SU+RE HOUSE

STEVENS INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY®

U.S. DEPARTMENT OF ENERGY

U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

NREL NATIONAL RENEWABLE ENERGY LABORATORY

ORANGE COUNTY GREAT PARK

SU+RE HOUSE

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SOLAR DECATHLON 2015
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MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

COVER SHEET & PROJECT TITLE

G-001

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ABBREVIATIONS

AC	ALTERNATE CURRENT
ACCES.	ACCESSORY
ACOUS.	ACOUSTIC(AL)
ADJ.	ADJUSTABLE
AFCI.	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
ALUM.	ALUMINUM
ALT.	ALTERNATE
ANOD.	ANODIZED
ARCH.	ARCHITECT(URAL)
AUTO.	AUTOMATIC
AVG.	AVERAGE
AWG.	AMERICAN WIRE GAUGE
&	AND
BD.	BOARD
BLDG.	BUILDING
BLKG	BLOCKING
BOT.	BOTTOM
B.U.	BUILT UP
C	COLD
CAB.	CABINET
CD	COMPRESSIBLE DUCT
CEM.	CEMENT(ITIOUS)
CER.	CERAMIC
CLG.	CEILING
COL.	COLUMN EQ.
CONC.	CONCRETE
CONSTR.	CONSTRUCTION
CONN.	CONNECTION
CONT.	CONTINUOUS(ATION)
CONTR.	CONTRACT(OR)
COORD.	COORDINATE
COV.	COVER
CTR.	CENTER
CW	COLD WATER
DBL	DOUBLE
DC	DIRECT CURRENT
DTL.	DETAIL
DHW	DOMESTIC HOT WATER
DIA.	DIAMETER
DIFF.	DIFFUSER
DIM.	DIMENSION
DN.	DOWN
DR.	DOOR
DRN.	DRAIN
DS.	DOWNSPOUT
DW	DRINKING WATER
DWG.	DRAWING
DWR.	DRAWER
EF	EXHAUST FAN
ELEV.	ELEVATION
ELAST.	ELASTOMERIC
ELEC.	ELECTRICAL
EMBED	EMBEDD(ED)(ING)
EMT	ELECTRICAL METALLIC TUBING
EQ.	EQUAL
EQUIP.	EQUIPMENT
ERV	ENERGY RECOVERY VENTILATOR
EXIST.	EXISTING
EXP JT.	EXPANSION JOINT
EXPS.	EXPOSE(D)
EXT.	EXTERIOR
FAB.	FABRICATION
FOF	FACE OF FINISH
FOS	FACE OF STUD
FCU.	FAN COIL UNIT
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
FIN.	FINISH
F.R.	FIRE RATING
FXD.	FIXED
FXTR.	FIXTURE
FL.	FLOOR
FL	FLANGE
FLR.	FLOORING
FLASH.	FLASHING
FLDG.	FOLDING.
FT.	FOOT OR FEET
FTG.	FOOTING
FURN.	FURNITURE
GAL	GALLON
GALV.	GALVANIZED
GA	GAUGE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GL.	GLASS
GR.	GRADE(ING)
GND.	GROUND
GYP.	GYPSUM
H	HOT
HD.	HEAD
HDWD.	HARDWOOD
HDWE.	HARDWARE
HEX.	HEAT EXCHANGER
H.M.	HOLLOW METAL
H.P.	HEAT PUMP
HT.	HEIGHT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HW	HOT WATER
INFO	INFORMATION
INSTRUM.	INSTRUMENT(ATION)
INSUL.	INSULATION
INTLK.	INTERLOCK(ING)
INT.	INTERIOR
INFILTR.	INFILTRATION
KIT.	KITCHEN
kW	KILOWATT
LAV.	LAVATORY
LT.	LIGHT
LVLG.	LEVELING
LVR.	LOUVER
MAX.	MAXIMUM
MFD.	MANUFACTURED
MFR.	MANUFACTURER
MATL.	MATERIAL
MECH.	MECHANICAL
MEMB.	MEMBRANE
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MLWK.	MILLWORK
MP	MAIN PANEL
MTL.	METAL
MOIST	MOISTURE
MPPT	MAXIMUM POWER POINT TRACKER
MTD.	MOUNTED
NIC	NOT IN CONTRACT
NO.	NUMBER
NOTC	NORMAL OPERATING CELL TEMPERATURE
NPT	NATIONAL PIPE THREAD
N.	NEW
NR	NPT REDUCER
NTS	NOT TO SCALE
ORNA.	ORNAMENTAL
O/	OVER
OA.	OVERALL S.F.
OVFL.	OVERFLOW
OVHD	OVERHEAD
OC	ON CENTER
OPNG.	OPENING
OPP.	OPPOSITE
OPR.	OPERABLE
PTN.	PARTITION
PC	COPPER FITTING
TEMP.	TEMPERED
THWN	THERMOPLASTIC HIGH WATER RESISTANT NYLON
COATED	
TL.	THERMOCOUPLE DATA LOGGER
TLT.	TOILET
T&G	TONGUE AND GROOVE
TOC	TABLE OF CONTENTS
TRTD.	TREATED
TS	TEMPERATURE SENSOR
TT-1	THERMAL STORAGE TANK
TYP.	TYPICAL
UNDRLAY.	UNDERLAYMENT
UTIL.	UTILITY
UNO	UNLESS OTHERWISE NOTED
V	VALVE
VEH.	VEHICLE
VERT.	VERTICAL
VIF	VERIFY IN FIELD
VOC	VOLATILE ORGANIC COMPOUND
W	WATTS
W/	WITH
W.C.	WATER CLOSET
WD.	WOOD
WDW	WINDOW
W/O	WITHOUT
WR	WEATHER RESISTANT OUTLETS W/ WEATHER RESISTANT BUBBLE COVER
WT.	WEIGHT
WP.	WATER PROOF
WP	WATER PUMP

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SHEET NUMBER	SHEET NAME
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O-805	SCAFFOLD LAYOUT
O-901	CONSTRUCTION ASSEMBLY

ARCH SYMBOLS

ROOM NAME / 101 — AREA TAG

0 — STRUCTURAL GRID

NORTH ARROW

0 2' 4' 8' — GRAPHIC SCALE

1 / A101 SIM — CALLOUT TAG

1 / A101 — ELEVATION TAG

1 / A101 — INTERIOR ELEVATION TAG

A4 / A101 — SECTION TAG

01 — REVISION TAG

A — WALL TYPE TAG

℄ — CENTER LINE

101 — DOOR TAG

1T — WINDOW TAG

EGRESS + ADA SYMBOLS

S — SMOKE DETECTOR

FIRE EXTINGUISHER

EGRESS PATH

FIRST-AID KIT

EMERGENCY MEETING AREA

MATERIAL HATCHES

CONCRETE

PLYWOOD

STEEL

SOLID WOOD

ALUMINUM

HIGH DENSITY FOAM

SOIL

SPRAY FOAM

RIGID INSULATION

BATT INSULATION

DRYWALL (G.W.B.)

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LOT NUMBER: LOT #110

SHEET TITLE

TOC, ABREVIATIONS & SYMBOLS

G-002

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APPLICABLE BUILDING CODES

1. EXHIBIT SITE: (IRVINE, CA)

   2015 SOLAR DECATHLON BUILDING CODE
   2015 SOLAR DECATHLON RULES
   2015 SOLAR DECATHLON MINIMUM BUILDING DESIGN CONSIDERATIONS
   2012 IBC INTERNATIONAL BUILDING CODE
   2012 IRC INTERNATIONAL RESIDENTIAL CODE
   2014 NFPA NATIONAL ELECTRIC CODE
   2012 IFC INTERNATIONAL FIRE CODE

2. PERMANENT SITE: (NEW JERSEY)

   2009 IBC INTERNATIONAL BUILDING CODE NEW JERSEY EDITION
   2009 IECC INTERNATIONAL ENERGY CONSERVATION CODE

ACCESSIBILITY

2010 STANDARD FOR ACCESSIBLE DESIGN

SECTION 504 OF THE REHABILITATION ACT (PARTIAL FEDERAL FUNDING ASSISTANCE) WITH COMPLIANCE OF:UNIFORM FEDERAL ACCESSIBILITY STANDARDS (U.F.A.S)

REGULATION	LIMITATIONS	CONDITIONS PROPOSED
HEIGHT (MAX): FINISHED SQUARE FOOTAGE (PER ANSI Z765-2003)	18 FT. 600 S.F. MIN, 1000 S.F. MAX.	16 FT. 8 IN. 999 S.F. - FIRST FLOOR
LOT DIMENSIONS:	78 FT. X 60 FT. 4680 S.F.	78 FT. X 60 FT. 4680 S.F.

ROOM FINISH SCHEDULE

NAME	NUMBER	AREA	PERIMETER	VOLUME	CEILING HEIGHT	CEILING FINISH	FLOOR FINISH	WALL FINISH
MECH ROOM	101	41 SF	28'-10 1/16"	401 CF	9'-8 1/4"	PLYWOOD	AQUALOCK	PLYWOOD
SECOND BEDROOM	102	92 SF	38'-9 1/2"	775 CF	8'-5"	GYP	MAPLE HARDWOOD	GYP
MASTER BEDROOM	103	93 SF	38'-8 5/16"	781 CF	8'-5"	GYP	MAPLE HARDWOOD	GYP
KITCHEN & LIVING	104	507 SF	97'-8 3/16"	4,672 CF	9'-2 11/16"	PLYWOOD	MAPLE HARDWOOD	PLYWOOD & IKEA MDF
HALLWAY	105	25 SF	20'-8 3/8"	203 CF	8'-0"	PLYWOOD	MAPLE HARDWOOD	PLYWOOD
LAUNDRY	106	7 SF	10'-5 5/8"	55 CF	8'-0"	GYP	AQUALOCK	GYP
BATHROOM	107	54 SF	36'-10 7/8"	455 CF	8'-5 3/8"	GYP	TILE	TILE

FLAME SPREAD & SMOKE DEVELOPMENT

CEILING FINISH	ASTME84 FLAME SPREAD	SMOKE DEVELOPMENT	CLASS	SOURCE
5/8" GYPSUM WALL BOARD TYPE X	15	0	I	NG
1/2" BIRCH HARDWOOD PLYWOOD	114	N/A	III	HPVA

FLOOR FINISH	ASTME84 FLAME SPREAD	SMOKE DEVELOPMENT	CLASS	SOURCE
MAPLE FLOORING	104	157	III	CWC
AQUALOCK LAMINATE FLOORING	<20	N/A	I	N/A
BATHROOM TILE	0	0	I	N/A

WALL FINISH	ASTME84 FLAME SPREAD	SMOKE DEVELOPMENT	CLASS	SOURCE
5/8" GYPSUM WALL BOARD TYPE X	15	0	I	NG
BATHROOM TILE	0	0	I	N/A
3/4" BIRCH HARDWOOD PLYWOOD	114	N/A	III	HPVA
5/8" MDF COVER PANEL	120	N/A	III	HPVA

FIRE SUPPRESSION: BUILDING TO BE FULLY SPRINKLERED WITH NFPA 150 SYSTEM (SECTION 403)

FIRE RESISTANT CONSTRUCTION	REQ'MNT OF IBC/ IRC	PROVIDED	REFERENCE	REMARKS
FIRE SEPARATION DISTANCE REQ'MTS <10 FT. (EXCLUDING PARTY WALLS)	1 HR	1 HR	2012 IRC - TABLE 302.1	
MEANS OF EGRESS	**REQ'MNT OF IBC/ IRC**	**PROVIDED**	**REFERENCE**	**REMARKS**
# OF EXITS PER DWELLING UNIT	1	2	2012 IRC - SECTION R311	
# OF EXIT DOORS PER HABITABLE ROOM	1	1	2012 IRC - SECTION R311	
# OF EMERGENCY ESCAPE & RESCUE OPENINGS FROM SLEEPING ROOMS	1	1	2012 IRC - SECTION R310	5 S.F. OPENABLE AREA AT GRADE LEVEL
MIN. DOOR EGRESS WIDTH	32 IN.	34 IN.	2012 IRC - SECTION R311	
MIN. EXT. DOOR WIDTH	36 IN.	36 IN.	2012 IRC - SECTION R311	
MIN. CORRIDOR WIDTH	36 IN.	36 IN.	2012 IRC - SECTION R311	
COMMON PATH OF EGRESS TRAVEL	75 FT.	40'-6" FT. MAX	2012 IBC - SECTION 1014	
MAX EXIT ACCESS TRAVEL DISTANCE	200 FT.	160 FT. MAX	2012 IBC - SECTION 1015.1	

OCCUPANT LOAD:

DESIGN OCCUPANT LOAD PER TABLE IBC 1004.1.1: ONE OCCUPANT PER 200 GROSS FLOOR AREA MIN.

GROSS FLOOR AREA:

FIRST FLOOR:	999 G.S.F	4 OCCUPANTS
TOTAL:	999 G.S.F.	4 OCCUPANTS

TABLE R302.1(2) EXTERIOR WALLS - DWELLINGS WITH FIRE SPRINKLERS

EXTERIOR WALL ELEMENT		MINIMUM FIRE RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
WALLS	FIRE-RESISTANCE RATED	1 HOUR-TESTED IN ACCORDANCE WITH ASTM E 119 OR UL 263 WITH EXPOSURE FROM THE OUTSIDE	0 FEET
	NOT FIRE-RESISTANCE RATED	0 HOURS	3 FEET a
PROJECTIONS	FIRE-RESISTANCE RATED	1 HOUR ON THE UNDERSIDE	2 FEET a
	NOT FIRE-RESISTANCE RATED	0 HOURS	3 FEET
OPENINGS IN WALLS	UNLIMITED	N/A	< 3 FEET
	NONE REQUIRED	0 HOURS	3 FEET a
PENETRATIONS	ALL	COMPLY WITH SECTION R302.4	< 3 FEET
		NONE REQUIRED	3 FEET a

a. FOR RESIDENTIAL SUBDIVISIONS WHERE ALL DWELLINGS ARE EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEMS INSTALLED IN ACCORDANCE WITH SECTION P2904, THE FIRE SEPARATION DISTANCE FOR NONRATED EXTERIOR WALLS AND RATED PROJECTIONS SHALL BE PERMITTED TO BE REDUCED TO 0 FEET, AND UNLIMITED UNPROTECTED OPENINGS AND PENETRATIONS SHALL BE PERMITTED, WHERE THE ADJOINING LOT PROVIDES AN OPEN SETBACK YARD THAT IS 6 FEET OR MORE IN WIDTH ON THE OPPOSITE SIDE OF THE PROPERTY LINE.

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LOT NUMBER: LOT #110

SHEET TITLE

SITE AND BUILDING REGULATORY SUMMARY

G-010

8/16/2015 5:53:01 PM

GENERAL BUILDING CODE NOTES

GENERAL BUILDING CONSTRUCTION

R302.1 EXTERIOR WALLS.
CONSTRUCTION, PROJECTIONS, OPENINGS AND PENETRATIONS OF EXTERIOR WALLS OF DWELLINGS AND ACCESSORY BUILDINGS FOR DWELLINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION P2904 SHALL COMPLY WITH TABLE R302.1(2).

SEE TABLE R302.1(2). (G-010)

INTERIOR FINISHES MUST COMPLY WITH IRC SECTION R302.9. SYNTHESIZED BUILDING MATERIALS, SUCH AS THOSE USING PLASTICS, MUST BE PROVIDED WITH THE MANUFACTURER'S TEST DOCUMENTATION INDICATING COMPLIANCE WITH ASTME-84 OR UL 723 DEMONSTRATING A MINIMUM CLASS C.

R302.9.1 INTERIOR FINISH FLAME SPREAD INDEX.
WALL AND CEILING FINISHES SHALL HAVE A FLAME SPREAD INDEX OF NOT GREATER THAN 200.

EXCEPTION: FLAME SPREAD INDEX REQUIREMENTS FOR FINISHES SHALL NOT APPLY TO TRIM DEFINED AS PICTURE MOLDS, CHAIR RAILS, BASEBOARDS AND HANDRAILS; TO DOORS AND WINDOWS OR THEIR FRAMES; OR TO MATERIALS THAT ARE LESS THAN 1/28 INCH IN THICKNESS CEMENTED TO THE SURFACE OF WALLS OR CEILINGS IF THESE MATERIALS EXHIBIT FLAME SPREAD INDEX VALUES NO GREATER THAN THOSE OF PAPER OF THIS THICKNESS CEMENTED TO A NONCOMBUSTIBLE BACKING.

R302.9.2 INTERIOR FINISH SMOKE-DEVELOPED INDEX.
WALL AND CEILING FINISHES SHALL HAVE A SMOKE-DEVELOPED INDEX OF NOT GREATER THAN 450.

R302.11 FIREBLOCKING.
IN COMBUSTIBLE CONSTRUCTION, FIREBLOCKING SHALL BE PROVIDED TO CUT OFF ALL CONCEALED DRAFT OPENINGS (BOTH VERTICAL AND HORIZONTAL) AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE.

FIREBLOCKING SHALL BE PROVIDED IN WOOD-FRAME CONSTRUCTION IN THE FOLLOWING LOCATIONS:

1. IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES AND PARALLEL ROWS OF STUDS OR STAGGERED STUDS, AS FOLLOWS:
1.1. VERTICALLY AT THE CEILING AND FLOOR LEVELS.
1.2. HORIZONTALLY AT INTERVALS NOT EXCEEDING 10 FEET.
2. AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
3. IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP AND BOTTOM OF THE RUN. ENCLOSED SPACES UNDER STAIRS SHALL COMPLY WITH SECTION R302.7.
4. AT OPENINGS AROUND VENTS, PIPES, DUCTS, CABLES AND WIRES AT CEILING AND FLOOR LEVEL, WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION. THE MATERIAL FILLING THIS ANNULAR SPACE SHALL NOT BE REQUIRED TO MEET THE ASTM E 136 REQUIREMENTS.

R302.13 COMBUSTIBLE INSULATION CLEARANCE.
COMBUSTIBLE INSULATION SHALL BE SEPARATED A MINIMUM OF 3 INCHES FROM RECESSED LUMINAIRES, FAN MOTORS AND OTHER HEAT-PRODUCING DEVICES.

EXCEPTION: WHERE HEAT-PRODUCING DEVICES ARE LISTED FOR LESSER CLEARANCES, COMBUSTIBLE INSULATION COMPLYING WITH THE LISTING REQUIREMENTS SHALL BE SEPARATED IN ACCORDANCE WITH THE CONDITIONS STIPULATED IN THE LISTING.

RECESSED LUMINAIRES INSTALLED IN THE BUILDING THERMAL ENVELOPE SHALL MEET THE REQUIREMENTS OF SECTION N1102.4.4 OF THIS CODE.

LIGHT VENTILATION AND HEATING

R303.1 HABITABLE ROOMS.
ALL HABITABLE ROOMS SHALL HAVE AN AGGREGATE GLAZING AREA OF NOT LESS THAN 8% (PERCENT) OF THE FLOOR AREA OF SUCH ROOMS. NATURAL VENTILATION SHALL BE THROUGH WINDOWS, DOORS, LOUVERS OR OTHER APPROVED OPENINGS TO THE OUTDOOR AIR. SUCH OPENINGS SHALL BE PROVIDED WITH READY ACCESS OR SHALL OTHERWISE BE READILY CONTROLLABLE BY THE BUILDING OCCUPANTS. THE MINIMUM OPENABLE AREA TO THE OUTDOORS SHALL BE 4% (PERCENT) OF THE FLOOR AREA BEING VENTILATED.

R303.3 BATHROOMS.
BATHROOMS, WATER CLOSET COMPARTMENTS AND OTHER SIMILAR ROOMS SHALL BE PROVIDED WITH AGGREGATE GLAZING AREA IN WINDOWS OF NOT LESS THAN 3 SQUARE FEET, ONE-HALF OF WHICH MUST BE OPENABLE.

EXCEPTION: THE GLAZED AREAS SHALL NOT BE REQUIRED WHERE ARTIFICIAL LIGHT AND A LOCAL EXHAUST SYSTEM ARE PROVIDED. THE MINIMUM LOCAL EXHAUST RATES SHALL BE DETERMINED IN ACCORDANCE WITH SECTION M1507. EXHAUST AIR FROM THE SPACE SHALL BE EXHAUSTED DIRECTLY TO THE OUTDOORS.

R303.7 STAIRWAY ILLUMINATION.
ALL INTERIOR AND EXTERIOR STAIRWAYS SHALL BE PROVIDED WITH A MEANS TO ILLUMINATE THE STAIRS, INCLUDING THE LANDINGS AND TREADS. INTERIOR STAIRWAYS SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF EACH LANDING OF THE STAIRWAY. FOR INTERIOR STAIRS THE ARTIFICIAL LIGHT SOURCES SHALL BE CAPABLE OF ILLUMINATING TREADS AND LANDINGS TO LEVELS NOT LESS THAN 1 FOOT-CANDLE (11 LUX) MEASURED AT THE CENTER OF TREADS AND LANDINGS. EXTERIOR STAIRWAYS SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF THE TOP LANDING OF THE STAIRWAY. EXTERIOR STAIRWAYS PROVIDING ACCESS TO A BASEMENT FROM THE OUTSIDE GRADE LEVEL SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF THE BOTTOM LANDING OF THE STAIRWAY.

EXCEPTION: AN ARTIFICIAL LIGHT SOURCE IS NOT REQUIRED AT THE TOP AND BOTTOM LANDING, PROVIDED AN ARTIFICIAL LIGHT SOURCE IS LOCATED DIRECTLY OVER EACH STAIRWAY SECTION.

R303.8 REQUIRED GLAZED OPENINGS.
REQUIRED GLAZED OPENINGS SHALL OPEN DIRECTLY ONTO A STREET OR PUBLIC ALLEY, OR A YARD OR COURT LOCATED ON THE SAME LOT AS THE BUILDING.

EXCEPTIONS:
1. REQUIRED GLAZED OPENINGS MAY FACE INTO A ROOFED PORCH WHERE THE PORCH ABUTS A STREET, YARD OR COURT AND THE LONGER SIDE OF THE PORCH IS AT LEAST 65 PERCENT UNOBSTRUCTED AND THE CEILING HEIGHT IS NOT LESS THAN 7 FEET.
2. EAVE PROJECTIONS SHALL NOT BE CONSIDERED AS OBSTRUCTING THE CLEAR OPEN SPACE OF A YARD OR COURT.
3. REQUIRED GLAZED OPENINGS MAY FACE INTO THE AREA UNDER A DECK, BALCONY, BAY OR FLOOR CANTILEVER PROVIDED A CLEAR VERTICAL SPACE AT LEAST 36 INCHES IN HEIGHT IS PROVIDED.

R303.4 MECHANICAL VENTILATION.
WHERE THE AIR INFILTRATION RATE OF A DWELLING UNIT IS LESS THAN 5 AIR CHANGES PER HOUR (ACH) WHEN TESTED WITH A BLOWER DOOR AT A PRESSURE OF 0.2 INCH W.C (50 PA) IN ACCORDANCE WITH SECTION N1102.4.1.2, THE DWELLING UNIT SHALL BE PROVIDED WITH WHOLE-HOUSE MECHANICAL VENTILATION IN ACCORDANCE WITH SECTION M1507.3.

R303.5.1 MECHANICAL VENTILATION INTAKE OPENINGS.
MECHANICAL AND GRAVITY OUTDOOR AIR INTAKE OPENINGS SHALL BE LOCATED A MINIMUM OF 10 FEET FROM ANY HAZARDOUS OR NOXIOUS CONTAMINANT, SUCH AS VENTS, CHIMNEYS, PLUMBING VENTS, STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS, EXCEPT AS OTHERWISE SPECIFIED IN THIS CODE. WHERE A SOURCE OF CONTAMINANT IS LOCATED WITHIN 10 FEET OF AN INTAKE OPENING, SUCH OPENING SHALL BE LOCATED A MINIMUM OF 3 FEET BELOW THE CONTAMINANT SOURCE.

FOR THE PURPOSE OF THIS SECTION, THE EXHAUST FROM DWELLING UNIT TOILET ROOMS, BATHROOMS AND KITCHENS SHALL NOT BE CONSIDERED AS HAZARDOUS OR NOXIOUS.

R303.5.2 MECHANICAL VENTILATION EXHAUST OPENINGS.
EXHAUST AIR SHALL NOT BE DIRECTED ONTO WALKWAYS.

R303.6 MECHANICAL VENTILATION OUTSIDE OPENING PROTECTION.
AIR EXHAUST AND INTAKE OPENINGS THAT TERMINATE OUTDOORS SHALL BE PROTECTED WITH CORROSION-RESISTANT SCREENS, LOUVERS OR GRILLES HAVING A MINIMUM OPENING SIZE OF 1/4 INCH AND A MAXIMUM OPENING SIZE OF 1/2 INCH. IN ANY DIMENSION. OPENINGS SHALL BE PROTECTED AGAINST LOCAL WEATHER CONDITIONS. OUTDOOR AIR EXHAUST AND INTAKE OPENINGS SHALL MEET THE PROVISIONS FOR EXTERIOR WALL OPENING PROTECTIVES IN ACCORDANCE WITH THIS CODE.

MINIMUM ROOM AREAS

R304.1 MINIMUM AREA.
EVERY DWELLING UNIT SHALL HAVE AT LEAST ONE HABITABLE ROOM THAT SHALL HAVE NOT LESS THAN 120 SQUARE FEET OF GROSS FLOOR AREA.

R304.2 OTHER ROOMS.
OTHER HABITABLE ROOMS SHALL HAVE A FLOOR AREA OF NOT LESS THAN 70 SQUARE FEET

R304.3 MINIMUM DIMENSIONS.
HABITABLE ROOMS SHALL NOT BE LESS THAN 7 FEET IN ANY HORIZONTAL DIMENSION

R304.4 HEIGHT EFFECT ON ROOM AREA.
PORTIONS OF A ROOM WITH A SLOPING CEILING MEASURING LESS THAN 5 FEET OR A FURRED CEILING MEASURING LESS THAN 7 FEET FROM THE FINISHED FLOOR TO THE FINISHED CEILING SHALL NOT BE CONSIDERED AS CONTRIBUTING TO THE MINIMUM REQUIRED HABITABLE AREA FOR THAT ROOM.

CEILING HEIGHT

R305.1 MINIMUM HEIGHT.
HABITABLE SPACE, HALLWAYS, BATHROOMS, TOILET ROOMS, LAUNDRY ROOMS AND PORTIONS OF BASEMENTS CONTAINING THESE SPACES SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 7 FEET.

EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1.1 MINIMUM OPENING AREA.
ALL EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE FEET.

EXCEPTION: GRADE FLOOR OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5 SQUARE FEET.

R310.1.2 MINIMUM OPENING HEIGHT.
THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24 INCHES.

R310.1.3 MINIMUM OPENING WIDTH.
THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20 INCHES.

R310.1.4 OPERATIONAL CONSTRAINTS.
EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL BE OPERATIONAL FROM THE INSIDE OF THE ROOM WITHOUT THE USE OF KEYS, TOOLS OR SPECIAL KNOWLEDGE.

MEANS OF EGRESS

R311.1 MEANS OF EGRESS.
ALL DWELLINGS SHALL BE PROVIDED WITH A MEANS OF EGRESS AS PROVIDED IN THIS SECTION. THE MEANS OF EGRESS SHALL PROVIDE A CONTINUOUS AND UNOBSTRUCTED PATH OF VERTICAL AND HORIZONTAL EGRESS TRAVEL FROM ALL PORTIONS OF THE DWELLING TO THE EXTERIOR OF THE DWELLING AT THE REQUIRED EGRESS DOOR WITHOUT REQUIRING TRAVEL THROUGH A GARAGE.

R311.2 EGRESS DOOR.
AT LEAST ONE EGRESS DOOR SHALL BE PROVIDED FOR EACH DWELLING UNIT. THE EGRESS DOOR SHALL BE SIDE-HINGED, AND SHALL PROVIDE A MINIMUM CLEAR WIDTH OF 32 INCHES WHEN MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. THE MINIMUM CLEAR HEIGHT OF THE DOOR OPENING SHALL NOT BE LESS THAN 78 INCHES IN HEIGHT MEASURED FROM THE TOP OF THE THRESHOLD TO THE BOTTOM OF THE STOP.

R311.3 FLOORS AND LANDINGS AT EXTERIOR DOORS.
THERE SHALL BE A LANDING OR FLOOR ON EACH SIDE OF EACH EXTERIOR DOOR. THE WIDTH OF EACH LANDING SHALL NOT BE LESS THAN THE DOOR SERVED. EVERY LANDING SHALL HAVE A MINIMUM DIMENSION OF 36 INCHES MEASURED IN THE DIRECTION OF TRAVEL. EXTERIOR LANDINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT).

R311.6 HALLWAYS.
THE MINIMUM WIDTH OF A HALLWAY SHALL BE NOT LESS THAN 3 FEET.

GUARDRAILS

R312.1.1 WHERE REQUIRED.
GUARDS SHALL BE LOCATED ALONG OPEN-SIDED WALKING SURFACES, INCLUDING STAIRS, RAMPS AND LANDINGS, THAT ARE LOCATED MORE THAN 30 INCHES MEASURED VERTICALLY TO THE FLOOR OR GRADE BELOW AT ANY POINT WITHIN 36 INCHES HORIZONTALLY TO THE EDGE OF THE OPEN SIDE. INSECT SCREENING SHALL NOT BE CONSIDERED AS A GUARD.

R312.1.2 HEIGHT.
REQUIRED GUARDS AT OPEN-SIDED WALKING SURFACES, INCLUDING STAIRS, PORCHES, BALCONIES OR LANDINGS, SHALL BE NOT LESS THAN 36 INCHES HIGH MEASURED VERTICALLY ABOVE THE ADJACENT WALKING SURFACE, ADJACENT FIXED SEATING OR THE LINE CONNECTING THE LEADING EDGES OF THE TREADS.

R312.1.3 OPENING LIMITATIONS.
REQUIRED GUARDS SHALL NOT HAVE OPENINGS FROM THE WALKING SURFACE TO THE REQUIRED GUARD HEIGHT WHICH ALLOW PASSAGE OF A SPHERE 4 INCHES IN DIAMETER.

FOAM PLASTIC

R316.2 LABELING AND IDENTIFICATION.
PACKAGES AND CONTAINERS OF FOAM PLASTIC INSULATION AND FOAM PLASTIC INSULATION COMPONENTS DELIVERED TO THE JOB SITE SHALL BEAR THE LABEL OF AN APPROVED AGENCY SHOWING THE MANUFACTURER'S NAME, THE PRODUCT LISTING, PRODUCT IDENTIFICATION AND INFORMATION SUFFICIENT TO DETERMINE THAT THE END USE WILL COMPLY WITH THE REQUIREMENTS.

R316.3 SURFACE BURNING CHARACTERISTICS.
ALL FOAM PLASTIC OR FOAM PLASTIC CORES USED AS A COMPONENT IN MANUFACTURED ASSEMBLIES USED IN BUILDING CONSTRUCTION SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 75 AND SHALL HAVE A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 450 WHEN TESTED IN THE MAXIMUM THICKNESS INTENDED FOR USE IN ACCORDANCE WITH ASTM E 84 OR UL 723. LOOSE-FILL-TYPE FOAM PLASTIC INSULATION SHALL BE TESTED AS BOARD STOCK FOR THE FLAME SPREAD INDEX AND SMOKE-DEVELOPED INDEX.

EXCEPTION: FOAM PLASTIC INSULATION MORE THAN 4 INCHES THICK SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 75 AND A SMOKE-DEVELOPED INDEX OF 450 WHERE TESTED AT A MINIMUM THICKNESS OF 4 INCHES, PROVIDED THE END USE IS APPROVED IN ACCORDANCE WITH SECTION R316.6 USING THE THICKNESS AND DENSITY INTENDED FOR USE.

R316.4 THERMAL BARRIER.
FOAM PLASTIC SHALL BE SEPARATED FROM THE INTERIOR OF A BUILDING BY AN APPROVED THERMAL BARRIER OF MINIMUM 1/2 INCH GYPSUM WALLBOARD OR A MATERIAL THAT IS TESTED IN ACCORDANCE WITH AND MEETS THE ACCEPTANCE CRITERIA OF BOTH THE TEMPERATURE TRANSMISSION FIRE TEST AND THE INTEGRITY FIRE TEST OF NFPA 275.

R316.5.2 ROOFING.
THE THERMAL BARRIER SPECIFIED IN SECTION R316.4 IS NOT REQUIRED WHEN THE FOAM PLASTIC IN A ROOF ASSEMBLY OR UNDER A ROOF COVERING IS INSTALLED IN ACCORDANCE WITH THE CODE AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND IS SEPARATED FROM THE INTERIOR OF THE BUILDING BY TONGUE-AND-GROOVE WOOD PLANKS OR WOOD STRUCTURAL PANEL SHEATHING IN ACCORDANCE WITH SECTION R803, NOT LESS THAN 15/32 INCH THICK BONDED WITH EXTERIOR GLUE AND IDENTIFIED AS EXPOSURE 1, WITH EDGES SUPPORTED BY BLOCKING OR TONGUE-AND-GROOVE JOINTS OR AN EQUIVALENT MATERIAL. THE SMOKE-DEVELOPED INDEX FOR ROOF APPLICATIONS SHALL NOT BE LIMITED.

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CLIENT

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2015
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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

BUILDING CODES

G-011

8/16/2015 5:53:08 PM

RAMP + ACCESSIBILITY

RAMPS
A 'RAMP' IS ANY SLOPING SURFACE USED AS PART OF THE CIRCULATION PATH THAT HAS A SLOPE IN EXCESS OF 1:20. SLOPING SURFACES LESS THAN 1:20 SHALL COMPLY WITH 2010 STANDARD FOR ACCESSIBLE DESIGN SECTION 403.

SD BUILDING CODE 4-3.
SOLAR DECATHLON TEAMS MUST DESIGN AND PROVIDE A METAL PLATE TRANSITION COMPONENT BETWEEN THE ACCESS RAMP AND THE WALKING SURFACE OF THE COMPETITION SITE. SUCH PLATE SHALL BE NO GREATER THAN 1/2 INCH THICK AT THE EDGE CONTACTING THE WALKING SURFACE OF THE COMPETITION SITE. IF THE EDGE EXCEEDS 1/4 INCH THICKNESS, IT SHALL BE PROVIDED WITH A 1:2 BEVEL. IF THE CONNECTED RAMP EXCEEDS 5% SLOPE, THE TRANSITION PLATE AND THE RAMP MUST BE PROVIDED WITH HANDRAILS AND EDGE PROTECTION. BOTH SHALL EXTEND ONTO THE TRANSITION PLATE WITH THE HANDRAILS EXTENDING 12 IN. BEYOND THE TERMINATION OF THE TRANSITION PLATE. THE DESIGN OF THE TRANSITION PLATE SHALL ACCOMMODATE THE LATERAL LOADS PLACED ON THE HANDRAILS AND EXTENSIONS WITHOUT RELYING ON GROUND EMBEDMENT FOR SUPPORT.

ADA2010 405.2 SLOPE.
RAMP RUNS SHALL HAVE A RUNNING SLOPE NOT STEEPER THAN 1:12. (8.3-PERCENT SLOPE)

ADA2010 405.4
FLOOR OR GROUND SURFACES. FLOOR OR GROUND SURFACES OF RAMP RUNS SHALL COMPLY WITH 302. CHANGES IN LEVEL OTHER THAN THE RUNNING SLOPE AND CROSS SLOPE ARE NOT PERMITTED ON RAMP RUNS.

ADA2010 405.5
CLEAR WIDTH. THE CLEAR WIDTH OF A RAMP RUN AND, WHERE HANDRAILS ARE PROVIDED, THE CLEAR WIDTH BETWEEN HANDRAILS SHALL BE 36 INCHES MINIMUM.

ADA2010 405.6 RISE.
THE RISE FOR ANY RAMP RUN SHALL BE 30 INCHES MAXIMUM.

ADA2010 405.7 LANDINGS.
RAMPS SHALL HAVE LANDINGS AT THE TOP AND THE BOTTOM OF EACH RAMP RUN. LANDINGS SHALL COMPLY WITH FIGURE 405.7.

ADA2010 405.7.2 WIDTH.
THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE WIDEST RAMP RUN LEADING TO THE LANDING.

ADA2010 405.7.3 LENGTH.
THE LANDING CLEAR LENGTH SHALL BE 60 INCHES LONG MINIMUM.

ADA2010 405.7.4 CHANGE IN DIRECTION.
RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS SHALL HAVE A CLEAR LANDING 60 INCHES MINIMUM BY 60 INCHES MINIMUM.

ACCESSIBLE ROUTES

SD BUILDING CODE 4-1.
AN ACCESSIBLE ROUTE SHALL BE PROVIDED WITHIN THE UNIT TO ALL SPACES ACCESSIBLE TO THE PUBLIC AS PART OF THE TOUR. COMPONENTS OF THE ACCESSIBLE ROUTE USED BY THE TOURING PUBLIC MUST COMPLY WITH 2010 STANDARD FOR ACCESSIBLE DESIGN. IF ANY OF THE FEATURES ARE AVAILABLE AND INTENDED FOR USE BY THE PUBLIC, THEY SHALL BE ACCESSIBLE IN ACCORDANCE WITH THE 2010 STANDARD FOR ACCESSIBLE DESIGN.

ADA2010 402.2 COMPONENTS.
ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A RUNNING SLOPE NOT STEEPER THAN 1:20, DOORWAYS, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, ELEVATORS, AND PLATFORM LIFTS.

ADA2010 403.3 SLOPE.
THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20. THE CROSS SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:48.

302.3 Openings.
Openings in floor or ground surfaces shall not allow passage of a sphere more than 1/2 inch (13 mm) diameter except as allowed in 407.4.3, 409.4.3, 410.4, 810.5.3 and 810.10. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

ADA2010 303.2 VERTICAL CHANGE IN LEVEL.
CHANGES IN LEVEL OF 1/4 INCH HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL.

ADA2010 303.3 BEVELED.
CHANGES IN LEVEL BETWEEN 1/4 INCH HIGH MINIMUM AND 1/2 INCH HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2.

ADA2010 303.4 RAMPS.
CHANGES IN LEVEL GREATER THAN 1/2 INCH HIGH SHALL BE RAMPED, AND SHALL COMPLY WITH 405 OR 406.

ADA2010 403.5.1 CLEAR WIDTH.
THE CLEAR WIDTH OF WALKING SURFACES SHALL BE 36 INCHES MINIMUM.

EXCEPTION: THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32 INCHES MINIMUM FOR A LENGTH OF 24 INCHES MAXIMUM PROVIDED THAT REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48 INCHES LONG MINIMUM AND 36 INCHES WIDE MINIMUM.

ADA2010 404.1 GENERAL.
DOORS, DOORWAYS, AND GATES THAT ARE PART OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH SECTION 404.

SD BUILDING CODE 4-5.
A. DOORS THAT CAN BE FIXED IN AN OPEN POSITION MAY BE ACCEPTED AS PART OF THE ACCESSIBLE ROUTE IF 32 IN. MINIMUM CLEARANCE IS PROVIDED THROUGH THE DOOR OPENING WITH THE DOOR SECURED IN THE FULLY OPEN POSITION.
B. DOORS WITHOUT REQUIRED MANEUVERING CLEARANCES THAT ARE INTENDED TO REMAIN OPEN DURING THE PUBLIC TOUR MUST BE CLEARLY IDENTIFIED ON THE PLANS AND APPROVED BY THE SOLAR DECATHLON BUILDING OFFICIAL.

ADA2010 404.2.3 DOORWAY CLEAR WIDTH.
DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES MINIMUM. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES AND 80 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES.

ADA2010 405.8 HANDRAILS.
RAMP RUNS WITH A RISE GREATER THAN 6 INCHES SHALL HAVE HANDRAILS COMPLYING WITH ADA2010 SECTION 505.

ADA2010 405.9.2 EDGE PROTECTION CURB OR BARRIER.
A CURB OR BARRIER SHALL BE PROVIDED THAT PREVENTS THE PASSAGE OF A 4 INCH DIAMETER SPHERE, WHERE ANY PORTION OF THE SPHERE IS WITHIN 4 INCHES OF THE FINISH FLOOR OR GROUND SURFACE.

HANDRAILS

ADA2010 505.1 GENERAL.
HANDRAILS PROVIDED ALONG WALKING SURFACES COMPLYING WITH 403, REQUIRED AT RAMPS COMPLYING WITH 405, AND REQUIRED AT STAIRS COMPLYING WITH 504 SHALL COMPLY WITH 505.

ADA2010 505.2 WHERE REQUIRED.
HANDRAILS SHALL BE PROVIDED ON BOTH SIDES OF STAIRS AND RAMPS.

ADA2010 505.3 CONTINUITY.
HANDRAILS SHALL BE CONTINUOUS WITHIN THE FULL LENGTH OF EACH STAIR FLIGHT OR RAMP RUN. INSIDE HANDRAILS ON SWITCHBACK OR DOGLEG STAIRS AND RAMPS SHALL BE CONTINUOUS BETWEEN FLIGHTS OR RUNS.

ADA2010 505.4 HEIGHT.
TOP OF GRIPPING SURFACES OF HANDRAILS SHALL BE 34 INCHES MINIMUM AND 38 INCHES MAXIMUM VERTICALLY ABOVE RAMP SURFACES. HANDRAILS SHALL BE AT A CONSISTENT HEIGHT ABOVE RAMP SURFACES.

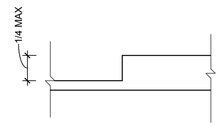
ADA2010 505.5 CLEARANCE.
CLEARANCE BETWEEN HANDRAIL GRIPPING SURFACES AND ADJACENT SURFACES SHALL BE 1½ MINIMUM.

ADA2010 505.6 GRIPPING SURFACE.
HANDRAIL GRIPPING SURFACES SHALL BE CONTINUOUS ALONG THEIR LENGTH AND SHALL NOT BE OBSTRUCTED ALONG THEIR TOPS OR SIDES. THE BOTTOMS OF HANDRAIL GRIPPING SURFACES SHALL NOT BE OBSTRUCTED FOR MORE THAN 20 PERCENT OF THEIR LENGTH. WHERE PROVIDED, HORIZONTAL PROJECTIONS SHALL OCCUR 1½ MINIMUM BELOW THE BOTTOM OF THE HANDRAIL GRIPPING SURFACE.

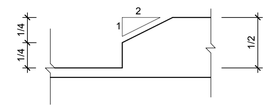
ADA2010 505.7.1 CIRCULAR CROSS SECTION.
HANDRAIL GRIPPING SURFACES WITH A CIRCULAR CROSS SECTION SHALL HAVE AN OUTSIDE DIAMETER OF 1¼ INCHES MINIMUM AND 2 INCHES MAXIMUM.

ADA2010 505.7.2 NON-CIRCULAR CROSS SECTIONS.
HANDRAIL GRIPPING SURFACES WITH A NON-CIRCULAR CROSS SECTION SHALL HAVE A PERIMETER DIMENSION OF 4 INCHES MINIMUM AND 6¼ INCHES MAXIMUM, AND A CROSS-SECTION DIMENSION OF 2¼ INCHES MAXIMUM.

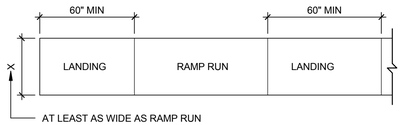
ADA2010 505.10.1 TOP AND BOTTOM EXTENSION AT RAMPS.
RAMP HANDRAILS SHALL EXTEND HORIZONTALLY ABOVE THE LANDING FOR 12 INCHES MINIMUM BEYOND THE TOP AND BOTTOM OF RAMP RUNS. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT RAMP RUN.



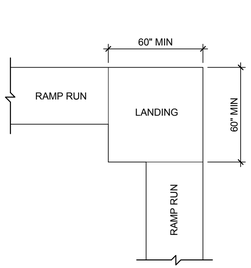
303.2 VERTICAL CHANGE IN LEVEL



303.3 BEVELED CHANGE IN LEVEL

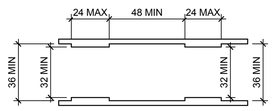


STRAIGHT

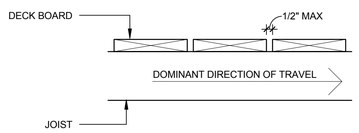


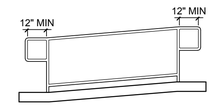
CHANGE IN DIRECTION

405.7 RAMP LANDINGS

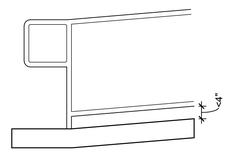


403.5.1 CLEAR WIDTH OF AN ACCESSIBLE ROUTE

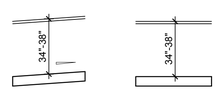




505.10.1 TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS

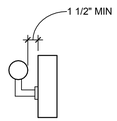


405.9.2 CURB OR BARRIER EDGE PROTECTION

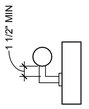


RAMPS WALKING SURFACES

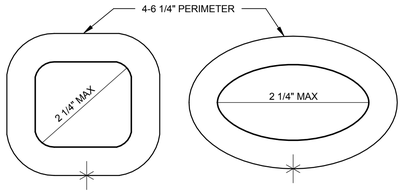
505.4 HANDRAIL HEIGHT



505.5 HANDRAIL CLEARANCE



505.6 HORIZONTAL PROJECTIONS BELOW GRIPPING SURFACE



505.7.2 HANDRAIL NON-CIRCULAR CROSS SECTION

SU+RE HOUSE
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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
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06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

RAMP & HANDRAIL NOTES

G-012

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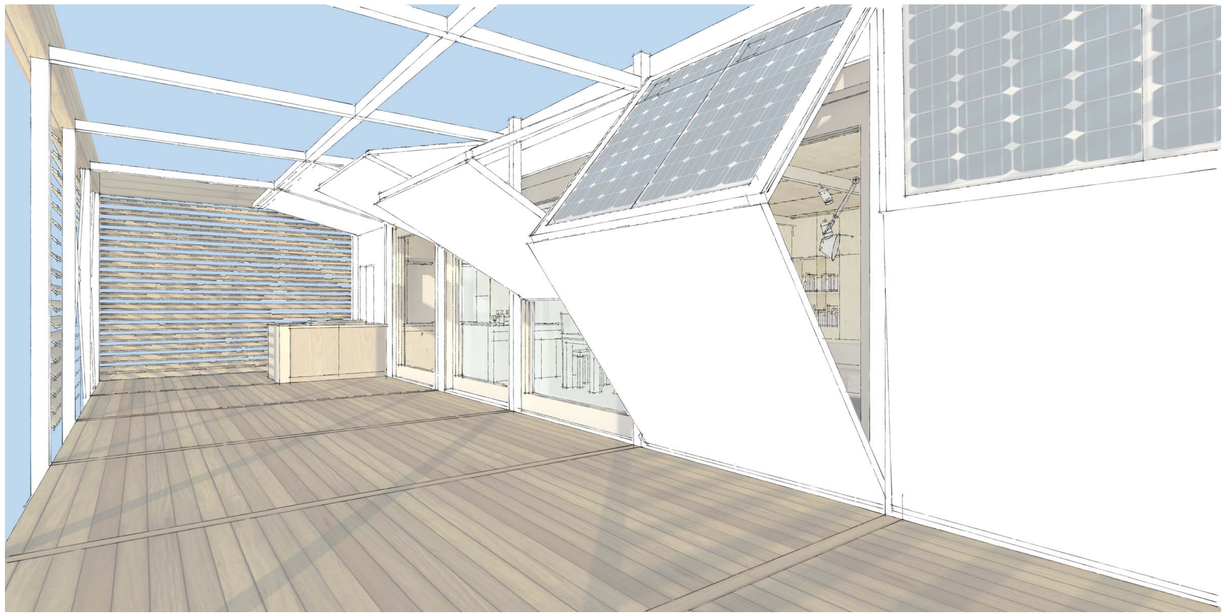
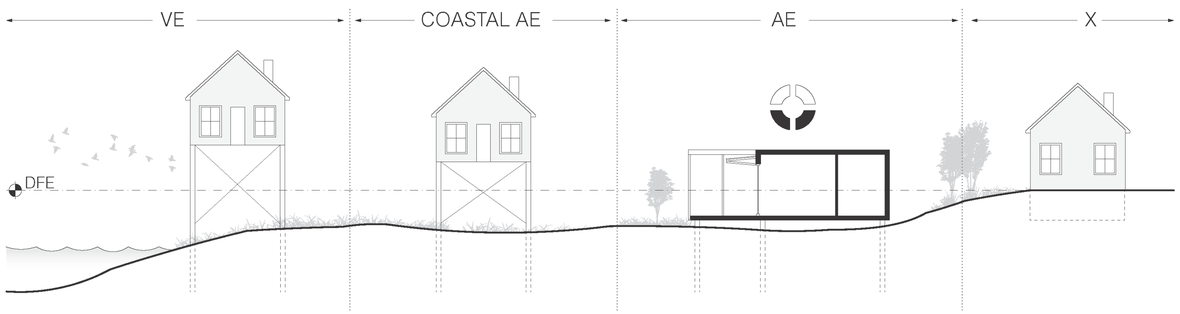


C1 VIEW FROM SOUTH DECK

THE SURE HOUSE IS DESIGNED FOR NEW YORK AND NEW JERSEY COASTAL CITIES AND TOWNS, ESPECIALLY THOSE WHICH EXPERIENCED SEVERE DAMAGE FROM HURRICANE SANDY DURING THE FALL OF 2012. THE STORM SURGE, HIGH WINDS AND FLOODING ASSOCIATED WITH HURRICANE SANDY RESHAPED THE LANDSCAPE ALONG THE ATLANTIC COAST AND HIGHLIGHTED THE VULNERABILITY OF SHORE NEIGHBORHOODS. IN ADDITION TO THESE PHYSICAL CHANGES, NY AND NJ COASTAL TOWNS HAVE EXPERIENCED DRAMATIC CHANGES AS A RESULT OF ECONOMIC AND POLICY FACTORS. CURRENTLY, FEMA AND THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) POLICY ARE DRIVING THE REBUILDING OF THESE COMMUNITIES, OFTEN RESULTING IN COSTLY RENOVATIONS AND, SADLY, UNSUCCESSFUL STREETSCAPES. THE SURE HOUSE WILL FULFILL THE NEED IN THESE REGIONS FOR DURABLE, SAFE, AND RESILIENT SUSTAINABLE HOMES. THE INCLUSION OF STORM AND FLOOD RESILIENCE TO THIS SOLAR-POWERED HOME SETS IT APART FROM OTHER HOMES AND FULFILLS A CRITICAL NEED WITHIN THE HOUSING STOCK OF THIS AREA, SERVING AS A MODEL FOR FUTURE RESILIENT DEVELOPMENT AND CONSTRUCTION IN STORM- VULNERABLE ENVIRONMENTS.

THESE SHORE REGIONS HAVE A RICH HISTORY AS VIBRANT MIDDLE-CLASS SUMMER COMMUNITIES; HOWEVER, IN ADDITION TO THE SUMMER VISITORS, THESE REGIONS ARE ALSO HOME TO TIGHT-KNIT NEIGHBORHOODS OF FULL-TIME RESIDENTS WHO REPRESENT THE TARGET MARKET FOR THE SURE HOUSE. THE ARCHITECTURE OF THESE COMMUNITIES IS VARIED AND VIBRANT, WITH MANY HISTORIC HOMES ALONGSIDE CONTEMPORARY AND MID-CENTURY MODERN STRUCTURES. THE SURE HOUSE DRAWS FROM THIS RICH CULTURE FOR ITS STYLE, MATERIALS AND PATTERNS OF LIVING TO CREATE A SAFE, SUSTAINABLE HOME WHICH WILL FIT WELL WITHIN THESE DEVELOPED COASTAL AREAS.



A1 SURE HOUSE LOCATION DIAGRAM

NTS

D5 COASTAL LOCATION

NTS

B5 COASTAL COMMUNITY

NTS

A5 TYP. BLOCK

NTS

SU+RE HOUSE

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01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

DESIGN INTENT & TARGET MARKET DESCRIPTION

G-013

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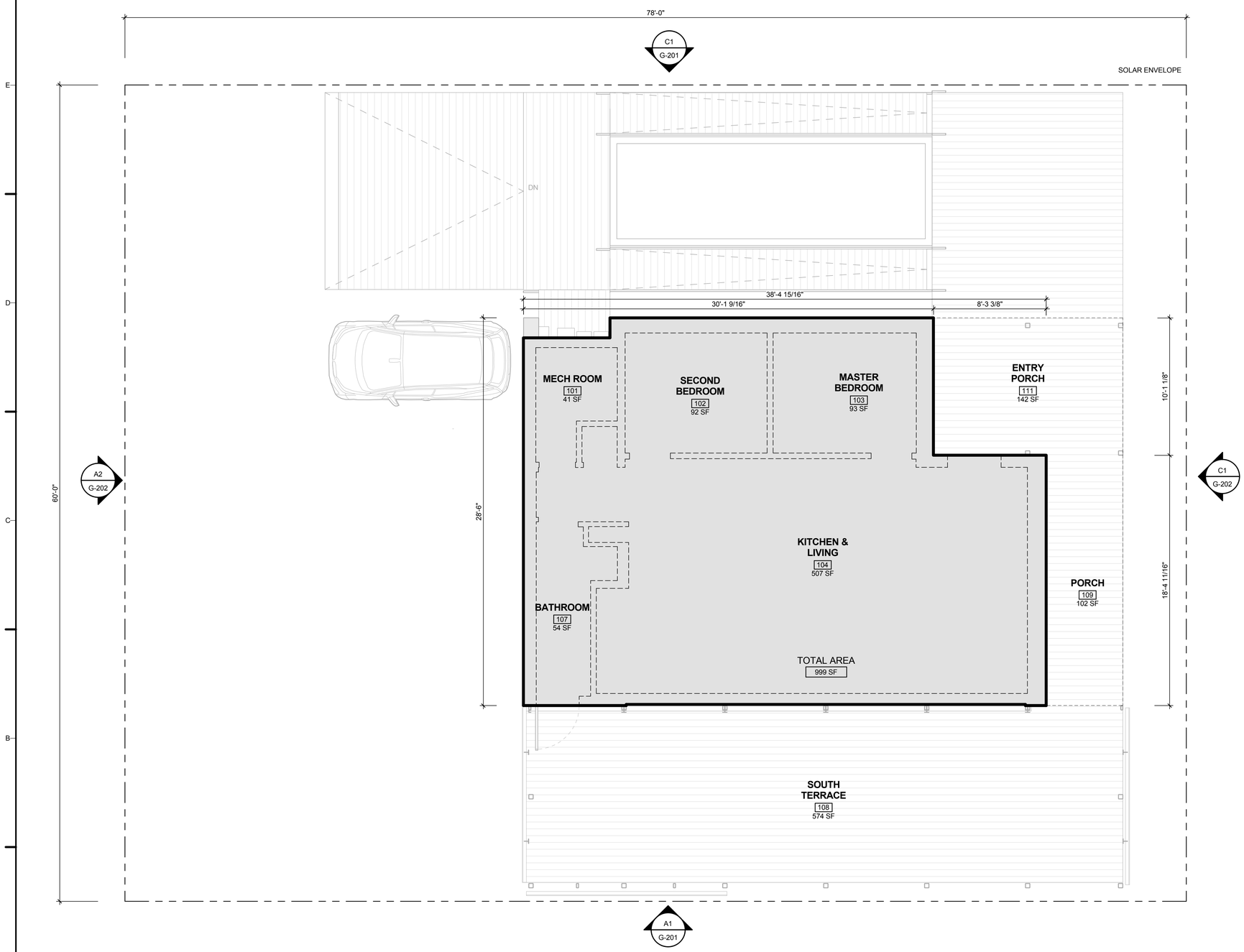

A1 FINISHED SQUARE FOOTAGE COMPLIANCE PLAN

1/4" = 1'-0"

GENERAL SHEET NOTES:

1. ALL AREA CALCULATIONS ARE MEASURED IN ACCORDANCE WITH ANSI STANDARD Z765-2003

2. CALCULATION OF SQUARE FOOTAGE DEVELOPED BY USING THE PLANS OF THE HOUSE.

3. FINISHED AREA MEASURED TO THE EXTERIOR FINISHED SURFACE OF OUTSIDE WALLS.

4. THE FINISHED SQUARE FOOTAGE OF THE HOUSE IS REPORTED TO THE NEAREST WHOLE SQUARE FOOT FOR ABOVE-GRADE FINISHED SQUARE FOOTAGE AND FOR BELOW-GRADE FINISHED SQUARE FOOTAGE FOR ALL ROOMS INCLUDED IN THE SQUARE FOOTAGE CALCULATION.

5. TOTAL AREA = **999 SF**

REFERENCE KEYNOTES:

SHEET KEYNOTES:

DRAWING KEY

SU+RE HOUSE

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01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

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SHEET TITLE

FINISHED SQUARE FOOTAGE COMPLIANCE PLAN

G-101

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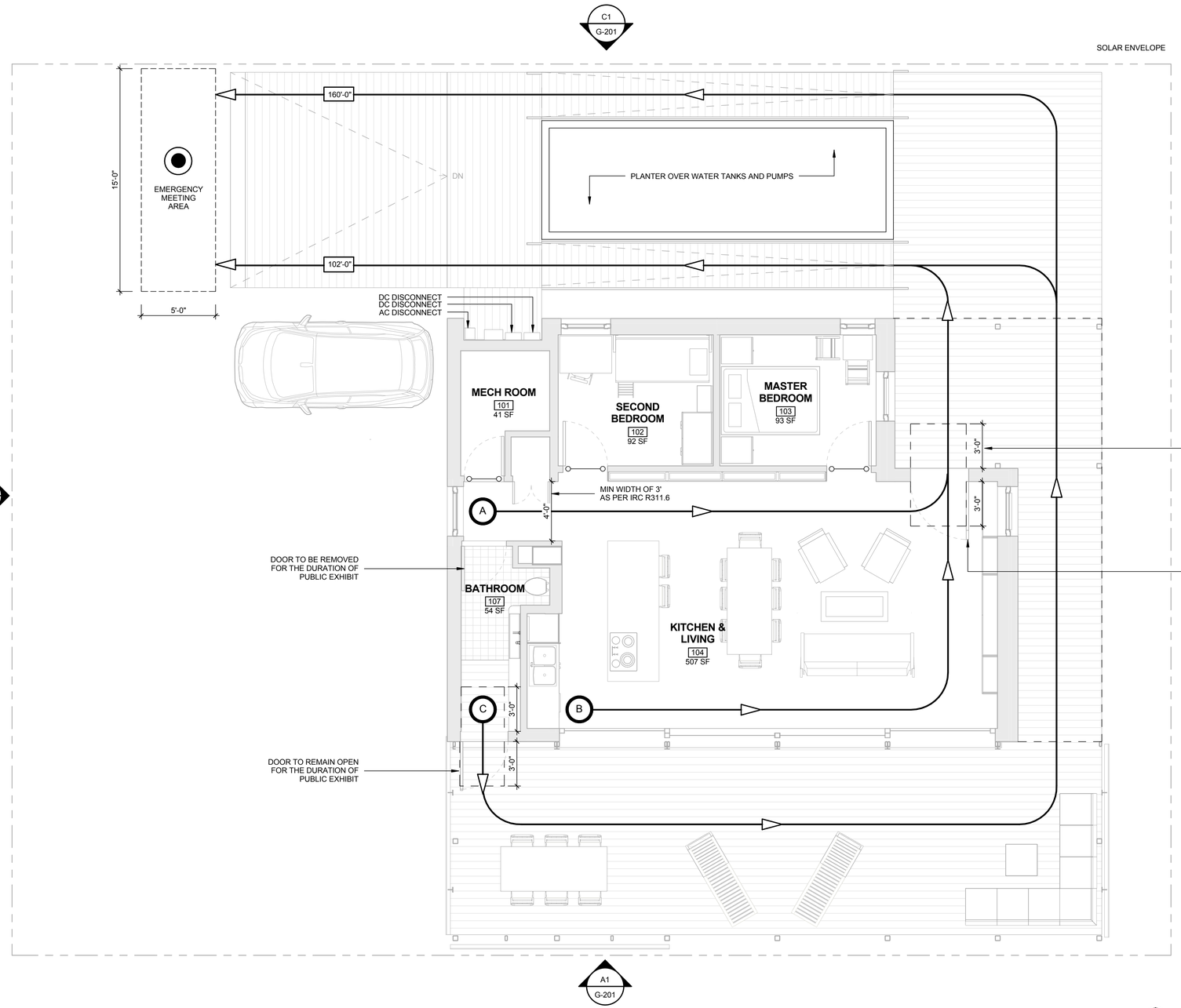

A1 EMERGENCY EGRESS PLAN

1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

1. APPLICABLE CODES:

   2015 SOLAR DECATHLON BUILDING CODE
   2015 SOLAR DECATHLON RULES
   2015 SOLAR DECATHLON MINIMUM BUILDING DESIGN CONSIDERATIONS

   2012 IBC INTERNATIONAL BUILDING CODE
   2012 IRC INTERNATIONAL RESIDENTIAL CODE
   2012 NFPA NATIONAL ELECTRIC CODE
   2012 ICC INTERNATIONAL FIRE CODE

   2009 IBC INTERNATIONAL BUILDING CODE NEW JERSEY EDITION

2. ACCESSIBILITY:

   2012 STANDARD FOR ACCESSIBLE DESIGN

3.REFERENCE CODES:

   2012 IRC CHAPTER 3
   SECTION R302.10 FIRE-RESISTANT CONSTRUCTION
   SECTION R308 GLAZING
   SECTION R310.1 EMERGENCY ESCAPE AND RESCUE REQUIRED
   SECTION R 311 MEANS OF EGRESS
   SECTION R314 SMOKE ALARM
   SECTION R314.4 POWER SOURCE SMOKE ALARMS
   SECTION 315 CARBON MONOXIDE ALARMS

   2012 IBC CHAPTER 3
   SECTION 303 ASSEMBLY GROUP A

   2012 IBC CHAPTER 10
   SECTION 1014 EXIT ACCESS
   SECTION 1015 EXIT AND EXIT ACCESS DOORWAYS
   TABLE 1015.1 SPACES WITH ONE EXIT OR ACCESS DOORWAY
   TABLE 1016.1 EXIT ACCESS TRAVEL DISTANCE GROUP A WITH SPRINKLER SYSTEM: 250 FT
   TABLE 1004.1.2 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT, ASSEMBLY UNCONCENTRATED: 15 NET SQUARE FOOT PER OCCUPANT
   TABLE 1021.2 STORIES WITH ONE EXIT GROUP A: MAX 49 OCCUPANTS AND 75 FEET TRAVEL DISTANCE

   2012 IRC CHAPTER 29
   SECTION P2904 DWELLING UNIT FIRE SPRINKLER SYSTEMS
   NFPA 275 STANDARD METHOD OF FIRE TESTS FOR THE ELEVATION OF THERMAL BARRIERS
   NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE

DRAWING KEY

ENTRANCE NOT OPEN TO PUBLIC

EMERGENCY MEETING AREA

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01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

EMERGENCY EGRESS PLAN

G-102

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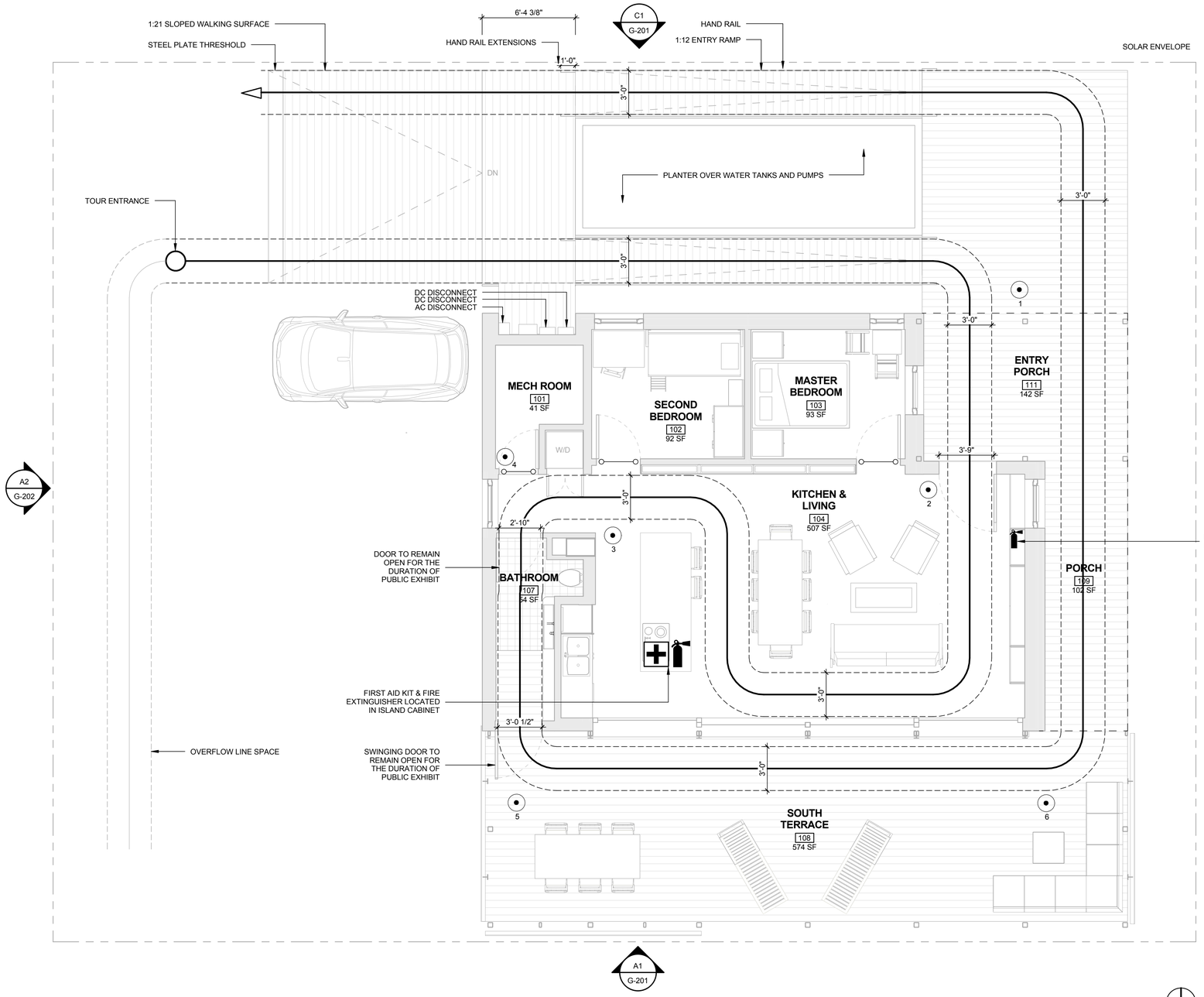

A1 ADA COMPLIANT TOUR ROUTE
1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

1. APPLICABLE CODES

SD BUILDING CODE 4-1.
AN ACCESSIBLE ROUTE SHALL BE PROVIDED WITHIN THE UNIT TO ALL SPACES ACCESSIBLE TO THE PUBLIC AS PART OF THE TOUR. COMPONENTS OF THE ACCESSIBLE ROUTE USED BY THE TOURING PUBLIC MUST COMPLY WITH 2010 STANDARD FOR ACCESSIBLE DESIGN. IF ANY OF THE FEATURES ARE AVAILABLE AND INTENDED FOR USE BY THE PUBLIC, THEY SHALL BE ACCESSIBLE IN ACCORDANCE WITH THE 2010 STANDARD FOR ACCESSIBLE DESIGN.

ADA2010 402.2 COMPONENTS.
ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A RUNNING SLOPE NOT STEEPER THAN 1:20, DOORWAYS, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, ELEVATORS, AND PLATFORM LIFTS.

ADA2010 403.3 SLOPE.
THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20. THE CROSS SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:48.

ADA2010 303.2 VERTICAL CHANGE IN LEVEL.
CHANGES IN LEVEL OF 1/4 INCH HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL.

ADA2010 303.3 BEVELED.
CHANGES IN LEVEL BETWEEN 1/4 INCH HIGH MINIMUM AND 1/2 INCH HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2.

ADA2010 303.4 RAMPS.
CHANGES IN LEVEL GREATER THAN 1/2 INCH HIGH SHALL BE RAMPED, AND SHALL COMPLY WITH 405 OR 406.

ADA2010 403.5.1 CLEAR WIDTH.
THE CLEAR WIDTH OF WALKING SURFACES SHALL BE 36 INCHES MINIMUM.

EXCEPTION: THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32 INCHES MINIMUM FOR A LENGTH OF 24 INCHES MAXIMUM PROVIDED THAT REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48 INCHES LONG MINIMUM AND 36 INCHES WIDE MINIMUM.

ADA2010 404.1 GENERAL.
DOORS, DOORWAYS, AND GATES THAT ARE PART OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH SECTION 404.

SD BUILDING CODE 4-5.
A. DOORS THAT CAN BE FIXED IN AN OPEN POSITION MAY BE ACCEPTED AS PART OF THE ACCESSIBLE ROUTE IF 32 IN. MINIMUM CLEARANCE IS PROVIDED THROUGH THE DOOR OPENING WITH THE DOOR SECURED IN THE FULLY OPEN POSITION.
B. DOORS WITHOUT REQUIRED MANEUVERING CLEARANCES THAT ARE INTENDED TO REMAIN OPEN DURING THE PUBLIC TOUR MUST BE CLEARLY IDENTIFIED ON THE PLANS AND APPROVED BY THE SOLAR DECATHLON BUILDING OFFICIAL.

ADA2010 404.2.3 DOORWAY CLEAR WIDTH.
DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES MINIMUM. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES AND 80 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES.

ADA2010 405.8 HANDRAILS.
RAMP RUNS WITH A RISE GREATER THAN 6 INCHES SHALL HAVE HANDRAILS COMPLYING WITH ADA2010 SECTION 505.

ADA2010 405.9.2 EDGE PROTECTION CURB OR BARRIER.
A CURB OR BARRIER SHALL BE PROVIDED THAT PREVENTS THE PASSAGE OF A 4 INCH DIAMETER SPHERE, WHERE ANY PORTION OF THE SPHERE IS WITHIN 4 INCHES OF THE FINISH FLOOR OR GROUND SURFACE.

DRAWING KEY

- ENTRANCE NOT OPEN TO PUBLIC
- FIRE EXTINGUISHER
- FIRST-AID KIT
- TOUR GUIDE LOCATIONS

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01	10-09-2014	80% DD SET

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SHEET TITLE

ADA TOUR ROUTE COMPLIANCE PLAN

G-103

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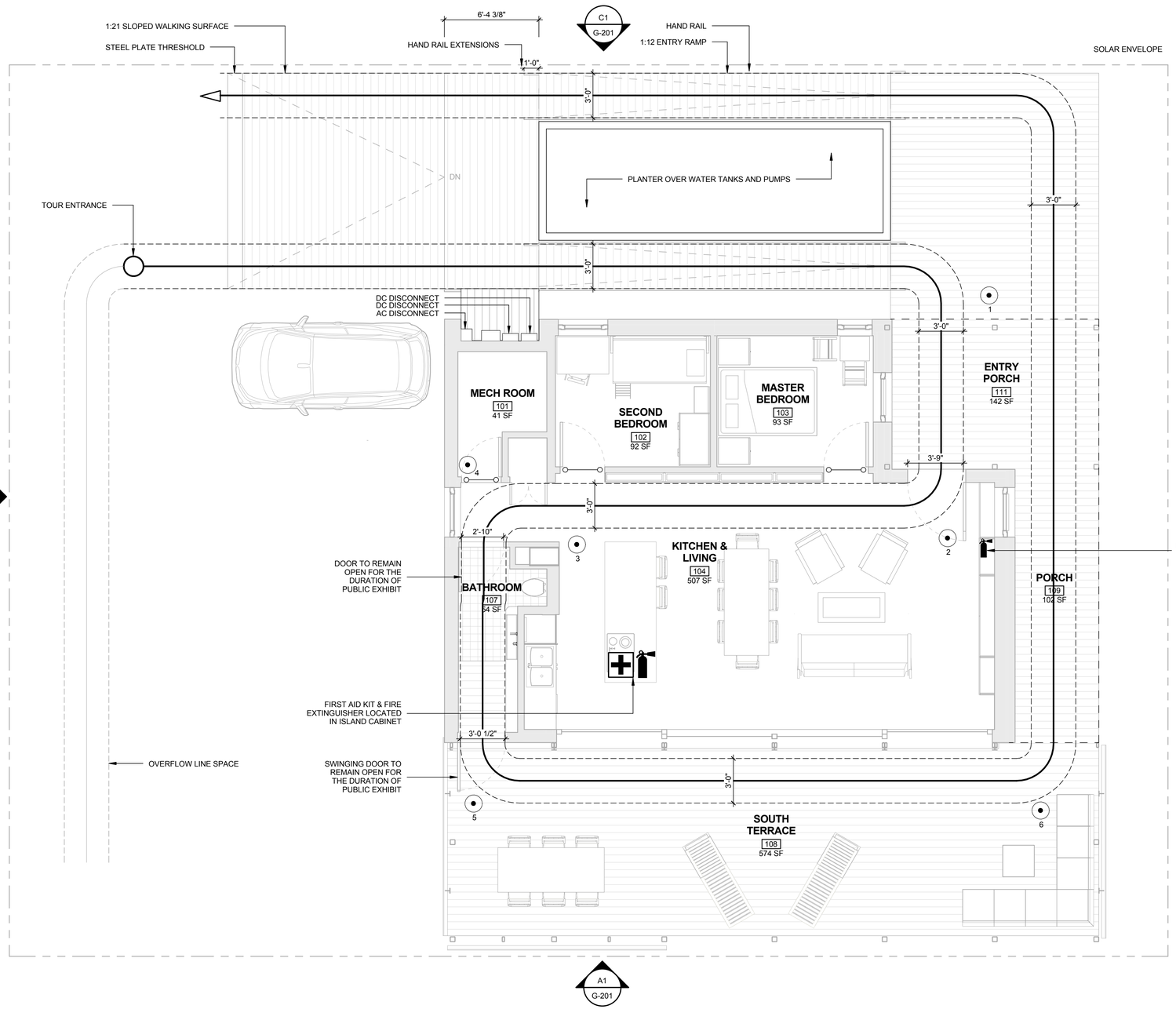

A1 ADA COMPLIANT TOUR ROUTE - SHORT ROUTE

1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

1. APPLICABLE CODES

SD BUILDING CODE 4-1.
AN ACCESSIBLE ROUTE SHALL BE PROVIDED WITHIN THE UNIT TO ALL SPACES ACCESSIBLE TO THE PUBLIC AS PART OF THE TOUR. COMPONENTS OF THE ACCESSIBLE ROUTE USED BY THE TOURING PUBLIC MUST COMPLY WITH 2010 STANDARD FOR ACCESSIBLE DESIGN. IF ANY OF THE FEATURES ARE AVAILABLE AND INTENDED FOR USE BY THE PUBLIC, THEY SHALL BE ACCESSIBLE IN ACCORDANCE WITH THE 2010 STANDARD FOR ACCESSIBLE DESIGN.

ADA2010 402.2 COMPONENTS.
ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A RUNNING SLOPE NOT STEEPER THAN 1:20, DOORWAYS, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, ELEVATORS, AND PLATFORM LIFTS.

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CHANGES IN LEVEL OF 1/4 INCH HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL.

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CHANGES IN LEVEL BETWEEN 1/4 INCH HIGH MINIMUM AND 1/2 INCH HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2.

ADA2010 303.4 RAMPS.
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ADA2010 404.1 GENERAL.
DOORS, DOORWAYS, AND GATES THAT ARE PART OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH SECTION 404.

SD BUILDING CODE 4-5.
A. DOORS THAT CAN BE FIXED IN AN OPEN POSITION MAY BE ACCEPTED AS PART OF THE ACCESSIBLE ROUTE IF 32 IN. MINIMUM CLEARANCE IS PROVIDED THROUGH THE DOOR OPENING WITH THE DOOR SECURED IN THE FULLY OPEN POSITION.
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ADA2010 404.2.3 DOORWAY CLEAR WIDTH.
DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES MINIMUM. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES AND 80 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES.

ADA2010 405.8 HANDRAILS.
RAMP RUNS WITH A RISE GREATER THAN 6 INCHES SHALL HAVE HANDRAILS COMPLYING WITH ADA2010 SECTION 505.

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DRAWING KEY

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01	10-09-2014	80% DD SET

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SHEET TITLE

ADA TOUR ROUTE COMPLIANCE PLAN

G-104

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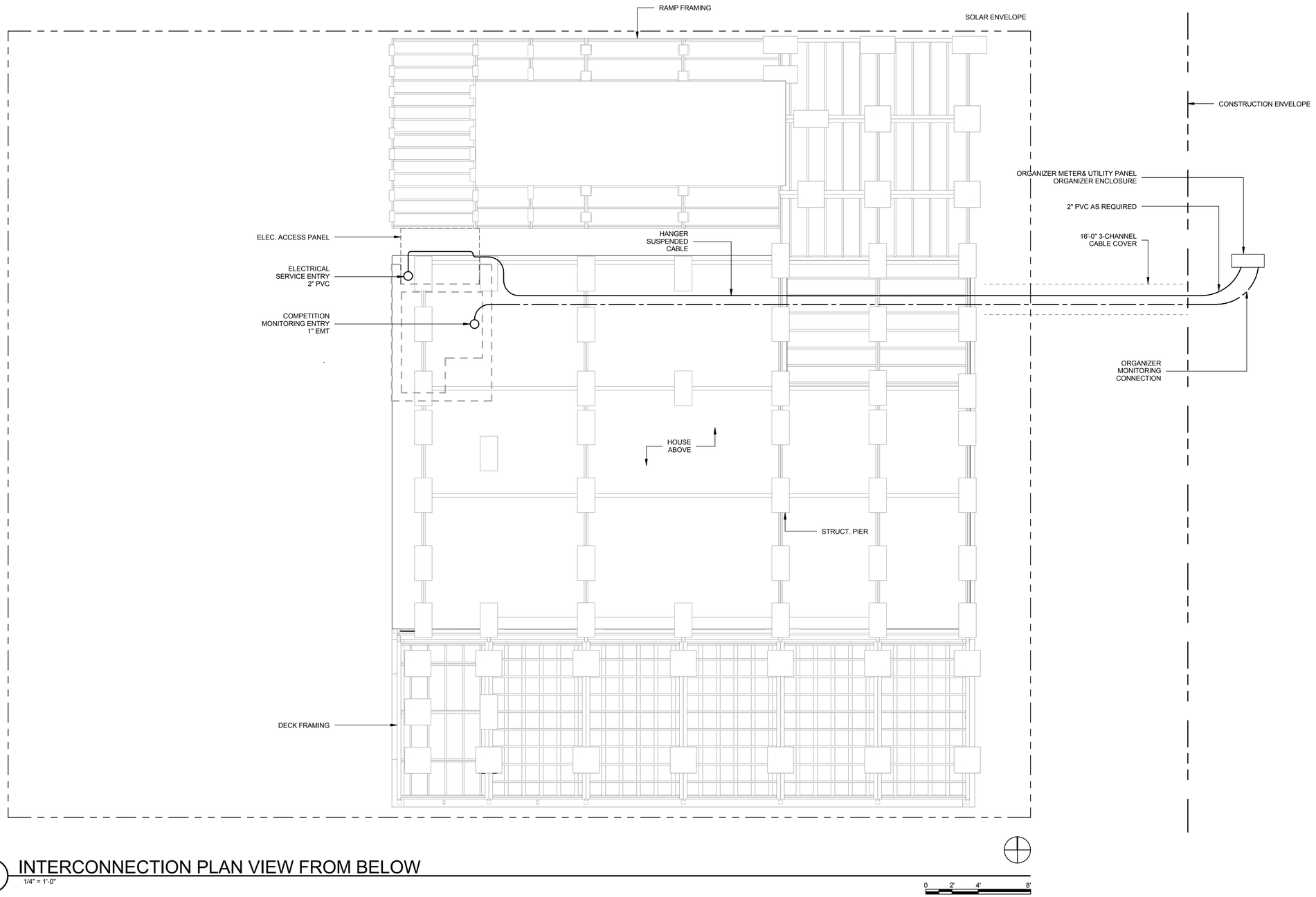

A1 INTERCONNECTION PLAN VIEW FROM BELOW

1/4" = 1'-0"

0 2' 4' 8'

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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INTERCONNECTION PLAN

G-121

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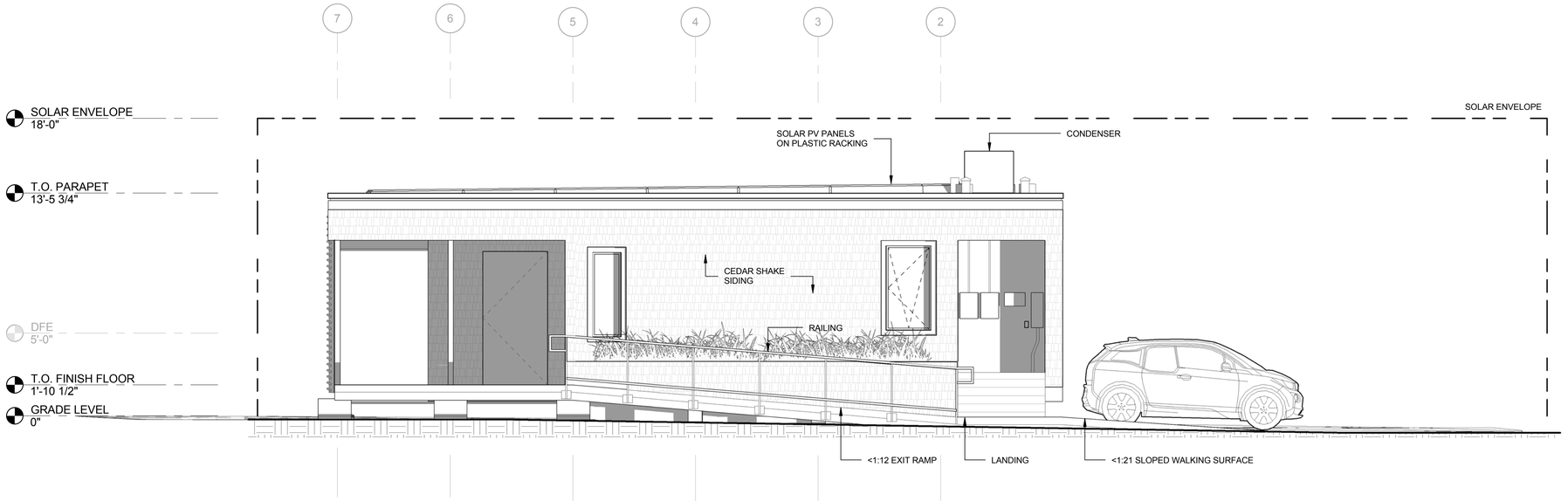
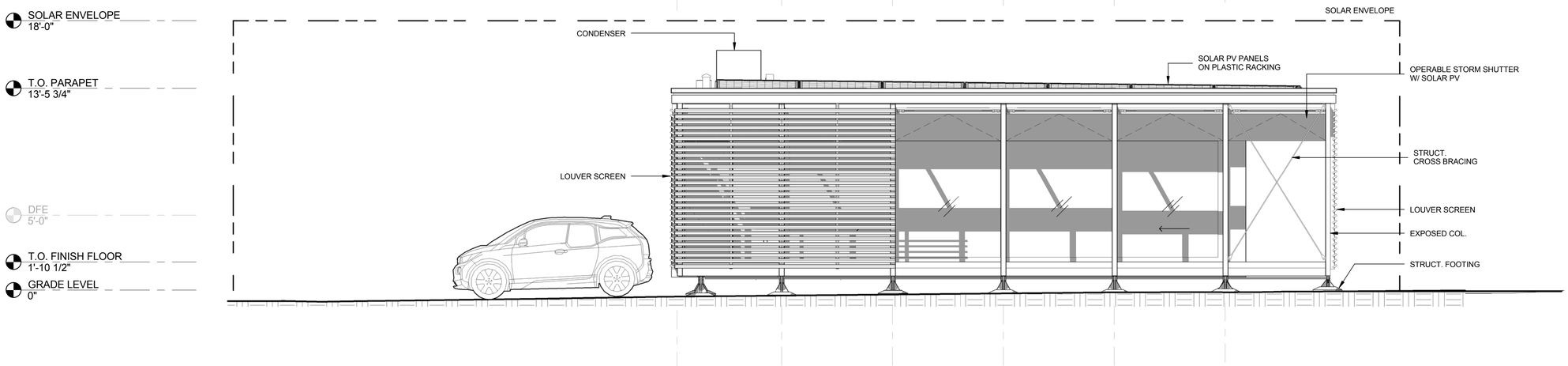


C1 NORTH SOLAR COMPLIANCE ELEVATION

1/4" = 1'-0"

0 2' 4' 8'



A1 SOUTH SOLAR COMPLIANCE ELEVATION

1/4" = 1'-0"

0 2' 4' 8'

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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CLIENT

U.S. DEPARTMENT OF ENERGY

SOLAR DECATHLON 2015

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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

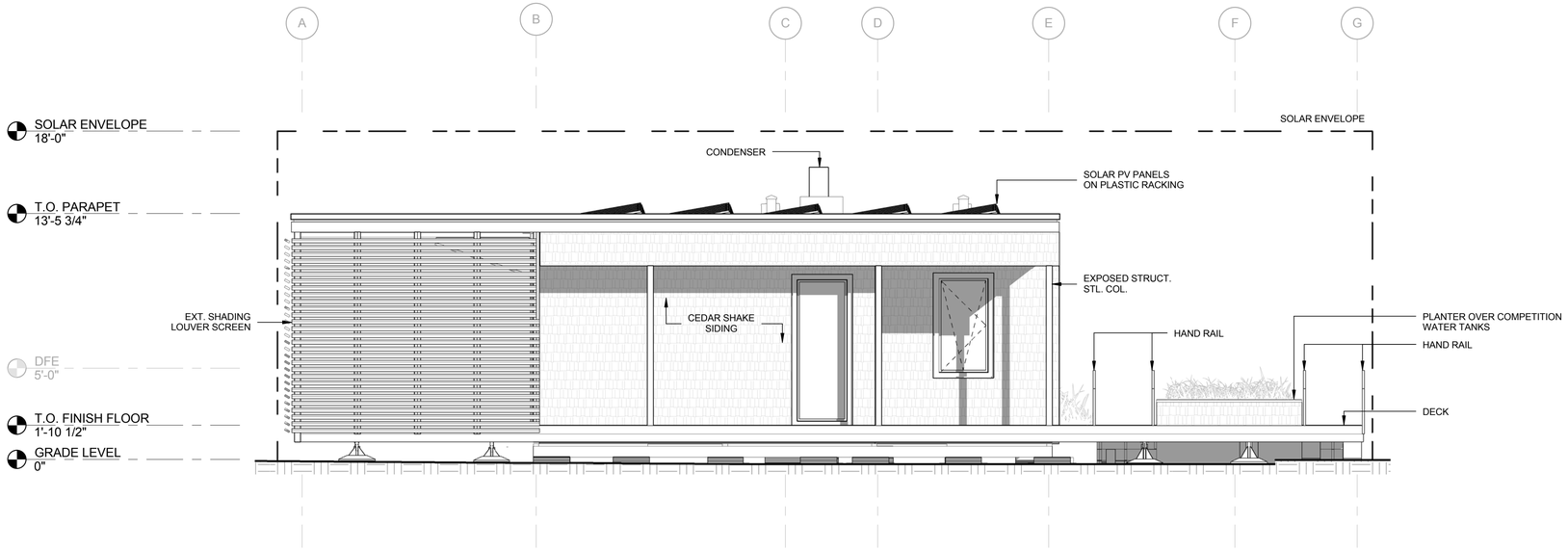
LOT NUMBER: LOT #110

SHEET TITLE

SOLAR ENVELOPE COMPLIANCE ELEVATIONS

G-201

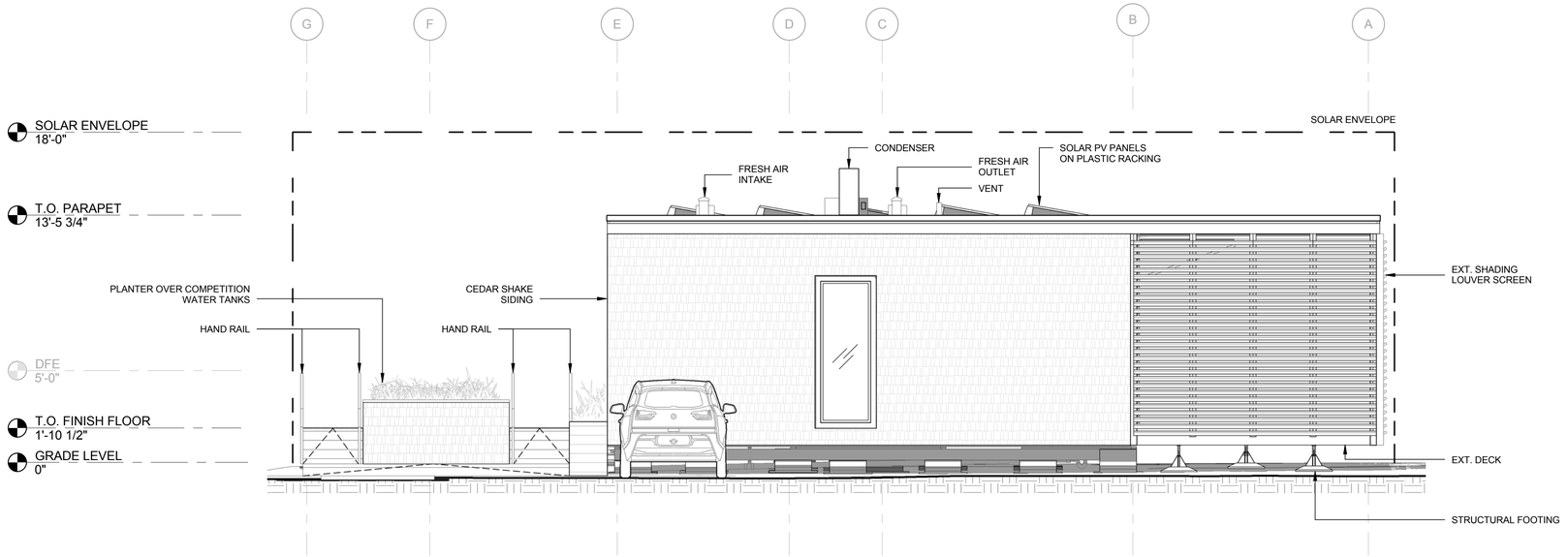
8/16/2015 5:55:02 PM



C1 EAST ELEVATION

1/4" = 1'-0"

0 2' 4' 8'



A1 WEST ELEVATION

1/4" = 1'-0"

0 2' 4' 8'

8/16/2015 5:55:20 PM

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LOT NUMBER:	LOT #110
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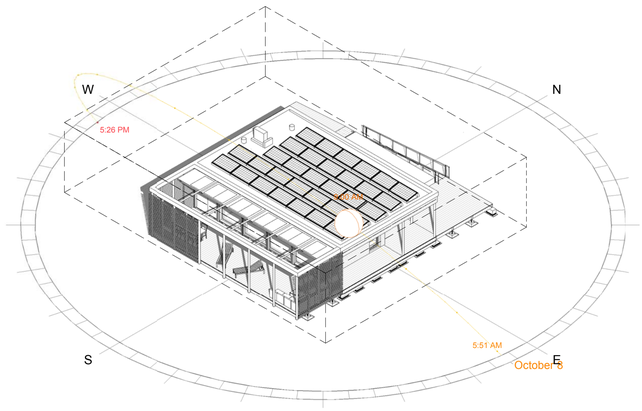
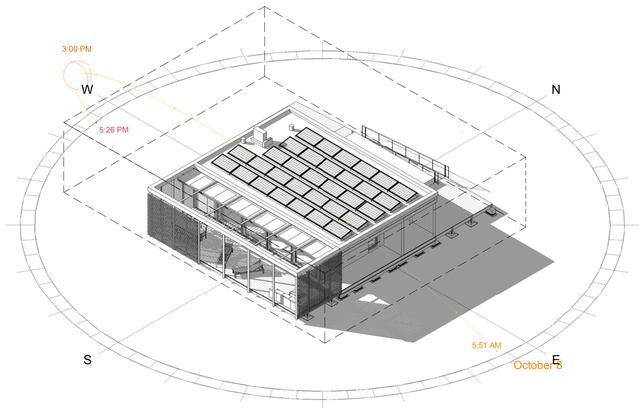
SHEET TITLE

SOLAR ENVELOPE COMPLIANCE ELEVATIONS

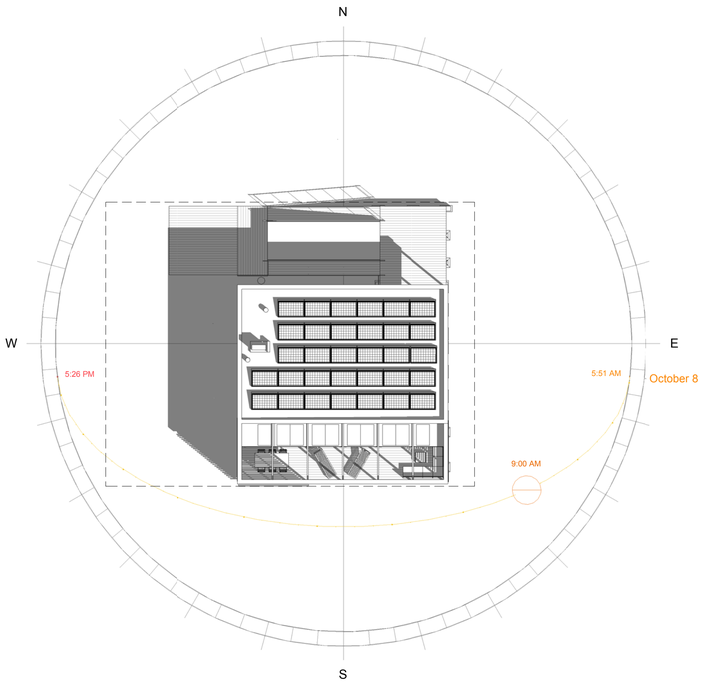
G-202



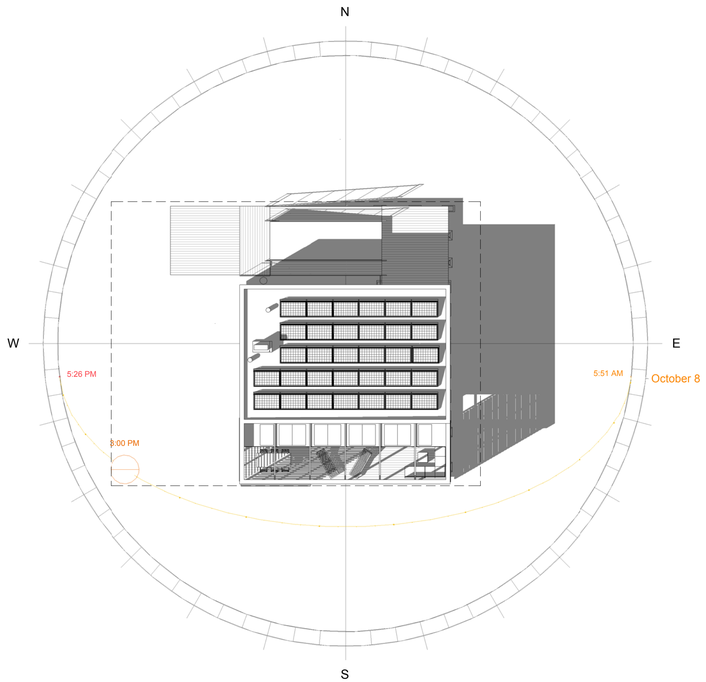
C1 10/8 SHADED AXONOMETRIC 9AM



C4 10/8 SHADED AXONOMETRIC 3PM



A1 10/8 SHADED PLAN 9AM



A4 10/8 SHADED PLAN 3PM

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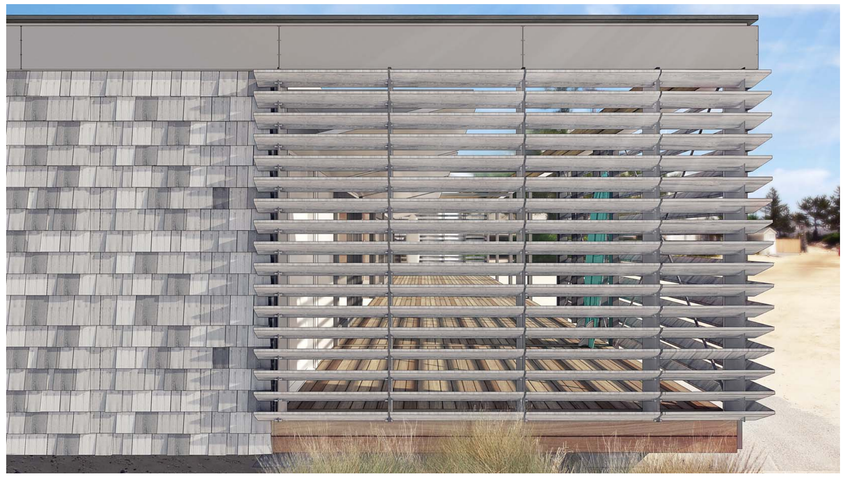
SHEET TITLE

SHADING DIAGRAMS

G-601

8/16/2015 5:55:40 PM

C1 SOUTH ELEVATION
NTS



C4 WEST ELEVATION LOUVER
NTS

A1 SOUTH TERRACE
NTS

A4 INTERIOR
NTS

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SHEET TITLE

GENERAL PROJECT RENDERINGS

G-901

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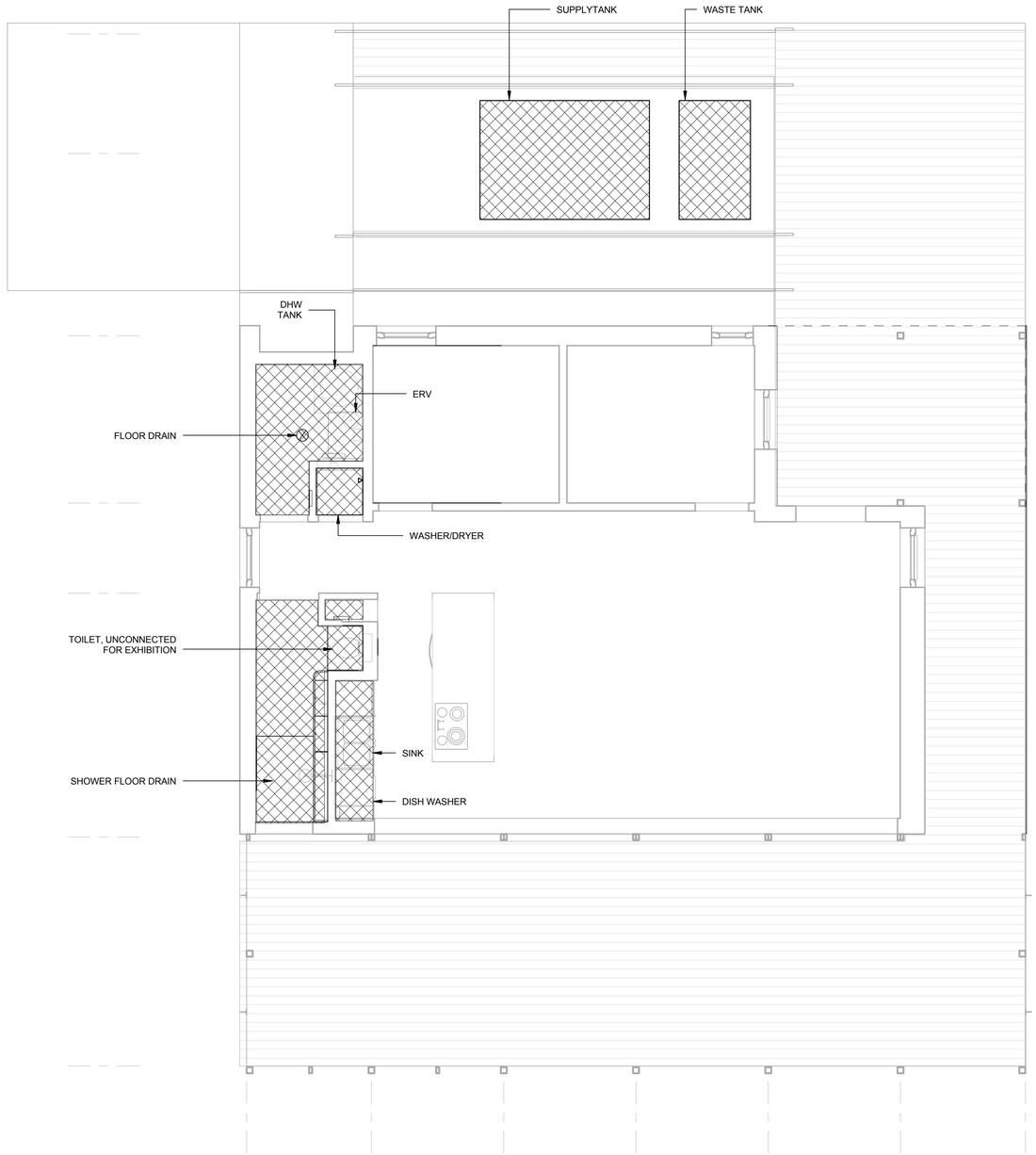

A1 LIQUID LOCATION AND SPILL CONTAINMENT PLAN

1/4" = 1'-0"

0 2' 4' 8'

8/16/2016 6:02:35 PM

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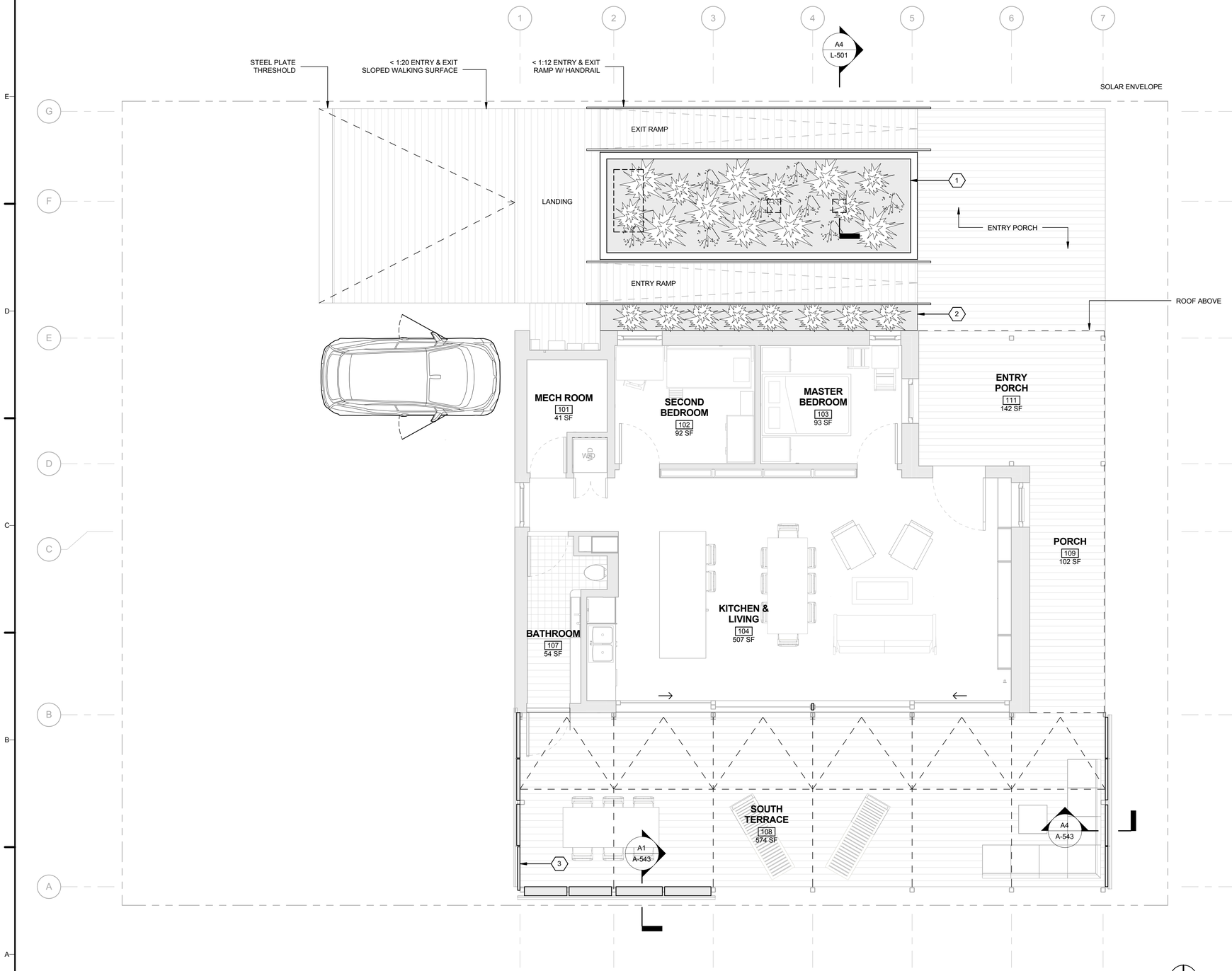
SHEET TITLE

LIQUID LOCATION & SPILL CONTAINMENT

H-101



A1 LANDSCAPE PLAN

1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

REFERENCE KEYNOTES:

1.

SHEET KEYNOTES:

1. LANDSCAPING OVER PLANTERS: **160 SF**
2. LANDSCAPING @ SOUTH RAMP: **45 SF**
3. LANDSCAPING @ SOUTHERN TERRACE: **16 SF**

DRAWING KEY

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SHEET TITLE

LANDSCAPE LOCATIONS

L-101

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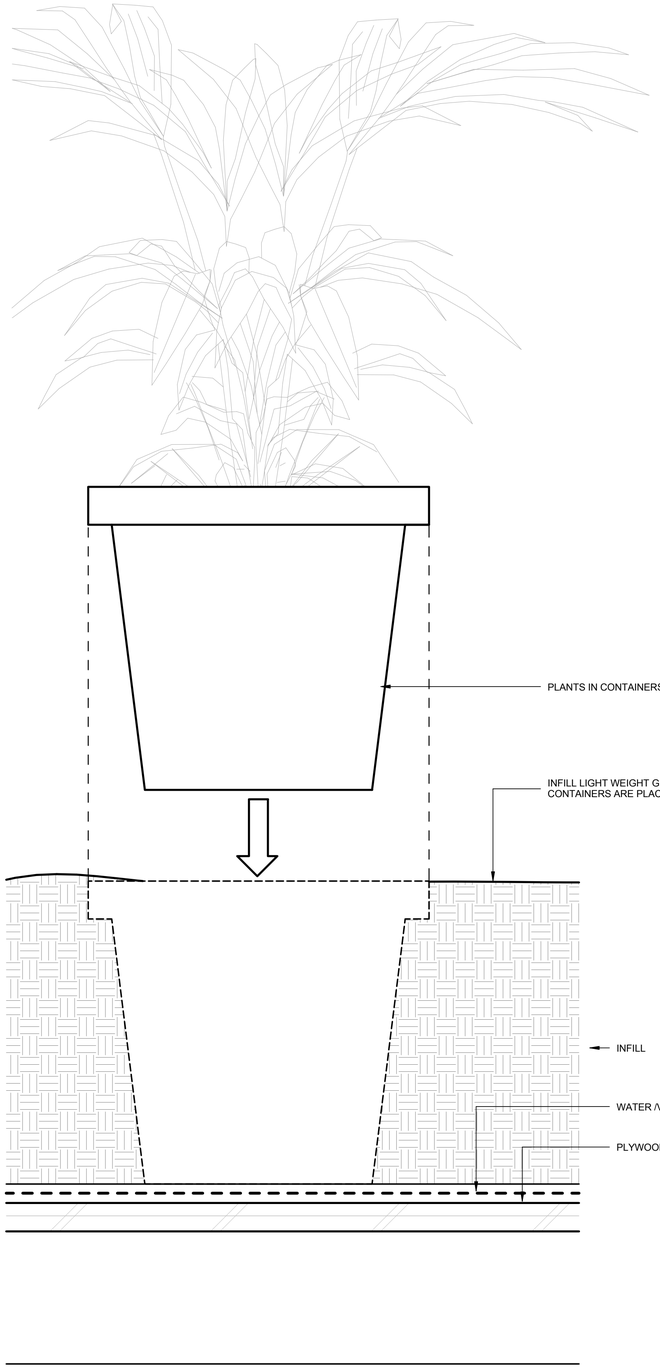
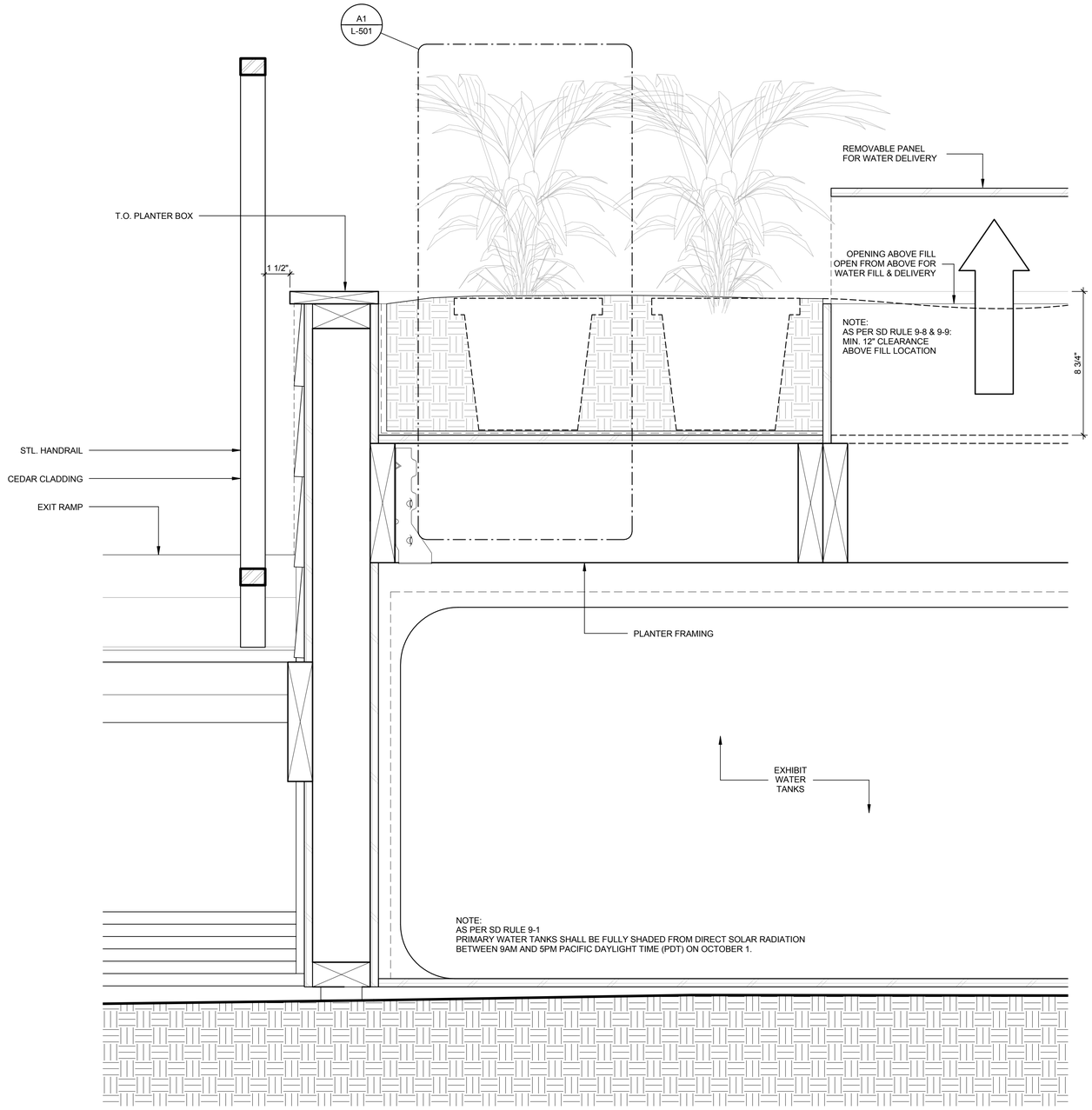


A1 PLANTER ASSEMBLY

6" = 1'-0"

0 1" 2" 3" 4"



A4 NORTH RAMP & PLANTER SECTION

3" = 1'-0"

0 3" 6" 1'

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SHEET TITLE

PLANTING DETAILS

L-501

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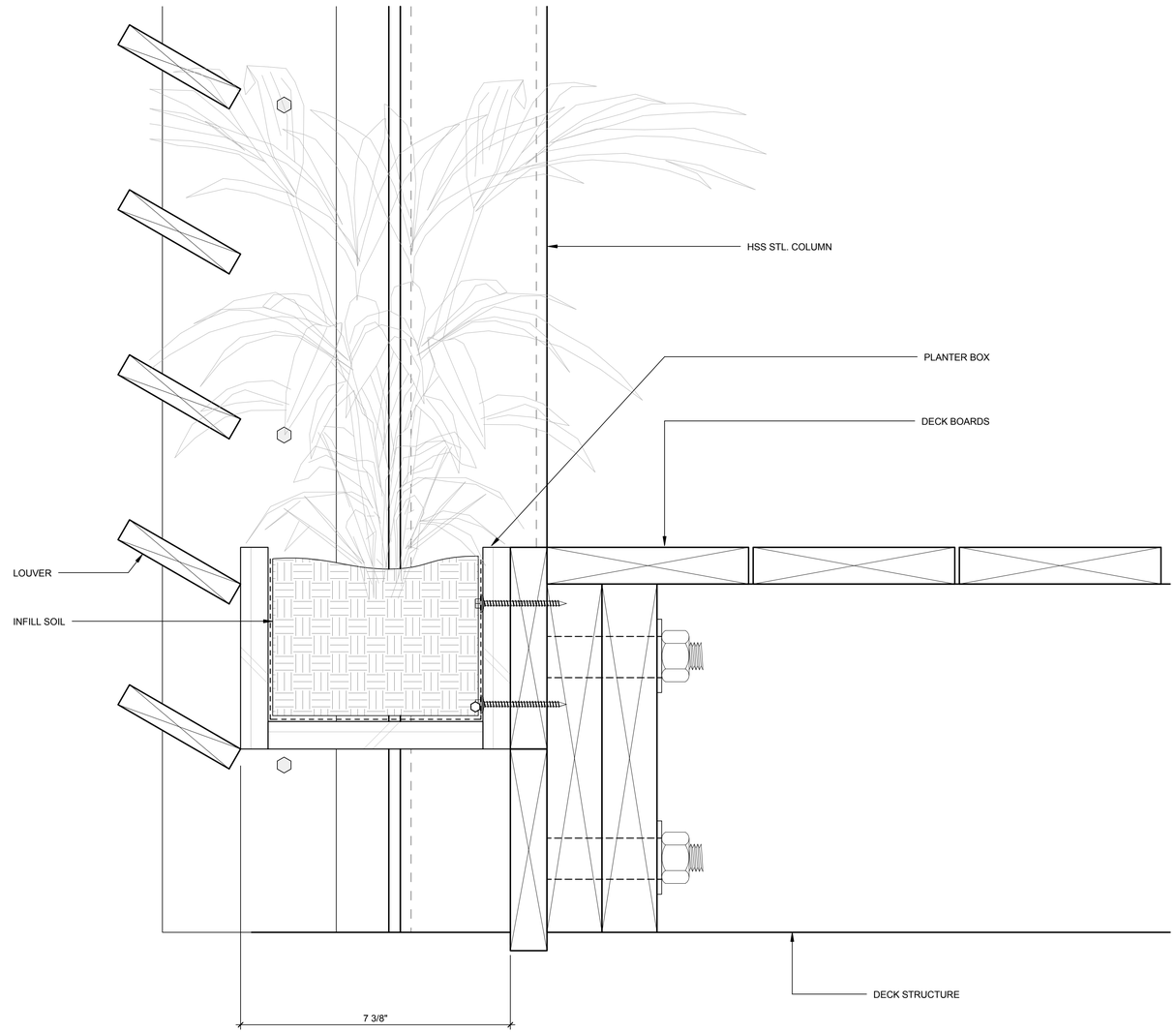

A1 PLANTER DETAIL @ SOUTH TERRACE

6" = 1'-0"

0 1" 2" 3" 4"

8/16/2015 6:04:11 PM

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SHEET TITLE

PLANTING DETAILS

L-502

PLANT SCHEDULE

IMAGE	COMMON NAME	BOTONICAL NAME	PLANT TYPE
	LONGLEAF BUSH LUPINE	LUPINUS LONGIFOLIOUS	SHRUB
	COMMON SUN ROSE	HELIANTHERUM SCOPARIUM	SHRUB
	CLEVELAND SAGE	SALVIA CLEVELANDII	SHRUB
	NARROW LEAF MILKWEED	ASCLEPIAS FASCICULARIS	PERRENIAL
	JUNE GRASS	KOELERIA MACRANTHA	GRASS
	CANE BLUESTEM	BOTHRIOCHLOA BARBINODIS	GRASS
	SMALL FLOWERED MELICA	MELICA IMPERFECTA	GRASS
	PURPLE THREE AWN	ARISTIDA PURPUREA	GRASS
	PURPLE NEEDLE GRASS	STIPA PULCHRA	GRASS
	GIANT WILD RYE	ELYMUS CONDENSATUS	GRASS

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LOT NUMBER: LOT #110

SHEET TITLE

PLANT SCHEDULE

L-601

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GENERAL NOTES

1. ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE APPLICABLE REFFERENCE STANDARDS
    1. 2015 SOLAR DECATHLON BUILDING CODE 2015
    2. 2015 SOLAR DECATHLON RULES
    3. 2015 SOLAR DECATHLON MINIMUM BUILDING DESIGN CONSIDERATIONS
    4. 2012 INTERNATIONAL BUILDING CODE
    5. 2012 INTERNATIONAL RESIDENTIAL CODE
    6. 2009 INTERNATIONAL BUILDING CODE (NEW JERSEY EDITION)
    7. ASCE 7-10, MINIMUM DESIGN CODES FOR BUILDINGS OR OTHER STRUCTURES
    8. AISC STEEL CONSTRUCTION MANUAL
2. ALL STUCTURAL WORK SHALL CONFORM TO THE PROJECT SPECIFCTIONS. ALL DRAWING NOTES, AND APPLICABLE REFERENCE STANDARDS. THE SCOPE OF WORK IS NOT SOLELY DEFINED BY THESE DOCUMENTS.
3. TYPICAL DETAILS APPLY THROUGHOUT THE PROJECT, EVEN IF NOT SPECIFICALLY REFERENCED IN PLANS OR DETAILS. DETAISL OF CONSTRUCTION NOT FULLY SHOWN OR NOTED ON THE DRAWINGS NOR CALLED OUT IN THE SPECIFICATIONS SHALL BE OF THE SAME SIZE AND CHARACTER AS FOR SIMILAR CONDITIONS WHICH ARE SHOWN AND NOTED.
4. SEE ARCHITECTURAL DRAWINGS FOR SITE POSITIONING AND PROJECT DATUM REFERENCE (0' 0") SHOWN ON ARCHITECTURAL DRAWINGS.
5. DO NOT USED SCALED DIMENSIONS; USE ONLY WRITTEN DIMENSIONS. WHERE NO DIMENSION IS PROVIDED, CONSULT THE ARCHITECT FOR CLARIFICATIONS BEFORE PROCEEDING WORK.
6. THE CONTRACTOR SHAL BE SOLELY RESPONSIBLE FOR THE CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF PERSONS AND PROPERTY AND THE MEANS AND METHODS OF CONSTRUCTION.
7. STRUCTURAL ELEMENTS SHALL BE CENTERED AROUND GRIDLINES OR DIMENSION LINES, UNLESS OTHERWISE NOTED.
8. ALL STRUCTURAL WORK SHALL BE COORDINATED WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL,PLUMBING, ETC. REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN ON PLAN. DISCREPENCIES AND/OR INTERFACES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ENGINEERED DESIGNS AND COORDINATION OF FINAL SUPPORT DETAILS OF NON-STRUCTURAL ITEMS IDENTIFIED IN CONTRACT DOCUMENTS INCLUDING; BUT NOT LIMITED TO:
    A. MECHANICAL EQUIPMENT
10. DETAILS SHOWN IN STRUCTURAL DRAWINGS ARE INDICATIVE IN NATURE. CONTRACTOR TO DESIGN, COORDINATE, AND/OR PROVIDE ADDITIONAL FRAMING AS REQUIRED.
11. OPENINGS SHALL NOT BE MADE IN ANY STRUCTURAL MEMBER UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.
12. DEFICIENT WORK AND WORK NOT IN CONFORMANCE WITH THE CONTRACT DOCUMENTS AS IDENTIFIED BY THE ARCHITECT OR INSPECTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. CONSTRACTOR SHALL COMPENSATE OWNER FOR SERVICES ARISING FROM DEFICIENT WORK.
13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY REQUIRED DEWATERING OF THE SITE DURING CONSTRUCTION.
14. SHEAR WALLS MUST BE BUILT AND FASTENED IN ACCORDANCE WITH STAMPED STRUCTURAL CALCULATIONS AND IRC.

WOOD

1. ALL FRAMING LUMBER AND DETAILS OF WOOD CONSTRUCTION SHALL CONFORM TO THE "NATIONAL DESIGN SPECIFICATION FOR STRESS GRADE LUMBER AND ITS FASTENING" (INCLUDING SUPPLEMENTS)
2. ALL ENGINEERED WOOD PRODUCTS ARE TO BE PROVIDED BY NORDIC AND WEST FRASER AND ARE TO MEET ALL SPECIFICATIONS OF "WESTFRASER LVL USER'S GUIDE" AND "NORDIC ENGINEERED WOOD RESIDENTIAL DESIGN CONSTRUCTION GUIDE" OR APPROVED EQUAL.
3. LAMINATED LUMBER SECTIONS ARE TO BE BUILT TO THE ANNOTATED GRADE OR APPROVED EQUAL.
4. REFER TO "WESTFRASER LVL USER'S GUIDE" AND "NORDIC ENGINEERED WOOD RESIDENTIAL DESIGN CONSTRUCTION GUIDE" FOR ALL INFORMATION INCLUDING, BUT NOT LIMITED TO
    A. PENETRATION ALLOWANCES IN WOOD MEMBERS
    B. BEARING REQUIREMENTS OF JOISTS
    C. CONNECTION/BLOCKING DETAILS
5. DETAILS OF WOOD FRAMING SUCH AS NAILING, BLOCKING, BRIDGING, ETC. SHALL CONFORM TO THE 2012 INTERNATIONAL RESIDENTIAL CODE OR THE "WESTFRASER LVL USER'S GUIDE" AND "NORDIC ENGINEERED WOOD RESIDENTIAL DESIGN CONSTRUCTION GUIDE" UNLESS GREATER REQUIREMENTS ARE SHOWN IN DETAILS.
6. TYPICAL LUMBER SHALL BE OF THE FOLLOWING MINIMUM GRADE AND SHALL BE GRADE STAMPED BY A RECOGNIZED GRADING AGENCY, SHALL BE SURFACED DRY, AND SHALL BE USED AT A MAXIMUM OF 19% WATER CONTENT.
    SPECIES: DOUGLAS-FUR-LARCH
    GRADE: NO. 2 UNLESS SPECIFIED OTHERWISE IN DRAWINGS
7. PLYWOOD SHEATHING SHAL BE APA GRADE STAMPED FOR THE SPECIFIC SPAN, AND SHALL BE MADE WITH EXTERIOR GLUE, AND SHALL BE OF THE FOLLOWING THICKNESS:
    FLOORS/ROOFS: APA RATED SHEATHING EXPOSURE 1
    NON-SHEAR WALLS: APA RATED SHEATHING EXTERIOR EXPOSURE 1
    SHEAR WALLS: APA RATED STRUCTURAL SHEATHING GRADE 1
8. ALL PLYWOOD SHEATHING SHALL BE GLUE AND NAILED TO FLOOR JOISTS USING APA APPROVED ELASTOMERIC CONSTRUCTION ADHESIVE AND CODE REQUIRED NAILING.
9. WHERE BEAMS ARE FLUSH TO HEADER, USE APROVED TYPE BEAM HANGER.
10. ALL STANDARD SPF WOOD OR SOUTHER YELLOW PINE SHALL BE TAKEN AS NO 2 PRESSURE TREATED WOOD UNLESS OTHERWISE STATED.

STEEL

1. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
2. MATERIAL SPECIFICATIONS MUST BE AS FOLLOWS:
    A. HSS SHAPES
        1. ASTM A500 GRADE B
    B. W SHAPES
        1. ASTM A992
3. BOLTS: UNLESS OTHERWISE NOTED ON DRAWINGS
    A. HIGH STRENGTH BOLTS
        1. ASTM A325-N
    B. MACHINE BOLTS
        1. ASTM A307
4. BOLT HOLES IN STEEL SHALL BE 1/16 INCH LARGER DIAMETER THAN NOMINAL SIZE OF BOLT USED, UNLESS OTHERWISE NOTED OR PREAPPROVED BY THE STRUCTURAL ENGINEER.
5. FOR BOLTED CONNECTIONS, PROVIDE 1 1/2 INCH EDGE AND END DISTANCE COVER, UNLESS OTHERWISE NOTED.
6. ALL WELDS SHALL BE PREQUALIFIED IN CONFORMANCE WITH THE "STRUCTURAL WELDING CODE-STEEL" (AWS D1.1) OF THE AMERICAN WELDING SOCIETY. MINIMUM TENSILE STRENGTH OF WELD MATERIAL SHALL BE 70 KSI TYPICAL UNLESS OTHERWISE NOTED. WELDING ELECTRODES SHALL BE AS PER RECCOMMENDED BY THEIR MANUFACTURER FOR THE POSITION AND OTHER CONDITIONS OF ACTUAL USE.

LOAD SCHEDULE

	DEAD LOAD	LIVE LOAD	SNOW LOAD	WIND LOAD	SEISMIC LOAD	TOTAL FACTORED LOAD
ROOF	17 PSF	20 PSF	25 PSF	-	-	64.9 PSF
FLOOR	15 PSF	50 PSF	-	-	-	98 PSF
DECK	16 PSF	100 PSF	25 PSF WHERE APPLICABLE	-	-	179.2 PSF (NO SNOW)
GENERAL	-	-	25 PSF, EXCEPT ON RAMP	39 PSF	7.8K OVER HOUSE	-

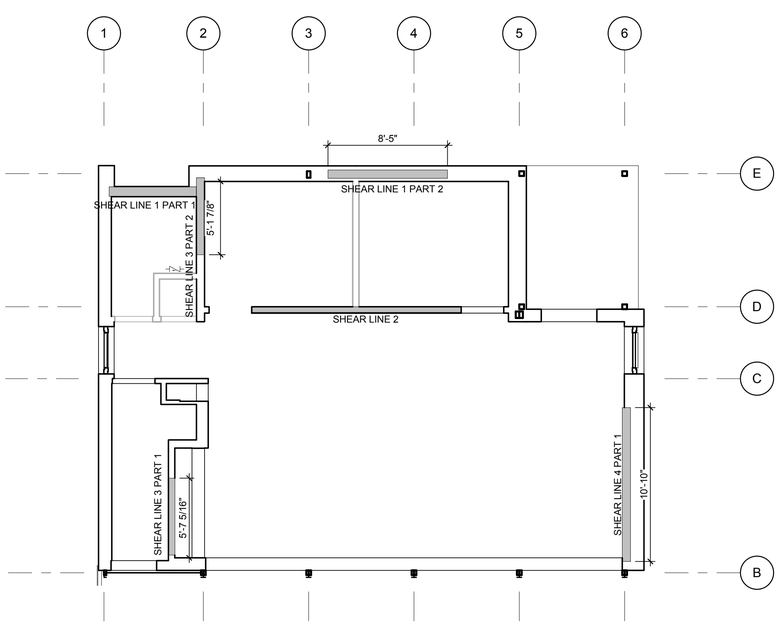
LOADS AS PER ASCE 7-10, SD BUILDING CODE, AND IRC 2012
AN ADDITIONAL LOAD OF 1000LB WAS DISTRIBUTED IN THE MECHANICAL ROOM TO ACCOUNT FOR HEAVIER LOADS.

2012 IRC TABLE R301.2
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

GROUND SNOW LOAD (PSF)	WIND SPEED (MPH)	EXPOSURE CATEGORY	SEISMIC DESIGN CATEGORY	SUBJECT TO DAMAGE FROM			ICE BARRIER UNDERLAYMENT REQUIRED	FLOOD HAZARD
				WEATHERING	FROST LINE DEPTH	TERMITE		
5 (1)	85 (2)	C (3)	D (4)	NEGLIGIBLE (5)	0 (6)	VERY HEAVY (7)	NO (8)	- (9)

THIS PROJECT FALLS UNDER THE JURISDICTION OF THE RESIDENTIAL CODE OF THE STATE OF CALIFORNIA. CONTRACTER SHALL FOLLOW ALL MINIMUMS ESTABLISHED IN NOTED CODE UNLESS SPECIFICALLY WAIVED BY LOCAL CODE OFFICIALS. IF CONTRADICTIONS OCCUR BETWEEN THESE DOCUMENTS AND THE NOTED CODE, THE MORE CONSERVATIVE SPECIFICATION SHALL APPLY.

1. GROUND SNOW LOAD IS BASED ON FIGURE R301.2(5) AND ASCE 7-05
2. WIND SPEED IS BASED ON FIGURE R301.2(4) AND SD 2015 BUILDING CODE
3. EXPOSURE CATEGORY IS BASED ON SD 2015 BUILDING CODE
4. SEISMIC DESIGN CATEGORY IS BASED ON FIGURE R301.2(2) AND SD 2015 BUILDING CODE
5. WEATHERING IS DETERMINED BY FIGURE R301.2(3)
6. FROST DEPTH IS DETERMINED BY THE LOCAL GOVERNMENT
7. TERMITE PROBABILITY IS DETERMINED BY FIGURE R301.2(6) AND BY LOCAL AUTHORITIES.
8. IN ACCORDANCE WITH SECTIONS R905.2.7.1, R905.4.3.1, R905.7.3.1 AND R905.8.3.1, WHERE THERE HAS BEEN A HISTORY OF LOCAL DAMAGE FROM THE EFFECTS OF ICE DAMMING, THE JURISDICTION SHALL FILL IN THIS PART OF THE TABLE WITH 'YES'. OTHERWISE, THE JURISDICTION SHALL FILL IN THIS PART OF THE TABLE WITH 'NO'.
9. FLOOD HAZARD IS DETERMINED BY LOCAL SURVEY AND FEMA MAPS. WHERE APPLICABLE, THE FOLLOWING PARAMETERS HAVE BEEN USED:
    A. DFE (DESIGN FLOOD ELEVATION)
    B. BFE (BASE FLOOD ELEVATION)
    C. G (GROUND ELEVATION IN FEET ABOVE DATUM)



A3 SHEAR WALL LOCATION
3/16" = 1'-0"

NOTES:
1. ALL SHEAR WALL CONNECTIONS SHALL COMPLY WITH IRC 2012 TABLE 602.3C.
2. SHEAR WALL LENGTHS SHOWN ABOVE ARE THE MINIMUM REQUIRED LENGTH. LONGER SHEAR WALLS ARE PREFERRED AND ALLOWED.

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06	05-04-2015	CONSTRUCTION SET
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04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

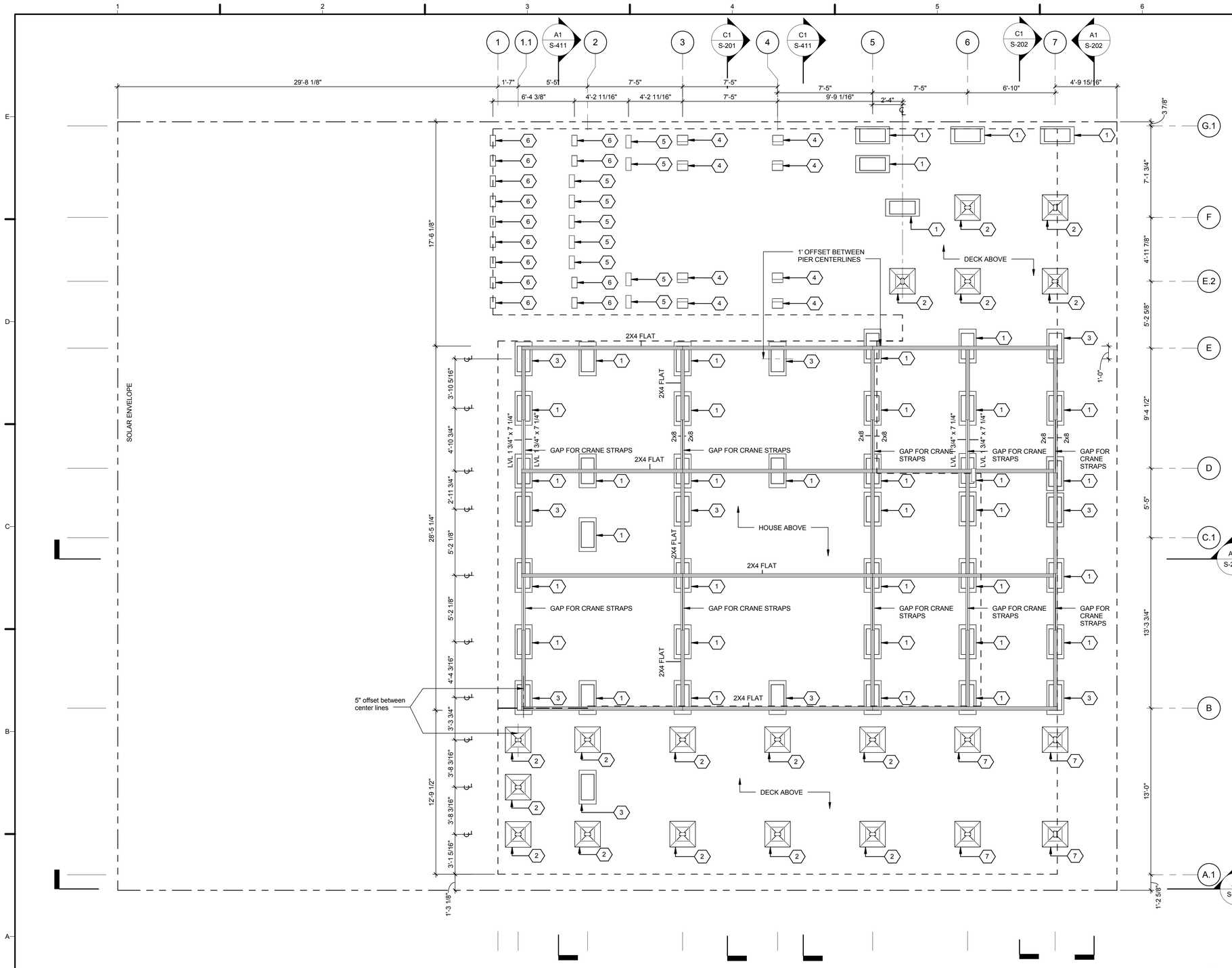
LOT NUMBER: LOT #110

SHEET TITLE

STRUCTURAL NOTES AND SYMBOLS

S-001

8/16/2015 7:15:28 PM



A1 FOUNDATION PLAN
1/4" = 1'-0"

GENERAL SHEET NOTES:

REFERENCE KEYNOTES:

SHEET KEYNOTES:

1. PLYWOOD PIERS AS SEEN ON SHT S-523.
2. 11" SEISMIC PIERS AS SEEN ON SHT S-521.
3. PLYWOOD ANCHOR PIERS AS SEEN ON SHT S-522.
4. RAMP PIER A SEEN ON SHT S-525
5. RAMP PIERS B
6. RAMP PIERS C
7. 7" SEISMIC PIER

DRAWING KEY

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01	10-09-2014	80% DD SET

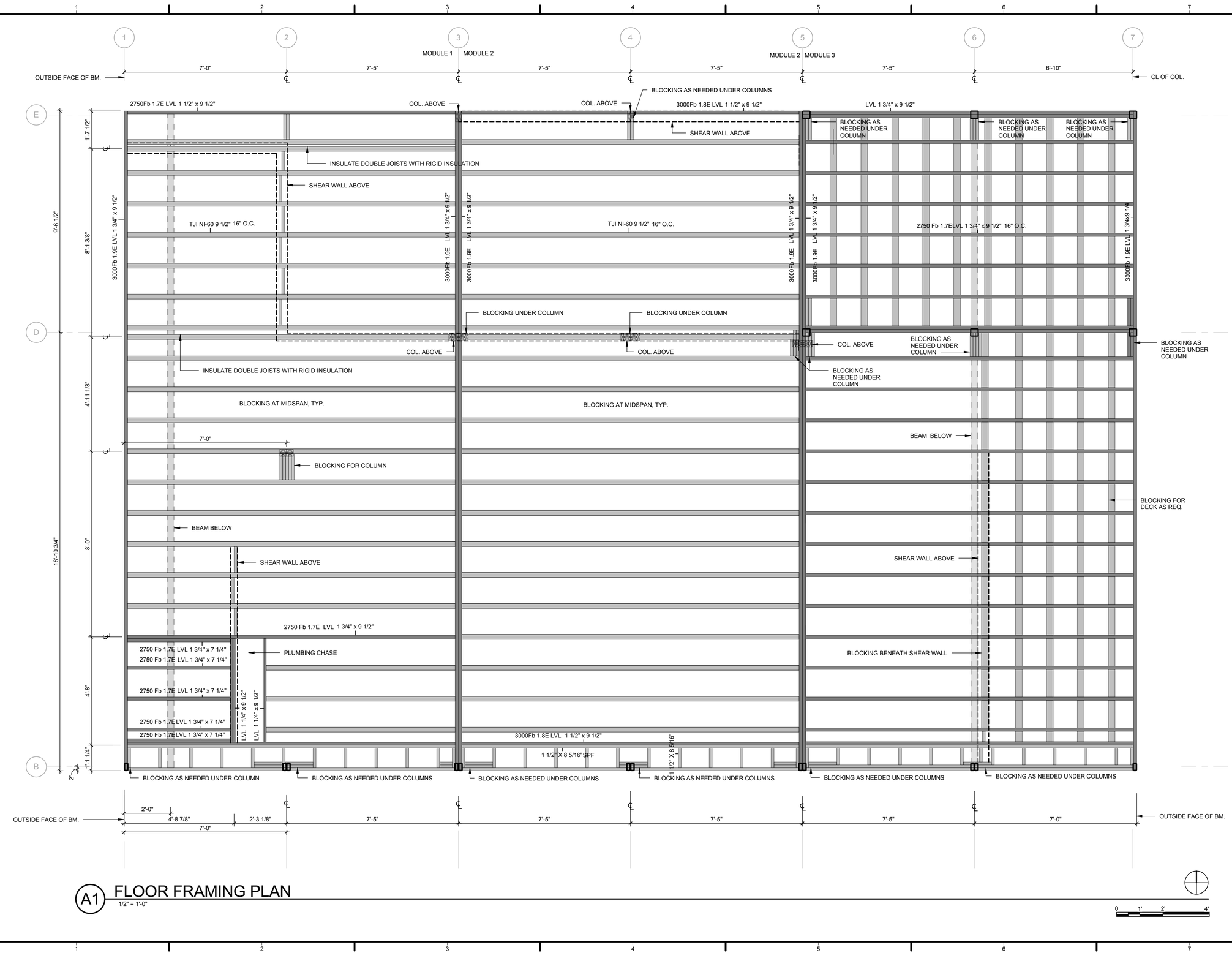
LOT NUMBER: LOT #110

SHEET TITLE

FOUNDATION AND FOOTING PLAN

S-101

8/16/2015 7:15:34 PM



A1 FLOOR FRAMING PLAN

1/2" = 1'-0"

8/16/2015 7:16:04 PM

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

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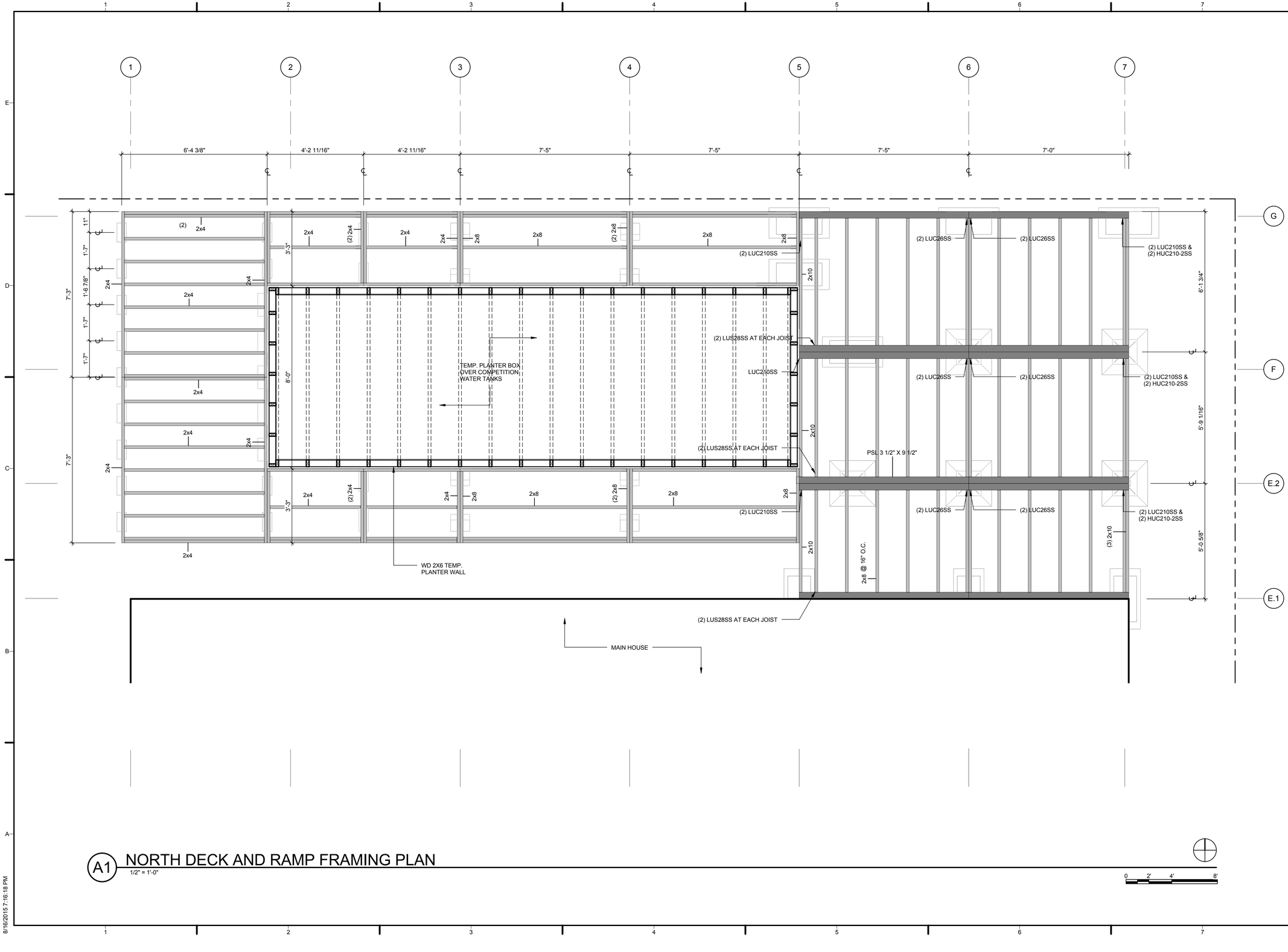
SHEET TITLE

FLOOR FRAMING PLAN

S-102



A1 NORTH DECK AND RAMP FRAMING PLAN

1/2" = 1'-0"

0 2' 4' 8'

8/16/2015 7:16:18 PM

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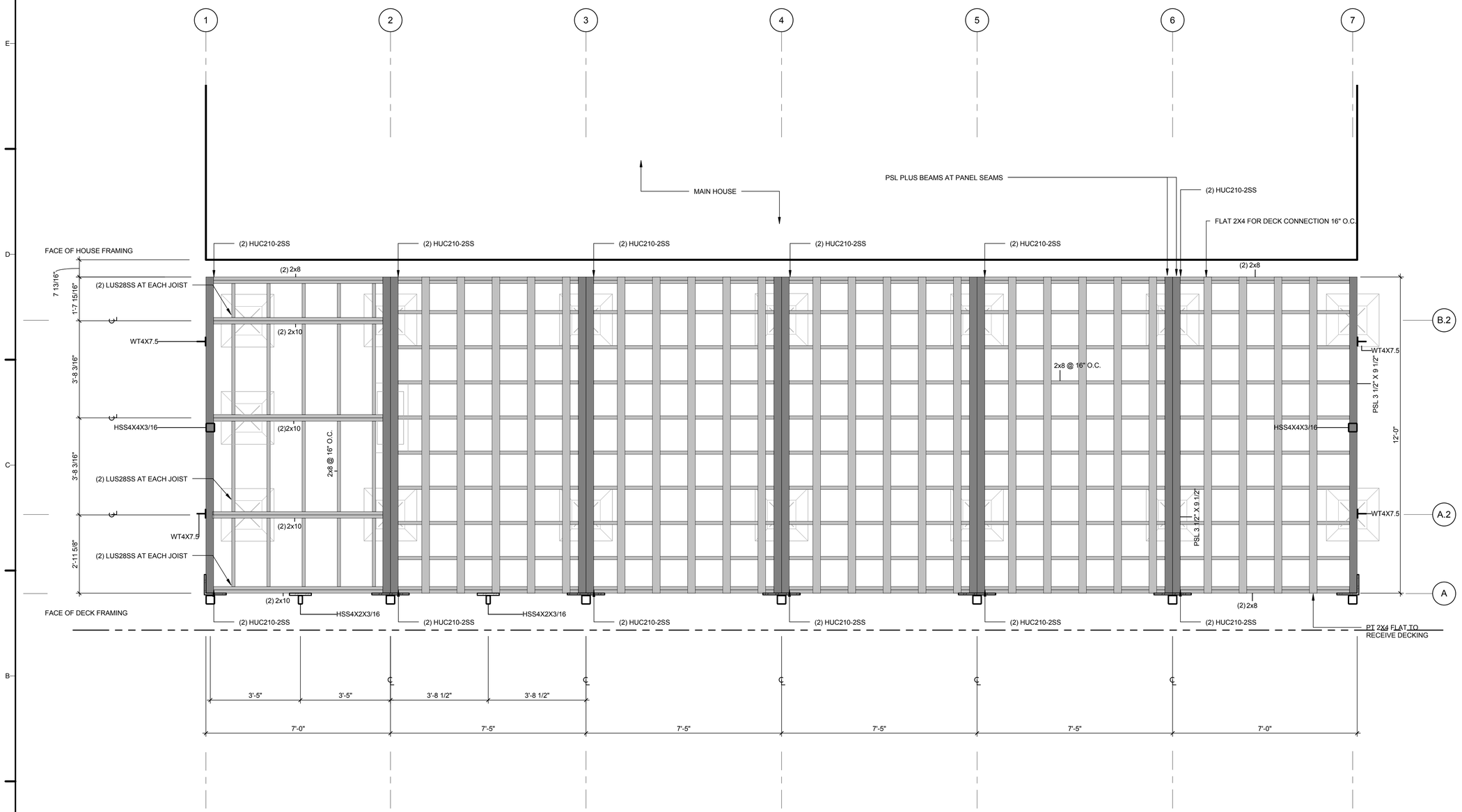
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

NORTH DECK AND RAMP FRAMING PLAN

S-103



A1 SOUTH DECK FRAMING PLAN

1/2" = 1'-0"

0 1' 2' 4'

8/16/2015 7:16:24 PM

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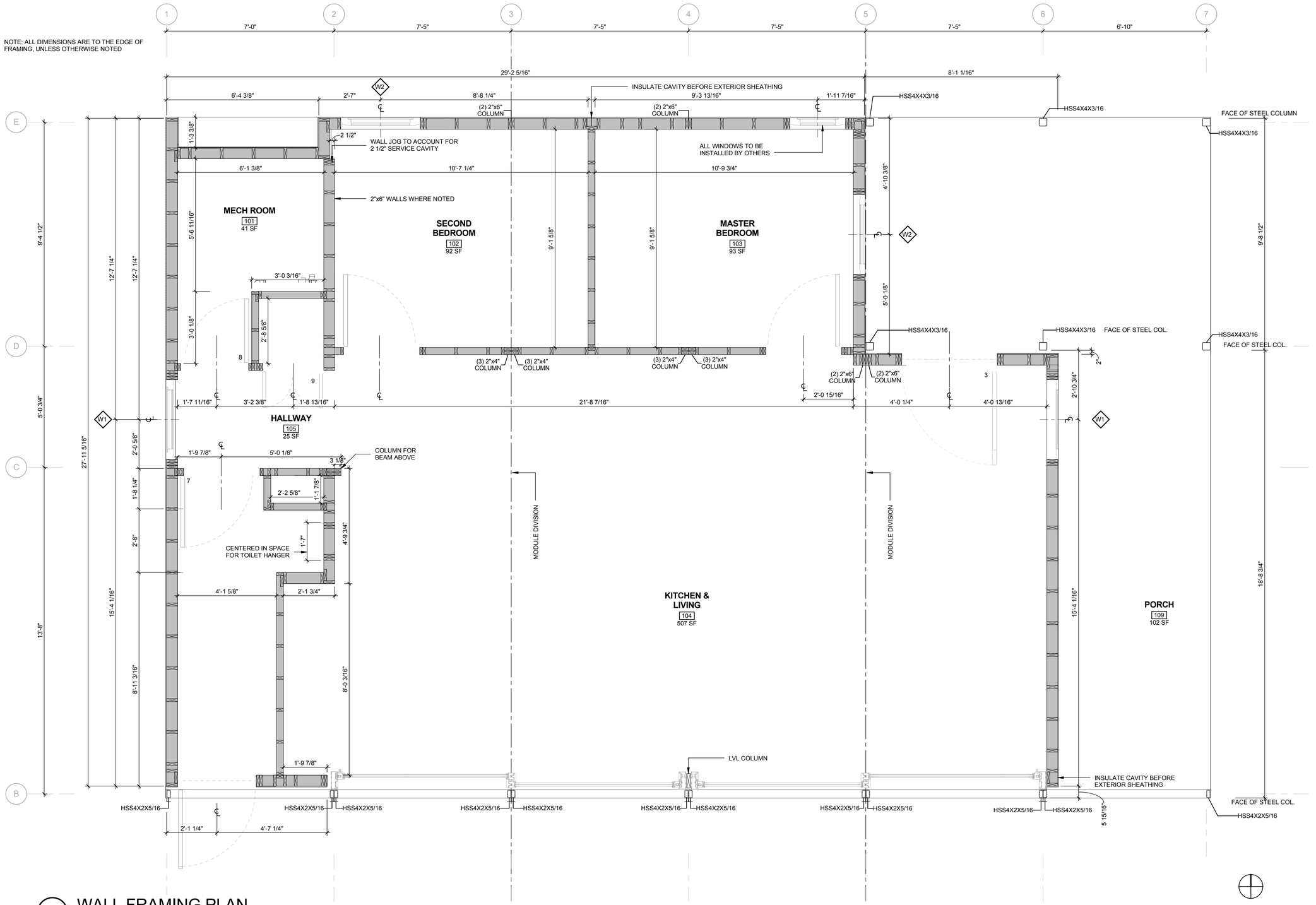
SHEET TITLE

SOUTH DECK FRAMING PLAN

S-104

NOTE: ALL DIMENSIONS ARE TO THE EDGE OF FRAMING, UNLESS OTHERWISE NOTED



A1 WALL FRAMING PLAN
1/2" = 1'-0"

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01	10-09-2014	80% DD SET

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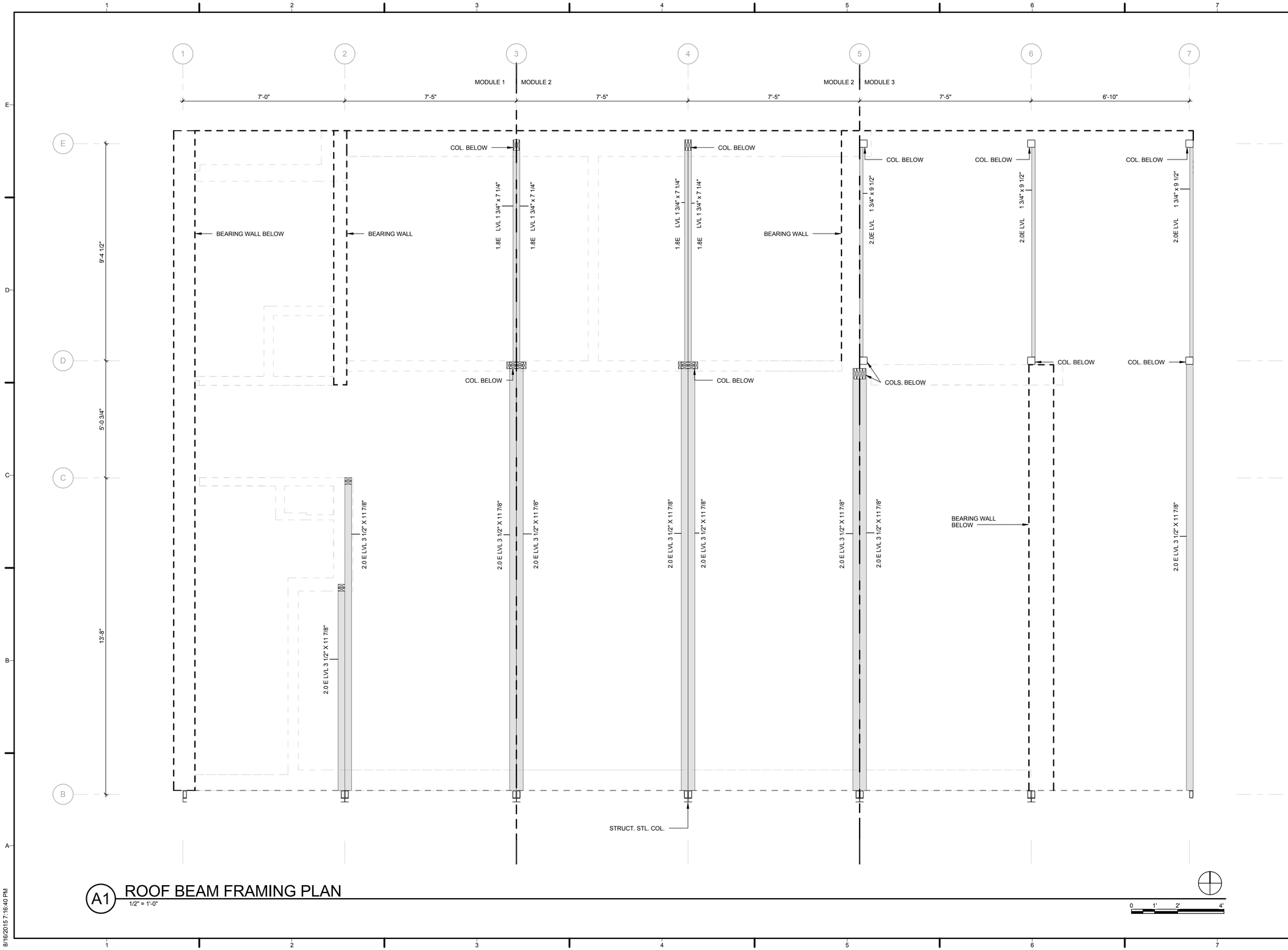
SHEET TITLE

WALL FRAMING PLAN

S-105



A1 ROOF BEAM FRAMING PLAN

1/2" = 1'-0"

8/16/2015 7:16:40 PM

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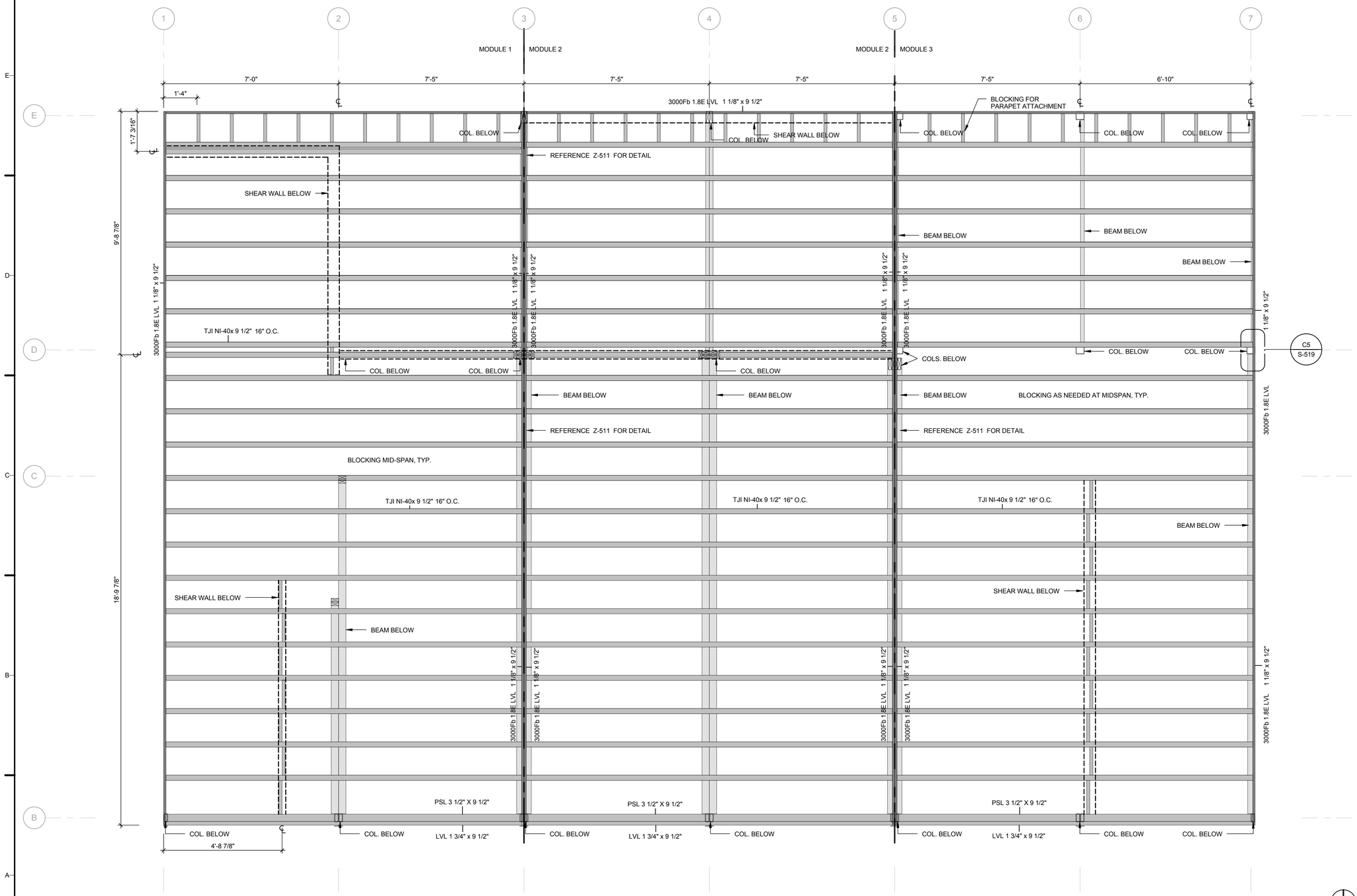
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

ROOF BEAM FRAMING PLAN

S-106



A1 ROOF FRAMING PLAN

1/2" = 1'-0"

0 1' 2' 4'

8/16/2015 7:16:47 PM

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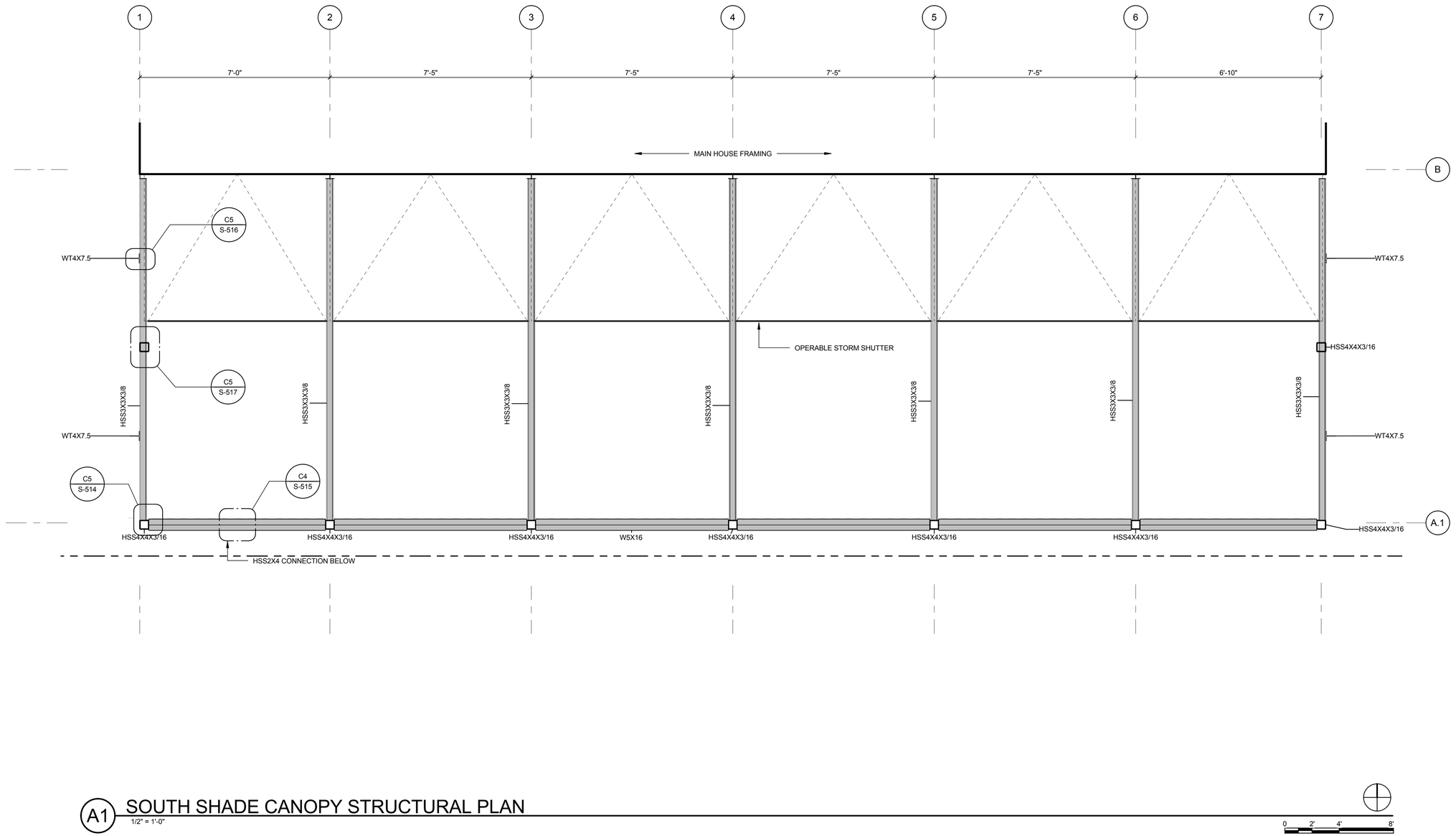
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

ROOF FRAMING PLAN

S-107



A1 SOUTH SHADE CANOPY STRUCTURAL PLAN

1/2" = 1'-0"

0 2' 4' 8'

8/16/2015 7:16:56 PM

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01	10-09-2014	80% DD SET

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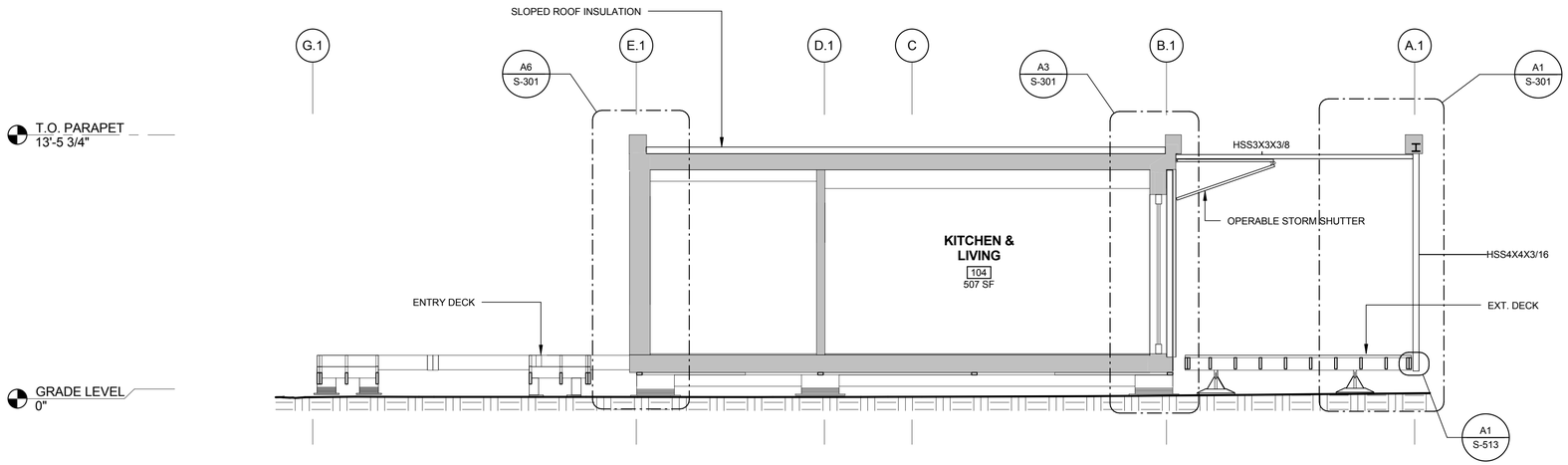
SHEET TITLE

SOUTH SHADE CANOPY STRUCTURAL PLAN

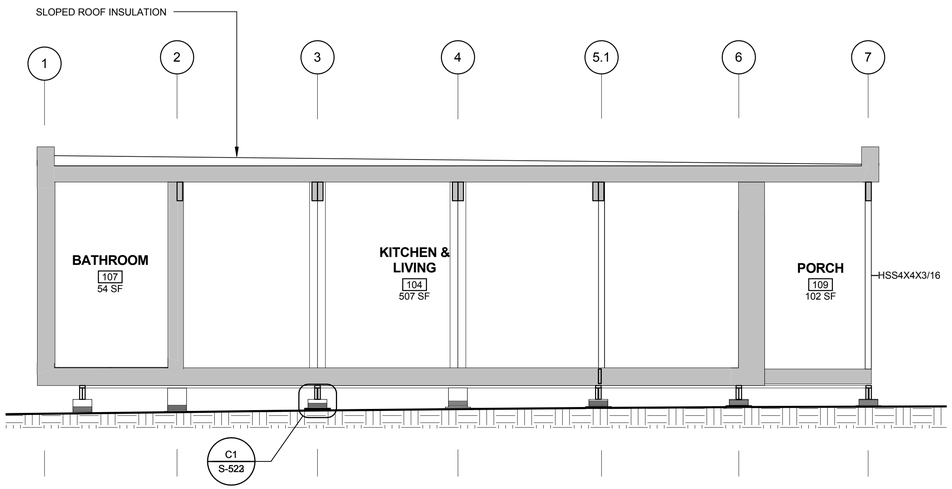
S-108



C1 SECTION LOOKING WEST

1/4" = 1'-0"

0 2' 4' 8'



A1 SECTION LOOKING NORTH

1/4" = 1'-0"

0 2' 4' 8'

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STRUCTURAL SECTIONS

S-201

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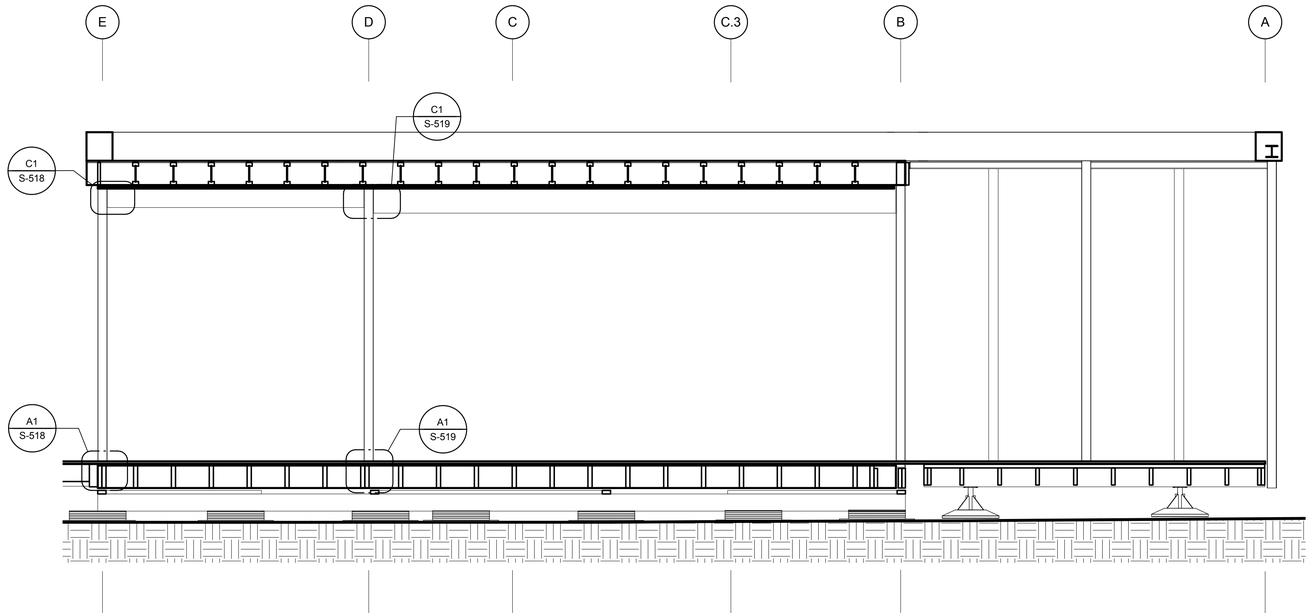
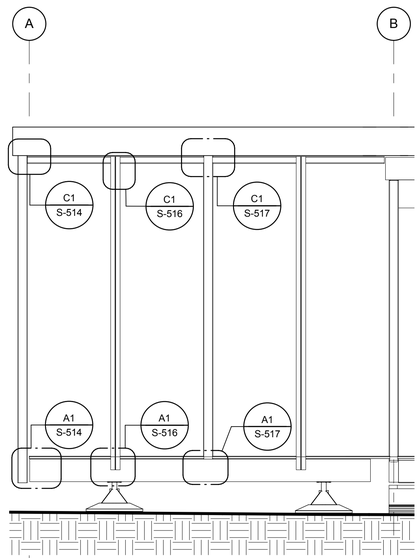


C1 STEEL SECTION LOOKING EAST (GRID 7)

3/8" = 1'-0"

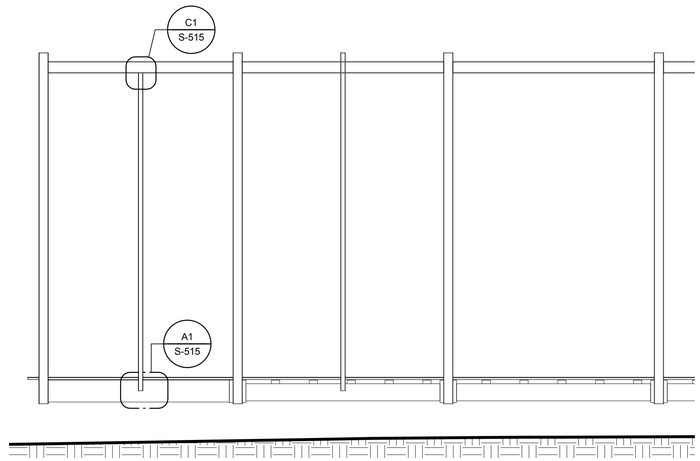
0 2' 4' 6'



A1 STEEL SECTION LOOKING EAST (GRID 1)

3/8" = 1'-0"

0 2' 4' 6'



A4 STEEL SECTION LOOKING NORTH (GRID A)

3/8" = 1'-0"

0 2' 4' 6'

8/16/2015 7:17:22 PM

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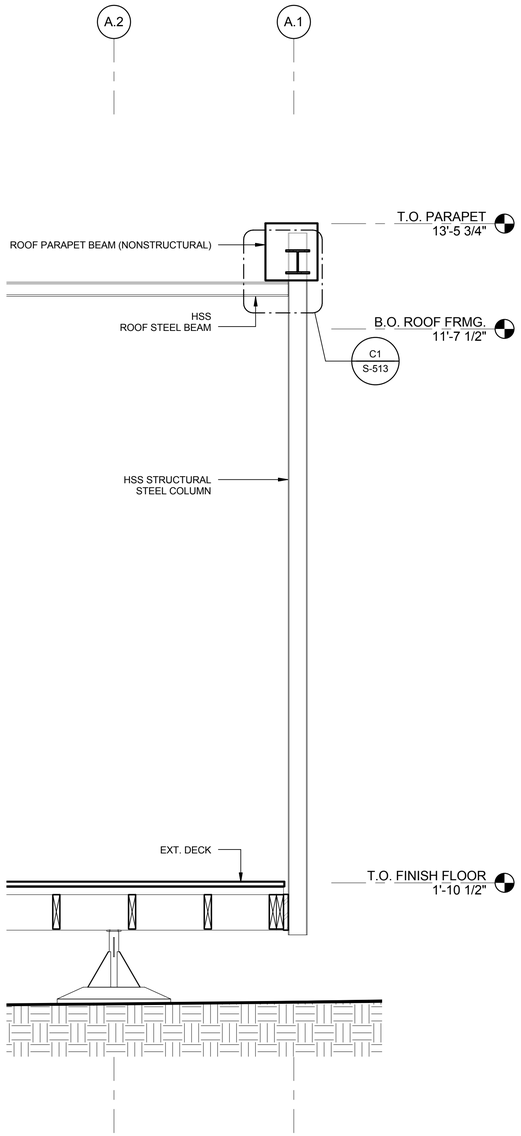
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

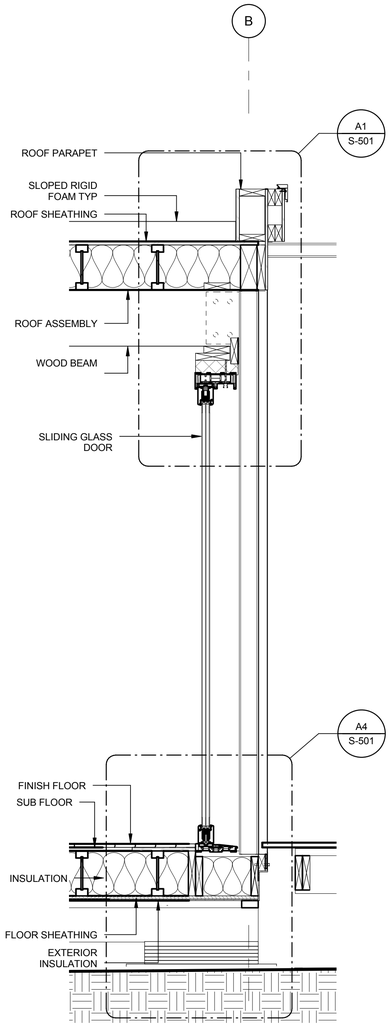
SHEET TITLE

STRUCTURAL DECK SECTIONS

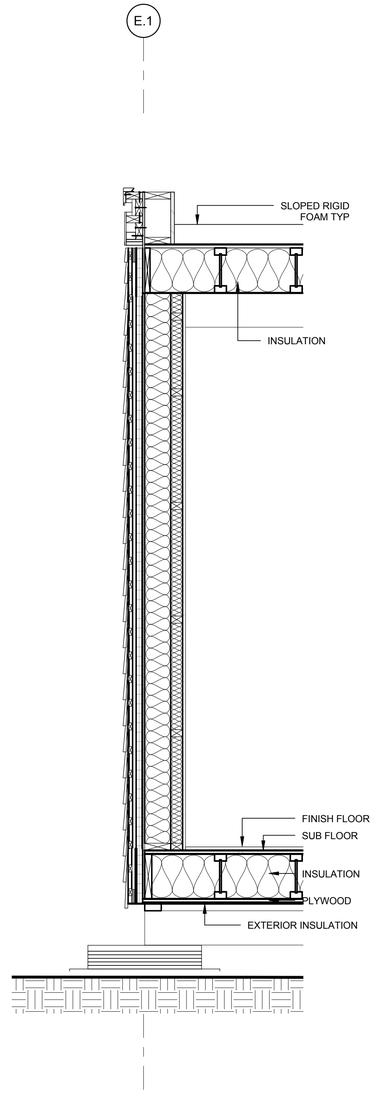
S-202



A1 TYP COLUMN TO ROOF BEAM
3/4" = 1'-0"
0 1' 2' 3'



A3 TYP COLUMN TO ROOF BEAM @ SOUTH WALL
3/4" = 1'-0"
0 1' 2' 3'



A6 TYP WALL SECTION
3/4" = 1'-0"
0 1' 2' 3'

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01	10-09-2014	80% DD SET

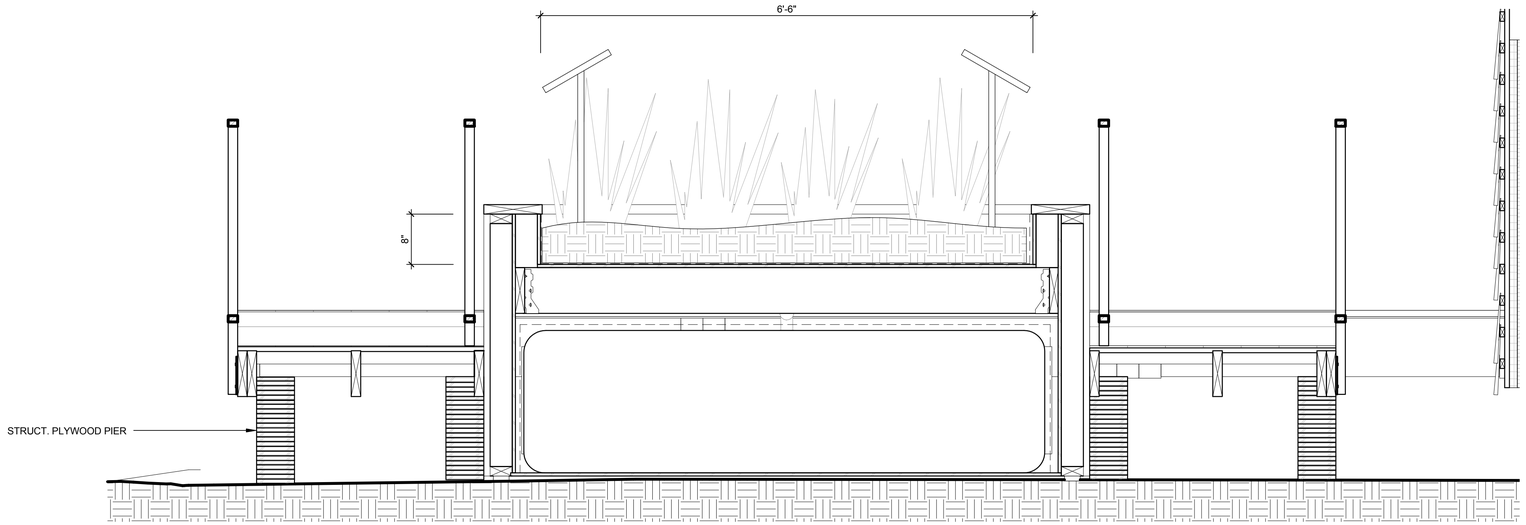
LOT NUMBER: LOT #110

SHEET TITLE

FRAMING SECTIONS

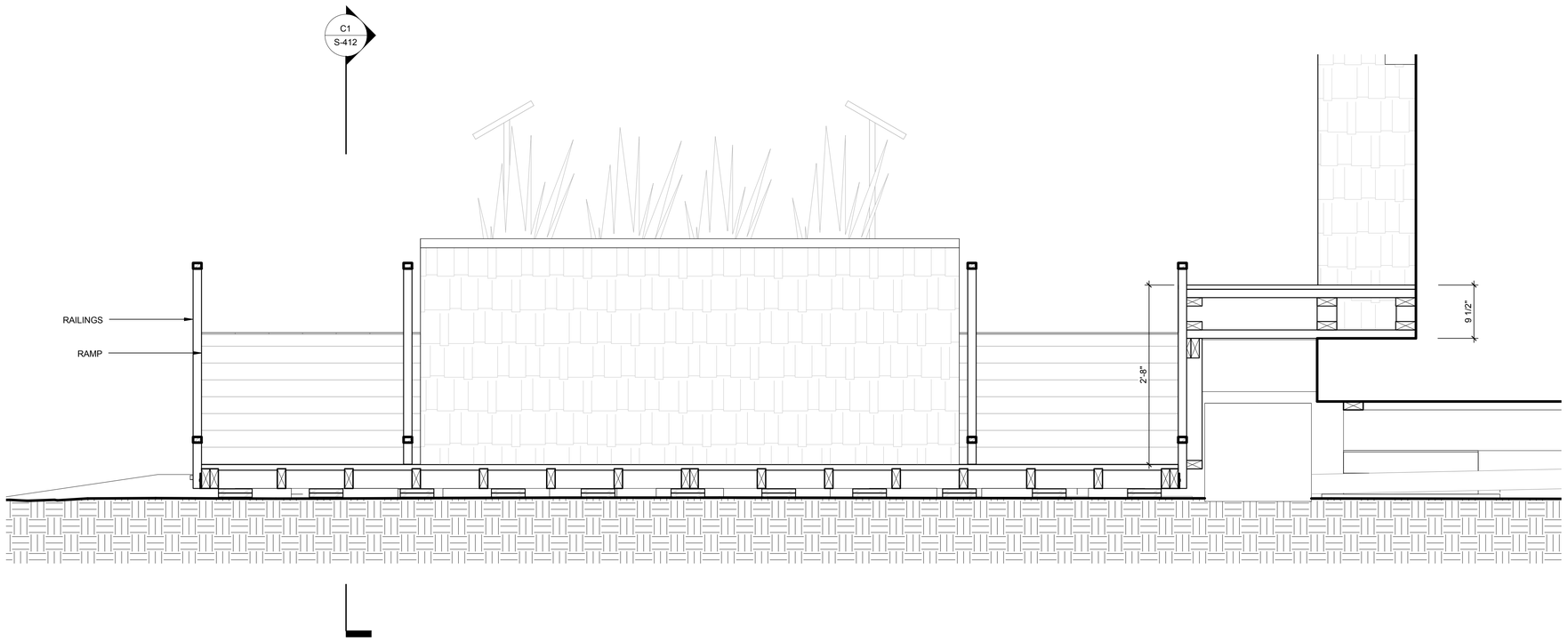
S-301

8/16/2015 7:17:33 PM



C1 NORTH RAMP & PLANTER SECTION
1" = 1'-0"

0 1/2' 1' 2'



A1 NORTH PLANTER & RAMP - LANDING
1" = 1'-0"

0 1/2' 1' 2'

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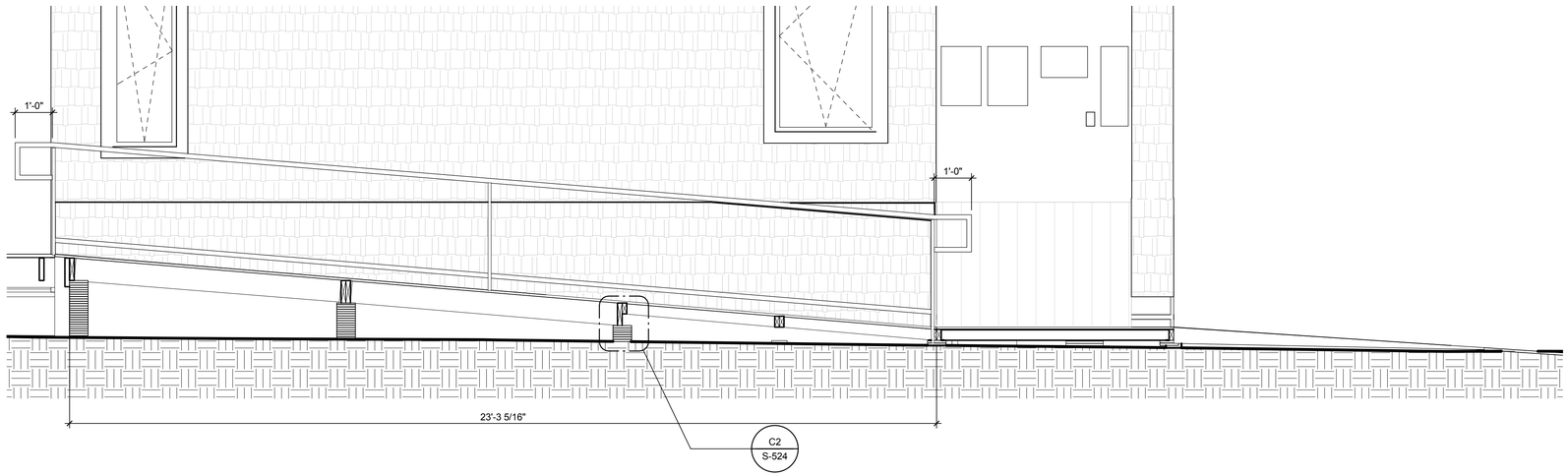
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

RAMP & NORTH PLANTER SECTION

S-411



C1 NORTH RAMP SECTION LOOKING SOUTH

1/2" = 1'-0"

0 1' 2' 4'

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01	10-09-2014	80% DD SET

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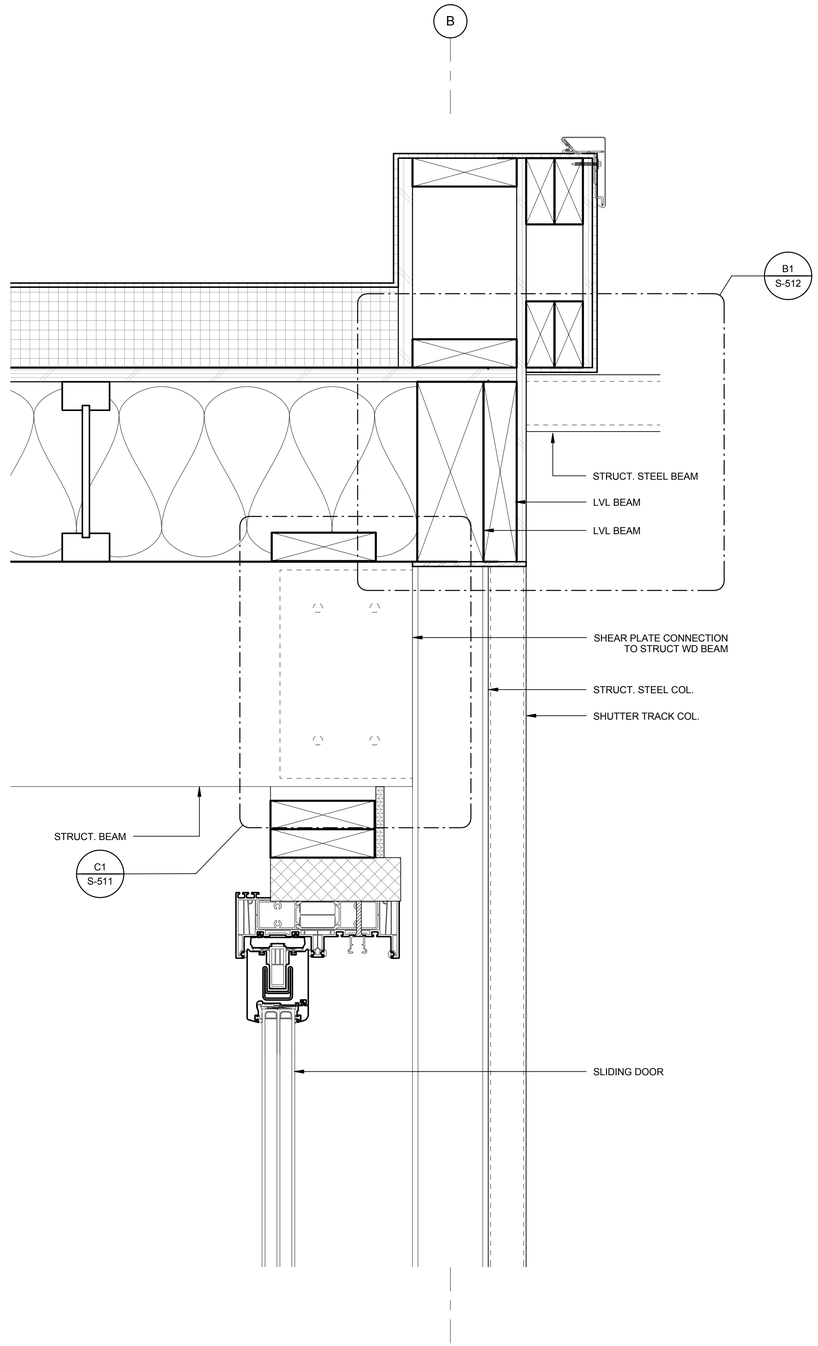
SHEET TITLE

RAMP & NORTH PLATER SECTION

S-412

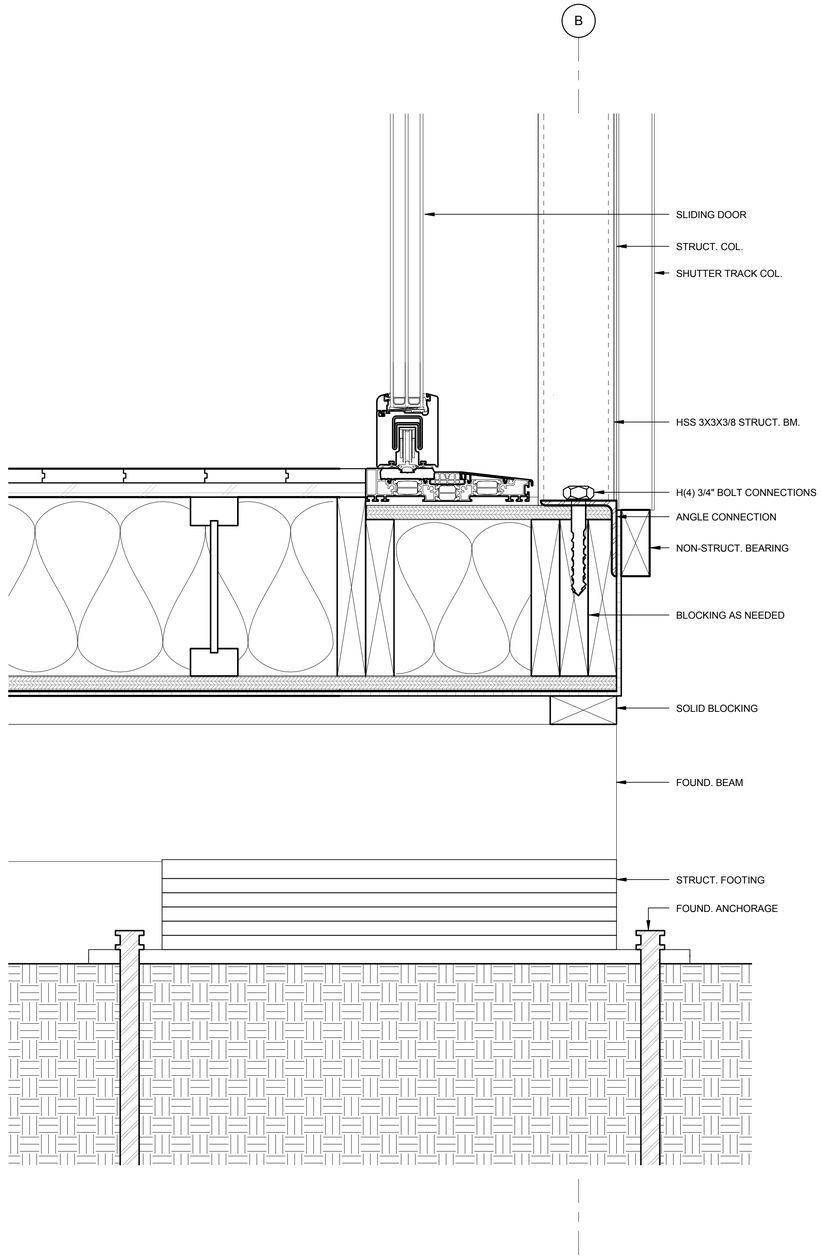
8/16/2015 7:17:46 PM



A1 HEADER ABOVE SLIDING GLASS DOORS

3" = 1'-0"

0 3" 6" 1'



A4 FOOTER BELOW SLIDING GLASS DOORS

3" = 1'-0"

0 3" 6" 1'

8/16/2015 7:17:55 PM

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

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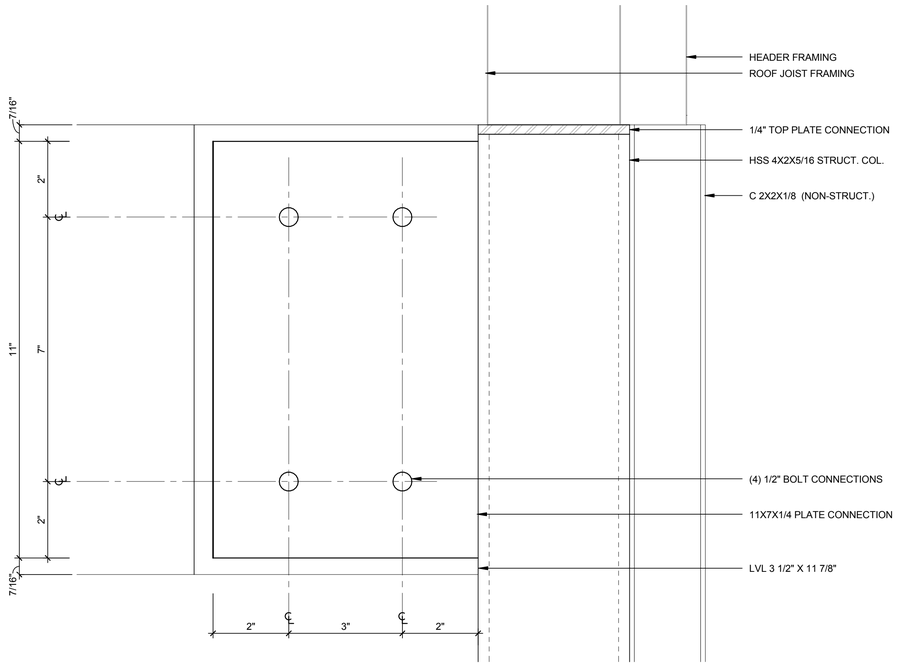
SHEET TITLE

HEADER AND FOOTER DETAILS

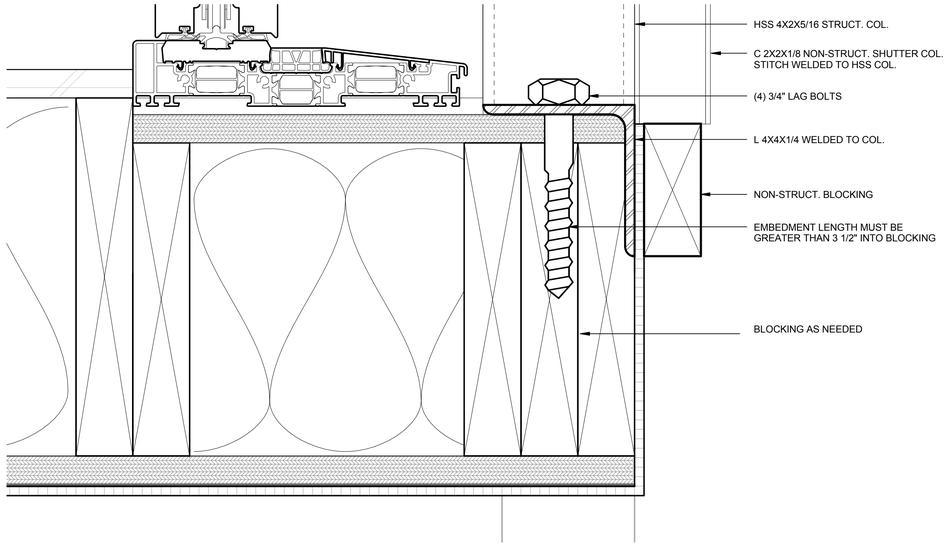
S-501



C1 TYP. STEEL TO ROOF BEAM DETAIL

6" = 1'-0"

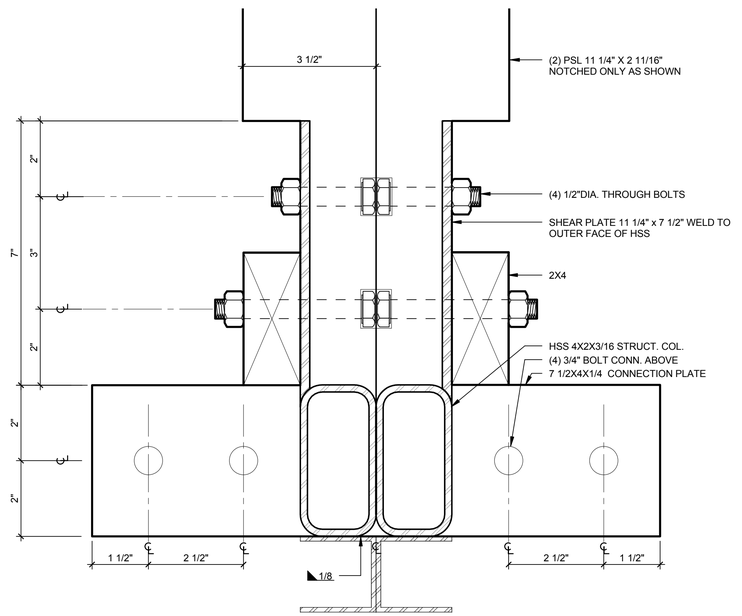
0 1" 2" 3" 4"



A1 TYP. STEEL COLUMN TO FLOOR DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

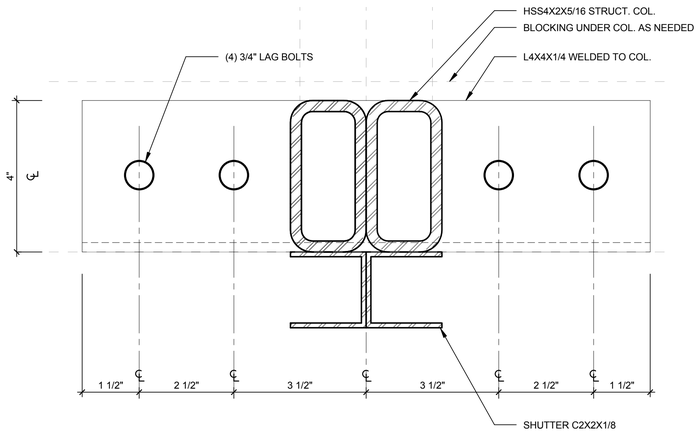


C4 TYP. COLUMN TO ROOF BEAM PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

NOTES:
1. KNIFE CONNECTION LOCATED AT 2B, 3B, 4B, 5B.



A4 TYP. COLUMN TO FLOOR PLAN DETAIL VIEW

6" = 1'-0"

0 1" 2" 3" 4"

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01	10-09-2014	80% DD SET

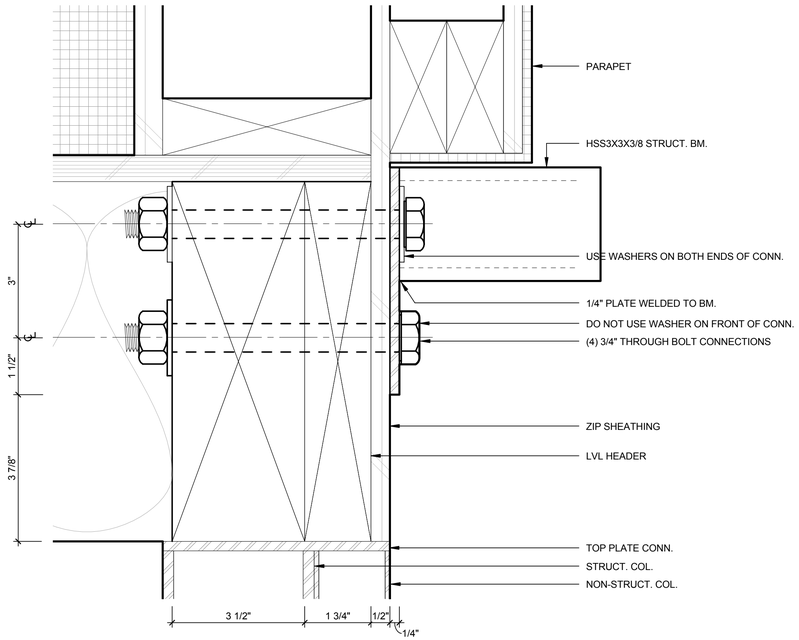
LOT NUMBER: LOT #110

SHEET TITLE

HOUSE STEEL COLUMN CONNECTIONS

S-511

8/16/2015 7:18:11 PM



B1 SOUTH SHUTTER BEAM CONNECTION DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

B5 SHUTTER BEAM HOUSE CONNECTION

6" = 1'-0"

0 1" 2" 3" 4"

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01	10-09-2014	80% DD SET

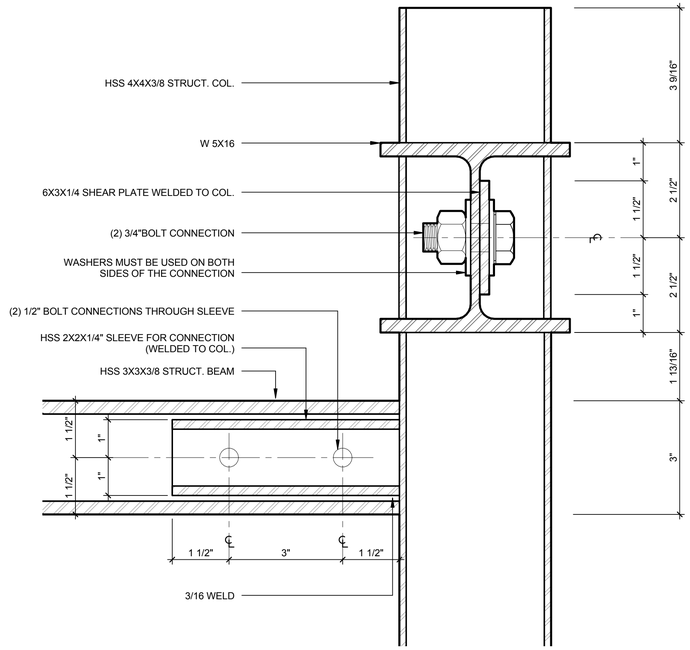
LOT NUMBER: LOT #110

SHEET TITLE

STEEL ROOF BEAM TO HOUSE CONNECTIONS

S-512

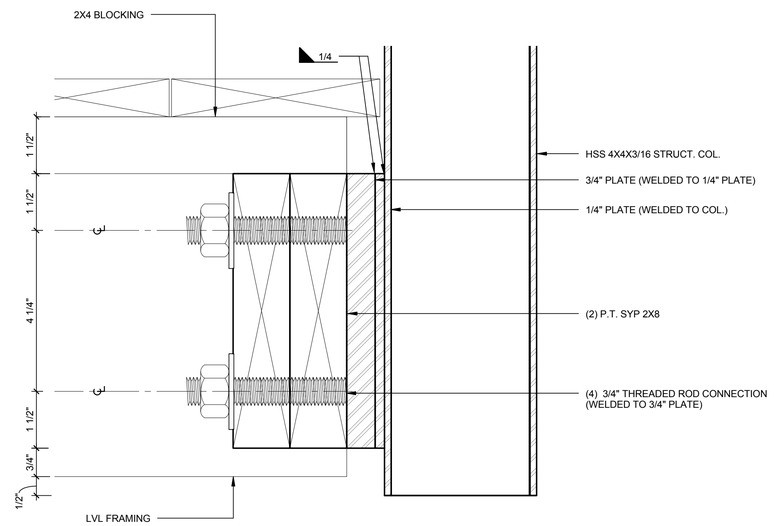
8/16/2015 7:18:18 PM



C1 TYP. HSS COLUMN TO ROOF BEAM SIDE VIEW

6" = 1'-0"

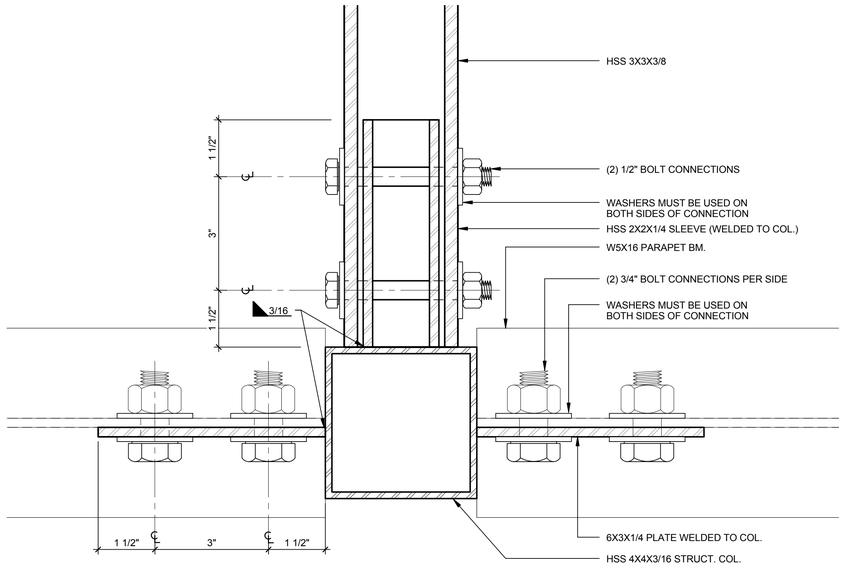
0 1" 2" 3" 4"



A1 SOUTH COLUMN AT DECK

6" = 1'-0"

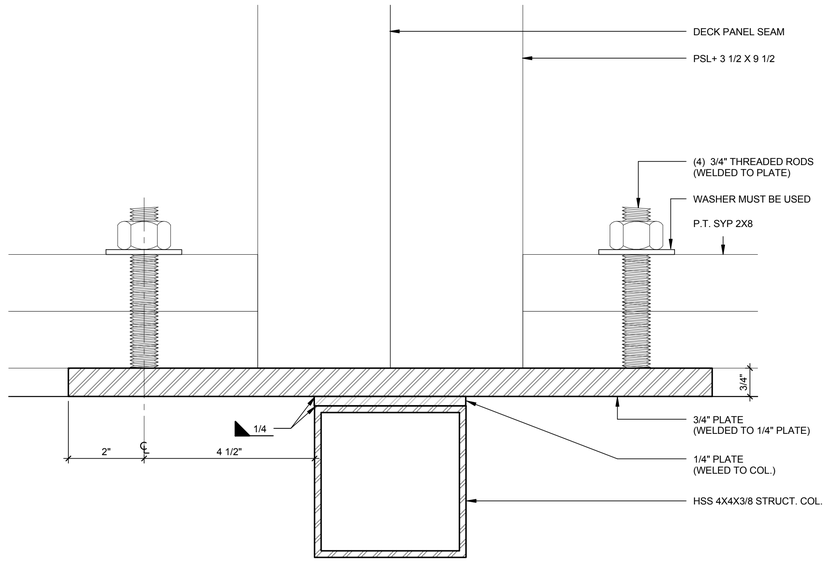
0 1" 2" 3" 4"



C4 TYP. HSS COLUMN TO ROOF BEAM PLAN VIEW

6" = 1'-0"

0 1" 2" 3" 4"



A4 SOUTH COLUMN TO DECK PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

NOTE: THE DIMENSIONS OF THIS DRAWING HAVE DIFFERENT VARIATIONS BASED ON LOCATION ON THE SOUTH DECK. IN OTHER VERSIONS USE A 1'5" PLATE IN PLACE OF THE 20" PLATE SHOWN HERE. KEEP EDGE COVER TO THREADED ROD CONSTANT.

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01	10-09-2014	80% DD SET

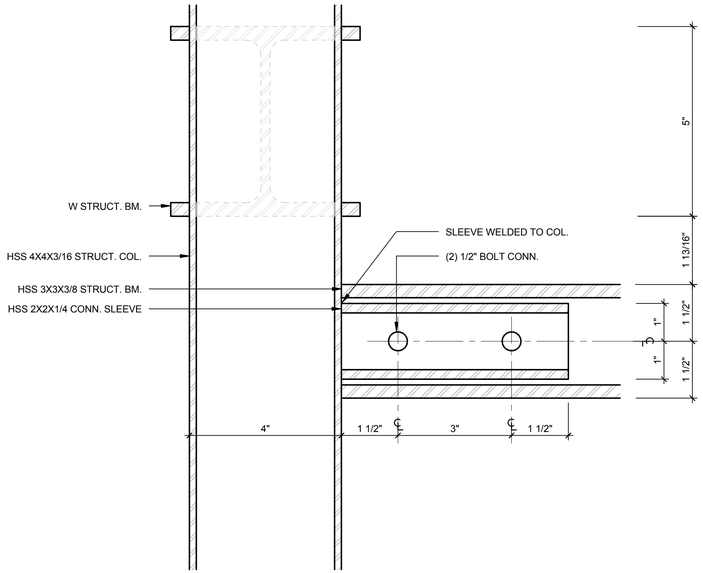
LOT NUMBER: LOT #110

SHEET TITLE

SOUTHERNMOST DECK STEEL CONNECTIONS

S-513

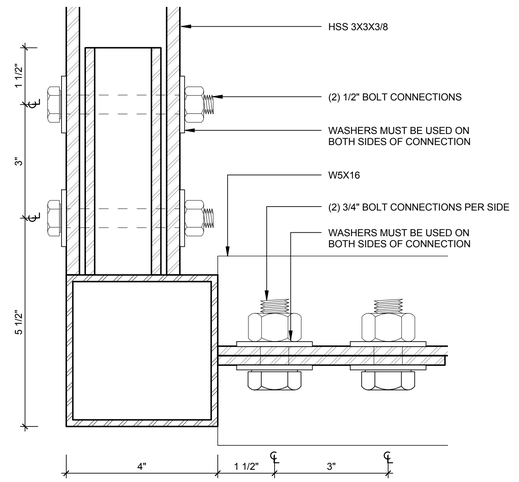
8/16/2015 7:18:25 PM



C1 SLEEVE CONNECTION SECTION

6" = 1'-0"

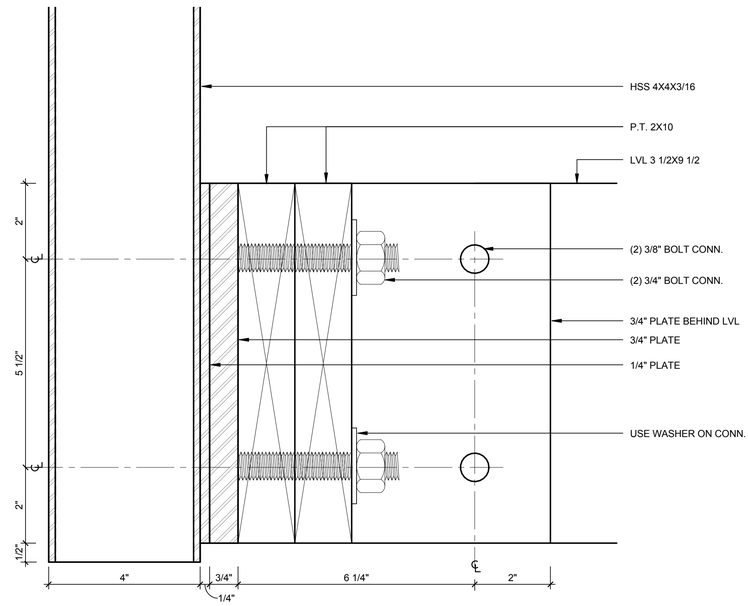
0 1" 2" 3" 4"



C5 SLEEVE CONNECTION PLAN

6" = 1'-0"

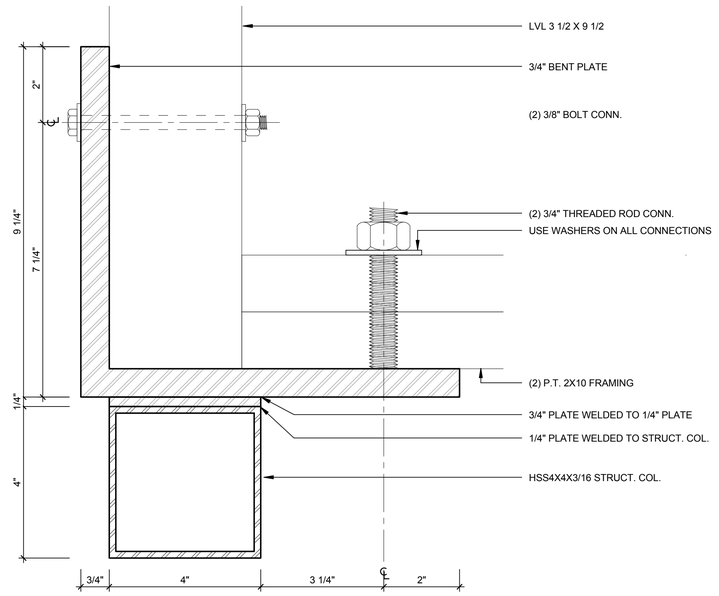
0 1" 2" 3" 4"



A1 CORNER CONNECTION SECTION

6" = 1'-0"

0 1" 2" 3" 4"



A5 CORNER CONNECTION PLAN

6" = 1'-0"

0 1" 2" 3" 4"

8/16/2015 7:18:33 PM

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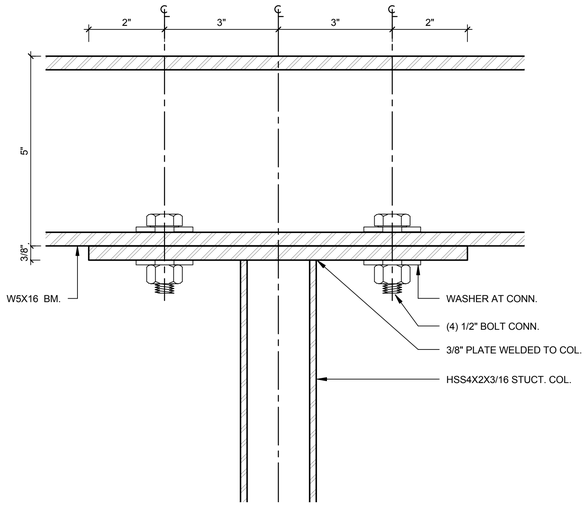
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

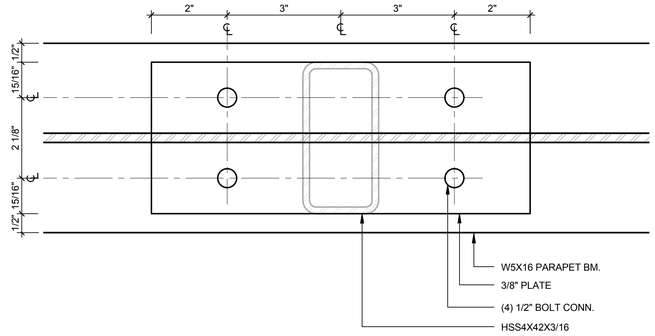
SOUTHERNMOST COLUMN EDGE DETAILS

S-514



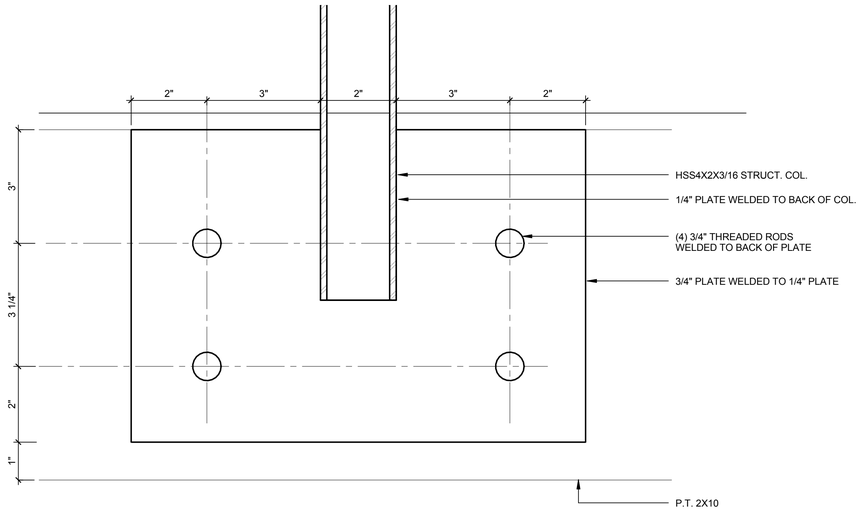
C1 TOP PLATE CONNECTION SECTION DETAIL
6" = 1'-0"

0 1" 2" 3" 4"



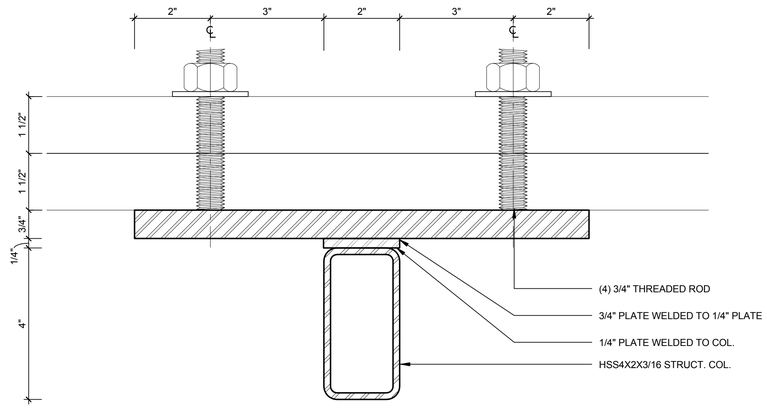
C4 TOP PLATE CONNECTION PLAN DETAIL
6" = 1'-0"

0 1" 2" 3" 4"



A1 THREADED ROD CONNECTION SECTION DETAIL
6" = 1'-0"

0 1" 2" 3" 4"



A4 THREADED ROD CONNECTION PLAN
6" = 1'-0"

0 1" 2" 3" 4"

8/16/2015 7:18:42 PM

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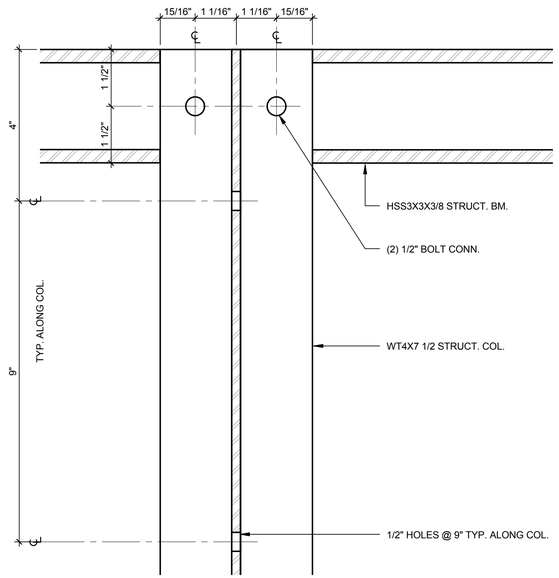
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

4X2 COLUMN CONNECTIONS

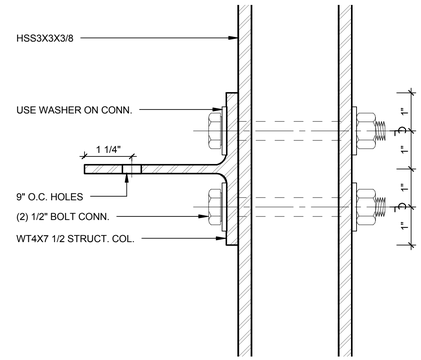
S-515



C1 WT TOP CONN. SECTION DETAIL

6" = 1'-0"

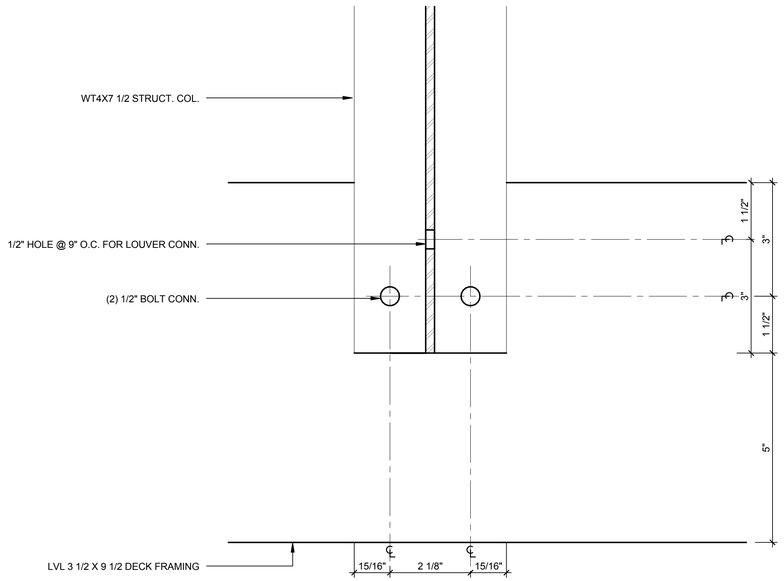
0 1" 2" 3" 4"



C5 WT TOP CONN. PLAN DETAIL

6" = 1'-0"

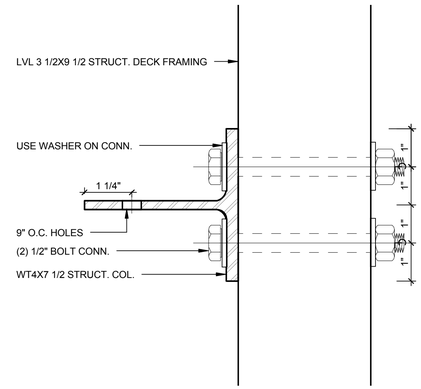
0 1" 2" 3" 4"



A1 WT BOTTOM CONN. SECTION DETAIL

6" = 1'-0"

0 1" 2" 3" 4"



A5 WT BOTTOM CONN. PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

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01	10-09-2014	80% DD SET

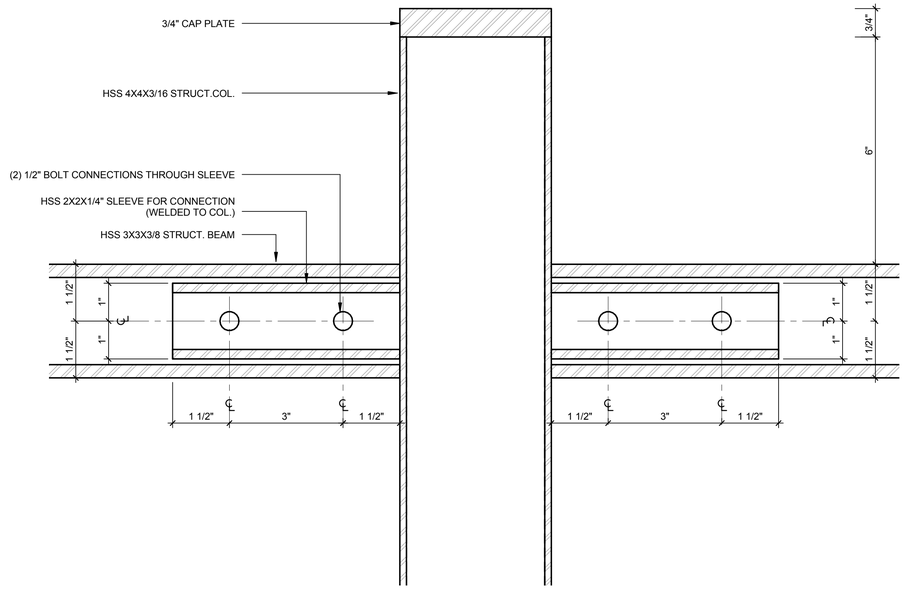
LOT NUMBER: LOT #110

SHEET TITLE

WT COLUMN CONNECTIONS

S-516

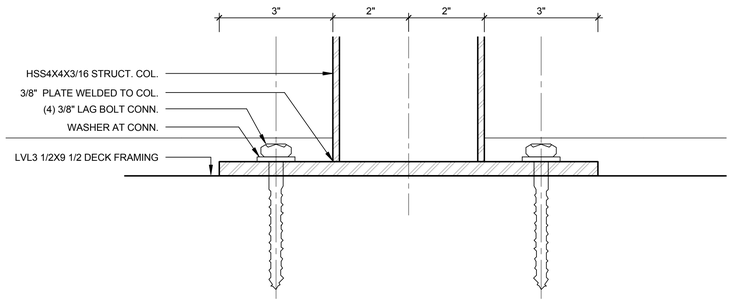
8/16/2015 7:19:21 PM



C1 DOUBLE SLEEVE CONN. SECTION DETAIL

6" = 1'-0"

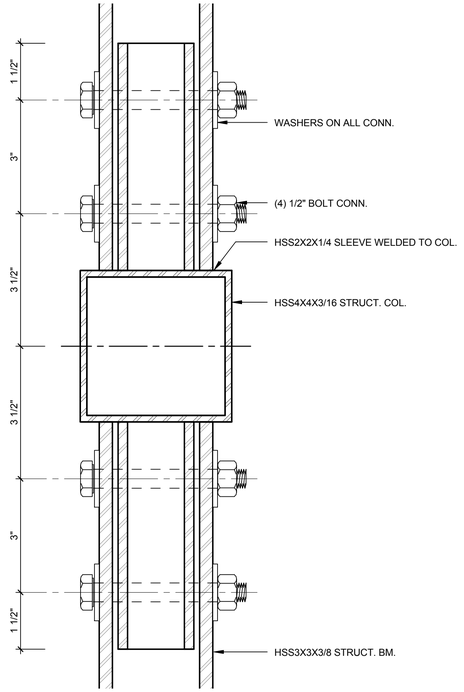
0 1" 2" 3" 4"



A1 LAG DECK CONN. SECTION DETAIL

6" = 1'-0"

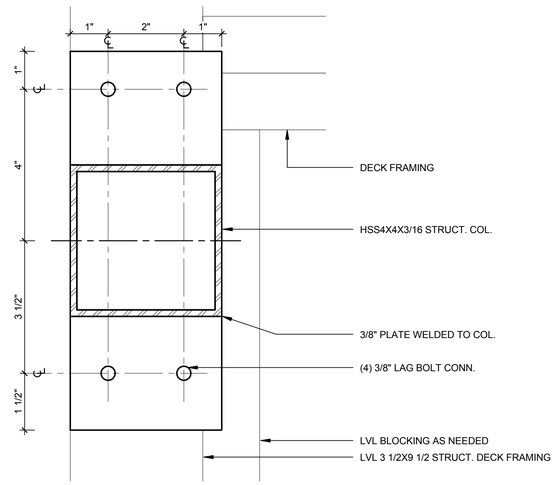
0 1" 2" 3" 4"



C5 DOUBLE SLEEVE CONN. PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"



A5 LAG DECK CONN. PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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01	10-09-2014	80% DD SET

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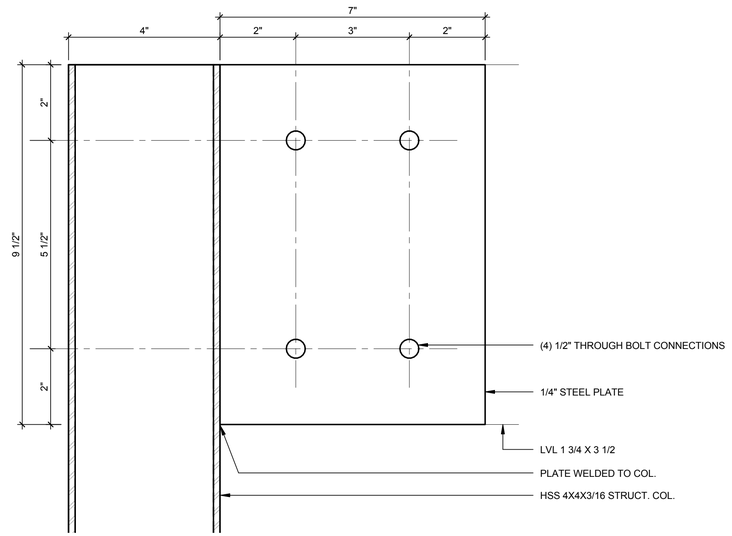
SHEET TITLE

4X4 E&W SIDE STEEL COLUMN CONNECTIONS

S-517

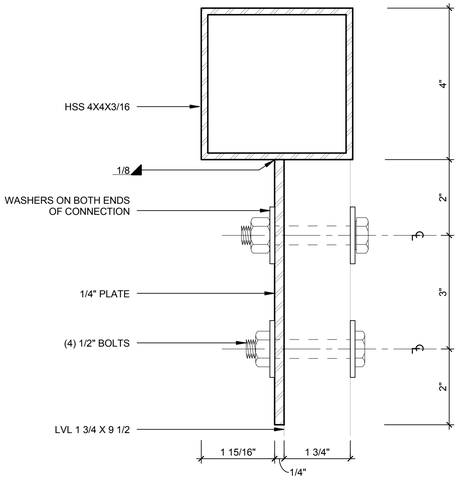
8/16/2015 7:19:37 PM



C1 KNIFE PLATE TOP CONNECTION

6" = 1'-0"

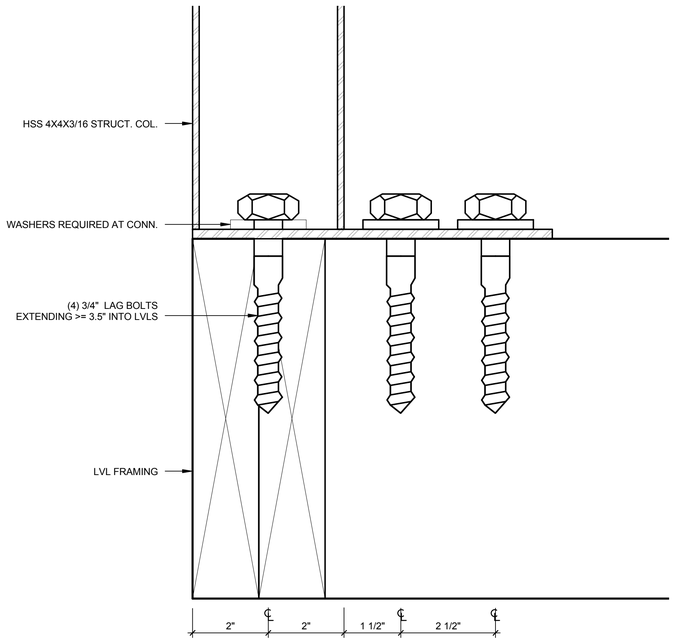
0 1" 2" 3" 4"



C5 ROOF KNIFE PLATE GRID 7 CONNECTION PLAN

6" = 1'-0"

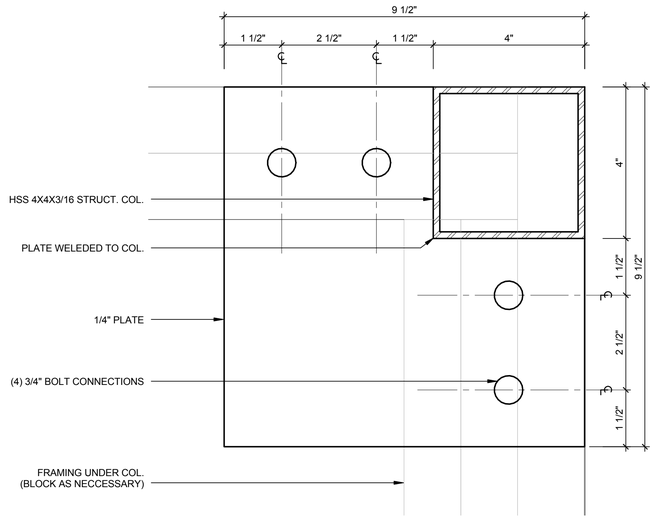
0 1" 2" 3" 4"



A1 COLUMN BASE PLATE CONNECTION SECTION

6" = 1'-0"

0 1" 2" 3" 4"



A5 COLUMN BASE PLATE CONNECTION PLAN

6" = 1'-0"

0 1" 2" 3" 4"

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

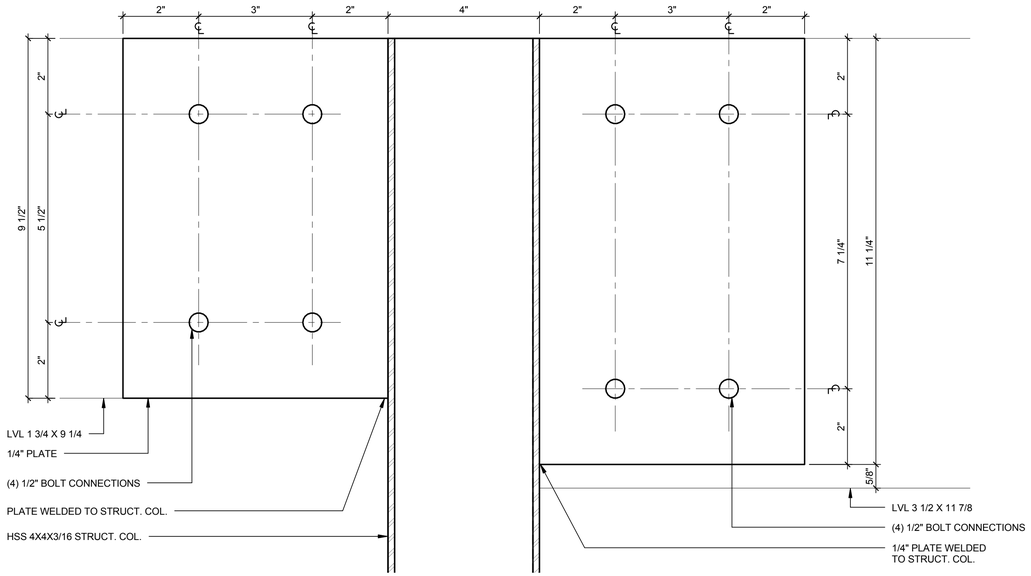
LOT NUMBER: LOT #110

SHEET TITLE

NORTHEAST CORNER COLUMN CONNECTIONS

S-518

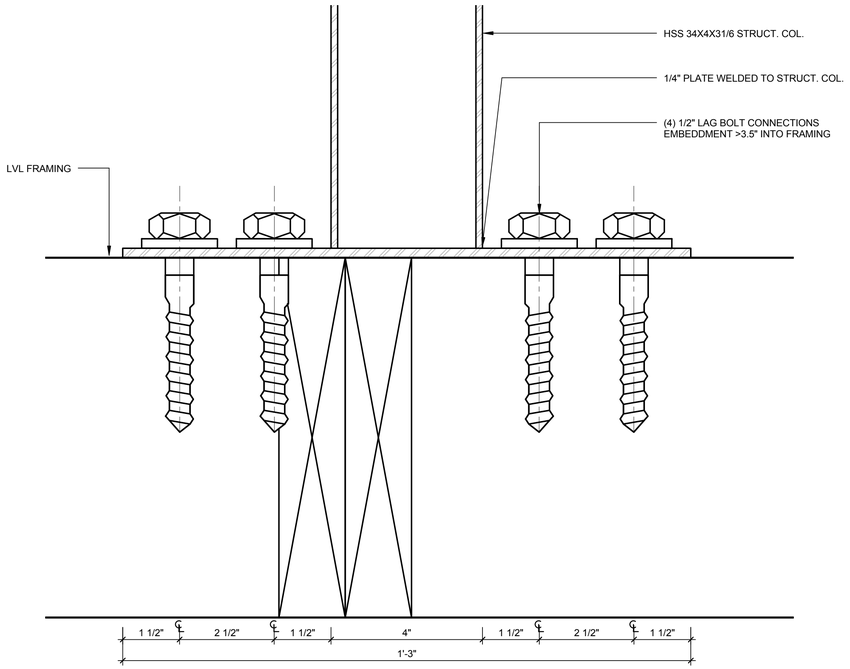
8/16/2015 7:19:53 PM



C1 KNIFE PLATE CONNECTION SECTION DETAIL

6" = 1'-0"

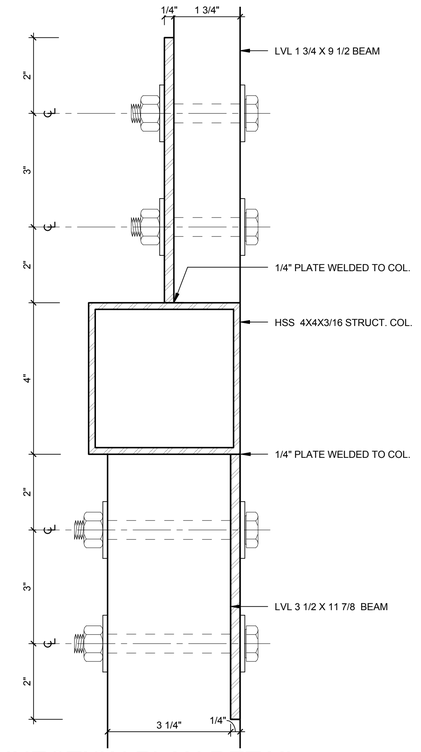
0 1" 2" 3" 4"



A1 LAG BOTTOM CONNECTION SECTION DETAIL

6" = 1'-0"

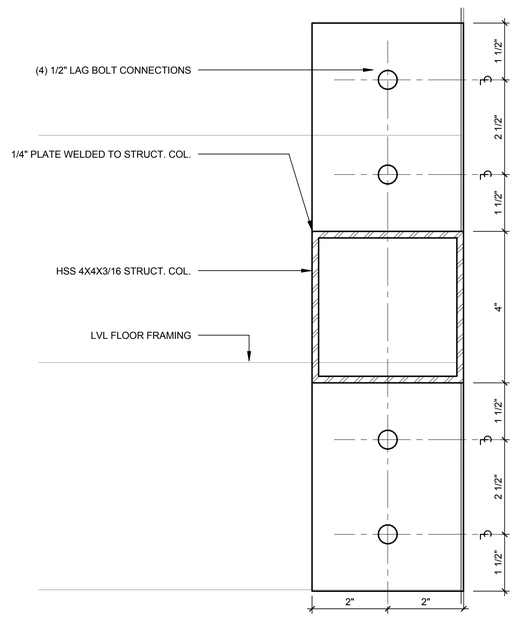
0 1" 2" 3" 4"



C5 KNIFE PLATE CONNECTION PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"



A5 LAG BOTTOM CONNECTION PLAN DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

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01	10-09-2014	80% DD SET

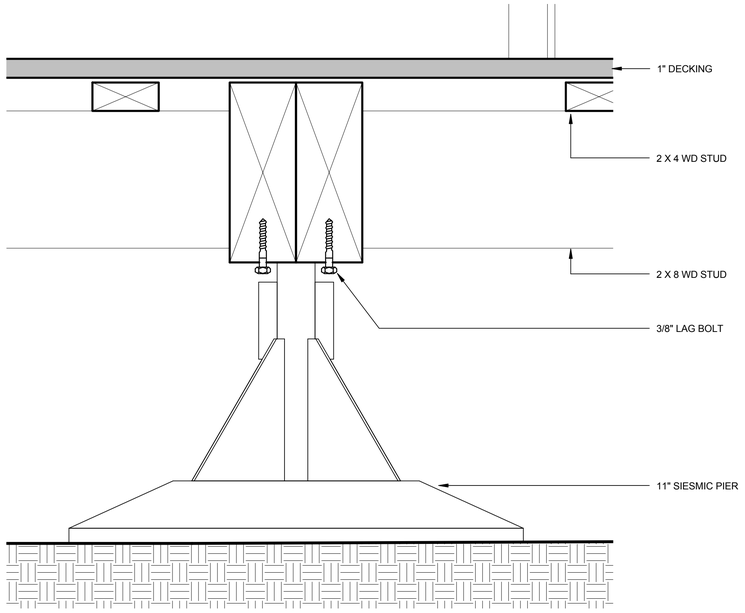
LOT NUMBER: LOT #110

SHEET TITLE

NORTHEAST COLUMN CONNECTIONS

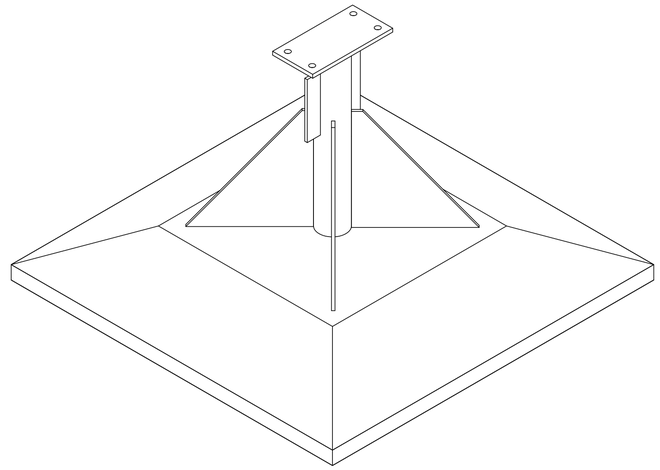
S-519

8/16/2015 7:20:00 PM



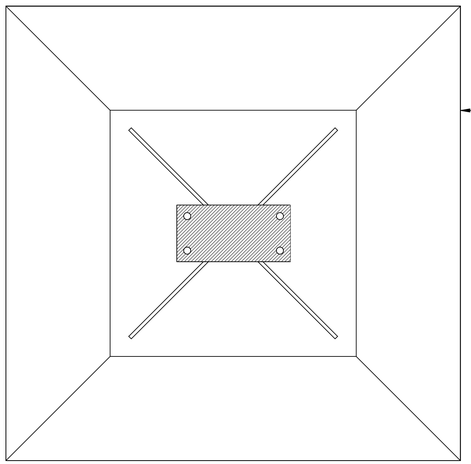
C1 PIER_SEISMIC PIER
3" = 1'-0"

0 3" 6" 1'



C4 SEISMIC PIER ISOMETRIC

0 3" 6" 1'



A1 SEISMIC PIER AND CONCRETE PAD TOP VIEW
3" = 1'-0"

0 3" 6" 1'

8/16/2015 7:20:07 PM

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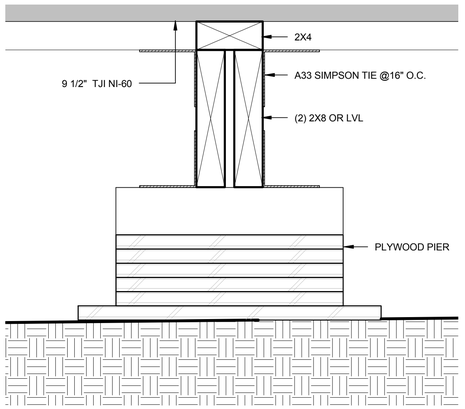
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

SEISMIC PIER DETAILS

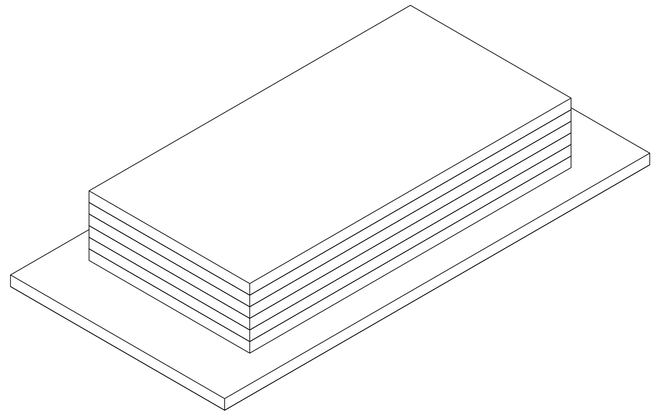
S-521



C1 PIER_PLYWOOD MODULE ANCHORED PIER

3" = 1'-0"

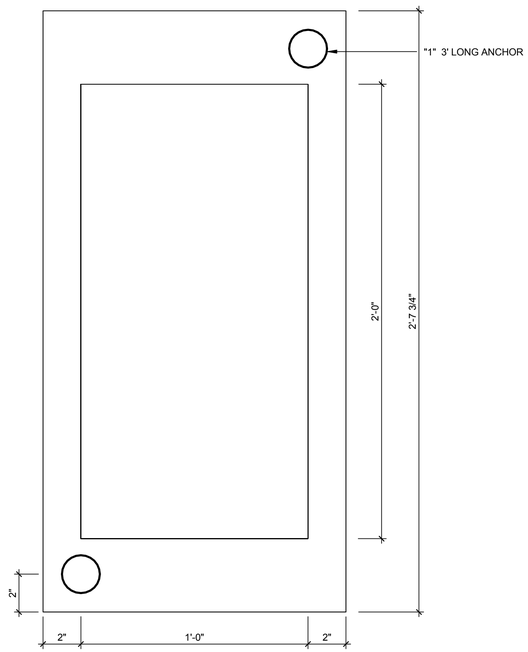
0 1" 2" 3" 4"



C4 PIER_ANCHOR PIER

NOTE: ANCHORS MUST EXTEND 3' INTO THE GROUND.

0 1" 2" 3" 4"



A1 PIER_ANCHOR PIER

3" = 1'-0"

0 1" 2" 3" 4"

8/16/2015 7:20:16 PM

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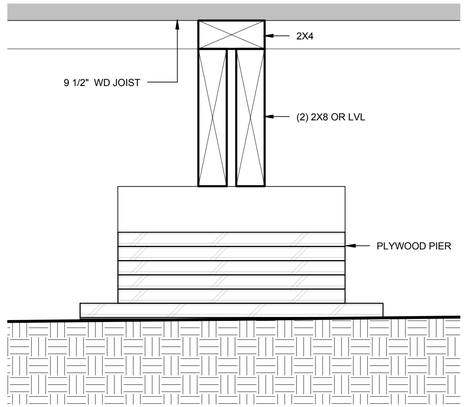
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

ANCHOR PIER DETAILS

S-522

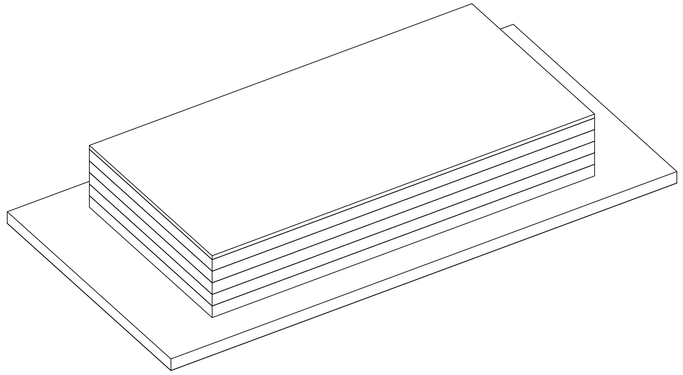


C1 PIER_PLYWOOD MODULE PIERS

3" = 1'-0"

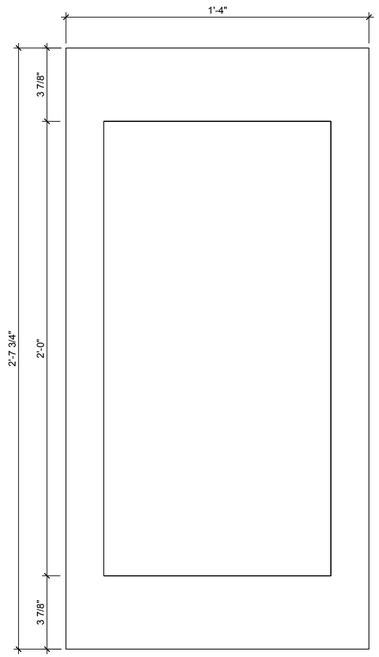
0 3" 6" 1'

NOTES:
1. PLYWOOD PIERS CAN BE ADJUSTED TO NECESSARY HEIGHT BY ADDING VARYING THICKNESSES OF PLYWOOD.



C4 PIER_PLYWOOD STACK

0 3" 6" 1'



A1 PIER_PLYWOOD PIER

3" = 1'-0"

0 3" 6" 1'

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01	10-09-2014	80% DD SET

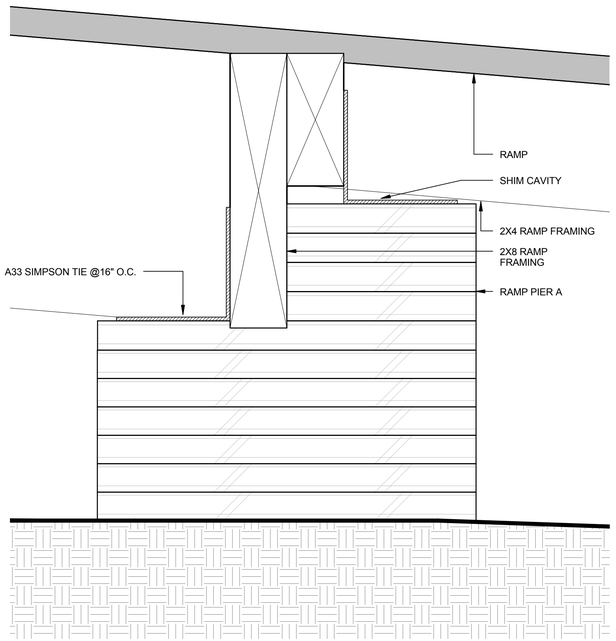
LOT NUMBER: LOT #110

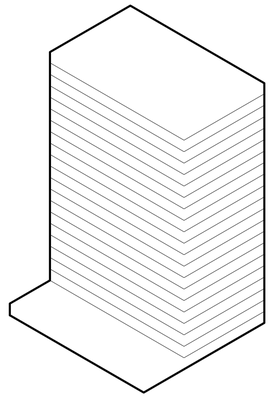
SHEET TITLE

PLYWOOD MODULE PIER DETAILS

S-523

8/16/2015 7:20:23 PM

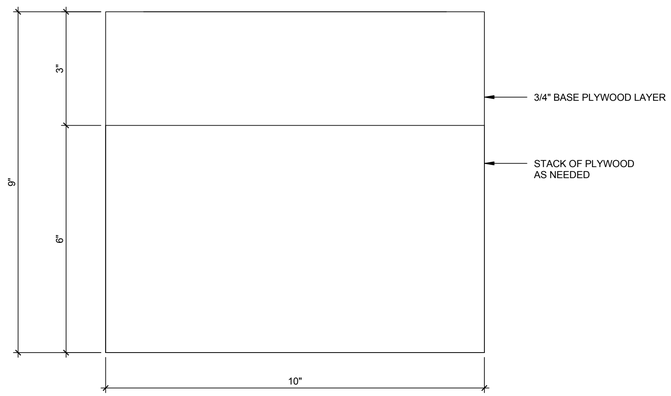




C2 PIER_RAMP PIER A

6" = 1'-0"

0 1" 2" 3" 4"



C4 PIER_RAMP PIER A

0 1" 2" 3" 4"

A1 PIER_RAMP PIER A

6" = 1'-0"

0 1" 2" 3" 4"

8/16/2015 7:20:30 PM

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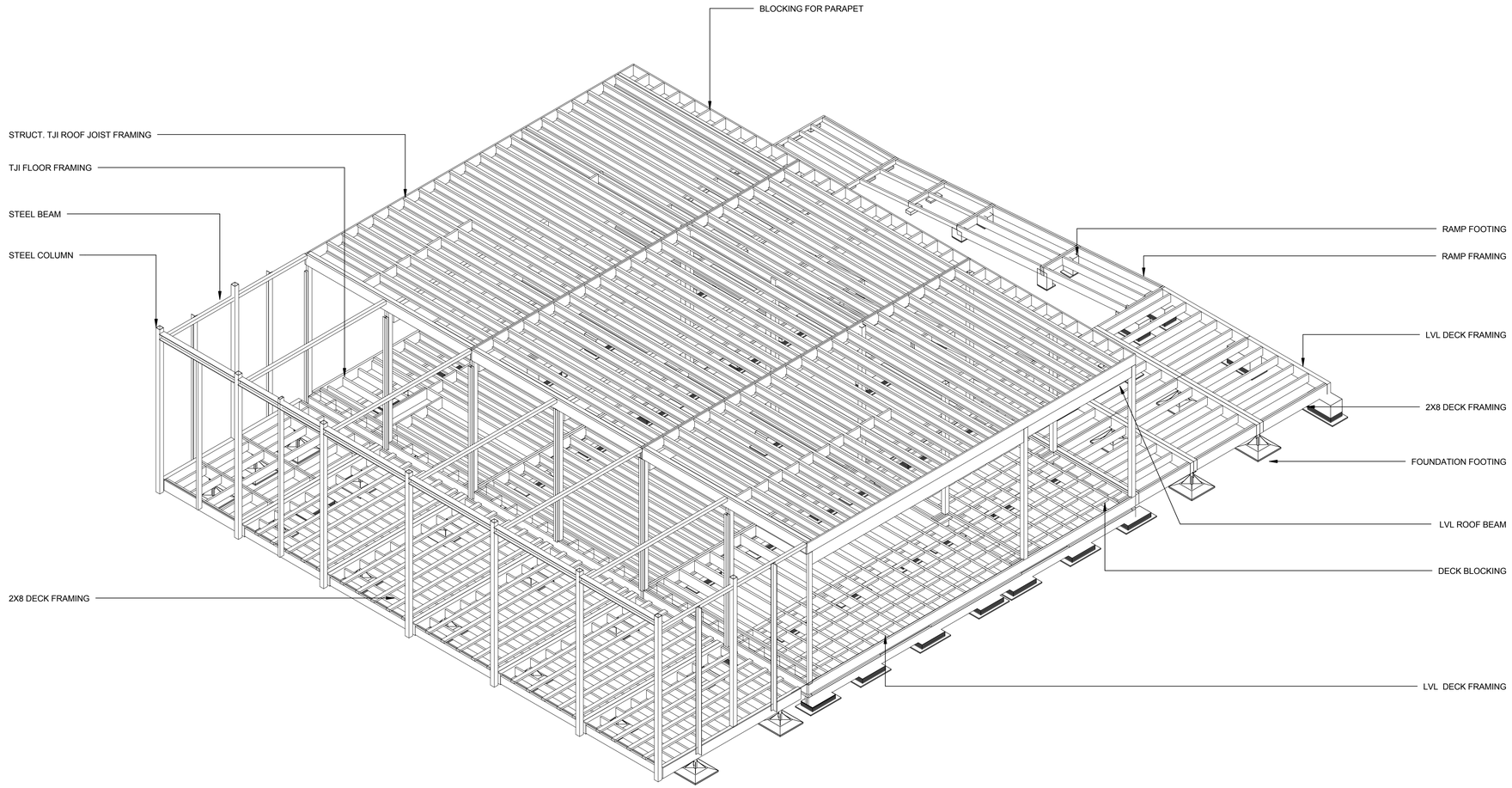
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

RAMP PIER - A DETAILS

S-524



C1 SOUTH EAST STRUCTURAL ISOMETRIC

0 2' 4' 8'

8/16/2015 7:20:37 PM

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

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SHEET TITLE

FRAMING ISOMETRICS

S-901

A1 ORANGE COUNTY GREAT PARK, IRVINE, CA

1/64" = 1'-0"

0 16' 32' 64'

8/16/2015 6:11:37 PM

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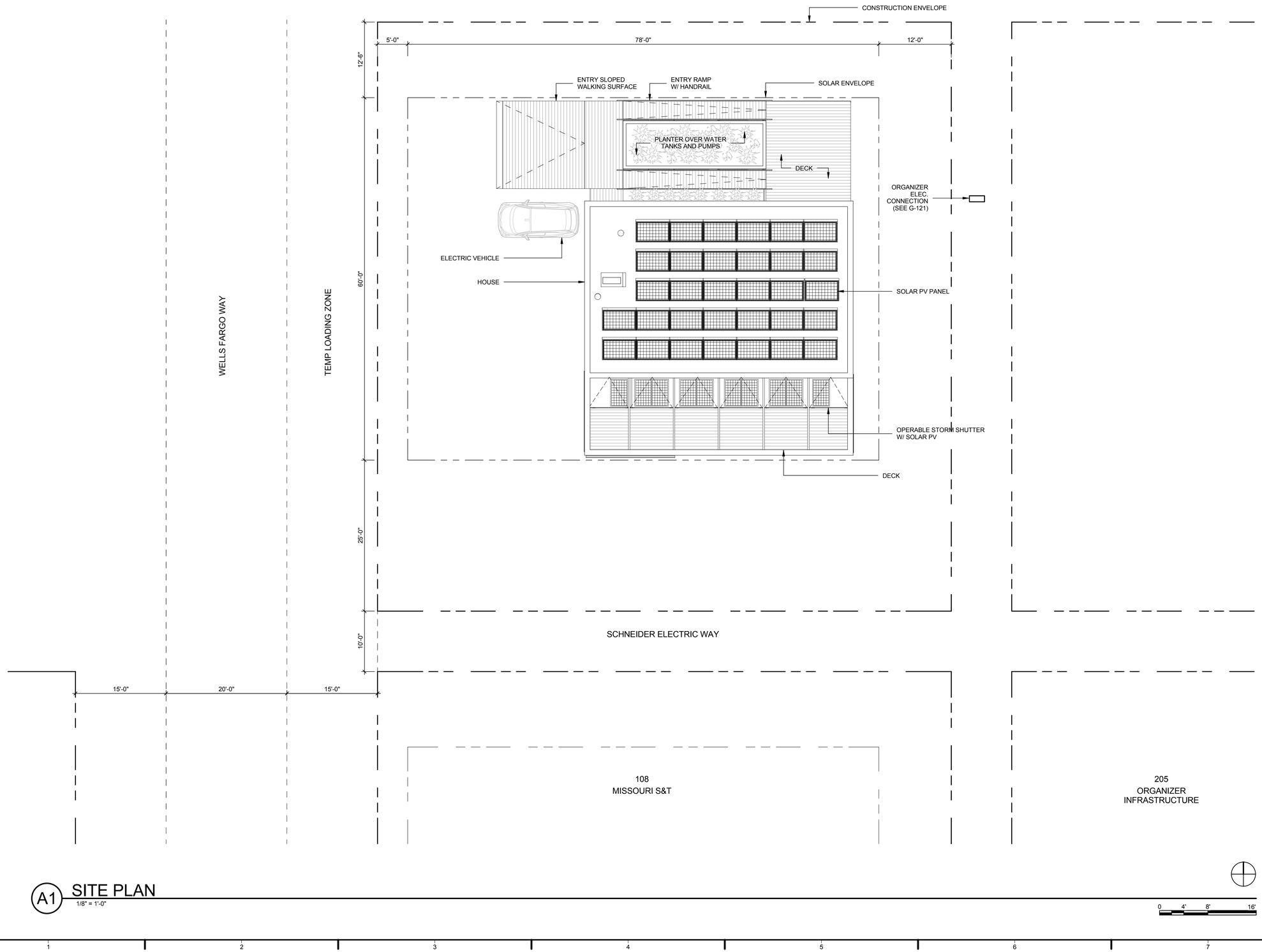
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

LOCATION PLAN

A-101



A1 SITE PLAN
1/8" = 1'-0"

0 4' 8' 16'

8/16/2015 6:11:44 PM

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01	10-09-2014	80% DD SET

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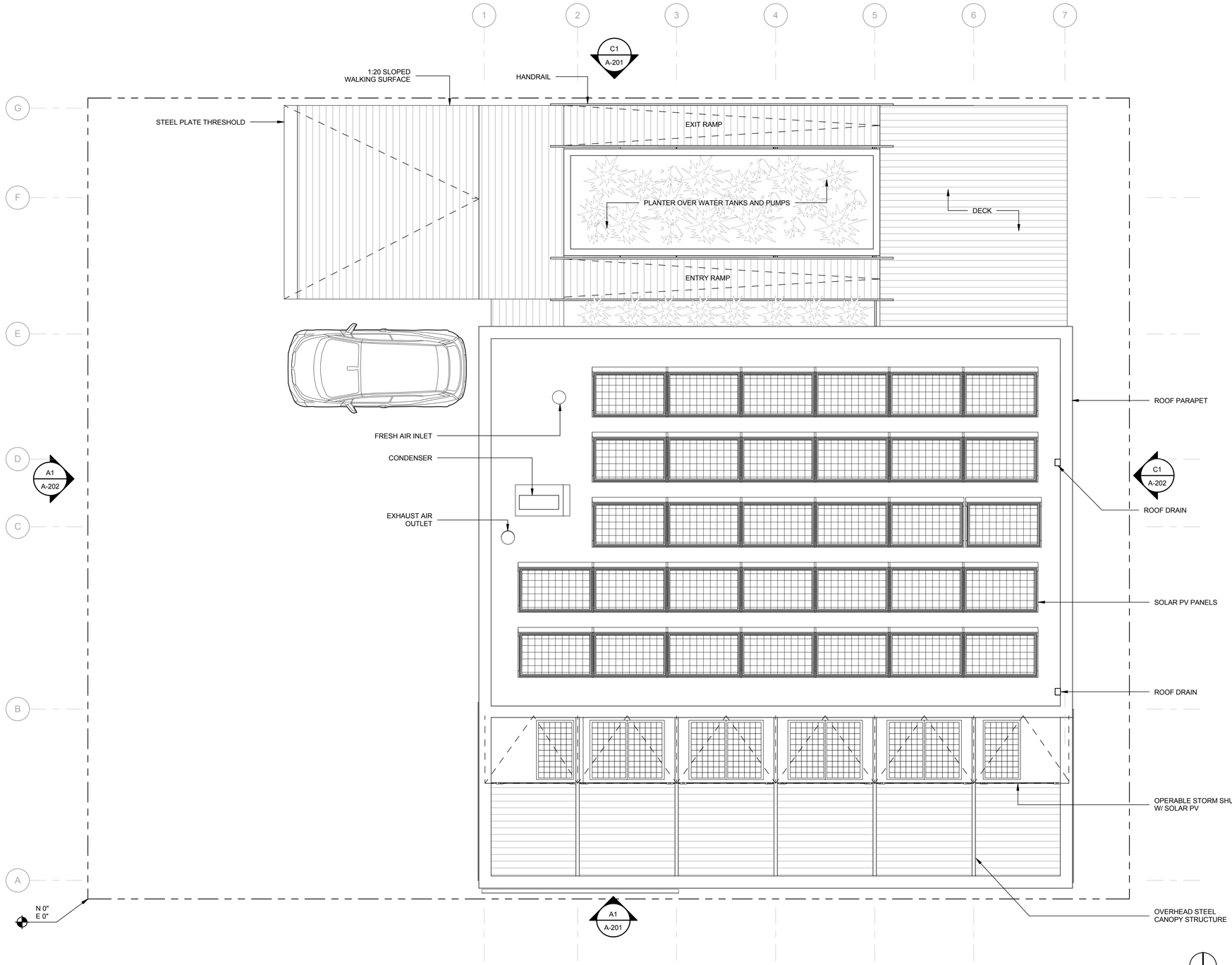
SHEET TITLE

SITE PLAN

A-102



A1 ROOF PLAN

1/4" = 1'-0"

GENERAL SHEET NOTES:

1. ROOF SLOPE AT 1/8" PER FT.

REFERENCE KEYNOTES:

1.

SHEET KEYNOTES:

DRAWING KEY

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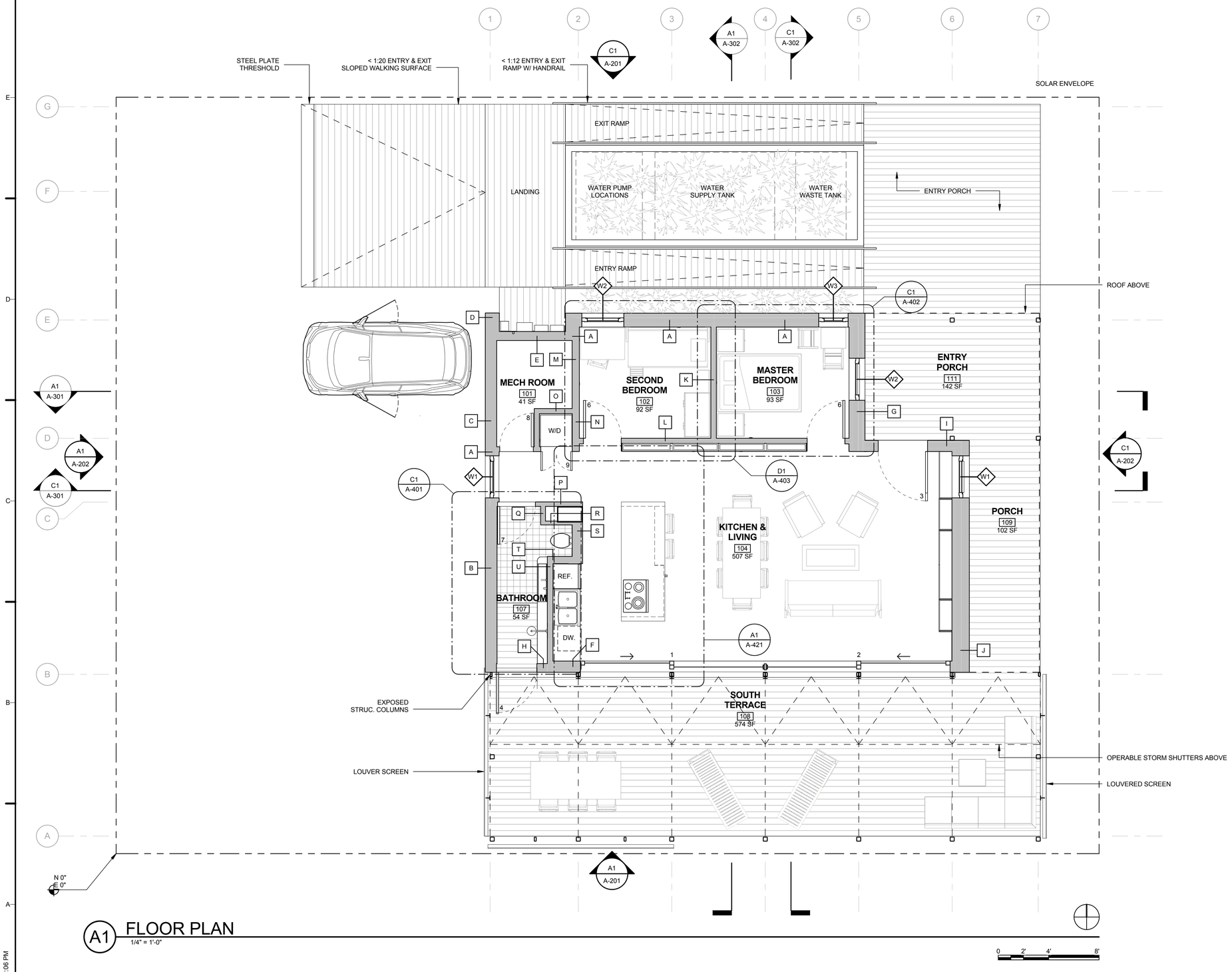
SHEET TITLE

ROOF PLAN

A-111

8/16/2015 6:11:50 PM



A1 FLOOR PLAN
1/4" = 1'-0"

0 2' 4' 8'

8/16/2015 6:12:06 PM

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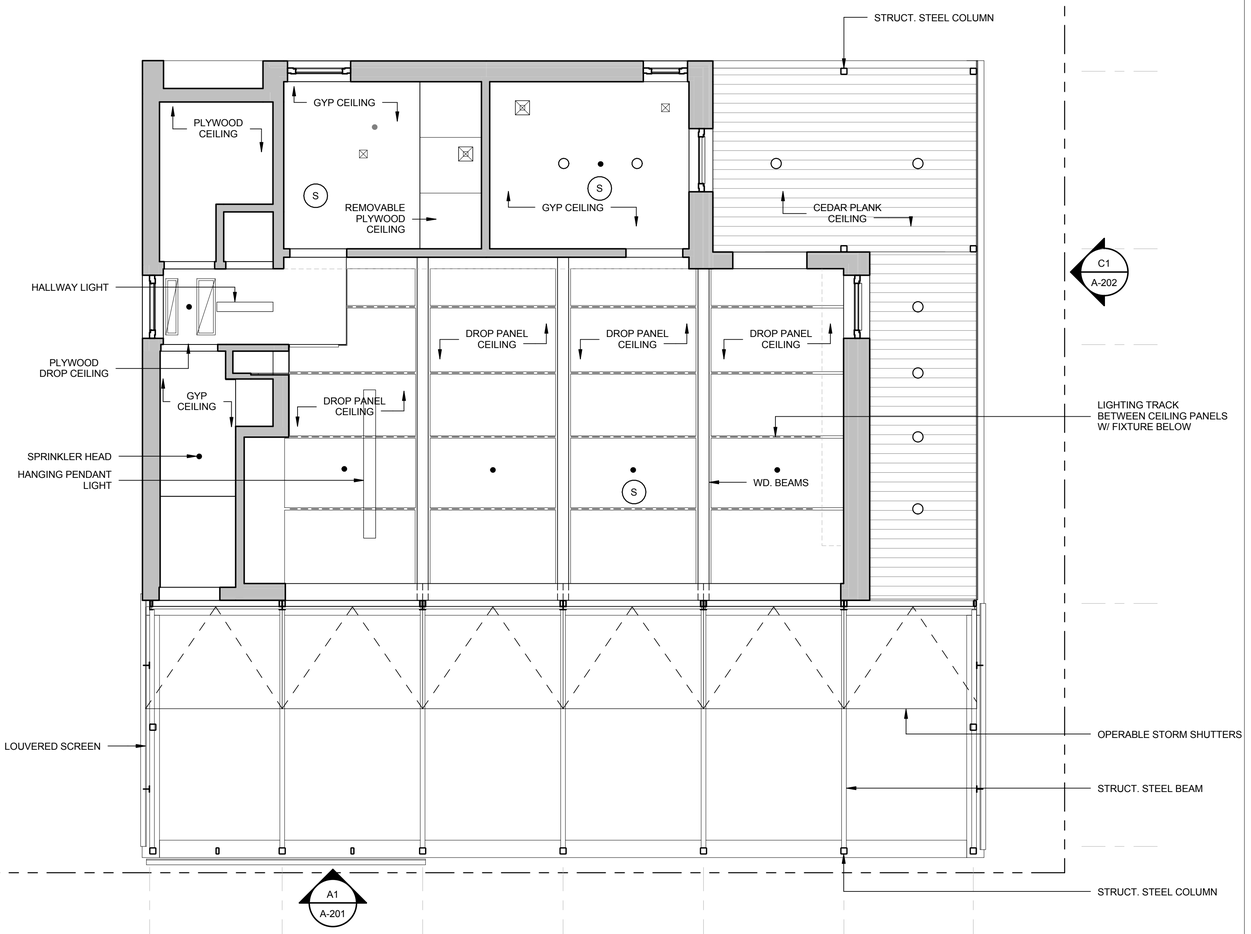
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

FIRST FLOOR PLAN

A-113



A1 REFLECTED CEILING PLAN

1/4" = 1'-0"

0 2' 4' 8'

DRAWING KEY:

- FRESH AIR SUPPLY DIFFUSER
- CONDITIONED AIR SUPPLY DIFFUSER
- RETURN GRILLE
- S SMOKE DETECTOR
- SPRINKLER
- RECESSED LIGHT

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BLDG TYP LLC
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CLIENT

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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

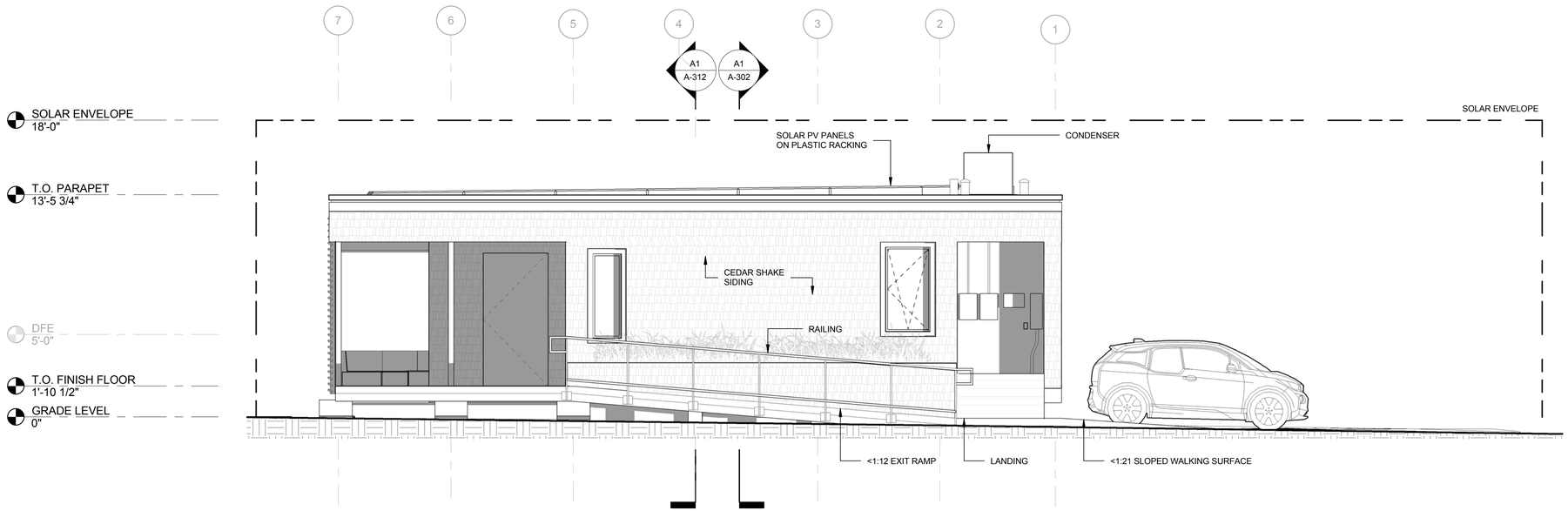
LOT NUMBER: LOT #110

SHEET TITLE

FIRST FLOOR REFLECTED CEILING PLAN

A-121

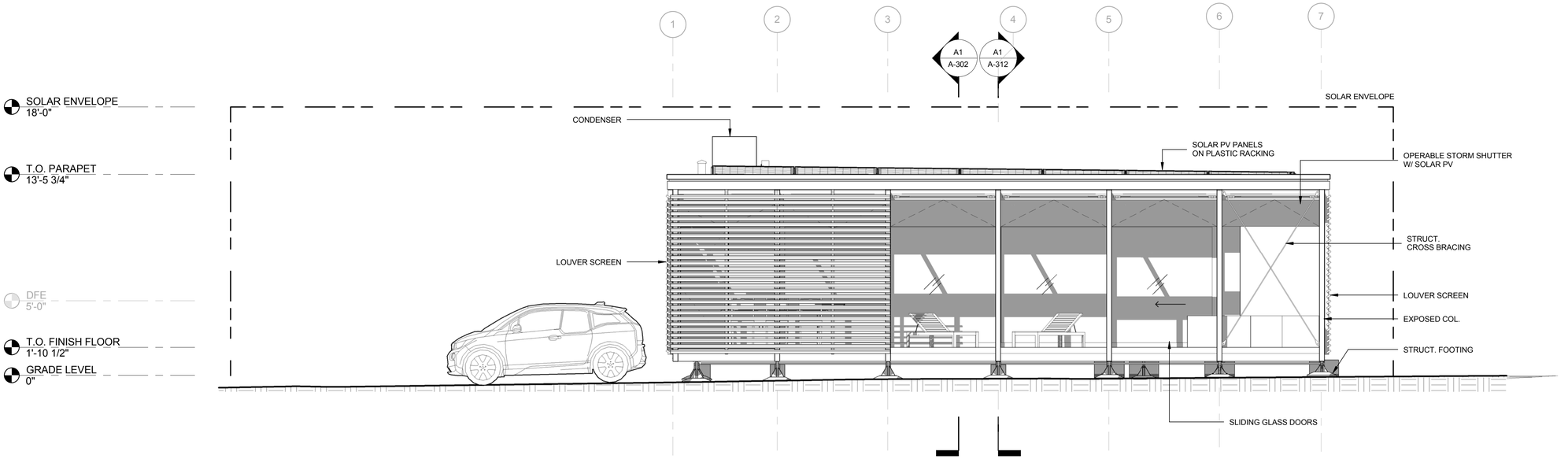
8/16/2015 6:12:13 PM



C1 NORTH ELEVATION

1/4" = 1'-0"

0 2' 4' 8'



A1 SOUTH ELEVATION

1/4" = 1'-0"

0 2' 4' 8'

8/16/2015 6:12:28 PM

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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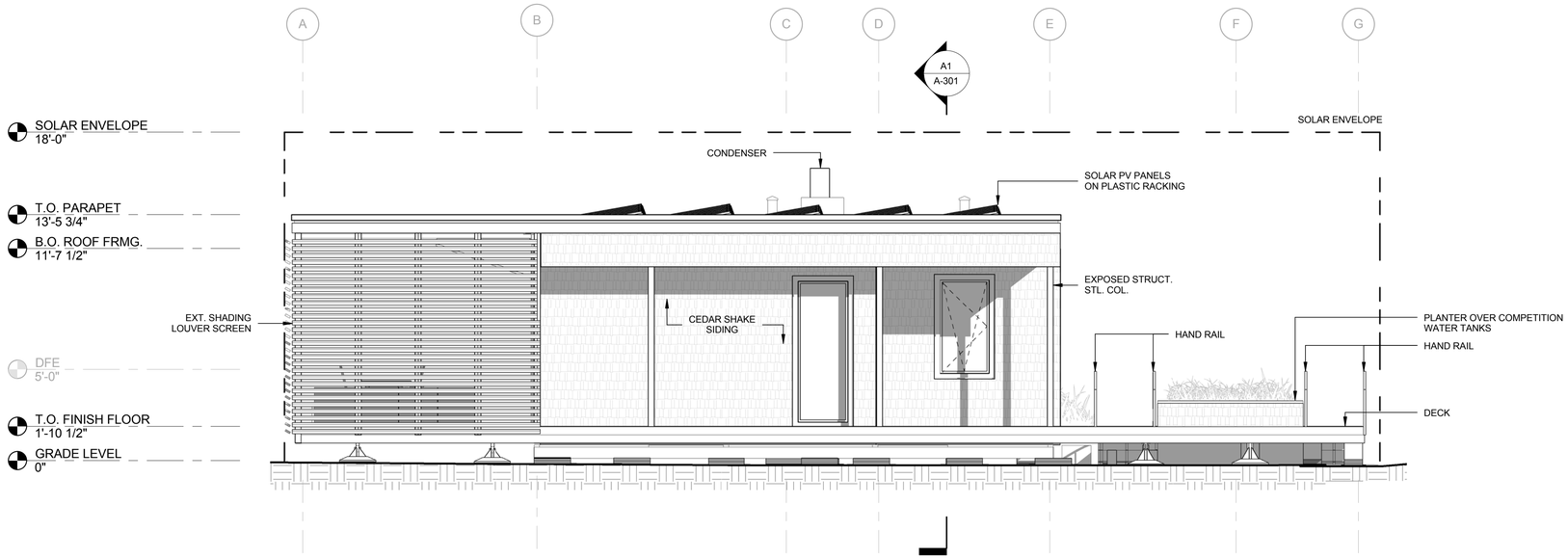
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

EXTERIOR
ELEVATIONS

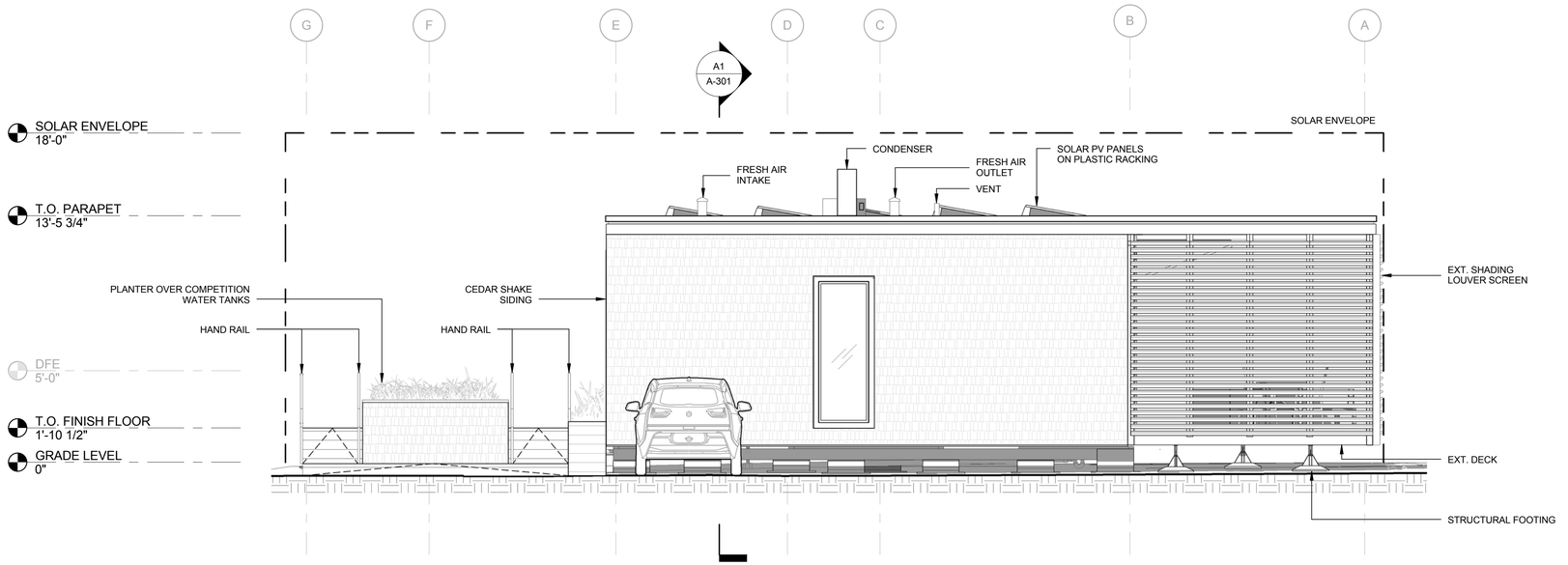
A-201



C1 EAST ELEVATION

1/4" = 1'-0"

0 2' 4' 8'



A1 WEST ELEVATION

1/4" = 1'-0"

0 2' 4' 8'

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

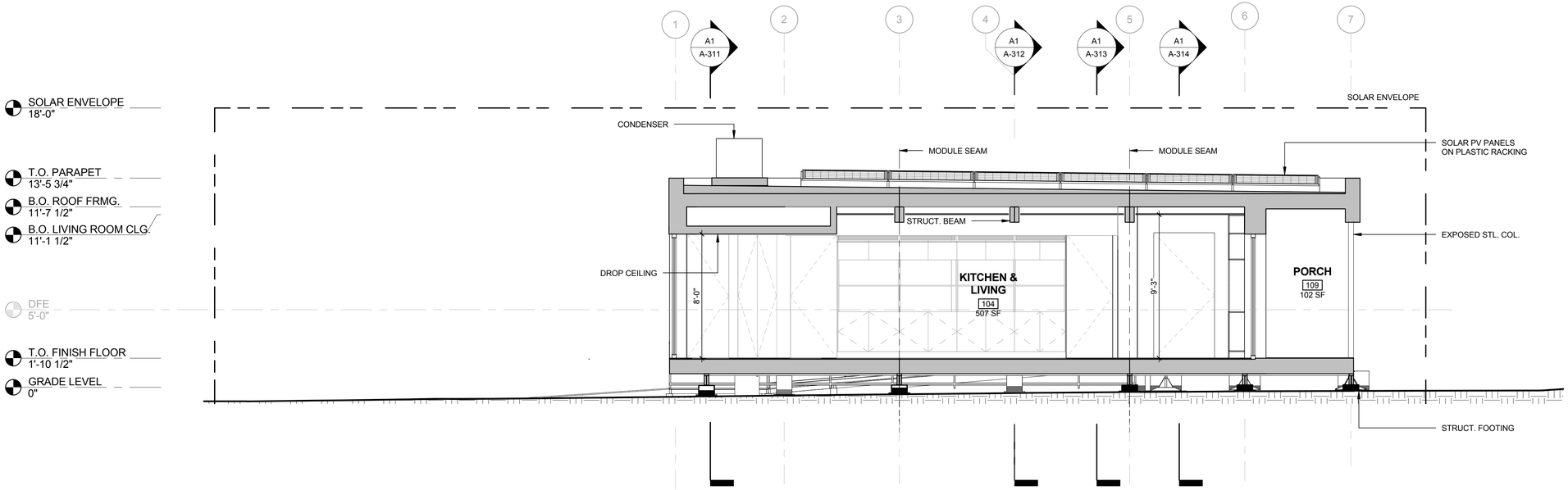
LOT NUMBER: LOT #110

SHEET TITLE

EXTERIOR ELEVATIONS

A-202

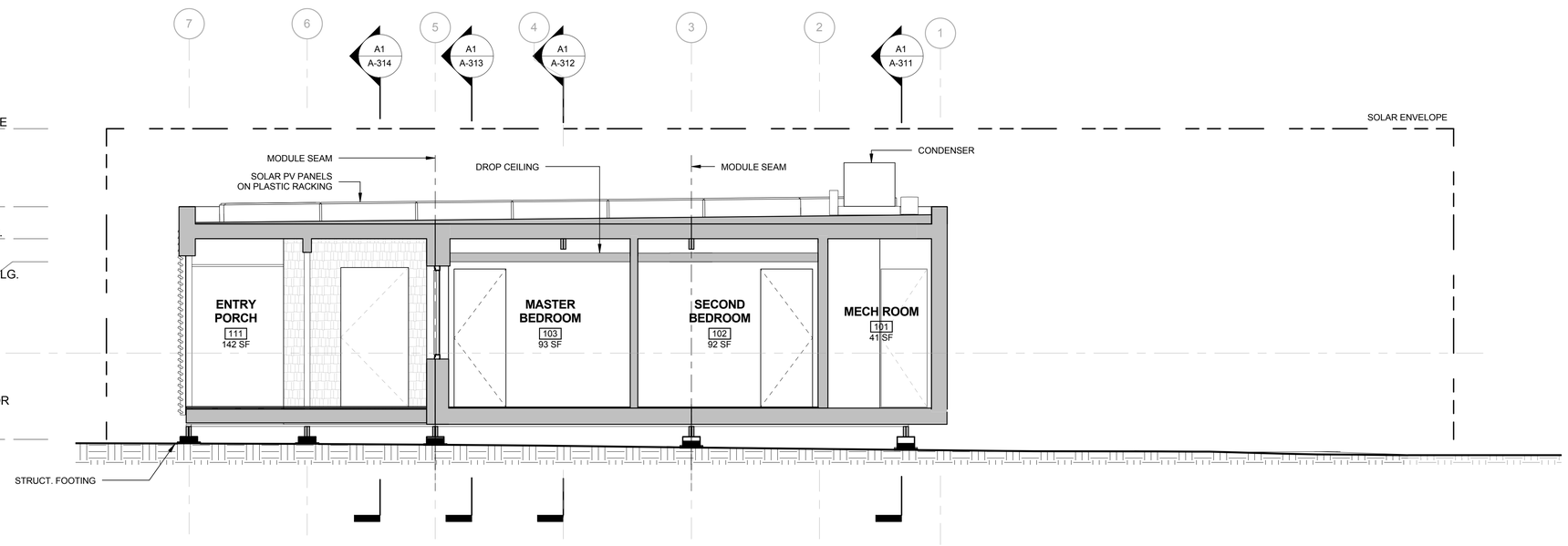
8/16/2015 6:12:42 PM



C1 BUILDING SECTION LOOKING NORTH

1/4" = 1'-0"

0 2' 4' 8'



A1 BUILDING SECTION LOOKING SOUTH

1/4" = 1'-0"

0 2' 4' 8'

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

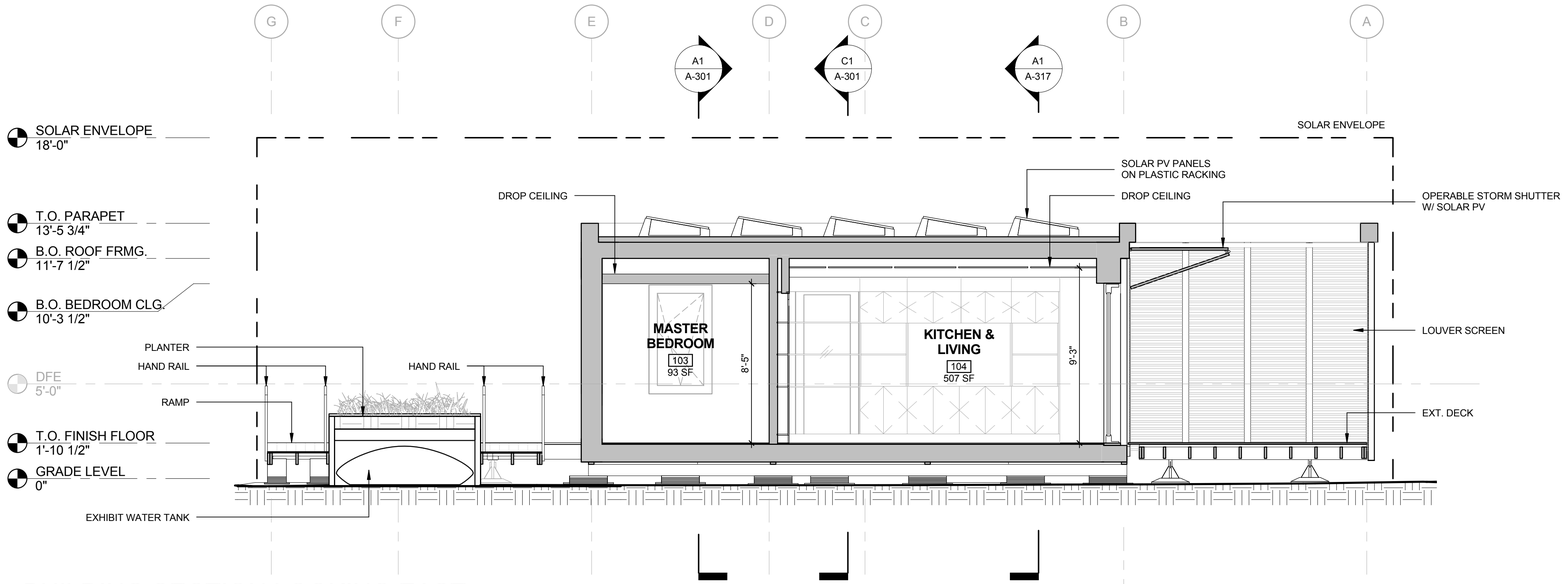
LOT NUMBER: LOT #110

SHEET TITLE

SITE SECTIONS

A-301

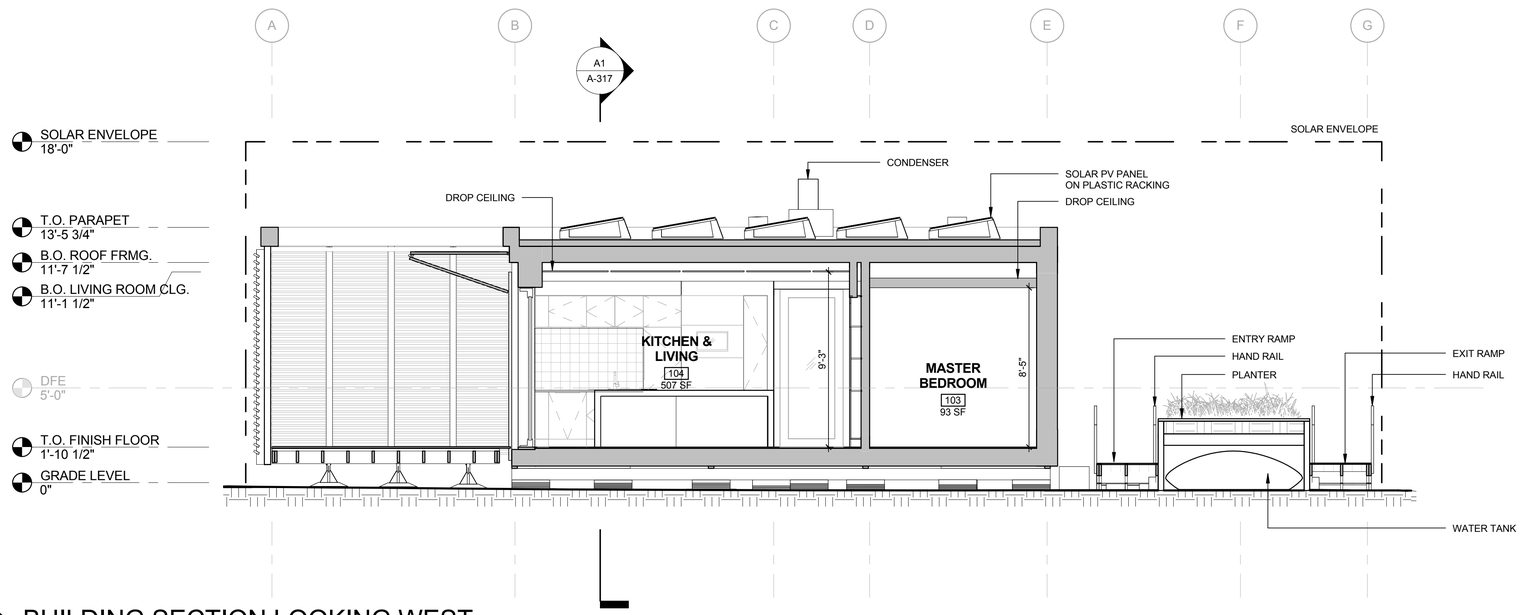
8/16/2015 6:13:07 PM



C1 BUILDING SECTION LOOKING EAST

1/4" = 1'-0"

0 2' 4' 8'



A1 BUILDING SECTION LOOKING WEST

1/4" = 1'-0"

0 2' 4' 8'

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04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

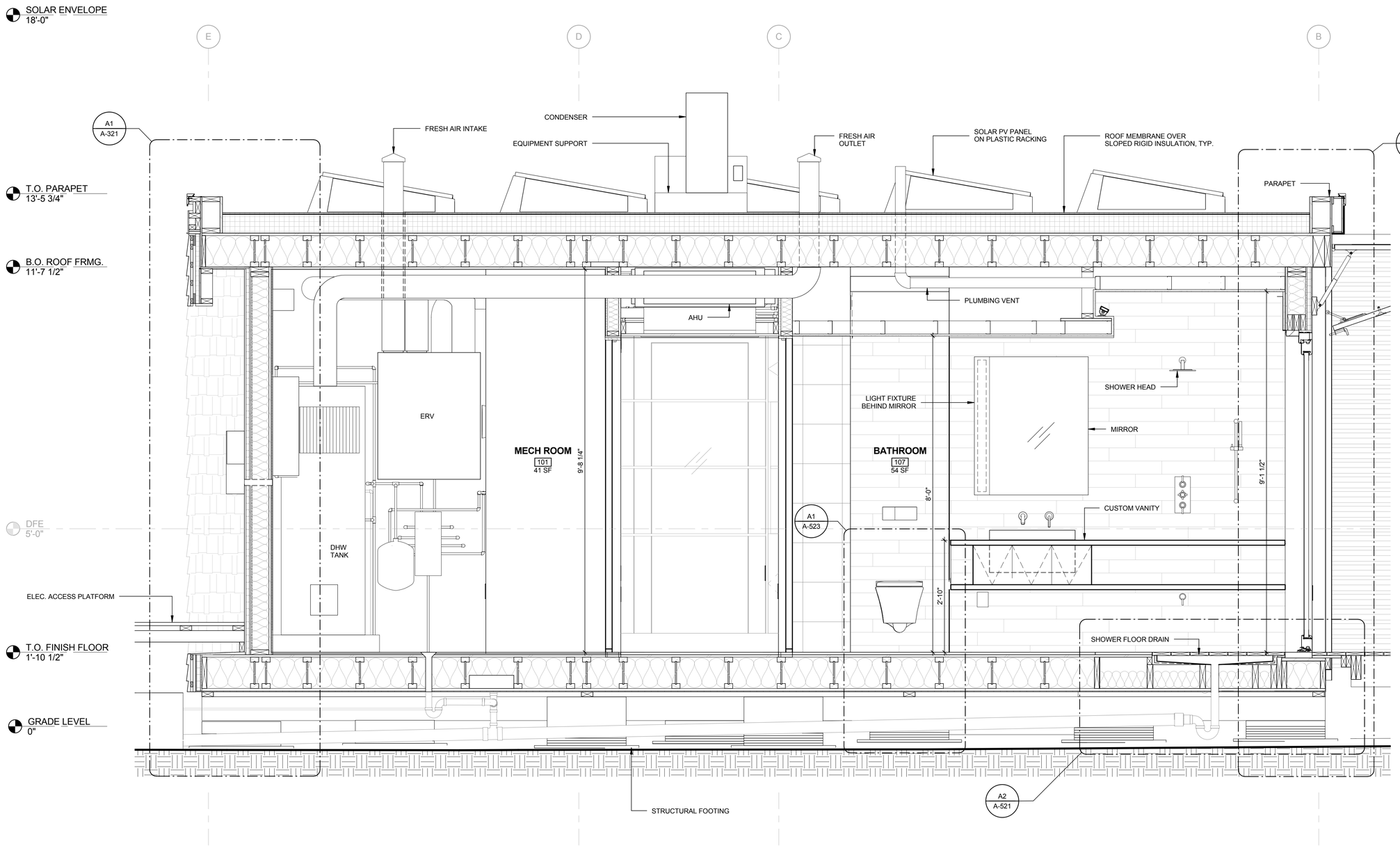
LOT NUMBER: LOT #110

SHEET TITLE

SITE SECTIONS

A-302

8/16/2015 6:13:20 PM



A1 BUILDING SECTION LOOKING EAST - MECH. ROOM & BATHROOM

3/4" = 1'-0"

0 1' 2' 3'

SU+RE HOUSE

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03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

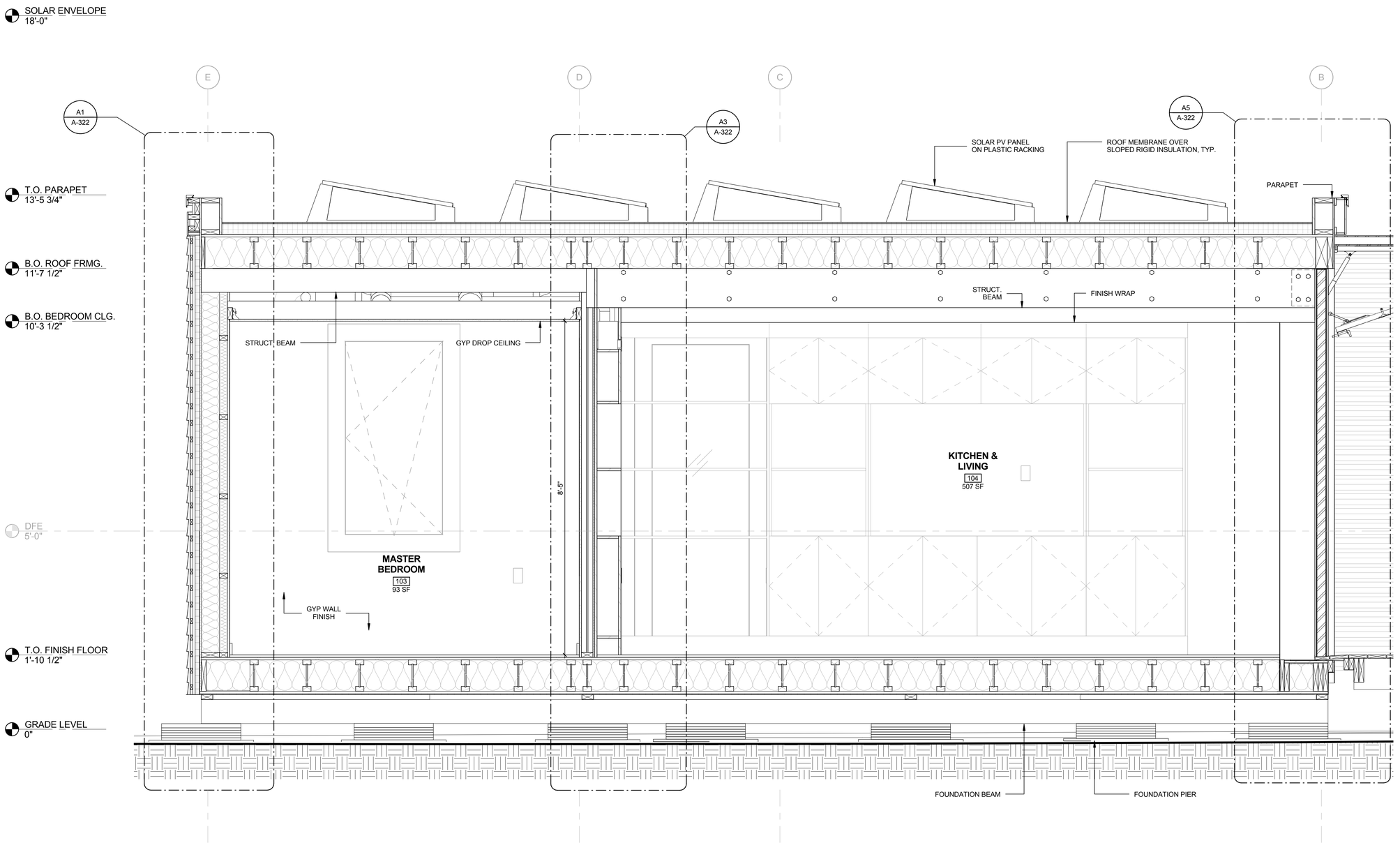
LOT NUMBER: LOT #110

SHEET TITLE

BUILDING SECTION

A-311

8/16/2015 6:13:33 PM



A1 BUILDING SECTION LOOKING EAST@ BEDROOM & LIVING ROOM

3/4" = 1'-0"

0 1' 2' 3'

8/16/2015 6:13:42 PM

SU+RE HOUSE

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
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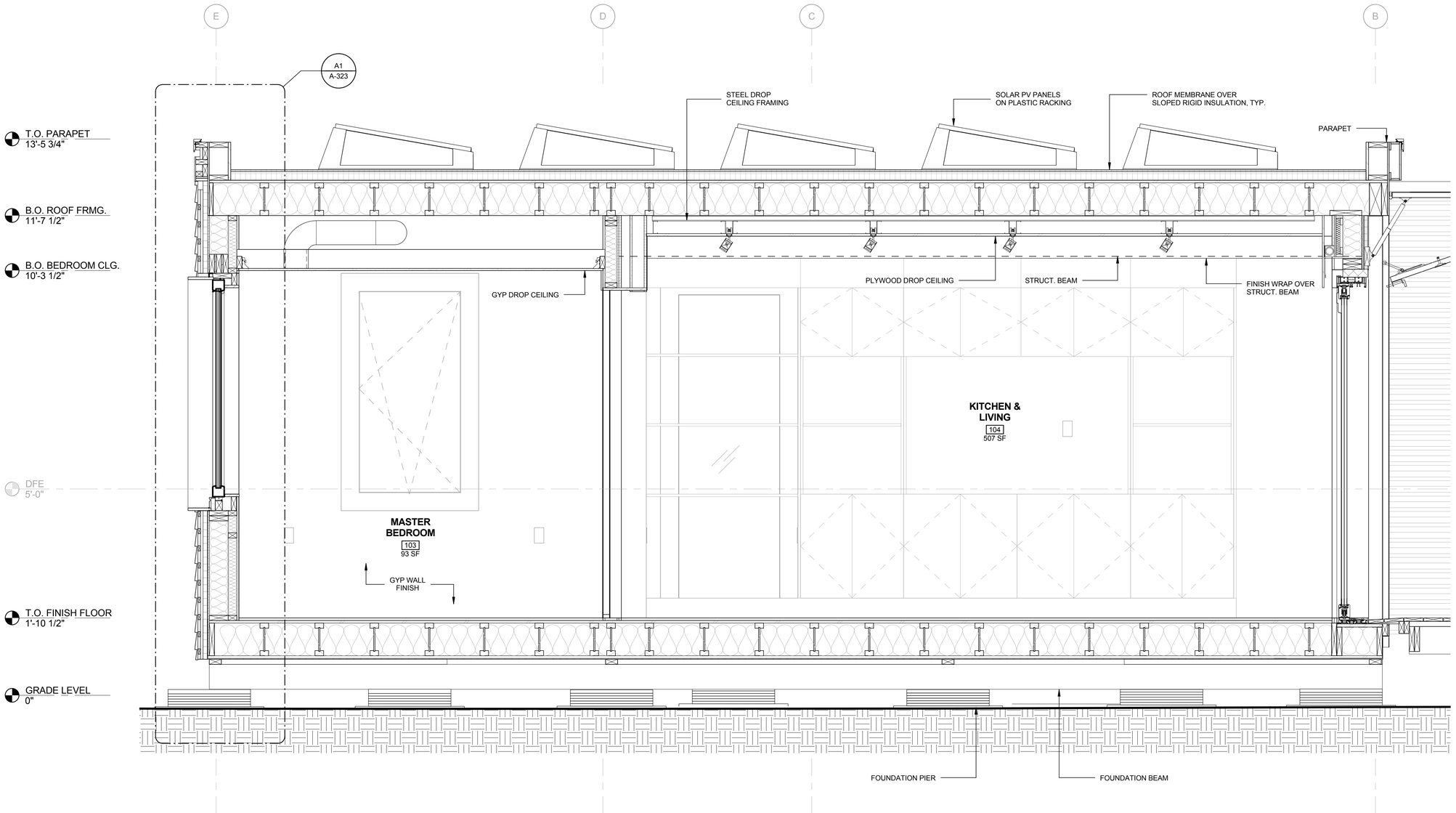
SHEET TITLE

BUILDING SECTION

A-312



A1 BUILDING SECTION LOOKING EAST @ BED & LIVING ROOM

3/4" = 1'-0"

0 1' 2' 3'

8/16/2015 6:13:51 PM

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
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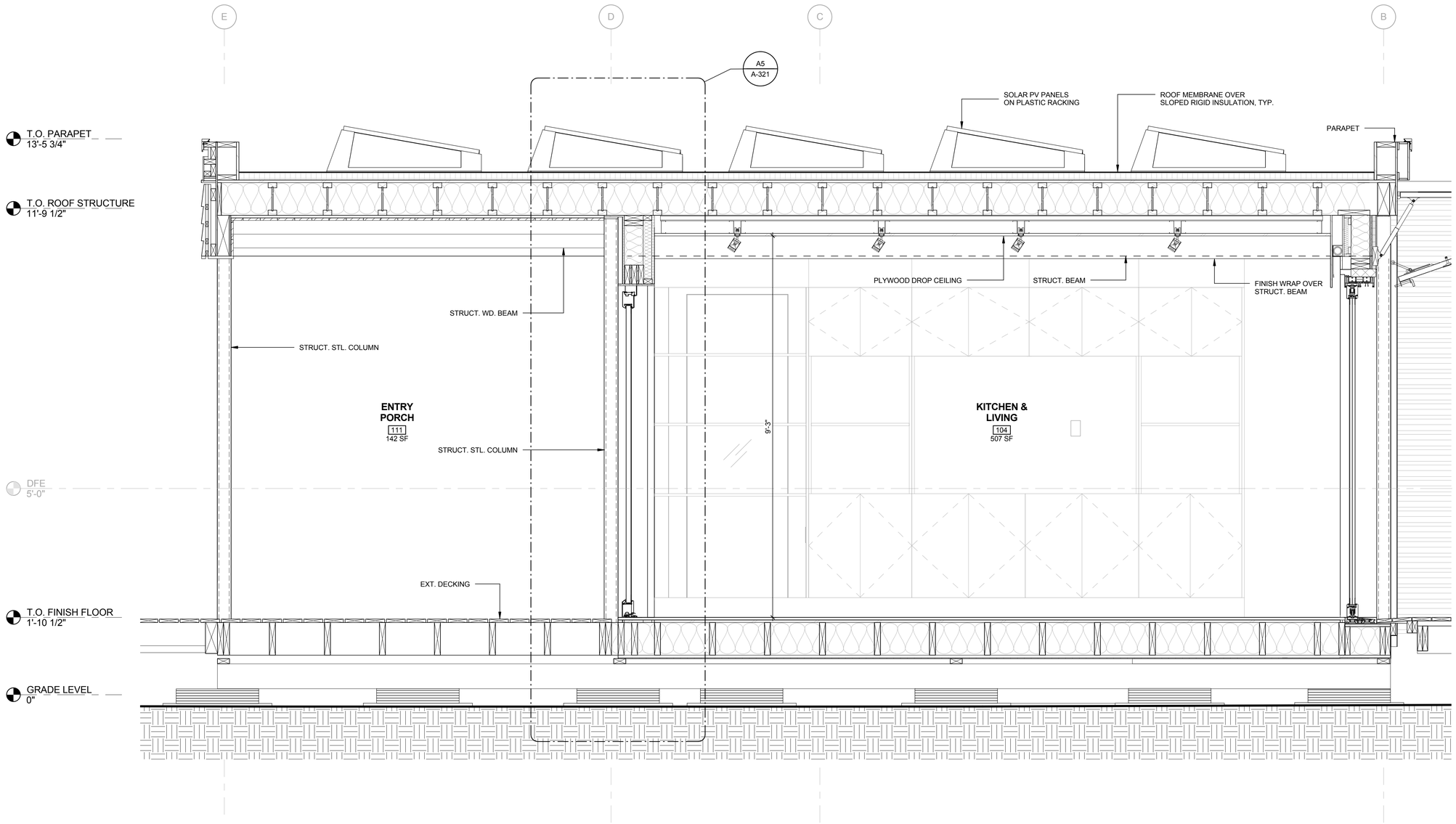
SHEET TITLE

BUILDING SECTION

A-313



A1 BUILDING SECTION LOOKNG EAST @ ENTRY DOOR

3/4" = 1'-0"

0 1' 2' 3'

8/16/2015 6:14:00 PM

SU+RE HOUSE

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03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
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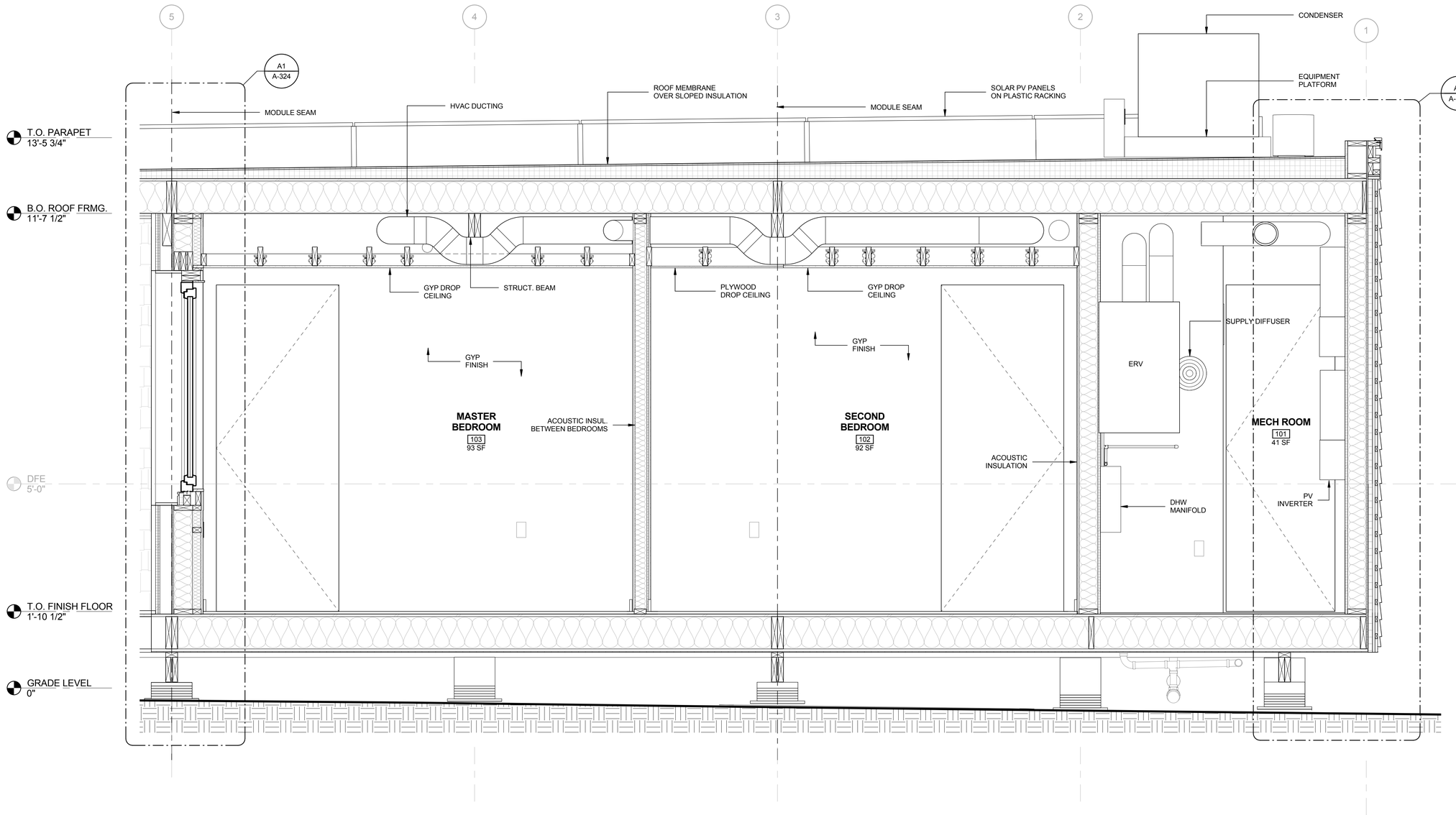
SHEET TITLE

BUILDING SECTION

A-314



A1 WALL SECTION LOOKING SOUTH @ BEDROOMS & MECH. ROOM

3/4" = 1'-0"

0 1' 2' 3'

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

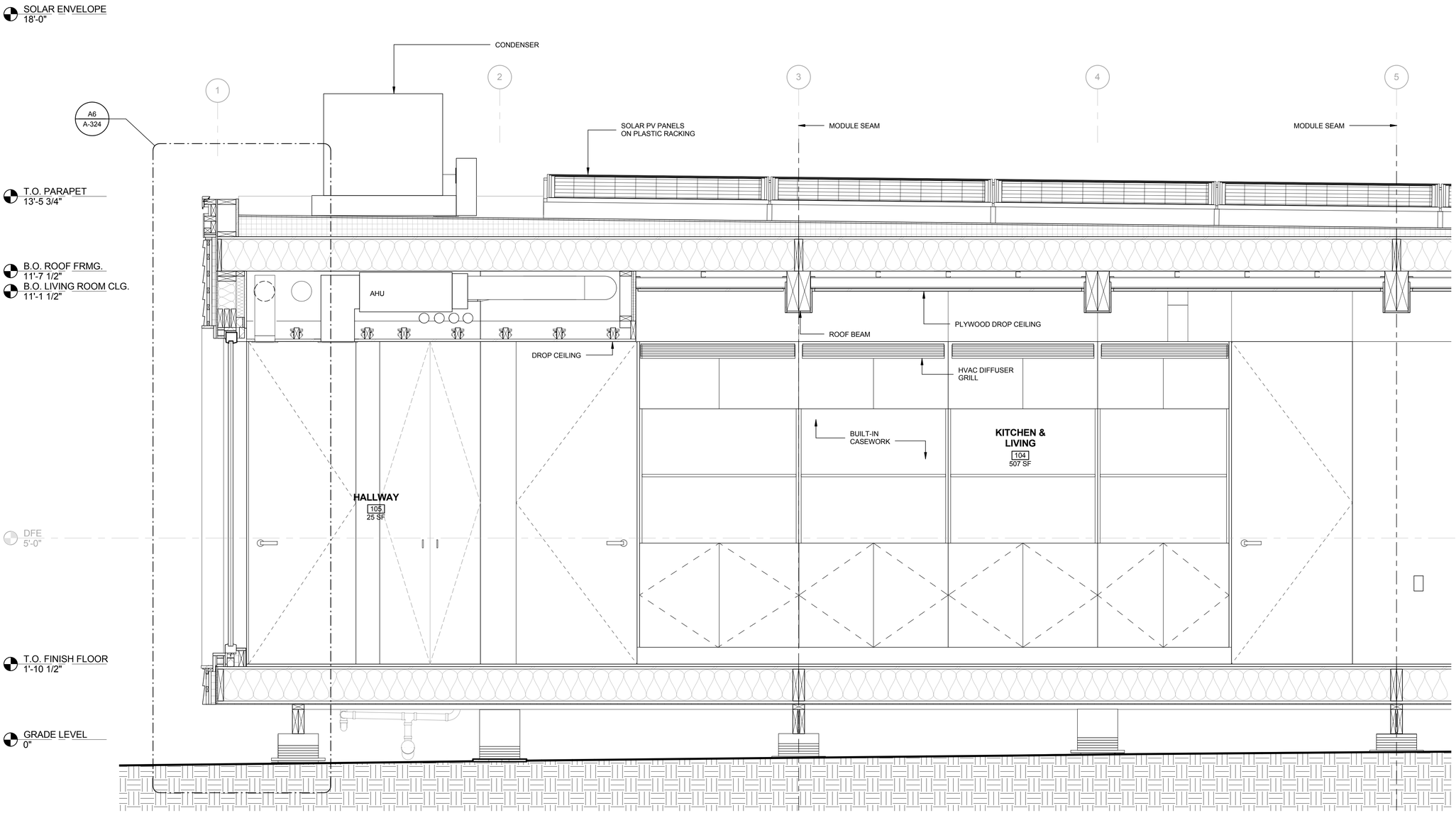
LOT NUMBER: LOT #110

SHEET TITLE

BUILDING SECTION

A-315

8/16/2015 6:14:20 PM



A1 BUILDING SECTION LOOKING NORTH @ HALLWAY

3/4" = 1'-0"

0 1' 2' 3'

8/16/2015 6:14:36 PM

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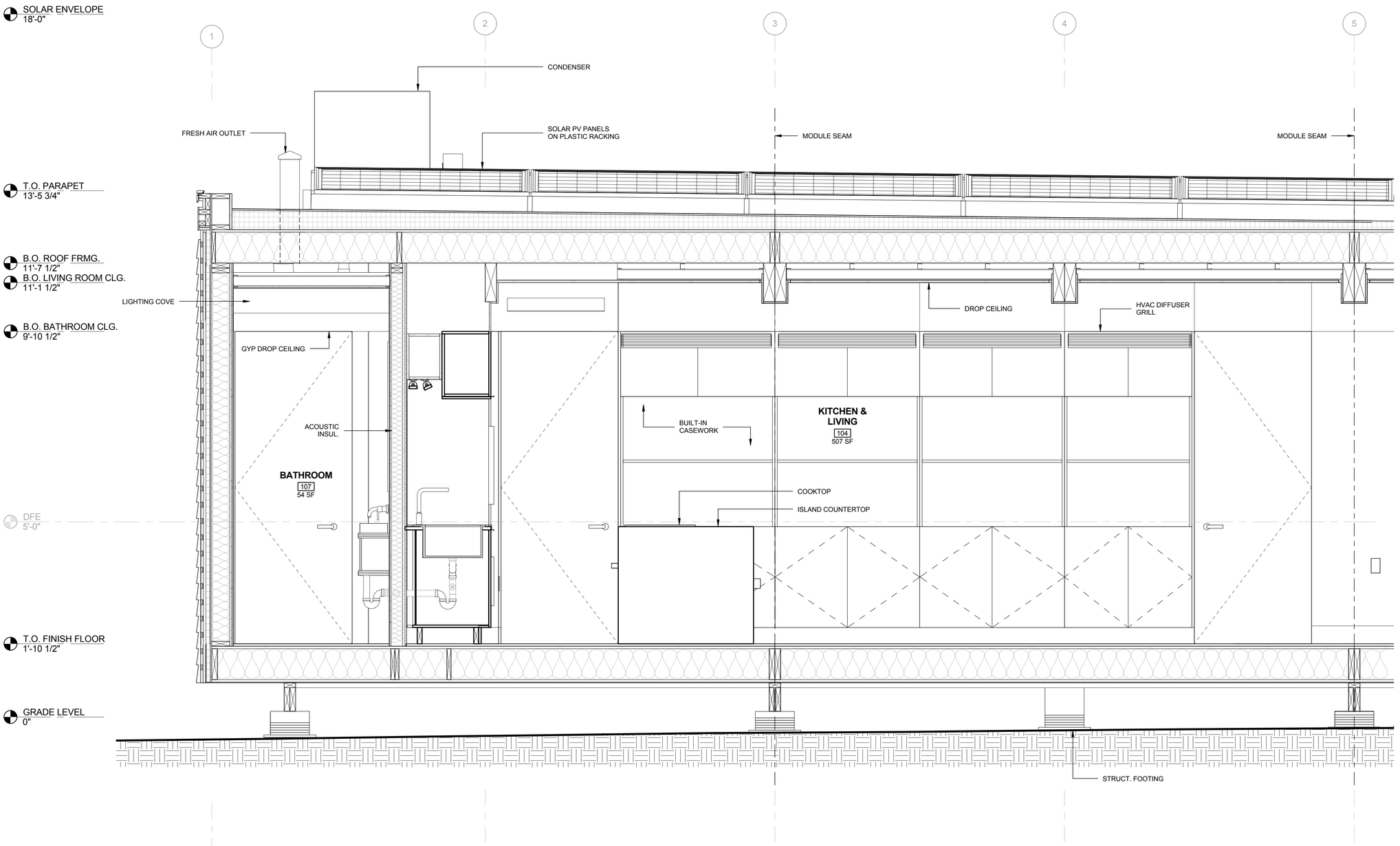
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

BUILDING SECTION

A-316



A1 BUILDING SECTION LOOKING NORTH

3/4" = 1'-0"

0 1' 2' 3'

8/16/2015 6:14:46 PM

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
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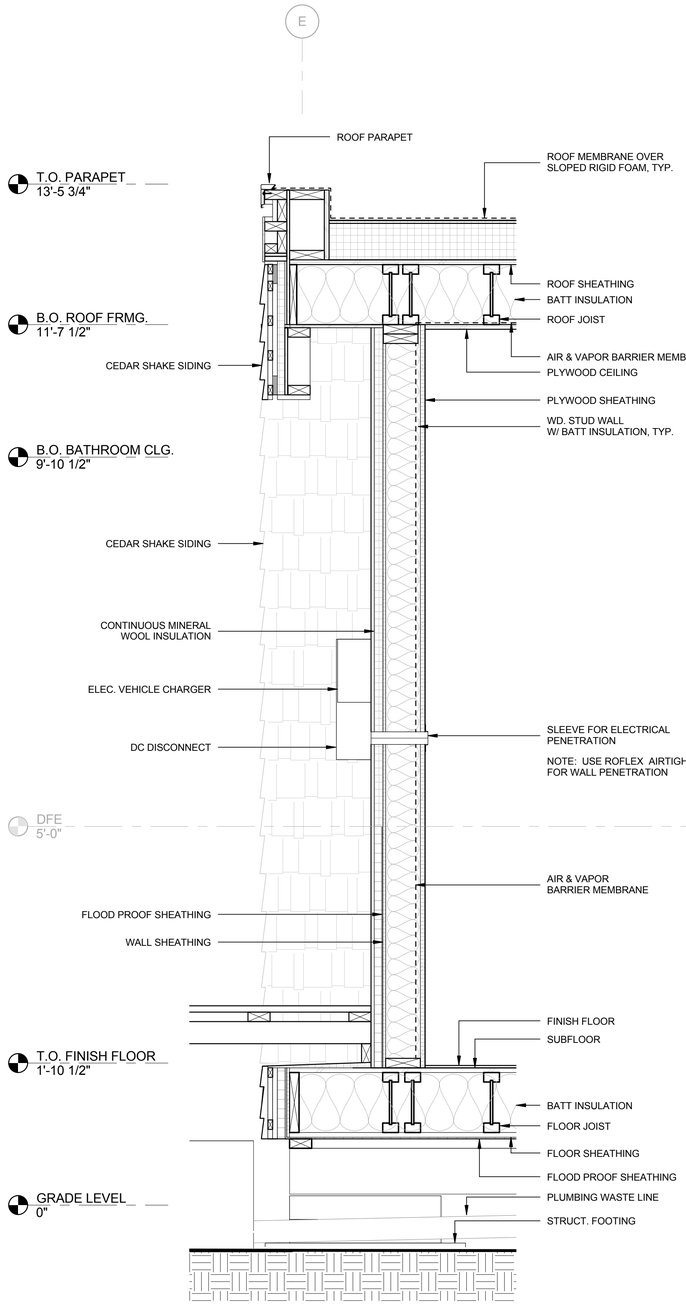
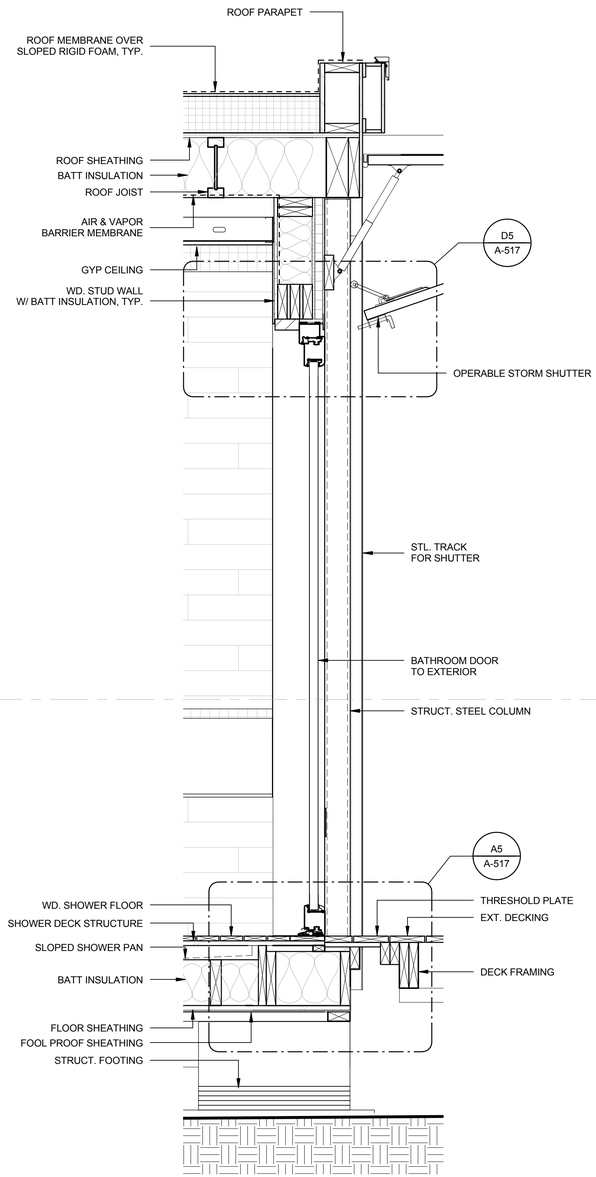
SHEET TITLE

BUILDING SECTION

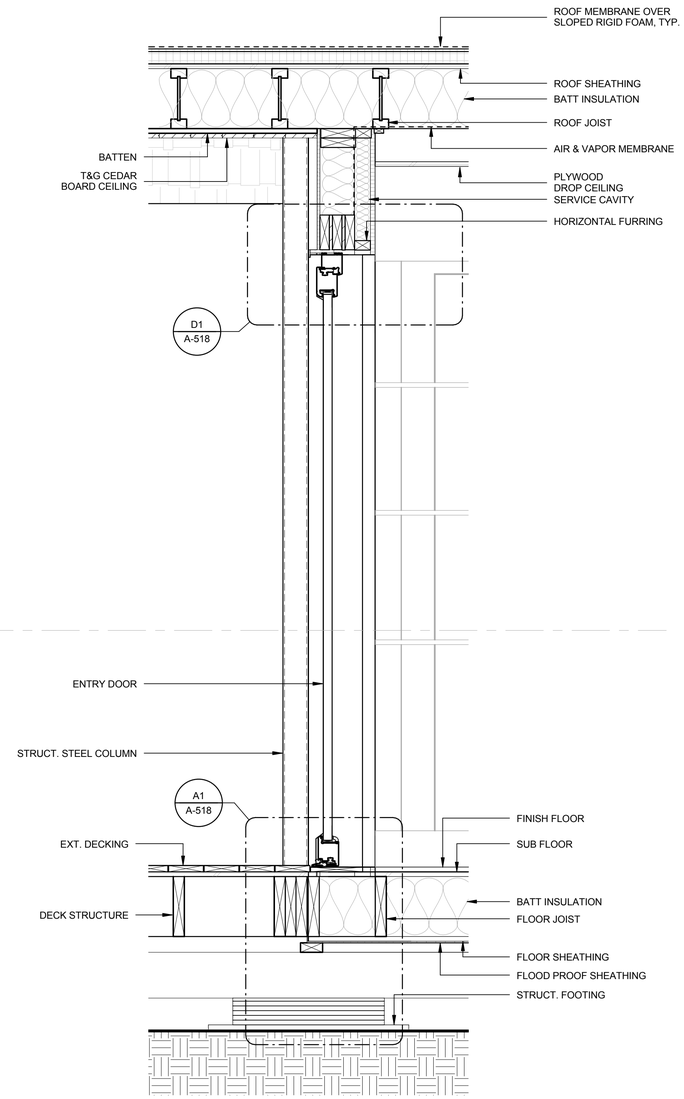
A-317



A1 WALL SECTION @ ELECTRICAL SERVICE CLOSET
1" = 1'-0"



A3 WALL SECTION @ BATH ROOM EXT. DOOR
1" = 1'-0"



A5 WALL SECTION @ ENTRY DOOR
1" = 1'-0"

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
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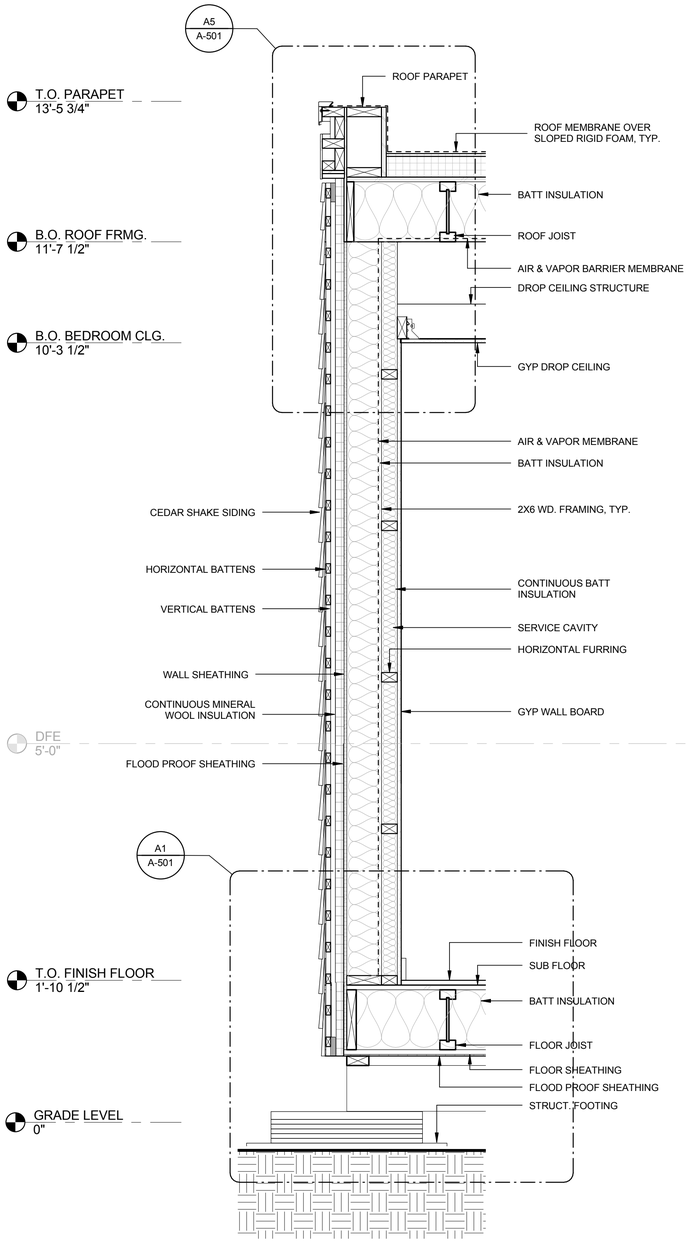
SHEET TITLE

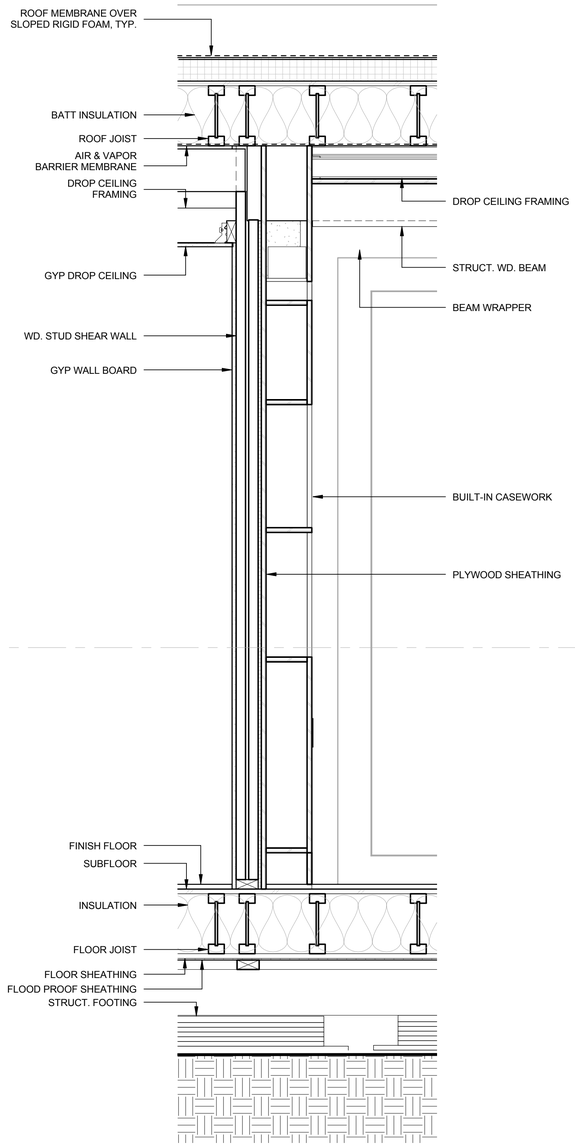
WALL SECTIONS

A-321

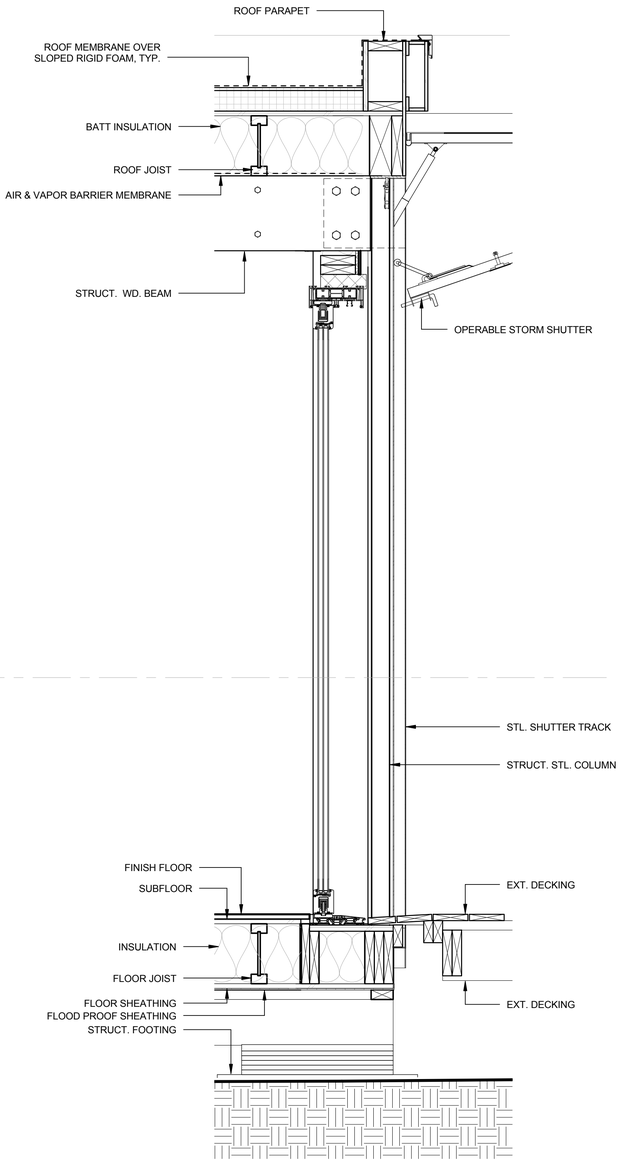
8/16/2015 6:14:54 PM



A1 WALL SECTION @ TYP NORTH WALL
1" = 1'-0"



A3 WALL SECTION @ LIVING ROOM SHEAR WALL
1" = 1'-0"



A5 WALL SECTION @ SOUTH STL. COLUMN
1" = 1'-0"

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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

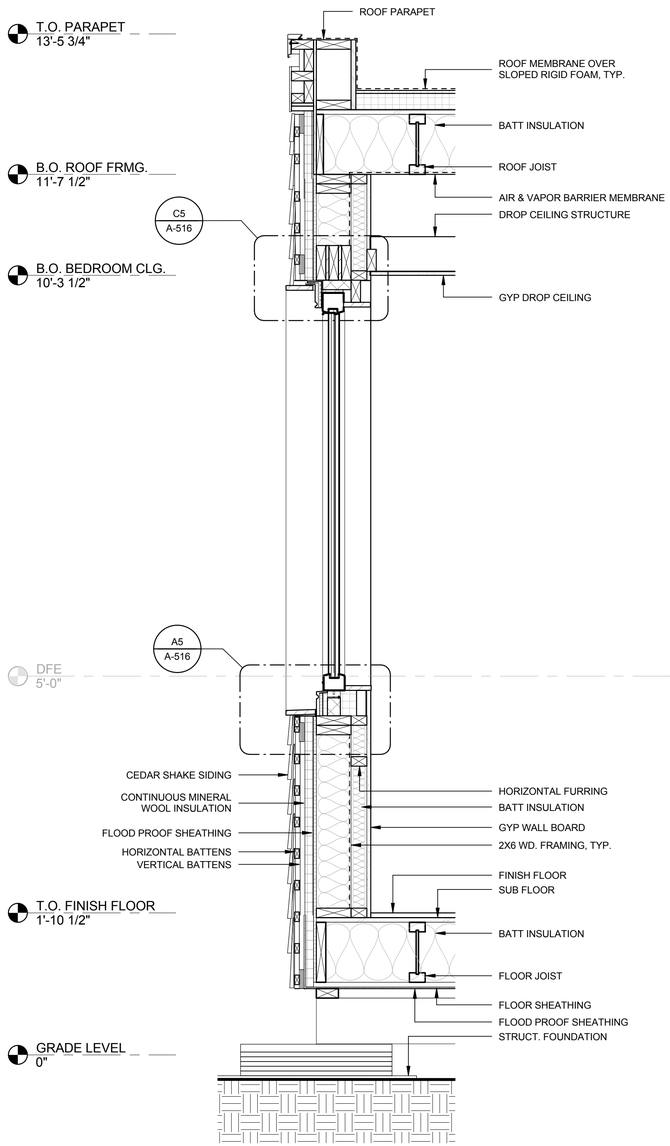
LOT NUMBER: LOT #110

SHEET TITLE

WALL SECTIONS

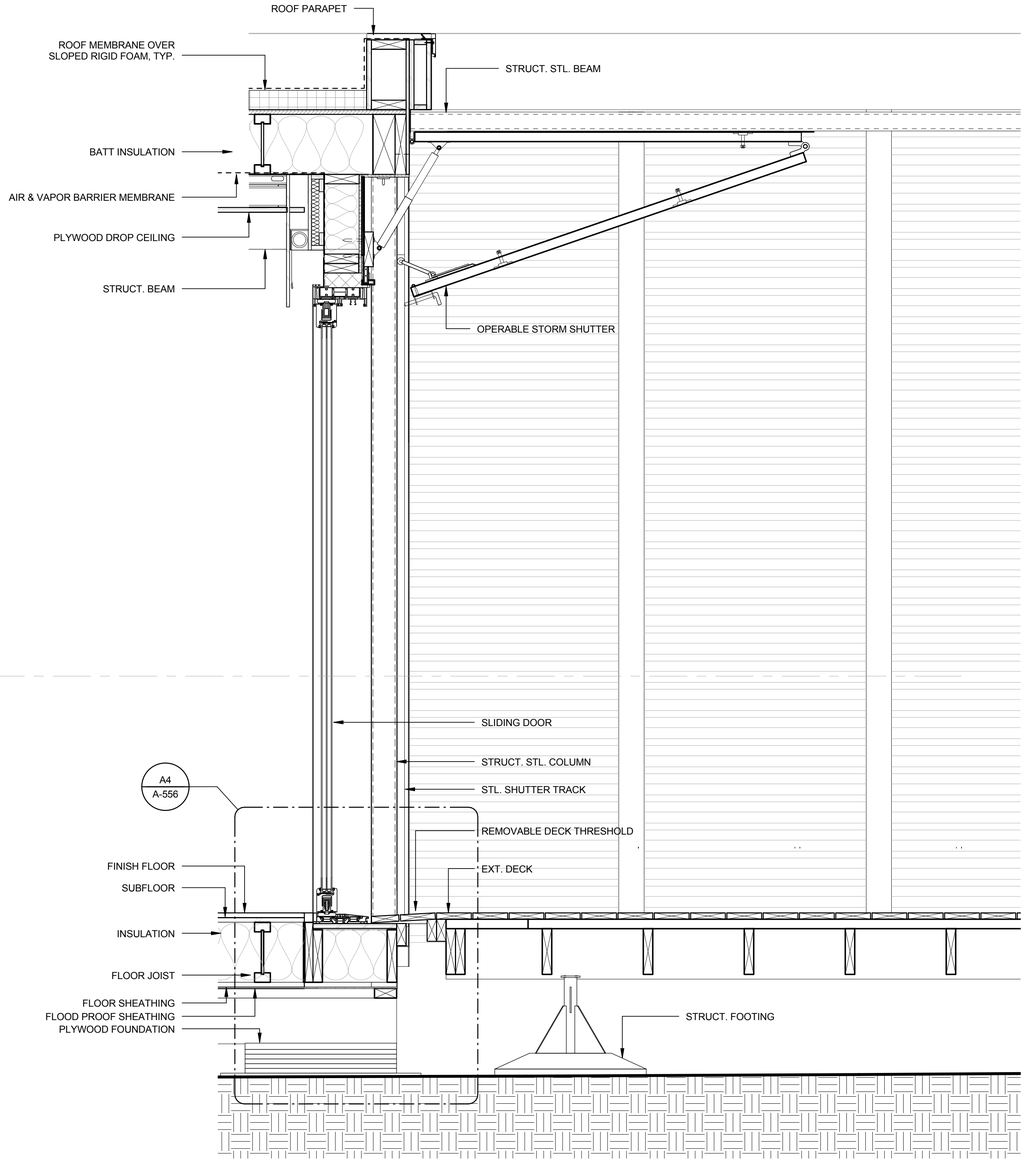
A-322

8/16/2015 6:15:01 PM



A1 WALL SECTION @ FIXED NORTH WINDOW
1" = 1'-0"

0 1 2



A4 WALL SECTION @ SOUTH GLASS DOORS
1" = 1'-0"

0 1 2

8/16/2015 6:15:08 PM

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LOT NUMBER: LOT #110

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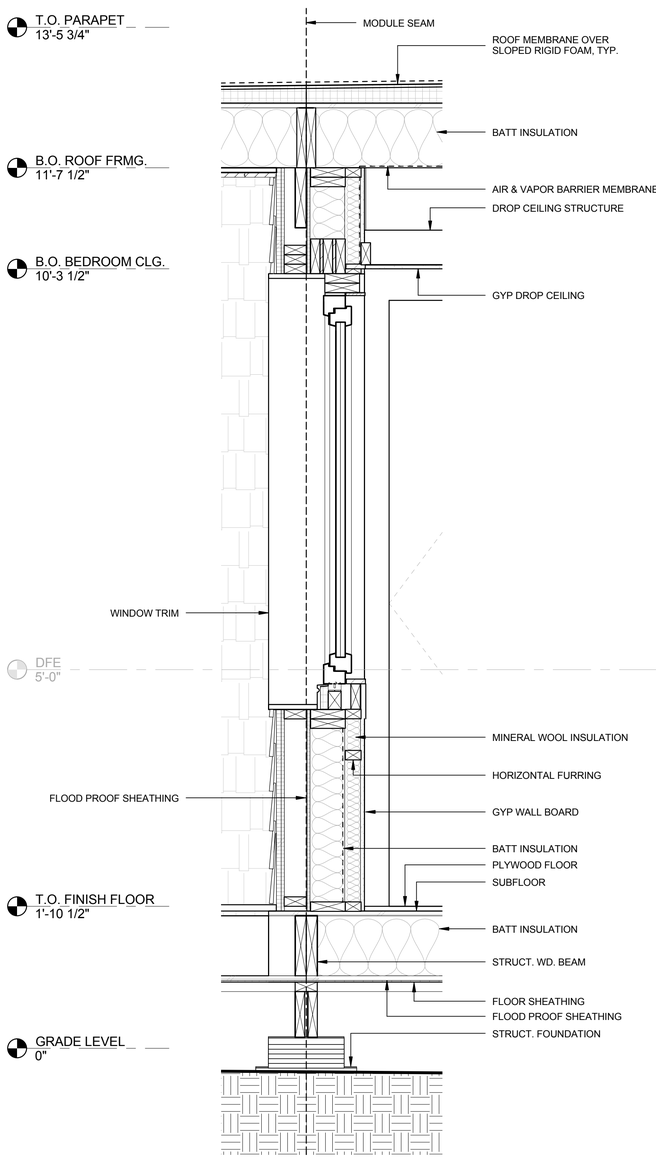
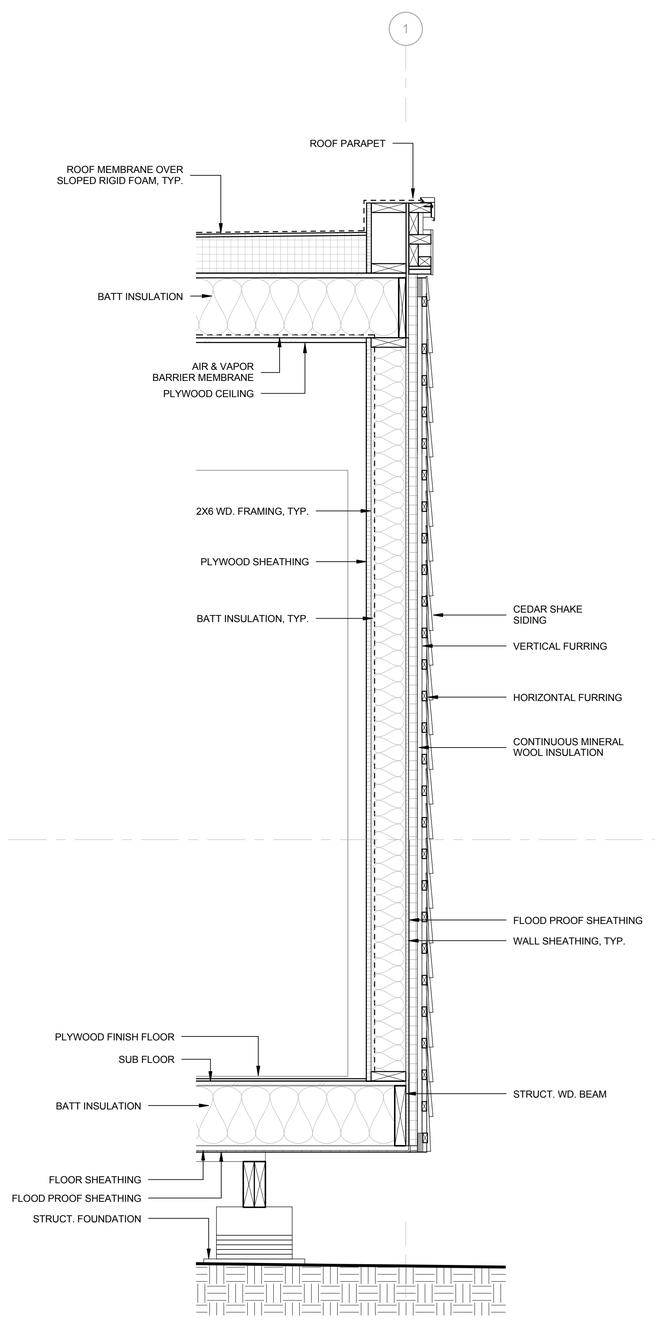
SHEET TITLE

WALL SECTIONS

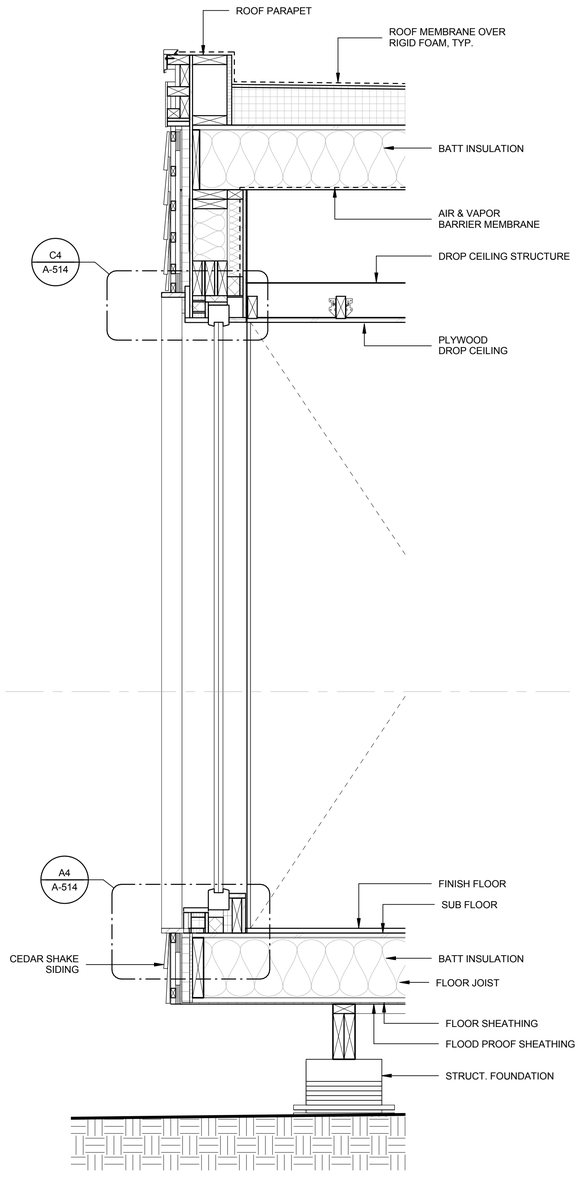
A-323



A1 WALL SECTION @ EAST OPERABLE WINDOW
1" = 1'-0"



A3 WALL SECTION @ MECH. ROOM EXT. WALL
1" = 1'-0"



A6 WALL SECTION @ FIXED WEST WINDOW
1" = 1'-0"

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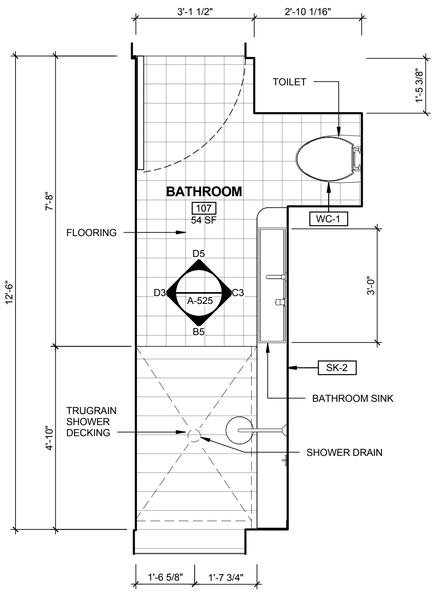
LOT NUMBER: LOT #110

SHEET TITLE

WALL SECTIONS

A-324

8/16/2015 6:15:19 PM



C1 ENLARGED BATHROOM PLAN

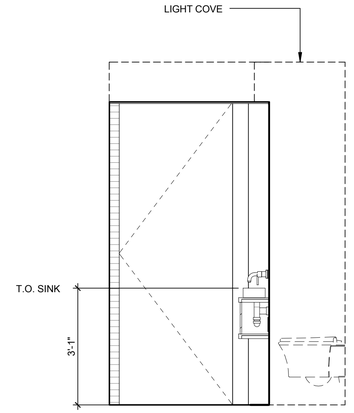
1/2" = 1'-0"

0 1' 2' 4'

D3 BATHROOM ELEVATION WEST

1/2" = 1'-0"

0 1' 2' 4'



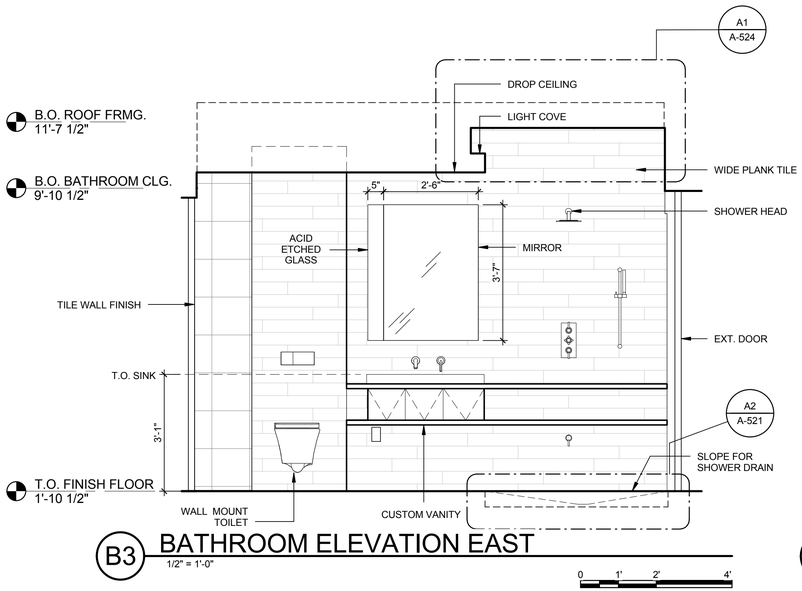
D5 BATHROOM ELEVATION NORTH

1/2" = 1'-0"

0 1' 2' 4'

A1 BATHROOM PERSPECTIVE

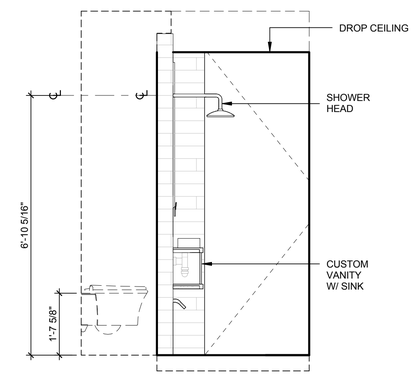
NTS



B3 BATHROOM ELEVATION EAST

1/2" = 1'-0"

0 1' 2' 4'



B5 BATHROOM ELEVATION SOUTH

1/2" = 1'-0"

0 1' 2' 4'

GENERAL SHEET NOTES:

ALL OF DIMENSIONS TO FACE OF FINISH U.O.N.

SEE P-601 FOR FIXTURE INFORMATION

1. APPLICABLE CODES:

R307.1 SPACE REQUIRED.
FIXTURES SHALL BE SPACED IN ACCORDANCE WITH FIGURE R307.1, AND IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION P2705.1.

R307.2 BATHTUB AND SHOWER SPACES.
BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR.

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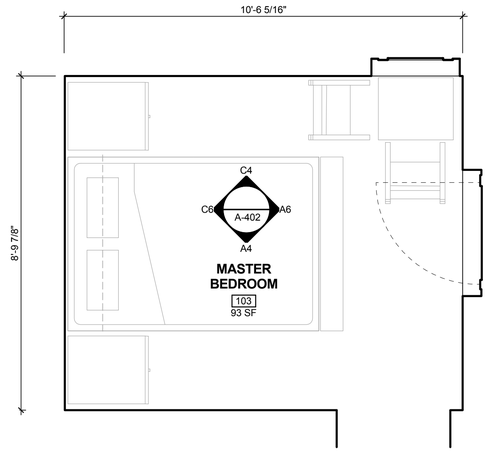
LOT NUMBER: LOT #110

SHEET TITLE

ENLARGED BATHROOM PLAN & ELEVATIONS

A-401

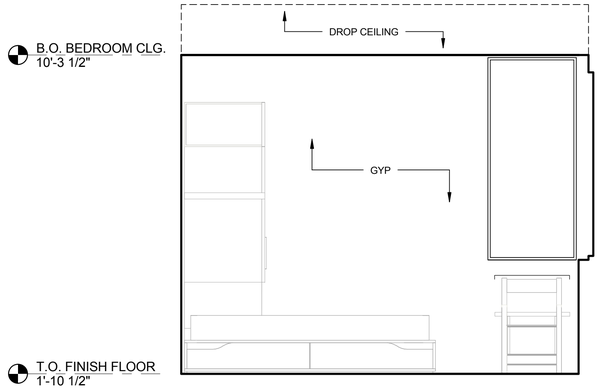
8/16/2015 6:15:34 PM



C1 ENLARGED MASTER BEDROM

1/2" = 1'-0"

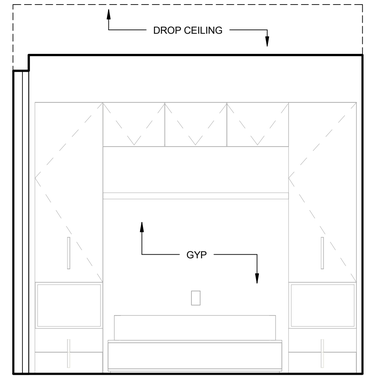
0 1' 2' 4'



C4 NORTH ELEVATION

1/2" = 1'-0"

0 1' 2' 4'



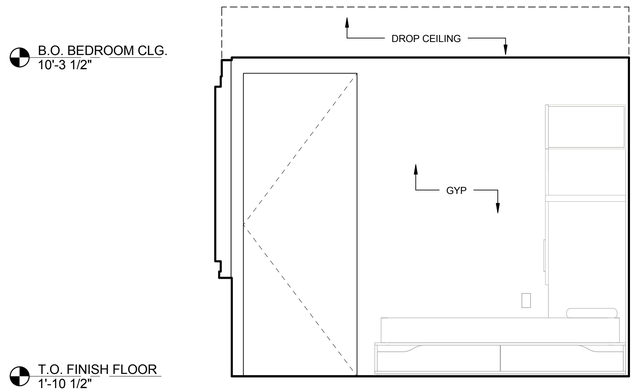
C6 WEST ELEVATION

1/2" = 1'-0"

0 1' 2' 4'

A1 MASTER BEDROOM PERSPECTIVE

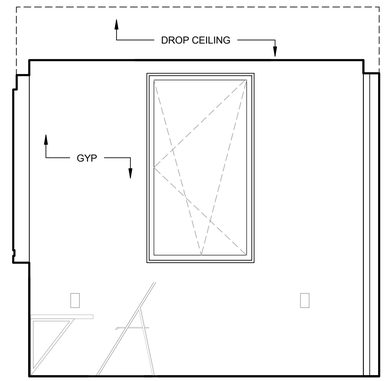
NTS



A4 SOUTH ELEVATION

1/2" = 1'-0"

0 1' 2' 4'



A6 EAST ELEVATION

1/2" = 1'-0"

0 1' 2' 4'

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01	10-09-2014	80% DD SET

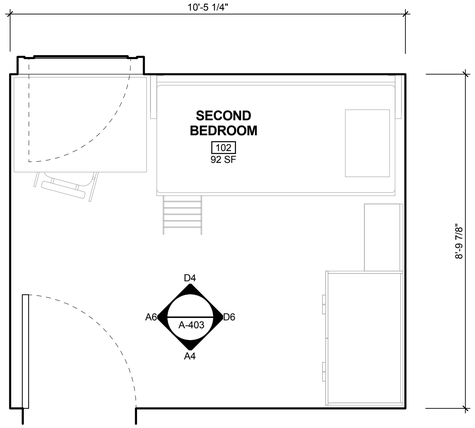
LOT NUMBER: LOT #110

SHEET TITLE

ENLARGED MASTER BEDROOM

A-402

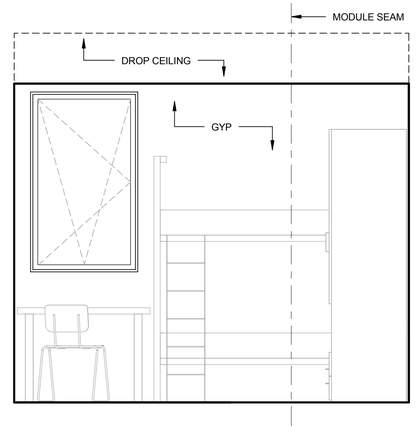
8/16/2015 6:15:56 PM



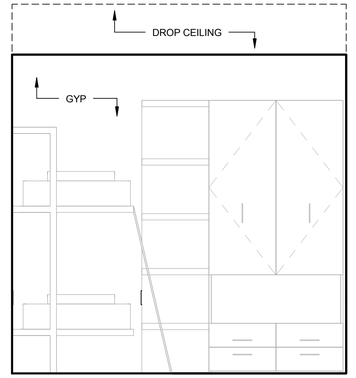
D1 ENLARGED SECOND BEDROOM
1/2" = 1'-0"
0 1' 2' 4'

B.O. BEDROOM CLG.
10'-3 1/2"

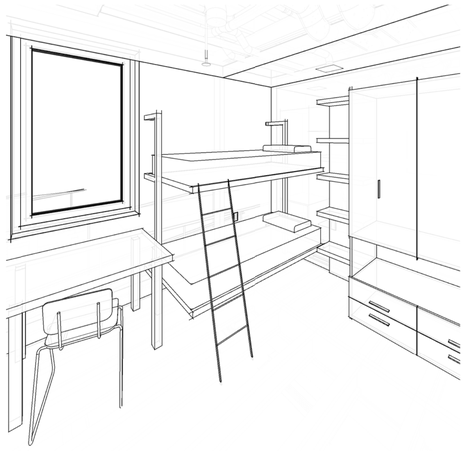
T.O. FINISH FLOOR
1'-10 1/2"



D4 NORTH ELEVATION
1/2" = 1'-0"
0 1' 2' 4'



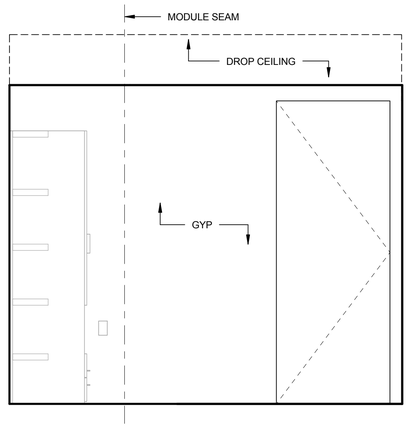
D6 EAST ELEVATON
1/2" = 1'-0"
0 1' 2' 4'



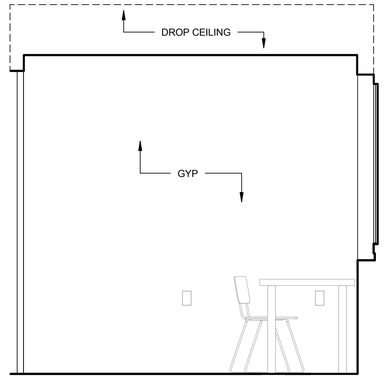
A1 SECOND BEDROOM PERSPECTIVE
NTS

B.O. BEDROOM CLG.
10'-3 1/2"

T.O. FINISH FLOOR
1'-10 1/2"



A4 SOUTH ELEVATION
1/2" = 1'-0"
0 1' 2' 4'



A6 WEST ELEVATION
1/2" = 1'-0"
0 1' 2' 4'

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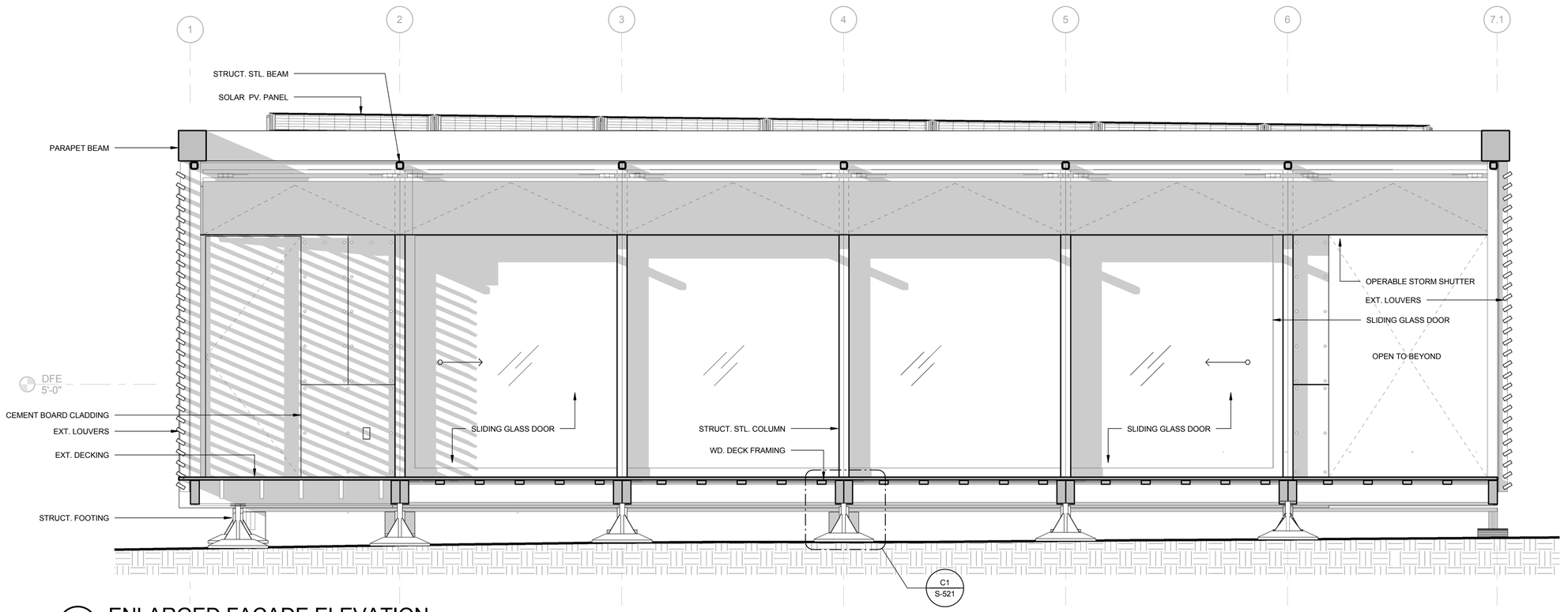
LOT NUMBER: LOT #110

SHEET TITLE

ENLARGED SECOND BEDROOM

A-403

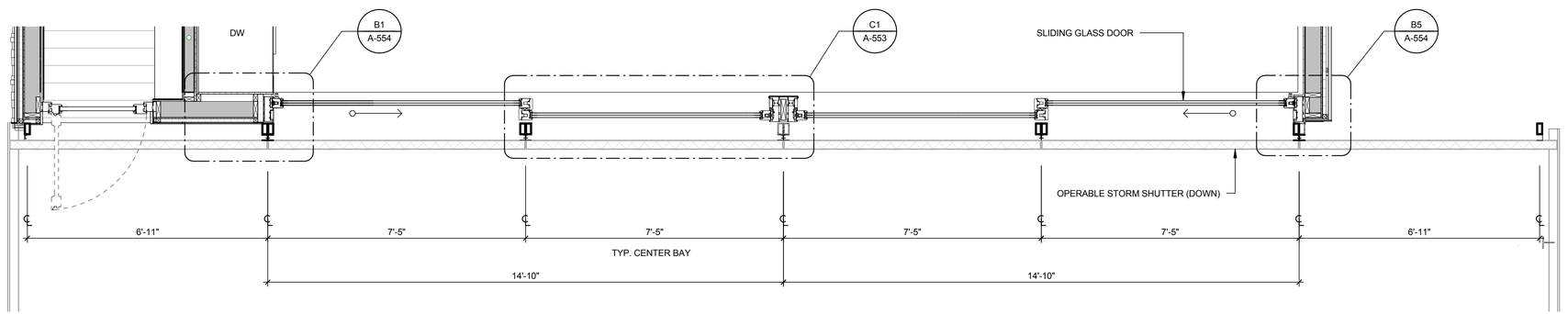
8/16/2015 6:16:10 PM



C1 ENLARGED FACADE ELEVATION

1/2" = 1'-0"

0 1' 2' 4'



A1 SOUTH GLAZING DETAIL PLAN

1/2" = 1'-0"

0 1' 2' 4'

8/16/2015 6:16:25 PM

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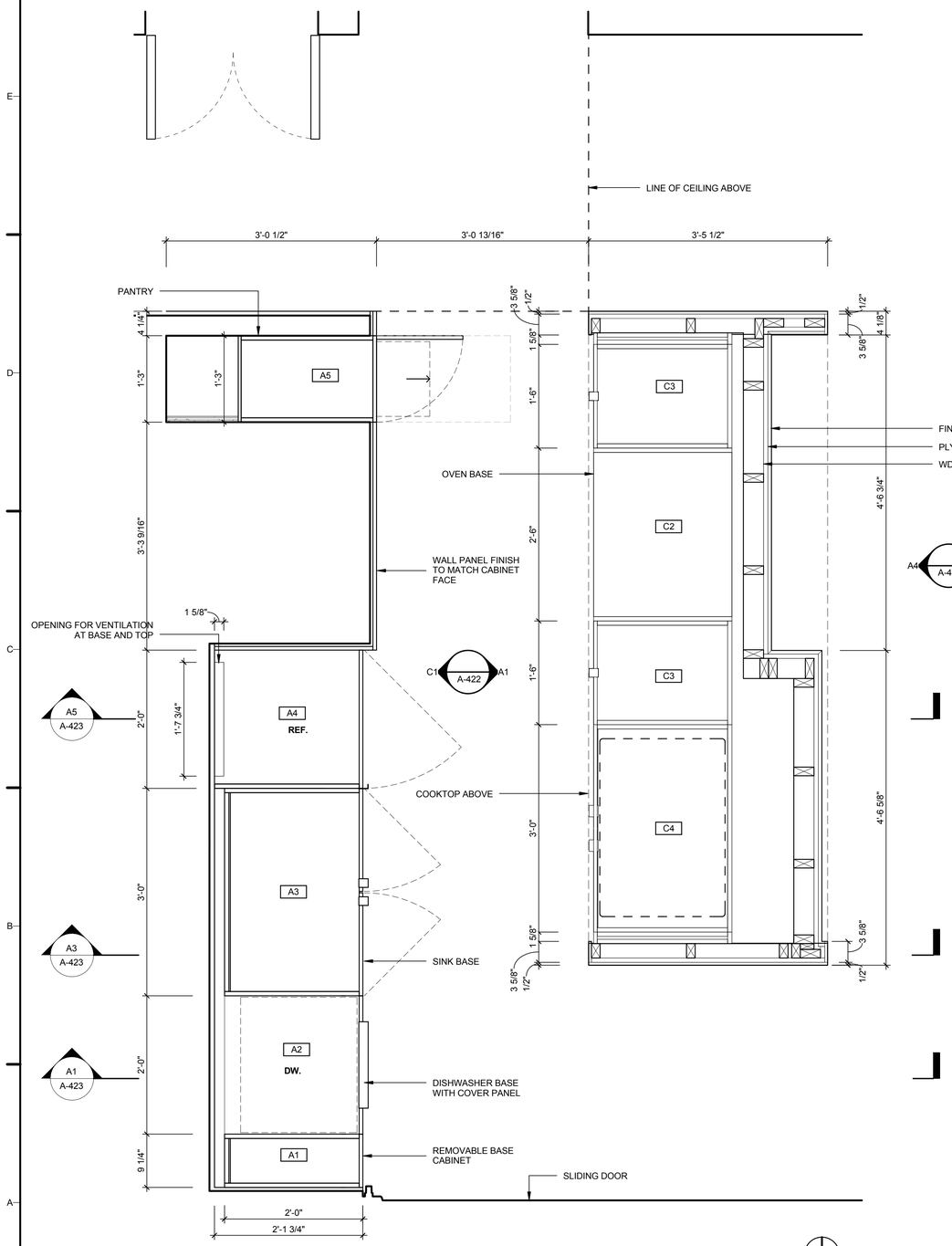
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

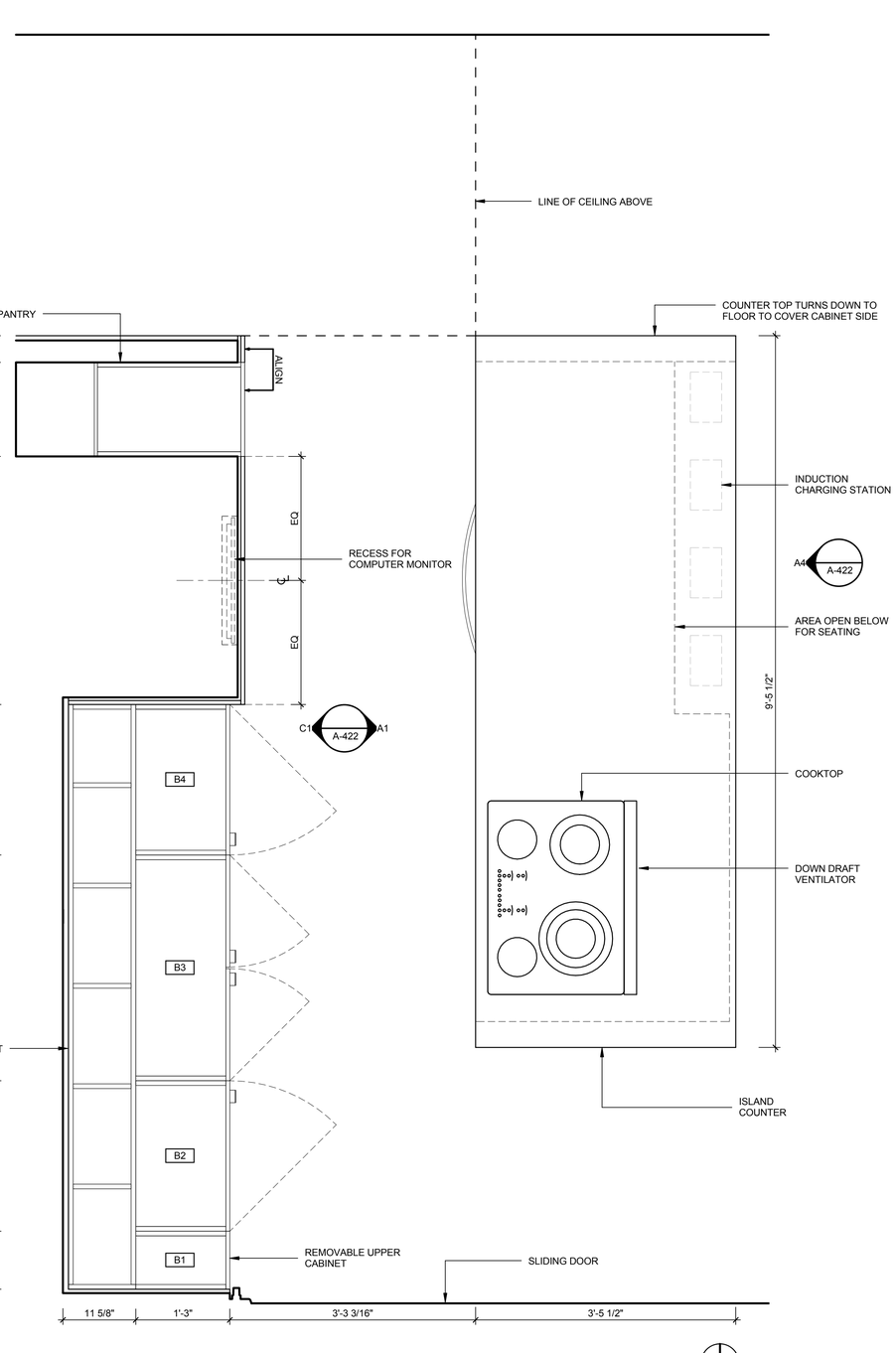
ENLARGED SOUTH FACADE PLAN + ELEVATION

A-411



A1 KITCHEN CABINETRY PLANS-BASE CABINETS

1" = 1'-0"



A4 KITCHEN CABINETRY PLANS-UPPER CABINETS

1" = 1'-0"

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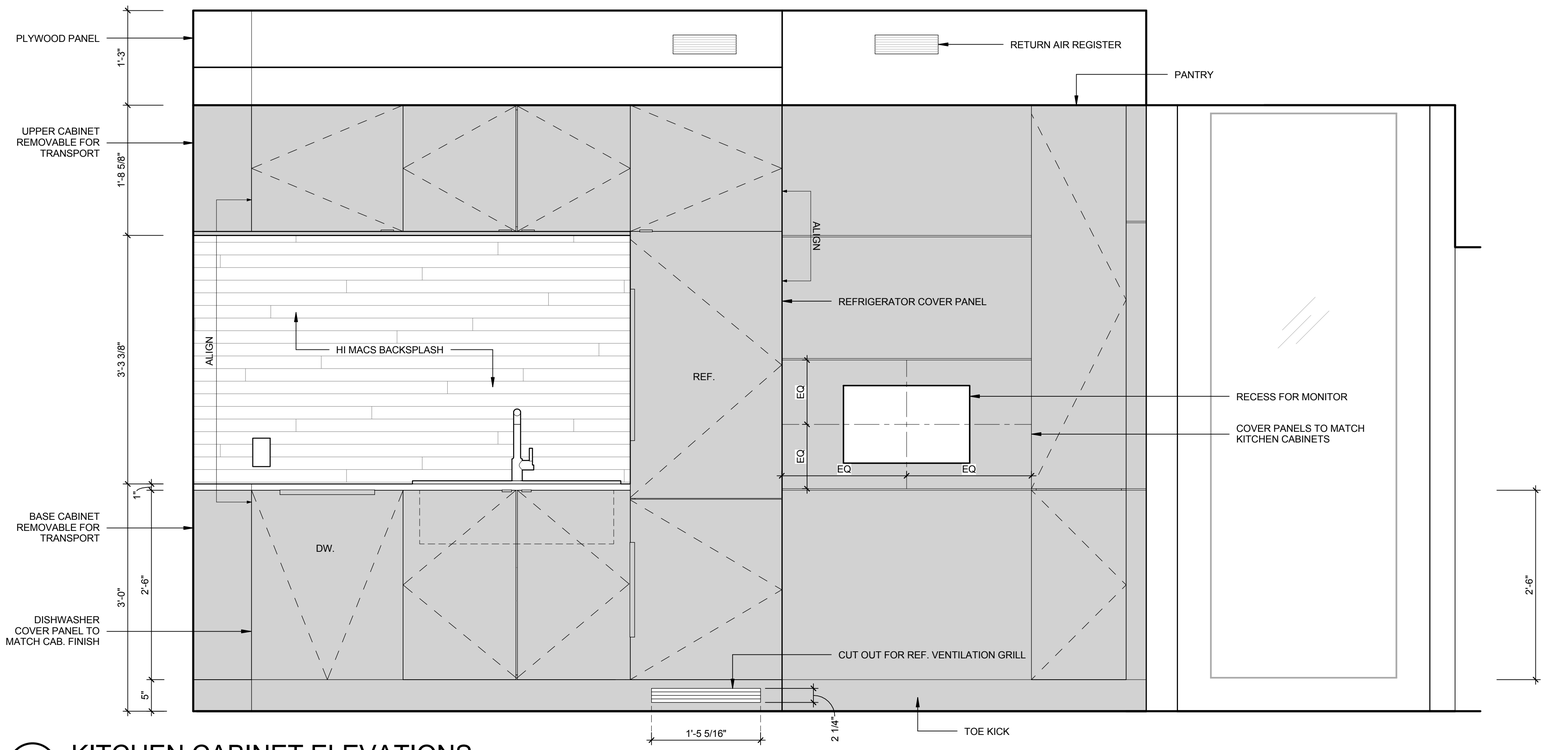
LOT NUMBER: LOT #110

SHEET TITLE

KITCHEN CASEWORK PLANS

A-421

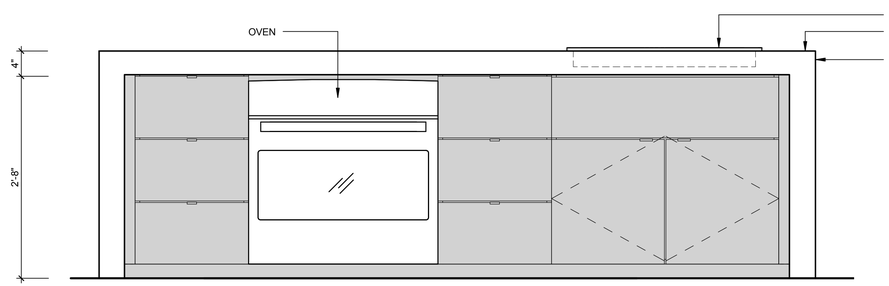
8/16/2015 6:16:34 PM

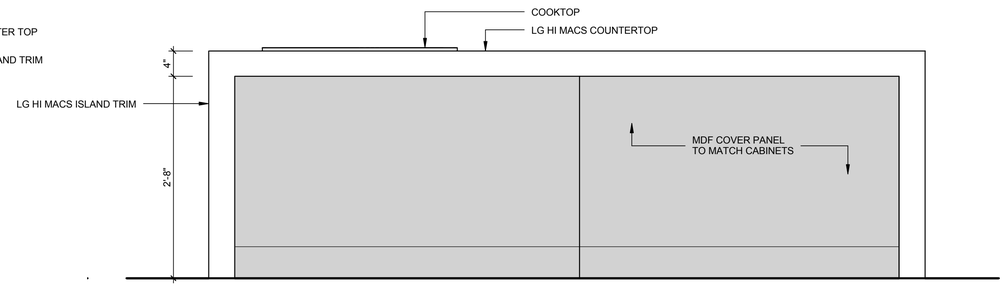


C1 KITCHEN CABINET ELEVATIONS

1" = 1'-0"

0 1 2





A1 KITCHEN ISLAND ELEVATION EAST

1" = 1'-0"

0 1 2

A4 KITCHEN ELEVATION WEST

1" = 1'-0"

0 1 2

KITCHEN CABINETS

MARK	COUNT	ROOM: NUMBER	ROOM: NAME	MANUFACTURER	MODEL	FRAME COLOR	FACE COLOR	FINSIH	DIMENSIONS			TOE-KICK HEIGHT	TOE-KICK DEPTH	URL
									WIDTH	HEIGHT	DEPTH			
A1	1	104	KITCHEN & LIVING	IKEA	790.364.78	WHITE	VEDDINGE WHITE	SEMI-GLOSS	9 1/4"	2'-6"	2'-0"	5"	3"	http://www.ikea.com/us/en/catalog/products/S79036478/
A2	1	104	KITCHEN & LIVING	IKEA	202.667.82	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2'-0"	2'-6"	2'-0"	5"	3"	http://www.ikea.com/us/en/catalog/products/20266782/
A3	1	104	KITCHEN & LIVING	IKEA	790.364.78	WHITE	VEDDINGE WHITE	SEMI-GLOSS	3'-0"	2'-6"	2'-0"	5"	3"	http://www.ikea.com/us/en/catalog/products/S79036478/
A4	1	104	KITCHEN & LIVING	IKEA	802.667.79	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2'-0"	6'-5 7/16"	2'-1"	5"	3"	http://www.ikea.com/us/en/catalog/products/20266782/#/80266779
A5	1	104	KITCHEN & LIVING	IKEA	390.361.78	WHITE	VEDDINGE WHITE	SEMI-GLOSS	1'-3"	7'-6"	2'-0"			http://www.ikea.com/us/en/catalog/products/S39036178/
B1	1	104	KITCHEN & LIVING	IKEA	690.343.66	WHITE	VEDDINGE WHITE	SEMI-GLOSS	9 1/4"	1'-8"	1'-3"			http://www.ikea.com/us/en/catalog/products/S69034366/
B2	1	104	KITCHEN & LIVING	IKEA	690.343.66	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2'-0"	1'-8"	1'-3"			http://www.ikea.com/us/en/catalog/products/S69034366/
B3	1	104	KITCHEN & LIVING	IKEA	790.343.75	WHITE	VEDDINGE WHITE	SEMI-GLOSS	3'-0"	1'-8"	1'-3"			http://www.ikea.com/us/en/catalog/products/S79034375/
B4	1	104	KITCHEN & LIVING	IKEA	690.343.66	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2'-0"	1'-8"	1'-3"			http://www.ikea.com/us/en/catalog/products/S69034366/
C1	1	104	KITCHEN & LIVING	IKEA	590.381.62	WHITE	VEDDINGE WHITE	SEMI-GLOSS	1'-6"	2'-6"	2'-0"	2 1/4"	1 1/8"	http://www.ikea.com/us/en/catalog/products/S59038162/
C2	1	104	KITCHEN & LIVING	IKEA	502.986.49	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2'-6"	2'-6"	2'-0"	2 1/4"	1 1/8"	http://www.ikea.com/us/en/catalog/products/50298649/
C3	1	104	KITCHEN & LIVING	IKEA	590.381.62	WHITE	VEDDINGE WHITE	SEMI-GLOSS	1'-6"	2'-6"	2'-0"	2 1/4"	1 1/8"	http://www.ikea.com/us/en/catalog/products/S59038162/
C4	1	104	KITCHEN & LIVING	IKEA	590.381.62	WHITE	VEDDINGE WHITE	SEMI-GLOSS	3'-0"	2'-6"	2'-0"	2 1/4"	1 1/8"	http://www.ikea.com/us/en/catalog/products/S59038162/
C5	1	104	KITCHEN & LIVING	IKEA	590.381.62	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2"	2'-6"	2'-0"	2 3/4"	1 1/8"	http://www.ikea.com/us/en/catalog/products/S59038162/
C5	1	104	KITCHEN & LIVING	IKEA	590.381.62	WHITE	VEDDINGE WHITE	SEMI-GLOSS	2"	2'-6"	2'-0"	2 3/4"	1 1/8"	http://www.ikea.com/us/en/catalog/products/S59038162/

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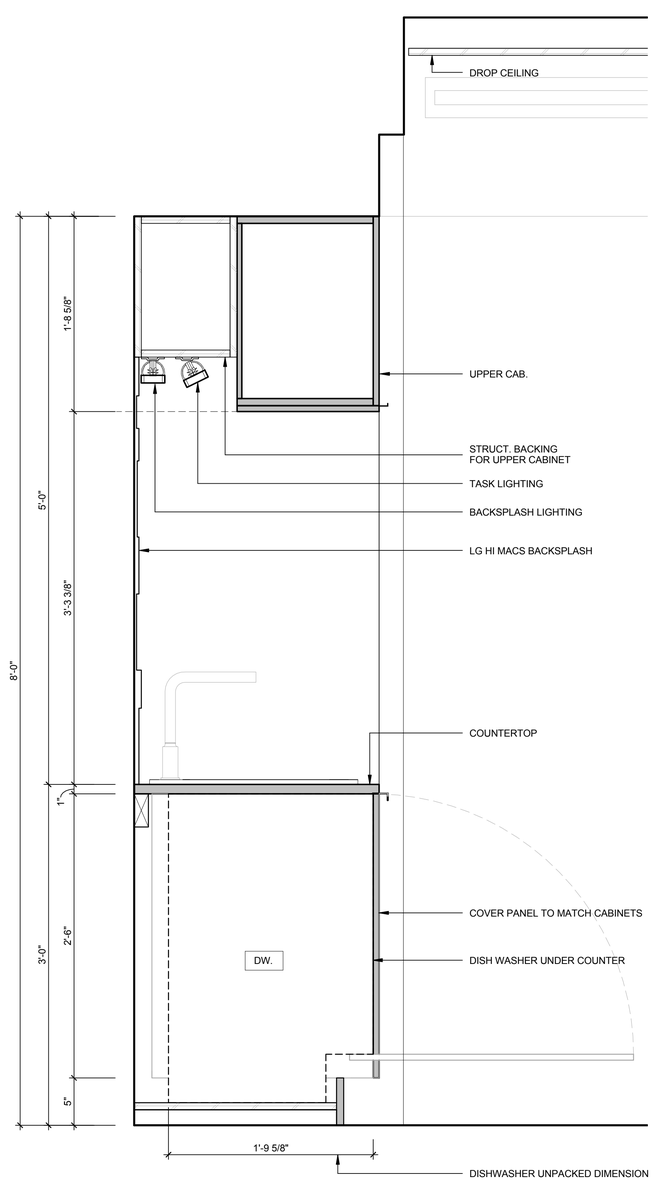
01	10-09-2014	80% DD SET

SHEET TITLE

ENLARGED KITCHEN ELEVATION

A-422

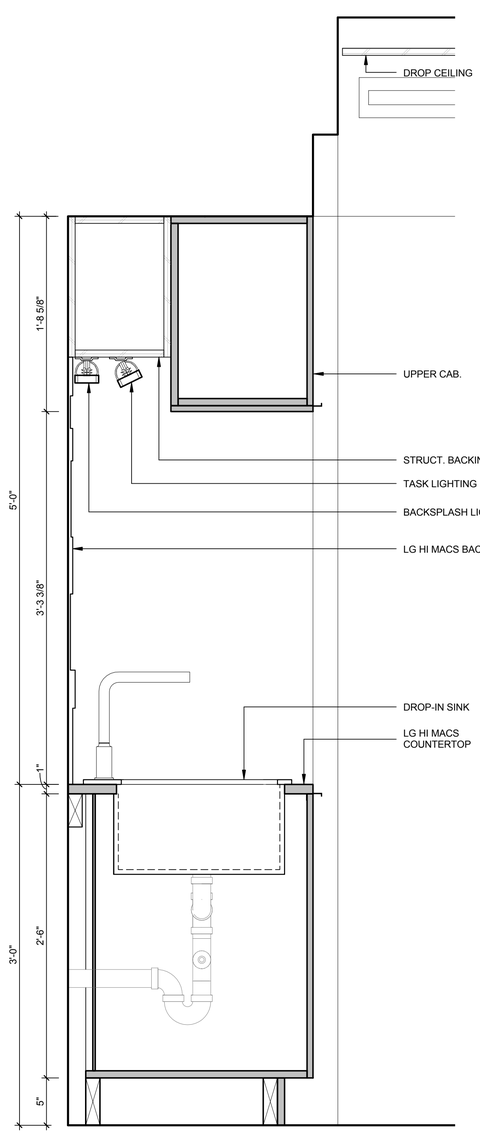
8/16/2015 6:17:16 PM



A1 CASEWORK DETAIL - DISHWASHER

1 1/2" = 1'-0"

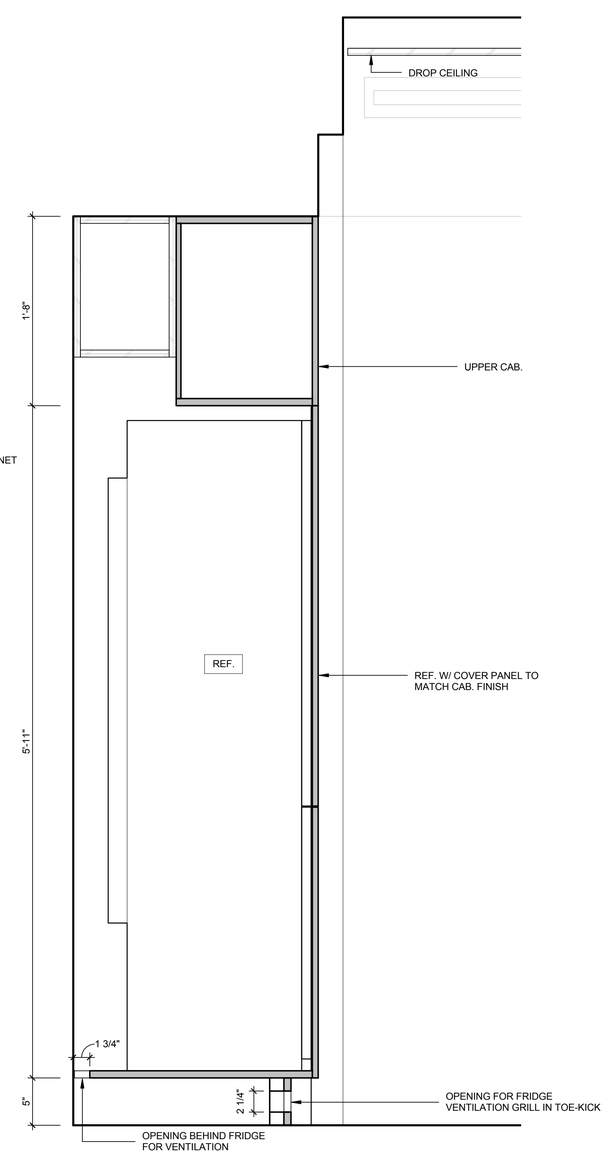
0 1 2



A3 CASEWORK DETAIL - SINK

1 1/2" = 1'-0"

0 1 2



A5 CASEWORK DETAIL - FRIDGE

1 1/2" = 1'-0"

0 1 2

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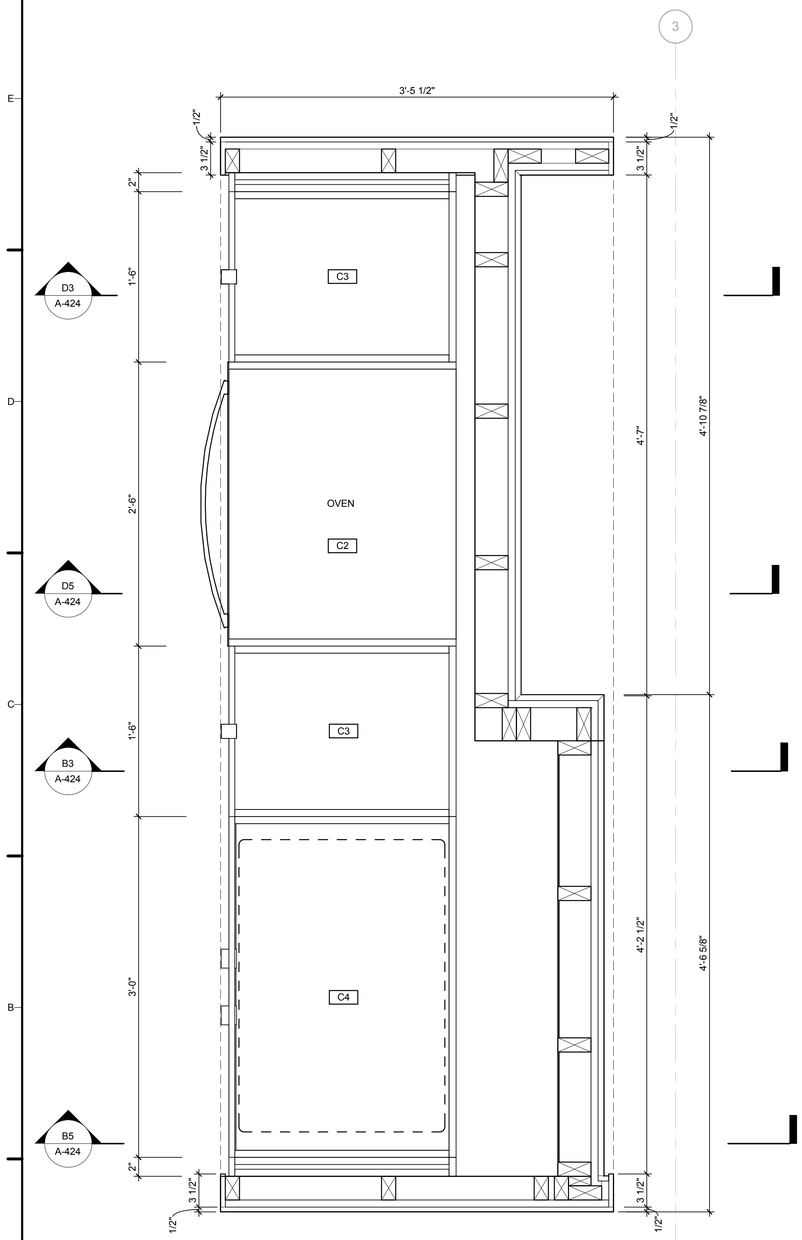
SHEET TITLE

KITCHEN CASEWORK SECTIONS

A-423

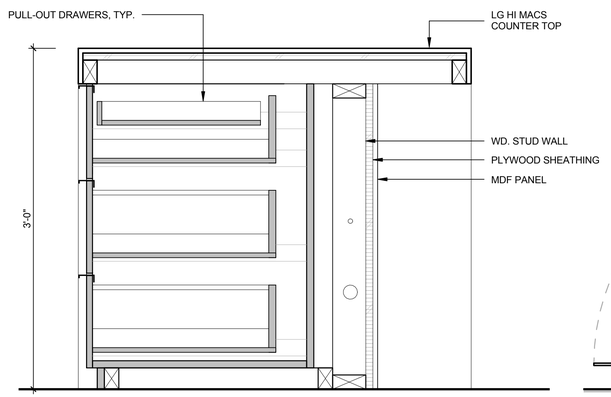
8/16/2015 6:17:24 PM



A1 KITCHEN ISLAND PLAN

1 1/2" = 1'-0"

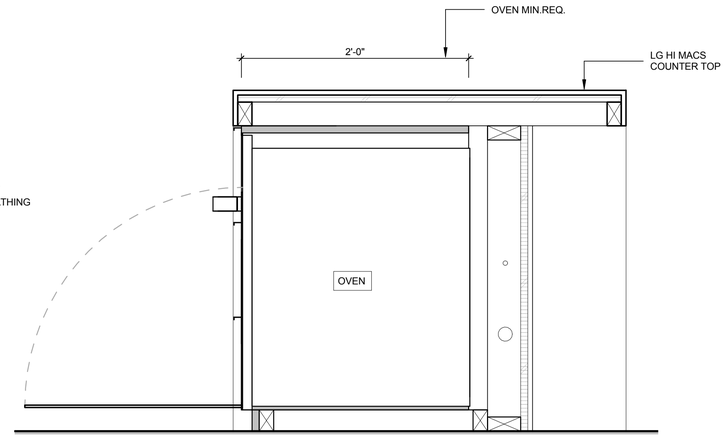
0 1/2" 1' 1 1/2'



D3 CASEWORK SECTION - C1

1 1/2" = 1'-0"

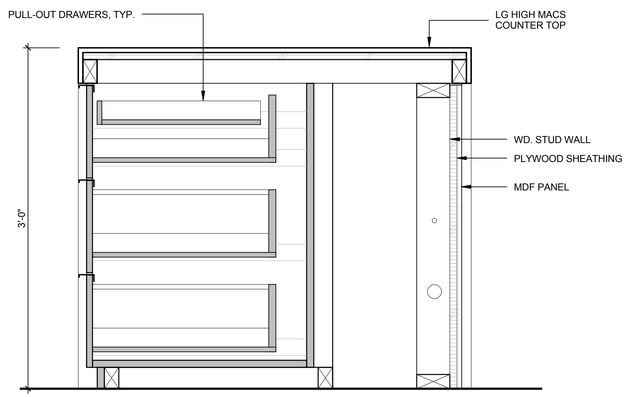
0 1/2" 1' 1 1/2'



D5 CASEWORK SECTION - C2

1 1/2" = 1'-0"

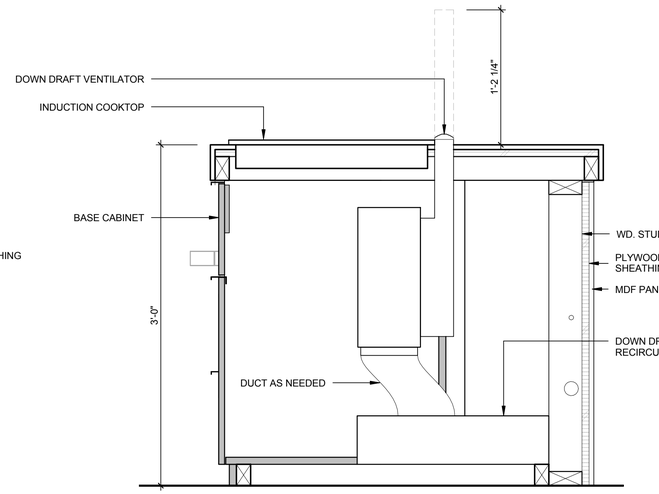
0 1/2" 1' 1 1/2'



B3 CASEWORK SECTION - C3

1 1/2" = 1'-0"

0 1/2" 1' 1 1/2'



B5 CASEWORK SECTION - C4

1 1/2" = 1'-0"

0 1/2" 1' 1 1/2'

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01	10-09-2014	80% DD SET

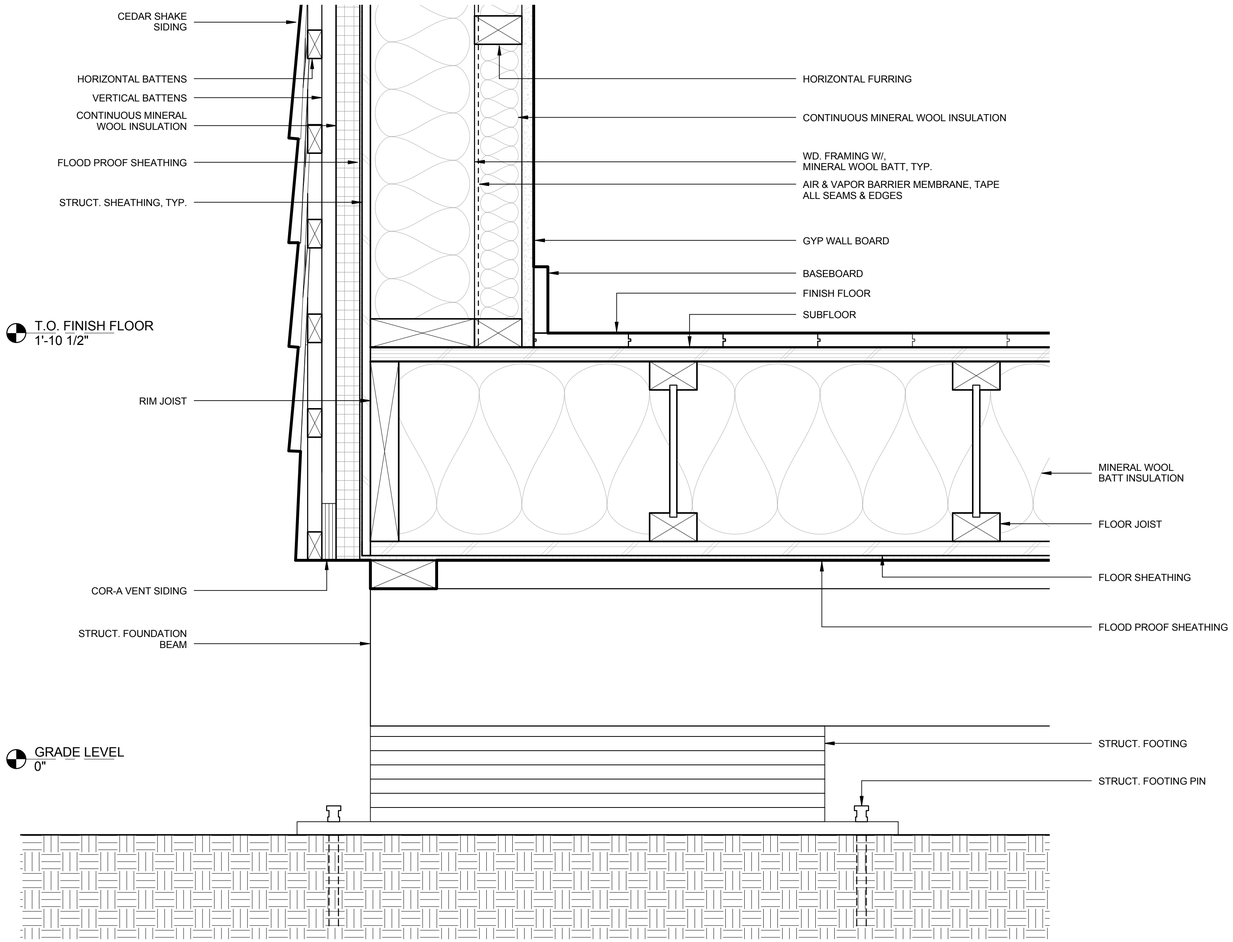
LOT NUMBER: LOT #110

SHEET TITLE

KITCHEN ISLAND

A-424

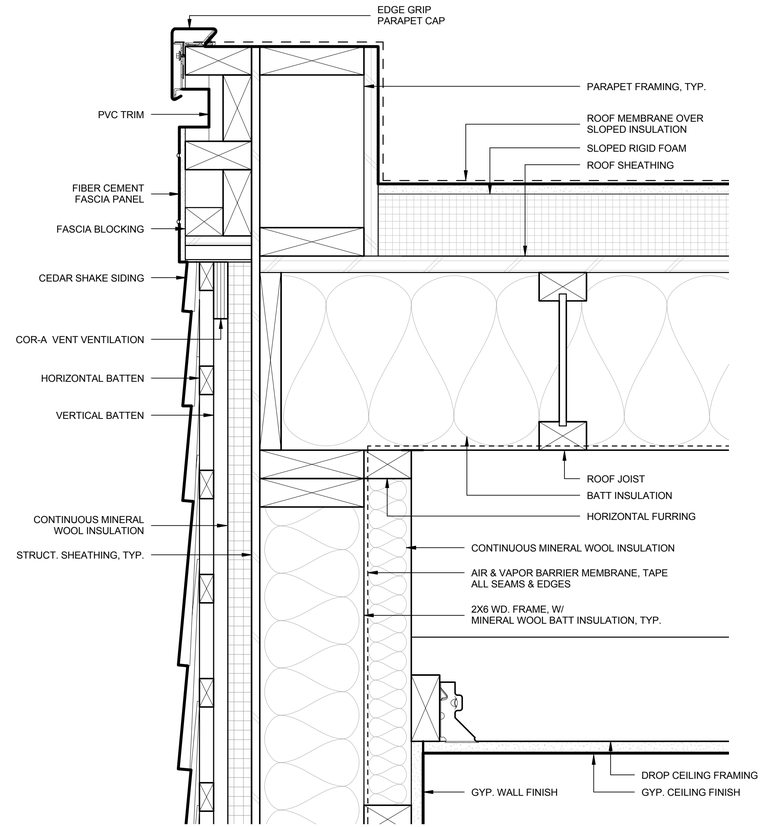
8/16/2015 6:17:29 PM



A1 TYP. WALL-TO-FLOOR DETAIL

3" = 1'-0"

0 3" 6" 1'



A5 TYP. WALL-TO-ROOF DETAIL

3" = 1'-0"

0 3" 6" 1'

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01	10-09-2014	80% DD SET

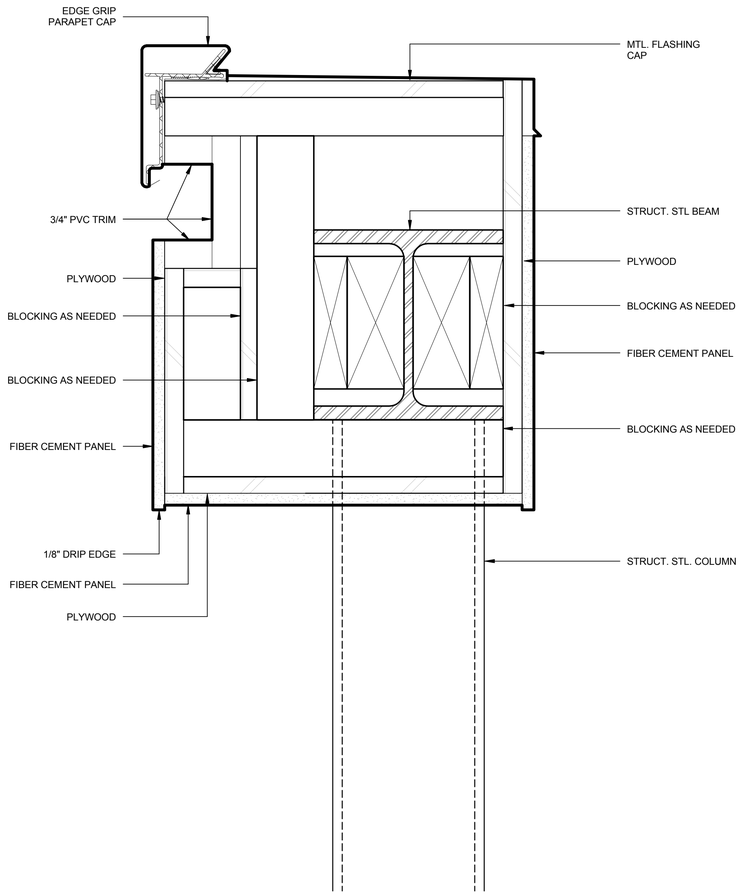
LOT NUMBER: LOT #110

SHEET TITLE

TYP. DETAILS

A-501

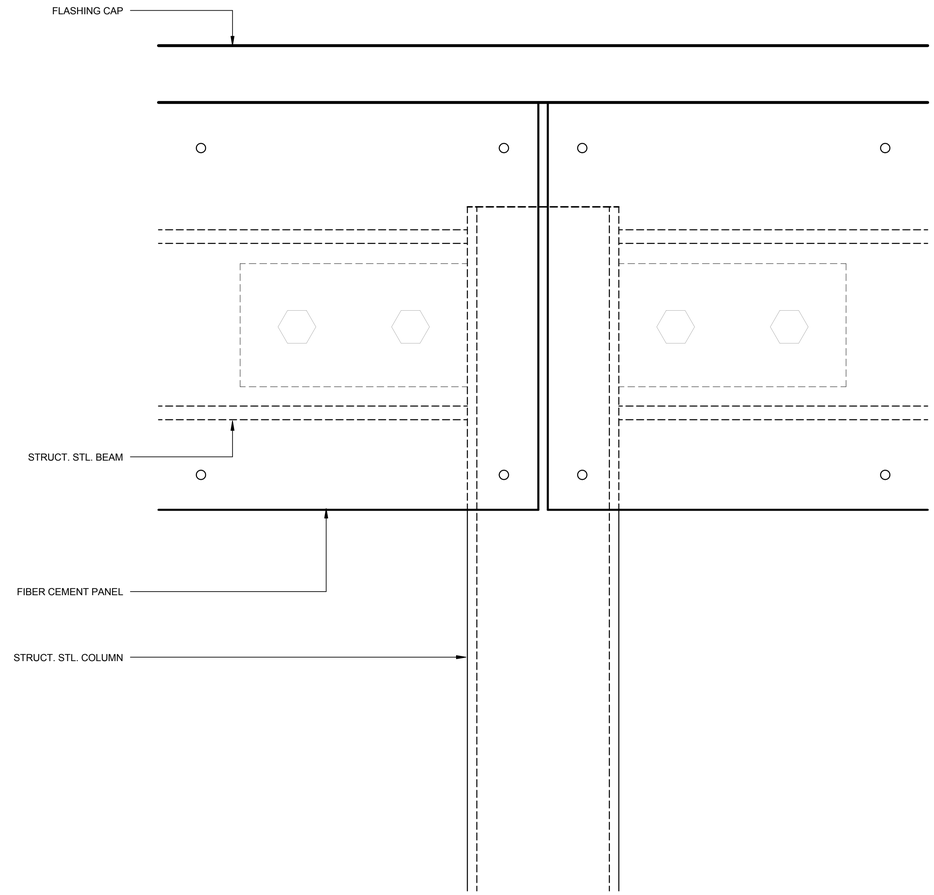
8/16/2015 6:17:35 PM



B1 SOUTH PARAPET BEAM DETAIL SECTION

6" = 1'-0"

0 1" 2" 3" 4"



B4 PARAPET BEAM ELEVATION LOOKING SOUTH

6" = 1'-0"

0 1" 2" 3" 4"

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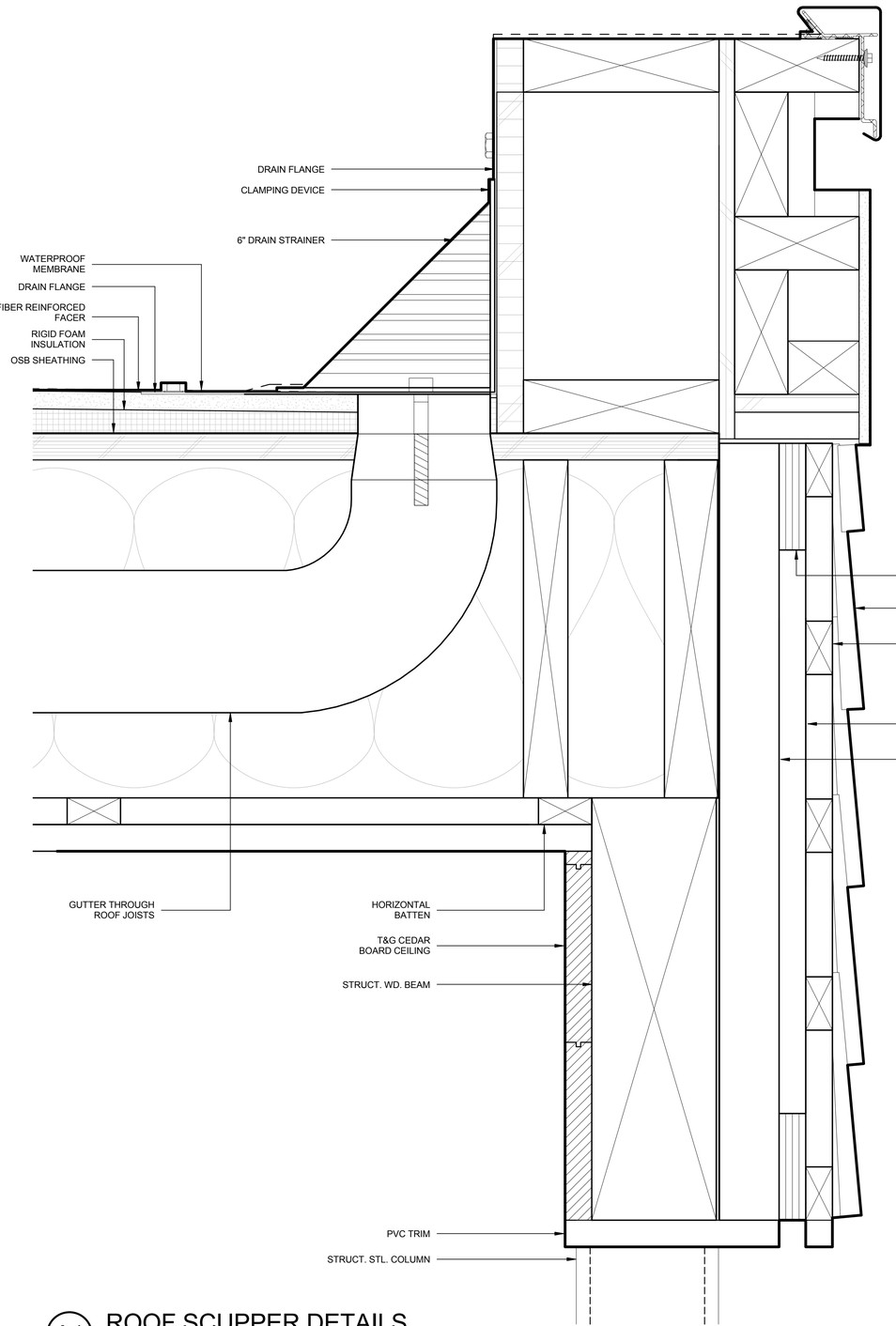
LOT NUMBER: LOT #110

SHEET TITLE

SOUTHERN BEAM DETAIL

A-502

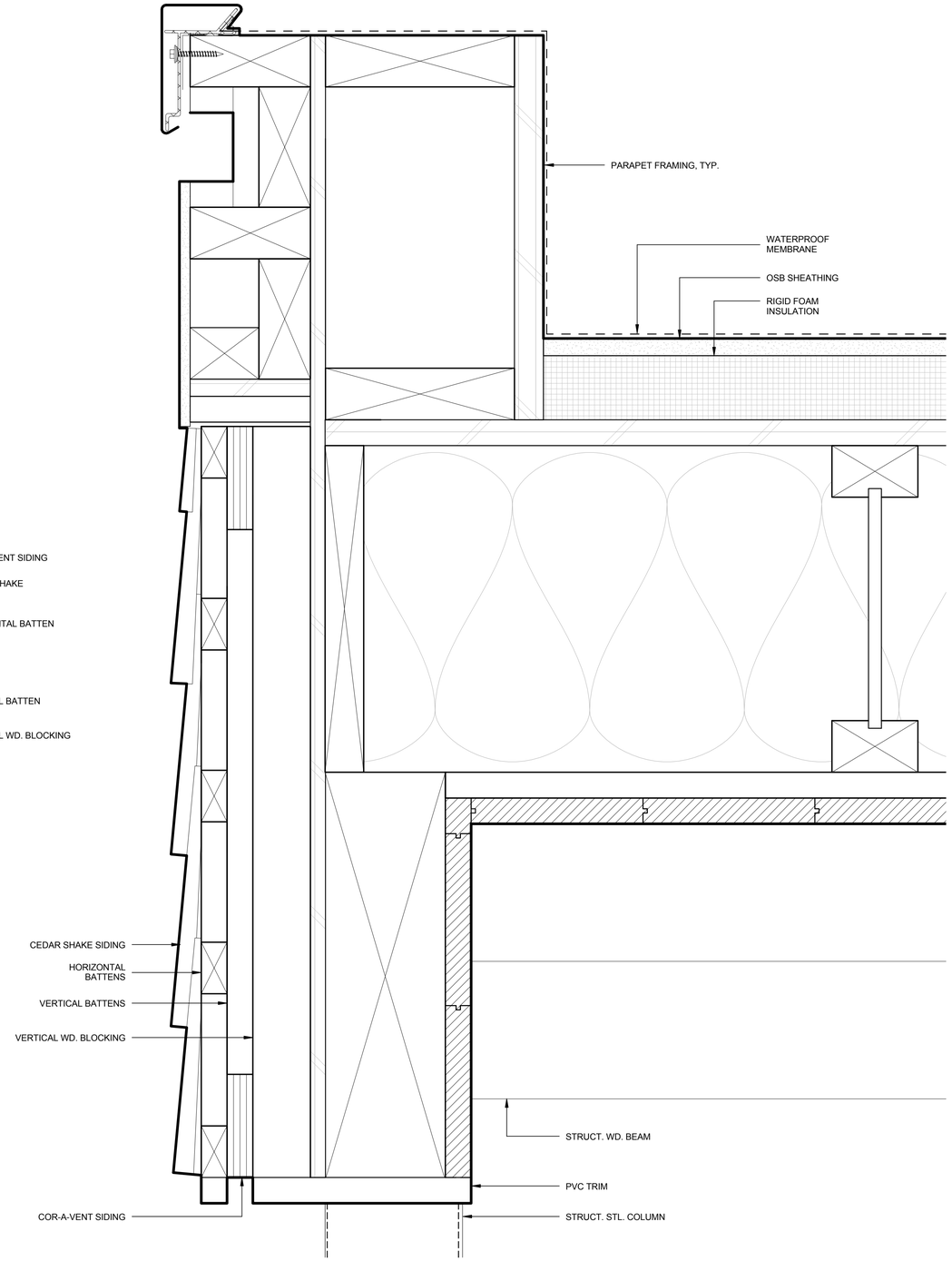
8/16/2015 6:17:40 PM



A1 ROOF SCUPPER DETAILS

6" = 1'-0"

0 1" 2" 3" 4"



A4 NORTH ENTRY PORCH ROOF DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

8/16/2015 6:17:48 PM

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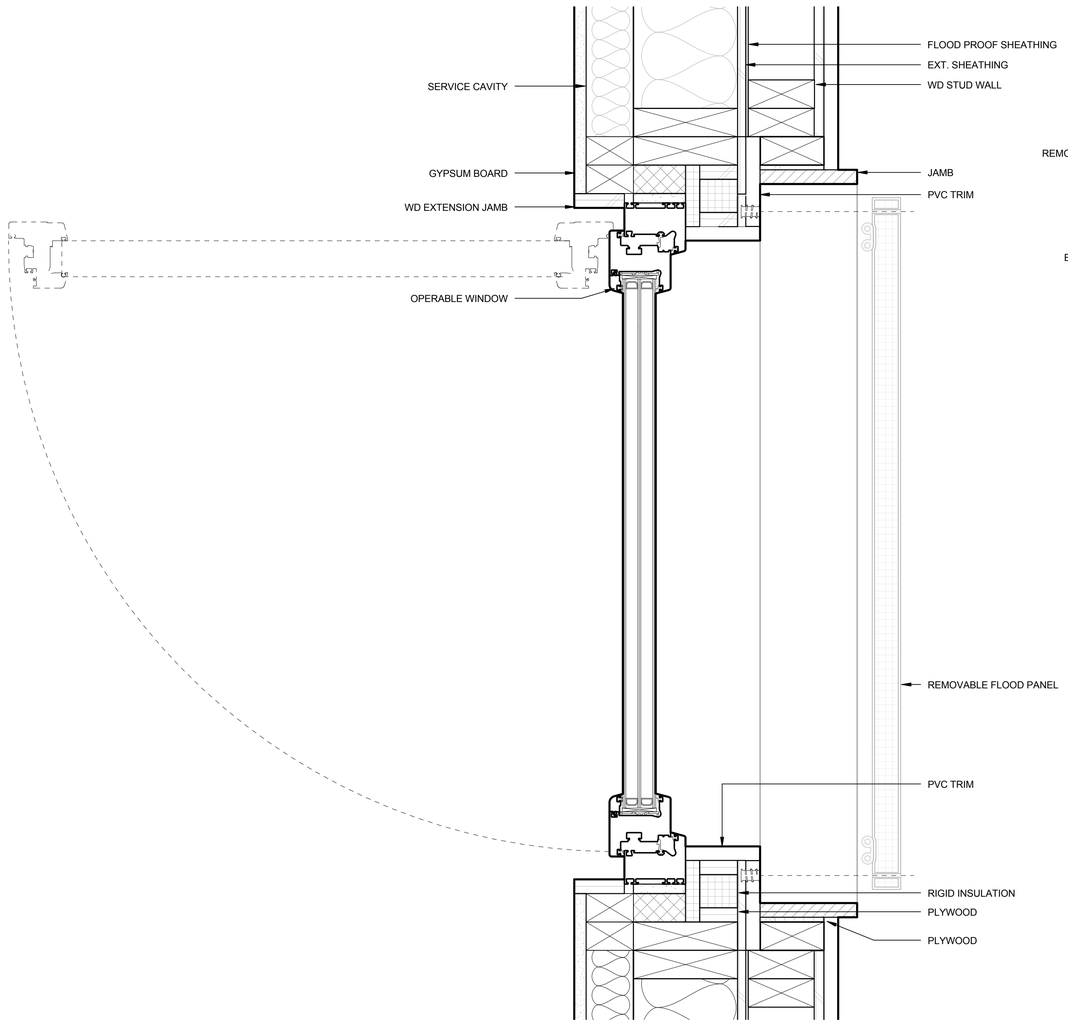
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

SCUPPER & GUTTER DETAILS

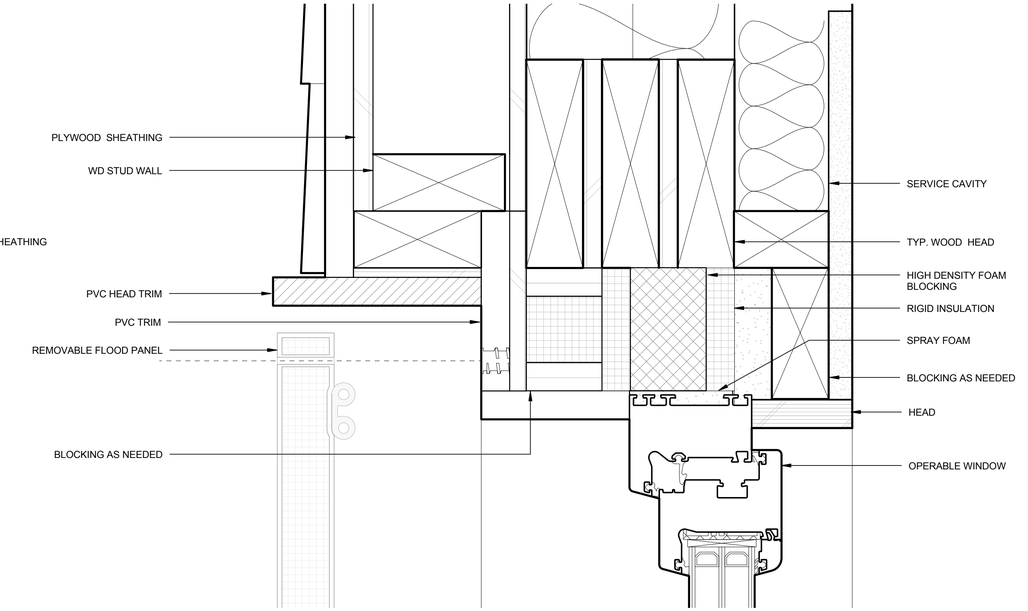
A-503



A1 OPERABLE WINDOW JAMB DETAIL

3" = 1'-0"

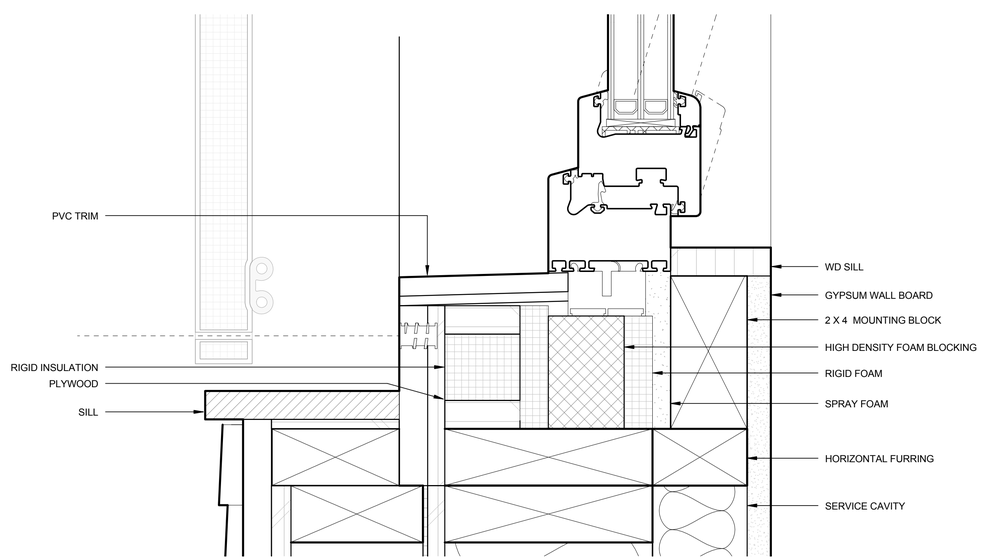
0 3" 6" 1'



C5 OPERABLE WINDOW HEAD DETAIL

6" = 1'-0"

0 1" 2" 3" 4"



A5 OPERABLE WINDOW SILL DETAIL

6" = 1'-0"

0 1" 2" 3" 4"

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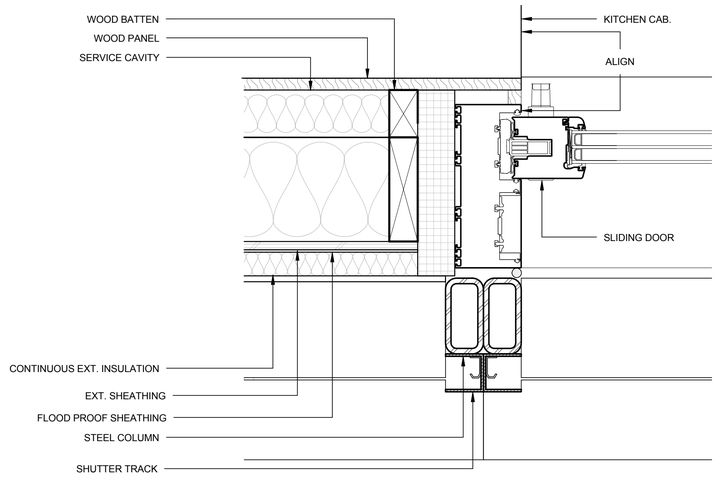
SHEET TITLE

OPERABLE WINDOW DETAILS

A-511

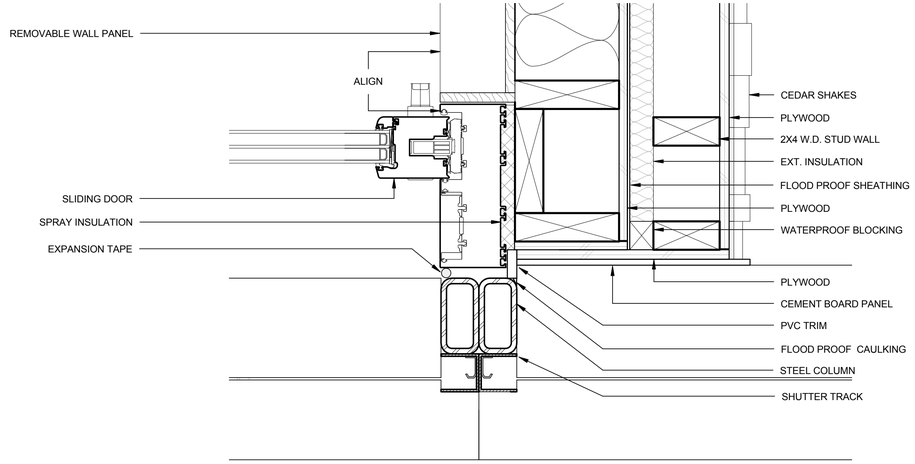
8/16/2015 6:17:54 PM



C2 DOOR JAMB DETAIL AT KITCHEN WALL

3" = 1'-0"

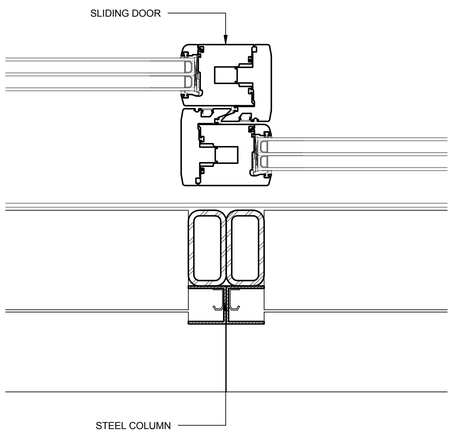
0 3" 6" 1'



C5 DOOR JAMB DETAIL AT EAST WALL

3" = 1'-0"

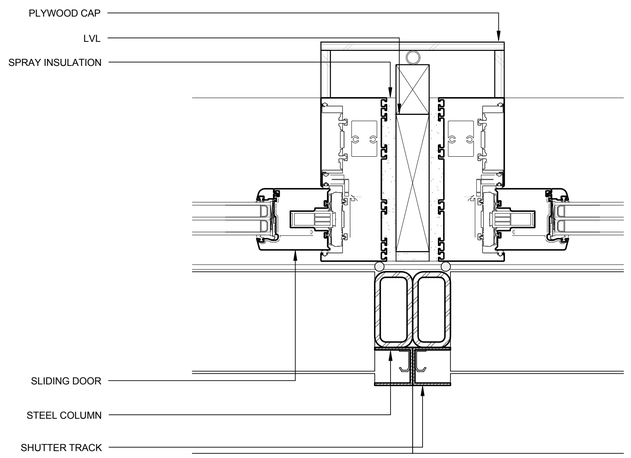
0 3" 6" 1'



A2 DOOR JAMB DETAIL AT CENTER

3" = 1'-0"

0 3" 6" 1'



A5 DOOR JAMB DETAIL AT COLUMN

3" = 1'-0"

0 3" 6" 1'

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

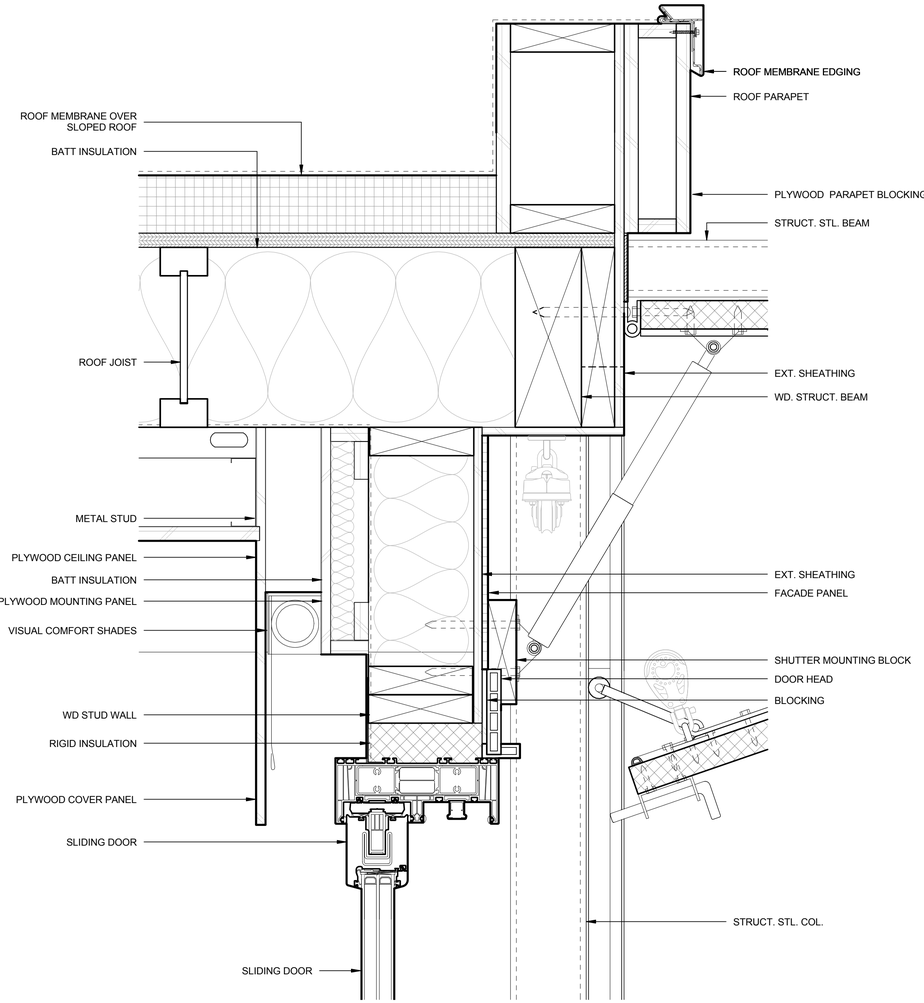
LOT NUMBER: LOT #110

SHEET TITLE

LIFT AND SLIDE DOOR JAMB DETAILS

A-512

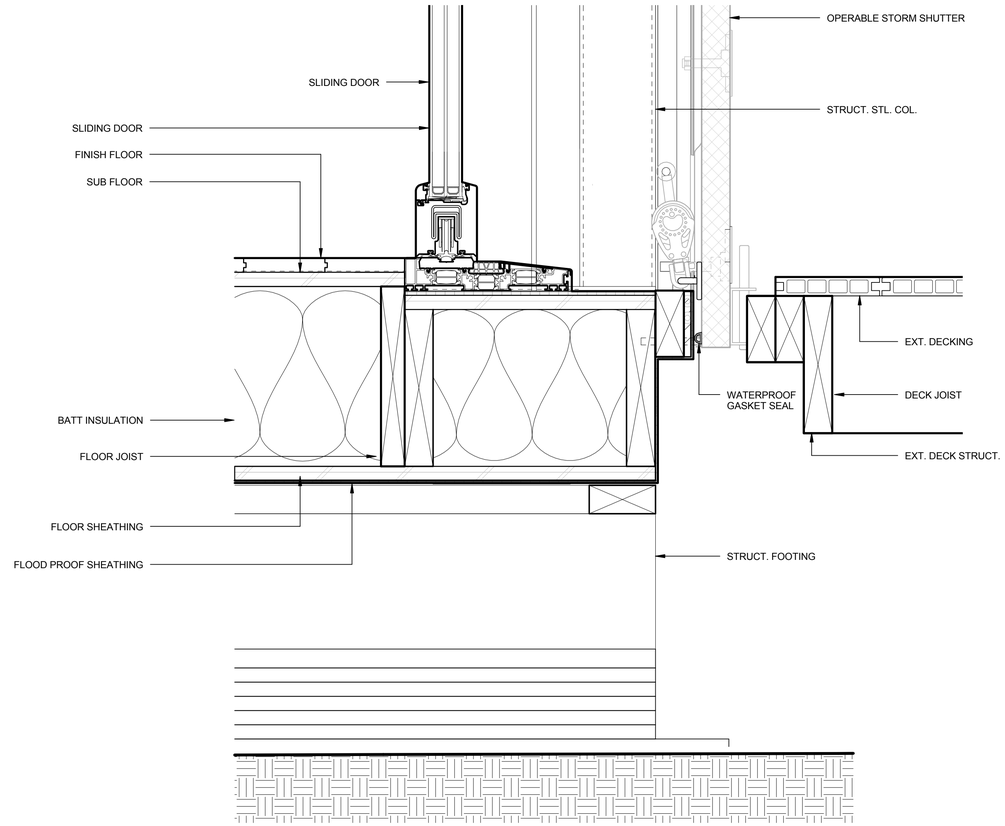
8/16/2015 6:18:02 PM



A1 SOUTH SLIDING DOOR HEAD DETAIL

3" = 1'-0"

0 3" 6" 1'



A5 SOUTH SLIDING DOOR SILL DETAIL

3" = 1'-0"

0 3" 6" 1'

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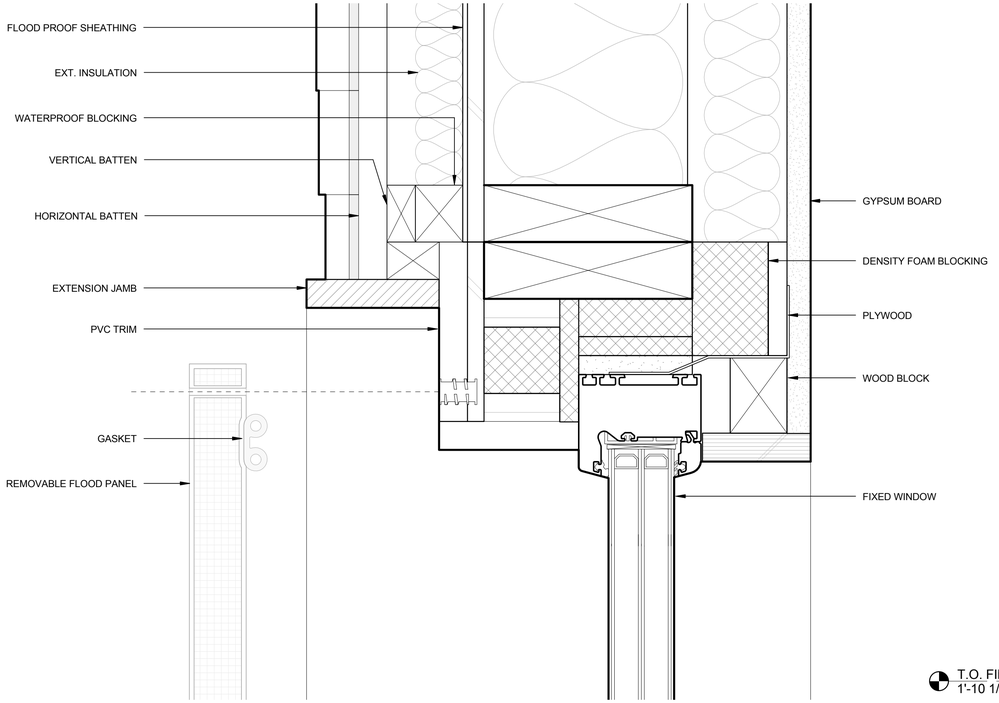
LOT NUMBER: LOT #110

SHEET TITLE

LIFT AND SLIDE HEADER AND SILL

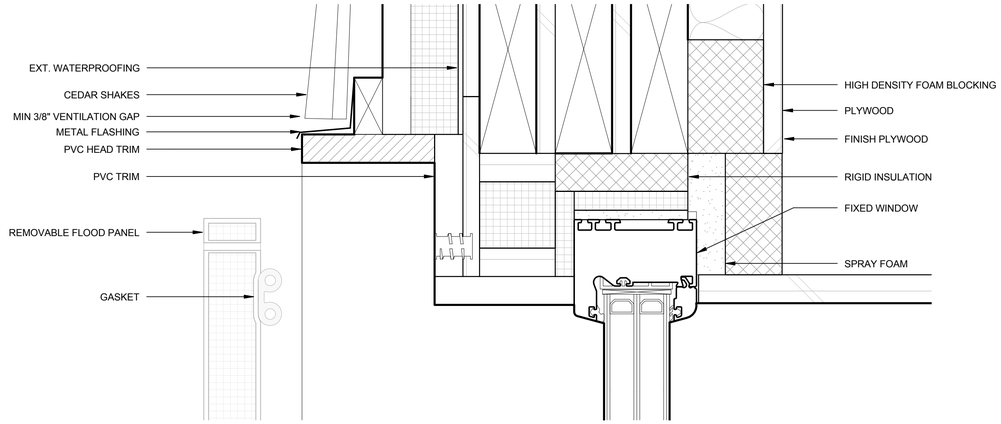
A-513

8/16/2015 6:18:17 PM



A1 FIXED WEST WINDOW JAMB DETAIL
6" = 1'-0"

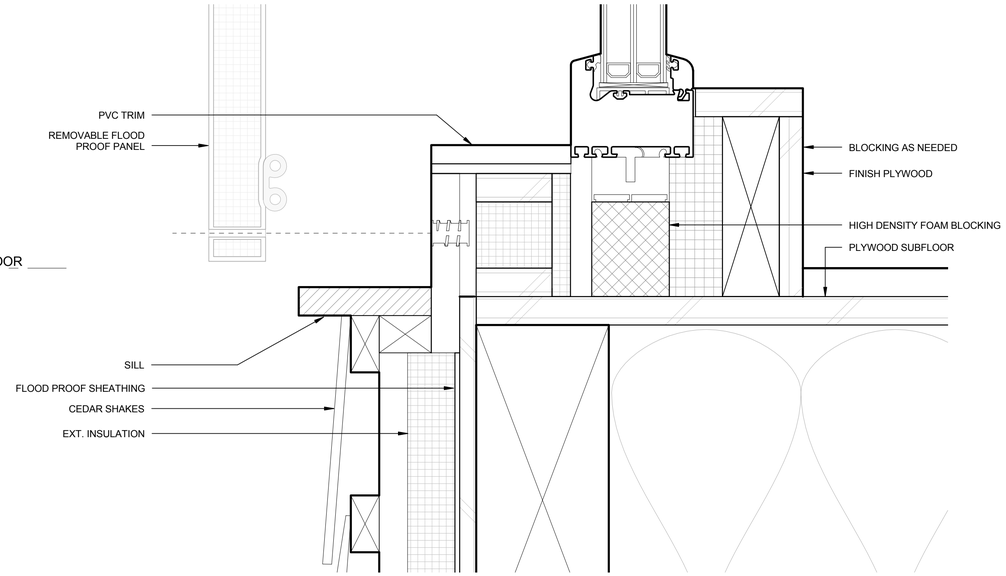
0 3" 6" 1'



C4 FIXED WEST WINDOW HEAD DETAIL
6" = 1'-0"

0 1" 2" 3" 4"

T.O. FINISH FLOOR
1'-10 1/2"



A4 FIXED WEST WINDOW SILL DETAIL
6" = 1'-0"

0 1" 2" 3" 4"

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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SOLAR DECATHLON 2015
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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

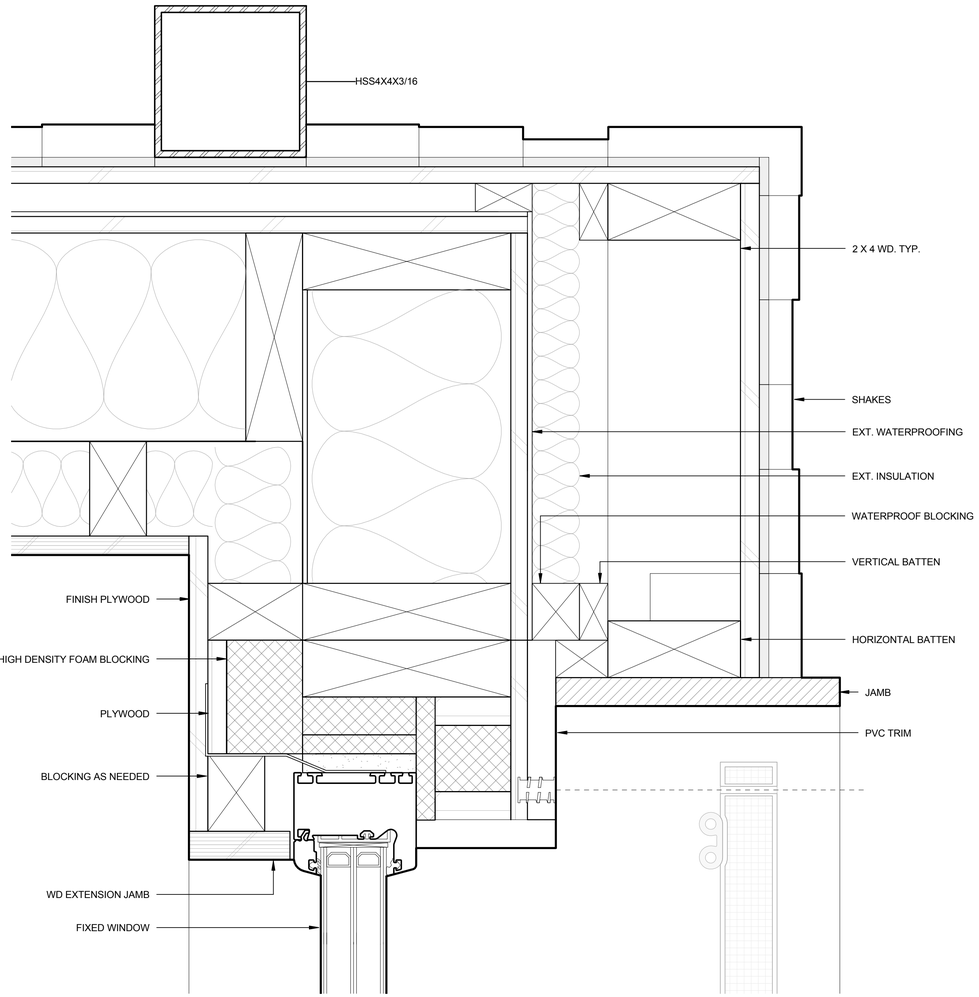
LOT NUMBER: LOT #110

SHEET TITLE

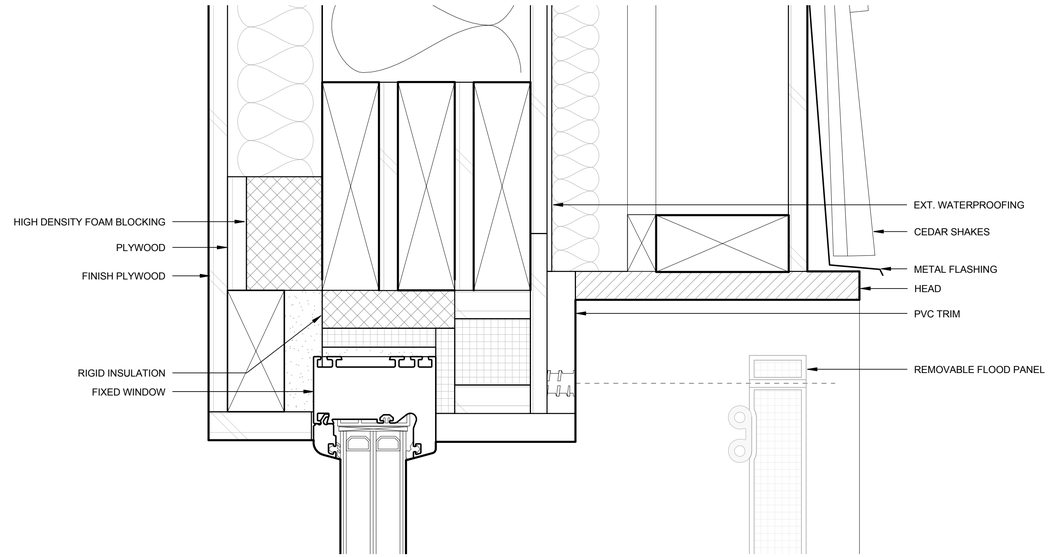
FIXED WEST WINDOW DETAILS

A-514

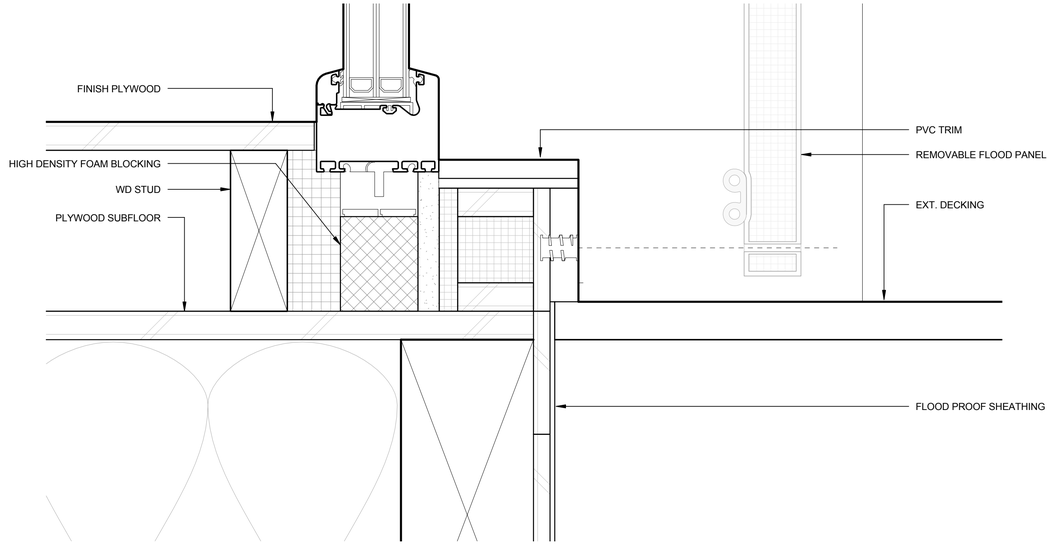
8/16/2015 6:18:34 PM



A1 FIXED EAST WINDOW JAMB
6" = 1'-0"



C4 FIXED EAST WINDOW HEADER DETAIL
6" = 1'-0"



A4 FIXED EAST WINDOW SILL DETAIL
6" = 1'-0"

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01	10-09-2014	80% DD SET

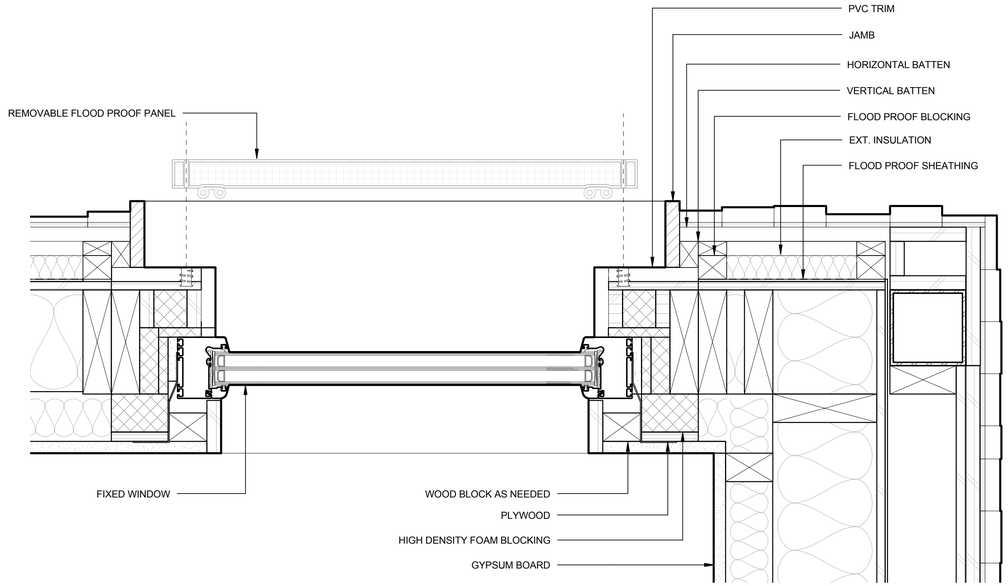
LOT NUMBER: LOT #110

SHEET TITLE

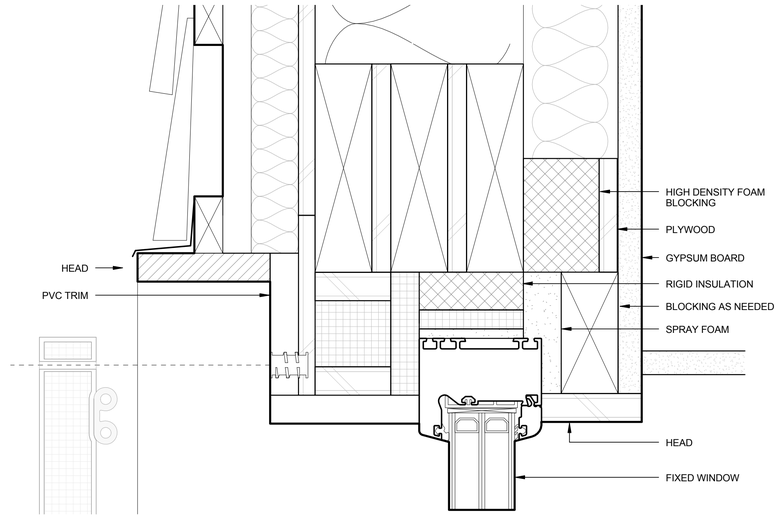
FIXED EAST WINDOW DETAILS

A-515

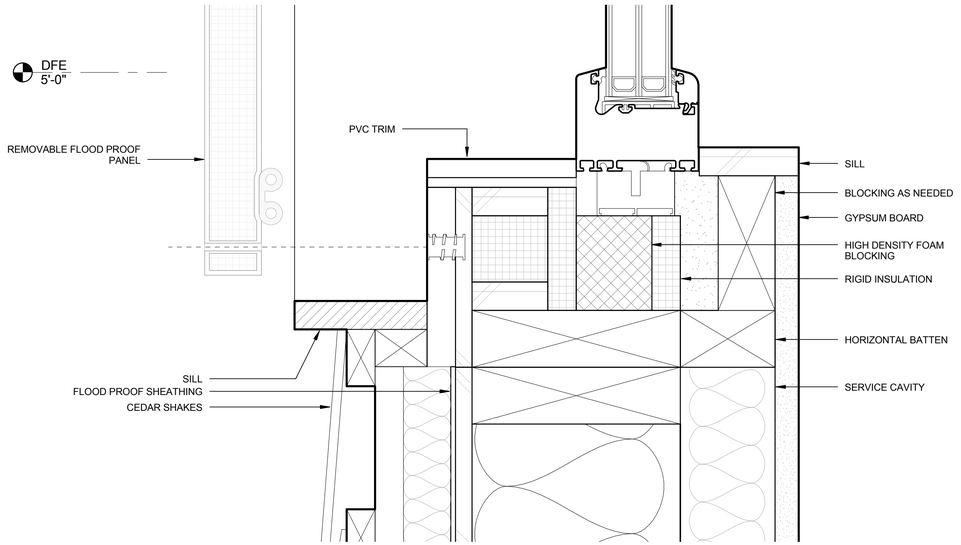
8/16/2015 6:18:45 PM



A1 FIXED NORTH WINDOW JAMB DETAIL
3" = 1'-0"



C5 FIXED NORTH WINDOW HEAD DETAIL
6" = 1'-0"



A5 FIXED NORTH WINDOW SILL DETAIL
6" = 1'-0"

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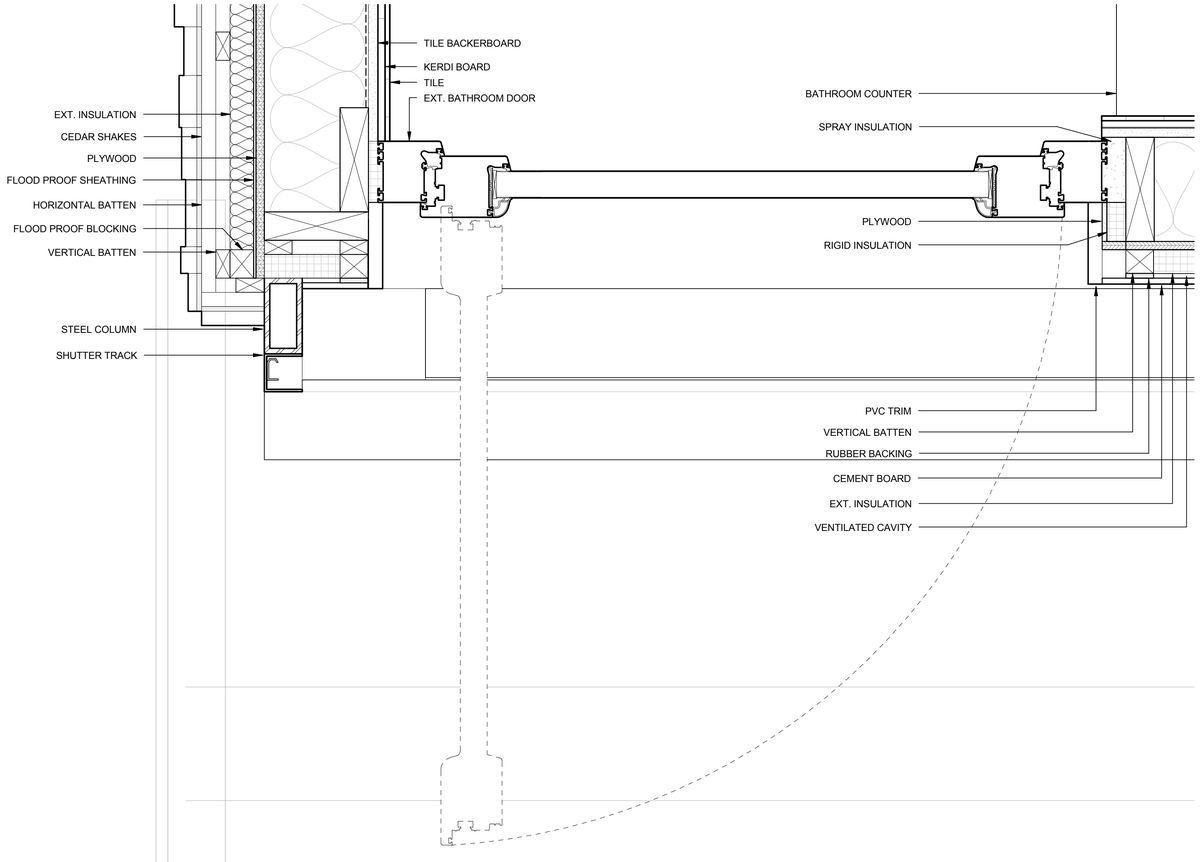
LOT NUMBER: LOT #110

SHEET TITLE

FIXED WINDOW DETAILS

A-516

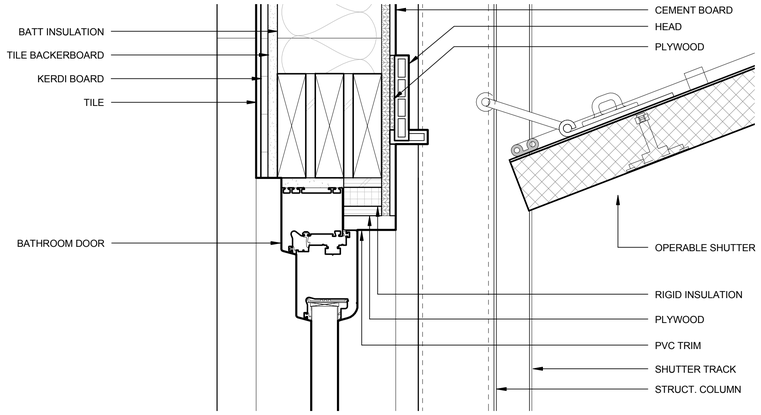
8/16/2015 6:19:09 PM



A1 BATHROOM DOOR JAMB DETAIL

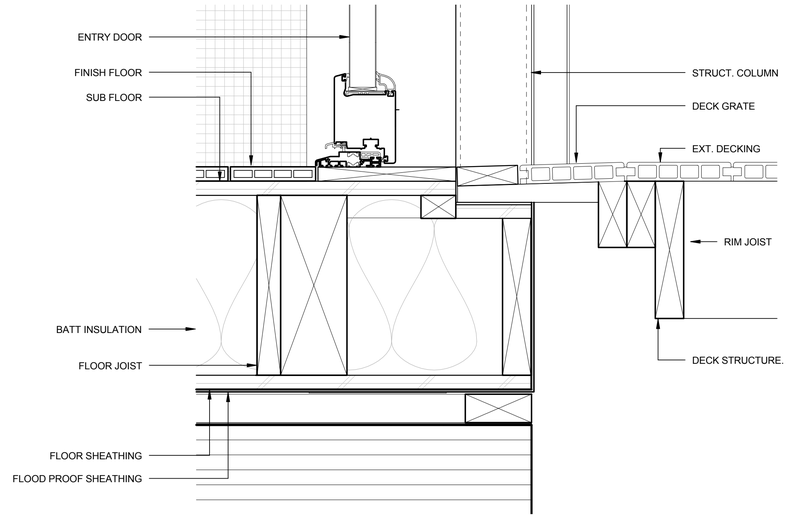
3" = 1'-0"

0 3" 6" 1'



D5 BATHROOM DOOR HEAD DETAIL

3" = 1'-0"



A5 BATHROOM DOOR SILL DETAIL

3" = 1'-0"

0 3" 6" 1'

8/16/2015 6:19:15 PM

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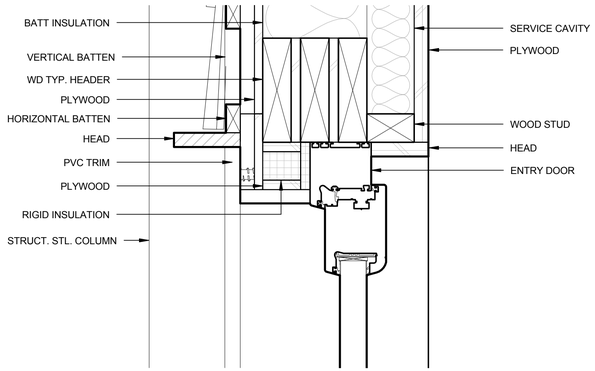
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

EXT. BATHROOM DOOR DETAILS

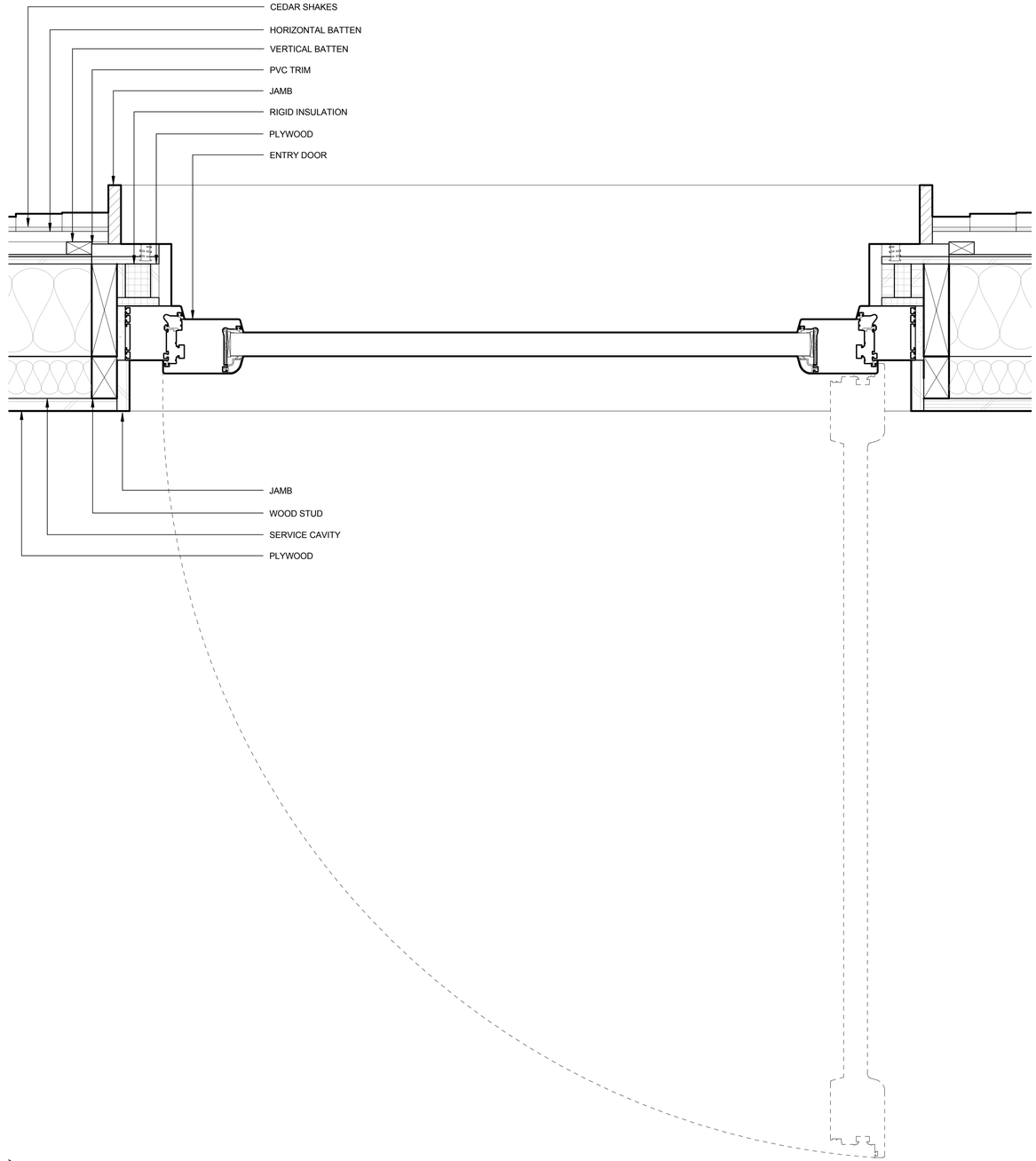
A-517

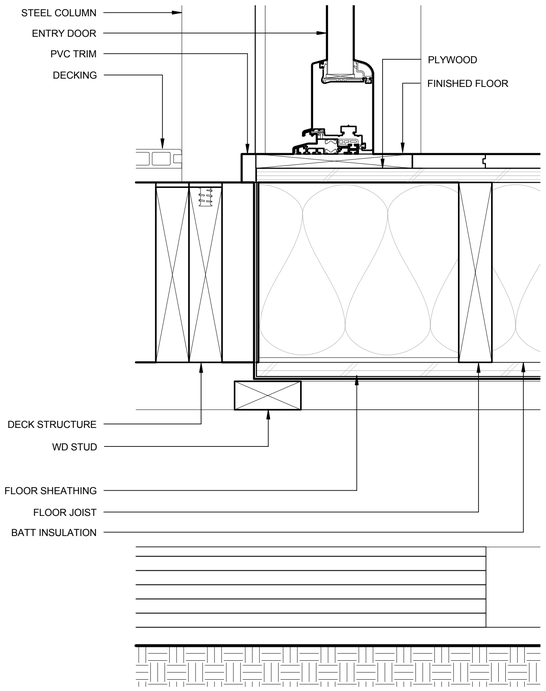


D1 ENTRY DOOR HEADER DETAIL

3" = 1'-0"

0 3" 6" 1'





A1 ENTRY DOOR SILL DETAIL

3" = 1'-0"

0 3" 6" 1'

A3 ENTRY DOOR JAMB DETAILS

3" = 1'-0"

0 3" 6" 1'

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01	10-09-2014	80% DD SET

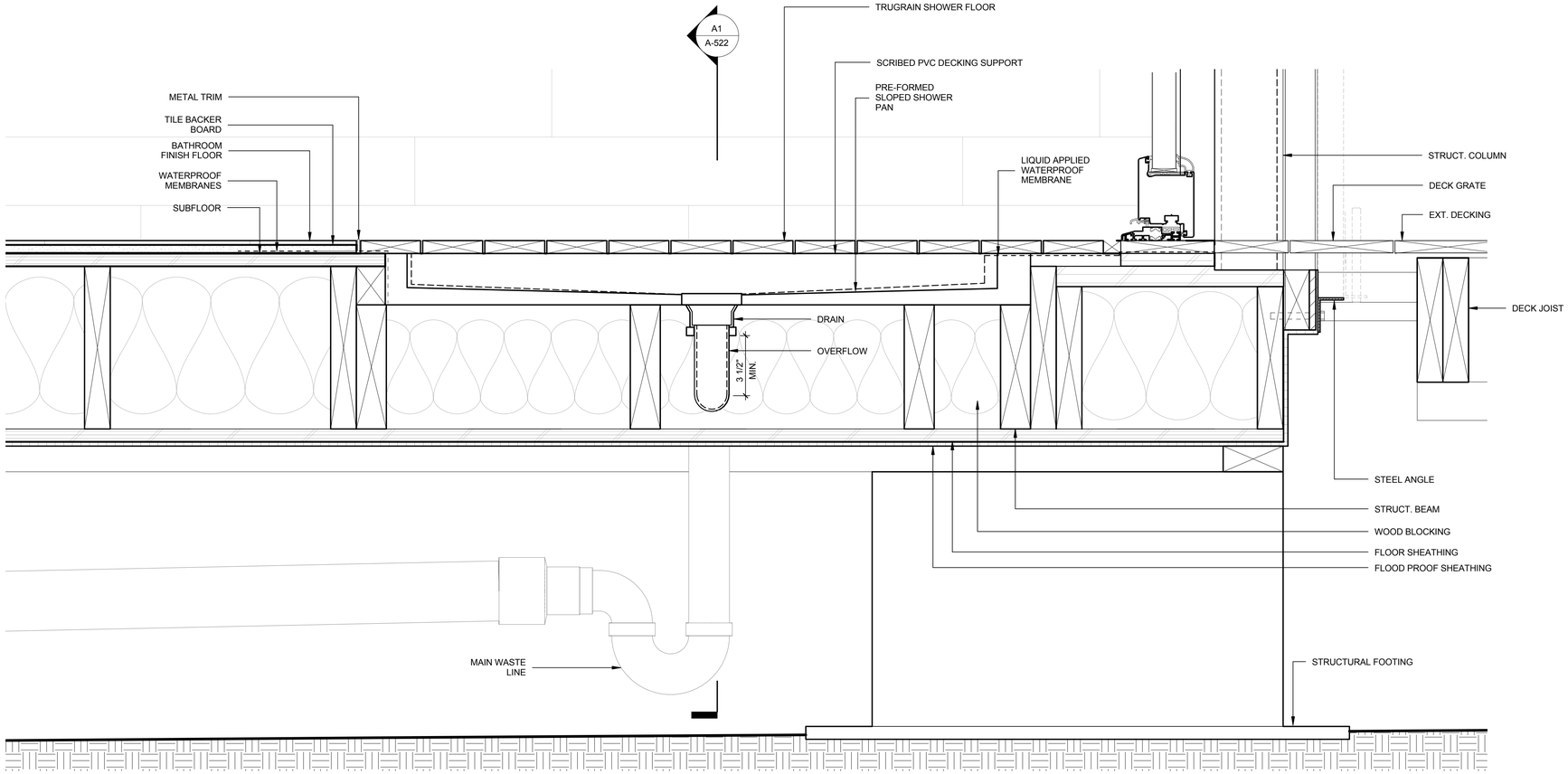
LOT NUMBER: LOT #110

SHEET TITLE

ENTRY DOOR DETAIL

A-518

8/16/2015 6:19:22 PM



A2 BATHROOM SHOWER DRAIN DETAIL LOOKING EAST

3" = 1'-0"

0 3" 6" 1'

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01	10-09-2014	80% DD SET

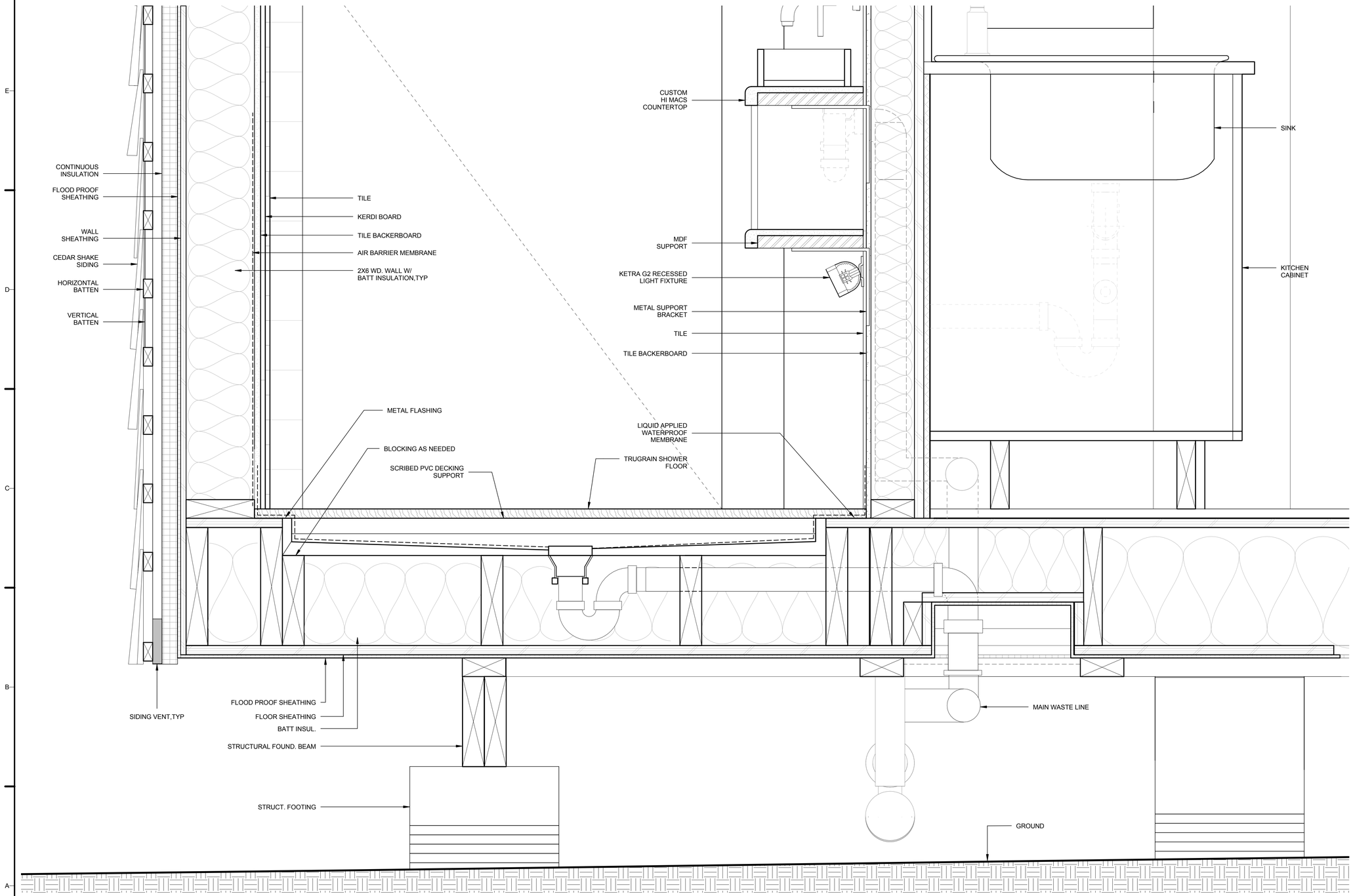
LOT NUMBER: LOT #110

SHEET TITLE

BATHROOM SHOWER DRAIN DETAIL

A-521

8/16/2015 6:19:29 PM



A1 BATHROOM SHOWER DRAIN SECTION LOOKING NORTH

3" = 1'-0"

0 3" 6" 1'

8/16/2015 6:19:35 PM

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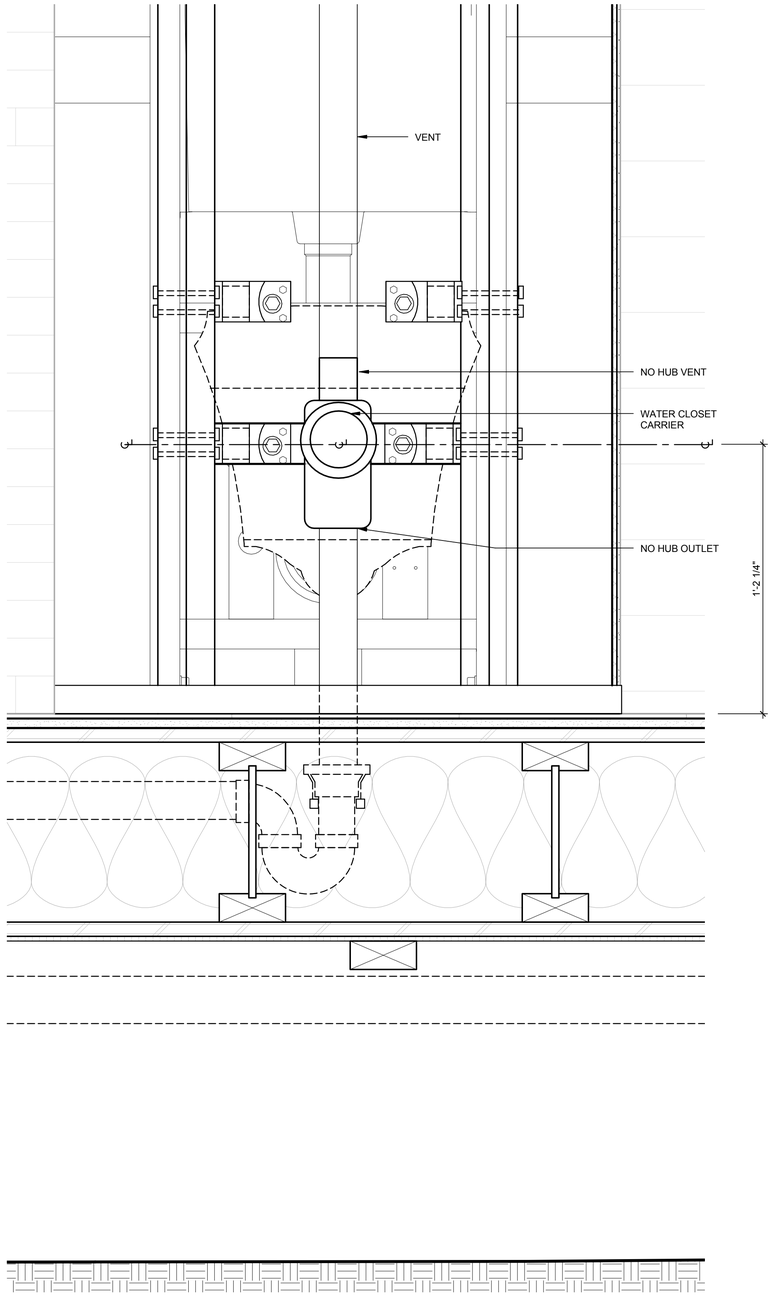
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

BATHROOM DETAILS

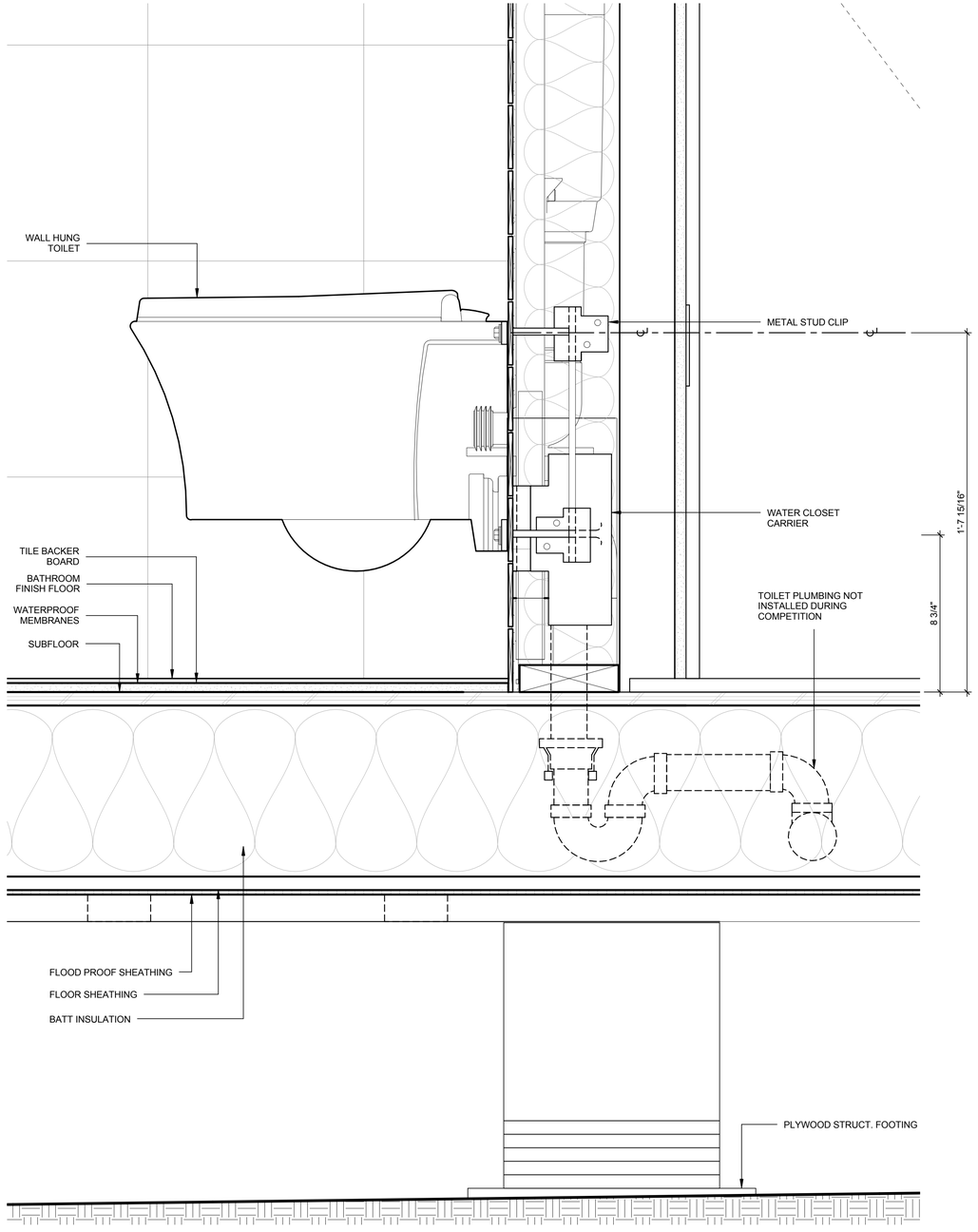
A-522



A1 BATHROOM WATER CLOSET CARRIER

3" = 1'-0"

0 3" 6" 1'



A4 BATHROOM SECTION TOILET

3" = 1'-0"

0 3" 6" 1'

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

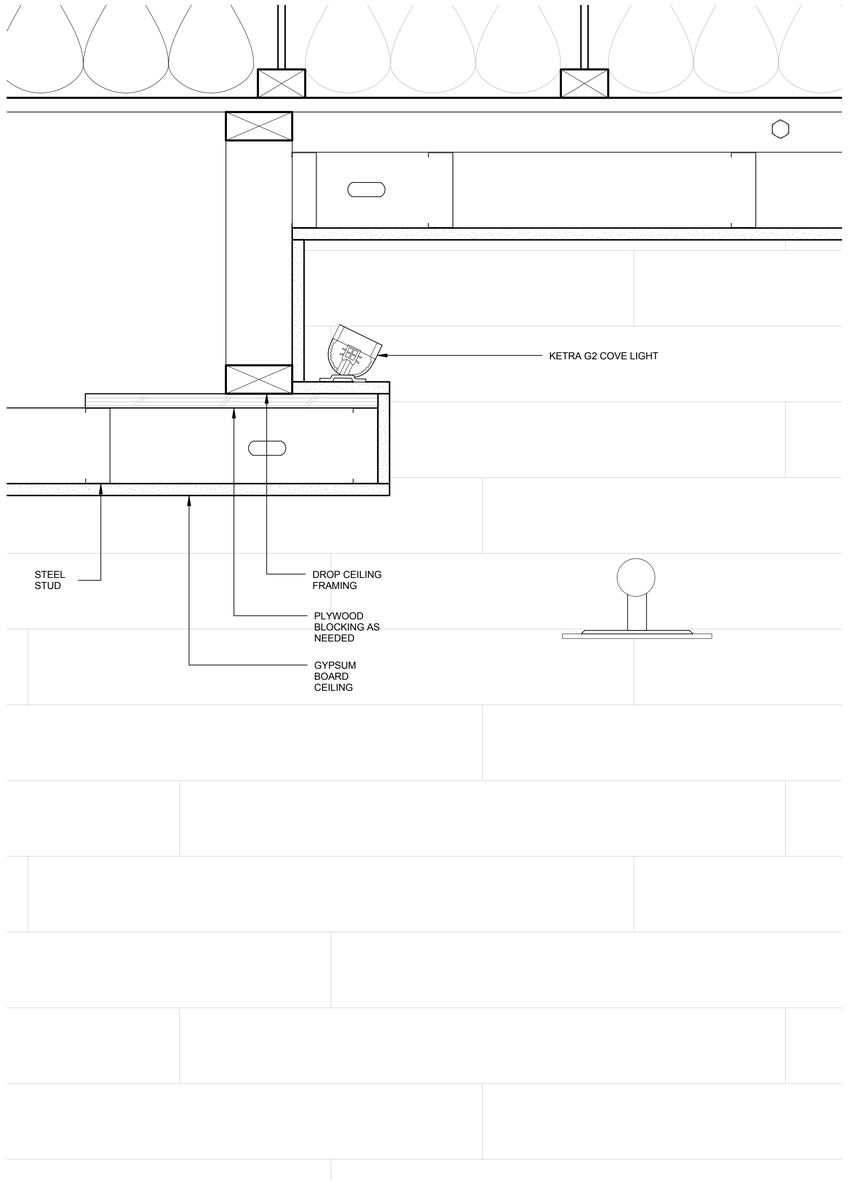
LOT NUMBER:	LOT #110
COPYRIGHT:	NONE: PROJECT IS PUBLIC DOMAIN

SHEET TITLE

BATHROOM DETAILS

A-523

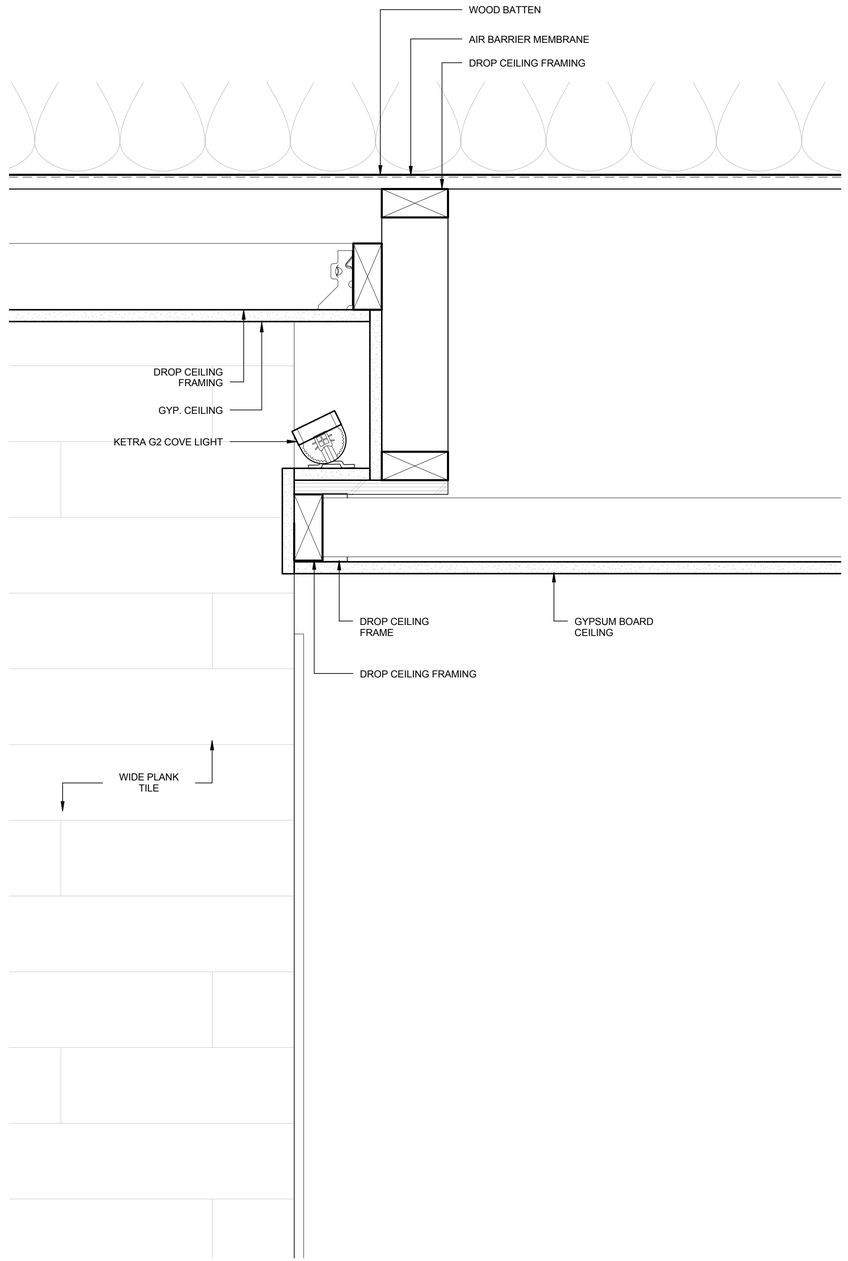
8/16/2015 6:19:41 PM



A1 BATHROOM CEILING COVE LIGHT - SHOWER

3" = 1'-0"

0 3" 6" 1'



A4 BATHROOM CEILING COVE LIGHT - TOILET

3" = 1'-0"

0 3" 6" 1'

8/16/2015 6:19:48 PM

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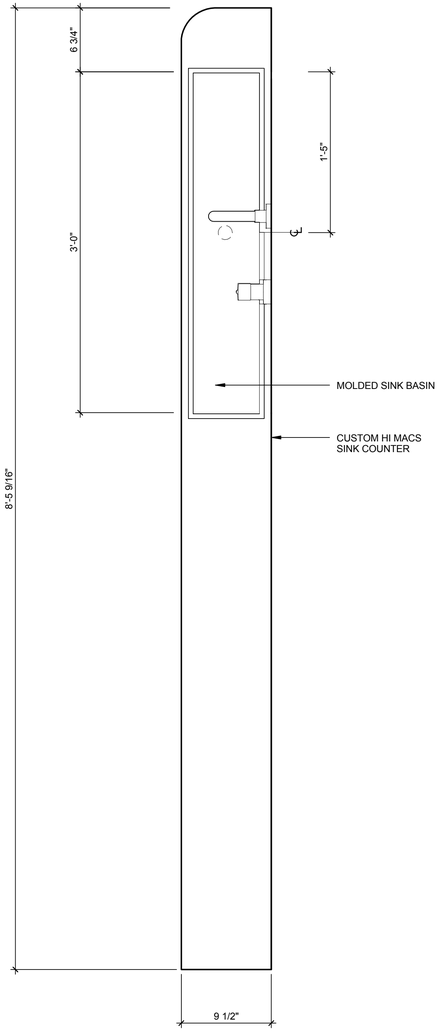
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

BATHROOM COVE LIGHT

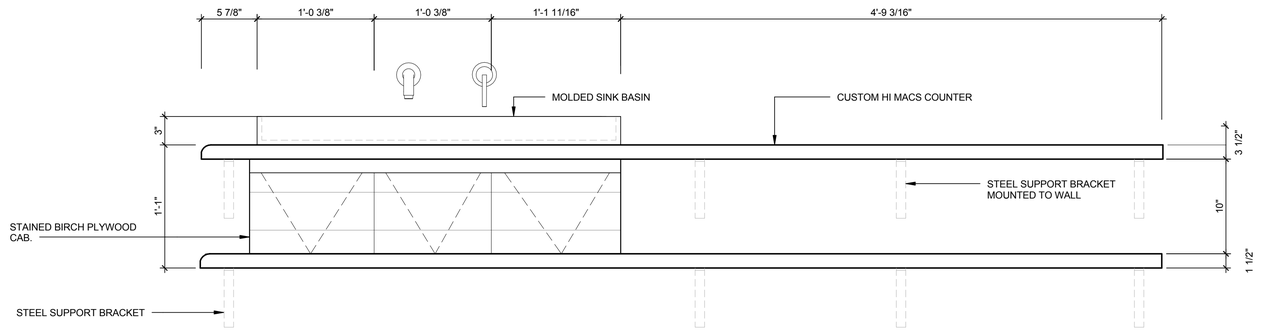
A-524



A1 BATHROOM VANITY PLAN

1 1/2" = 1'-0"

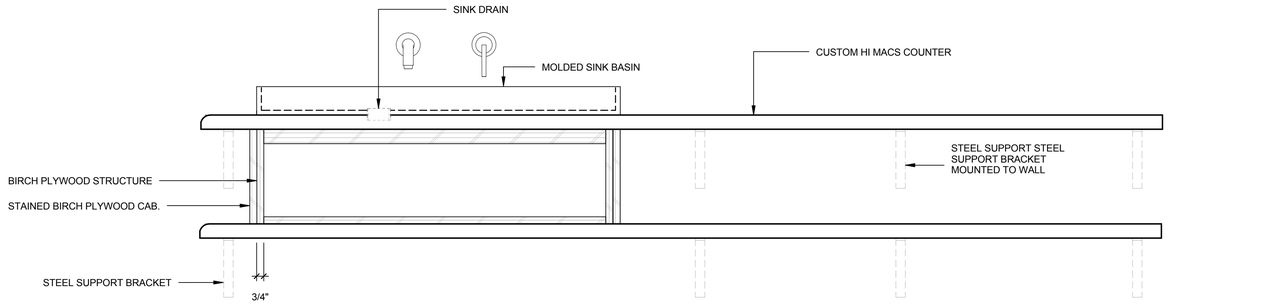
0 1/2" 1' 1 1/2'



D3 BATHROOM COUNTER FRONT

1 1/2" = 1'-0"

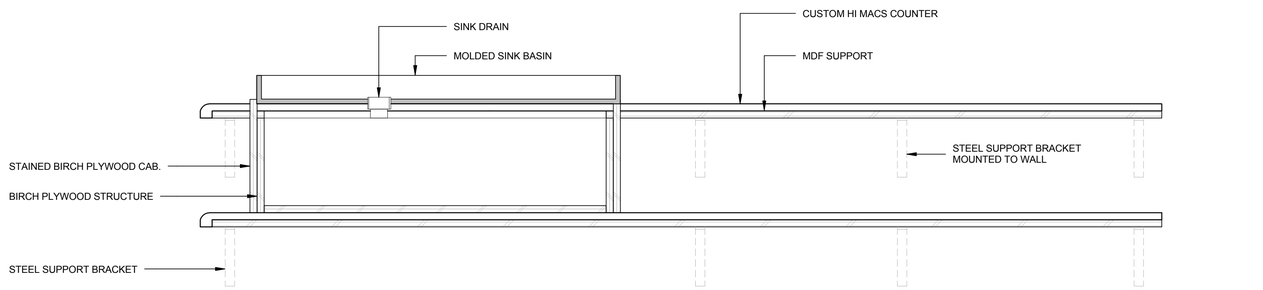
0 1/2" 1' 1 1/2'



C3 VANITY W.O FACE PANELS

1 1/2" = 1'-0"

0 1/2" 1' 1 1/2'



A3 VANITY W.O FACE PANELS

1 1/2" = 1'-0"

0 1/2" 1' 1 1/2'

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01	10-09-2014	80% DD SET

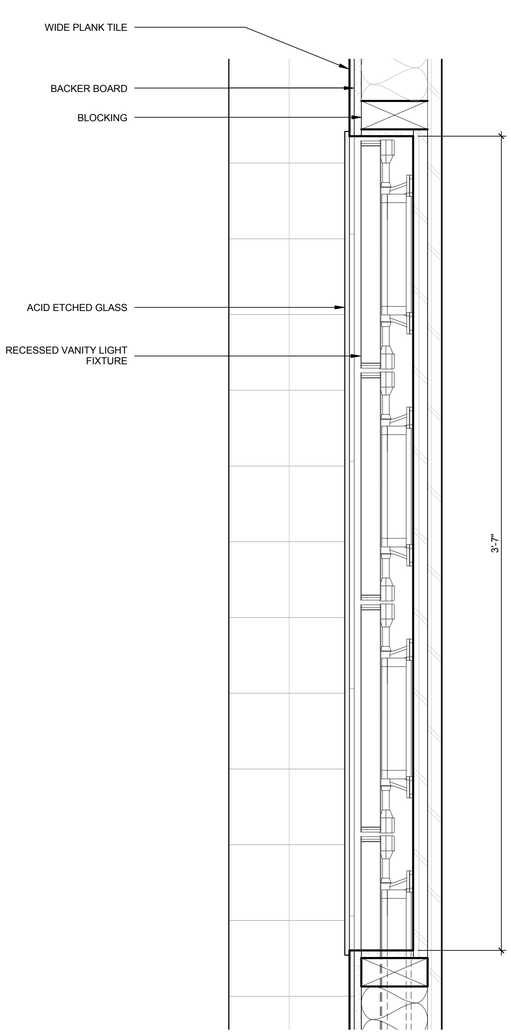
LOT NUMBER: LOT #110

SHEET TITLE

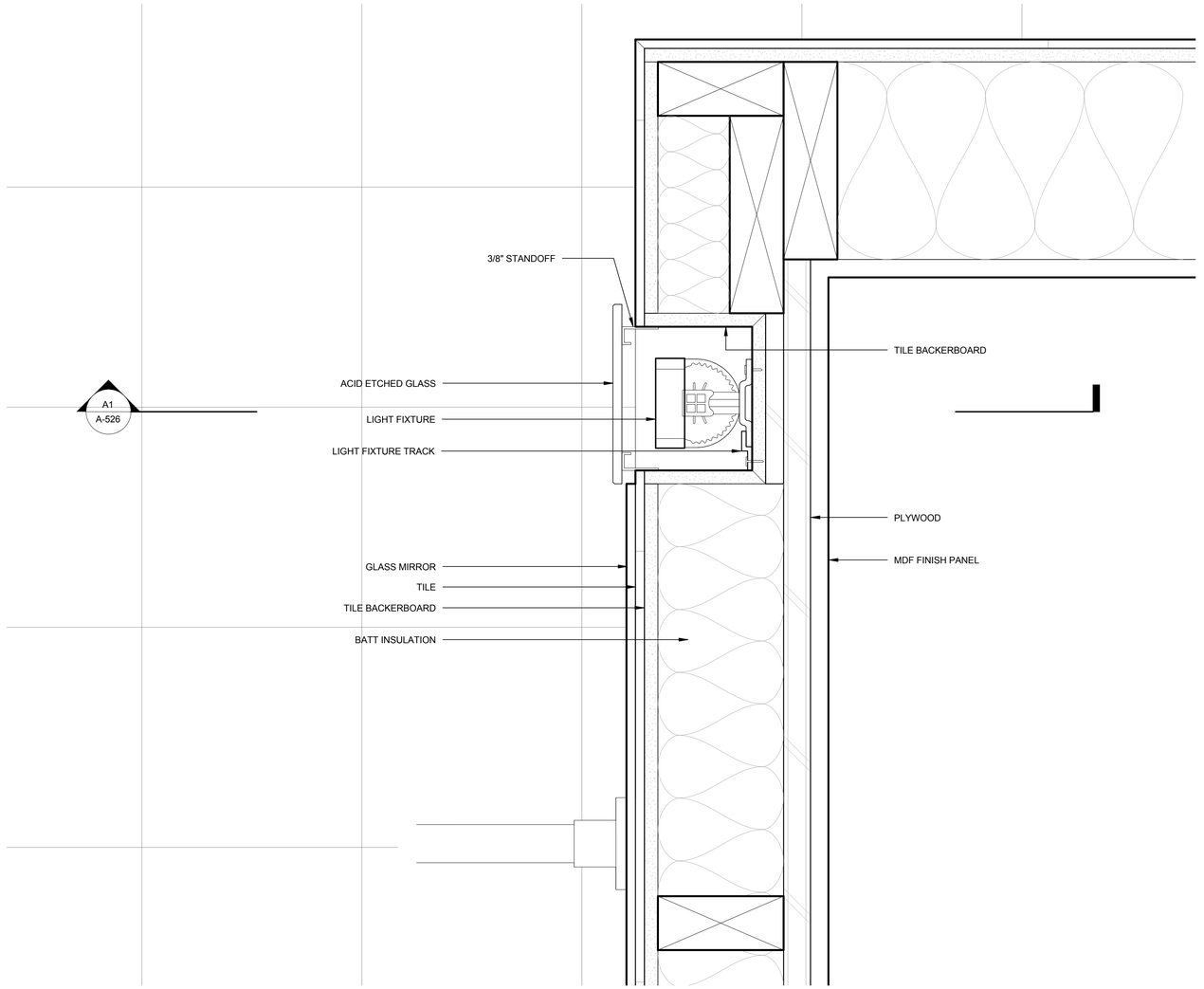
BATHROOM SINK + COUNTER

A-525

8/16/2015 7:53:24 PM



A1 VANITY LIGHT DETAIL
3" = 1'-0"
0 3" 6" 1'



A3 VANITY LIGHT PLAN DETAIL
6" = 1'-0"
0 3" 6" 1'

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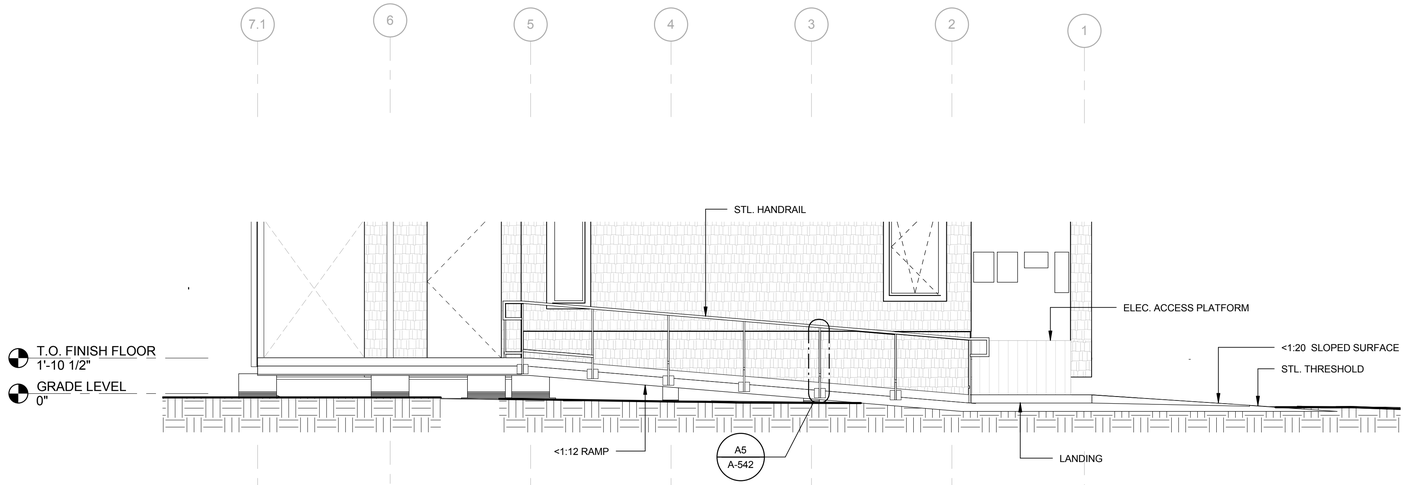
LOT NUMBER: LOT #110

SHEET TITLE

BATHROOM VANITY LIGHT

A-526

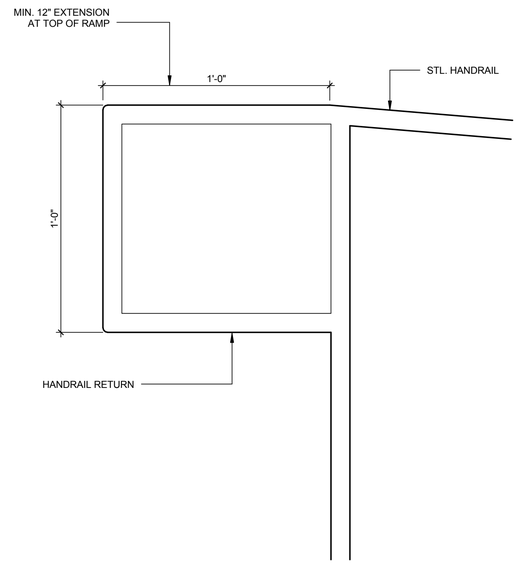
8/16/2015 6:20:02 PM



C1 RAMP SECTION LOOKING NORTH

1/4" = 1'-0"

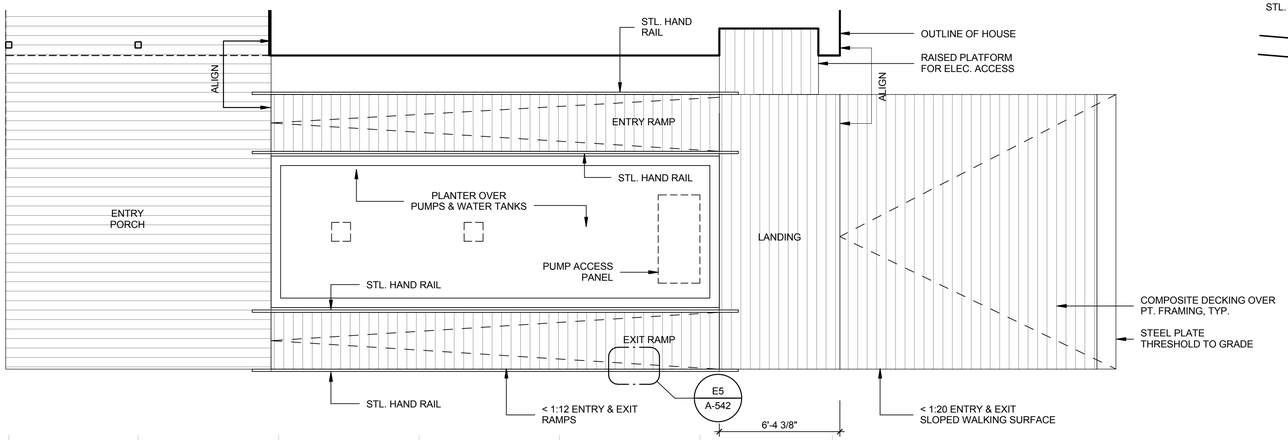
0 2' 4' 8'



C6 TOP EXTENSION & RETURN

3" = 1'-0"

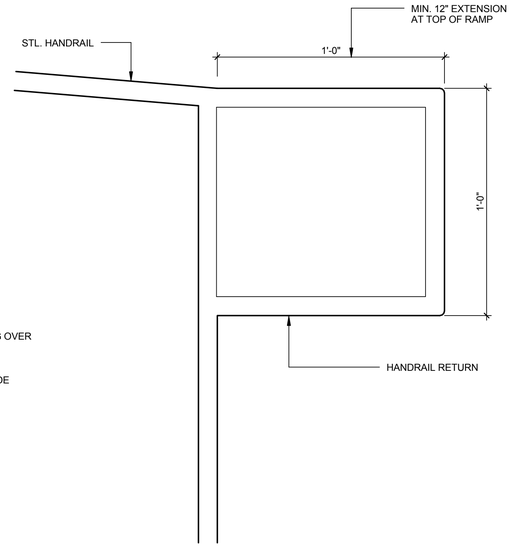
0 3" 6" 1'



A1 RAMP PLAN

1/4" = 1'-0"

0 2' 4' 8'



A6 BOTTOM EXTENSION & RETURN

3" = 1'-0"

0 3" 6" 1'

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

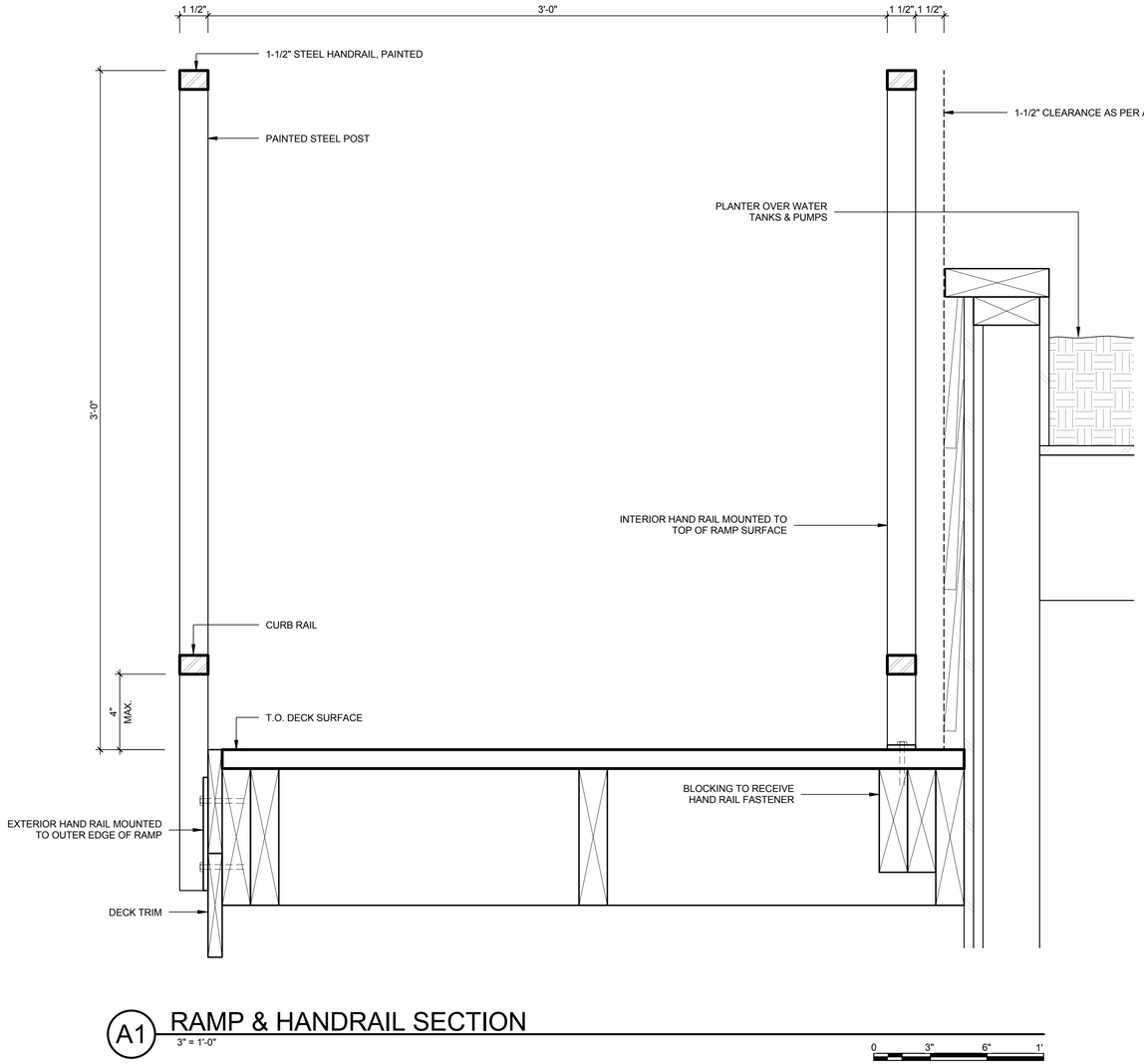
RAMP & HANDRAIL DETAILS

A-541

8/16/2015 6:20:10 PM

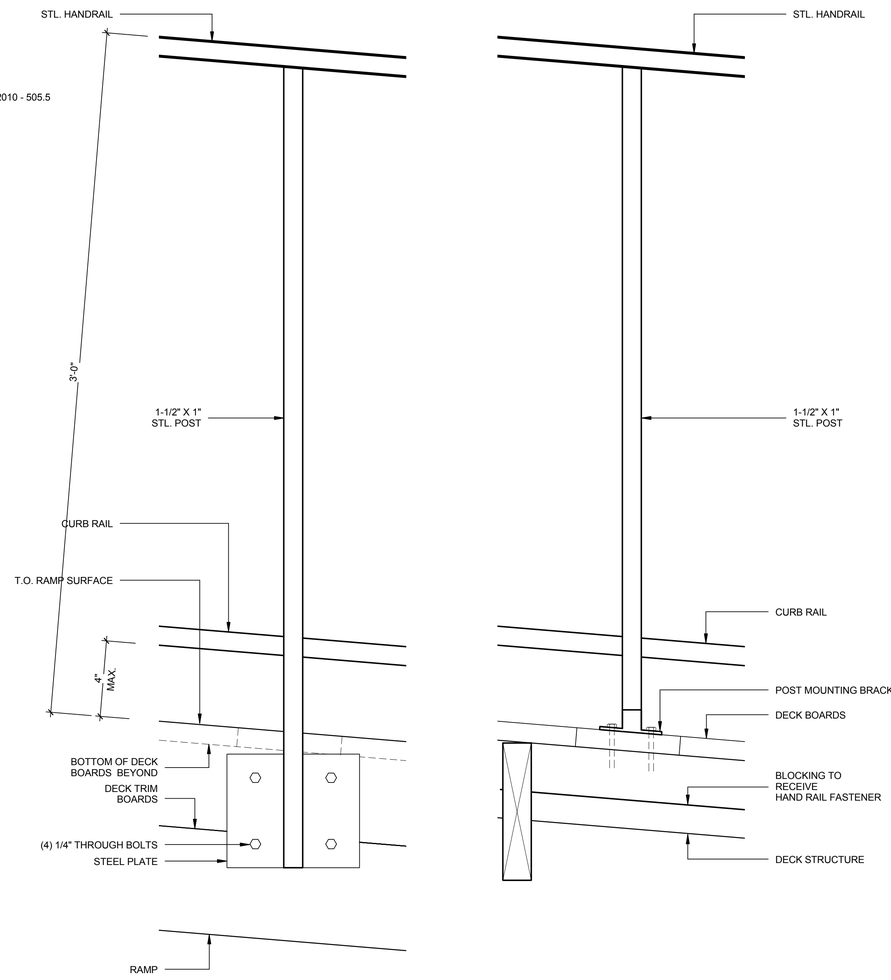
E5 HANDRAIL PLAN DETAIL, TYP.
3" = 1'-0"

0 3" 6" 1'



A1 RAMP & HANDRAIL SECTION
3" = 1'-0"

0 3" 6" 1'



A5 EXT. HANDRAIL POST DETAIL
3" = 1'-0"

0 3" 6" 1'

A6 INT. HANDRAIL POST DETAIL
3" = 1'-0"

0 3" 6" 1'

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01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
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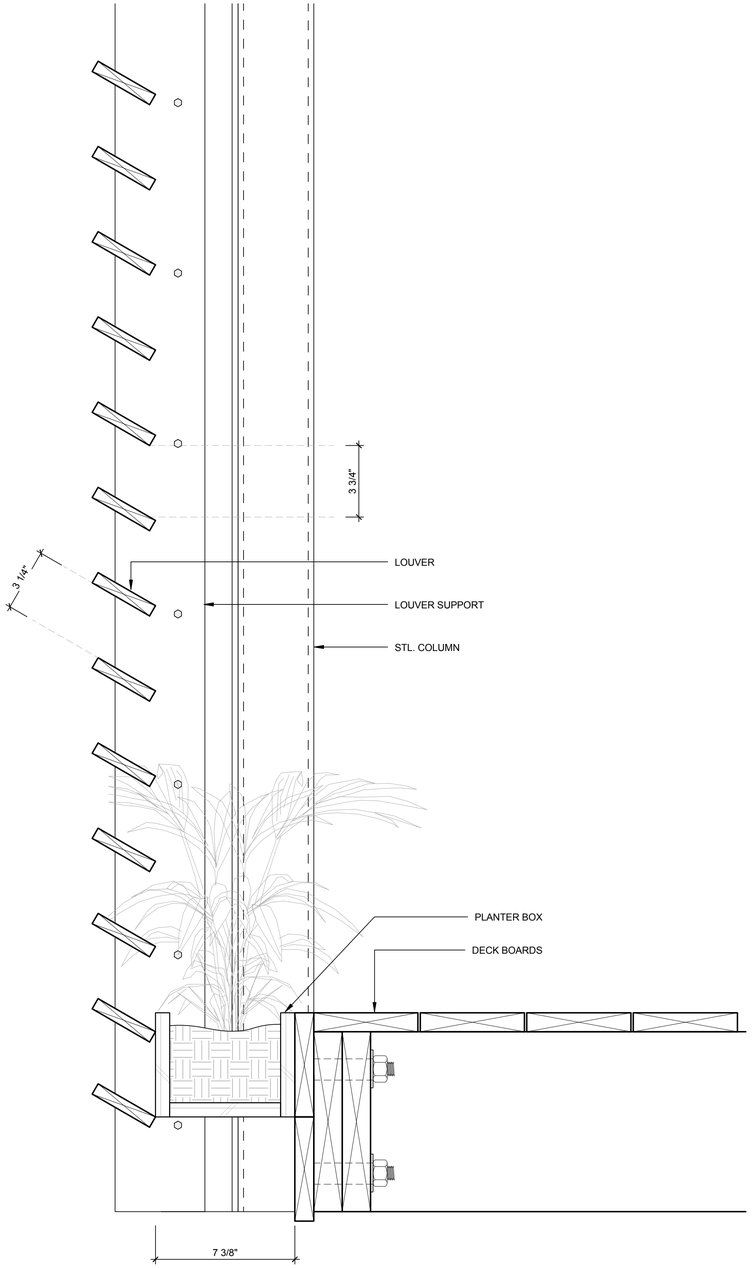
SHEET TITLE

RAMP & HANDRAIL DETAILS

A-542

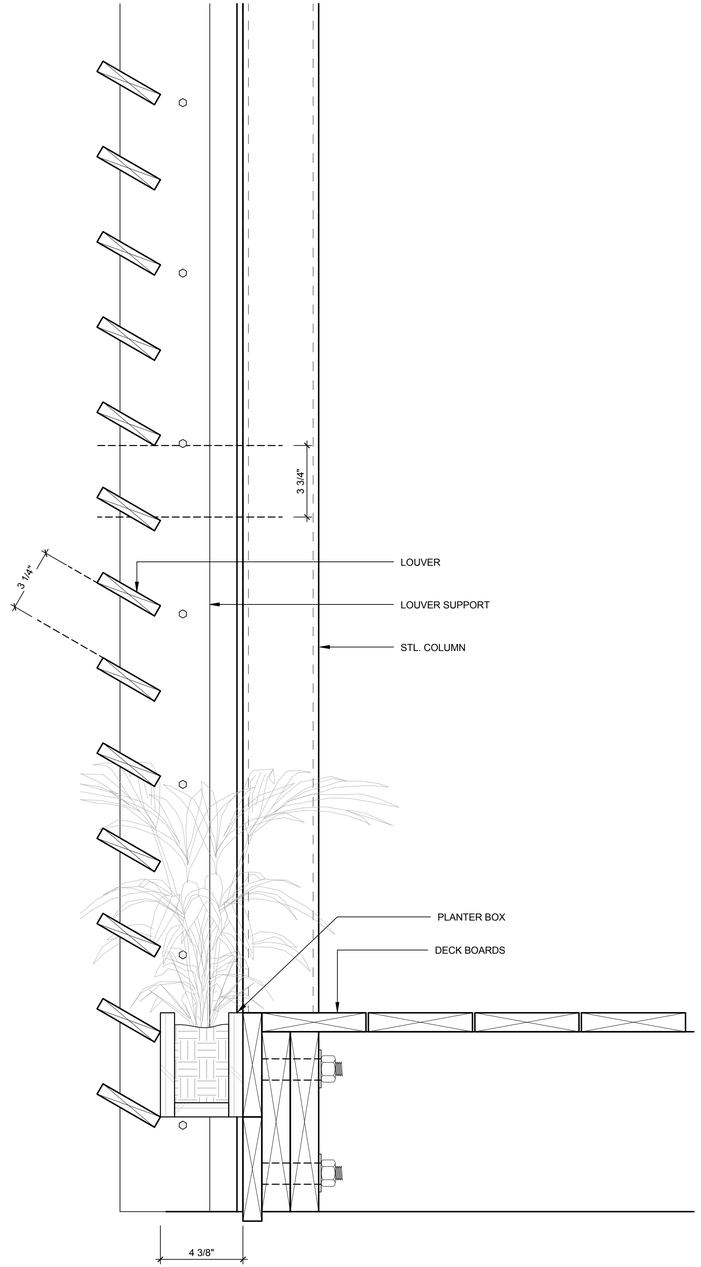
8/16/2015 7:29:22 PM



A1 PLANTER DETAIL - SOUTH

3" = 1'-0"

0 1/2' 1' 2'



A3 PLANTER DETAIL - EAST & WEST

3" = 1'-0"

0 1/2' 1' 2'

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01	10-09-2014	80% DD SET

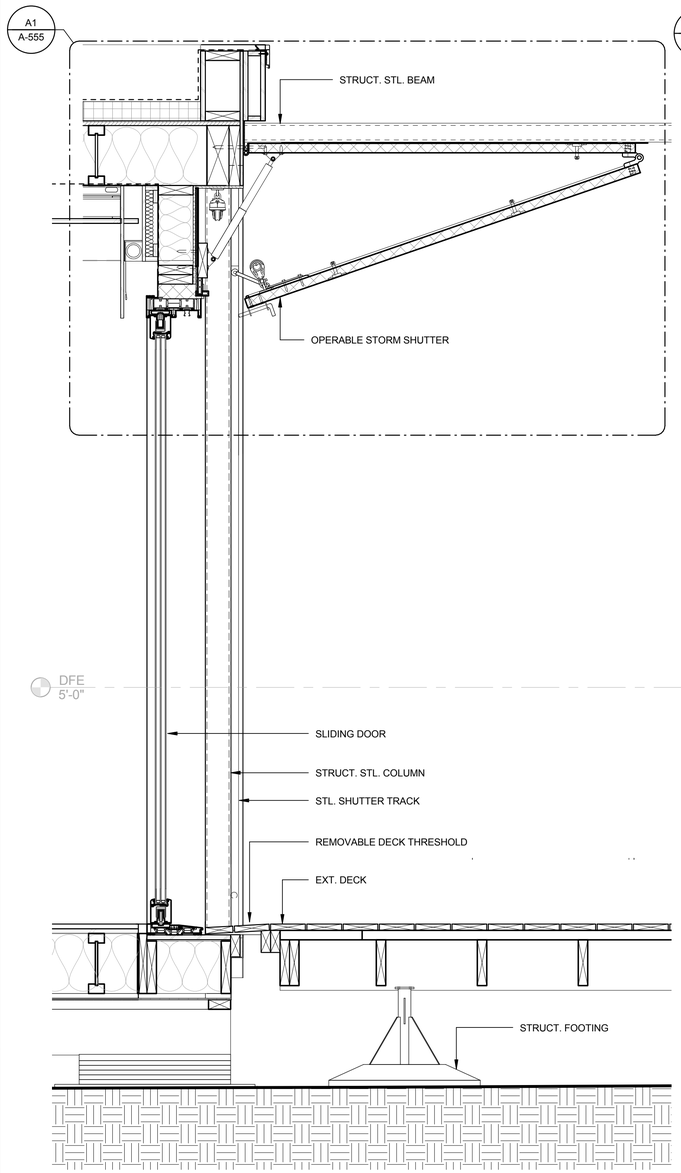
LOT NUMBER: LOT #110

SHEET TITLE

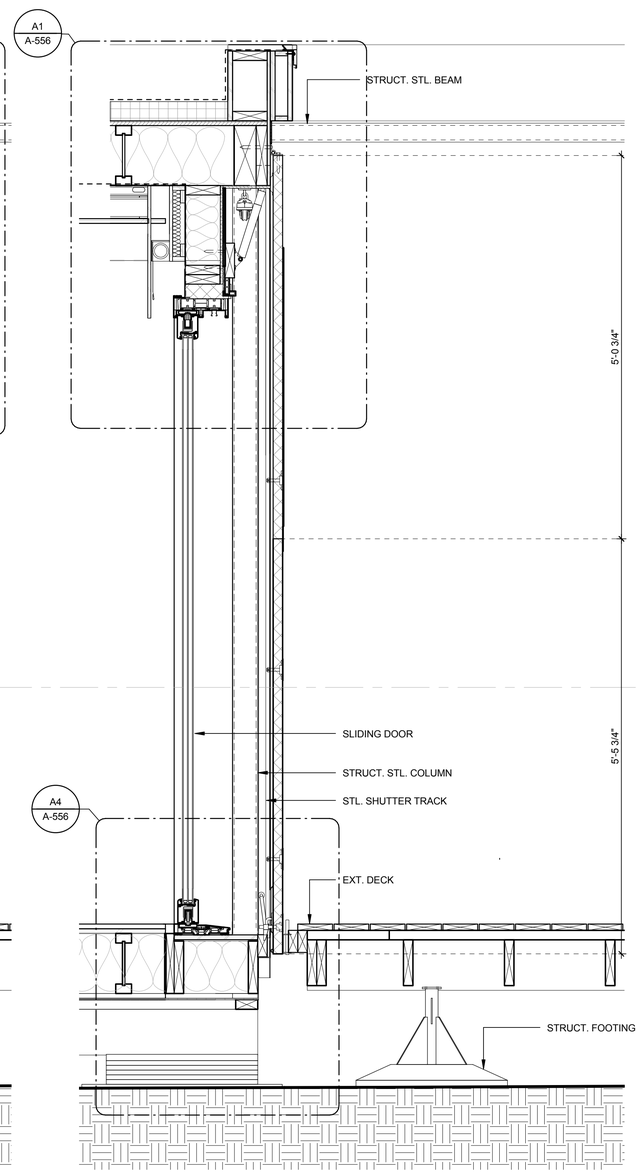
PLANTER DETAIL @ LOUVERS

A-543

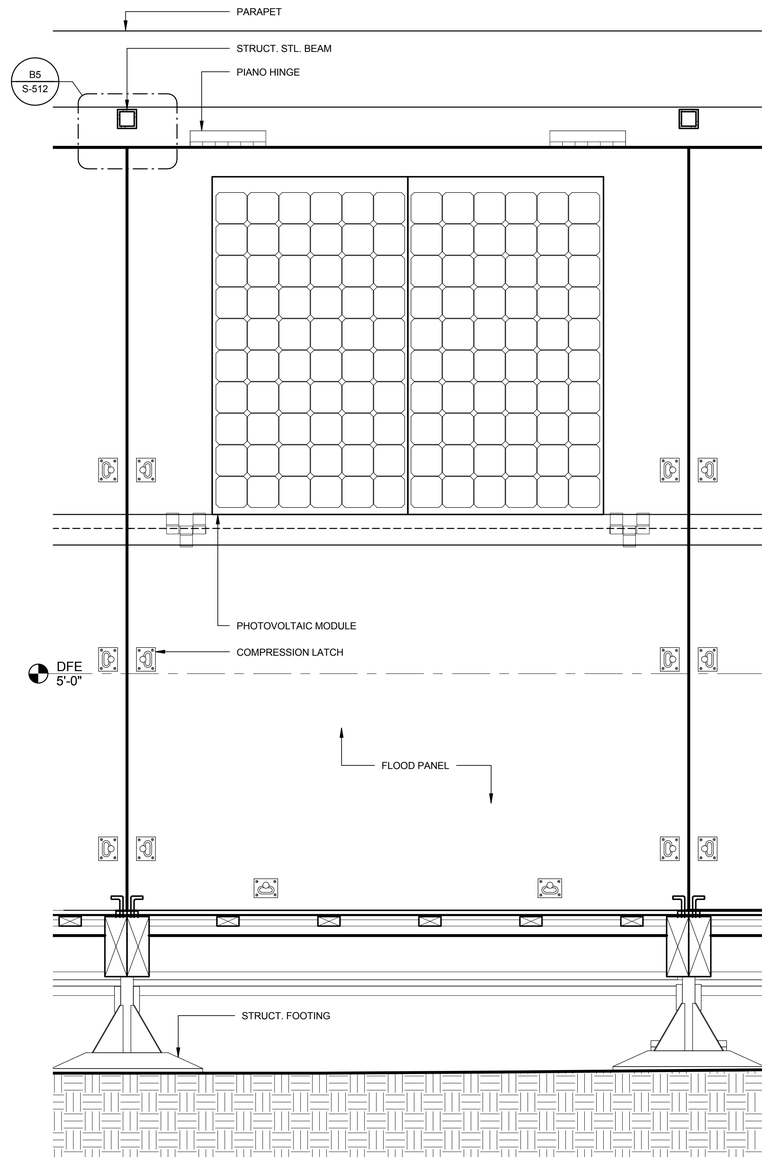
8/16/2015 7:53:29 PM



A1 STORM SHUTTER SECTION - OPEN
1" = 1'-0"



A3 STORM SHUTTER SECTION - CLOSED
1" = 1'-0"



A5 STORM SHUTTER EXT. ELEVATION - CLOSED
1" = 1'-0"

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01	10-09-2014	80% DD SET

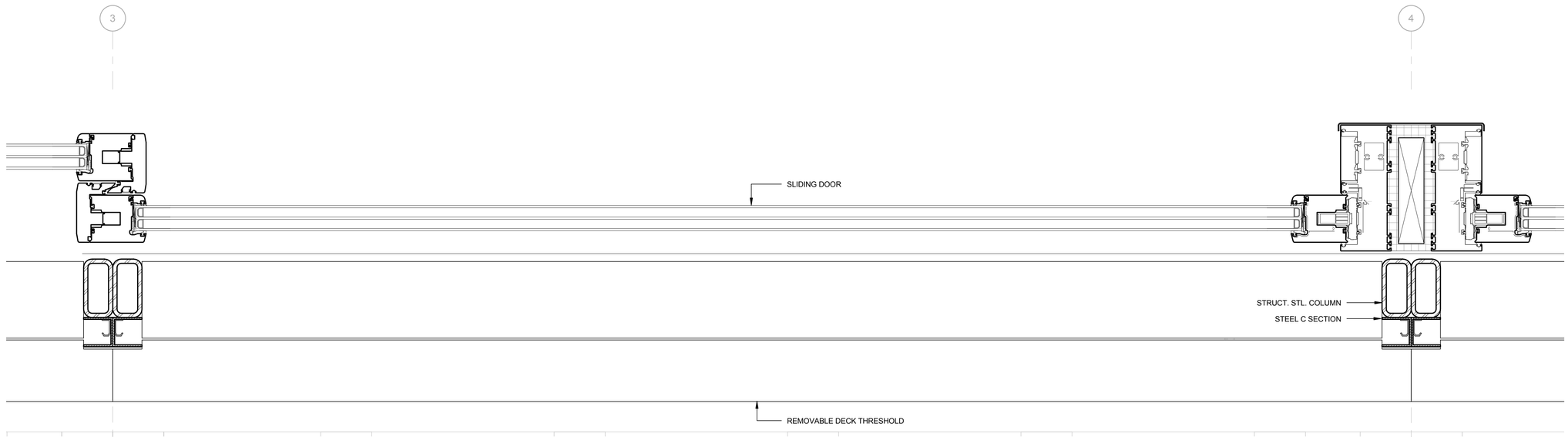
LOT NUMBER: LOT #110

SHEET TITLE

SOUTH WALL SECTION AND ELEVATION

A-552

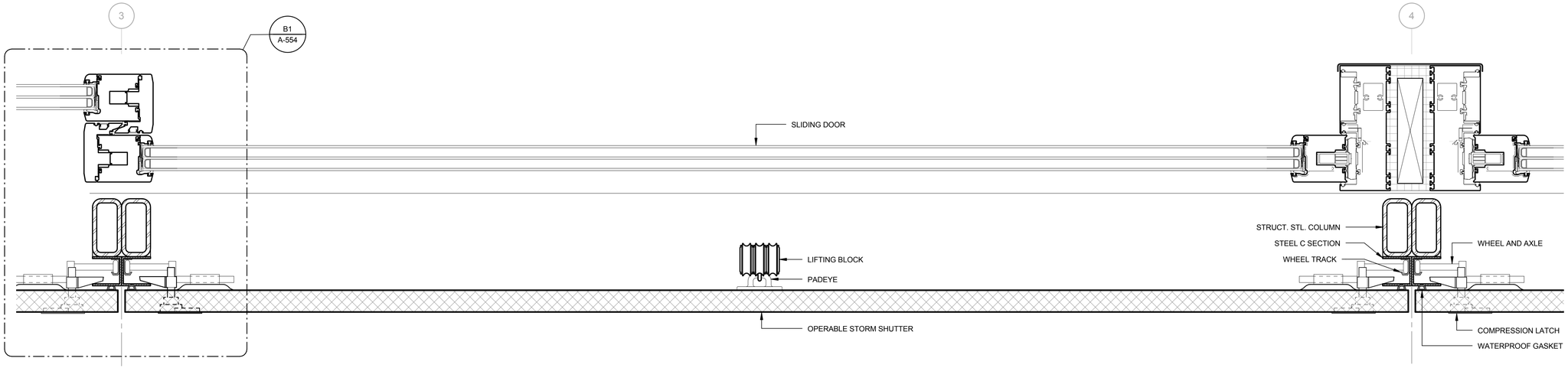
8/16/2015 6:20:15 PM



C1 TYP. BAY PLAN WITH GRATE - SHUTTER OPEN

3" = 1'-0"

0 3" 6" 1'



A1 TYP. BAY PLAN - SHUTTER CLOSED

3" = 1'-0"

0 3" 6" 1'

8/16/2015 6:20:23 PM

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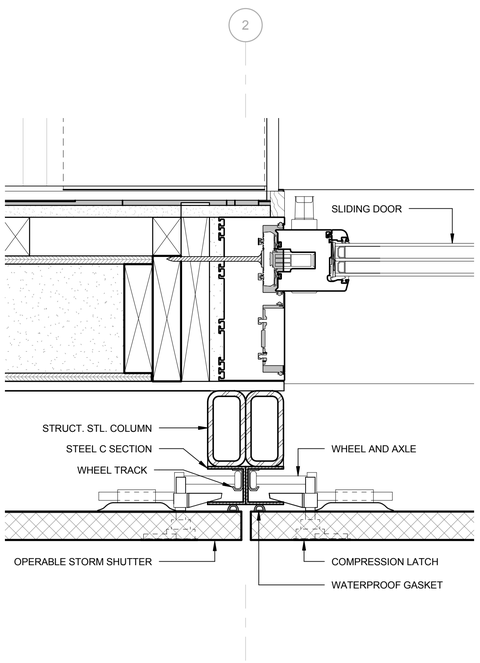
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

TYP. SHUTTER BAY PLAN

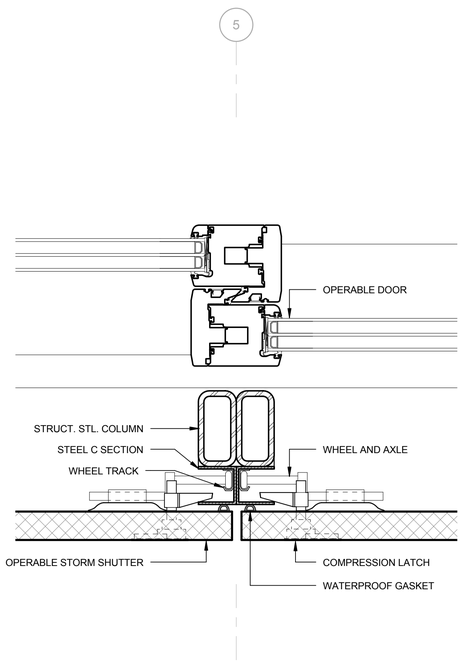
A-553



B1 SOUTH STORM SHUTTER PLAN DTL @ LINE 2

3" = 1'-0"

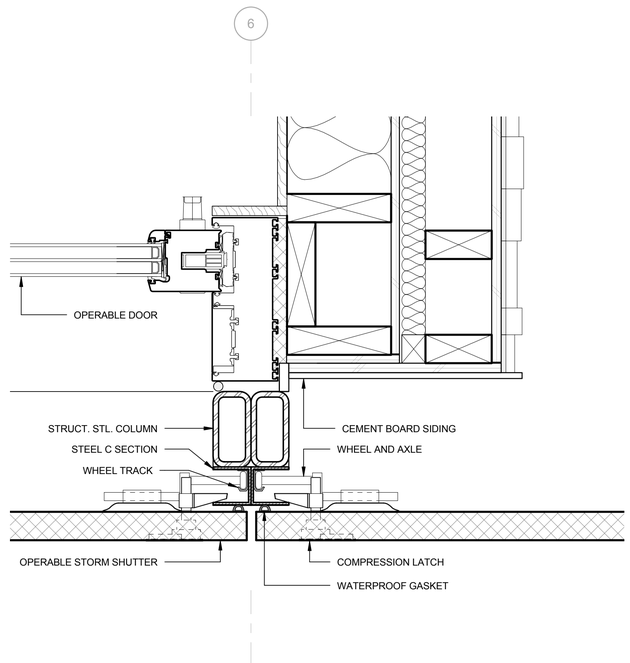
0 3" 6" 1'



B3 SOUTH STORM SHUTTER PLAN DTL. @ LINE 5

3" = 1'-0"

0 3" 6" 1'



B5 SOUTH STORM SHUTTER PLAN DTL @ LINE 6

3" = 1'-0"

0 3" 6" 1'

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01	10-09-2014	80% DD SET

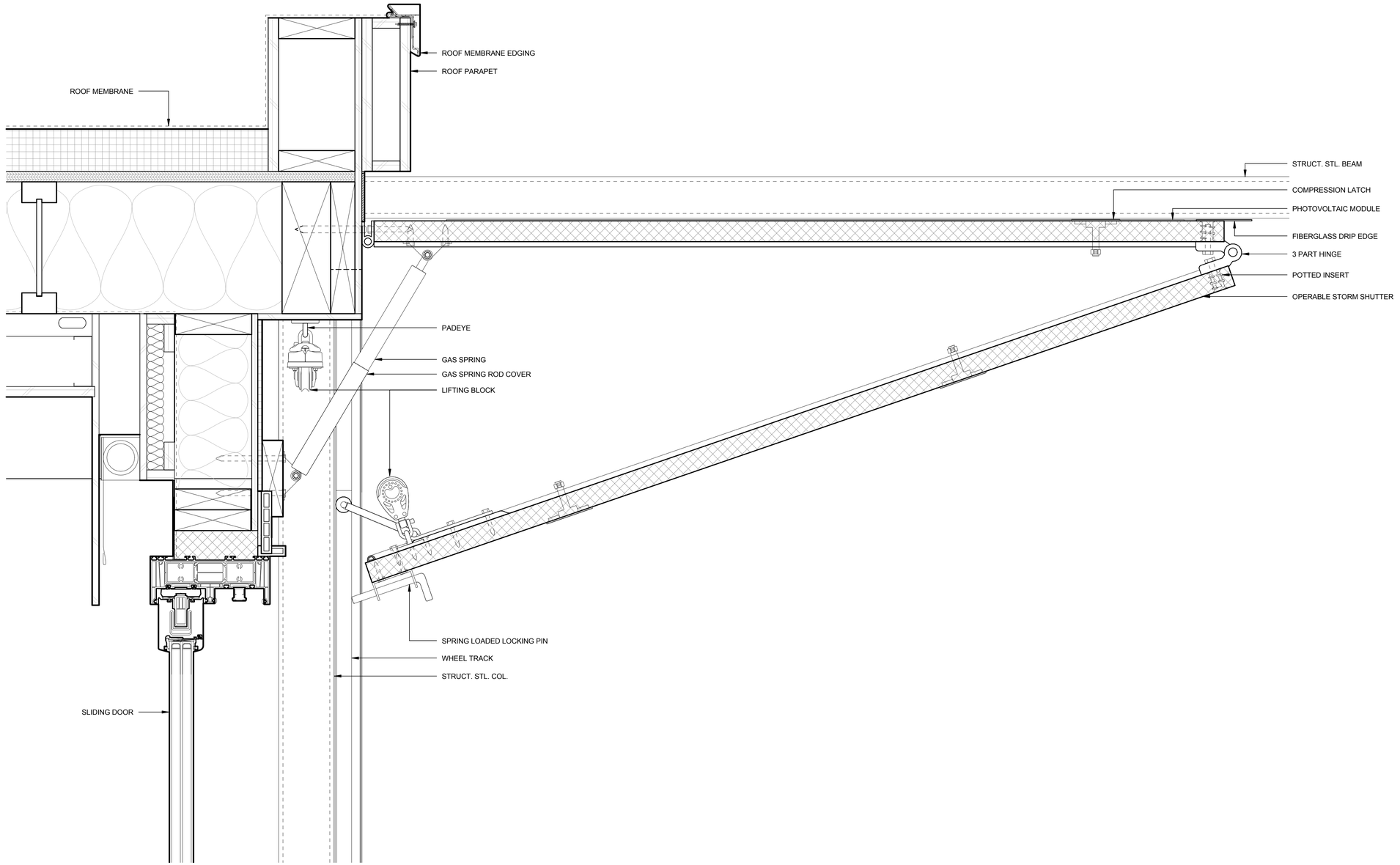
LOT NUMBER: LOT #110

SHEET TITLE

SOUTH SHUTTER PLAN DETAILS

A-554

8/16/2015 6:20:29 PM



A1 STORM SHUTTER HEAD DETAIL - OPEN

3" = 1'-0"

0 3" 6" 1'

8/16/2015 6:20:34 PM

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01	10-09-2014	80% DD SET

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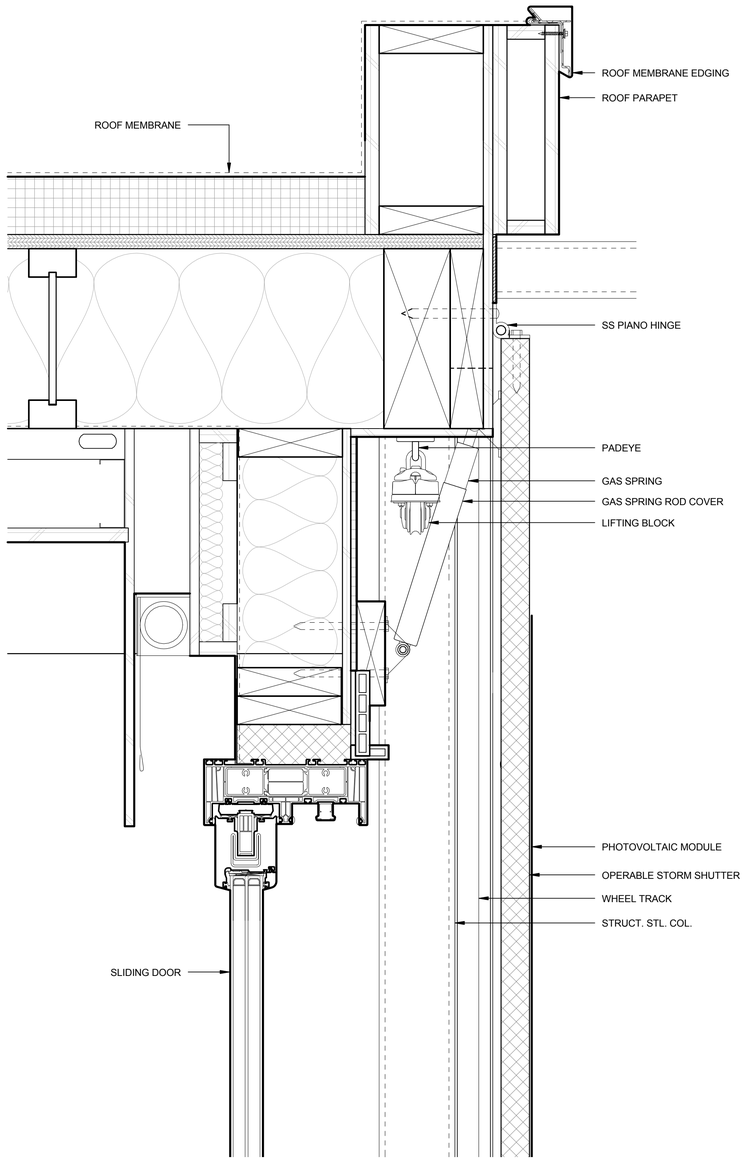
SHEET TITLE

SHUTTER HEAD DETAIL

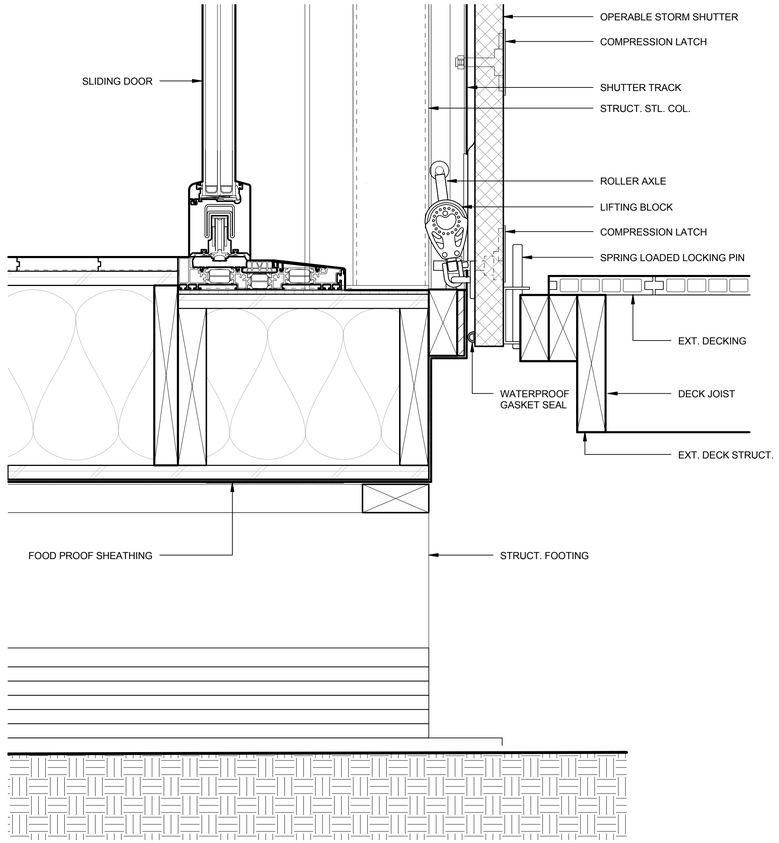
A-555



A1 TYP. STORM SHUTTER HEAD DTL. - CLOSED

3" = 1'-0"

0 3" 6" 1'



A4 TYP. STORM SHUTTER SILL DTL. - CLOSED

3" = 1'-0"

0 3" 6" 1'

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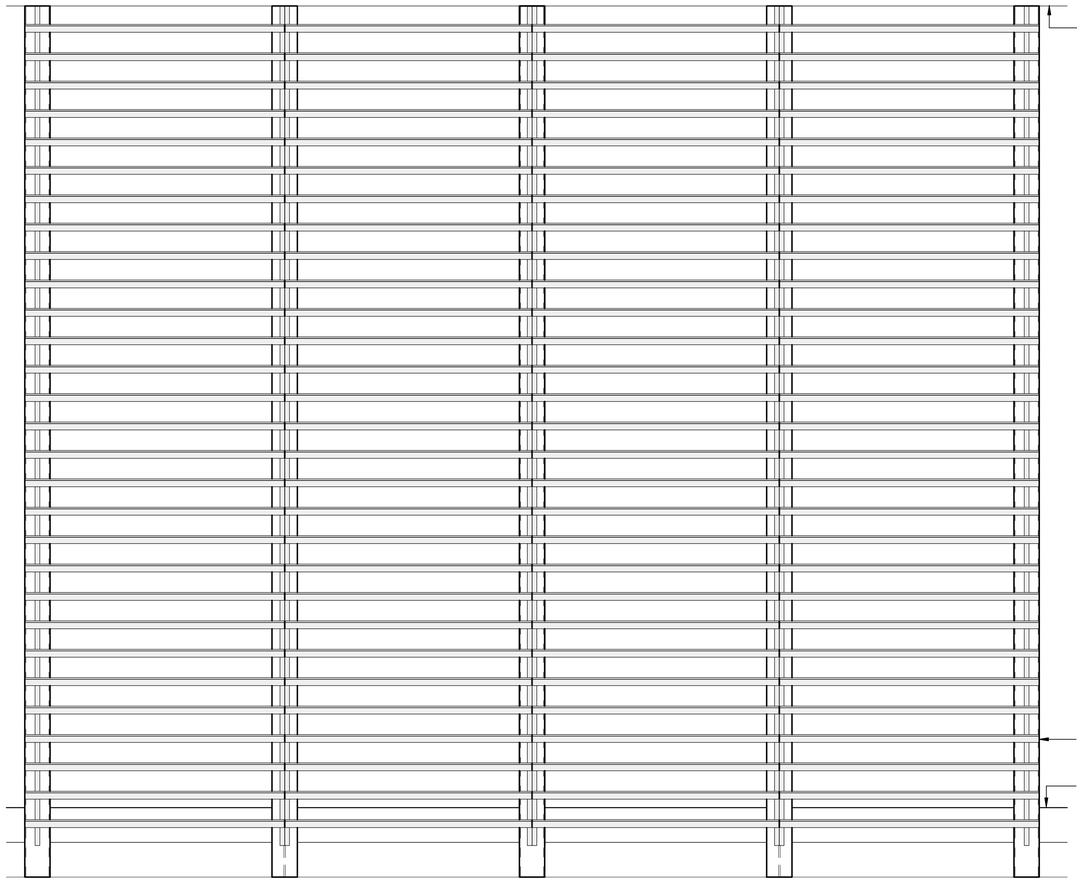
LOT NUMBER: LOT #110

SHEET TITLE

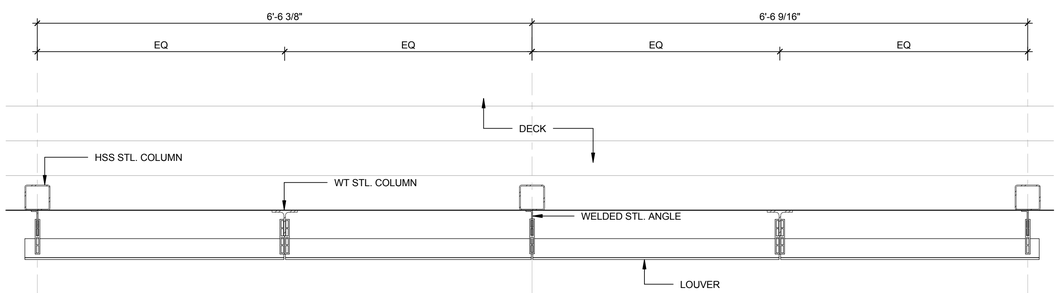
SHUTTER DETAIL - CLOSED

A-556

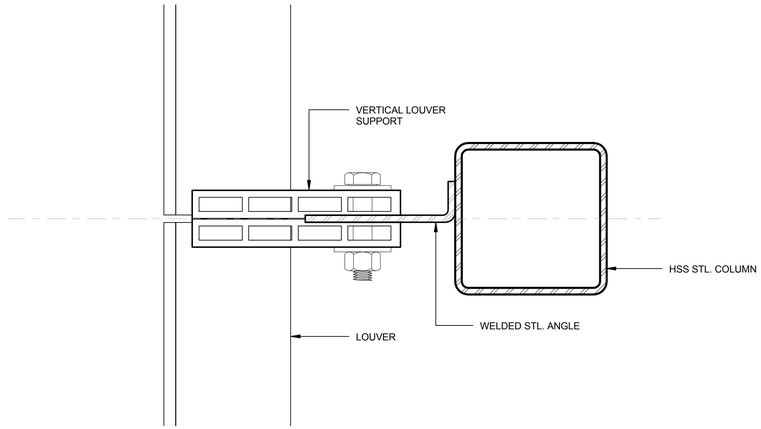
8/16/2015 6:20:54 PM



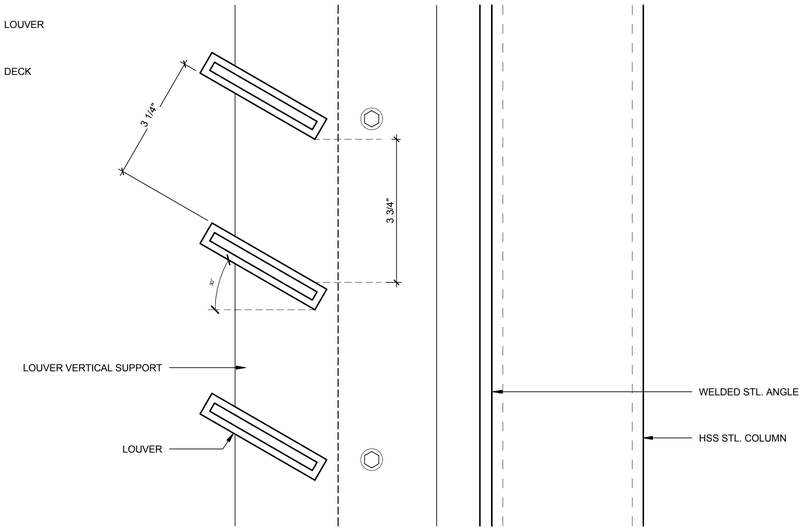
B1 LOUVER TYP. BAY ELEVATION
1" = 1'-0"
0 1/2' 1' 2'



A1 TYP. LOUVER BAY PLAN
1" = 1'-0"
0 1/2' 1' 2'



C5 TYP. LOUVER PLAN DETAIL
6" = 1'-0"
0 1" 2" 3" 4"



A5 TYP. LOUVER SECTION DETAIL
6" = 1'-0"
0 1" 2" 3" 4"

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01	10-09-2014	80% DD SET

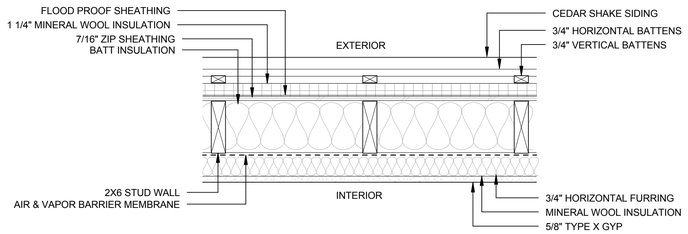
LOT NUMBER: LOT #110

SHEET TITLE

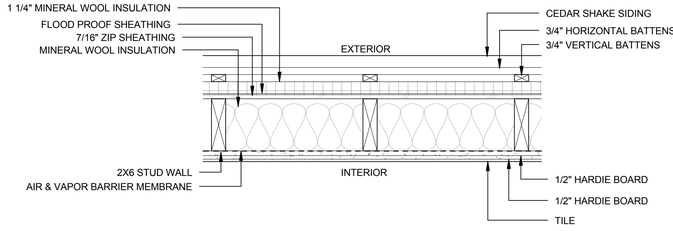
LOUVER DETAILS

A-581

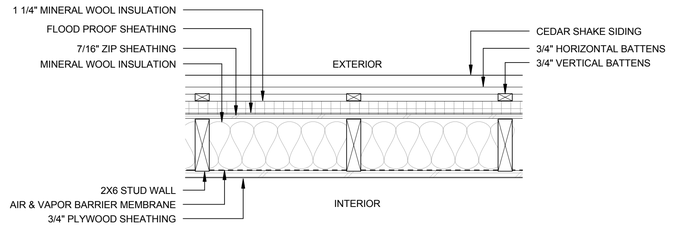
8/16/2015 6:21:14 PM



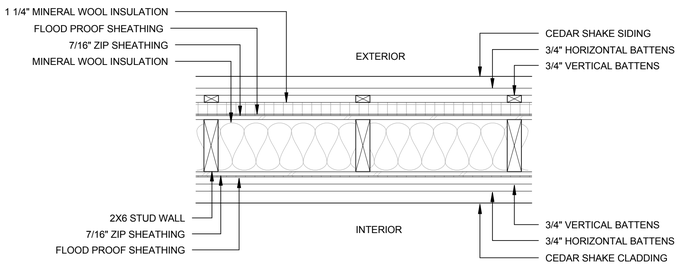
A EXT. TYP 2X6 STUD WALL W/ FURRING + SHAKE



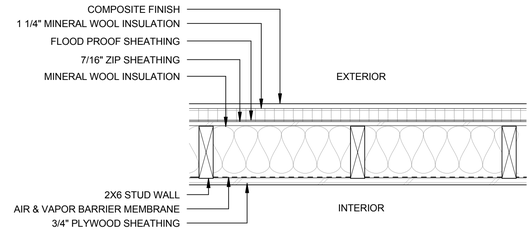
B EXT. BATHROOM 2X6 STUD WALL + SHAKE



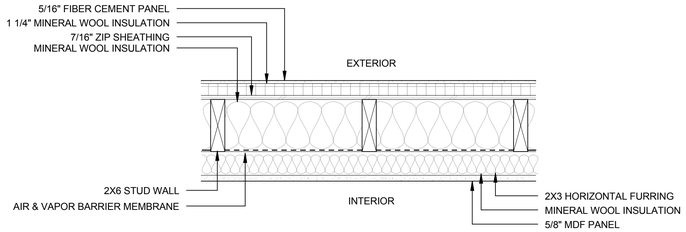
C EXT. MECH ROOM 2X6 STUD WALL + SHAKE



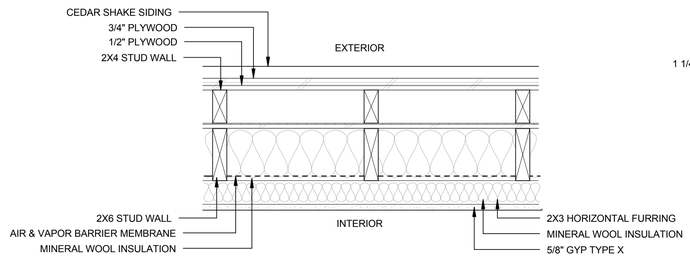
D EXT. MECH ROOM 2X6 STUD WALL + SHAKE & COMPOSITE



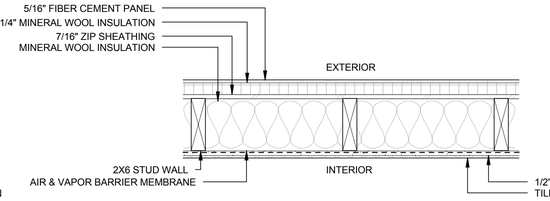
E EXT. MECH ROOM 2X6 STUD WALL + COMPOSITE FINISH



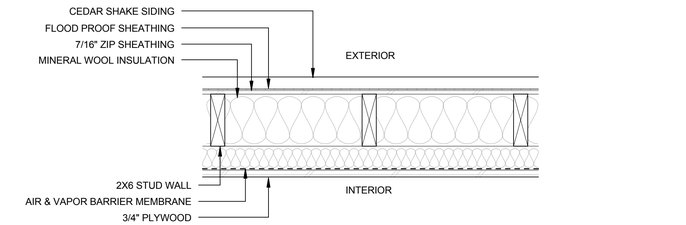
F EXT. 2X6 STUD WALL FIBER CEMENT FINISH



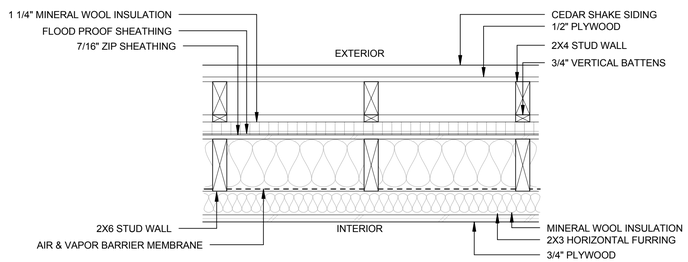
G EXT. 2X6 STUD WALL EXPOSED COMPOSITE W/O INSULATION



H EXT. BATH 2X6 STUD WALL EXPOSED COMPOSITE



I EXT. 2X6 STUD WALL W/ SHAKE



J EXT. 2X6 STUD WALL EXPOSED COMPOSITE W/O INSULATION

ROOM SCHEDULE

NAME	NUMBER	AREA	PERIMETER	VOLUME	CEILING HEIGHT	INT / EXT
MECH ROOM	101	41 SF	28'-10 1/16"	401 CF	9'-8 1/4"	INT
SECOND BEDROOM	102	92 SF	36'-9 1/2"	775 CF	8'-5"	INT
MASTER BEDROOM	103	93 SF	36'-8 5/16"	781 CF	8'-5"	INT
KITCHEN & LIVING	104	507 SF	97'-8 3/16"	4,672 CF	9'-2 11/16"	INT
HALLWAY	105	25 SF	20'-8 3/8"	203 CF	8'-0"	INT
LAUNDRY	106	7 SF	10'-5 5/8"	55 CF	8'-0"	INT
BATHROOM	107	54 SF	36'-10 7/8"	455 CF	8'-5 3/8"	INT
Grand total: 7		819 SF	272'-0 15/16"	7,343 CF		

MATERIAL CONDUCTIVITY SCHEDULE

NAME	R / inch
MINERAL WOOL	4.2
SOLID WOOD	1.25
OSB SHEATHING	1.4
XPS FOAM	5.0
HIGH DENSITY EPS FOAM	3.8
GYPSUM	0.9
PLYWOOD	1.4

WALL TYPES - EXT

WTWT	WALL TYPE	FUNCTION	THICKNESS	INSULATION (CAVITY)	R-VALUE (CAVITY)	INT. FINISH	EXT. FINISH	COUNT	STRUCTURAL USAGE	FIRE RATING	LENGTH	AREA	VOLUME
EXT. TYP 2X6 STUD WALL W/ FURRING + SHAKE	A	Exterior	1'-1 3/16"	MINERAL WOOL	39.58	GYPSUM WALL BOARD	CEDAR SHAKE	4	Bearing	1	28'-2 1/2"	228 SF	250 CF
EXT. BATHROOM 2X6 STUD WALL + SHAKE	B	Exterior	11 3/16"	MINERAL WOOL	30.03	TILE	CEDAR SHAKE	1	Bearing	1	13'-4 13/16"	129 SF	120 CF
EXT. MECH ROOM 2X6 STUD WALL + SHAKE	C	Exterior	10 13/16"	MINERAL WOOL	30.52	PLYWOOD SHEATHING	CEDAR SHAKE	1	Bearing	1	9'-0 5/8"	89 SF	80 CF
EXT. MECH ROOM 2X6 STUD WALL + SHAKE & COMPOSITE	D	Exterior	1'-1 3/8"	MINERAL WOOL	23.95	CEDAR SHAKE	CEDAR SHAKE	1	Bearing	1	1'-9"	17 SF	19 CF
EXT. MECH ROOM 2X6 STUD WALL	E	Exterior	8 9/16"	MINERAL WOOL	30.95	PLYWOOD SHEATHING	COMPOSITE SKIN	1	Bearing	1	6'-5 9/16"	54 SF	38 CF
EXT. 2X6 STUD WALL FIBER CEMENT FINISH	F	Exterior	10 5/8"	MINERAL WOOL	37.71	GYPSUM WALL BOARD	CEDAR SHAKE	2	Bearing	1	41'-0 3/8"	84 SF	74 CF
EXT. 2X6 SHAKE WALL @ EAST ENTRY	G	Exterior	1'-3 3/16"	MINERAL WOOL	39.92	GYPSUM WALL BOARD	CEDAR SHAKE	1	Bearing	1	10'-5 1/8"	78 SF	98 CF
EXT. BATH 2X6 STUD WALL EXPOSED COMPOSITE	H	Exterior	8 1/4"	MINERAL WOOL	27.10	TILE	FIBER CEMENT	1	Bearing	1	4'-8 3/16"	14 SF	10 CF
EXT. 2X6 STUD WALL W/O INSULATION SHAKE FINISH	I	Exterior	10 9/16"	MINERAL WOOL	32.83	PLYWOOD	CEDAR SHAKE	1	Bearing	1	8'-2 11/16"	50 SF	44 CF
EXT. TYP 2X6 STUD WALL W/ FURRING SHAKE FINISH	J	Exterior	1'-4 9/16"	MINERAL WOOL	41.02	PLYWOOD	CEDAR SHAKE	1	Bearing	1	17'-6 1/8"	145 SF	200 CF
Grand total: 14											140'-8 15/16"	887 SF	934 CF

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SOLAR DECATHLON 2015

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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

EXT. WALL TYPES

A-601

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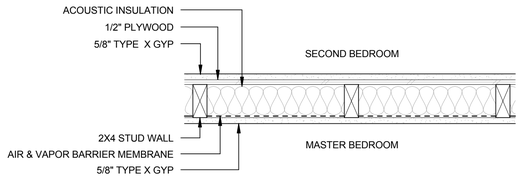
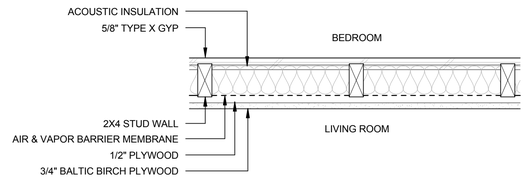
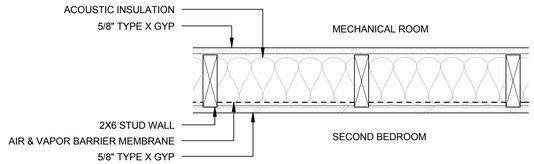


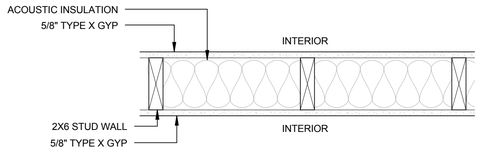
K INT. 2X4 BEDROOM PARTITION WALL



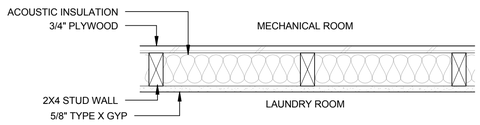
L INT. 2X4 STUD SHEAR WALL



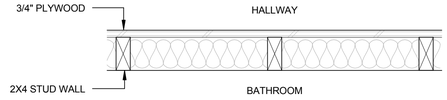
M INT. MECH ROOM 2X6 STUD WALL @ BEDROOM



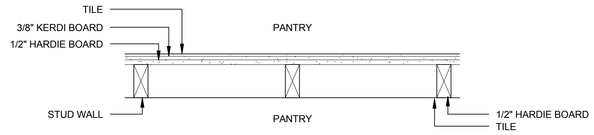
N INT. 2X6 STUD WALL @ LAUNDRY ROOM



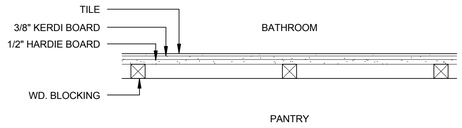
O INT. TYP 2X4 STUD WALL @ LAUNDRY ROOM



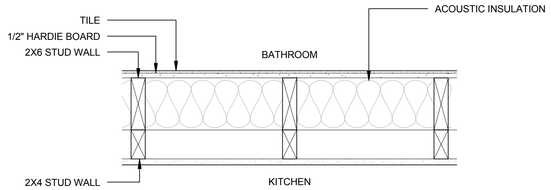
P INT. 2X4 STUD WALL @ HALLWAY



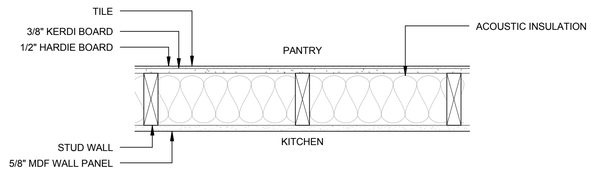
Q INT. BATH 2X4 STUD WALL W/ TILE



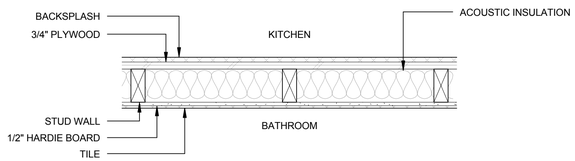
R INT. 2X4 STUD WALL @ PANTRY



S INT. 2X6 STUD WALL @ BATHROOM + KITCHEN MONITOR



T INT. 2X6 STUD WALL @ BATHROOM



U INT. 2X4 STUD SHEAR WALL @ BATHROOM & KITCHEN

WALL TYPES - INT

TYPE	WALL TYPE	FUNCTION	THICKNESS	INSULATION (CAVITY)	R-VALUE (CAVITY)	INT. FINISH	EXT. FINISH	COUNT	STRUCTURAL USAGE	FIRE RATING	LENGTH	AREA	VOLUME
INT. 2X4 BEDROOM PARTITION WALL	K	Interior	5 1/4"	ACOUSTIC	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	1	Bearing	1	9'-7 3/16"	87 SF	38 CF
INT. 2X4 STUD SHEAR WALL	L	Interior	5 3/8"	ACOUSTIC	N/A	GYPSUM WALL BOARD	PLYWOOD SHEATHING	2	Bearing	1	22'-3 3/4"	162 SF	72 CF
INT. MECH ROOM 2X6 STUD WALL @ BEDROOM	M	Interior	6 7/8"	ACOUSTIC	N/A	GYPSUM WALL BOARD	PLYWOOD SHEATHING	1	Bearing	1	5'-11 1/2"	57 SF	33 CF
INT. 2X6 STUD WALL @ LAUNDRY ROOM	N	Interior	6 3/4"	ACOUSTIC	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	1	Bearing	1	3'-2 7/16"	29 SF	16 CF
INT. 2X4 STUD WALL @ LAUNDRY ROOM	O	Interior	4 7/8"	ACOUSTIC	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	2	Bearing	1	6'-1 5/16"	56 SF	23 CF
INT. BATH 2X4 STUD WALL W/ TILE	Q	Interior	4 5/8"	N/A	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	1	Bearing	1	1'-5 15/16"	12 SF	4 CF
INT. 2X4 STUD WALL @ PANTRY	R	Interior	3 5/8"	N/A	N/A		MDF WALL PANEL	1	Bearing	1	1'-1 11/16"	13 SF	4 CF
INT. 2X6 STUD WALL @ BATHROOM + KITCHEN MONITOR	S	Interior	9 15/16"	ACOUSTIC	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	1	Bearing	1	4'-5 3/16"	29 SF	24 CF
INT. 2X6 STUD WALL @ BATHROOM	T	Interior	6 7/8"	ACOUSTIC	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	1	Bearing	1	2'-2"	27 SF	16 CF
INT. 2X4 STUD SHEAR WALL @ BATHROOM & KITCHEN	U	Interior	5 3/8"	ACOUSTIC	N/A	GYPSUM WALL BOARD	GYPSUM WALL BOARD	1	Bearing	1	8'-5 1/2"	76 SF	34 CF
Grand total: 12											64'-10 7/16"	547 SF	264 CF

ROOM SCHEDULE

NAME	NUMBER	AREA	PERIMETER	VOLUME	CEILING HEIGHT	INT / EXT
MECH ROOM	101	41 SF	28'-10 1/16"	401 CF	9'-8 1/4"	INT
SECOND BEDROOM	102	92 SF	38'-9 1/2"	775 CF	8'-5"	INT
MASTER BEDROOM	103	93 SF	38'-8 5/16"	781 CF	8'-5"	INT
KITCHEN & LIVING	104	507 SF	97'-8 3/16"	4,672 CF	9'-2 11/16"	INT
HALLWAY	105	25 SF	20'-8 3/8"	203 CF	8'-0"	INT
LAUNDRY	106	7 SF	10'-5 5/8"	55 CF	8'-0"	INT
BATHROOM	107	54 SF	36'-10 7/8"	455 CF	8'-5 3/8"	INT
Grand total: 7		819 SF	272'-0 15/16"	7,343 CF		

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LOT NUMBER: LOT #110

SHEET TITLE

INT. WALL TYPES

A-602

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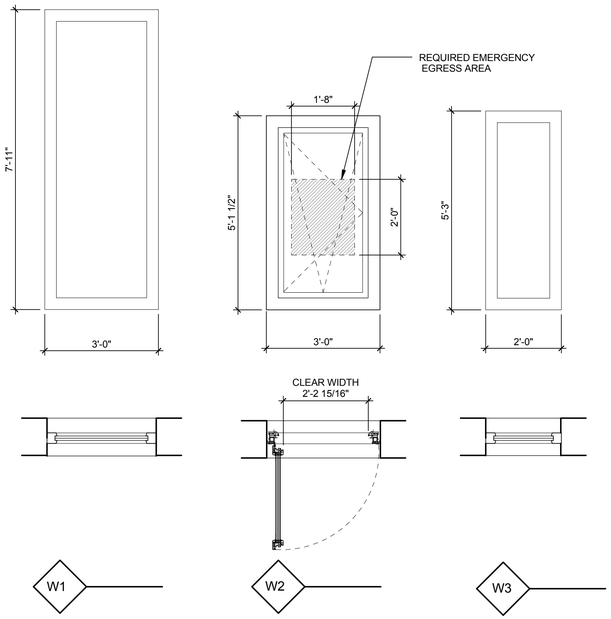

EGRESS WIDTH - 24 15/16" > 20"
EGRESS HEIGHT - 52 1/4" > 24"

SAFETY GLAZING

R308.1 SAFETY GLAZING IDENTIFICATION.
EACH PANE OF GLAZING INSTALLED IN HAZARDOUS LOCATIONS AS DEFINED IN SECTION R308.4 SHALL BE PROVIDED WITH A MANUFACTURER'S DESIGNATION SPECIFYING WHO APPLIED THE DESIGNATION, DESIGNATING THE TYPE OF GLASS AND THE SAFETY GLAZING STANDARD WITH WHICH IT COMPLIES, WHICH IS VISIBLE IN THE FINAL INSTALLATION. THE DESIGNATION SHALL BE ACID ETCHED, SANDBLASTED, CERAMIC-FIRED, LASER ETCHED, EMBOSSED, OR BE OF A TYPE WHICH ONCE APPLIED CANNOT BE REMOVED WITHOUT BEING DESTROYED. A LABEL SHALL BE PERMITTED IN LIEU OF THE MANUFACTURER'S DESIGNATION.

R308.4 HAZARDOUS LOCATIONS.
THE LOCATIONS SPECIFIED IN SECTIONS R308.4.1 THROUGH R308.4.7 SHALL BE CONSIDERED SPECIFIC HAZARDOUS LOCATIONS FOR THE PURPOSES OF GLAZING.

R308.4.1 GLAZING IN DOORS.
GLAZING IN ALL FIXED AND OPERABLE PANELS OF SWINGING, SLIDING AND BIFOLD DOORS SHALL BE CONSIDERED A HAZARDOUS LOCATION.

R308.4.2 GLAZING ADJACENT DOORS.
GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE OF THE GLAZING IS WITHIN A 24-INCH ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE FLOOR OR WALKING SURFACE SHALL BE CONSIDERED A HAZARDOUS LOCATION.

R308.4.3 GLAZING IN WINDOWS.
GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL THAT MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE CONSIDERED A HAZARDOUS LOCATION:
1. THE EXPOSED AREA OF AN INDIVIDUAL PANE IS LARGER THAN 9 SQUARE FEET;
2. THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 18 INCHES ABOVE THE FLOOR;
3. THE TOP EDGE OF THE GLAZING IS MORE THAN 36 INCHES ABOVE THE FLOOR; AND
4. ONE OR MORE WALKING SURFACES ARE WITHIN 36 INCHES, MEASURED HORIZONTALLY AND IN A STRAIGHT LINE, OF THE GLAZING.

R308.6.2 SAFETY GLAZING PERMITTED MATERIALS.
THE FOLLOWING TYPES OF GLAZING MAY BE USED:
1. LAMINATED GLASS WITH A MINIMUM 0.015-INCH POLYVINYL BUTYRAL INTERLAYER FOR GLASS PANES 16 SQUARE FEET OR LESS IN AREA LOCATED SUCH THAT THE HIGHEST POINT OF THE GLASS IS NOT MORE THAN 12 FEET ABOVE A WALKING SURFACE OR OTHER ACCESSIBLE AREA; FOR HIGHER OR LARGER SIZES, THE MINIMUM INTERLAYER THICKNESS SHALL BE 0.030 INCH.
2. FULLY TEMPERED GLASS.
3. HEAT-STRENGTHENED GLASS.
4. WIRED GLASS.
5. APPROVED RIGID PLASTICS.

EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 EMERGENCY ESCAPE AND RESCUE REQUIRED.
BASEMENTS, HABITABLE ATTICS AND EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING. WHERE EMERGENCY ESCAPE AND RESCUE OPENINGS ARE PROVIDED THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES MEASURED FROM THE FINISHED FLOOR TO THE BOTTOM OF THE CLEAR OPENING. THE NET CLEAR OPENING DIMENSIONS REQUIRED BY THIS SECTION SHALL BE OBTAINED BY THE NORMAL OPERATION OF THE EMERGENCY ESCAPE AND RESCUE OPENING FROM THE INSIDE. EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL OPEN DIRECTLY INTO A PUBLIC WAY, OR TO A YARD OR COURT THAT OPENS TO A PUBLIC WAY.

R310.1.1 MINIMUM OPENING AREA.
ALL EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE FEET.
EXCEPTION: GRADE FLOOR OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5 SQUARE FEET.

R310.1.2 MINIMUM OPENING HEIGHT.
THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24 INCHES.

R310.1.3 MINIMUM OPENING WIDTH.
THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20 INCHES.

WINDOW SCHEDULE

TYPE	COUNT	EGRESS	DESCRIPTION	MANUFACTURER	MODEL	FRAME TYPE	FRAME COLOR	NOMINAL WIDTH	NOMINAL HEIGHT	ROUGH WIDTH	ROUGH HEIGHT	GLAZING TYPE	GLASS SHGC	UNIT U-VALUE	WT	GLASS COATING	OPERATION	HANDLE MANUF.	HANDLE MODEL	HANDLE FINISH	HARDWARE SET #	COMMENTS
W1	2	NO	FIXED	EAS	S182	UPVC	BASALT GREY	3'-0"	7'-11"	3'-4"	8'-5"	TRIPLE PANE	0.62	0.14	ARGON	LoWE	NONE	EAS	STANDARD	SILVER	N/A	SAFETY GLAZING
W2	2	YES	TILT & TURN	EAS	S182	UPVC	BASATL GREY	3'-0"	5'-1 1/2"	3'-4"	5'-9"	TRIPLE PANE	0.62	0.14	ARGON	LowE	IN-SWING	EAS	STANDARD	SILVER	N/A	SAFETY GLAZING
W3	1	NO	FIXED	EAS	S182	UPVC	BASALT GREY	2'-0"	5'-3"	2'-4"	5'-9"	TRIPLE PANE	0.62	0.14	ARGON	LowE	NONE	EAS	STANDARD	SILVER	N/A	SAFETY GLAZING

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01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

WINDOW TYPES

A-603

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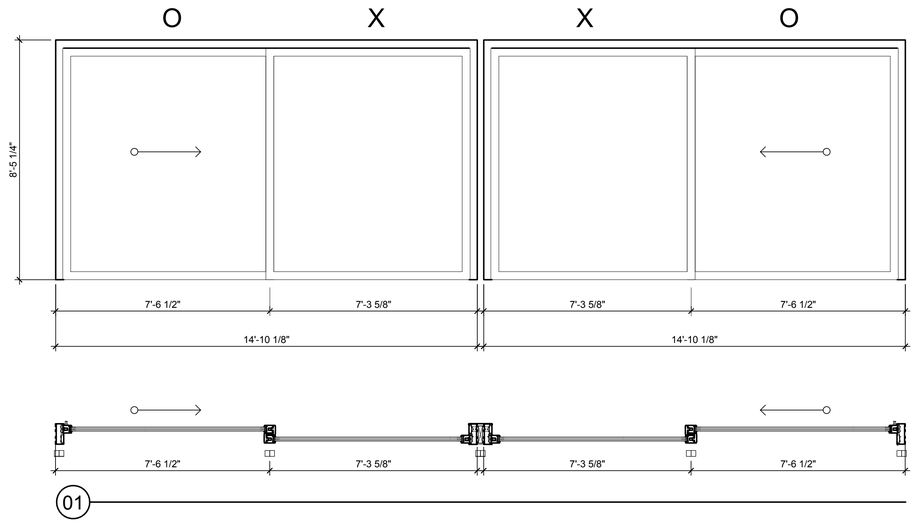

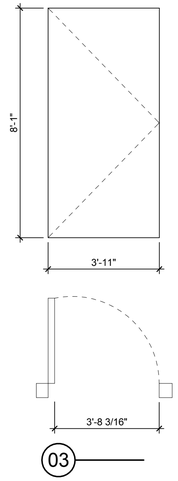

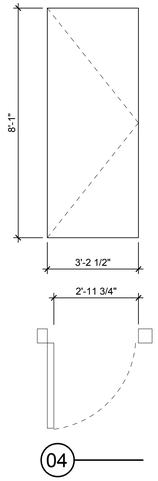

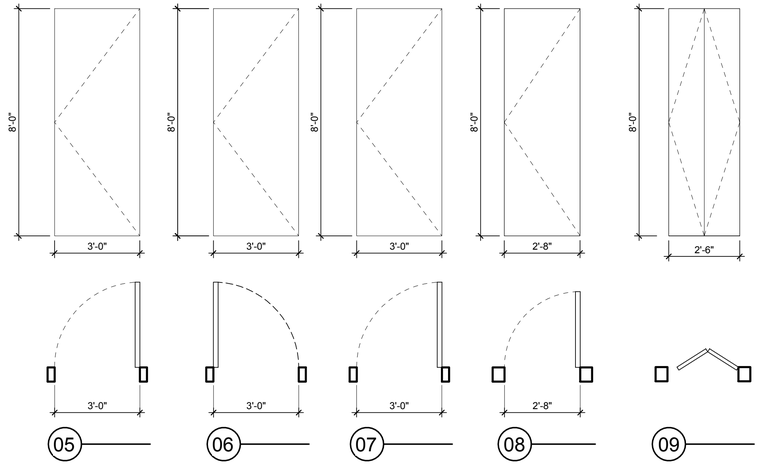

DOOR SCHEDULE

Type Mark	DESCRIPTION	COUNT	MANUFACTURER	MODEL	WIDTH	HEIGHT	Rough Width	Rough Height	OPERATION	HANDLE MANUFACTURER	HANDLE FINISH	DOOR FINISH	SCREENS	(U) VALUE	SHGC	DOOR TYPE	FRAME TYPE	FRAME COLOR	COMMENTS
1	LIFT AND SLIDE DOOR	1	SCHUCO	THERMOSLIDE	14'-10 1/8"	8'-5 1/4"		0"	SLIDE	SCHUCO	SILVER	BASALT GRAY	N/A	0.6520	0.62	EXTERIOR	THERMOSLIDE	BASALT GREY	SAFETY GLAZING
2	LIFT AND SLIDE DOOR	1	SCHUCO	THERMOSLIDE	14'-10 1/8"	8'-5 1/4"		0"	SLIDE	SCHUCO	SILVER	BASALT GRAY	N/A	0.6520	0.62	EXTERIOR	THERMOSLIDE	BASALT GREY	SAFETY GLAZING
3	FRONT ENTRY	1	SCHUCO	CT70	3'-11"	8'-1"	4'-0"	8'-2 1/2"	LEFT HAND	SCHUCO	SILVER	BASALT GRAY	N/A	0.6520	0	EXTERIOR	CT70	BASALT GREY	SOLID DOOR
4	BATHROOM EXTERIOR DOOR	1	SCHUCO	CT70	3'-2 1/2"	8'-1"	3'-3 1/2"	8'-2 1/2"	LEFT HAND REVERSE	SCHUCO	SILVER	BASALT GRAY	N/A	0.6520	0	EXTERIOR	CT70	BASALT GREY	SOLID DOOR
5	MASTER BEDROOM DOOR	1	MASONITE MAX	SOLID CORE	3'-0"	8'-0"	3'-2"	8'-6"	LEFT HAND			BIRCH		0.6520	0				
6	KIDS BEDROOM DOOR	1	MASONITE MAX	SOLID CORE	3'-0"	8'-0"	3'-2"	8'-6"	RIGHT HAND			BIRCH		0.6520	0				
7	BATHROOM INTERIOR DOOR	1	MASONITE MAX	SOLID CORE	3'-0"	8'-0"	3'-3"	8'-6"	RIGHT HAND			PAINTED		0.6520	0				
8	MECH ROOM DOOR	1	MASONITE MAX	SOLID CORE	2'-8"	8'-0"	3'-0"	8'-6"	RIGHT HAND			PAINTED		0.6520	0				
9	LAUNDRY ROOM DOOR	1	MASONITE MAX	SOLID CORE	2'-6"	8'-0"			FRENCH			BIRCH		0.6520	0				

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SHEET TITLE

DOOR TYPES

A-604

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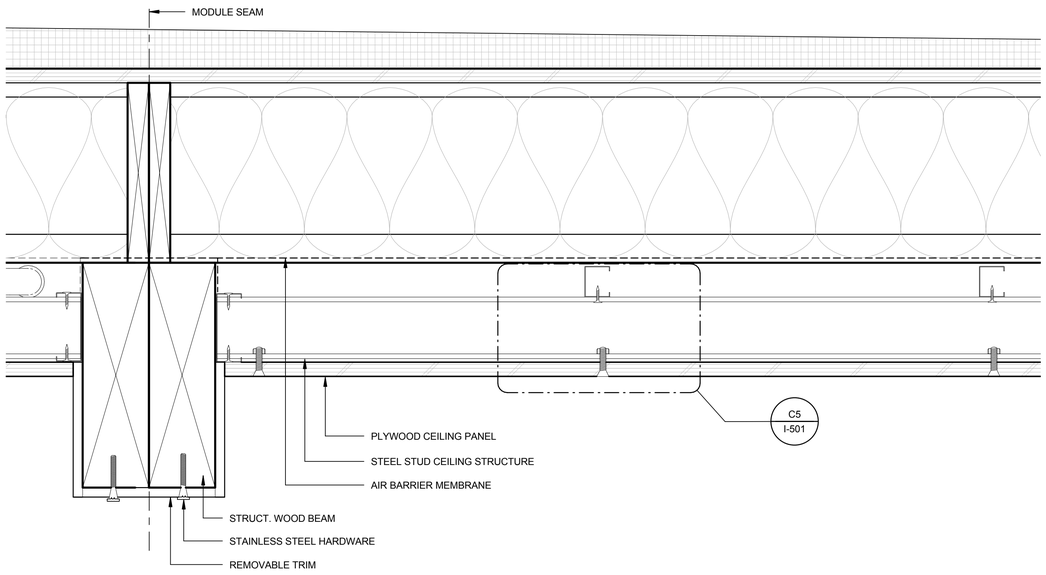
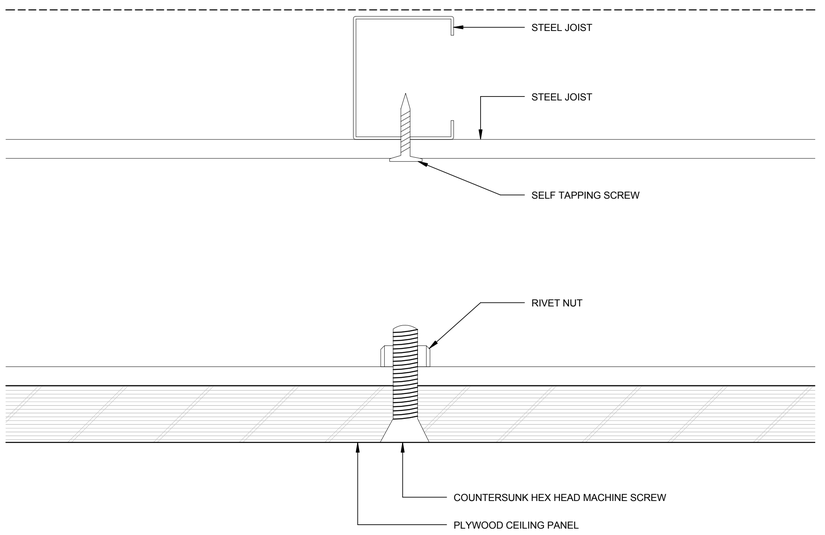


C1 DROP CEILING @MODULE SEAM

3" = 1'-0"

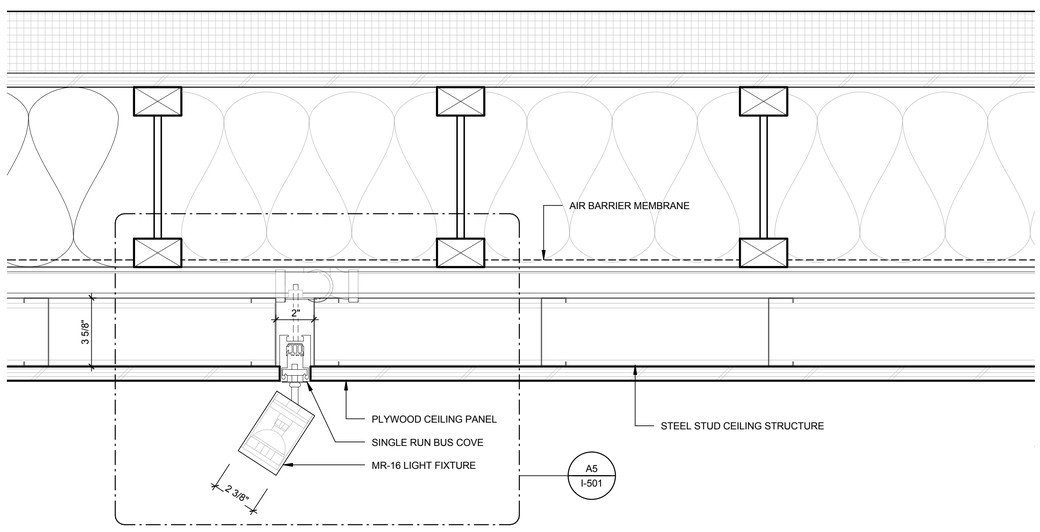
0 3" 6" 1'



C5 DROP CEILING FASTENER DETAIL

12" = 1'-0"

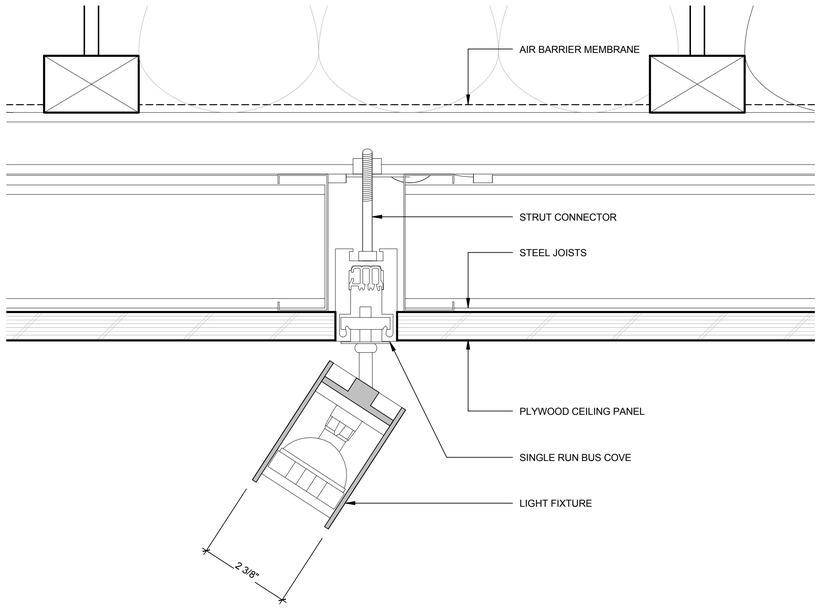
0 1/2" 1' 2'



A1 TYP DROP CEILING CROSS SECTION

3" = 1'-0"

0 3" 6" 1'



A5 DROP CEILING TRACK STRUT CONNECTION

6" = 1'-0"

0 1" 2" 3" 4"

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TYP DROP CEILING DETAILS

I-501

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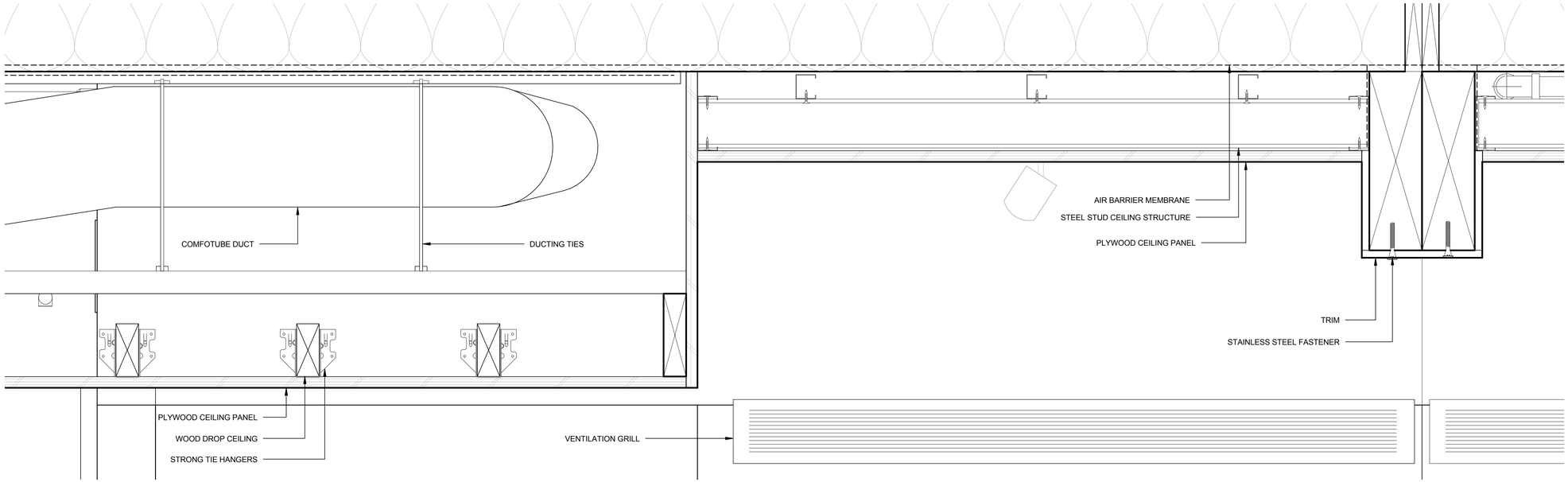
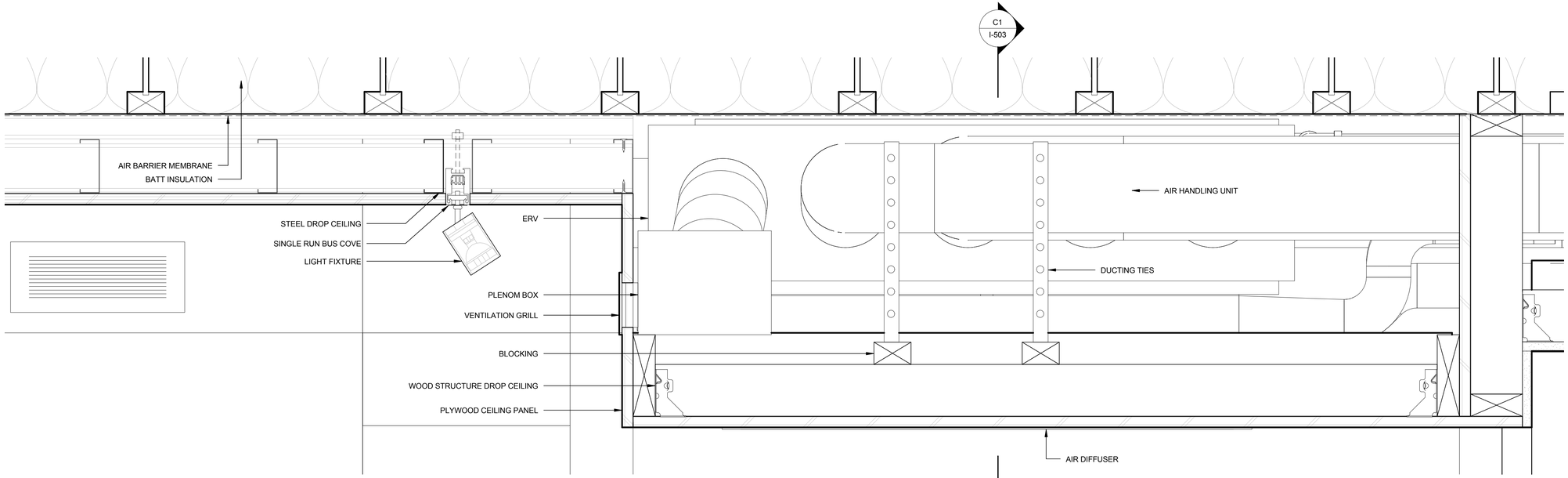


C1 SUSPENDED DROP CEILING DETAIL LOOKING NORTH

3" = 1'-0"

0 3" 6" 1'



A1 DROP CEILING @ MECH ROOM LOOKING WEST

3" = 1'-0"

0 3" 6" 1'

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SHEET TITLE

DROP CEILING @ MECHANICAL ROOM

I-503

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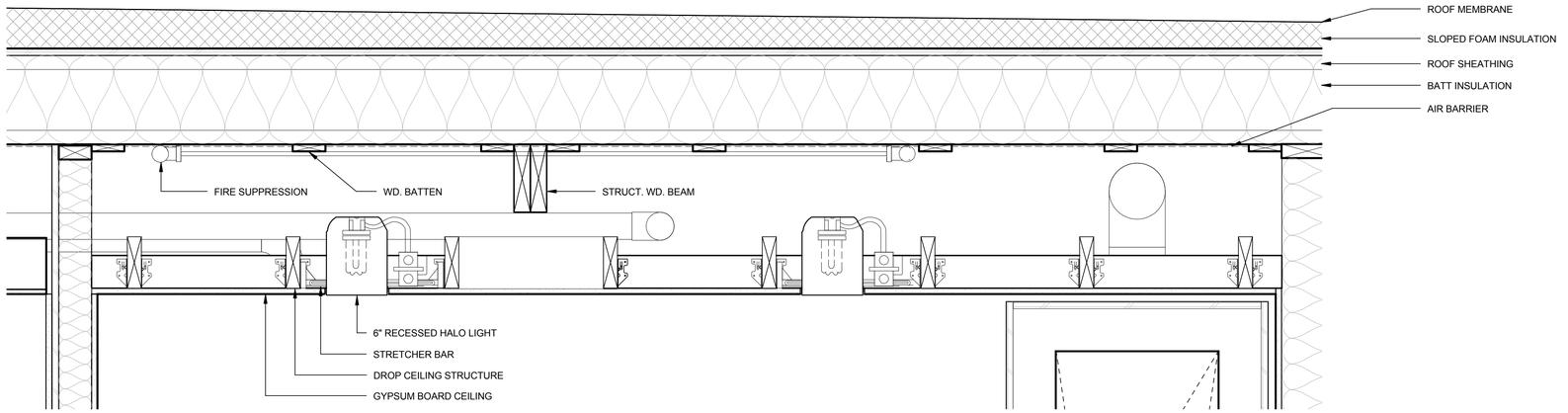
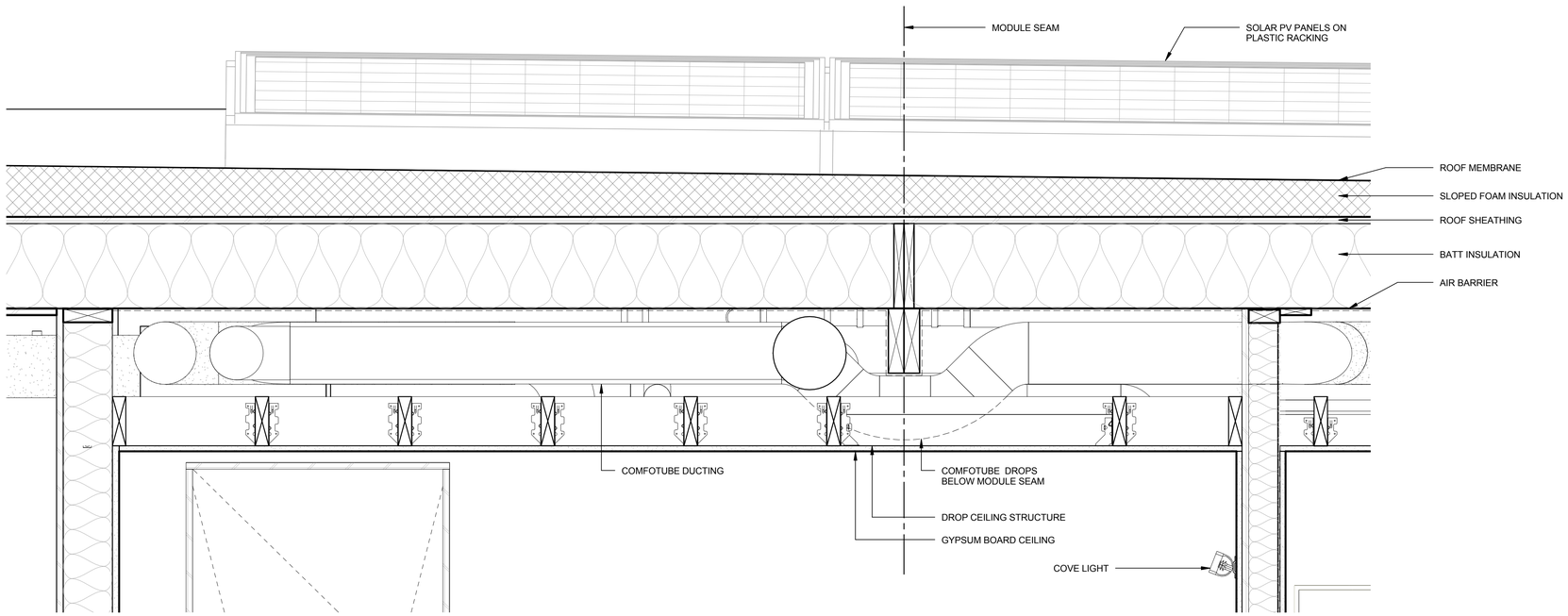


C1 DROP CEILING MASTER BEDROOM

1 1/2" = 1'-0"

0 1/2" 1' 1 1/2'



A1 DROP CEILING SECOND BEDROOM

1 1/2" = 1'-0"

0 1/2" 1' 1 1/2'

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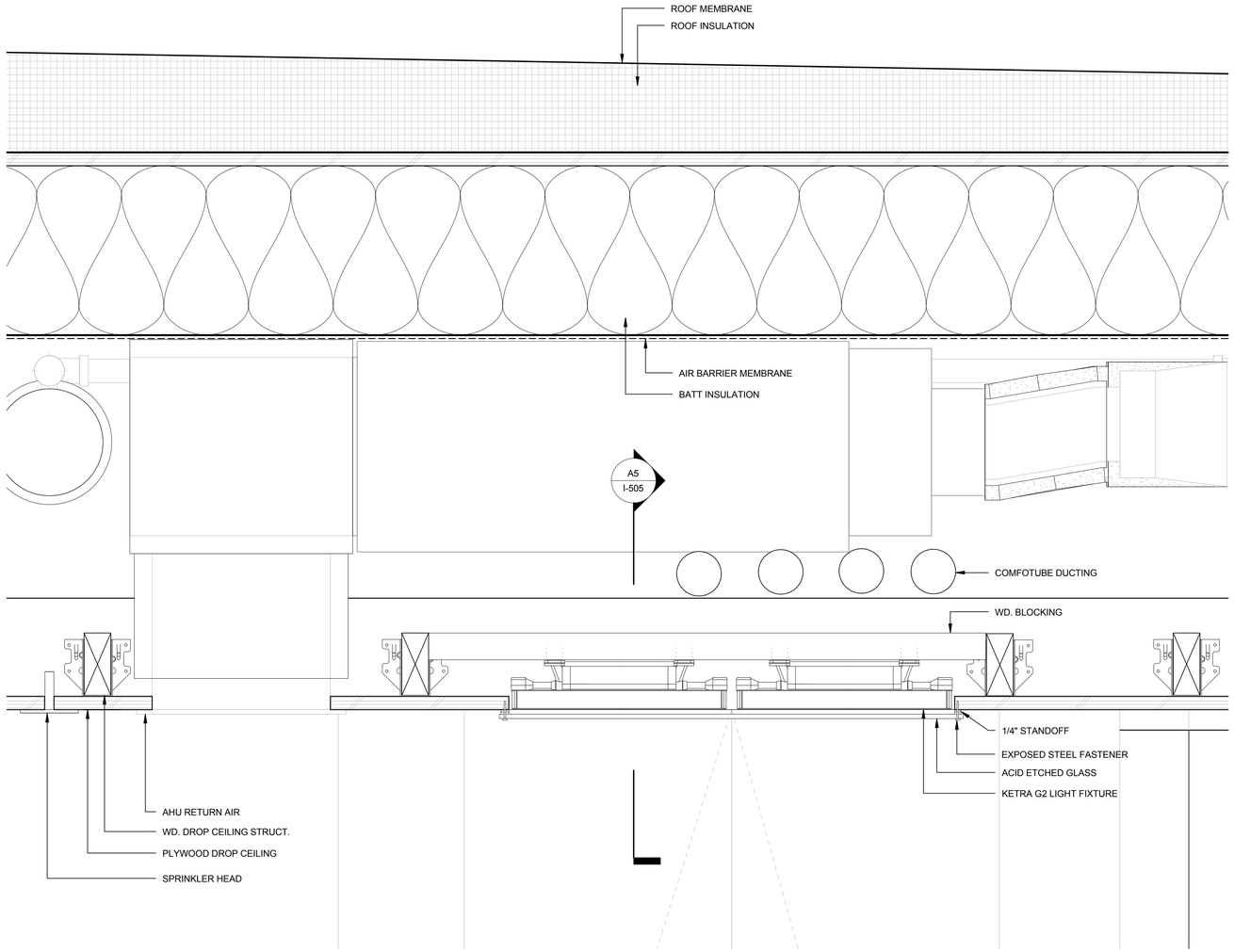
SHEET TITLE

BEDROOM DROP CEILING DETAILS

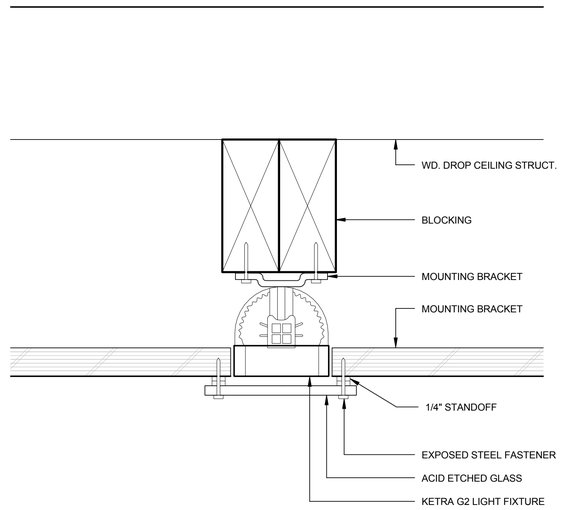
I-504



A1 HALLWAY CEILING LIGHT DETAIL

3" = 1'-0"

0 3" 6" 1'



A5 HALLWAY CEILING LIGHT CROSSCUT

6" = 1'-0"

0 1" 2" 3" 4"

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HALLWAY CEILING LIGHT

I-505

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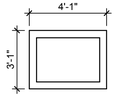
NFPA 13D TABLE 7.5.5.3 DISTANCES FROM HEAT SOURCES

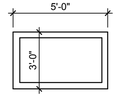
HEAT SOURCE	ORDINARY TEMP 135o-170o	INTERMEDIATE TEMP. 175o-225o
SIDE OF FIREPLACE	36"	12"
FRONT OF FIREPLACE	60"	36"
WOOD BURNING STOVE	42"	12"
KITCHEN RANGE	18"	9"
WALL OVEN	18"	9"
HOT AIR FLUES	18"	9"
UNINSULATED HEAT DUCTS	18"	9"
UNINSULATED HOT WATER PIPES	12"	6"
SIDE OF HOT AIR DIFFUSER	24"	12"
FRONT OF HOT AIR DIFFUSER	36"	18"
HOT WATER HEATER	6"	3"
FURNACE	6"	3"
50W-250W LIGHT FIXTURE	6"	3"
250W-499W LIGHT FIXTURE	12"	6"

SEE GENERAL NOTES 8.6.3 FOR CLOSET REQUIREMENTS

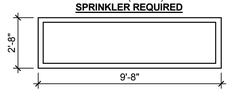
THE LEAST DIMENSION EXCEEDS 3 FT (0.9 M)
SPRINKLER REQUIRED



SQUARE FOOTAGE DOES NOT EXCEED 24 FT2 (2.2 M2)
SPRINKLER NOT REQUIRED



SQUARE FOOTAGE EXCEEDS 24 FT2 (2.2 M2)
SPRINKLER REQUIRED



SIDEWALL MOUNTED SPRINKLER HEAD

CEILING MOUNTED SPRINKLER HEAD

2" 2" DIAMETER PIPING

1 1/2" 1 1/2" DIAMETER PIPING

1" 1" DIAMETER PIPING

SPRINKLER BOOSTER PUMP

FIRE SPRINKLER RISER

IN-LINE FLOW TEST HOOKUP

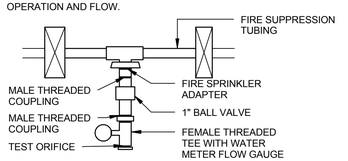
S SMOKE DETECTOR

UPRIGHT SPRINKLER

BALL VALVE

IN-LINE FLOW TEST

THE IN-LINE FLOW TEST CAN BE CONSTRUCTED ON SITE. IT PERFORMS A FLOW TEST TO ENSURE PROPER SYSTEM OPERATION AND FLOW.



FLOW TEST
TO ENSURE THE SYSTEM PROVIDES ENOUGH WATER FOR PROPER FIRE SPRINKLER PERFORMANCE, YOU SHOULD CONDUCT A FLOW VERIFICATION TEST.

NOTE: THE NFPA 13D INSTALLATION STANDARD DOES NOT REQUIRE FLOW VERIFICATION.

BEFORE PERFORMING A FLOW VERIFICATION TEST, CONFIRM THE WATER PRESSURES BY CONTACTING THE WATER AND SEWER DEPARTMENT OF YOUR LOCAL CITY. ENSURE THE AVAILABLE WATER PRESSURE MATCHES THE PRESSURE USED IN THE SYSTEM DESIGN.

NOTE: THE SPRINKLER PLAN INDICATES THE MOST HYDRAULICALLY REMOTE SPRINKLER (OR PAIR OF SPRINKLERS). FOR TEST REQUIREMENTS ON OTHER SPRINKLERS, CONSULT YOUR LOCAL CODE.

GENERAL NOTES

1. SPRINKLER SYSTEMS ARE DESIGNED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS, IBC NJ 2009, NFPA-13D 2007 EDITION AND NJ UNIFORM CONSTRUCTION CODE.
2. ALL HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA-13D.
3. ALL MAIN, BRANCH PIPING AND FITTINGS 2" AND SMALLER TO BE CPVC ASTM F-442.
4. SPRINKLER HEADS TO BE RESIDENTIAL TYPE WHITE RECESSED UNLESS OTHERWISE NOTED.
5. OWNER'S NOTE: IT IS THE OWNER'S RESPONSIBILITY TO ENSURE THAT A MINIMUM OF 40° FAHRENHEIT IS MAINTAINED THROUGHOUT THE ENTIRE BUILDING WHERE WET SPRINKLER PIPING AND VALVE ASSEMBLIES ARE INSTALLED.
6. SMOKE ALARMS WILL BE PROVIDED PRIMARILY FROM THE BUILDING WIRING WITH BATTERIES AS BACKUPS.
7. SMOKE ALARMS WILL BE TIED TOGETHER SO THAT WHEN ONE ALARM IS TRIGGERED ALL ALARMS IN THE BUILDING WILL GO OFF.
8. FIRE EXTINGUISHERS HAVE MINIMUM RATING OF 2A-10BC.
9. FIRE SUPPRESSION WATER DISTRIBUTION PIPES WERE SIZED BY DETERMINING THE AVAILABLE PRESSURE TO OFFSET FRICTION LOSS IN PIPING AND IDENTIFYING A PIPING MATERIAL, DIAMETER AND LENGTH USING THE EQUATION IN SECTION P2094.6.2 OF THE 2012 IRC.
10. ALL PIPING, FIXTURES, FITTINGS AND SPRINKLER HEADS MUST COMPLY WITH THE LEAD FREE REQUIREMENTS OF AB1953. ALL OF THE ABOVE NOTED ITEMS ARE NOT PERMITTED TO EXCEED 0.25% LEAD CONTENT. IF THESE REQUIREMENTS ARE NOT ABLE TO BE MET WITH THE CURRENTLY UTILIZED MATERIAL A SEPARATE PIPE FEEDING ALL POTABLE WATER FIXTURES MUST BE INSTALLED AND SEPARATED FROM THE NON AB1953 COMPLIANT MATERIAL.
11. "STAND ALONE" OR "MULTI-PURPOSE, WET PIPE" SYSTEMS ARE NOT PERMITTED TO USE ANTI-FREEZE, 2010 CRC R313.3.1.
12. SYSTEM MUST COMPLY WITH NFPA 13D, OR R313.3, WHICH IS CONSIDERED TO BE EQUIVALENT.
13. MODIFICATIONS ARE PROHIBITED. SPRINKLERS THAT HAVE BEEN PAINTED, CAULKED, MODIFIED OR DAMAGED MUST BE REPLACED, 2010 CRC R313.3.2.6.
14. WATER SHUT OFF VALVE IS NOT PERMITTED, 2010 CRC R313.3.2.
15. OWNERS MANUAL MUST BE PROVIDED TO THE OWNER, 2010 CRC R313.3.7.
16. MINIMUM SPACING BETWEEN SPRINKLERS IS 7'-0" REFER TO SPACING CHARTS FOR MAXIMUM SPACING BETWEEN SPRINKLERS AND FROM WALLS.
17. SPRINKLERS ARE NOT NECESSARILY CENTERED IN ROOMS DUE TO LIGHT FIXTURES OR OTHER CEILING MOUNTED OBSTRUCTIONS.

INSULATION GUIDE LINES PER NFPA 13D

- 8.3.1* WET PIPE SYSTEMS. A WET PIPE SYSTEM SHALL BE PERMITTED TO BE USED WHERE ALL PIPING IS INSTALLED IN AREAS MAINTAINED ABOVE 40°F, INCLUDING AREAS PROPERLY INSULATED TO MAINTAIN 40°F.
- A.8.3.1 IN AREAS SUBJECT TO FREEZING, CARE SHOULD BE TAKEN IN UNHEATED ATTIC SPACES TO COVER SPRINKLER PIPING COMPLETELY WITH INSULATION. INSTALLATION SHOULD FOLLOW THE GUIDELINES OF THE INSULATION MANUFACTURER. FIGURE A.8.3.1(A) THROUGH FIGURE A.8.3.1(E) SHOW SEVERAL METHODS THAT CAN BE CONSIDERED. (SEE 2010 CRC R313.3.2.3 FOR CA REQUIREMENT(S)
- NFPA 13D 8.6 LOCATION OF SPRINKLERS
- 8.6.1 SPRINKLERS SHALL BE INSTALLED IN ALL AREAS EXCEPT WHERE OMISSION IS PERMITTED BY 8.6.2 THROUGH 8.6.7.
- 8.6.2 SPRINKLERS SHALL NOT BE REQUIRED IN BATHROOMS OF 55 FT2 AND LESS.
- 8.6.3 SPRINKLERS SHALL NOT BE REQUIRED IN CLOTHES CLOSETS, LINEN CLOSETS, AND PANTRIES THAT MEET ALL OF THE FOLLOWING CONDITIONS
  (1) THE AREA OF THE SPACE DOES NOT EXCEED 24 FT2.
  (2) THE LEAST DIMENSION DOES NOT EXCEED 3 FT.
  (3) THE WALLS AND CEILINGS ARE SURFACED WITH NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIALS AS DEFINED IN NFPA 220, STANDARD ON TYPES OF BUILDING CONSTRUCTION.
- 8.6.4 SPRINKLERS SHALL NOT BE REQUIRED IN GARAGES, OPEN ATTACHED PORCHES, CARPORTS, AND SIMILAR STRUCTURES.
- 8.6.5 SPRINKLERS SHALL NOT BE REQUIRED IN ATTICS, PENTHOUSE EQUIPMENT ROOMS, ELEVATOR MACHINE ROOMS, CONCEALED SPACES DEDICATED EXCLUSIVELY TO AND CONTAINING ONLY DWELLING UNIT VENTILATION EQUIPMENT, FLOOR/CEILING SPACES, ELEVATOR SHAFTS CRAWL SPACES, AND OTHER CONCEALED SPACES THAT ARE NOT USED OR INTENDED FOR LIVING PURPOSES AND DO NOT CONTAIN FUEL-FIRED EQUIPMENT.
- 8.6.6 SPRINKLERS SHALL NOT BE REQUIRED IN COVERED UNHEATED PROJECTIONS OF THE BUILDING AT ENTRANCES/EXITS AS LONG AS THERE IS ANOTHER MEANS OF EGRESS FROM THE DWELLING UNIT.
- 8.6.7 SPRINKLERS SHALL NOT BE REQUIRED FOR CEILING POCKETS THAT MEET THE FOLLOWING CONDITIONS:
  (1) THE TOTAL VOLUME OF UNPROTECTED CEILING POCKET DOES NOT EXCEED 100 FT3
  (2) THE ENTIRE FLOOR UNDER THE UNPROTECTED CEILING POCKET IS PROTECTED BY THE SPRINKLERS AT THE LOWER CEILING ELEVATION.
  (3) EACH UNPROTECTED CEILING POCKET IS SEPARATED FROM ANY ADJACENT UNPROTECTED CEILING POCKET BY A MINIMUM 10 FT HORIZONTAL DISTANCE.
  (4) THE INTERIOR FINISH OF THE UNPROTECTED CEILING POCKET IS NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIAL
  (5) SKYLIGHTS NOT EXCEEDING 32 FT2 SHALL BE PERMITTED TO HAVE A PLASTIC COVER.

(MOST DEMANDING AREA)
HYDRAULIC INFORMATION

HAZARD CLASS	NFPA-13D
SYSTEM AREA	2 HDS
DENSITY	0.05 GPM
AREA PER SPRK	18X18 SPRK COVERAGE
PLUMB. DEMAND	0 GPM (SEPARATE SUPPLY)
TOTAL SYSTEM REQUIREMENTS	
GALLON PER MINUTE	34.486 GPM
WATER PSI	41.794 PSI
AT	STREET CONNECTION (TEST)
WATER SUPPLY INFORMATION	
STATIC PRESSURE	60 PSI
RESIDUAL PRESSURE	52 PSI
GPM FLOWING	856 GPM
WATERFLOW TEST INFO	
STATIC =	60 PSI
RESIDUAL =	52 PSI
FLOW RATE =	856 GPM
DATE:	12/5/2014
INFO BY:	QUICK RESPONSE FIRE PROTECTION
LOCATION:	OCEAN AVE/BLAINE AVENUE SEASIDE HEIGHTS, NEW JERSEY

FIRE SPRINKLERS CODE REQUIREMENTS
R313.2 ONE- AND TWO-FAMILY DWELLINGS AUTOMATIC FIRE SYSTEMS. AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN ON- AND TWO-FAMILY DWELLINGS.

P2904.1 GENERAL.
THE DESIGN AND INSTALLATION OF RESIDENTIAL FIRE SPRINKLER SYSTEMS SHALL BE IN ACCORDANCE WITH NFPA 13D OR SECTION P2904. WHICH SHALL BE CONSIDERED EQUIVALENT TO NFPA 12D. PARTIAL RESIDENTIAL SPRINKLER SYSTEMS SHALL BE PERMITTED TO BE INSTALLED ONLY IN BUILDINGS NOT REQUIRED TO BE EQUIPPED WITH A RESIDENTIAL SPRINKLER SYSTEM. SECTION P2904 SHALL APPLY TO STAND-ALONE AND MULTIPURPOSE WET-PIPE SPRINKLER SYSTEMS THAT DO NOT INCLUDE THE USE OF ANTIFREEZE. A MULTIPURPOSE FIRE SPRINKLER SYSTEM SHALL PROVIDE DOMESTIC WATER TO BOTH FIRE SPRINKLERS AND PLUMBING FIXTURES. A STAND-ALONE SPRINKLER SYSTEM SHALL BE SEPARATE AND INDEPENDENT FROM THE WATER DISTRIBUTION SYSTEM.

P2904.1.1 REQUIRED SPRINKLER LOCATIONS.
SPRINKLERS SHALL BE INSTALLED TO PROTECT ALL AREAS OF A DWELLING UNIT.
EXCEPTIONS:
1. ATTICS, CRAWL SPACES AND NORMALLY UNOCCUPIED CONCEALED SPACES THAT DO NOT CONTAIN FUEL-FIRED APPLIANCES DO NOT REQUIRE SPRINKLERS. IN ATTICS, CRAWL SPACES AND NORMALLY UNOCCUPIED CONCEALED SPACES THAT CONTAIN FUEL-FIRED EQUIPMENT, A SPRINKLER SHALL BE INSTALLED ABOVE THE EQUIPMENT; HOWEVER, SPRINKLERS SHALL NOT BE REQUIRED IN THE REMAINDER OF THE SPACE.
2. CLOTHES CLOSETS, LINEN CLOSETS AND PANTRIES NOT EXCEEDING 24 SQUARE FEET IN AREA, WITH THE SMALLEST DIMENSION NOT GREATER THAN 3 FEET AND HAVING WALL AND CEILING SURFACES OF GYPSUM BOARD.
3. BATHROOMS NOT MORE THAN 55 SQUARE FEET IN AREA.
4. GARAGES; CARPORTS; EXTERIOR PORCHES; UNHEATED ENTRY AREAS, SUCH AS MUD ROOMS, THAT ARE ADJACENT TO AN EXTERIOR DOOR; AND SIMILAR AREAS.

P2904.2 SPRINKLERS.
SPRINKLERS SHALL BE NEW LISTED RESIDENTIAL SPRINKLERS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

P2904.2.1 TEMPERATURE RATING AND SEPARATIONS FROM HEAT SOURCES.
EXCEPT AS PROVIDED FOR IN SECTION P2904.2.2, SPRINKLERS SHALL HAVE A TEMPERATURE RATING OF NOT LESS THAN 135°F AND NOT MORE THAN 170°F. SPRINKLERS SHALL BE SEPARATED FROM HEAT SOURCES AS REQUIRED BY THE SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

P2904.2.4.1 COVERAGE AREA LIMIT.
THE AREA OF COVERAGE OF A SINGLE SPRINKLER SHALL NOT EXCEED 400 SQUARE FEET AND SHALL BE BASED ON THE SPRINKLER LISTING AND THE SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

P2904.2.4.2 OBSTRUCTIONS TO COVERAGE.
SPRINKLER DISCHARGE SHALL NOT BE BLOCKED BY OBSTRUCTIONS UNLESS ADDITIONAL SPRINKLERS ARE INSTALLED TO PROTECT THE OBSTRUCTED AREA. ADDITIONAL SPRINKLERS SHALL NOT BE REQUIRED WHERE THE SPRINKLER SEPARATION FROM OBSTRUCTIONS COMPLIES WITH EITHER THE MINIMUM DISTANCE INDICATED IN FIGURE P2904.2.4.2 OR THE MINIMUM DISTANCES SPECIFIED IN THE SPRINKLER MANUFACTURER'S INSTRUCTIONS WHERE THE MANUFACTURER'S INSTRUCTIONS PERMIT A LESSER DISTANCE.

P2904.2.4.2.1 ADDITIONAL REQUIREMENTS FOR PENDENT SPRINKLERS.
PENDENT SPRINKLERS WITHIN 3 FEET OF THE CENTER OF A CEILING FAN, SURFACE-MOUNTED CEILING LUMINAIRE OR SIMILAR OBJECT SHALL BE CONSIDERED TO BE OBSTRUCTED, AND ADDITIONAL SPRINKLERS SHALL BE INSTALLED.

P2904.2.4.2.2 ADDITIONAL REQUIREMENTS FOR SIDEWALL SPRINKLERS.
SIDEWALL SPRINKLERS WITHIN 5 FEET OF THE CENTER OF A CEILING FAN, SURFACE-MOUNTED CEILING LUMINAIRE OR SIMILAR OBJECT SHALL BE CONSIDERED TO BE OBSTRUCTED, AND ADDITIONAL SPRINKLERS SHALL BE INSTALLED.

P2904.3 SPRINKLER PIPING SYSTEM.
SPRINKLER PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS FOR COLD WATER DISTRIBUTION PIPING. SPRINKLER PIPING SHALL COMPLY WITH ALL REQUIREMENTS FOR COLD WATER DISTRIBUTION PIPING. FOR MULTIPURPOSE PIPING SYSTEMS, THE SPRINKLER PIPING SHALL CONNECT TO AND BE A PART OF THE COLD WATER DISTRIBUTION PIPING SYSTEM.

P2904.3.1 NONMETALLIC PIPE AND TUBING.
NONMETALLIC PIPE AND TUBING, SUCH AS CPVC, PEX AND PE-RT SHALL BE LISTED FOR USE IN RESIDENTIAL FIRE SPRINKLER SYSTEMS.

P2904.3.1.1 NONMETALLIC PIPR PROTECTION.
NONMETALLIC PIPE AND TUBING SYSTEMS SHALL BE PROTECTED FROM EXPOSURE TO THE LIVING SPACE BY A LATER OF NOT LESS THAN 3/8-INCH-THICK GYPSUM WALLBOARD, 1/2-INCH-THICK PLYWOOD, OR OTHER MATERIAL HAVING A 15-MINUTE FIRE RATING.

P2904.3.2 SHUTOFF VALVES PROHIBITED.
WITH THE EXCEPTION OF SHUTOFF VALVES FOR THE ENTIRE WATER DISTRIBUTION SYSTEM, VALVES SHALL NOT BE INSTALLED IN ANY LOCATION WHERE THE VALVE WOULD ISOLATE PIPING SERVING ONE OR MORE SPRINKLERS.

P2904.3.3 SINGLE DWELLING LIMIT.
PIPING BEYOND THE SERVICE VALVE LOCATED AT THE BEGINNING OF THE WATER DISTRIBUTION SYSTEM SHALL NOT SERVE MORE THAN ONE DWELLING.

P2904.3.4 DRAIN.
A MEANS TO DRAIN THE SPRINKLER SYSTEM SHALL BE PROVIDED ON THE SYSTEM SIDE OF THE WATER DISTRIBUTION SHUTOFF VALVE.

P2904.4 DETERMINING SYSTEM DESIGN FLOW.
THE FLOW FOR SIZING THE SPRINKLER PIPING SYSTEM SHALL BE BASED ON THE FLOW RATING OF EACH SPRINKLER IN ACCORDANCE WITH SECTION P2904.4.1 AND THE CALCULATION IN ACCORDANCE WITH SECTION P2904.4.2.

P2904.5 WATER SUPPLY.
THE WATER SUPPLY SHALL PROVIDE NOT LESS THAN THE REQUIRED DESIGN FLOW RATE FOR SPRINKLERS IN ACCORDANCE WITH SECTION P2904.4.2 AT A PRESSURE NOT LESS THAN THAT USED TO COMPLY WITH SECTION P2904.6.

P2904.6 PIPE SIZING.
THE PIPING TO SPRINKLERS SHALL BE SIZED FOR THE FLOW REQUIRED BY SECTION P2904.4.2. THE FLOW REQUIRED TO SUPPLY THE PLUMBING FIXTURES SHALL NOT BE REQUIRED TO BE ADDED TO THE SPRINKLER DESIGN FLOW.

P2904.7 INSTRUCTIONS AND SIGNS.
AN OWNER'S MANUAL FOR THE FIRE SPRINKLER SYSTEM SHALL BE PROVIDED TO THE OWNER. A SIGN OR VALVE TAG SHALL BE INSTALLED AT THE MAIN SHUTOFF VALVE TO THE WATER DISTRIBUTION SYSTEM STATING THE FOLLOWING: "WARNING, THE WATER SYSTEM FOR THIS HOME SUPPLIES FIRE SPRINKLERS THAT REQUIRE CERTAIN FLOWS AND PRESSURES TO FIGHT A FIRE. DEVICES THAT RESTRICT THE FLOW OR DECREASE THE PRESSURE OR AUTOMATICALLY SHUT OFF THE WATER TO THE FIRE SPRINKLER SYSTEM, SUCH AS WATER SOFTENERS, FILTRATION SYSTEMS AND AUTOMATIC SHUTOFF VALVES, SHALL NOT BE ADDED TO THIS SYSTEM WITHOUT A REVIEW OF THE FIRE SPRINKLER SYSTEM BY A FIRE PROTECTION SPECIALIST. DO NOT REMOVE THIS SIGN."

P2904.8.1 PRECONCEALMENT INSPECTION.
THE FOLLOWING ITEMS SHALL BE VERIFIED PRIOR TO THE CONCEALMENT OF ANY SPRINKLER SYSTEM PIPING:
1. SPRINKLERS ARE INSTALLED IN ALL AREAS AS REQUIRED BY SECTION P2904.1.1.
2. WHERE SPRINKLER WATER SPRAY PATTERNS ARE OBSTRUCTED BY CONSTRUCTION FEATURES, LUMINARIES OR CEILING FANS, ADDITIONAL SPRINKLERS ARE INSTALLED AS REQUIRED BY SECTION P2904.2.4.2.
3. SPRINKLERS ARE THE CORRECT TEMPERATURE RATING AND ARE INSTALLED AT OR BEYOND THE REQUIRED SEPARATION DISTANCES FROM HEAT SOURCES AS REQUIRED BY SECTIONS P2904.2.1 AND P2904.2.2.
4. THE PIPE SIZE EQUALS OR EXCEEDS THE SIZE USED IN APPLYING TABLES P2904.6.2(4) THROUGH P2904.6.2(9) OR, IF THE PIPING SYSTEM WAS HYDRAULICALLY CALCULATED IN ACCORDANCE WITH SECTION P2904.6.1, THE SIZE USED IN THE HYDRAULIC CALCULATION.
5. THE PIPE LENGTH DOES NOT EXCEED THE LENGTH PERMITTED BY TABLES P2904.6.2(4) THROUGH P2904.6.2(9) OR, IF THE PIPING SYSTEM WAS HYDRAULICALLY CALCULATED IN ACCORDANCE WITH SECTION P2904.6.1, PIPE LENGTHS AND FITTINGS DO NOT EXCEED THOSE USED IN THE HYDRAULIC CALCULATION.
6. NONMETALLIC PIPING THAT CONVEYS WATER TO SPRINKLERS IS LISTED FOR USE WITH FIRE SPRINKLERS.
7. PIPING IS SUPPORTED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S AND SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. THE PIPING SYSTEM IS TESTED IN ACCORDANCE WITH SECTION P2503.7.

P2904.8.2 FINAL INSPECTION.
THE FOLLOWING ITEMS SHALL BE VERIFIED UPON COMPLETION OF THE SYSTEM:
1. SPRINKLERS ARE NOT PAINTED, DAMAGED OR OTHERWISE HINDERED FROM OPERATION.
2. WHERE A PUMP IS REQUIRED TO PROVIDE WATER TO THE SYSTEM, THE PUMP STARTS AUTOMATICALLY UPON SYSTEM WATER DEMAND.
3. PRESSURE-REDUCING VALVES, WATER SOFTENERS, WATER FILTERS OR OTHER IMPAIRMENTS TO WATER FLOW THAT WERE NOT PART OF THE ORIGINAL DESIGN HAVE NOT BEEN INSTALLED.
4. THE SIGN OR VALVE TAG REQUIRED BY SECTION P2904.7 IS INSTALLED AND THE OWNER'S MANUAL FOR THE SYSTEM IS PRESENT.

SMOKE ALARMS
R314.2 SMOKE DETECTION SYSTEMS.
HOUSEHOLD FIRE ALARM SYSTEMS INSTALLED IN ACCORDANCE WITH NFPA 72 THAT INCLUDE SMOKE ALARMS, OR A COMBINATION OF SMOKE DETECTOR AND AUDIBLE NOTIFICATION DEVICE INSTALLED AS REQUIRED BY THIS SECTION FOR SMOKE ALARMS, SHALL BE PERMITTED. THE HOUSEHOLD FIRE ALARM SYSTEM SHALL PROVIDE THE SAME LEVEL OF SMOKE DETECTION AND ALARM AS REQUIRED BY THIS SECTION FOR SMOKE ALARMS. WHERE A HOUSEHOLD FIRE WARNING SYSTEM IS INSTALLED USING A COMBINATION OF SMOKE DETECTOR AND AUDIBLE NOTIFICATION DEVICE(S), IT SHALL BECOME A PERMANENT FIXTURE OF THE OCCUPANCY AND OWNED BY THE HOMEOWNER. THE SYSTEM SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION AND BE MAINTAINED IN ACCORDANCE WITH NFPA 72.

R314.3 LOCATION.
SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS:
1. IN EACH SLEEPING ROOM.
2. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.

R314.4 POWER SOURCE.
SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHEN SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE, AND WHEN PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVERCURRENT PROTECTION.

R314.5 INTERCONNECTION.
WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT IN ACCORDANCE WITH SECTION R314.3, THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM.

E3902.12 ARC-FAULT CIRCUIT-INTERRUPTER PROTECTION.
ALL BRANCH CIRCUITS THAT SUPPLY 120-VOLT, SINGLE-PHASE, 15- AND 20-AMPERE OUTLETS INSTALLED IN FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS AND SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A COMBINATION TYPE ARC-FAULT CIRCUIT INTERRUPTER INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT.

NFPA 72: SMOKE DETECTORS INSTALLED IN A WALL SHALL BE NO CLOSER THAN 4" AND NO MORE THAN 12" FROM THE CEILING

NFPA 72: WHEN LOCATED ON THE CEILING, SMOKE DETECTORS MUST BE NO CLOSER THAN 4" FROM THE WALL.

CO ALARM
R315.1 CARBON MONOXIDE ALARMS.
AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.

R315.2 CARBON MONOXIDE DETECTION SYSTEMS.
CARBON MONOXIDE DETECTION SYSTEMS THAT INCLUDE CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THIS SECTION FOR CARBON MONOXIDE ALARMS AND NFPA 720, SHALL BE PERMITTED. THE CARBON MONOXIDE DETECTORS SHALL BE LISTED AS COMPLYING WITH UL 2075. WHERE A HOUSEHOLD CARBON MONOXIDE DETECTION SYSTEM IS INSTALLED, IT SHALL BECOME A PERMANENT FIXTURE OF THE OCCUPANCY, OWNED BY THE HOMEOWNER AND SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION.

R315.4 ALARM REQUIREMENTS.
SINGLE-STATION CARBON MONOXIDE ALARMS SHALL BE LISTED AS COMPLYING WITH UL 2034 AND SHALL BE INSTALLED IN ACCORDANCE WITH THIS CODE AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

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SHEET TITLE

FIRE PROTECTION NOTES AND SYMBOLS

F-001

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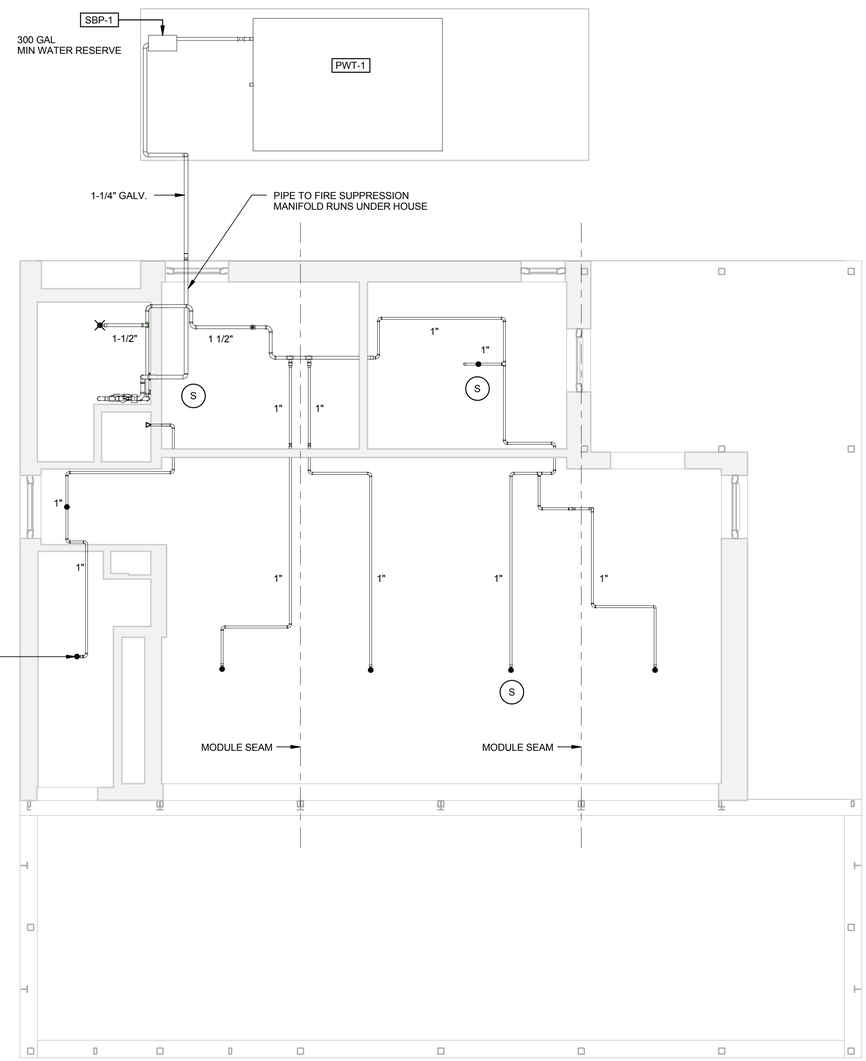
SPRINKLER SCHEDULE	
1/2" FULLY RECESSED HOSTED SPRINKLER HEAD	8
1/2" HOSTED ON DROP SPRINKLER HEAD	1
1" PIPE	53' 3"
1 1/4" PIPE	3' 2"
1 1/2" PIPE	2' 2"
2" PIPE	36' 5 3/4"
2" RISER MANIFOLD	1
2" SPRINKLER PIPE VERTICAL	36' 5 3/4"
SBP-1	1
SMOKE DETECTOR	3



A1 FIRE DETECTION AND ALARM PLAN
1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

REFERENCE KEYNOTES:

SHEET KEYNOTES:

DRAWING KEY

- SIDEWALL MOUNTED SPRINKLER HEAD
- CEILING MOUNTED SPRINKLER HEAD
- 2" — 2" DIAMETER PIPING
- 1 1/2" — 1 1/2" DIAMETER PIPING
- 1" — 1" DIAMETER PIPING
- SPRINKLER BOOSTER PUMP
- FIRE SPRINKLER RISER
- IN-LINE FLOW TEST HOOKUP
- S — SMOKE DETECTOR
- UPRIGHT SPRINKLER
- BALL VALVE

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SHEET TITLE

FIRE DETECTION AND ALARM

F-101

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A1 FIRE SUPPRESSION COVERAGE PLAN

1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

1. HATCHED AREA INDICATES EXTENT OF SPRINKLER COVERAGE.

REFERENCE KEYNOTES:

1.

SHEET KEYNOTES:

DRAWING KEY

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SHEET TITLE

FIRE SUPPRESSION COVERAGE PLAN

F-103

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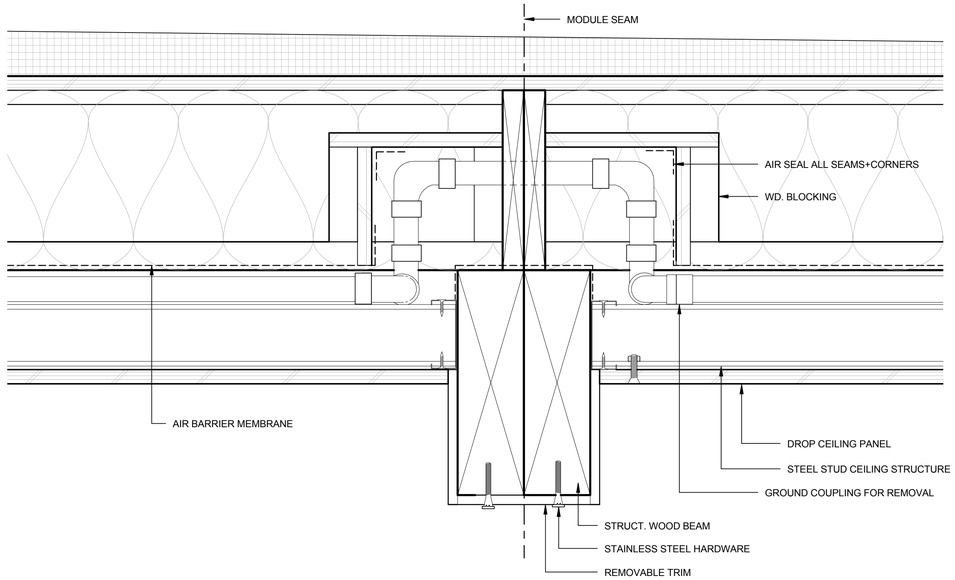
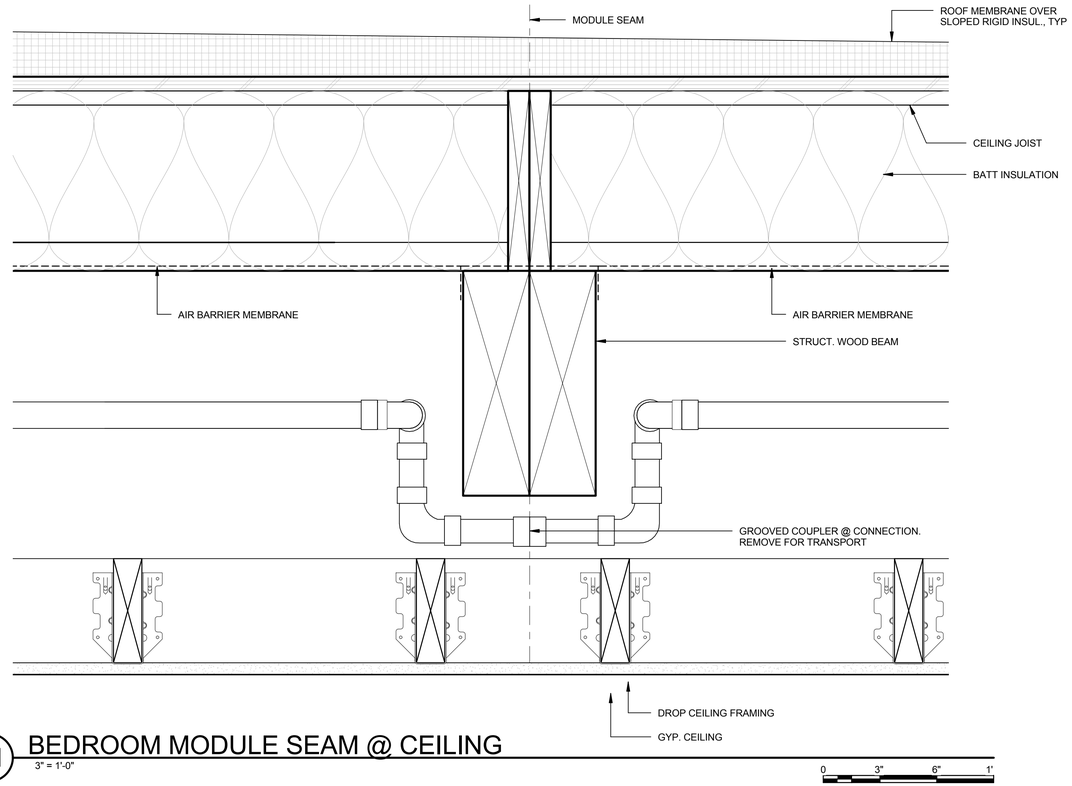


C1 LIVING ROOM MODULE BREAK @ CEILING

3" = 1'-0"

0 3" 6" 1'



A1 BEDROOM MODULE SEAM @ CEILING

3" = 1'-0"

0 3" 6" 1'

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SHEET TITLE

FIRE SUPPRESSION DETAILS

F-501

SPRINKLER SCHEDULE

COUNT	DIAMETER	MANUFACTURER	MODEL	K-FACTOR	ORIFICE	URL	DESCRIPTION
1	1 1/4"	AMES	2000B	N/A	N/A	HTTP://MEDIA.WATTSWATER.COM/ES-A-2000B.PDF	DOUBLE CHECK BACKFLOW ASSEMBLY
1	1 1/4"	VIKING	EASYPAC	N/A	N/A	HTTP://WWW.VIKINGGROUPINC.COM/DATABOOK/WETSYSTEMS/102407.PDF	RESIDENTIAL RISER MANIFOLD
1	1"	RELIABLE	F1RES44 HSW RECESSED SIDEWALL	4.9	Standard	HTTP://WWW.RELIABLESPRINKLER.COM/SITES/DEFAULT/FILES/PRODUCTS/BULLETINS/135%20MODEL%20F1%20RES%20SPRINKLERS05GPM.PDF	SPRINKLER HEAD
8	1/2"	RELIABLE	F1RFC49 WHITE CONCEALED PENDENT	4.9	Standard	HTTP://WWW.RELIABLESPRINKLER.COM/SITES/DEFAULT/FILES/PRODUCTS/BULLETINS/006%20MODEL%20RFC43%20RESIDENTIAL%20FLAT%20CONCEALED%20.PDF	SPRINKLER HEAD
1	1/2"	VIKING	FREEDOM® RESIDENTIAL UPRIGHT LEAD FREE SPRINKLER VK4670	4.9	Standard	HTTP://WWW.VIKINGGROUPINC.COM/DATABOOK/CURRENT_TDS/061314.PDF	SPRINKLER HEAD
N/A	N/A	VIKING	BLAZEMASTER ® CPVC FIRE SPRINKLER PIPE	N/A	N/A	HTTP://WWW.VIKINGGROUPINC.COM/USRELATED/BLAZEMASTER/VIKING%20PLASTICS.PDF	CPVC PIPE

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SHEET TITLE

FIRE PROTECTION SCHEDULES

F-601

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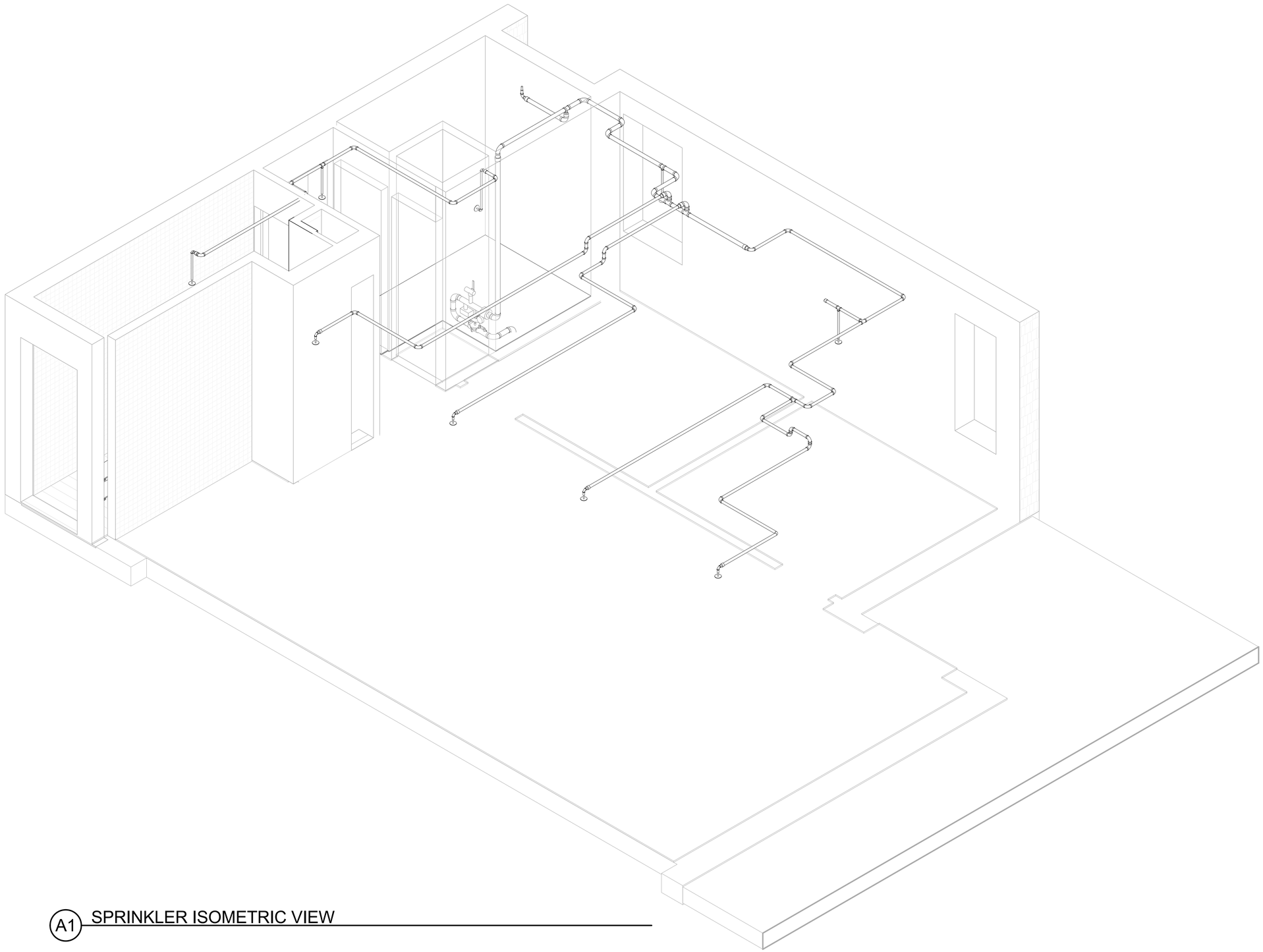

A1 SPRINKLER ISOMETRIC VIEW

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SHEET TITLE

SPRINKLER ISOMETRIC

F-901

PLUMBING CODE NOTES

GENERAL PLUMBING CODE NOTES
R322.1.7 PROTECTION OF WATER SUPPLY AND SANITARY SEWAGE SYSTEMS.
NEW AND REPLACEMENT WATER SUPPLY SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOOD WATERS INTO THE SYSTEMS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE. NEW AND REPLACEMENT SANITARY SEWAGE SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOODWATERS INTO SYSTEMS AND DISCHARGES FROM SYSTEMS INTO FLOODWATERS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE AND CHAPTER 3 OF THE INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE.

P2503.5.1 ROUGH PLUMBING.
DWV SYSTEMS SHALL BE TESTED ON COMPLETION OF THE ROUGH PIPING INSTALLATION BY WATER OR FOR PIPING SYSTEMS OTHER THAN PLASTIC, BY AIR WITH NO EVIDENCE OF LEAKAGE. EITHER TEST SHALL BE APPLIED TO THE DRAINAGE SYSTEM IN ITS ENTIRETY OR IN SECTIONS AFTER ROUGH PIPING HAS BEEN INSTALLED, AS FOLLOWS:
1. WATER TEST. EACH SECTION SHALL BE FILLED WITH WATER TO A POINT NOT LESS THAN 10 FEET (3048 MM) ABOVE THE HIGHEST FITTING CONNECTION IN THAT SECTION, OR TO THE HIGHEST POINT IN THE COMPLETED SYSTEM. WATER SHALL BE HELD IN THE SECTION UNDER TEST FOR A PERIOD OF 15 MINUTES. THE SYSTEM SHALL PROVE LEAK FREE BY VISUAL INSPECTION.
2. AIR TEST. THE PORTION UNDER TEST SHALL BE MAINTAINED AT A GAUGE PRESSURE OF 5 POUNDS PER SQUARE INCH (PSI) (34 KPA) OR 10 INCHES OF MERCURY COLUMN (34 KPA). THIS PRESSURE SHALL BE HELD WITHOUT INTRODUCTION OF ADDITIONAL AIR FOR A PERIOD OF 15 MINUTES.

P2503.5.2 FINISHED PLUMBING.
AFTER THE PLUMBING FIXTURES HAVE BEEN SET AND THEIR TRAPS FILLED WITH WATER, THEIR CONNECTIONS SHALL BE TESTED AND PROVED GAS TIGHT AND/OR WATER TIGHT AS FOLLOWS:
1. WATER TIGHTNESS. EACH FIXTURE SHALL BE FILLED AND THEN DRAINED. TRAPS AND FIXTURE CONNECTIONS SHALL BE PROVEN WATER TIGHT BY VISUAL INSPECTION.
2. GAS TIGHTNESS. WHEN REQUIRED BY THE LOCAL ADMINISTRATIVE AUTHORITY, A FINAL TEST FOR GAS TIGHTNESS OF THE DWV SYSTEM SHALL BE MADE BY THE SMOKE OR PEPPERMINT TEST AS FOLLOWS:
2.1. SMOKE TEST. INTRODUCE A PUNGENT, THICK SMOKE INTO THE SYSTEM. WHEN THE SMOKE APPEARS AT VENT TERMINALS, SUCH TERMINALS SHALL BE SEALED AND A PRESSURE EQUIVALENT TO A 1-INCH WATER COLUMN (249 PA) SHALL BE APPLIED AND MAINTAINED FOR A TEST PERIOD OF NOT LESS THAN 15 MINUTES.
2.2. PEPPERMINT TEST. INTRODUCE 2 OUNCES (59 ML) OF OIL OF PEPPERMINT INTO THE SYSTEM. ADD 10 QUARTS (9464 ML) OF HOT WATER AND SEAL ALL VENT TERMINALS. THE ODOR OF PEPPERMINT SHALL NOT BE DETECTED AT ANY TRAP OR OTHER POINT IN THE SYSTEM.

P2503.6 SHOWER LINER TEST.
WHERE SHOWER FLOORS AND RECEPTORS ARE MADE WATER TIGHT BY THE APPLICATION OF MATERIALS REQUIRED BY SECTION P2709.2, THE COMPLETED LINER INSTALLATION SHALL BE TESTED. THE PIPE FROM THE SHOWER DRAIN SHALL BE PLUGGED WATER TIGHT FOR THE TEST. THE FLOOR AND RECEPTOR AREA SHALL BE FILLED WITH POTABLE WATER TO A DEPTH OF NOT LESS THAN 2 INCHES (51 MM) MEASURED AT THE THRESHOLD. WHERE A THRESHOLD OF AT LEAST 2 INCHES HIGH DOES NOT EXIST, A TEMPORARY THRESHOLD SHALL BE CONSTRUCTED TO RETAIN THE TEST WATER IN THE LINED FLOOR OR RECEPTOR AREA TO A LEVEL NOT LESS THAN 2 INCHES DEEP MEASURED AT THE THRESHOLD. THE WATER SHALL BE RETAINED FOR A TEST PERIOD OF NOT LESS THAN 15 MINUTES AND THERE SHALL BE NO EVIDENCE OF LEAKAGE.

P2503.8 INSPECTION AND TESTING OF BACKFLOW PREVENTION DEVICES.
INSPECTION AND TESTING OF BACKFLOW PREVENTION DEVICES SHALL COMPLY WITH SECTIONS P2503.8.1 AND P2503.8.2.

P2902.3 BACKFLOW PROTECTION.
A MEANS OF PROTECTION AGAINST BACKFLOW SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS P2902.3.1 THROUGH P2902.3.6. BACKFLOW PREVENTION APPLICATIONS SHALL CONFORM TO TABLE P2902.3, EXCEPT AS SPECIFICALLY STATED IN SECTIONS P2902.4 THROUGH P2902.5.5.

P2902.4 PROTECTION OF POTABLE WATER OUTLETS.
POTABLE WATER OPENINGS AND OUTLETS SHALL BE PROTECTED BY AN AIR GAP, REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER WITH ATMOSPHERIC VENT, ATMOSPHERIC-TYPE VACUUM BREAKER, PRESSURE-TYPE VACUUM BREAKER OR HOSE CONNECTION BACKFLOW PREVENTER.

P2902.5 PROTECTION OF POTABLE WATER CONNECTIONS.
CONNECTIONS TO THE POTABLE WATER SHALL CONFORM TO SECTIONS P2902.5.1 THROUGH P2902.5.5.

P2902.5.1 CONNECTIONS TO BOILERS.
THE POTABLE SUPPLY TO THE BOILER SHALL BE EQUIPPED WITH A BACKFLOW PREVENTER WITH AN INTERMEDIATE ATMOSPHERIC VENT COMPLYING WITH ASSE 1012 OR CSA B64.3. WHERE CONDITIONING CHEMICALS ARE INTRODUCED INTO THE SYSTEM, THE POTABLE WATER CONNECTION SHALL BE PROTECTED BY AN AIR GAP OR A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER COMPLYING WITH ASSE 1013, CSA B64.4 OR AWWA C511.

P2902.5.2 HEAT EXCHANGERS.
HEAT EXCHANGERS USING AN ESSENTIALLY TOXIC TRANSFER FLUID SHALL BE SEPARATED FROM THE POTABLE WATER BY DOUBLE-WALL CONSTRUCTION. AN AIR GAP OPEN TO THE ATMOSPHERE SHALL BE PROVIDED BETWEEN THE TWO WALLS. HEAT EXCHANGERS UTILIZING AN ESSENTIALLY NONTOXIC TRANSFER FLUID SHALL BE PERMITTED TO BE OF SINGLE-WALL CONSTRUCTION.

P2902.5.3 LAWN IRRIGATION SYSTEMS.
THE POTABLE WATER SUPPLY TO LAWN IRRIGATION SYSTEMS SHALL BE PROTECTED AGAINST BACKFLOW BY AN ATMOSPHERIC VACUUM BREAKER, A PRESSURE VACUUM BREAKER ASSEMBLY OR A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY. VALVES SHALL NOT BE INSTALLED DOWNSTREAM FROM AN ATMOSPHERIC VACUUM BREAKER. WHERE CHEMICALS ARE INTRODUCED INTO THE SYSTEM, THE POTABLE WATER SUPPLY SHALL BE PROTECTED AGAINST BACKFLOW BY A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY.

P2703.1 FIXTURE TAIL PIECES MINIMUM SIZE.
FIXTURE TAIL PIECES SHALL BE NOT LESS THAN 1-1/2 INCHES IN DIAMETER FOR SINKS, DISHWASHERS, LAUNDRY TUBS, BATHTUBS AND SIMILAR FIXTURES, AND NOT LESS THAN 1-1/4 INCHES IN DIAMETER FOR BIDETS, LAVATORIES AND SIMILAR FIXTURES.

P2704.1 JOINT ACCESS.
SLIP JOINTS SHALL BE MADE WITH AN APPROVED ELASTOMERIC GASKET AND SHALL BE INSTALLED ONLY ON THE TRAP OUTLET, TRAP INLET AND WITHIN THE TRAP SEAL. FIXTURES WITH CONCEALED SLIP-JOINT CONNECTIONS SHALL BE PROVIDED WITH AN ACCESS PANEL OR UTILITY SPACE NOT LESS THAN 12 INCHES IN ITS SMALLEST DIMENSION OR OTHER APPROVED ARRANGEMENT SO AS TO PROVIDE ACCESS TO THE SLIP CONNECTIONS FOR INSPECTION AND REPAIR.

P2705.1 INSTALLATION.
THE INSTALLATION OF FIXTURES SHALL CONFORM TO THE FOLLOWING:

1. FLOOR-OUTLET OR FLOOR-MOUNTED FIXTURES SHALL BE SECURED TO THE DRAINAGE CONNECTION AND TO THE FLOOR, WHERE SO DESIGNED, BY SCREWS, BOLTS, WASHERS, NUTS AND SIMILAR FASTENERS OF COPPER, BRASS OR OTHER CORROSION-RESISTANT MATERIAL.
2. WALL-HUNG FIXTURES SHALL BE RIGIDLY SUPPORTED SO THAT STRAIN IS NOT TRANSMITTED TO THE PLUMBING SYSTEM.
3. WHERE FIXTURES COME IN CONTACT WITH WALLS AND FLOORS, THE CONTACT AREA SHALL BE WATER TIGHT.
4. PLUMBING FIXTURES SHALL BE USABLE.
5. WATER CLOSETS, LAVATORIES AND BIDETS. A WATER CLOSET, LAVATORY OR BIDET SHALL NOT BE SET CLOSER THAN 15 INCHES FROM ITS CENTER TO ANY SIDE WALL, PARTITION OR VANITY OR CLOSER THAN 30 INCHES CENTER-TO-CENTER BETWEEN ADJACENT FIXTURES. THERE SHALL BE A CLEARANCE OF NOT LESS THAN 21 INCHES IN FRONT OF A WATER CLOSET, LAVATORY OR BIDET SHALL NOT BE SET CLOSER THAN 15 INCHES (381 MM) FROM ITS CENTER TO ANY SIDE WALL, PARTITION OR VANITY OR CLOSER THAN 30 INCHES (762 MM) CENTER-TO-CENTER BETWEEN ADJACENT FIXTURES. THERE SHALL BE A CLEARANCE OF NOT LESS THAN 21 INCHES (533 MM) IN FRONT OF A WATER CLOSET, LAVATORY OR BIDET TO ANY WALL, FIXTURE OR DOOR.
6. THE LOCATION OF PIPING, FIXTURES OR EQUIPMENT SHALL NOT INTERFERE WITH THE OPERATION OF WINDOWS OR DOORS.
7. IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2(1), PLUMBING FIXTURES SHALL BE LOCATED OR INSTALLED IN ACCORDANCE WITH SECTION R322.1.7.
8. INTEGRAL FIXTURE-FITTING MOUNTING SURFACES ON MANUFACTURED PLUMBING FIXTURES OR PLUMBING FIXTURES CONSTRUCTED ON SITE, SHALL MEET THE DESIGN REQUIREMENTS OF ASME A112.19.2/CSA B45.1 OR ASME A112.19.3/CSA B45.1.

P2706.2 WASTE RECEPTOR STANDPIPES.
STANDPIPES SHALL EXTEND NOT LESS THAN OF 18 INCHES BUT NOT GREATER THAN 42 INCHES ABOVE THE TRAP WEIR. ACCESS SHALL BE PROVIDED TO STANDPIPE TRAPS AND DRAINS FOR RODDING.

SHOWERS
P2708.1 SHOWERS.
SHOWER COMPARTMENTS SHALL HAVE NOT LESS THAN 900 SQUARE INCHES OF INTERIOR CROSS-SECTIONAL AREA. SHOWER COMPARTMENTS SHALL BE NOT LESS THAN 30 INCHES IN MINIMUM DIMENSION MEASURED FROM THE FINISHED INTERIOR DIMENSION OF THE SHOWER COMPARTMENT, EXCLUSIVE OF FIXTURE VALVES, SHOWER HEADS, SOAP DISHES, AND SAFETY GRAB BARS OR RAILS. THE MINIMUM REQUIRED AREA AND DIMENSION SHALL BE MEASURED FROM THE FINISHED INTERIOR DIMENSION AT A HEIGHT EQUAL TO THE TOP OF THE THRESHOLD AND AT A POINT TANGENT TO ITS CENTERLINE AND SHALL BE CONTINUED TO A HEIGHT OF NOT LESS THAN 70 INCHES ABOVE THE SHOWER DRAIN OUTLET. HINGED SHOWER DOORS SHALL OPEN OUTWARD.

P2708.3 SHOWER CONTROL VALVES.
INDIVIDUAL SHOWER AND TUB/SHOWER COMBINATION VALVES SHALL BE EQUIPPED WITH CONTROL VALVES OF THE PRESSURE-BALANCE, THERMOSTATIC-MIXING OR COMBINATION PRESSURE-BALANCE/THERMOSTATIC-MIXING VALVE TYPES WITH A HIGH LIMIT STOP IN ACCORDANCE WITH ASSE 1016 OR ASME A112.18.1/CSA B125.1. THE HIGH LIMIT STOP SHALL BE SET TO LIMIT THE WATER TEMPERATURE TO NOT GREATER THAN 120°F. IN-LINE THERMOSTATIC VALVES SHALL NOT BE USED FOR COMPLIANCE WITH THIS SECTION.

P2709.1 SHOWER CONSTRUCTION.
WHERE A SHOWER RECEPTOR HAS A FINISHED CURB THRESHOLD, IT SHALL BE NOT LESS THAN 1 INCH BELOW THE SIDES AND BACK OF THE RECEPTOR. THE CURB SHALL BE NOT LESS THAN 2 INCHES AND NOT MORE THAN 9 INCHES DEEP WHEN MEASURED FROM THE TOP OF THE CURB TO THE TOP OF THE DRAIN. THE FINISHED FLOOR SHALL SLOPE UNIFORMLY TOWARD THE DRAIN NOT LESS THAN 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) NOR MORE THAN 1/2 UNIT VERTICAL PER 12 UNITS HORIZONTAL (4-PERCENT SLOPE) AND FLOOR DRAINS SHALL BE FLANGED TO PROVIDE A WATER-TIGHT JOINT IN THE FLOOR.

P2709.2 LINING REQUIRED.
THE ADJOINING WALLS AND FLOOR FRAMING ENCLOSING ON-SITE BUILT-UP SHOWER RECEPTORS SHALL BE LINED WITH ONE OF THE FOLLOWING MATERIALS:

3. PLASTIC LINER MATERIAL THAT COMPLIES WITH ASTM D 4068 OR ASTM D 4551;
5. SHEET-APPLIED LOAD-BEARING, BONDED WATERPROOF MEMBRANES THAT COMPLY WITH ANSI A118.10.

THE LINING MATERIAL SHALL EXTEND NOT LESS THAN 2 INCHES BEYOND OR AROUND THE ROUGH JAMBS AND NOT LESS THAN 2 INCHES ABOVE FINISHED THRESHOLDS. SHEET-APPLIED LOAD BEARING, BONDED WATERPROOF MEMBRANES SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

P2709.2.4 LIQUID-TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS.
LIQUID-TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS SHALL MEET THE REQUIREMENTS OF ANSI A118.10 AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

P2709.3 INSTALLATION.
LINING MATERIALS SHALL BE SLOPED ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) TO WEEP HOLES IN THE SUBDRAIN BY MEANS OF A SMOOTH, SOLIDLY FORMED SUBBASE, SHALL BE PROPERLY RECESSED AND FASTENED TO APPROVED BACKING SO AS NOT TO OCCUPY THE SPACE REQUIRED FOR THE WALL COVERING, AND SHALL NOT BE NAILED OR PERFORATED AT ANY POINT LESS THAN 1 INCH ABOVE THE FINISHED THRESHOLD.

R307.2 BATHTUB AND SHOWER SPACES.
BATHTUB AND SHOWER FLOORS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR.

WATER-CLOSET, LAVATORIES, LAUNDRY
P2711.3 LAVATORY WASTE OUTLETS.
LAVATORIES SHALL HAVE WASTE OUTLETS NOT LESS THAN 1-1/4 INCH IN DIAMETER. A STRAINER, POP-UP STOPPER, CROSSBAR OR OTHER DEVICE SHALL BE PROVIDED TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.

P2712.1 WATER CLOSETS.
WATER CLOSETS SHALL CONFORM TO THE WATER CONSUMPTION REQUIREMENTS OF SECTION P2903.2 AND SHALL CONFORM TO ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 OR CSA B45.5. WATER CLOSETS SHALL CONFORM TO THE HYDRAULIC PERFORMANCE REQUIREMENTS OF ASME A112.19.2/CSA B45.1. WATER CLOSET TANKS SHALL CONFORM TO ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 OR CSA B45.5. WATER CLOSETS THAT HAVE AN INVISIBLE SEAL AND UNVENTILATED SPACE OR WALLS THAT ARE NOT THOROUGHLY WASHED AT EACH DISCHARGE SHALL BE PROHIBITED. WATER CLOSETS THAT PERMIT BACKFLOW OF THE CONTENTS OF THE BOWL INTO THE FLUSH TANK SHALL BE PROHIBITED.
P2714.1 SINK WASTE OUTLETS.
SINKS SHALL BE PROVIDED WITH WASTE OUTLETS NOT LESS THAN 1-1/2 INCHES IN DIAMETER. A STRAINER, CROSSBAR OR OTHER DEVICE SHALL BE PROVIDED TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.

P2715.1 LAUNDRY TUB WASTE OUTLET.
EACH COMPARTMENT OF A LAUNDRY TUB SHALL BE PROVIDED WITH A WASTE OUTLET NOT LESS THAN 1-1/2 INCHES IN DIAMETER AND A STRAINER OR CROSSBAR TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.

P2717.1 PROTECTION OF WATER SUPPLY.
THE WATER SUPPLY FOR DISHWASHERS SHALL BE PROTECTED BY AN AIR GAP OR INTEGRAL BACKFLOW PREVENTER.

P2717.2 SINK AND DISHWASHER.
A SINK AND DISHWASHER ARE PERMITTED TO DISCHARGE THROUGH A SINGLE 1-1/2-INCH TRAP. THE DISCHARGE PIPE FROM THE DISHWASHER SHALL BE INCREASED TO NOT LESS THAN 3/4 INCH IN DIAMETER AND SHALL BE CONNECTED WITH A WYE FITTING TO THE SINK TAILPIECE. THE DISHWASHER WASTE LINE SHALL RISE AND BE SECURELY FASTENED TO THE UNDERSIDE OF THE COUNTER BEFORE CONNECTING TO THE SINK TAILPIECE.

P2718.1 WASTE CONNECTION.
THE DISCHARGE FROM A CLOTHES WASHING MACHINE SHALL BE THROUGH AN AIR BREAK.

P2719.1 FLOOR DRAINS.
FLOOR DRAINS SHALL HAVE WASTE OUTLETS NOT LESS THAN 2 INCHES IN DIAMETER AND A REMOVABLE STRAINER. THE FLOOR DRAIN SHALL BE CONSTRUCTED SO THAT THE DRAIN CAN BE CLEANED. ACCESS SHALL BE PROVIDED TO THE DRAIN INLET. FLOOR DRAINS SHALL NOT BE LOCATED UNDER OR HAVE THEIR ACCESS RESTRICTED BY PERMANENTLY INSTALLED APPLIANCES.

FIXTURES AND FITTING
P2722.1 GENERAL FIXTURE FITTING.
FIXTURE SUPPLY VALVES AND FAUCETS SHALL COMPLY WITH ASME A112.18.1/CSA B125.1 AS LISTED IN TABLE P2701.1. FAUCETS AND FIXTURE FITTINGS THAT SUPPLY DRINKING WATER FOR HUMAN INGESTION SHALL CONFORM TO THE REQUIREMENTS OF NSF 61, SECTION 9. FLEXIBLE WATER CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF SECTION P2905.7.

P2722.2 HOT WATER FIXTURE FITTING.
FIXTURE FITTINGS AND FAUCETS THAT ARE SUPPLIED WITH BOTH HOT AND COLD WATER SHALL BE INSTALLED AND ADJUSTED SO THAT THE LEFT-HAND SIDE OF THE WATER TEMPERATURE CONTROL REPRESENTS THE FLOW OF HOT WATER WHEN FACING THE OUTLET.

P2722.3 HOSE-CONNECTED OUTLETS.
FAUCETS AND FIXTURE FITTINGS WITH HOSE-CONNECTED OUTLETS SHALL CONFORM TO ASME A112.18.3 OR ASME A112.18.1/CSA B125.1.

VENTILATION
917.2 STACK SIZE.
DRAINAGE STACKS SHALL BE SIZED IN ACCORDANCE WITH TABLE 917.2. STACKS SHALL BE UNIFORMLY SIZED BASED ON THE TOTAL CONNECTED DRAINAGE FIXTURE UNIT LOAD. THE STACK VENT SHALL BE THE SAME SIZE AS THE DRAINAGE STACK. A 3-INCH STACK SHALL SERVE NOT MORE THAN TWO WATER CLOSETS.

SECTION P3114 AIR ADMITTANCE VALVES
P3114.2 INSTALLATION.
THE VALVES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION AND THE MANUFACTURER'S INSTRUCTIONS. AIR ADMITTANCE VALVES SHALL BE INSTALLED AFTER THE DWV TESTING REQUIRED BY SECTION P2503.5.1 OR P2503.5.2 HAS BEEN PERFORMED.

917.3 BRANCH SIZE.
HORIZONTAL BRANCHES CONNECTING TO A SINGLE STACK VENT SYSTEM SHALL BE SIZED IN ACCORDANCE WITH TABLE 710.1(2). NOT MORE THAN ONE WATER CLOSET SHALL DISCHARGE INTO A 3-INCH HORIZONTAL BRANCH AT A POINT WITHIN A DEVELOPED LENGTH OF 18 INCHES MEASURED HORIZONTALLY FROM THE STACK.

WHERE A WATER CLOSET IS WITHIN 18 INCHES MEASURED HORIZONTALLY FROM THE STACK AND NOT MORE THAN ONE FIXTURE WITH A DRAIN SIZE OF NOT MORE THAN 11/2 INCH CONNECTS TO A 3-INCH HORIZONTAL BRANCH, THE BRANCH DRAIN CONNECTION TO THE STACK SHALL BE MADE WITH A SANITARY TEE.

917.4 LENGTH OF HORIZONTAL BRANCHES.
THE LENGTH OF HORIZONTAL BRANCHES SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 917.4.1 THROUGH 917.4.3.

917.4.1 WATER CLOSET CONNECTION.
WATER CLOSET CONNECTIONS SHALL BE NOT GREATER THAN 4 FEET IN DEVELOPED LENGTH MEASURED HORIZONTALLY FROM THE STACK.

EXCEPTION: WHERE THE CONNECTION IS MADE WITH A SANITARY TEE, THE MAXIMUM DEVELOPED LENGTH SHALL BE 8 FEET.

917.4.2 FIXTURE CONNECTIONS.
FIXTURES OTHER THAN WATER CLOSETS SHALL BE LOCATED NOT GREATER THAN 12 FEET (3657 MM) IN DEVELOPED LENGTH, MEASURED HORIZONTALLY FROM THE STACK.

917.4.3 VERTICAL PIPING IN BRANCH.
THE LENGTH OF VERTICAL PIPING IN A FIXTURE DRAIN CONNECTING TO A HORIZONTAL BRANCH SHALL NOT BE CONSIDERED IN COMPUTING THE FIXTURE'S DISTANCE IN DEVELOPED LENGTH MEASURED HORIZONTALLY FROM THE STACK.

917.8 PROHIBITED LOWER CONNECTIONS.
STACKS GREATER THAN 2 BRANCH INTERVALS IN HEIGHT SHALL NOT RECEIVE THE DISCHARGE OF HORIZONTAL BRANCHES ON THE LOWER TWO FLOORS. THERE SHALL BE NO CONNECTIONS TO THE STACK BETWEEN THE LOWER TWO FLOORS AND A DISTANCE OF NOT LESS THAN 10 PIPE DIAMETERS DOWNSTREAM FROM THE BASE OF THE SINGLE STACK VENTED SYSTEM.

P2801.5 REQUIRED PAN.
WHERE A STORAGE TANK-TYPE WATER HEATER OR A HOT WATER STORAGE TANK IS INSTALLED IN A LOCATION WHERE WATER LEAKAGE FROM THE TANK WILL CAUSE DAMAGE, THE TANK SHALL BE INSTALLED IN A GALVANIZED STEEL PAN HAVING A MATERIAL THICKNESS OF NOT LESS THAN 0.0236 INCH (0.6010 MM) (NO. 24 GAGE), OR OTHER PANS APPROVED FOR SUCH USE. LISTED PANS SHALL COMPLY WITH CSA LC3.

P2801.7 WATER HEATER SEISMIC BRACING.
IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2 AND TOWNHOUSES IN SEISMIC DESIGN CATEGORY C, WATER HEATERS SHALL BE ANCHORED OR STRAPPED IN THE UPPER ONE-THIRD AND IN THE LOWER ONE-THIRD OF THE APPLIANCE TO RESIST A HORIZONTAL FORCE EQUAL TO ONE-THIRD OF THE OPERATING WEIGHT OF THE WATER HEATER, ACTING IN ANY HORIZONTAL DIRECTION, OR IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S RECOMMENDATIONS.

P2705.1 GENERAL.
THE INSTALLATION OF FIXTURES SHALL CONFORM TO THE FOLLOWING:

1. FLOOR-OUTLET OR FLOOR-MOUNTED FIXTURES SHALL BE SECURED TO THE DRAINAGE CONNECTION AND TO THE FLOOR, WHERE SO DESIGNED, BY SCREWS, BOLTS, WASHERS, NUTS AND SIMILAR FASTENERS OF COPPER, BRASS OR OTHER CORROSION-RESISTANT MATERIAL.
2. WALL-HUNG FIXTURES SHALL BE RIGIDLY SUPPORTED SO THAT STRAIN IS NOT TRANSMITTED TO THE PLUMBING SYSTEM.
3. WHERE FIXTURES COME IN CONTACT WITH WALLS AND FLOORS, THE CONTACT AREA SHALL BE WATER TIGHT.
4. PLUMBING FIXTURES SHALL BE USABLE.
5. WATER CLOSETS, LAVATORIES AND BIDETS. A WATER CLOSET, LAVATORY OR BIDET SHALL NOT BE SET CLOSER THAN 15 INCHES (381 MM) FROM ITS CENTER TO ANY SIDE WALL, PARTITION OR VANITY OR CLOSER THAN 30 INCHES (762 MM) CENTER-TO-CENTER BETWEEN ADJACENT FIXTURES. THERE SHALL BE A CLEARANCE OF NOT LESS THAN 21 INCHES (533 MM) IN FRONT OF A WATER CLOSET, LAVATORY OR BIDET TO ANY WALL, FIXTURE OR DOOR.
6. THE LOCATION OF PIPING, FIXTURES OR EQUIPMENT SHALL NOT INTERFERE WITH THE OPERATION OF WINDOWS OR DOORS.
7. IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2(1), PLUMBING FIXTURES SHALL BE LOCATED OR INSTALLED IN ACCORDANCE WITH SECTION R322.1.7.
8. INTEGRAL FIXTURE-FITTING MOUNTING SURFACES ON MANUFACTURED PLUMBING FIXTURES OR PLUMBING FIXTURES CONSTRUCTED ON SITE, SHALL MEET THE DESIGN REQUIREMENTS OF ASME A112.19.2/CSA B45.1 OR ASME A112.19.3/CSA B45.1.

P2709.3 INSTALLATION.
LINING MATERIALS SHALL BE SLOPED ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) TO WEEP HOLES IN THE SUBDRAIN BY MEANS OF A SMOOTH, SOLIDLY FORMED SUBBASE, SHALL BE PROPERLY RECESSED AND FASTENED TO APPROVED BACKING SO AS NOT TO OCCUPY THE SPACE REQUIRED FOR THE WALL COVERING, AND SHALL NOT BE NAILED OR PERFORATED AT ANY POINT LESS THAN 1 INCH (25.4 MM) ABOVE THE FINISHED THRESHOLD.

P3005.1 DRAINAGE FITTINGS AND CONNECTIONS.
CHANGES IN DIRECTION IN DRAINAGE PIPING SHALL BE MADE BY THE APPROPRIATE USE OF SANITARY TEES, WYES, SWEEPS, BENDS OR BY A COMBINATION OF THESE DRAINAGE FITTINGS IN ACCORDANCE WITH TABLE P3005.1. CHANGE IN DIRECTION BY COMBINATION FITTINGS, HEEL OR SIDE INLETS OR INCREASERS SHALL BE INSTALLED IN ACCORDANCE WITH TABLE P3005.1 AND SECTIONS P3005.1.1 THROUGH P3005.1.4. BASED ON THE PATTERN OF FLOW CREATED BY THE FITTING.

TABLE P3005.1 FITTINGS FOR CHANGE IN DIRECTION

TYPE OF FITTING PATTERN	CHANGE IN DIRECTION		
	HORIZONTAL TO VERTICAL[C]	VERTICAL TO HORIZONTAL	HORIZONTAL TO HORIZONTAL
SIXTEENTH BEND	X	X	X
EIGHTH BEND	X	X	X
SIXTH BEND	X	X	X
QUARTER BEND	X	X[A]	X[A]
SHORT SWEEP	X	X[A,B]	X[A]
LONG SWEEP	X	X	X
SANITARY TEE	X	-	-
WYE	X[C]	X	X
COMBINATION WYE AND EIGHTH BEND	X	X	X

FOR SI: 1 INCH = 25.4 MM.
A. THE FITTINGS SHALL ONLY BE PERMITTED FOR A 2-INCH OR SMALLER FIXTURE DRAIN.
B. THREE INCHES AND LARGER.
C. FOR A LIMITATION ON MULTIPLE CONNECTION FITTINGS, SEE SECTION P3005.1.1.

P3005.3 HORIZONTAL DRAINAGE PIPING SLOPE.
HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED IN UNIFORM ALIGNMENT AT UNIFORM SLOPES NOT LESS THAN 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) FOR 21/2 INCH (64 MM) DIAMETER AND LESS, AND NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL (1-PERCENT SLOPE) FOR DIAMETERS OF 3 INCHES (76 MM) OR MORE.

SYMBOLS

- COLD WATER
- HOT WATER
- GATE VALVE
- CHECK VALVE
- BALL VALVE
- PUMP
- CLEANOUT
- BREAK
- HEAT TRAP
- P-TRAP
- SUMP PUMP
- FLOOR DRAIN
- TRANSITION (FLOOR PLAN)
- DOUBLE CHECK VALVE
- DUAL OUTLET SHUTOFF VALVE

PLUMBING ABBREVIATIONS

WFSU	WATER SUPPLY FIXTURE UNITS
DFU	DRAINAGE FIXTURE UNITS
VTR	VENT TO ROOF
DBP	DOMESTIC BOOSTER PUMP
SP	SUMP PUMP
BA	BASIN
DHW	DOMESTIC HOT WATER
PWT	POTABLE WATER TANK
WWT	WASTE WATER TANK
ET	EXPANSION TANK
PM	PLUMBING MANIFOLD
WM	WASHING MACHINE
LAV	LAVATORY
SK	SINK
DW	DISHWASHER
SH	SHOWER
WC	WATER CLOSET

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STEVENS DEPT. OF HEALTH & SAFETY

CLIENT

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2015
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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

PLUMBING SYMBOLS AND NOTES

P-001

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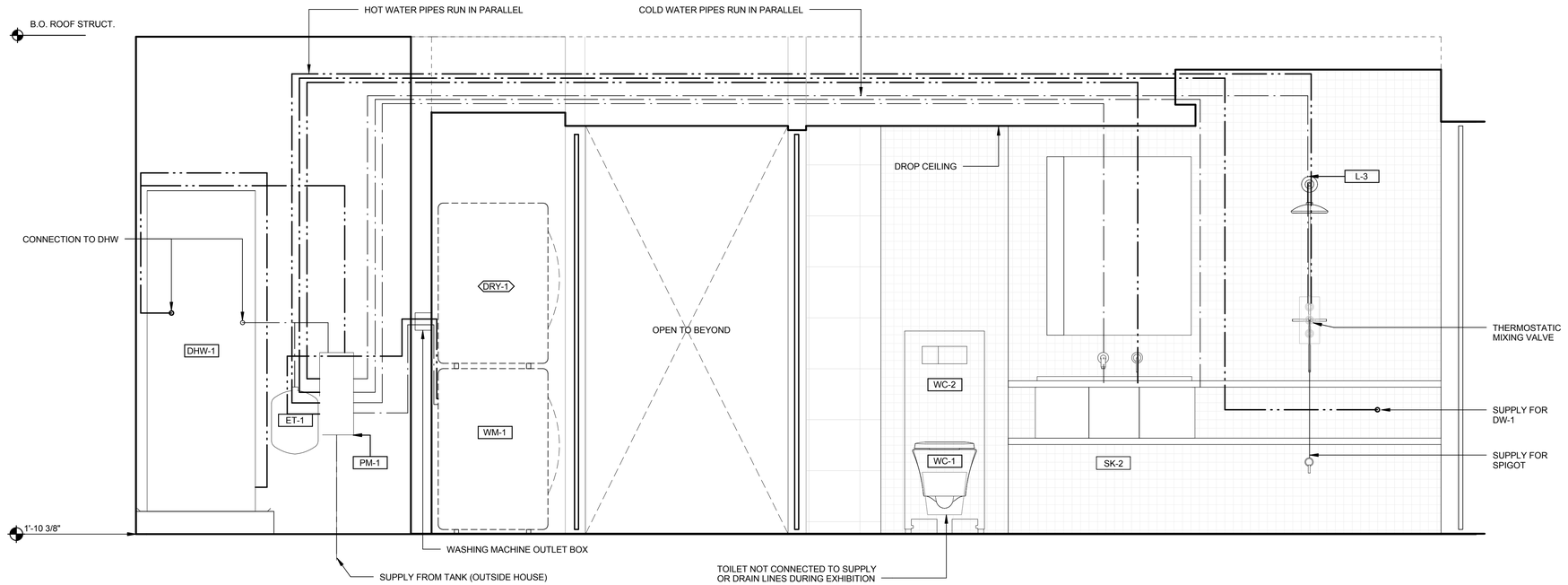
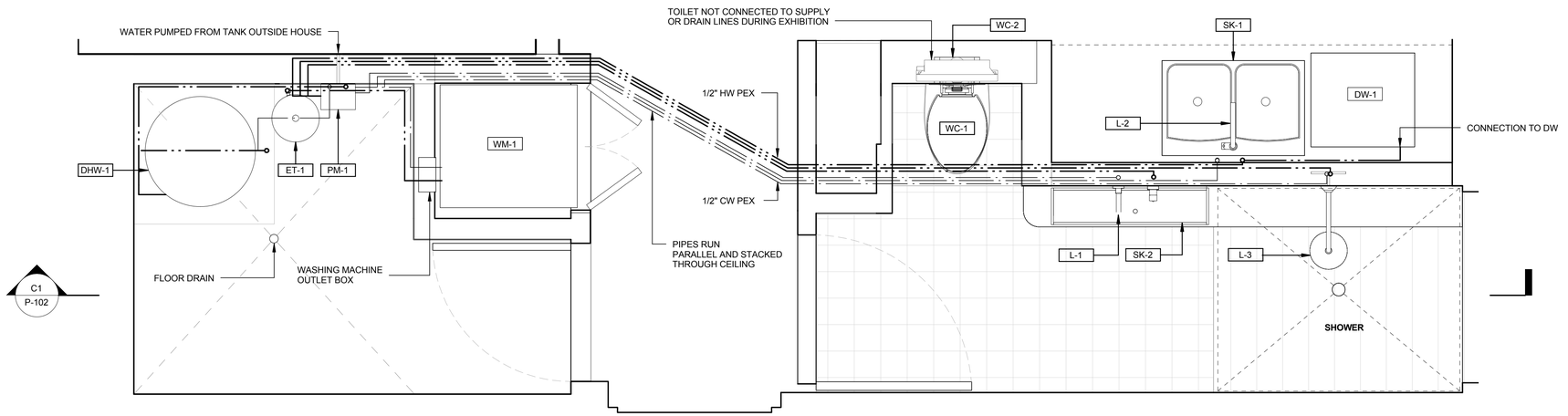


C1 PLUMBING SUPPLY SECTION VIEW

3/4" = 1'-0"

0 2' 4' 6'



A1 DOMESTIC SUPPLY PLAN

3/4" = 1'-0"

0 2' 4' 6'

8/16/2015 6:30:40 PM

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MARK	DATE	DESCRIPTION
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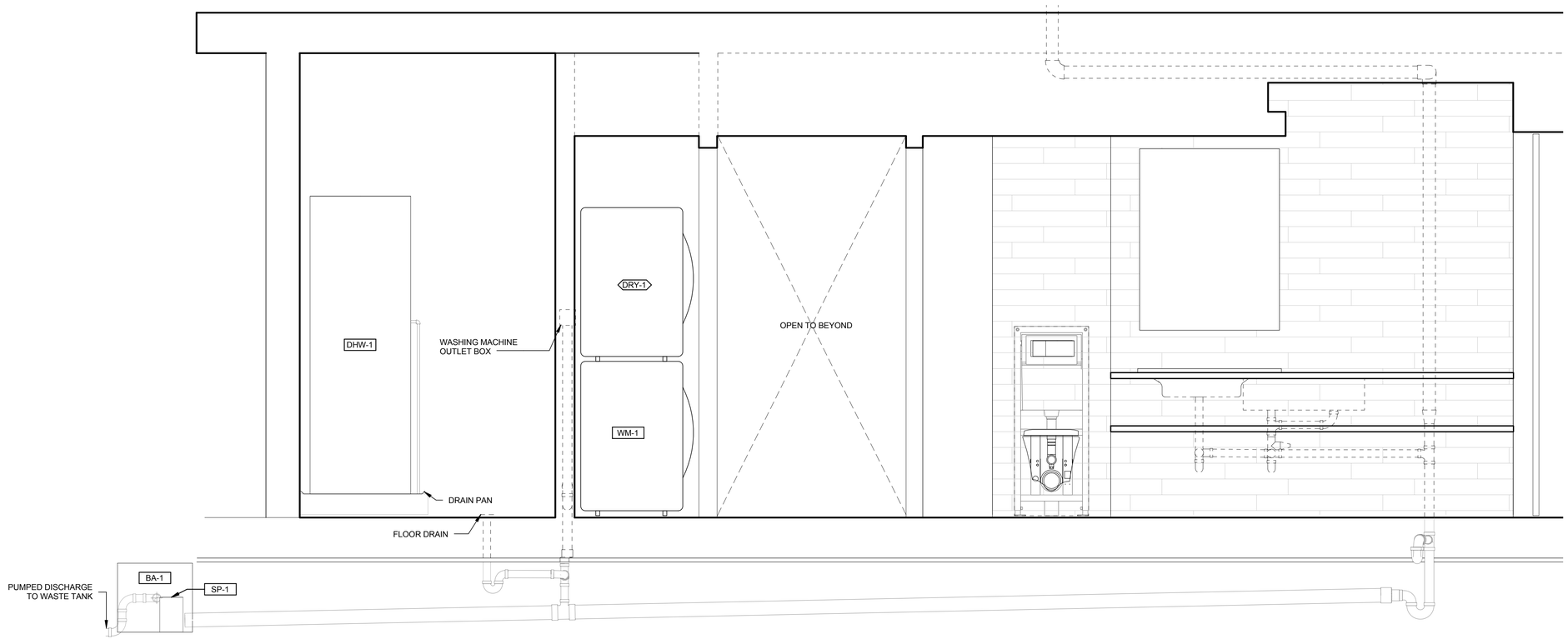
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

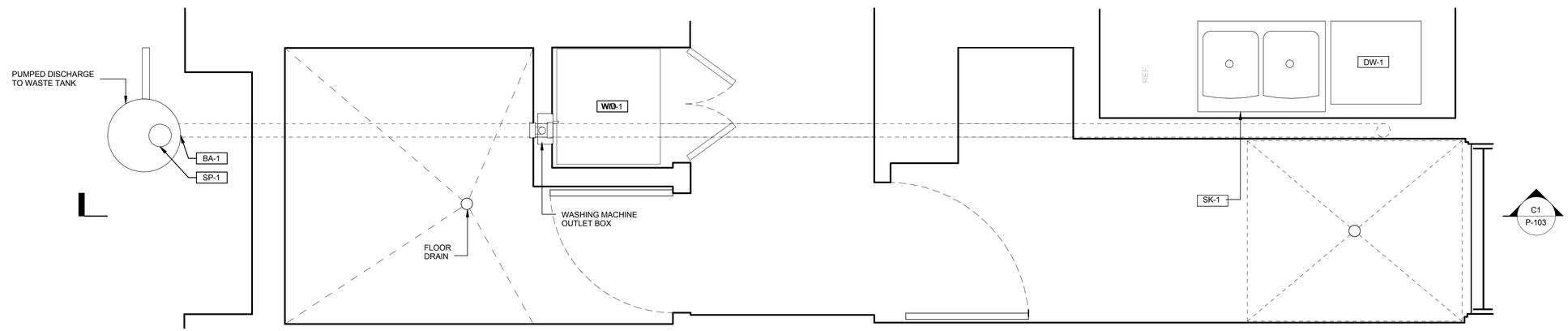
DOMESTIC SUPPLY

P-102



C1 PLUMBING RETURN SECTION VIEW

3/4" = 1'-0"



A1 DOMESTIC RETURN PLAN

3/4" = 1'-0"

0 2' 4' 6'

8/16/2015 6:30:47 PM

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LOT NUMBER: LOT #110

SHEET TITLE

DOMESTIC RETURN

P-103

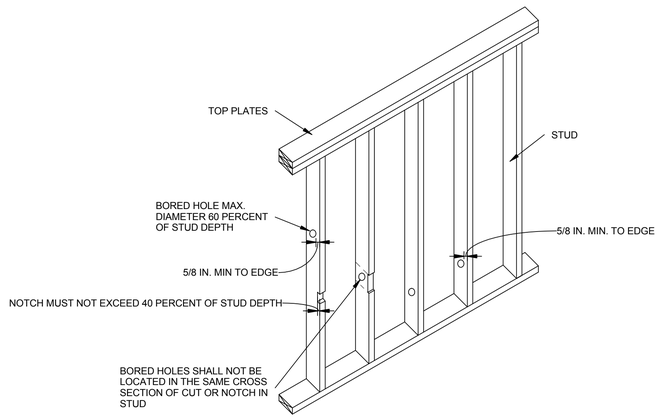
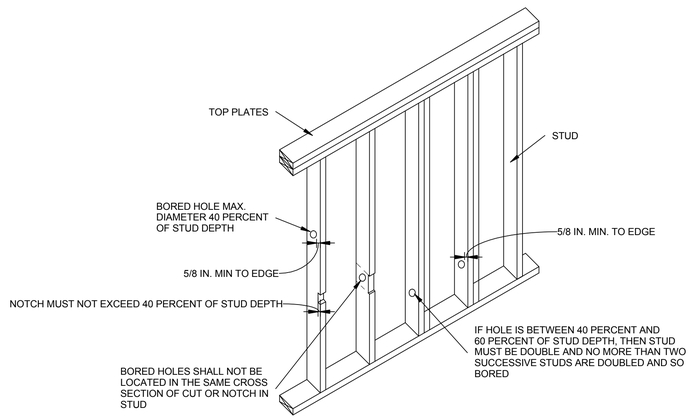


FIGURE R602.6(2) NOTCHING AND BORED HOLE LIMITATIONS FOR INTERIOR WALLS AND NONBEARING WALLS

C1 TYP. PLUMBING FRAMING DETAILS -NONBEARING WALLS

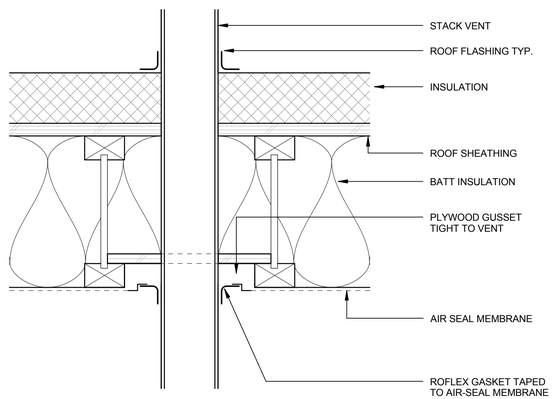
NTS



NOTE: CONDITION FOR EXTERIOR AND BEARING WALLS.
FIGURE R602.6(1) NOTCHING AND BORED HOLE LIMITATIONS FOR EXTERIOR WALLS AND BEARING WALLS

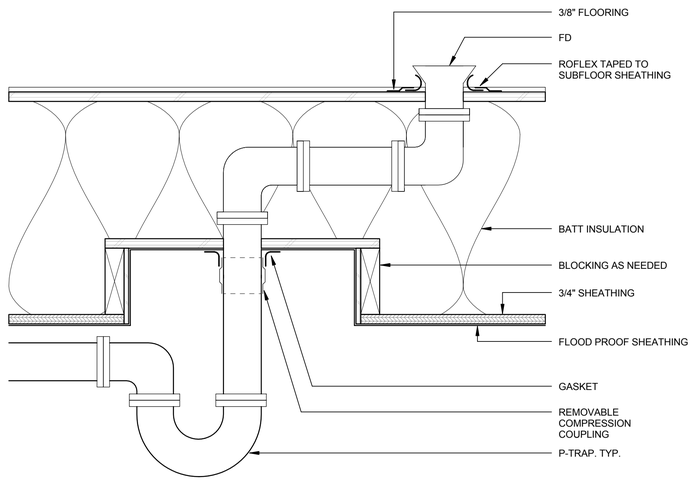
C4 TYP. PLUMBING FRAMING DETAILS - BEARING WALLS

NTS



A1 TYP. VENT ROOF PENETRATION DETAIL

NTS



A4 TYP. FLOOR DRAIN PENETRATION DETAIL

NTS

GENERAL SHEET NOTES:

1. APPLICABLE CODES:

P2603.2 DRILLING AND NOTCHING.
WOOD-FRAMED STRUCTURAL MEMBERS SHALL NOT BE DRILLED, NOTCHED OR ALTERED IN ANY MANNER EXCEPT AS PROVIDED IN SECTIONS R502.8, R602.6, R802.7 AND R802.7.1. HOLES IN LOAD-BEARING MEMBERS OF COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION SHALL BE PERMITTED ONLY IN ACCORDANCE WITH SECTIONS R505.2.5, R603.2.5 AND R804.2.5. IN ACCORDANCE WITH THE PROVISIONS IN SECTIONS R505.3.5, R603.3.4 ANDR804.3.4, CUTTING AND NOTCHING OF FLANGES AND LIPS OF LOAD-BEARING MEMBERS OF COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION SHALL NOT BE PERMITTED. STRUCTURAL INSULATED PANELS (SIPS) SHALL BE DRILLED AND NOTCHED OR ALTERED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R613.7.

P2603.2.1 PROTECTION AGAINST PHYSICAL DAMAGE.
IN CONCEALED LOCATIONS, WHERE PIPING, OTHER THAN CAST-IRON OR GALVANIZED STEEL, IS INSTALLED THROUGH HOLES OR NOTCHES IN STUDS, JOISTS, RAFTERS OR SIMILAR MEMBERS LESS THAN 1-1/2 INCHES FROM THE NEAREST EDGE OF THE MEMBER, THE PIPE SHALL BE PROTECTED BY STEEL SHIELD PLATES. SUCH SHIELD PLATES SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0575 INCH (NO. 16 GAGE). SUCH PLATES SHALL COVER THE AREA OF THE PIPE WHERE THE MEMBER IS NOTCHED OR BORED, AND SHALL EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.

P2603.3 BREAKAGE AND CORROSION.
PIPES PASSING THROUGH CONCRETE OR CINDER WALLS AND FLOORS, COLD-FORMED STEEL FRAMING OR OTHER CORROSIVE MATERIAL SHALL BE PROTECTED AGAINST EXTERNAL CORROSION BY A PROTECTIVE SHEATHING OR WRAPPING OR OTHER MEANS THAT WILL WITHSTAND ANY REACTION FROM LIME AND ACID OF CONCRETE, CINDER OR OTHER CORROSIVE MATERIAL. SHEATHING OR WRAPPING SHALL ALLOW FOR MOVEMENT INCLUDING EXPANSION AND CONTRACTION OF PIPING. THE WALL THICKNESS OF MATERIAL SHALL BE NOT LESS THAN 0.025 INCH.

R602.6 DRILLING AND NOTCHING OF STUDS.
DRILLING AND NOTCHING OF STUDS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

1. NOTCHING. ANY STUD IN AN EXTERIOR WALL OR BEARING PARTITION MAY BE CUT OR NOTCHED TO A DEPTH NOT EXCEEDING 25 PERCENT OF ITS WIDTH. STUDS IN NONBEARING PARTITIONS MAY BE NOTCHED TO A DEPTH NOT TO EXCEED 40 PERCENT OF A SINGLE STUD WIDTH.

2. DRILLING. ANY STUD MAY BE BORED OR DRILLED, PROVIDED THAT THE DIAMETER OF THE RESULTING HOLE IS NO MORE THAN 60 PERCENT OF THE STUD WIDTH, THE EDGE OF THE HOLE IS NO MORE THAN 5/8INCH TO THE EDGE OF THE STUD, AND THE HOLE IS NOT LOCATED IN THE SAME SECTION AS A CUT OR NOTCH. STUDS LOCATED IN EXTERIOR WALLS OR BEARING PARTITIONS DRILLED OVER 40 PERCENT AND UP TO 60 PERCENT SHALL ALSO BE DOUBLED WITH NO MORE THAN TWO SUCCESSIVE DOUBLED STUDS BORED. SEE FIGURES R602.6(1) AND R602.6(2).

EXCEPTION: USE OF APPROVED STUD SHOES IS PERMITTED WHEN THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

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SHEET TITLE

TYPICAL PLUMBING DETAILS

P-501

8/16/2015 6:30:54 PM

PLUMBING FIXTURE SCHEDULE

TYPE MARK	ROOM: NAME	ROOM: NUMBER	DESCRIPTION	MANUFACTURER	MODEL	COUNT	URL	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	DIAMETER (IN)	CSI NUM
BA-1	OUTSIDE	N/A	SUMP PUMP BASIN	JACKEL	SF15	1	HTTP://WWW.JACKELINC.COM/PDF/SF15%20PRODUCT%20SHEET.PDF	N/A	17.5	N/A	19	22 14 29.19
DBP-1	OUTSIDE	N/A	SUPPLY PUMP	DAVEY	BT 14-45	1	HTTP://WWW.DAVEYUSA.COM/PRODUCT_DOCUMENTS/1191001333904_USA022-3K-0607-SC.PDF	7.75	14.54	15.35	N/A	22 11 23
DHW-1	MECH ROOM	101	80 GAL DHW	VAUGHN	S80WHPT3838I	1	HTTP://WWW.VAUGHNCORP.COM/DOWNLOADS/CATALOGS/HEATPUMPBROCHURE.PDF	N/A	73.5	N/A	28.0	22 33 01
DW-1	KITCHEN & LIVING	104	24" BUILT-IN DISHWASHER - CUSTOM PANEL	BLOMBERG	DWT57500FBI	1	HTTP://WWW.PCRICHARD.COM/BLOMBERG/BLOMBERG-24INCH-BUILT-IN-DISHWASHER-CUSTOM-PANEL/DWT57500FBI.PCRP#	23.5	33.8	21.6	N/A	11 48 00
ET-1	MECH ROOM	101	EXPANSION TANK	AMTROL	ST-12	1	HTTP://WWW.AMTROL.COM/MEDIA/SUBMITTAL/P27P40_SUBMITTAL_07_15.PDF	23	33.5	12.6875	N/A	22 12 23.13
L-1	BATHROOM	107	WALL MOUNTED FAUCET	KITCHEN SOURCE	VIG-VG05001BN	1	HTTP://WWW.KITCHENSOURCE.COM/BATHROOM-FAUCETS/VIG-VG05001ARB2.HTM#	5.25	4.38	9	0.88	22 41 39
L-2	KITCHEN & LIVING	104	BLANCO LINUS PULLOUT KITCHEN FAUCET	BLANCO	441197	1	HTTP://WWW.BLANCO-GERMANY.COM/EN_US/EN_US/FAUCETS/PRODUCTCATALOG/DETAIL.HTML?SID=12695866320308FILTER=FALSE&TTYPE=3#COLORS	N/A	11.13	8.63	1.06	22 41 39
L-3	BATHROOM	107	MONITOR SCALD-GUARD TUB & SHOWER TRIM W/ VOLUME CONTROL	DELTA FAUCET	T17455	1	HTTP://WWW.BEDBATHANDBEYOND.COM/STORE/PRODUCT/DELTA-REG-RAIN-CAN-SHOWERHEAD-WITH-ARM-IN-CHROME/1042904526	N/A	N/A	N/A	N/A	22 41 00
PM-1	MECH ROOM	101	PLUMBING MANIFOLD	VIEGA	36142	1	HTTP://WWW.SUPPLYHOUSE.COM/VIEGA-36142-3-8-14-PORT-COMPRESSION-MANABLOC-6-HOT-8-COLD-ZERO-LEAD	8	15.94	3	N/A	22 11 13
PWT-1	OUTSIDE	N/A	1000G SUPPLY WATER TANK	HUSKY PORTABLE CONTAINMENT	CUSTOM	1	HTTP://WWW.HUSKYPORTABLE.COM/BLADDER-TANKS_ID46.HTML	84	24	120	4	22 12 00
PWT-2	OUTSIDE	N/A	PRESSURE TANK	AMTROL	WX-202H	1	HTTP://WWW.SUPPLYHOUSE.COM/AMTROL-WX-202H-WX-202H-144S236-20-GAL-WELL-X-TROL-WELL-TANK-SPACE-SAVER	30	16	15	1	22 12 23.13
SBP-1	OUTSIDE	N/A	FIRE SUPPRESSION PUMP	LEGEND 13-D	STANDARD	1	HTTP://WWW.13DPUMPS.COM/LEGEND_13D_STANDARD.HTML	10	24	18	N/A	21 30 00
SK-1	KITCHEN & LIVING	104	DIAMOND EQUAL DOUBLE BOWL	BLANCO	440220	1	HTTP://WWW.BLANCO-GERMANY.COM/EN_US/EN_US/SINKS/PRODUCT_CATALOG/SINK.HTML?SID=12687782999458FILTER=TRUE#PROS	33	9.5	22	N/A	22 41 16.16
SK-2	BATHROOM	107	LG HIMAC SINK	PRECISION CUSTOM COUNTER	CUSTOM	1	HTTP://WWW.CCBP.NET/INDEX.HTML	101.56	15	9.5	N/A	22 40 00
SP-1	OUTSIDE	N/A	SUMP PUMP	GRUNDFOS	KP 150	1	HTTPS://US.GRUNDFOS.COM/PRODUCTS/FIND-PRODUCT/UNILIFT-KP.HTML#OVERVIEW	N/A	8.86	N/A	5.87	22 14 29
WC-1	BATHROOM	107	DUAL-FLUSH WALL-HUNG TOILET	KOHLER	VEIL	1	HTTP://WWW.US.KOHLER.COM/US/VEIL%E2%84%A2-ONE-PIECE-ELONGATED-DUAL-FLUSH-WALL-HUNG-TOILET/PRODUCTDETAIL/STYLES-OF-TOILETS/927331.HTM	15.13	13	21	N/A	22 41 16
WC-2	BATHROOM	107	IN-WALL TANK AND CARRIER SYSTEM	KOHLER	K-6284	1	HTTP://WWW.US.KOHLER.COM/WEBASSETS/KPNA/CATALOG/PDF/EN/K-6284_SPEC.PDF	18.81	47	5	N/A	10 28 13
WM-1	LAUNDRY	106	WASHING MACHINE	LG	WM4070HWA	1	HTTP://WWW.LG.COM/US/WASHERS/LG-WM4070HWA-TURBOWASH-WASHER	27	38.69	29.75	N/A	11 30 13.23
WWT-1	OUTSIDE	N/A	400G WASTE WATER TANK	HUSKY PORTABLE CONTAINMENT	CUSTOM	1	HTTP://WWW.HUSKYPORTABLE.COM/BLADDER-TANKS_ID46.HTML	84	17	72	4	22 12 00

GENERAL SHEET NOTES:

1. APPLICABLE CODES:

   P2903.2 MAXIMUM FLOW AND WATER CONSUMPTION.
   THE MAXIMUM WATER CONSUMPTION FLOW RATES AND QUANTITIES FOR ALL PLUMBING FIXTURES AND FIXTURE FITTINGS SHALL BE IN ACCORDANCE WITH TABLE P2903.2.

PLUMBING FIXTURE OR FITTING FIXTURE	PLUMBING FIXTURE OR FITTING FIXTURE
LAVATORY FAUCET	2.2 GPM AT 60 PSI
SHOWER HEAD	2.5 GPM AT 80 PSI
SINK FAUCET	2.2 GPM AT 60 PSI
WATER CLOSET	1.6 GALLONS PER FLUSHING CYCLE

2. FOR SI: 1 GALLON PER MINUTE = 3.785 L/M, 1 POUND PER SQUARE INCH = 6.895 KPA.

   A. A HANDHELD SHOWER SPRAY IS ALSO A SHOWER HEAD.

   B. CONSUMPTION TOLERANCES SHALL BE DETERMINED FROM REFERENCED STANDARDS.

3. FOR 400 G WASTE WATER TANK AND 1000 G SUPPLY WATER TANK: 4 INCH DIAMETER REFERS TO DIAMETER OF FILLING AND EMPTYING PORTS ON TOPS OF TANKS.

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LOT NUMBER: LOT #110

SHEET TITLE

PLUMBING SCHEDULES

P-601

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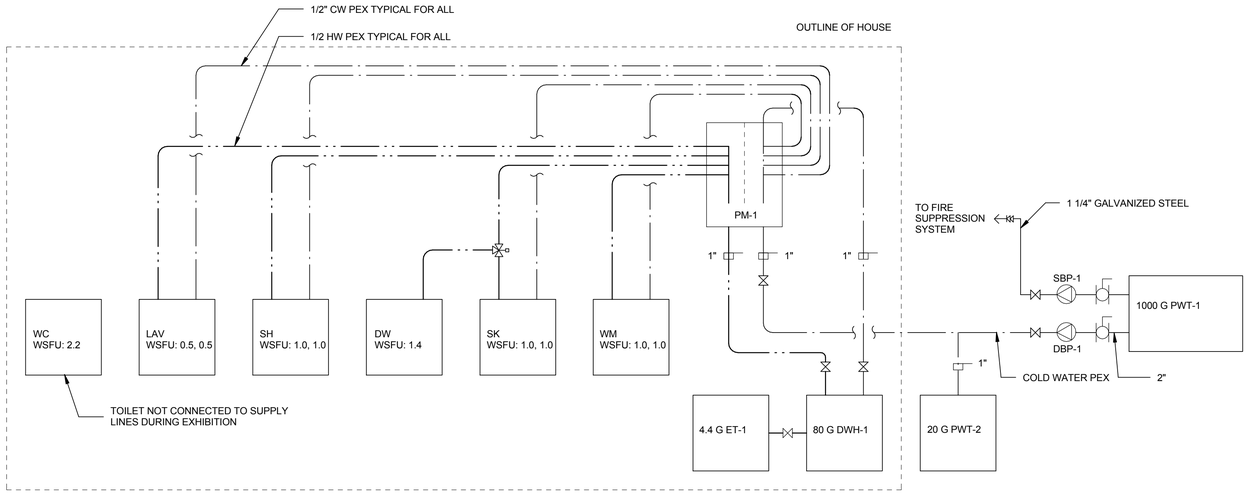
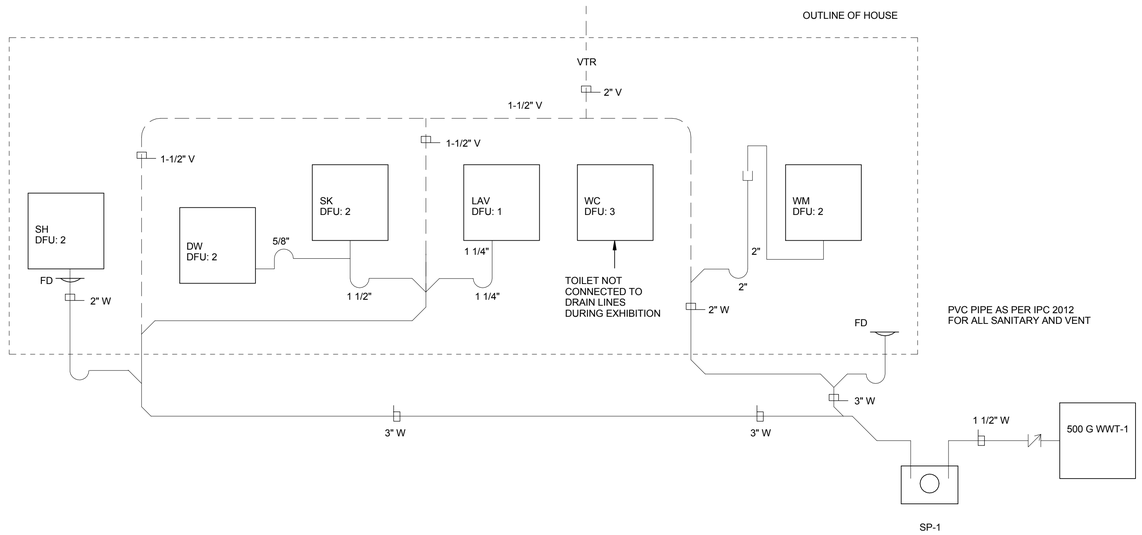


C1 DOMESTIC WATER SUPPLY RISER DIAGRAM

NPT



A1 WASTE AND VENT RISER DIAGRAM

NPT

GENERAL SHEET NOTES:

P2717.3 SINK, DISHWASHER AND FOOD GRINDER.
THE COMBINED DISCHARGE FROM A SINK, DISHWASHER, AND WASTE GRINDER IS PERMITTED TO DISCHARGE THROUGH A SINGLE 11/2-INCH (38 MM) TRAP. THE DISCHARGE PIPE FROM THE DISHWASHER SHALL BE INCREASED TO NOT LESS THAN 3/4 INCH (19 MM) IN DIAMETER AND SHALL CONNECT WITH A WYE FITTING BETWEEN THE DISCHARGE OF THE FOOD-WASTE GRINDER AND THE TRAP INLET OR TO THE HEAD OF THE FOOD GRINDER. THE DISHWASHER WASTE LINE SHALL RISE AND BE SECURELY FASTENED TO THE UNDERSIDE OF THE COUNTER BEFORE CONNECTING TO THE SINK TAIL PIECE OR THE FOOD GRINDER.

P2903.9.1 SERVICE VALVE.
EACH DWELLING UNIT SHALL BE PROVIDED WITH AN ACCESSIBLE MAIN SHUTOFF VALVE NEAR THE ENTRANCE OF THE WATER SERVICE. THE VALVE SHALL BE OF A FULL-OPEN TYPE HAVING NOMINAL RESTRICTION TO FLOW, WITH PROVISION FOR DRAINAGE SUCH AS A BLEED ORIFICE OR INSTALLATION OF A SEPARATE DRAIN VALVE. ADDITIONALLY, THE WATER SERVICE SHALL BE VALVED AT THE CURB OR LOT LINE IN ACCORDANCE WITH LOCAL REQUIREMENTS.

P2903.9.2 WATER HEATER VALVE.
A READILY ACCESSIBLE FULL-OPEN VALVE SHALL BE INSTALLED IN THE COLD-WATER SUPPLY PIPE TO EACH WATER HEATER AT OR NEAR THE WATER HEATER.

P2903.9.3 FIXTURE VALVES AND ACCESS.
VALVES SERVING INDIVIDUAL FIXTURES, APPLIANCES, RISERS AND BRANCHES SHALL BE PROVIDED WITH ACCESS. AN INDIVIDUAL SHUTOFF VALVE SHALL BE REQUIRED ON THE FIXTURE SUPPLY PIPE TO EACH PLUMBING FIXTURE OTHER THAN BATHTUBS AND SHOWERS.

P3114.3 WHERE PERMITTED.
INDIVIDUAL VENTS, BRANCH VENTS, CIRCUIT VENTS AND STACK VENTS SHALL BE PERMITTED TO TERMINATE WITH A CONNECTION TO AN AIR ADMITTANCE VALVE. INDIVIDUAL AND BRANCH TYPE AIR ADMITTANCE VALVES SHALL VENT ONLY FIXTURES THAT ARE ON THE SAME FLOOR LEVEL AND CONNECT TO A HORIZONTAL BRANCH DRAIN.

P3114.4 LOCATION.
INDIVIDUAL AND BRANCH AIR ADMITTANCE VALVES SHALL BE LOCATED NOT LESS THAN 4 INCHES (102 MM) ABOVE THE HORIZONTAL BRANCH DRAIN OR FIXTURE DRAIN BEING VENTED. STACK-TYPE AIR ADMITTANCE VALVES SHALL BE LOCATED NOT LESS THAN 6 INCHES (152 MM) ABOVE THE FLOOD LEVEL RIM OF THE HIGHEST FIXTURE BEING VENTED. THE AIR ADMITTANCE VALVE SHALL BE LOCATED WITHIN THE MAXIMUM DEVELOPED LENGTH PERMITTED FOR THE VENT. THE AIR ADMITTANCE VALVE SHALL BE INSTALLED NOT LESS THAN 6 INCHES (152 MM) ABOVE INSULATION MATERIALS WHERE INSTALLED IN ATTICS.

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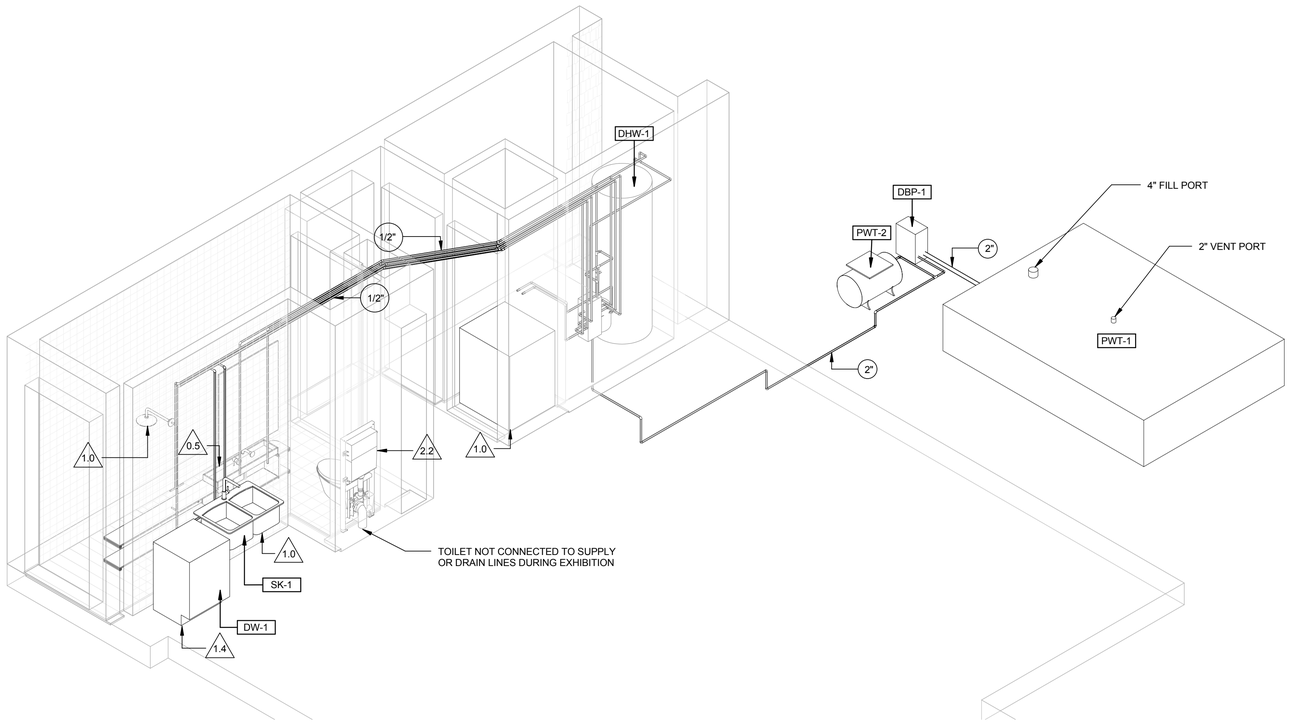
SHEET TITLE

DOMESTIC SUPPLY AND RETURN DIAGRAMS

P-602



A1 PLUMBING SUPPLY ISOMETRIC

LEGEND

- COLD WATER
- HOT WATER
- (#) SIZE (IN.)
- △ # WSFU

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LOT NUMBER:	LOT #110
COPYRIGHT:	NONE: PROJECT IS PUBLIC DOMAIN

SHEET TITLE

SUPPLY ISOMETRICS

P-901

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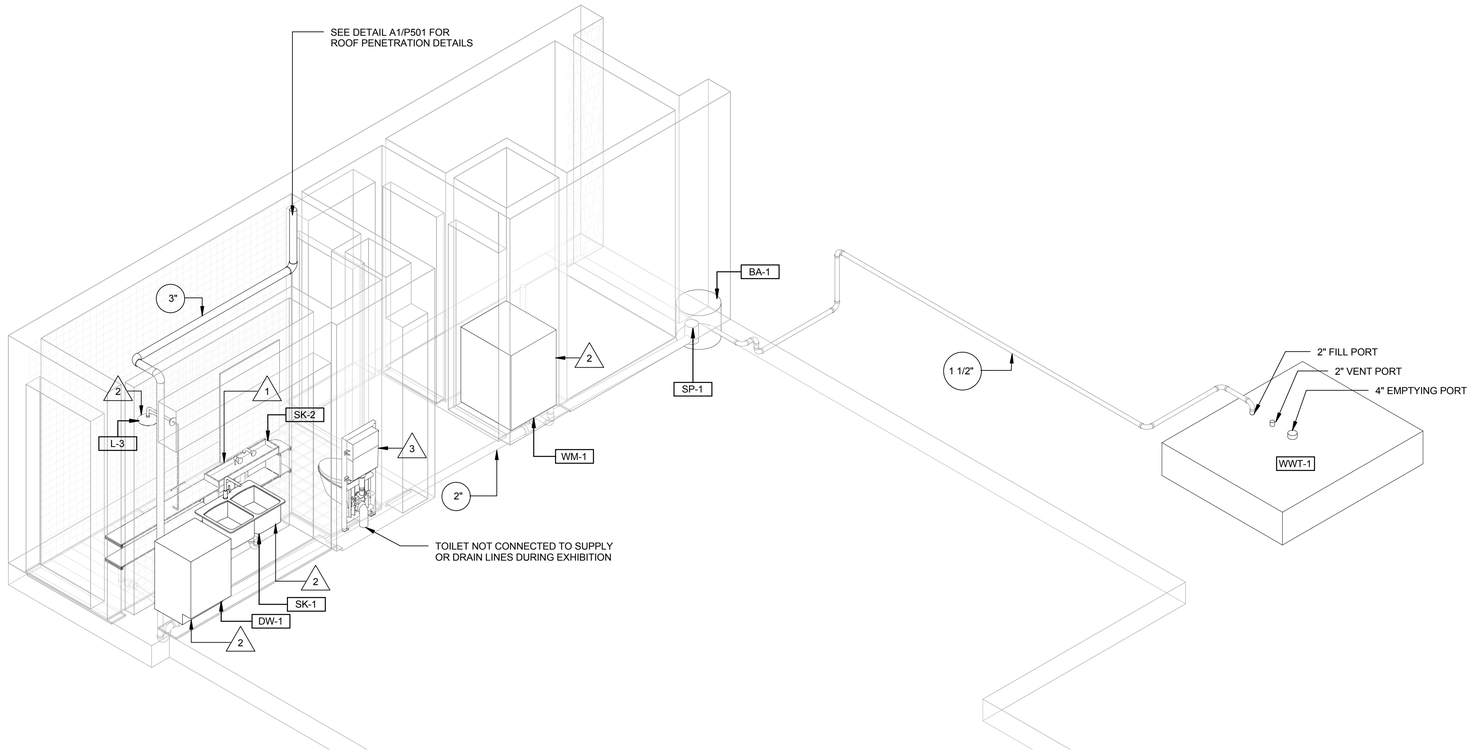

A1 PLUMBING RETURN ISOMETRIC

LEGEND

(#) SIZE (IN.)

△ # DFU

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LOT NUMBER: LOT #110

SHEET TITLE

RETURN
ISOMETRICS

P-902

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MECH SYMBOLS

DUCTWORK

INSULATED DUCTWORK

UNINSULATED FLEX DUCTWORK (COMFOTUBE)

INSULATED FLEX DUCTWORK

AUTOMATIC DAMPER (ELECTRIC)

CEILING DIFFUSER

CEILING RETURN

PLENUM BOX

LINEAR SLOT DIFFUSER/REGISTER

TRANSFER GRILLE

MECH ABBREVIATIONS

ACCU	AIR COOLED CONDENSING UNIT
AHU	AIR HANDLING UNIT
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
ER	EXHAUST REGISTER
EG	EXHAUST GRILLE
ERV	ENERGY RECOVERY VENTILATOR
LD	LINEAR DIFFUSER
OA	OUTSIDE AIR
RA	RECIRCULATED AIR
RG	RETURN GRILLE
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
SG	SUPPLY GRILLE
SR	SUPPLY REGISTER
ZK	ZONING KIT

BUILDING CODE & MECHANICAL NOTES

1. **SECTION R106.1.1**
INFORMATION ON CONSTRUCTION DOCUMENTS

CONSTRUCTION DOCUMENTS SHALL BE DRAWN UPON SUITABLE MATERIAL. ELECTRONIC MEDIA DOCUMENTS ARE PERMITTED TO BE SUBMITTED WHEN APPROVED BY THE BUILDING OFFICIAL. CONSTRUCTION DOCUMENTS SHALL BE OF SUFFICIENT CLARITY TO INDICATE THE LOCATION, NATURE AND EXTENT OF THE WORK PROPOSED AND SHOW IN DETAIL THAT IT WILL CONFORM TO THE PROVISIONS OF THIS CODE AND RELEVANT LAWS, ORDINANCES, RULES AND REGULATIONS, AS DETERMINED BY THE BUILDING OFFICIAL. WHERE REQUIRED BY THE BUILDING OFFICIAL, ALL BRACED WALL LINES, SHALL BE IDENTIFIED ON THE CONSTRUCTION DOCUMENTS AND ALL PERTINENT INFORMATION INCLUDING, BUT NOT LIMITED TO, BRACING METHODS, LOCATION AND LENGTH OF BRACED WALL PANELS, FOUNDATION REQUIREMENTS OF BRACED WALL PANELS AT TOP AND BOTTOM SHALL BE PROVIDED.

2. **SECTION M1307**
APPLIANCE INSTALLATION

M1307.1 GENERAL.
INSTALLATION OF APPLIANCES SHALL CONFORM TO THE CONDITIONS OF THEIR LISTING AND LABEL AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE MANUFACTURER'S OPERATING AND INSTALLATION INSTRUCTIONS SHALL REMAIN ATTACHED TO THE APPLIANCE.

M1307.2 ANCHORAGE OF APPLIANCES.
APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE FASTENED OR ANCHORED IN AN APPROVED MANNER. IN SEISMIC DESIGN CATEGORIES D1 AND D2, WATER HEATERS SHALL BE ANCHORED OR STRAPPED TO RESIST HORIZONTAL DISPLACEMENT CAUSED BY EARTHQUAKE MOTION. STRAPPING SHALL BE AT POINTS WITHIN THE UPPER ONE-THIRD AND LOWER ONE-THIRD OF THE APPLIANCE'S VERTICAL DIMENSIONS. AT THE LOWER POINT, THE STRAPPING SHALL MAINTAIN A MINIMUM DISTANCE OF 4 INCHES ABOVE THE CONTROLS.

M1307.5 ELECTRICAL APPLIANCES.
ELECTRICAL APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH CHAPTERS 14, 15, 19, 20 AND 34 THROUGH 43 OF THIS CODE.

M1307.6 PLUMBING CONNECTIONS.
POTABLE WATER AND DRAINAGE SYSTEM CONNECTIONS TO EQUIPMENT AND APPLIANCES REGULATED BY THIS CODE SHALL BE IN ACCORDANCE WITH CHAPTERS 29 AND 30.

3. **SECTION M1308**
MECHANICAL SYSTEMS INSTALLATION

M1308.1 DRILLING AND NOTCHING.
WOOD-FRAMED STRUCTURAL MEMBERS SHALL BE DRILLED, NOTCHED OR ALTERED IN ACCORDANCE WITH THE PROVISIONS OF SECTIONS R502.8, R602.6, R602.6.1 AND R802.7. HOLES IN LOAD-BEARING MEMBERS OF COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION SHALL BE PERMITTED ONLY IN ACCORDANCE WITH SECTIONS R505.2.5, R603.2.5 AND R804.2.5. IN ACCORDANCE WITH THE PROVISIONS OF SECTIONS R505.3.5, R603.3.4 AND R804.3.4, CUTTING AND NOTCHING OF FLANGES AND LIPS OF LOAD-BEARING MEMBERS OF COLD-FORMED STEEL LIGHT FRAME CONSTRUCTION SHALL NOT BE PERMITTED. STRUCTURAL INSULATED PANELS (SIPS) SHALL BE DRILLED AND NOTCHED OR ALTERED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R613.7.

M1308.2 PROTECTION AGAINST PHYSICAL DAMAGE.
IN CONCEALED LOCATIONS WHERE PIPING, OTHER THAN CAST-IRON OR GALVANIZED STEEL, IS INSTALLED THROUGH HOLES OR NOTCHES IN STUDS, JOISTS, RAFTERS OR SIMILAR MEMBERS LESS THAN 1.5 INCHES FROM THE NEAREST EDGE OF THE MEMBER, THE PIPE SHALL BE PROTECTED BY SHIELD PLATES. PROTECTIVE STEEL SHIELD PLATES HAVING A MINIMUM THICKNESS OF 0.0575-INCH, SHALL COVER THE AREA OF THE PIPE WHERE THE MEMBER IS NOTCHED OR BORED, AND SHALL EXTEND A MINIMUM OF 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.

4. **SECTION M1401**
GENERAL

M1401.1 INSTALLATION.
HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THE REQUIREMENTS OF THIS CODE.

M1401.2 ACCESS.
HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE LOCATED WITH RESPECT TO BUILDING CONSTRUCTION AND OTHER EQUIPMENT AND APPLIANCES TO PERMIT MAINTENANCE, SERVICING AND REPLACEMENT. CLEARANCES SHALL BE MAINTAINED TO PERMIT CLEANING OF HEATING AND COOLING SURFACES; REPLACEMENT OF FILTERS, BLOWERS, MOTORS, CONTROLS AND VENT CONNECTIONS; LUBRICATION OF MOVING PARTS; AND ADJUSTMENTS.

EXCEPTION: ACCESS SHALL NOT BE REQUIRED FOR DUCTS, PIPING, OR OTHER COMPONENTS APPROVED FOR CONCEALMENT.

M1401.3 SIZING.
HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE SIZED IN ACCORDANCE WITH ACCA MANUAL S BASED ON BUILDING LOADS CALCULATED IN ACCORDANCE WITH ACCA MANUAL J OR OTHER APPROVED HEATING AND COOLING CALCULATION METHODOLOGIES.

M1401.4 EXTERIOR INSTALLATIONS.
EQUIPMENT AND APPLIANCES INSTALLED OUTDOORS SHALL BE LISTED AND LABELED FOR OUTDOOR INSTALLATION. SUPPORTS AND FOUNDATIONS SHALL PREVENT EXCESSIVE VIBRATION, SETTLEMENT OR MOVEMENT OF THE EQUIPMENT. SUPPORTS AND FOUNDATIONS SHALL BE IN ACCORDANCE WITH SECTION M1305.1.4.1.

M1401.5 FLOOD HAZARD.
IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2(1), HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE LOCATED OR INSTALLED IN ACCORDANCE WITH SECTION R322.1.6.

5. **SECTION M1403**
HEAT PUMP EQUIPMENT

M1403.1 HEAT PUMPS.
THE MINIMUM UNOBSTRUCTED TOTAL AREA OF THE OUTSIDE AND RETURN AIR DUCTS OR OPENINGS TO A HEAT PUMP SHALL BE NOT LESS THAN 6 SQUARE INCHES PER 1,000 BTU/H OUTPUT RATING OR AS INDICATED BY THE CONDITIONS OF THE LISTING OF THE HEAT PUMP. ELECTRIC HEAT PUMPS SHALL CONFORM TO UL 1995.

M1403.2 FOUNDATIONS AND SUPPORTS.
SUPPORTS AND FOUNDATIONS FOR THE OUTDOOR UNIT OF A HEAT PUMP SHALL BE RAISED AT LEAST 3 INCHES ABOVE THE GROUND TO PERMIT FREE DRAINAGE OF DEFROST WATER, AND SHALL CONFORM TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

6. **SECTION M1411**
HEATING AND COOLING EQUIPMENT

M1411.1 APPROVED REFRIGERANTS.
REFRIGERANTS USED IN DIRECT REFRIGERATING SYSTEMS SHALL CONFORM TO THE APPLICABLE PROVISIONS OF ANSI/ASHRAE 34.

M1411.3 CONDENSATE DISPOSAL.
CONDENSATE FROM ALL COOLING COILS OR EVAPORATORS SHALL BE CONVEYED FROM THE DRAIN PAN OUTLET TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL (1-PERCENT SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS WHERE IT WOULD CAUSE A NUISANCE.

M1411.3.1 AUXILIARY AND SECONDARY DRAIN SYSTEMS.
IN ADDITION TO THE REQUIREMENTS OF SECTION M1411.3, A SECONDARY DRAIN OR AUXILIARY DRAIN PAN SHALL BE REQUIRED FOR EACH COOLING OR EVAPORATOR COIL WHERE DAMAGE TO ANY BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW FROM THE EQUIPMENT DRAIN PAN OR STOPPAGE IN THE CONDENSATE DRAIN PIPING. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL (1-PERCENT SLOPE). DRAIN PIPING SHALL BE A MINIMUM OF 3/4-INCH NOMINAL PIPE SIZE. ONE OF THE FOLLOWING METHODS SHALL BE USED:

1. AN AUXILIARY DRAIN PAN WITH A SEPARATE DRAIN SHALL BE INSTALLED UNDER THE COILS ON WHICH CONDENSATION WILL OCCUR. THE AUXILIARY PAN DRAIN SHALL DISCHARGE TO A CONSPICUOUS POINT OF DISPOSAL TO ALERT OCCUPANTS IN THE EVENT OF A STOPPAGE OF THE PRIMARY DRAIN. THE PAN SHALL HAVE A MINIMUM DEPTH OF 1.5 INCHES (38 MM), SHALL NOT BE LESS THAN 3 INCHES LARGER THAN THE UNIT OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIAL. GALVANIZED SHEET STEEL PANS SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN 0.0236-INCH (NO. 24 GAGE). NONMETALLIC PANS SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN 0.0625 INCH.

2. A SEPARATE OVERFLOW DRAIN LINE SHALL BE CONNECTED TO THE DRAIN PAN INSTALLED WITH THE EQUIPMENT. THIS OVERFLOW DRAIN SHALL DISCHARGE TO A CONSPICUOUS POINT OF DISPOSAL TO ALERT OCCUPANTS IN THE EVENT OF A STOPPAGE OF THE PRIMARY DRAIN. THE OVERFLOW DRAIN LINE SHALL CONNECT TO THE DRAIN PAN AT A HIGHER LEVEL THAN THE PRIMARY DRAIN CONNECTION.

3. AN AUXILIARY DRAIN PAN WITHOUT A SEPARATE DRAIN LINE SHALL BE INSTALLED UNDER THE COILS ON WHICH CONDENSATION WILL OCCUR. THIS PAN SHALL BE EQUIPPED WITH A WATER LEVEL DETECTION DEVICE CONFORMING TO UL 508 THAT WILL SHUT OFF THE EQUIPMENT SERVED PRIOR TO OVERFLOW OF THE PAN. THE PAN SHALL BE EQUIPPED WITH A FITTING TO ALLOW FOR DRAINAGE. THE AUXILIARY DRAIN PAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 1 OF THIS SECTION.

4. A WATER LEVEL DETECTION DEVICE CONFORMING TO UL 508 SHALL BE INSTALLED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE OR THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.

M1411.3.1.1 WATER-LEVEL MONITORING DEVICES.
ON DOWN-FLOW UNITS AND ALL OTHER COILS THAT HAVE NO SECONDARY DRAIN OR PROVISIONS TO INSTALL A SECONDARY OR AUXILIARY DRAIN PAN, A WATER-LEVEL MONITORING DEVICE SHALL BE INSTALLED INSIDE THE PRIMARY DRAIN PAN. THIS DEVICE SHALL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN BECOMES RESTRICTED. DEVICES SHALL NOT BE INSTALLED IN THE DRAIN LINE.

M1411.3.2 DRAIN PIPE MATERIALS AND SIZES.
COMPONENTS OF THE CONDENSATE DISPOSAL SYSTEM SHALL BE CAST IRON, GALVANIZED STEEL, COPPER, POLYBUTYLENE, POLYETHYLENE, ABS, CPVC OR PVC PIPE OR TUBING. ALL COMPONENTS SHALL BE SELECTED FOR THE PRESSURE AND TEMPERATURE RATING OF THE INSTALLATION. JOINTS AND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE MATERIALS SPECIFIED IN CHAPTER 30. CONDENSATE WASTE AND DRAIN LINE SIZE SHALL BE NOT LESS THAN 3/4-INCH (19 MM) INTERNAL DIAMETER AND SHALL NOT DECREASE IN SIZE FROM THE DRAIN PAN CONNECTION TO THE PLACE OF CONDENSATE DISPOSAL. WHERE THE DRAIN PIPES FROM MORE THAN ONE UNIT ARE MANIFOLDED TOGETHER FOR CONDENSATE DRAINAGE, THE PIPE OR TUBING SHALL BE SIZED IN ACCORDANCE WITH AN APPROVED METHOD.

M1411.3.3 APPLIANCES, EQUIPMENT AND INSULATION IN PANS.
WHERE APPLIANCES, EQUIPMENT OR INSULATION ARE SUBJECT TO WATER DAMAGE WHEN AUXILIARY DRAIN PANS FILL, THOSE PORTIONS OF THE APPLIANCES, EQUIPMENT AND INSULATION SHALL BE INSTALLED ABOVE THE FLOOD LEVEL RIM OF THE PAN. SUPPORTS LOCATED INSIDE OF THE PAN TO SUPPORT THE APPLIANCE OR EQUIPMENT SHALL BE WATER RESISTANT AND APPROVED.

M1411.4 AUXILIARY DRAIN PAN.
CATEGORY IV CONDENSING APPLIANCES SHALL HAVE AN AUXILIARY DRAIN PAN WHERE DAMAGE TO ANY BUILDING COMPONENT WILL OCCUR AS A RESULT OF STOPPAGE IN THE CONDENSATE DRAINAGE SYSTEM. THESE PANS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF SECTION M1411.3.

EXCEPTION: FUEL-FIRED APPLIANCES THAT AUTOMATICALLY SHUT DOWN OPERATION IN THE EVENT OF A STOPPAGE IN THE CONDENSATE DRAINAGE SYSTEM.

M1411.5 INSULATION OF REFRIGERANT PIPING.
PIPING AND FITTINGS FOR REFRIGERANT VAPOR (SUCTION) LINES SHALL BE INSULATED WITH INSULATION HAVING A THERMAL RESISTIVITY OF AT LEAST R-4 AND HAVING EXTERNAL SURFACE PERMEANCE NOT EXCEEDING 0.05 PERM WHEN TESTED IN ACCORDANCE WITH ASTM E 96.

M1411.6 LOCKING ACCESS PORT CAPS.
REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS SHALL BE FITTED WITH LOCKING-TYPE TAMPER-RESISTANT CAPS OR SHALL BE OTHERWISE SECURED TO PREVENT UNAUTHORIZED ACCESS.

7. **SECTION M1503**
RANGE HOODS

M1503.1 GENERAL.
RANGE HOODS SHALL DISCHARGE TO THE OUTDOORS THROUGH A SINGLE-WALL DUCT. THE DUCT SERVING THE HOOD SHALL HAVE A SMOOTH INTERIOR SURFACE, SHALL BE AIR TIGHT, SHALL BE EQUIPPED WITH A BACK-DRAFT DAMPER, AND SHALL BE INDEPENDENT OF ALL OTHER EXHAUST SYSTEMS. DUCTS SERVING RANGE HOODS SHALL NOT TERMINATE IN AN ATTIC OR CRAWL SPACE OR AREAS INSIDE THE BUILDING.

EXCEPTION: WHERE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND WHERE MECHANICAL OR NATURAL VENTILATION IS OTHERWISE PROVIDED, LISTED AND LABELED DUCTLESS RANGE HOODS SHALL NOT BE REQUIRED TO DISCHARGE TO THE OUTDOORS.

8. **SECTION M1506**
EXHAUST DUCTS AND EXHAUST OPENINGS

M1506.1 DUCTS.
WHERE EXHAUST DUCT CONSTRUCTION IS NOT SPECIFIED IN THIS CHAPTER, CONSTRUCTION SHALL COMPLY WITH CHAPTER 16.

M1506.2 EXHAUST OPENINGS.
AIR EXHAUST OPENINGS SHALL TERMINATE NOT LESS THAN 3 FEET FROM PROPERTY LINES; 3 FEET FROM OPERABLE AND NONOPERABLE OPENINGS INTO THE BUILDING AND 10 FEET FROM MECHANICAL AIR INTAKES EXCEPT WHERE THE OPENING IS LOCATED 3 FEET ABOVE THE AIR INTAKE. OPENINGS SHALL COMPLY WITH SECTIONS R303.5.2 AND R303.6.

9. **SECTION M1601**
DUCT CONSTRUCTION

M1601.1 DUCT DESIGN.
DUCT SYSTEMS SERVING HEATING, COOLING AND VENTILATION EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION AND ACCA MANUAL D OR OTHER APPROVED METHODS.

M1601.1.1 ABOVE-GROUND DUCT SYSTEMS.
ABOVE-GROUND DUCT SYSTEMS SHALL CONFORM TO THE FOLLOWING:

1. EQUIPMENT CONNECTED TO DUCT SYSTEMS SHALL BE DESIGNED TO LIMIT DISCHARGE AIR TEMPERATURE TO A MAXIMUM OF 250°F.

2. FACTORY-MADE AIR DUCTS SHALL BE CONSTRUCTED OF CLASS 0 OR CLASS 1 MATERIALS AS DESIGNATED IN TABLE M1601.1.1(1).

3. FIBROUS DUCT CONSTRUCTION SHALL CONFORM TO THE SMACNA FIBROUS GLASS DUCT CONSTRUCTION STANDARDS OR NAIMA FIBROUS GLASS DUCT CONSTRUCTION STANDARDS.

4. MINIMUM THICKNESS OF METAL DUCT MATERIAL SHALL BE AS LISTED IN TABLE M1601.1.1(2). GALVANIZED STEEL SHALL CONFORM TO ASTM A 653. METALLIC DUCTS SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE.
5. USE OF GYPSUM PRODUCTS TO CONSTRUCT RETURN AIR DUCTS OR PLENUMS IS PERMITTED, PROVIDED THAT THE AIR TEMPERATURE DOES NOT EXCEED 125°F AND EXPOSED SURFACES ARE NOT SUBJECT TO CONDENSATION.

6. DUCT SYSTEMS SHALL BE CONSTRUCTED OF MATERIALS HAVING A FLAME SPREAD INDEX NOT GREATER THAN 200.

7. STUD WALL CAVITIES AND THE SPACES BETWEEN SOLID FLOOR JOISTS TO BE USED AS AIR PLENUMS SHALL COMPLY WITH THE FOLLOWING CONDITIONS:

7.1. THESE CAVITIES OR SPACES SHALL NOT BE USED AS A PLENUM FOR SUPPLY AIR.

7.2. THESE CAVITIES OR SPACES SHALL NOT BE PART OF A REQUIRED FIRE-RESISTANCE-RATED ASSEMBLY.

7.3. STUD WALL CAVITIES SHALL NOT CONVEY AIR FROM MORE THAN ONE FLOOR LEVEL.

7.4. STUD WALL CAVITIES AND JOIST-SPACE PLENUMS SHALL BE ISOLATED FROM ADJACENT CONCEALED SPACES BY TIGHT-FITTING FIREBLOCKING IN ACCORDANCE WITH SECTION R602.8.

7.5. STUD WALL CAVITIES IN THE OUTSIDE WALLS OF BUILDING ENVELOPE ASSEMBLIES SHALL NOT BE UTILIZED AS AIR PLENUMS.
M1601.2 FACTORY-MADE DUCTS.
FACTORY-MADE AIR DUCTS OR DUCT MATERIAL SHALL BE APPROVED FOR THE USE INTENDED, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. EACH PORTION OF A FACTORY-MADE AIR DUCT SYSTEM SHALL BEAR A LISTING AND LABEL INDICATING COMPLIANCE WITH UL 181 AND UL 181A OR UL 181B.
M1601.2.1 VIBRATION ISOLATORS.
VIBRATION ISOLATORS INSTALLED BETWEEN MECHANICAL EQUIPMENT AND METAL DUCTS SHALL BE FABRICATED FROM APPROVED MATERIALS AND SHALL NOT EXCEED 10 INCHES IN LENGTH.

M1601.3 DUCT INSULATION MATERIALS.
DUCT INSULATION MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: 1. DUCT COVERINGS AND LININGS, INCLUDING ADHESIVES WHERE USED, SHALL HAVE A FLAME SPREAD INDEX NOT HIGHER THAN 25, AND A SMOKE-DEVELOPED INDEX NOT OVER 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723, USING THE SPECIMEN PREPARATION AND MOUNTING PROCEDURES OF ASTM E 2231.

10. EQUIPMENT INSTALLATION SPECIFICATIONS:

SUSPEND NEW AHU-1 FROM CEILING STRUCTURE ABOVE USING 5/16" THREADED ROD WITH DOUBLE NUTS. PROVIDE ¼" RUBBER WASHERS BETWEEN HANGING TABS AND THREADED RODS FOR VIBRATION ISOLATION. CONNECT SA AND RA DUCTWORK TO EQUIPMENT WITH FLEXIBLE CONNECTIONS. ATTACH ZONING KIT TO THE SUPPLY SIDE OF AHU-1 ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE FULL SIZE ACCESS PANEL LOCATED ON THE WALL OF THE MECH ROOM.

MOUNT ERV-1 ON NEW KINDORFF WALL BRACKET 4' 5-1/4" ABOVE FINISHED FLOOR. PROVIDE ¼" RUBBER VIBRATION ISOLATORS BETWEEN BRACKET AND EQUIPMENT. MAINTAIN 24" SERVICE ACCESS ON THE FRONT OF THE EQUIPMENT. CONNECT DUCTWORK TO EQUIPMENT WITH FLEXIBLE CONNECTIONS.

ALL DUCTS EXITING ERV TO BE 6 INCH DIAMETER ZHENDER COMFOTUBE DUCTS. ERV IS TO BE MOUNTED ON WALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

THE ERV IS SET TO BE SET TO CONTINUOUS OPERATION TO PROVIDE CONSTANT FRESH AIR TO THE HOUSE.

PROVIDE PLENUM BOXES WITH 1" ACOUSTICAL LINING ON ALL SIDES.

INSTALL NEW RANGE HOOD WITHIN CABINETRY. HOOD SHALL BE 30" ABOVE THE RANGE TOP. INSTALL NEW CHARCOAL FILTER ASSEMBLY.

FRESH AIR VENTILATION CALCULATIONS - SECTION M403

ROOM	# OF PEOPLE	CFM/PERSON REQUIRED	CFM DELIVERED
MASTER BEDROOM	2	15 CFM/PERSON	30 CFM
SECOND BEDROOM	1	15 CFM/PERSON	15 CFM
LIVING ROOM/KITCHEN	NA	25 CFM CONTINUOUS	25 CFM

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CLIENT

U.S. DEPARTMENT OF ENERGY
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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

MECHANICAL SYMBOLS AND NOTES

M-001

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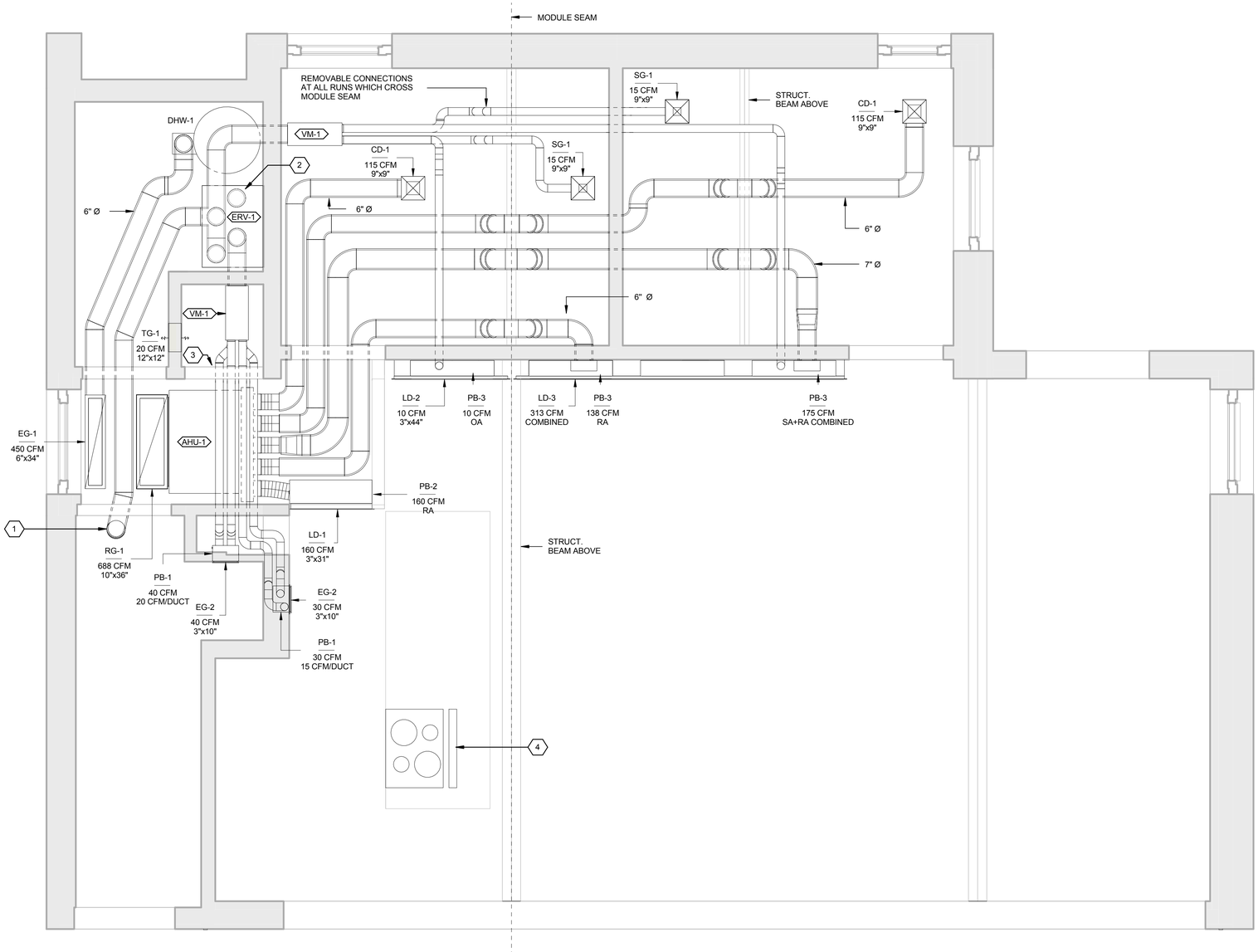

A1 REFLECTED CEILING PLAN

1/2" = 1'-0"

0 1' 2' 4'

GENERAL SHEET NOTES:

1. ALL INTERIOR DOORS SHALL HAVE A 1" UNDERCUT.

REFERENCE KEYNOTES:

SHEET KEYNOTES:

1. ERV EXHAUST THROUGH THE ROOF. TERMINATES MORE THAN 10 FEET AWAY HORIZONTALLY FROM THE SUPPLY FOR THE ERV, COMPLIANT WITH CODE M1506.2.

2. ERV FRESH AIR SUPPLY THROUGH THE ROOF. IT TERMINATES MORE THAN 10 FEET AWAY HORIZONTALLY FROM THE EXHAUST FROM THE ERV, COMPLIANT WITH CODE M1506.2.

3. WASHER/DRYER CLOSET DOOR LOUVERED FOR VENTILATION REQUIRED AS PER MANUFACTURING INSTRUCTIONS.

4. DUCTLESS RANGE HOOD TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTUER'S INSTALLATION INSTRUCTIONS, IN KITCHEN AREA. KITCHEN AREA WILL RECEIVE FRESH AIR THROUGH MECHANICAL VENTILATION, COMPLIANT WITH CODE M1503.

DRAWING KEY

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LOT NUMBER: LOT #110

SHEET TITLE

HVAC EQUIPMENT AND DISTRIBUTION RCP

M-101

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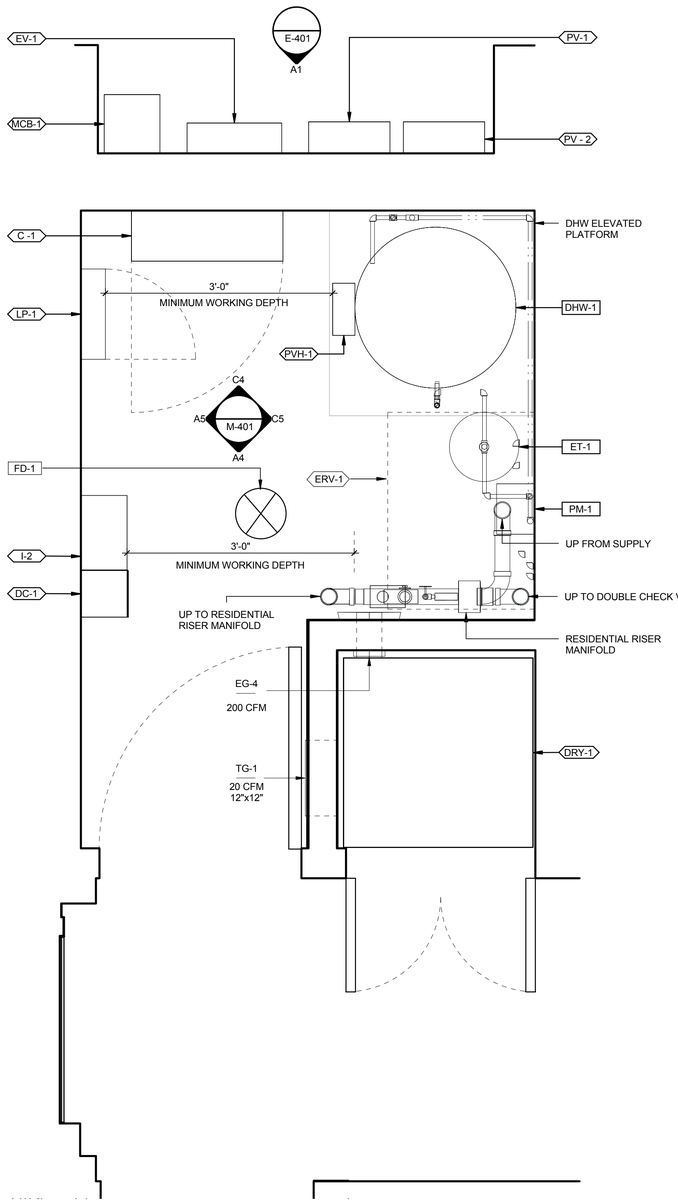
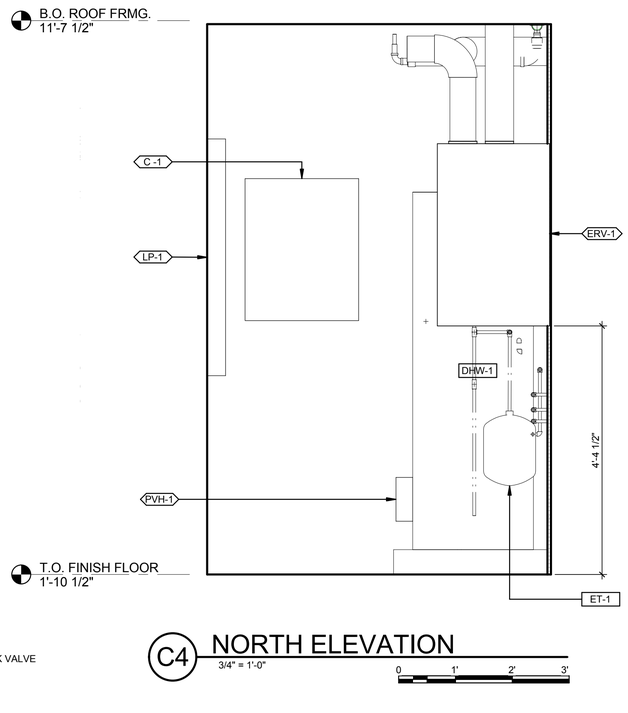
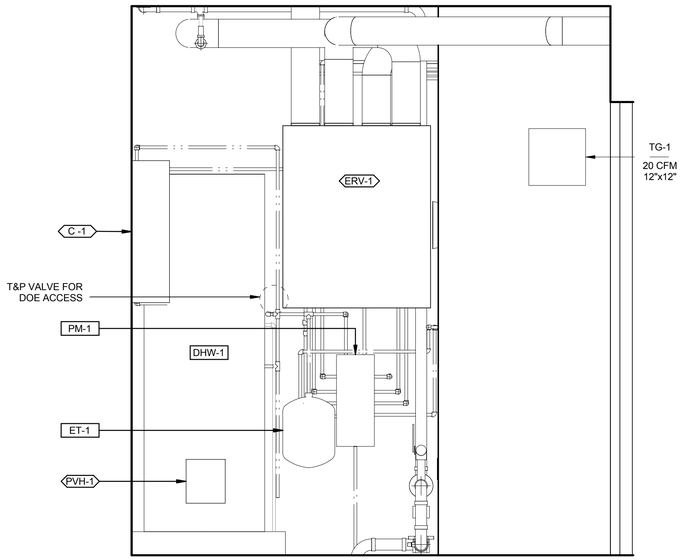


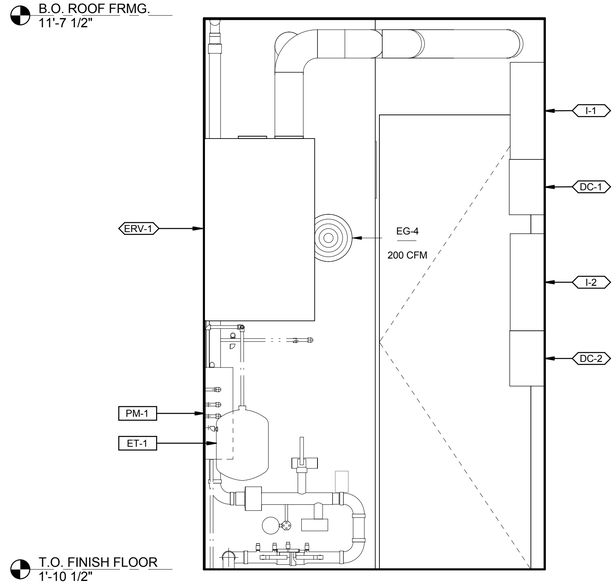
A1 MECH ROOM COORDINATION PLAN
1" = 1'-0"
0 1 2



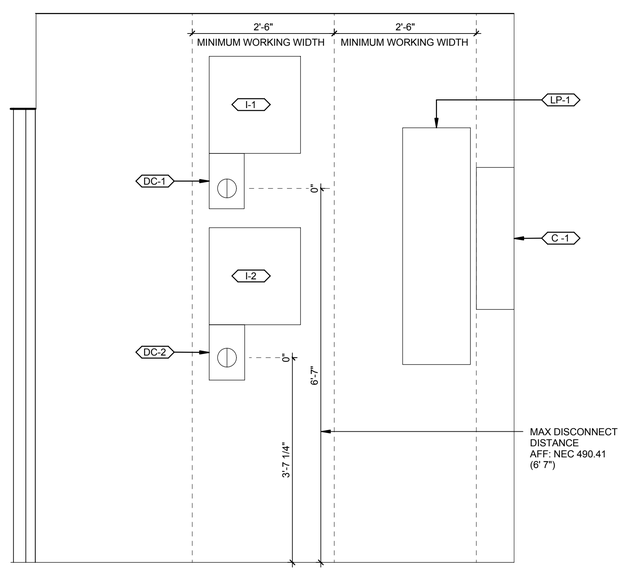
C4 NORTH ELEVATION
3/4" = 1'-0"
0 1' 2' 3'



C5 EAST ELEVATION
3/4" = 1'-0"
0 1' 2' 3'



A4 SOUTH ELEVATION
3/4" = 1'-0"
0 1' 2' 3'



A5 WEST ELEVATION
3/4" = 1'-0"
0 1' 2' 3'

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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

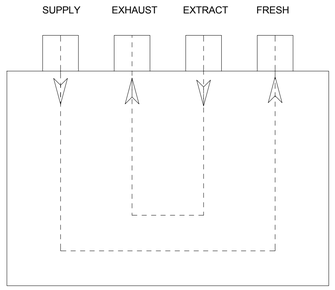
LOT NUMBER: LOT #110

SHEET TITLE

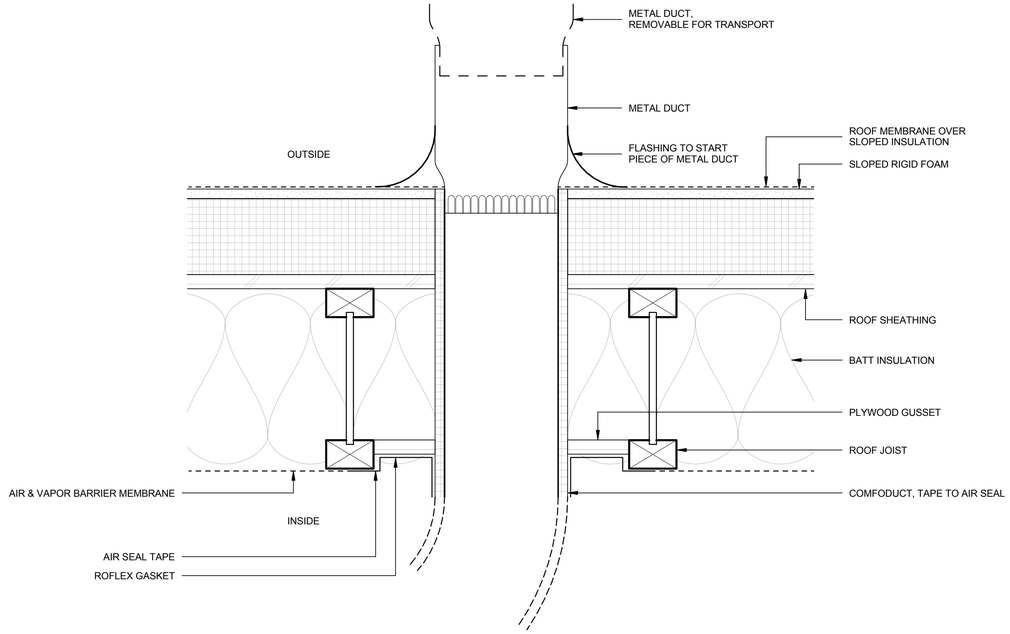
MECHANICAL ELEVATIONS

M-401

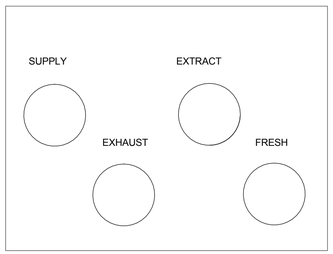
8/16/2015 6:32:42 PM



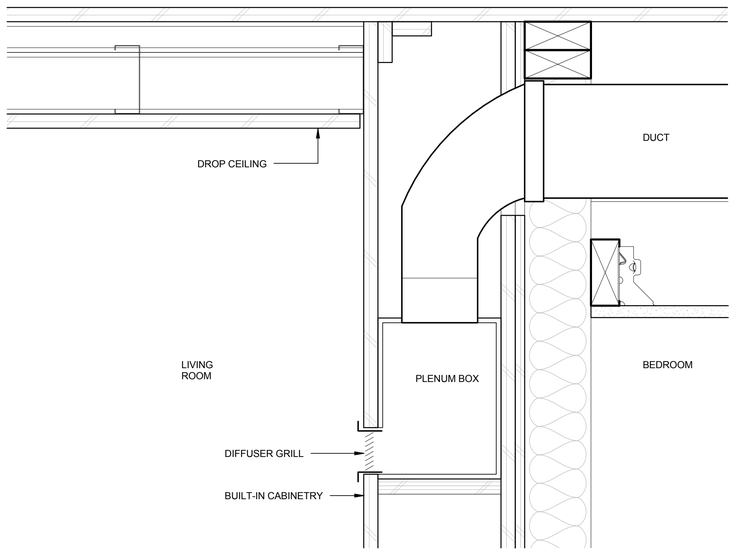
D2 ERV FRONT VIEW
1/4" = 1'-0"
0 2' 4' 8'



C4 TYP. LINEAR FRESH AIR ROOF PENETRATION DETAIL
3" = 1'-0"
0 3" 6" 1'



B2 ERV TOP VIEW
1/4" = 1'-0"
0 2' 4' 8'



A4 TYP. LINEAR DIFFUSER DETAIL AT LIVING ROOM CABINETRY
3" = 1'-0"
0 3" 6" 1'

SU+RE HOUSE

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LOT NUMBER: LOT #110

SHEET TITLE

MECHANICAL DETAILS

M-501

8/16/2015 6:32:49 PM

MECHANICAL EQUIPMENT SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL	ROOM: NAME	ROOM: NUMBER	COUNT	URL	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	DIAMETER (IN)	BTU/H COOLING	BTU/H HEATING	CSI NUM
ACCU-1	CONDENSING UNIT	DAIKIN	RZQ24PVJU9	ROOF	N/A	1	HTTP://WWW.DAIKINAC.COM/CONTENT/ASSETS/DOC/SUBMITTALDATASHEETS/SKYAIR/SDS-FBQ24PVJU-RZQ24PVJU9.PDF	35.4375	30.3125	12.6250	N/A	N/A	N/A	23 74 00
AHU-1	AIR HANDLING UNIT	DAIKIN	FBQ24PVJU	HALLWAY	N/A	1	HTTP://WWW.DAIKINAC.COM/CONTENT/ASSETS/DOC/SUBMITTALDATASHEETS/SKYAIR/SDS-FBQ24PVJU-RZQ24PVJU9.PDF	39.3750	11.8125	27.5625	N/A	24000	27000	23 82 19
DRY-1	DRYER	LG	DLHX4072	LAUNDRY	106	1	HTTP://WWW.AJMADISON.COM/CGI-BIN/AJMADISON/DLHX4072.HTML	27.0000	39.0000	30.0000	N/A	N/A	N/A	11 30 13.23
ERV-1	ENERGY RECOVERY VENTILATOR	ZEHNDER	NOVUS 300	MECH ROOM	101	1	HTTP://ZEHNDERAMERICA.COM/WP-CONTENT/UPLOADS/2014/02/ZEHNDER-NOVUS-300.PDF	31.2000	38.5000	23.7000	N/A	N/A	N/A	23 72 00
VM-1	VENTILATION MANIFOLD	ZEHNDER	COMFOWELL 220	MECH ROOM	101	1	HTTP://ZEHNDERAMERICA.COM/WP-CONTENT/UPLOADS/2014/01/ZEHNDER-COMFOWELL-220.PDF	8.70000	9.00000	9.00000	N/A	N/A	N/A	23 33 00
VM-1	VENTILATION MANIFOLD	ZEHNDER	COMFOWELL 220	KID'S ROOM	N/A	1	HTTP://ZEHNDERAMERICA.COM/WP-CONTENT/UPLOADS/2014/01/ZEHNDER-COMFOWELL-220.PDF	8.70000	9.00000	9.00000	N/A	N/A	N/A	23 33 00
ZK-1	ZONING KIT	DAIKIN	DZK030E5	HALLWAY	N/A	1	HTTP://WWW.DAIKINAC.COM/CONTENT/ASSETS/DOC/SUBMITTALDATASHEETS/DZK/SD-DZK030E5-REV1.00.PDF	43.5800	10.4300	10.4300	N/A	N/A	N/A	23 33 00

AIR TERMINAL SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL	COUNT	WIDTH (IN)	DEPTH (IN)	CSI NUM
CD-1	CEILING DIFFUSER	TUTTLE & BAILEY	MA	2	9.00	9.00	23 33 00
EG-1	GRILLE	TUTTLE & BAILEY	4000	1	6.00	34.00	23 33 00
EG-2	LINEAR DIFFUSER	TUTTLE & BAILEY	4000	2	3.00	10.00	23 33 00
EG-3	GRILLE	TUTTLE & BAILEY	4000	1	6.00	6.00	23 33 00
EG-4	DRYER VENT	SPEEDI-PRODUCTS	N/A	1	4.00	N/A	23 33 00
LD-1	LINEAR DIFFUSER	TUTTLE & BAILEY	4000	1	31.00	3.00	23 33 00
LD-2	LINEAR DIFFUSER	TUTTLE & BAILEY	4000	1	36.00	3.00	23 33 00
LD-3	LINEAR DIFFUSER	TUTTLE & BAILEY	4000	1	136.00	3.00	23 33 00
PB-1	HVAC PLENUM BOX	HERMAN FABRICATORS	N/A	2	3.00	10.00	23 33 00
PB-2	HVAC PLENUM BOX	HERMAN FABRICATORS	N/A	1	32.00	8.00	23 33 00
PB-3	HVAC PLENUM BOX	HERMAN FABRICATORS	N/A	4	32.00	9.00	23 33 00
RG-1	GRILLE	TUTTLE & BAILEY	4000	1	10.00	34.00	23 33 00
SG-1	FRESH AIR SUPPLY GRILLE	TUTTLE & BAILEY	MA	2	9.00	9.00	23 33 00
SG-2	SUPPLY INLET	TUTTLE & BAILEY	A52	1	12.00	12.00	23 33 00
TG-1	TRANSFER GRILLE	TUTTLE & BAILEY	A52	1	12.00	12.00	23 33 00

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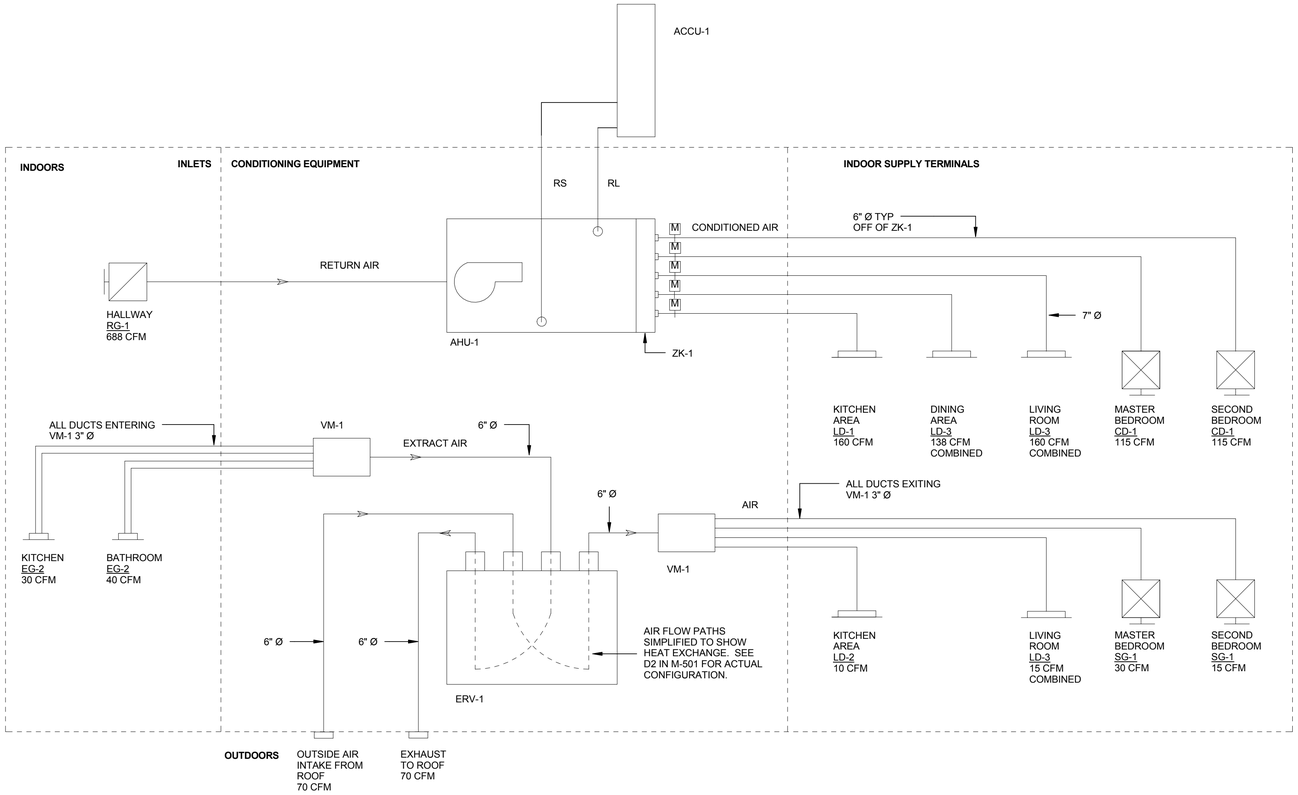
LOT NUMBER: LOT #110

SHEET TITLE

SCHEDULES

M-601

8/16/2015 6:32:57 PM



A2 HVAC RISER DIAGRAM

NTS

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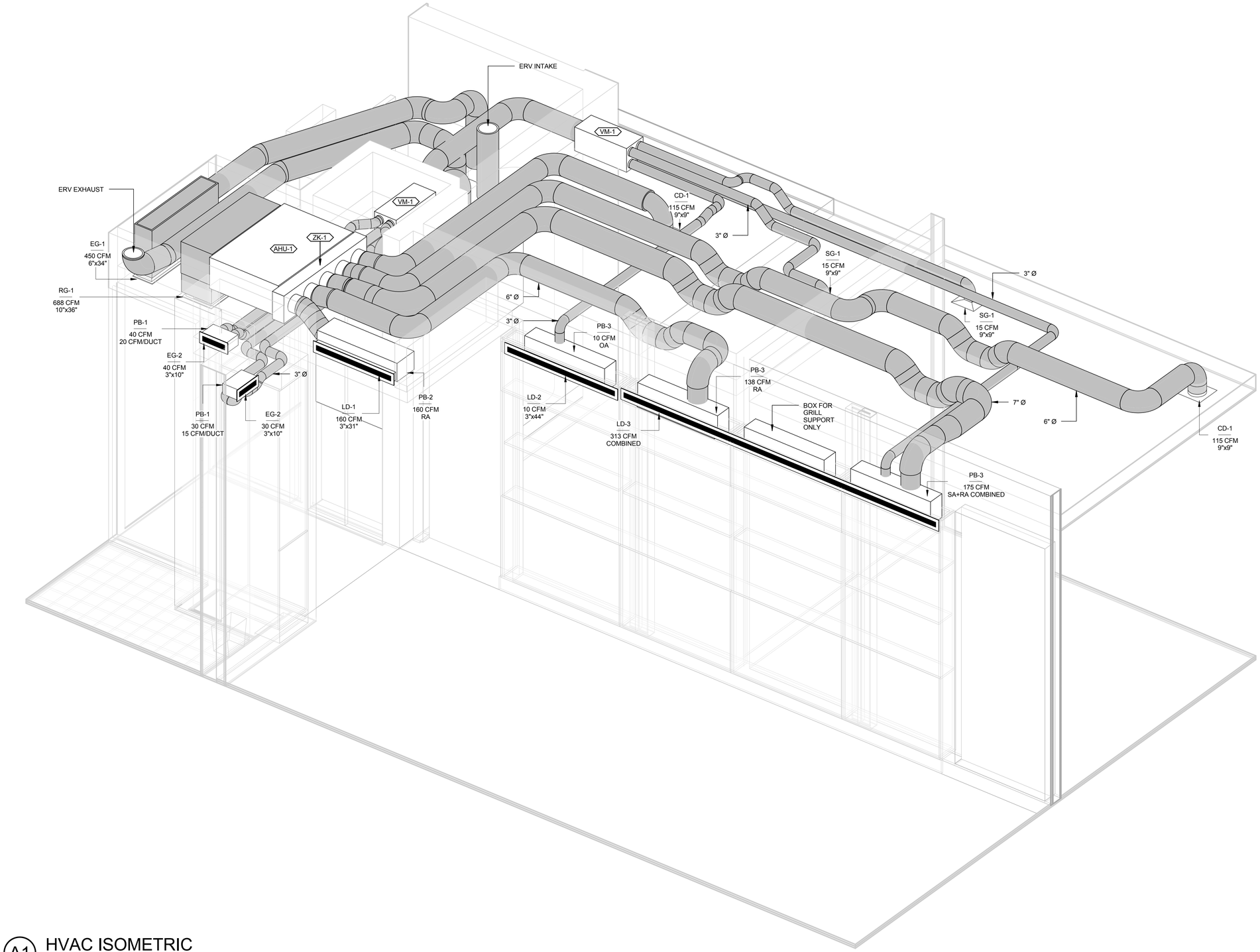
LOT NUMBER: LOT #110

SHEET TITLE

HVAC RISERS

M-602

8/16/2015 6:33:03 PM



A1 HVAC ISOMETRIC

0 1' 2' 3'

8/16/2015 6:33:24 PM

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LOT NUMBER: LOT #110

SHEET TITLE

HVAC ISOMETRICS

M-901

ELECTRICAL SYMBOLS

	120V DUPLEX RECEPTACLE
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER 120V DUPLEX RECEPTACLE
WP	WEATHER PROOF IN-USE 120V DUPLEX RECEPTACLE
	FLOOR 120V DUPLEX RECEPTACLE
CTR	UNDER COUNTER 120V DUPLEX RECEPTACLE
	240V SINGLE RECEPTACLE
J	JUNCTION BOX
$	SWITCH

ELECTRICAL ABBREVIATIONS

ACCU	AIR COOLED CONDENSING UNIT
AHU	AIR HANDLING UNIT
CT	CURRENT TRANSFORMER SENSOR
DHW	DOMESTIC HOT WATER
DSC	DC DISCONNECT
DW	DISHWASHER
DX	LIGHT DRIVER
ERV	ENERGY RECOVERY VENTILATOR
EV	ELECTRIC VEHICLE CHARGER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUG ONLY PANELBOARD
REF	REFRIGERATOR
W/D	WASHER/DRYER

GENERAL ELECTRICAL NOTES

INSTALLATION OF ELECTRICAL CONDUCTORS, RACEWAYS, AND DEVICES SHALL CONFORM TO THE 2014 NATIONAL ELECTRIC CODE AND THE 2015 SOLAR DECATHLON BUILDING CODE.

ALL ELECTRICAL EQUIPMENT SHALL CARRY AN APPROVED TESTING AGENCY LISTING IN ACCORDANCE WITH IRC SECTION 140.11 AND SECTION 110.2 OF THE NEC, OR SHALL HAVE BEEN APPROVED BY THE SOLAR DECATHLON BUILDING OFFICIAL AND SOLAR DECATHLON ELECTRICAL INSPECTORS FOR TEMPORARY USE DURING THE SOLAR DECATHLON 2015 EVENT.

THE GROUNDING ELECTRODE CONDUCTOR FROM THE MAIN SERVICE EQUIPMENT TO THE SOLAR DECATHLON 2015 ORGANIZER UTILITY PANEL SHALL BE A MINIMUM SIZE OF 4 AWG COPPER AND SHALL BE BONDED BY QUALIFIED ELECTRICAL PERSONNEL TO THE ORGANIZER GROUNDING ELECTRODE SYSTEM AT THE ORGANIZER UTILITY PANEL LOCATION.

THE EQUIPMENT GROUNDING ELECTRODE CONDUCTOR SHALL BE THE FIRST TO BE CONNECTED AND LAST TO BE DISCONNECTED DURING INSTALLATION, DE-INSTALLATION, OR SERVICING OF PHOTOVOLTAIC MODULES AND INVERTERS.

BRANCH CIRCUIT CONDUCTORS SHALL HAVE AN AMPACITY NOT LESS THAN THE MAXIMUM LOAD TO BE SERVED. CONDUCTORS SHALL BE SIZED TO CARRY NOT LESS THAN THE LARGER OF NEC 210.19(A)(1)(a) OR (b).

CONDUCTORS SPECIFIED IN THE ELECTRICAL PLAN SHALL BE SIZED IN COMPLIANCE WITH NEC TABLE 310.15(B)(16). MINIMUM AC CONDUCTOR SIZE SHALL BE #14 AWG. MINIMUM DC CONDUCTOR SIZE SHALL BE #12 AWG.

EXCEPT WHERE OTHERWISE NOTED, CONDUCTORS SHALL BE COPPER WITH 600 VOLT INSULATION.

RACEWAYS BETWEEN PULL BOXES SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL).

EXTERIOR RACEWAYS AND WIRING DEVICES BELOW THE FIRST LEVEL FLOOR SHALL BE SELECTED FOR MECHANICAL PROTECTION. EXTERIOR FITTINGS FOR RACEWAYS SHALL BE COMPRESSION TYPE AND LIQUIDTIGHT.

ALL PANELBOARDS SHALL BE PROVIDED WITH A FACTORY-INSTALLED GROUND BUS FOR CONNECTING TO GROUND THE GREEN OR BARE GROUND WIRE IN ALL BRANCH CIRCUITS.

PLUG-IN TYPE OVERCURRENT PROTECTION DEVICES OR PLUG-IN TYPE MAIN LUG ASSEMBLIES THAT ARE BACKFED SHALL BE SECURED IN PLACE BY AN ADDITIONAL FASTENER THAT REQUIRES OTHER THAN A PULL TO RELEASE THE DEVICE FROM THE MOUNTING MEANS ON THE PANEL PER NEC 408.37(D).

PROVIDE IDENTIFICATION OF ALL BRANCH CIRCUITS ON A TYPEWRITTEN DIRECTORY CARD IN THE PANELBOARD DOOR.

FOR MECHANICAL EQUIPMENT DETAIL REFER TO MECHANICAL DRAWINGS AND EQUIPMENT SPECIFICATIONS IN THE PROJECT MANUAL.

ALL EXTERIOR 125V BRANCH CIRCUIT RECEPTACLES SHALL BE LISTED AS WEATHER-RESISTANT, GROUND FAULT PROTECTED, AND EQUIPPED WITH "IN-USE" TYPE WEATHER PROTECTION.

ALL INTERIOR NON-LOCKING 125V BRANCH CIRCUIT RECEPTACLES SHALL BE TAMPER RESISTANT PER NEC 406.12.

ALL 120V SINGLE PHASE 15 AMP AND 20 AMP BRANCH CIRCUITS SUPPLYING OUTLETS OR DEVICES INSTALLED IN THE LOCATIONS SPECIFIED IN NEC SECTION 210.12(A) SHALL INCLUDE ARC FAULT CIRCUIT INTERRUPTER PROTECTION BY ANY OF THE MEANS SPECIFIED IN NEC 210.12(A) NUMBERS (1) THROUGH (6). ARC FAULT CIRCUIT INTERRUPTER PROTECTION SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION.

ALL 125V SINGLE PHASE 15 AMP AND 20 AMP RECEPTACLES INSTALLED IN THE LOCATIONS SPECIFIED IN NEC SECTION 210.8(A) NUMBERS (1) THROUGH (10) SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION FOR PERSONNEL.

AN OUTLET INSTALLED FOR THE PURPOSE OF CHARGING ELECTRIC VEHICLES SHALL BE SUPPLIED BY A SEPARATE BRANCH CIRCUIT HAVING NO OTHER OUTLETS PER NEC 210.17.

TEAM SHALL PROVIDE A CLEAR INSTALLATION ROUTE FOR ORGANIZER ETHERNET AND POWER CABLES FROM THE ORGANIZER UTILITY PANEL TO THE ORGANIZER ENCLOSURE.

TEAM SHALL SUPPLY A DEDICATED 15A 2P BRANCH CIRCUIT BREAKER AND ADEQUATE GROUND AND NEUTRAL BUS BAR TERMINALS IN THE TEAM PANEL BOARD FOR VOLTAGE SENSE CIRCUITRY CONNECTIONS TO THE ORGANIZER PV MONITORING METER TO BE CONNECTED BY ORGANIZER'S QUALIFIED ELECTRICAL PERSONNEL.

TEAM SHALL PROVIDE AN ORGANIZER ENCLOSURE OF REQUIRED SPECIFICATIONS PER SOLAR DECATHLON 2015 TEAM INTERCONNECTION CHECKLIST WITH ADEQUATE CONDUIT FILL AND PULL BOX ACCESS FOR ENTRANCE OF ORGANIZER SENSOR WIRES.

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SHEET TITLE

ELECTRICAL SYMBOLS AND NOTES

E-001

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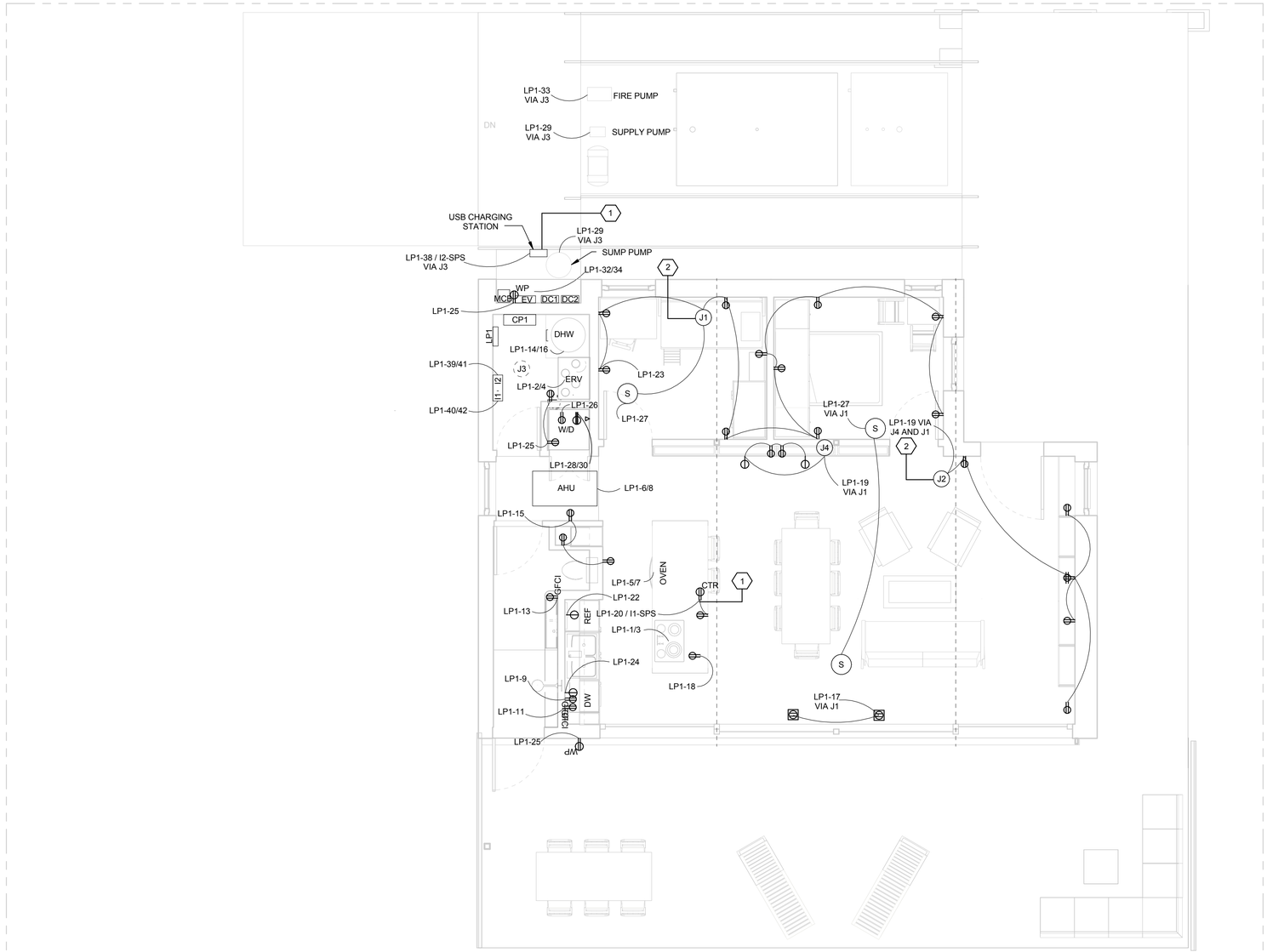

A1 FIRST FLOOR POWER PLAN

1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

REFERENCE KEYNOTES:

SHEET KEYNOTES:

1. RESILIENT POWER SUPPLY RECEPTACLE WITH SWITCHING FROM LOAD PANEL 1 (LP1) TO INVERTERS ISLANDABLE SECURE POWER SUPPLY (I1-SPS/12-SPS)

2. JUNCTION FOR MODULE-MODULE ELECTRICAL CONNECTIONS

DRAWING KEY

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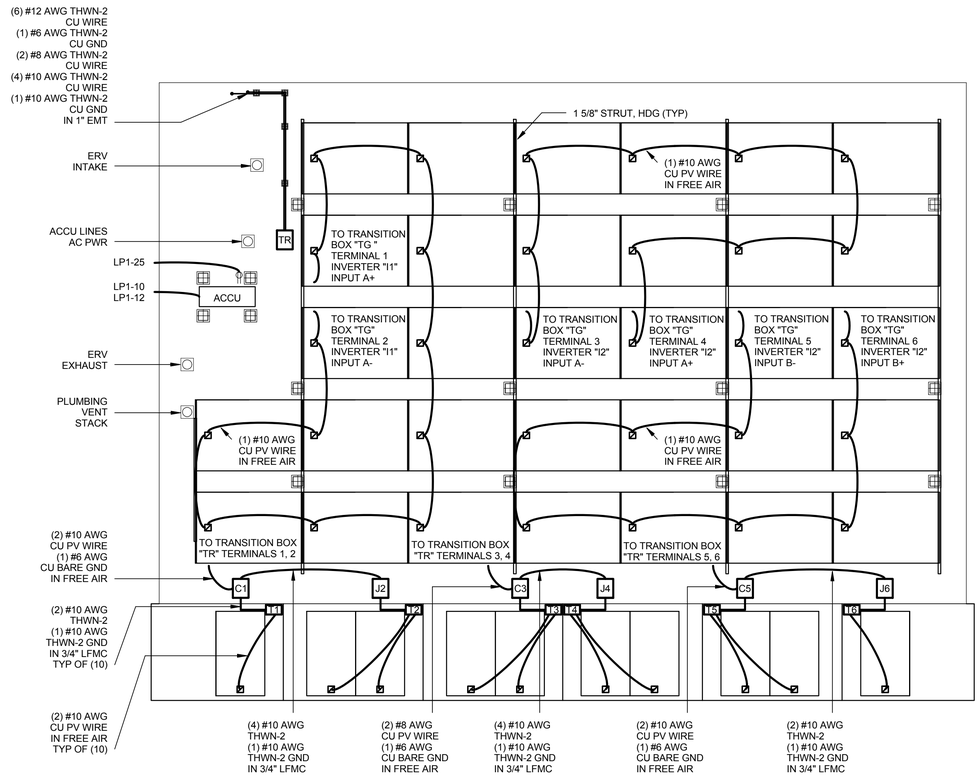
LOT NUMBER: LOT #110

SHEET TITLE

FIRST FLOOR POWER PLAN

E-101

8/16/2015 6:35:20 PM



A1 ROOF POWER AND PV PLAN

1/4" = 1'-0"

0 1' 2' 4'

8/16/2015 6:35:26 PM

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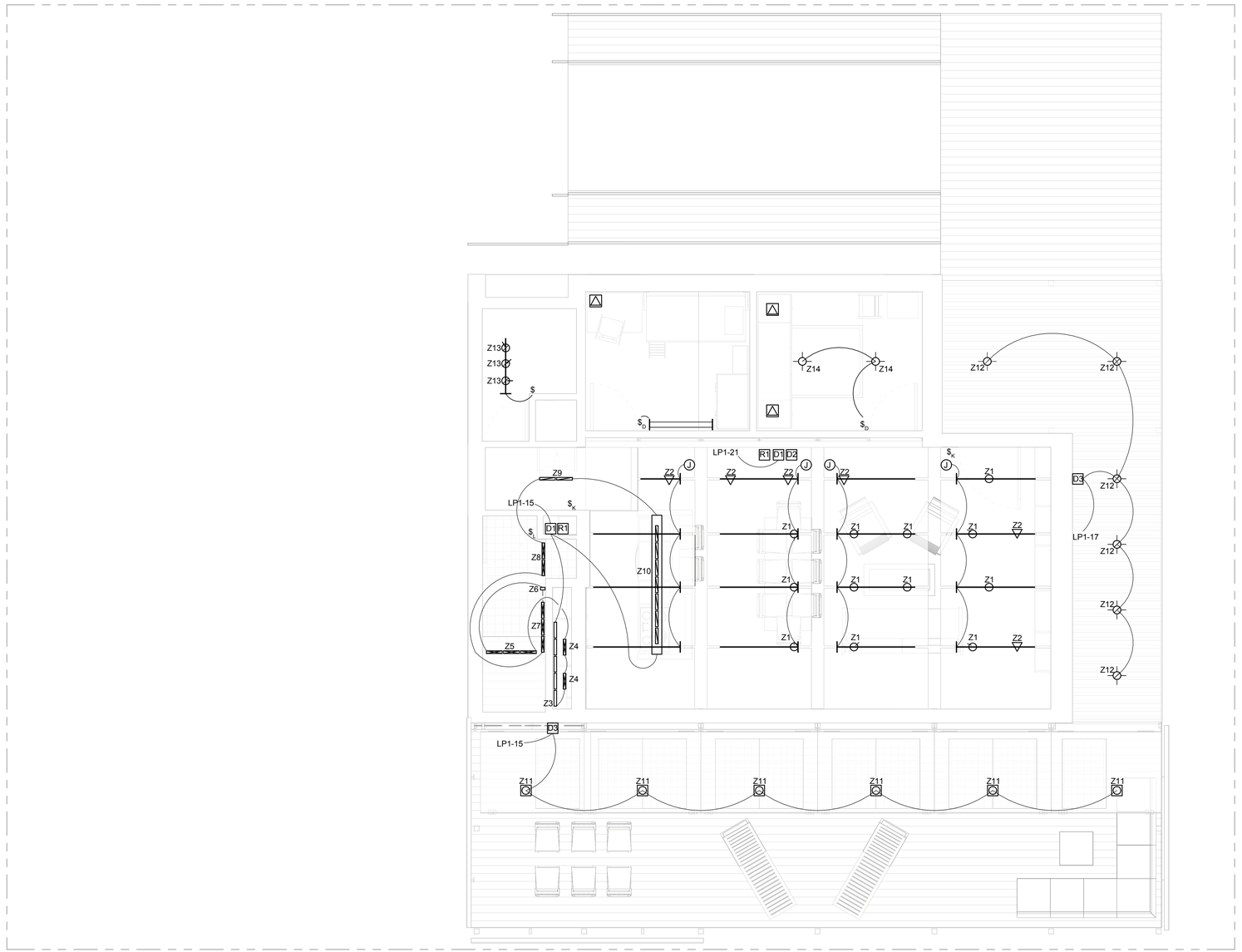
LOT NUMBER: LOT #110

SHEET TITLE

ROOF POWER PLAN

E-102



A1 LIGHTING PLAN

1/4" = 1'-0"

0 2' 4' 8'

8/16/2015 6:35:38 PM

SU+RE HOUSE

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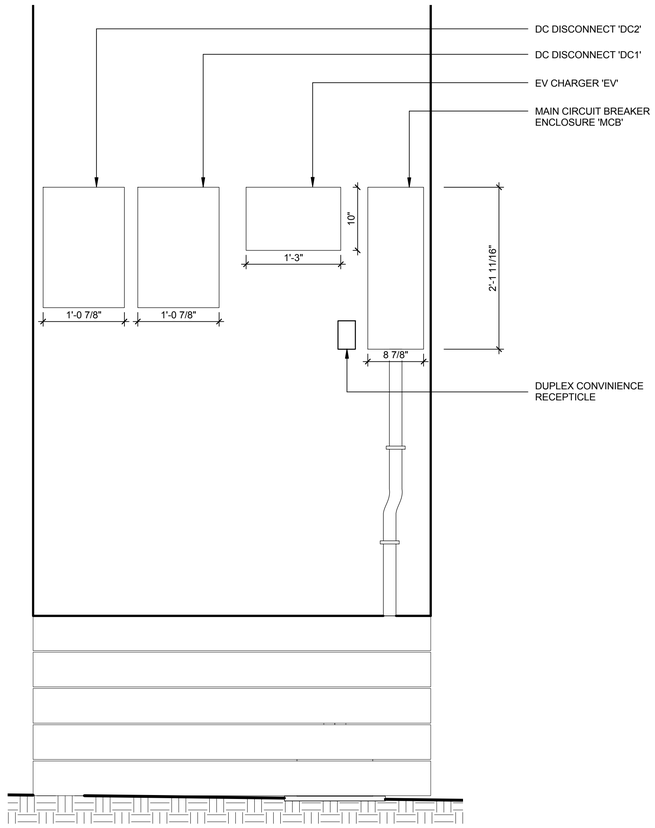
LOT NUMBER:	LOT #110
COPYRIGHT:	NONE: PROJECT IS PUBLIC DOMAIN

SHEET TITLE

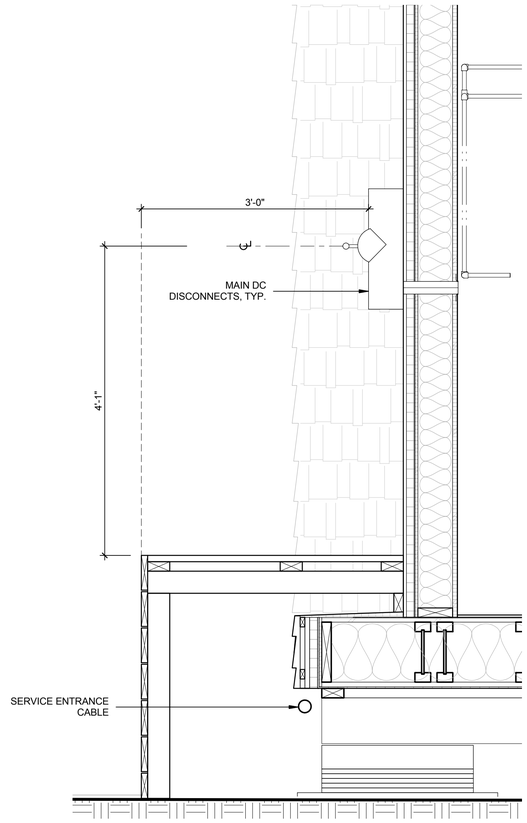
LIGHTING PLAN

E-103



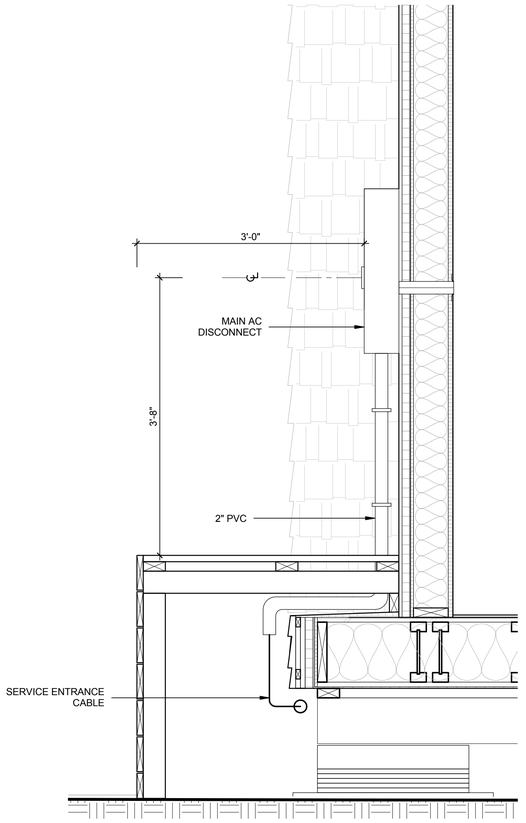
A1 ELEC. CLOSET SOUTH ELEVATION
1" = 1'-0"

0 1/2' 1' 2'



A3 DC DISCONNECT SECTION
1" = 1'-0"

0 1/2' 1' 2'



A6 AC DISCONNECT SECTION
1" = 1'-0"

0 1/2' 1' 2'

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CLIENT

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SOLAR DECATHLON 2015
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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

ELECTRICAL ELEVATIONS & SECTIONS

E-401

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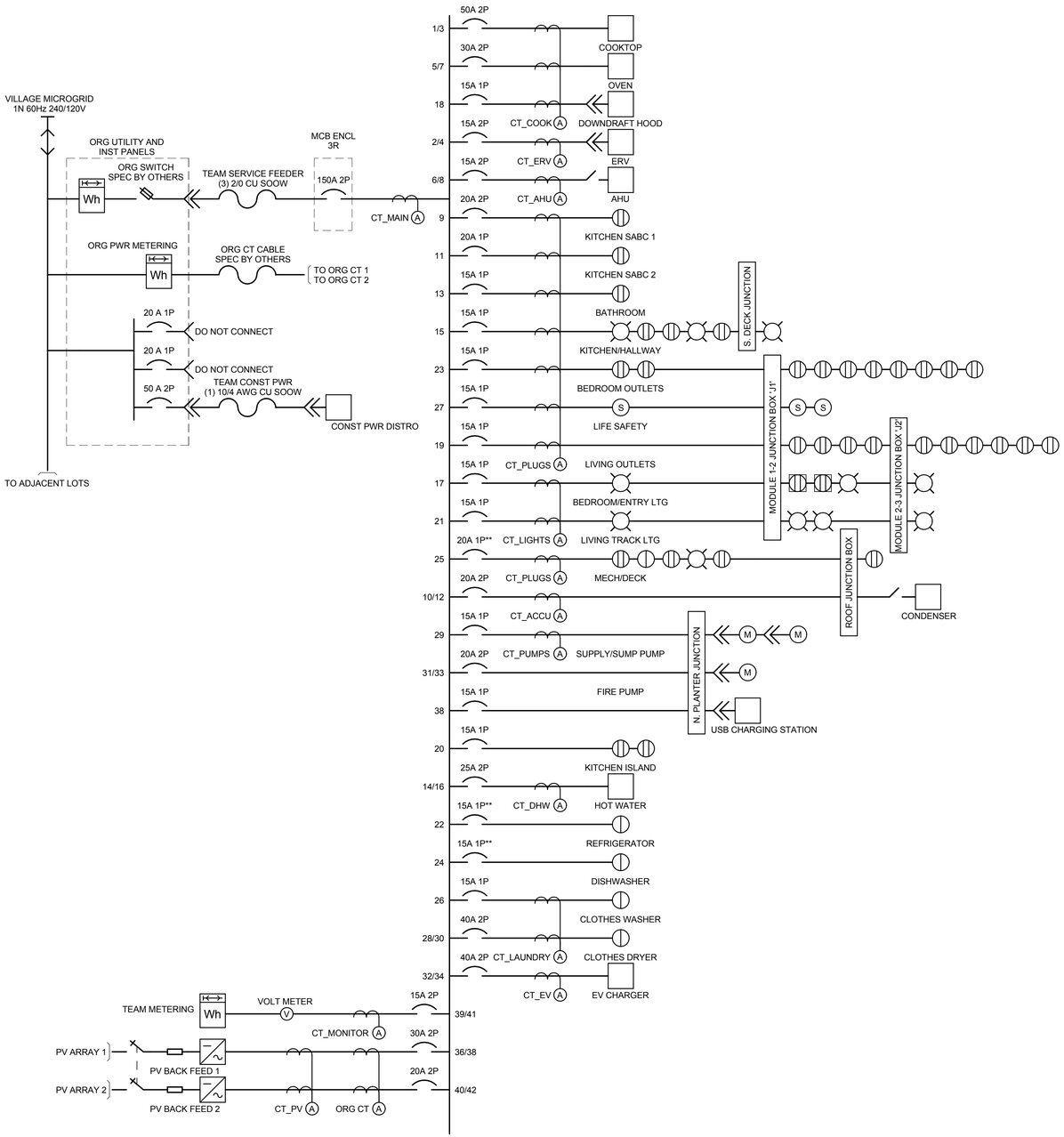

A1 SINGLE LINE DIAGRAM

PANEL: LOAD PANEL 1 (LP1) | MAIN LUG ONLY (MLO) | LOCATION: MECHANICAL ROOM
VOLTAGE: 120/240 VAC | BUS RATING: 225 A

#	POLE	TRIP	LOAD DESCRIPTION	AMPS	VA	WIRE SIZE	CT	CT	WIRE SIZE	VA	AMPS	LOAD DESCRIPTION	TRIP	POLE	#
LP1-01	2	50	COOKTOP	6	6320	6/3	A3	B1	12/2	143	10	ERV	15	2	LP1-02
LP1-03							A4	-							LP1-04
LP1-05	2	30	OVEN	6	4200	8/3	A3	A5	10/2	3600	10	AIR HANDLER	15	2	LP1-06
LP1-07							A4	A6							LP1-08
LP1-09	1	20	KITCHEN SABC 1	6	1500	12/2	B8	A7	10/2	4800	10	CONDENSER	20	2	LP1-10
LP1-11	1	20	KITCHEN SABC 2	7.5	1500	12/2	B9	A8							LP1-12
LP1-13	1	15	BATHROOM	6	180	12/2	B8	B4	10/2	6000	10	HOT WATER	25	2	LP1-14
LP1-15	1	15	KITCHEN/HALLWAY	7.5	540	14/2	B9	-							LP1-16
LP1-17	1	15	BEDROOM/ENTRY LTG	6	360	14/2	B10	A3	12/2	1200	10	DOWNDRAFT HOOD	15	1	LP1-18
LP1-19	1	15	LIVING OUTLETS	7.5	1800	14/2	B9	B11	12/2	360	10.2	KITCHEN ISLAND	15	1	LP1-20
LP1-21	1	15	LIVING TRACK LTG	6	720	12/2	B10	B5	12/2	1500	10	REFRIGERATOR	15**	1	LP1-22
LP1-23	1	15	BEDROOM OUTLETS	7.5	1800	14/2	B9	B6	12/2	1194	10.2	DISHWASHER	15**	1	LP1-24
LP1-25	1	20**	MECH/DECK	6	720	12/2	B8	B3	12/2	6240	10	CLOTHES WASHER	15	1	LP1-26
LP1-27	1	15	LIFE SAFETY	7.5	900	14/2-3	B9	B2	8/3	6240	10.2	DRYER	40	2	LP1-28
LP1-29	1	15	SUPPLY/SUMP PUMP	6	720	12/2	B7	B3							LP1-30
LP1-31	2	20	FIRE PUMP	7.5	900	10/2	-	A9	8/3	7200	10.2	EV CHARGER	40	2	LP1-32
LP1-33							-	A10							LP1-34
LP1-35	2	15	TEAM METERING	7.5	900	#14 THHN	B12	-	-	-	-	-	-	-	LP1-36
LP1-37							-	B11	12/2	180	10	CHARGING BENCH	15	1	LP1-38
LP1-39	2	20	PV BACKFEED 2	7.5	3840	#10 THHN	A11	A11	#10 THHN	5000	10.2	PV BACKFEED 1	30	2	LP1-40
LP1-41							-	-							LP1-42

*AFCI PROTECTED CIRCUIT BREAKER **GFCI PROTECTED CIRCUIT BREAKER ***AFCI/GFCI PROTECTED CIRCUIT BREAKER

C5 ELECTRICAL PANEL SCHEDULE

DESCRIPTION	CALCULATION	LOADING	NEC REFERENCE
LIGHTING			
GENERAL RECEPTACLES	998 SF x 3 VA/SF	2994 VA	220.12
SUBTOTAL		2994 VA	
SMALL APPLIANCE BRANCH CIRCUIT			
SMALL APPLIANCES	2 x 1500 VA	3000 VA	210.11(C)(1) + 220.52(A)
CLOTHES WASHER	1500 VA	1500 VA	210.11(C)(2) + 220.52(B)
DESCRIPTION		4500 VA	
ELECTRIC DRYER & COOKING			
CLOTHES DRYER	MAX(5000 VA, NAMEPLATE: 2800 W)	5000 VA	220.54
ELECTRIC COOKTOP	NAMEPLATE: 7400 W	7400 VA	220.55
ELECTRIC OVEN	NAMEPLATE: 4200 W	4200 VA	220.55
SUBTOTAL		16600 VA	
FIXED APPLIANCES			
DISHWASHER	NAMEPLATE: 1400 W	1400 VA	
DOWNDRAFT HOOD	10 A x 120 V	1200 VA	
EV CHARGER	NAMEPLATE: 7200 W	7200 VA	
HOT WATER	25 A x 240 V	6000 VA	
SUBTOTAL		15800 VA	
ADDITIONAL MOTORS			
SUPPLY PUMP	NAMEPLATE: 860 W	860 VA	
SUMP PUMP	NAMEPLATE: 334 W	334 VA	
SUBTOTAL		1194 VA	
HEATING & AIR CONDITIONING			
AIR HANDLER UNIT (AHU)	15 A x 240 V	3600 VA	
CONDENSER UNIT (ACCU)	20 A x 240 V	4800 VA	
ENERGY RECOVERY VENTILATOR (ERV)	NAMEPLATE: 143 W	143 VA	
SUBTOTAL		8593 VA	
GENERAL LOADS			
LIGHTING		2994 VA	
SMALL APPLIANCE BRANCH CIRCUIT		4500 VA	
ELECTRIC DRYER & COOKING		16600 VA	
FIXED APPLIANCES		15800 VA	
ADDITIONAL MOTORS		1194 VA	
SUBTOTAL		41088 VA	
GENERAL LOADS W/ DERATE FACTOR	10KVA @ 100%, REMAINDER @ 40%	22436 VA	220.82(B)
HEATING & AIR CONDITIONING		8593 VA	220.82(C)
TOTAL LOAD		31029 VA	
LOAD FOR NEUTRAL	TOTAL LOAD / 240 V	130 A	
SOLAR DECATHLON SERVICE SIZE		150 A	
TEAM SERVICE ENTRANCE CABLE CONDUCTOR SIZE		4/0 ALUMINUM	

A5 ELECTRICAL LOAD CALCULATIONS

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SHEET TITLE

SINGLE-LINE DIAGRAM AND AC CALCULATIONS

E-601

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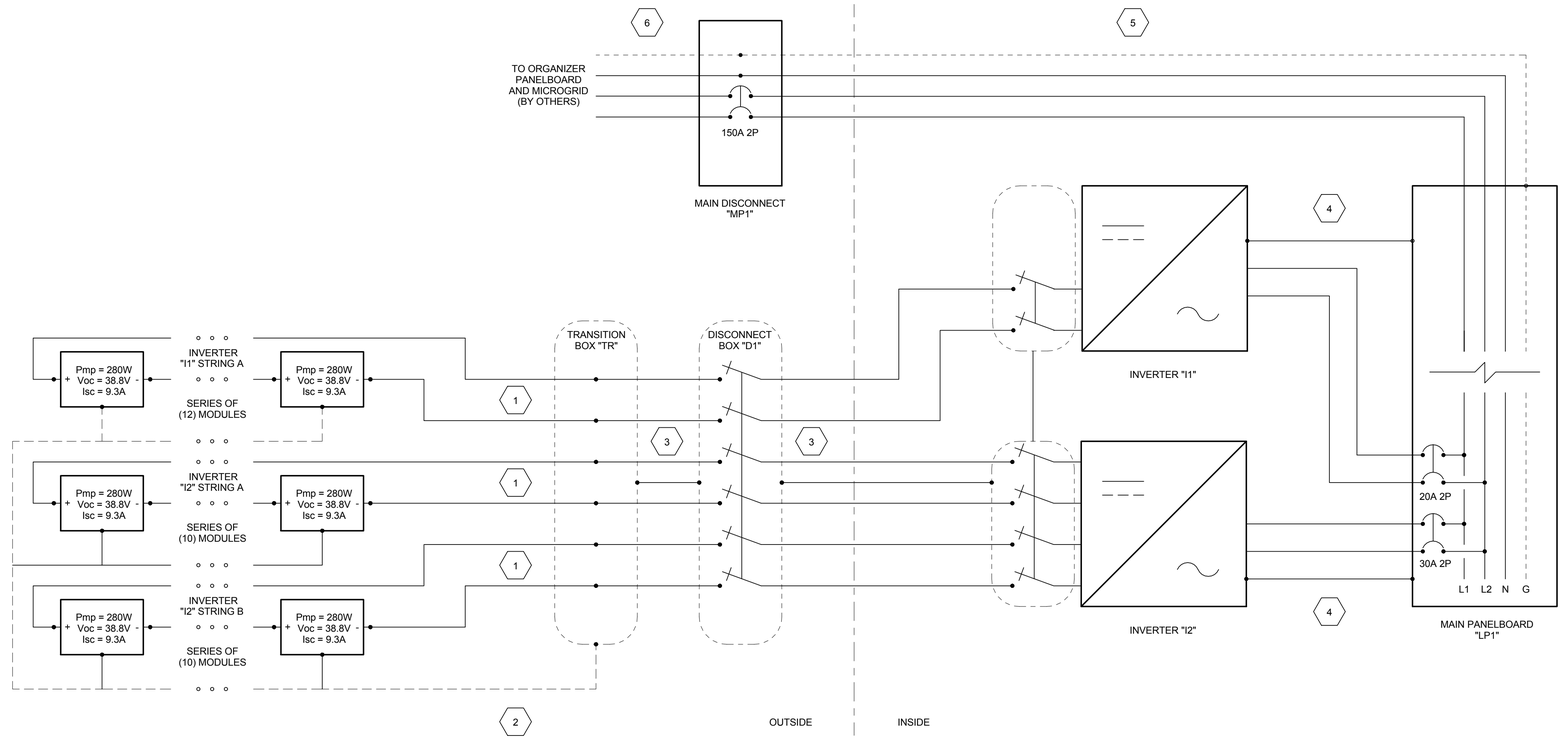

SYSTEM DESCRIPTION	MODULE SPECIFICATIONS	INVERTERS	SUB-ARRAY 1 STRING INVERTER "I1"	SUB-ARRAY 2 STRING INVERTER "I2"
UTILITY-INTERACTIVE SOLAR ARRAY CONSISTS OF TWO '2' INVERTERS AND THIRTY-TWO '32' SOLAR MODULES INVERTER ONE '1' IS PAIRED WITH A STRING OF TWELVE '12' SOLAR MODULES (IN SERIES) INVERTER TWO '2' IS PAIRED WITH TWO '2' STRINGS OF TEN '10' SOLAR MODULES EACH (IN SERIES)	LG MONOX LG280S1C-B3 STC Pmax 280 Wp Vmpp 31.9 V Impp 8.78 A Voc 38.8 V ISC 9.33 A TEMPERATURE COEFFICIENTS PMpp -0.43%/C TkVoc -0.31%/C TkIsc 0.04%/C	INVERTER "I1": SUNNY BOY 3000TL-US 240 V AC 1 STRING OF 12 MODULES INVERTER "I2": SUNNY BOY 5000TL-US 240 V AC 2 STRINGS OF 10 MODULES MAX INPUT CURRENT 15 A / 15 A MAX INPUT VOLTAGE 600 V / 600 V START VOLTAGE 150 V / 150 V MPPT VOLTAGE RANGE 125-500 V / 125-500 V MAX OUPUT CURRENT 16 A / 22 A OUTPUT VOLTAGE 240 V / 240 V	STRING A OPEN-CIRCUIT VOLTAGE 465.6 V OPERATING VOLTAGE 382.8 V MAX DC SYSTEM VOLTAGE 600V OPERATING CURRENT 8.78 A SHORT-CIRCUIT CURRENT 9.33 A MAX POWER 3.360 kW	STRING A & STRING B (IDENTICAL) OPEN-CIRCUIT VOLTAGE 388 V OPERATING VOLTAGE 319 V MAX DC SYSTEM VOLTAGE 600 V OPERATING CURRENT 8.78 A SHORT-CIRCUIT CURRENT 9.33 A MAX POWER 5.600 kW

1. (2) #10 AWG PV WIRE IN FREE AIR
2. (1) #6 AWG BARE SOLID CU GND IN FREE AIR
3. (6) #10 AWG THWN-2 (1) #10 AWG THWN-2 GND IN 1" EMT
4. (2) #10 AWG THWN-2 (1) #10 AWG THWN-2 GND IN 3/4" EMT
5. (3) 2/0 CU THWN-2 (1) #6 AWG CU THWN-2 GND IN 2" PVC
6. (1) 4/0-4/0-4/0-2/0 AL SE-U IN FREE AIR

A1 THREE-LINE DIAGRAM ROOF PV

NTS

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LOT NUMBER: LOT #110

SHEET TITLE

THREE-LINE DIAGRAM ROOF PV

E-602

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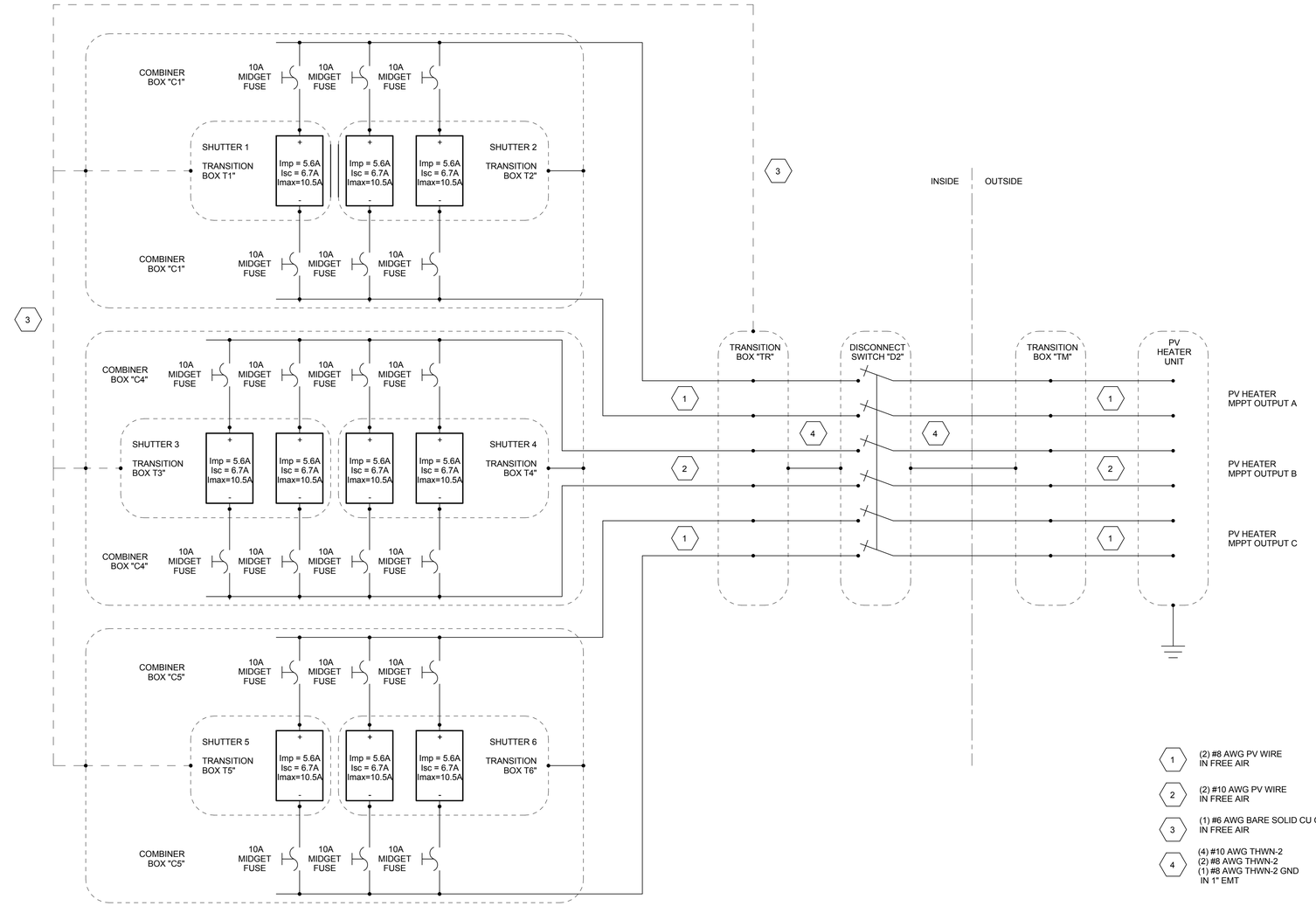

1. (2) #8 AWG PV WIRE IN FREE AIR
2. (2) #10 AWG PV WIRE IN FREE AIR
3. (1) #6 AWG BARE SOLID CU GND IN FREE AIR
4. (4) #10 AWG THWN-2 (2) #8 AWG THWN-2 (1) #8 AWG THWN-2 GND IN 1" EMT

SYSTEM DESCRIPTION	MODULE SPECIFICATIONS SOLBIAN CUSTOM 180		PARALLELED MODULE GROUP SPECIFICATIONS		PHOTOVOLTAIC HEATER SPECIFICATIONS	
SYSTEM IS NOT UTILITY INTERACTIVE ISLANDED DC ARRAY POWERS PHOTOVOLTAIC HEATER UNIT AND ELEMENT. ALL PRODUCED DC ELECTRIC POWER IS CONVERTED TO USEABLE HEAT FOR DOMESTIC HOT WATER. NOMINAL STRING VOLTAGES ARE BELOW 60Vdc.	STC Pmax Vmp Imp Voc Isc TkVoc TkVoc	 180 Wp 33.0 V 5.6 A 41.0 V 6.7 A -0.11 V/°C -0.38 %/°C	Voc Vmpp Vmax Impp Isc Pnom (6.7A)*1.25^2 = 10.452 A REQUIRES 10A FUSING	41.0 V 33.0 V 50.0 V 16.8 / 22.4 / 16.8 A 20.1 / 26.8 / 20.1 A 540 / 720 / 540 w	MAX RECOMMENDED POWER MAX INPUT CURRENT MAX INPUT VOLTAGE STRING FUSE RATING DC START VOLTAGE MPPT VOLTAGE RANGE ELEMENT HEATING CAPACITY	1.5-2.7 kW 3*20 (over configuration- to 30 A permitted) 50 V 10A 18 V 16 - 40 V 1,500 W

A1 THREE-LINE DIAGRAM SHUTTER PV
NTS

8/16/2015 6:36:41 PM

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SHEET TITLE

THREE-LINE DIAGRAM SHUTTER PV

E-603

ELECTRICAL EQUIPMENT SCHEDULE

MANUFACTURER	MODEL	DESCRIPTION	COUNT
ADVANCED ENERGY	401R1K5	PV HEATER	1
EATON	CH42NLPN225K/CH8NLKS	MLO PLUG-ON NEUTRAL LOADCENTER	1
EATON	DCU3061URM	3 CIRCUIT, DC DISCONNECT	2
EATON	ECB200RB	ECB CIRCUIT BREAKER ENCLOSURE	1
EATON	IM0EV00002E	EV CHARGER	1
HAMMOND	EN4SD30248WGY	CONTROLS ENCLOSURE (CP1)	1
LG	MONOX 280W	280W PV SOLAR PANELS	32
SMA	DC-DISCON2TLUS-10	INVERTER DC DISCONNECT	2
SMA	SB 3800TL-US-22	INVERTER (I2)	1
SMA	SB 5000TL-US-22	INVERTER (I1)	1

ELECTRICAL FIXTURE SCHEDULE

FIXTURE	COUNT
COUNTERTOP RECEPTACLE: STANDARD	1
DUPLEX RECEPTACLE: GFCI	3
DUPLEX RECEPTACLE: STANDARD	24
OUTLET FLOOR-DUPLEX: SINGLE	2
QUADRUPLEX RECEPTACLE: PLAIN	1
RECEPTACLE - 220V: STANDARD	1
SIMPLEX RECEPTACLE: STANDARD	4
WEATHER PROOF RECEPTACLE: STANDARD	3

LIGHTING SCHEDULE

#	SYMBOL	DESCRIPTION	MANUFACTURER	WATTAGE	COUNT	TOTAL W
L1A		2 CIRCUIT 120V TRACK	LITELAB BUSRUN 08H	N/A	-	N/A
L1B		1 CIRCUIT 120V TRACK	JUNO 1 CIRCUIT TRACK	N/A	-	N/A
L2A		TRACK-MOUNTED ADJUSTABLE LED SPOT	LITELAB J19 MR16	9W	12	108W
L2B		TRACK-MOUNTED ADJUSTABLE LED WALL WASH	LITELAB J21 MR16	9W	6	54W
L3A		LINEAR LED GRAZE	KETRA G2 LINEAR LED NARROW - 400 LUMEN	11W	5	55W
L3Ba		LINEAR LED MEDIUM FLOOD	KETRA G2 LINEAR LED MEDIUM - 400 LUMEN	11W	5	55W
L3Bb		LINEAR LED MEDIUM FLOOD	KETRA G2 LINEAR LED MEDIUM - 700 LUMEN	19W	9	171W
L3Ca		LINEAR LED WIDE FLOOD	KETRA G2 LINEAR LED WIDE - 400 LUMEN	11W	4	44W
L3Cb		LINEAR LED WIDE FLOOD	KETRA G2 LINEAR LED WIDE - 700 LUMEN	19W	7	133W
L4A		TRACK-MOUNTED ADJUSTABLE LED FLOOD	KETRA S38 PAR38 LED GU24 TA TRACK ADAPTER	17W	3	51W
L4B		RECESSED CEILING LED DOWNLIGHT	KETRA S38 PAR38 LED GU24 6" HALO RECESSED DOWNLIGHT	17W	2	34W
L5		SURFACE-MOUNTED LED DOWNLIGHT	B-K LIGHTING ARTISTAR MR16 DOWNLIGHT	9W	6	54W
L6		RETROFIT E26 LED LAMP	KETRA A20 LED RETROFIT LAMP EDISON BASE	11W	3	33W
L7		WALL-MOUNTED LINEAR LED	TBD (BEDROOM LINEAR 3' FIXTURE)	50W	1	50W
L8		SURFACE-MOUNTED IN-GRADE LED UPLIGHT	B-K LIGHTING ARTISTAR RECESSED IN-GRADE UPLIGHT	9W	6	54W
D1	D1	LINEAR LED DRIVER	KETRA N3 SATELLITE	5W	2	10W
D2	D2	120V DMX DIMMER	DMX DIMMER	5W	1	5W
D3	D3	12V ELECTRONIC DRIVER	B-K LIGHTING	5W	2	10W
R1	R1	120V CONTACT CLOSURE RELAY	FUNCTIONAL DEVICES	N/A	2	N/A
INDOOR INSTALLED LIGHTING POWER DENSITY: 0.8 W/SF						
OUTDOOR INSTALLED LIGHTING POWER DENSITY: 0.8 W/LF						

LIGHTING ZONING SCHEDULE

#	DESCRIPTION
Z1	LIVING ROOM TRACK MAIN
Z2	LIVING ROOM TRACK WALL WASH
Z3	KITCHEN UNDER CABINET WALL WASH
Z4	KITCHEN UNDER CABINET TASK
Z5	BATHROOM SHOWER COVE
Z6	BATHROOM VANITY
Z7	BATHROOM UNDER SINK
Z8	BATHROOM TOILET COVE
Z9	LAUNDRY/HALLWAY
Z10	KITCHEN PENDANT
Z11	SOUTH DECK
Z12	ENTRY & EAST DECK
Z13	MECHANICAL ROOM
Z14	MASTER BEDROOM

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LOT NUMBER: LOT #110

SHEET TITLE

SCHEDULES

E-604

8/16/2015 6:36:49 PM

SOLAR CALCULATIONS

UTILITY INTERACTIVE SOLAR ARRAY

TEMPERATURE CORRECTIONS

MAXIMUM NUMBER OF SOLAR MODULES IN SERIES

V_MAX = V_OC + ((T_LOW - T_REF) * TKV_OC * V_OC)

NEW JERSEY	CALIFORNIA
V_MAX = 38.8 + ((-14 - 25) * -0.003 * 38.8) = 43.3396 V MAX DC VOLTAGE = 600 V_DC 600V_DC / 43.3396 V_DC = 13.844 V MAX # LG MONOX 280 W SOLAR MODULES = 13	V_MAX = 38.8 + ((3 - 25) * -0.003 * 38.8) = 41.3608 V MAX DC VOLTAGE = 600 Vdc 600 V_DC / 41.3608 V_DC = 14.5065 MAX # LG MONOX 280 W SOLAR MODULES = 14

MINIMUM NUMBER OF SOLAR MODULES IN SERIES

V_MIN = (V_MP + ((T2%H + T_RISE - T_REF) * TKV_MP * V_MP))

NEW JERSEY	CALIFORNIA
V_MIN = 31.9 + ((32 + 30 -25) * -0.0042 * 31.9) = 26.94274 V MIN DC VOLTAGE = 150 V_DC 150 V_DC / (26.94274*0.8) = 6.959 V MIN # LG MONOX 280 W SOLAR MODULES = 7	V_MAX = 38.8 + ((3 - 25) * -0.003 *38.8) = 41.3608 V MAX DC VOLTAGE = 600 V_DC 600 V_DC / 41.3608 V_DC = 14.5065 V MAX # LG MONOX 280 W SOLAR MODULES = 14

COMBINED DESIGN CONDITIONS DICTATE STRING LENGTH OF 7 – 13 MODULES IN SERIES

INVERTER OPTIMIZATION RATIOS

SMA SB 3000-TL

INVERTER "I1" STRING "A"	12 SOLAR MODULES * 280 W = 3360 W	STRING DC NOM / INVERTER DC NOM
TOTAL	= 3360 W	3360 W / 3000 W = **1.12**

SMA SB 5000-TL

INVERTER "I2" STRING "A"	10 SOLAR MODULES * 280 W = 2800 W	
INVERTER "I2" STRING "B"	10 SOLAR MODULES * 280 W = 2800 W	STRING DC NOM / INVERTER DC NOM
TOTAL	= 5600 W	5600 W / 5000 W = **1.12**

WIRE SIZING

CURRENT CARRYING CONDUCTORS

	APPLY CONT. RATING	TEMP CORRECTION	MIN. WIRE SIZE	WIRE SELECTION
INVERTER "I1" STRING "A"	ISC = 9.33 A 9.33 A * 1.25 = 11.6625	11.66 / 0.82 = 14.2 A	#16 AWG	**#10 AWG**
INVERTER "I2" STRING "A"	ISC = 9.33 A 9.33 A * 1.25 = 11.6625	11.66 / 0.82 = 14.2 A	#16 AWG	**#10 AWG**
INVERTER "I2" STRING "B"	ISC = 9.33 A 9.33 A * 1.25 = 11.6625	11.66 / 0.82 = 14.2 A	#16 AWG	**#10 AWG**

NOTE: #10 AWG UPSIZED FROM #12 AWG SOLAR MODULE LEADS DUE TO AVAILABILITY

EQUIPMENT GROUNDING CONDUCTOR

#6 AWG BARE COPPER IS SPECIFIED AS EGC. IT HAS BEEN UPSIZED BEYOND MINIMUM REQUIRED CONDUCTOR SIZE BECAUSE IT IS EXPOSED TO POTENTIAL PHYSICAL DAMAGE.

OCPD SIZING

I_MAX * (1.25)^2 = OCPD AMPERAGE

SB 3000-TL MAX OUTPUT CURRENT = 15 A	15 A * (1.25)^2 = 18.75 A	OCPDC SELECTION: **20 AMP BREAKER**
SB 5000-TL MAX OUTPUT CURRENT = 22 A	22 A * (1.25)^2 = 27.5 A	OCPD SELECTION: **30 AMP BREAKER**

SOLAR AMERICA BOARD FOR CODES AND STANDARDS

	HIGH TEMPERATURE		DISTANCE ABOVE ROOF			EXTREME MIN (T_LOW)
	0.4% HIGH	0.4% HIGH	0.5"	3.5"	12"	
BELMAR-FARMINGDALE (ASHRAE)	36°C	32°C	54°C	49°C	46°C	-14°C
EL TORO MCAS (ASHRAE)	34°C	31°C	53°C	48°C	45°C	3°C

CELL TEMPERATURE AT STC = 25°C, TRISE = 30°C (CONSERVATIVE EXPECTED CELL TEMP. RISE),
*0.8 FACTOR REPRESENTS EFFECTS OF
HIGH VOLTAGE, ARRAY DEGRADATION, AND MODULE VOLTAGE TOLERANCE

	NO MORE THAN 3 CONDUCTORS IN RACEWAY	4-6 CONDUCTORS IN RACEWAY
#16 AWG	18 A	14.4 A
#14 AWG	25 A	20 A
#12 AWG	30 A	24 A
#10 AWG	40 A	32 A
#8 AWG	55 A	44 A
#6 AWG	75 A	50 A

DESIGN TEMPERATURE = 2% HIGH TEMPERATURE (NJ 32°C / CA 31°C)
EXTREME CONDITION = 32°C OR 89.6°F
TEMPERATURE ADDER FOR 3.5 – 12 IN. OFF OF ROOF SURFACE = 30°F
COMPENSATED AMBIENT TEMP. = DESIGN TEMP. + TEMP. ADDER
COMPENSATED AMBIENT TEMP = 90°F + 30°F = 120°F
AMBIENT TEMPERATURE CORRECTION FACTOR AT
120°F FOR 90°C CONDUCTOR = 0.82

DC DHW SOLAR ARRAY

TEMPERATURE CORRECTIONS

MAXIMUM NUMBER OF SOLAR MODULES IN SERIES

V_MAX = V_OC + ((T_LOW - T_REF) * TKV_OC * V_OC)

NEW JERSEY	CALIFORNIA
V_MAX = 33.0 + ((-14 - 25) * -0.0038 * 33.0) = 37.8906 V MAX DC VOLTAGE = 50 V_DC 50 V_DC / 37.8906 V_DC = 1.3195 V MAX # LG MONOX 280 W SOLAR MODULES = 1	V_MAX = 33.0 + ((3 - 25) * -0.0038 * 33.0) = 35.7588 V MAX DC VOLTAGE = 50 V_DC 50 V_DC / 35.7588 V_DC = 1.3983 V MAX # LG MONOX 280 W SOLAR MODULES = 1

INVERTER OPTIMIZATION RATIOS

ADVANCED ENERGY PV HEATER (DC NOM = 1500 W)

MPPT STRING "A"	3 SOLAR MODULES * 180 W = 540 W	
MPPT STRING "B"	4 SOLAR MODULES * 180 W = 720 W	
MPPT STRING "C"	3 SOLAR MODULES * 180 W = 540 W	STRING DC NOM / INVERTER DC NOM
TOTAL	= 1800 W	1800 W / 1500 W = **1.2**

WIRE SIZING

DC DHW ARRAY - CURRENT CARRYING CONDUCTORS

		APPLY CONT. RATING		TEMP. CORRECTION	MIN. WIRE SIZE	WIRE SELECTION
MPPT "A"	ISC = 20.1 A	20.1 * 1.25 = 25.125 A		25.125 / 0.82 = 30.6 A	#10 AWG	**#10 AWG**
MPPT "B"	ISC = 26.8 A	26.8 A * 1.25 =	33.5 A	33.5 / 0.82 = 40.9 A	#8 AWG	**#8 AWG**
MPPT "C"	ISC = 20.1 A	20.1 A * 1.25 =	25.125 A	25.125 / 0.82 = 30.6 A	#10 AWG	**#10 AWG**

DC DHW ARRAY - EQUIPMENT GROUNDING CONDUCTOR

AE PV HEATER TO ROOFTOP COMBINER BOXES
#6 AWG BARE COPPER IS SPECIFIED AS EGC. IT HAS BEEN UPSIZED BEYOND MINIMUM REQUIRED CONDUCTOR SIZE BECAUSE IT IS EXPOSED TO POTENTIAL PHYSICAL DAMAGE.

ROOFTOP COMBINER BOXES TO TRANSITION BOX
ACCORDING TO 690.45 AN ASSUMED OCPD SIZE FOR THE MAXIMUM PV CIRCUIT CURRENT MUST BE USED TO REFERENCE TABLE 250.122 TO DETERMINE EQUIPMENT GROUNDING CONDUCTOR SIZE.

I_MAX * (1.25)^2 = OCPD AMPERAGE

		APPLY CONT. & PV RATING	MIN. EGC SIZE	WIRE SELECTION
MPPT A	ISC = 20.1 A	20.1 A * 1.252 = 31.356 A	#10 AWG	**#10 AWG**
MPPT B	ISC = 26.8 A	26.8 A * 1.252 = 41.808 A	#10 AWG	**#10 AWG**
MPPT C	ISC = 20.1 A	20.1 A * 1.252 = 31.356 A	#10 AWG	**#10 AWG**

OCPD SIZING

I_MAX * (1.25) ^ 2 = OCPD AMPERAGE

SOLBIAN 180 W SHORT CIRCUIT AMPERAGE = 6.7 AMPS	6.7 A * (1.25) ^ 2 = 10.46875 A	OCPD SELECTION: 10 AMP FUSE

A1 SOLAR CALCULATIONS
NTS

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CLIENT
U.S. DEPARTMENT OF ENERGY
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MARK	DATE	DESCRIPTION
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06	05-04-2015	CONSTRUCTION SET
05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

SHEET TITLE
SOLAR CALCULATIONS

E-605

8/16/2015 6:36:56 PM

A1 LOCATION PLAN: OC GREAT PARK, IRVINE, CA

1/64" = 1'-0"

0 16' 32' 64'

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01	10-09-2014	80% DD SET

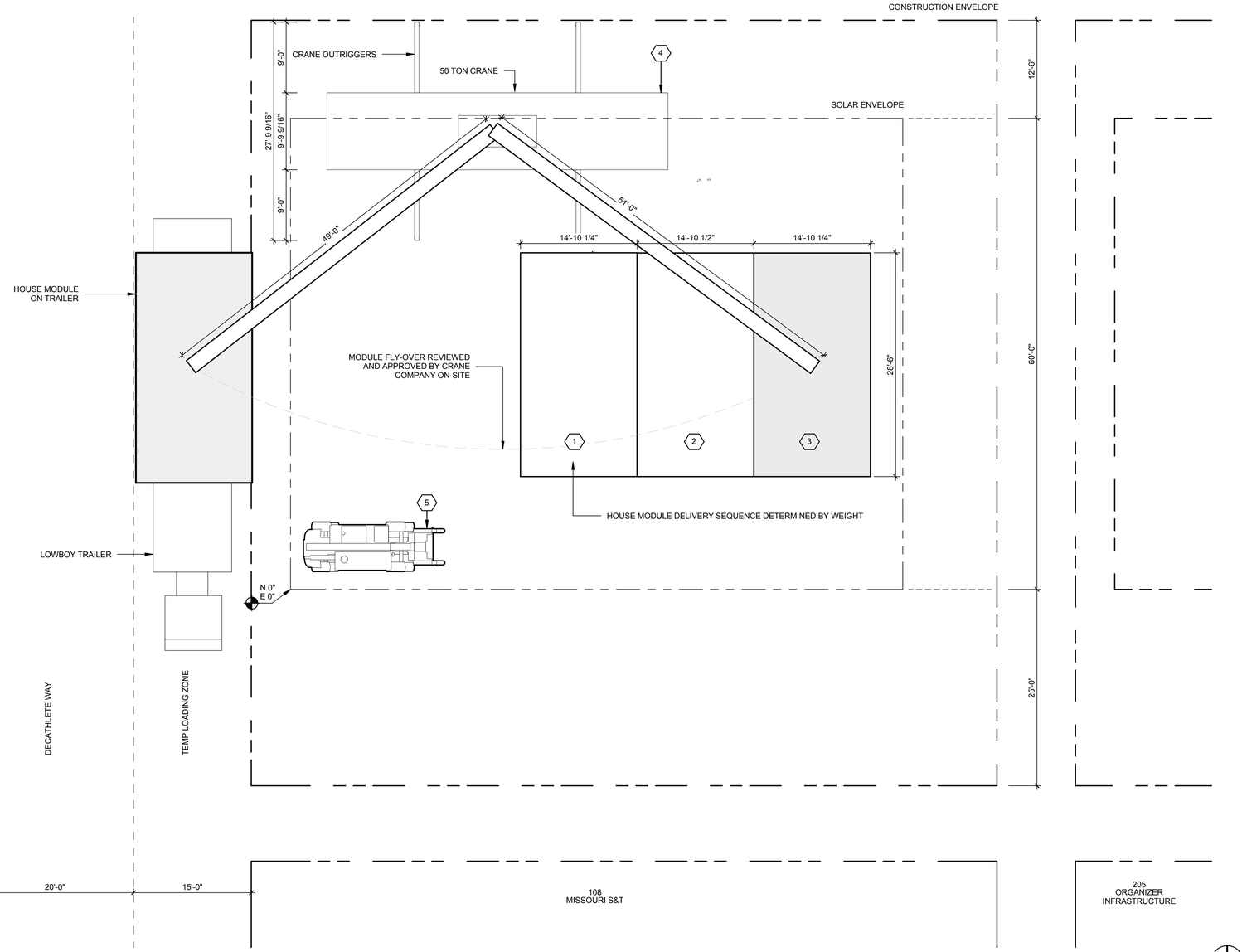
LOT NUMBER: LOT #110

SHEET TITLE

COMPETITION SITE PLAN

O-001

8/16/2015 6:38:10 PM



A1 CRANE PLAN
1/8" = 1'-0"

0 4' 8" 16"

GENERAL SHEET NOTES:

1. SEE SHEET A-101 FOR LOCATION PLAN
2. HEAVY MACHINERY:

GROVE TM690
TRUCK MOUNTED HYDRAULIC CRANE
CAPACITY: 90 TONS
MAX. ON-BOARD BOOM & JIB LENGTH: 172'
MAX. TIP HEIGHT: 207'

SKYTRAK 6042
TELEHANDLER
RATED CAPACITY: 6,000LB
MAX. LIFT HEIGHT: 41'-11"
MAX. FORWARD REACH: 27'-11"

(3) LOW BOY TRAILERS FOR MODULE DELIVERY W/ APROX. 45' BEDS

REFERENCE KEYNOTES:

SHEET KEYNOTES:

1. MODULE 1:

WIDTH: 14' 10 1/4"
LENGTH: 28' 6"
HEIGHT: 12'
WEIGHT: 23,490 LBS

INCLUDES: MECH. ROOM, BATHROOM, KITCHEN

2. MODULE 2:

WIDTH: 14' 10 1/2"
LENGTH: 28' 6"
HEIGHT: 12'
WEIGHT: 17,226 LBS

INCLUDES: KID'S BEDROOM, LIVING ROOM

3. MODULE 3:

WIDTH: 14' 10 1/4"
LENGTH: 28' 6"
HEIGHT: 12'
WEIGHT: 15,740 LBS

INCLUDES: MASTER BEDROOM, LIVING ROOM, ENTERTAINMENT CENTER, EAST PORCH

4. GROVE TM890 TRUCK MOUNTED HYDRAULIC CRANE
5. SKYTRAK 6042 TELEHANDLER

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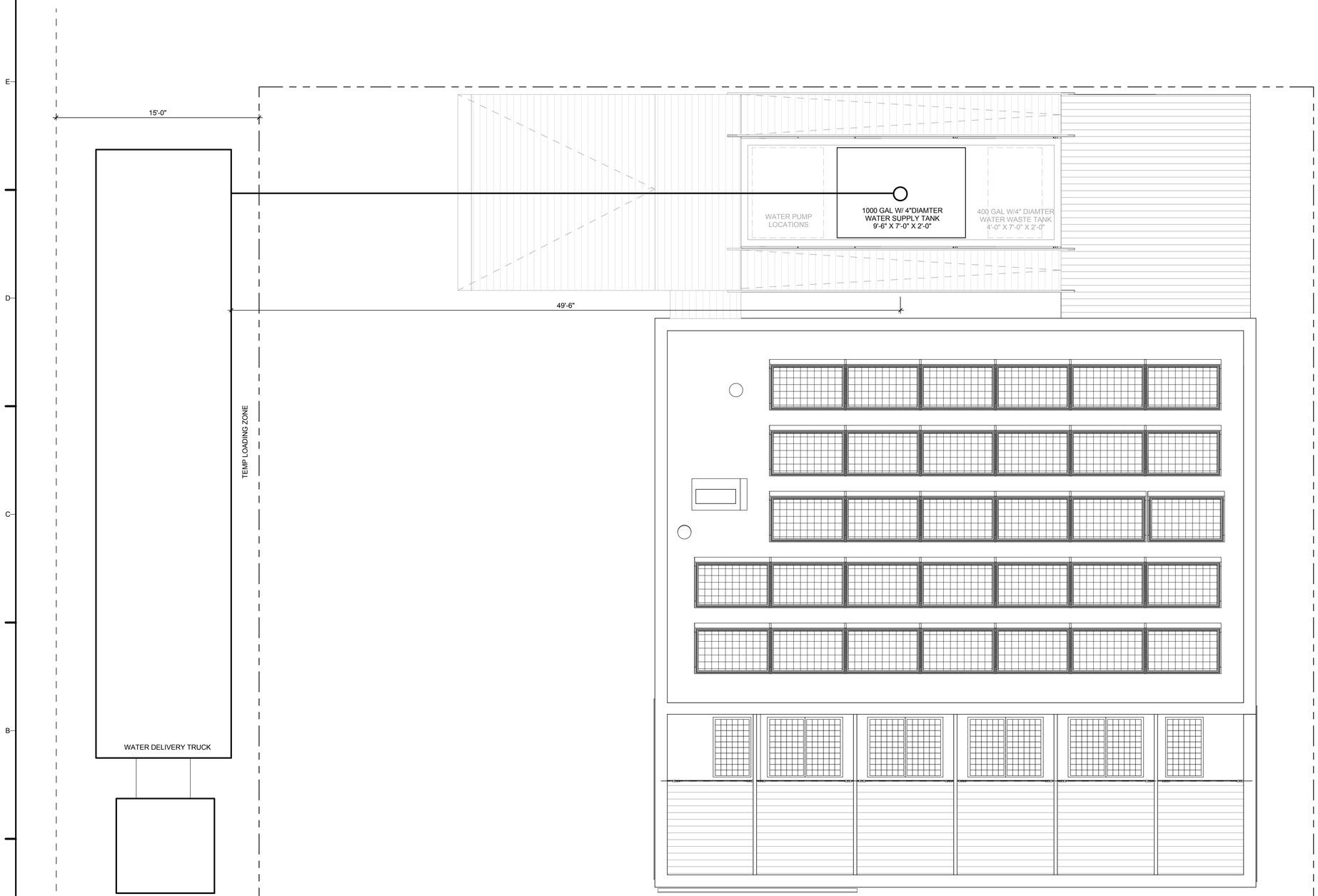
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE
CRANE LOGISTICS PLAN

O-101

8/16/2015 6:38:15 PM



A1 WATER TRUCK & FILL LOCATION
1/4" = 1'-0"

0 2' 4' 8'

8/16/2015 6:38:22 PM

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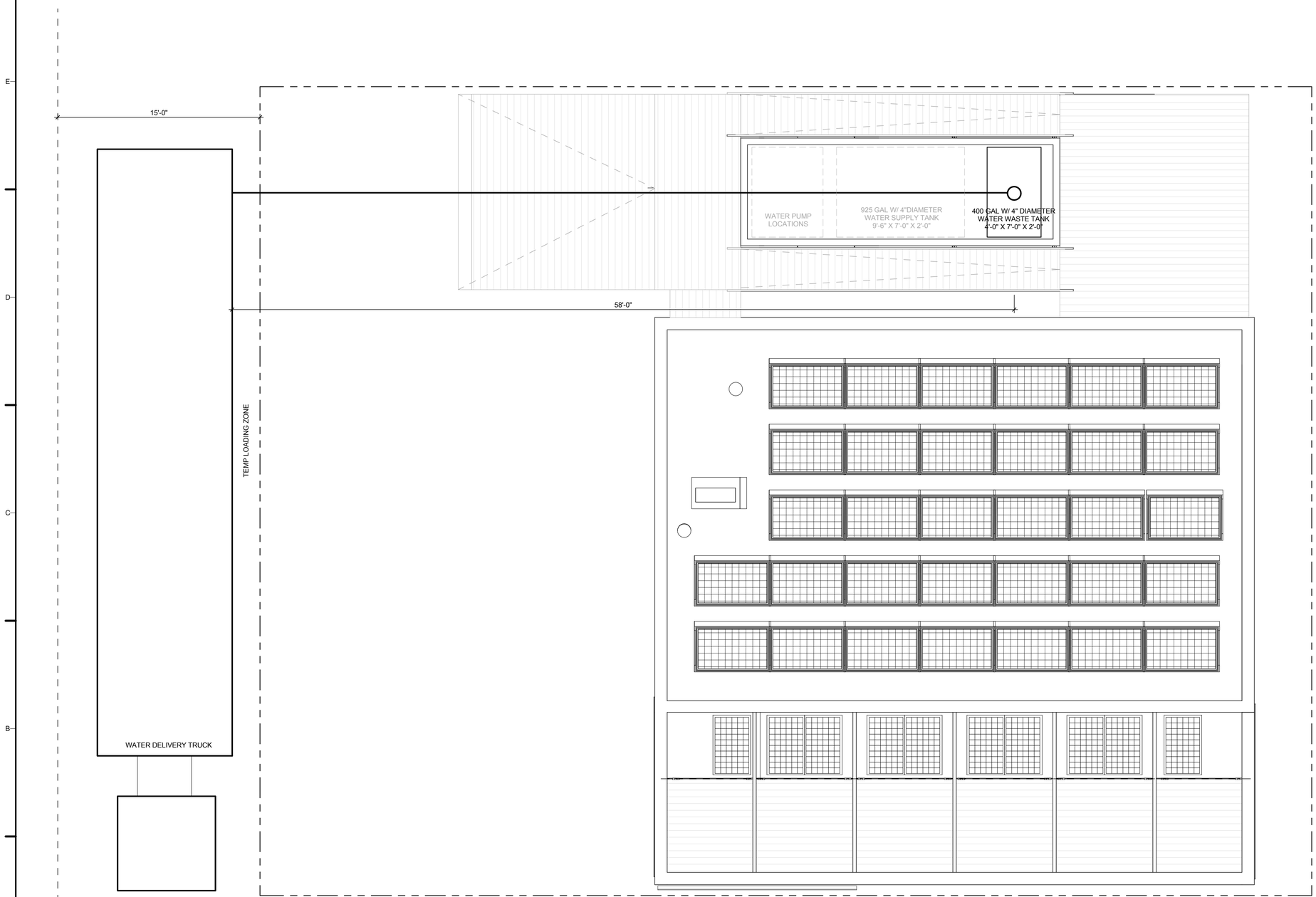
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER:	LOT #110
COPYRIGHT:	NONE: PROJECT IS PUBLIC DOMAIN

SHEET TITLE

WATER TRUCK & FILL LOCATIONS

O-201



A1 WATER TRUCK & REMOVAL LOCATION
1/4" = 1'-0"

0 2' 4' 8'

8/16/2015 6:38:30 PM

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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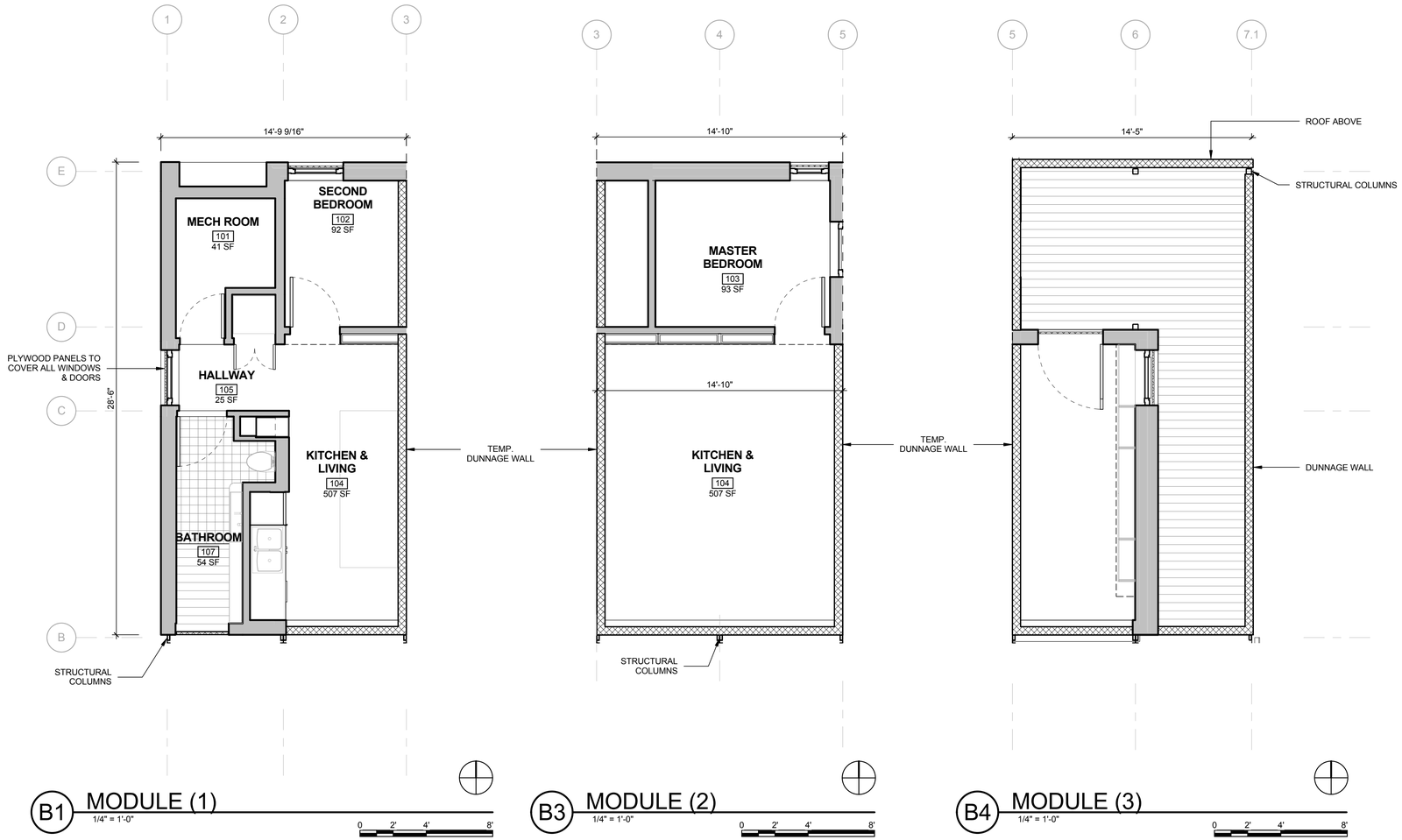
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

WATER TRUCK & EMPTYING LOCATIONS

O-202



B1 MODULE (1)
1/4" = 1'-0"
0 2' 4' 8'

B3 MODULE (2)
1/4" = 1'-0"
0 2' 4' 8'

B4 MODULE (3)
1/4" = 1'-0"
0 2' 4' 8'

GENERAL SHEET NOTES:

1. ALL BUILT IN CABINETRY TO BE REMOVED FOR TRANSPORTATION.

2. TEMPORARY DUNNAGE WALLS TO BE USED IN ALL OPENINGS DURING TRANSPORTATION AND ASSEMBLY.

3. SOUTH SLIDING GLASS DOORS TO BE REMOVED FOR TRANPORTATION.

REFERENCE KEYNOTES:

SHEET KEYNOTES:

DRAWING KEY

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

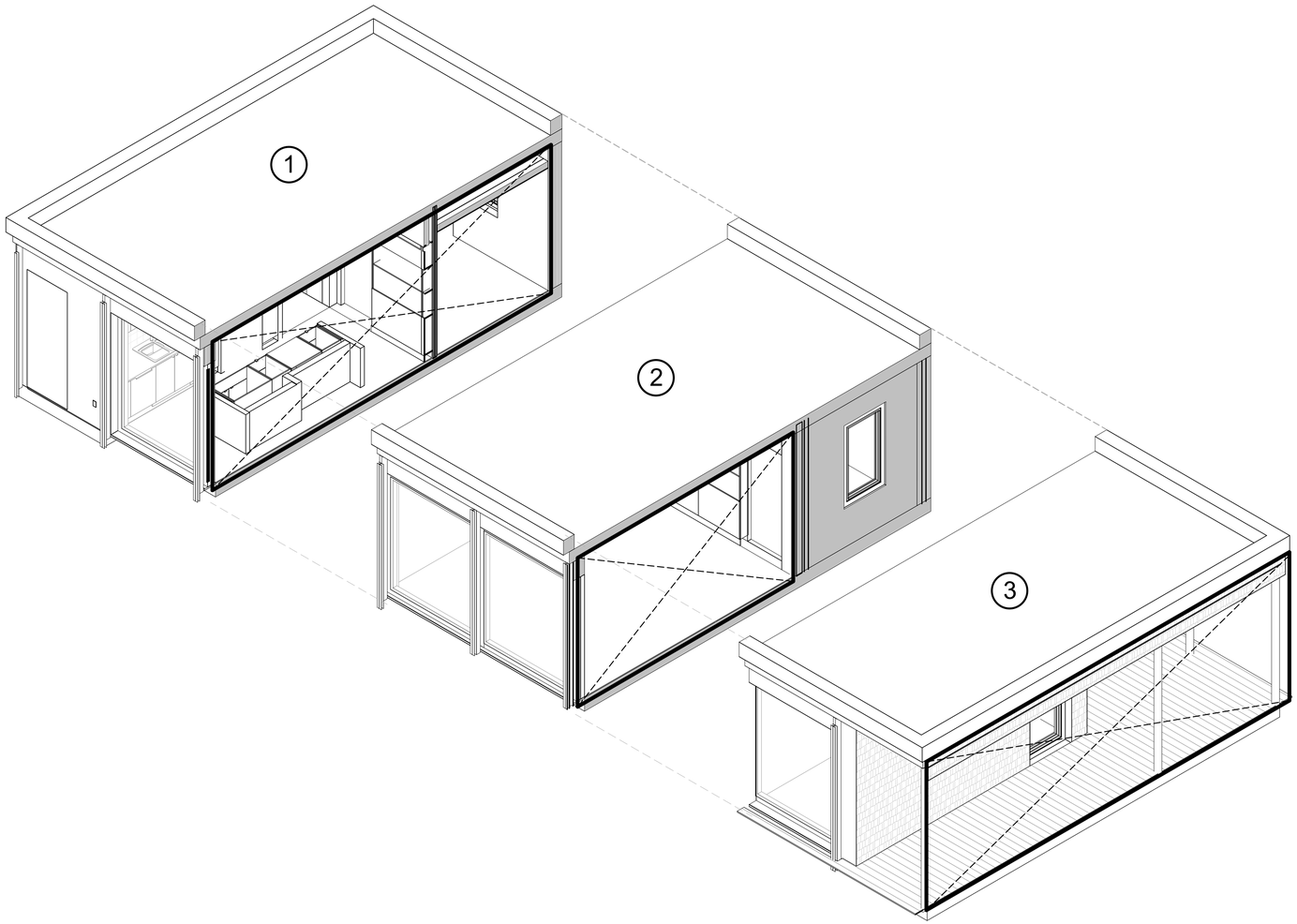
LOT NUMBER: LOT #110

SHEET TITLE

MODULE LOGIC

O-401

8/16/2015 6:38:42 PM



A1 MODULES

0 2' 4' 8'

GENERAL SHEET NOTES:

REFERENCE KEYNOTES:

SHEET KEYNOTES:

1. MODULE 1:

   WIDTH: 14' 10"
   LENGTH: 29' 0"
   HEIGHT: 12' 8"
   WEIGHT: 15,430 LBS

   INCLUDES: MECH. ROOM, BATHROOM, KITCHEN

2. MODULE 2:

   WIDTH: 14' 10"
   LENGTH: 29' 0"
   HEIGHT: 12' 8"
   WEIGHT: 13,480 LBS

   INCLUDES: KID'S BEDROOM, LIVING ROOM

3. MODULE 3:

   WIDTH: 14' 10"
   LENGTH: 29' 0"
   HEIGHT: 12' 8"
   WEIGHT: 4,980 LBS

   INCLUDES: MASTER BEDROOM, LIVING ROOM, ENTERTAINMENT CENTER, EAST PORCH

DRAWING KEY

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

MODULE 3D DIMENSIONS

O-402

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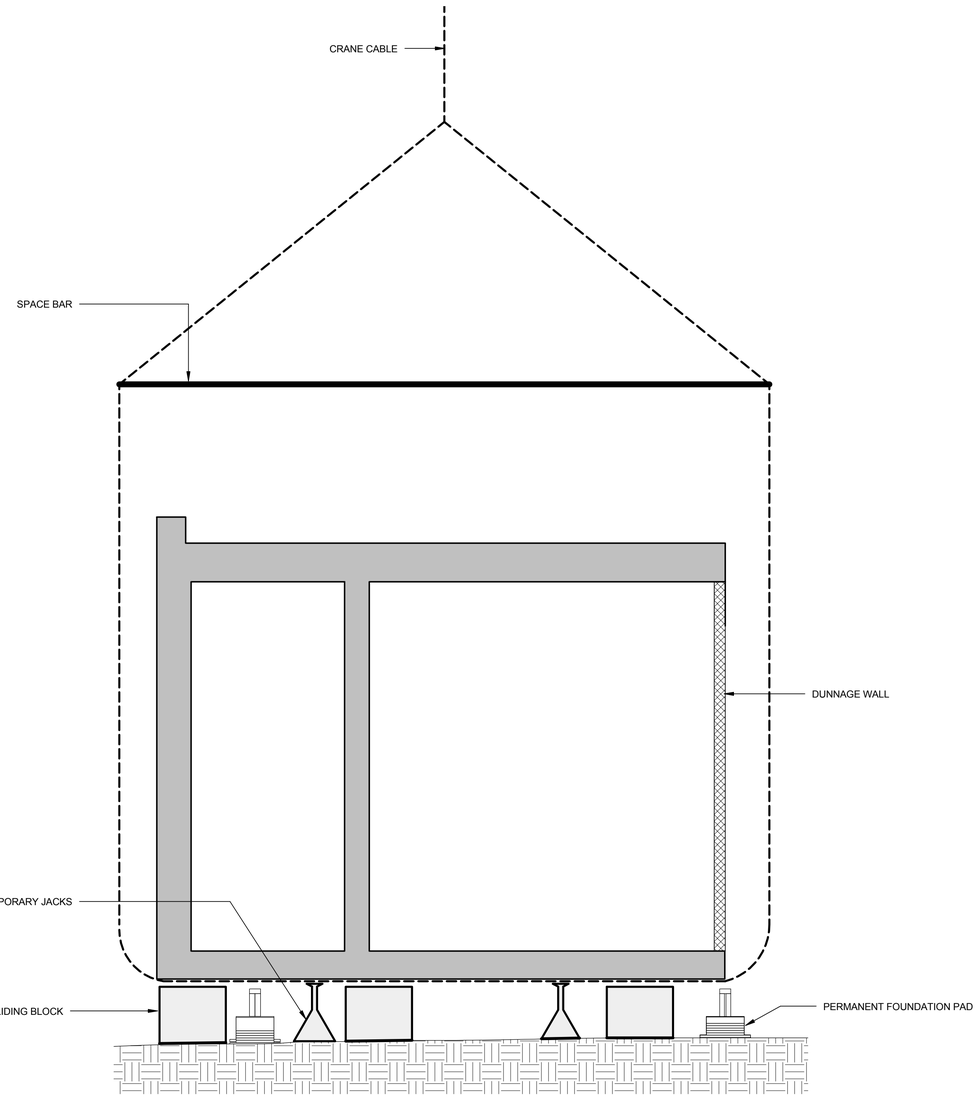

A2 SLING DETAIL MODULE 1

1/2" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

1. MODULES WILL FIRST BE SET ON TEMPORARY JACKS IN ORDER TO SLIDE THE NYLON SLING OUT.

2. AFTER THIS THE MODULES WILL BE LOWERED TO SLIDING BLOCKS IN ORDER TO SLIDE MODULES FLUSH TO EACH OTHER FOR CONNECTION.

3. MODULES WILL THEN BE LOWERED TO THE FOUNDATION.

REFERENCE KEYNOTES:

SHEET KEYNOTES:

DRAWING KEY

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01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

CRANE SLING DETAIL

O-403

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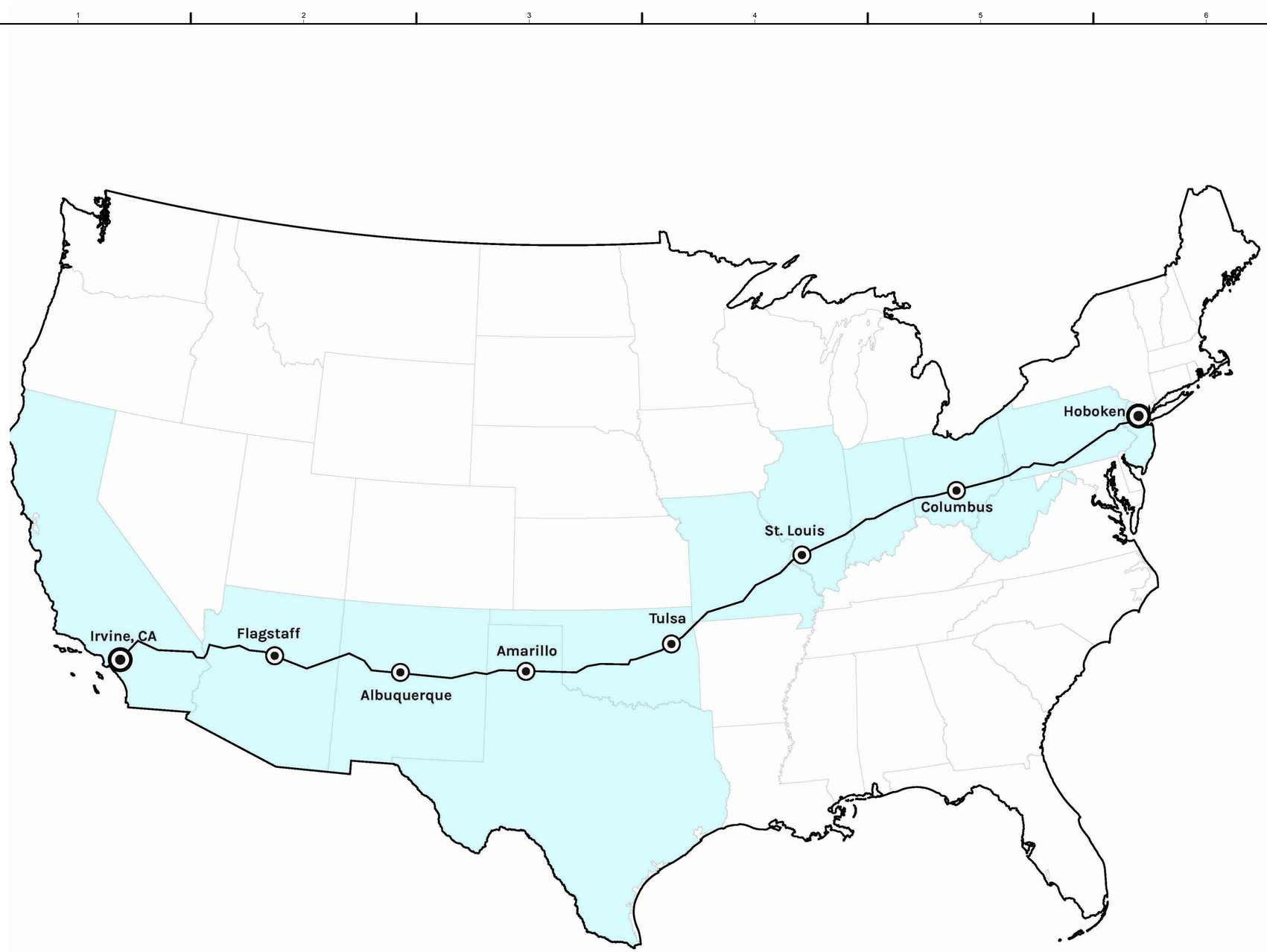

A1 TEMPORARY TRAVEL ROUTE
NTS

GENERAL SHEET NOTES:

1. DEPARTURE POINT : HOBOKEN, NJ
DESTINATION : OCEAN COUNTY GREAT PARK, IRVINE, CA

2. DISTANCE: 2,800 MILES

3. ESTIMATED TRAVEL TIME: 7□10 DAYS

4. STATES PASSING THROUGH TO ACQUIRE PERMITS:

-NEW JERSEY
-PENNSYLVANIA
-OHIO
-INDIANA
-ILLINOIS
-IOWA
-NEBRASKA
-COLORADO
-UTAH
-ARIZONA
-NEVADA
-CALIFORNIA

T

REFERENCE KEYNOTES:

SHEET KEYNOTES:

DRAWING KEY

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01	10-09-2014	80% DD SET

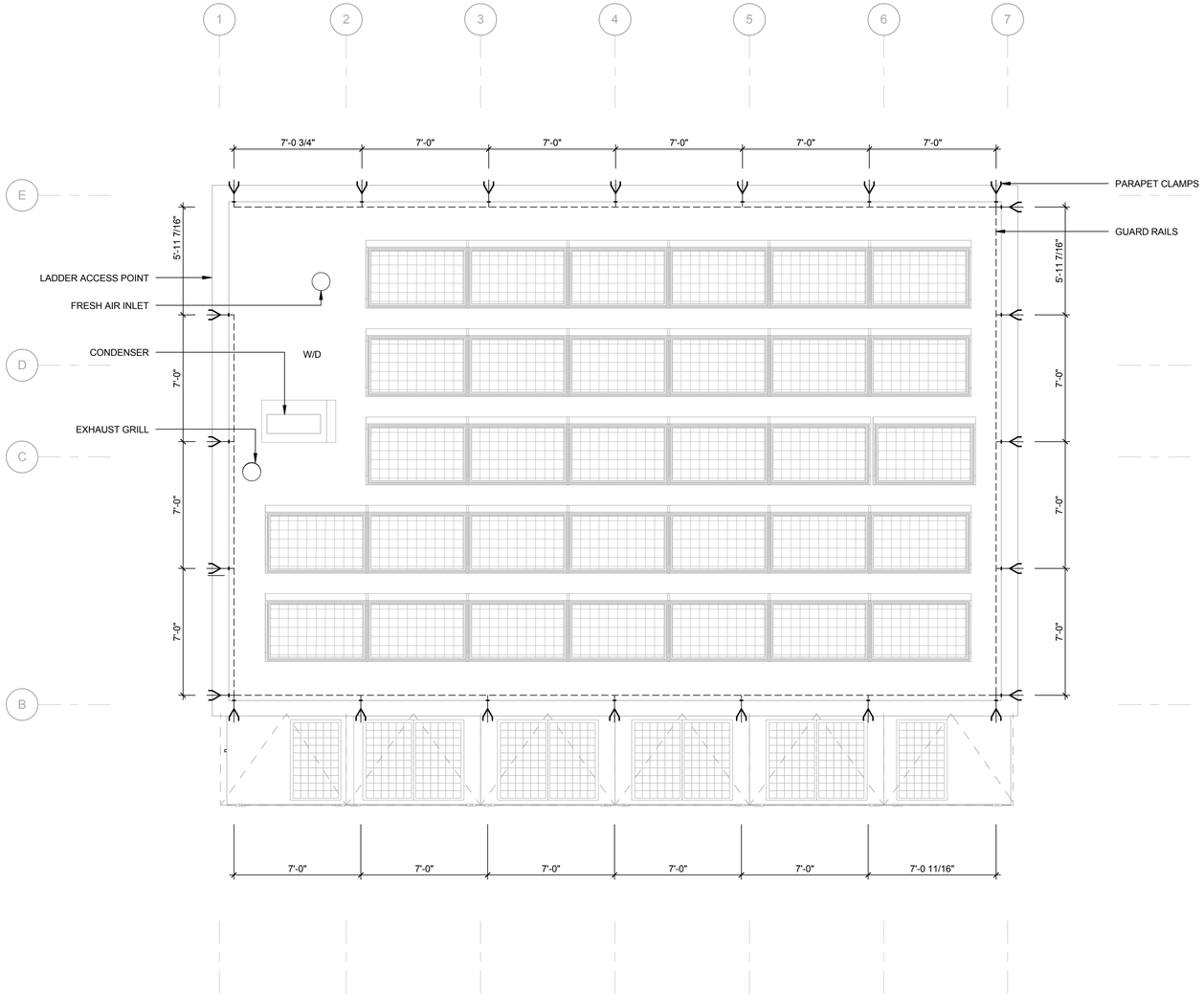
LOT NUMBER: LOT #110

SHEET TITLE

TEMP TRAVEL ROUTE

O-603

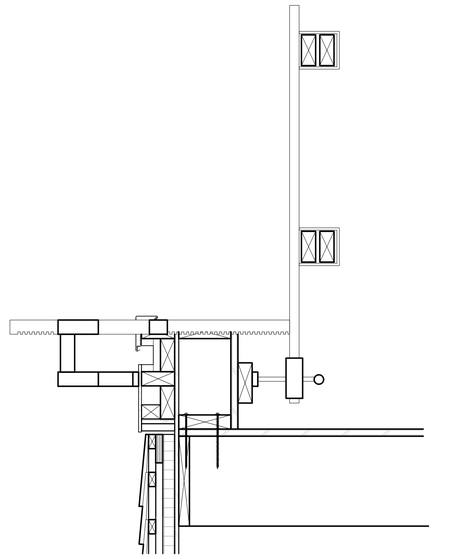
8/16/2015 6:39:12 PM



A1 CONSTRUCTION ROOF FALL PROTECTION PLAN

1/4" = 1'-0"

0 2' 4' 8'



C5 FALL PROTECTION GUARDRAIL

1 1/2" = 1'-0"

0 1' 2' 4'

GENERAL SHEET NOTES:

1. PARAPET CLAMPS MAY BE PLACED A MAXIMUM OF 8' APART
2. TOP RAILS MUST BE 42" (+/-3") ABOVE THE WORK SURFACE
3. MIDRAILS MUST BE HALFWAY BETWEEN THE TOP EDGE OF THE GUARDRAIL SYSTEM AND THE WORKING LEVEL (NOT THE TOEBOARD)
4. INSTALL GUARDRAILS IN ALL GUARDRAIL POST RUNGS. GUARDRAILS MUST BE COMPATIBLE SNAP-ON METAL RAILS, OR 2" X 4", OR 2" X 6" CONSTRUCTION GRADE LUMBER
5. LUMBER GUARDRAILS MUST OVERLAP 12" AT EACH END BETWEEN CONSECUTIVE GUARDRAIL POSTS

REFERENCE KEYNOTES:

1.

SHEET KEYNOTES:

1.

DRAWING KEY

PARAPET CLAMP GUARDRAIL SYSTEM

GUARD RAIL LOCATIONS

SU+RE HOUSE

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02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

LOT NUMBER: LOT #110

SHEET TITLE

FALL PROTECTION PLAN

O-801

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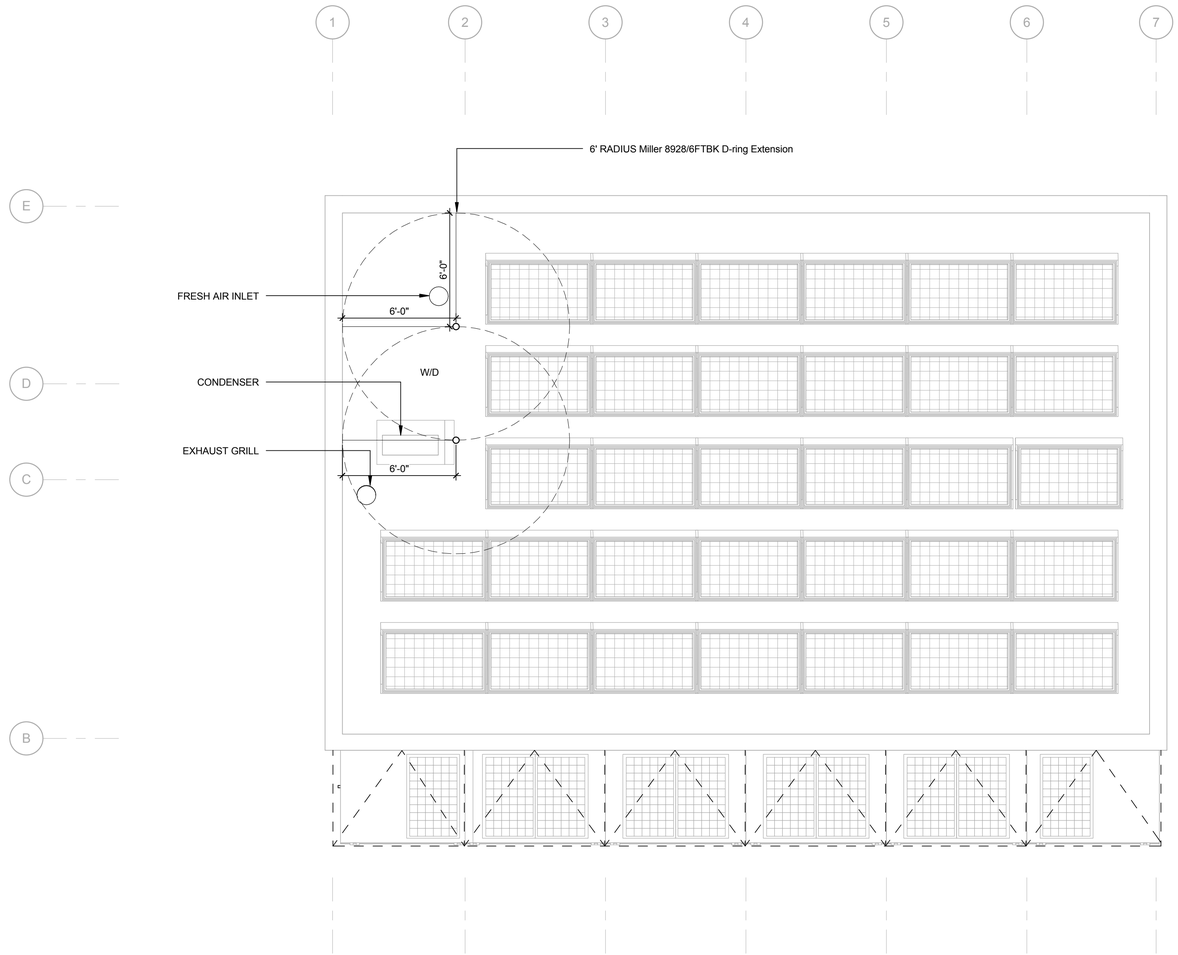

A1 ROOF FALL PROTECTION PLAN DURING COMPETITION

1/4" = 1'-0"

0 2' 4' 8'

GENERAL SHEET NOTES:

1. FALL PROTECTION TO BE USED FOR EMERGENCIES DURING COMPETITION WHEN CONSTRUCTION FALL PROTECTION IS NOT ASSEMBLED

REFERENCE KEYNOTES:

1.

SHEET KEYNOTES:

DRAWING KEY

SU+RE HOUSE

STEVENS INSTITUTE OF TECHNOLOGY

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01	10-09-2014	80% DD SET

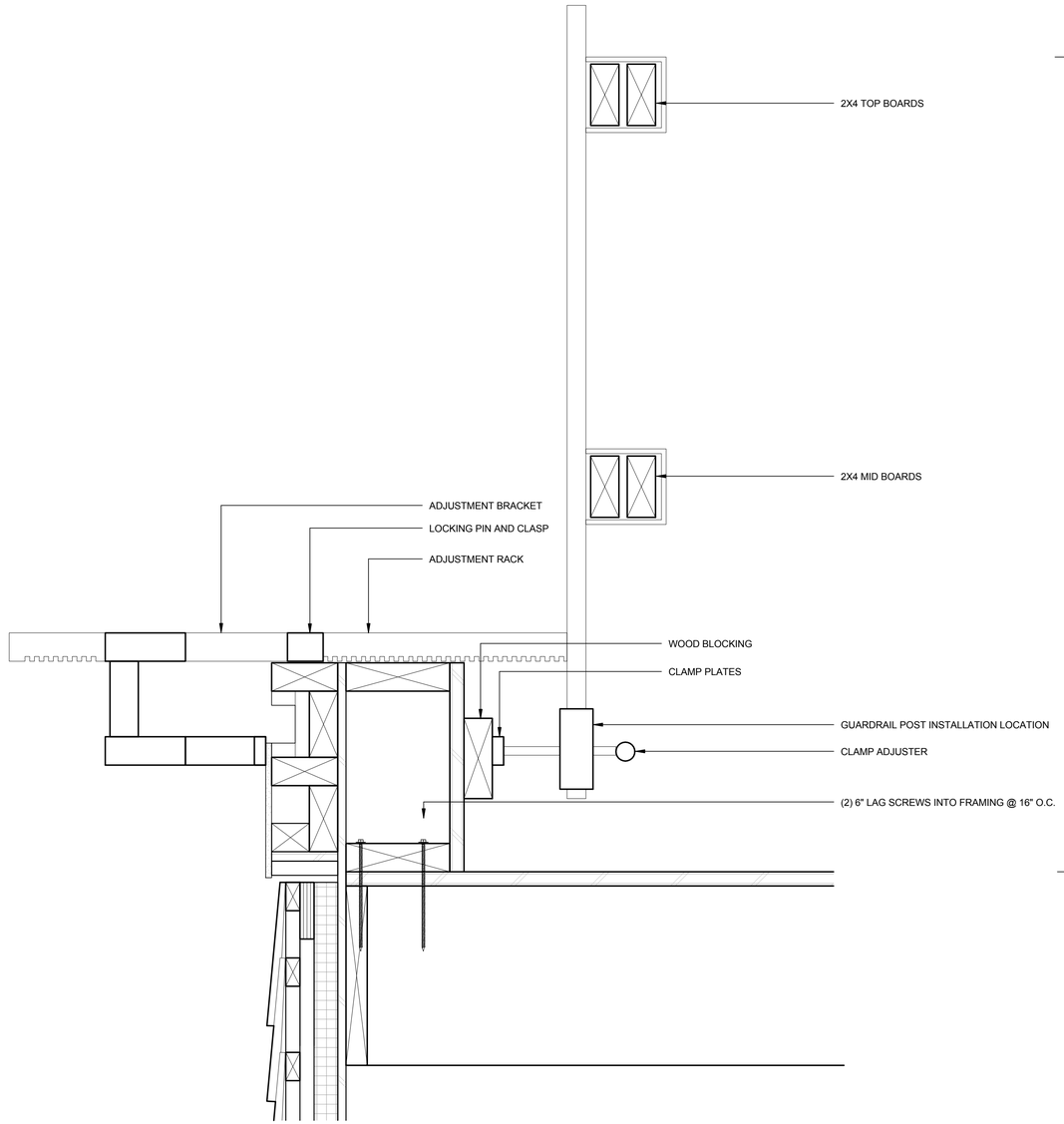
LOT NUMBER: LOT #110

SHEET TITLE

FALL PROTECTION PLAN

O-802

8/16/2015 6:39:26 PM



A1 TEMP. ROOF GUARDRAIL SECTION DETAIL

3" = 1'-0"

0 3" 6" 1'

GENERAL SHEET NOTES:

1. GUARDIAN 15170 PARAPET WALL GUARDRAIL SYSTEM
2. PARAPET CLAMPS MAY BE PLACED A MAXIMUM OF 8' APART
3. TOP RAILS MUST BE 42" (+/-3") ABOVE THE WORK SURFACE
4. MIDRAILS MUST BE HALFWAY BETWEEN THE TOP EDGE OF THE GUARDRAIL SYSTEM AND THE WORKING LEVEL (NOT THE TOEBOARD)
5. INSTALL GUARDRAILS IN ALL GUARDRAIL POST RUNGS. GUARDRAILS MUST BE COMPATIBLE SNAP-ON METAL RAILS, OR 2" X 4", OR 2" X 6" CONSTRUCTION GRADE LUMBER
6. LUMBER GUARDRAILS MUST OVERLAP 12" AT EACH END BETWEEN CONSECUTIVE GUARDRAIL POSTS

REFERENCE KEYNOTES:

1.

SHEET KEYNOTES:

1.

DRAWING KEY

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CLIENT

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SOLAR DECATHLON 2015

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U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

MARK	DATE	DESCRIPTION
07	08-17-2015	AS-BUILT DRAWINGS
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05	04-05-2015	FRAMING SET
04	02-11-2015	100% CD SET
03	12-18-2014	80% CD SET
02	11-18-2014	80% DD SET R1
01	10-09-2014	80% DD SET

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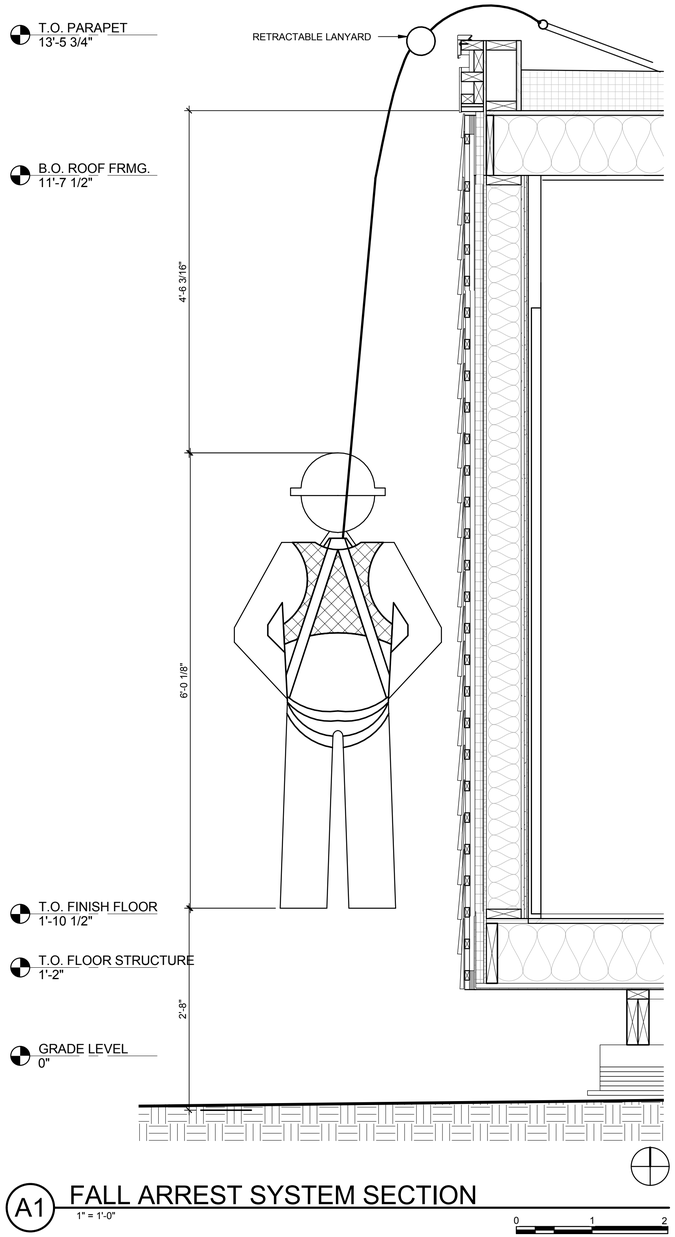
SHEET TITLE

FALL PROTECTION SECTION

O-803

8/16/2015 6:39:31 PM



A1 FALL ARREST SYSTEM SECTION

1" = 1'-0"

0 1 2

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FALL ARREST SYSTEM SECTION

O-804

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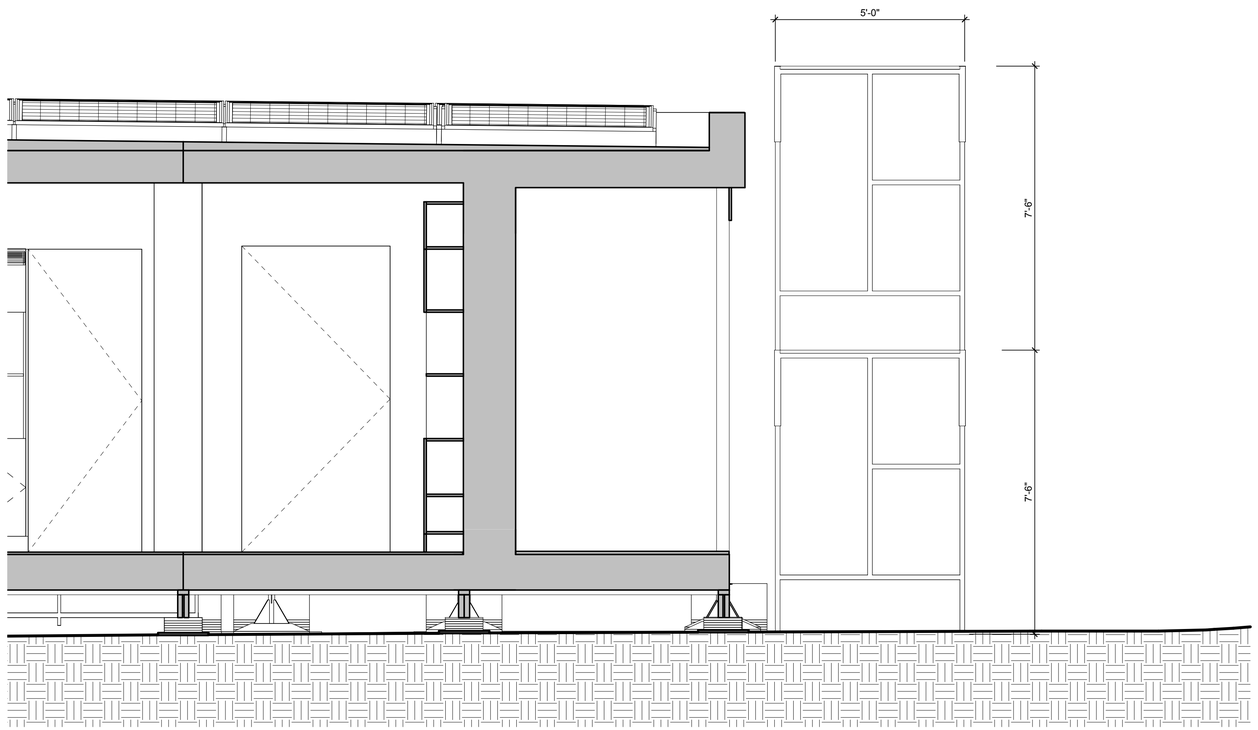

A1 SCAFFOLD SETUP
1/2" = 1'-0"

0 1' 2' 4'

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LOT NUMBER: LOT #110

SHEET TITLE

SCAFFOLD LAYOUT

O-805

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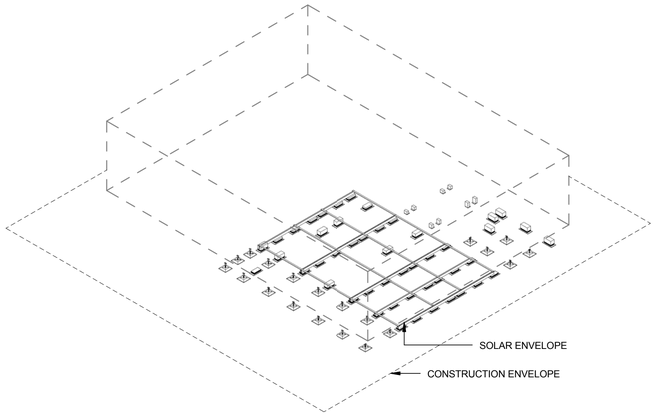
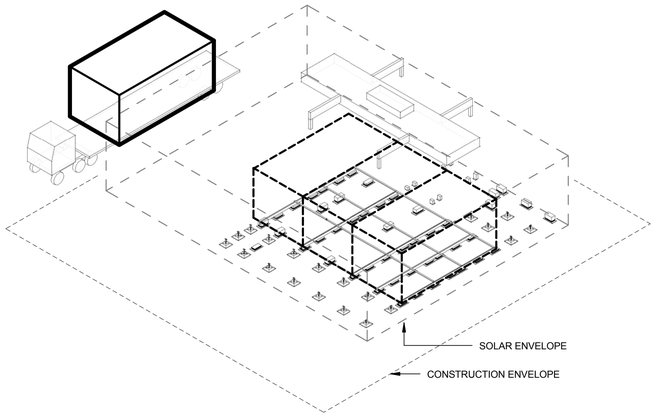
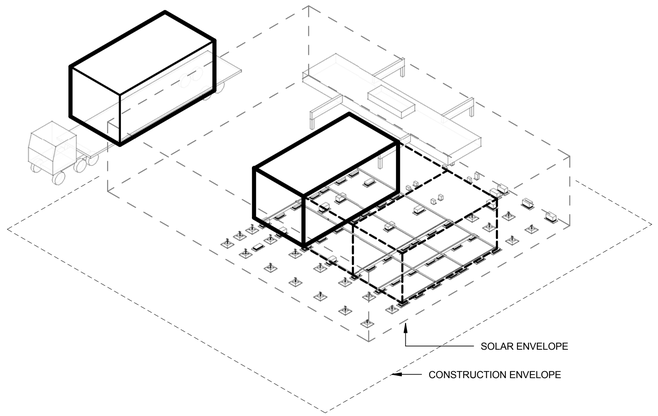


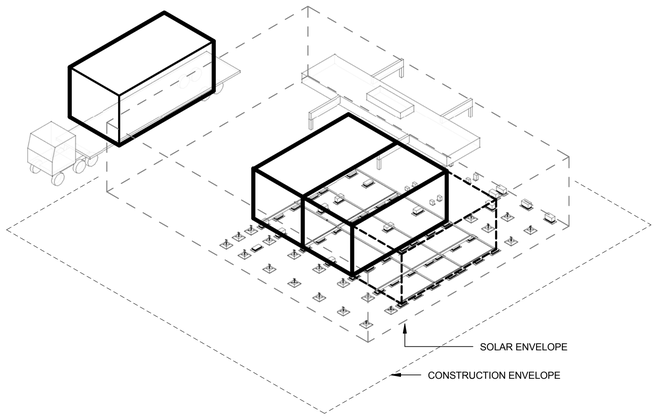
D1 FOUNDATION



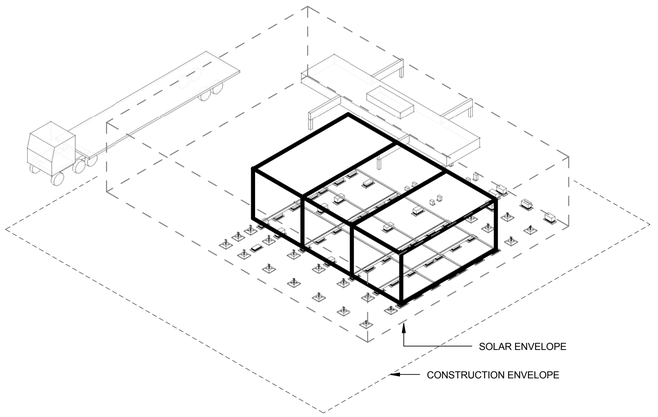
D3 MODULE DELIVERY



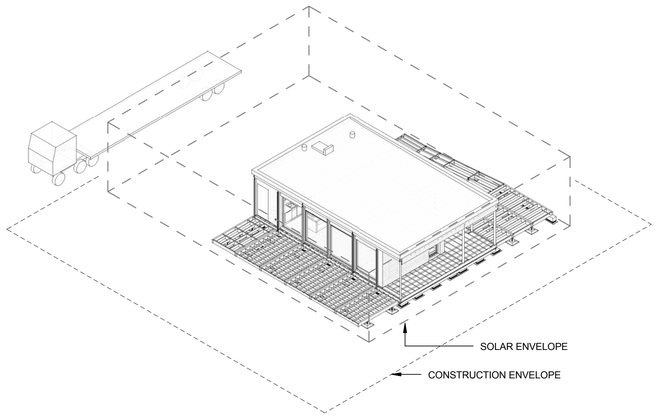
D5 MODULE 1 PLACEMENT



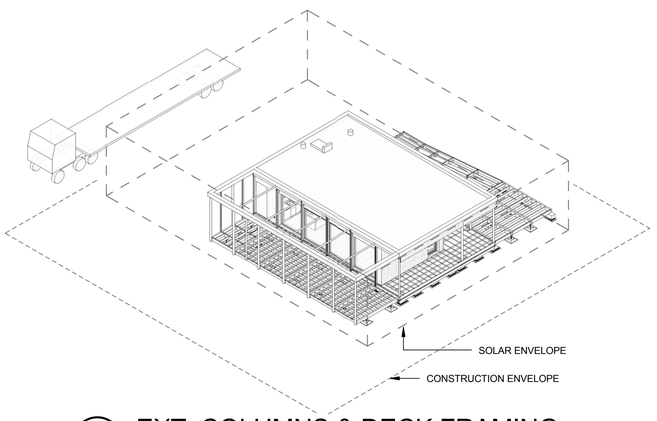
B1 MODULE 2 PLACEMENT



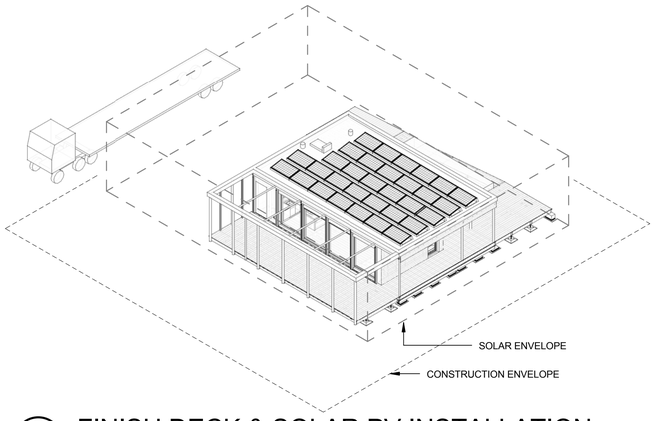
B3 MODULE 3 PLACEMENT



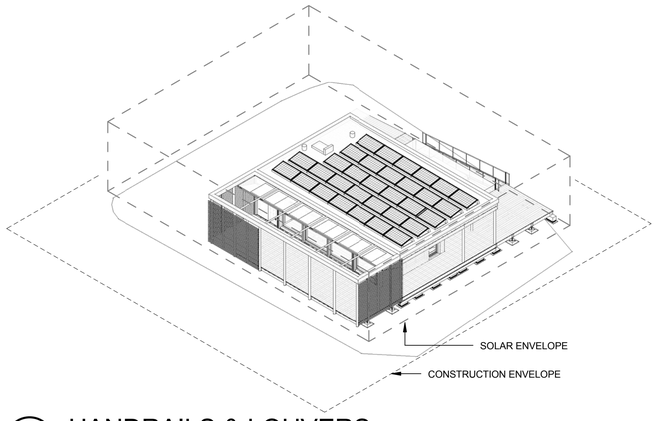
B5 DECK & RAMP FRAMING



A1 EXT. COLUMNS & DECK FRAMING



A3 FINISH DECK & SOLAR PV INSTALLATION



A5 HANDRAILS & LOUVERS

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SHEET TITLE

CONSTRUCTION ASSEMBLY

O-901

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