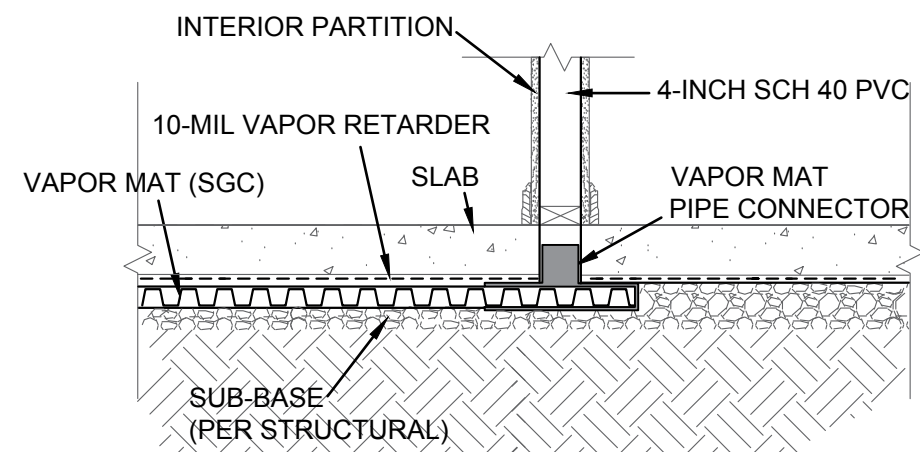
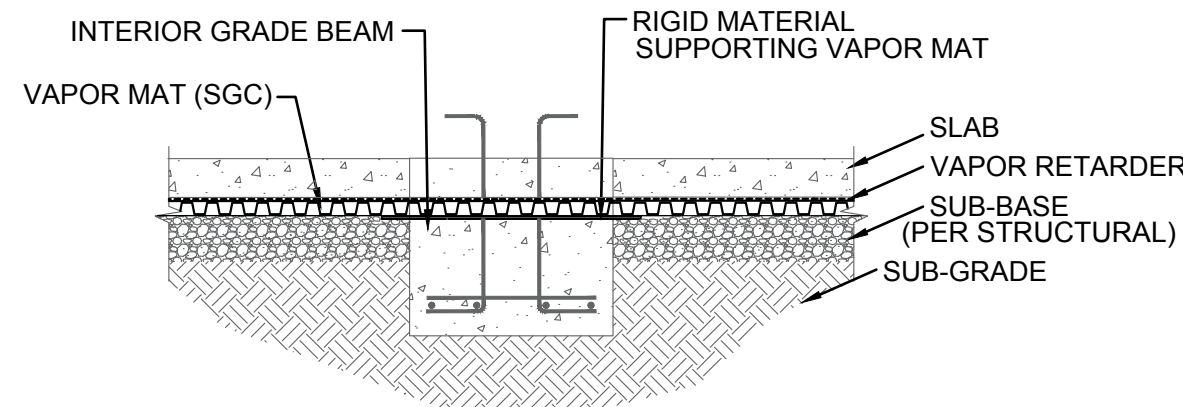


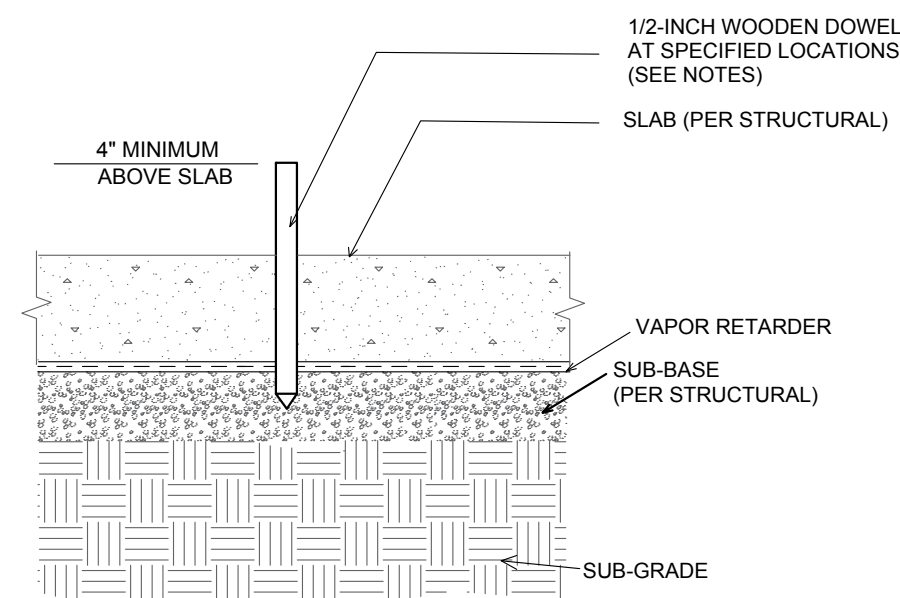
1 SOIL GAS VENT STACK DETAIL(TYP)
SCHEMATIC - NO SCALE



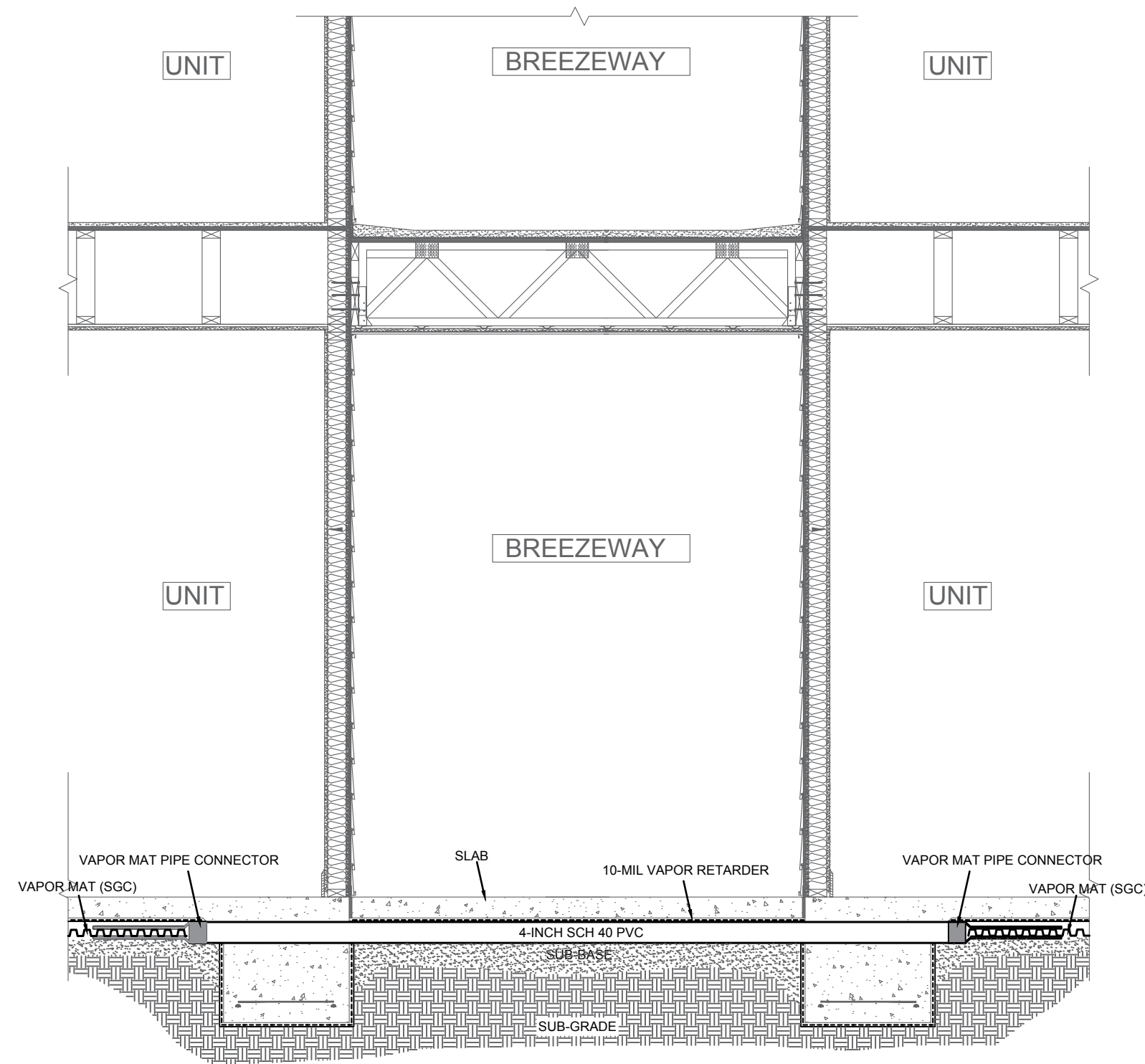
2 VAPOR MAT (SGC) CONNECTION TO VERTICAL VENT STACK (TYP)
SCHEMATIC - NO SCALE



3 VAPOR MAT (SGC) TRAVERSING INTERIOR GRADE BEAM DETAIL (TYP)
SCHEMATIC - NO SCALE



4 TEST POINT LOCATOR DETAIL (TYP)
SCHEMATIC - NO SCALE



5 SGC BREACH AT BREEZEWAY DETAIL (TYP)
SCHEMATIC - NO SCALE

General Notes and Specifications:

Part A- General:

- These plans depict the details of a Passive Soil Gas Vent System design. The design has been developed in accordance with ANSI/AARST CC-1000 2018, *Soil Gas Control Systems in New Construction of Buildings*, by or under the direct supervision of a Qualified Radon Professional. Building layouts, structural details and other information pertaining to the design was referenced from the available plans supplied to Protect Environmental by the project architect, Kelly Grossman Architects Architecture. The design may be modified by Protect Environmental, as necessary, to accommodate construction restraints.

Part B- Definitions:

- ACTIVE SOIL DEPRESSURIZATION (ASD)- A fan-driven *system* to create a vacuum beneath a structure that is greater in strength than the vacuum applied to the soil by the building above.
- GAS-PERMEABLE LAYER- Void space or permeable aggregate that allows *hydraulic conductivity* for *soil gas* movement into and across a *soil gas collection plenum*.
- INLET- See *Soil Gas Inlet*.
- INLET PIPING- Air duct piping that connects one or more *soil gas inlets* to a *vent stack*.
- MITIGATION SYSTEM- Any system designed to reduce indoor concentrations of radon or other *soil gas* pollutants.
- PLENUM- See *Soil Gas Collection Plenum*
- PRESSURE FIELD EXTENSION (PFE)- The amount of sub-slab vacuum created by active soil depressurization.
- QUALIFIED RADON PROFESSIONAL- An individual that has demonstrated a minimum degree of appropriate technical knowledge and skills specific to radon mitigation and/or measurement, as appropriate: a) as established in certification requirements of the National Radon Proficiency Program (NRPP) or the National Radon Safety Board (NRSB); and b) as required by statute, state licensure or certification program, where applicable.
- SOIL GAS- Air within soil that can contain radon and/or other hazardous gasses or vapors.
- SOIL GAS COLLECTION PLENUM- A three-dimensional enclosure, in whatever shape it may be, constructed for collecting radon and other *soil gases* from under slabs, *soil gas retarders* and from behind walls that surround a void or *gas-permeable layer*.
- SOIL GAS COLLECTOR (SGC)- *Vapor mat* laid within the *soil gas collection plenum*, designed to facilitate flow of *soil gas* to the *inlet piping*.
- SOIL GAS INLET- Air transfer opening to the face of adjoining granular aggregate or soil.
- SOIL GAS VENT SYSTEM- Individual and complete configuration for controlled *soil gas* venting that includes a *vent stack(s)* extended from *gas-permeable materials* within a *soil gas collection plenum(s)* to the system exhaust above the roof.
- SUB-BASE- A layer of aggregate or granular fill on top of the subgrade.
- SUB-GRADE- Native soil (or improved soil), usually compacted.
- SYSTEM- See *Soil Gas Vent System* or *Mitigation System*.
- TEST POINT- A predetermined location for later installation of a test port to facilitate *pressure field extension* evaluation.
- VAPOR RETARDER- Pliable plastic sheeting that establishes a barrier between *soil gas* and enclosed spaces within a building. Also commonly referred to as vapor barrier or soil gas retarder.
- VAPOR MAT- A pre-manufactured geotextile product designed to create a *gas-permeable layer* beneath the slab.
- VENT STACK- Sometimes referred to as risers, air duct piping that routes the entire system air volume capacity from the *soil gas collection plenum(s)* to the system exhaust above the roof.

Part C- Construction:

- Create a soil gas collection plenum by sealing any penetrations and waterproofing foundation walls. Emplace the *vapor mat soil gas collector* (SGC) over 4-inches (minimum) of compacted select fill (per structural). The SGC shall be no less than 12 inches nor further than 10 feet from exterior foundation walls. At points where the SGC must traverse interior structural supports, support vapor mat across trench with a rigid material, such as lengths of 1/2-inch rebar or pan metal roofing, to breach the area prior to pouring the slab. *Vapor mat* may be moved laterally to accommodate plumbing penetrations or other obstacles.
- At identified locations, connect the SGC across breezeways with 4-inch SCH 40 PVC.
- Install a 10-mil (per structural) *vapor retarder* over the entire foundation footprint to create an airtight seal below the slab. All seams shall be overlapped a minimum of 12 inches and taped in place. Any penetrations through the *vapor retarder* shall be sealed with appropriate sealant and taped.
- At points identified as *vent stack* locations, attach vapor mat pipe connectors per manufacturer instructions. Install 4-inch SCH 40 PVC vertical vent stack pipes per design drawings and connect to SGC inlet, ensuring that piping extends a minimum of 2 feet above slab level. Any joints shall be solvent welded.
- Place 1/2-inch wooden dowels at locations identified as *test points* to ensure tendons or sub-slab utilities do not obstruct coring the slab to perform the PFE evaluation. *Test points* may be moved laterally to avoid noted obstacles.
- Pour the slab per structural drawings and specifications.
- Once cured, all gaps and joints in the concrete slab- that is, control joints, isolation joints, construction joints, and so forth- shall be sealed to prevent air leakage into the soil gas collection plenum. All sump covers shall, likewise, be sealed to prevent air leakage. Waterproof all below-grade exterior foundation walls, consistent with IBC Section 1805. Caulks and sealants shall be applied according to manufacturer instructions.
- Extend *vent stack* piping vertically through all levels of living space until it reaches the roofline, secured every 10 feet. Any portion of the vent stack that runs through unconditioned space shall be insulated with a material with an R-value of 4 or greater. The *vent stack* pipe will exit through the roof at least 10 feet above ground level; above the roof surface at least 18 inches; at least 10 feet away and 2 feet above any window, door, or other opening (including mechanical intakes) into conditioned space; and, 10 feet away from any occupied living spaces of adjoining buildings. Final location of *vent stacks* shall be verified by the General Contractor or Project Architect to ensure compliance.
- Affix labeling identifying items as components of a radon or soil gas vent system. Vent stacks shall be labeled on each floor level of the building and within each room or accessible service area through which it runs. Labels shall be at intervals of not greater than 20 feet and in any area where piping is exposed and not enclosed behind walls, so as to be clearly visible to service personnel. Labels shall meet standards set forth in ANSI/AARST CC-1000 2018.
- Install a watertight switch on the roof, within 6 feet of each potential radon fan location. Outlets and breaker board circuit shall be labeled accordingly. All electrical work shall be completed by a licensed electrical contractor.

Part D- Quality Control:

- All mitigation component inspections and testing shall be conducted by or under the direct supervision of a Qualified Radon Professional. Upon completion of the project, the Qualified Radon Professional shall certify the project as complete.
- Post-construction testing shall be conducted to verify indoor radon concentrations in the buildings are below the EPA action level of 4.0 pCi/L.
- All system design, installation and post-construction verification shall comply with ANSI/AARST CC-1000 2018. All post-construction testing shall comply with ANSI MAMF-2017.

Part E- Post-Construction:

- If post-construction verification testing indicates radon levels at or above the EPA action level, activation of the Soil Gas Vent System shall be conducted by installing a Radon Fan(s) in accordance with ANSI/AARST CC-1000 2018. Upon completion of activation, additional post-construction testing shall be conducted to verify indoor radon concentrations in the buildings are below the EPA action level.

NORWOOD ESTATES
916 NORWOOD PARK BLVD.
AUSTIN, TX

SOIL GAS CONTROL PLAN

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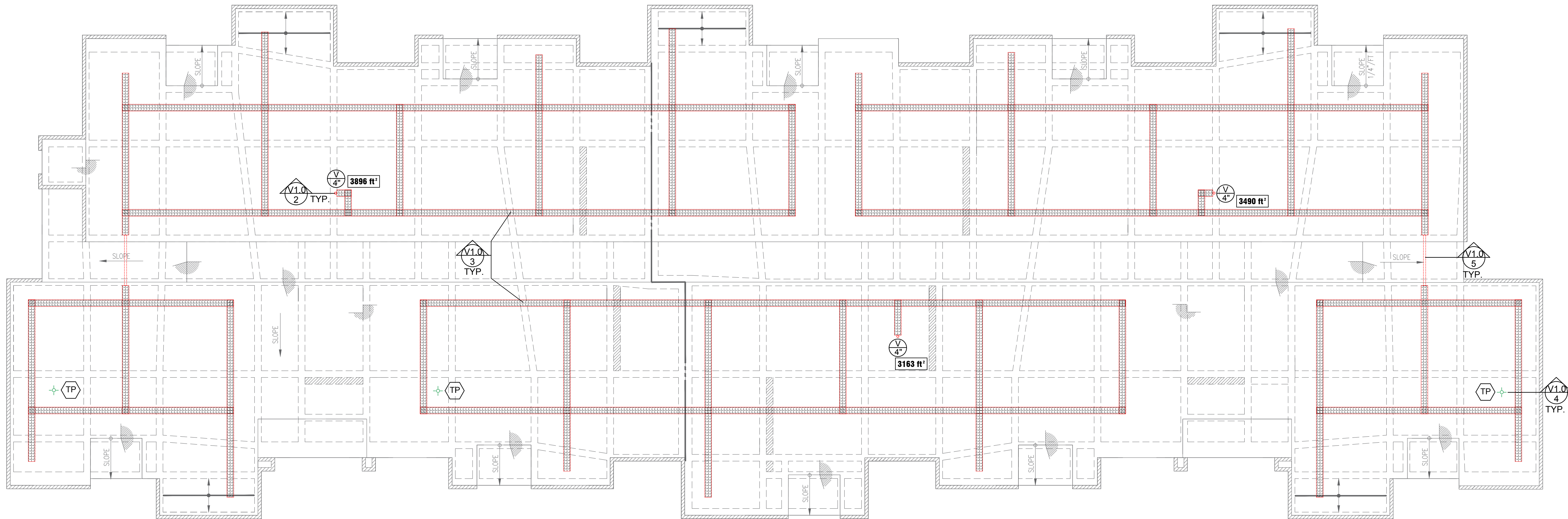
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TOLL FREE: 877-508-8850

DRAWING DATE
06/12/2019

SHEET
V1.0

Certified by Keith Hoylman,
Radon Mitigation Professional
ID# RMT-109309

Keith Hoylman



SOIL GAS CONTROL SYSTEM LEGEND

- 12-INCH VAPOR MAT SGC
- BREEZEWAY BREACH
- 4-INCH VERTICAL VENT
- TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0

NORWOOD ESTATES
916 NORWOOD PARK BLVD.
AUSTIN, TX

SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

BLDG TYPE I FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE

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ENVIRONMENTAL

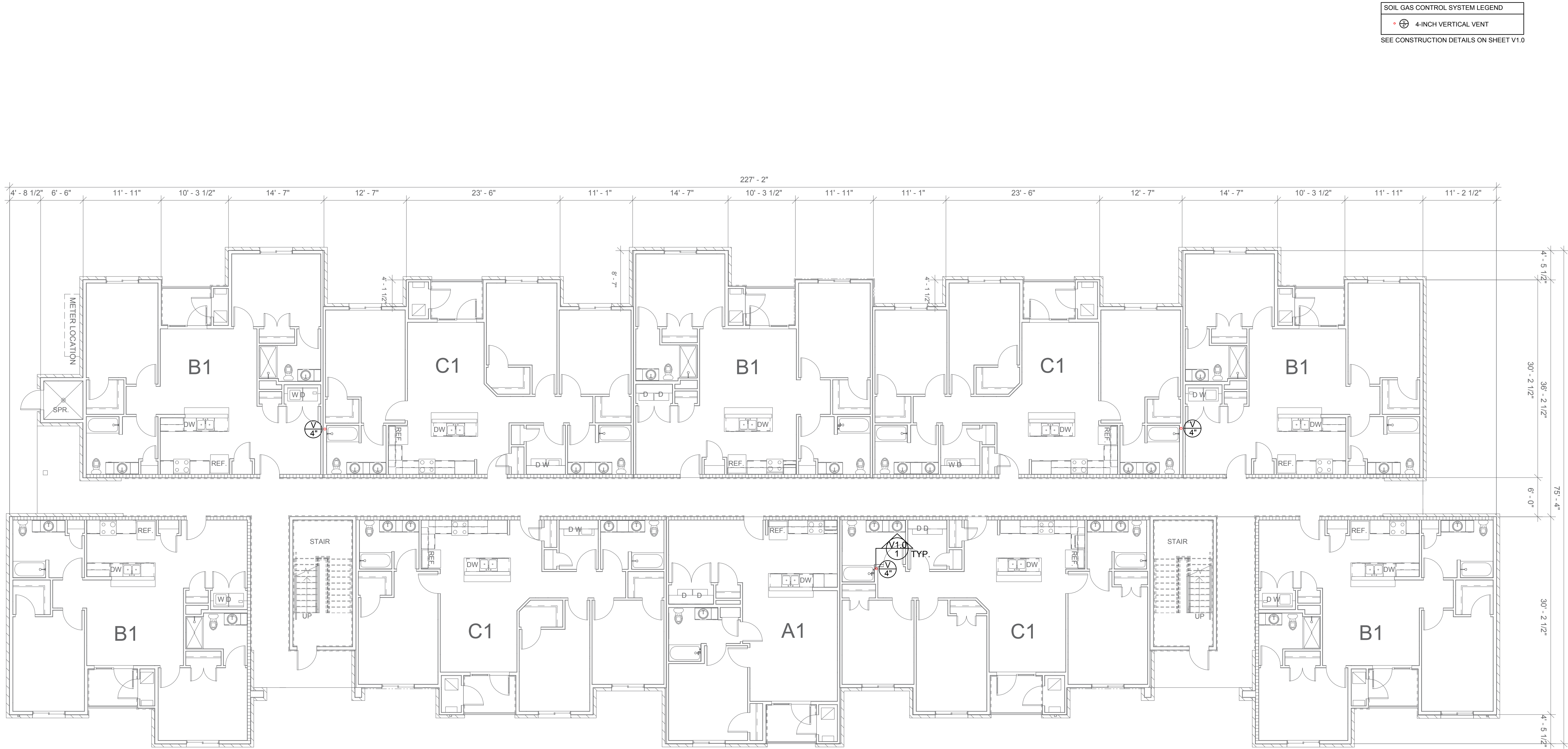
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Keith Hoylman
RTRM



BLDG TYPE I FIRST FLOOR SOIL GAS CONTROL PLAN
NO SCALE

NORWOOD ESTATES
916 NORWOOD PARK BLVD.
AUSTIN, TX

SOIL GAS CONTROL PLAN
HUD PROJECT #051-36028

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ENVIRONMENTAL

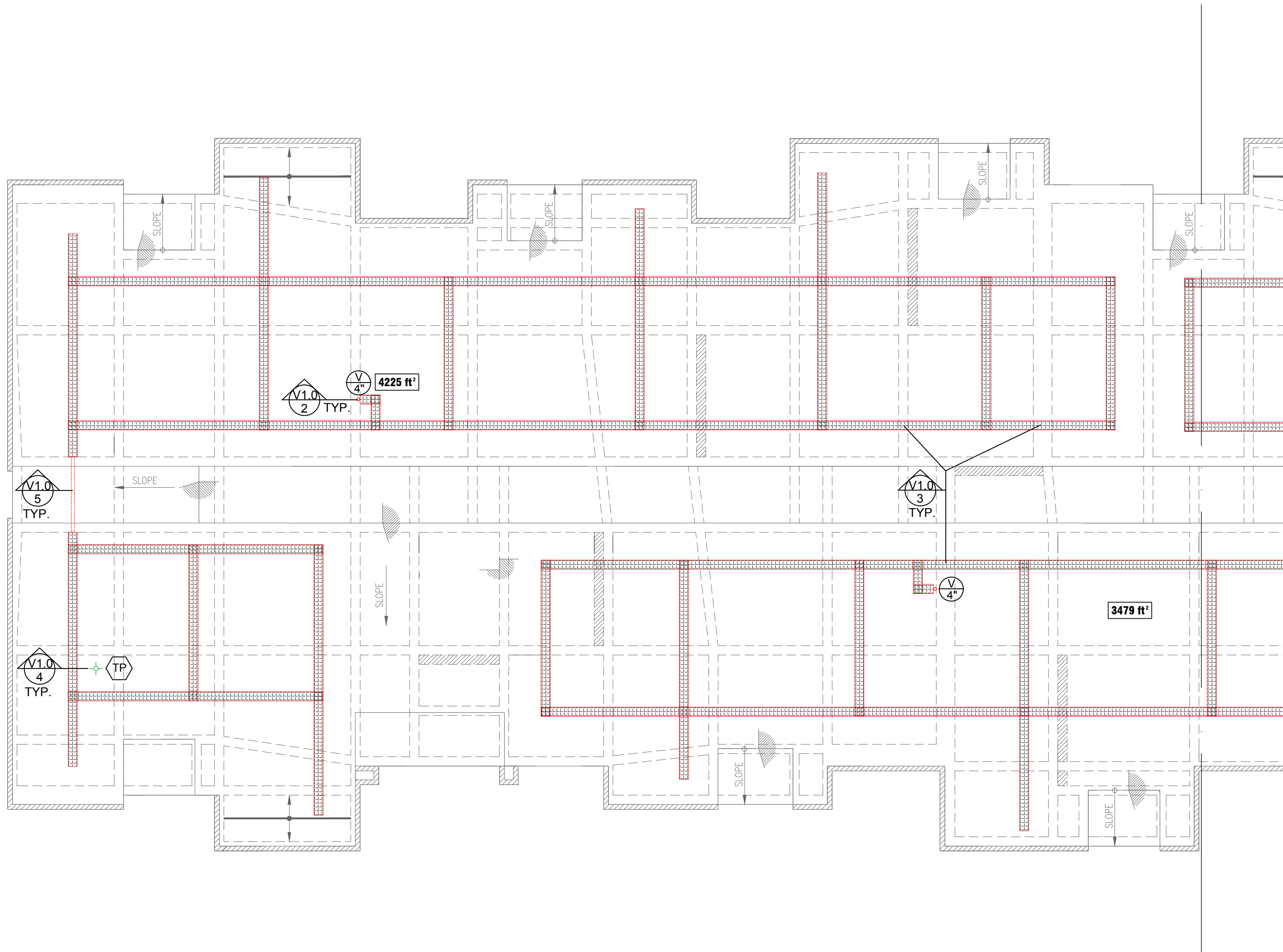
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DRAWING DATE
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Keith Hoylman
RTRM

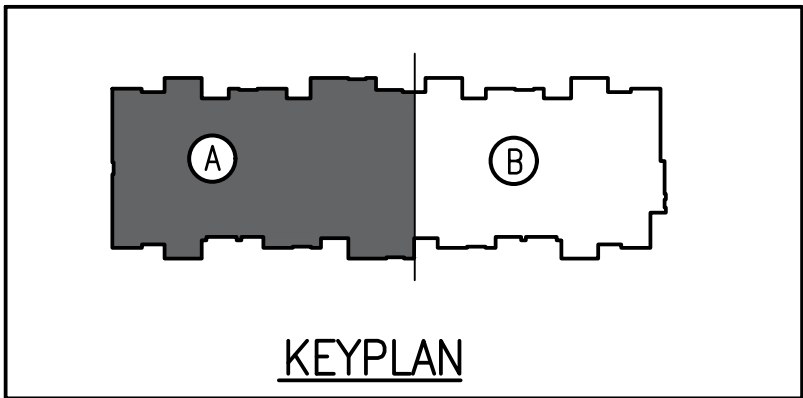


BLDG TYPE II, AREA A FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND

- 12-INCH VAPOR MAT SGC
- BREEZEWAY BREACH
- 4-INCH VERTICAL VENT
- TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0



NORWOOD ESTATES
916 NORWOOD PARK BLVD.
AUSTIN, TX

SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

PROTECT
ENVIRONMENTAL

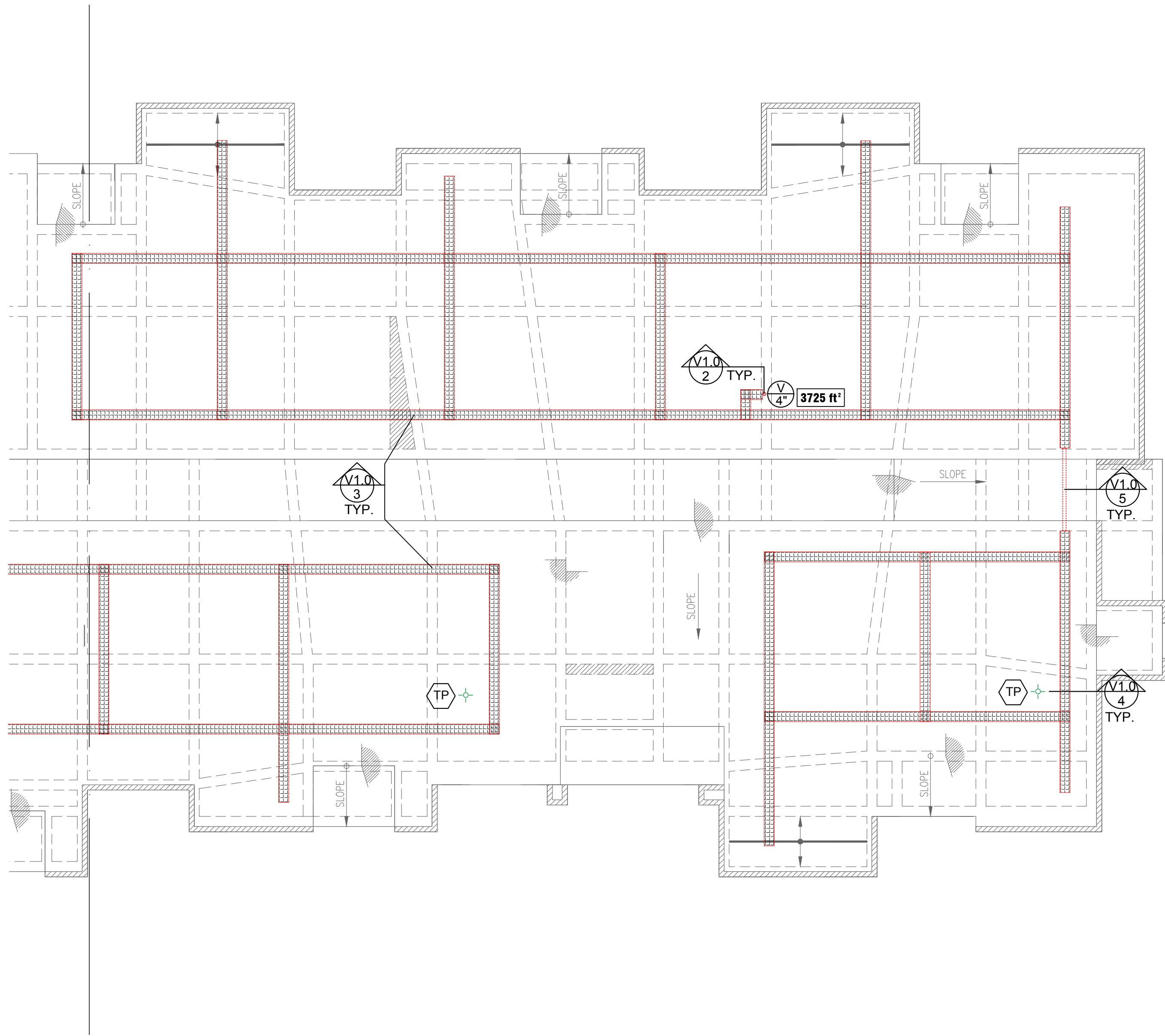
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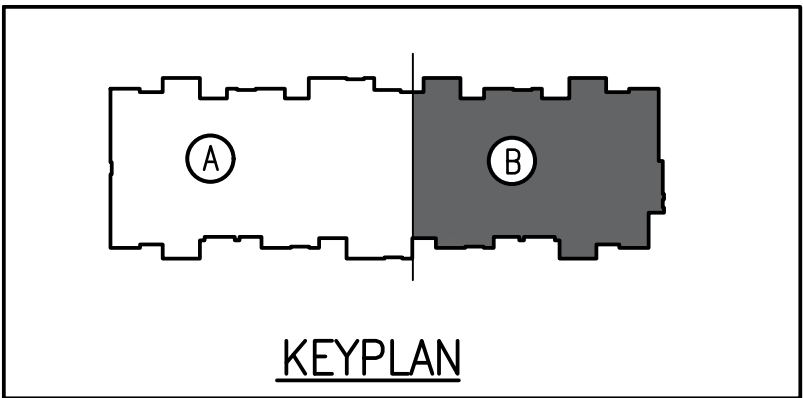
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BLDG TYPE II, AREA B FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND	
	12-INCH VAPOR MAT SGC
	BREEZEWAY BREACH
	4-INCH VERTICAL VENT
	TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0



NORWOOD ESTATES
916 NORWOOD PARK BLVD.
AUSTIN, TX

SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

PROTECT
ENVIRONMENTAL

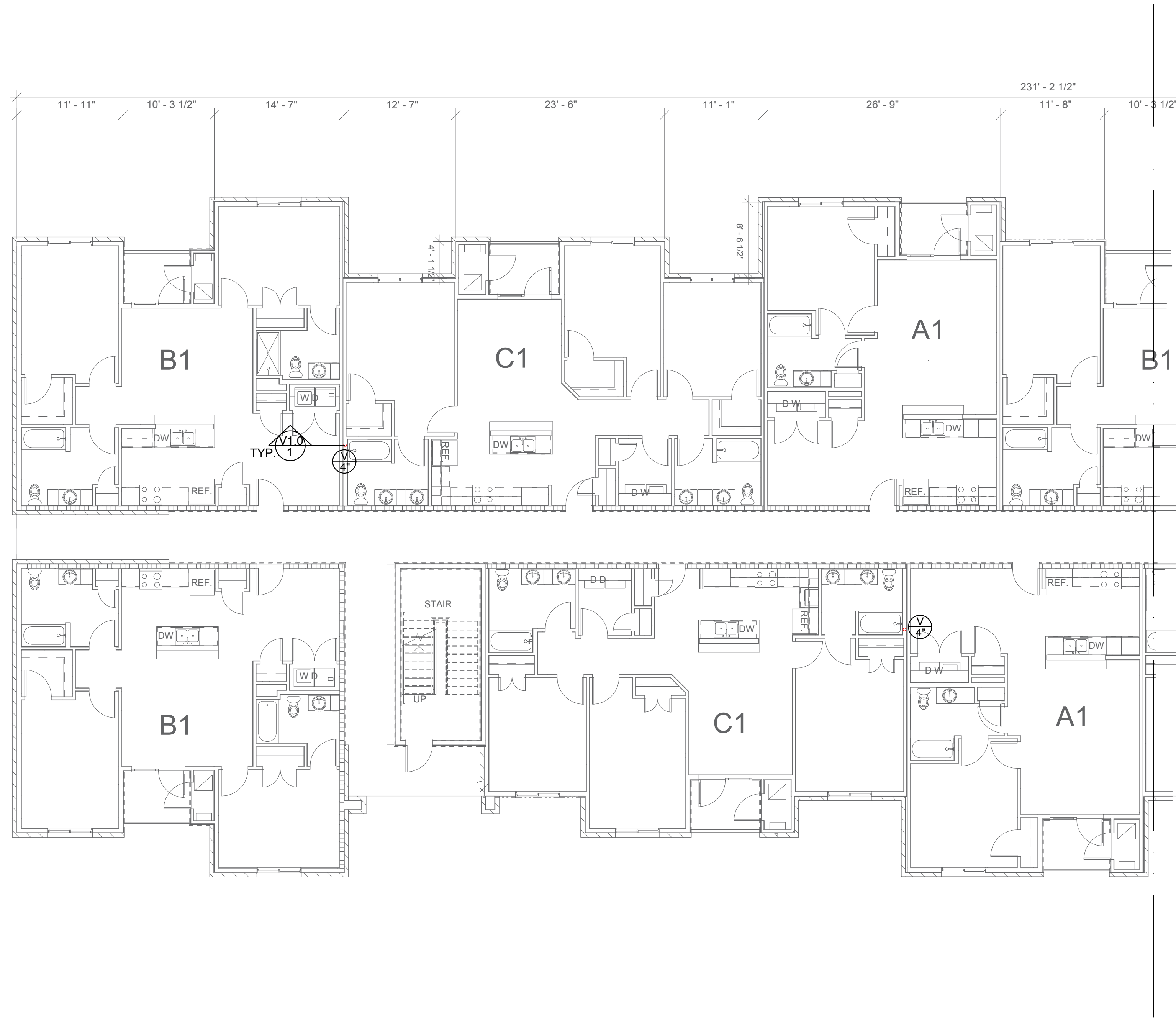
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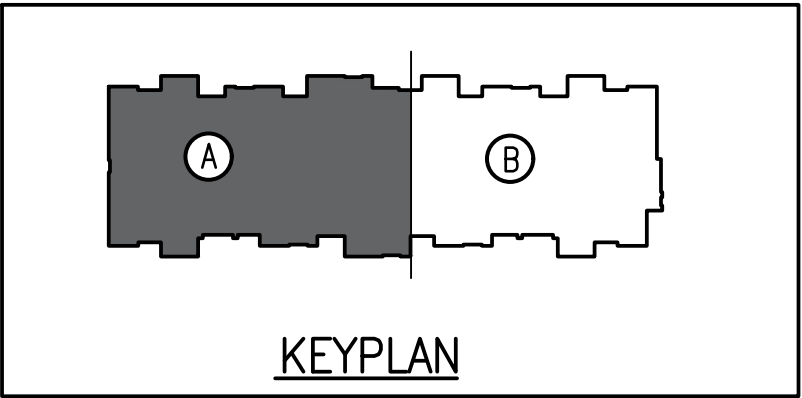
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BLDG TYPE II, AREA A FIRST FLOOR SOIL GAS CONTROL PLAN
NO SCALE



SOIL GAS CONTROL SYSTEM LEGEND	
	4-INCH VERTICAL VENT
SEE CONSTRUCTION DETAILS ON SHEET V1.0	

NORWOOD ESTATES
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AUSTIN, TX

SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

PROTECT
ENVIRONMENTAL

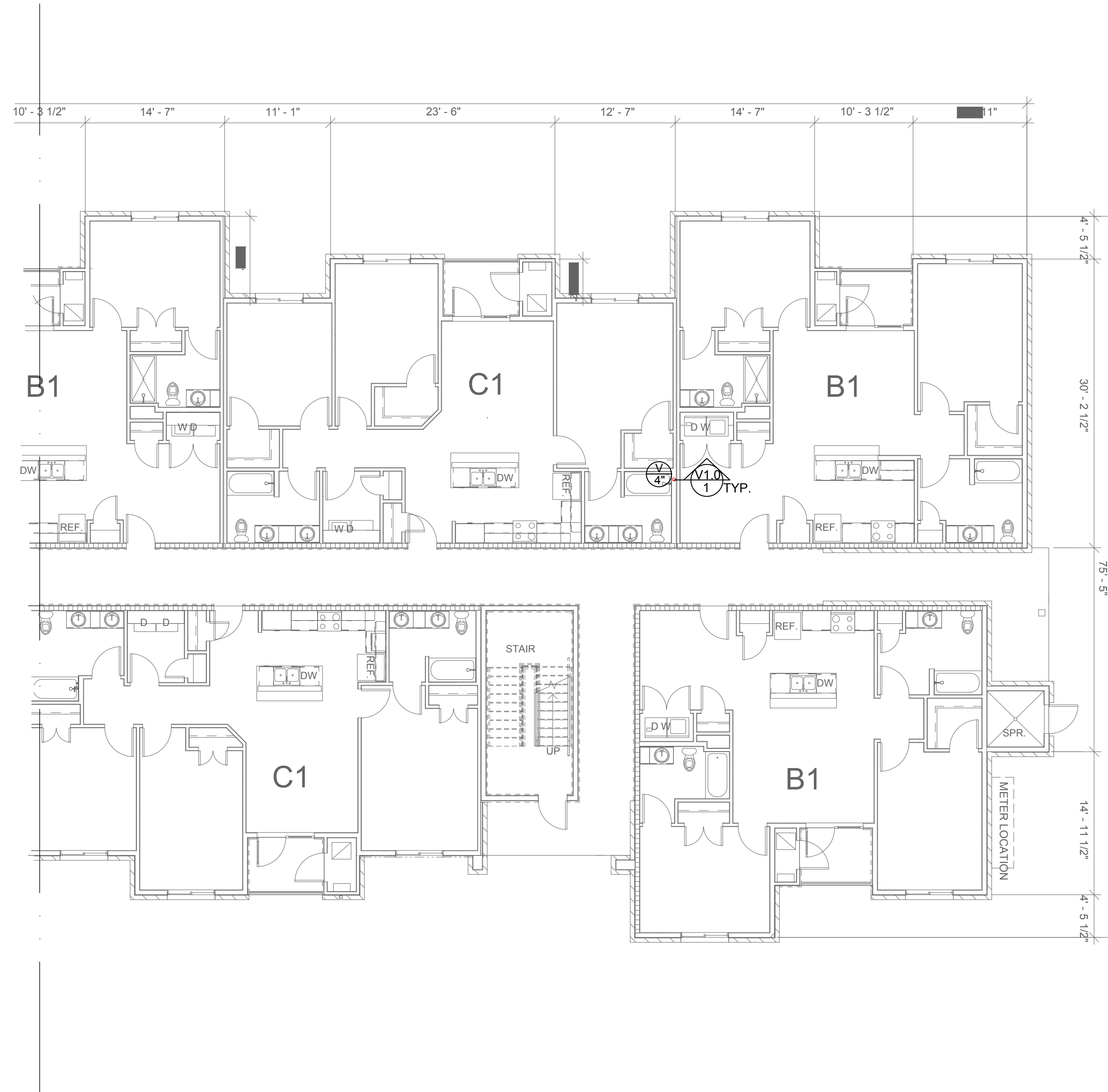
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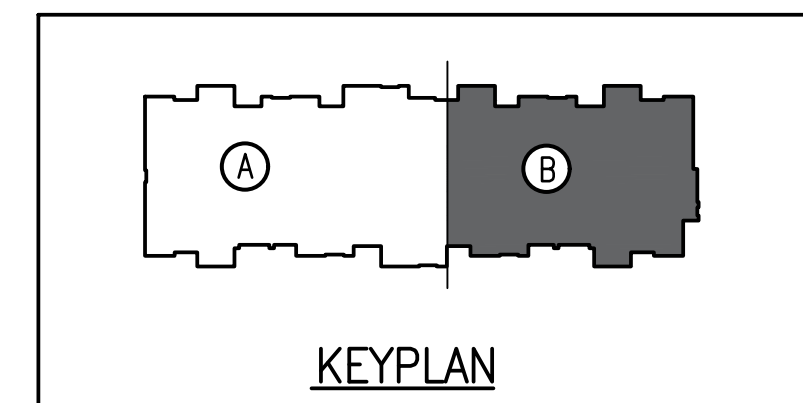
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BLDG TYPE II, AREA B FIRST FLOOR SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND
• ⊕ 4-INCH VERTICAL VENT
SEE CONSTRUCTION DETAILS ON SHEET V1.0



NORWOOD ESTATES
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SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

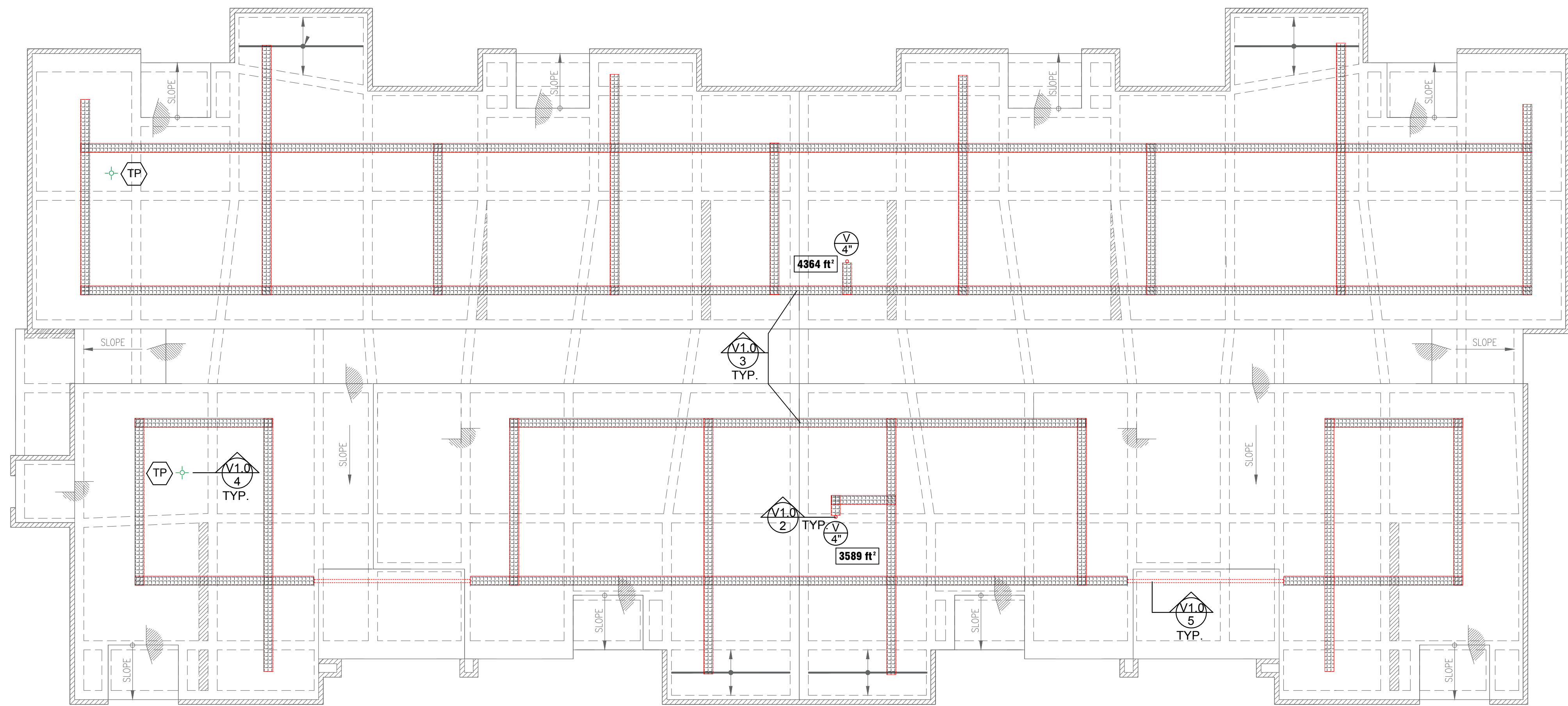
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RTRM



BLDG TYPE III, FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND

- 12-INCH VAPOR MAT SGC
- BREEZEWAY BREACH
- 4-INCH VERTICAL VENT
- TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0

NORWOOD ESTATES
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AUSTIN, TX

SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

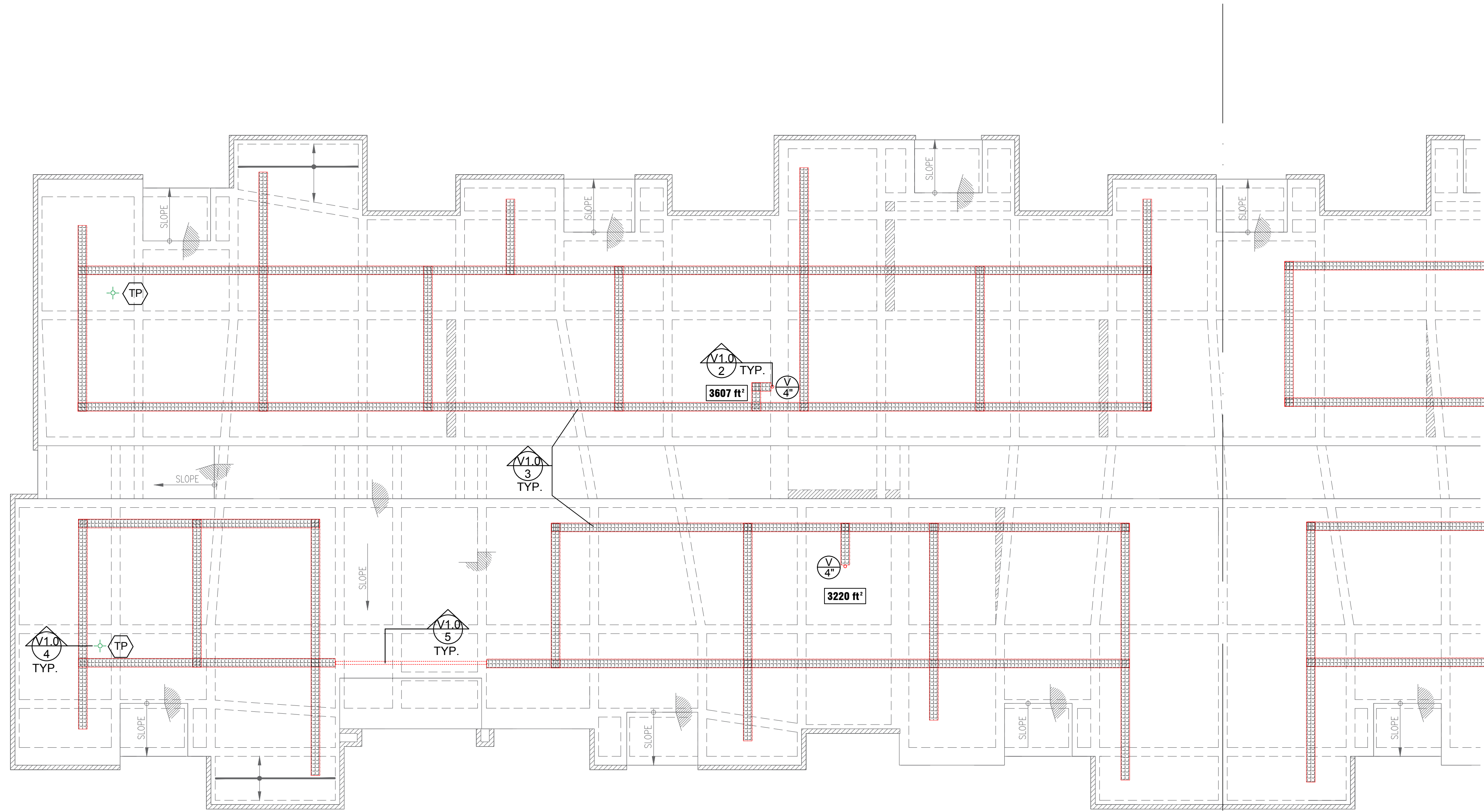
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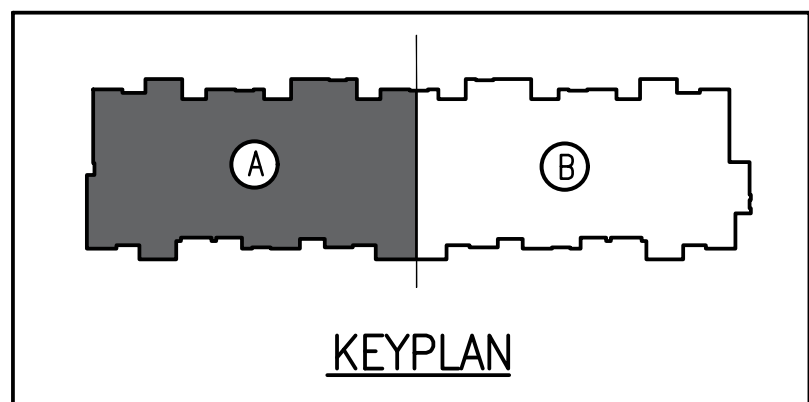


BLDG TYPE IV, AREA A FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND

- 12-INCH VAPOR MAT SGC
- BREEZEWAY BREACH
- 4-INCH VERTICAL VENT
- TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0



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SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

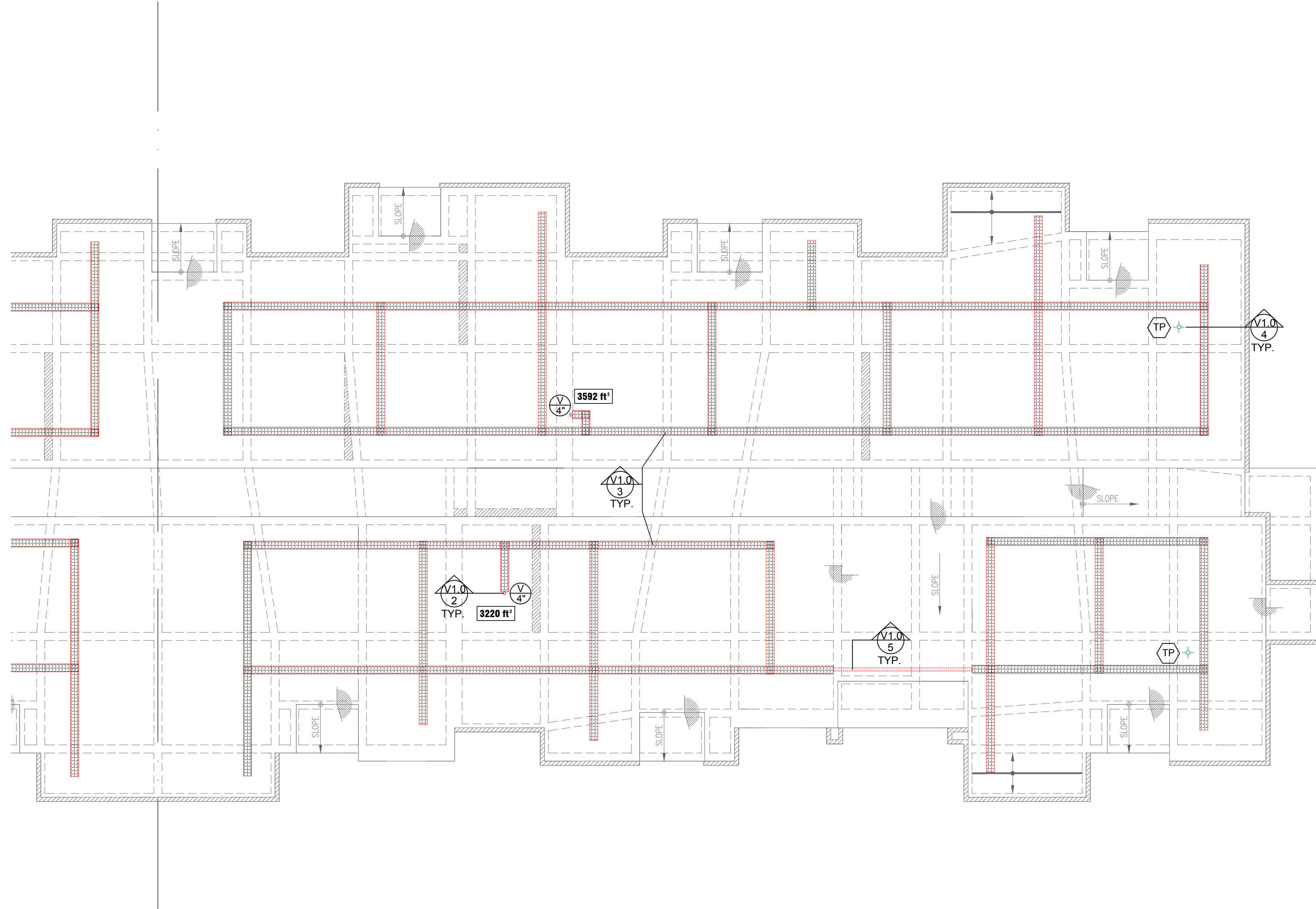
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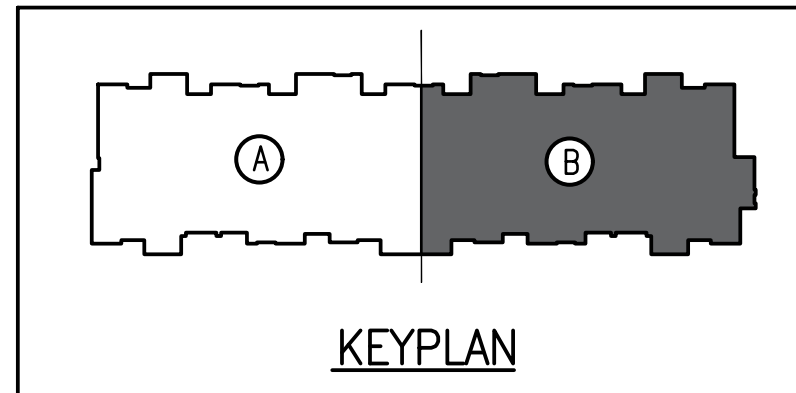


BLDG TYPE IV, AREA B FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND

- 12-INCH VAPOR MAT SGC
- BREEZEWAY BREACH
- 4-INCH VERTICAL VENT
- TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0



NORWOOD ESTATES
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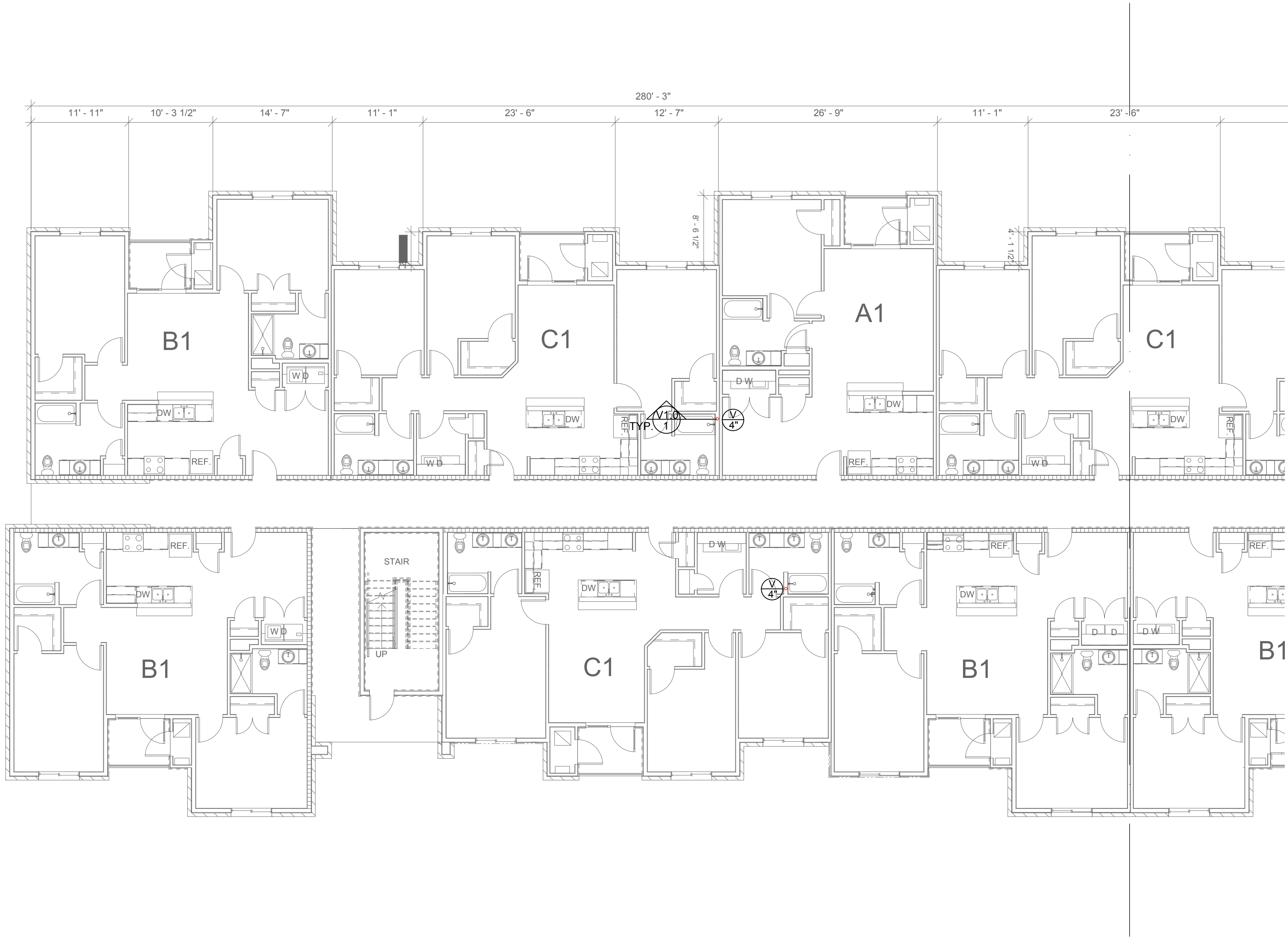
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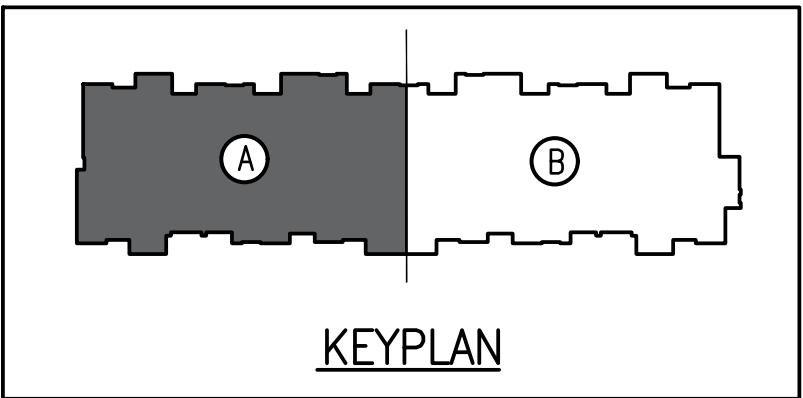
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SOIL GAS CONTROL SYSTEM LEGEND
• ⊕ 4-INCH VERTICAL VENT
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BLDG TYPE IV, AREA A FIRST FLOOR SOIL GAS CONTROL PLAN
NO SCALE



NORWOOD ESTATES
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ENVIRONMENTAL

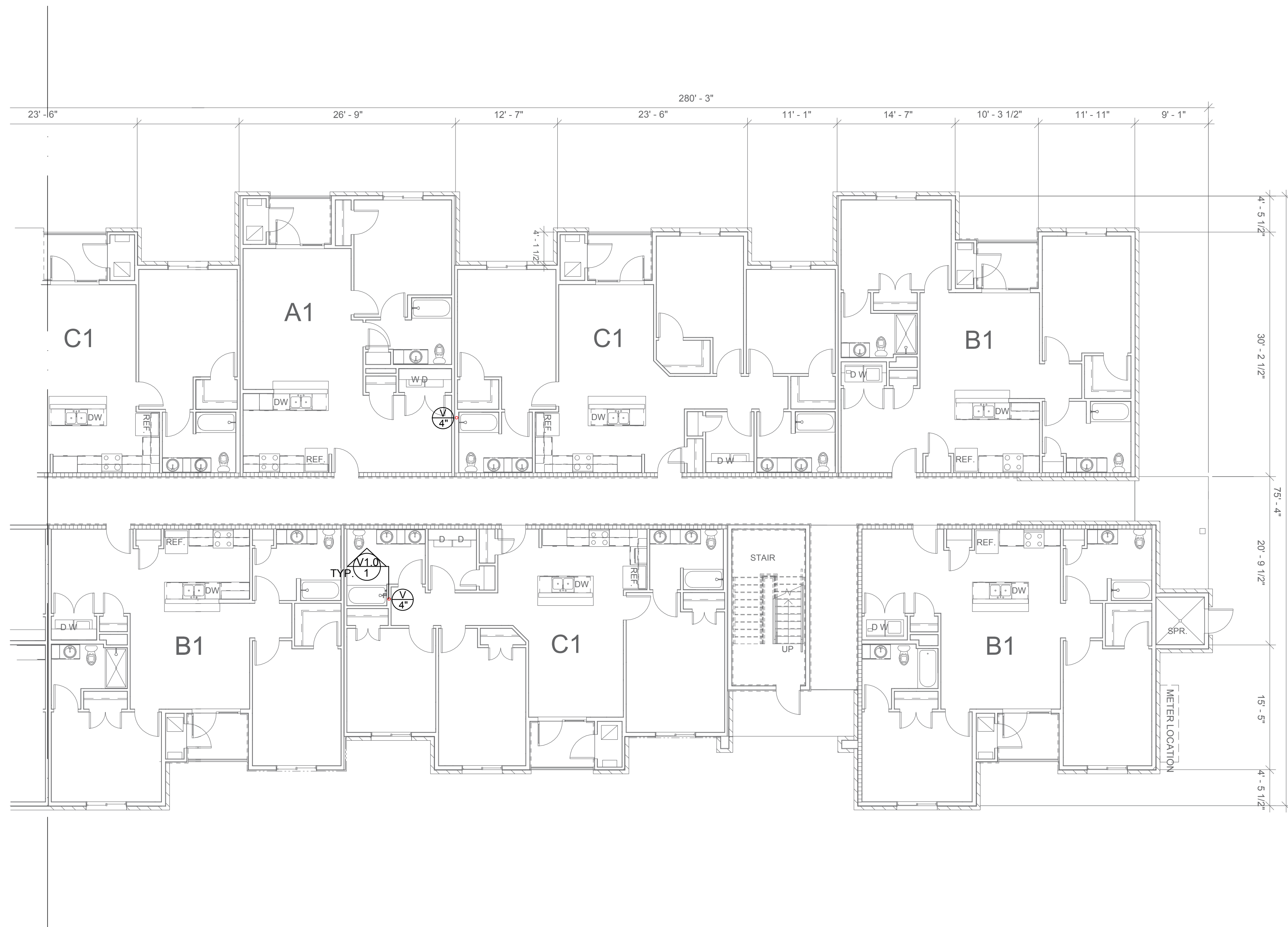
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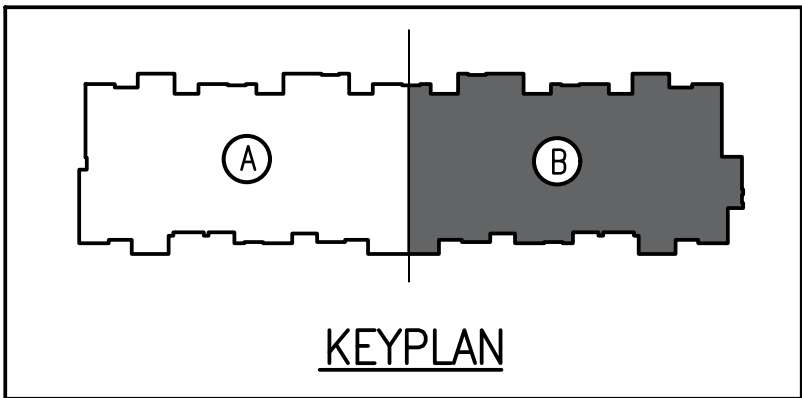
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RTRM



BLDG TYPE IV, AREA B FIRST FLOOR SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND
• ⊕ 4-INCH VERTICAL VENT
SEE CONSTRUCTION DETAILS ON SHEET V1.0



NORWOOD ESTATES
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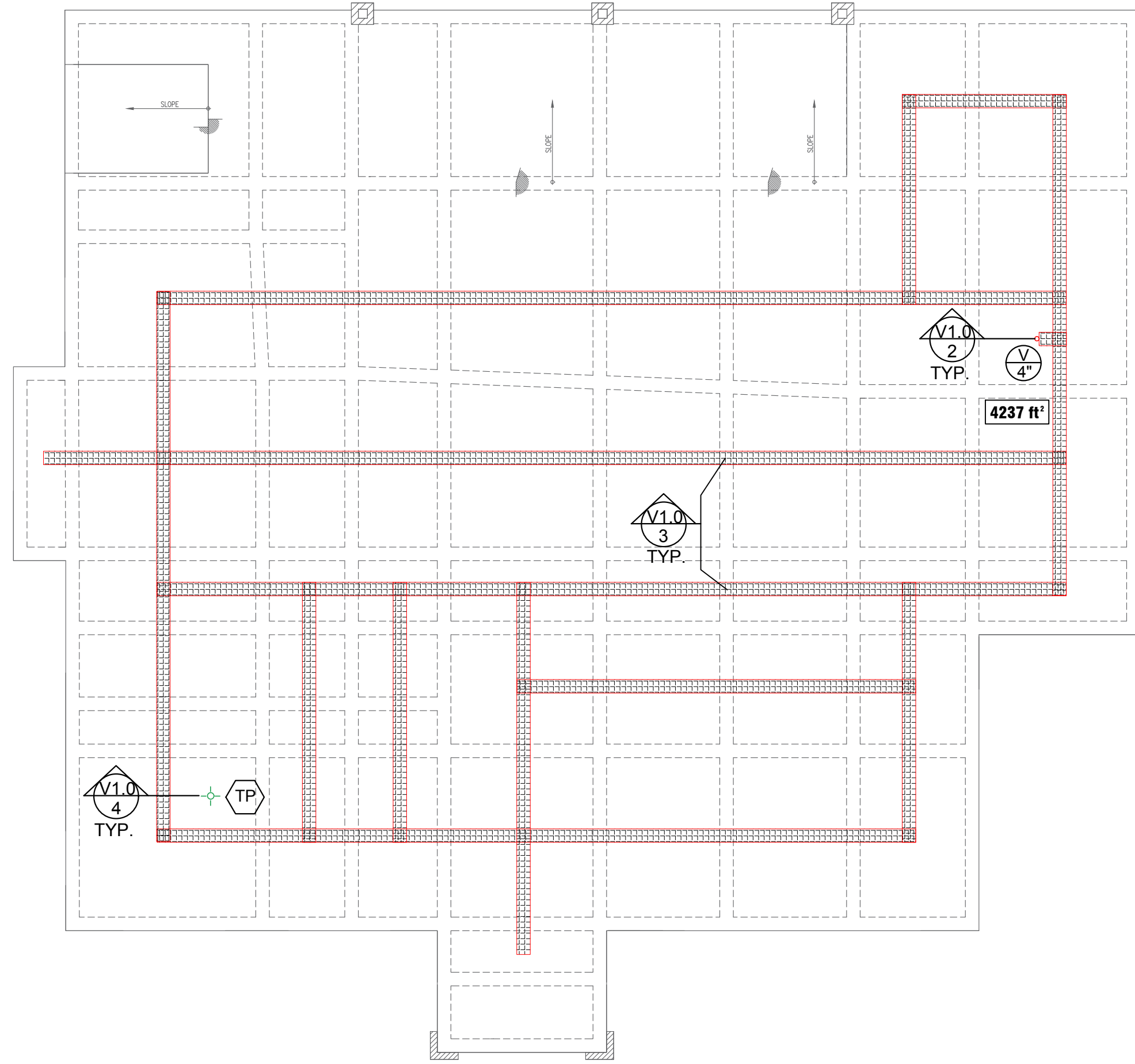
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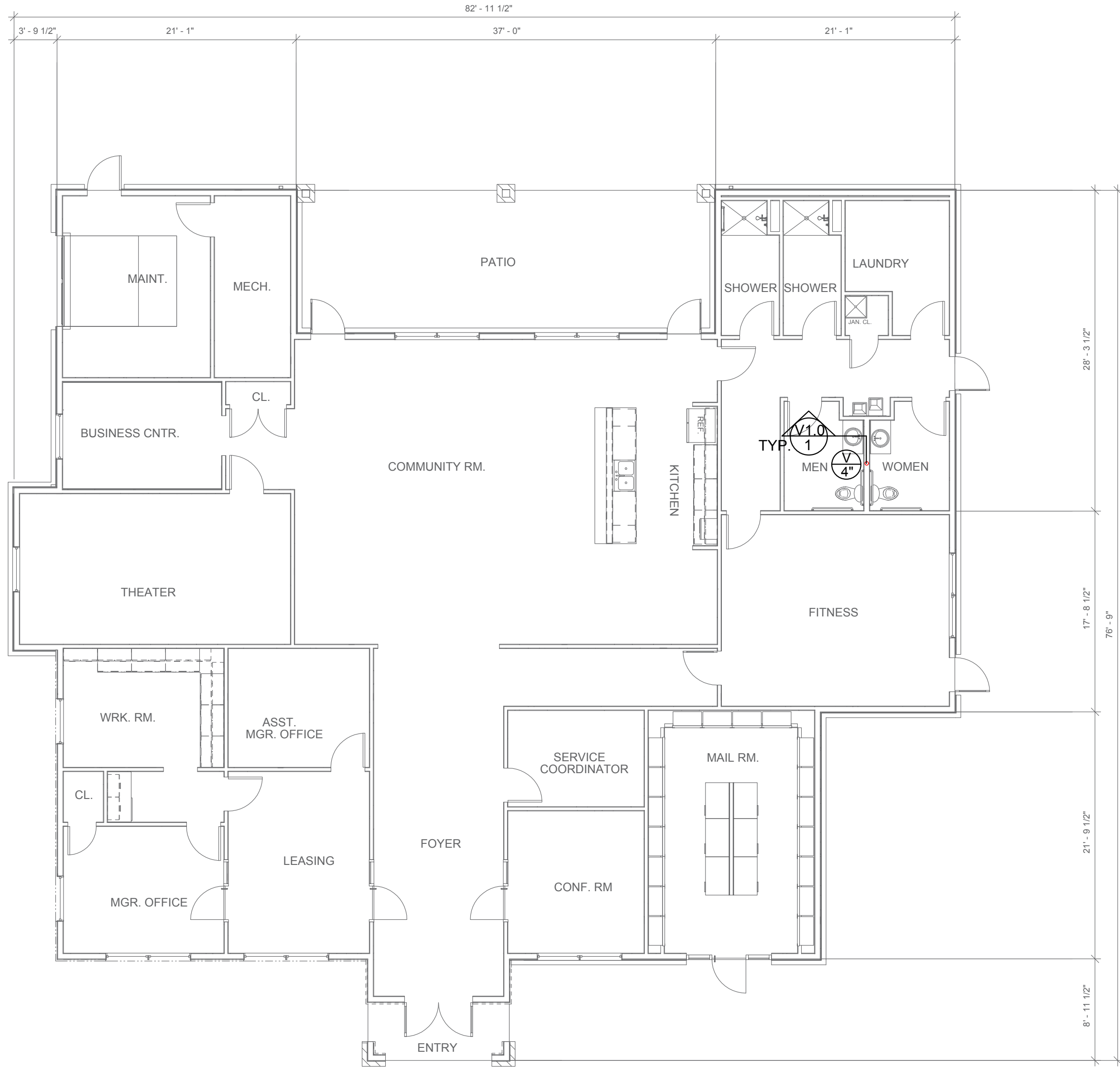
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RTRM



CLUBHOUSE FOUNDATION SOIL GAS CONTROL PLAN
NO SCALE



CLUBHOUSE FIRST FLOOR SOIL GAS CONTROL PLAN
NO SCALE

SOIL GAS CONTROL SYSTEM LEGEND	
	12-INCH VAPOR MAT SGC
	4-INCH VERTICAL VENT
	TEST POINT

SEE CONSTRUCTION DETAILS ON SHEET V1.0

NORWOOD ESTATES
916 NORWOOD PARK BLVD.
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SOIL GAS CONTROL PLAN
HUD PROJECT #051-38028

PROTECT
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SHEET
V5.1

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