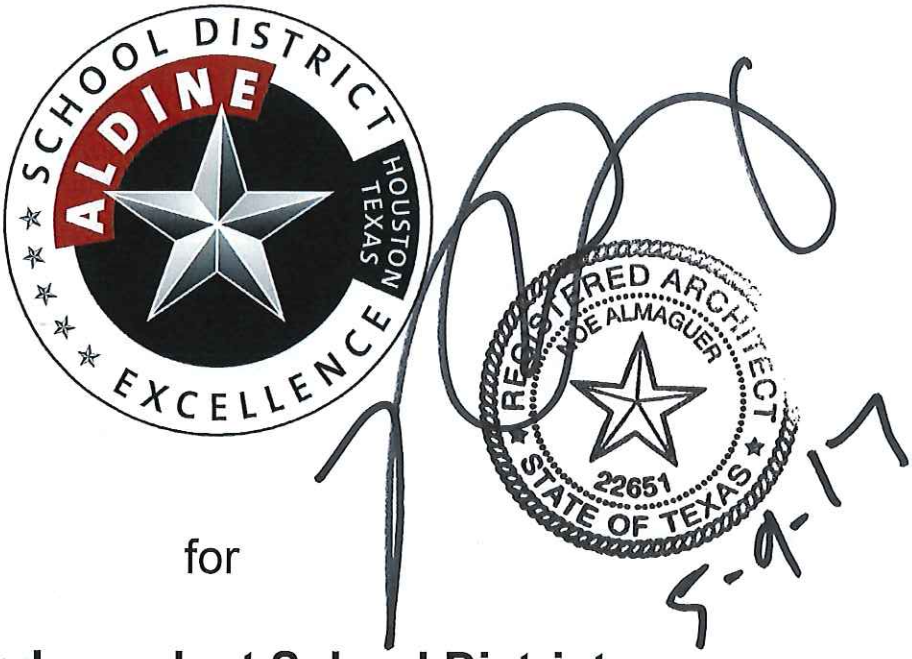
ADDENDUM #2

ALDINE ISD

RESOURCE AND STAFF DEVELOPMENT CENTER PHASE III



for

Aldine Independent School District

Issued for Proposals
April 24, 2017

Addendum Issued Date
May 9, 2017

Bids Due
May 25, 2017, at 2:00 p.m.

Molina Walker Almaguer Architects, Inc.

Note: This addendum includes this cover and 194 additional 8 ½ x 11 pages plus 108 full size drawings.

To the Plans and Specifications for the Aldine Administration Annex Building (Phase 2), this addendum forms a part of the Contract Documents and modifies said documents as follows:

PART 1 - GENERAL / MANUFACTURERS AND PRODUCTS APPROVED AS EQUALS

1.1 **Bid Proposal Due Date** has been postponed until **Thursday, May 25, 2017, at 2:00 pm**. All Bids must be signed in, dated and time stamped by a designated AISD representative in the Board Room at 2520 W.W. Thorne Drive, Houston, Texas 77073. Base Bids will be accepted no later than **2:00 PM Thursday, May 25, 2017**.

1.2 **Estimated Construction Time**:

A. The date of Substantial Completion for the entire project has been extended to Tuesday, **January 23, 2018**. BIDDERS should schedule all work to be completed and final cleaned in order for AISD to take possession and occupy the facility on Friday, February 23, 2018, which is the Final Completion date.

1.3 **Criminal Background Fingerprinting requirement District Guidelines**:

A. Aldine I.S.D. Criminal Background Fingerprinting Requirement is included in this addendum and forms part of the Contract Documents and shall be incorporated integrally therewith.

1.4 **Approved as Equals**:

A. Specification Section 08 33 23 Rolling Service Doors – Raynor Worldwide (800-472-9667) located on 1101 East River Rd., Dixon, IL 61021 is listed as an approved equal manufacturer.

PART 2 - SPECIFICATIONS

2.1 Under Specification Section 00 10 00 Instructions to Bidders:

A. Replaced specification section in its entirety.

2.2 Under Specification Section 01 23 00 Alternates:

A. Add Alternate No. 3: The Contractor shall provide the Owner with an established landscape. During the ninety calendar day (Base Bid), (one year, 360 calendar day, Alternate No. 3) establishment period the Contractor shall care for and provide a project site that is attractive in appearance and shall keep plant materials and lawns in a healthy and vigorous condition using accepted horticultural standards.

B. Add Alternate No. 4: Provide roof mounted heating ventilation unit with stainless steel heat exchanger, roof curb, electrical power provisions with associated devices, and gas piping with as-

sociated regulator. Ventilation units shall be integrated into the existing building automation system. A new 3-inch gas line connected to the existing natural gas service downstream of gas meter shall be provided. Provide new control interface devices as required. New roof openings with structural members shall be provided.

2.3 Under Specification Section 01 32 00 Geotechnical Report:

A. Add specification section in its entirety.

2.4 Under Specification Section 20 24 10 Diesel Engine Provisions

A. Add Specification Section in its entirety.

2.5 Under Specification Section 20 38 00 Kitchen Equipment Provisions:

A. Add Speciation Section in its entirety.

2.6 Under Specification Section 21 13 16 Dry-Pipe Fire Sprinkler Systems:

A. Add Specification Section in its entirety.

2.7 Under Specification Section 22 05 25 Miscellaneous Equipment:

A. Add Specification Section in its entirety.

2.8 Under Specification Section 22 15 00 Compressed Shop Air Systems:

A. Add Specification Section in its entirety.

2.9 Under Specification Section 22 16 13 Natural Gas Piping Systems:

A. Add Specification Section in its entirety.

2.10 Under Specification Section 22 33 33 Electric Water Heaters:

A. Add Specification Section in its entirety.

2.11 Under Specification Section 22 42 10 Plumbing Fixtures and Trim:

A. Replace Specification Section in its entirety.

2.12 Specification Section 23 05 25 Miscellaneous Equipment:

A. Add specification section in its entirety.

2.13 Specification Section 23 05 93 Startup, Testing, Adjusting, and Balancing

A. Replace specification section in its entirety.

2.14 Specification Section 23 05 93_13 Supplemental Balancing and Adjustment:

A. Add specification section in its entirety.

2.15 Specification Section 23 09 16.13 Automatic Temperature Controls:

A. Add specification section in its entirety.

2.16 Specification Section 23 34 10 Fans:

A. Add specification section in its entirety.

2.17 Specification Section 23 55 33_16 Gas Unit Heaters:

A. Add specification section in its entirety.

2.18 Specification Section 23 81 13 Roof Mounted Air Conditioning Units:

A. Add specification section in its entirety.

2.19 Specification Section 23 81 33 Kitchen Makeup Air Units:

A. Add specification section in its entirety.

2.20 Specification Section 23 82 31 Electric Duct Heaters:

A. Add specification section in its entirety.

2.21 Specification Section 26 05 63 Telephone and Data System Provisions:

A. Add specification section in its entirety.

2.22 Specification Section 26 12 21 Pad Mounted Transformers:

A. Add specification section in its entirety.

2.23 Specification Section 26 27 10 Power Distribution Equipment:

A. Add specification section in its entirety.

2.24 Specification Section 26 36 23 Automatic Transfer Switches:

A. Add specification section in its entirety.

2.25 Specification Section 32 01 90, Operation and Maintenance of Planting:

A. Paragraph 1.2A: Revise: “(one year, 360 calendar days, Alternate No. ?)” to read “(one year, 360 calendar days, Alternate No. 3)”

B. Paragraph 1.3B: Revise: “(one year, 360 calendar days, Alternate No. ?)” to read “(one year, 360 calendar days, Alternate No. 3)”

2.26 Specification Section 32 90 00, Planting:

A. Paragraph 1.8: Revise: “(ONE YEAR Maintenance (Alternate No. ??)” to read “(ONE YEAR Maintenance (Alternate No. 3)”

B. Paragraph 1.8A: Revise: “(360 calendar days, Alternate No. ?)” to read “(360 calendar days, Alternate No. 3)”

2.27 Specification Section 41 34 24 Paint Spray Booth:

A. Add specification section in its entirety.

PART 3 - DRAWING

CIVIL / LANDSCAPE DRAWINGS

3.1 Under Sheet L01-00:

A. Revise quantity of HM from 189,606SF to read 61,932 SF.

3.2 Under Sheet L01-01, Detail C1:

A. Revise quantity of HM from 221,471SF to read 159,539SF.

3.3 Under Sheet C1.1:

A. Revised general notes sheets, added Appendix D notes. See Attached 30X42 Sheet.

3.4 Under Sheet C2.1:

A. Added Revision Clouds to all the graphically changed areas and structures. Modified the Fire Lane route. See Attached 30X42 Sheet.

3.5 Under Sheet C3.1:

A. Revised Sally Port Area, added ramp, concrete walkway structure and saw cut. Revised Sally Port Section. Revised drive way and island, removed sidewalk, and revised handicap and side-walk grades. Extended grade of sidewalk to boundary. See Attached 30X42 Sheet.

3.6 Under Sheet C3.2:

A. Revised gravel patch routes, added ramp and saw cut. Added section 3, graphically modified the fuel pump area and grades. Changed inlet structure to junction box. See Attached 30X42 Sheet.

3.7 Under Sheet C3.3:

A. Revised grade on pavement. Relocated connecting drive and grades from exist parking to the proposed parking area. Added ramps from proposed building. Modified parking islands to existing parking areas. Added ramps, saw cut, concrete walk to the existing building. Added sections to sheet and enlarged area. See Attached 30X42 Sheet.

3.8 Under Sheet C3.4:

A. Revised outfall system: Removed manhole and changed pipe size. Modified Extreme event over-flow concrete lined weir. Updated gravel path and HCFCD call outs. See Attached 30X42 Sheet.

3.9 Under Sheet C6.1:

A. Revised Outfall system: Removed man hole. Modified Extreme event overflow concrete lined weir. Added Dimension and modified call outs. See Attached 30X42 Sheet.

3.10 Under Sheet C6.2:

A. Modified sections and added HCFCD Units number and dimensions. See Attached 30X42 Sheet.

3.11 Under Sheet C6.3:

A. Revised section to the outfall system: Removed manhole, modified pipes size and material and added restrictor to outfall system. Revised Typical Extreme Event Overflow-Concrete-Lined Swale section and added Emergency Relief Outfall Weir section. See Attached 30X42 Sheet.

3.12 Under Sheet C6.4:

A. Included “Bedding HDPE Pipe Detail”. See Attached 30X42 Sheet.

3.13 Under Sheet C7.1:

A. Added Revision Clouds to all the graphically changed areas and structures. Revised Paving Joint layout and Concrete pavement sections. See Attached 30X42 Sheet.

3.14 Under Sheet C8.1:

A. Included Stage II protection to existing and proposed inlets. Added Revision Clouds to all the graphically changed areas and structures. See Attached 30X42 Sheet.

3.15 Under Sheet C8.2:

A. Included additional Storm Water Pollution Prevention Plan Details. See Attached 30X42 Sheet.

ARCHITECTURAL DRAWINGS

3.16 Under Sheet A00-01 Index:

A. Revised Index of Drawings

3.17 Under Sheet A02-02 Site Plan:

A. Modified drive, trail, added wood bridge at spillway

3.18 Under Sheet A02-04 Enlarged Site Plans:

A. Modified drive, trail, curb, tree protection

3.19 Under Sheet A02-06 Enlarged Site Plan:

A. Modified guardhouse, police lot fence, and parking entrance

3.20 Under Sheet A02-07 Overall Site And Fenceline Plan:

A. Modified color of text

3.21 Under Sheet A02-10 Site Details:

A. Added service yard screen detail

3.22 Under Sheet A02-12 Fuel Station Canopy And Guard House:

A. Added tree protection fencing and notes

3.23 Under Sheet A03-11 Warehouse Area A:

A. Added fire extinguisher cabinet locations

3.24 Under Sheet A03-12 Warehouse Area B:

A. Added fire extinguisher cabinet locations and notes

3.25 Under Sheet A03-13 Warehouse Area C:

A. Added fire extinguisher cabinet locations and notes

3.26 Under Sheet A03-14 Warehouse Area D:

A. Added fire extinguisher cabinet locations

3.27 Under Sheet A03-30 Warehouse Floor Plan:

A. Removed electrical room enclosure and door

3.28 Under Sheet A05-03 Room Schedule:

A. Modified room schedule and legend

3.29 Under Sheet A06-03 Exterior Elevations:

A. Added section mark for screen wall

STRUCTURAL DRAWINGS

3.30 Under Sheets S1.0 Foundation Plans:

A. Replace Sheet it its entirety.

3.31 Under Sheets S2.0 Foundation Sections:

A. Replace Sheet it its entirety.

3.32 Under Sheets S3.0 Foundation Plans:

A. Replace Sheet it its entirety.

MEP SHEETS

3.33 Under Sheet M10-01:

A. Clarified demolition keyed notes.

3.34 Under Sheet M10-02:

A. Clarified demolition keyed notes.

3.35 Under Sheet M10-03 1:

A. Indicated existing louvers in Auto to remain.

3.36 Under Sheet M10-04 1:

A. No Changes.

3.37 Under Sheet M10-05:

A. No Changes.

3.38 Under Sheet M10-06 1:

A. No Changes.

3.39 Under Sheet M10-07 1:

A. Clarified contractor scope for modification to existing louver operators.

3.40 Under Sheet M11-02 1:

A. Created new roof demolition plan sheet.

3.41 Under Sheet M11-03:

A. Created new roof demolition plan sheet.

3.42 Under Sheet M11-04:

A. Created new roof demolition plan sheet.

3.43 Under Sheet M11-05:

A. Created new roof demolition plan sheet.

3.44 Under Sheet M11-06:

A. Created new roof demolition plan sheet.

3.45 Under Sheet M11-07:

A. Created new roof demolition plan sheet.

3.46 Under Sheet M11-08:

A. Created new roof demolition plan sheet.

3.47 Under Sheet M20-01:

A. Added (5) new VAVs associated with AHU-5 and ERU-1.

3.48 Under Sheet M20-02:

A. Clarified keyed notes.

3.49 Under Sheet M20-03:

A. Clarified design to remove level 2 design from level 1 plan in warehouse office area.

3.50 Under Sheet M20-04:

A. No Changes.

3.51 Under Sheet M20-05:

A. Clarified design by moving roof mounted equipment to roof plan.

3.52 Under Sheet M20-06:

3.53 Clarified design by moving roof mounted equipment to roof plan.

3.54 Under Sheet M20-07:

A. Provided equipment designation tags.

3.55 Under Sheet M20-08:

A. Indicated scope associated with level 1 Office Building interior office renovations.

3.56 Under Sheet M20-09:

A. Indicated intake and discharge louvers for Maintenance Building.

3.57 Under Sheet M20-10:

A. Clarified design to remove level 1 design from level 2 plan in warehouse office area.

3.58 Under Sheet M21-02:

A. Indicated Alternate #4 design for indirect gas fired heating ventilation units in lieu of ventilation fans.

3.59 Under Sheet M21-03:

A. Indicated exhaust fans for Auto.

3.60 Under Sheet M21-04:

A. Indicated Alternate #4 design for indirect gas fired heating ventilation units in lieu of ventilation fans

3.61 Under Sheet M21-05:

A. Indicated Alternate #4 design for indirect gas fired heating ventilation units in lieu of ventilation fans

3.62 Under Sheet M21-06:

A. No Changes.

3.63 Under Sheet M21-07:

A. Provide new roof plan to show roof mounted equipment.

3.64 Under Sheet M21-08:

A. Provide new roof plan to show roof mounted equipment.

3.65 Under Sheet M30-01:

3.66 Indicated scope required for ASHRAE 15 compliance within refrigeration room.

3.67 Under Sheet M30-02:

A. Added sheet to show scope associated with replacement of existing exhaust fan in Area A.

3.68 Under Sheet M60-01:

A. Revised equipment schedules and associated notes.

3.69 Under Sheet M60-02:

A. Revised equipment schedules and associated notes.

3.70 Under Sheet M60-03:

A. Revised equipment schedules and associated notes.

3.71 Under Sheet E10-02:

A. Indicated demolition scope associated with removal of existing refrigeration equipment.

3.72 Under Sheet E10-03:

A. Indicated demolition of existing electrical distribution gear for replacement with new equipment.

3.73 Under Sheet E20-02:

3.74 Indicated demolition of existing light pole to be replaced with new LED fixture and pole.

3.75 Under Sheet E20-03:

A. Added new quazite pull box

3.76 Under Sheet E20-04:

3.77 Clarified scope related to site lighting.

3.78 Under Sheet E20-05:

A. Clarified scope related to site lighting.

3.79 Under Sheet E20-06:

A. Clarified scope related to site lighting.

3.80 Under Sheet E21-01:

A. Indicated Occupancy Sensor.

3.81 Under Sheet E22-01:

A. Miscellaneous power revisions to clarify design.

B. Added power for five VAVs.

C. Indicated power for automatic dampers.

3.82 Under Sheet E22-02:

A. Miscellaneous power revisions to clarify design.

B. Indicated location of generator annunciator panel.

3.83 Under Sheet E22-03:

A. Indicated new electrical distribution equipment to replace existing.

3.84 Under Sheet E22-04:

A. Miscellaneous power revisions to clarify design.

3.85 Under Sheet E22-05:

A. Miscellaneous power revisions to clarify design.

3.86 Under Sheet E22-06:

A. Miscellaneous power revisions to clarify design.

3.87 Under Sheet E22-07:

A. No Changes.

3.88 Under Sheet E22-08:

A. Electrical room will be deleted. Provide outdoor rated enclosures for equipment exposed to weather.

3.89 Under Sheet E22-09:

A. Sheet added to indicated scope associated with new interior renovations of level 1 of the Office Building.

3.90 Under Sheet E23-01:

A. Sheet added to indicate roof mounted equipment.

3.91 Under Sheet E23-02:

A. Sheet added to indicate roof mounted equipment.

3.92 Under Sheet E23-04:

A. Sheet added to indicate roof mounted equipment.

3.93 Under Sheet E23-05:

A. Sheet added to indicate roof mounted equipment.

3.94 Under Sheet E30-01:

A. Miscellaneous power revisions to clarify design.

3.95 Under Sheet E40-01:

A. Indicated new electrical distribution equipment.

3.96 Under Sheet E60-01:

A. Updated panel schedules.

3.97 Under Sheet P20-01:

A. Specified mop sink, MS-1.

B. Specified washing machine valve box, WMB-1.

C. Indicated requirement to extend existing fire protection to provide sprinkler coverage in mechanical rooms and Tele/Comm room.

3.98 Under Sheet P20-02:

A. Removed make-up water connection to new air cooled chiller, ACWCU-1.

3.99 Under Sheet P20-03:

3.100 Indicated scope associated with demolition and reconnection of existing sprinkler piping affected by demolition of storage racks in Parts area.

A. Indicated wall hydrant, WH-1, in Pesticide Storage area.

3.101 Under Sheet P20-08:

A. Indicated 6” fire line for future fire protection system as required.

3.102 Under Sheet P20-09:

A. Indicated provisions for dry-pipe sprinkler system for the Lean-To.

3.103 Under Sheet P21-01:

A. Indicated plumbing scope associated with Alternate #4.

3.104 Under Sheet P30-01:

A. Increased natural gas pipe size for generator and heating ventilation unit. Pipe size specified to be 3”.

3.105 Under Sheet P40-01:

A. Revised “GAS RISER – GENERATOR” detail to indicate scope for Alternate #4.

3.106 Under Sheet FE2-1:

A. Detail 2: Revise lighting circuit to LF-36 to match panel schedule.

TECHNOLOGY

3.107 Under T1.01 Technology Site Plan:

A. Replace Sheet T1.01 in its entirety with the attached Sheet T1.01.

3.108 Under Sheet T2.01 Technology Floor Plan Area C:

A. Add Keyed Notes 2 & 3

B. Kitchen 1563
   1. Add (2) ceiling mounted D1 data drops with Keyed Note 3.
   2. Relocate floor box D1 to location indicated. Add Keyed Note 2.

C. Technology Storage 1613
   1. Delete (6) cameras

D. Book Storage 1622
   1. Delete (5) Cameras
   2. Add (2) Cameras to locations indicated

E. Book Staging Area 1620
   1. Delete (1) Camera
   2. Add (2) Cameras

F. Hall 1662
   1. Add (1) Camera

3.109 Under Sheet T2.02 Technology Floor Plan Area E:

A. Auto 1600
   1. Add (2) 180 degree Exterior Cameras to locations indicated
   2. Delete (2) Interior Cameras

B. Room 1700
   1. Add (1) Camera to location indicated

C. Hallway Plan North of Office 1619
   1. Add (1) Camera to location indicated

D. Parts 1617
   1. Delete (1) Camera

E. Warehouse Hall 1600
   1. Add (2) Cameras to locations indicated
   2. Delete (1) Camera

F. Breakroom 1612
   1. Add (2) D2 data drops to locations indicated
   2. Add location of Wall Mounted IC

G. Breakroom 1610
   1. Add (5) D1V1 data drops to locations indicated

H. Inventory 1602
   1. Relocate (7) D1V1 data drops
   2. Add (1) D1V1 data drop
   3. Relocate (1) Camera, add callout for 360 Degree Camera

I. Receiving 1601 – Exterior wall

J. Add (2) Exterior Cameras to locations indicated

3.110 Under Sheet T2.03 Technology Floor Plan Area F:

A. Hallway Plan East of Storage 1628
   1. Delete (6) Cameras
   2. Delete (1) Card Reader
   3. Add (2) Cameras to locations indicated

B. Future Staging Area 1626
   1. Add (4) Cameras to locations indicated
   2. Delete (10) Cameras

C. Locksmith Paint General Maintenance 1628
   1. Delete (6) Cameras

D. Fire Alarm Storage 1651
   1. Delete (1) Camera

E. Carpentry Shop 1646
   1. Delete (2) Cameras

F. Carpentry Storage 1645
   1. Delete (2) Cameras

G. Hallway Plan North of Electrical Storage Room 1650
   1. Relocate (2) Cameras

H. HVAC 1634
   1. Delete (3) Cameras
   2. Relocate (1) Camera

I. Roofing 1638
   1. Delete (3) Cameras
   2. Relocate (1) Camera
   3. Add (1) 180 Degree Exterior Camera to exterior wall

J. Plumbing 1642
   1. Delete (3) Cameras
   2. Relocate (1) Camera

K. Tool Room 1644
   1. Delete (2) Cameras

2. Relocate (1) Camera

L. Maintenance 1800
1. Add (1) Exterior Camera to Plan North exterior wall
2. Delete (3) Interior Cameras
3. Add (2) 180 Degree Interior Cameras

3.111 Under Sheet T2.04 Technology Floor Plan Area G:

A. Relocate (6) Cameras

B. Add (1) 180 Degree Exterior Camera to Plan West exterior wall

3.112 Under Sheet T3.01 Technology Schedules And Details:

A. Replace Sheet T3.01 in its entirety with the attached Sheet T3.01.

PART 4 - QUESTIONS AND RESPONSES

4.1 **Question #1**: Please provide soils report, structural and details. The soils report is needed for the utility subcontractors to determine the ground water depth.

Response #1: Refer to attached Specification Section 01 32 00 for Geotechnical Information.

4.2 **Question #2**: Light & Medium duty concrete sheet C7.1 indicates - Lime/Flyash 15lbs. & 40lbs, 6" deep but specification section 31 20 00-10 indicates lime/flyash 15lbs. & 53lbs, 6" deep. Please clarify which one to use.

Response #2: Use the amount listed on the Plan Sheet: Lime/Flyash 15lbs. & 40lbs, 6" deep.

4.3 **Question #3**: Index sheet A00-01 lists structural sheets S1.0, S2.0 and S3.0 but were not included in the drawings.

Response #3: Refer to attached Sheets S1.0, S2.0 and S3.0 to this addendum.

END OF ADDENDUM #2 DESCRIPTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The requirements of the General Conditions, Supplementary Conditions, Division 1, Division 20, and Drawings apply to all Work herein.

B. Requirements of the following Division 20-28 Sections apply to this section:

1. Design Criteria - Section 20 05 02
2. Basic Division 20-28 Requirements - Section 20 05 03
3. Schedule of Submittal Data - Section 20 05 04
4. General Division 20-28 Materials and Methods - Section 20 05 05
5. Scope of Work - Section 26 05 01
6. Testing - Section 26 05 07

1.2 SCOPE

A. General: Furnish and install automatic transfer switches (ATS) as specified herein, having continuous electrical ratings of the amperage capacity, voltage, and phase as indicated on the drawings. Transfer switches shall be compatible with the standby electric generation set.

B. Related Sections: Other Division 20-28 Sections contain requirements related to the work of this Section. These may include, but not be limited to, the following sections:

1. Packaged Electric Generating Systems - Section 26 32 13.13

1.3 QUALITY ASSURANCE

A. Manufacturers: If they comply with these specifications and requirements, products of the following manufacturers will be acceptable:

1. ASCO
2. Zenith
3. Onan
4. Russelectric

B. Codes and Standards: The automatic transfer switch shall conform to the requirements of NEMA Standard ICS 2-447 and Underwriters' Laboratories UL-1008 and shall be UL listed as follows:

1. For use in emergency and stand-by systems in accordance with Articles 517, 700, 701, and 702 of the National Electric Code.
2. Rated in amperes for total system transfer including control of motors, electric discharge lamps, electric heating, and tungsten filament lamp loads as referred to in Paragraph 1.7 and 1.9 of UL-1008.
3. Transfer switches rated 400 amperes and less shall be suitable for 100 percent tungsten filament lamp load. Switches rated above 400 amperes shall be suitable for 30 percent of 400 amperes tungsten filament lamp load.

4. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
5. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.
6. All materials, installation and workmanship shall comply with the applicable requirements and standards addressed within the following references:

    a. ANSI/UL 1008 - Automatic Transfer Switches.
    b. NEMA ICS 1-109 - Tests.
    c. NEMA ICS 2-447 - A-C Automatic Transfer Panels.
    d. NFPA 20 - Standard for Centrifugal Fire Pumps (for switches utilized with fire pumps).
    e. NFPA 70 - National Electrical Code.
    f. NFPA 99 - Essential Electrical Systems for Health Care Facilities.
    g. NFPA 110 - Standard for Emergency and Standby Power Systems.
    h. IEEE 446 - IEEE Recommended Practice for Emergency and Standby Power -Systems.
    i. IEEE 241 - IEEE Recommended Practice for Electrical Power Systems in Commercial Buildings.

PART 2 - PRODUCTS

2.1 TRANSFER SWITCHES

A. General: Automatic transfer switches shall be product of a quality manufacturer regularly engaged in the design, development and manufacture of solid-state electromagnetic switching devices with adequate testing facilities and a recognized quality control program to insure product output reliability, performance and safety.

B. Each automatic transfer switch shall consist of a power transfer module and a control module, interconnected to provide complete automatic operation.

C. Automatic transfer switches shall be mechanically held and electrically operated by one solenoid or motor mechanism energized from the source to which the load is to be transferred.

D. Switches shall be rated for continuous duty, shall be inherently double throw and shall be mechanically interlocked to ensure only one of two possible positions:

    1. Normal.
    2. Emergency.

E. Automatic transfer switches shall be suitable for use with "emergency" sources such as an engine or turbine driven generator source or another utility source.

F. Switches shall be suitable for bus or cable connections as required by the Drawings. Automatic transfer switches shall utilize terminations for compression connectors when terminated at cable connects. They shall be U.L. listed for bus or compression fitting termination.

G. Contacts: All main contacts shall be of silver composition. They shall be protected by arcing contacts in sizes 600 Amperes and over. Switches less than 600 amps shall have arc barriers and arc quenches to protect the main contacts. They shall be of the blow-on configuration and have segmented or brush construction in ratings 600 Amperes and over. The operating transfer time in either direction shall not exceed (1/6) of a second without arc over. The switches shall be capable of transferring 600% rated current at 0.5 power factor between the 277/480 or 480 Volt A.C. sources that are 120^{o} out of phase. The switches shall be able to close on inrush current equal to 20 times normal without excessive burning or welding of the contacts.

H. The control module shall be supplied with a protective cover and be mounted separately from the power transfer module for ease of maintenance. The interconnecting wiring harness shall include a disconnect plug to disconnect all wires including both sources of control power for routine maintenance.

I. Sensing and control logic shall be solid-state and mounted on plug-in printed circuit boards. Printed circuit boards shall be keyed to prevent incorrect installation. Interfacing relays shall be industrial control grade plug-in type with dust covers. Relays shall be field adjustable and have replaceable silver alloy contacts.

J. Inspection of all contacts (movable and stationary) shall be possible from the front of the transfer switch without disassembly of operating linkages and without disconnection of power conductors.

K. A manual-operating handle shall be provided for maintenance purposes. The handle shall permit the operator to stop the contacts at any point throughout the entire travel to properly inspect and service the contacts when required.

L. Automatic transfer switches utilizing components of molded case circuit breakers, contactors, or parts thereof that have not been intended for continuous duty or repetitive load transfer switching are not acceptable.

M. Automatic transfer switches less than 400 Amperes shall have inherent ability to withstand fault current of 100,000 Amperes RMS. Switches 400 Amperes and greater shall have inherent ability to withstand fault current of 200,000 Amperes RMS. These ratings shall apply to switches used in combination with any current-limiting fuse in accordance with UL 1008.

N. The automatic transfer switch shall be rated to withstand the RMS symmetrical short circuit current available at the automatic transfer switch terminals with the noted overcurrent protection and voltage shown.

O. The automatic transfer switches shall be mounted in NEMA 1 non-ventilated, wall mounted or floor mounted enclosures as indicated. Switches and accessory devices shall be provided as required.

P. Provide four-pole (non-overlapping neutral) switches unless otherwise indicated on the Drawings.

2.2 OPERATION

A. The automatic transfer switch control panel shall utilize solid-state sensing on "normal" and "emergency" for automatic, positive operation. The following shall be provided:

1. Voltage and Frequency Sensing:

a. Three phase automatic transfer switches - all phases of the "normal" source and the "emergency" source shall be monitored line-to-line.
b. Close differential voltage sensing shall be provided as indicated in item (a) above.
c. The "pick-up" voltage shall be adjustable from 85% to 100% of nominal.
d. The "dropout voltage" shall be adjustable from 75% to 98% of the pickup value.
e. The starting of the emergency source stand-by power system will be initiated reduction of "normal" source voltage to 80% of normal voltage.
f. Independent frequency sensing of the "emergency" source shall be provided.
g. The "pick-up" frequency shall be adjustable from 90% to 100% of nominal.
h. The "transfer-to-emergency" will be initiated when the "emergency" source voltage is 90% or more of nominal voltage, and the frequency of the "emergency" source is 95% or more of nominal.
i. The "retransfer-to-normal" shall occur when "normal" source voltage restores to 90% of nominal voltage.
j. An in-phase monitor relay shall be provided and shall be wired and factory set such that hot source to hot source transfer in either direction is inhibited until the phase angle of both sources is within a 15-degree band.

2. Time Delays:

a. A time delay to override momentary "normal" source outages to delay all transfer switch and engine starting signals. The time delay shall be field re-connection for 2, 4 or 6 seconds and factory connected for 2 seconds.
b. An adjustable time delay on "transfer-to-emergency" for all automatic transfer switch(es) shall be initially set as follows:

1) ATS-2 through 4 8 Seconds

c. A time delay on "transfer-to-emergency" for the Fire Pump automatic transfer switch shall be field adjustable from 0 to 60 seconds and shall be initially set at 12 seconds. Refer to Division 15 for additional requirements on Fire Pump Automatic Transfer Switch.
d. A time delay for "shut-down" of the emergency generator set to provide unloaded running of the engine for cool down. The time

delay shall be field adjusted for the time setting as recommended by the stand-by generator set manufacturer.

e. An adjustable pre-signal relay on ATS-2,4 serving elevator loads to operate on SPDT contact 3 to 20 seconds prior to transfer in either direction. Contacts shall reset immediately after transfer. Contact shall be initially set for 8 seconds.

f. An adjustable time delay on retransfer from "emergency" to "normal" of 0 to 30 minutes to assure a stable normal source. A bypass circuit shall override this time delay in the event of simultaneous failure of the emergency source and availability of a suitable normal source. Setting shall be as recommended by generator manufacturer.

3. Engine Control Contacts: A contact that closes when "normal" source fails for initiating engine starting, rated 10 amps, 32V DC. Contacts to be gold plated for low voltage service.

4. Auxiliary Contacts:

a. Three auxiliary contacts that close when the automatic transfer switch is connected to "normal" source, rated 10 amps, 480 volts, 60 Hz AC.

b. Three auxiliary contacts that close when the automatic transfer switch is connected to "emergency" source, rated 10 amps, 480 volts, 60 Hz AC.

5. A test switch to momentarily simulate normal source failure.

6. A "green" signal light to indicate when the automatic transfer switch is connected to the "normal" source. A "red" signal light to indicate when the automatic transfer switch is connected to the "emergency" source.

7. A contact for use in exercising the generator set remotely from the Building Control and Automation System.

2.3 PERFORMANCE TESTS

A. Certified independent laboratory test data on a switch of the same design and rating shall be provided to confirm the following switching abilities:

1. Overload and endurance at 480 volts AC per Tables 25.1, 25.2, 27.1, and 27.2 of UL-1008 when enclosed according to NEMA Standard ICS 2-447 and UL 1008.

2. Temperature rise tests after the overload and endurance tests to confirm the ability of the transfer switches to carry their rated current within the allowable temperature limits of the insulation in contact with current carrying parts.

3. Withstand current tests per Paragraph 31 of UL-1008 for 100,000 Amperes RMS symmetrical, at 480 volts and X/R ratio at 6.6.

4. No welding of contacts. Transfer switch must be operable to alternate source after the withstand current tests.

5. Dielectric tests at 1960 volts, RMS, minimum after the withstand current test.

B. All production units shall be subjected to the following factory tests:

1. The complete automatic transfer switch shall be tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.
2. The switch shall be subjected to a dielectric strength test per NEMA Standard ICS 1-109.21.

C. The control panel shall meet or exceed the voltage surge withstand capability in accordance with IEEE Standard 472-1974 (ANSI C37.90a-1974) and the impulse withstand voltage test in accordance with the proposed NEMA Standard ICS 1-109.

PART 3 - EXECUTION

3.1 SUBMITTALS

A. Shop drawing submittals shall include, but not be limited to, include the following:

1. A written description of the system operation.
2. Completely identified and marked catalog cuts of all associated equipment and devices, with all non-applicable items crossed out, and applicable equipment or devices clearly "high-lighted" or identified.
3. Interconnecting wiring diagrams to indicate interlock control wiring terminal connections between the generator set and the automatic transfer switches.
4. Complete bill of material for all equipment.
5. Complete warranty information as specified.
6. Certified independent laboratory test data results as specified.
7. A notarized letter from the system supplier certifying compliance with all requirements of this specification.
8. Complete instructions, consisting of operating and maintenance manuals, parts book, dimensional drawings, separate unit wiring diagrams and schematics and interconnecting wiring diagrams shall be provided to the Engineer within 30 days of completion of the project.
9. Upon completion of the field test, four (4) copies of the final report shall be documented, certified, and sent to the Engineer for distribution to the Owner or authorized Owner's representative, indicating that all automatic transfer switches in conjunction with the standby electric power system have been tested and are 100% operational.
10. Additional information as required in Section 20 05 03.

3.2 INSTALLATION

A. Automatic Transfer Switches shall be located and installed where shown, including all connections, in accordance with wiring diagrams specified herein, approved shop drawings, and manufacturers written installation instructions.

B. Floor mounted transfer switches shall be mounted on concrete housekeeping pads. Refer to Section 20 05 05 for additional requirements.

C. Furnish and install generator start-up control wiring from each automatic transfer switch to the emergency generator set control panel. Furnish and install control wiring from automatic transfer switches to their respective elevator controllers.

D. Each transfer switch shall be furnished with an operator's manual providing installation and operating instructions.

3.3 INITIAL START-UP, SYSTEM CHECKOUTS AND TEST

A. The complete installation shall be initially started and checked out for operational compliance by representatives of the manufacturer of the automatic transfer switches and the standby electric power system.

B. Upon completion of initial startup and system checkouts, the supplier of the automatic transfer switches or his authorized representative shall perform a field test, witnessed by the engineer, to demonstrate full compliance with all requirements of the specification, but not limited to demonstration of proper operation of all generator startup wiring, all control interlocks and a minimum of four (4) automatic operations of each transfer switch.

C. Refer to Section 26 05 07 for additional test requirements.

3.4 WARRANTY

A. The automatic transfer switches shall be warranted for a period of five (5) years from the date of acceptance or beneficial occupancy, whichever shall occur first. Beneficial occupancy shall be defined as acceptance by the local authority having jurisdiction for the complete packaged electrical generating system specifically.

END OF SECTION 26 36 23