DESIGN AND CONSTRUCTION CRITERIA AND GUIDELINES
METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY
DEPARTMENT OF GENERAL SERVICES
April 1, 2015

ADDENDA # 1

23 00 00	HVAC Guidelines	[Revisions as Noted]
25 00 00	Integrated Automation (BAS)	[Revisions as Noted]
26 00 00	Electrical Guidelines	[Revisions as Noted]
31 2113	Radon Mitigation	[New Section]

How to use the Design and Construction Criteria and Guidelines Document:

This document is updated frequently to identify criteria and issues that arise from the design, construction and management of buildings under Metro General Services. This document identifies project process/ construction/maintenance procedural items as well as materiality criteria to be consider for all projects. The document shall be a guide for the Design-Builder Team, to help identify criteria unique to Metro General Services Projects. The Design-Builder Team shall follow the criteria within this document when preparing drawings and specifications, reviewing criteria with Metro as noted in the document.

Identifying Changes from Previous Issuance:

- Text that has a ~~strike-through~~ has been deleted since the previous issuance and will be deleted from the document at the next issuance.
- *Italic text* has been added or modified since the previous issuance and will be "un-italicized" for the next issuance.
- Punctuation, grammer and spelling corrections are not indicated.
- Numbering Revisons can occur between issuances due to other modifcations.

Additions and Revisions:
Metro Project Managers can propose additions and revisions via the "Amendment Form." Proposed Amendments will be collected by the Manager of Design and Construction, reviewed as necessary, at staff meetings with all Metro Project Managers and delivered to the Assistant Director of General Services for signature approval or recommendation. Once approved, the amendments will be incorporated into the next issuance. If any proposed amendment will effect projects currently in design and construction, a "Directive Memo" will be issued to all project teams.

Division 23	Heating, Ventilating, and Air Conditioning (HVAC)	Attachment
235200.	**HEATING BOILERS**	
235200.2	MANUFACTURERS: Approved manufacturers shall be: ~~Lochinvar, Hurst, Bryan, or approved equal.~~ *ASME certified, locally provided and supported boiler type.*	
236400.	**PACKAGED WATER CHILLERS**	
236400.1	MANUFACTURERS: Acceptable manufacturers shall be Trane, ~~McQuay~~, *Daikin* and York or approved equal. Chillers shall comply with ASHRAE 15, ASME boiler and pressure vessel code, UL 465, NFPA70. Manufacturer's standard microprocessor-based chiller controls shall be unit mounted and factory wired with a single point power connection and separate control circuit.	
237000.	**CENTRAL HVAC EQUIPMENT**	
237000.1	MANUFACTURERS: <u>General AHUs</u> - Trane, ~~McQuay,~~ *Daikin,* York, or approved equal. <u>100% Outdoor Air units</u> - Air handler manufacturers shall be approved by Metro. <u>IT cooling units</u> - Air handlers shall be Liebert, or approved equal. <u>Geothermal heat pump</u> - ~~Climatemaster, Water Furnace,~~ *FHP, Daikin* or approved equal. <u>BAS System</u> - Automated Logic, Alerton, Trane, Honeywell, JCI*/Metasys* , ~~or approved equal.~~	
238100.	**DECENTRALIZED HVAC EQUIPMENT**	
238100.2	VRF UNIT MANUFACTURERS: Mitsubishi, ~~LG,~~ Daikin; ~~or approved equal.~~	

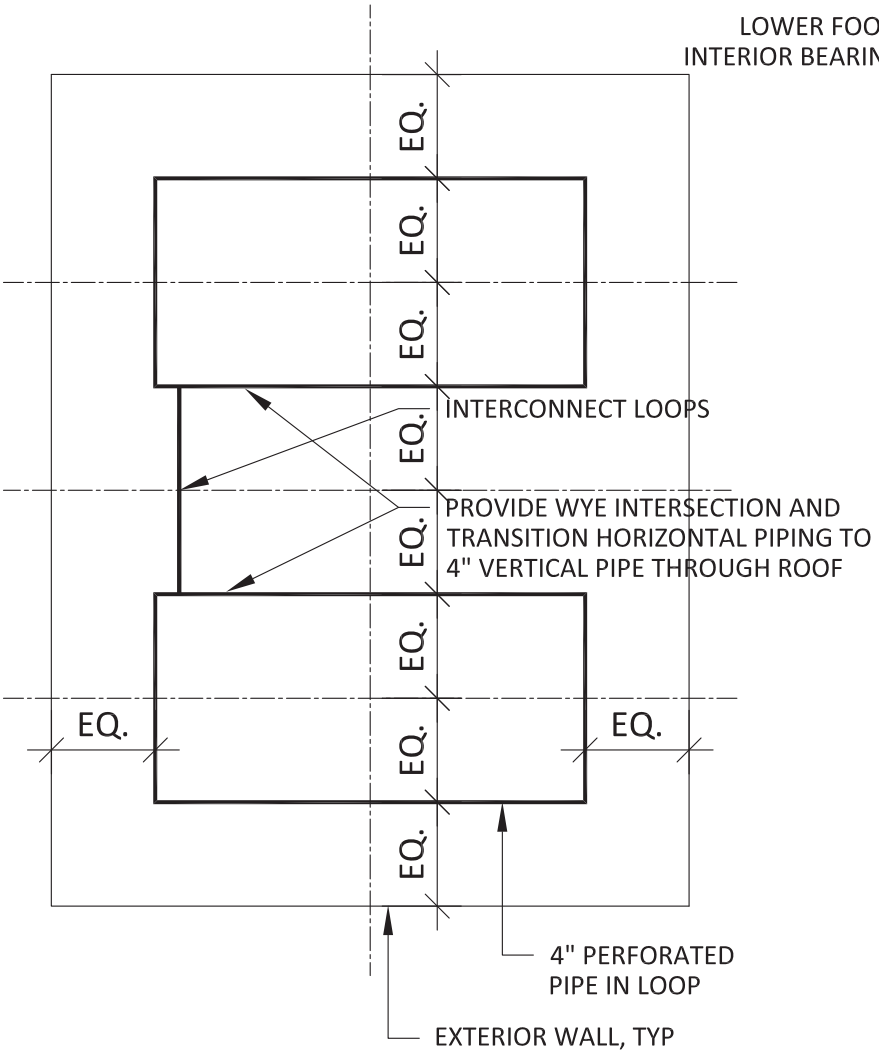
Division 25	Integrated Automation	Attachment
250000.1	**GENERAL REQUIREMENTS**	
250000.1.3	All building automation systems will need to be web based and viewable on any Android based tablet or smartphone. ~~The Push button shall be shown on the BAS home page and controllable from the BAS for testing and emergency purposes.~~	
250000.1.4	An emergency HVAC stop button should be installed for Metro Police precincts. Coordinate location of push-button device with Metro Project Manager. *The Push button shall be shown on the BAS home page and controllable from the BAS for testing and emergency purposes.*	
255500.	**INTEGRATED AUTOMATION CONTROL OF HVAC**	
255500.2	**TEMPERATURE CONTROLS / THERMOSTATS**	
255500.2.1	Dedicated temperature zone controls will be provided for multipurpose rooms, individual offices, IT rooms, and workroom spaces. *Metro requires combination temerature/humidty capable thermostats to be used in all spaces. RH reading required for all zones.*	

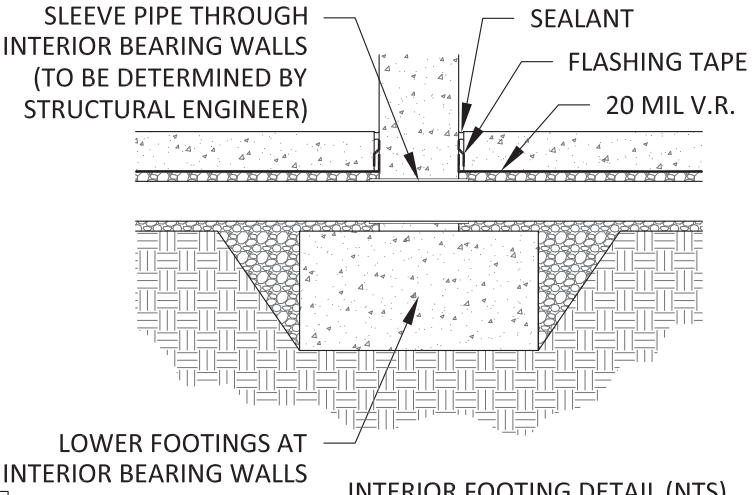
Division 26	Electrical	Attachment
260900.	**INSTRUMENTATION AND CONTROL FOR ELECTRICAL SYSTEMS**	
260900.1	All Exterior Area and Security Lighting shall be "dusk on and dawn off"~~, powered from one location in the building, and controlled from the photo control,~~ with provisions for manual override. *Astronomical time clock control with additional photo eye for low light on is required* . ~~shall not be used on exterior or security lighting.~~	
260900.2	**LIGHTING CONTROL**	
260900.2.1	Lighting Control panels shall be specified for every Metro project and be capable of BACnet interface with the building automation system (BAS). Lighting Controls (inside and out) must be from the same manufacturer. This is to be provided by the BAS contractor. Lighting integration will be pulled by the BAS contractor and included in their bid. *Note: 24/7 Facilities such as Fire Stations and Police Stations may not require a lighting control panel. Instead utilize stand alond timers and occupancy sensors.*	
265113	***LAMPS***	
265113.1	*Approved Manufacturers for Lamps: Phillips, GE, and Sylvania or Approved Equal by Metro* *Note: Lesser quality lamps tend to require more frequent replacement which impacts the long-term maintenance costs.*	
481400.	**SOLAR ENERGY - ELECTRICAL PANELS AND SYSTEMS**	
481400.2	Approved Manufacturers of Solar Inverters 1. ABB/Aurora 2. SMA/Sunny Portal ~~3. Deck Monitoring/Satcon Powergate~~	

Division 31	RADON MITIGATION	Attachment
312113.	*GENERAL: Include complete sections in the specifications for this division of the Work, in addition to notes indicated on drawings. The Design-Build Team is responsible for complete coordination of statements in the specifications and the notes on the drawings.*	
312113.1	*Mitigation of Radon gas in Metro Nashville General Services Projects. On all projects where there is a slab-on-grade, employ the following Radon mitigation efforts:*	
312113.2	*When constructing a slab-on-grade building, install a sealed 20mil vapor barrier directly below each floor slab. Tex-Trude Xtreme 20 mil is the basis-of-design for the standard of quality. Substitutions will be evaluated by Metro General Services. Membrane to be installed per manufacturer specifications with a minimum 6" lap.*	***R***
312113.3	*Endeavor to locate a loop of 4" perforated plastic pipe imbedded in a 4"-6" layer of washed #57 stone under the vapor barrier for every 4,000 square feet of slab area with a dedicated 4" vent through the roof for each loop. More than one loop may share a vent stack. Perforated pipe will be installed at the first quarter point inside the walls laterally under the slab. Perforated pipe shall be covered with a geotextile cloth sock to prevent materials from entering the pipe. Vent stacks may be SCH 40 PVC where codes allow.*	
312113.4	*For floor slabs up to 4,000 square feet, the perforated pipe loop should be placed at the first quarter points from the edge of the slab laterally. Other placement designs may be approved by MNPS Project Manager. Slab areas in excess of 4,000 square feet should have separate loops which allow the gas to enter from two sides.*	
312113.5	*Evaluate whether or not the vent system is to be active or passive to meet acceptable radon levels. If the vent is active it will have an electrically powered in-line fan installed. To facilitate this installation whenever it may be required; Provide 120V 20A power near where the vent penetrates the roof deck at all radon vents. This outlet is to be a dedicated circuit, and labeled in the panel to identify it as a radon vent and instructing that it be left on at all times.*	
312113.6	*Each riser vent is to be clearly identified from slab through roof with lettering, stenciled on piping, saying "RADON VENT PIPING"*	
312113.7	*Radon vent piping is to extend 12" above the roof surface and at least 10 feet away from any windows, intakes or other openings in the project building or adjacent buildings. Provide as few elbows and turns as possible. Locate in an interior wall, through attic space, if applicable, and through roof.*	
312113.8	*Seal slab, wall and foundation entry points especially rooms planned to be under slightly negative pressure like kitchens, restrooms, laboratories, gymnasiums and shops.*	

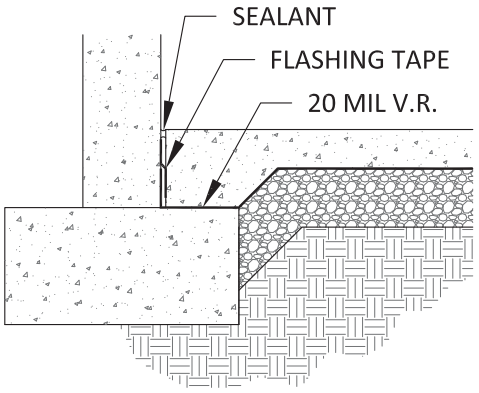
ELECTRICAL NOTE:
PROVIDE AND INSTALL A DEDICATED CIRCUIT FOR ALL FUTURE ROOF MOUNTED RADON FANS. HOT WIRE A JUNCTION BOX AT EACH FUTURE FAN LOCATION. IDENTIFY THE BREAKER IN THE PANEL WITH WORDING "RADON FAN - DO NOT TURN OFF"

SAMPLE 8000SF FOOTPRINT (NTS)
PROVIDE A RADON LOOP BELOW SLAB FOR EVERY 4000SF OR FRACTION THEREOF

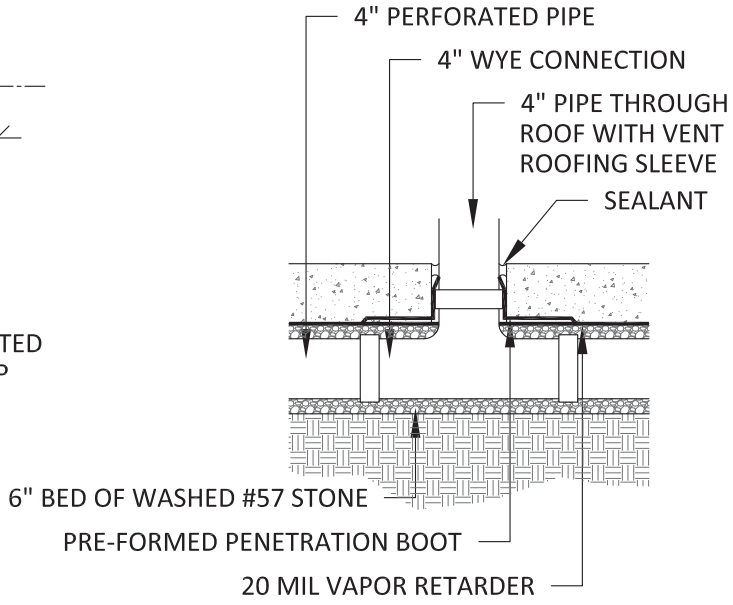




INTERIOR FOOTING DETAIL (NTS)



PERIMETER FOOTING DETAIL (NTS)



VERTICAL PENETRATION DETAIL (NTS)

FEBRUARY 5, 2015

RADON REQUIREMENTS

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