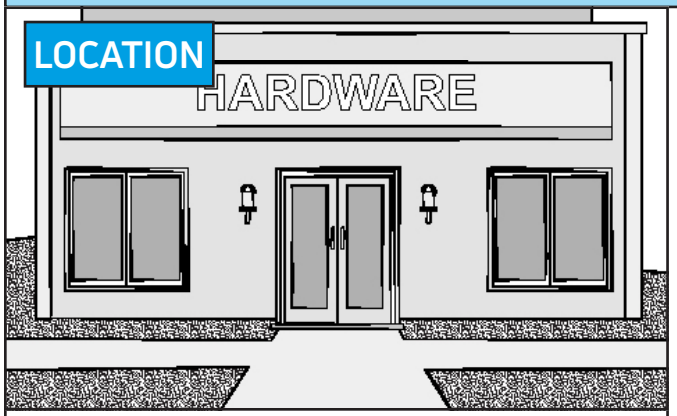
QUALITY INSTALLATION STANDARDS

END-TO-END INSTALLATION & PHOTO REQUIREMENTS

Viasat

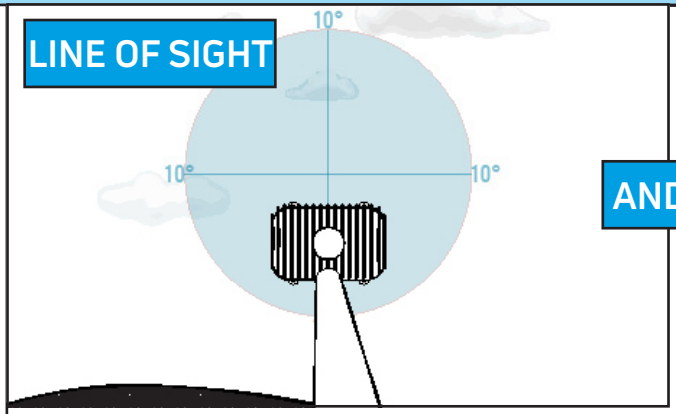
LOCATION / LOS

LOCATION



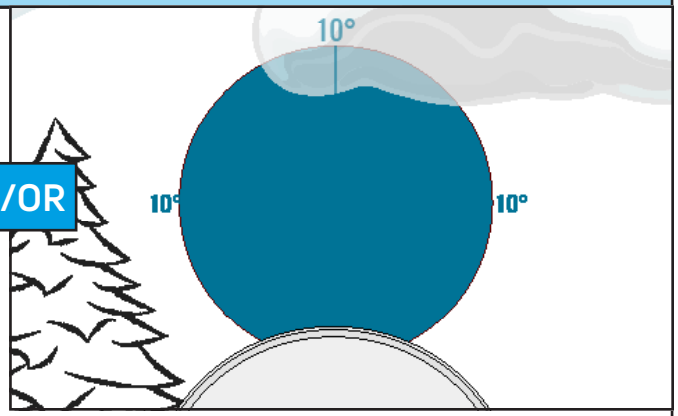
- Show full, frontal view of the building from the street:
  - — Show customer's address
  - — Show mailbox if necessary
- Do not take pictures of the customer, customer documents, or customer vehicle/license plate

LINE OF SIGHT



- Show a clear view of the southern sky toward the TRIA
- Take at least one photo that shows the line of sight from:
  - — Top of the boom arm (where it connects to the reflector) toward the TRIA and/or
  - — 1-2 feet behind the antenna reflector

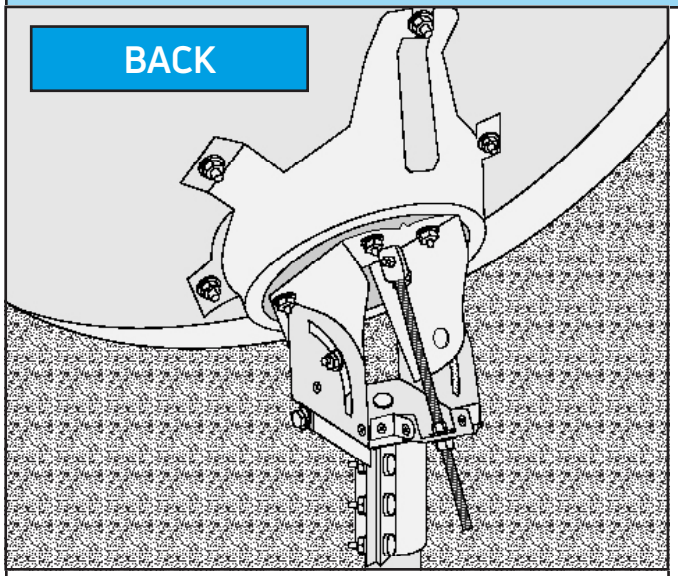
AND/OR



- Line of Sight should be:
  - — Clear in all directions by 10 degrees
  - — Clear of tree growth, seasonal foliage changes, and future development

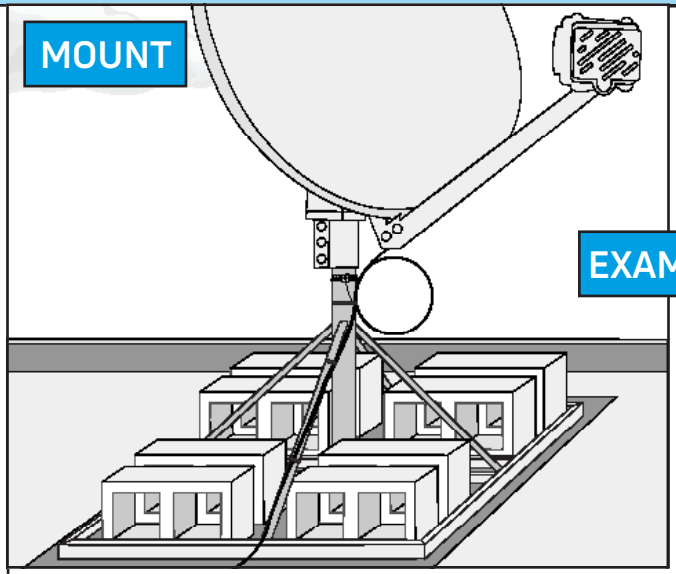
OUTDOOR UNIT (ODU)

BACK



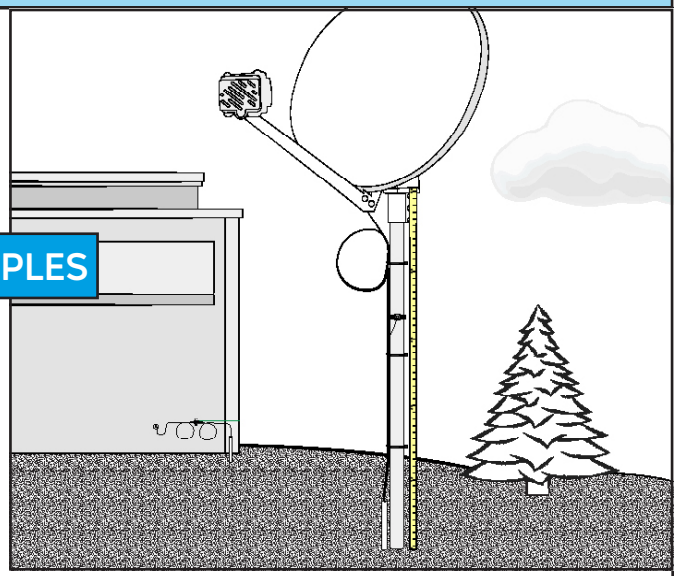
- Show the entire back assembly of the ODU installed:
  - — Tighten all nuts and bolts, including collar bolts and elevation rod nuts
  - — Use all hardware as designed for assembly
  - — Use only approved components (matching reflector, AZ/EL and hardware)
  - — Set skew according to the information on the work order

MOUNT



- Show correct installation of one of our approved mounts:
  - — Wall / Roof Mount
  - — Pole Mount
  - — Side "S" Mount
  - — Low Profile "Stub" Mount
  - — Under Eave Mount
  - — Brick Mount
  - — Non-Pen Mount

EXAMPLES



Reference "Mount Types" section for specific mount standards

- All information detailed in the mount profile must be visible in the installation photo
- Submit as many pictures as necessary to depict all installation requirements

QUALITY INSTALLATION STANDARDS

END-TO-END INSTALLATION & PHOTO REQUIREMENTS

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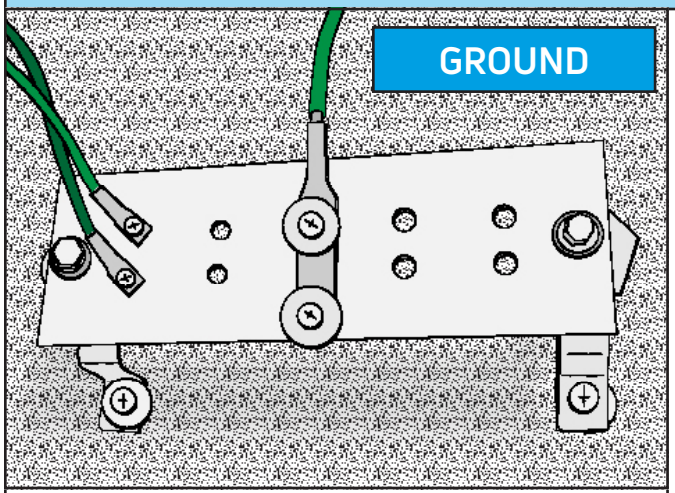
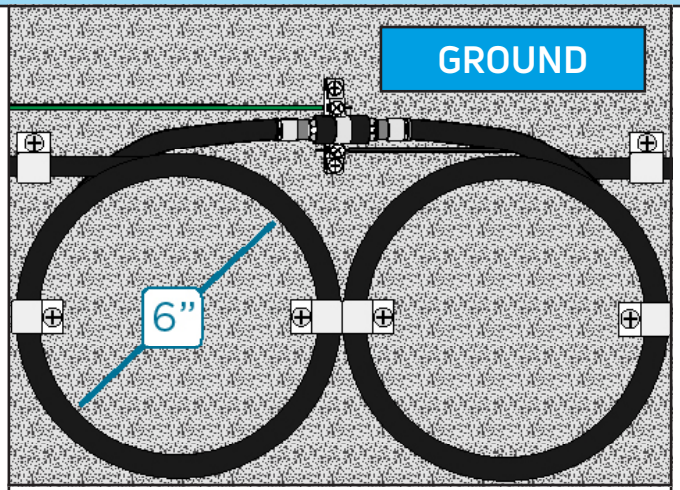
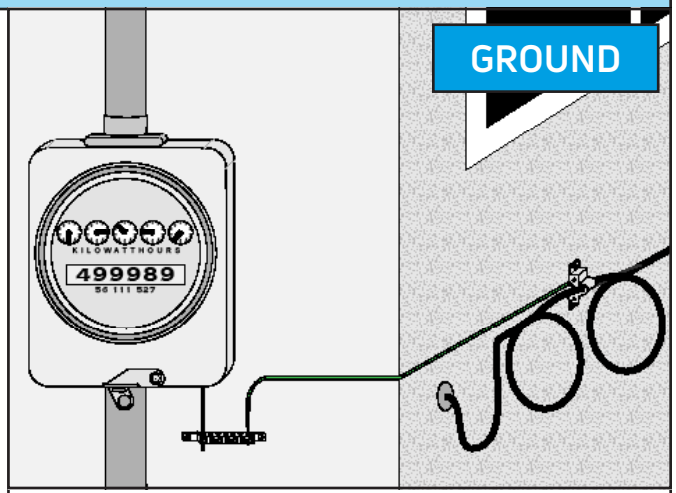
GROUND



- Show a UL listed device attached to an NEC-approved ground source
  - — IBT (required if present), Internal BUS, #6 bare copper wire, back-bonded grounding electrode, metallic raceway, meter box, grounded I-beam, approved main water line
- Use matching metals (ex. copper to copper)
- Do not impede the opening of the meter box door
- Do not share ground sources (Each IBT port = a ground)
- Scrape paint to allow metal to metal contact

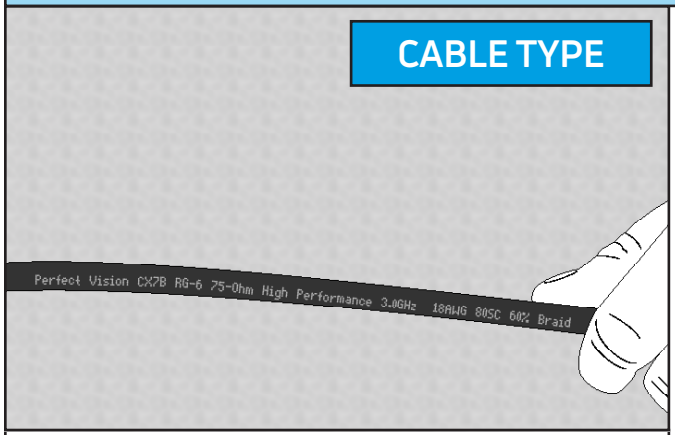


- Show the installation of a UL listed, 3Ghz rated ground block:
  - — Install compression connectors, torque to 30 in. lbs.
  - — Use weather boots on both sides of the ground block
  - — Form 6” diameter service loops
  - — Attach ground block directly to structure (2 screws)
  - — Run the #10 gauge solid copper ground wire as straight and short as possible, with minimal bends
  - — Connect messenger and ground wire to ground block

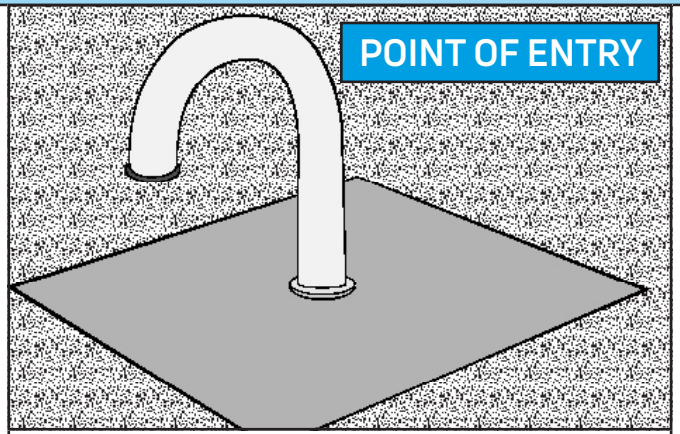


- Show the entire run from the ground block to the ground source:
  - — Must be less than 20 feet
  - — May require multiple photos to demonstrate entire ground run
    - » If multiple photos are necessary, they must visually overlap so the ground run can be followed

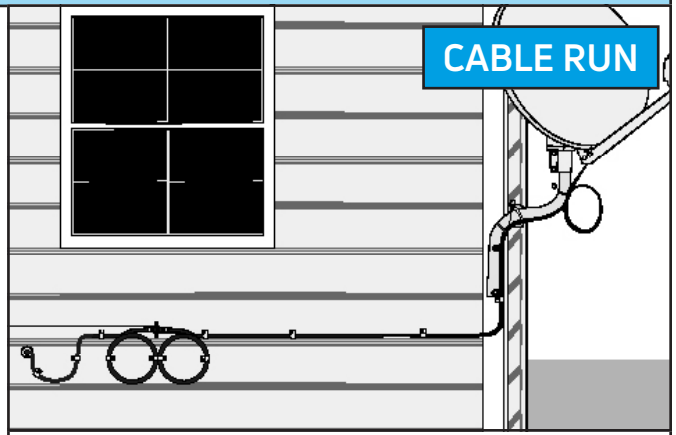
CABLE



- Show a close-up of cable markings proving:
  - — Cable type and model number
  - — Solid copper, rated to 3GHz, 75 Ohm, 60% braid
  - — Cable is in good condition



- Show point where cable enters the building:
  - — For a flat roof: Use a J-tube, witch’s hat, or other approved flashing prior to entry
  - — For a side wall: Use a J-loop prior to entry
  - — Form cable bends with a diameter of at least 6”
  - — Never bend the cable to 90 degree angles



- Show that the cabling:
  - — Is <150’, neat, and follows the lines of the house
  - — Is attached using only screw clips
  - — Is continuous and does not use in-line barrels, excluding the ground block and wall plate

QUALITY INSTALLATION STANDARDS

MOUNT TYPES

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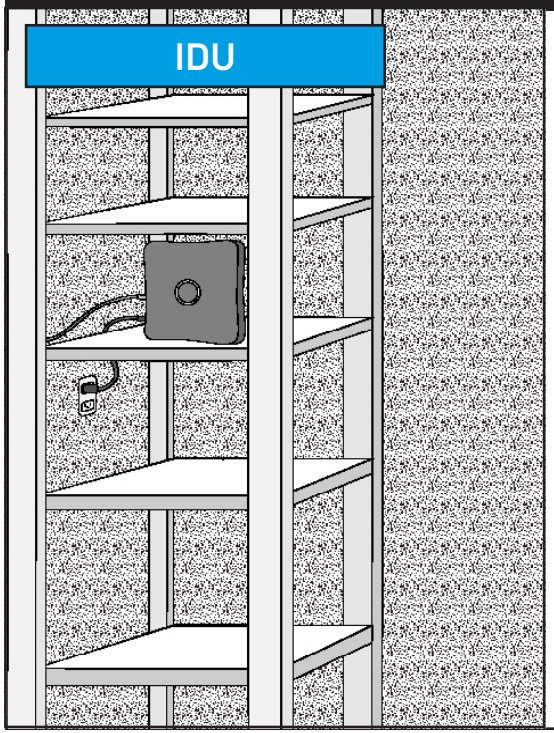
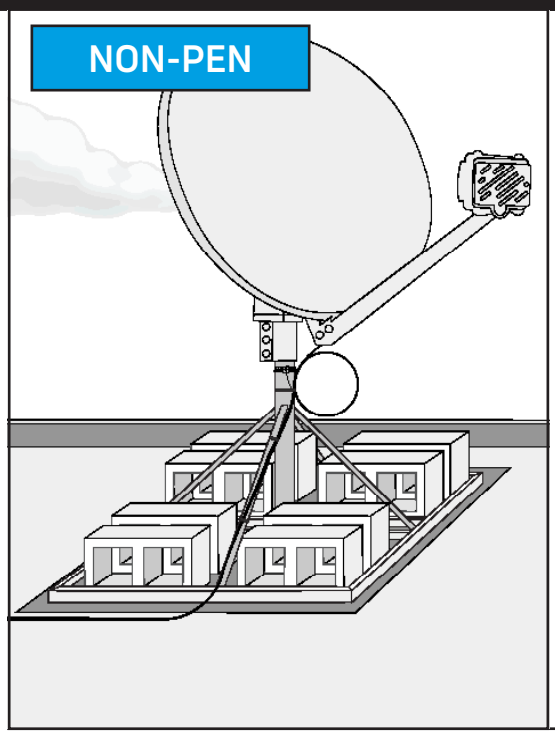
IDU



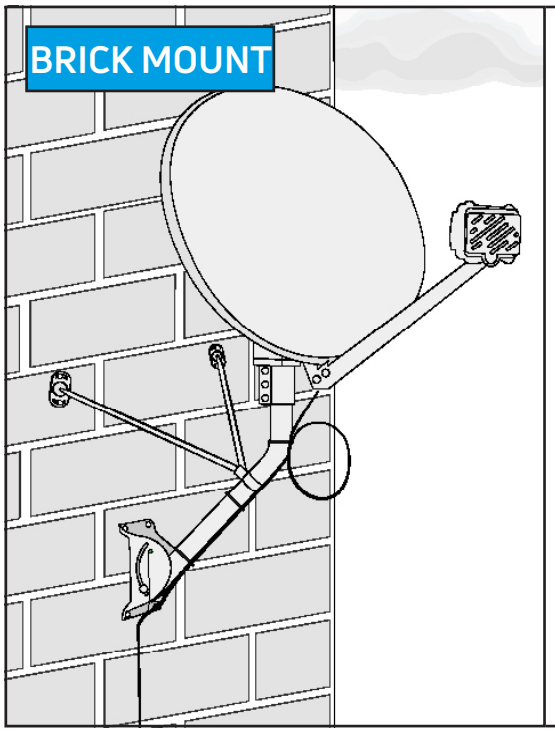
- Show indoor portion of cable run, from POE to IDU
- Show location of IDU proving:
  - — That it is indoors (near a desk, shelf, etc.)
  - — That it is in a place with adequate air flow
- Show that correct cable type has been used in the installation
  - — Approved Plenum - Use if the building forced air return is circulating or open
  - — Approved (Non-plenum) RG6 Coax - Use in other instances
  - — Complete Exede Business cable details are available on the eGuide

NON-PEN



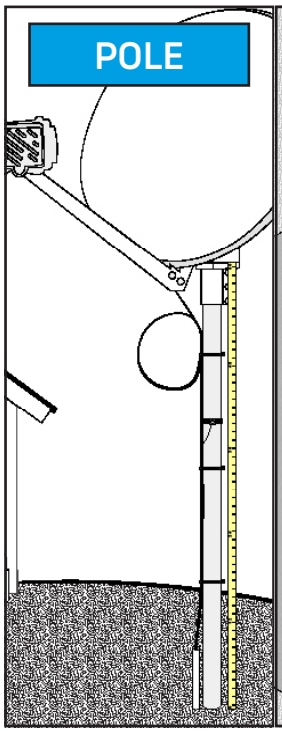
- Approved for flat roof, balcony, deck, patio, and ground use when a pole mount is not an option
- Use a protective mat
- If using monopoles, position the collars 2” below the bend, at a downward angle, forming a tripod
- Zip-tie cable to the mast, including a 6” diameter service loop
- Universal or stub mount based on location with snow as a consideration
- Should be placed in area of low traffic
- Surface must allow mast to be leveled
- Location should not be prone to flooding
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Cable must not pose a tripping hazard
- Requires eight 28-pound cinder blocks for ballast
- Connect messenger/ground wire to either:
  - — A galvanized strap on the mast, or
  - — A green ground screw on the footplate
- Tighten all hardware completely

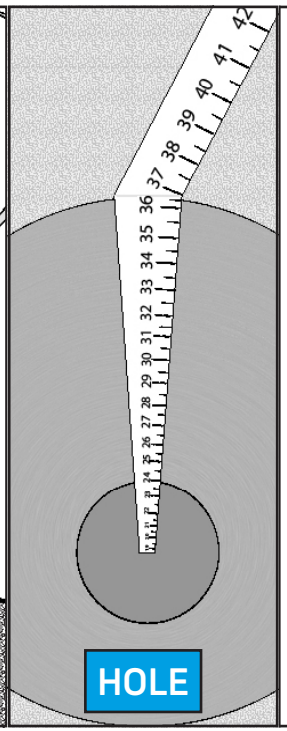
BRICK MOUNT



- Attach to an approved, structurally sound surface (load bearing wall, 28” away from corner/door/window/top of wall, no chimneys)
- Mount antenna at least 5’ above walking surface
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Use only approved and matching ODU hardware
- Secure footplate using four 2” lags in corner holes and proper anchors
- Position monopoles 2” below the bend, at an upward angle, forming a tripod
- Monopole plates secured by two 2” lags, using proper anchors
- Lags must not be drilled into mortar, or more than two lags in one brick
- Seal all drilled holes with silicone
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect messenger/ground wire to a green ground screw on the footplate
- Tighten all hardware completely

POLE





POLE MOUNT

- Install in stable, solid ground
- Use an approved pole:
  - — 2” OD, 9 gauge, or
  - — 2 3/8” OD, Schedule 40
- Pole must be galvanized, have an anti-spin device, and 96” in length
- Install antenna at least 5’ above walking surface, and photo displays measuring tape for entire pole length
- Use 150 lbs. of concrete (3 bags)
- Use 2 sweeps (1 at pole, 1 at house)
- If non-flooded cable is used, it must be buried in conduit
- Zip-tie cable to the pole, including a 6” diameter service loop
- Connect the messenger/ground wire to a galvanized ground strap
- Tighten all hardware completely

HOLE

- The hole must measure 36” from the bottom to the top
- Hole should appear 12” in diameter and bell-shaped at the bottom

QUALITY INSTALLATION STANDARDS

MOUNT TYPES

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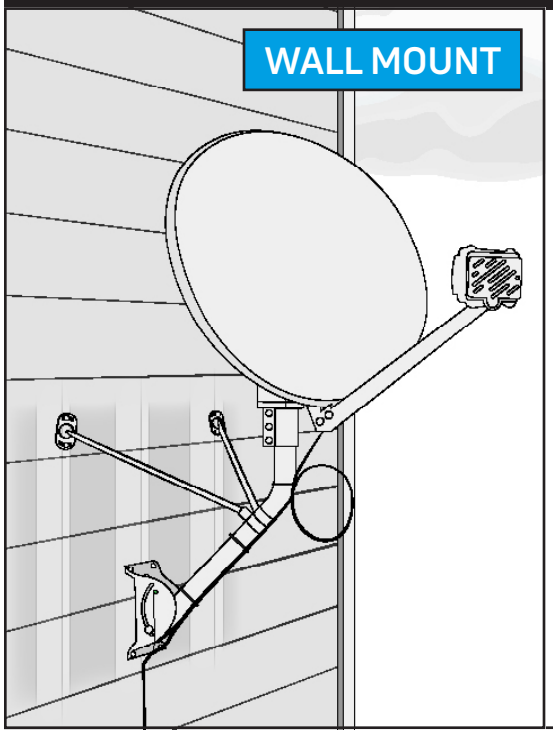
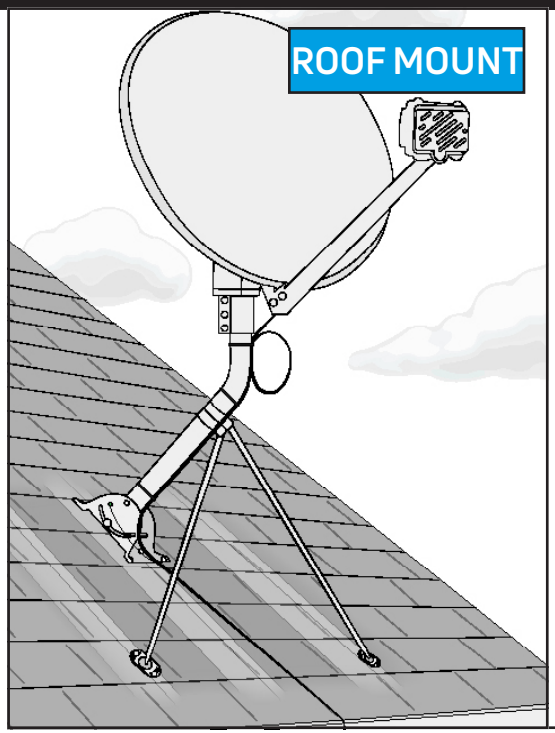
WALL MOUNT



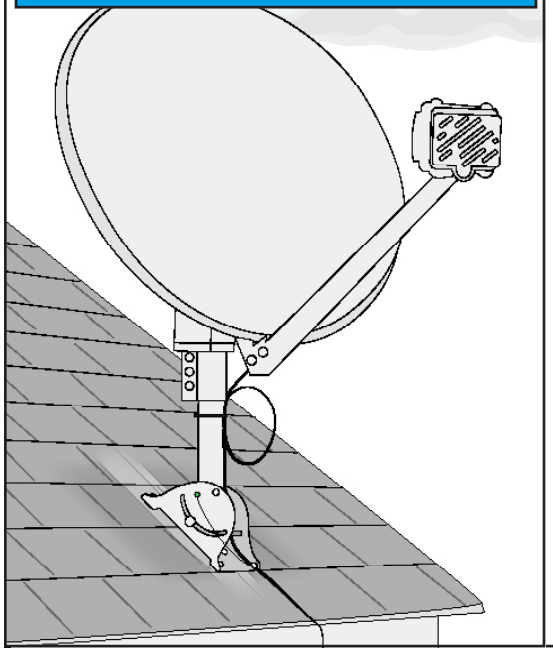
- Attach to an approved, structurally sound surface (wood or composite siding only)
- Mount antenna at least 5’ above walking surface
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Use only approved and matching ODU hardware
- Secure the footplate to the wall with:
  - — Two 3” lags through center holes into stud
  - — Four 2” lags through corner holes
- Position monopoles 2” below the bend, at an upward angle, forming a tripod
- Secure monopole plates to adjacent studs using two 3” lags
- Seal all drilled holes with silicone
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect the messenger/ground wire to a green ground screw on the footplate
- Tighten all hardware completely

ROOF MOUNT



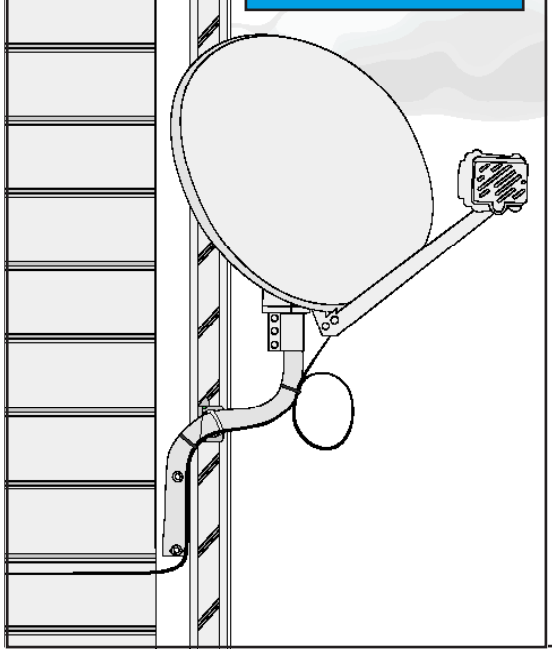
- Attach to an approved, structurally sound surface (asphalt shingles only, sloped roof, close to the roof’s edge, ideally not over living space)
- ODU is at least 3’ from electrical panel and 20’ from overhead power lines
- Use only approved and matching ODU hardware
- Secure the footplate to the roof with:
  - — Two 3” lags through center holes into rafter
  - — Four 2” lags through corner holes
- Position monopoles 2” below the bend, at a downward angle, forming a tripod
- Secure monopole plates to adjacent rafters using two 3” lags
- Seal all drilled holes with tar-based sealant
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect the messenger/ground wire to a green ground screw on the footplate
- Tighten all hardware completely

LOW PROFILE “STUB” MOUNT



- Attach to an approved, structurally sound surface:
  - — Sloped roofs only
  - — Asphalt shingles only
  - — Close to the roof’s edge
  - — Ideally not over living space
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Use only approved and matching ODU hardware
- Secure the footplate to the roof with:
  - — Two 3” lags through center holes into rafter
  - — Four 2” lags through corner holes
- Seal all drilled holes with tar-based sealant
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect the messenger/ground wire to a green ground screw on the footplate
- Tighten all hardware completely

SIDE “S”

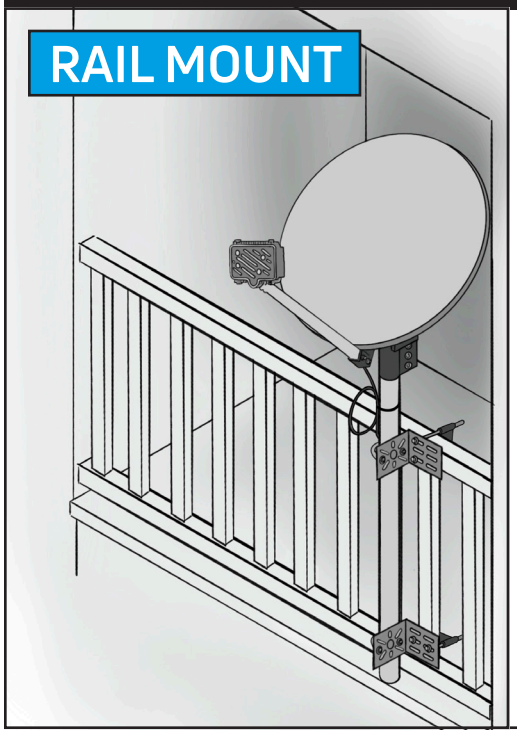


- Attach to an approved, structurally sound surface (wood or composite siding only, southern-facing corner, avoid touching the eave/roof with antenna)
- Mount antenna at least 5’ above walking surface
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Use only approved and matching ODU hardware
- Secure the footplate to a corner stud with:
  - — Two 6” lags on S-tube
  - — Two 3” lags on L-bracket
- Seal all drilled holes with silicone
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect messenger/ground wire to a galvanized strap or green ground screw
- Tighten all hardware completely

QUALITY INSTALLATION STANDARDS

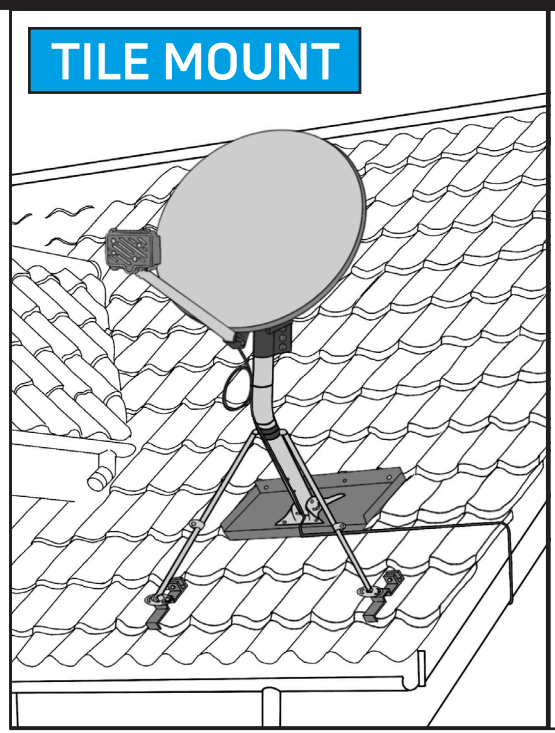
MOUNT TYPES

RAIL MOUNT



- Attach to structurally sound railing, preferably near a wall or post
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect the messenger to the L-bracket with a green ground screw
- Prevent hazards by properly routing and securing the coaxial cable
- Tighten all hardware completely

TILE MOUNT



- Attach to an approved, structurally sound surface on a sloped tile roof (clay or concrete tiles only)
- Avoid broken or cut tiles and use at least 3’ from any flashing
- ODU is at least 3’ from electrical panel and 20’ from power lines
- Requires use of tri mast
- Place 2 or more rows from eave
- Position monopoles 2” below the bend, at a downward angle, forming a tripod
- Zip-tie cable to the mast, including a 6” diameter service loop
- Connect the messenger/ground wire to a green ground screw on the footplate
- Tighten all hardware completely