

TGKX.238 - Roof Deck Constructions

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

Roof Deck Constructions

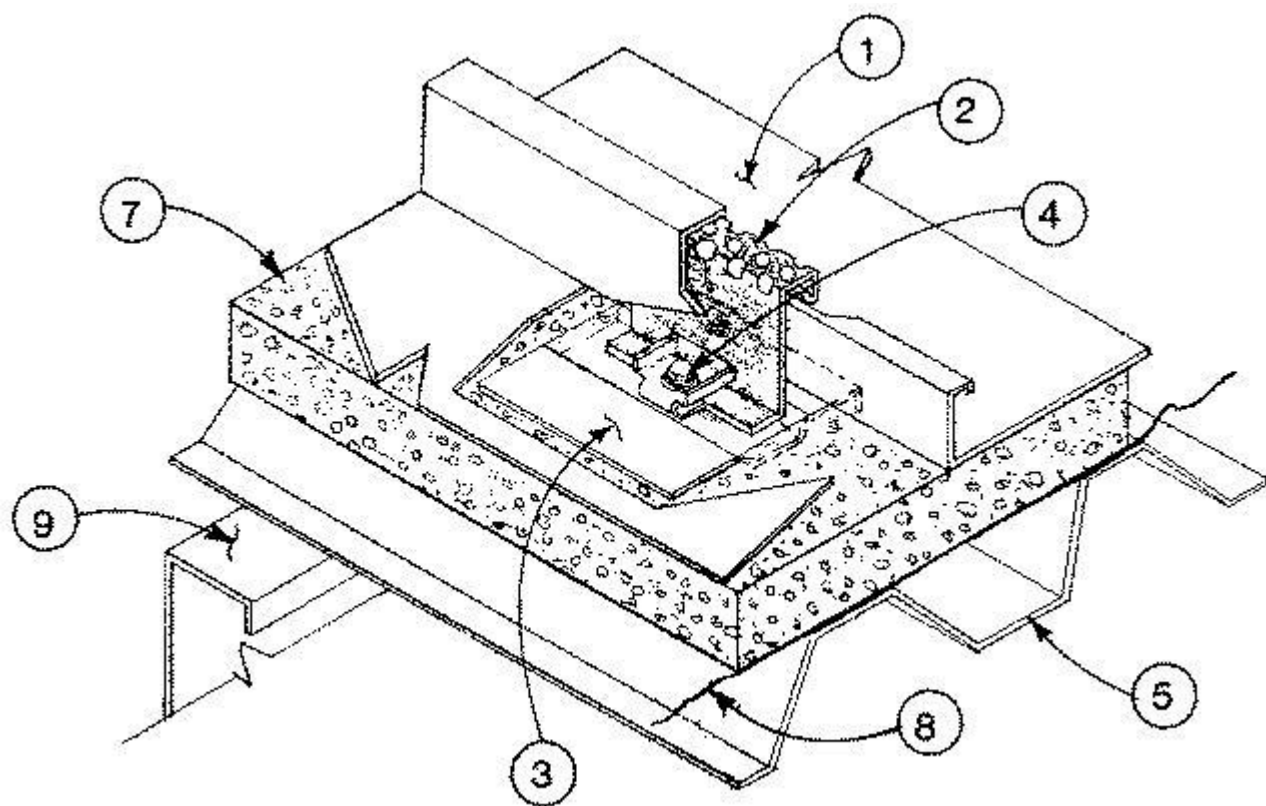
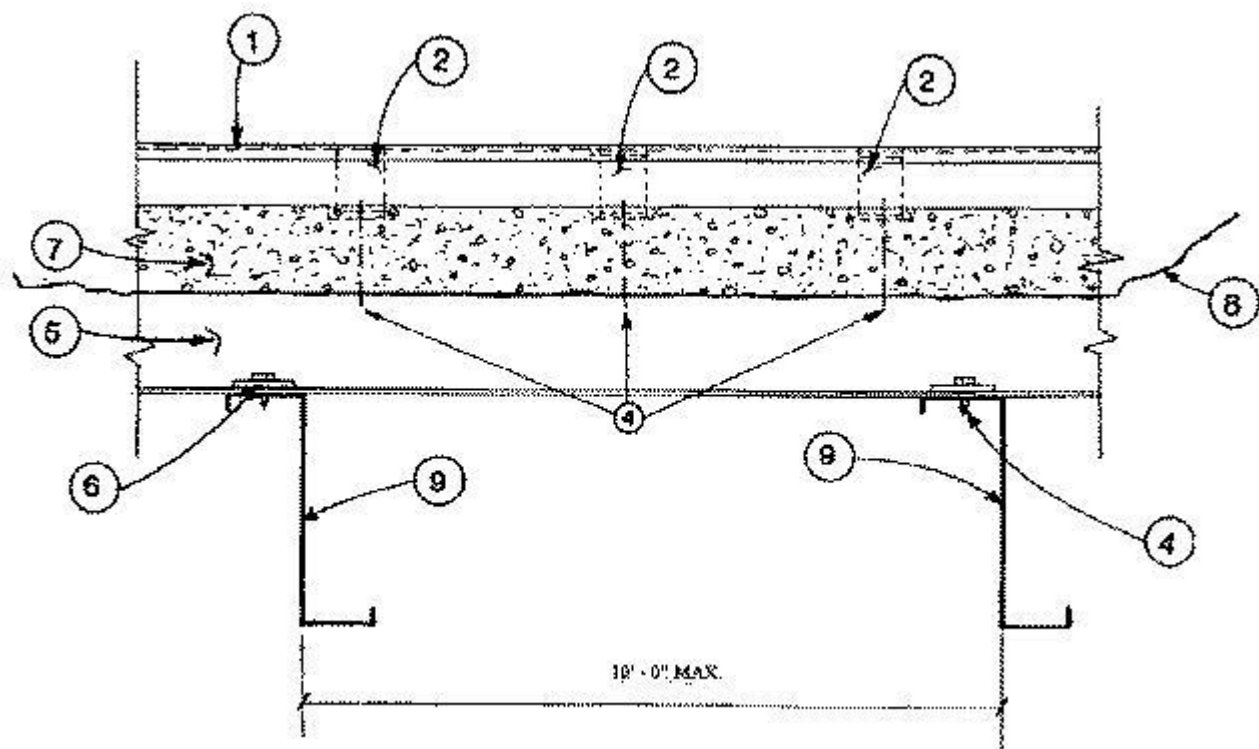
[See General Information for Roof Deck Constructions](#)

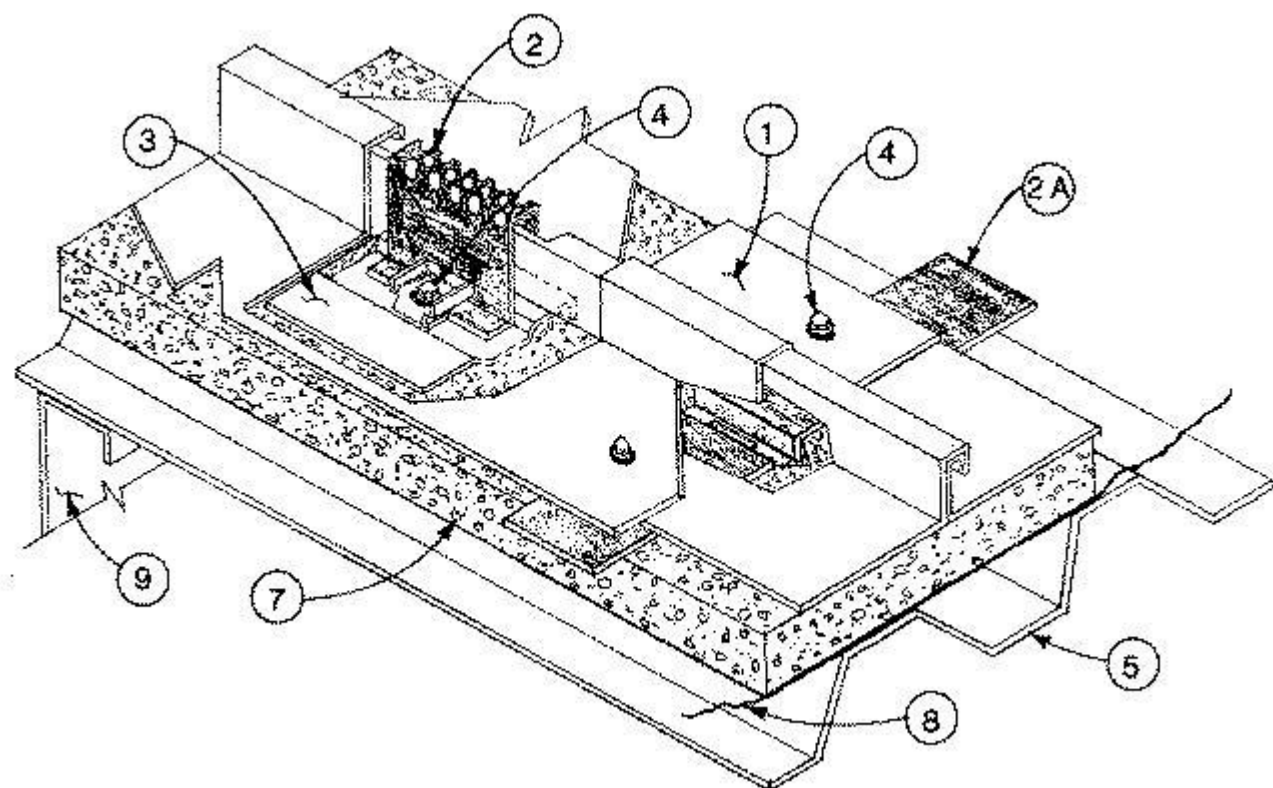
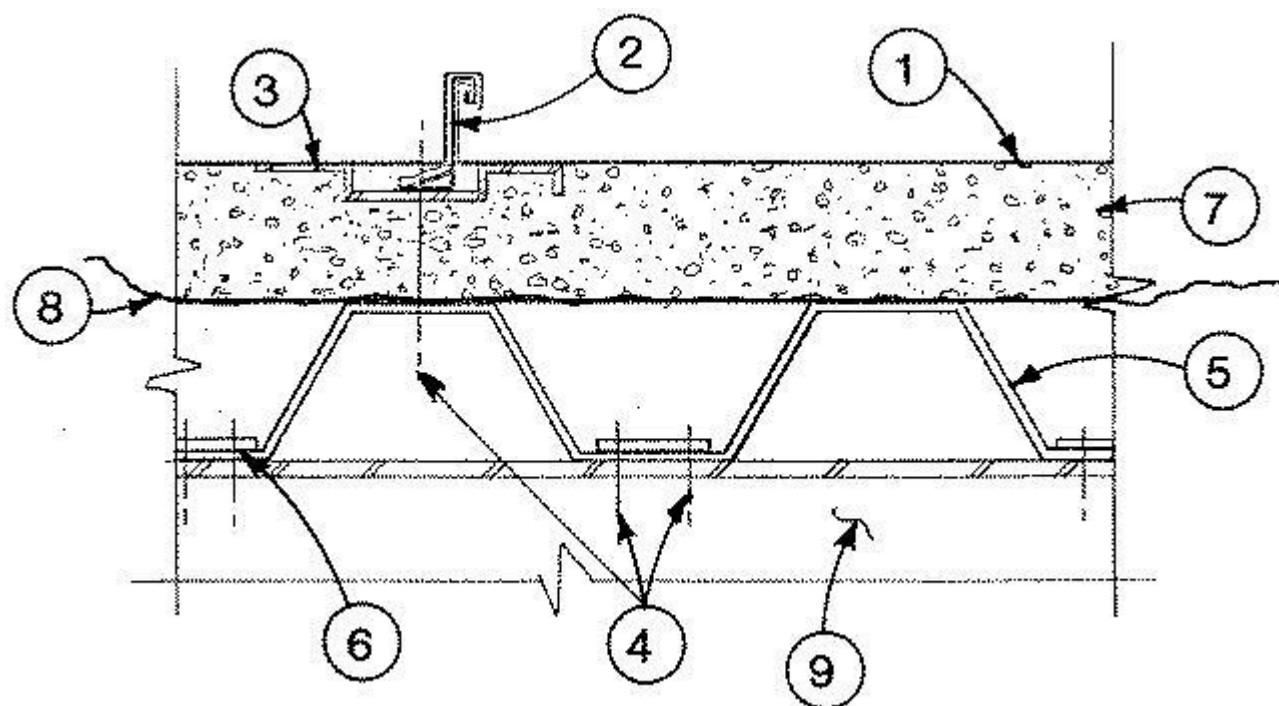
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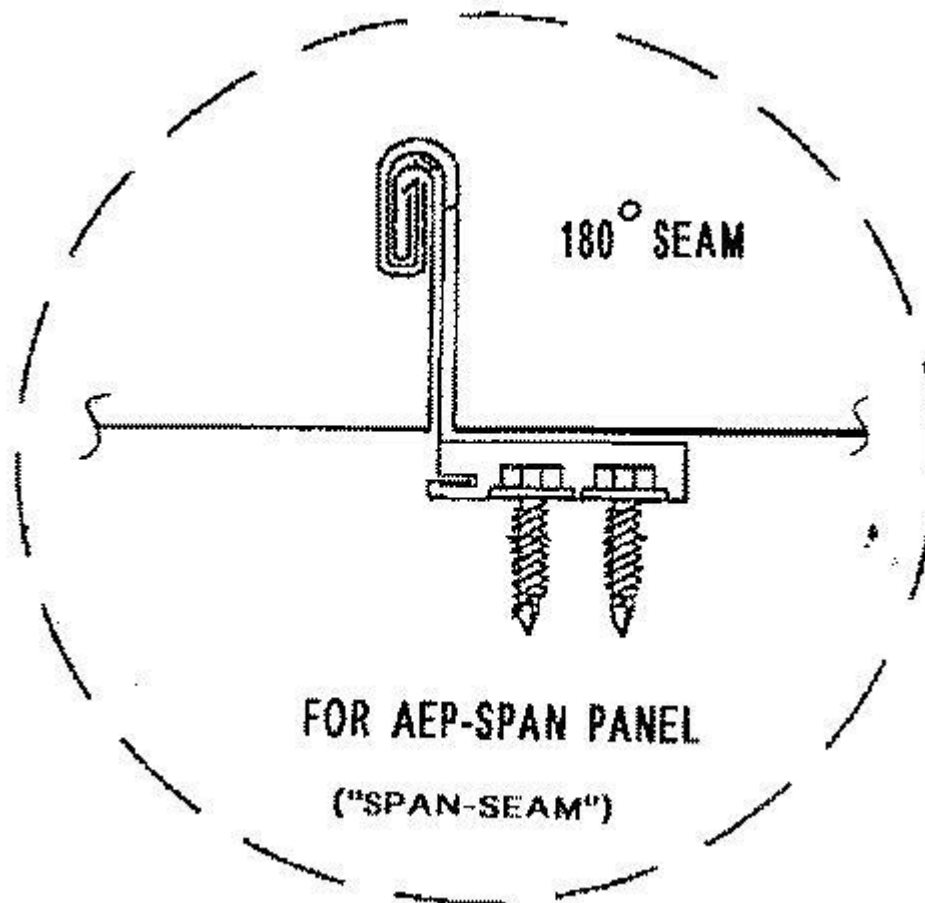
July 28, 2020

Uplift — Class 90

Fire Not Investigated







1. **Metal Roof Deck Panels*** — No. 24 MSG minimum coated steel. Panels 16 in. wide, 2 in. high at side ribs. Panels continuous over two or more spans. End laps to occur near panel clip locations and to include end lap back up plate (Item 2A). Ends of panels overlapped 6 in. Side laps to be tightened and crimped with a special motorized crimping machine at a maximum 45 degree angle unless indicated in the individual panels in this item. Crimping process to include tabs of panel clips (Item 2). A bead of sealing compound may be used at panel end laps and side joints.

A-LERT ROOF SYSTEMS ([View Classification](#)) — "A-Lert Loc"

ADVANCED ROOFING TECHNOLOGY INC ([View Classification](#)) — "ARTK 12" and "ARTK 16"

AEGIS ROOFING COMPANY ([View Classification](#)) — "Aegis 50 Architectural Profile"

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "Span-Lok" or "Span-Lok HP" (90° Seam) or "SpanSeam" (180° Seam)

AMERICAN BUILDINGS CO ([View Classification](#)) — "Loc-Seam" (90° Seam), "Loc-Seam 360" (180° Seam)

ARCHITECTURAL METAL SOLUTIONS ([View Classification](#)) — "Armor-Lock"

ARCHITECTURAL SHEETMETAL PRODUCTS INC ([View Classification](#)) — "ASP ML-200"

BAKER ROOFING INC ([View Classification](#)) — "2 in. Mechanical Seamed"

BUTLER MANUFACTURING, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — "VSR11"

CENTURION INDUSTRIES INC, DBA TFC CANOPY ([View Classification](#)) — "Centurion 1624M"

CONSTRUCTION METAL PRODUCTS INC ([View Classification](#)) — "CMP Series 2500"

CUSTOM-BILT METALS ([View Classification](#)) — "CB-2000"

DREXEL METALS INC ([View Classification](#)) — "DMC 200S"

DREXEL METALS, INC. ([View Classification](#)) — "Met-Fab III"

EAST TEXAS ARCHITECTURAL SHEETMETAL L L C, DBA ETAS INC ([View Classification](#)) — "2" SPANLOCK"

ENGLERT INC ([View Classification](#)) — "Series 2500"

FABRAL INC ([View Classification](#)) — "Power Seam"

H&H METAL PRODUCTS INC ([View Classification](#)) — "Uni-SeamLoc" (180° Seam)

HPM BUILDING SUPPLY ([View Classification](#)) — "Custom-Lock 2"

KNUDSON MFG INC ([View Classification](#)) — "ULTRALOK"

LAWMAN HEATING & COOLING INC ([View Classification](#)) — "SS210A"

METAL PANELS INC ([View Classification](#)) — "SSLF2A"

METAL PANEL SYSTEMS INC ([View Classification](#)) — "MP-200" or "UC6"

METAL ROOFING SYSTEMS INC ([View Classification](#)) — "MRS System 2500"

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — "T-Span" or "T-Span 180" (180° Seam)

METALLION INDUSTRIES INC ([View Classification](#)) — "MI200" or "MI210"

MORIN CORP ([View Classification](#)) — "SLR-12", "SLR-14", "SLR-16" (90° or 180° Seam)

NEW TECH MACHINERY CORP ([View Classification](#)) — "SS210A"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "VR16 II-90" or "VR16 II-360"

NU-RAY METALS ([View Classification](#)) — "NRM-2200"

PMRS ([View Classification](#)) — "200MS"

PREMIUM PANELS INC ([View Classification](#)) — "Premium Lock 210A" or "P.L. 210A"

RPR INC, DBA RAIN PROOF ROOFING ([View Classification](#)) — "RP210"

ROLLFAB METAL BUILDING PRODUCTS ([View Classification](#)) — "MS-200HP/90" and "MS-200HP/180"

ROOF WORKS FABRICATING L L C ([View Classification](#)) — "SS210"

ROOFMASTERS ROOFING & SHEET METAL CO INC ([View Classification](#)) — "Loc Master"

SAN ANTONIO QUALITY METALS ([View Classification](#)) — "ML-200"

SHEFFIELD METALS INTERNATIONAL ([View Classification](#)) — "SMI 2" A Mechanical Seam"

STORAGE STRUCTURES INC. ([View Classification](#)) — "SS210A"

STREAMLINE ROOFING & CONSTRUCTION INC ([View Classification](#)) — "200MS"

SUPERIOR METAL SYSTEMS INC ([View Classification](#)) — "SMS 416"

TAYLOR METAL INC, DBA TAYLOR METAL PRODUCTS ([View Classification](#)) — "Mechanical Seam 200"

THE BRYER CO ([View Classification](#)) — "TBC-SUPERSEAM"

THREE DIAMOND FAB LLC ([View Classification](#)) — "TDF-SSC200"

UNION CORRUGATING CO ([View Classification](#)) — "ML200"

U S METALS L L C ([View Classification](#)) — "US-210A"

VARCO PRUDEN BUILDINGS, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — "SLR II"

WESTERN STATES METAL ROOFING ([View Classification](#)) — "MS2 ®"

ZIMMERMAN METALS INC ([View Classification](#)) — "SS2000"

2. Roof Deck Fasteners — (Panel Clips) — Two part assembly: Base, 1 in. wide approximately 1-1/4 in. long with upper segment folded over lower end of tab. Fabricated from 0.050 in. thick coated or stainless steel. Upper tab 3 in. wide, maximum tab height 3-1/2 in. with lower end formed to engage base. Fabricated from 0.023 in. thick coated or stainless steel.

BUILDING PRODUCTS DEVELOPMENT INC ([View Classification](#)) — "NC3300", "NCF-3300", "NCF-3300-SS" Series Clip

2A. Roof Deck Fasteners — (Panel Clips) — No. 24 MSG minimum gauge coated steel with a separately formed base fabricated of No. 18 MSG minimum gauge coated steel. One clip to be used per panel at each purlin.

AMERICAN BUILDINGS CO ([View Classification](#)) — "LSBC-1" or "Loc-Seam Expansion Clip"

2B. Roof Deck Fasteners (End Lap Back-Up Plate) — (Not Shown) — No. 18 MSG minimum gauge coated steel. maximum length 48 in., width 6-1/2 in.

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — "T-Span Clip"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "NBS VR16 II BC", "NBS VR16 II Sliding" or "NBS VR16 II MD"

2C. Roof Deck Fasteners — (Panel Clips) — Two types, both two piece assemblies. Type 330 base approximately 1.88 in. by 1.70 in.; Type 330B base approximately 1.11 in. by 2.00 in. Both types fabricated from No. 16 MSG coated steel and formed to fold over upper tab. Type 330 upper tab 4.30 in. wide and 2.91 in. high maximum. Type 330B upper tab 4.30 in. wide and 3.34 in. high maximum. Both types formed to engage base. Clips spaced 48 in. maximum.

MORIN CORP ([View Classification](#)) — "SLR-330 Clip" (for 45° seam)

MORIN CORP ([View Classification](#)) — "SLR-330B Clip" (for 90° & 180° seam)

3. Roof Deck Fastener* (Bearing Clip) — No. 18 MSG minimum gauge coated steel; 3 in. wide by 3-1/4 in. long with 3/8 in. legs. Used under Panel Clips (Item 2, 2A and 2C) over purlins and rigid insulation. Three 1/4 in. diameter guide holes located in base.

3A. Roof Deck Fasteners* (Bearing Plate) — (Not Shown) — (Optional) — No. 24 MSG minimum gauge coated steel. 4-5/8 in. wide, 6 in. long. Used under panel clips over rigid insulation.

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "SL Bearing Plate"

4. Fasteners (Screws) — Fasteners used to attach the bearing plates to the liner panels to be No. 11 by 3-3/4 in. long self-drilling, stand-off plated steel, flat torx-head screws. Three fasteners per bearing plate used, driven into liner panel. Fasteners used to attach panel clips (Item No. 2) to the bearing plates (Item 3) to be No. 18 by 1 in. long self-drilling, self-tapping, hex-washer-head, plated steel screws. One screw used for each panel clip. Fasteners used to attach the liner panels to the purlin supports to be No. 12-14 by 1-1/4 in. self-drilling, self-tapping, hex-head, plated steel screws with a separate 5/8 in. diameter steel washer and a neoprene sealing washer. Two fasteners to be used at each support with fasteners located in every valley. Fasteners used at liner panel side laps to be the same type as liner panel screws and spaced 20 in. OC. Fasteners used at end laps to be 1/4-10 by 1 in. long self-drilling, self-tapping, hex-head, plated steel screws with 1/2 in. OD. metal backed sealing washers. Spacing to be in a 1, 3, 3-1/2, 3-1/2, 3, 1 in. pattern.

5. Liner Panel — The liner panel to be 3 in. deep and fabricated from No. 22 MSG minimum steel. Top of crests to be 5-1/2 in. wide, valleys to be 2-1/2 in. wide at top. Yield strength to be minimum 33,000 psi. Liner panel to be fastened to supports with screws indicated under Item 4 or with welds and weld washers of type indicated by manufacturer of liner panel. Welds to be located in every valley.

6. Fastener Reinforcement (Bearing Plate) — The reinforcements used with the screws attaching the liner panels to the purlins to be 0.125 in. minimum thick steel and to have an area of approximately 2-in.².

7. Foamed Plastic — (Rigid Insulation) — — Supplied in 4 ft wide sheets. Minimum thickness to be 1 in. Density to be minimum of 2.0 PCF or see products Classified under Foamed Plastic (TJBX).

8. Vapor Barrier — Used between the liner panel and the foamed plastic to be a 6 mil plastic sheeting.

9. Purlins — No. 12 MSG minimum gauge steel (minimum yield strength 40,000 psi) or minimum type H open web joists. Refer to General Information, Roof Deck Construction, (Roofing Materials and Systems Directory) for Items not evaluated.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2020-07-28

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product.

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TGKX.238A - Roof Deck Constructions

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- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
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Roof Deck Constructions

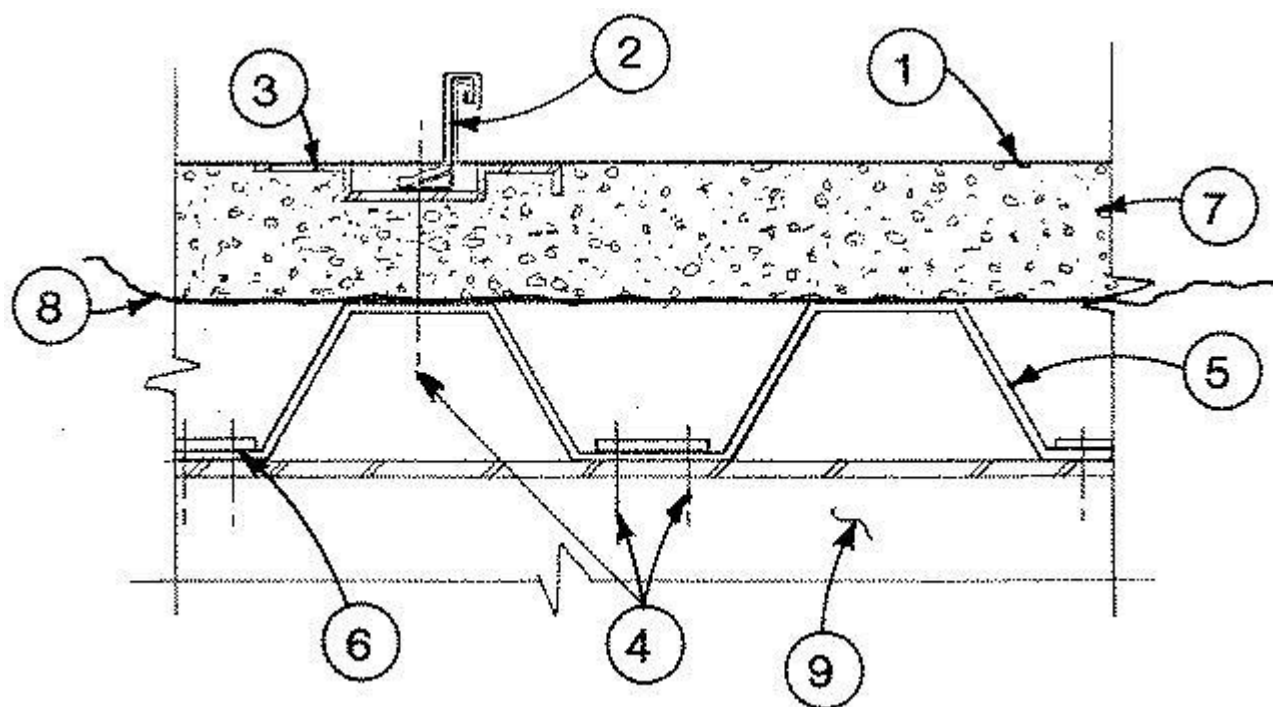
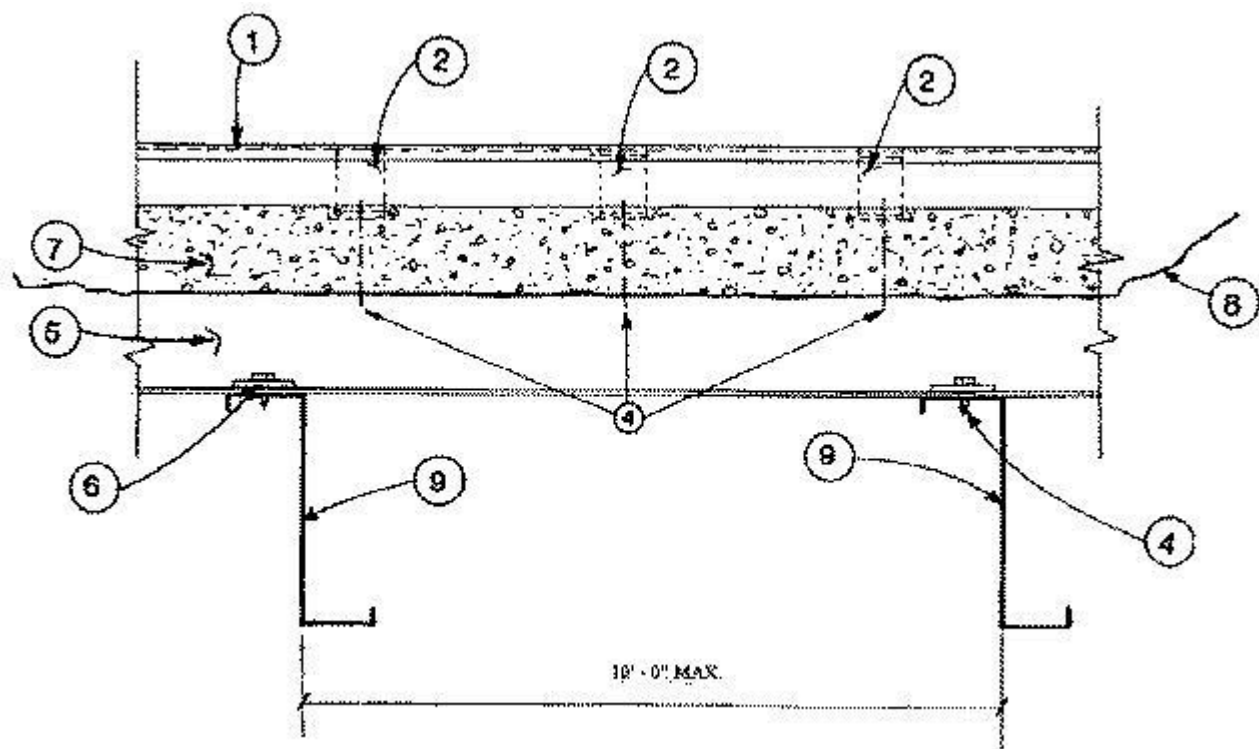
[See General Information for Roof Deck Constructions](#)

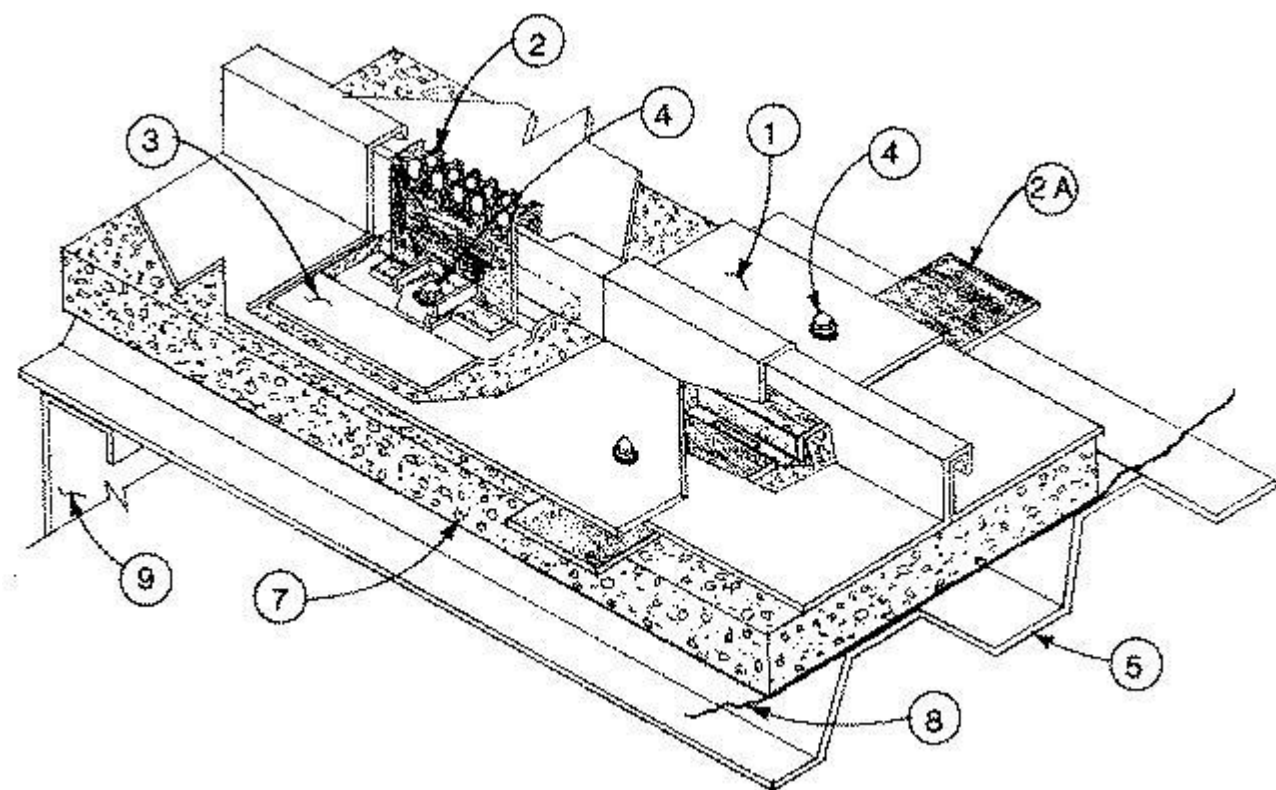
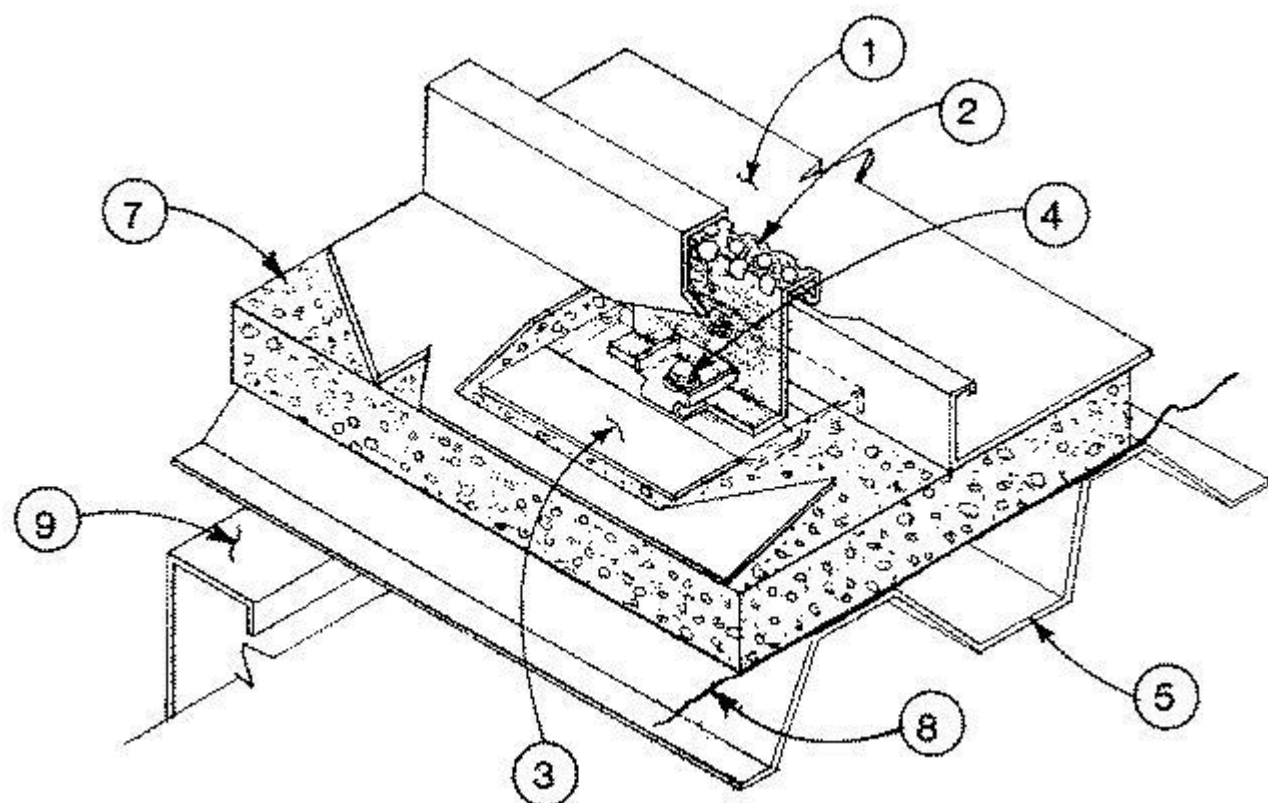
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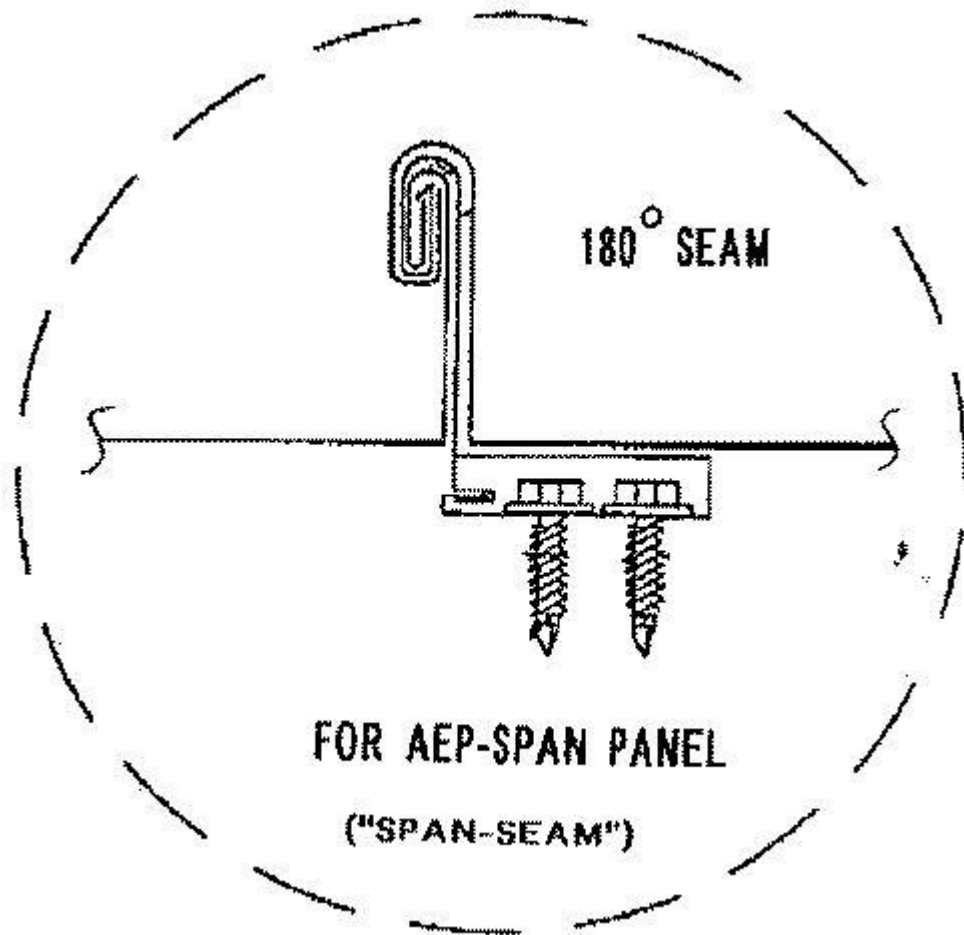
July 28, 2020

Uplift — Class 90

Fire Not Investigated







1. **Metal Roof Deck Panels*** — No. 24 MSG minimum coated steel. Panels 16 in. wide, 2 in. high at side ribs. Panels continuous over two or more spans. End laps to occur near panel clip locations and to include end lap back-up plate (Item 2A). Ends of panels overlapped 6 in. Side laps to be tightened and crimped with a special motorized crimping machine at a maximum 45 degree angle unless indicated in the individual panels in this item. Crimping process to include tabs of panel clips (Item 2). A bead of sealing compound may be used at panel end laps and side joints.

A-LERT ROOF SYSTEMS ([View Classification](#)) — "A-Lert Loc"

ADVANCED ROOFING TECHNOLOGY INC ([View Classification](#)) — "ARTK 12" and "ARTK 16"

AEGIS ROOFING COMPANY ([View Classification](#)) — "Aegis 50 Architectural Profile"

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "Span-Lok" or "Span-Lok HP" (90° Seam) or "SpanSeam" (180° Seam)

AMERICAN BUILDINGS CO ([View Classification](#)) — "Loc-Seam" (90° Seam), "Loc-Seam 360" (180° Seam)

ARCHITECTURAL METAL SOLUTIONS ([View Classification](#)) — "Armor-Lock"

BAKER ROOFING INC ([View Classification](#)) — "2 in. Mechanical Seamed"

BUTLER MANUFACTURING, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — "VSR11"

CENTURION INDUSTRIES INC, DBA TFC CANOPY ([View Classification](#)) — "Centurion 1624M"

CONSTRUCTION METAL PRODUCTS INC ([View Classification](#)) — "CMP Series 2500"

CUSTOM-BILT METALS ([View Classification](#)) — "CB-2000"

DREXEL METALS INC ([View Classification](#)) — "DMC 200S"

DREXEL METALS, INC. ([View Classification](#)) — "Met-Fab III"

EAST TEXAS ARCHITECTURAL SHEETMETAL L L C, DBA ETAS INC ([View Classification](#)) — "2" SPANLOCK"

ENGLERT INC ([View Classification](#)) — "Series 2500"

FABRAL INC ([View Classification](#)) — "PowerSeam"

H&H METAL PRODUCTS INC ([View Classification](#)) — "Uni-SeamLoc" (180° Seam)

HPM BUILDING SUPPLY ([View Classification](#)) — "Custom-Lock 2"

KNUDSON MFG INC ([View Classification](#)) — "ULTRALOK"

LAWMAN HEATING & COOLING INC ([View Classification](#)) — "SS210A"

MCELROY METAL MILL INC ([View Classification](#)) — "ABC JSM 200"

METAL PANELS INC ([View Classification](#)) — "SSLF2A"

METAL PANEL SYSTEMS INC ([View Classification](#)) — "MP-200" or "UC6"

METAL ROOFING SYSTEMS INC ([View Classification](#)) — "MRS System 2500"

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — T-Span or "T-Span 180" (180° Seam)

MORIN CORP ([View Classification](#)) — "SLR-12", "SLR-14", "SLR-16" (90° or 180° Seam)

NEW TECH MACHINERY CORP ([View Classification](#)) — "SS210A"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "VR16 II-90" or "VR16 II-360"

NU-RAY METALS ([View Classification](#)) — "NRM-2200"

PMRS ([View Classification](#)) — "200MS"

PREMIUM PANELS INC ([View Classification](#)) — "Premium Lock 210A" or "P.L. 210A"

RPR INC, DBA RAIN PROOF ROOFING ([View Classification](#)) — "RP210"

ROLLFAB METAL BUILDING PRODUCTS ([View Classification](#)) — "MS-200HP/90" and "MS-200HP/180"

ROOF WORKS FABRICATING L L C ([View Classification](#)) — "SS210"

ROOFMASTERS ROOFING & SHEET METAL CO INC ([View Classification](#)) — "Loc Master"

SAN ANTONIO QUALITY METALS ([View Classification](#)) — "ML-200"

SHEFFIELD METALS INTERNATIONAL ([View Classification](#)) — "SMI 2" A Mechanical Seam"

STORAGE STRUCTURES INC. ([View Classification](#)) — "SS210A"

STREAMLINE ROOFING & CONSTRUCTION INC ([View Classification](#)) — "200MS"

SUPERIOR METAL SYSTEMS INC ([View Classification](#)) — "SMS 416"

TAYLOR METAL INC, DBA TAYLOR METAL PRODUCTS ([View Classification](#)) — "Mechanical Seam 200"

THE BRYER CO ([View Classification](#)) — "TBC-SUPERSEAM"

THREE DIAMOND FAB LLC ([View Classification](#)) — "TDF-SSC200"

UNION CORRUGATING CO ([View Classification](#)) — "ML200"

U S METALS L L C ([View Classification](#)) — "US-210A"

VARCO PRUDEN BUILDINGS, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — "SLR II"

WESTERN STATES METAL ROOFING ([View Classification](#)) — "MS2®"

ZIMMERMAN METALS INC ([View Classification](#)) — "SS2000"

2. Roof Deck Fasteners* (Panel Clips) — Two part assembly: Base, 1 in. wide approximately 1-1/4 in. long with upper segment folded over lower end of tab. Fabricated from 0.050 in. thick coated or stainless steel. Upper tab 3 in. wide, maximum tab height 3-1/2 in. with lower end formed to engage base. Fabricated from 0.023 in. thick coated or stainless steel. Clips spaced 30 in. OC.

BUILDING PRODUCTS DEVELOPMENT INC ([View Classification](#)) — "NC3300", "NCF-3300", "NCF-3300-SS" Series Clip

MCELROY METAL MILL INC ([View Classification](#)) — "ABC JSM 200 Utility"

2A. Roof Deck Fasteners* (End Lap Back-Up Plate) — No. 18 MSG minimum gauge coated steel. Maximum length 48 in., width 6-1/2 in.

2B. Roof Deck Fasteners* (Panel Clips) — (Not Shown) — Two part assembly. A base fabricated from No. 16 MSG minimum thick coated steel and a tab fabricated from No. 22 MSG minimum thick coated steel. Clips spaced 30 in. OC maximum. Clips fastened to liner panel (Item 5). Two screws used per clip. (See Item 4 for description of screws).

As an alternate the following described clip may be used: Two part assembly consisting of a base with a vertical leg 5 in. long and either 2 in. or 3 in. high and a tapered upper tab maximum 3 in. long formed to interlock with the base. Base fabricated from No. 18 MSC coated steel and to have two 1/4 in. guide holes. Upper tab fabricated from No. 25 MSC coated steel.

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "SL-2.5 in. Standard Clip", "SL-2 in. Profile Clip"

BUTLER MANUFACTURING, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — "VSR11 2.5 Clip"

FABRAL INC ([View Classification](#)) — "AMP-Loc High Fixed", "AMP-Loc Low Fixed", "AMP-Loc High Floating", "AMP-Loc Low Floating", "PowerSeam Low Floating", "PowerSeam High Floating".

VARCO PRUDEN BUILDINGS, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — "SLR11 2.5 Clip"

2C. Roof Deck Fasteners* (Back-Up Plates) — (Not Shown) — Used with AEP-Span "SL-216" panels. No. 16 MSG coated steel length 10-1/2 in., width 15-3/4 in. slipped under lower panel at end-lap. Panels fastened together at end-lap using four No. 1/4 - 14 by 1-1/8 in. long self-drilling self-tapping, hex-washer-head, plated steel screws with a 5/8 OD steel washer and a sealing washer. Screws spaced 4 in. OC beginning 2 in. from ribs.

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "SL-216 End-Lap Back-Up Plate"

2D. Roof Deck Fasteners* (Panel Clip) — (Not Shown) — Two part assembly; A base fabricated from No. 16 MSG minimum coated steel and an upper tab fabricated from No. 22 MSG minimum coated steel. Clips fastened to purlins using two fasteners per clip. See Item No. 4 for description of fasteners.

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — "T-Span Clip"

2E Roof Deck Fasteners* — (Panel Clips) — (Not Shown) — No. 22 MSG minimum coated steel. Clips located at panel sides. Guide Holes in bottom clip to accommodate two screw fasteners (Item 4).

FABRAL INC ([View Classification](#)) — "AMP-Loc Low Fixed", "AMP-Loc High Fixed".

2F. Roof Deck Fasteners (Panel Clips) — (Not Shown) — No. 24 MSG minimum gauge coated steel with a separately formed base fabricated of No. 18 MSG min gauge coated steel. One clip to be used per panel at each purlin.

AMERICAN BUILDINGS CO ([View Classification](#)) — "LSBC-1" or "Loc-Seam Expansion Clip"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "NBS VR16 II BC", "NBS VR16 II Sliding" or "NBS VR16 II MD"

SUPERIOR METAL SYSTEMS INC ([View Classification](#)) — SMS-24SSC

3. Roof Deck Fastener* (Bearing Clip) — No. 18 MSG minimum gauge coated steel; 3 in. wide by 3-1/4 in. long with 3/8 in. legs. Used under Panel Clips (Item 2, 2D, 2E and 2F) over purlins and rigid insulation. Three 1/4 in. diameter guide holes located in base.

3A. Roof Deck Fasteners* (Bearing Plate) — (Not Shown) — No. 24 MSG minimum gauge coated steel. 4-5/8 in. wide, 6 in. long used under each panel clip (Item 2B).

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "SL Bearing Plate"

4. Fasteners (Screws) — Fasteners used to attach panel clips (Item No. 2) to the liner panels (Item No. 5) to be No. 11 by minimum 3-3/4 in. long self-drilling, plated steel flat Phillips head screws. One screw used for each panel clip. Fasteners used

to be No. 12-14 by 1-1/4 in. self-drilling, self-tapping, hex-head, plated steel screws with a separate 5/8 in. diameter steel washer and a neoprene sealing washer. Two fasteners to be used at each support with fasteners located in every valley. Fasteners used at liner panel side laps to be the same type as liner panel screws and spaced 20 in. OC. Fasteners used at metal roof deck panel end laps to be 1/4-10 by 1 in. long self-drilling, self-tapping, hex-head, plated steel screws with 1/2 in. OD metal backed sealing washers. Spacing to be in a 1, 3, 3-1/2, 3-1/2, 2, 1 in. pattern.

5. **Liner Panel** — The liner panel to be minimum 1-1/2 in. deep Type A, B, F, or N Deck fabricated from No. 22 MSG minimum gauge steel. Yield strength to be minimum 33,000 psi. Liner panel to be fastened to supports with screws indicated under Item 4 or with welds and weld washers of type indicated by manufacturer of liner panel. Welds to be located in every valley.

6. **Fastener Reinforcement (Bearing Plate)** — The reinforcements used with the screws attaching the liner panels to the purlins to be 0.125 in. thick and to have an area of approximately 2-in².

7. **Foamed Plastic (Rigid Insulation)** — Supplied in 4 ft wide sheets. Minimum thickness to be 1 in. Density to be minimum of 2.0-lb/ft³ or see products Classified under Foamed Plastic (TJBX).

8. **Vapor Barrier** — Used between the liner panel and the foamed plastic to be a 6 mil thick plastic sheeting.

9. **Purlins** — No. 12 MSG minimum gauge steel (minimum yield strength 40,000 psi) or minimum Type H Open web joists. Refer to General Information, Roof Deck Construction, (On-Line Certification Directory) for Items not evaluated.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2020-07-28

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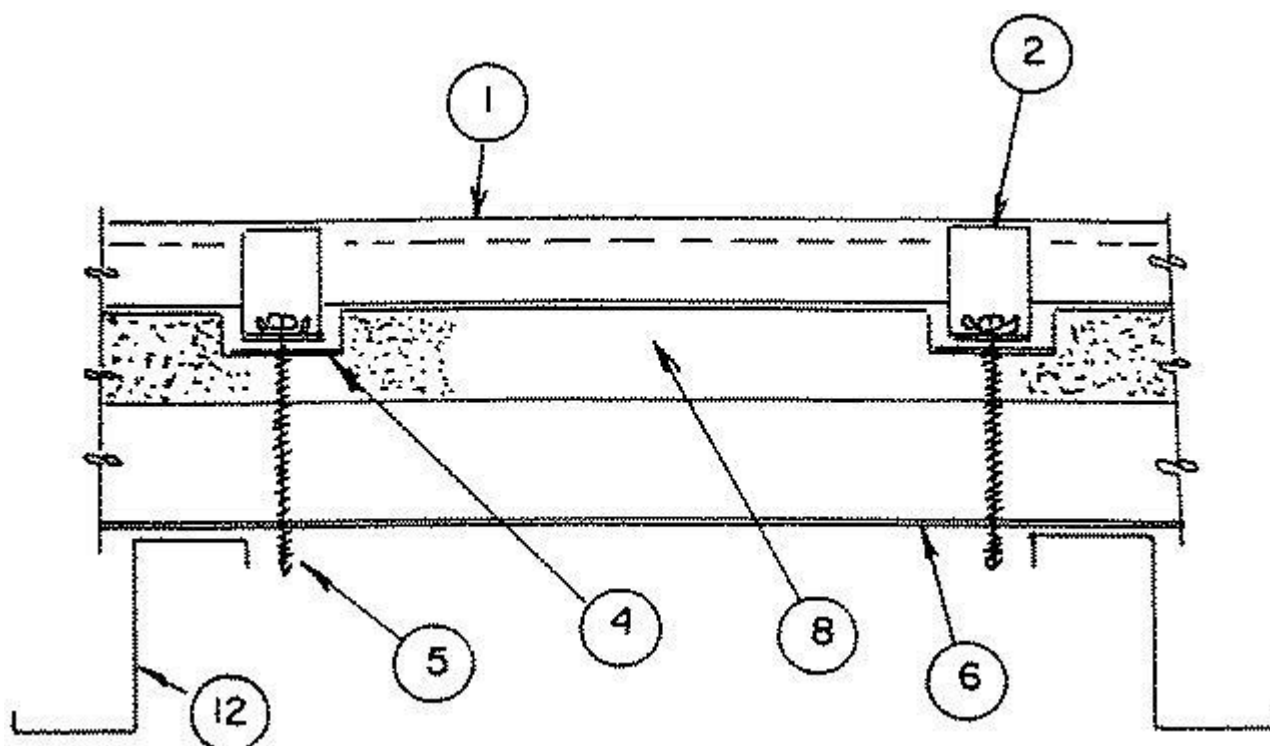
[See General Information for Roof Deck Constructions](#)

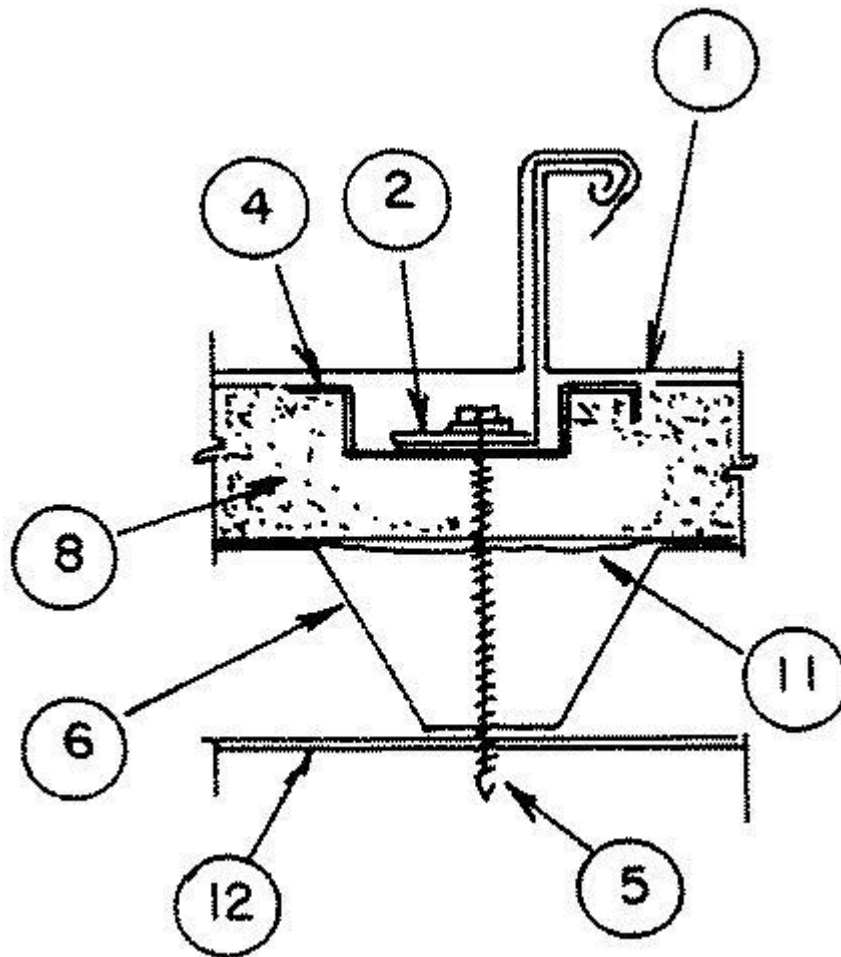
Construction No. 238B

December 05, 2019

Uplift — Class 90

Fire Not Investigated





1. Metal Roof Deck Panels* — No. 24 MSG minimum coated steel. Maximum panel width 16 in. and rib height 2 in. Panels continuous over two or more spans. Endlap for "BattenLok" or "Super-Lok" panels to be 6 in. and to include back up plate (Item 3). Endlap for "Master-Span" and "KA2000" panels to be 2 in. and to include back up plate (Item 3A). A bead of sealant may be used at panel ends and side joints. Side laps to be tightened and crimped with an electric crimping machine to an angle of 45 degree maximum unless indicated in the individual panels in this item. Crimping process to include the upper portion of panel clips (Items 2 or 2A).

A & S BUILDING SYSTEMS L P ([View Classification](#)) — " BattenLok", "BattenLok HS" or "SuperLok"

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "Span-Lok" or "Span-Lok HP" (90° Seam) or "SpanSeam" (180° Seam)

AMERICAN BUILDINGS CO ([View Classification](#)) — " Loc-Seam," (90° Seam) "Loc-Seam 360" (180° Seam)

BUTLER MANUFACTURING, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — " VSR11"

CENTRAL TEXAS METAL ROLLFORMING INC ([View Classification](#)) — " SPANLOC 200"

CHIEF INDUSTRIES INC ([View Classification](#)) — "MVF" or "MVP"

CUSTOM-BILT METALS ([View Classification](#)) — CB-2000

KIRBY BUILDING SYSTEMS INC ([View Classification](#)) — " KA2000", "RoofLok" and "RoofLok Plus"

KNUDSON MFG INC ([View Classification](#)) — " ULTRALOK"

MBCI ([View Classification](#)) — " BattenLok", "BattenLok HS" or "SuperLok"

MCELROY METAL MILL INC ([View Classification](#)) — "ABC JSM 200"

MESCO METAL BUILDINGS ([View Classification](#)) — " BattenLok", "BattenLok HS" or "SuperLok"

METAL ROOFING SYSTEMS INC ([View Classification](#)) — "MRS System 2500"

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — "T-Span" or "T-Span 180" (180° Seam)

NCI BUILDING SYSTEMS L P ([View Classification](#)) — " BattenLok", "BattenLok HS" or "SuperLok"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "VR16 II-90" or "VR16 II-360"

PETERSEN ALUMINUM CORP ([View Classification](#)) — "Tite-Loc" and "Tite-Loc Plus"

PINNACLE STRUCTURES INC ([View Classification](#)) — "PINNACLE BATTENLOK" and "PINNACLE SUPERLOK"

ROLLFAB METAL BUILDING PRODUCTS ([View Classification](#)) — "MS-200HP/90" and "MS-200HP/180"

SAN ANTONIO QUALITY METALS ([View Classification](#)) — " ML-200"

TAYLOR METAL INC, DBA TAYLOR METAL PRODUCTS ([View Classification](#)) — "MS200"

TREMCO INC ([View Classification](#)) — "TremLock VP Series II"

VARCO PRUDEN BUILDINGS, DIV OF BLUESCOPE BUILDINGS NORTH AMERICA INC ([View Classification](#)) — " SLR II"

1A. Metal Roof Deck Panels* — Panels may be physically curved at a radius of 110 ft. or greater.

A & S BUILDING SYSTEMS L P ([View Classification](#)) — " BattenLok" or "SuperLok"

AEP SPAN, DIV OF ASC PROFILES ([View Classification](#)) — "SL-216" or "SPS-216"

MBCI ([View Classification](#)) — " BattenLok" or "SuperLok"

MESCO METAL BUILDINGS ([View Classification](#)) — " BattenLok" or "SuperLok"

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — "T-Span" or "T-Span 180" (180° Seam)

NCI BUILDING SYSTEMS L P ([View Classification](#)) — " BattenLok" or "SuperLok"

PETERSEN ALUMINUM CORP ([View Classification](#)) — " Tite-Loc" and "Tite-Loc Plus"

2. Roof Deck Fasteners* (Panel Clips) — Either of the following:

Fixed Clip or Utility — One piece assembly fabricated from No. 22 MSG minimum steel, 3 in. wide. Floating Clip — two piece assembly with a base fabricated from No. 22 MSG minimum steel, 4-1/4 in. wide, and a top fabricated from No. 22 MSG steel, 4-1/4 in. wide. Clip spacing to be 48 in. O.C. maximum. Sealant may be used in the top of the clips.

BUILDING PRODUCTS DEVELOPMENT INC ([View Classification](#)) — "NC3300", "NCF-3300", "NCF-3300-SS" Series Clip

MCELROY METAL MILL INC ([View Classification](#)) — "ABC JSM 200 Utility"

NCI BUILDING SYSTEMS L P ([View Classification](#)) — "BattenLok High or Low, Fixed or Floating Clip" ; "BattenLok Utility Clip" — "SuperLok High or Low, Fixed or Floating Clip" ; "SuperLok Utility Clip" .

2A. **Roof Deck Fasteners*** — (Panel Clip) — (Not Shown) — Two part assembly; A base fabricated from No. 16 MSG minimum coated steel and upper tab fabricated from No. 22 MSG minimum coated steel. Clips fastened to purlins using two fasteners per clip. See Item No. 3 for description of fasteners.

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — " T-Span Clip"

2B. **Roof Deck Fasteners* (Panel Clips)** — (Not Shown) Used with "Tite-Loc" or "Tite-Loc Plus" Panels.

One piece assembly; 3 in. wide, approximately 2 in. high with two or three guide holes in base. Fabricated from No. 22 MSG coated steel.

PETERSEN ALUMINUM CORP ([View Classification](#)) — "Tite-Loc Utility Clip", "Tite-Loc Plus Utility Clip"

One piece assembly; 3 in. wide, approximately 2-3/8 in. or 3 in. high, with three guide holes in base. Fabricated from No. 22 MSG coated steel.

PETERSEN ALUMINUM CORP ([View Classification](#)) — "Tite-Loc Low/High Fixed Clip", "Tite-Loc Plus Low/High Fixed Clip"

Two piece assembly; base approximately 2 in. wide, 1-11/16 in. long formed to engage upper tab. Fabricated from No. 16 MSG coated steel. Tab approximately 4-5/16 in. wide; 2-3/8 in. or 2-7/8 in. high, formed to engage base. Fabricated from No. 22 MSG coated steel. Base to have two guide holes.

PETERSEN ALUMINUM CORP ([View Classification](#)) — " Tite-Loc Sliding Clip", "Tite-Loc Plus Sliding Clip", "Tite-Loc AR Fixed Clip" and "Tite-Loc AR Sliding Clip", " Tite-Loc Plus AR Fixed Clip" and "Tite-Loc Plus AR Sliding Clip"

2C. **Roof Deck Fasteners (Panel Clips)** — (Not Shown) — No. 24 MSG minimum gauge coated steel with a separately formed base fabricated of No. 18 MSG minimum gauge coated steel. One clip to be used per panel at each purlin.

AMERICAN BUILDINGS CO ([View Classification](#)) — " LSBC-1" or "Loc-Seam Expansion Clip"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "NBS VR16 II BC", "NBS VR16 II Sliding" or "NBS VR16 II MD".

SUPERIOR METAL SYSTEMS INC ([View Classification](#)) — SMS-24SSC

3. **Endlap Back-Up Plate*** — (Not Shown) No. 16 MSG minimum coated steel, 15-1/2 in. wide with two 1 in. wide by 3/4 in. long tabs for sliding over end of panels.

4. **Bearing Plate** — (Optional) No. 20 MSG minimum coated steel, 4 in. wide by 5 in. long. Used under panel clip (Item 2, 2A, 2B and 2C) over rigid insulation (Item 8).

5. **Panel Fasteners** — (Screws) Screws used to attach the panel clips (Items 2 or 2A) to liner panel (Item 6) to be No. 14 Truss Head with No. 3 Phillips drive. Length to be a minimum of 1/2 in. longer than the combined thickness of the liner panel (Item

6), rigid insulation (Item 8), gypsum wallboard (Item 10) and plywood or oriented strand board (Item 10). Two screws per clip. Screws used to attach liner panel (Item 6) to purlins (Item 12) to be No. 12 x 1-1/4 in. self-drilling, Hex Head with 5/8 in. O.D. washer. Two screws to be used at each valley. Screws at liner panel side laps to be the same type as liner panel to purlin screws. Spacing to be 20 in. OC.

Screws used at endlap to be one of the following: 14 x 1 in. Type AB, Hex Washer Head self-tapping, 14 x 1-1/4 in. Hex Washer Head, self-tapping; 14 x 1 in. Type AB Phillips Stainless Steel, Self-tapping. Five screws per panel in a 1, 3, 4, 4, 3 in. pattern.

6. Metal Deck — No. 22 MSG minimum steel. Minimum yield strength 30 KSI. Minimum depth 1-1/2 in. Panel type to be A, B, F or N Deck. As an alternate metal deck, 22 MSG minimum steel, minimum yield strength 80 KSI, minimum depth 15/16 in. designated Type HD may be used; Liner panel to be fastened to supports with screws as indicated in Item 4 or with welds and weld washers of type indicated by manufacturer of liner panel. Welds to be located in each valley.

7. Fastener Reinforcement — (Not Shown) Reinforcements used with the screws attaching the liner panels to the purlins. Thickness to be 0.125 in. with an area of approx 2-in.².

8. Foamed Plastic (Rigid Insulation) — (Optional) Minimum thickness 1 in. Any rigid type having a minimum compressive strength of 25 psi or minimum density of 2 pcf or see products Classified under Foamed Plastic (TJBX). Supplied in 4 ft wide sheets.

9. Plywood or OSB — (Optional) (Not Shown) Minimum APA Rated plywood, nominal 3/8 in or 1/2 in. thick or oriented strand board (OSB), nominal 3/8 in or 7/16 in. thick, 4 x 8 ft. Sheets to be installed on top of Foamed Plastic (Item 8) in lieu of bearing plates (Items 4 or 4A).

10. Gypsum Board — (Optional) (Not Shown) Any 5/8 in. thick gypsum wallboard supplied in sheets 2 x 4 to 4 x 12 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. As an alternate, any 1/2 in. thick gypsum board can be placed on top of the foamed plastic rigid insulation (Item 8). The total cumulative thickness of the rigid board (Item 8) and gypsum board may not exceed 4-1/2 in.

11. Vapor Barrier — (Optional) Used between liner panel and foamed plastic. minimum 6 mil plastic sheeting.

12. Supports (Purlins) — Purlins used for liner panels to be cold formed steel sections. As alternates: structural steel components (hot rolled beams, channels, etc.) may be used. Minimum gauge and yield to depend on design considerations. Maximum spacing to depend on design considerations.

Refer to General Information, Roof Deck Constructions (On-Line Certification Directory), for Items Not Evaluated.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2019-12-05

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TGKX.238C - Roof Deck Constructions

Design/System/Construction/Assembly Usage Disclaimer

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- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

Roof Deck Constructions

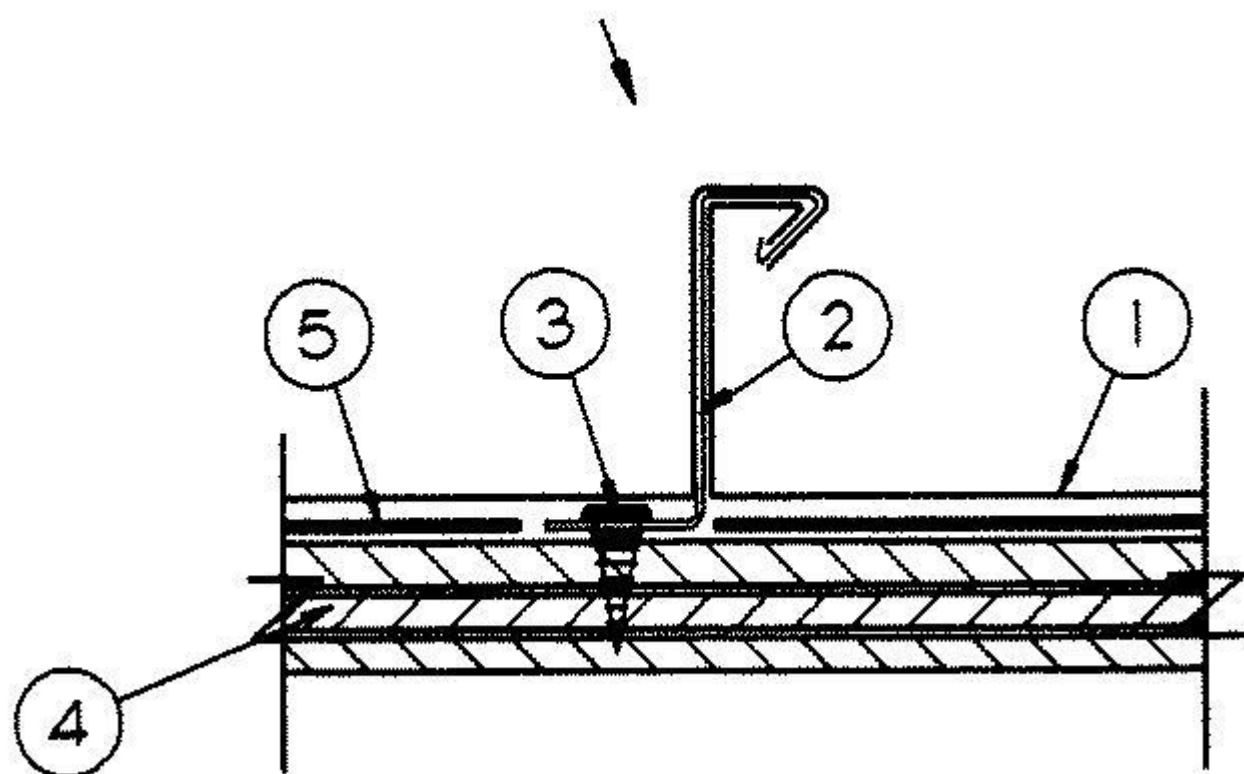
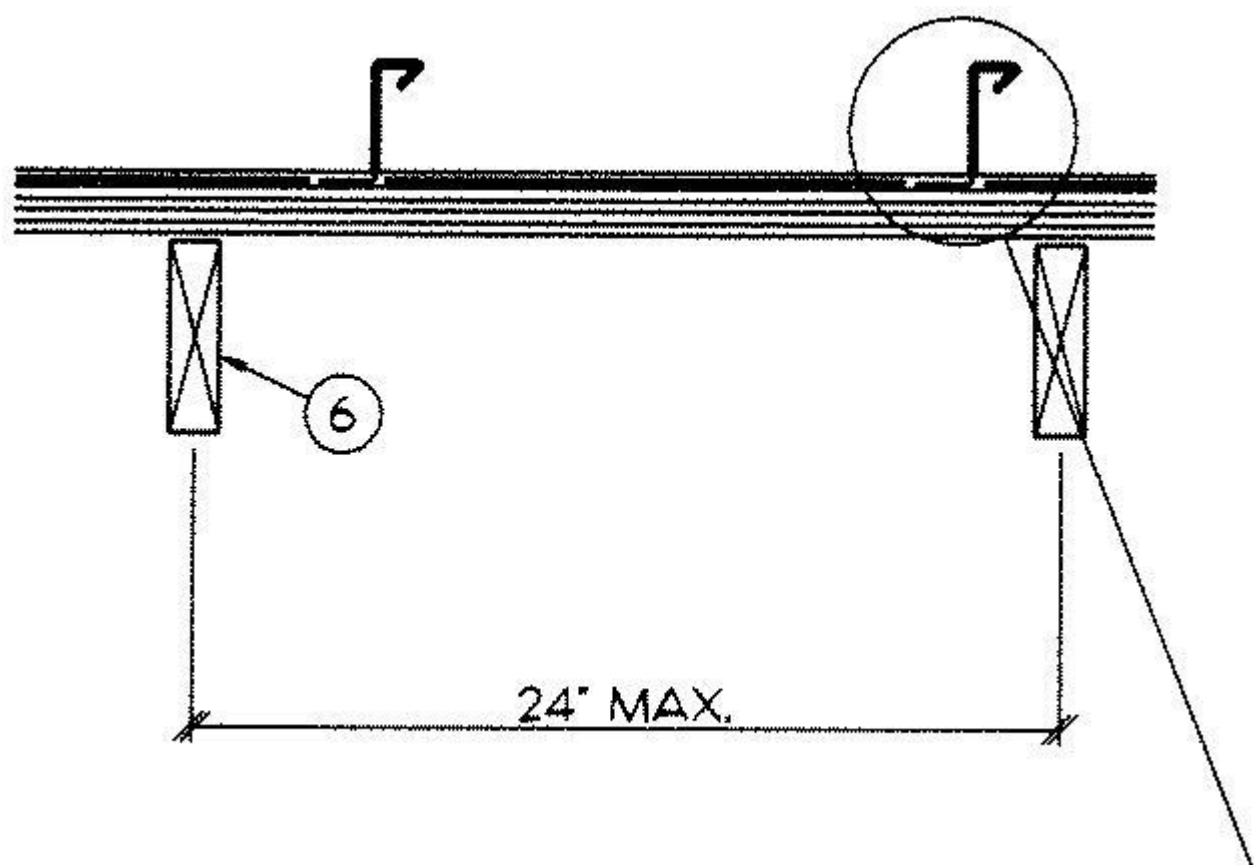
[See General Information for Roof Deck Constructions](#)

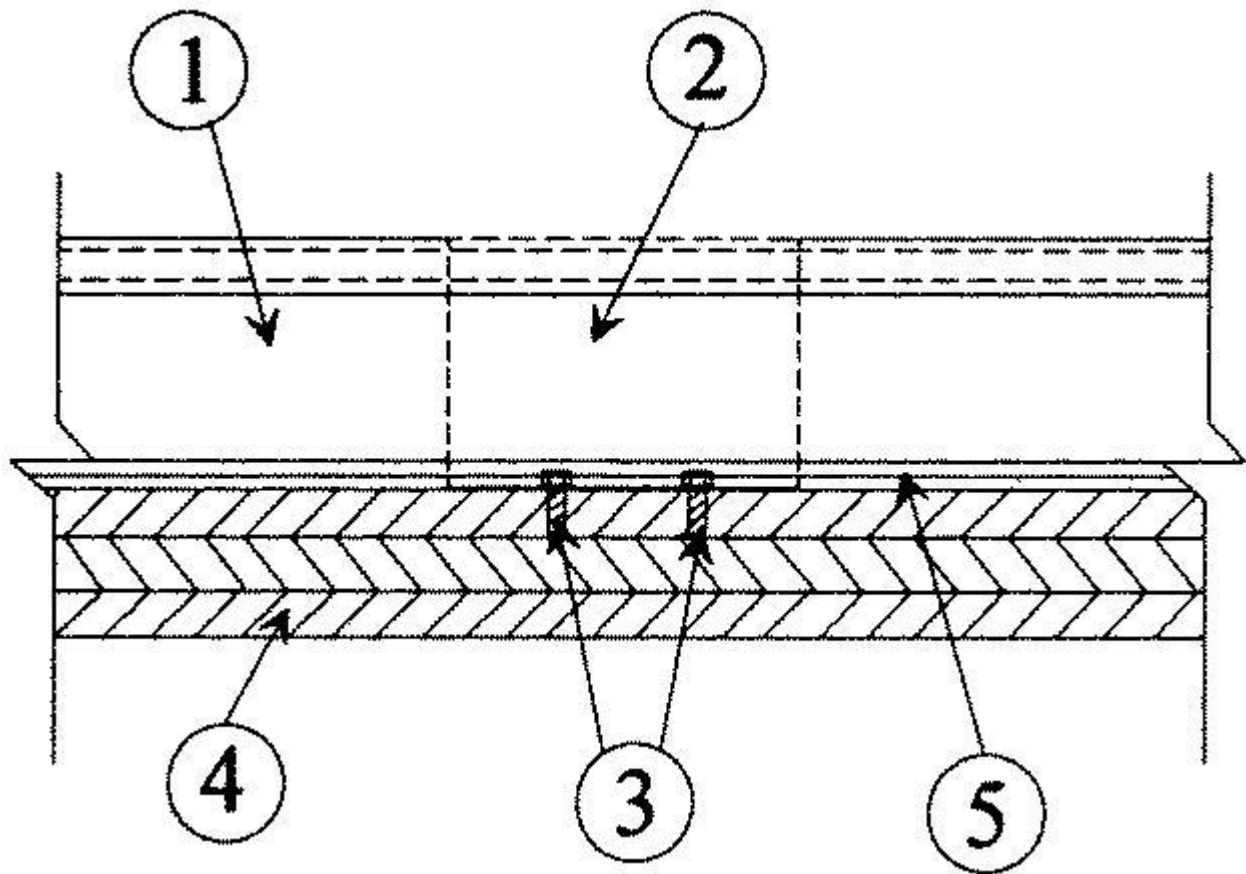
Construction No. 238C

August 12, 2019

Uplift Class 90

Fire Not Investigated





1. Metal Roof Deck Panels* — No. 24 MSG or No. 22 MSG minimum coated steel. Panels 16 in. wide, 2 in. high at side ribs. Side laps to be tightened and crimped with a special motorized crimping machine at a maximum 45 degree angle unless indicated in the individual panels in this item. Crimping process to include tabs of panel clips (Item 2). A bead of sealing compound may be used at panel side joints.

AMERICAN BUILDINGS CO ([View Classification](#)) — "Loc-Seam", (90° Seam) "Loc-Seam 360" (180° Seam)

CUSTOM-BILT METALS ([View Classification](#)) — CB-2000

KNUDSON MFG INC ([View Classification](#)) — " ULTRALOK"

MCELROY METAL MILL INC ([View Classification](#)) — "ABC JSM 200"

METAL ROOFING SYSTEMS INC ([View Classification](#)) — "MRS System 2500"

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — T-Span or "T-Span 180" (180° Seam)

MORIN CORP ([View Classification](#)) — " SLR-12", "SLR-14", "SLR-16" (90° or 180° Seam)

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "VR16 II-90" or "VR16 II-360"

ROLLFAB METAL BUILDING PRODUCTS ([View Classification](#)) — "MS-200HP/90" and "MS-200HP/180"

TAYLOR METAL INC, DBA TAYLOR METAL PRODUCTS ([View Classification](#)) — "MS200"

2. **Roof Deck Fasteners*** — (Panel Clips) — (Not Shown) — One part assembly, No. 20 MSG minimum coated steel. Height, 2-5/32 in., Width, 3 in.

2A. **Roof Deck Fasteners*** — (**Panel clips**) — Used with Architectural Building Components, Inc. JSM-200 Panel, fixed clip fabricated from No. 22 MSG minimum coated steel. Floating clip, two part assembly; base fabricated from No. 14 MSG coated steel, clip tab fabricated from No. 22 MSG minimum coated steel. Sliding clip, two part assembly; base fabricated from No. 16 MSG coated steel, clip tab fabricated from No. 22 MSG coated steel. Clips spaced maximum 30 in. OC along length of panel ribs.

MCELROY METAL MILL INC ([View Classification](#)) — "ABC JSM 200 Utility"

2B. **Roof Deck Fasteners*** — (**Panel clips**) — Used with American Buildings Inc. "Loc-Seam" or "Loc-Seam 360" Metal Roof Deck Panel. Clips spaced maximum. 30 in. OC along length of panel ribs.

AMERICAN BUILDINGS CO ([View Classification](#)) — "Loc-Seam Expansion Clips"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "NBS VR16 II Sliding " or "NBS VR16 II MD".

SUPERIOR METAL SYSTEMS INC ([View Classification](#)) — SMS-24SSC

2C. **Roof Deck Fasteners*** — (Panel Clip) — (Not Shown) — Two part assembly; A base fabricated from No. 16 MSG minimum coated steel and upper tab fabricated from No. 22 MSG minimum coated steel. Clips fastened to purlins using two fasteners per clip. See Item No. 3 for description of fasteners.

METAL SALES MANUFACTURING CORPORATION ([View Classification](#)) — T-Span Clip

2D. **Roof Deck Fasteners** — (Panel Clips) - Two types, both two piece assemblies. Type 330 base approximately 1.88 in. by 1.70 in.; Type 330B base approximately 1.11 in. by 2.00 in. Both types fabricated from No. 16 MSG coated steel and formed to fold over upper tab. Type 330 upper tab 4.30 in. wide and 2.91 in. high maximum. Type 330B upper tab 4.30 in. wide and 3.34 in. high maximum. Both types formed to engage base. Clips spaced maximum 30 in.

MORIN CORP ([View Classification](#)) — "SLR-330 Clip" (for 45° seam)

MORIN CORP ([View Classification](#)) — "SLR-330B Clip" (for 90° & 180° seam)

3. **Fasteners (screws)** — Fasteners used to attach panel clips (Items No. 2, 2A, 2B, 2C) to the plywood deck to be No. 12-8 by 1 in. long No. 1 Phillips drive, flat recess-head, steel wood screw. Two screws used per clip.

4. **Plywood Decking** — Plywood decking to be graded per PS83 specifications, 19/32 in. (nominal 5/8 in.) thick, exposure 1 APA rated sheathing, span C-D 40/20 plywood, square edged. Butt ends not blocked.

5. **Underlayment (Optional)** — Type 15 or 30 organic felt. Side laps, end laps and attachment per manufacturers standard.

6. **Supports** — Spaced maximum of 24 in. OC. Any of the following types may be used to support the plywood decking:

a) Nominal 2 by 6 in., minimum No. 2 grade A.F.P.A. S-P-F Hemlock Fir, Douglas Fir or Southern Pine or equivalent.

b) Wood trusses with a nominal 2 by 4 in. upper chord of the same grade as Item a.

c) No. 22 MSG minimum cold formed coated steel (minimum yield to be 33,000 psi).

7. **Plywood Fasteners (Not Shown)** — Fasteners used to attach the plywood deck to the supports to be as follows:

a) For plywood-to-wood supports No. 8-18 by 1-7/8 in. long bugle-head steel screws with a No. 2 Phillips drive, a "Hi-Low" thread pattern and an "S-Point" .

b) As an alternate to Item a, 8d by 2-1/2 in. long deformed shank common nails may be used.

c) For plywood-to-steel supports for a steel thickness less than No. 20 MSG No. 7-19 by 1-1/4 in. long bugle-head steel screws with a No. 2 Phillips head drive "Hi-Low" threads and an "S-Point" . For a steel thickness greater than No. 20 MSG to No. 16 MSG, No. 6-20 by 1-1/4 in. long bugle-head steel screws with a No. 2 Phillips drive and an S12 (TEKS/3) ® point.

Spacing: Fastener spacing for all fastener types to be 6 in. OC at the plywood butt edges and 12 in. OC in the interior.

Refer to General Information, Roof Deck Construction (On-Line Certification Directory) for items not evaluated.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2019-08-12

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TGKX.336 - Roof Deck Constructions

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

Roof Deck Constructions

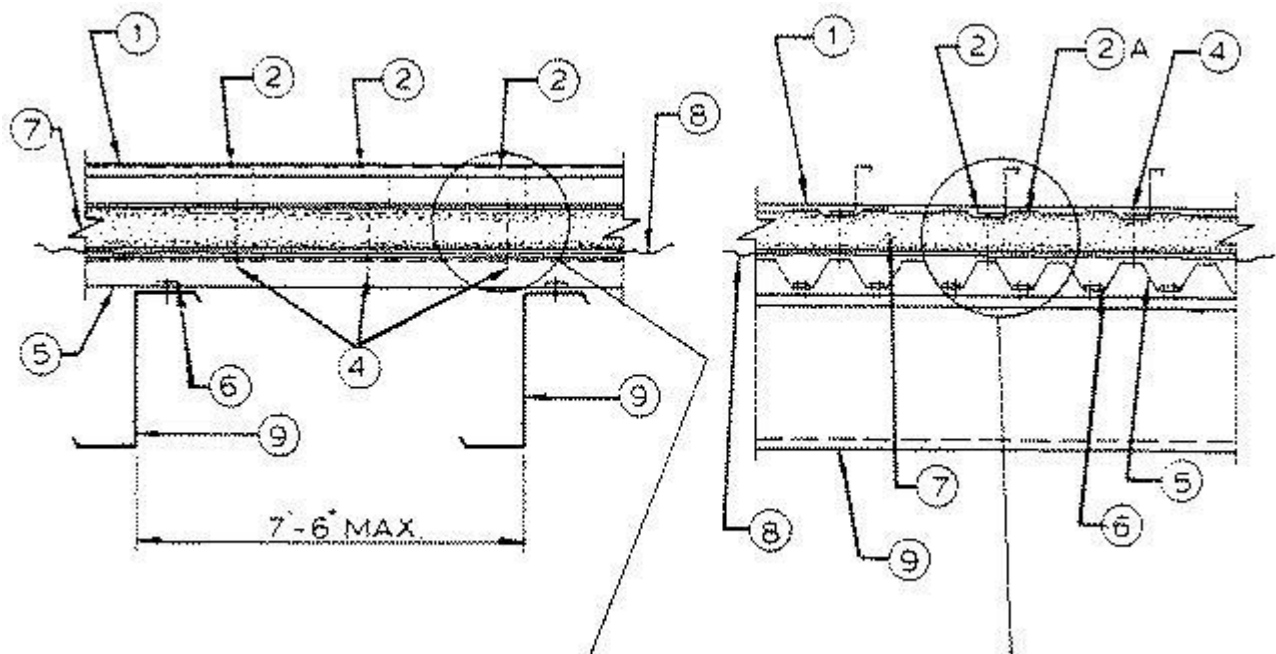
[See General Information for Roof Deck Constructions](#)

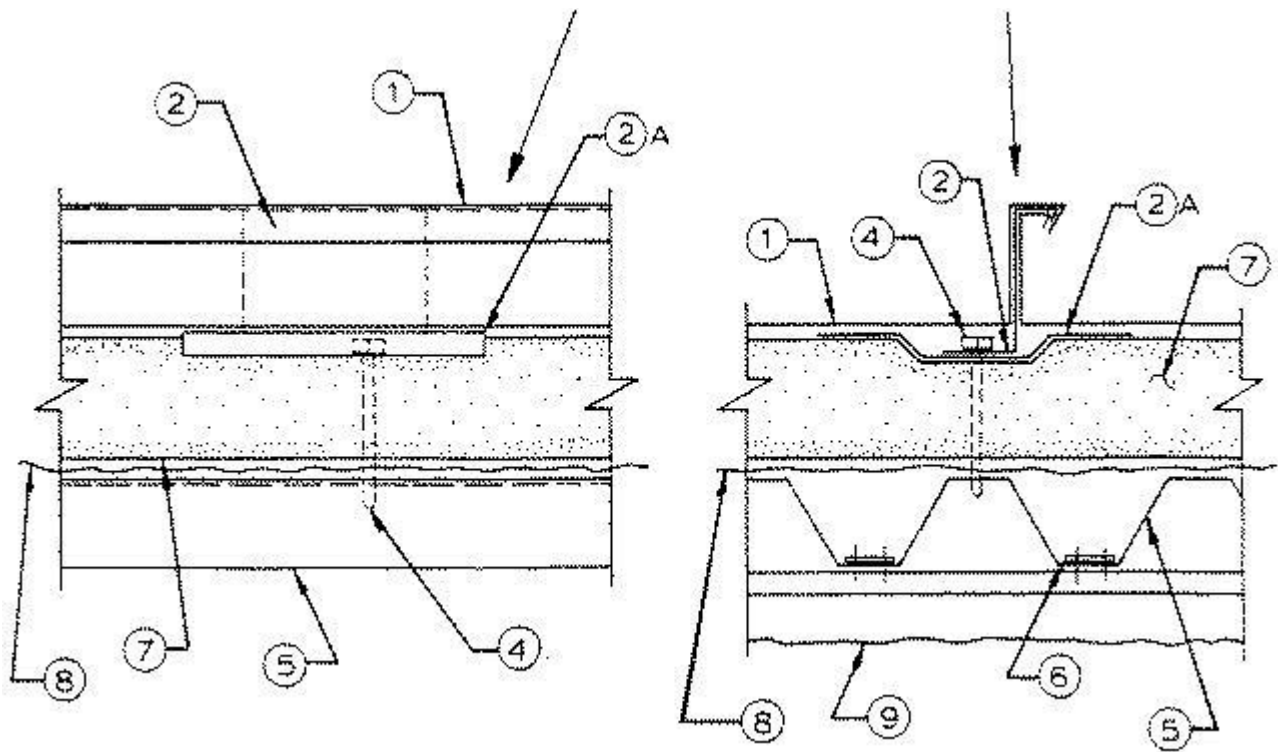
Construction No. 336

August 12, 2019

Uplift — Class 90

Fire Not Investigated





1. Metal Roof Deck Panels — 24 MSG minimum gauge steel, maximum width 16 in. Panel continuous over two or more spans. Endlaps to occur near panel clip location and to include endlap backing plate (Item 3). Panels shall be overlapped 6 inches. Side laps to be tightened and crimped with a special motorized crimping machine. Crimping process to include tabs of panel clips (Item 2). A line of sealant may be used at panel endlaps and side joints.

AMERICAN BUILDINGS CO ([View Classification](#)) — "Loc-Seam," (90° Seam) , "Loc-Seam 360" (180° Seam)

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "VR16 II-90" or "VR16 II-360"

2. Roof Deck Fasteners (Panel Clips) — 24 MSG minimum gauge coated steel with a separately formed base fabricated of 18 MSG minimum gauge coated steel. Clips spaced 30 in. on center along length of panel ribs. Clips to be fastened to liner panel (Item 6).

AMERICAN BUILDINGS CO ([View Classification](#)) — "LSBC-1", "Loc-Seam Expansion Clip"

NUCOR BUILDING SYSTEMS, DIV OF NUCOR CORP ([View Classification](#)) — "NBS VR16 II BC", "NBS VR16 II Sliding " or "NBS VR16 II MD".

SUPERIOR METAL SYSTEMS INC ([View Classification](#)) — SMS-24SSC

2A. Panel Clip Bearing Plate — Located under each Roof Deck Fastener (Item 2). Fabricated from 0.043 in. thick minimum coated steel.

3. Endlap Backing Plate — Backing Plate shall be fabricated from 0.051 in. thick coated steel. Enlap plate to be 12-1/2 in. long and approximately the full panel width.

4. Substructure — (Plywood) — (Optional) — (Not Shown) Plywood decking used in lieu of Panel Clip Bearing Plate (Item 2A) to be nominal 1/2 in. thick, (15/32 in. actual) exposure 1 APA Rated sheathing, C-D, 40/20 plywood. Located over rigid insulation (Item 7).

5. Fasteners (Screws) — Fasteners used to attach panel clips (Item No. 2) to the liner panels (Item No. 6) to be No. 11 by minimum 3-3/4 in. long self-drilling, self-tapping hex-head or Phillips head screws. One screw to be used for each panel clip.

Fasteners used to attach liner panels to the supports shall be No. 12-14 by 1-1/4 in. self-drilling, self-tapping, hex-head, plated steel screws with a separate 9/16 in. diameter metal backed sealing washer. Two fasteners to be used at each support with fasteners located in every valley. Fasteners used at liner panel side laps to be the same as liner panel screws and spaced 20 in. O. C.

Fasteners used at panel endlaps to be No. 12-14 by 1-1/4 in. long self-drilling, self-tapping, hex-head screws with 1/2 in. O. D. metal backed sealing washers. Spacings to be 1, 3-1/4, 3-1/8, 3-3/4, 2-3/4, 1-7/8 in. pattern.

5A. **Fasteners (Screws)** — (Optional) Fasteners used to attach panel clips (Item No. 2) to the liner panels (Item No. 6) to be No. 14-13 by minimum 3-3/4 in. long self-drilling, self-tapping #2 recess drive or Phillips head screws. One screw to be used for each panel clip.

6. **Liner Panel** — The liner panel to be minimum 1-1/2 in. deep, Type A, B, F or N Deck, fabricated from 22 MSG minimum steel. Yield strength to be minimum 33,000 psi. Liner panel to be fastened to support with screws as indicated under Item No. 5, or with welds and weld washers of type indicated by manufacturer of liner panel. Welds to be located in every valley.

7. **Fastener Reinforcement** — The reinforcements used with the screws attaching the liner panels to be 0.125 in. thick and to have an area of approximately 2-in.².

8. **Foamed Plastic (Rigid Insulation)** — Supplied in 4 ft wide sheets. minimum thickness to be 1 in. Density to be minimum 2.0 lbs per cu ft.

9. **Vapor Barrier (Optional)** — Used between the liner panel and the formed plastic. Barrier to be a 6 mil thick plastic sheeting.

10. **Purlins (Supports)** — 12 MSG minimum gauge steel (minimum yield strength 40,000 psi) or minimum Type H open web joists.

10A. **Purlins (Supports) - (optional)** — 16 MSG minimum thick steel (50 ksi minimum yield strength) spacing to depend on design considerations for uplift loading; maximum 5 ft. - 0 in. O.C., in lieu of (Item no. 10). Refer to General Information, Rood Deck Constructions, (On-Line Certification Directory) for items not evaluated.

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