

Wall and Storage Cabinets

General Requirements

WOODWORK INSTITUTE CASEWORK SUPPORTS & ATTACHMENTS HCAI Pre-Approval of Manufacturer's Certification (OPM) OPM-0092	
SUPPORTS & ATTACHMENTS DESIGNED FOR: 2019 CALIFORNIA BUILDING CODE (CBC) ASCE 7-16	
IMPORTANCE FACTOR: FOR FASTENERS: DESIGN S.R.A., SHORT PERIOD: COMP. AMF. FACTOR: COMP. RESPONSE MOD. FACTOR: OVERSTRENGTH FACTOR:	$I_p=1.5$ $S_w=2.00$ $q_m=1.0$ (ASCE 7-16) $R_p=2.5$ TABLE 13.5.1 $D_o=2.0$ (REQ'D FOR ANCHORAGE TO CONCRETE & CMU)
THE SUPPORT AND ATTACHMENT DETAILS MAY BE USED FOR ANY LOCATION IN THE STATE OF CALIFORNIA WHERE S_{ds} IS NOT GREATER THAN 2.00 AND AT ANY HEIGHT IN THE BUILDING WHERE $a_h/v_n \leq 1.0$.	
SEISMIC FORCES: FOR FASTENERS USED IN FRAMED WALLS OR CMU WALLS: FORCES SHOWN ON THESE DRAWINGS ARE AT ASD LEVEL. CALCULATED THUS: $F_{pm}=1.0(DW_p)/(ASD)$ $F_{pm}=0.28(W_p)/(ASD)$ FOR FASTENERS USED IN CONCRETE WALLS: FORCES SHOWN ON THESE DRAWINGS ARE AT SD LEVEL. CALCULATED THUS: $F_p=1.44(W_p)/(ASD)$ $F_p=0.40(W_p)/(ASD)$	
THIS PRE-APPROVAL ENCOMPASSES THE FOLLOWING: DESIGN CRITERIA: DC-01, DC-02 & DC-03 STORAGE CABINET: SC-01, SC-02 & SC-03 WALL CABINET: WC-01, WC-02 & WC-03 BASE CABINET: BC-01, BC-02 PENINSULA CABINET: PC-01, PC-02	
THIS PRE-APPROVAL COVERS ONLY THE SUPPORTS & ATTACHMENTS OF THE UNIT TO THE STRUCTURE. THE SUPPORTS AND ATTACHMENTS SHALL BE SUPPLIED & INSTALLED BY THE CONTRACTOR.	
SCALE: NONE DATE: 5/2/2022 DESIGN CRITERIA	Drawing No. OPM-0092 DC-01 1 of 13
LTK ASSOCIATES INCORPORATED Structural Engineers 745 Delta Drive Los Altos, CA 94022 (650) 987-8485 FAX (650) 987-6148	WOODWORK INSTITUTE 1455 Response Road, Suite 110 Sacramento, CA 95815 (916) 372-9943 woodworkinstitute.com

GENERAL NOTES: 1) THIS HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM MUST BE BASED ON THE CBC 2019. 2) STRUCTURAL ENGINEER OF RECORD IS RESPONSIBLE FOR: a) THE DESIGN OF THE STRUCTURE, FLOOR, WALL, BACKING TO SUPPORT THE FORCES DUE TO THIS EQUIPMENT LOADING. b) NO CASE SHALL BE USED WHERE THE DESIGN FORCES ARE LESS THAN THE CODE REQUIRED MINIMUM DESIGN LOADS. c) VERIFY THAT THE ANCHORS ARE AN ADEQUATE DISTANCE FROM ANY OPENINGS. d) VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE ADEQUATE DISTANCE FROM THE ANCHORS SHOWN IN THIS PRE-APPROVAL. SEOR SHALL VERIFY THERE IS NO ADVERSE INTERACTION WHERE OTHER ANCHORS ARE IN ADJACENT UNITS OR SHOT FROM THIS UNIT'S ANCHORS.	
STANDARD WOODWORK CASEWORK: MATERIAL USED IN THE CONSTRUCTION OF THE POINT OF ATTACHMENT TO THE STRUCTURE (i.e., NAILER) SHALL BE OF THE FOLLOWING: PLYWOOD (STRUCT. I), MDF (GRADE 1500 OR), DOUGLAS FIR LARCH WITH A SPECIFIC GRAVITY OF 0.50 OR BETTER. MINIMUM THICKNESS OF 3/4" FOR THE PART THROUGH WHICH ATTACHMENT IS TO BE MADE. HOLES IN CABINET FOR EXPANSION ANCHORS SHALL BE BOLT DIAMETER + 1/16". TOE KICK ANGLE: 16 GA., 50 ksi SHEET METAL. LOADING: MAXIMUM CONTENT LOAD: 33 PCF	
FASTENERS AT WOOD FRAMED WALLS: SCREW FASTENERS SHALL BE: SIMPSON STRONG DRIVE SDW119400B WITH MIN. 2" PENETRATION INTO WOOD BACKING. FASTENERS AT METAL FRAMED WALLS: SCREW FASTENERS SHALL BE: SHEET METAL SCREWS (SMS) WITH HEX WASHER HEAD (TAPPING SCREW FASTENERS SHALL HAVE DATA IN ACCORDANCE W/ ACC-ES-40118). SMS SHALL HAVE MIN. 3" THREADS EXTEND BEYOND SHEET METAL B.C.G.	
WALL HUNG CABINET ELEVATION OF CABINET BACK FASTENER LOCATIONS	
SCALE: NONE DATE: 5/2/2022 WALL CABINET SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 DC-02 2 of 13
LTK ASSOCIATES INCORPORATED Structural Engineers 745 Delta Drive Los Altos, CA 94022 (650) 987-8485 FAX (650) 987-6148	WOODWORK INSTITUTE 1455 Response Road, Suite 110 Sacramento, CA 95815 (916) 372-9943 woodworkinstitute.com

EXPANSION ANCHORS IN CONCRETE: FOR USE IN CONCRETE WALL OR FLOOR: HLTI KIKW BOLT-T22 (ICC ESR-426) 3/8" ANCHORS W/ 1/2" EMBEDMENT INSTALLATION TORQUE: 30 ft-lb 1/2" ANCHORS W/ 1/2" EMBEDMENT INSTALLATION TORQUE: 50 ft-lb	
EXPANSION ANCHORS IN CMU WALLS: UNCRACKED CMU WALL (ALL CASES GROUTED SOLID) HLTI KIKW BOLT-T22 (ICC ESR-451) 3/8" ANCHORS W/ 1/2" EMBEDMENT INSTALLATION TORQUE: 15 ft-lb	
NOTE: Expansion anchors designed to ICC-ES E-601 are limited to allowable stress design ONLY in accordance with ADOT 1.2. Hence, verify design values are not acceptable. Allowable stress values can be shown provided, SEOR will strengthen that the masonry is not cracked as defined in ICC-ES AC01 Section 2.3; the SEOR shall provide calculations to show that the masonry wall would not crack under the design earthquake loads under all service conditions; the wall will remain elastic.	
EXPANSION ANCHOR TESTING IN CONCRETE: PER CBC SECTION 1903.4: "TORQUE TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR (FROM APPROVED INDEPENDENT AGENCY) & A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE JOB OWNER, ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE." "TEST OF THE ANCHORS, IF ANY ANCHOR FAILS, IT SHALL BE RETESTED WITHIN 10 DAYS OF THE TEST." "TEST ACCEPTANCE CRITERIA: ANCHORS TESTED W/ A CALIBRATED WRENCH MUST ATTAIN THE SPECIFIED TORQUE WITHIN 1/2 TURN OF THE NUT." EXPANSION ANCHOR TESTING IN CMU: SIMILAR TO CRITERIA NOTE ABOVE.	
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LTK ASSOCIATES INCORPORATED Structural Engineers 745 Delta Drive Los Altos, CA 94022 (650) 987-8485 FAX (650) 987-6148	WOODWORK INSTITUTE 1455 Response Road, Suite 110 Sacramento, CA 95815 (916) 372-9943 woodworkinstitute.com

Specific Wall Cabinet Requirements

STANDARD WOODWORK CASEWORK: DIMENSIONS: D = 14" & 18" MAX. H = 48" (max) LENGTH = 12" (min) to 48" (max) LOADING: APPROXIMATE EMPTY WEIGHT OF CABINET: 6 pcf	
WALL BACKING & STUDS: SEE DESIGN CRITERIA DWG. NO. DC-02 FASTENERS & ANCHORS: FOR FASTENER & ANCHOR TYPES, SEE DWG. NO. DC-02 & DC-03 FOR FASTENER & ANCHOR LOCATIONS AND SPACING SEE DWG'S: WC-02 & WC-03	
WALL CONSTRUCTION MAY BE OF: CONCRETE, CMU, OR WOOD / STEEL STUD FRAMING, SEOR TO DESIGN WALL AND CHECK IF CABINETS ON BOTH SIDES.	
MINIMUM FLOOR CONSTRUCTION: 3 1/4" THICK, 3000 PSI SAND LWT CONC. OVER MIN. 20 GA. METAL DECK. SEOR TO CHECK FLOOR TO SUPPORT CABINET LOADS.	
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FASTENER SPACING AT CORNERS	
FASTENERS & ANCHORS: 1) FOR FASTENER AND ANCHOR TYPES, SEE DRAWING DC-02 & DC-03. 2) FOR FASTENER AND ANCHOR SPACING, SEE DRAWING WC-03.	
WALL HUNG CABINET ELEVATION OF CABINET BACK FASTENER LOCATIONS	
SCALE: NONE DATE: 5/2/2022 WALL CABINET SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 WC-02 8 of 13
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STANDARD WOODWORK CASEWORK: LOADING: APPROXIMATE EMPTY WEIGHT OF CABINET: 6 pcf	
WALL BACKING: D = 12" & 24" (max) H = 96" (max) LENGTH = 12" (min) to 48" (max)	
FASTENERS & ANCHORS: FOR FASTENER & ANCHOR TYPES, SEE DWG. NO. DC-02 & DC-03 (UNO) FOR FASTENER & ANCHOR SPACING, SEE DWG. NO. DC-02 & DC-03 (UNO)	
14" DEEP CABINET SCREWS TO WOOD BACKING: SIMPSON SDWH, 3" FROM EACH END, 8.4" o.c. BETWEEN T max. = 104 lbs, V max. = 144 lbs (Forces are ASD) SCREWS TO METAL BACKING: #14 SMS, 3" FROM EACH END, 8.4" o.c. BETWEEN T max. = 104 lbs, V max. = 144 lbs (Forces are ASD)	
18" DEEP CABINET SCREWS TO WOOD BACKING: SIMPSON SDWH, 3" FROM EACH END, 8.4" o.c. BETWEEN T max. = 104 lbs, V max. = 144 lbs (Forces are ASD) SCREWS TO METAL BACKING: #14 SMS, 3" FROM EACH END, 8.4" o.c. BETWEEN T max. = 104 lbs, V max. = 144 lbs (Forces are ASD)	
ANCHORS TO CMU: 3/8" HKB-T22, 2 1/2" EMBEDMENT 3" FROM EACH END, 14" o.c. BETWEEN T max. = 341 lbs, V max. = 423 lbs (Forces are ASD)	
ANCHORS TO CONCRETE: 3/8" HKB-T22, 2" EMBEDMENT 3" FROM EACH END, 14" o.c. BETWEEN T max. = 611 lbs, V max. = 493 lbs (Forces are SDXOmega)	
SCALE: NONE DATE: 5/2/2022 WALL CABINET SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 WC-03 9 of 13
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Specific Storage Cabinet Requirements

STANDARD WOODWORK CASEWORK: DIMENSIONS: D = 12" & 24" (max) H = 96" (max) LENGTH = 12" (min) to 48" (max) LOADING: APPROXIMATE EMPTY WEIGHT OF CABINET: 6 pcf	
WALL BACKING & STUDS: SEE DESIGN CRITERIA DWG. NO. DC-02 FASTENERS & ANCHORS: FOR FASTENER & ANCHOR TYPES, SEE DWG. NO. DC-02 & DC-03 FOR FASTENER & ANCHOR LOCATIONS AND SPACING SEE DWG'S: SC-02 & SC-03	
WALL CONSTRUCTION MAY BE OF: CONCRETE, CMU, OR WOOD / STEEL STUD FRAMING, SEOR TO DESIGN WALL AND CHECK IF CABINETS ON BOTH SIDES.	
MINIMUM FLOOR CONSTRUCTION: 3 1/4" THICK, 3000 PSI SAND LWT CONC. OVER MIN. 20 GA. METAL DECK. SEOR TO CHECK FLOOR TO SUPPORT CABINET LOADS.	
SCALE: NONE DATE: 5/2/2022 STORAGE CABINET SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 SC-01 4 of 13
LTK ASSOCIATES INCORPORATED Structural Engineers 745 Delta Drive Los Altos, CA 94022 (650) 987-8485 FAX (650) 987-6148	WOODWORK INSTITUTE 1455 Response Road, Suite 110 Sacramento, CA 95815 (916) 372-9943 woodworkinstitute.com

FASTENER SPACING AT CORNERS	
FASTENERS & ANCHORS: 1) FOR FASTENER AND ANCHOR TYPES, SEE DRAWING DC-02 & DC-03. 2) FOR FASTENER AND ANCHOR SPACING, SEE DRAWING SC-03.	
STORAGE CABINET ELEVATION OF BACK PANEL FASTENER LOCATIONS	
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STANDARD WOODWORK CASEWORK: LOADING: APPROXIMATE EMPTY WEIGHT OF CABINET: 6 pcf	
WALL BACKING: D = 12" & 24" (max) H = 96" (max) LENGTH = 12" (min) to 48" (max)	
FASTENERS & ANCHORS: FOR FASTENER & ANCHOR TYPES, SEE DWG. NO. DC-02 & DC-03 (UNO) FOR FASTENER & ANCHOR SPACING, SEE DWG. NO. DC-02 & DC-03 (UNO)	
12" DEEP CABINET SCREWS TO WOOD BACKING: SIMPSON SDWH, 3" FROM EACH END, 14" o.c. BETWEEN, 2 LINES AT MIDDLE T max. = 103 lbs, V max. = 89 lbs (Forces are ASD) SCREWS TO METAL BACKING: #14 SMS, 3" FROM EACH END, 14" o.c. BETWEEN, 2 LINES AT MIDDLE T max. = 103 lbs, V max. = 89 lbs (Forces are ASD)	
24" DEEP CABINET SCREWS TO WOOD BACKING: SIMPSON SDWH, 3" FROM EACH END, 14" o.c. BETWEEN, 2 LINES AT MIDDLE T max. = 211 lbs, V max. = 155 lbs (Forces are ASD) SCREWS TO METAL BACKING: #14 SMS, 3" FROM EACH END, 14" o.c. BETWEEN, 2 LINES AT MIDDLE T max. = 211 lbs, V max. = 155 lbs (Forces are ASD)	
ANCHORS TO CMU: 3/8" HKB-T22, 2 1/2" EMBEDMENT 3" FROM EACH END, 14" o.c. BETWEEN T max. = 382 lbs, V max. = 354 lbs (Forces are ASD)	
ANCHORS TO CONCRETE: 3/8" HKB-T22, 2" EMBEDMENT 3" FROM EACH END, 14" o.c. BETWEEN T max. = 591 lbs, V max. = 510 lbs (Forces are SDXOmega)	
SCALE: NONE DATE: 5/2/2022 STORAGE CABINET SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 SC-03 6 of 13
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General Notes

The 2013 and 2015 editions of the California Building Code (CBC) only regulate seismic compliance of wall mounted upper and floor resting casework that extend over 6' above the finished floor but did not address typical floor resting base or peninsula casework.

On April 18, 2010, WI was granted OPHSD's OPA-2649-10 pre-approval for seismic casework installation of wall mounted and floor resting tall storage, base and peninsula casework. With adoption of the 2013 CBC WI was granted OSHPD's OPM-0090-13; however, only for wall mounted upper and floor resting tall storage casework as required by the CBC.

Because the 2013 CBC did not regulate seismic installation of floor resting base or peninsula casework, the Woodwork Institute's Certified Seismic Installation Program (CSIP) for casework was based both on the 2013 CBC for wall mounted upper and floor resting tall storage cabinets, and retained the 2010 CBC's requirements for floor resting base and peninsula casework. The new CSIP based on the 2019 code includes wall hung cabinets, tall cabinets and standard base and peninsula cabinets in one OSHPD approved OPM.

All of WI's CSIP requirements are engineered to and based on the latest published CBC requirements and acknowledged by California's Department of Health Care Access and Information (HCAI) pre-approval programs. All engineering is adequate for casework installation within the State of California at any height within a building where the SDS is not greater than 2.0. Requirements and/or allowances for wall construction, blocking, sheet rock thickness, maximum cabinet sizes, etc. are specifically covered within the individual OPM approvals included herewith.

Specific details about the minimum procedures, requirements and cost of WI's Certified Seismic Installation program can be found at <http://woodworkinstitute.com/services/certified-seismic-installation-program/> or by calling the applicable WI Architectural Services Representative as listed at <http://woodworkinstitute.com/about-us-2/about-us/>.

WI's OPA and OPM requirements/details are only valid in conjunction with WI's CSIP Program.

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Base and Peninsula Cabinets

Specific Base Cabinet Requirements

STANDARD WOODWORK CASEWORK: NOTES: SEE NOTES ON DWG. DC-01, DC-02 & DC-03 DIMENSIONS: D = 24" (max) H = 36" (max) LENGTH = 12" (min) to 48" (max) LOADING: APPROXIMATE EMPTY WEIGHT OF CABINET: 6 pcf	
WALL BACKING: SEE DESIGN CRITERIA DWG. NO. DC-02 FASTENERS & ANCHORS: FOR FASTENER & ANCHOR TYPES, SEE DWG. NO. DC-02 & DC-03 (UNO) FOR FASTENER & ANCHOR SPACING, SEE DWG. NO. DC-02 & DC-03 (UNO)	
SCREWS TO WOOD BACKING: SIMPSON SDWH, 3" FROM EACH END, 12" o.c. BETWEEN T max. = 153 lbs, V max. = 94 lbs (Forces are ASD)	
SCREWS TO METAL BACKING: #14 SMS, 3" FROM EACH END, 12" o.c. BETWEEN T max. = 153 lbs, V max. = 94 lbs (Forces are ASD)	
ANCHORS TO CMU: 3/8" HKB-T22, 3" FROM EACH END, 14" o.c. BETWEEN, 2 1/2" EMBEDMENT T max. = 387 lbs, V max. = 312 lbs (Forces are ASD)	
ANCHORS TO CONCRETE: 3/8" HKB-T22, 3" FROM EACH END, 21" o.c. BETWEEN, 2" EMBEDMENT T max. = 557 lbs, V max. = 449 lbs (Forces are SDXOmega)	
SCALE: NONE DATE: 5/2/2022 BASE CABINET SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 BC-01 10 of 13
LTK ASSOCIATES INCORPORATED Structural Engineers 745 Delta Drive Los Altos, CA 94022 (650) 987-8485 FAX (650) 987-6148	WOODWORK INSTITUTE 1455 Response Road, Suite 110 Sacramento, CA 95815 (916) 372-9943 woodworkinstitute.com

STANDARD WOODWORK CASEWORK: NOTES: SEE NOTES ON DWG. DC-01, DC-02 & DC-03 DIMENSIONS: D = 24" (max) H = 36" (max) LENGTH = 12" (min) to 48" (max) LOADING: APPROXIMATE EMPTY WEIGHT OF CABINET: 6 pcf	
WALL BACKING: SEE DESIGN CRITERIA DWG. NO. DC-02 FASTENERS & ANCHORS: FOR FASTENER & ANCHOR TYPES, SEE DWG. NO. DC-02 & DC-03 (UNO) FOR FASTENER & ANCHOR SPACING, SEE DWG. NO. DC-02 & DC-03 (UNO)	
SCREWS TO WOOD BACKING: SIMPSON SDWH, 3" FROM EACH END, 12" o.c. BETWEEN T max. = 141 lbs, V max. = 114 lbs (Forces are ASD)	
SCREWS TO METAL BACKING: #14 SMS, 3" FROM EACH END, 12" o.c. BETWEEN T max. = 125 lbs, V max. = 98 lbs (Forces are ASD)	
ANCHORS TO CMU: 3/8" HKB-T22, 3" FROM EACH END, 14" o.c. BETWEEN, 2 1/2" EMBEDMENT T max. = 387 lbs, V max. = 341 lbs (Forces are ASD)	
ANCHORS TO CONCRETE: 3/8" HKB-T22, 3" FROM EACH END, 21" o.c. BETWEEN, 2" EMBEDMENT T max. = 591 lbs, V max. = 510 lbs (Forces are SDXOmega)	
SCALE: NONE DATE: 5/2/2022 BASE CABINET W/ CHASE SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 BC-02 11 of 13
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Specific Peninsula Cabinet Requirements

STANDARD WOODWORK CASEWORK: CABINETS SHALL HAVE INTEGRAL TOE	
FASTENERS: AT CABINET BASE TO FLOOR SUPPORT USE: #12 SHEET METAL SCREWS, S1 = 3" MAX., S2 = 9" o.c. MAX. T = 100 lbs, V = 147 lbs (Forces are ASD, not concurrent)	
FLOOR ANCHORS: AT FLOOR SUPPORT TO CONCRETE SLAB USE: 1/2" x 16 GA. L BENT SHEET METAL ANGLE (FY=50KSI) S1 = 2" MAX., S3 = 9" MAX., S4 = 9" MAX. T = 555 lbs, V = 528 lbs (Forces are SDXOmega) SEE EXPANSION ANCHOR NOTES DWG. DC-03	
MIN. 3 1/4" CONCRETE SLAB: 3000 PSI NORMAL WEIGHT OR SAND LIGHTWEIGHT CONCRETE (SLAB MAY BE SLAB OVER METAL DECK AS SHOWN OR OTHER SOLID SLAB SUCH AS MIN. 4" SLAB ON GRADE)	
TOE KICK: MIN. 4" SLAB ON GRADE	
STEEL DECK: 20ga MIN.	
NOTES: SEE NOTES ON DWG. DC-01, DC-02 & DC-03	
SCALE: NONE DATE: 5/2/2022 PENINSULA CASEWORK SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 PC-01 12 of 13
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STANDARD WOODWORK CASEWORK: CABINETS SHALL HAVE INTEGRAL TOE	
FLOOR SUPPORTS & ATTACHMENTS: TYPICAL DETAILS, SEE PC-01	
MIN. 3 1/4" CONCRETE SLAB: 3000 PSI NORMAL WEIGHT OR SAND LIGHTWEIGHT CONCRETE (SLAB MAY BE SLAB OVER METAL DECK AS SHOWN OR OTHER SOLID SLAB SUCH AS MIN. 4" SLAB ON GRADE)	
TOE KICK: MIN. 4" SLAB ON GRADE	
STEEL DECK: 20ga MIN.	
NOTES: SEE NOTES ON DWG. DC-01, DC-02 & DC-03	
SCALE: NONE DATE: 5/2/2022 PENINSULA CASEWORK SUPPORTS & ATTACHMENTS	Drawing No. OPM-0092 PC-02 13 of 13
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