



**ADDENDUM NO. 02  
October 27, 2022**

To Drawings and Specifications dated October 10, 2022.

**BALES INTERMEDIATE AND WESTWOOD ELEMENTARY RENOVATIONS ISSUE FOR  
PROPOSAL  
FOR FRIENDSWOOD I.S.D.**

Prepared by: PBK  
11 Greenway Plaza, 22<sup>nd</sup> Floor  
Houston, TX 77046-1104  
PBK Project No: 220083

**Notice to Bidders**

- A. Receipt of this Addendum shall be acknowledged on the Bid Form.
- B. This Addendum forms part of the Contract documents for the above referenced project and shall be incorporated integrally therewith.
- C. Each bidder shall make necessary adjustments and submit his proposal with full knowledge of all modifications, clarifications, and supplemental data included therein. Where provisions of the following supplemental data differ from those of the original Contract Documents, this Addendum shall govern.

**RFI / CLARIFICATIONS**

**General**

- Item No. 1 Pre-proposal conference agenda and sign-in are attached to this addendum.
- Item No. 2 Is ALC the owner of controls at both locations?  
**The controls are ALC at both campuses.**
- Item No. 3 What type of fire alarm system is in each school?  
**The fire alarm systems are by Simplex.**
- Item No. 4 On page A101C there are notes on the material legend to match existing Door and Casework P-Lam, do you have the existing P-Lam color to match?  
**The plastic laminate colors will be selected from the full range of color selections available including wood grains patterns, premium, and solid colors by the manufacturers indicated in the specifications.**
- Item No. 5 What is the permit status?  
**Both permits are ready to be issued. However, the City of Friendswood has them on hold until a general contractor is selected and MEP applications are submitted by the GC. See attached MEP applications for your reference – applications are required for each campus.**
- Item No. 6 On drawings AD101 and A101 for Bales Intermediate School there is a general note for exterior waterproofing, there are no elevations for this waterproofing, does this scope apply?  
**The exterior waterproofing scope of work is included in the base bid at Bales Intermediate. This scope is campus wide at all exterior expansion joints, windows, door frames, and wall penetrations as indicated in the general note.**
- Item No. 7 Regarding division 8 The hardware specifications and hardware sets are missing. Please advise on what hardware you would like.  
**08 71 00 Door Hardware included in this addendum.**
- Item No. 8 Is this summer work?  
**Most of the work will be summer work. When a Contractor is selected, a meeting will be held with the district to discuss any work that could happen during student breaks or after hours prior to summer.**

Item No. 9 Anticipated date to proceed?  
The anticipated date to proceed is end of November 2022. At this time the Contractor can commence procurement and submittals prior to commencing on-site work. See item No.09.

Item No. 10 When will this go to the board for approval?  
November 14, 2022

## Specifications

Item No. 11 **Section 08 71 00 Door Hardware**  
A. Section added in its entirety, refer to attachment.

## Structural

Item No. 12 **Westwood Elementary School Renovation: S-100 OVERAL SCOPE SHEET**  
A. Westwood Elementary School Structural Scope List, Scope Item #2 (Alternate 7) revised to read: "INFILL EXISTING STAGE OPENING WITH NEW CMU WALL AND DEMO EXISTING STAGE FLOOR. REF S-101A FOR NEW FOUNDATIONS AND GRADE BEAMS BENEATH NEW CMU WALL. REF S-400 SERIES FOR TYPICAL CMU NOTES AND DETAILS. PROVIDE #4 DOWELS x2'-6" AT 4'-0" OC VERTICALLY AT EACH END OF NEW WALL. DRILL AND EPOXY #4 DOWELS 6" INTO ENDS OF EXISTING CMU WALL USING HILTI HY-200 V3 ADHESIVE. EXISTING STAGE FLOOR SHALL BE SAW CUT AND REPLACED WITH NEW SLAB-ON-GRADE. PLACE NEW SLAB ON NEW 15 MIL VAPOR BARRIE OVER COMPACTED EXISTING FILL. EXISTING FILL SHALL BE COMPACTED TO BETWEEN 95 TO 100 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDRAR PROCTOR DENSITY TEST (ASTM D698). THE MOISTURE CONENT SHALL BE BETWEEN OPTIMUM AND +2 PERCENT OF THE OPTIMUM MOISTURE CONTENT FOR SELECT FILL. ALERT STRUCTURAL EOR IS ADDITIONAL FILL IS REQUIRED FOR PLACEMENT OF NEW SLAB. REF 1/S-305 FOR TYPICAL SLAB INFILL DETAIL."

## Architectural

Item No. 13 **Bales Intermediate School Renovation: Sheets A-101C, A101D, A-101E and AF101**  
A. LVT-1 to be Shaw Contract, pigment direct glue, 0503V, color charcoal 65595, 7"x48"

Item No. 14 **Westwood Elementary School: AD101A 1ST Floor Demolition Plan – AREA A**  
A. Revise keynote 0148 to "SOUND RACK TO BE REMOVED AND SALVAGED FOR RE-INSTALL IN SAME LOCATION."  
B. Add keynote 0160 "REMOVE ANY WALL MOUNTED EQUIPMENT OR FIXTURES AND SALVAGE TO BE RE-INSTALLED IN SAME LOCATION UNLESS NOTED OTHERWISE."  
Note to be applied to stage.

Item No. 15 **Westwood Elementary School Renovation: AD101B 1ST Floor Demolition Plan – Area B**  
A. Add keynote 0160 "REMOVE ANY WALL MOUNTED EQUIPMENT OR FIXTURES AND SALVAGE TO BE RE-INSTALLED IN SAME LOCATION UNLESS NOTED OTHERWISE."  
Note to be applied to rooms 7, 10, 14, 17, and 16.  
B. Apply interior floor finish and ceiling to be demolished demo legend hatch to room 16, including the second speech pathology room, in its entirety.  
C. Apply keynote 0134 to room 16 including the second speech pathology room.

Item No. 16 **Westwood Elementary School Renovation: AD101C 1ST Floor Demolition Plan – Area C**  
A. Add keynote 0160 "REMOVE ANY WALL MOUNTED EQUIPMENT OR FIXTURES AND SALVAGE TO BE RE-INSTALLED IN SAME LOCATION UNLESS NOTED OTHERWISE."  
Note to be applied to room 22.

Item No. 17 **Westwood Elementary School Renovation: A-101A 1ST Floor Plan – Area A**  
A. Revise keynote 0906 to "ALL WALLS IN THIS ROOM TO RECEIVE PAINTED 5/8" GYP BOARD ON 1 1/2" HAT CHANNEL. HAT CHANNEL AND GYP TO EXTEND 6" ABOVE CEILING. ANY SALVAGED WALL MOUNTED ITEMS TO BE RE-INSTALLED UNLESS NOTED OTHERWISE."

- Item No. 18     **Westwood Elementary School Renovation: A-101B 1ST Floor Plan – Area B**  
A. Add keynote 0910 “ALL EXISTING WALLS IN THIS ROOM TO RECEIVE PAINTED 5/8” GYP BOARD ON 1 1/2” HAT CHANNEL. HAT CHANNEL AND GYP TO EXTEND 6” ABOVE CEILING. ANY SALVAGED WALL MOUNTED ITEMS TO BE RE-INSTALLED UNLESS NOTED OTHERWISE.” Keynote to apply to rooms 7A, 10A, 10B, 14, 14A, A4C, 17A, 17B, 17C, and 16.
- Item No. 19     **Westwood Elementary School Renovation: A-101C 1ST Floor Plan – Area C**  
A. Add keynote 0910 “ALL EXISTING WALLS IN THIS ROOM TO RECEIVE PAINTED 5/8” GYP BOARD ON 1 1/2” HAT CHANNEL. HAT CHANNEL AND GYP TO EXTEND 6” ABOVE CEILING. ANY SALVAGED WALL MOUNTED ITEMS TO BE RE-INSTALLED UNLESS NOTED OTHERWISE.” Keynote to apply to room 22.
- Item No. 20     **Westwood Elementary School Renovation: A-201A 1ST Floor Plan – Area A**  
A. Detail 02: Revise call out “PAINTED 5/8” GYP BOARD ON 5/8” HAT CHANNEL” to read “PAINTED 5/8” GYP BOARD ON 1 1/2” HAT CHANNEL.”
- Item No. 21     **Westwood Elementary School Renovation: A-811 Door Panel & Frame Types & Partition Types**  
A. Revised partition M5C to read “6” CMU TO DECK WITH PAINTED 5/8” GYP BOARD ON 1 1/2” HAT CHANNEL.”
- Item No. 22     **Westwood Elementary School Renovation: AG101**  
A. Revise Sheet Name to be “GRAPHICS & SIGNAGE PLAN”  
B. Alternate 10 signage applies to rooms 17B.  
C. Alternate 9 signage applies to room 14A.  
D. Signage Schedule: Remove “AREA D” from name. Remove signs for rooms 17C and 22.

**MEPT**

- Item No. 23     MEPT Drawing Revisions – Refer to LEAF Narrative dated October 27, 2022.

**Attachments include 36 additional sheets ending with sheet TN-101F dated 10/27/2022.**



*Melissa Turnbaugh*

October 27, 2022



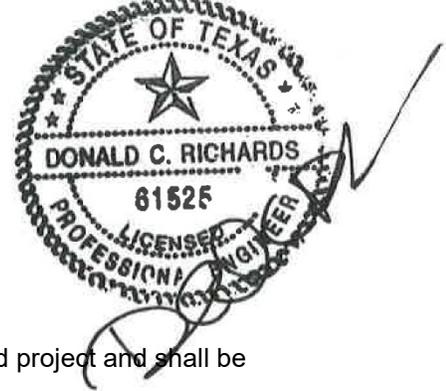
**ADDENDUM NO. 02  
October 27, 2022**

**MEP/TS ITEMS**

To Drawings and Specifications dated October 10, 2022

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**SPECIFICATIONS**

**MECHANICAL:**

- Item No. 1      23 05 14 – VARIABLE FREQUENCY DRIVES**  
1. Section 1.7: Delete Yaskawa.

**PLUMBING:**

- Item No. 1      22 08 00 – COMMISSIONING OF PLUMBING SYSTEMS**  
1. Delete section.
- Item No. 1      22 40 00 – PLUMBING FIXTURES**  
2. Section 2.1 B: Manufacturer shall be Sloan and Zurn only.

**TECHNOLOGY:**

- Item No. 1      27 10 00 – STRUCTURED CABLING SYSTEM**
1. Section 3.03 D and 3.03 F, colors shall be as follows:
    - a. Data – blue
    - b. Security – yellow
    - c. Access points – red
    - d. CCTV – orange
    - e. PA – white
    - f. Phones – dark green
  2. Section 3.03 F, 3.03 G, and 3.06 C: Provide keystone jacks.
  3. Section 3.04 A: Fiber to be single mode 12 strand.
  4. Section 3.05 D: Rack manufacturers shall be Chatsworth or Hoffman.



5. Section 3.05 E: Cable management – vertical only.
6. Section 4.01: Provide a laminated 24x36 floor plan of the addition inside the IDF, identify all new outlets on plan.

- Item No. 1      27 41 00 – INTEGRATED AUDIO VIDEO SYSTEMS AND EQUIPMENT**
1. Section 2.2 A: 'PS' and 'AVO' outlets shall be C2G #39702 with active HDMI and USB cables. Female USB B at teacher station, female USB A at panel. Provide 15' patch cords on each end.
  2. Delete section 2.2 B, 2.2 C, and 2.2 D.
  3. Add to Section 2.2 E: USB cable to be C2G #38998.
- Item No. 1      27 51 24 – INTERCOMMUNICATIONS SYSTEMS**
1. Replace specification in its entirety, see attached.
- Item No. 1      28 16 00 – ACCESS CONTROL SYSTEM**
2. Remove section.
- Item No. 1      28 16 00 – INTRUSION DETECTION SYSTEM**
1. Remove section.
- Item No. 1      28 31 00 – FIRE DETECTION AND NOTIFICATION SYSTEM**
1. Delete section 1.2 K.
  2. Section 1.7 A: Manufacturer shall be Simplex.
  3. Section 2.3 A: Existing FACP manufacturer is Simplex.

## **DRAWINGS**

### **MECHANICAL:**

- Item No 01      Sheet – M-101A – 1<sup>ST</sup> FLOOR MECHANICAL PLAN – AREA A (Bales)**
1. Keyed note 1 on this sheet shall read as follows: "Existing fan powered terminal units and associated controls to remain. Provide hot water control valve and actuator and temperature sensors, integrate unit into BAS. Provide new insulation after valve replacement."
- Item No 02      Sheet – M-101B – 1<sup>ST</sup> FLOOR MECHANICAL PLAN – AREA B (Bales)**
2. Terminal boxes on this sheet marked as keyed note 1 shall be changed to keyed note 3.
- Item No 03      Sheet – M-101C – 1<sup>ST</sup> FLOOR MECHANICAL PLAN – AREA C (Bales)**
3. Terminal box in Conference ADM8 shall have keyed note 1 in lieu of keyed note 2.
- Item No 04      Sheet – M-401 – MECHANICAL ENLARGED PLANS (Bales)**
4. Detail 1: Provide BAS connection to domestic water heater in boiler room, provide on/off control.

### **ELECTRICAL**

- Item No 05      Sheet – EP-101A – 1<sup>ST</sup> FLOOR POWER PLAN – AREA A (Bales)**
1. Clarification: Existing panel 'LMA' located in Mech #UM1. The following mechanical equipment to be connected to panel 'LMA' – B-01, B-02, circulation pump for boilers, circulation pump for hot water heater. Pump P-3 to be connected to panel DPA.
- Item No 06      Sheet – EP-101B – 1<sup>ST</sup> FLOOR POWER PLAN – AREA B (Bales)**
1. Clarification of source panel – AHU-02 to be connected to existing distribution board DPB.

- Item No 07     **Sheet – EP-101C – 1<sup>ST</sup> FLOOR POWER PLAN – AREA C (Bales)**
1. Clarification of source panel – AHU-05 to be connected to existing distribution board DPA.
  2. Clarification of source panel – AHU-06 to be connected to existing distribution board DPA.
  3. Clarification of source panel – AHU-07 to be connected to existing distribution board DPA.
- Item No 08     **Sheet – EP-101D – 1<sup>ST</sup> FLOOR POWER PLAN – AREA D (Bales)**
1. Source panel location – Existing panel DPB located in Elec. #UE3.
  2. Clarification of source panel – AHU-01 to be connected to existing distribution board DPB.
- Item No 09     **Sheet – EP-101E – 1<sup>ST</sup> FLOOR POWER PLAN – AREA E (Bales)**
1. Add two above counter duplex receptacles to the plan south wall of room FA7, on one circuit. Keyed note 1.
- Item No 10     **Sheet – General – Lighting Plan Sheets (Bales)**
1. Provide lighting contactors and connection to BAS with associated programming for existing exterior lighting circuits (those serving outside parking lot, wallpack, or canopy/ soffit lighting). For pricing, include (4) 4-pole contactors located adjacent to existing source panels or at location of current switching mechanism (time clock, etc). Exact locations to be field verified during construction.
- Item No 11     **Sheet – EP-101B – 1<sup>ST</sup> FLOOR POWER PLAN – AREA B (Westwood)**
1. Existing panelboard 'LE' shown in Bookroom #8. New dedicated 120V circuits in this area shall be routed back to this panelboard. Provide new 20A/1P breaker where required.
  2. Add two duplex receptacles to plan north wall of Office 14, with connection to circuit shown in space.
- Item No 12     **Sheet – EP-101C – 1<sup>ST</sup> FLOOR POWER PLAN – AREA C (Westwood)**
1. Existing panelboard 'LA1' shown in room area between Boys #49 and Girls #50. New dedicated 120V circuits in this area shall be routed back to this panelboard. Provide new 20A/1P breaker where required.
- Item No 13     **Sheet – EP-102 – ELECTRICAL ROOF PLAN (Westwood)**
1. Clarification of source panel – ACCU-MDF-01 to be connected to existing panelboard LC which will be relocated to main electrical room.

## **TECHNOLOGY**

- Item No 14     **Sheet – General – Fire Alarm Series Sheets (Bales)**
1. General note: Existing FACP is manufactured by Simplex.
- Item No 15     **Sheet – General – Technology Series Sheets (Bales)**
1. General note: Existing intercom system is manufactured by Rauland (Telecenter 6).
- Item No 16     **Sheet – TN-101C – 1<sup>ST</sup> FLOOR TECHNOLOGY PLAN – AREA C (Bales)**
1. The scope of work shown in the OT/PT office ADM3 and ADM3b shall be part of Alternate #5. Clarification of source panel – ACCU-MDF-01 to be connected to existing panelboard LC which will be relocated to main electrical room.



- Item No 17      **Sheet – TN-101D – 1<sup>st</sup> FLOOR TECHNOLOGY PLAN – AREA D (Bales)**  
1. Addendum 1 Item 35 note 5: Should be changed to “Remove existing data drop.”
- Item No 18      **Sheet – TN-101E – 1<sup>st</sup> FLOOR TECHNOLOGY PLAN – AREA E (Bales)**  
1. Addendum 1 Item 36: This item is referring to keyed note 13.
- Item No 19      **Sheet – TN-201F - 1<sup>ST</sup> FLOOR TECHNOLOGY PLAN – AREA F (Bales)**  
1. Add this sheet in its entirety.  
2. Add one (1) “D1” data drop device in Mech room UM8
- Item No 20      **Sheet – General – Fire Alarm Series Sheets (Westwood)**  
1. General note: Existing FACP is manufactured by Simplex.
- Item No 21      **Sheet – General – Technology Series Sheets (Westwood)**  
1. General note: Existing intercom system is manufactured by Bogen (Nyquist IP). Existing zoned cabling and speakers are analog. New speakers shall be connected to operate with nearest existing zone.  
2. General note: All projectors removed from this campus shall be returned to district technology staff. Coordinate with owner.
- Item No 22      **Sheet – TF-101A – 1<sup>st</sup> FLOOR FIRE ALARM PLAN – AREA A (Westwood)**  
1. Music room - demolish existing fire alarm devices in this space.
- Item No 23      **Sheet – TN-101A – 1<sup>st</sup> FLOOR TECHNOLOGY PLAN – AREA A (Westwood)**  
1. Music room  
    i. Remove the AP shown on the plan east wall.  
    ii. Provide an intercom speaker in this room, connect to head end.  
    iii. Add keyed note: Demolish data outlets and other low voltage devices in this space, and provide those shown.  
    iv. Existing projector plate in plan northwest corner to be relocated to cafeteria side of wall at stage floor height. Replace cabling from plate to projector.
- Item No 24      **Sheet – TN-101B – 1<sup>st</sup> FLOOR TECHNOLOGY PLAN – AREA B (Westwood)**  
1. Provide an intercom speaker connected to head end, and local volume control in the following rooms: 7A, 10A, 10B, 14, 14A, 14C, 17A, 17B, 17C, and 16.  
2. Provide a PS and D3 in the plan southeast corner of room 16.  
3. Provide an AVO in the plan southwest corner of room 16.  
4. D2 in room 16 shall be D3.
- Item No 25      **Sheet – TN-101C – 1<sup>st</sup> FLOOR TECHNOLOGY PLAN – AREA C (Westwood)**  
1. 1<sup>st</sup> Grade room 22:  
    i. Provide an intercom speaker connected to head end, and local volume control.  
    ii. Provide one (1) “AP”.  
    iii. Add keyed note: Demolish data outlets and other low voltage devices in this space and provide new as shown.

**End of MEP/TS Addendum**



**BALES INTERMEDIATE AND WESTWOOD ELEMENTARY RENOVATIONS**  
**FRIENDSWOOD INDEPENDENT SCHOOL DISTRICT**

**PRE-PROPOSAL CONFERENCE**  
 Friendswood ISD CSP No.: CSP 23-003  
 PBK Project No.: 220083

**AGENDA**

**Tuesday, October 25, 2022 at 10:00 A.M.**

**I. Introductions**

- A. OWNER: Friendswood Independent School District
  - 01 Mr. Thad Roher ..... Superintendent of Schools
  - 02 Ms. Amber Petree ..... Chief Financial Officer
  - 03 Ms. Kim Dingell ..... Bond Manager
  - 04 LaJuan Harris ..... Project Manager
  
- B. ARCHITECT: PBK
  - 01 Melissa Turnbaugh..... Partner-In-Charge
  - 02 Blanca Soto ..... Project Manager
  - 03 Darius Spurlock ..... Field Representative
  
- C. CIVIL: DIG Engineers
  - 01 Trace ..... Principal
  - 02 Karsten Falke ..... Project Manager
  
- D. MEP: Leaf Engineers
  - 01 Mark Madorsky ..... President
  - 02 Matt Sickorez..... Project Manager
  
- E. STRUCTURAL: Kubala Engineers
  - 01 John Kubala ..... Principal
  - 02 Emily Scarfo ..... Project Manager
  
- F. LANDSCAPING: EdgeLand
  - 01 Jacob Galles ..... President
  - 02 Edgar Jaimes ..... Project Manager

**II. Proposal Due Tuesday, November 1, 2022**

**Date and Time:** Bids due at 2:00 PM CST to  
 FISD Administration Building  
 302 Laurel Dr.  
 Friendswood, Texas 77546

Alternates due at 3:00 PM CST to  
 FISD Administration Building  
 302 Laurel Dr.  
 Friendswood, Texas 77546

**Proposal Location:** Friendswood ISD Administration Building  
 302 Laurel Drive.  
 Friendswood, Texas 77546

**Bid Proposal Opening:** Bid and Alternate Opening at 3:30 PM at  
 FISD Annex Building Board Room  
 402 Laurel Dr.  
 Friendswood, Texas 77546



**III. Changes/Addenda:**

- A. Any changes arising out of questions requiring interpretation, clarification or correction to the Proposal Documents will be made by Addendum. All questions shall be submitted in writing.
- B. Addenda-01 – October 24, 2022

**IV. Instruction to Offerors:**

- A. In order for the Owner to properly evaluate each proposer's qualifications, each proposer shall submit an AIA Document A305 Contractor's Qualification Statement, with all required attachments and information.

The Contractor's Qualification Statement shall be submitted by **Tuesday, October 25, 2022 by 3:30P.M. to the Friendswood Independent School District Administration Building at 302 Laurel, Friendswood, Texas 77546.** In addition to the information contained in the Statement form, offerors shall also address the selection criteria issues listed under the paragraph below for Determination of Successful Respondent and Award of Contract.

**(\*Qualification Statements submitted by fax transmission will not be accepted.)**

- B. Selection / Evaluation Criteria: The Offeror shall be selected in accordance with selection criteria provided as part of Section 00 21 00 in the project manual.

**V. Proposal Forms (Proposal forms and supporting information shall be provided in duplicate).** All proposals must be delivered sealed to the above address at or before the scheduled time and date for proposal opening. Proposals will be received at no other location. If Proposal is sent by U.S. Mail, it must be sent Certified Mail.

- A. Base Proposal (Shall Be Due By 2:00 PM on Tuesday, November 1, 2022).
- B. Alternate Proposal (Shall Be Due By 3:00 PM on Tuesday, November 1, 2022).
- C. Proposal Bond (Shall be provided with Base Proposal Form).
- D. Felony Conviction Notification (Shall be provided with Base Proposal Form).
- E. Affidavit of Non-Discriminatory Employment (Shall be provided with Base Proposal Form).
- F. List of Subcontractors (Shall be provided with Alternate Proposal Form).
- G. Proposal Evaluation Waiver (Shall be provided with Base Proposal Form).
- H. Affidavit on Non-Collusion (Shall be provided with Base Proposal Form).
- I. Conflict of Interest Questionnaire (Shall be provided with Base Proposal Form).
- J. Proposal Bond or certified check in the amount of 10% of the proposal.
- K. Performance and Payment Bond – Include in proposal costs for 100% Performance Bond and 100% Payment Bond.

**VI. Base Proposal and Contract Time**

- A. The Work shall commence upon Notice to Proceed, and the various portions defined below shall be Substantially Complete by the following Substantial Completion dates:
  - 1. Entire Scope of Work: **July 24, 2023**
- B. Refer to Section 01 32 00 for other scheduling requirements, and to the Supplementary Conditions for information concerning liquidated damages.
- C. Liquidated Damages
  - 1. Liquidated Damages for the work shall be established as \$1,000.00 per day for each and every calendar day that the work is not substantially complete beyond the agreed date which the contractor has agreed to for Substantial Completion of the Work included in the Contract Documents.
  - 2. Liquidated Damages for the punch list not being completed within 90 days of receipt shall be established as \$500.00 per day for each and every calendar day that the punch list is not complete.
  - 3. Liquidated Damages for failure to close out the project within 60 days of Substantial Completion shall be established as \$500.00 per day for each and every calendar day until close-out.

**VII. Alternates:**

- A. As listed and described in Section 01 23 00.

**VIII. Allowances:**

- A. As listed and described in Section 01 21 00.

**IX. Miscellaneous Job Conditions (Refer to Sections 01 50 00 and 01 56 00):**

- A. Utilities
  - 1. Temporary Power
  - 2. Temporary Water
- B. Temporary Facilities
  - 1. Field offices
  - 2. Storage facilities
  - 3. Sanitary facilities
- C. Signs
- D. Barriers
- E. Security
- F. Construction Fencing
- G. Cleaning (note: Section 01 77 00)
- H. First Aid
- I. Fire Protection
- J. Construction Aids (scaffolds, ladders, etc.)
- K. Parking Facilities

**X. ADDITIONAL ITEMS**

- A. Substitutions – no substitutions will be considered unless submitted on provided substitution form
- B. Schedule of Values
- C. Applications for Payment
- D. Performance and Payment Bonds – 100%
- E. Addenda item(s) to be issued
- F. Sub-contractor information to be submitted, with proposal. The following categories are required:
  - Mechanical
  - Electrical
  - Plumbing
  - Masonry
  - Concrete
  - Steel
  - Casework
  - Doors
  - Glazing
  - Flooring
  - Any other prudent subcontractor

**XI. Discussion Items / Questions**



## SECTION 087100 - DOOR HARDWARE

### PART 1 - GENERAL

#### 1.01 SUMMARY

##### A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components
3. Field verification, preparation and modification of existing doors and frames to receive new door hardware.

##### B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

##### C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
  - a. "Metal Doors and Frames"
  - b. "Flush Wood Doors"
  - c. "Stile and Rail Wood Doors"
  - d. "Interior Aluminum Doors and Frames"
  - e. "Aluminum-Framed Entrances and Storefronts"
  - f. "Stainless Steel Doors and Frames"
  - g. "Special Function Doors"
  - h. "Entrances"
6. Division 09 sections for touchup, finishing or refinishing of existing openings modified by this section.
7. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
8. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

#### 1.02 REFERENCES

##### A. UL LLC

1. UL 10B - Fire Test of Door Assemblies

2. UL 10C - Positive Pressure Test of Fire Door Assemblies
  3. UL 1784 - Air Leakage Tests of Door Assemblies
  4. UL 305 - Panic Hardware
- B. DHI - Door and Hardware Institute
1. Sequence and Format for the Hardware Schedule
  2. Recommended Locations for Builders Hardware
  3. Keying Systems and Nomenclature
  4. Installation Guide for Doors and Hardware
- C. NFPA – National Fire Protection Association
1. NFPA 70 – National Electric Code
  2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
  3. NFPA 101 – Life Safety Code
  4. NFPA 105 – Smoke and Draft Control Door Assemblies
  5. NFPA 252 – Fire Tests of Door Assemblies
- D. ANSI - American National Standards Institute
1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
  2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
  3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
  4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
  5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

### 1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
  - a. Comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
  - b. Review drawings and Sections from related trades to verify compatibility with specified hardware.
  - c. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.

- a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
3. Door Hardware Schedule:
    - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
    - b. Submit with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
    - c. Indicate complete designations of each item required for each opening, include:
      - 1) Door Index: door number, heading number, and Architect's hardware set number.
      - 2) Quantity, type, style, function, size, and finish of each hardware item.
      - 3) Name and manufacturer of each item.
      - 4) Fastenings and other pertinent information.
      - 5) Location of each hardware set cross-referenced to indications on Drawings.
      - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
      - 7) Mounting locations for hardware.
      - 8) Door and frame sizes and materials.
      - 9) Degree of door swing and handing.
      - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
  4. Key Schedule:
    - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
    - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
    - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
    - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
    - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
    - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
- C. Informational Submittals:
1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
  2. Provide Product Data:
    - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
    - b. Include warranties for specified door hardware.
- D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
  - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
  - b. Catalog pages for each product.
  - c. Final approved hardware schedule edited to reflect conditions as installed.
  - d. Final keying schedule
  - e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
  - f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
  - a. Fire door assemblies, in compliance with NFPA 80.
  - b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
  - a. For door hardware: DHI certified AHC or DHC.
  - b. Can provide installation and technical data to Architect and other related subcontractors.
  - c. Can inspect and verify components are in working order upon completion of installation.
  - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:

- a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
  - b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
2. Smoke and Draft Control Door Assemblies:
- a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
  - b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
3. Electrified Door Hardware
- a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
4. Accessibility Requirements:
- a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
5. Texas Department of Insurance Windstorm Requirements: This project falls under the Texas Department of Insurance Windstorm Inspection Program for Inland II. All products, materials and installation systems shall be evaluated and approved by the Texas Department of Insurance, Windstorm Inspection Program, and listed in the TDI Product Evaluation Index or approved by the Windstorm Engineer as outlined below. Products, materials, and installation systems not presently approved by the Texas Department of Insurance, Windstorm Inspection Program, may be considered for this project. However, they must be properly submitted through the Architect for review by the Windstorm Engineer. This submittal shall be a part of the initial submittal process outlines in Section 013400 and requirements for this portion are detailed within the Texas Department of Insurance Windstorm Inspection website at the following location: [www.tdi.state.tx.us/wind/submittal\\_requi.html](http://www.tdi.state.tx.us/wind/submittal_requi.html). Products, materials, and installation systems not approved by the Windstorm Engineer shall NOT be installed or utilized on this project.
- C. Pre-Installation Meetings
1. Keying Conference
    - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
      - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
      - 2) Preliminary key system schematic diagram.
      - 3) Requirements for key control system.
      - 4) Requirements for access control.
      - 5) Address for delivery of keys.

2. Pre-installation Conference

- a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- b. Inspect and discuss preparatory work performed by other trades.
- c. Inspect and discuss electrical roughing-in for electrified door hardware.
- d. Review sequence of operation for each type of electrified door hardware.
- e. Review required testing, inspecting, and certifying procedures.
- f. Review questions or concerns related to proper installation and adjustment of door hardware.

3. Electrified Hardware Coordination Conference:

- a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- E. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
  - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
  - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
    - a. Mechanical Warranty
      - 1) Locks: 10 years
      - 2) Exit Devices: 3 years
      - 3) Closers: 30 years
    - b. Electrical Warranty
      - 1) Locks: 1 year
      - 2) Exit Devices: 1 year

#### 1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
  - 1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.
- B. Approval of manufacturers and/or products other than those listed as "Scheduled Manufacturer" in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.
- C. Approval of products is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

#### 2.02 MATERIALS

- A. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
  2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
  3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.
1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
  2. Use materials which match materials of adjacent modified areas.
  3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.
- C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.
- D. Cable and Connectors:
1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
  2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
  3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

## 2.03 HINGES

- A. Manufacturers and Products:
1. Scheduled Manufacturer and Product: Ives 5BB series
- B. Requirements:
1. Provide hinges conforming to ANSI/BHMA A156.1.
  2. Provide five knuckle, ball bearing hinges.
  3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
    - a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
    - b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
  4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

- a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
  - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
5. 2 inches or thicker doors:
- a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
  - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
9. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
- a. Steel Hinges: Steel pins
  - b. Non-Ferrous Hinges: Stainless steel pins
  - c. Out-Swinging Exterior Doors: Non-removable pins
  - d. Out-Swinging Interior Lockable Doors: Non-removable pins
  - e. Interior Non-lockable Doors: Non-rising pins
10. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

## 2.04 CONTINUOUS HINGES

### A. Manufacturers:

1. Scheduled Manufacturer: Ives

### B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

## 2.05 ELECTRIC POWER TRANSFER

### A. Manufacturers:

1. Scheduled Manufacturer and Product: Von Duprin EPT-10

B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 MORTISE LOCKS (AREAS AS SCHEDULED)

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Falcon MA series. No Substitute.

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors.
2. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
3. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
4. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1-inch (25 mm) throw, constructed of stainless steel.
5. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
6. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide a request to exit (RX) switch that is actuated with rotation of inside lever.
7. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.
  - a. Lever Design: Sutro-Gala (SG) to match existing.

2.07 CYLINDRICAL LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage ND series. No Substitute.

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.

7. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
  - a. Lever Design: Rhodes (RHO).

## 2.08 DEADBOLTS

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage B600 Series. No Substitute.

### B. Requirements:

1. Provide grade 1 deadbolt series conforming to ANSI/BHMA A156.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide deadbolts with standard 2-3/4 inches (70 mm) backset. Provide 2-3/8 inches (60 mm) where noted or if door or frame detail requires. Provide deadbolt with full 1-inch (25 mm) throw, constructed of steel alloy.
4. Provide manufacturer's standard strike.

## 2.09 EXIT DEVICES

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Von Duprin 99/33A series. No Substitute.

### B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide grooved touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.

15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with VR910 trim.
17. Provide exit devices with trim designs to match other lever used on the project on corridor doors with mag hold-open.
18. Special Options:
  - a. XP
    - 1) Rim Exit Devices: provide devices with non-tapered smart latchbolt with 90° latchbolt to strike engagement under stress and Static Load Resistance of 2000 pounds.

## 2.10 CYLINDERS

### A. Manufacturers and Products:

1. Scheduled Manufacturer: Falcon SFIC. No Substitute.

### B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
  - a. Conventional Open: Match Owner's Existing SFIC Keyway.

## 2.11 KEYING

### A. Scheduled System:

1. Existing factory registered system:
  - a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

### B. Requirements:

1. Construction Keying:
  - a. Replaceable Construction Cores.
    - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
      - a) 3 construction control keys
      - b) 12 construction change (day) keys.
    - 2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.
2. Permanent Keying:

- a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
  - 1) Master Keying system as directed by the Owner.
- b. Forward biting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
- c. Provide keys with the following features:
  - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
  - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
  - 3) Geographically Exclusive: Where High Security or Security cylinders/cores are indicated, provide nationwide, geographically exclusive key system complying with the following restrictions.
- d. Identification:
  - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
  - 2) Identification stamping provisions must be approved by the Architect and Owner.
  - 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
  - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
  - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
- e. Quantity: Furnish in the following quantities.
  - 1) Change (Day) Keys: 3 per cylinder/core.
  - 2) Permanent Control Keys: 3.
  - 3) Master Keys: 6.

## 2.12 KEY CONTROL SYSTEM

### A. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.
  - a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
  - b. Provide hinged-panel type cabinet for wall mounting.

## 2.13 DOOR CLOSERS

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4040XP series (Exterior & High Traffic Locations). No Substitute.

### B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2-inch (38 mm) diameter piston with 5/8-inch (16 mm) diameter double heat-treated pinion journal. QR code with a direct link to maintenance instructions.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards. Provide snap-on cover clip, with plastic covers, that secures cover to spring tube.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck. Provide graphically labelled instructions on the closer body adjacent to each adjustment valve. Provide positive stop on reg valve that prevents reg screw from being backed out.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

## 2.14 DOOR CLOSERS

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 1460 series (Interior Locations). No Substitute.

### B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory.
2. Provide door closers with fully hydraulic, full rack and pinion action cast iron cylinder.
3. Closer Body: 1-1/4-inch (32 mm) diameter, with 5/8-inch (16 mm) diameter heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

## 2.15 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Ives

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

## 2.16 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer: Ives

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Size plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

## 2.17 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers: Glynn-Johnson

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.
2. Provide friction type at doors without closer and positive type at doors with closer.

## 2.18 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button or thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.19 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.20 MAGNETIC HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: LCN

B. Requirements:

1. Provide wall or floor mounted electromagnetic door release as specified with minimum of 25 pounds of holding force. Coordinate projection of holder and armature with other hardware and wall conditions to ensure that door sits parallel to wall when fully open. Connect magnetic holders on fire-rated doors into the fire control panel for fail-safe operation.

2.21 FINISHES

- A. FINISH: As Scheduled.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.
- C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

- D. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Where on-site modification of doors and frames is required:
  - 1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
  - 2. Field modify and prepare existing doors and frames for new hardware being installed.
  - 3. When modifications are exposed to view, use concealed fasteners, when possible.
  - 4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:
    - a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
    - b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
    - c. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

### 3.03 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
  - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
  - 2. Custom Steel Doors and Frames: HMMA 831.
  - 3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
  - 4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- I. Lock Cylinders:
  - 1. Install construction cores to secure building and areas during construction period.
  - 2. Replace construction cores with permanent cores as indicated in keying section.
  - 3. Furnish permanent cores to Owner for installation.

- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
  - 1. Conduit, junction boxes and wire pulls.
  - 2. Connections to and from power supplies to electrified hardware.
  - 3. Connections to fire/smoke alarm system and smoke evacuation system.
  - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
  - 5. Connections to panel interface modules, controllers, and gateways.
  - 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- M. Closer/holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
- O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- P. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

### 3.04 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
  - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

### 3.05 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

### 3.06 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

OPT0291357-V1

**HARDWARE SET # 103**

EACH SGL DOOR(S) TO HAVE:

<u>QTY</u>		<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>		<u>FINISH</u>	<u>MFR</u>
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	OFFICE LOCK	ND50BD RHO		626	SCH
1	EA	SFIC CORE	C607 X MATCH EXISTING KEYING SYSTEM		626	FAL
1	EA	SFIC CONST. CORE	C607CCA		622	FAL
1	EA	FLOOR/WALL STOP	FS436/WS406CCV AS REQ		626	IVE
3	EA	SILENCER	SR64 (SEALS BY FRAME MFR AT ALF)		GRY	IVE

**HARDWARE SET # 203**

EACH SGL DOOR(S) TO HAVE:

<u>QTY</u>		<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>		<u>FINISH</u>	<u>MFR</u>
4	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80BD RHO		626	SCH
1	EA	SFIC CORE	C607 X MATCH EXISTING KEYING SYSTEM		626	FAL
1	EA	SFIC CONST. CORE	C607CCA		622	FAL
1	EA	FLOOR/WALL STOP	FS436/WS406CCV AS REQ		630	IVE
3	EA	SILENCER	SR64 (SEALS BY FRAME MFR AT ALF)		GRY	IVE

END OF SECTION

## **SECTION 27 51 23 - INTERCOM SYSTEM**

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The system shall be supplied by the manufacturer's authorized contractor. Certification shall be submitted verifying that the contractor is the manufacturer's authorized contractor. Included shall be certificates of attendance in manufacturer's installation / maintenance training by the contractors directly employed personnel. The communications contracting company shall have been in business for a minimum of 5 years, continuously furnishing the specified manufacturers' product lines and systems.
- B. The system assemblies shall be completely factory built and tested by manufacturers of established reputation, who have and can refer to similar systems which are currently installed and functioning properly. The factory pre-assembled cabinets, consoles, and power supplies shall be UL approved and listed.
- C. The system shall be guaranteed for a period of one year from the date of acceptance or first beneficial use, whichever is first, against defects in materials, workmanship, design and improper adjustment. Any defects in the system shall be corrected at no expense to the Owner, provided the system does not show signs of abuse. During the guarantee period any work found not to be in conformance with the plans, specifications and addenda shall be brought into conformity with same at no additional cost to the owner.
- D. The equipment described herein, and furnished per these specifications shall be supplied by one communications contractor. The contractor shall hold the necessary License for this type of work. All reference to model numbers and other detailed descriptive data is intended to establish standards of design, performance, and quality as required. Equipment manufactured by Rualand as installed by a certified local Rauland integrator. Contractor is required to submit current certification from manufacturer with submittals.
- E. The communications contractor shall furnish all equipment, accessories and material required for the installation of a comprehensive Intercom / Telephone Communications System in strict compliance with these specifications and applicable contract drawings. Any material and/or equipment not specified or described herein necessary for the proper operation of the system shall be deemed part of this specification.
- F. The contractor shall be prepared to offer a service contract for the maintenance of the system beyond the warranty period.
- G. The contractor shall instruct personnel designated by the owner in the proper use, basic care, and maintenance of the equipment. Such training shall be provided as an integral component of the system.
- H. The contractor shall submit certificates of factory authorization and completion of the manufacturers telephone installation and maintenance training.

#### **1.2 SUBMITTALS**

- A. Provide submittals in as follows:
  - 1. Shop drawings: Provide wiring diagrams clearly indicating proposed equipment and

interconnection of all internal and external components. Include dimensional details of all mounting including rack elevations and ergonomic layouts. Submit to architect for approval prior to fabrication.

2. Provide complete catalog cuts of all major components including but not limited to:
  - a. Intercom / Telephone Equipment Racks and Equipment.
  - b. Classroom and Station Equipment, Jacks, and terminations
  - c. Classroom and Hallway "Amplified Voice" Speakers, Outside Paging Speakers Backboxes and Specialty Rough-Ins
  - d. Wire, Cable, Jacks and Termination fields

### **1.3 OPERATIONS AND MAINTENANCE MANUALS**

- A. Provide complete bound O&M manuals describing maintenance and operation of the system. Include descriptions and service data on all component parts. Manual shall also include the following:
  1. Warranty Statement indicating effective dates.
  2. Complete engineering data on all systems furnished including schematics of all equipment, shop drawings on all specially fabricated items, wiring diagrams of the system in its "as built" condition.
  3. Instructions on operational procedures, including master and substation operation, standard and special codes and alarm or maintenance indications and procedures.
  4. A listing of all stations connected to the system, the power drawn by each speaker circuit, and the total load in watts connected to the amplifiers.
  5. All system programming information and forms.

### **1.4 SCOPE**

- A. Provide a complete and comprehensive micro-processed School Communications / Clock system. The system shall incorporate integrated Speaker Intercom and fully non-blocking Digital Telephone systems with connection to outside telephone lines as specified. All system functions shall be enabled by DTMF/microprocessor control. The communications system shall be provided by one supplier to assure smooth coordination of all communications needs. The system shall have the capabilities of processing voice/data transmission at the standard ISDN basic rate interface (BRI).to and from any administrative telephone station. The system shall accept direct DS-1 level interfaces.

### **1.6 FUNCTION – INTERCOM**

- A. The system shall provide the state of the art in technology for all internal telephone and intercom communications, secondary clock corrections, and bell schedule. The system shall be easy to learn and operate. All standard system programming shall be user friendly to allow the system administrator the ability to easily program system features.
- B. Provide complete and satisfactorily operating Integrated Intercom/Communications System as described herein, using materials and equipment of types, sizes, ratings, and performances as indicated. Use materials and equipment that comply with referenced standards and manufacturers standard design and construction, in accordance with published product information. Coordinate the features of all materials and equipment so they form an integrated system, with components and interconnections matched for optimum performance of specified functions.
- E. Allow activation of security monitoring functions on a per room and per zone basis. Amplified two-way voice communication shall be available from any dial phone in the system, through any speaker in the system. This shall allow hands-free communication to any classroom or any individual loudspeaker unit. A programmable

pre-announce tone shall sound immediately before the intercom path is opened and a supervisory tone shall continue to sound at regular intervals when speaker monitoring is active.

- F. The system shall allow room or area security monitoring features. This will include the ability to support motion detectors or normally open alarm inputs.

## **PART 2 - PRODUCTS**

### **2.1 EQUIPMENT**

- A. INTERCOM CONTROL SYSTEM COMPONENTS: Equal to Rauland Telecenter ICS. Rauland numbers used to identify standards of operation and features.
  - 1. Rauland ICSBASE: System assembly including Main card cage and power supply.
  - 2. ICSSLM: Station Card - 1 Per 12 Stations
  - 3. ICSACM: Analog Card - 1
  - 4. ICSTIM: Telephone Interface Module
  - 5. ICSXPRRM: Expander chassis
  - 6. ICSPIM: Program Interface Module
  - 7. MPA250: 250 Watt Amplifier – Provide as Required to Meet System Load
  - 8. TC6402 Administrative Phone with ICSDTD Display
  
- B. EQUIPMENT ENCLOSURES: The Intercom Program Equipment shall be mounted in an upright equipment rack having 61" panel space and measuring 46-3/8"H x 22-3/8"W x 18-1/2"D. Color shall be black. All intercom system / program equipment shall be provided as required to fully implement a functioning system. Provide Rauland RP1103A
  
- C. SPEAKERS, CEILING MOUNTED: Shall be 8" full range loudspeaker baffle combination. 5 oz. nominal magnet eight, 10 watt continuous power, with matching dual 25/70 volt transformer. Transformer shall be capable of delivering at least 5 separate wattage taps from 1/8 watt to 5 watts. Flush mounted onto steel back box. Provide Rauland ACC1400 with ACC1101 Back Box and ACC1104 Tile Support.
  
- D. CLOCKS: 12 inches 24 VAC synchronous analog clocks. Provide Simplex 6300 Series Quantity as shown on plans. Provide backboxes, wiring, and raceway as required for proper operation. Provide wire guards in cafeteria/gym.
  
- E. WALL MOUNTED SPEAKERS: 8 inches full range speakers with dual 25/70 volt transformer shall mount in flush combination clock speaker baffles as shown on the plans. ACCWB5 Quantity as shown on plans.
  
- F. WALL MOUNTED VOLUME CONTROL Provide as shown on floor plans. Provide Rauland ACC1300.
  
- G. OUTDOOR WEATHERPROOF PAGING / PROGRAM SPEAKERS: Shall be UL listed, flush mounted water proof type paging speakers for voice and tones with matching transformer. NEAR SPEAKERS with Transformer. Quantity as shown on plans. Provide Soundolier APF-15T With 193-8-6 Back box and VP161-APF Baffle
  
- H. Classroom Call Buttons – Provide Rauland 2305CS Call Switch

## **PART 3 – EXECUTION:**

### **3.1 MATERIALS:**

- A. WIRE: Wire shall be #22 gauge at a minimum. Wire for communications system shall consist of 2 twisted pairs #22 solid copper under plenum jacket. No splices are permitted except in approved junction boxes. All terminations shall be made on telephone type punch blocks or at specified devices. Display, speaker, and specialty cables shall be as required for best operation under manufacturer recommendations.
- B. JACKS: All station device terminations (except speakers) shall be terminated on USOC standard modular jacks. Jacks for wall mounted telephones shall have lugs for securely attaching the instrument to the wall.
- C. TERMINAL CABINETS: A terminal cabinet with a sufficient number of bushed openings shall be installed in the wall behind the Intercom Control Console equipment rack. Cabling between the equipment rack and the main junction box shall be provided with telephone type 50 pin connectors to allow ease in console connections, disconnection's and service. Satellite terminal junction boxes shall be provided as needed to allow for station terminations in each building.

### **3.2 INSTALLATION:**

- A. All work under this section shall be performed by persons having specific familiarity with telephone, data and sound system installation. Upon request the contractor shall submit resumes, references or other corroborating documentation, to the engineer to confirm the contractors capabilities and experience.
- B. GROUNDING: Except were specifically indicated otherwise, all exposed non-current carrying metallic parts of the communications system shall be grounded. This may be accomplished via a driven ground rod, cold water pipe or building power ground. If the building power ground is used, a separate ground conductor shall be used from the equipment to the grounding grid. All grounding shall be done with #6 solid copper wire or larger. The contractor shall use every effort to insure system stability and safety.
- C. WIRING: A comprehensive, documented communications wiring system is to be installed. Wiring is to be identified by room number, segregated, neatly laced, and terminated on telephone type punch blocks. Back boards and cross connect fields shall be neatly organized as to function. (ie: intercom, telephone stations, data network etc.) All termination points are to be labeled with function. Data cables shall be certified as usable and checked using the cable certification sheet. Data cables shall be labeled as per the data identification scheme.
- D. SPEAKER WATTAGE TAPS: Tap all classrooms at ½ watt. Tap Corridor Speakers for 1 watt, Outside Horns 3.3 watts, Tap Speakers in High Ceilings (15FT +) at 4 watts. Rest rooms ½ watt.

### **3.3 TESTING AND TRAINING:**

- A. Prior to connection of any terminal equipment all cables shall be tested as per REA spec. PC-4. Cables shall be tested for Opens, Splits, Crossed Pairs, Shorts to Ground and Shield Continuity. All defective cabling is to be replaced prior to device hook-up.
- B. Upon completion of the installation the contractor shall test each room station speaker, handset or call switch for proper operation. All telephones, programming and functions are to

be tested for proper operation. All emergency and program functions are to be tested. Any malfunction shall be corrected prior to final acceptance.

- C. A minimum of Four hours time shall be included in the bid for instruction of the owners forces in proper operation and routine maintenance of the system. Instruction shall cover all materials indicated in the owners and operations manual.
- D. Operational guidelines shall be given in written form in sufficient numbers so that all key personal have operational instructions of programming, station use and special features. Copies of these instructions shall be provided for permanent record in the operations and maintenance manuals specified in part 1.04 above.

**END OF SECTION**



**BUILDING PERMIT APPLICATION - MECHANICAL/HVAC**

**1. PROPERTY INFORMATION**

Job Address: \_\_\_\_\_  
 Owner/Occupant/ Business Name: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_ Email Address: \_\_\_\_\_

**2. PROJECT INFORMATION**

Describe proposed work: \_\_\_\_\_

QTY #		FEE
1	Permit Issuance Fee	\$30
<b>NEW INSTALLATION OF HEATING, VENTILATING DUCTWORK, AIR CONDITIONING AND REFRIGERATION SYSTEMS</b>		
	5 tons or less (each unit or system)	\$35
	More than 5 tons (per ton)	\$10
<b>REPAIRS, ALTERATIONS AND ADDITIONS TO EXISTING SYSTEMS</b>		
	5 tons or less (each unit or system)	\$25
	More than 5 tons (per ton)	\$ 5
<b>BOILERS</b>		
	Boilers 33,000 BTU (1 BHP) TO 165,000 BTU (5 BHP)	\$ 5
	Boilers 165,001 BTU (5 BHP) TO 330,000 BTU (10 BHP)	\$10
	Boilers 330,001 BTU (10 BHP) TO 1,165,000 BTU (52 BHP)	\$15
	Boilers 1,165,001 BTU (52 BHP) TO 3,330,000 BTU (98 BHP)	\$25
	Boilers over 3,300,000 BTU (98 BHP)	\$35
<b>OTHER</b>		
	Temporary Operation Inspection Fee	\$ 5
	Commercial, Industrial, Institutional Kitchen Hood/Vent System	\$ 5
<b>TOTAL</b>		

**3. CONTRACTOR INFORMATION**

Business Name: \_\_\_\_\_  
 Address: \_\_\_\_\_ City, State, Zip: \_\_\_\_\_  
 Telephone: \_\_\_\_\_ Email Address: \_\_\_\_\_

**4. I HEREBY CERTIFY THAT I HAVE READ AND EXAMINED THIS APPLICATION AND KNOW THE SAME TO BE TRUE AND CORRECT. ALL PROVISIONS OF LAWS AND ORDINANCES GOVERNING THIS TYPE OF WORK WILL BE COMPLIED WITH WHETHER SPECIFIED HEREIN OR NOT.**

**\*\*LICENSCECD HVAC CONTRACTOR MUST SIGN APPLICATION – NO EXCEPTIONS\*\***

PRINT NAME: \_\_\_\_\_ LICENSE # \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_



**City of Friendswood**  
**910 South Friendswood Dr.**  
**Friendswood, TX 77546**  
**281-996-3201**

**BUILDING PERMIT APPLICATION - ELECTRICAL**

**PROPERTY INFORMATION**

**Date:** \_\_\_\_\_

Job Address: \_\_\_\_\_

Job Description: \_\_\_\_\_

Owner/Occupant/Business: \_\_\_\_\_

Phone Number: \_\_\_\_\_

\*\*\*\*\*

**CONTRACTOR INFORMATION**

Business Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Cell: \_\_\_\_\_

#		Each	Total	#		Each	Total
	Permit Issuance Fee	30.00			Window A/C Receptacles	4.50	
	Swimming Pool	15.00			Sign: Shop Inspection, per kva	2.00	
	Meter Loop, Service, and 4 Outlets	10.00			Incandescent and Vacuum Tube Signs, per kva	2.00	
	Reconnect	20.00			Festoon Lighting and Streamers, per circuit	.50	
	Temporary Saw Pole	10.00			Motors up to but not including ½ HP	.50	
	Temporary Cut In	15.00			½ HP and Less Than 2 HP	2.00	
	Outlets and Switches	0.35			2HP and Less Than 10	3.00	
	Lighting Fixtures	0.35			10 HP and Less Than 25 HP	4.00	
	Range Receptacle	1.00			25 HP and Less Than 100 HP	8.00	
	Clothes Dryer	1.00			100 HP and Over	0.08 per HP	
	Cooking Tops	1.00			X-ray Machine	2.00	
	Ovens	1.00			Water Heater	1.00	
	Dishwashers	1.00			Garbage Disposals	1.00	
	Electric Furnace/Heater	5.00			<b>TOTAL FEES</b>		

**MASTER ELECTRICIAN MUST SIGN APPLICATION**

PRINT NAME: \_\_\_\_\_ LICENSE # \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

OWNER OF THIS BUILDING AND THE ABOVE SIGNED AGREE TO CONFORM TO ALL APPLICABLE LAWS OF THE CITY OF FRIENDSWOOD



## BUILDING PERMIT APPLICATION - *PLUMBING/GAS*

**PROPERTY INFORMATION**

**Date:** \_\_\_\_\_

Job Address: \_\_\_\_\_

Job Description: \_\_\_\_\_

Owner/ Occupant/ Business: \_\_\_\_\_

Phone Number: \_\_\_\_\_

\*\*\*\*\*

**CONTRACTOR INFORMATION**

Business Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Cell: \_\_\_\_\_

<b>GAS</b>			
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#		EACH	TOTAL
	Permit Issuance Fee	30.00	
	Gas Piping (1-4 outlets)	5.00	
	Gas Piping (5+ outlets, each)	1.00	
	Central Heating / Air Unit	5.00	
	Each Additional Unit	1.00	
	Water Heater and/or Vent	2.50	
	Tankless Water Heater *	2.50	
*RMP hereby confirms adequate capacity is available for addition of BTUs of Tankless Water Heater.			
	Each Additional Unit	1.00	
	Annual Gas Test	20.00	
<b>TOTAL</b>			

<b>PLUMBING</b>			
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#		EACH	TOTAL
	Permit Issuance Fee	30.00	
	Each Fixture, Floor Drain or Trap (Including all piping)	2.50	
	Water Connection or Water Meter Installation	5.00	
	Sewer Connection	5.00	
	Replacement or Repair of Sewer	5.00	
	Cesspool	5.00	
	Septic System	10.00	
	Water Heater and/or Vent	2.50	
	Tankless Water Heater	2.50	
	Water Piping Install / Repair	5.00	
	Water Treatment Equipment	5.00	
	Drainage/Vent Piping Repair	5.00	
	Backflow Protective Devices (1-5)	2.50	
	Backflow Protective Devices (6+)	1.50	
	Grease Trap	10.00	
<b>TOTAL</b>			

**RESPONSIBLE MASTER PLUMBER  
 MUST SIGN APPLICATION**

PRINT NAME: \_\_\_\_\_ LICENSE # \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

OWNER OF THIS BUILDING AND THE ABOVE SIGNED AGREE TO CONFORM TO ALL APPLICABLE LAWS OF THE CITY OF FRIENDSWOOD

