

304 Whitson Avenue — Plumbing, HVAC and Electrical Critical Code Screen

Property: 304 Whitson Avenue, Swannanoa, NC 28778 **Jurisdiction:** Buncombe County, North Carolina **Review date:** 2026-08-20
Model: 304-whitson-central-piecewise-v5-trade-review.blend **Status:** **BLOCKED — NOT CODE READY — NOT FOR CONSTRUCTION**

1. Executive verdict

This model is useful for schematic trade coordination. It is not a permit set and it is not a construction model. It cannot be certified “up to code” in its present form.

Discipline	Verdict	Material reason
Plumbing	FAIL / REDESIGN REQUIRED	About 88.81 ft of modeled gravity sanitary route is exactly level. Pipe sizes, inverts, fixture-unit calculations, complete venting, cleanouts and risers are absent.
HVAC	BLOCKED / REDESIGN REQUIRED	No load, CFM, outdoor-air, static-pressure, equipment-selection or TAB data. Commercial kitchen hood, grease duct, makeup air and suppression are not construction-designed. Roof intake/exhaust separation is unresolved and one wet-exhaust condition is likely deficient.
Electrical	BLOCKED / REDESIGN REQUIRED	No load calculation, one-line, panel schedules, circuiting, feeder/conductor/OCPP sizing, fault-current analysis, grounding/bonding or working-clearance zones. Multiple modeled electrical solids physically cross plumbing and HVAC solids.
Cross-trade	FAIL COORDINATION	Mesh tests confirm MDP/water-heater and MDP/CW/HW conflicts, wet-exhaust/sanitary-stack conflict, service-route conflicts, and repeated light/HVAC terminal intersections.

Required gate: A North Carolina licensed design professional and licensed trade contractors must convert this schematic into sealed construction documents. Buncombe County/AHJ review and field verification remain mandatory.

2. Review basis and limits

Governing code basis

North Carolina’s official code page states that the 2018 NC Building, Existing Building, Plumbing, Mechanical and Fuel Gas codes remain current. It states that the 2020 NC Electrical Code became effective November 1, 2021.[1] The State Electrical Division lists the 2020 code as current and the later code as indefinitely delayed.[2] OSFM separately states that the 2018 code remains in effect until the delayed replacement receives an official effective date.[3]

This review therefore used:

- 2018 NC Building Code.
- 2018 NC Existing Building Code.
- 2018 NC Plumbing Code.
- 2018 NC Mechanical Code.
- 2018 NC Fuel Gas Code.
- 2020 NC Electrical Code.
- Buncombe County commercial plan-review requirements.

Code adoption must still be reconfirmed with Buncombe County at permit intake.

What this review did

- Inspected the live Blender geometry and route centerlines.
- Measured slopes, lengths, equipment envelopes and roof separations.
- Screened current geometry against primary NC code text.
- Ran conservative bounding-box checks and evaluated-mesh intersection tests across the three trades.
- Created five isolated, annotated views per trade.
- Embedded review status, major findings and 15 trade cameras in the v5 Blender file.

What this review did not do

- No field survey or destructive investigation.
- No approved occupancy classification or final occupant load.
- No equipment submittals, manufacturer instructions or listing data.
- No hydraulic, thermal, ventilation, electrical load or fault-current calculations.
- No verification of utility service capacities or existing underground conditions.
- No fire-resistance plan, smoke compartment plan, sprinkler/fire-alarm design or structural load review.
- No permit approval, inspection or professional seal.

Buncombe County's checklist requires plumbing risers and fixture/equipment information; mechanical dampers, access and equipment schedules; and electrical load calculations, panel schedules, device locations, bonding and grounding details.[5] Those required construction-document items are absent from the model.

3. Severity definitions

- **FAIL:** A measurable modeled condition conflicts with the screened requirement or geometry physically clashes.
- **LIKELY FAIL:** The modeled condition appears deficient, but exact opening faces, listing data or field dimensions are missing.
- **BLOCKED:** Required data is absent, so compliance cannot be determined.
- **COORDINATION RISK:** The geometry requires trade resolution before construction documents.
- **PASS:** Verified against available model and source evidence. No whole discipline achieved this status.

4. Plumbing critical analysis

P-01 — Gravity sanitary slope

Verdict: FAIL

Model evidence:

- Level sanitary route length: **27.0689 m / 88.81 ft.**
- Main route contains level segments of 11.1918 m and 1.7903 m.
- Restroom branch contains level segments of 4.4000 m, 6.7928 m and 2.8941 m.
- Only the final 2.1348 m / 7.00 ft segment has modeled fall, approximately **1.405%**.
- Pipe diameter is absent.

The NC Plumbing Code requires uniform alignment and slope. Table 704.1 requires 1/4 in/ft for pipe 2-1/2 in or smaller, 1/8 in/ft for 3–6 in pipe, and 1/16 in/ft for 8 in or larger pipe.[7]

Required correction: Replace the level schematic routes with a pipe-size-specific invert design. Show upstream/downstream inverts, developed lengths, flow arrows, cleanouts, building-sewer tie-in elevation and minimum cover. The 1.405% segment only screens above the 1.04% minimum if its diameter is 3–6 in; it would not satisfy the 2.08% minimum for 2-1/2 in or smaller pipe.

P-02 — Pipe sizing and risers

Verdict: BLOCKED

No pipe diameters, drainage fixture units, water-supply fixture units, pressure data, developed lengths, material specifications or riser diagrams are embedded. Buncombe County requires supply and waste/vent riser diagrams.[5]

Required correction: Issue sealed water and waste/vent plans and risers. Include service size, meter/backflow assembly, velocity/pressure basis, fixture units, branch sizes, stack sizes, vent sizes, cleanouts, valves, supports, insulation and test requirements.

P-03 — Fixture count and accessible plumbing

Verdict: BLOCKED

The model shows restroom fixtures and provisional Floor 2 fixture placeholders, but there is no approved occupancy classification, occupant load, sex distribution, accessible-fixture layout, service sink determination or drinking-water determination. NC Plumbing Code Table 403.1 bases minimum fixtures on actual use and occupant load.[6]

Required correction: Fix the use/occupancy plan first. Then calculate required water closets, lavatories, service sinks and drinking-water provisions. Coordinate accessible clearances, mounting heights and routes with the architect.

P-04 — Vents and cleanouts

Verdict: BLOCKED

A wet-vent object and roof termination are modeled, but vent sizing, connection rules, developed lengths, trap-arm lengths and all required cleanouts are not documented. The code requires drainage cleanouts under Section 708.[7]

Required correction: Complete the vent system and cleanout schedule. Show accessible cleanouts at the building drain, changes of direction, stacks and required intervals. Keep access panels outside rated or inaccessible construction.

P-05 — Commercial kitchen and grease waste

Verdict: LIKELY FAIL / BLOCKED

The kitchen and prep sinks only exist as schematic placeholders. No final appliance/fixture schedule exists. The modeled grease-interceptor envelope is indoors and has no manufacturer, type, capacity, flow basis, venting, access, elevation or utility/health-department approval. NC Plumbing Code Section 1003 requires grease-laden fixtures and equipment to discharge through a suitable interceptor and requires sizing/location based on anticipated use, manufacturer instructions and local utility/health requirements.[8]

MSD's food-service application requires engineered kitchen plans, a site plan, interceptor manufacturer details and sizing calculations.[19] The sewer-use ordinance text adopted by MSD in 2020 requires a new food-service establishment to use an outdoor grease interceptor approved in writing before installation. It allows an indoor grease trap only where conditions prohibit outdoor installation and MSD approves the design and location in writing.[20] Current applicability must be confirmed directly with MSD during allocation and plan review.

Required correction: Finalize the food-service equipment schedule. Identify every grease-laden fixture. Separate sanitary and grease waste. Submit the MSD application. Default to an outdoor interceptor unless MSD approves an indoor exception in writing. Show sizing calculations, inlet/outlet inverts, venting, sampling/access, maintenance clearance and approved location.

P-06 — Potable water, backflow and water heater

Verdict: BLOCKED

The model has schematic CW/HW lines and a water heater. It does not show peak-demand sizing, available pressure, backflow selection, thermal expansion control, temperature control, recirculation, T&P relief valve or relief discharge route. NC Plumbing Code requires the water distribution system to meet peak demand and requires protection against contamination from cross-connections.[14] Storage water heaters require approved pressure and temperature relief protection and compliant discharge piping.[15]

Required correction: Provide pressure/flow data, pipe sizing, backflow matrix, air gaps, mixing/temperature control, expansion control and a visible gravity T&P discharge route to an approved termination.

P-07 — Fuel gas

Verdict: BLOCKED

A gas route is modeled, but no appliance BTUH schedule, pressure, material, sizing method, regulator, shutoff, sediment trap, bonding or combustion-air data exists. NC Fuel Gas Code requires piping to be sized for all intended outlets and requires visual inspection and pressure testing before acceptance.[17]

Required correction: Size gas piping from the final equipment schedule and utility pressure. Show regulators, shutoffs, unions, sediment traps, appliance connectors, bonding and test pressure/duration.

P-08 — Plumbing coordination defects

Verdict: FAIL COORDINATION

Confirmed model conflicts include:

- MDP intersects the water-heater solid.
- MDP and MDP door intersect CW and HW solids.
- Wet exhaust riser intersects the sanitary stack.
- Electrical service route intersects water-service and sanitary-route solids.

These are direct mesh intersections, not only visual overlaps. Resolve locations and clearances before trade drawings.

5. HVAC critical analysis

H-01 — Heating/cooling loads and ventilation

Verdict: BLOCKED

No room-by-room heating/cooling load, equipment capacity, diversity, envelope basis, outdoor-air calculation, exhaust schedule, pressure relationship, static-pressure calculation or fan-selection point is embedded. NC Mechanical Code Section 403 requires minimum outdoor-air capacity and approved balancing.[9]

Required correction: Complete room-by-room load calculations and an occupancy-based ventilation schedule. Tag every duct, grille, diffuser and terminal with size and design CFM. Show return/transfer paths and pressure relationships.

H-02 — Commercial kitchen hood capacity

Verdict: BLOCKED

The modeled hood is approximately **3.3723 m / 11.06 ft** long. Appliance duty is absent. Using the NC Mechanical Code wall-canopy screening rates, an 11.06 ft hood could require approximately:

- Light duty: **2,213 CFM**.
- Medium duty: **3,319 CFM**.
- Heavy duty: **4,426 CFM**.
- Extra-heavy duty: **6,085 CFM**.

These are screening values only. They are not a design because appliance duty, hood listing, overhang, mounting height and capture test data are unknown. Commercial kitchen hoods, grease ducts, makeup air and suppression must meet the applicable Chapter 5 requirements.[10]

Required correction: Finalize cooking appliances first. Select a listed hood. Calculate exhaust from the applicable listing/code path. Document overhang, duty class, mounting height, capture/containment and required clearances.

H-03 — Grease duct and shaft

Verdict: FAIL / BLOCKED

The model shows a hood, grease duct/riser, shaft and roof fan. Live v5 geometry also places MEP_H_HOOD_RISER, MEP_H_MUA_RISER and MEP_P_VENT_HOOD inside the modeled HOOD shaft envelope. The NC Mechanical Code requires a grease-duct enclosure to serve a single grease duct and prohibits other ducts, piping or wiring in that enclosure.[10] This shared-enclosure condition is a direct modeled conflict.

The model also does not show duct material/gauge, continuously welded liquid-tight construction, slope/reservoir, cleanout doors, enclosure rating, shaft clearances, firestopping or access. The code requires grease-duct cleanout spacing and specified clearances; it also requires compliant makeup air and design outdoor-air balance information.[10]

Required correction: Reserve a grease-only enclosure or use a listed grease-duct enclosure assembly. Relocate the MUA riser and plumbing vent outside that enclosure. Issue grease-duct fabrication details, cleanout locations, access panels, clearances, roof curb/fan connection, firestops and acceptance-test requirements.

H-04 — Makeup air, interlocks and fire suppression

Verdict: BLOCKED

No makeup-air CFM, tempering capacity, delivery method, air-balance schedule or control sequence exists. No suppression system or exhaust/MUA/fuel/power interlock sequence is modeled. The code requires makeup air during commercial kitchen exhaust operation, design air-balance documentation and automatic suppression where a Type I hood is required.[10]

Required correction: Select the MUA unit from the final exhaust volume. Show tempered air delivery, room pressure target and interlocked control sequence. Coordinate suppression shutdown, gas valve, appliance power and fan proof.

H-05 — Roof intake/exhaust separation

Verdict: LIKELY FAIL / BORDERLINE

Model measurements:

1. Hood fan cap to RTU intake louver:

- Center-to-center horizontal distance: **3.1457 m / 10.32 ft**. - Exhaust center only **0.2000 m / 0.66 ft** above intake center. - The nominal center distance is only about 4 in beyond 10 ft. Code measures actual openings, not object centers. Exact edge geometry, discharge direction and equipment submittals are absent.

2. Wet exhaust fan to MUA intake:

- Center-to-center horizontal distance: **1.0702 m / 3.51 ft**. - Closest modeled bounding-envelope gap: approximately **0.6078 m / 1.99 ft**. - Exhaust center is **0.4350 m / 1.43 ft below** the intake center.

NC Mechanical Code Chapter 5 regulates exhaust outlet location relative to air intakes and building openings, with stricter provisions for grease exhaust.[10]

Required correction: Place actual intake and outlet faces on the roof plan with dimensions and elevations. Reorient or relocate equipment as needed. Do not accept the center-to-center measurements as clearance proof.

H-06 — Access, service and condensate

Verdict: BLOCKED

No compliant service work zones, replacement paths, roof access, service receptacles/lighting, condensate routes or secondary drain/overflow protection are documented. NC Mechanical Code requires HVAC components to remain accessible and requires condensate drainage for applicable equipment.[13]

Required correction: Show manufacturer service clearances, replacement path, roof access, curb/flashing, service receptacle/light, condensate primary/secondary drainage and freeze protection.

H-07 — Rated penetrations and dampers

Verdict: BLOCKED

Rated walls, floors, corridors and shafts are not fixed. Fire, smoke and combination damper locations are absent. NC Mechanical Code requires protected duct penetrations and requires required dampers to be shown and identified on the plans.[16]

Required correction: Coordinate final rated assemblies with the architect/fire protection designer. Add all damper types, access panels, sleeves and listed firestop systems.

H-08 — HVAC coordination defects

Verdict: FAIL COORDINATION

Confirmed model conflicts include:

- Wet exhaust riser through sanitary stack.
- Corrected electrical service route through main HVAC, return and shaft solids.
- Multiple Floor 1 and Floor 2 light solids crossing HVAC terminal/duct solids.

Some light/terminal overlaps may represent intended common ceiling locations, but the current solids occupy the same space. Resolve with a reflected-ceiling coordination plan and exact mounting elevations.

6. Electrical critical analysis

E-01 — Service, load and fault-current design

Verdict: BLOCKED

The model shows a meter, MDP, kitchen panel, Floor 2 panel, IT/low-voltage placeholder and an approximately **30.2911 m / 99.38 ft** service/feeder route. It does not include utility service characteristics, available fault current, connected/demand load, service rating, feeder sizes, conductor material, OCPD, voltage, phase, AIC/SCCR or voltage-drop basis. Buncombe County requires electrical load calculations and panel schedules.[5]

Required correction: Obtain utility service and available-fault-current data. Issue a sealed one-line, service/load calculation, fault-current calculation, equipment ratings and feeder schedule.

E-02 — One-line, panels and circuiting

Verdict: BLOCKED

No one-line, panel schedules, circuit numbers, homeruns, wiring methods, conductor sizes, neutral/ground sizes, OCPD ratings, disconnects or equipment connections are embedded.

Required correction: Circuit every receptacle, light, mechanical unit, plumbing equipment, commercial-kitchen appliance and life-safety load. Provide panel schedules, feeder/conductor/OCPD data, raceway fill/derating where applicable and disconnect locations.

E-03 — Working and dedicated space

Verdict: FAIL COORDINATION / BLOCKED CODE CHECK

The model does not reserve working or dedicated equipment space. The MDP physically intersects the water heater and CW/HW solids. NC OSFM states that access and working space must be maintained around electrical equipment and specifically identifies service equipment, switchboards, switchgear, panelboards and motor-control centers as equipment subject to NEC 110.26(A).[18]

Required correction: Relocate the MDP or plumbing. Draw required width, depth, height, dedicated equipment space and access/egress zones at the meter, MDP and all panels. Coordinate final voltage and condition-dependent dimensions from NEC Table 110.26(A)(1).

E-04 — Commercial kitchen GFCI and equipment power

Verdict: BLOCKED

The final commercial-kitchen equipment schedule is absent. Circuits, disconnects, receptacle locations, wet/cleaning exposure, GFCI protection and appliance ratings are not shown. NC OSFM's 2020 code interpretation states that commercial-kitchen receptacles within the rule's voltage/ampereage scope require GFCI protection for personnel.[11]

Required correction: Finalize the kitchen equipment list. Provide dedicated circuits, disconnects, GFCI protection, receptacle types/locations, cleaning/wet-location ratings and panel capacity.

E-05 — Hood, suppression and mechanical interlocks

Verdict: BLOCKED

No electrical sequence exists for hood fan, MUA, appliance power, gas valve, fire suppression, fan proof or alarm monitoring.

Required correction: Provide a cause-and-effect sequence and wiring diagram. Coordinate shunt-trip or contactor functions only where required by the listed suppression/hood/appliance package.

E-06 — Grounding, bonding and surge protection

Verdict: BLOCKED

No grounding-electrode system, equipment bonding, gas-piping bond, water-piping bond, separately derived system detail, surge protection or lightning-protection interface is documented.

Required correction: Provide grounding/bonding details and field verification of existing electrodes and metallic piping. Coordinate service surge protection and any separately derived systems from final equipment selections.

E-07 — Life-safety electrical

Verdict: BLOCKED

The model does not establish exit signs, emergency egress illumination, emergency source/branching, fire-alarm devices, notification coverage or monitoring interfaces. These depend on final occupancy, occupant load, egress and fire-protection design.

Required correction: Complete the architectural life-safety plan first. Then provide the required emergency/egress lighting and fire-alarm electrical scope.

E-08 — Lighting controls and energy-code scope

Verdict: BLOCKED

The model shows lighting solids but no control zones, occupant sensors, time-switch controls, manual reduction, daylight controls, lighting-power calculation, control narrative or functional test plan. The 2018 NC Energy Conservation Code makes commercial lighting controls mandatory and requires occupant-sensor control in spaces including conference/meeting/multipurpose rooms, private offices, restrooms, storage rooms over 100 square feet, computer server rooms and mechanical/electrical rooms.[21]

Required correction: Issue the selected energy-code compliance path and lighting-control plan. Show control zones, occupant sensors, time-switch/manual-reduction controls, daylight controls where applicable, emergency-lighting exceptions, lighting power, sequence of operation and functional testing.

E-09 — Electrical coordination defects

Verdict: FAIL COORDINATION

Confirmed model conflicts include:

- MDP with water heater.
- MDP and panel door with CW/HW piping.
- Electrical service route with plumbing service/sanitary and HVAC main/return/shaft solids.
- Repeated lighting/HVAC terminal and duct intersections.

Resolve equipment rooms, shaft pathways and reflected ceilings before issuing trade drawings.

7. Cross-trade stop-work list

Do not release construction from this model until all items below are closed:

1. Regrade the sanitary system and issue an invert schedule.
2. Relocate either the MDP or water heater/piping and reserve code working space.
3. Separate the wet exhaust from the sanitary stack.
4. Reroute the electrical service path away from plumbing and HVAC solids.
5. Resolve roof exhaust/intake locations from actual equipment openings.
6. Finalize the commercial-kitchen equipment schedule.
7. Complete the Type I hood, grease duct, MUA and suppression design. Make the grease enclosure grease-duct-only.
8. Fix occupancy/use and occupant load.
9. Issue sealed plumbing risers, HVAC calculations/schedules and electrical one-line/load/panel documents.
10. Complete rated-penetration, firestop, damper, life-safety and structural coordination.
11. Run a final clash check against the construction-level models.
12. Obtain licensed-design, contractor, utility and AHJ approval.

8. Required subcontractor deliverables

Plumbing contractor / plumbing designer

- Field survey of water, sewer and gas services.

- Fixture/equipment schedule and final rough-in matrix.
- Water sizing and pressure calculation.
- Drainage fixture-unit and vent sizing.
- Supply and waste/vent risers.
- Pipe sizes, slopes, inverts and cleanouts.
- Grease-interceptor selection and approval.
- MSD food-service application, outdoor-interceptor layout or written indoor exception, manufacturer details and sizing calculations.
- Backflow, air-gap, water-heater relief and expansion details.
- Gas sizing, regulators, valves and test plan.
- Penetration, support, insulation, test and inspection details.

Mechanical contractor / mechanical designer

- Room-by-room load and ventilation calculations.
- Equipment selection and schedules.
- Duct sizes, CFM, static pressure and terminal schedule.
- Outdoor-air and exhaust air-balance schedule.
- Hood/appliance duty determination and exhaust calculation.
- Grease-duct fabrication, cleanout, enclosure and firestop details.
- MUA selection, tempering and controls.
- Suppression and mechanical/electrical interlock sequence.
- Roof layout with opening-to-opening clearances and service access.
- Condensate, damper, TAB and commissioning requirements.

Electrical contractor / electrical designer

- Utility/service verification and available fault current.
- Connected/demand load calculation and sealed one-line.
- Panel and feeder schedules.
- Circuiting, homeruns, conductors, raceways, OCPD and disconnects.
- AIC/SCCR and coordination data.
- Grounding, bonding and surge protection.
- NEC working/dedicated space zones.
- Kitchen GFCI and final equipment connections.
- Lighting-power and lighting-control compliance, zoning, sequences and functional testing.
- Hood/MUA/suppression/gas-valve interlocks.
- Emergency lighting, exit signs and fire-alarm coordination.
- Labeling, torque, acceptance-test and closeout requirements.

9. Issued review artifacts

- **Editable review model:** 304-whitson-central-piecewise-v5-trade-review.blend
- **Plumbing sheets:** P-01 through P-05.
- **HVAC sheets:** H-01 through H-05.
- **Electrical sheets:** E-01 through E-05.

- **Geometry audit:** model-geometry-audit.json.
- **Conservative clash screen:** cross-trade-aabb-clash-screen.json.
- **Mesh-level clash results:** confirmed-cross-trade-clashes.json.
- **Roof/mechanical measurements:** embedded in the v5 scene metadata and this report.

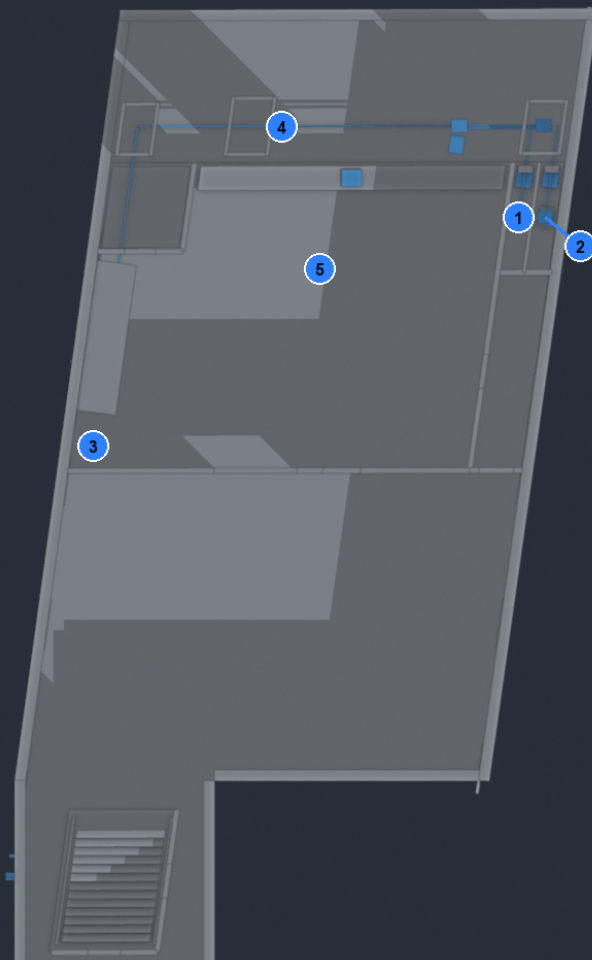
10. Final disposition

Current model disposition: BLOCKED — coordination model only.

The isolated views are suitable for subcontractor scope review and design kickoff. They are not suitable for bids that assume complete quantities, fabrication, installation or code compliance. The trade contractors should return marked-up routes, equipment data, calculations and exclusions. A licensed designer should then issue sealed permit/construction documents and run a final coordinated clash review.

Sources

[1] <https://www.ncosfm.gov/codes/codes-current-and-past> — NC OSFM — Codes Current and Past [2] <https://www.ncosfm.gov/codes/state-electrical-division/state-electrical-code-and-interpretations> — NC OSFM — State Electrical Code and Interpretations [3] <https://www.ncosfm.gov/news/press-releases/2025/04/07/north-carolina-delays-implementation-2024-state-building-code> — NC OSFM — 2024 Code Implementation Delayed [5] <https://www.buncombecounty.org/common/permits/Checklist%20For%20Commercial%20Plan%20Review.pdf> — Buncombe County Commercial Plan Review Checklist [6] <https://codes.iccsafe.org/content/NCPC2018/chapter-4-fixtures-faucets-and-fixture-fittings> — 2018 NC Plumbing Code — Chapter 4 [7] <https://codes.iccsafe.org/content/NCPC2018/chapter-7-sanitary-drainage> — 2018 NC Plumbing Code — Chapter 7 [8] <https://codes.iccsafe.org/content/NCPC2018/chapter-10-traps-interceptors-and-separators> — 2018 NC Plumbing Code — Chapter 10 [9] <https://codes.iccsafe.org/content/NCMC2018/chapter-4-ventilation> — 2018 NC Mechanical Code — Chapter 4 Ventilation [10] <https://codes.iccsafe.org/content/NCMC2018/chapter-5-exhaust-systems> — 2018 NC Mechanical Code — Chapter 5 Exhaust Systems [11] <https://www.ncosfm.gov/electrical/2108b-general-rules-gfci-protection-receptacles-non-dwelling-applications/open> — NC OSFM — GFCI in Commercial Kitchens [13] <https://codes.iccsafe.org/content/NCMC2018/chapter-3-general-regulations> — 2018 NC Mechanical Code — Chapter 3 General Regulations [14] <https://codes.iccsafe.org/content/NCPC2018/chapter-6-water-supply-and-distribution> — 2018 NC Plumbing Code — Chapter 6 Water Supply [15] <https://codes.iccsafe.org/content/NCPC2018/chapter-5-water-heaters> — 2018 NC Plumbing Code — Chapter 5 Water Heaters [16] <https://codes.iccsafe.org/content/NCMC2018/chapter-6-duct-systems> — 2018 NC Mechanical Code — Chapter 6 Duct Systems [17] <https://codes.iccsafe.org/content/NCFGC2018/chapter-4-gas-piping-installations> — 2018 NC Fuel Gas Code — Chapter 4 Gas Piping [18] <https://www.ncosfm.gov/electrical/11026-working-space-and-clearances/open> — NC OSFM Interpretation — NEC 110.26 Working Space and Clearances [19] <https://www.msdbc.org/documents/forms/development/5-Food%20Service%20Application%20V4.pdf> — MSD Food Service Establishment Application [20] <https://msdbc.org/documents/boardminutes/2020/052020.pdf> — MSD 2020 Sewer Use Ordinance Adoption Record [21] <https://codes.iccsafe.org/content/NCECC2018P3/chapter-4-ce-commercial-energy-efficiency> — 2018 NC Energy Conservation Code — Commercial Energy Efficiency



P-01 FLOOR 1 PLUMBING SCOPE PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

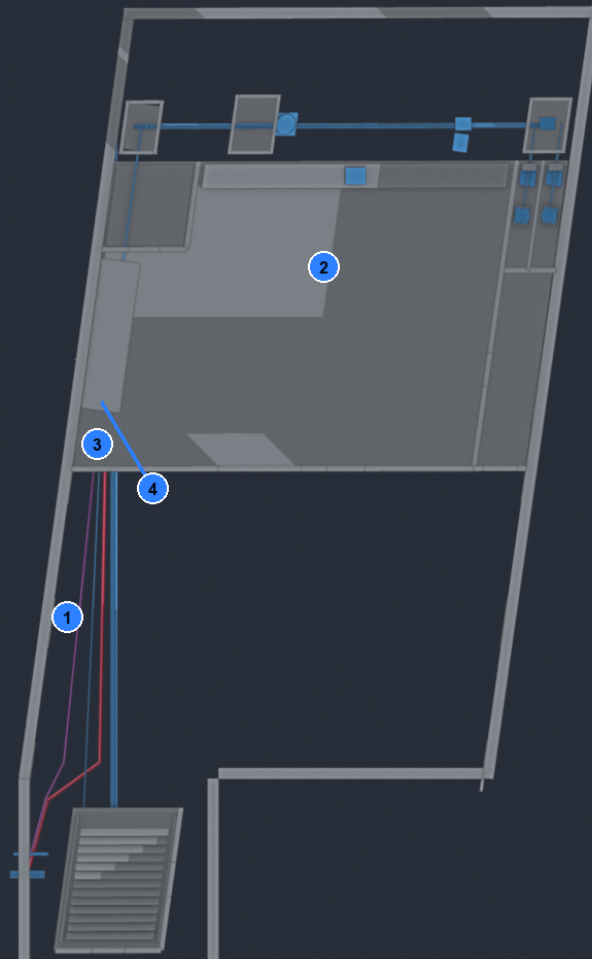
1. RR-A fixtures
2. RR-B fixtures
3. Grease interceptor
4. Water heater
5. Level sanitary branch

CRITICAL FINDINGS

- MODEL DEFECT: long gravity sanitary runs are 0.0% slope.
- Pipe sizes, inverts, fixture units, vents and cleanouts are absent.

CONTRACTOR / DESIGNER ACTIONS

- Confirm approved use, occupant load, fixture count, sex distribution and accessible layout.
- Add service/mop sink and drinking-water provisions if required by final occupancy.
- Field locate every retained fixture and issue a tagged fixture/equipment schedule.
- Provide sealed water, waste and vent plans plus risers.



P-02 UNDER-SLAB SANITARY / GREASE PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

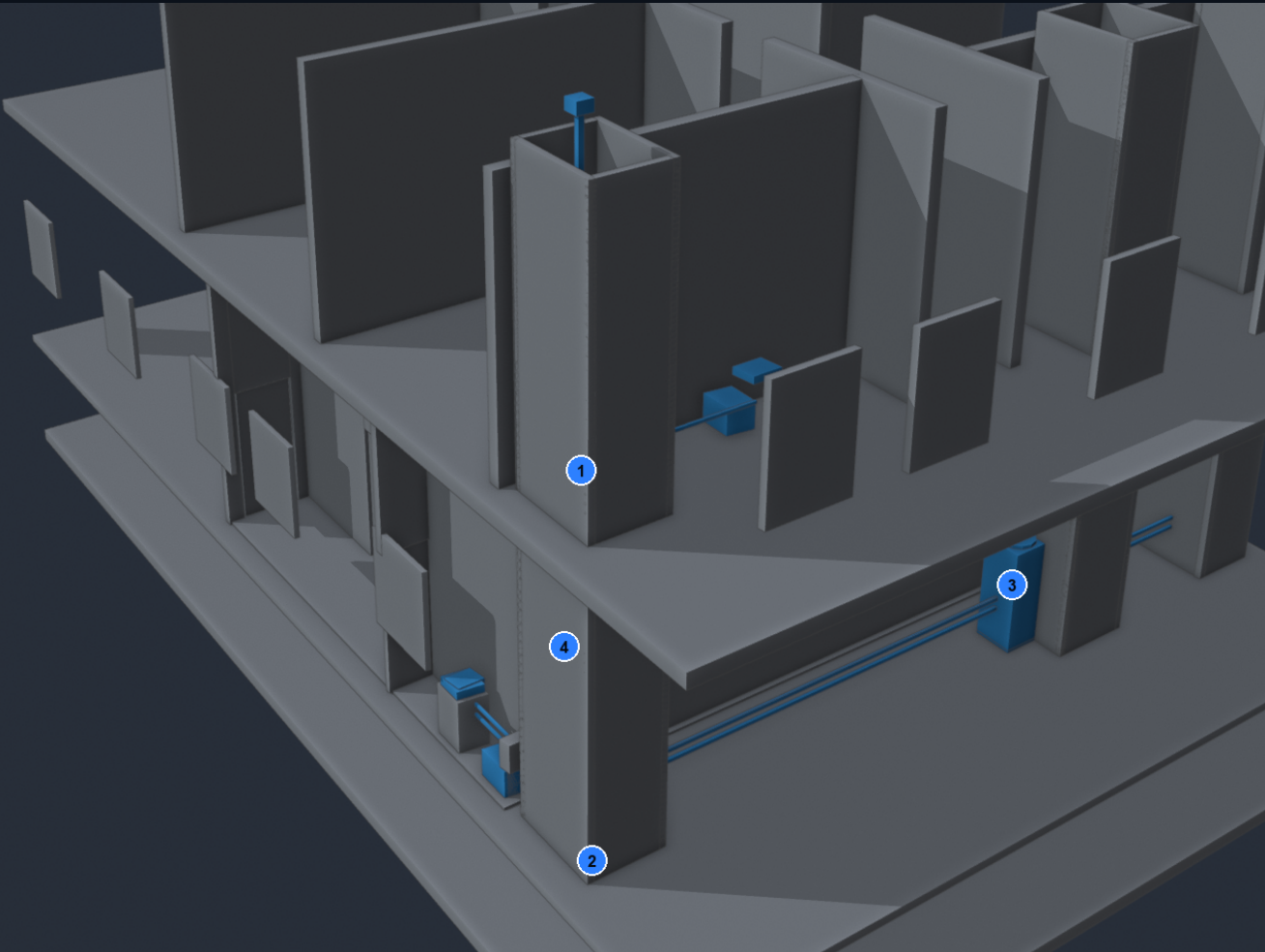
1. Level sanitary main
2. Level restroom branch
3. GI - size TBD
4. Grease waste route

CRITICAL FINDINGS

- MODEL DEFECT: long gravity sanitary runs are 0.0% slope.
- Pipe sizes, inverts, fixture units, vents and cleanouts are absent.

CONTRACTOR / DESIGNER ACTIONS

- REJECT modeled level gravity runs. Regrade by pipe size: ≤ 2.5 in: 1/4 in/ft; 3-6 in: 1/8 in/ft; ≥ 8 in: 1/16 in/ft.
- Show pipe sizes, inverts, flow arrows, developed lengths, cleanouts and exterior tie-in.
- Separate grease-laden waste and size the interceptor with utility / health department input.
- Field verify slab, footing, trench and downstream sewer elevations before routing.



P-03 WET SHAFT / RISER COORDINATION

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

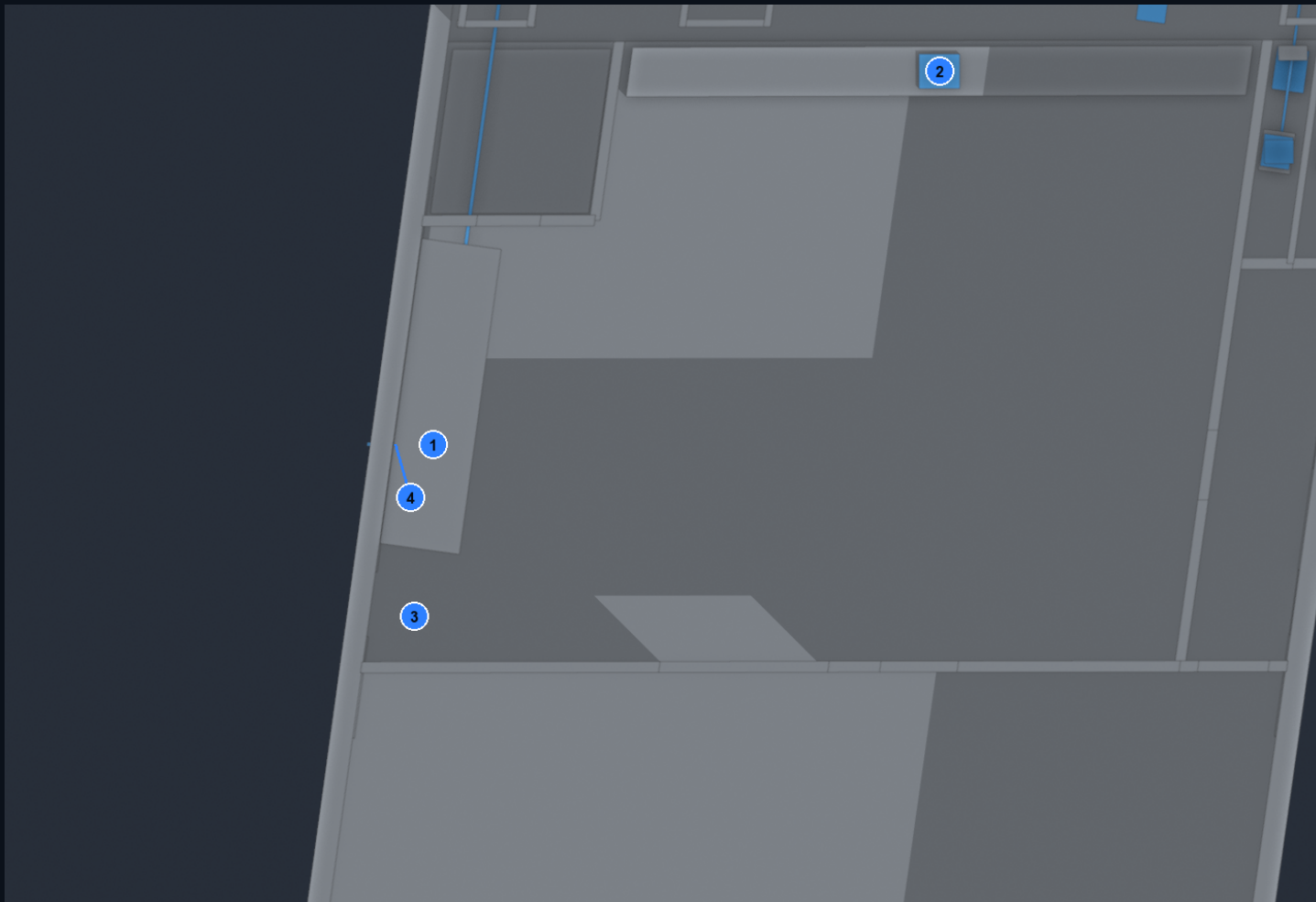
1. Wet vent
2. Wet shaft
3. WH / service area
4. F2 fixture placeholder

CRITICAL FINDINGS

- MODEL DEFECT: long gravity sanitary runs are 0.0% slope.
- Pipe sizes, inverts, fixture units, vents and cleanouts are absent.

CONTRACTOR / DESIGNER ACTIONS

- Size soil, waste and vent stacks from fixture units; show vent termination.
- Detail sleeves, supports and rated firestopping at every floor / shaft penetration.
- Provide valve and cleanout access without blocking required clearances.
- Confirm all Floor 2 fixture placeholders and exact rough-in elevations.



P-04 KITCHEN PLUMBING ROUGH-IN PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

1. Kitchen sink - placeholder
2. Prep sink - placeholder
3. Grease interceptor
4. Gas route - schematic

CRITICAL FINDINGS

- MODEL DEFECT: long gravity sanitary runs are 0.0% slope.
- Pipe sizes, inverts, fixture units, vents and cleanouts are absent.

CONTRACTOR / DESIGNER ACTIONS

- Final commercial-kitchen equipment and sink schedule is missing; current sinks are placeholders.
- Size CW, HW, gas and waste from final manufacturer loads and fixture units.
- Submit MSD food-service review; use an outdoor interceptor unless MSD approves an indoor exception in writing.
- Specify backflow / air gaps, WH T&P discharge and thermal expansion control.



P-05 PLUMBING SYSTEM COORDINATION ISO

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

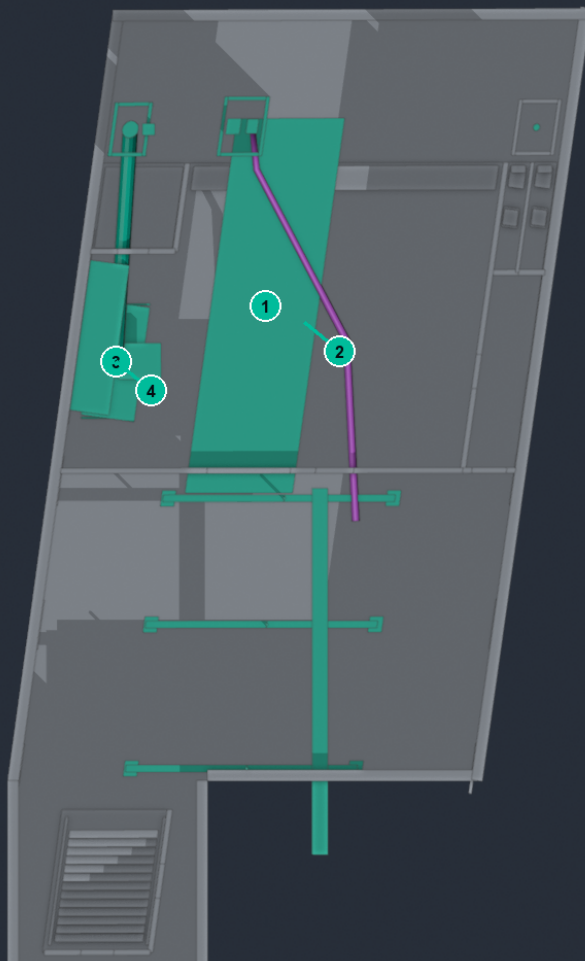
1. Cold water service
2. Sanitary main
3. Restroom branch
4. Vent termination
5. Water heater

CRITICAL FINDINGS

- MODEL DEFECT: long gravity sanitary runs are 0.0% slope.
- Pipe sizes, inverts, fixture units, vents and cleanouts are absent.

CONTRACTOR / DESIGNER ACTIONS

- Field verify water, sewer and gas service sizes, elevations, meters and shutoffs.
- Issue complete supply and waste/vent risers with sizes, slopes and insulation.
- Provide test, disinfection, flushing, pressure-test and inspection requirements.
- Coordinate penetrations, access, supports and firestopping with structure / architecture.



H-01 FLOOR 1 HVAC PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

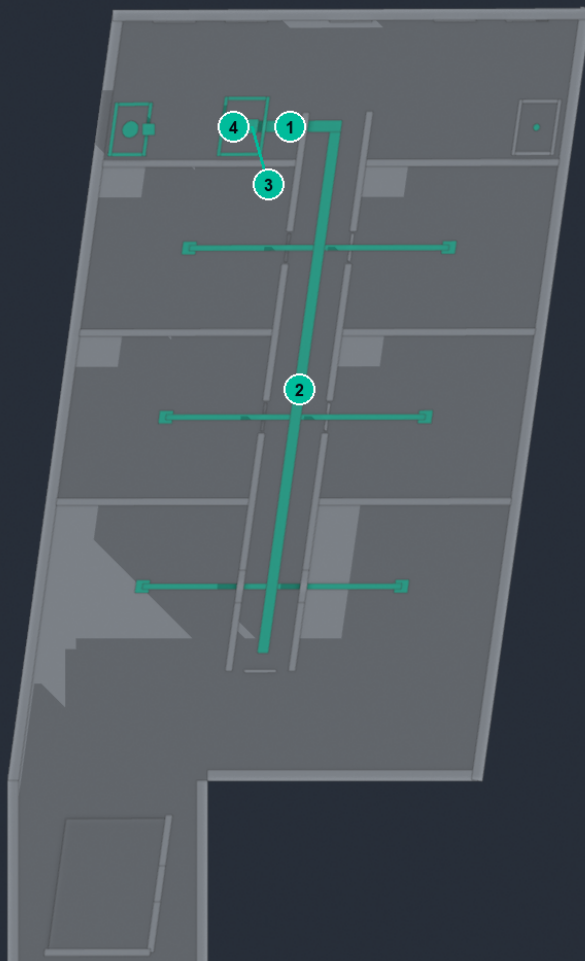
1. F1 supply main
2. Corrected return route
3. Kitchen hood
4. Grease exhaust riser

CRITICAL FINDINGS

- No loads, CFM, static pressure, outdoor-air or TAB data.
- Kitchen grease exhaust / MUA / suppression is not construction-designed.

CONTRACTOR / DESIGNER ACTIONS

- Perform room-by-room heating/cooling load and occupancy-based outdoor-air calculations.
- Tag every duct, grille and terminal with size and design CFM; show return-air path.
- Coordinate kitchen hood, restroom exhaust and pressure balance with supply / return.
- Show controls, thermostat zones, condensate, supports and service access.



H-02 FLOOR 2 HVAC PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

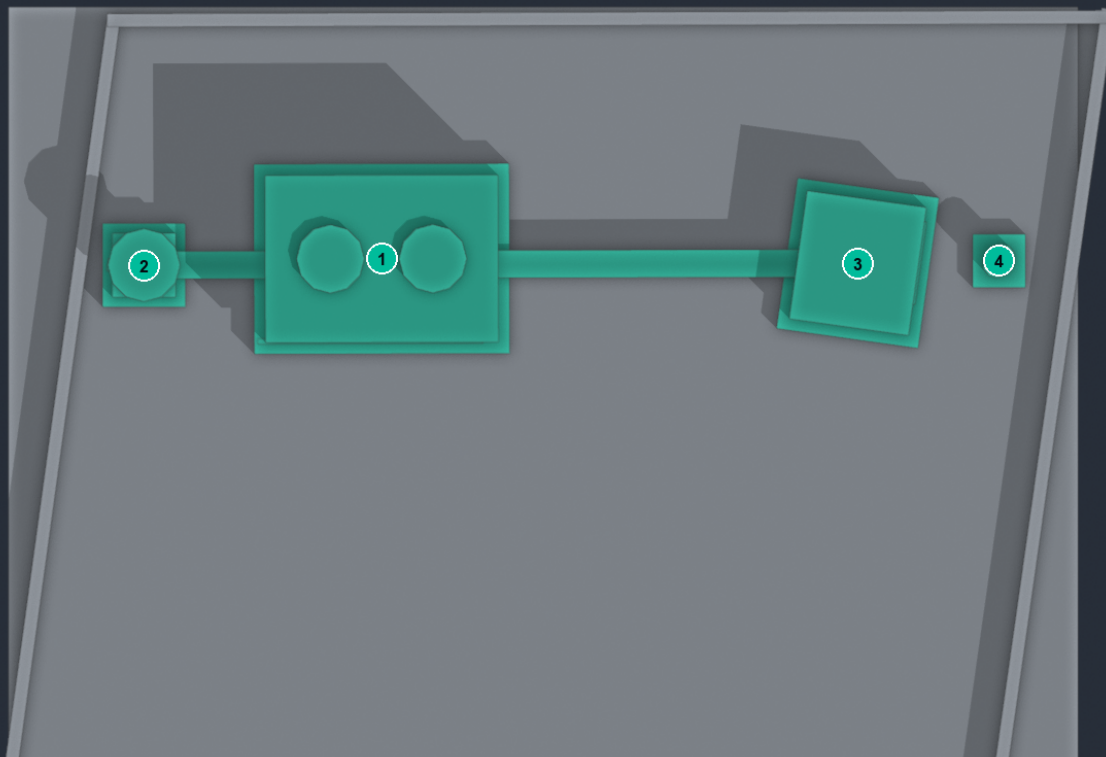
1. F2 supply feed
2. F2 hall trunk
3. Return shaft
4. Supply shaft

CRITICAL FINDINGS

- No loads, CFM, static pressure, outdoor-air or TAB data.
- Kitchen grease exhaust / MUA / suppression is not construction-designed.

CONTRACTOR / DESIGNER ACTIONS

- Calculate office, conference and podcast-room outdoor air and zone loads.
- Tag duct sizes, CFM, balancing devices and transfer / return paths.
- Resolve acoustic criteria for podcast rooms without defeating ventilation.
- Show fire / smoke damper locations after rated assemblies are fixed.



H-03 ROOF MECHANICAL PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

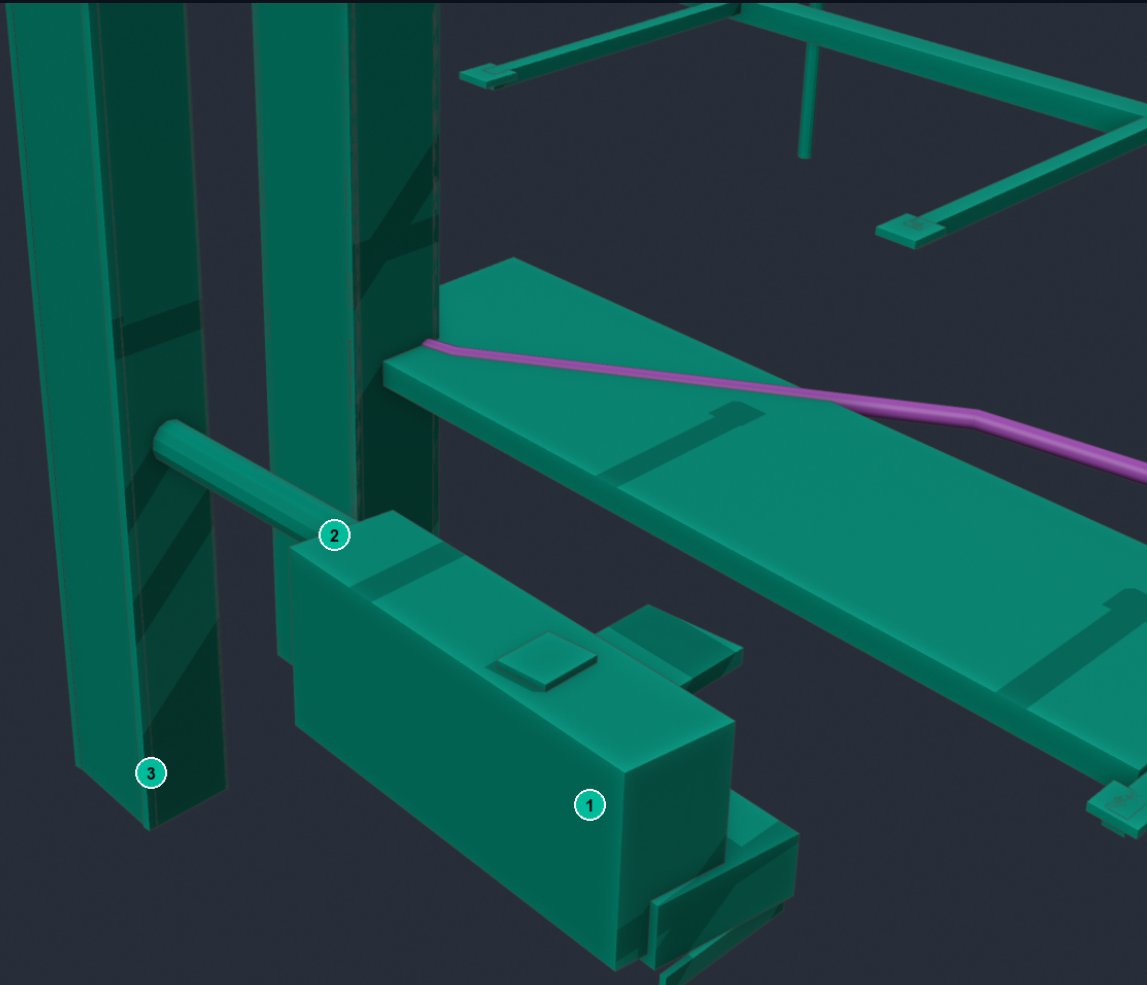
1. RTU
2. Type I exhaust fan
3. Makeup air unit
4. Wet exhaust fan

CRITICAL FINDINGS

- No loads, CFM, static pressure, outdoor-air or TAB data.
- Kitchen grease exhaust / MUA / suppression is not construction-designed.

CONTRACTOR / DESIGNER ACTIONS

- Field verify curbs, roof structure, flashing, service path and equipment clearances.
- Resolve exact exhaust-outlet to intake / opening / property-line distances.
- MUA and wet-fan envelopes are only ~0.61 m apart; verify actual intake/discharge faces.
- Provide equipment schedule, disconnects, condensate and roof access details.



H-04 HOOD / GREASE DUCT / SHAFT ISO

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

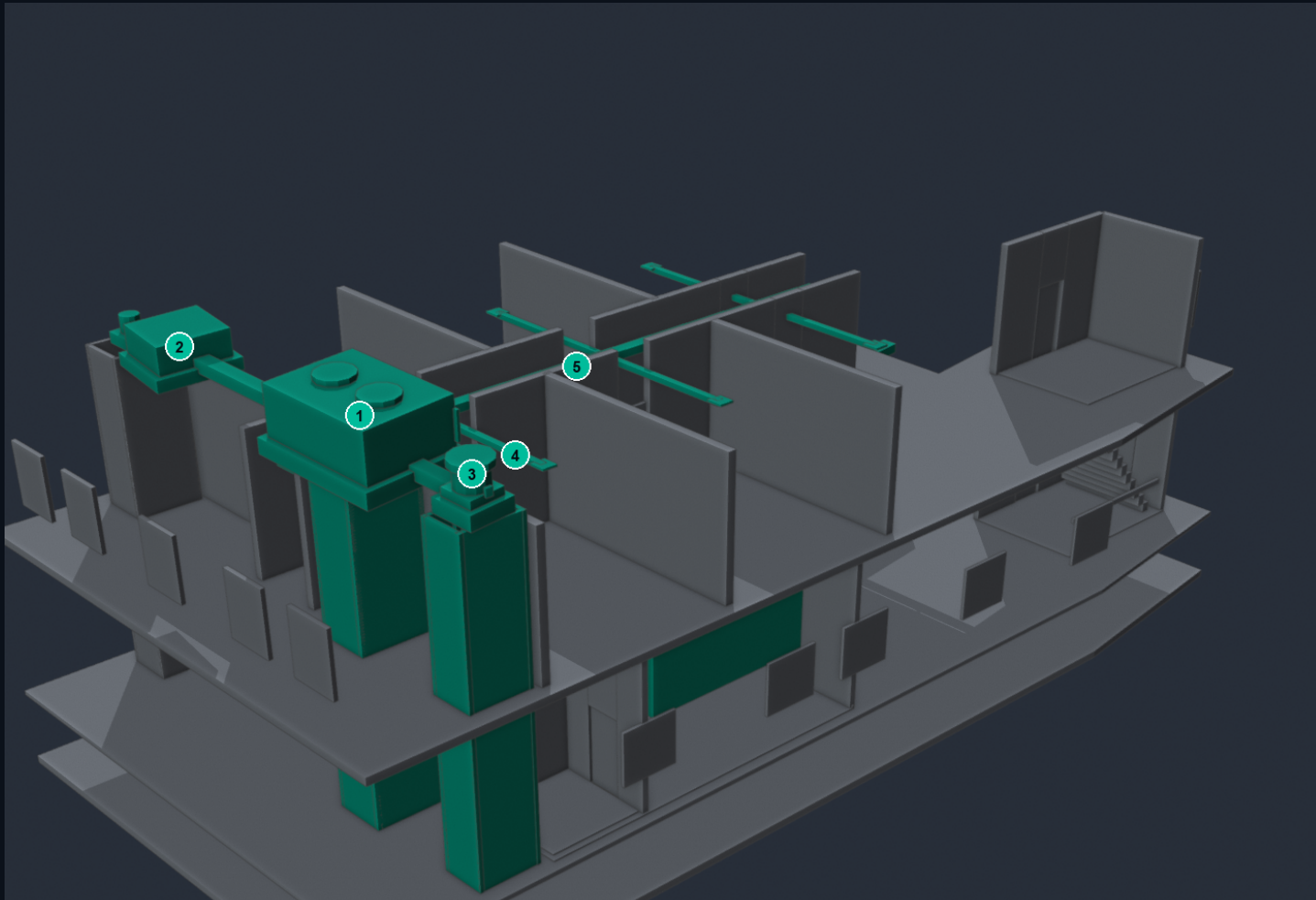
1. Type I hood candidate
2. Grease duct
3. Hood shaft

CRITICAL FINDINGS

- No loads, CFM, static pressure, outdoor-air or TAB data.
- Kitchen grease exhaust / MUA / suppression is not construction-designed.

CONTRACTOR / DESIGNER ACTIONS

- FAIL: grease, MUA and plumbing vent share the modeled HOOD shaft.
- Provide a grease-only enclosure; relocate MUA and plumbing vent outside it.
- Detail welded/listed grease duct, cleanouts, slope/reservoir, rating and firestops.
- Provide listed suppression, interlocks, tempered MUA and outdoor-air balance.



COORDINATION MODEL ONLY | FIELD VERIFY | LICENSED DESIGN + AHJ APPROVAL REQUIRED

H-05 HVAC SYSTEM COORDINATION ISO

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

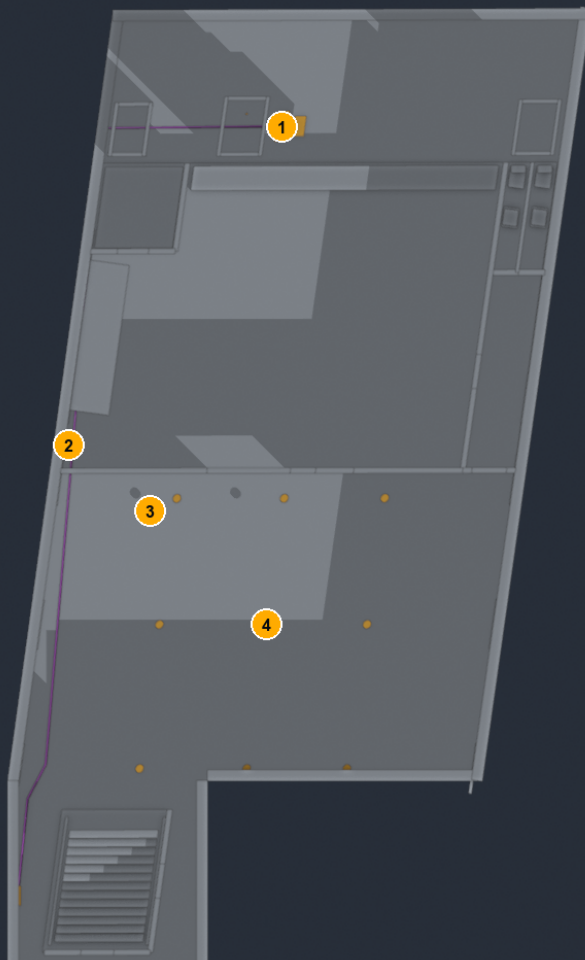
1. RTU
2. MUA
3. Hood exhaust fan
4. Return reroute
5. F2 distribution

CRITICAL FINDINGS

- No loads, CFM, static pressure, outdoor-air or TAB data.
- Kitchen grease exhaust / MUA / suppression is not construction-designed.

CONTRACTOR / DESIGNER ACTIONS

- Complete load, ventilation, static-pressure and equipment-selection calculations.
- Issue duct construction, pressure class, insulation, supports and access requirements.
- Coordinate all rated penetrations and identified damper access.
- Require TAB, hood capture/containment and commissioning reports before final approval.



E-01 FLOOR 1 POWER / LIGHTING PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

1. MDP
2. Kitchen panel
3. Service/feeder route
4. F1 lighting

CRITICAL FINDINGS

- No load calc, one-line, panel schedule, circuiting or fault data.
- Working clearances and life-safety electrical scope are not modeled.

CONTRACTOR / DESIGNER ACTIONS

- Complete connected/demand load and circuit every light, receptacle and equipment item.
- Provide kitchen, toilet and other required GFCI protection; identify special circuits.
- Show emergency egress lighting, exit signs and fire-alarm interfaces from final life-safety plan.
- Tag panel, circuit, homerun, wiring method and mounting height.



E-02 FLOOR 2 POWER / LIGHTING PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

1. F2 panel
2. East office lighting
3. West office lighting
4. Riser

CRITICAL FINDINGS

- No load calc, one-line, panel schedule, circuiting or fault data.
- Working clearances and life-safety electrical scope are not modeled.

CONTRACTOR / DESIGNER ACTIONS

- Provide lighting / receptacle layout, panel circuiting and C405 control zones.
- Add required occupant sensors, time-switch / reduction controls and functional testing.
- Show emergency/egress lighting and fire-alarm devices from approved occupant/use plan.
- Coordinate office, conference, podcast and IT loads; issue voltage-drop criteria.



E-03 SERVICE / MDP / FEEDER ROUTE

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

1. Meter/service
2. Corrected service route
3. MDP
4. IT / low-voltage placeholder

CRITICAL FINDINGS

- No load calc, one-line, panel schedule, circuiting or fault data.
- Working clearances and life-safety electrical scope are not modeled.

CONTRACTOR / DESIGNER ACTIONS

- Obtain utility service data and available fault current; size service and feeders.
- Issue sealed one-line, load calculations, grounding / bonding and surge protection details.
- Provide panel schedules, OCPD, conductor, conduit, SCCR/AIC and selective-coordination data.
- Draw and field protect NEC 110.26 working / dedicated spaces at meter, MDP and panels.



E-04 KITCHEN EQUIPMENT POWER PLAN

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

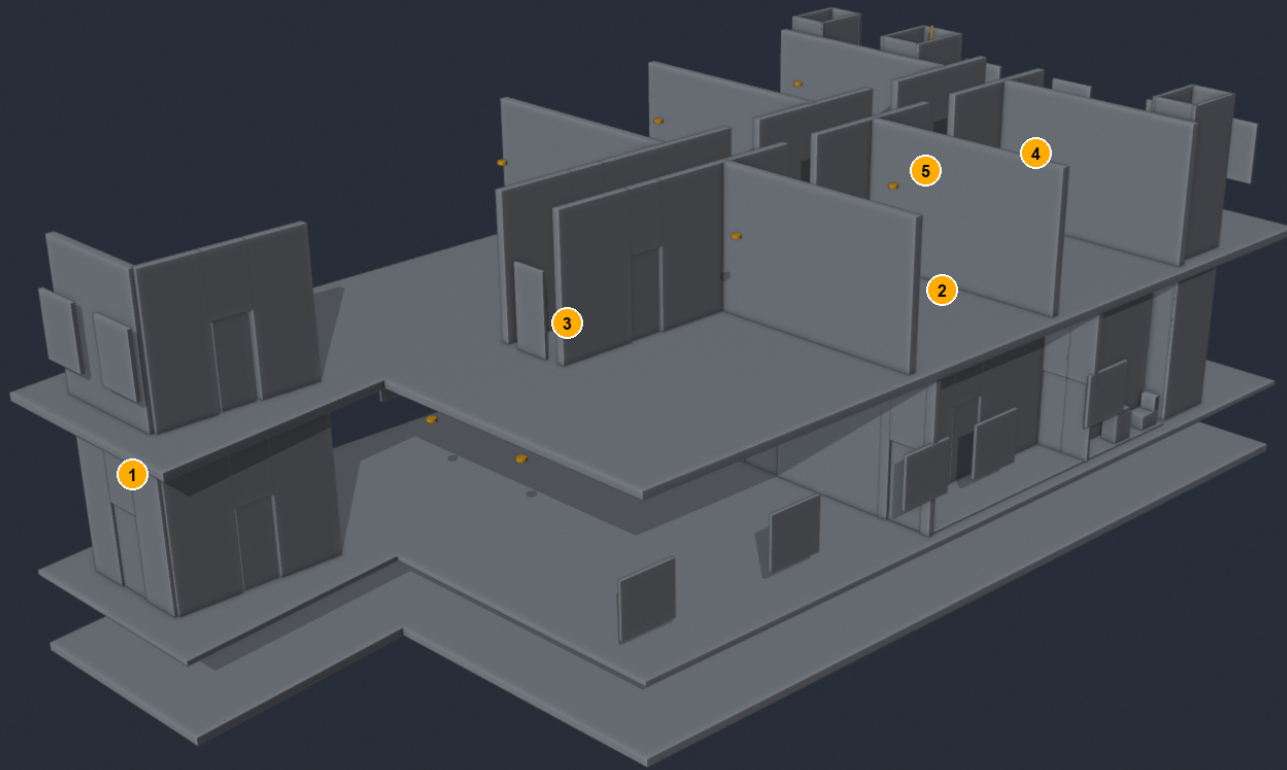
1. Kitchen panel
2. Hood / suppression interlock
3. Feeder route

CRITICAL FINDINGS

- No load calc, one-line, panel schedule, circuiting or fault data.
- Working clearances and life-safety electrical scope are not modeled.

CONTRACTOR / DESIGNER ACTIONS

- Final kitchen equipment schedule is absent; do not size circuits from placeholders.
- Provide dedicated circuits, disconnects and GFCI for final appliances and receptacles.
- Coordinate hood suppression shutdown, gas valve, MUA and exhaust-fan interlocks.
- Show wet-location ratings, cleaning exposure, receptacle placement and panel capacity.



COORDINATION MODEL ONLY | FIELD VERIFY | LICENSED DESIGN + AHJ APPROVAL REQUIRED

E-05 ELECTRICAL SYSTEM COORDINATION ISO

CODE SCREEN: BLOCKED — NOT FOR CONSTRUCTION

VISIBLE MODEL TAGS

1. Meter
2. MDP
3. Kitchen panel
4. F2 panel
5. Riser

CRITICAL FINDINGS

- No load calc, one-line, panel schedule, circuiting or fault data.
- Working clearances and life-safety electrical scope are not modeled.

CONTRACTOR / DESIGNER ACTIONS

- Field verify existing service, panels, feeders, grounding electrode system and spare capacity.
- Issue one-line, riser, panel schedules, branch circuits and wiring methods.
- Coordinate penetrations, sleeves, firestopping and equipment disconnect locations.
- Perform acceptance tests, torque documentation, labeling and inspection closeout.