



A10 Foundations

BUILDER Summit Training – Assessor Boot Camp





A10 Foundations

A1010 – Standard Foundations

Grade Beams, Strip Footings, Column Piers

A1020 – Special Foundations

Pile Foundations, Caissons

A1030 – Slab on Grade

Standard Slab on Grade, Structural Slab on Grade



Business Rules

Include A101001 Wall Foundations – Strip Footing for all buildings unless drawings or other information determines otherwise

If there is a notch or protrusion less than 5' don't include in quantity

Include A101002 Column Foundations when columns are > 4"

Don't include sidewalks, patios, or other slab surfaces

Keep it to the building footprint



Business Rules

If there is a slab on grade, include under A103002 Structural Slab on Grade

Not A103001 Standard Slab on Grade

Buildings with loading docks will have 2 slab on grade sections

One with a Section Name of N/A and one of DOCK

If there is an addition, you will also have a Section Name of ADDITION with a different year

Include slab of an exterior transformer with its direction from the building in the Section Name



Inspections

Almost all types will be age-based

Walk the perimeter looking for cracks where the foundation is seen

Warehouses may have exposed slab on grade

Check walls for cracks, particularly the corners of doors and windows on CMU or brick

Do any cracks split the block or brick?

Look down the wall for deformation

If you see any issues, direct rate it



A20 Basement Construction

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A20 Basement Construction

A2010 – Basement Excavation (not in scope)

A2020 – Basement Walls

Walls, Moisture Protection, Insulation

Only 1 section in scope: A202001 Basement Wall Construction – General



A20 Basement Construction

Does not include the floor; likely a slab on grade (A10 Foundations)

Basement walls that extend 4' above grade are considered B2010 Exterior Walls

To get quantity, don't just add the perimeter



Inspections

Be careful:

Steep stairs

Dark, humid

Low ceilings

Storage

Don't go thru crawl spaces or into confined spaces

Check for cracks wider than a hairline

Look down the wall for deformation and signs of moisture



B10 Superstructure

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B10 Superstructure

B1010 – Floor Construction

Structural Frame, Floor Decks, Balconies, Ramps

B1020 – Roof Construction

Structural Frame, Roof Decks, Canopies



Business Rules – Floors and Roofs

Floor construction includes slabs but not A1030 Slab on Grade

- Floor on a raised foundation

- Floors of a multi-story building

For structural frame (floor or roof) General and Other are only Subtypes in scope

- Other is not needed

For decking (floor or roof) General and Other are not in scope

- Must select specific type

Don't confuse floor and roof construction on multi-story buildings



Business Rules – Other

Section mezzanine separately with MEZZANINE in Section Name

Interior load-bearing walls are not in scope

Include all interior walls under C10 Interior Construction

Include any ramps that are not bolted down under B101006 Ramps

Don't include awnings or overhangs under 100 SF

If a canopy connects 2 buildings, include under the larger one with and Inventory

Comment



Inspections

Rarely seen; age-based is likely

Check in mechanical rooms and stairwells where superstructure may be exposed



B20 Exterior Enclosure

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B20 Exterior Enclosure

B2010 – Exterior Walls

Exterior Closure (surface), Backup Construction, Louvers and Screens

B2020 – Exterior Windows

Windows, Storefronts, Curtain Walls

B2030 – Exterior Doors

Solid, Glazed, Overhead and Rollup, Gates



Business Rules – Ext Closure

Surfaces on a multi-story building are 1 section

If stucco or EIFS on a CMU wall

Add B201001 Exterior Closure – Concrete Block with Section Name of INTERIOR BACKING

Don't confuse Metal Panel with Metal Siding or Pre-Engineered Steel Wall Panel

For wall louvers, don't use B201001 Wall Louver [typo! B102001]

Use B201005 Exterior Louvers and Screens

Don't section parapets separately; incorporate it into the wall section



Business Rules – Ext Closure

Include handrails if they are:

- A standalone item not integral to another item

- A different material than the stair or balcony

- Longer than 10 LF

Don't confuse exterior ladders with interior (C103090)

Include sun control devices only if quantity is over 100 SF



Business Rules – Windows and Doors

B202001 Windows – General is only window section in scope

Section Name must include material and the count (not quantity; UoM)

It's not a separate window unless it's separated by wall material

Windows that extend to the ground are B202002 Storefronts

Windows over 1 story in height are B202003 Curtain Wall

Double doors = quantity of 2

If a door has a window, it is not a B203002 Glazed Door



Inspections

Should be able to Direct Rate all sections

Most sections should be same age as the building

Test ladders before climbing

3-point technique

Check caulking around windows and wall seams

Look for cracks coming from corners of windows and door openings

Look down the face of a wall for deformations



B30 Roofing

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B30 Roofing

B3010 – Roof Coverings

Steep Slope Roofs, Low Slope Roofs, Insulation and Fill (not in scope), Flashings (not in scope), Gutters and Downspouts, Skylights, Hatches, Vents (not in scope), Walkway Protection (not in scope)

Army Guide includes B3020 Roof Openings...but it doesn't exist



Business Rules – Roofs

Super extra important: Roofs are dangerous

Watch where you walk, loose clothing, ladders, lightning

In this scope, “Roof Coverings” includes entire roof system

Exposed Surface

Any layers or membranes

Insulation

Does not include any structural frame or decking (B1020 Roof Construction)

Steep slope roof quantities will be slightly larger than the building footprint

Downspouts must be on exterior; interior drains are under D204002 Roof Drains



Inspections

Don't access steep sloped roofs

Existing data in BUILDER is often wrong; always verify

Have a strategy:

- Get overall view first, looking for ponding, blistering

- Walk perimeter, looking at connection to parapet and corners

- Then drains, valleys, seams

- Check close at roof hatches, skylights, roof equipment mounts

Rely on age and information from local facility staff

Even though out of scope individually, consider flashings and vents in rating



Inspections

Not rating ladder (B2010 for exterior; C1030 Specialties for interior) but using it
3 point technique

For gutters, look for erosion on ground

For downspouts, check connection to building, look close to the ground where most damage is, and consider extensions and splash blocks



C10 Interior Construction

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C10 Interior Construction

C1010 – Partitions

Fixed Partitions (walls), Interior Windows

C1020 – Interior Doors

Standard Doors, Glazed Doors, Fire Doors, Overhead Doors

C1030 – Specialties

Restroom Partitions, Lockers, Counters and Cabinets (out of scope), Firestopping Penetrations (out of scope)



Business Rules – Walls, Handrails, and Windows

For a wall with drywall on both sides, count only 1 side

Don't double count the other side

Includes studs and both sides

Handrails included only if different material

No minimum LF

C101004 Guardrails includes handrails and wall bumper rails

For all windows, use C101005 Interior Windows – General (UoM of SF instead of EA)

There is a C101005 Interior Windows – Interior Windows...don't use it

Sidelight windows that extend to ground are Interior Storefronts



Business Rules – Doors

For Overhead Doors

Used to be only 2 Subtypes, so resectioning may be needed

For Other Interior Personnel Doors – Cipher Lock

Use only for interior blast doors

Many assessors used it for a standard door with an electric lock so resectioning may be needed

For Lockers

Must be bigger than a backpack

Not intended for PO Boxes or secure room phone lockers



Inspections

Should be able to Direct Rate everything

Looking for more than scuffs and paint damage

Check door and window hardware

Be careful with age, interior items are often replaced



C20 Stairs

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C20 Stairs

C2010 – Stair Construction

Exterior, Interior

Fire Escape and Handrails and Guardrails are out of scope

Concrete, Metal, Wood



Business Rules – Stairs

12 and 24 riser options for the Subtype

A “stair” is a full set of steps from one floor to another

Even if there is a landing in the middle

24 steps with a landing is not 2 x 12 Riser Flights

Stair finishes are under C302008 Stair Finishes



Business Rules – Stairs

Determine Subtype material by the frame not the tread

Metal stringers with concrete tread is a Metal Stair

Steps vs Stairs

3-14 and 15-30

Year of stairs will likely match builder year

<i>Material/Equipment Category (Level IV)</i>	<i>Sub-Component Type (Pseudo Level V)</i>	<i>UoM</i>
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs - Concrete (12 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs - Concrete (24 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs - Metal (12 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs - Metal (24 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs - Wood (12 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Stairs - Wood (24 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Steps	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Steps - Concrete	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Exterior Steps - Wood	EA
C201001 INTERIOR AND EXTERIOR STAIRS	General	FLT
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs - Concrete (12 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs - Concrete (24 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs - Metal (12 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs - Metal (24 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs - Wood (12 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Stairs - Wood (24 Riser Flight)	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Steps	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Steps - Concrete	EA
C201001 INTERIOR AND EXTERIOR STAIRS	Interior Steps - Wood	EA



Inspections

Should be able to Direct Rate everything

Don't base rating on stair finish

Lots of accidents on stairs – look for loose treads, handrails, trip hazards



C30 Interior Finishes

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C30 Interior Finishes

C3010 – Wall Finishes

Plaster, Tile, Drywall (no studs), Paint (maybe), Wallpaper

C3020 – Floor Finishes

Tile, Terrazzo, Vinyl, Carpet, Stair Finishes, Hardeners and Sealers, Raised Access

C3030 – Ceiling Finishes

Acoustical Tile, Wood, Plaster

C3040 – Coatings and Special Finishes

Out of scope



Business Rules – Walls and Ceilings

Concrete Wall is just the finish

If entire wall is concrete, inventory under C10 Interior Construction

If other finishes are on a stud wall, inventory under C1010 Partitions

Don't double count drywall from C101001 Fixed Partitions Wall, Drywall

Be careful with the inside of an exterior wall

Exposed metal decking from the floor above is not a ceiling for the floor below

C303005 Suspension Systems not in Army Guide

Include if there are acoustical tiles?

Business Rules – Paint

Detailed Inventory Guidance and Component Type Breakdown

C30 INTERIOR FINISHES - C3010 WALL FINISHES

C30

C301005 WALL COVERINGS - Paint

Typical Application and General Component Guidance:

This component is used to inventory paint wall finishes.



Business Rules/General/Lessons Learned/Reinspection

Business Rule

If an interior wall has been painted, DO NOT inventory the quantity under a paint finish. The assessor should have selected 'PAINTED' and provided a 'PAINT DCR' under C1010.

If there is an exterior wall where the interior has been painted, then only the paint is captured as an interior finish.

Unpainted brick, concrete, and masonry walls are not captured under C3010. C1010 should be used.

Component Type	In Scope?	Details Req?	Inventory Pic?	Group Cmnt?	Age Based?	Design Life	UOM	
Paint	Yes	No	No	No	N/A	No	20	SF



Inspections

Should be able to Direct Rate everything

“The component should be rated based on its condition, NOT the condition of the paint coating. An assessor can have a DCR for the component and then select the 'PAINTED' box and provide a DCR for the paint coating.”

Similar to C10 assessments, looking for more than scuffs

Stained and warped ceiling tiles – coordinate with other assessors



D10 Conveying

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D10 Conveying

D1010 – Elevators and Lifts

Passenger, Freight, Wheelchair Lifts, Dumbwaiters

D1020 – Weight Handling Equipment

Overhead Cranes

D1030 – Escalators and Moving Walks

Escalators, Moving Walks

D1040 – Other

Pneumatic Tube Systems, Conveyor Belts, Chutes



Business Rules – Conveying

Does not include dock levelers and auto lifts

E1030 Vehicular Equipment

If no capacity available, passenger usually ~2,500; freight usually ~4,500

Hydraulic Elevators usually 3 or less stops; Traction Elevator usually 4 or more

If a lift is on rollers, it is temporary and not included

For Pneumatic Tube Systems, use Other

UoM is EA (common mistake is SF)



Inspections

Try to see pumps and motors and not just inside of cab

Rely on annual inspection certificate and interviews



D20 - Plumbing

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D20 – Plumbing Includes

D2010 – Fixtures

Waterclosets, Lavatories, Sinks

D2020 – Domestic Water Distribution

Pipes, Water Heaters, Pumps

D2030 – Sanitary Waste

Pipes, Vents, Drains

D2040 – Rain Water Drainage

Internal Roof Drains, Pipes

D2090 – Other

Specialty Pipes, Compressed Air, Interceptors



Business Rules - Sinks

Sinks (General) are out of scope

Kitchen Sink is any sink in a kitchen regardless of material

Stainless sink in a kitchen is not a Stainless Sink

Mop Sink will be on the floor – drain is part of sink, not a floor drain

Used to be a Service Sink so resectioning may be needed

Service Sink is attached to the wall

Any plastic sink is a Laundry Sink

Any sink that does not match a specific Subtype is General, and not included



Business Rules – Other Fixtures

Do not section bathroom fixtures by mens/womens, except by condition

For a group shower with no partitions, count shower heads for quantity

Water Coolers are chilled, Drinking Fountains are not

For a double Water Cooler or Drinking Fountain, quantity is 2

Units with a bottle filler are Water Fountains With Bottle Filler

Use Combo Eye Wash and Shower if they are one unit

Sump is the plastic lining, not the Sump Pump

Sump Pump used to be Sump, but now should be D204003 Rainwater Drainage Equipment so resectioning may be needed



Business Rules – Pipes, Fittings, Valves

UoM for Pipe and Fittings (General) is LF – How to measure?

Domestic Water: Building SF x 6 / 73; Waste Water: Building SF x 4 / 74

Real-life average cost / Current unit cost of pipes in BUILDER

Use your judgement to adjust – hangar vs hospital

Will often have 2 backflow preventers – One under D2020 Domestic Water and one under D4020 Fire Protection

D20 vs D30

Put PW, CW, and HW in Section Names



Business Rules – Equipment and Drains

Do not include point-of-use Water Heaters under 20G

Water Heaters 80G or less should be put under “Residential”

This direction did not exist in the past so resectioning may be needed

Water Heaters over 80G should be put under “Commercial”

Floor Drains not sectioned by floor

Floor Drains in a shower are part of the fixture

Roof Drains include basket, drain, and interior piping

Usually found on flat roofs

Internal drains only; exterior drains are downspouts

Used to be Schedule 40 exterior drains were under Roof Drains, so resectioning may be needed



Inspections

Work with the D30 inspector – potential overlaps

Pipes and fittings are likely only age-based ratings

Not roof, floor, or trench drains

Be careful when checking fixtures

Don't test emergency eye washes or showers



D30 HVAC

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D30 HVAC

D3010 – Energy Supply

Oil Supply, Gas Supply, Steam Supply, Hot Water Supply, Solar, Wind

D3020 – Heat Generating Systems

Boilers, Furnaces, Fuel-Fired Unit Heaters, Auxiliary Equipment

D3030 – Cooling Generating Systems

Chilled Water Systems, Direct Expansion Systems, Auxiliary Equipment

D3040 – Distribution Systems

Air Heating and Cooling, Steam, Hot Water, Chilled Water, Exhaust, Air Handling Units



D30 HVAC

D3050 – Terminal and Package Units

Unit Ventilators, Unit Heaters (hydronic and infrared), Fan Coil Units, Package Units

D3060 – Controls

HVAC, Electronic, Pneumatic

D3090 – Other

Radon Management, Ventilation/Heat Recovery

Caution 1: Get familiar with requirements for this system; many many options

Caution 2: Multiple changes since 2019 so resectioning is likely needed



Business Rules – Boilers

For Boilers, Gas Hot Water is most common on Army installations

Check for gas flue thru roof or wall and gas line serving the Boiler

Gas Oil Fire Tube most common in large buildings or in mechanical building that serves large buildings

If there is a Boiler, must add D304003 Hot Water Distribution Systems – General for piping



Business Rules – Furnaces, Unit Heaters, and Aux Equipment

If there is no heating element, it is a DX unit not a Furnace

Include under D305003 Fan Coil Unit – DX

Square, cassette type heaters are D305002 Unit Heaters – Infrared

If forced air or long tube, include under D302003 Fuel-Fired Unit Heaters

If there is a hot or chilled water hydronic system, there will usually be an Air Separator and an Expansion Tank

Don't include expansion tanks connected to domestic water or any expansion tanks under 5G



Business Rules – Equipment, Ductwork, Pumps, and Pipes

Don't include humidifiers or dehumidifiers if integrated into Air Handler

Must be a permanent, stand-alone unit

Ductwork calculation:

Building SF x 8 / 27

Don't include hot or chilled water distribution pumps under D202003 Domestic Water Equipment – Booster Pump

Use D304003 Hot Water Distribution Systems or D304006 Chilled Water Distribution Systems

Don't forget D304003 (HW) and D304006 (CW) piping

Building SF x 8 / 5,863



Business Rules – Chillers and DX Systems

If there is a Chiller, there will usually be a cooling tower

If it is a ductless DX system, include under D305006 Package Units – A/C Unit, Split Systems w/ Air Cooled Condenser

If refrigerant is R-22, include in Section Details under Equipment Type

Direct Expansion Rooftop A/C Units are out of scope

Use D305006 Package Units



Business Rules – AHUs

Don't confuse with D304008 Air Handling Units with D305006 Package Units

If including under D304008 Air Handling Units, item will usually just have a HW and CW coil present

Use D304008 Air Handling Units – Field Fabricated for AHUs that have doors large enough to walk into

AHUs usually located in mechanical rooms

Rooftop units are usually D305006 Package Units

Large AHUs sometimes on roof – look for hydronic piping



Business Rules – Unit Ventilators and Unit Heaters

For D305001 Unit Ventilators – Air Curtains, separate each individual unit

UoM is LF

No option for electric unit heaters

Include under D305005 Electric Heating

For hydronic baseboard heaters use D305004 Fin Tube Radiation – Baseboard Heating – General for UoM of LF

For electric baseboard heaters use Other for UoM of EA

Section by floor



Business Rules – Package Units

D305006 Package Units – A/C Split Systems used only for small, ductless DX split systems that serve a single room

Due to confusion of air handler vs package units, Section Details are critical

Especially Equipment ID Number

Search Model and/or Serial Number

Generally use Air Handling Units for indoor units and Packaged Units for outdoor

More confusion: There is a D305006 Package Units – Rooftop, a D303002 Direct Expansion Systems – Rooftop A/C, and a D304008 Air Handling Units – Rooftop

Use D305006 Package Units – Rooftop Unit for gas-fired package units



Business Rules – Others

For small thru-wall units, don't include window-mounted units

Considered temporary

Use D306004 Instrument Air Compressors – General only for HVAC systems

Often incorrectly used for auto and shop air compressors, and air compressors related to dry-pipe fire protection systems

Don't include: Common valves, residential-type kitchen exhausts and ceiling fans, small bathroom exhaust fans, vents, grilles, registers, diffusers, or fire dampers



Inspections

Difficult to rate items with covers

Rely on age and interviews with facility staff

Don't rate equipment with R-22 refrigerant higher than Amber +

Don't include equipment that is abandoned in place



D40 Fire Protection

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D40 Fire Protection

D4010 – Fire Alarm and Protection Systems

Alarms and Controls, Devices

D4020 – Water Supply

Piping and Equipment, Backflow Preventors

D4030 – Standpipe Systems

Risers, Pumps

D4040 – Sprinklers

Deluge, Dry Pipe, Preaction, Wet Pipe



D40 Fire Protection

D4050 – Specialties

Dispersion Nozzles, Extinguishers (not in scope)

D4060 – Other

Carbon Dioxide Systems, Foam-Generating Equipment, Optical Detection Systems

Don't section by floor



Business Rules – Alarms and Detection

Typical fire system will have:

D401001 Fire Alarm Distribution (UoM of SF)

D401001 Fire Alarm Distribution – Fire (UoM of EA)

D401002 Fire Alarm Devices – General (Uom of EA)

Devices (Annunciators, Detectors, Door Releases, Pull Stations, Strobes) are grouped and counted under D401002 Fire Alarm Devices – General



Business Rules – Distribution

Typical system will also have:

D402001 Fire Protection Water Piping and Equipment – Backflow Preventor

D403001 Standpipe Equipment and Piping – Riser

D403001 Sprinklers and Releasing Devices – [type]

Don't confuse Fire Protection Backflow Preventor with Domestic Water Backflow Preventors

For foam systems, tanks, pumps, valves, etc. are included in the “system”



Inspections

Use an age-based rating for controls

Look in stairwells of multi-story buildings for risers

If risers are hidden, look for Siamese connections on the exterior



D50 Electrical

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D50 Electrical

D5010 – Electrical Service and Distribution

Service Entrance Equipment, Interior Distribution Transformers, Panelboards, Circuit Breakers, Motor Control Centers

D5020 – Lighting and Branch Wiring

Branch Wiring, Lighting

D5030 – Communications and Security

Telecom Systems, PA Systems, Security Systems

D5040 – Other

Emergency lighting, Generators, Grounding Systems, Lightning Protection



D50 Electrical

D5040 – Other

Emergency lighting, Generators, Grounding Systems, Lightning Protection

Caution 1: Get familiar with requirements for this system; many many options

Caution 2: Multiple changes since 2019 so resectioning is likely needed



Business Rules – Electrical

If Service Entrance serves 2 buildings, include under the larger building with an inventory comment

Include all interior transformers serving emergency panels

Don't include transformers enclosed inside electric panels

Include exterior transformers under D501003 Interior Distribution Transformer

Don't include pole-mounted transformers

Exterior panels should have Section Names of EXTERIOR

Interior panels should be sectioned by floor with Section Names of FL1, FL2, etc.



Business Rules – Panels

Use caution when opening panels

Notify facility staff if there are missing breaker covers

All safety switches and enclosed circuit breakers >30 Amp should be included

Don't open safety switches, switchgear, and transfer switches

Branch Wiring will have a Section Name of N/A unless there are additions

For Exit Lighting, don't include signs – must be illuminated

For Exterior Lights, don't use EXTERIOR in the Section Name

Don't section by floor



Business Rules – Communications and Emergency Power

Include only 1 section per communication system

Quantity is often wrong

Security Systems are out of scope

For Emergency Generators, diesel tank is considered part of generator if attached

If separate, include diesel tanks under D301002 Gas Supply System

Communicate with other assessors



Business Rules – Lightning and Grounding

Use D509004 Lightning Protection – Other to get UoM of SF

If there is lightning protection, also include D509003 Grounding Systems – Other to get UoM of SF

One of the few times Other Subtype is encouraged



Inspections

Most items difficult to assess

Panels

Lights

Communications

For Branch Wiring, consider information from local facility staff