Cover sheet

Workshop detached building addition for 22409 100th Ave SE, Kent, Wa, 98031
Property locator: 1822059366

Contents

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1. Project description for 22409 100th Ave SE addition:

A small (<750 sq ft floor area) woodshop and crafts building is proposed to be added in the 'back yard' of 22409 100th Ave SE. The building is intended to make maximum use of recycled materials.

Generally, the plans are ¼" = 1 foot, and verified by phone call with Kent bldg dept that 11x17 sheets were ok for a small building with that drawing scale.

A level 6" by 12" concrete foundation will support a single story, part of the foundation walls are up to 6 ft in height to accommodate the sloping terrain, and up to 4 ft high 2x6 cripple walls will support the building. Rebar schedules are per IRC 2009. The cripple walls are designed per IRC as the first floor of a 2 story building. 2x12 (H/F #2 or better grade or species) floor joists with 2x12 rim joists rest on 2x6 Pressure treated sills: one portion of the shop will have 18 ft long 2x12s on 16" centers spanning 17'-4"; a second portion will have 12 ft 2x12s on 24" centers spanning 11 feet, 4". R-11 perimeter insulation and R-38 floor insulation will be used.

Exterior doors at each end of the building provide for crawl space access. The crawl space dirt will be covered with 6 mil black polyethylene. Removed dirt will be spread in a 6" layer over a 120 ft by 30 ft area and to fill in sunken areas of existing yard.

The structural floor is made up of 5ft by 10 foot sheets of 1.8 cm thick Baltic birch plywood per British specifications BS 6566 and BS 5268. The 'Alternate use material' sheet of this drawing details the source and suitability of this material, and samples accompany the permit application. The subfloor nailing will be 8d@6" OC on all joists. The finish floor will be of the same material, with joints offset from the structural layer, with a 4 mil layer of polyethylene sheet between. The finish layer will be attached with finish nails or screws with plugs for appearance and stained.

The walls will be a 2x8 wall of mostly #2 and better SYP. The wall studs are grade stamped by SPIB, and were salvaged from shipping pallets used to ship 757 engine cowlings from Southern CA to Renton, and all were originally 9 ft-5" long. Some longer #2 H/F may be used for top plates.

Wall construction will be intermediate type framing, and insulation will be R-25. The interior wall will be 5/8" drywall over a 4 mill sheet of polyethylene. Sandwiched headers make maximum use of the wall width for rigid insulation between the inside and outside. The sole plate will have one seam of caulking between the floor and plate. The interior wallboard will be taped and painted.

The entire wall will be sheathed with the 1.8 cm Baltic birch plywood. Where there are cripple walls below the floor, the 10 foot sheathing panels will extend across the bottom plates and join at horizontal blocking on the cripple wall. Nail pattern will be 8d @ 6" OC at all studs and blocking.

The entire exterior will be covered with house wrap, and siding will be hardi-plank to match the existing house.

One large window will be a salvaged 5 ft by 8 foot double pane aluminum framed windows with wood thermal break. The use of 2x8 walls, 2x12 floor joists, and R-49 ceiling insulation provides sufficient margin that the WSEC component performance worksheet shows compliance using the default 0.69 U value for this salvaged window. The additional windows will be new low-e argon filled windows with a labeled U value of 0.29 or 0.30.

One 23.8 sq ft exterior door is used, and is custom built using 3x4 white oak frame (salvaged from aluminum panel shipping pallets). Dual door panels sandwich 2" insulation.

All windows and the door have top and sill flashing.

The roof and ceiling construction are standard 5/12 rafter and ceiling joist construction, using 2x6 and 2x8s on 24" centers. Nailing schedules are per IRC. Ceiling is 5/8" drywall. Attic access and ventilation are provided for by 22" by 30" minimum removable vent panels at each gable.

Roof sheathing may be a mix of the 1.8 cm Baltic birch; new 7/16" 24/16 APA rated OSB; or salvaged APA 40/20 or 48/24 rated plywood (again, from aircraft part shipping crates). Since the birch plywood sheets weigh in excess of 120# each, we may decide during construction that the effort to install those sheets on the roof outweighs the savings of using the lightweight OSB.

Roof sheathing will be covered with 15# felt lapped 2", with a layer of roll roofing installed in the valleys also. Galvanized drip edges will be used on all edges. Architectural grade asphalt shingles will be the roofing itself.

Gutters: Since the building is adjacent to 20" to 30" DBH cedar and Douglas Fir trees, it is preferred that there be no gutters used on that side of the building, as 45 years experience in this area shows that there is no commercial product that can keep fir needles from clogging gutters with the resultant overflows.

An informal ASTM 4829 test on the soil from a test pit was performed. Surprisingly, given the high clay content, the 4" diameter, 2 inch high sample cylinder of soil showed an expansive index of only 3.4 (7.8 mil expansion after 30 hours soak), well below the IRC limit for draining runoff directly to the ground adjacent to the foundation. Since the side of the building nearest the trees would have less than 3 feet of soil backfill against the foundation, to be on the very safe side, it is proposed that the South and west side gutters be eliminated and the backfill on these sides be gravel - which would also function as an infiltration trench.

The North and East side of the building will have gutters and downspouts.

There will be a ½ bath, with a toilet and sink, plus a utility sink in the work area. The existing building 4" PVC sewer pipe is nearby to tie into for sewage. There will be a small tank-less hot water heater. There is an existing hose bib on the present dwelling structure approximately 25 feet from the shop. A T will be installed in this line to provide an underground PVC or PEX supply line to the shop building.

Whole house ventilation is provided by means of the 70 CFM @ 0.25 sp bathroom fan and the >1/2" space under the bathroom door. 2 exterior air intake vents are provided.

The WSEC component performance calculations show a 10, 595 BTU/hr heat source is needed. For the 21F design temperature, an 18,000 rated BTU/hr mini-split heat pump will provide over 11,000 BTU/hr. Specific model and brand will be selected based on availability and price at the time of installation, and will be >13 SEER rating.

General lighting will be via T-8 fluorescent tubes with electronic ballasts. The exterior door and steps will be illuminated with an exterior wall sconce.

All construction and installations will be by the owner and family. Contact information:

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Technical content author: Art Brockschmidt (father)

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Alternate use material

In accordance with an e-mail response from Bill Zeitler of the Kent building department, the following Technical data is provided. This discussion is intended to establish that the Baltic (aka Finnish) Birch plywood proposed for use is an acceptable 'alternate material' per IRC R104.11; '" …. *the equivalent of that prescribed in this code. Compliance with the specific performance-based provisions of the International Codes in lieu of specific requirements of this code shall also be permitted as an alternate*."
Tables at the right are from the BS6566 and BS5268-2 British codes of 1997. The table at the bottom of the page provide specific for the 1.8 cm, 13 ply Baltic Birch the drawing calls out to use for flooring, wall sheathing, and roof sheathing.

Discussion:

Since the mid 1980's until last year, Boeing employees were allowed to salvage shipping crates. The owner's father has salvaged, and stored under cover, a hundred or so 5 foot by 10 foot , 1.8 cm thick sheets of 13 ply birch plywood. These plywood sheets were part of pallets constructed in Carrickfergus, Ireland, and used to ship 737 rudders to Boeing from Short Aircraft in Belfast Ireland. Up to 6 of these sheets were nailed with 5d nails at approx 3" OC to 8 cm x 8 cm stringers, with additional plywood brackets and braces to hold the rudders in place during shipment. Each of the 5x10 sheets has 8 to 16, 10 mm dia bolt holes, which will be plugged during construction with caulking for all sheathing. The BS 6566 marking on these sheets was normally a small ink stamp on the edge(cabinet grade face grain both sides), so very few retain the markings due to handling. There are 3 11 by 17 inch samples of this BS 6566 plywood accompanying the permit application. A Nov, 1990 article in FineHomebuilding magazine described some previous uses of this type salvaged material, which is now called 'green' material.

The proposed use of this plywood is a substitute for APA 24/16 rated osb or plywood. It will be used for no spans over 24", even though the strength capabilities are greater than for 48/24 APA rated plywood.
floor sheathing, with the face grain parallel to the span (the face grain is in the 5 ft dimension, floor panels will have the 10 ft dimension across the joists) and will be used for both 16" and 24" OC joists.
as shear panels on the walls with the face grain perpendicular to the 24" OC 2x8 studs, walls will have intermediate 2x4 studs at the 5 ft OC locations.
as roof sheathing across 24" OC rafters, again with the face grain parallel to the span, and, as cabinets and countertops

A comparison of stress and deflection capabilities between 13 py, .8 cm birch ply and 23/32 D Fir ply is shown in the table below, BS 6566 Birch plywood with the face grain, even perpendicular to the span as proposed for portions of the floor and roof, is stronger than 48/24 APA rated plywood and deflects only 36% that of 24/16 APA rated plywood. The deflection ratio was calculated on the basis of (1/E*I) ratios.

Plywood designation	Doug Fir, 1.85 cm, 23/32, 5 ply	Birch, 1.8 cm, 13 ply, per BS 6566	
		Face grain parallel to span	Face grain perpendicular to span
APA span rating	48/24	See discussion	
Extreme fiber stress in bending	12.9 N/m2 1871 psi	17.58 N/m2 2550 psi	13.99 N/m2 2029 psi
Transverse Shear	0.63 N/m2 91 psi	1.32 N/m2 191 psi	1.17 N/m2 170 psi
Deflection	1 = baseline for 24/16 DF plywood	36% of deflection	33% of deflection

Table 45 — Grade stresses and moduli for service classes 1 and 2 for Canadian Douglas fir plywood: select tight face, select and sheathing grades: unsanded

Type and direction of stress and modulus	Nominal thickness (with number of plies in parentheses) mm									
	7.5 (3)	9.5 (3)	12.5 (4)	12.5 (5)	15.5 (5)	18.5 (5)	18.5 (6)	18.5 (7)	20.5 (6)	20.5 (7)
	Grade stress or modulus N/mm²									
Extreme fibre in bending:										
— face grain parallel to span	13.0	12.2	10.9	14.5	12.9	15.3	11.7	12.4	10.9	11.5
— face grain perpendicular to span	2.71	2.66	3.45	5.12	4.73	5.47	5.27	5.32	5.32	5.37
Tension:										
— parallel to face grain	8.27	6.55	4.97	6.65	5.37	6.89	5.61	5.61	5.42	5.07
— perpendicular to face grain	2.17	2.12	3.15	3.64	2.91	3.79	2.46	3.69	2.22	3.30
Compression:										
—parallel to face grain	12.5	9.90	7.49	10.0	8.13	10.4	8.52	8.52	8.18	7.68
— perpendicular to face grain	3.99	3.94	5.76	4.78	3.84	4.97	3.20	4.83	2.91	4.38
Bearing:										
— on face	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16
Rolling shear in plane of plies: — in face veneer — in back veneer — at first glueline	0.51	0.39	0.39	0.51	0.51	0.51	0.39	0.51	0.39	0.51
Transverse shear:										
— bending:										
— face grain parallel to span	0.53	0.44	0.47	0.62	0.65	0.63	0.53	0.56	0.54	0.56
— face grain perpendicular to span	0.68	0.68	0.73	0.32	0.33	0.32	0.31	0.41	0.33	0.44
Panel shear:										
— parallel and perpendicular to face grain	1.72	1.72	1.72	1.72	1.77	1.77	1.77	1.77	1.77	1.77
Modulus of elasticity in bending:										
— face grain parallel to span	6 475	6 145	5 490	5 525	4 965	5 920	4 550	4 810	4 245	4 465
— face grain perpendicular to span	255	245	615	1 135	1 055	1 255	1 320	1 335	1 410	1 420
Modulus of elasticity in tension and compression:										
— parallel to face grain	4 865	3 840	2 920	3 905	3 150	4 040	3 310	3 310	3 185	2 985
— perpendicular to face grain	1 650	1 625	2 390	1 980	1 595	2 060	1 335	2 005	1 205	1 810
Shear modulus (for panel shear):										
— parallel and perpendicular to face grain	285	275	260	260	255	265	250	250	245	245

Table 49 — Grade stresses and moduli for service classes 1 and 2 for Finnish birch plywood 1.4 mm veneer: sanded

Type and direction of stress and modulus	Nominal thickness (with number of plies in parentheses) mm								
	6.5 (5)	9 (7)	12 (9)	15 (11)	18 (13)	21 (15)	24 (17)	27 (19)	30 (21)
	Grade stress or modulus N/mm²								
Extreme fibre in bending:									
— face grain parallel to span	20.68	19.60	18.32	17.93	17.58	17.24	17.14	16.94	16.79
— face grain perpendicular to span	10.54	12.46	13.59	13.79	13.99	14.23	14.28	14.33	14.43
Tension:									
— parallel to face grain	20.78	19.75	19.16	18.86	18.62	18.42	18.32	18.22	18.12
— perpendicular to face grain	15.17	15.86	16.20	16.45	16.60	16.70	16.79	16.84	16.89
Compression:									
— parallel to face grain	10.34	10.00	9.80	9.70	9.60	9.55	9.50	9.46	9.46
— perpendicular to face grain	8.08	8.42	8.62	8.72	8.82	8.86	8.91	8.91	8.96
Bearing:									
— on face	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Rolling shear:									
— in face veneer	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
— in back veneer	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
— at first glueline	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Transverse shear:									
— bending:									
— face grain parallel to span	1.41	1.32	1.37	1.30	1.32	1.28	1.30	1.27	0.27
— face grain perpendicular to span	0.90	1.17	1.12	1.19	1.17	1.19	1.18	1.21	0.21
Panel shear:									
— parallel and perpendicular to face grain	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83
Modulus of elasticity in bending:									
— face grain parallel to span	5 850	5 200	4 900	4 750	4 600	4 500	4 450	4 400	4 350
— face grain perpendicular to span	2 150	2 800	3 100	3 300	3 400	3 490	3 550	3 600	3 650
Modulus of elasticity in tension and compression:									
— parallel to face grain	4 500	4 350	4 250	4 200	4 200	4 150	4 150	4 150	4 100
— perpendicular to face grain	3 500	3 650	3 750	3 800	3 800	3 850	3 850	3 800	3 900
Shear modulus (for panel shear):									
— parallel and perpendicular to face grain	320	320	320	320	320	320	320	320	320

WSEC component performance calculations, using the WSU worksheet.

9				Heating System Size	
10				Ducts are located in unconditioned space	☐
11	Conditioned Floor Area	723		Equipment size over design load	100%
12	Conditioned Building Volume	5784		Btu/hour output	10,595
13	Weather Station	Kent		KW	3.1

	Component Performance, R-3 occupancies	Code Target Values		Proposed Design Values	
16		Area	UA	Area	UA
17	Vertical Glazing U = 0.300	108	32.5	108	48.0
18	Overhead Glazing U = 0.500	0	0.0	0	0.0
19	Doors U = 0.200	24	4.8	24	0.0
20	Flat/Vaulted Ceilings U = 0.027	670	18.1	670	18.1
21	Wall (above grade) U = 0.056	1188	66.5	1188	55.8
22	Floors U = 0.029	726	21.1	726	17.4
23	Slab on Grade F = 0.360	0	0.0	0	0.0
24	Below Grade				
25	2' depth, wall U = 0.042	0	0.0	0	0.0
26	2' depth, slab F = 0.590	0	0.0	0	0.0
27	3.5' depth, wall U = 0.041	0	0.0	0	0.0
28	3.5' depth, slab F = 0.640	0	0.0	0	0.0
29	7' depth, wall U = 0.037	0	0.0	0	0.0
30	7' depth, slab F = 0.570	0	0.0	0	0.0
31					
32		Target UA Total	142.9	Proposed UA Total	139.4
33		Target Credits from Chpt. 9	1.0	Proposed Credits from Chpt. 9	1.5 Qualifies

36 Vertical Glazing

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Inch	Height Feet	Inch	Area	UA
39	1	2glass pella thermastar	lowes	0.300	3	5	0	4		60.0	18.0
40	7	2gl Alum with TB Clear ≥1/2"spacer	10-6A	0.690	1	8		5		40.0	27.6
41			0	0.000						0.0	0.0
42			0	0.000	0	0		0		0.0	0.0
43		2glass pella thermastar	lowes	0.300	1	4		0		0.0	0.0
44		2glass pella thermastar	lowes	0.300	1	2		4		8.0	2.4

135 Walls (Above Grade)

	Plan ID	Component Description	Ref.	Wall U	Net Area	UA
138	6	R25 cavity+R0 foam INT 2X8W Lap	10-5	0.047	1188.0	55.8
139			0	0.000		0.0
140			0	0.000		0.0
141			0	0.000		0.0
142			0	0.000		0.0
143			0	0.000		0.0
144			0	0.000		0.0
145			0	0.000		0.0
146			0	0.000		0.0
147			0	0.000		0.0
148			0	0.000		0.0
149			0	0.000		0.0
150			0	0.000		0.0
151						
152				Sum of Net Wall Area and UA	1188.0	55.8

154 Floor (over crawl or exterior)

	Plan ID	Component Description	Ref.	Floor U	Area	UA
157	7	R38 + R11 perim vented Joist 16oc	10-3	0.024	726.0	17.4
158			0	0.000		0.0
159			0	0.000		0.0
160			0	0.000		0.0
161						
162				Sum of Area and UA	726.0	17.4

94 Exterior Doors

	Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Inch	Height Feet	Inch	Area	UA
97		1 Exempt Door if less than 24 SF								0.0	0.0
98	2	1 exempt door, if <24 Square Feet	502.1.5.2	0.000	1	3	3	7	4	23.8	0.0
99			0	0.000	0	0	0	0		0.0	0.0
100			0	0.000	0	2	6	7	0	0.0	0.0
101			0	0.000						0.0	0.0
102			0	0.000						0.0	0.0
103			0	0.000						0.0	0.0
104			0	0.000						0.0	0.0
105			0	0.000						0.0	0.0
106			0	0.000						0.0	0.0
107			0	0.000						0.0	0.0

108 If exempt door is selected, must be ≤ 24 SF.

109 Sum of Area and UA 23.8 0.0

205 Chapter 9 Options Total of 1 Credit Required

	Opt.	Opt. Description		
207	1a	High Efficiency HVAC Equipment 1	☐	
208	1b	High Efficiency HVAC Equipment 2	☐	
209	1c	High Efficiency HVAC Equipment 3	☐	
210	2	High Efficiency HVAC Distribution System	☐	
211	3a	Efficient Building Envelope 1	☑	0.5
212	3b	Efficient Building Envelope 2	☐	
213	3c	Super-Efficient Building Envelope 3	☐	
214	4a	Air Leakage Control and Efficient Ventilation	☐	
215	4b	Additional Air Leakage Control and Efficient Ventilation	☐	
216	5a	Efficient Water Heating	☐	
217	5b	High Effieciency Water Heating	☐	
218	6	Small Dwelling Unit	☑	1.0
219	7	Large Dwelling Unit	☐	
220	8	Renewable Electric Energy	☐	______ *1200 kwh
221				Total Credits 1.50

ITEM

IRC nailing table included here on drawing plans for quick reference as minimum nailing.

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS
Roof			
1	Blocking between joists or rafters to top plate, toe nail	3-8d (2 1/2" × 0.113")	—
2	Ceiling joists to plate, toe nail	3-8d (2 1/2"× 0.113")	—
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	—
4	Collar tie rafter, face nail or 1 1/4" × 20 gage ridge strap	3-10d (3" × 0.128")	—
5	Rafter to plate, toe nail	2-16d (3 1/2" × 0.135")	—
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	4-16d (3 1/2" × 0.135") 3-16d (3 1/2" × 0.135")	— —
Wall			
7	Built-up corner studs	10d (3" × 0.128")	24" o.c.
8	Built-up header, two pieces with 1/2" spacer	16d (3 1/2" × 0.135")	16" o.c. along each edge
9	Continued header, two pieces	16d (3 1/2" × 0.135")	16" o.c. along each edge
10	Continuous header to stud, toe nail	4-8d (2 1/2" × 0.113")	—
11	Double studs, face nail	10d (3" × 0.128")	24" o.c.
12	Double top plates, face nail	10d (3" × 0.128")	24" o.c.
13	Double top plates, minimum 24-inch offset of end joints, face nail in lapped area	8-16d (3 1/2"× 0.135")	—
14	Sole plate to joist or blocking, face nail	16d (3 1/2" × 0.135")	16" o.c.
15	Sole plate to joist or blocking at braced wall panels	3-16d (3 1/2" × 0.135")	16" o.c.
16	Stud to sole plate, toe nail	3-8d (2 1/2" × 0.113") or 2-16d 3 1/2" × 0.135")	— —
17	Top or sole plate to stud, end nail	2-16d (3 1/2" × 0.135")	—
18	Top plates, laps at corners and intersections, face nail	2-10d (3" × 0.128")	—
22	Wider than 1" × 8" sheathing to each bearing, face nail	3-8d (2 1/2" × 0.113") 4 staples 1 3/4"	— —
Floor			
23	Joist to sill or girder, toe nail	3-8d (2 1/2" × 0.113")	—
24	1" × 6" subfloor or less to each joist, face nail	2-8d (2 1/2" × 0.113") 2 staples 1 3/4"	— —
25	2" subfloor to joist or girder, blind and face nail	2-16d (3 1/2" × 0.135")	—
26	Rim joist to top plate, toe nail (roof applications also)	8d (2 1/2" × 0.113")	6" o.c.
27	2" planks (plank & beam - floor & roof)	2-16d (3 1/2" × 0.135")	at each bearing
28	Built-up girders and beams, 2-inch lumber layers	10d (3" × 0.128")	Nail each layer as follows: 32" o.c. at top and bottom and staggered. Two nails at ends and at each splice.
29	Ledger strip supporting joists or rafters	3-16d (3 1/2" × 0.135")	At each joist or rafter

(continued)

TABLE R602.3(1)-continued FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER[b, c, e]	SPACING OF FASTENERS Edges (inches)[i]	SPACING OF FASTENERS Intermediate supports[c, e] (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
30	3/8" - 1/2"	6d common (2"×0.113") nail (subfloor wall) 8d common (2 1/2"×0.131") nail (roof)[f]	6	12[g]
31	19/32" - 1"	8d common nail (2 1/2"×0.131")	6	12[g]
32	1 1/8" - 1 1/4"	10d common (3"×0.148") nail or 8d (2 1/2"×0.131") deformed nail	6	12
Wood structural panels, combination subfloor underlayment to framing				
37	3/4" and less	6d deformed (2" × 0.120") nail or 8d common (2 1/2" × 0.131") nail	6	12
38	7/8"- 1"	8d common (2 1/2" × 0.131") nail or 8d deformed (2 1/2" × 0.120") nail	6	12
39	1 1/8"- 1 1/4"	10d common (3" × 0.148") nail or 8d deformed (2 1/2" × 0.120") nail	6	12

Notching and drilling of joists and studs will comply with the applicable sections of IRC.

Since the framing for this shop has full top and bottom plates, the only openings will be around electrical conduit and wire, heat pump cables, and plumbing piping.
Fill openings around vents, pipes, ducts, cables and wires at ceiling and floor level with stuffed fiberglass or rockwool to resist the free passage of flame and products of combustion.

2x8 studs and top and bottom plates may have no larger than 2" dia holes drilled with the hole edge more than 1.5" from the edges. 2x8 studs may be notched 1.5".

There will be NO notching of any joist.

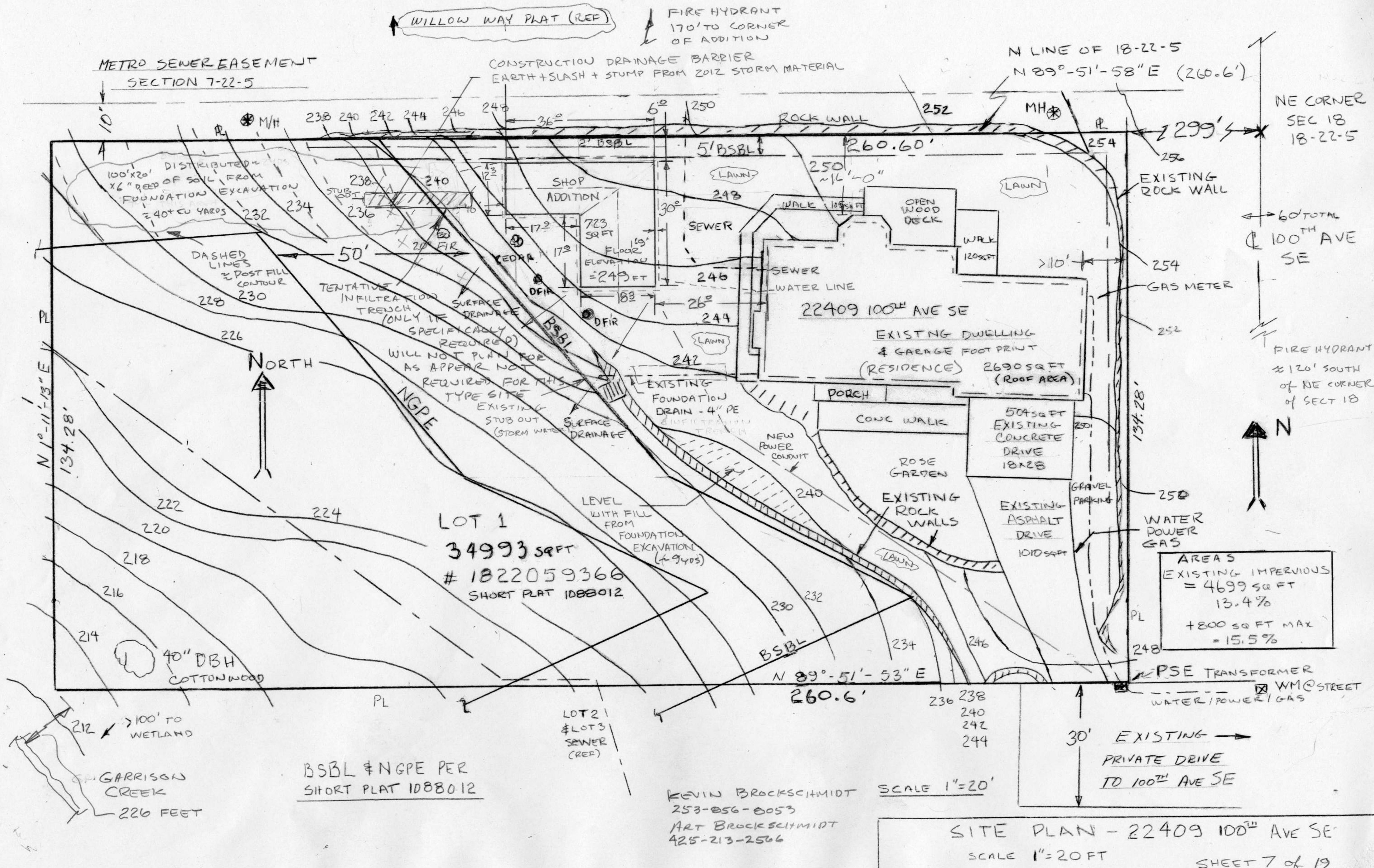
The 2x12 joists may be drilled up to 3-3/4 inch diameter within 4 feet of the ends with the edge of the hole at least 2" from the joist edge.

NUMBER AND TYPE OF FASTENER[a, b, c]

SPACING OF FASTENERS

Valuation, based on actual cost and estimated labor : $21, 553
(e.G. salvaged materials zero cost)

Material	QTY	$$/per	total
Concrete	8 yds	$100	$800
Form ties	250		$250
Forms, stakes, etc	salvaged		
Rebar	800	$0.40	$320
Galv bolts	35	$2	$70
Plate Washers	35	$1.50	$45
Sesmic anchors	6	$15	$90
Galv 16d	1 box		$150
Galv 8d	1 box		$120
8d	2 box		$150
10d	2 box		$150
16d	3 box		$250
Roofing nails	1 box		$40
Siding nails	1 box		$110
Sill PT 2x6	150 lf	$1/ft	$150
2X12s (H/F)	500 lf	$1/ft	$500
2x12 salvage	500 lf	salvaged	
Sheathing	3600 sq ft	salvaged	
OSB if needed	25 sheets	$9	$225
Polyethlyene	5 rolls	$60	$300
2x8 by 8 ft	120	salvaged	
2x6 rafters	600 lf	$0.80	$480
2x6 ceiling	150lf	$0.80	$120
2x8 ceiling	350 lf	$0.90	$315
15# felt	10 rolls	$28	$280
Roll roof	1 roll	$45	$45
Roofing	11 sqs	$150	$1,650
Siding	3600 lf	$0.50	$1,800
Drip edge/flash	300 lf	$0.30	$90
House wrap	2 rolls	$120	$240
Caulking	2 cases	$50	$100
Wallboard	60 shts	$10	$600
Wallboard screws	1 box	$60	$60
Doors	2	salvage	
Interior molding ar		salvage	
Plumbing	1 set		$1,000
Electrical	1 set		$1,000
Heat Pump	1 1.5T	$1,200	$1,500
Insulation	house set		$1,950
Vents/ Fan	1 set		$170
Paint/stain	20 gal	$1 surplus	$20
Fuel	30 gal	$ 5 gal	$150
Labor @ 0.7 hr sqft	560 hrs	$9.04	$5,063
Misc. (tools wear, etc)			$1,200
TOTAL valuation			**$21,553**



WILLOW WAY PLAT (REF)
FIRE HYDRANT 170' TO CORNER OF ADDITION
METRO SEWER EASEMENT
SECTION 7-22-5
CONSTRUCTION DRAINAGE BARRIER
EARTH + SLASH + STUMP FROM 2012 STORM MATERIAL
N LINE OF 18-22-5
N 89°-51'-58" E (260.6')
NE CORNER SEC 18 18-22-5
±299'
ROCK WALL
260.60'
5' BSBL
2' BSBL
M/H
MH
PL
100'x20' x6" DEEP OF SOIL FROM FOUNDATION EXCAVATION ±40 CU YARDS DISTRIBUTED
STUB OUT
SHOP ADDITION
723 SQ FT
FLOOR ELEVATION =249 FT
20" FIR
CEDAR
DFIR
50'
DASHED LINES ≈ POST FILL CONTOUR
TENTATIVE INFILTRATION TRENCH (ONLY IF SPECIFICALLY REQUIRED) WILL NOT PLAN FOR AS APPEAR NOT REQUIRED FOR THIS TYPE SITE
SURFACE DRAINAGE
EXISTING STUB OUT (STORM WATER)
EXISTING FOUNDATION DRAIN - 4" PE
INFILTRATION TRENCH
BSBL
NGPE
NORTH
LAWN
SEWER
WALK
OPEN WOOD DECK
WALK 120 SQ FT
SEWER WATER LINE
22409 100TH AVE SE
EXISTING DWELLING & GARAGE FOOT PRINT (RESIDENCE) 2690 SQ FT (ROOF AREA)
PORCH
CONC WALK
504 SQ FT EXISTING CONCRETE DRIVE 18x28
NEW POWER CONDUIT
ROSE GARDEN
EXISTING ROCK WALLS
EXISTING ROCK WALL
EXISTING ASPHALT DRIVE 1010 SQ FT
GRAVEL PARKING
GAS METER
WATER POWER GAS
60' TOTAL
℄ 100TH AVE SE
FIRE HYDRANT ±120' SOUTH OF NE CORNER OF SECT 18
N
LEVEL WITH FILL FROM FOUNDATION EXCAVATION (±9 YDS)
LOT 1
34993 SQ FT
1822059366
SHORT PLAT 1088012
AREAS
EXISTING IMPERVIOUS = 4699 SQ FT 13.4%
+800 SQ FT MAX = 15.5%
N 0°-11'-13" E
134.28'
N 89°-51'-53" E
260.6'
40" DBH COTTONWOOD
>100' TO WETLAND
GARRISON CREEK
226 FEET
LOT 2 & LOT 3 SEWER (REF)
PSE TRANSFORMER
WM @ STREET
WATER/POWER/GAS
30'
EXISTING PRIVATE DRIVE TO 100TH AVE SE
BSBL & NGPE PER SHORT PLAT 1088012
SCALE 1"=20'
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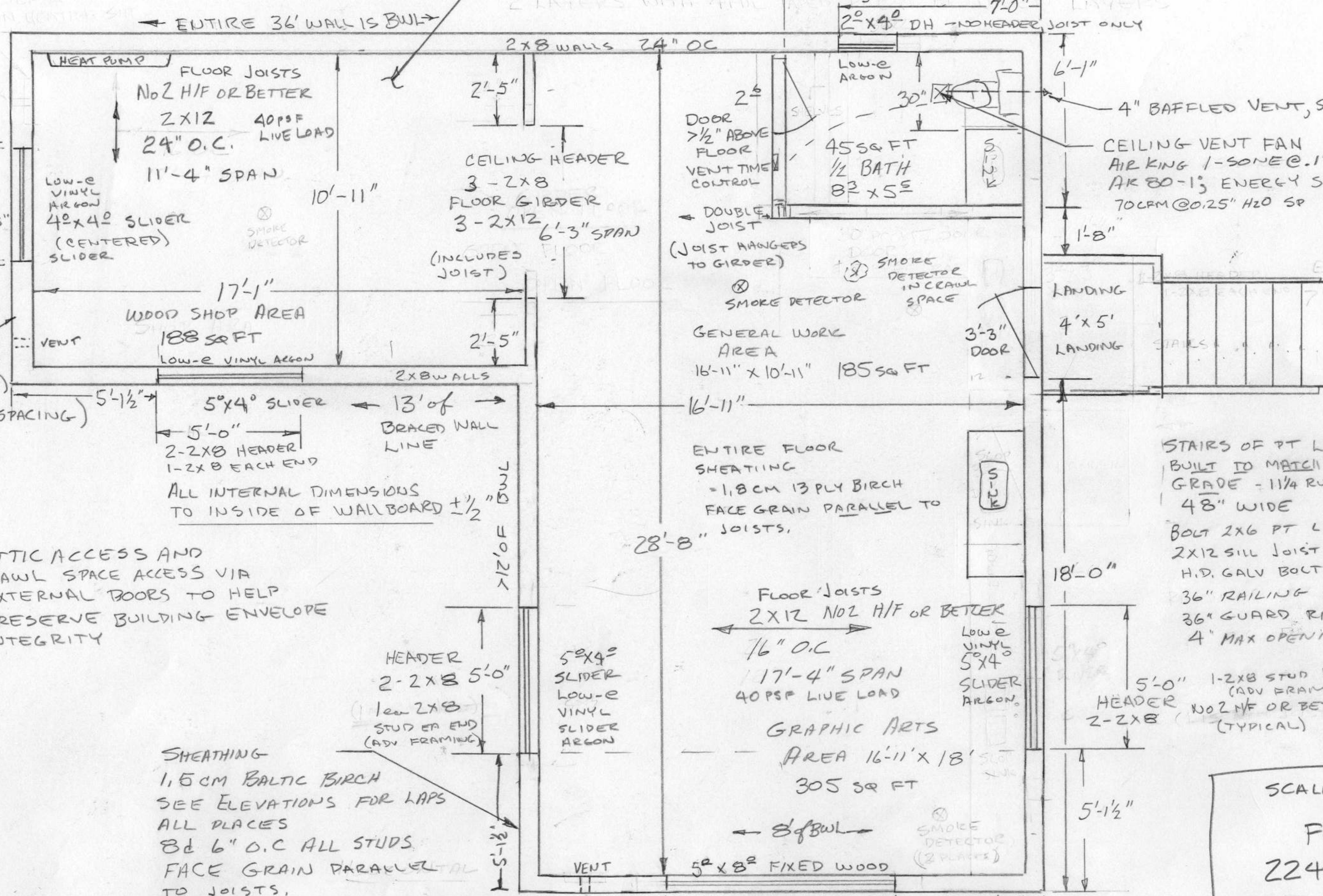
ART BROCKSCHMIDT
425-213-2566
SITE PLAN - 22409 100TH AVE SE
SCALE 1"=20 FT
SHEET 7 of 19

DOUBLE LAYER OF FLOOR – 4 MIL POLY BETWEEN LAYERS
NAIL BOTTOM LAYER 8d @ 6" O.C ALL JOISTS
TOP LAYER IS FINISHED FLOOR, PLUGGED SCREWS OR 8d FINISH NAILS
OFFSET EDGES
1.8cm BALTIC BIRCH – DIRECTION OF FACE GRAIN OPTIONAL

NORTH

8' of BRACED WALL LINE



4" BAFFLED VENT, SMOOTH DUCT

CEILING VENT FAN
AIR KING 1-SONE @ .1" H2O
AK 80-1; ENERGY STAR
70 CFM @ 0.25" H2O SP

EAST WALL
18' of BWL

FLOOR GIRDER
2-2X12
SPAN = 4'-3"
(1 IS RIM JOIST)
2-2X6 EACH END STUDS

2X12 RIM JOISTS (ALL AROUND)
(16d @ 6" SPACING)

STAIRS OF PT LUMBER
BUILT TO MATCH FINAL GRADE – 11¼ RUN; <7" RISE
48" WIDE
BOLT 2X6 PT LEDGER TO 2X12 SILL JOIST WITH 3 ea ½" DIA H.D. GALV BOLTS.
36" RAILING BOTH SIDES
36" GUARD RAIL BOTH SIDE
4" MAX OPENING BANNISTERS

1-2X8 STUD EACH END (ADV FRAMING)
No2 H/F OR BETTER (TYPICAL)

INTERIOR FINISH
TAPED 5/8 DRYWALL
LATEX PAINT
WINDOW SILLS & DOOR FRAME RESAWN OAK PALLETS w/ STAIN
STAINED BIRCH FLOOR

ATTIC ACCESS AND CRAWL SPACE ACCESS VIA EXTERNAL DOORS TO HELP PRESERVE BUILDING ENVELOPE INTEGRITY

723 SQ FT FLOOR
8% = 58 SQ FT
4% = 29 SQ FT
WINDOW AREA = 124 SQ FT
OPENABLE = 42 SQ FT
WITH DOOR = 64 SQ FT

SHEATHING
1.5cm BALTIC BIRCH
SEE ELEVATIONS FOR LAPS
ALL PLACES
8d 6" O.C ALL STUDS
FACE GRAIN PARALLEL TO JOISTS.

HEADER
1-2X12 (PARALLEL TO JOISTS)
GIRDER BELOW 2-2X12; 6'-3" SPAN
(DOUBLE JOIST) 2 ea 2X6 POSTS EACH END

ALL WALLS CONSTRUCTED AS BRACED WALLS
1.8CM 13 PLY BIRCH PLY SHEATHING
WITH 8d NAILS @ 6" O.C ON 24" OC 2X8 STUDS
AND 5' O.C INTERMEDIATE 2X4 (OR 2X6) STUDS IN ADDITION.

SCALE ¼" = 1 FT
FLOOR PLAN
22409 100TH AVE SE

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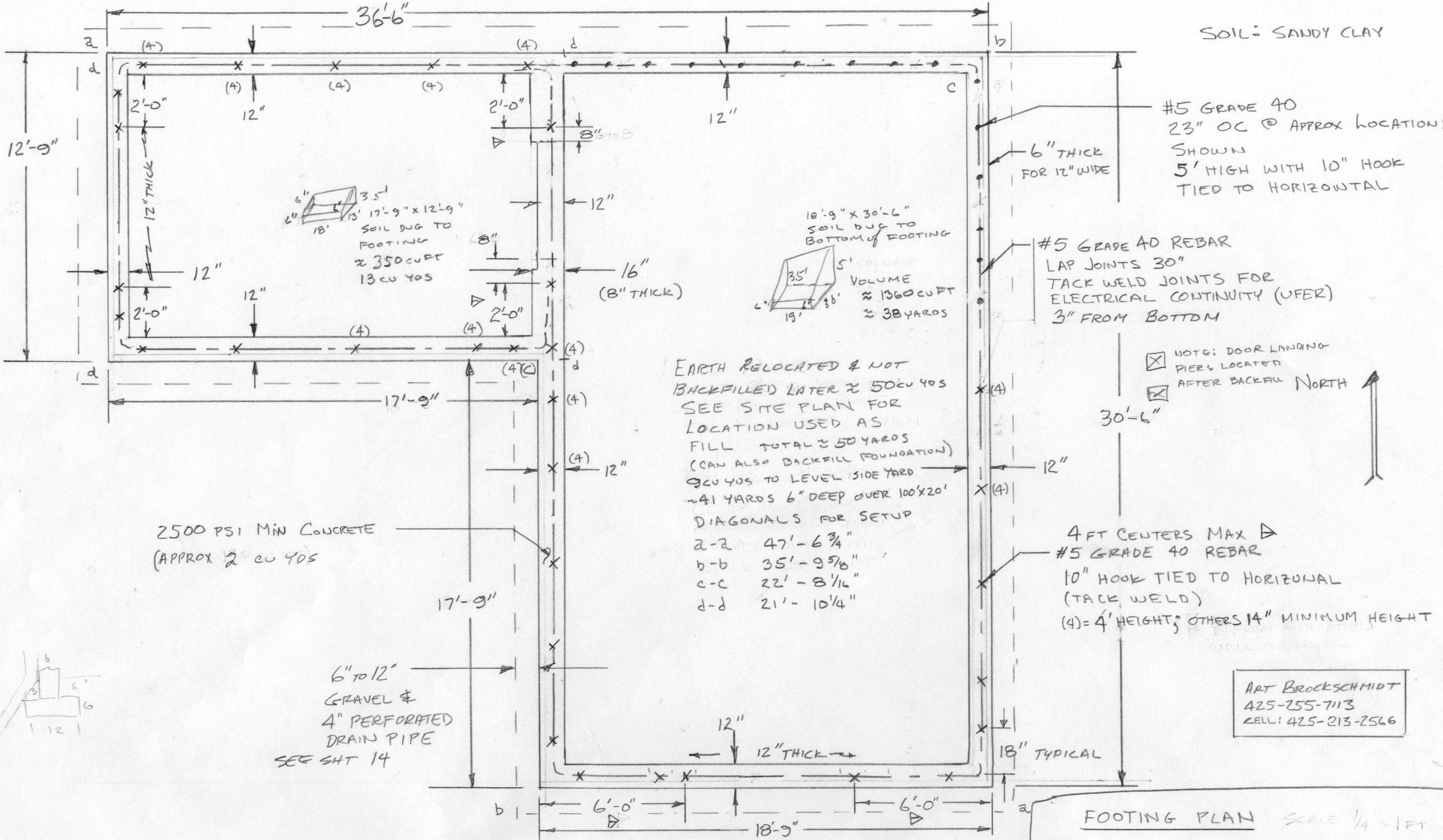

FOOTING PLAN

SCALE: 1/4" = 1 FT

22409 100TH AVE SE

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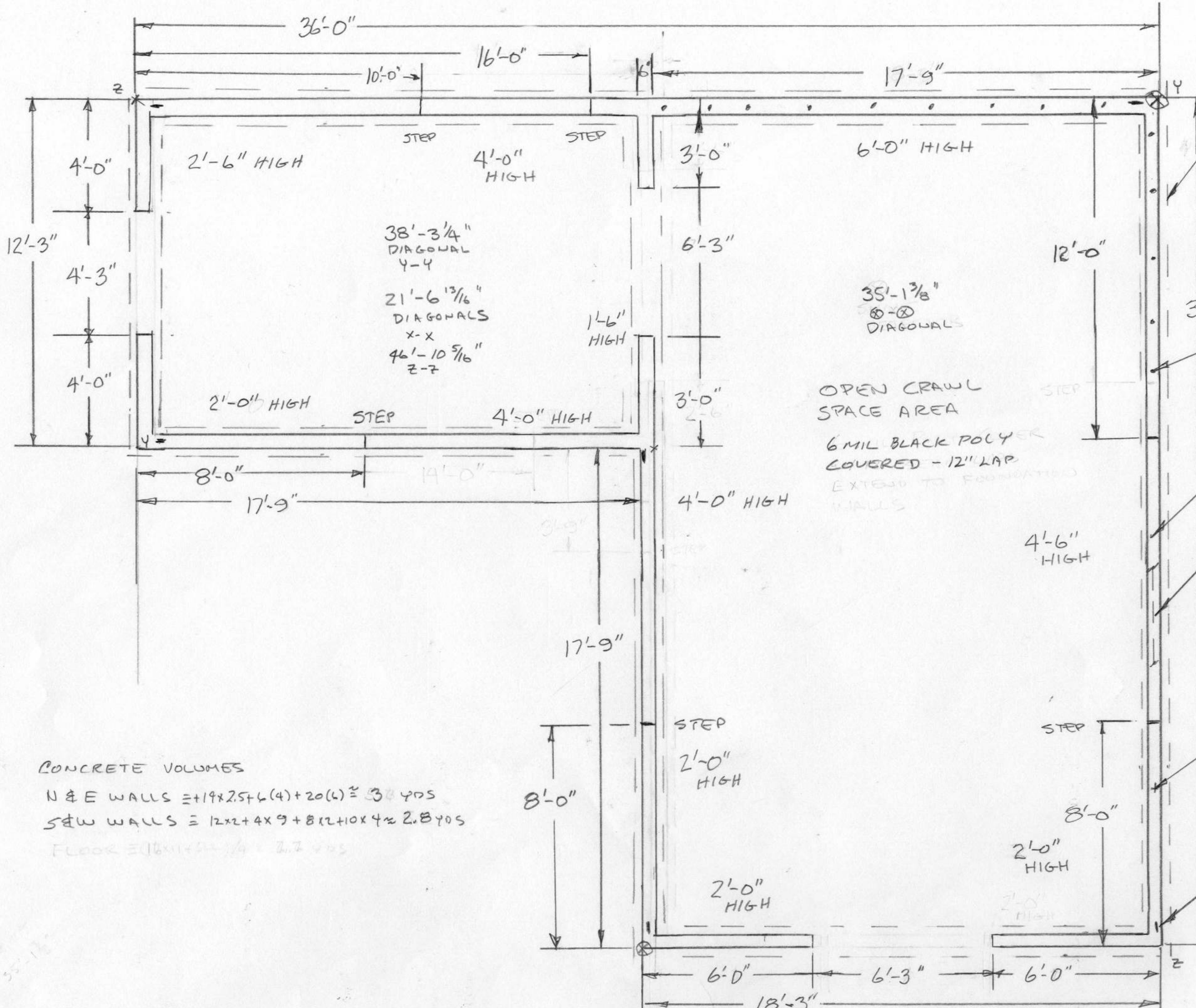

CONTINUOUS 6"X12" FOOTINGS - SEE FOOTING PLAN SHT
2" COVER OVER ALL REBAR

VERTICAL #5 GRADE 40 REBAR 23" O.C. ON 6'-0" HIGH WALL SECTIONS (CL/SC SOIL)

ALL WALLS 6" THICK

ALL WALLS, ALL AROUND #5 GRADE 40 REBAR 6"-12" FROM TOP AND AT MID POINT FOR 4' AND HIGHER WALLS - REBAR INSIDE LEG OF STHD14 STRAPS

FOUNDATION WALL PLAN

1/2" X 10" HDG BOLT
3" X 3" X .229 MIN PLATE WASHER
SEE FOUNDATION ELEVATION SHEET FOR SPECIFIC LOCATIONS FURTHER REFERENCE
(4' O.C.; 5" TO 12" FROM SILL ENDS)

STHD14RJ SESMIC STRAP
6 PLACES; CORNERS
TOP #5 GRADE 40 REBAR INSIDE OF STRAP LEG

CONCRETE VOLUMES
N & E WALLS = +19x2.5+6(4)+20(6) ≈ 3 YDS
S & W WALLS = 12x2+4x9+8x2+10x4 ≈ 2.8 YDS

STEM WALL PLAN

SCALE 1/4" = 1 FT
22409 100TH AVE SE

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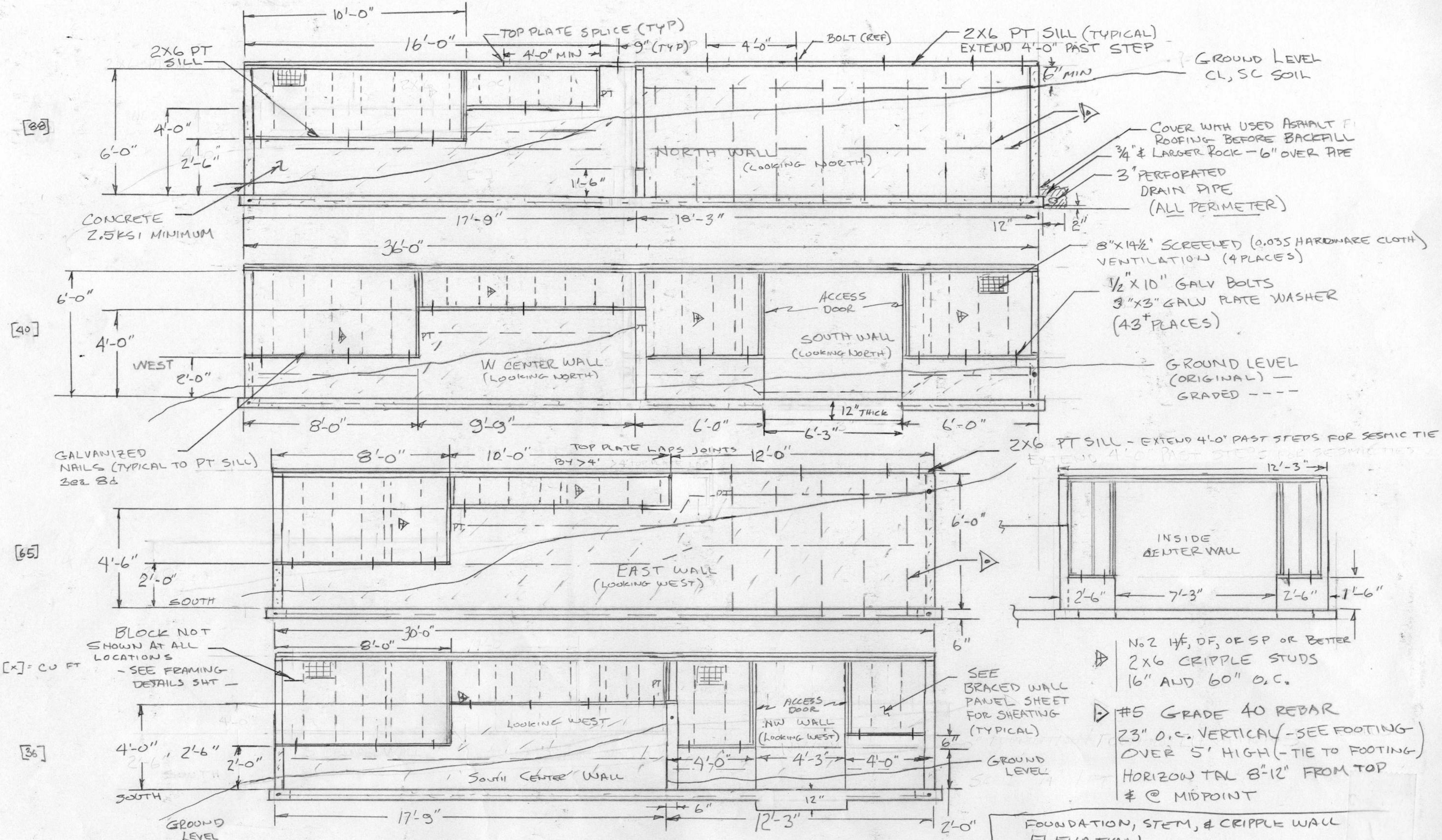
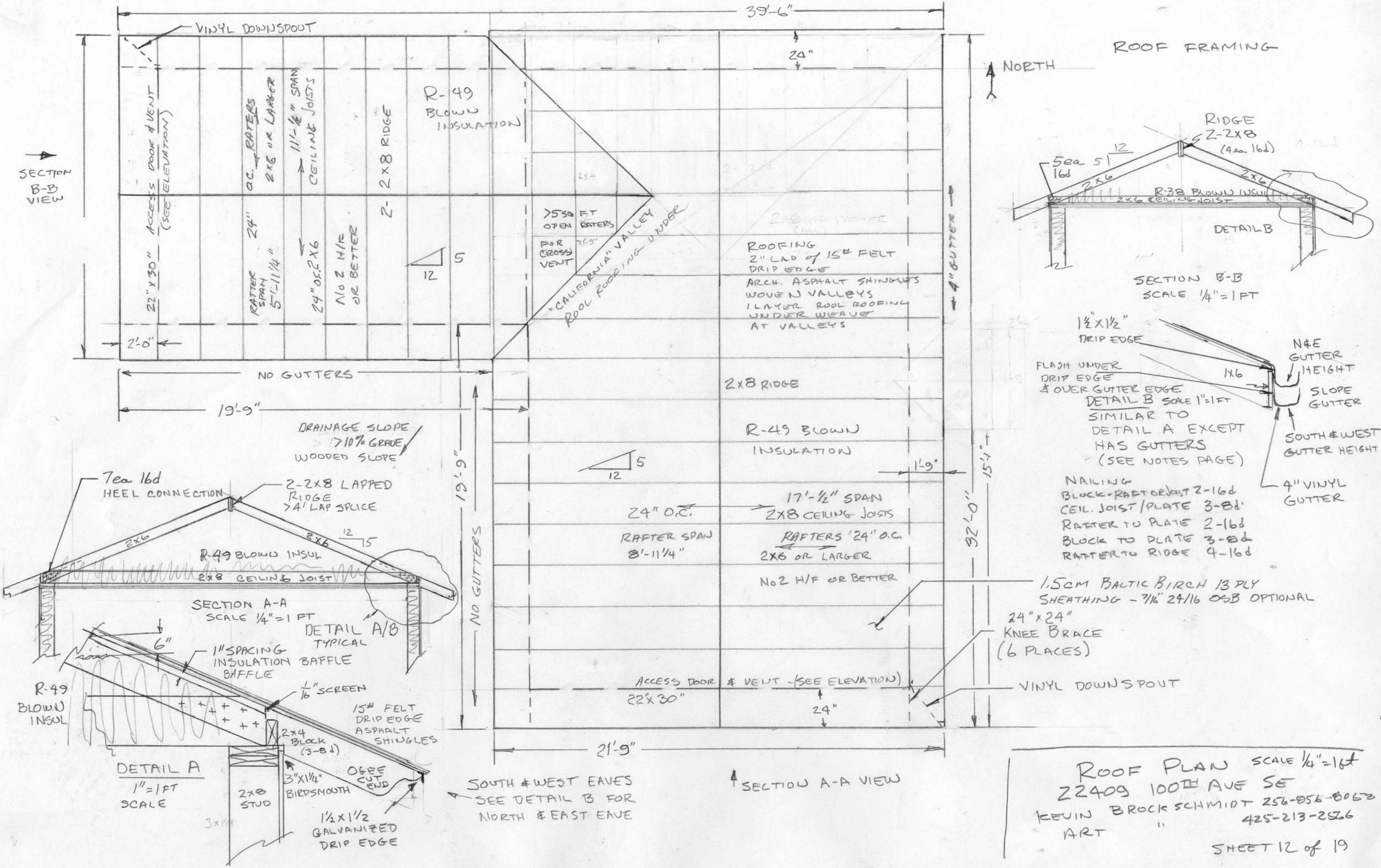
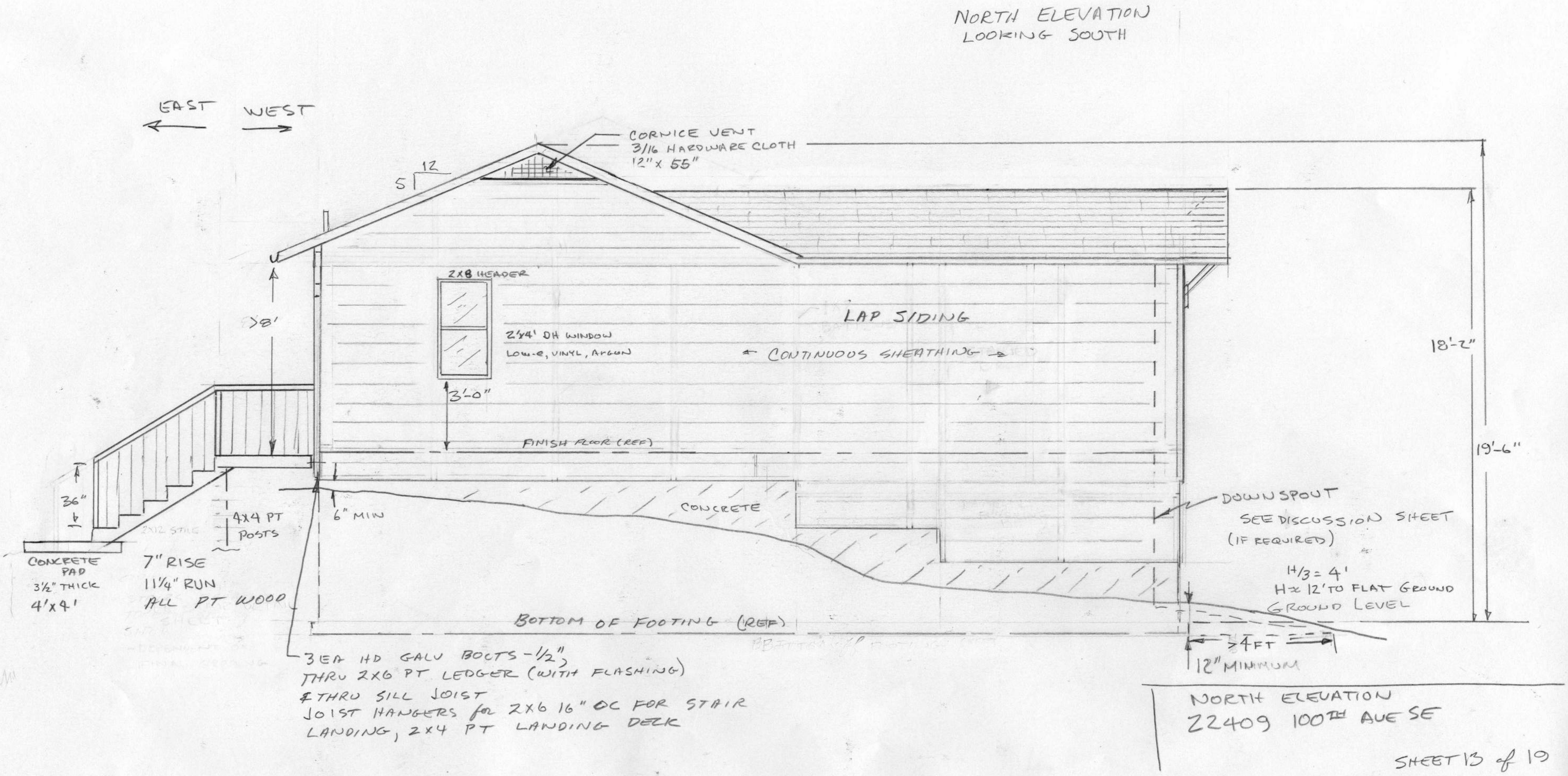
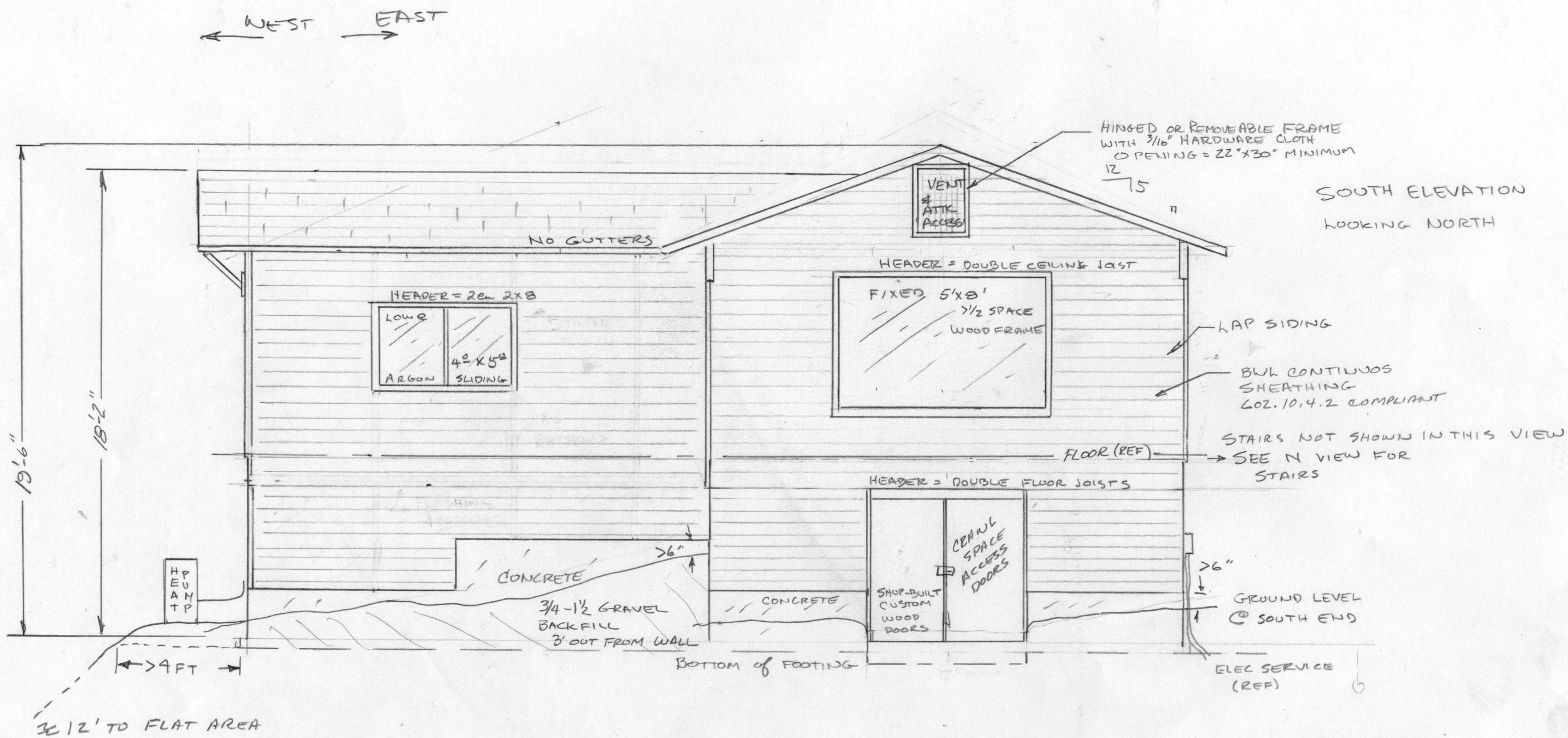


FOUNDATION ELEVATIONS
ALL CRIPPLE WALLS AS 2-STORY BWL 8d 6" O.C.
1.8CM BALTIC BIRCH PANELS

FOUNDATION, STEM, & CRIPPLE WALL
ELEVATION
22409 100th AVE SE
ART BROCKSCHMIDT 425-213-2566
SHEET 11 of 19 19


ROOF FRAMING
NORTH
39'-6"
VINYL DOWNSPOUT
SECTION B-B VIEW
22" x 30" ACCESS DOOR & VENT (SEE ELEVATION)
RATTER SPAN 5'-11 1/4"
24" O.C. RAFTERS 2x6 OR LARGER
11'-1/2" SPAN CEILING JOISTS
24" O.C. 2x6
No 2 H/F OR BETTER
2-2x8 RIDGE
R-49 BLOWN INSULATION
12
5
2'-0"
NO GUTTERS
19'-9"
24"
>550 FT OPEN RATERS
FOR CROSS VENT
"CALIFORNIA" VALLEY ROOL ROOFING UNDER
ROOFING
2" LAP of 15# FELT
DRIP EDGE
ARCH. ASPHALT SHINGLES
WOVEN VALLEYS
1 LAYER ROOL ROOFING UNDER WEAVE AT VALLEYS
4" GUTTER
2x8 RIDGE
R-49 BLOWN INSULATION
1'-9"
15'-1"
32'-0"
17'-1/2" SPAN
2X8 CEILING JOISTS
24" O.C.
RAFTER SPAN 8'-11 1/4"
RAFTERS 24" O.C.
2X6 OR LARGER
No2 H/F OR BETTER
1.5cm BALTIC BIRCH 13 PLY SHEATHING - 7/16" 24/16 OSB OPTIONAL
24" x 24" KNEE BRACE (6 PLACES)
ACCESS DOOR & VENT - (SEE ELEVATION)
22"X30"
VINYL DOWNSPOUT
21'-9"
SECTION A-A VIEW
DRAINAGE SLOPE >10% GRADE
WOODED SLOPE
7ea 16d HEEL CONNECTION
2-2x8 LAPPED RIDGE >4' LAP SPLICE
2x6
2x6
R-49 BLOWN INSUL
2x8 CEILING JOIST
SECTION A-A
SCALE 1/4" = 1 FT
DETAIL A/B TYPICAL
6"
1" SPACING INSULATION BAFFLE
BAFFLE
R-49 BLOWN INSUL
1/16" SCREEN
15# FELT
DRIP EDGE
ASPHALT SHINGLES
2x4 BLOCK (3-8d)
3"X1 1/4" BIRDSMOUTH
OGEE CUT END
2x8 STUD
1 1/2 x 1 1/2 GALVANIZED DRIP EDGE
DETAIL A
1" = 1 FT SCALE
SOUTH & WEST EAVES
SEE DETAIL B FOR NORTH & EAST EAVE
RIDGE
2-2x8
(4ea 16d)
5ea 16d
2x6
R-38 BLOWN INSUL
2x6 CEILING JOIST
DETAIL B
SECTION B-B
SCALE 1/4" = 1 FT
1 1/2 X 1 1/2" DRIP EDGE
FLASH UNDER DRIP EDGE & OVER GUTTER EDGE
1x6
N&E GUTTER HEIGHT
SLOPE GUTTER
SOUTH & WEST GUTTER HEIGHT
4" VINYL GUTTER
DETAIL B SCALE 1" = 1 FT
SIMILAR TO DETAIL A EXCEPT HAS GUTTERS
(SEE NOTES PAGE)
NAILING
BLOCK-RAFTER OR JOIST 2-16d
CEIL. JOIST/PLATE 3-8d
RAFTER TO PLATE 2-16d
BLOCK TO PLATE 3-8d
RAFTER TO RIDGE 4-16d
ROOF PLAN SCALE 1/4" = 1 ft
22409 100TH AVE SE
KEVIN BROCKSCHMIDT 256-856-8063
ART " 425-213-2526
SHEET 12 of 19


NORTH ELEVATION
LOOKING SOUTH
EAST
WEST
CORNICE VENT
3/16 HARDWARE CLOTH
12" x 55"
12
5
2X8 HEADER
2'X4' DH WINDOW
LOW-E, VINYL, ARGON
LAP SIDING
CONTINUOUS SHEATHING
>8'
3'-0"
FINISH FLOOR (REF)
18'-2"
19'-6"
36"
4X4 PT
POSTS
6" MIN
CONCRETE
DOWNSPOUT
SEE DISCUSSION SHEET
(IF REQUIRED)
H/3 = 4'
H ≈ 12' TO FLAT GROUND
GROUND LEVEL
CONCRETE
PAD
3½" THICK
4'X4'
7" RISE
11¼" RUN
ALL PT WOOD
BOTTOM OF FOOTING (REF)
>4FT
12" MINIMUM
3 EA HD GALV BOLTS - ½",
THRU 2X6 PT LEDGER (WITH FLASHING)
& THRU SILL JOIST
JOIST HANGERS for 2X6 16" OC FOR STAIR
LANDING, 2X4 PT LANDING DECK
NORTH ELEVATION
22409 100TH AVE SE
SHEET 13 of 19



SOUTH ELEVATION

22409 100th AVE SE

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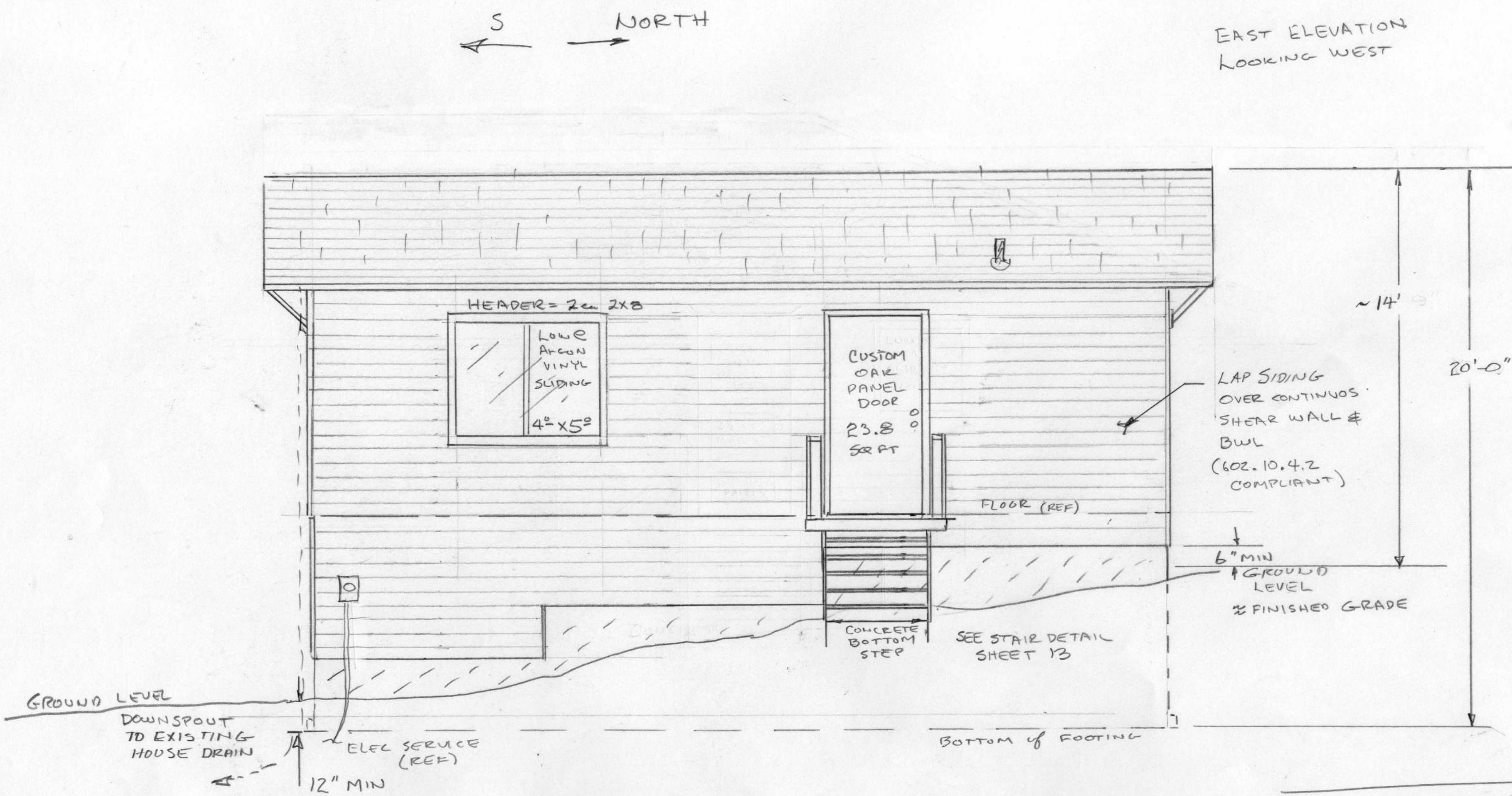

EAST ELEVATION
22409 100TH AVE SE

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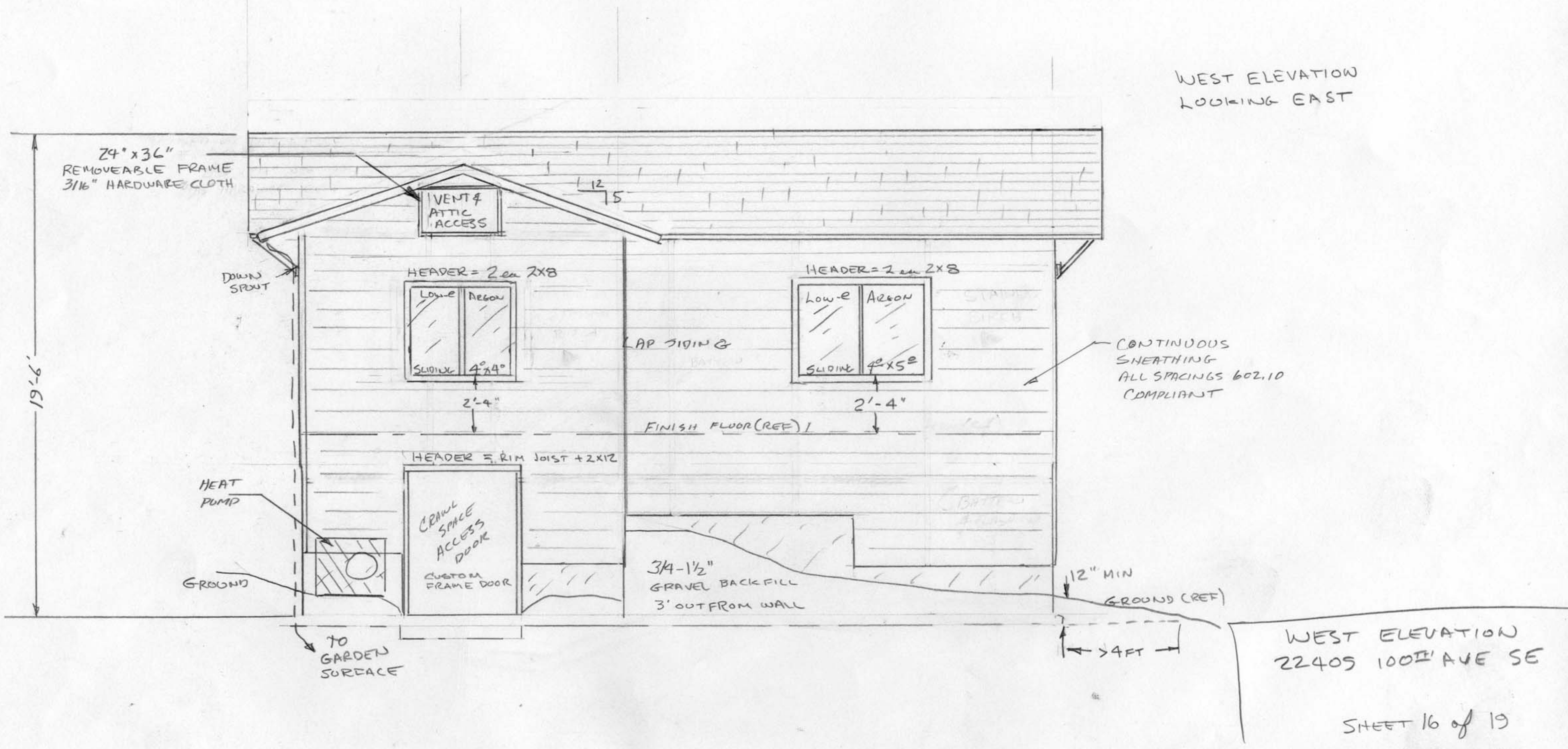
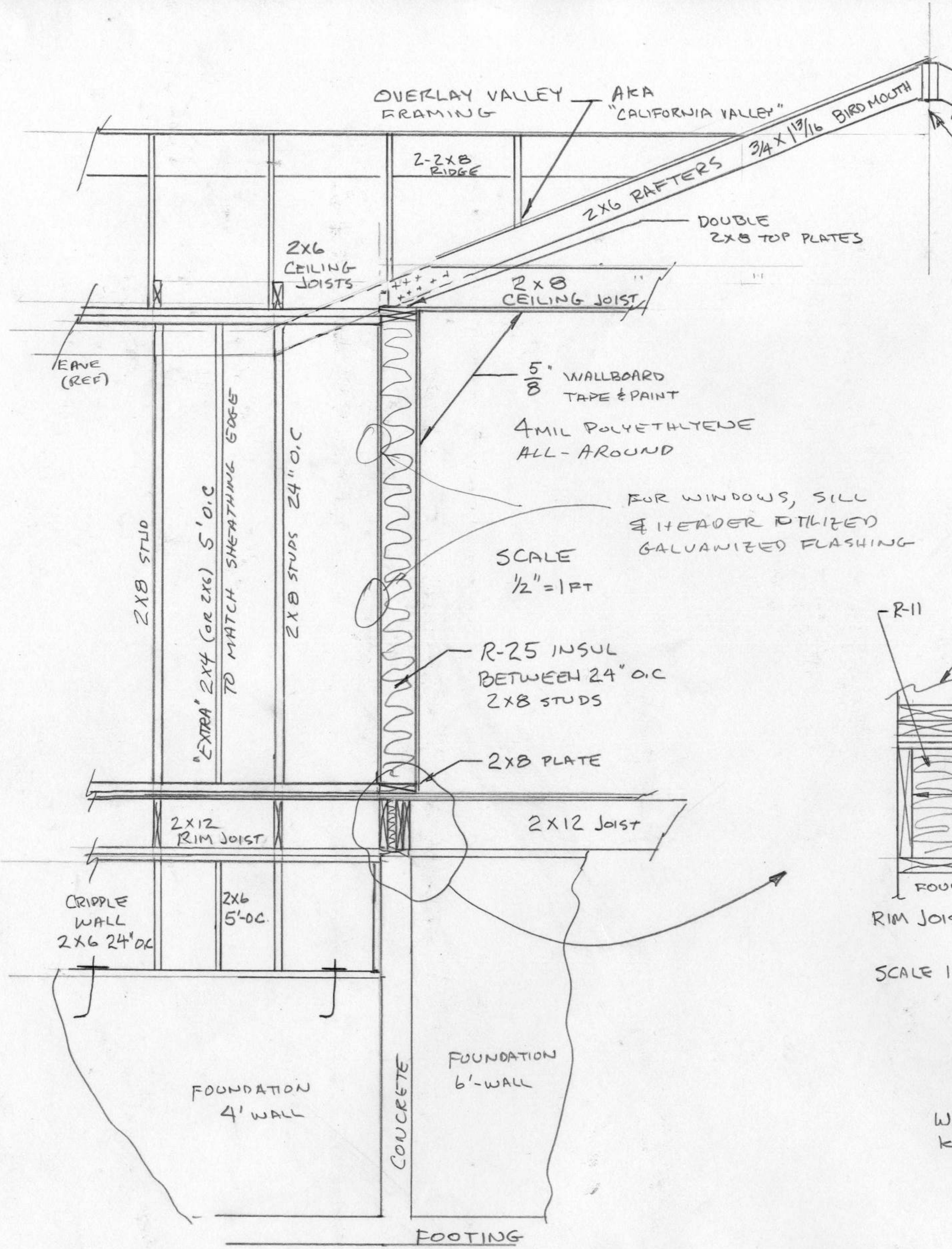
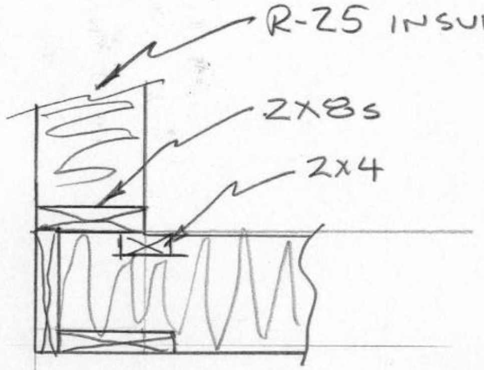
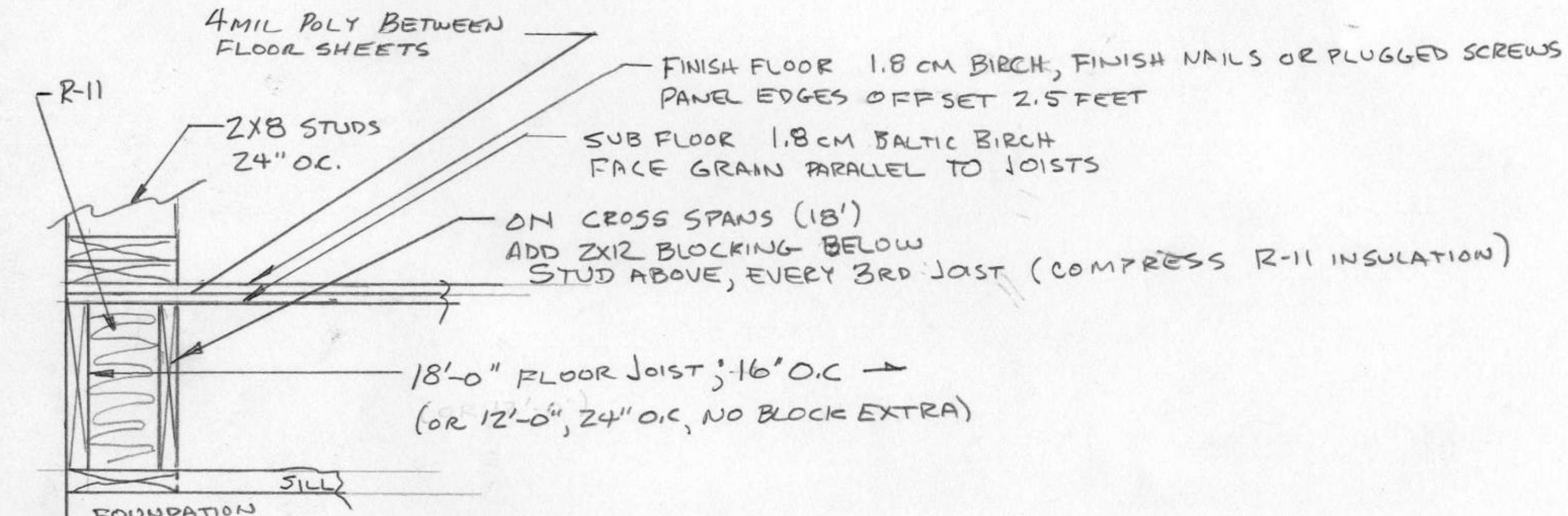

WEST ELEVATION
LOOKING EAST
24" x 36"
REMOVEABLE FRAME
3/16" HARDWARE CLOTH
VENT & ATTIC ACCESS
12
5
DOWN SPOUT
HEADER = 2 ea 2X8
Low-e
ARGON
SLIDING
4⁰x4⁰
LAP SIDING
HEADER = 2 ea 2X8
Low-e
ARGON
SLIDING
4⁰x5⁰
CONTINUOUS SHEATHING
ALL SPACINGS 602.10 COMPLIANT
19'-6"
2'-4"
2'-4"
FINISH FLOOR (REF)
HEADER = RIM JOIST + 2X12
HEAT PUMP
CRAWL SPACE ACCESS DOOR
CUSTOM FRAME DOOR
GROUND
3/4-1½"
GRAVEL BACKFILL
3' OUT FROM WALL
12" MIN
GROUND (REF)
>4FT
TO GARDEN SURFACE
WEST ELEVATION
22405 100th AVE SE
SHEET 16 of 19





2 X 8 CORNERS
1" = 1 FT
MODIFIED ADV FRAME FOR 2X8 WALL

ALL NAILING PER NAIL SHEET TABLE



RIM JOIST AREAS

SCALE 1" = 1 F

GIRDER SECTION OVER 6'-3" SPAN
REPLACES BLOCKING & INSULATION WITH 2X12S 7'-10½" LONG
3ea 18'-0" JOISTS CUT TO 17'-9" & SUPPORTED AT GIRDER
END WITH JOIST HANGERS ATTACHED TO GIRDER
2X12S GIRDER SECTION NAILED TO RIM JOIST
WITH

WINDOW & DOOR USE STANDARD
KING, TRIM, & CRIPPLE STUDS

FRAMING DETAILS

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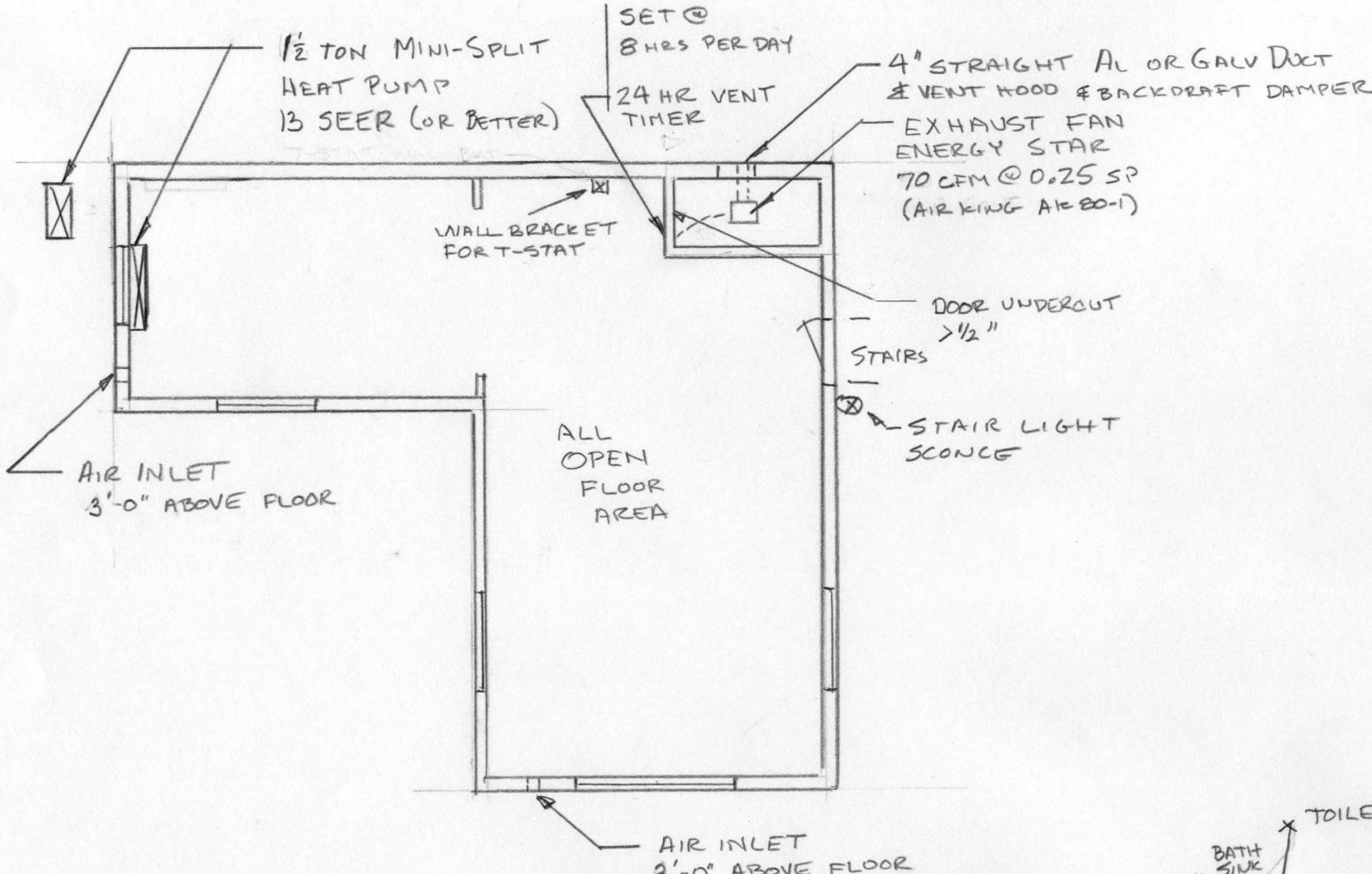
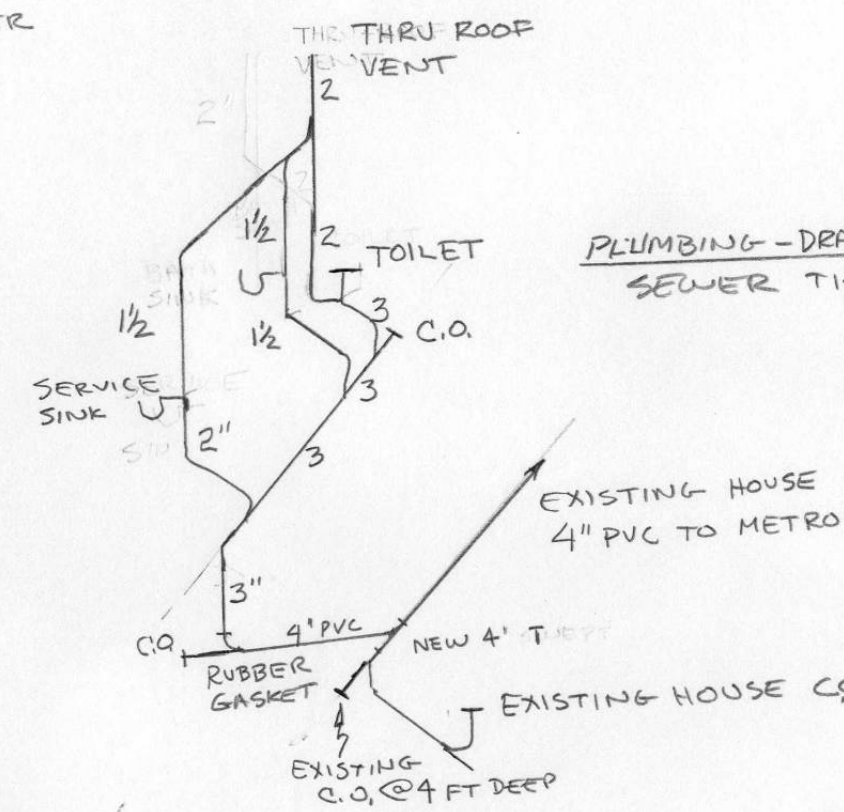


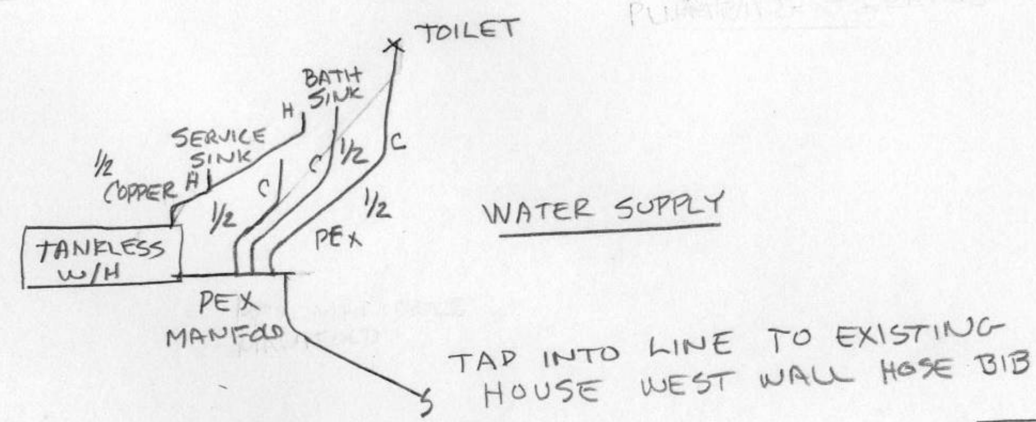
HEATING & VENTILLATION

AND ELECTRICAL AS
REQ BY IRC (STAIR LIGHT)

PLUMBING - DRAINS
SEWER TIE-IN



WATER SUPPLY



MECHANICAL & PLUMBING
22409 100TH AVE SE
ART BROCKSCHMIDT
425-213-2566
SHEET 18 of 19

Reserved if required for additional details.