Moultonborough Community Center

Old Route 109
Moultonborough, NH

Schematic Design Short Form Specifications

January 13, 2022

Outline Specifications
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Not used

FIRE PROTECTION, PLUMBING, HVAC, ELECTRICAL

210500	Fire Sprinkler System
220500	Plumbing
230500	HVAC
260500	Electrical

OUTLINE SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

01010 – General

1. Scope of Work:

   New construction of a community center: Provide and perform all components of the work in a complete manner, with all normal accessories, for the intended use in fully functional condition.

   Perform all work in accordance with the International Building Code 2015, NFPA Life Safety Code 2015, New Hampshire Energy Code, ADA, and all other applicable local and state codes.

2. Schedule: TBD

3. Contract: The Contract Agreement shall be AIA A101/A201 *Standard Form of Agreement Between Owner and Contractor*, with *General Conditions of the Contract for Construction,* latest editions.

DIVISION 2 – SITEWORK

02011 – Structure Demolition

1. Section includes demolition and removal of above and below-grade construction.
2. Comply with governing EPA notification regulations before beginning demolition.
3. Demolish foundation walls and other below-grade construction within footprint of new construction and extending 5 feet outside new construction.
4. Completely fill below-grade areas and voids with material as indicated in the site civil specifications.
5. Clean, pack, and transport items indicated to be salvaged to the Owner.

02200 – Earthwork

1. Remove vegetation and strip topsoil within work limits. Protect trees and shrubs to remain from damage during construction operations.
2. Excavate to the depth required for structures and utilities. Remove all unsuitable materials. Should unsuitable materials be encountered under proposed structures, the Owner will engage the services of a certified geotech company to determine the course of action.
3. Backfill excavations with satisfactory soil material. Backfill foundations with drainage fill. Compact soil beneath structures and paving to a minimum of 95% of optimum dry density in accordance with AASHTO T99.

02513 – Asphalt Paving

1. Provide 2” asphalt base course (¾”aggregate size) and 1” finish course (½” aggregate size). Materials shall be NHDOT specifications, Section 401, Table 2.
2. Subbase: 18” deep. Shall be free of any organic materials, trash, and boulders over 12” in diameter. On-site material shall contain less than 40% fines (#200 sieve). Imported fill shall contain less than 30% fines.
3. Base: 12” deep. Material shall be gravel, NHDOT item 304.2, and 6” of crushed gravel, NHDOT item 304.3.
4. Compaction: Subbase and base materials shall be compacted in 12” lifts, to not less than 95% dry density in accordance with AASHATO T99.
5. Pavement markings: NHDOT standards, white, 4” wide.

02730 – Sanitary Sewerage

1. Provide a new sanitary septic system for the project in accordance with state and local standards.

02900 – Landscaping

1. Provide an allowance for trees, shrubs and flowers.

DIVISION 3 – CONCRETE

03310 – Concrete Work

1. All concrete construction to conform to ACI 318, “Building Code Requirements for Reinforced Concrete”, latest edition.
2. Provide 3000 psi concrete for footings, foundation walls and slabs on grade (exept where noted). Provide 4000 psi air entrained concrete for exterior pads.
3. Reinforcing bars: ASTM A615, Grade 60, deformed. Lap all continuous bars 48 diameters. Provide matching corner and intersection bars.
4. Concrete cover for reinforcing bars:
   Footings: 3”
   Foundation Walls: 1 ½”
   Slabs on Grade: 1 ¼” from top
   Piers: 2” to ties
   Pilasters: 1 ½” to ties
5. Welded wire fabric: ASTM A185. Lap 1½ squares at all joints and tie at 3’ c/c.
6. Provide Fibermesh reinforcing in slabs on grade.
7. Provide ‘Stego Wrap’ Class A vapor retarder under slabs, 10 mil thickness, as manufactured by Stego Industries LLC. Provide all accessories for a complete system, including ‘Stego Tape’ and ‘Stego Mastic’.
8. Admixture containing calcium chloride not allowed. For slabs which will receive moister sensitive adhered flooring products, provide ‘Barrier 1’ admixture as manufactured by Barrier One Inc.
9. Sealer: One coat “Sher-Crete” clear as manufactured by Sherwin Williams Company.
10. Control joints:
    Walls: 3/4” x 3/4” V strip, 30’ c/c max.
11. Finish: Interior slabs: steel trowel
    Exterior slabs: light broom
    Walls: form finish
12. Submittals: Concrete mix design certificates.

DIVISION 4 – MASONRY

04200 – Unit Masonry and Mortar

1. Normal Weight Concrete Masonry Units: Normal weight, ASTM C90 for bearing units, ASTM C129 for non-loadbearing units. Type 1, 1600 psi, 8” x 16” x width shown.
2. Light Weight Concrete Masonry Units: For non-loadbearing walls only; ASTM C331, 105 pcf, 800 psi, 8” x 16” x width shown.
3. Architectural Concrete Masonry Units: ground-faced and split faced as shown on the drawings.
4. Mortar: Type S, 1800 psi min: Portland cement Type I, ASTM C150; Hydrated Lime: Type S, ASTM C144; Aggregates: Well-graded sand, clean and dry, 10% passing No. 100 sieve; Water: Potable.

5. Grout: As per ASTM C476, 3000 psi, 8-10" slump: Portland cement Type I; Fine and Course Aggregates: Standard concrete type, ASTM C404, max 3/8", clean and well graded, free of contaminants. Water: Potable.
6. Joint reinforcement: Horizontal truss type, 9 gauge.
7. Through-wall flashing: Asphalt-copper fabric, 5 oz.
8. Control Joints: Pre-moulded PVC; H&B VS Series.
9. Cleaning Agent: Sure-Klean, VanaTrol, manufactured by ProSoCo Inc.
10. Loose Lintels: Hot-dipped galvanized steel.
11. Reinforcing Bar: Grade 60 steel, deformed.
12. Installation: As per the National Concrete Masonry Association.
13. Submittals: Product data, field mock-up panel, samples.

DIVISION 5 – METALS

05210 – Steel Joists

1. Provide open web steel joists with bridging, attached seats, and anchors.
2. Perform work in accordance with SJI Open Web Steel Joists.
3. Shop prime joists in accordance with SJI standards.
4. Provide A36 steel bearing plates and anchors for installation on existing foundation walls.
5. Adjust member spacing as required to accommodate piping.

05310 – Steel Decking

1. Provide Vulcraft acoustical roof deck over new steel roof joist system.
2. Provide pre-coated galvanized steel deck materials in accordance with ASTM A525, gauge as indicated.
3. Welding materials to conform to AWS D1.1. Weld washers to be mild steel, uncoated.
4. Provide deck accessories including metal closure strips, concrete stops and cover plates of 20 gauge galvanized steel.
5. Erect metal decking in accordance with SDI Design Manual for Form Decks.
6. Fasten deck to steel supports with fusion welds through weld washers.

DIVISION 6 – CARPENTRY

06100 – Rough Carpentry

1. Dimensional sawn lumber shall be NLGA grade #2 and better SPF, maximum moisture content 19%.
2. Manufactured lumber shall be by Weyerhaeuser as follows:
   - Beams and Headers: LVL or PSL
   - Columns and Posts: PSL
   - Rim Joists: LSL
   - I Joists: TJI
3. Provide ½" APA structural rated wall sheathing and 5/8" APA rated structural rated roof sheathing. Subfloor panels shall be ¾" T&G "Advantech".
4. Provide pressure treated Southern Pine where in contact with concrete or roofing materials.
5. Flush-framed connections shall be metal beam or joist hangers, manufactured by Simpson Strong Tie Inc. or equal.
6. Provide DuPont "Tyvek" air infiltration barrier on all exterior wall surfaces scheduled to receive new siding.
7. Install rough carpentry work in accordance with the *Wood Frame Construction Manual* by the American Wood Council (ANSI/AF&PA WFCM, current edition) and *IBC 2009* Chapter 23. Provide fasteners in accordance with the *Manual* and *IBC* Code requirements.

8. Install Zip panel sheathing with tapes and accessories in strict accordance with manufacturer's instructions.

06150 – Finish Carpentry

1. Section includes: Exterior trim and porch ceilings (see section 07465 for Fiber-Cement Siding).
2. Porch ceiling material: Douglas Fir, 5/8" x 4", C+Btr, VG, E+CB, clear finish.
3. Trim and painted siding materials: Solid cellular PVC: Kleer or equal, field painted.
4. Installation: trim with Stainless steel nails spaced as per the manufacturer's written instructions.

06161 – Insulating Sheathing

1. Scope: Composite insulating structural sheathing for exterior walls.
2. Basis of design: Provide sheathing products as manufactured by Hunter Panels, Portland, ME.
3. Panels:
4. Fasteners: As recommended by the manufacturer.
5. Installation: In strict accordance with manufacturer's written instructions and Chapter 34 of the *IBC*. Insulating sheathing shall be structurally rated as shear and braced walls and shall have all panel edges solid blocked.
6. Warranty: 30 years.

06192 – Shop Fabricated Wood Trusses

1. Provide roof and floor trusses manufactured in accordance with ANSI/TPI 1- *National Design Standard for Metal Plate Connected Wood Truss Construction.*
2. Provide engineering by the truss manufacturer to comply with *IBC International Building Code* structural loads as amended by the *State of New Hampshire Building Code*. Designs shall be stamped by a licensed Structural Engineer registered in the State of New Hampshire.
3. Lumber materials shall be identified by grade mark, with a maximum moisture content of 7%.
4. Metal connector plates shall be manufactured by a TPI member plate Manufacturer and shall be not less than 20 gauge, ASTM A653/A653M, grade 33, with galvanized coating in accordance with ASTM A924/A924M, coating G60.
5. Provide trusses with live load deflection characteristics of less than L/360.
6. Install trusses in strict accordance with TPI and Manufacturer's standards.
7. Provide lateral bracing in accordance with the drawings.
8. Provide metal hurricane tie down clips at each roof truss bearing point: Simpson or equal.
9. Submittals: Truss design drawings, layout drawings, calculations.

06300 – Wood Treatment

1. Lumber and plywood indicated to be fire retardant shall be pressure treated with fire retardant chemicals manufactured by Koppers "Dricon FRT", or approved equal and shall conform to requirements of local authorities having jurisdiction. Treatment shall provide a Fire-Hazard Classification equal to 25 for flame spread, smoke developed and fuel contributed.

06400 – Architectural Woodwork

General
1. Scope: Interior trim and wood veneer cabinets and plastic laminate countertops
2. Architectural Woodwork to conform to AWS "Custom" standards.
3. Grades for transparent finish:
   Lumber: Grade I.
   Wood veneer: Grade A, bookmatched.
4. Grades for opaque finish:
   Lumber: Grade II.

5. Composite woods:
   MDF: ANSI A208.2, Grade MD
   Particleboard: ANSI A208.1, Grade M2
   Hardwood Plywood and Face Veneers: HPA HP-1.
6. High pressure laminate: NEMA LD 3. Adhesive: Resorcinol.
7. Thermoset Decorative Overlay: Melamine decorative paper complying with LMA SAT-1.

Interior Standing and Running Trim

1. Lumber:
   Softwood Lumber: Douglas Fir, plain sawn, clear satin finish in accordance with 09900.
   Hardwood Lumber: Red Oak, quartersawn, clear satin finish.
2. Panel Products:
   Softwood Plywood: Douglas Fir, plain sawn, veneer core, clear satin finish.
   Hardwood Plywood: Red Oak, quartersawn, clear satin finish.
   High Pressure Decorative Laminate: Formica, Wilsonart, or equal.
3. Profiles:

Window and Door Jamb Casing:	GWB returns
Window and Door Head Casing:	GWB returns
Window Stool:	1x bullnose, projecting ¾" beyond apron on all three sides
Window Apron:	none
Chair rail in Corridors And Function Room:	1x3 with 1x2 bullnose cap and ¾" scotia apron

4. Casing joinery: Glued with biscuit or pocket screw attachment.

Architectural Cabinets

1. Scope: Wood veneer base and wall cabinets, plastic laminate countertops, closet shelving.
2. Lumber:
   For exposed surfaces: Douglass Fir, plain sawn.
   For semi-exposed and concealed surfaces: Birch, plain sawn.
3. Panel Products (Wood Veneer Cabinets)
   For exposed surfaces: Hard White Maple faces, rift sawn, veneer core.
   For semi-exposed and concealed surfaces: Birch, rotary sawn.
4. Cabinet Style: Frameless, full overlay.
5. Cabinet Hardware as per BHMA 159.9:

Frameless Concealed Hinges:	B01602, 170 degree opening
Wire Pulls:	Back mounted, 4" x 5/16" dia.
Shelf Rests:	B04013
Drawer Slides:	Side mounted, full extension, B05091
Grommets:	2 inch OD, plastic
Shelving Brackets and Standards:	Knape and Vogt, heavy duty, clear anodized aluminum finish
Wall hung countertop brackets:	Rakks aluminum, powder coat white
Locks	CR Laurence Cabinet Lock
Finishes:	BHMA 626

6. Countertops: HPDL, 1 1/8" particleboard core (water resistant where sinks are located) with exposed maple edge, chamfered. Provide ¾" x 4" plastic laminate back and side splash.
7. Wall-hung countertop brackets: mill finish aluminum as manufactured by Rakks Inc., EH series, spaced 32" c/c.
8. Shop finish: Conversion varnish, satin.
9. Submittals: Shop drawings, samples and product data.

Closet Shelving

1. Provide shelving as indicated on the drawings.
2. Material: ¾" Veneer Core plywood. Face and back veneer species: any Group 1 species, plain sliced, A-C INT APA, exterior glue, hardwood edge banded.
3. Finish: Conversion varnish, satin.

4. Provide brackets and standards as manufactured by Knape and Vogt, Grand Rapids, MI:
   Regular Duty: 70/170 Series
   Heavy Duty: 83/183 Series

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

07110 – Foundation Waterproofing, Insulation, and Finish System

1. Provide "Horizon" Foundation system as manufactured by Tremco at Gym exposed foundation walls which support CMU bearing walls.
2. System components:
   Waterproofing: "Tuff-N-Dri" liquid applied waterproofing membrane
   Insulation: R10 "Thermopanel" rigid fiberglass board mechanically fastened to foundation
   Finish: "Horizon Coat" spray-applied exterior finish on all exposed surfaces, matte
3. Warranty: 30 years.

07200 – Building Insulation

1. Provide building insulation as shown on the drawings meeting the criteria set forth in this section.
2. Fiberglass batts: Unfaced or Kraft faced as indicated, high-performance: ASTM 665: CertainTeed or equal.
3. Fiberglass sound attenuation batts: Unfaced: ASTM C665: Certainteed or equal.
4. Thermal Closed Cavity Blowing Insulation: CertainTeed OPTIMA Loose Fiber Glass Insulation for Closed Cavity Applications. Fiber glass blowing insulation for use behind OPTIMA non-woven fabric in sidewalls, cathedral Ceilings, floored attics and other closed cavity applications. Complies with ASTM C 764; mineral fiber loose fill insulation Type 1:

   Compression Filled Application: Sidewalls, Cathedral Ceilings and other closed cavities:

   Thermal Resistance: R of 15
   Density 1.8
   Thickness: 3-12 inches (2 by 4)

   Thermal Resistance: R of 23
   Density 1.8
   Thickness: 5-12 inches (2 by 6)

   Sheet Retarder: CertainTeed MemBrain, polyimide film vapor retarder. Material has a permeance of 1 perm or less when tested to ASTM E 86, dry cup method and increases to greater than 10 perms using the wet cup method.
5. Mineral Fiber Insulation for Thermal Barrier: Glass or other inorganic fibers and resinous binders formed into flexible blankets, batts or rolls; ASTM C 665. Kraft faced type may be used to facilitate installation.
6. Extruded polystyrene: ASTM C 578, Type VII for under-slab conditions, Type IV for all other areas.
7. Polyisocyanurate: Faced, ASTM C 1289, Type II.
8. Provide moulded polystyrene insulation baffles to maintain minimum 2" ventilation space at eaves.
9. Provide sill seal insulation between top of foundation wall and wood plates.

07209 – Mineral Wool Insulation

1. Basis of Design: "RockWool Premium Plus" as manufactured by American Rockwool Manufacturing LLC, Plano, TX.
2. Wall Spray application: Flame Spread 0, Smoke Developed 5
   a. Density: 4 pcf
   b. R value: 4.14/inch

3. Loose Blow Attic: Flame Spread 0, Smoke Developed 0.
    a. Density: 1.7 pcf
    b. R value: 3.39/inch
4. Semi-Rigid mineral wool insulation for general purpose: ASTM C612, Type IVA, R4.2/inch, unfaced.
5. Submittals: Product data
6. Warranty: Manufacturer's standard.

07250 – Weather Barriers

1. Section includes weather barrier membrane, seam tape, flashing, and fasteners.
2. Basis of design: "Tyvek Commercial Wrap D" spunbonded polyolefin weather barrier, as manufactured by DuPont.
3. Accessories:

Seam Tape:	3" DuPont Tyvek tape
Fasteners:	As produced by the manufacturer for the specific conditions
Sealants:	Elastomeric polymer type, ASTM C920: DuPont Commercial Sealant
Adhesives:	as recommended by the manufacturer
Primers:	as recommended by the manufacturer
Flashing:	As produced by the manufacturer for the specific conditions

4. Installation: As per manufacturers written instructions.

07270 - Fluid Applied Non Permeable Air Barrier Membrane

1. Basis of Design: "Air'Bloc 06WB as manufactured by Henry Company, El Segundo, CA.
2. Transition membrane for openings, corners and other transitions: HE200 AM metal Clad as manufactured by Henry.
3. Through-wall flashing membrane: Blueskin TWF as manufactured by Henry.
4. Provide primers and other accessories as produced by the manufacturer.
5. Installation: in strict accordance with manufacturer's written instructions and specifications.
6. Warranty: 10 Years.

07280 – Air Sealing

1. Provide air sealing to supplement and provide continuity of the main or primary air barrier assembly, including the bridging, sealing and/or filling of perimeter of building components and systems such as, but not limited to: door and window openings, crevices, roof-wall connections, mechanical and electrical penetrations in walls, floors and roofs, window and curtain wall, mullions, beam and column enclosures, and voids in walls.
2. Air seal at openings in walls, floors and roofs at mechanical and electrical penetrations, openings at each floor level in shafts or stairwells, and penetrations through construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating item.
3. MATERIALS (materials are based on those produced by Dow Chemical Company):

    A. CLASS A - Insulating air sealant: Polyurethane Foam: Two-component chemically-cured spray-applied polyurethane foam with the following characteristics:

        FROTH-PAK™ Foam Sealant.

    B. Foamed-in-Place Sealant – General Purpose Type: single-component polyurethane sealant. Gun-applied and Straw-applied products, Thermal Value R3.5 per inch.

        GREATSTUFF PRO™ Gaps & Cracks Insulating Foam Sealant. Clean substrate per manufacturer's recommendations.

    C. Foamed-in-Place Sealant – Low Foaming Pressure: single-component polyurethane sealant low expansion pressure specifically designed for window and door application. Gun-applied and Straw-applied products, Thermal Value R3.5 per inch.

GREAT STUFF PRO™ Window & Door Insulating Foam Sealant. Clean substrate per manufacturer's recommendations.

4. INSTALLATION

   A. Install materials in strict compliance with manufacturer's written installation instructions.

   B. Provide continuity with the air barrier systems by sealing the following areas within the construction and construction assemblies. Please note that these areas are typical in nature and does not limit the application of these products to these noted areas but any and all details within the construction that present similar air leakage characteristics should receive similar applications:

      1. Various roof locations including penetrations of all kinds and roof to fascia junctions.
      2. Window head, jamb and sill areas at cavity walls and framed walls.
      3. Various roof areas including sloped roof/wall junctions, penetrations of all kinds and roof/wall junctions.
      4. Junction of roof air/vapor barrier and wall air/vapor barrier.
      5. Junctions at mechanical equipment located on the roof.
      6. Provide reduced air leakage into and out of building(s) by sealing gaps, leaks and holes in interior and exterior construction

   C. Ensure continuity of air and vapor seal between wall and window and door frames in accordance with the requirements of CSA A440.4 Windows standard.

   D. Inspect roof perimeter for air leakage paths such as the fluted deck itself, truss and structural beam penetrations above and below the top of the wall, open mortar joints, and conduit and pipe penetrations. Use smoke tester kits to identify and locate leakage.

<u>07311 – Asphalt Shingles</u>

1. Provide laminated asphalt shingles with Class A fire rating and limited lifetime warranty: CertainTeed "Landmark Premium", or equal.
2. Provide membrane under all shingles: WR Grace "Ice and Water Shield" or equal.
3. Provide 5" .032" aluminum edge at eaves and rakes.
4. Provide .019" aluminum flashing at roof/wall intersections.
5. Provide continuous ridge ventilator: 'Shingle Vent II' by Air Vent or equal.
6. Install roof shingle valleys in the 'closed cut' method.
7. Follow manufacturer's written specifications and installation instructions.
8. Submittals: Samples, installation instructions.

<u>07465 – Fiber-Cement Siding and Trim</u>

1. Scope: Factory finished siding panels, soffit panels, and accessories and trim.
2. Provide products as produced by James Hardie, Allura, or equal complying with ASTM C1186, Type A, Grade II.
3. Provide products which have a smooth texture.
4. Factory finish: Factory primed and finished with 100 percent acrylic solid color.
5. Nailing: Stainless steel.
6. Install in strict accordance with manufacturer's written specifications and installation instructions.
7. Submittals: Product data, samples, installation methods.
8. Warranty: 50 year limited siding warranty, 15 year limited paint warranty.

<u>07530 - Flexible Sheet Roofing System</u>

1. Provide complete 60 mil reinforced TPO fully adhered roof membrane system as indicated.

2. Basis of Design: “Ultraply Platinum” TPO Roofing system as manufactured by Firestone Building Products LLC, Carmel, In.
3. The roofing system shall be installed by a roofing applicator authorized by the manufacturer.
4. Provide assembly having Underwriters Laboratories, Inc. (UL) Class A Fire Hazard Classification.
5. Insulation: Provide rigid polyisocyanurate roof deck insulation, 25 psi, as indicated on drawings and as manufactured by the roofing manufacturer, tapered where required.
6. Protection board: Dens-Deck as manufactured by Georgia Pacific.
7. Walkway pads: Provide walkway pads by the roofing manufacturer, adhered to the roof membrane, in locations shown.
8. Curb and Parapet Flashing: Same material as membrane, with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice; precut to 18 inches (457 mm) wide.
9. Miscellaneous flashings, sealers, sealants, termination bars: as produced by the roofing manufacturer.
10. Installation shall be in strict accordance with the manufacturer’s written specifications and installation instructions.
11. Submittals:
    a. Provide membrane manufacturer's printed data sufficient to show that all components of roofing system, including insulation and fasteners, comply with the specified requirements and with the membrane manufacturer's requirements and recommendations for the system type specified; include data for each product used in conjunction with roofing membrane.
    b. Where UL or FM requirements are specified, provide documentation that shows that the roofing system to be installed is UL-Classified or FM-approved, as applicable; include data itemizing the components of the classified or approved system.
    c. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.
12. Shop Drawings: Provide:
    a. The roof membrane manufacturer's standard details customized for this project for all relevant conditions, including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, and drains.
    b. For tapered insulation, provide project-specific layout and dimensions for each board.
13. Warranty: Provide Firestone 30 year Platinum Red Shield Limited Warranty for wind uplift coverage for a wind speed of 90 mph.

07840 – Firestopping

1. Basis of Design: Provide complete firestop systems as manufactured by Hilti. Inc., Tulsa, OK.
2. Provide fire-tested firestop systems to maintain the integrity of fire-rated construction.
3. Materials to comply with UL and ASTM testing procedures for through-penetration firestop, fire barrier systems, and other Code-required systems.
4. Provide systems from a single manufacturer throughout the building.
5. Provide products and systems which meet F, T and W ratings as required.
6. Install materials in strict accordance with manufacturer’s written specifications and instructions.
7. Warranty period: 2 years from the date of Substantial Completion.

07842 – Fire-Resistive Joint Systems

1. Section includes fire-resistive systems for floor-floor, floor-wall, wall-wall, and head-of-wall joints.
2. Provide products for each joint system as manufactured by Tremco Inc. USG, or equal.
3. System shall comply with the requirements of the applicable UL listing.
4. Install materials in strict accordance with manufacturer’s written specifications and instructions.

07900 – Joint Sealers:

1. Scope: Provide joint sealers as indicated and as required at:

Exterior joints:
- Between dissimilar materials, such as door and window frames an louvers
- Control and expansion joints
- Concrete and masonry
- Thresholds

Interior joints:
- Perimeters of exterior openings
- Control and expansion joints
- Control joints in wall and floor tile
- Penetrations in acoustical and smoke barrier construction
- Countertops
- Masonry joints
- Perimeters of door and window frames

2. At exterior and interior movement joints: Tremco “Dymeric 240” multi-component polyurethane based elastomeric.
   At interior minimal movement joints and acoustical construction: Tremco “Acrylic Latex 834”.
3.
5. At interior joints at ceramic tile and plumbing fixtures: Tremco “Tremsil 200” silicone rubber.
6. Provide back-up joint fillers, bond-breaker tape, primers and cleaners as recommended by the manufacturer.
7. Installation: As per ASTM C1193 and ASTM C919.

DIVISION 8 – DOORS AND WINDOWS

08110 – Steel Doors and Frames

1. Provide doors complying with the requirements with the Steel Door Institute Specifications SDI-100. Fire rated door assemblies shall comply with NFPA 80, and shall have been tested in accordance with ASTM E152.
2. Interior doors: SDI-100, Grade II, heavy duty, model 1, min 18 gauge faces, 14 gauge stiles and 16 gauge closures, with reinforced, stiffened and sound deadened core of polystyrene foam or impregnated Kraft honeycomb.
3. Exterior doors: SDI-100, Grade III, extra heavy duty, model 2, min 16 gauge galvanized faces, with an insulated core, max U value 0.24 in accordance with ASTM C236.
4. Exterior steel frames: 14 gauge hot-dipped galvanized cold-rolled steel, mitered, continuously welded and ground smooth.
5. Interior steel frames: 16 gauge cold-rolled steel, mitered, continuously welded and ground smooth. Provide 3 silencers on all non-weatherstripped frames.
6. Frame reinforcement: Provide 7 gauge hinge reinforcement, 12 gauge closer reinforcement, and 14 gauge lock reinforcement. Provide .042 in floor anchors.
7. Jamb anchors: Masonry: Adjustable strap or stirrup T-shaped. Stud Wall: designed to engage stud, welded to back of frames, .042 in thick min.
8. Finish: All doors and frames to be shop primed, field finished.
9. Submittals: Door and frame schedules, elevations, and installation details.

Install doors and frames in accordance with SDI-100, and NFPA 80 for fire-rated assemblies

08210 – Flush Wood Doors

1. Provide 5 ply bonded solid core doors with AWS ‘A’ Grade veneer, AWI ‘Custom’ grade.
2. Veneer: Hard White Maple, plain sliced, book matched, center balance matched.
3. Vertical edges: Same species as faces, no finger joints.

4. For doors scheduled to receive painted finish: 2 or 3 ply face panel construction each side over a solid core, edge bonded to stiles and rails. Provide AWS Custom Grade rotary cut birch face veneers. Provide close-grain hardwood for exposed edges and all other solid wood components.
5. Core: Provide AWS core types as follows:

   Non fire rated: PC (Grade 1-LD-2)
   Non fire rated: SCL (for doors with panic devices)
   Fire rated: FD as applicable for fire rating

   Provide solid lumber rails in doors scheduled to receive closers.

6. Lite frames and louvers: Provide flush solid wood stops to match face species.
7. Finish: Factory finish, TR-6 catalyzed polyurethane, satin sheen, selected from manufacturer's standard clear finishes.
8. Submittals: Door schedules, elevations, samples.
9. Warranty: Life of installation.

08415 – Aluminum Entrances and Storefront

1. Provide aluminum entrances and thermal break aluminum storefront as shown on drawings.
2. Manufacturers: EFCO, Portal, Kawneer, or equal.
3. Storefront style: Aluminum framed. Aluminum members: ASTM B209, ASTM B221, ASTM B429.
4. Door style: Medium stile and rail.
5. Finish: Clear anodized.
6. Provide the following standard hardware as scheduled:
   Rim touch bar panics
   Latchset
   Lever Handles
   Removable mullions
   Full mortise, 5 knuckle ball bearing brass hinges, non-removable pins
   Surface mounted closers
   Push-pull set on interior pairs of Vestibule doors
7. Installation shall be in strict accordance with manufacturer's written instructions and with AAMA (American Architectural Manufacturer's Association) publication "Installation of Windows and Doors in Commercial Buildings".
8. Warranty: 5 years from date of Substantial Completion.
9. Submittals: Product data, shop drawings, operation and maintenance data.

08430 – Automatic Door Openers

1. Scope: Provide automatic door openers at Main Entrance and Function Room entrance doors and vestibule doors.
2. Units are based on "HD Swing Type 4100' as manufactured by Horton Automatics. Unit is surface applied and shall be mounted on the inside of outswing doors.
3. Provide Basic Sensor System and guide rails as required.
4. Installation shall be by an installer certified by the manufacturer and AAADM in strict accordance with the manufacturer's written instructions.
5. Warranty: One year manufacturer's and distributor's warranty.
6. Submittals: Product data, installation instructions.

08540 – Fiberglass Windows

1. Basis of Design: Wood-Ultrex windows as manufactured by Marvin Windows and Doors, Fargo, ND.
2. Window types: Sliding.
3. Characteristics:

Cladding color:	White
Frame and Sash:	Clear pine interior, field finished; Pultruded fiberglass exterior
Glass:	Low E II insulating with Argon
Lites:	Simulated Divided Lites with spacer bars
Hardware:	Satin nickel finish
Screen:	Aluminum, with charcoal aluminum wire

4. Installation shall be in strict accordance with manufacturer's written instructions and with AAMA (American Architectural Manufacturer's Association) publication "Installation of Windows and Doors in Commercial Buildings". Provide perimeter flashing system with prefabricated corners and sill pan: Grace Vycor.
5. Screens: aluminum mesh.
6. Warranty: 10 years from date of Substantial Completion.
7. Submittals: Elevations, installation details, RO, glazing type.

08710 – Finish Hardware

1. Hardware finishes to be US 26D, brushed chrome.
2. Provide hardware in compliance with NFPA 80 for fire rated openings.
3. Butts: 5 knuckle ball bearing, non-rising pins. Provide non-removable pins on exterior doors.
4. Continuous hinges: Provide Hager series 780 "Roton" continuous geared hinges at all exterior doors. Hinges to be Heavy Duty, concealed.
5. Locks: Schlage AL Series cylinder type at interior doors, 'Jupiter' lever trim. Provide Schlage L Series mortise type at exterior doors, '07' lever trim. Provide removable cores keyed as per Owner's requirements.
6. Door Closers: LCN 4040, mounted on less visible side of door.
7. Panic Devices: Von Duprin 22 Series. Provide fire exit devices where located on fire rated doors. Provide rim device where mullions are called for, surface mounted vertical rods elsewhere. Provide standard outside lever with keyed cylinder. Provide electric devices where electronic access is called for.
8. Push/Pull: Ives #8300 Push Plate, 4" x 16"; Ives #8190 Pull, 12". Bar type: Ives #9190 with 12" pull.
9. Kick Plates: .050" thick stainless steel, 10" high x door width minus 2".
10. Thresholds: Pemko, thermally broken aluminum at exterior doors, ADA compliant.
11. Weatherstripping: Sweeps: Pemko 18062 mounted on pull side; Weatherstripping: Pemko 303; Smoke Seal: Pemko S88.
12. Submittals: Product data, schedules.

08800 – Glass and Glazing

1. Section includes glazing for windows, doors, glazed openings, and mirrors. All glass to meet or exceed the requirements of Federal Specification DD-G-451.
2. Products:
   Annealed float glass: ASTM C1036, Type I, quality Q3; Class 1.
   Heat strengthened glass: ASTM C1036 and ASTM C1048. Provide where required by Code.
   Tempered glass: ASTM C1036 and ASTM C1048, permanently marked with certification label of the SGCC. Provide where required by Code.
   Wired Glass: ASTM E152, UL labeled. Provide where required by Code.
   Laminated glass: ASTM C1172, polyvinyl butyral interlayers, 6 mm total thickness, with permanent certification label. Provide where required by Code.
   Fire Glass: Provide Pilkington Pyrostop as manufactured by Pilkington Group and distributed by Technical Glass Products, Snoqualmie, WA.

Thickness:	7/8"
VT:	88-75%
Fire Rating:	1 Hour as per UL 263 and ASTM E119
Glazing Compound:	As per manufacturer

Accessories and installation shall be in strict accordance with manufacturer's instructions and UL.

3. Insulating glass units to be 1" total thickness, with ¼" thick inner and outer panes and ½" air space. Provide Low E coating on #3 surface: PPG "Solarban 60". Provide tinted units as noted. Units to be filled with Argon gas as per ASTM E774. Provide a primary polyisobutylene seal and secondary polysulfide or silicone seal.
4. Fixed and sliding glass: Provide aluminum extrusions as manufactured by CR Laurence Co.

   Fixed lites: Provide low-profile extruded aluminum U shapes at head and sill. Provide 1/8" gap at glass sides without framing or sealant.

   Sliding lites: Provide CRL 'Masteroll Overhead Track System', complete with overhead track and fascia, hangers, rollers, and plastic guides at glass bottom.
   Locks: Showcase type.

5. GLAZING SCHEDULE

Exterior doors	Low E insulating glass, tempered
Storefront	Low E insulating glass
Interior doors	¼" float glass, tempered
Interior lites	¼" float glass, tempered as required by Code

6. Warranty: Insulating glass units: 10 years.
7. Submittals: Product information.

DIVISION 9 – FINISHES

09250 – Gypsum Board and Metal Stud Partitions

1. Scope: Gypsum drywall, gypsum sheathing, non-loadbearing metal stud framing systems, and associated components and finishing systems.
2. Provide gypsum products from one of the following manufacturers: USG, Domtar, Gold Bond, Georgia Pacific, or approved equal. Products of this section are based on USG.
3. Gypsum Board: Shall be in compliance with ASTM C1396/C1396M, thickness as indicated.
4. Moisture Resistant Gypsum Board: ASTM C1396/C1396M, with a mold resistance score of 10 in accordance with ASTM D3274. Provide in all spaces subject to moisture.
5. Taping Compounds: 'Sheetrock Taping Compound' and 'Sheetrock Topping Compounds' as manufactured by USG, in compliance with ASTM C475/C475M
6. Trim and Accessories: Made of galvanized steel sheet. Provide aluminum trim in areas subject to moisture.
7. Provide metal framing products and accessories from one of the following manufacturers: Marino/Ware, Superior, Dietrich, Uni-Mast, or approved equal.
8. Unless noted otherwise, provide 25 gauge galvanized cold-formed steel framing members, ASTM A446. Install in accordance with Gypsum Association recommendations and ASTM C754. Maximum allowable lateral deflection of interior partition framing shall be L/240 at 5 psf. Provide deflection head tracks 2 ½" deep, 20 ga min.
9. Install gypsum board in accordance with Gypsum Association publication GA-216 and ASTM C840. Provide level 2 finish at concealed non-fire-rated areas (tape set in compound at all joints; one coat of compound over fasteners), unprimed, level 4 finish at exposed areas (two coats compound over tape; three coats compound over fasteners), primed.
10. Provide control joints as recommended by the panel manufacturer. Provide where partition or ceiling spans exceed 30'.
11. 'Acoustical' partitions shall have stud tracks and bottom and top edges of gypsum board set in acoustical sealant. All wall penetrations to be sealed.
12. Provide thermafiber sound batts as indicated.

13. Fire rated partitions shall comply with the requirements of the specified UL tested assembly.
14. Submittals: Product data.

09511 – Acoustical Ceilings

1. Provide suspended acoustic panel ceiling systems with exposed grid.
2. System Standard:
   Panels: Armstrong “Fine Fissured Second Look”, 2’x4’x3/4”, #1761, white
   Grid: Armstrong 15/16” “Prelude ML”
   Height: As indicated
3. System for Bathrooms, Locker Rooms:
   Panels: Armstrong “Fine Fissured Ceramaguard”, 2’x4’x5/8”, #607, white
   Grid: Armstrong 15/16” “AL Prelude Plus XL”
   Height: As indicated
4. System for Kitchen:
   Panels: Armstrong “Fine Fissured Ceramaguard”, 2’x4’x5/8”, #605, white
   Grid: Armstrong 15/16” “AL Prelude Plus XL”
   Height: As indicated
5. Warranty: 10 years.
6. Submittals: Product data, samples.

09652 – Rubber Tile Flooring

1. Provide rubber tile flooring and rubber base as indicated.
2. Rubber Tile: ASTM F-1344, Type IB, Grade 2. Basis of design: “Norament Grano” .14” thickness with hammered surface, as manufactured by Nora Systems, Salem, NH.
3. Rubber Base: FS SS-W-40, Type I; 4 inches high, 1/8 inch gage; with matching preformed external corner units. Style: Cove wall base with standard toe.
4. Adhesive and Filler/Wall Patch: As recommended by the base manufacturer for the type of substrate indicated.
5. Resilient Edge Strips: Homogeneous vinyl; not less than one inch wide, 1/8 inch gage; tapered bullnose edge. Color/Pattern: Matching floor tile.
6. Provide 5% of the installed flooring as attic stock.
7. Submittals: Product data, samples.

09704 – Epoxy Flooring

1. Provide epoxy flooring at Kitchen.
2. Flooring is based on Series 222 Deco-Tread Epoxy Flooring System as manufactured by Tnemic Company, Inc., Kansas City. MO.
3. Tnemec Series 222 Epoxy Flooring System to consist of the following:
   a) Saturating Prime Coat: Tnemec Series 201 100% Solids Epoxy Primer/Sealer.
   b) Intermediate Coat: Tnemec Series 222 100% Solids Epoxy with color quartz broadcast to rejection (times two).
   c) Topcoat: Tnemec Series 222 clear epoxy.
4. Follow manufacturer’s written specifications and installation instructions, including subfloor preparation and moisture testing and mitigation procedures.
5. Installer shall be approved by the manufacturer
6. Installed thickness: 1/8”.
7. Provide 4” epoxy wall base.

09750 – Polyurethane Athletic Flooring

1. Provide athletic flooring in the Gym.
2. Basis of Design: “Pulastic Classic 110” as manufactured by Robbins Inc.

3. Warranty: 25 years.
4. Base: Rubber.
5. Gamelines: Perimeter: Track. Main Court: Basketball, volleyball. Side courts: Basketball.
6. Installation: By a company certified by the manufacturer.
7. Submittals: Product info, color samples.

09775 – Fiberglass Reinforced Plastic Panels

1. Provide FRP panels at Mechanical Rooms 8’ high and at bathroom wet walls 4’ high.
2. Provide products equal to Kemlite “Glasbord-P”, pebbled finish.
3. Install panels by fully adhering to substrate with manufacturer’s standard adhesives and trim strips. Provide mechanical fasteners where required by the manufacturer.
4. Follow manufacturer’s written specifications and installation instructions, including subfloor preparation and moisture testing and mitigation procedures.

09900 – Painting

1. Provide best quality paint products of Sherwin Williams or approved equal. Provide primers by same manufacturer as finish coating at all bare surfaces. Prime coat is not needed on factory primed or previously painted surfaces. Apply paint in accordance with manufacturer's instructions, under conditions and at spreading rate recommended to achieve minimum dry mil thickness for system specified. Sand between coats. Provide coating of uniform color and sheen, without holidays, lap marks, streaks, sags, drips or show through of substrate. Apply additional coats as required if uniform finish is not achieved with specified number of coats. Owner will select colors from manufacturer's standards.
   Water Based Polyurethane for wood floors: “Streetshoe 275 Satin” as manufactured by Basic Coatings, Inc.
2. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair
3. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
4. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with solution of tri-sodium phosphate, rinse well and allow to dry.
5. Uncoated Steel and Iron Surfaces: Remove scale by wire brushing, sandblasting, and clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.
6. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Clean surfaces with solvent. Prime bare steel surfaces.
7. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
8. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.
9. Exterior Trim Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior paintable caulking compound after prime coat has been applied.
10. Exterior Wood Porch Ceilings Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.

PAINT SCHEDULE

The following paint schedule is based on Sherwin Williams paint products unless otherwise noted:

Application	Finish	System		Coats
INTERIOR:				
Drywall	Eggshell	Primer:	ProMar 200 Zero VOC Latex Primer B28W2600	1
		Finish:	ProMar 200 Zero VOC Interior Latex Eg-Shel B20-2600	2
CMU	Epoxy	Primer:	PrepRite Block Filler B25W25	1
		Finish:	Pro Industrial Pre Cat Epoxy Eg-Shel K45-151	2
Metal	Semigloss	Primer:	Pro-Cryl Universal Primer B66-310	1
		Finish:	Pro Industrial 0 VOC Acrylic Semi-Gloss B66-650	2
Wood	Clear	Stain	Oil Based Penetrating Stain	1
		Primer:	Oil Based Polyurethane Clear Finish (reduced 25%)	1
		Finish:	Oil Based Polyurethane Clear Finish Satin	2
Concrete Floors		Primer:	ArmorSeal Tread-Plex Primer B90	1
		Finish:	ArmorSeal Tread-Plex B90	2
Roof Joists and Deck		Finish:	Pro Industrial Acrylic Dryfall Flat B42-80	1
EXTERIOR:				
PVC	Satin	Primer:	Exterior Latex Primer	1
		Finish:	A-100 Exterior Latex Satin A82	1
Wood Ceilings	Stain	Primer:	Woodscapes Exterior Acrylic Solid Color Stain (Factory)	1
		Finish:	Woodscapes Exterior Acrylic Solid Color Stain	1
Metal	Satin	Primer:	Pro Industrial Pro Cryl B66-310	1
		Finish:	Pro Industrial Eg-Shel B66-660	2

DIVISION 10 – SPECIALTIES

10160 – Toilet Partitions

1. Provide solid plastic toilet partitions, floor mounted overhead rail braced, in configurations indicated, complete with anchors and hardware.
2. Units to be equal to products manufactured by Santana/Comtec/Capitol composed of HDPE material, 1” thick.
3. Door hardware, wall brackets and headrail shall be heavy-duty extruded aluminum 6463-T5 alloy. Headrail brackets shall be 20 gauge stainless steel.
4. Submittals: Product data, color samples, shop drawings showing plan and elevation layouts.
5. Warranty: 25 year manufacturer’s material warranty.

10180 – Operable Partitions

1. Scope: Operable panel partition in the Function Room.
2. Basis of Design: Manually operated Acousti-Seal 932 as manufactured by Modernfold, Inc., Greenfield, IN., 3" thick x 48" wide.
3. Final closure: Hinged panel.
4. Panel skin: ½" MR GWB, STC 41, with reinforced vinyl face with woven backing.
5. Hinges: full leaf butt.
6. Suspension system and sound seals: manufacturer's standard.
7. Installation: in accordance with manufacturer and ASTM E557.
8. Warranty: manufacturer's standard.

10440 – Interior Signs

1. Provide interior panel signs with raised vinyl lettering, ADA compliant, at all new spaces.
2. All signs shall be 1/8" thick opaque acrylic sheet or MP plastic material with matte finish and square polished edges and corners. Signs shall be height and length required, with 1" high Helvetica Medium characters, machine engraved background into sign surface to create 1/32" raised characters and pictograms with Grade 2 braille for all text. Background characters shall be of contrasting colors as selected by the Owner. Where room numbers, names and/or International Symbol of Accessibility (ISA) are required, they shall be on the same sign.
3. Sign types:
   Toilet Rooms: Identified as "Women" or "Men" or "Restroom", with 6"x6" International Symbol of Access where applicable. Provide pictograph symbol of men or women.
   Mechanical, Utility, Storage Rooms: Identify with room names at all doors.
   Building Entrance: Identify as "Entrance" with the ISA.
   "Exit" signs to be provided at exit stairs and exit doors, with the ISA.
   Installation: Strictly follow manufacturer's written specifications and installation instructions.

Signs shall be mounted 60" above floor to the center of the sign, within 18" of door latch jambs.

4. Submittals: Product data, shop drawings, samples.

10510 – Metal Lockers

1. Provide standard metal lockers with baked enamel finish as shown on the drawings.
2. Locker specifications:
   Size: 12" x12" x72"
   Body: Knock Down with 24 gauge solid body components
   Frame: 16 gauge with 16 gauge horizontal cross member
   Handle: seamless stainless steel
   Hinges: 16 gauge continuous piano hinge
   Hooks: 2 single and 1 double
   Shelf: Provide one
   Top: Flat
   Curb: 4" high
3. Warranty: 2 years.
4. Submittals: Product data, shop drawings.

10522 – Fire Extinguishers

1. Provide seven (7 total – 2 in the Gym) UL listed 2A:10BC multipurpose dry chemical fire extinguisher and semi-recessed cabinet as shown. Unit is based on Larsen as follows:

Fire Extinguisher	#MP5
Cabinet	#2409-5R, Horizontal Duo door style, laminated safety glass, aluminum, rolled edge

10810 – Toilet Accessories

1. Toilet and shower accessories shall be manufactured by Bradley Co., or approved equal. Provide the following:

Paper towel dispenser:	#250-15
Soap dispenser:	#6562
Toilet paper dispenser:	#5071
Mirror:	#780
Grab bars:	#812, safety grip finish

DIVISION 11 – EQUIPMENT

11660 – Gymnasium Equipment

1. Provide products as manufactured by Aalco Manufacturing, St Louis, MO.
2. Wall mounted fold-up backstops: Model 24-WS; provide (4).
3. Ceiling suspended forward fold backstops: Model 22-SF; provide (2).
4. Backboards, goals and nets: #501 backboard with protection pad, #28HS4 goal, net; provide (6).
5. Manual Hoist: Model K-500; provide (6).
6. Cushion panels: #440-602, 6’ high; provide (12).
7. Volleyball: Model SLS – 99P complete package.
8. Warranty: manufacturer’s standard.

DIVISION 12 – FURNISHINGS

12494 – Roller Shades

1. Scope: Window treatments for all windows except at the Gym.
2. Provide Sunscreen roller shades equal to Mechoshade as follows:
   Mounting: Surface mounted ‘Slimline Drive-End Bracket’ with fascia
   Configuration: Single solar shadecloth
   Fabric: ThermoVeil 3000 satin texture, visually translucent, dense twill-weave pattern at 2 percent open
3. Installation: In strict accordance with manufacturer’s written instructions.
4. Warranty: Hardware and Shadecloth: 25 years. Installation: One year from date of substantial completion.
5. Submittals: Product data, samples.

12660 – Telescoping Seating

1. Scope: Wall-attached telescoping seating in the Gym.
2. Basis of design: “Maxam 26 Series Telescopic Gym Seat System” as manufactured by Hussey Seating Company, North Berwick, ME.
3. Characteristics:
   a. Rise: 11 5/8”
   b. Aisle: foot level
   c. Seat type: 12” polymer
   d. Rail type: self storing end rails.
   e. Operation: manual

DIVISION 13 – SPECIAL CONSTRUCTION

13110 – Swimming Pools

1. Section includes shotcrete formed lap and therapy pools.
2. Work to conform to ACI 301 “Specifications for Structural Concrete” and ACI 506.2 “Specifications for Shotcrete”.
3. Shotcrete materials shall be as per ASTM C150, ASTM C33, and Course-Aggregate Class 3S, compressive strength 3,500 psi at 28 days. Apply as per ACI 506.2.
4. Surface finish: As per ACI 596R, ¼” coat of shotcrete using ACR 506R, Grade 1, fine screened sand with wood-float finish.
5. Waterstops: PVC type, CE CRD-C 572.
6. Pool coping: Precast concrete “waterfall” profile, 5,000 psi minimum.
7. Pool deck drains: Fabricated PVC as manufactured by Stegmeir LLC. Extend around entire pool perimeters.
8. Pool equipment: Provide a complete pool water filtration, sanitizing system and heating system as manufactured by Pentair Inc.
9. Provide Levelor electronic water leveling system as manufactured by Zodiac, Inc.
10. Provide the following:
    a. tiled lane markers with T’s and Targets.
    b. (3) access ladders and (1) access stair for each pool.
    c. Racing lane dividers for the lap pool.
    d. Pentair low-voltage lighting systems mounted in pool sidewalls.
    e. (2) ADA compliant pool lifts: “Ranger 2” pool lift as manufactured by Aqua Creek Products.

DIVISION 14 – VERTICAL TRANSPORTATION

Not Used

SECTION 210500

FIRE SUPPRESSION SYSTEM OUTLINE SPECIFICATION

1. SCOPE

A. Furnish all labor, materials, appurtenances, equipment, and services necessary and required to complete all sprinkler and related work as called for in these contract documents.

B. Provide a complete set of NFPA 13 working sprinkler drawings based on these specifications and the architectural plans. Reference architectural plans, sections and elevations.

C. Scope of Work

Provide wet and dry sprinkler piping, heads and supports for the entire community, activity and aquatic centre. Provide 40 HP – 500 GPM vertical fire pump, supply piping from underground cistern, 18,000 gallon fire water cistern with level control system, wet and dry pipe risers/valves, jockey pump and all necessary flow and tamper switches. There is attic space above the eastern wing of the facility (Sprinkler/Mech., Meeting Room, Game Room, Bathrooms, Adult Lounge, Function Room, Kitchen areas) and it will require a dry sprinkler system.

D. Anything called for in the specifications and not shown on the drawings, or shown on the drawings and not called for in the specifications, shall be included in the Contractor's work, the same as if included in both.

E. The work to be performed under this specification shall consist of all labor and materials, installing all materials, equipment and appurtenances and performing all operations necessary as shown on the drawings and hereinafter specified or as required to provide a complete and operable system. This shall include, but not necessarily limited to, the following:

1. Installation of Piping, Fittings, Valves, Hangers and Sprinkler Heads.
2. Installation of fire pumps and cistern.
3. Installation of wet and dry pipe risers.
4. Testing.

F. The term "Provide", when used in these specifications, shall mean "Furnish and Install".

G. The term "Furnish" shall mean to obtain and deliver on the job for installation by other trades.

H. When the term "Contractor" or "This Contractor" is used in this section of the specification, it shall be understood that it refers to the contractor responsible for all work under this section. Those responsible for work covered by other sections of the specification, will be referred to as "General Contractor" or simply by the term "Others".

I. The contractor shall be solely responsible for the verification of field measurements before ordering any materials or equipment, before making any installation or doing any work.

J. Any discrepancies which may be found shall be reported at once to the Owner for consideration and decision before proceeding with any work in the affected area.

K. Each contractor shall be held to have examined the site, drawings and specifications and all other contract documents.

L. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section, and within all construction scheduled target dates for project delivery.

M. Protect all material and equipment from damage until final acceptance. Close all openings, during construction, with temporary plugs. Provide new materials and equipment to replace damaged items without additional cost to the Owner.

N. Any required special tools or devices, other than those tools normally available to the maintenance or operating staff, shall be furnished to the Owner, suitably marked, packed or boxes for staff usage. The tools provided shall be listed by the contractor, identified as to their use or to the equipment to which they apply, in a written transmittal to the Owner.

O. All refuse material and rubbish that may accumulate from time to time during the progress of the project, as a result of the Contractor's work being performed under these specifications, shall be removed by him in order to keep the buildings and premises clean to the satisfaction of the Owner.

2. CODES AND PERMITS

A. All work performed, all equipment and materials installed under this contract shall be in strict accordance with the requirements of all governing codes and standards including,

but not limited to, the following:

1. NFPA 13 – Standard for the Installation of Sprinkler Systems (2016).

2. NFPA 101 – Life Safety Code (latest edition).

3. International Building Code (2015).

B. Contractor shall obtain and pay for all construction or installation permits and other certificates, and pay all inspection fees related to his work. He shall prepare specific plans as required by proper authorities before their acceptance of the work.

C. The entire installation shall conform with all pertinent codes and regulations of local, county and state authorities, NFPA, and any other regulatory body having jurisdiction over this class of work.

D. The contractor shall, before installing any work or materials, report any discrepancies between the applicable codes, rules or regulations as they pertain to the work, the drawings and the specifications to the Owner and obtain directions for procedure.

E. Coordinate the work under this section with the work of the other sections which are now or may later be engaged in work at this same site. Schedule all work so that there will be no delay in the proper installation and completion of any part or parts of each respective section wherein it may be interrelated with that of this contract so that generally, all construction work may proceed in its natural sequence without necessary delay.

F. Provide all identification signs for piping, control valves, main drain valves, auxiliary drains, test drains and all others including hydraulic design placard, as required by NFPA 13.

3. MATERIAL AND WORKMANSHIP

A. All materials shall be new and shall conform to the grade, quality and standard specified.

B. All work shall be performed in a neat and workmanlike manner by mechanics experienced in their trades in accordance with the drawings and specifications.

C. Coordinate the procurement of specified materials and equipment being supplied by subcontractors, manufacturers and vendors.

D. Provide all required items such as alarm bells, valves, drains, flow switches, etc., for a complete system.

4. SUBSTITUTION

A. Generally, the manufacturer or figure numbers first named in the specifications and/or listed in equipment schedules on the drawings, are the items that have been used as a base of design. Should equivalent items of other manufacturers be submitted and accepted, it shall be the Contractor's responsibility to make all necessary changes to the general construction, structural, heating, ventilating and air conditioning, plumbing and electrical systems, that are required by the use of the substituted items at no additional cost.

B. When one manufacturer or figure number is used for a given material or equipment, provide only such material or equipment.

C. Where sprinkler heads are substituted, the contractor shall verify adequate coverage and shall incorporate the specific hydraulic performance characteristics for the respective sprinkler heads, in the hydraulic calculations.

5. SHOP DRAWINGS

A. Drawings or manufacturer's literature with complete physical and performance data of all equipment to be furnished shall be submitted for approval before manufacture or fabrication.

B. Review of the shop drawings and submittals is limited to conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the project site, for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction, and for coordination of the work of all trades.

C. The approval of shop drawings shall not be construed as a complete check, but will only indicate that the general methods of construction and detailing are satisfactory and will not relieve the contractor of the responsibility of any error or omissions which may exist. The contractor shall be responsible for all dimensions, for the design of adequate connections and details and for the satisfactory operation, construction and coordination of all work.

D. Shop drawings shall be submitted in a timely manner to all contractors, subcontractors and/or any other entity which requires drawings for coordination of their work with the fire protection.

E. Submission of shop drawings shall include, but not be limited to the following:

1. Pipe, fittings and hangers.

2. Sprinkler heads.

3. Wet valve.

4. Dry valve.

5. Fire pump and jockey pump.

6. Fire water cistern and level control system.

7. Sprinkler system working drawings.

8. Hydraulic calculations.

F. Submit shop drawings, with each piece of equipment clearly labeled.

6. AS-BUILT DRAWINGS

A. As the work under construction progresses, the contractor shall make all necessary notations to prepare a set of as-built drawings.

B. The drawings shall indicate the size and location of all pipe and sprinkler heads.

C. Drawings of as-built conditions shall be submitted and approved before final payment will be made to the contractor.

7. COOPERATION WITH OTHER TRADES

A. The sprinkler contractor shall give full cooperation to other trades and shall furnish (in writing, with copies to the Owner) any information necessary to permit the work of all trades to be installed satisfactorily and with least possible interference or delay.

B. Where the work of the sprinkler contractor will be installed in close proximity to work of other trades or where there is evidence that the work of the sprinkler contractor will interfere with the work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Owner, the sprinkler contractor shall prepare composite working drawings and sections at a suitable scale clearly showing other trades. If the sprinkler contractor installs his work before coordinating with work of

other trades, he shall make necessary changes in his work to correct the condition without extra charge.

8. MATERIALS AND EQUIPMENT

A. All materials and equipment used in installation of sprinkler system shall be UL listed and approved and/or Factory Mutual Laboratories List of Approved Equipment listed and approved. All materials and equipment shall be the latest design of the manufacturer. Following materials shall conform to the respective specifications and other requirements as stated throughout this specification.

9. VALVES

A. All valves in fire protection system shall be FM approved. Provide supervisory switch in the OS&Y and butterfly valves.

B. At the Contractor's option, FM approved alternative valves with built in supervisory switches may be used.

C. All valves, checks, etc. shall be of the approved type, designed for not less than 175 psi W.W.P.

10. PIPING

A. Pipe shall be steel made to any one of the three specifications listed. Welding will not be permitted if there are any sprinklers connected thereto:

ASTM A53
ASTM A120
ASTM A135

B. Piping material may be schedule 10 (thin wall) provided joints are made by roll groove coupling. Threading will not be permitted.

C. Piping material may be schedule 40 with flanged, roll groove couplings or thread joints.

D. CPVC pipe and fittings may be provided in accordance with code.

11. PIPING ACCESSORIES

A. All hangers must be an approved type per NFPA 13. No sprinkler piping is to be supported from any mechanical or electrical devices.

1. No chains, wire or perforated band iron will be permitted for hangers.

B. Where required for access to equipment, valves and cocks and where not otherwise specified, metal access doors and frames shall be furnished by this Contractor and installed by others. Panels shall be Milcor, suitable for surface in which installed and fire rated equal to the construction in which installed, where applicable.

C. Contractor shall furnish and install identification tags on all control valves. Tags shall be brass with black enamel numbers.

12. SPRINKLER HEADS

A. Shall be regular automatic closed type of ordinary degree temperature rating except that sprinkler heads to be installed in the vicinity of heating equipment shall be of the temperature rating required by NFPA 13, and heads installed in locations where special occupancies indicate need for high temperature or corrosion resistant head, the proper heads shall be determined and provided by sprinkler contractor.

B. All sprinkler heads shall be 1/2" orifice and a 155/165 degrees F temperature rating, unless otherwise noted.

C. Sprinkler heads in suspended and GWB hard ceilings shall be semi-recessed chrome pendants.

D. Sprinkler heads in open ceilings shall be brass, pendants or uprights.

E. Cabinet: Sprinkler heads and sprinkler head wrench shall be provided in a cabinet at an accessible location adjacent to each valve. The number and types of extra sprinkler heads shall be as specified in NFPA 13.

F. Sprinkler contractor to submit shop drawings of all sprinkler heads to the owner/engineer for review and approval.

13. INSTALLATION

A. It is the intention of the specifications to call for finished work, tested and ready for operation.

B. All work shall be executed and inspected in accord with all laws, ordinances, rules and regulations of local authorities having jurisdiction over such work. The Contractor shall

obtain all permits and pay all fees in connection herewith where required. Should any change in the specifications be required to conform to these ordinances, the Contractor shall notify the Engineer and Owner at the time of submitting his bid. After entering into the Contract, Contractor will be held to complete all necessary work to meet local requirements without extra expense to the Owner.

C. Contractor shall base all measurements, both horizontal and vertical from established benchmarks. All work shall agree with these established lines and levels. Contractor shall verify all measurements at site, and check the correctness of same as related to the work. Should the Contractor discover any discrepancy between actual measurements and those indicated, which prevent following contract plans, he shall not proceed with his work until he has received instructions from the Owner.

D. Contractor shall protect the work and material of all trades from damage by his work or workmen and shall make good all damage thus caused. Contractor shall be responsible for work and equipment until finally inspected, tested and accepted, protect work against theft, injury or damage; and carefully store materials and equipment received on site which are not immediately installed. He shall close open ends of work with temporary covers or plugs during construction to prevent entry of obstructive material.

E. Contractor shall furnish all scaffolding, rigging, hoisting and services necessary for erection and delivery onto the premises of any equipment and apparatus furnished and shall remove same from premises when no longer required.

F. The Contractor is required under contract stipulations to leave all chases and opening in walls, floors, ceilings, partitions, beams, etc, provided, however, this Contractor shall furnish to the Contractor full information as to locations, dimensions, etc., of such chases and openings, including the provision and proper setting of all sleeves and other equipment in advance of construction to the work so as to cause no delay in the work.

G. Should any cutting of walls, floors, ceilings, partitions, etc., be required for proper installation of the work or apparatus, such cutting and restoring of the work to its original condition shall be done at his own expense and in a manner acceptable to the Engineer. All drilling and patching for anchor bolt, hangers and other supports shall be subject to the approval of the Owner.

H. All refuse and surplus materials incidental to the work of this contract shall be removed by this Contractor as the work progresses.

I. All portions of the system shall be hydrostatically tested. Flushing of underground piping shall be done in accord with NFPA 13, prior to connection of the interior fire protection system . On completion of the work, the system shall be tested by full flow. Each wet

and dry pipe valve for the systems shall be tested through inspector test connections equivalent to one sprinkler head water flow and installed at the most hydraulically remote location from the sprinkler valves. All alarms and other devices shall be tested. All appliances and equipment for testing shall be furnished by the Contractor and all expenses, except for water and electricity used in connection with the tests, shall be defrayed by him. On completion of the tests by the Contractor, any defects detected shall be corrected by the Contractor at his own expense and additional tests made until the system is proved satisfactory. The Contractor shall submit to the Owner a certificate covering materials and tests, similar to that specified in NFPA 13 with a request for formal inspection, at least two (2) working days prior to the date of inspection. At this inspection, any or all of the required tests shall be repeated as directed by the Owner.

J. The Contractor shall maintain in good order two complete sets of the plans for recording all changes made to the work covered under this section of the specification during the entire job operation. He shall keep the sets up to date at all times. At the completion of the work, these sets of prints are to be turned over to the Owner.

K. The Contractor shall deliver the sprinkler system equipment covered by these specifications to the Owner complete and in first class operating condition in every respect and shall guarantee that material, equipment and workmanship shall be entirely free from defects and that he will repair or replace at his own expense as may be directed by the Owner, any material, equipment or workmanship in which defects may develop within one (1) year after date of final payment of work. The Contractor shall further guarantee that workmanship and material where not specifically mentioned in plans and specifications shall be the best of their respective kind, and the constructive and installation will be in accord with best standards practiced in every detail.

L. The mechanical and electrical system components shall be installed in the following sequence:

1. Ductwork and air handling units.
2. Sanitary waste and domestic water piping.
3. Sprinkler Piping.
4. Electrical wiring and conduit.

14. NAMEPLATES

A. Fire suppression equipment shall be marked with an engraved, laminated, black phenolic nameplate. Lettering and/or numbering shall be positioned on the front of the equipment so as to be clearly visible. The engraving shall be a minimum of ¼” in height with white enameled undercut characters on a dark background. The legend on the nameplates shall be so composed as to clearly indicate the function of the equipment and be secured to the

equipment with permanent adhesives.

15. MAINTENANCE MANUALS AND OPERATING INSTRUCTIONS

A. Provide three bound sets of complete manufacturer's service and maintenance instructions on all pieces of equipment furnished.

B. Furnish services of representatives of equipment manufacturers to instruct attendants in the proper operation of the equipment.

C. Provide four hours of operating and maintenance instruction to person or persons designed by Owner to receive this instruction. Instruction to be given after equipment is operating and prior to acceptance by Owner.

16. GUARANTEE

A. The contractor shall replace free of charge, all material and equipment that becomes useless or inoperative because of original defects in material or workmanship or because of defects caused by poor workmanship when making the installation.

B. The guarantee period shall begin on the date of written acceptance of the system, by the Owner or his representative, and shall run for one full year from date of written acceptance.

END OF SECTION 210500

SECTION 220500

PLUMBING OUTLINE SPECIFICATIONS

1. SCOPE

A. Provide plumbing as shown on plumbing design drawings and as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:

1. Domestic hot and cold water piping system.
2. Drain, waste, and vent system.
3. Plumbing fixtures as shown on the architectural drawings.
4. Propane gas piping.

B. Reference architectural drawings for locations of plumbing fixtures.

C. The work to be performed under this specification shall consist of all labor and materials, installing all materials, equipment and appurtenances and performing all operations necessary as shown on the drawings and hereinafter specified or as required to provide a complete and operable system. This shall include, but not necessarily limited to, the following:

1. Domestic hot and cold water piping system.
2. Drain, waste, and vent system.
3. Plumbing fixtures as shown on the architectural drawings.
4. Propane gas piping.

D. Scope of Work

1. Plumbing Fixtures and Equipment

- Men's Bathroom – Three (3) Toilets (WC-1), One (1) Urinal (URN-1), Three (3) Bath Sinks (LAV-1) and One (1) Floor Drain (FD-1).

- Women's Bathroom – Four (4) Toilets (WC-1), Three (3) Bath Sinks (LAV-1) and One (1) Floor Drain (FD-1).

- Family Bath – One (1) Toilet (WC-1) and One (1) Bath Sink (LAV-2).

- Corridor – One (1) Drinking Fountain (DF-1).

- Sprinkler/Mechanical – One (1) Floor Drain (FD-1).

- Janitor/Storage – One (1) Mop Sink (MS-1), One (1) Janitor's Sink, One (1) Floor Drain (FD-1) and Well Expansion Tank (well system to be provided by others).

- Kitchen – All equipment and fixtures to be provided by others. Provide Waste/Vent/CW/HW piping for triple bay sink, dishwasher, prep sink and Three (3) hand wash sinks. Provide Waste/Vent piping for Two (2) Floor Drains (FD-1) and Three (3) Floor Sinks (IWD-1).

- Makers/Crafts Room – One (1) S.S. Counter Mounted Sink (Sink-1).

- Kitchenette – One (1) S.S. Counter Mounted Sink (Sink-2) and piping for dishwasher.

- Men's Locker Room – Five (5) Toilets (WC-1), Two (2) Urinals (URN-1), Four (4) Bath Sinks (LAV-2), Two (2) Standard Showers (SH-1), One (1) ADA Shower (SH-2) and Two (2) Floor Drains (FD-1).

- Men's Locker Room – Seven (7) Toilets (WC-1), Four (4) Bath Sinks (LAV-2), Two (2) Standard Showers (SH-1), One (1) ADA Shower (SH-2) and Two (2) Floor Drains (FD-1).

- Aquatic Mechanical Room – One (1) Floor Drain (FD-1).

- Gas Piping – Underground propane tanks and piping to building to be provided by others.
  * Gas Furnaces – Four (4) 100 MBH Gas Furnaces, One (1) 80 MBH Gas Furnace and One (1) 40 MBH Gas Furnace.
  * Water Heater – One (1) 199 MBH Water Heater (WH-1).
  * Kitchen – One (1) 210 MBH 6 Burner Range with gas control valve.
  * Multipurpose – One (1) 300 MBH Rooftop Unit
  * Storage/Activity (Multipurpose) – One (1) 30 MBH Propane Unit Heater.
  * Aquatic Center – One (1) 250 MBH Dehumidification Unit and One (1) 1000 MBH boiler to heat the pools.

E. Plumbing Fixture and Equipment Specifications

1. WC-1 Water Closet: American Standard Madera Flowise 16.5” Height 1.26 GPF Flushometer Toilet System Model 2854.016, or equal.
2. URN-1 Urinal: American Standard Washbrook Flowise o.5 GPF H.E. Urinal System Model 6590.501, or equal.
3. LAV-1 Bath Sink: American Standard Rondalyn Countertop Sink model 0491.019 (ADA) with American Standard Faucet model 2175.502, or equal.
4. LAV-2 Bath Sink: American Standard Decorum Wall-Hung Lavatory model 9024.904EC (ADA) with American Standard Faucet model 2175.502, or equal.
5. FD-1 Floor Drain: Jay R. Smith Floor Drain model 2010, or equal.
6. DF-1 Drinking Fountain: Elkay ADA Barrier Free Water Cooler, 2 Station model EZSTL8LC, or equal.
7. MS-1 Mop Sink: Fiat 24”x24” molded stone mop basin Model MSB 2424 with Fiat Faucet model 830 AA and Hose and Hose Bracket, Mop Hanger, & S.S. Bumperguard, or equal.
8. IWD-1 Floor Sink: Jay R. Smith model 3100, or equal.
9. SH-1 Standard Shower: 36”x36” Fiat Molded Stone Base, Tiled Walls and Pressure Balancing Faucet and Trim, or equal.
10. SH-2 ADA Shower: 36”x 60” Fiat Molded Stone Base, Tiled Walls and ADA Pressure Balancing Faucet, Slide Rail, Grab Bars and Trim, or equal.
11. WH-1 Water Heater: Bradford White Model EF-100T-199E-3N(E) with mixing valve and recirculation pump, or equal.
12. JS-1 Janitor’s Sink: Fiat Model FL-1 Floor Mounted Serv-A-Sink with Fiat model A-1 faucet.
13. SINK-1 Craft Sink: Elkay model LR1919 with Elkay model LK5000 faucet.
14. SINK-2 Kitchenette Sink: Elkay model LRAD332265PD with Elkay model LK5000 faucet.

F. The term "Provide", when used in these specifications, shall mean "Furnish and Install".

G. The term "Furnish" shall mean to obtain and deliver on the job for installation by other trades.

H. When the term "Contractor" or "This Contractor" is used in this section of the specification, it shall be understood that it refers to the contractor responsible for all work under this section. Those responsible for work covered by other sections of the specification, will be referred to as "General Contractor" or simply by the term "Others".

I. The contractor shall be solely responsible for the verification of field measurements before ordering any materials or equipment, before making any installation or doing any work.

J. Any discrepancies which may be found shall be reported at once to the Owner for consideration and decision before proceeding with any work in the affected area.

K. Each contractor shall be held to have examined the site, drawings and specifications and all other contract documents.

L. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section, and within all construction scheduled target dates for project delivery.

M. Protect all material and equipment from damage until final acceptance. Close all openings, during construction, with temporary plugs. Provide new materials and equipment to replace damaged items without additional cost to the Owner.

N. Any required special tools or devices, other than those tools normally available to the maintenance or operating staff, shall be furnished to the Owner, suitably marked, packed or boxes for staff usage. The tools provided shall be listed by the contractor, identified as to their use or to the equipment to which they apply, in a written transmittal to the Owner.

O. All refuse material and rubbish that may accumulate from time to time during the progress of the project, as a result of the Contractor's work being performed under these specifications, shall be removed by him in order to keep the buildings and premises clean to the satisfaction of the Owner.

2. CODES AND PERMITS

A. All work performed, all equipment and materials installed under this contract, shall be in strict accordance with the requirements of all governing codes and standards including, but not limited to, the following:

1. International Plumbing Code (2015).

2. International Building Code (2015).

B. Contractor shall obtain and pay for all construction or installation permits and other certificates, and pay all inspection fees related to his work. He shall prepare specific plans as required by proper authorities before their acceptance of the work.

C. The entire installation shall conform with all pertinent codes and regulations of local, county and state authorities, and any other regulatory body having jurisdiction over this

class of work.

D. Where provisions of these specifications, contract documents and/or the drawings, conflict in any way with the applicable codes, rules or regulations, the codes, rules and regulations shall govern.

E. Changes in the drawings, specifications or the installed work to comply fully with codes, rules or regulations shall be made by the contractor as part of the contract without additional cost.

F. The Contractor shall, before installing any work or materials, report any discrepancies between the applicable codes, rules or regulations as they pertain to the work, the drawings and the specifications to the Owner and obtain directions for procedure.

G. Coordinate the work under this section with the work of the other sections which are now or may later be engaged in work at this same site. Schedule all work so that there will be no delay in the proper installation and completion of any part or parts of each respective section wherein it may be interrelated with that of this contract so that generally, all construction work may proceed in its natural sequence without necessary delay.

3. MATERIAL AND WORKMANSHIP

A. All materials shall be new and shall conform to the grade, quality and standard specified.

B. All work shall be performed in a neat and workmanlike manner by mechanics experienced in their trades in accordance with the drawings and specifications.

C. Coordinate the procurement of specified materials and equipment being supplied by subcontractors, manufacturers and vendors.

4. SUBSTITUTION

A. Generally, the manufacturer or figure numbers first named in the specifications and/or listed in equipment schedules on the drawings, are the items that have been used as a base of design. Should equivalent items of other manufacturers be submitted and accepted, it shall be the Contractor's responsibility to make all necessary changes to the general construction, structural, heating, ventilating and air conditioning, plumbing and electrical systems, that are required by the use of the substituted items at no additional cost.

B. When one manufacturer or figure number is used for a given material or equipment, provide only such material or equipment.

5. SHOP DRAWINGS

A. Drawings or manufacturer's literature with complete physical and performance data of all equipment to be furnished shall be submitted for approval before manufacture or fabrication.

B. The approval of shop drawings shall not be construed as a complete check, but will only indicate that the general methods of construction and detailing are satisfactory and will not relieve the contractor of the responsibility of any error or omissions which may exist. The contractor shall be responsible for all dimensions, for the design of adequate connections and details and for the satisfactory operation, construction and coordination of all work.

C. The approval of shop drawings shall not be construed as a complete check, but will only indicate that the general methods of construction and detailing are satisfactory and will not relieve the contractor of the responsibility of any error or omissions which may exist. The Contractor shall be responsible for all dimensions, for the design of adequate connections and details and for the satisfactory operation, construction and coordination of all work.

D. Submission of shop drawings shall include, but not be limited to the following:

1. Plumbing Fixtures, Equipment and Trim.
2. Pipe, Fittings and Valves.
3. Insulation.
4. Pipe Hangers.
5. Water Heater

E. Submit 5 sets of shop drawings, with each piece of equipment clearly labeled.

6. AS-BUILT DRAWINGS

A. As the work under construction progresses, the contractor shall make all necessary notations to prepare a set of as-built drawings.

B. Drawings of as-built conditions shall be submitted and approved before final payment will be made to the contractor.

7. PIPE SCHEDULE

A. Drain, waste and vent system:

1. For waste piping below the floor and outside underground:

    a. Provide Schedule 40 PVC piping with solvent welded joints or service weight cast iron with bell and spigot joints.

2. Above Ground:

    a. Provide Schedule 40 PVC with solvent welded joints, service weight cast iron with no-hub fittings, or DWV copper with solder joints.

    b. PVC piping shall never be used in return air plenums. Provide ductile iron pipe with no-hub fittings in all return air plenums. Coordinate with the Mechanical Contractor concerning location of return air plenums.

B. Water system (domestic piping):

1. Above ground: provide Type "L" copper with sweated connections. Branch piping to fixtures may be in PEX.

8. MATERIALS

A. PVC pipe and fittings: ASTM D 2665, Schedule 40.

1. PVC socket fittings: ASTM D 2665, made to ASTM D 3311 drain, waste and vent pipe patterns.

B. Cast iron with no-hub fittings: ASTM A 888 or CISPI 301

1. No-hub fittings: CISPI 301

D. Fittings:

1. For copper lines, provide copper fittings.

E. Unions:

1. For copper lines, provide copper fittings.

2. For connections in iron pipe lines 2 - 2 ½" and smaller, provide ground joint brass-to-iron fittings.

9. VALVES

A. Gate valves: Provide solid wedge disc, rising stem, 200 PSI WOG; non-rising stem valves may be used only where there is insufficient clearance.

1. 3" and smaller, rising stem: Provide Crane #438, bronze, screwed.

2. 3" and smaller, non-rising stem: Provide Crane #438, bronze, screwed.

3. Valves on asbestos-cement lines: Provide "Ring-Tite" hubs and Crane #462.

B. Globe valves: Provide replaceable composition disc suitable for 200 degree F water.

1. 2" and smaller: Provide Crane #7, bronze, screwed.

2. 2 - 2 ½" and larger: Provide Crane #359, iron body, flanged, 200 PSI WOG.

C. Check valves:

1. 3" and smaller: Provide Crane #37, bronze, screwed, Y-pattern, 200 PSI WOG, swing check type.

2. 4" and larger: Provide Crane #373, IBBM, flanged, 200 PSI WOG.

D. Partition stop valves: Provide Chicago Faucet #1771, loose key type.

10. FLASHING

A. Where pipes of this Section pass through the roof. Coordinate flashing with the Construction Manager and the Roofing Contractor.

11. PIPE HANGERS

A. Water piping:

1. Provide Cooper B-Line split ring hangers with supporting rods.

2. Provide Semco "trisolators".

B. Soil and waste piping:

1. Provide Cooper B-Line adjustable ring hangers with supporting rods.

2. Use Cooper B-Line riser clamps at each floor and as required.

12. CLEANOUTS

A. Provide cleanouts as manufactured by Jay R. Smith or Josam.

13. ACCESS BOXES (as required – coordinate all locations with owner)

A. Walls:

1. Provide Smith #4730 or Josam #8650 with polished chrome plate face in tile walls.

2. Provide Smith #4760-AKL, or Josam #SLA or #SLB, with bonderized prime-coated steel face and with Allen lock in walls of other finished rooms.

B. Ceilings:

1. Provide Acorn #7211-3-AKL or Josam #SLA bonderized prime-coated steel face with Allen lock.

C. Floors:

1. Provide Smith #4910 or Josam #8630-5 with XH plain aluminum or nickel-bronze non-skid top.

2. Provide Smith #4920 for floors covered with vinyl reinforced or pure vinyl tile.

14. TRAPS

A. For lavatories and sinks, except service sinks, provide heavy-duty chromed brass traps manufactured by Wolverine or equal.

15. HANDICAPPED INSULATION

A. As required by code, at lavatories for handicapped persons provide Plumberex insulation

or equal, on hot water supply, cold water supply, tailpiece, and trap.

16. INSULATION

A. Insulate hot water lines with 1" thick Owens/Corning Fiberglass "25 ASJ/SSL".

B. Insulate cold water lines with ½" Armour-Flex foam type insulation.

C. Also see requirements specified for "handicapped insulation".

17. SLEEVES

A. Where pipes pass through concrete, masonry, or stud walls, or pass through ceilings, provide "Sperzel" rust-proof "Crete-Sleeve" of the size required.

18. OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Owner.

19. SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

20. PLUMBING SYSTEM LAYOUT

A. Lay out the plumbing system in careful coordination with the Drawings, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system.

B. Lay out pipes to fall within partition, wall, or roof cavities, and to not require furring other than as shown on the drawings.

21. TRENCHING AND BACKFILLING

A. Perform trenching and backfilling associated with the work of this Section in strict accordance with the other applicable sections of these specifications.

B. Cut bottom of trenches to grade. Make trenches 12" wider than the greatest dimension of the pipe.

C. Bedding and backfilling:

1. Install piping promptly after trenching. Keep trenches open as short a time as practicable.

2. Under the building, install pipes on a 6" bed of damp sand. Backfill to bottom of slab with damp sand.

3. Outside the building, install underground piping on a 6" bed of damp sand. Backfill to within 12" of finish grade with damp sand. Backfill remainder with native soil.

4. Do not backfill until instillation has been approved and until Project Record Documents have been properly annotated.

22. INSTALLATION OF PIPING AND EQUIPMENT, GENERAL

A. General:

1. Proceed as rapidly as the building construction will permit.

2. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.

3. Cut pipe accurately, and work into place without springing or forcing, properly cleaning windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.

4. Show no tool marks or thread on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.

5. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings. Unless otherwise noted, install water supply and return piping with straight side of eccentric fittings at top of the pipe.

6. Run horizontal sanitary drainage piping at a uniform grade of 1/8" per foot for pipe 3" and greater and 1/4" per foot for pipe less than 3", unless otherwise noted. Run horizontal water piping with an adequate pitch upwards in direction of flow to allow complete drainage.

7. Provide sufficient swing joint, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the Drawings.

8. Support piping independently at pumps, coils, tanks, and similar locations, so that weight of pipe will not be supported by the equipment.

9. Pipe the drains from pump glands, drip pans, relief valves, air vents, and similar locations, to spill over an open sight drain, floor drain, or other acceptable discharge point, and terminate with a plain end unthreaded pipe 6" above the drain.

10. Securely bolt all equipment, isolators, hangers, and similar items in place.

11. Support each item independently from other pipes. Do not use wire for hanging or strapping pipes.

12. Provide complete dielectric isolation between ferrous and non-ferrous metals.

13. Provide union and shut off valves suitably located to facilitate maintenance and removal of equipment and apparatus.

B. Equipment access:

1. Install piping, equipment, and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to the Owner.

2. Provide access doors where valves, motors, or equipment requiring access for maintenance are located in walls or chases or above ceilings. Coordinate location of access doors with other trades as required.

23. PIPE JOINTS

A. Copper tubing:

1. Cut square, remove burrs, and clean inside of female fitting to a bright finish.

   a. Apply solder flux with brush to tubing.
   b. Remove internal parts of solder-end valves prior to soldering.

2. Provide dielectric unions at points of connection of copper tubing to ferrous piping and equipment.

3. For joining copper tubing, use:

    a. Water piping 3" and smaller: 95-5 solder;
    b. Water piping larger than 3": "Sil-fos" brazing;
    c. Underground: "Sil-fos" brazing.

B. Screwed piping:

1. Deburr cuts.

    a. Do not ream exceeding internal diameter of the pipe.
    b. Thread to requirements of ANSI B2.1.

2. Use Teflon tape on male thread prior to joining other services.

3. Use litharge and glycerin on joint prior to cleaning for air and oil piping.

C. Leaky joints:

1. Remake with new material.

2. Remove leaking section and/or fitting as directed.

3. Do not use thread cement or sealant to tighten joint.

24. PIPE SUPPORTS

A. Support suspended piping with clevis or trapeze hangers and rods.

B. Space hangers and supports for horizontal copper tubing according to the following schedule:

Tube size:	Maximum spacing on centers:
1" and smaller:	6' - 0"
1-1/2":	7' - 0"
2":	8' - 0"
2-1'2":	9' - 0"
3" and larger:	10' - 0"

C. Provide sway bracing on hangers longer than 18".

D. Support vertical piping with riser clamps secured to the piping and resting on the building structure. Provide at each floor unless otherwise noted.

E. Arrange pipe supports to prevent excessive deflection, and to avoid excessive bending stress.

F. No-hub piping:

1. Provide hangers on the piping at each side of, and within 6" of, hubless pipe coupling so the coupling will bear no weight.

2. Do not provide hangers on couplings.

3. Provide hangers adequate to maintain alignment and to prevent sagging of the pipe.

4. Make adequate provision to prevent shearing and twisting of the pipe and the joint.

25. SLEEVES AND OPENINGS

A. Provide sleeves for each pipe passing through walls, partitions, floors, roofs, and ceilings.

1. Set pipe sleeves in place before concrete is placed.

2. For uninsulated pipe, provide sleeves two pipe sizes larger than the pipe passing through, or provide a minimum of ½" clearance between inside and outside of pipe.

3. For insulated pipe, provide sleeves of adequate size to accommodate the full thickness of pipe covering, with clearance for packing and calking.

B. Calk the space between sleeve and pipe or pipe covering, using a noncombustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible asbestos cotton, rope, or fiberglass, and provide the waterproof compound described above.

C. Finish and escutcheons:

1. Smooth up rough edges around sleeves with plaster or spackling compound.

2. Provide 1" wide chrome or nickel plated escutcheons on all pipes exposed to view where passing through walls, floors, partitions, ceilings, and similar locations.

    a. Size the escutcheons to fit pipe and covering.
    b. Hold escutcheons in place with set screw.

26. CLEANOUTS

A. Secure the Contractor and Owner's approval of locations for cleanouts in finished areas prior to installation.

B. Provide cleanouts of same nominal size as the pipes they serve or as shown on the plumbing drawings.

C. Make cleanouts accessible. After pressure tests are made and approved, thoroughly graphite the cleanout threads.

27. VALVES

A. Provide ball valves in water systems. Locate and arrange so as to give complete regulation of apparatus, equipment, and fixtures.

B. Provide valves in at least the following locations:

1. In branches and/or headers of water piping serving a group of fixtures.

2. On both sides of apparatus and equipment.

3. For shutoff of risers and branch mains.

4. For flushing and sterilizing the system.

C. Locate valves for easy accessibility and maintenance.

28. PLUMBING FIXTURE INSTALLATION

A. Installation:

1. Set fixtures level and in proper alignment with respect to walls and floors, and with fixtures equally spaced.

2. Provide supplies in proper alignment with fixtures and with each other.

3. Provide flush valves in alignment with the fixture, without vertical or horizontal offsets.

B. Grout wall and floor mounted fixtures watertight where the fixtures are in contact with walls and floors.

C. Calk deck-mounted trim at the time of assembly, including fixture and casework mounted. Calk self-rimming sinks installed in casework.

29. DISINFECTION OF WATER SYSTEMS

A. Disinfect hot and cold water systems.

1. Perform disinfection under the Contractor's observation. Notify the Contractor and Owner at least 48 hours prior to start of the disinfection process.

2. Disinfect the domestic water piping per the International Plumbing Code (2009).

30. OTHER TESTING AND ADJUSTING

A. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and inspections required by the International Plumbing Code (2009) and the local building officials.

B. Where tests show materials or workmanship to be deficient, replace or repair as necessary, and repeat the tests until the specified standards are achieved.

C. Adjust the system to optimum standards of operation.

31. NAMEPLATES

A. Plumbing equipment shall be marked with an engraved, laminated, black phenolic nameplate. Lettering and/or numbering shall be positioned on the front of the equipment so as to be clearly visible. The engraving shall be a minimum of ¼" in height with white enameled undercut characters on a dark background. The legend on the nameplates shall be so composed as to clearly indicate the function of the equipment and be secured to the equipment with permanent adhesives.

32. MAINTENANCE MANUALS AND OPERATING INSTRUCTIONS

A. Provide three bound sets of complete manufacturer's service and maintenance instructions on all pieces of equipment furnished.

B. Furnish services of representatives of equipment manufacturers to instruct attendants in the proper operation of the equipment.

C. Provide eight hours of operating and maintenance instruction to person or persons designed by Owner to receive this instruction. Instruction to be given after equipment is operating and prior to acceptance by Owner.

33. GUARANTEE

A. The contractor shall replace free of charge, all material and equipment that becomes useless or inoperative because of original defects in material or workmanship or because of defects caused by poor workmanship when making the installation.

B. The guarantee period shall begin on the date of written acceptance of the system, by the Owner or his representative, and shall run for one full year from date of written acceptance.

END OF SECTION 220500

SECTION 230500

HEATING, VENTILATION AND AIR CONDITIONING OUTLINE SPECIFICATIONS

1. SCOPE

A. Provide HVAC system as specified herein, and as required for a complete and proper installation including, but not necessarily limited to:

1. Gas Furnaces and Condensing units.
2. Rooftop Packaged Units.
3. Dehumidification System.
4. Ductwork, grilles, registers, diffusers, dampers and insulation.
5. HVAC controls.
6. Unit heaters.
7. Exhaust fans.
8. Make-up Air Unit.
9. Kitchen Hood.
10. Energy Recovery Ventilators (ERV)

B. Reference architectural drawings for floor plan layout and room names.

C. The work to be performed under this specification shall consist of all labor and materials, installing all materials, equipment and appurtenances and performing all operations necessary as shown on the drawings and hereinafter specified or as required to provide a complete and operable system. This shall include, but not necessarily limited to, the following:

1. Installation of gas furnaces and associated condensing unit, ductwork and grilles/diffusers.
2. Installation of Rooftop Packaged Units.
3. Installation of Dehumidification System.
4. Installation of unit heaters.
5. Installation of exhaust fans.
6. Installation of electric heater.
7. Installation of HVAC electronic controls.
8. Installation of Energy Recovery Ventilators (ERV).
9. Installation of kitchen hood and make-up air unit.
10. Insulation.
11. Balancing.

12. Testing.

D. Scope of Work

1. HVAC System #1 which will include Meeting Room, Workroom/Program Room, Offices, Vestibule, Kitchenette, Adult Lounge, Nursing Room and Family Room, provide a 100 MBH high efficiency gas furnace with 5-ton DX coil, 5 ton condensing unit (14 SEER) and 300 CFM ERV. The gas furnace shall be located in Jan./Storage. Provide 2 zone VVT control system for gas furnace system and CO2 sensor to control the outside air intake.
   Provide a 75 CFM ceiling exhaust fan for Family Room.
2. HVAC System #2 which will include Gameroom, Makers/Craft Room, Bathrooms, Family Bath and Corridors, provide 100 MBH high efficiency gas furnace with 5-ton DX coil, 5-ton condensing unit (14 SEER) and 300 CFM ERV. Gas furnace shall be located in Sprinkler/Mech. Provide 2 zone VVT control system for gas furnace system and CO2 sensor to control the outside air intake.
   Provide a 300 CFM ceiling exhaust fan in each bathroom group and a 75 CFM ceiling exhaust fan in Family Bath
3. Provide 3 KW electric unit heater for Jan./Storage.
4. Provide 3 KW electric unit heater for Sprinkler/Mech.
5. HVAC System #3 which will include Kitchen, Office, Kitchen Storage, Storage and Corridor, provide 80 MBH high efficiency gas furnace with 4-ton DX coil and 4 ton condensing unit (14 SEER). Gas furnace shall be located in Mechanical Room. In Kitchen provide 6'-0" x 42" S.S. kitchen exhaust hood, associated 1500 CFM gas fired make-up air system and 1500 CFM kitchen hood exhaust fan. Kitchen hood, make-up air system and exhaust shall be provided by Captiveaire, or equal.
6. Provide 2 KW electric unit heater for Mechanical Room.
7. HVAC System #4 for the Function Room, provide two (2) 100 MBH high efficiency gas furnaces with 5-ton DX coils, 5 ton condensing units (14 SEER) and 400 CFM ERV. One unit will service the north side of the Function Room and the other will service the south side. The gas furnaces shall be located in the Mechanical Room. Provide CO2 sensors to control the outside air intake and a roof mounted pressure relief vent.
8. HVAC System #5 for the Gym, provide one (1) 20-ton gas fired rooftop packaged unit (300 MBH heating capacity) mounted on roof of Storage/Activity Storage room. Provide CO2 sensor to control the outside air intake.
9. For the Storage/Activity Storage room provide a high efficiency 30 MBH gas fired unit heater.

10. HVAC System #6 for the Aquatic area, provide the following DesertAire equipment:

- DesertAire Model SA45CG7MCH Dehumidifier
- DesertAire Model RC8S022C3H22227 Remote Condenser
- DesertAire Model 412-025 VOC Sensor for Duct Mount
- DesertAire Model CA3510-CD Remote Display
- DesertAire Model CA500 Supply Air Pres Tip Kit
- DesertAire Model CA411 Water Temp Sensor Assembly
- DesertAire Model CA3500-ND-T SAT Sensor
- DesertAire Model ER-02 Recoveraire System with (2) 8’ Benches.

Dehumidifier and condenser to be grade mounted on concrete slabs on the west side of the Aquatic Center.

11. HVAC System #7 for Men’s and Women’s Locker Rooms, provide a 40 MBH high efficiency gas furnace with 2-ton DX coil and 2 ton condensing unit (14 SEER) and 900 CFM ERV with 12 KW electric duct heater. Gas furnace shall be located Aquatic Mechanical room and ERV to be located above the ceiling.
12. Gas furnaces,condensing units and packaged roof top units shall be provided by Carrier, York, Trane, or equal. ERV units shall be by Renewaire or Life Breath.
13. Provide all necessary ductwork, grilles, diffusers, registers and insulation for air handling systems.

E. The term "Provide", when used in these specifications, shall mean "Furnish and Install".

F. The term "Furnish" shall mean to obtain and deliver on the job for installation by other trades.

G. When the term "Contractor" or "This Contractor" is used in this section of the specification, it shall be understood that it refers to the contractor responsible for all work under this section. Those responsible for work covered by other sections of the specification, will be referred to as "General Contractor" or simply by the term "Others".

H. The contractor shall be solely responsible for the verification of field measurements before ordering any materials or equipment, before making any installation or doing any work.

I. Any discrepancies which may be found shall be reported at once to the Contractor

for consideration and decision before proceeding with any work in the affected area.

J. Each contractor shall be held to have examined the site, drawings and specifications and all other contract documents.

L. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section, and within all construction scheduled target dates for project delivery.

M. Protect all material and equipment from damage until final acceptance. Close all openings, during construction, with temporary plugs. Provide new materials and equipment to replace damaged items without additional cost to the Owner.

N. Any required special tools or devices, other than those tools normally available to the maintenance or operating staff, shall be furnished to the Owner, suitably marked, packed or boxes for staff usage. The tools provided shall be listed by the contractor, identified as to their use or to the equipment to which they apply, in a written transmittal to the Owner.

O. All refuse material and rubbish that may accumulate from time to time during the progress of the project, as a result of the Contractor's work being performed under these specifications, shall be removed by him in order to keep the buildings and premises clean to the satisfaction of the Contractor and Owner.

2. CODES AND PERMITS

A. All work performed, all equipment and materials installed under this contract, shall be in strict accordance with the requirements of all governing codes and standards including, but not limited to, the following:

1. International Mechanical Code (2015).
2. International Building Code (2015).
3. Applicable ASHRAE Standards.
4. Applicable SMACNA Standards.

B. Contractor shall obtain and pay for all construction or installation permits and other certificates, and pay all inspection fees related to his work. He shall prepare specific plans as required by proper authorities before their acceptance of the work.

C. The entire installation shall conform with all pertinent codes and regulations of local, county and state authorities, and any other regulatory body having jurisdiction over this class of work.

D. Where provisions of these specifications, contract documents and/or the drawings, conflict in any way with the applicable codes, rules or regulations, the codes, rules and regulations shall govern.

E. Changes in the drawings, specifications or the installed work to comply fully with codes, rules or regulations shall be made by the contractor as part of the contract without additional cost.

F. The contractor shall, before installing any work or materials, report any discrepancies between the applicable codes, rules or regulations as they pertain to the work, the drawings and the specifications to the Owner and obtain directions for procedure.

G. Coordinate the work under this section with the work of the other sections which are now or may later be engaged in work at this same site. Schedule all work so that there will be no delay in the proper installation and completion of any part or parts of each respective section wherein it may be interrelated with that of this contract so that generally, all construction work may proceed in its natural sequence without necessary delay.

3. MATERIAL AND WORKMANSHIP

A. All materials shall be new and shall conform to the grade, quality and standard specified.

B. All work shall be performed in a neat and workmanlike manner by mechanics experienced in their trades in accordance with the drawings and specifications.

C. Coordinate the procurement of specified materials and equipment being supplied by subcontractors, manufacturers and vendors.

4. SUBSTITUTION

A. Generally, the manufacturer or figure numbers first named or listed in equipment schedules on the drawings, are the items that have been used as a base of design. Should equivalent items of other manufacturers be submitted and accepted, it shall be the Contractor's responsibility to make all necessary changes to the

general construction, structural, heating, ventilating and air conditioning, plumbing and electrical systems, that are required by the use of the substituted items at no additional cost. The contractor changes shall comply with all applicable codes and manufacturer's published clearance requirements with full access available.

B. When one manufacturer or figure number is used for a given material or equipment, provide only such material or equipment.

5. SHOP DRAWINGS

A. Drawings or manufacturer's literature with complete physical and performance data of all equipment to be furnished shall be submitted for approval before manufacture or fabrication.

B. Shop drawings and cuts shall be submitted in accordance with the Supplementary General Conditions of this specification.

C. Review of the shop drawings and submittals is limited to conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the project site, for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction, and for coordination of the work of all trades.

D. The approval of shop drawings shall not be construed as a complete check, but will only indicate that the general methods of construction and detailing are satisfactory and will not relieve the contractor of the responsibility of any error or omissions which may exist. The contractor shall be responsible for all dimensions, for the design of adequate connections and details and for the satisfactory operation, construction and coordination of all work.

E. Submission of shop drawings shall include, but not be limited to the following:

1. Gas Furnaces
2. Condensing units.
3. Gas Fired Unit heaters.
4. Electric Unit Heaters.
4. Rooftop Packaged Units
5. Dehumidification Systems.
6. Kitchen Hood, Exhaust Fan and Make-up Air Unit.
7. Insulation.

8. Control systems, including wiring diagrams.
9. Ductwork, diffusers and grilles.
10. Exhaust Fans.
11. Energy Recovery Ventilators (ERV).
12. Refrigerant Piping.

F. Submit shop drawings, with each piece of equipment clearly labeled.

6. AS-BUILT DRAWINGS

A. As the work under construction progresses, the contractor shall make all necessary notations to prepare a set of as-built drawings.

B. Drawings of as-built conditions shall be submitted and approved before final payment will be made to the contractor. Submit as-built drawings at substantial completion phase of project.

7. ELECTRICAL WORK

A. The electrical contractor shall furnish and install all power wiring for all electrical devices furnished to him at the job site.

B. Electrical contractor shall provide all code required disconnected switches for all motors. The setting of all motors required for ventilation equipment shall be included as part of the ventilation work.

C. All electrical items called for as part of the ventilation work shall conform to the NEMA Standards, to the requirements of the National Fire Protection Association, and to the requirements of any local electrical code authority having jurisdiction. Any field conformance shall be included as part of the work in this section.

D. The supplying of any and all "Field Instruction" diagrams deemed necessary by the Engineer for the complete delineation of electrical wiring for ventilating equipment shall be included as part of the ventilating work.

E. The mechanical contractor shall provide all controls, wiring and any 120.V/1PH. power wiring required for controls, for a turnkey installation.

8. RELATIONS WITH OTHER TRADES

A. Coordinate the work under this section with the work of the other sections which

are now or may later be engaged in work at this same site. Schedule all work so that there will be no delay in the proper installation and completion of any part or parts of each respective section wherein it may be interrelated with that of this contract so that generally, all construction work may proceed in its natural sequence without necessary delay.

B. Examine all drawings, note any conditions which may affect work, and care for same in executing contract.

C. Prepare complete detail, shop and field, equipment and roughing, installation drawings necessary for the proper installation of work.

9. SHEET METAL WORK

A. Ductwork

1. Galvanized steel construction. Dimensions shown on plan are clear inside dimensions.
2. Fabricate and erect all sections of duct work in true shapes with seams straight, rigidly braced and suspended level. Make sure all changes in direction with bends or elbows having inner radius equal to width of the duct in the same plane as the bend. Where structural conditions make the use of such bends impossible, use blades or vaned turns with square throats and heels. Make all changes in shapes of ducts with a slope of not sharper than 3 inches per foot. Fabricate and reinforce in accordance with schedule shown in current issue of S.M.A.C.N.A. low velocity construction manual.
3. Volume and deflections dampers as indicated on drawings or required at junctions of each branch duct and where necessary to control the flow of air. Dampers are to be hinged at side of duct.
4. Air tight reinforced access doors are required in all duct work, fan connections, fire dampers and elsewhere throughout the system to permit access for cleaning and for control apparatus. Doors shall be as manufactured by Nailor Industries, Inc., or approved equal.
5. Support exposed ducts with 1" x 1" x 1/8" galvanized angle hangers secured to structural framing and placed not more than 8 feet apart. Small ducts may be hung in accordance with SMACNA. In case of large size ducts, consideration shall be given to closer spacing of hangers. All concealed ducts shall hang 1" x 1/8" galvanized flat bar hangers 4 feet apart.
6. Entire duct installation shall comply with the latest regulations of the National Fire Protection Association and the International Building

Code 2015.

B. Grilles, Registers and Diffusers

1. Each supply grille, register and diffuser shall have an air turning device either at the outlet or at the take off. Each supply outlet shall have volume control provisions adjustable through the outlet.

C. Ductwork Insulation

1. Ducts shall be insulated with the insulation and thicknesses as shown herein:
   * Supply air ducts routed within building envelope - 1-1/2 inch thick fiberglass duct wrap with vapor barrier foil jacket K=0.31 @ 75 degrees F.
   * Supply, return and exhaust ducts routed within the building, but not in conditioned spaces - 2 inch thick fiberglass duct wrap with vapor barrier foil jacket.
   * All supply air ductwork shall have a ½" ductliner to reduce noise.

D. Flexible Connections

1. Provide flexible connections where ducts connect to fans.
2. Flexible connection to be flameproof cloth 16 ounce canvas, airtight and unpainted (or equal).
3. Use heavy bolted steel clamps to permit easy removal.
4. Unclamped section between duct and equipment to be not less than 6 inches in length, crimped to form fluted corrugations, VENTFAB, Proco Products, or Duro Dyne Corp.

E. Flexible Type Duct

1. Flexible type duct shall consist of a poly interior lining (core), wire helix, fiberglass insulation and a polyethylene vapor barrier (exterior). Flexible duct connectors shall be listed by Underwriters' Laboratories specification 181 and shall have a flamespread rating not exceeding 25 and a smoke development rating not exceeding 50. Flexible duct shall be by Certainteed, Manville Corp. or equal.
2. The flexible ducts shall be installed with a minimum run and with a minimum of bends. No run shall exceed 12 feet and bends shall have a minimum radius of 1-1/2 times the diameter of the duct measured from

the center line. All joints and connections shall be sealed.

3. Install duct in fully extended condition as far as practical, using only the minimum length required to make the connection. Installation of ducts in compressed or partially compressed condition will noticeably increase friction loss.
4. Where it is necessary to support horizontal runs to prevent shifting, make certain that the duct is fully extended between supports.
5. The flexible duct connection shall be pre-insulated with 1 inch insulation glass fiber wherever the adjacent trunk duct is specified to be insulated.
6. The flexible duct connection shall be suitable for 1-1/2 times the duct pressure at the connection.

10. REFRIGERANT PIPING

A. Pipe Material: Drawn-Temper Copper Tube: ASTM B 280, Type ACR, clean, dry and capped.

B. Pipe Fittings: Wrought-Copper Fittings: ASTM B16.22.

C. Joints: Brazed connections.

D. Insulation Material: Closed cell elastomeric - 2 inch thick; Armstrong Armaflex, Halstead Ind. or Rubatex Corp.

11. AUTOMATIC TEMPERATURE CONTROL

A. General

1. Furnish and install electronic controls as manufactured by Honeywell, Johnson, or approved equal.
2. A.T.C. contractor shall furnish all control diagrams and provide a one year service guarantee of all controls.
3. Mechanical contractor shall install all wall mounted controls and furnish and install all necessary wiring for all controls. Provide and install field mounted sensors and wiring as indicated on the design documents.
4. Provide three (3) copies of reduced floor plans showing location of all controls and thermostats and the location of the equipment which it controls. One (1) copy shall be in the final job records and two (2) copies will be submitted to the Owner.

12. TESTING AND BALANCING

A. General

1. All equipment shall be tested; labor, material, instruments and power required for testing shall be furnished indicated under the particular section of the specifications.
2. Tests shall be performed in the presence and to the satisfaction of the Engineer and the Owner and such other parties as may have legal jurisdiction.
3. In no case shall equipment or accessories be subjected to pressures exceeding their ratings.
4. All defective work shall be promptly repaired or replaced and the tests shall be repeated until the particular system and component parts thereof receive the approval of the Owner.
5. Any damages resulting from tests or any and all trades shall be repaired and damaged materials replaced, all to the satisfaction of the Owner.
6. Contractor is responsible for balancing both air and water systems.

B. Equipment Test

1. Demonstrate that all equipment and apparatus fulfill the requirements of the specifications. All equipment shall be operated and tested for rate capacities and specified characteristics. Voltage and amperage readings shall be taken on all electric motors.

C. Air System Balancing

1. Balance and regulate air systems to conform with quantities shown on drawings. Work shall be performed by qualified personnel using calibrated instruments.
2. A written report shall be submitted to the Engineer indicating such information as supply/exhaust air and fresh air, C.F.M., static pressure, motor H.P., fan R.P.M., temperatures, pressures and fan characteristics.
3. Records of air balancing should become a permanent part of the final job records and a copy shall be supplied to the owner.
4. Run system for at least eight hours to verify proper functioning of all controls and equipment. Upon completion of tests and approval by the Owner's representative, instruct Owner's agent in the proper operation and maintenance of the systems.

13. NAMEPLATES

A. All HVAC equipment shall be marked with an engraved, laminated, black phenolic nameplate. Lettering and/or numbering shall be positioned on the front of the equipment so as to be clearly visible. The engraving shall be a minimum of ¼" in height with white enameled undercut characters on a dark background. The legend on the nameplates shall be so composed as to clearly indicate the function of the equipment and be secured to the equipment with screws or permanent adhesives, as applicable.

14. MAINTENANCE MANUALS AND OPERATING INSTRUCTIONS

A. Provide three bound sets of complete manufacturer's service and maintenance instructions on all pieces of equipment furnished.

B. Furnish services of representatives of equipment manufacturers to instruct attendants in the proper operation of the equipment.

C. Provide eight hours of operating and maintenance instruction to person or persons designed by Owner to receive this instruction. Instruction to be given after equipment is operating and prior to acceptance by Owner.

15. GUARANTEE

A. The contractor shall replace free of charge, all material and equipment that becomes useless or inoperative because of original defects in material or workmanship or because of defects caused by poor workmanship when making the installation.

B. The guarantee period shall begin on the date of written acceptance of the system, by the Owner or his representative, and shall run for one full year from date of written acceptance.

END OF SECTION 230500

Quotation

Fluid Transfer Products - Boston
97-6 North Rd
Fremont, NH 03044
6036799897

To:

Date: 1/6/2022
Quote No: M-21-2204 / 26518

Project: The Hub

Qty	Order Code	Description	Ext Price
1	SA45CG7MCH_____	Dehumidifier at 208/3/60	$200,361.00
1	RC8S022C3H22227	Remote Condenser at 208-230/3/60	$19,369.00
1	CB-MNGZ-14	Roof Curb	$5,922.00
1	WARRANTY - CMP 5 YEAR	Warranty	$4,130.00
1	412-025	VOC Sensor for Duct Mount	$665.00
1	511-030 (2)	ROC CHK VLV	$665.00
1	CA3510-OD	Remote Display	$462.00
1	CA500	Supply Air Pres Tip Kit	$196.00
1	CA411	Water Temp Sensor Assy	$70.00
1	CA3500-ND-T	SAT Sensor (field installed)	$70.00
		Subtotal for Unit DH-1 Dehumidifier	**$231,910.00**

Qty	Description	Ext Price
1	Model ER-02 Recoveraire System with Qty-2 8' Bench	$30,870.00
	Subtotal for Miscellaneous Items	**$30,870.00**

Project Subtotal	$231,910.00
SubTotal for Special Items	$30,870.00
Non-LC/LV Start-up	$1,750.00
Freight	$7,460.00
Total Pricing for Project	$271,990.00

Notes

Shipping Terms: FOB Germantown, WI **Shipment** 28 **Weeks**

Payment Terms: Cash in Advance Michael Miller

Quote Valid: Quote Valid for 30 days Sales

Exclusive of any taxes

SelectAire™ Quotation Scope

Quote #: M-21-2204 / 26518 1/6/2022
Project Name The Hub
Model: SA45CG7MCH_____
Tag #: DH-1

Unit Weight: 8500 lbs

Capacities:

- Supply Air: 19200 CFM
- Outside Air: 9400 CFM
- Exhaust Air: 9600 CFM
  Dehumidification
- EAT: 80.0 °F DB / 69.6 °F WB
- Total Cooling Capacity: 548 MBH
- Total Sensible Capacity: 294.97 MBH
- Moisture Removal Capacity: 240.0 lb/hr
- Total Heat of Rejection: 690 MBH

DX Refrigeration System:

- Refrigerant Type: R-410A
- Scroll Compressor(s), Nominal Tons: 45
- Hot Gas Reheat Condenser Coil
- Coil Coating: Electrofin Coating
- Receiver w/ Flooding Valve
- Hot Gas Bypass Not Included

Airflow Configuration:

- Supply Discharge Location: Top
- Return Intake Location: Horizontal
- Exhaust Disch Location: Horizontal
- Supply ESP: 3.00 in WC
- Supply TSP: 4.54 in WC
- Supply Blower VFD: Not Included
- Exhaust ESP: 0.00 in WC
- Exhaust TSP: 3.14 in WC
- EC Exhaust Blower Included

Air Filters:

- Supply Filters: MERV 13

Enclosure:

- Location: Outdoor
- Service Access: Left Side
- Separate Electrical Compartment
- Galvanized w/ Powder Coated Paint

Condensate Drain Pan:

- A minimum of 20-Gauge Stainless Steel, Sloped
- 1.5 in. PVC Drain Connection (External P-trap required)

Unit Electrical:

- Main Power (V/Ph/Hz): 208/3/60
- MCA (Amps): 339
- MOPD (Amps): 400
- SCCR (kA): CF
  When protected by Class J, T, or RK1 fuses
- Disconnect: Included, Non-Fused

Controls:

- Model CM3510
- Temp & RH Sensors: Installed in unit by Desert Aire
- Occupancy Timer w/ BMS Override
- Remote Display Terminal: Included
- BMS Compatibility: BACnet MSTP

Water Condenser:

- Circuit A Condenser 1: Pool

Air Cooled Condenser:

- Model #: RC8S022C3H22227
- # of Fans: 3
- Unit Weight: 1186 lbs
- Voltage/Phase/Hz - 208/230-3-60
- MCA (Amps): 22.1
- MOPD (Amps): 25
- SCCR (Amps): 5kA
- Rated Ambient Condition - 95 °F
- Coil - Cu Tubing w/ Al Fins

Auxiliary Heat:

- Hot Water Coil
- Capacity: 250 MBH
- Control Signal: Modulating

Warranties (Parts Only):

- Standard Warranty: 2 years
- Compressor Warranty: 5 Years
- Air Side Coil Warranty: 5 Years

SelectAire™ Quotation Scope

DESERT AIRE, LLC.
TERMS AND CONDITIONS OF SALE

These Terms and Conditions of Sale shall govern all purchase orders placed by buyer ("Buyer") for products ("Products") from Desert Aire, LLC, a Delaware corporation, and its affiliates (collectively, "Seller").

1. Acceptance; Contrary Terms; Entire Agreement. All orders for Products are subject to acceptance by Seller at its offices in Germantown, Wisconsin. BUYER'S ORDER IS ACCEPTED ONLY ON THE TERMS AND CONDITIONS CONTAINED HEREIN AND THE PROVISIONS OF ANY PURCHASE ORDER OR OTHER WRITING WHICH ARE INCONSISTENT HEREWITH SHALL NOT CONSTITUTE PART OF THESE TERMS AND CONDITIONS OF SALE AND SHALL BE DEEMED A MATERIAL ALTERATION HEREOF. SELLER'S ACCEPTANCE OF BUYER'S ORDER IS SUBJECT TO AND CONDITIONED ON BUYER'S ASSENT TO THESE TERMS AND CONDITIONS OF SALE. ANY CONDUCT OR ACTION BY BUYER RECOGNIZING OR EVIDENCING THE EXISTENCE OF AN AGREEMENT SHALL BE DEEMED TO BE AN ACCEPTANCE BY BUYER WITHOUT EXCEPTION OF THESE TERMS AND CONDITIONS OF SALE. Seller's written proposal or price quotation ("Seller's Written Proposal") and these Terms and Conditions of Sale are intended by the parties to be the complete and exclusive agreement of the parties with respect to the subject matter hereof and supersede all prior understandings, representations, warranties or agreements between the parties, whether written or oral. Without limiting the generality of the foregoing, no course of prior dealings, course of performance, course of conduct, community standards, industry standards, customary practices or interpretation, or usage of trade shall be relevant to supplement or explain any terms in these Terms and Conditions of Sale. No modification of these Terms and Conditions of Sale, whether in whole or in part, will be valid or binding upon Seller unless expressly agreed to by Seller in a signed writing.

2. Changes and Cancellation. All orders for Products accepted by Seller shall be firm and no changes or cancellation shall be allowed without the written consent of Seller. Buyer acknowledges and agrees that in the event any cancellations are approved by Seller, Buyer will pay to Seller, as liquidated damages and not as a penalty, an amount equal to (i) the costs incurred by Seller up to the date of cancellation determined using Seller's standard pricing, plus (ii) up to a 15% of the purchase price for the Products.

3. Prices; Payment Terms. The prices and the payment terms for the Products shall be those set forth in Seller's Written Proposal and shall be exclusive of all sales, use, excise and other similar taxes, all of which are the sole responsibility of Buyer. Buyer shall pay interest on all late payments at the lesser of the rate of 1.5% per month or the highest rate permissible under applicable law, calculated daily and compounded monthly, and shall reimburse Seller for all costs incurred in collecting any late payments, including, without limitation, attorney's fees, in addition to all other remedies available under these Terms and Conditions of Sale. Payment for the Products specified herein shall constitute acceptance by Buyer.

4. Taxes. Unless otherwise specified, all prices shown do not include applicable excise sales, use or other tax imposed upon the sale and/or delivery of these products. Any such taxes, when applicable, will be charged and listed as separate items on the invoice, or in lieu thereof the purchaser shall provide the company with a tax-exemption certification acceptable to the taxing authorities.

5. Delivery. All shipping terms shall be EXW (Incoterms 2010) Seller's Plant. All freight, storage, insurance or other fees or charges (including, without limitation, any sales, use or value-added taxes and import duties on the Products, if any) shall be paid by Buyer and if advanced by Seller, shall be added to Seller's invoice and payable together with payment for the Products purchased. Unless otherwise specified in Seller's Written Proposal or otherwise agreed-to by Seller, Seller will package the Products in a commercially reasonable manner acceptable to commercial carriers and will furnish special packaging, at Buyer's sole expense, only if specifically requested by Buyer and expressly agreed to in writing by Seller. Due to the nature of Seller's custom work, shipping dates in Seller's Written Proposal or Buyer's purchase order are estimates only and any delay in shipment shall not relieve Buyer of its obligation to pay for Products or accept subsequent deliveries.

6. Title; Risk of Loss. Title and risk of loss shall pass to Buyer upon delivery of the Products to a carrier at Seller's plant and as collateral security for the payment of the purchase price of the Products, Buyer hereby grants to Seller a lien on and security interest in and to all of the right, title and interest of Buyer in, to and under the Products, wherever located, and whether now existing or hereafter arising or acquired from time to time, and in all accessions thereto and replacements or modifications thereof, as well as all proceeds (including insurance proceeds) of the foregoing. Buyer authorizes Seller to file any uniform commercial code financial statements necessary to perfect Seller's security interest in the Products.

7. Shipping Damage. It is Buyer's immediate responsibility to report to the trucking company any exterior shipping damage and to file a claim with the trucking company. The Seller shall not be responsible for the cost to repair damage.

8. Inspection and Rejection of Nonconforming Products. Buyer shall inspect the Products within fifteen (15) days of receipt and shall be deemed to have accepted the Products unless it notifies Seller in writing during such inspection period of any Products that (a) fail to conform to the specifications set forth in Buyer's order or (b) materially exceed the quantity of Products ordered by Buyer (collectively, "Nonconforming Products"). If Buyer timely notifies Seller of any Nonconforming Products, Seller shall, in its sole discretion, either (i) replace or repair such Nonconforming Products, or (ii) credit or refund the price paid by Buyer for such Nonconforming Products, together with any reasonable shipping and handling expenses incurred by Buyer in connection therewith. THE REMEDIES SET FORTH IN THIS SECTION 7 SHALL BE BUYER'S SOLE AND EXCLUSIVE REMEDIES AND SELLER'S ENTIRE LIABILITY FOR THE DELIVERY OF NONCONFORMING PRODUCTS. All returns must be authorized by seller and no credit will be allowed for returned items that are damaged in transit, incomplete, or received in an unsatisfactory condition. All items which are not eligible for credit will be returned to the purchaser, transportation collect.

9. Exclusive Warranty. Subject to the terms and limitations of the exclusive warranty and remedies described herein, Seller warrants the Products sold pursuant to Seller's Written Proposal to be free from all latent defects in material and workmanship for a period as defined by the warranty statement as part of this proposal. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SELLER NEITHER ASSUMES (NOR HAS AUTHORIZED ANY PERSON TO ASSUME) ANY OTHER WARRANTY OR LIABILITY IN CONNECTION WITH THE PRODUCTS. SELLER MAKES NO WARRANTIES WITH RESPECT TO BUYER'S USE OF THE PRODUCTS OR CLAIMS BY BUYER'S PERSONNEL ARISING FROM BUYER'S USE OF THE PRODUCTS, OR ANY OTHER VARIABLE OVER WHICH THE SELLER HAS NO CONTROL. IF BUYER'S ORDER IS FOR PRODUCTS WHICH CONTAIN COMPONENTS MANUFACTURED BY A PARTY OTHER THAN SELLER, BUYER ACKNOWLEDGES THAT SELLER IS NOT THE MANUFACTURER OF SUCH COMPONENTS AND AGREES THAT ALL SUCH COMPONENTS ARE WARRANTED ONLY TO THE EXTENT OF THE MANUFACTURER'S EXPRESS WARRANTIES TO SELLER, WHICH SELLER SHALL PROVIDE TO BUYER AT BUYER'S REQUEST. NOTWITHSTANDING THE FOREGOING, SELLER SHALL NOT BE LIABLE FOR A BREACH OF THE WARRANTY SET FORTH IN THIS SECTION 9 IF BUYER ALTERS, MODIFIES OR REPAIRS THE PRODUCTS IN ANY WAY WITHOUT THE PRIOR WRITTEN CONSENT OF SELLER.

10. Warranty Remedies. Buyer shall provide Seller written notice of any defect in breach of the warranty set forth in Section 9, above, promptly after Buyer discovers such defect, and shall give Seller a reasonable opportunity after such notice to examine such Products to verify Buyer's claim that the Products are defective. If it is found that the goods contained defects at the time furnished by seller, seller will either repair or replace the defective part or parts at seller's option. This warranty to repair or replace is the exclusive remedy and is expressly limited to the materials furnished by seller. All replacements or repairs shall be F.O.B. Germantown, WI. The Seller shall not be liable for labor cost incurred in diagnosing the problem, in removal or replacement of the part so repaired or replaced. Accordingly, Seller shall not be liable for any consequential damages, whether to person or property, caused by defects in goods. This warranty does not apply to any goods which may have been repaired or altered in any way outside of our factory, so as to affect its stability in our judgement, nor does this warranty apply to any goods which have been subjected to misuse, negligence or accident. This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability, and extends only to the original purchaser.

11. Indemnification. Buyer shall indemnify and hold Seller and each of its officers, directors, employees, shareholders, affiliates, agents, representatives, successors and assigns harmless from and against any and all claims, actions, demands, legal proceedings, judgments, settlements, sums, costs, liabilities, losses, obligations, damages, penalties, fines, costs and other expenses (including, but not limited to, reasonable attorneys' fees) relating to, arising out of or resulting from (i) Buyer's use of the Products (except to the extent caused by the gross negligence or willful misconduct of Seller), or (ii) if the specifications or designs for the Products are provided by Buyer, any claim that the Products infringe upon the intellectual property, proprietary or other rights of any third party.

12. Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY THIRD PARTY FOR ANY LOSS OF USE, REVENUE OR PROFIT OR DIMINUTION IN VALUE, OR FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES WHETHER ARISING OUT OF BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NOTWITHSTANDING THE FAILURE OF ANY AGREED OR OTHER REMEDY OF ITS ESSENTIAL PURPOSE. IN NO EVENT SHALL SELLER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO SELLER FOR THE PRODUCTS.

13. Seller Specifications, Designs and Drawings. BUYER ACKNOWLEDGES AND AGREES THAT ANY SPECIFICATIONS, DESIGNS AND DRAWINGS FOR THE PRODUCTS PROVIDED BY SELLER ARE ONLY APPROXIMATIONS AND SELLER EXPRESSLY DISCLAIMS ANY WARRANTY WITH RESPECT TO ANY SUCH SPECIFICATIONS, DESIGNS, SOFTWARE CALCULATIONS AND

DRAWINGS. Seller shall retain ownership of all specifications, designs and drawings provided by Seller and Buyer shall not provide such specifications, designs and drawings to any other party without the written consent of Seller.

14. Excuse from Performance. Seller shall have no liability for any failure or delay in shipment or other nonperformance if shipment or performance is rendered impossible, impracticable or unreasonably burdensome by any event, whether or not foreseen or foreseeable, brought about by any cause other than the willful misconduct of Seller, including, without limitation, accidents, breakdowns, riots, war, terrorism, interruptions in or failures of sources or subcontractors to supply materials or equipment, failures in manufacturing processes or equipment, strikes, labor or transportation problems, fires, explosions or other acts of God, or orders, contracts, priorities, directives, requisitions or requests of the federal or state governments, whether or not voluntarily assumed.

15. Notices. Any notice relating to these Terms and Conditions of Sale must be in writing and will be considered given at the earlier of the date when actually delivered to an officer of a party at the address provided in writing to the other party or when deposited in the United States mail, certified or registered mail, postage prepaid, return receipt requested, to such address.

16. Assignment. Buyer may not assign any of its rights, duties or obligations under these Terms and Conditions of Sale without Seller's prior written consent. Any attempted assignment without Seller's written consent, even if by operation of law, shall be null and void.

17. Controlling Law. All matters arising out of relating to these Terms and Conditions of Sale shall be governed by the internal laws of the State of Wisconsin, without regard to any choice or conflicts of law provisions. Any legal suit, action or proceeding arising out of or relating to this Agreement shall be instituted in the federal courts of the United States of America or the courts of the State of Wisconsin in each case located in Milwaukee County, Wisconsin, and each party irrevocably submits to the exclusive jurisdiction of such courts in any such suit, action or proceeding. The United Nations Convention on Contracts for the International Sale of Products (CISG) does not apply to any transaction between Seller and Buyer.

18. Invalidity or Unenforceability. In the event that any provision of these Terms and Conditions of Sale is found invalid or unenforceable, whether in whole or in part, for any reason, such provision shall be changed and interpreted so as to best accomplish the objectives of such provision within the limits of applicable law or applicable court decisions. The invalidity or unenforceability of any such provision or part of such provision will not affect the validity or enforceability of the remaining terms and conditions hereof.

19. Waiver. The failure of Seller or Buyer, at any time, to require the performance of any obligation or to assert a right contained herein will not affect either party's right to require such performance or assert such right at any time thereafter; nor shall the waiver of any right or obligation be construed in any way as a waiver of any succeeding breach.

20. Survival. The provisions of, and respective obligations of, Seller and Buyer under Sections 7 through 14 of these Terms and Conditions of Sale, inclusive, shall survive any termination of any of the parties' other obligations hereunder or other termination of their agreement with respect to Products sold hereunder.

SECTION 260500

ELECTRICAL OUTLINE SPECIFICATIONS

1. SCOPE OF WORK

A. The work to be performed under this specification shall consist of all labor and materials, installing all materials, equipment and appurtenances and performing all operations necessary as shown on the drawings and hereinafter specified or as required to provide a complete and operable system. This shall include, but not necessarily limited to, the following:

1. Switchgear/Panels
2. Power and Lighting Distribution
3. Branch Circuit Wiring
4. Wiring Devices
5. Lighting Fixtures
6. Switches and Receptacles
7. Emergency Lighting and Power
8. Fire Alarm System
9. Emergency Generator

B. Reference architectural drawings for floor plan layouts and room names.

C. Scope of Work

1. Reference attached Electrical – Room Requirements Schedule for lighting, receptacle, data and telephone outlet requirements for each room. Provide CAT6 wiring from telephone/data outlets to Mechanical 2. Owner's IT contractor to provide patch panels and final connections.
2. Reference attached Light Fixture Schedule for specifications of proposed lighting.
3. Exit and Emergency Lighting
    a. Provide exit and emergency lighting per code.
4. HVAC Equipment Wiring Requirements
    a. Six (6) gas furnaces - 20A. CB – 120V./1Ph. each.
    b. Four (4) 5 ton condensing units - 50A. CB – 208V./1Ph. each.
    c. One (1) 4 ton condensing unit -t 40 A. CB – 208V./1Ph.
    d. One (1) 2 ton condensing unit - 25 A. C.B. – 208V./1Ph.
    e. Five (5) ERV units - 20 A. C.B. – 208V./1Ph. each
    f. Two (2) 3 KW – 208V./1Ph. electric unit heaters.
    g. One (1) 2 KW – 208V./1Ph. electric unit heater.

h. Two (2) ceiling exhaust fans at 100 W. – 120V./1Ph.
i. Two (2) ceiling exhaust fan at 50 W. – 120V./1Ph.
j. One (1) kitchen hood exhaust fan - 1.5 HP at 208V./3Ph.
k.One (1) make-up unit – 30 A. C.B. – 208V./1Ph.
l. One (1) 20 ton packaged rooftop unit - 110 A. C.B. – 208V./3Ph.
m. One (1) 45 ton dehumidification system – 400 A. C.B. – 208V./3Ph.
n. Pool pumping and filtering equipment – provide 100 A. 208.V./3Ph. electrical subpanel.
o. One (1) gas fired unit heater - 15 A. CB – 120V./1Ph.

5. Sprinkler System
   a. One (1) fire pump at 40 HP – 208V./3 Ph. (Phase 2).
   b. One (1) jockey pump at ¾ HP – 120V./1Ph. (Phase 2).
   c. Sprinkler contractor to provide fire pump controllers with built-in transfer switches.
6. Electrical Service and Distribution
   a. Provide 1200 A. – 208V./3Ph. underground electrical service to MDP panel in Jan./Storage.
   b. Provide 200 A. – 208V./3Ph. subpanel in Jan/Storage.
   c. Provide 400 A. – 208V./3Ph. emergency panel in Jan./Storage.
   d. Provide 200 A. – 208V. /3Ph. subpanel in Mechanical (Kitchen).
   e. Provide 200 A. – 208V./3Ph. subpanel in the Storage/Activity Room off of Multipurpose Room.
7. Provide Three (3) 3” underground PVC underground conduits with pull wire for low voltage service entrance.
8. Provide 150 KW diesel base emergency generator and transfer switch to feed fire pump and miscellaneous building loads. Automatic transfer switch to be located in Janitor/Storage.
9. Fire Alarm System
   a. Install new addressable fire alarm system for a fully sprinkled building.
10. Exterior Lighting
   a. Provide Twenty (20) type E fixtures spaced equally around the exterior of the building.
   b. Provide photocell and time clock control for all exterior fixtures.

D. The term "Provide", when used in these specifications, shall mean "Furnish and Install".

E. The term "Furnish" shall mean to obtain and deliver on the job for installation by other trades.

F. When the term "Contractor" or "This Contractor" is used in this section of the specification, it shall be understood that it refers to the contractor responsible for all work under this section. Those responsible for work covered by other sections of the

specification, will be referred to as "General Contractor" or simply by the term "Others".

G. The contractor shall be solely responsible for the verification of field measurements before ordering any materials or equipment, before making any installation or doing any work.

H. Any discrepancies which may be found shall be reported at once to the owner for consideration and decision before proceeding with any work in the affected area.

I. Each contractor shall be held to have examined the site, drawings and specifications and all other contract documents.

J. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section, and within all construction scheduled target dates for project delivery.

K. Protect all material and equipment from damage until final acceptance. Close all openings, during construction, with temporary plugs. Provide new materials and equipment to replace damaged items without additional cost to the Owner.

L. Any required special tools or devices, other than those tools normally available to the maintenance or operating staff, shall be furnished to the Owner, suitably marked, packed or boxes for staff usage. The tools provided shall be listed by the Contractor, identified as to their use or to the equipment to which they apply, in a written transmittal to the Owner.

M. All refuse material and rubbish that may accumulate from time to time during the progress of the project, as a result of the Contractor's work being performed under these specifications, shall be removed by him in order to keep the buildings and premises clean to the satisfaction of the Owner.

2. CODES AND PERMITS

A. All work performed, all equipment and materials installed under this contract, shall be in strict accordance with the requirements of all governing codes and standards including, but not limited to, the following:

1. National Electric Code – NEC (2017).

2. Applicable National Fire Protection Association (NFPA) Codes (latest

edition).

3. Underwriter's Laboratories.

4. Safety and Health Act (OSHA).

5. International Building Code (2015).

6. Applicable State and Local Codes

B. Contractor shall obtain and pay for all construction or installation permits and other certificates, and pay all inspection fees related to his work. He shall prepare specific plans as required by proper authorities before their acceptance of the work.

C. The entire installation shall conform with all pertinent codes and regulations of local, county and state authorities, NFPA, NEC and any other regulatory body having jurisdiction over this class of work.

D. Materials and equipment shall bear stamps or seals of the NFPA, UL, NEMA, IEEE and other industry regulatory groups, where applicable.

E. Where provisions of these specifications, contract documents and/or the drawings, conflict in any way with the applicable codes, rules or regulations, the codes, rules and regulations shall govern.

F. Changes in the drawings, specifications or the installed work to comply fully with codes, rules or regulations shall be made by the contractor as part of the contract without additional cost.

G. The Contractor shall, before installing any work or materials, report any discrepancies between the applicable codes, rules or regulations as they pertain to the work, the drawings and the specifications to the Owner and obtain directions for procedure.

H. Coordinate the work under this section with the work of the other sections which are now or may later be engaged in work at this same site. Schedule all work so that there will be no delay in the proper installation and completion of any part or parts of each respective section wherein it may be interrelated with that of this contract so that generally, all construction work may proceed in its natural sequence without necessary delay.

3. MATERIAL AND WORKMANSHIP

A. All materials shall be new and shall conform to the grade, quality and standard specified.

B. All work shall be performed in a neat and workmanlike manner by experienced electricians in accordance with the drawings and specifications.

C. Coordinate the procurement of specified materials and equipment being supplied by subcontractors, manufacturers and vendors.

D. All materials and equipment for which label service is available shall bear the label of the Underwriter's Laboratories.

4. SUBSTITUTION

A. Generally, the manufacturer or figure numbers first named in the specifications and/or listed in equipment schedules on the drawings, are the items that have been used as a base of design. Should equivalent items of other manufacturers be submitted and accepted, it shall be the Contractor's responsibility to make all necessary changes to the general construction, structural, heating, ventilating and air conditioning, plumbing and electrical systems, that are required by the use of the substituted items at no additional cost.

B. When one manufacturer or figure number is used for a given material or equipment, provide only such material or equipment.

5. SHOP DRAWINGS

A. Drawings or manufacturer's literature with complete physical and performance data of all equipment to be furnished shall be submitted for approval before manufacture or fabrication.

B. Review of the shop drawings and submittals is limited to conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the project site, for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction, and for coordination of the work of all trades.

C. The approval of shop drawings shall not be construed as a complete check, but will only indicate that the general methods of construction and detailing are satisfactory and will not relieve the contractor of the responsibility of any error or omissions which may exist. The contractor shall be responsible for all dimensions, for the design of adequate

connections and details and for the satisfactory operation, construction and coordination of all work.

D. Submission of shop drawings shall include, but not be limited to the following:

1. Panel Boards.
2. Lighting Fixtures.
3. Safety Switches and Starters.
4. Switches and Receptacles & Associated Cover Plates.
5. Wiring, Conduits and Cable.
6. Junction and Outlet Boxes.
7. Fire Alarm System.
8. Emergency Generator.

E. Any item that will be supplied with a UL label shall be so documented on the shop drawings.

F. Submit 5 sets of shop drawings, with each piece of equipment clearly labeled.

6. AS-BUILT DRAWINGS

A. As the work under construction progresses, the contractor shall make all necessary notations to prepare a set of as-built drawings.

B. The drawings shall indicate the size and location of all raceways, above and below grade, including above ceilings. Where applicable, elevations shall be noted. All floor duct and floor outlets shall be dimensioned from columns and building lines. All duct banks, manholes, hand holes, etc., shall be indicated as to exact location.

C. Drawings of as-built conditions shall be submitted and approved before final payment will be made to the contractor.

7. ELECTRICAL WIRING, EQUIPMENT AND DEVICES

A. Conduit, Fittings and Cables

1. Provide all conduits, flexible conduit, boxes and condulets, sleeves and all other required fittings for all electrical power, light, alarm, communication and control wiring.

2. No conduit shall be less than 3/4"commercial trade size, unless shown or specified otherwise.

3. All fire alarm, and other low voltage wiring shall be run in plenum rated wiring.

4. The type of conduit or cable shall be as follows for all feeders and distribution circuits:

Application	Type of Conduit/Cable
* Outdoors - above ground	Galv. Rigid Steel or EMT with W.P. fittings
* Branch circuit (exposed)	EMT
* Branch circuit (concealed)	MC cable
* Supply to Distribution Panels	EMT
* Underground	Schedule 40/80 PVC

B. Installation of Conduit

1. All conduits shall be installed in accordance with the applicable provisions of the NEC, using approved fittings and couplings, as specified, or shown on the drawings.

2. Flexible conduit may be used only for short connections not exceeding 18 inches.

3. All conduits shall be concealed from view, unless otherwise noted, being either buried in the concrete floor slabs, walls or masonry or run above suspended ceilings and all vertical conduits shall be enclosed in the walls as the work progresses.

4. All conduits shall be securely supported by individual ring hangers and rods, steel trapeze hangers or by galvanized malleable iron pipe straps, fastened to concrete slabs, beams or bar joists with Ackerman Johnson or Tampin expansion shields, or from beam clamps attached to the structural members of the building. The use of perforated band iron will not be permitted.

5. The arrangement of all conduits and the methods of fastening same shall be subject to the direction and approval of the Engineer. Conduits shall be installed so that not more than the equivalent of four 90 degree bends occur in any one run. If a greater number of bends is required, a junction box shall be installed.

6. All conduits run in masonry or concrete which is below grade shall be provided with taper threaded galvanized couplings in lieu of standard conduit

couplings. All threads shall be coated with red lead and coupled up watertight.

7. Exposed conduits shall be installed with cast condulet type fittings and outlet boxes, unless specifically indicated otherwise on the drawings.

8. Conduits in concrete slabs crossing expansion joints shall be provided with a conduit expansion fitting.

9. Where wiring passes through holes in sheet metal, such as partition studs, etc., the holes shall be provided with a rubber or plastic grommet to prevent chaffing.

C. Junction or Pull Boxes

1. The junction or pull boxes shall be constructed of code gauge galvanized steel in accordance with the Underwriters requirements. Boxes shall have a removable cover, shall be of the size as shown or required for the passing of conductors through the boxes, and in no case shall the space allowed in the box for the sweep of the cables be less than the same dimension of a conduit elbow.

D. Outlet Boxes

1. Outlet boxes of proper type and size as required by building conditions shall be placed at all receptacles, switch, telephone and special outlets. Outlet boxes shall be firmly secured in place and set true and flush with the finished surface.

2. Outlet boxes, where concealed, shall be of one piece plastic, square, rectangular or octagonal.

3. Pressed steel outlet boxes shall not be used on exposed or exterior conduit work. Where conduits run exposed all outlet boxes shall be cast metal with suitable gasketed covers and fittings. Boxes for ceiling outlets, which receive fixtures, shall have fixture studs.

E. Wire Installation

1. Provide wiring per specification section 7.A.

2. The minimum sizes of wire shall be as follows:

* Lighting and convenience outlet circuits - No. 12 AWG
* Power circuits - No. 12 AWG
* Signal and control circuit - No. 14 AWG

F. Wire and Cable

1. Unless otherwise specified, all wire furnished under this contract shall be single conductor copper, Type THWN-2 or Type THHN.

G. Location of Outlets

1. Locate receptacles per final electric design drawings.

2. If an outlet is installed by this contractor in such a location as to be out of proper relation to beams, walls or other details of the building, its location shall be corrected by and at the expense of this contractor at the direction of the owner.

H. Heights of Outlets and Wall Switches

1. Unless otherwise indicated, outlet boxes and switches in walls shall be located with the center line at the following elevation above the finished floor line:

* Switch Outlets: 4'-0"
* Telephone Outlets, Wall Type: 1'-6"
* Receptacle Outlets, Unless Otherwise Noted: 1'-6"
* Fire Alarm Stations: 3'-10"
* Motor Starters & Safety Switches: 4'-6"
* Panel Boards (top): 6'-0"

I. Wall Switches

1. Switches for the local control of lighting shall be of the heavy duty, handle operated tumbler type, as indicated. Switches shall be Leviton model CSB1-20 or equal as manufactured by Arrow-Hart or Hubbell.

J. Receptacles

1. Wall receptacles for convenience outlets shall be of the duplex type rated at not less than 20 ampere at 125 volts. Receptacles to be provided with a grounding clip equal to Leviton BR20 or equal as manufactured by Arrow-Hart or

Hubbell.

K. Wall Plates

1. Unless otherwise specified, all wall plates for switch, receptacles, telephone and similar outlets shall be provided with a white plastic plate. Where more than one switch occurs at one point, gang plates shall be used.

2. In all finished areas, unless otherwise specified, all wall plates for switch, receptacle, telephone and similar outlets shall be provided with smooth faced plastic plates with beveled edge to lie flat against the wall. Plate thickness shall be .100" and shall meet Flame Test UL 514. Color shall be as selected by owner. Where more than one switch or receptacle occurs at one point, gang plates shall be used.

L. Safety Switches

1. Safety switches shall be fused or NEMA Standard construction with positive quick-make and quick-break operating mechanism, safety interlocking cover and external operating handle. Enclosing case shall be code gauge steel, rust proofed and enameled. The switch shall function with the quick-make and break spring removed. Safety switches shall be as manufactured by Square D Company, ITE or General Electric.

M. Labels

1. Each safety switch, panel board, motor starter and similar equipment shall be labeled and numbered with characters not less than 1 inch high to indicate the device and equipment served. A laminated nameplate with enameled lettering shall be used for indication.

N. Motor Connections

1. All electric motors furnished under the general, HVAC and plumbing specifications will be installed under the respective contracts.

2. The Electrical Contractor shall provide the necessary disconnects set and wire the units as specified. All motor controls furnished by the other contractors shall be installed and wired by the Electrical Contractor.

3. The Electrical Contractor shall run power wiring system for the various points

indicated to the motor outlets and connect up complete and ready for operation unless otherwise noted.

O. Grounding

1. Cabinets, panel boards, motors, conduits and all non-current carrying parts of the entire electrical system shall be thoroughly and effectively grounded as required by the NEC (Article #250).

P. Panel Boards

1. All panel boards shall be equipped with insulated neutral bar for the wiring being connected and a separate grounding bar.

2. Provide a typed panel board schedule identifying each circuit and firmly attach to inside door of panel board.

8. LIGHTING FIXTURES

A. Scope

1. Provide and install a complete system of lighting fixtures installed in place, including lamps, wired and connected and left in a satisfactory operating condition. At time of final approval by the Owner all fixtures shall be clean and any burned out lamps or ballasts replaced at no additional charge.

2. Every lighting outlet shall be equipped with a lighting fixture.

3. Contractor shall submit shop drawings and descriptive data for each type of fixture to be installed. Samples of all lighting fixtures shall be submitted for approval upon request of Owner.

B. Lamps

1. All lamps shall be furnished and installed under this section.

9. SUPPORTS AND FASTENING DEVICES

A. Electrical Contractor shall furnish, fabricate, shop paint, deliver and erect all structural work required for the proper support of all equipment installed under this contract, unless otherwise indicated. These supports shall be independent of all other equipment supports.

B. Anchors shall be provided where indicated or necessary to control expansion in the raceway lines. Anchors shall be heavy, substantial construction capable of holding stationary, under the most severe operating conditions and shall be securely attached to their supports, the building structure and to the equipment.

10. HANGERS

A. Electrical Contractor shall be responsible for the furnishing and erecting of all required supports and hangers for all items in the various types of construction encountered in the project.

B. Provide hangers and supports in strict compliance with the 2014 edition of the National Electric Code.

C. Hangers shall conform to the requirements of zone 2 seismic loadings as defined by the International Building Code (2009).

11. SLEEVES

A. Raceways passing through walls, floors, ceilings and partitions shall be provided with sleeves. Where raceways pass through outside walls, floors on grade or roof, sleeves shall be sealed watertight by caulking the space between sleeve and pipe with oakum and filled at both sides with waterproof caulking materials.

12. CUTTING AND PATCHING

A. Contractor shall furnish drawings to indicate the size and location of all openings to the General Contractor.

B. The General Contractor shall be responsible for all cutting and patching required.

13. SCAFFOLDING, RIGGING AND HOISTING

A. Electrical Contractor shall furnish all scaffolding, staging, rigging, hoisting and services necessary for erection and delivery into the premises of any equipment and apparatus furnished or installed by him and shall remove same from premises when no longer required.

B. Scaffolding and staging construction and maintenance shall be in strict accordance with all applicable codes and regulations including Electrical Contractor's safety regulations.

The structure shall be erected so as not to interfere with the work of others. If it becomes necessary to move the scaffolding and/or staging to permit installation of other work, the contractor shall do so at his own expense.

14. ACCESS PANELS

A. Electrical Contractor shall furnish all access panels required in walls, ceilings, etc., for access to junction boxes or other equipment. Coordinate location of access panels with owner.

B. Electrical Contractor shall coordinate with the owner of type and finish of access panels to be furnished.

C. Electrical Contractor shall turn over all access panels to the General Contractor for installation.

D. Minimum size of access panels shall be 12" x 12".

E. Access panels shall be as manufactured by Milcor, Ruskin Mfg. or United McGill Corp.

15. ELECTRICAL EQUIPMENT AND COORDINATION

A. All electrically operated equipment shall be furnished with NEMA standard motors, switches, pushbuttons, relays and all other controlling devices required for satisfactory operation by the contractor supplying the equipment. Disconnect switches shall be provided by the Electrical Contractor. Integral contractors shall be considered starters.

B. All motors and their controllers shall conform with the Electrical Section of this specification, the National Electric Code, the local utility and other bodies having jurisdiction over this class of work.

C. All starters and switches shall be the product of one manufacturer, Square D, General Electric or I-T-E Siemens.

D. The Electrical Contractor shall wire all motors, starters and controllers except as noted.

E. The Mechanical and Plumbing Contractors shall furnish the Electrical Contractor with complete wiring diagrams of mechanical and plumbing equipment, as required.

16. NAMEPLATES

A. Each panel board, starter, disconnect or safety switch shall be marked with an engraved, laminated, black phenolic nameplate. Lettering and/or numbering shall be positioned on the front of the equipment so as to be clearly visible. The engraving shall be a minimum of 1/4" in height with white enameled undercut characters on a dark background. The legend on the nameplates shall be so composed as to clearly indicate the function of the equipment and shall be secured to the equipment with screws.

17. MAINTENANCE MANUALS AND OPERATING INSTRUCTIONS

A. Provide three bound sets of complete manufacturer's service and maintenance instructions on all pieces of equipment furnished.

B. Furnish services of representatives of equipment manufacturers to instruct attendants in the proper operation of the equipment.

C. Provide eight hours of operating and maintenance instruction to person or persons designated by Owner to receive this instruction. Instruction to be given after equipment is operating and prior to acceptance by Owner.

18. GUARANTEE

A. The contractor shall replace free of charge, all material and equipment that becomes useless or inoperative because of original defects in material or workmanship or because of defects caused by poor workmanship when making the installation.

B. The guarantee period shall begin on the date of written acceptance of the system, by the Owner or his representative, and shall run for one full year from date of written acceptance.

19. TESTING AND ADJUSTING

A. All electrical conductors, after installation of apparatus and wiring has been completed, shall be tested to insure continuity, freedom from grounds and insulation resistance values in accordance with the requirements of the National Electric Code and local inspection authorities.

B. All components, both singularly and as a whole, shall be adjusted and left in a satisfactory operating condition.

C. All overload devices, including equipment furnished under other divisions of these specifications, shall be set and adjusted to suit the load conditions and all tests made to determine actual loads. The contractor shall be responsible for proper rotation of all

motors.

D. All tests shall be made in the presence of the Owner or his authorized representative.

20. FIRE ALARM SYSTEMS

A. Scope of Work

1. Install new addressable fire alarm system by Fire-Lite, Edwards, Honeywell, Silent Knight or equal.

B. References

1. NFPA 70 – National Electric Code
2. NFPA 72 – Installation, Maintenance, and Use of Protective Signaling Devices
3. NFPA 72E – Automatic Fire Detectors
4. NFPA 72G – Notification Appliances for Protective Signaling Systems
5. NFPA 72H – Guide for Test Procedures for Protective Signaling Systems
6. NFPA 101 – Life Safety Code
7. ADA – Americans with Disabilities Act
8. Underwriters' Laboratories UL 864
9. International Building Code 2009
10. International Fire Code 2009

C. Submittals for Review

1. Product Data: Provide electrical characteristics and connection requirements.
2. Calculations for battery capacities and power supply calculations.
3. Shop Drawings: Indicate annunciator layout and system wiring diagram showing each device and wiring connection required.

D. Submittals for Information

1. Test Reports: Indicate satisfactory completion of required tests and inspections.

E. Quality Assurance

1. Conform to requirements NFPA 70 and NFPA 101.

2. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

F. Maintenance Service

1. Provide service and maintenance of fire alarm equipment for one year from date of completion. Provide written warranty to owner upon completion of project.

END OF SECTION 260500

ELECTRICAL - ROOM REQUIREMENTS

ROOM	LIGHT FIXTURE TYPE AND QUANTITY	RECEPTACLE QUANTITIES			DATA OUTLET (CAT 6)	TEL OUTLET (CAT 6)	NOTES
		20A.-1POLE DUPLEX	20A.-1POLE DUPLEX-GFI	2 POLE RECEPT.			
1. SPRINKLER/MECH.	FIXT. B - QTY. 3		2				• OCCUPANCY SENSOR CONTROL
2. GAMEROOM	FIXT. A - QTY. 12	8			1	1	• OCCUPANCY SENSOR CONTROL
3. MAKERS/CRAFTS ROOM	FIXT. A - QTY. 6	6			1	1	• OCCUPANCY SENSOR CONTROL
4. BATHROOMS (TYP. OF 2)	FIXT. A - QTY. 3		1				• OCCUPANCY SENSOR CONTROL
5. FAMILY BATH	FIXT. A - QTY. 1		1				• OCCUPANCY SENSOR CONTROL
6. NURSING ROOM	FIXT. A - QTY. 1		1				• OCCUPANCY SENSOR CONTROL
7. FAMILY ROOM	FIXT. A - QTY. 1		1				• OCCUPANCY SENSOR CONTROL
8. JAN./STORAGE	FIXT. B - QTY. 3		2		2	2	• OCCUPANCY SENSOR CONTROL
9. MEETING ROOM	FIXT. A - QTY. 6	4			1	1	• OCCUPANCY SENSOR CONTROL
10. WORKROOM/PROGR. RM.	FIXT. A - QTY. 6	4			1	1	• OCCUPANCY SENSOR CONTROL
11. OFFICES (TYP. OF 2)	FIXT. A - QTY. 1 (EACH)	4			1	1	• OCCUPANCY SENSOR CONTROL
12. VESTIBULE	FIXT. A - QTY. 1	1					• OCCUPANCY SENSOR CONTROL
13. KITCHENETTE	FIXT. A - QTY. 2	1	3	1 (40 A.)			• OCCUPANCY SENSOR CONTROL
14. ADULT LOUNGE	FIXT. A - QTY. 10	6			1	1	• OCCUPANCY SENSOR CONTROL
15.MAIN CORRIDORS (2)	FIXT. A - QTY. 12 (TOTAL)	4					• OCCUPANCY SENSOR CONTROL
16.FUNCTION RM. & VEST.	FIXT. A - QTY. 66	12			1	1	• OCCUPANCY SENSOR CONTROL
17 STORAGE (TYP. OF 5)	FIXT. B - QTY. 1 (EACH)						• OCCUPANCY SENSOR CONTROL
18. KITCHEN	FIXT. A - QTY. 10		24		1	1	• OCCUPANCY SENSOR CONTROL
19. MECH. (KITCHEN)	FIXT. B - QTY. 2		1				• OCCUPANCY SENSOR CONTROL
20. OFFICE (KITCHEN)	FIXT. A - QTY. 1	4			1	1	• OCCUPANCY SENSOR CONTROL
21. CORRIDOR (KITCHEN)	FIXT. A - QTY. 2	1					• OCCUPANCY SENSOR CONTROL
22. AQUATIC	FIXT. E - QTY. 38		12		1	1	• LIGHT SWITCH CONTROL
23. MEN'S LOCKER ROOM	FIXT. B - QTY. 10 FIXT. C - QTY. 3		2				• OCCUPANCY SENSOR CONTROL
24. WOMEN'S LOCKER ROOM	FIXT. B - QTY. 10 FIXT. C - QTY. 3		2				• OCCUPANCY SENSOR CONTROL
25. STORAGE (AQUATIC)	FIXT. B - QTY. 2						• OCCUPANCY SENSOR CONTROL

NOTE: 1. PROVIDE DIMMING IN ALL OFFICES AND MEETING/CONFERENCE ROOMS.

ELECTRICAL - ROOM REQUIREMENTS

ROOM	LIGHT FIXTURE TYPE AND QUANTITY	RECEPTACLE QUANTITIES			DATA OUTLET (CAT 6)	TEL OUTLET (CAT 6)	NOTES
		20A.-1POLE DUPLEX	20A.-1POLE DUPLEX-GFI	2 POLE RECEPT.			
26. MECH. (AQUATIC)	FIXT. B - QTY. 2		1				• OCCUPANCY SENSOR CONTROL
27. CORRIDOR (LOCKER ROOMS)	FIXT. A - QTY. 2	1					• OCCUPANCY SENSOR CONTROL
28. CORRIDOR (TO MULTIPURPOSE)	FIXT. A - QTY. 4	1					• OCCUPANCY SENSOR CONTROL
29. MULTIPURPOSE	FIXT. C - QTY. 34	12					• LIGHT SWITCH CONTROL
30. STORAGE/ACTIVITY (FIRST FLOOR)	FIXT. B - QTY. 8	2					• OCCUPANCY SENSOR CONTROL
30. STORAGE/ACTIVITY (MEZZANINE)	FIXT. B - QTY. 8	2					• OCCUPANCY SENSOR CONTROL

NOTE: 1. PROVIDE DIMMING IN ALL OFFICES AND MEETING/CONFERENCE ROOMS.

LIGHT FIXTURE SCHEDULE

FIXTURE TYPE	MANUFACTURER'S DESCRIPTION	LAMPS		VOLTS	MOUNTING	REMARKS/NOTES
		NO.	TYPE			
A	LITHONIA 2'X2' CENTER BASKET LED TROFFER MODEL 2BLT2 40L ADP EZ1 LP835	1	4,000 LUMENS LED	120	RECESSED CEILING	
B	LITHONIA LED LOW-PROFILE LED WRAPAROUND MODEL LBL4 4000LM 80CRI 35K NO DIM MVOLT	1	4000 LUMENS LED	120	SURFACE CEILING	
C	LITHONIA LED HIGH BAY MODEL IBE 18LM MVOLT 40K	1	22,000 LUMENS LED	120	CEILING	
D	LITHONIA 6" WAFER LED RECESSED DOWNLIGHT MODEL WF6 LED 30K 90CRI MW	1	1150 LUMENS LED	120	RECESSED CEILING	
E	LUX DYNAMICS LED HIGH BAY MODEL LUX-IK10P-E-3-DA-HO3-840-2-U10-CA2-I-T-5/10-10Y-NAT	1	18108 LUMENS LED	120	PENDENT CEILING	
F	LITHONIA LED WALLPACK MODEL KAXW P1 30K R4 MVOLT PIR	1	3415 LUMENS LED	120	WALL	• 180° MOTION/AMBIENT LIGHT SENSOR