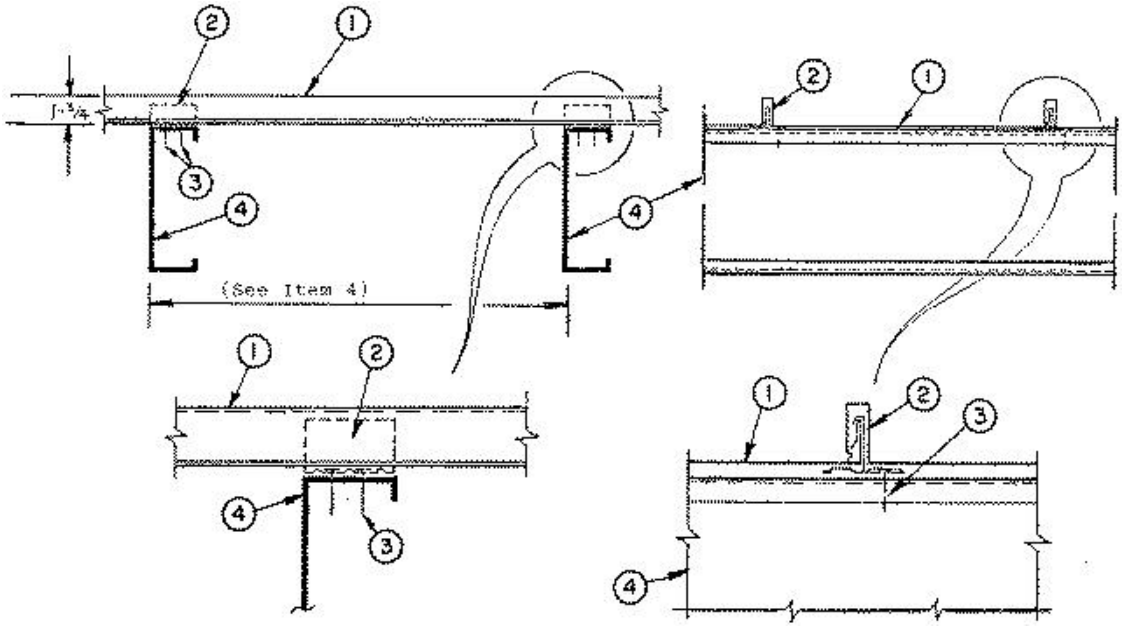
Construction No. 254
Wind-Uplift — Class 90 (See Item No. 4) Fire Not Investigated



1. **Metal Roof Deck Panels * —** No. 22 MSG or No. 24 MSG min thickness coated steel panels. Panels 12 in. wide, 1-3/4 in. high at the ribs. Panels continuous over two or more spans. A bead of sealant may be used at panel side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

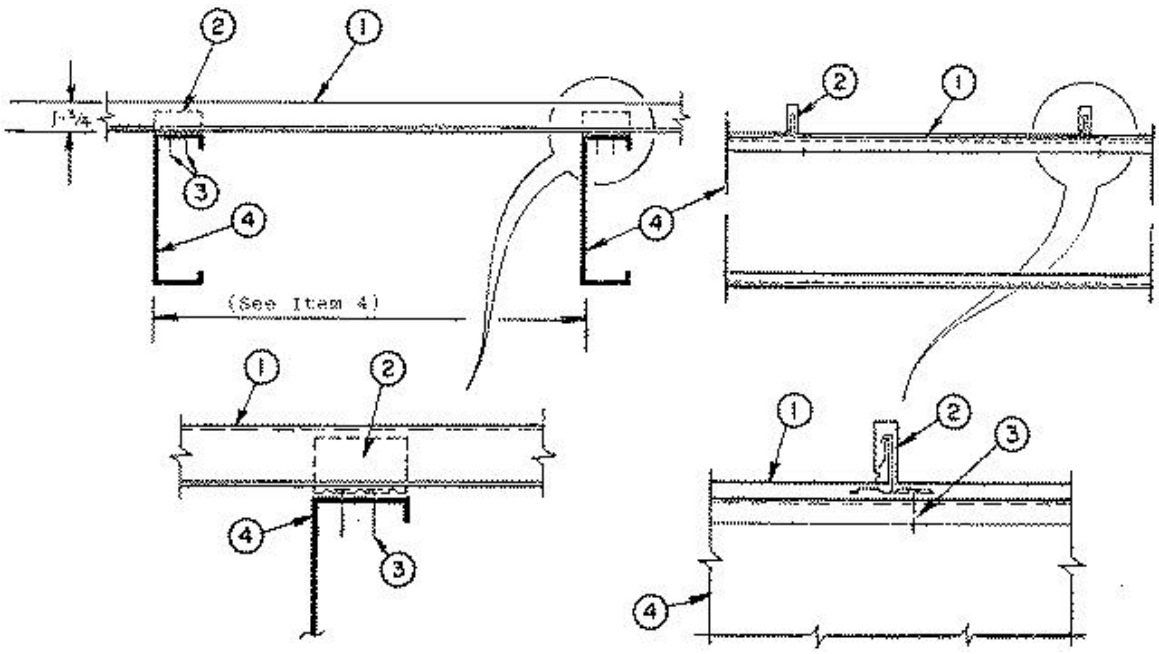
2. **Roof Deck Fasteners * (Panel Clips) —** One piece assembly, 3-1/2 in. wide, 1-7/8 in. high, thickness 0.048 in. One panel clip located at each purlin intersection.

2A. **Roof Deck Fasteners (Bearing Plate) —** (Not Shown) - No. 16 MSG coated steel, 4 in. by 5 in. with guide holes. Used when Rigid Insulation (Item 5) is used.

3. **Panel Fasteners (Screws) —** Fasteners used to attach panel clips (Item 2) to purlins (Item 4) when no rigid insulation (Item 5) is used to be No. 10-16 by 1 in. long, self-drilling, self-tapping, pancake head, No. 3 point, plated steel screws. When rigid insulation is used, No. 14-13 DPI carbon, pancake head combination Square/Phillips Drive screws to be used. Length to penetrate steel minimum of 5/8 in. Two screws per clip to be used, inserted through panel clip guide holes.

4. **Purlins —** No. 16 MSG min thickness steel (50,000 psi min yield strength).
Spacing — For 22 MSG thickness panels - 60 in. OC
For 24 MSG thickness panels - 48 in. OC

Construction No. 255
Uplift — Class 90 and 60 (See Item No. 4) Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min thickness coated steel. Panel width 18 in. max., 10 in. min. Rib height 1-3/4 in. at female side. Panels continuous over two or more spans. A bead of sealant may be used at panel side joints.

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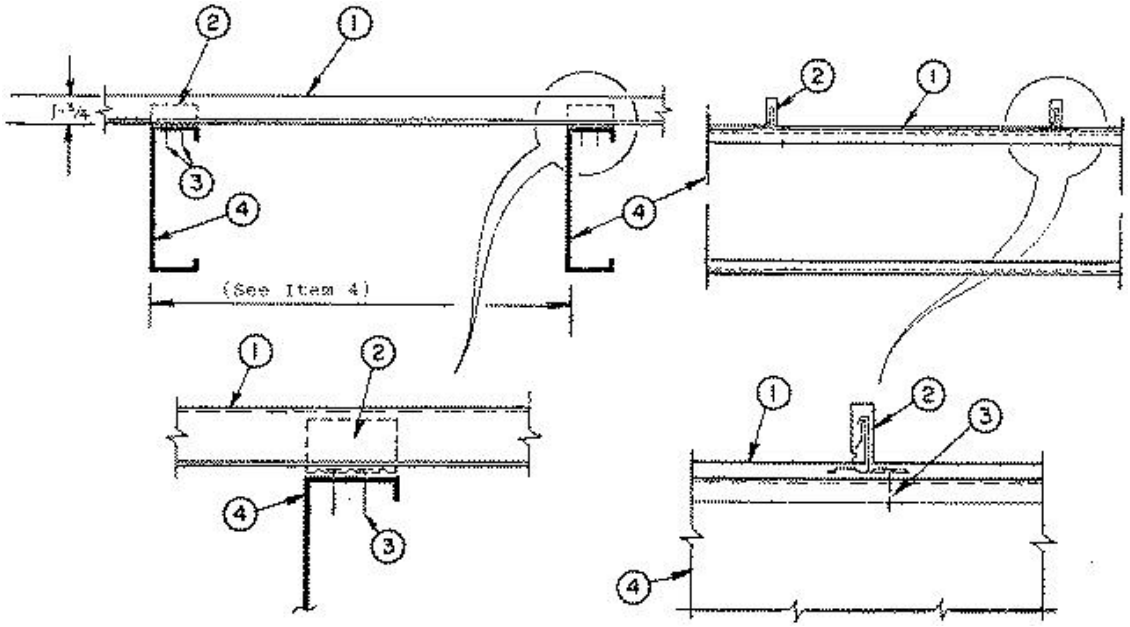
2. **Roof Deck Fasteners* —** (Panel Clips) — One piece assembly, 3-1/2 in. wide, 1-7/8 in. high. One panel clip located at each purlin intersection.

2A. **Roof Deck Fasteners (Bearing Plate) —** (Not Shown) - No. 16 MSG coated steel, 4 in. by 5 in. with guide holes. Used when Rigid Insulation (Item 5) is used.

3. **Panel Fasteners (Screws) —** Fasteners used to attach panel clips (Item 2) to purlins (Item 4) when no rigid insulation (Item 5) is used to be No. 10-16 by 1 in. long, self-drilling, self-tapping, pancake head, No. 3 point, plated steel screws. When rigid insulation is used, No. 14-13 DP1 carbon, pancake head combination Square/Phillips Drive screws to be used. Length to penetrate steel minimum of 5/8 in. Two screws per clip to be used, inserted through panel clip guide holes.

Construction No. 261
Uplift — Class 90 and 60 (See Item No. 4) Fire Not Investigated



1. **Metal Roof Deck Panels* —** 0.032 in. thick aluminum or No. 24 MSG min thickness coated steel. Panels 10-1/2 in. wide, 1-3/4 in. high at the ribs. Panels continuous over two or more spans. A bead of sealant may be used at panel side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* (Panel Clips) —** One piece assembly, 3-1/8 in. wide, 1-7/8 in. high. One panel clip located at each purlin intersection. Min thickness 0.048 in. (No. 18 MSG).

3. **Panel Fasteners (Screws) —** Fasteners used to attach panel clips (Item 2) to purlins (Item 4) when no rigid insulation (Item 5) is used to be No. 10-16 by 1 in. long, self-drilling, self-tapping, pancake head, No. 3 point, plated steel screws. When rigid insulation is used, No. 14-13 DP1 carbon, pancake head combination Square/Phillips Drive screws to be used. Length to penetrate steel minimum of 5/8 in. Two screws per clip to be used, inserted through panel clip guide holes.

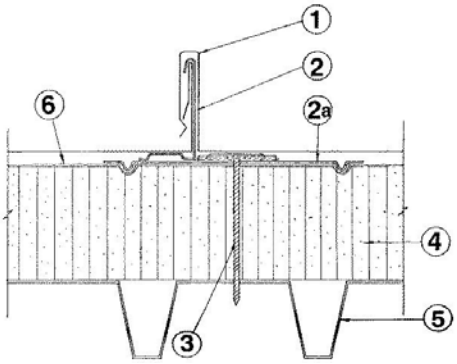
4. **Purlins —** No. 16 MSG min thickness steel (50,000 psi min yield strength).
Spacing:

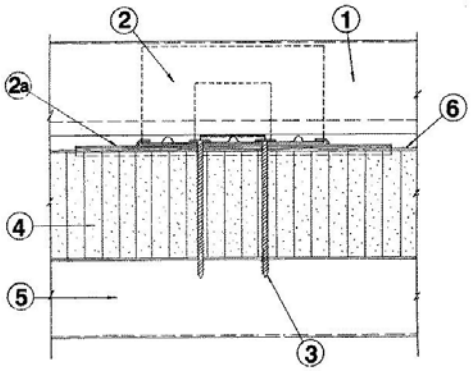
For aluminum panels:	For Class 90 to be 36 in. OC.
	For Class 60 to be 48 in. OC.
For steel panels:	22 MSG thick to be 60 in. OC.
	24 MSG thick to be 48 in. OC.

Construction No. 303

Uplift — Class 90

Fire Not Investigated (except when 4B is used)





1. **Metal Roof Deck Panels* —** No. 24 MSG min thickness coated steel. Panel width 18 in. max., 10 in. min. ribs height 1-3/4 in. at female side. Panels continuous over three or more clips with no end laps. A bead of sealant may be used at panel side joints.

METAL ROOFING SYSTEMS INC. - "MRS System 2000"

1A. **Metal Roof Deck Panels* —** (Not Shown) — To be used with Roof Deck Fastener (2E). 0.032 in. min thick aluminum, 16 in. wide, 1-3/4 in. high at the rib. Panels continuous over three or more clips with no end laps. A bead of sealant may be used at panel side joints.

2. **Roof Deck Fasteners* (Panel Clips) —** One piece assembly, No. 24 MSG min thickness, 3-1/2 in. wide, 1-15/16 in. high. Clip spacing to be 48 in. OC. Clips to interface with Item 2A (bearing plate).

2A. **Roof Deck Fasteners* (Bearing Plate) —** One piece assembly, No. 24 MSG min thickness steel, 4-1/2 in. wide, 6 in. long.

2B. **Bearing Plate —** (Not Shown) To be used with "Lock-Seam UL 90 Clip", "Permaseam Clip", "K-Lok Structural Clips" or "MP-175 Clip" only, (Item 2). Bearing plates to be 16 MSG min coated steel, 3-7/8 wide by 5 in long (50,000 psi min yield strength).

2C. **Bearing Plate* —** (Not Shown) — To be used with "Snap-Clad Clips" only (Item 2). To be 24 MSG thick coated steel, nom 4-5/8 in. wide by 6 in. long.

2D. **Bearing Plate —** (Not Shown) — To be used with "Vertical Seam Clip" only (Item 2) — Flat plate, 4 in. wide, 5 in. long fabricated from No. 20 MSG coated steel. Two 1/4 in. diam guide holes located to accommodate panel clip screw fasteners. (50,000 psi min yield strength).

2E. **Roof Deck Fasteners* (Panel Clips) —** (Not Shown) — One piece assembly, 3-1/2 in. wide, 1-7/8 in high with a 1-3/8 in. wide horizontal leg. No. 18 MSG min thick coated steel. Two 1/4 in. guide holes located in horizontal leg. Clips spaced 18 in. OC.

3. **Panel Fasteners — (Screws) —** Fasteners used to attach panel clips and bearing plates (Items 2 & 2A) through rigid insulation and optional OSB and/or gypsum board and into light gauge steel deck (Item No. 5) to be No. 14 truss head type with No. 3 Phillips drive, self-drilling steel screws. Two screws per clip to be used, inserted through 1/4 in. diam guide holes. Fasteners to penetrate liner panel 3/4 in. min.

3A. **Panel Fasteners (Screws) —** (Not Shown) — For Steelox Systems L L C, as an alternate, when no Rigid Insulation (Item 4) is used, No. 10-16 by min 1 in. long TEK 3 Carbon pancake head, self-drilling, self-tapping screws to be used. When rigid insulation is used, No. 14-13 by varying lengths, DP1, carbon, pancake-head, Square/Phillips Head screws to be used. Two fasteners per clip to be used for either type.

4. **Foamed Plastic — (Rigid Insulation) —** Min thickness 1 in., max thickness 4-1/2 in. Density to be a min of 1.8 pcf. or see products Classified under TJBX Category. Note: For Steelox Systems L L C, rigid insulation may be omitted. See Item 3A for fastener type.

4A. **Oriented Strand Board (OSB) —** (Optional) — (Not Shown) — Located over foamed plastic (Item 4). Max thickness 7/16 in. Note: Bearing plates not required when OSB is used.

4B. **Gypsum Board —** (Optional) — Max thickness 5/8 in. Located over liner panel (Item 5).

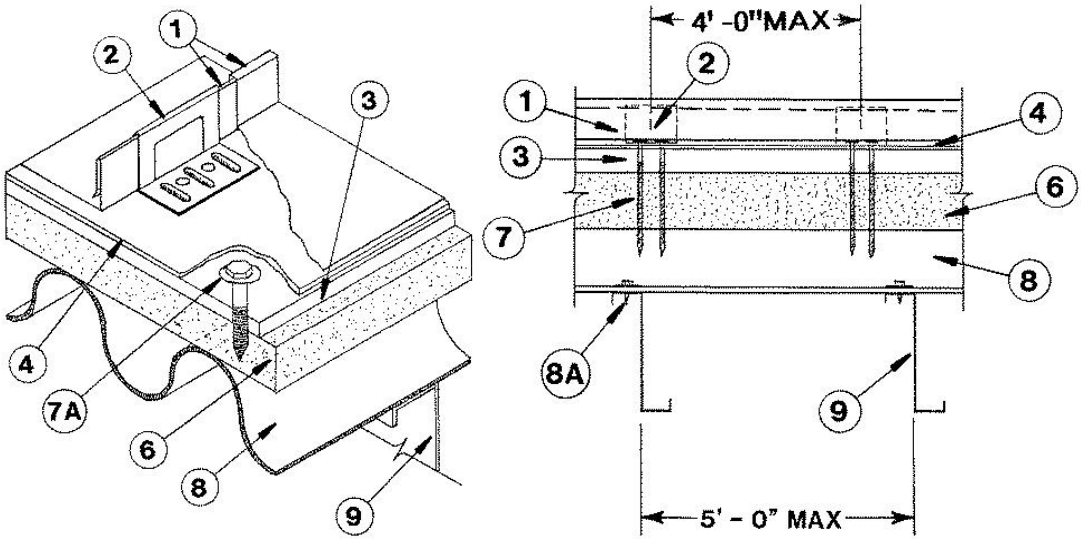
4C. **Foamed Plastic* —** (optional) (Not Shown) Rigid Foamed Plastic Insulation, "Foamular Thermapink 18" or "Foamular Thermapink 25", loose laid or mechanically fastened in one or more layers. Total thickness of insulation not to exceed 8 in.

5. **Liner Panel —** Min thickness No. 22 MSG. Coated steel (33000 psi) min yield strength min depth 1-1/2 in., max pitch 6 in. fabricated to various profiles.

6. **Underlayment —** (Not shown) — One ply of 30 lb roofing felt or one layer of bituminous resin type water proofing membrane.

7. **Supports —** (Not Shown) Used to support liner panels, spaced per deck manufacturer's specifications for uplift.

Construction No. 342
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min gauge coated steel. Panel width 18 in. max., 10 in. min. Rib height 1-3/4 in. at female side. A bead of sealant may be used at panel side joints. Panels continuous over three or more clips with no end laps.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* (Panel Clips) —** One piece assembly, No. 24 MSG min thickness, 3-1/2 in. wide, 1-15/16 in. high. Clip spacing to be 48 in. OC.

3. **Gypsum Board* (Mineral Board) —** Min thickness 1/2 in. Opposite side edges have a tongue and groove configuration. Butt (end) joints to be staggered and occur over steel deck crests. Wallboard installed perpendicular to steel deck corrugations.

4. **Vapor Barrier —** (Optional) Installed on top of metal deck (Item 8) or on top of gypsum wallboard (Item 3). Minimum 6 mil plastic sheet.

5. **Joint Tape —** (Not Shown) All wallboard joints shall be taped with 2.5 in. wide joint tape supplied by the manufacturer.

6. **Foamed Plastic — (Rigid Insulation) —** (Optional) — Expanded polystyrene supplied in 4 by 8 ft sheets, min thickness 13/16 in., min density 1.0 pcf, or (Rigid Insulation) Polyisocyanurate supplied in 4 by 8 ft sheets or (Rigid Insulation) Phenolic supplied in 4 by 8 ft sheets. All end joints to be staggered with respect to adjoining rows. All joints to be offset from joints in mineral board (Item 3).

7. **Fasteners —** For attaching panel clips to steel deck to be two 0.140 in. diam threaded shank Phillips, bugle or trumpet head, self-drilling, self-tapping corrosion resistant coated steel screws supplied by roof deck manufacturer. Screws shall penetrate steel deck min 1/2 in.

7A. **Fasteners —** For attaching wallboard to steel deck (Item 8) to be min 0.140 in. diam threaded shank Phillips, bugle or trumpet head, self-drilling, self-tapping, corrosion resistant coated steel screws supplied by the manufacturer. Screws are installed into top corrugations of steel deck through nom 3 by 3 in. corrosion resistant steel roof deck plates, spaced in a pattern as determined by the pitch of the steel deck with the min density of 21 fasteners per 4 by 8 ft sheet (Item 3).

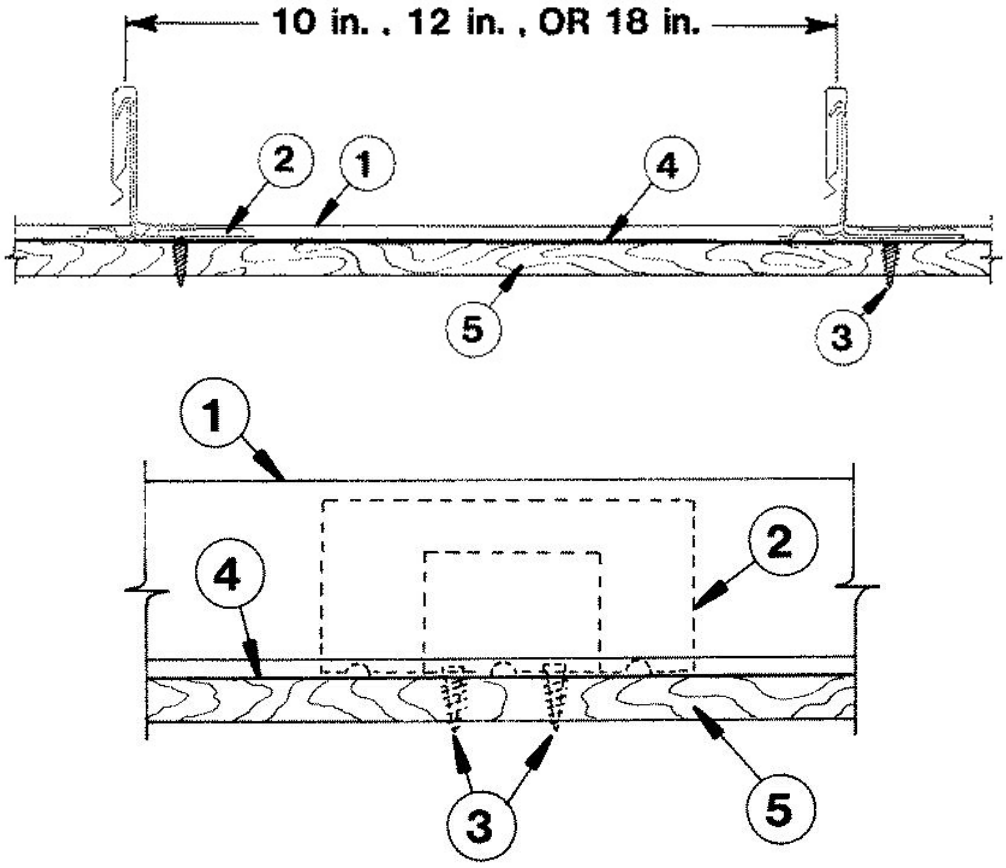
7B. **Panel Fasteners (Screws) —** For Steelox Systems L L C, as an alternate, when no Rigid Insulation (Item 4) is used, No. 10-16 by min 1 in. long TEK 3 Carbon pancake head, self-drilling, self-tapping screws to be used. When rigid insulation is used, No. 14-13 by varying lengths, DP1, carbon, pancake-head, Square/Phillips Head screws to be used. Two fasteners per clip to be used for either type. See Item 8 for steel deck thickness.

8. **Steel Deck —** Fabricated to various profiles, min yield strength 33,000 psi. Steel deck profile, support spacing and method of positioning (end and side laps) and fastening of deck to supports to be per deck manufacturers requirements for uplift loading. Deck thickness to accommodate panel clip screw fastener pullout strength. When fasteners described in Item 7B are used, min thickness to be No. 22 MSG

8A. **Deck Fasteners —** Steel deck panels to be fastened to structural supports and at laps using ARC spot welds with weld washers or screw fasteners per deck manufacturer's requirements for uplift loading.

9. **Purlins —** 16 MSG min gauge steel (min yield strength 50,000 PSI) or min Type H open web joists.

Construction No. 343
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min coated steel. Panel width 18 in. max., 10 in. min. Rib height 1-3/4 in. at female side. Panels continuous over three or more clips with no endlaps. A bead of sealant may be used at panel side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

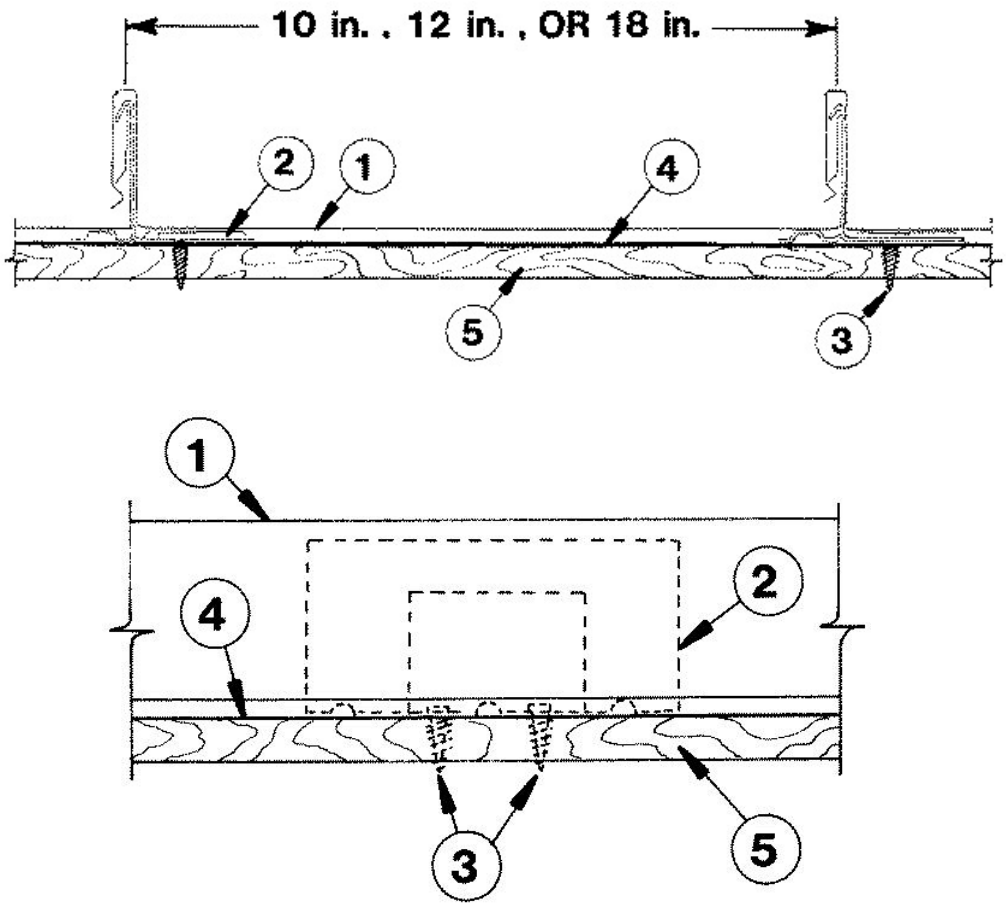
2. **Roof Deck Fasteners*(Panel Clips) —** One piece assembly, 3-1/2 in. wide, 1-7/8 in. high. Min thickness No. 18 MSG. Clips spaced 36 in. OC, max, fastened to plywood deck.

3. **Fasteners (Screws) —** Fasteners used to attach panel clips (Item 2) to plywood to be No. 10-12 by 1 in. long pancake head, No. 2 Phillips drive, A-point, coated steel screw. Min two fasteners per clip to be used. When Items 5A (Rigid Insulation) and 5B (Bearing Plate) are used, No. 12 Dekfast fastener to be used and installed through clip (Item 2), bearing plate (Item 5B), rigid insulation (Item 5A) and plywood decking (Item 5A). Length of fastener to be equal to total thickness plus 7/8 in.

4. **Underlayment —** Underlayment used over plywood deck to be Type 15 or 30 organic felt. Sides overlapped min 2 in., end laps per manufacturer's instructions. Felt nailed to plywood deck with 1-1/4 in. long steel cap nails, located per manufacturer's instructions. Nail spacing to be max 12 in. OC at the side lap and max 24 in. OC in interior rows.**As An Alternate —** A self-adhering modified bitumen water proofing membrane may be used, installed per manufacturer's instructions. Note - when alternate is used the plywood joints need not be sealed.

5. **Plywood Decking —** Plywood decking to be graded per PS83 specifications, 19/32 in. thick, exposure 1, APA Rated Sheathing (42/20) square edged. Butt ends not blocked. All butt and side joints to be sealed with a one part urethane caulk sealant applied with a caulking gun and feathered outward from the joint. (Note exception under Item No. 4, Alternate.)

Construction No. 414
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min coated steel panels, 18 in. max width, 1-3/4 in. high at female side rib. Panels continuous over three or more clips with no endlaps. A bead of sealant may be used at panel side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* (Panel Clips) —** One piece assembly, 3-1/2 in. wide, 1-7/8 in. high. Min thickness 18 MSG. Clips spaced 36 in. OC, max, fastened to plywood deck.

3. **Fasteners (Screws) —** Fasteners used to attach panel clips (Item 2) to plywood to be No. 10-12 by 1 in. long pancake head, No. 2 Phillips drive, A-point, coated steel screw. Min two fasteners per clip to be used.

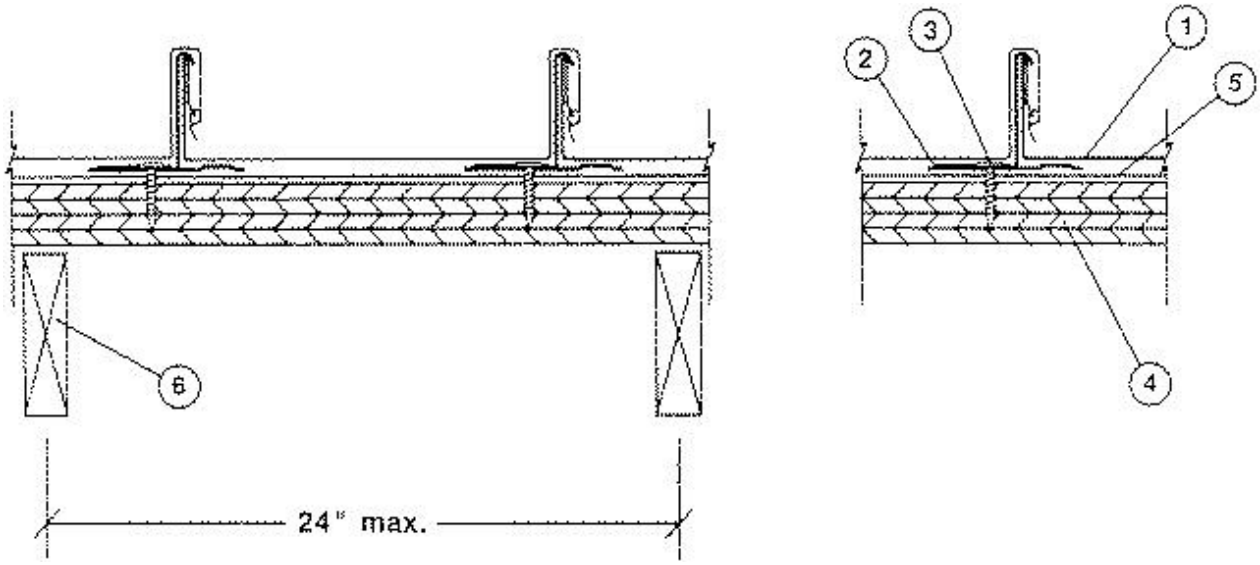
4. **Underlayment —** Underlayment used over plywood deck to be Type 15 or 30 organic felt.

As an Alternate-A self-adhering modified bitumen water proofing membrane may be used, installed per manufacturer's instructions. Note - when alternate is used the plywood joints need not be sealed.

5. **Plywood Decking —** Plywood decking to be graded per PS83 specifications, 19/32 in. thick, exposure 1, APA Rated Sheating (42/20) square edged. Butt ends not blocked. All butt and side joints to be sealed with a one part urethane caulk sealant applied with a caulking gun and feathered outward from the joint. (Note exception under Item No. 4, Alternate).

*Bearing the UL Classification Mark

Construction No. 436
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min coated steel. Max panel width 18 in., rib height 1-3/4 in. Panels continuous over two or more spans. Endlap for panels to be overlapped 6 in. A bead of sealant may be used at panel ends and side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* — (Panel Clips) —** One piece assembly, 3-1/2 in. wide by 1-7/8 in high. Clip spacing to be 48 in. OC.

3. **Fasteners — (Screws) —** Screws used to attach the panel clips to Substructure (Item 4) to be No. 10 by 1 in long Pancake head wood screws with a No. 2 Phillips head or 10x1 in., 1/4 in. Hex Head Woodgrip. Two screws per clip.

Screws used to attach Substructure (Item 4) to wood trusses or joists (Item 6) to be No. 8 by 2 in. Bugle head screws. As an optional fastener, 2-1/2 in. long 8d common deformed shank nails may be used. Fasteners used at endlaps to be 14x1 in. Type AB or 10x1 in. woodgrip.

When light gauge structural steel joists are used, screws to be No. 12 by 1-5/8 in. long with a Phillips head.

Spacing of screws to be 6 in. OC at plywood or OSB ends and 12 in. OC at interior joists.

4. **Substructure (Plywood or OSB) —** Plywood decking or oriented strand board (OSB) to be a nom 5/8 in. thick, exposure sheathing span C-D, 40/20 plywood. (All butt joints to be sealed against leakage by using tape and/or caulking). In lieu of plywood, 1 in. tongue and groove decking may be used.

5. **Moisture Barrier — (Optional) —** Any suitable membrane to protect Substructure (Item 4).

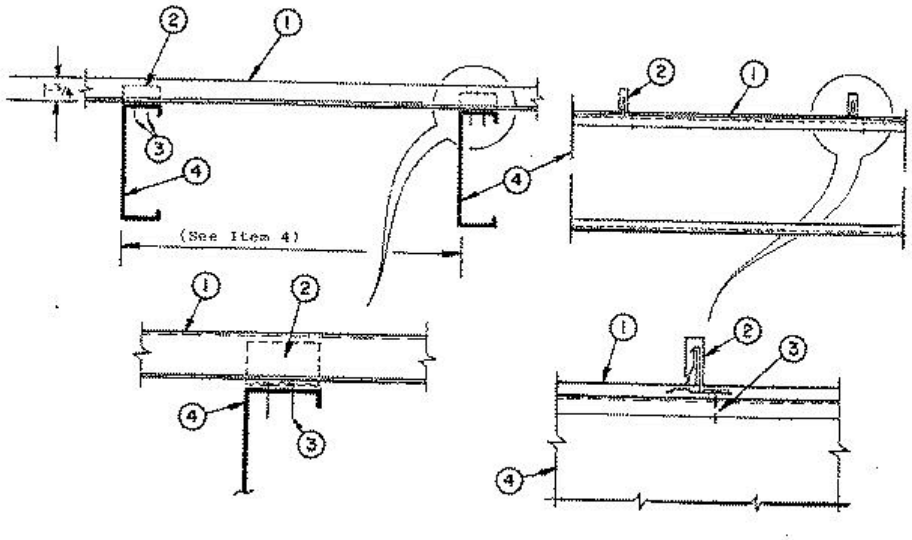
6. **Joists —** Joists, spaced at 2 ft, 0 in. OC max (when tongue and groove decking is used, joist spacing may be 30 in. OC max), may be one of the following:

A. Nom 2 by 6 in. wood joists, No. 2 or better.

B. Nom 2 by 4 in wood when used on a top chord of a wood truss, No. 2 or better.

C. Light gauge structural steel framing with the member against the plywood to be a min No. 22 MSG coated steel.

Construction No. 445
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min coated steel. Max panel width 12 in., rib height 1-3/4 in. Panels continuous over two or more spans. No endlaps. A bead of sealant may be used at panel ends and side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* — (Panel Clips) —** One piece assembly, 3-1/2 in. wide by 1-7/8 in. high. Clip spacing to be 48 in. OC.

3. **Panel Fasteners — (Screws) —** Screws used to attach panel clips (Item 2) to purlins (Item 4) to be No. 10x1 in. long No. 3 self-drilling point, No. 2 Phillips Pancake head. Two screws per clip.

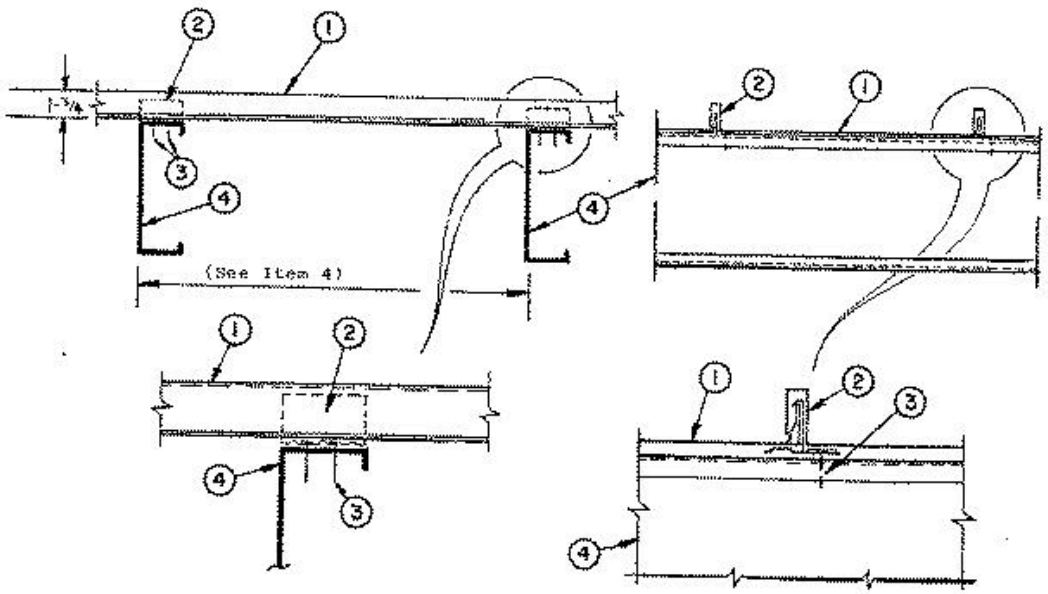
4. **Purlins —** No. 16 MSG min thickness steel (min yield 50 ksi).

Spacing —	For 22 MSG thickness panels - 60 in. OC.
	For 24 MSG thickness panels - 48 in. OC.

5. **Insulation — (Optional) (not shown) —** 3 in. thick vinyl faced blanket insulation. To be installed between metal panels (Item 1) and purlins (Item 4).

*Bearing the UL Classification Mark

Construction No. 446
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min coated steel. Max panel width 18 in., rib height 1-3/4 in. Panels continuous over two or more spans. No endlaps. A bead of sealant may be used at panel ends and side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* — (Panel Clips) —** One piece assembly, 3-1/2 in. wide by 1-7/8 in. high. Clip spacing to be 48 in. OC.

3. **Panel Fasteners — (Screws) —** Screws used to attach panel clips (Item 2) to purlins to be No. 10 by 1 in. long No. 3 self-drilling point, No. 2 Phillips Pancake head. Two screws per clip.

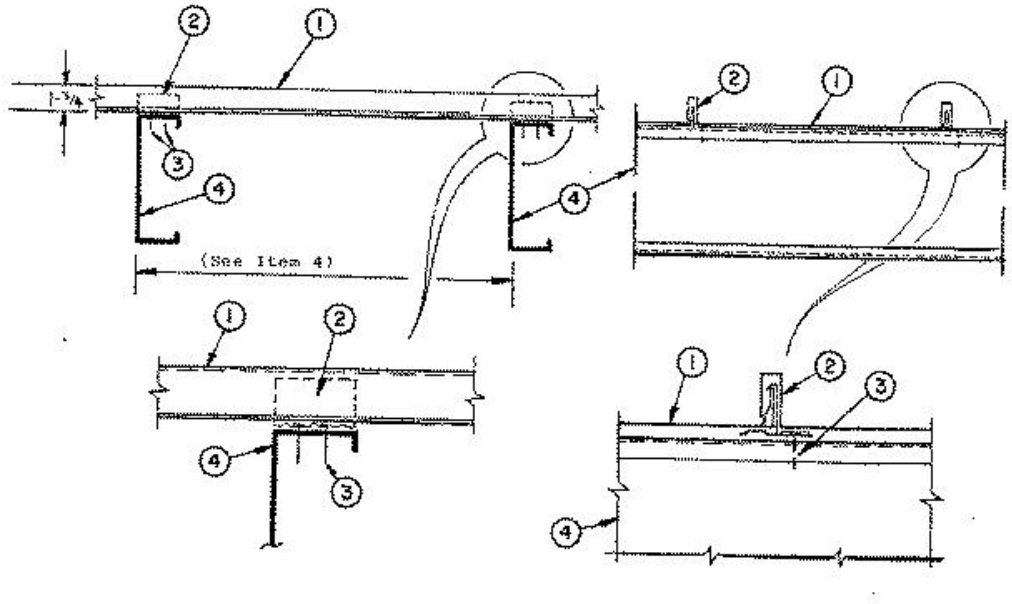
4. **Purlins —** No. 16 MSG min thickness steel (min yield 50 ksi) spaced 48 in. OC.

5. **Insulation — (Optional) (not shown) —** 3 in. thick vinyl faced blanket insulation. To be installed between metal panels (Item 1) and purlins (Item 4).

5A. **Insulation —** (Optional) (not shown) - 1/4 in. thick closed/microcellular polyethylene insulation with foil facing designated "Low-E Insulation™." To be installed between metal panels (Item 1) and purlins (Item 4).

*Bearing the UL Classification Mark

Construction No. 447
Uplift — Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** 0.032 in. thick aluminum or No. 24 MSG min thickness coated steel. Panels 10 in. wide, 1-3/4 in. high at the ribs. Panels continuous over two or more spans. No endlaps. A bead of sealant may be used at panel side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* — (Panel Clips) —** One piece assembly, 3-1/2 in. wide by 1-7/8 in. high. One panel clip located at each purlin intersection.

3. **Panel Fasteners — (Screws) —** Screws used to attach panel clips (Item 2) to purlins (Item 4) to be No. 10x1 in. long No. 3 self-drilling point. No. 2 Phillips Pancake head. Two screws per clip.

4. **Purlins —** No. 16 MSG min thickness steel (min yield 50 ksi).

Spacing —

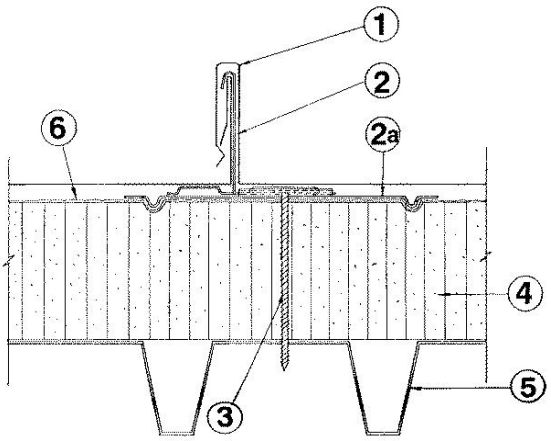
For 0.032 in. thick aluminum panels	36 in. OC.
For 22 MSG thickness panels	60 in. OC.
For 24 MSG thickness panels	48 in. OC.

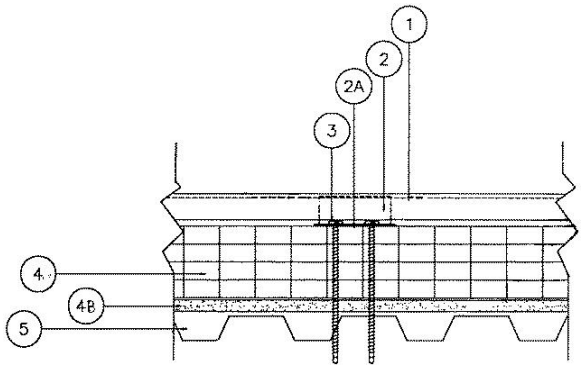
5. **Insulation — (Optional)—(Not shown) —** 3 in. thick vinyl faced blanket insulation. To be installed between metal panels (Item 1) and purlins (Item 4).

Refer to General Information, Roof Deck Constructions, for Items Not Evaluated.

*Bearing the UL Classification Mark

Construction No. 448
Uplift — Class 90
Fire Not Investigated





1. **Metal Roof Deck Panels* —** No. 24 MSG min coated steel. Max panel width 18 in., rib height 1-3/4 in. Panels continuous over three or more spans. Endlaps for panels to be overlapped 6 in. and to include back up plate (Item 2B). A bead of sealant may be used at panel ends and side joints.

METAL ROOFING SYSTEMS INC. - “MRS System 2000”

2. **Roof Deck Fasteners* — (Panel Clips) —** One piece assembly, 3-1/2 in. wide by 1-7/8 in. high. Clip spacing to be 48 in. OC.

2A. **Bearing Plate — (Optional) —** To be used in lieu of plywood or OSB (Item 4A) with rigid insulation (Item 4). Bearing plates to be 16 MSG min coated steel. Located under each clip (Item 2) for support.

2B. **Endlap Back-Up Plate — (Not shown) —** No. 16 MSG min coated steel, width of back up plate to correspond to width of panel. Two 1 in. wide by 3/4 in. long tabs are used for sliding over end of panels.

3. **Panel Fasteners — (Screws) —** Screws used to attach the panel clips and bearing plates (Items 2 and 2A) through rigid insulation and into metal deck (Item 5). Screws to be No. 14 Truss head with No. 3 Phillips drive. Length to be a min of 1/2 in. longer than thickness of rigid insulation and metal deck. Two screws per clip. Fasteners used at endlaps to be one of the following: 14x1 in. Type AB self-tapper; 14x1-1/4 in. Hex washer head self-driller; 14x1 in. Type AB Phillips stainless steel self-tapper.

4. **Rigid Insulation — (Optional) —** Foamed plastic, max thickness 4 in. Density to be a min of 2 PCF.

4A. **Plywood or OSB — (Optional) (Not Shown) —** Min APA rated plywood, exposure sheathing span C-D 40/20, nom 1/2 in. thick, or Oriented Strand Board (OSB), nom 7/16 in. thick. 4x8 ft. Sheets to be installed on top of rigid insulation (Item 4) in lieu of bearing plates (Item 2A).
4B. **Gypsum Board — (Optional) —** Any 5/8 in. thick gypsum wallboard supplied in sheets 2x4 ft to 4x12 ft. Applied perpendicular to steel roof deck direction with adhesive. End joints to occur over crests of steel roof deck and be staggered 2 ft in adjacent rows. The total cumulative thickness of the rigid board (Item 4) and the gypsum may not exceed 4 in.

5. **Metal Deck —** No. 22 MSG min thickness coated steel. Min yield strength 33 KSI. Min depth 1-1/2 in. Max pitch 6 in.

6. **Vapor Barrier — (Optional) —** Installed on top of metal deck (Item 5) or on top of gypsum wallboard (Item 4B) if used. Min 6 mil plastic sheet.

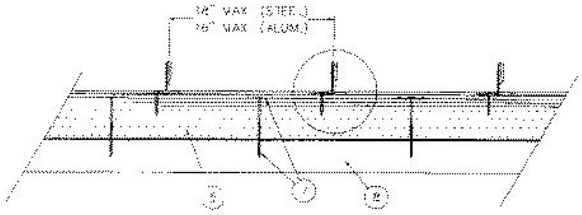
6A. **Waterproof Membrane — (Optional) (Not shown) —** Used to protect plywood or OSB (Item 4A). Installed under panels (Item 1).

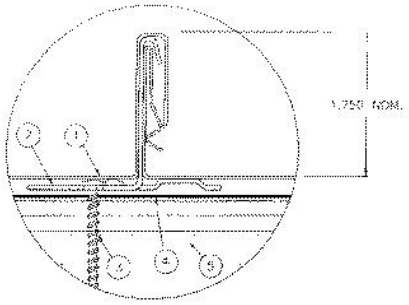
7. **Supports — (Not shown) —** Used to support metal deck, spaced per deck manufacturer's specifications.

Construction No. 508A

Uplift — Class 90

Fire Not Investigated





1. **Metal Roof Deck Panels* —** (when used with nailable insulation) No. 24 MSG min thick coated steel panels, 18 in., 16 in., 12 in. or 10 in. wide or 0.032 in. min thick aluminum, 16 in., 12 in. or 10 in. wide; 1-3/4 in. high at female side rib. Panels continuous over three or more clips with no end laps. A bead of sealant may be used at panel side joints.

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2. **Roof Deck Fasteners* (Panel Clips) —** One piece assembly, 3-1/2 in. wide, 1-7/8 in. high. No. 18 MSG min thick coated steel. Clips spaced 36 in. OC max for steel panels and 18 in. OC max for aluminum panels. Fastened to nailable insulation (Item 5).

2A. **Roof Deck Fasteners* (Panel Clips) —** One piece assembly , 3-1/2 in. wide, 1-7/8 in. high. No. 18 MSG min thick coated steel. Clips spaced 36 in. OC max for steel panels. Fastened to structural cement-Fiber unit

3. **Fasteners (Screws) —** Fasteners used to attach panel clip (Item 2) to nailable insulation (Item 5), or structural cement-fiber units (Items 5A or 5D) to be No. 10-12 by 1 in. long pancake head, No. 2 Phillips drive, A-point, coated steel screws. Min two fasteners per clip.

4. **Underlayment —** Underlayment used over nailable insulation (Item 5) to be Type 30 organic felt. Sides overlapped min 2 in. End laps per manufacturer's instructions. Felt nailed to nailable insulation with 1 in. long galvanized steel roofing nails, located in side laps and between side lap per manufacturer's instructions. Nail spacing to be max 12 in. OC at the side lap and max 24 in. OC in interior rows.

5. **Nailable Insulation —** Consisting of 1 in. min. to 3-1/2 in. max thick Classified polysisocyanurate foamed plastic with a factory laminated 7/16 in. thick APA rated O.S.B. Density of foamed plastic to be 2 pcf.

5A. **Structural Cement-Fiber Unit (Substructure) —** (Not Shown) (used in lieu of Nailable Insulation (Item 5) Consists of a minimum 5 in. thick composite structural cement-fiber units with foamed plastic core of a minimum 0.95 PCF density expanded polystyrene and 7/16 in OSB structural use panels on one face. All transverse butt joints are to occur over structural support. Unit will be designated as plank (tongue and groove) when used without truss tees (Item 5B). Unit will be designated as tile (rabbetted) when used with truss tees.

5B. **Truss Tee —** (Optional) (Not Shown) Minimum size to be 5-6-17-2. Maximum spacing to be 48-1/4 in. OC. Tees to be welded to structural support (Item 6) with a 3/4 in. fillet weld on both sides of tee.

5C. **Tectum Grout —** (Optional) (Not Shown) Used with truss tee (Item 5B) and tile (rabbetted) type substructure (Item 5A). Grout to fill void between substructure tiles around and above truss tee.

5D. **Structural Cement-Fiber Unit (Substructure) —** (Not Shown) (May be used in lieu of Item 5A) Consists of a minimum 5 in. thick composite structural cement-fiber units with foamed plastic core of a minimum 1.5 PCF density expanded polystyrene 7/16 in OSB structural use panels on one face. All transverse butt joints are to occur over structural support. Unit will be designated as plank (tongue and groove) when used without truss tees (Item 5B). Unit will be designated as tile (rabbetted) when used with truss tees.

6. **Supports (Purlins) —** (Not shown) — Purlins used for liner panel (Item 8) support to be cold formed steel sections. As alternatives, structural steel components (hot rolled beams, channels, open web joists, etc.) may be used. Min gauge and yield to depend on design considerations for uplift loading with max spacing to be 6 ft OC. As alternatives, structural steel components (hot rolled beams, channels, open web joists, etc.) may be used. Size and spacing of structural components to depend on design considerations.

7. **Fasteners (Screws) —** Fasteners used to attach nailable insulation (Item 5) to liner panel (Item 8) to be No. 11-13, No. 3 Phillips drive, truss head, painted steel screws. Length to depend on overall thickness of deck and to penetrate steel deck 1/2 in. min.

A 2 in. diameter formed pressure plate fabricated from No. 22 MSG coated steel to be used with each screw. Fasteners located in three rows along the 8 ft length of the nailable insulation beginning 6 in. from the 8 ft edges with a row down the center and spaced 21 in. OC beginning 6 in. from the 4 ft edges. A total of 15 fasteners used for each 4 by 8 ft board.

Fasteners used to attach Structural Cement Fiber Units (Items 5A or 5D) to structural support (Item 6) to be minimum 6 in. long, No. 14 screw with 5/8 in. diameter head. Fasteners are spaced a maximum of 12 in. OC at each joist along butt end. Pre-drilling with a 3/16 in. bit for steel up to 1/8 in. thick or with a 7/32 in. bit for steel greater than 1/8 in. thick when required.

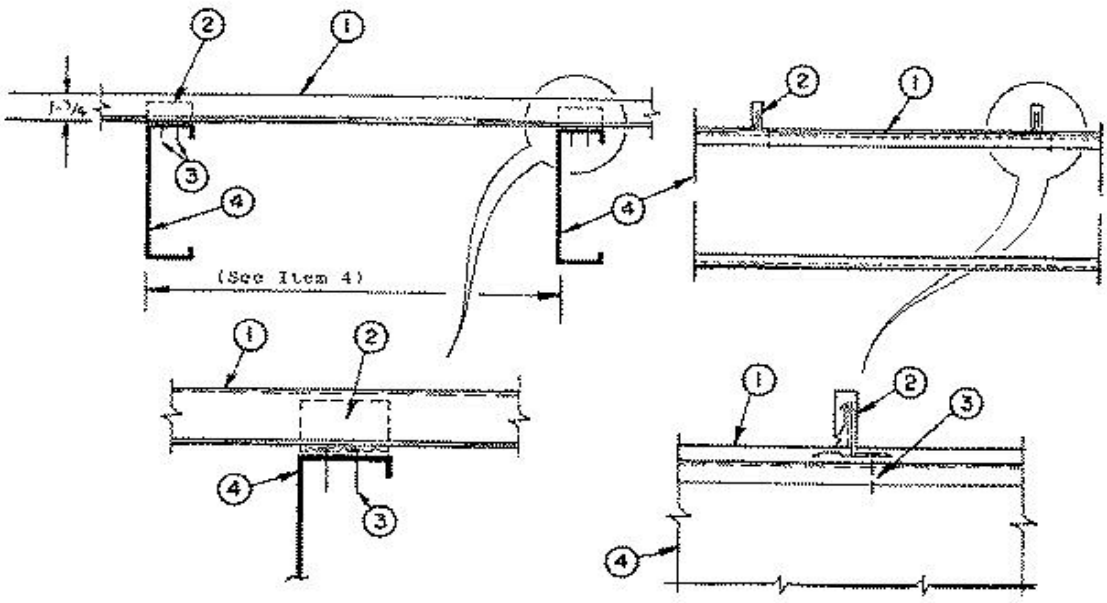
8. **Liner Panel (Steel Deck) —** (Optional when structural cement fiber units (items 5A or 5B) are used) No. 22 MSG min thick coated steel. Min depth 1-1/2 in., max pitch 6 in. fabricated to various profiles. Min yield strength 33,000 psi. Fastened to supports (Item 6) with fastener type and spacing per liner panel manufacturers instructions for uplift loading.

9. **Gypsum Board —** (Optional) (Not shown) — Max thick 5/8 in. supplied in 4 by 8 ft sheets. Butt joints located over crests of metal roof deck panel (Item 1). Fastened to panel with same fasteners used for nailable insulation (Item 5).

Refer to General Information, Roof Deck Construction (Roofing Materials and Systems Directory) for items not evaluated.

*Bearing the UL Classification Mark

Construction No. 543
Uplift – Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG (minimum) thickness coated steel. Maximum panel width 18 inches by 1-3/4 inches high at the ribs. Panels continous over two or more spans with no end laps. A bead of sealant may be used at the panel side joint.

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2. **Roof Deck Fasteners*—(Panel Clips) —** One piece assembly, 3-1/2 inches wide, 1-7/8 inches high. Minimum thickness No. 18 MSG. One clip located at each purlin intersection.

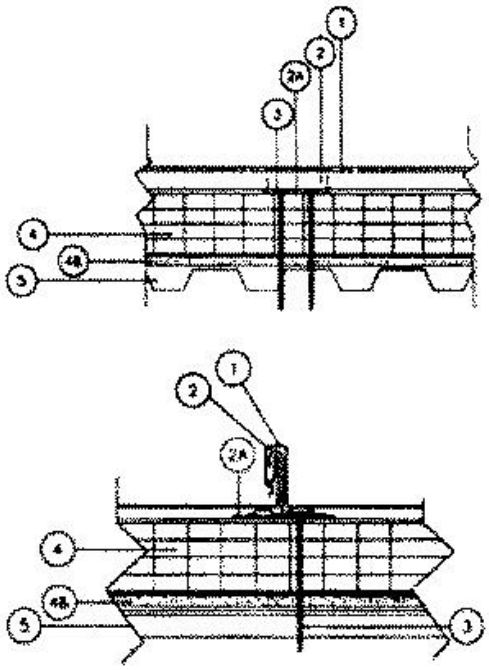
3. **Fasteners (screws) —** Fasteners used to attach panel clips (Item No. 2) to purlins to be No 10-16 by 1 inch long plated steel pancake head No. 2 Phillips drive with a No. 3 self-drilling point. Two screws per clip.

4. **Purlins —** No. 16 MSG minimum thickness steel with a minimum yield strength of 50,000 psi. Purlin spacing as follows:
a) 48 inch purlin spacing for class 90 rating for No. 24 MSG panels in all widths.
b) 60 inch purlin spacing for class 90 rating for No. 22 MSG 12 inch wide panels only.
c) 60 inch purlin spacing for class 60 rating for No. 22 MSG panels in all widths.

5. **Insulation —** (optional)-Any compressible blanket insulation, 3 inches max. thickness when located between panels (Item No. 1) and purlin (Item No. 4).

*Bearing the UL Classification Mark

Construction No. 544
Uplift – Class 90 Fire Not Investigated



1. **Metal Roof Deck Panels* —** No. 24 MSG min. Coated steel. Max. panel width 18 inches and rib height 1-3/4 inches. Panels continuous over two or more spans. Endlap for panels to be overlapped 6 in. A bead of sealant may be used at panel ends and side joints.

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2. **Roof Deck Fasteners*—(Panel Clips) —** One piece assembly, 3-1/2 inches wide, 1-7/8 inches high. Minimum thickness No. 18 MSG. One clip to be used at each purlin. Maximum clip spacing to be 48 inches O.C. Clips to interface with bearing plates (Item No. 2A).

2A. **Bearing Plate —** -No. 24 MSG minimum gauge coated steel, 5 inches wide by 3-7/8 inches long (50,000 psi minimum yield strength).

3. **Panel Fasteners (screws) —** Fasteners used to attach panel clips (Item No. 2) and bearing plates (Item No. 2A) through rigid board insulation (Item No. 4), light gauge steel deck (Item No. 5) and into purlins (Item No.7) to be No. 14 self-tapper. Two screws per clip to be used. Length to be a minimum of 1/2 inch longer than the combined thickness of the liner panel (Item No. 5), rigid insulation (Item No. 4), gypsum wall board (Item No. 4B) and plywood or oriented strand board (Item No. 4A).

4. **Foamed Plastic-(rigid insulation) —** Minimum thickness 1 inch, maximum thickness 6 inches. Density to be a minimum of 2 pcf.

4A. **Plywood or OSB —** (optional)—(not shown)-Minimum APA rated plywood or Oriented Strand Board (OSB), nominal thickness 1/2 inch. To be installed over Rigid Board (Item No. 4) in lieu of bearing plates (Item No. 2A).

4B. **Gypsum Wallboard —** (optional)—(Any 5/8 inch thick gypsum wallboard supplied in sheets 2x4 to 4x12 foot. Applied with adhesive perpendicular to steel liner panel (Item No. 5). End joints to occur over crests of steel liner panel (Item No. 5) and be staggered 2 foot in adjacent rows. The total cumulative thickness of the rigid board (Item No. 4), plywood/OSB (Item No. 4A) and gypsum board (Item No. 4B) may not exceed 6 inches.

5. **Liner Panel —** (optional)-No. 29 MSG minimum steel. Minimum yield strength 80,000 psi, minimum depth 9/16 inches, maximum pitch 2.6667 inches O.C.

6. **Underlayment —** (optional) (Not Shown) —Any suitable membrane to protect substructure (Item 4A).

7. **Supports (Purlins) —** (not shown)-No. 16 MSG minimum thickness coated steel with a minimum yield strength of 50,000 psi. Or minimum "H" series open-web joists. Maximum spacing "48" O.C.

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