

TWELVE OAKS



CONSTRUCTION CRITERIA

Updated- August 2023

| Table of Contents: | Page |
|---------------------------------|-------------|
| Introduction | 3 |
| Project Information | 4 |
| Structural | 5 |
| Mechanical | 7 |
| Plumbing | 14 |
| Electrical | 19 |
| Fire Alarm | 23 |
| Fire Protection | 25 |
| HVAC & BAS - Schematic Diagrams | 28 |

Introduction

Information contained in this section has been assembled to assist the architect and the architect's consultants in preparation of Construction Documents and Specifications. The architect is responsible for adhering to the requirements outlined in the **Lease Criteria** as well as the following criteria.

Twelve Oaks Mall will provide an opportunity for Tenant's to express their individual identity & branding through the use of high end, sophisticated and sustainable materials. We encourage the use of sustainable design and construction practices for all aspects of Tenant improvements.

The following Construction Document Criteria and the Design Criteria, which are available on our website at <http://tenantcoordination.taubman.com>, were created to help define the Design Philosophy.

Landlord's Criteria is intended to assist with the Tenant's design with respect to the limitations of the Base Building systems; to ensure that the interfaces between the tenant systems and the Base Building systems conform to the respective limitations. Landlord's Criteria does not ensure satisfactory performance of tenant systems, nor compliance with any Code regulations and ordinances. It is the Tenant's sole responsibility to ensure that tenant systems will perform to the Tenant's satisfaction.

Project Information

Landlord's Tenant Coordinator: The role of the Tenant Coordinator is to serve as liaison between Landlord and the Tenant, Tenant's architect, and Tenant's contractor. All plans and correspondence concerning Tenant's construction are to be submitted to the Landlord's Tenant Coordination Department.

Tenant Coordinator

Twelve Oaks Mall

Jennifer Grider, Senior Tenant Coordinator/PM

Phone: (248) 258-7396

200 East Long Lake Road

Email: jgrider@taubman.com

Bloomfield Hills, MI 48304

248.258.6800

Mall Address:

Twelve Oaks Mall

Phone: 248.348.9438

Management Office

27500 Novi Road

Novi, MI 48377

Facilities Director: Mark Newman

Phone: 248.348.4607

Building Information:

Construction Type: 2B Unprotected/Fully Sprinkled

Zoning Classification: Mercantile

Structural

Modifications and Alterations: Modifications and alterations to Landlord's framing structure and floors will not be permitted without Landlord's prior written approval. In the event that Landlord approves Tenant's request, Tenant shall leave Landlord's structure as strong as or stronger than original design with finishes unimpaired. Conditions vary by location. Refer to Base Building Structural drawings for more information and Field verify all structural conditions:

1. **Floors on Grade: Tenant** shall provide a 4" concrete slab with a minimum strength of 3,000 PSI on a reinforced with 6" x 6" – W1.4 x W1.4 WWF on a vapor barrier (10 mil minimum). **Tenant shall provide additional compacted sand fill and remove excess as required.**
 - a. **Termite Protection:** Treat soil for termite protection prior to pouring the slabs as needed per code. Provide products by one of the following manufactures:
 - i. Control Solutions Inc., Dominion 2L Termiticide/Insecticide (Basis-of-Design), BASF Corporation, Agricultural Products, Bayer Environmental Science, FMC Corporation, Agricultural Products Group, Syngenta
 - b. **Structural Design Loads:** First Level: **75 psf** – subject to Landlord review and approval.
2. **Upper Level Floors:** Landlord provided concrete slab on composite metal deck. Approximate 2" depression may occur within concrete slab in designated areas adjacent to the Tenant's storefront lease line (V.I.F) to allow for tenant's floor finish thickness.
 - a. **Structural Design Loads:** Second Level: **75 psf**
3. **Mezzanines:** Upper level floor framing has not been designed to support mezzanines. In the event an upper level Tenant is approved for a mezzanine, all structural enhancements of the floor framing and associated structure is the sole responsibility of the Tenant. Tenant shall submit structural mezzanine framing drawings and structural calculations verifying capacity of the base building structure, prepared by a structural engineer registered in the State of Florida for Landlord's review and approval.
4. **Roof:** Structural design loads subject to Landlord review and approval. Tenant shall submit loading, roof framing analysis and support details - prepared by a structural engineer registered in the State of Florida for Landlord's review and approval.
5. **Concrete Floor Penetrations and Floor Trenching:** Required by Tenant shall be coordinated with Landlord's Field Representative and shall be reviewed and approved by landlord's structural consultant.
 - a. All floor penetrations in food service/preparation areas and toilet rooms shall have water tight sleeves extending a minimum of 4" above finish floor.
 - b. **Concrete Floor Trenching on upper level floor framing is not permitted**
 - i. **Cores Only – maximum 4" diameter**
 1. Spacing and quantity of cores to be reviewed and approved by landlord structural consultant.

6. **Vibration Isolation and Sound Attenuation:** Vibration isolation requirements must be provided for all equipment (floor mounted and suspended).
 - a. Speaker systems must provide sound attenuation materials and installation methods so as not to infringe on adjacent tenant's quiet enjoyment.
 - b. ***Speakers must be located 20ft +/- from store entry and equipped with a separate volume control.***

Floor - General Requirements

1. ***Transitions: All floor finishes at the storefront lease line shall be the same finish floor elevation (flush) as the Landlord's mall floor and provide recessed Schluter Type or equivalent transition strips***
 - a. All toilet rooms are to have an ADA compliant marble threshold (or equivalent) to contain water in the event of a leak.
2. **Expansion Joints:** Expansion joints in sales areas must be detailed and illustrated in the Construction Documents. Expansion joint material must be compatible with the floor finish materials.
3. **Anti-Fracture Membrane - Floor Isolation:** It is recommended to install an Anti-Fracture Membrane at the column lines, transitions between the structural slab and any shrinkage cracks that are evident.

Mechanical Design

1. Landlord Provisions

a. **Multiple-Zone Variable-Air Volume (VAV) Central HVAC System (Cooling Only)**

- i. Packaged rooftop units (RTU) provide supply air at a constant temperature and varying flow rate to each tenant to satisfy a specified temperature setpoint.
- ii. High velocity duct mains with point of connection(s) for tenant within leased premises, tenant to verify duct tap(s) locations in field.
- iii. The landlord provided system is cooling only, if needed tenant shall be responsible for providing supplemental heating as specified by landlord.
- iv. Outside air provided in accordance with ASHRAE 62.1.

v. **Landlord system shall provide cooling at a rate of no less than 400 square feet per ton.**

- vi. Landlord system will not operate during shopping center off-hours as determined by landlord.

b. **Landlord Provided Supply Air Characteristics**

i. **Lower Level Tenants – Maximum Allowed 1.10 CFM/SF.**

ii. **Tenants with Roof Above – Maximum Allowed 1.15 CFM/SF.**

- iii. Supply Air Temperature Setpoint – 55° F
- iv. Available External Static Pressure Downstream of VAV Terminal Unit – 0.25 IN. W.G.

c. **Design Conditions (Based on Governing Energy Code)**

- i. Indoor Conditions
 - i. Summer – Minimum 76° FDB
 - ii. Winter – Maximum 70° FDB
 - iii. Lighting – Watts/SF as allowed per governing codes
 - iv. Occupancy – 1 person / 75 SF
 - v. Sensible Heat Gain – 250 BTU/HR/person
 - vi. Latent Heat Gain – 250 BTU/HR/person
 - vii. Exterior Wall U Value – 0.090 BTU/(HR*F*FT²)
 - viii. Roof U Value – 0.032 BTU/(HR*F*FT²)
- ii. Outdoor Conditions
 - i. Summer – 92° FDB / 75° FWB
 - ii. Winter – 10° FDB

d. **Toilet Exhaust System**

- i. Point of connection within leased premises, tenant to verify size and location in field.

e. **Building Automation System Communication Loop Building A, B, C, & D Tenants**

- i. Tenant VAV terminal units are not connected to the landlord's BAS and operate independently through tenant installed controls.

- f. **Building Automation System Communication Loop Building E Tenants**
 - i. Point of connection within leased premises, tenant to verify location of communication loop junction box in field.
 - ii. The tenant's VAV terminal unit is controlled by the landlord's BAS.
 - g. **Smoke Control System**
 - i. Refer to the **Fire Protection Design** section for information on the center smoke control system.
 - ii. **HVAC system depends on the use and operation of the second floor plenum for purposes of smoke evacuation**
 - iii. **All upper level tenants to have 1 hour fire rated ceiling throughout premises. Tenant to provide access panels for service and repair of landlord equipment.**
2. **Tenant General Requirements**
- a. **Tenants designated to install individual Heating, Ventilating, and Air Conditioning Systems**
 - i. Depending on Lease Requirement and location, some tenants may provide their own individual system, subject to landlord review and approval (i.e. heating, ventilation and air-conditioning equipment and controls, ducts, insulation, water supply, venting and drainage, fresh air supply and return, exhaust and make-up air, dehumidification and humidification equipment, water saving equipment and all structural, plumbing and electrical work related thereto).
 - ii. Air handling units within leased premises shall be floor supported, suspending air handling units from the building structure is not permitted.
 - iii. Tenant shall be required to provide air conditioning units with an outside air connection full economizer capability operated by automatic temperature controls.
 - iv. All return air back to air handling unit shall be ducted, the space between the ceiling and structure above shall not be used as a return air plenum.
 - v. All equipment shall be designed in accordance with governing codes and adhere to the criteria below where applicable.
 - b. **Base Building Systems**
 - i. Tenant shall not make modifications to landlord's base building systems without prior approval from landlord.
 - ii. Any damage done to the landlord's base building or systems by tenant during construction shall be repaired by the landlord at the tenant's expense.
 - c. **Professional Engineer:** Tenant shall engage a professional engineer licensed in the state of Michigan to prepare mechanical construction drawings and specifications.

- d. Load Calculations:**
 - i. Tenant shall include space load calculations on the construction drawings.
 - ii. Calculations shall conform to Michigan Building Code – Energy Conservation, ASHRAE standards, and the landlord provided design conditions.
- e. Construction Standards:** All mechanical work shall be installed per governing codes and the landlord’s tenant criteria.
- f. As-Builts:** Upon completion of tenant build out, the tenant shall provide one (1) set of pdf as-built plans for all mechanical work to the landlord.
- g. Testing and Balancing**
 - i. The tenant shall use an AABC or NEBB certified HVAC balancing contractor to adjust and balance the tenant's HVAC systems.
 - ii. Balance shall be done per the design air quantities indicated on the tenant's design drawings, but not in excess of airflow capacity designated by the Landlord.
 - iii. Balancing of terminal units must be coordinated with the landlord’s BAS contractor.
 - iv. A certified balancing report must be submitted to the landlord for review and approval at least two weeks prior to opening of the leased premises or as directed by landlord.
 - v. If balancing is not performed by tenant the landlord shall balance the tenant’s HVAC system at the tenant’s expense.
- h. Space Odors:** Tenants that produce odors must make provisions for maintaining acceptable negative air pressures within their space with respect to adjacent tenants and the mall concourse.
- i. Existing Work:** Existing systems from previous tenant cannot be abandoned in place and must be demolished entirely if not being re-used.
- j. Roof Openings:** Cutting and patching of roof openings shall be performed by the landlord’s contractor at tenant’s expense.
- k. Labeling**
 - i. Equipment shall be labeled as required by landlord tenant construction rules and regulations manual.
 - ii. Any penetration through walls, ceilings, floors, or roof into a space not within the tenant’s lease line must be identified with the space number and fixture type.
- l. Mechanical Load Calculation Check Sheets**
 - i. Shall be certified by engineer of record
 - ii. Submit with construction documents for landlord review process

3. Tenant Equipment and Control Requirements

- a. **Equipment Access:** Proper access shall be provided and maintained for landlord and tenant installed equipment/accessories.
- b. **VAV Terminal Units for Building A, B, C, & D Tenants**
 - i. Tenants shall provide a minimum of one (1) VAV terminal unit as follows:
 - i. Single Duct terminal unit(s)
 - ii. Resistance heating if required included in the terminal unit
 - iii. Compatible with direct digital controls
- c. **VAV Terminal Units for Building E Tenants**
 - i. Landlord shall furnish and install VAV terminal unit(s) as required at tenants' expense.
- d. **VAV Terminal Unit Controls Building A, B, C, & D Tenants**
 - i. ***Tenant shall furnish and install VAV box controllers, thermostats, zone sensors, and all associated control wiring as required.***
 - ii. All control wiring shall be installed in conduit.
 - iii. VAV terminal units are not connected to the landlord's BAS.
 - iv. Prior to the start of demolition, the tenant shall have the landlord approved contractor safe off existing VAV controls that will not be re-used at tenant's expense.
- e. **VAV Terminal Unit Controls Building E Tenants**
 - i. ***Tenant shall use landlord approved BAS contractor to furnish and install VAV box controllers, zone sensors, and all associated control wiring at tenant's expense.***
 - ii. All control wiring shall be installed in conduit.
 - iii. VAV terminal units are connected to and controlled by the landlord's BAS.
 - iv. Prior to the start of demolition, the tenant shall have the landlord approved contractor safe off existing VAV controls that will not be re-used at tenant's expense.
- f. **Roof Mounted Equipment**
 - i. Tenant rooftop equipment shall be located in areas designated by landlord at specified heights and shall submit a roof plan showing all existing and new equipment within the vicinity of the tenant space.
 - i. Should the weight or location of tenant rooftop equipment require additional supports, screens, catwalks, roof hatches, etc. they shall be provided by the tenant according to the landlord's specifications.

- ii. Tenant shall submit a roof loading analysis and support details prepared by a structural engineer registered in Michigan. All equipment shall be mounted on rails or roof curbs and anchored to the supporting structure to withstand wind and seismic effects per governing codes. Anchorage requirements shall be provided on mechanical plans.
- iii. Roof equipment placement shall be done by crane or helicopter, equipment shall not be rolled across or improperly rested upon the roof. An equipment pick plan shall be submitted to the landlord for approval before commencement of rooftop equipment placement work.
- iv. All rooftop equipment shall be painted according to landlord's specifications.

g. Restroom Exhaust Fans

- i. Inline or ceiling mounted.
- ii. Provide with backdraft damper.
- iii. Connect to landlord provided toilet exhaust duct main.

h. Air Devices

- i. Building A, B, C, D, and E Lower Level tenants shall relieve air to the mall concourse through storefront doors.
- ii. Building A, B, C, D, and E Upper Level tenants shall relieve air to the ceiling plenum through return grilles sized for a maximum velocity of 400 FPM net.

i. Auxiliary Heat

- i. All tenant supplemental heating equipment shall be approved by landlord.
- ii. Reheat of conditioned supply air is not permitted per governing codes.
- iii. Electrical resistance heating shall be powered from tenant's panel.

j. Fire Dampers

- i. Shall be UL listed.
- ii. Provide at locations where ductwork penetrates a fire rated assembly.

4. Tenant Material and Installation Requirements

a. Tenant Interface Drawings: Refer to HVAC & BAS – Schematic Diagrams for more information on tenant fit out guidelines and connections to landlord systems.

b. Hangers and Supports

- i. Hangers and supports shall be supported from structural members only (not secured to the deck above).
- ii. Additional intermediate structural supports for hangers shall be installed as needed upon landlord approval.
- iii. All duct hangers exposed to public view shall be wire or rod type, shall be evenly spaced, and shall be grouped as much as possible with other trades for uniformity.

c. Main and Branch Ductwork

- i. Ductwork shall be fabricated of minimum 26 gauge galvanized steel, flexible ductwork is permitted for final connection to air devices (maximum length as specified per governing code).
- ii. Flexible ductwork is permitted for final connection to air devices (maximum length as specified per governing code).
- iii. Main duct branch connections shall be via 45 degree entry, bellmouth, or conical type and shall be provided with a locking quadrant type volume damper.
- iv. Square and rectangular duct elbows shall have double thickness turning vanes.
- v. Supply and outside air ductwork shall be insulated as required by governing codes.

d. SMACNA Ductwork Construction Standards

- i. Duct Class – 2 in. water gauge
- ii. Seal Class – A
- iii. Rectangular Metal Leakage Class – 6
- iv. Round Metal Leakage Class – 3

5. Tenant Food Service Requirements

a. Kitchen Hoods

- i. Type I hoods shall be installed where cooking appliances produce grease or smoke as a result of the cooking process.
 - i. Shall include UV light system for grease mitigation in ductwork.
 - ii. Shall be provided with an approved automatic fire suppression system complying with governing codes.
 - iii. ***The kitchen hood fire suppression system shall be connected to the base building fire alarm system for monitoring, at the tenant's expense.***
- ii. Type II hoods shall be installed above dishwashers and appliances that produce heat or moisture and do not produce grease or smoke as a result of the cooking process.
- iii. Kitchen hoods shall be constructed and installed as required by governing codes.

b. Grease Ductwork

- i. Grease ductwork shall be constructed, installed, and tested as required by governing codes.
- ii. Grease ductwork shall be encompassed by an approved rated enclosure where required by governing codes.
- iii. Routing of grease ductwork and placement of access doors beyond the tenant's space shall be approved by landlord.

c. Kitchen Exhaust Fans

- i. Shall be up-blast discharge type bearing evidence of UL & NSF approval for kitchen exhaust service.
- ii. Locate a minimum of 30 feet horizontally away from outside air intakes or openings to the building.
- iii. Grease drain and trap.
- iv. Cleanout port.
- v. G2 grease guard rooftop defense system
- vi. Minimum 40" discharge above the roof.

d. Pollution Control Units (PCU)

- i. A PCU shall be provided as required by governing codes.
- ii. Landlord reserves the right to require tenant to provide a pollution control unit if kitchen exhaust fans do not meet the minimum landlord required distance from outside air intakes or openings into building.
- iii. PCUs shall be factory assembled and capable of significantly reducing smoke, grease, and odor from the exhaust air stream
- iv. PCUs shall be provided with an approved fire-extinguishing system and an internal detection system capable of activating fire-extinguishing system protecting the unit.

e. Make-Up Air Units

- i. Make-up air units shall be required to deliver fresh air to tenant kitchen/hood(s).
- ii. Make-up air units shall be installed a minimum of 36" above the roof surface.
- iii. Make-up air units shall be interlocked to start with the associated exhaust air system.

f. Kitchen Systems

- i. Shall be designed and constructed such that the space is maintained at a negative pressure relative to the mall common area.
- ii. Tenant make-up air systems shall replace the minimum amount of exhaust air as required by governing codes.

g. General Maintenance

- i. Food service tenants shall clean their filters, hoods, duct systems, and grease collecting devices on a regular basis as determined by landlord.
- ii. Tenants shall take the appropriate steps necessary to prevent the depositing and accumulation of grease on the roof, damage to the roof resulting from tenant neglect shall be repaired by the landlord at tenant's expense.
- iii. The Landlord reserves the right to maintain the tenant's hoods, duct systems, and grease collecting devices at Tenant's expense.

h. Duct Lining: Food service tenants shall not use internally lined ductwork.

Plumbing Design

1. Landlord Provisions

- a. **Domestic Water:** Point of connection on main line above or below leased premises, tenant to verify size and location in field.
- b. **Sanitary Waste:** Point of connection on main line adjacent to or below leased premises, tenant to verify size and location in field.
- c. **Sanitary Vent:** Point of connection on main line within leased premises, tenant to verify size and location in field.
- d. **Grease Waste:** Point of connection on main line for food court tenants, tenant to verify existence and location in field.
- e. **Cooking Oil:** Food court tenants provide a community disposal service for used cooking oil that is payed for by the tenants.
- f. **Gas Manifold:** Provided by utility company located in exterior service courts, tenant to verify location and capacity in field. Gas piping to leased premises may be existing from previous tenant and can be reused if deemed to be in acceptable condition upon inspection and test.

2. Tenant General Requirements

- a. **Base Building Systems**
 - i. Tenant shall not make modifications to landlord's base building systems without prior approval from landlord.
 - ii. Any damage done to the landlord's base building or systems by tenant during construction shall be repaired by the landlord at the tenant's expense.
- b. **Professional Engineer:** Tenant shall engage a professional engineer licensed in the state of Michigan to prepare plumbing construction drawings and specifications.
- c. **Construction Standards:** All plumbing work shall be installed per governing codes and the landlord's tenant criteria.
- d. **As-Builts:** Upon completion of tenant build out, the tenant shall provide one (1) set of pdf as-built plans for all plumbing work to the landlord.
- e. **Plumbing Calculations:** Plumbing tabulations shall be provided on drawings to include water supply fixture units (WSFU), drainage fixture units (DFU), and grease interceptor sizing calculations (if applicable).
- f. **Tenant Criteria Sections:** Refer to Architectural and Structural sections of tenant criteria for information on floor and wall construction requirements.
- g. **Existing Work:**
 - i. Existing systems from previous tenant cannot be abandoned in place and must be demolished entirely if not being re-used, except for below grade piping that does not interfere with future work.

- ii. All below grade sanitary piping that will be re-used must be jetted and videoed before being put into service.
- h. Roof Openings:** Cutting and patching of roof openings shall be performed by the landlord's contractor at tenant's expense.
- i. Labeling**
 - i. Equipment shall be labeled as required by landlord tenant construction rules and regulations manual.
 - ii. Any penetration through walls, ceilings, floors, or roof into a space not within the tenant's lease line must be identified with the space number and fixture type.

j. Plumbing Facilities: Tenant shall be required to install a minimum of one (1) restroom if leased premises is not located within 300 feet of public restrooms.

3. Tenant Equipment and Fixture Requirements

- a. Equipment Access:** Proper access shall be provided and maintained for landlord and tenant installed equipment/accessories.
- b. Water Meter**
 - i. Provide Seametrics MJNR meter with 10G output**
 - ii. Water meter shall be installed in an accessible location a maximum of 5 feet above finished floor (preferably in tenant restroom).
- c. Water Heaters**
 - i. Tenants shall provide instantaneous or storage type water heater(s) as required.
 - ii. Storage type water heaters shall be floor mounted and provided with the following:
 - i. Vacuum relief valve
 - ii. Temperature and pressure relief valve with discharge piping to an indirect waste receptor
 - iii. 3/4" drain valve with male garden hose threads
 - iv. Heat trap nipples
 - v. Expansion tank
 - vi. Minimum 24 gage galvanized steel drain pan with discharge piping to an indirect waste receptor
- d. Plumbing fixtures**
 - i. Shall be commercial grade.
 - ii. Shall Comply with ADA guidelines.
 - iii. Shall not exceed code specified maximum flow rates.
 - iv. Dry retail water closets shall be tank type (flushometer valves are not acceptable).
 - v. A minimum of one (1) mop sink shall be provided within tenant space.
 - i. Mop sink for kiosks shall be concealed from public view and requirements shall be verified with local municipality.**

- vi. Restrooms, janitor closets, etc. shall include at least one (1) floor drain, minimum size 3" (all floor drains shall be provided with trap primers).

e. Hair interceptors

- i. Shall be installed on all sinks, basins, special sanitary units, etc. which in any way receive human or animal hair.
- ii. All hair interceptors must be made accessible and maintained.

4. Tenant Material and Installation Requirements

a. *Tenant Interface Drawings: Refer to HVAC & BAS – Schematic Diagrams for more information on tenant fit out guidelines and connections to landlord systems.*

b. Hangers and Supports

- i. Hangers and supports shall be supported from structural members only (not secured to the deck above).
- ii. Additional intermediate structural supports for hangers shall be installed as needed upon landlord approval.
- iii. Cast iron pipe must be supported at least every five feet and at every joint/fitting.
- iv. All hangers exposed to public view shall be evenly spaced and grouped as much as possible with other trades for uniformity.
- v. Supports are required for all piping routed across the roof.

c. Domestic Water Piping

- i. Above Grade: Type L drawn-temper copper tubing conforming to ASTM B88 with solder-joint fittings.
- ii. Below Grade: Type K drawn-temper copper tubing conforming to ASTM B88 with solder-joint fittings.
- iii. All valves for domestic water shall have a minimum CWP rating of 125 psi.

d. Sanitary Waste and Vent Piping

- i. Above Grade: Service weight hubless cast-iron pipe conforming to ASTM A 888 with stainless steel shield and clamps no-hub coupling.
- ii. Below Grade: Solid-wall schedule 40 PVC conforming to ASTM D 2665 with PVC socket fittings.

e. Gas Piping

- i. Black steel schedule 40 pipe conforming to ASTM A 53 with steel press-connect fittings conforming to CSA LC-4 or as may be required by governing codes and landlord's insurance provider.
- ii. All valves for natural gas piping shall be bronze plug valves with a minimum pressure rating of 125 psi.
- iii. Tenants requiring natural gas shall arrange for gas service directly with gas utility.
- iv. Tenant shall install all gas piping to and within their space.

- v. Routing of gas piping to tenant space shall be approved by landlord.
- vi. All exterior gas piping shall be painted per landlord's specification.
- vii. Gas piping on roof shall be installed on landlord specified roller supports.
- viii. Gas piping shall be labeled per governing codes along with the tenant's name and space number.

f. Condensate Piping

- i. Rooftop air conditioning unit condensate line routing shall be coordinated with landlord.
 - i. All condensate piping shall be routed to an indirect waste receptacle as required by governing code.
 - ii. Condensate piping material shall be copper type DWV

g. Pipe Sleeves: Shall be installed for penetrations through floor slabs.

h. Escutcheons: Shall be provided at pipe penetrations through walls and partitions within finished areas.

i. Insulation: All domestic water lines and condensate piping shall be insulated as required by governing codes and be rated for use in a return air plenum.

j. Drain Pans: An auxiliary drain pan with leak detection shall be provided below plumbing piping that is routed through base building mechanical/electrical rooms and under air handling units with evaporator coils located indoors.

5. Tenant Food Service Requirements

a. Grease Waste

- i. Food court and restaurant tenants shall provide a grease waste disposal system with designated grease interceptor in accordance with governing codes.
- ii. Food court tenants shall connect internal grease waste disposal system to landlord provided point of connection routed to an external grease interceptor.
- iii. Tenant furnished grease interceptors shall be in accordance with governing codes.
 - i. Provide grease waste sampling port as required by governing code.

b. Cooking Oil

- i. Food court tenants shall be responsible for disposing of used cooking oil in tenant provided community disposal container.
- ii. Tenant shall be responsible for cleaning up any cooking oil spills on the way to or at community disposal container.
- iii. Restaurant tenants shall be required to coordinate with cooking oil disposal company for installation of used cooking oil disposal container and regular maintenance.

c. Floor Drains

- i. Kitchens, walk in coolers, and other wet areas shall include at least one (1) floor drain, minimum size 3" (all floor drains shall be provided with trap primers).

Electrical Design

1. Landlord Provisions

a. Electrical Service

- i. 277/480 Volt, 3 Phase, 4 Wire, 60 Hertz

b. Distribution Switchboard

- i. Circuit breaker compartment

c. Telecommunications

- i. Telecommunications service backbone from minimum point of entry (MPOE) to intermediate distribution frames (IDF) throughout the center.
- ii. Point of connection to IDF located within tenant space for connection by tenant, tenant to verify location in field.

2. Tenant General Requirements

a. Base Building Systems

- i. Tenant shall not make modifications to landlord's base building systems without prior approval from landlord.
- ii. Any damage done to the landlord's base building or systems by tenant during construction shall be repaired by the landlord at the tenant's expense.

b. Professional Engineer: Tenant shall engage a professional engineer licensed in the state of Michigan to prepare electrical construction drawings and specifications.

c. Constructions Standards: All electrical work shall be installed per governing codes and the landlord's tenant criteria.

d. As-Builts: Upon completion of tenant build out, the tenant shall provide one (1) set of pdf as-built plans for all electrical work to the landlord.

e. Existing Work: Existing systems from previous tenant cannot be abandoned in place and must be demolished entirely if not being re-used.

f. Roof Openings: Cutting and patching of roof openings shall be performed by the landlord's contractor at tenant's expense.

g. Compliance Forms: Tenant shall complete energy compliance forms as required per governing codes.

h. Electrical Data Tabulation Sheets

- i. Shall be certified by engineer of record
- ii. Submit with construction documents for landlord review process

i. Labeling

- i. Equipment shall be labeled as required by landlord tenant construction rules and regulations manual.
- ii. Any penetration through walls, ceilings, floors, or roof into a space not within the tenant's lease line must be identified with the space number and fixture type.

3. Tenant Equipment and Fixture Requirements

- a. **Required Access:** Proper access shall be provided and maintained for landlord and tenant installed equipment, junction boxes, and accessories.
- b. **Electrical Meter**
 - i. Tenant shall use landlord approved contractor to furnish and install Shark power meter in landlord electrical room at tenant's expense.
- c. **Circuit Breakers**
 - i. Tenant shall use landlord approved contractor to furnish and install circuit breaker as required for electrical service in landlord provided distribution switchboard.
- d. **Panelboards**
 - i. Provide panelboard(s) designed for 20% minimum spare ampacity (based on connected load) and 20% spare breaker space.
 - ii. Loads shall be balanced across all phases.
 - iii. ***Electrical Panels for kiosks shall be concealed from public view and requirements shall be verified with local municipality.***
 - iv. ***Ensure sufficient space in front of electrical equipment is provided to meet electrical code requirements. Consider marking the floor areas in front of electrical equipment to ensure items are not placed or stored in these areas.***
- e. **Transformers**
 - i. Provide three phase dry type transformer located within the leased premises.
 - ii. Transformers shall be mounted on the floor or structural wall, not from the building structure or demising walls.
- f. **Lighting Fixtures (Refer to Architectural Design Section)**
- g. **Exit/Emergency Lighting System**
 - i. Tenant shall provide exit and emergency lighting system as required by governing codes.
 - ii. Emergency lighting shall be battery-operated with recessed or twin-head configuration.
 - iii. In areas visible to customers, battery assembly for exit and emergency lights shall be concealed and remote type light fixtures used.
 - iv. Exit signs must be green on edge lit or white background per governing codes.
- h. **Signage**
 - i. Circuits serving sign(s) shall be connected by a time switch.
- i. **Telecommunications**
 - i. ***Tenant shall coordinate with landlord's telecommunications service provider (Granite) for account set up and scheduling service activation.***

- j. **Roof Mounted Antennas or Equipment**
 - i. The addition of any roof mounted antennas or equipment must be approved by landlord and installed by landlord approved contractor.
 - ii. All equipment shall be mounted on rails and anchored to the supporting structure to withstand wind and seismic effects per governing codes.
 - iii. ***The use of sled, ballast, or platform mounts are not permitted***
 - k. **Service Call System**
 - i. Tenant shall provide and install a buzzer call system located at the back of house service corridor entrance.
 - ii. Buzzer call system shall not be audible in sales floor area.
4. **Tenant Material and Installation Requirements**
- a. ***Tenant Interface Drawings: Refer to HVAC & BAS – Schematic Diagrams for more information on tenant fit out guidelines and connections to landlord systems.***
 - b. **Hangers and Supports**
 - i. Hangers and supports shall be supported from structural members only (not secured to the deck above).
 - ii. Additional intermediate structural supports for hangers shall be installed as needed upon landlord approval.
 - iii. All hangers exposed to public view shall be evenly spaced and grouped as much as possible with other trades for uniformity.
 - iv. Supports are required for all piping routed across the roof.
 - c. **Electrical Wiring**
 - i. Tenant shall use landlord approved contractor to provide electrical service feeders in conduit from landlord’s distribution switchboard to tenant’s premises.
 - i. Electrical feeders shall be sized for no more than a three percent (3%) voltage drop.
 - ii. All conductors shall be insulated soft-drawn annealed copper type THHN/THWN building wire and color coded (aluminum conductors are not allowed).
 - d. **Conduit**
 - i. ***All interior electrical wiring shall be in electric metal tubing (EMT), metal-clad cable is not permitted.***
 - ii. ***All exterior electrical wiring shall be in rigid metal conduit (RMC).***
 - iii. Speaker, security, or other low voltage wiring within the tenant’s leased premises shall be installed in conduit.

e. Neutral Conductor

- i. The neutral conductor shall not be bonded to ground at the tenant's electrical distribution equipment. The ground fault protection in the landlord's distribution system will not function properly if the neutral is bonded to ground anywhere.

Fire Alarm Design

1. Landlord Provisions

- a. **Addressable Fire Alarm Panel:** Located in base building Fire Command Center.
- b. **Tenant Interface Junction Box (TIB)**
 - a. Signaling and notification circuits from base building fire alarm panel routed to terminal strip within TIB for future connection by tenant.
 - b. Tenant to verify location of TIB in field.

2. Tenant General Requirements

a. **Base Building Systems**

- i. Tenant shall not make modifications to landlord's base building systems without prior approval from landlord.
- ii. Any damage done to the landlord's base building or systems by tenant during construction shall be repaired by the landlord at the tenant's expense.

b. *Approved Contractor: Tenant shall engage landlord approved contractor to prepare fire alarm construction drawings/specifications and install the fire alarm system within the tenant's space.*

c. **Construction Standards:** All fire alarm work shall be installed per governing codes and the landlord's tenant criteria.

d. **As-Builts:** Upon completion of tenant build out, the tenant shall provide one (1) set of pdf as-built plans for all fire alarm work to the landlord.

e. **Existing Work**

- i. Existing systems from previous tenant cannot be abandoned in place and must be demolished entirely if not being re-used.
- ii. Tenant shall use landlord approved contractor to safe-off fire alarm system before any demolition work occurs.

f. **Labeling:** Equipment shall be labeled as required by landlord tenant construction rules and regulations manual.

3. Tenant Equipment and Control Requirements

a. **Code Compliance:** Tenant is required to provide a code compliant fire alarm system within their leased premises as required by governing codes and in accordance with NFPA 72.

b. **Fire Alarm System Devices:**

- i. Tenant shall provide and install all initiating devices, notification appliances, addressable modules, auxiliary power supplies, junction boxes, etc. as required by governing codes and landlord specifications.
- ii. Tenant shall not be required to provide occupant notification if leased premises is less than 1,000 square feet.

c. **Junction Box:** Tenant is required to connect fire alarm system serving the leased premises to the landlord provided tenant interface junction box (TIB).

d. HVAC Systems

- i. Tenants providing independent packaged rooftop HVAC systems shall provide unit or duct mounted smoke detectors per landlord tenant construction rules and regulations manual, addressable through the center's fire alarm system.
- ii. All tenant provided supplemental ducted HVAC equipment, including kitchen hood fire suppression systems, shall interface with the center's fire alarm system for appropriate sequencing during a fire alarm emergency.

e. *Final Acceptance: Testing of the tenant fire alarm system shall be performed by the landlord approved contractor concurrent with the base building fire alarm system at the tenant's expense.*

Fire Protection Design

1. Landlord Provisions

a. Tenant Fire Service Main (TFSM)

- i. Ordinary hazard pipe scheduled fire protection sprinkler system main routed to tenant space with a point of connection for tenant use.
 - i. **Tenant is only allowed one (1) point of connection on fire protection sprinkler system main.**
 - ii. Tenant to verify location in field.
- ii. Fire protection sprinkler system is provided with a supervised alarm system, the system is monitored by the local fire department, center security, and various alarm companies.

b. Smoke Control System

- i. **HVAC system depends on the use and operation of the second floor plenum for purposes of smoke evacuation**
- ii. **All upper level tenants to have 1 hour fire rated ceiling throughout premises. Tenant to provide access panels for service and repair of landlord equipment.**
- iii. The landlord has provided a fully functional smoke evacuation system for in-line tenants complete with all necessary equipment and controls.
- iv. Sequencing and shutdown of the landlord provided VAV system shall be via the center's fire alarm system and Building Automation System (BAS) as required during a smoke control emergency.
- v. Upon initiation of the smoke control system, smoke is pulled out the front of each tenant space and up to the top of the mall concourse by smoke exhaust fans located on the roof.
- vi. Make-up air to each tenant space is provided by the landlord RTUs that serve the tenant leased premises.
- vii. Tenants requiring an independent smoke control system shall design and install such systems after review and approval by the landlord.
 - i. The tenant shall use landlord approved contactor to furnish and install all smoke detectors, contacts, addressable modules, relays, etc. necessary to interface with the center's fire alarm system and BAS for smoke control, including programming.

2. Tenant General Requirements

a. Base Building Systems

- i. Tenant shall not make modifications to landlord's base building systems without prior approval from landlord.
- ii. Any damage done to the landlord's base building or systems by tenant during construction shall be repaired by the landlord at the tenant's expense.

b. Approved Contractor

i. Tenant shall engage fire protection contractor to prepare fire sprinkler shop drawings and perform scope of work.

ii. Tenant shall use landlord approved contractor for any modifications or additions to the landlord's smoke control system.

iii. Fire sprinkler drawings and calculations must be submitted to landlord's insurance provider for approval before commencement of work.

c. Construction Standards: All fire protection work shall be installed per governing codes, the landlord's tenant criteria, and the landlord's insurance provider.

d. As-Builts: Upon completion of tenant build out, the tenant shall provide one (1) set of pdf as-built plans for all fire protection work to the landlord.

e. Existing Work

i. Existing systems from previous tenant cannot be abandoned in place and must be demolished entirely if not being re-used.

ii. Tenant shall use landlord approved contractor to safe-off fire sprinkler system before any demolition work occurs.

f. Service Interruptions: All fire protection work must be accomplished without interrupting fire protection service to the remainder of the center during operating hours.

g. Tenant Responsibility: Tenant shall be solely responsible for the fire protection system within the leased premises.

h. Pressure Test: Tenant shall perform hydrostatic pressure test on installed fire sprinkler system.

i. High Piled Storage: Where storage/merchandise is high piled or hazard commodities are stored, coordinate design criteria with NFPA and landlord insurance provider.

3. Tenant Material and Installation Requirements

a. System Components: All fire protection sprinkler system components shall be UL listed and landlord insurance provider approved.

b. Pipe Material

i. Minimum schedule 40 steel pipe conforming to ASTM A53 is required.

c. Sprinkler Heads

i. Sprinkler heads at the storefront, in show windows, and in all hard-surface ceilings must be fully concealed type.

ii. Semi-recessed (or concealed) type heads may be used in lay-in or other approved type ceiling systems (where accessible to the public).

iii. Fully pendant type sprinkler heads are permitted only in stock/storage or open ceiling areas.

iv. No stock or merchandise shall be within 18" of sprinkler heads.

v. All walk-in coolers and freezers shall be provided with a minimum of one dry sprinkler head as required by governing codes and/or landlord insurance provider.

vi. Ductwork greater than 4 ft. or a combination of requires sprinkler protection to be extended below the ductwork as required by governing codes and/or landlord insurance provider.

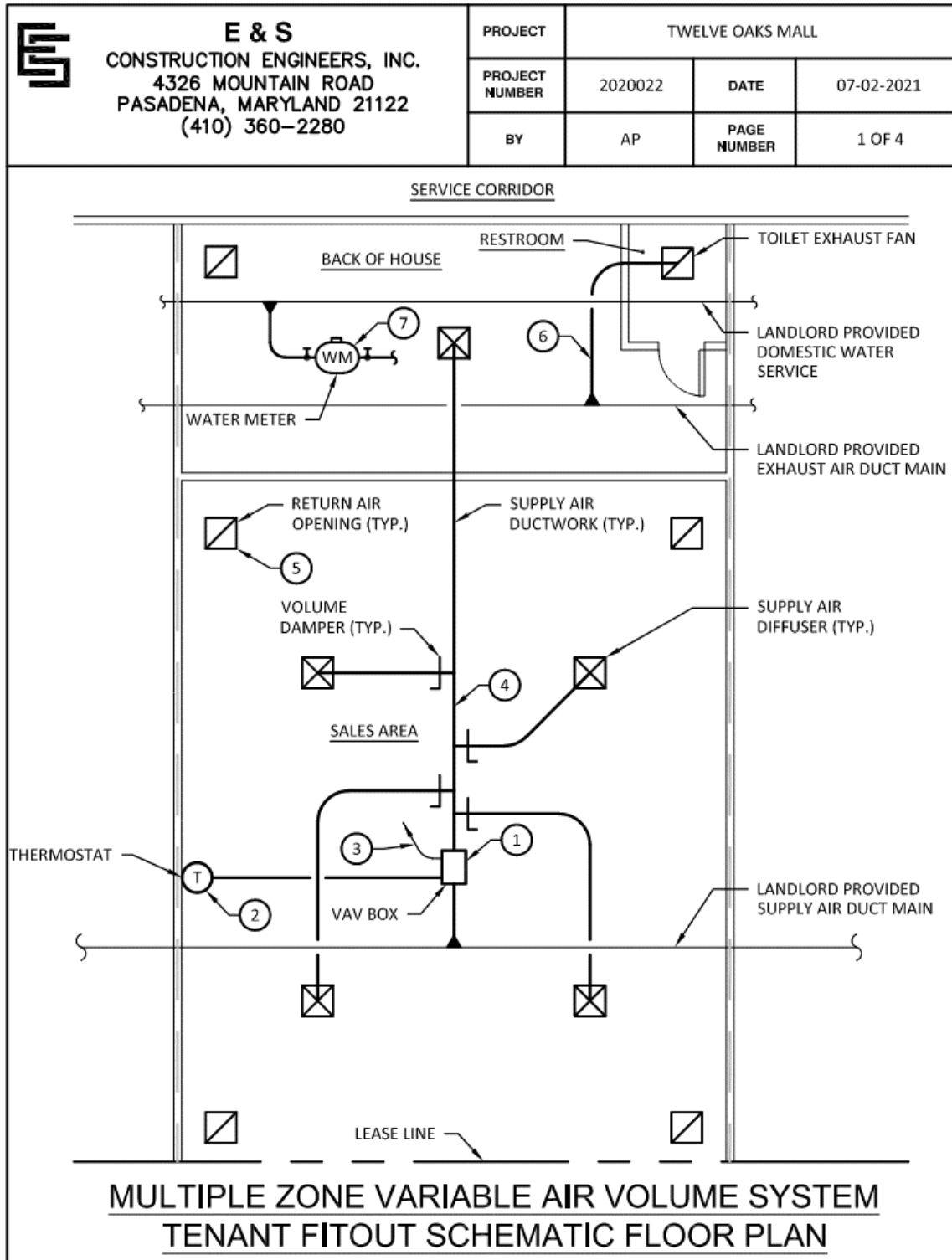
d. Valves

- i. An isolation valve shall be installed at the point of connection to the landlord's sprinkler main outside the tenant's leased premises.
- ii. Individual tenant control valves are not allowed in the sprinkler system.
- iii. Valve operation and alarm system are accomplished at source by landlord.

e. Mobile Storage Shelving:

i. The solid shelving on mobile storage systems should be wire mesh shelves to allow for adequate flue spaces on the mobile (compact) storage systems. Manufacturers typically offer two options for "wire grid" shelf decking, one with 2 in. by 4 in. openings and the other with 1 in. by 4 in. openings. A less desirable alternative would be to install minimum 3 in. bumper extenders every 4 ft. to 5 ft. throughout the mobile storage system.

HVAC & BAS – Schematic Diagrams (Building A, B, C, & D Tenants)





E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 2 OF 4 |

DRAWING KEY NOTES:

① TENANT VARIABLE AIR VOLUME (VAV) TERMINAL UNIT

VAV TERMINAL UNIT(S) SHALL BE SINGLE DUCT COOLING ONLY WITH RESISTIVE HEATING AS REQUIRED. TENANT SHALL PROVIDE ADEQUATE CLEARANCE FOR SERVICING, A MINIMUM OF 3'-0" CLEARANCE ON CONTROL SIDE OF VAV UNIT(S). ACCESS TO VAV UNIT(S) THROUGH CEILING MUST BE PROVIDED AND MAINTAINED BY TENANT. THE VAV TERMINAL UNIT CONTROLLER SHALL BE FURNISHED AND INSTALLED BY THE LANDLORD'S BAS CONTRACTOR AT THE TENANT'S EXPENSE.

② THERMOSTAT

THERMOSTATS SHALL BE WALL MOUNTED 48" ABOVE FINISHED FLOOR IN THE AREA TO BE CONTROLLED AND IN A LOCATION THAT IS NOT RESTRICTED FROM AIR CIRCULATION.

③ ELECTRICAL SERVICE TO VAV

A DEDICATED POWER CIRCUIT SHALL BE PROVIDED TO THE VAV TERMINAL UNIT 24 V TRANSFORMER. A DISCONNECT SWITCH ADJACENT TO THE VAV TERMINAL UNIT SHALL BE PROVIDED FOR SERVICING EQUIPMENT. ACCESS TO THE DISCONNECT SWITCH SHALL BE PROVIDED AND MAINTAINED.

④ SUPPLY AIR SYSTEM

SUPPLY DUCTWORK SHALL BE RIGID GALVANIZED SHEET METAL, ALL SUPPLY DUCTWORK SHALL BE INSULATED. VAV INLET SUPPLY DUCTWORK SHALL BE APPROXIMATELY 3' TO 5' STRAIGHT INTO BOX AND MUST BE THE SAME SIZE AS THE CONNECTION TO VAV UNIT. INLET SUPPLY AIR DUCTWORK SHALL BE EXTERNALLY INSULATED AND IS NOT ALLOWED TO BE FLEXIBLE DUCTWORK. TENANT SHALL UTILIZE THE SUPPLY AIR TAP(S) PROVIDED WITHIN TENANT SPACE. IF ADDITIONAL TAP(S) ARE REQUIRED, TENANT SHALL COORDINATE WITH LANDLORD.

⑤ RETURN AIR OPENINGS

LOWER LEVEL TENANT RETURN AIR SHALL BE REMOVED THROUGH THE TENANT STOREFRONT DOORS. UPPER LEVEL TENANTS SHALL FURNISH AND INSTALL RETURN AIR GRILLES THAT OPEN INTO THE RETURN AIR PLENUM ABOVE THE TENANT'S SPACE IN SIZE/QUANTITIES REQUIRED TO MAINTAIN A MAXIMUM AIR VELOCITY OF 400 FPM.

⑥ TOILET EXHAUST

A TOILET EXHAUST FAN WITH ASSOCIATED TOILET EXHAUST DUCTWORK CONNECTED TO LANDLORD'S TOILET EXHAUST DUCT SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE TENANT'S CONTRACTOR.

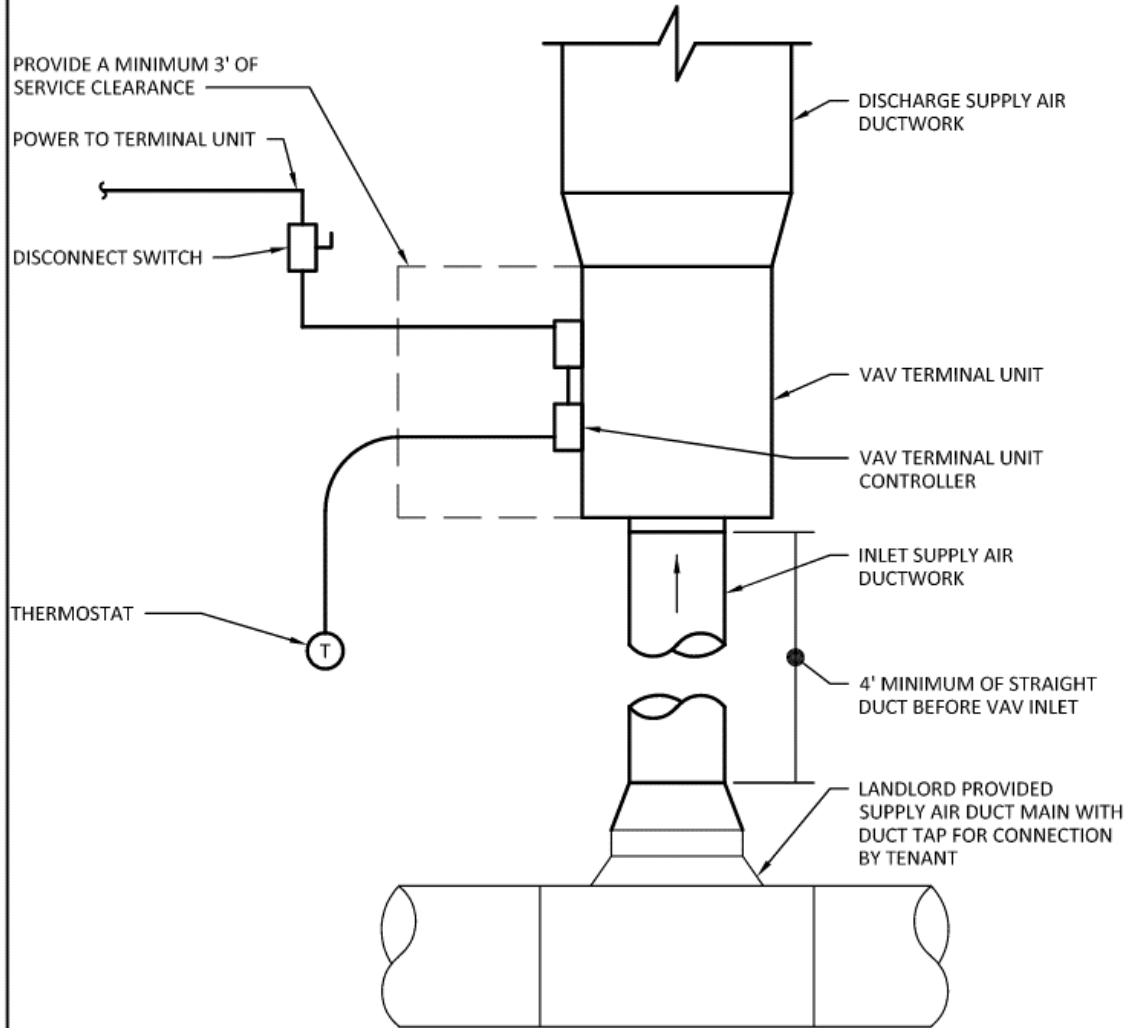
⑦ WATER METER

TENANT SHALL FURNISH AND INSTALL NEPTUNE MODEL T-10 WATER METER WITH REMOTE READOUT CAPABILITIES (TRICON S REGISTER OR EQUIVALENT).



E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 3 OF 4 |



NOTES:

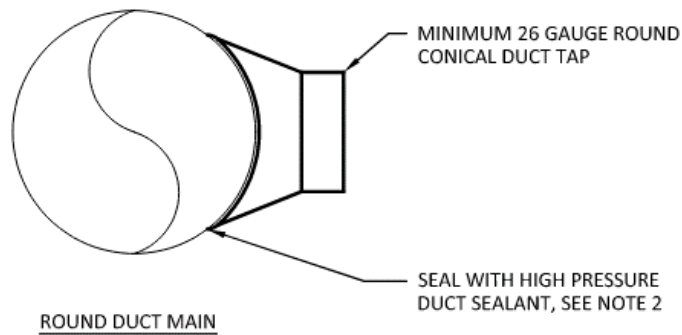
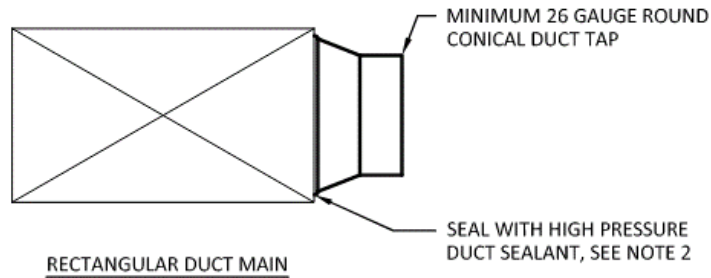
1. ACCESS MUST BE PROVIDED AND MAINTAINED TO SERVICE THE TENANT VAV BOX ABOVE CEILING, MINIMUM SIZE ACCESS DOOR SHALL BE 24" x 24".

TENANT VAV TERMINAL UNIT DETAIL



E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 4 OF 4 |

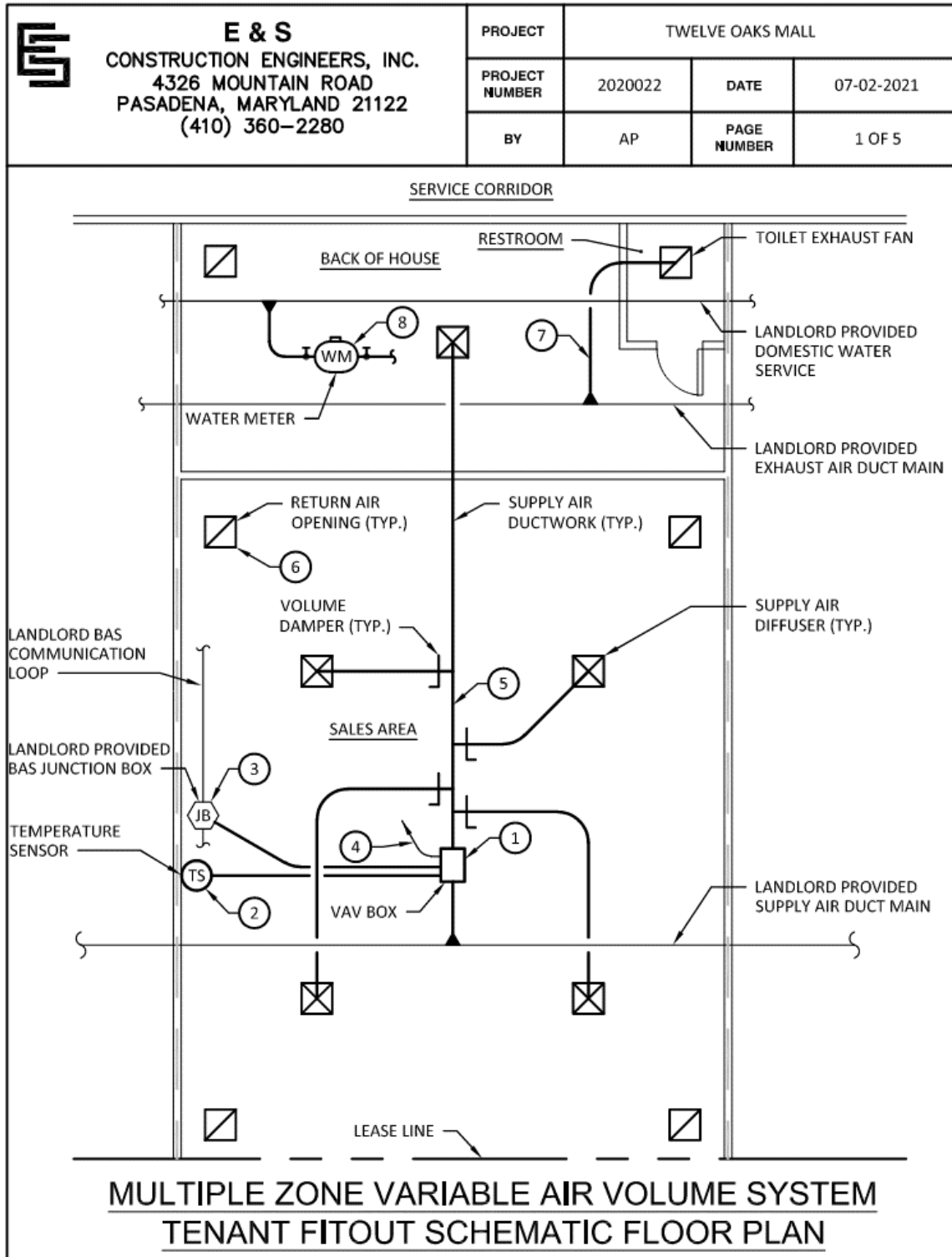


NOTES:

1. TENANTS REQUIRING ADDITIONAL SUPPLY OR EXHAUST AIR TAPS SHALL COORDINATE WITH LANDLORD FOR APPROVAL. MODIFICATIONS TO BASE BUILDING SYSTEMS SHALL BE INSPECTED BY THE LANDLORD PRIOR TO THE COVERING OF ANY WORK.
2. DUCT SEALANT SHALL BE UL 181 LISTED AND SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50.

TENANT DUCTWORK MAIN CONNECTION DETAIL

HVAC & BAS – Schematic Diagrams (Building E Tenants)





E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 2 OF 5 |

DRAWING KEY NOTES:

① TENANT VARIABLE AIR VOLUME (VAV) TERMINAL UNIT

VAV TERMINAL UNIT(S) SHALL BE SINGLE DUCT COOLING ONLY WITH RESISTIVE HEATING AS REQUIRED. TENANT SHALL PROVIDE ADEQUATE CLEARANCE FOR SERVICING, A MINIMUM OF 3'-0" CLEARANCE ON CONTROL SIDE OF VAV UNIT(S). ACCESS TO VAV UNIT(S) THROUGH CEILING MUST BE PROVIDED AND MAINTAINED BY TENANT. THE VAV TERMINAL UNIT CONTROLLER SHALL BE FURNISHED AND INSTALLED BY THE LANDLORD'S BAS CONTRACTOR AT THE TENANT'S EXPENSE.

② TEMPERATURE SENSOR

TEMPERATURE SENSOR SHALL BE WALL MOUNTED 48" ABOVE FINISHED FLOOR IN THE AREA TO BE CONTROLLED AND IN A LOCATION THAT IS NOT RESTRICTED FROM AIR CIRCULATION. THE TEMPERATURE SENSOR(S) SHALL BE FURNISHED AND INSTALLED BY THE LANDLORD'S BAS CONTRACTOR AT THE TENANT'S EXPENSE.

③ BUILDING AUTOMATION SYSTEM (BAS) JUNCTION BOX

LANDLORD JUNCTION BOX LOCATED WITHIN LEASED PREMISES FOR TERMINATION OF TENANT'S BAS COMMUNICATION WIRING, ALL COMMUNICATION WIRING SHALL BE INSTALLED IN 3/4" CONDUIT. ALL BAS COMMUNICATION WIRING WORK SHALL BE PERFORMED BY THE LANDLORD'S BAS CONTRACTOR AT THE TENANT'S EXPENSE.

④ ELECTRICAL SERVICE TO VAV

A DEDICATED POWER CIRCUIT SHALL BE PROVIDED TO THE VAV TERMINAL UNIT 24 V TRANSFORMER. A DISCONNECT SWITCH ADJACENT TO THE VAV TERMINAL UNIT SHALL BE PROVIDED FOR SERVICING EQUIPMENT. ACCESS TO THE DISCONNECT SWITCH SHALL BE PROVIDED AND MAINTAINED.

⑤ SUPPLY AIR SYSTEM

SUPPLY DUCTWORK SHALL BE RIGID GALVANIZED SHEET METAL, ALL SUPPLY DUCTWORK SHALL BE INSULATED. VAV INLET SUPPLY DUCTWORK SHALL BE APPROXIMATELY 3' TO 5' STRAIGHT INTO BOX AND MUST BE THE SAME SIZE AS THE CONNECTION TO VAV UNIT. INLET SUPPLY AIR DUCTWORK SHALL BE EXTERNALLY INSULATED AND IS NOT ALLOWED TO BE FLEXIBLE DUCTWORK. TENANT SHALL UTILIZE THE SUPPLY AIR TAP(S) PROVIDED WITHIN TENANT SPACE. IF ADDITIONAL TAP(S) ARE REQUIRED, TENANT SHALL COORDINATE WITH LANDLORD.

⑥ RETURN AIR OPENINGS

LOWER LEVEL TENANT RETURN AIR SHALL BE REMOVED THROUGH THE TENANT STOREFRONT DOORS. UPPER LEVEL TENANTS SHALL FURNISH AND INSTALL RETURN AIR GRILLES THAT OPEN INTO THE RETURN AIR PLENUM ABOVE THE TENANT'S SPACE IN SIZE/QUANTITIES REQUIRED TO MAINTAIN A MAXIMUM AIR VELOCITY OF 400 FPM.

⑦ TOILET EXHAUST

A TOILET EXHAUST FAN WITH ASSOCIATED TOILET EXHAUST DUCTWORK CONNECTED TO LANDLORD'S TOILET EXHAUST DUCT SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE TENANT'S CONTRACTOR.

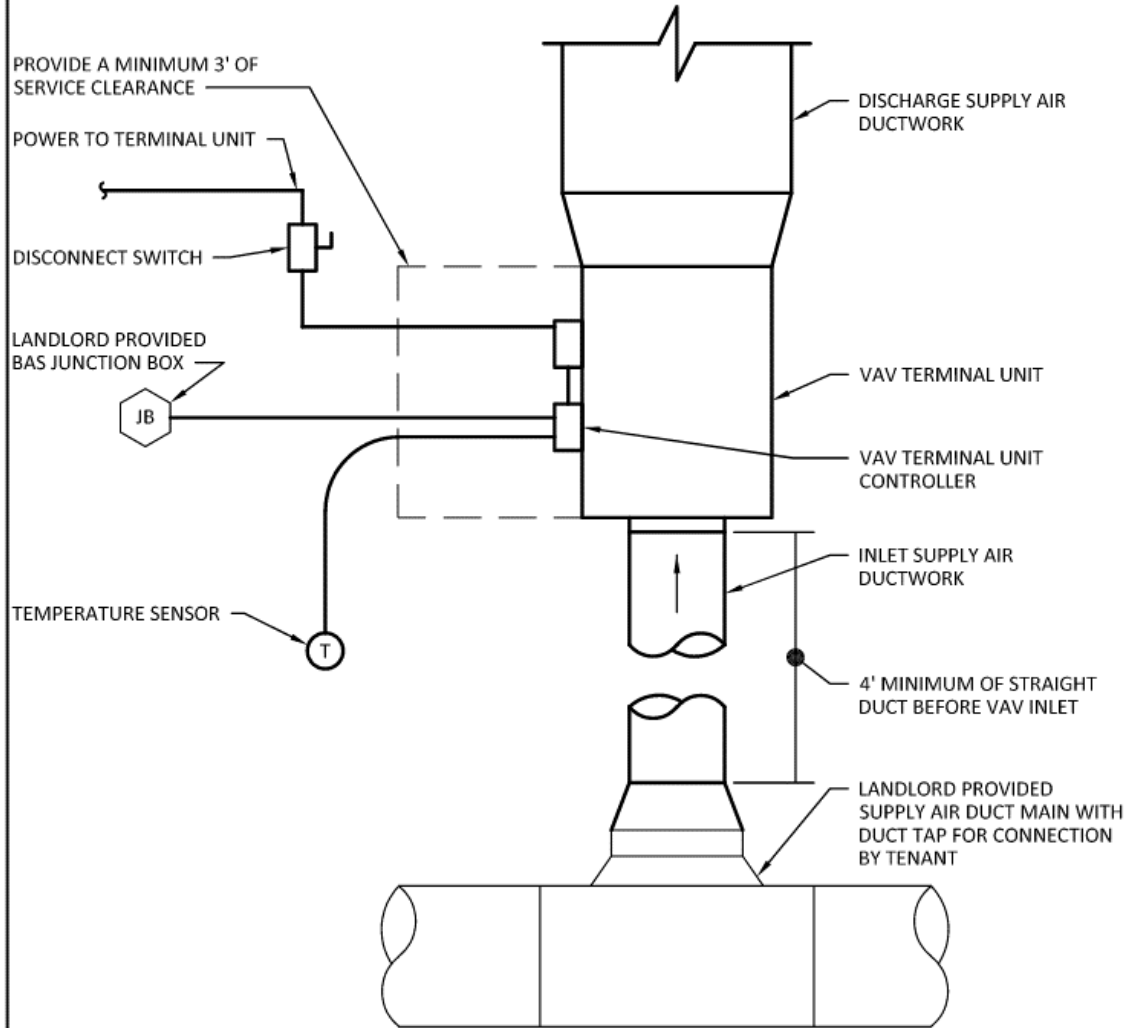
⑧ WATER METER

TENANT SHALL FURNISH AND INSTALL NEPTUNE MODEL T-10 WATER METER WITH REMOTE READOUT CAPABILITIES (TRICON S REGISTER OR EQUIVALENT).



E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 3 OF 5 |



NOTES:

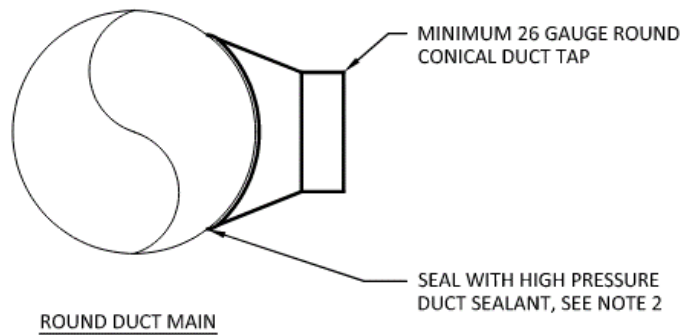
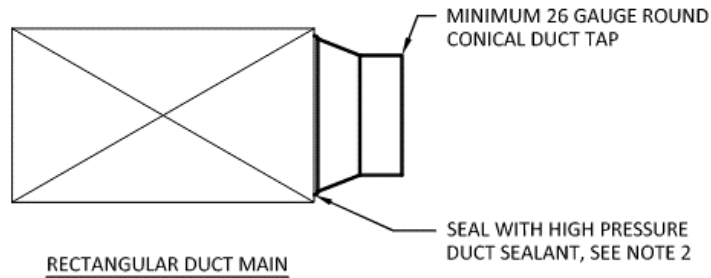
1. ACCESS MUST BE PROVIDED AND MAINTAINED TO SERVICE THE TENANT VAV BOX ABOVE CEILING, MINIMUM SIZE ACCESS DOOR SHALL BE 24" x 24".

TENANT VAV TERMINAL UNIT DETAIL



E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 4 OF 5 |



NOTES:

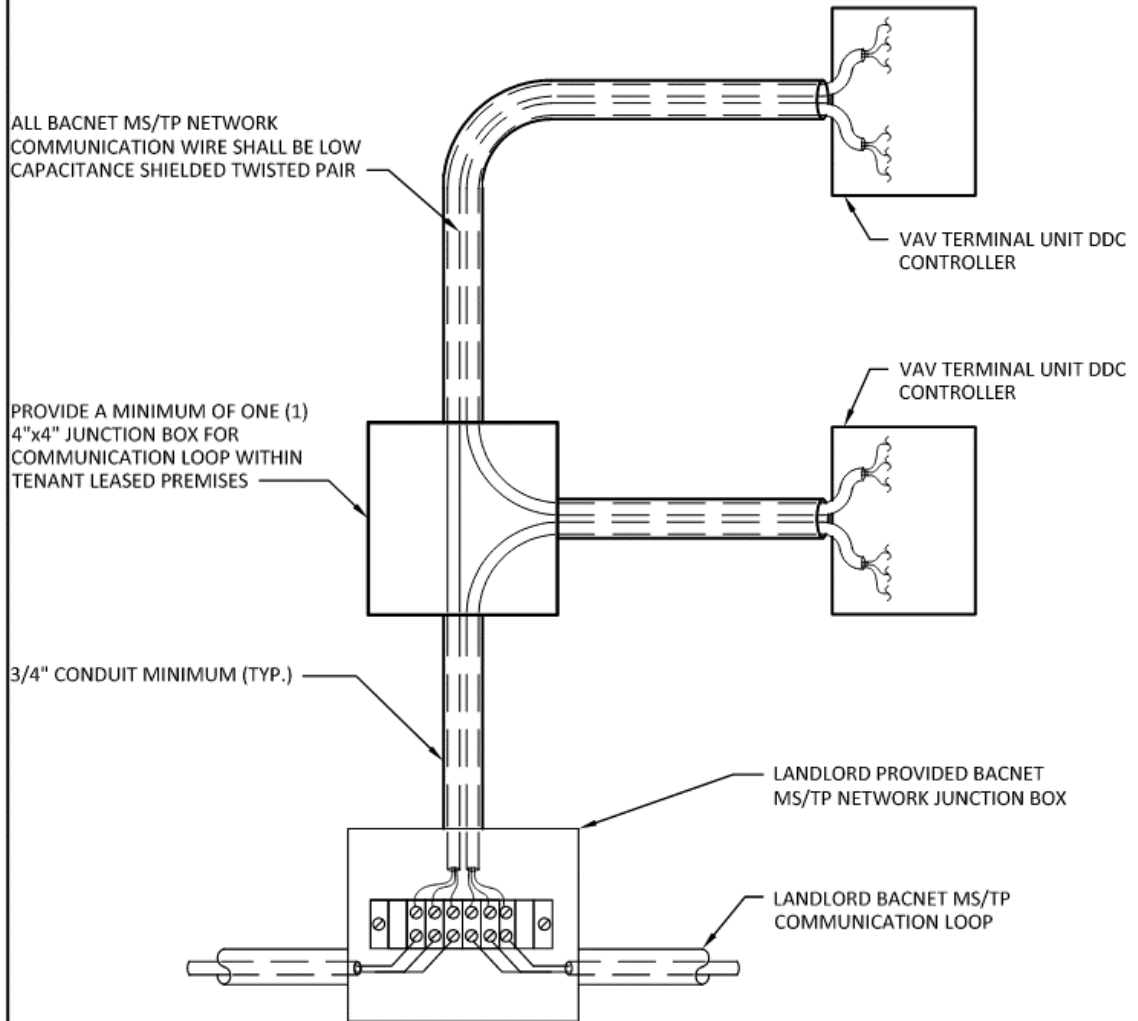
1. TENANTS REQUIRING ADDITIONAL SUPPLY OR EXHAUST AIR TAPS SHALL COORDINATE WITH LANDLORD FOR APPROVAL. MODIFICATIONS TO BASE BUILDING SYSTEMS SHALL BE INSPECTED BY THE LANDLORD PRIOR TO THE COVERING OF ANY WORK.
2. DUCT SEALANT SHALL BE UL 181 LISTED AND SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50.

TENANT DUCTWORK MAIN CONNECTION DETAIL



E & S
CONSTRUCTION ENGINEERS, INC.
4326 MOUNTAIN ROAD
PASADENA, MARYLAND 21122
(410) 360-2280

| | | | |
|----------------|------------------|-------------|------------|
| PROJECT | TWELVE OAKS MALL | | |
| PROJECT NUMBER | 2020022 | DATE | 07-02-2021 |
| BY | AP | PAGE NUMBER | 5 OF 5 |



NOTES:

1. ACCESS MUST BE PROVIDED AND MAINTAINED TO SERVICE BAS COMMUNICATION JUNCTION BOXES.

BAS COMMUNICATION LOOP WIRE INSTALLATION DETAIL