GENERAL POLICIES

- **It is Radford University's (RU) intent to maximize the design potential of every campus project, in terms of supporting the programmatic intent of the project while respecting the overall campus planning and in-**

- Existing open green spaces should be maintained to the maximum extent possible.
- Exterior furniture and lighting to match existing with respect to style, color, and materials. Provide signage at all building and site entry points to match existing.
- Service areas and exterior equipment to be screened and set back from public view, using architectural appropriate materials.
- Vehicular traffic and parking shall be set back from the street and incorporate plantings/screening as appropriate. Parking shall be located in general along the campus exterior edges.
- Proposed plantings and vegetation shall be discussed with the University prior to final construction/installation for suitability of materials and execution.

- New buildings
    - If joining an existing building, the floor numbers shall match.
    - Number rooms sequentially in a clockwise manner.
    - Use consistent prefix/suffix, three digits maximum.
    -

- The owner reserves the right to require bonds on performance and labor materials on projects less than $500,000.
- Follow the Construction and Professional Services Manual (CPSM) latest edition for sample newspaper advertisement. Use Invitation for Bid sample for inclusion in Project Manual.
- Prior to advertisement, Radford University will select bid dates.
- Plans and specifications are to be provided to Southern Graphics in Roanoke VA for availability for purchase. Plans and specifications are to be distributed to Valley Construction News, Roanoke, VA, and McGraw-Hill/Dodge, Richmond, VA. Coordinate format of documents with RU.

- – RU

CONSTRUCTION GENERAL REQUIREMENTS

Radford University strives to preserve overall existing campus operations and appearance, along with the safety of all students, faculty, and staff, while allowing construction and renovation activities to occur.

_____- The Contractor bears sole responsibility for the safety of his or her employees.
The Contractor is expected to take all steps necessary to establish, administer, and enforce safety rules that meet the regulatory requirements of the Virginia Department of Labor and Industry (VDLI) and federal and state Occupational Safety and Health Administration (OSHA) compliance requirements. These regulations include, but are not limited to:

> Title 29 of the Code of Federal Regulations (CFR) Parts 1910, Occupational Safety and Health Administration (OSHA) Standards for General Industry,
> Title 29 of the Code of Federal Regulations (CFR) Parts 1926, Occupational Safety and Health Administration (OSHA) Standards for the Construction Industry.

The Contractor bears sole responsibility for communication of safety-related information and requirements to his or her Subcontractors. Contractors shall assure that their Subcontractors comply with the requirements outlined herein.

_____

- No work shall begin until a pre-construction meeting is held that addresses fencing of construction areas, construction traffic, parking of contractor's vehicles and work hours.
- Contractor shall provide a 1-week notice and work plan for any work which will impact campus. Notice shall include impacted areas and systems, durations and timelines, and required support from the university.
- Contractor's workers shall not interface with students. Inappropriate behavior from any worker will result in an immediate dismissal from the project.
- Vehicles shall not be parked on sidewalks for any period of time that blocks egress from a building. Contractor shall obtain all required permits for vehicle access and parking on University property.
- Construction sites shall be secured for safety at the end of each day.
- Contractor shall work with RU to coordinate service and pedestrian access to affected adjacent buildings and major pedestrian walkways.
- Work schedules are subject to quiet times for student exams and other University function. Jack-hammering and other excessive noise shall be limited and may be restricted.
- Equipment shall not drive or park on grass lawns or sidewalks. Sidewalk access may be allowed if cleared first with the University. Equipment that leaks any fluids will not be allowed on campus.

- Involve RU in the plant selection process. Use zone 6a or hardier plants, requiring minimal watering. We do not want any marginally hardy plantings. Perform an in-person design review with RU's Facilities Department.
- Protect existing trees on construction sites to the drip line, with posts and American wire fence.

- Exterior accessibility signage shall be mounted on pre-drilled metal channel sign posts at a height per ADA Standards for Accessible Design. Base of sign post shall not hold water. Properly fill voids from core drilling so the base of the sign does not rust.
- Emergency phones may be required for new sites; coordinate with RU for standard manufacturer/mod.22 TTw 5.21 0 Td[;Am47 (w s)-4 (i)-6 (t-1.0 (h R)8 (U)o7(t-1.s 13 ꝑb /)1-2 (ro)8 (i (as)2 (0
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CONCRETE

_____ See walks above.

_____ Shall be air entrained concrete type A3 with fibermesh. WWF not required.

_____– Provide adequate sample panels to establish acceptable standard for all exposed architectural precast concrete. Sample panels shall be approved by RU prior to the initiation of architectural precast concrete work.

METALS

- Shall be in compliance with ADA when used as handrail. Square stock may be used as guardrail only. All rails shall be steel, primed and painted to match other campus rails, unless otherwise indicated or pre-finished. Powder coating is preferred.
- Fully grout base of handrails if core drilled into concrete. The base of the handrail shall have positive drainage away from the handrail.
- Handrail height – When ADA provides a range of acceptable heights – design to the middle of the heights to provide the maximum construction tolerance.

WOOD AND PLASTIC

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THERMAL AND MOISTURE PROTECTION

DOORS AND WINDOWS

- Standard interior doors – Shall be red oak or birch plain sliced, A W1 premium grade.
- Closet doors in Residence Halls – Use track bypass style.
- Locksets – By Best Lock Corporation (preferred basis of design). List first when naming manufacturers and have schedule reflect Best in specifications. Provide Best 9K37 series with 15D lever handles and S3 strokes. Keying shall match existing campus-wide system. Permanent core and keys shall be sent to owner by Best. The owner will install permanent cores and return construction cores to Best Lock. Finish shall be 626 (satin chrome) typical in new construction; verify existing in building renovation projects, often satin bronze. Locksets generally shall be cylindrical in lieu of mortise. Provide Best 7-pin interchangeable core cylinders at all locations. Mark each core in a concealed place on the core (when the core is installed). Provide brass constructiony1 (bp12)10ehp4 (nr)1uin

FINISHES

_____ Lay-in 24 inch by 24 inch ceiling tile (preferred). Use of tegular edge tiles must be approved by Radford University prior to inclusion in project specifications; 770 Armstrong is what we stock in the storeroom. Use standard 15/16" grid, no slim-line or other custom grid unless approved by RU. Bulkheads shall be constructed of gypsum drywall.

_____ – Preferred floor and wainscot in toilet areas. Sanitary cove base, typical on ceramic and quarry tile areas. Epoxy grout required.

_____ – Use 12 inches by 12 inches by 1/8 inch typical, with alternating pattern. Owner will supply floor finish, and contractor shall install 4 coats (this applies to VCT). Coordinate with RU for patterns and finishes for LVT products.

____ – Rubber, four inches high, cove ½ inch minimum depth, unless otherwise approved. Specify roll lengths where practical. Base in carpeted areas to be installed following carpet installation. Do not specify preformed corner or end pieces.

_____ – Rubber, full width of stair, with reinforced rubber nosing.

_____– Semi-gloss finish typical on all trim and wall paint in all kitchen, toilet, and wet areas. Semi-gloss finish also typical on all trim and wall paint in all high-traffic areas, such as cort - (u)6 (c)4 (h)-3.9 (as91p)-4 4d

FURNISHINGS

_____– Consult with RU for method of procurement and installation of window treatments. Discuss any proposed specialty treatments with RU.

_____ – ADA and other code-required required signage shall be in the construction contract; consult with RU on standard styles, colors, etc. Discuss room signage with RU during design.

- Plumbing fixtures - Use American Standard, Toto, Kohler, and Eljer as preferred basis of design. Use Sloan, Zurn, and Delany flush valve as preferred basis of design. Use American Standard, Kohler, Chicago Faucet, Eljer, Speakman, Moen, or Delta as faucet preferred basis of design. Provide mop-basins, floor mounted, in lieu of sinks.
- China and flush valves shall be from the same manufacturer.
- Utilize water conservation low-flow fixtures.

_____ – Bladder type.

_____

- Variable frequency drives preferred on air handling units. Drive capable of auto reset upon alarm clearance.
- Variable air volume units shall have a 1-volt to 10-volt damper motor and a flow ring mounted on the inlet side. Hot water heating coil mounted in the duct on the outlet side of box. No fiberglass insulation inside boxes.
- Parallel boxes are the preferred basis of design.

_____– All piping insulation on domestic cold water, chilled water, and dual temperature shall be continuous.

_____ – Required when transitioning between incompatible materials.

_____

- Vacuum breakers should be provided on outside faucets and janitor sinks. Air-gap or anti-siphon device where water line could be suspect to chemicals.
- Provide bottle filling station at drinking fountains. Use Oasis or Elkay as design standards.
- Water hammer arresters are to be provided.
- Where showers and commodes are on the same system the line should be sized large enough to prevent shower scalding when commode is flushed.
-

- Consult RU concerning the use of regional chilled water plants by connecting buildings with chilled water piping.

- Provide two pumps with each pump having 100 percent pumping capability. Pumps shall be operated in a lead-lag mode.

- Shall be capable of being controlled from energy management system. Control of hot water supply shall be accomplished by energy management system.
- Check with local gas company (ATMOS) for pressure requirements.

- Double wall construction with solid galvanized steel interior panels. Fan/motor assembly to be mounted on internal isolators.
- Install UV lights and GPS around coils of AHU's.
- Consider heat pipe around large AHU coils. Use in conjunction with UV lights to eliminate coil cleaning.
- Energy recovery ventilators - wheels are acceptable. Plate and frame heat exchangers are not acceptable.
- Do not use steam or electric re-heat, unless specifically approved. Use energy recovery

_____– The exchanger shall be used in ice storage systems for “free cooling” when a cooling tower is used. In ice storage systems, the exchanger is used to separate the glycol from the water in the building system. When a cooling tower is used, the exchanger is used to transfer water temperature from the tower to the building system.

_____

- Shall be insulated on exterior. Vapor barrier on the insulation shall be continuous with no areas open to the air.
-

ELECTRICAL/FIRE ALARM/SECURITY

_____– Consider LED wherever practicable. Otherwise, use energy saving type, electronic ballast, T-8 fluorescent tubes, typical. Tubes shall be Low-Mercury Lamps: complying with EPA's toxicity characteristic leaching procedure test; shall yield less than 0.2 mg of mercury per liter when tested according to NEMA LL 1.

_____– Consult with RU for lighting controls. Many spaces may require specific controls and schemes (e.g. Offices, Classrooms, Conference Rooms, Laboratories, Hallways and Stairwells, Bathrooms, Support Spaces, Night Lighting, and Emergency Egress). Controls shall account for safety, energy conservation, and convenience. Large lighting projects control by BAS.

_____– Minimum size ¾" inch. EMT for all main runs and branches. May transition to MC after last junction box to light fixture. Run concealed in walls. Use flexible metallic conduit or liquid-tight flexible metallic conduit for final connection to machinery or vibrating equipment.

_____ – Utilize UL-rated penetration assemblies.

_____– Use LED wherever practicable. All exterior lights shall be controlled by the Building Automation System (BAS). Calculates sunrise and sunset and turns the lights on and off at the appropriate times. Utilize exterior-rated ballast. Install manual override.

_____ – All devices shall be rated 20 amp minimum. Provide receptacle in stairs for housekeeping. Provide receptacle on building exterior by entrances or every 100 feet. Provide receptacles at rooftop equipment. Label all receptacles with circuit number and panel designation.

_____ – Provide 25% spare spaces minimum in the panel for future needs. Provide emergency panel that connects to all life safety devices. Calculate arc-flash rating for each panel, and note on drawings. Require arc-flash warning labels on panels.

_____ – Provide generator, not battery back-up. If providing a generator, consult with RU about other than life safety back-up power needs.

W____– Copper.

_____ Shall be installed such that they are **not** back to back, and a minimum of one stud space apart.

- Provide minimum 3000-psi concrete encased duct bank system from the identified connection point at the University's 4.16kV system (typically a manhole) to the load to be served. Duct banks are to be steel reinforced under roadways, within 10 feet of foundation or wall penetrations, and anywhere that heavy loading, shear, or potential settling of soil is anticipated. Add red dye to concrete mix such that concrete is a uniform red color when cured. Use Schedule 40 PVC conduit in duct banks separated with manufactured plastic or fiberglass conduit spacers. Install a continuous 4/0 bare copper grounding conductor either under or within the concrete encasement and extend it into all pull and termination structures and equipment to create a continuous system ground. Provide at least one spare duct in runs between underground structures. Do not exceed 450 feet between pull/splice structures to facilitate cable installation. Perform cable-pulling calculations to verify design, and add pull structures as required. Terminate feeder duct bank run either in an underground vault with a sub-surface load-interrupter switchgear, or at a pad-mounted load-interrupter switchgear. Extend duct bank from load ways of switchgear to transformer(s).
- Provide manholes as required per design. Equip each manhole with cable stanchions and racks on each wall as required, pulling-in irons, a continuous 4/0 bare copper ground ring, and a 10' x 3/4" copper clad steel ground rod driven into the soil through the manhole floor. Procure manholes and accessories per RU guide specification.
- Provide 4/0 CU, 15kV, 133% Insulation Level, Type MV-105 cable for extension of the medium voltage system. Procure cable per RU guide specification. Connections to new switchgear are to be looped, in that, the existing feeder is broken, extended to the new switch, then returned to the tap location and then reconnected to continue feeder loop. All proposed designs for connections to the 4.16kV system must be submitted and approved by the University.
- All connections in the medium voltage system are to be made using modular elbow connections: 600A class dead-break on the main feeder systems and 200A load-break on the transformer feeders. No straight splices are to be used either for initial tap or as intermediate splices.
- No new medium voltage equipment is to be installed inside buildings.
- Load-interrupter switchgear are to be loop-type with incoming and outgoing 600A class loop ways, two (2) for the main feeders and up to three (3) 200A class load ways for the taps to the transformers. All connections shall be via IEEE 386 dead-front elbow interfaces, 600A dead-break for loop ways and 200A load-break for tap ways. Loop ways shall be equipped with load break switches having "OPEN, CLOSE, and GROUND" positions. Load ways shall be equipped with relayed vacuum fault interrupters in series with load break switches, also equipped with "OPEN, CLOSE, and GROUND" positions. Switches shall be pad-type or underground vault style,

- 1” data conduit penetrations

motor, parallel or series motor, and the heating valve during occupied periods to maintain space temperature. During unoccupied periods, the fan and heating coil shall maintain unoccupied temperatures.

Constant volume units shall incorporate economizer dampers with up to 100 percent outside air and a separate minimum outside air duct with a damper for exhaust make-up. Also a return (exhaust) fan shall be ducted to the outside and to the return of the AHU with dampers at each location. The BAS shall open the minimum damper to its set position to provide make-up air for building exhaust when the unit is running and close it when the unit shuts down. The economizer damper shall remain closed, return damper open and the exhaust damper closed when the unit is not in e Tw -39.18amp (r)10 2 ⁄MCID 3S1r clom-2 (n)d D-

APPENDIX A – STANDARD DETAILS