16. SKYLIGHT, SCUTTLE AND SMOKE VENT

17. EXPANSION JOINT WITH METAL COVER
18. EQUIPMENT SUPPORT CURB

Notes:
1. This detail allows for roof maintenance around the support equipment. The continuous bindup is preferred in a two to four structural section for installation of the equipment. Weight can be spread across two or more supporting members, where heavy structural systems are used or high girth must be provided for removal and replacement of roofing and flashing between parallel supports. A minimum of 0.049 m (2 in) of vertical clearance from roof surface to bottom side of equipment is recommended. When using aluminum or composite materials, the Designer is responsible for material selection and submittals.
2. Attach nails to curb with suitable fasteners.

19. AREA DIVIDER IN ROOF SYSTEM

Notes:
1. An area divider is designed simply as a raised, double wood member attached to a properly supported curb. Curb located between the roof expansion joints is to support flashing and details of the flow of water.
2. Flashing requirements are typical for both sides of an area divider.
3. Attach nails to curb with suitable fasteners.
20. ROOFING OVER STEEL DECK TOP VIEW: TWO LAYERS SYSTEM OVERLAPPING

21. ROOFING OVER STEEL DECK CORRUGATED STEEL DECK DESIGN
22. ROOFING OVER STEEL DECK RIDGES AND VALLEYS

23. ROOFING OVER STEEL DECK DESIGN OF UPSTANDS STEEL CURBS
24. ROOFING OVER STEEL DECK RAIN WATER OUTLET

25. ROOFING OVER STEEL DECK COUNTER FLASHING / COUNTER CLADDING
26. ROOFING OVER STEEL DECK EXPANSION JOINTS

<table>
<thead>
<tr>
<th>THICKNESS OF STEEL CURB</th>
<th>HEIGHT OF VERTICAL FLANGE</th>
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<tbody>
<tr>
<td>0.75 mm</td>
<td>= 0.25 m</td>
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<tr>
<td>1.0 mm</td>
<td>= 0.40 m</td>
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<tr>
<td>1.2 mm</td>
<td>= 0.50 m</td>
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</table>

27. ROOFING OVER STEEL DECK ROOF OPENINGS
28. ROOFING OVER STEEL DECK EDGE FLASHING

29. ROOFING OVER STEEL DECK PIPE PENETRATION
30. ROOFING OVER STEEL DECK INTERNAL CORNER
**SPECIFICATION SHEET GUIDE**

<table>
<thead>
<tr>
<th>LAYERS</th>
<th>COVERING</th>
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<tr>
<td>DECK</td>
<td>SINGLE</td>
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<tr>
<th>Concrete</th>
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<td>Metal Deck</td>
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<td>2</td>
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<td>Wood Deck</td>
<td>4</td>
<td>1</td>
<td>2</td>
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</table>

**Eg:** Specification No. 322 may be read as the first digit indicating the deck type, the second digit indicating the number of layers of waterproofing membrane and the last digit showing the covering. So, 322, may be read as metal deck, two layers and exposed system.
### SINGLE LAYER COVERED SYSTEM

**Over Concrete Deck / Accessible Roof**

#### Deck:
The roofing system shall be installed on a dry, smooth and clean concrete deck with at least 1% positive slope to outlets.

#### Materials:
The roofing materials shall be:

1. **BITUMAT Polyflame / Premierflex**
   - Polyflame / Premierflex 4 black finish as roofing membrane.
   - Polyflame / Premierflex 4 granule finish as flashing membrane.
2. **BITUMAT Bituprime Primer**, complying with ASTM D 41.
3. **Base Sheet**: (Optional if specified)
4. **Separation Layer**: 150 microns polyethylene sheet (If insulation to be laid in inverted roof system).
5. **Insulation Board / Wooden Panel**: (Optional as specified).
6. **Filter Layer**: 120-140 gm/m² polyester felt
7. **Topping**: Crushed stones, washed clean, 25/35mm size, minimum 5cm thick or more governed by the thickness of insulation board.

#### INSTALLATION:
(Refer to section 28.3.2. of Bitumat Systems Design and Installation Manual)

1. A sand cement mortar cant strip, 7x7 cm, shall be provided at all parapets and protrusions.
2. The parapet, the cant strip and 20 cm over the deck shall be primed.
3. Starting at the low point of the roof, BITUMAT Polyflame shall be loose-laid over the deck, with 10 cm side laps and 15 cm staggered end laps fully torch welded and seamed. At all parapets and protrusions, BITUMAT Polyflame shall be fully torch welded 20 cm over the deck, on cant and 5 cm above cant. (Refer to 28.3.2 of Bitumat Systems Design and Installation Manual).

#### FLASHING:
(Refer to Section 28.3.7. of Bitumat Systems Design and Installation Manual)

1. The flashing membrane shall be installed in 1m wide strips, fully torch welded 10 cm on the horizontal membrane, on the cant and on the parapet wall.
2. The upper horizontal joint of the flashing membrane shall be at least 10 cm above the top surface of the gravel and shall be protected by an adequate counterflashing system. (For Counter Flashing, Sealants & Other relevant details. Refer to Section 28.3.8., 28.3.9., 28.3.10., 28.3.11., 28.3.12., 28.3.13. and 28.3.14.)

#### TOP COVERING:

1. Install the separation layer and the insulation boards loose-laid. (If insulation is specified).
2. Install the filter layer and the top covering. (As specified).
3. Flashing membranes shall be mechanically protected (Curb stone, reinforced plastering, tiles on mortar, . . .).

All membrane laying and detailing shall be in accordance with **BITUMAT Systems Design and Installation Manual**.
TWO LAYER EXPOSED SYSTEM
Over Concrete Deck / Slope from 15 to 30%

Deck:
The roofing system shall be installed on a dry, smooth and clean concrete screed with a positive slope to outlets (Maximum 30%).

Materials:
The roofing materials shall be:

1.) BITUMAT Polyflame / Premierflex
   - Polyflame / Premierflex 4 black finish as roofing membrane.
   - Polyflame / Premierflex 4 granule finish as flashing membrane and as the top layer.

2.) BITUMAT Bituprime Primer, complying with ASTM D 41.

3.) Base Sheet: (Optional if specified)

4.) Separation Layer:
   150 microns polyethylene sheet (If insulation to be laid in inverted roof system).

5.) Insulation Board / Wooden Panel: (Optional as specified).

6.) Filter Layer: 120-140 gm/m² polyester felt

7.) Topping
   Crushed stones, washed clean, 25/35mm size, minimum 5cm thick or more governed by the thickness of insulation board.

INSTALLATION: (Refer to section 28.3.2. of Bitumat Systems Design and Installation Manual)

1.) A sand cement mortar cant strip, 7x7 cm, shall be provided at all parapets and protrusions.

2.) The parapet, cant strip and the entire deck shall be primed.

3.) BITUMAT first layer membrane shall be fully torch welded onto the deck with 10 cm side laps and 15 cm staggered end laps. At all parapets and protrusions BITUMAT Polyflame 4 granule second layer shall be extended fully bonded 5 cm above the cant strip. First and second layer side laps shall be staggered or crossed.

FLASHING: (Refer to Section 28.3.7. of Bitumat Systems Design and Installation Manual)

1.) The flashing membrane shall be installed in 1m wide strips, fully torch welded 10 cm on the horizontal membrane, on the cant and on the parapet wall.

2.) The upper horizontal joint of the flashing membrane shall be at least 10 cm above the top surface of the roof and shall be protected by an adequate counterflashing system. (For Counter Flashing, Sealants & Other relevant details. Refer to Section 28.3.8., 28.3.9., 28.3.10., 28.3.11., 28.3.12., 28.3.13. and 28.3.14.)

All membrane laying and detailing shall be in accordance with BITUMAT Systems Design and Installation Manual.
Deck:
The roofing system shall be installed on a dry, smooth and clean concrete deck without negative slope.

Materials:
The roofing materials shall be:
1.) BITUMAT Polyflame / Premierflex
   - Polyflame / Premierflex 4 black finish as roofing membrane.
   - Polyflame / Premierflex 4 granule finish as flashing membrane.
2.) BITUMAT Bituprime Primer, complying with ASTM D 41.
3.) Base Sheet: (Optional if specified)
4.) Separation Layer:
   150 microns polyethylene sheet (If insulation to be laid in inverted roof system).
5.) Insulation Board / Wooden Panel: (Optional as specified).
6.) Filter Layer: 120-140 gm/m² polyester felt
7.) Topping
   Crushed stones, washed clean, 25/35mm size, minimum 5cm thick or more governed by the thickness of insulation board.

INSTALLATION: (Refer to section 28.3.2. of Bitumat Systems Design and Installation Manual)
1.) A sand cement mortar cant strip, 7x7 cm, shall be provided at all parapets and protrusions.
2.) The parapet, cant strip and 20 cm over the deck shall be primed.
3.) Starting at the low point of the roof, BITUMAT first layer shall be loose-laid over the deck, with 10 cm side laps and 15 cm staggered end laps fully torch welded and seamed. At all parapets and protrusions, BITUMAT Polyflame shall be fully bonded 20 cm over the primed cant. (Refer to 28.3.2 of Bitumat Systems Design and Installation Manual).

FLASHING: (Refer to Section 28.3.7. of Bitumat Systems Design and Installation Manual)
1.) The flashing membrane shall be installed in 1m wide strips, fully torch welded 10 cm on the horizontal membrane, on the cant and on the parapet wall.
2.) The upper horizontal joint of the flashing membrane shall be at least 10 cm above the top surface of the roof and shall be protected by an adequate counterflashing system. (For Counter Flashing, Sealants & Other relevant details. Refer to Section 28.3.8., 28.3.9., 28.3.10., 28.3.11., 28.3.12., 28.3.13. and 28.3.14.)

TOP COVERING:
1.) Install the separation layer and the insulation boards loose-laid (If insulation specified).
2.) Install the filter layer and the top covering as specified.

All membrane laying and detailing shall be in accordance with BITUMAT Systems Design and Installation Manual.
Decks:
The roofing system shall be installed on a dry, smooth and clean concrete deck without negative slope.

Materials:
The roofing materials shall be:

1.) BITUMAT Polyflame / Premierflex
   • Polyflame / Premierflex 4 black finish as roofing membrane.
   • Polyflame / Premierflex 4 granule finish as flashing membrane.

2.) BITUMAT Bituprime Primer, complying with ASTM D 41.

3.) Base Sheet: (Optional if specified)

4.) Separation Layer:
   150 microns polyethylene sheet (If insulation to be laid in inverted roof system).

5.) Insulation Board / Wooden Panel: (Optional as specified).

6.) Filter Layer: 120-140 gm/m² polyester felt

7.) Topping
   Crushed stones, washed clean, 25/35mm size, minimum 5cm thick or more governed by the thickness of insulation board.

INSTALLATION: (Refer to section 28.3.2. of Bitumat Systems Design and Installation Manual)

1.) A sand cement mortar cant strip, 7x7 cm, shall be provided at all parapets and protrusions.

2.) The parapet, cant strip and 20 cm over the deck shall be primed.

3.) Starting at the low point of the roof, BITUMAT first layer shall be loose-laid over the deck, with 10 cm side laps and 15 cm staggered end laps fully torch welded and seamed. At all parapets and protrusions, BITUMAT first layer shall be fully bonded 20 cm over the primed deck and over the primed cant. (Refer to 28.3.2 of Bitumat Systems Design and Installation Manual).

4.) BITUMAT Polyflame second layer shall be fully torch welded onto first layer with 10 cm side laps and 15 cm staggered end laps. Side laps of first and second layer shall be staggered. At parapets and protrusions, BITUMAT Polyflame 2nd layer shall be extended fully bonded 5 cm above the cant on the primed parapet.

FLASHING: (Refer to Section 28.3.7. of Bitumat Systems Design and Installation Manual)

1.) The flashing membrane shall be installed in 1m wide strips, fully torch welded 10 cm on the horizontal membrane, on the cant and on the parapet wall.

2.) The upper horizontal joint of the flashing membrane shall be at least 10 cm above the top surface of the roof and shall be protected by an adequate counterflashing system. (For Counter Flashing, Sealants & Other relevant details. Refer to Section 28.3.8., 28.3.9., 28.3.10., 28.3.11., 28.3.12., 28.3.13. and 28.3.14.)

TOP COVERING:

1.) Install the separation layer and the insulation boards loose-laid (If insulation specified).

2.) Install the filter layer and the top covering. (As specified).

3.) Flashing membrane shall be mechanically protected (Curb stone, reinforced plastering, tiles on mortar,...).

All membrane laying and detailing shall be in accordance with BITUMAT Systems Design and Installation Manual.
Decks: 
The corrugated steel sheets shall be properly attached to the main structural framing as per specification...A positive slope to drain must exist. The steel deck shall be covered with covering / or insulation boards mechanically fastened to the steel deck as per specification...the board surface shall be clean, dry, smooth and properly levelled.

Materials: 
The roofing materials shall be:

1.) BITUMAT Polyflame / Premierflex
   - Polyflame / Premierflex 4 black finish as roofing membrane.
   - Polyflame / Premierflex 4 granule finish as flashing membrane.

2.) BITUMAT Bituprime Primer, complying with ASTM D 41.

3.) Base Sheet: (Optional if specified)

4.) Separation Layer:
   150 microns polyethylene sheet (If insulation to be laid in inverted roof system).

5.) Insulation Board / Wooden Panel: (Optional as specified).

6.) Filter Layer: 120-140 gm/m² polyester felt

7.) Topping
   Crushed stones, washed clean, 25/35mm size, minimum 5cm thick or more governed by the thickness of insulation board.

INSTALLATION: (Refer to section 28.3.2. of Bitumat Systems Design and Installation Manual)

1.) A sand cement mortar cant strip, 7x7 cm, shall be provided at all parapets and protrusions.
2.) The parapet, the cant strip and 20 cm over the boards shall be primed.
3.) Starting at the low point of the roof, BITUMAT Polyflame shall be loose-laid over the deck, with 10 cm side laps and 15 cm staggered end laps fully torch welded and seamed. At all parapets and protrusions, BITUMAT Polyflame shall be fully torch welded 20 cm over the boards, on cant and 5 cm above cant. (Refer to 28.3.2 of Bitumat Systems Design and Installation Manual).

FLASHING: (Refer to Section 28.3.7. of Bitumat Systems Design and Installation Manual)

1.) The flashing membrane shall be installed in 1m wide strips, fully torch welded 10 cm on the horizontal membrane, on the cant and on the parapet steel curb.
2.) The upper horizontal joint of the flashing membrane shall be at least 15 cm above the top surface of the gravel and shall be protected by an adequate counterflashing or countercladding system. (For Counter Flashing, Sealants & Other relevant details. Refer to Section 28.3.8., 28.3.9., 28.3.10., 28.3.11., 28.3.12., 28.3.13. and 28.3.14.)

TOP COVERING:

1.) Install the separation layer and the insulation boards loose-laid (If insulation specified).
2.) Install the filter layer and a bed of gravel (As specified).

All membrane laying and detailing shall be in accordance with BITUMAT Systems Design and Installation Manual.
Deck:
The corrugated steel sheets shall be properly attached to the main structural framing as per specification...A positive slope to drain must exist. The steel deck shall be covered with a wood panel or insulation boards mechanically fastened to the steel deck as per specification...the board surface shall be clean, dry, smooth and properly levelled.

Materials:
The roofing materials shall be:

1.) BITUMAT Polyflame / Premierflex
   - Polyflame / Premierflex 4 black finish as roofing membrane.
   - Polyflame / Premierflex 4 granule finish as flashing membrane.

2.) BITUMAT Bituprime Primer, complying with ASTM D 41.

3.) Base Sheet: (Optional if specified)

4.) Separation Layer:
   150 microns polyethylene sheet (If insulation to be laid in inverted roof system).

5.) Insulation Board / Wooden Panel: (Optional as specified).

6.) Filter Layer: 120-140 gm/m² polyester felt

7.) Topping
   Crushed stones, washed clean, 25/35mm size, minimum 5cm thick or more governed by the thickness of insulation board.

INSTALLATION: (Refer to section 28.3.2. of Bitumat Systems Design and Installation Manual)

1.) A fiber or insulation cant strip, 7x7 cm, shall be provided at all parapets and protrusions.
2.) The parapet, the cant strip and 20 cm over the board shall be primed.
3.) Starting at the low point of the roof, BITUMAT first layer shall be loose-laid over the deck, with 10 cm side laps and 15 cm staggered end laps fully torch welded and seamed / nailed. At all parapets and protrusions, BITUMAT first layer shall be fully bonded 20 cm over the primed deck and over the primed cant. (Refer to 28.3.2 of Bitumat Systems Design and Installation Manual).
4.) BITUMAT Polyflame second layer shall be fully torch welded onto first layer with 10 cm side laps and 15 cm staggered end laps. Side laps of first and second layer shall be staggered. At parapets and protrusions, BITUMAT Polyflame 2nd layer shall be extended fully bonded 5 cm above the cant on the primed parapet steel curb.

FLASHING: (Refer to Section 28.3.7. of Bitumat Systems Design and Installation Manual)

1.) The flashing membrane shall be installed in 1m wide strips, fully torch welded 10 cm on the horizontal membrane, on the cant and on the parapet steel curb.
2.) The upper horizontal joint of the flashing membrane shall be at least 15 cm above the top surface of the gravel and shall be protected by an adequate counterflashing or countercladding system. (For Counter Flashing, Sealants & Other relevant details. Refer to Section 28.3.8., 28.3.9., 28.3.10., 28.3.11., 28.3.12., 28.3.13. and 28.3.14.)

TOP COVERING:

1.) Install the separation layer and the insulation boards loose-laid (If insulation specified).
2.) Install the filter layer and a bed of gravel (As specified).

All membrane laying and detailing shall be in accordance with BITUMAT Systems Design and Installation Manual.