

OPTION F DETACHED ADU

CONSTRUCTION / ENGINEERING BASIS SET

112 W 29TH ST, RICHMOND, VA 23225
PIN S0001130005 | ZONE R-5 | 20 FT x 24 FT

SCHEMATIC - NOT FOR CONSTRUCTION

Prepared from owner sketches, field measurements, assessor documents, repo CAD/model geometry, and Option F coordination. Licensed architect/engineer must verify and complete before permit or construction.



DESIGN INTENT RENDERING - DOES NOT CONTROL CONSTRUCTION

BASIS AND LIMITS
1. Enclosed building: 24 ft east-west x 20 ft north-south; two stories; 480 sf gross upper ADU. Exterior stair and east patios remain unenclosed. 2. Selected Option F: full-depth south garage, stacked north-center wet core, northeast owner flex room, west bedroom, east living/kitchen, south stair, and east patios. 3. No survey, utility locate, geotechnical report, drainage design, truss package, engineered lumber calculations, REScheck, HVAC Manual J/S/D, electrical load calculation, or sealed structural design was available. 4. Do not scale drawings. Dimensions are design-basis values. Field verify property lines, grades, utilities, existing house geometry, and all product rough openings. 5. North and west roof edges are flush at setback walls in this basis. Any eave/rake projection requires Zoning confirmation or inward relocation of building. 6. This set coordinates decisions and exposes missing work. It is not permission to build and carries no professional seal.

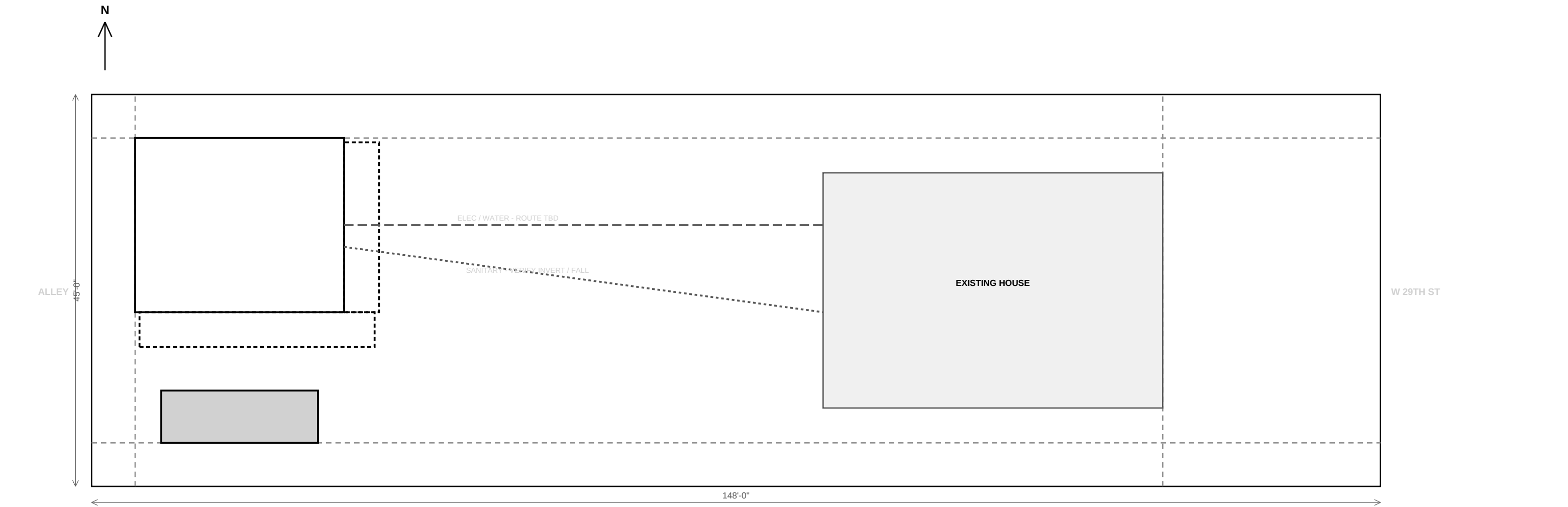
SHEET	TITLE	STATUS	PRIMARY COMPLETION NEED
G001	COVER / PROJECT BASIS	BASIS	Architect/engineer verification
G002	CODE, ZONING, AND PERMIT MATRIX	BASIS	Architect/engineer verification
C101	SITE / ACCESS / UTILITY CONCEPT	BASIS	Architect/engineer verification
A101	LEVEL 1 DIMENSIONED PLAN	BASIS	Architect/engineer verification
A102	LEVEL 2 DIMENSIONED PLAN	BASIS	Architect/engineer verification
A201	ROOF PLAN / OPENING SCHEDULES	BASIS	Architect/engineer verification
A301	EXTERIOR ELEVATIONS	BASIS	Architect/engineer verification
A401	BUILDING SECTIONS / ENVELOPE	BASIS	Architect/engineer verification
S101	FOUNDATION / FRAMING BASIS	BASIS	Architect/engineer verification
M101	MEP / ELECTRICAL / LIFE SAFETY BASIS	BASIS	Architect/engineer verification
G003	SPECIFICATIONS / CLOSEOUT CHECKLIST	BASIS	Architect/engineer verification

ITEM	DESIGN BASIS	SOURCE / ACTION
Governing residential code	2021 Virginia Residential Code; effective Jan. 18, 2024	Confirm with Richmond at permit intake
Risk / use	Detached accessory dwelling over private garage; Risk Category II	Final classification by code official
Wind	115 mph basic design wind speed, Risk Category II	Richmond structural criteria
Ground snow	20 psf	Richmond structural criteria
Seismic	Design Category B	Richmond structural criteria
Frost	18 in minimum	Bottom of exterior footing below frost depth
Soil	1,500 psf assumed only for preliminary sizing	Geotechnical/soil report and field verification required
Energy	Climate Zone 4A working basis; prescriptive path or REScheck	Confirm jurisdictional climate data and final assemblies
Garage separation	5/8 in Type X at garage ceiling below habitable rooms; protected supports	VRC R302.6; final listed assembly
Bedroom EERO	5.7 sf net clear; min 20 in width, 24 in height; sill max 44 in	VRC R310; verify selected product
Stair	36 in clear; 14 risers at approx. 7-15/16 in; 13 treads at 10 in basis	Field-set from final floor elevation; VRC R311
Guards	36 in landings; 34-38 in stair handrail; openings under 4 in	VRC R312; verify graspability/load design

ZONING BASIS - WRITTEN CONFIRMATION NEEDED
1. R-5 lot recorded as 45 ft x 148 ft. Working yards: 5 ft side, 5 ft rear, 25 ft front. Current site drawing places ADU walls at north and alley-side minimums. 2. Detached ADU floor area cannot exceed greater of one-third main dwelling or 500 sf. Upper floor is 480 sf gross. Obtain written ruling for lower owner flex room and powder room exclusions. 3. Accessory building height basis is 20 ft maximum. Proposed ridge is 19 ft 10 in from average adjacent grade; survey final grade and roof finish before approval. 4. ADU access must satisfy Public Works and Fire. Confirm hydrant within 250 ft, alley access, address visibility, and any WISP needs. 5. Verify lot coverage, easements, historic-district status, tree impacts, and whether replacement shed is reviewed in same zoning application.

PERMIT / DEFERRED SUBMITTAL MATRIX
1. Black-and-white PDF; architectural plans at minimum 1/8 in = 1 ft. Submit site, foundation, framing, floor plans, elevations, sections, insulation, and rated assemblies. 2. Separate trade permits: electrical, plumbing, mechanical, and gas if used. This sheet coordinates scope but is not a trade permit application. 3. Deferred engineered items: roof trusses/rafters, floor trusses or I-joists, LVL/PSL headers, portal frame/hold-downs, exterior stair/deck framing, and any unusual foundation condition. 4. New-home checklist calls for soil report, braced-wall information, truss package, structural reports as applicable, and REScheck or equivalent envelope data. 5. Before excavation: boundary/topographic survey, utility locate (Virginia 811), sanitary invert, water capacity/meter decision, electrical service/load study, drainage path, and erosion/stormwater screening.

Sources checked 2026-08-03: [rva.gov/planning-development-review/permits-and-inspections](https://www.rva.gov/planning-development-review/permits-and-inspections)
[rva.gov/planning-development-review/accessory-dwelling-units](https://www.rva.gov/planning-development-review/accessory-dwelling-units)
[rva.gov/sites/default/files/2025-02/Building Plan Requirements Residential 2021 VRC Updated.pdf](https://www.rva.gov/sites/default/files/2025-02/Building%20Plan%20Requirements%20Residential%202021%20VRC%20Updated.pdf)
codes.iccsafe.org/content/VARC2021P1/



SITE / GRADING NOTES

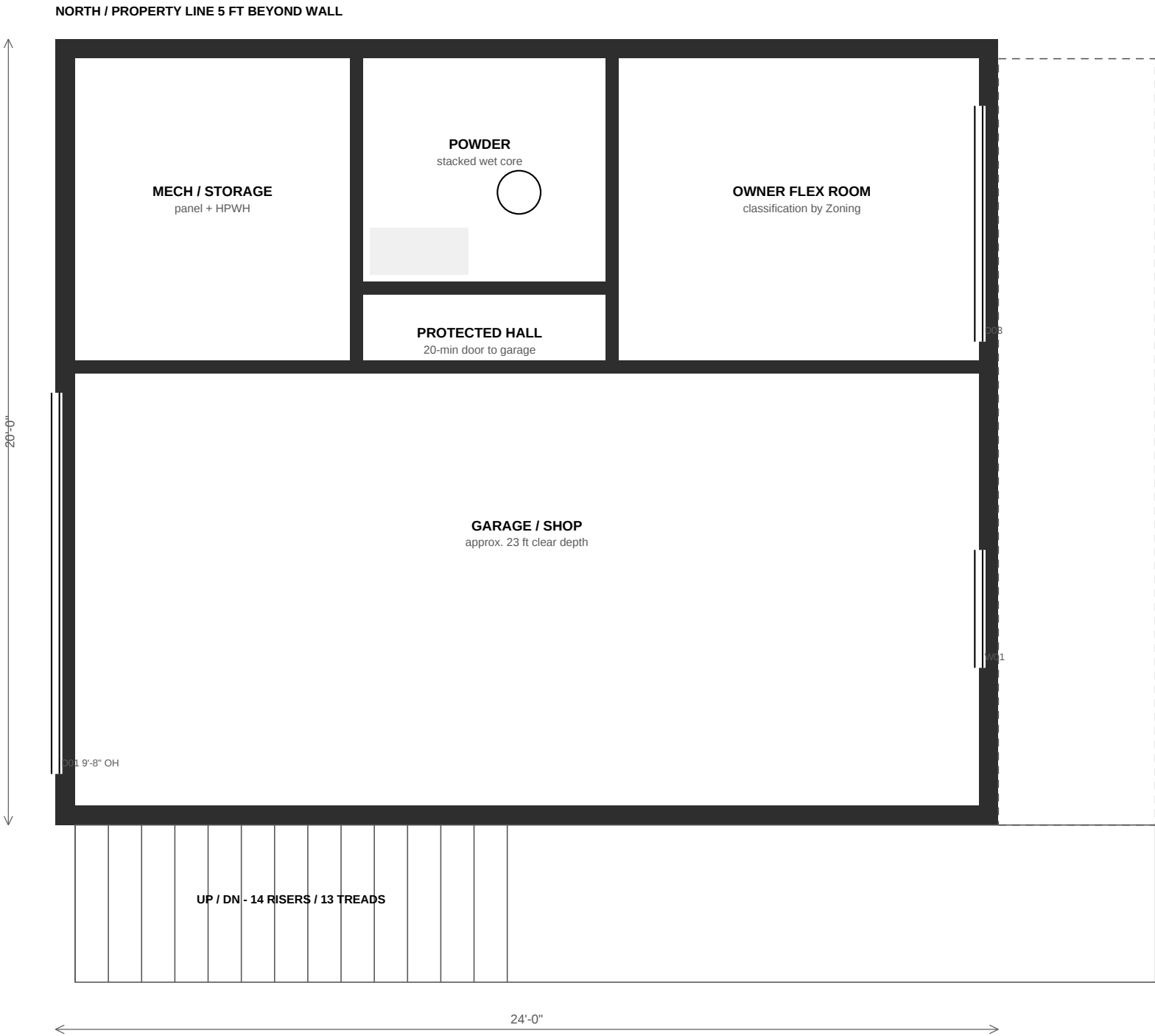
1. Survey controls. Do not establish building from fences, aerials, or this diagram. Licensed surveyor to stake walls and verify setbacks before footing excavation.
2. Maintain positive drainage away from new foundation. Working target: 6 in fall within first 10 ft where feasible; civil designer to adapt to lot and prevent discharge onto neighbors or alley.
3. Roof drainage: gutters both eaves, sealed downspouts to approved splash blocks or infiltration system. No discharge across stair, alley, or neighboring property.
4. Limit disturbed area; install stabilized construction entrance, inlet protection if applicable, and perimeter controls required by Water Resources.
5. Protect trees and existing house foundation. Arborist to review roots within excavation zone before final siting.

UTILITY BASIS

1. Water: new 1 in service from approved connection basis; size by developed length and fixture units. Confirm meter/backflow policy with DPU.
2. Sanitary: 4 in building sewer at code slope where gravity route is feasible. Camera/locate existing line and verify invert before foundation design.
3. Electrical: feeder from existing service to detached-building panel; electrician to perform dwelling/service load calculation and grounding design.
4. Communications: separate conduit with pull string. Maintain separation from power and other utilities.
5. No gas planned. All-electric basis uses heat pump HVAC, heat-pump water heater, induction range, and electric dryer.

SITE DIMENSIONS TO VERIFY

1. Lot: 45 ft x 148 ft; main house east wall approx. 25 ft from front line; field/survey confirmation governs.
2. ADU enclosed walls: west x=5 ft; east x=29 ft; south y=20 ft; north y=40 ft in repo coordinates.
3. Replacement shed: 18 ft x 6 ft maximum outside envelope, 8 ft from alley and 5 ft side setback. Keep roof, gutters, and foundation within envelope.
4. Stair/access band: approximately x=5.5 to 32.5 ft and y=16 to 20 ft; 5 ft clear to replacement shed basis.
5. Existing shed removal must be reconciled with assessor's historical detached-garage record before demolition permit scope is finalized.



PLAN NOTES

- Garage floor: 4 in concrete slab over compacted granular base and 10 mil vapor retarder; slope only where approved and coordinate overhead-door threshold.
- Separate garage from upper dwelling with listed floor/ceiling assembly using minimum 5/8 in Type X gypsum at garage ceiling. Protect supporting walls/columns and seal penetrations.
- Door from garage to protected hall: self-closing/self-latching 20-minute or 1-3/8 in solid wood/steel as accepted; no direct opening into sleeping room.
- Mechanical/storage zone is unconditioned unless final energy design encloses equipment. HPWH condensate and pan drain require approved termination.
- Owner flex-room zoning classification controls finishes, heating/cooling, and whether lower area counts toward ADU cap. Do not construct as sleeping room.
- Overhead door final size: 9 ft 8 in rough planning width. Engineer portal frame/header and manufacturer to provide wind-rated door for 115 mph basis.

ROOM	FINISH / BASIS	CEILING
Garage/shop	sealed concrete / painted gypsum	8'-6" nominal
Mech/storage	sealed concrete / durable wall finish	8'-6" nominal
Powder/hall	tile or resilient / moisture-resistant finish	8'-0" min
Owner flex	resilient / gypsum; classification pending	8'-0" min

PLAN SCALE: 1/4 IN = 1 FT WHEN PRINTED 100% ON 11 x 17
DO NOT SCALE ELECTRONIC VIEW. DIMENSIONS TO FACE OF STUD UNLESS NOTED; EXTERIOR DIMENSIONS TO FACE OF SHEATHING.

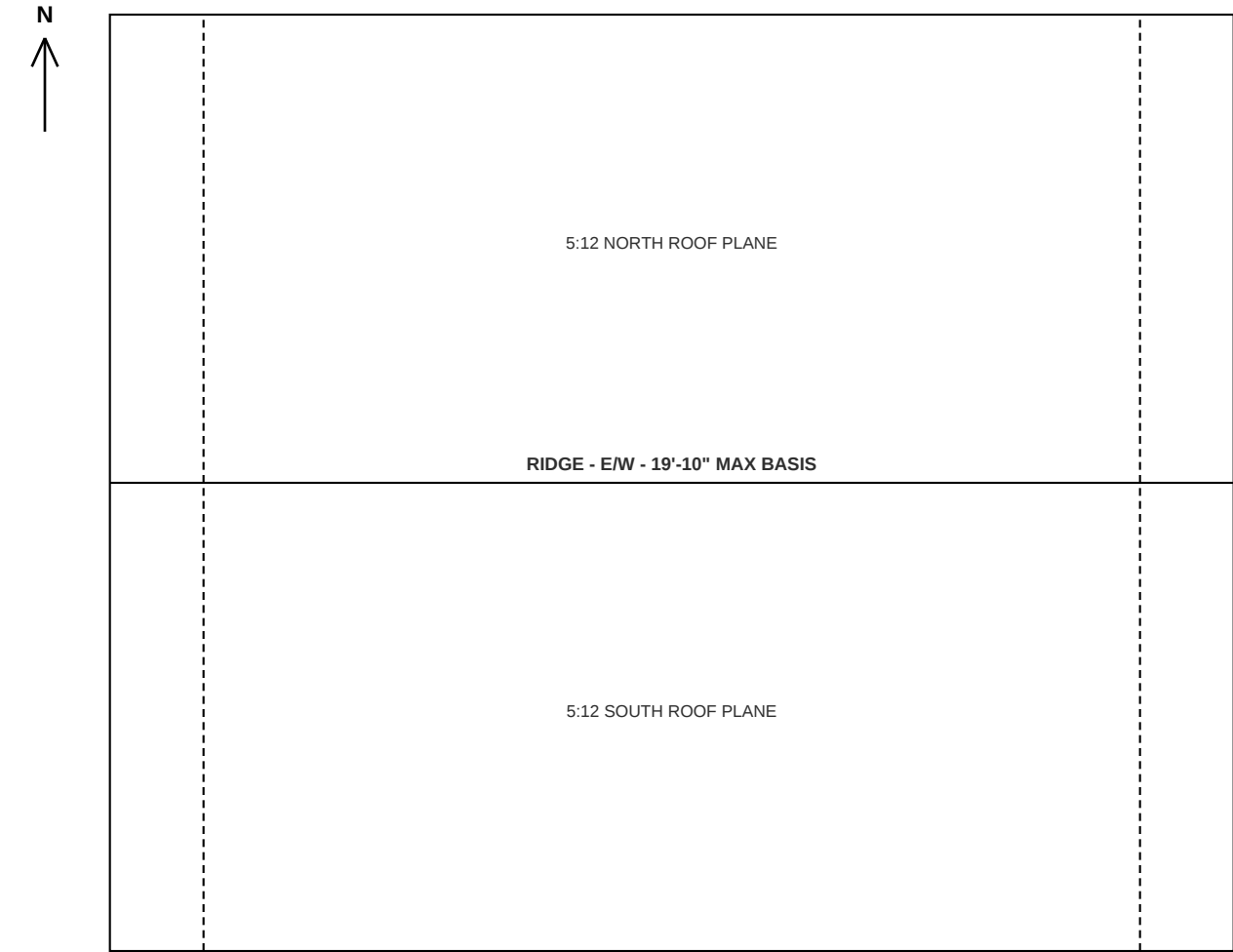


PLAN NOTES

- Upper gross floor area: 480 sf. Net interior basis: approximately 437 sf. Final zoning area calculation uses exterior-face definition and approved exclusions.
- Sloped ceiling follows roof. Maintain not less than 7 ft over required area and not less than 5 ft at any included floor area; final truss/rafter geometry controls.
- Bedroom EERO W02: select casement with at least 5.7 sf net clear, 20 in clear width, 24 in clear height, and sill not over 44 in above floor.
- Safety glazing at doors, adjacent glazing, bath/shower, and hazardous locations per VRC R308. Confirm each product and permanently label.
- Kitchen island requires receptacle layout per adopted NEC, plumbing/vent coordination, and 42 in preferred clear work aisle. Verify appliance installation clearances.
- Apartment entry is side-hinged D05 from connected south landing; large east slider D04 is secondary patio access, not sole conventional entry.

ROOM	AREA / BASIS	CEILING
Bedroom	92 sf clear; queen + storage	sloped, 7 ft compliance zone
Bath	stacked wet core	sloped, fixtures near ridge
Kitchen/living/dining	open plan	sloped to 20 ft ridge basis
Laundry/storage	low-eave service zone	sloped; verify equipment clearance

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NORTH/WEST EDGES FLUSH AT SETBACK BASIS; SOUTH/EAST 12 IN OVERHANG SUBJECT TO ZONING

ROOF / ATTIC NOTES

1. Final system: engineered raised-heel roof trusses or engineer-designed rafters at 24 in o.c. maximum; 20 psf ground snow and 115 mph wind basis.

2. Supplier to coordinate sloped interior ceiling, room partitions, gable-end openings, mechanical penetrations, energy R-value, and maximum 19 ft 10 in ridge.

3. Provide continuous load path, uplift connectors at every truss/rafter, gable bracing, blocking, and sheathing nailing per sealed truss/structural package.

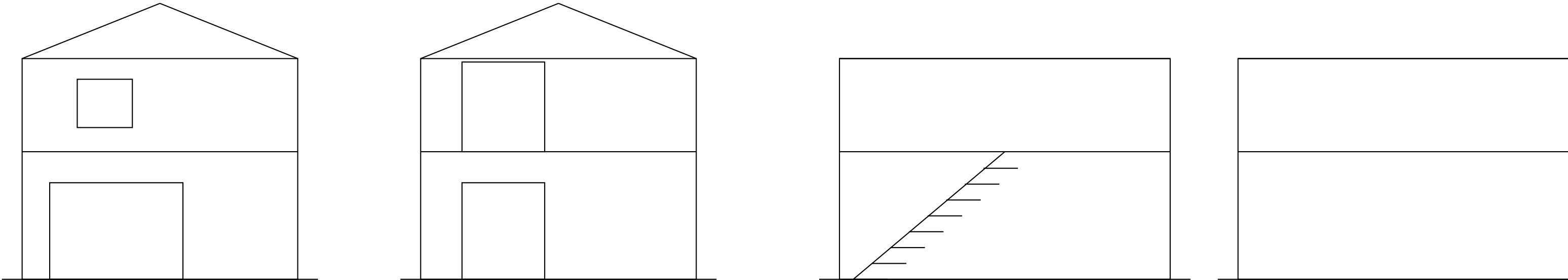
4. Asphalt shingles over code-compliant underlayment and 1/2 in minimum roof sheathing basis; final thickness/fastening by span and wind design.

5. Ventilation strategy by final energy/envelope designer. Do not combine vented and unvented assemblies; avoid soffit vents at setback edges if fire-separation rules prohibit them.

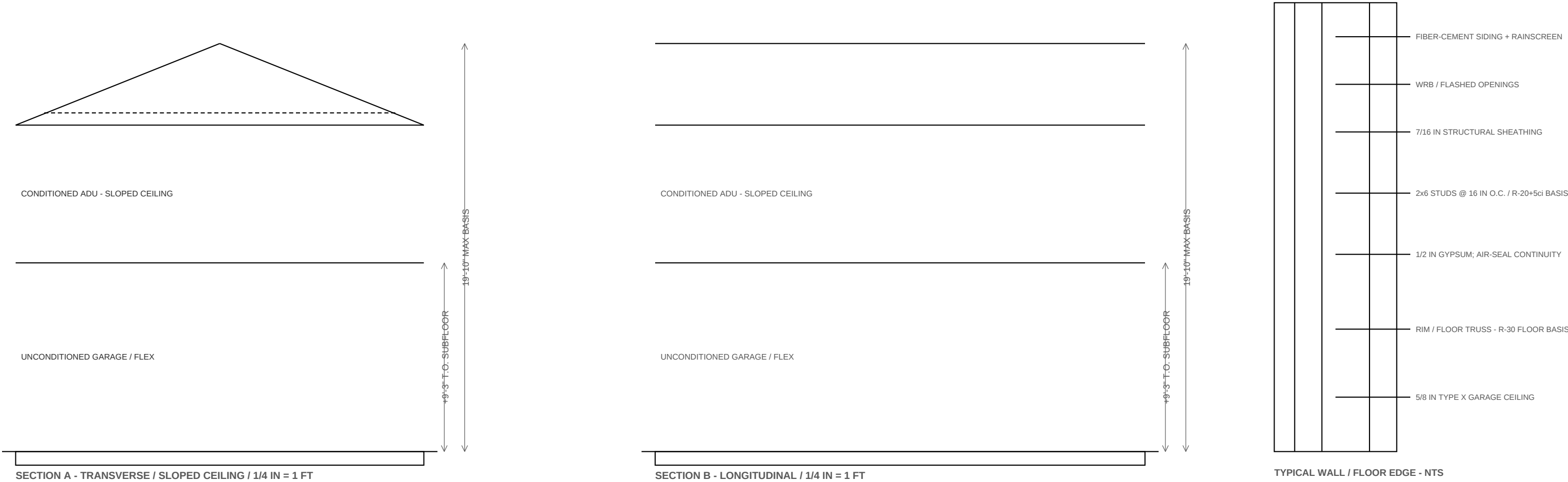
6. Gutters and downspouts coordinated with site drainage. Ice barrier, drip edge, flashing, crickets, and penetration boots per adopted code and manufacturer.

MARK	SIZE BASIS	TYPE / NOTES
D01	9'-8" x 7'-0"	wind-rated sectional overhead; engineered portal/header
D02	3'-0" x 6'-8"	garage/hall protected, self-closing
D03	6'-0" x 6'-8"	level-1 east slider; safety glazing
D04	6'-0" x 6'-8"	level-2 east slider; safety glazing
D05	3'-0" x 6'-8"	upper apartment entry; outswing/inswing verify

MARK	SIZE BASIS	TYPE / PERFORMANCE
W01	3'-0" x 3'-0"	garage awning/fixed; tempered if hazardous
W02	3'-6" x 5'-0"	bedroom casement; EERO product data required
W03	5'-0" x 3'-6"	south living; safety glazing check
W04	3'-6" x 4'-0"	east dining; operable/fixed per ventilation
ALL	manufacturer RO	U <= 0.30 working basis; SHGC <= 0.40



ELEVATION / EXTERIOR NOTES	
1. Vertical datum: 0'-0" top of level-1 slab; +9'-3" top of upper subfloor working basis; +16'-0" eave/plate basis; +19'-10" maximum ridge basis. Survey average adjacent grade before finalizing height. 2. Exterior wall basis: fiber-cement lap siding over drained/ventilated rainscreen, continuous water-resistive barrier, taped structural sheathing, 2x6 framing, cavity insulation, smart vapor retarder where required, and gypsum interior finish. 3. North and west walls sit at working minimum yards. Keep north wall without openings; show flush north eave and flush west rake until Zoning confirms projections or building is relocated inward. 4. Exterior wood exposed to weather shall be naturally durable or preservative treated. Provide corrosion-resistant fasteners/connectors compatible with treatment and flashing. 5. Patio/landing guards shown diagrammatically. Final design must resist prescribed guard loads, reject a 4 in sphere, and include graspable stair handrail 34-38 in above nosings. 6. Finish palette: muted green-gray lap siding, light trim/guards, dark red-brown doors/windows, dark roof. Final colors do not affect code but historic/design review may apply.	



ENVELOPE BASIS

1. Working prescriptive targets for Climate Zone 4A: U-0.30 windows, R-60 roof/ceiling, R-20+5ci wood walls, R-30 floor over unconditioned garage. Final REScheck/approved alternative governs.

2. Sloped roof without attic may use approved reduced cavity R-value only where code permits; exterior continuous insulation or raised framing likely needed to preserve headroom and condensation control.

3. Continuous air barrier around conditioned upper level. Seal rim, top plates, penetrations, bath/laundry, and transition to rated garage ceiling. Blower-door target per adopted energy code.

4. No shared garage return air. Ducts/air handlers serving dwelling remain inside conditioned envelope where practical.

FOUNDATION / FIRE SECTION BASIS

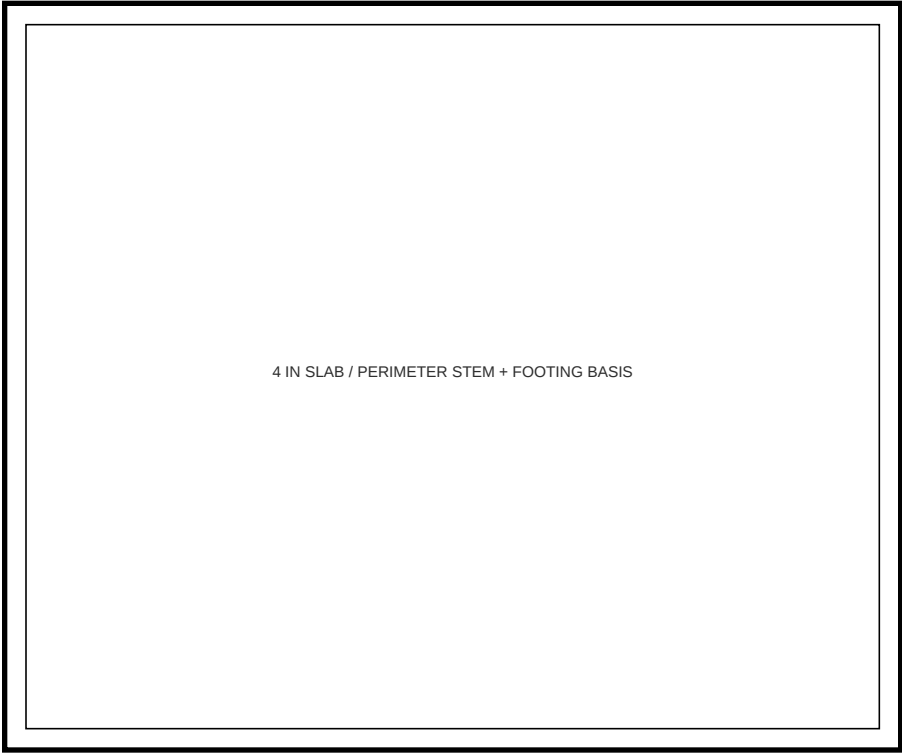
1. Continuous footing bottom at least 18 in below finished grade and on undisturbed competent soil. Preliminary footing size is not final without soil and load verification.

2. Termite treatment/protection, capillary break, sill sealer, pressure-treated sill, anchor bolts, and flashing per adopted code and site conditions.

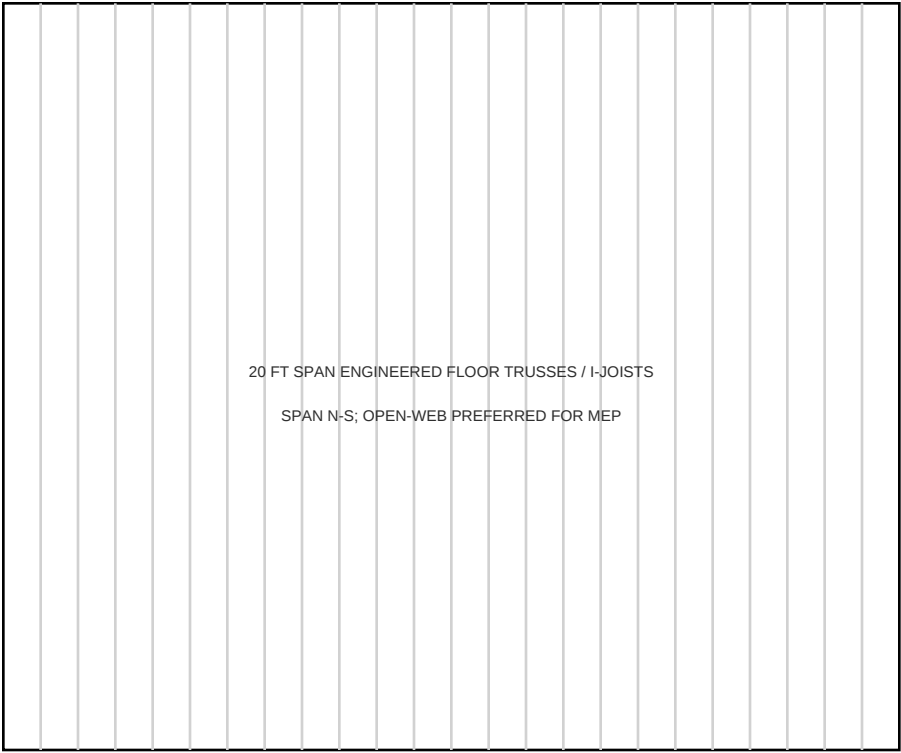
3. Garage ceiling below dwelling: listed assembly with 5/8 in Type X minimum at garage side; protect bearing elements and penetrations. Do not install unlisted recessed fixtures in rated membrane.

4. Smoke alarms inside/outside sleeping area and on each story; CO alarms outside sleeping area and on garage-adjacent story. Interconnect with battery backup.

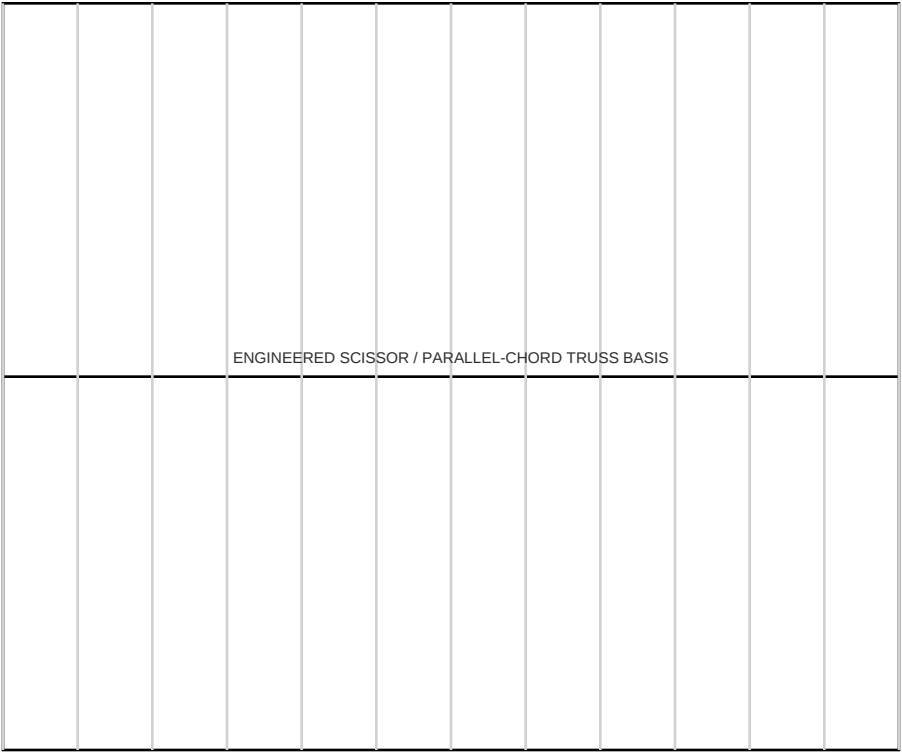
FOUNDATION PLAN - 1/4 IN = 1 FT



LEVEL 2 FLOOR FRAMING - 1/4 IN = 1 FT

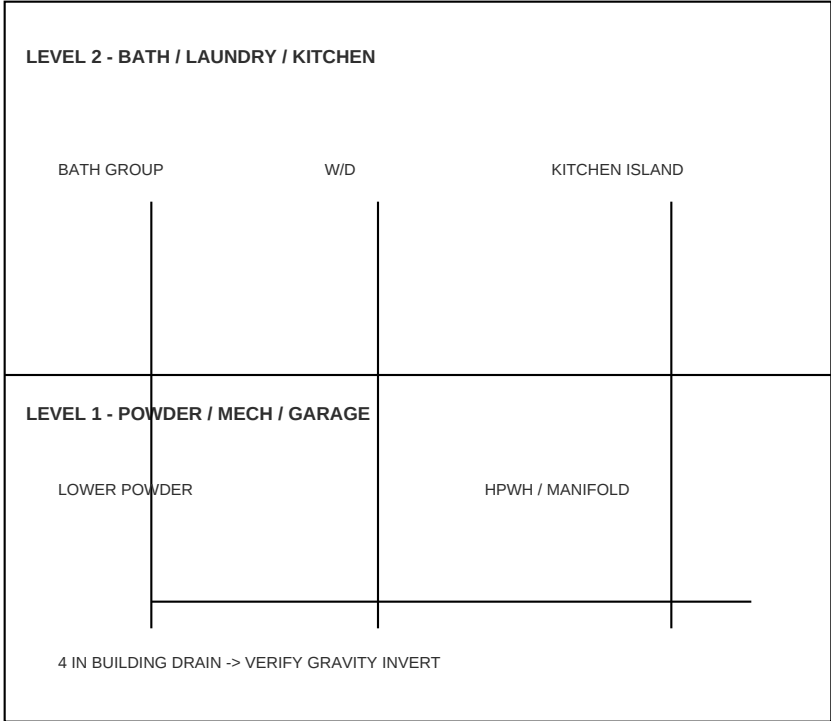


ROOF FRAMING - 1/4 IN = 1 FT

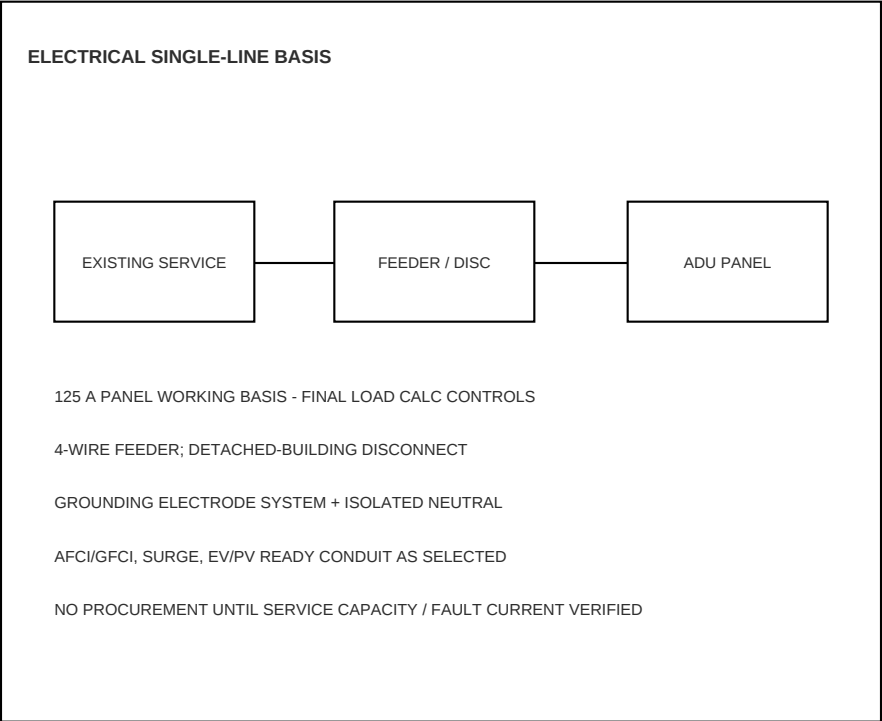


ELEMENT	PRELIMINARY BASIS ONLY	FINAL REQUIREMENT
Exterior footing	16 in wide x 8 in thick continuous; (2) #4 cont.	Engineer/geotech verify soil, loads, steps, reinforcement
Stem wall	8 in concrete/CMU; #4 vertical at 48 in o.c. basis	Final height/reinforcing and drainage by site condition
Slab	4 in, 3,500 psi; fiber or WWF basis; 10 mil vapor retarder	Jointing, thickening, garage slope, termite treatment
Floor	11-7/8 in minimum engineered open-web/I-joist at 16 in o.c.	Sealed supplier layout, reactions, holes, blocking
Garage header	(3) 1-3/4 x 11-7/8 LVL placeholder	Sealed calculation and portal-frame/hold-down design
East sliders	(2) 1-3/4 x 9-1/2 LVL placeholder	Sealed calculation; point loads carried to foundation
Roof	engineered trusses at 24 in o.c. max; 5:12 exterior	Sealed truss package, bracing, reactions, uplift
Stair/patio	6x6 posts; built-up beams; 2x8 joists placeholder	Engineer/member tables, lateral, guards, footing sizes
Wall bracing	7/16 structural sheathing continuous; portal at garage	Braced-wall calculation, nailing, hold-down schedule

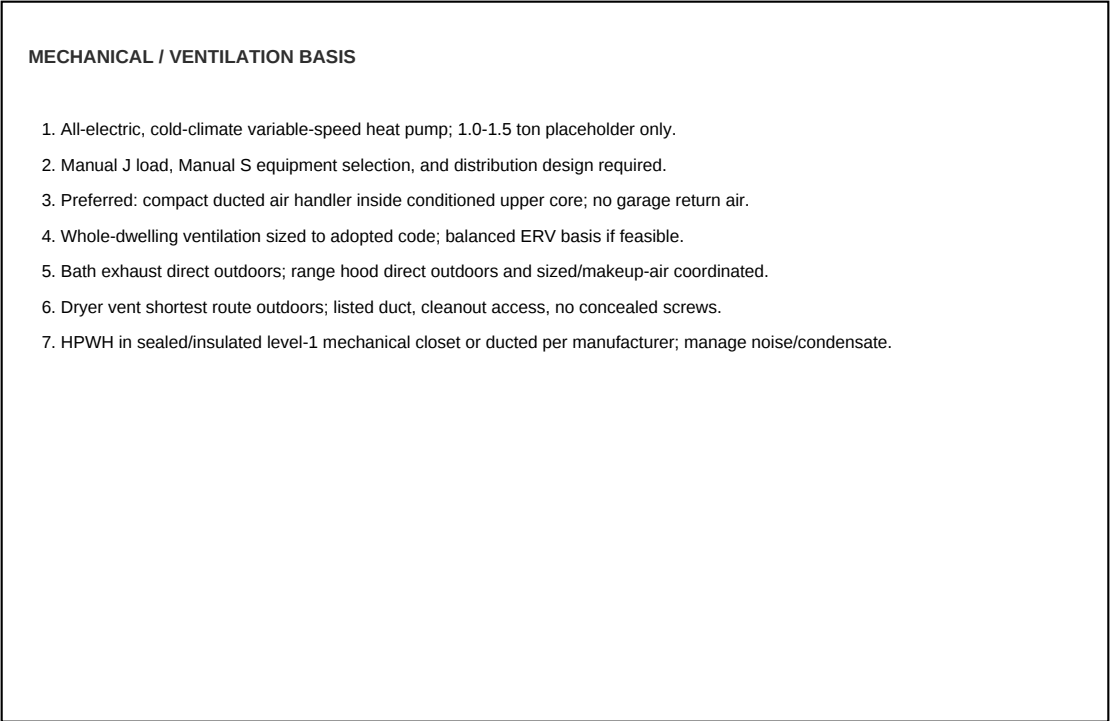
STRUCTURAL HOLD POINTS
1. No structural size on this sheet is approved for procurement or construction. 2. Engineer to establish dead loads including finishes, counters, tile, deck, and MEP. 3. Carry concentrated header/truss loads to footing with posts and squash blocks. 4. Coordinate all penetrations before fabrication. No field cuts in engineered members without written approval. 5. Provide continuous load path roof-to-foundation for 115 mph wind.



PLUMBING / DWV RISER - DIAGRAMMATIC



ELECTRICAL BASIS - 2020 NEC / VIRGINIA ADOPTION



SYSTEM	LOCATIONS / BASIS	FINAL ACTION
Smoke alarms	inside bedroom, outside bedroom, each story; interconnected	Electrical plan and adopted R314
CO alarms	outside bedroom and garage-adjacent story	Adopted R315 / product listing
Receptacles	dwelling wall spacing; kitchen, bath, laundry, exterior, garage	NEC layout / AFCI-GFCI
Lighting	stairs/landings, exterior doors, garage, rooms; high efficacy	3-way stair controls / energy code
Fire separation	garage ceiling/supports, protected door, sealed penetrations	Listed assemblies and inspection
Water protection	pans/leak sensors at HPWH and washer	Approved drains/shutoffs

MEP COORDINATION HOLDS
1. Trade designers own final sizing, permits, and installation documents.
2. Verify existing service, water pressure, sewer route/invert, and utility provider rules before foundation.
3. Keep plumbing in stacked wet core and route floor penetrations away from engineered member no-cut zones.
4. Air-seal and firestop every garage separation penetration with listed systems.
5. Coordinate exterior equipment clearances with property line, windows, stair, drainage, and noise.

DIVISION	SCHEMATIC BASIS	REQUIRED BEFORE CONSTRUCTION
01 General	Field verify; protect occupied house; maintain egress and utilities	Permit set, contractor scope, schedule, insurance, safety plan
02 Existing	Remove 12 x 18 field shed; protect trees/fence; reconcile assessor record	Demo permit/zoning, utility locate, hazardous-material review
03 Concrete	3,500 psi basis; continuous footings/stem; 4 in slab	Geotech/soil verification, engineered foundation, mix/joint plan
06 Wood	2x6 walls; engineered floor/roof, PT exterior framing	Sealed calculations, shop drawings, connector/fastener schedule
07 Envelope	WRB, rainscreen, fiber cement, asphalt roof, continuous air barrier	Hygrothermal/energy check, flashing details, product approvals
08 Openings	wind-rated windows/doors; EERO; safety glazing	Manufacturer data, rough openings, U/SHGC, design-pressure ratings
09 Finishes	durable garage finish; moisture-resistant wet areas	Owner selections, flame/smoke compliance, substrate coordination
21 Fire	alarms; garage separation; fireblocking	Listed assemblies, penetration systems, inspection sign-off
22 Plumbing	stacked wet core; all-electric DHW; gravity sewer basis	Trade permit, fixture-unit sizing, sewer invert, water service
23 HVAC	heat pump + balanced ventilation basis	Manual J/S/D, ventilation calculation, condensate plan
26 Electrical	125 A panel placeholder; all-electric loads	Service/load calc, feeder, grounding, circuiting, trade permit
31 Earthwork	positive drainage; compacted subbase; erosion controls	Survey, grading/drainage plan, RESMP determination

OWNER DECISIONS
1. Confirm Option F as final layout and whether lower flex room remains owner-only/non-ADU space. 2. Choose flush setback-side roof edges or authorize survey/zoning study for inward shift and overhangs. 3. Confirm exterior stair weather protection, decking material, guard style, and maintenance access. 4. Confirm all-electric program, EV/PV readiness, induction cooking, dryer type, and HPWH location. 5. Select window operation while preserving bedroom EERO, natural ventilation, privacy, and safety glazing. 6. Choose foundation strategy after survey/soil: slab/stem basis versus crawlspace or engineered thickened edge. 7. Confirm budget and whether replacement shed is same-phase construction.

PRE-PERMIT COMPLETION CHECKLIST
1. Boundary/topographic survey with grades, easements, structures, trees, and utility evidence. 2. Written Zoning confirmation: ADU area/exclusions, lower flex/powder classification, setbacks/projections, height, lot coverage, shed, access. 3. Architectural permit drawings with fully dimensioned plans, four elevations, sections, openings, finishes, stair/guard details, and code analysis. 4. Structural package: soil basis, foundation, floor/roof layouts, headers, portal/lateral design, deck/stair, braced-wall information, calculations and seals where required. 5. Energy compliance: REScheck or prescriptive schedule; final window values, assemblies, air sealing, ventilation, and equipment efficiencies. 6. Separate trade designs/permits and utility approvals; confirm Fire/Public Works/Water Resources routing.

CONSTRUCTION / INSPECTION HOLD POINTS
1. Preconstruction: approved plans on site, survey staking, erosion controls, utility locate, tree protection. 2. Footing: bearing soil, location, depth, size, reinforcing, and step geometry before concrete. 3. Foundation/slab: forms/CMU, anchorage, underslab trades, subbase, vapor retarder, reinforcement, termite provisions. 4. Framing: approved engineered packages, member sizes, nailing, bracing, hold-downs, connectors, fireblocking, rough trades before concealment. 5. Fire separation/insulation: rated membrane and penetrations; air barrier and R-values before cover. 6. Final: stairs, guards, alarms, EERO, safety glazing, address, drainage, trade finals, zoning/land-disturbance/public-works finals, certificate of occupancy.