation, analyses, and recommendations from a limited amount of site and subsurface information. It is not standard engineering practice to retrieve material samples from exploration locations continuously with depth. Therefore, we must infer strata boundaries and thicknesses. Strata boundaries may also be gradual transitions, and project planning should expect the strata to vary in depth, elevation, and thickness, away from the exploration locations.

Variations in subsurface conditions present between exploration locations may not be revealed until performing additional exploration work or starting construction. If future activity for this project reveals any such variations, you should notify us so that we may reevaluate our recommendations. Such variations could increase construction costs, and we recommend including a contingency to accommodate them.



5.1.2 Groundwater Levels

We made groundwater measurements under the conditions reported herein and shown on the exploration logs and interpreted in the text of this report. Note that the observation periods were short, and project planning can expect groundwater levels to fluctuate in response to rainfall, flooding, irrigation, seasonal freezing and thawing, surface drainage modifications, and other seasonal and annual factors.

5.2 Continuity of Professional Responsibility

5.2.1 Plan Review

We based this report on a limited amount of information, and we made a number of assumptions to help us develop our recommendations. We should be retained to review the geotechnical aspects of the designs and specifications. This review will allow us to evaluate whether we anticipated the design correctly, if any design changes affect the validity of our recommendations, and if the design and specifications correctly interpret and implement our recommendations.

5.2.2 Construction Observations and Testing

We recommend retaining us to perform the required observations and testing during construction as part of the ongoing geotechnical evaluation. This will allow us to correlate the subsurface conditions exposed during construction with those encountered by the borings and provide professional continuity from the design phase to the construction phase. If we do not perform observations and testing during construction, it becomes the responsibility of others to validate the assumption made during the preparation of this report and to accept the construction-related geotechnical engineer-of-record responsibilities.

5.3 Use of Report

This report is for the exclusive use of the addressed parties. Without written approval, we assume no responsibility to other parties regarding this report. Our evaluation, analyses and recommendations may not be appropriate for other parties or projects.

5.4 Standard of Care

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

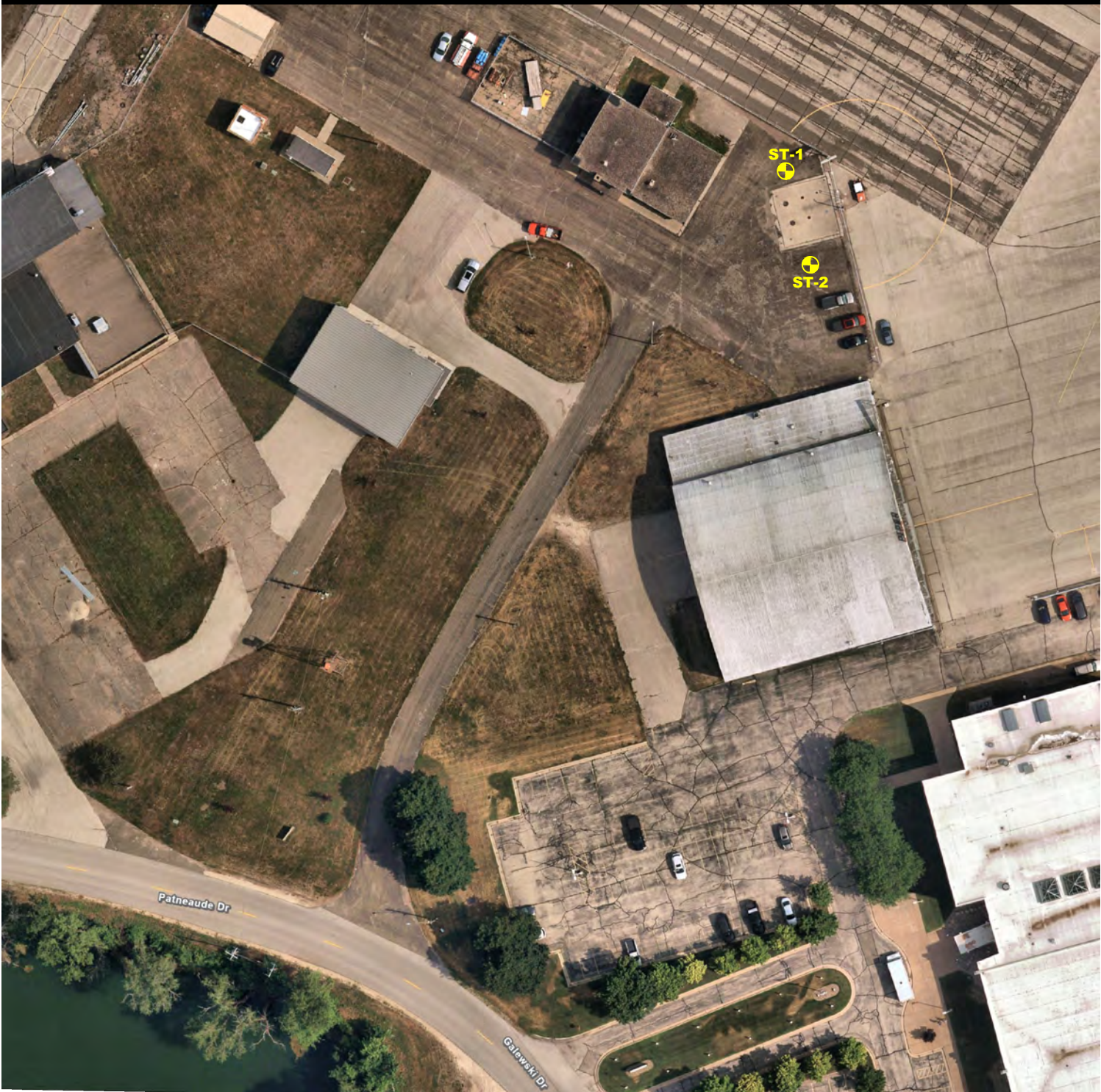
Appendix

Soil Boring Location Sketch

Fence Diagram

Log of Boring Sheets ST-1 and ST-2

Descriptive Terminology of Soil



**DENOTES APPROXIMATE LOCATION OF
STANDARD PENETRATION TEST BORING**



40' 0 80'

SCALE: 1" = 80'

**BRAUN
INTERTEC**

The antenna you build on

2309 Palace Street
La Crosse, WI 54603
608.781.7277
braunintertec.com

Project No:
10008258_001

Drawing No:
10008258_001

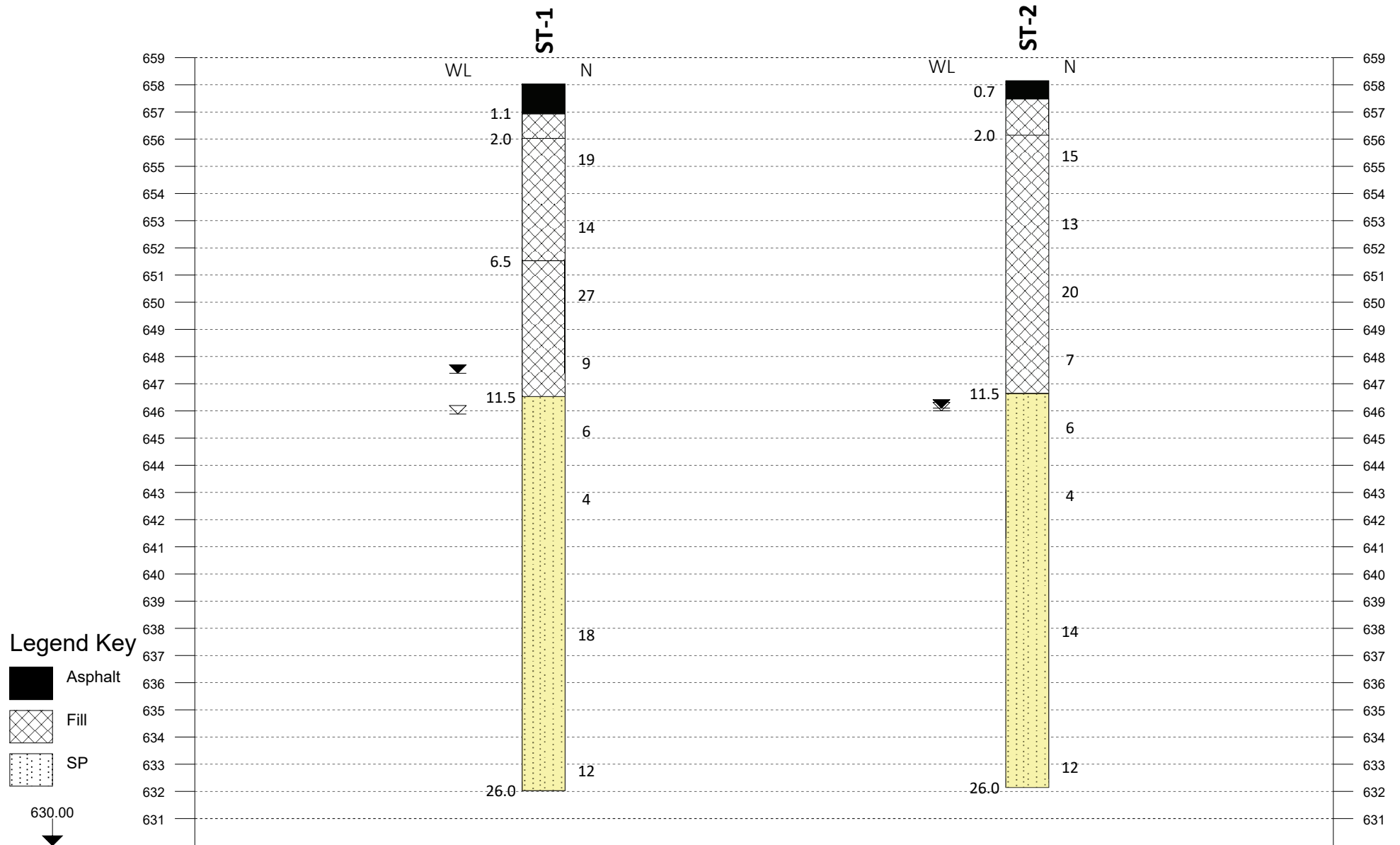
Drawn By: BJB
Date Drawn: 4/3/26
Checked By: BV
Last Modified: 4/3/26

Winona Airport Fueling Replacement

106 E. Galewski Dr.

Winona, Minnesota

**Soil Boring
Location Sketch**



Project ID: 10008258_001
 Vert. Scale: 1"= 5'
 Hor. Scale: NTS
 Date: 04/06/2026

Fence Diagram
 Geotechnical & Environmental Evaluation
 Winona Airport Fueling Replacement
 106 East Galewski Drive
 Winona, Minnesota

See Descriptive Terminology sheet for explanation of abbreviations

Project Number 10008258_001 Geotechnical & Environmental Evaluation Winona Airport Fueling Replacement 106 East Galewski Drive Winona, Minnesota					BORING: ST-1		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Winona (US Feet)		
					NORTHING: 182866.8	EASTING: 476331.0	
DRILLER: E. Rislov		LOGGED BY: B. Wright		START DATE: 03/16/26	END DATE: 03/16/26		
SURFACE ELEVATION: 658.0 ft		RIG: 7507	METHOD: 3 1/4" HSA	SURFACING: Asphalt		WEATHER: Sunny, light breeze, 33°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	PID ppm	MC %	Tests or Remarks
656.9		PAVEMENT, 4 inches bituminous over 9 inches of apparent aggregate base					
1.1		FILL: SILTY SAND (SM), black, moist		4-9-10 (19) 14"	0.0		
656.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained, brown, moist		5-7-7 (14) 14"	0.0		
2.0			5				
651.5		FILL: SILTY SAND (SM), fine to medium-grained, with Gravel, brown, moist		10-13-14 (27) 14"	0.0	5	P200=4%
6.5			10	8-5-4 (9) 14"	0.0		Temporary well installed with screen set from 9.5 to 14.5 feet.
646.5		POORLY GRADED SAND (SP), medium to coarse-grained, trace Gravel, brown, wet, very loose to medium dense (ALLUVIUM)		5-3-3 (6) 14"	0.0		Water sample ST-1 collected at 11:00 for analytical testing.
11.5			15	3-2-2 (4) 16"	0.0	16	P200=2%
			20	4-8-10 (18) 18"	0.0		
			25	4-5-7 (12) 18"	0.0		
632.0		END OF BORING					Water observed at 12.0 feet while drilling.
26.0		Boring then backfilled with auger cuttings					Water observed at 10.5 feet at end of drilling.
			30				Water observed at 10.5 feet in temporary well.

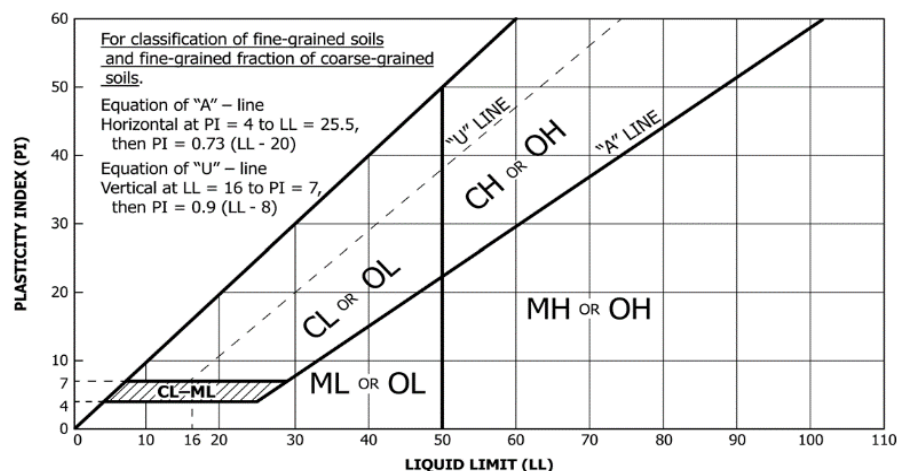
See Descriptive Terminology sheet for explanation of abbreviations

Project Number 10008258_001 Geotechnical & Environmental Evaluation Winona Airport Fueling Replacement 106 East Galewski Drive Winona, Minnesota					BORING: ST-2		
					LOCATION: Captured with RTK GPS.		
					DATUM: NAD 1983 HARN Adj MN Winona (US Feet)		
					NORTHING: 182813.8	EASTING: 476345.1	
DRILLER: E. Rislov		LOGGED BY: B. Wright		START DATE: 03/16/26	END DATE: 03/16/26		
SURFACE ELEVATION: 658.1 ft		RIG: 7507	METHOD: 3 1/4" HSA	SURFACING: Asphalt		WEATHER: Sunny, calm, 27°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	PID ppm	MC %	Tests or Remarks
657.5		PAVEMENT, 4 inches of bituminous over 4 inches of apparent aggregate base					
0.7							
656.1		FILL: SILTY SAND (SM), with Gravel, black, moist		5-7-8 (15) 8"	1.1		
2.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained, trace Gravel, brown, moist					
			5	3-6-7 (13) 6"	0.4	3	P200=2%
				8-11-9 (20) 8"	0.9		
			10	4-3-4 (7) 8"	1.3		Temporary well installed with screen set from 8.5 to 13.5 feet.
646.6		POORLY GRADED SAND (SP), medium to coarse-grained, brown, wet, very loose to medium dense (ALLUVIUM)		13-3-3 (6) 10"	0.6		Water sample ST-2 collected at 09:20 for analytical testing.
11.5			15	2-2-2 (4) 12"	0.1	14	P200=2%
		Trace Gravel	20	2-5-9 (14) 18"	1.9		
			25	6-7-5 (12) 12"	0.3		
632.1		END OF BORING					Water observed at 12.0 feet while drilling.
26.0		Boring then backfilled with auger cuttings					Water observed at 11.9 feet at end of drilling.
			30				Water observed at 10.2 feet in temporary well.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse-grained Soils (more than 50% retained on No. 200 sieve)	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines ^C)	$C_u \geq 4$ and $1 \leq C_c \leq 3^D$	GW	Well-graded gravel ^E	
			$C_u < 4$ and/or ($C_c < 1$ or $C_c > 3$) ^D	GP	Poorly graded gravel ^E	
		Gravels with Fines (More than 12% fines ^C)	Fines classify as ML or MH	GM	Silty gravel ^{EFG}	
			Fines Classify as CL or CH	GC	Clayey gravel ^{EFG}	
	Sands (50% or more coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines ^H)	$C_u \geq 6$ and $1 \leq C_c \leq 3^D$	SW	Well-graded sand ^I	
			$C_u < 6$ and/or ($C_c < 1$ or $C_c > 3$) ^D	SP	Poorly graded sand ^I	
		Sands with Fines (More than 12% fines ^H)	Fines classify as ML or MH	SM	Silty sand ^{FGI}	
			Fines classify as CL or CH	SC	Clayey sand ^{FGI}	
Fine-grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (Liquid limit less than 50)	Inorganic	PI > 7 and plots on or above "A" line ^J	CL	Lean clay ^{KLM}	
			PI < 4 or plots below "A" line ^J	ML	Silt ^{KLM}	
		Organic	Liquid Limit – oven dried Liquid Limit – not dried <0.75	OL	Organic clay ^{KLMN} Organic silt ^{KLMO}	
			Silts and Clays (Liquid limit 50 or more)	Inorganic	PI plots on or above "A" line	CH
	PI plots below "A" line	MH			Elastic silt ^{KLM}	
	Organic	Liquid Limit – oven dried Liquid Limit – not dried <0.75		OH	Organic clay ^{KLMP} Organic silt ^{KLMQ}	
		Highly Organic Soils		Primarily organic matter, dark in color, and organic odor		PT

- A. Based on the material passing the 3-inch (75-mm) sieve.
- B. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders," or both" to group name.
- C. Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay
- D. $C_u = D_{60} / D_{10}$ $C_c = (D_{30})^2 / (D_{10} \times D_{60})$
- E. If soil contains $\geq 15\%$ sand, add "with sand" to group name.
- F. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
- G. If fines are organic, add "with organic fines" to group name.
- H. Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay
- I. If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.
- J. If Atterberg limits plot in hatched area, soil is CL-ML, silty clay.
- K. If soil contains 15 to < 30% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
- L. If soil contains $\geq 30\%$ plus No. 200, predominantly sand, add "sandy" to group name.
- M. If soil contains $\geq 30\%$ plus No. 200 predominantly gravel, add "gravelly" to group name.
- N. $PI \geq 4$ and plots on or above "A" line.
- O. $PI < 4$ or plots below "A" line.
- P. PI plots on or above "A" line.
- Q. PI plots below "A" line.



Laboratory Tests			
DD	Dry density, pcf	q_p	Pocket penetrometer strength, tsf
WD	Wet density, pcf	q_u	Unconfined compression test, tsf
P200	% Passing #200 sieve	LL	Liquid limit
MC	Moisture content, %	PL	Plastic limit
OC	Organic content, %	PI	Plasticity index

Particle Size Identification

Boulders..... over 12"
Cobbles..... 3" to 12"
Gravel
Coarse..... 3/4" to 3" (19.00 mm to 75.00 mm)
Fine..... No. 4 to 3/4" (4.75 mm to 19.00 mm)
Sand
Coarse..... No. 10 to No. 4 (2.00 mm to 4.75 mm)
Medium..... No. 40 to No. 10 (0.425 mm to 2.00 mm)
Fine..... No. 200 to No. 40 (0.075 mm to 0.425 mm)
Silt..... No. 200 (0.075 mm) to .005 mm
Clay..... < .005 mm

Relative Proportions^{L,M}

trace..... 0 to 5%
little..... 6 to 14%
with..... $\geq 15\%$

Inclusion Thicknesses

lens..... 0 to 1/8"
seam..... 1/8" to 1"
layer..... over 1"

Apparent Relative Density of Cohesionless Soils

Very loose 0 to 4 BPF
Loose 5 to 10 BPF
Medium dense..... 11 to 30 BPF
Dense..... 31 to 50 BPF
Very dense..... over 50 BPF

Consistency of Cohesive Soils

Blows Per Foot
Very soft..... 0 to 1 BPF..... < 0.25 tsf
Soft..... 2 to 4 BPF..... 0.25 to 0.5 tsf
Medium..... 5 to 8 BPF 0.5 to 1 tsf
Stiff..... 9 to 15 BPF..... 1 to 2 tsf
Very Stiff..... 16 to 30 BPF..... 2 to 4 tsf
Hard..... over 30 BPF..... > 4 tsf

Moisture Content:

Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp but no visible water.
Wet: Visible free water, usually soil is below water table.

Drilling Notes:

Blows/N-value: Blows indicate the driving resistance recorded for each 6-inch interval. The reported N-value is the blows per foot recorded by summing the second and third interval in accordance with the Standard Penetration Test, ASTM D1586.

Partial Penetration: If the sampler could not be driven through a full 6-inch interval, the number of blows for that partial penetration is shown as #/x" (i.e. 50/2"). The N-value is reported as "REF" indicating refusal.

Recovery: Indicates the inches of sample recovered from the sampled interval. For a standard penetration test, full recovery is 18", and is 24" for a thinwall/shelby tube sample.

WOH: Indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WOR: Indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

Water Level: Indicates the water level measured by the drillers either while drilling (), at the end of drilling (), or at some time after drilling ().

Sample Symbols

	Standard Penetration Test		Rock Core
	Modified California (MC)		Thinwall (TW)/Shelby Tube (SH)
	Auger		Texas Cone Penetrometer
	Grab Sample		Dynamic Cone Penetrometer

APPENDIX C

Certificates

WINONA MUNICIPAL AIRPORT

CERTIFICATE OF COMPLIANCE REQUIREMENT
FOR ALL CONTRACTS IN EXCESS OF \$100,000

NAME OF BIDDER OR PROPOSER: _____

MAILING ADDRESS: _____

PROJECT OR ITEM(S) BID: _____

Consistent with Minnesota Statute S473.144, the City of Winona ("Owner") may not accept a bid or proposal for a contract or execute a contract for goods or services in excess of \$100,000 with any business having more than forty (40) full-time employees within Minnesota on a single working day during the previous twelve (12) months, unless the firm or business has an affirmative action plan for the employment of minority persons, women and qualified disabled individuals that has been approved by the Commissioner of the State of the Minnesota Department of Human Rights. A certificate of compliance from the Commissioner of the State of Minnesota Department of Human Rights signifies that a business has an approved affirmative action plan.

Further, the Owner may not execute a contract for goods or services in excess of \$100,000 with any business that has more than forty (40) full-time employees on a single working day during the previous twelve (12) months in the state where the business has its primary place of business, unless the business certifies to the Owner that it is in compliance with federal affirmative action requirements.

Please indicate if your business has had more than forty (40) full-time employees on a single working day during the previous twelve (12) months.

_____ Yes

_____ No (Must submit a signed notarized statement to this effect within three of the Owner's business days following the bid opening.)

If "Yes" is marked above, please indicate whether or not your business has an Affirmative Action Plan that is currently approved by the Commissioner of the Minnesota Department of Human Rights.

_____ Yes (Must submit a copy of the Certificate of Compliance within three of the Owner's business days following the bid opening.)

_____ No (Bid/proposal will be considered non-responsive)

Signature

Date

Safety Plan Compliance Document (SPCD)

City of _____
Project: _____
Airport: _____

Date: _____

FAA Grant No.: _____

Contractor: _____

NOTE: SPCD shall be completed by Contractor and submitted to the City of _____ for review and approval prior to issuance of Notice to Proceed. The signed SPCD indicates an understanding of the operational safety requirements of the Construction Safety Phasing Plan (CSPP) and the assertion of compliance with the approved CSPP and SPCD, unless written approval is granted by the Owner/Engineer.

CONTRACTOR INFORMATION

Identify each representative and point of contact responsible for monitoring compliance with the CSPP and SPCD during construction and coordinating an immediate response to correct any construction-related activity that may adversely affect operational safety of the airport. At least one of the listed employees must be on-site when active construction is taking place.

Title	Name	Phone Number
Project Manager		
Superintendent		
Foreman		
Additional Contact 1		
Additional Contact 2		
Additional Contact 3		

CSPP ALTERATIONS

List any additional information or proposed alterations to the CSPP. If no alterations are to be made to the CSPP, clearly state; **"No alterations to the CSPP are proposed."** Any alteration proposed by the contractor that does not conform to the CSPP and may impact the airport's operational safety will require a revision to the CSPP.

CONTRACTOR

The Contractor certifies they have read and understand the operational safety requirements of the Construction Safety and Phasing Plan (CSPP) for the project and will abide by all provisions as written and with any alterations as noted in the CSPP Alterations. The Contractor will not deviate from the CSPP unless otherwise approved in writing by the Owner/Engineer.

Contractor _____ By _____ Date _____

City of _____
The City of _____ has reviewed and accepts this Safety Plan Compliance Document.

Title By Date

APPENDIX D
MnDOT STANDARD PLATES

Not Used

APPENDIX E
Prevailing Wage Rates

MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS



THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

Construction Type: Highway and Heavy

Region Number: 06

Counties within region:

- DODGE-20
- FILLMORE-23
- FREEBORN-24
- GOODHUE-25
- HOUSTON-28
- MOWER-50
- OLMSTED-55
- RICE-66
- STEELE-74
- WABASHA-79
- WINONA-85

Effective: 2025-11-03 Revised: 2025-12-01

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate. *Note: Overtime pay after eight (8) hours on the project must be paid even if the worker does not exceed forty (40) hours in the work week.*

Violations on MnDOT highways and road projects should be reported to:

Department of Transportation
Office of Construction
Transportation Building MS650
John Ireland Blvd
St. Paul, MN 55155
(651) 366-4209

All other prevailing wage violations and questions should be sent to:

Department of Labor and Industry
Prevailing Wage Section
443 Lafayette Road N
St Paul, MN 55155
(651) 284-5091
DLI.PrevWage@state.mn.us

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)				
101 LABORER, COMMON (GENERAL LABOR WORK)	2025-11-03	39.01	26.01	65.02
102 LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2025-11-03	39.01	26.01	65.02

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
103	LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2025-11-03	31.66	22.78	54.44
104	FLAG PERSON	2025-11-03	39.01	26.01	65.02
105	WATCH PERSON	2025-11-03	29.11	22.19	51.30
106	BLASTER	2025-11-03	42.01	26.01	68.02
107	PIPELAYER (WATER, SEWER AND GAS)	2025-11-03	42.51	26.01	68.52
108	TUNNEL MINER	2025-11-03	33.51	22.39	55.90
109	UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2025-11-03	40.51	26.01	66.52
110	SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.	2025-11-03	28.18	20.07	48.25
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2025-11-03	26.42	0.08	26.50
112	QUALITY CONTROL TESTER (FIELD AND COVERED OFF-SITE FACILITIES; TESTING OF AGGREGATE, ASPHALT, AND CONCRETE MATERIALS); LIMITED TO MN DOT HIGHWAY AND HEAVY CONSTRUCTION PROJECTS WHERE THE MN DOT HAS RETAINED QUALITY ASSURANCE PROFESSIONALS TO REVIEW AND	2025-11-03	19.70	0.13	19.83

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
INTERPRET THE RESULTS OF QUALITY CONTROL TESTERS. SERVICES PROVIDED BY THE CONTRACTOR.					
SPECIAL EQUIPMENT (201 - 204)					
201	ARTICULATED HAULER	2025-11-03	46.25	29.40	75.65
		2026-05-04	47.68	31.00	78.68
202	BOOM TRUCK	2025-11-03	48.96	29.40	78.36
203	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS	2025-11-03	41.37	29.40	70.77
		2026-05-04	42.60	31.00	73.60
204	OFF-ROAD TRUCK	2025-11-03	44.67	26.40	71.07
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2025-11-03	33.91	23.49	57.40
HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR					
GROUP 2		2025-11-03	47.24	29.40	76.64
		2026-05-04	48.71	31.00	79.71
302	HELICOPTER PILOT (HIGHWAY AND HEAVY ONLY)				
303	CONCRETE PUMP (HIGHWAY AND HEAVY ONLY)				
304	ALL CRANES WITH OVER 135-FOOT BOOM, EXCLUDING JIB (HIGHWAY AND HEAVY ONLY)				
305	DAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)				
306	GRADER OR MOTOR PATROL				
307	PILE DRIVING (HIGHWAY AND HEAVY ONLY)				
308	TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
GROUP 3		2025-11-03	46.61	29.40	76.01
		2026-05-04	48.05	31.00	79.05
309	ASPHALT BITUMINOUS STABILIZER PLANT				
310	CABLEWAY				
311	CONCRETE MIXER, STATIONARY PLANT (HIGHWAY AND HEAVY ONLY)				
312	DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)				
313	DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS, UP TO THREE CUBIC YARDS MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS (HIGHWAY AND HEAVY ONLY)				
314	DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER				
315	FRONT END LOADER, FIVE CUBIC YARDS AND OVER INCLUDING ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)				
316	LOCOMOTIVE CRANE OPERATOR				
317	MIXER (PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE				
318	MECHANIC . WELDER ON POWER EQUIPMENT (HIGHWAY AND HEAVY ONLY)				
319	TRACTOR . BOOM TYPE (HIGHWAY AND HEAVY ONLY)				
320	TANDEM SCRAPER				
321	TRUCK CRANE . CRAWLER CRANE (HIGHWAY AND HEAVY ONLY)				
322	TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)				
GROUP 4		2025-11-03	46.25	29.40	75.65
		2026-05-04	47.68	31.00	78.68
323	AIR TRACK ROCK DRILL				
324	AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)				
325	BACKFILLER OPERATOR				
326	CONCRETE BATCH PLANT OPERATOR (HIGHWAY AND HEAVY ONLY)				
327	BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)				
328	BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)				
329	BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS				
330	CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS				
331	CHIP HARVESTER AND TREE CUTTER				
332	CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE				
333	CONCRETE MIXER ON JOBSITE (HIGHWAY AND HEAVY ONLY)				
334	CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)				
335	CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT				
336	CURB MACHINE				
337	DIRECTIONAL BORING MACHINE				
338	DOPE MACHINE (PIPELINE)				

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
339	DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL (HIGHWAY AND HEAVY ONLY)			
340	DUAL TRACTOR			
341	ELEVATING GRADER			
342	FORK LIFT OR STRADDLE CARRIER (HIGHWAY AND HEAVY ONLY)			
343	FORK LIFT OR LUMBER STACKER (HIGHWAY AND HEAVY ONLY)			
344	FRONT END, SKID STEER OVER 1 TO 5 C YD			
345	GPS REMOTE OPERATING OF EQUIPMENT			
346	HOIST ENGINEER (POWER) (HIGHWAY AND HEAVY ONLY)			
347	HYDRAULIC TREE PLANTER			
348	LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)			
349	LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)			
350	MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE			
351	MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS (HIGHWAY AND HEAVY ONLY)			
352	PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE			
353	PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY(HIGHWAY AND HEAVY ONLY)			
354	PIPELINE WRAPPING, CLEANING OR BENDING MACHINE			
355	POWER PLANT ENGINEER, 100 KWH AND OVER (HIGHWAY AND HEAVY ONLY)			
356	POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES			
357	PUGMILL			
358	PUMPCRETE (HIGHWAY AND HEAVY ONLY)			
359	RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)			
360	SCRAPER			
361	SELF-PROPELLED SOIL STABILIZER			
362	SLIP FORM (POWER DRIVEN) (PAVING)			
363	TIE TAMPER AND BALLAST MACHINE			
364	TRACTOR, BULLDOZER (HIGHWAY AND HEAVY ONLY)			
365	TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)			
366	TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER (HIGHWAY AND HEAVY ONLY)			
367	TUB GRINDER, MORBARK, OR SIMILAR TYPE			
368	WELL POINT DISMANTLING OR INSTALLATION (HIGHWAY AND HEAVY ONLY)			
GROUP 5	2025-11-03	42.77	29.40	72.17
	2026-05-04	44.06	31.00	75.06
369	AIR COMPRESSOR, 600 CFM OR OVER (HIGHWAY AND HEAVY ONLY)			
370	BITUMINOUS ROLLER (UNDER EIGHT TONS)			
371	CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)			
372	FORM TRENCH DIGGER (POWER)			

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
373	FRONT END, SKID STEER UP TO 1C YD			
374	GUNITE GUNALL (HIGHWAY AND HEAVY ONLY)			
375	HYDRAULIC LOG SPLITTER			
376	LOADER (BARBER GREENE OR SIMILAR TYPE)			
377	POST HOLE DRIVING MACHINE/POST HOLE AUGER			
378	POWER ACTUATED AUGER AND BORING MACHINE			
379	POWER ACTUATED JACK			
380	PUMP (HIGHWAY AND HEAVY ONLY)			
381	SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)			
382	SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER			
383	SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER			
384	STUMP CHIPPER AND TREE CHIPPER			
385	TREE FARMER (MACHINE)			
GROUP 6	2025-11-03	41.37	29.40	70.77
	2026-05-04	42.60	31.00	73.60
387	CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER			
388	CONVEYOR (HIGHWAY AND HEAVY ONLY)			
389	DREDGE DECK HAND			
390	FIRE PERSON OR TANK CAR HEATER (HIGHWAY AND HEAVY ONLY)			
391	GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)			
392	GREASER (TRACTOR) (HIGHWAY AND HEAVY ONLY)			
393	LEVER PERSON			
394	OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT) (HIGHWAY AND HEAVY ONLY)			
395	POWER SWEEPER			
396	SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS			
397	TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING			
TRUCK DRIVERS				
GROUP 1	2025-11-03	38.80	24.70	63.50
	2026-05-01	40.64	25.40	66.04
601	MECHANIC . WELDER			
602	TRACTOR TRAILER DRIVER			
603	TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)			
GROUP 2	2025-11-03	38.16	24.70	62.86
	2026-05-01	39.97	25.40	65.37

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
604	FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK				
GROUP 3		2025-11-03	35.50	21.75	57.25
605	BITUMINOUS DISTRIBUTOR DRIVER				
606	BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607	THREE AXLE UNITS				
GROUP 4		2025-11-03	35.74	21.76	57.50
608	BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)				
609	DUMP PERSON				
610	GREASER				
611	PILOT CAR DRIVER				
612	RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS				
613	TWO AXLE UNIT				
614	SLURRY OPERATOR				
615	TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)				
616	TRACTOR OPERATOR, UNDER 50 H.P.				
SPECIAL CRAFTS					
701	HEATING AND FROST INSULATORS	2025-11-03	43.90	23.05	66.95
702	BOILERMAKERS	2025-11-03	48.35	31.93	80.28
703	BRICKLAYERS	2025-11-03	36.05	19.68	55.73
704	CARPENTERS	2025-11-03	47.57	32.17	79.74
		2026-05-01	50.76	32.17	82.93
705	CARPET LAYERS (LINOLEUM)	2025-11-03	35.32	14.03	49.35
706	CEMENT MASONS	2025-11-03	56.13	14.34	70.47
707	ELECTRICIANS	2025-11-03	49.49	27.25	76.74
711	GROUND PERSON	2025-11-03	33.40	16.30	49.70
712	IRONWORKERS	2025-11-03	46.35	37.86	84.21
		2026-05-03	49.50	37.86	87.36
713	LINEMAN	2025-11-03	46.32	20.12	66.44

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
714	MILLWRIGHT	2025-11-03	41.70	31.81	73.51
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2025-11-03	48.00	29.09	77.09
		2026-05-04	50.50	29.09	79.59
716	PILEDRIIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2025-11-03	47.71	31.98	79.69
		2026-05-01	50.90	31.98	82.88
717	PIPEFITTERS . STEAMFITTERS	2025-11-03	59.09	36.45	95.54
		2026-05-01	64.09	36.45	100.54
719	PLUMBERS	2025-11-03	49.91	33.58	83.49
721	SHEET METAL WORKERS	2025-11-03	57.96	34.57	92.53
723	TERRAZZO WORKERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVVAGE@STATE.MN.US			
724	TILE SETTERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVVAGE@STATE.MN.US			
725	TILE FINISHERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVVAGE@STATE.MN.US			
727	WIRING SYSTEM TECHNICIAN	2025-11-03	51.07	23.52	74.59
728	WIRING SYSTEMS INSTALLER	2025-11-03	26.49	12.40	38.89
729	ASBESTOS ABATEMENT WORKER	2025-11-03	36.23	22.26	58.49
730	SIGN ERECTOR	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVVAGE@STATE.MN.US			