GLMVArchitecture

PROJECT MANUAL

DODGE CITY USD 443
NEW SITE SIGNAGE AT DODGE CITY HIGH SCHOOL
ARCHITECT'S PROJECT NUMBER 00820.19001

DODGE CITY, KANSAS

DATE: FEBRUARY 4, 2019

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INVITATION TO BID

OWNER: Dodge City Unified School District 443
Board of Education
1000 Second Avenue
Dodge City, Kansas 67801

PROJECTS: New Site Signage at Dodge City High School
Dodge City, Kansas

PROJECT SCOPE:

This Project consists of new site signs for Dodge City High School.

ARCHITECTS:

Architects for this Project is GLMV Architecture, Inc., Wichita, Kansas.

BID RECEIVING:

A single Bid will be received for this Project. Construction will be performed under a single contract between the Owner and Contractor.

Sealed Bids will be received at the Office of the Clerk of the Board of Education, 1000 Second Avenue, Dodge City, Kansas, in accordance with "Instructions to Bidders" included in the Project Manual for the following dates and times:

Until 10:00 a.m. CDT, Thursday, February 28, 2019.

BIDDING DOCUMENTS:

Bidding Documents may be examined at the following locations:

GLMV Architecture, Inc.
1525 E. Douglas
Wichita, Kansas 67211

Dodge City Chamber of Commerce
311 W. Spruce Street
Dodge City, Kansas 67801

KCNR, LLC
230 S. Laura, Suite 101
Wichita, Kansas 67211

Bona fide Bidders may secure up to 1 copy of the Bidding Documents from the Architects without cost. The documents are also available electronically.

BID SECURITY:

Bid Security in the amount of 5 percent of the Base Bid will be required to accompany Bid proposals and shall be made payable to Dodge City USD 443.

BID GUARANTEE:

All Bidders shall guarantee Bid proposal for a period of 30 days after date of receipt of Bids. No Bidder may withdraw his Bid during that period of time.

OWNER'S RESERVATION:

Dodge City USD 443 reserves the right to reject any and all Bids and to waive informalities in Bidding.

Owner
Mr. Bill Hammond
Executive Director of Business Operations
Unified School District 443
1000 Second Avenue
Dodge City, KS 67801

Project Architect
Bradley Doeden, AIA, LEED AP
Project Manager
GLMV Architecture, Inc.
1525 E. Douglas
Wichita, KS 67211
(316) 265-9367

END OF INVITATION TO BID

BID FORM

TO: Dodge City Unified School District 443
Dodge City, Kansas

Pursuant to and in compliance with the Invitation to Bid and the proposed Contract Documents relating to construction of:

New Site Signage at Dodge City High School, Dodge City, Kansas

including Addenda _____ the undersigned, having become thoroughly familiar with the terms and conditions of the proposed Contract Documents and with local conditions affecting the performance and costs of the Work at the place where the Work is to be completed, and having fully inspected the site in all particulars, hereby proposes and agrees to fully perform the Work within the time stated and in strict accordance with the proposed Contract Documents, including furnishing of any and all labor and materials, and to do all of the work required to construct and complete said Work in accordance with the Contract Documents, for the following sum of money:

BASE BID:

All labor, material, services, and equipment necessary for completion of the Work shown on the Drawings and in the Specifications.

_____

_____ Dollars ($_____)

BID SECURITY:

Accompanying the Bid Proposal is a Bid Bond or Cashier's Check in the amount of:

_____

_____ Dollars ($_____)

payable to Dodge City USD 443. Bid security shall be forfeited as liquidated damages in the event the Undersigned fails to enter into Contract Agreement with the Owner and furnish all other required documents within 5 days after receipt of Notice of Award.

COMPLETION TIME:

If awarded this Contract, the Undersigned will complete the Work in _____ calendar days from execution of the Contract for Construction.

OWNER'S RESERVATION:

I understand that the Owner reserves the right to reject this Bid, but that this Base Bid shall remain open and shall not be withdrawn for a period of 30 days from the date prescribed for its opening.

CONTRACT EXECUTION:

If written notice of the acceptance of this Bid is mailed or delivered to the undersigned, within 30 days after the date set for the opening of this Bid, or at any other time thereafter before it is withdrawn, the undersigned will execute and deliver the Contract to the Owner in accordance with this Bid as accepted, and will also furnish and deliver to the Owner the Performance Bond, Labor and Material Payment Bond and Statutory Bond (in accordance with the Contract Documents and Bid as accepted), and proof of insurance coverage, all within 10 days after personal delivery or after deposit in the mails of the notification of acceptance of this Bid.

The form of contract shall be the "Standard Form of Agreement Between Contractor and Owner for Construction of Buildings," AIA Document A101.

Notice of acceptance, or request for additional information, may be addressed to the undersigned at the address set forth below.

The names of all persons interested in the foregoing Bid as principals are:

(IMPORTANT NOTICE: If Bidder or other interested person is a corporation, give legal name of corporation, state where incorporated and names of president and secretary thereof; if a partnership, give name of the firm and names of all individual co-partners composing the firm; if Bidder or other interested person is an individual, give first and last names in full.)

_____

_____

_____

SIGN HERE: _____

_____

_____

Signature of Bidder

NOTE: If Bidder is a corporation, set forth the legal name of the corporation, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if Bidder is a partnership, set forth the name of the firm together with the signature of the partnership.

Business address: _____

_____

Telephone Number: _____

Date of Proposal: _____

IMPORTANT NOTICE: Bid Form is to be submitted in duplicate, together with guarantee (Bid Bond or Certified Check) as specified in the Invitation to Bid.

END OF BID FORM

SECTION 010600 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including the Drawings, which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in the Contract Documents are defined generally in this article. Definitions and explanations of this Section are not necessarily either complete or exclusive but are general for the Work to the extent not state more explicitly in another provision of the Contract Documents.

B. General Requirements: The provisions or requirements of Division 01 Sections. General Requirements apply to entire Work of Contract and, where so indicated, to other elements of work which are included in the Project.

C. Indicated: The term "indicated" is a cross-reference to details, notes, or schedules on the Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for the purpose of helping the reader locate a cross-reference, and no limitation of location is intended except as specifically noted.

D. Directed, Requested, etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Architect," "requested by Architect," etc. However, no such implied meaning will be interpreted to extend Architect's responsibility into the Contractor's area of construction supervision.

E. Approve: Where used in conjunction with Architect's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of the term "approved," will be held to limitations of the Architect's responsibilities and duties as specified in the General and Supplementary Conditions. In no case will "approval" by Architect be interpreted as a release of the Contractor from responsibilities to fulfill requirements of the Contract Documents.

F. Project Site: The space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the Project. The extent and location of the Project site is shown on the Drawings.

G. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

H. Install: Except as otherwise defined in greater detail, term “install” is used to describe operations at Project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations, as applicable to each instance.

I. Provide: Except as otherwise defined in greater detail, the term “provide” means to furnish and install, complete and ready for the intended use, as applicable in each instance.

J. Installer: The entity (person or firm) engaged by the Contractor or its subcontractor or sub-subcontractor for the performance of a particular unit of work at the Project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in the operations they are engaged to perform.

K. Testing Laboratory: An independent entity engaged to perform specific inspections or tests of the work, either at the Project site, or elsewhere; and to report and (if required) interpret results of those inspections or tests.

1.3 FORMAT AND SPECIFICATION EXPLANATIONS

A. Section Numbering: Used to facilitate cross-references in Contract Documents. Sections are placed in the Project Manual in numeric sequence; however, numbering sequence is not complete, and the listing of Sections at the beginning of the Project Manual must be consulted to determine the numbers and names of the Specification Sections in the Contract Documents.

B. Page Numbering: Numbered independently for each Section; recorded in listing of Sections (Table of Contents) in Project Manual. The Section number is shown with the page number at the bottom of each page to facilitate location of text in the Project Manual.

C. Overlapping and Conflicting Requirements: Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping or those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written in the Contract Documents (not by way of reference to industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer all apparently equal but different requirements and uncertainties as to which level of quality is more stringent to the Architect for a decision before proceeding.

D. Minimum Quality/Quantity: In every instance, the quality level or quantity shown or specified is intended as the minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances or uncertainty to the Architect for decision before proceeding.

E. Specialist; Assignments: In certain instances, Specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work. These must be recognized as special requirements over which the Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application of regulations, union jurisdictions, and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of the entire set of requirements remains with the Contractor.

1.4 INDUSTRY STANDARDS

A. General Applicability of Standard: Applicable standards of the construction industry have the same force and effect (and are made apart of Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith.

1. Reference Standards: (referenced directly in Contract Documents or by governing regulations) have precedence over nonreferenced standards which are recognized in industry for applicability to work.

B. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with the standard in effect as of date of Contract Documents.

C. Abbreviations and Names: Where acronyms or abbreviations are used in Specifications or other Contract Documents, they are defined to mean the industry recognized name of trade association, standards generating organization, governing authority or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations," published by Gale Research Co., available in large libraries.

1.5 GOVERNING REGULATIONS/AUTHORITIES

A. Permits Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgements, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 010600

SECTION 011000 - SUMMARY

1.1 GENERAL

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

1.2 PROJECT IDENTIFICATION

A. The name of the Project is:
USD 443
New Site Signage at Dodge City High School
Dodge City, Kansas

B. The Work of the Contract has been identified in the Contract Documents by GLMV Architecture, Inc., and are dated January 25, 2019.

1.3 DESCRIPTION OF WORK

A. The Work can be described briefly without effect or influence on the requirements of Documents listed below as follows:

1. Fabricate and install new site signs for Dodge City High School including lighting and concrete pavement.

B. Summary by References: Work of Contract can be summarized by reference to the Contract, General Conditions, Supplementary Conditions, Specifications Sections as listed in the "Table of Contents" bound herewith, Drawings as listed in the "Index to Drawings," Addenda and Modifications to the Contract Documents issued subsequent to the initial printing of this Project Manual and including, but not necessarily limited to, printed matter reference by any of these. It is recognized that Work of Contract is also unavoidably affected or influence by governing regulations, natural phenomenon including weather conditions, and other forces outside the Contract Documents.

1.4 SCHEDULING CONFERENCES

A. It shall be the responsibility of the Contractor to hold regular scheduling and coordination conferences with subcontractors and other site contractors to advise the Owner and Architect, well in advance, of all construction sequences and activities. Include the Owner, or his designated representative as required, to accomplish timely and acceptable performance of the construction schedule.

1.5 COORDINATION

A. General: It shall be the responsibility of the General Contractor to schedule and coordinate the Work of all trades to provide a completed Project.

1.6 SEQUENCE OF CONSTRUCTION EVENTS

A. Sequence of construction activities will be coordinated by the General Contractor.

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section Includes: Contingency allowances.

1.3 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

A. Allowance: Allow Project Contingency allowance of $5,000 for the Work in the Base Bid.

END OF SECTION 012100

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 GENERAL

A. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract are considered requests for substitutions. The following are not requests for substitutions:

1. Substitutions requested during the bidding period and accepted by Addendum prior to award of the Contract.
2. Revisions to the Contract Documents requested by the Owner.
3. Specified options included in the Contract Documents.
4. Contractor's compliance with the regulations issued by governing authorities.

B. Substitution Request Submittal: The Architect will consider requests for substitution received within 60 days after commencement of the Work.

1. Submit 3 copies of each request for substitution. Submit requests according to procedures required for change-order proposals.
2. Identify the product or method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide documentation showing compliance with the requirements for substitutions and the following information:

    a. Coordination information, including a list of changes needed to other Work that will be necessary to accommodate the substitution.
    b. A comparison of the substitution with the Work specified, including performance, weight, size, durability, and visual effect.
    c. Product Data, including Drawings and descriptions of products and installation procedures.
    d. Samples, where applicable or requested.
    e. A statement indicating the effect on the contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the substitution on Contract Time.
    f. Cost information, including a proposal of the net change, if any in the Contract Sum.
    g. Certification that the substitution conforms to the Contract Documents and is appropriate for the applications indicated.
    h. The Contractor's waiver of rights to additional payment or time that may become necessary because of failure of the substitution to perform adequately.

4. Architect's Action: If necessary, the Architect will request additional information within 1 week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection within 2 weeks of receipt of the request. Acceptance will be in the form of a change order.

    a. Use the product specified if the Architect cannot make a decision within the time allocated.

PART 2 - PRODUCTS

2.1 CONDITIONS

A. The Architect will receive and consider a request for substitution when 1 or more of the following conditions are satisfied. Otherwise, the Architect will return the request without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Changes are in keeping with the intent of the Contract Documents.
3. The specified product cannot be provided within the Contract Time. The Architect will not consider a request if the specified product cannot be provided as a result of failure to pursue the Work promptly.
4. The request is related to an "or-equal" clause.
5. The substitution offers the Owner a substantial advantage, in cost, time, or other considerations, after deducting compensation to the Architect for redesign and increased cost of other construction.
6. The specified product cannot receive approval by a governing authority, and the substitution can be approved.

B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction not complying with the Contract Documents do not constitute an acceptable request for substitution, nor do they constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012500

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

    a. Application for Payment forms with Continuation Sheets.
    b. Contractor's Construction Schedule.

2. Submit the Schedule of Values to Architect at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least 1 line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

    a. Project name and location.
    b. Name of Architect.
    c. Architect's project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
4. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
5. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Progress payments shall be submitted to Architect by the 25th of the month. The period covered by each Application for Payment is 1 month, ending on the last day of the previous month.

D. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

E. Payment Application Forms: Use forms provided by Owner for Applications for Payment.

F. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated Schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

G. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Products list.
5. Submittals Schedule (preliminary if not final).
6. Copies of building permits.
7. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
8. Certificates of insurance and insurance policies.
9. Performance and payment bonds.

I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This Application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

B. Each Contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific Contractor.

C. Related Section Includes: Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of 1 part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of Submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.5 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:

a. Indicate functional and spatial relationships of components of Architectural, Structural, Civil, Mechanical, and Electrical Systems.
b. Indicate required installation sequences.
c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit 2 opaque copies of each submittal. Architect will return 1 copy.

a. Submit 5 copies where Coordination Drawings are required for operation and maintenance manuals. Architect will retain 2 copies; remainder will be returned. Mark up and retain 1 returned copy as a Project Record Drawing.

4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project Superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 5 days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 14 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative Construction Schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. Designation of key personnel and their duties.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.

h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. Preparation of Record Documents.
l. Work restrictions.
m. Owner's occupancy requirements.
n. Responsibility for temporary facilities and controls.
o. Parking availability.
p. Office, work, and storage areas.
q. Equipment deliveries and priorities.
r. First aid.
s. Security.
t. Progress cleaning.
u. Working hours.

3. Minutes: Record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. The Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written recommendations.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.

u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at monthly intervals (minimum). Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each general contractor, major subcontractors, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of Submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.

11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the Schedule have been made or recognized. Issue revised Schedule concurrently with the report of each meeting.

1.8 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Architect.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs: Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow 7 working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal.

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within 7 days if Contractor disagrees with response.

G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.

7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 GENERAL

A. Submittal Procedures: Coordinate submittal preparation with construction, fabrication, other submittals and activities that require sequential operations. Transmit in advance of construction operations to avoid delay.

1. Coordinate submittals for related operations to avoid delay because of the need to review submittals concurrently for coordination. The Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.
2. Processing: Allow 2 weeks from Architect's receipt of submittal for initial review. Allow more time if the Architect must delay processing to permit coordination. Allow 2 weeks for reprocessing.

    a. No extension of Contract time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

3. Submittal Transmittal: Package each submittal appropriately. Transmit with a transmittal form. The Architect will not accept submittals from sources other than the Contractor.

B. Submittal Schedule: After developing the Contractor's Construction Schedule, prepare a Schedule of Submittals. Submit within 10 days of submittal of the Construction Schedule.

1. Coordinate with list of subcontracts, Schedule of Values, list of products, and the Contractor's Construction Schedule.
2. Prepare the schedule in chronological order. Provide the following information:

    a. Date for first submittal.
    b. Related Section number.
    c. Submittal category (Shop Drawings, Product Data or Samples).
    d. Name of the subcontractor.
    e. Description of the Work covered.
    f. Date for the Architect's final approval.

3. Schedule Distribution: Distribute copies of the Contractor's Construction Schedule and the Submittal Schedule to the Architect, Owner, subcontractors, and parties required to comply with submittal dates. Post copies in the field office.

    a. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their Work and are no longer involved in construction activities.

b. Updating: Revise the schedule after each meeting or activity where revisions have been made. Issue the updated schedule concurrently with the report of each meeting.

C. Shop Drawings: Submit newly prepared information drawn to scale. Indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information. Include the following information:

1. Dimensions.
2. Identification of products and materials included by Sheet and Detail number.
3. Compliance with standards (provide a letter affirming compliance).
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Sheet Size: Except for templates and full-size Drawings, submit 4 correctable, reproducible prints and 1 blue- or black-line print on sheets at least 8-1/2 by 11 inches but no larger than 36 by 48 inches. The Architect will return the reproducible print.
7. If reproducible sheets are not furnished, submit 6 copies of all submittal data for all disciplines, except plumbing, mechanical, electrical and food services, where 8 copies are required.

a. Do not use Shop Drawings without an appropriate final stamp indicating action taken.
b. Provide a space on all documents to print shop drawing stamp.

D. Product Data: Collect Product Data into a single submittal for each element of construction. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, mark copies to indicate applicable information.

1. Include the following information:

a. Manufacturer’s printed recommendations.
b. Compliance with trade association standards.
c. Compliance with recognized testing agency standards.
d. Application of testing agency labels and seals.
e. Notation of dimensions verified by field measurements.
f. Notation of coordination requirements.

2. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
3. Submittals: Submit 4 copies; submit 5 copies where required for maintenance manuals. The Architect will retain 1, the Engineer will retain 1, and 2 will be returned to the Contractor.

a. Unless noncompliance with Contract Documents is observed, the submittal serves as the final submittal.

4. Distribution: Furnish copies to installers, subcontractors, suppliers, and other required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until a copy of Product Data is the Installer's possession.

    a. Do not use unmarked Product Data for construction.

E. Material Test/inspection and Reports, Geotechnical Studies:

1. Submit material test reports to the following parties no later than 1 business day after the date of the test procedure.

    a. Architect, 2 copies.

2. Reports shall be sent to the above parties in a manner that will assure receipt of the report no less than 2 business days after the report has been released for review. Use of fax transmission of the report with a hard copy to follow will be acceptable.
3. All reports of similar nature shall be submitted in the same format which is standard with the testing laboratory employed.
4. All reports shall have the following basic information:

    a. All reports of similar nature shall have sequential numbers with date and time of test.
    b. Name of test shall be given.
    c. Specification Section requiring the report shall be referenced.
    d. Result of the report shall be clearly stated.
    e. A bold letter statement shall be included on the report stating the test result "PASSED" or "FAILED" the test minimum requirements.
    f. Physical site location of where the test was taken shall be clearly stated on the report.
    g. Prevailing weather conditions shall be stated on the test report.

5. In instances where a material test failed to pass the required test, a schedule of rework and retest date shall be submitted to the Architect.

F. Quality Assurance Submittals: Submit quality control submittals, including design data, certifications, manufacturer's instructions, and manufacturer's field reports required under other Sections of the Specifications.

1. Certifications: Where certification that a product or installation complies with specified requirements is required, submit a notarized certification from the manufacturer certifying compliance.

G. Architect's Action: Except for submittals for the record or information, where action and return are required, the Architect will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

1. Action Stamp: The Architect will stamp each submittal with an action stamp. The Architect will mark the stamp appropriately to indicate the action taken.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013300

SECTION 014100 - PROCEDURES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. The types of minimum requirements for procedures and performance or control work of a general nature include but are not necessarily limited to the following categories:

1. Administrative/supervisory personnel.
2. Surveys and records or reports.
3. Limitations for use of Site.
4. Special reports.
5. Tradespeople and workmanship standards.
6. Inspections, tests, and reports.
7. General installation provisions.
8. Cutting and patching.
9. Cleaning and protection.

1.3 ADMINISTRATIVE/SUPERVISORY PERSONNEL

A. General: In addition to a General Superintendent, provide other administrative and supervisory personnel required for performance of Work.

B. Project Coordinator: Provide a full-time Project Coordinator, who is experienced in administration and supervision of construction including sitework, and who is authorized to act as the general coordinator of interfaces between units of work. For purposes of this provision, “interface” is defined to include the scheduling and sequencing of work, sharing or access to work spaces, installations, protection of each other’s work, cutting and patching, tolerances, cleaning, selections for compatibility, preparation of coordination drawings, inspections, tests, and temporary facilities and services.

1.4 SURVEYS AND RECORDS/REPORTS

A. General: Working from lines and levels established by property survey, and as shown in relation to the work, establish and maintain bench marks and other dependable markers to set lines and levels for the work as needed to properly locate each element of entire Project. Calculate and

measure required dimensions as shown (within recognized tolerances, if not otherwise indicated); do not scale Drawings to determine dimensions. Advise tradesmen performing the Work of marked lines and levels provided for their use in layout of Work.

B. Surveyor: Engage a Land Surveyor experienced and specializing in land survey work, who is registered in state where Project is located, to perform services specified in this Article. Cost of such services shall be paid by the Contractor.

C. Survey Procedures: Verify layout information shown on Drawings, in relation to property survey and existing benchmarks, before proceeding with layout of actual Work. As Work proceeds, check every major element for line, level and plumb (where applicable), and maintain an accurate surveyor's log or record book of such checks, available for Architect's/Engineer's reference at reasonable times. Record deviations from required lines and levels, and advise Architect/Engineer promptly upon detection of deviations exceeding indicated or recognized tolerances. Record deviations which are accepted (not corrected) on Record Drawings.

D. Record "AS-BUILT" Prints:

1. Contractor shall identify and record any deviations from plan location on these prints. All underground drainage systems shall be identified and dimensioned on these prints as well as any concealed systems.
2. At the completion of the Project, the Contractor shall create electronic As-built Drawings and forward to the Architect as a part of the Closeout Submittals.

1.5 LIMITATIONS FOR USE OF SITE

A. General: In addition to site utilization limitations and requirements shown on Drawings, and indicated by other Contract Documents, administer allocation of available space equitable among entities needing access and space, so as to produce best overall efficiency in performance of total work of Project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1.6 TRADESPERSONS AND WORKMANSHIP STANDARDS

A. General: Instigate and maintain procedures to ensure that persons performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality levels for workmanship in completed Work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

1.7 INSPECTIONS, TESTS AND REPORTS

A. General: Required inspection and testing services are intended to assist in determination of probable compliances of work with requirements, but do not relieve Contractor of responsibility for those compliances, or for general fulfillment of requirements of Contract Documents. Specified inspections and tests are not intended to limit Contractor's quality control program. Afford reasonable access to agencies performing tests and inspections.

B. Qualification of Testing Agencies: Except as otherwise indicated and except where manufacturer's testing facilities are indicated as acceptable, engage independent testing laboratories specializing in required services and complying with "Recommended Requirements for Independent Laboratory Qualification" by ACIL.

C. Reports: Submit test/inspection reports, including agency's analysis of results and recommendations where applicable, in duplicate to Architect/Engineer except as otherwise indicated, reference Section 013300 Submittal Procedures, for material test/inspection report distribution requirements, and submit copies directly to governing authorities where required or requested.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014100

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Use of utilities shall be provided by the Owner, provided utilities are used at Bright Beginnings Early Childhood Center.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pavement: Comply with Division 2 Section "Hot-Mix Asphalt Paving." and Section "Cement Concrete Pavement."

B. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts.

C. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide galvanized steel bases for supporting posts.

D. Wood Enclosure Fence: Plywood, 6 feet high, framed with four 2-by-4-inch rails, with preservative-treated wood posts spaced not more than 8 feet apart.

E. Gypsum Board: Minimum 1/2-inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36/C 36M.

F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

C. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

D. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

E. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install temporary electric power service overhead or underground, unless otherwise indicated.

F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Install lighting for Project identification sign.

G. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install 1 telephone line for each field office.

1. Provide additional telephone lines for the following:

a. Provide a dedicated telephone line for each facsimile machine and computer in each field office.

2. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Architect's office.
e. Engineers' offices.
f. Owner's office.
g. Principal subcontractors' field and home offices.

3. Provide Superintendent with cellular telephone or portable 2-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Identification and Temporary Signs: Provide Project identification signs. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

1. Provide temporary, directional signs for construction personnel and visitors.
2. Maintain and touchup signs so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Division 01 Section "Summary."

B. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

C. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner with 1set of keys.

D. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

F. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for products selected under an allowance.
2. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
3. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service

performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:

a. Specification Section number and title.
b. Generic name used in the Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.
h. Identification of items that require early submittal approval for scheduled delivery date.

3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.

a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.

4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
5. Architect's Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit 3 copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified material or product cannot be provided.

b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change Order.
b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. Comparable Product Requests: Submit 3 copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.

D. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between 2 or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Divisions 02 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide 1 of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by 1 of the manufacturers listed that complies with requirements.
5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide 1 of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by 1 of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by 1 of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than 1 contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

A. Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in these Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.

9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit 3 copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2- by 11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Sweep concrete floors broom clean in unoccupied spaces.
    i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    k. Remove labels that are not permanent.

l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 QUALITY ASSURANCE

A. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

PART 2 – PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.2 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I, gray.

a. Fly Ash: ASTM C 618, Class C.

B. Normal-Weight Aggregates: ASTM C 33 coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory

service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 3/4-inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494 M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

2.6 RELATED MATERIALS

A. Expansion and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, 2-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Type II, non-load-bearing, for bonding freshly mixed concrete to hardened concrete.

2. Types I and II, non-load-bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
3. Types IV and V, load-bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.7 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of fly ash to 20 percent.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Exterior Slabs-on-Grade:

1. Minimum Compressive Strength: 4,000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: Not less than 2 inches and not more than 5 inches.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.

2.9 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

PART 3 – EXECUTION

3.1 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Inspections:

1. Steel reinforcement placement.
2. Headed bolts and studs.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.
6. Verification of concrete strength before removal of shores and forms from beams and slabs.

END OF SECTION 033000

SECTION 101426 - EXTERIOR SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Nonilluminated parking and directional signs.
2. Nonilluminated monumental sign.
3. Internally illuminated pylon signs.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary Project identification signs and for temporary informational and directional signs.
2. Section 033000 "Cast-in-Place Concrete" for concrete fill in postholes and setting anchor bolts in concrete foundations for signs.

1.3 COORDINATION

A. Furnish templates and tolerance information for placement of sign-anchorage devices embedded in permanent construction by other installers.

B. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For signage.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign.

C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.

1. Include representative Samples of available typestyles and graphic symbols.

D. Samples for Verification: For each type of sign assembly, showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Parking and Directional Signs: Not less than 12 inches square, including corner and post.
2. Monumental Signs: Not less than 12 inches square, including corner.

E. Product Schedule: For post-and-panel and pylon signs. Use same designations indicated on Drawings or specified.

F. Delegated-Design Submittal: For monumental sign.

1. Include structural analysis calculations for signs indicated to comply with design loads; signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Evaluation Reports: For post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of products and an entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.
c. Separation or delamination of sheet materials and components.

2. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design sign structure and anchorage of parking, directional and monumental sign type(s) according to structural performance requirements.

B. Structural Performance: Signs and supporting elements shall withstand the effects of gravity and other loads within limits and under conditions indicated.

1. Uniform Wind Load: Per local building code authorities.
2. Concentrated Horizontal Load: Per local building code authorities.
3. Uniform and concentrated loads need not be assumed to act concurrently.

C. Thermal Movements: For exterior signs, allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 degrees F, ambient; 180 degrees F, material surfaces.

2.2 POST-AND-PANEL SIGNS

A. Parking and Directional Signs: Sign of hollow-box configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Parking Signs:

a. Basis of Design: Furnish and install 6 double-face, non-illuminated signs, as manufactured by Luminous Neon Inc., 2300 E. Wyatt Earp Boulevard, Dodge City, Kansas, (620) 227-2307.

1) Provide each sign consisting of a 4-foot-high by 3-foot-wide cabinet (0.090-inch aluminum skin, aluminum angle framework, red enamel finish, Scotchlite reflective white copy/logo/stripe, blue vinyl background).
2) Mount signs on 4-inch by 4-inch by 9-foot direct-bury painted aluminum tubing posts (blue enamel finish). Auger two 10-inch-diameter by 3-foot-deep footings per sign (excavation through dirt, including dirt haul-off). Set the posts in 3,000-psi concrete.
3) Form/pour a 10-inch by 48-inch by 5.5-inch-high concrete mow pad around each sign.
4) Overall height 4'-10".

2. Directional Signs:

a. Basis of Design: Furnish and install 5 double-face, non-illuminated signs, as manufactured by Luminous Neon Inc., 2300 E. Wyatt Earp Boulevard, Dodge City, Kansas, (620) 227-2307

1) Each sign will consist of a 5-foot-high by 4-foot-wide cabinet (0.090-inch aluminum skin, aluminum angle framework, blue enamel finish, Scotchlite reflective white copy/logo/stripe, red vinyl background).
2) Mount signs on 4-inch by 4-inch by 9-foot direct-bury painted aluminum tubing posts (red enamel finish).
3) Auger two 10-inch-diameter by 4-foot-deep footings per sign (excavation through dirt, including dirt haul-off). Set the posts in 3,000-psi concrete, and form/pour a 10-inch by 60-inch by 5.5-inch-high concrete mow pad around each sign.
4) Overall sign height shall be 5'-10".

3. Solid-Sheet Sign Panels, Returns, and Back: Aluminum sheet with finish specified in "Sign-Panel-Face Finish and Applied Graphics" Subparagraph and as follows:

a. Thickness: 0.090-inch.
b. Surface-Applied Graphics: Applied vinyl film.
c. Etched and Filled Graphics: Sign face etched or routed to receive enamel-paint infill.
d. Inset, Cutout Characters: Sign face routed to receive push-through acrylic graphics flush with or slightly projecting from the sign panel.

4. Hollow-Box Sign Frame: Entire perimeter framed with formed-aluminum sheet or extruded-aluminum, hollow-box-type frame with vertical edges attached to supports with aluminum fittings. Close top and bottom edges of panels with manufacturer's standard welded seams or extrusions.

a. Hollow-Box Depth: 8 inches.
b. Profile: Square.
c. Corner Condition in Elevation: Mitered.
d. Finish: Baked enamel. Match Drawings in Appendix.

5. Sign-Frame Mounting: As indicated on Drawings.

6. Posts: Aluminum.

    a. Shape: Square.
    b. Size: 4 by 4 inches.
    c. Installation Method: Direct burial.
    d. Finish and Color: Baked enamel. Match Drawings in Appendix.

2.3 MONUMENTAL SIGNS

A. Monumental Sign: Sign with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Entrance Monument Sign:

    a. Basis of Design: Furnish and install 1 single-face, non-illuminated sign, as manufactured by Luminous Neon Inc., 2300 E. Wyatt Earp Boulevard, Dodge City, Kansas, (620) 227-2307.

        1) The sign shall consist of a 4'-high by 18'-8"-wide main base cabinet (constructed of 0.090-inch aluminum skin, aluminum angle framework, with metallic silver enamel finish, and 7725-69 Duranodic bronze vinyl copy), and a 3" by 16'-8" bottom reveal (0.090-inch aluminum skin, aluminum angle framework, metallic silver enamel finish).
        2) Provide 54-inch-high individual aluminum channel letters (0.090-inch aluminum construction, metallic silver enamel finish, full painted aluminum backs, 18 inches deep).
        3) Furnish and set two 5.5" by 12' steel base poles in 36"-diameter by 6'-deep augured footings (excavation through dirt, including dirt haul-off), filled with 3,000-psi concrete, and form/pour a 2'-6" by 19'-8" by 5-1/2"-deep concrete mow pad.

            a) Weld the signage to the base poles, sitting down on the concrete pad.
            b) Overall sign height will be 9'-3".

        4) Provide and coordinate exterior light fixtures and concrete pad.

2. Solid-Sheet Sign Panels, Returns, and Back: Aluminum sheet with finish specified in "Sign-Panel-Face Finish and Applied Graphics" Subparagraph and as follows:

    a. Thickness: 0.090-inch.
    b. Surface-Applied Graphics: Applied vinyl film.
    c. Etched and Filled Graphics: Sign face etched or routed to receive enamel-paint infill.
    d. Inset, Cutout Characters: Sign face routed to receive push-through acrylic graphics flush with or slightly projecting from the sign panel.

3. Hollow-Box Sign Frame: Entire perimeter framed with formed-aluminum sheet or extruded-aluminum, hollow-box-type frame with vertical edges attached to supports with aluminum fittings. Close top and bottom edges of panels with manufacturer's standard welded seams or extrusions.

    a. Hollow-Box Depth: 18 inches.
    b. Profile: Square.
    c. Corner Condition in Elevation: Square.
    d. Finish and Color: Baked enamel. Match Drawing in Appendix.

4. Sign-Panel-Face Finish and Applied Graphics:

    a. Baked-Enamel Graphics: Manufacturer's standard, in color matching Drawings in Appendix.

2.4 MATERIALS

A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Vinyl Film: UV-resistant vinyl film of nominal thickness indicated, with pressure-sensitive, permanent adhesive on back; die cut to form characters or images as indicated on Drawings and suitable for exterior applications.

D. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV- and water-resistant for colors and exposure indicated.

2.5 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following unless otherwise indicated:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General:

    a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
    b. Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant, Allen-head, spanner-head or 1-way-head slots unless otherwise indicated.

4. Inserts: Furnish inserts to be set by other installers into concrete or masonry work.

2.6 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in locations concealed from view after final assembly.
2. Mill joints to tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed joints of flux, and dress exposed and contact surfaces.
4. Conceal fasteners and anchors unless indicated to be exposed; locate exposed fasteners where they will be inconspicuous.
5. Internally brace signs for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.

B. Sign Message Panels: Construct sign-panel surfaces to be smooth and to remain flat under installed conditions within a tolerance of plus or minus 1/16-inch measured diagonally from corner to corner.

1. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.
2. Increase panel thickness or reinforce with concealed stiffeners or backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.
3. Continuously weld joints and seams unless other methods are indicated; grind, fill, and dress welds to produce smooth, flush, exposed surfaces with welds invisible after final finishing.

C. Post Fabrication: Fabricate posts designed for structural performance indicated and of lengths required for installation method indicated for each sign.

1. Aluminum Posts: Manufacturer's standard 0.125-inch-thick, extruded-aluminum tubing unless otherwise indicated, with brackets or slots to engage sign panels. Include post caps, fillers, spacers, junction boxes, access panels, reinforcement where required for loading conditions, and related accessories required for complete installation.
2. Steel Posts: Fabricate from minimum 0.237-inch-thick, steel tubing unless otherwise indicated. Include post caps, fillers, spacers, junction boxes, access panels, reinforcement where required for loading conditions, and related accessories required for complete installation.
3. Direct Burial: Fabricate posts 36 inches longer than height of sign to permit direct burial or embedment in concrete foundations or concrete-filled postholes.
4. Baseplates: Fabricate posts with baseplates welded to bottom of posts. Drill holes in baseplate for anchor-bolt connection.

5. Reverse Sleeves: Provide inserts by sign manufacturer, sized for close fit inside posts. Size inserts for direct embedment in concrete foundations and to attach sign posts securely and prevent sign movement, but of a height not less than one-third of post height plus 36 inches for embedment.

    a. Provide through bolts to fasten posts to inserts.

D. Monument Sign Fabrication: Fabricate sign with integral base consisting of channels, angles, plates, or other fittings. Design and fabricate pylon and anchorage for structural performance indicated. Detail anchorage so that water can drain out of assembly without obstruction. Drill holes in members for anchor-bolt connection. Provide anchor bolts of size required for connecting base to concrete foundations.

1. Internal Frames: Manufacturer's standard internal aluminum framing system and anchorage, modified as required for Project requirements. Provide welded construction. Cut, drill, and tap units to receive hardware, bolts, and similar items.

2.7 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.8 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs.

C. Verify that anchorage devices embedded in permanent construction are correctly sized and located to accommodate signs.

D. Verify that electrical service is correctly sized and located to accommodate signs.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using installation methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign components are clean and free of materials or debris that would impair installation.
4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.3 INSTALLING POSTS

A. Vertical Tolerance: Set posts plumb within a tolerance of 1/16-inch in 3 feet.

B. Direct-Burial Method:

1. Excavation: Excavate posthole to dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating an additional 12 inches, backfilling with satisfactory soil or well-graded aggregate, and compacting to original subgrade elevation.
2. Setting in Earth: Set post in position, support to prevent movement, and backfill with satisfactory soil or well-graded aggregate as recommended in writing by manufacturer. Place and compact backfill in 6-inch lifts, compacting each lift.
3. Setting in Cast-in-Place Concrete: Set post in position, support to prevent movement, and place concrete in posthole as indicated on Drawings.

C. Baseplate Method:

1. Preset Anchor Bolts: Set post baseplate in position over anchor bolts projecting from concrete foundation, shim and support post to prevent movement, place washers and nuts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

2. Drilled-in-Place Anchor Bolts: Set post baseplate in position over concrete foundation, locate and drill anchor holes, shim and support post to prevent movement, place washers and anchor bolts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

3.4 INSTALLING MONUMENTAL SIGN

A. Vertical Tolerance: Install pylons plumb within a tolerance of 1/16-inch in 3 feet.

B. Attachment with Preset Anchor Bolts: Set sign base in position over anchor bolts projecting from concrete foundation, shim and support sign to prevent movement, place washers and nuts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

C. Attachment with Drilled-in-Place Anchor Bolts: Set pylon base in position over concrete foundation, locate and drill anchor holes, shim and support pylon to prevent movement, place washers and anchor bolts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

3.5 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

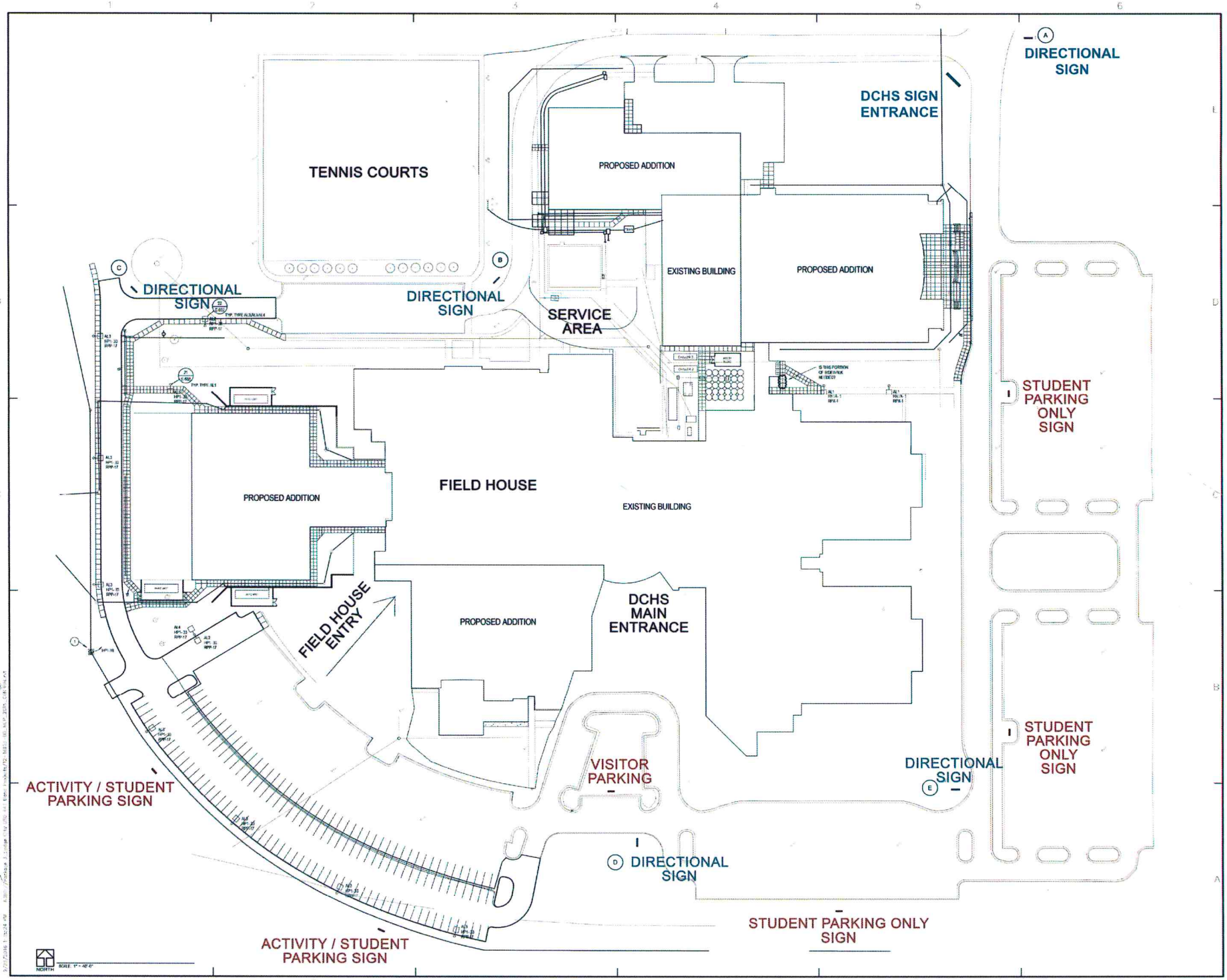
B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101426

Appendix

Appendix 1
Drawings of Parking and Directional Signs



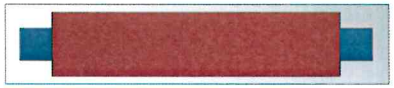
GLMV Architecture
1525 E. Douglas, Wichita, KS 67211
Tel: (316) 265-9367
www.glmv.com

USD 443 DODGE CITY PUBLIC SCHOOL

DODGE CITY HIGH SCHOOL

2201 W Ross Blvd Dodge City, KS 67801

(X3) (X2) (X1)



TOP VIEW

"All noted dimensions are approximate and may be modified slightly during manufacturing to allow proper component usage".

SPECIFICATIONS:

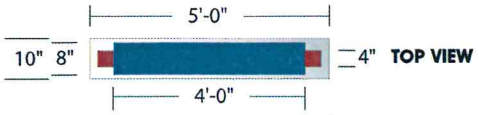
- FURNISH AND INSTALL (6) DOUBLE-FACE, NON-ILLUMINATED SIGNS, EACH CONSISTING OF A 4'X3' CABINET MOUNTED ON ALUMINUM TUBING
- COLORS: CABINET RED ENAMEL 7622, BLUE 288, COPY, LOGO AND STRIPE SCOTCHLITE REFLECTIVE WHITE, TUBING BLUE 288
- FONTS: GOTHAM BOLD, SCHOOL "DEMON" LOGO

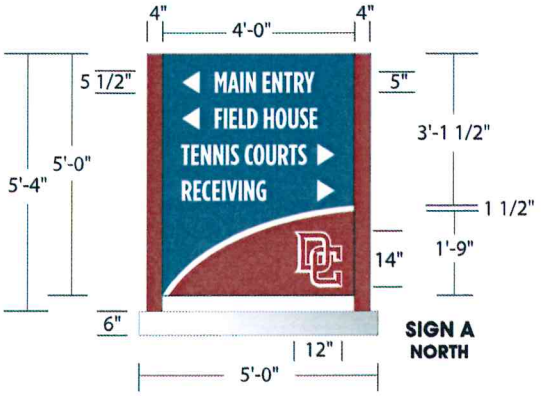
CUSTOMER: DODGE CITY HIGH SCHOOL
NAME: **TOM MONTGOMERY**
LOCATION: DODGE CITY, KS

DATE: 11/1/18
DESIGN NO.: NH-29470-1
ARTIST: JAH
SCALE: 1/2" = 1'

APPROVED: **DATE:**

LUMINOUS Neon Inc
ART & SIGN SYSTEMS





SIGN A
NORTH

SIGN A
SOUTH

SIGN B
NORTH

SIGN B
SOUTH

SIGN C
EAST

SIGN C
WEST

SIGN D
EAST

SIGN D
WEST

SIGN E
NORTH

SIGN E
SOUTH

CUSTOMER: DODGE CITY HIGH SCHOOL
NAME: TOM MONTGOMERY
LOCATION: DODGE CITY, KS

DATE: 8/1/18
DESIGN NO.: NM-29471
ARTIST: JAH

SCALE: 1/4" = 1'

SPECIFICATIONS

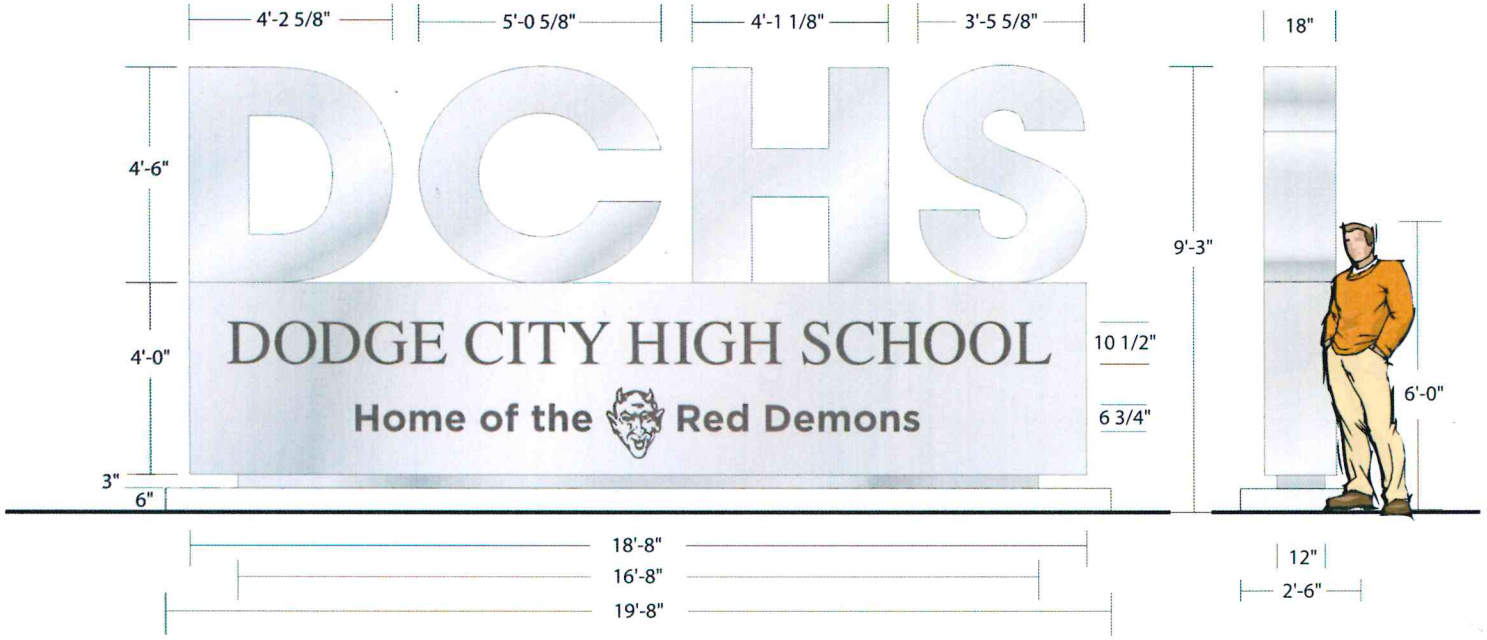
- FURNISH AND INSTALL (5) DOUBLE-FACE, NON-ILLUMINATED SIGNS, EACH CONSISTING OF A 5'X4' CABINET MOUNTED ON ALUMINUM TUBING
- COLORS: CABINET BLUE 288, RED 7622, COPY, LOGO AND STRIPE SCOTCHLITE REFLECTIVE WHITE, TUBING RED 7622
- FONTS: GOTHAM CONDENSED BOLD, GOTHAM BOLD ITALIC, SCHOOL LOGO

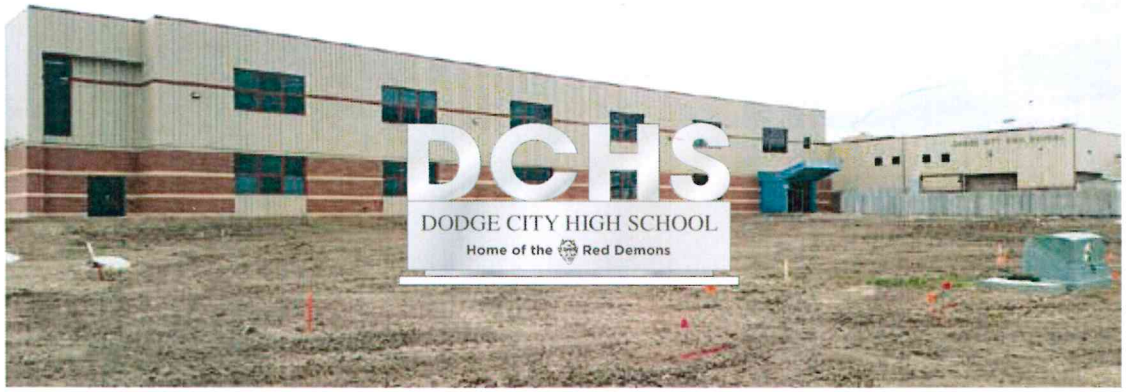
APPROVED:

DATE:

LUMINOUS Neon Inc
ART & SIGN SYSTEMS

Appendix 2
Drawings of Monumental Sign





"All noted dimensions are approximate and may be modified slightly during manufacturing to allow proper component usage".

SPECIFICATIONS:

- FURNISH AND INSTALL (1) SINGLE-FACE, NON-ILLUMINATED SIGN, CONSISTING OF A 4'H X 18'8"W MAIN CABINET WITH A 3"H X 16'8"W BOTTOM REVEAL AND 4'6"H INDIVIDUAL ALUMINUM CHANNEL LETTERS 18" DEEP WITH FULL PAINTED BACKS. ALL PAINTED SOLID SILVER (PMS 877). ALL COPY & DEMON LOGO IN MONOTONE 7725-69 DURANODIC VINYL.
- COLORS: SILVER PMS 877, 7725-69 DURANODIC VINYL
- FONTS: ITC AVANT GARDE GOTHIC BOLD, TIMES REGULAR, GOTHAM BOLD

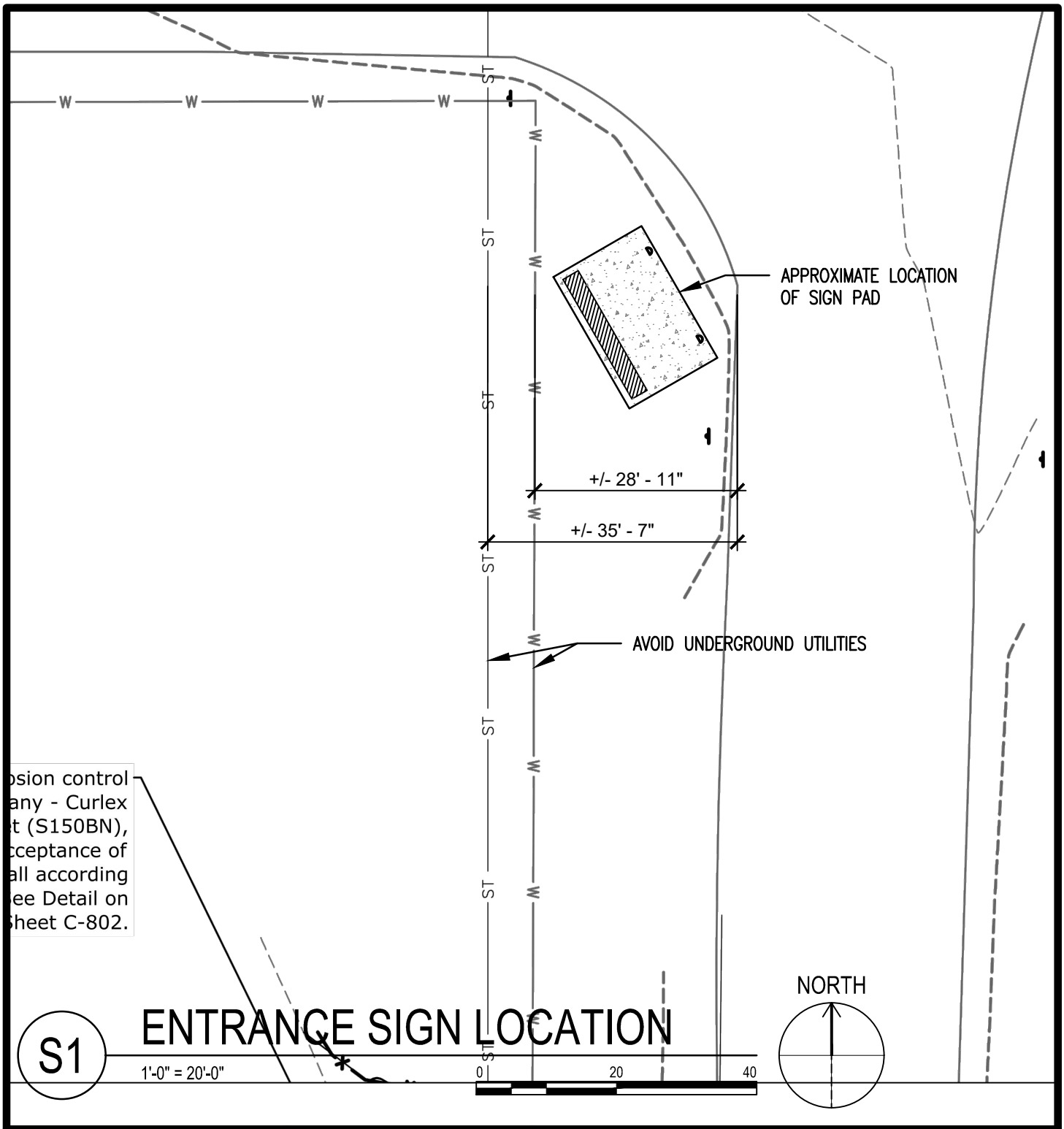
CUSTOMER: DODGE CITY HIGH SCHOOL
NAME: **TOM MONTGOMERY**
LOCATION: DODGE CITY, KS

DATE: 11/14/18
DESIGN NO.: NH-30348-2
ARTIST: JAH
SCALE: 1/4" = 1'

APPROVED: **DATE:**

LUMINOUS Neon Inc
ART & SIGN SYSTEMS

Appendix 3
Site Location Drawing



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S1

ENTRANCE SIGN LOCATION

1'-0" = 20'-0"

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REF:	
PROJECT NO:	00820.730
DATE:	01/25/2019
FILE:	\\kcglmvfilep01\kc-cad-2\00820.730\E - CAD\00820.730_HS SITE SIGNAGE.dwg
DRAWN BY:	####
CHK'D BY:	####

SHEET TITLE

CONC PAD LAYOUT FOR SITE SIGNAGE

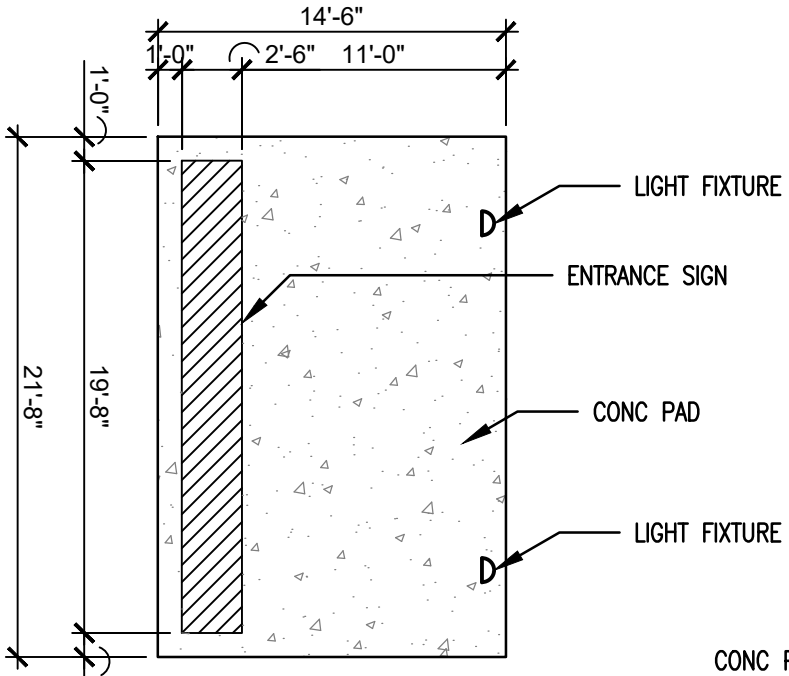
PROJECT

DC HIGH SCHOOL SITE SIGNAGE

DRAWING

A-102

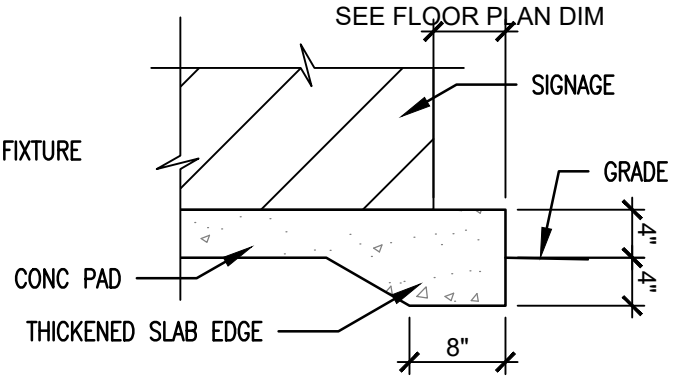
Appendix 4
Concrete Pad Drawing



A1 ENTRANCE SIGN PAD

1/8" = 1'-0"

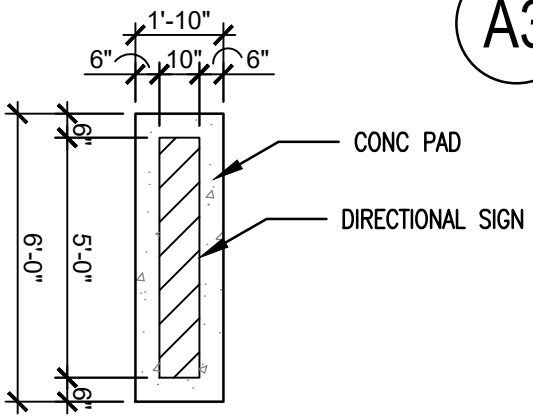
0 4' 8' 16'



A3 CONC PAD DTL

3/4" = 1'-0"

0 1' 2' 3'



A2 DIRECTION SIGN PAD

1/4" = 1'-0"

0 2' 4' 8'

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REF:

PROJECT NO: 00820.730

DATE: 01/25/2019

FILE: \\kcglmvfilep01\kc-cad-2\00820.730\E - CAD\00820.730_HS SITE SIGNAGE.dwg

DRAWN BY: ####

CHK'D BY: ####

SHEET TITLE

CONC PAD LAYOUT FOR SITE SIGNAGE

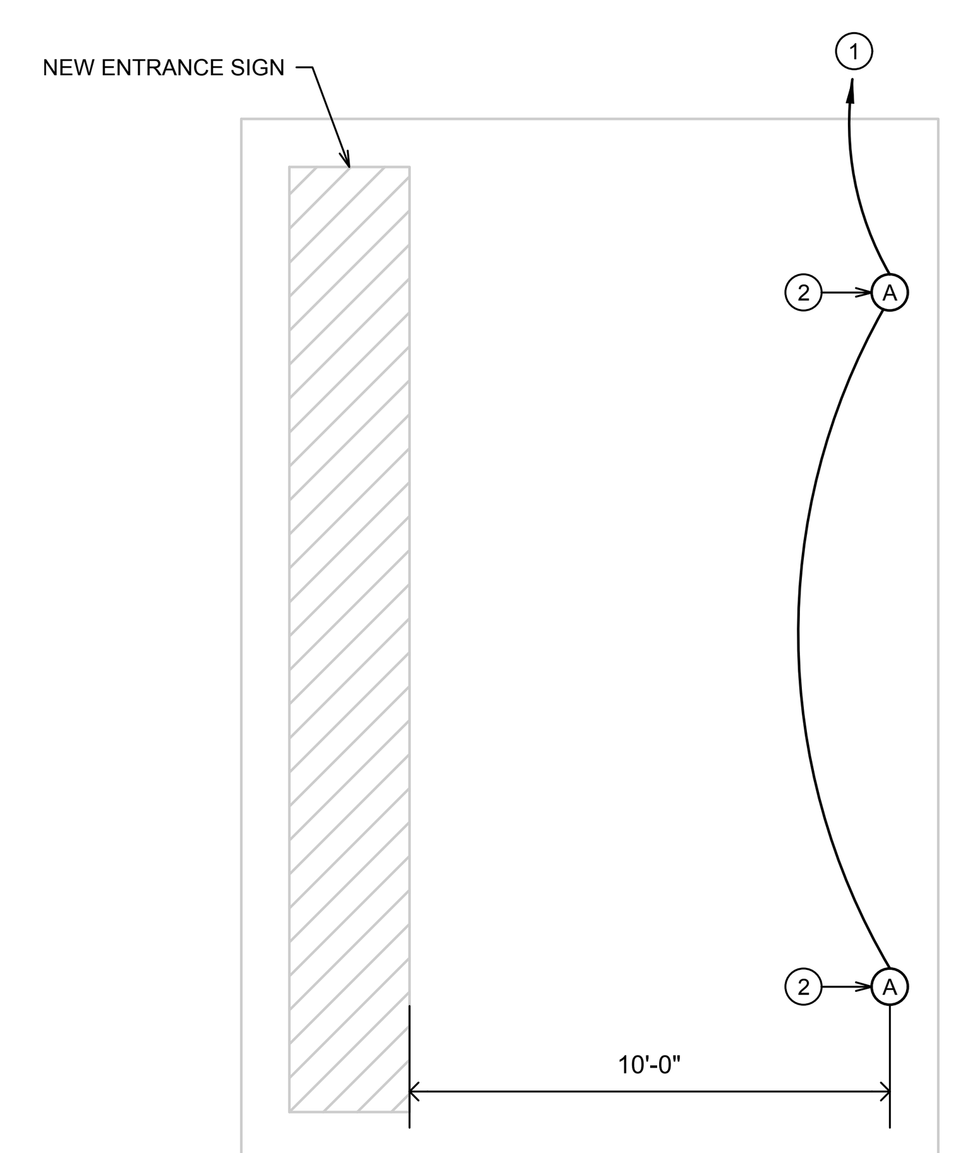
PROJECT

DC HIGH SCHOOL SITE SIGNAGE

DRAWING

A-101

Appendix 5
Sheet E101 Electrical Plans



A NEW SIGN LIGHTING PLAN

SCALE: 1/4" = 1'-0"

NORTH

GENERAL NOTES:

1. ALL CIRCUITS INDICATED ON DRAWINGS SHALL BE 20A, 120V CIRCUITS WITH (2)-#12'S AND (1)-#12 G. IN 0.5" CONDUIT U.O.N.
2. LABEL ALL SNAP SWITCH COVERPLATES WITH THE PANEL AND CIRCUIT NUMBER.
3. REFER TO RELATED ARCHITECTURAL DRAWINGS FOR RELATED INFORMATION.
4. REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
5. A GROUND CONDUCTOR SIZED PER N.E.C. ARTICLE 250 IS REQUIRED IN ALL POWER, RECEPTACLE, AND LIGHTING CIRCUITS. GROUND CONDUCTORS ARE NOT SHOWN ON DRAWINGS.

PLAN NOTES:

(1) CONNECT TO EXISTING PANEL HX1A. PROVIDE A NEW 277V,20A CIRCUIT BREAKER AS REQUIRED. THE NEW CIRCUIT SHALL BE RAN THRU THE EXISTING RELAY PANEL RPX1. PROVIDE A NEW RELAY AS REQUIRED. THE NEW RELAY SHALL BE PROGRAMMED TO MATCH THE EXISTING LIGHTING SCHEDULE. ELECTRICAL CONTRACTOR TO VERIFY THERE IS SPACE FOR A NEW RELAY. IF THERE IS NOT SPACE FOR AN ADDITIONAL RELAY, THE NEW FLOOD LIGHTS, FIXTURE A, SHALL BE PROVIDED WITH AN INTEGRAL FACTORY-INSTALLED PHOTOCELL.

(2) NEW FIXTURE TO BE MOUNTED ON CONCRETE PEDESTAL PROVIDED BY GC.

LIGHT FIXTURE SCHEDULE

ICE

FIXT LTR	MANUFACTURER	CATALOG NUMBER	LAMPS NO.	LAMPS TYPE	FIXT. VOLT.	FINISH	MOUNTING	REMARKS
A	HE WILLIAMS	VF1-L20/740-MF-SR-DBZ-FVS-DIM-277 VF1-SM-DBZ	-	18W LED	277	BRONZE	GRADE	FLOOD LIGHT

LIGHT FIXTURE SCHEDULE NOTES

ICE

GENERAL NOTES:

a. GENERAL CONTRACTOR SHALL PROVIDE FIREPROOFING AROUND RECESSED FIXTURES INSTALLED IN FIRE RATED CEILING PER U.L. REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL COORDINATE.

b. SEE SPECIFICATIONS FOR LAMP AND BALLAST TYPE. VERIFY LAMP COLOR WITH ARCHITECT PRIOR TO ORDERING.

c. PROVIDE ARROWS AND FACES AS INDICATED BY THE DRAWINGS.

d. MANUFACTURERS LISTED IN THIS SCHEDULE OR BY WRITTEN ADDENDUM WILL BE THE ONLY APPROVED MANUFACTURERS TO BID THE LIGHTING FIXTURES FOR THIS PROJECT. CONTRACTORS AND SUPPLIERS USING PRICING FROM MANUFACTURERS NOT LISTED ON SCHEDULE OR BY ADDENDUM DO SO AT THEIR OWN RISK.

e. FIXTURES BY WILLIAMS EQUAL TO THOSE SPECIFIED AND APPROVED BY THE ENGINEER WILL BE ACCEPTABLE: FIXTURE EQUALS SHALL BE MANUFACTURED THE SAME AS SPECIFIED UNITS, I.E., ENCLOSED SPRING LOADED LATCHES, ALUMINUM DOORS, POST PAINTED FINISH.

f. PROVIDE 0-10V CONTROL WIRING AS REQUIRED.

LIGHT FIXTURE SCHEDULE NOTES:

(1) XXXXXXXXXXXXXXXXXXXXXX

CU FEEDER SCHEDULE

ICE

FEEDER IDENT.	CONDUCTORS SETS	QUANT. PER SET	SIZE	GROUND SIZE PER SET	ISOLATED GRD. SIZE PER SET	CONDUIT SIZE PER SET
20.X	1	SEE NOTE 'b'	#12	#12	-----	1/2"
30.X	1	SEE NOTE 'b'	#10	#10	-----	1/2"
40.X	1	SEE NOTE 'b'	#8	#10	-----	3/4"
50.X	1	SEE NOTE 'b'	#6	#10	-----	1"
60.X	1	SEE NOTE 'b'	#4	#10	-----	1 1/4"
70.X	1	SEE NOTE 'b'	#4	#8	-----	1 1/4"
80.X	1	SEE NOTE 'b'	#3	#8	-----	1 1/4"
90.X	1	SEE NOTE 'b'	#2	#6	-----	1 1/4"
100.X	1	SEE NOTE 'b'	#1	#6	-----	1 1/2"

FEEDER SCHEDULE NOTES:

a. THIS PROJECT MAY NOT REQUIRE ALL FEEDER TYPES LISTED IN THIS SCHEDULE.

b. THE NUMBER OF CONDUCTORS WILL BE BASED ON THE FOLLOWING NOTATION AT THE END OF EACH FEEDER TAG:

EXAMPLE: XXXX.X

AMPACITY

XXXX.XS: INDICATES THE SERVICE FEEDER SIZE, AND NUMBER OF CONDUCTORS. NO GROUND SHALL BE REQUIRED FOR SERVICE FEEDERS.

XXXX.2: INDICATES (2) HOT CONDUCTORS (OR 1 HOT + 1 NEUTRAL) FOR SINGLE PHASE CONNECTIONS

XXXX.3: INDICATES (3) HOT CONDUCTORS FOR THREE PHASE CONNECTIONS,(OR 2 HOT +1 NEUTRAL) FOR SINGLE PHASE CONNECTIONS

XXXX.4: INDICATES (3) HOT CONDUCTORS & (1) NEUTRAL CONDUCTOR. FOR THREE PHASE CONNECTIONS

SYMBOL LIST

ICE

SYMBOL	DESCRIPTION	MOUNTING
A	FLUORESCENT FIXTURE & FIXTURE LETTER	CEILING
A	FLUORESCENT FIXTURE & FIXTURE LETTER	CEILING
A A	INCAND. OR H.I.D. FIXTURE & FIXT. LETTER	SURF./RECESSED
A	INCAND. OR H.I.D. FIXTURE & FIXT. LETTER	WALLBRACKET
	EXIT FIXT. - SHADING DENOTES FACE(S)	CEIL./WALL
E	EMERGENCY LIGHT	CEIL./WALL
	GFCI DUPLEX GROUNDED RECEPTACLE	1'-3" AFF
	DUPLEX GROUNDED RECEPTACLE	1'-3" AFF
	EXTERIOR GFCI RECEPT. WEATHERPROOF	1'-3" AFF
	DOUBLE DUPLEX RECEPTACLE	1'-3" AFF
	SPECIAL OUTLET, SEE SCHEDULE OR AS NOTED	
	OCCUPANCY SENSOR, SEE SCHEDULE OR AS NOTED	
	PHONE/DATA OUTLET	1'-3" AFF
	DATA OUTLET	1'-3" AFF
	CATV OUTLET	1'-3" AFF
	SWITCHED RECEPTACLE	1'-3" AFF
▼ ▼W ▼P	TELEPHONE OUTLET (P=PAY, 44")(W= 44")	1'-3" AFF
$ $3 $4 $P $K	SWITCHES (1-POLE,3-WAY,4-WAY,PILOT,KEY)	4'-0" TO TOP
	PUSH BUTTON	
J	JUNCTION BOX	
F	FUSTAT	
A	BRANCH CIRCUIT PANEL & PANEL DESIG.	6'-6"TO TOP
30/3/240	H.D. SAFETY SWITCH (AMPS,POLE,VOLTAGE)	6'-6"TO TOP
0/3/240	STARTER (SIZE,POLE,VOLTAGE)	6'-6"TO TOP
x	PLAN NOTE	
●	MOTOR	
	CONDUIT RUN W/ CONDUCTORS SEE NOTE #7	CEIL./WALL
	CONDUIT RUN 2 CIRCUIT, SEE NOTE #7	EARTH/FLOOR
	PARTIAL HOMERUN (MULTIPLE LOAD LOCATIONS)	
30.3 30/3	FEEDER 30.3 30A CIRCUIT SEE NOTE #7	
	CIRCUIT SUPPLIED FROM EMERGENCY SYSTEM	
XXX.X	FEEDER IDENTIFICATION, SEE SCHEDULE	
CT	SEE NOTE #9	
WP	WEATHERPROOF	
EM	ITEM SUPPLIED FROM EMERGENCY SYSTEM	
a,b,c	INDICATES SWITCHING SCHEME	
TP	TAMPER PROOF	

GENERAL NOTES

ICE

1. VERIFY ALL OUTLET LOCATIONS ON THE JOB PRIOR TO ROUGH-IN.
2. REFER TO RELATED ARCHITECTURAL, MECHANICAL, AND STRUCTURAL DRAWINGS FOR RELATED INFORMATION.
3. REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
4. COORDINATE OUTLET BOX LOCATIONS WITH MASONRY TO MINIMIZE CUTTING OF BRICK OR BLOCK.
5. WALL MOUNTING HEIGHTS TO CENTERLINE OF DEVICE UNLESS OTHERWISE NOTED.
6. E.C. SHALL REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTION OF INTERLOCKING AND CONTROLS OF MECHANICAL UNITS AND THERMOSTAT LOCATIONS.
7. CONDUIT RUN W/CONDUCTORS AS INDICATED, CONDUIT SIZE AS REQUIRED. CONDUIT RUN TO PANEL DEVICE SIZE AS INDICATED (AMP/ POLE). CIRCUIT WITHOUT INDICATION IS ROUTED TO 20A.,1P. BREAKER. CONDUCTOR COUNT IS NOT SHOWN ON THE DRAWINGS FOR #12 SIZE CONDUCTORS. ELECTRICAL CONTRACTOR SHALL PROVIDE NUMBER OF CONDUCTORS AS REQUIRED FOR CIRCUITING, SWITCHING AND/OR CONTROL AS REQUIRED. ALL REQUIREMENTS OF THE CURRENT NATIONAL ELECTRICAL CODE SHALL BE FOLLOWED FOR CONDUIT FILL AND CONDUCTOR DE-RATING IF APPLICABLE.
8. EXIT LIGHTS AND EMERGENCY LIGHT FIXTURES WITH BATTERY BACKUP SHALL BE CIRCUITED WITH UNSWITCHED HOT CONDUCTOR FROM AREA LIGHTING CIRCUIT FOR POWER SENSING AND CHARGING. IN ADDITION, PROVIDE SWITCHED CIRCUITS TO ANY REQUIRED EMERGENCY LIGHT FIXTURES REQUIRING SAME FOR LOCAL AREA CONTROL.
9. "CT" INDICATED ADJACENT TO DEVICE INDICATES DEVICE IS MOUNTED ABOVE BACKSPLASH OF COUNTER TOP. VERIFY EXACT HEIGHT WITH ARCHITECTURAL PLANS AND ELEVATIONS.
10. A GROUND CONDUCTOR SIZED PER N. E. C. ARTICLE 250 IS REQUIRED IN ALL POWER, RECEPTACLE, AND LIGHTING CIRCUITS. GROUND CONDUCTORS ARE NOT SHOWN ON DRAWINGS.

ISSUE DATE:
2019-02-01

REVISIONS

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LICENSED
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2/1/19
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DODGE CITY HIGH SCHOOL
SITE SIGNAGE

DATE: 2019-02-01
DRAWN BY: MH
CHECKED BY: DR

PROJECT NO. 19020.00

ELECTRICAL PLANS

E101

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Appendix 6
Sheet E102 Electrical Specifications

DIVISION 16 ELECTRICAL

SECTION 16010

GENERAL REQUIREMENTS

PART 1 - GENERAL EXTENT OF WORK

1.01 The General Conditions, General Requirements, and Special Conditions shall be and are hereby made a part of this section. The Electrical Contractor shall furnish all labor, materials, tools, transportation, equipment, services and facilities required for the complete, proper and substantial installation of all electrical work shown on the drawings and/or outlined in these specifications. The installation shall include all materials, appliances and apparatus not specifically mentioned herein or noted on the drawings, but which are necessary to make a complete working installation of all electrical systems.

1.02 The Contractor shall consult and be guided by the General Conditions and all other divisions referred to herein and relative thereto in performing the work covered under this division of the specification.

1.03 All of the electrical related work required for this project (unless specified otherwise) is a part of the electrical contract price and is not necessarily specified under this division of the specifications or shown on the drawings. Therefore, all divisions of the specifications and all drawings shall be consulted.

1.04 The drawings showing the layout of the work indicate the approximate locations of outlets, apparatus and equipment. The drawings are schematic only and are not intended to show the exact routing of conduits, etc. The final determination as to the routing shall be governed by structural conditions and other obstructions. This shall not be construed to mean the design of the system may be changed, it merely refers to the exact run of a raceway between given points. The Contractor shall consult all contract drawings which may affect the location of any outlet, apparatus or equipment to avoid possible interference and permit full coordination of all work. The right to make any reasonable change in the location of apparatus, outlets and equipment up to the time of roughing-in is reserved by the Architect without involving any additional expense to the Owner.

1.05 The approval by the Architect or his representative of any materials, drawings, etc., submitted by the Contractor will be considered as general only and to aid the Contractor in carrying out his work. Such approval as may be given does not relieve the Contractor from the necessity of furnishing the materials and performing all the work as required by the drawings and the specifications.

1.06 The work specified under this division of the specifications shall include the furnishing of all labor, materials, apparatus and tools necessary for the complete installation of all conduit and wiring; devices for lighting, power and control systems, and such other work and equipment as are indicated on the drawings or as noted herein.

1.07 The entire installation shall be made in a workman like manner, left completely connected, and ready to give proper and continuous service.

1.08 All materials and work in connection with the foregoing items shall be as specified herein, or called for on the drawings.

1.09 The complete installation shall be in accordance with the latest rules and regulations of the National Fire Protection Association and all other Boards and Departments having jurisdiction. Any items or requirements noted herein or shown on the drawings in excess of code requirements, but permitted under the code, shall take preference unless special permission is obtained from the Architect to the contrary.

1.10 The light and power installation shall operate with the electrical energy obtained from outside sources. Such part of the system as may be regulated by rules of the local utility company shall, insofar as method of construction, workmanship and materials are concerned, be in full accordance with the standard practice and rules and regulations of the local utility company.

1.11 This Contractor shall coordinate his work under this division of the specifications with the work of other trades wherein it may be interrelated. His work shall be done in such an order that there will be no interference in installing, nor delay in completion, of any part or parts of each respective trade, thereby permitting all construction work to proceed in its natural sequence without unnecessary delay.

1.12 Before submitting his bid, the Contractor shall familiarize himself with the rules of all governing bodies having jurisdiction and shall notify the Architect in submitting his bid, if in his opinion, any work or material specified is contrary to such rules. Otherwise, the Contractor shall be responsible for the approval of all work and materials and, in case the use of any material specified is not permitted, a substitute shall be approved by the Architect and shall be provided at no increase in cost.

1.13 Unless noted otherwise on the Drawings, or elsewhere in these Specifications, the singular words 'Provide', 'Furnish', or 'Install' noted on the drawings or in these Specifications shall mean to completely furnish, install, and connect each item, and if such is a part or component of a system the entire system shall be functional with all items and components provided.

PART 2 - RULES AND REGULATIONS

2.01 All work under this heading shall comply with the latest rules and regulations of the National Electrical Code Standard of the National Fire Protection Association and with all laws, regulations and ordinances of the utility company, City, County and State.

2.02 Drawings and specifications indicate the minimum standards of construction. Should any work indicated be substandard to any ordinance, law, code, rule or regulation bearing on work, the Contractor shall execute work accordingly, without increased cost to the Owner, but not until he has referred such variances to the Architect for his approval.

2.03 This Contractor shall provide and install only the brands of materials and equipment specified herein, or equipment approved by the Architect-Engineer as equal. All material and equipment shall be listed and labeled by Underwriters Laboratories, Inc., indicating compliance with nationally recognized standards and/or tests.

PART 3 - PERMITS, FEES AND INSPECTIONS

3.01 Secure and pay for all necessary and usual permits, fees, inspections and certificates required for this work and deliver permits and certificates to the Architect for transmittal to the Owner before final acceptance of the project.

PART 4 - SERVICES

4.01 This Contractor shall pay for all expenses, deposits, reimbursements, etc., required by the local rules and codes for the service to the building, complete and ready for use.

4.02 This Contractor shall bear all expenses involved for the complete installation of the electrical service (both temporary and permanent) to the building ready for operation, except as specifically excluded on the drawings. All temporary wiring shall be installed per the National Electrical Code. This shall include guard posts around transformers and pedestals per utility company standards. Verify complete installation and locations of pad mount or pole mount transformers with the local electric utility company and bid installation to comply with their requirements.

4.03 This Contractor shall consult all local departments to verify requirements and bid installation of service in accordance with local codes and utility company standards.

4.04 This Contractor shall bear all expenses involved for the complete telephone service conduit installation and steel or nylon pull wire ready for cable installation. Verify complete installation with the local telephone company and bid installation to comply with their requirements.

PART 5 - TEMPORARY ELECTRICAL

5.01 Electrical Contractor/Subcontractor shall:

A. Make arrangements with electric utility for temporary service.

B. Provide materials, equipment, labor to install, modify, maintain (and upon completion of project, remove) safe temporary electrical power and lighting systems per OSHA standards.

C. Provide sufficient capacity for construction tools, equipment, temporary ventilation and lighting.

D. Distribute systems throughout building and construction area of site such that an extension cord no longer than 100' will reach any work area. Open branch systems permitted where permitted by the National Electrical Code and OSHA. Provide temporary services to all construction offices as required.

E. Employ permanent systems as they are completed and available.

F. Provide metering of temporary service. All temporary utility costs will be paid by the General Contractor.

PART 6 - MATERIALS OF APPROVED EQUAL

6.01 Where items of equipment and/or materials are specifically identified herein by a manufacturer's name, model or catalog number, only such specific items may be used in the base bid, except as hereinafter provided.

6.02 Unless requests for changes in base bid specifications are received and approved and noted by written addendum prior to the opening of bids, the successful contractor will be held to furnish specified items.

6.03 After contract is awarded, changes in specifications shall be made only as defined under "Substitution of Equipment."

PART 7 - SUBSTITUTION OF EQUIPMENT

7.01 After execution of the contract, substitution of equipment of makes other than those specifically named in the contract documents may be approved by the Engineer only if the equipment named in the specifications cannot be delivered to the job in time to completethe work in proper sequence to work of other contractors, due to conditions beyond control of the contractor.

7.02 Requests for substitutions must be accompanied by documentary proof of equality of difference in price and delivery, if any, in form of certified quotations from suppliers of both specified and proposed equipment.

7.03 The Owner shall receive all benefits of the difference in cost involved in any substitution, and the contract altered by change order to credit Owner with any savings so obtained.

PART 8 - SUBMITTALS

8.01 Contractor shall, within 15 days after award of contracts begin sending to the General Contractor for review submittals containing the following:

8.02 Shop Drawings:

A. Submit three master sets of "Shop Drawings" in the form of bond paper 8 1/2" x 11" or 11" x 17" size. Data shall be reduced on drawings as required to leave 5" x 3" clear on each drawing for Engineer's stamp.

B. Architect and consultants will retain copies of the master set for their records and return one reviewed master set to the contractor.

C. Contractor(s) shall, upon receipt of reviewed shop drawings, obtain and distribute copies of reviewed master set as necessary to coordinate work. (Contractor's file, job site file, record document file, other prime contractors, subcontractors and suppliers.)

D. Shop Drawings are custom prepared data and shall show and identify item(s) to be furnished and give location, arrangement, scale, details, sizes, dimensions, performance characteristics, capacities, wiring diagrams, finish and other pertinent information. Each individual item shall have its own separate sheet provided for approval. (Example: Separate sheets for each panelboard.)

E. All shop drawings shall be checked and signed by this contractor and General Contractor prior to submittal to the Architect/Engineer. SHOP DRAWINGS SUBMITTED WITHOUT THE CONTRACTOR'S STAMP OF APPROVAL AND VERIFICATION WILL BE RETURNED BEFORE THE ENGINEER WILL REVIEW SAME. Equipment, materials, etc., not meeting specifications and/or drawing requirements shall be returned to the supplier for corrections before they are submitted to the Architect-Engineer. This Contractor is reminded that only those materials specified, approved or otherwise indicated by the project specifications, drawings, or addenda will be permitted to be used in constructing the electrical work for this project. The first review of submittals (shop drawings) will be provided as indicated at no charge to the Contractor. However, subsequent review(s) of resubmittals required by "Rejected" status from the original review will necessitate the Electrical Contractor being charged by the electrical consultant a fee of $65 per man-hour, with a minimum charge of $100 for each item resubmitted. It is intended that all electrical submittals be made in a complete and timely fashion such as to permit a comprehensive and thorough review of same.

F. Each shop drawing sheet shall indicate job name.

G. Shop drawings submitted without contractor's signatures or approval and verification will not be reviewed.

H. Shop drawings shall be submitted on wire, devices, fixtures (including distribution curves), gear, systems, conduit, etc.

8.03 Product Data: Product Data includes manufacturer's printed specifications, instructions, recommendations, pertinent catalog pages and similar information. Such data shall be marked to identify the data applicable to the Project. Submit three copies. Architect and consultants will review, note and record action and make copies for their files. One submitted copy then will be returned to the Contractor who shall reproduce and distribute copies needed for Project Work.

8.04 Quantities of materials will not be verified by the Architect or Engineer. Submittal Review stamp on shop drawings does not constitute review of quantities listed on shop drawings.

8.05 Engineer's review of Compliance Submittals will not relieve Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless Contractor, has in writing, called Engineer's attention to such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall any review by Engineer relieve Contractor from responsibility for errors and/or omissions in Compliance Submittals. No work shall be fabricated until the Architect's review has been obtained. Any time delay caused by correcting and resubmitting shop drawings will be the responsibility of the Contractor.

PART 9 - OPERATING INSTRUCTIONS:

9.01 The Contractor shall submit along with the shop drawings of the equipment, three (3) copies of operating instructions for all items. Instructions shall be prepared by the manufacturer of the equipment.

9.02 After the operating instructions have been approved by the Engineer, the Contractor shall frame one (1) set under plastic and mount near the equipment described.

9.03 The Contractor shall also obtain all manufacturer's instruction manuals and provide one complete set of "as built" drawings and turn these over to the Architect upon completion of the project.

9.04 The Contractor shall keep in a safe place all keys and special wrenches furnished with equipment under this contract and shall give same to the Architect at the completion of the project.

9.05 The Contractor shall prepare (5) complete brochures covering all systems and equipment furnished and installed under his contract. Brochures shall be submitted to the Architect-Engineer for review prior to delivery to the Owner. The Engineer will retain (1) copy. The cost of these brochures shall be included in the contract cost. Brochures shall contain the following:

A. Certified equipment drawings and/or catalog data clearly marked for equipment furnished as required for approval submission under previously detailed section of these specifications.

B. Complete operating and maintenance instructions for each item of equipment.

C. Complete parts list for each equipment item.

D. Any special emergency operating instructions and a list of service organizations (including addresses and telephone numbers) capable of rendering emergency service to the various parts of the system.

E. Riser diagrams on special systems.

9.06 Brochures shall be bound in hard fiberboard covers or loose-leaf binders. If loose-leaf binding is used, each sheet shall be reinforced to prevent tearing from continued usage. Each brochure shall have the following information clearly printed on its front cover:

A. Project name and address.

B. Section of work covered: "Electrical Work".

C. Name and address of Architect.

D. Name and address of Engineer.

E. Name and address of Contractor.

F. Telephone number of Contractor, including night or emergency number.

9.07 In addition to these written instructions, each respective Contractor shall fully and carefully instruct the Owner, or his representatives, as to the proper operation, care and maintenance of each system and its equipment.

PART 10 - COORDINATION AND BUILDING CONDITIONS

10.01 The Contractor shall visit the site and determine all existing local conditions affecting work in his contract. He shall examine architectural drawings and specifications to familiarize himself with the type of construction to be used for all work and how it will affect the installation of work in his contract.

10.02 Failure to determine existing conditions or the nature of existing or new construction will not be considered as a basis for the granting of additional compensation.

10.03 The drawings have been prepared to cover all electrical work under this contract. The Contractor is referred to all other contract drawings to guide him in the proper installation of his work.

10.04 The Contractor shall fully familiarize himself with the floor drawings, elevations, details of construction, feeders, fixtures, conduit, wiring, service, etc., insofar as it may affect the installation of the work under this specification in order that all necessary materials and labor may be provided even though not specifically referred to on the drawings or called for in the specifications.

10.05 As the drawings are generally diagrammatic, the final layout of the work shall be subject to the approval of the Architect but the Contractor shall be responsible without increase in contract price for the coordination of all work under various divisions of the specifications.

10.06 This Contractor shall confer with other Contractors installing work which may affect his work and must arrange his conduit, etc., in proper relation to such work. Any damage resulting from his neglect to do so must be paid for by the Contractor.

10.07 Where necessary to fit and center with paneling of ceilings and wall spaces, the Contractor must, at his own expense, shift the lighting outlets or other outlets as required by the Architect.

10.08 All outlets shall be set in such a manner as to finish flush with wall and ceiling lines unless marked to be exposed or surface mounted on the drawings. The height of brackets, switches, outlets, etc., are to be as directed.

10.09 The Contractor shall obtain from the Architectural and Structural drawings the exact location and size of spaces available for his apparatus and material and shall install them accordingly. In case the space allowed is not sufficient, or an obstruction interferes with placing them as shown or specified, the Contractor shall obtain instructions from the Architect and shall install them as directed without extra charge.

10.10 The above provisions refer only to the exactness of positions that cannot be determined from the drawings and do not permit placing apparatus distinctly different from that shown on the drawings.

10.11 This Contractor shall do all cutting and patching of building materials required for the installation of work herein specified. No structural member shall be cut without the approval of the Architect and all such cutting shall be done in a manner directed by him.

10.12 All patching shall be done in a neat and workman-like manner, meeting with the approval of the Architect, by mechanics of the particular trade involved. Any penetrations through roof shall be made with "Stoneman" flashing connections as manufactured by Stoneman Engineering and Manufacturing Co., Inglewood, Calif., and any penetrations made in exterior or basement foundation walls shall be sealed with Thunderline "Link-Seal" connections, as manufactured by Thunderline Corporation, Wayne, Michigan.

10.13 Any holes or voids created in floors, ceilings and walls, including any spaces or gaps around conduit or equipment passing through such areas, which compromise the applicable rating of the floors, ceilings or walls, shall be sealed with an intumescent material equal to "3M Fire Barrier Caulk, Putty or Strip Sheet", "Carborundum Fiberfrax Fyre Putty", "Tremco X-ferno Fire Products", or "Rectorseal Metacalk". Material equal to the above and meeting U.L. 1479 may be used. All installations shall be per manufacturer's exact instructions.

10.14 All drilling of holes through concrete shall be accurately and carefully done by using a "Concrete Termite" drill. The use of a star drill or air hammer for this work shall not be permitted.

10.15 This Contractor shall do all painting and finishing of all electrical equipment installed in finished areas. All work shall be performed in accordance with the Architectural specification section on "Painting and Finishing". All colors and finish applications shall be as directed by the Architect. (Painting is not required of receptacles, switches, circuit breakers, etc., unless specifically so noted on the drawings.)

10.16 The Electrical Contractor shall confirm the exact electrical requirements for all equipment supplied by others and installed or connected by the Electrical Contractor. The specific work performed for the installation of any equipment shall be in conformance with the requirements established by the shop drawings of the equipment supplied. In the event the shop drawings establish requirements distinctly different than the requirements shown in the contract documents, the Contractor shall be entitled only to an adjustment of the difference between the work shown and the work required with full credit for labor and materials shown on the original drawings.

10.17 The Electrical Contractor shall provide all trenching and backfilling for underground conduits. Unless noted otherwise in other divisions of these specifications, all trenches shall be backfilled and compacted with material defined by the United Soil Classification as ML or CL (silt and clay of low to medium plasticity). Compaction shall be to 90% of ASTM D698.

PART 11 - PERFORMANCE

11.01 Provide as part of the work of this contract, in addition to the first year guarantee on equipment and materials, the following described routine maintenance and inspection. (The one year time period will not start until each and every item is complete in accordance with drawings and specifications and accepted by the Owner). Check all emergency systems, control, fire alarm, transformers, etc., correct and adjust same. This service to be provided during the guarantee period.

PART 12 - SYSTEM

12.01 System: Distribution characteristics shall be as indicated on drawings.

PART 13 - GROUNDING

13.01 All conductors, motor frames, etc., that require grounding shall be grounded in accordance with the requirements of the National Electrical Code, local power company and local electrical codes. All ground connections to ground rods shall be with U.L. approved ground clamps. Provide additional ground rods as required to achieve a resistance of 25 ohms or less per N.E.C. 250-84; at the request of the Engineer provide a copy of the ground test results. Multiple ground rods (when required) shall not be less than 6 feet apart.

PART 14 - ADJUSTING, ALIGNING AND TESTING

14.01 All equipment shall be checked for proper adjustment and balance. All panelboards, distribution panels, switchboards, and transformers shall be balanced to provide a balanced load on each phase. A complete record of all such adjustments shall be made. Final readings shall be submitted to the Architect-Engineer for records. The Contractor shall provide all equipment, instruments, gauges, meters, etc., as required for the complete checking of these systems.

14.02 Mechanisms of all electrical equipment shall be checked, adjusted, and tested for proper operation. Adjustable parts of all lighting fixtures and other electrical equipment shall be checked, adjusted, and tested as required to produce the intended performance.

14.03 Completed wiring system shall be free from open or shorted circuits. After completion, this Contractor shall perform tests for insulation resistance in accordance with the requirements of the National Electrical Code.

14.04 The Contractor shall maintain service and equipment for the testing of electrical equipment and apparatus until all work is approved and accepted by the Owner. A first class voltmeter and ammeter shall be kept available at all times and this Contractor shall provide service for test readings when and as required. All test readings shall be recorded on an approved form and submitted to the Architect.

14.05 Before final acceptance is made, this Contractor shall, at his own expense, frame under plastic the sequence of operations of the sound system, controls, fire alarm, etc., for each and every item requiring instructions. These instructions shall be mounted as directed. He shall cover same with Architect and/or his selected parties, and shall adjust all apparatus and place same in satisfactory operating service as approved by the Architect.

14.06 Final observation will be made upon written request from the Contractor after the project is complete. At the time of final observation, the Contractor shall be present or shall be represented by a person of authority. The Contractor shall demonstrate, as directed by the Architect-Engineer, that his work fully complies with the purpose and intent of the drawings and specifications. All labor, services, and all instruments or tools necessary for such demonstration and tests shall be provided by the Contractor.

PART 15 - MOTOR CONTROL AND SPECIAL CONNECTIONS

15.01 The Electrical Contractor shall furnish, install and connect all wiring, conduit, boxes, toggle switches, thermal switches, disconnect switches, remote push-button stations not included in magnetic starters, etc., for all equipment requiring electrical power that is furnished by other contractors and/or the Owner, as required for a complete and operatable system. The Electrical Contractor shall receive, install and connect all magnetic starters and controllers, capacitors, power factor correction devices, transformers, alarms, bells, horns, relays, remote switches, etc., for equipment supplied by others, (i.e. starters, capacitors or power factor correction devices for mechanical equipment, etc.). In general all major equipment will be specified to be factory prewired with only service and interlocking required at the site by the Electrical Contractor; however he shall check all divisions of the specifications to verify if the equipment is specified factory prewired and if not, then it shall be the responsibility of the Electrical Contractor to provide the complete wiring of the equipment in accordance with wiring diagrams, and temperature control drawings provided by the other contractors and/or the Owner, to the Electrical Contractor. All interlocking of equipment shall be by the Electrical Contractor.

15.02 All control equipment requiring piping connections to air, water, steam, etc., lines such as pneumatic electrical relays, remote bulb temperature controls, solenoid valves, aquastats, pressure control, etc., will be furnished and installed under "Mechanical Work".

15.03 All line and low voltage wiring, conduit and connections required to control equipment and/or dampers are a part of this section. Provide and install line or low voltage wiring to all dampers as required for system operation. All low voltage wiring, conduit, connections and/or terminations are by the Electrical Contractor unless specifically noted otherwise within the bidding documents.

15.04 It shall be assumed the Contractor has familiarized himself with the equipment to be furnished by the other contractors and/or the Owner in connection with this work and that provisions for such connections and work have been included in the Contractor's price. In no case will extra remuneration be allowed for such work.

15.05 Connections to all equipment have been designed for units as specified on the drawings or in the specifications. In the event equipment or controls differ on approved mechanical shop drawings, it shall be the responsibility of the supplying contractor to coordinate electrical connections to the units and reimburse Electrical Contractor for any changes in system design. These changes shall not involve additional cost to the Owner.

PART 16 - GUARANTEE

16.01 This Contractor, by the acceptance of this specification and the signing of his contract, acknowledges his acquaintance with the requirements and guarantees that every part used in constructing the system as herein described will be of the best of its respective kind that can be obtained and will be erected in a most thorough and substantial manner by none but experienced workmen.

16.02 He guarantees that all conduit as provided within and by this specification will be free from all obstructions of every description and will be free from holes or broken places and be well bonded together. He guarantees that all wiring and conduit to be used in construction of this project will be new and unused.

16.03He further guarantees to hold himself responsible for any defects which may develop in any part of the entire system, including apparatus and appliances provided under this section of the specification, and to replace and make good without cost to the Owner any such faulty parts of construction which develop defects at any time within one year from date of final certification of completion and acceptance. Provide manufacturer's engineering and technical staff at site to analyze and rectify problems that develop during guarantee period immediately. If problems cannot be rectified immediately to the Page 16010- Owner's satisfaction, advise Architect in writing, describe efforts to rectify situation, and provide analysis of cause of problem. Architect will then suggest course of action. The Electrical Contractor shall replace material and equipment that requires excessive service during guarantee period as defined and as directed by the Architect. This guarantee does not include ordinary lamp failure.

16.04 Use of systems provided under the Specification for temporary services and facilities shall not constitute Final Acceptance of the work nor beneficial use by the Owner, and shall not institute guarantee period.

PART 17 - SUPPLEMENTARY CONDITIONS

17.01 Supplementary to all other terms of the contract, this work shall be performed subject to the following conditions.

17.02 Materials and equipment installed on this project shall be first class in quality and shall be new and unused.

17.03 Workmanship on this project shall be first class work performed by the experienced licensed mechanics of the proper trade.

17.04 Work under this contract shall be adequately protected at all times. Temporary raceways shall be kept closed and all raceways shall be installed clean and free from dirt and grease.

17.05 Storage, parking, signs, advertisement, fires and smoking shall conform to all applicable regulations and/or directions of the Architect.

17.06 Measurements on job and shop layouts required for installation of work shall be the responsibility of the contractor and acceptance of work is subject to approval of shop drawings by the Architect.

17.07 Contractor shall furnish all hoists, scaffolds, staging, runways and equipment necessary for the completion of this work.

17.08 Obtain and pay for all required electrical permits and licenses.

17.09 Maintain lights and guards required for safety.

17.10 Remove temporary service after use.

PART 18 - CONTRACT CHANGES

18.01 All changes or deviations from the contract, including those for extra or additional work, must be submitted in writing for the approval of the Architect/Engineer. No verbal orders will be recognized.

PART 19 - RUBBISH/CLEANUP

19.01 All rubbish resulting from the work herein specified shall be periodically removed by this Contractor.

19.02 Clean all electrical equipment and materials of all foreign matter (both inside and out). Clean all light fixtures using only methods and materials as recommended by the manufacturer.

PART 20 - PROPOSALS

20.01 The Contractor shall consult the General Conditions and the Proposal Form for proposals and subdivisions of the work required.

PART 21 - EXTENT OF WORK

21.01 The extent of the work under this heading of the contract shall be the furnishing of all plant, labor, materials, and equipment as required to complete work as shown on the drawings and as specified under this heading, and all plant, labor, materials and equipment not shown on the drawings or specified, but necessary to make installation complete in accordance with the intent of the contract, to provide first class, complete, and operative installation throughout.

PART 22 - TAXES

22.01 Contractor shall include all applicable local, state and federal taxes in his bid. Consult the Supplementary Conditions of these specifications relative to any and all tax exemptions permitted for this project.

PART 23 - "AS-BUILT DRAWINGS"

23.01 E.C. shall prepare and submit to the Engineer, upon completion of the project, one complete set of reproducible "As Built" drawings for the electrical portion of the project.

23.02 Drawings shall clearly indicate any and all approved deviations (i.e. addendum items, change order data, etc.) from the Project Bid Documents.

23.03 These drawings will become the property of the Owner and will be for his future reference file, record document.

DIVISION 16 ELECTRICAL

SECTION 16020

BASIC MATERIALS AND METHODS

PART 1 - CONDUIT

1.01 Materials:

A. All conduits and raceways shall be as listed below. No other wiring or raceway systems will be allowed.

B. Rigid conduit (G.R.S.) and intermediate metal conduits (IMC) shall be standard size, hot dip galvanized steel conduit, minimum 1/2" trade size, as manufactured by Triangle PWC, Inc., Allied, or equal. Rigid conduit and IMC shall be provided with threaded fittings and couplings. In trade sizes 2-1/2" to 4", contractor may use Allied 'KwikCouple' fittings in lieu of individual steel couplings. Where 'Kwik-Couple' fittings are used exterior for vertical risers, install fitting with taper end up. A "green" ground wire, sized per NEC 250-95, shall be installed in all conduits containing phase conductors.

C. E.M.T. (thinwall conduit) shall be minimum 1/2" trade size, as manufactured by Triangle PWC, Inc., Allied, or equal. Provide EMT with Thomas and Betts, or equal, U.L. listed steel or die-cast type fittings. Indenter type fittings shall not be used. Contractor may use Allied 'Kwik-Fit' fittings in lieu of individual fittings. A "green" ground wire, sized per NEC 250-95, shall be installed in all conduits containing phase conductors. E.M.T. conduit shall not be installed in earth or below grade.

D. All conduit installed in wet locations, exposed exterior to the building, or subjected to physical abuse (i.e. industrial locations), shall be rigid steel conduit (G.R.S.) or intermediate metal conduit (I.M.C.). All conduit installed in earth or below grade shall be rigid steel conduit (G.R.S.), intermediate metal conduit (I.M.C.), or U.L. approved schedule 40 P.V.C. conduit.

E. Thin wall conduit (E.M.T.) may be used where code permits except as outlined above.

F. Short runs of galvanized or liquid tight steel flexible conduit may be used when approved by the Engineer. (Minimum 1/2" trade size.) A separate "green" ground conductor (sized per N.E.C.) shall be installed in all flexible conduits. Type AC "Armored Cable", Type MC "Metal-clad Cable", or "BX" cable shall not be used in any manor unless supplied as part of a manufactured flexible wiring system for lighting and approved by the Engineer.

G. U.L. approved schedule 40 P.V.C. conduit may only be used where conduits are to be run in earth or below slabs. P.V.C. conduits shall not be used above grade inside or outside of the building, unless specifically noted otherwise on the drawings. Use G.R.S. ells and risers, both horizontal and vertical. Use conduit adapters when converting from P.V.C. to steel conduit. Branch circuit and feeder P.V.C. conduit to be 3/4" min. Concrete encase all conduit installed below grade where so noted on the drawings, (U.L. approved schedule 40 P.V.C. with plastic spacers). All P.V.C. conduit shall be provided with a separate "green" ground conductor, sized per N.E.C.

1.02 Bushings and Locknuts:

A. Where conduits enter boxes, they shall be rigidly clamped to the box by double locknuts and bushings. Conduit shall enter the box squarely. Bushings and locknuts shall be made of malleable iron and shall have sharp clean-cut threads.

1.03 Conduit Installation:

A. Where conduit sizes are not specifically indicated, provide sizes in accordance with the requirements of the N.E.C.

B. Conduit work in general shall be installed concealed in walls, floor and roof construction or concealed within furred spaces. Exposed work shall include only feeders and short connections to equipment in equipment room unless noted otherwise. All exposed conduits (where approved by the Engineer) shall be routed parallel and/or perpendicular to building elements.

C. Conduit to be installed to the requirements of structure and to the requirements of all other work on the project. Conduit shall be installed to clear all openings, depressions, pipes, ducts, reinforcing steel, etc. Conduit set in forms for concrete structure shall be installed in such a manner that installation will not affect the strength of the structure. Coordinate installation with Structural Engineer for conduits rising up from floor slabs into bottom of panelboards. Minimum distance between conduits shall be 6". Maximum size of conduit permitted in concrete slabs, if so approved by the Architect, is 1" trade size.

D. Conduit shall be installed continuous between connections to outlets, boxes and cabinets with a minimum possible number of bends and not more than the equivalent of 4-90 degree bends between J-box connections. Bends shall be smooth and even and shall be made without flattening conduit or flaking enamel. Radius of bends shall be as long as possible and never shorter than the corresponding trade elbow. Long radius elbows shall be used where necessary.

E. Conduits shall be securely fastened in place with approved straps, hangers, and steel supports as required by the National Electrical Code. All surface mounted conduits on walls below eight foot above grade shall be secured with conduit straps, no clamps. The use of wire, plumbers straps, etc, will not be permitted.

F. Junction and pull boxes shall be installed where shown on drawings and additional boxes shall be installed if required for pulling of wire, provided location and installation is approved by the Architect. All boxes shall be code gauge construction with screw type covers and shall be installed in accessible locations.

G. Conduit shall be reamed and thoroughly cleaned before installation and kept clean after installation. Openings shall be plugged and boxes shall be covered as required to keep conduit clean during construction. All conduit shall be fished clear of obstructions before the pulling of wires. All conduit shall be as sized above and shall not be smaller than N.E.C. listed minimum requirements.

H. All work shall be protected against damage during construction and any work damaged or moved out of line after roughing-in shall be repaired and reset to the approval of the Architect without additional cost to the Owner.

I. Conduit terminations at panelboards, switchboards, motor control equipment, junction boxes, etc., shall be aligned and installed true and plumb. Wood or steel bucks or templates shall be used where required. This work shall also include all steel supports as required for mounting of electrical equipment excepting only where steel supports are specified to be furnished under another specification heading.

J. Where conduits cross construction expansion joints, Contractor shall provide Appleton XJ or equal expansion couplings with copper bonding jumpers.

K. Where conduits are installed in concrete, all connectors and couplings shall be water tight or rated for direct burial in concrete.

L. Mechanical equipment service clearances and electrical apparatus service clearances as specified in their respective manufacturer's product data shall be maintained free from conduit obstructions.

M. All conduits routed below grade shall be minimum 30" below grade unless noted otherwise on the drawings. All conduits routed below floor slabs shall be installed a minimum of 4" below the slab.

PART 2 - WIRES AND WIRING

2.01 American, Southwire, Essex, or equal code gauge wire, rated 600V, finished with fadeless color coding and bearing Underwriter's label. Wires shall be soft annealed copper with properties conforming to the National Electrical Code requirements. No. 8 gauge and larger shall be stranded and No. 10 gauge and smaller may be solid or stranded, unless noted otherwise on the drawings. Stranded conductors shall only be used on devices and lugs that are U.L. listed for use with stranded conductors.

2.02 Wire smaller than No. 12 gauge shall not be used unless specifically called for on the drawings.

2.03 Unless noted otherwise on the Electrical drawings or herein, all wiring for all systems shall be routed within conduit, shall be of the same insulation type and shall be continuous between outlets and boxes (with no splices or taps into conduit). Splices and taps in outlet boxes shall be twisted joints. U.L. approved pre-insulated spring pressure connectors shall be used for branch circuit connections. Connectors shall be installed so that all conductors are properly insulated.

2.04 All control wiring shall be copper, solid or stranded, #14 Ga. or larger depending upon current requirements, with insulation type for 90 C. rating. Where stranded conductors are used, provide with spade type insulated copper terminals. Unless noted otherwise on the Mechanical drawings or herein, all mechanical control wiring for all systems shall be routed within conduit, shall be of the same insulation type and shall be continuous between outlets and boxes (with no splices or taps into conduit).

2.05 See riser diagrams and/or other sections of the Specifications for types and ratings for sound, fire alarm, control and other special cables.

2.06 Wires for general use within the building shall be type THHN or type THWN, 90 degree rated except where called for otherwise on the drawings. Type THHN or type THWN shall be used at the temperature rating of equipment termination lugs, environmental conditions, and as Code allows. Wires for other than general use shall be as hereinafter specified for specific services.

2.07 A "green" insulated ground conductor, sized per N.E.C. 250-95 and/or as shown on the drawings, shall be installed in each conduit containing phase conductors.

2.08 Where quantities of conductors in a raceway system are not specifically indicated, provide the number as required to maintain function, control and number of circuits as indicated.

2.09 All conductors shall be identified at all termination points and in all pull and junction boxes by the following method of color coding:

208/120 Volt System	240/120Volt System	480/277 Volt System
Phase A Black	Phase A Black	Phase A Brown
Phase B Red	Phase B Red	Phase B Orange
Phase C Blue	*Phase C Blue	Phase C Yellow
Neutral White	Neutral White	Neutral Gray
Ground Green	Ground Green	Ground Green

*(Note: identify "high leg" per N.E.C.)

2.10 All conductors size #6 AWG and smaller shall have colored insulation. Where conductors with black insulation are used for the larger wire sizes (#4 AWG and larger), color coding shall be provided with two (2) layers, one-half lapped, of No.35 colored Scotch Vinyl electrical tape. Where any conductor is or can be supplied from an emergency system the Contractor shall mark each conductor with an additional two layers, one-half lapped, of Purple colored Scotch Vinyl Electrical tape.

2.12 Provide a listing of the above described conductor color code identification scheme at all branch circuit panelboards per Article 210-4(d), National Electrical Code.

2.13 Splices and taps for #6 and larger conductors shall be made with block type terminations (with insulating jacket) or with split bolt connectors, covered and completely insulated with a minimum of three half-lapped layers of Scotch No. 33+ (105 degree C) plastic electrical tape or by approved insulated fastener. All splices and taps having irregular surfaces shall be properly padded with Scotchfil putty before application of insulating plastic tape. Scotchlok electrical pre-insulated spring pressure connectors or equal may be used for up to #8 conductors.

PART 3 - OUTLET BOXES

3.01 All electrical service outlets, including plug receptacles, lamp receptacles, lighting fixtures and switches shall be provided with 4" square, code gauge steel knockout boxes, galvanized or sherardized and of required depth for service and appliances. Single gang 'handy boxes' will not be allowed. All outlet boxes shall be flush mounted unless noted otherwise on the drawings or herein. Boxes installed in gyp board or plaster finish shall have code gauge galvanized raised covers set to not more than 1/4" behind final finish. Covers shall be selected with proper openings for devices installed in box. Manufacturers shall be Steel City, Appleton, RACO or equals approved by the Engineer.

3.02 Boxes mounted to metal wall studs shall be mounted with Caddy #MSF metal stud clip, or equal as approved by the Engineer. Boxes mounted to either metal or wood studs shall be mounted with Caddy #766 farside box support, or equal as approved by the Engineer. Single metal stud box clips without box supports are not acceptable for mounting boxes.

3.03 Sectional boxes shall not be used except where directed and approved by the Architect for installation in unplastered tile walls and provided conduit connections are installed concealed in walls.

3.04 Where lighting fixtures and appliance outlets are to be mounted on concrete or on plaster finish on concrete, outlet boxes shall be installed in forms of exact dimensions from bench marks, columns, walls or floors. Where lighting fixtures and appliance outlet are to be mounted on masonry walls and/or plastered furring or other finish, outlet boxes shall be roughed in to general location before installation of walls and furring and shall be reset to exact dimensions before walls and furring are constructed. All outlet boxes shall be set true to horizontal and vertical lines parallel to walls, floors, and ceilings and be true to finish lines.

3.05 Install all outlets in a secure and substantial manner and locate so as to be compatible with space, construction and equipment requirements and with the work of the other trades.

3.06 Furnish and install plaster rings for all boxes installed in plastered (or gyp board) ceilings and walls. Verify construction with general construction drawings.

3.07 Boxes for exterior or wet location work (where permitted or approved) shall be Appleton or Crouse-Hinds Type FS or FSC for shallow devices and Type FD or FDC for deep devices. Boxes for ceiling mounted light fixtures shall have approved no-bolt fixture studs. Boxes used as junction boxes shall have beveled edge flat steel blank covers.

3.08 Location of outlets on small drawings is approximate and exact dimensions for location of outlets shall be as taken from large scale drawings and details on drawings or as directed by the Architect. Outlets shall be located generally from column centers and finished wall lines or to center of joints of wall panels. Ceiling outlets shall be installed at elevation of suspended ceilings and connected to outlets in ceiling or slab above.

3.09 Clock outlets shall be mounted 8'-0" above floor unless otherwise noted on the drawings. All other outlets shall be mounted at heights above floor as called for on the drawings or as directed. Bracket lights over mirrors shall be centered on mirror with 2" clearance above mirror.

3.10 Boxes for switches and receptacles installed in columns shall be located off center to allow for future partitions.

3.11 Boxes for switches at or near doors shall be installed on the side opposite the hinge and within 6" of the door. Verify door swing direction prior to rough-in.

3.12 Rough-in outlets for electric water coolers so as to be concealed behind coolers, but remain accessible, in accordance with recommendation of equipment supplier.

3.13 To prevent sound from traveling through walls, electrical devices serving different rooms shall not be mounted in the same stud space. Through-wall boxes shall not be used. In fire rated walls or partitions, outlet boxes on opposite sides of walls or partitions shall be separated by a horizontal distance of not less than 24 inches. Installation shall be per UBC with fire stopping pads manufactured by International Protective Coating Corp. Outlet boxes larger than 4" square shall not be installed in fire rated walls or partitions. Verify location of fire rated walls or partitions with Architectural drawings prior to rough-in.

3.14 Provide blank cover plates for all outlet boxes not used. Plates in finished areas shall match those specified for switch and receptacle devices. Blank cover plates for junction boxes supplied from the emergency system or fire alarm system shall be painted red.

PART 4 - INSTALLATION OF SWITCH PLATES, ESCUTCHEONS, ETC.

4.01 It shall be the duty of this Contractor to examine the plaster, painting, and other finishes before making his installation to make sure that these accessories, when installed, will fit and cover properly and leave no open or unfinished surface showing. He shall refuse to complete his installation where faulty work on the part of others is found, and he shall promptly report the trouble to the Architect.

PART 5 - SUPPORTS AND HANGERS

5.01 Provide supports and hangers as necessary and as required to insure a good and substantial installation. Support raceways, fixtures, cabinets, boxes, etc., on approved type of trapeze hangers or wall brackets, as manufactured by Unistrut, American Electric, B-Line, Globe, or approved equal. Provide steel hanger rods securely fastened to or through the building structure for all trapezes, etc. Do not suspend from mechanical piping or ductwork. Perforated plumber's straps or wire will not be permitted.

PART 6 - JUNCTION, PULL AND SUPPORT BOXES

6.01 Pull and junction boxes shall be code gauge galvanized steel boxes with bolted, hinged or screwed covers. Boxes shall be flush or surface mounted as shown or required by N.E.C. and job conditions. Install in accessible locations.

6.02 Conductors shall not be spliced within pull boxes.

6.03 Boxes shall be rated as shown on the drawings or as required by applicable codes, ie: raintight, weatherproof, explosionproof, etc.

PART 7 - PAINTING AND FINISHES

7.01 Preparation of the material and the materials used for priming and finish painting shall be in accordance with the "Painting" section. Finish painting shall be performed under "Painting " section. Priming shall be performed under this section. Equipment specified to be factory-primed or finish-coated shall be the work of this section and materials and workmanship shall be as specified in "Painting" section.

DIVISION 16 ELECTRICAL

SECTION 16040

LIGHTING

PART 1 - LIGHTING FIXTURES

1.01 This work shall include all lighting fixtures and lamps as specified on the drawings and herein. Fixtures shall be completely free of defects, dents, rust or chipped surfaces. No cracked, broken, or chipped lenses will be acceptable. Fixtures that are cracked, broken, chipped, rusted, dented or otherwise damaged, shall be replaced without additional cost to the Owner. Fixtures shall be furnished complete including hickeys, suspension nipples, and all other materials and equipment as required for hanging and supporting fixtures in accordance with U.L. UBC, and NEC requirements. This Contractor shall furnish and install lamps for all fixtures and shall wipe fixtures and lamps before and after installation. All recessed mounted fixtures shall be mounted with the trim flush to the finish ceiling or wall surfaces, free of gaps or cracks.

1.02 Electrical Contractor shall verify exact ceiling types in all areas with architectural room finish schedule for exact fixture mounting (i.e., grid or flange type mounting) prior to ordering of fixtures. Electrical Contractor shall verify ceiling construction details in all areas and provide appropriate mounting hardware for installation of lighting fixtures. All surface mounted fixtures shall be supported independent from ceiling system and shall be securely mounted. Lay-in fixtures shall be supported directly from structure, unless ceiling system has been designed for support of such fixtures.

1.03 LED Lighting

a. Shall be Reduction of Hazardous Substance (RoHS) compliant, and comply with FCC 47 CFR Part 15, IES LM-79 & 80.
b. Minimum CRI of 80 with a color temperature of 3000-4000°K for interior fixtures and 4000-4500°K for exterior fixtures, unless otherwise noted in the Contract Documents.
c. Minimum rated life of 60,000 hours at 25°C ambient temperature.
d. LED driver shall have a THO of <20% and a power factor of 0.95 or higher with integral short circuit, open circuit and overload protection.
e. LED driver and LED module shall be accessible and replaceable from below.
f. LED lighting fixtures shall be assembled in the USA with minimum 80% materials content from the USA.
g. LED fixtures shall be provided with a minimum 5 year warranty on entire fixture (all components).
h. E.C. to provide all low voltage wiring for 0-10V dimmable fixtures.

ISSUE DATE:
2019-02-01

REVISIONS

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2/1/19
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DODGE CITY HIGH SCHOOL
SITE SIGNAGE

DATE: 2019-02-01
DRAWN BY: MH
CHECKED BY: DR

PROJECT NO. 19020.00

ELECTRICAL SPECIFICATIONS

E102

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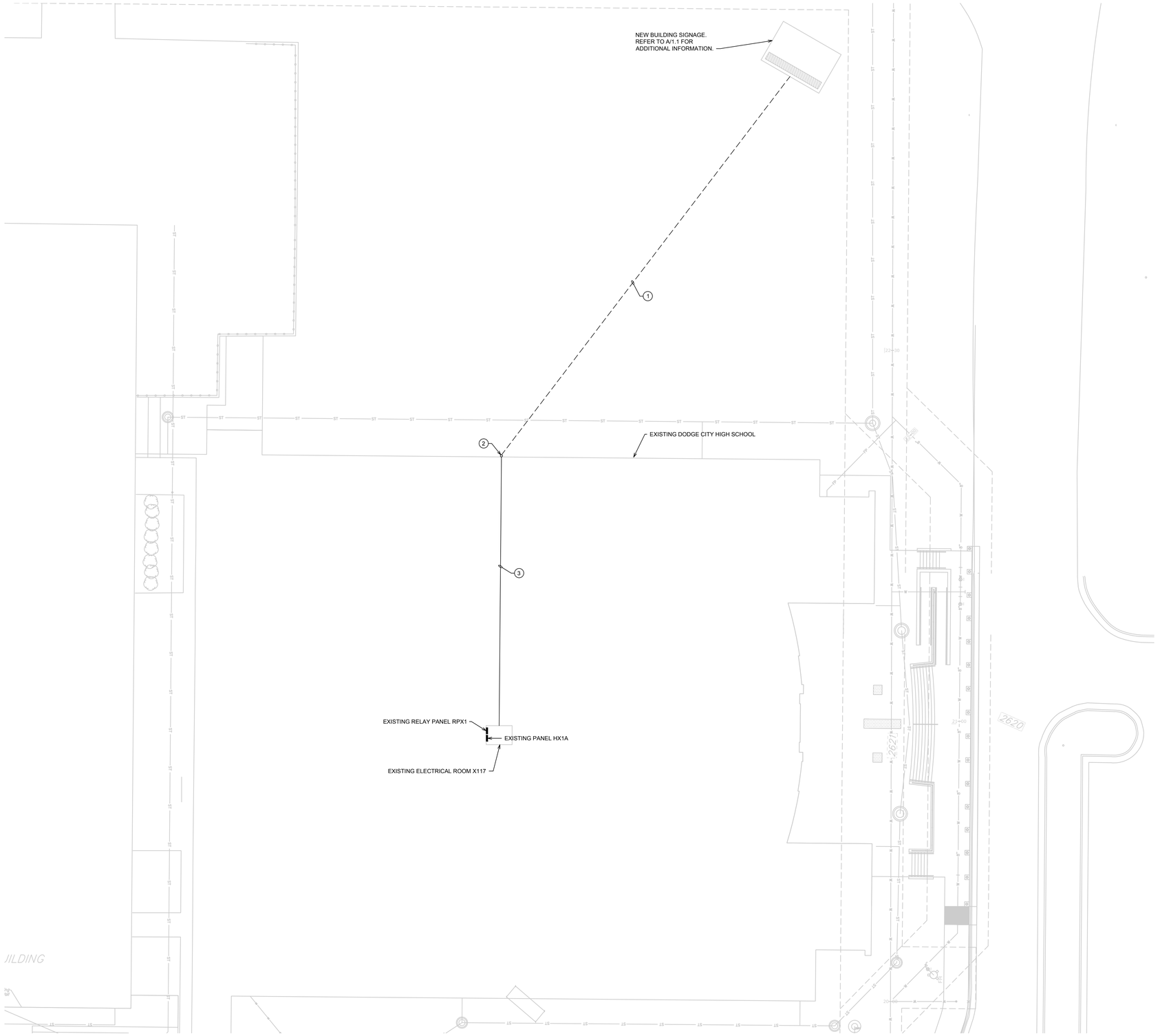
Appendix 7

Sheet E200 Partial Electrical Site Plan



A PARTIAL ELECTRICAL SITE PLAN
SCALE: 1/16" = 1'-0"

NORTH

GENERAL NOTES:

1. ALL CIRCUITS INDICATED ON DRAWINGS SHALL BE 20A, 120V CIRCUITS WITH (2)-#12'S AND (1)-#12 G. IN 0.5" CONDUIT U.O.N.
2. LABEL ALL SNAP SWITCH COVERPLATES WITH THE PANEL AND CIRCUIT NUMBER.
3. REFER TO RELATED ARCHITECTURAL DRAWINGS FOR RELATED INFORMATION.
4. REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
5. A GROUND CONDUCTOR SIZED PER N.E.C. ARTICLE 250 IS REQUIRED IN ALL POWER, RECEPTACLE, AND LIGHTING CIRCUITS. GROUND CONDUCTORS ARE NOT SHOWN ON DRAWINGS.

PLAN NOTES:

1. ELECTRICAL CONTRACTOR TO INSTALL NEW CIRCUIT IN PVC CONDUIT A MINIMUM OF 36" BELOW GRADE. COORDINATE WITH EXISTING UTILITIES PRIOR TO ROUGH-IN.
2. EC TO TRANSITION TO EMT CONDUIT AND SURFACE MOUNT NEW CONDUIT ON EXTERIOR OF BUILDING. EC TO PAINT CONDUIT TO MATCH EXISTING BUILDING.
3. NEW FEEDER TO BE ROUTED ABOVE ACCESSIBLE CEILING. COORDINATE ROUTING WITH EXISTING CONDITIONS PRIOR TO ROUGH-IN.

ISSUE DATE:
2019-02-01

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DODGE CITY HIGH SCHOOL
SITE SIGNAGE

DATE: 2019-02-01
DRAWN BY: MH
CHECKED BY: DR

PROJECT NO. 19020.00

PARTIAL ELECTRICAL SITE PLAN

E200

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