

MASONRY

Institute of Michigan

8" SINGLE WYTHE CMU

- "SEMI-HEATED" BUILDINGS/SPACES
- "HEATED" BUILDINGS/SPACES

HIGH PERFORMANCE ATTRIBUTES

- ARCHITECTURAL
- STRUCTURAL
- ENERGY
- FIRE
- SOUND
- MOISTURE
- AIR

FOR ADDITIONAL INFORMATION ON HIGH PERFORMANCE ATTRIBUTES OF MASONRY WALLS, SEE ["MASS BENEFITS"](#)

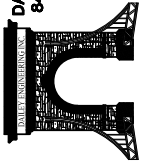
NOTES

- 1) MOISTURE MANAGEMENT: THIS SET OF DETAILS CALLS FOR THE USE OF AN INTEGRAL WATER REPELLANT (IWR) ADDED TO BOTH THE UNITS AND THE MORTAR. ADDITIONALLY, AFTER CLEANING A COMPATIBLE, BREATHABLE, FIELD-APPLIED WATER REPELLANT SHALL ALSO BE FIELD APPLIED.
- 2) JOINT TOOLING SHOULD BE PERFORMED ONLY WHEN THE MORTAR IS "THUMBPRINT HARD". THE TIME OF TOOLING IS ESPECIALLY IMPORTANT FOR MORTAR AND UNITS CONTAINING INTEGRAL WATER REPELLANTS.
- 3) THIS SET OF DETAILS SHOWS WALL CONSTRUCTION PRIMARILY AT HOLLOW CELLS. WHERE VERTICAL REINFORCEMENT AND GROUT OCCURS, THE PAN FLASHING, DRAINAGE MATERIAL AND INSULATION IS OMITTED. FOR CLARITY, SEE PHOTOGRAPH ON SHEET A-3 OF THE PAN FLASHING AT THE BASE OF A PARTIALLY GROUTED WALL. FLASHING IS NOT REQUIRED IN SOLID GROUTED SINGLE WYTHE WALLS PER NCMA 19-02B (2012).
- 4) THIS SET OF DETAILS WILL RESULT IN A WALL WITH THREE CONTROL LAYERS: THERMAL, AIR AND MOISTURE. (SEE SHEETS A-12 AND A-13 FOR ADDITIONAL INFORMATION). MOST DETAILS SHOWN IN THIS SET ARE FOR A "SEMI-HEATED BUILDING" DEPICTING ONLY CELL FILL INSULATION. IN CONTRAST, SHEETS A-8.1 AND A-8.2 DEPICT RIGID INSULATION AT THE INTERIOR SURFACE OF THE MASONRY WALL, WHICH CAN BE PART OF A COMPLIANCE OPTION FOR HEATED BUILDINGS.
- 5) FOR PLACING CONTROL JOINTS (CJs), TWO OPTIONS ARE AVAILABLE:
 - A) AWAY FROM THE OPENINGS (PREFERRED): SEE SHEETS A-10.1, AND A-10.2
 - B) AT THE OPENINGS: SEE SHEETS A-11.1, A-11.2 AND A-11.3

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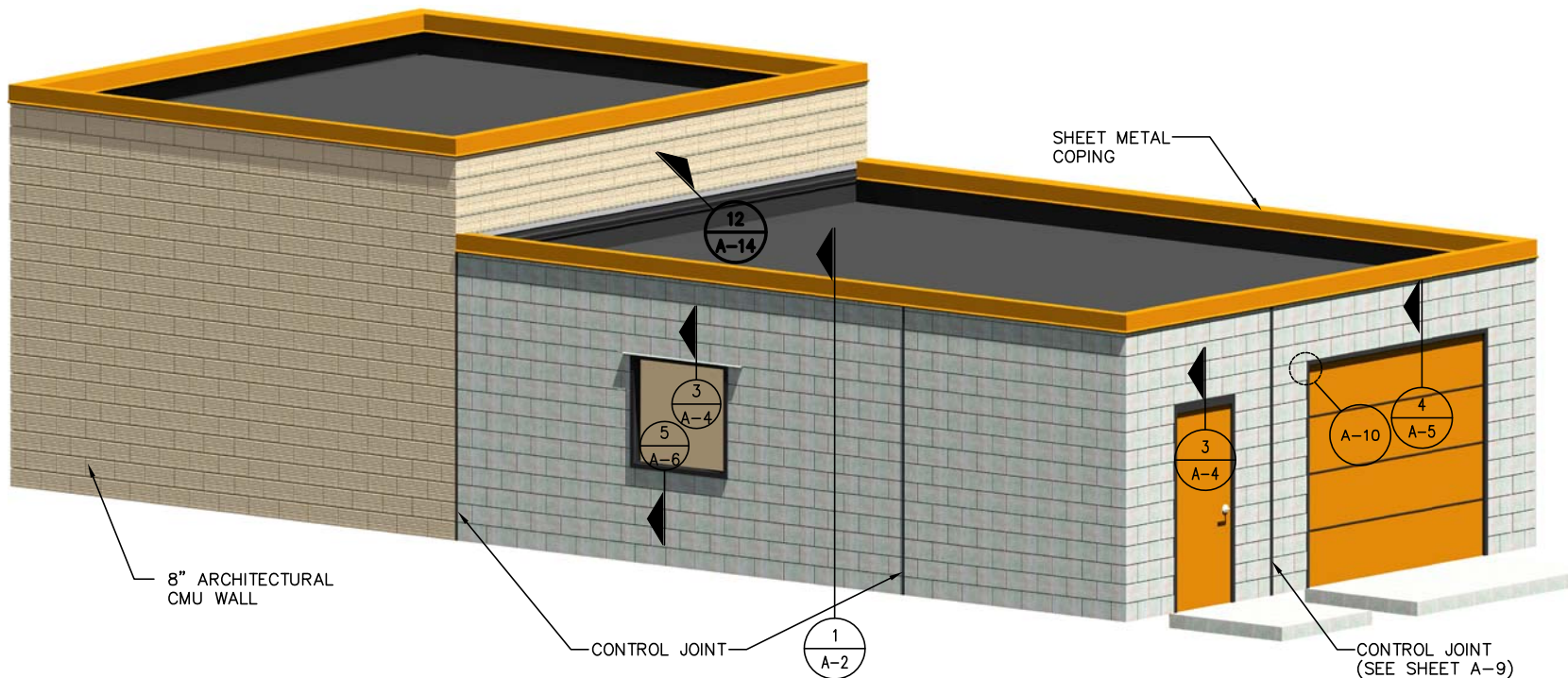
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 MASONRY
Institute of Michigan

DETAIL SET SW.8 (8" SINGLE WYTHE)

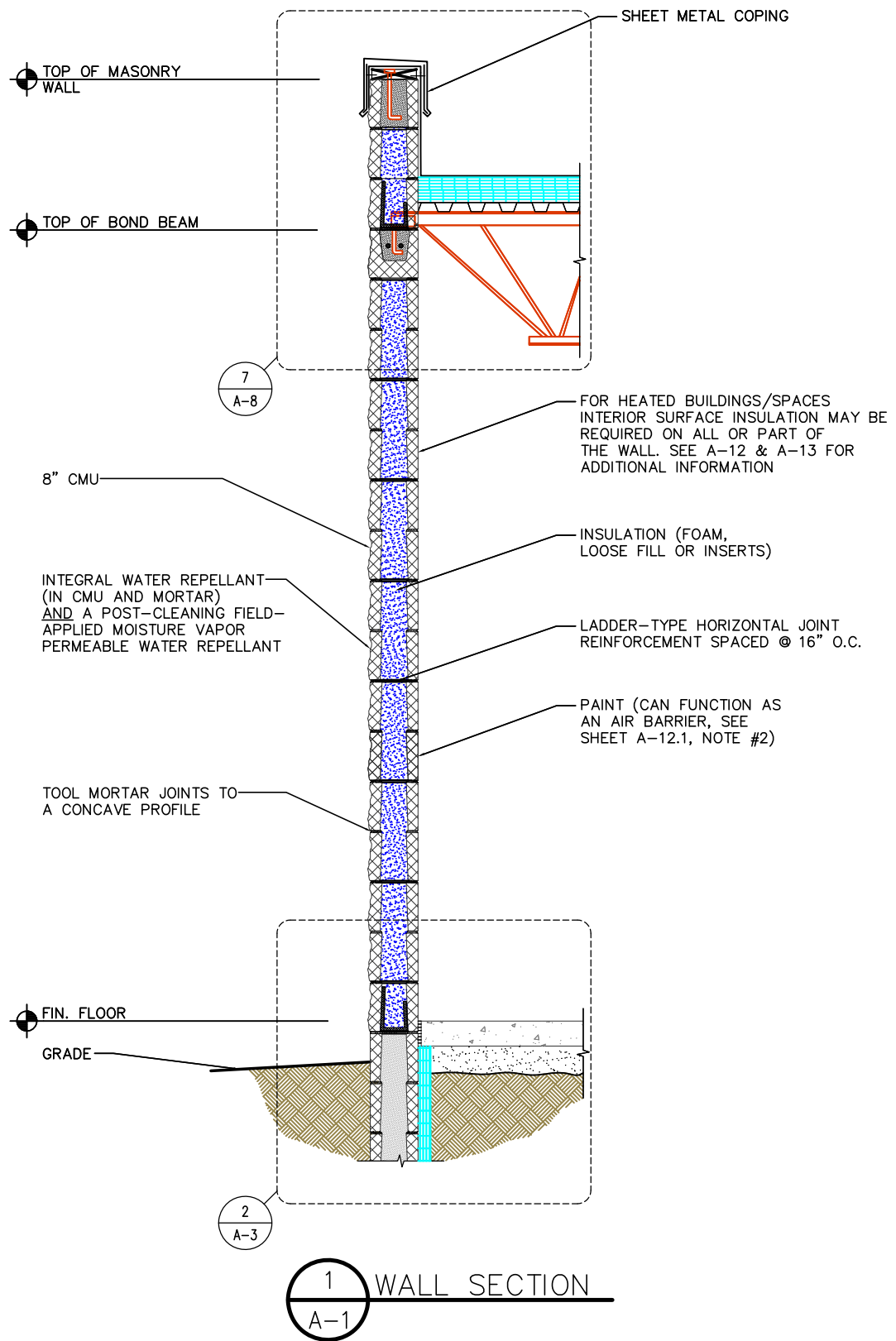
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	
GENERIC BUILDING ISOMETRIC	
SHEET:	A-1.0

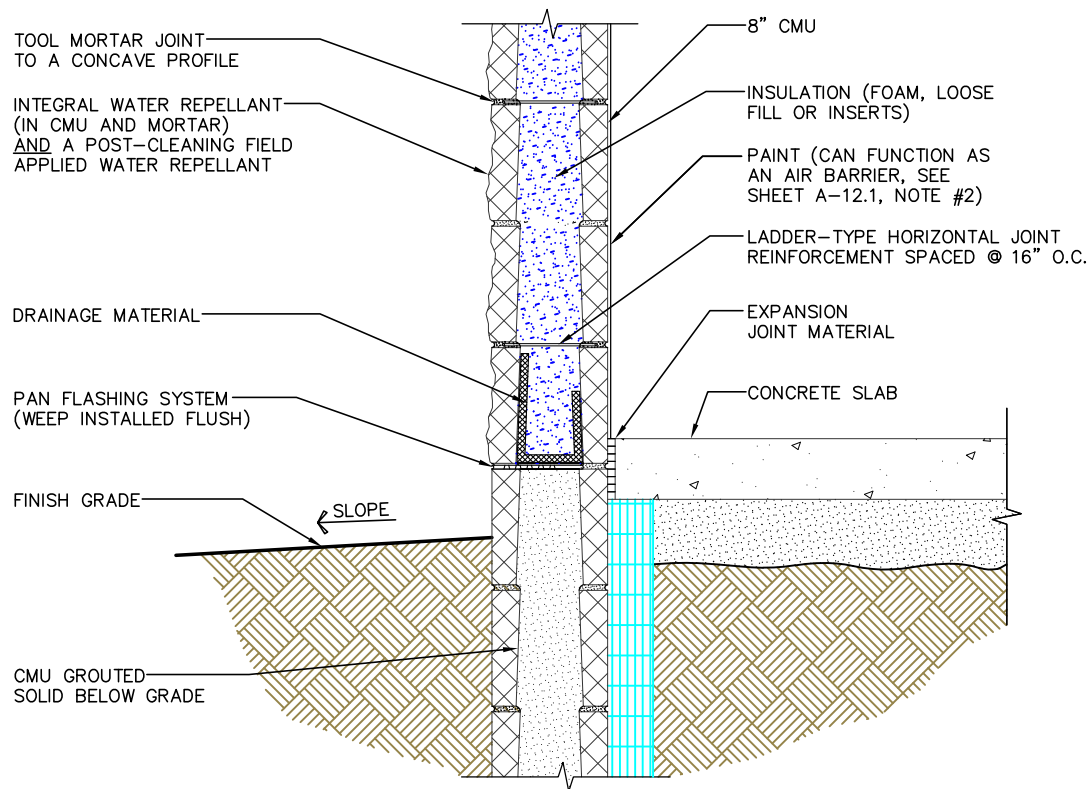


GENERIC BUILDING
NOT TO SCALE

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	GENERIC BUILDING ISOMETRIC
SHEET:	A-1.1

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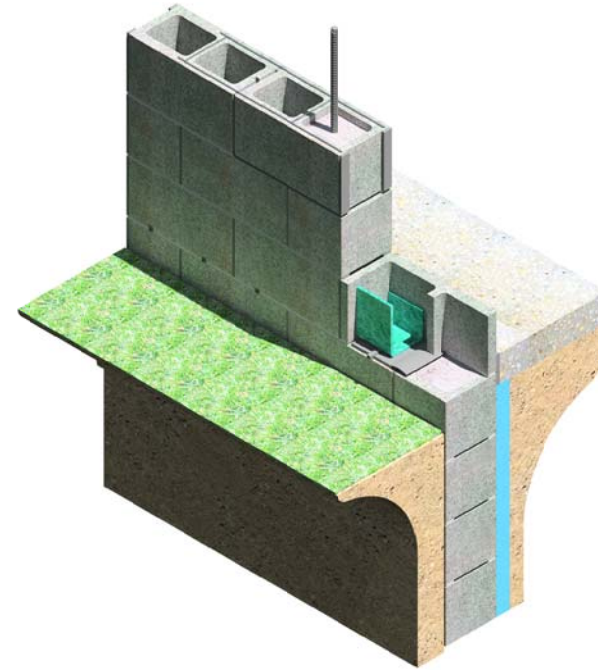




2
A-2

BASE DETAIL

NOTE: TOP OF CONCRETE SLAB TO BE ABOVE PAN FLASHING, BOTH OF WHICH ARE TO BE ABOVE FINISH GRADE.



ISOMETRIC VIEW



REINFORCED CELL PICTURE

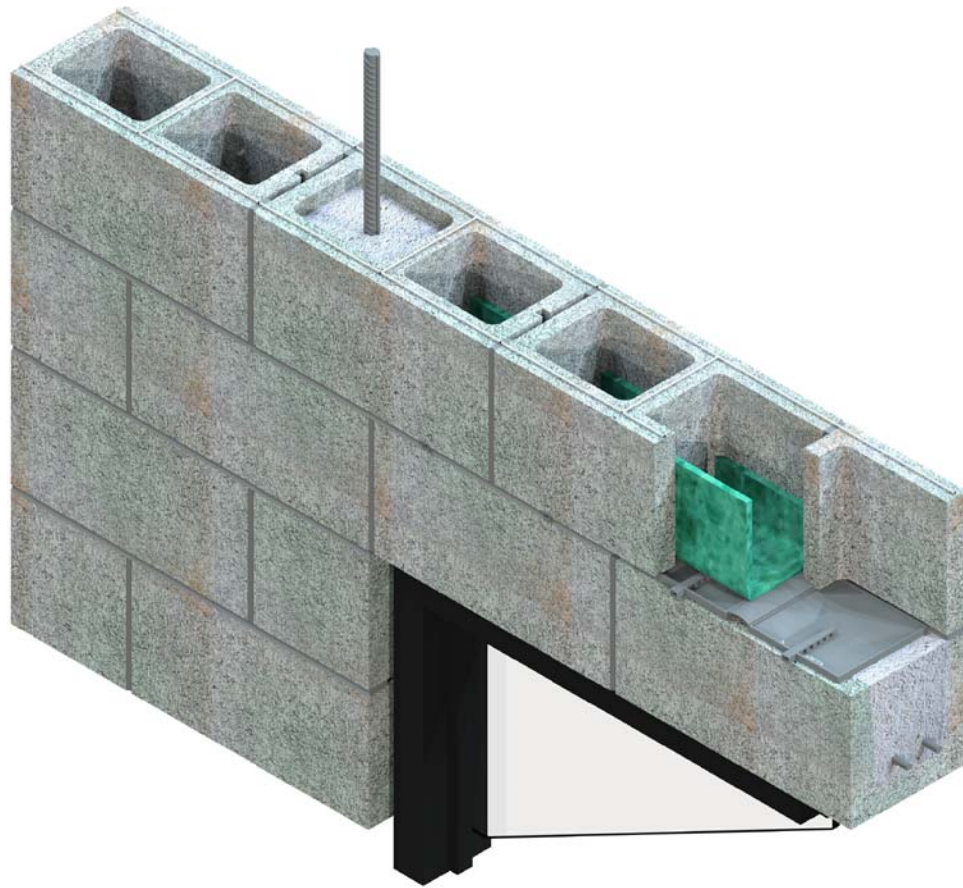
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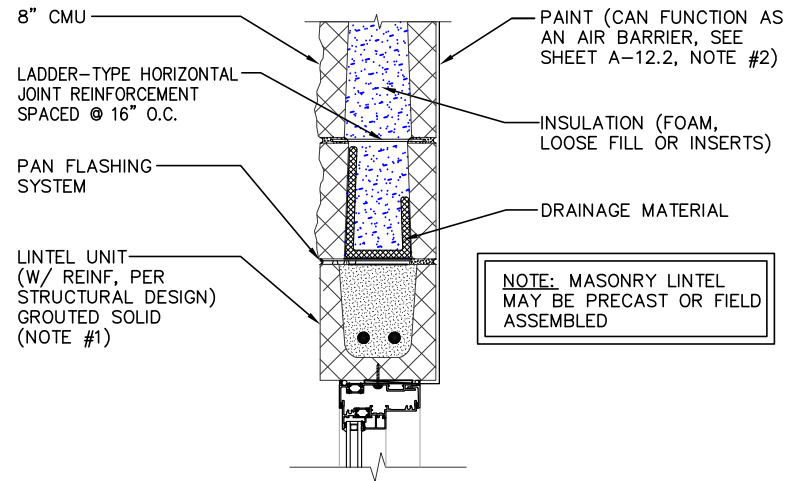
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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	BASE DETAIL
SHEET:	A-3



ISOMETRIC VIEW



SECTION VIEW

NOTES:

1) LINTEL UNITS AND OPEN BOTTOM UNITS ARE NOT AVAILABLE WITH SPLIT-FACE CMU. THEREFORE THE DETAIL SHOWS A SMOOTH FACE UNIT.

2) UNPROTECTED ALUMINUM DOOR AND WINDOW FRAMES CAN INTERACT WITH CEMENT-BASED MATERIALS AND INCUR DAMAGE. SEE PCA "ALUMINUM FRAMES IN MASONRY WALLS" FOR RECOMMENDATIONS.

<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>

3A
A-1

SHORT SPAN
MASONRY LINTEL
(PREFERRED DETAIL)

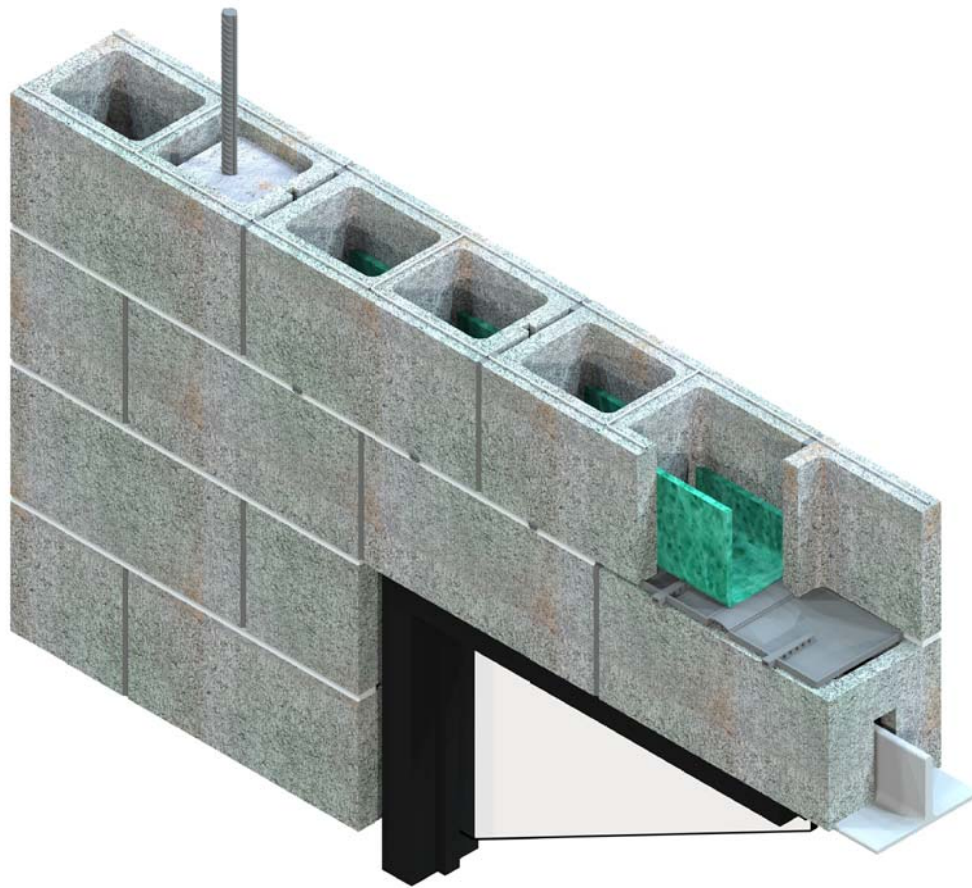
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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SHORT SPAN MASONRY LINTEL
SHEET:	A-4.1



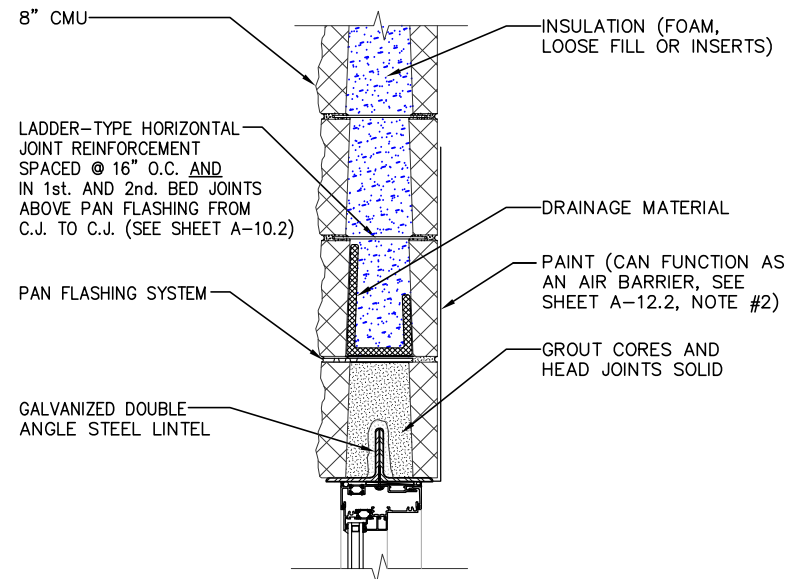
ISOMETRIC VIEW

NOTES:

1) CONTINUE PAN FLASHING SYSTEM A MINIMUM OF ONE CELL BEYOND BOTH JAMB EDGES OF THE OPENING.

2) UNPROTECTED ALUMINUM DOOR AND WINDOW FRAMES CAN INTERACT WITH CEMENT-BASED MATERIALS AND INCUR DAMAGE. SEE PCA "ALUMINUM FRAMES IN MASONRY WALLS" FOR RECOMMENDATIONS.

<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>



SECTION VIEW

3B
A-1

SHORT SPAN
DOUBLE ANGLE STEEL LINTEL

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PH. # (517) 467-9000



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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:

DRAWN: M.W.F.

APPROVED:

DATE: 04/08/2020

TITLE:

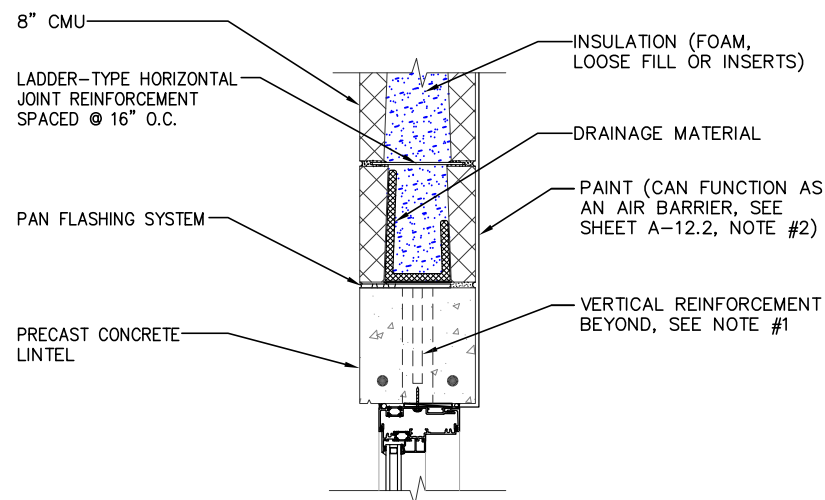
SHORT SPAN DOUBLE ANGLE STEEL LINTEL

SHEET:

A-4.2



ISOMETRIC VIEW



SECTION VIEW

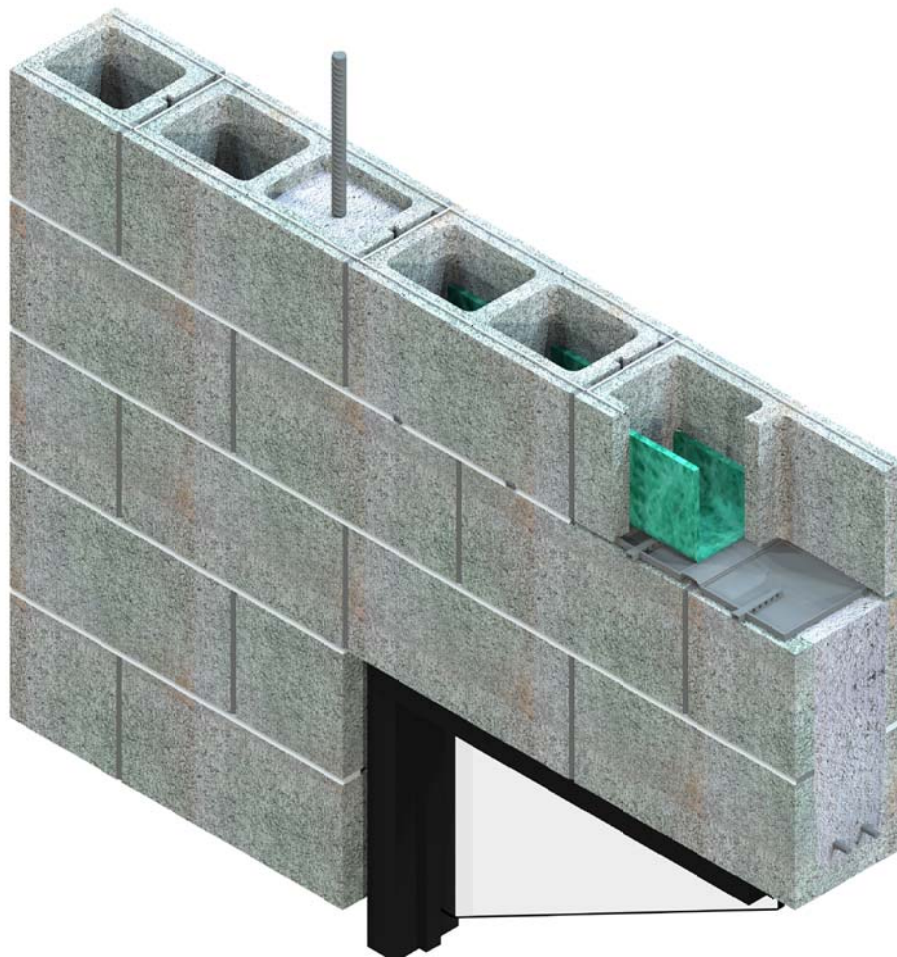
- NOTES:
- 1) NOTCH ENDS OF PRECAST LINTEL AS REQUIRED FOR VERTICAL REINFORCEMENT.
 - 2) UNPROTECTED ALUMINUM DOOR AND WINDOW FRAMES CAN INTERACT WITH CEMENT-BASED MATERIALS AND INCUR DAMAGE. SEE PCA "ALUMINUM FRAMES IN MASONRY WALLS" FOR RECOMMENDATIONS.
<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>

NOTE: FOR AESTHETIC REASONS, THIS DETAIL IS NORMALLY USED ONLY ON WALLS CONSTRUCTED OF STANDARD UNITS, NOT THOSE WITH ARCHITECTURAL CMU UNITS.

3C
A-1

SHORT SPAN
PRECAST CONCRETE LINTEL

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SHORT SPAN PRECAST CONCRETE LINTEL
SHEET:	A-4.3



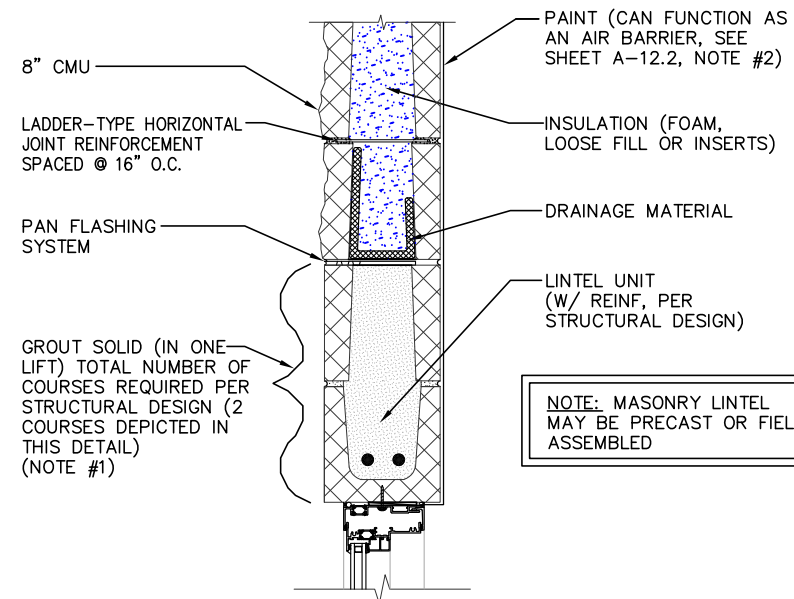
ISOMETRIC VIEW

NOTES:

1) LINTEL UNITS AND OPEN BOTTOM UNITS ARE NOT AVAILABLE WITH SPLIT-FACE CMU. THEREFORE THE DETAIL SHOWS A SMOOTH FACE UNIT.

2) UNPROTECTED ALUMINUM DOOR AND WINDOW FRAMES CAN INTERACT WITH CEMENT-BASED MATERIALS AND INCUR DAMAGE. SEE PCA "ALUMINUM FRAMES IN MASONRY WALLS" FOR RECOMMENDATIONS.

<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>



SECTION VIEW

4A
A-1

LONG SPAN
MASONRY LINTEL
(PREFERRED DETAIL)

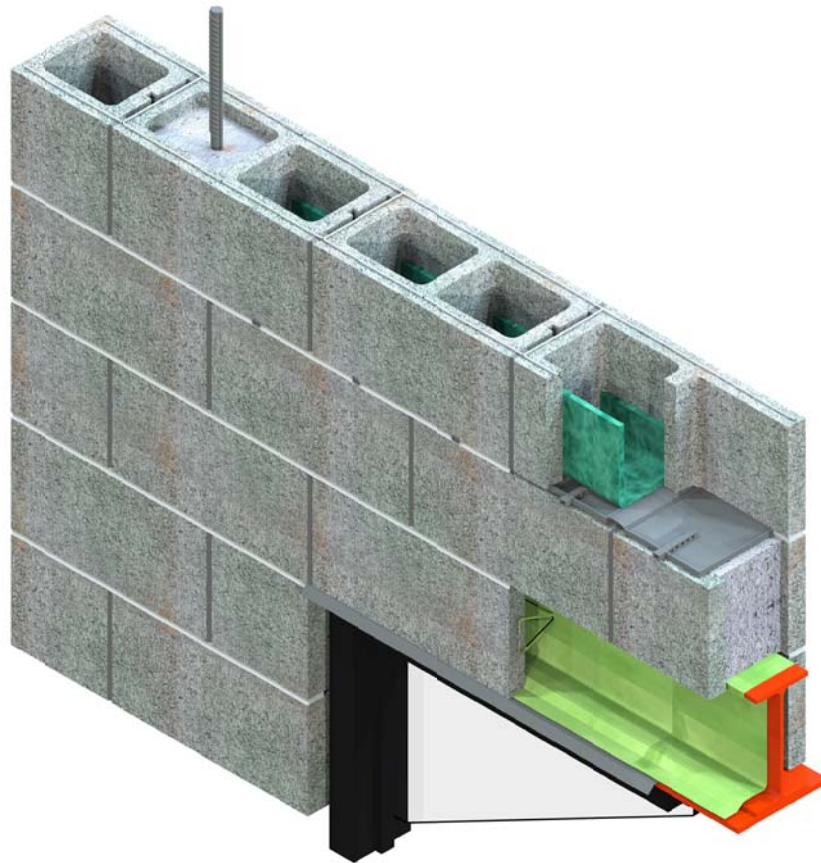
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PH. # (517) 467-9000



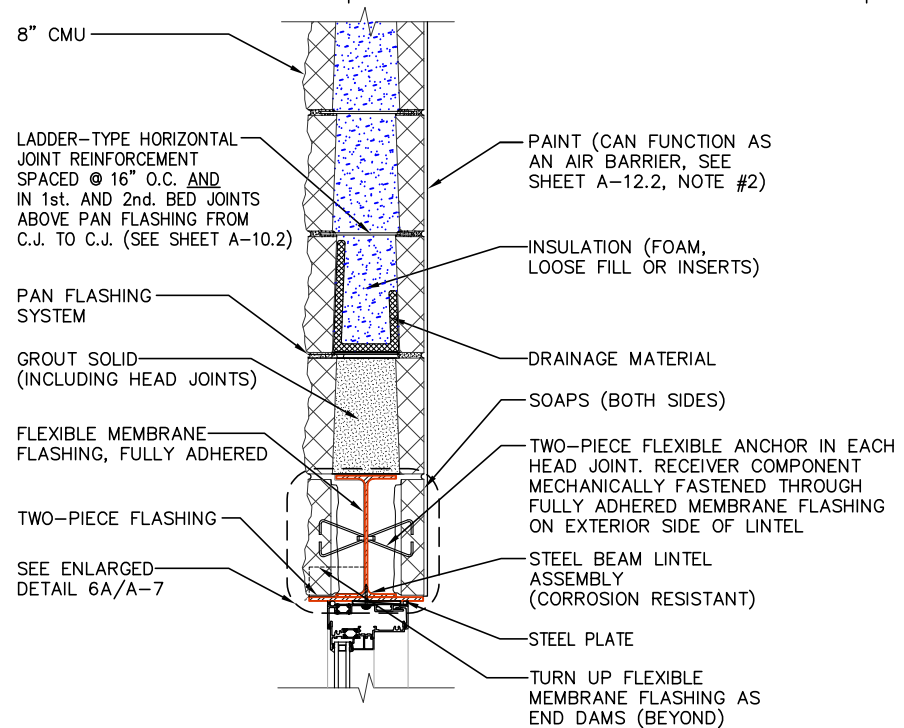
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Institute of Michigan

DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	LONG SPAN MASONRY LINTEL
SHEET:	A-5.1



ISOMETRIC VIEW



SECTION VIEW

NOTES:

1) CONTINUE PAN FLASHING SYSTEM A MINIMUM OF ONE CELL BEYOND BOTH JAMB EDGES OF THE OPENING.

2) UNPROTECTED ALUMINUM DOOR AND WINDOW FRAMES CAN INTERACT WITH CEMENT-BASED MATERIALS AND INCUR DAMAGE. SEE PCA "ALUMINUM FRAMES IN MASONRY WALLS" FOR RECOMMENDATIONS.

<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>

4B
A-1

LONG SPAN NARROW
FLANGE 8" STEEL LINTEL
(W8 SERIES)

NOTE: WITH THIS DETAIL
SOAPS REQUIRE MINIMAL
OR NO NOTCHING.

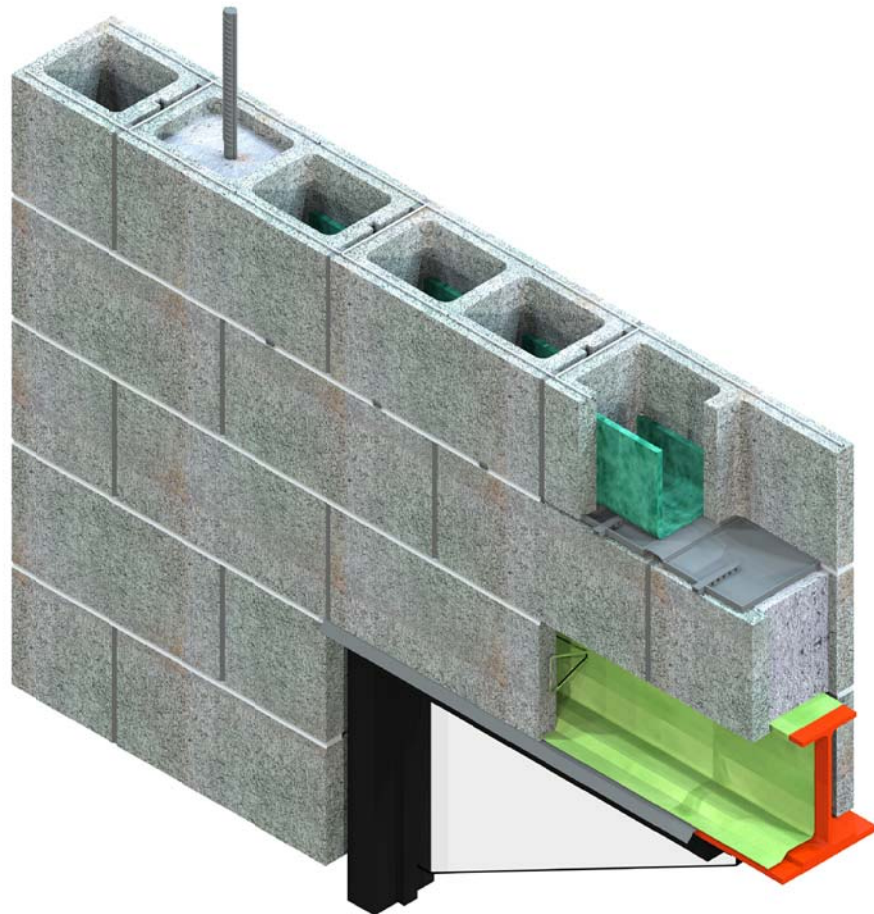
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PH. # (517) 467-9000



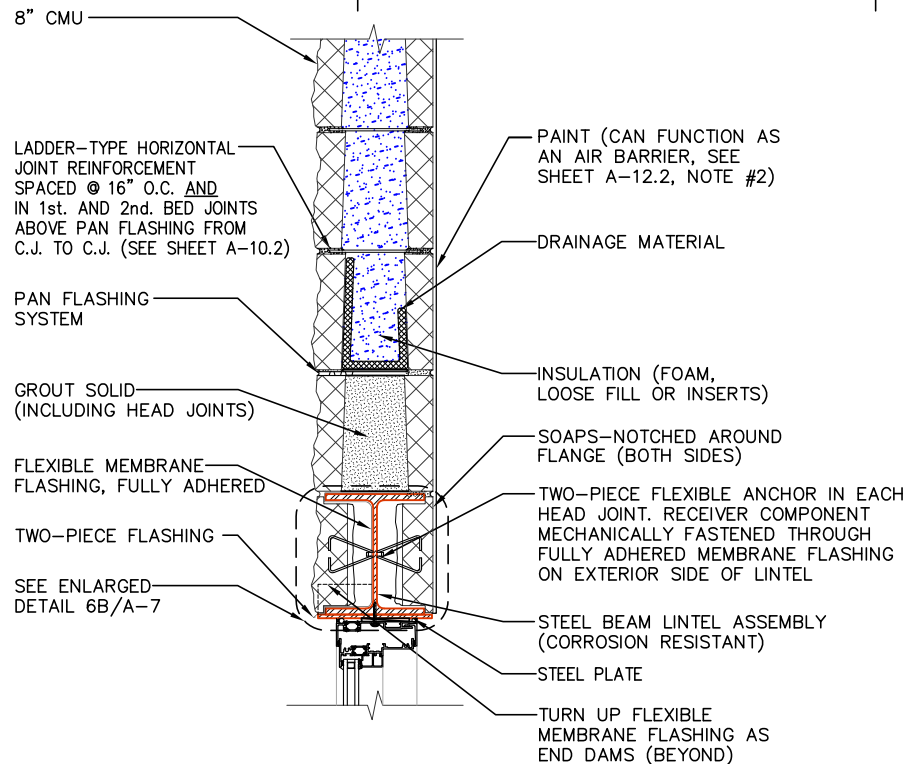
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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:
DRAWN: M.W.F.
APPROVED:
DATE: 04/08/2020
TITLE:
LONG SPAN NARROW
FLANGE 8" STEEL
LINTEL
SHEET:
A-5.2



ISOMETRIC VIEW



SECTION VIEW

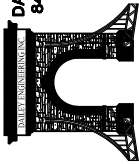
- NOTES:**
- 1) CONTINUE PAN FLASHING SYSTEM A MINIMUM OF ONE CELL BEYOND BOTH JAMB EDGES OF THE OPENING.
 - 2) UNPROTECTED ALUMINUM DOOR AND WINDOW FRAMES CAN INTERACT WITH CEMENT-BASED MATERIALS AND INCUR DAMAGE. SEE PCA "ALUMINUM FRAMES IN MASONRY WALLS" FOR RECOMMENDATIONS.
<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>

4C
A-1

LONG SPAN WIDE
FLANGE 8" STEEL LINTEL
(W8 SERIES)

NOTE: WITH THIS DETAIL
SOAPS REQUIRE NOTCHING.

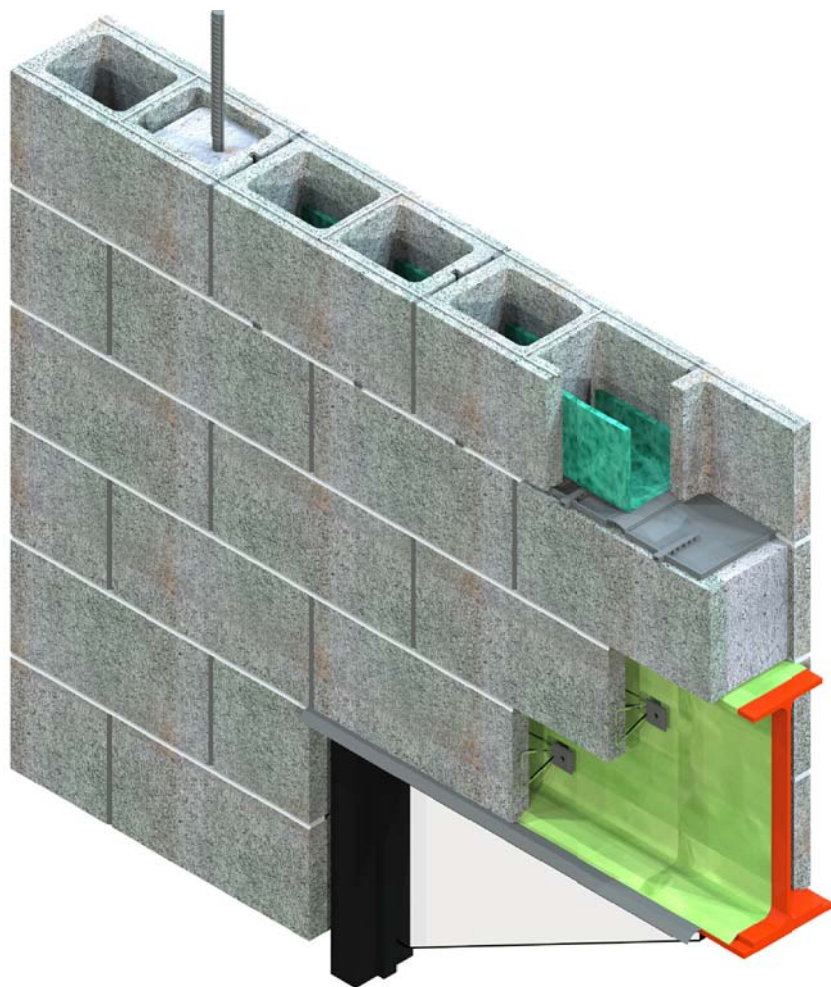
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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:
DRAWN: M.W.F.
APPROVED:
DATE: 04/08/2020
TITLE:
LONG SPAN WIDE
FLANGE 8" STEEL
LINTEL
SHEET:
A-5.3



ISOMETRIC VIEW

LADDER-TYPE HORIZONTAL
JOINT REINFORCEMENT
SPACED @ 16" O.C. AND
IN 1st. AND 2nd. BED JOINTS
ABOVE PAN FLASHING FROM
C.J. TO C.J. (SEE SHEET A-10.2)

8" CMU

INSULATION (FOAM,
LOOSE FILL OR INSERTS)

PAN FLASHING
SYSTEM

GROUT SOLID
(INCLUDING HEAD JOINTS)

FLEXIBLE MEMBRANE
FLASHING, FULLY ADHERED

TWO-PIECE FLASHING

SEE ENLARGED
DETAIL 6B/A-7

DRAINAGE MATERIAL

PAINT (CAN FUNCTION AS
AN AIR BARRIER, SEE
SHEET A-12.2, NOTE #2)

SOAPS-NOTCHED AROUND
FLANGE (BOTH SIDES)

TWO-PIECE FLEXIBLE ANCHOR IN EACH
HEAD JOINT IN EACH SOAP COURSE
RECEIVER COMPONENT MECHANICALLY
FASTENED THROUGH FULLY
ADHERED MEMBRANE FLASHING
ON EXTERIOR SIDE OF LINTEL

STEEL BEAM LINTEL ASSEMBLY
(CORROSION RESISTANT)

STEEL PLATE

TURN UP FLEXIBLE
MEMBRANE FLASHING AS
END DAMS (BEYOND)

NOTES:

1) CONTINUE PAN FLASHING SYSTEM A MINIMUM
OF ONE CELL BEYOND BOTH JAMB EDGES OF
THE OPENING.

2) UNPROTECTED ALUMINUM DOOR AND WINDOW
FRAMES CAN INTERACT WITH CEMENT-BASED
MATERIALS AND INCUR DAMAGE. SEE PCA
"ALUMINUM FRAMES IN MASONRY WALLS"
FOR RECOMMENDATIONS.

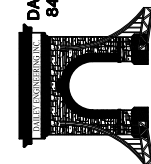
<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>

SECTION VIEW

4D
A-1
LONG SPAN WIDE
FLANGE 16" STEEL LINTEL
(W16 SERIES)

NOTE: WITH THIS DETAIL
SOAPS REQUIRE NOTCHING.

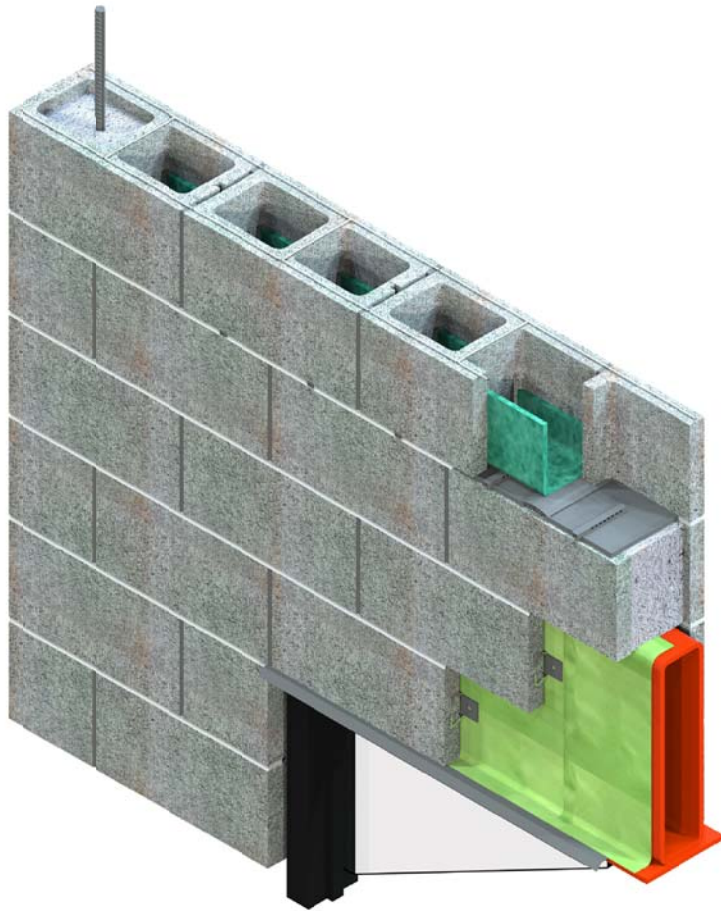
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8485 STEPHENSON ROAD
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PH. # (517) 467-9000



111 MASONRY
Institute of Michigan

DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	LONG SPAN WIDE FLANGE 16" STEEL LINTEL
SHEET:	A-5.4



ISOMETRIC VIEW

LADDER-TYPE HORIZONTAL
JOINT REINFORCEMENT
SPACED @ 16" O.C. AND
IN 1st. AND 2nd. BED JOINTS
ABOVE PAN FLASHING FROM
C.J. TO C.J. (SEE SHEET A-10.2)

8" CMU

INSULATION (FOAM,
LOOSE FILL OR INSERTS)

PAN FLASHING
SYSTEM

GROUT SOLID
(INCLUDING HEAD JOINTS)

FLEXIBLE MEMBRANE
FLASHING, FULLY ADHERED

TWO-PIECE FLASHING

SEE ENLARGED
DETAIL 6B/A-7
(SIMILAR)

DRAINAGE MATERIAL

PAINT (CAN FUNCTION AS
AN AIR BARRIER, SEE
SHEET A-12.2, NOTE #2)

SOAPS-(BOTH SIDES)

TWO-PIECE FLEXIBLE ANCHOR IN EACH
HEAD JOINT IN EACH SOAP COURSE
RECEIVER COMPONENT MECHANICALLY
FASTENED THROUGH FULLY
ADHERED MEMBRANE FLASHING
ON EXTERIOR SIDE OF LINTEL

HSS STEEL LINTEL ASSEMBLY
(CORROSION RESISTANT)

STEEL PLATE

TURN UP FLEXIBLE
MEMBRANE FLASHING AS
END DAMS (BEYOND)

SECTION VIEW

NOTES:

1) CONTINUE PAN FLASHING SYSTEM A MINIMUM
OF ONE CELL BEYOND BOTH JAMB EDGES OF
THE OPENING.

2) UNPROTECTED ALUMINUM DOOR AND WINDOW
FRAMES CAN INTERACT WITH CEMENT-BASED
MATERIALS AND INCUR DAMAGE. SEE PCA
"ALUMINUM FRAMES IN MASONRY WALLS"
FOR RECOMMENDATIONS.

<http://www.cement.org/for-concrete-books-learning/materials-applications/masonry/construction/aluminum-frames-in-masonry-walls>

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111 MASONRY
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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:

DRAWN: M.W.F.

APPROVED:

DATE: 04/08/2020

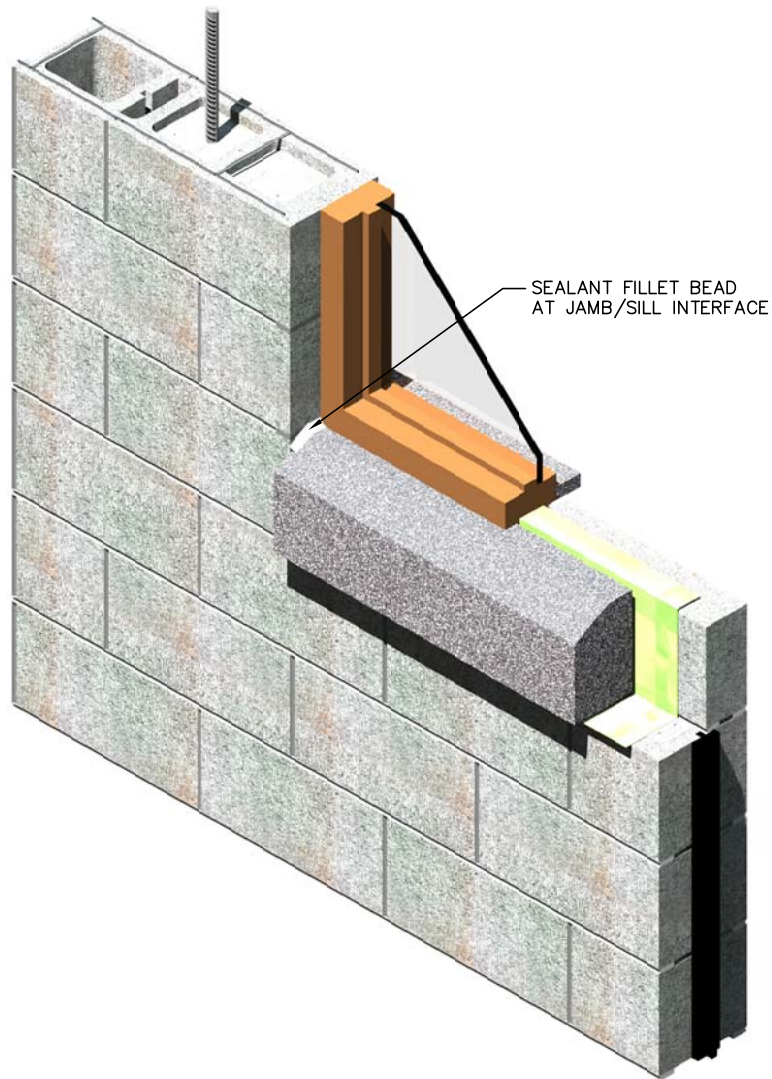
TITLE:

LONG SPAN HSS
STEEL LINTEL

SHEET:

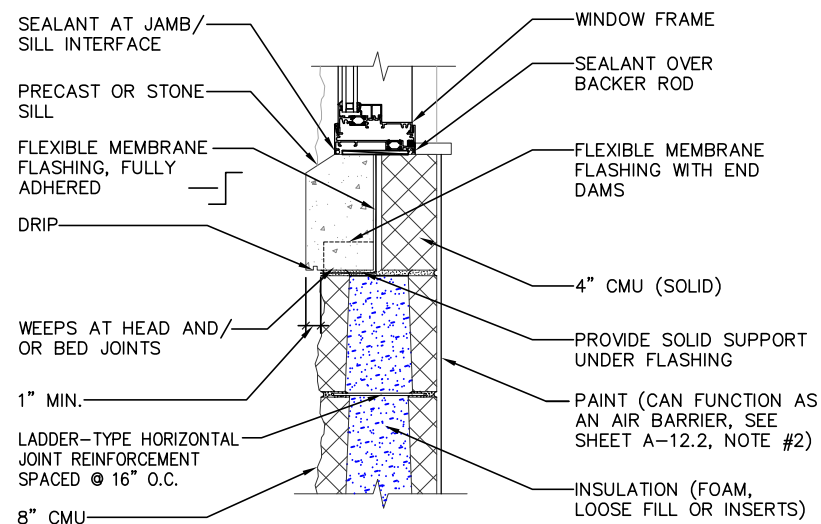
A-5.5

4E
A-1
LONG SPAN HSS
STEEL LINTEL DETAIL



ISOMETRIC VIEW

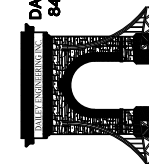
NOTE: MULTIPLE PIECE SILLS
MAY REQUIRE MASONRY
ANCHORS IN THE HEAD JOINTS



SECTION VIEW

5A
A-1 PRECAST OR STONE SILL

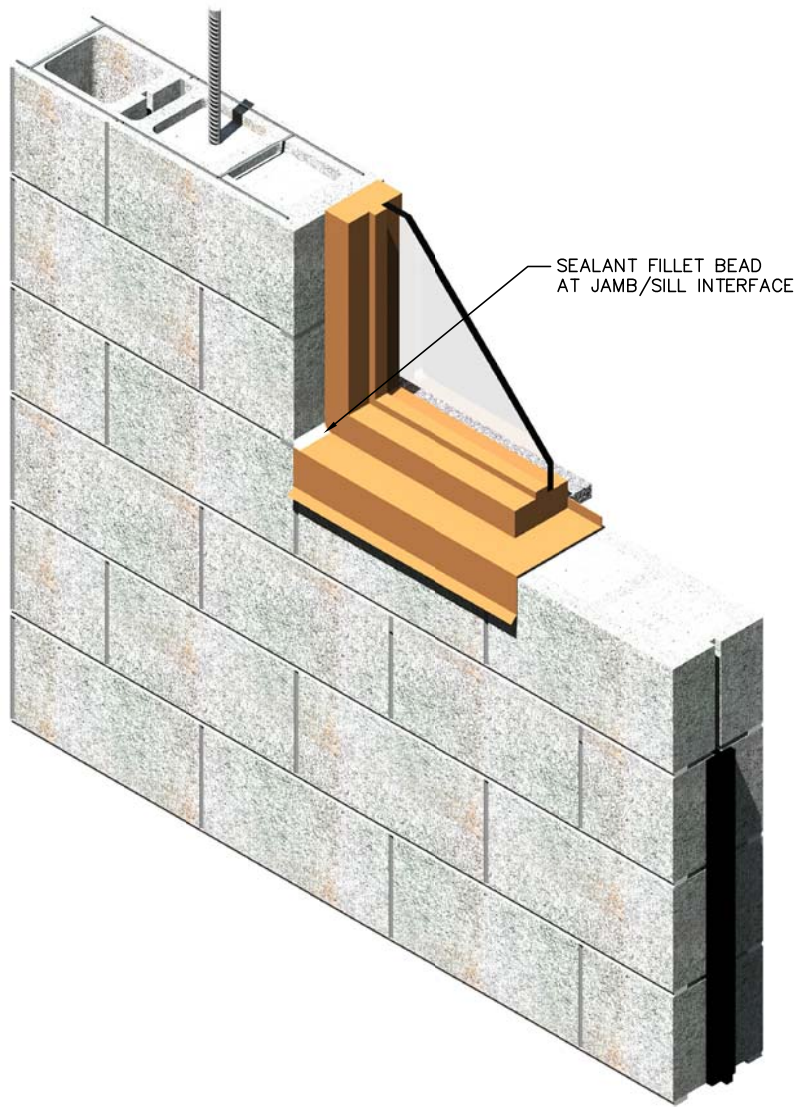
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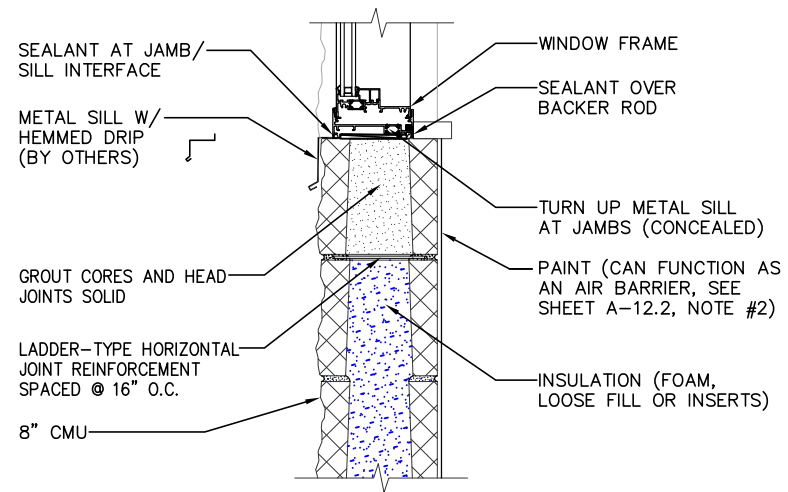
DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	PRECAST SILL DETAIL
SHEET:	A-6.1



ISOMETRIC VIEW

NOTES:
CAUTION SHOULD BE USED WHEN USING EXPOSED METAL DRIP EDGES AT LOCATIONS WITHIN PEDESTRIAN REACH. SEE M.I.M. "EXPOSED METAL FLASHING" BULLETIN FOR ADDITIONAL INFORMATION.



SECTION VIEW

5B
A-1 METAL SILL

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PH. # (517) 467-9000



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DETAIL SET SW.8 (8" SINGLE WYTHE)

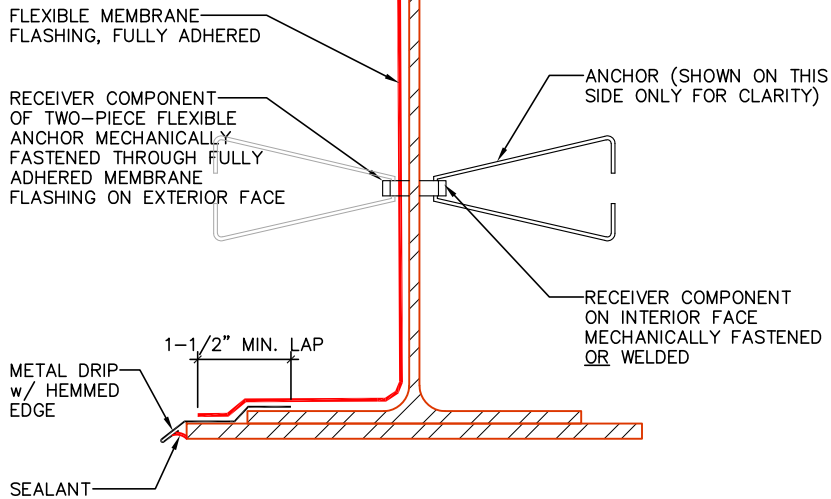
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	METAL SILL DETAIL
SHEET:	A-6.2

NOTE: THIS DETAIL PERTAINS TO STEEL LINTELS W/ FLANGE WIDTHS OF 5 1/4" TO 5 1/2". FOR NARROW FLANGE WIDTHS, SEE DETAIL 6A.

NOTE: TURN UP FLEXIBLE MEMBRANE FLASHING AS END DAMS AT BOTH ENDS OF STEEL BEAM

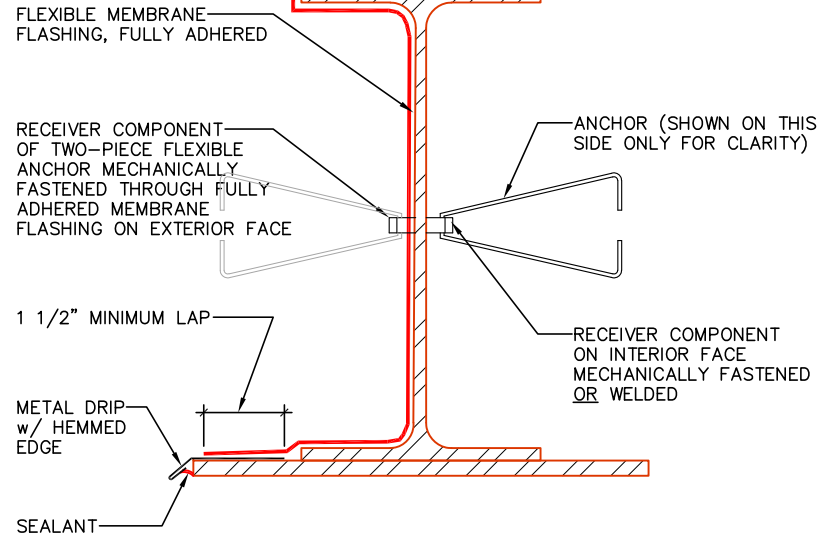
(CMU NOT SHOWN FOR CLARITY)

(CMU NOT SHOWN FOR CLARITY)



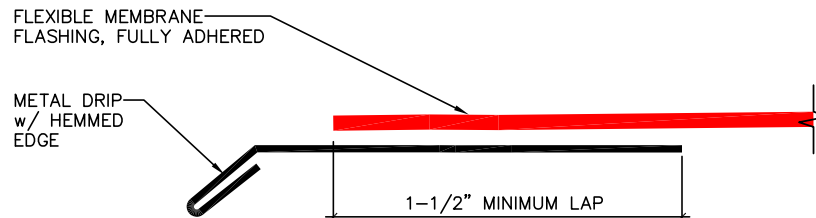
ENLARGED FLASHING DETAIL AT WIDE FLANGE STEEL LINTELS

6B
A-5



ENLARGED FLASHING DETAIL AT NARROW FLANGE STEEL LINTELS

6A
A-5



ENLARGED TWO-PIECE FLASHING DETAIL

6C
A-5

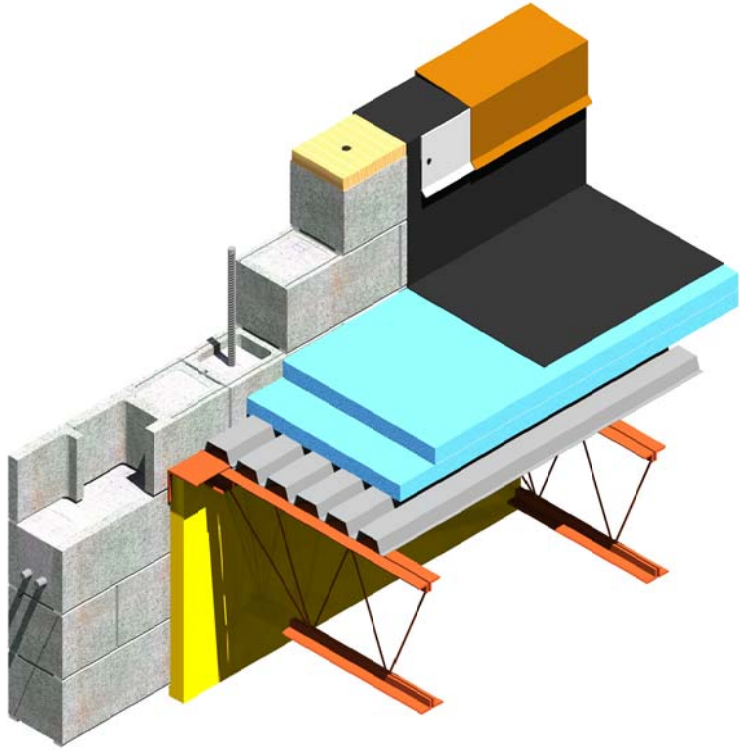
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ONSTED, MI 49266
PH. # (517) 467-9000



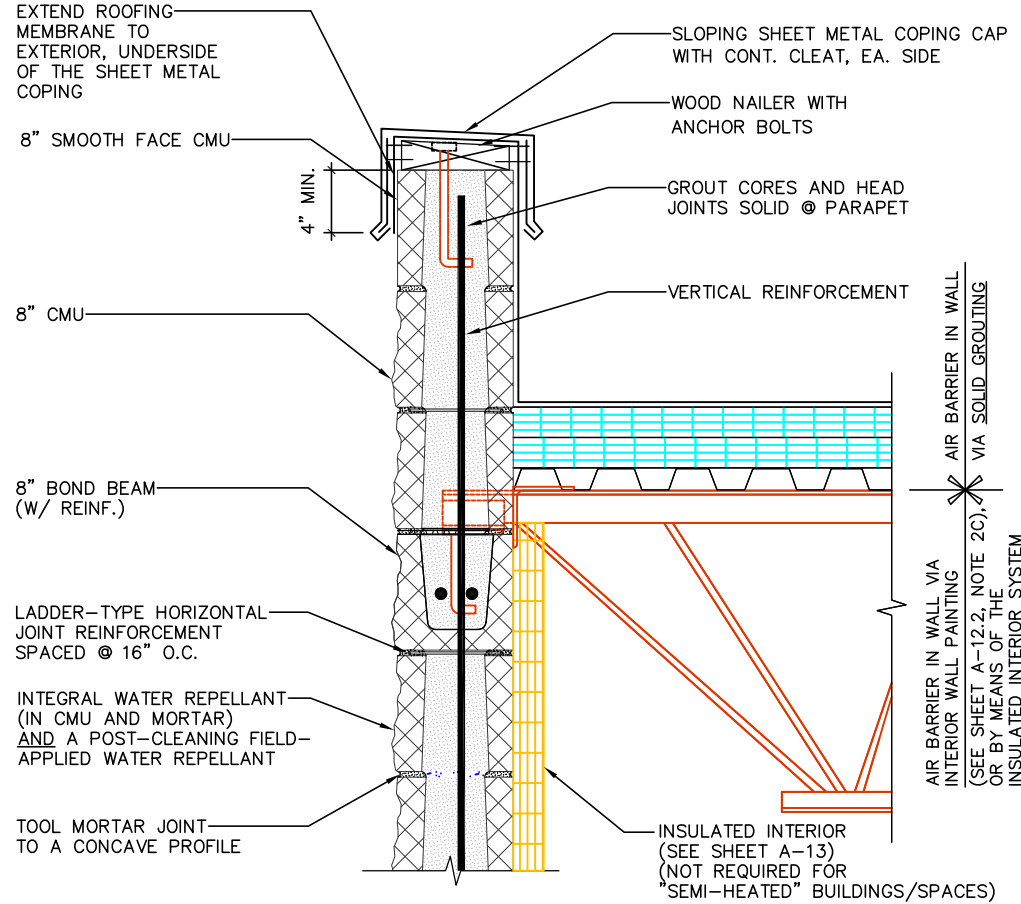
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Institute of Michigan

DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	TWO-PIECE FLASHING DETAILS
SHEET:	A-7



ISOMETRIC VIEW



SECTION VIEW

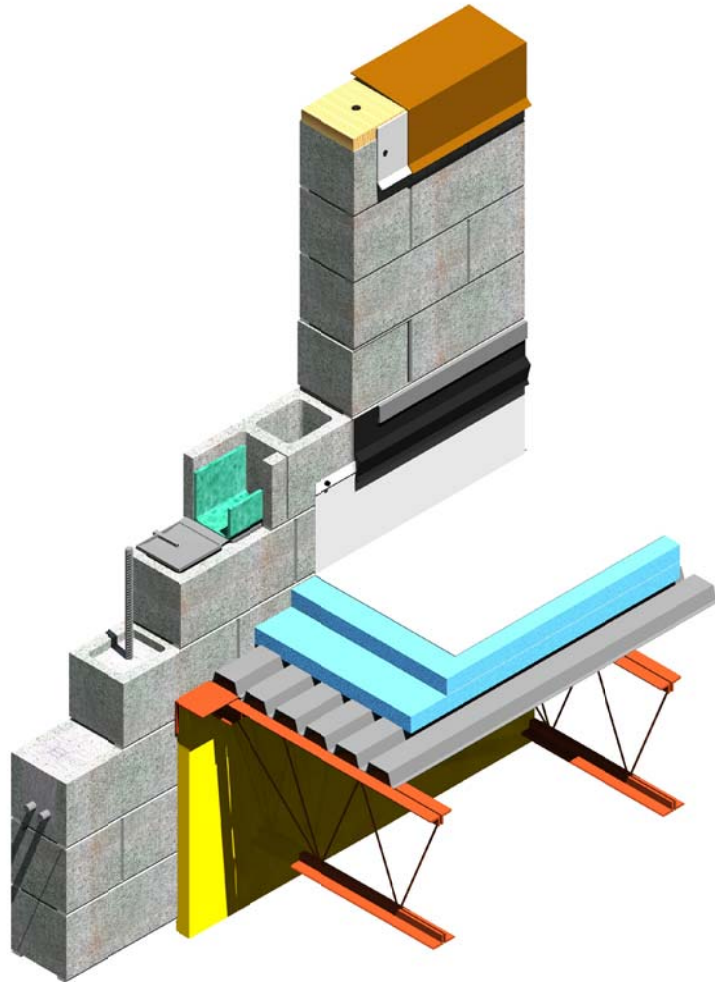
7A
A-2

SHORT PARAPET DETAIL

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SHORT PARAPET DETAIL
SHEET:	A-8.1

NOTES:

- 1) THIS DETAIL ONLY APPLICABLE TO A REINFORCED WALL DUE TO FLASHING/BOND BREAK CONCERNS.



ISOMETRIC VIEW

7B TALL PARAPET DETAIL
A-2

ROOFING OPTION:
EXTEND ROOFING
MEMBRANE TO
EXTERIOR, UNDERSIDE
OF THE SHEET METAL
COPING

8" SMOOTH FACE CMU

NOTE:
VERTICAL REINFORCEMENT
NOT SHOWN FOR CLARITY

8" CMU

REMOVABLE FASTENERS
BY ROOFING
CONTRACTOR)

PAN FLASHING SYSTEM

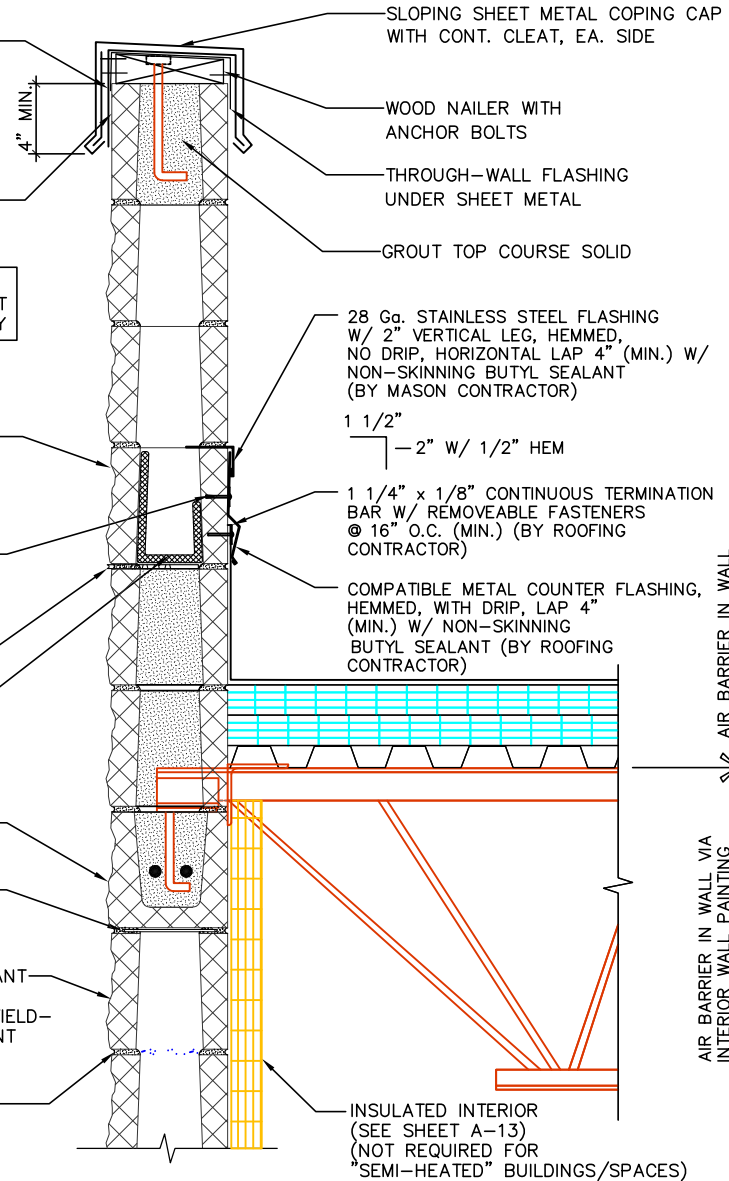
DRAINAGE MATERIAL

8" BOND BEAM
(W/ REINF.)

LADDER-TYPE HORIZ.
JOINT REINFORCEMENT
SPACED @ 16" O.C.

INTEGRAL WATER REPELLANT
(IN CMU AND MORTAR)
AND A POST-CLEANING FIELD-
APPLIED WATER REPELLANT

TOOL MORTAR JOINT
TO A CONCAVE PROFILE



SECTION VIEW

AIR BARRIER IN WALL VIA
INTERIOR WALL PAINTING
(SEE SHEET A-12.2, NOTE 2C),
OR BY MEANS OF THE
INSULATED INTERIOR SYSTEM

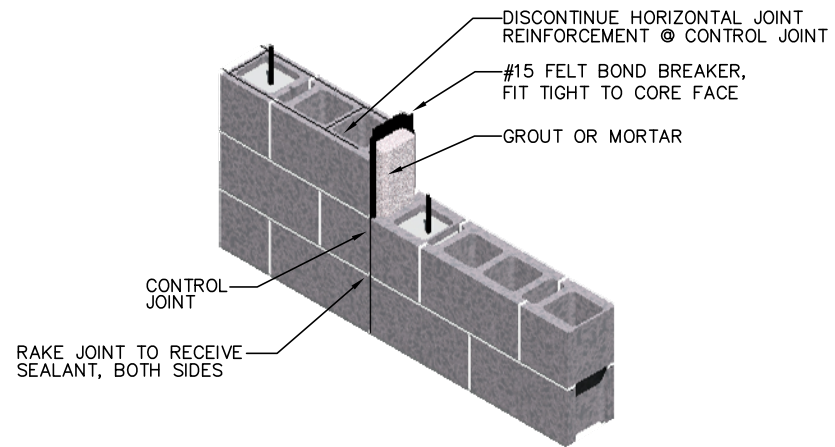
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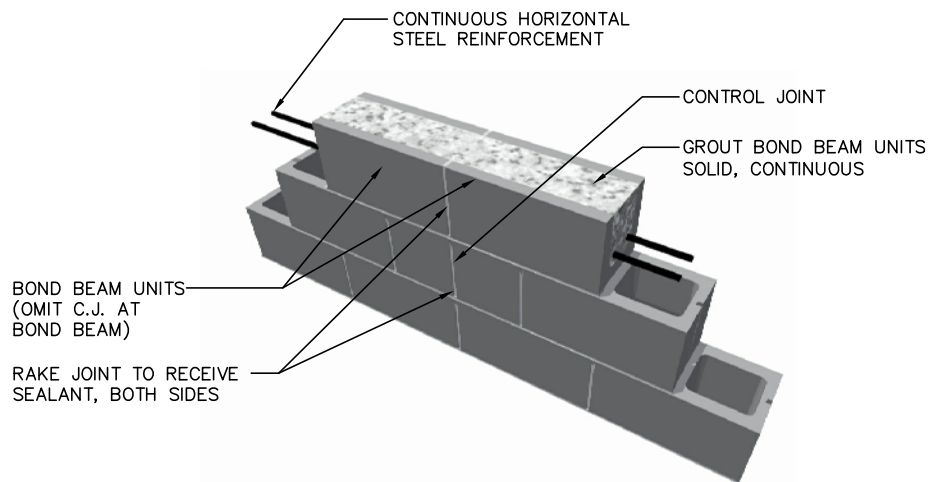
DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	TALL PARAPET DETAIL
SHEET:	A-8.2



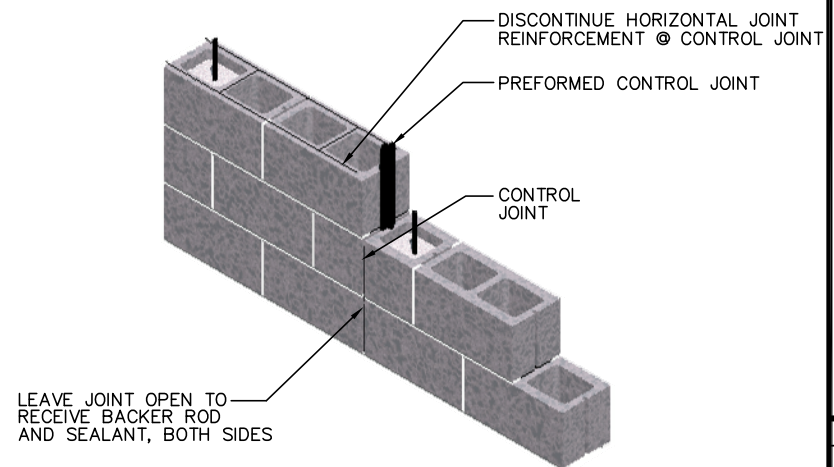
8A
A-9

MASONRY CONTROL JOINT — MICHIGAN DETAIL



8C
A-9

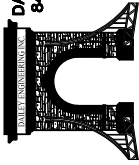
MASONRY CONTROL JOINT @ CONTINUOUS BOND BEAM DETAIL (PER STRUCTURAL REQUIREMENTS)



8B
A-9

MASONRY CONTROL JOINT — ALTERNATE DETAIL

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DETAIL SET SW.8 (8" SINGLE WYTHE)

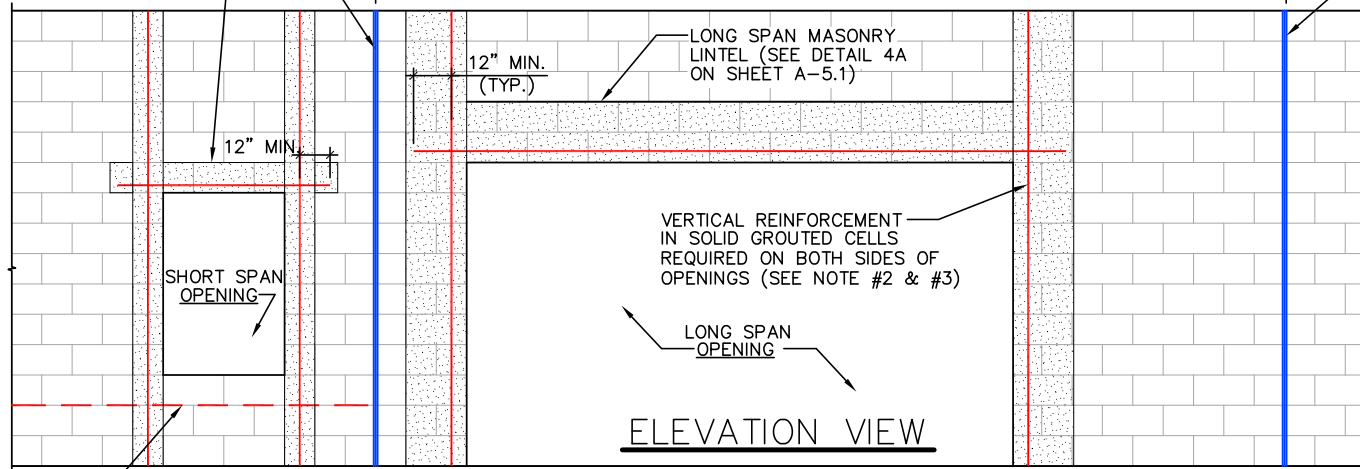
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	CONTROL JOINT DETAILS
SHEET:	A-9

CONTROL JOINT (LOCATED AWAY FROM EDGE OF WALL OPENINGS (NOTE #4))

SHORT SPAN MASONRY LINTEL (SEE DETAILS 3A AND 3C ON SHEETS A-4.1 AND A-4.3)

MAX. CONTROL JOINT SPACING (TYPICALLY 20'-0") BUT NOT TO EXCEED TWICE THE HEIGHT OF WALL

CONTROL JOINT (LOCATED AWAY FROM EDGE OF WALL OPENINGS (NOTE #4))



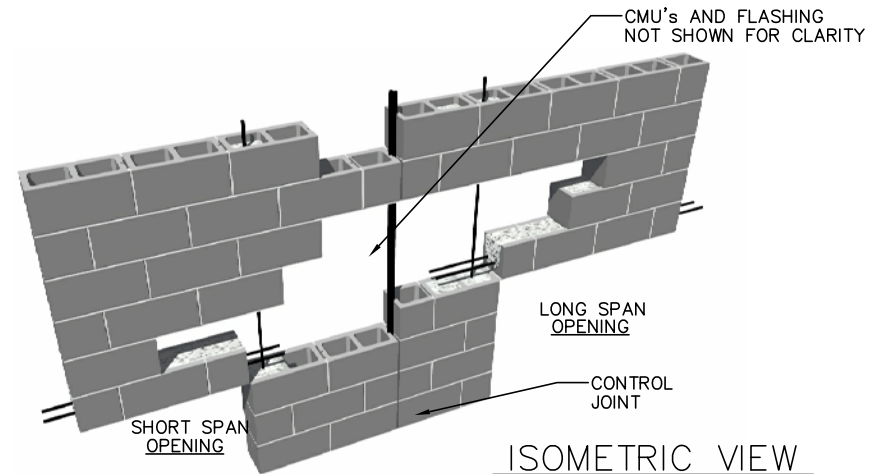
LADDER JOINT REINFORCEMENT IN MORTAR JOINT BELOW SILL FROM CONTROL JOINT TO CONTROL JOINT

REINFORCED MASONRY OPENING & ASSOCIATED CONTROL JOINT DESIGN FOR MASONRY LINTELS

9A
A-10

NOTES:

- 1) TRADITIONALLY, CONTROL JOINTS HAVE TYPICALLY BEEN LOCATED AT OR VERY CLOSE TO THE SIDES OF UNREINFORCED OPENINGS. HOWEVER IT IS THE MIM'S PREFERENCE FOR CONTROL JOINTS TO BE LOCATED AWAY FROM THE EDGE OF OPENINGS AND TO ADD REINFORCEMENT AROUND THE OPENINGS.
- 2) FOR BEST PERFORMANCE, THE VERTICAL REINFORCEMENT SHOULD BE PREFERABLY PLACED IN THE CELL IMMEDIATELY ADJACENT TO THE OPENING. HOWEVER IF THIS CELL IS CONGESTED, THE VERTICAL REINFORCEMENT MAY BE PLACED IN THE 2nd. CELL FROM THE OPENING.
- 3) ON LONG SPAN OPENINGS IT IS RECOMMENDED TO GROUT BOTH THE 1st. AND 2nd. CELLS FROM THE OPENING TO PROVIDE ADDITIONAL RESISTANCE FOR ATTACHING THE DOOR OR WINDOW FRAME.
- 4) FOR CONTROL JOINT DETAILS SEE SHEET A-9.
- 5) FOR ADDITIONAL INFORMATION ON CONTROL JOINT SPACING/LOCATIONS, SEE NCMA TEK 10-3.



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GENERIC WALL DESIGN - 8" SINGLE WYTHE CMU

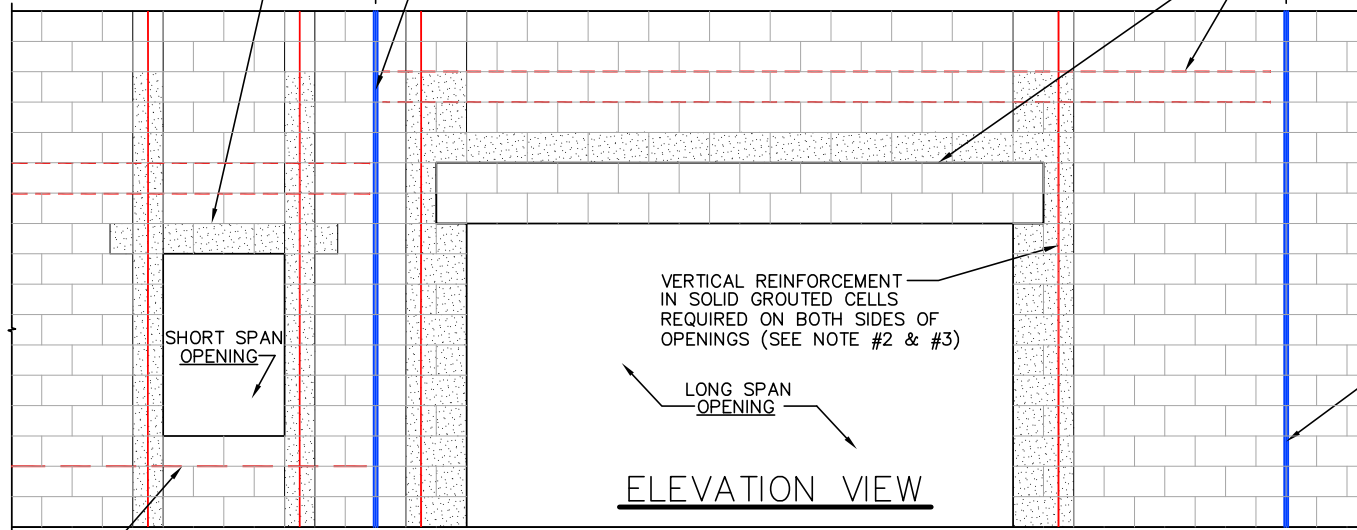
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	REINFORCED MASONRY OPENING & ASSOCIATED CONTROL JOINT DESIGN
SHEET:	A-10.1

SHORT SPAN DOUBLE ANGLE-
STEEL LINTEL (SEE DET. 3B ON
SHEET A-4.2) W/ JOINT REINF.
IN THE 1st. & 2nd. BED JOINTS
ABOVE THE PAN FLASHING FROM
CONTROL JOINT TO CONTROL JOINT

MAX. CONTROL JOINT SPACING (TYPICALLY 20'-0")
BUT NOT TO EXCEED TWICE THE HEIGHT OF WALL

CONTROL JOINT (LOCATED
AWAY FROM EDGE OF WALL
OPENINGS (NOTE #4))

LONG SPAN STEEL LINTEL
(SEE DETAILS 4C THROUGH
4E ON SHEETS A-5.3 THROUGH
A-5.5, WITH JOINT REINFORCEMENT
IN THE 1st. & 2nd. BED JOINTS
ABOVE THE PAN FLASHING FROM
CONTROL JOINT TO CONTROL JOINT)



SHORT SPAN
OPENING

VERTICAL REINFORCEMENT
IN SOLID GROUTED CELLS
REQUIRED ON BOTH SIDES OF
OPENINGS (SEE NOTE #2 & #3)

LONG SPAN
OPENING

ELEVATION VIEW

LADDER JOINT REINFORCEMENT
IN MORTAR JOINT BELOW SILL
FROM CONTROL JOINT TO CONTROL
JOINT

CONTROL JOINT (LOCATED
AWAY FROM EDGE OF WALL
OPENINGS (NOTE #4))

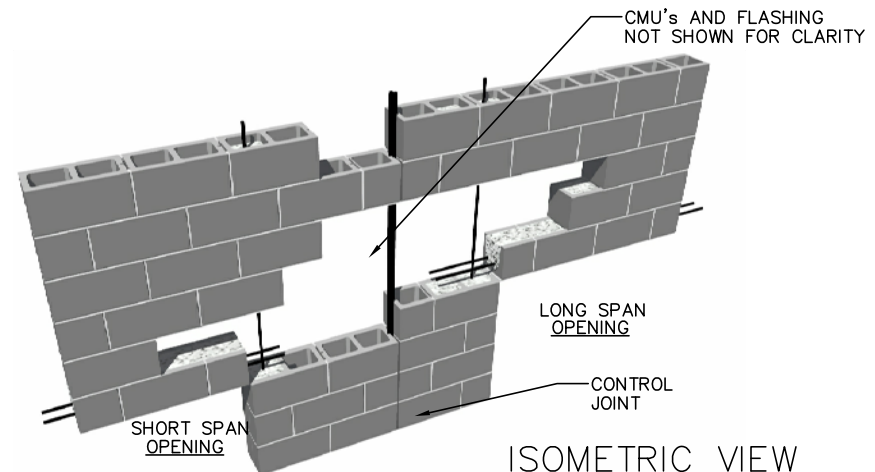
REINFORCED MASONRY OPENING & ASSOCIATED CONTROL JOINT DESIGN FOR STEEL LINTELS

9B

A-10

NOTES:

- 1) TRADITIONALLY, CONTROL JOINTS HAVE TYPICALLY BEEN LOCATED AT OR VERY CLOSE TO THE SIDES OF UNREINFORCED OPENINGS. HOWEVER IT IS THE MIM'S PREFERENCE FOR CONTROL JOINTS TO BE LOCATED AWAY FROM THE EDGE OF OPENINGS AND TO ADD REINFORCEMENT AROUND THE OPENINGS.
- 2) FOR BEST PERFORMANCE, THE VERTICAL REINFORCEMENT SHOULD BE PREFERABLY PLACED IN THE CELL IMMEDIATELY ADJACENT TO THE OPENING. HOWEVER IF THIS CELL IS CONGESTED, THE VERTICAL REINFORCEMENT MAY BE PLACED IN THE 2nd. CELL FROM THE OPENING.
- 3) ON LONG SPAN OPENINGS IT IS RECOMMENDED TO GROUT BOTH THE 1st. AND 2nd. CELLS FROM THE OPENING TO PROVIDE ADDITIONAL RESISTANCE FOR ATTACHING THE DOOR OR WINDOW FRAME.
- 4) FOR CONTROL JOINT DETAILS SEE SHEET A-9.
- 5) FOR ADDITIONAL INFORMATION ON CONTROL JOINT SPACING/LOCATIONS, SEE NCMA TEK 10-3.



LONG SPAN
OPENING

SHORT SPAN
OPENING

CONTROL
JOINT

ISOMETRIC VIEW

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GENERIC WALL DESIGN - 8" SINGLE WYTHE CMU

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	REINFORCED MASONRY OPENING & ASSOCIATED CONTROL JOINT DESIGN
SHEET:	A-10.2

NOTE: 8" BEARING IS SHOWN AND IS TYPICAL, BUT SHOULD BE INCREASED IF NECESSARY BASED ON STRUCTURAL BEARING CALCULATIONS

STEEL REINFORCEMENT
IN SOLID GROUTED CELLS

CONTROL JOINT (BACKER ROD
AND SEALANT)

GROUT SOLID (IN ONE
LIFT) TOTAL NUMBER OF
COURSES REQUIRED PER
STRUCTURAL DESIGN (3
COURSES DEPICTED IN
THIS DETAIL)

LINTEL STEEL
REINFORCEMENT

MASONRY LINTEL
(MAY BE PRE-CAST
OR FIELD ASSEMBLED)

SLIP PLANE W/ BOND BREAK MATERIAL BETWEEN
MASONRY LINTEL AND MASONRY BEARING.
BACKER ROD AND SEALANT ON ALL THREE
EXPOSED FACES.

GROUT SOLID UNDER
LINTEL BEARING AS REQUIRED

OPENING

ELEVATION VIEW

NCMA RECOMMENDS WIRE: 24" LONG
HORIZONTAL JOINT REINFORCEMENT
AT LINTEL BEARING AND TWO
COURSES BELOW LINTEL BEARING

SLIP PLANE/CONTROL JOINT
@ LONG SPAN MASONRY LINTEL

10A
A-11.1

NOTE: EVEN FOR FIELD ASSEMBLED MASONRY
LINTELS, DO NOT OVERLAP/INTERLOCK THE
LINTEL REINFORCING WITH THE WALL REINFORCING.
NO REINFORCING (VERTICAL OR HORIZONTAL) SHALL
PASS THROUGH THE CONTROL JOINT.

PREFORMED CONTROL
JOINT GASKET (SEE
SHEET A-9)

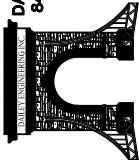
BACKER ROD AND SEALANT
ON BED JOINT ON ALL
THREE EXPOSED FACES

BOND BREAKER MATERIAL

JAMB OPENING
FACE

ISOMETRIC VIEW

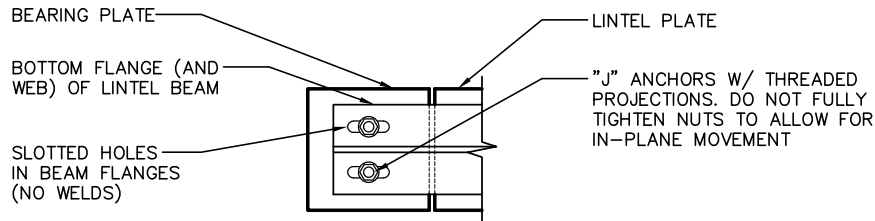
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DETAIL SET SW.8 (8" SINGLE WYTHE)

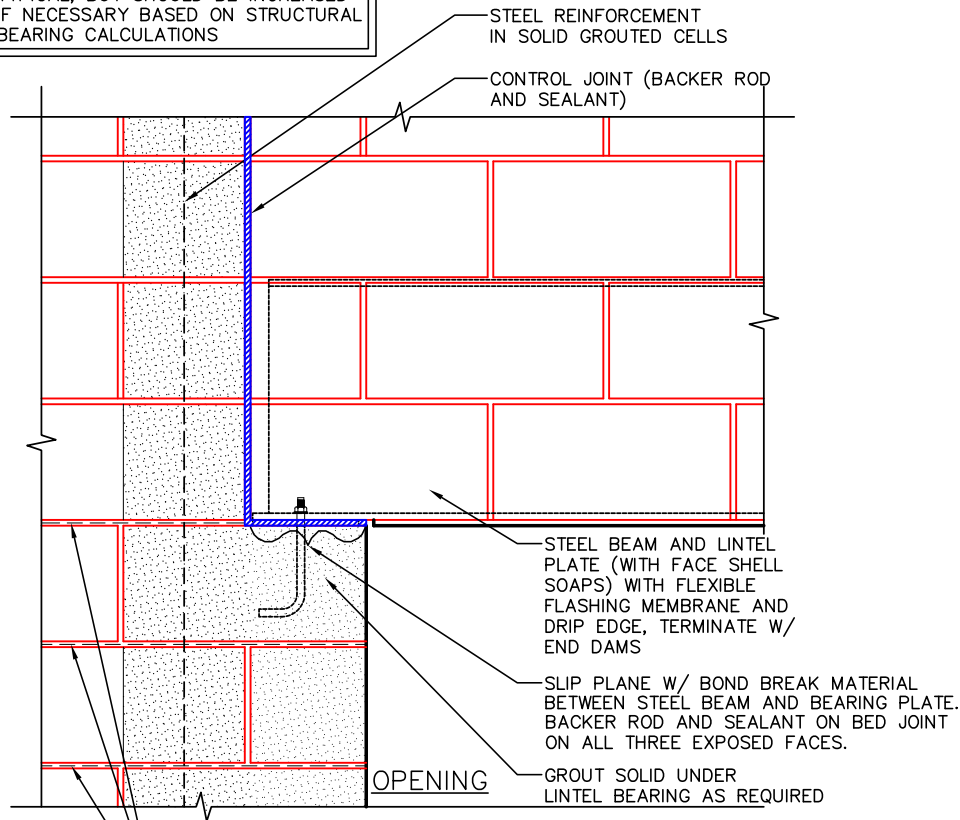
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SLIP PLANE/ CONTROL JOINT @ MASONRY LINTEL
SHEET:	A-11.1



- NOTES:**
- 1) DO **NOT** WELD STEEL BEAM LINTEL PLATE TO BEARING PLATE (TYPICAL BOTH SIDES).
 - 2) STEEL BEAM TO HAVE SLOTS ON BOTTOM FLANGES TO ALLOW FOR IN-PLANE MOVEMENT.

PLAN OF LINTEL/BEARING PLATE

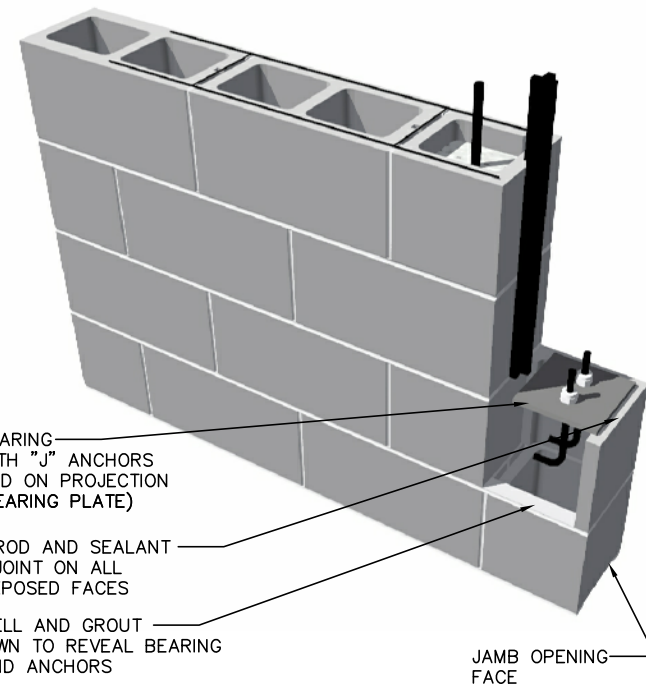
NOTE: 8" BEARING IS SHOWN AND IS TYPICAL, BUT SHOULD BE INCREASED IF NECESSARY BASED ON STRUCTURAL BEARING CALCULATIONS



ELEVATION VIEW

NCMA RECOMMENDS WIRE: 24" LONG HORIZONTAL JOINT REINFORCEMENT AT LINTEL BEARING AND TWO COURSES BELOW LINTEL BEARING

NOTE:
NO REINFORCEMENT (VERTICAL OR HORIZONTAL) SHALL PASS THROUGH THE CONTROL JOINT.

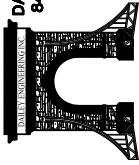


ISOMETRIC VIEW

SLIP PLANE/CONTROL JOINT @ LONG SPAN WIDE FLANGE STEEL LINTEL

10B
A-11.2

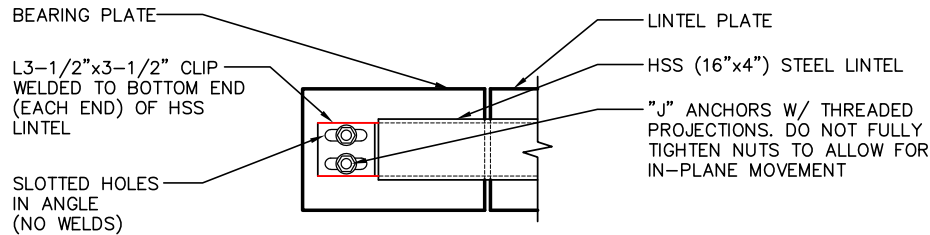
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DETAIL SET SW.8 (8" SINGLE WYTHE)

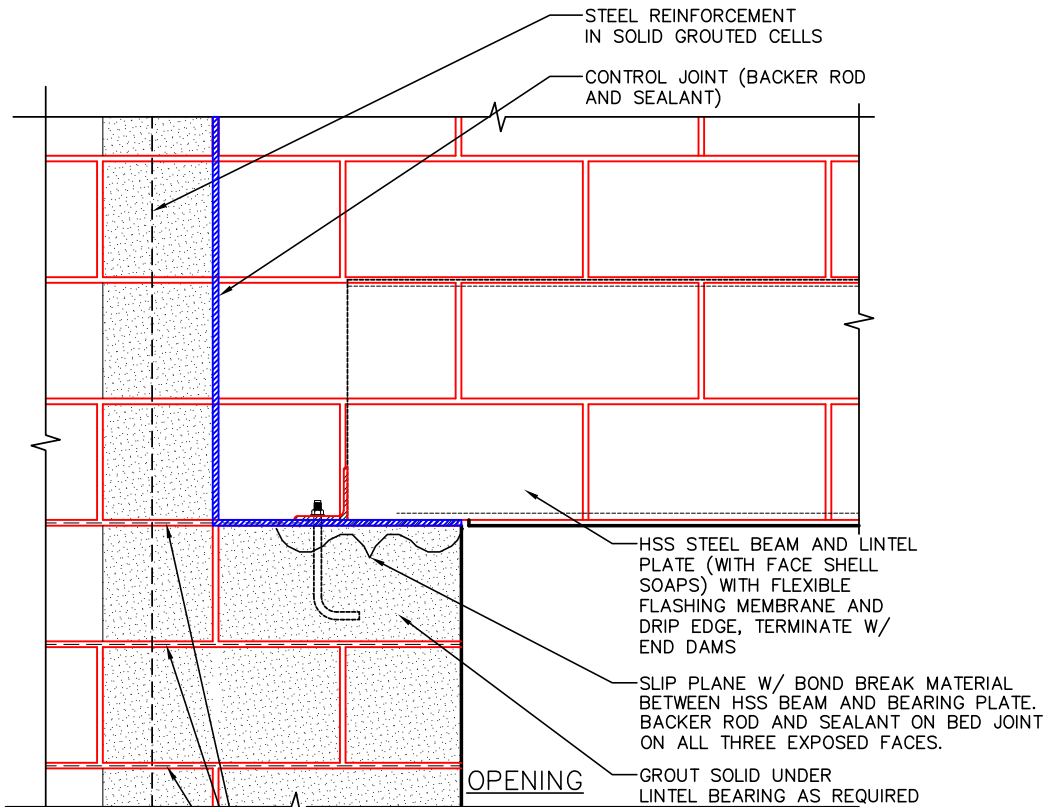
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SLIP PLANE/ CONTROL JOINT @ STEEL LINTEL
SHEET:	A-11.2



PLAN OF LINTEL/BEARING PLATE

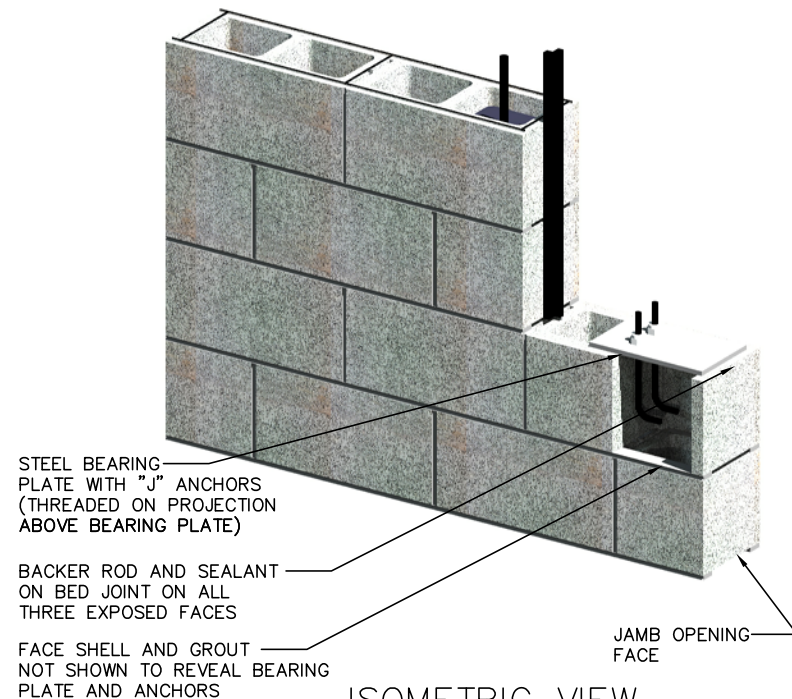
NOTES:
1) DO NOT WELD STEEL BEAM LINTEL PLATE TO BEARING PLATE (TYPICAL BOTH SIDES).

NOTE:
NO REINFORCEMENT (VERTICAL OR HORIZONTAL) SHALL PASS THROUGH THE CONTROL JOINT.



ELEVATION VIEW

NCMA RECOMMENDS WIRE: 24" LONG HORIZONTAL JOINT REINFORCEMENT AT LINTEL BEARING AND TWO COURSES BELOW LINTEL BEARING

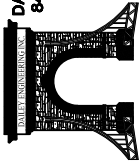


ISOMETRIC VIEW

SLIP PLANE/CONTROL JOINT @ LONG SPAN HSS STEEL LINTEL

10C
A-11.2

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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SLIP PLANE/ CONTROL JOINT @ STEEL LINTEL
SHEET:	A-11.3

"CONTROL LAYER" INFORMATION

1) THERMAL CONTROL LAYER OVERVIEW:

COMPLIANCE OPTIONS:

- 1) FOR "SEMI-HEATED" BUILDINGS SEE NOTE 1A BELOW AND SHEET A-12.3.
(CONVENTIONAL UNITS – PRESCRIPTIVE METHOD, COMCHECK NOT REQUIRED).
- 2) FOR "HEATED" BUILDINGS:
 - A) FOR SINGLE WYTHE WALLS EXPOSED ON THE EXTERIOR AND FULLY INSULATED ON THE INTERIOR FACE, SEE NOTE 1BA BELOW AND SHEET A-13,
(CONVENTIONAL UNITS – PRESCRIPTIVE METHOD, COMCHECK NOT REQUIRED).
 - B) FOR SINGLE WYTHE WALLS EXPOSED ON THE EXTERIOR AND PARTIALLY INSULATED ON THE INTERIOR FACE, SEE NOTE 1BB BELOW AND SHEETS A-12.4 THRU A-12.7 (CONVENTIONAL UNITS – COMCHECK METHOD).
 - C) FOR SINGLE WYTHE WALLS EXPOSED ON THE EXTERIOR AND EXPOSED ON THE INTERIOR FACE (USING SPECIAL ENERGY UNITS), SEE NOTE 1BC BELOW AND SHEET A-12.8
(SPECIALITY ENERGY UNITS – PRESCRIPTIVE METHOD, COMCHECK NOT REQUIRED).

1A) THERMAL CONTROL LAYER – "SEMI-HEATED" BUILDINGS/SPACES:

A) ASHRAE 90.1-2013 PRESCRIPTIVE COMPLIANCE REQUIREMENTS FOR MASS WALLS FOR CLIMATE ZONES 5, 6, & 7; AND ALTERNATE INSULATION OPTION:

ZONE	WALLS ABOVE GRADE		
	CONTINUOUS INSULATION METHOD (Rci MINIMUM)	U _{max} METHOD (U _{max} OF ENTIRE WALL ASSEMBLY)	ALTERNATE INSULATION OPTION:
5	Rci ≥ 5.7	U _{assembly} ≤ 0.151	ASTM C90 CONCRETE BLOCK WALLS, UN-GROUTED OR PARTIALLY GROUTED AT 32" OR LESS ON CENTER VERTICALLY AND 48" OR LESS ON CENTER HORIZONTALLY, WITH ALL UN-GROUTED CORES FILLED WITH MATERIAL HAVING A MAXIMUM THERMAL CONDUCTIVITY OF 0.44 BTU·in/h·ft ² ·°F, COMPLY PER SECT. 5.5.3.2 EXCEPTION (SEE SHEET A-12.3)
6	Rci ≥ 5.7	U _{assembly} ≤ 0.151	
7	Rci ≥ 7.6	U _{assembly} ≤ 0.123	NOT APPLICABLE

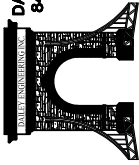
TABLE NOTES:

- 1) MICHIGAN RANGES FROM ZONE 5 IN THE SOUTH TO ZONE 7 IN THE NORTH.
- 2) SEE NCMA TEK 06-02C, TABLE 5, FOR R-VALUES AND U-FACTORS OF SINGLE WYTHE CONCRETE MASONRY WALLS, AND ADDITIONAL THERMAL DATA INFORMATION.
 - B) IN ORDER TO USE THE PRESCRIPTIVE PROVISIONS OF REFERENCED ENERGY CODE, WALL OPENINGS ARE LIMITED TO A MAXIMUM 40% OF GROSS WALL AREA, AND SKYLIGHTS ARE LIMITED TO A MAXIMUM 5% OF THE GROSS ROOF AREA.

1B) THERMAL CONTROL LAYER – "HEATED" BUILDINGS/SPACES:

- A) FOR OCCUPANCIES SUCH AS OFFICE, RETAIL, ASSEMBLY, ETC.; WHERE THE EXTERIOR WALLS ARE COMMONLY FINISHED ON THE INTERIOR SIDE WITH FURRING AND INSULATION, SEE SHEET A-13 FOR EXAMPLES OF INSULATION OPTIONS.
- B) FOR INDUSTRIAL WAREHOUSE OCCUPANCIES, IT IS POSSIBLE TO HAVE EXPOSED CMU ON THE LOWER PART OF THE WALL (FOR SUPERIOR DURABILITY), AND DIRECT APPLY RIGID FOAM INSULATION ON THE UPPER PART OF THE WALL. SEE SHEETS A-12.4 THRU A-12.7 FOR GUIDANCE ON USING "COMCHECK" TO ACHIEVE ENERGY CODE COMPLIANCE USING THIS APPROACH.
- C) SPECIAL ENERGY UNITS (PROPRIETARY) PROVIDE ANOTHER OPTION. SEE SHEET A-12.8 FOR ADDITIONAL INFORMATION.

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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:
DRAWN: M.W.F.
APPROVED:
DATE: 04/08/2020
TITLE:
CONTROL
LAYER INFORMATION
SHEET:
A-12.1

"CONTROL LAYER" INFORMATION (CONTINUED)

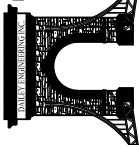
2) AIR CONTROL LAYER:

- A) THE AIR CONTROL LAYER IS OFTEN REFERED TO AS AN "AIR BARRIER" (SYSTEM). SEVERAL PRODUCTS AND OPTIONS (SUCH AS LIQUID OR MEMBRANE APPLIED PROPRIETARY SYSTEMS) ARE AVAILABLE, WITH DIFFERING LEVELS OF COST AND COMPLEXITY. SEE NOTE # 2 ON SHEET A-13.1 FOR MORE COMMENTS ADDRESSING AN AIR CONTROL LAYER.
- B) THIS SET OF DETAILS REFLECTS AN AIR BARRIER SYSTEM ACHIEVED WITH SPECIFIC MASONRY DETAILING/CONSTRUCTION AND NON-PROPRIETARY COATINGS DESCRIBED IN NOTE C BELOW.
- C) THE FOLLOWING NON-PROPRIETARY COATINGS ARE CONSIDERED TO MEET AN AIR LEAKAGE OF LESS THE 0.04 CFM/SQ. FT. @ 75 Pa. (SEE NCMA TEK 6-14A FOR ADDITIONAL INFORMATION).
- 1) PRESCRIPTIVE COMPLIANCE:
 - FULLY GROUTED CMU
 - CMU WALL WITH ONE APPLICATION OF BLOCK FILLER AND TWO APPLICATIONS OF A PAINT OR SEALER COATING
 - CMU WALL WITH A PORTLAND CEMENT/SAND PARGE, STUCCO OR PLASTER WITH A MINIMUM THICKNESS OF 1/2".
 - 2) BY LABORATORY TESTING:
 - 12" CMU SEALED WITH AT LEAST (2) COATS OF COMMERCIAL-GRADE LATEX PAINT.
 - 8" CMU COATED WITH A SINGLE COAT OF HIGH QUALITY LATEX PAINT.
 - 8" CMU COATED WITH A SINGLE COAT OF MASONRY BLOCK FILLER.

3) MOISTURE CONTROL LAYER:

- A) SINGLE WYTHE WALL ASSEMBLIES DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THESE DETAILS PROVIDE PROTECTION AGAINST WATER PENETRATION, ESPECIALLY FOR LOW-RISE BUILDINGS. FOR IMPROVED PROTECTION, CONSIDER THE DRAINAGE WALL ASSEMBLIES SHOWN IN M.I.M. DETAIL SET CW.8 (8" CAVITY WALL). SEE NOTE #3 ON SHEET A-13 FOR MORE COMMENTS ADDRESSING A VAPOR CONTROL LAYER.

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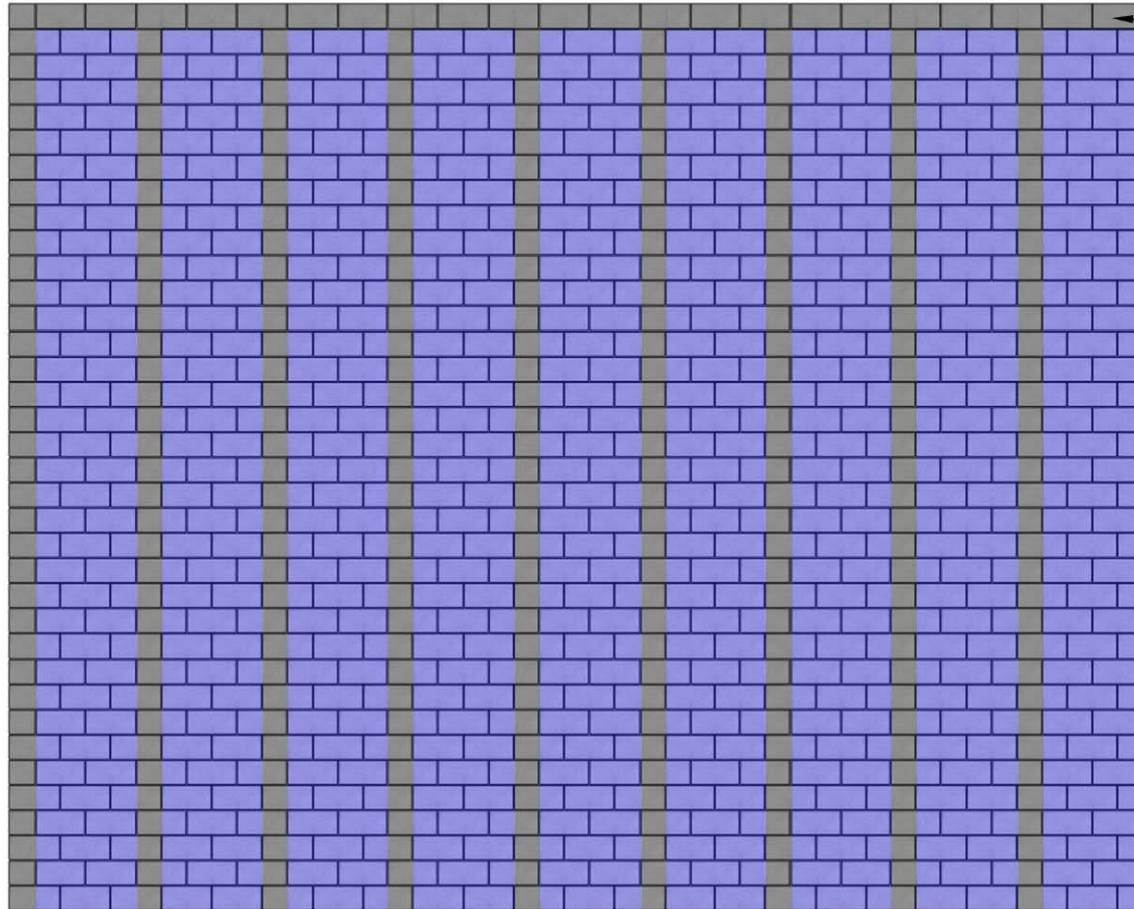


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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	CONTROL LAYER INFORMATION
SHEET:	A-12.2

SEMI-HEATED BUILDING W/CONVENTIONAL UNITS
(PRESCRIPTIVE METHOD, COMCHECK NOT REQUIRED)
ALTERNATE INSULATION OPTION



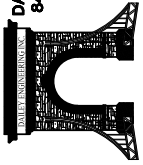
Bond Beam
 $\geq 48''$ O.C.

$\geq 32''$ O.C. Grouted Cells

■ Grout

■ Insulation: Maximum Thermal Conductivity of $0.44 \text{ Btu}\cdot\text{in}/\text{H}\cdot\text{Ft}^2 \cdot ^\circ\text{F}$
 (See NCMA TEK 6-2C, Table 5)

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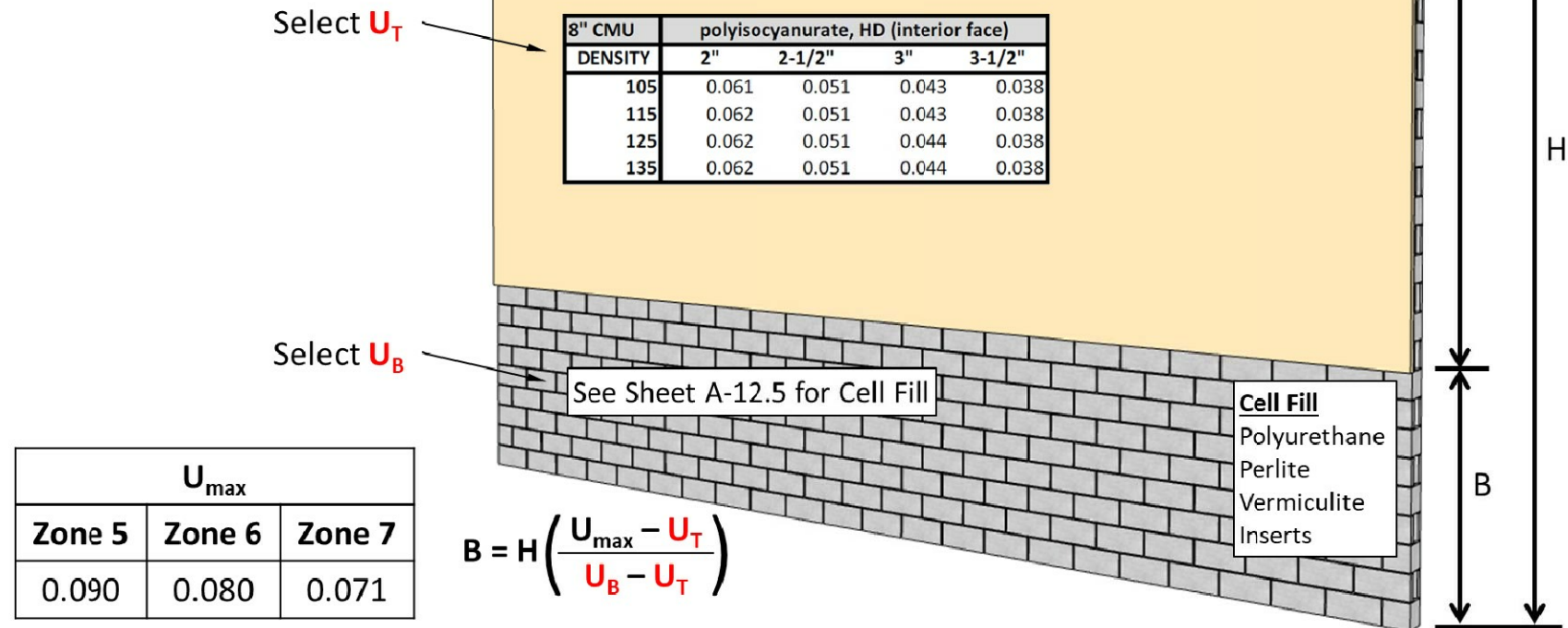
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DETAIL SET SW.8 (8" SINGLE WYTHE)

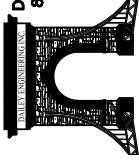
IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	SEMI-HEATED ALTERNATE INSULATION OPTION
SHEET:	A-12.3

HEATED BUILDING W/CONVENTIONAL UNITS (COMCHECK METHOD)

- Exposed on the Exterior
- Partially Insulated on the Interior



SAMPLE WALL FOR COMCHECK EXAMPLE



HEATED BUILDING W/CONVENTIONAL UNITS (COMCHECK METHOD)

- Exposed on the Exterior
- Partially Insulated on the Interior

8" CMU		POLYURETHANE BAR SPACING, polyurethane foamed-in-place, R=5.9 per in. (cell fill)													
DENSITY		8"	16"	24"	32"	40"	48"	56"	64"	72"	80"	88"	96"	104"	120"
105		0.529	0.355	0.298	0.269	0.251	0.240	0.231	0.225	0.220	0.216	0.213	0.210	0.208	0.205
115		0.555	0.381	0.323	0.294	0.277	0.265	0.257	0.250	0.246	0.242	0.239	0.236	0.234	0.230
125		0.581	0.408	0.351	0.322	0.305	0.293	0.285	0.279	0.274	0.271	0.268	0.265	0.262	0.259
135		0.606	0.437	0.381	0.353	0.336	0.325	0.317	0.311	0.306	0.303	0.300	0.297	0.295	0.292

8" CMU		PERLITE BAR SPACING, perlite, R=3.12 per in. (cell fill)													
DENSITY		8"	16"	24"	32"	40"	48"	56"	64"	72"	80"	88"	96"	104"	120"
105		0.529	0.362	0.307	0.279	0.262	0.251	0.243	0.237	0.232	0.229	0.226	0.223	0.221	0.218
115		0.555	0.388	0.332	0.304	0.287	0.276	0.268	0.262	0.257	0.254	0.251	0.248	0.246	0.243
125		0.581	0.415	0.359	0.332	0.315	0.304	0.296	0.290	0.285	0.282	0.279	0.276	0.274	0.271
135		0.606	0.443	0.389	0.362	0.346	0.335	0.327	0.321	0.317	0.313	0.310	0.308	0.306	0.304

8" CMU		VERMICULITE BAR SPACING, vermiculite, R=2.27 per in. (cell fill)													
DENSITY		8"	16"	24"	32"	40"	48"	56"	64"	72"	80"	88"	96"	104"	120"
105		0.529	0.367	0.314	0.287	0.271	0.260	0.252	0.246	0.242	0.238	0.236	0.233	0.231	0.228
115		0.555	0.393	0.339	0.312	0.295	0.284	0.277	0.271	0.266	0.263	0.260	0.257	0.255	0.252
125		0.581	0.419	0.366	0.339	0.323	0.312	0.304	0.298	0.294	0.290	0.288	0.285	0.283	0.280
135		0.606	0.448	0.395	0.369	0.353	0.342	0.335	0.329	0.325	0.321	0.319	0.316	0.314	0.311



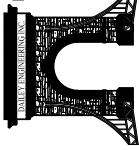
Conventional Unit w/Insert*
(Typical U-values range from 0.17 to 0.25)

*NOTES:

- 1) This is a proprietary product, consult the manufacturer for U-Values and technical information and guidance for structural design
- 2) Basis of design for Conventional Units with inserts is "Korfil ICON."

CONVENTIONAL CMU'S "U_B" VALUES

DAILEY ENGINEERING, INC.
8485 STEPHENSON ROAD
ONSTED, MI 49266
PH. # (517) 467-9000



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Institute of Michigan

DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	U-VALUE REFERENCE CHARTS
SHEET:	A-12.5

MIM Building 10-4-19.cck - COMcheck 4.1.1.0 Code: 90.1 (2013) Standard

File Edit View Options Code Help

Project Envelope Interior Lighting Exterior Lighting Mechanical Requirements

Roof Skylight Exterior Wall Semi-Exterior Wall Window Door Basement Floor

#	Component	Assembly	Building Area Type	Orientation	Fenestration Details	Construction Details	Gross Area or Slab Perimeter	Units	Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	SHGC	Projection Factor	VT	Heat Capacity
1	Roof 1	Insulation Entirely Above...	1 - Warehouse...				5000	ft2		30.0	0.032				
2	South (lower)	Other Mass Wall	1 - Warehouse...	South			808	ft2			0.272				15.30
3	Door 1	Insulated Metal			Non-Swin...		576	ft2			0.500				
4	East (lower)	Other Mass Wall	1 - Warehouse...	East			408	ft2			0.248				13.80
5	West (lower)	Other Mass Wall	1 - Warehouse...	West			408	ft2			0.248				13.80
6	North (lower)	Other Mass Wall	1 - Warehouse...	North			808	ft2			0.249				13.80
7	Door 2	Insulated Metal			Swinging		49	ft2			0.500				
8	South (upper)	Other Mass Wall	1 - Warehouse...	South			2222	ft2			0.043				15.30
9	North (upper)	Other Mass Wall	1 - Warehouse...	North			2222	ft2			0.043				13.80
10	Window 5	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
11	Window 6	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
12	Window 7	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
13	Window 8	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
14	East (upper)	Other Mass Wall	1 - Warehouse...	East			1122	ft2			0.043				13.80
15	Window 9	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
16	Window 10	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
17	West (upper)	Other Mass Wall	1 - Warehouse...	West			1122	ft2			0.043				13.80
18	Window 11	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
19	Window 12	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
20	Exterior Wall 9	Click here to select As...	1 - Warehouse...				0	ft2			0.051				
21	Floor 1	Wood-Framed, 16" o.c. Wood-Framed, 24" o.c. Steel-Framed, 16" o.c. Steel-Framed, 24" o.c. Metal Building Wall Solid Concrete Concrete Block Other (U-Factor Option)	Warehouse...			Insulation...	303	linear ft.			15.0				

Invalid assembly type(s)

Check Envelope Compliance Help Envelope TBD Interior Lighting TBD Exterior Lighting TBD

STEP 1: Select Exterior Wall
STEP 2: Select Other U-Factor Option
STEP 3: Select Mass Wall

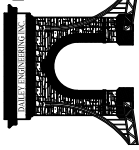
COMCHECK STEPS #1—#3

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DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:
DRAWN: M.W.F.
APPROVED:
DATE: 04/08/2020
TITLE:
COMCHECK
SUPPORT INFORMATION
SHEET:
A-12.6



MIM Building 10-4-19.cck - COMcheck 4.1.1.0 Code: 90.1 (2013) Standard

File Edit View Options Code Help

Project Envelope Interior Lighting Exterior Lighting Mechanical Requirements

Roof Skylight Exterior Wall Semi-Exterior Wall Window Door Basement Floor

	Component	Assembly	Building Area Type	Orientation	Fenestration Details	Construction Details	Gross Area or Slab Perimeter	Units	Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	SHGC	Projection Factor	VT	Heat Capacity
▼ Building															
1	Roof 1	Insulation Entirely Abo...	1 - Warehous...				5000	ft2		30.0	0.032				
2	South (lower)	Other Mass Wall	1 - Warehous...	South			808	ft2			0.272				15.30
3	Door 1	Insulated Metal				Non-Swin...	576	ft2			0.500				
4	East (lower)	Other Mass Wall	1 - Warehous...	East			408	ft2			0.248				13.80
5	West (lower)	Other Mass Wall	1 - Warehous...	West			408	ft2			0.248				13.80
6	North (lower)	Other Mass Wall	1 - Warehous...	North			808	ft2			0.249				13.80
7	Door 2	Insulated Metal				Swinging	49	ft2			0.500				
8	South (upper)	Other Mass Wall	1 - Warehous...	South			2222	ft2			0.043				15.30
9	North (upper)	Other Mass Wall	1 - Warehous...	North			2222	ft2			0.043				13.80
10	Window 5	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
11	Window 6	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
12	Window 7	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
13	Window 8	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
14	East (upper)	Other Mass Wall	1 - Warehous...	East			1122	ft2			0.043				13.80
15	Window 9	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
16	Window 10	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
17	West (upper)	Other Mass Wall	1 - Warehous...	West			1122	ft2			0.043				13.80
18	Window 11	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
19	Window 12	Metal Frame:Fixed			Code default ...	Glazing: Sing...	16	ft2			1.250	0.82	0.00	0.76	
20	Exterior Wall 9	Other Mass Wall	1 - Warehous...	Unspec...			0	ft2			0.000				1.00
21	Floor 1	Slab-On-Grade:Unhea...	1 - Warehous...			Insulation...	303	linear ft.		15.0					

STEP 4: Enter Wall Area
STEP 5: Select U-Factors from Tables and enter
STEP 6: Select Heat Capacity from NCMA TEK 6-16A

✓ Check Envelope Compliance Help Envelope TBD Interior Lighting TBD Exterior Lighting TBD

Invalid Area(s)

COMCHECK STEPS #4-#6

HEATED BUILDING W/SPECIALTY ENERGY UNITS (PRESCRIPTIVE METHOD, COMCHECK NOT REQUIRED)

- Exposed on the Exterior
- Exposed on the Interior

Specialty Energy Unit



Special Energy Unit #1*
(Typical U-values range from
0.049 to 0.052)

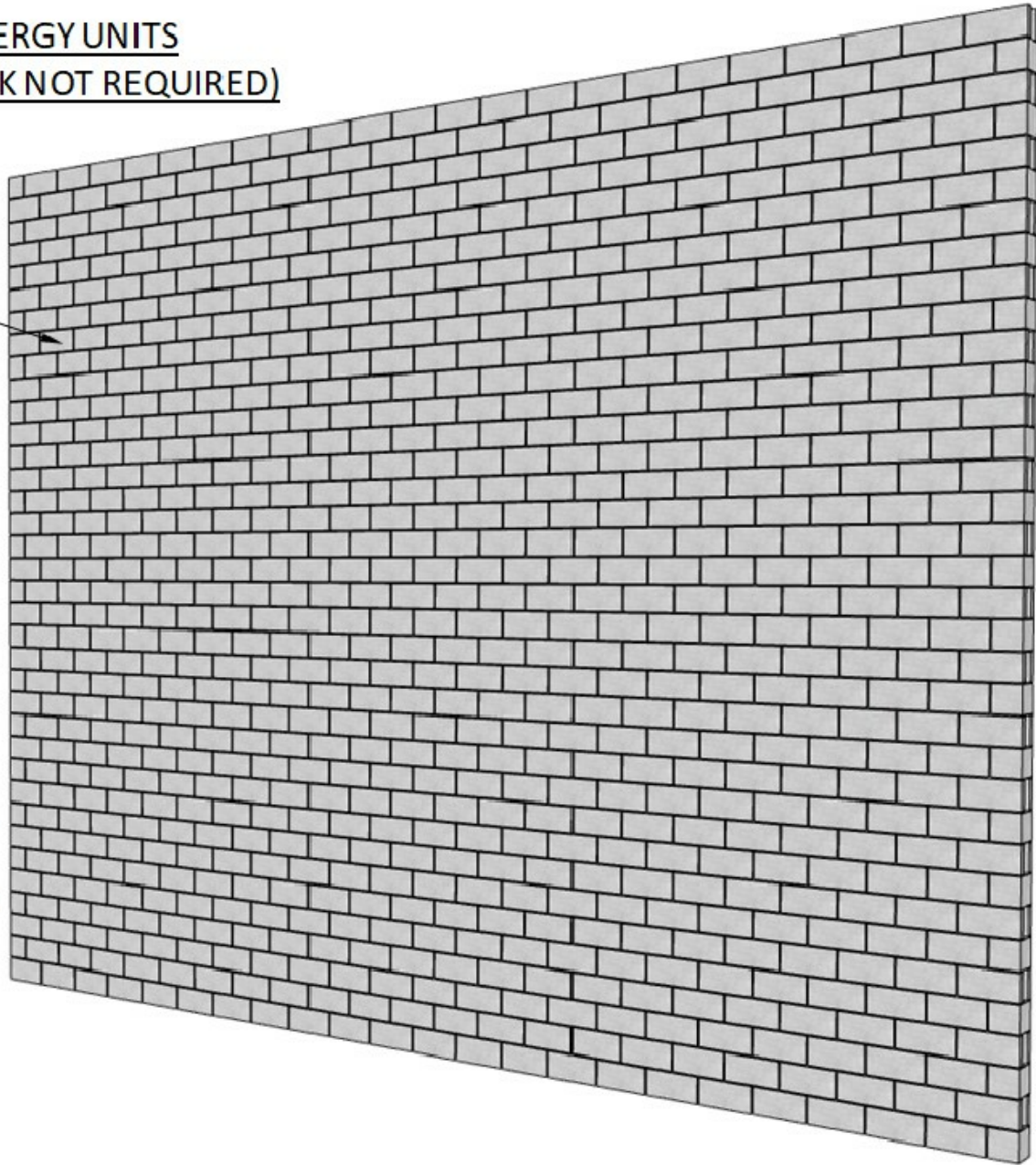


Special Energy Unit #2*
(Typical U-values range from
0.11 to 0.15)

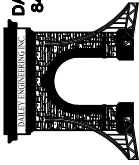
*NOTES:

- 1) These are proprietary products, consult the manufacturer for U-Values and technical information and guidance for structural design
- 2) Basis of design for Special Energy Unit #1 is "Omniblock." Basis of design for Special Energy Unit #2 is "Korfil HiR."

U_{max}		
Zone 5	Zone 6	Zone 7
0.090	0.080	0.071



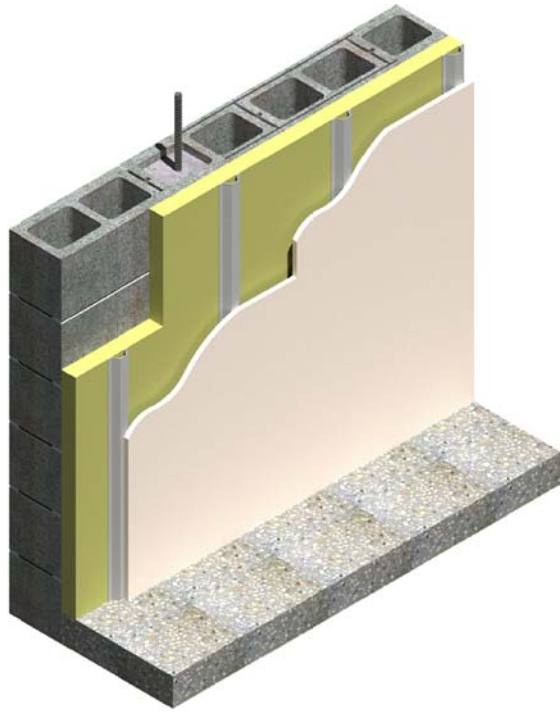
DAILEY ENGINEERING, INC.
8485 STEPHENSON ROAD
ONSTED, MI 49266
PH. # (517) 467-9000



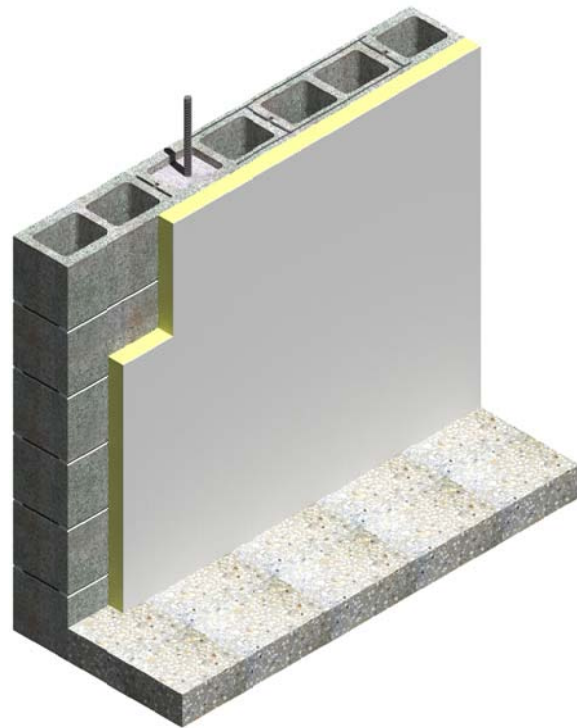
111 MASONRY
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DETAIL SET SW.8 (8" SINGLE WYTHE)

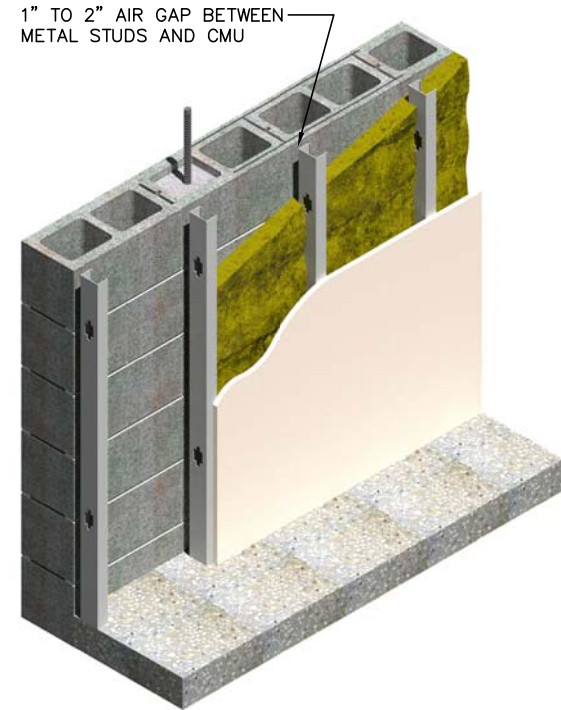
IN CHARGE:
DRAWN: M.W.F.
APPROVED:
DATE: 04/08/2020
TITLE:
SPECIAL
ENERGY UNITS
SHEET:
A-12.8



RIGID INSULATION WITH
FURRING/GYP. BOARD



RIGID FOAM WITH
COMPOSITE THERMAL BARRIER



SPRAY FOAM WITH
METAL STUDS/GYP. BOARD

NOTES:

THE THREE OPTIONS SHOWN ABOVE:

- 1) ARE JUST A FEW REPRESENTATIVE SAMPLES OF THE MULTITUDE OF AVAILABLE INTERIOR INSULATION SYSTEMS:
 - A) RIGID BOARD – EXTRUDED OR EXPANDED POLYSTYRENE, OR POLYISOCYANURATE
 - B) CLOSED-CELL SPRAY POLYURETHANE FOAM
 - C) CELLULAR GLASS
 - D) FIBROUS BATT
 - E) FIBROUS BLOW-IN
- 2) DO NOT ADDRESS A VAPOR CONTROL LAYER, AND HAVE VARYING LEVELS OF VAPOR PERMEABILITY. THE DEGREE OF VAPOR PERMEABILITY AND INTERIOR SPACE HUMIDITY SHOULD BE CAREFULLY EVALUATED (DEWPOINT ANALYSIS) IN ORDER TO ACHIEVE PROPER CONDENSATION CONTROL.
- 3) HAVE NOT BEEN ANALYZED FOR AIR CONTROL LAYER PERFORMANCE. THE OTHER DETAILS IN THIS SET REFLECT AN AIR BARRIER SYSTEM ACHIEVED WITH SPECIFIC MASONRY DETAILING/ CONSTRUCTION AND NON-PROPRIETARY COATINGS APPLIED DIRECTLY TO THE CMU (SEE SHEET A-12.2, NOTE #2). IF AN INTERIOR WALL INSULATION SYSTEM IS INCLUDED IN THE DESIGN, THE USER MAY WISH TO CONSIDER OTHER AIR BARRIER SYSTEMS (PERHAPS EVEN UTILIZING COMPONENTS OF THE INTERIOR WALL INSULATION SYSTEM, IF APPLICABLE).

11A
A-13.1

INSULATION OPTIONS FOR
INTERIOR SURFACE OF EXTERIOR WALL

IN CHARGE:	
DRAWN:	M.W.F.
APPROVED:	
DATE:	04/08/2020
TITLE:	INSULATION OPTIONS FOR INTERIOR SURFACE OF EXTERIOR WALL
SHEET:	A-13

NOTES:

- 1) THIS DETAIL ONLY APPLICABLE TO A REINFORCED WALL DUE TO FLASHING/BOND BREAK CONCERNS.

NOTE:

VERTICAL REINFORCEMENT NOT SHOWN FOR CLARITY

8" CMU

INSULATION (FOAM, LOOSE FILL OR INSERTS)

PAINT (CAN FUNCTION AS AN AIR BARRIER, SEE SHEET A-12.2, NOTE #2)

DRAINAGE MATERIAL

REMOVABLE FASTENERS BY ROOFING CONTRACTOR

(BUILDING INTERIOR)

8" BOND BEAM (W/ REINF.)

LADDER-TYPE HORIZ. JOINT REINFORCEMENT SPACED @ 16" O.C.

(BUILDING INTERIOR)

INTEGRAL WATER REPELLANT (IN CMU AND MORTAR) AND A POST-CLEANING FIELD-APPLIED BREATHABLE WATER WATER REPELLANT

PAN FLASHING SYSTEM DIRECTLY OVER THE METAL FLASHING

28 Ga. STAINLESS STEEL FLASHING W/ 2" VERTICAL LEG, HEMMED, NO DRIP, HORIZONTAL LAP 4" (MIN.) W/ NON-SKINNING BUTYL SEALANT (BY MASON CONTRACTOR)

1 1/2" - 2" W/ 1/2" HEM

1 1/4" x 1/8" CONTINUOUS TERMINATION BAR W/ REMOVEABLE FASTENERS @ 16" O.C. (MIN.) (BY ROOFING CONTRACTOR)

COMPATIBLE METAL COUNTER FLASHING, HEMMED, WITH DRIP, LAP 4" (MIN.) W/ NON-SKINNING BUTYL SEALANT (BY ROOFING CONTRACTOR)

(BUILDING INTERIOR)

ISOMETRIC VIEW

SECTION VIEW

12
A1.1
UPPER WALL /
LOW ROOF FLASHING DETAIL

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ONSTED, MI 49286
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111 MASONRY
Institute of Michigan

DETAIL SET SW.8 (8" SINGLE WYTHE)

IN CHARGE:

DRAWN: M.W.F.

APPROVED:

DATE: 04/08/2020

TITLE:
UPPER WALL /
LOW ROOF FLASHING
DETAIL

SHEET:
A-14