DOCUMENT 00 9111
ADDENDUM NO. 02

DATE: August 2, 2019
PROJECT NAME: IA DAS – DHS STS Site Utility Package and Fire Alarm System Replacement Package

This Addendum forms a part of the bidding and contract documents. This Addendum supersedes and supplements all portions of the original bidding and contract documents dated June 21, 2019 and Addendum #01 with which it conflicts.

ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE SPACE PROVIDED ON THE BID FORM. FAILURE TO DO SO MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

THE DUE DATE AND TIME FOR RECEIPT OF BIDS IS BEING CHANGED TO 2:00 P.M. CENTRAL TIME, AUGUST 8, 2019.

1. GENERAL

   A. Regarding Bid Package 26-1, when figuring the split between Project 8982.01 and 9060.00, the fiber optic cabling designated for communications is part of 8982.01; the fiber optic cabling designated for fire alarms is part of 9060.00. In other words, the fire alarms project will be pulling the fire alarm fiber optic cabling through conduit installed by the site project."

2. SPECIFICATIONS

   A. Specification Section 00 0110 – Table of Contents

      i. **ADD** Section 22 0523 – General Duty Valves for Plumbing Piping

   B. Specification Section 00 1113 – Notice to Bidders

      i. **REPLACE** this specification section in its entirety with the section attached to this Addendum. This revision changes the bid due date.

   C. Specification Section 00 2113 – Instructions to Bidders

      i. Article 3.06, Letter B, Number 1

         a. **REVISE** the due date for bids from August 6, 2019 to August 8, 2019.

   D. Specification Section 00 3113 – Preliminary Schedule

      i. Part 1, Article 1.03, Letter A

         a. **REVISE** the anticipated notice of intent to award to August 13, 2019.

   E. Specification Section 22 0523 – General Duty Valves for Plumbing Piping

      i. **ADD** specification to project for all interior plumbing piping valves

F. Specification Section 22 1005 – Plumbing Piping

i. **REPLACE** section with attached section. Replaced section removes CIP for interior piping and removes valves from specification. Valves are now specified in section 22 0523.

G. Specification Section 27 1005 – Structured Cabling for Voice and Data

i. Part 2, Article 2.3

a. **REVISE** reference from 26.0533.13 to 26 0534.

H. Specification Section 28 4621.11 – Modular Addressable Fire Alarm System

i. Part 1, Article 1.5, Letter D, Number 8

a. **ADD** sentence "Dual channel voice is basis of design."

ii. Part 2, Article 2.2, Letter C and Letter E Number 1

a. **ADD** sentence "Two SLC circuits are the minimum for every building."

iii. Part 2, Article 2.2, Letter E, Number 4 and Number 4a and Number 5.

a. **ADD** sentence "A standard 80-character display is acceptable."

I. Specification Section 28 4622 – Management Station

i. Part 2, Article 2.4, Letter D

a. **ADD** "D. One (1) printer shall be provided and installed. Location of printer is to be in Administration Building near and connected to the monitoring station."

3. DRAWINGS

A. **Site Utility Package Drawings**

i. Sheet 00-C3.01:

a. **REMOVE** tunnel shoring note for the tunnel north of A.E. Shepherd. This section of tunnel (tunnel 'G') anticipates that no shoring is needed. Contractor shall review and monitor all tunnels where work and excavation is being completed near and use appropriate methods for compaction near existing tunnels.

ii. Sheet 00-C3.03:

a. **REVISE** 2"x6"x6" tee note for 2" water service to Vocational Building to read: "6" 90-degree bend with 2" Service Saddle located east of the bend".

iii. Sheet 00-P1.00

a. **DELETE** Blind flange note on view A4 – Campus Meter Elevation View. Refer to view D4 for blind flange locations.

iv. Sheet 00-E1.01

a. **ADD** note #2 to Detail 4 to read: "2. This detail shall also apply to exterior site lighting conduit wall penetrations excluding required J-Box on inside of wall and revising notes to read 3/4" conduit or as required."

v. Sheet 00-E1.03

a. **REVISE** keynote 00-E3.03 to read: "Existing site lighting feeder conductors in tunnels and buildings shall be disconnected from panels and removed. Abandoned site lighting conduits in buildings shall be removed. Site lighting conduits in tunnels may be abandoned in place with all wire removed."

vi. Sheet 00-E1.05

a. **REVISE** Keynote 00-E5.07 #2 to read: "Install new ¾" conduit for site lighting."

b. **ADD** keynote #00-E5.12 to read: "Refer to Sheet 00-C5.01 Detail #6 (Tunnel Casing Pipe – Water Pipes and Conduit) for all new site lighting conduits which pass through the existing tunnel system."

B. **Fire Alarm System Replacement Package Drawings**

i. Sheet 00-E0.00

a. **REPLACE** in its entirety

ii. Sheet 01-E3.01

a. **REPLACE** in its entirety

iii. Sheet 01-E3.02

a. **REVISE** speaker to speaker / strobe in Room W155.

iv. Sheet 01-E3.03

a. **REPLACE** in its entirety

b. **REVISE** heat detector in Room N122A to a smoke detector. Code requires a smoke detector wherever the fire alarm panel is to be mounted.

c. **REVISE** speaker strobes on the walls and speakers on the ceilings to strobe only in Corridor C106.

d. **MOVE** strobe from round counter wall to other side of the corridor in Corridor C105.

e. **REVISE** speaker to strobe in Room N122A.

f. **DELETE** one microphone on wall outside of office in Reception N115.

v. Sheet 01-E3.04

a. **REPLACE** in its entirety

b. **REVISE** to one strobe in Room S141C.

c. **REVISE** speaker to strobe device in Room S150.

vi. Sheet 02-E3.01

a. **DELETE** one strobe from Vestibule Entrance 3-G10.

b. **REVISE** Keynote E-02-13 to read**:** "NEW WEATHER / TORNADO WARNING HORN STROBE WITH 30 CANDELA RATING. REFER TO ELECTRICAL INSTALLATION NOTE #7 ON DRAWING 00-E0.00."

vii. Sheet 02-E3.02

a. **ADD** weather / tornado warning horn strobe device to entrance lobby 3-108 on wall with shower 3-114a.

b. **ADD** weather / tornado warning horn strobe device to entrance lobby 4-108 on wall with shower 4-114a.

c. **DELETE** smoke detector with sounder base from Bedroom 4-117.

d. **ADD** Keynote E-02-13 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

viii. Sheet 03-E3.01

a. **REVISE** devices to a single horn/strobe in all similar locations.

b. **ADD** Keynote E-03-06 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

ix. Sheet 04-E3.01

a. **REVISE** devices to a single horn/strobe in all similar locations.

b. **REVISE** Keynote E-04-14 to read**:** "NEW WEATHER / TORNADO WARNING HORN STROBE WITH 30 CANDELA RATING. REFER TO ELECTRICAL INSTALLATION NOTE #7 ON DRAWING 00-E0.00."

x. Sheet 08-E3.01

a. **ADD** weather / tornado warning device west wall in Corridor G-26.

b. **ADD** weather / tornado warning device on wall near stairs G-06 door in Corridor G-27.

xi. Sheet 08-E3.02

a. **REVISE** strobe west end of Corridor 102 to a horn / strobe.

b. **ADD** weather / tornado warning device on east and west wall in Corridor 102.

xii. Sheet 08-E3.03

a. **ADD** weather / tornado warning device on north wall of Corridor 3-201.

b. **ADD** weather / tornado warning device in Living Rooms 203 and 209.

xiii. Sheet 10-E3.01

a. **DELETE** the following portion of Keynote E-10-03 “Contractor shall mount device between”. A combination smoke / CO device is required.

b. **REVISE** device to horn / strobe in Room 102.

xiv. Sheet 11-E3.01

a. **REVISE** all weather /tornado warning devices to single horn/strobe devices throughout kitchen/storeroom building.

b. **ADD** Keynote E-11-12 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xv. Sheet 11-E3.02

a. **REVISE** weather /tornado warning device to single horn/strobe device.

b. **ADD** Keynote E-11-12 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xvi. Sheet 11-E3.03

a. **REMOVE** Keynote E-11-07 and remove heat detector shown in Elevator room.

xvii. Sheet 12-E3.01

a. **REVISE** one strobe to a horn/strobe.

b. **ADD** weather /tornado warning device to pump room.

c. **ADD** Keynote E-12-10 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xviii. Sheet 12-E3.02

a. **ADD** weather /tornado warning device to boiler room.

b. **ADD** weather /tornado warning device to machine part room 109 on east wall.

c. **ADD** weather /tornado warning device to catwalk corridor 101 on north wall.

d. **ADD** Keynote E-12-10 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xix. Sheet 12-E3.03

a. **REVISE** Keynote E-12-10 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xx. Sheet 14-E3.01

a. **ADD** weather / tornado warning devices to workshop 2 north wall and to workshop 1 south wall on Ground Floor.

b. **ADD** weather / tornado warning devices to classroom 2 north wall and classroom 1 south wall on First Floor.

c. **ADD** Keynote E-14-04 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xxi. Sheet 14-E3.02

a. **ADD** weather / tornado warning devices to Classroom 3 north wall and to Classroom 4 south wall of Second Floor.

b. **ADD** Keynote E-14-04 to read: “New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00.”

xxii. Sheet 16-E3.01

a. **REMOVE** Strobe in Stairwell and Office 102.

b. **ADD** weather / tornado warning devices to Garage on east wall.

c. **REVISE** Smoke detectors to include Sounder Bases in two Bedrooms on Second Floor.

d. **ADD** Keynote E-16-08 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

xxiii. Sheet 17-E3.01

a. **ADD** weather /tornado warning device to west wall of Main Hall 111.

b. **DELETE** bell in Room B02.

c. **ADD** weather /tornado warning device to South wall of Room B02.

d. **ADD** Keynote E-17-10 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

xxiv. Sheet 19-E3.01

a. **REVISE** Weather / tornado device to a single horn/strobe in all locations.

b. **REVISE** Keynote E-19-05 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

xxv. Sheet 20-E3.01

a. **REVISE** Weather / tornado device to a single horn/strobe.

b. **ADD** Weather / tornado device to Garage 2.

c. **ADD** Keynote E-20-07 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

xxvi. Sheet 21-E3.01

a. **ADD** weather /tornado warning device to west wall of General Storage.

b. **ADD** Keynote E-21-06 to read: "New weather / tornado warning horn strobe with 30 candela rating. Refer to electrical installation Note #7 on Drawing 00-E0.00."

4. QUESTIONS

A. Q: Can combination smoke/heat detectors be used?

A: Combination smoke/heat detectors are acceptable if code compliant.

B. Q: Most buildings indicate an outdoor beacon to be supplied. Is there a basis of design, candela requirement or specification for this device? Is it permissible to use a standard weather proof strobe that are commonly used for this application?

A: New weather proof exterior fire alarm strobe shall be a minimum of 110 candela rating. Contractor shall mount the new device on the front of the building so that it is code compliant and visible from the campus access roads. It is permissible to use a standard weather proof strobe.

C. Q: Most buildings indicate a combination fire alarm horn and tornado bell, is there a basis of design for this device etc.? Can these be individual devices? The plan note also indicates the operation of this shall be coordinated between the two systems. What is the other system and is it completely independent of the fire alarm system?

A: A note has been added to Sheet 00-E0.00 – Electrical Installation Notes #7 to clarify.

D. Q: School 01-E3.03: There are two microphones shown on opposite walls in the reception area, is this correct? One is noted the other is not.

A: Microphone on wall outside of office has been deleted.

E. Q: Cottage 3, 4 02-E3.02: One bedroom is shown with a smoke detector and sounder base, the remaining are empty. Is this correct?

A: Smoke detector and sounder base has been removed from bedroom.

F. Q: General Cottage: Smoke detectors are shown in the kitchens, is this correct? An example is 03-3.01 in both kitchens.

A: Yes. The kitchen is a simple kitchen. Device can be a combination heat/smoke device. Kitchens in cottages do not have a fire suppression system.

G. Q: Old Fire House 16-E3.01: Bedrooms are shown with standard smoke detectors, are smoke detectors with sounder bases required?

A: Sounder bases have been added.

H. Q: 00-E0.00: Fire Alarm Installation note 15 indicates an integration with an outdoor speaker system, is this system self-contained and operational and only requires an audio signal from the fire alarm system for this integration or is something more necessary?

A: The existing exterior weather / tornado mass notification speaker system is self-contained and operational and is a siren only requiring an audio signal.

I. Q: 00-E0.00 Fire Alarm Installation note 6: Is it required that the system be UL Certificated or Placarded? For reference this requires an Underwriters Lab team to come to the site and perform and inspection of the entire system.

A: The final installation of the campus wide fire alarm system shall be tested and certified by a trained and licensed representative of the fire alarm manufacturer and shall meet all requirements as outlined in Division 28 Specification. All components shall be from a single manufacturer and UL listed for fire alarm life safety. A complete NFPA record of completion document showing certification of the system shall be provided to the owner upon completion of the project.

J. Q: Network Riser 00-E5.01: The Generator Building connection to the Canteen is indicated to be fiber. Fire Alarm Installation note 13 indicates it to be copper, which is correct?

A: Copper is correct.

K. Q: Will the fiber network for the fire alarm network be multi-mode or single-mode?

A: The fiber network for the fire alarm network will depend on the mode the vendor uses.

L. Q: Where smoke detection and CO detection are shown in very close proximity to one another is a combination device acceptable?

A: A combination device is acceptable.

5. ATTACHMENTS

   A. Specification 00 1113

   B. Specification 22 0523

   C. Specification 22 1005

   D. Fire Alarm System Package Drawings

      i. Sheet 00-E0.00 (ADD 2)

      ii. Sheet 01-E3.01 (ADD 2)

      iii. Sheet 01-E3.03 (ADD 2)

      iv. Sheet 01-E3.04 (ADD 2)

END OF DOCUMENT

SECTION 00 1113

NOTICE TO BIDDERS

RFB #0919335154

The Iowa Department of Administrative Services – Central Procurement Bureau, Hoover State Office Building, Level 3, 1305 East Walnut Street, Des Moines, Iowa 50319 will be receiving bids for the following work at the State Training School for Boys located at 3211 Edgington Avenue, Eldora, Iowa, 50627:

1. Bid Package #26-1: Sitewide conduit; fiber optics; communications; site lighting; fire alarm system replacement. The Iowa Department of Administrative Services anticipates work beginning onsite for this bid package around September 30, 2019. The communications and site lighting shall be substantially complete by June 30, 2020. The fire alarm improvements will be phased, with portions of the project running concurrently with the work of a future bid issuance of Building Mechanical work. Refer to Section 00 3113 Preliminary Schedule for further information.

2. Bid Package #33-1: Sitewide water mains; building water services; tree removal; temporary tunnel shoring; PCC paving. The Iowa Department of Administrative Services anticipates tree removal beginning onsite around September 9, 2019. At the Contractor's option, the water main and building water services work may begin in 2019 or 2020 and shall be substantially complete by August 7, 2020.

Bids must be received no later than **2:00 pm, local time, Thursday, August 8, 2019**. Late bids will not be considered. Sealed bids are to be delivered to the Office of the Department of Administrative Services – Central Procurement Bureau, Hoover State Office Building, Level 3, 1305 East Walnut Street, Des Moines, Iowa, 50319. Bids shall be submitted on the Bid Form and shall be accompanied by a Bid Security as set forth in the Instructions to Bidders in the amount of 5% of the total bid amount. Each bid shall be accompanied by a bid bond, cashier's check or a certified check drawn upon a solvent bank chartered under the laws of the United States of America.

The Iowa Department of Administrative Services reserves the right to reject any and all bids, and to waive irregularities and to accept a bid that is deemed in the best interest of the State of Iowa.

Bidders must comply with all affirmative action/equal employment opportunity provisions of the State of Iowa and the Federal Government.

This project is exempt from Iowa Sales Tax. Davis Bacon Wages **will not** apply to this project.

An **optional** Pre-Bid meeting will be held Tuesday, July 16, 2019 at 10:00 am at the State Training School for Boys, 3211 Edgington Avenue, Eldora, Iowa, 50627. Attendees are to check in with the Dispatcher in the basement of the Administration Building. This meeting is not mandatory but is highly recommended.

Bidding Documents may be obtained from Rapids Reproductions by visiting www.rapidsrepro.com or by calling (515) 251-3222, Monday through Friday between 8:00 am and 5:00 pm.

For further information regarding this project contact:
Steve Oberbroeckling – Issuing Officer
Iowa Department of Administrative Services – Central Procurement Bureau
1305 East Walnut Street
Des Moines, Iowa 50319
Phone: (515) 725-2090
E-Mail: steve.oberbroeckling@iowa.gov

END OF SECTION

SECTION 22 0523
GENERAL DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. Provide equipment, materials, labor, and supervision necessary to install valves as indicated on drawings and in schedules, and herein specified.

B. As nearly as possible, all valves shall be of a single manufacturer.

C. Valves shall conform to ANSI standard dimensions.

D. ASME Compliance:

1. ASME B16.10 for ferrous valve dimensions.

2. ASME B31.9 for building services piping valves.

E. NSF Compliance: NSF/ANSI 61 and/or NSF/ANSI 372 for valve materials for potable-water service. Valves for domestic water must be 3rd Party Certified.

1.2 SUBMITTALS

A. Submit detailed Product Data clearly indicating manufacturer, model, size, dimensions and pressure rating.

1.3 PACKAGING

A. Valves shall be furnished or provided with protective packaging to prevent damage during shipping or on the job site.

B. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.

2. Protect threads, flange faces, grooves, and weld ends.

3. Set angle, and globe valves closed to prevent rattling.

4. Set ball and plug valves open to minimize exposure of functional surfaces.

5. Set butterfly valves closed or slightly open.

6. Block check valves in either closed or open position.

C. Use the following precautions during storage:

1. Maintain valve end protection.

2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

D. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1.4 DEFINITIONS

CWP: Cold working pressure.

EPDM: Ethylene propylene copolymer rubber.

NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

PTFE: Polytetrafluoroethylene plastic.

SSP - Saturated Steam Pressure

WP - Working Pressure

SWP - Steam Working Pressure

W.O.G. - Water, Oil, Gas Pressure

BR - Bronze

I.B.B.M. - Iron Body, Bronze-Mounted

O.S.&Y. - Outside Screw and Yoke

N.R.S. - Non-Rising Stem

R.S. - Rising Stem

M.S.S. - Manufacturer's Standardization Society of the Valve and Fitting Industry, Inc.

Lead Free: Refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content =0.25% per Safe Drinking Water Act as amended January 4, 2011, Section 1417. .

PART 2 PRODUCTS

2.1 GENERAL

A. Materials: Discs, gaskets, packings, seats, diaphragms and lubricants shall conform to recommendations of the valve manufacturer for the intended use.

B. Body materials, unless otherwise stated:

1. Bronze: 125-150 lbs., ASTM B62
2. High Grade Steam-Metal or Valve-Bronze Alloy: 200-300 lbs., ASTM B61
3. Cast Iron: ASTM A126, Class B
4. Ductile Iron: ASTM A395, A536
5. Cast Steel: ASTM A216

C. Lead Free silicon bronze (ASTM listed) valves shall be made with corrosion-resistant materials. Manufacturer shall provide third party certification tested in accordance with EN ISO 6509 regarding dezincification corrosion resistance and stress corrosion cracking.

D. Ferrous Valves: NPS 2-1/2 (DN 65) and larger with flanged ends, unless otherwise indicated.

E. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves.
2. Grooved: With grooves according to AWAA C606.
3. Solder Joint: With sockets according to ASME B16.18.
4. Threaded: With threads according to ASME B1.20.1.
5. Copper Press: With sockets according to ASME B16.22/ASTM B75.

H. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material that meets UL 2043 approved for inside air plenum, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.
2. Butterfly Valves: Shall have 2” extended neck for insulation clearance.
3. Gate Valves: With rising stem.

2.2 MANUFACTURERS

A. Subject to compliance with requirements, provide products manufactured by one of the following, as listed for each valve type, or Engineer-approved equivalent.

Valve Type	Approved Manufacturer
Ball Valves	Jamesbury, Apollo, Jenkins, Milwaukee, Watts, Worchester, Powell, or NIBCO
Butterfly Valves	Lined: Keystone, Demco, Milwaukee, Centerline, Nibco High Performance: Jamesbury, Dezurik, Durco

2.3 BALL VALVES

A. Provide ball valves complying with MSS SP-72 or MSS SP-110. Ball valves shall be as follows unless otherwise indicated on the drawings.

1. 2 in. and smaller: ASTM B584 bronze body, 2-piece, full port stainless steel brass ball, screwed or soldered ends with teflon seats and seals, blow out proof stem, tee or lever handle rated to 150 SWP/600WOG.
2. 2 in. and smaller for medical gas systems: ASTM B62 forged brass or bronze body, 3-piece, full port, stainless steel ball, soldered ends with Teflon seats and seals, lever handle.
3. Over 2 in.: ASTM A2116 carbon semi-steel or ASTM A536 ductile iron body, 2-piece, full port stainless steel brass ball, ANSI rated flanged ends with teflon seats and lever handle rated to 150 SWP/600WOG.

B. CPVC and PVC ball valves shall be union type, full port, schedule 80.

2.4 BUTTERFLY VALVES

A. High Performance

1. Disc - 316 S.S. eccentric disc.

2. Seat - One-piece flexible TFE polymer seat.

3. Stem - 17-4 pH stainless steel with TFE shaft seal wrapped in stainless steel; Chevron type TFE packing.

4. Bodies - ANSI class 150 carbon steel; nickel aluminum bronze; 316 stainless steel; Monel Alloy 20.

5. Actuators - Lever handle with infinite position lever with positive locking feature on valve sizes 2 in. through 5 in. Geared handwheel on valve sizes 6 in. and larger. Geared handwheel on valve sizes 6 in. and larger. Furnish chain operator and chain for valves 6 inches and larger, and located 8 feet or more above the finished floor in mechanical equipment rooms.

6. General Specifications

a. Butterfly valves may be of flanged, wafer, or lug type (lugs drilled and tapped). Grooved valve couplings may be used where grooved piping is applied.

b. Elastomer seats shall be bonded to a rigid backup ring, be field replaceable, and of the types listed above.

c. The spherical segmented wafer disc shall be aluminum bronze of the floating type with no external disc to stem fasteners. Drive is accomplished by a square stem engaging in a broached disc.

d. Stems shall be of the two-piece type, completely sealed from line flow.

e. Working Pressures: 28 in. vacuum to 150 lb. working pressures, 300 lb. test, with bubble-tight shutoff.

2.5 DRAIN VALVES (HOSE BIBBS)

A. Soldered or Threaded Ends: Bronze body, screwed bonnet, rising stem, composition disc, 3/4 in. threaded hose outlet connection; 125 psi maximum pressure rating.

2.6 PVC AND CPVC VALVES

A. PVC, Polyvinyl Chloride - Cell Classification 12454 per ASTM D1784 for body, stem, actuator and internal parts. Viton O-ring cap seals and self-lubricating TFE seats.

B. CPVC, Chlorinated Polyvinyl Chloride – Cell Class 24448 per ASTM D1784 for body, stem, actuator and internal parts. Viton O-ring cap seals and self-lubricating TFE seats.

2.7 ACTUATORS, HANDWHEELS, OPERATORS, HANDLES, AND WRENCHES

A. Provide suitable handwheels for gate, globe and drain valves.

B. Valve Actuator Types:

1. Gear Actuator: For quarter-turn valves NPS 8 (ND 200) and larger.

2. Handwheel: For valves other than quarter-turn types.
3. Hand lever: For quarter-turn valves NPS 6 (DN 150) and smaller.
4. Chainwheels: Valve actuation assembly with sprocket rim, brackets, and chain for mounting height.

PART 3 EXECUTION

3.1 VALVE LOCATIONS – GENERAL

A. Unless otherwise noted, shutoff valves shall be provided at all equipment connections (supply and return where applicable) for the following piping: pump suction and discharge, water, air, fuel and gas and drain lines (except on gravity drains from pans). Equipment connections include such items as tanks, pumps, heat exchangers, and similar items.

B. All valves 4 in. and larger used for dead end service (future connections) shall be butterfly type (high performance), lugged style with tapped holes in a wafer body.

C. Install chainwheels on operator for ball and gate valves NPS 4 (DN 100) and larger and more than 96 inches (2400 mm) above floor or more than three feet above ceiling. Extend chains to 60 inches (1520 mm) above finished floor or just above ceiling.

3.2 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent this movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.3 VALVE INSTALLATION

A. Follow the manufacturer's recommended installation instructions concerning soldering, silver brazing, welding, threading, and installation of flanged valves in order to prevent damage to the valve and assure its maximum efficiency. Additional specific installation requirements are as follows:

1. Thread pipe for threaded valves to standard length only, using new block dies.
2. Put pipe compound on the pipe end, not into the valve threads. Securely screw pipe and valve together.
3. Blow out or otherwise thoroughly clean pipe sections before they are installed.
4. Close valve before installation.
5. Secure and adjust valves for no leaks and for easy operation.

6. Install valves with stems horizontal or vertical above the pipe and square with building construction. Install valves in position to allow full stem movement.

7. Install valves so piping does not place a stress or strain on the valve body. Locate valves for easy access and provide separate support where necessary.

8. Install extended-stem valves where insulation is indicated. Stems shall be extended such that the handle moves freely without contact with the insulation.

9. Install drain valves at low points of piping, at each mechanical equipment item, and elsewhere, where indicated.

10. Locate valves, cock, and hose bibbs to allow easy accessibility for operation, maintenance and repair.

11. Lugged butterfly valves with rubber-lined seats shall be installed with the disc(s) partially open. Bolts shall be torqued to the manufacturer's recommendations.

B. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

C. When soldering use paste fluxes that are approved by the manufacturer for use with Lead Free Alloys.

3.4 PROVISION FOR WRENCHES

A. One operating wrench shall be provided for every 10 valves of each type not equipped with handwheels or levers. A minimum of two wrenches shall be provided for each type of valve.

3.5 SPECIAL OPERATORS FOR 1/4 TURN PRODUCTS

A. Special slow closing operators shall be provided for quick closing valves to prevent the destructive fluid action of "water hammer" effects.

1. Steam under 50 PSI and incompressible fluids: As recommended by the manufacturer.

3.6 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.7 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. Drawings indicate valve types to be used. If valve applications are not indicated, use the following:

1. Shutoff Service: Butterfly valves.

a. Piping NPS 2-1/2 (DN 65) and larger: Furnish cast-iron butterfly valves.

2. Drain Duty: Hose-end drain valves.

3. Cast-iron, grooved-end valves may be used with grooved-end piping.

4. PVC and CPVC ball, butterfly and check valves may be used in matching piping materials.

5. Butterfly Valve Dead-End Service: Single-flange (lug) type.

B. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.

   1. Install hose-end drain valves at low points in water mains, risers, and branches.

   2. Install stop-and-waste drain valves where indicated.

C. If valves with specified CWP ratings are not available, the same types of valves with CWP ratings may be substituted.

END OF SECTION

SECTION 22 1005

PLUMBING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pipe, pipe fittings, specialties, and connections for piping systems.

1. Domestic water.
2. Flanges, unions, and couplings.
3. Pipe hangers and supports.
4. Manufactured sleeve-seal systems.
5. Valves.
6. Water pressure reducing valves.
7. Relief valves.
8. Strainers.

1.2 REFERENCE STANDARDS

A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 1999, and addenda A&B (R2004).

B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.

C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.

D. ASME B31.9 - Building Services Piping; 2014.

E. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems; 2009.

F. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999 (Reapproved 2014).

G. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

H. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.

I. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2016.

J. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.

K. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.

L. ASTM D2846/D2846M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems; 2014.

M. ASTM F437 - Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80; 2015.

N. ASTM F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40; 2015.

O. ASTM F439 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80; 2013.

P. ASTM F441/F441M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80; 2015.

Q. ASTM F442/F442M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR); 2013.

R. ASTM F493 - Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings; 2014.

S. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2017.

T. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2009.

U. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2013.

V. AWWA C606 - Grooved and Shouldered Joints; 2015.

W. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.

X. NSF 61 - Drinking Water System Components - Health Effects; 2016.

Y. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.6 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.2 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

A. Ductile Iron Pipe: AWWA C151/A21.51.

1. Fittings: Ductile or gray iron, standard thickness.

2. Joints: AWWA C111/A21.11, styrene butadiene rubber (SBR) or vulcanized SBR gasket with 3/4 inch (19 mm) diameter rods.

2.3 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.

2. Joints: ASTM B32, alloy Sn95 solder.

3. Mechanical Press Sealed Fittings: Double pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, non toxic synthetic rubber sealing elements.

B. CPVC Pipe: ASTM D2846/D2846M, ASTM F441/F441M, or ASTM F442/F442M.

1. Fittings: CPVC; ASTM D2846/D2846M, ASTM F437, ASTM F438, or ASTM F439.

2. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement.

3. Joints: Grooved mechanical couplings.

C. Polypropylene (PP-R or PP-RCT), SDR 11, ASTM F 2389

1. Fittings: The fittings shall contain no rework or recycled materials except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All fittings shall be certified by NSF International as complying with NSF 14, NSF 61, and ASTM F 2389.

2. Joints: Install fittings and joints using socket-fusion, elecrofusion, or butt-fusion as applicable for the fitting or joint type in accordance with the pipe and fitting manufacturer’s specifications and product standards. Prior to joining, the pipe and fittings shall be prepared in accordance with ASTM F 2389 and the manufacturer’s specifications.

3. Manufacturers:

a. Aquatherm

b. Niron

c. Engineer Approved Equivalent

2.4 FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 Inches (80 mm) and Under:

1. Ferrous pipe: Class 150 malleable iron threaded unions.
2. Copper tube and pipe: Class 150 bronze unions with soldered joints.

B. Flanges for Pipe Size Over 1 Inch (25 mm):

1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.

C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.

1. Dimensions and Testing: In accordance with AWWA C606.
2. Housing Material: Provide ASTM A47/A47M malleable iron, ductile iron, or _____, galvanized.
3. Gasket Material: Nitrile rubber suitable for operating temperature range from minus 20 degrees F to 180 degrees F (minus 29 degrees C to 82 degrees C).
4. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
5. When pipe is field grooved, provide coupling manufacturer's grooving tools.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.5 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.

1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
   a. Cold and Hot Pipe Sizes 6 Inches (150 mm) and Over: Double hangers.
3. Trapeze Hangers: Welded steel channel frames attached to structure.
4. Vertical Pipe Support: Steel riser clamp.
5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.

B. Plumbing Piping - Water:

1. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
2. Hangers for Cold Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
3. Wall Support for Pipe Sizes to 3 Inches (80 mm): Cast iron hook.

4. Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.

5. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

6. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.6 MANUFACTURED SLEEVE-SEAL SYSTEMS

A. Modular/Mechanical Seal:

1. Synthetic rubber interlocking links continuously fill annular space between pipe and wall/casing opening.

2. Provide watertight seal between pipe and wall/casing opening.

3. Elastomer element size and material in accordance with manufacturer's recommendations.

4. Glass reinforced plastic pressure end plates.

2.7 WATER PRESSURE REDUCING VALVES

A. Over 2 Inches (50 mm):

1. ASSE 1003, cast iron body with interior lining complying with AWWA C550, bronze fitted, elastomeric diaphragm and seat disc, flanged.

2. Set valve to 80 PSI.

2.8 RELIEF VALVES

A. Pressure:

1. ANSI Z21.22, AGA certified, bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated.

2.9 STRAINERS

A. Size 2 inch (50 mm) and Under:

1. Threaded brass body for 175 psi (1200 kPa) CWP, Y pattern with 1/32 inch (0.8 mm) stainless steel perforated screen.

2. Class 150, threaded bronze body 300 psi (2070 kPa) CWP, Y pattern with 1/32 inch (0.8 mm) stainless steel perforated screen.

B. Size 1-1/2 inch (40 mm) to 4 inch (100 mm):

1. Class 125, flanged iron body, Y pattern with 1/16 inch (1.6 mm) stainless steel perforated screen.

C. Size 5 inch (125 mm) and Larger:

1. Class 125, flanged iron body, basket pattern with 1/8 inch (3.2 mm) stainless steel perforated screen.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Provide support for utility meters in accordance with requirements of utility companies.

E. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

F. Sleeve pipes passing through partitions, walls and floors.

G. Pipe Hangers and Supports:

1. Install in accordance with ASME B31.9.

2. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.

3. Place hangers within 12 inches (300 mm) of each horizontal elbow.

4. Provide copper plated hangers and supports for copper piping.

H. Manufactured Sleeve-Seal Systems:

1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.

2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.

3. Locate piping in center of sleeve or penetration.

4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.

5. Tighten bolting for a water-tight seal.

6. Install in accordance with manufacturer's recommendations.

I. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.4 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

3.5 SERVICE CONNECTIONS

A. Provide new water service complete with approved water meter with by-pass valves, pressure reducing valve, and sand strainer.

3.6 SCHEDULES

A. Pipe Hanger Spacing:

1. Metal Piping:

a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):

1) Maximum Hanger Spacing: 6.5 ft (2 m).

2) Hanger Rod Diameter: 3/8 inches (9 mm).

b. Pipe Size: 1-1/2 inches (40 mm) to 2 inches (50 mm):

1) Hanger Rod Diameter: 3/8 inch (9 mm).

c. Pipe Size: 2-1/2 inches (65 mm) to 3 inches (75 mm):

d. Pipe Size: 4 inches (100 mm) to 6 inches (150 mm):

1) Maximum Hanger Spacing: 10 ft (3 m).

e. Pipe Size: 8 inches (200 mm) to 12 inches (300 mm):

1) Maximum hanger spacing: 14 ft (4.25 m).

2) Hanger Rod Diameter: 7/8 inch (22 mm).

2. Plastic Piping:

a. All Sizes:

1) Maximum Hanger Spacing: 6 ft (1.8 m).

2) Hanger Rod Diameter: 3/8 inch (9 mm).

END OF SECTION

ELECTRICAL SYMBOL LEGEND

HT AFF	SYMBOL	DESCRIPTION
72"**	FACP	FIRE ALARM CONTROL PANEL
72"**	FA ANNUN	FIRE ALARM REMOTE ANNUNCIATOR
72"**	EVAC	VOICE EVACUATION PANEL
	FTP	FIBER TERMINATION PANEL (FTP)
48"	●	REMOTE TEST/STATUS STATION
18"	M EVAC	VOICE EVAC MICROPHONE OUTLET
48"***	F P	PULLSTATION
80"***	F	FIRE ALARM BELL
80"***	F 110cd	FIRE ALARM BELL WITH STROBE (CANDELAS)
80"***	F	FIRE ALARM CHIME
80"***	F 110cd	FIRE ALARM CHIME WITH STROBE (CANDELAS)
80"***	F 15cd	FIRE ALARM HORN STROBE CANDELAS
80"***	F	FIRE ALARM HORN
	F 15cd	FIRE ALARM STROBE CANDELAS
	F 15cd	FIRE ALARM STROBE, CEILING MTD (CANDELAS)
	S F 15cd	FIRE ALARM SPEAKER W/STROBE, CEILING MTD (CANDELAS)
80"***	F S 110cd	FIRE ALARM SPEAKER WITH STROBE (CANDELAS)
	F S	FIRE ALARM WALL SPEAKER
	S FA	FIRE ALARM CEILING MOUNTED QUAD SPEAKER
	S FA	FIRE ALARM CEILING MOUNTED SPEAKER
8"*****	S P S P	SMOKE DETECTOR (TYPE DENOTED)
	R/F135 R/F135	HEAT DETECTOR (TYPE AND TEMP DENOTED)
	CO CO	GAS DETECTOR (TYPE DENOTED)
		LINEAR HEAT DETECTOR
	S SB	COMBINATION SMOKE DETECTOR AND LOW FREQUENCY SOUNDER BASE
		SMOKE DAMPER
	●	F.A. DOOR HOLDER
	F J F	EXISTING WEATHER / TORNADO HORN AND BELL WITH JUNCTION BOX
80"***	M T	WEATHER / TORNADO WARNING HORN STROBE "M" & "T" INDICATED WEATHER / TORNADO ALARM CIRCUIT IN FACP
80"***	M T	WEATHER / TORNADO WARNING STROBE "M" & "T" INDICATED WEATHER / TORNADO ALARM CIRCUIT IN FACP
80"***	M T	WEATHER / TORNADO WARNING HORN "M" & "T" INDICATED WEATHER / TORNADO ALARM CIRCUIT IN FACP
	FR	FIRE ALARM SHUT DOWN RELAY
	FS	SPRINKLER FLOW SWITCH
	TS	SPRINKLER VALVE TAMPER SWITCH
	CM	ADDRESSABLE CONTROL MODULE
	MM	ADDRESSABLE MONITOR MODULE
	CH	DOOR HOLDER/HOLD OPEN
	DR	SMOKE DAMPER RELEASE
	E#	KEYED NOTE (SEE SCHEDULE)

2 ADD

ALL DISTANCES ARE TO CENTER OF DEVICE OR EQUIPMENT UNLESS OTHERWISE NOTED. DEVICES INDICATED AT 48" MAY NOT BE INSTALLED WITH ANY OPERABLE PART HIGHER THAN 48". DEVICES MAY BE INSTALLED IN CONCRETE MASONRY UNITS WITH THE TOP OF THE DEVICE AT 48".

* DISTANCE ABOVE DOOR FRAME

** DISTANCE TO TOP OF EQUIPMENT OR DEVICE

*** DISTANCE TO HIGHEST OPERABLE POINT OF EQUIPMENT

**** DISTANCE BELOW CEILING

***** DISTANCE TO BOTTOM OF DEVICE

ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)
A	AMPERE
AC	ABOVE COUNTER
ACLG	ABOVE CEILING
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AMP	AMPERE
ANNUN	ANNUNCIATOR
ARCH	ARCHITECT, ARCHITECTURAL
AS	AMP SWITCH
AT	AMP TRIP
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BD	BOARD
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CAB	CABINET
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
COMB	COMBINATION
CONN	CONNECTION
CONST	CONSTRUCTION
CU	COPPER
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DPR	DAMPER
DS	SAFETY DISCONNECT SWITCH
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
ER	ELEVATOR RECALL
EXIST	EXISTING
EXH	EXHAUST
FA	FIRE ALARM
FABP	FIRE ALARM BOOSTER POWER SUPPLY PANEL
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FIXT	FIXTURE
FLR	FLOOR
FU	FUSE
GA	GAUGE
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GYP BD	GYPSUM BOARD
HOA	HANDS-OFF-AUTOMATIC SWITCH
HORIZ	HORIZONTAL
HT	HEIGHT
HV	HIGH VOLTAGE
IC	INTERRUPTING CAPACITY
J-BOX	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KVAR	KILOVOLT-AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LOC	LOCATE OR LOCATION
LT	LIGHT
LTG	LIGHTING
LTNG	LIGHTNING
LV	LOW VOLTAGE
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDC	MAIN DISTRIBUTION CENTER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MFS	MAIN FUSED DISCONNECT SWITCH
MH	MANHOLE
MIC	MICROPHONE
MIN	MINIMUM

MISC	MISCELLANEOUS
MSBD	MAIN SWITCHBOARD
MT	MOUNT
MT.C	EMPTY CONDUIT
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFDS	NON-FUSED SAFETY DISCONNECT SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
OL	OVERLOADS
PA	PUBLIC ADDRESS
PB	PULL BOX OR PUSHBUTTON
PED	PEDESTAL
PF	POWER FACTOR
PH	PHASE
PIV	POST INDICATING VALVE
PNL	PANEL
PP	POWER POLE
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE (CONDUIT)
PWR	POWER
QUAN	QUANTITY
RCPT	RECEPTACLE
REQD	REQUIRED
RM	ROOM
RSC	RIGID STEEL CONDUIT
RTU	ROOF TOP UNIT
SC	SURFACE CONDUIT
SEC	SECONDARY
SHT	SHEET
SPEC	SPECIFICATION
SPKR	SPEAKER
SP	SPARE
SR	SURFACE RACEWAY
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
SURF	SURFACE MOUNTED
SW	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
SYS	SYSTEM
TEL	TELEPHONE
TEL/DATA	TELEPHONE/DATA
TERM	TERMINAL
TL	TWIST LOCK
TR	TAMPER RESISTANT
TYP	TYPICAL
UC	UNDER COUNTER
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
UH	UNIT HEATER
UT	UNDERGROUND TELEPHONE
UTIL	UTILITY
V	VOLT
VA	VOLT-AMPERES
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W	WATT
W/	WITH
WG	WIRE GUARD
W/O	WITHOUT
WP	WEATHERPROOF
XFMR	TRANSFORMER
XFR	TRANSFER
∠	ANGLE
@	AT
Δ	DELTA
'	FEET
"	INCHES
#	NUMBER
Ø	PHASE
℄	CENTER LINE
℘L	PLATE

DRAWING NUMBER REFERENCE KEY

SHEET NUMBER

MEP DISCIPLINE — DESIGN NUMBER
ELDORA BUILDING NUMBER — DRAWING SEQUENCE
01-ED3.01
REFERENCE ONLY — SET SORT ORDER

MEP DISCIPLINE:
M = MECHANICAL
E = ELECTRICAL
ED = ELECTRICAL DEMOLITION
P = PLUMBING

DESIGN NUMBER:
3 = NEW SYSTEMS, AND SYSTEM DEMOLITION

ELDORA BUILDING NUMBER:
00 = CAMPUS WIDE GENERAL INFORMATION / CIVIL
01 = SCHOOL/GYM
02 = COTTAGE 3,4
03 = COTTAGE 5, RECIEVING
04 = COTTAGE 7,8
05 = COOPER (NOT IN SCOPE)
06 = DETENTION (NOT IN SCOPE)
07 = STEWART (NOT IN SCOPE)
08 = ADMINISTRATION BUILDING
09 = A.E. SHEPHERD
10 = CANTEEN
11 = KITCHEN / STORAGE
12 = POWER PLANT
13 = OLD CHAPEL (*LIMITED SCOPE)
14 = MAINTENANCE BUILDING
15 = CONCRETE GARAGE (NOT IN SCOPE)
GARAGE (NOT IN SCOPE
16 = OLD FIRE HOUSE
17 = CORBETT-MILLER
17A= PUMP HOUSE (NOT IN SCOPE)
18 = MANSION (*LIMITED SCOPE)
19 = VOCATIONAL
20 = DIESEL SHOP
21 = GENERAL SUPPLY
GENERATOR (*LIMITED SCOPE)

1 ADD

DRAWING SEQUENCE:
01 = DRAWING NUMBER SEQUENCE

FIRE ALARM INSTALLATION NOTES

1. ALL NEW FIRE ALARM PANELS SHALL COMMUNICATE USING NEW FIBER OPTIC CABLE INSTALLED AS PART OF THIS CONTRACT. CONTRACTOR WILL PROVIDE AND INSTALL REQUIRED FIBER CABLE TO PROVIDE COMPLETE CAMPUS WIDE VIEW AND CONTROL FROM THE NEW GRAPHICAL WORK STATION IN THE ADMIN BUILDING. THE NEW FIBER OPTIC CABLE JACKET FOR THE FIRE ALARM SYSTEM SHALL BE CLEARLY LABELED AND MARKED BY THE CONTRACTOR.
2. REFER TO NEW SYSTEM DRAWINGS FOR LOCATION OF DEVICES.
3. CONTRACTOR SHALL VERIFY QUANTITY OF FIRE ALARM INTERFACE RELAYS NEEDED TO MONITOR AND CONTROL EXISTING AIR HANDLING UNITS, SPRINKLER FLOW AND TAMPER SWITCHES, SMOKE DAMPERS, EXHAUST FAN SHUT DOWN, DOOR HOLDER RELEASE, AND ELEVATOR RECALL.
4. SOME AREAS OF THE ADMINISTRATION BUILDING CONTAIN ASBESTOS. ASBESTOS REPORT IS AVAILABLE. CONTRACTOR SHALL VERIFY THE PRESENCE OF ASBESTOS IN ALL AREAS PRIOR TO STARTING ANY NEW WORK. CONTRACTOR SHALL AVOID DISTURBING WHERE POSSIBLE. IF ASBESTOS MUST BE DISTURBED, COORDINATE LOCATIONS WITH OWNER BEFORE STARTING ANY WORK. FIRE ALARM CONTRACTOR SHALL INSTALL WALL MOUNTED SYSTEM PER NEC CODE IN ALL AREAS POSSIBLE.
5. CONTRACTOR SHALL VERIFY ASBESTOS REPORTS WITH STATE PRIOR TO STARTING ANY NEW CONSTRUCTION.
6. THE FINAL INSTALLATION OF THE CAMPUS WIDE FIRE ALARM SYSTEM SHALL BE TESTED AND CERTIFIED BY A TRAINED AND LICENSED REPRESENTATIVE OF THE FIRE ALARM MANUFACTURER AND SHALL MEET ALL REQUIREMENTS AS OUTLINED IN DIVISION 28 SEPCIFICATION. ALL COMPONENTS SHALL BE FROM A SINGLE MANUFACTURER AND UL LISTED FOR FIRE ALARM LIFE SAFETY. A COMPLETE NFPA RECORD OF COMPLETION DOCUMENT SHOWING CERTIFICATION OF THE SYSTEM SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF THE PROJECT. (2 ADD)
7. VOICE EVACUATION SYSTEM SHALL REQUIRE INTELLIGIBILITY BY VENDOR IN COORDINATION WITH STATE INSPECTOR. NOTE AREAS THAT MIGHT BE "ACOUSTICALLY DISTINGUISHABLE SPACES".
8. ALL CAMPUS BUILDINGS WITH FIRE ALARM SYSTEMS SHALL HAVE AN EXTERNAL NOTIFICATION DEVICE TO AID RESPONDERS IDENTIFY WHICH CAMPUS BUILDING IS IN ALARM. REFER TO DRAWINGS FOR LOCATION OF EXTERNAL NOTIFICATION DEVICE. CONTRACTOR SHALL VERIFY WITH LOCAL ELDORA FIRE DEPARTMENT CHIEF ON THE REQUIREMENTS OF THE EXTERNAL NOTIFICATION DEVICE PRIOR TO INSTALLATION.
9. ALL SPRINKLERED BUILDINGS SHALL REQUIRE EXTERNAL NOTIFICATION DEVICE NEAR FIRE DEPARTMENT CONNECTION. CONTRACTOR SHALL VERIFY LOCATION WITH LOCAL ELDORA FIRE DEPARTMENT CHIEF PRIOR TO INSTALLATION.
10. A "FIRE WATCH" PROGRAM IS MANDATED BY THE STATE FIRE MARSHAL. CONTRACTOR SHALL NOTIFY THE STATE WITH IN 48 HOURS TO PROVIDE FIRE WATCH. CONTACT THE CURRENT FIRE PREVENTION SUPERVISOR AT (515) 725 - 6145.

    KYLE GORSH OR KATHRYN BLAKE
11. THE NEW FIRE ALARM SYSTEM IS A LIFE SAFETY SYSTEM AND SHALL COMPLY WITH ALL APPROPRIATE CODES AS LISTED IN SPECIFICATION DIVISION 28.
12. THE MANSION AND OLD CHAPEL BUILDINGS EXISTING FIRE ALARM SYSTEM WILL NOT BE REPLACED. PROVIDE MONITOR MODULES AND CABLE TO MONITOR THE ALARM AND TROUBLE POINTS FROM THE EXISTING PANEL IN THE MANSION AND OLD CHAPEL BUILDINGS. THE MANSION SHALL BE MONITORED BY THE NEW FIRE ALARM PANEL IN THE SCHOOL BUILDING. THE OLD CHAPEL SHALL BE MONITORED BY THE NEW FIRE ALARM PANEL IN THE MAINTENANCE BUILDING. PROVIDE SURGE SUPPRESSION FOR COPPER CABLES CONNECTION. (1 ADD)
13. THE GENERATOR WILL NOT HAVE A NEW FIRE ALARM PANEL BUT WILL BE MONITORED. PROVIDE MONITOR MODULES AND CABLE TO MONITOR THE ALARM AND TROUBLE POINTS FROM THE GENERATOR. THE GENERATOR SHALL BE MONITORED BY THE NEW FIRE ALARM PANEL IN THE CANTEEN BUILDING. PROVIDE SURGE SUPPRESSION FOR COPPER CABLES.
14. ALL ACOUSTICAL TILES THAT ARE DAMAGED OR DEMOLISHED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW AND INSTALLED BY CONTRACTOR.
15. THE EXISTING EXTERIOR WEATHER / TORNADO MASS NOTIFICATION SPEAKER SYSTEM SHALL BE INTEGRATED THE NEW FIRE ALARM SYSTEM AND SHALL BE CONTROLLED BY THE NEW FACP LOCATED IN THE ADMINISTRATION BUILDING. (2 ADD)
16. NEW SYSTEM SHALL BE FULLY INSTALLED, TESTED, AND REPORTING TO ADMIN BUILDING BEFORE SHUTTING DOWN EXISTING SYSTEM. ONCE NEW SYSTEM IS FULLY OPERATIONAL – THEN REMOVE ALL EXISTING DEVICES AND CABLE ASSOCIATED WITH EXISTING FIRE ALARM SYSTEMS. REMOVE ALL ACCESSIBLE CONDUIT, BOXES, HANGERS, AND PIPE HANGERS NOT BEING USED BY NEW SYSTEM.
17. CONTRACTOR SHALL SUPPLY AND INSTALL NEW NOTIFICATION APPLIANCE CIRCUIT(NAC) PANEL BOOSTERS AS NEEDED. COORDINATE INSTALLATION LOCATION WITH OWNER PRIOR TO INSTALLATION. EQUIPMENT SHALL BE INSTALLED WITH TAMPER RESISTANT HARDWARE.
18. CONTRACTOR SHALL SUPPLY AND INSTALL NEW AMPLIFIERS FOR VOICE EVACUATION FIRE ALARM SYSTEMS AS NEEDED. COORDINATE INSTALLATION LOCATION WITH OWNER PRIOR TO INSTALLATION.
19. CONTRACTOR SHALL SUPPLY AND INSTALL WALL SEALANT AND CAULKING REQUIRED FOR WALL PENETRATIONS. CONTRACTOR SHALL SEAL AROUND ALL CONDUIT PENETRATIONS THROUGH INTERIOR WALLS AND FLOORS SEPARATING AREAS TO RESTORE ORIGINAL RATING; USE A UL CLASSIFIED FIRE SEALANT. ELECTRICAL CONTRACTOR SHALL REQUEST INSPECTION OF SEALS BY THE FIRE MARSHAL OR THE AHJ BEFORE AND AFTER PLACEMENT OF SEALANT MATERIALS.

ELDORA SCHOOL CAMPUS BUILDINGS LIST

01 = SCHOOL/GYM
02 = COTTAGE 3,4
03 = COTTAGE 5, RECIEVING
04 = COTTAGE 7,8
08 = ADMINISTRATION BUILDING
09 = A.E. SHEPHERD
10 = CANTEEN
11 = KITCHEN / STORAGE
12 = POWER PLANT
13 = OLD CHAPEL (*LIMITED SCOPE)
14 = MAINTENANCE BUILDING
15 = CONCRETE GARAGE (NOT IN SCOPE)
GARAGE (NOT IN SCOPE)
16 = OLD FIRE HOUSE
17 = CORBETT-MILLER
17A= PUMP HOUSE (NOT IN SCOPE)
18 = MANSION (*LIMITED SCOPE)
19 = VOCATIONAL
20 = DIESEL SHOP
21 = GENERAL SUPPLY
GENERATOR (*LIMITED SCOPE)

1 ADD

BUILDING 05, 06, 07 ARE NOT SHOWN ON SITE PLAN AND NOT IN SCOPE OF THIS CONTRACT.

1 ADD

*MANSION, OLD CHAPEL AND GENERATOR LIMITED SCOPE OF WORK ENTAILS RECONNECT EXISTING EQUIPMENT AND PANELS TO THE NEAREST NEW FACP PANEL AS SHOWN ON DRAWINGS.

DEMOLITION GENERAL NOTES

1. ALL NEW FIRE ALARM PANELS, WORKSTATIONS, AND PERIPHERAL DEVICES SHALL BE INSTALLED WITH NEW WIRING AND NEW FIBER OPTIC CABLE. REUSE OF ANY EXISTING DEVICES IS ACCEPTABLE AS LONG AS FINAL INSTALLATION IS A COMPLETE UL CERTIFIED / UL LISTED SYSTEM. ALL REUSED DEVICES SHALL BE CLEANED BY THE CONTRACTOR FOR A "LIKE NEW" APPEARANCE. ANY CONDUIT, SURFACE MOUNTED RACEWAY, AND BACKBOXES THE CONTRACTOR WISHES TO REUSE SHALL BE INSPECTED AND VERIFIED TO BE FREE OF ANY CRACKS, HOLES, OR PHYSICAL DAMAGE WHICH COULD COMPROMISE THE INTEGRITY OF THE NEW FIRE ALARM CABLE. IF SUCH CONDITIONS EXIST, THEN THE CONDUIT, RACEWAY, AND/OR BACKBOXES SHALL BE REPLACED WITH NEW.
2. LIGHT LINES INDICATE EXISTING WALLS AND EQUIPMENT TO REMAIN. DASHED LINES INDICATE WALLS, EQUIPMENT, AND ELECTRICAL ITEMS TO BE REMOVED.
3. COORDINATE PATCHING REQUIREMENTS FOR UNUSED OPENINGS WITH THE GENERAL CONTRACTOR. CONTRACTOR SHALL PATCH ALL UNUSED OPENINGS. PATCHWORK SHALL MATCH MATERIALS, FINISH, AND TEXTURE OF ADJACENT SURFACES.
4. FIRE ALARM - REMOVE EXISTING CEILING MOUNTED DEVICES AND WALL MOUNTED NOTIFICATION DEVICES. COORDINATE FIRE ALARM SYSTEM DOWN TIME WITH GENERAL CONTRACTOR PRIOR TO STARTING DEMOLITION.
5. COORDINATE DISPOSAL OF ALL ITEMS NOT REQUESTED AS SALVAGE BY THE OWNER.
6. DRAWINGS DO NOT IDENTIFY ALL OUTLETS, SWITCHES, CABLING, OR EQUIPMENT TO BE REMOVED. CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE PRIOR TO BIDDING AND INCLUDE LABOR AND MATERIAL NECESSARY FOR REQUIRED DEMOLITION IN THEIR BID.
7. WIRING SHALL BE REMOVED BACK TO SERVING PANEL. INSTALLATION OF NEW CONDUCTORS IN EXISTING CONDUITS WILL BE PERMITTED AS DESCRIBED IN THE DIVISION 26 AND 28 SPECIFICATIONS.
8. MANY AREAS CONTAIN ASBESTOS. CONTRACTOR SHALL VERIFY THE PRESENCE OF ASBESTOS IN ALL AREAS PRIOR TO STARTING ANY DEMOLITION WORK. CONTRACTOR SHALL AVOID DISTURBING WHERE POSSIBLE. IF ASBESTOS MUST BE DISTURBED, COORDINATE LOCATIONS WITH OWNER BEFORE STARTING ANY DEMOLITION WORK.
9. CONTRACTOR SHALL VERIFY ASBESTOS REPORTS WITH STATE PRIOR TO STARTING ANY DEMOLITION.
10. COORDINATE DEMOLITION SCHEDULE WITH OWNER PRIOR TO COMPLETING WORK.
11. NOT ALL FIRE ALARM DEVICES ARE INDICATED ON DRAWINGS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING FIRE ALARM DEVICES PRIOR TO STARTING DEMOLITION
12. EXISTING FIRE ALARM DEVICES ARE TO BE DEMOLISHED AND REPLACED WITH NEW, UNLESS OTHERWISE NOTED.
13. EXISTING DAMPERS, FLOW SWITCHES, AND TAMPER SWITCHES ARE EXISTING TO REMAIN. REFER TO DRAWINGS FOR MORE INFORMATION.

ELECTRICAL INSTALLATION NOTES

1. MOUNT ALL FIRE ALARM PULL STATIONS AT +48" FROM FLOOR (CENTERLINE DIMENSION) EXCEPT WHERE OTHERWISE NOTED.
2. INSTALL ALL WALL MOUNTED FIRE ALARM NOTIFICATION DEVICES AT 80" ABOVE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER, EXCEPT WHERE OTHERWISE NOTED. ALL SMOKE DETECTION DEVICES MOUNTED ON WALLS MOUNTING HEIGHT SHALL BE MEASURED TO THE TOP OF THE DEVICE.
3. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL DETECTORS AND/OR SPEAKERS WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN THE CEILING TILE PATTERN. SMOKE DETECTORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL OPENING THAT CAN NOT BE MADE TO MATCH EXISTING, CONTRACTOR SHALL REPAINT THE WALL. COLOR TO BE COORDINATED WITH ELDORA MAINTENANCE. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
5. CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK. CONTRACTOR SHALL PROVIDE NEW CEILING TILES TO REPLACE ANY DAMAGED CEILING TILES.
6. FIRE ALARM CONDUIT SHALL BE INSTALLED UTILIZING THE FOLLOWING SPECIFICATION:
    - A. CONDUIT INSTALLED IN UNFINISHED SPACES SHALL BE LABELED IN BOLD RED LETTERING "FIRE ALARM", WITH LABELING SPACED EVERY 20'-0" FEET APART IN A READABLE LOCATION. (2 ADD)
    - B. ALL JUNCTION BOXES INSTALLED ABOVE DROP CEILINGS OR IN UNFINISHED SPACES SHALL BE PAINTED RED AND LABELED "FIRE ALARM" IN BLACK LETTERING.
    - C. ALL CONDUITS SURFACE MOUNTED ON WALLS OR CEILINGS IN FINISHED SPACES SHALL BE LABELED IN BOLD RED LETTERING "FIRE ALARM", WITH LABELING SPACED EVERY 20'-0" FEET APART IN A READABLE LOCATION.
    - D. ALL JUNCTION BOXES SURFACE MOUNTED ON WALLS OR CEILINGS IN FINISHED SPACES SHALL BE LABELED IN BOLD RED LETTERING "FIRE ALARM", IN A READABLE LOCATION.
7. THE INTERIOR WEATHER / TORNADO ALARM DEVICE SHALL BE A HORN/STROBE NOTIFICATION DEVICE THAT WILL BE ACTIVATED BY THE NEW NETWORK FIRE ALARM SYSTEM. THE DEVICE MUST BE WHITE IN COLOR WITH NO "FIRE" MARKINGS ON IT. IT SHALL HAVE A COLORED STROBE (AMBER, BLUE, GREEN, ETC.). COORDINATE COLOR PREFERENCE WITH OWNER PRIOR TO CONSTRUCTION. THE DEVICE SHALL PRODUCE A TONE/SOUND THAT IS UNIQUE AND DIFFERENT FROM THAT PRODUCED BY THE FIRE ALARM NOTIFICATION DEVICES. CONTRACTOR SHALL COORDINATE THE INTERIOR WEATHER / TORNADO ALARMS TONE/SOUND FOR A UNIFIED ALARM FOR ALL BUILDINGS. (2 ADD)

ELECTRICAL GENERAL NOTES

1. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY THE STATE, THE STATE AMENDMENTS CODES AND ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).
2. IT IS THE INTENT OF THESE DOCUMENTS TO COMPLY WITH THE APPLICABLE CODES. WHERE DISCREPANCIES OCCUR, NOTIFY THE ENGINEER/ARCHITECT IN WRITING FOR INTERPRETATION. CORRECT ANY INSTALLATION THAT FAILS TO COMPLY WITH THE CODES AND STANDARDS AT NO ADDITIONAL COST TO THE OWNER.
3. CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
5. COORDINATE ELECTRICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF ELECTRICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.
6. DEVICES AND JUNCTION BOXES SHOWN ON DRAWINGS ARE DIAGRAMMATIC. COORDINATE EXACT PLACEMENT OF ALL DEVICES WITH OWNER AND OTHER TRADES PRIOR TO INSTALLATION. VERIFY DOOR SWING PRIOR TO INSTALLATION OF ALL SWITCH BOXES. ADJUSTMENT OF LOCATION PRIOR TO INSTALLATION, SHALL BE DONE WITH NO ADDITIONAL COST TO THE OWNER.
7. DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
8. ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED 'OFF' AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.
9. NO ENERGIZED CONDUCTORS SHALL BE EXPOSED AT ANYTIME EXCEPT WHEN THE IMMEDIATE AREA IS UNDER THE SUPERVISION OF A QUALIFIED ELECTRICIAN.
10. CONDUIT RUNS SHALL BE AS FOLLOWS:
    - A. ALL CONDUITS SHALL BE SECURED TO WALLS OR CEILINGS WITH TAMPER RESISTANT HARDWARE. CONDUIT STRAPS SHALL BE VANDAL RESISTANT. CONTRACTOR SHALL UTILIZE 1-HOLE OR 2-HOLE CONDUIT STRAPS UNLESS NOTED OTHERWISE.
    - B. CONDUITS SHALL BE RUN CONCEALED WHERE POSSIBLE.
    - C. ALL CONDUITS WHICH ARE SURFACE MOUNTED TO A WALL AND RUNS VERTICALLY TO A FIRE ALARM PANEL, PULLSTATION, OR DOOR HOLD, ETC. CONTRACTOR SHALL UTILIZE A 2-HOLE CONDUIT STRAPS.
11. CONTRACTOR SHALL FIELD VERIFY BUILDING EXISTING EXPANSION JOINTS PRIOR TO CONSTRUCTION. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANUFACTURE'S WRITTEN RECOMMENDATIONS.
12. ALL PENETRATIONS THROUGH FIRE RATED WALLS BY DIVISION 26 AND 28 CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL. NOT ALL DRAWINGS HAVE BUILDING'S FIRE RATED WALLS INDICATED. CONTRACTOR SHALL PROCEED AS FOLLOWS:
    - A. WHEN FIRE WALLS OF BUILDINGS ARE INDICATED ON DRAWINGS CONTRACTOR SHALL COMPLY WITH CURRENT CODE REQUIREMENTS.
    - B. WHEN FIRE WALLS OF BUILDING ARE NOT INDICATED ON DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR FIRE CAULKING ALL PENETRATIONS THROUGH EXISTING WALLS.
13. THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER.
14. THESE DRAWINGS SHALL NOT BE SCALED TO OBTAIN DIMENSIONS. REFER TO DIMENSIONED ARCHITECTURAL FLOOR PLANS. IF THE DIMENSIONS CANNOT BE DETERMINED BY THE INFORMATION GIVEN, CONTRACTOR SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION.
15. PERIODIC SITE OBSERVATION BY THE ENGINEER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.
16. THE INFORMATION CONTAINED ON THE ELECTRICAL DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, THE SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC., AND SHALL BE CONSIDERED THE CONTRACT DOCUMENTS AND WITH ALL THEREIN BY REFERENCE, WHICH THE CONTRACTOR CERTIFIES KNOWLEDGE OF BY SIGNING THE CONTRACT.
17. CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY, UNRELIEVED BY REVIEW OF SHOP DRAWINGS OR PERIODIC OBSERVATION OF CONSTRUCTION, FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.), FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE. VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.

ELECTRICAL CODE INFORMATION

GOVERNING CODES: STATE OF IOWA

BUILDING CODE ....IBC 2015.
FIRE CODE ....IFC 2015.
PLUMBING CODE ....UPC 2015.
MECHANICAL CODE ....IMC 2015.
ELECTRICAL CODE ....NEC 2017.
ENERGY CODE ....IECC 2012.

BID ALTERNATE #1

VENDOR SHALL PROVIDE SPARE PARTS:
TWO (2) HEAT DETECTION HEADS,
FOUR (4) SMOKE DETECTION HEADS AND
FOUR (4) DEVICE BASES

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ELDORA STS FIRE ALARM SYSTEM
REPLACEMENT PACKAGE

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
3211 EDGINGTON AVE. ELDORA, IA 50627

ADD 1 07-26-2019 ADDENDUM - 01
ADD 2 08-02-2019 ADDENDUM - 02

DRAWN: RML
APPROVED: JW
ISSUED FOR: CONSTRUCTION
DATE: 06/21/2019
PROJECT NO: 4185221
CLIENT : #9060.00

ELECTRICAL
GENERAL
INFORMATION

00-E0.00

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Autodesk Revit 2019

A4 GROUND FLOOR NEW

1/8" = 1'-0" 0 — 12'

KEYNOTE LEGEND

KEY	NOTE
E-00-02	CONTRACTOR SHALL OBTAIN AN ASBESTOS REPORT FOR BUILDING PRIOR TO STARTING ANY WORK. REFER TO DEMOLITION GENERAL NOTES 8, 9 AND 10 AND FIRE ALARM INSTALLATION NOTES 4, 5 AND 6 ON DRAWING 00-E0.00.
E-00-03	BUILDING HAS DROP CEILINGS THROUGHOUT UNLESS OTHER WISE NOTED. CONTRACTOR SHALL RECESS MOUNT DEVICES IN DROP CEILINGS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING. VERIFY CEILING TYPE PRIOR TO INSTALLATION.
E-00-06	HARD CEILING. CONTRACTOR SHALL SURFACE MOUNT DEVICES AND CONDUITS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING.
E-00-08	ALL FIRE ALARM DEVICES, BACK BOXES, AND CONDUIT SHALL BE VANDAL RESISTANT AND SHALL BE INSTALLED WITH TAMPER RESISTANCE HARDWARE.
E-01-07	NEW DUCT TYPE SMOKE DETECTOR. INSTALLED IN SAME LOCATION AS EXISTING.
E-01-08	NEW WEATHER PROOF EXTERIOR HORN.
E-01-09	EXISTING SPRINKLER SYSTEM FIRE ALARM FLOW SWITCH. CONTRACTOR SHALL INSTALL NEW MONITORING MODULES TO EXISTING FLOW SWITCH. DURING INSTALLATION OF NEW MONITORING MODULES CONTRACTOR SHALL REPORT ANY ISSUES AFFECTING THE SUCCESSFUL OPERATION OF FLOW SWITCH TO OWNER AND ENGINEER.
E-01-10	EXISTING SPRINKLER SYSTEM FIRE ALARM TAMPER SWITCH. CONTRACTOR SHALL INSTALL NEW MONITORING MODULES TO EXISTING TAMPER SWITCH. DURING INSTALLATION OF NEW MONITORING MODULES CONTRACTOR SHALL REPORT ANY ISSUES AFFECTING THE SUCCESSFUL OPERATION OF TAMPER SWITCH TO OWNER AND ENGINEER.
E-01-16	NEW CO DETECTOR.
E-01-17	EXISTING 30 AMP EXTERIOR LIGHTING DISCONNECT TO REMAIN.

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ELDORA STS FIRE ALARM SYSTEM REPLACEMENT PACKAGE

SCHOOL

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES

3211 EDGINGTON AVE. ELDORA, IA 50627

ADD 2 08/02/2019 ADDENDUM 2

DRAWN: RML
APPROVED: JW
ISSUED FOR: DD REVIEW
DATE: 06/21/2019
PROJECT NO: 41865221
CLIENT : #9960.00

SYSTEM RENOVATION - GROUND FLOOR

01-E3.01

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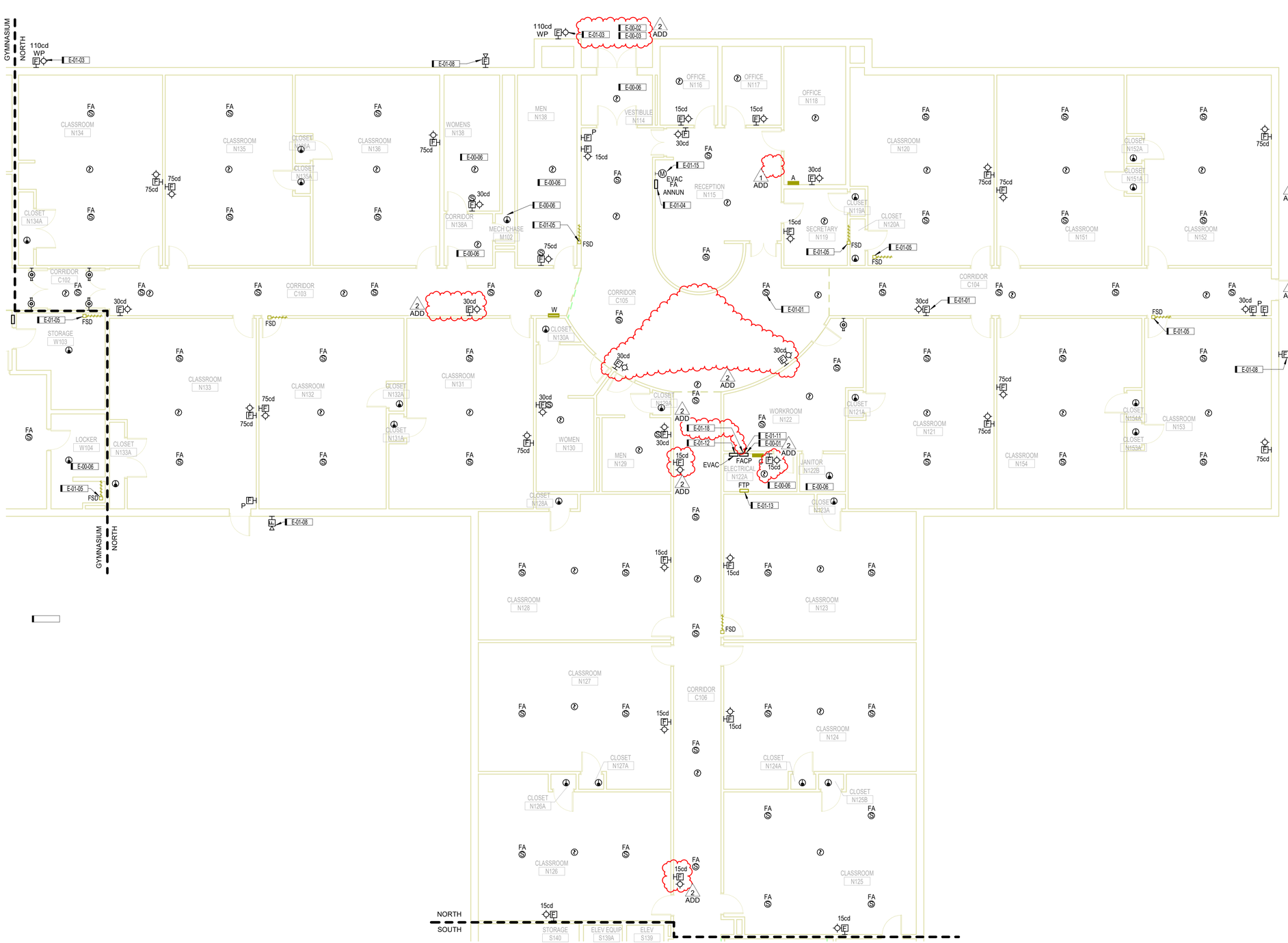
Autodesk Revit 2019



NORTH

A4 FIRST FLOOR SCHOOL NEW - NORTH

1/8" = 1'-0" 0 — 12'

KEYNOTE LEGEND

KEY	NOTE
E-00-01	NEW CAMPUS / ADMINISTRATION BUILDING FACP. THE NEW FACP PANEL SHALL BE FULLY NETWORK CONNECTED WITH THE OTHER CAMPUS EXISTING BUILDING'S NEW FACP PANELS. BUILDING'S NEW ADDRESSABLE FACP PANEL SHALL BE CONNECTED TO THE CAMPUS SITE FACP PANEL LOCATED IN THE RECEPTIONIST OFFICE IN ADMINISTRATION BUILDING. COORDINATE NEW CAMPUS / ADMINISTRATION BUILDING FACP PANEL LOCATION WITH OWNER PRIOR TO INSTALLATION.
E-00-02	CONTRACTOR SHALL OBTAIN AN ASBESTOS REPORT FOR BUILDING PRIOR TO STARTING ANY WORK. REFER TO DEMOLITION GENERAL NOTES 8, 9 AND 10 AND FIRE ALARM INSTALLATION NOTES 4, 5 AND 6 ON DRAWING 00-E0.00.
E-00-03	BUILDING HAS DROP CEILINGS THROUGHOUT UNLESS OTHER WISE NOTED. CONTRACTOR SHALL RECESS MOUNT DEVICES IN DROP CEILINGS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING. VERIFY CEILING TYPE PRIOR TO INSTALLATION.
E-00-06	HARD CEILING. CONTRACTOR SHALL SURFACE MOUNT DEVICES AND CONDUITS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING.
E-01-01	ALL FIRE ALARM DEVICES SHALL BE VANDAL RESISTANT AND SHALL BE INSTALLED WITH TAMPER RESISTANCE HARDWARE.
E-01-03	NEW WEATHER PROOF EXTERIOR FIRE ALARM STROBE WITH 110 CANDELA RATING. CONTRACTOR SHALL MOUNT THE NEW DEVICE ON THE FRONT OF THE BUILDING SO THAT IT IS CODE COMPLIANT AND VISIBLE FROM THE CAMPUS ACCESS ROADS.
E-01-04	PROVIDE NEW FIRE ALARM ANNUNCIATOR PANEL. ANNUNCIATOR SHALL HAVE CAPABILITY TO TURN OFF THE AUDIBLE ALARM, IF CODE COMPLIANT. CONTRACTOR SHALL VERIFY WITH SFM (STATE FIRE MARSHAL) PRIOR TO INSTALLATION.
E-01-05	EXISTING SMOKE DAMPER. CONTRACTOR SHALL CONNECT NEW FIRE ALARM RELAYS TO EXISTING DAMPER. SMOKE DAMPERS SHALL BE PROGRAMMED TO CLOSE UPON THE ACTIVATION OF ANY SMOKE DETECTOR IN THE HALL OR AREA ALONG THE WALL WHERE THE DAMPER IS LOCATED. DURING INSTALLATION OF NEW RELAYS CONTRACTOR SHALL REPORT ANY ISSUES AFFECTING THE SUCCESSFUL OPERATION OF DAMPER TO OWNER AND ENGINEER. COORDINATE ALL INSTALLATION WORK ABOVE CEILING WITH OWNER.
E-01-08	NEW WEATHER PROOF EXTERIOR HORN.
E-01-11	NEW SCHOOL FACP PANEL. CONTRACTOR SHALL RECONNECT NEW FACP PANEL TO EXISTING 120V FIRE ALARM PANEL CIRCUIT WITH NEW FEEDER AND CONDUIT.
E-01-12	NEW VOICE EVACUATION PANEL. CONTRACTOR SHALL INSTALL NEW VOICE EVACUATION SYSTEM. COORDINATE WITH OWNER EXACT AUTOMATIC VOICE EVACUATION INSTRUCTION OF NEW SYSTEM PRIOR TO INSTALLATION. NEW SYSTEM SHALL HAVE A REMOTE MICROPHONE INSTALLED AT THE RECEPTION (N115). SEE PLANS FOR LOCATION.
E-01-13	EXISTING FTP PANEL.
E-01-15	NEW VOICE EVACUATION REMOTE MICROPHONE.
E-01-18	NEW WEATHER / TORNADO ALERT ALARM SYSTEM SHALL BE INCORPORATED INTO THE NEW FACP. SEPARATE AND DISTINCT TONE AND VERBAL MESSAGE SHALL BE PROGRAMMED INTO THE NEW FACP FOR WEATHER ALERT WARNINGS. WHEN THE WEATHER / TORNADO ALARM WARNING SYSTEM IS TRIGGERED BY THE CAMPUS FACP IN THE ADMINISTRATION BUILDINGS THE PRERECORDED MESSAGE AND TONES WILL BE PLAYED OVER THE NEW VOICE EVAC SYSTEM. THIS RECORDED MESSAGE AND TONE WILL PLAY UNTIL THE ALARM IS DEACTIVATED AT THE MAIN ADMINISTRATION BUILDING. THE WEATHER / TORNADO ALARM SHALL NOT SUPERSEDE A FIRE ALARM NOTIFICATION UPON A FIRE ALARM DETECTION CONDITION AT ANY GIVEN BUILDING. THE FIRE ALARM VOICE EVAC MESSAGE AND WEATHER / TORNADO WARNING EVAC MESSAGE WILL NOT PLAY AT THE SAME TIME. COORDINATE WEATHER / TORNADO ALERT TONES AND VERBAL MESSAGE WITH OWNER PRIOR TO PROGRAMMING.

2 ADD

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ELDORA STS FIRE ALARM SYSTEM REPLACEMENT PACKAGE

SCHOOL

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES

3211 EDGINGTON AVE. ELDORA, IA 50627

ADD 1	07/26/2019	ADDENDUM 1
ADD 2	08/02/2019	ADDENDUM 2

DRAWN: RML
APPROVED: JW
ISSUED FOR: DD REVIEW
DATE: 06/21/2019
PROJECT NO: 4165221
CLIENT : #9060.00

SYSTEM RENOVATION - FIRST FLOOR SCHOOL - NORTH

01-E3.03

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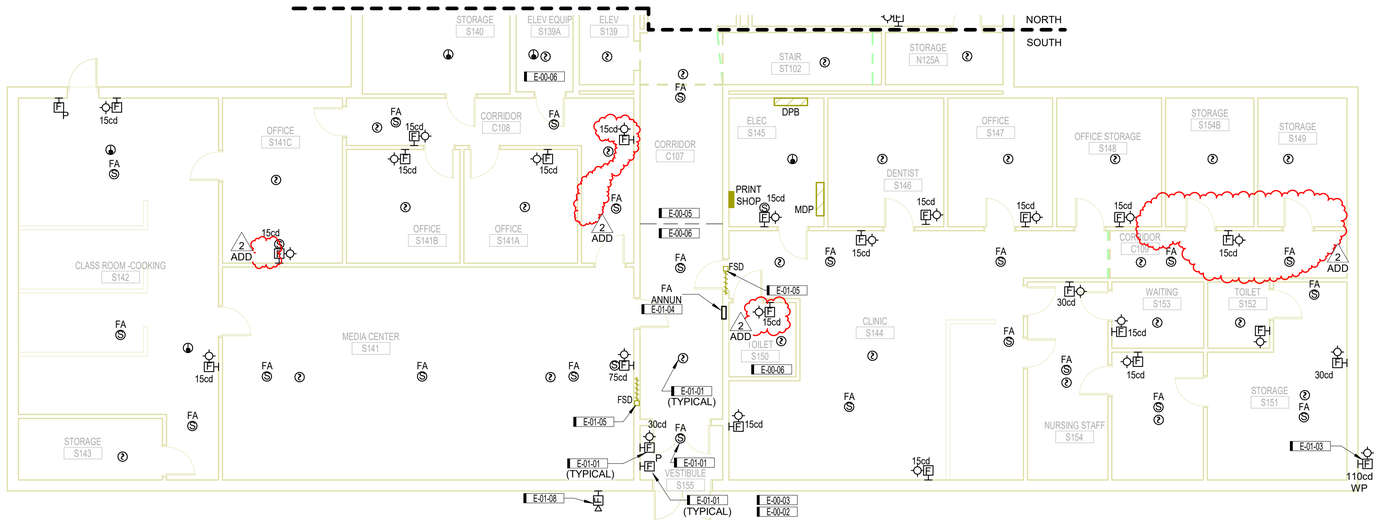
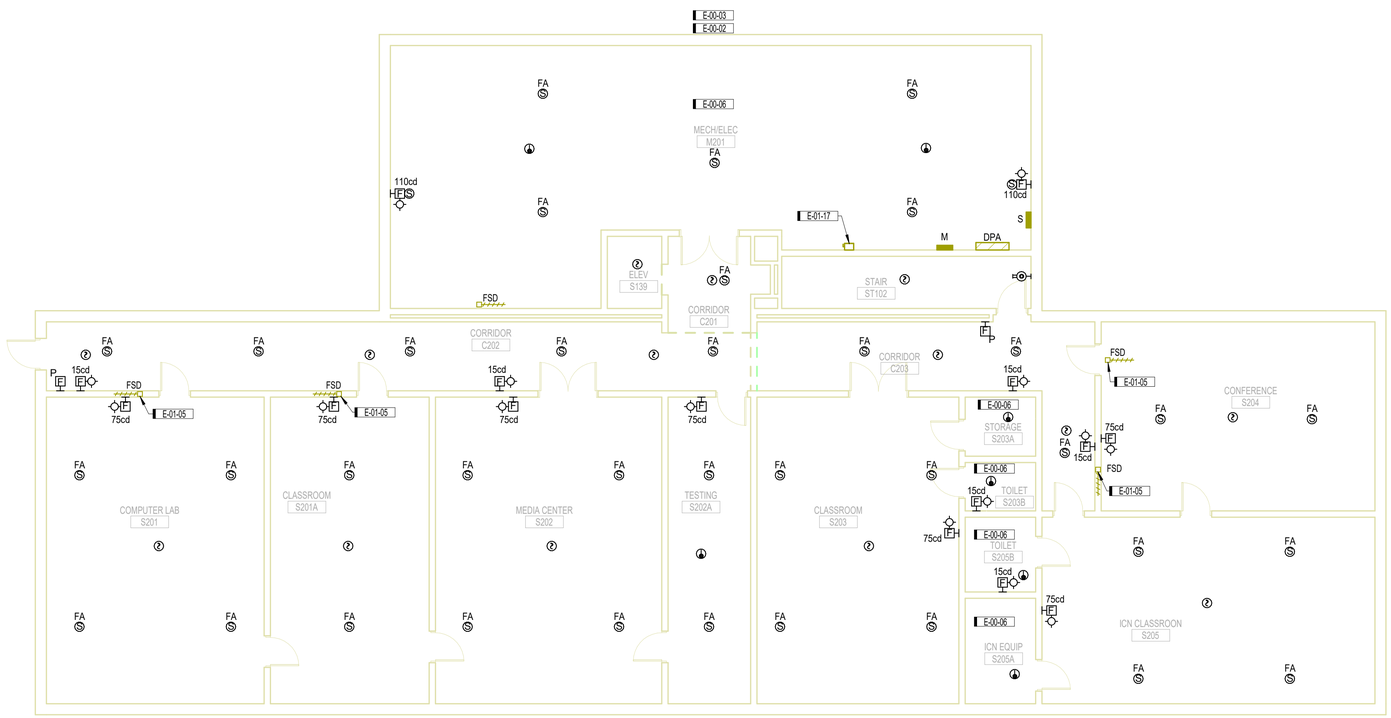
Autodesk Revit 2019



NORTH

A2 FIRST FLOOR SCHOOL NEW - SOUTH

1/8" = 1'-0" 0 12'



NORTH

A4 SECOND FLOOR SCHOOL NEW - SOUTH

1/8" = 1'-0" 0 12'

KEYNOTE LEGEND

KEY	NOTE
E-00-02	CONTRACTOR SHALL OBTAIN AN ASBESTOS REPORT FOR BUILDING PRIOR TO STARTING ANY WORK. REFER TO DEMOLITION GENERAL NOTES 8, 9 AND 10 AND FIRE ALARM INSTALLATION NOTES 4, 5 AND 6 ON DRAWING 00-E0.00.
E-00-03	BUILDING HAS DROP CEILINGS THROUGHOUT UNLESS OTHER WISE NOTED. CONTRACTOR SHALL RECESS MOUNT DEVICES IN DROP CEILINGS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING. VERIFY CEILING TYPE PRIOR TO INSTALLATION.
E-00-05	DROP CEILING. CONTRACTOR SHALL RECESS MOUNT DEVICES IN DROP CEILINGS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING.
E-00-06	HARD CEILING. CONTRACTOR SHALL SURFACE MOUNT DEVICES AND CONDUITS. ALL WALL PENETRATIONS SHALL BE FIRE SEALED TO MAINTAIN WALL FIRE RATING.
E-01-01	ALL FIRE ALARM DEVICES SHALL BE VANDAL RESISTANT AND SHALL BE INSTALLED WITH TAMPER RESISTANCE HARDWARE.
E-01-03	NEW WEATHER PROOF EXTERIOR FIRE ALARM STROBE WITH 110 CANDELA RATING. CONTRACTOR SHALL MOUNT THE NEW DEVICE ON THE FRONT OF THE BUILDING SO THAT IT IS CODE COMPLIANT AND VISIBLE FROM THE CAMPUS ACCESS ROADS.
E-01-04	PROVIDE NEW FIRE ALARM ANNUNCIATOR PANEL. ANNUNCIATOR SHALL HAVE CAPABILITY TO TURN OFF THE AUDIBLE ALARM, IF CODE COMPLIANT. CONTRACTOR SHALL VERIFY WITH SFM (STATE FIRE MARSHAL) PRIOR TO INSTALLATION.
E-01-05	EXISTING SMOKE DAMPER. CONTRACTOR SHALL CONNECT NEW FIRE ALARM RELAYS TO EXISTING DAMPER. SMOKE DAMPERS SHALL BE PROGRAMMED TO CLOSE UPON THE ACTIVATION OF ANY SMOKE DETECTOR IN THE HALL OR AREA ALONG THE WALL WHERE THE DAMPER IS LOCATED. DURING INSTALLATION OF NEW RELAYS CONTRACTOR SHALL REPORT ANY ISSUES AFFECTING THE SUCCESSFUL OPERATION OF DAMPER TO OWNER AND ENGINEER. COORDINATE ALL INSTALLATION WORK ABOVE CEILING WITH OWNER.
E-01-08	NEW WEATHER PROOF EXTERIOR HORN.
E-01-17	EXISTING 30 AMP EXTERIOR LIGHTING DISCONNECT TO REMAIN.

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ELDORA STS FIRE ALARM SYSTEM REPLACEMENT PACKAGE

SCHOOL

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES

3211 EDGINGTON AVE. ELDORA, IA 50627

ADD 2 08/02/2019 ADDENDUM 2

DRAWN: RML
APPROVED: JW
ISSUED FOR: DD REVIEW
DATE: 06/21/2019
PROJECT NO: 4185221
CLIENT : #9060.00

SYSTEM RENOVATION - FIRST & SECOND FLOOR SCHOOL - SOUTH

01-E3.04

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