Nu-Roof®
Retrofit Systems

Technical Installation Information

A&S BUILDING SYSTEMS
INTRODUCTION

If your roof is causing problems due to leaks, high maintenance costs and low energy efficiency, the MBCI NuRoof® Retrofit System is the remedy. With the NuRoof® Retrofit System, you can install a slopped roof which will eliminate leaks and minimize maintenance costs. Energy efficiency may also be increased substantially with additional insulation.

The NuRoof® Retrofit System allows design flexibility with a choice of roof slopes, hips, valleys, gable endwalls, vertical and trapezoidal standing seam panels, as well as the traditional PBR Panel. These panels are available in a wide range of colors and gauges. So, whether you are retrofitting an old warehouse, manufacturing plant or an office building, the MBCI NuRoof® Retrofit System is the answer.

ARCHITECT/OWNER RESPONSIBILITY

The architect/owner using the MBCI NuRoof® Retrofit System must recognize that the existing structural roof system most likely was designed based on the roof load being applied uniformly by means of a metal deck or similar substrate. The NuRoof® Retrofit System will replace the uniform load with a series of concentrated loads onto the existing roof system which may not be feasible in all applications. Also, as a result of the addition of the retrofit roof, additional weight will be added to the existing roof that must be checked. MBCI highly recommends that a structural engineer conduct an investigation of the entire structure being proposed for a retrofit system to determine the adequacy of the existing roof structure to withstand additional loading. Their investigation should include the condition of the existing structural, existing dead loads, can existing loads be removed, (i.e. rock ballast) and what additional dead loads will the structure accept and at what spacing?

NOTE:
1. Some buildings may have structural members in both directions. In this case, each method may be used where required.
2. Hipped NuRoof® Systems may require both methods.
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NuRoof® DESIGN INFORMATION

ARCHITECT/ENGINEER INFORMATION

1. The recommended slope range of the retrofit roof is 1/4:12 - 4:12. For slopes greater than 4:12 please contact MBCI.

2. The maximum recommended height of the retrofit system above the existing roof is 10 feet. This is not due to the capacity of the framing, but to the altered shape of the building and its ability to withstand the new wind loads as well as erection limitations.

3. The NuRoof® Retrofit System will add approximately 2 to 4 PSF to the weight of the existing roof.

4. Load transfer may result in concentrated loads occurring on the existing roof. A professional structural engineer must investigate the existing roof to be sure that no undesirable effects are created on the existing roof by the NuRoof® Retrofit System.

5. Lateral wind forces will be developed at gabled endwalls created by the retrofit roof. These wind forces will be transmitted into the existing roof by the “X” bracing parallel to the retrofit purlins. MBCI cannot be responsible for the adequacy of the existing building to resist the additional wind forces which develop at these gabled endwalls.

6. The uniform retrofit roof loads will be concentrated through the retrofit columns. These concentrated loads are then transmitted to the existing roof deck above the existing roof structural members. The adequacy of the existing metal deck corrugations to resist web crippling must be investigated during the design phase. It is not recommended to install this system over the existing insulation board due to possible creep over the life of the system (consult the manufacturer of the existing insulation board for allowable static compressive loads). If the existing roof has moisture trapped within the layers from water intrusion, MBCI recommends the removal of the roofing materials (down to the existing deck) at all base channels or roof support zee locations. This will allow trapped moisture to be drawn out by proper ventilation. If the deck is corroded through to the structural framing, consult with your structural engineer for possible deck reinforcement at the column base attachments to maintain the integrity of the metal deck. NOTE: Existing metal decks can provide lateral support (diaphragm action) to the overall structure. Removing the metal deck at the column locations may compromise the integrity of the existing metal deck diaphragm system. Since the NuRoof® Retrofit System relies on the existing metal deck to transfer its lateral loads to the existing structural system, the existing metal deck must remain intact.

7. An “attic space” will be created by the NuRoof® Retrofit System. MBCI recommends proper venting of this “attic space” in accordance with applicable codes, to be determined by a mechanical engineer, allowing any trapped moisture to escape. MBCI also recommends that “attic space” be reviewed by other building, fire, or insurance related officials for possible sprinkling or extension of existing fire walls to the bottom of the “new” roof system. Use a minimum of 3” vinyl faced roll insulation between the retrofit panels and the retrofit purlins to help prevent condensation and roof noise. If the use of retrofit framing in “New Construction” will result in the installation of HVAC equipment and ductwork in the “attic space” to conflict with the extensive bracing system required by the NuRoof® Retrofit System, please consult with MBCI’s sales engineering staff during the design phase to resolve these issues.

8. The NuRoof® framework is equally effective over existing roof decks made of metal, Tongue and Groove wood and concrete decks. However, each existing roof system must be evaluated independently on its ability to accept multiple point loading from the retrofit system.

9. The NuRoof® framework will be supplied in unpunched 20’-0” lengths. Field cutting of material will be required.
ARCHITECT/ENGINEER INFORMATION

(Continued)

10. For MBCI to properly design the retrofit framing, the following information is required:
   Retrofit roof live/wind load, collateral load, snow load, seismic zone, existing building size and
   location, existing structural orientation (parallel or perpendicular to retrofit roof slope) and
   spacing, type of existing substrate members, governing code, retrofit roof pitch, retrofit roof
   panel desired, and the use of hipped or gable ends. MBCI is not responsible for the ability of
   the existing building to accept the loads imposed upon it by the retrofit framework. The MBCI
   engineering department can conduct an engineering study of the proposed retrofit framing and
   provide column reactions based on the above information that may be used by your structural
   engineer to do their study of the existing structure. Following this page is a design data sheet.
   This sheet can be filled out and sent to MBCI for our Project Service Department to perform esti-
   mates, designs, drawings or a combination of all three.

CAUTION

In certain cases the retrofit roof panel selected may require additional retrofit purlins at the
perimeter of the roof to ensure that the panel is capable of resisting the additional wind/snow
load in this area.
**DESIGN INFORMATION**

**DESIGN DATA SHEET**

**PROJECT INFORMATION**

<table>
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<td>Project Location:</td>
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<tr>
<td>(City, State, County):</td>
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<td></td>
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<td>Building Code:</td>
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<td>Deflection Rqmts.:</td>
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**EXISTING ROOF GEOMETRY**

<table>
<thead>
<tr>
<th>Length: ft</th>
<th>Eave Height: ft</th>
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<tbody>
<tr>
<td>Width: ft</td>
<td>Overhang: ft</td>
</tr>
<tr>
<td>Slope: :12</td>
<td>Parapet Height: ft</td>
</tr>
</tbody>
</table>

(Provide drawings of existing building - including structural drawings)

**EXISTING ROOF TYPE**

- Built Up [ ]
- Shingle [ ]
- Modified Bitumen [ ]
- Trocal [ ]
- Single Ply [ ]
- PVC [ ]
- Other - Specify [ ]

**EXISTING ROOF SUBSTRATE**

- Insulation Type: [ ]
- Tectum Thickness: in.
- Insulation Thickness: in.
- Concrete Thickness: in.
- Plywood Thickness: in.
- Lightweight [ ]
- Wood Thickness: in.
- Structural [ ]
- Metal Deck Thickness: in.
- Precast [ ]
- Metal Deck Gauge: Other - Specify [ ]

**EXISTING STRUCTURAL MEMBERS**

- Bar Joists: @ " o.c.
- Wood Trusses: @ " o.c.
- "Hot Rolled" Steel: @ " o.c.
- Concrete Beams: @ " o.c.
- Wood Rafters: @ " o.c.
- Other - Specify: @ " o.c.

Has the existing structure been analyzed by a professional engineer?

- Yes [ ]
- No [ ]

Engineer's name: ____________________________

Engineer's phone #: ____________________________

**NUROOF® GEOMETRY**

<table>
<thead>
<tr>
<th>Length: ft</th>
<th>Ridge Condition:</th>
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| Width: ft | Gable [ ]
| Slope: :12 | Hip [ ]
| Eave Height: ft | |
| Overhang: ft | |
| Eave Condition: Eave Trim [ ] | |
| Box Gutter [ ] | Structural Members: Red Oxide [ ]
| Sculptured Gutter [ ] | Galvanized [ ]
| Snow Gutter [ ] | |

(Provide drawings of new proposed roof plan)

**NOTES**

- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
## SECTION PROPERTIES

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<th>Section</th>
<th>Ga.</th>
<th>Weight (PLF)</th>
<th>Ix (in.4/ft.)</th>
<th>Sx (in.3/ft.)</th>
<th>Rx (in.)</th>
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**Notes:**

1. All calculations for the properties of cees and zees are calculated in accordance with the 2001 North American Specification for the Design of Cold-Formed Steel Structural Members published by the American Iron and Steel Institute (A.I.S.I.).
2. Ix is for deflection determination.
3. Sx is for bending.
4. Ma is allowable bending moment.
5. The allowable bending moment (Ma) assumes that the compressive flange is laterally braced so as to provide the full moment capacity of the section.

The Engineering data contained herein is for the expressed use of customers and design professionals. Along with this data, it is recommended that the design professional have a copy of the most current version of the North American Specification for the Design of Cold-Formed Steel Structural Members published by the American Iron and Steel Institute to facilitate design. This Specification contains the design criteria for cold-formed steel components. Along with the Specification, the designer should reference the most current building code applicable to the project jobsite in order to determine environmental loads. If further information or guidance regarding cold-formed design practices is desired, please contact the manufacturer.
RETROFIT FRAMING OVER STRUCTURAL MEMBERS
PARALLEL TO THE ROOF SLOPE
(Base Channel Attachment)

DETAIL 1

CROSS SECTION A-A
BASE CHANNEL ATTACHMENT

PLAN VIEW
BASE CHANNEL ATTACHMENT

EXISTING STRUCTURAL

BASE CHANNEL

EXISTING ROOF DECK

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

RETROFIT FRAMEWORK

RETROFIT COLUMN SPACING DETERMINED BY EXISTING STRUCTURAL SPACING

EXISTING STRUCTURAL

BASE CHANNEL ATTACHMENT

EXISTING ROOF DECK

BASE CHANNEL

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)
RETROFIT FRAMING OVER STRUCTURAL MEMBERS PARALLEL TO THE ROOF SLOPE
(Column Attachment)

DETAIL 1

CROSS SECTION A-A
COLUMN ATTACHMENT
RETROFIT FRAMING OVER STRUCTURAL MEMBERS PARAEL TO THE ROOF SLOPE
(“X” Bracing Attachment)

EXISTING STRUCTURAL

BASE CHANNEL

RETROFIT COLUMN SPACING DETERMINED BY EXISTING STRUCTURAL SPACING

LONGITUDINAL ANGLE BRACING

TRANSVERSE ANGLE BRACING (EVERY 40’ MIN.)

RETROFIT FRAMEWORK

DETAIL 1

CROSS SECTION A-A

ANGLE BRACE ATTACHMENT

DETAIL 1

NuRoof® DESIGN INFORMATION
RETRIVIT FRAMING OVER STRUCTURAL MEMBERS PARALLEL TO THE ROOF SLOPE

(Purlin Attachment)

NOTE: PURLIN LAPS MUST OCCUR AT A COLUMN LOCATION

SELF-DRILLING FASTENERS

RETRIVIT PURLIN

RETRIVIT COLUMN

BASE CHANNEL

RETRIVIT COLUMN SPACING DETERMINED BY EXISTING STRUCTURAL SPACING

LONGITUDINAL ANGLE BRACING

EXISTING STRUCTURAL

DETAIL 1

PURLIN FLANGE CAN BE ROLL FORMED TO A MAXIMUM SLOPE OF 4:12

RETROFIT FRAMEWORK

TRANSVERSE ANGLE BRACING (EVERY 40’ MIN.)

4:12
3:12
2:12
1:12

CROSS SECTION A-A PURLIN ATTACHMENT

RETRIVIT COLUMN

BASE CHANNEL

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

DETAIL 1

EXISTING STRUCTURAL

SELF-DRILLING FASTENERS

EXISTING ROOF DECK

BASE CHANNEL
RETROFIT FRAMING OVER STRUCTURAL MEMBERS
PARALLEL TO THE ROOF SLOPE
(Strut Attachment)

DETAIL 1

CROSS SECTION A-A
STRUT ATTACHMENT
RETROFIT FRAMING OVER STRUCTURAL MEMBERS PARALLEL TO THE ROOF SLOPE (Panel Attachment)

DETAIL 1

EXISTING STRUCTURAL

EXISTING ROOF DECK

BASE CHANNEL

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)

RETROFIT COLUMN

SELF-DRILLING FASTENERS

RETROFIT FRAMEWORK

CROSS SECTION A-A PANEL ATTACHMENT

LONGITUDINAL ANGLE BRACING

TRANSVERSE ANGLE BRACING (EVERY 40' MIN.)

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)
RETROFIT FRAMING OVER STRUCTURAL MEMBERS
PERPENDICULAR TO THE ROOF SLOPE
(Base Zee Attachment)

NOTE: BASE ZEE LAPS MUST OCCUR OVER A SUPPORT

SELF-DRILLING FASTENERS

EXISTING STRUCTURAL

CROSS SECTION A-A
BASE ZEE ATTACHMENT

PLAN VIEW
BASE ZEE ATTACHMENT

EXISTING STRUCTURAL

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

BASE ZEE

EXISTING ROOF DECK

BASE ZEE ATTACHMENT

EXISTING STRUCTURAL

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

EXISTING ROOF DECK

BASE ZEE SPACING

EXISTING STRUCTURAL

DETIAL 1

BASE ZEE ATTACHMENT

EXISTING STRUCTURAL

BASE ZEE

EXISTING ROOF DECK

BASE ZEE ATTACHMENT

RETROFIT FRAMEWORK

DETAIL 1

BASE ZEE

EXISTING STRUCTURAL

EXISTING STRUCTURAL

BASE ZEE

NOTE: BASE ZEE LAPS MUST OCCUR OVER A SUPPORT

SELF-DRILLING FASTENERS

EXISTING STRUCTURAL

BASE ZEE SPACING

EXISTING STRUCTURAL

EXISTING STRUCTURAL

BASE ZEE ATTACHMENT
RETROFIT FRAMING OVER STRUCTURAL MEMBERS PERPENDICULAR TO THE ROOF SLOPE
(Column Attachment)

DETAIL 1

CROSS SECTION A-A
COLUMN ATTACHMENT

PLAN VIEW
COLUMN ATTACHMENT

RETROFIT FRAMEWORK

EXISTING STRUCTURAL SPACING

RETROFIT COLUMN

BASE ZEE SPACING

BASE ZEE

BASE ZEE BASE ZEE BASE ZEE

EXISTING ROOF DECK

EXISTING ROOF DECK

EXISTING ROOF DECK

EXISTING ROOF DECK

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

SELF-DRILLING FASTENERS (4) REQ’D.

SELF-DRILLING FASTENERS (4) REQ’D.

SELF-DRILLING FASTENERS (4) REQ’D.
NuRoof®

DESIGN INFORMATION

RETROFIT FRAMING OVER STRUCTURAL MEMBERS
PERPENDICULAR TO THE ROOF SLOPE
(“X” Bracing Attachment)

LONGITUDINAL ANGLE BRACING

TRANSVERSE ANGLE BRACING (EVERY 40’ MIN.)

EXISTING STRUCTURAL SPACING

DETAIL 1 RETROFIT FRAMEWORK

RETROFIT COLUMN

SELF-DRILLING FASTENERS

ANGLE BRACING

BASE ZEE

EXISTING STRUCTURAL

DETAIL 1

EXISTING ROOF DECK

BASE ZEE

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

SELF-DRILLING FASTENERS (4) REQ’D.

ANGLE BRACING

BASE ZEE

EXISTING ROOF DECK

EXISTING STRUCTURAL

SELF-DRILLING FASTENERS

ANGLE BRACING (FIELD NOTCH)

BASE ZEE

EXISTING STRUCTURAL

DETAIL 1

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

SELF-DRILLING FASTENERS (4) REQ’D.

ANGLE BRACING

BASE ZEE

EXISTING ROOF DECK

EXISTING STRUCTURAL

CROSS SECTION A-A

ANGLE BRACE ATTACHMENT

EFFECTIVE NOVEMBER 4, 2005

SEE www.mbcicom FOR CURRENT INFORMATION

SUBJECT TO CHANGE WITHOUT NOTICE

NR-17
RETROFIT FRAMING OVER STRUCTURAL MEMBERS
PERPENDICULAR TO THE ROOF SLOPE
(Purlin Attachment)

NOTE: PURLIN LAPS MUST OCCUR AT A COLUMN LOCATION

SELF-DRILLING FASTENERS

EXISTING STRUCTURAL SPACING

LONGITUDINAL ANGLE BRACING

EXISTING STRUCTURAL

DETAIL 1

REbuild COLUMN

REbuild PURLIN

REbuild COLUMN

REbuild PURLIN

REbuild COLUMN

REbuild PURLIN

NOTE: PURLIN LAPS MUST OCCUR AT A COLUMN LOCATION

SELF-DRILLING FASTENERS

SELF-DRILLING FASTENERS

SELF-DRILLING FASTENERS

SELF-DRILLING FASTENERS

SELF-DRILLING FASTENERS

SELF-DRILLING FASTENERS

TRANSVERSE ANGLE BRACING (EVERY 40' MIN.)

PURLIN FLANGE CAN BE ROLL FORMED TO A MAXIMUM SLOPE OF 4:12

4:12

3:12

2:12

1:12

PURLIN FLANGE CAN BE ROLL FORMED TO A MAXIMUM SLOPE OF 4:12

4:12

3:12

2:12

1:12

DETAIL 1

CROSS SECTION A-A

PURLIN ATTACHMENT
RETROFIT FRAMING OVER STRUCTURAL MEMBERS
PERPENDICULAR TO THE ROOF SLOPE
(Strut Attachment)

DETAIL 1 CROSS SECTION A-A

RETROFIT FRAMEWORK

BASE ZEE SPACING
LONGITUDINAL ANGLE BRACING
EXISTING STRUCTURAL

BASE ZEE

BASE ZEE SPACING

RETROFIT PURLIN SPACING

BASE ZEE

RETROFIT PURLIN

TRANSVERSE ANGLE BRACING (EVERY 40' MIN.)

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)

EXISTING STRUCTURAL SPACING

DETAIL 1

SELF-DRILLING FASTENERS

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)

SELF-DRILLING FASTENERS (4) REQ'D.

TRANSVERSE ANGLE BRACING

CONTINUOUS CHANNEL SECTION

SELF-DRILLING FASTENERS

SELF-DRILLING FASTENERS

RTROFIT COLUMN

BASE ZEE

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)

EXISTING STRUCTURAL

EXISTING ROOF DECK

A

A

CROSS SECTION A-A

STRUT ATTACHMENT
RETROFIT FRAMING OVER STRUCTURAL MEMBERS PERPENDICULAR TO THE ROOF SLOPE
(Panel Attachment)

DETAIL 1

CROSS SECTION A-A
PANEL ATTACHMENT
RETROFIT FRAMING OVER STRUCTURAL MEMBERS
(Gable Endwall Girt Attachment)

EXISTING STRUCTURAL

BASE CHANNEL

RAKE ANGLE

CROSS SECTION A-A
ENDWALL ATTACHMENT

ISOMETRIC VIEW
OF ENDWALL

SELF-DRILLING FASTENERS

PANCAKE HEAD SELF DRILLERS
(2 PER CONN.)

RAKE ANGLE

SELF-DRILLING FASTENERS
(2) REQ'D.

ENDWALL GIRT HAT SECTION

SELF-DRILLING FASTENERS

FASTENER TO EXISTING STRUCTURAL
(NOT BY MBCI)
RETROFIT FRAMING FOR ROOF HIP
(Back-to-Back Hip Channel Attachment)

HIP CHANNEL BACK TO BACK

(2) PANCAKE HEAD SELF DRILLERS

(2) PANCAKE HEAD SELF DRILLERS

DETAIL 1

SELF-DRILLING FASTENERS

12" O.C. STAGGERED

DETAIL 1

LONGITUDINAL ANGLE BRACING

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)

RETOFIT PURLIN

EXISTING STRUCTURAL

BASE CHANNEL

BASE ZEE

RETOFIT FRAMEWORK

4⅛" x 2" HIP CHANNEL (BACK TO BACK)

RETROFIT PURLIN

(2) PANCAKE HEAD SELF DRILLERS

4⅛" x 2" HIP CHANNEL (BACK TO BACK STITCHED @ 12" O.C.)
RETROFIT FRAMING FOR ROOF VALLEY
(Back-to-Back Valley Channel Attachment)

DETAIL 1

RETROFIT PURLIN

TRANSVERSE ANGLE BRACING (EVERY 40' MIN.)

CONTINUOUS CHANNEL SECTION (EVERY BRACED COLUMN LINE)

EXISTING STRUCTURAL

BASE ZEE

BASE CHANNEL

RETROFIT FRAMEWORK

4 ¹⁄₈" x 2" VALLEY CHANNEL (BACK TO BACK)

LONGITUDINAL ANGLE BRACING

RETROFIT PURLIN

SELF-DRILLING FASTENERS

12" O.C.

STAGGERED

VALLEY CHANNEL BACK TO BACK

(2) PANCAKE HEAD SELF DRILLERS

4 ¹⁄₈" x 2" VALLEY CHANNEL (BACK TO BACK STITCHED @ 12" O.C.)

(2) PANCAKE HEAD SELF DRILLERS

DETAIL 1
RETROFIT FRAMING FOR ROOF RIDGE
(Peak Framing Attachment)

EXISTING ROOF DECK
EXISTING STRUCTURAL

CROSS SECTION A-A
STRUT ATTACHMENT

SELF-DRILLING FASTENERS

RETROFIT COLUMN

SELF-DRILLING FASTENERS

CONTINUOUS CHANNEL SECTION

SELF-DRILLING FASTENERS

BASE CHANNEL

SELF-DRILLING FASTENERS

EXISTING ROOF DECK
EXISTING STRUCTURAL

FASTENER TO EXISTING STRUCTURAL (NOT BY MBCI)
BASE CHANNEL CONNECTION WITH COLUMN ATTACHMENT
(Flange Connection)

EXISTING ROOF SYSTEM

BASE SHOE FASTENER
(MIN. QTY. 4, NOT BY MBCI)

4" CEE COLUMN

4½" x 2" CHANNEL x 1'-0" (BASE SHOE)

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1¼"-14 x 1½" SELF-DRILLER W/O WASHER [FASTENER #1B] (2) PER CONN.

1¼"-14 x 1½" SELF-DRILLER W/O WASHER [FASTENER #1B] (2) PER SIDE, (4) TOTAL

EXISTING STRUCTURAL

BASE ZEE CONNECTION WITH COLUMN ATTACHMENT
(Flange Connection)

EXISTING ROOF SYSTEM

BASE ZEE FASTENER
(MIN. QTY. 2, NOT BY MBCI)

4" CEE COLUMN

1¼"-14 x 1½" SELF-DRILLER W/O WASHER [FASTENER #1B] (4) TOTAL

BASE ZEE

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1¼"-14 x 1½" SELF-DRILLER W/O WASHER [FASTENER #1B] (2) PER CONN.

1¼"-14 x 1½" SELF-DRILLER W/O WASHER [FASTENER #1B] (4) TOTAL

EXISTING STRUCTURAL
BASE ZEE CONNECTION WITH COLUMN ATTACHMENT
(Web Connection)

EXISTING ROOF SYSTEM
BASE ZEE FASTENER (MIN. QTY. 2, NOT BY MBCI)
EXISTING STRUCTURAL
2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)
1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(4) TOTAL
4" CEE COLUMN

BASE ZEE CONNECTION
(Lap Connection)

EXISTING ROOF SYSTEM
BASE ZEE FASTENER (MIN. QTY. 2, NOT BY MBCI)
EXISTING STRUCTURAL
1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(2) PER CONN.
HIGH STRENGTH BASE ZEE-CLIP ANGLE CONNECTION WITH COLUMN ATTACHMENT

(Flange Connection)

EXISTING ROOF SYSTEM ▼
EXISTING STRUCTURAL ▼

BASE ZEE FASTENER (MIN. QTY. 2, NOT BY MBCI)
BASE ZEE CLIP ANGLE

ANGLE CLIP FASTENER (MIN. QTY. 2, NOT BY MBCI)
2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(2) PER CONN.

1/4"-14 x 1 1/4" S.D. W/O WASHER
[FASTENER #1B] (4) TOTAL

HIGH STRENGTH BASE ZEE-CLIP ANGLE CONNECTION WITH COLUMN ATTACHMENT

(Web Connection)

EXISTING ROOF SYSTEM ▼
EXISTING STRUCTURAL ▼

BASE ZEE FASTENER (MIN. QTY. 2, NOT BY MBCI)
BASE ZEE CLIP ANGLE

ANGLE CLIP FASTENER (MIN. QTY. 2, NOT BY MBCI)
2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B] (2) PER CONN.

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B] (4) TOTAL

1/4"-14 x 1 1/4" S.D. W/O WASHER
[FASTENER #1B] (4) TOTAL
PURLIN TO COLUMN ATTACHMENT
(Flange Connection)

ZEE PURLIN

4" CEE COLUMN

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN
FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(2) PER CONN.

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) TOTAL

CS-1 STRUT

PURIN TO COLUMN ATTACHMENT
(Flange Connection With Purlin Clip)

3" x 3" CLIP ANGLE

ZEE PURLIN

4" CEE COLUMN

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN
FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(2) PER CONN.

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) TOTAL

CS-1 STRUT

PURIN TO COLUMN ATTACHMENT
(Flange Connection at Purlin Lap)

6"

ZEE PURLIN

4" CEE COLUMN

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN
FOR EXACT LOCATION)

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(8) TOTAL

CS-1 STRUT

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN
FOR EXACT LOCATION)

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) TOTAL

ZEE PURLIN

4" CEE COLUMN

CS-1 STRUT

2" x 2" ANGLE (SEE PLAN
FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) TOTAL

4" CEE COLUMN
NuRoof®

PURLIN TO COLUMN ATTACHMENT
(Web Connection)

4" CEE COLUMN

ZEE PURLIN

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(4) TOTAL

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(2) PER CONN.

CS-1 STRUT

PURLIN TO COLUMN ATTACHMENT
(Web Connection With Purlin Clip)

3" x 3" CLIP ANGLE

ZEE PURLIN

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(4) TOTAL

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(2) PER CONN.

3" x 3" CLIP ANGLE

ZEE PURLIN

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

PURLIN TO COLUMN ATTACHMENT
(Web Connection at Purlin Lap)

4" CEE COLUMN

ZEE PURLIN

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(8) TOTAL

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(2) PER CONN.

3" x 3" CLIP ANGLE

ZEE PURLIN

1/4"-14 x 1 1/4" S.D.
W/O WASHER [FASTENER #1B]
(2) PER CONN.
LONGITUDINAL ANGLE BRACING
(Parallel to Purlins)

existing roof system

4 1/4" x 2" channel
x 1'-0" (base shoe)

field notch angle
as required

existing structural

2" x 2" angle (see plan
for exact location)

1/4"-14 x 1 1/4" self-driller
w/o washer [fastener #1b]
(2) per side, (4) total

1/4"-14 x 1 1/4" self-driller
w/o washer [fastener #1b]
(4) per conn.

existing roof system

base zee

4" cee column

field notch angle
as required

base shoe fastener
(min. qty. 4, not by mbc)

base zee fastener
(min. qty. 2, not by mbc)

existing structural

nuroof®
TRANSVERSE ANGLE BRACING
(Perpendicular to Purlins)

4" CEE COLUMN

EXISTING ROOF SYSTEM
BASE ZEE FASTENER
(MIN. QTY. 2, NOT BY MBCI)
EXISTING STRUCTURAL

⁴⁄₁₄" x 1¼" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(2) PER CONN.

2" x 2" ANGLE (SEE PLAN
FOR EXACT LOCATION)

⁴⁄₁₄" x 1¼" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) PER CONN.

FIELD NOTCH ANGLE
AS REQUIRED

⁴⁄₁₄" x 1¼" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) PER CONN.

FIELD NOTCH ANGLE
AS REQUIRED

EXISTING ROOF
SYSTEM
BASE SHOE FASTENER
(MIN. QTY. 4, NOT BY MBCI)
EXISTING STRUCTURAL

⁴⁄₁₄" x 1¼" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(2) PER SIDE, (4) TOTAL

²⁄₁₄" x 1¼" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(4) PER CONN.

EXISTING ROOF
SYSTEM
BASE ZEE
FIELD ZEE FASTENER
(MIN. QTY. 2, NOT BY MBCI)
EXISTING STRUCTURAL

⁴⁄₁₄" x 1¼" SELF-DRILLER
W/O WASHER [FASTENER #1B]
(2) PER CONN.
DOUBLE LONGITUDINAL ANGLE BRACING  
(Parallel to Purlins With Base Shoe)

- 4" CEE COLUMN
- CS-1 STRUT
- 2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)
- ¹⁄₄" 14 x 1⁄₄" SELF-DRILLER W/O WASHER [FASTENER #1B] (2) PER CONN.
- ¹⁄₄" 14 x 1⁄₄" SELF-DRILLER W/O WASHER [FASTENER #1B] (4) PER CONN.
- FIELD NOTCH ANGLE AS REQUIRED

EXISTING ROOF SYSTEM

BASE SHOE FASTENER  
(MIN. QTY. 4, NOT BY MBCI)

EXISTING STRUCTURAL

FIELD NOTCH ANGLE AS REQUIRED

4⅛" x 2" CHANNEL x 1'-0" (BASE SHOE)

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

FIELD NOTCH ANGLE AS REQUIRED
DOUBLE LONGITUDINAL ANGLE BRACING
(Parallel to Purlins With Base Zee)

EXISTING ROOF SYSTEM

BASE ZEE FASTENER (MIN. QTY. 2, NOT BY MBCI)

EXISTING STRUCTURAL

BASE ZEE

ZEE PURLIN

CS-1 STRUT

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(2) PER CONN.

1/4"-14 x 1 1/4" SELF-DRILLER W/O WASHER [FASTENER #1B]
(4) PER CONN.
DOUBLE TRANSVERSE ANGLE BRACING
(Perpendicular to Purlins With Base Shoe)

- ZEE PURLIN
- CS-1 STRUT
- 2” x 2” ANGLE (SEE PLAN FOR EXACT LOCATION)
- 1/4”-14 x 1 1/4” SELF-DRILLER W/O WASHER [FASTENER #1B]
  (2) PER SIDE, (4) TOTAL
  - EXISTING ROOF SYSTEM
  - BASE SHOE FASTENER (MIN. QTY. 4, NOT BY MBCI)
  - EXISTING STRUCTURAL

- 4” CEE COLUMN

- 1/4”-14 x 1 1/4” SELF-DRILLER W/O WASHER [FASTENER #1B]
  (2) PER CONNECTOR
DOUBLE TRANSVERSE ANGLE BRACING
(Perpendicular to Purlins With Base Zee)

1/4" x 1/4" SELF-DRILILLER W/O WASHER [FASTENER #1B]
(4) PER CONN.

FIELD NOTCH ANGLE AS REQUIRED

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

FIELD NOTCH ANGLE AS REQUIRED

2" x 2" ANGLE (SEE PLAN FOR EXACT LOCATION)

FIELD NOTCH ANGLE AS REQUIRED

BASE ZEE FASTENER
(MIN. QTY. 2, NOT BY MBCI)

EXISTING STRUCTURAL

EXISTING ROOF SYSTEM

BASE ZEE
EAVE OVERHANG
(With Parapet Wall)

EXISTING ROOF SYSTEM
EAVE DETAILS

EAVE WITH FASCIA WALL

EAVE WITH ANGLES
EDGE/CORNER ZONE
(For Use in High Wind Condition)

Nut (4) per conn.

1/4"-14 x 1 1/4" S.D. self-driller w/o washer [Fastener #1B] (4) per conn.

1/4"-14 x 1 1/4" self-driller w/o washer [Fastener #1B] (2) per conn.

4" CEE PURLIN BRIDGING

1/4"-14 x 1 1/4" self-driller w/o washer [Fastener #1B] (2) per conn.

4" CEE COLUMN

4 1/8" x 2" channel x 1'-0" (base shoe)

BASE SHOE FASTENER (MIN. QTY. 4, NOT BY MBCI)

EXISTING ROOF SYSTEM

ZEE PURLIN

ZEE PURLIN

1/4"-14 x 1 1/4" S.D. w/o washer [Fastener #1B] (4) per conn.
ARCHITECT/ENGINEER INFORMATION
(Optional Method)

1. The optional NuRoof® Retrofit Systems are designed to go directly over existing sloped roof systems.
2. The optional NuRoof® Grid System allows for additional purlins to be installed when the existing purlin spacing does not meet the current code requirements.
3. The optional NuRoof® Retrofit System over existing PBR requires the use of the MBCI Ultra-Dek® or Double-Lok® roof systems. The high clips used with these systems elevate the roof system 1\(\frac{3}{8}''\) over the existing structure, allowing the panels to pass over a standard 1\(\frac{1}{4}''\) PBR panel. If the existing roof system has a rib height of 1\(\frac{1}{2}''\) a non-compressible \(\frac{1}{4}''\) shim can be used.
4. Care must be taken when cutting back the eave of the existing roof system to make sure no shavings land on adjacent or stored new roofing materials. Hot shavings landing on new material can cause premature rusting of the material surface.
5. When installing the optional NuRoof® Retrofit System over a PBR system the module of the existing roof system must be checked. The MBCI Ultra-Dek®/Double-Lok® roof systems hold a 24'' module and if the existing roof was stretched ahead or shrunk back the clips will eventually foul into an existing major rib. An 18'' panel can be installed in lieu of a 24'' panel to allow the new roof system to stay on the module created by the existing roof panels.

INSTALLATION GUIDELINES

1. Pre-Order
   a. Prior to ordering panels, all dimensions should be confirmed by field measurements.
2. Jobsite Storage and Handling
   a. Check the shipment against the shipping list.
   b. Damaged material must be noted on Bill of Lading.
   c. Materials should be handled carefully. A spreader bar of appropriate length is recommended for hoisting.
3. Application Checklist
   a. Check substrate for proper alignment and uniformity.
   b. Periodic check of panel alignment is crucial to proper panel installation.
   c. Material should be cut on the ground to minimize cut fillings on new materials.
NuRoof® GRID SYSTEM
(Optional Method)

EXISTING ROOF PANEL

HAT SECTION [HS-1]
ATTACH TO EXISTING FRAMING WITH (2) FASTENERS PERCONN.

EXISTING FRAMING

HAT SECTION [HS-1]
ATTACH TO SECONDARY FRAMING WITH (2) FASTENERS PERCONN.

EXISTING WALL PANEL

MAIN PURLIN SPACING
EDGE ZONE SPACING
PURLIN SUPPORT FRAMING

EQUAL
EQUAL
EQUAL
EQUAL
EQUAL
EQUAL
NuRoof® GRID SYSTEM
(Optional Method Details)

CONNECTION OF HAT SECTIONS TO PURLIN (SIDE VIEW)

CONNECTION OF HAT SECTIONS TO PURLIN (FRONT VIEW)

SPLICE DETAIL
NOTE: MUST OCCUR OVER A SUPPORT MEMBER.
NuRoof®

SSR SYSTEM OVER EXISTING PBR PANEL
(Optional Method)

NOTE: MAJOR RIB OF EXISTING ROOF PANEL CANNOT EXCEED 1 ¼“ IN HEIGHT.
SSR SYSTEM OVER EXISTING PBR PANEL
(Eave Detail)

INSTALLATION NOTE:
1. APPLY TRI-BEAD TAPE SEALER CONTINUOUS ALONG EAVE ANGLE.
2. ATTACH INSIDE METAL CLOSURE WITH ⅛-14 x 1" S.D.S. W/WASHER [FASTENER #1].
3. APPLY A 10" LONG PIECE OF TRI-BEAD TAPE SEALER UP AND OVER THE INSIDE METAL CLOSURE.
4. APPLY A 2" LONG PIECE OF TRI-BEAD TAPE SEALER IN VERTICAL LEG OF PANEL SEAM.
5. IF THE PANELS HAVE MINOR RIBS, APPLY MINOR RIB TAPE SEAL BETWEEN PANEL AND EAVE TRIM OR GUTTER.
6. ATTACH PANEL WITH ⅛-14 x 1⅛" LONG-LIFE W/WASHER IN THE FLAT PANEL AND ONE EACH SIDE OF THE INSIDE METAL CLOSURE (8) TOTAL [FASTENER #1E].

SSR SYSTEM OVER EXISTING PBR PANEL
(Clip Attachment Detail)
NuRoof®

SSR SYSTEM OVER EXISTING PBR PANEL
(Rake Detail)

- HIGH RAKE SUPPORT ANGLE [HW-7720]
- SCULPTURED RAKE TRIM
- TRAPEZOID TRIM [HW-115]
- 1/4 x 1 1/4" LONG-LIFE S.D.
W/WASHER [FASTENER #4]
@ 12" O.C.
- 1/4 x 1/2" LONG-LIFE LAPTEK
W/WASHER [FASTENER #4]
@ 12" O.C.
- FOAM CLOSURE
- WALL PANEL
- ULTRA-DEK® PANEL
DOUBLE-LOK® PANEL
- PURLIN

SSR SYSTEM OVER EXISTING PBR PANEL
(Vented Ridge Detail)

- ROOF PITCH [FL-254]
- HIGH FLOATING CLIP [HW-2120]
- ULTRA-DEK® PANEL
DOUBLE-LOK® PANEL
- MODIFIED BACKUP PLATE [HW-7760] 24" PANEL
- TRI-BEAD TAPE SEALER CONT.
ACROSS PANEL [HW-504]
- 1/4 x 1/2" SELF-DRILLER
W/WASHER [FASTENER #1]
(2 PER CLIP)
- 1/4 x 1/2" LONG-LIFE TYPE "B"
W/WASHER [FASTENER #46]
(6 PER PANEL LOCATED IN PREPUNCHED HOLES IN PANEL OF PANEL)
- OUTSIDE CLOSURE [HW-430] 24" PANEL
- EXISTING PBR PANEL
SSR SYSTEM OVER EXISTING PBR PANEL
(EndLap Detail)

1/4"-14 x 1 1/4" LONG-LIFE S.D. W/WASHER [FASTENER #1E] (2 PER ENDLAP)
1/4"-14 x 5/8" LONG-LIFE TYPE "B" W/WASHER [FASTENER #46] (6 PER PANEL LOCATED IN PREPUNCHED HOLES IN PAN OF PANEL)

FASTENER SEQUENCE @ ENDLAP

ROOF PITCH 12

HIGH FLOATING CLIP [HW-2120]

TRI-BEAD TAPE SEALER CONT. ACROSS PANEL [HW-504]

ULTRA-DEK® PANEL DOUBLE-LOK® PANEL (PREPUNCHED)

ULTRA-DEK® PANEL DOUBLE-LOK® PANEL (PREPUNCHED)

EXISTING PBR PANEL

PURLIN

1/4"-14 x 1/4" SELF-DRILLER W/WASHER [FASTENER #1] (2 PER CLIP)

1/4"-14 x 1 1/4" LONG-LIFE TYPE "B" W/WASHER [FASTENER #46] (6 PER PANEL LOCATED IN PREPUNCHED HOLES IN PAN OF PANEL)