



# Structural Specs

## 1.1 DESIGN LOADS

A. THE STRUCTURE WAS DESIGNED FOR THE LIVE LOADS SHOWN BELOW AND DEAD LOADS AS REQUIRED BY CONSTRUCTION IN ACCORDANCE WITH IBC 2015 FOR EXISTING BUILDINGS AND THE BALTIMORE CITY AMENDMENT. LOADS DUE TO SNOW LOAD BUILD UP WERE CONSIDERED IN DESIGN OF STRUCTURAL COMPONENTS ADJACENT TO PARAPETS, HIGH BUILDING WALLS, ETC. INCREASE IN THESE LOADINGS, DUE TO CHANGE IN FUNCTION MESH, EQUIPMENT, CONSTRUCTION MATERIALS, ETC. TO HAVE WRITTEN APPROVAL FROM THE DESIGNING STRUCTURAL ENGINEER.

B. THE BASIC STABILITY OF THE STRUCTURE IS DEPENDENT UPON THE DIAPHRAGM ACTION OF FLOORS, WALLS & ROOF ACTING TOGETHER. PROVIDE GWS, BRACES, STRUTS, ETC. TO ACCOMMODATE LIVE, DEAD AND WIND LOADS UNTIL FINAL CONNECTIONS BETWEEN THESE ELEMENTS ARE MADE.

C. LIVE LOADS SHOWN BELOW ARE IN POUNDS PER SQUARE FOOT.

ROOF LIVE LOAD:	30	GROUND SNOW LOAD (Ps):	30
FLAT ROOF SNOW LOAD (Pf):	25		
STAIRS:	100	SNOW LOAD IMPORTANCE FACTOR:	1.2
OFFICE FL LL:	50		
WIND CRITERIA:			
BASIC WIND SPEED:	120 MPH (3 SECOND GUST)		
WIND IMPORTANCE FACTOR (Iw):	1.0	BUILDING CATEGORY:	II
MAIN WIND FORCE SYSTEM EXPOSURE CATEGORY:	B		
HORIZONTAL LOADS		VERTICAL LOADS	
WALL 14	WINDWARD ROOF -14		
ROOF -14	LEEWARD ROOF -14		

COMPONENTS & CLADDING:  
 ROOF ZONE 1-21  
 ROOF ZONES 28-33 & -44  
 WALL ZONE 4-14 & 14  
 WALL ZONE 5-28 & 14

SEISMIC CRITERIA:  
 Ss = .18F<sub>a</sub> + 1.6    S<sub>ds</sub> = .171  
 S1 = .06F<sub>v</sub> + 2.4    S<sub>d1</sub> = .088  
 SEISMIC SITE CLASSIFICATION = D  
 SEISMIC DESIGN CATEGORY = B  
 BASIC SEISMIC-FORCE-RESISTING SYSTEM: 2L, (R) + 2  
 SEISMIC BASE SHEAR (V): 10 KIPS  
 SEISMIC USE GROUP: I  
 ANALYSIS PROCEDURE: EQUIVALENT  
 LATERAL DESIGN CONTROL: WIND

## 1.2 SHORING

A. PROVIDE SHORING AS REQUIRED TO MAINTAIN STABILITY OF THE STRUCTURE, ADJACENT UTILITIES, CONSTRUCTION, AND EMBANKMENTS DURING THE CONSTRUCTION PERIOD. STRENGTH AND PLACEMENT OF SHORING IS TOTALLY THE RESPONSIBILITY OF THE CONTRACTOR.

B. PRIOR TO BEGINNING WORK, SUBMIT DRAWINGS SHOWING COMPLETE DETAILS OF SHORING PROCEDURES AND ATTACHMENT OF SHORING TO OTHER MEMBERS AND EXISTING FRAMING. THESE DRAWINGS ARE TO BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER (REGISTERED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED). THESE DRAWINGS ARE SUBMITTED FOR RECORD PURPOSES ONLY AND DO NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR STRENGTH AND PLACEMENT OF SHORING MATERIALS.

C. REMOVE FINISHES, SUCH AS PLASTER, STUCCO, ETC., SO THAT SHORING WILL BE IN DIRECT CONTACT WITH STRUCTURAL MEMBERS.

D. WHERE SPACES BETWEEN SHORING AND EXISTING MEMBERS EXIST, DRIVE HARDWOOD WEDGES SNUG AND TOE NAIL TO SHORING.

## 1.3 EXISTING CONDITIONS

A. EXPOSE EXISTING FRAMING AND NOTIFY ARCHITECT PRIOR TO INSTALLATION OF NEW FRAMING.

B. CONTRACTOR MUST FIELD CHECK AND VERIFY DIMENSIONS AND ELEVATIONS OF EXISTING WORK PRIOR TO FABRICATION OF NEW MATERIALS.

C. RELOCATE EXISTING ELECTRICAL, PLUMBING AND HVAC AS REQUIRED TO ALLOW INSTALLATION OF NEW FRAMING.

D. PATCH, REPAIR OR REPLACE EXISTING CONSTRUCTION AS REQUIRED IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS, UNLESS NOTED OTHERWISE, TO MATCH EXISTING TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE.

E. ALTERNATE ENGINEERING SOLUTIONS DUE TO UN-ANTICIPATED EXISTING CONDITIONS ARE TO BE PAID BY THE OWNER.

F. TEMPORARY RE-LOCATION OF EXISTING CONSTRUCTION, EQUIPMENT, ETC. IS TO BE THE CONTRACTOR'S RESPONSIBILITY AND WILL BE RE-INSTALLED IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE.

G. BUILDING COMPONENTS REFERENCED IN THESE DRAWINGS AS "MATCH EXISTING" OR SIMILAR NOTATION ARE TO BE VERIFIED BY THE CONTRACTOR AND FABRICATED/INSTALLED IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS.

## 1.5 SUBMITTALS

A. BEFORE SUBMISSION OF SHOP DRAWINGS, CONTRACTOR SHALL HAVE DETERMINED AND VERIFIED QUANTITIES, DIMENSIONS, SPECIFIED PERFORMANCE CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA WITH RESPECT THERETO AND REVIEWED OR COORDINATED EACH SHOP DRAWING WITH OTHER SHOP DRAWINGS AND SAMPLES AND WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS.

B. AFTER CHECKING AND VERIFYING COMPLIANCE WITH CONTRACT DOCUMENTS AND ACTUAL FIELD CONDITIONS, CONTRACTOR SHALL SUBMIT, FOR REVIEW, SHOP DRAWINGS REFERENCED IN THE INDIVIDUAL MATERIALS SECTIONS. CONTRACTOR SHALL STAMP OR PROVIDE A SIMILAR WRITTEN INDICATION THAT CONTRACTOR HAS REVIEWED THE SUBMISSION AND IS SATISFIED THAT MATERIALS SHOWN ARE IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

C. A REVIEW PERIOD OF 5 WORKING DAYS WILL BE REQUIRED FOR SHOP DRAWING REVIEW, OF EACH UNIT TYPE. SHOP DRAWING SUBMISSION OF MULTIPLE COMPONENT TYPES WILL REQUIRE ADDITIONAL REVIEW TIME. SHOP DRAWINGS WILL BE FORWARDED TO CLIENT FOR THEIR REVIEW BEFORE RETURNING TO THE CONTRACTOR.

## 2.1 DEMOLITION

A. DEMOLITION INCLUDES CONTROLLED DESTRUCTION OF STRUCTURES AND THE REMOVAL AND DISPOSAL OF DEMOLISHED MATERIALS AS SHOWN ON THE DRAWINGS AND INCLUDED IN THESE NOTES.

B. PERFORM DEMOLITION IN SECTIONS SMALL ENOUGH TO PREVENT DAMAGE OF MATERIALS AND FACILITIES AND FOR EMBANKMENTS TO REMAIN IN PLACE.

C. PROVIDE ADEQUATE SHORING, BRACING, AND PROTECTION TO PREVENT MOVEMENT, SETTLEMENT, COLLAPSE OR DAMAGE TO EXISTING MATERIALS AND FACILITIES AND FOR EMBANKMENTS TO REMAIN. SUBMIT COMPLETE DETAILS OF SHORING PROCEDURES SIGNED BY A PROFESSIONAL ENGINEER (REGISTERED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED) PRIOR TO BEGINNING WORK.

D. PROMPTLY REPAIR DAMAGES CAUSED BY THE DEMOLITION TO ADJACENT FACILITIES, MATERIALS, OR EMBANKMENTS AT NO COST TO THE OWNER.

E. PROMPTLY REMOVE FROM SITE AND PROPERLY DISPOSE OF DEBRIS, RUBBISH, AND OTHER MATERIALS RESULTING FROM THE DEMOLITION.

## 2.8 EXPANSION BOLTS & POWER ACTUATED FASTENERS

A. EXPANSION BOLTS AND POWER ACTUATED FASTENERS SHALL HAVE THE MINIMUM WORKING LOAD CAPACITY FOR SHEAR AND PULLOUT AS SHOWN ON THE DRAWINGS.

B. SUBMIT TO ENGINEER COMPLETE DATA ON CAPACITY OF TYPE TO BE USED PRIOR TO INSTALLATION.

## 4.1 MASONRY

A. UNLESS GOVERNED BY BUILDING CODE OR LOCAL AMENDMENTS: MANUFACTURE AND INSTALL MASONRY IN ACCORDANCE WITH (ACI 530/ASCE 5/TMS 402), (ACI 530.1/ASCE 8/TMS 602). WHEN THERE IS A CONFLICT, THE MOST STRINGENT IS TO APPLY.

B. BLOCK: CONCRETE MASONRY UNITS: 1,000 PSI COMPRESSIVE STRENGTH (AVERAGE OF THREE UNITS). ASTM C-90 WITH MINIMUM DENSITY OF 125 LBS. PER CU. FT. FOR NORMAL WEIGHT AND 100 LBS. PER CU. FT. FOR LIGHT WEIGHT UNITS.

C. DESIGNED F'm: 1,500 PSI. AT 28 DAYS.

D. MORTAR: ASTM C-270 TYPE S. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS TO BE 1,800 PSI.

E. GROUT FOR WALL FILL: ASTM C-476. 4,500 PSI MINIMUM (UND) AT 28 DAYS WITH 60% OF STRENGTH AT 7 DAYS. USE FINE AGGREGATE SIZE #1 IN ACCORDANCE WITH ASTM C-404. MIX TO A SLUMP OF 8 TO 11 INCHES UTILIZING WATER REDUCING ADMIXTURES. FLY ASH AND BLAST-FURNACE SLAG (UP TO 25%) MAY BE USED. HOWEVER, FLY ASH AND BLAST-FURNACE SLAG CAN PRODUCE SLOWER INITIAL STRENGTH GAIN, WHICH NEEDS TO BE CONSIDERED IN COLD WEATHER.

F. GROUT FOR BOLT EMBEDS AND UNDER BEAM OR BASE PLATES: ASTM C-1107, 5000 PSI, NON-SHRINK.

## 5.1 STRUCTURAL STEEL

A. UNLESS GOVERNED BY BUILDING CODE OR LOCAL AMENDMENTS: FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION AND OSHA STEEL ERECTION STANDARDS UNLESS NOTED ON DRAWINGS OR SPECIFICATIONS. WHEN THERE IS A CONFLICT, THE MOST STRINGENT IS TO APPLY.

B. SUBMIT COMPLETE SHOP AND ERECTION DRAWINGS FOR REVIEW PRIOR TO FABRICATION. REPRINTS OF CONTRACT DOCUMENTS ARE NOT ACCEPTABLE.

C. SUBMIT CALCULATIONS FOR BEAM TO BRACE CONNECTIONS, SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED, IF SHOP DRAWINGS DEVIATE FROM CONSTRUCTION DRAWINGS.

D. STEEL - ASTM A-36 FOR ANGLES, CHANNELS, AND MISCELLANEOUS SHAPES.  
 - ASTM A-992 (50 KSI) FOR WF SHAPES.  
 STEEL TO BE OF AMERICAN ORIGIN ONLY.

E. STRUCTURAL TUBES - ASTM A-500 (GRADE B).

F. STRUCTURAL PIPES - ASTM A-601, OR ASTM A-53, TYPE E, GRADE B.

G. SUPPLY STEEL LINTELS REQUIRED FOR WALL SUPPORT. LINTELS WILL BE INSTALLED UNDER MASONRY DIVISION.

H. BASE PLATE ANCHORS - GALVANIZED ASTM F-1554, GRADE 36, 55, 106. (55 CAN BE FURNISHED IN LIEU OF 36 FOR WELDING)

I. HOOKED, HEADED, OR THREADED ANCHOR RODS - GALVANIZED ASTM A-307, GRADE A.

J. NUTS - GALVANIZED ASTM A-563, HEAVY.

K. WASHERS - GALVANIZED ASTM F-436.

L. PLATE WASHERS - ASTM A-36.

M. HIGH STRENGTH BOLTS FOR CONNECTIONS - GALVANIZED ASTM A-325 OR A-490.

N. THREADED RODS - GALVANIZED ASTM A193.

O. NELSON STUDS - ASTM A106, GRADES C1010-C1020

P. GROUT FOR UNDER BASE AND BEARING PLATES: ASTM C-1107, 5000 PSI.

Q. WELDERS SHALL BE CERTIFIED IN ACCORDANCE WITH THE A.W.S.

R. COORDINATE WELDING ELECTRODES, MACHINES, ETC., WITH TYPE OF STEEL BEING WELDED.

S. COAT STEEL EXPOSED AFTER BUILDING IS COMPLETED WITH ONE SHOP COAT OF AN APPROVED RUST INHIBITIVE PRIMER. PAINT STEEL EXPOSED TO WEATHER AFTER BUILDING IS COMPLETED WITH TWO ADDITIONAL COATS OF RUST INHIBITIVE PAINT AFTER ERECTION. PAINT SHALL BE COMPATIBLE WITH SHOP COAT.

T. ENGAGE THE SERVICES OF AN QUALIFIED INSPECTION AND TESTING AGENCY TO INSPECT STRUCTURAL STEEL PLACEMENT AND CONNECTIONS.

U. FIELD WELDS TO BE INSPECTED IN ACCORDANCE WITH AWS D1.1. MOMENT CONNECTION WELDS TO BE PHYSICALLY INSPECTED BY NON DESTRUCTIVE MEANS IN ACCORDANCE WITH AWS D1.1.

V. SUBMIT CAPACITIES OF ALL ANCHORS AND POWER ACTUATED FASTENERS FOR REVIEW PRIOR TO USE.

## 6.1 WOOD FRAMING

A. WOOD FRAMING AND FASTENERS - COMPLY WITH THE RECOMMENDATIONS OF THE AMERICAN WOOD COUNCIL (AWC).

B. PLYWOOD: APA - THE ENGINEERED WOOD ASSOCIATION GRADE TRADE MARKED MEETING THE REQUIREMENTS OF THE LATEST EDITION, PER CODE, OF U.S. PRODUCT STANDARD PS-1.

C. PANEL THICKNESS AND IDENTIFICATION INDEX SHALL BE AT LEAST EQUAL TO THAT SHOWN ON THE DRAWINGS. INSTALL AND CONNECT IN ACCORDANCE WITH THE RECOMMENDATIONS OF APA - THE ENGINEERED WOOD ASSOCIATION.

D. UNLESS OTHERWISE NOTED ON DRAWINGS, ATTACH PLYWOOD TO FRAMING WITH MIN. 8d NAILS AT 6" O/C ON EDGES OF SHEET AND 12" O/C ON EACH INTERIOR SUPPORT.

E. STRUCTURAL LUMBER HEM FIR #1 OR BETTER WITH 10% MAXIMUM MOISTURE CONTENT IN USE AND SHALL HAVE THE FOLLOWING MINIMUM UNFACTORED PROPERTIES:

E = 1,500,000 PSI    fe = 625 PSI  
 fb = 975 PSI    ft = 625 PSI  
 fc (PARALLEL TO GRAIN) = 1,350 PSI    fv = 150 PSI

F. ATTACH MULTIPLE MEMBERS TOGETHER AS FOLLOWS:  
 2-2x2 ROWS 16d NAILS @ 16" O/C  
 TOP LOADED WITH 3-2x4 2 ROWS 16d NAILS @ 16" O/C  
 SIDE LOADED 3-2x8 AND 3-2x8: 2 ROWS- 16d NAILS @ 12" O/C  
 SIDE LOADED 3-2x10 AND 3-2x12: 3 ROWS- 16d NAILS @ 12" O/C  
 4-2x12: 2 ROWS - 1/2" BOLTS @ 24" O/C

G. PROVIDE FLUSH FRAMED JOISTS AND HEADERS WITH A PREFABRICATED GALVANIZED (SADDLE TYPE) METAL CONNECTOR UNLESS NOTED OTHERWISE. HANGERS SHALL BE 18 GAGE MINIMUM THICK AND HAVE CAPACITY TO RESIST 600# MINIMUM FOR EACH 2X MEMBER IN SHEAR FOR SPECIES OF WOOD USED.

H. ATTACH WOOD BLOCKING, NAILERS, ETC., TO STEEL OR CONCRETE FRAMING WITH POWER ACTUATED FASTENERS UNLESS NOTED OTHERWISE. SPACE FASTENERS AT 2'-0" MAXIMUM O/C, STAGGERED. MINIMUM CAPACITY OF EACH FASTENER SHALL BE 200 POUNDS IN SHEAR AND PULLOUT, UNLESS NOTED OTHERWISE.

INSTALL NEW 2x12 WOOD BLOCKING BETWEEN TWO EXISTING JOISTS TO RECEIVE (2) 1/2" THRU BOLTS AT EACH FRONT WALL HSS4x3 ROOF CONNECTION.

(2) L6"x3"x10GAX0"-8" LONG WITH VERTICAL SLOT IN LONG LEG TO RECEIVE 3/4" THRU BOLT AT EACH HSS4x3 ROOF CONNECTION UNO.

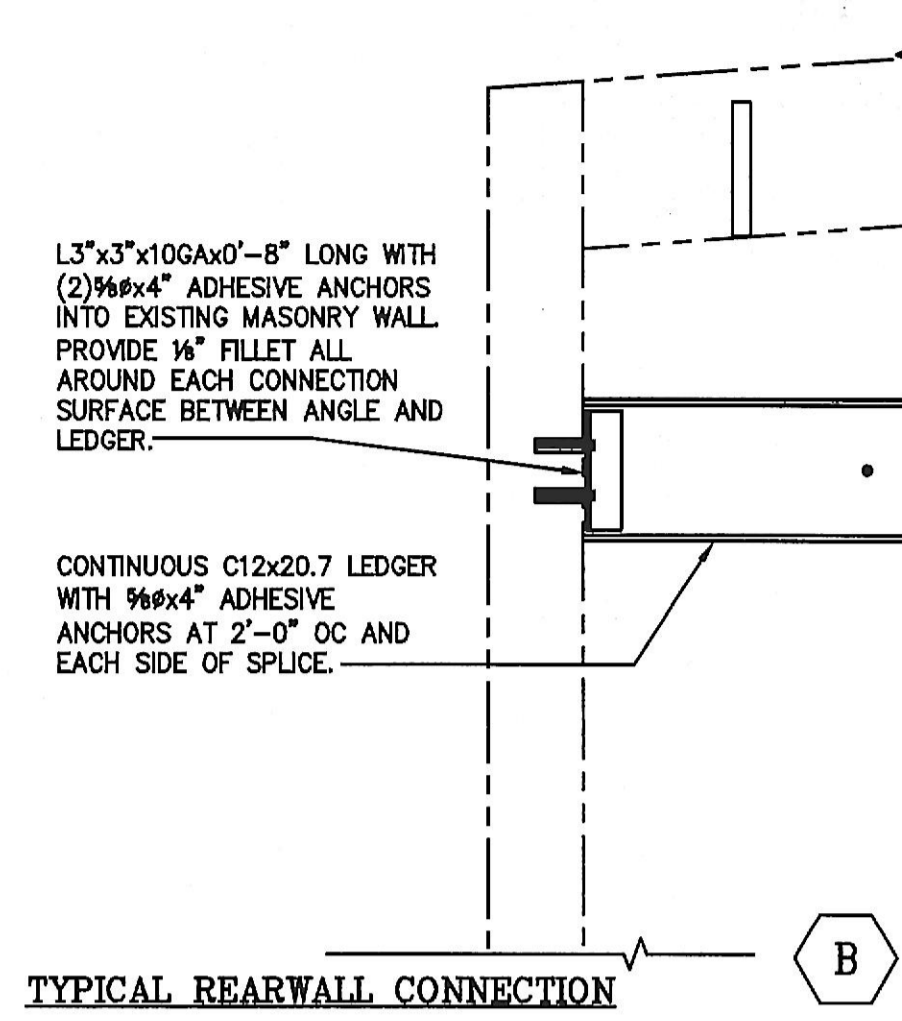
INSTALL NEW 2x12 WOOD BLOCKING BETWEEN TWO EXISTING JOISTS TO RECEIVE (2) 1/2" THRU BOLTS EACH 3" ANGLE LEG (4 TOTAL EACH BLOCKING) AT EACH HSS4x3 ROOF CONNECTION UNO.

HSS4x3x0.1875" DIAGONAL BRACE AT 8'-0" OC MAXIMUM.

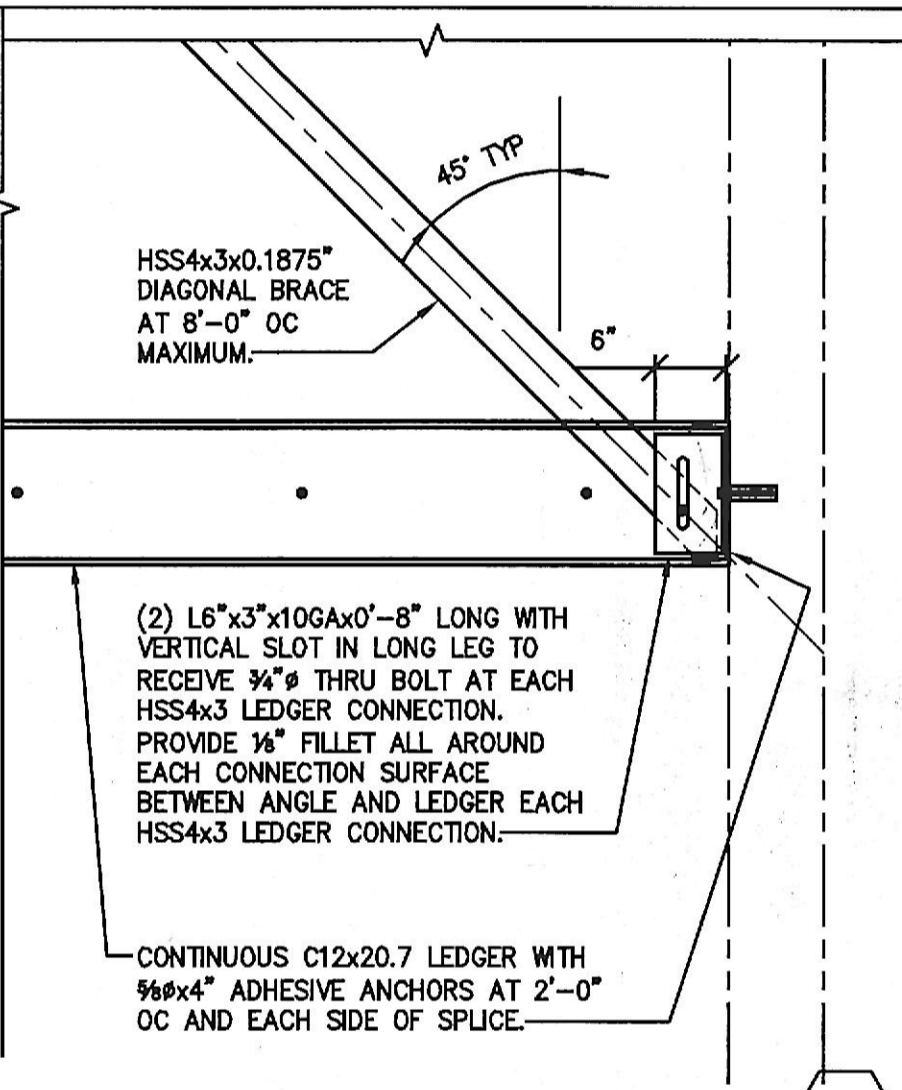
CONTINUOUS C12x20.7 LEDGER WITH 5/8"x4" ADHESIVE ANCHORS AT 2'-0" OC AND EACH SIDE OF SPLICE.

(2) L6"x3"x10GAX0"-8" LONG WITH VERTICAL SLOT IN LONG LEG TO RECEIVE 3/4" THRU BOLT AT EACH HSS4x3 LEDGER CONNECTION. PROVIDE 1/4" FILLET ALL AROUND EACH CONNECTION SURFACE BETWEEN ANGLE AND LEDGER EACH HSS4x3 LEDGER CONNECTION.

TYPICAL SIDEWALL BRACE



TYPICAL REARWALL CONNECTION



TYPICAL FRONTWALL CONNECTION

PROJECT: M.I.C.A ANNEX BLDG  
 THIRD FLOOR  
 100 NORTH CHARLES STREET  
 BALTIMORE, MARYLAND

PROJECT MANAGER: M.I.C.A  
 100 NORTH ROYAL AVENUE  
 BALTIMORE, MD 21205  
 PHONE: 410-621-6500  
 WWW.MICAE.COM

DESIGNER: ARIUM | AE  
 1507 WYAN KNOX ROAD  
 SUITE 405  
 BALTIMORE, MD 21204  
 PHONE: 410-621-6500  
 WWW.ARIUM.COM

DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_

TITLE: Structural Specs and Details  
 PROJECT FILE NAME: M112-SP16  
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 DRAWN BY: mhw  
 CHECKED BY: mhw  
 IN CHARGE: mhw

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