02A

Letting September 22, 2023

Notice to Bidders, Specifications and Proposal

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. VE057
Vermilion Regional Airport
Danville, Illinois
Vermilion County
Illinois Project No. DNV-5046
SBG Project No. N/A

(Printed by authority of the State of Illinois)

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). All bids must be submitted to the iCX system prior to 12:00 p.m. on September 22, 2023, at which time the bids will be publicly opened from the iCX SecureVault.

2. **DESCRIPTION OF WORK**. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

   Contract No. VE057
   Vermilion Regional Airport
   Danville, Illinois
   Vermilion County
   Illinois Project No. DNV-5046
   SBG Project No. N/A

   Upgrade Airport Perimeter Fence

   For engineering information, please contact Eric Hills, P.E., C.M. of Crawford, Murphy & Tilly, Inc. at 217.572.1150.

3. **INSTRUCTIONS TO BIDDERS**.

   (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 10-18 of the Illinois Standard Specifications for Construction of Airports (Adopted April 1, 2012), become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.

   (b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.

4. **AWARD CRITERIA AND REJECTION OF BIDS**. This contract will be awarded within 90 calendar days to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to readvertise the proposed improvement, and to waive technicalities.

5. **PRE-BID CONFERENCE.** N/A

6. **DISADVANTAGED BUSINESS POLICY.** The DBE goal for this contract is 4.0%.

7. **SPECIFICATIONS AND DRAWINGS.** The work shall be done in accordance with the Illinois Standard Specifications for Construction of Airports (Adopted April 1, 2012), the Special Provisions dated July 28, 2023, and the Construction Plans dated July 28, 2023 as approved by the Illinois Department of Transportation, Division of Aeronautics.

8. **BIDDING REQUIREMENTS AND BASIS OF AWARD.** When alternates are included in the proposal, the following shall apply:

   a. Additive Alternates

      (1) Bidders must submit a bid for the Base Bid and for all Additive Alternates.

      (2) Award of this contract will be made to the lowest responsible qualified bidder computed as follows:

      The lowest aggregate amount of (i) the Base Bid plus (ii) any Additive Alternate(s) which the Department elects to award.

      The Department may elect not to award any Additive Alternates. In that case, award will be to the lowest responsible qualified bidder of the Base Bid.

   b. Optional Alternates

      (1) Bidders must submit a bid for the Base Bid and for either Alternate A or Alternate B or for both Alternate A and Alternate B.

      (2) Award of this contract will be made to the lowest responsible qualified bidder computed as follows:

      The lower of the aggregate of either (i) the Base Bid plus Alternate A or (ii) the Base Bid plus Alternate B.

9. **CONTRACT TIME.** The Contractor shall complete all work within the specified contract time. Any calendar day extension beyond the specified contract time must be fully justified, requested by the Contractor in writing, and approved by the Engineer, or be subject to liquidated damages.

   The contract time for this contract is 37 calendar days.

10. **INDEPENDENT WEIGHT CHECKS.** The Department reserves the right to conduct random unannounced independent weight checks on any delivery for bituminous, aggregate or other pay item for which the method of measurement for payment is based on weight. The weight checks will be accomplished by selecting, at random, a loaded truck and obtaining a loaded and empty weight on an independent scale. In addition, the department may perform random weight checks by obtaining loaded and empty truck weights on portable scales operated by department personnel.

11. **MATERIAL COST ADJUSTMENTS.** The Illinois Department of Transportation, Division of Aeronautics does not offer any material cost adjustment provisions.

12. **GOOD FAITH COMPLIANCE.** The Illinois Department of Transportation has made a good faith effort to include all statements, requirements, and other language required by federal and state law and by various offices within federal and state governments whether that language is required by law or not. If anything of this nature has been left out or if additional language etc. is later required, the bidder/contractor shall cooperate fully with the Department to modify the contract or bid documents to correct the deficiency. If the change results in increased operational costs, the Department shall reimburse the contractor for such costs as it may find to be reasonable.

By Order of the
Illinois Department of Transportation

Omer Osman,
Secretary

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
EEO

Effective: July 21, 1978
Revised: November 18, 1980

The requirements of the following provisions written for federally-assisted construction contracts, including all goals and timetables and affirmative action steps, shall also apply to all State-funded construction contracts awarded by the Illinois Department of Transportation.

Notice of Requirement for Affirmative Action to Ensure
Equal Employment Opportunity (Executive Order 11246)

1. The offeror's or bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract 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:

APPENDIX A

The following goal for female utilization in each construction craft and trade shall apply to all Contractors holding Federal and federally assisted construction contracts and subcontracts in excess of $10,000. The goal is applicable to the Contractor's total on-site construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally assisted or nonfederally related construction contact or subcontract.

Area Covered (Statewide)

Goals for Women apply nationwide.

GOAL	Goal (percent)
Female Utilization	6.9

APPENDIX B

Until further notice, the following goals for minority utilization in each construction craft and trade shall apply to all Contractors holding federal and federally-assisted construction contracts and subcontracts in excess of $10,000 to be performed in the respective geographical areas. The goals are applicable to the Contractor's total on-site construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally-assisted or nonfederally related construction contract or subcontract.

Economic Area	Goal (percent)
056 Paducah, KY: Non-SMSA Counties - IL - Hardin, Massac, Pope KY - Ballard, Caldwell, Calloway, Carlisle, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, McCracken, Marshall	5.2
080 Evansville, IN: Non-SMSA Counties - IL - Edwards, Gallatin, Hamilton, Lawrence, Saline, Wabash, White IN - Dubois, Knox, Perry, Pike, Spencer KY - Hancock, Hopkins, McLean, Mublenberg, Ohio, Union, Webster	3.5
081 Terre Haute, IN: Non-SMSA Counties - IL - Clark, Crawford IN - Parke	2.5

083 Chicago, IL:
SMSA Counties:
1600 Chicago, IL - 19.6
IL - Cook, DuPage, Kane,
Lake, McHenry, Will
3740 Kankakee, IL - 9.1
IL - Kankakee
Non-SMSA Counties 18.4
IL - Bureau, DeKalb, Grundy, Iroquois,
Kendall, LaSalle, Livingston, Putnam
IN - Jasper, Laporte, Newton,
Pulaski, Starke

084 Champaign - Urbana, IL:
SMSA Counties:
1400 Champaign - Urbana - Rantoul, IL - 7.8
IL - Champaign
Non-SMSA Counties - 4.8
IL - Coles, Cumberland, Douglas,
Edgar, Ford, Piatt, Vermilion

085 Springfield - Decatur, IL:
SMSA Counties:
2040 Decatur, IL - 7.6
IL - Macon
7880 Springfield, IL - 4.5
IL - Menard, Sangamon
Non-SMSA Counties 4.0
IL - Cass, Christian, Dewitt, Logan,
Morgan, Moultrie, Scott, Shelby

086 Quincy, IL:
Non-SMSA Counties 3.1
IL - Adams, Brown, Pike
MO - Lewis, Marion, Pike, Ralls

087 Peoria, IL:
SMSA Counties:
1040 Bloomington - Normal, IL - 2.5
IL - McLean
6120 Peoria, IL - 4.4
IL - Peoria, Tazewell, Woodford
Non-SMSA Counties - 3.3
IL - Fulton, Knox, McDonough, Marshall,
Mason, Schuyler, Stark, Warren

088 Rockford, IL:
SMSA Counties:
6880 Rockford, IL - 6.3
IL - Boone, Winnebago
Non-SMSA Counties - 4.6
IL - Lee, Ogle, Stephenson

098 Dubuque, IA:
Non-SMSA Counties - 0.5
IL - JoDaviess
IA - Atlamakee, Clayton, Delaware,
Jackson, Winnesheik
WI - Crawford, Grant, Lafayette

099 Davenport, Rock Island, Moline, IA - IL:
SMSA Counties:
1960 Davenport, Rock Island, Moline, IA - IL - 4.6
IL - Henry, Rock Island
IA - Scott
Non-SMSA Counties - 3.4
IL - Carroll, Hancock, Henderson, Mercer, Whiteside
IA - Clinton, DesMoines, Henry, Lee, Louisa, Muscatine
MO - Clark

107	St. Louis, MO:	
	SMSA Counties:	
	7040 St. Louis, MO - IL -	14.7
	IL - Clinton, Madison, Monroe, St. Clair	
	MO - Franklin, Jefferson, St. Charles,	
	St. Louis, St. Louis City	
	Non-SMSA Counties -	11.4
	IL - Alexander, Bond, Calhoun, Clay,	
	Effingham, Fayette, Franklin, Greene,	
	Jackson, Jasper, Jefferson, Jersey,	
	Johnson, Macoupin, Marion, Montgomery,	
	Perry, Pulaski, Randolph, Richland,	
	Union, Washington, Wayne, Williamson	
	MO - Bollinger, Butler, Cape Girardeau,	
	Carter, Crawford, Dent, Gasconade,	
	Iron, Lincoln, Madison, Maries,	
	Mississippi, Montgomery, Perry,	
	Phelps, Reynolds, Ripley, St. Francois,	
	St. Genevieve, Scott, Stoddard, Warren,	
	Washington, Wayne	

These goals are applicable to all the Contractor's 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 nonfederally involved construction.

The Contractor's compliance with Executive Order 11246 and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the provisions and specifications set forth in its federally assisted contracts, 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 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 11246 and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Illinois Department of Transportation will provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten working days of award of any construction contract and/or subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. This notification will 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 the entire State of Illinois for the goal set forth in APPENDIX A and the county or counties in which the work is located for the goals set forth in APPENDIX B.

STANDARD FEDERAL EQUAL EMPLOYMENT
OPPORTUNITY CONSTRUCTION CONTRACT
SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

   (a) "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   (b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   (c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
   (d) "Minority" includes:
      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000. the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction Contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. 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, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must 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 must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall 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:

   (a) Ensure and 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, where possible, will assign two or more women to each construction project. 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 as such sites or in such facilities.

   (b) 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 organizations' responses.

   (c) 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 such 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 therefor, along with whatever additional actions the Contractors may have taken.

   (d) Provide immediate written notification to the Director 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.

   (e) Develop on-the-job training opportunities and/or participate in training programs for the area 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 Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

   (f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreements; 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 EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

   (g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation 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.

   (h) Disseminate the Contractor's EEO 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 EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

   (i) 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 month prior to the date for the acceptance of applications for apprenticeship of 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.

   (j) 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 workforce.

   (k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

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

(m) 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 EEO policy and the Contractor's obligations under these specifications are being carried out.

(n) Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

(o) 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.

(p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). 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 7a through p 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 workforce 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 a defense for the Contractor's noncompliance.

9. A single 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 the Executive Order 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 the Executive Order if a specified minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. 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 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government 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 (e.g., 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 his requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES
NONFEDERAL-AID CONTRACTS

Effective: March 20, 1969
Revised: January 1, 1994

1. General

   a. The requirements set forth herein shall constitute the specific affirmative action requirements under this contract and supplement the non- discrimination requirements contained elsewhere in this proposal.

   b. The Contractor shall work with the Illinois Department of Transportation (IDOT) in carrying out Equal Employment Opportunity (EEO) obligations and in reviews of activities under the contract.

   c. The Contractor, and all subcontractors holding subcontracts (not including material suppliers) of $10,000 or more, shall comply with the following minimum specific requirement activities of EEO. The Contractor shall include these requirements in every subcontract of $10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

2. Equal Employment Opportunity Policy

   The Contractor shall accept as operating policy the following statement which is designed to further the provision of EEO to all persons, and to promote the full realization of equal employment opportunity through a positive continuing program: "It is the policy of this Company to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age, or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

3. Equal Employment Opportunity Officer

   The Contractor shall designate and make known to IDOT contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active Contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

4. Dissemination of Policy

   a. All members of the Contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the Contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

      (1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the Contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

      (2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the Contractor's EEO obligations within thirty days following their reporting for duty with the Contractor.

      (3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the Contractor's procedures for locating and hiring minority and female employees.

   b. In order to make the Contractor's EEO policy known to all employees, prospective employees, and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the Contractor shall take the following actions:

      (1) Notices and posters setting forth the Contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

      (2) The Contractor's EEO policy and the procedures to implement such policy shall be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. Recruitment

   a. When advertising for employees, the Contractor shall include in all advertisements for employees the notation: "An Equal Opportunity Employer". All such advertisements shall be published in newspapers, or other publications, having a large circulation among minority groups in the area from which the project work force would normally be derived.

   b. The Contractor shall, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority and female applicants, including, but not limited to, State employment

agencies, schools, colleges and minority and female organizations. To meet this requirement, the Contractor shall, identify sources of potential minority and female employees, and establish with such identified sources procedures whereby minority and female applicants may be referred to the Contractor for employment consideration. In the event the Contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he/she is expected to observe the provisions of that agreement to the extent that the system permits the Contractor's compliance with EEO contract provisions.

c. The Contractor shall encourage present employees to refer minority and female applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority and female applicants shall be discussed with employees.

6. Personnel Actions

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, will be taken without regard to race, color, religion, sex, national origin, age, or disability. The following procedures shall be followed:

a. The Contractor shall conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The Contractor shall periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The Contractor shall periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Contractor shall promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The Contractor shall promptly investigate all complaints of alleged discrimination made to the Contractor in connection with the obligations under this contract, shall attempt to resolve such complaints, and shall take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the Contractor shall inform every complainant of all of the avenues of appeal.

7. Training and Promotion

a. The Contractor shall assist in locating, qualifying and increasing the skills of minority and female employees and applicants for employment.

b. Consistent with the Contractor's work force requirements and as permissible under Federal and State regulations, the Contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance.

c. The Contractor shall advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The Contractor shall periodically review the training and promotion potential of minority and female employees and shall encourage eligible employees to apply for such training and promotion.

8. Unions

If the Contractor relies in whole or in part upon unions as a source of employees, the Contractor shall use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minorities and females within the unions, and to effect referrals by such unions of minority and female employees. Actions by the Contractor, either directly or through a Contractor's association acting as agent, shall include the procedures set forth below:

a. The Contractor shall use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority and female employees for membership in the unions and increasing the skills of minority and female and employees so that they may qualify for higher paying employment.

b. The Contractor shall use best efforts to incorporate an EEO clause into each union agreement to the end that such union shall be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age, or disability.

c. The Contractor is to obtain information as to the referral practices and policies of the labor union, except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the Contractor, the Contractor shall so certify to IDOT and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the Contractor with a reasonable flow of minority and female referrals within the time limit set forth in the collective bargaining agreement, the Contractor shall, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and females. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the Contractor has a collective bargaining agreement providing for exclusive referral failed to refer minorities or female employees). In the event the union referral practice prevents the Contractor from meeting the obligations pursuant to these Special Provisions, such Contractor shall immediately notify IDOT.

9. Selection of Subcontractors, Procurement of Materials, and Leasing of Equipment

The Contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The Contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR Part 23, shall have equal opportunity to compete for and perform subcontracts which the Contractor enters into pursuant to this contract. The Contractor shall use best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority and female representation among their employees. Contractors shall obtain lists of DBE construction firms from IDOT personnel.

c. The Contractor shall use his/her best efforts to ensure subcontractor compliance with their EEO obligations.

10. Records and Reports

The Contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of IDOT.

a. The records kept by the Contractor shall document the following:

(1) the number of minorities, non-minorities and females employed in each work classification on the project;

(2) the progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and females;

(3) the progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) the progress and efforts being made in securing the services of DBE subcontractors, or subcontractors with meaningful minority and female representation among their employees.

b. The Contractor shall submit to IDOT a monthly report every month for the duration of the project, indicating the number of minority, non-minority and female employees currently engaged in each work classification required by contract work and the number of hours worked. This information is to be reported on Form SBE-956. If on-the-job training is being required by special provision, the Contractor will be required to collect and report training data.

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
REQUIRED PROVISIONS – STATE CONTRACTS

Effective: April 1 1965
Revised: January 1, 2017

I. SELECTION OF LABOR

The Contractor shall comply with all Illinois statutes pertaining to the selection of labor.

EMPLOYMENT OF ILLINOIS WORKERS DURING PERIODS OF
EXCESSIVE UNEMPLOYMENT

Whenever there is a period of excessive unemployment in Illinois, which is defined herein as any month immediately following two consecutive calendar months during which the level of unemployment in the State of Illinois has exceeded five percent as measured by the United States Bureau of Labor Statistics in its monthly publication of employment and unemployment figures, the Contractor shall employ at least 90 percent Illinois laborers. "Illinois laborer" means any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident.

Other laborers may be used when Illinois laborers as defined herein are not available, or are incapable of performing the particular type of work involved, if so certified by the Contractor and approved by the Engineer. The Contractor may place no more than three of his/her regularly employed non-resident executive and technical experts, who do not qualify as Illinois laborers, to do work encompassed by this Contract during period of excessive unemployment.

This provision applies to all labor, whether skilled, semi-skilled, or unskilled, whether manual or non-manual.

II. EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

1. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

2. That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (in accordance with the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

3. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service.

4. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.

5. That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

6. That it will permit access to all relevant books, records, accounts and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

7. That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations.

III. SUBLETTING OR ASSIGNING THE CONTRACT

1. The Contractor shall perform with his/her own organization contract work amounting to not less than 51 percent of the original total contract price, except that any items designated by the State as "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed may be deducted from the original total contract price before computing the amount of work required to be performed by the Contractor with his/her own organization.

   a. "His/her own organization" shall be construed to include only worker employed and paid directly by the Contractor and equipment owned or rented by him/her, with or without operators.

   b. "Specialty Items" shall be construed to be limited to work that requires specialized knowledge, craftsmanship or equipment not ordinarily available in contracting organizations qualified to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. In addition to the 51 percent requirement set forth in paragraph 1 above, the Contractor shall furnish (a) a competent superintendent or foreman who is employed by him/her, who has full authority to direct performance of the work in accordance with the contract requirements, and who is in charge of all construction operations (regardless of who performs the work), and (b) such other of his/her own organizational capability and responsibility (supervision, management, and engineering services) as the State highway department contracting officer determines is necessary to assure the performance of the contract.

3. The Contractor shall not sublet, sell, transfer, assign or otherwise dispose of the contract or contracts or any portion thereof, or of his/her right, title or interest therein, without written consent of the Engineer. In case such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform with the Contractor's own organization, work amounting to not less than 51 percent of the total contract cost, except that any items designated in the contract as "specialty items" may be performed by subcontract and the cost of any such specialty items so performed by subcontract may be deducted from the total cost before computing the amount of work required to be performed by the Contractor with his/her own organization. Materials purchased or produced by the Contractor must be incorporated into the project by the Contractor's own organization if their cost is to be applied to the 50 percent requirement.

   No subcontracts, or transfer of contract, shall in any case release the Contractor of his/her liability under the contract and bonds. All transactions of the Engineer shall be with the Contractor. The Contractor shall have representative on the job at all times when either contract or subcontract work is being performed.

   All requests to subcontract shall contain a certification that the subcontract agreement exists in writing and physically contains the required Federal and State Equal Employment Opportunity provisions and Labor compliance provisions, including the contract minimum wage requirements. The Contractor shall permit Department or Federal representatives to examine the subcontract agreements upon notice.

4. Any items that have been selected as "Specialty Items" for the contract are listed as such in the Special Provisions, bid schedule, or elsewhere in the contract documents.

5. No portion of the contract shall be sublet, assigned or otherwise disposed of, except with the written consent of the State highway department contracting officer, or his/her authorized representative, and such consent when given shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the contract. Request for permission to sublet, assign or otherwise dispose of any portion of the contract shall be in writing and accompanied by (a) a showing that the organization which will perform the work is particularly experienced and equipped for such work, and (b) an assurance by the Contractor that the labor standards provisions set forth in this contract shall apply to labor performed on all work encompassed by the request.

IV. COMPLIANCE WITH THE PREVAILING WAGE ACT

1. Prevailing Wages. All wages paid by the Contractor and each subcontractor shall be in compliance with The Prevailing Wage Act (820 ILCS 130), as amended, except where a prevailing wage violates a federal law, order, or ruling, the rate conforming to the federal law, order, or ruling shall govern. The Contractor shall be responsible to notify each subcontractor of the wage rates set forth in this contract and any revisions thereto. If the Department of Labor revises the wage rates, the Contractor will not be allowed additional compensation on account of said revisions. Current wage rate information shall be obtained by visiting the Department of Labor website at http://www.illinois.gov/idol/Pages/default.aspx. It is the responsibility of the Contractor to review the rates applicable to the work of this contract at regular intervals in order to insure the timely payment of current rates. Provision of this information to the Contractor by means of the Department of Labor website satisfies the notification of revisions by the Department to the Contractor pursuant to the Act, and the Contractor agrees that no additional notice is required.

2. Payroll Records. The Contractor and each subcontractor shall make and keep, for a period of three years from the later of the date of final payment under the contract or completion of the contract, records of the wages paid to his/her workers. The payroll records shall include each worker's name, address, telephone number, social security number, classification, rate of pay, number of hours worked each day, starting and ending times of work each day, total hours worked each week, itemized deductions made, and actual wages paid. Upon seven business days' notice, these records shall be available at a location within the State, during reasonable hours, for inspection by the Department or the Department of Labor; and Federal, State, or local law enforcement agencies and prosecutors.

3. **SUBMISSION OF PAYROLL RECORDS (BDE)**

   Effective: April 1, 2021
   Revised: November 1, 2022

   Submission of Payroll Records. The Contractor and each subcontractor shall, no later than the 15th day of each calendar month, file a certified payroll for the immediately preceding month to the Illinois Department of Labor (IDOL) through the Illinois Prevailing Wage Portal in compliance with the State Prevailing Wage Act (820 ILCS 130). The portal can be found on the IDOL website at https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/Prevailing-Wage-Portal.aspx. Payrolls shall be submitted in the format prescribed by the IDOL.

   In addition to filing certified payroll(s) with the IDOL, the Contractor and each subcontractor shall certify and submit payroll records to the Department each week from the start to the completion of their respective work, except that full social security numbers shall not be included on weekly submittals. Instead, the payrolls shall include an identification number for each employee (e.g., the last four digits of the employee's

social security number). In addition, starting and ending times of work each day may be omitted from the payroll records submitted. The submittals shall be made using LCPtracker Pro software. The software is web-based and can be accessed at https://lcptracker.com/. When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate option ("No Work", "Suspended", or "Complete") selected."

4. Employee Interviews. The Contractor and each subcontractor shall permit his/her employees to be interviewed on the job, during working hours, by compliance investigators of the Department or the Department of Labor.

V. NONSEGREGATED FACILITIES

(Applicable to State Financed Construction Contracts and related subcontracts exceeding $10,000 which are not exempt from the Equal Opportunity clause).

By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement, as appropriate, the bidder, construction Contractor, subcontractor, or material supplier, as appropriate, certifies that (s)he does not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that (s)he does not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. (S)He certifies further that (s)he will not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that (s)he will not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. (S)He agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. (S)He agrees that (except where he/she has obtained identical certifications from proposed subcontractors and material suppliers for specific time periods), he/she will obtain identical certifications from proposed subcontractors or material suppliers prior to the award of subcontracts or the consummation of material supply agreements, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that (s)he will retain such certifications in his/her files.

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SECTION 80 PROSECUTION AND PROGRESS

This Special Provision amends the provisions of the Standard Specifications for Construction of Airports, adopted April 1, 2012 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

80-09 FAILURE TO COMPLETE ON TIME.

DELETE: “See contract documents for current schedule of deductions.”

ADD:

Schedule of Deductions for Each Day of Overrun in Contract Time			
Original Contract Amount		Daily Charges	
From More Than	To and Including	Calendar Day	Work Day
$ 0	$ 100,000	$ 475	$ 675
100,000	500,000	750	1,050
500,000	1,000,000	1,025	1,425
1,000,000	3,000,000	1,275	1,725
3,000,000	6,000,000	1,425	2,000
6,000,000	12,000,000	2,300	3,450
12,000,000	And over	6,775	9,525

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SECTION 90 MEASUREMENT AND PAYMENT

This Special Provision amends the provisions of the Standard Specifications for Construction of Airports, adopted April 1, 2012 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

90-07 PARTIAL PAYMENTS.

DELETE: The entire section.

ADD: Partial payments will be made to the Contractor at least once each month as the work progresses. The payments will be based upon estimates, prepared by the Resident Engineer, of the value of the work performed and materials complete and in place in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the Section 90-08 PAYMENT FOR MATERIALS ON HAND. From the amount of partial payment so determined on Federal-Aid projects, there shall be deducted an amount up to ten percent of the cost of the completed work which shall be retained until all conditions necessary for financial closeout of the project are satisfied. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than $1,000.00 will be approved for payment other than the final payment. A final voucher for under $5.00 shall not be paid except through electronic funds transfer. (15 ILCS 405/9(b-1))

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Department to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in Section 90-09 ACCEPTANCE AND FINAL PAYMENT.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610) progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

In accordance with 49 USC § 47111, the Department will not make payments totaling more than 90 percent of the contract until all conditions necessary for financial closeout of the project are satisfied.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved.

90-10 TRUST AGREEMENT OPTION.

DELETE: The entire section.

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Construction of Airports," adopted April 1, 2012, and the Special Provisions included herein which apply to and govern the airport improvement of: Upgrade Airport Perimeter Fence at Vermilion Regional, Contract VE057, and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

SPECIAL PROVISION FOR COMPLETION TIME VIA CALENDAR DAYS

It being understood and agreed that the completion within the time limit is an essential part of the contract, the bidder agrees to complete the work within **37 calendar days**, unless additional time is granted by the Engineer in accordance with the provisions of the specifications. In case of failure to complete the work on or before the time named herein, or within such extra time as may have been allowed by extensions, the bidder agrees that the Department of Transportation shall withhold from such sum as may be due him/her under the terms of this contract, the costs, as set forth in Section 80-09 Failure to Complete on Time of the Standard Specifications, which costs shall be considered and treated not as a penalty but as damages due to the State from the bidder by reason of the failure of the bidder to complete the work within the time specified in the contract.

CONSTRUCTION AIR QUALITY – DIESEL VEHICLE EMISSIONS CONTROL (BDE)
Effective: April 1, 2009
Revised: January 2, 2012

Diesel Vehicle Emissions Control. The reduction of construction air emissions shall be accomplished by using cleaner burning diesel fuel. The term "equipment" refers to any and all diesel fuel powered devices rated at 50 hp and above, to be used on the project site in excess of seven calendar days over the course of the construction period on the project site (including any "rental" equipment).

All equipment on the jobsite, with engine ratings of 50 hp and above, shall be required to: use Ultra Low Sulfur Diesel fuel (ULSD) exclusively (15 ppm sulfur content or less).

Diesel powered equipment in non-compliance will not be allowed to be used on the project site, and is also subject to a notice of non-compliance as outlined below.

The Contractor shall certify that only ULSD will be used in all jobsite equipment. The certification shall be presented to the Department prior to the commencement of the work.

If any diesel powered equipment is found to be in non-compliance with any portion of this specification, the Engineer will issue the Contractor a notice of non-compliance and identify an appropriate period of time, as outlined below under environmental deficiency deduction, in which to bring the equipment into compliance or remove it from the project site.

Any costs associated with bringing any diesel powered equipment into compliance with these diesel vehicle emissions controls shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall also not be grounds for a claim.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists, he/she will notify the Contractor in writing, and direct the Contractor to correct the deficiency within a specified time period. The specified time-period, which begins upon Contractor notification, will be from 1/2 hour to 24 hours long, based on the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge regarding the time period.

The deficiency will be based on lack of repair, maintenance and diesel vehicle emissions control.

If the Contractor fails to correct the deficiency within the specified time frame, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be $1,000.00 for each deficiency identified.

If a Contractor or subcontractor accumulates three environmental deficiency deductions in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of contract time, waiver of penalties, or be grounds for any claim.

CONSTRUCTION AIR QUALITY – IDLING RESTRICTION (BDE)
Effective: April 1, 2009

Idling Restrictions. The Contractor shall establish truck-staging areas for all diesel powered vehicles that are waiting to load or unload material at the jobsite. Staging areas shall be located where the diesel emissions from the equipment will have a minimum impact on adjacent sensitive receptors. The Department will review the selection of staging areas, whether within or outside the existing highway right-of-way, to avoid locations near sensitive areas or populations to the extent possible. Sensitive receptors include, but are not limited to, hospitals, schools, residences, motels, hotels, daycare facilities,

elderly housing and convalescent facilities. Diesel powered engines shall also be located as far away as possible from fresh air intakes, air conditioners, and windows. The Engineer will approve staging areas before implementation.

Diesel powered vehicle operators may not cause or allow the motor vehicle, when it is not in motion, to idle for more than a total of 10 minutes within any 60 minute period, except under any of the following circumstances:

1) The motor vehicle has a gross vehicle weight rating of less than 8000 lb (3630 kg).
2) The motor vehicle idles while forced to remain motionless because of on-highway traffic, an official traffic control device or signal, or at the direction of a law enforcement official.
3) The motor vehicle idles when operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency.
4) A police, fire, ambulance, public safety, other emergency or law enforcement motor vehicle, or any motor vehicle used in an emergency capacity, idles while in an emergency or training mode and not for the convenience of the vehicle operator.
5) The primary propulsion engine idles for maintenance, servicing, repairing, or diagnostic purposes if idling is necessary for such activity.
6) A motor vehicle idles as part of a government inspection to verify that all equipment is in good working order, provided idling is required as part of the inspection.
7) When idling of the motor vehicle is required to operate auxiliary equipment to accomplish the intended use of the vehicle (such as loading, unloading, mixing, or processing cargo; controlling cargo temperature; construction operations, lumbering operations; oil or gas well servicing; or farming operations), provided that this exemption does not apply when the vehicle is idling solely for cabin comfort or to operate non-essential equipment such as air conditioning, heating, microwave ovens, or televisions.
8) When the motor vehicle idles due to mechanical difficulties over which the operator has no control.
9) The outdoor temperature is less than 32 °F (0 °C) or greater than 80 °F (26 °C).

When the outdoor temperature is greater than or equal to 32 °F (0 °C) or less than or equal to 80 °F (26 °C), a person who operates a motor vehicle operating on diesel fuel shall not cause or allow the motor vehicle to idle for a period greater than 30 minutes in any 60 minute period while waiting to weigh, load, or unload cargo or freight, unless the vehicle is in a line of vehicles that regularly and periodically moves forward.

The above requirements do not prohibit the operation of an auxiliary power unit or generator set as an alternative to idling the main engine of a motor vehicle operating on diesel fuel.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists based on non-compliance with the idling restrictions, he/she will notify the Contractor, and direct the Contractor to correct the deficiency.

If the Contractor fails to correct the deficiency a monetary deduction will be imposed. The monetary deduction will be $1,000.00 for each deficiency identified.

SPECIAL PROVISION FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
Effective: September 1, 2000
Revised: March 2, 2019

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract the Contractor signs with a subcontractor.

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

(a) Withholding progress payments;

(b) Assessing sanctions;

(c) Liquidated damages; and/or

(d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE

companies to do a part of the work. The assessment indicates, in the absence of unlawful discrimination and in an arena of fair and open competition, DBE companies can be expected to perform 4.0% of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

(a) The bidder documents enough DBE participation has been obtained to meet the goal or,

(b) The bidder documents a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at: http://www.idot.illinois.gov/doing-business/certifications/disadvantaged-business-enterprise-certification/il-ucp-directory/index.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement and failure of the bidder to comply will render the bid not responsive.

The bidder shall submit a DBE Utilization Plan (form SBE 2026), and a DBE Participation Statement (form SBE 2025) for each DBE company proposed for the performance of work to achieve the contract goal, with the bid. If the Utilization Plan indicates the contract goal will not be met, documentation of good faith efforts shall also be submitted. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract. The required forms and documentation must be submitted as a single .pdf file using the "Integrated Contractor Exchange (iCX)" application within the Department's "EBids System".

The Department will not accept a Utilization Plan if it does not meet the bidding procedures set forth herein and the bid will be declared not responsive. In the event the bid is declared not responsive, the Department may elect to cause the forfeiture of the penal sum of the bidder's proposal guaranty and may deny authorization to bid the project if re-advertised for bids.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan is approved. All information submitted by the bidder must be complete, accurate and adequately document enough DBE participation has been obtained or document the good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. This means the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts the bidder has made. Mere *pro forma* efforts, in other words efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

(a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases and will be considered by the Department.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

(5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

(7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.

(b) If the Department determines the bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided it is otherwise eligible for award. If the Department determines the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification will also include a statement of reasons for the adverse determination. If the Utilization Plan is not approved because it is deficient as a technical matter, unless waived by the Department, the bidder will be notified and will be allowed no more than a five calendar day period to cure the deficiency.

(c) The bidder may request administrative reconsideration of an adverse determination by emailing the Department at "DOT.DBE.UP@illinois.gov" within the five calendar days after the receipt of the notification of the determination. The determination shall become final if a request is not made on or before the fifth calendar day. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be reviewed by the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.

(e) DBE as a material supplier:

(1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.

(2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.

(3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a DBE regular dealer or DBE manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the DBE Participation Commitment Statement.

(a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be emailed to the Department at DOT.DBE.UP@illinois.gov.

(b) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE

subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A or AER 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, a new Request for Approval of Subcontractor will not be required. However, the Contractor must document efforts to assure the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

(c) SUBCONTRACT. The Contractor must provide copies of DBE subcontracts to the Department upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.

(d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:

(1) The replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or

(2) The DBE is aware its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or

(3) The DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

(e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a) of this part. Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the Contractor;

(3) The listed DBE subcontractor fails or refuses to meet the Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1200 or applicable state law.

(6) The Contractor has determined the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides written notice to the Contractor of its withdrawal;

(8) The listed DBE is ineligible to receive DBE credit for the type of work required;

(9) A DBE owner dies or becomes disabled with the result that the listed DBE subcontractor is unable to complete its work on the contract;

(10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE contractor was engaged or so that the Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated or fails to complete its work on the Contract for any reason, the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department will provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

(f) FINAL PAYMENT. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than 30 calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Resident Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the

Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.

(g) ENFORCEMENT. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

SPECIAL PROVISION FOR WEEKLY DBE TRUCKING REPORTS (BDE)
Effective: June 2, 2012
Revised: November 1, 2021

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Resident Engineer on Division of Aeronautics Form "AER 723" within ten business days following the reporting period. The reporting period shall be Sunday through Saturday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

SPECIAL PROVISION FOR SUBCONTRACTOR MOBILIZATION PAYMENTS
Effective: November 2, 2017
Revised: April 1, 2019

To account for the preparatory work and the operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting according to Section 80-01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least seven days prior to the subcontractor starting work. The amount paid shall be at the following percentage of the amount of the subcontract reported on form AER 260A submitted for the approval of the subcontractor's work.

Value of Subcontract Reported on Form AER 260A	Mobilization Percentage
Less than $10,000	25%
$10,000 to less than $20,000	20%
$20,000 to less than $40,000	18%
$40,000 to less than $60,000	16%
$60,000 to less than $80,000	14%
$80,000 to less than $100,000	12%
$100,000 to less than $250,000	10%
$250,000 to less than $500,000	9%
$500,000 to $750,000	8%
Over $750,000	7%

The mobilization payment to the subcontractor is an advance payment of the reported amount of the subcontract and is not a payment in addition to the amount of the subcontract; therefore, the amount of the advance payment will be deducted from future progress payments.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department.

SPECIAL PROVISION FOR PAYMENTS TO SUBCONTRACTORS
Effective: November 2, 2017

Federal regulations found at 49 CFR §26.29 mandate the Department to establish a contract clause to require Contractors to pay subcontractors for satisfactory performance of their subcontracts and to set the time for such payments.

State law also addresses the timing of payments to be made to subcontractors and material suppliers. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, requires that when a Contractor receives any payment from the Department, the Contractor shall make corresponding, proportional payments to each subcontractor and material supplier performing work or supplying material within 15 calendar days after receipt of the Department payment. Section 7 of the Act further provides that interest in the amount of two percent per month, in addition to the payment due, shall be paid to any subcontractor or material supplier by the Contractor if the payment required by the Act is withheld or delayed without reasonable cause. The Act also provides that the time for payment required and the calculation of any interest due applies to transactions between subcontractors and lower-tier subcontractors and material suppliers throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the State Prompt Payment Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

When progress payments are made to the Contractor according to Article 90-07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain. Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause. If reasonable cause is asserted, written notice shall be provided to the applicable subcontractor and/or material supplier and the Engineer within five days of the Contractor receiving payment. The written notice shall identify the contract number, the subcontract or material purchase agreement, a detailed reason for refusal, the value of payment being withheld, and the specific remedial actions required of the subcontractor and/or material supplier so that payment can be made.

This Special Provision does not create any rights in favor of any subcontractor or material supplier against the State or authorize any cause of action against the State on account of any payment, nonpayment, delayed payment, or interest claimed by application of the State Prompt Payment Act. The Department will not approve any delay or postponement of the 15 day requirement except for reasonable cause shown after notice and hearing pursuant to Section 7(b) of the State Prompt Payment Act. State law creates other and additional remedies available to any subcontractor or material supplier, regardless of tier, who has not been paid for work properly performed or material furnished. These remedies are a lien against public funds set forth in Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c), and a recovery on the Contractor's payment bond according to the Public Construction Bond Act, 30 ILCS 550.

SPECIAL PROVISION FOR SUBCONTRACTOR AND DBE PAYMENT REPORTING (BDE)
Effective: April 2, 2018

Subcontractor and Disadvantaged Business Enterprise Payment Reporting

The Contractor shall report all payments made to the following parties:

(a) first tier subcontractors;

(b) lower tier subcontractors affecting disadvantaged business enterprise (DBE) goal credit;

(c) material suppliers or trucking firms that are part of the Contractor's submitted DBE utilization plan.

The report shall be made through the Department's on-line subcontractor payment reporting system within 21 days of making the payment.

SPECIAL PROVISION FOR NPDES CERTIFICATION

In accordance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter I), and the Clean Water Act, and the regulations thereunder, this certification is required for all construction contracts that will result in the disturbance of one or more acres total land area.

The bidder certifies under penalty of law that he/she understands the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR100000) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

The Airport Owner or its Agent will:

1) prepare, sign and submit the Notice of Intent (NOI)

2) conduct site inspections and complete and file the inspection reports

3) submit Incidence of Non-Compliance (ION) forms

4) submit Notice of Termination (NOT) form

Prior to the issuance of the Notice-to-Proceed, for each erosion control measure identified in the Storm Water Pollution Prevention Plan, the contractor or subcontractor responsible for the control measure(s) must sign the above certification (forms to be provided by the Department).

ILLINOIS WORKS APPRENTICESHIP INITIATIVE – STATE FUNDED CONTRACTS (BDE)
Effective: June 2, 2021
Revised: September 2, 2021

Illinois Works Jobs Program Act (30 ILCS 559/20-1 et seq.). For contracts having an awarded contract value of $500,000 or more, the Contractor shall comply with the Illinois Works Apprenticeship Initiative (30 ILCS 559/20-20 to 20-25) and all applicable administrative rules. The goal of the Illinois Apprenticeship Works Initiative is that apprentices will perform either 10% of the total labor hours actually worked in each prevailing wage classification or 10% of the estimated labor hours in each prevailing wage classification, whichever is less. The Contractor may seek from the Department of Commerce and Economic Opportunity (DCEO) a waiver or reduction of this goal in certain circumstances pursuant to 30 ILCS 559/20-20(b). The Contractor shall ensure compliance during the term of the contract and will be required to report on and certify its compliance. An apprentice use plan, apprentice hours, and a compliance certification shall be submitted to the Engineer on forms provided by the Department and/or DCEO.

REVISIONS TO THE ILLINOIS PREVAILING WAGE RATES

The Prevailing rates of wages are included in this Contract proposal. The rates have been ascertained and certified by the Illinois Department of Labor for the locality in which the work is to be performed and for each craft or type of work or mechanic needed to execute the work of the Contract. As required by Prevailing Wage Act (820 ILCS 130/0.01, et seq.) and this Proposal, not less than the rates of wages ascertained by the Illinois Department of Labor and as revised during the performance of a Contract shall be paid to all laborers, workers and mechanics performing work under the Contract. Post the scale of wages in a prominent and easily accessible place at the site of work.

If the Illinois Department of Labor revises the prevailing rates of wages to be paid as listed in the specification of rates, the contractor shall post the revised rates of wages and shall pay not less than the revised rates of wages. Current wage rate information shall be obtained by visiting the Illinois Department of Labor web site at https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/Rates.aspx or by calling 312-793-2814. It is the responsibility of the contractor to review the rates applicable to the work of the contract at regular intervals in order to insure the timely payment of current rates. Provision of this information to the contractor by means of the Illinois Department of Labor web site satisfies the notification of revisions by the Department to the contractor pursuant to the Act, and the contractor agrees that no additional notice is required. The contractor shall notify each of its subcontractors of the revised rates of wages.

Item No. 2A VE057

Letting Date: September 22, 2023

SECTION III

SPECIAL PROVISIONS

FOR

UPGRADE AIRPORT PERIMETER FENCE

IL PROJ: DNV-5046

AT

VERMILION REGIONAL AIRPORT

DANVILLE, ILLINOIS

LETTING DATE: SEPTEMBER 22, 2023

SUBMITTAL DATE:
JULY 28, 2023

Prepared By:

CRAWFORD, MURPHY & TILLY
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Springfield, Illinois 62702

Exp. 11/30/23
ERIC HILLS
062.070576
LICENSED PROFESSIONAL ENGINEER OF
ILLINOIS
7/26/23

GENERAL

These Special Provisions, together with the Standard Specifications for Construction of Airports, Rules and Regulations, Payroll Requirements and Minimum Wage Rates which are hereto attached or which by reference are herein incorporated, cover the requirements of the State of Illinois, Division of Aeronautics, and the representatives of the Vermilion Regional Airport for the construction of *Upgrade Airport Perimeter Fence* at the Vermilion Regional Airport in Danville, Illinois.

The Supplementary Special Provisions are also included to specify materials, testing, construction methods, etc. to describe the work not included in the Standard Specifications for Construction of Airports.

GOVERNING SPECIFICATIONS AND RULES AND REGULATIONS

The **"Illinois Standard Specifications for Construction of Airports"**, State of Illinois, Department of Transportation, Division of Aeronautics, dated April 1, 2012 shall govern. In the case of conflict with any part or parts of said specifications, the said Special Provisions shall take precedence and shall govern. Where noted within the Special Provisions, the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction dated January 1, 2022 shall apply. Where conflicts arise regarding contract documents versus IDOT Highway Standards and Standard Drawings, the contract documents shall govern.

The Standard Specifications can be obtained from the Illinois Department of Transportation, Division of Aeronautics website at:
https://public.powerdms.com/IDOT/documents/2083173/Standard%20Specifications%20for%20Construction%20of%20Airports%202012
or from the Division of Aeronautics.

INDEX TO SPECIAL PROVISIONS

INDEX TO SUPPLEMENTARY SPECIAL PROVISIONS

DIVISION I – GENERAL PROVISIONS

SECTION 40 – SCOPE OF WORK

40-05 MAINTENANCE OF TRAFFIC

ADD: The Contractor shall provide 10-days of notice to the Airport Manager prior to the start of construction.

The Contractor shall provide and maintain construction entrance signage on all public use roads intended to be used by his operations as required by the Airport, Township, County, and/or State. The Contractor shall be responsible for coordinating all hauling and access on city, township, or county roads with the agency responsible for the roadway.

SECTION 50 – CONTROL OF WORK

50-01 AUTHORITY OF THE ENGINEER

ADD: The Resident Engineer shall not be allowed to modify the contract documents without the approval of the Division of Aeronautics.

50-04 COOPERATION OF CONTRACTOR

ADD: A weekly progress meeting shall be scheduled during construction to discuss work areas, scheduling, etc. The superintendent for the project, the subcontractor's foreman, and the Resident Engineer are required to attend this meeting. The Airport Management and the Division may attend the meeting.

The completion of the individual phases/ pavement closures within the times specified or discussed at the weekly meetings is of extreme importance to the Airport. The Contractor shall update his progress schedule as required for the scheduled progress meetings. No additional compensation will be made for accelerated work to meet schedule and/or contract time. If the Contractor falls behind schedule for any reason, including weather delays, s/he shall work extra hours or add extra crews to attempt to complete the project within the original schedule milestones.

50-05 COOPERATION BETWEEN CONTRACTORS

ADD: Other contracts may be under construction concurrently resulting in more than one Contractor working on the Airport at the same time.

The Contractor shall plan and conduct his work so as not to interfere or hinder the progress or work being performed by the other Contractor. The timely prosecution of the overall project is dependent upon the proper coordination between Contractors.

It is to be fully understood by the Contractor that the prosecution of the overall projects and the safety and convenience of the aviation travelling public are the governing criteria for resolving conflicts which may arise between his schedule and the schedule of other Contractors. When conflicts arise, resolution of such conflicts will be made by the Airport Manager through the Resident Engineer in the best interest of the Airport. Delays, changes in scheduling, or expedition of work under this contract to coordinate the timely prosecution of work will be considered incidental to the contract and no additional compensation will be allowed.

The Contractor shall acquaint himself with all ongoing contracts prior to bidding and shall cooperate with the Owner and any other Contractors who may be working on other contracts.

50-06 CONSTRUCTION LAYOUT STAKES

DELETE: The first paragraph.

ADD: As the first paragraph:

The Contractor will be required to furnish and place construction layout stakes for the project.

RESPONSIBILITY OF THE RESIDENT ENGINEER

DELETE: Lines A & B.

ADD:

A. The Resident Engineer will locate and reference three (3) control points within the limits of the project.

B. Benchmarks will be established along the project outside of construction lines.

DELETE: Line D.

REVISE: Line E to read:

"The Resident Engineer may make random checks…"

DELETE: Line F.

DELETE: Line L.

DELETE: Line J.

ADD: As paragraph M:

M. It is not the responsibility of the Resident Engineer to check the correctness of the Contractor's stakes or forms, except as provided herein; however, any errors that are apparent shall be immediately called to the Contractor's attention, and he shall be required to make the necessary correction before the stakes are used for construction purposes.

RESPONSIBILITY OF THE CONTRACTOR

ADD:

H. The Contractor shall immediately notify the Resident Engineer of conflicts or discrepancies with the established control points.

I. Construction layout shall not be paid for separately but shall be considered incidental to the pay item for which the layout is required.

50-12 LOAD RESTRICTIONS

ADD:

Access to the construction work area is limited to the haul routes as shown on the site plan and construction activity plan drawings. The use of existing airport pavements by the contractor's construction traffic, including all haul traffic, is limited to the hauling routes as shown on the site plan and construction activity plan drawings. Use of existing airfield pavement other than as shown on the site plan and construction activity plan drawings is prohibited. Any damage to existing airfield pavement due to construction traffic operating beyond the approved work limits, hauling outside of the approved haul/access routes and construction traffic operating in prohibited areas shall be repaired by the Contractor at his own expense to the satisfaction of the Owner.

If it is found the fully loaded delivery trucks are excessively damaging the Airport or local roadway pavement, the Contractor shall limit the weight of the material being hauled onto the site. The Resident Engineer shall determine what is considered excessive damage. No payments will be made for additional hauling that may be required due to load restrictions.

The Contractor shall coordinate construction hauling, construction access and load restrictions with the local jurisdiction responsible for that roadway i.e. County Superintendent of Highways and/or the Township Road Commissioner. The Contractor shall be responsible for damage to any road caused by his construction operations. Any damage to existing public roads shall be repaired by the Contractor at his own expense to the satisfaction of the Owner.

50-13 MAINTENANCE DURING CONSTRUCTION

ADD:

Material tracked onto public use roads shall be removed and disposed of continuously during the work.

50-16 FINAL INSPECTION

DELETE: The first sentence of the first paragraph.

ADD: As the first sentence of the first paragraph.

Upon due notice to the Resident Engineer from the Contractor of presumptive completion of the entire project, the charging of Contract Time shall be suspended and the Engineer will make an inspection.

ADD: After the first sentence of the second paragraph:

The charging of Contract Time shall resume on the day following the inspection and shall continue until the remaining work, including the applicable requirements of Section 40-08, Final Clean-up, is completed to the Engineer’s satisfaction.

50-18 PLANS AND WORK DRAWINGS

ADD: After the third paragraph:

Submittals shall include items such as: Contractor’s, manufacturer’s, or fabricator’s drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Prior to submission, the Contractor shall review all shop drawing submittals for accuracy, completeness, and compliance with the contract requirements. The Contractor shall stamp, sign and date each submittal indicating Contractor approval of the submittal.

When submittals require close coordination of a number of products, the Contractor shall coordinate a concurrent submittal of all such products. The Project Engineer may withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Any deviation from contract requirements shall be clearly identified on the shop drawing submittal and supporting documentation for such deviation shall be attached. The Project Engineer reserves the right to rescind inadvertent acceptance of submittals containing unidentified deviations.

REVISE: The second sentence of the seventh paragraph to read as follows:

Such review will not relieve the Contractor of the responsibility for complying with the contract document requirements or for any error that may exist in the submittal. The Contractor is responsible for the dimensions and designs of adequate connections, detail and satisfactory construction of all work.

EDIT: Information to be included on shop drawing submittals shall conform to the following:

PROJECT LOCATION:	**Vermilion Regional Airport**
PROJECT TITLE:	**Upgrade Airport Perimeter Fence**
PROJECT NUMBERS:	**Illinois Project: DNV-5046**
CONTRACT ITEM:	**(Pay Item Name & Number) i.e.: AR162722 – Electric Gate – 22'**
SUBMITTED BY:	**(Contractor/Subcontractor Name)**
DATE:	**(Date of Submittal)**

This information shall be included on each page of each submittal.

ADD: **The Project Engineer shall return incomplete or vague material shop drawing submittals for completion prior to review.**

Shop drawing submittals shall contain a letter of certification from the **producer** stating that all materials furnished for the project conform to the requirements of the plans and specifications. Letters of certification from the producer shall be dated no more than six (6) months prior to the date it is submitted to the Project Engineer. Letters of certification from producers to verify submitted material conforms to the requirements of the contract shall be submitted on company letterhead and include the project name, location and project numbers. Submittals not including this information shall not be reviewed and returned as incomplete. Incomplete shop drawing submittals causing re-submittal(s) shall not be allowed as justification for additional contract time.

The Project Engineer will review each submittal; mark corrections or modifications required and return it to the Contractor. The Project Engineer will review each submittal with an action stamp and will mark the stamp appropriately to indicate action taken as follows. Submittals marked "Resubmit with Corrections" or "Rejected" shall not be used at the project site. **All submittals must ultimately receive "No Exceptions Taken" stamp from the Project Engineer to be eligible for payment.** Submittals stamped "Exceptions Taken as Noted" are **not** considered approved shop drawings.

1. "No Exceptions Taken": Means fabrication/installation may be undertaken.
   Submittals stamped as such do not authorize changes to the contract price or time.
2. "Exceptions Taken as Noted": Same as "No Exceptions Taken" provided the

Contractor complies with the corrections noted on the submittal by the Project Engineer. The Contractor is still obligated to resubmit the submittal including the corrections made by the Project Engineer so ultimately a shop drawing stamped "No Exceptions Taken" may be forwarded to the Division. Submittals not stamped Approved are not considered approved shop drawings.

3. "Resubmit with Corrections": Fabrication and/or installation MAY NOT be undertaken. Make appropriate revisions and resubmit limiting corrections to items marked.

SECTION 60 – CONTROL OF MATERIALS

60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

REVISE: The first sentence of the third paragraph as follows:

". . . shall provide, prior to delivery, . . ."

SECTION 70 – LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-10 BARRICADES, WARNING SIGNS & HAZARD MARKERS

ADD: After the second paragraph:

The Contractor shall provide and install any warning signs (trucks entering highway, etc.) and provide flagman as required by the agency responsible for public roadway jurisdiction i.e. Vermilion County Highway Department and/or Illinois Department of Transportation. Any and all costs for signage or traffic control shall be borne by the Contractor.

The Contractor shall be required to provide a 24-hour phone number for emergency barricade and barricade lighting maintenance.

Contractor identification shall be displayed on both sides of all Contractor vehicles by labeling painted on the vehicles or by magnetically attached signs.

70-13 RESPONSIBILITY FOR DAMAGE CLAIMS

REVISE: In the second sentence of the first paragraph, change the word “inspection” to “observation”.

REVISE: In the last sentence of the fourth paragraph, change the word “inspection” to “observation”.

70-17 CONTRACTOR’S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS

DELETE: “Person to Contact” table after the second paragraph.

ADD: After the second paragraph:

Maintenance of Airport Systems is critical to the operation of the Airport and the safety and/ or security of the traveling public. Prior to beginning work the Contractor shall investigate existing systems which may be located within the work area and locate all existing utilities. The Contractor may seek assistance from the JULIE, Engineer, Resident Engineer, Airport and FAA with locating utilities but the final responsibility for all utility locates lies solely with the Contractor. If the Contractor’s investigation reveals that a utility must be relocated to allow for the performance of the work in the plans, the Contractor shall immediately notify the Resident Engineer and remain clear of the utility until resolution has been determined by the Division and the Airport. Any system, including but not limited to systems associated with security, air navigation, weather, airfield lighting damaged by the Contractor’s operations shall be immediately repaired to the satisfaction of the owner. No delay shall be taken in the repair of the damaged facility. The Contractor shall not be allowed to finish work for the day until the utility has been repaired.

The Contractor shall be responsible for locating Airport owned utilities. The following table includes contact numbers that may provide assistance for locating cable. The personnel listed in the table are in no way responsible for damage to existing utilities.

If, in the Contractor’s opinion, additional assistance is needed to locate the utility service or facility, the Contractor shall enlist the assistance of a qualified technician or professional utility location firm to accurately locate underground utilities or facilities prior to excavation. Prior to commencing this detailed location work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such owner of his/her plan of

operation and request the presence of a representative of the owner to observe the work. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

Only after the investigation has been made should the Contractor begin excavation operations. Upon beginning these operations, the Contractor shall use extreme caution in the methods utilized. The Contractor shall utilize exploratory trenching or small tool excavation practices when beginning operations in critical areas to verify that the utilities are clear of the area of interest or to verify the location and depth of these facilities.

Should any utilities or cables require location, the following people shall be contacted:

Vermilion Regional Airport

Utility Service or Facility	Person to Contact	Contact Phone
Airfield and Roadway Lighting Cables	Doug Hardy	217-442-4624
FAA Control and Communications Cable	Jared Ramsey	217-355-4040
Sanitary Sewer	Doug Hardy	217-442-4624
Electric Cables – Public	J.U.L.I.E.	1-800-892-0123
Water	J.U.L.I.E.	800-892-0123
Telephone Cables	J.U.L.I.E.	800-892-0123
Gas Lines	J.U.L.I.E.	800-892-0123
All Utilities	Doug Hardy	217-442-4624

Any utility damaged by the Contractor shall be repaired by the Contractor to the satisfaction of the Owner and shall be at the cost of the Contractor. In the event that an existing utility is damaged during construction, all other work on the project shall be suspended until the utility is repaired. No additional time will be awarded to the Contractor for delays in the project due to damaged utilities. It is a high priority to the airport that all existing Airport utilities, unless otherwise noted in the plans, remain in good working condition throughout the duration of the project.

Special care shall be taken on all operations and particularly near pavement edges to avoid damage to edge lights and all underground electrical cable on the airport. The approximate location of existing underground cable is shown on drawings. Any airfield lights or cable that are broken and require replacement because of the Contractor's operations will be replaced by the Contractor at his/her own expense.

Any airfield cable repairs or replacement to any part of the electrical system made necessary by the Contractor's operations will be made by him/her in the manner specified in Sections 108 and 125 at no cost to the Airport. Cost of replacement to be borne by the Contractor shall include any expense incurred in locating as well as repairing or replacing damaged parts of the system by the owning agency.

70-26 CONTRACTOR'S RESPONSIBILITY FOR SAFETY DURING CONSTRUCTION

ADD: At the end of this section:

E. Restrict movement of construction vehicles to construction areas with flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate or as shown in plans.

F. Ensure that no construction employees, employees of subcontractors or suppliers, or other persons enter any part of the aircraft operations area from construction site.

G. Provide a 24-hour point of contact that will coordinate an immediate response to correct any construction-related activity that may adversely affect the operation of the Airport.

SECTION 80 – PROSECUTION AND PROGRESS

80-08 DETERMINATION AND EXTENSION OF CONTRACT TIME

ADD: After the fourth paragraph:

The Engineer will make charges against Contract Time after the presumptive completion of the entire project as provided for in Section 50-16, Final Inspection.

ADD: After the last paragraph of this section:

For this project, the following number of calendar days available for work per month has been assumed to be:

Month	Workable Calendar Days
January	0
February	0
March	0
April	0
May	15
June	17
July	17
August	17
September	16
October	16
November	14
December	0

For an extension of contract time due to inclement weather to be considered, the actual total number of calendar days available for work on controlling items must be less than the total number of workable calendar days assumed for the duration of the contract.

Requests for extension of contract time on calendar day projects caused by inclement weather, shall, as a minimum, be supported with National Weather Bureau data and project diaries. Requests for extension of contract time due to inclement weather will not be considered until after final acceptance.

As part of the request for contract time extension review, consideration may be given to how timely the Contractor prosecuted the work up to the point of the delays and the efforts by the Contractor to get back on schedule including the addition of labor or equipment and the extension of work hours and work days.

No allowance will be made for anticipated profits.

During the weekly progress meetings, the production rates of the Contractor will be analyzed. If it is determined by those in attendance that generally and reasonably the work has fallen behind schedule or will not be completed under normal circumstances in the specified time frames, the Contractor will be required to increase his forces and/or extend working hours per day.

DIVISION II – PAVING CONSTRUCTION DETAILS

ITEM 150510 – ENGINEER'S FIELD OFFICE

DESCRIPTION

150-1.1 ADD: The Airport will provide the office location for the Field Office within the existing Airport building. The Contractor shall be responsible for furnishing and maintaining the space as stated herein.

CONSTRUCTION METHODS

150-2.1(A) ADD: …and one adjustable office chair on rolling wheels, 2 – 3'x4' desks, bottled water, copy machine/scanner capable of printing and scanning in color on 8.5x11 and 11x17. Reliable access to the internet for office use, such as a portable wifi card using cellular data.

DELETE:

150-2.1(B THOUGH KM) DELETE THESE PARAGRAPHS

BASIS OF PAYMENT

150-3.1 ADD:

Payment will be made under:

Item AR150510 – Engineer's Field Office – per lump sum

ITEM 150520 – MOBILIZATION

DESCRIPTION

150-1.1 DELETE: THIS SECTION

ADD:

This item of work shall consist of mobilization required by the contract at the time of notice to proceed, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable.

If additional mobilization activities and costs are required during the performance of the contract as a result of added items of work, such costs shall be included in the unit price for the item or items of work added. This does not apply to any approved “time and materials work.”

This item also includes all efforts related to restoration of the project site, staging area and haul road as directed in the bidding documents at the conclusion of the job. This activity includes, but is not limited to, incidental grading, seeding and clean-up, as required to restore the project site to original condition.

150-1.3 ADD NEW SECTION

Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster “Equal Employment Opportunity is the Law” in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL “Notice to All Employees” Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Department.

BASIS OF PAYMENT

150-3.1 REMOVE AND REPLACE FIRST PARAGRAPH WITH:

This item shall be paid for at the lump sum price for MOBILIZATION. The amount which a Contractor will receive payment for, according to the following schedule, will be limited to six percent of the original Base Bid contract amount. Should the bid for mobilization exceed six percent, the amount over six percent will not be paid until final acceptance of the project by the Engineer.

ADD:

Payment will be made under:

Item AR150520 – Mobilization – per lump sum.

ITEM 610 – STRUCTURAL PORTLAND CEMENT CONCRETE

DESCRIPTION

610-1.1 ADD:

In lieu of the requirements of Sections 610-2.1 through 610-2.7, the Contractor may provide a Class SI concrete meeting the requirements of the current Illinois Department of Transportation (IDOT or the Department), Standard Specifications for Road and Bridge Construction (latest edition). The mix design must be pre-approved by the Department prior to submittal to the RPR for review. As a minimum, the Class SI mix design shall indicate the following information:

a) The name, address, and MISTIC producer number for the concrete,
b) The source, MISTIC producer/supplier number, gradation, quality, and SSD weight for the coarse and fine aggregates,
c) The source, MISTIC producer/supplier number, type, and weight of the cementitious materials and/or fly ash,
d) The source, MISTIC producer/supplier number, dosage rate of all admixtures,
e) Recent substantiating test data.

METHOD OF MEASUREMENT

610-4.1 ADD:

Concrete shall be considered incidental to the project and no separate measurement for payment shall be made.

DIVISIION III – FENCING (WIRE FENCES)

ITEM 162 – CHAIN-LINK FENCE

DESCRIPTION

162-1.1 ADD: This item shall also consist of furnishing and erecting Electric Slide Gates in accordance with the requirements below, the Supplementary Special Provisions (Sections 26 01 26 through 28 10 00), and the details shown on the plans.

MATERIALS

162-2.2 DELETE: This entire section.

162-2.11 ADD NEW SECTION

Gate Operator. Gate operator shall be 1HP minimum or as recommended by the gate manufacturer. The gate operator shall operate on 240VAC, 1-Phase and controlled by detector loops, card readers and remote controllers integrated into plastic cards (wallet size). The installation of gate operator shall be as detailed on the plans.

CONSTRUCTION METHODS

162-3.1 ADD:

Existing Air Power Unit (APU) along existing fence line and as denoted on the plans shall be removed and disposed of at the contractor's expense and shall be considered incidental to Remove Class E Fence. All electrical services for APU shall be properly capped.

To remove the existing fencing that is surface-mounted to the existing pavement, the Contractor shall carefully remove all concrete anchor bolts and base plates without damaging the pavement. Any bolts or other pavement penetrations that cannot be removed shall be ground flush with the top of the pavement.
Upon removal of surface-mounted fencing, the Contractor shall fill holes in the pavement with nonshrink grout or epoxy.

162-3.12 DELETE: This entire section.

162-3.13 ADD NEW SECTION

Installing Electric Gates. The Contractor shall install new electric gates as detailed on the plans to the satisfaction of the owner. Signs shall be installed on the gate as detailed on the plans.

METHOD OF MEASUREMENT

162-4.1 REVISE TO READ:

Class E Fence (Chain Link) shall be measured in its final position from outside to outside of end posts or corner posts and shall be the length of fence actually constructed, inclusive of any non-electrified driveway gates and pedestrian gates. Non-electrified driveway gates and pedestrian gates will not be measured separately for payment.

162-4.2 DELETE: This entire section.

162-4.3 REPLACE: This entire section with the following.

Class E Fence Removal to be paid for shall be the actual length of fence (including post widths) removed, inclusive of pedestrian and vehicle swing gates. Pedestrian gates, vehicle swing gates, and other chain link appurtenances (not electrified) shall be measured per linear foot as “Remove Class E Fence”.

162-4.4 DELETE: This entire section.

162-4.5 DELETE: This entire section.

162-5.5 DELETE: This entire section.

162-5.6 ADD NEW SECTION

Electric gates will be measured as complete units, per each. This item shall include but not limited to all labor, materials, and incidentals necessary to complete electric gate, gate operator, card readers on gooseneck stands, detector loops, access card printing machine, software, cabling, power/control rack, circuit breakers, cable/conduits for power and communication, light pole, light pole foundation, cameras, and all incidental items required for a complete and operational electric gate with access control system and as specified in specification Division 26 and Division 28. Signs to be affixed to the gate will not be measured for payment and instead shall be considered incidental to the gate item.

BASIS OF PAYMENT

162-5.2 DELETE: This entire section.

162-5.3 REPLACE: Class E Fence Removal

WITH: Remove Class E Fence

162-5.4 DELETE: This entire section.

162-5.5 REPLACE: Class E Gate Removal

WITH: Remove Gate

ADD: Payment will be made under:

Item AR162722 – Electric Gate – 22’ – per each.

Item AR162900 – Remove Class E Fence – per foot.

Item AR162908 – Remove Electric Gate – per each.

Item AR800303 – Remove Electric APU – per each.

Item AS162506 – Class E Fence 6’ – per foot.

Item AS162900 – Remove Class E Fence – per foot.

Item AT162506 – Class E Fence 6’ – per foot.

Item AT162722 – Electric Gate – 22’ – per each.

Item AT162900 – Remove Class E Fence – per foot.

Item AT162908 – Remove Electric Gate – per each.

DIVISION III(SP) – SPECIAL PROVISIONS

ITEM SP. NO. 1 PANEL FENCE

DESCRIPTION

SP-1.1 This item of work shall consist of furnishing and installing new security panel fence and non-electrified swing gates at the locations shown on the plans. The work shall be in accordance with this specification and in accordance with the details as shown on the construction plans.

The fence shall be the product of a manufacturer who has demonstrated by actual installation of a similar nature that the product is of the type required. The Contractor shall include all supplementary parts necessary or required for a complete and satisfactory installation within the true meaning and intent of the drawings. All runs of the fence shall present the same general appearance and the product supplied shall be of one manufacturer, except for items which do not influence the appearance or quality of the completed fence.

Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

MATERIALS

SP-2.1 GENERAL. The manufactured panels and posts shall be subjected to multi-stage pretreatment/wash, followed by an application of a primer and a topcoat. The minimum cumulative coating thickness shall be 2-4 mils. All panels, pickets, rails, and accessories shall be the color black.

The manufactured gates, panels and posts shall be capable of withstanding the following tests:

ASTM B117 Practice for Operating Salt Spray (Fog) Apparatus

SP-2.2 PANELS. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa). Panels shall be a standard height of 6’ tall, and panel width shall be determined by manufacturer’s requirements not to exceed 10’.

SP-2.3 PICKETS. Material for pickets shall be 5/8” square x minimum 16 Ga. Tubing. The rails shall be steel channel, minimum 14 Ga.

SP-2.4 GATES. The materials used for gate framing (uprights & diagonal bracing) shall be manufactured from ASTM A653 Steel with yield strength of 34,800 PSI, a tensile strength of 37,700PSI and a standard mill finish. Material for pickets shall be minimum 16 ga. Panel Single Swing Gates shall have a standard height of 6’ and clear opening of 5’. Panel Double Swing Gates shall have a standard height of 6’ and minimum clear opening of 16’. For the 16’ gate, it may be necessary for the panels to be greater than 6’ tall in order for the panel to be no more than three inches above the existing driveway yet allow the top rails to be in-line with the fencing adjacent to the gate.

SP-2.5 ACCESSORIES. All accessories when applicable shall be of the same manufacturer, type and color as the panels, pickets, and rails. Accessories include but are not limited to rail brackets, post brackets, post caps, and fasteners. Accessories shall be properly coated to prevent rusting, coating shall be black to match panels, pickets and other fence and gate components.

CONSTRUCTION METHODS

SP-3.1 CLEARING FENCE LINE. The site of the fence shall be sufficiently cleared of obstructions, and surface irregularities shall be graded so that the fence will conform to the general contour of the ground. The fence line shall be cleared to a minimum width of 2 feet on each side of the centerline of the fence.

This clearing shall consist of the removal of all stumps, brush, rocks, trees, fence, posts, or other obstructions which will interfere with proper construction of the same fence. The bottom of the fence shall be placed a uniform distance above the ground, as specified on the plans. When shown on the plans or as directed by the Resident Engineer, the existing fences which coincide with, or are in a position to interfere with, the new fence location shall be removed by the Contractor as a part of the construction work, unless such removal is listed as a separate item in the bid schedule. All holes remaining after post removal shall be refilled with suitable soil, sand, or other material acceptable to the Resident Engineer and shall be compacted properly with tampers.

The work shall include the handling and disposal of all material cleared, excavated, or removed, regardless of the type, character, composition, or condition of such material encountered.

SP-3.2 INSTALLING GATES AND FENCE. Install all gates and fence per manufacturer's requirements and as detailed in the plans. Install posts uniformly at the manufacturer's recommended spacing not to exceed 10'. Set posts in concrete in accordance with Item 610 and the plans. The top of the concrete bases shall be slightly above the ground, trowel finished, and sloped to drain away from the posts. Holes of full depth and size for the concrete bases for posts shall be dug to the size and depth as shown on the plans.

METHOD OF MEASUREMENT

SP-4.1 Panel Fence shall be measured in its final position from outside to outside of end posts or corner posts and shall be the length of fence actually constructed, except the space occupied by the gates. Panel Swing Gates shall be measured in units for each gate installed and accepted.

BASIS OF PAYMENT

SP-5.1 Payment will be made at the contract unit price per linear foot for panel fence. This price shall be full compensation for furnishing all materials and for all preparation, erection, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made at the contract unit price per each for panel gates. This price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item AR800300 – Panel Fence – per foot.

Item AR800301 – Panel Single Swing Gate – per each.

Item AR800302 – Panel Double Swing Gate – per each.

DIVISION X – SUPPLEMENTARY SPECIAL PROVISIONS

DIVISION 26 – ELECTRICAL
Section 26 01 26 – Testing Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

B. Contractor shall note that this section shall be considered a Supplement to testing requirements outlined or described in other sections of these specifications.

1.02 WORK INCLUDES

A. Extent of Work as required by the Drawings and these Specifications.

1.03 RELATED WORK

A. Specified elsewhere:
1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 19 – Low Voltage Conductors and Cables
3. Section 26 05 26 - Grounding and Bonding for Electrical Systems
4. Section 26 27 16 – Electrical Cabinets and Enclosures

1.04 QUALITY ASSURANCE

A. Regulatory Requirements
1. Governing Codes:
a. NFPA 70 – National Electrical Code (most current issue)

1.05 SUBMITTALS

A. Submit under provisions of Division 1.
1. Test Reports:
a. Test of entire electrical system as noted herein. Submit to the Engineer in triplicate.

PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish all equipment, tools, manpower, and labor to perform specified testing.

PART 3 EXECUTION

3.01 TESTING

A. After wires and cables are in place and connected to devices and equipment, the system shall be tested for short circuits, improper grounds, and other faults. When fault condition is present, the trouble shall be rectified, then re-tested. Where cable is found defective or damaged, it shall be removed and replaced in entirety; do not field repair. Cost for correction shall be considered incidental to the project.

B. All wiring devices and electrical apparatus furnished under this contract, when ground or shorted on any integral “live” part, shall be removed and the trouble rectified by replacing all defective parts and materials. Cost of correction is considered incidental to the project.

C. All feeder cables and other power distribution apparatus shall have a Megger resistance test conducted to determine that insulation resistance is not less than that recommended by the manufacturer, or as noted below.

Unless otherwise recommended by the manufacturer, insulation resistance testing shall meet or exceed the following on 600 Volt equipment utilizing 500 Volt resistance test instrument:

Conductors .....50 Meg-Ohms
Motors…….5 Meg-Ohms
Switchboards, MCC’s and Panelboards .....25 Meg-Ohms
Power Transformers .....5 Meg-Ohms

D. Contractor shall furnish all tests and shall provide all test equipment, meters, instruments, cable connections or apparatus necessary for performing tests as specified herein. All costs for testing shall be considered incidental to this item and will not be paid for separately.

E. Examine connections to equipment for proper phase relationships. Rotate phase conductors as necessary in order to correct.

F. All motors shall be tested under Section 26 29 01. All motors shall be tested for correct direction of rotation. Run tests on all motors shall be tested for correct direction of rotation. Run tests on all motors and verify that proper overload devices have been installed. Coordinate this task with motor supplier.

G. Testing of Ground System

1. Each and all grounded cases and metal parts associated with electrical equipment shall be tested for continuity of connection with the ground bus system by the Contractor in the presence of the Engineer or his representative.
2. All grounding electrode conductors brought in from the ground field shall be tested for satisfactory continuity and by resistance measurement

between the electrical equipment ground bus and the ground field. The grounding path shall not exceed 0.010 ohms.

3. Each Ground Field shall be tested for resistance to earth a “three-terminal” or “fall-of-potential” test as described in IEEE Standard #81. As an alternate, a specially designed clamp-on instrument such as AEMC Model 3710 (now superseded by Model 6416) or 3730 (now superseded by Model 6417) may be used if found acceptable to the engineer. Based upon measured field data, the Contractor shall calculate the ground field resistance and furnish record copies to the Engineer and Owner for record. In no case shall the ground field resistance exceed 25 ohms. If the resistance is found to be higher than 25 ohms, one additional rod shall be driven with a minimum separation equal to the length of the ground rod used and connected in parallel with the rod under test.

4. Exterior ground field resistance testing shall not be measured during unusually wet weather and should be performed during normal weather and soil conditions. Any tests incorrectly performed or not performed to the satisfaction of the engineer will be repeated. Costs for all such re-testing shall be considered incidental to the project.

5. All specified maximums and minimums of this specifications must be met. Complete test records of all tests shall be made and shall show resistance values obtained and calculations of same, showing method of test and calculation.

3.02 CORRECTION OF DEFECTS

A. When tests disclose any unsatisfactory workmanship or equipment furnished under this contract, correct defects and retest. Repeat tests until satisfactory results are obtained.

B. When any wiring or equipment is damaged by tests, repair or replace such wiring or equipment. Test repaired items to ensure satisfactory operation.

END OF SECTION 26 01 26

DIVISION 26 – ELECTRICAL
Section 26 05 00 – Common Work Results for Electrical

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is general in nature and applicable to electrical system work. Contractor is also directed to other sections of Division 26 - Electrical for additional related specifications for items described in this section.

B. Work included in this section shall apply to installation and testing of all materials and equipment necessary to completely install electrical system as shown on drawings and as described herein in these specifications, or as may be necessary for a complete and operational electrical system.

C. Unless otherwise noted, all electrical equipment shown on project drawings shall be furnished under Division 26.

D. Drawings pertaining to this installation indicate general location of conduits, wiring, distribution and motor control centers, lighting and outlets, and other details necessary for installation of system.

E. Electrical installation as shown on drawings and as specified herein is based upon best available information, with regard to characteristics of mechanical equipment specified. In the event changes are necessary in order to accommodate mechanical equipment furnished, necessary revisions will be made with approval of Owner’s representative.

F. Any minor changes in location of equipment, to include conduits, outlets, etc., from those shown on drawings, shall be made without extra charge if so directed by Owner’s representative. These changes shall be any changes in location that, had new location been the bid-upon location, would not have resulted in an increase in contract construction cost over that actually bid.

G. All electrical equipment shall be installed in conformance with applicable sections of NPFA 70 - National Electrical Code, respective equipment manufacturer's directions, as detailed on drawings and as specified herein. Any installations which void U.L. listing (or other third-party listing) and/or manufacturer's warranty of a device or equipment shall NOT be permitted.

H. RELATED CONTRACT WORK DESCRIBED ELSEWHERE IN THESE SPECIFICATIONS:

Electrical Contractor shall note that it is not the intent of these Division 26 specifications herein to be all-inclusive of electrically related work to be performed as part of this contract.

Contractor shall also comply with electrical requirements in these sections of the specifications, including, but not limited to, wiring of motors, control panels

furnished by others, HVAC equipment and all other electrically powered equipment furnished by others under this project.

1.02 LAWS AND ORDINANCES

A. In installation of this work, Contractor shall comply in every respect with requirements of National Electrical Code (NEC), National Board of Fire Underwriters, and any state and local requirements, laws and ordinances as may be applicable.

B. If, in opinion of the Contractor, there is anything in drawings or specifications that will not strictly comply with above laws, ordinances and rules, the matter shall be referred to the attention of the Owner's representative for a decision before proceeding with that part of the work. No changes on drawings or in specifications shall be made without the full consent of Owner's representative.

C. Contractor shall obtain and pay for all licenses, permits and inspections required by above laws, ordinances and rules for entire electric wiring job called for in these specifications and accompanying drawings.

1.03 DRAWINGS

A. Drawings for electrical work will be a part of electrical drawings to which will be added, during the period of construction, any other detail drawings as may be necessary in opinion of Owner's representative, to show proper installation of various appliances or equipment with relation to project.

B. Drawings and specifications are intended to be descriptive only, and any error or omissions of detail in either shall not relieve Contractor from obligations thereunder to install in correct detail any and all materials necessary for complete and operating electrical systems to extent shown on drawings and described in this specification.

C. Contractor shall, during progress of job, record any and all changes or deviations from original drawings, and, at completion of project, shall deliver to Owner's representative a single marked-up set of "as-built" drawings.

1.04 SHOP AND ERECTION DRAWINGS

A. This Contractor shall prepare shop drawings for all parts of his work. Before commencing any work or providing any material, Contractor shall submit for approval of Owner's representative all drawings relating to construction, arrangement or disposition of equipment entering into contract, and show complete equipment with manufacturer's specifications of same.

B. Shop drawings of all distribution and motor control centers, panels, power and lighting systems, fixtures, wire, cables, devices, etc. shall be submitted for approval, as well as complete details of all systems not shown in detail on drawings.

C. Shop drawings shall be fully descriptive of all materials and equipment to be incorporated into this project. Contractor shall carefully check all submitted shop drawings, making sure they are complete in all details and cover specific items as hereinafter specified.

D. Shop drawings shall be submitted in sufficient quantity as required by the General Conditions.

E. No material or equipment shall be allowed at the site until shop drawings approved by the Engineer are received by the Resident Engineer at the site.

F. The following information shall be clearly marked on each shop drawing, catalog cut, pamphlet, specifications sheet, etc. submitted:

PROJECT TITLE:
BRANCH OF WORK: ELECTRICAL
NAME OF BUILDING OR LOCATION:
PAGE OF DRAWINGS OR SPECS WITH WHICH EQUIPMENT COMPLIES:
DATE:
SUBMITTED BY:

PART 2 PRODUCTS

2.01 PRODUCTS SHALL BE AS SPECIFIED IN OTHER SECTION AND AS DETAILED ON THE DRAWINGS

PART 3 EXECUTION

3.01 EQUIPMENT STORAGE

A. Except as indicated below, all electrical equipment considered to be a part of this contract shall be stored before installation in a warm, dry, indoor area so as to protect the equipment from physical damage, freezing, dirt and any other harmful effects.

B. The following electrical equipment shall be permitted to be stored outdoors on pallets or without direct contact with the earth, under tarpaulins or plastic covers:

1. Conduit. Does not include boxed fittings, etc., which shall be stored indoors.
2. Cable Tray. Does not include boxed hardware, which shall be stored indoors.
3. Ground Rods.
4. Wire and Cable.
5. Rebar.
6. Strut-type framing members. Does not include boxed hardware, which shall be stored indoors.
7. Exterior pad mount transformers.

8. Exterior Pad-Mounted Med. Voltage Switchgear.
9. Other electrical equipment not listed herein, with written approval of the Owner’s Authorized Representative.

C. The following electrical equipment shall be permitted to be stored exposed outdoors on pallets or without direct contact with the earth:
1. Light Poles. Does not include light fixtures or boxed hardware, which shall be stored indoors.
2. Other electrical equipment not listed herein, with written approval of the Owner’s Authorized Representative.

D. The installation of electrical equipment shall not begin until the structure, if required, within which the equipment is to be permanently housed, is complete enough to provide protection from weather and vandalism (i.e. roof, windows and temporary padlockable or permanent doors installed).

E. The Contractor will be responsible for ensuring conformance with these procedures.

3.02 EQUIPMENT MOUNTING

A. All equipment and materials shall be installed and completed in a first-class workmanlike manner. The right is reserved to direct the removal and replacement of any item, which in the opinion of the Owner's Representative and/or Architect/Engineer does not present an orderly and reasonably neat or workmanlike appearance, provided such items can be properly installed in an orderly way by usual methods in such work.

B. The approximate location of all equipment and devices is shown on the Drawings. The Owner's Representative and/or Architect/Engineer reserves the right to change the location of all equipment or devices 6 ft in any direction at no additional cost provided such changes are requested before final installation.

C. Install all equipment with ample space allowed for removal and repair. Provide ready accessibility to removable parts of equipment and to all wiring without moving equipment which is installed or which is already in place. Provide access panels for all devices installed above non-accessible ceilings and/or within walls or partitions.

D. Install electrical equipment with due consideration to ventilating ducts, HVAC equipment, mechanical piping, etc., adjusting locations as necessary.

E. Electrical equipment shall be installed to maintain minimum clearances per Article 110 of NEC and ANSI C2 (National Electrical Safety Code.)

F. Electrical Contractor shall be responsible for furnishing and setting all anchor bolts required to install Electrical Contractor's equipment.

G. Where concrete mounting pads are required for electrical equipment mounting, Electrical Contractor shall furnish all concrete and form work necessary to complete the installation.

H. Where electrical equipment is located on damp or wet walls or locations as directed, it shall be "stand-off" mounted a minimum of ½" from wall in a manner so that rear of equipment is freely exposed to surrounding air. Method of mounting shall be approved by Owner's representative before equipment is mounted.

I. Unless otherwise noted, top of safety-switches, control panels, and similar equipment shall be 5'-0" above finish floor or finish grade.

J. Enclosures for panelboards, switches or overcurrent devices shall not be used as junction boxes, auxiliary gutters or raceways for conductors feeding through or tapping-off to other switches or overcurrent devices, unless adequate space for this purpose is provided and the equipment is listed for this use.

K. In order to maintain NEC ratings and classifications of cables, do not combine conduit contents or modify conduit materials of construction unless specifically directed or shown otherwise on project documents.

L. Per NEC 300.11(A)(2), when independent electrical equipment support wires are installed within dropped-ceiling areas, they shall be distinguished by color, tagging, or other permanent effective means.

3.03 COORDINATION

A. Provide day-to-day coordination with the work of other contractors engaged in this project. Execute the work in a manner not to interfere with other Contractors, and vice-versa.

B. Coordinate with other contractors regarding the location and size of pipes, raceways, ducts, openings, devices, so that there may be no interferences between installation or of the progress of any contractor.

C. Coordinate installation of equipment and wiring with the established construction schedule.

D. Provide temporary platforms and handrails as required, to allow installation of electrical components and raceway systems.

3.04 PROTECTION OF WORK

A. Protect work from injury by keeping all conduit and boxes capped and plugged or otherwise protected. This includes damage by freezing and/or stoppage from building materials, sand, dirt, or concrete.

B. Protect all equipment and fixtures from damages during the project, provide all tarpaulins, drop cloths, barricades, temporary heaters or auxiliary equipment.

C. All materials or equipment damaged during construction shall be repaired or replaced with new items to the satisfaction of the Architect/Engineer.

END OF SECTION 26 05 00

DIVISION 26 – ELECTRICAL
Section 26 05 05 – Electrical Demolition

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Work Includes
   1. Electrical demolition.

B. RELATED WORK (RESERVED)

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT (RESERVED)

PART 3 EXECUTION

3.01 EXAMINATION

A. The drawings are intended to indicate the scope of work required and not to indicate every box, conduit, or wire that must be removed.

B. Where walls, ceilings, etc., are indicated as being removed on general plans, the Contractor shall be responsible for the removal of all electrical equipment, devices, fixtures, wiring, systems, etc., from the removed area.

C. Where ceilings, walls, partitions, etc., are temporarily removed and replaced by others, this Contractor shall be responsible for the removal, storage, and replacement of equipment, devices, fixtures, raceways, wiring, systems, etc.

D. Verify that abandoned wiring and equipment serve only abandoned equipment or facilities. Extend conduit, wire and equipment to facilities or equipment which shall remain in operation following demolition. Extension of conduit wire equipment shall be compatible with surrounding area.

E. Coordinate scope of work with all other Contractors and the Owner's representative at the project site. Schedule removal of equipment and electrical service to avoid conflicts.

F. Bid submittal means Contractor has visited the project site and has verified existing conditions and scope of work.

G. Prior to beginning any work, the Contractor shall field determine all existing circuits and equipment powered by these circuits in the areas of demolition.

3.02 PREPARATION

A. Disconnect electrical systems scheduled for removal.

B. Coordinate outages with the Owner’s representative.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Demolish existing electrical work as outlined in the plans.

B. Remove existing electrical panels, conduit and cables to accommodate new construction.

C. Where possible, remove wiring and raceway to source of supply. Abandoned conduits which extend to below grade shall be removed to minimum of 1'-0" below grade and capped to prevent entry of water.

D. Remove exposed abandoned raceway. Cut raceway flush with walls and floors, and patch surfaces. Remove all associated clamps, hangers, supports, etc. associated with raceway removal.

E. Disconnect abandoned outlets and toggle switches and remove devices. Remove abandoned outlets and toggle switches if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlet boxes which are not removed.

F. Disconnect and remove existing electrical equipment as detailed on the plans.

G. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Maintain access and operation to existing electrical equipment which shall remain active.

J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CONTINUITY OF SERVICE DURING ELECTRICAL DEMOLITION

A. Contractor shall maintain continuity of service to all existing electrical equipment to remain in operation at the facility.

B. Contractor shall note that the proposed improvements under this contract shall occur at an airport that must remain in operation during the improvements. Construction sequencing to minimize power outages at the gate is mandatory.

C. There shall be no power outages of any kind or duration whatsoever without the written consent of the owner's authorized representative. Failure to comply with

this requirement could result in substantial penalty charges being assessed the contractor.

D. With assistance and approval of the owner's authorized representative(s), the contractor shall develop a written electrical demolition sequence schedule as part of the overall Electrical Construction Sequence Schedule. No electrical work shall begin without this written construction sequence schedule.

E. Prior to beginning of any work requiring a power outage of any kind or duration, the contractor shall have all labor, material and equipment on site and ready for use.

F. Maximum duration of any single power outage, whether partial or complete, shall be eight (8) hours - again, only with the written approval of the owner's authorized representative.

END OF SECTION 26 05 05

DIVISION 26 – ELECTRICAL
Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Work included in this section is supply of wire and cable to provide a complete and operational electrical system.

B. Any bid submitted to the Owner which contains cost adjustments for the current price of metals (copper and/or aluminum) will be rejected. Qualified bids in any form will not be considered.

C. Unless otherwise specified or detailed on the project drawings, all wire and cable shall be installed in conduit.

D. Unless otherwise specified or detailed on drawings, all wire and cable on this project shall be copper construction only.

E. Related Sections
1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 33 - Raceway and Boxes for Electrical Systems
3. Section 26 05 26 - Grounding and Bonding for Electrical Systems

F. Reference to Standards
1. ANSI/NFPA 70 - National Electrical Code
2. U.L Standard No. 44 - Thermoset-Insulated Wires and Cables.
3. IPCEA Publication No. S-66-524.
4. Federal Specification J-C-30B
5. ASTM Specification B-8.

1.03 SUBMITTAL REQUIREMENTS

A. Submit under provisions of Division 01.

B. Contractor shall submit for all cable types and sizes used on this project.

1.04 QUALIFICATIONS

A. Wire and cable shall be manufactured and supplied by a company regularly engaged in business of furnishing wire and cable. If required by Owner's

representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of wire and cable.

1.05 DELIVERY, STORAGE AND HANDLING

A. Wire and cable shall be delivered on reels or coiled in boxes. Wire and cables shall be stored and handled to prevent damage to conductor and insulation.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. RHW-2 / USE-2 WIRE

Unless otherwise noted on the drawings or specifications, all exterior cable shall be dual-rated type RHW-2/USE-2. Contractor should note that this applies to both direct buried cable and cable in conduit or duct.

Cable shall be 600 Volt rated, sized as indicated on the drawings. Cable shall comply with Underwriters Laboratories Standard U.L. 44 (for Type RHW-2) and U.L. 854 (for Type USE-2) and shall pass the IEEE 383, 70,000 BTU/hr and VW-1 Flame Tests. Cable insulation shall be abrasion, moisture, heat and sunlight resistant black cross-linked polyethylene (XLP). Cables shall be rated for use at 90°C in both wet and dry locations and be suitable for use in conduit, underground service entrance cable and direct burial applications.

B. THHN/THWN-2

Unless otherwise noted on the plans or specifications, all interior power wiring installed under this project shall be dual rated type THHN/THWN-2.

Cable shall be 600 Volt rated, sized as indicated on the drawings. Cable shall comply with Underwriters Laboratories Standard U.L. 83. Cables shall be rated 90°C in dry locations 75°C in wet locations. Conductors shall be annealed copper.

C. INSTRUMENTATION SHIELDED CABLE
(For use in Conduit)

Shielded instrumentation cable shall be used where required or shown on plans. Cable construction shall be #16 AWG tinned copper, polyethylene insulated, have #18 AWG stranded tinned copper drain wire and aluminum-polyester shield with 100% coverage. Overall jacket shall be polyvinyl Chloride (PVC). Cables shall be 60°C, 600 V rated and U.L. recognized.

1. 2-Conductor shielded instrumentation cable for use in conduit shall be Belden #8719, or equivalent.
2. 3-Conductor shielded instrumentation cable for use in conduit shall be Belden #8618, or equivalent.

D. CATEGORY 6 CABLE

1. UTP Cable to be 4 Pair, 23 AWG solid copper construction and Certified to TIA/EIA-568.2-D Category 6 requirements.
2. Cable shall accommodate transmission speeds up to 4.8 Gb/s.
   a. Riser cable shall be ITS/ETL Certified as CMP and listed as NEC type CMR per UL Standard 444. Riser cable shall be Belden DataTwist 4812 or equivalent.
   b. Plenum cable shall be NFPA 262, UL 910 (Plenum) FT6, listed as NEC type CMP per UL Standard 444. Plenum cable shall be Belden DataTwist 4813 or equivalent.

2.02 COLOR CODING

A. Color code conductor insulation for #10 AWG or smaller conductors. Color code conductors #8 AWG or larger with colored tape or colored insulation. Standard colors:

	120/240V 1 Phase 3W	240 V or 208/120V 3 Phase 3 or 4W	480V 3 Phase 3 or 4W	240/120V 3 Phase 4W,)
Phase A	Black	Black	Brown	Black
Phase B	Red	Red	Orange	Orange (high leg)
Phase C	N/A	Blue	Yellow	Blue
Neutral	White	White	Gray	White
Ground	Green	Green	Green	Green

B. Intrinsically safe wiring shall be light blue color insulation per ANSI/ISA RP12.6 and NEC 504 or per respective equipment manufacturer's recommendations.

C. Control wiring insulation color shall be red.

D. 120 VAC control wiring from a separate source (for example, 120 V control wiring from a control panel that supplies a remote located starter) shall be with yellow color insulation.

E. 24 VDC wiring shall be Blue for Positive and White with Blue Stripe for Negative.

2.03 WIRE PULLING LUBRICANT

A. Pulling lubricant shall be UL listed, water based, polymer solution. Lubricants containing waxes, soaps or combustible materials are not acceptable. Contractor shall verify the compatibility of the selected cable pulling lubricant and cable jacket materials proposed. Manufacturers/Lubricants shall be as follows, or equivalent:

1. American Polywater - Polywater J

2. Ideal Industries - ClearGlide
3. American Colloid - Poly-X
4. Buchanan - Quick Slip
5. ARNCO – HydraLube

2.04 SPLICES AND JOINTS

A. Splices and joints shall be as described below, or approved equivalent.

B. Interior applications:
1. #8 and smaller conductors:
a. Ideal “sing nut” type insulated connectors.
b. Scotchlok R, B, and Y type insulated connectors.
2. #6 and larger conductors:
a. New construction: For straight line connections, use compression connector with rubber insulating cover or boot.
b. New construction: For “Tee” cable taps, use compression connector with rubber insulating cover or boot.
c. Existing construction: For taps in cabinets, gutters and other close locations, use O-Z/Gedney type XW & XWC, XTP & XTPC or, PMX &PMXC, or equivalent.

C. Exterior applications

Note that below grade splices in manholes, handholes and vaults will not be allowed on this project unless specifically shown on drawings. Conductors are to be pulled continuous end-to-end unless otherwise noted or directed by the Engineer in writing.
1. #8 and smaller conductors:
a. Twist-on connectors pre-filled with silicone-based sealant to protect against moisture and corrosion. Units shall be UL 486D listed as weatherproof, waterproof and suitable for direct burial. Units shall be Ideal Industries “Underground” #64 or King Innovation “Dryconn King 6 Blue” Filled Waterproof Connectors, or equivalent.
2. #6 and larger conductors:
a. NSI/Polaris ISRW Series “Blue”
b. Ilsco Series USPA, DBK, SSK or PDSS

2.05 LINE MARKING TAPE

A. Where required or noted on the drawings, line marking tape shall be installed as specified. Electrical line marking tape shall be installed only if specifically noted on project drawings. Tape shall be minimum 5 mils thick constructed of aluminum foil encased in an impervious Mylar plastic coating. The minimum tensile strength determined in accordance with ASTM D882 is 15,000 PSI. The tape shall contain sufficient metal mass to provide detectability at depths up to 3 feet with a radio type metal locator. Tape shall be acid, alkali and corrosion resistant. Color shall be “RED”, corresponding to the standard color for electrical lines, and shall additionally be printed with “WARNING-ELECTRICAL LINE BELOW” or similar text. Line marking tape shall be as manufactured by Pro-Line Safety Products of

West Chicago, Illinois or equivalent. Unless otherwise indicated on the drawings, burial depth of tape shall be approximately 18" below finish grade.

PART 3 EXECUTION

3.01 INSTALLATION (WIRE CONDUCTORS)

A. Wire and cable shall be installed using accepted industry methods to prevent damage to conductors and insulation. Installation shall comply with all applicable sections of NEC regarding conduit fill.

B. No splices shall be permitted in conduit bodies. All splices shall be made in junction boxes, control panels, cabinets and light pole bases provided for that purpose as detailed or required by need.

C. Neatly train and lace wiring inside boxes, equipment and panelboards.

D. Drawings are diagrammatic in showing circuitry routing between devices and equipment. Provide all phase conductors, neutrals, switched and unswitched legs, grounds, etc., as required for a complete and operational electrical system.

E. All 120V circuits shall have individual neutral conductors. 120V circuits with “shared” neutral conductor shall not be permitted.

F. Minimum wire size shall be #12 unless otherwise noted. Where protected by 15A fuses, control wiring may be #14 AWG.

G. All conductors shall be continuous without splices except at locations approved for the purposes of splicing.

H. All wire sizes shall be stranded except where specifically approved otherwise.

I. Intrinsically safe wiring shall be separated from non-intrinsically safe wiring in compliance with Article 504 of the NEC and ANSI/ISA Standard RP12.6. Intrinsically safe wiring insulation color shall be blue.

J. All circuits shall be labeled in compliance with Section 26 05 53 – Identification for Electrical Systems.

K. Pulling eyes on conductors or a basket weave grip shall be used for pulling cable. Woven wire cable grips shall be used to pull all single conductor cable where pulling eyes are not available. Preferred method for pulling conductors is factory-installed eyes attached to conductors. All sharp points and edges on the hardware attaching the pulling rope to the cable shall be taped to prevent snagging or damaging the raceway.

L. When a cable grip or pulling eye is used for pulling, the area of the cable covered by the grip or seal plus 6 inches shall be cut off, and discarded when the pull is completed. When pulling loops are used, the entire loop shall be cut off and discarded when the pull is completed.

M. A non-binding type of swivel, or swivel connection shall be inserted between the pulling rope and the cable pulling eye, grip or loop to prevent twisting under strain and allow for free rotation of the cable during pulling.

N. The pulling tension of any cable shall not exceed the maximum tension recommended by the cable manufacturer. Pulling mechanisms of both the manual and power types shall have the rated capacity clearly marked on the equipment. Cable shall be installed using either hand-tension or by use of specially-designed “cable-tuggers”. Any cable pulled through conduit using trucks, back-hoe’s, earthmoving equipment or similar apparatus will be rejected and will be replaced with new cable at the Contractor’s expense.

O. Break-away shear-pins or other acceptable method of tension limitation shall be utilized on mechanical pulling equipment to prevent over-stressing cable during installation. To avoid insulation damage from excessive sidewall pressure at bends, the pulling tension, in pounds at a bend, shall not exceed 300 times the radius of the bend in feet.

P. As soon as the cable is pulled into place, the pulling eyes, cable grips, or pulling loops shall be removed. On exterior pulls, the remaining cable ends shall be temporarily resealed with either a minimum of three (3) wraps of 2" Scotch #23 rubber splicing tape or heat-shrink caps. Exposed cable ends shall be wrapped in such a manner to prevent unintentional water entry. Cable ends or seals shall be installed prior to the end of the workday.

Q. Cable shall not be bent to a radius of less than 4 times the overall diameter, including installation apparatus.

R. Cable supports and securing devices shall be installed to provide adequate support without deformation of the cable jackets or insulation.

S. All damaged or rejected cable shall be removed from the project site and replaced at no additional expense to the project.

3.02 CONNECTIONS AND TERMINATIONS (WIRE CONDUCTORS)

A. Identify each conductor in panelboards, junction or pull boxes, or troughs with a permanent pressure sensitive label with suitable numbers or letters for easy recognition. Identify control wiring at each end and in junction boxes with numeric wire number corresponding to control wiring diagram.

B. Thoroughly clean wire before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Terminate spare conductors with electrical tape, identify as “spares” and roll up in box.

3.03 TESTING (WIRE CONDUCTORS)

A. Inspect wiring for physical damage and proper connection.

B. All wire and cable shall be tested for continuity and short circuits prior to energizing circuits. Verify proper phasing, adjust as required.

C. CAT 6 Cable: Shall be tested in permanent link configuration. Testing shall be accomplished with a Level III test set with a minimum spectral frequency range of 1 to 250MHz. The test specifications for all installed cables must meet or exceed the specifications for CAT 6 cabling that are documented within the TIA/EIA- 568-C.1/2. Correct malfunctioning cables and retest to demonstrate compliance; otherwise remove and replace with new and retest. Typed or printed documentation must be provided listing all runs by location. The documentation must include the original instrument printouts detailing the results of all the tests. The documentation must also detail the date each cable was tested and the tester's name.

D. Comply with all applicable items in Section 26 01 26 and 26 05 00.

END OF SECTION 26 05 19

DIVISION 26 – ELECTRICAL
Section 26 05 26 – Grounding and Bonding for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.02 Work under this item includes the electrical grounding and bonding of the service entrance gear, electrical distribution equipment, metallic raceways, metallic enclosures, utilization equipment and other appurtenances for the work or equipment to be furnished under this project. In general, all work shall meet or exceed that defined in article 250 of the national electrical code NEC/NFPA 70.

1.03 This specifications section neither replaces any NEC requirements, nor are any NEC requirements not specifically identified considered deleted from the scope of work. Items listed in this section are furnished to either augment or exceed those established by NEC.

1.04 SUMMARY

A. Equipment grounding conductors

B. Grounding Electrodes

C. Grounding Electrode Conductors

D. Bonding

E. Related Sections
   1. Section 26 05 00 – Common Work Results for Electrical

F. Reference to Standards
   1. Article 250; ANSI/NFPA 70 - National Electrical Code (NEC)
   2. NFPA 780 – Standard for the Installation of Lightning Protection Systems

1.05 SUBMITTALS

A. Submit under provisions of Division 01.
   1. Ground rods
   2. Exothermic welding components

1.06 QUALIFICATIONS (RESERVED)

1.07 QUALITY ASSURANCE (RESERVED)

1.08 DELIVERY, STORAGE AND HANDLING

A. Ground rods shall be tie-wrapped together and stored away from contact with the earth.

B. Exothermic welds and hardware items shall not be shipped loose but shall be in boxes, labeled with material and equipment enclosed. Boxes shall be stored away from contact with earth and shall be protected from weather.

1.09 REGULATORY REQUIREMENTS (RESERVED)

1.10 COORDINATION

A. Installation of all Grounding and Bonding shall be coordinated with other trades and Sub-Contractors. Special attention is required for installation of Concrete-Encased Electrodes within structural footings.

1.11 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.12 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS (RESERVED)

2.02 EQUIPMENT SPECIFICATION

A. Ground rods shall be UL listed, single-piece, 3/4" diameter by 10' long copper-clad steel with minimum 10 mil copper cladding.

All buried connections of grounding and bonding components shall be via exothermic weld only. Clamp or compression grounding connections below grade will be rejected and replaced at Contractor’s expense.

B. Exothermic Welding Equipment Manufacturers
1. Erico – Cadweld
2. Continental Industries – Therm-O-Weld
3. Hagar – Ultraweld

C. Grounding conductors shall be 600 volt, same insulation type as used for phase conductors, green in color unless otherwise noted.

D. Grounding electrode conductors in contact to earth shall be bare, stranded, annealed copper. Grounding Electrode Conductors shall be the larger of that detailed on the project drawings, specified herein or as required by NEC.

PART 3 EXECUTION

3.01 INSTALLATION

A. A continuous grounding system shall be provided throughout the facility. The Contractor shall furnish and install all grounding and bonding as required per NEC and all Local Codes, whether or not specifically shown on the project drawings.

B. Except for separately derived systems, a single-point ground system is intended throughout the facility. So-called “Multi-point”, “independent”, “clean” or “separate” grounding systems that are not inter-bonded to the single-point facility system do not comply with NEC, are unsafe, and will be rejected.

1. On occasion, supplemental driven ground rods may be required on the project drawings. All such supplemental ground rods are to be bonded to the equipment grounding conductor and are NOT intended to indicate any separation of, or isolation from, the facility grounding system.

C. Equipment ground conductors (green insulated) shall be used solely for grounding and bonding purposes and be kept entirely separate from grounded neutral conductors (white insulation), except where bonded at the Service Entrance equipment.

1. The system Neutral and Ground conductors shall be bonded together through the Main Bonding Jumper in the Service Entrance Equipment only.
2. Unless otherwise directed on the project drawings, Grounding Electrode Conductors shall terminate on the Neutral Bus within the Service Entrance equipment.
3. The Main Bonding Jumper within the Service Entrance equipment shall be accessible for visual inspection.

D. Do not re-bond Neutral and Ground downstream unless required by special conditions, such as those described in NEC Article 250.32.

E. Grounding Electrode System

1. As a minimum, the Grounding Electrodes shall comply with NEC Articles 250.52 and 250.53. Where present at each new building or structure, all available Grounding Electrodes defined in NEC Article 250.52A1 thru A4 shall be interconnected to form the Grounding Electrode System.
2. Per NEC Article 250.68A, the Grounding Electrode System shall be installed in such a manner that each connection point may be visually inspected, unless encased by concrete or earth.
3. Per NEC Article 250.64, Grounding Electrode Conductors shall be installed without splice between Service Entrance Equipment Neutral bar and Grounding Electrodes. Where required due to distance or construction, splicing shall be permitted by means of exothermic welding only. Irreversible “H” and “C” type compression connectors shall NOT be utilized for Grounding Electrode Conductors.

a. Where exposed or visible, all Grounding Electrode Conductors (regardless of size) shall be protected from physical damage using non-metallic conduit, such as Schedule 40 PVC. Extend protective conduit as close as practical to the Grounding Electrode. Any metallic conduits installed by the Contractor for grounding electrodes must be bonded at both ends per NEC Article 250.64E.
b. Where a copper Grounding Electrode System Bus-Bar is indicated on the project drawings, it shall be sized as noted but no less than ¼"T x 2"W x 24"L.. Size of the single copper Grounding Electrode Conductor between the Service Entrance Neutral Bus and the Grounding Electrode System Bus-Bar shall be the larger of that shown in NEC Table T250.66 or as noted on the project drawings. Connection of Grounding Electrode Conductors to a Grounding Electrode System Bus-Bar shall be through the use of listed compression-type lugs bolted to the Bus-Bar.

4. Grounding Electrode Conductors shall be individually installed from the Service Entrance Neutral Bus (or Grounding Electrode System Bus-Bar) to the respective Grounding Electrode. "Looping" of Grounding Electrode conductors (extending a suitably-sized single grounding electrode conductor from electrode-to-electrode) shall NOT be utilized without written approval from the Engineer.
5. Connection of Grounding Electrode Conductors to individual Grounding Electrodes shall comply with NEC Article 250.70.
   a. Connection at all Grounding Electrodes shall be by use of exothermic welding. Clamp or compression connection connections shall NOT be utilized without written approval from the Engineer.
   b. Below-grade ground rod and associated ground wire shall be clean and dry before performing the exothermic weld. Verify that the proper size and type of exothermic weld kit is used before beginning work
   c. Exothermic welds shall be left exposed for inspection and approval before backfilling or otherwise concealing. Any unacceptable exothermic welds shall be redone, including any necessary replacement material (ground rods, ground wires, etc.) as needed to provide an accepted exothermic weld.
6. Non-Metallic conduits containing grounding electrode conductors shall not be supported with metal clamps that completely encircle the conduit. Use nylon nuts, bolts, straps and/or reinforced fiberglass or premium grade plastic resin strut support with non-metallic hardware as manufactured by Aickinstrut, or equivalent.
7. On projects where the only Grounding Electrode listed in NEC Article 250.52A through 250.52D is a metallic underground water pipe, it must be supplemented by another grounding electrode per NEC Article 250.53D2. Unless directed otherwise, the supplemental grounding electrode shall be a driven ground field.

a. Ground field shall consist of a triangle 10 feet on each side, with a driven ground rod at each vertex of the triangle. Size of the copper Grounding Electrode Conductor, and the bonding jumpers between all ground rods, shall be the larger of that shown on the project drawings or #6 AWG.
b. If required due to space constraints, furnish two (2) ground rods a minimum of 10 feet apart. Deviations from the triangular-shaped ground field shall require written approval by the Engineer prior to installation.

F. All metallic raceways, boxes, enclosures, etc. shall include an insulated equipment ground conductor. Due to corrosion, metallic raceway and conduit connectors alone WILL NOT be considered as meeting this requirement. The Equipment Grounding Conductor shall positively bond all electrical components and utilization equipment to the facility ground system.

G. All metallic boxes used for electrical equipment shall include listed grounding screws or lugs. No more than one grounding conductor shall be installed per lug location unless lug is listed for multiple conductors.

H. The largest factory-scored concentric conduit knockouts shall be used to provide conduit bonding to NEMA 1 & 3R enclosures.
1. If required, provide a conduit reducing hub for the specific conduit size terminated.

I. Equipment Grounding Conductors shall be sizes as shown in NEC T250.122, but no less than #12 AWG.

J. All other exposed metal piping (e.g. air, fire-protection, natural gas, metallic process piping etc.) and exposed structural steel not used as a Grounding Electrode shall be bonded to the Grounding Electrode System per NEC Article 250.104. Size of the copper bonding jumper shall be no smaller than that shown in NEC Table T250.66.

K. All communications systems described in NEC Chapter 8 shall be bonded to system ground. Installation shall comply with NEC Article 250.94 and Articles 800, 810, 820 and 830. Size of the copper bonding jumper shall be #6 AWG unless otherwise noted on the project drawings.

3.02 INTERFACE WITH OTHER SYSTEMS

(Where used on the project)

A. Interface with Surge Protective Devices installed under section 26 43 13.

B. Lightning Protection Systems shall be bonded per NEC Article 250.106. All Lightning Protection Systems shall be bonded to facility Grounding Electrode system on facility exterior. Isolated grounding for Lightning Protection Systems will not be allowed.

3.03 TESTING

A. As described in Specifications Section 26 01 26.

B. All grounded metal cases and parts associated with electrical equipment shall be tested for continuity with ground system.

C. If requested, testing shall be performed in the presence of the Owner's representative.

D. Provide a copy of all testing reports to Engineer for record purposes.

END OF SECTION 26 05 26

DIVISION 26 – ELECTRICAL
Section 26 05 29 – Hangers and Supports for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Strut-type framing for conduit and equipment supports

B. Cable Rack saddle-type supports

C. Anchors and Fasteners

D. Related Sections
   1. Section 26 05 00 – Common Work Results for Electrical

E. Reference to Standards
   1. ANSI/NFPA 70 - National Electrical Code.
   2. NECA - National Electrical Contractors Association.
   3. ASTM No. A570 G33
   4. ASTM No. A-123
   5. ASTM No. A-525
   6. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.03 SUBMITTALS

A. Submit under provisions of Division 01.

B. Product Data: Provide manufacturer's catalog data for fastening systems and supports.

C. Manufacturer's instructions: Include application conditions and limitations for use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination and installation of Product.

1.04 DELIVERY, STORAGE AND HANDLING

A. Stored conduit and equipment supports shall not be in contact with earth, but shall be on pallets or other above-grade supports. Conduit and equipment supports shall be covered to minimize exposure to weather.

B. Anchors and fasteners shall be stored in their original containers in a clean, dry place. They shall not be exposed to weather.

1.05 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.06 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MOUNTING STRUT

A. Where utilized, strut-type metal framing shall be provided to mount and support electrical equipment and enclosures as indicated on the drawings.

B. Strut-type supports shall be either aluminum or stainless-steel construction. Unless specifically identified for use on the drawings, painted or factory coated steel, galvanized steel or non-metallic strut are not acceptable alternates to this requirement. Use stainless steel on all project locations where strut is in direct physical contact with earth.

C. Unless specifically noted to be Type 316 Stainless Steel only, Stainless Steel strut-type metal framing may be Type 304 or Type 316 Stainless Steel.

D. Aluminum strut-type metal framing shall be Type 6063-T6 Aluminum.

E. All mounting hardware shall be stainless steel.

F. Manufacturers:
1. Unistrut: P-1000 EA (Aluminum), P-1000 SS (Stainless Steel)
2. B-Line: B22AL (Aluminum), B24SS (Stainless Steel)
3. Equivalent meeting specifications

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine all supports and fasteners for straightness, rust and corrosion. Do not use any equipment that is not straight or is rusted or corroded.

3.02 PREPARATION

A. All equipment shall be clean at time of installation. Remove all burs.

3.03 INSTALLATION

A. Install products in conformance with manufacturer’s instructions and as detailed in drawings.

B. Provide anchors, fasteners and supports in accordance with NECA Standard of Installation. Do not use spring steel clips or clamps except as noted in Section 26 05 29-3.03H.

C. Do not fasten supports to pipes (except where detailed on drawings), ducts, mechanical equipment (except where detailed on drawings), or conduit.

D. Install surface mounted cabinets, enclosures and panelboards with a minimum of four anchors.

E. Provide materials, sizes and types of anchors, fasteners, and supports necessary to carry loads of equipment and conduits. Consider weights of equipment and conduit when selecting products.

F. Provide all necessary hardware, such as floor flanges, in order to install equipment as specified or as shown on the drawings.

G. Include knee-braces and stiffeners as necessary to provide rigid support such that equipment does not bounce or sway.

H. Use spring-lock washers under all nuts.

END OF SECTION 26 05 29

DIVISION 26 – ELECTRICAL
Section 26 05 33 – Raceway and Boxes for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Work included in this section is conduits, raceways and fittings required for operation and maintenance of facility.

B. Related Sections
1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 19 – Low Voltage Conductors and Cable
3. Section 26 05 29 – Hangers and Supports for Electrical Systems

C. Reference to Standards
1. Federal Specifications WW-C-581d
2. Federal Specifications WW-C-540c
3. Federal Specifications WC-1094-A
4. ANSI C80.1
5. ANSI C80.3
6. ANSI C80.5
7. ANSI/NEMA OS-1 – Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports
8. UL 50 – Enclosures for Electrical Equipment
9. UL Standard UL-1 Standard for Flexible Metal Conduit
10. UL Standard UL-6 Electrical Rigid Metal Conduit – Steel
11. UL Standard UL-6A Electrical Rigid Metal Conduit – Aluminum, Red Brass and Stainless Steel
12. UL Standard UL-651 Standard for Schedule 40, 80, Type EB and a Rigid PVC Conduit and Fittings.
13. UL Standard UL-651A Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit.
14. UL Standard UL-797 Electrical Metallic Tubing - Steel
15. UL Standard UL-1479 Standard for Fire Tests of Penetration Firestops.
16. NEMA RN1
17. NEMA RN2
18. NFPA 70 (NEC)

19. NEMA TC-2
20. NEMA TC-3
21. NEMA TC-7
22. NEMA 250

1.03 SUBMITTALS (SUBMIT ONLY ON TYPES APPLICABLE FOR PROJECT)

A. Submit under provisions of Division 01.

B. Schedule 40 Galvanized Rigid Steel Conduit

C. PVC Coated Galvanized Rigid Steel Conduit

D. Schedule 40 Aluminum Rigid Conduit

E. Electrical Metallic Tubing (EMT)

F. Rigid PVC Conduit

G. Flexible Metal Conduit

H. Liquid Tight Flexible Metal Conduit

I. Explosion-proof Flexible Metal Couplings

J. High-Density Polyethylene Conduit (Unit Duct)

K. Fittings and Conduit Bodies

L. Expansion/Deflection Fittings

M. Lay-In Wireway

N. Conduit Seals
   1. Conduit Fire Stopping
   2. Conduit Water Seals
   3. Conduit Explosion Proof Seals

1.04 QUALIFICATIONS

A. All materials shall be purchased new from suppliers/manufacturers regularly engaged in the business of electrical conduit, ducts and fittings.

B. Junction and pull boxes shall be manufactured and supplied by a company regularly engaged in business of furnishing junction and pull boxes. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of junction and pull boxes. Junction and pull boxes shall be U.L. listed.

1.05 DELIVERY, STORAGE AND HANDLING

A. Conduits shall not be shipped loose, but shall be bundled by sizes. Threads of metal conduits shall be protected by plastic caps. Fittings shall be stored in boxes.

All equipment shall be stored on pallets to prevent contact with earth and shall be covered with plastic sheeting to protect them from dirt and weather.

B. Junction and pull boxes shall not be shipped loose, but shall be in boxes with labels indicating size and type. These boxes shall be stored away from contact with earth and protected from weather and abuse.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

Note that all types specified below may not be used on this project. Refer to project drawings for individual project requirements.

A. Schedule 40 Galvanized Rigid Steel Conduit:

Conduit shall be of heavy wall type fabricated from mild steel tubing and shall have a hot-dipped galvanized inner and outer coating, with a final coating of zinc chromate. Conduit and installation shall comply with all requirements in NEC Article 344. Mounting hardware shall be corrosion resistant, stainless steel, or galvanized steel.

B. PVC Coated Galvanized Rigid Steel Conduit:

PVC coated galvanized rigid steel conduit shall be Robroy Industries Plasti-Bond, Atkore Calbond PVC Coated Conduit or equivalent. PVC coating shall be a minimum of 40 mils in thickness and permanently fused to hot-dipped galvanized rigid steel conduit. A urethane inner coating shall be applied to the conduit interior and a clear urethane coating shall be applied over the galvanized threads. Conduit and installation shall comply with all requirements in NEC Article 344. Mounting hardware shall be corrosion resistant: PVC coated supporting devices with stainless steel hardware. Must pass adhesion test and be labeled ETL verified PVC-001.

C. Schedule 40 Rigid Aluminum Conduit

Conduit shall be of 6063 aluminum alloy, T-1 temper (Former designation T-42). Rigid aluminum conduit shall be third-party listed for use in classified (hazardous) locations. Conduit and installation shall comply with all requirements in NEC Article 344. Do not utilize steel or iron conduit fittings with aluminum conduit. Mounting hardware shall be corrosion resistant: stainless steel or aluminum.

D. Electrical Metallic Tubing (EMT)

EMT shall be hot dip galvanized steel with an organic corrosion resistant coating and shall be produced in accordance with U.L. Standard 797, ANSI C80.3 and NEMA RN2. Fittings for EMT conduit shall be compression type only, set-screw type fittings shall not be utilized. Conduit and installation shall comply with all requirements in NEC Article 358.Mounting hardware shall be corrosion resistant: zinc, galvanized steel, aluminum or stainless steel.

E. Rigid PVC Conduit:

Conduit shall be Schedule 40 or Schedule 80, as noted on the drawings, PVC, 90°C, UL rated or approved equivalent. Material shall comply to NEMA Specification TC-2 (Conduit), TC-3 (Fittings-UL-514), and UL-651 (Standard for rigid nonmetallic conduit). Conduit and fittings shall carry a UL label (on each 10 foot length of conduit and stamped or molded on every fitting). Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. Markings shall be legible and permanent. Clean rework material, generated by manufacturer's own conduit production, may be used by same manufacturer, provided end products meet requirements of this specification. Conduit and fittings shall be homogeneous plastic material free from visible cracks, holes, or foreign inclusions. Conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables. Conduit, fittings and cement shall be compatible to assure system integrity and shall be as shown on project drawings, or equal. Conduit and installation shall comply with all requirements in NEC Article 352. Mounting hardware shall be corrosion resistant: nonmetallic support straps or PVC conduit clamps with stainless steel hardware, designed for the installation of PVC conduit, which allows the conduit to expand and contract freely over varying temperature changes.

F. Flexible Metal Conduit

Flexible metal conduit (Greenfield) shall consist of interlocking steel armor and shall comply with U.L. Standard 1 and 1479. Conduit and installation shall comply with all requirements in NEC Article 348.

G. Liquid Tight Flexible Metal Conduit (Non-Hazardous Areas):

Liquid tight flexible metal conduit shall consist of polyvinyl jacket over flexible hot dip galvanized steel tubing. Flexible conduit shall be completely sealed from liquids, dust, dirt and fumes, be resistant to oil, gasoline, grease and abrasion. Jacket shall also be sunlight resistant. Flexible conduit shall be U.L. listed and comply with Article 351 of NEC. Flexible conduit shall be Flexi-Guard Type UAG, as manufactured by O-Z/Gedney, or equal. Conduit and installation shall comply with all requirements in NEC Article 350.

H. Liquid Tight Flexible Non-Metallic Conduit (Non-Hazardous Areas):

Liquidtight Flexible Non-Metallic Conduit shall be non-conductive, non-corrosive, resistant to oil, acid, ozone and alkaline, and crush, abrasion and strain resistant.

Conduit shall maintain internal I.D. even in tight radius bends. Conduit shall be UL Listed for use as indicated in Article 356 of the NEC, UL Listed for outdoor use, and sunlight resistant. Trade sizes 1/2", 3/4" and 1" shall be UL Listed for direct bury. Conduit shall be suitable for use at conduit temperatures of 80°C dry, 60°C wet and 60°C oil resistant as required by section 15-6 of ANSI/NFPA 79-1985 and UL 1660. Liquidtight non-metallic flexible conduit shall be Carlon Carflex Type LFNC-B, or equivalent.

I. Flexible Couplings w/stainless-steel braid (Hazardous Areas/Explosion Proof):

Flexible couplings used in hazardous areas shall be suitable for use in Class I, Div. I, Group D areas and shall comply with all requirements of Articles 500 and 501 of the NEC. Note: Due to corrosive environments, ALL explosion-proof flexible metal couplings shall be constructed with Stainless Steel braided construction over woven cotton braid impregnated with asphalt. Do NOT utilize bronze-braid explosion-proof flexible conduit as it is quickly corroded by hydrogen-sulfide gas. All explosion-proof flexible couplings shall additionally be liquid tight and listed for wet locations. Explosion-proof flexible couplings shall provide a continuous electrical grounding path which meets, or exceeds, NEC & UL requirements. Explosion proof flexible conduit shall be Crouse-Hinds ECGJH#### -S516 (Male-to-Male) or ECLK#### -S516 Series (Male-to-Female), or equivalent, where # indicate manufacturer's code designation for coupling trade-size and length

J. High-Density Polyethylene (HDPE) Conduit (Unit Duct and Directional Bore)

Unit duct shall be installed with additions, options and exceptions as noted herein. Unless otherwise specified, the Polyethylene Duct shall be Schedule 40 and comply with the following:

1. NEMA TC-7 Smooth Wall Coilable Polyethylene Electrical Plastic Duct
2. ASTM D-3485 Standard specification for Smooth Wall Coilable Polyethylene (PE) Conduit (Duct) for preassembled wire and cable.
3. ASTM D-2477 Standard Specifications for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter
4. ASTM D-3350 Standard Specifications for Polyethylene Plastics Pipe and Fittings Materials
5. NEC Art 353 High Density Polyethylene Conduit; Type HDPE Conduit.
6. U.L. 651 Continuous length HDPE

Materials used for the manufacture of the polyethylene conduit and casing shall be high-density polyethylene that meets or exceeds a cell classification of 334430C (Black) or 334430E (Colored Shell) per ASTM D-3350. Recycled and reclaimed materials from outside the manufacturer's plant shall not be utilized in manufacture. Black material shall contain a minimum of 2% carbon black for long-term protection against UV degradation. The base resign used in the manufacture of the product shall contain a high-quality anti-oxidant package. The wall thickness shall be in accordance with ASTM D-2447. Conduit or casing shall be continuously marked with durable printing at intervals no greater than five (5) feet. Coils and reels shall have sequential footage marks. In order to prevent the entrance of dirt

and water, the open ends of each length of reeled flexible duct, and all installed lengths prior to termination, shall be sealed by plastic caps. Polyethylene duct shall be Tamaqua, CPChem (Division of Chevron Phillips Chemical), Cablecon (by Integral Corp.) or equivalent. All fittings shall be specifically designed for use with polyethylene conduit. All terminations of polyethylene conduit to other conduit types shall be made utilizing fittings listed for the purpose. Solvent bonding of polyethylene conduit shall utilize American Polywater Corp. BonDuit Conduit Adhesive, or approved equivalent. Conduit and installation shall comply with all requirements in NEC Article 353.

K. Fittings and Conduit Bodies:

Unless otherwise specified, all fittings and conduit bodies shall be manufactured from the same type of material as the conduit system (aluminum, galvanized steel, PVC, etc.)

Field Modifications to Existing Rigid Metal Conduit Systems ONLY: Where modifications to existing rigid conduit installations make threading of field cuts impossible, use Type HK series couplings by Thomas & Betts/Steel City, or equivalent.

L. Expansion and Deflection Fittings

Where noted on project drawings, or required by the nature of construction location, furnish conduit Expansion, Deflection or Expansion/Deflection Fittings. Expansion and deflection fittings shall be compatible with other conduit materials and be type AX (expansion), DX (deflection) or AXDX (expansion/deflection) as manufactured by O-Z/Gedney, or equivalent.

M. Lay-In Wireway:

Unless otherwise indicated on the drawings, lay-in wireway installed in dry (non-hosedown) interior areas shall be NEMA 1 hinge cover steel enclosed wiring trough. Lay-in wireway installed outdoors or in interior areas subject to hosedown or wet conditions shall be NEMA 3R, 4 or 4X as noted on the drawings. Wireway shall be sized as shown on drawings, as a minimum, or as required by NEC, and shall be as manufactured by Square D, Hoffman, or equivalent. Install all hinged wireways with hinges on bottom such that doors will not interfere with maintenance and installation when open.

N. Pull Cords

Each empty conduit shown or described on the drawings shall be furnished with a pull cord to facilitate future conductor installation. Cord shall consist of non-deteriorating, non-metallic, non-cotton construction such as polyester or nylon material. Minimum tensile strength of all pull strings shall be 200#. Leave minimum of 12 inches slack at each termination or end. Any references on project drawings to “pull wire” shall be interpreted as a pull cord as described herein.

2.02 SEALING

A. Fire Seal (Fire Stopping Material):

1. Fire stopping materials shall consist of commercially manufactured products capable of passing ASTM E-814 (UL 1479) Standard Method of Fire Test for Through Penetration Fire Stops.
2. Fire stopping materials shall maintain the rating of the wall, partition, ceiling or floor opening where penetration is made. Comply with NEC 300-21.
3. All fire-stopping materials shall be third-party classified.
4. Where sleeves are to be installed, the sleeve shall be heavy wall steel pipe sleeves, anchored to building construction and finished plumb with wall, ceiling, or floor lines.
5. Manufacturers:
   a. Chase Technology – CTC, PR-855.
   b. Dow Corning – Silicone RTV Foam 3-6548.
   c. Nelson – Flameseal.
   d. Thomas & Betts – Flame Safe.
   e. 3M – Fire Barrier.
6. Where applicable for the respective wall and its fire rating, smoke and fire stop fittings may be used in lieu of sealant as manufactured by OZ/Gedney, Series CFS.

B. Thermal Seal:

1. Seal penetrations of thermally insulated equipment or rooms top prevent heat transfer.

C. Moisture Seal:

1. When electrical conduits are installed in sleeves, core-drilled holes or box outs, seal between conduit and penetration of perimeter walls, ceilings or floors to prevent entry of water.
2. Seal conduit penetrations of roof with flashings compatible with roof design and approved by Roofing System Manufacturer and Engineer.
3. Seal annular space between conductors and conduit wall of all conduit terminations where conduit enters a building from below grade in order to block moisture migration into electrical equipment. In addition seal conduits entering electrical equipment located either interior or exterior that once installed condensation is created in the electrical equipment due the electrical system being connected to areas with a different temperature. Conduit moisture barrier material shall not harden and be compatible with both wire insulation and conduit materials. Installed product shall be easily removed for maintenance or modifications, regardless of the length of time material has been installed. Conduit moisture seal material shall be:
   a. “Hydroblock” by WaterGuard Technology Products
      16023 East Freeway
      Channelview, Texas 77530-4365
      Phone: (281) 862-0300
      Fax: (281) 862-0314

b. American Polywater Corporation
Polywater Duct Sealant FST-250 Series
P.O. Box 53
Stillwater, MN 55082
Phone: (651) 430-2270
Fax: (651) 430-3634

c. O-Z/Gedney
Type DUX Water Sealing Compound

2.03 BOXES

A. Dimensions of all boxes shall meet or exceed NEC Article 370 requirements. Boxes larger than 12 inches in any dimension shall be hinged type.

B. Flush mounted exterior boxes in floors, walkways and walls shall be NEMA 4, cast aluminum, Crouse Hinds, Killark, or equal. For supplemental corrosion protection, boxes encased in poured concrete shall have an asphalt paint coating applied to surfaces in contact with concrete prior to installation. Note that an asphalt paint coating is not required on boxes installed in masonry brick or block walls.

C. Surface mounted interior junction and pull boxes used with GRS or EMT conduit shall be NEMA 12, powder coated galvanized steel.

D. Exterior junction and pull boxes located in non-hazardous, non-classified areas shall be NEMA 4X stainless steel or aluminum. Provide waterproof conduit hubs, Meyers or equivalent, for all conduit terminations at enclosures. Gasketed lock-nuts will not meet this requirement.

E. Acceptable manufacturers:
1. Appleton Electric Co.
2. Carlon
3. Crouse-Hinds Co.
4. Hammond
5. Hennessy Outdoor Enclosures.
6. Hoffman Co.
7. Hubbell-Killark Electric Mfg. Co.
8. O.Z./Gedney Co.
9. Square D.
10. Thomas & Betts

PART 3 EXECUTION

3.01 INSPECTION

A. All conduits shall be inspected for proper fit and finish, for out-of-round and for proper thickness. All burrs and flashing shall be removed. Conduit and fittings shall be clean and free of obstructions.

3.02 INSTALLATION

A. Unless otherwise specified or detailed on the project drawings, all wire and cable shall be installed in conduit.

B. Unless otherwise shown on the project drawings, minimum conduit trade-size shall be 3/4". Larger sizes shall be installed where noted or where required by NEC.

C. In general, no aluminum conduit shall be cast in concrete or in direct contact with earth. Where such contact is found necessary or where specifically noted on project drawings, either coat all aluminum contact surfaces with a protective bituminous coating (such as Carboline Bitumastic 50 or 300M) or alternately substitute galvanized rigid steel conduit for the sections which are in contact with concrete or earth.

D. Interior Conduit Applications:

1. Above Grade or Floor:
Rigid Galvanized Steel or Rigid Aluminum type unless otherwise noted on the project drawings.

2. Below Grade or Floor:
Schedule 40 PVC type unless otherwise noted on the project drawings. Where interior conduits exit from below floor or grade to above grade furnish conduit transition between types no more than 6” above finish floor.

E. Exterior Conduit Applications

1. Above Grade:
Rigid Galvanized Steel type unless otherwise noted on the project drawings. Where conduits exit to above grade transition to conduit type shall be no more than 6” from penetration.

2. Below Grade:
   a. Schedule 40 PVC type unless otherwise noted on the project drawings. Where interior conduits exit from below floor or grade to above grade furnish conduit transition between types no more than 6” above finish floor.

F. Moisture Seal of Below-Grade Conduits

1. Seal annular space between conductors and conduit wall of all conduit terminations where conduit enters from below grade in order to block moisture migration into electrical equipment. Install product only after conductors have been installed, terminated and commissioned for service. Install moisture seal products per all manufacturers instructions and requirements.

G. Conduit Sealing For Fireproofing

1. Sleeves:

a. Install rigid metallic sleeves where exposed raceways pass through floors, walls (except exterior walls below grade) and ceilings.
b. Sleeve Diameter: Size sleeves to accommodate their through penetrating items and allow a minimum of a one (1”) inch void between the sleeve and the item of penetration.

2. Seal openings in fire rated floors, ceilings and roofs:
   a. Pack void with backing material and ends of the sleeve sealed with a minimum of one (1") inch of a listed fire-resistive silicone compound to a depth required to meet the fire rating of the structure penetrated.
   b. Install firestopping to meet the requirements of ASTM E-814
   c. Install product in accordance with the manufacturer's instructions.

H. Conduit size and fill requirements shall comply with appropriate conduit fill tables in Annex C of NEC. It should be noted these are minimum requirements and larger conduit sizes or smaller fill requirements shall be used whenever specified or detailed on drawings.

I. Flexible conduit shall be provided as a connection between each motor junction box (or any other piece of equipment subject to movement or vibration) and rigid conduit system. Liquid-tight and explosion-proof flexible conduit shall not exceed 3' in length.

J. Ream conduits only after threads are cut. Cut joints square to butt solidly into couplings. Where necessary to join two pieces of conduit and it is impossible to use standard coupling, use three piece conduit coupling. Use of running thread is prohibited. This applies to all rigid conduit installations, underground or otherwise. In order to comply with NEC Article 300.6(A), all rigid steel conduit shall have field-cut threads re-coated using an electrically conductive, corrosion-resistant compound, Thomas & Betts/Shamrock "Kopr-Shield" (a product of Jet Lube, Inc.), or equivalent.

K. Make all joints in underground conduit watertight with approved joint compound. Temporarily plug conduit openings to exclude water, concrete or any foreign materials during construction. Clean conduit runs before pulling in conductors.

L. Hickey hand-bends will not be acceptable for conduits one inch (1") and larger. Use pre-manufactured factory elbows or bends fabricated with hydraulic bending machine. Field bending of all PVC conduit shall be accomplished with use of equipment approved by conduit manufacturer. Open flame bending equipment will not be acceptable.

M. A run of conduit between outlet and outlet, between fitting and fitting or between outlet and fitting shall not contain more than the equivalent of four quarter turn bends (360°), including bends immediately at an outlet or fitting.

N. At all conduit terminations furnish locknuts on both sides of enclosure plus an insulated bushing unless conduit termination is into a factory-threaded conduit opening or watertight (Myers-type) hub.

O. All conduit terminations at NEMA 4 or 4X enclosures shall be made with watertight (Myers-type) hubs listed for the application.

P. Do not run conduit below or adjacent to water piping, except where permitted by Owner's representative.

Q. Run exposed conduits parallel with walls and at right angles to building lines, not diagonally.

R. Support exposed PVC conduit runs on walls or ceiling every three feet (3') and support exposed rigid metal conduit runs on walls or ceiling every five feet (5') with stainless steel or PVC coated galvanized cast one hole straps, clamp backs and anchors. Provide lead shield insert anchors, with stainless steel round head machine screws, for concrete and brick construction. In wood construction, use stainless steel round head wood screws. Where steel members occur, drill and tap and use stainless steel round head machine screws.

S. In brick construction, drill hole for insert near center of brick, not near edge or in mortar joint.

T. Support two or more PVC exposed hanging parallel conduit runs every three feet (3') and support exposed rigid metal hanging parallel conduit runs every five feet (5') with trapeze hangers. Hanger assembly to consist of concrete inserts, threaded solid rod, washers, nuts and cross members nominally one and five-eighths inch (1-5/8") by one and five-eighths inch (1-5/8") non-metallic framing, as specified in Section 26 05 29 – Hangers and Supports for Electrical Systems. Anchor each conduit individually to cross members of every other hanger with cast one hole straps, clamps backs and proper sized stainless steel or non-metallic machine bolts and nuts.

U. Perforated metal strapping of any kind is prohibited.

V. Provide expansion and deflection fittings in all conduits which pass through or over building expansion joints. All expansion and deflection fittings shall be designed for, and compatible with, the conduit types on which they are installed.

W. Grounding Electrode Conductors shall be installed in non-metallic PVC conduit or bonded to both ends of metallic conduit to comply with NEC 250.64.

X. Identification of “poured” conduit seals: Conduit seal fill plugs shall be neatly spray painted red immediately following installation of fill material. Excess spray paint on surrounding surfaces shall be removed at the Contractor’s expense. The Engineer will use this means of identification to certify that the Contractor has installed conduit-seal fill materials and plugs in compliance with all U.L., F.M. and manufacturer’s requirements. Do not spray paint fill plugs of any spare or future conduit seals.

Y. PVC coated galvanized rigid steel conduit shall be installed per manufacturer’s requirements, using tools specifically designed for installation of PVC coated galvanized rigid steel conduit. Any tools, hardware or installation methods which cause damage the PVC coating shall not be utilized. Do not install any material found damaged from shipping or handling. Any PVC coated conduit damaged during installation shall be immediately repaired to the satisfaction of the Owner’s authorized representative using patching materials and methods per manufacturer’s instructions. If, in the opinion of the Owner’s authorized representative, PVC coated galvanized rigid steel conduit is damaged beyond repair, the damaged portion(s) shall be removed and replaced at the contractor’s expense.

3.03 BOXES INSTALLATION

A. Junction or pull boxes required by code or need which are not detailed on drawings shall be considered incidental to proposal price and will not be paid for separately.

B. Any damage to equipment enclosures, pull or junction boxes shall be immediately repaired or replaced to satisfaction of Owner's representative.

C. Junction and pull boxes containing intrinsically safe wiring shall be labeled "Intrinsically Safe".

D. All pull or junction boxes surface mounted in any interior damp location shall be "standoff" mounted 1/2" from the wall in a manner to promote air circulation completely around the box.

E. The contractor shall coordinate the installation of flush mounted junction boxes with the general and mechanical work as required at each structure.

F. Provide knockout closures to cap unused knockout holes where blanks have been removed (for non-hazardous location boxes).

G. All mounting hardware shall be corrosion resistant.

H. All metal junction boxes shall be bonded to ground with a ground wire connection.

END OF SECTION 26 05 33

DIVISION 26 – ELECTRICAL
Section 26 05 41 - Underground Electrical Construction

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Work included in this section is trenching and backfilling required for installation of conduit.

B. This Specifications Section includes all exterior direct-buried conduit. Unless otherwise specified on drawings.

C. Related Sections
1. Division 03 – Concrete
2. Section 26 05 00 – Common Work Results for Electrical
3. Section 26 05 33 – Raceway and Boxes for Electrical Systems
4. Section 26 05 19 – Low-Voltage Conductors and Cables

D. Reference to Standards
1. Federal Specifications WW-C-581d
2. ANSI C80.1
3. ANSI/SCTE 77
4. UL Standard #6
5. NEMA RN1-1980
6. NEC (Chapter 9 Tables 4, 5, 5A, 8 and Appendix C)
7. NEMA TC-2
8. NEMA TC-3
9. UL-651
10. A.A.S.H.T.O.
11. ASTM A615

1.03 SUBMITTALS

A. Submit under provisions of Division 01.

B. Conduit Spacers / Supports

1.04 DELIVERY, STORAGE AND HANDLING

A. Reinforcing steel and conduit supports shall be stored on pallets, covered to protect them from weather.

1.05 MAINTENANCE SERVICE (WARRANTY)

A. Material and workmanship shall be warranted to be free from defects in materials and workmanship for a period of one year from date of substantial completion established by Owner.

PART 2 PRODUCTS

2.01 DUCT SPACERS / SUPPORTS

A. Duct line spacers / supports shall provide stability and consistent separation and relieve direct stress for duct materials to be encased in concrete. Units shall incorporate a dovetail or other interlocking means to allow side-by-side interchangeablilty of conduit spacer sizes while maintaining horizontal stability. Units shall be of non-metallic construction and include integral base flanges and re-bar slots. Duct Spacers / Supports shall be Underground Devices “Wunpeece”, Carlon/Lamson & Sessions Snap-Loc series or equivalent.

2.02 LINE MARKING TAPE
(To be provided only if specifically indicated on drawings)

A. Electrical line marking tape shall be installed only if specifically noted on project drawings. Tape shall be minimum 5 mils thick constructed of aluminum foil encased in an impervious Mylar plastic coating. The minimum tensile strength determined in accordance with ASTM D882 is 15,000 PSI. The tape shall contain sufficient metal mass to provide detectability at depths up to 3 feet with a radio type metal locator. Tape shall be acid, alkali and corrosion resistant. Color shall be “RED”, corresponding to the standard color for electrical lines, and shall additionally be printed with “WARNING-ELECTRICAL LINE BELOW” or similar text. Line marking tape shall be as manufactured by Pro-Line Safety Products of West Chicago, Illinois or equivalent. Unless otherwise indicated on the drawings, burial depth of tape shall be approximately 18" below finish grade.

2.03 MISCELLANEOUS FITTINGS

A. Fittings and conduit supports shall be suitable for use with conduits and ducts supplied.

2.04 DIRECTIONAL BORE EQUIPMENT

A. The directional boring equipment shall consist of a directional boring rig of sufficient capacity to perform the bore and pullback the pipe, a boring fluid mixing & delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations and trained and competent personnel to operate the system. All equipment shall be in good, safe operating

condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

B. The directional boring machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power boring operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations. The rig shall be grounded during boring and pull-back operations. Sufficient spares shall be kept on hand for any break-downs which can be reasonably anticipated.

C. The bore head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and boring fluid jets.

D. The Guidance System shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

E. Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 - 10.

F. The Guidance System shall be a conventional electromagnetic sound walkover system, Magnetic Guidance System (MGS) probe or proven gyroscopic probe and interface shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at the maximum depth required and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information to the tool face, azimuth (horizontal direction), and inclination (vertical direction).

PART 3 EXECUTION

3.01 DUCT BANK

A. Security

Contractor is responsible for providing all safety barricades, safety materials, man-lift devices, and posting safety watches at all raceway trenches as required to construct this project in a safe manner.

B. Concrete Encased Schedule 40 PVC

Unless otherwise specified on drawings, all underground conduit and duct-bank shall be Schedule 40 PVC concrete-encased. Reinforced concrete-encased duct-bank shall be provided where duct-bank is installed under vehicular-traveled surfaces or whenever ductbank crosses underground piping. Reinforcing shall extend minimum of 5’-0” beyond the edge of all pavement surfaces. Transitions

from below-grade Schedule 40 PVC conduit to galvanized rigid steel conduit shall be as detailed on project drawings. All field threaded galvanized rigid steel conduit shall have field threads re-coated using an electrically conductive, corrosion-resistant compound as specified in Section 26 05 33.

C. Excavation for Conduit

The ground shall be excavated in open trenches to width, depth and in direction necessary for proper installation of underground conduit and connections as may be shown on drawings.

Any necessary sheathing to prevent cave-ins, etc. shall be provided by this Contractor.

Where muck or unstable ground is encountered in bottom of trench, it shall be excavated to a depth of at least 12 inches below line of duct or slab. Where bottom of trench is excavated below necessary elevation, it shall be brought to proper grade by use of torpedo sand or three-eighth inch (3/8") gravel, well compacted.

Where excavation for its entire depth is in water or wet sand, Contractor shall furnish a temporary pumping system connected with well points so as to drain same effectively during construction.

Excavations shall be deeper than minimum wherever required in order that ducts or conduits may be installed so as to avoid new or existing piping, etc., as directed by site conditions or Owner’s representative.

Should conduits, ducts, etc. pass under sidewalks, roads, or curbs, Contractor shall take up same in order to install conduit or ducts. All sidewalks, roads or curbs shall be replaced with material equal to that removed and shall be as approved by Owner’s representative.

CONTRACTOR SHALL PROCEED WITH CAUTION IN EXCAVATION AND PREPARATION OF TRENCH SO THAT EXACT LOCATION OF UNDERGROUND STRUCTURES, UTILITIES AND PIPING, BOTH KNOWN AND UNKNOWN, MAY BE DETERMINED, AND CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REPAIR OF SUCH STRUCTURES, UTILITIES AND PIPING WHEN BROKEN OR OTHERWISE DAMAGED BY CONTRACTOR.

D. Installation of Underground Conduit

Unless otherwise noted on project drawings, all underground conduit shall be a minimum of 1'-6" and a maximum of 2'-6" below finished grade to top of top duct in bank.

Where possible, install conduit with typical pitch of 4 inches per 100 ft length.

Where conduit comprised of plastic (PVC) conduit must transition from underground to above ground, conduits shall transition from PVC conduit to rigid steel PVC coated conduit by means of factory manufactured couplings and elbow.

All transitions from plastic (PVC) conduit to galvanized rigid steel PVC coated conduit shall be made underground as detailed on drawings.

Any rigid metal conduit ends shall be electrically bonded to the largest ground conductor passing thru the structure by use of threaded lay-in type insulated grounding bushings such as O/Z Gedney IBC-L-AC.

All duct runs shall be separated and supported before backfilling. Conduit spacing shall be minimum of 7-1/2” center-to-center.

All angle bends in conduit of 45° or greater shall be made with PVC-coated rigid galvanized steel conduit. Provide factory manufactured couplings between conduit types.

Before Contractor pulls any cables into ducts he shall have a mandrel one-fourth inch (1/4") smaller than duct inside diameter and approximately twenty inches (20") long pulled through each duct, and if any obstructions are found, Contractor shall remove them and clear ducts.

E. Removal of Water

Contractor shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering excavations or other parts of work and shall keep said excavations dry until all work to be performed therein has been completed.

F. Backfill in Open Areas

Backfill for conduit and duct runs in continuous open areas away from roadways, paved areas and structures shall be backfilled as described below.

Unless otherwise noted, clean material obtained from the excavation which, in opinion of Owner’s representative, does not contain excessive moisture, shall be suitable in constructing backfill. Excavated material which is considered unsuitable by Owner’s representative due to excessive moisture may be allowed to dry before being used as backfill. Approved backfill material shall be placed in 6 to 8 inch lifts (layers) and then compacted as necessary to prevent settlement.

G. Backfill Under Roadways and Paved Areas

Unless otherwise ordered by Owner’s representative, CA-6 granular backfill shall be used in locations where conduit and duct runs cross roadways and paved surfaces. Granular backfill shall be used from top of concrete encasement to bottom of roadway base and shall be compacted to 95% Standard Proctor of material to be used, as tested.

H. Pavement Restoration

If duct bank installation requires pavement removal, pavement shall be saw cut prior to removal. As directed by the Owner’s authorized representative, pavement

removed shall be replaced with concrete pavement or bituminous concrete surface material (Class I, minimum of 1700 pound Marshall stability) and compacted to satisfaction of Owner's representative.

I. Jacking Conduit

With approval of Owner's representative, Contractor shall be permitted to jack conduit under roadways.

3.02 DIRECTIONAL BORE

A. The Engineer must be notified 48 hours in advance of starting work. The Directional Bore shall not begin until the Engineer is present at the job site and agrees that proper preparations for the operation have been made. The Engineer approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility for the satisfactory completion of the work as authorized under the Contract. It shall be the responsibility of Engineer to provide inspection personnel at such times as appropriate without causing undue hardship by reason of delay to the Contractor.

B. Contractor shall ream bore hole to a minimum of 25% greater than outside diameter of pipe bell for straight pulls. Contractor shall have the option to pre-ream or ream and pull back pipe in one operation if conditions allow. Contractor shall not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

C. After successfully reaming bore hole to the required diameter, Contractor shall pull the conduit as shown on the plans through the bore hole. In front of the conduit shall be a swivel. Once pull-back operations have commenced, operations must continue without interruption until conduit is completely pulled into bore hole. During pull-back operations Contractor shall not apply more that the maximum safe pipe pull force at any time. In the event that conduit becomes stuck, Contractor shall notify Engineer. Engineer, Contractor, and/or the maintaining agency shall discuss options and then work shall proceed accordingly.

D. Following drilling operations, the Contractor shall de-mobilize equipment and restore the work-site to original condition. Any noticeable surface defects, due to the drilling operation, shall be repaired by the Contractor.

E. The contractor shall maintain a daily project log of boring operations and a guidance system log with a copy given to Engineer at completion of project. Location and depths shall be recorded onto the As-Built drawings.

END OF SECTION 26 05 41

DIVISION 26 – ELECTRICAL
Section 26 05 53 – Identification
for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes field-installed nameplates, labeling and identification methods for electrical equipment, components and wiring.

B. Related Sections

1. Section 26 05 00 – Common Work Results for Electrical

C. Reference to Standards

1. ANSI/NFPA 70 - National Electrical Code

1.03 SUBMITTALS

A. Submit under provisions of Division 01.

B. Product Data: Provide catalog data for nameplates, labels and markers.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

D. During course of construction, Contractor shall submit Wiring Identification Tables, listing wire marker identification schedules of all proposed wiring and terminations.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Nameplates and legend plates shall be engraved three-layer laminated plastic, black letters on white background. Legends (wording) shall be as detailed on drawings or as directed by Owner’s representative.

B. All wire markers installed on electrical equipment above grade shall be weatherproof and water resistant. Wire identification labeling, whether factory applied or written in the field, shall utilize an adhesive that does not soften or weaken over time. Sleeve or tubing type labels may be utilized as an alternate. Paper adhesive-backed wire markers will be rejected and replaced at the

Contractor's expense. Wire marker labels shall be as manufactured by Brady, or equivalent.

C. All wire markers installed below grade in manholes, handholes or vaults shall be waterproof. Markers shall be non-corroding plastic clip-on sleeve type construction. Markers shall be permanently factory-printed such that label identification will not deteriorate due to time or contact with water. Wire markers used below grade shall be Brady Clip-Sleeve, or equivalent.

D. Provide and install Safety Stripe Tapes on finished floors around electrical gear noting clearances required per NEC Article 110.26. Tape shall be minimum 2" in width with alternating black/yellow striping. Tape shall be Scotch/3M #5702 or equivalent.

PART 3 EXECUTION

3.01 EXAMINATION (RESERVED)

3.02 PREPARATION

A. Degrease and clean surfaces to receive nameplates, legend plates and markers.

3.03 INSTALLATION

A. Secure nameplates and legend plates to equipment using screws or adhesive.

B. Nameplates or legend plates shall be provided for all disconnects, enclosed starters, control panels, transformers, level meters, flow meters and recorders.

C. Per NEC 110.16: Arc Flash warning labels shall be included for all electrical equipment, such as switchboards, switchgear, panelboards, industrial control panels, meter socket enclosures and motor control centers, that are likely to require examination, adjustment, servicing, or maintenance while energized. Labels shall be field or factory marked to warn qualified persons of potential electric arc flash hazards. Label shall be permanently affixed, able to withstand the environment involved and shall not be hand written.

D. Per NEC 408.4 (B) All switchboards, switchgear and panelboards supplied by a feeder shall be permanently marked to indicate which device or equipment where the power originates. Label shall be self-adhesive, polyester type waterproof and shall not be handwritten.

E. Wiring Device identification labels shall be furnished and installed on all wiring device cover plates per Specifications Sections 26 27 26-3.01O and 26 27 26-3.01P.

F. Contractor shall develop the Wiring Identification Tables to be used for ALL wiring terminations on this project, and shall submit Tables for review and comment by Owner's Representative prior to installation of any conductors or cables.

G. Provide wire markers for ALL wires and terminations. By "all", this is intended to include, but not be limited to, all terminations at distribution panelboards, motors,

valves, heaters, fan coils, heat pumps, fans, dampers, all MCC terminations, instrumentation & controls, terminal blocks and strips, etc. Wire identification shall be unique to wire that is marked or to terminal that wire lands upon. Identification of a run of wire from termination to termination shall be same throughout run.

H. Provide wire markers in all manholes, handholes and vaults.

I. Include markers labeled “SP” on all spare conductors.

3.04 AS-BUILT WIRING IDENTIFICATION TABLE

A. Upon completion of project, Contractor shall provide five copies of as-built Wiring Identification Table. This table shall list all circuits installed as part of this work and shall give identification of all wires and terminations as installed and marked.

Table shall include routing of all conductors installed in the project from end-to-end including each conduit, manhole, handhole and vault through which each conductor passes. Include and identify all spare conductors.

END OF SECTION 26 05 53

DIVISION 26 – ELECTRICAL
Section 26 27 16 – Electrical Cabinets and Enclosures

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Enclosures used to house electrical equipment.

B. Related Sections
1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 26 – Grounding and Bonding for Electrical Systems
3. Section 26 05 29 – Hangers and Supports for Electrical Systems
4. Section 26 05 53 – Identification for Electrical Systems

C. Reference to Standards
1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
2. ANSI/NFPA 70 - National Electrical Code.
3. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.03 SUBMITTALS

A. Submit under provisions of Division 01.

B. Product Data: Provide manufacturer’s standard data for enclosures and cabinets.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

1.04 QUALIFICATIONS

A. Cabinet and Enclosure manufacturer shall be regularly engaged in construction of Product and shall have at least five years’ experience.

1.05 DELIVERY, STORAGE AND HANDLING

A. Cabinets and enclosures shall be delivered to jobsite in original shipping containers and shall be stored in a clean, dry location until ready for installation.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.07 EXTRA MATERIALS (SPARE PARTS)

A. Provide individual containers of touch up paint for each painted cabinet and enclosure.

B. For each cabinet and enclosure with a locking mechanism, provide two spare keys.

PART 2 PRODUCTS

2.01 MANUFACTURERS (RESERVED)

2.02 EQUIPMENT SPECIFICATION

A. NEMA 1

Enclosures shall be NEMA 1 rated, hinged, single or double door with slotted flush latch and white interior mounting panel, similar to Hoffman A-xxN Series (where xx is size subseries), or equivalent. Materials of construction shall be 14- or 16-gauge steel, depending on enclosure size, with polyester powder coating. Large enclosures shall have continuous hinge on door. Where noted, large enclosures shall include door operated light kits. Enclosure shall include grounding device kit or other means of positively grounding door to enclosure body.

B. NEMA 3R

Enclosures shall be NEMA 3R rated, hinged with stainless steel hinge pin, with drip shield, single door, white interior mounting panel and easily released door clamps. Materials of construction shall be 16- or 14-gauge steel, depending on enclosure size, with polyester powder coating. Furnish all exterior-mounted NEMA 3R enclosures with a NEMA 4X Drain-Vent (specified below) to remove interior moisture and condensation.

C. NEMA 4X

Enclosures shall be NEMA 4/ NEMA 4X/ NEMA 12 rated, hinged, gasketed, single or double door, with easily released fast-operating clamp assemblies or quarter turn slotted latch kits replacing conventional screw clamps, white interior mounting panel and stainless-steel hinge pin. Materials of construction shall be 16- or 14-gauge (depending on size) Type 304 stainless steel, Type 5052 H-32 aluminum, molded fiberglass polyester or corrosion resistant nonmetallic composite material. Interior mounting panel shall be steel, finish shall be white enamel. Where noted, enclosures shall include door operated light kits. Metallic enclosures shall include grounding device kit or other means of positively grounding door to enclosure body. Furnish all exterior-mounted NEMA 4X

enclosures with a NEMA 4X Drain-Vent (specified below) to remove interior moisture and condensation.

D. NEMA 12

Enclosures shall be NEMA 12 rated, continuous hinge, gasketed, single or double door, with white interior mounting panel. Materials of construction shall be 16- or 14-gauge steel, depending on enclosure size, with polyester powder coating. Small enclosures shall be similar to Hoffman “CHQR” Series, or equivalent. Medium size enclosures shall include 1-point latch kits or quarter turn slotted latch kits replacing conventional external screw clamps. Large size enclosures shall include 3-point latch kits. Where noted, large enclosures shall include door operated light kits. Enclosure shall include grounding device kit or other means of positively grounding door to enclosure body.

E. Drain-Vents

Where noted or specified, enclosure Drain-Vents shall be furnished and installed in the bottom of enclosures in order to remove unwanted condensation and moisture from within enclosure. Units shall be NEMA 4X rated and shall maintain the NEMA 4X rating of enclosures when installed. Drain-Vents shall be as manufactured by Stahlin Enclosures Model DV4XKIT, or equivalent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect cabinets, enclosures and mounting panels for damage or rust. Inspect gasketing for proper sealing. Inspect hinges and clamps for proper operation.

3.02 PREPARATION

A. Thoroughly clean interior and exterior of cabinets and enclosures. Sand and apply touch up paint where needed. Install mounting panels after equipment is mounted to it.

3.03 INSTALLATION

A. Install cabinets and enclosures at locations shown on drawings and as directed by Owner’s representative. Cabinets and enclosures shall be "stand off" mounted 1/2" from wall to provide free air flow behind cabinets and enclosures.

B. To maintain NEMA 4X enclosure ratings, watertight hubs which are UL listed NEMA 4X shall be installed as necessary at conduit entrances to enclosure.

C. At both interior and exterior locations, where enclosure or cabinet knockouts consist of tangential knockouts, the Contractor shall install weatherproof hubs sized for largest knockout, with a reducing bushing sized for the incoming conduit.

END OF SECTION 26 27 16

DIVISION 26 – ELECTRICAL
SECTION 26 56 00 - EXTERIOR LIGHTING

PART 1 GENERAL

1.01 WORK INCLUDES

A. Base Bid:
   1. Electrical Contractor shall provide
      a. Lighting fixtures and accessories complete as shown or implied on the Contract Documents.

1.02 DESCRIPTION

This section specifies the furnishing, installation, and connection of exterior luminaires, poles, and supports. The term “Lighting Fixtures”, “Fixture” and “Luminaire” are used interchangeably.

1.03 RELATED WORK

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specified Elsewhere
   1. Section 03 30 00 – Cast In Place Concrete
   2. Section 26 05 00 – Common Work Results for Electrical
   3. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables
   4. Section 26 05 26 – Grounding and Bonding for Electrical Systems
   5. Section 26 05 33 – Raceway and Boxes for Electrical Systems
   6. Section 26 05 41 - Underground Electrical Construction
   7. Section 26 09 23 – Lighting Controls

1.04 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed by a Nationally Recognized Testing Laboratory and classified as suitable for the purpose specified and indicated.

1.05 SUBMITTALS

A. Submit in accordance with Division 1, submittals and Section 26 05 00, and the following requirements.

B. Shop Drawings:
   1. Clearly present sufficient information to determine compliance with drawings and specifications.

2. Include electrical ratings, dimensions, mounting, details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, ballasts, poles, luminaires, lamps, and accessories.
3. In addition to the printed copies of the submittal, a portable document format (pdf) of the submittal shall be transmitted via email to the Engineer.

C. Manuals: Two weeks prior to final inspection, submit four copies of operating and maintenance manuals to the Resident Engineer. Include technical data sheets, wiring and connection diagrams, and information for ordering replacement lamps, ballasts, and parts.

D. Certifications: Two weeks prior to final inspection, submit four copies of the following to the Architect/Engineer:
1. Certification by the manufacturer that the materials are in accordance with the drawings and specifications.
2. Certification by the contractor that the complete installation has been properly installed and tested.

E. Contract closeout information: Not required for Engineer/Architect review.
1. Operating and maintenance data.
2. Owner instruction report.
3. As-Built drawings

F. Warranties: Provide one (1) year minimum material and labor warranty on all components from date of substantial completion.

1.06 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.

B. Aluminum Association Inc. (AA):
AAH35.1-06 Alloy and Temper Designation Systems for Aluminum

C. American Association of State Highway and Transportation Officials (AASHTO):

LTS-5-09 Structural Supports for Highway Signs, Luminaires and Traffic Signals

D. American Concrete Institute (ACI):
318-14 Building Code Requirements for Structural Concrete

E. American National Standards Institute (ANSI):
H35.1/H35 1M-17 American National Standard Alloy and Temper Designation Systems for Aluminum.

F. American Society for Testing and Materials (ASTM):
A123/A123M-17 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products A153/A153M-16 Zinc Coating (Hot-Dip) on Iron and Steel Hardware

B108/B108M-15 Aluminum-Alloy
Permanent Mold Casting C1089-13 Spun
Cast Prestressed Concrete Poles

G. Illuminating Engineering Society of North America (IESNA) HB-9-00 Lighting Handbook
RP-8-14 Roadway Lighting
RP-20-98 Lighting for Parking Facilities
RP-33-99 Lighting for Exterior Environments
LM-5-96 Photometric Measurements of Area and
Sports Lighting Installations LM-50-99 Photometric
Measurements of Roadway Lighting Installations
LM-64-01 Photometric Measurements of
Parking Areas
LM-72-97 (R2010) Directional Positioning of Photometric Data
LM-79-08 Approved Method for the Electrical and Photometric
Measurements of Solid-Sate Lighting Products
LM-80-15 Approved Method for Measuring Lumen Maintenance of LED Light Sources
TM-15-11 Luminaire Classification System for Outdoor Luminaires

H. National Electrical Manufacturers Association (NEMA):
C136.3-14 For Roadway and Area Lighting Equipment –
Luminaire Attachments
ICS 2-00 (R2005) Controllers, Contactors and Overload
Relays Rated 600 Volts ICS 6-93 (R2006) Enclosures

I. National Fire Protection Association (NFPA):

70-20 National Electrical Code (NEC)
101-18 Life Safety Code

J. Underwriters Laboratories, Inc. (UL): 496-17 Lampholders
773-16 Plug-In, Locking Type Photocontrols for
Use with Area Lighting 773A-06 Nonindustrial
Photoelectric Switches for Lighting Control 1029-
94 High-Intensity-Discharge Lamp Ballasts
1598-08 Luminaires
8750-15 Light Emitting Diode (LED) Light Sources for Use in Lighting Products

1.07 DELIVERY, STORAGE, AND HANDLING

Provide manufacturer's standard provisions for protecting pole finishes during transport, storage, and installation. Do not store poles on ground. Store poles so they are at least 12 in [305 mm] above ground level and growing vegetation. Do not remove factory-applied pole wrappings until just before installing pole.

PART 2 PRODUCTS

2.01. LIGHTING FIXTURES/MANUFACTURERS

A. Lighting fixtures shall be as per fixture schedule as shown on the plans.

2.01 POLES

A. General:
1. Poles shall be as shown on the drawings, and as specified. Finish shall be as specified on the drawings.
2. The pole and arm assembly shall be designed for wind loading of 100 mph [161 km/hr], with an additional 30% gust factor, supporting luminaire(s) and accessories such as shields, banner arms, and banners that have the effective projected areas indicated. The effective projected area of the pole shall be applied at the height of the pole base, as shown on the drawings.
3. Poles shall be anchor-bolt type designed for use with underground supply conductors. Poles shall have handhole having a minimum clear opening of 2.5 x 5 in [65 x 125 mm]. Handhole covers shall be secured by stainless steel captive screws.
4. Provide a steel-grounding stud opposite handhole openings, designed to prevent electrolysis when used with copper wire.
5. Provide a base cover that matches the pole in material and color to conceal the mounting hardware pole-base and anchor bolts.
6. Hardware and Accessories: All necessary hardware and specified accessories shall be the product of the pole manufacturer.
7. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings,

B. Types:
1. Aluminum: Provide aluminum poles manufactured of corrosion resistant AA AAH35.1 aluminum alloys conforming to AASHTO LTS-4 for Alloy 6063-T6 or Alloy 6005-T5 for wrought alloys, and Alloy 356-T4 (3,5) for ASTM B108-03 cast alloys. Poles shall be seamless extruded or spun seamless type. Provide a pole grounding connection designed to prevent electrolysis when used with copper ground wire. Base covers for aluminum poles shall be cast from 356-T6 aluminum alloy in accordance with ASTM B108-03.

2.02 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete, having 3000 psi minimum 28-day compressive strength.

B. Foundations shall support the effective projected area of the specified pole, arm(s), luminaire(s), and accessories, such as shields, banner arms, and banners, under wind conditions previously specified in this section.

C. Place concrete in spirally-wrapped treated paper forms for round foundations, and construct forms for square foundations.

D. Rub-finish and round all above-grade concrete edges to approximately 0.25 in [6 mm] radius.

E. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings. Anchor bolts shall be in a welded cage or properly positioned by the tiewire to stirrups. Anchor bolts shall be steel rod having a minimum yield strength of 50,000psi; the top 12 inches of the rod shall be galvanized in accordance with ASTM A 153/A 153M.

F. Prior to concrete pour, install electrode per Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

2.03 LUMINAIRES

A. Luminaires shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat, and safe cleaning and relamping.

B. Light distribution pattern types shall be as shown on the drawings.

C. Lenses shall be frame-mounted, heat-resistant, borosilicate glass, with prismatic refractors, unless otherwise shown on the drawings. Attach the frame to the luminaire housing by hinges or chain. Use heat and aging-resistant, resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

D. Pre-wire internal components to terminal strips at the factory.

E. Bracket-mounted luminaires shall have leveling provisions and clamp-type adjustable slip-fitters with locking screws.

F. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

G. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings, match finish process and color of pole or support materials. Where indicated on drawings,

H. Luminaires shall carry factory labels, showing complete, specific lamp and ballast information.

2.04 LAMPS

A. Install the proper lamps in every luminaire installed

B. Lamps shall be general-service, outdoor lighting types.

C. LED sources shall meet the following requirements:
1. Operating temperature rating shall be between -40˚ F [-40˚ C] and 120˚ F [50˚ C].
2. Correlated Color Temperature (CCT) 4000K unless indicated otherwise.
3. Color Rendering Index (CRI) greater or equal than 85.
4. The manufacturer shall have performed JEDEC (Joint Electron Devices Engineering Council) reliability tests on the LEDs as follows: High Temperature Operating Life (HTOL), Room Temperature Operating Life (RTOL), Low Temperature Operating Life (LTOL), Powered Temperature Cycle (PTMCL), Non-Operating Thermal Shock (TMSK), Mechanical Shock Variable Vibration Frequency, and Solder Heat Resistance (SHR).

2.05 LED DRIVERS

A. LED Drivers shall meet the following requirements:
1. Drivers shall have a minimum efficiency of 85%.
2. Starting Temperature: -40 degrees C (-40 degrees F).

3. Input Voltage: 120 to 480 (±10%) volt.
4. Power Supplies: Class I or II output.
5. Surge Protection: The system must survive 250 repetitive strikes of “C Low” (C Low: 6kV/1.2 x 50 µs, 10kA/8 x 20 µs) waveforms at 1-minute intervals with less than 10% degradation in clamping voltage. “C Low” waveforms are as defined in IEEE/ASNI C62.41.2-2002, Scenario 1 Location Category C.
6. Power Factor (PF): ≥ 0.90.
7. Total Harmonic Distortion (THD): ≤ 20%.
8. Comply with FCC Title 47 CFR Part 18 Non-consumer RFI/EMI Standards.
9. Drivers shall be reduction of hazardous substances (ROHS)-compliant.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install lighting in accordance with the NEC, as shown on the drawings, and in accordance with manufacturer’s recommendations.

B. Pole Foundations:
1. Excavate only as necessary to provide sufficient working clearance for installation of forms and proper use of tamper to the full depth of the excavation. Prevent surface water from flowing into the excavation. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath, and the end of conduit.
2. Set anchor bolts according to anchor-bolt templates furnished by the pole manufacturer.
3. Install poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.

C. Adjust luminaries that require field adjustment or aiming.

3.02 GROUNDING

Ground noncurrent-carrying parts of equipment, including metal poles, luminaires, mounting arms, brackets, and metallic enclosures, as specified in Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially-treated or tined connectors suitable and listed for this purpose.

3.03 ACCEPTANCE CHECKS AND TESTS

Verify operation after installing luminaires and energizing circuits.

END OF SECTION 26 56 00

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY
Section 28 10 00 – Access Control Systems

PART 1 GENERAL

1.01 WORK INCLUDES

A. Contractor Provide:
   1. Access Control Software, and Access Control Terminal Controllers (TC), for the monitoring and supervised programmable control of new security gate entries. Provide Software Programming, Interconnection (via LAN / WAN) and physical integration to equipment to be controlled.
   2. Provide proximity card readers, and physical connections.

1.02 RELATED WORK

A. Section 26 00 00 – General Electrical Requirements.
B. Section 26 05 33 – Conduit and Raceway.
C. Section 26 05 19 – Building Wire and Cable.
D. Section 26 05 26 – Grounding and Bonding.
E. Section 26 05 29 – Supporting Devices.

1.03 REFERENCES

A. Materials and workmanship shall conform to the latest issue of all industry standards, publications, or regulations referenced in this section and with the following references as applicable.
   1. NFPA 70 – National Electrical Code (2002 Edition)
   2. UL294 – Standard for Access Control Systems
   3. UL 1076 – Standard for Intrusion Alarm Security Systems
   4. NFPA 101 - Life Safety Code (2000 Edition)
   5. EIA – Electronic Industries Alliance
   6. FCC – Rules and Regulations (Part 15, Radio Frequency Devices)
   7. Illinois Accessibility Code (IAC) – Latest version.

1.04 NEW SYSTEM DESCRIPTION

A. The new security gate access control system shall be provided to accommodate access control by card readers as shown on the plan documents and shall control new vehicle gate entry on the grounds of the airport airside facilities. Through the Terminal Controllers (TC), new card readers shall provide inputs to the system with TC's providing output (Vend) connections to access devices.

B. The system shall support both manual and automatic inputs to the system. Each input shall be capable of initiating a number of different actions, such as operation of access gates or mandoors, activation of remote devices, secondary control and graphic map generation / integration with text description.

C. Access control functions shall include, validation based on time of day, day of week, holiday scheduling, automatic or manual retrieval of cardholder, and access validation based on positive verification of RFID card.

D. The System and associated TC's shall provide the capability for future interface to CCTV Digital Video Recorder systems through network interface or software based connection. The CCTV can be programmed to respond to alarm or card reader input, switching the appropriate camera(s) to the appropriate monitor(s) and/or recording devices.

E. Utilizing assigned passwords, it shall be possible to define the levels of system operation for each individual Operator. Operator Actions range from basic monitoring to full control of the system databases. Access levels with verification PINs shall be programmed for various users as directed by owner. Provide strict coordination with facility manager and Security staff during the setup of access levels.

F. The system programming shall be user-friendly Windows environment (use conventional "Title Bar", "Menu Bar", "Tool Bar" and "Status Bar") and allow mouse control of key functions. The programming shall be MENU driven and include online "Documentation", "Help" or "Tutorial" information, as well as online data entry examples. The software shall utilize combo boxes for all previously entered system-required data. The system shall provide supervised alarm and control point monitoring. Upon recognition of an alarm, the system shall be capable of displaying alarm information in graphical map and text format, and providing auxiliary switching inputs to future systems that are associated with the alarm point(s). The system shall be capable of arming or disarming alarm and control points both manually and automatically, by time of day, and day of week.

G. The method of communication from remote locations to the central components shall be transparent to the user. Network communications over LAN / WAN supporting the facility.

H. After installation, the owner shall be able to perform hardware configuration changes as desired without the services of the manufacturer.

I. Equipment repair shall be able to be accomplished on site, by module replacement, utilizing readily available components.

J. All control components shall utilize "Distributed-Processing" concepts. The distributed processing shall include the ability to download operating parameters to any field panel, thus allowing the field panel (TC) to provide full operating functions independent of any other system component.

K. The vehicle gate shall be card reader controlled for entering vehicles.

1. When the vehicle gate is in the card reader control mode of operation the vehicle driver shall be required to hold an access card up to a card reader mounted on a pedestal outside the gate. Upon a valid card read entry the security system shall signal the vehicle gate to open.

L. The vehicle gate shall have a free exit loop for exiting vehicles.

1. A detector loop shall be provided upstream of the gate detector loop on the airside. When a vehicle is present over the free exit loop the vehicle gate shall open.

M. Entry and Exit Gate Detector Loop Control of Vehicle Gate

1. A detector loop shall be provided by the gate contractor in the drive lane adjacent to the card reader pedestal. The security system shall enable the card reader when a vehicle is present over the loop and shall disable the card reader when a vehicle is not present over the loop.

2. The gate contractor shall provide a pair of terminals connected to the detector loop such that when a vehicle is detected a maintained contact closure shall be placed across those terminals. When the vehicle is no longer detected the contact shall return to the open condition.

1.05 QUALITY ASSURANCE

A. Supplier / System Integrator: The access control system shall be from a single-source supplier / system integrator specializing in intrusion detection and access control systems with a minimum of 15 years experience. Technicians working on project must be certified on the hardware and software used for this project.

B. System Equipment shall be that of Kantech (Base Bid) or equals per the alternate bid items listed here-in.

C. Installer: Company specializing in intrusion detection and access control systems with a minimum of five years experience installing systems of similar size and scope.

1.06 SUBMITTALS

A. Manufacturer’s Data:

1. Submit three (3) copies of:
   a. Product Data Sheets
   b. Installation Instructions
   c. Detailed Wiring Diagrams.
2. Authorized Dealer Certificate and Certified Training Certificates of installers who will be working on this project.

B. Shop Drawings

1. Submit copies as outlined under the General Conditions of the Specification, including:

a. Field Controller equipment location wall layouts, including size requirements.
b. Detailed wiring diagrams of Field Controllers, Integration Details, and head-end devices.
c. Load calculations of all security equipment for verification of sizing electrical.
d. Detailed integrated wiring connection drawings depicting termination to field controlled devices (Access Gates, man doors, etc).
e. Detailed programming flow-charts and programming schedules as required for programming the system. Provide a hardcopy of all users and access levels, PINs and security clearances as entered into the system. Turn over to owner / engineer after final programming is complete.

C. As-Built Drawings
1. Update Construction Drawings to create final As-Built Drawings. Submit 3 copies to Architect / Engineer for incorporation in closeout documents for owner's use.

1.07 OPERATION AND MAINTENANCE MANUALS

A. Operation Data: Include 3 copies of the software User Manuals.

B. Maintenance Data: Include maintenance and repair procedures.

C. Submit all O&M documentation in 3-ring binder format.

1.08 PRODUCT HANDLING AND STORAGE

A. Contractor shall store equipment and all associated product off site until ready for physical installation. On delivery to site, promptly install all equipment as required.

1.09 WARRANTY AND SERVICE AGREEMENT

A. All equipment, materials, and labor shall be guaranteed for a period of 1-year (365 days) from the date of final acceptance by the Owner.

B. Provide any software maintenance updates or upgrades at no additional cost to the Owner during this period.

C. Perform two (2) scheduled preventative maintenance site visits per year during the warranty period.

D. Response Times – Normal business hours shall be 8:00 AM to 3:30 PM Monday through Friday. Calls for service before noon shall be responded to on-site before the end of the next day.

PART 2 PRODUCTS

2.01 ACCESS CONTROL MANAGEMENT SYSTEM

A. The Access Control Management System (SMS) shall be the Kantech EntraPass Corporate Edition. (Base Bid and Basis of Design)

B. Or approved equal.

2.02 BASIC CENTRAL SYSTEM COMPONENTS

A. Communications Interface to Field Controllers Supported:

1. RS-232
2. RS-485
3. TCP/IP

B. Distributed Intelligence

1. The system shall use distributed intelligence architecture, with controllers operating independently of one another.
2. Globalized functions for all controllers connected to communications LAN/WAN shall include: Use Count, Absentee Limit, Temporary Days, Passback, and Global I/O and shall not require the host to be online for processing and control.

C. Stand Alone Operation

1. All database information required for stand-alone operation shall be stored at the control panel level. All decision-making shall be performed at the control panel, eliminating the need for degraded mode operation.
2. Proprietary software programs and control logic information used to coordinate and drive system hardware shall be stored in Flash Downloadable Read Only Memory.

2.03 SYSTEM CONFIGURATION

A. Host Computer to Controller Communication Protocols

1. Communications between the computer and the controller shall be accomplished by Network Communications and shall be encrypted using a cipher feedback method. The encryption shall be full time and not require any programming or key setting to operate. The host computer is the existing computer system at the Vermilion Regional Airport. All communications shall be via encrypted VPN communications between the two sites. The proposed system shall be fully compatible with the existing system.
2. The system shall utilize TCP/IP for communicating over computer networks.

3. All of the communications protocols shall be supported simultaneously on the system.

B. Host Computer to Controller Communication Transmission Methods/Hardware

1. Communications between the computer and the controller shall be over the owners administration network routed through the secure VPN communication between the airport facilities.

2.04 SYSTEM SOFTWARE

A. Operator

1. Operators entered into the system shall take on the Rights of the Operator Group to which they are assigned. In addition, a unique set of Permissions can be defined per Operator which grant or deny the Operator's ability to perform system functions, like: Acknowledge and Clear 1 or more alarms; Assign/Unassign Credentials; Change Alarm and Event Viewer Properties; Display Card Reader Codes; Download Credentials; Preview and Print Badges; Use any or all of the Component Windows.

B. CCTV Interface

1. System Software shall allow the ability to define selected inputs to be sent to a CCTV DVR system as selected outputs. On a given input or event, a selected or programmed output shall be created and sent via contact closure to the CCTV DVR system. The provided outputs from the Terminal Controllers (TC) shall provide for specific event triggering at the DVR through the CCTV DVR alarm inputs.

C. Controller Properties

1. Controller Properties shall define all General settings for the Controller. These setting will include: Name, Type, Address, Local Time Zone, Enabled Status, Firmware Revision Number and Date, Expansion Option Boards Installed and available Hardware. All additional Controller Setup Options can be defined here and are detailed in the Firmware Features section below.

D. Controller Device Properties

1. The Controller Device Properties shall define all connected field devices, including: Gates, Doors, Readers, Inputs, Relays, Expansion Inputs, and Expansion Relays. Device names and all operating parameters shall be definable if operation other than the included defaults is required.

E. Graphics

1. The Graphics application shall allow the Operator to add, delete or modify graphic floorplans and add indicator icons to graphic floorplans that represent Controllers, input/output points, readers, or cameras located in the facility.

2. Provide graphical screens that represent the access gates and turnstiles within the grounds and access points within the facilities.

2.05 HARDWARE REQUIREMENTS

A. Controllers (Kantech KT-2)

1. There shall be one primary type of terminal controller: Access control (8 door). Alarm monitoring (16 supervised inputs; and relay control, up to 32 relays may be added with the addition of cards, and expansion boards. Communications with system over TCP/IP protocol. Connect to facility LAN / WAN.

B. Controller Board

1. The controller board shall be microprocessor based, incorporating Flash ROM (firmware) downloadable from the Host Computer, RAM (User Information, System Setups, Event Transaction Buffer) and a Clock/Calendar. The ROM shall be modularly upgradeable in the field for enhancements to system features. All powered connections to the controller board shall be protected by fuses. All wiring connections to the controller board shall be to "Phoenix" type screw terminals. Each door connection shall consist of terminals for two readers, one 10 Amp rated Form C dry output relay for lock / operate-vend control, and one input for monitoring a status switch, a request-to-exit device, and a tamper switch. There shall be status indicator lights for active relays, as well as diagnostic indicator lights to aid in system troubleshooting. There shall be dedicated alarm output relay(s) for external reporting of the following conditions: Alarm; Duress; Tamper; and Trouble.

C. Enclosure

1. The controller enclosure shall be a NEMA style metal cabinet designed for surface mounting. It shall have a tamper proof, removable hinged door with a high security key lock. It shall have conduit knockouts to allow from 1/2" to 1" conduit to be used for wire entry into the cabinet.

D. Internal Power Supply

1. The controller shall have an internal power supply that will accept 60 Hz/100 - 120 VAC. The primary side of the power supply shall be protected with a fuse. The power supply shall provide VDC power required for the controller board, internal battery charger, selected card readers, and reader interface boards.
2. Provide additional 120VAC power circuits to each terminal controller as required for powering of additional modules and equipment.

E. Standby Battery

1. The controller shall have an internal standby battery that is capable of running the system during AC power interruptions. It shall be recharged by a charging circuit incorporated into the controller board. Batteries shall

be sized to support a minimum of 4 hrs of normal operation after primary power failure.

F. Alarm Inputs

1. The controller shall be capable of accepting up to 32 additional supervised alarm inputs, in increments of 8. The sensitivity of the line supervision shall be 2%. The alarm expansion boards shall be mounted in the controller cabinet and connect to the controller board via an expansion bus cable.

G. Relay Output

1. The access control alarm monitoring controllers shall be capable of accepting up to 32 additional Form C, 2 Amp rated relay outputs in increments of 8. These outputs shall be used for control applications other than standard door access, such as elevator floor control, local door annunciators, HVAC interface, CCTV alarm trigger, etc. The relay expansion boards shall be mounted in the controller cabinet and connect to the controller board via an expansion bus cable. (Future Capacity)

H. Intelligent Reader Interface

1. The control panels shall utilize an intelligent reader interface to communicate with card readers of various types. The interface shall be microprocessor based and allow data format Wiegand (26 to 55 bit) for RFID card readers. The interface shall utilize a digitizing algorithm, which will convert the card data to a unique number, thus, eliminating the need for facility codes. A single interface shall support readers associated with each gate. The interface shall be U.L. Listed to U.L.294.

2.06 CONTROLLER FIRMWARE

A. General Features

1. The software for the controller shall reside in Flash ROM (firmware) and be located on a plug removable module on the controller board to facilitate easy field upgradability of the features. All of the necessary software for a fully functional System is located in the controller. The controller firmware shall include the following general features at a minimum and be fully supported by the Velocity head-end.
   a. 3 - 15 digit keypad Code's
   b. Duress digit for keypad Code's
   c. 150 Time Zones for access restriction and automatic event control
   d. 128 Access Zones for access management
   e. 256 Control Zones for alarm and relay management
   f. 366 programmable holidays this year, 366 days next year. Each Holiday may be assigned to 1 – 4 Holiday Schedules.
   g. Automatic daylight savings time clock adjustment
   h. 27 different functions for Code's and cards, e.g. access, unlock, re-lock, alarm mask, relay control
   i. Add user records
   j. Tag users for annunciation at host computer
   k. 4,000 Users
   l. 750 event, 750 alarm transaction buffer

B. Access Control Features

1. The controller shall include the following access control features at a minimum.
   a. Restrict access by: time of day; day of week; door; holiday
   b. Momentary Access of door up to 8100 seconds
   c. Extended Access for User Definable Momentary Access duration.
   d. Special Needs Time Extension to provide additional time for Momentary Access and Door Open Too Long for selected people.
   e. Unlock/Re-lock of door by CODE, card or Time Zone
   f. Door status monitoring shall allow for: door forced monitoring; door-open-too-long monitoring; door-open-too-long while door is unlocked; auto-re-lock of door when opened or closed
   g. Request-to-exit masks alarm and/or unlocks door
   h. 2-person requirement by door. A user can be defined as Normal, A/B Rule A, A/B Rule B, Executive Override. Can be disabled by Time Zone.
   i. 63 Passback Zones. Can be disabled by Time Zone. A User can designate with Passback Executive Override.
   j. Use Count limits on users
   k. Absentee Rule limits on users
   l. Temporary Day limits on users

m. Occupancy Counting / Minimum & Maximum limits per Passback Zone
n. Deadman CODE / Timer
o. Threat Levels – 99 Levels may be defined. Based on the Level in effect for the facility, selected readers may be disabled, dual readers in Card/Code Only During Time Zone can require dual, and selected User's Credentials can be disabled.

C. Alarm Management Features

1. The controller shall include the following alarm management features at a minimum.

a. Momentarily mask alarm by CODE and/or card
b. Mask/unmask alarm by CODE and/or card or by Time Zone
c. Alarm device supervised while masked
d. Tamper switch on alarm device monitored while masked
e. Tamper Input may be configured to operate as a "Latch Monitor" with the appropriate door lock hardware.
f. Entry/Exit delay per alarm input
g. Alarm input triggers relay/s

D. Relay Control Features

1. The controller shall include the following relay control features at a minimum.
a. CODE and/or card, input, or other relay triggers relay/s
b. Trigger relay/s by time zone
c. Relay may be normally de-energized or energized
d. Disable relay/s during time zone
e. Clear relay at end of time zone

2.07 CARD READER

A. Readers

1. The controllers shall accept the following reader technology concurrently: Wiegand for RFID card reader. The readers can be used for access control, alarm management, and/or relay control and shall be capable of being used alone (card only).

B. Proximity Type Card Reader

1. The controller shall be capable of using proximity readers that output a standard 26-55 Bit Wiegand data format. The readers can have a medium read range and be unidirectional or bi-directional.

2. Readers shall have a minimum read range of 12-inches when mounted directly to a metal surface. Each reader shall be gray in color and shall be of the "slim-line" type for surface mullion mount to mount to single gang box.

3. Readers shall be Manufactured by H.I.D. Corporation

4. Provide HID Indala Proximity Mid-Range Readers 610 Series Reader or approved equal, with wiegand format output for mount at each vehicle entry point as shown on the plans.

C. Long Range Tag and Card Reader

1. The controller shall be capable of using proximity readers that output a standard 26-55 Bit Wiegand data format. The readers shall have a long-read range and be unidirectional.
2. Readers shall have a minimum read range of 25-feet when mounted per manufacturers recommendation.
3. Reader shall be mounted on pole at manufacturer recommended height with required mounting hardware.
4. Readers shall be Manufactured by Applied Wireless ID (AWID).
5. Provide LR-3000 Long-Range Readers or approved equal, with wiegand format output for mount at each vehicle entry point as shown on the plans.

D. Gooseneck Mount for Card Readers.

1. As noted on drawings, provide dual steel gooseneck stand for mount of high and low readers located at gate entries.
   a. Unit shall provide mounting provisions for reader at large truck level and standard vehicle level.
   b. Mount to concrete base as required.
   c. Color: Natural Aluminum or as directed by Architect.
   d. Unit shall be fabricated welded steel.

2.08 AUXILIARY POWER SUPPLY

A. Provide dedicated auxiliary power supplies for the operation and support of control hardware and locking devices. Auxiliary power supply shall be surface wall mount type metal steel, NEMA 1 enclosure. Power supply shall provide a minimum of 8 amps of Direct Current (DC) power rated at 12 Volts. Power supply shall provide adequate space in lower portion of enclosure for the mounting of standby battery backup. Batteries shall be of the Gel-cell or lead-acid type and shall be sized to support complete locking and system control operations for a period of 4 hrs after primary power failure. Power supply shall incorporate a door mounted tamper switch and locking hardware for security. Outputs shall be fused and surge protected using integral on board electronics.

1. Provide power supplies as required by access control system manufacturer or one of the following additional manufactures:
   a. Securitron
   b. Locknetics
   c. Alarm-Saf
   d. Altronix

2.09 ENCLOSURE HEATER

A. Provide fan forced enclosure heater for access control panel as shown on the plans.

1. Heater shall provide the following functionality:
   a. Watts: 200W
   b. Current: 1.9A
   c. Voltage: 120VAC, 1PH
   d. Thermostat range adjustable from 0°F to 100°F (-18°C to 38°C)
   e. Forced Air Fan
   f. Surface Mount Type
   g. Housing Material Aluminum

2.10 SURGE PROTECTOR

A. Provide surge protection units for protection of all circuits (Readers, Communications and Control) physically leaving any building. Surge Protectors shall protect individual cabling runs and shall be installed at both the direct point of exit from a building and the point of entry to a building or device location. Electrical contractor shall install the individual surge suppression module in a listed and approved manner. Provide grounding as required per the manufacturers listed instructions.

1. Surge Protectors shall provide the following functionality:

   a. Flame Retardant Encapsulated Housing.
   b. Terminal Barrier Strip screw terminal connectors.
   c. Continuous Current: 3 Amps Power, 150mA (Data).
   d. Response Time: <1 nSec.
   e. Minimum Voltage: 18 VDC - 38 VDC.
   f. Max Surge Current: 3,000 Joules.
   g. Max Energy Dissipation: 37 Joules.

2. Card Reader Surge Protector:
   a. Ditek DTK-4LVPLCR
   b. or equal.

3. Camera Surge Protector:
   a. Ditek DTK-PVPIP
   b. or equal

2.11 OUTDOOR CAMERA

A. Provide outdoor camera, mounting hardware and licenses required for outdoor cameras as shown on the plans.

1. Camera shall provide the following functionality or approved equal:
   a. Image Sensor: Sony STARVIS 5.69Mega Pixels Image Sensor
   b. Scan System: Progressive Scan
   c. Total Pixels: 2704(H) x 2104(V), 5.69 Mega Pixels
   d. Effective Pixels: 2616(H) x 1964(V), 5.14 Mega pixels
   e. Day & Night: Auto / Day (Color) / Night (BW), ICR Control
   f. Privacy Area: On / Off (8 Programmable Zones)
   g. Motion Detection: 432 Zone, Sensitivity 1~5 Step, On / Off
   h. WDR: Real WDR On / Off (Adjust)
   i. DNR: 2DNR, 3DNR, On / Off (Adjust)
   j. SLDC: Simple Lens Distortion Correction, On / Off
   k. Defog: Detects Foggy, On / Off (Adjust)
   l. Elec. Shutter: Auto(1/20~1/30000), Suppress Rolling, Manual
   m. Color Adjust: Bright / Contrast / Saturation / Sharp / Hue
   n. White Balance: Auto / User
   o. OSD Display: Text, Date, Time, Event, On / Off
   p. Image Mirror: Normal / Mirror (H) / Flip(V) / Both (HV)
   q. OS: Windows
   r. Interface: RJ45 10/100 Base-T PoE
   s. Protocol: TCP/IP, UDP/IP, RTP, RTSP, RTCP, NTP, HTTP, DHCP, FTP, SMTP, DNS, DDNS
   t. Compress Format: H.265 / H.264 / MJPEG
   u. Resolution: 2560x1920 / 2560x1440 / 2048x1536 / 1920x1080 / 1280x720 / 640x480 / 640x360 / 320x240
   v. Max. Frame Rate: 30fps @ all resolution
   w. Video Quality: H.265 : Bitrate Control, H.264 : Bitrate Control, MJPEG : Quality Level Control
   x. Streaming: Two way
   y. Power Supply: 12vDC
   z. Operating Temp: -20ºC ~ +50ºC
   aa. Preservation Temp: -20ºC ~ +50ºC
   bb. Humidity: 0% ~ 95%

2.12 NETWORK SWITCH

A. Provide 5-Port Industrial PoE+ Unmanaged Ethernet Switch, w/4*10/100Tx (30W/Port) + 1*10/100Tx, 12~36VDC and all network programming required for the access control and cameras.

1. Network switch (Basis of Design) shall be manufactured by Antaira Model No. LNP-0500-24
2. Or Approved Equal.

EXECUTION

3.01 INSTALLATION

A. Install system in accordance with manufacturer's instructions.

B. Install wiring for alarm and access control circuit conductors in conduit. Use 22 AWG minimum size conductors for communication and 18 AWG minimum size for power conductors.

1. Reference plan sheets for cable requirements.
   a. Contractor shall confirm all cable requirements with supplier prior to bidding. Any requirements different that those specified shall be incorporated for proper operation.

C. Make conduit and wiring connections to new and equipment and hardware devices as required.

D. Coordinate all field cabling and terminal connections with other equipment provided. Field coordination with all equipment vendors shall be the sole responsibility of the contractor. Verify all system and equipment requirements prior to ordering equipment or installing supporting cable.

3.02 TRAINING

A. The contractor shall coordinate with the Airport System Administrators for one (1) 4-hour Operator training session on the Operational System. Training to be conducted on-site on the actual running system.

B. Coordinate all training session scheduling with the Airport a minimum of 10 days in advance.

3.03 GUARANTEE

A. The contractor shall guarantee all wiring and terminal equipment to be free from inherent and mechanical defects due to workmanship and materials used for a period of one (1) year from date of substantial completion.

B. It shall be the responsibility of the equipment supplier, and the contractor, to furnish a one (1) year written warranty. Warranty shall list all equipment in the system and state that equipment to be free from inherent and mechanical defects due to workmanship and materials for a period of one (1) year from date of startup or beneficial use of the system.

C. Warranty service for the equipment shall be provided by the system supplier’s factory trained representative during normal working hours, Monday through Friday, excluding holidays. Emergency service provided at times other than as stipulated above shall be available from the same source at additional cost to the owner.

D. For follow-up visits or service calls, the provider must be able to respond from a company-owned office that is located less than 100 mi. from the actual jobsite.

END OF SECTION 28 10 00