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Approved with Conditions
Date: 05/16/13
Planner: Benjamin Wallace Jr

Outline Specification

OA- MRI
Expansion & Renovation

33 Sewall Street
Portland, Maine

Issue for Bid & Permit
March 8, 2013

PDT project № 12126

ARCHITECTS

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CENTERS OF ORTHOPEADICS - MRI
OUTLINE SPECIFICATION

DIVISION I - GENERAL REQUIREMENTS

Intent of Documents: The Drawings and Outline Specification are schematic. Components or systems not listed, but necessary for a complete project shall be considered a requirement of these documents.

Codes and Standards: All work shall meet or exceed applicable codes and regulations of building, zoning, fire department and other governmental agencies having jurisdiction. These shall include applicable local, state, federal, public utilities, transportation and/ or environmental regulations, applicable handicapped accessibility regulation and standards including, but not limited to, the Maine Human Rights Act, and The Americans with Disabilities Accessibility Guidelines. Where there are conflicts between codes and regulations, the most stringent shall be applicable.

DIVISION I – GENERAL CONDITIONS

The General Contractor's responsibility includes but is not limited to the following:

- Project management, supervision, safety program
- Field layout, shop drawings, record and as-built drawings, quality control
- General liability, workman's compensation insurances
- Payment and performance bonds, [builder's risk insurance,]building permits, testing services
- Temporary service (electrical, water, sanitary, power, heat, fire protection, enclosures/barriers)
- Snow fencing of foundations and site fencing at project, dust and water control
- Signs and project identification, field office and storage trailers.
- Dust control, ongoing project cleaning, final cleanup, legal disposal of waste
- Record drawings and Jobsite meeting minutes

Owner responsibilities:

- Site plan approvals and regulatory review; reasonable, unimpeded access to the site.
- Timely decision making and desired night time security
- Desired testing services and builders risk insurance

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Alternates:

Alternate №1; Shielding Enclosure Acoustical Upgrade

- Shielding to include foam insulation for acoustical absorption for added STC of № - № ;

Alternate №2; Shielding Enclosure Door Acoustical Upgrade

- Upgrade door from manufacturers standard options to increase STC rating.

Alternate №3; Suspended Acoustical Ceiling Tile Upgrade

- Upgrade ceiling tile at MRI rooms only, see Division 9.

Alternate №4; Ceramic Tile at Toilet Room to match building standard.

- Upgrade finishes at Toilet room only – from base bid paint at walls and RSF-1 at floor to include ceramic floor and wainscot at all 4 walls, see Division 9.

DIVISION 2 – EXISTING CONDITIONS / DEMOLITION

- Remove items shown on the drawings and dispose of at suitable recycling/disposal location.
- Any items indicated as salvage for the Owner will be carefully removed and stored at a location determined by the Owner.

DIVISION 3 - CONCRETE

Submittals

- Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315.

Reinforcing Materials:

- Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- Fiber Reinforcing: ASTM C 1116, Type III virgin polypropylene fibers

Concrete Materials:

- Portland Cement: ASTM C 150, Type I or Type II,
- Normal Weight Aggregates: ASTM C 33.
- Water: Potable.
- Air-Entraining Admixture: ASTM C 260.
- High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G containing not more than 1% chloride ions.

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- Normal range water reducing admixture: ASTM C 494 Type A containing no calcium chloride.

- Accelerating Admixture: ASTM C 494, Type C or E.

Proportioning And Design Of Mixes:

- Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301.

- Proportion design mixes to provide concrete with the following properties:

  - Interior Slabs on Grade and Elevated Slabs:
    - Strength: 4000 psi @28 days, 3/4" aggregate
    - W/C Ratio: 0.48
    - Entrained Air: 4% ± 1%
    - Slump: 3" ±

  - Foundation Walls and Footings:
    - Strength: 3000 psi @28 days, 3/4" aggregate
    - W/C Ratio: 0.58
    - Entrained Air: 4% ± 1%
    - Slump: 3" ±

  - Exterior Slabs, and all other exposed Site Concrete:
    - Strength: 4000 psi @28 days, 3/4" aggregate
    - W/C Ratio: 0.40
    - Entrained Air: 6% ± 1%
    - Slump: 3" ±
    - DCI Corrosion Inhibitor by Grace: 3 1/2 gal/cy.
    - Add @ Batch Plant

DIVISION 4 - MASONRY

Unit masonry assemblies shall be complete and comply with ACI 530.1/ASCE 6/TMS 602 and include:

- Brick
- Mortar and grout.
- Masonry joint reinforcement.
- Ties and anchors.
- Embedded flashing.
- Precast concrete sills
- Miscellaneous masonry accessories.

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Where shown to "match existing," provide face brick matching color range, texture, and size of exi adjacent brickwork.

- Field Brick, Type I: match existing
- Accent Brick, Type 2: match existing

Mortar and Grout Materials

- General: Mortar and grout may be provided in one of two options; field mix of Portland cement, lime and sand or with specified Portland Cement-Lime Mix.

Miscellaneous Masonry Accessories

- Compressible Filler: Pre-molded filler strips complying with ASTM D 1056, Grade 2A1.
- Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
- Cavity Drainage Material: 1-inch- thick, free-draining mesh; made from polyethylene strands and shaped to avoid being clogged by mortar droppings.

DIVISION 5 – STEEL

Submittals

A. Submit shop drawings, including complete details and schedules for fabrication and assembly of structural steel members, procedures and diagrams.

B Submit detailed drawings showing layout and types of deck panels, anchorage details, and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories.

Materials:

A. Structural Steel Wide Flange Shapes: ASTM A992, Grade 50

B. Other Structural Steel Shapes, Plates and Bars: ASTM A36

C. HSS shapes (square, rectangular and round): ASTM A500, Grade B, Fy = 46 ksi

D. Painted Deck Units: ASTM A611, Grade C.

Sheet metal Accessories: ASTM A526, commercial quality, galvanized.

E. Anchor Rods: ASTM F1554, Grade 36 headed unless otherwise indicated.

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F. Unfinished Threaded Fasteners: ASTM A 307, Grade A

G. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, a hardened washers, as follows:

1. Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A325

2. Direct-tension-indicator bolts conforming to ASTM F1852 or direct-tension-indicating washers conforming to ASTM F959 may be used at Contractor's option.

H. Electrodes for Welding: E70XX and comply with AWS Codes.

DIVISION 6 - CARPENTRY

Rough Carpentry

Wood blocking

- Provide lumber for support or attachment of other construction. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 15 percent maximum moisture content and any of the following species: Spruce-pine-fir (south) or Spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA.

Interior Architectural Woodwork

Custom Laminate Cabinets

- Match Building Standard.

- Plastic Laminate Color: *(to match doors at MRI shielding mfr- GC to confirm)*; Formica Finnish Oak 118-58

Hardware:

- ANSI/BHMA A156.9; satin stainless steel; concealed, self-closing hinge; 4" wire pull; drawer glides: 100 lb. capacity; shelf supports: No. 346, 2" O.C. by Knape & Vogt; shelf standards: No 85 standards and No. 185 brackets at wall mounted shelving. Or as varies per building standard.

Countertops:

- Custom plastic laminate countertops. Color: Wilsonart 4588k-07 Kalahari Topaz

Counter Support Brackets:

- Heavy gage aluminum angle, MIG welded corners, 5/16 inch holes for mounting; primed finish for field painting. Provide Rakks Counter Support, Model No. EH-1818, by Ragine Corp. (800-826-6006)

- or approved substitution.

Shelving:

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- Shelving: 3/4" Thermoset decorative overlay (Melamine) with 3mm PVC edging white.

- Hardware: Knape & Vogt No. E3200 WH, twin slotted standards with NO. E321(brackets.

Coat hanger hooks:

- Knape & Vogt No. PKV3 ANO 5-1/2" Utility Hook

Interior Standing and Running Trim

- Chair Rail: Paint Grade Poplar to match existing.

DIVISION 7 - THERMAL AND MOISTURE

Building Insulation

Thermal Insulation

- Walls: 3" thick rigid extruded polystyrene insulation - typical, UNO.

- Foundation: 2" thick rigid extruded polystyrene insulation- typical, UNO

- Roof: 4" thick / tapered rigid polyisocyanurate insulation (Maintain a minimum of R-36 throughout).

Sound Insulation

- Metal Framing sound attenuation batt insulation; 3 " thickness; extend full height to underside of deck. (Typical at all partitions)

Below-Grade Vapor Retarders

- 10 mil Stegowrap or equal

Air Barriers

40 mil DFT sheet, roll-on, or spray-applied air barrier membrane system

Membrane Roofing

- .060 adhered EPDM membrane with rigid insulation (see Building Insulation), roof drains, and roof edge trims-flashings

- Cutting, flashing and patching of existing roof membrane to accommodate piping and/or duct penetrations thru roof

- Note that existing membrane manufacturer must be identified and consulted as to warranty validations for this work. Do work in manner that maintains existing roof warranty.

Joint Sealants

- Exterior and interior sealants as required

DIVISION 8 - DOORS AND WINDOWS

Steel Door Frames

Frames

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- Comply with ANSI A250.8; Recommended Specifications for Standard Steel Doors and F
- Fabricate frames with mitered or coped and continuously welded corners and seamless fa joints; All welded joints shall be ground and dressed to be smooth, flush and invisible; Prov welded frames with temporary spreader bars.
- Provide door silencers on strike jambs.

Flush Wood Doors

Doors

- Note: Match base building specification.
- Comply with NWWDA I.S.1 and AWI " Architectural Woodwork Quality Standards."
- Wood doors shall be prepped for mortise hardware at factory in accordance with the hardware templates.
- Doors shall be paint grade solid core wood doors, U.N.O..

Access Panel

- Aluminum Insulated Access Door, 22" x 36" opening– Basis of design: Cendrex PFU

Aluminum-Frame Entrances and Storefronts

- Exterior thermally broken aluminum frame, 2 by 4-1/2 inches, thermally broken sub-sill
- Interior non-thermal aluminum frame, 2 by 4-1/2 inches
- Clear anodized finish
- Heavy duty, 2" thick aluminum entry doors, medium stile

Tubular Daylighting Device

Tubular daylighting device, consisting of roof dome, reflective tube, and diffuser assembly; configuration as indicated on the drawings.

Basis of Design: Model: Solotube 290 DS

Accessories:

- Local Dimmer Control utilizing a butterfly baffle design of Spectralight Infinity reflective material to minimize shadowing when in use.
- Glass Distractions decorative fixture – Owner to choose from Mfrs options.

Manufacturer: Solatube International, Inc.; 2210 Oak Ridge Way, Vista, CA 92081. ASD. Tel. Toll Free: 888-765-2882. Tel: (760) 477-1120. Fax: (760) 597-4488. Email: commsales@solatube.com. Web: www.solatube.com

Door Hardware

Hardware/ Swing Doors

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- Note: Match base building specification

- Basis of design: Sargent 8200 Series or Equal; Lever Design P; 26 D finish; Inside face of le be polished to match base building requirement;

- See Interior Fit-Up Schedule for hardware functions.

Pocket Doors

- Sliding Pocket Door hardware & door pulls, 1"dia, 26 D finish

Auxiliary Materials

- Door stops: Ives (or equal) door stops appropriate for each condition, 26D finish.

- Coat Hooks: Bobrick B-7671 with 26D finish; one hook each for doors at toilet room and office, mounted on room side and one each @ East Wall of Changing rooms.

Glazing

Sliding Window Hardware

- CRL Masteroll Overhead Track System by CRLaurence. Complete assembly, each consisting of upper channels, carriers and countertop guides.

- Additionally provide single sided pull handle, 6" Brushed Nickel finish on room side.

Glass

- Heat treated glass products: Tempered glass, ASTM C 1048

- Clear glass, thicknesses as required by frame size.

- Magnetically Shielded Glass – by shielding manufacturer

DIVISION 9 – FINISHES

Gypsum Board Assemblies

Gypsum Wall Board and Metal Stud Walls

- Fire Rated Gypsum Board: ASTM C36; 5/8" inch thick, maximum available length in place; ends square cut, tapered edges. Mold and moisture resistant gypsum board only at walls with sinks and the whole shower rooms

- Fiberglass faced Gypsum Board at exterior walls: Densglas or equal

- Studs and Tracks: ASTM C645; galvanized sheet steel, 20 gage, C shape.
  Note: Typical Walls shall be 3 5/8" metal studs with 5/8" GWB at both sides and sound attenuation blankets. Extend walls to underside of deck or to flush with existing construction.

- Acoustical sealant at tracks and Gypsum Board intersection with slab at STC rated partitions.

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Acoustical Ceiling Panels

Ceiling Tile

- Armstrong, Cortega; 24 x 24 x 5/8" Tegular edge, medium texture; 15/16" Prelude expose System, white. (To match base building specification, NRC rating of 55)

- Alternate № ; Upgrade to Armstrong, Optima; 24 x 24 x 5/8" Tegular edge, 15/16" or similar tile with 0.95 or greater NRC rating within the MRI shielding rooms.

Resilient Flooring

Resilient Sheet Flooring

- Mannington – Assurance II (slip-retardant sheet flooring), color: Toasted Sesame 16306 [RSF-1]

Resilient Wall Base

- Johnsonite, 4" high rolled cove base; 1/8 inch thick. Color: 29 Moon Rock @ new. Match existing at areas to remain.

Carpet

Carpet

- Shaw; Ingrain modular tile (building standard) – color: alder 39109 [CPT-2]

Entry Mat

- Mannington; Traverse – modular entry mat tile, color: Ochre Owl [CPT-1]

Tiling

- Alternate № ; to match building standard, including but not limited to 2 x 2 inch ceramic mosaic floor tile, 4-1/4 x 4-1/4 inch ceramic wall tile [wainscot], Cove base and bullnose edge trim

Painting

Paint

- Building Standard colors by California Paints.

  Walls:

  P-1: DE5358 Ivory Oats, typical above chair rail
  P-2: DE6162 Antique Lace, typical for painted trim
  P-3: DEC767 Riverbed, typical below chair rail
  P-4: G-6 Bronzed Plate (from 20th Century Collection), orange accent
  P-5: DE5528 Watercress, green accent6
  P-6: DE5716 Rolling Waves, blue accent

  Doors & Frames:

  Match building standard

Application as follows:

- Provide Low-VOC paint products.

- New walls: 1 coat interior latex-based primer; 2 coats interior eggshell latex enamel.

- Steel frames: 1 coat interior enamel undercoat; 1 coat interior semi gloss alkyd enamel.

- Running Trim: 1 coat interior latex-based primer; 2 coats interior semi-gloss latex enamel.

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DIVISION 10 – ACCESSORIES

Toilet and Bath Accessories

Toilet Accessories – to match building standard unless otherwise noted.

- Paper towel dispensers
- Toilet Tissue dispensers, double roll
- Grab bars
- Soap dispensers
- Robe Hook
- Mirrors: ModelNº B-165 2436
- Materials and Finishes: AISI Type 302 or 304, No. 4 polished finish.

Decorative Surfaces

Acoustical Melamine Foam Panels with Custom Fabric Wrap.

- Materials:
  - Open Cell Melamine Acoustical Foam.
  - Fabric – to be provided by Owner from porous custom-printed media.
- Pattern: Flat.
- Thickness: 2 inches.
- Sizes: 2 by 2 feet or 2 by 4 feet.
- Edge Detail: Square.
- Density: 0.7lbs/cu. ft.
- Colors: Standard Colors: Natural White or Light Grey – (t.b.s)
- Flammability: ASTM E84, Class A.
  Flame Spread: 6.
  Smoke Developed: 15.
- Noise Reduction Coefficient: 2 inch: 1.00.
- Installation: Acoustical Adhesive.

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Curtain Track & Curtains

- Imperial IFC-98; White Finish; Provide one hook for every 6 inches of track length
- Curtains – Sheer fabric in lieu of mesh top), lined at decorative fabric, closable – per dra
- Fabric : Architex Rx7003 color: Sunshine

Fire Extinguisher and Cabinet

- UL and FM listed products
- Fire Extinguisher: Multipurpose dry chemical type; sized for project requirements; cabinet mounted.
- Cabinet: Semi-recessed; full tempered glass; clear anodized finish.

DIVISION 11 - EQUIPMENT

Not Used – all equipment provided by Owner. Coordinate installation with Owner and Owner's separate contractors.

DIVISION 12 – FURNISHINGS

Not Used

DIVISION 13 - SPECIAL CONSTRUCTION

Radio Frequency Shielding

- Manufacturer: Acceptable manufacturers include:
  1. Braden Shielding Systems, 9260 Broken Arrow Expressway, Tulsa Oklahoma, 74145; Contact: Tony Steffans; tsteffens@bradenshielding.com (918) 624-2888 Ext. 103
  2. ETS-Lindgren, 1301 Arrow Point Drive, Cedar Park, Texas 78613; Contact: Ed Powers: ED.Powers@ETS-Lindgren.com (607) 387-6347
  3. Other enclosures are acceptable provided two layers of shielding are provided in all walls, floors, and ceiling. Single layer shielding techniques are not acceptable.
- Steel is the preferred shielding material due to its higher performance, other mediums are acceptable provided they meet MRI vendors performance requirements and the following:
  1. The manufacturers must have been engaged in the manufacture and installation of RF shielded enclosures for a minimum of five years.
  2. The submittal shall include a list of at least 10 successful installations of similar complexity and size. Test results from those sites shall also be included.

RF shielding - solid core modular panel system

- The basic enclosure shall be constructed to the proper dimensions consisting of pre-engineered

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modular panels and their related framing system.

- Wall, floor and ceiling panels: all shield panels shall be rigid structural panels, faced on interior and exterior sides with fully galvanized 28 gauge steel skins. Provide necessary att channels for the application of interior furring studs.

- Panel interlocking system: shall consist of 11 gauge pre-engineered zinc plated metal framing members. No rigid solder seams shall be permitted. The framing element shall consist of shapes, which will provide a clamping action on both the interior and exterior panel edges. A uniform and constant pressure contact shall be maintained against the entire perimeter of each shielded panel.

- Trihedral corners are to be framed with machined cast bronze corner cap assemblies.

- Fasteners used within the framing system shall be hardened steel, self-tapping torx™ head screws set at 90 inch pounds of torque and spaced on 4" centers for the entire perimeter of all shielded panels.

- Floor system:
    1. Magnet room floor systems shall be dual skinned galvanized steel with zinc-plated framing.
    2. Fasteners: all fasteners utilized within the floor system shall be flat head torx™ head screws mounted within the framing system. Each unit set at 90 inch pounds of torque on 4" centers.

General:

- In no case shall any fastening system be employed that utilizes screws, nails or other projections through the shield medium. On dual skin panels, items may be mounted directly to the interior skin face as long as the mounting mechanism does not penetrate the exterior skin and proper mounting techniques are utilized.

RF shielded door:

The RF shielded door assembly shall provide full RF integrity while presenting the appearance of a conventional door.

- Door leaf: shall consist of a solid core, plastic laminated leaf with full perimeter brass contact strip. The leaf shall be hung from three (3) radial thrust-bearing hinges. One layer of fully annealed copper sheet shall be laminated to the exterior surface of the leaf and electrically bonded to the perimeter brass contact strip to provide the rf shielding effectiveness. A user serviceable brass contact strip with integral beryllium copper contact fingers shall be attached to the leaf bottom.

- Door latch: the door handle is a standard "classroom function" type, lockable from the outside only. All hardware, hinges and handle have a brushed us26d finish.

- Jamb: shall consist of kiln dried dimensioned oak directly mounted to dual skinned panels.

- RF contact fingers: shall consist of a single row of heavy-duty beryllium copper alloy spring temper contact finger strips. Contact strips shall be compression mounted to the interior side of the doorjamb. This mounting location will ensure protection of the contact fingers from the passage of cryogen dewars, carts and equipment. All contact fingers are to be user serviceable and repairable.
- Threshold: shall consist of a solid brass, tapered ramp mounted directly into the shielded doorjamb. This brass sill shall provide the necessary RF seal. The RF contact fingers shall be mounted to the

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bottom of the door leaf.

- Floor coverings: due to the inherent design of RF shielded doors, acceptable finish floor c shall not exceed 1/8" in total thickness.

RF Shielded Window Openings:

- RF windows: shall consist of a double layer ofRF shielding conductive mesh material. This window shall not degrade the RF shielding effectiveness of the shield.

RF Shielded Accessories:

- Filters: shall provide an attenuation, which is satisfactory for the intended application, and be mounted on the service panels. Electrical conductors shall pass through waveguide fittings, which are an integral part of the filter. A means of securing the filter to the service panel shall be an integral part of each filter.

- Waveguide air vents: shall be used to supply intake and exhaust air to provide necessary ventilation. Each ventilator shall be of the waveguide below cut-off type. Vents shall be 3/16" steel hex cell 1" deep.

- Grounding:

- Single point service ground: shall be accomplished with a 1/2" diameter threaded solid brass-grounding stud on the service panel. The standard method of grounding shall consist of connecting exterior and interior shields at one point on the service panel to achieve a single point.

- Equipment grounds: grounding for the super conducting magnet and RF front end shall be as required by the MRI equipment manufacturer.

- Mechanical penetrations: shall be RF shielded waveguide type nonferrous pipe penetrations for all pipes entering the shielded enclosure.

- Removable magnet access panels: shall be provided as indicated on the contract drawings.

Radio Frequency Shielding Performance:

- The function of RF construction is to permit an interference free environment with a single ground point using industry standard construction techniques.

- For this purpose the interference free environment must meet these minimum functional requirements:

- Attenuation to magnet field: as required by the magnet supplier.

- Attenuation to electric field: as required by the magnet supplier.

- Attenuation to plane waves: as required by the magnet supplier.

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- The environment must be constructed ungrounded with a minimum resistance to ground ohms.

Coordination:

- Refer to mechanical, electrical and plumbing drawings for utility penetrations of the shielding.

- Items furnished by other sections for installation into the work of this section shall be installed in accordance with the requirements of such other sections, providing such requirements do not violate the shield.

DIVISION 21 – FIRE SUPPRESSION

By Design-Build Contractor, per building standards.
The building shall be fitted with a fully automatic and supervised sprinkler system per NFPA 13. Provide design and components as necessary to meet NFPA 13 and state and local codes, and as appropriate within MRI shielded locations.

DIVISION 22 - PLUMBING

Not Used

DIVISION 23 – HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

By Design-Build Contractor, per building standards.

DIVISION 24 – NOT USED

Not Used

DIVISION 25 – NOT USED

Not Used

DIVISION 26 – ELECTRICAL

By Design-Build Contractor, per building standards.
Coordinate needs for power/ phone and data with tenant.

Wiring Methods

- Hospital grade Metal Clad (MC) cables to patient exam or procedure areas, standard MC cables for the rest of the branch circuits.

Lighting Fixtures

- Check-In & Changing: Compact Fluorescent Downlight with decorative housing/lens.
  Use Lightolier Vetro Downlight frosted as basis of design. Electrical to determine diameter based on light levels in areas used.

- Staff/Tech: Incandescent downlights on dimmer switching

- General Lighting: Recessed Direct-Indirect basket type fixture – 2x2 or 2x4

- Toilet Room – Wall Mounted Linear Fixture, Direct-Indirect Horizontal

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- MRI magnet rooms – MedLux XLS-2.0 LED downlights, square. Provide separate dimming panel for each room adjacent to viewing window in Staff/Tech area.

- Corridor & Waiting – Wall Mounted Linear Sconce
  Use Lightolier Soli T5 acrylic as basis of design.

- Under Cabinet – Lightolier TCF Series or approved substitution.

- Office – Finelite Series I2-ID or approved substitution

- Exterior Bollard Lighting - Mitre Bollard M4-CF single head bollard by Architectural Area Lighting

DIVISION 31 – EARTHWORK

Erosion and Sedimentation Control

- Provide all materials, equipment, and labor necessary for the diversion of surface water from the construction area and provide temporary and permanent erosion and sedimentation control measures in accordance with the Cumberland County Soil & Water Conservation District, Department of Environmental Protection publication dated March 2003, "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices" and City of Portland requirements.

Site Clearing

- Mark the site, contact digsafe and locate underground utilities prior to construction. Protect existing above and below ground utilities during construction.

- Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during construction. Obtain Street opening permits from the Municipality if required for work within the public right of way. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

- Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

- Protection of Existing Improvements: Protect existing improvements not indicated to be removed on adjoining properties and on Owner's property. Restore damaged improvements to their original condition, as acceptable to the Owner's Representative.

- Remove and dispose of all material that is removed and not reused in the new construction.

Earthwork

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- Remove all materials encountered to the limits shown on the drawings and to achieve the subgrade elevations. Furnish, install all fill material including loam and seed for a complete installation.

- Excavation: Conform to subgrade elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection. Any subgrade areas that are disturbed should be recompacted or excavated and replaced with compacted structural fill prior to placing concrete. Subgrades should be protected against freezing temperatures if exposed during construction.

- Saw cut pavement prior to excavation to provide a clean, uniform edge.

- Backfill: Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment and not more than 6" in loose depth for material compacted by hand-operated tampers. Compact to the following minimum densities:

FILL AND BACKFILL LOCATION	DENSITY
Under structure foundations	95% of max.
Crushed stone fill	100%
Select fill below slab areas and sidewalks	95%
Under pavement	95%
Embankments	90%
Beside structure foundation walls	92 - 95%

Maximum density: ASTM D1557, modified.

Materials:

- Aggregate Subbase: MDOT Standard Specifications Section 703.06(b), Type D.
- Aggregate Base: MDOT Standard Specifications Section 703.06(a), Type A.
- Crushed Stone: MDOT Standard Specifications Section 703.30
- Structural fill used below foundations and for backfill adjacent to walls shall consist of sandy gravel to gravelly sand free of organic material, loam, trash, snow, ice, frozen soil and other objectionable material, and should conform to the following gradation:

Sieve Size	Max % Passing by Weight
6"	100
No. 4	30 - 90
No. 40	10 - 50
No. 200	0 - 8

- 3/4 Inch Crushed Stone: Crushed stone shall be a quarry product or washed gravel stone Consisting of durable crushed rock or gravel stone free of silt, clay, loam or other deleterious materials and shall conform to the following gradation requirements for the nominal size indicated.

Sieve Size	Max % Passing by Weight
1"	100

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3/4"	90-100
1/2"	20-55
3/8"	0-15
No. 4	0-5

- Loam: Loam or approved topsoil removed within the confines of the project area shall be reused. If the quantity of stockpiled topsoil is insufficient, provide new topsoil which is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 2 in. in any dimension, and other extraneous or toxic matter harmful to plant growth. Sand, silt, and clay contents comprising existing or new topsoil shall fall within the following ranges:

Sand	50% - 70%
Silt	2% - 40%
Clay	10% - 28%

DIVISION 32 – EXTERIOR IMPROVEMENTS

Galvanized Handrail

- Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 80)
- Galvanize exterior railings, to comply with ASTM A 123/A 123M. Provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- Zinc-Rich Primer: Complying with MPI№ 134 and compatible with topcoat. DTM Acrylic Primer by Sherwin Williams, or equal one coat, 2.5-5.0 dry mils thickness.
- Top Coat for Galvanized Steel: Pro Industrial Zero VOC Acrylic by Sherwin Williams, or equal, semi-gloss black, two coats, 2.5-4.0 dry mils thickness.
- Grout and Anchoring Cement: Factory-packaged, nonshrink, nonmetallic grout complying with ASTM C 1107; or water-resistant, nonshrink anchoring cement; recommended by manufacturer for exterior use.

Precast Concrete Stairs

- Provide shop drawing to confirm riser and tread dimensions.
- Stair nosing shall be style no. 816 in "Alumacast" as manufactured by American Safety Tread Company, Helena, Alabama 35080. Telephone 1-800-245-4881 or approved equal. Nosings shall terminate not more than 3" from ends of steps. Nosings shall be furnished with wing anchors, bolts and nuts or concealed cast anchors.

Materials:

- Portland cement: ASTM C 150, Type I or III
- Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- Plain-Steel Welded Wire Reinforcement: ASTM A 185 or A497 fabricated from plain steel wire into flat sheets having a minimum yield strength of 70,000psi.
- Plates and Angles: Cast-in loose plates and angles shall conform to ASTM 36.
- Water: Potable, clean and free from oils, acids, salts or other injurious substances.
- Mix Design: 28-day compressive strength minimum of 5,000 psi. 6% + 1.5% of air entrainment.

Admixtures:

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- Air entrainment agents shall conform to ASTM C 260.
- Precast elements exposed to weather or vulnerable to deicers shall have 6% + 1.5% of ai entrainment.
- Water reducing agent shall conform to ASTM C 494, Type A.
- High range water reducing agent shall conform to ASTM C494 Type A.

Normal-Weight Aggregates:

- Fine Aggregates: ASTM C 33, washed natural sand
- Course Aggregates: Crushed stone conforming to ASTM C 33. Aggregate shall be graded crushed stone with a resulting weight of concrete up to 155 lbs./cu. ft.

- Grout:Cement shall be gray Portland cement, free from soluble salts and complying with ASTM C 150, Type I or Type III High Early Strength, one brand throughout work. Strength shall be 4,000 psi in 28 days.

Landscape Work

- Planting installation of trees, shrubs and ground covers; planting of lawns and other work as indicated on Site Drawings.
- Provide trees, shrubs, and other plants complying with the recommendations and requirements of ANSI Z60.1 "Standard for Nursery Stock" as published by the American Landscape & Nursery Association. All plants shall be nursery grown and shall have been growing under the same climatic conditions as the location of this project for at least two (2) years prior to award date of this contract.
- Deciduous Shrubs: Provide balled and burlapped (B&B) deciduous shrubs otherwise noted in plant list. Container grown deciduous shrubs will be acceptable in lieu of balled and burlapped deciduous shrubs as approved by the Owner's Representative
- Coniferous and Broadleafed Evergreens: Provide balled and burlapped (B&B) evergreens. Container grown evergreens will be acceptable as approved by the Owner's Representative.
- Deciduous Trees: Provide balled and burlapped (B&B) deciduous trees unless otherwise noted in plant list. Container grown deciduous trees will be accepted in lieu of balled and burlapped deciduous trees as approved by the Owner's Representative.
- Ground Cover: Provide plants established and well-rooted in removable containers or integral peat pots and with no less than the minimum number and length of runners required by ANSI Z60.1 for the pot size shown or listed.
- Seed for lawn areas shall be sown at the rate of 5 lbs. per 1,000 sq. ft. of coverage. The seed mixture for lawn areas shall consist of seeds proportioned by weight as follows:

Creeping Red Fescue	20%
Kentucky Bluegrass	70%
Ryegrass cv. 'Repell'	10%

- Lawn areas will be accepted only upon attainment of a reasonably thick uniform stand of grass of not less than 80 percent coverage of permanent grasses, free from thin or bare spots
- Planting Bed Mulch: Provide shredded bark mulch for planting beds. Do not use material that is decayed or mixed with soil, weeds or other foreign matter. Use material that is large enough in size to prevent it from drifting and blowing in normal wind storms.
- Unless otherwise indicated by the owner, the acceptability of the plant material furnished and

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planted shall be at the end of a period of establishment, during which the Contractor, as necessary, shall employ all possible means to preserve the plants in a healthy and vigorou growing condition and to insure their successful establishment. The establishment perioc extend for a period of one (1) calendar year from the date of final acceptance of the prc Necessary replacements shall be made so that at the time of final acceptance all plants shall be in a healthy, vigorous growing condition and free from sizable die-back

Bollard Lighting

- All wiring and controls for site light shall be by Design-Build Contractor, per building standards.

Coordinate needs for power and control with the owner

- Bollard lighting shall be selected by the Owner, color and finish from the full range of the manufacture's options.
- The basis of design fixture is Miter Bollard M4-CF single head bollard by Architectural Area Lighting or owner approved equal http://www.aal.net/products/mitre_bollard/
- Install bollards on 5'-0"x14" Diameter precast concrete bases with 1" chamfered edge. Cast bases with anchor bolts per manufacturer.

DIVISION 33 – UTILITIES

By Design-Build Contractor, per building standards.