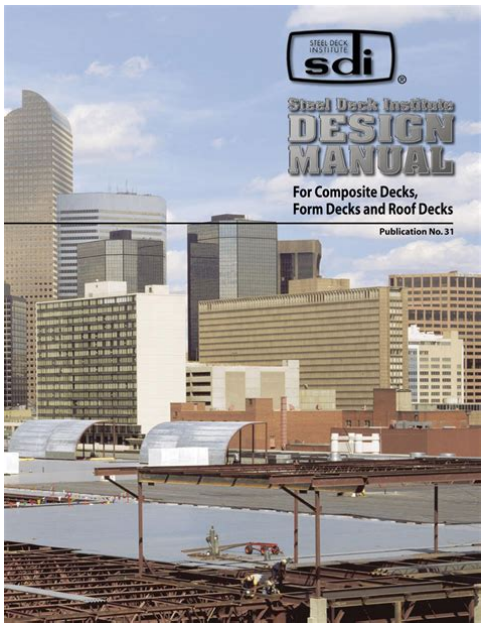
Design Manual For Composite Decks Form Decks And Roof Decks No. 30



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LIABILITY STATEMENT The data published in this catalog has been developed using recognized engineering principles and is intended for general information only. Applicability of the products and the accuracy of the data should be assessed by a licensed professional engineer or architect to determine the suitability for the intended application.Thank you, for helping us keep this platform clean. The editors will have a look at it as soon as possible. According to NRCAs 201516 Annual MarketAlso, NRCA s market surveySome changes mayFor new constructionSDI also has associate members, which include engineers andThe most current edition of SDIs design manual was published in 2007 andThe load tables provideAISI S100 is referenced in modelSDI permits the dead load weight of a roof deck construction to beIn situations where design winduplift loads are greater thanAlso, attachmentUniform uplift loading occurs with conventional, adhered roof membraneAn example of a roofIf a roof membranes fastener rows are perpendicular to theIf fastener rows occur at structuralFurthermore, SDI recommends a structuralThis version of FM 4451 did not reference AISI S100 or other SDI guidelines. Instead, itAs a result, relativelyThis analysis directly affects steel roof decks upliftFM 4451compliant steel roofThis change resulted in FM Approvals reclassifying in manyTable 1A applies to steel roof decks with 33kippersquareinch ksi yieldFor calculation purposes,The calculations should be based on assuming aThis would be the caseIf a seamfastened, mechanically attached, singleplyFurther evaluation by an experienced, licensed design professional typically is necessary.NRCA looks forward to continuing to constructively work with theseResults from this research are expected later this year.In some situations, steel roofIn highly corrosive orIn highly corrosive orPlease log in to leave a comment.http://medes.ru/img/lib/4-deck-manual-card-shuffler.xml

- **design manual for composite decks form decks and roof decks no. 30, design manual for composite decks form decks and roof decks no. 300, design manual for composite decks form decks and roof decks no. 30 days, design manual for composite decks form decks and roof decks no. 308, design manual for composite decks form decks and roof decks no. 3000.**

The strength and stiffness of the panels are a result of the shape of the ribs and the material properties of the steel. Deck is typically furnished in a standard width with the ends square cut. Any cutting for width, such as at openings or for angular fit, is done at the job site. Sheet to sheet fastening is done with screws, button punching crimping, or welds. It a acts as a working platform b stabilizes the frame c serves as a concrete form for the slab and d reinforces the slab to carry the design loads applied during the life of the building. Composite decks are distinguished by the presence of shear connector devices as part of the deck. These devices are designed to mechanically lock the concrete and deck together so that the concrete and deck work together to carry subsequent floor loads. The shear connector devices can be rolled into embossments, lugs, holes or wires welded to the panels. The deck profile configuration can also be used to interlock concrete and steel. The bare top surface can be expected to develop rust BEFORE CONCRETE is placed. The bottom side of the deck has a primer coat of paint. Galvanized deck has a zinc coating on both sides. The air gap caused by overlapping prevents proper fusion with the structural steel when sheet end laps are shear stud welded. If bearing is actually less than shown, further investigation is required. Roof deck acts alone in transferring horizontal and vertical loads into the building frame. Roof deck rib openings are usually narrower than floor deck rib openings. This provides adequate support of

rigid thermal insulation board. Continuous perimeter support of the deck is necessary to limit edge deflection in the finished roof and may be required for diaphragm shear transfer. The standard factory applied paint for roof deck is primer paint, and is not intended to weather for extended time periods.http://nsdadventist.org/FCKData/4-cylinder-wisconsin-engine-manual.xml

Field painting, touch up of abrasions, and deterioration of the primer coat or other protective finishes are the responsibility of the buyer. It is recommended, however, that any field paint be applied over a small test area of the primed deck and tested for compatibility and adhesion prior to proceeding with field painting. Cellular deck can be used in the same manner as floor deck. Electrical, telephone, and computer wires are easily run through the chase created between the deck panel and the bottom sheet. The joint tht occurs at butting cell ends must be taped or otherwise protected to prevent concrete from entering the cell. Cell interiors must be free of welding burrs, or other sharp intrusions to prevent damage to wires. Care must be maintained.Installation of deck for this purpose requires special methods for attachment to the frame because the flt plate now on the top can prevent direct access to the deck material that is bearing on the structural steel. It may be advisable to treat the flt top surface to prevent slipping. Cellular deck is always furnished galvanized or painted over galvanized. Connections to the frame are by the same methods used to attach floor and roof deck. Welding washers are recommended when welding metal thickness is less than 0.0280 inches. Galvanized deck must be used for those roof deck systems where form deck is used to carry a lightweight insulating concrete fill. This assembly functions as a structural roof deck diaphragm. The assembly may include dry installed thermal insulation placed above either prime painted, field painted galvanized, or galvanized and painted steel sections. Prior to beginning deck erection, the erector should review the plans for overall job site orientation. On projects with multiple deck profiles and gages, individual areas should be identified for each type of metal deck cubierta de metal. All General Notes should be reviewed for special instructions.

Drawing sections in particular need to be studied for installation details. The drawings and bundle tags need to be examined for proper bundle placement. The engineer of record has approved the attachment method and pattern. Therefore, all fastening to the structure and sheet side laps should be carefully followed as shown on the “APPROVED FOR CONSTRUCTION” drawings. Deck bundle weights for material to be applied over structural steel frames or other framing systems will be as required to suit job conditions, and to meet safe hoisting, spreading and installation procedures. If heavier or lighter bundles are required because of job conditions, this information must be conveyed to the deck supplier well before production is scheduled. The deck supplier, the erector, and the purchaser should all be in agreement about the bundle sizes, and weights that are to be delivered to the job. The deck manufacturer may be asked to sequence deck bundling so that deck will be delivered in a proper or previously agreed upon order, and be unloaded and hoisted in logical sequence. Erection information should be made available to the deck manufacturer as soon as possible after placing the order so that sequencing can be done during preparation of approval drawings. These procedures may consider the following 1. Strapping will be secured, preventing blow off, or loosening of sheets during transit. 2. Deck bundles may be placed against the trailer or truck bulkhead to prevent forward movement in case of sudden stop. In all cases, the bundle arrangement on the trailer will be made with an effort to provide the greatest stability of the load, and to achieve the allowable weight. This may cause a dangerous situation; over tightening of the tie downs in anticipation of settling will damage the product. Periodic adjustments and retightening are necessary. Each adjustment should also ensure that the tarps are repositioned to keep the load dry to prevent moisture from affecting the finish.

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The access must be adequate to support the lifting equipment and the delivery trucks. Lifting

equipment must be capable of safely lifting the deck bundles, and have sufficient reach to properly place the bundles on the structure. Bundles should be counted. The bill of lading should be checked to verify trailer contents. Small packages are sometimes carried inside the tractor. Check to see if all items are present. Any material damages or shortages should be noted on the bill of lading PRIOR to signing for the material, and the suppler should be immediately notified. Bundles should be protected against condensation with a ventilated waterproof covering. Bundles should be stacked so that this is no danger of tipping, sliding, rolling, shifting, or material damage. Tightness should be periodically checked and additional securement should be used as needed. Bundles should never by hoisted by strapping, and should always be placed tag side up. It is the position of the Steel Deck Institute that; DECK BUNDLES MUST ALWAYS BE PLACED ON THE FRAME NEAR A MAIN SUPPORTING BEAM AT A COLUMN OR WALL.This OSHA regulation must be examined by anyone engaged in this activity, such that all criteria is understood and met. However, where employer elect, due to conditions specific to the site, to develop alternate means and methods that provide employee protection, a site specific erection plan shall be developed by a qualified person. OSHA provides guidelines for establishing a site specific erection plan in Appendix A of OSHA Federal Register Subpart R 1926. The deck manufacturer is not responsible for preparing the “site specific” erection plan. However, deck erection drawings may be helpful to those preparing the plan. For the most part these platforms will not have protected openings. Erectors must also work on the open steel frame and use ladders or scaffolding to access the work.

The purpose of establishing these practices and processes is to reduce the slipping hazard of the walking surfaces of decking products. For more information on this issue, please refer to the “Steel Coalition Lubricant Task Group Report” dated May 14, 2002. This report is available on the SDI web site. Falls may occur at any time, and at any location. Alertness is essential. Ladders should be securely tied to the structural frame or the scaffolding. Stairs, if available, should be rigidly attached to the building frame. Workers should take precautions to protect themselves from share edges and projecting corners. Before deck bundles are placed on the frame, the frame plumbness and connections should be checked. Verify that temporary bracing is in place to keep the frame in a plumb condition until the deck is placed and secured. Verify the structure’s capacity to carry the deck bundles. The bundles must be rigged for lifting so that shifting and excessive tipping will not occur and so the lifting device will not damage the metal roof deck or metal floor deck cubierta de metal. All lifting equipment must be adequate for the job. The hoisting operation must be properly directed and manned. Taglines attached to the bundles not to the bands will help workers control and position the load. Never move bundles by pulling on the strapping. See Section Unloading. If possible, spread metal roof decking or metal floor decking bundles out along the building column lines to create several small stacks rather than stacking all the bundles in one area. Workers should be instructed to keep the load in sight until it is safely placed on the structure. Metal decking bundles should be landed so that the ends of the metal roof decking and metal floor decking bundles rest on a bearing surface rather than having one or both ends cantilevered. Bundles of metal decking which have been unbanded must be secured to prevent individual sheets from being blown off the structure.

If the metal decking sheets are temporarily used to access bundles, they must be end bearing not cantilevered and must be securely attached to the frame to prevent slip off. A working area should be at least 12 feet wide. It is recommended that a working area be established around or along each metal roof decking or metal floor decking bundle so that the bundle can safely be accessed. The platform can then be extended in any convenient direction. Specific job requirements need to be considered to determine metal decking erection starting points and erection progression. As the

platform is extended it will be necessary for at least one worker to work from the structural frame. OSHA standards require that employers provide fall protection during metal decking erection operations, and all OSHA guidelines for safety while erecting metal roof deck or metal floor deck must be followed. Refer to OSHA Regulation 29 CFR Section 1926.759c2003 which states that under special circumstances a Controlled Deck Zone CDZ may be established which permits flexibility to the methods of personal fall protection. This leading edge should only be approached in order to place the next sheet. Workers should also maintain a safe distance 6 feet if possible from the end of the metal roof deck or metal floor deck unit. When aligning the edge side lap, the worker should kneel. Kneeling lowers a worker's center of gravity and decreases the change of falling. Refer to OSHA Regulation 29 CFR Section 1926.759 a12003 which states that under special circumstances a Controlled Deck Zone CDZ may be established which permits flexibility to the methods of deck installation. It is the responsibility of the design professional to define whether a hole is required to be decked over. Where large size holes or other conditions that do not allow an opening to be decked over, employees shall be protected in accordance with OSHA Regulation 29 CFR Section 1926.760 a12003.

Care must be taken when cutting bundle straps to prevent straps or dunnage from dropping onto personnel or equipment. Workers should be instructed on all aspects of deck safety before any metal floor decking or metal roof decking is installed. Such installation is available to members on request from the Iron Workers International Association AFLCIO by contacting a local union training coordinator. Nonunion sources may also be available. If temporary shoring is required to attain fifty pounds per square foot, then the shoring must be securel in place before the floor deck erection begins. The fiftypound per square foot loading does not consider concrete weight. If the metal roof decking being used does not provide a platform capacity of 30 PSF, then it should be planked or supported during erection. Areas subject to traffic or material staging should be planked. Caution is required by anyone on the deck when this condition exists. Ensure bottom sheet extends past the support at both ends, otherwise place where full support can be obtained. The beginning point should be carefully selected for proper deck orientation and edge of roof or floor slab location. A snap chalk line should be used at reasonable intervals to assure proper alignment of deck panels. Panel cover widths must be maintained to achieve long straight runs of deck. Rib alignment must be parallel to the girders at all girder lines to prevent unsightly conditions. Flutes that do not align can create closure problems that may interrupt the slab design. Proper alignment can only be achieved by proper adjustment of each deck panel as it is placed. Cover width errors accumulated across the bay cannot be corrected with the last sheets in the run. This minor effort at the time of deck placement eliminates the need for field corrections.

Often the metal decking is used as part of the horizontal bracing system and the fastening method and pattern have been selected to provide a certain strength and stiffness in the plane of the metal deck. For metal decking that is intended to end lap metal roof deck, the end lap location should be adjusted so the center of the lapped portion occurs over the support or, when supported by bar joists, over a top chord member. These screw guns are equipped with a clutch and depth limiting nosepiece to prevent over torquing.Air is supplied by a compressor equipped with a regulator that prevents overdriving or underdriving the fastener. The fasteners have a flat head at the drive end and a ballistic point at the penetrating end. A variety of sizes are available to meet the penetration requirements of the steel substrate. Quality welding of light gauge metal roof decking techo de metal cubierta or metal floor decking suelo de metal cubierta requires experience and the selection of proper amperage and electrodes. A weld quality control test procedure is shown below. All welding should be done in accordance with the Structural Welding Code, AWS D1.1 or D1.3. Weld washers are not recommended for deck thicknesses of 0.028 inches thick minimum 22 gauge and greater. Weld washers are recommended for metal thicknesses less than 0.028 inches. Proper welding requires good metaltometal contact; therefore, lapping composite metal floor deck units and

shear lugs is not recommended. For the same reason, built in hanger tabs in metal floor deck that bear on structural steel should be flattened or removed. These studs are usually installed after the deck as been spread to act as a working platform. Therefore, it is necessary that the platform be adequately attached to the structure before the studs are installed. Note If the deck is heavier than 16 gauge the stud manufacturer should be consulted for installation procedures.

Shear studs, like all other fasteners, must be installed in accordance with the design drawings. However, for closed in areas, ventilation must be provided. Adequate ventilation is extremely important when welding galvanized metal decking. All workers involved in the welding operation must wear eye protection to avoid weld flash. Cutting and welding sparks can cause construction fires. Conditions at a construction site are subject to rapid change. Welding may be safe in a given area and then, because combustibles are introduced, the area is suddenly not safe. The General Contractor job supervisor should prevent other trades from storing combustibles near or under areas where welding is to be done. Constant alertness in and below the general area is mandatory. These are frequently referred to as stitch connections. Self drilling screws, welds or button punches are the usual stitch connections. The installer must be sure that the underlying sheet is drawn tightly against the top sheet. Again, as when screws are used as the frame attachment, the special screw driving guns are used to prevent over torquing. Button punching requires the worker to adjust his weight so the top of the metal deck stays level across the joint. Since the quality of the button punch attachment depends on the strength and care of the tool operator, it is important that a consistent method be developed. Automatic power driven crimping devices are rarely seen on metal deck jobs, but should not be ruled out as a fastening method. Outdated The Delta Grip Tool System is now a common, automatic, power driven crimping device used on many metal roof decking job sites. Burn holes are the rule rather than the exception and an inspector should not be surprised to see them in the deck. The weld develops its strength by holding around the perimeter. A good weld will have 75% or more of its perimeter working.

On occasion, side lap welds will be specified for metal decking that has the button punchable side lap arrangement. Weld washers should never be used at side laps between supports. Just as when welding to the frame, adequate ventilation must be available and welding near combustibles prohibited. Loos tools should not be left lying about. Stud welding ferrules should be broken off of the studs. All debris must be removed from metal floor deck before concrete is poured. Any partially used bundles must be tightly secured to prevent blow off. Usually the design professional knows the general area where a vent stack may cut the roof, or approximately where a telephone conduit may pierce the slab; but he may not know how big the hole will be. This lack of information makes it difficult to advise how holes should be reinforced, if at all, or how damaged deck should be repaired. Guide specifications reflect this lack of specific knowledge. The SDI Specification states, “Openings not shown on the erection diagrams, such as those required for stacks, conduits, plumbing, vents, etc., shall be cut and reinforced, if necessary by the trades requiring the openings.” The design professional should be consulted for reinforcing requirements, but frequently, unless details are shown on the plans, no deck reinforcing is provided and the design professional is not consulted. The design professional must then make the decision as to what constitutes damaged deck while considering how replacement may delay the job. How much damage can be tolerated depends on architectural and structural considerations. If the underside of the deck is exposed to public view, very little visible damage may be allowed. In most cases, however, the deck will be hidden by a ceiling or ducts and utilities and the usual concern is about structural performance. In most cases, the capacity of the deck is greater than required for roof loads.

When properly attached, the sump pan will care the load of the deck it replaces. It also acts as a small header to transfer loads into adjacent uncut sheets.The design professional must approved any change in fastening. Areas that buckle during the pour are usually caused by previous damage, over

spanning the deck, or allowing concrete to pile up. Buckled areas do not adversely affect the live load capacity. Tests at West Virginia University, by Dr. Larry Luttrell, showed no loss in live load capacity when the deck was purposely buckled. Metal floor deck, like metal roof deck, can be examined as a cantilever. However, the SDI does not publish a cantilever table for metal floor deck because of the great profile variations available. A method for calculating allowable cantilever spans is shown below. A preferred forming method is to block out concrete from where a penetration will occur; and, after the concrete sufficiently cures, burn the deck away. The design professional determines the need for additional bars or mesh around the block out. Side laps must be tightly connected to prevent opening during concrete pouring. Since most applications of composite metal floor deck are in dry interior areas, field painting of burned, cut or abraded areas is not usually required. Any touch up requirements must be provided in the job specifications since the design professional establishes the deck finish required for the environment. The deck should have been selected to provide at least fifty pounds per square foot capacity as a working platform. If the contractor anticipates loads on the platform that will exceed 50 psf, they should take appropriate steps to ensure the deck will carry the load. Damaged areas must be repaired oraccepted. All ferrules should have been broke off the studs. All dirt and debris must be removed. All reinforcement, wires or rods, should be securely in place.

The concrete contractor should review the deck shoring requirements and make sure that shores are securely in place. It should be placed uniformly over the supporting structure and spread towards the center of the deck span. Concrete should be placed in a direction so that the weight is first applied to the top sheet at the side lap, reducing the possibility of the side opening during the pour. Workers should not congregate around the concrete placement zone. If buggies are used to place the concrete, runways should be planked and the buggies should only operate on the planking. The planks should be stiff enough to transfer buggy loads without damaging the deck. Deck damage caused by roll bars or careless placement must be avoided. They were placed on your computer when you launched this website. You can change your cookie settings through your browser. Other highlights of this manual are current ASTM material designations, information on cellular deck in nonelectrified applications, and guidelines for cellular deck floor systems with electrical distribution.