Masonry Details That Work

Prepared by

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INTRODUCTION

The Canadian Masonry Research Institute

The Canadian Masonry Research Institute (CMRI) is a non-profit regional masonry association founded in 1971 to provide design advice and technical support to the construction industry across the prairie provinces. CMRI’s membership includes all major masonry contractors and producers of masonry products in the region. Structural engineers, architects, researchers, contractors, developers and building owners are invited to visit or contact CMRI in Edmonton, Alta.

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Disclaimer

This manual is intended to encourage state-of-the-art masonry design by offering details of critical building features that can be adapted and developed by architectural and engineering professionals to suit the particular conditions of a building, including location, use and occupancy.

The user of “Details That Work” should be familiar with local building practices, and the requirements of the local Building Code and the CSA Masonry Standards. These standards include:

- CSA S304.1, Masonry Design for Buildings, Limit States Design
- CSA A179, Mortar and Grout for Unit Masonry Canada
- CSA A370, Masonry Connectors
- CSA A371, Masonry Construction for Buildings
- CSA A165 Series, Concrete Masonry Units
- CSA A82 Series, Brick Masonry Units
- CSA S478, Guideline on Durability in Buildings
The user should carefully evaluate the effects of all structural and non-structural environmental loads, and the masonry should be designed, and the appropriate materials, components and assemblies selected, to effectively resist these loads over the design service life. The sizes and configurations of the components and assemblies shown in the manual are for illustration purposes only, and are not intended to promote a specific product over others available on the market. The user may choose to substitute other components and assemblies where appropriate.

It is the responsibility of the user to apply professional knowledge in the use of the details. CMRI does not warrant or assume any liability for the accuracy or completeness of the details, or their fitness for any particular purpose or project.

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1. Insulation in contact with flashing both sides
2. Shear connection as required
3. Weld plates cast into concrete flush with outside surface of concrete c/w flat sheet "knife blade" gusset
4. Reinforced concrete slab
5. Angle clip as required on both sides of wall staggered
6. Provide deflection space with lateral support for block wall as required
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- Interior Slab
- Flexible Dowel IncaseMENT MIN. 3"
- Vertical Movement Joint
- 3/8" Clearance to Balcony Slab
- Masonry Curtain Wall from Foundation
- Balcony Slab
- 15M Dowel Bend and Grout into Core Each End, Location and Spacing as Required by Design
- Load Bearing Wing Wall
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NOTE: SEAL WHERE REINFORCEMENT PENETRATES FLASHING

FLASHING AND WEEP HOLES @ 32"

MASONRY TIE

GROUT

VOID BLOCKING AND GROUT

PRESSURE TREATED WOOD BLOCKING

CAULKING

EXTEND FLASHING 6" UP; SPlice WITH POLY ON IN BOARD FACE OF POLY
Detail 5.8 – Parapet with Metal Coping

- Metal coping lapped, crimped and caulked at joints
- Ethafoam rod and caulking
- Fully grout all parapet units (per CSA S304 & CSA S304.1 & CSA A371)
- Masonry tie
- Bond beam
- Two ply roofing membrane
- Void blocking and grout
- Precast hollow core floor
- Non corroding or corrosion resistant bearing padset in min. 1” from face of concrete block
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WATERPROOF TOP ONLY.
CAULK JOINTS WHERE
PRE-FABRICATED CAP
ASSEMBLIES JOIN

CAULK AT LOCATIONS
WHERE VERTICAL
REINFORCING STEEL
PENETRATES FLASHING

FULLY GROUT ALL
UNITS IN PARAPET
(PER CSA S304
& CSA S304.1
& CSA A371)

NOTE: DO NOT USE DETAIL
IN SEVERE WEATHERING
APPLICATIONS
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- **Reinforcing Steel in Grouted Load Bearing Masonry**
- **Flashings**
- **Reinforcing Steel**
- **Masonry Tie**
- **Foundation Wall**
- **Gypsum Board Air/Vapour Barrier Insulation Steel Stud Air Space**
- **Extend Flashing 6" up; Splice with poly on in board face of poly Caulking**
- **Void Blocking & Grout**
- **Non Corroding or Corrosion Resistant Bearing Pad Set in Min. 1"**
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- Movement joint for non-load bearing walls
- Clip angle fastened with drilled in place fastener
- Steel plate welded to gusset plate
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- DRILLED IN INSERT OR EXPOSED REINFORCING ROD
- MOVEMENT JOINT FOR NON-LOAD BEARING WALLS
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- Block Shear Connectors
- Spacing of block shear connectors to be in accordance with CSA S304.1 & CSA A370
- Weep Holes @ 24" o/c
- Flashing: Continuous L4" x 4" x 1/2"
  - W/ 3/8" outriggers
  - C/W 8" x 4" x 3/8" weld plate
  - W/ 2-3/4 mm dia x 6" long
  - Anchor bolts @ 24" o.c.
- Cement Board or Parging over rigid insulation
- Concrete block air/vapour barrier membrane
- Rigid insulation
- Air space
- Brick veneer
Detail 8.7 – Brick Veneer / Concrete Block At Foundation Bond Beam

1-1/2M BAR CONTINUOUS IF REQUIRED

SPACING OF BLOCK SHEAR CONNECTORS TO BE IN ACCORDANCE WITH CSA S304.1 & CSA A670

FLASHER

CONTINUOUS 14" x 4" x 1/2"
W/ 3/8" OUTRIGGERS
C/W 8" x 4" x 3/8" WELD PLATE
W/2-3/4"mm DIA x 6" LONG ANCHOR BOLTS @ 24" O.C.

2-20M CONTINUOUS TOP & BOTTOM
CEMENT BOARD OR PARGING OVER RIGID INSULATION

GRID

GRouting SQUID CONTINUOUS

5" CONCRETE FLOOR SLAB
6" COMPACTED GRANULAR FILL, COMPACTED BASE
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AT STUB WALL FOR WINDOW OPENINGS
AND AT FOUNDATION

**Movement Joint**
(ROD & CAULKING)

**Flashing**

- Brick Veneer
- Air Space
- Water Resistive Barrier
- Exterior Sheathing
- Stud Wall
- Batt Insulation
- Polyethylene V/B
- Gypsum Board

- 22ga. Conventional Corrugated
- Strip Tie
- Spaced 16" O.C. Horizontal (Max.)
- 24" O.C. Vertical (Max.)

**TYPICAL BRICK ANGLE SUPPORT DETAIL**

- See detail 9.8 for detail & detail 9.9 for alternative det.

- Weep Holes @ 24" O.C.
- Flashing
- Cement Board or Furring
- On Rise Insulation
- Damp-Proofing
  - On Waterproofing
  - As Required

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- Brick Ties as per CSA A370
  - Spaced 16" O.C. Horiz. (Max.)
  - & 24" O.C. Vertical (Max.)

- Brick Veneer
- 1" Air Space
- Water Resistant Barrier
- Exterior Sheathing
- Stud Wall
- Batt Insulation
- Polyethylene V/B
- Gypsum Board

- Steel Angle
  - L 5 1/2" x 3 1/2" x 3/8" Continuous
  - with Vented Spacing Plate (Gusset)
  - @ 16" O.C. C/W Anchor Bolts as Req’d
  - See Table 1

- Insulation Pillow

- Weep Holes @ 24" O.C.

- Flashing

- Cement Board or Fording over Rigid Insulation

- Damp-Proofing or Waterproofing
Detail 9.12 – Steel Shelf Angle Brick Support Detail at Stud Wall for Window Openings

Brick Ties as per CSA A370-
spaced 16" o.c. horiz. (max.)
24" o.c. vertical (max.)

Brick Support Angle
L 3 1/2" x 3 1/2" x 3/8" continuous with
angle spacers @ 16" o.c.
attached to built up beam with
3/8" dia. lag bolts @ 16" o.c.
provide min. 4" embedment

*Note: Conventional 22 ga corrugated strip ties
must not be used with cavity larger
than 1" including insulation

- Gypsum Board
- Polyethylene V/B
- Stud Wall
- Batt Insulation
- Exterior Sheathing
- Water Resistant Barrier
- Rigid Insulation
- 1" Air Space
- Brick Veneer

Built Up Beam as Required
For small openings use loose angle iron as per attached Table 2

Flashing
Detail 9.13 – Brick Shelf Angle Support Detail for Bay Window
Detail 9.14 – Section Through Typical Brick Shelf Angle Support Detail for Bay Window
Detail 9.15 – Alternate Section Through Typical Brick Shelf Angle Support Detail for Bay Window
Detail 9.16 – Typical Brick Shelf Angle Support Detail for Bay Window

L 4" x 4" x 3/8" CONTINUOUS
BRICK SUPPORT ANGLE
CONNECT TO BEAM WITH
3/8" DIAMETER THRU BOLTS
SPACED @ 16" O.C. FOR
MAXIMUM LENGTH OF 3'-0"

NAIL WITH 4" SPIKES
TOP & BOTTOM
FASTEN WITH 3/8" DIAMETER
x 3" LONG LAG BOLTS
© CLIP ANGLES
Detail 9.17 – Alternate Brick Shelf Angle Support Detail and Isometric for Bay Window
Detail 9.18 – Typical Brick Shelf Angle Brick Support Parallel with Truss Joist Floor System
Detail 9.19 – Window Opening with Loose Iron Lintel

- L 3 1/2" x 3 1/2" x 3/8" loose angle iron lintel bearing on brick on each side of window opening
- See Table 2 for maximum allowable spans for loose angles
Detail 9.20 – Roof Truss Bearing on Load Bearing Stud Wall
Detail 9.21 – Roof Truss Bearing on Lintel
Detail 9.22 – External Brick Face on Basement Wall

- **External Brick Facing**
- 1" airspace
- 2 1/2" rigid insulation
- Bituthane vapour barrier continuous membrane adhered to sheathing seal joints & junctions
- 1/2" exterior plywood or OSB
- 2x4 wood stud bearing wall @ 16" o.c. c/w batt insulation
- Gypsum board

**Weep Holes @ 24" o.c. Horiz.**

**Prefinished Metal Flashing**

**Parging to 300mm below grade**

**Concrete Wall Grade**

**Brick Ties as per CSA A370 spaced 16" o.c. Horiz. & 24" o.c. Vertical**

**Floor finishes as specified by architect, on plywood over floor joist**

**See Detail – A**

**Weep Holes @ 24" o.c. extend vert. reinf. adjacent to openings into foundation and dowel @ distances not to exceed 4 ft. (1.2m)**

**Prefinished metal flashing with membrane spliced & sealed**

**Detail – A**
BRICK TIES AS PER CSA A370 SPACED 16” O.C. HORIZ. & 24” O.C. VERTICAL

EXTERNAL BRICK FACE
1” AIRSPACE
2 1/2” RIGID INSULATION
BITUTHANE VAPOUR BARRIER CONTINUOUS MEMBRANE ADHERED TO SHEATHING, SEAL JOINTS AND JUNCTIONS
1/2” EXTERIOR PLYWOOD OR OSB.
2X4 WOOD STUD BEARING WALL @ 16” O.C. C/W BATT INSULATION
GYPSUM BOARD

PROVIDE SAME ASSEMBLY ABOVE MID-FLOOR LEVEL

Detail 9.23 – Floor Joist Bearing on External Wood Stud Wall
Detail 9.24 – Wood Truss Parallel to External Wood Stud Wall c/w Soffit

- Outriggers to take up overhang member
- Roof assembly (see architect)
- Gable end truss c/w vertical members
- Vent holes @ 24”
- Prefinished metal soffit
- Confirm with arch.
- Brick ties as per CSA, auto spaced 45° o.c. horiz. & 24” o.c. vert.
- Brick ties no more than 12” from top & 16” from bottom
- External brick facing
- 1” airspace
- 2” H2R rigid insulation
- Aluminum vapor barrier
- Continuous membrane adhered to sheathing, seal at joints and junctions
- 1/2” exterior plywood or OSB
- 2x4 wood stud bearing wall @ 16” o.c. c/w batt insulation
- Gypsum board
Detail 9.25 – Floor Joist Parallel to External Wood Stud Wall

* EXTERNAL BRICK FACING
* 1” AIRSPACE
* 2 1/2” RIGID INSULATION
* BUTYL TAPE VAPOUR BARRIER CONTINUOUS MEMBRANE ADHERED TO SHEATHING, SEAL JOINTS AND JUNCTIONS
* 1/2” EXTERIOR PLYWOOD OR OSB.
* 2x4 WOOD STUD BEARING WALL @ 16” o.c. c/w. BATT INSULATION
* GYPSUM BOARD

PROVIDE SAME ASSEMBLY ABOVE MID-FLOOR LEVEL
**Detail 9.26 – Walk-Out Basement Through Load Bearing External Wall**

- BRICK TIES AS PER CSA A370 SPACED @ 16" o.c. HORIZ. & 24" o.c. VERTICAL
- FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON PLYWOOD OVER FLOOR JOIST
- T/O SUBFLOOR
- U/S OF CEILING BLOCKING
- HEADER BEAM OVER DOOR
- CONTINUOUS BRICK SUPPORT ANGLE (LOOSE LINTEL)
- GRADE
- CONCRETE WALL
- FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON FLOOR SLAB

- EXTENSION BRICK FACING
- 1" AIRSPACE
- 2 1/2" RIGID INSULATION
- BITUTHANE VAPOUR BARRIER CONTINUOUS MEMBRANE ADHERED TO SHEATHING, SEAL JOINTS AND JUNCTIONS
- 1/2" EXTERIOR PLYWOOD OR OSB.
- 2x4 WOOD STUD BEARING WALL @ 16" o.c. c/w. BATT INSULATION
- GYPSUM BOARD
Detail 9.27 – Projected Bay Window & Truss Bearing on Stud Wall

- Prefinished Vented Metal Soffit
- Prefinished Metal Flashing
- Prefinished Metal Flashing
- Window and Frame as Specified
- Header BM. Over Window
- Continuous Brick Support Angle (Loose Lintel)
- Vent Holes @ 24” o.c.
- Horizontal

- External Brick Facing
- 1” Airspace
- 2 1/2” Rigid Insulation
- Bituthane Vapour Barrier
  Continuous Membrane Adhered to Sheathing, Seal Joints and Junctions.
- 1/2” Exterior Plywood or OSB.
- 2x4 Wood Stud Bearing Wall
  @ 16” o.c. c/w. Batt Insulation
- Gypsum Board
Detail 9.28 – Garage Door Lintel

VENT HOLES @ 12”
  o.c. HORIZONTAL

PREFINISHED VENTED METAL
SOFIT

BRICK TIES AS PER CSA CAN–A370
  @ 16” o.c. HORIZONTAL &
  24” o.c. VERTICAL
BRICK TIES NO MORE THAN 12”
FROM TOP & 16” FROM BOTTOM

* EXTERNAL BRICK FACING
* 1” AIRSPACE
* 2 1/2” RIGID INSULATION
* BITUTHANE VAPOUR BARRIER
  CONTINUOUS MEMBRANE ADHERED
  TO SHEATHING, SEAL JOINTS AND
  JUNCTIONS.
* 1/2” EXTERIOR PLYWOOD OR OSB.
* 2x4 WOOD STUD BEARING
  WALL @ 16” o.c. c/w.
  BATT INSULATION
* GYPSUM BOARD

PREFINISHED METAL FLASHING
FLASHING

STEEL ANGLE WELDED TO
STEEL PLATES SPACED AT
36” o.c. PLATES WELDED TO
CONTI PLATE ALONG WALL & BOLTED TO HEADER BEAM

HEADER BEAM

U/S OF CEILING
12” MAX.

24” (TPF)
Detail 9.29 – Roof Truss Bearing on Block Wall

- PREFINISHED VENTED METAL SOFFIT

- ROOF ASSEMBLY (SEE ARCHITECT)

- CONFIRM WITH ARCH. (TYPICAL)

- PRESSURE TREATED TOP PLATE

- 2 COURSE BOND BEAM r/w
  2-15M BOTTOM CONTI.
  ALL AROUND

- STUCCO
- INSULATED CONC. BLOCK

- CONTINUOUS MEMBRANE ADHERED
  TO MASONRY WALL, SEAL AT JOINTS
  AND JUNCTIONS

- NON-LOADBEARING
  LIGHT GAUGE STEEL STUD
  @ 16, o.c. c/w. TOP & BOTTOM TRACK.

- GYPSUM BOARD
Detail 9.30 – Roof Truss Bearing on Bond Beam
Detail 9.31 – Block Wall on Concrete Basement Wall

- STUCCO
- INSULATED BLOCKWALL
- CONTINUOUS MEMBRANE ADHERED TO MASONRY WALL SEAL AT JOINTS & JUNCTIONS
- NON-LOADBEARING LIGHT GAUGE STEEL STUD @ 16" O.C. C/W TOP & BOTTOM TRACK
- GYPSUM BOARD

4" BLOCK

EXTEND VERTICAL REINF. @ OPENINGS INTO FOUNDATION, AND DOWEL AT DISTANCES NOT TO EXCEED 4FT. (1.2M)
CONTINUOUS PREFINISHED METAL FLASHING
PARGING TREATED PLYWOOD RIGID INSULATION
CONCRETE WALL GRADE

SOLID GROUT FILL
FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON PLYWOOD OVER FLOOR JOIST
MAIN FLOOR JOIST
TEMPORARY HEADER
Detail 9.32 – Floor Joist Bearing on External Block Wall

- STUCCO
- INSULATED BLOCKWALL
- CONTINUOUS MEMBRANE ADHERED TO MASONRY WALL SEAL AT JOINTS & JUNCTIONS
- NON-LOADBEARING LIGHT GAUGE STEEL STUD @ 16" o.c. c/w TOP & BOTTOM TRACK
- GYPSUM BOARD

PROVIDE SAME ASSEMBLY BELOW MID-FLOOR LEVEL

- FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON PLYWOOD OVER FLOOR JOIST
- MAIN FLOOR JOIST
- SOLID GROUT FILL

TEMPORARY HEADER

4" BLOCK
Detail 9.33 – Roof Truss Parallel to External Block Wall

- Prefinished Vented Metal Soffit
- 2 Course Bond Beam c/w
  2-15M Bottom Conti.
  All Around
- Stucco
- Insulated Conc. Block
- Continuous Membrane Adhered
  to Masonry Wall, Seal at Joints
  and Junctions
- Non-Loadbearing Light
  Gauge Steel Stud @ 16" o.c.
  c/w. Top and Bottom Track
- Gypsum Board

Outriggers to take up overhang member

Roof Assembly (See Architect)

Cable End Truss c/w. Vertical Members
Detail 9.34 – Floor Joist Parallel to External Block Wall

- STUCCO
- INSULATED BLOCK WALL
- CONTINUOUS MEMBRANE ADHERED TO MASONRY WALL SEAL AT JOINTS & JUNCTIONS
- NON-LOADBEARING LIGHT GAUGE STEEL STUD @ 16"o.c. c/w TOP AND BOTTOM TRACK
- GYPSUM BOARD

PROVIDE SAME ASSEMBLY BELOW MID-FLOOR LEVEL

2 COURSE BOND BEAM r/w 2-15M BOTTOM CONTI.

FLOOR FINISHES AS SPECIFIED BY ARCHITECT. ON PLYWOOD OVER FLOOR JOIST

U/S. OF JOIST

MECHANICALLY FASTENED TO BLOCK WALL AT 4 ft. (1.2M) o.c. MAX.
Detail 9.35 – Walk-Out Basement Through External Block Wall
Detail 9.36 – Projected Bay Window and Truss Bearing on Block Wall

- Roof Assembly (See Architect)
- Prefinished Vented Metal Soffit
- Single Course Bond Beam r/w. 1-15M Bottom Conti.
- Stucco
- Insulated Conc. Block
- Continuous Membrane Adhered to Masonry Wall Seal at Joints & Junctions
- Non-Loadbearing Light Gauge Steel Stud @ 16" o.c. c/w. Top & Bottom Track
- Gypsum Board
- Window and Frame as Specified
Detail 9.37 – Garage Door Lintel
Detail 9.38 – Roof Truss Bearing on External Brick Wall
Detail 9.39 – Roof Truss Bearing on Lintel External Wall

- Roof Assembly (see architect)

- See enlarged detail – A

- Confirm with architect (typical)

- Prefinished, vented metal soffit

- Superking hollow brick

- 2 1/2" rigid insulation mechanically fastened to brick

- Non-loadbearing light gauge steel stud @ 16" o.c. c/w. batt insulation and header over door/window

- Continuous membrane adhered to insulation seal at joints and junction

- Gypsum board

- Load bearing lintel

- Detail – A
Detail 9.40 – External Bearing Wall on Basement Wall
Detail 9.41 – Floor Joist Bearing on External Wall

**Materials and Details:**

- **4 Course Super Brick Core**
- **Grouted at Floor Joist Level for Anchorage to Embedded Bolts**
- **Weep Holes @ 24”**
- **Pref. Metal Flashing**
- **Superking Hollow Brick**
- **2 1/2” Rigid Insulation Mechanically Fastened to Brick**
- **Non-Loadbearing Light Gauge Steel Stud @ 16” o.c.**
- **c/w Batt Insulation**
- **Continuous Membrane Adhered to Insulation: Seal at Joints and Junction**
- **Gypsum Board**

Provide same assembly above mid-floor level.
Detail 9.42 – Roof Truss Parallel to External Wall c/w Soffit

- OUTRIGGERS TO TAKE UP OVERHANG MEMBER
- ROOF ASSEMBLY (SEE ARCHITECT)
- GABLE END TRUSS c/w VERTICAL MEMBERS
- CONFIRM WITH ARCHI (TYPICAL)
- **PREFINISHED VENTED METAL SOFFIT**
  - SUPERKING HOLLOW BRICK
  - 2 1/2" RIGID INSULATION MECHANICALLY FASTENED TO BRICK
  - NON-LOADBEARING, LIGHT GAUGE STEEL STUD @ 16" O.C. c/w BATT INSULATION
  - CONTINUOUS MEMBRANE ADHERED TO INSULATION, SEAL JOINTS AND JUNCTION
  - GYPSUM BOARD
Detail 9.43 – Floor Joist Parallel to External Wall

- 4 COURSE SUPER BRICK
  CORE GROUTED AT FLOOR JOIST LEVEL FOR ANCHORAGE TO EMBEDDED BOLTS

- 2 1/2” RIGID INSULATION MECHANICALLY FASTENED TO BRICK

- SUPERKING HOLLOW BRICK

- NON-LOADBEARING LIGHT GAUGE STEEL STUD @ 16” O.C. C/W BATT INSULATION

- CONTINUOUS MEMBRANE ADHERED TO INSULATION SEAL JOINTS AND JUNCTION

- GYPSUM BOARD

- FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON PLYWOOD OVER FLOOR JOIST

- T/O SUBFLOOR

- WEEP HOLES @ 24” O.C.

- U/S OF CEILING

- PROVIDE SAME ASSEMBLY ABOVE MID-FLOOR LEVEL
Detail 9.44 – Walk-Out Basement Through Load Bearing External Wall

- FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON PLYWOOD OVER FLOOR JOIST
- T/O SUBFLOOR

- 4 COURSE SUPER BRICK CORE GROUTED AT FLOOR JOIST LEVEL FOR ANCHORAGE TO EMBEDDED BOLTS
- WEEP HOLES @ 24” o.c.
- PREF. METAL FLASHING
- SUPERKING HOLLOW BRICK
- 2 1/2” RIGID INSULATION MECHANICALLY FASTENED TO BRICK
- NON-LOADBEARING LIGHT GAUGE STEEL STUD @ 16” o.c. c/w. BATT INSULATION
- CONTINUOUS MEMBRANE ADHERED TO INSULATION SEAL JOINT AND JUNCTION
- GYPSUM BOARD

- FLOOR FINISHES AS SPECIFIED BY ARCHITECT, ON BASEMENT FLOOR SLAB
- CONCRETE WALL

GRADE

U/S OF CEILING

INSULATION

JOIST HANGER TO 2-2x10 LEDGER
Detail 9.45 – Projected Bay Window & Truss Bearing on Brick

- Prefinished vented metal soffit
- Prefinished metal flashing
- Loadbearing lintel
- Window and frame as specified
- Prefinished metal flashing
- 4 SuperKING hollow brick
- 4 2 1/2" rigid insulation mechanically fastened to brick
- 4 Non-loadbearing light gauge steel stud @ 16" o.c.
  c/w batt insulation
- 4 Continuous membrane adhered to insulation, seal joint and junction
- 4 Gypsum board
Detail 9.46 – Garage Door Lintel

- Prefinished Vented Metal Soffit
- Prefinished Metal Flashing
- CONTI Brick Support
  Steel Angle Welded To
  Steel Plates @ 36" O.C.
  Steel Plate Welded To
  CONTI Plate Bolted To
  Header Beam
- Header Beam Over Garage Door
- Wood Blocking
- Prefinished Hollow Brick
- 2 1/2" Rigid Insulation Mechanically Fastened To Brick
- Non-Loadbearing Light Gauge Steel Stud @ 16" O.C. c/w Batt Insulation
- Continuous Membrane Adhered To Insulation. Seal Joint And Junction
- Gypsum Board
Detail 9.47 – Masonry Reinforcing Details
Table 1

Anchoring a concrete basement wall 3 ½” x 3 ½” x 3/8” angle iron to provide support for brick veneer

<table>
<thead>
<tr>
<th>Height of Brick</th>
<th>Drop-In Anchor</th>
<th>Wedge Anchor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/2” Dia.</td>
<td>5/8” Dia.</td>
</tr>
<tr>
<td>4.0’</td>
<td>3.6’</td>
<td>4.0’</td>
</tr>
<tr>
<td>6.0’</td>
<td>2.3’</td>
<td>4.0’</td>
</tr>
<tr>
<td>8.0’</td>
<td>1.6’</td>
<td>3.0’</td>
</tr>
<tr>
<td>10.0’</td>
<td>1.5’</td>
<td>2.3’</td>
</tr>
<tr>
<td>12.0’</td>
<td>1.0’</td>
<td>2.0’</td>
</tr>
<tr>
<td>Min. Embedment</td>
<td>2.0”</td>
<td>2.4”</td>
</tr>
<tr>
<td>Min. Edge Distance</td>
<td>2.5”</td>
<td>3.0”</td>
</tr>
</tbody>
</table>
Table 2

Maximum Allowable Spans for Steel Lintels
Supporting Masonry Veneer – With Imperial Equivalents

<table>
<thead>
<tr>
<th>Minimum Angle Size</th>
<th>Brick Thickness</th>
<th>Stone Thickness</th>
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<tbody>
<tr>
<td>mm</td>
<td>Inches</td>
<td>mm</td>
</tr>
<tr>
<td>75mm</td>
<td>3&quot;</td>
<td>90mm</td>
</tr>
<tr>
<td>90x75x6.0</td>
<td>3.5x3x0.25</td>
<td>2500”</td>
</tr>
<tr>
<td>90x90x6.0</td>
<td>3.5x3.5x0.25</td>
<td>2600”</td>
</tr>
<tr>
<td>100x90x6.0</td>
<td>4.3x5x0.25</td>
<td>2800”</td>
</tr>
<tr>
<td>125x90x6.0</td>
<td>5x3.5x0.25</td>
<td>3300”</td>
</tr>
<tr>
<td>150x90x6.0</td>
<td>6x3.5x0.25</td>
<td>3700”</td>
</tr>
</tbody>
</table>

Adopted from CSA Standard CAN3-A370-M84 “Connectors For Masonry”
# Chapter 10

**Pre-Engineered Metal Buildings**

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<tr>
<td>10.2</td>
<td>Plain Concrete Masonry Wall Detail at Pile Foundation with Concrete Grade Beam</td>
<td>3</td>
</tr>
<tr>
<td>10.3</td>
<td>Plain Concrete Masonry Wall Detail at Foundation with Masonry Grade Beam</td>
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</tr>
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<td>10.4</td>
<td>Reinforced Concrete Masonry Wall Detail at Pile Foundation with Masonry Grade Beam</td>
<td>5</td>
</tr>
<tr>
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<td>Reinforced Concrete Masonry Cavity Wall Detail at Foundation</td>
<td>6</td>
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<tr>
<td>10.6</td>
<td>Masonry Wall Detail at Sidewall Eave for Walls Spanning Vertically</td>
<td>7</td>
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<td>10.7</td>
<td>Masonry Wall Detail at Sidewall Eave for Walls Spanning Horizontally</td>
<td>8</td>
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<td>10.8</td>
<td>Masonry Wall Detail at Low Sidewall for Walls Spanning Vertically</td>
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<td>10.9</td>
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<td>Gable End Wall Detail</td>
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<td>Load Bearing End Wall</td>
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<td>Load Bearing End Wall (For Light Loads)</td>
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<td>Connection of Wall to Horizontal I-Beam Detail</td>
<td>16</td>
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<td>10.16</td>
<td>Connection of Wall to Steel Column</td>
<td>17</td>
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<tr>
<td>10.17</td>
<td>Connection of Wall to Horizontal Z-Section Girt</td>
<td>18</td>
</tr>
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</table>
Detail 10.1 – Plain Concrete Masonry Wall Detail at Pile Foundation with Masonry Grade Beam
Detail 10.2 – Plain Concrete Masonry Wall Detail at Pile Foundation with Concrete Grade Beam
Detail 10.3 – Plain Concrete Masonry Wall Detail at Foundation with Masonry Grade Beam
Detail 10.4 – Reinforced Concrete Masonry Wall Detail at Pile Foundation with Masonry Grade Beam
Detail 10.5 – Reinforced Concrete Masonry Cavity Wall Detail at Foundation
Detail 10.6 – Masonry Wall Detail at Sidewall Eave for Walls Spanning Vertically
Detail 10.7 – Masonry Wall Detail at Sidewall Eave for Walls Spanning Horizontally
Detail 10.8 – Masonry Wall Detail at Low Sidewall for Walls Spanning Vertically
Detail 10.9 – Masonry Wall Detail at Low Sidewall for Walls Spanning Horizontally
Detail 10.11 – Load Bearing End Wall

- Purlin
- Bond Beam
- Vertical reinforcing steel in grouted cells (beyond) as required by design
- Joint reinforcing
- Masonry wall
Detail 10.12 – Load Bearing End Wall (For Light Loads)
Detail 10.13 – Wall Detail with Structural Steel Channel Support
Detail 10.14 – Connection of Wall to Structural Channel
Detail 10.15 – Connection of Wall to Horizontal I-Beam Detail
Detail 10.16 – Connection of Wall to Steel Column
Detail 10.17 – Connection of Wall to Horizontal Z-Section Girt