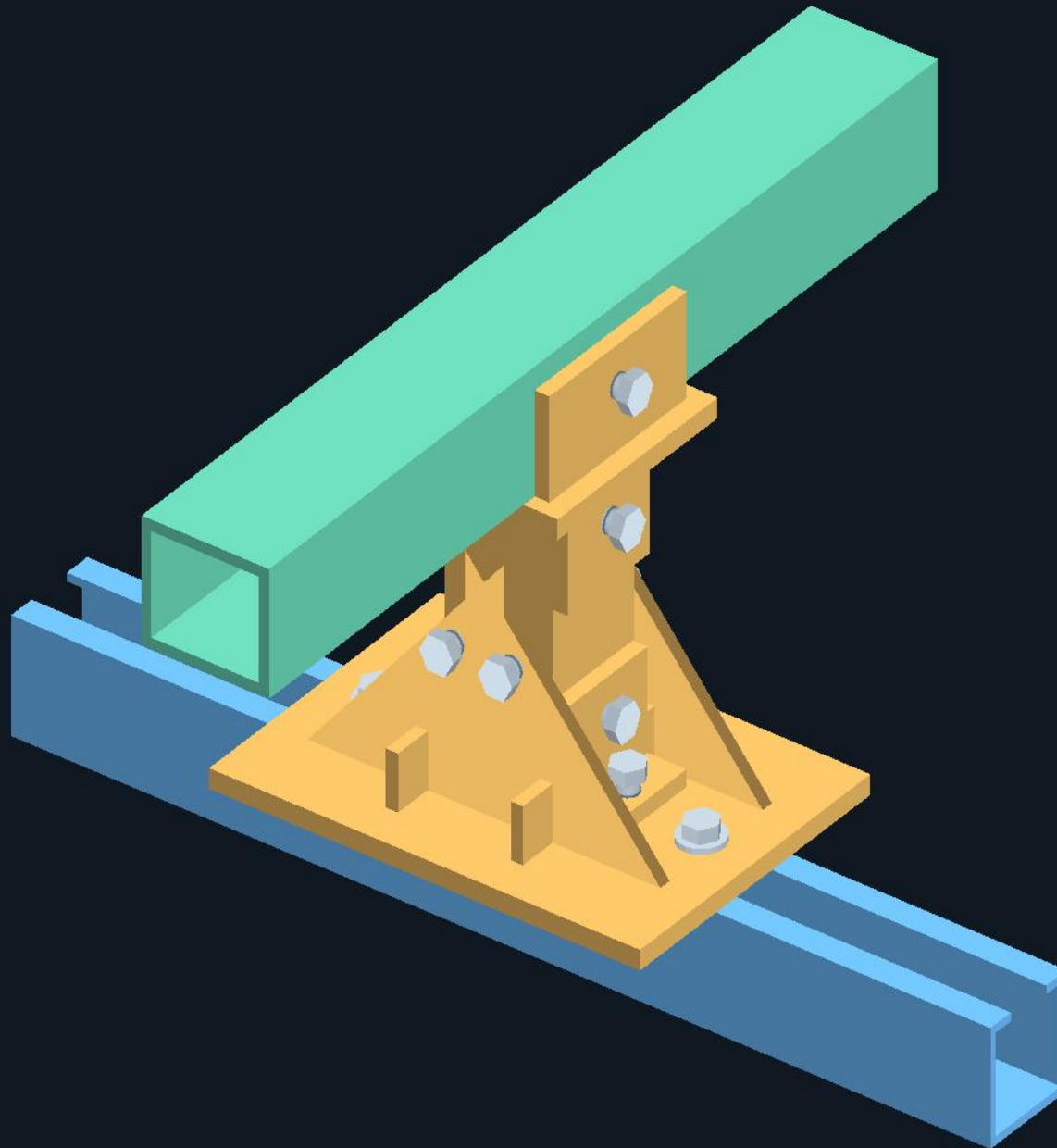


01 / WHAT YOU ARE ACTUALLY BUILDING

shaded 3D identification model • proportions illustrative • no tube size, hole pattern or load rating released



- 01 ALUMINUM STRUT — BUY**
one rail along each gutter
inward lips retain channel nuts
- 03 BASE PLATE — FABRICATE**
cut / drill documented aluminum plate
bolts into channel nuts below
- 04 SHORT TUBE POST — CUT**
6061-T6 square tube candidate
height set by actual roof crown
- 05 ANGLES + 06 GUSSETS — FABRICATE**
angles join post to base and cap
gussets brace both directions
- 07 TOP SADDLE — FABRICATE**
cap plate + side keeper angles
through-bolted to retain the crossbar
- 08 RECTANGULAR CROSSBAR — CUT**
closed tube, not open strut here
spans from one side of van to the other

IMPORTANT: this is a hybrid rack, not an all-Unistrut kit.

the blue rail and its nuts are catalog parts. the gold pedestal is a custom bolted subassembly.

a standard 90° strut bracket is NOT a complete raised support. shown fasteners are illustrative.

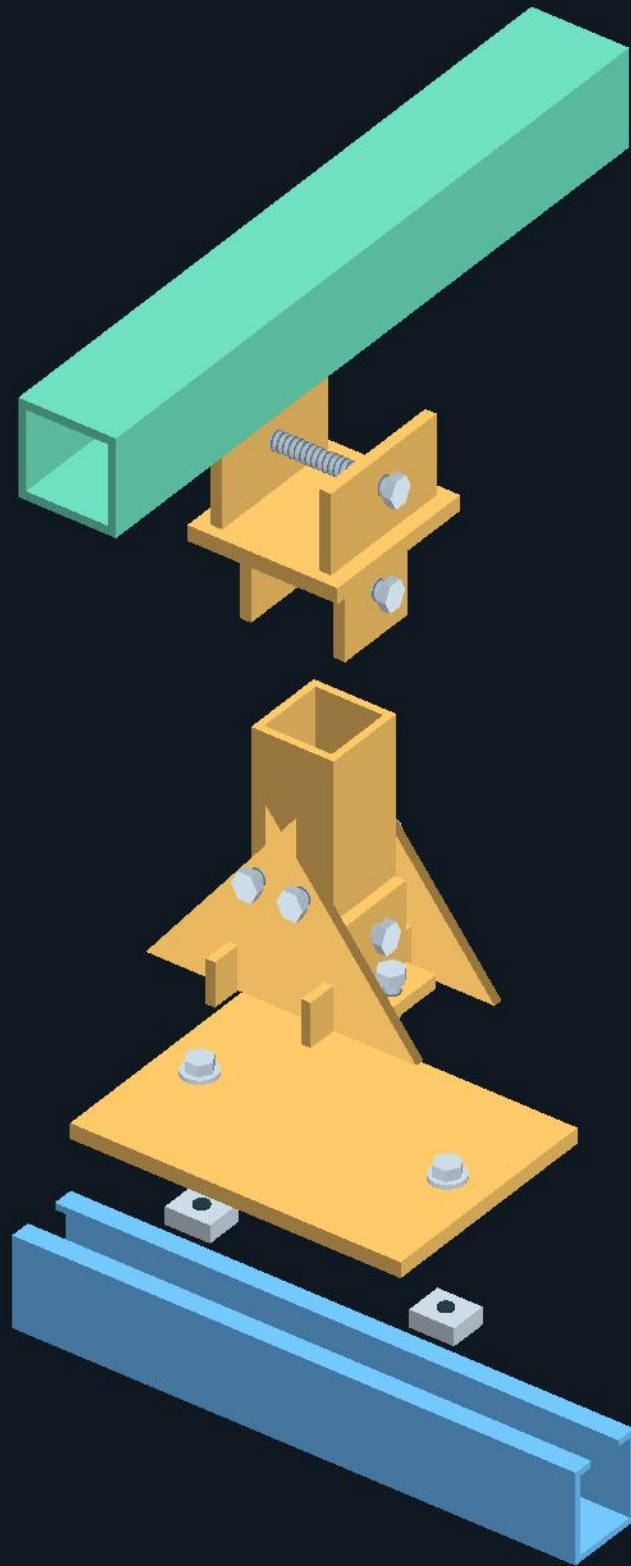
plates / angles / gussets still need hole, edge-distance, access, isolation and strength details.

color key: blue = gutter rail | gold = pedestal parts | green = crossbar | silver = fastening hardware

model explains part shapes and assembly only; it does not establish suitability for highway loads or the vehicle studs.

02 / THE PEDESTAL — EXPLODED INTO BUYABLE SHAPES

same part IDs as sheet 01 • separation exaggerated to show interfaces • labels are not a cut list



08 CROSSBAR

closed rectangular aluminum tube
through-bolt needs an internal crush sleeve

07 CAP PLATE + KEEPER ANGLES

the cap supports the beam; side angles retain it
through-bolt connects beam to keeper angles

04 POST + 05 ANGLES + 06 GUSSETS

cut tube; bolt angles and gusset cheeks to it
additional perpendicular bracing is required
the assembly is not one off-the-shelf product

03 BASE PLATE

spreads pedestal forces into rail connection
not a washer; plate bending must be checked

02 CHANNEL NUT + MATCHING BOLT

nut inserts into strut and turns under its lips
bolt passes through base plate into the nut
nut thread and bolt thread MUST match

01 LONGITUDINAL STRUT RAIL

use exact aluminum section + compatible fittings
factory M8 stud system below is a different joint

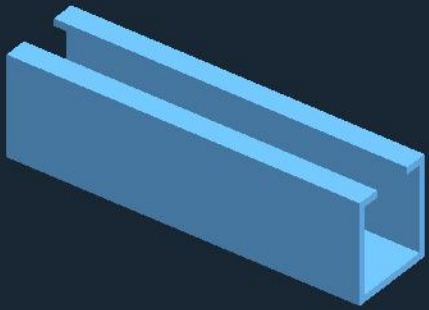
do not assume strut bolts are M8 just because the van studs are M8. metric and imperial systems must not be mixed.

washers / nuts / bolt lengths and retention are selected per joint. hardware drawn is for identification, not torque or sizing.

03 / HARDWARE YOU CAN RECOGNIZE AT THE SUPPLIER

rendered part illustrations, not product photos • BUY = catalog type / MAKE = cut or drilled part

01 inward-lip aluminum strut



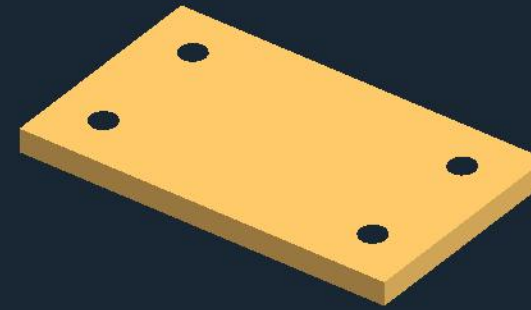
BUY • not plain U-channel

02 channel nut + hex bolt



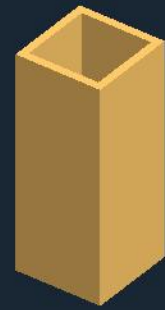
BUY • matched thread + channel series

03 base / cap plate



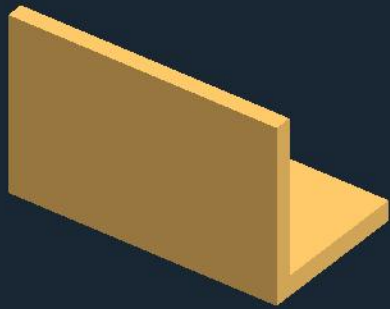
MAKE • cut, drill, deburr

04 square tube riser



MAKE • cut from documented stock

05 L-angle connection pieces



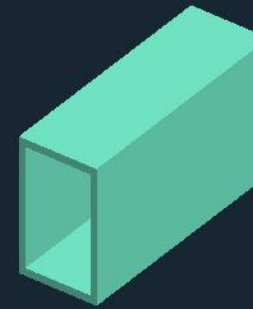
MAKE • cut angle + drill holes

06 triangular gusset plates



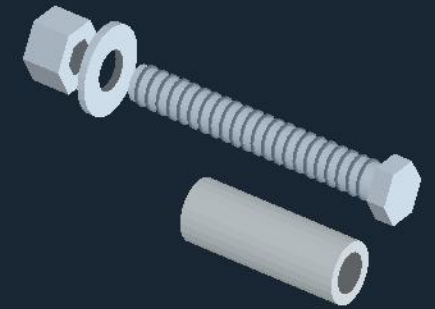
MAKE • cut / drill; not cosmetic

08 rectangular crossbar tube



MAKE • section still unselected

09 bolt + sleeve + locknut



BUY / CUT • through-tube joint

10 M8 × 1.25 coupling nut



BUY • 25 mm is owner example

11 aluminum pipe spacer



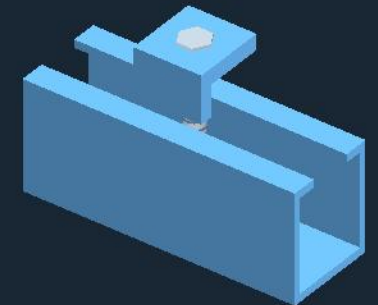
CUT • 1-inch nominal sch-40 example

12 top bolt + fender washer



BUY • gutter connection hardware

13 solar rail + panel clamp



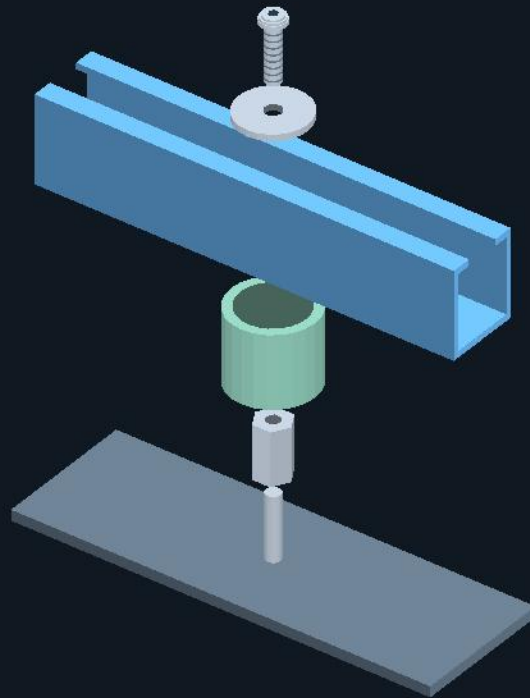
BUY • exact module approval needed

07 top saddle = plate + angle pieces, NOT a universal off-the-shelf bracket. 09 locknut is a candidate, not a blanket spec.

nominal pipe size is not outside diameter. verify alloy, temper, wall thickness, fastener grade, finish and compatibility.

04 / WHERE THE REST OF THE HARDWARE GOES

connection families • no new holes in panel frames • A/C and fan need appliance-specific structural interfaces

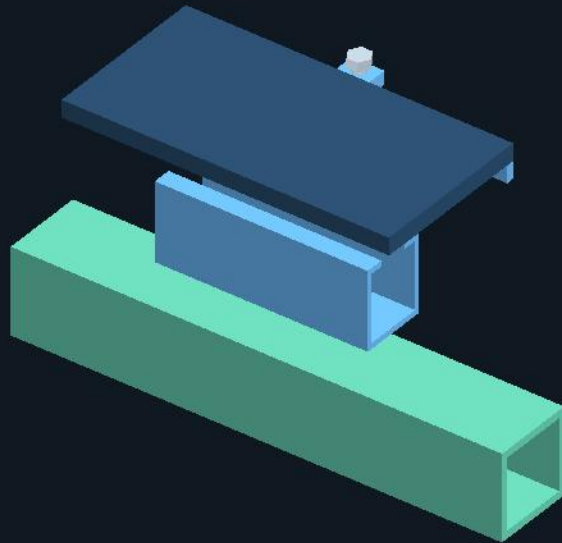


GUTTER → SIDE RAIL

- 10 COUPLING NUT**
threads onto the verified factory M8 × 1.25 stud
- 11 PIPE SLEEVE**
surrounds the coupler when assembled
sleeve bearing and exact height must be verified
- 12 TOP BOLT + FENDER WASHER**
bolt enters through channel floor from above
bolt length must avoid bottoming in the coupler

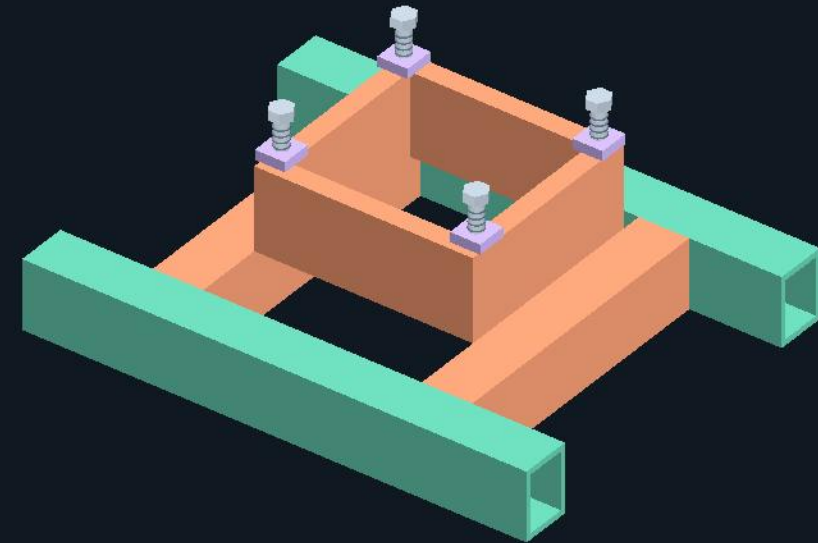
exploded view: in service, the sleeve and coupler nest.

13 / SOLAR — EXPLODED INTERFACE



clamp / approved mounting bolt → rail → bracket → crossbar
rail optional only if approved direct mounting geometry works.
rail-to-crossbar brackets need positive uplift restraint.

14 / A/C + FAN SUPPORT BAYS

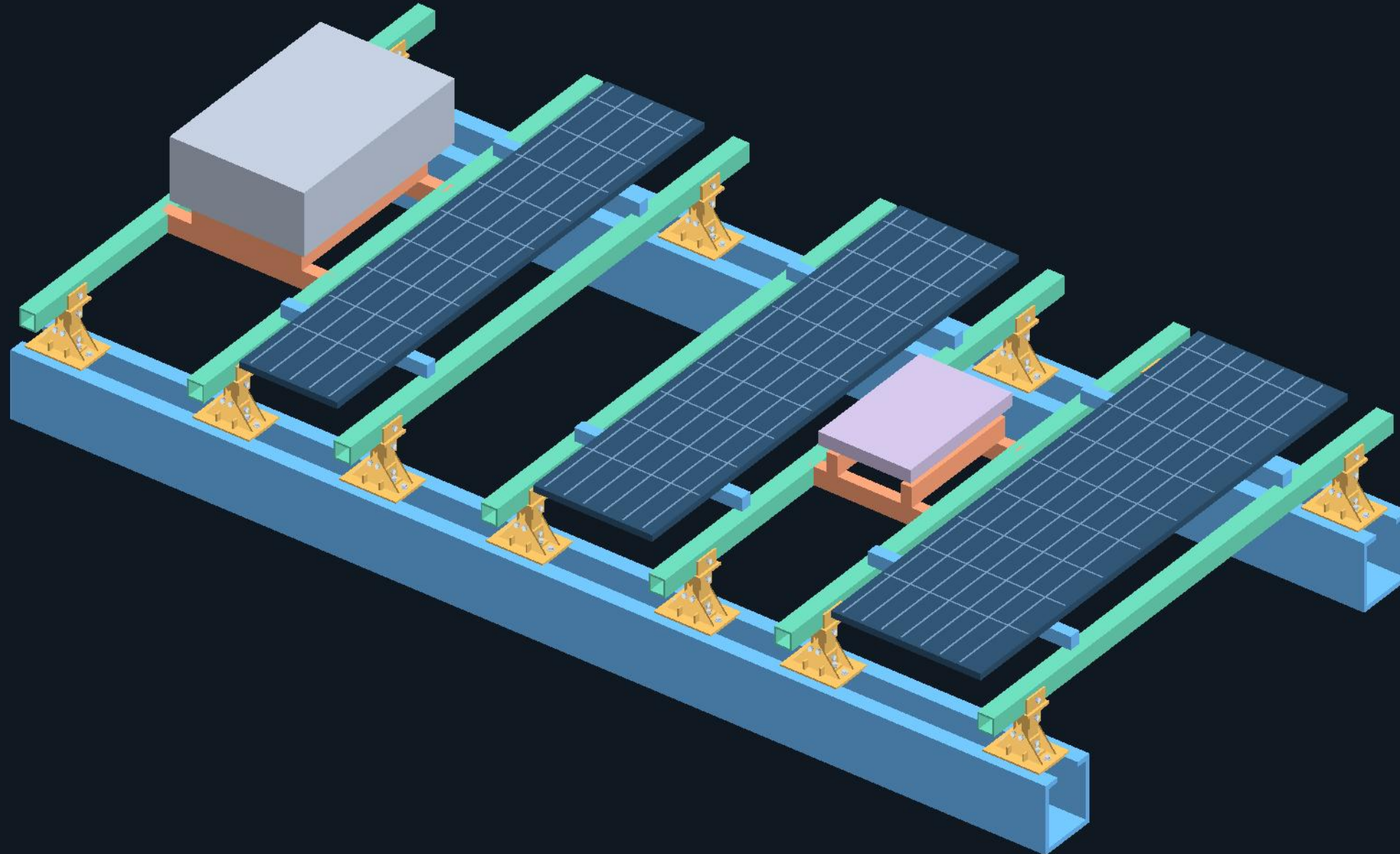


tube headers / trimmers + custom structural curb
connect each bearing and clamp point into crossbars.
gasket / flashing seals; structural curb carries load.

also required: specified retention, corrosion isolation, bonding, cable clamps, tube caps and optional fairing brackets.
factory stud capacity, all member/joint sizing, clearances and appliance compatibility remain unresolved. no bulk-order quantities.

05 / HOW THE SUPPORTS REPEAT AROUND THE ROOF

whole-rack assembly concept • not a measured layout • member counts and locations shown only to explain construction



01 SIDE RAILS
blue: run front-to-back

04 RISER ASSEMBLIES
post + plates + gussets
same assembly as sheet 01

08 CROSSBARS
green: span left-to-right

13 SOLAR
three panel positions
mounting rails hidden here

14 A/C + FAN
separate framed bays
orange: structural supports

front / A/C → J1 → J2 → fan → J3 / rear. no dimensional fit, spacing or appliance clearance is established here.

this view explains how the detailed support repeats; it is not a quantity schedule or an approved support pattern.
gutter stud locations are not automatically riser locations. side-rail span, pedestal locations and vehicle connections must be designed together.