

# LEGACY VILLAS

LIBERTY LAKE, WASHINGTON



## CONSULTANTS

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## STRUCTURAL / LANDSCAPE

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## PROJECT INFORMATION

### Site Address:

21700 EAST COUNTRY VISTA DRIVE

### Code Compliance

2012 International Building Code (IBC)  
2012 International Energy Conservation Code (IECC)  
2012 International Fire Code (IFC)  
2012 International Mechanical Code (IMC)  
2012 International Plumbing Code (IPC)  
2012 International Fuel Gas Code (IFGC)  
2009 ICC/ANSI 117.1

### Parcel Number:

55156.9202 & .9203

### Height and Number of Stories:

ACTUAL : 23'9" HIGH; 1 STORY  
ALLOWABLE HEIGHT: 40' HIGH; 2 STORIES

### Type of Construction:

V-B

### Occupancy Classification:

A-3 ASSEMBLY

ZONING M-2 COMMUNITY CENTER - MIXED USE

BUILDING USE (NONSEPARATED) U - B - A-3

SITE AREA (15.92 ACRES) 693,766 S.F.

## DRAWING INDEX

	CONST. SET DATE	SUBMITTAL DATE	REVISION DATE	REVISION DATE
ARCHITECTURAL				
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## ARCHITECTURAL ABBREVIATIONS

&	And	D.F.	Drinking Fountain	FURR.	Furring	N.	North	SECT.	Section
L	Angle	DET.	Detail	FUT.	Future	N.I.C.	Not In Contract	SH.	Shelf
@	At	DIA.	Diameter	GA.	Gauge	NO.#	Number	SHR.	Shower
⊕	Centerline	DIM.	Dimension	GALV.	Galvanized	NOM.	Nominal	SHT.	Sheet
∅	Diameter or Round	DISP.	Dispenser	G.B.	Grab Bar	N.T.S.	Not To Scale	SHW.	Single Hung Window
⊥	Perpendicular	DN.	Down	CL.	Glass	O.A.	Overall	SIM.	Similar
#	Pound or Number	D.O.	Door Opening	GND.	Ground	OBS.	Obscure	S.N.D.	Sanitary Napkin Dispenser
(E)	Existing	DR.	Door	GR.	Grade	O.C.	On Center	S.N.R.	Sanitary Napkin Receptacle
		DWR.	Drawer	GYP.	Gypsum	O.D.	Outside Diameter (Dim.)	SPEC.	Specification
		DS.	Downspout			OFF.	Office	SQ.	Square
ACOUS.	Acoustical	D.S.P.	Dry Standpipe	H.B.	Hose Bibb	OPNG.	Opening	SST.	Stainless Steel
A.D.	Area Drain	DWG.	Drawing	H.C.	Hollow Core	OPP.	Opposite	S.S.K.	Service Sink
ADJ.	Adjustable			HDWD.	Hardwood			STA.	Station
AGGR.	Aggregate			HDWE.	Hardware			STD.	Standard
AL.	Aluminum	E.	East	H.M.	Hollow Metal	PRCST.	Pre-cast	STL.	Steel
APPROX.	Approximate	E.A.	Each	HORIZ.	Horizontal	PL.	Plate	STOR.	Storage
ARCH.	Architectural	E.J.	Expansion Joint	HR.	Hour	P. LAM.	Plastic Laminate	STRL.	Structural
ASB.	Asbestos	EL.	Elevation	HGT.	Height	PLAS.	Plaster	SUSP.	Suspended
ASPH.	Asphalt	ELEC.	Electrical			PLYWD.	Plywood	SYM.	Symmetrical
		ELEV.	Elevator			PR.	Pair		
BD.	Board	EMER.	Emergency	I.D.	Inside Diameter	PT.	Point	TRD.	Tread
BITUM.	Bituminous	ENCL.	Enclosure	INSUL.	Insulation	P.T.D.	Paper Towel Dispenser	T.B.	Towel Bar
BLDG.	Building	E.P.	Electrical Panelboard	INT.	Interior	P.T.D./R	Combination Paper Towel Dispenser & Receptacle	T.C.	Top of Curb
BLK.	Block	EQ.	Equal			PTN.	Partition	TEL.	Telephone
BLKG.	Blocking	EQPT.	Equipment			P.T.R.	Paper Towel Receptacle	TER.	Terrazzo
BM.	Beam	E.W.C.	Electric Water Cooler	JAN.	Janitor	Q.T.	Quarry Tile	T.& G.	Tongue and Groove
BOT.	Bottom	EXST.	Existing	JT.	Joint			THK.	Thick
		EXPO.	Exposed					T.P.	Top of Pavement
		EXP.	Expansion	KIT.	Kitchen			T.P.D.	Toilet Paper Dispenser
CAB.	Cabinet	EXT.	Exterior			R.	Riser	T.V.	Television
C.B.	Catch Basin			LAB.	Laboratory	RAD.	Radius	T.W.	Top of Wall
CEM.	Cement			LAM.	Laminate	R.D.	Roof Drain	TYP.	Typical
CER.	Ceramic	F.A.	Fire Alarm	LAV.	Lavatory	REF.	Reference		
C.I.	Cast Iron	F.B.	Flat Bar	LKR.	Locker	REFR.	Refrigerator	UNF.	Unfinished
CLG.	Ceiling	F.D.	Floor Drain	LT.	Light	RGR.	Register	U.O.N.	Unless Otherwise Noted
CLKG.	Calking	FDN.	Foundation			REINF.	Reinforced	UR.	Urinal
CLO.	Closet	F.E.	Fire Extinguisher			REQ.	Required		
CLR.	Clear	F.E.C.	Fire Extinguisher Cab. MAX.			RESIL.	Resilient		
COL.	Column	F.H.C.	Fire Hose Cabinet	M.C.	Maximum	RM.	Room	VERT.	Vertical
CONC.	Concrete	FIN.	Finish	MECH.	Mechanical Cabinet	R.O.	Rough Opening	VEST.	Vestibule
CONN.	Connection	FL.	Floor	MEMB.	Membrane	RWD.	Redwood		
CONSTR.	Construction	FLASH.	Flashing	MET.	Metal	R.W.L.	Rain Water Leader	W.	West
CONT.	Continuous	FLUOR.	Fluorescent	MFR.	Manufacturer			W/	With
CORR.	Corridor	F.O.C.	Face of Concrete	MH.	Manhole			W.C.	Water Closet
CTSK.	Countersunk	F.O.F.	Face of Finish	MIN.	Minimum			WD.	Wood
CNTR.	Counter	F.O.S.	Face of Studs	MIR.	Mirror			WDW	Window
CTR.	Center	PRF.	Fireproof	MISC.	Miscellaneous	S.	South	W/O	Without
		F.S.	Full Size	M.O.	Masonry Opening	S.C.D.	Seat Cover Dispenser	WP.	Waterproof
DBL.	Double	FT.	Foot or Feet	MTD.	Mounted	SCHED.	Schedule	WSCT.	Wainscot
DEPT.	Department	FTG.	Footing	MUL.	Mullion	S.D.	Soap Dispenser	WT.	Weight

## SYMBOLS

AA 4	BUILDING SECTION SHT. ON WHICH SECTION OCCURS	8	FLAG NOTE
A 3	WALL SECTION SHT. ON WHICH SECTION OCCURS	⊕	WORK POINT, CONTROL POINT OR DATUM POINT
1 5	TYPICAL DETAIL SHT. ON WHICH DETAIL OCCURS	OFFICE 102 1A1 9-6	ROOM IDENTIFICATION TYPE 1 ROOM NAME ROOM NO. ROOM MATERIAL CODES 1ST NO. - FLOOR/BASE 2ND NO. - WALLS/WAINSCOT 3RD NO. - CEILING CEILING HEIGHT OTHER THAN TYPICAL
2 A5	INTERIOR ELEVATION(S) SHT. ON WHICH ELEV. OCCURS ARROW INDICATE(S) DIRECTION SEEN FROM	OFFICE 102	ROOM IDENTIFICATION TYPE 2 ROOM NAME ROOM NUMBER
A	COLUMN LINE ORIENT POINT OF HEXAGONS TO COLUMN LINE. LETTERS IN ONE DIRECTION NUMBERS IN THE OTHER	- - - - -	EXISTING CONTOURS
1	WINDOW TYPE	- S -	SEWER LINE
2,1	FINISH COLOR	- W -	WATER LINE
X 4	EQUIPMENT TYPE X=X-RAY, F=FOOD SERVICE, 4=EQUIPMENT GROUP	- G -	GAS LINE
42.0	GRID LINES FOR SURVEYORS GRID MODULE GRID, ETC.	- C -	CENTERLINE OF RIGHT-OF-WAY
●	MATCH LINE SHADED PORTION IS THE SIDE CONSIDERED	- - - - -	PROPERTY LINE
1 2	DOOR SYMBOL DOOR MARK HARDWARE GROUP	- O.P. -	OVERHEAD POWER
3	REVISION	⊕	MANHOLE
F	PARTITION WALL TYPE	⊕	CATCH BASIN
98'-6"	TOP OF FOOTING	⊕	FIRE HYDRANT
		⊕	POWER POLE
		- x - x -	FENCE
		+T.W. 10.0	TOP OF WALL
		+T.C. 18.0	TOP OF CURB
		+T.P. 18.4	TOP OF PAVEMENT
		+T.O. 64.0	NEW FINISH GRADE (45') EXISTING GRADE (HORZ.)
		X 33.1	SPOT ELEVATION

## MATERIALS

[Symbol]	EARTH
[Symbol]	GRANULAR FILL
[Symbol]	CONCRETE - LARGE SCALE
[Symbol]	PRECAST CONCRETE - PLAN
[Symbol]	PRECAST CONCRETE - SECTION
[Symbol]	REINFORCING BARS
[Symbol]	ASPHALT
[Symbol]	CONCRETE MASONRY UNITS
[Symbol]	BRICK
[Symbol]	FIRE BRICK
[Symbol]	GROUT
[Symbol]	METAL - LARGE SCALE
[Symbol]	STONE
[Symbol]	MASONRY - ELEVATION
[Symbol]	METAL AT SMALL SCALE
[Symbol]	CARPET - SECTION
[Symbol]	FRAMING LUMBER
[Symbol]	FINISH LUMBER
[Symbol]	PLYWOOD - LARGE SCALE
[Symbol]	GYPSON WALLBOARD
[Symbol]	PLASTER ON LATH
[Symbol]	STRUCTURAL GLAZED TILE
[Symbol]	CERAMIC TILE ON GROUT BED
[Symbol]	ACOUSTICAL TILE
[Symbol]	BATT INSULATION
[Symbol]	RIGID INSULATION
[Symbol]	CAVITY WALL INSULATION
[Symbol]	LOOSE FILL INSULATION
[Symbol]	SHEATHING TYPE INSULATION
[Symbol]	METAL STUDS
[Symbol]	WOOD FRAME WALL
[Symbol]	PARTITION (FUTURE OR DEMO.)
[Symbol]	PARTITION (EXISTING)
[Symbol]	PARTITION (PORTION DEMO)
[Symbol]	PARTITION (NEW OPENING)
[Symbol]	PARTITION (CLOSED OPENING)
[Symbol]	EXPANSION JOINT FILLER

REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
COUNTRY VISTA ROAD, LIBERTY LAKE, WA

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SHEET TITLE:  
CLUBHOUSE PLAN

DRAWN BY:  
LJS

PROJECT:  
15:26

DATE:  
6/15/2016

SHEET NO.  
A0.1

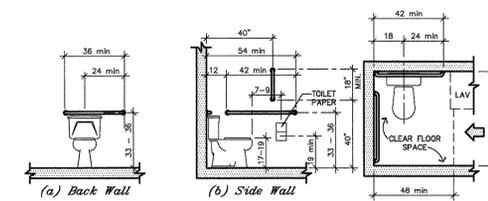
**ARCHITECTURAL GENERAL NOTES:**

- THE APPLICABLE BUILDING CODE IS THE 2012 INTERNATIONAL BUILDING CODE (2012 IBC). FOLLOWING ALL APPLICABLE CODES IS REQUIRED.
- DO NOT SCALE DRAWINGS.
- FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALED DRAWINGS. WHERE DISCREPANCIES OCCUR, THEY SHALL BE REPORTED TO ARCHITECT FOR RESOLUTION.
- DETAILED DRAWINGS AND LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS.
- CONCRETE DIMENSIONS ARE GIVEN TO FACE OF CONCRETE AND TO THE FACE OF ROUGH OPENINGS.
- PARTITION DIMENSIONS ARE GIVEN TO THE FACE OF STUD UNLESS OTHERWISE NOTED.
- DOOR OPENING LOCATIONS ARE DIMENSIONED TO ROUGH OPENING OR CENTERLINE OF OPENING.
- WHERE NO MATERIAL NOTES OCCUR, THE GRAPHIC MATERIAL INDICATION SHALL INDICATE MATERIAL TYPES AND ITEMS. SEE MATERIALS & SYMBOLS LIST ON THIS SHEET.
- PROVIDE LANDINGS AND FLOOR LEVELS AT DOORS THAT COMPLY WITH THE 2012 IBC SECTION 1008.1.4, 1008.1.5 AND 1008.1.6
- ALL NEW CONSTRUCTION TO COMPLY WITH ICC/ANSI A117.1 - 2009.
- ALL MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
- EACH SUBCONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS FOR ACCURACY PRIOR TO COMMENCING WITH THE WORK. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
- PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2012 IBC SECTION 712 AND 716.
- THE DRAWINGS INDICATE LOCATION, DIMENSIONS, REFERENCE, AND TYPICAL DETAILS OF CONSTRUCTION. THE DRAWINGS DO NOT INDICATE EVERY CONDITION - WORK NOT PARTICULARLY DETAILED SHALL BE OF CONSTRUCTION SIMILAR TO PARTS THAT ARE DETAILED.
- FIRE-RESISTIVE FLOOR-CEILING OR ROOF CEILING CONSTRUCTION SYSTEMS SHALL HAVE FIRE-RESISTANCE RATINGS SET FORTH IN 2009 IBC. PENETRATIONS IN FLOORS AND CEILINGS REQUIRING PROTECTED OPENINGS SHALL BE FIRE-STOPPED WITH ASSEMBLIES TESTED IN ACCORDANCE WITH ASTM E814.
- THE INTERIOR NON-BEARING WALLS SHOULD BE SHOWN TO ALLOW ROOF TRUSS DEFLECTION WITHOUT LOADING THE WALL, SUCH AS USE OF SIMPSON STC CLIP OR EQUIVALENT.
- PROVIDE FIRE EXTINGUISHER CABINETS AND FIRE EXTINGUISHERS AS REQUIRED BY THE 2012 INTERNATIONAL FIRE CODE, IF NEEDED.
- WOOD MEMBERS IN CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED.
- FIRE STOPPING SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS:
  - IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AT THE CEILING AND FLOOR LEVELS AND AT 10 FOOT INTERVALS ALONG THE LENGTH OF THE WALL.
  - AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
  - IN OPENINGS AROUND VENTS, PIPES, DUCTS, CHIMNEYS, FIREPLACES AND SIMILAR OPENINGS WHICH AFFORD A PASSAGE FOR FIRE AT CEILING AND FLOOR LEVELS, WITH NON-COMBUSTIBLE MATERIALS.
- AN ATTIC ACCESS OPENING NOT LESS THAN 20 INCHES BY 30 INCHES SHALL BE PROVIDED IN THE CEILING OF EACH SEPARATE DWELLING UNIT ON THE TOP FLOOR OF BUILDINGS WITH COMBUSTIBLE CEILING OR ROOF CONSTRUCTION. LOCATE TO PROVIDE 30" MIN. CLEAR HEADROOM IN THE ATTIC AT OR ABOVE THE ACCESS OPENING.
- WHEN FIRE-RATED WALLS AND PARTITIONS REQUIRE PROTECTED OPENINGS, THE FOLLOWING PENETRATIONS INTO OR THROUGH SUCH CONSTRUCTION ARE PERMITTED:
  - COPPER OR FERROUS PIPES OR CONDUITS MAY PENETRATE THE WALLS OR PARTITION, PROVIDED FIRE STOPPING IS PROVIDED.
  - OPENINGS FOR STEEL ELECTRICAL OUTLET BOXES NOT EXCEEDING 16 SQUARE INCHES IN AREA, PROVIDED THE AREA OF SUCH OPENINGS DOES NOT AGGREGATE MORE THAN 100 SQUARE INCHES FOR ANY 100 SQUARE FOOT OF WALL OR PARTITION AREA. OUTLET BOXES ON OPPOSITE SIDES OF WALLS OR PARTITIONS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES.
- ALL INSULATION MATERIALS INCLUDING FACING, SUCH AS VAPOR BARRIER OR BREATHER PAPERS INSTALLED WITHIN FLOOR-CEILING ASSEMBLIES, ROOF-CEILING ASSEMBLIES, WALLS, CRAWL SPACES OR ATTICS SHALL HAVE A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DENSITY NOT TO EXCEED 450.
- FIELD VERIFY DIMENSIONS AND SIZE OF ALL FIXTURES/APPLIANCES PRIOR TO ERECTION AND INSTALLATION.

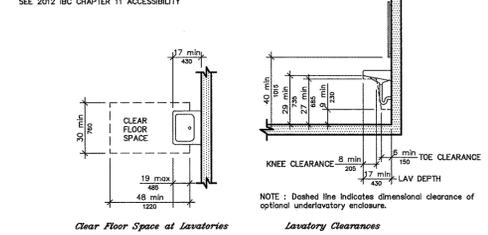
**GENERAL NOTES**

- CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS BEFORE ORDERING MATERIALS OR BEGINNING WORK. REPORT ALL INCONSISTENCIES TO ARCHITECT PRIOR TO PROCEEDING WITH WORK. ALL WORK REQUIRING MEASURING SHALL BE DONE ACCORDING TO FIGURES ON DRAWINGS AND NOT SCALED FROM DRAWINGS. THE ARCHITECT WILL FURNISH ANY MISSING DIMENSIONS UPON REQUEST.
- ALL WORK SHALL CONFORM TO PREVAILING CODES, ORDINANCES, AND REQUIREMENTS.
- CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION, AND SHALL PAY ALL APPLICABLE FEES.
- DIMENSIONS:
  - DIMENSIONS ON DRAWINGS ARE TO FACE OF STUDS OR CENTER LINE OF COLUMNS TYPICALLY, UNLESS OTHERWISE NOTED.
  - EXTERIOR DIMENSIONS ARE TO FACE OF STUDS.
  - DOOR AND CASED OPENINGS WITHOUT LOCATION DIMENSIONS OR DETAILS ARE TO BE CENTERED BETWEEN ADJACENT WALLS. DOORS ADJACENT TO ONE WALL, BUT NOT DIMENSIONED, SHALL BE LOCATED WITH DOOR OPENING 3" FROM FACE OF ADJACENT WALL.
  - VERIFY ALL DIMENSIONS AND CONDITIONS AND NOTIFY ARCHITECT OF ALL DISCREPANCIES PRIOR TO PROCEEDING WITH WORK.
- CODES: ALL WORK SHALL CONFORM TO APPLICABLE BUILDING CODES, ORDINANCES AND LAWS HAVING JURISDICTION AT PROJECT SITE. NOTIFY ARCHITECT OF ALL CONFLICTS. ENERGY REQUIREMENTS SHALL COMPLY WITH THE 2012 WASHINGTON STATE ENERGY CODES PER TABLE R402.1.1.
- DO NOT SCALE DRAWINGS: USE DIMENSIONS SHOWN ON DRAWINGS AND ACTUAL FIELD MEASUREMENTS. NOTIFY ARCHITECT OF DISCREPANCIES FOUND.
- COORDINATION:
  - REVIEW AND COORDINATE REQUIREMENTS OF THE DRAWINGS BEFORE BEGINNING INSTALLATION OF WORK. REPORT DISCREPANCIES DISCOVERED IN WRITING TO THE ARCHITECT. WORK INSTALLED AND FOUND IN CONFLICT WITH THE REQUIREMENTS INDICATED ON DRAWINGS SHALL BE CORRECTED BY THE CONTRACTOR.
  - VERIFY THAT UTILITY REQUIREMENTS CHARACTERISTICS OF OPERATING EQUIPMENT ARE COMPATIBLE WITH BUILDING UTILITIES. COORDINATE WORK OF VARIOUS CONSTRUCTION TRADES HAVING INTERDEPENDENT RESPONSIBILITIES FOR INSTALLING, CONNECTING TO, AND PLACING IN SERVICE OF SUCH EQUIPMENT.
  - COORDINATE SPACE REQUIREMENTS AND INSTALLATION OF MECHANICAL AND ELECTRICAL WORK INDICATED ON DRAWINGS. VERIFY LOCATION AND REQUIRED OPENING SIZES FOR MECHANICAL EQUIPMENT, LOCATION AND SIZE OF EQUIPMENT FOR PADS AND BASES, AND REQUIREMENT AND LOCATION OF POWER AND WATER OR DRAIN INSTALLATION WITH EQUIPMENT MANUFACTURERS BEFORE PROCEEDING WITH THE WORK.
  - COMPLY WITH INSTALLATION REQUIREMENTS OF MANUFACTURER'S INSTRUCTIONS AND APPROVED SHOP DRAWINGS.

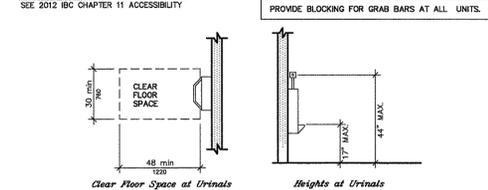
**WATER CLOSETS**  
SEE 2012 IBC CHAPTER 11 ACCESSIBILITY



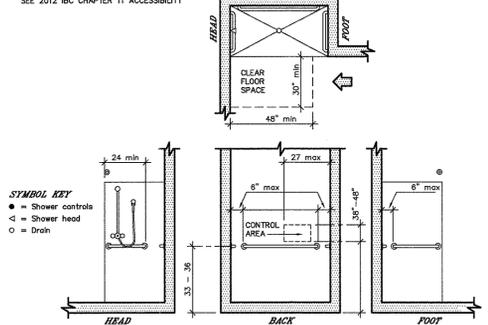
**LAVATORIES, SINKS and MIRRORS**  
SEE 2012 IBC CHAPTER 11 ACCESSIBILITY



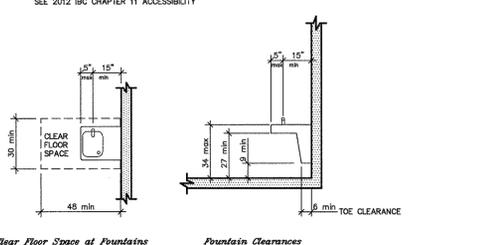
**URINALS**  
SEE 2012 IBC CHAPTER 11 ACCESSIBILITY



**ROLL-IN SHOWER**  
SEE 2012 IBC CHAPTER 11 ACCESSIBILITY



**DRINKING FOUNTAINS**  
SEE 2012 IBC CHAPTER 11 ACCESSIBILITY

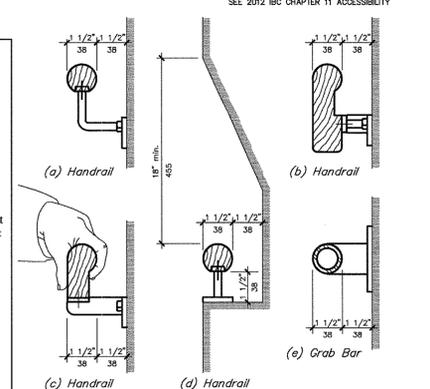


**GRAB BARS and HANDRAILS**  
SEE 2012 IBC CHAPTER 11 ACCESSIBILITY

Grab bar reinforcement, (250 lbs force min.) based on 2x8 lumber, should be minimally as follows: 1) Horizontal reinforcement AFF for toilets, tubs, and showers - Reinforcement at 30.5" max. (30" max. if using 8" steel ribbon) to 38" min. AFF; 2) Toilets - Rear: 4" from the wall inside corner & extending min. 40" horizontally; Side: 10" from inside wall corner extending min 46" horizontally. Accessible units must have vertical reinforcement: Place above and flush with horizontal reinforcement, centered 40" from corner and extending upward 43" min. AFF. 3)

Tubs - At tub (without built-in seats) along rear wall, per FHA, locate between 6" above tub rim to 38" AFF, extending horizontally to within 6" of wall corners. At the two short walls, per ICC, horizontal reinforcement should align with the front face of tub & extend min. 28" deep. In addition, on the control wall, vertical reinforcement aligned with front face of tub, beginning flush with and above horizontal reinforcement (or overlap horizontal approx. 1" if using steel), shall extend upward to 62" min. AFF. 4)

Showers - Ensure horizontal reinforcement on all 3 sides. Also provide vertical reinforcement at the control wall as in a tub. If a transfer shower, provide reinforcement for a future fold-down seat opposite the control wall, from the shower floor extending upward 24" min. AFF for the entire depth of shower.



**GENERAL ACCESSIBILITY NOTES**

- ALL BUILDINGS SHALL COMPLY WITH INTERNATIONAL BUILDING CODE 2012 AND ANIS 117.1-2009.
- PROVIDE A MANUAL FIRE ALARM PER IBC SECTION 907.2.9.
- HALLWAYS SHALL BE A MINIMUM OF 36" IN WIDTH.
- OBJECTS HAVE A 4" MAX. PROJECTION FROM WALL WITH A MAX. OF 24" WIDE AND GREATER THAN 27" ABOVE FINISH FLOOR, EXCEPTED WING WALL THAT GOES DOWN TO FLOOR.
- SIGNAGE PER IBC SHALL BE INSTALLED AND FIELD VERIFIED AS TO THE LOCATION, TYPE, SIZE AND VERBIAGE.
- OPERABLE WINDOWS SHALL HAVE ACCESSIBLE CONTROLS AT A MAX. HEIGHT OF 48" ABOVE FINISH FLOOR.
- ASSURE ALL DOORS HAVE ACCESSIBLE HARDWARE, SUCH AS LEVER STYLE.
- ALL DOORS NEED TO BE 32" CLEAR (36" RECOMMEND), EXCEPT DOORS THAT LEAD INTO AREAS WITH LESS THAN 24" IN DEPTH.
- DOORWAYS SHALL HAVE A CLEAR OPENING WIDTH OF 32" MIN MEASURED BETWEEN THE DOOR AND STOP, WITH THE DOOR OPEN 90 DEGREES.
- THRESHOLDS AT DOORWAYS SHALL BE 1/2" MAX. IN HEIGHT.
- SIGN INDICATING ACCESSIBLE PARKING SHOULD BE LOCATED AT ALL ACCESSIBLE PARKING STALLS.
- INSTALL BLOCKING FOR GRAB BARS AT TOILET AND BATHING FIXTURES.
- INSTALL ALL TOILETS 18" EXACTLY FROM DRYWALL FACE OF SIDE WALL.
- INSTALL OUTLETS 15" MIN. AFF TO LOWEST RECEPTACLE AND 46" AFF TO HIGHEST RECEPTACLE. 48" AFF TO HIGHEST THERMOSTAT AND OTHER CONTROLS.
- MAILBOXES: FOR ALL GROUND FLOOR UNITS AND THE LEASING OFFICE THE LOWEST BOTTOM SHELF IS 15" AFF, AND THE MAX HEIGHT OF 48" AFF TO THE LOCK SET.
- MIRRORS ABOVE THE LAVATORIES SHALL HAVE THE BOTTOM EDGE OF THE REFLECTING SURFACE 40" MAX. ABOVE THE FLOOR.
- THE TOP OF THE WATER CLOSET SEAT SHALL BE BETWEEN 15" AND 19" ABOVE FINISH FLOOR.
- WATER CLOSETS SHOULD BE CENTERED ON 36" 18" FROM WALL.
- KITCHENS SHALL HAVE A CLEAR SPACE OF 40" BETWEEN OPPOSING COUNTER TOPS AND APPLIANCES. SECTION 1004.12
- A CLEAR FLOOR SPACE, POSITIONED FOR PARALLEL OR FORWARD AND CENTERED, SHALL BE PROVIDED AT EACH KITCHEN APPLIANCE AND FIXTURE. SECTION 1004.12.2
- ACCESSIBLE ROUTES REQUIRE ROUTES TO ANY AND ALL PUBLIC AND COMMON AREAS ( ALL FACILITIES, ELEMENTS OUTSIDE, MAILBOXES, SITE FURNISHINGS, OUTSIDE STORAGE AREAS, REFUSE DISPOSAL AREAS, PLAYFIELDS, AMPHITHEATERS, PICNIC SITES, SWIMMING POOLS, SUN DECKS, TENNIS COURTS, CLUBHOUSES, PLAYGROUND, GAZEBOS, PARKING AREA, SIDEWALKS, ALL OR PARTS OF NATURE TRAILS AND JOGGING PATHS.
- 36" MINIMUM FOR ACCESSIBLE ROUTE.
- ALL ENTRY DOORS SHALL REQUIRE 18" CLEAR ON PULL SIDE OF DOOR AND 12" CLEAR ON THE PUSH SIDE OF THE DOOR. ANSI 404
- ALL DOORS SHALL HAVE 18" CLEAR ON PULL SIDE OF DOOR AND 12" CLEAR ON THE PUSH SIDE OF THE DOOR. ANSI 404
- A CLEAR FLOOR SPACE COMPLYING WITH SECTION 305 SHALL BE PROVIDED AT ALL APPLIANCES AND FIXTURES.
- WHERE THERE ARE NO OBSTRUCTIONS TO INTERFERE WITH THE REACH OF A PERSON, CONTROLS AND OUTLETS SHALL BE MOUNTED IN A RANGE OF 15" FROM FINISH FLOOR TO 48" ABOVE FINISH FLOOR IN ACCORDANCE WITH ANS 117.1, SECTION 308.
- WORK SURFACE HEIGHT SHALL BE BASED ON THE TOP OF THE SINK RIM AT A MAX. HEIGHT OF 34" ABOVE FINISH FLOOR. A KNEE SPACE OF 30" IN LENGTH SHALL BE PROVIDED IN AT LEAST ONE SECTION OF THE KITCHEN COUNTERTOP. INSTALL OUTLET AT WORKSPACE AT 44" MAX AFF.
- INSTALL OUTLETS AT CABINET FACE AND ENDS.
- RANGE HOOD CONTROLS SHALL BE MOUNTED A MAX OF 46" AFF.

REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
COUNTRY VISTA ROAD, LIBERTY LAKE, WA

**WYATT ARCHITECTS AND ASSOCIATES**  
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STATE OF WASHINGTON

6-14-2016

SHEET TITLE:  
NOTES  
DRAWN BY:  
LJS  
PROJECT:  
15:26  
DATE:  
6/15/2016  
SHEET NO.  
A02

**BUILDING CODE SUMMARY WORKSHEET - BUILDING 'M' - SINGLE STORY - NONSEPERATED (508.3)**

PROJECT NAME: LEGACY VILLAS APARTMENTS  
 BUILDING CODE EDITION 2012 IBC

**SECTION 1 - BUILDING USE OR OCCUPANCY**

Identify all use and occupancy classification group (s) in the Building (i.e. B, M, R-2, A-3, ect.):	U	B	A-3		
Clubhouse			X		
Office		X			
Clubhouse	X				

List all occupancy separation fire barrier ratings required (i.e. B to S-2 = 2hr, IBC 508)  
 Include both horizontal and vertical separations: N/A  
 And:  
 Provide mixed use ratio calculations per 508: N/A  
 Or:  
 Building is constructed per IBC 508.3.2 for Non-Separated Uses or IBC 509 Special Provisions: N/A

Lists all incidental use areas (per IBC Table 508.2), floor area, and separation to be provided

Room or Area	Floor Area (sq.ft.)	Fire Separation
N/A	N/A	N/A

List all accessory use areas not defined as Incidental Use, and fire barrier requirements (per IBC 508.3.1)

Room or Area	Floor Area (sq.ft.)	% floor area on story	Fire Separation

**SECTION 2 - BUILDING CONSTRUCTION**

List Construction Type(s) used in the design (IA, IIB, VA, ect.): VB, NFPA 13R Sprinklers

Building Height

Type V-B	ALLOWED	PROPOSED
Building Height (per IBC Table 503)	40'	22.8
Number of Stories (per IBC Table 503)	3	1
Are Automatic Sprinklers used for Height Modifications? (per IBC Section 504)	NO	NO
Is there a basement?	NO	NO
Is an Automatic Sprinkler System Used in Place of 1 Hour Construction? (per IBC Table 601, Footnote e.) or other fire resistive construction per IBC 601 footnote c.?	NO	NO

Fire Resist. of Ext Walls Based on Fire Sep Distance (per IBC Tables 602 & 705.8)

Building M		Fire Separation Dist.			
List Wall Locations (i.e. North, South, ect.)	Provided	Range	Rating	Opening Protection (705.8)	
North	Open Space	30'	10' <-x< 30'	0	NO LIMIT
East	Open Space	5'	10' <-x< 30' (VB)	0	No Limit
South	Open Space	30'	10' <-x< 30'	0	Not Required
West	Open Space	30'	10' <-x< 30'	0	No Limit

Fire Resistance Rating Requirements (per IBC Table 601)

	Rating Required	Rating Provided	Assembly #
Structural Frame	0 hr	0 hr	
Bearing Walls - Exterior	0 hr	0 hr	
Bearing Walls - Interior	0 hr	0 hr	
Walls Separating Dwelling Units	0 hr	0 hr	
Nonbearing Walls & Partitions- Interior	0 hr	0 hr	
Floors Separating Dwelling Units	0 hr	0 hr	
Floor Construction	0 hr	0 hr	
Roof Construction	0 hr	0 hr	

**SECTION 3 - BUILDING AREA LIMITATIONS: "ALLOWABLE"**

If there are multiple construction types, or if a fire wall divides the building, provide a separation analysis for each area. Repeat as necessary.

Area Limitations for Each Proposed IBC Use or Occupancy Group	Occupancy 1	Occupancy 2	Occupancy 3
IBC Use / Occupancy Group	U	B	A-3
Table 503 Area Limitation (per IBC Table 503) <At>	1 Story @ 5500 sq.ft. +1 story per IBC 504.2 Sprinkler Inc.	2 Stories @ 9000 sq.ft. +1 story per IBC 504.2 Sprinkler Inc.	1 Story @ 6000 sq.ft. +1 story per IBC 504.2 Sprinkler Inc.
Frontage Area Increase Multiplier (per IBC 506.2) <If>	[F/P-0.25]W/30	[F/P-0.25]W/30	[F/P-0.25]W/30
Automatic Sprinkler System Area Increase Multiplier (per IBC 506.3) <Is> (not allowed for IBC 903.3.1.2 NFPA 13R sprinklers)	0%	0%	0%
Total ALLOWANCE Floor Area (Equation 5-1 / IBC 506.1) <Aa>	At + [At x If] + [At x Is]	At + [At x If] + [At x Is]	At + [At x If] + [At x Is]
Total ALLOWANCE Building Area	3 x Aa	3 x Aa	3 x Aa
Does the Building Qualify for Unlimited Area (per IBC 507)	NO		

**SECTION 3A - BUILDING AREAS "PROPOSED"**

If there are multiple construction types, or if a fire wall divides the building, provide a separation analysis for each area. Repeat as necessary.

Area Limitations for Each Proposed IBC Use or Occupancy Group	Occupancy 1	Occupancy 1	Occupancy 1
IBC Use / Occupancy Group	U	B	A-3
Table 503 Area Limitation (per IBC Table 503) <At>	5500	9000	6000
Frontage Area Increase Multiplier (per IBC 506.2) <If>	0	0	0
Building Perimeter w/ 20' open space <F>	0	0	0
Perimeter of building <P>	0	0	0
Width of open space <W>	0	0	0
Automatic Sprinkler System Area Increase Multiplier (per IBC 506.3) <Is> (not allowed for IBC 903.3.1.2 NFPA 13R sprinklers)	0	0	0
Total ALLOWABLE Floor Area (Equation 5-1 / IBC 506.1) <Aa>	5500	9000	6000
Total ALLOWANCE Building Area	3 x Aa =	3 x Aa =	3 x Aa =
Max. PROPOSED Floor Area	3,619	N/A	N/A
Total PROPOSED Building Area	3,619		

**SECTION 4 - OCCUPANT LOAD BUILDING EXITING**

If there are multiple construction types, or if a fire wall divides the building, provide a separation analysis for each area. Repeat as necessary.

Occupancy	Level 1		
	U	B	A-3
Floor Area (sf)	532	312	2,775
Occupant Load Factor (per Table 1004.1.1)	200	100	15
Total Occupant Load Per Floor (1004.4)	3	4	185

Number of Exits and Exit Widths From Each Level

	Number of Exits per 1015.1		Egress Components		Exit Width per 1005.1 w/ sprinklers			
	Req'd.	Prov.	Stairs	Door	Stair Width (in.)(0.3)		Door (in.)(0.2)	
	Req'd.	Prov.	Req'd.	Prov.	Req'd.	Prov.	Req'd.	Prov.
Level 1	2	4	0	3	0	0	0	0

Section 1009.1 - Stairways serving an occupant load less than 50 shall have clear width of not less than 36 in.

Are Areas of Refuge Required: NO

REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
 COUNTRY VISTA ROAD, LIBERTY LAKE, WA

**WYATT ARCHITECTS AND ASSOCIATES**  
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 6-14-2016

SHEET TITLE:  
 CLUBHOUSE CODE SHEET  
 DRAWN BY:  
 LJS  
 PROJECT:  
 15:26  
 DATE:  
 6/15/2016  
 SHEET NO.  
**A0.3**

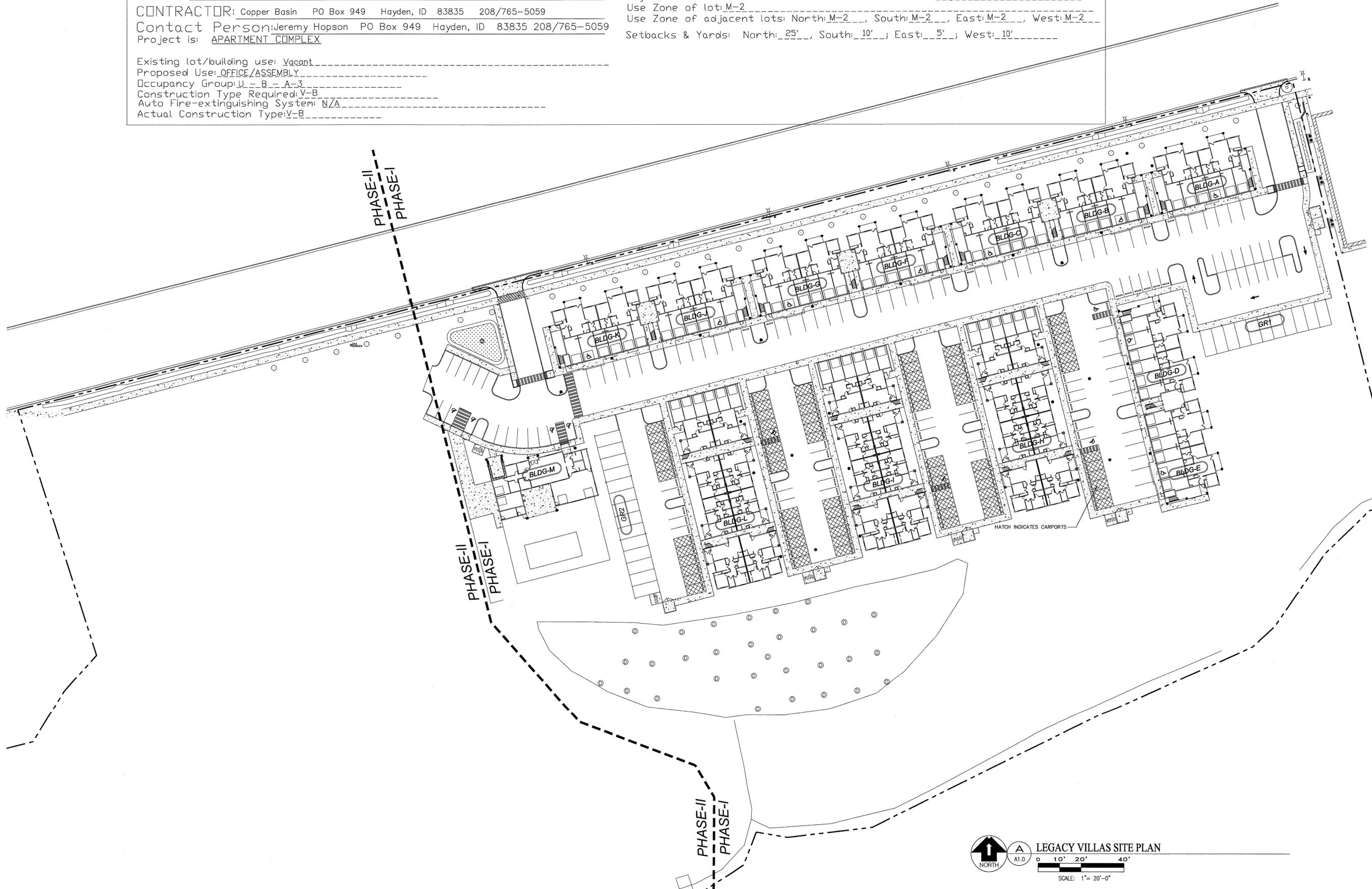
# PROJECT INFORMATION

Name of Project: LEGACY VILLAS APARTMENTS - PHASE I  
 Date: 6/15/2016  
 Street Address: (TBD) COUNTRY VISTA DRIVE - LIBERTY LAKE, WA  
 Parcel Numbers: 55156.9202 & 55161.9203

OWNER: Legacy Villas LLC (name) PO Box 949 Hayden, ID 83835 (address) 208/765-5059 (phone)  
 CONTRACTOR: Copper Basin PO Box 949 Hayden, ID 83835 208/765-5059  
 Contact Person: Jeremy Hopson PO Box 949 Hayden, ID 83835 208/765-5059  
 Project is: APARTMENT COMPLEX

Existing lot/building use: Vacant  
 Proposed Use: OFFICE/ASSEMBLY  
 Occupancy Group: U - B - A-3  
 Construction Type Required: V-B  
 Auto Fire-extinguishing System: N/A  
 Actual Construction Type: V-B

Allowable Height: 40'  
 Allowable Area: 6,000 S.F.  
 Actual Building Height and no. of stories: 22'10" feet, One story;  
 Ground floor area and occupant load: Area: 3,619sf - 192 occupants  
 Total new floor area: 3,619; Total existing floor area: N/A  
 New construction Valuation: \$480,000 Clubhouse  
 ZONING:  
 Hazard Area? (Airport, Slide, Flood): N/A  
 Any Previous Environmental Declarations on this site: N/A  
 Use Zone of lot: M-2  
 Use Zone of adjacent lots: North: M-2, South: M-2, East: M-2, West: M-2  
 Setbacks & Yards: North: 25', South: 10'; East: 5'; West: 10'



REVISIONS

PROPOSED CLUBHOUSE FOR:  
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 COUNTRY VISTA ROAD, LIBERTY LAKE, WA

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 6-14-2016

SHEET TITLE:  
 SITE PLAN

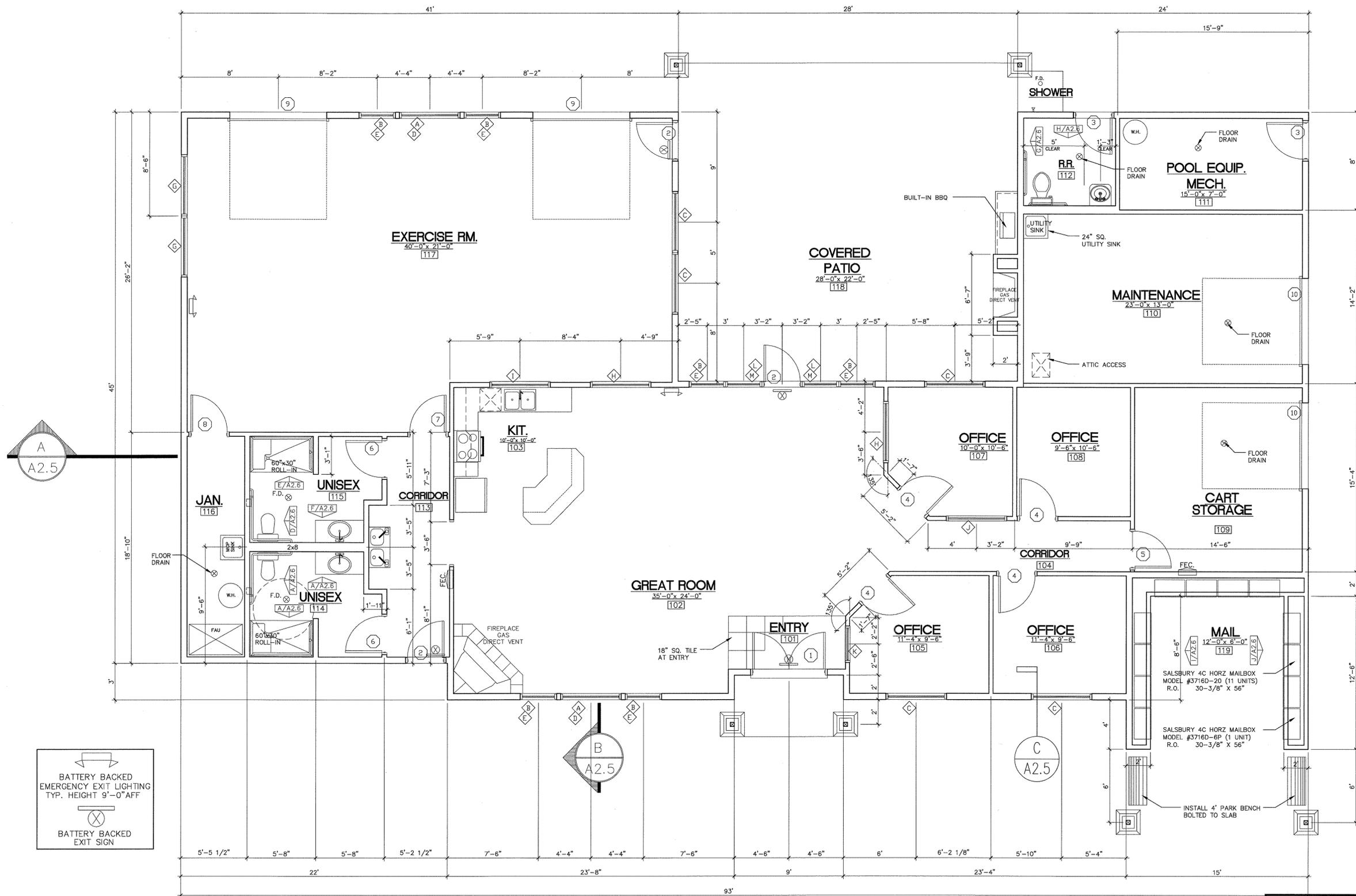
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PROJECT:  
 15:26

DATE:  
 6/15/2016

SHEET NO.  
**A1.0**

**LEGACY VILLAS SITE PLAN**  
 SCALE: 1" = 20'-0"

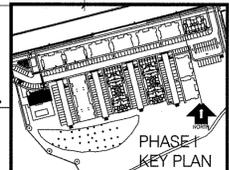


BATTERY BACKED  
EMERGENCY EXIT LIGHTING  
TYP. HEIGHT 9'-0" AFF

BATTERY BACKED  
EXIT SIGN

NORTH  
A2.0  
CLUBHOUSE FLOOR PLAN  
SCALE: 1/4"=1'-0"

3,619 S.F.



REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
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6-14-2016

SHEET TITLE:  
CLUBHOUSE PLAN

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15:26

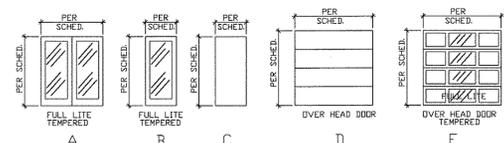
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6/7/2016

SHEET NO.  
A2.0

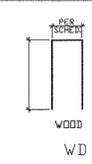
### DOOR SCHEDULE

DOOR MARK	1. DOOR SIZE	2. TYPE	3. THICKNESS	4. CONSTRUCTION	5. FACING/FINISH	6. GLASS	7. RATING	8. FRAME TYPE	9. FRAME FINISH	REMARKS
1	(2) 3'0"X6'8" ENTRY	A	1-3/4"	ISD	MP	IT	--	WD	WP	AUTO CLOSER -
2	3'0"X6'8" PATIO	B	1-3/4"	ISD	MP	IT	--	WD	WP	AUTO CLOSER
3	3'0"X6'8" RR/MECH.	C	1-3/4"	ISD	MP	--	--	WD	WP	
4	3'0"X6'8" OFFICE	B	1-3/4"	SC	WP	--	--	WD	WP	
5	3'0"X6'8" CART	C	1-3/4"	SC	MP	--	--	WD	WP	
6	3'0"X6'8" RR	C	1-3/4"	SC	MP	--	--	WD	WP	AUTO CLOSER - PRIVACY LOCK
7	3'0"X6'8" EXERCISE	C	1-3/4"	SC	MP	IT	--	WD	WP	AUTO CLOSER
8	3'0"X6'8" JAN.	C	1-3/4"	SC	MP	--	--	WD	WP	
9	8'0"X8'0" EXERCISE	E	1-3/4"	ISD	MP	IT	--	WD	WP	OVER HEAD DOOR- FULL LITE- TEMP.
10	7'0"X8'0" CART/MAIN.	D	1-3/4"	ISD	MP	--	--	WD	WP	OVER HEAD DOOR-AUTO CLOSER

### DOOR TYPES



### FRAME TYPES



### DOOR LEGEND

2. TYPE: SEE ABOVE
4. CONSTRUCTION: ISD = INSULATED STEEL DOOR, SC = SOLID CORE WOOD, VN = VINYL
- 5./9. FACING/FINISH: MP = METAL PAINTED, WS = WOOD STAINED, WP = WOOD PAINTED, FF = FACTORY FINISH
6. GLASS TYPE: IT = INSULATED TEMPERED PLATE, FR = FIRE RATED (20 MIN)
8. DOOR FRAME: VN = VINYL, WD = WOOD, AL = ALUMINUM, HM = HOLLOW METAL
- NOTE: ALL EXTERIOR DOORS TO BE INSULATED METAL

### DOOR NOTES:

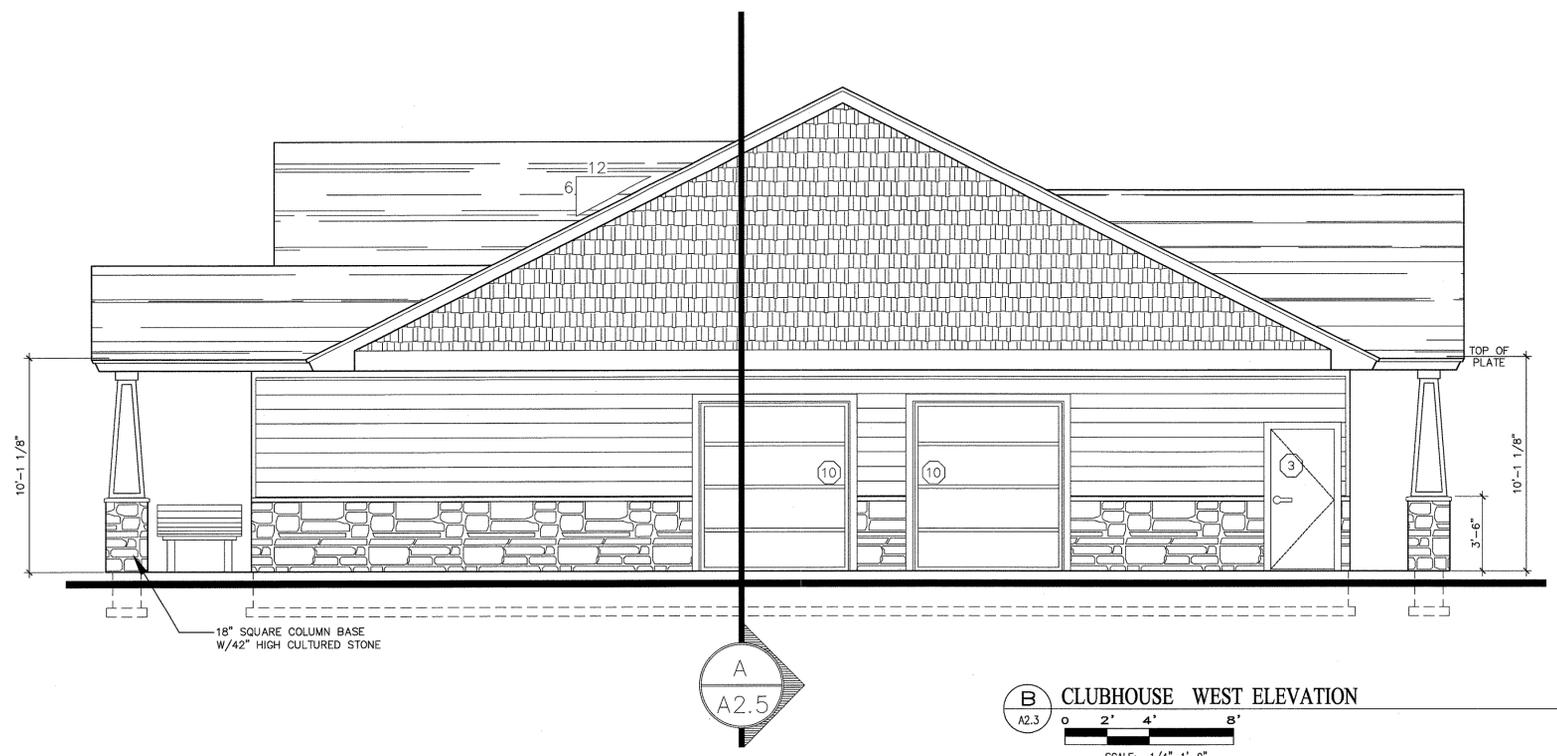
- ALL EXIT DOORS ARE TO BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE.
- LATCHING AND LOCKING DOORS THAT ARE HAND ACTIVATED AND IN A PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVER TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS OR OTHER HARDWARE THAT PROVIDES PASSAGE WITHOUT GRASPING THE HARDWARE.
- MAXIMUM EFFORT TO OPERATE DOORS MUST NOT EXCEED 8.5 POUNDS FOR EXTERIOR DOORS AND 5 POUNDS FOR INTERIOR DOORS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED UP TO 15 POUNDS.
- ALL EXTERIOR DOOR SHALL BE INSULATED AND WEATHER STRIPPED.
- DOOR THRESHOLD SHALL BE A MAX HEIGHT OF 1/2" SLOPED AT 1:12 TO FLOOR.
- ALL HARDWARE SHALL BE LEVER TYPE.

### WINDOW SCHEDULE

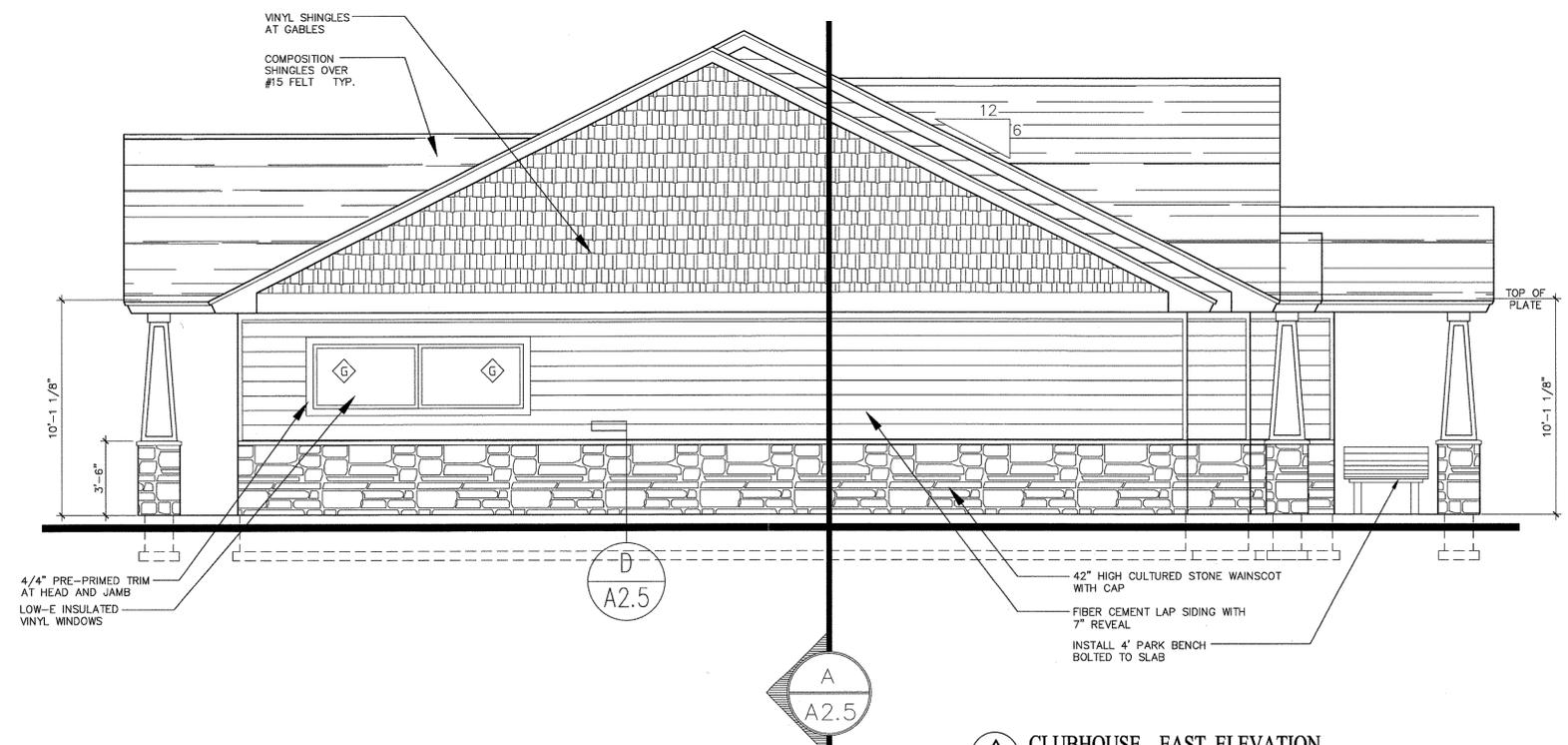
WINDOW MARK	ROUGH OPENING WIDTH X HEIGHT	ELEVATION	GLASS TYPE	FRAME	SILL HEIGHT (A.F.F.)	RATING	REMARKS
B	3'-0" X 4'-0"	-	IN VN	4'-0"x4"	-	FIXED	
C	3'-0" X 4'-0"	-	IN VN	4'-0"x4"	-	FIXED	
D	3'-0" X 4'-0"	-	IN VN	3'-0"x4"	-	FIXED	
E	3'-0" X 2'-0"	-	IN VN	2'-0"x4"	-	FIXED	
F	3'-0" X 2'-0"	-	IN VN	2'-0"x4"	-	FIXED	AWNING - OPERABLE WITH SCREEN
G	3'-0" X 5'-0"	-	IN VN	5'-0"x4"	-	FIXED	
H	5'-0" X 5'-0"	-	PG CW	3'-0"x4"	-	FIXED	
I	5'-0" X 4'-0"	-	PG CW	4'-0"x4"	-	FIXED	
J	5'-0" X 5'-0"	-	TP CW	3'-0"x4"	-	FIXED	
K	3'-0" X 5'-0"	-	TP CW	3'-0"x4"	-	FIXED	
L	3'-0" X 4'-0"	-	IT VN	4'-0"x4"	-	FIXED	
M	3'-0" X 2'-0"	-	IT VN	2'-0"x4"	-	FIXED	AWNING - OPERABLE WITH SCREEN

### WINDOW LEGEND

- GLASS TYPE: IT = INSULATED TEMPERED, IN = INSULATED, TP = TEMPERED, PG = PLATE GLASS
- FRAME MATERIAL: MV = MANUFACTURED WOOD, CW = CUSTOM WOOD, VN = VINYL, AL = ALUMINUM, ST = STEEL, HM = HOLLOW METAL
- GLAZING IN FIXED OR OPERABLE PANELS WITHIN 24 INCHES OF EITHER VERTICAL SIDE OF THE DOOR SHALL BE SAFETY GLASS.
- FIELD VERIFY ALL ROUGH OPENINGS OF WINDOWS AND DOORS PRIOR TO PURCHASE.
- EXTERIOR GLAZING U-Factor - 0.29, SOLAR HEAT GAIN CO. - 0.22



**B CLUBHOUSE WEST ELEVATION**  
SCALE: 1/4"=1'-0"



**A CLUBHOUSE EAST ELEVATION**  
SCALE: 1/4"=1'-0"

CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS BEFORE ORDERING MATERIALS OR BEGINNING WORK. REPORT ALL INCONSISTANCIES TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
COUNTRY VISTA ROAD, LIBERTY LAKE, WA

**WYATT ARCHITECTS AND ASSOCIATES**  
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6-14-2016

SHEET TITLE: CLUBHOUSE ELEVATION & SCHEDULES

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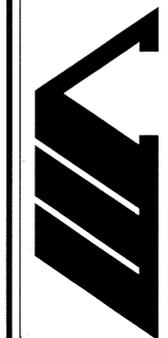
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DATE: 6/15/2016

SHEET NO. A2.1

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
 COUNTRY VISTA ROAD, LIBERTY LAKE, WA

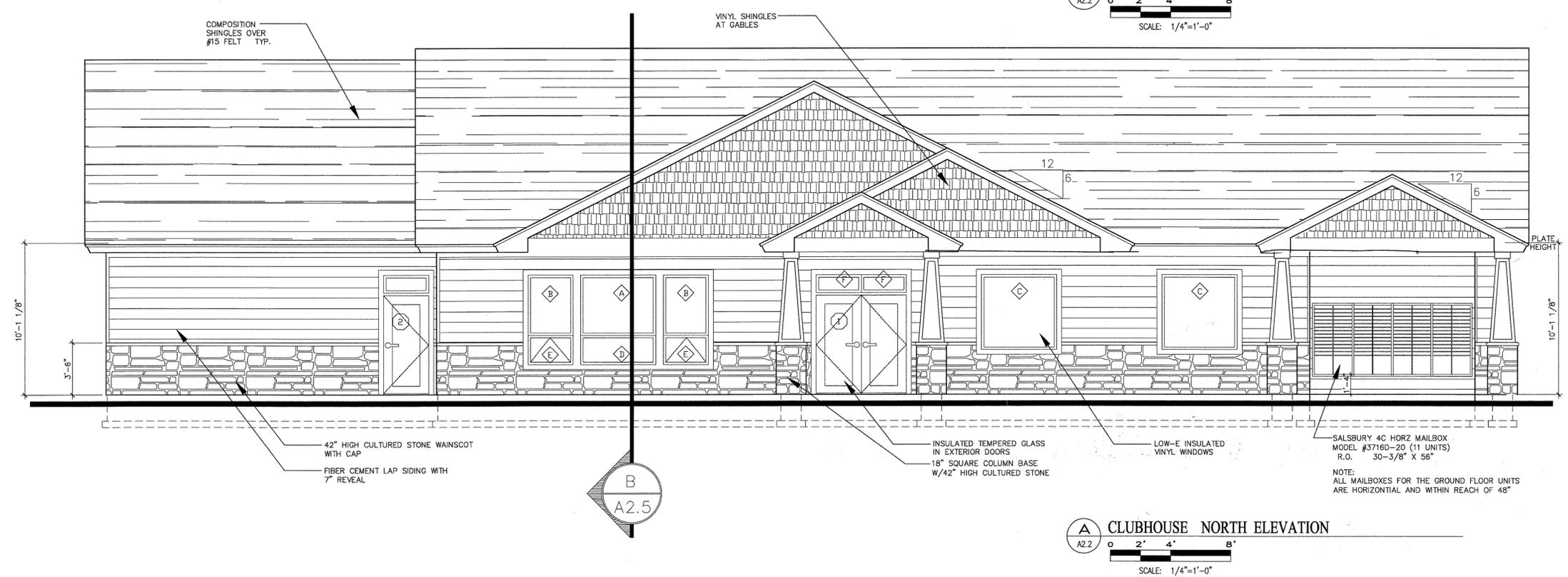
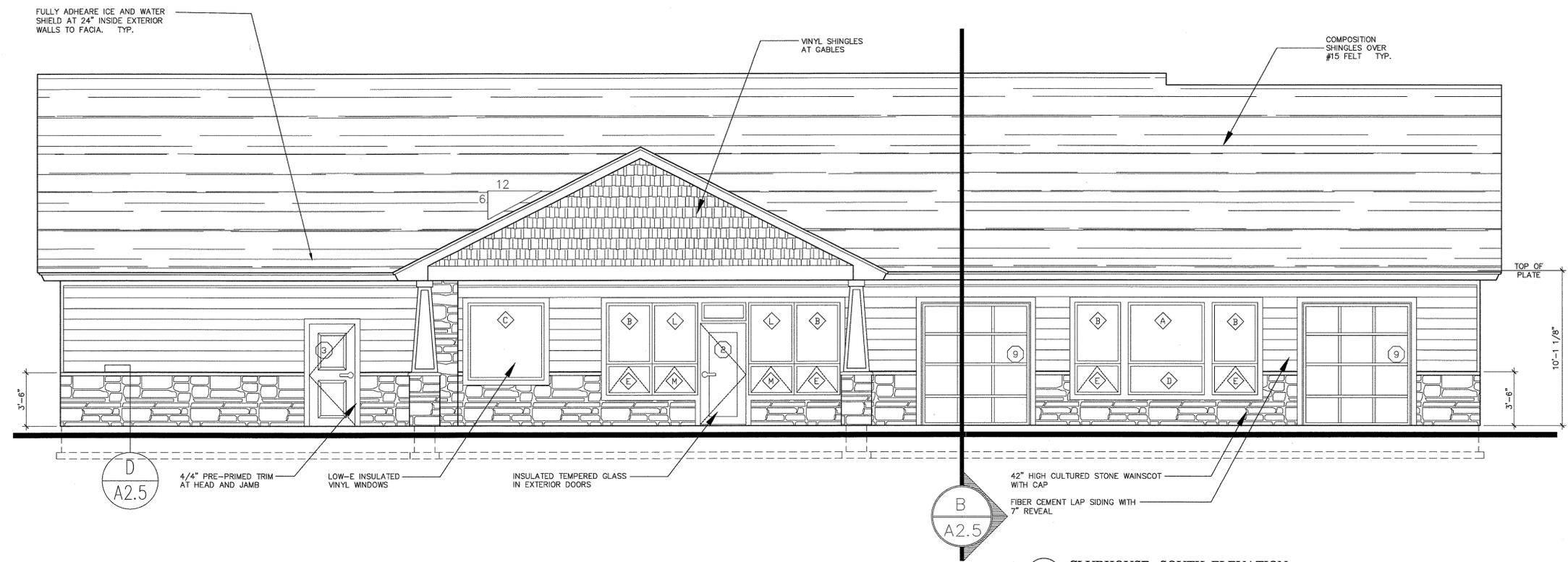
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6-17-2016

SHEET TITLE:  
 CLUBHOUSE ELEVATION  
 DRAWN BY:  
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 PROJECT:  
 15:26  
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**A2.2**



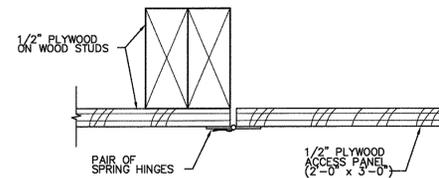
VENTILATION:  
 ENCLOSED ATTICS AND ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS SHALL HAVE CROSS VENTILATION FOR EACH SEPARATE SPACE BY VENTILATING OPENINGS PROTECTED AGAINST THE ENTRANCE OF RAIN AND SNOW. WHERE EAVE OR CORNICE VENTS ARE INSTALLED, INSULATION SHALL NOT BLOCK THE FREE FLOW OF AIR. A MINIMUM OF 1 INCH OF AIR SPACE SHALL BE PROVIDED BETWEEN THE INSULATION AND THE ROOF SHEATHING.

THE OPENING AREA MAY BE 1/300 OF THE AREA OF SPACE VENTILATED.

ATTIC VENTILATION: CLUBHOUSE  
 AREA = 3,619/300  
 = 38.7 SQ. FT.  
 = 1,737 SQ. IN.  
 PROVIDE 50% = 868 SQ. IN.

PROVIDE 868 SQ. IN. @ RIDGE & ROOF VENTS AND 868 SQ. IN. @ SOFFIT VENT. MIN.

THERE IS 210 LINEAR FEET OF SOFFIT VENT ON THE BUILDING PERIMETER. THIS PROVIDES 1,050 SQ. IN. OF VENTING AT THE SOFFIT. THERE IS 81 LINEAR FEET OF RIDGE VENT WHICH PROVIDES 1,620 SQ. IN. OF VENTING.

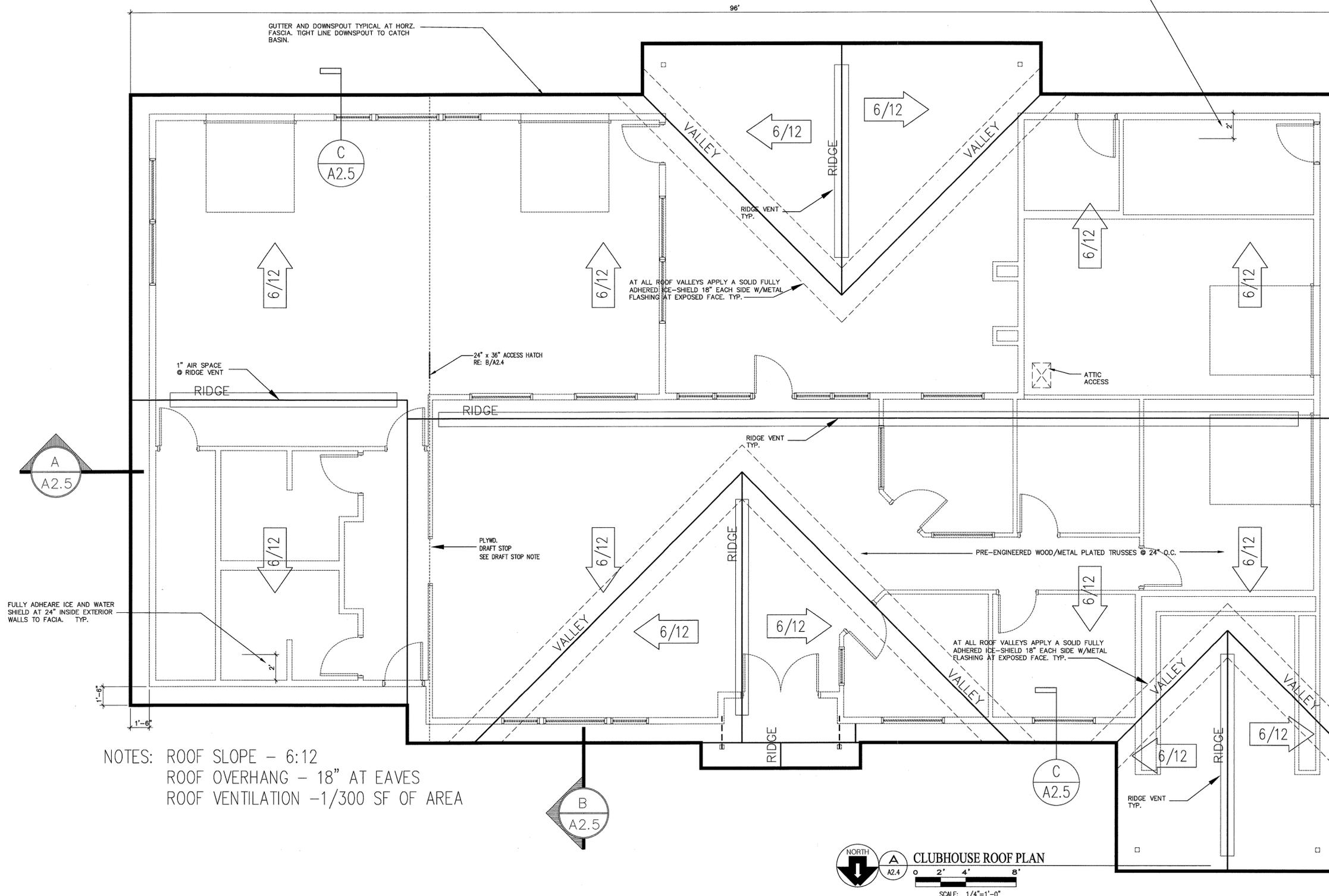


ACCESS HATCH  
 JAMB DETAIL (© DRAFT STOP)  
 SCALE: NONE

DRAFT STOP NOTE:

PROVIDE A SMOKE TIGHT SEAL FROM CEILING TO UNDERSIDE OF PLYWD. DECK AT ATTIC W/ 1/2" PLYWD. SECURE TO STRUCTURAL TRUSS FRAMING. PROVIDE 24" x 36" ACCESS PANEL THRU DRAFT STOP. CAULK ALL PANEL JOINTS AND EDGES CONTINUOUSLY.

FULLY ADHERE ICE AND WATER SHIELD AT 24" INSIDE EXTERIOR WALLS TO FACIA. TYP.



NOTES: ROOF SLOPE - 6:12  
 ROOF OVERHANG - 18" AT EAVES  
 ROOF VENTILATION - 1/300 SF OF AREA

REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
 COUNTRY VISTA DRIVE - LIBERTY LAKE, WA

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 Phone: 509-837-7380  
 Fax: 509-837-7380  
 www.wyattarchitects.com

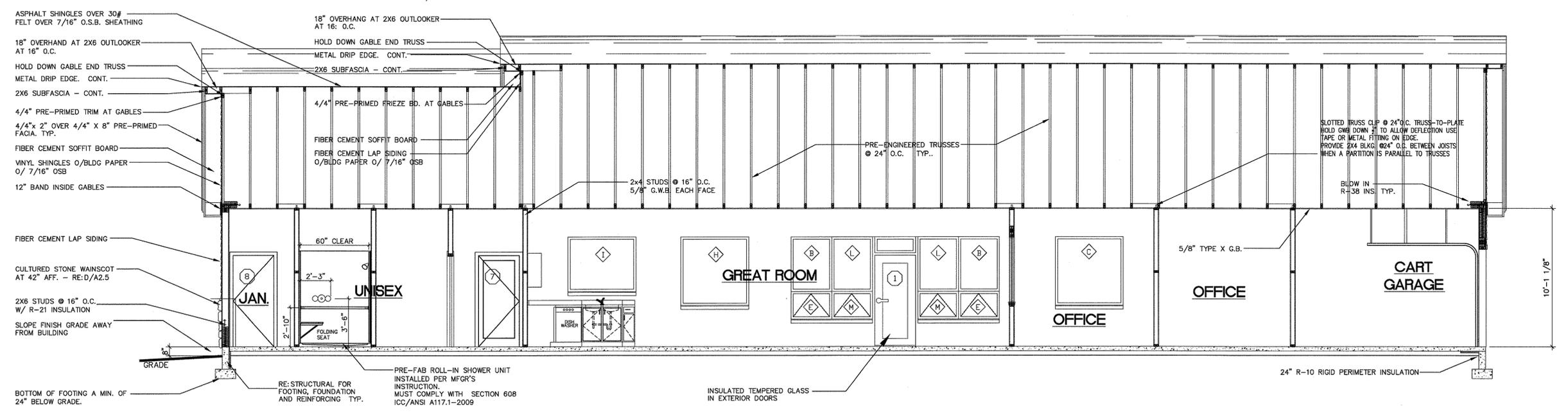
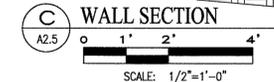
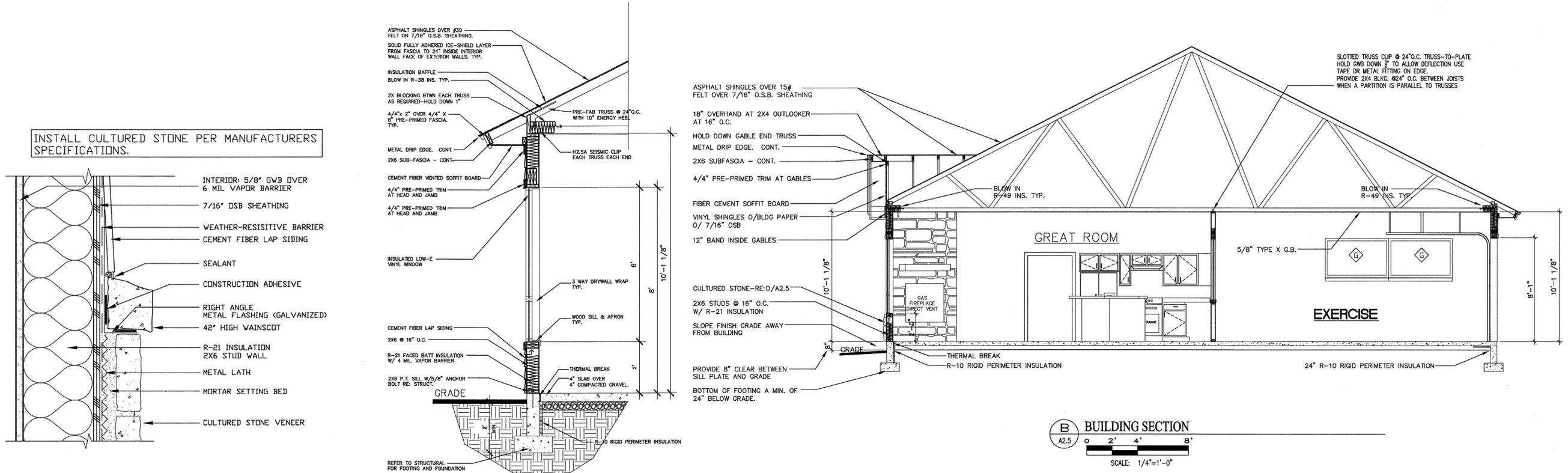
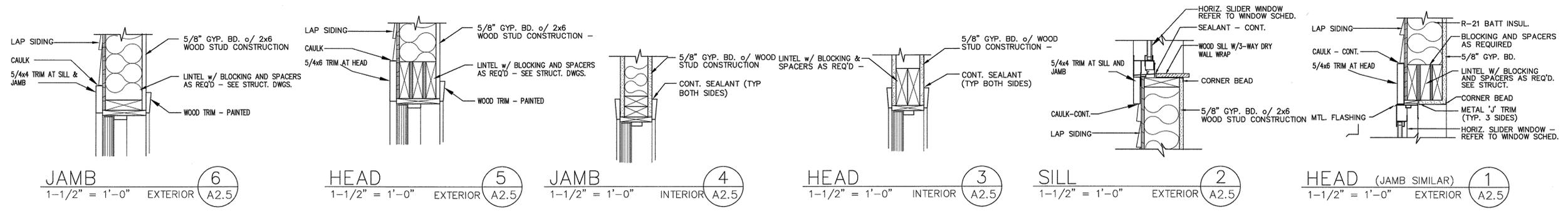


1984 REGISTERED ARCHITECT  
 JAMES A. McARTHUR, JR.  
 STATE OF WASHINGTON  
 6-14-2016

SHEET TITLE:  
 ROOF PLAN  
 DRAWN BY:  
 LJS  
 PROJECT:  
 15:26  
 DATE:  
 6/15/2016  
 SHEET NO.

A2.4

NORTH  
 CLUBHOUSE ROOF PLAN  
 SCALE: 1/4"=1'-0"

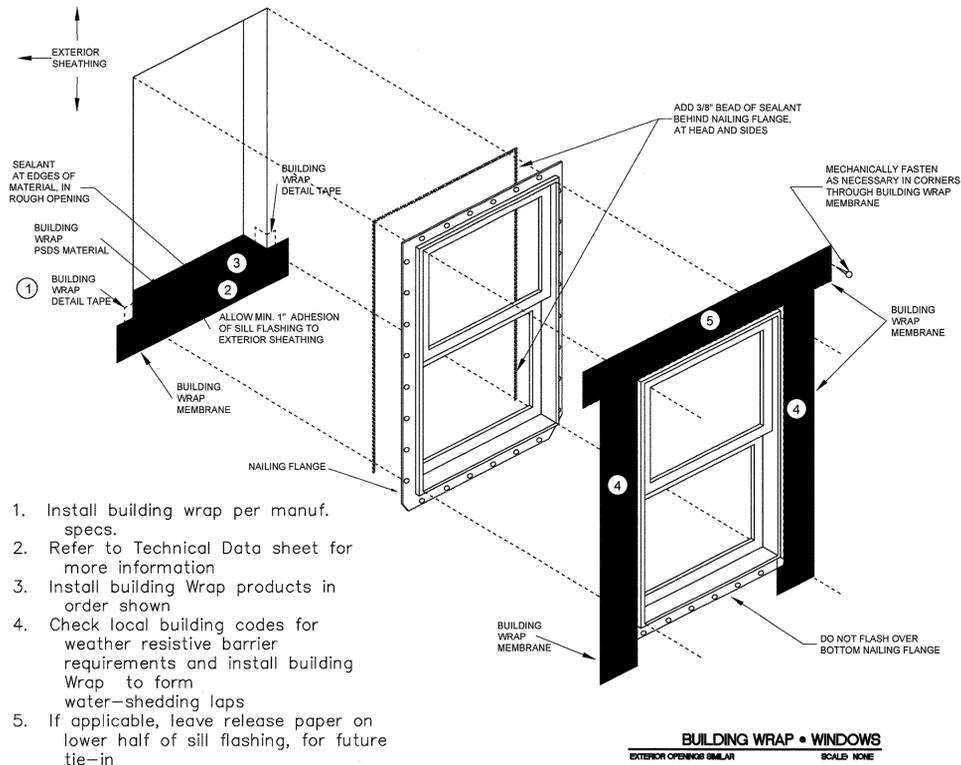


PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
 COUNTRY VISTA DRIVE - LIBERTY LAKE, WA

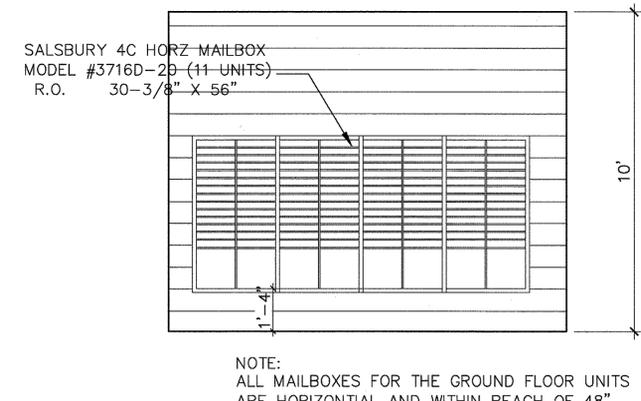
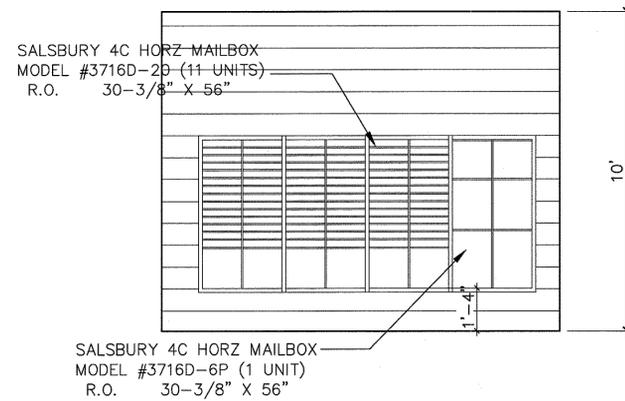
**WYATT ARCHITECTS AND ASSOCIATES**  
 JAMES A. McARTHUR, A.I.A.  
 Project Manager: James A. McArthur, Jr.  
 4905 South Crestline Street, Burien, WA 98148  
 Spokane Valley, WA 99216  
 Phone: (509) 837-7860 / Fax: (509) 837-7868  
 jama@wyattarchitects.com

1954 REGISTERED ARCHITECT  
 JAMES A. McARTHUR, JR.  
 STATE OF WASHINGTON  
 6-14-2016

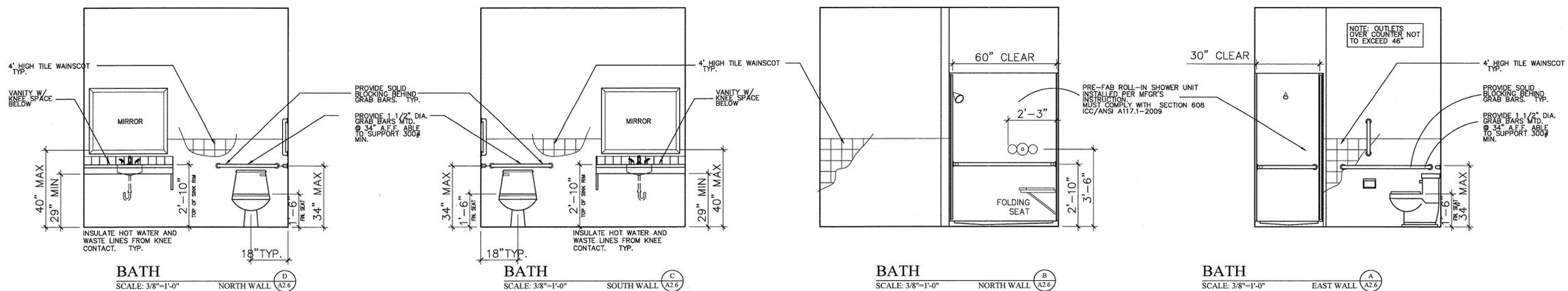
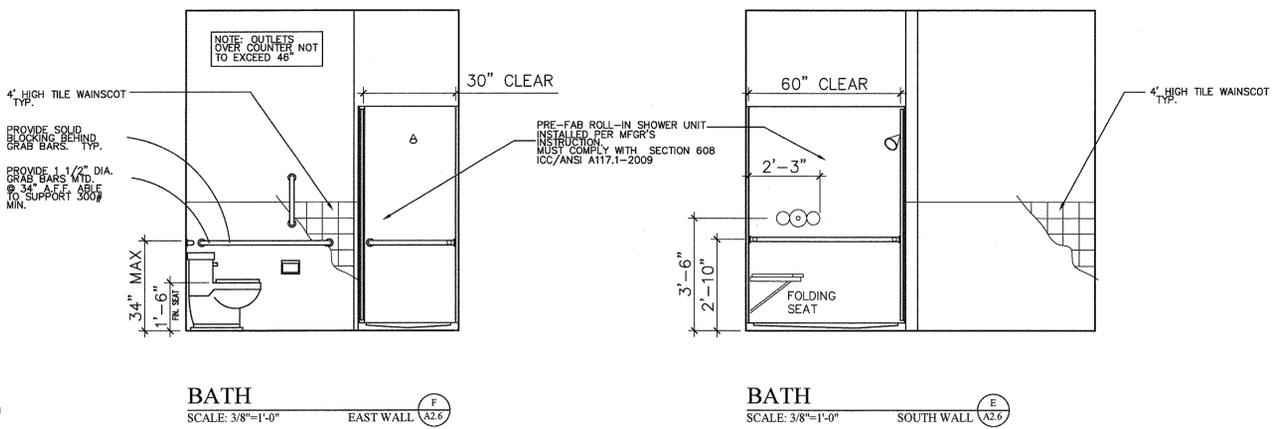
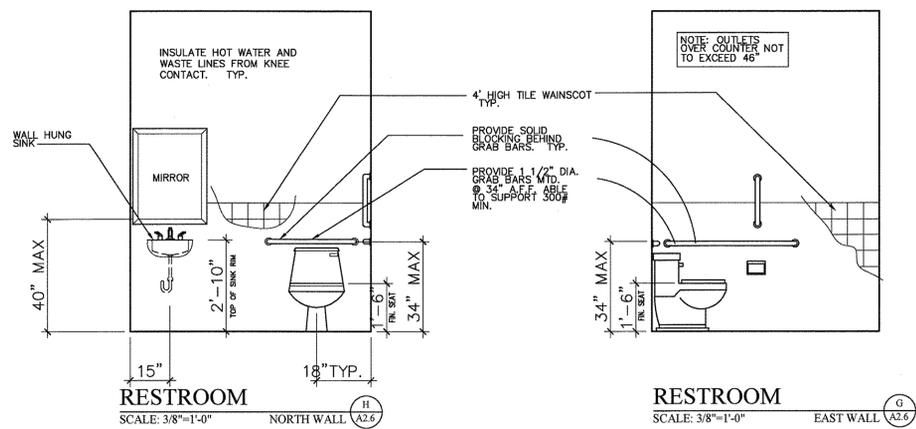
SHEET TITLE: BUILDING SECTION  
 DRAWN BY: LJS  
 PROJECT: 15:26  
 DATE: 6/15/2016  
 SHEET NO. **A2.5**



1. Install building wrap per manuf. specs.
2. Refer to Technical Data sheet for more information
3. Install building Wrap products in order shown
4. Check local building codes for weather resistive barrier requirements and install building Wrap to form water-shedding laps
5. If applicable, leave release paper on lower half of sill flashing, for future tie-in



NOTE:  
ALL MAILBOXES FOR THE GROUND FLOOR UNITS  
ARE HORIZONTAL AND WITHIN REACH OF 48"



CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS BEFORE ORDERING MATERIALS OR BEGINNING WORK. REPORT ALL INCONSISTANCIES TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

REVISIONS

PROPOSED CLUBHOUSE FOR:  
**LEGACY VILLAS**  
COUNTRY VISTA DRIVE - LIBERTY LAKE, WA

**WYATT ARCHITECTS AND ASSOCIATES**  
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james@wyattarchitects.com



1934 REGISTERED ARCHITECT  
JAMES A. McARTHUR, JR.  
STATE OF WASHINGTON  
6-14-2016

SHEET TITLE:  
INTERIOR ELEVATIONS  
DRAWN BY:  
LJS  
PROJECT:  
15:26  
DATE:  
6/15/2016  
SHEET NO.  
**A2.6**

HVAC BASIS OF DESIGN				
OUTDOOR DESIGN TEMPERATURES PER ASHRAE	{ 91.4°F Db SUMMER 62.8°F Wb SUMMER 6.7°F Db WINTER	STATE: WASHINGTON	COUNTY: SPOKANE	CLIMATE ZONE: 5B
DESIGN ALTITUDE 2,182 FT ABOVE SEA LEVEL				
INDOOR AREA DESIGN CONDITIONS	SUMMER		WINTER	
GENERAL SPACE DESIGNATION	Db (°F)	% HUMIDITY	Db (°F)	% HUMIDITY
GENERAL BUILDING	75	50	70	50
THESE DOCUMENTS WERE DEVELOPED USING THE 2012 INTERNATIONAL MECHANICAL CODE (IMC), THE 2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC), THE 2012 IDAHO FIRE CODE (IFC), AND THE 2012 INTERNATIONAL FUEL GAS CODE (IFGC) WITH THE STATE OF IDAHO AMENDMENTS				

### WSEC COMPLIANCE

- HVAC EQUIPMENT SHALL HAVE MINIMUM PERFORMANCE AT SPECIFIED RATING CONDITIONS NOT LESS THAN THE VALUES INDICATED IN THE TABLE C403.2.3 THROUGH 14-3 OF THE WSEC AND AS INDICATED ON THE CONTRACT DOCUMENTS.
- THERMOSTATS:**
  - PROVIDE THERMOSTAT WITH 7-DAY PROGRAMMABLE THERMOSTAT CAPABLE OF BEING SET FOR 7-DIFFERENT DAY TYPES PER WEEK (5+2 AND 5+1+1) THERMOSTATS ARE NOT ACCEPTABLE. THERMOSTAT SHALL HAVE PROGRAMMING BACK UP CAPABLE OF RETAINING THE PROGRAMMING FOR A MINIMUM OF TEN HOURS UPON LOSS OF POWER.
  - THE THERMOSTAT SHALL BE CAPABLE OF MANUAL OVERRIDE.
  - THERMOSTAT SHALL BE CAPABLE OF BEING SET FOR A 5 DEGREE DEADBAND (WHEN CONTROLLING EQUIPMENT CAPABLE OF BOTH HEATING AND COOLING)
  - FOR THERMOSTATS CONTROLLING HEATING AND COOLING EQUIPMENT SUPPLYING OVER 2,000 CFM OF SUPPLY AIR, THE THERMOSTAT SHALL BE PROVIDED WITH "OPTIMUM START" CAPABILITIES.
  - HVAC SYSTEMS SHALL BE EQUIPPED WITH AUTOMATIC CONTROLS CAPABLE OF ACCOMPLISHING SETBACK OR SHUTDOWN DURING UNOCCUPIED PERIODS AS REQUIRED BY SECTION C403.2.4.5 OF THE WSEC AND AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES.
  - PROVIDE DEADBAND BETWEEN HEATING/COOLING SPACE SENSOR SETPOINTS OF 5 DEGREES AS REQUIRED BY THE WSEC OR AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES
  - AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CAPABLE OF AUTOMATICALLY ADJUSTING THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.
- PROVIDE BALANCING DEVICES IN ALL BRANCH DUCTS AND PIPE RUNS TO TERMINAL DEVICES AS REQUIRED BY SECTION C408.2.2 OF THE WSEC AND AS INDICATED ON THE CONTRACT DOCUMENTS.
- SEALANTS FOR GALVANIZED DUCTWORK: SEAL AIR DUCT JOINTS AND JOINTS BETWEEN FITTINGS AND DUCTS WITH HARDCAST SEALANT OR APPROVED EQUAL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- ALL DUCTWORK SHALL COMPLY WITH SMACNA STANDARDS FOR CONSTRUCTION OF GALVANIZED DUCTWORK. ALL DUCTWORK SHALL BE SEALED AS REQUIRED BY SECTION C403.2.7 OF THE WSEC.
- DUCTWORK STATIC PRESSURE AND SEAL CLASS:

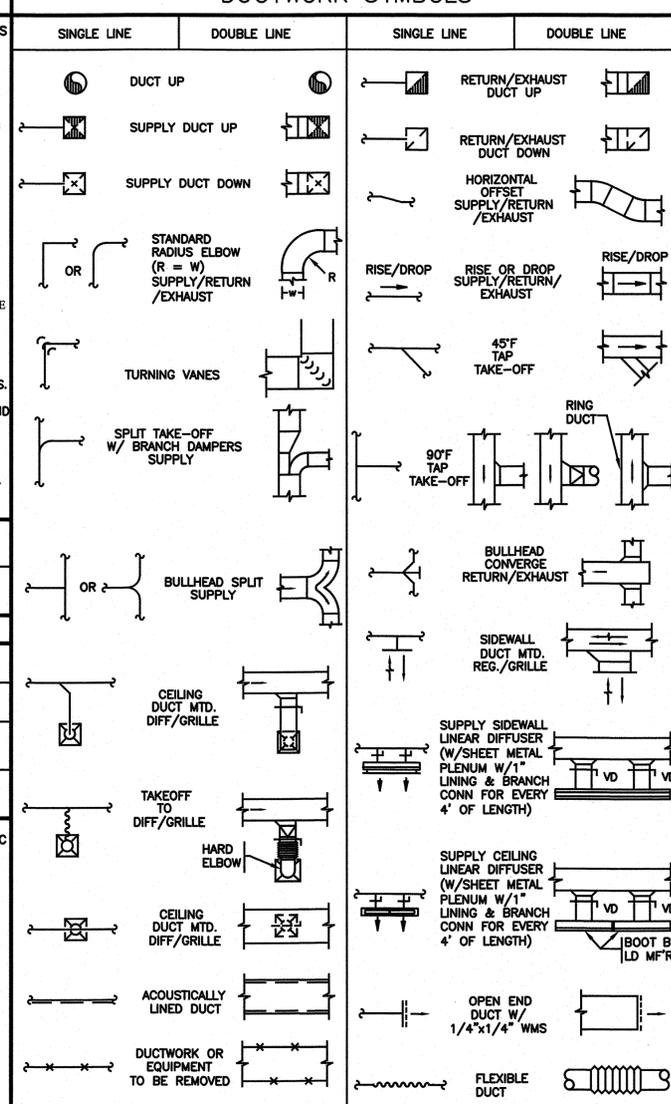
DUCT CONSTRUCTION CLASS	STATIC PRESSURE RATING	PRESSURE	SMACNA SEAL CLASS	SMACNA LEAKAGE CLASS	VELOCITY	NOTES
1"	1/2" TO 2"	POS. OR NEG.	B	12	2500 FPM OR LESS	SEAL TRANSVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT WALL PENETRATIONS

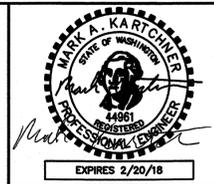
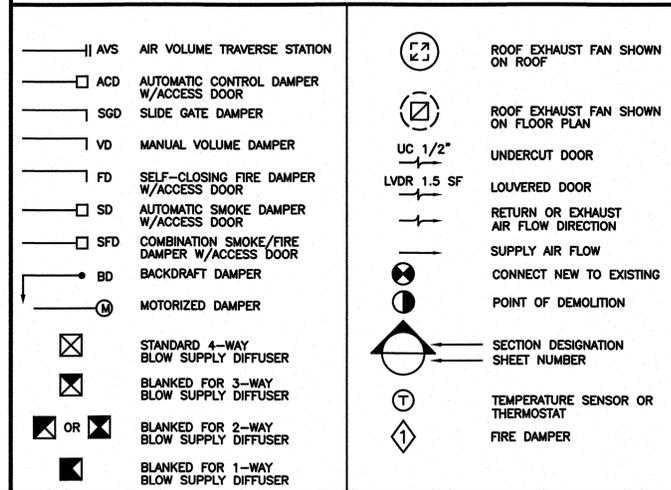
DUCT TYPE	LOCATION	R-VALUE
SUPPLY/RETURN	NOT WITHIN CONDITIONED SPACE	R-6 (INCLUDE APPROVED WEATHERPROOF BARRIER)
OUTSIDE AIR	WITHIN CONDITIONED SPACE (NOT CONSIDERED PART OF THE BUILDING ENVELOPE)	R-8 (DAMPER AT ENVELOPE PENETRATION)
SUPPLY	WITHIN CONDITIONED SPACE	R-3.3

- ALL DUCTWORK SHALL BE INSULATED AS REQUIRED BY SECTION C403.2.7 OF THE WSEC.
- HVAC SYSTEMS SERVING PORTIONS OF THE BUILDING HAVING LESS THAN 24-HOUR OPERATION SHALL BE SHUT OFF DURING UNOCCUPIED PERIODS AS REQUIRED BY SECTION 1432.1 OF THE WSEC OR AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES.
- ALL AIR SYSTEMS SHALL BE PROVIDED WITH A 100% CAPABLE AIR ECONOMIZER CAPABILITY AS REQUIRED BY THE SECTION C403.3.1 OF THE WSEC AND AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES.
- AIR ECONOMIZERS SHALL BE CAPABLE OF PROVIDING PARTIAL COOLING EVEN WHEN ADDITIONAL MECHANICAL COOLING IS REQUIRED TO MEET THE REMAINDER OF THE COOLING LOAD.
- SIMULTANEOUS HEATING AND COOLING TO INDIVIDUAL ZONES SHALL BE PROHIBITED AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES.
- MOTOR EFFICIENCY SHALL NOT BE LESS THAN THE MINIMUM CALLOUTS PER TABLE C403.2.13 OF THE WSEC FOR FULL LOAD EFFICIENCIES.
- RECORD DRAWINGS SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE AS REQUIRED BY SECTION C408.1.3 OF THE WSEC. THE DRAWINGS SHALL INDICATE THE LOCATION AND PERFORMANCE DATA OF EQUIPMENT, GENERAL CONFIGURATION OF DUCTWORK AND PIPING DISTRIBUTION SYSTEMS, INCLUDING FLOW RATES AS A MINIMUM.
- MOTORIZED DAMPERS:**
  - OUTDOOR AIR SUPPLY, EXHAUST OPENINGS AND RELIEF OUTLETS SHALL BE PROVIDED WITH CLASS 1A MOTORIZED DAMPERS WHICH CLOSE AUTOMATICALLY WHEN THE SYSTEM IS OFF
  - RETURN AIR DAMPERS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS.
- ALL OUTSIDE AIR, RETURN, RELIEF, AND EXHAUST DAMPERS SHALL BE SPECIFIED TO BE LOW LEAKAGE DAMPERS AND SHALL BE SPECIFIED TO NOT EXCEED THE FOLLOWING MAXIMUM LEAKAGE VALUES WHEN TESTED IN ACCORDANCE WITH AMCA 500D AT 1.0" W.G.:
  - MOTORIZED DAMPERS SHALL HAVE A TESTED MAXIMUM LEAKAGE RATE NOT TO EXCEED 4 CFM/SF
  - GRAVITY DAMPERS GREATER THAN 24" IN ONE OR MORE DIMENSION SHALL HAVE A TESTED MAXIMUM LEAKAGE RATE NOT TO EXCEED 20 CFM/SF.
  - GRAVITY DAMPERS LESS THAN 24" IN EITHER DIMENSION SHALL HAVE A TESTED MAXIMUM LEAKAGE RATE NOT TO EXCEED 40 CFM/SF
- FUNCTIONAL TESTING: THE MECHANICAL EQUIPMENT AND ASSOCIATED CONTROLS MUST BE FUNCTIONALLY PERFORMANCE TESTED IN ACCORDANCE WITH THE 2012 NREC REQUIREMENTS (SECTIONS C408.2.3.1 THROUGH C408.2.3.3)
  - OPERATION AND MAINTENANCE DATA FOR EQUIPMENT.
  - NAMES AND ADDRESSES OF SERVICE AGENCIES.
  - HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION.
  - NARRATIVE OF HOW SYSTEM IS INTENDED TO OPERATE.
- HVAC SYSTEMS SHALL BE BALANCED AS REQUIRED BY SECTION 1416.3 OF THE WSEC.

### DUCTWORK SYMBOLS



### ADDITIONAL SYMBOLS



WWW.KARTCHNERENGINEERING.COM  
6814 S. JACKSON RIDGE LANE  
GREENACRES, WA 99016  
(509) 922-0383

**Kartchner** Engineering

No.	DATE	BY

LEGACY VILLAS  
COUNTRY VISTA DRIVE  
LIBERTY LAKE, WA

MECHANICAL: SCHEDULES & SYMBOLS

SHEET TITLE	PROJECT ADDRESS	PROJECT TITLE
DATE	6-14-16	
DRAWN	YD	
CHECKED	MAK	
PROJECT NUMBER	16-40	
DRAWING NO.		

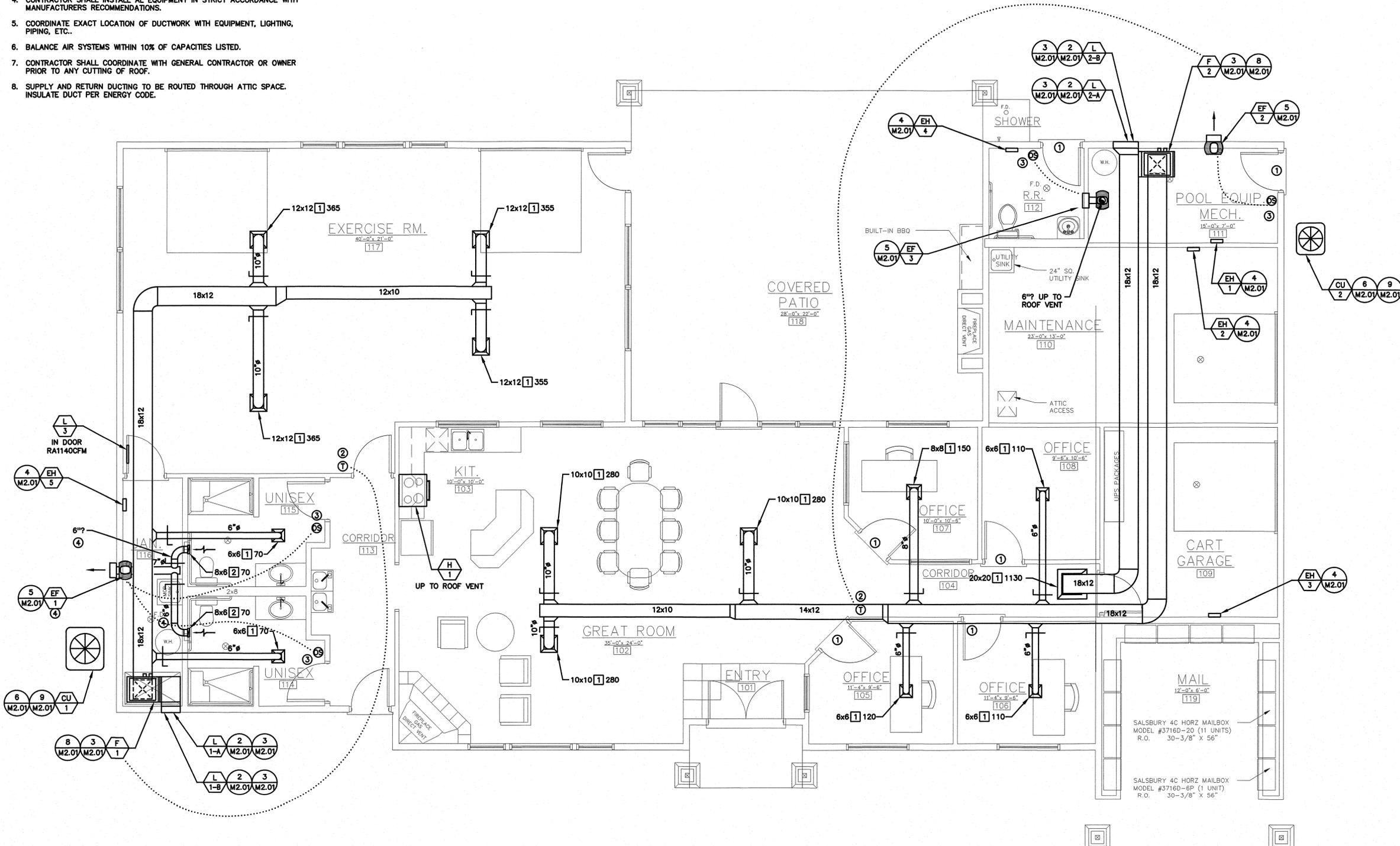
M0.01

## 2 GENERAL NOTES

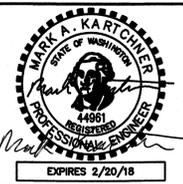
- FOR THE PURPOSES OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR MUST VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE BEGINNING ANY FABRICATION OR CONSTRUCTION.
- ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL CODES IN ACCORDANCE WITH THE CURRENT INTERNATIONAL MECHANICAL CODE.
- ALL NEW MATERIAL, METHODS, AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE BUILDING STANDARDS AS APPROVED BY THE OWNER.
- CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
- COORDINATE EXACT LOCATION OF DUCTWORK WITH EQUIPMENT, LIGHTING, PIPING, ETC..
- BALANCE AIR SYSTEMS WITHIN 10% OF CAPACITIES LISTED.
- CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR OR OWNER PRIOR TO ANY CUTTING OF ROOF.
- SUPPLY AND RETURN DUCTING TO BE ROUTED THROUGH ATTIC SPACE. INSULATE DUCT PER ENERGY CODE.

## 3 KEYED NOTES

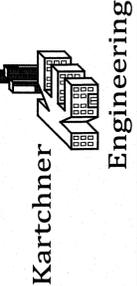
- UNDERCUT DOOR BY 1" FOR RETURN AND EXHAUST AIRFLOW.
- 7 DAY PROGRAMMABLE T-STAT W/ AUTO CHANGEOVER. MOUNT MAX 4' ABOVE FINISHED FLOOR.
- OCCUPANCY SENSOR OR TIMER SWITCH REQUIRED, COORDINATE WITH ELECTRICAL.
- EXHAUST DUCT AND EXHAUST FAN ARE LOCATED IN JANITOR ROOM 116.



1 MECHANICAL: MAIN FLOOR PLAN  
SCALE: 1/4" = 1'-0"



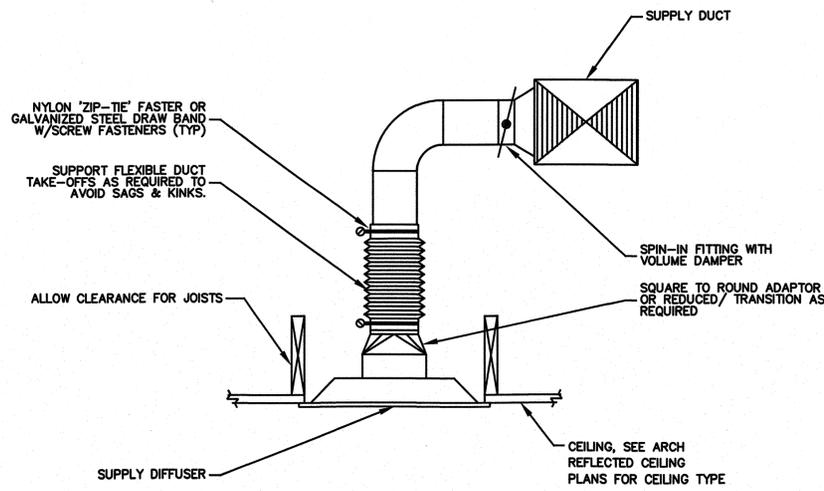
WWW.KARTCHNERENGINEERING.COM  
68 GREENACRES, W.A. 99016  
(509) 922-0383



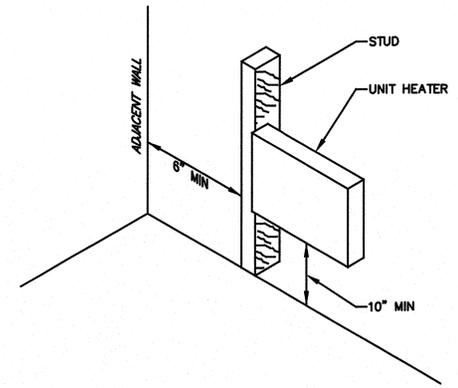
No.	DATE	BY
4		
3		
2		
1		

LEGACY VILLAS COUNTRY VISTA DRIVE LIBERTY LAKE, WA		
MECHANICAL: FLOOR PLAN		
SHEET TITLE	PROJECT ADDRESS	PROJECT TITLE
DATE	6-14-16	
DRAWN	YD	
CHECKED	MAK	
PROJECT NUMBER	16-40	
DRAWING NO.		

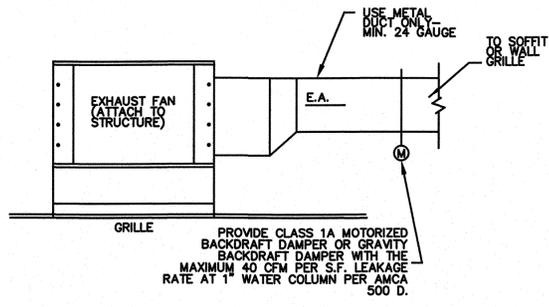
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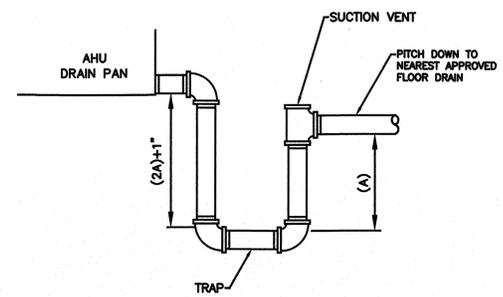
1 TYPICAL DIFFUSER CONNECTION  
SCALE: NOT TO SCALE det#



4 ELECTRIC WALL HEATER DETAIL  
SCALE: NOT TO SCALE det#

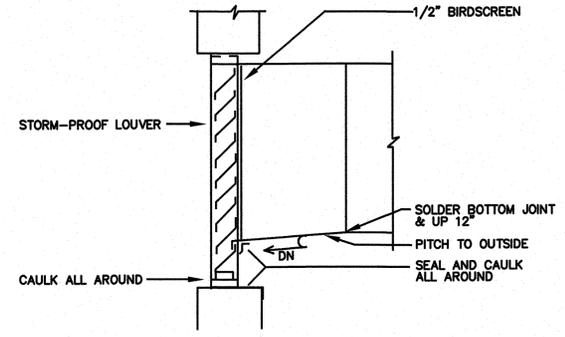


5 EXHAUST FAN DETAIL  
SCALE: NOT TO SCALE det#

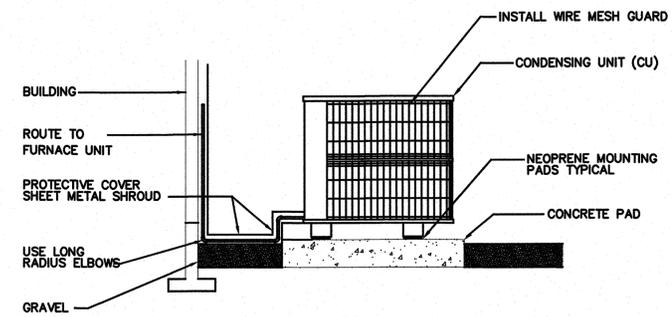


NOTES:  
1. ALL CONDENSATE DRAIN LINES SHALL BE FULL SIZE OF DRAIN PAN OUTLET  
2. A = UNIT TOTAL STATIC PRESSURE (T.S.P.)

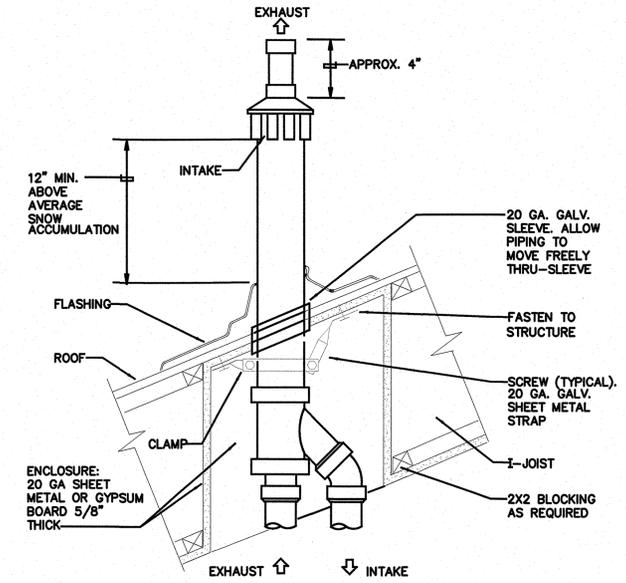
7 CONDENSATE DRAIN DETAIL  
SCALE: NOT TO SCALE det#



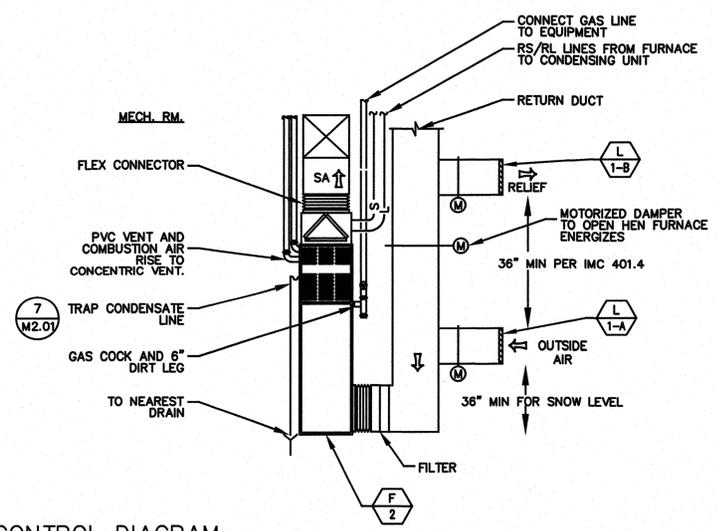
2 LOUVER CONNECTION DETAIL  
SCALE: NOT TO SCALE det#



9 CONDENSING UNIT INSTALLATION DETAIL (CU)  
SCALE: NOT TO SCALE det#



8 FURNACE COMBUSTION  
SCALE: NOT TO SCALE det#



3 FURNACE CONTROL DIAGRAM  
SCALE: NOT TO SCALE det#

**SEQUENCE OF OPERATION:**  
PROVIDE A ROOM THERMOSTAT COMPATIBLE WITH THE UNIT TO CONTROL THE HEATING, COOLING, AND ECONOMIZER IN SEQUENCE.

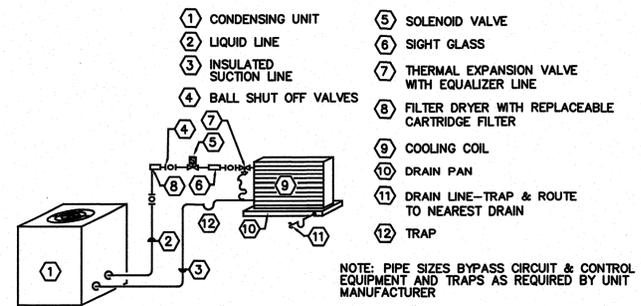
**OCCUPIED MODE:**  
THE FURNACE SUPPLY FAN SHALL CYCLE ON A CALL FOR HEATING OR COOLING AND THE ECONOMIZER DAMPERS SHALL POSITION TO MINIMUM OUTSIDE AIR AS SET AT THE UNIT MOUNTED POTENTIOMETER.

ON A CALL FOR COOLING WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 78° (OR THE ROOM SETPOINT) THE ECONOMIZER SHALL ACTIVATE BY MODULATING THE OUTSIDE AIR DAMPER OPEN, AND THE RETURN DAMPER CLOSED. WHEN OUTSIDE TEMPERATURE IS ABOVE 78° (OR THE ROOM SETPOINT) THE ECONOMIZER SHALL BE LOCKED OUT AND DAMPERS SHALL POSITION TO MINIMUM OUTSIDE AIR. FURTHER CALL FOR COOLING SHALL CYCLE ON THE COMPRESSOR. THE REVERSE SHALL OCCUR WITH A DECREASE IN CALL FOR COOLING.

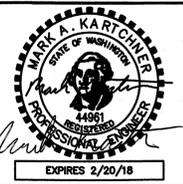
ON A CALL FOR HEATING WHEN THE OUTSIDE TEMPERATURE IS GREATER THAN 30° THE HEAT PUMP SHALL CYCLE TO SATISFY THE ROOM SETPOINT. ON A CALL FOR HEATING WHEN THE OUTSIDE TEMPERATURE IS LESS THAN 30° GAS HEATING SHALL CYCLE TO SATISFY THE ROOM SETPOINT.

**UNOCCUPIED MODE:**  
THE UNIT FAN SHALL CYCLE ON A CALL FOR COOLING OR HEATING WITH THE OUTSIDE AIR DAMPERS CLOSED AND THE RETURN AIR DAMPER FULLY OPEN.

THE DX COOLING OR GAS HEATING SHALL CYCLE TO MAINTAIN THE REDUCED ROOM SETPOINTS.



6 TYPICAL REFRIGERATION PIPING  
SCALE: NOT TO SCALE det#



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GREENACRES, WA 99016  
(509) 922-0383  
Kartchner Engineering

No.	DATE	BY

LEGACY VILLAS  
COUNTRY VISTA DRIVE  
LIBERTY LAKE, WA

MECHANICAL: DETAILS

SHEET TITLE	PROJECT ADDRESS	PROJECT TITLE
DATE	6-14-16	
DRAWN	YD	
CHECKED	MAK	
PROJECT NUMBER	16-40	
DRAWING NO.		

M2.01

95 % HIGH EFFICIENCY CONDENSING FURNACE																					
#	LOCATION	INTERLOCK W/ HEAT PUMP	FURNACE MFR MODEL#	FAN				COOLING			HEATING			ELECTRICAL				WEIGHT	O.A. (CFM)	NOTES	
				CFM	ESP	HP	TYPE	EAT (DB)	LAT (DB)	S.C (MBH)	INPUT (MBH)	OUTPUT (MBH)	AFUE	VENT SIZE	VOLT	PHASE	MCA				MOCP
F 1	MECHANICAL RM	CU 1	CARRIER 59SP5-60	1600	0.5	1	ECM	80	61	59	120	117	96.5	3	115	1	15.6	20	270	200	① ② ③ ④
F 2	MECHANICAL RM	CU 2	CARRIER 59SP5-36	1375	0.8	1	ECM	80	61	31	60	58	96.5	3	115	1	15.6	20	270	200	① ② ③ ④

NOTES:  
 ① PROVIDE INTEGRATED COOLING COIL WITH FURNACE    ③ PROVIDE FILTER  
 ② PROVIDE STANDALONE PROGRAMMABLE THERMOSTAT    ④ INTERLOCK FURNACE W/ ASSOCIATED MOTORIZED DAMPER ON O.A. DAMPER

ELECTRIC WALL HEATER							
#	MFR/MODEL #	SERVICE	CFM	ELECTRICAL		WEIGHT	NOTES
				KW	V/φ		
EH 1	INDEECO WRI	MECHANICAL ROOM	40	2	208/1	-	① ②
EH 2	INDEECO WRI	MECHANICAL ROOM	40	2	208/1	-	① ②
EH 3	INDEECO WRI	MECHANICAL ROOM	40	1.5	208/1	-	① ②
EH 4	INDEECO WRI	MECHANICAL ROOM	40	2	208/1	-	① ②
EH 5	INDEECO WRI	MECHANICAL ROOM	40	1	208/1	-	① ②

NOTES:  
 ① PROVIDE WALL MOUNTING BRACKET KIT.    ② PROVIDE BUILT IN THERMOSTAT.

LOUVER SCHEDULE											
#	MFR	MODEL #	TYPE	SERVICE	MATERIAL	SIZE (WxH)	CFM	VELOCITY FPM	BLADE		NOTES
									SPC (°)	OPEN AREA	
L 1-A	RUSKIN	ELF375DXH	FIXED	INTAKE	ALUMINUM	30x30	1600	500	0.05	3.2	① ② ③
L 1-B	RUSKIN	ELF375DXH	FIXED	RELIEF	ALUMINUM	30x30	1600	500	0.05	3.2	① ② ③
L 2-A	RUSKIN	ELF375DXH	FIXED	INTAKE	ALUMINUM	24x36	1375	500	0.05	2.75	① ② ③
L 2-B	RUSKIN	ELF375DXH	FIXED	RELIEF	ALUMINUM	24x36	1375	500	0.05	2.75	① ② ③
L 3	RUSKIN	-	FIXED	DOOR	ALUMINUM	-	1440	500	-	-	②

NOTES:  
 ① PROVIDE 1/2"x1/2" 19 GAUGE ALUMINUM BIRD SCREEN.  
 ② LOUVER SHALL HAVE BAKED ENAMEL FINISH  
 ③ CLASS 1A MOTORIZED DAMPERS REQUIRED, SEE FURNACE DETAIL

CONDENSING UNIT - 13 SEER												
#	LOCATION	INTERLOCK W/ FURNACE	MFR MODEL #	NONINAL TONS	WEIGHT	SEER	ELECTRICAL				NOTES	
							VOLT	PHASE	MCA	MFS		
CU 1	GROUND	F 1	CARRIER 24ABB-60	5 TON	230	13	208	1	34.2	50	30	
CU 2	GROUND	F 2	CARRIER 24ABB-36	3 TON	170	13	208	1	20.5	30	20	

NOTES:  
 ① PROVIDE STAND OR PLATFORM FOR CONDENSING UNIT

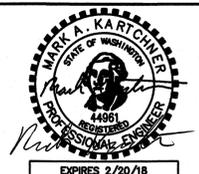
EXHAUST FANS												
#	MFR	MODEL	SERVICE	DRIVE	CFM	ESP (")	FAN RPM	SONE LEVEL	MOTOR		NOTES	
									HP	VOLTS/PHASE		
EF 1	NUTONE	-	RESTROOM	DIRECT	140	0.25	-	-	1/12	120	1	① ② ③ INTERLOCK WITH LIGHT SWITCH
EF 2	NUTONE	-	POOL EQUIPMENT, MECH.	DIRECT	80	0.25	-	-	1/12	120	1	① ② ③ INTERLOCK WITH LIGHT SWITCH
EF 3	NUTONE	-	RESTROOM	DIRECT	70	0.25	-	-	1/12	120	1	① ② ③ INTERLOCK WITH LIGHT SWITCH

NOTES:  
 ① PROVIDE GRAVITY BACKDRAFT DAMPER, MAX LEAKAGE 40CFM/FT² at 1.0"W.C. per AMCA 500D  
 ② PROVIDE DISCHARGE WALL GRILLE  
 ③ WALL MOUNTED

RESIDENTIAL KITCHEN HOOD													
#	MFR	MODEL	COLOR	SERVICE	DRIVE	CFM	ESP (")	FAN RPM	SONE LEVEL	ELECTRICAL			NOTES
										AMPS	VOLTS	PHASE	
H 1	GE	JV338H	WHITE	HOOD	DIRECT	130	0.2	1200	1.3	2.5	120	1	

AIR OUTLETS SCHEDULE												
#	MFR	MODEL	SERVICE	TYPE	MATERIAL	MOUNTING	BORDER	PATTERN	BLADE			NOTES
									SPC (°)	POS	DEFL (")	
1	TITUS	MCD	SUPPLY	DIFFUSER	STEEL	SURFACE	TYPE 1	4-WAY ADJUST.	-	-	-	① ② ③
2	TITUS	35ORL	RETURN/EXHAUST	GRILLE	STEEL	SURFACE	TYPE 1	FIXED	3/4"	FACE HORIZ.	35°	① ② ③

NOTE:  
 ① FINISH SHALL BE WHITE ANODIC ACRYLIC PAINT.  
 ② PROVIDE BALANCING DAMPER IN BRANCH DUCT SERVING AIR OUTLET AT TAKEOFF FROM TRUNK DUCT. (ADDITIONAL DAMPERS FOR SYSTEM BALANCING ARE SHOWN ON DRAWINGS).  
 ③ PROVIDE SQUARE TO ROUND TRANSITION AS REQUIRED.



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4		
3		
2		
1		

No. DATE BY

LEGACY VILLAS  
 COUNTRY VISTA DRIVE  
 LIBERTY LAKE, WA

MECHANICAL: DETAILS

SHEET TITLE: PROJECT ADDRESS: PROJECT TITLE:

DATE: 6-14-16  
 DRAWN: YD  
 CHECKED: MAK  
 PROJECT NUMBER: 16-40  
 DRAWING NO.

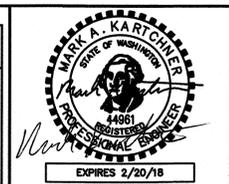
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PLUMBING LEGEND	
SYMBOL OR ABBREVIATION	DEFINITION
	SOIL OR WASTE BELOW GRADE
	SOIL OR WASTE ABOVE GRADE
	VENT
	COLD WATER
	HOT WATER
	NATURAL GAS (BELOW 1PSI)
	CLEAN OUT TO GRADE
	VENT
	CLEANOUT
	VENT THRU ROOF
	WALL CLEANOUT
	FLOOR CLEANOUT
	COLD WATER MAIN

PLUMBING/PIPING SYMBOLS	
	ELBOW UP
	ELBOW DOWN
	TEE UP
	TEE DOWN
	CONCENTRIC REDUCER/INCREASER
	ECCENTRIC REDUCER/INCREASER
	UNION
	RISE/DROP IN PIPE
	RISE/DROP IN PIPE & 90° TURN
	VENT THRU ROOF
	CAP
	CLEAN-OUT (WALL)
	CLEAN-OUT (FLUSH TO FLOOR OR GRADE)
	FLOOR DRAIN
	CIRCULATING PUMP (POINTS IN DIRECTION OF FLOW)
	VALVE (AS INDICATED OR SPECIFIED)
	CHECK VALVE
	PRESSURE & TEMPERATURE (RELIEF) VALVE
	PRESSURE REDUCING VALVE (POINTS TOWARDS LOW PRESSURE)
	GAS VALVE
	SOLENOID VALVE
	HOSE BIBB
	CIRCUIT SETTER
	VALVE BOX W/ VALVE (AS SPECIFIED)
	CONNECTION TO EXISTING
	EXTENSION & CONTINUATION

ADDITIONAL SYMBOLS	
	SECTION DESIGNATION
	SHEET NUMBER
	DETAIL NUMBER
	SHEET NUMBER

- ### WSEC COMPLIANCE
- ELECTRIC WATER HEATERS LOCATED IN UNCONDITIONED SPACES OR ON CONCRETE FLOORS SHALL BE SEPARATED FROM THE SUPPORTING SURFACE WITH R-10 INSULATION AS DESCRIBED IN SECTION C404.4 OF THE WSEC.
  - PIPE INSULATION - PER WSEC C404.6. FOR AUTOMATIC-CIRCULATING HOT WATER AND HEAT-TRACED SYSTEMS, PIPING SHALL BE INSULATED WITH NOT LESS THAN 1 INCH (25 MM) OF INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU PER INCH/H · FT<sup>2</sup> · F (1.53 W PER 25 MM/M<sup>2</sup> · K).
  - PROVIDE HEAT TRAP ON SUPPLY AND DISCHARGE PIPING FROM WATER HEATER AS REQUIRED IN SECTION C404.4 OF WSEC. RHEEM SP2003 OR EQUAL.
  - RECORD DRAWINGS SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE AS REQUIRED BY SECTION C408.1.3 OF THE WSEC. THE DRAWINGS SHALL INDICATE THE LOCATION AND PERFORMANCE DATA OF EQUIPMENT, GENERAL CONFIGURATION OF DUCTWORK AND PIPING DISTRIBUTION SYSTEMS, INCLUDING FLOW RATES AS A MINIMUM.
  - COMMISSIONING: MECHANICAL EQUIPMENT AND ASSOCIATED CONTROLS MUST BE COMMISSIONED IN ACCORDANCE WITH THE 2012 NREC REQUIREMENTS (SECTION C408) INCLUDING BUT NOT LIMITED TO: A COMMISSIONING PLAN, A PRELIMINARY COMMISSIONING REPORT, FINAL COMMISSIONING REPORT AND COMPLETION OF THE 2012 NREC COMMISSIONING COMPLIANCE CHECKLIST. A COPY OF THE COMMISSIONING COMPLIANCE CHECKLIST IS REQUIRED TO BE GIVEN TO THE LOCAL BUILDING OFFICIAL.
  - OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER AS REQUIRED BY SECTION C408.1.3.2 OF THE WSEC. AS MINIMUM, THE MANUALS SHALL INCLUDE:
    - SUBMITTAL DATA.
    - OPERATION AND MAINTENANCE DATA FOR EQUIPMENT.
    - NAMES AND ADDRESSES OF SERVICE AGENCIES.
    - HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION.
    - NARRATIVE OF HOW SYSTEM IS INTENDED TO OPERATE.
  - COMMISSIONING SHALL BE PROVIDED AND REPORT OF COMMISSIONING SHALL BE SUBMITTED TO THE OWNER AS REQUIRED BY SECTION C408.1.2 OF THE WSEC.



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### 1 GAS CALCULATION

130' PIPE LENGTH COLUMN IN CODE USED FOR SIZING.  
130' FOR SIZING AT 0.5" W.C.

EQUIPMENT	MBH
F-1	115
F-2	47
POOL WH	310
FIREPLACE-1	50
FIREPLACE-2	50
BBQ	50
<b>TOTAL:</b>	<b>622 MBH</b>

EQUIPMENT  
3/4" MAIN @ 2PSI  
1-1/4" BUILDING @ 6.5"W.C.

### 2 WATER CALCULATION

AVAILABLE PRESSURE 60  
BACKFLOW PREVENTOR -12  
PRESS. LOSS ACROSS METER -2  
STATIC PRESS. LOSS (ELEV.)  
10'-0" x .43= -4.3  
MIN. PRESS. AT LAST FIXTURE -15  
PERMITTED AVAIL. PIPING PRESS. LOSS 26.7

TOTAL EQUIVALENT DISTANCE 130 FT

ALLOWABLE PRESSURE =  $26.7 \times 100 = 20.5$   
LOSS PER 100 FT. 130 FT

FIXTURE	QUAN.	F.U. DEVICE	TOTAL FU
WATER CLOSET	3	2.5	7.5
LAVATORY	3	1	3
MOP SINK	1	3	3
ADDITIONAL SINKS	2	1.5	3
DRINKING FOUNTAIN	1	0.75	0.75
HOSE BIBB	1	2.5	2.5
DISHWASHER	1	2	2
SHOWER HEADS	1	2	2
ADA DUAL SHOWER HEADS	2	4	8
<b>TOTAL F.U.</b>			<b>31.75</b>

METER SIZE 1"  
SUPPLY MAIN SIZE 1-1/4"

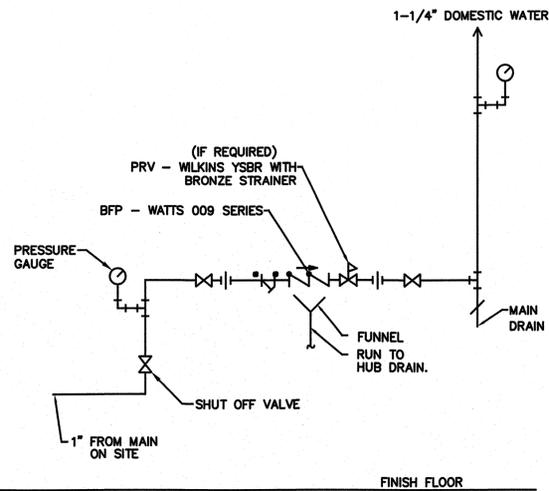
PLUMBING SCHEDULE								
SYMBOL	DESCRIPTION	TRIM & DETAIL REFERENCES	H.W	C.W	W	V	NOTES:	
(BF-1)	BACK FLOW PREVENTOR	WATTS 009 OR EQUAL LEAD FREE	RE: P-2.D				1/2" FOR SODA DISPENSER	
(FD-1)	FLOOR DRAIN	J.R. SMITH 2005A B-P	RE: P-2.G			2"	TRAP PRIMER IN RESTROOM	
(HB-1)	NON-FREEZE WALL HYDRANT	WOODFORD 25	3/4"		3/4"		NON FREEZE WALL HYDRANT WITH INTERIOR VACUUM BREAKER -HANDLE KEY, 3/4 HOSE CONNECT.	
(MS-1)	MOP SINK 28"x28"		CHICAGO FAUCET 897-CP	1/2"	1/2"	3"	2"	N/A
(L-1)	LAVATORY COUNTER	AMERICAN STANDARD AQUALYN #0476.028	AMERICAN STANDARD RELIANT 7385.003.002	1/2"	1/2"	2"	1 1/2"	INSULATE P-TRAP & EXPOSED H.W. LINES.
(L-2)	HAND WASH SINK WALL MOUNT	EAGEL HSA 10	HIGH MOUNT 4" SPLASH MOUNTED GOOSENECK FAUCET	1/2"	1/2"	2"	1 1/2"	INSULATE P-TRAP & EXPOSED H.W. LINES. PROVIDE HEAVY GUAGE OPTION
(WC-1)	WATER CLOSET HANDICAP	CADET III FLOWISE #2835.128	ELONGATED SEAT AND COVER		1/2"	3"	2"	1.128 GALLON FLUSH TANK, 17" RIM HEIGHT ELONGATED BOWL. ADA
(S-1)	KITCHEN SINK TWO COMPARTMENT	JUST STYLUS DL-2233-A-GR	SYMMONS S-245-5-LWG	1/2"	1/2"	2"	1 1/2"	INSULATE P-TRAP & EXPOSED H.W. LINES. PROVIDE HEAVY GUAGE OPTION
(S-2)	UTILITY SINK			1/2"	1/2"	2"	1 1/2"	REGENCY WALL MOUNTED SWIVEL FAUCET WITH 8" CENTERS - 12" SWING SPOUT
(SH-1)	SHOWER STALL	FREEDOM ADA ROLL-IN SHOWER 62"X33		1/2"	1/2"	2"	1 1/2"	WATER CONTROLS (ADA)
(SH-2)	SHOWER STALL	LASCO 1363BFS ONE PIECE DRAIN-PROVIDE W/ UNIT		1/2"	1/2"	2"	1 1/2"	NON FREEZE WALL HYDRANT WITH INTERIOR VACUUM BREAKER
(FCO)	GRADE (FLOOR) CLEAN OUT	JAY R SMITH 4040	N/A		SEE PLANS			CAST IRON TOP, ABS PLUG WITH GASKET SEAL. SIZE TO MATCH WASTE PIPING.
(DW-1)	DISHWASHER	KENMORE 24" MODEL 12413		1/2"		1 1/2"	1 1/4"	CONNECT WASTE TO SINK DRAIN
(WH-1)	ELECTRIC WATER HEATER	A.O. SMITH ECT-50	50 GALLON RE: P-2.G	3/4"	3/4"			4.5 KW STANDARD, 6.0 KW MAXIMUM, ENERGY FACTOR 0.91
(WH-2)	ELECTRIC WATER HEATER	A.O. SMITH ECT-30	30 GALLON RE: P-2.G	3/4"	3/4"			4.5 KW STANDARD, 6.0 KW MAXIMUM, ENERGY FACTOR 0.93
(DF-1)	DRINKING FOUNTAIN ADA BI-LEVEL	ELKAY EZOSTL6C	120 V, 60 HZ, 4.0 FLA, 89 LBS		1/2"	1 1/4"		

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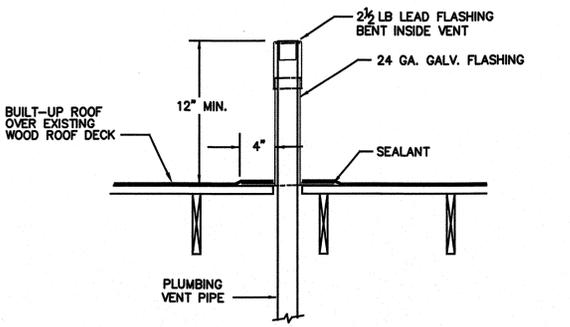
PLUMBING: SCHEDULES & SYMBOLS

SHEET TITLE	PROJECT ADDRESS	PROJECT TITLE
DATE	6-14-16	
DRAWN	YD	
CHECKED	MAK	
PROJECT NUMBER	16-40	
DRAWING NO.		

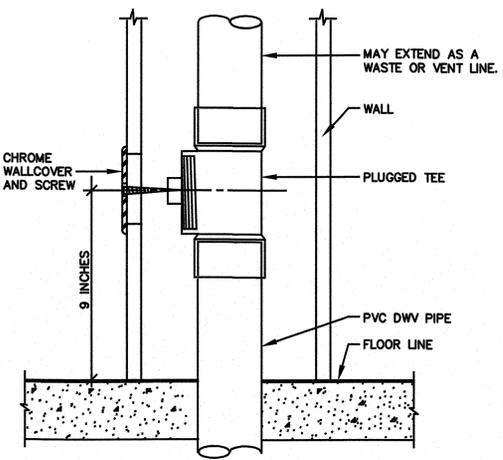
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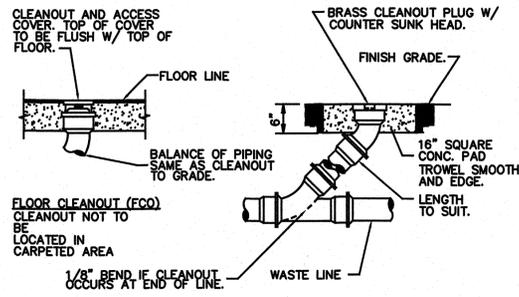
1 WATER HEADER DETAIL  
SCALE: NOT TO SCALE



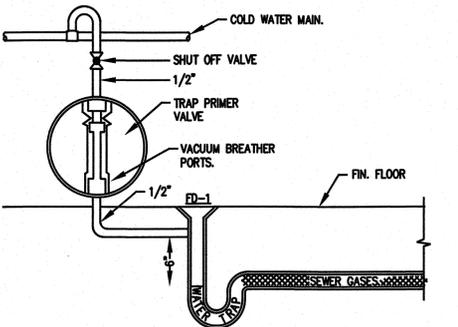
4 ROOF VENT PENETRATION DETAIL (VTR)  
SCALE: NOT TO SCALE



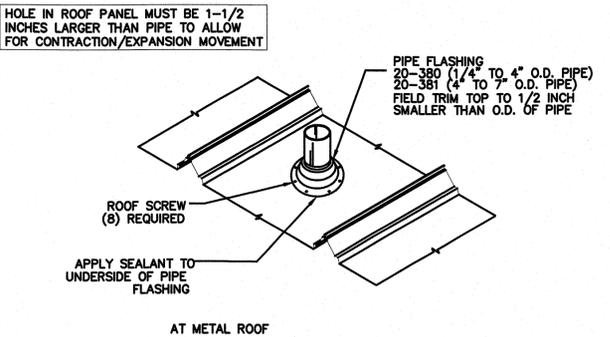
7 WALL CLEAN-OUT DETAIL  
SCALE: NOT TO SCALE



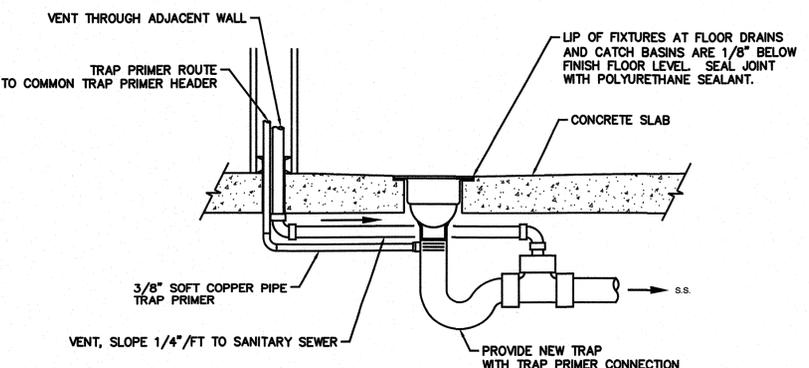
8 FLOOR CLEANOUT TO GRADE  
SCALE: NOT TO SCALE



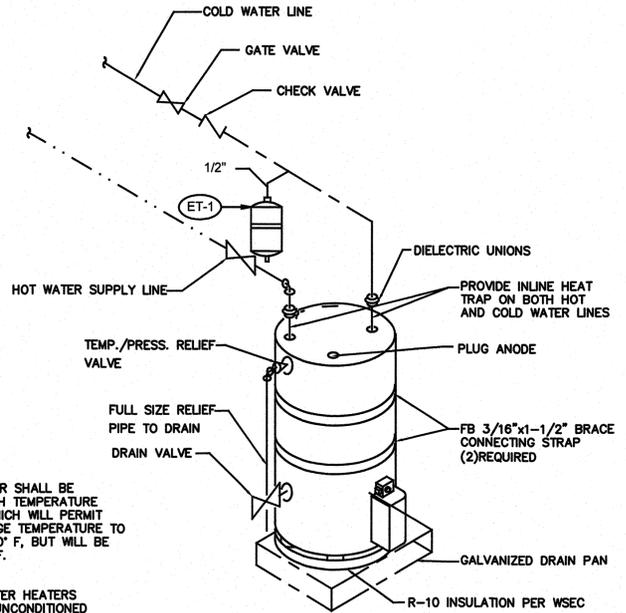
2 FLOOR DRAIN & TRAP PRIMER DETAIL  
SCALE: NOT TO SCALE



5 VENT PENETRATION DETAIL  
SCALE: NOT TO SCALE

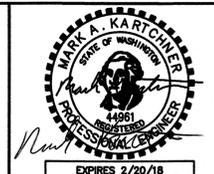


3 FLOOR DRAIN & TRAP PRIMER DETAIL  
SCALE: NOT TO SCALE



- GENERAL NOTES:
1. WATER HEATER SHALL BE SUPPLIED WITH TEMPERATURE CONTROLS WHICH WILL PERMIT THE DISCHARGE TEMPERATURE TO BE SET TO 90° F, BUT WILL BE SET AT 110° F.
  2. ELECTRIC WATER HEATERS LOCATED IN UNCONDITIONED SPACES OR ON CONCRETE FLOORS SHALL BE SEPARATED FROM THE SUPPORTING SURFACE WITH R-10 INSULATION AS DESCRIBED IN SECTION C404.4 OF THE WSEC.

6 ELECTRICAL WATER HEATER  
SCALE: NOT TO SCALE



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4		
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No.	DATE	BY

LEGACY VILLAS  
COUNTRY VISTA DRIVE  
LIBERTY LAKE, WA

PLUMBING: DETAILS

SHEET TITLE	
PROJECT ADDRESS	
PROJECT TITLE	
DATE	6-14-16
DRAWN	YD
CHECKED	MAK
PROJECT NUMBER	16-40
DRAWING NO.	

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## 2 GENERAL NOTES

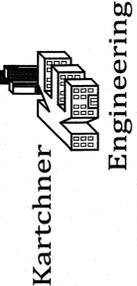
1. PROVIDE AND INSTALL FIXTURES AS SHOWN. CONNECTION TO SANITARY SEWER AND VENT PIPING FOR A FULLY FUNCTIONAL SYSTEM.
2. SLOPE ALL SEWERS 1/4" PER FOOT WHEN POSSIBLE. NO LINES SHALL BE LESS THAN 1/8" PER FOOT.
3. FOR THE PURPOSES OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR MUST VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE BEGINNING ANY FABRICATION OR CONSTRUCTION.
4. ALL WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE CURRENT STATE AND LOCAL PLUMBING CODES AND ORDINANCES.
5. CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
6. COORDINATE EXACT LOCATION OF PIPING WITH OTHER TRADES.
7. ALL SOIL PIPING SHALL BE PVC SCHEDULE 40.
8. ALL VENT PIPING SHALL BE ABOVE FLOOD RIM LEVEL OF HIGHEST FIXTURE BEFORE CONNECTION TO COMMON VENTS.
9. HORIZONTAL DRAINAGE PIPE SHALL BE PROVIDED WITH A CLEANOUT AT ITS UPPER TERMINAL, AND EACH RUN OF PIPING, THAT IS MORE THAN 100' IN TOTAL DEVELOPED LENGTH. CLEANOUTS SHALL BE PROVIDED IN A DRAINAGE LINE FOR EACH AGGREGATE HORIZONTAL CHANGE OF DIRECTION EXCEEDING ONE HUNDRED THIRTY FIVE DEGREES.

## 3 KEYED NOTES

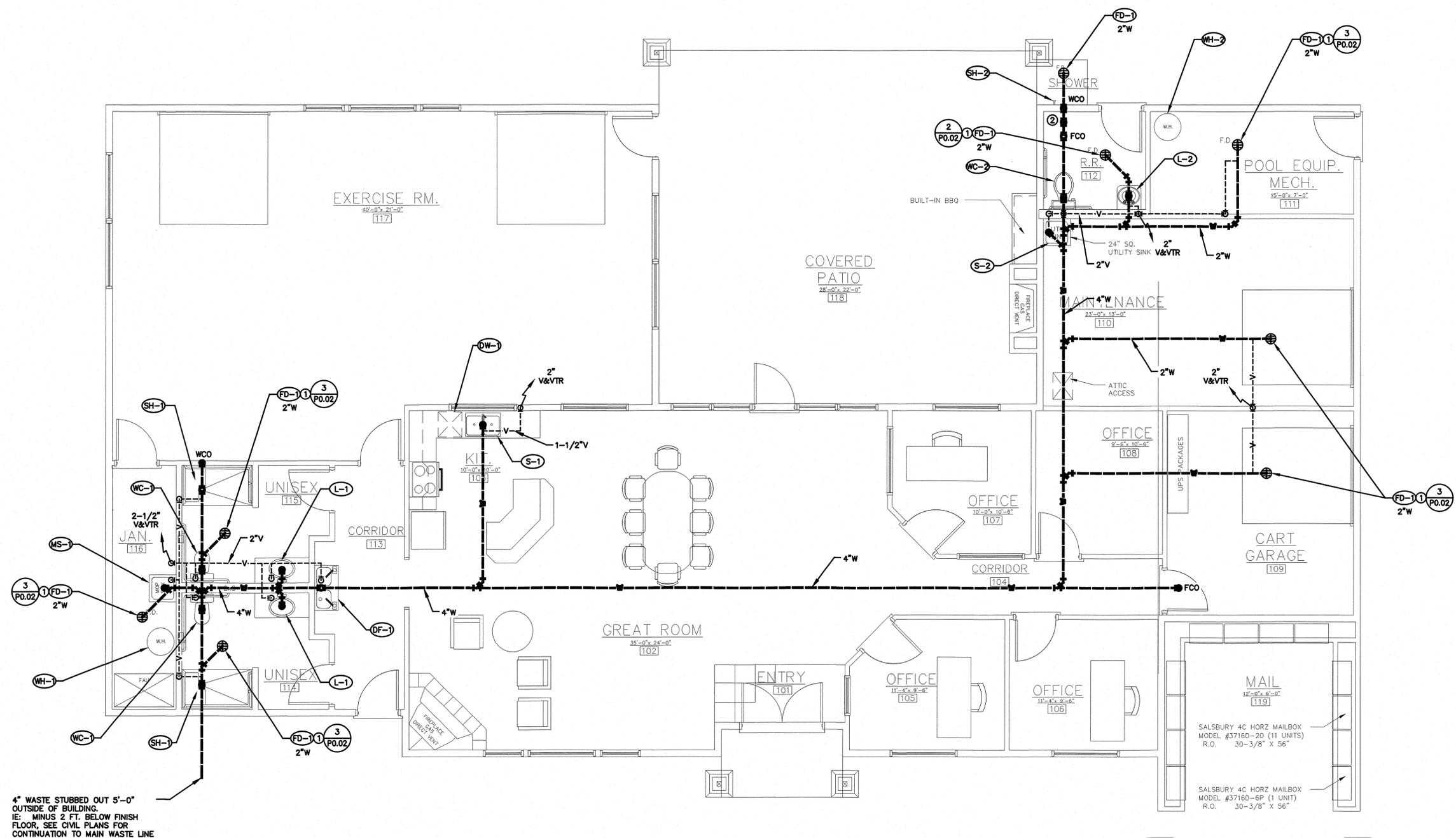
- ① PROVIDE AND INSTALL FLOOR DRAINS WHERE SHOWN, INCLUDING TRAP PRIMERS WITH P-TRAP AND PRIMER UP TO FD AND 2"V UP IN WALL.
- ② LOCATE P-TRAP FOR SHOWER INSIDE HEATED BATHROOM.



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No.	DATE	BY



4" WASTE STUBBED OUT 5'-0"  
 OUTSIDE OF BUILDING.  
 IE: MINUS 2 FT. BELOW FINISH  
 FLOOR, SEE CIVIL PLANS FOR  
 CONTINUATION TO MAIN WASTE LINE

1 PLUMBING: WASTE & VENT PLAN MAIN FLOOR  
 SCALE: 1/4" = 1'-0"



LEGACY VILLAS  
 COUNTRY VISTA DRIVE  
 LIBERTY LAKE, WA

PLUMBING: WASTE & VENT PLAN MAIN FLOOR

SHEET TITLE	PROJECT ADDRESS	PROJECT TITLE
DATE	6-14-16	
DRAWN	YD	
CHECKED	MAK	
PROJECT NUMBER	16-40	
DRAWING NO.		

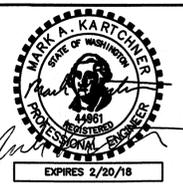
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## 2 GENERAL NOTES

1. PROVIDE AND INSTALL FIXTURES AS SHOWN. CONNECTION TO NEW HOT AND COLD PIPING FOR A FULLY FUNCTIONAL SYSTEM.
2. FOR THE PURPOSES OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR MUST VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE BEGINNING ANY FABRICATION OR CONSTRUCTION.
3. ALL WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE CURRENT STATE AND LOCAL PLUMBING CODES AND ORDINANCES.
4. CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. COORDINATE EXACT LOCATION OF PIPING WITH OTHER TRADES.
6. ALL WATER PIPING LOCATED IN THE ATTIC MUST BE WITHIN THE THERMAL ENVELOPE TO PREVENT FREEZING.

## 3 KEYED NOTES

- ① PROVIDE WATER SUPPLY TO TRAP PRIMERS.
- ② PROVIDE SHUTOFF AND DRAIN BACK FOR WINTERIZING EXTERIOR SHOWER.
- ③ ROUTE THROUGH ATTIC USING STRAIGHT LINES, TRY TO AVOID DUCTING.



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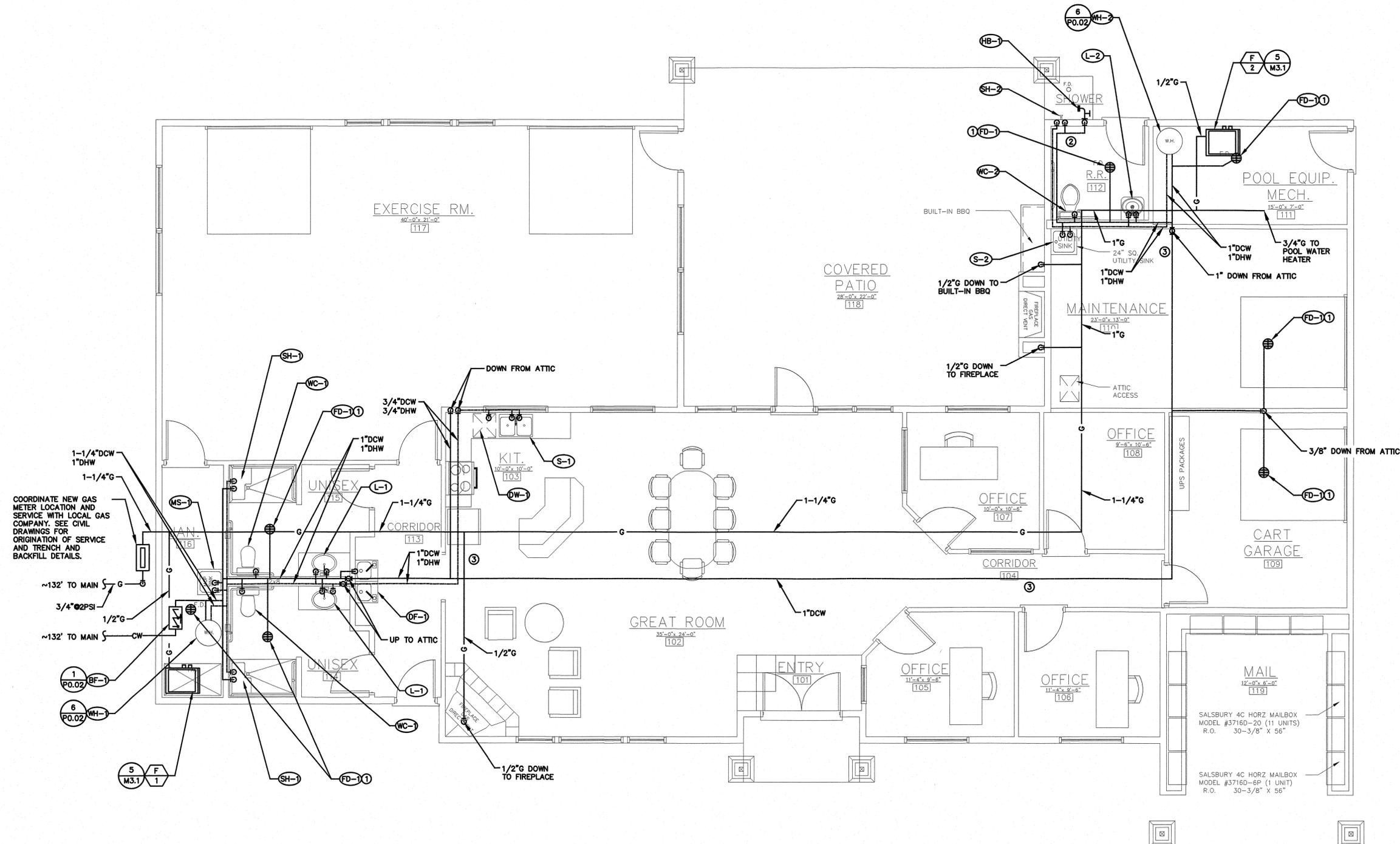
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No.	DATE	BY

LEGACY VILLAS  
COUNTRY VISTA DRIVE  
LIBERTY LAKE, WA

SHEET TITLE	PROJECT ADDRESS	PROJECT TITLE
DATE	6-14-16	
DRAWN	YD	
CHECKED	MAK	
PROJECT NUMBER	16-40	
DRAWING NO.		

P1.02

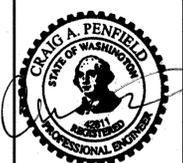


1 PLUMBING: WATER & GAS PLAN MAIN FLOOR  
SCALE: 1/4" = 1'-0"









CONNECTION	FASTENING <sup>a,m</sup>	LOCATION
1. Joist to sill or girder	3-8d common (2 1/2" x 0.131") 3-3" x 0.131" nails 3-3" x 14 gage staples	toenail
2. Bridging to joist	2-8d common (2 1/2" x 0.131") 2-3" x 0.131" nails 2-3" x 14 gage staples	toenail each end
3. 1" x 6" subfloor to each joist	2-8d common (2 1/2" x 0.131")	face nail
4. Wider than 1" x 6" subfloor to each joist	3-8d common (2 1/2" x 0.131")	face nail
5. 2" subfloor to joist or girder	2-16d common (3 1/2" x 0.162")	blind and face nail
6. Sole plate to joist or blocking	16d (3 1/2" x 0.135") at 24" o.c. 3" x 0.131" nails at 8" o.c. 3" 14 gage staples at 8" o.c.	typical face nail
Sole plate to joist or blocking at braced wall panel	3-16d (3 1/2" x 0.135") at 16" o.c. 4-3" x 0.131" nails at 16" o.c. 4-3" 14 gage staples at 16" o.c.	braced wall panels
7. Top plate to stud	2-16d common (3 1/2" x 0.162") 3-3" x 0.131" nails 3-3" 14 gage staples	end nail
8. Stud to sole plate	4-8d common (2 1/2" x 0.131") 4-3" x 0.131" nails 3-3" 14 gage staples	toenail
	2-16d common (3 1/2" x 0.162") 3-3" x 0.131" nails 3-3" 14 gage staples	end nail
9. Double studs	16d (3 1/2" x 0.135") at 24" o.c. 3" x 0.131" nails at 8" o.c. 3" 14 gage staples at 8" o.c.	face nail
10. Double top plates	16d (3 1/2" x 0.135") at 16" o.c. 3" x 0.131" nails at 12" o.c. 3" 14 gage staples at 12" o.c.	typical face nail
Double top plates	8-16d common (3 1/2" x 0.162") 12-3" x 0.131" nails 12-3" 14 gage staples	lap splice
11. Blocking between joists or rafters to top plate	3-8d common (2 1/2" x 0.131") 3-3" x 0.131" nails 3-3" 14 gage staples	toenail
12. Rim joist to top plate	8d (2 1/2" x 0.131") at 6" o.c. 3" x 0.131" nails at 6" o.c. 3" 14 gage staples at 6" o.c.	toenail
13. Top plates, laps and intersections	2-16d common (3 1/2" x 0.162") 3-3" x 0.131" nails 3-3" 14 gage staples	face nail
14. Continuous header, two pieces	16d common (3 1/2" x 0.162")	16" o.c. along edge
15. Ceiling joists to plate	3-8d common (2 1/2" x 0.131") 5-3" x 0.131" nails 5-3" 14 gage staples	toenail
16. Continuous header to stud	4-8d common (2 1/2" x 0.131")	toenail
17. Ceiling joists, laps over partitions (see Section 2308.10.4.1, Table 2308.10.4.1)	3-16d common (3 1/2" x 0.162") minimum, Table 2308.10.4.1 4-3" x 0.131" nails 4-3" 14 gage staples	face nail
18. Ceiling joists to parallel rafters (see Section 2308.10.4.1, Table 2308.10.4.1)	3-16d common (3 1/2" x 0.162") minimum, Table 2308.10.4.1 4-3" x 0.131" nails 4-3" 14 gage staples	face nail
19. Rafter to plate (see Section 2308.10.1, Table 2308.10.1)	3-8d common (2 1/2" x 0.131") 3-3" x 0.131" nails 3-3" 14 gage staples	toenail
20. 1" diagonal brace to each stud and plate	2-8d common (2 1/2" x 0.131") 2-3" x 0.131" nails 3-3" 14 gage staples	face nail
21. 1" x 8" sheathing to each bearing	3-8d common (2 1/2" x 0.131")	face nail
22. Wider 1" x 8" sheathing to each bearing	3-8d common (2 1/2" x 0.131")	face nail
23. Built-up corner studs	16d common (3 1/2" x 0.162") 3" x 0.131" nails 3" 14 gage staples	24" o.c. 16" o.c. 16" o.c.
24. Built-up girder and beams	20d common (4" x 0.192") 32" o.c. 3" x 0.131" nails at 24" o.c. 3" 14 gage staples at 24" o.c.	face nail at top and bottom staggered on opposite sides
	2-20d common (4" x 0.192") 3-3" x 0.131" nails 3-3" 14 gage staples	face nail at ends and at each splice
25. 2" planks	16d common (3 1/2" x 0.162")	at each bearing
26. Collar tie to rafter	3-10d common (3" x 0.148") 4-3" x 0.131" nails 4-3" 14 gage staples	face nail
27. Jack rafter to hip	3-10d common (3" x 0.148") 4-3" x 0.131" nails 4-3" 14 gage staples	toenail
	2-16d common (3 1/2" x 0.162") 3-3" x 0.131" nails 3-3" 14 gage staples	face nail
28. roof rafter to 2-by ridge beam	2-16d common (3 1/2" x 0.162") 3-3" x 0.131" nails 3-3" 14 gage staples	toenail
	2-16d common (3 1/2" x 0.162") 3-3" x 0.131" nails 3-3" 14 gage staples	face nail
29. Joist to band joist	3-16d common (3 1/2" x 0.162") 4-3" x 0.131" nails 4-3" 14 gage staples	face nail
30. Ledger strip	3-16d common (3 1/2" x 0.162") 4-3" x 0.131" nails 4-3" 14 gage staples	face nail at each joist

CONNECTION	FASTENING <sup>a,m</sup>	LOCATION
31. Wood structure panels and particleboard <sup>b</sup> Subfloor, roof, and wall sheathing (to framing)	1/2" and less 6d <sup>c</sup> 2 1/2" x 0.113" nail <sup>d</sup> 1 1/2" 16 gage <sup>e</sup> 3/8" and 6d <sup>c</sup> 2 1/2" x 0.113" nail <sup>d</sup> 2" 16 gage <sup>e</sup> 1/8" to 1 1/4" 10d <sup>f</sup> or 8d <sup>f</sup>	
Single floor (combination subfloor-unerment to framing)	3/4" and less 6d <sup>c</sup> 7/8" 8d <sup>c</sup> 1/8" to 1 1/4" 10d <sup>f</sup> or 8d <sup>f</sup>	
32. Panel siding (to framing)	1/2" and less 6d <sup>c</sup> 7/8" 8d <sup>c</sup>	
33. Fiberboard sheathing <sup>g</sup>	1/2" No. 11 gage roofing nail <sup>h</sup> 6d common nail (2" x 0.113") No. 16 gage staple No. 11 gage roofing nail <sup>h</sup> 8d common nail (2 1/2" x 0.131") No. 16 gage staple	
34. Interior paneling	1/4" 4d <sup>i</sup> 3/8" 6d <sup>i</sup>	

For 1/8" inch=25.4 mm  
a. Common or box nails are permitted to be used except where otherwise stated.  
b. Nails spaced at 6 inches in center of edges, 12 inches at intermediate supports except 6 inches at supports where spans are 48 inches or more, for nailing of wood structural panel and particleboard sheathing and shear walls, refer to section 2305. Nails for wall sheathing are permitted to be common, box or coating.  
c. Common or deformed shank (6d - 2" x 0.113", 8d - 2 1/2" x 0.131", 10d - 3" x 0.148").  
d. Common (6d - 2" x 0.113", 8d - 2 1/2" x 0.131", 10d - 3" x 0.148").  
e. Deformed shank (6d - 2" x 0.113", 8d - 2 1/2" x 0.131", 10d - 3" x 0.148").  
f. Corrosion-resistant roofing nails with 1/2-inch diameter head and 1/2-inch length galvanized sheathing and 3/4-inch length for 5/8-inch sheathing. Spacing shall be 6 inches on center on edges and 12 inches on center at intermediate supports for nonstructural applications.  
g. Corrosion-resistant roofing nails with 1/2-inch diameter head and 1/2-inch length galvanized sheathing and 3/4-inch length for 5/8-inch sheathing. Panel supports are 16 inches (20 inches if strength is in the long direction of the panel, unless otherwise marked).  
h. Coating (15" x 0.080") or finish (15" x 0.072") nails spaced 6 inches on panel edges, 12 inches at intermediate supports.  
i. Panel supports of 24 inches. Coating or finish nails spaced 6 inches on panel edges, 12 inches at intermediate supports.  
j. For roof sheathing applications, 3d nails (2 1/2" x 0.113") are the minimum required for wood structural panels.  
k. Staples shall have a minimum crown width of 3/8 inch.  
l. For roof sheathing applications, fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports.  
m. Fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports for subfloor and wall sheathing and 3 inches on center at edges, 6 inches at intermediate supports for roof sheathing.  
n. Fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports.

STRAP	MIN END STUDS	FASTENERS	CAPACITY (LB)	ADDITIONAL INFO:
CS16	2x	(22) 0.131" NAILS	1,705	CUT LENGTH = 26" + CLEAR SPAN
MST37	(2)2x	(20) 0.162" NAILS	2,170	
MST48	(2)2x	(32) 0.162" NAILS	3,695	
MST60	(2)2x	(46) 0.162" NAILS	4,830	

- NOTES:**
- SOME STRAP TYPES NOTED MAY NOT BE USED ON THIS PROJECT.
  - PROVIDE PANEL EDGE NAILING PER SHEAR WALL SCHEDULE AT TENSION STRAP STUDS/POST.
  - CAPACITIES INCLUDE 1.33 STRESS INCREASE.
  - MINIMUM NAIL LENGTHS SHALL BE 2 1/2" FOR 0.131" Ø, 3" FOR 0.148" Ø AND 3 1/2" FOR 0.162" Ø UNO.
  - TOTAL NAILS SPECIFIED, USE HALF THE NAILS AT THE STUDS ABOVE AND BELOW LEVEL BEING CONNECTED. REFERENCE SIMPSON CATALOG FOR DEFINITION OF CLEAR SPAN AND NAIL LOCATIONS.
  - FOR STRAP LENGTHS AND ADDITIONAL INSTALLATION INFORMATION CONSULT CURRENT SIMPSON CATALOG.

**6 TENSION STRAP SCHEDULE AND TYPICAL STRAP CONNECTION AT FLOOR FRAMING**

SCALE: 3/4" = 1'-0"

HOLD DOWN	MIN END STUDS	FASTENERS	CAPACITY (LB)	ANCHORAGE TO CONCRETE		
				CAST-IN-PLACE	MECHANICAL	ADHESIVE
HDU2	(2)2x	(6) SDS 1/4"x2 1/2"	3,075	SB 3/8"x24	TITEN HD 1/2"x15	
HDU4	(2)2x	(10) SDS 1/4"x2 1/2"	4,565	SB 3/8"x24	N/A	
HDU5	(2)2x	(14) SDS 1/4"x2 1/2"	5,645	SB 3/8"x24	N/A	
HDU8	(3)2x	(20) SDS 1/4"x2 1/2"	7,870	SB 3/8"x24	N/A	

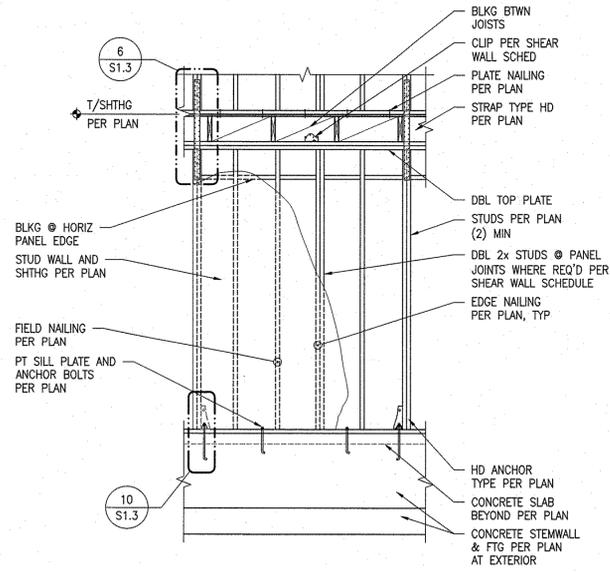
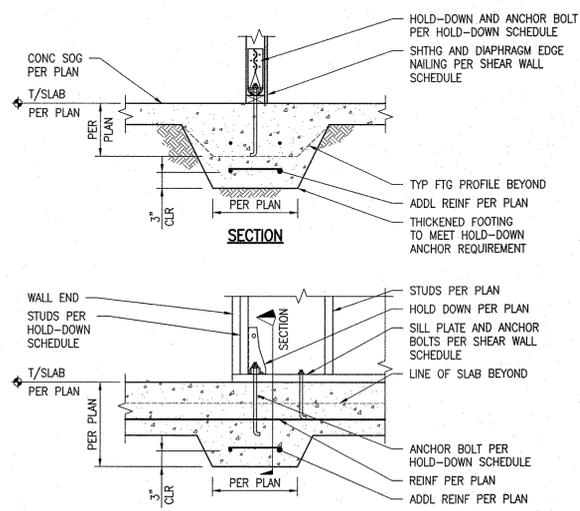
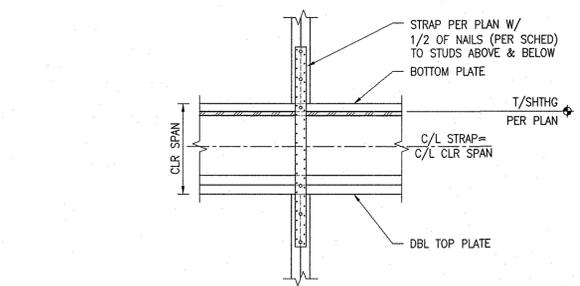
- NOTES:**
- SOME HOLD-DOWN TYPES NOTED MAY NOT BE USED ON THIS PROJECT.
  - PROVIDE PANEL EDGE NAILING PER SHEAR WALL SCHEDULE AT HOLD-DOWN STUDS/POST.
  - CAPACITIES INCLUDE 1.33 STRESS INCREASE.
  - BASED ON MINIMUM f<sub>c</sub> = 2500 PSI CONCRETE.
  - STEM WALLS SHALL BE 6" WIDE MINIMUM FOR 3/8" Ø ANCHOR BOLTS AND 8" WIDE MINIMUM FOR 1/2" Ø AND LARGER ANCHOR BOLTS.
  - CAST-IN-PLACE (CIP) TYPE ANCHOR BOLTS AT HOLD-DOWNS SHALL HAVE A HEX HEAD WITH A STANDARD CUT WASHER OR A STANDARD HOOK (MINIMUM 3x BOLT DIAMETER).
  - CONTACT ENGINEER FOR POST INSTALLED HOLD-DOWN OPTIONS.
  - THREADED ROD WITH SIMPSON SET OR HILTI HY-150 ADHESIVE.
  - FOR 3/8" Ø ANCHOR BOLT, USE STANDARD CUT WASHER BETWEEN SEAT OF ANCHOR AND NUT.

**10 HOLD-DOWN SCHEDULE AND TYPICAL HOLD-DOWN ANCHOR AT THICKENED SLAB FOOTING**

SCALE: 3/4" = 1'-0"

TAG	GWB & APA RATED PLYWOOD/OSB SHEATHING THICKNESS	PANEL EDGE FASTENING	PANEL FIELD FASTENING	FASTENER SIZE (1/2)	MINIMUM FRAMING MEMBERS			SHEAR TRANSFER CONNECTIONS			CAPACITY		
					BOTTOM PLATE	PT SILL PLATE	ABUTTING PANEL EDGE	SILL PLATE CONNECTION TO FOUNDATION	BOTTOM PLATE TO RIM/BLKG	RIM/BLKG CONNECTION TO TOP PLATE			
G4	1/2" GWB ONE FACE	4" OC	12" OC	#6x1 1/2" TYPE 'W'	2x	2x	2x	2x	16" OC	1/2" @ 72" OC	0.148" Øx3 1/4" @ 8" OC	A35 @ 32" OC	165 PLF
P6	1 1/2" ONE SIDE	6" OC	12" OC	0.131" Ø	2x	2x	2x	2x	24" OC	5/8" @ 48" OC	0.148" Øx3 1/4" @ 8" OC	A35 @ 32" OC	260 PLF
P4	1 1/2" ONE SIDE	4" OC	12" OC	0.131" Ø	2x	2x	(2)2x	(2)2x	24" OC	5/8" @ 48" OC	0.148" Øx3 1/4" @ 6" OC	A35 @ 16" OC	380 PLF
P3	1 1/2" ONE SIDE	3" OC	12" OC	0.131" Ø	2x	2x	(2)2x	(2)2x	24" OC	5/8" @ 32" OC	0.148" Øx3 1/4" @ 4" OC	A35 @ 16" OC	490 PLF
2P4	1 1/2" BOTH SIDE	4" OC	12" OC	0.131" Ø	2x	3x	(2)2x	(2)2x	16" OC	5/8" @ 16" OC	0.148" Øx3 1/4" @ 6" OC (2) ROWS STAGGERED	A35 @ 8" OC	760 PLF
2P3	1 1/2" BOTH SIDE	3" OC	12" OC	0.131" Ø	2x	3x	(2)2x	(2)2x	16" OC	5/8" @ 16" OC	0.148" Øx3 1/4" @ 4" OC (2) ROWS STAGGERED	A35 @ 8" OC	980 PLF

- NOTES:**
- SCHEDULE ASSUMES DOUGLAS-FIR FRAMING AND IS IN CONFORMANCE WITH THE 2012 IBC. GYPSUM WALLBOARD (GWB) SHEAR WALLS SHALL NOT BE USED IN SEISMIC DESIGN CATEGORIES E OR F. ALL PANEL EDGES SHALL BE BLOCKED.
  - REFERENCE THE TYPICAL SHEAR WALL ELEVATION FOR ADDITIONAL INFORMATION.
  - INSTALL PANELS EITHER HORIZONTALLY OR VERTICALLY. 1/2" APA-RATED SHEATHING (OSB) MAY BE USED IN PLACE OF 1 1/2" SHEATHING PROVIDED THAT ALL STUDS ARE SPACED AT 16" OC.
  - WHERE SHEATHING IS APPLIED TO BOTH SIDES OF WALL, PANEL EDGE JOINTS ON 2X FRAMING SHALL BE STAGGERED SO THAT JOINTS ON OPPOSITE SIDES ARE NOT LOCATED ON THE SAME STUD.
  - PROVIDE SHEAR WALL SHEATHING AND NAILING FOR THE ENTIRE LENGTH OF THE WALLS INDICATED ON THE PLANS. ENDS OF FULL HEIGHT WALLS ARE DESIGNATED BY WINDOWS, OR DOORWAYS OR AS DESIGNATED ON THE PLANS. FOR HOLD-DOWN REQUIREMENTS, REFERENCE PLANS. WALLS DESIGNATED AS PERFORATED SHEAR WALLS REQUIRE SHEATHING ABOVE AND BELOW ALL OPENINGS.
  - SHEATHING EDGE NAILING IS REQUIRED AT ALL HOLD-DOWN POSTS. EDGE NAILING MAY ALSO BE REQUIRED TO EACH STUD USED IN BUILT-UP HOLD-DOWN POSTS. FOR ADDITIONAL INFORMATION, REFERENCE THE HOLD-DOWN DETAILS.
  - INTERMEDIATE FRAMING TO BE 2x MINIMUM MEMBERS. DOUBLE 2x STUDS SHALL BE CONNECTED TOGETHER NAILING THE STUDS TOGETHER WITH NAILS OF THE SAME SIZE AND SPACING AS THE BOTTOM PLATE TO RIM/BLKG CONNECTION.
  - FRAMING CLIPS TO BE MANUFACTURED BY SIMPSON STRONG-TIE. SHEAR VALUES BASED ON 0.131" Øx1 1/2" NAILS USED TO ATTACH FRAMING CLIPS DIRECTLY TO FRAMING, USE 0.131" Øx2 1/2" NAILS WHERE INSTALLED OVER SHEATHING.
  - WHERE BOTTOM PLATE ATTACHMENT SPECIFIES (2) ROWS OF NAILS, PROVIDE DOUBLE JOIST, RIM JOIST OR EQUAL BELOW. STAGGER NAILS IN ROWS 1/2" APART MINIMUM.
  - PRESSURE TREATED MATERIAL CAN CAUSE EXCESSIVE CORROSION IN THE FASTENERS. PROVIDE HOT-DIPPED GALVANIZED (ELECTRO-PLATING IS NOT ACCEPTABLE) NAILS, CONNECTOR PLATES (FRAMING ANGLES, ETC.) AND FOR ALL CONNECTORS IN CONTACT WITH PRESSURE TREATED FRAMING MEMBERS. FOR ADDITIONAL INFORMATION, REFERENCE STRUCTURAL NOTES.
  - SIMPSON TITEN HD ANCHOR BOLTS (MIN 8" LENGTH) CAN BE USED AS A 1-TO-1 (SIZE AND SPACING) REPLACEMENT FOR CAST-IN-PLACE ANCHOR BOLTS. CONTACT THE STRUCTURAL ENGINEER OF RECORD FOR OTHER ADHESIVE OR EXPANSION BOLT ALTERNATIVES TO CAST-IN-PLACE ANCHOR BOLTS. SPECIAL INSPECTION MAY BE REQUIRED.
  - NAIL STUDS TO 3x SILL PLATES WITH EITHER (2) 0.148" Øx4" END NAILS OR (4) 0.131" Øx2 1/2" TOENAILS.
  - MINIMUM NAIL LENGTHS SHALL BE 2 1/2" FOR 0.131" Ø, 3" FOR 0.148" Ø AND 3 1/2" FOR 0.162" Ø UNO.



**12 TYPICAL SHEAR WALL ELEVATION**

SCALE: 3/8" = 1'-0"

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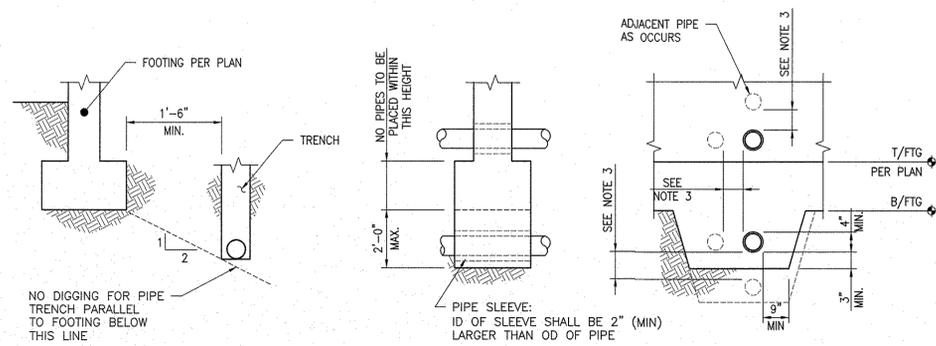
CIVIL	STRUCTURAL	SURVEYING	TRAFFIC	PLANNING	LANDSCAPE	OTHER
	X					

**LEGACY VILLAS CLUBHOUSE**  
LIBERTY LAKE, WA

DRAWN: JDK  
REVIEWED: CAP  
SCALE: PER PLAN  
PROJ #: 16-1624  
DATE: 06/13/16

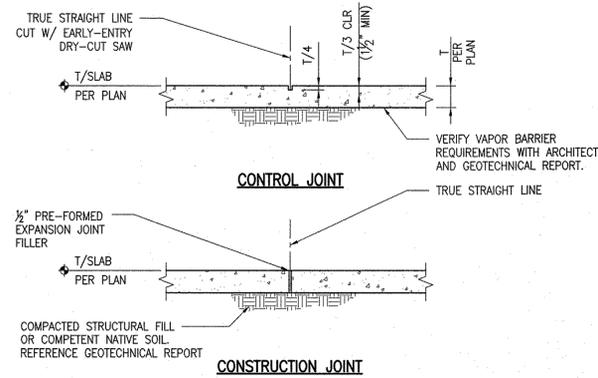
SHEAR WALLS, HOLD-DOWNS, AND NAILING SCHEDULE  
**SC1.3**





- NOTES:**
- SEE NOTES ON FOUNDATION PLAN FOR ADDITIONAL REINFORCEMENT.
  - PIPE & CONDUIT MUST RUN PERP. THRU WALL.
  - VERT. & HORZ. CLEAR SPACE BETWEEN ADJACENT PIPE SLEEVES SHALL NOT BE LESS THAN THE DIAMETER OF THE LARGER SLEEVE.

**1 TYPICAL PIPE OR CONDUIT PENETRATIONS AT FOUNDATION**  
SCALE: N.T.S.



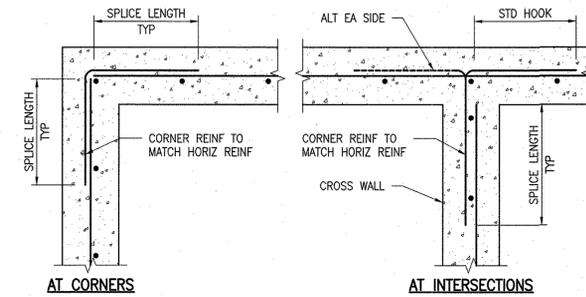
- NOTES:**
- CONSTRUCTION/CONTROL JOINT LOCATIONS AT CONTRACTORS DISCRETION UNLESS NOTED OTHERWISE ON PLANS. MAXIMUM ENCLOSED SQUARE FOOTAGE AREA TO BE 144 SQUARE FEET, WITH MAXIMUM PANEL ASPECT RATIO OF 1.3 TO 1.0.
  - USE "EARLY ENTRY DRY-CUT SAW" AS SOON AS POSSIBLE WITHOUT CAUSING RAVELING OF CONCRETE EDGES. SAWCUT ALONG SHORT DIRECTION OF POUR FIRST.

**3 TYPICAL CONCRETE SLAB JOINT**  
SCALE: N.T.S.

BAR SIZE	f <sub>c</sub> = 3000psi					
	DEVELOPMENT LENGTH			LAP SPLICE		
	TENSION	COMPRESSION	ALL BARS	TENSION	COMPRESSION	ALL BARS
#3	22	17	9	28	22	12
#4	29	22	11	37	29	15
#5	36	28	14	47	36	19
#6	43	33	17	56	43	23
#7	63	48	20	81	63	27
#8	72	55	22	93	72	30

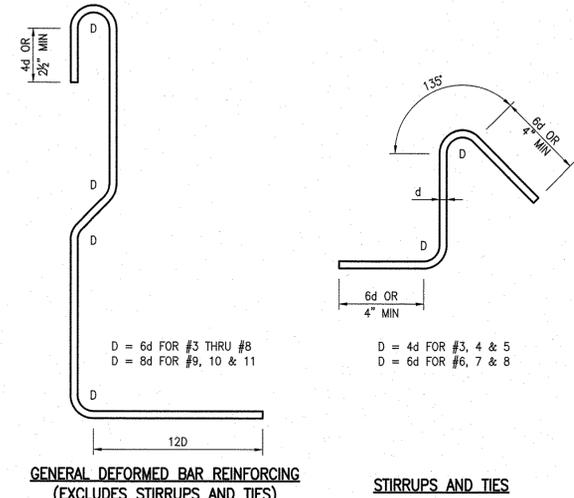
- NOTES:**
- VALUES FOR UNCOATED REINFORCING AND NORMAL WEIGHT CONCRETE WITH CLEAR SPACING > d<sub>b</sub>, CLEAR COVER > d<sub>b</sub> AND MINIMUM STIRRUPS OR TIES THROUGHOUT L<sub>d</sub> OR CLEAR SPACING > 2d<sub>b</sub> AND CLEAR COVER > d<sub>b</sub>.
  - DEVELOP ALL REINFORCING IN STRUCTURAL SLABS WITH MINIMUM DEVELOPMENT LENGTH L<sub>d</sub>.
  - TOP BAR = HORIZONTAL BAR WITH MORE THAN 12" OF FRESH CONCRETE BELOW OR AS NOTED ON DOCUMENTS AS "TOP BAR".
  - UNLESS NOTED OTHERWISE, ALL LAPS SHALL BE MINIMUM CLASS B OR CLASS B (TOP BARS).
  - ALL TABULATED VALUES ARE IN INCHES.

**4 TYPICAL LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE**  
SCALE: N.T.S.



- NOTES:**
- FOR SPLICE LENGTHS, REFERENCE LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE.
  - FOR WALL REINFORCING, REFERENCE PLAN.
  - AT FOOTING AND STEM WALLS, CORNER REINFORCING TO MATCH FOOTING AND STEM WALL HORIZONTAL REINFORCING.

**7 TYPICAL CORNER REINF AT CONCRETE WALLS**  
SCALE: N.T.S.



- GENERAL DEFORMED BAR REINFORCING (EXCLUDES STIRRUPS AND TIES)**
- STIRRUPS AND TIES**
- D = 6d FOR #3 THRU #8  
D = 8d FOR #9, 10 & 11
- D = 4d FOR #3, 4 & 5  
D = 6d FOR #6, 7 & 8
- d = DEFORMED BAR DIAMETER, D = BEND DIAMETER

**8 TYPICAL REBAR BENDING SCHEDULE**  
SCALE: N.T.S.

**5 NOT USED**  
SCALE: 3/4" = 1'-0"

**6 NOT USED**  
SCALE: 3/4" = 1'-0"

**9 NOT USED**  
SCALE: 3/4" = 1'-0"

**10 NOT USED**  
SCALE: 3/4" = 1'-0"

**11 NOT USED**  
SCALE: 3/4" = 1'-0"

**12 TYPICAL ANCHOR BOLT SCHEDULE**  
SCALE: N.T.S.

INSTALLATION TYPE	CAST-IN-PLACE (PRE-AUTHORIZED) [2]				DRILL-IN-OPTIONS (SUBMITTAL REQUIRED) [3]	
	STD J-BOLT	HEADED ANCHOR	THREADED ROD ANCHOR	SIMPSON ANCHOR BOLT	ADHESIVE ANCHOR	EXPANSION ANCHOR
EMBEDMENT REQUIREMENTS	7d	12d/DIA		PER MFR	[4]	
LIMITS	3/8" MAX	3/8" THRU 2 1/2"		FOR WOOD FRAME ONLY	3/8" THRU 1"	

- NOTES:**
- CONTRACTOR SHALL DETERMINE THE REQUIRED THREAD PROJECTION SUITABLE FOR THE THICKNESS OF THE MATERIAL BEING FASTENED PLUS GROUT ALLOWANCE, IF ANY, AND CONSTRUCTION TOLERANCES, UNO.
  - CONTRACTOR MAY SELECT APPROPRIATE CAST-IN-PLACE ANCHOR BOLT OPTION WITHOUT SUBMITTAL. DRILL-IN OPTIONS ARE NOT APPROPRIATE AT ALL CONDITIONS. IF DRILL-IN METHOD IS PREFERRED, SUBMIT MANUFACTURER'S INFORMATION, ALLOWABLE LOAD VS. EMBEDMENT DATA AND LOCATIONS WHERE SUBSTITUTIONS ARE REQUESTED. ENGINEER WILL DETERMINE IF SUBSTITUTION IS APPROPRIATE FOR LOCATION AND LOADING.
  - EMBEDMENT OF DRILL-IN ANCHORS SHALL BE PER ENGINEER'S SUBMITTAL REVIEW COMMENTS. EMBEDMENT SHALL BE (9) NINE TIMES THE NOMINAL ANCHOR DIAMETER, UNO.
  - AT PRESSURE TREATED SILLS, PROVIDE HOT DIPPED GALVANIZED OR STAINLESS STEEL ANCHORS.



REV	DATE	BY	REVISIONS

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CIVIL	STRUCTURAL	SURVEYING	TRAFFIC	PLANNING	LANDSCAPE	OTHER
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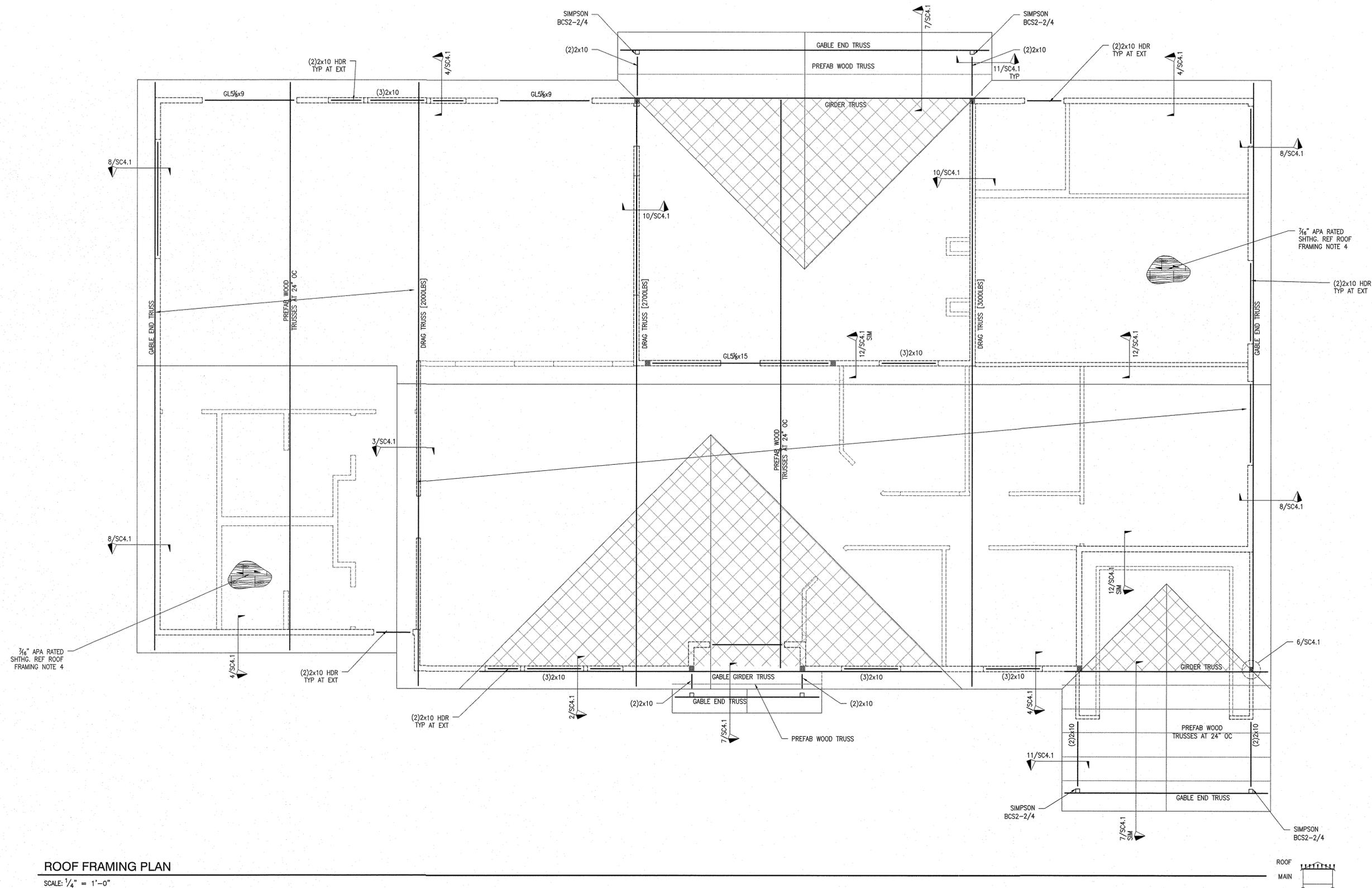
**LEGACY VILLAS CLUBHOUSE**  
**LIBERTY LAKE, WA**

**DRAWN:** JDK  
**REVIEWED:** CAP  
**SCALE:** PER PLAN  
**PROJ #:** 16-1624  
**DATE:** 06/13/16

STRUCTURAL TYPICAL DETAILS

SC1.5





**ROOF FRAMING PLAN**

SCALE: 1/4" = 1'-0"

**ROOF FRAMING NOTES:**

1. REFERENCE SC1.1 AND SC1.2 FOR STRUCTURAL GENERAL NOTES AND OTHER STRUCTURAL DESIGN CRITERIA NOT SHOWN ON THIS SHEET. REFERENCE SC1.3, SC1.4 AND SC1.5 FOR TYPICAL CONSTRUCTION DETAILS.
2. ALL DIMENSIONS AND ELEVATIONS SHALL BE COORDINATED WITH THE ARCHITECTS DRAWINGS PRIOR TO CONSTRUCTION. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL AND SPRINKLER DRAWINGS FOR ALL DUCTS, CHASES AND PIPES.
3. REFERENCE THE FRAMING PLAN BELOW FOR BEARING AND SHEAR WALLS, POSTS AND BUNDLED STUDS, AND CONNECTION HARDWARE.
4. APA RATED ROOF SHEATHING THICKNESS PER PLAN. REFERENCE THE STRUCTURAL GENERAL NOTES FOR SHEATHING REQUIREMENTS AND SPAN RATINGS. SHEATHING TO BE NAILED TO ROOF FRAMING WITH 0.131"x3" NAILS @ 6"OC AT PANEL EDGES AND @ 12"OC FIELD, UNO.
5. THE DESIGN AND ENGINEERING OF ROOF TRUSSES AND SPACING ARE PER THE TRUSS MANUFACTURER. REFERENCE THE STRUCTURAL GENERAL NOTES FOR DESIGN LOADS AND SUBMITTAL REQUIREMENTS. ROOF TRUSSES SHOWN ARE A SUGGESTED LAYOUT.
6. CROSS-HATCHED REGION SHOWS APPROXIMATE AREAS OF OVER-FRAMING. TRUSSES SUPPORTING OVER-FRAMING SHALL BE DESIGNED TO CARRY LOADS FROM THE OVER-FRAMING IN ADDITION TO THE DESIGN LOADS SPECIFIED IN THE STRUCTURAL GENERAL NOTES. THE OVER-FRAMING DESIGN IS THE RESPONSIBILITY OF THE TRUSS MANUFACTURER.
7. ALL GIRDER TRUSSES SHALL BE SUPPORTED BY A MINIMUM OF THREE STUDS OR BEAR DIRECTLY ON SUPPORTING BEAM. TRUSS MANUFACTURER SHALL SUBMIT GIRDER TRUSSES REACTIONS TO THE ENGINEER OF RECORD. ALL MULTIPLE STUDS SUPPORTING HIP MASTER AND GIRDER TRUSSES TO CONTINUE TO FOUNDATION.
8. PROVIDE SIMPSON H2.5T HURRICANE TIES AT ALL ROOF TRUSSES TYPICAL. TRUSS HANGERS SHALL BE SUPPLIED AND DESIGNED BY THE TRUSS SUPPLIER.

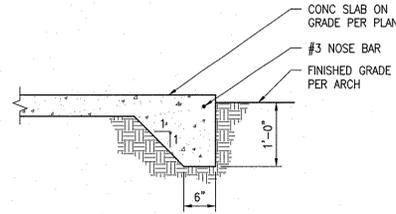
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 PH: 509-893-2817 FAX: 509-893-0227

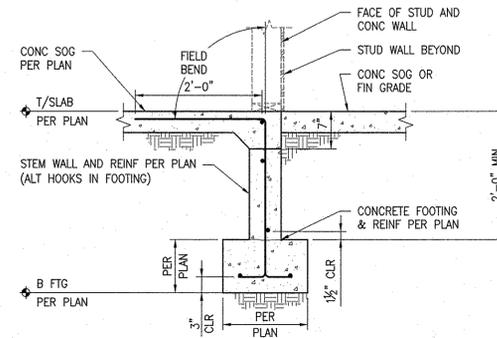
CIVIL	STRUCTURAL	SURVEYING	TRAFFIC	PLANNING	LANDSCAPE	OTHER
	X					

**LEGACY VILLAS CLUBHOUSE**  
 LIBERTY LAKE, WA

**DRAWN:** JDK  
**REVIEWED:** CAP  
**SCALE:** PER PLAN  
**PROJ #:** 16-1624  
**DATE:** 06/13/16



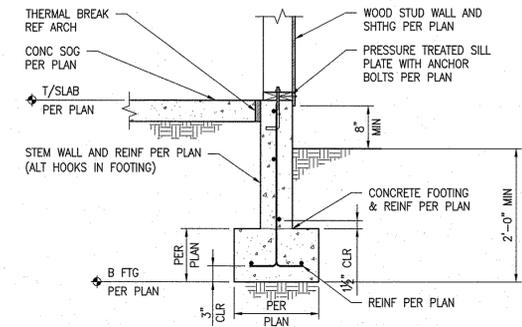
1 NOT USED  
SCALE: 3/4" = 1'-0"



2 SLAB EDGE AT PATIO  
SCALE: 3/4" = 1'-0"

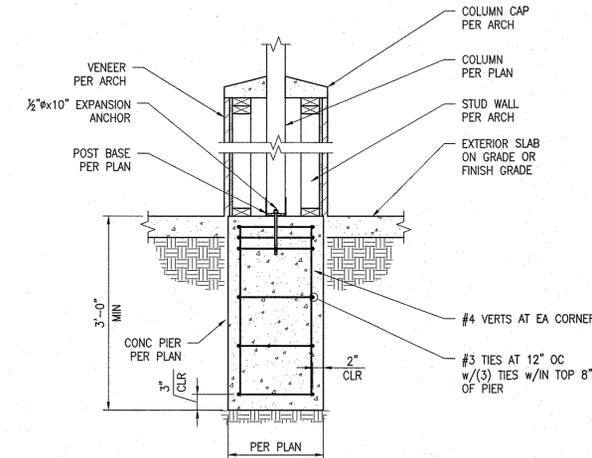
NOTE:  
COORDINATE ALIGNMENT OF SHTHG & STEM WALL.

3 SLAB OVER-POUR AT OPENINGS  
SCALE: 3/4" = 1'-0"

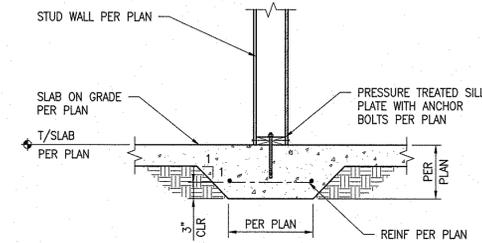


4 WOOD STUD WALL AT EXTERIOR FOOTING  
SCALE: 3/4" = 1'-0"

NOTES:  
1. COORDINATE ALIGNMENT OF SHTHG & STEM WALL.  
2. EXTERIOR SLAB ON GRADE AT SIM.

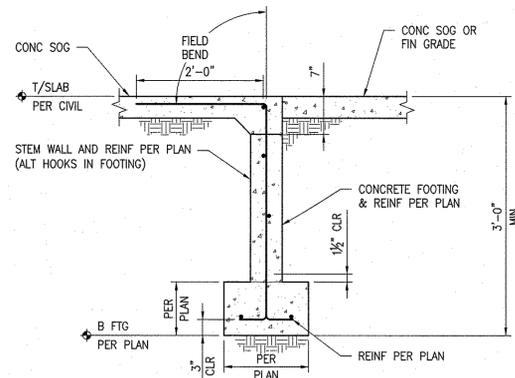


7 PATIO COLUMN  
SCALE: 3/4" = 1'-0"



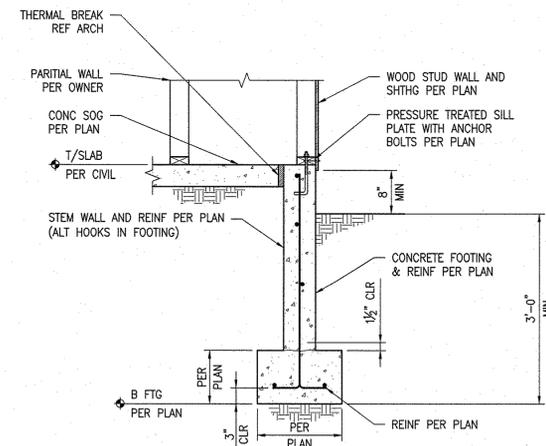
8 THICKENED SLAB AT INTERIOR STRUCTURAL WALL  
SCALE: 3/4" = 1'-0"

NOTE:  
COLD JOINT BETWEEN FOOTING AND SLAB NOT PERMITTED



11 SLAB POUR OVER AT MAIL BOXES  
SCALE: 3/4" = 1'-0"

NOTES:  
1. COORDINATE ALIGNMENT OF SHTHG & STEM WALL.



12 EXTERIOR FOOTING AT MAIL BOXES  
SCALE: 3/4" = 1'-0"

NOTES:  
1. COORDINATE ALIGNMENT OF SHTHG & STEM WALL.

5 NOT USED  
SCALE: 3/4" = 1'-0"

6 NOT USED  
SCALE: 3/4" = 1'-0"

9 NOT USED  
SCALE: 3/4" = 1'-0"

10 NOT USED  
SCALE: 3/4" = 1'-0"

REV	DATE	BY	REVISIONS

**IWCE**  
 WHEELER CONSULTING ENGINEERS  
 SPOKANE VALLEY, WA 99216  
 PH: 509-893-8817 FAX: 509-893-0227

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	X					

**LEGACY VILLAS CLUBHOUSE**  
**LIBERTY LAKE, WA**

DRAWN: JDK  
 REVIEWED: CAP  
 SCALE: PER PLAN  
 PROJ #: 16-1624  
 DATE: 06/13/16





Whipple Consulting Engineers, Inc.

## Structural Calculations

Legacy Villas  
Clubhouse  
Liberty Lake, WA

Prepared for:  
Wyatt Architects  
P.O. Box 141713  
Spokane Valley, WA 99214



6/13/16

June 13, 2016  
WCE Job #2016-1624



## Whipple Consulting Engineers

2528 North Sullivan, Spokane Valley, WA 99216

509-893-2617

[www.whipplece.com](http://www.whipplece.com)

### GRAVITY LOADS

<u>ROOF DEAD LOADS</u>	WEIGHT (PSF)	<u>ROOF LIVE LOADS</u>	WEIGHT (PSF)
Roofing	3	Roof Live Construction	20
Sheathing/Metal Deck	1.0	Snow Loads	40
Insulation	1.5		
Trusses/Framing	3.0		
Ceiling	1.0		
MEP	3.0		
Miscellaneous	2.5		
<hr/>		<u>WALL DEAD LOAD</u>	
Total Roof Dead Load	15.0	2x6	10
<u>FLOOR DEAD LOADS</u>		<u>FLOOR LIVE LOADS</u>	
Floor	n/a	Floor	n/a
Corridor/Decks	n/a	Corridor/Decks	n/a

### LATERAL LOADS

#### Wind

Wind Speed	110	MPH
Exposure	C	
Importance Category	II	

#### Seismic

Seismic Importance Factor	1.0	
Seismic Use Group	II	
Site Class	C	
Spectral Response Coeff ( $S_{DS}$ )	0.343	g
Spectral Response Coeff ( $S_{D1}$ )	0.115	g
Seismic Design Category	B	
Response Modification Factor (R)	6.5	Light Framed Wood Shear Walls
Seismic Response Coeff ( $C_S$ )	0.0422	

Wind

**SCE 7-10 Wind Forces Chpt 28, Pt2 & Chpt 30, Pt2**

File: P:\WCE\_WORK\242IDK-92MHZA9-DDBJGBY-HISEV10W-KC7A4YC-FWSUIDN-U.EC6

ENERCALC, INC. 1983-2016, Build:6.16.4.12, Ver:6.16.4.12

Calc. #: KW-06009199

Licensee: Whipple Consulting Engineers

Description: Clubhouse

Calculations per ASCE 7-10

**Analytical Values**

V : Basic Wind Speed per Sect 26.5-1 A, B or C **110.0 mph**  
 Roof Rise:Run Ratio **6:12**  
 Occupancy per Table 1.5-1 **II** All Buildings and other structures except those listed as Category I, III, and IV

Exposure Category per 26.7 **Exposure C**  
 MRH : Mean Roof Height **18.50 ft** *"Lambda" is interpolated between height tabular values.*  
 Lambda : per Figure 28.6-1, Page 305 **1.27**  
 Effective Wind Area of Component & Cladding **10.0 ft<sup>2</sup>**  
 Roof pitch for cladding pressure **0 to 7 degrees**  
 User specified minimum design pressure **8.0 psf**  
 Topographic Factor Kzt per 26.8 **1.00**  
 LHD : Least Horizontal Dimension **48.0 ft**  
 a = max(0.04 \* LHD, 3, min(0.10 \* LHD, 0.4\*MRH)) **4.80 ft** max(0.04 \* LHD, 3, min(0.10 \* LHD, 0.4\*MRH))

**Design Wind Pressures**

Minimum Additional Load Case per 28.4.4 = 16 PSF on entire vertical plane

Horizontal Pressures . . .

Load Case # 1 . . .  
 Zone: A = 30.51 psf Zone: C = 22.03 psf  
 Zone: B = 8.00 psf Zone: D = 8.00 psf

Load Case # 2 . . .  
 Zone: A = 8.00 psf Zone: C = 8.00 psf  
 Zone: B = 8.00 psf Zone: D = 8.00 psf

Vertical Pressures . . .

Load Case # 1 . . .  
 Zone: E = -13.55 psf Zone: G = -9.75 psf  
 Zone: F = -18.48 psf Zone: H = -14.81 psf

Load Case # 2 . . .  
 Zone: E = -8.00 psf Zone: G = -8.00 psf  
 Zone: F = -10.00 psf Zone: H = -8.00 psf

Overhangs . . .

Load Case # 1 . . .  
 Zone: Eoh = -25.19 psf Zone: Goh = -21.52 psf

Load Case # 2 . . .  
 Zone: Eoh = 8.00 psf Zone: Goh = 8.00 psf

# CLUBHOUSE BASE SHEAR

## SEISMIC BASE SHEAR

$$SL = 40 \text{ PSF} > 30 \text{ PSF} \Rightarrow 20\% \text{ SL USED} = 8 \text{ PSF}$$

WEIGHTS

ROOF 15 PSF  
WALL 10 PSF

ROOF AREA = 4585 SF

WALL LENGTH = 307'

WALL HEIGHT = 10'

T/MAIN

$$\text{LOAD} = (4585 \text{ SF})(15 \text{ PSF} + 8 \text{ PSF}) + (307')(5')(10 \text{ PSF}) = 121^{\text{k}}$$

∴ SEE ENERCALL  
RESULTS FOR  
BASE SHEAR

## WIND BASE SHEAR

∴ SEE ENERCALL WIND FORCES CALCULATION SHEET

### INTO SIDE WALLS

$$\begin{aligned} \text{ROOF} & (2)(4.8')(12')(8 \text{ PSF}) + (93' - 9.6')(12')(8 \text{ PSF}) \\ \text{WALL} & + (9.6')(5')(30.5 \text{ PSF}) + (93' - 9.6')(5')(22.03 \text{ PSF}) \end{aligned}$$

$$= 19.6^{\text{k}}$$

$$\text{ASD} = (0.6)(19.6^{\text{k}}) = 11.8^{\text{k}}$$

### INTO END WALLS

$$\begin{aligned} \text{ROOF+WALL} & (4.8)(12' + 5')(30.5 \text{ PSF}) + (48' - 48')(17')(22.03 \text{ PSF}) \\ & = 18.7^{\text{k}} \end{aligned}$$

$$\text{ASD} = (0.6)(18.7^{\text{k}}) = 11.2^{\text{k}}$$

∴ WIND CONTROLS  
INTO SIDE  
AND END WALLS



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Traffic   
Planning   
Survey   
Structural   
Landscape   
Civil

NAME OF PROJECT

LEGACY VILLAS

COMPUTED BY

JDK

CHECKED BY

CAP

JOB NUMBER

16-1624

SHEET NUMBER

OF

DATE

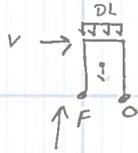
4-14-16

# CLUBHOUSE LATERAL - HOLD DOWN

## LINE (B)(C)

$$V = 379 \text{ PLF} / 0.715 = 530 \text{ PLF}$$

$$L = 17'-11"$$



$$DL = [6'(15 \text{ PSF}) + 10(25 \text{ PSF})(10')] (0.6) = 96 \text{ PLF}$$

$$\sum M_o = (-530 \text{ PLF})(17.92)(10') + (96 \text{ PLF})(17.92)^2 - F(17.92) = 0$$

$$\Rightarrow F = -4440 \text{ Lb}$$

(Tension)

HOLD DOWN REQD

## LINE (E)

$$V = 78 \text{ PLF}$$

$$L = 3'-0"$$

$$DL = 96 \text{ PLF}$$

$$PDL = (96 \text{ PLF})(7')/2 = 336 \#$$

$$\sum M_o = (-78 \text{ PLF})(3')(10') + (96 \text{ PLF})(3')^2/2 + (336 \#)(3') - F(3') = 0$$

$$\Rightarrow F = -300 \text{ Lb}$$

(Tension)

no hold down reqd.

## LINE (B)

$$V = 106 \text{ PLF w/c.}$$

$$L = 22'-0"$$

$$DL = 96 \text{ PLF}$$

$$\sum M_o = (-106 \text{ PLF})(22.5')(10') + (96 \text{ PLF})(22.5')^2/2 - F(22.5') = 0$$

$$\Rightarrow F = -364 \#$$

(TENSION)

∴ NO HOLDDOWN REQUIRED

## LINE (D)

$$V = 188 \text{ PLF} / 0.726 = 259 \text{ PLF}$$

$$L = 11'-9"$$

$$DL = [24'(15 \text{ PSF}) + 10'(25 \text{ PSF})] (0.6) = 276 \text{ PLF}$$

$$\sum M_o = (-259 \text{ PLF})(11.75')(10') + (276 \text{ PLF})(11.75')^2/2 - F(11.75') = 0$$

$$\Rightarrow F = 907 \#$$

(Tension)

∴ HDUA REQUIRED

## LINE (1)

$$V = 96 \text{ PLF}$$

$$L = 4'-0"$$

$$DL = 276 \text{ PLF}$$

$$\sum M_o = (-96 \text{ PLF})(4')(10') + (276 \text{ PLF})(4')^2/2 - F(4) = 0$$

$$\Rightarrow F = -408 \text{ Lb}$$

(Tension)

no hold down reqd.



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Traffic   
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Structural   
Landscape   
Civil

NAME OF PROJECT

LEGACY VILLAS

COMPUTED BY

JDK

CHECKED BY

CAP

JOB NUMBER

16-1624

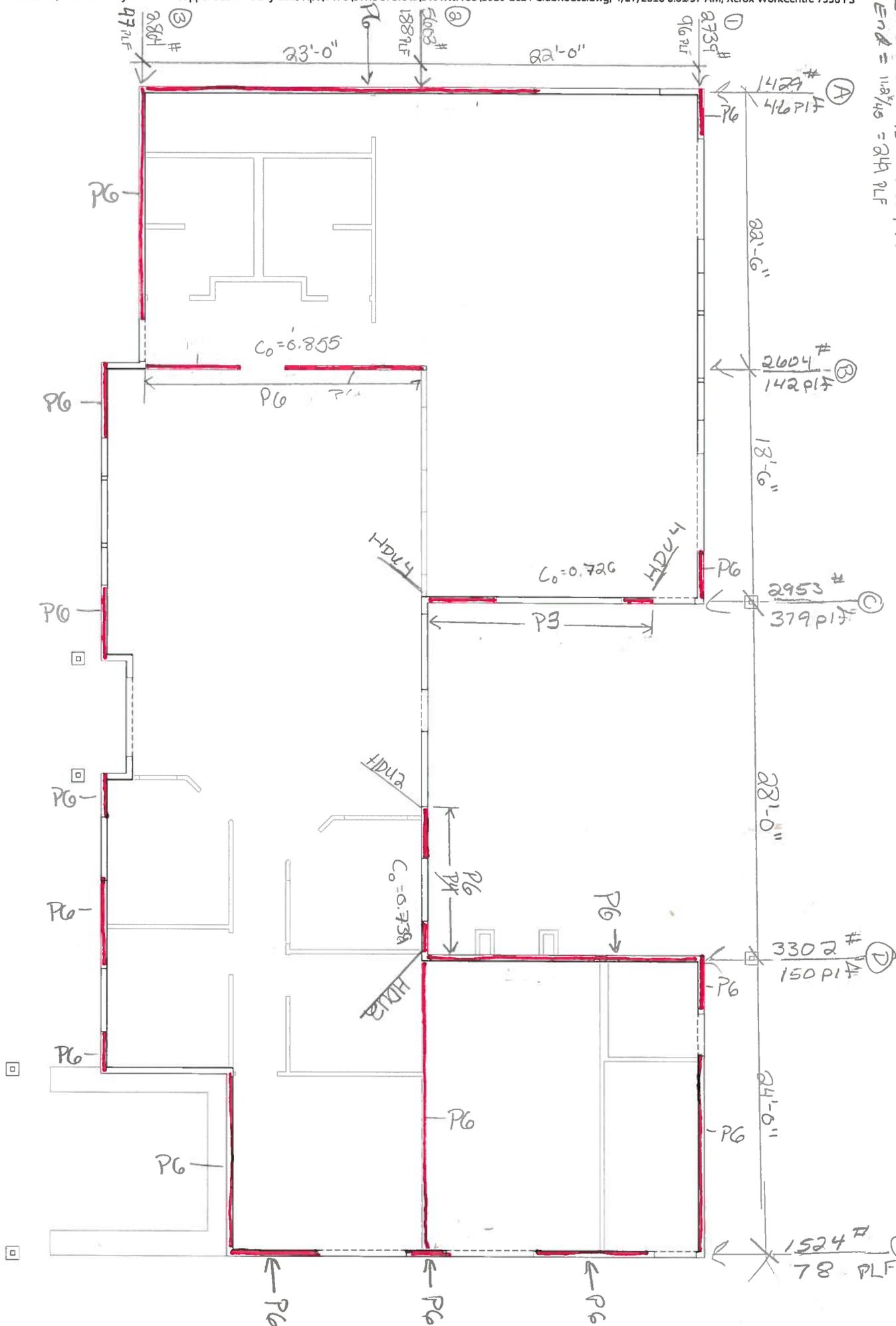
SHEET NUMBER

OF

DATE

4-27-16

END = 118'145 = 244 PLF



**Project:** Legacy Villas

**Project No:** 16-1624

**Date:** 05/06/16

**Subject:** Perforated Shear Wall - Clubhouse Line B

**By:** JDK

	0.33	0.50	0.67	0.83	1.00
	2.67	4	5.33	6.67	8
	3.33	5	6.67	8.33	10
10%	1.00	0.69	0.53	0.43	0.36
20%	1.00	0.71	0.56	0.45	0.38
30%	1.00	0.74	0.59	0.49	0.42
40%	1.00	0.77	0.63	0.53	0.45
50%	1.00	0.80	0.67	0.57	0.50
60%	1.00	0.83	0.71	0.63	0.56
70%	1.00	0.87	0.77	0.69	0.63
80%	1.00	0.91	0.83	0.77	0.71
90%	1.00	0.95	0.91	0.87	0.83
100%	1.00	1.00	1.00	1.00	1.00

**Sum of Perforated Shear Wall Lengths**

$$L_{total} = 22.00$$

$$\sum L_i = 10.92 + 7.58 = 18.50$$

**Full Height SHTHG=** 0.84

#1 0.8

#2 0.9

**Factor** 0.591

**Max OPNG Height=** 6.92

**Wall Height=** 10

% 69.2%

0.67

0.83

**Factor** 0.848

Enter Four Values from Table Above	
0.83	0.77
0.91	0.87

0.863 0.811

**$C_o$ =** 0.855

# Whipple Consulting Engineers

2528 N Sullivan Rd, Spokane Valley, WA



**Project:** Legacy Villas

**Project No:** 16-1624

**Date:** 05/06/16

**Subject:** Perforated Shear Wall - Clubhouse Line C

**By:** JDK

Table 4.3.3.5 Shear Capacity Adjustment Factor, $C_o$					
	0.33	0.50	0.67	0.83	1.00
	2.67	4	5.33	6.67	8
	3.33	5	6.67	8.33	10
10%	1.00	0.69	0.53	0.43	0.36
20%	1.00	0.71	0.56	0.45	0.38
30%	1.00	0.74	0.59	0.49	0.42
40%	1.00	0.77	0.63	0.53	0.45
50%	1.00	0.80	0.67	0.57	0.50
60%	1.00	0.83	0.71	0.63	0.56
70%	1.00	0.87	0.77	0.69	0.63
80%	1.00	0.91	0.83	0.77	0.71
90%	1.00	0.95	0.91	0.87	0.83
100%	1.00	1.00	1.00	1.00	1.00

**Sum of Perforated Shear Wall Lengths**

$L_{total} =$		17.92	
		2.42	
$\Sigma L_i =$		5.42	= 7.84

**Full Height SHTHG=** 0.44

#1 0.4  
#2 0.5

**Factor** 0.625

**Max OPNG Height=** 5.67  
**Wall Height=** 10  
% 56.7%

Enter Four Values from Table Above	
0.77	0.63
0.8	0.67

0.781 0.645

**$C_o =$**  0.726

0.50  
0.67

**Factor** 0.598

Project: Legacy Villas

Project No: 16-1624

Date: 05/06/16

Subject: Perforated Shear Wall - Clubhouse Line 2

By: JDK

	0.33	0.50	0.67	0.83	1.00
	2.67	4	5.33	6.67	8
	3.33	5	6.67	8.33	10
10%	1.00	0.69	0.53	0.43	0.36
20%	1.00	0.71	0.56	0.45	0.38
30%	1.00	0.74	0.59	0.49	0.42
40%	1.00	0.77	0.63	0.53	0.45
50%	1.00	0.80	0.67	0.57	0.50
60%	1.00	0.83	0.71	0.63	0.56
70%	1.00	0.87	0.77	0.69	0.63
80%	1.00	0.91	0.83	0.77	0.71
90%	1.00	0.95	0.91	0.87	0.83
100%	1.00	1.00	1.00	1.00	1.00

**Sum of Perforated Shear Wall Lengths**

$$L_{total} = 11.75$$

$$\Sigma L_i = 4.08 + 2.67 = 6.75$$

Full Height SHTHG = 0.57

- #1 0.5
- #2 0.6

Factor 0.255

Max OPNG Height = 5.67  
 Wall Height = 10  
 % 56.7%

Enter Four Values from Table Above	
0.77	0.63
0.8	0.67

0.792 0.660

$C_o = 0.739$

0.50  
0.67

Factor 0.598

# Whipple Consulting Engineers

2528 N Sullivan Rd, Spokane Valley, WA



**Project:** Legacy Villas

**Project No:** 16-1624

**Date:** 05/06/16

**Subject:** Drag Truss Calculations - Clubhouse Line B

**By:** JDK

b(length of line)= 48

v (plf)= 212

$v_R = 90$

R(lbs)= 4339

L(trib)= 20.5

$v_w = 194$

_____		_____		_____	
$L_1 =$	$L_2 =$	$L_3 =$	$L_4 =$	$L_5 =$	
0	22.08	11.33	3.5	11.08	

<b>Plot of Unit Shears</b>	0	90	90	90	90 plf
	194		194	0	194 plf
<b>Net Unit Shears</b>		90			plf
	-194	-103	90	-103	plf
<b>Collector Forces</b>		1996.02	826.45	1142.85	-0.90 lbs
	0				lbs

**Max Drag req= 1996 lbs**  
Service Load

# Whipple Consulting Engineers

2528 N Sullivan Rd, Spokane Valley, WA



**Project:** Legacy Villas

**Project No:** 16-1624

**Date:** 05/06/16

**Subject:** Drag Truss Calculations - Clubhouse Line C

**By:** JDK

b(length of line)= 48

v (plf)= 212

v<sub>R</sub>= 103

R(lbs)= 4921

L(trib)= 23.25

v<sub>w</sub>= 219

_____		_____		_____	
L <sub>1</sub> =	L <sub>2</sub> =	L <sub>3</sub> =	L <sub>4</sub> =	L <sub>5</sub> =	
22.5	25.5	0	0	0	

<b>Plot of Unit Shears</b>	103	103	0	0	0 plf
	219		0	0	0 plf
<b>Net Unit Shears</b>		103			plf
	-116		0	0	0 plf
<b>Collector Forces</b>		0.00	0.00	0.00	0.00 lbs
	-2614				lbs

**Max Drag req= 2614 lbs**  
Service Load

# Whipple Consulting Engineers

2528 N Sullivan Rd, Spokane Valley, WA



**Project:** Legacy Villas

**Project No:** 16-1624

**Date:** 05/06/16

**Subject:** Drag Truss Calculations - Clubhouse Line D

**By:** JDK

b(length of line)= 48

v (plf)= 212

$v_R$ = 115

R(lbs)= 5503

L(trib)= 26

$v_w$ = 245



$L_1$ =	$L_2$ =	$L_3$ =	$L_4$ =	$L_5$ =
22.5	25.5	0	0	0

<b>Plot of Unit Shears</b>	115	115	0	0	0 plf
	245		0	0	0 plf
<b>Net Unit Shears</b>		115			plf
	-130		0	0	0 plf
<b>Collector Forces</b>		0.00	0.00	0.00	0.00 lbs
	-2924				lbs

**Max Drag req= 2924 lbs**  
Service Load

# SCE Seismic Base Shear

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## Clubhouse Seismic Base Shear

Risk Category		Calculations per ASCE 7-10
Risk Category of Building or Other Structure :	"II" : All Buildings and other structures except those listed as Category I, III, and IV	ASCE 7-10, Page 2, Table 1.5-1
Seismic Importance Factor	= 1	ASCE 7-10, Page 5, Table 1.5-2
<b>USER DEFINED Ground Motion</b>		ASCE 7-10 11.4.1

Max. Ground Motions, 5% Damping :

$$S_S = 0.3430 \text{ g, 0.2 sec response}$$

$$S_1 = 0.1150 \text{ g, 1.0 sec response}$$

## Site Class, Site Coeff. and Design Category

Site Classification "C" : Shear Wave Velocity 1,200 to 2,500 ft/sec	=	C	ASCE 7-10 Table 20.3-1
Site Coefficients $F_a$ & $F_v$ (using straight-line interpolation from table values)	$F_a$ = $F_v$ =	1.20 1.69	ASCE 7-10 Table 11.4-1 & 11.4-2
Maximum Considered Earthquake Acceleration	$S_{MS} = F_a * S_s$ $S_{M1} = F_v * S_1$	= 0.412 = 0.194	ASCE 7-10 Eq. 11.4-1 ASCE 7-10 Eq. 11.4-2
Design Spectral Acceleration	$S_{DS} = S_{MS}^{2/3}$ $S_{D1} = S_{M1}^{2/3}$	= 0.274 = 0.129	ASCE 7-10 Eq. 11.4-3 ASCE 7-10 Eq. 11.4-4
Seismic Design Category	=	B	ASCE 7-10 Table 11.6-1 & -2

## Resisting System

Basic Seismic Force Resisting System . . .

### Bearing Wall Systems

Light-framed walls sheathed w/wood structural panels rated for shear resistance or steel sheets.

Response Modification Coefficient "R"	= 6.50	Building height Limits :
System Overstrength Factor "Wo"	= 3.00	Category "A & B" Limit: No Limit
Deflection Amplification Factor "Cd"	= 4.00	Category "C" Limit: No Limit
		Category "D" Limit: Limit = 65
		Category "E" Limit: Limit = 65
		Category "F" Limit: Limit = 65

NOTE! See ASCE 7-10 for all applicable footnotes.

## Lateral Force Procedure

ASCE 7-10 Section 12.8.2

Equivalent Lateral Force Procedure

The "Equivalent Lateral Force Procedure" is being used according to the provisions of ASCE 7-10 12.8

## Determine Building Period

Use ASCE 12.8-7

Structure Type for Building Period Calculation : All Other Structural Systems

"Ct" value	= 0.020	"hn" : Height from base to highest level =	10.0 ft
"x" value	= 0.75		
"Ta" Approximate fundamental period using Eq. 12.8-7 :		$T_a = C_t * (h_n^x)$	= 0.112 sec
"TL" : Long-period transition period per ASCE 7-10 Maps 22-12 -> 22-16			16.000 sec

Building Period "Ta" Calculated from Approximate Method selected = 0.112 sec

## "Cs" Response Coefficient

ASCE 7-10 Section 12.8.1.1

$S_{DS}$ : Short Period Design Spectral Response	= 0.274	From Eq. 12.8-2, Preliminary $C_s$	= 0.042
"R" : Response Modification Factor	= 6.50	From Eq. 12.8-3 & 12.8-4, $C_s$ need not exceed	= 0.177
"I" : Seismic Importance Factor	= 1	From Eq. 12.8-5 & 12.8-6, $C_s$ not be less than	= 0.012

**$C_s$  : Seismic Response Coefficient = 0.0422**

## Seismic Base Shear

ASCE 7-10 Section 12.8.1

$C_s$  = 0.0422 from 12.8.1.1

W ( see Sum  $W_i$  below ) = 121.00 k

Seismic Base Shear  $V = C_s * W = 5.11 \text{ k}$

# SCE Seismic Base Shear

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Proj. # : KW-06009199

## Vertical Distribution of Seismic Forces

ASCE 7-10 Section 12.8.3

\* k : hx exponent based on Ta = 1.00

Table of building Weights by Floor Level...

Level #	Wi : Weight	Hi : Height	(Wi * Hi) ^k	Cvx	Fx=Cvx * V	Sum Story Shear	Sum Story Moment
1	121.00	10.00	1,210.00	1.0000	5.11	5.11	0.00
Sum Wi =	121.00 k	Sum Wi * Hi =	1,210.00 k-ft		Total Base Shear =	5.11 k	Base Moment = 51.1 k-ft

## Diaphragm Forces : Seismic Design Category "B" to "F"

ASCE 7-10 12.10.1.1

Level #	Wi	Fi	Sum Fi	Sum Wi	Fpx : Calcd	Fpx : Min	Fpx : Max	Fpx	Dsgn. Force
1	121.00	5.11	5.11	121.00	5.11	6.64	13.28	6.64	6.64

Wpx ..... Weight at level of diaphragm and other structure elements attached to it.

Fi ..... Design Lateral Force applied at the level.

Sum Fi ..... Sum of "Lat. Force" of current level plus all levels above

MIN Req'd Force @ Level .....  $0.20 * S_{DS} * W_{px}$

MAX Req'd Force @ Level .....  $0.40 * S_{DS} * W_{px}$

Fpx : Design Force @ Level .....  $W_{px} * \frac{\sum(x \rightarrow n) F_i}{\sum(x \rightarrow n) w_i}$ , x = Current level, n = Top Level

Wind Governs

# Multiple Simple Beam

File = P:\WCE\_WORK\242IDK-9\2MHZA9-D\BDBJBY-HSEV10W-KC7A4YC-FWSUIDN-U.EC6  
 ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4  
 Licensee : Whipple Consulting Engineers

Lic. # : KW-06009199

## Description : Roof Beams and Headers

### Wood Beam Design : 5' Exterior Header

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10

BEAM Size : **3-2x10, Sawn, Fully Braced**

Using Allowable Stress Design with IBC 2012 Load Combinations, Major Axis Bending

Wood Species : Douglas Fir - Larch

Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	31.20 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

#### Applied Loads

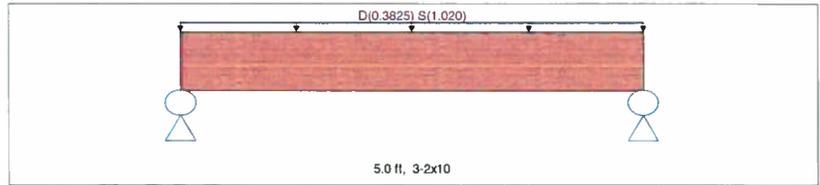
Beam self weight calculated and added to loads  
 Unif Load: D = 0.0150, S = 0.040 k/ft, Trib= 25.50 ft

#### Design Summary

Max fb/Fb Ratio = **0.725 : 1**  
 fb : Actual : 824.85 psi at 2.500 ft in Span # 1  
 Fb : Allowable : 1,138.50 psi  
 Load Comb : +D+S+H

Max fv/FvRatio = **0.426 : 1**  
 fv : Actual : 88.17 psi at 4.233 ft in Span # 1  
 Fv : Allowable : 207.00 psi  
 Load Comb : +D+S+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.98			2.55			
Right Support	0.98			2.55			



#### Max Deflections

Downward L+Lr+S	0.030 in	Downward Total	0.042 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1975 >360	Total Defl Ratio	1427 >240

### Wood Beam Design : 15'-4" Header at Patio Wall

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10

BEAM Size : **5.125x15, GLB, Fully Braced**

Using Allowable Stress Design with IBC 2012 Load Combinations, Major Axis Bending

Wood Species : DF/DF

Wood Grade : 24F - V4

Fb - Tension	2,400.0 psi	Fc - Prll	1,650.0 psi	Fv	265.0 psi	Ebend- xx	1,800.0 ksi	Density	31.20 pcf
Fb - Compr	1,850.0 psi	Fc - Perp	650.0 psi	Ft	1,100.0 psi	Eminbend - xx	950.0 ksi		

#### Applied Loads

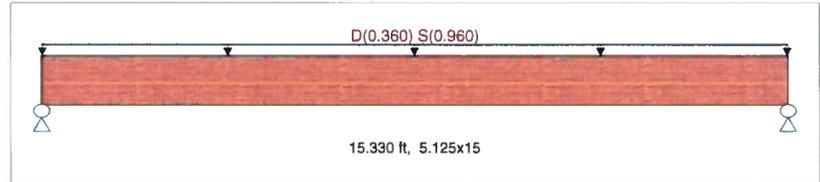
Beam self weight calculated and added to loads  
 Unif Load: D = 0.0150, S = 0.040 k/ft, Trib= 24.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.888 : 1**  
 fb : Actual : 2,451.72 psi at 7.665 ft in Span # 1  
 Fb : Allowable : 2,760.00 psi  
 Load Comb : +D+S+H

Max fv/FvRatio = **0.551 : 1**  
 fv : Actual : 167.93 psi at 14.104 ft in Span # 1  
 Fv : Allowable : 304.75 psi  
 Load Comb : +D+S+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.89			7.36			
Right Support	2.89			7.36			



#### Max Deflections

Downward L+Lr+S	0.462 in	Downward Total	0.644 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	397 >360	Total Defl Ratio	285 >240

### Wood Beam Design : 8' Header at Exterior Wall

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10

BEAM Size : **5.125x9, GLB, Fully Braced**

Using Allowable Stress Design with IBC 2012 Load Combinations, Major Axis Bending

Wood Species : DF/DF

Wood Grade : 24F - V4

Fb - Tension	2,400.0 psi	Fc - Prll	1,650.0 psi	Fv	265.0 psi	Ebend- xx	1,800.0 ksi	Density	31.20 pcf
Fb - Compr	1,850.0 psi	Fc - Perp	650.0 psi	Ft	1,100.0 psi	Eminbend - xx	950.0 ksi		

#### Applied Loads

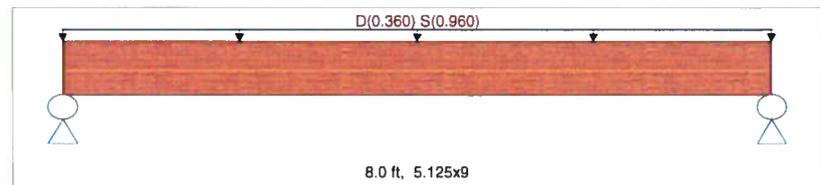
Beam self weight calculated and added to loads  
 Unif Load: D = 0.0150, S = 0.040 k/ft, Trib= 24.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.669 : 1**  
 fb : Actual : 1,845.41 psi at 4.000 ft in Span # 1  
 Fb : Allowable : 2,760.00 psi  
 Load Comb : +D+S+H

Max fv/FvRatio = **0.462 : 1**  
 fv : Actual : 140.71 psi at 0.000 ft in Span # 1  
 Fv : Allowable : 304.75 psi  
 Load Comb : +D+S+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.48			3.84			
Right Support	1.48			3.84			



#### Max Deflections

Downward L+Lr+S	0.159 in	Downward Total	0.220 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	604 >360	Total Defl Ratio	436 >240

# Multiple Simple Beam

File = P:\WCE\_WORK\242\DK-9\2MHZA9-D\B\JGBY-HSEV10W-K\C7A4YC-F\WSUIDN-U.EC6  
 ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. #: KW-06009199

Licensee: Whipple Consulting Engineers

## Wood Beam Design : Rafter Support Beam at Patio

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10

BEAM Size : **2-2x10, Sawn, Fully Braced**

Using Allowable Stress Design with IBC 2012 Load Combinations, Major Axis Bending

Wood Species : Douglas Fir - Larch

Wood Grade : No.2

Fb - Tension	900 psi	Fc - Prll	1350 psi	Fv	180 psi	Ebend- xx	1600 ksi	Density	31.2 pcf
Fb - Compr	900 psi	Fc - Perp	625 psi	Ft	575 psi	Eminbend - xx	580 ksi		

### Applied Loads

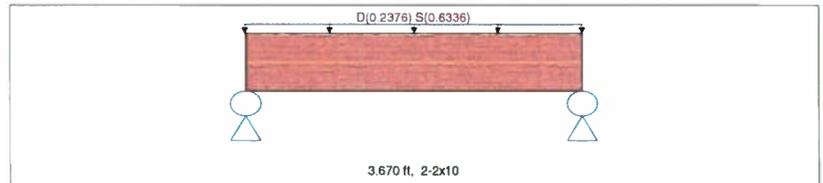
Beam self weight calculated and added to loads  
 Unif Load: D = 0.0150, S = 0.040 k/ft, Trib= 15.840 ft

### Design Summary

Max fb/Fb Ratio = **0.364** : 1  
 fb : Actual : 414.26 psi at 1.835 ft in Span # 1  
 Fb : Allowable : 1,138.50 psi  
 Load Comb : +D+S+H

Max fv/FvRatio = **0.244** : 1  
 fv : Actual : 50.47 psi at 0.000 ft in Span # 1  
 Fv : Allowable : 207.00 psi  
 Load Comb : +D+S+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.45			1.16			
Right Support	0.45			1.16			



Max Deflections  
 Downward L+Lr+S 0.008 in Downward Total 0.011 in  
 Upward L+Lr+S 0.000 in Upward Total 0.000 in  
 Live Load Defl Ratio 5362 >360 Total Defl Ratio 3873 >240

## Wood Beam Design : Rafter Support Beam at Mailboxes

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10

BEAM Size : **2-2x10, Sawn, Fully Braced**

Using Allowable Stress Design with IBC 2012 Load Combinations, Major Axis Bending

Wood Species : Douglas Fir - Larch

Wood Grade : No.2

Fb - Tension	900 psi	Fc - Prll	1350 psi	Fv	180 psi	Ebend- xx	1600 ksi	Density	31.2 pcf
Fb - Compr	900 psi	Fc - Perp	625 psi	Ft	575 psi	Eminbend - xx	580 ksi		

### Applied Loads

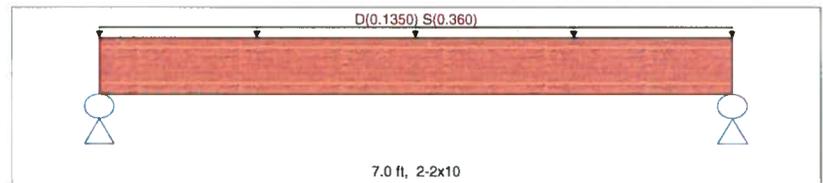
Beam self weight calculated and added to loads  
 Unif Load: D = 0.0150, S = 0.040 k/ft, Trib= 9.0 ft

### Design Summary

Max fb/Fb Ratio = **0.756** : 1  
 fb : Actual : 860.76 psi at 3.500 ft in Span # 1  
 Fb : Allowable : 1,138.50 psi  
 Load Comb : +D+S+H

Max fv/FvRatio = **0.357** : 1  
 fv : Actual : 73.93 psi at 6.230 ft in Span # 1  
 Fv : Allowable : 207.00 psi  
 Load Comb : +D+S+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.49			1.26			
Right Support	0.49			1.26			



Max Deflections  
 Downward L+Lr+S 0.062 in Downward Total 0.086 in  
 Upward L+Lr+S 0.000 in Upward Total 0.000 in  
 Live Load Defl Ratio 1360 >360 Total Defl Ratio 977 >240



# ood Column

File = P:\WCE\_WORK\242\DK-9\2MHZA9-DVDBJGBY-HSEV10W-KC7A4YC-FWSUIDN-U.EC6  
 ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. #: KW-06009199

Licensee: Whipple Consulting Engineers

Description: Patio Column

## Load Combination Results

Load Combination	C <sub>D</sub>	C <sub>P</sub>	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
+0.60D+0.70E+0.60H	1.600	0.248	0.1835	PASS	0.0 ft	0.0	PASS	10.0 ft

## Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction
	@ Base	@ Top	@ Base	@ Top	@ Base
+D+H		k		k	0.983 k
+D+L+H		k		k	0.983 k
+D+Lr+H		k		k	0.983 k
+D+S+H		k		k	2.783 k
+D+0.750Lr+0.750L+H		k		k	0.983 k
+D+0.750L+0.750S+H		k		k	2.333 k
+D+0.60W+H		k		k	0.983 k
+D+0.70E+H		k		k	0.983 k
+D+0.750Lr+0.750L+0.450W+H		k		k	0.983 k
+D+0.750L+0.750S+0.450W+H		k		k	2.333 k
+D+0.750L+0.750S+0.5250E+H		k		k	2.333 k
+0.60D+0.60W+0.60H		k		k	0.590 k
+0.60D+0.70E+0.60H		k		k	0.590 k
D Only		k		k	0.983 k
Lr Only		k		k	k
L Only		k		k	k
S Only		k		k	1.800 k
W Only		k		k	k
E Only		k		k	k
H Only		k		k	k

## Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.70E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.70E+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
E Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

# ood Column

File = P:\WCE\_WORK\242\DK-9\2MHZA9-D\BDBJGBY-HSEV10W-KC7A4YC-FWSUIDN-U.EC6

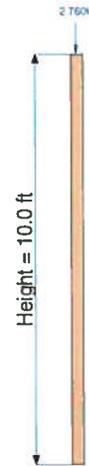
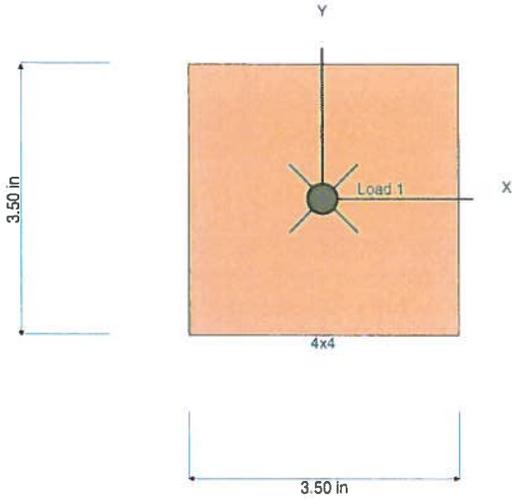
ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Licensee : Whipple Consulting Engineers

Lic. # : KW-06009199

Description : Patio Column

## Sketches



Loads are total entered value. Arrows do not reflect absolute direction.



# Wood Column

File = P:\WCE\_WORK\242IDK-92MHA9-DIDBJGBY-HISEV10W-KIC7A4YC-F1CFED0-A.EC6

ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. #: KW-06009199

Licensee: Whipple Consulting Engineers

Description: Bundled Studs under 15'-4" Header

## Load Combination Results

Load Combination	C <sub>D</sub>	C <sub>P</sub>	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
+0.60D+0.70E+0.60H	1.000	0.399	0.1205	PASS	0.0 ft	0.0	PASS	10.0 ft

## Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction
	@ Base	@ Top	@ Base	@ Top	@ Base
+D+H		k		k	2.944 k
+D+L+H		k		k	2.944 k
+D+Lr+H		k		k	2.944 k
+D+S+H		k		k	10.304 k
+D+0.750Lr+0.750L+H		k		k	2.944 k
+D+0.750L+0.750S+H		k		k	8.464 k
+D+0.60W+H		k		k	2.944 k
+D+0.70E+H		k		k	2.944 k
+D+0.750Lr+0.750L+0.450W+H		k		k	2.944 k
+D+0.750L+0.750S+0.450W+H		k		k	8.464 k
+D+0.750L+0.750S+0.5250E+H		k		k	8.464 k
+0.60D+0.60W+0.60H		k		k	1.766 k
+0.60D+0.70E+0.60H		k		k	1.766 k
D Only		k		k	2.944 k
Lr Only		k		k	k
L Only		k		k	k
S Only		k		k	7.360 k
W Only		k		k	k
E Only		k		k	k
H Only		k		k	k

## Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.70E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.70E+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
E Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

# Wood Column

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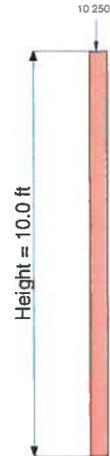
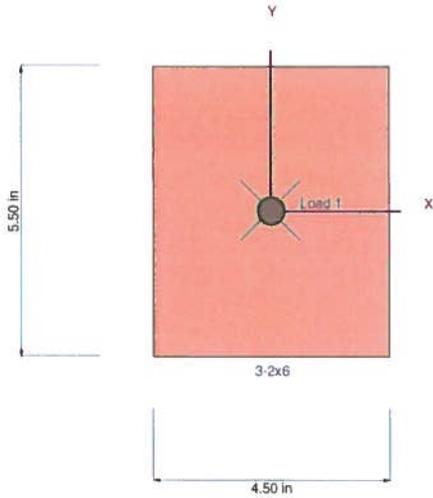
ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Licensee : Whipple Consulting Engineers

Lic. # : KW-06009199

Description : Bundled Studs under 15'-4" Header

## Sketches



Loads are total entered value. Arrows do not reflect absolute direction.

# Wall Footing

File = P:\WCE\_WORK\242IDK-92MHZA9-DIDBJGBY-H1SEV10W-KIC7A4YC-FWSUIDN-U.EC6  
 ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. #: KW-06009199

Licensee: Whipple Consulting Engineers

Description: Perimeter Wall Footing

## Code References

Calculations per ACI 318-11, IBC 2012, CBC 2013, ASCE 7-10  
 Load Combinations Used: IBC 2012

## General Information

### Material Properties

$f'_c$ : Concrete 28 day strength	=	2.50 ksi
$f_y$ : Rebar Yield	=	60.0 ksi
$E_c$ : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
$\phi$ Values Flexure	=	0.90
Shear	=	0.750

### Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0:1
Min. Sliding Safety Factor	=	1.0:1
AutoCalc Footing Weight as DL	:	Yes

### Soil Design Values

Allowable Soil Bearing	=	3.0 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

### Increases based on footing Depth

Reference Depth below Surface	=	2.0 ft
Allow. Pressure Increase per foot of depth when base footing is below	=	ksf ft

### Increases based on footing Width

Allow. Pressure Increase per foot of width when footing is wider than	=	ksf ft
-----------------------------------------------------------------------	---	--------

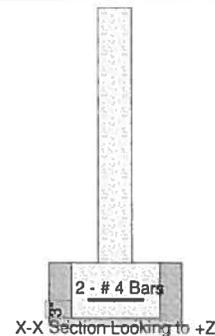
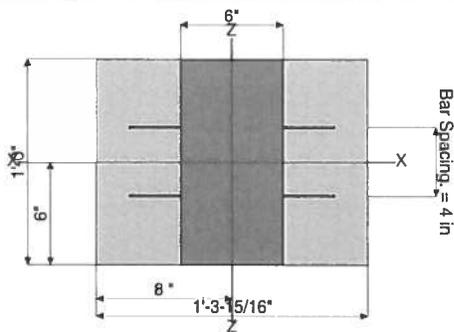
Adjusted Allowable Bearing Pressure = 3.0 ksf

## Dimensions

Footing Width	=	1.330 ft
Wall Thickness	=	6.0 in
Wall center offset from center of footing	=	0 in

## Reinforcing

Footing Thickness	=	10.0 in	Bars along X-X Axis	
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in	# of Bars in 12" Width	= 2
			Reinforcing Bar Size	= # 4



## Applied Loads

	D	Lr	L	S	W	E	H
P: Column Load	=	0.360		2.40			k
OB: Overburden	=						ksf
V-x	=						k
M-zz	=						k-ft
Vx applied	=						in above top of footing

# Wall Footing

File = P:\WCE\_WORK\242IDK-9\2MHZA9-D\B\JGBY-H\SEV10W-KC7A4YC-FWSUIDN-U.EC6

ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. #: KW-06009199

Licensee: Whipple Consulting Engineers

Description: Perimeter Wall Footing

## DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination	
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination	
PASS	0.7320	Soil Bearing	2.196 ksf	3.0 ksf	+D+S+H
PASS	0.02459	Z Flexure (+X)	0.2890 k-ft	11.753 k-ft	+1.20D+0.50L+1.60S+1
PASS	0.002581	Z Flexure (-X)	0.03033 k-ft	11.753 k-ft	+0.90D+E+0.90H
PASS	n/a	1-way Shear (+X)	0.0 psi	75.0 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a

## Detailed Results

### Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress		Actual / Allowable Ratio
			-X	+X	
. +D+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+L+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+Lr+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+S+H	3.0 ksf	0.0 in	2.196 ksf	2.196 ksf	0.732
. +D+0.750Lr+0.750L+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+0.750L+0.750S+H	3.0 ksf	0.0 in	1.745 ksf	1.745 ksf	0.582
. +D+0.60W+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+0.70E+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+0.750Lr+0.750L+0.450W+H	3.0 ksf	0.0 in	0.3915 ksf	0.3915 ksf	0.131
. +D+0.750L+0.750S+0.450W+H	3.0 ksf	0.0 in	1.745 ksf	1.745 ksf	0.582
. +D+0.750L+0.750S+0.5250E+H	3.0 ksf	0.0 in	1.745 ksf	1.745 ksf	0.582
. +0.60D+0.60W+0.60H	3.0 ksf	0.0 in	0.2349 ksf	0.2349 ksf	0.078
. +0.60D+0.70E+0.60H	3.0 ksf	0.0 in	0.2349 ksf	0.2349 ksf	0.078

Units: k-ft

### Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
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Footing Has NO Overturning

### Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding Safety Ratio	Status
--------------------------------------------	---------------	-----------------	----------------------	--------

Footing Has NO Sliding

### Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
. +1.40D+1.60H	0.04719	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.40D+1.60H	0.04719	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50Lr+1.60L+1.60H	0.04045	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50Lr+1.60L+1.60H	0.04045	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60L+0.50S+1.60H	0.1181	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60L+0.50S+1.60H	0.1181	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60Lr+0.50L+1.60H	0.04045	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60Lr+0.50L+1.60H	0.04045	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60Lr+0.50W+1.60H	0.04045	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60Lr+0.50W+1.60H	0.04045	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50L+1.60S+1.60H	0.289	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50L+1.60S+1.60H	0.289	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60S+0.50W+1.60H	0.289	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+1.60S+0.50W+1.60H	0.289	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. -1.20D+0.50Lr+0.50L+W+1.60H	0.04045	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. -1.20D+0.50Lr+0.50L+W+1.60H	0.04045	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50L+0.50S+W+1.60H	0.1181	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50L+0.50S+W+1.60H	0.1181	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK

# Wall Footing

File = P:\WCE\_WORK\242IDK-92MHZA9-DIDBJGBY-HSEV10W-KIC7A4YC-FIWSUIDN-U.EC6  
ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. # : KW-06009199

Licensee : Whipple Consulting Engineers

Description : Perimeter Wall Footing

. +1.20D+0.50L+0.70S+E+1.60H	0.1492	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
. +1.20D+0.50L+0.70S+E+1.60H	0.1492	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK

# all Footing

File = P:\WCE\_WORK\242IDK-9\2MHZA9-D\BDBJGBY-HSEV10W-KC7A4YG-FWSUIDN-U.EC6

ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Licensee : Whipple Consulting Engineers

Lic. # : KW-06009199

Description : Perimeter Wall Footing

## Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in <sup>2</sup>	Gvrn. As in <sup>2</sup>	Actual As in <sup>2</sup>	Phi*Mn k-ft	Status
.+0.90D+W+0.90H	0.03033	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
.+0.90D+W+0.90H	0.03033	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK
.+0.90D+E+0.90H	0.03033	-X	Bottom	0.216	Min Temp %	0.4	11.753	OK
.+0.90D+E+0.90H	0.03033	+X	Bottom	0.216	Min Temp %	0.4	11.753	OK

## One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60L+0.50S+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60Lr+0.50L+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60Lr+0.50W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+1.60S+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60S+0.50W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+0.50L+W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+0.50S+W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+0.70S+E+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+0.90D+W+0.90H	0 psi	0 psi	0 psi	75 psi	0	OK
+0.90D+E+0.90H	0 psi	0 psi	0 psi	75 psi	0	OK

# General Footing

File = P:\WCE\_WORK\242IDK-9\2MHZA9-D\B\JGBY-H\SEV10W-KC7A4YC-FWSUIDN-U.EC6  
 ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4  
 Licensee : Whipple Consulting Engineers

Lic. # : KW-06009199  
 Description : Column Pier Footing

## Code References

Calculations per ACI 318-11, IBC 2012, CBC 2013, ASCE 7-10  
 Load Combinations Used : IBC 2012

## General Information

### Material Properties

f'c : Concrete 28 day strength	=	2.50 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

### Soil Design Values

Allowable Soil Bearing	=	3.0 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

### Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

### Increases based on footing Depth

Footing base depth below soil surface	=	3.0 ft
Allow press. increase per foot of depth when footing base is below	=	0.0 ksf
	=	0.0 ft

### Increases based on footing plan dimension

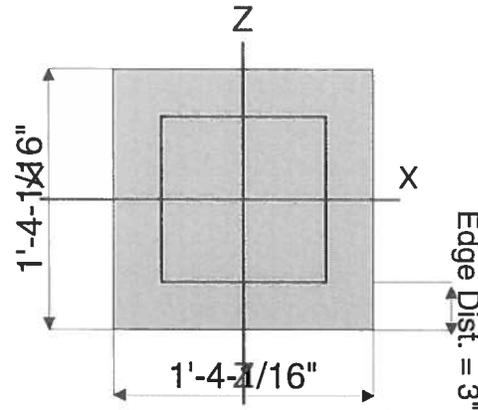
Allowable pressure increase per foot of depth when max. length or width is greater than	=	0.0 ksf
	=	0.0 ft

## Dimensions

Width parallel to X-X Axis	=	1.340 ft
Length parallel to Z-Z Axis	=	1.340 ft
Footing Thickness	=	6.0 in

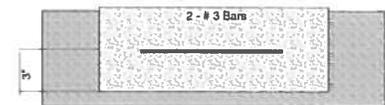
### Pedestal dimensions...

px : parallel to X-X Axis	=	16.0 in
pz : parallel to Z-Z Axis	=	16.0 in
Height	=	0.0 in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



## Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	2
Reinforcing Bar Size	=	# 3
Bars parallel to Z-Z Axis	=	
Number of Bars	=	2
Reinforcing Bar Size	=	# 3



### Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	=	n/a
# Bars required within zone	=	n/a
# Bars required on each side of zone	=	n/a

## Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	0.960	0.0	0.0	2.560	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0 k

# General Footing

File = P:\WCE\_WORK\242\DK-92\MHZA9-D\BJGBY-H\SEV10W-KIC7A4YC-FWSUIDN-U.EC6  
 ENERCALC, INC. 1983-2016, Build:6.16.3.4, Ver:6.16.3.4

Lic. #: KW-06009199

Licensee: Whipple Consulting Engineers

Description: Column Pier Footing

## DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.6787	Soil Bearing	2.036 ksf	3.0 ksf	+D+S+H about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.0	Z Flexure (+X)	0.0 k-ft	0.0 k-ft	No Moment
PASS	0.0	Z Flexure (-X)	0.0 k-ft	0.0 k-ft	No Moment
PASS	0.0	X Flexure (+Z)	0.0 k-ft	0.0 k-ft	No Moment
PASS	0.0	X Flexure (-Z)	0.0 k-ft	0.0 k-ft	No Moment
PASS	n/a	1-way Shear (+X)	0.0 psi	75.0 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	2-way Punching	0.0 psi	75.0 psi	+1.40D+1.60H

## Detailed Results

### Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, +D+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+L+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+Lr+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+S+H	3.0	n/a	0.0	2.036	2.036	n/a	n/a	0.679
X-X, +D+0.750Lr+0.750L+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+0.750L+0.750S+H	3.0	n/a	0.0	1.679	1.679	n/a	n/a	0.560
X-X, +D+0.60W+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+0.70E+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+0.750Lr+0.750L+0.450W+H	3.0	n/a	0.0	0.6099	0.6099	n/a	n/a	0.203
X-X, +D+0.750L+0.750S+0.450W+H	3.0	n/a	0.0	1.679	1.679	n/a	n/a	0.560
X-X, +D+0.750L+0.750S+0.5250E+H	3.0	n/a	0.0	1.679	1.679	n/a	n/a	0.560
X-X, +0.60D+0.60W+0.60H	3.0	n/a	0.0	0.3659	0.3659	n/a	n/a	0.122
X-X, +0.60D+0.70E+0.60H	3.0	n/a	0.0	0.3659	0.3659	n/a	n/a	0.122
Z-Z, +D+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+L+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+Lr+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+S+H	3.0	0.0	n/a	n/a	n/a	2.036	2.036	0.679
Z-Z, +D+0.750Lr+0.750L+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+0.750L+0.750S+H	3.0	0.0	n/a	n/a	n/a	1.679	1.679	0.560
Z-Z, +D+0.60W+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+0.70E+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+0.750Lr+0.750L+0.450W+H	3.0	0.0	n/a	n/a	n/a	0.6099	0.6099	0.203
Z-Z, +D+0.750L+0.750S+0.450W+H	3.0	0.0	n/a	n/a	n/a	1.679	1.679	0.560
Z-Z, +D+0.750L+0.750S+0.5250E+H	3.0	0.0	n/a	n/a	n/a	1.679	1.679	0.560
Z-Z, +0.60D+0.60W+0.60H	3.0	0.0	n/a	n/a	n/a	0.3659	0.3659	0.122
Z-Z, +0.60D+0.70E+0.60H	3.0	0.0	n/a	n/a	n/a	0.3659	0.3659	0.122

### Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

### Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

# TAS Technical Assistance Services

Garden Court Building, 222 W. Mission Avenue. Suite 234, Spokane, WA 99201 (509) 325-4476 FAX (509) 325-4587

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06/14/16

Liberty Lake Planning and Community Development  
22710 E. Country Vista Blvd.  
Liberty Lake, WA

Project/Type: Apartment Complex Clubhouse

Address: Legacy Villas Clubhouse  
Country Vista Road  
Liberty Lake, WA

Project Number:

Project Owner/Phone:

Contact Name/Phone: Lee Schwartzenburg, Wyatt Architects and Associates/ 928-1860

Permit Center:

It is my opinion that plans and specifications submitted to TAS for the above project, in conjunction with the compliance requirements noted below, show compliance with the requirements of the 2012 Washington State Energy Code. Compliance requirements not shown on the plans or specifications are listed below.

## 1. ENVELOPE:

- a. sec. C303.1 **Building thermal envelope insulation:** Insulation installers shall provide a certification listing the type, manufacturer and R-value of insulation installed in each element of the building thermal element. For blown or sprayed insulation, the initial installed thickness, settled thickness, settled R-value, installed density, coverage area and number of bags installed shall be listed on the certification.
- b. sec. C303.1.1 **Blown or sprayed roof/ceiling insulation:** The thickness of blown-in ceiling insulation shall be written in inches on markers that are installed at least one for every 300 sq.ft. throughout the attic space. The markers shall be affixed to the trusses or joists.

c. sec.C303.1.2 **Insulation mark installation:** Insulating materials shall be installed such that the manufacturer's R-value mark is readily observable upon inspection.

d. sec. C402.4.1.1 **Air barrier construction.** A continuous air barrier shall be constructed to comply with the following:

1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across joints and assemblies
2. Air barrier joints and seams shall be sealed, including sealing transitions in places and changes in materials. Air barrier penetrations shall be sealed in accordance with Section C402.4.2. The joints and seals shall be securely installed in or on the joint for its entire length so as to not dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.

See attached Section C402.4 through C402.4.5.2 for additional air leakage information and requirements (including building testing).

e. C402.4.8 **Recessed lighting (if used).** All recessed luminaries shall be IC rated and labeled as having an air leakage rate of not more than 2.0 cfm when tested in accordance with ASTM E 283 at a 1.57 psf pressure differential. All recessed luminaries shall be sealed with a gasket or caulk between the housing and interior wall or ceiling covering.

2. **MECHANICAL:** See the Mechanical Permit Plans Checklist for locations on the plans for compliance requirements/ information not noted below.

a. sec. C403.2.4.3.3 **Automatic start capabilities.** Automatic start controls shall be provided for each HVAC system. The controls shall be capable of automatically adjusting the daily start time of the HVAC system in order to bring each space to the desired temperature immediately prior to scheduled occupancy.

b. sec. 403.2.8 **Piping insulation:** All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.2.8 (attached).

c sec. C403.2.8.1 **Protection of piping insulation:** Piping insulation exposed to weather shall be protected from damage, including that due to sunlight, moisture, equipment maintenance and wind.

d. sec . C403.2.10.3 **Fractional hp fan motors.** Motors for fans that are 1 /12 hp or greater and less than 1 hp shall be electronically commutated motors or shall have a minimum efficiency of 70 percent when rated in accordance with D)E 10 C.F.R. 431. These motors shall also have the means to adjust motor speed for either balancing or remote control. Belt driven fans may use sheave adjustments for airflow balancing in lieu of a varying motor speed

e. C404.3 **Temperature controls.** Service water heating equipment shall be provided with controls to allow a set point of 90 deg. F. The outlet temperature of lavatories in public facility restrooms shall be limited to 110 deg. F.

NOTE: The EF for the water heaters was not given on the plans reviewed. The EF shown on the Mechanical Summary form is the minimum requirement per Table C404.2 (attached) calculations.

f. sec. C404.6 **Pipe insulation:** For automatic-circulating hot water and heat-traced systems, piping shall be insulated with not less than 1 inch of insulation having a conductivity not exceeding 0.27 Btu per inch/h-sq.ft.-deg. F. The first eight feet of piping in nonhot -water-supply temperature maintenance systems served by equipment without integral heat traps shall be insulated with 0.5 inch of material having a conductivity not exceeding 0.27 Btu per inch/h-sq.ft.-deg. F.

g. sec. C408.1 **Commissioning, General.** This project is below the threshold of Btu/h for both cooling and heating required for mandatory commissioning. However the HVAC system still needs to be tested and inspected.

See the attached **COMMISSIONING COMPLIANCE CHECKLIST** for applicable requirements.

3. **LIGHTING:** Lighting fixtures had not been specified at the time of this review -- see the Lighting Summary forms for allowable wattage.

The plans reviewed did not show walkways around the building. In addition to the wattage allowance shown on the Exterior Lighting Summary, .7 watts per linear foot is allowed for walkways less than 10 ft. width, .14 watts per sq.ft. for walkways 10 ft. width or greater (Tradable Wattage).

Switching not shown on plans reviewed -- Control requirements are noted below.

a. sec. C405.2.1.1 **Interior Lighting Controls:** Each area enclosed by walls or floor to ceiling partitions shall have at least one manual control for the lighting serving that area. The required controls shall be located within the area served by the controls or be a remote switch that identifies the lights served and indicates their status.

b. sec. C405.2.1.2 **Light Reduction Controls:** Each area that is required to have a manual control shall also allow the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern by at least 50 percent. Lighting reduction shall be achieved by one of the following or other approved method:

1. Controlling all lamps or luminaries;
2. Dual switching of alternate rows of luminaries, alternate luminaries or alternate lamps;
3. Switching the middle lamp luminaries independently of the outer lamps; or
4. Switching each luminaire or each lamp.

**Exception: Light reduction controls need not be provided in the following areas and spaces:**

1. Areas that have only one luminaire, with rated power less than 100 Watts.
2. Areas that are controlled by an occupant-sensing device.
3. Corridors, equipment rooms, storerooms, restrooms, electrical or mechanical rooms.
4. Spaces that use less than 0.6 watts per square foot.
5. Daylight spaces.

c. sec. C405.2.2.1 **Automatic time switch control devices:** Automatic time switches shall be installed to control lighting in all areas of the building.

Automatic time switches shall have a minimum 7 day clock and be capable of being set for 7 different day types per week and incorporate an automatic holiday "shut-off" feature, which turns off all loads for at least 24 hours and then resumes normally scheduled operations. Automatic time switches shall also have program back-up capabilities, which prevent the loss of program and time settings for at least 10 hours, if power is interrupted.

**Exceptions: Lighting in spaces controlled by occupancy sensors does not need to be controlled by automatic time switch controls.**

d. sec. C405.2.2.2 **Occupancy sensors:** Occupancy sensors shall be installed in all meeting rooms, private offices, restrooms, storage rooms and janitorial closets, and other spaces 300 square feet or less enclosed by floor to ceiling height partitions. These automatic control devices shall be installed to automatically turn off lights within 30 minutes of all occupants leaving the space, and shall either be manual on or shall be controlled to automatically turn the lighting on.

e. sec. C405.2.2.3 **Daylight zone control:** All daylighted zones adjacent to vertical glazing or under overhead glazing shall be provided with daylight-sensing automatic controls which control the lights independent of general area lighting.

The Daylight Zone for vertical glazing is defined as Primary Zone (extends into the space a distance equal to the window head height) and Secondary Zone ( extends an additional distance past the Primary Zone edge equal to the window head height or to the nearest ceiling height opaque partition), whichever is less. The width of the Daylight Zone is assumed to be the width of the glazing plus two feet on each side.

All permanent luminaires in the daylighted zone shall be controlled by automatic daylight sensing controls. Primary and Secondary Zones shall be controlled separately.

Controls shall:

1. Control only luminaires within the daylit area.
2. Incorporate time-delay circuits to prevent cycling of light level changes of less than three minutes.

f. sec. C405.2.2.3.2 **Automatic daylighting controls:** Setpoint and other controls for calibrating the lighting control device shall be readily accessible.

Daylighting controls device shall be capable of automatically reducing the lighting power in response to available daylight by either one of the following methods:

1. Continuous dimming using dimming ballasts and daylight sensing automatic controls that are capable of reducing the power of general lighting in the daylit zone continuously to less than 20 percent of rated power at maximum light output.
2. Stepped dimming using multi-level switching and daylight-sensing controls that are capable of reducing lighting power automatically. The system shall provide a minimum of two control channels per zone and be installed in a manner such that at least one control step is between 50 percent and 70 percent of design lighting power and another control step is no greater than 35 percent of the design power, and the system is capable of automatically turning the system off.

g. sec. C405.2.3 **Specific application controls.** Specific application controls shall be provided for the following:

1. Luminaires serving the exit access and providing means of egress illumination required by Section 1006.1 of the International Building Code, including luminaires that function as both normal and emergency means of egress shall be controlled by a combination of listed emergency relay and occupancy sensors, or signal from another building control system, that automatically shuts off the lighting when the areas served by that illumination are unoccupied.

**Exception:** Means of egress illumination serving the exit access that does not exceed 0.05 watts per square foot of building area is exempt from this requirement.

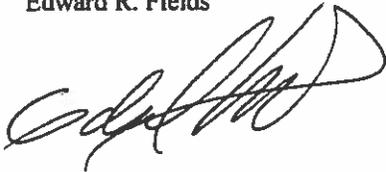
- h. **sec. C405.2.4 Exterior lighting controls. Lighting not designated for dusk-to-dawn operation shall be controlled by either a combination of a photosensor and a time switch, or an astronomical time switch. Lighting designated for dusk-to-dawn operation shall be controlled by an astronomical time switch or photo sensor. All time switches shall be capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.**
- i. **sec. C405.4 Exit signs. Internally illuminated exit signs shall not exceed 5 watts per side.**
- j. **sec. 405.6.1 Exterior building grounds lighting. All exterior building grounds luminaires that operate at greater than 100 watts shall contain lamps having a minimum efficacy of 60 lumens per watt unless the luminaire is controlled by a motion sensor.**
- k. **sec. C408.3.1 Lighting system functional testing: Functional testing is not required for systems with total installed wattage less than 20kW and less than 10 kW controlled by occupancy sensors or automatic daylighting controls. However, the following testing is suggested.**

Where occupant sensors, time switches, programmable schedule controls, photosensors or daylighting controls are installed, the following procedures shall be performed.

1. Confirm that the placement, sensitivity and time-out adjustments for occupant sensors yield acceptable performance.
2. Confirm that the time switches and programmable schedule controls are programmed to turn the lights off.
3. Confirm that the placement and sensitivity adjustments for photo sensor controls reduce electric light based on the amount of usable daylight in the space as specified.

Enclosed are NREC compliance forms for the ENVELOPE, MECHANICAL and LIGHTING categories.

Edward R. Fields



Technical Assistance Services  
ICC Certification #1139685-78

## Envelope Summary

Zones 4c/5b

ENV-SUM

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 &amp; R3 over 3 stories and all R1

Revised Oct 2013

<b>Project Info</b> Compliance forms do not require a password to use. Instructional and calculating cells are write-protected.	Project Address	LEGACY VILLAS CLUBHOUSE COUNTRY VISTA ROAD LIBERTY LAKE, WA	Date	06/14/16
	Applicant Name:	IVYATT ARCHITECTS & ASSOCIATES	For Building Department Use	
	Applicant Address:	LEE SCHWARTZENBURG		
	Applicant Phone:	928-1860		

<b>Project Description</b>	<input checked="" type="checkbox"/> New Building <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Change of Occupancy/Conditioning
----------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>Compliance Path</b> Selection required to enable forms.	<input type="checkbox"/> Prescriptive <input checked="" type="checkbox"/> Component Performance <input type="checkbox"/> Total Building Performance
---------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------

<b>Occupancy Group</b> Selection required to enable forms.	<input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Group R - R2 & R3 over 3 stories and all R1
---------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------

<b>Vertical Fenestration and Skylight Area Calculation</b> If complying via the Prescriptive path, enter values for vertical fenestration, skylights, gross walls and roof on this ENV-SUM worksheet. If complying via the Component Performance path, enter these values in the ENV-UA worksheet. These values auto-fill from ENV-UA and are write-protected on ENV-SUM.	Total Vertical Fenestration (rough opening)	divided by	Gross Exterior Above Grade Wall Area	times 100 equals	% Vertical Fenestration
	571 sq. ft.	÷	3327 sq. ft.	X 100 =	17.2%
	Total Skylight	divided by	Gross Exterior Roof Area	times 100 equals	% Skylight
		÷		X 100 =	

<b>Fenestration Area Compliance</b>	Vertical Fenestration Area
	Skylight Area

<b>Vertical Fenestration Alternates</b>	<input type="checkbox"/> 50% or more of the floor area is within a daylight zone per C402.3.1.1 <input type="checkbox"/> High Performance Fenestration U-factors and SHGC per C402.3.1.3
-----------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>Single Story Spaces Requiring Skylights</b>	Compliance Method <input type="checkbox"/> Skylight area 3% or greater, VT-0.40 or greater <input type="checkbox"/> Skylight effective aperture 1% or greater, provide calculation <input type="checkbox"/> Space eligible for exception _____ Requires a minimum of 50% of floor area to be within a skylight daylight zone for specific space types. Refer to C402.3.2 for requirements.
------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>Semi-Heated Spaces</b>	<input type="checkbox"/> Project has semi-heated spaces as defined per C402.1.4 <input type="checkbox"/> Applying wall exception to semi-heated spaces 1. Semi-heated spaces may comply under Prescriptive or Component Performance compliance path. 2. Semi-heated spaces shall be documented separately from other conditioned spaces – provide separate compliance forms for each conditioned space type. 3. Envelope elements separating semi-heated from other conditioned spaces shall comply with exterior thermal envelope requirements.
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<b>Refrigerated Spaces</b>	<input type="checkbox"/> Walk-in Cooler <input type="checkbox"/> Walk-in Freezer <input type="checkbox"/> Refrigerated Warehouse Cooler <input type="checkbox"/> Refrigerated Warehouse Freezer Refrigerated spaces shall comply under the Prescriptive Path only. Compliance documentation for these areas may be combined with non-refrigerated areas in the ENV-PRESCRIPTIVE form. Refer to C402.5 and C402.6 for requirements.
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<b>Mixed Occupancy and/or Space Conditioning</b>	Project includes more than one occupancy type and/or level of space conditioning. Multiple compliance forms may be required. Select all that apply to scope of project: <input type="checkbox"/> Commercial <input type="checkbox"/> R2 & R3 over 3 stories and all R1 <input type="checkbox"/> Refrigerated Space <input type="checkbox"/> Fully Conditioned <input type="checkbox"/> Semi-Heated <input type="checkbox"/> Low Energy* <input type="checkbox"/> R2 & R3 - 3 stories or less *Low energy areas are exempt from all thermal envelope provisions and compliance forms for these areas are not required. Refer to C101.5.2 for exemption.
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Project Address	LEGACY VILLAS CLUBHOUSE	Date	06/14/16
Occupancy Group	<input checked="" type="radio"/> Commercial <input type="radio"/> Group R	For Building Department Use	
Change in occupancy or space conditioning <input type="radio"/>			
Note - Proposed UA may exceed Target UA by 10% per C101.4.4 and C101.4.5			
Fenestration Area as % gross above-grade wall area	17.2%	Max. Target:	30.0%
Skylight Area as % gross roof area		Max. Target:	5.0%
Vertical Fenestration Alternates:			

Notes: 1: If vertical fenestration or skylight area exceeds maximum allowed per C402.3.1, then Target Area Adjustment of all applicable envelope elements will be calculated by the compliance form. Refer to Target Area Adjustments worksheet for this calculation.  
 2: U-factors shall come from Appendix A, Chapter C303, or calculated per approved method as specified in C402.1.2.

Building Component		Proposed UA			Target UA		
Provide source of U-factor, page/plan # of assembly detail & ID		U-factor	x Area (A)	= UA (U x A)	U-factor	x Area (A)	= UA (U x A)
Roofs	Deck	R=	ID:		0.034		
		R=	ID:		Above Deck Insulation		U-0.034
		R=	ID:				
Roofs	Mtl Bld	R=	ID:		0.031		
		R=	ID:		Metal Building		U-0.031
		R=	ID:				
Roofs	Other	R= 49	ID: 6:12 TRUSS / 10" HT. AT FLUTE	.023 3619 83.2	0.021	3619	76.0
		R=	ID:		Single raft, attic, other		U-0.021
		R=	ID:				
Roofs	Mtl. Frm.	R=	ID:		0.055		
		R=	ID:		Steel/metal frame		U-0.055
		R=	ID:				
Roofs	Mtl Bld.	R=	ID:		0.052		
		R=	ID:		Metal Building		U-0.052
		R=	ID:				
Roofs	Wood/Oth	R= 21	ID: INT. FRAME / HORIZ. SIDING OR VENEER	.054 2602 140.5	0.054	2602	140.5
		R=	ID:		Wood Frame, other		U-0.054
		R=	ID:				
Roofs	Mass*	R=	ID:		0.104		
		R=	ID:		Mass Wall		U-0.104
		R=	ID:				
Below	Grade Walls	R=	ID:		0.104		
		R=	ID:		Assumed to be Mass Wall		U-0.104
		R=	ID:				
Floors	Mass	R=	ID:		0.031		
		R=	ID:		Mass Floor		U-0.031
		R=	ID:				
Floors	Framed	R=	ID:		0.029		
		R=	ID:		Joist/Framing		U-0.029
		R=	ID:				
Slab-on-grade	Unheated	R= 10	ID: VERT. / THERMAL BREAK SLAB TO FDN.	.54 292 157.7	0.540	330	178.2
		R=	ID:		Slab-On-Grade		U-0.54
		R= 10	ID: VERT. / NO TB SLAB TO FDN (DR. BLOCKOUTS)	.70 38 26.6			
Slab-on-grade	Heated	R=	ID:		0.550		
		R=	ID:		Heated Slab-On-Grade		U-0.55
		R=	ID:				

\*Proposed non-residential CMU walls meeting Table C402.1.2 Footnote D requirements can use the target U-value of 0.104 rather than Appendix A values. Show footnote requirements in plans.

Page 1 Subtotal	Area	UA	Area	UA
	6551	408.0	6551	394.7

# Component Performance Path, pg. 2

Zones 4c/5b

ENV-UA

2012 Washington State Energy Code Compliance Forms for Commercial Buildings Including R2 & R3 over:

Revised Oct 2013

Project Address <b>LEGACY VILLAS CLUBHOUSE</b>	Date <b>06/14/16</b>
Fenestration Area as % gross above-grade wall area <b>17.2%</b> Max. Target: 30.0%	For Building Department Use
Skylight Area as % gross roof area Max. Target: 5.0%	
<p>Notes: 1: If vertical fenestration or skylight area exceeds maximum allowed per C402.3.1, then Target Area Adjustment of all applicable envelope elements will be calculated by the compliance form. Refer to Target Area Adjustments worksheet for this calculation.</p> <p>2: Provide NFRC rated U-factor or default U-factor from Appendix A for the fenestration assembly thermal performance (combination of frame and glazing).</p> <p>3: Fenestration that separates conditioned space from a non-conditioned or semi-conditioned</p>	

Building Component		Proposed UA			Target UA			
Provide source of U-factor, page/plan # of assembly detail & ID		U-factor	x Area (A)	= UA (U x A)	U-factor	x Area (A)	= UA (U x A)	
Swing Doors	U= .16 ID: H.T.I. INSULATED / IVD. JDMB	.16	42	6.7	0.37	42	15.5	
	U= ID:				Opaque Swing Doors U-0.37			
	U= ID:							
Roll-up Doors	U= .25 ID: INSULATED OVHD PANEL	.25	112	28.0	0.37	112	41.4	
	U= ID: DR / R7 MIN.				Opaque rollup & sliding U-0.37			
	U= ID:							
Vertical Fenestration	Non-Metal	U= .30 ID: VINYL/OPERABLE/LOW-E+ARG	.30	48	14.4	0.30	464	139.2
		U= .27 ID: VINYL/FIXED/LOW-E+ARGON	.27	311	84.0	Non-Metal Frame U-0.30		
		U= .28 ID: INSULATED DR/FULL LIGHT	.28	105	29.4			
		U= ID: W/LOW-E						
	Metal, fixed	U= ID:				0.38		
		U= ID:				Metal Frame, Fixed U-0.38		
		U= ID:						
	Metal, op.	U= ID:				0.40		
		U= ID:				Metal Frame, Operable U-0.40		
		U= ID:						
MTI entrance	U= .68 ID: 1/2" FULL GLZ. NON-TB OVHD	.68	128	87.0	0.60	128	76.8	
	U= ID: DR/SOLARBAN GLZ (OR				Metal Entrance Door U-0.60			
	U= ID: SIMILAR) .32 CENTER OF							
	U= ID: GLASS U-FACTOR							
Skylights	U= ID:				0.50			
	U= ID:				All types U-0.50			
	U= ID:							
	U= ID:							

	Area	UA	Area	UA
Page 2 Subtotal	746	249.5	746	272.9
Page 1 Subtotal	6551	408.0	6551	394.7
Total	7297	657.5	7297	667.6

## Component Performance Compliance (UA)

To comply:

- 1) Proposed Total UA shall not exceed Target Total UA.
- 2) Proposed Total Area shall equal Target Total Area.

**SHGC Calculation**

**Zone 4c/5b**

**ENV-SHGC**

2012 Washington State Energy Code Compliance Forms for Commercial, Group R1, and > 3 story R2 & R3

Revised June 2013

Project Address <b>LEGACY VILLAS CLUBHOUSE</b>			Date <b>06/14/16</b>		
Fenestration Area as % gross exterior wall area		Prop	Max. Target		
Skylight Area as % gross exterior roof area		Prop	Max. Target		
To comply the Proposed total SHGC x A for all fenestration (vertical & skylights) shall not exceed Target total SHGC x A.					
<b>Skylights</b>		Proposed SHGC		Target SHGC	
Provide SHGC source (NFRC or default), page/plan # of detail & ID		SHGC	x Area (A) = SHGC x A	SHGC	x Area (A) = SHGC x A
ID:					
ID:				SHGC	0.35
ID:					
ID:					
ID:					
Totals				Totals	

Note: Compliance is based upon combined skylight and vertical fenestration performance.

<b>All Non-North Vertical Fenestration+</b>		Proposed SHGC		Target SHGC ++	
Provide SHGC source (NFRC or default), page/plan # of detail and ID		PF	SHGC* x Area (A) = SHGC x A	PF Category	SHGC x Area (A) = SHGC x A
ID:				PF < 0.2	0.40
ID:				0.2 ≤ PF < 0.5	0.48
ID:				PF ≥ 0.5	0.64
ID:	- VINYL GLZ, LOW-E + ARGON / .36 SHGC			++ If projection factor (PF) credits are applied to the proposed design, Target SHGC will sum fenestration area by PF category.	
ID:	- SOLARBAN GLZ IN OVD. DR. / .38 SHGC				
ID:	NO CALCULATIONS REQUIRED				
ID:					
Totals				Totals	

+ If projection factor credit is applied, then vertical fenestration must be entered in the correct table according to orientation. If credit is not applied then all vertical fenestration can be entered in either table.  
 \* Note: Fenestration that separates conditioned space from a non-conditioned or semi-conditioned space shall be listed here with a proposed SHGC equal to the target value.

<b>North Vertical Fenestration+</b>		Proposed SHGC		Target SHGC++	
Provide SHGC source (NFRC or default), page/plan # of detail and ID		PF++	SHGC* x Area (A) = SHGC x A	PF Category	SHGC x Area (A) = SHGC x A
ID:				PF < 0.2	0.40
ID:				0.2 ≤ PF < 0.5	0.44
ID:				PF ≥ 0.5	0.48
ID:				++ If projection factor (PF) credits are applied to the proposed design, Target SHGC will sum fenestration area by PF category.	
ID:					
ID:					
North Total					

To comply proposed total SHGC x A shall not exceed Target total SHGC x A.	Grand Total	Area	SHGC x A	Grand Total	Area	SHGC x A

# Building Permit Plans Checklist, pg. 1

ENV-CHK

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Project Address **LEGACY VILLAS CLUBHOUSE**

Date **06/14/16**

The following information is necessary to check a building permit application for compliance with the building envelope requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes, no, na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
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## SCOPE

NA	C101.6.2	Low energy spaces	Low energy spaces identified on plans		
	C101.5.2.1 C402.1.4	Semi-heated spaces	Semi-heated spaces identified on plans		
	C402.5 C402.6	Cooler and freezer spaces	Walk-in and refrigerated warehouse cooler and freezer spaces identified on plans		
	C101.4.6	Mixed occupancy	Spaces with different occupancy requirements identified on plans		
	C101.4.4 C101.4.5	Change of occupancy/space conditioning	Existing F, S and U-occupancy building spaces undergoing a change of occupancy or space conditioning that require compliance are identified on plans		

## ENVELOPE PROVISIONS

Y	C303.1	Insulation identification	Indicate identification mark shall be applied to all insulation materials		COMPLIANCE LETTER
	C303.1.3 C402.4.3	Fenestration product rating	Fenestration products shall be labeled with rated U-factor, SHGC, VT, and leakage rating		
	C303.1.1 C402.2	General insulation installation	Indicate installation methods, thicknesses, densities and clearances to achieve the intended R-value of all insulation materials; Where two or more layers of rigid insulation will be used, indicate that edge joints between layers are staggered		A2.5
	C402.2.1	Roof assembly insulation	Indicate R-value(s) of cavity/continuous insulation on roof sections; Indicate framing materials on roof sections; Indicate method of framing for ceilings below vented attics and vaulted ceilings per A102.2 (std, adv); Provide area-weighted calculations for sloped insulation installed entirely above deck; Indicate R-values for thermal spacers and each insulation layer, and liner system (LS) method for metal building roofs		A2.5/ C.P. PATH - PAGE 1
NA	C402.2.1	Skylight curb insulation	Indicate curb insulation R-value on roof section if not included in skylight NFRC rating		
Y	C402.2.3 C402.2.4 C303.2.1	Above/below grade wall insulation	Indicate R-value(s) of cavity/continuous insulation on wall sections; Indicate framing materials on wall sections; Indicate method of framing for wood const per A103.2 (std, int, adv); Indicate mass of masonry walls; Indicate loose-fill core insulation material, percentage of cores filled, and frequency of grouted cores and bond beams for masonry walls; Indicate method of protection of exposed exterior basement/crawlspace wall insulation		A2.5
NA	C402.5 C402.6	Walk-in/refrigerated warehouse cooler and freezer insulation	Indicate insulation R-values of ceilings, walls, doors, floors on sections; Indicate method of minimizing door infiltration; Indicate type(s) of transparent doors and windows		
Y	C402.2.7	Opaque doors	Indicate rated U-factor (swinging) or R-value (roll-up/sliding) on wall sections - applies to doors with less than 50% glazed area		C.P. PATH - PAGE 2
NA	C402.2.5	Floor over outdoor or unconditioned space insulation	Indicate R-value(s) of cavity/continuous insulation on floor sections; Indicate framing material on floor sections; Indicate mass of masonry floors		
Y	C402.2.6 C303.2.1	Slab-on-grade floor insulation	Indicate R-value of continuous insulation on wall section or foundation detail; Indicate insulation extends down vertically and/or horizontally the required distance from top of slab; Indicate method of protection of exposed exterior slab edge insulation		A2.5/ C.P. PATH - PAGE 1
NA	C402.2.6 C303.2.1	Radiantly heated slab-on-grade floor insulation	Indicate R-value of continuous insulation on wall section or foundation detail; Indicate insulation extends down vertically from top of slab and then horizontally under the entire slab; Indicate method of protection of exposed exterior slab edge insulation		
NA	C402.2.8	Radiant heating system insulation	Indicate insulation R-value behind radiant panels, U-bend/headers and bottom surface of radiantly heated floors (other than radiantly heated slab-on-grade)		

Building Permit Plans Checklist. pg. 2

ENV-CHK

2012 Washington State Energy Code Compliance Forms for Commercial Buildings Including R2 & R3 over 3 stories and all R1

Project Address LEGACY VILLAS CLUBHOUSE Date 06/14/16

Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
Y	C402.3.1	Vertical fenestration maximum area	Provide calculation for total vertical fenestration area as percentage of gross above grade wall area	ENVELOPE SUMMARY	
NA	C402.3.1.2	Skylight maximum area	Provide calculation for total skylight area as percentage of gross roof area		
Y	C402.3.3 C402.3.1.3 C303.1.3	U-factors, SHGC and VT for all fenestration assemblies	Indicate U-factors, SHGC and VT values in fenestration schedules; An area-weighted U-value may be used for all fenestration elements that qualify within the same fenestration category per Table C402.3; Indicate if values are NFRC or default. If default then specify frame type, glazing layers, gap width, low-e coatings, gas-fill.		C.P. PATH - PAGE 2 / SHGC CALC. SHEET.
NA	C402.3.1.1 Chap. 2 Definition	Increased max. vertical fenestration area with daylighting controls	Provide calculations showing that percentage of overall conditioned floor area in the daylight zone is equal to or greater than 50%; Indicate method of daylighting control in lighting equipment schedules; Indicate VT of vertical fenestration is at least 1.1 times the rated SHGC		
	C402.3.1.2	Increased max. vertical fenestration area with high-performance glazing	Indicate high performance U-factors and SHGC values in fenestration schedules; An area-weighted U-value may be used for all fenestration elements that qualify within the same fenestration category per this section		
	C402.3.3 C402.3.3.1	Permanent shading devices	Provide projection factor calculations (Equation C4-2) and associated SHGC multipliers for north and non-north orientations		
	C402.3.2	Single story spaces requiring skylights	Provide calculations for percentage of conditioned floor area located within a skylight daylight zone; Provide calculations for percentage of skylight area to daylight zone under skylights, OR; Provide calculations for percentage of overall skylight effective aperture (Equation C4-1); Indicate haze factor of skylight glazing material or diffuser		

**AIR LEAKAGE \*SEE ATTACHED SEC. C402.4 - C402.4.5.2 FOR COMPLIANCE REQUIREMENTS/INFORMATION**

Y	C402.4.1.1 C402.4.2	Air barrier construction and sealing	Indicate location of continuous air barrier on plans and sections; Provide details for all joints, transitions in materials, penetrations in air barrier and note method of sealing (caulked, gasketed, or other approved method)		*/COMPLIANCE LETTER
NA	C402.4.5.1	Stairway and shaft vents	Indicate locations of all stairway and shaft vents; Provide leakage rating of motorized dampers in mechanical equipment schedules; Indicate method of emergency operation - activation of fire alarm or interruption of power		
Y	C402.4.5.2	Outdoor air intakes, exhausts and relief openings	Indicate locations of all outside air intakes, exhausts and relief outlets, including those integral to mechanical equipment; Provide in mechanical equipment schedules leakage rating of dampers, identify whether motorized or gravity, and note any exceptions taken		TI-01
?	C402.4.8	Recessed lighting in building envelope	Indicate IC rating of fixtures in lighting equipment schedules; Indicate method of sealing between light fixture housing and wall or ceiling		COMPLIANCE LETTER
NA	C402.4.6	Loading dock seals	Indicate weather seal at cargo and loading dock doors		
NA	C402.4.7	Vestibules	Indicate locations and dimensions of vestibules; For unconditioned vestibules, indicate which envelope assembly (interior or exterior) complies with the requirements for a conditioned space		
Y	C402.4.1.2.3	Air barrier building test	Indicate air barrier test method in accordance with ASTM E779 or approved equivalent; Include the following requirements in project documents: (1) air barrier test report shall be submitted to jurisdiction once test is completed; (2) if test results exceed 0.4 cfm/ft <sup>2</sup> at 0.3 in. wg then visually inspect air barrier and seal noted sources of leakage; (3) submit a follow-up report to jurisdiction noting corrective measures taken		*

If "no" is selected for any question, provide explanation:

The window projection factor shall be determined in accordance with Equation C4-2.

$$PF = A/B$$

(Equation C4-2)

where:

- PF* = Projection factor (decimal).
- A* = Distance measured horizontally from the furthest continuous extremity of any overhang, eave, or permanently attached shading device to the vertical surface of the glazing.
- B* = Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave, or permanently attached shading device.

Where different windows or glass doors have different *PF* values, they shall each be evaluated separately.

**C402.3.3.1 SHGC adjustment.** Where the fenestration projection factor for a specific vertical fenestration product is greater than or equal to 0.2, the required maximum SHGC from Table C402.3 shall be adjusted by multiplying the required maximum SHGC by the multiplier specified in Table C402.3.3.1 corresponding with the orientation of the fenestration product and the projection factor.

**TABLE C402.3.3.1  
SHGC ADJUSTMENT MULTIPLIERS**

PROJECTION FACTOR	ORIENTED WITHIN 45 DEGREES OF TRUE NORTH	ALL OTHER ORIENTATION
$0.2 \leq PF < 0.5$	1.1	1.2
$PF \geq 0.5$	1.2	1.6

**C402.3.3.2 Increased vertical fenestration SHGC.** In Climate Zones 1, 2 and 3, vertical fenestration entirely located not less than 6 feet (1729 mm) above the finished floor shall be permitted a maximum SHGC of 0.40.

**C402.3.3.3 Reserved.**

→

**C402.3.3.4 Reserved.**

**C402.3.3.5 Dynamic glazing.** For compliance with Section C402.3.3, the SHGC for dynamic glazing shall be determined using the manufacturer's lowest-rated SHGC, and the VT/SHGC ratio shall be determined using the maximum VT and maximum

SHGC. Dynamic glazing shall be considered separately from other fenestration, and area-weighted averaging with other fenestration that is not dynamic glazing shall not be permitted.

**C402.3.4 Area-weighted *U*-factor.** An area-weighted average shall be permitted to satisfy the *U*-factor requirements for each fenestration product category listed in Table C402.3. Individual fenestration products from different fenestration product categories listed in Table C402.3 shall not be combined in calculating area-weighted average *U*-factor.

**C402.4 Air leakage (Mandatory).** The thermal envelope of buildings shall comply with Sections C402.4.1 through C402.4.8.

**C402.4.1 Air barriers.** A continuous air barrier shall be provided throughout the building thermal envelope. The air barriers shall be permitted to be located on the inside or outside of the building envelope, located within the assemblies composing the envelope, or any combination thereof. The air barrier shall comply with Sections C402.4.1.1 and C402.4.1.2.

**Exception:** Air barriers are not required in buildings located in Climate Zones 1, 2 and 3.

**C402.4.1.1 Air barrier construction.** The continuous air barrier shall be constructed to comply with the following:

1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across the joints and assemblies.
2. Air barrier joints and seams shall be sealed, including sealing transitions in places and changes in materials. Air barrier penetrations shall be sealed in accordance with Section C402.4.2. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.
3. Recessed lighting fixtures shall comply with Section C404.2.8. Where similar objects are installed which penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.

**Exception:** Buildings that comply with Section C402.4.1.2.3 are not required to comply with Items 1 and 3.

2. Fenestration in buildings that comply with Section C402.4.1.2.3 are not required to meet the air leakage requirements in Table C402.4.3.
3. Custom exterior windows and doors manufactured by a *small business* provided they meet the applicable provisions of Chapter 24 of the *International Building Code*. Once visual inspection has confirmed the presence of a gasket, operable windows and doors manufactured by *small business* shall be permitted to be sealed off at the frame prior to the test.

**TABLE C402.4.3  
MAXIMUM AIR INFILTRATION RATE  
FOR FENESTRATION ASSEMBLIES**

FENESTRATION ASSEMBLY	MAXIMUM RATE (CFM/FT <sup>2</sup> )	TEST PROCEDURE
Windows	0.20 <sup>a</sup>	AAMA/ WDMA/ CSA101/LS.2 /A440 or NFRC 400
Sliding doors	0.20 <sup>a</sup>	
Swinging doors	0.20 <sup>a</sup>	
Skylights - With condensation weepage openings	0.30	
Skylights - All other	0.20 <sup>a</sup>	
Curtain walls	0.06	NFRC 400 or ASTM E 283 at 1.57 psf (75 Pa)
Storefront glazing	0.06	
Commercial glazed swinging entrance doors	1.00	
Revolving doors	1.00	
Garage doors	0.40	ANSI/DASMA 105, NFRC 400, or ASTM E 283 at 1.57 psf (75 Pa)
Rolling doors	1.00	

For SI: 1 cubic foot per minute = 0.47 L/s, 1 square foot = 0.093 m<sup>2</sup>.

- a. The maximum rate for windows, sliding and swinging doors, and skylights is permitted to be 0.3 cfm per square foot of fenestration or door area when tested in accordance with AAMA/WDMA/CSA 101/LS.2/A440 at 6.24 psf (300 Pa).

**C402.4.4 Doors and access openings to shafts, chutes, stairways, and elevator lobbies.** Doors and access openings from conditioned space to shafts, chutes, stairways and elevator lobbies shall either meet the requirements of Section C402.4.3 or shall be gasketed, weatherstripped or sealed.

**Exception:** Door openings required to comply with Section 715 or 715.4 of the *International Building Code*; or doors and door openings required by the *International Building Code* to comply with UL 1784 shall not be required to comply with Section C402.4.4.

**C402.4.5 Air intakes, exhaust openings, stairways and shafts.** Stairway enclosures and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be provided with dampers in accordance with Sections C402.4.5.1 and C402.4.5.2.

**C402.4.5.1 Stairway and shaft vents.** Stairway and shaft vents shall be provided with Class I motorized dampers with a maximum leakage rate of 4 cfm/ft<sup>2</sup> (20.3 L/s m<sup>2</sup>) at 1.0 inch water gauge (w.g.) (249 Pa) when tested in accordance with AMCA 500D.

Stairway and shaft vent dampers shall be installed with controls so that they are capable of automatically opening upon:

1. The activation of any fire alarm initiating device of the building's fire alarm system; or
2. The interruption of power to the damper.

**C402.4.5.2 Outdoor air intakes and exhausts.** Outdoor air supply, exhaust openings and relief outlets shall be provided with Class IA motorized dampers which close automatically when the system is off. Return air dampers shall be equipped with motorized dampers. Dampers shall have a maximum leakage rate of 4 cfm/ft<sup>2</sup> (20.3 L/s m<sup>2</sup>) at 1.0 inch water gauge (w.g.) (249 Pa) when tested in accordance with AMCA 500D.

**Exceptions:**

1. Gravity (nonmotorized) dampers having a maximum leakage rate of 20 cfm/ft<sup>2</sup> (101.6 L/s m<sup>2</sup>) at 1.0 inch water gauge (w.g.) (249 Pa) when tested in accordance with AMCA 500D are permitted to be used for relief openings in buildings less than three stories in height above grade if equipment has less than 5,000 cfm total supply flow.
2. Gravity (nonmotorized) dampers for ventilation air intakes shall be protected from direct exposure to wind.
3. Gravity dampers smaller than 24 inches (610 mm) in either dimension shall be permitted to have a leakage of 40 cfm/ft<sup>2</sup> (203.2 L/s m<sup>2</sup>) at 1.0 inch water gauge (w.g.) (249 Pa) when tested in accordance with AMCA 500D.

**C402.4.1.2 Air barrier compliance options.** A continuous air barrier for the opaque building envelope shall comply with Section C402.4.1.2.3.

**C402.4.1.2.1 Materials.** Materials with an air permeability no greater than 0.004 cfm/ft<sup>2</sup> (0.02 L/s m<sup>2</sup>) under a pressure differential of 0.3 inches water gauge (w.g.) (75 Pa) when tested in accordance with ASTM E 2178 shall comply with this section. Materials in Items 1 through 15 shall be deemed to comply with this section provided joints are sealed and materials are installed as air barriers in accordance with the manufacturer's instructions.

1. Plywood with a thickness of not less than 3/8 inch (10 mm).
2. Oriented strand board having a thickness of not less than 3/8 inch (10 mm).
3. Extruded polystyrene insulation board having a thickness of not less than 1/2 inch (12 mm).
4. Foil-back polyisocyanurate insulation board having a thickness of not less than 1/2 inch (12 mm).
5. Closed cell spray foam a minimum density of 1.5 pcf (2.4 kg/m<sup>3</sup>) having a thickness of not less than 1 1/2 inches (36 mm).
6. Open cell spray foam with a density between 0.4 and 1.5 pcf (0.6 and 2.4 kg/m<sup>3</sup>) and having a thickness of not less than 4.5 inches (113 mm).
7. Exterior or interior gypsum board having a thickness of not less than 1/2 inch (12 mm).
8. Cement board having a thickness of not less than 1/2 inch (12 mm).
9. Built up roofing membrane.
10. Modified bituminous roof membrane.
11. Fully adhered single-ply roof membrane.
12. A Portland cement/sand parge, or gypsum plaster having a thickness of not less than 5/8 inch (16 mm).
13. Cast-in-place and precast concrete.
14. Fully grouted concrete block masonry.
15. Sheet steel or aluminum.

**C402.4.1.2.2 Assemblies.** Assemblies of materials and components with an average air leakage not to exceed 0.04 cfm/ft<sup>2</sup> (0.2 L/s m<sup>2</sup>) under a pressure differential of 0.3 inches of water gauge (w.g.) (75 Pa) when tested in accordance with ASTM E 2357, ASTM E 1677 or ASTM E

283 shall comply with this section. Assemblies listed in Items 1 and 2 shall be deemed to comply provided joints are sealed and requirements of Section C402.4.1.1 are met.

1. Concrete masonry walls coated with one application either of block filler and two applications of a paint or sealer coating;
2. A Portland cement/sand parge, stucco or plaster minimum 1/2 inch (12 mm) in thickness.

**C402.4.1.2.3 Building test.** The completed building shall be tested and the air leakage rate of the *building envelope* shall not exceed 0.40 cfm/ft<sup>2</sup> at a pressure differential of 0.3 inches water gauge (2.0 L/s m<sup>2</sup> at 75 Pa) in accordance with ASTM E 779 or an equivalent method approved by the code official. A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the building owner and the Code Official. If the tested rate exceeds that defined here, a visual inspection of the air barrier shall be conducted and any leaks noted shall be sealed to the extent practicable. An additional report identifying the corrective actions taken to seal air leaks shall be submitted to the building owner and the Code Official and any further requirement to meet the leakage air rate will be waived.

**C402.4.2 Air barrier penetrations.** Penetrations of the air barrier and paths of air leakage shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Joints and seals shall be sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials shall be appropriate to the construction materials being sealed. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.

**C402.4.3 Air leakage of fenestration.** The air leakage of fenestration assemblies shall meet the provisions of Table C402.4.3. Testing shall be in accordance with the applicable reference test standard in Table C402.4.3 by an accredited, independent testing laboratory and *labeled* by the manufacturer.

**Exceptions:**

1. Field-fabricated fenestration assemblies that are sealed in accordance with Section C402.4.1.

# Mechanical Summary

# MECH-SUM

2012 Washington State Energy Code Compliance Forms for Commercial, Group R1, and > 3 story R2 and R3

Revised June 2013

## Project Info

Project Address	LEGACY VILLAS CLUBHOUSE	Date	06/15/16
	COUNTRY VISTA ROAD	For Building Dept. Use	
	LIBERTY LAKE, WA		
Applicant Name:	WYATT ARCHITECTS & ASSOCIATES		
Applicant Address:	LEE SCHWARTZENBURG		
Applicant Phone:	928-1860		

## Project Description

Briefly describe mechanical system type and features.

Includes Plans

Include documentation requiring compliance with commissioning provisions per Section C408.

## Compliance Option

Simple System     Complex System     Systems Analysis

## Equipment Schedules

The following information is required to be incorporated with the mechanical equipment schedules on the plans. For projects without plans, fill in the required information below.

### Cooling Equipment Schedule

Equip. ID	Equip. Type	Brand Name <sup>1</sup>	Model No. <sup>1</sup>	Capacity <sup>2</sup> Btu/h	OSA CFM or Econo?	SEER or EER	REQUIRED	Economizer Option or Exception <sup>6</sup>	Heat Recovery Y/N
CU-1		CARRIER	24ABB-60	60M		13.0 SEER	13.0	ECONO	N
CU-2		CARRIER	24ABB-36	36M		13.0 SEER	13.0	ECONO	N

### Heating Equipment Schedule

Equip. ID	Equip. Type	Brand Name <sup>1</sup>	Model No. <sup>1</sup>	Capacity <sup>2</sup> Btu/h	OSA cfm or Econo?	Input Btu/h	Output Btu/h	Efficiency <sup>4</sup>	Heat Recovery Y/N
F-1		CARRIER	59SP5-60	117M	200	120M	117M	.965	N
F-2		CARRIER	59SP5-36	58M	200	60M	58M	.966	N
NOTE: MINIMUM 7.7 HSPF REQ. FOR HEAT PUMP IF USED									

### Fan Equipment Schedule

Equip. ID	Equip. Type	Brand Name <sup>1</sup>	Model No. <sup>1</sup>	CFM	SP <sup>1</sup>	HP/BHP	Flow Control <sup>5</sup>	Location of Service
NO FANS 5000 CFM OR GREATER / 1HP OR GREATER								

### Service Water Heating Equipment Schedule

Equip. ID	Equip. Type	Brand Name <sup>1</sup>	Model No. <sup>1</sup>	Input Capacity	Sub-Category	EF <sup>7</sup>	Location of Service
WH-1		A.O. SMITH	ECT-50	9-12KW		*.90	JOINITOR
WH-2		A.O. SMITH	ECT-30	9-12KW		*.93	POOL EQUIP
* SEE COMPLIANCE LETTER							

<sup>1</sup> If available.    <sup>2</sup> As tested according to Table C403.2.3(1A) thru C403.2.3(8).    <sup>3</sup> If required.    <sup>4</sup> COP, HSPF, Combustion Efficiency, or AFUE

# Mechanical Permit Plans Checklist - Page 1 of 3

MECH-CHK

2012 Washington State Energy Code Compliance Forms for Commercial, Group R1, and > 3 story R2 and R3

Revised June 2013

Project Address LEGACY VILLAS CLUBHOUSE Date 02/14/16

The following information is necessary to check a mechanical permit application for commercial provision compliance with the 2012 WSEC. NOTE: Define print area in Excel prior to printing MECH-CHK pages.

Applicability (yes,no,na)	Code Section	Code Provision	Information Required	Location on Plans	Building Department Notes
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## GENERAL PROVISIONS

### Equipment Sizing & Performance

Y	C403.2.1	Load calculations	Load calculations performed per ASHRAE Std 183 or equivalent per Chapter 3	MECH.	ENGINEER
	C403.2.2	Equipment and system sizing	Output capacity of heating and cooling equipment and systems do not exceed calculated loads, note exceptions taken	M3.01	
	C403.2.5	Minimum ventilation	Ventilation (natural or mechanical) provided per IMC; indicate mechanical ventilation is capable of being reduced to minimum requirement per IMC	M3.01	
	C403.2.3 & C403.2.3.2 & C403.2.12.1	Equipment minimum efficiency	Provide equipment schedules or complete MECH-SUM tables with type, capacity, efficiency, test standard (or other efficiency source) for all mechanical equipment	M3.01	
NA	C403.2.13	Electric motor efficiency	Provide equipment schedule with hp, rpm, efficiency for all motors; note except.		
NA	C403.2.10	Fan power limitation	Fan system motor hp or bhp does not exceed limits per Table C403.2.10.1(1)		
Y	C403.2.10.3 & C403.2.13	Fractional hp fan motors	Indicate fan motors 1/12 to 1 hp are ECM type or meet minimum efficiency req.	COMPLIANCE LETTER	
NA	C403.2.3	Maximum air cooled chiller capacity	Indicate air-cooled chiller capacity does not exceed air-cooled chiller limit		
	C403.2.1	Non-standard water-cooled chillers	Full-load and NPLV values for water-cooled centrifugal chiller adjusted for non-standard operational conditions		
	C403.2.12.1.2	Centrifugal fan cooling towers	Large capacity cooling towers with centrifugal fan(s) meet efficiency requirements for axial fan open circuit cooling towers		
	C403.2.3	Forced air furnace and unit heaters	Indicate intermittent ignition or IID, flue/draft damper & jacket loss		
	C403.2.3.3	Packaged electric heating/cooling equipment	List equipment required to be heat pumps on schedule		
	C403.2.3.4	Humidification	Indicate method of humidification (note requirements for systems with economizer)		

### HVAC System Controls & Criteria

Y	C403.2.4.1	Thermostatic controls	Indicate locations of thermostatic control zones on plans, including perimeter systems	M1.01	
	C403.2.4.1.1	Heat pump supplementary heat	Indicate staged heating (compression/supplemental) & outdoor lock-out temp	M2.01	
	C403.2.4.2	Setpoint overlap (deadband)	Indicate 5°F deadband minimum for systems controlling both heating & cooling	M0.01	
	C403.2.4.3	Automatic setback and shutdown	Indicate zone t-stat controls with required automatic setback & manual override	M0.01, 1-01	
	C403.2.4.3.3	Automatic (optimum) start	Indicate system controls that adjust equip start time to match load conditions	M0.01	COMPLIANCE LETTER
	C403.2.4.5 & C403.2.4.4	Dampers	Indicate location of OSA, exhaust, relief and return air dampers; include AMCA rated leakage and control type (motorized or gravity, note exceptions)	M0.01, 2.01, 3.01	
NA	C403.2.11	Heating outside a building	Indicate radiant heat system and occupancy controls		
	C403.2.4.5	Snow melt systems	Indicate shut-off controls based on outdoor conditions		
	C403.2.4.6	Combustion heating equipment	Indicate modulating or staged control		
	C403.2.4.7	Group R1 hotel/motel systems	Indicate method for guest room automatic setback & set-up of 5°F minimum		
	C403.2.4.8 / 9	Group R2/R3 dwelling unit systems	Indicate 5-2 programmable thermostats in primary spaces with minimum of two setback periods; note exceptions taken		
	C403.2.5.1	Demand controlled ventilation	Indicate high-occupancy spaces and systems requiring DCV		
	C403.2.5.2	Occupancy sensors	Indicate spaces requiring occupancy-based system control and method; or alternate means provided to automatically reduce OSA when partially		
	C403.2.5.3	Enclosed loading dock/parking garage ventilation	Indicate enclosed loading dock and enclosed parking garage ventilation system activation and control method		
	C403.2.5.4.1	Kitchen exhaust hoods	Indicate kitchen hoods requiring make-up air; indicate make-up air source and conditioning method		
	C403.2.5.4.2	Laboratory exhaust systems	Indicate lab exhaust systems requiring heat recovery, method & efficiency; or alternative method taken (VAV, semi-conditioned makeup, or CERM calculation)		
	C403.2.6.1	Energy recovery - ventilation systems	Indicate ventilation systems requiring ER, method & efficiency; note exceptions		
	C403.2.6.2	Energy recovery - condensate systems	Indicate on-site steam heating systems requiring energy recovery		
	C403.2.6.3	Energy recovery - condenser systems	Indicate remote refig. condensers requiring ER and use of captured energy		

# Mechanical Permit Plans Checklist - Page 2 of 3

MECH-CHK

2012 Washington State Energy Code Compliance Forms for Commercial, Group R1, and > 3 story R2 & R3

Revised June 2013

Project Address LEGACY VILLAS CLUBHOUSE Date 06/14/16

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Applicability (yes,no,na)	Code Section	Code Provision	Information Required	Location on Plans	Building Department Notes
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## GENERAL PROVISIONS, CONTINUED

### HVAC System Controls & Criteria, Continued

NA	C403.2.12	Variable flow control - fans/pumps	Indicate fan & pump motors requiring VF control & method (VSD or equiv controls)		
	C403.2.12.1	Variable flow control - cooling towers	Indicate cooling tower fans requiring variable flow control and method		
	C403.2.12.2	Large volume fan systems	Indicate fan systems requiring airflow reduction based on heating and cooling demand; or exception taken		
	C403.2.12.2	Single zone AC systems	Indicate method of cooling demand-based fan control for sys. > 110,000 btuh		
	C403.2.4.10	DDC system capabilities	Identify all DDC system input/output control points and indicate capability for trending and demand response setpoint adjustment		

### Ducting Systems

Y	C403.2.7.1 & C403.2.7.3	Duct construction	Indicate all ductwork constructed and sealed per IMC, C402 leakage requirements and IBC vapor retarder requirements	M0.01	
Y	C403.2.7.3.1-3	Duct pressure classifications	Identify location of low, medium and high pressure ductwork on plans	M1.01	NO HIGH PRESSURE
NA	C403.2.7.3.3	High pressure duct leakage test	Indicate high pressure duct leakage testing requirements on plans; provide test results to jurisdiction when completed		
Y	C403.2.7.1/2	Duct insulation	Indicate R-value of insulation on ductwork	M0.01	1.01

### Piping Systems

Y	C403.2.8	Piping insulation	Indicate R-value of insulation on piping	M2.01	COMPLIANCE LETTER
Y	C403.2.8.1	Piping insulation exposed to weather	Indicate method of protection from damage/degradation		COMPLIANCE LETTER

## SIMPLE SYSTEMS

### Qualifying Systems

Y	C403.3	Qualifying single zone systems	Verify unitary or packaged equipment does not exceed capacity limits, does not have active humidification or simultaneous heating/cooling	M3.01	
NA	C403.3	Qualifying 2-pipe heating systems	Verify 2-pipe heating-only system does not exceed capacity limits		
NA	C403.3.2	Hydronic system controls	Refer to Complex Systems Section C403.4.3		

### Simple System Economizers

Y	C403.3.1	Air economizer required	Indicate cooling systems requiring economizer controls; note in equip sched.	M10.01	
	C403.3.1.1.1	Air economizer capacity	Indicate modulating OSA control capability up to 100% OSA, or exception	M10.01	
	C403.3.1.1.3	Air economizer high limit controls	Indicate high limit shut-off control method per Table C403.3.1.1.3(2) ATTACHED TABLE C403.3.1.1.3(2)		
NA	C403.1.1.2	Integrated air economizer operation	Indicate capability for partial air economizer operation for systems with capacity > 65,000 btuh		
NA	C403.3.1	Air economizer exceptions	Indicate eligible exception(s) taken and provisions to comply with exception(s)		

## COMPLEX SYSTEMS

### Complex System Economizers

NA	C403.4.1	Air economizer required	Indicate cooling systems requiring economizer controls; note in equip sched.		
	C403.4.1.4	Economizer heating system impact	Verify control method of HVAC systems with economizers does not increase building heating energy usage during normal operation		
	C403.4.1.3	Integrated economizer operation	Indicate capability for partial economizer operation for air or water econo systems		
	Moved	Water economizer capacity	Indicate water econo capable of 100% cooling capacity at 50°F db/45°F wb OSA		
	C403.4.1.2	Water economizer maximum pressure drop	Indicate precooling coils and heat exchangers do not exceed pressure drop limit		
	C403.3.1	Air economizer exceptions	Indicate eligible exception(s) taken and provisions to comply with exception(s)		

# Mechanical Permit Plans Checklist - Page 3 of 3

MECH-CHK

2012 Washington State Energy Code Compliance Forms for Commercial, Group R1, and > 3 story R2 & R3

Revised June 2013

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The following information is necessary to check a mechanical permit application for commercial provision compliance with the 2012 WSEC.

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Applicability (yes,no,na)	Code Section	Code Provision	Information Required	Location on Plans	Building Department Notes
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## COMPLEX SYSTEMS, CONTINUED

### Specific System Requirements

NA	C403.4.2 & C403.2.12	Variable flow control - fans	Indicate fans requiring variable flow control and method		
	C403.4.2.1	VAV fan static pressure sensors	Indicate sensor locations on plans; include at least one sensor per major duct branch		
	C403.4.2.2	VAV fan static pressure setpoint	Indicate fan system static pressure setpoint based on zone requiring most pressure		
	C403.4.5	VAV systems serving multi-zones	Indicate supply air systems serving multiple zones that are required to be VAV, method of primary air control, and zones served; note exceptions taken		
	C403.4.5.4	VAV system supply air reset	Indicate controls that automatically reset supply air temp in response to loads		
	C403.4	Large capacity cooling systems	Indicate method of multi-stage or variable control for building cooling system capacity > 300 tons		
	C403.4.7	Hot gas bypass limitation	Indicate cooling equipment unloading or capacity modulation method		
	C403.4.3	Large capacity boiler systems	Indicate multi-stage or modulating burner for single boilers > 500,000 btuh		
	C403.4.3	Boiler sequencing	Indicate automatic controls that sequence operation of multiple boilers		
	C403.4.3.5	Chiller / boiler plant pump isolation	Indicate capability to automatically reduce overall plant flow and shut-off flow through chillers & boilers when not in use		
	C403.4.2 & C403.4.3.6	Variable flow control - pumps	Indicate pumps requiring variable flow control & method		
	C403.2.12.1 & C403.4.4	Variable flow control - cooling towers	Indicate cooling tower fans requiring variable flow control and method		
	C403.4.3.4	Hydronic system part load controls	Indicate heating & chilled water systems have the capability to automatically reset supply water temp AND reduce flow by ≥ 50% for systems > 300,000 btuh		
	C403.4.3.2	Two-pipe changeover systems	Indicate deadband, heating/cooling mode scheduling and changeover temperature range		
	C403.4.3.3.1	Water loop heat pump - deadband	Indicate capability of central equipment to provide min. 20°F water supply temp deadband between heat rejection and heat addition modes		
	C403.4.3.3	Water loop heat pump - heat rejection	Provide heat exchanger that separates cooling tower and heat pump loop in Climate Zone 5		
	C403.4.3.3.3	Water loop heat pump - isolation	Indicate 2-way isolation valve on each heat pump and variable flow control for systems with total pump power > 10 hp		
	C403.4.6	Condenser water heat recovery	Indicate system provided to pre-heat service water and efficiency		
	C403.5	Cooler / freezer - anti-sweat heaters	Indicate w/af & control method for walk-in cooler/freezer door anti-sweat heaters		
	C403.5 / 6	Cooler / freezer - evaporator and condenser fans	Indicate motor type for evaporator and condenser fans < 1 hp		

## SERVICE WATER HEATING

### Service Water Systems

Y	C404.2	Water-heating equip min. efficiency	Provide equipment schedule or complete MECH-SUM table with type, capacity, efficiency, test standard (or other efficiency source)		
	C404.3	Temperature controls	Indicate temperature controls have required setpoint capability	P0.02	COMPLIANCE LETTER
	C404.4	Heat traps	Indicate piping connected to equipment have heat traps on supply & discharge	P0.01, 0.02	
	C404.5	Insulation under water heater	Indicate R-10 insulation under tank	P0.01, 0.02	
	C404.6	Service water piping insulation	Indicate R-value of insulation on piping; note exceptions taken	P0.01	
NA	C404.7 / 8	Circulation systems and heat trace shut-off	Indicate shut-off capability based on occupancy and periods of limited demand		
NA	C404.9	Group R-2 service hot water meters	Indicate method of usage metering for dwell. units served by central HW system		

### Pools & In-Ground Permanently Installed Spas

NA	C404.10.1	Pool heating equip min. efficiency	Provide equipment schedule or complete MECH-SUM table with type, capacity, efficiency, test standard (or other eff. source); heat pump heaters ≥ 4 COP		
	C404.10.1 / 2	Pool heater on / off controls	Indicate automatic on/off control based on scheduling & accessible on/off switch on heater that operates independent of thermostat setting; or exception taken		
	C404.10.3	Pool covers	Indicate vapor retardant cover and insulation rating as required		
	C404.10.3	Pool assembly insulation	Indicate rating of insulation on sides and bottom of pools heated to > 80°F		
	C404.10.4	Heat recovery	Indicate method, exhaust air temperature reduction and recovered energy use		

**TABLE C404.2  
MINIMUM PERFORMANCE OF WATER-HEATING EQUIPMENT**

EQUIPMENT TYPE	SIZE CATEGORY (Input)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED <sup>a, b</sup>	TEST PROCEDURE
Water heaters, electric	≤ 12 kW	Resistance	0.97 - 0.00 132V, EF	DOE 10 CFR Part 430
	> 12 kW	Resistance	1.73V+ 155 SL, Btu/h	ANSI Z21.10.3
	≤ 24 amps and ≤250 volts	Heat pump	0.93 - 0.00 132V, EF	DOE 10 CFR Part 430
Storage water heaters, gas	≤ 75,000 Btu/h	≥ 20 gal	0.67 - 0.0019V, EF	DOE 10 CFR Part 430
	> 75,000 Btu/h and ≤ 155,000 Btu/h	< 4,000 Btu/h/gal	80% $E_r$ (Q/800 + 110√V)SL, Btu/h	ANSI Z21.10.3
	> 155,000 Btu/h	< 4,000 Btu/h/gal	80% $E_r$ (Q/800 + 110√V)SL, Btu/h	
Instantaneous water heaters, gas	> 50,000 Btu/h and < 200,000 Btu/h	≥ 4,000 (Btu/h)/gal and < 2 gal	0.62 - 0.00 19V, EF	DOE 10 CFR Part 430
	≥ 200,000 Btu/h <sup>c</sup>	≥ 4,000 Btu/h/gal and < 10 gal	80% $E_r$	ANSI Z21.10.3
	≥ 200,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	80% $E_r$ (Q/800 + 110√V)SL, Btu/h	
Storage water heaters, oil	≤ 105,000 Btu/h	≥ 20 gal	0.59 - 0.0019V, EF	DOE 10 CFR Part 430
	> 105,000 Btu/h	< 4,000 Btu/h/gal	78% $E_r$ (Q/800 + 110√V)SL, Btu/h	ANSI Z21.10.3
Instantaneous water heaters, oil	≤ 210,000 Btu/h	≥ 4,000 Btu/h/gal and < 2 gal	0.59 - 0.0019V, EF	DOE 10 CFR Part 430
	> 210,000 Btu/h	≥ 4,000 Btu/h/gal and < 10 gal	80% $E_r$	ANSI Z21.10.3
	> 210,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	78% $E_r$ (Q/800 + 110√V)SL, Btu/h	
Hot water supply boilers, gas and oil	≥ 300,000 Btu/h and < 12,500,000 Btu/h	≥ 4,000 Btu/h/gal and < 10 gal	80% $E_r$	ANSI Z21.10.3
Hot water supply boilers, gas	≥ 300,000 Btu/h and < 12,500,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	80% $E_r$ (Q/800 + 110√V)SL, Btu/h	
Hot water supply boilers, oil	≥ 300,000 Btu/h and < 12,500,000 Btu/h	≥ 4,000 Btu/h/gal and > 10 gal	78% $E_r$ (Q/800 + 110√V)SL, Btu/h	
Pool heaters, gas and oil	All	—	78% $E_r$	ASHRAE 146
Heat pump pool heaters	All	—	4.0 COP	AHRI 1160
Unfired storage tanks	All	—	Minimum insulation requirement R-12.5 (h · ft · °F)/Btu	(none)

For SI: °C = [(°F) - 32]/1.8, 1 British thermal unit per hour = 0.2931 W, 1 gallon = 3.785 L, 1 British thermal unit per hour per gallon = 0.078 W/L.

- Energy factor (EF) and thermal efficiency ( $E_r$ ) are minimum requirements. In the EF equation, V is the rated volume in gallons.
- Standby loss (SL) is the maximum Btu/h based on a nominal 70°F temperature difference between stored water and ambient requirements. In the SL equation, Q is the nameplate input rate in Btu/h. In the SL equation for electric water heaters, V is the rated volume in gallons. In the SL equation for oil and gas water heaters and boilers, V is the rated volume in gallons.
- Instantaneous water heaters with input rates below 200,000 Btu/h must comply with these requirements if the water heater is designed to heat water to temperatures 180°F or higher.

**TABLE C403.3.1.1.3(1)  
HIGH-LIMIT SHUTOFF CONTROL OPTIONS FOR AIR ECONOMIZERS**

Climate Zones	Allowed Control Types	Prohibited Control Types
1B, 2B, 3B, 3C, 4B, 4C, 5B, 5C, 6B, 7, 8	Fixed dry-bulb Differential dry-bulb Electronic enthalpy <sup>a</sup> Differential enthalpy Dew-point and dry-bulb temperatures	Fixed enthalpy
1A, 2A, 3A, 4A	Fixed dry-bulb Fixed enthalpy Electronic enthalpy <sup>a</sup> Differential enthalpy Dew-point and dry-bulb temperatures	Differential dry-bulb
All other climates	Fixed dry-bulb Differential dry-bulb Fixed enthalpy Electronic enthalpy <sup>a</sup> Differential enthalpy Dew-point and dry-bulb temperatures	--

- a. Electronic enthalpy controllers are devices that use a combination of humidity and dry-bulb temperature in their switching algorithm.

**TABLE C403.3.1.1.3(2)  
HIGH-LIMIT SHUTOFF CONTROL SETTING FOR AIR ECONOMIZERS**

DEVICE TYPE	CLIMATE ZONE	REQUIRED HIGH LIMIT (ECONOMIZER OFF WHEN):	
		EQUATION	DESCRIPTION
Fixed dry bulb	1B, 2B, 3B, 3C, 4B, 4C, 5B, 5C, 6B, 7, 8	$T_{oa} > 75^{\circ}\text{F}$	Outdoor air temperature exceeds 75°F
	5A, 6A, 7A	$T_{oa} > 70^{\circ}\text{F}$	Outdoor air temperature exceeds 70°F
	All other zones	$T_{oa} > 65^{\circ}\text{F}$	Outdoor air temperature exceeds 65°F
Differential dry bulb	1B, 2B, 3B, 3C, 4B, 4C, 5A, 5B, 5C, 6A, 6B, 7, 8	$T_{oa} > T_{ra}$	Outdoor air temperature exceeds return air temperature
Fixed enthalpy	All	$h_{oa} > 28 \text{ Btu/lb}^a$	Outdoor air enthalpy exceeds 28 Btu/lb of dry air <sup>a</sup>
Electronic Enthalpy	All	$(T_{oa}, RH_{oa}) > A$	Outdoor air temperature/RH exceeds the "A" setpoint curve <sup>b</sup>
Differential enthalpy	All	$h_{oa} > H_{ra}$	Outdoor air enthalpy exceeds return air enthalpy
Dew-point and dry bulb temperatures	All	$DP_{oa} > 55^{\circ}\text{F}$ or $T_{oa} > 75^{\circ}\text{F}$	Outdoor air dry bulb exceeds 75°F or outside dew point exceeds 55°F (65 gr/lb)

For SI: °C = (°F - 32) × 5/9, 1 Btu/lb = 2.33 kJ/kg.

- a. At altitudes substantially different than sea level, the Fixed Enthalpy limit shall be set to the enthalpy value at 75°F and 50-percent relative humidity. As an example, at approximately 6,000 feet elevation the fixed enthalpy limit is approximately 30.7 Btu/lb.
- b. Setpoint "A" corresponds to a curve on the psychometric chart that goes through a point at approximately 75°F and 40-percent relative humidity and is nearly parallel to dry-bulb lines at low humidity levels and nearly parallel to enthalpy lines at high humidity levels.

**TABLE C403.2.8  
MINIMUM PIPE INSULATION THICKNESS (thickness in inches)<sup>a</sup>**

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (inches)				
	Conductivity Btu · in./h · ft <sup>2</sup> · °F) <sup>b</sup>	Mean Rating Temperature, °F	< 1	1 to <1-1/2	1-1/2 to < 4	4 to < 8	≥ 8
> 350	0.32 – 0.34	250	4.5	5.0	5.0	5.0	5.0
251 – 350	0.29 – 0.32	200	3.0	4.0	4.5	4.5	4.5
201 – 250	0.27 – 0.30	150	2.5	2.5	2.5	3.0	3.0
141 – 200	0.25 – 0.29	125	1.5	1.5	2.0	2.0	2.0
105 – 140	0.21 – 0.28	100	1.0	1.0	1.5	1.5	1.5
40 – 60	0.21 – 0.27	75	0.5	0.5	1.0	1.0	1.0
< 40	0.20 – 0.26	75	0.5	1.0	1.0	1.0	1.5

- a. For piping smaller than 1 1/2 inch (38 mm) and located in partitions within *conditioned spaces*, reduction of these thicknesses by 1 inch (25 mm) shall be permitted (before thickness adjustment required in footnote b) but not to a thickness less than 1 inch (25 mm).
- b. For insulation outside the stated conductivity range, the minimum thickness (*T*) shall be determined as follows:  

$$T = r \left\{ \left( \frac{1}{k} + \frac{1}{r} \right) \frac{K}{k} - 1 \right\}$$
 where:  
*T* = minimum insulation thickness,  
*r* = actual outside radius of pipe,  
*t* = insulation thickness listed in the table for applicable fluid temperature and pipe size,  
*K* = conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature (Btu × in/h × ft<sup>2</sup> × °F) and  
*k* = the upper value of the conductivity range listed in the table for the applicable fluid temperature.
- c. For direct-buried heating and hot water system piping, reduction of these thicknesses by 1 1/2 inches (38 mm) shall be permitted (before thickness adjustment required in footnote b) but not to thicknesses less than 1 inch (25 mm).

**FIGURE C408.1.2.1  
COMMISSIONING COMPLIANCE CHECKLIST**

<b>Project Information</b>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Project Name:</td> </tr> <tr> <td style="padding: 2px;">Project Address:</td> </tr> <tr> <td style="padding: 2px;">Commissioning Authority:</td> </tr> </table>	Project Name:	Project Address:	Commissioning Authority:
Project Name:				
Project Address:				
Commissioning Authority:				
<b>Commissioning Plan (Section C408.1.1)</b>	<input type="checkbox"/> <b>Commissioning Plan was used during construction and included items below</b> <ul style="list-style-type: none"> <li>• A narrative description of activities and the personnel intended to accomplish each one</li> <li>• Measurable criteria for performance</li> <li>• Functions to be tested</li> </ul>			
<b>Systems Balancing (Section C408.2.2)</b>	<input checked="" type="checkbox"/> <b>Systems Balancing has been completed</b> <ul style="list-style-type: none"> <li>• Air and Hydronic systems are proportionately balanced in a manner to first minimize throttling losses</li> <li>• Test ports are provided on each pump for measuring pressure across the pump.</li> </ul>			
<b>Functional Testing  (Sections C208.2.3, C408.3.1, C408.4.1.3 and C408.5.1)</b>	<input checked="" type="checkbox"/> <b>HVAC Equipment Functional Testing has been completed (Section C408.2.3.1)</b> HVAC equipment has been tested to demonstrate the installation and operation of components, systems and system-to-system interfacing relationships in accordance with approved plans and specifications.			
	<input checked="" type="checkbox"/> <b>HVAC Controls Functional Testing has been completed (Section C408.2.3.2)</b> HVAC controls have been tested to ensure that control devices are calibrated, adjusted and operate properly. Sequences of operation have been functionally tested to ensure they operate in accordance with approved plans and specifications			
	<input checked="" type="checkbox"/> <b>Economizers Functional Testing has been completed (Section C408.2.3.3)</b> Economizers operate in accordance with manufacturer's specifications			
	<input type="checkbox"/> <b>Lighting Controls Functional Testing has been completed (Section C408.3.1)</b> Lighting controls have been tested to ensure that control devices, components, equipment, and systems are calibrated, adjusted and operate in accordance with approved plans and specifications			
	<input type="checkbox"/> <b>Service Water Heating System Functional Testing has been completed (Section C408.4.1)</b> Service water heating equipment has been tested to ensure that control devices, components, equipment, and systems are calibrated, adjusted and operate in accordance with approved plans and specifications			
	<input type="checkbox"/> <b>Pool and Spa Functional Testing has been completed (Section C408.4.1.3)</b> Pools and spas have been tested to ensure service water heating equipment, time switches and heat recovery equipment are calibrated, adjusted and operate in accordance with approved plans and specifications			
	<input type="checkbox"/> <b>Metering System Functional Testing has been completed (Section C408.5.1)</b> Energy source meters, energy end-use meters, the energy metering data acquisition system and required display are calibrated adjusted and operate in accordance with approved plans and specifications			
<b>Supporting Documents (Section 408.1.3.2)</b>	<input checked="" type="checkbox"/> <b>Manuals, record documents and training have been completed or are scheduled</b> <ul style="list-style-type: none"> <li>• System documentation has been provided to the owner or scheduled date: _____</li> <li>• Record documents have been submitted to owner or scheduled date: _____</li> <li>• Training has been completed or scheduled date: _____</li> </ul>			
<b>Commissioning Report (Section C408.1.2)</b>	<input type="checkbox"/> <b>Preliminary Commissioning Report submitted to Owner and includes items below</b> <ul style="list-style-type: none"> <li>• Deficiencies found during testing required by this section which have not been corrected at the time of report preparation</li> <li>• Deferred tests, which cannot be performed at the time of report preparation due to climatic conditions.</li> </ul>			
<b>Certification</b>	<input type="checkbox"/> I hereby certify that all requirements for Commissioning have been completed in accordance with the Washington State Energy Code, including all items above.  <div style="display: flex; justify-content: space-between;"> <span>_____</span> <span>_____</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Building Owner or Owner's Representative</span> <span>Date</span> </div>			

# Interior Lighting Summary

LTG-SUM

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised Jan 2014

<b>Project Info</b> Compliance forms do not require a password to use. Instructional and calculating cells are write-	Project Address	LEGACY VILLAS CLUBHOUSE	Date	06/14/16
		COUNTRY VISTA ROAD	For Building Department Use	
		LIBERTY LAKE, WA		
	Applicant Name:	WYATT ARCHITECTS & ASSOCIATES		
	Applicant Address:	LEE SCHWARTZENBURG		
	Applicant Phone:			

<b>Project Description</b>	<input checked="" type="checkbox"/> New Building <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Plans Included
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<b>Lighting Compliance Path</b>	<input checked="" type="checkbox"/> Lighting Power Density Calculations <input type="checkbox"/> Total Building Performance (If Total Building Performance then only LGT-CHK is required.)
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<b>Lighting Power Allowance Method</b>	Selection required to enable LPA forms <input type="checkbox"/> Building Area Method <input checked="" type="checkbox"/> Space-By-Space Method
----------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------

<b>Interior Lighting System Description</b>	
Briefly describe lighting system type and features.	

<b>Additions and Change of Space Use (C101.4.3 &amp; C101.4.4)</b>
<input type="checkbox"/> Addition area or Change of Space Use area complies with all applicable provisions as stand alone project <input type="checkbox"/> Addition area is combined with existing building lighting systems to demonstrate compliance with all applicable provisions per C101.4.3 Provide Building Area Method (LTG-INT-BLD) or Space-By-Space Method (LTG-INT-SPACE) Compliance Form. Document maximum allowed and proposed (including existing if applicable) lighting wattage of Addition or Change of Use space. Provide applicable lighting controls per C405.2 and commissioning of lighting controls per C405.13.

<b>Alterations, Renovations and Repairs (C101.4.3.1)</b>
<input type="checkbox"/> 60% or more of luminaires in space replaced Provide Building Area Method (LTG-INT-BLD) or Space-By-Space Method (LTG-INT-SPACE) Compliance Form. Document maximum allowed wattage within the lighting retrofit space in Maximum Allowed Wattage table and proposed (including existing) lighting wattage in Proposed Wattage table. Retrofit and non-retrofit spaces shall be documented separately using multiple forms.
<input type="checkbox"/> Less than 60% of luminaires in space replaced Provide a separate Space-By-Space Method (LTG-INT-SPACE) Compliance Form for this retrofit area. Document existing total wattage within the lighting retrofit space in cell provided in the Maximum Allowed Wattage table. Document proposed (including existing) lighting wattage in the Proposed Wattage table.
<input type="checkbox"/> Lamp and/or ballast replacement within existing luminaires only – existing total interior building wattage not increased
<input type="checkbox"/> New wiring installed to serve added fixtures and/or fixtures relocated to new circuit Provide applicable manual lighting controls (C405.2.1), occupancy sensors (C405.2.2.2), daylight zone controls (C405.2.2.3), specific application controls (C405.2.3), and commissioning of lighting controls per C405.13
<input type="checkbox"/> New or moved lighting panel Provide all applicable lighting controls as noted for New Wiring, automatic time switch controls (C405.2.2.1), and commissioning of lighting controls per C405.13.
<input type="checkbox"/> Space is reconfigured - luminaires unchanged or moved only Provide all applicable lighting controls as noted for New Wiring and commissioning of lighting controls per C405.13.
<input type="checkbox"/> No changes are being made to the interior lighting and space use not changed.

# Interior Lighting Summary - Space-By-Space

LTG-INT-SPACE

2012 Washington State Energy Code Compliance Forms for Commercial Buildings Including R2 & R3 over 3 stories and all R1

Revised Jan 2014

Project Address LEGACY VILLAS CLUBHOUSE Date 09/14/16

**Lighting Alterations, Renovations & Building Additions**

Less than 60% fixtures replaced   
  60% or more fixtures replaced   
  Stand alone bldg. addition   
  Addition combined w/exst

Notes:

a. Lighting fixtures in a building addition may comply as a stand alone project, or they may be combined with the overall existing bldg lighting to demonstrate compliance. Refer to C101.4.3.

b. For retrofits and building additions, provide Space Types and gross interior areas in the Maximum Allowed Lighting table. If a building addition will comply as combined with the overall existing building, include all applicable existing Space Types and gross interior areas.

c. Document new fixtures and all existing to remain fixtures in the Proposed Lighting table.

d. If less than 60% of existing fixtures will be replaced, provide total existing lighting wattage (prior to retrofit) in the space provided in the Maximum Allowed Lighting table.

For Building Department Use

## Maximum Allowed Lighting Wattage

Location (plan #, room #)	Space Type*	Allowed Watts per ft <sup>2</sup>	Gross Interior Area in ft <sup>2</sup>	Watts Allowed (watts/ft <sup>2</sup> x area)
	OFFICE	1.11	431	474
	KITCHEN	.99	116	115
	GREAT ROOM	1.23	893	1098
	EXERCISE	.72	947	682
	RESTROOMS	.98	242	237
	CORRIDOR	.66	173	77
	MAINTENANCE	1.59	326	518
	CART GARAGE	.63	212	134
	POOL EQUIPMENT	.95	114	108

	Area	Allowed Watts
Total	3454	3443

## Proposed Lighting Wattage

Location (plan #, room #)	Fixture Description***	Number of Fixtures	Watts/Fixture	Watts Proposed
NOTE:	FIXTURES HAD NOT BEEN SPECIFIED AT THE TIME OF THIS PLAN REVIEW. TOTAL WATTAGE (INCLUDING BALLAST LOADS) CANNOT EXCEED THE WATTAGE SHOWN ABOVE. ANY LINE VOLTAGE TRACK WATTAGE IS CALCULATED AT 50 WATTS/LINEAL FOOT REGARDLESS OF NUMBER OR TYPE OF HEAD - A CURRENT LIMITER IS THE BEST WAY TO CONTROL TRACK WATTAGE TO STAY WITHIN THE ALLOWABLE WATTAGE.			

Total Proposed Watts may not exceed Total Allowed Watts for Interior Lighting      Total Proposed Watts

\*\*\* Include existing to remain lighting fixtures and exempt lighting equipment per notes below.

Notes:

1. Include ALL proposed lighting fixtures.
2. For proposed Fixture Description, indicate fixture type, lamp type (e.g. T-8), number of lamps in the fixture, and ballast type (if included). For track lighting, list the length of the track (in feet) in addition to the fixture, lamp, and ballast information.

# Exterior Lighting Summary

LTG-EXT

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised Jan 2014

<b>Project Info</b>	Project Address: LEGACY VILLAS CLUBHOUSE	Date: 06/14/16
	COUNTRY VISTA ROAD	For Building Department Use
	LIBERTY LAKE, WA	
	Applicant Name: WYATT ARCHITECTS & ASSOCIATES	
	Applicant Addr: LEE SCHWARTZBURG	
Applicant Phone:		

<b>Project Description</b>	<input checked="" type="checkbox"/> New Building <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Plans Included
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<b>Lighting Zone</b> <i>As specified by jurisdiction. Zone selection required to enable LTG-EXT form</i>	<input type="radio"/> Zone 1 <input checked="" type="radio"/> Zone 2 <input type="radio"/> Zone 3 <input type="radio"/> Zone 4
-------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------

<b>Compliance Option</b>	<input checked="" type="radio"/> Lighting Power Density Calculations <input type="radio"/> Total Building Performance
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<b>Building Grounds</b> <i>Applies to luminaires &gt; 100 Watts</i>	<input type="checkbox"/> Efficacy > 60 lumens/W <input type="checkbox"/> Controlled by motion sensor
	<input type="checkbox"/> Exemption (list)

<b>Exterior Lighting Alterations</b>	<input type="checkbox"/> No changes are being made to the existing exterior lighting
	<input type="checkbox"/> New wiring installed to serve added fixtures and/or fixtures relocated to new circuit <i>Provide applicable exterior lighting controls per C405.2.4 and commissioning per</i>

Tradable Maximum Allowed Lighting Wattage				Base Site Allowance:
Tradable Surfaces	Surface Description	Allowed Watts per ft <sup>2</sup> or per lf	Area (ft <sup>2</sup> ), perimeter (lf) or # of items	Allowed Watts x ft <sup>2</sup> (or x lf)
	DOORS	20/L.F.	37 L.F.	740
	COVERED PATIO MULTIPURPOSE ACTIVITY AREA	39/SQ.FT.	787 SQ.FT.	306
	ENTRY CANOPY	25/SQ.FT.	80 SQ.FT.	22
Total Allowed Tradable Watts:				1068

Tradable Proposed Lighting Wattage (Use mfr listed maximum input wattage for luminaire.)				
Tradable Surface	Fixture Description	Number of Fixtures	Watts/Fixture	Watts Proposed
NOTE: FIXTURES NOT SPECIFIED AT TIME OF PLAN REVIEW. WATTAGE (INCLUDING BALLAST LOADS) CANNOT EXCEED THE ALLOWANCE SHOWN ABOVE. TRADABLE WATTAGE CAN BE USED ANYWHERE ON SITE OR BLDG. SEE COMPLIANCE LETTER FOR MORE ALLOWANCE INFORMATION				
Total Proposed Tradable Watts:				

Total proposed tradable watts may not exceed the sum of total allowed tradable watts plus the base site allowance. Any base site allowance not needed to make tradable watts comply can be applied to individual non-tradable categories.

Non-Tradable Maximum Allowed Lighting Wattage				Base Site Allowance Remaining:
Non-Tradable Surfaces	Surface Description	Allowed Watts per ft <sup>2</sup> or per lf	Area (ft <sup>2</sup> ), perimeter (lf) or # of items	Allowed Watts x ft <sup>2</sup> (or x lf)
	PERIMETER	2.5/L.F.	330 L.F.	825

Non-Tradable Proposed Lighting Wattage				
Non-Tradable Surface	Fixture Description	Number of Fixtures	Watts/Fixture	Watts Proposed
NOTE: FIXTURES NOT SPECIFIED AT TIME OF PLAN REVIEW. WATTAGE (INCLUDING BALLAST LOADS) CANNOT EXCEED THE ALLOWANCE SHOWN ABOVE. NON-TRADABLE WATTAGE CAN ONLY BE USED FOR BUILDING FACADE LIGHTING.				
Total excess Non-Tradable watts:				
Site Allowance Balance:				

Non-tradable proposed watts may not exceed allowed watts for any individual surface unless the total excess watts for all non-tradable surfaces are less than the remaining site allowance.

# Lighting, Motor, and Transformer Permit Documents Checklist LTG-CHK

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised Jan 2014

Project Address LEGACY VILLAS CLUBHOUSE Date 09/14/16

The following information is necessary to check a permit application for compliance with the lighting, motor, and transformer requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes, no, na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
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## LIGHTING CONTROLS (Section C405.2)

Y	C405.2.1.1 C405.2.1.2	Manual interior lighting controls	Indicate on plans the manual control type & locations served; Indicate on plans the 50% lighting load reduction method provided or identify exception taken	COMPLIANCE LETTER	
	C405.2.2.1	Automatic time switch controls and override switching	Indicate lighting system automatic shut-off capability - identify lighting zone areas served on plans; Indicate locations of override switches on plans and the areas served, include area sq. ft.; Indicate locations where automatic shutoff is provided by other methods (occupancy sensor, daylight controls, etc)		
	C405.2.2.2	Occupancy sensors	Indicate on plans the locations served by occupancy sensors		
	C405.2.2.3	Daylight zones - Vertical fenestration and skylights	Indicate vertical fenestration primary and secondary daylight zone areas on plans, include sq. ft.; Indicate skylight daylight zone areas on plans, include sq. ft.		
	C405.2.2.3.2	Daylight zone controls	Indicate on plans the locations served by daylight zone controls; Indicate in plans the lighting load reduction (dimming) method - stepped or continuous dimming		
	C405.2.3	Specific application lighting controls - General	Indicate on plans the locations served by specific application lighting controls	SEE ITEM #7 BELOW	
NA	C405.2.3 - Items 1&2	Display and accent lighting	Indicate lighting control method for display and accent lighting, and display case lighting; Indicate these fixtures are controlled independently from both general area lighting and other lighting applications within the same space		
	C405.2.3 - Item 3	Hotel/motel guest rooms	Provide a lighting control device at each guest room entry for all permanently installed fixtures in guest room; Indicated whether lighting control is manual or automatic		
	C405.2.3 - Item 4	Supplemental task lighting	Provide automatic shut-off vacancy controls for supplemental task lighting, including under-shelf or under-cabinet lighting		
	C405.2.3 - Item 5	Lighting for non-visual applications	Identify eligible non-visual applications and method of lighting control; Indicate these fixtures are controlled independently from both general area lighting and other lighting applications within the same space		
	C405.2.3 - Item 6	Lighting equipment for sale or demonstration	Indicate lighting control method for lighting equipment for sale or demonstration; Indicate these fixtures are controlled independently from both general area lighting and other lighting applications within the same space		
Y	C405.2.3 - Item 7	Means of egress lighting	If egress lighting power density is greater than 0.05W/m <sup>2</sup> , indicate method of automatic shut-off during unoccupied periods; Identify on plans the egress fixtures that function as both normal and emergency means of egress illumination	COMPLIANCE LETTER	
NA	C405.10 C405.11	Cooler and freezer lighting	Provide vacancy device or timer to turn off fixtures within 15 minutes of unoccupancy for cooler and freezer lighting fixtures with lamp efficacy less than 40 lumens per watt		
Y	C405.2.4	Exterior lighting controls	Indicate on exterior lighting plans the automatic lighting control method and locations served	COMPLIANCE LETTER	
Y	C405.6.1	Exterior building grounds lighting controls	Provide motion sensor controls for building grounds fixtures rated at greater than 100 watts with lamp efficacy less than 60 lumens, or identify exception taken	COMPLIANCE LETTER	
NA	C408.3	Lighting system functional testing	Identify applicable commissioning documentation requirements per Section C408 or eligibility for exception; Provide written procedures for functional testing of all automatic controls and describe the expected system response; Identify in construction documents the party responsible for functional testing of automatic lighting controls	COMPLIANCE LETTER	

## INTERIOR LIGHTING POWER & EFFICACY (Sections C405.5, C405.10, C405.11)

# Lighting, Motor, and Transformer Permit Documents Checklist LTG-CHK

2012 Washington State Energy Code Compliance Forms for Commercial Buildings Including R2 & R3 over 3 stories and all R1

Revised Jan 2014

Project Address LEGACY VILLAS CLUBHOUSE Date 06/14/16

The following information is necessary to check a permit application for compliance with the lighting, motor, and transformer requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes, no, na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
Y	C405.5.1 C405.5.1.1 C405.5.1.2 C405.5.1.3 C405.5.1.4	Total connected interior lighting power	Provide fixture schedule with fixture types, lamps, ballasts, and rated watts per fixture; Identify spaces eligible for lighting power exemption on plans and in compliance forms; Identify lighting equipment eligible for exemption in fixture schedule and in compliance forms; Indicate that exempt lighting equipment is in addition to general area lighting and is controlled independently	INT. LIGHTING SUMMARY	
Y	C405.4	Exit signs	Provide exit sign types and rated watts per fixture in fixture schedule (maximum 5 watts per fixture)	COMPLIANCE LETTER	
NA	C405.10 C405.11	Cooler and freezer lighting	For lighting in walk-in coolers and freezers, and refrigerated warehouse coolers and freezers, provide rated lamp efficacy (in lumens per watt) in fixture schedule		
<b>Lighting Power Calculation - Indicate compliance path taken</b>					
NA	C405.5.2	Building Area Method	Complete required compliance forms - proposed wattage per building area does not exceed maximum allowed wattage per building area. Identify locations of building areas on plans		
Y	C405.5.2	Space-By-Space Method	Complete required compliance forms - total proposed wattage does not exceed maximum allowed wattage. Identify locations of space types on plans, including retail display areas as applicable		
<b>EXTERIOR LIGHTING POWER &amp; EFFICACY (Section C405.6)</b>					
Y	C405.6.2	Total connected exterior lighting power	Provide fixture schedule with fixture types, lamps, ballasts, and rated watts per fixture; Identify exterior applications eligible for lighting power exemption on plans and in compliance forms; Indicate that exempt exterior lighting is controlled independently from non-exempt exterior lighting	EXT. LIGHTING SUMMARY	
	Table C405.6.2(1)	Exterior lighting zone	Indicate building exterior lighting zone as defined by the AHJ	EXT. LIGHTING SUMMARY	
	C405.6.1	Exterior building grounds lighting	For building grounds fixtures rated at greater than 100 watts, provide rated lamp efficacy (in lumens per watt) in fixture schedule	COMPLIANCE LETTER	
	C405.6.2	Exterior lighting power calculations	Complete required compliance form - proposed wattage for exterior lighting plus base site allowed does not exceed maximum allowed	EXT. LIGHTING SUMMARY	
<b>MOTORS &amp; TRANSFORMERS (Sections C405.8, C405.9)</b>					
NA	C405.8	Electric Motors	For motors not part of an HVAC system, provide electric motor schedule on electrical plans with hp, rpm, and rated efficiency		
NA	C405.9	Transformers	Provide distribution transformer schedule on electrical plans with transformer size and efficiency		

**If "no" is selected for any question, provide explanation:**