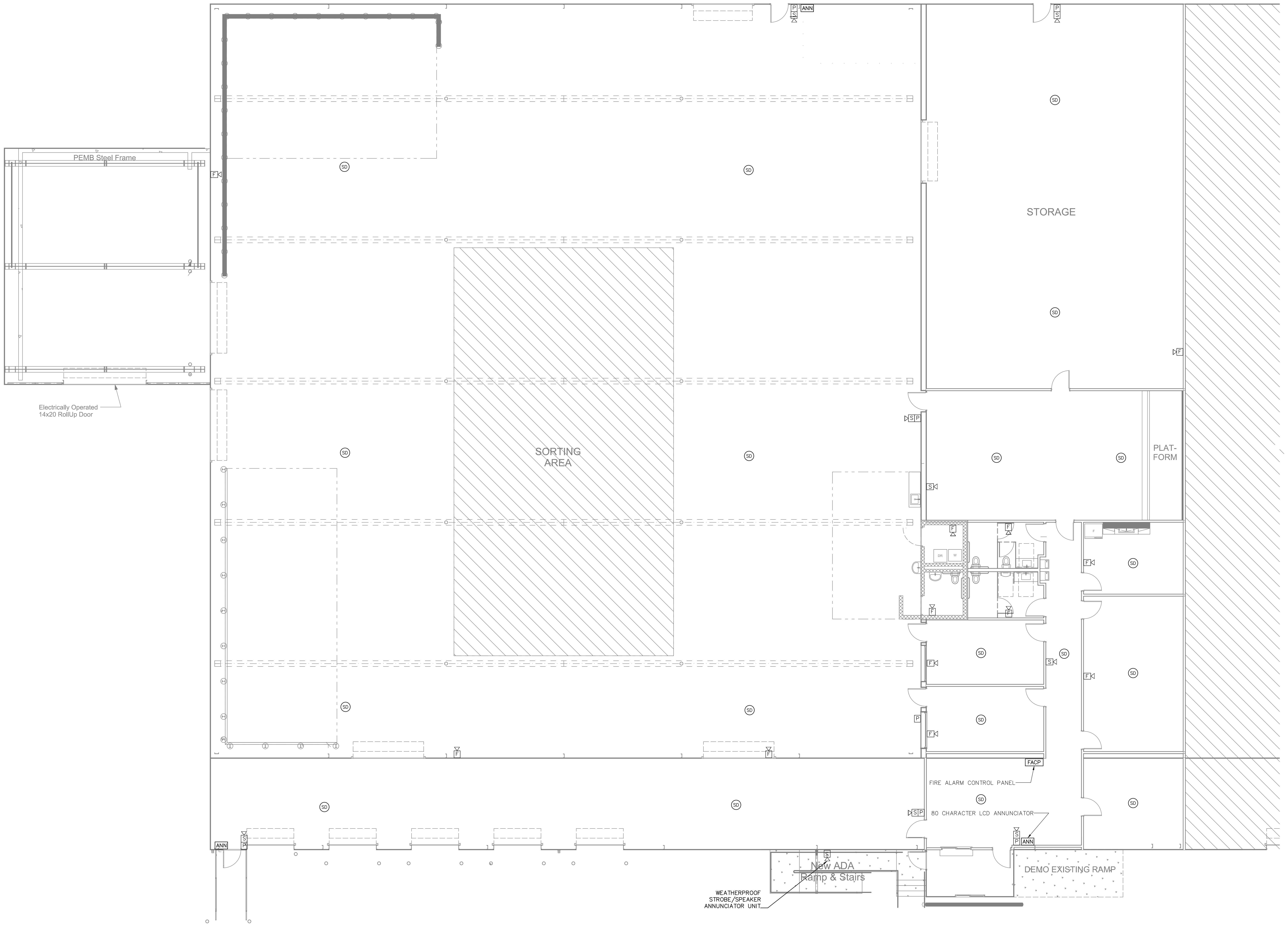

1 / E4.0 **FIRE ALARM PLAN**
SCALE: 1/8" = 1'

GENERAL FIRE ALARM NOTES - THIS SHEET ONLY

- CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE FIRE ALARM INSTALLATION AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO SUBMITTING BID. CHANGE ORDERS AFTER CONTRACTING WILL NOT BE ACCEPTED
- EQUIPMENT LOCATIONS AND CIRCUIT LOCATIONS SHOWN ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW THE INTENT OF THE DESIGN. COORDINATE FINAL LOCATION AND ROUTING WITH ACTUAL FIELD CONDITIONS
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT LAYOUT AND NOTIFY ARCHITECT OF ANY ITEMS NEEDING CLARIFICATION
- CONTRACTOR RESPONSIBLE FOR PROVIDING ALL MATERIAL AND LABOR FOR A COMPLETE AND FULLY FUNCTIONAL ELECTRICAL SYSTEM
- INSTALLATION OF FIRE ALARM SYSTEM IS TO BE DONE IN ACCORDANCE TO NFPA 72 AND NFPA 101
- VERIFY WITH OWNER ON ANY BRAND PREFERENCE FOR FIRE ALARM SYSTEM

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FIRE ALARM

PROJECT # **1715**
DESIGNER:
DATE: **08/08/2017**
REV. DATE:

E4.0

SECTION 13900 – FIRE SUPPRESSION

PART 1 GENERAL

1.1 SUMMARY
- A. Section includes complete fire suppression system including, as required, sprinkler system, fire department connections and fire pump system for sprinkling of the building.
- B. The Work is shown on the project architectural drawings.
- C. The intent of this specification is for the Contractor to determine, based on site visit(s) and the architectural drawings, the labor, materials, equipment, and other items necessary for a complete sprinkling of the building per NFPA 13. This determination includes, but is not limited to, the use of fire pumps, jockey pumps, fire hoses, stand pipes, and other fire suppression equipment for a complete sprinkling of the building. The Fire Suppression Contractor should base his bid on this determination.
- D. The information contained in the specification on fire pumps is intended to be a guide in the selection and installation of such fire pumps. If, based on hydraulic calculations and hydrant testing, a pump is deemed to be necessary; it is the responsibility of the Contractor to coordinate with other applicable trades, e.g. the Division 16 contractor, to provide a complete and functional fire suppression system installation.

1.2 SYSTEM DESCRIPTION
- A. Sprinkler System: Conform to the following criteria:
  1. Coverage for entire building.
  2. Design system hydraulically to achieve the hazard occupancy requirements set forth in NFPA 13.
- B. Fire Pump (where applicable): Conform to the following criteria:
  1. Description: Electric motor driven.
  2. Design to NFPA 20.
  3. System to achieve performance required by NFPA 13.
- C. The Contractor shall be responsible for coordinating with all other trades.
- D. The Contractor shall be responsible for obtaining all necessary inspections, permits, utility connections, and paying all required fees.
- E. Areas subject to freezing shall be provided with a dry pipe system.

1.3 SUBMITTALS
- A. Shop Drawings: Indicate detailed fire pump and jockey pump layout, pipe layout, supports, components, accessories, sizes, and hydraulic calculations. Drawings to be on a scale of 1/8"= 1'–0"showing all equipment and piping installed under this section. Shop drawings shall be given drawing numbers, which shall be retained through all revisions.
- B. All shop drawings submitted shall be approved by the Fire Marshall before submission to the Architect for approval. Submit sufficient prints for architect to retain three copies.
- C. Product Data: Submit data for pipe materials used, valves, manufacturer's catalog sheet for equipment indicating rough–in size, finish, accessories, pump type, capacity, power requirements, certified pump curves, and NPSH.

1.4 CHARTS AND TAGS
- A. Provide three (3) sets of charts or diagrams showing outline plan of the structures and the essential features of the systems including all piping, equipment, valves, and controls.
- B. All valves, dampers, and controls shall be designated

1.5 CLOSEOUT SUBMITTALS
- A. Project Record Documents: Record actual locations of sprinkler heads.
- B. Operation and Maintenance Data: Submit description of components of system, servicing requirements, record drawings, inspection data, and parts lists.

1.6 QUALITY ASSURANCE
- A. Perform Work in accordance with:
  1. Sprinkler Systems: NFPA 13.
  2. Standpipe and Hose Systems: NFPA 14.
  3. Fire Pump System: NFPA 20.
- B. Design fire suppression system under direct supervision of a NICET qualified fire protection system designer experienced in design of this Work and licensed at Project location.

PART 2 PRODUCTS

2.1 PIPE AND TUBE
- A. Steel Pipe: ASTM A135 black welded or seamless, schedule 40 or 10.
  1. Steel Fittings: ASME B16.9, wrought steel, butt welded; ASME B16.25, butt weld ends; ASTM A234/A234M, wrought carbon steel and alloy steel; ASME B16.5, steel flanges and fittings; ASME B16.11, forged steel socket welded and threaded.
  2. Cast Iron Fittings: ASME B16.1, flanges and fittings; ASME B16.4, threaded fittings.
  3. Malleable Iron Fittings: ASME B16.3, threaded type; ASTM A47/A47M.
  4. Water service underground pipe to building shall be as per site plans.

2.2 GATE VALVES
- A. Up to and including 2 inches: Bronze body and trim, rising stem, hand wheel, solid wedge or disc, threaded ends.
- B. Over 2 inches: Iron body, bronze trim, rising stem pre–grooved for mounting tamper switch, hand wheel, OS&Y, solid bronze or cast iron wedge, flanged or grooved ends.

2.3 BUTTERFLY VALVES
- A. Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, hand wheel and gear drive and integral indicating device, tamper switch.
- B. Iron body, iron or bronze disc, EPDM seat, wafer, lug, or grooved ends, extended neck, hand wheel and gear drive, integral indicating device, tamper switch.

2.4 CHECK VALVES
- A. Up to and including 2 inches: Bronze body and swing disc, rubber seat, threaded ends.
- B. Over 2 inches: Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends.

2.5 DRAIN VALVES
- A. Bronze compression stop with hose thread nipple and cap.
- B. Brass ball valve with cap and chain, 3/4 inch hose thread.

2.6 SPRINKLERS
- A. Sprinkler brand: Viking, Tyco.
- B. Suspended Ceiling Type: Semi–recessed pendant type with chrome plated finish and matching escutcheon.
- C. Exposed Area Type: Standard upright type with brass finish.
- D. Guards: Finish to match sprinkler head.

2.7 SPRINKLER PIPING SPECIALTIES
- A. Wet Pipe Sprinkler Alarm Valve: Check type valve with electrically or hydraulically operated alarms, with pressure retard chamber and variable pressure trim.
- B. Dry Pipe Sprinkler Alarm Valve: Check type valve with electrically or hydraulically operated alarms, with accelerator.
- C. Flooding Deluge Valve: Gate type valve, actuated electrically with electrically operated alarms, with alarm testing trim.
- D. Water Motor Alarm: Hydraulically operated impeller type alarm gong, red enameled.
- E. Electric Alarm: Electrically operated red enameled gong with pressure alarm switch.
- F. Water Flow Switch: Vane type switch with two contacts.
- G. Pressure Maintenance Pump: Close coupled motor and pump unit, with open drip proof, permanently lubricated, 115 volt, single phase, 60 Hz, motor.
- H. Air Compressor: Single unit, electric motor driven, ASME rated horizontal receiver tank, air pressure operated, safety valves, check valves, automatic tank drain, muffler–filter, belt guard, controls and 115 volt, single phase, 60 Hz motor.

2.8 STANDPIPE EQUIPMENT
- A. Hose Cabinet: Formed steel construction, prime coated; recessed mounted; 16 gage thick with 12 gage thick door; glazed door style, hinged with positive latch device. Fire rated when installed within fire rated assemblies.
- B. Hose Rack: Steel with polished chrome finish; swivel or stationary type with pins and water stop.
- C. Hose: 100 feet of 1–1/2 inch synthetic hose.
- D. Nozzle: Brass; combination fog–straight stream and adjustable shut–off nozzle.
- E. Hose Station Valves: Angle type, 1–1/2 inch nominal size with ball drip.
- F. Hose Connection Valves: Brass, chrome plated finish, 2–1/2 inch size, thread to match fire department hardware, threaded dust cap and chain.

2.9 FIRE DEPARTMENT CONNECTION
- A. Type: Post mounted type in vault with brass finish.
- B. Outlets: Two way with thread size to suit fire department hardware; threaded dust cap and chain of matching material and finish.
- C. Drain: 3/4 inch automatic drip.
- D. Label: "Fire Department Connection."
- E. Coordinate with local fire department on connection type before pricing job.

2.10 FIRE PUMP
- A. Pumps
  1. Type: UL 448 Centrifugal, direct connected.
  2. Casing: Cast iron, split case, single or double suction, rated for 150 psig or 1.25 times working discharge pressure, renewable bronze wearing rings, flanged suction and discharge.
  3. Impeller: Bronze, fully enclosed, keyed to shaft.
  4. Shaft: High–grade alloy steel with copper, bronze or stainless steel shaft sleeves.
  5. Bearings: Grease lubricated ball bearings.
  6. Drive: Flexible coupling with coupling guard.
  7. Seals: Packing gland with minimum four rings packing.
  8. Baseplate: High grade heat–treated cast iron or reinforced steel with integral drain rim.
- B. Accessories:
  1. Check valve in discharge pipe.
  2. OS&Y gate or butterfly valves on system side of check valve and on supply side of pump.
  3. Fire pump bypass fitted with OS&Y gate or butterfly valves and check valve.
  4. Relief valve.
  5. Pressure gages, suction and discharge.
  6. Temperature relief valve.
  7. Umbrella cock, automatic air release.
  8. Splash shield between pump and motor.
  9. Manifold with hose gate valves.
  10. Flow metering system for closed loop testing.
- C. Electric Drive: Squirrel cage type in open drip proof NEMA MG 1 enclosure, 208 volt, three phase, 60 Hz.
- D. Electric Motor Controls: Limited service type with reduced voltage starter.
  1. Alarm circuit for power failure.
- E. Operating Controls: Hand–off–automatic switch, fire water pressure switch to operate pump drive, fire water pressure switches for alarms, with indicating lights for low fire water pressure and high fire water pressure and contacts for remote circuits to indicate pump operational status and alarm status.

2.11 PRESSURE BOOSTER (JOCKEY) PUMP
- A. Electrically operated, positive–displacement pressure booster pump, pressure switch operated.

2.12 ELECTRICAL CHARACTERISTICS AND COMPONENTS
- A. Per Division 16.

PART 3 EXECUTION

3.1 INSTALLATION
- A. Install in accordance NFPA 13, NFPA 14, NFPA 20.
- B. Install Work in accordance with Fire Department, Fire Marshall, and local and state Building Inspection's standards.
- C. Ream pipe and tube ends to full inside diameter. Remove burrs and bevel plain end ferrous pipe.
- D. Remove scale and foreign material, inside and outside, before assembly.
- E. Install sleeves where penetrating footings, floors, or walls. Seal pipe and sleeve penetration to maintain fire resistance equivalent to fire separation of footings, floors, or walls.
- F. Install pipe runs to minimize obstruction to other work. Offset around ductwork.
- G. Install piping in concealed spaces above finished ceilings.
- H. Install gate valves for shut–off or isolating service.
- I. Install drain valves at main shut–off valves, low points of piping and apparatus.
- J. Connect system to water source ahead of domestic water connection with double check valve assembly.
- K. Install heads to coordinate with reflected ceiling plan. Center in two directions in ceiling tiles.
- L. Protection:
  1. Apply temporary tape or paper cover to sprinkler heads to protect from painting.
  2. Protect concealed sprinkler head cover plates from painting.
- M. Install air compressor on vibration isolators.
- N. Install drain piping from tank to nearest floor drain.
- O. Interface sprinkler system with building fire and smoke alarm system.
- P. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent Siamese connectors to allow full swing of fire department wrench handle.
- Q. Install drain piping from pump bases, pump stuffing boxes, and pump casings to floor sinks or drains. Install air vents on pump cases.
- R. Install long radius elbows on suction side of pump. Do not support piping from pump casing.
- S. Align base mounted pumps. Install on vibration isolators.
- T. On jockey pumps, install shut–off valves, check valve, and relief valves.
- U. Flush entire piping system of foreign matter.
- V. Hydrostatically test entire system. Schedule test to be witnessed by authority having jurisdiction.

END OF SECTION

SECTION 15401 – PLUMBING FIXTURES

PART 1 GENERAL

1.1 GENERAL
- A. Section 15010 is applicable.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN
- A. Fixture and accessory brands and model numbers shown below are intended to establish minimum acceptable quality. Models deemed by the engineer to be of inferior quality as compared to the Basis of Design will not be accepted. Equivalent fixtures and accessories by the manufacturers noted below are acceptable unless noted otherwise.
  1. Fixtures: Toto, Kohler, Crane, American Standard
  2. Sinks: Just, Moen, Kohler, Advance Tabco, Elkay, Toto
  3. Faucets: Toto, Delta, Kohler, Zurn, Symmons, Moen
  4. Supplies: Brasscraft, McGuire, ProFlo, Franklin Brass
  5. Water Closet Seats: Kohler, Toto, American Standard, Proflo, Bemis, Beneke
  6. Drinking Fountains: Elkay, Kohler
  7. Fixture Carriers: J.R. Smith, Zurn, Josam
  8. Floor drains: Watts, J.R. Smith, Josam, Zurn
  9. Indirect drains: Watts, J.R. Smith, Josam, Zurn
  10. Cleanouts: Watts, J.R. Smith, Josam, Zurn, Wade
  11. Hose Bibbs: Woodford, Chicago, T&S Brass
  12. Wall Hydrants: Josam, Woodford, Smith

PART 3 PLUMBING FIXUTURES:

3.1 SEE FIXTURE SCHEDULE

PART 4 EXECUTION

4.1 INSTALLATION
- A. Verify adjacent construction is ready to receive rough–in work of this section. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough in and installation. If discrepancies exist between millwork sizes and fixtures specified, contact Engineer for direction.
- B. All fixtures shall be installed straight, level, and plumb. When three or more of the same fixture are installed adjacent to each other, use equal spacing between fixtures.
- C. All fixtures and equipment shall be installed with all accessories required for a complete and fully functional installation, regardless of whether all equipment and accessories are listed on the plans or in the specifications.
- D. All vitreous china fixtures shall be bright white in color unless otherwise noted. Faucets shall be polished chrome unless otherwise noted. If these colors are unavailable, contact Engineer for approved alternatives.
- E. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons. All water and drain piping exposed to view shall be chrome plated. Piping underneath counters with closing doors need not be chrome plated.
- F. All handicapped fixtures shall be installed according to ADA and local code requirements. All handicapped drains shall be covered.
- G. All floors where floor drains are installed shall slope to drain, minimum 2%. This contractor shall coordinate with the applicable trades to ensure that the proper slope is achieved.
- H. Prime all floor drains. Where accessible, prime drain by water–saver trap primer from adjacent lavatory. Otherwise prime floor drain using water–valve type primer from domestic water supply. In lieu of water–based trap primers, PROVENT trap guards may be used where AHJ allows.
- I. All pressure operated fixtures and equipment shall be furnished with water stops. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.
- J. All hand washing fixtures shall have a delivered water temperature limit of 110 degrees F unless specified otherwise. This may be accomplished with a tempering valve at each device to maintain delivered temperature below 110 F. See plans for location of tempering valves as applicable.

END OF SECTION

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07/12/2017

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PLUMBING SPECIFICATIONS

PROJECT # **1715**
DESIGNER: JD

DATE: **07/12/2017**
REV. DATE:

P2.3