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Introduction

This handbook provides developers, owners, builders, and subcontractors with information to plan for communication services in STRATA NETWORKS' territory. The requirements herein are in accordance with current tariffs on file with the Utah Public Service Commission. It is STRATA NETWORKS' goal to help owners and builders understand the requirements to provide the best voice, data, and video services available.

This handbook deals with the placement of communication lines to Commercial Developments and Commercial Buildings (any non-residential project).

In order for Strata Networks to place facilities within any new commercial development, the owner of the development will be required to comply with the specifications and requirements pertaining to commercial developments included in this handbook.

In order for Strata Networks to provide facilities to serve any commercial building, the building owner will be required to sign the Letter of Intent (see the sample Letter of Intent on the next page). The Letter of Intent requires the owner to clearly choose the best option to provide communications service to the new building. It also ensures compliance of the specifications and requirements included within this handbook.

The costs associated with relocating any facilities in conflict with the development or building will be borne by the owner. These costs are to be paid in advance of any relocation work being done. Please allow 60 days for facilities to be relocated.

For further questions regarding the information in this handbook, please contact a STRATA NETWORKS engineer at (435) 622-5007.

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STRATA NETWORKS

Letter of Intent (Sample Letter)

Building Owner or Designee: _____

Building Address: _____

City: _____ State: _____ Zip: _____

Number of Units in Building: _____

This letter serves as documentation of the communications service configuration for a new commercial building. Service will be provided by STRATA NETWORKS to the new building in the configuration chosen by the building owner. It is the building owner's responsibility to comply with STRATA NETWORKS' requirements included in the STRATA NETWORKS' Commercial Handbook. Adequate and safe space must be provided and maintained by the owner for cable termination.

STRATA NETWORKS and the Owner or designee must mutually agree upon one of the four serving arrangements below. Please refer to STRATA NETWORKS' commercial Handbook for further information regarding each option.

- 1. STRATA NETWORKS facilities will terminate at one mutually agreed upon location upon entry into or on the building. The building owner will provide and maintain all wiring and cable beyond the Demarcation Point.
- 2. STRATA NETWORKS facilities will terminate at common locations as determined by STRATA NETWORKS and mutually agreed upon by the building owner. STRATA NETWORKS will provide, manage, and maintain the building cable and Demarcation Point. Demarcation Points will be accessible to user. All wiring beyond this point will be provided and maintained by the user.
- 3. STRATA NETWORKS will terminate facilities at locations determined by STRATA NETWORKS and mutually agreed upon by the building owner within each of the individual occupied units. STRATA NETWORKS will provide and maintain building cable to the Demarcation Point.
- 4. STRATA NETWORKS facilities will terminate at one mutually agreed upon location on the property of the building. The building owner will provide and maintain all wiring and cable beyond this Demarcation Point.

I certify that I am the owner or designee of this building and that this document accurately states the intended use of this building and know that

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STRATA NETWORKS will rely on this information in provisioning this building with communications services.

I agree to comply with the STRATA NETWORKS requirements and specifications as contained in the Commercial Handbook.

Signature: _____ Date: _____

Printed Name: _____

Building Owner: _____

Phone Number: _____ Address: _____

STRATA NETWORKS Engineer: _____

Signature: _____

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Requirements and Specifications for Commercial Developments

1. STRATA NETWORKS charges \$100.00 per lot to provide communication services for any commercial development. This is with the understanding that open trenches and road crossings will be provided by the developer. If open trench is not provided, the developer will be responsible for paying, in advance, STRATA NETWORKS' trenching costs to provide communication services.
2. A recorded subdivision plat and/or site plan must be provided to the STRATA NETWORKS engineer sixty (60) days prior to open trench date. When notifying the engineer please include the name of the development, and the development company's legal name with the developer's contact information. STRATA NETWORKS will not sign a plat until the Land Development Agreement is signed. The plat and site plan must be an Auto Cad file. The proposed buildings must be shown in the plat. Construction drawings are helpful but are not always necessary.
3. Legal city, and/or county addresses must be included with the plat before communication services for the development can be finalized. This is required for the 911 emergency services and STRATA NETWORKS databases.
4. Within the streets and P.U.E.'s of a new subdivision, STRATA NETWORKS will provide and place facilities in open trenches. Joint trenching with power is preferred. If developer wishes to joint trench—a copy of the power company's plan needs to be submitted to the engineer a minimum of thirty-five (35) days prior to open trench. Notify STRATA NETWORKS engineers immediately if the power plans change during this time. Any changes to the power plan during this 35 day period will cause delays in getting communications facilities designed and placed. STRATA NETWORKS will follow power trenches as much as possible but may need additional trenches provided.
5. Before facilities will be placed in open trench the grade must be within six inches of final or curb and gutter need to be installed.
6. Trench needs to allow for a minimum one foot separation, based on NESC standards, between communication and power cables. Phone cable is to be buried at a minimum cover depth of thirty (30) inches and a maximum cover depth of forty-two (42) inches.
7. Coordination and a review of development plans needs to take place with engineer two months prior to anticipated open trench date.
8. All cost associated with opening and closing the trench will be borne by the developer. If the Developer prefers, the Developer can pay

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STRATA NETWORKS to provide open trenches for the cost of time and material.

9. Backfill material shall not include rocks or any materials that might cause damage to cable and/or conduit. If damage does occur because of backfill material the developer will be held responsible for the cost of repair.
10. Although joint trench with other utilities is desired and encouraged, sharing conduits is not permitted.
11. In the event that a trench for crossing a road needs to be backfilled before STRATA NETWORKS crews can place facilities, the developer will be responsible for providing and installing a minimum of one, four-inch (schedule 40 PVC or type C) sleeve at the street crossing as dictated by the engineer's open trench and crossings detail/plan. More four-inch crossings may be required at some locations as determined by STRATA NETWORKS' engineers. All crossings are to be perpendicular to the street.
12. If the time intervals for installation need to be shorter at the developer's request there are two options:
 - a. Trenches can be left open until crews and material can be scheduled to install facilities.
 - b. The developer can pay expedite charges for engineering and construction. These charges are to be determined by the Strata engineer on a per job basis.
13. At the request of the engineer an easement within the subdivision granted to STRATA NETWORKS may be required to place cabinets and electronic equipment. This equipment will be placed to provide communication services within and possibly outside the development.

SUMMARY CHECKLIST FOR COMMUNICATION UTILITIES

Time to Open Trench	Item Due
60 Days	Provide recorded plat in AutoCad format Provide addresses for each unit Pay \$100 per lot to STRATA NETWORKS
35 Days	Provide power plan to STRATA NETWORKS
14 Days	Pick up trenching plan from STRATA NETWORKS
1 Day	Roadway must be within 6" of final grade
Open Trenches	

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Requirements and Specifications for Commercial Buildings

When STRATA facilities are requested in a commercial building, the Owner is responsible to choose one of four options of how best to provide service to their premise. There are four options an owner may choose from when deciding how to best have their premise provisioned. These options are:

1. Single Demarcation Point at Building

Strata Networks will terminate at one location on or inside the building. The building owner will provide, manage and maintain wire placed beyond the location of the Demarcation Point.

2. Multiple Common Demarcation Points

Strata Networks will terminate at common locations as determined by Strata and mutually agreed upon by the owner. Strata will provide, manage and maintain the building cable and Demarcation Point. The Demarcation Points are the “handoff” points and will be accessible to the end-users. This option is not available to single tenant buildings.

3. One Demarcation Point at Each Unit

Strata Networks will provide a Demarcation Point within each occupied unit. Strata will provide, manage and maintain the building cable, terminating wire, and Demarcation Points. This option is not available to single tenant buildings.

4. Single Demarcation Point on Property

Strata Networks will terminate at a single mutually agreed upon location on the commercial property. The owner will provide, manage and maintain building cable and wiring placed beyond the Demarcation Point.

Please work with a Strata Networks engineer for more information regarding the options.¹

¹ Pages 9-16 include drawings to help illustrate each of the four options.

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Preparing the Premise for STRATA Facilities

It is also the responsibility of the Owner to ensure that the premise is suited for Strata facilities according to the specifications and requirements.^{2,3}

- The location of the conduit shall be jointly agreed upon between Strata Networks and the Premise Owner.
- When choosing the demarcation location keep in mind that Cat5 wiring, typically used for inside wiring, should have no runs over 300 ft.
- Conduit must be provided, installed, and maintained by property owner.
- Conduit must be placed from the property line to the demarcation point wherever that may be.
- No more than 3 – 90 degree bends between pull points. A pull box must be placed in all runs with more than 3 – 90 degree bends. Runs exceeding 500 ft may need a pull box.
- All bends must be long sweep bends with a radius not less than: -Six times the internal diameter of conduits 2 inches or smaller -Ten times the internal diameter of conduits larger than 2 inches All bends are to be steel sweeps or no less than PVC Schedule 80 fully encased in concrete. All metallic conduit must be reamed and bushed.
- Conduit must be equipped with a measured pull tape with a 200 lb pull strength.
- Metal sleeves through foundation walls must extend to undisturbed soil in order to avoid shearing with ground settlement.
- Use rigid conduit under floor slabs.
- Where metal conduit is used, it must be kept from contact with reinforcing steel or other conductors.
- Conduit must be extended 4" above finished floor when inside the building and 18" above finished grade outside the building.
- Premise Owner is to seal each end of the conduit to prevent water, rodents, gases, and other foreign objects from entering in prior to cable placement. Strata Networks will reseal the conduit after the cable has been placed.

² Pages 6-8 include specifications and requirements that all owners will be required to follow in order for Strata Networks to provide facilities to the premise.

³ Pages 17-19 include drawings to help illustrate these requirements.



- One 4" conduit must be placed for all buildings 1 sf to 20,999 sf of floor space. Two 4" conduits must be placed for buildings 21,000 sf to 50,999 sf of floor space. Three 4" conduits must be placed for buildings 51,000 sf to 201,000 sf of floor space.
- Minimum depth is 24" of cover.
- Maintain proper clearances from other utilities as per NESC standards. This includes a minimum 12" separation from power.
- No other utilities may share the conduit.
- Inside wiring is the responsibility of the owner. At the demarcation point, Strata Networks requires that the inside wiring be #24 AWG color coded twisted pair copper wire with each wire being identified by the unit number.
- Two dedicated 110 V power outlet must be installed at each demarcation point for Strata use only. This outlet shall be connected to backup power if available in the building.

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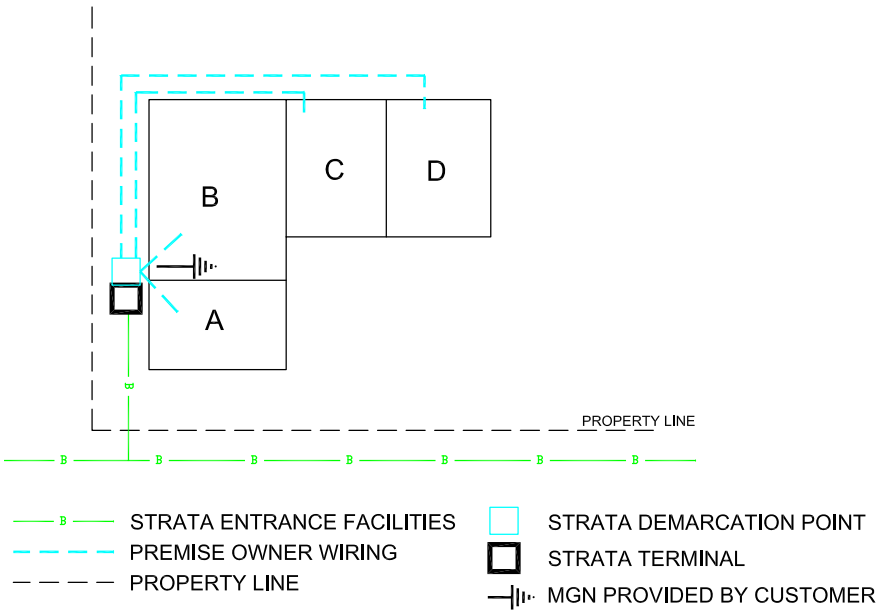
When the Demarcation Point is located inside a building the following specifications and requirements must be followed:

- Protector must be located as close to power as possible for purposes of grounding as per NEC standards. A #6 ground wire must be provided from the demarcation point to the power multi grounded neutral. If there are multiple demarcation points, a power multiground must be available at each point.
- Premise Owner must provide conduit for all Strata cables within a building. Runs exceeding 50' within a building must be plenum rated.
- Provide adequate lighting at demarcation point.
- Adequate space must be provided for the facilities and for workers.
- The demarcation point must not be located near flammable materials.
- Must not project into work areas or hazardous locations.
- Must not be in rooms with humidity, moisture, steam, or flood prone areas. Including rooms such as boiler rooms, washrooms, janitor's closets, etc.
- Must not be in rooms that contain steam pipes, drains, or cleanouts.
- Must not receive direct sunlight or heat.
- Telecommunications equipment produces heat and is prone to overheating. The communications room must be well ventilated and air conditioned.
- Must not be near power circuits and electrical equipment.
- Fire sprinklers in the ceiling that are connected to the building's fire sprinkler system are not recommended in the communications room. A fire alarm should be installed in the room.
- The typical panel is 4' high x 8' wide. If there are few facilities a smaller panel may be used but it must be no less than 4' x 4'. A minimum of 36" clearance area must be provided in the front of the equipment for workers to access and maintain equipment.
- When a rack is used, there must be overhead ladder racking from the back board to the rack.
- The panel must be covered with two coats of fire-retardant paint.
- Strata Networks can guarantee maintenance only if 24 hour 7 days a week access is provided.

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Option 1

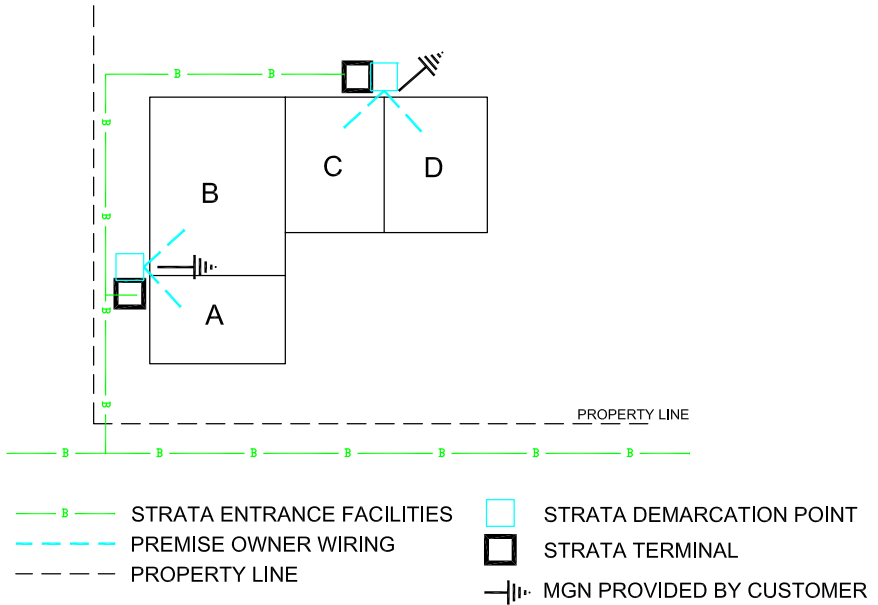
MULTI- OR SINGLE-TENANT PREMISES



OPTION 1: STRATA WILL TERMINATE FACILITIES AT ONE MUTUALLY AGREED UPON LOCATION ON THE EXTERIOR OR INTERIOR OF THE BUILDING.

Option 2

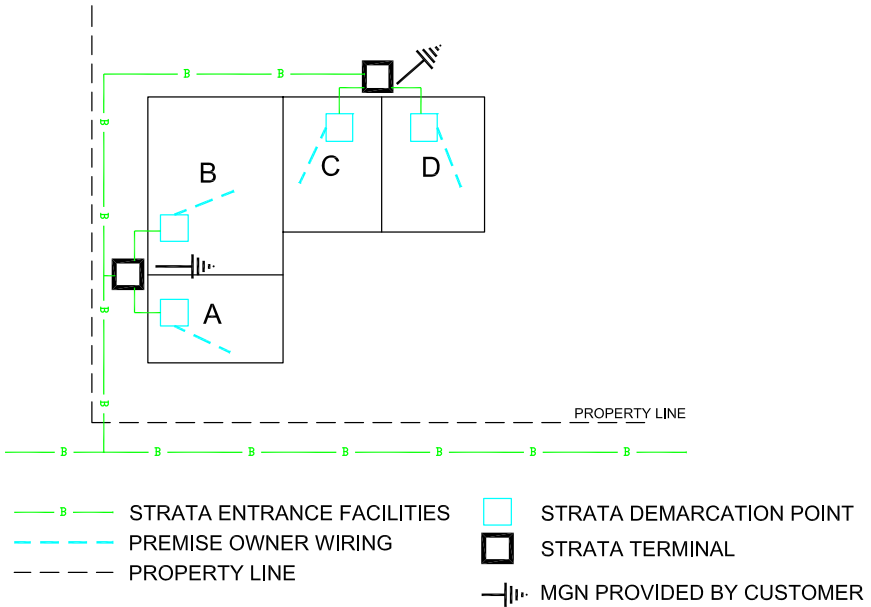
MULTI-TENANT PREMISES



OPTION 2: STRATA WILL TERMINATE FACILITIES AT MUTUALLY AGREED UPON COMMON LOCATIONS ON THE EXTERIOR OR INTERIOR OF THE BUILDING.

Option 3

MULTI-TENANT PREMISES

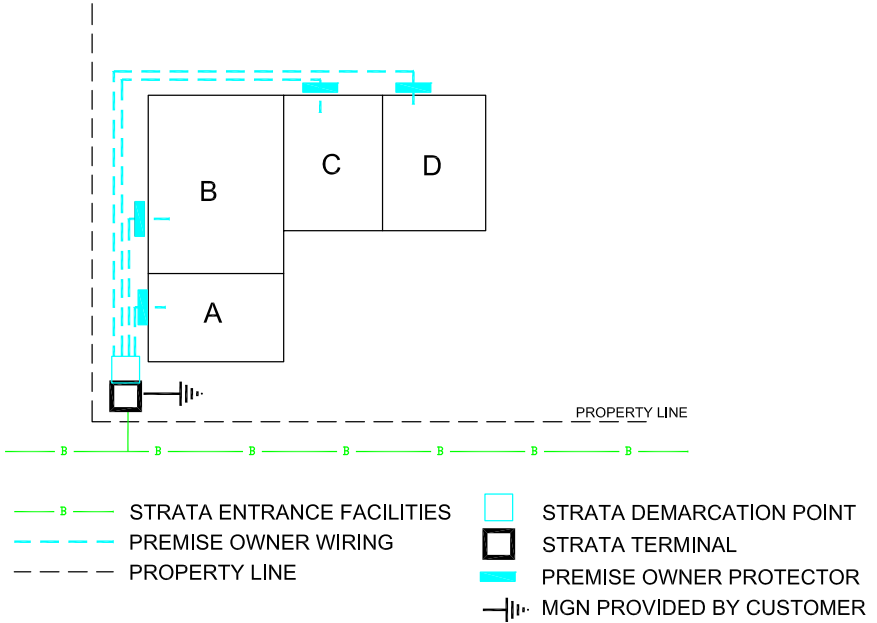


OPTION 3: STRATA WILL TERMINATE FACILITIES AT ONE MUTUALLY AGREED UPON LOCATION ON THE EXTERIOR OR INTERIOR OF EACH OCCUPIED UNIT.

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Option 4

MULTI- OR SINGLE-TENANT PREMISES

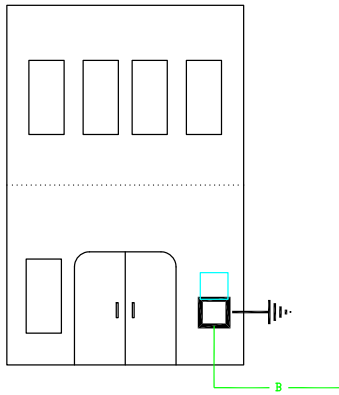






OPTION 4: STRATA WILL TERMINATE FACILITIES AT ONE MUTUALLY AGREED UPON LOCATION ON THE BUILDING PROPERTY. ALL WIRING BEYOND THAT POINT WILL BE THE RESPONSIBILITY OF THE PREMISE OWNER. THE COST OF THE STRATA TERMINATION WILL BE BORNE BY THE PREMISE OWNER.

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Option 1

MULTI- OR SINGLE-TENANT BUILDING



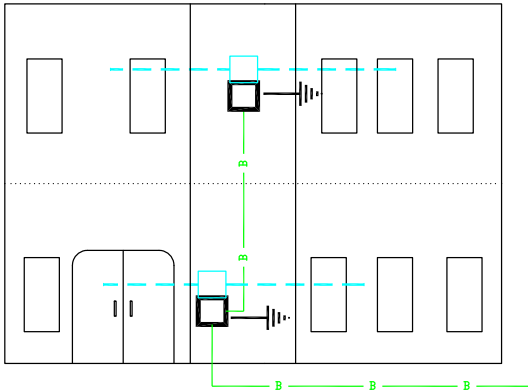
-  STRATA ENTRANCE FACILITIES
-  STRATA DEMARCATION POINT
-  STRATA TERMINAL
-  MGN PROVIDED BY CUSTOMER

OPTION 1: STRATA WILL TERMINATE FACILITIES AT ONE MUTUALLY AGREED UPON LOCATION ON THE EXTERIOR OR INTERIOR OF THE BUILDING.

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Option 2

MULTI-TENANT PREMISES



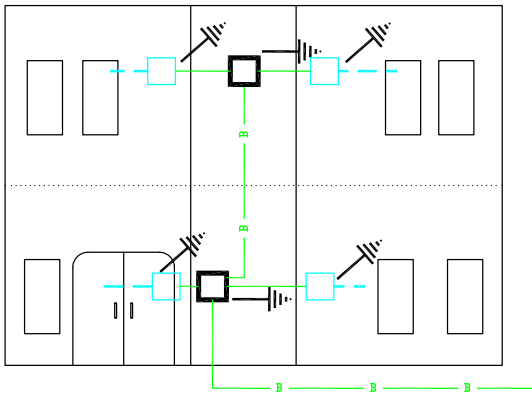
- B — STRATA ENTRANCE FACILITIES
- - - - PREMISE OWNER WIRING
- - - - PROPERTY LINE
- STRATA DEMARCATION POINT
- STRATA TERMINAL
- MGN PROVIDED BY CUSTOMER

OPTION 2: STRATA WILL TERMINATE FACILITIES AT MUTUALLY AGREED UPON COMMON LOCATIONS ON THE EXTERIOR OR INTERIOR OF THE BUILDING.

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Option 3

MULTI-TENANT PREMISES



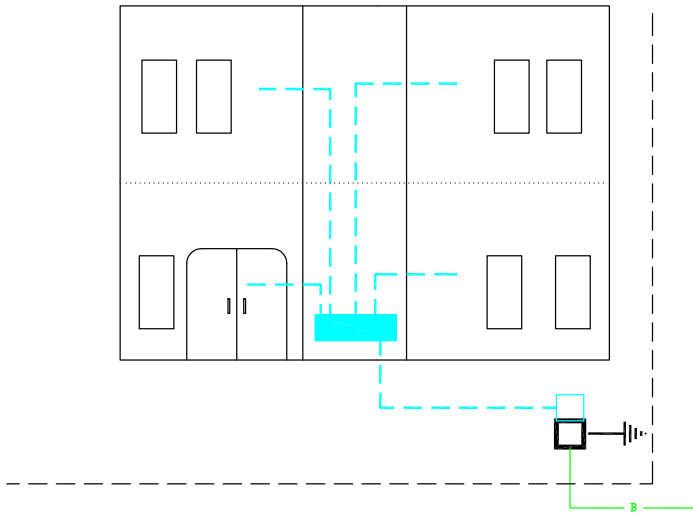
- B — STRATA ENTRANCE FACILITIES
- - - PREMISE OWNER WIRING
- - - - PROPERTY LINE
- STRATA DEMARCATON POINT
- STRATA TERMINAL
- MGN PROVIDED BY CUSTOMER

OPTION 3: STRATA WILL TERMINATE FACILITIES AT ONE MUTUALLY AGREED UPON LOCATION ON THE EXTERIOR OR INTERIOR OF EACH OCCUPIED UNIT.

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Option 4

MULTI- OR SINGLE-TENANT PREMISES

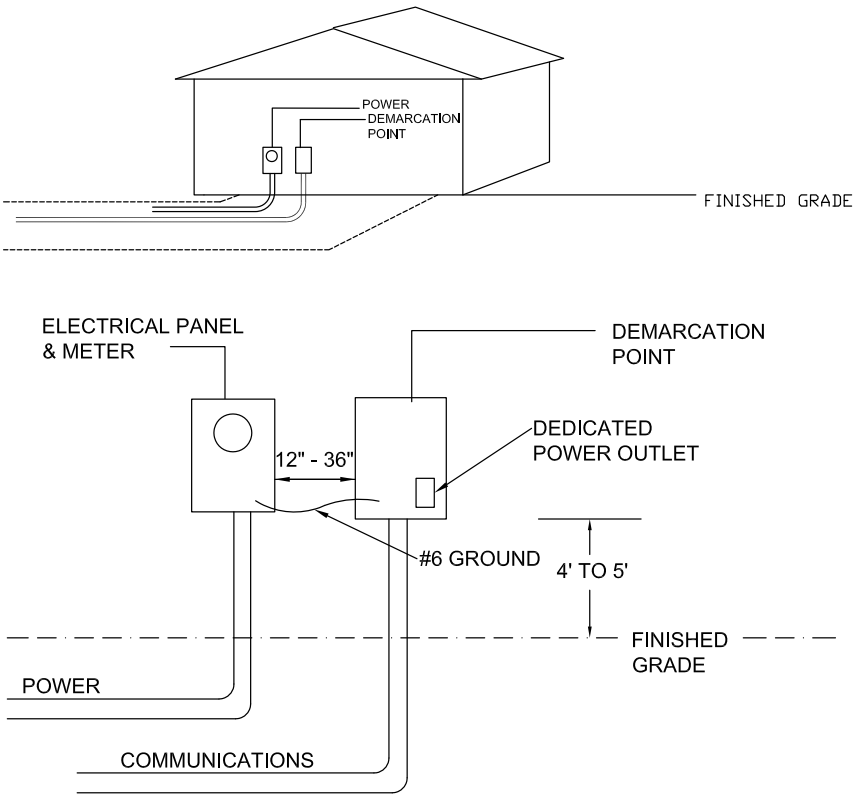


- B — STRATA ENTRANCE FACILITIES
- - - - PREMISE OWNER WIRING
- - - - PROPERTY LINE
- STRATA DEMARCATION POINT
- STRATA TERMINAL
- MGN PROVIDED BY CUSTOMER

OPTION 4: STRATA WILL TERMINATE FACILITIES AT ONE MUTUALLY AGREED UPON LOCATION ON THE BUILDING PROPERTY. ALL WIRING BEYOND THAT POINT WILL BE THE RESPONSIBILITY OF THE PREMISE OWNER. THE COST OF THE STRATA TERMINATION WILL BE BORNE BY THE PREMISE OWNER.

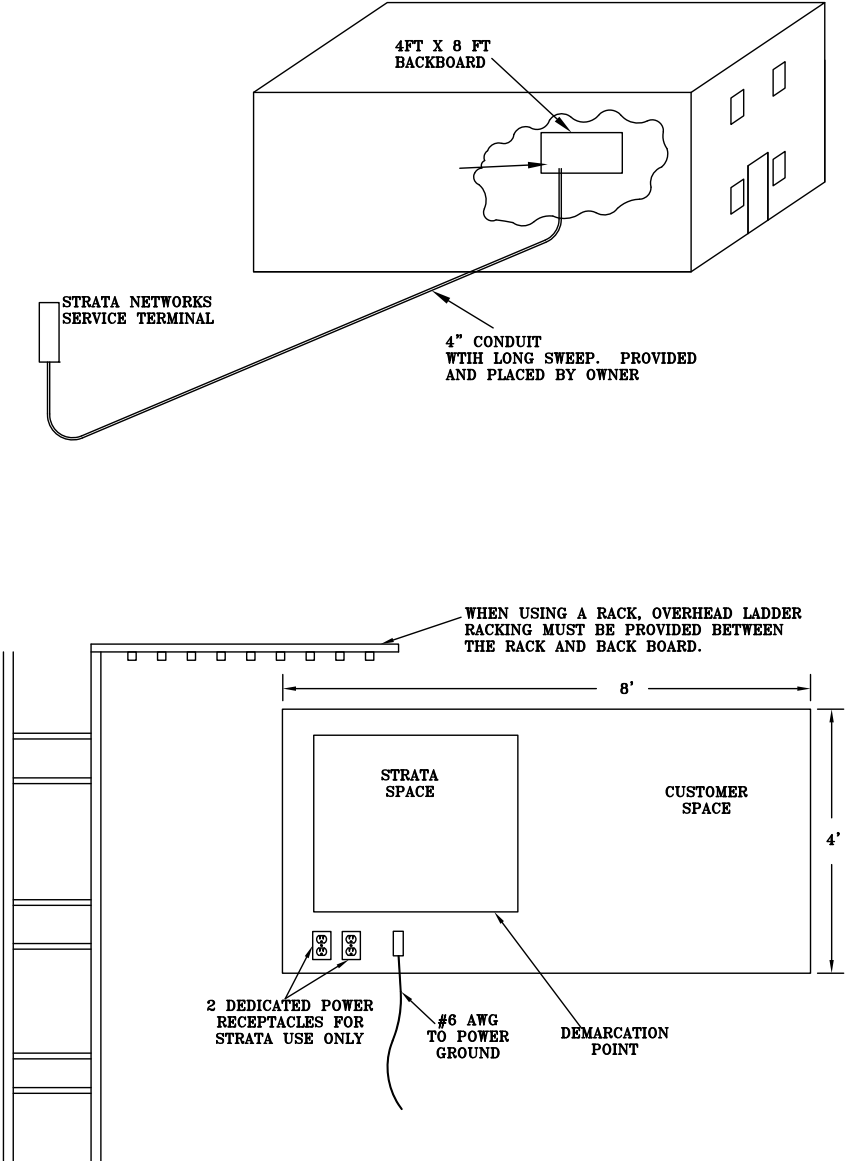
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Typical Exterior Demarcation Detail



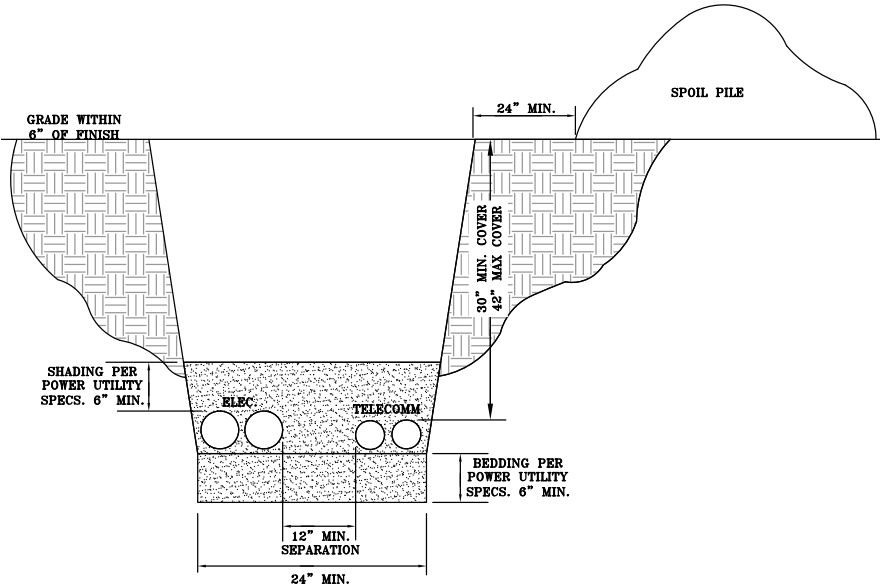
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Typical Interior Demarcation Detail



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Typical Trench Detail Within A Commercial Development





For further questions regarding the information in this handbook, please contact a STRATA NETWORKS engineer at 435-622-5007.