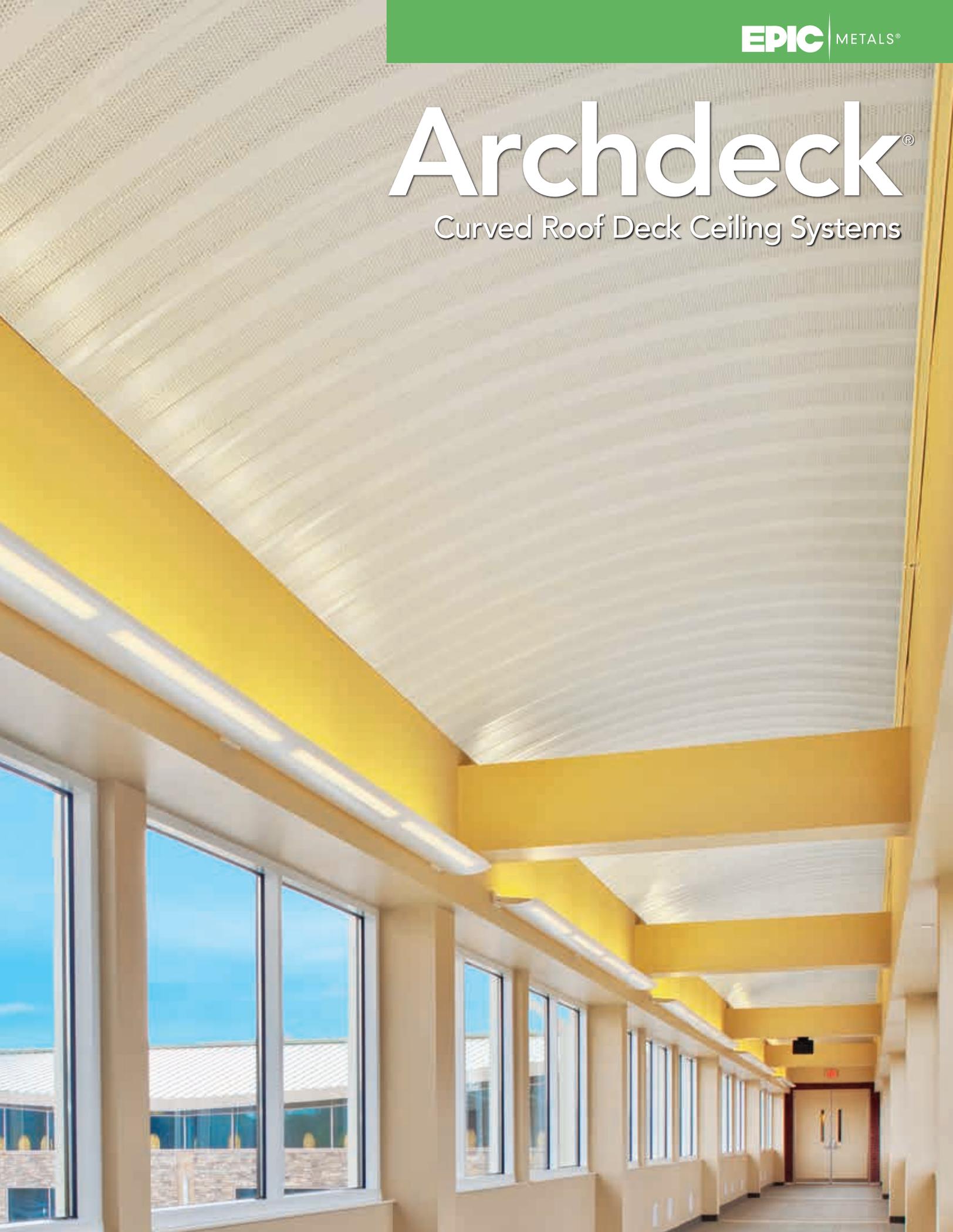


Archdeck®

Curved Roof Deck Ceiling Systems



Archdeck®

Curved Roof Deck Ceiling Systems

EPIC's Archdeck Roof and Floor Deck Ceiling Systems offer an innovative approach to designing modern, visually unobstructed interiors with architectural appeal.

The departure from flat roofline construction to a striking and unusual design is possible with EPIC Metals' Archdeck Curved Roof Deck Ceiling Systems. Archdeck is a deep-corrugated curved steel panel that makes it possible to have a curved roof without curving the structural steel.

The ribbed surface appearance of Archdeck and Archdeck A highlight the dramatic curvature formations of the ceiling design, while Archdeck P and PA create a simpler line to draw more attention to the surrounding architecture. Additionally, Archdeck P and PA hide roofing system fasteners, while Archdeck PA provides the added benefit of enhanced acoustical control. Archdeck will create impressive, soaring rooflines in any project.

The numerous benefits of the Archdeck Curved Roof Deck Ceiling Systems can lead to specification in the following types of projects: airport terminals, arenas, art galleries, canopies, gymnasiums, hospitals, hotels, laboratories, libraries, museums, office buildings, schools, sports domes, theaters, and more...

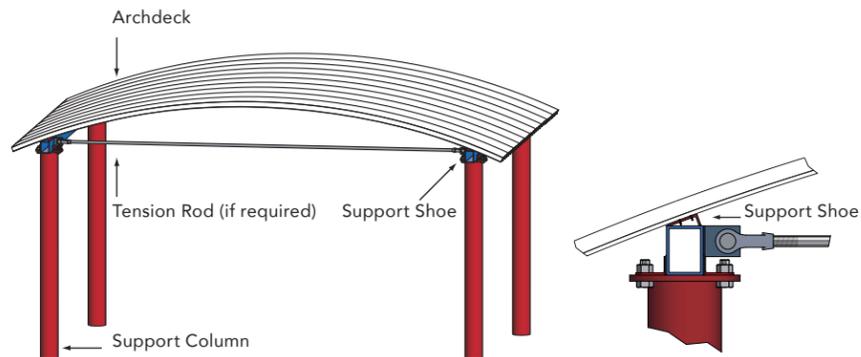
North Texas Municipal Water District, Environmental Services,
Wylie, Texas
Archdeck P - 24' Radius



Archdeck® Structural Considerations as Part of an Arched Structure

Archdeck panels with adequate rises compared to their span (Rise/Span $\geq .07$) can be utilized as a true structural arch. Therefore, uniform roof loads of 30 to 60 psf with Archdeck spans from 14' to 40' are possible. Structural properties of an arch are dependent on the entire framing system and are completely different from the structural properties of the Archdeck panel itself. Structural properties of an arch vary for each span, radius of curvature, and amount of lateral restraint. Computing the load-carrying capacity of an arch system is an involved process, and EPIC Metals' technical team is available for consultation regarding these special designs. Helpful geometric properties and a basic frame of an arch are shown below.

Basic Arch Frame



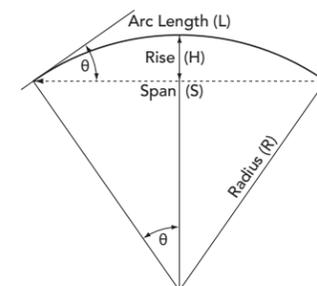
Minimum Radius for Archdeck & Archdeck P Panels

Gage	Radius
20	100
18	50
16	*25

* Smaller radii are possible. Consult EPIC Metals.

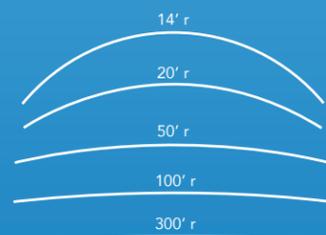
Archdeck panels are available in galvanized steel or galvanized steel with a prime coat of paint.

Geometric Properties



$$\begin{aligned} \text{Radius (R)} &= (4H^2 + S^2) / 8H \\ \text{Rise (H)} &= R - \frac{1}{2} (4R^2 - S^2)^{1/2} \\ \text{Arc Length (L)} &= \theta \pi R / 90 \\ \theta &= \tan^{-1} (S / 2 (R - H)) \end{aligned}$$

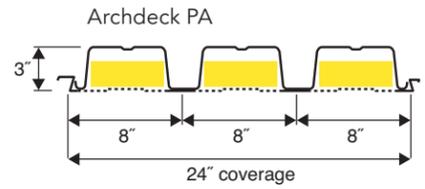
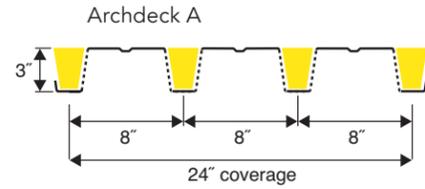
Archdeck panels are available in a wide spectrum of radii



National Air and Space Museum, Steven F. Udvar-Hazy Center, Chantilly, Virginia
Archdeck - 120' Radius

Archdeck® (A), P(A) Technical Tables

ACOUSTIC (A, PA)



Acoustical Performance

Panel Type	Absorption Coefficients						NRC
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
Archdeck A	0.14	0.36	0.89	0.95	0.53	0.34	0.70
Archdeck PA	0.46	0.64	1.12	0.99	0.76	0.58	0.90

Archdeck panels with low rises compared to their span (Rise/Span < .07) are not analyzed as arches. These relatively flat curves should be analyzed as simply supported beams with load capacity based on flat panel properties.

Archdeck Maximum Spans—Rise/Span < .07, Span ≤ 15' for Typical Uniform Roof Design Loads (ft.-in.)

Panel Type	Gage	LL = 30, DL = 10	LL = 40, DL = 10	LL = 50, DL = 10
Archdeck	20	12-6	11-6	10-6
	18	13-6	12-6	11-6
	16	15-0	13-6	12-6
Archdeck P	20/20	12-6	11-6	10-6
	18/20	13-6	12-6	11-6
	16/20	15-0	13-6	12-6

For Archdeck A, reduce spans by 5%

Consult EPIC Metals for spans and loads if the Archdeck or Archdeck A are to be specified without the top minor ribs.

Archdeck & Archdeck P(A) Load Table—Rise/Span ≥ .07 Uniform Total Load (Dead and Live) in Pounds Per Square Foot (Simple Spans)

Rise/Span Ratio	Gage	Horizontal Span (ft.)													
		14	16	18	20	22	24	26	28	30	32	34	36	38	40
0.07	18	-	-	-	-	-	-	-	29	27	26	-	-	-	-
	16	74	65	58	52	47	43	40	37	35	32	30	29	27	26
0.08	18	-	-	-	-	-	-	-	-	-	29	27	26	-	-
	16	84	73	65	59	53	49	45	42	39	37	34	33	31	29
0.09	18	-	-	-	-	-	-	-	-	-	-	-	29	27	26
	16	93	81	72	65	59	54	50	46	43	41	38	36	34	33
0.10	18	-	-	-	-	-	-	-	-	-	-	-	-	-	28
	16	102	89	79	71	65	59	55	51	48	45	42	40	38	36
0.11	16	110	97	86	77	70	64	59	55	52	48	45	43	41	39
0.12	16	119	104	92	83	76	69	64	59	55	52	49	46	44	42
0.13	16	127	111	98	89	81	74	68	63	59	55	52	49	47	44
0.14	16	134	117	104	94	85	78	72	67	63	59	55	52	49	-
0.15	16	141	123	110	99	90	82	76	71	66	62	58	55	-	-
0.16	16	148	129	115	103	94	86	80	74	69	65	61	-	-	-

- NOTES: 1. Dashes indicate rise to span ratio not met or limitations due to manufacturing/shipping. Loads below 25 psf not listed.
 2. Connections to supporting structural members are critical. Consult EPIC for more information.
 3. The loads listed in the above table are based on uniform loading of an arched structure.
 4. Loading other than uniform must be structurally investigated.
 5. End supports must be restrained from horizontal movement to maintain arching action.

For Archdeck A the above table does not apply. Consult with EPIC Metals.



Polk State College, Chain of Lakes Bldg
Winter Haven, Florida
Archdeck PA – 24' radius

Archdeck® (A) Curved Roof Deck Ceiling Systems Specifications

Note: Omit underlined areas for non-acoustic applications

PART 1: GENERAL

1.1 SUMMARY

The requirements of this specification section include all materials, equipment, and labor necessary to furnish and install EPIC Archdeck A Acoustical panels.

1.2 SUBMITTALS

- Product Data: Submit manufacturer's specifications, section properties, load tables, dimensions, finishes, and noise reduction coefficients.
- Shop Drawings: Submit placement drawings showing profiles and material thicknesses, layout, anchorage, and openings as dimensioned on the structural drawings.
- Samples: Submit full width sample 3' long to verify compliance with the specifications and the level of quality.

1.3 REFERENCE STANDARDS

- Section Properties: Shall be computed in accordance with the *American Iron and Steel Institute (AISI) Specification for Design of Cold-Formed Steel Structural Members*.
- Welding: Shall comply with applicable provisions of the *American Welding Society (AWS) D1.3 Structural Welding Code – Sheet Steel*.
- Superimposed Load Capacities: Shall be computed in accordance with the requirements of the Steel Deck Institute (SDI).
- Noise Reduction Coefficients: Shall be verified by the results of sound absorption tests conducted in accordance with ASTM C423 and E795.
- Manufacturer shall have been engaged in the production of smooth curved 3' deep roof deck ceiling systems for a period of at least ten years.

1.4 DELIVERY, STORAGE, AND HANDLING

- Archdeck A Acoustical panels shall be protected from damage during delivery, storage, and handling.
- If storage at the jobsite is required, Archdeck A Acoustical panels shall be protected from weather with a ventilated covering.

PART 2: PRODUCTS

2.1 MANUFACTURER

- In accordance with the requirements of this specification section, provide products manufactured by EPIC Metals, Rankin, PA.

2.2 MATERIALS

- Archdeck A Acoustical panels shall be manufactured from cold-formed steel sheets conforming to ASTM A653 Structural Quality with a minimum strength of 40 ksi.
- Before forming, the steel sheets shall have received a hot-dip protective coating of zinc conforming to ASTM-A-924, Class G60 or G90.
Epiclad® Paint Option—Prior to forming, galvanized steel shall be chemically cleaned and pre-treated followed by an oven-cured epoxy primer and a second coat of oven-cured polyester paint.
- The minimum uncoated thickness of materials furnished shall not be less than 95% of the design thickness.

Note: Not available with the natatorium paint specification.

2.3 FABRICATION

- Archdeck A Acoustical panels shall be cold-formed by the roll forming process to ensure quality and uniformity of profile.
- Archdeck A Acoustical panels shall be smooth-curved to the radii as indicated on the drawings.
- The webs of acoustic Archdeck A Acoustical panels shall be perforated with uniform rows of round holes for enhanced acoustic performance. Acoustic elements shall be provided to completely fill the flutes of the panels to provide an NRC rating of .70.

- Archdeck A Acoustical panels shall have overlapping sidelaps suitable for screw or weld fastening.
- The Archdeck A Acoustical panel type and gage shall be indicated on the structural drawings.
 - The structural drawings shall indicate required minimum design thicknesses.
 - The Archdeck A Acoustical panels selected shall be capable of supporting the design loads indicated on the structural drawings.
 - Openings and reinforcement for openings shall be provided as indicated on the structural drawings.
 - Manufacturer's standard ridge plates, valley plates, transition plates, sump pans, and eave plates shall be provided unless indicated otherwise on the structural drawings.

PART 3: EXECUTION

3.1 GENERAL

- The Archdeck A Acoustical panels shall be installed in strict accordance with the manufacturer's instructions, approved erection drawings, the *Steel Deck Institute's (SDI) Manual for Construction with Steel Deck*, and all applicable safety regulations.

3.2 INSTALLATION

- When it has been determined by the erector that it is safe to hoist bundles of material onto the supporting frame, it shall be located on the supporting frame in such manner that overloading of any of the individual framing members does not occur.
- Before being permanently fastened, Archdeck A Acoustical panels shall be placed on the supporting frame and adjusted to final position with ends accurately aligned and adequately bearing on the supporting frame. Consistent coverage shall be maintained so that panels located in adjacent bays will be properly aligned.
- Cutting of Archdeck A Acoustical panels to suit jobsite conditions, including all skew cuts, shall be performed in a neat and workmanlike manner. Only those openings indicated on the structural drawing shall be cut. Other openings shall be cut and reinforced by those requiring the opening as approved by the structural engineer.
- Archdeck A Acoustical panels shall be fastened to all supporting members with 0.75" diameter puddle welds at a spacing of 8" on center or as indicated on the manufacturer's erection drawings.
- The sidelaps of Archdeck A Acoustical panels shall be fastened together with #12 screws or 1"-long welds at a maximum spacing of 36" on center or less as indicated on the manufacturer's erection drawings.
- The sides of Archdeck A Acoustical panels located at the perimeter of the building shall be fastened to supporting members at an interval equal to the side lap spacing or as indicated on the manufacturer's erection drawings.
- Construction loads shall not be applied to Archdeck A Acoustical panels until after the panels are permanently fastened to supporting members and shall not exceed the load-carrying capacity of the panels as shown in the table on page 4 or 5.
- Items such as ceilings, light fixtures, conduit, pipe, and ductwork shall not be suspended from Archdeck A Acoustical panels without specific approval of the structural engineer.

Archdeck P(A) Curved Roof Deck Ceiling Systems Specifications

Note: Omit underlined areas for non-acoustic applications

PART 1: GENERAL

1.1 SUMMARY

- The requirements of this specification section include all materials, equipment, and labor necessary to furnish and install EPIC Archdeck PA Acoustical panels.

1.2 SUBMITTALS

- Product Data: Submit manufacturer's specifications, section properties, load tables, dimensions, finishes, and noise reduction coefficients.
- Shop Drawings: Submit placement drawings showing profiles and material thicknesses, layout, anchorage, and openings as dimensioned on the structural drawings.
- Samples: Submit full width sample 3' long to verify compliance with the specifications and the level of quality.

1.3 REFERENCE STANDARDS

- Section Properties: Shall be computed in accordance with the *American Iron and Steel Institute (AISI) Specification for Design of Cold-Formed Steel Structural Members*.
- Welding: Shall comply with applicable provisions of the *American Welding Society (AWS) D1.3 Structural Welding Code – Sheet Steel*.
- Superimposed Load Capacities: Shall be computed in accordance with the requirements of the Steel Deck Institute (SDI).
- Noise Reduction Coefficients: Shall be verified by the results of sound absorption tests conducted in accordance with ASTM C423 and E795.
- Manufacturer shall have been engaged in the production of smooth curved 3' deep plated roof deck ceiling systems for a period of at least ten years.

1.4 DELIVERY, STORAGE, AND HANDLING

- Archdeck PA Acoustical panels shall be protected from damage during delivery, storage, and handling.
- If storage at the jobsite is required, Archdeck PA Acoustical panels shall be protected from weather with a ventilated covering.

PART 2: PRODUCTS

2.1 MANUFACTURER

- In accordance with the requirements of this specification section, provide products manufactured by EPIC Metals, Rankin, PA.

2.2 MATERIALS

- Archdeck PA Acoustical panels shall be manufactured from cold-formed steel sheets conforming to ASTM A653 Structural Quality with a minimum strength of 40 ksi.
- Before forming, the steel sheets shall have received a hot-dip protective coating of zinc conforming to ASTM-A-924, Class G60 or G90.
Epiclad® Paint Option—Prior to forming, galvanized steel shall be chemically cleaned and pre-treated followed by an oven-cured epoxy primer and a second coat of oven-cured polyester paint.
Natacoat® Paint Option—For specialized painting systems that are recommended for Natatoriums and other high humidity applications, contact EPIC Metals.
- The minimum uncoated thickness of materials furnished shall not be less than 95% of the design thickness.

2.3 FABRICATION

- Archdeck PA Acoustical panels shall be cold-formed by the roll forming process to ensure quality and uniformity of profile.
 - Archdeck PA Acoustical panels shall have dovetail type sidelaps suitable for screw or weld fastening.
 - Shallow stiffening ribs shall be roll-formed into the bottom plates of Archdeck PA Acoustical panels. Ribs shall be located in the area between the webs to enhance the flatness of the bottom plate.

- Archdeck PA Acoustical panels shall be smooth-curved to the radii as indicated on the drawings.
- The bottom plates of cellular acoustic Archdeck PA Acoustical panels shall be perforated with uniform rows of round holes for enhanced acoustic performance. Acoustic elements shall be provided for the cells of the panels to provide an NRC rating of .90. The acoustic elements shall be factory installed and supported above the bottom plate by clips or continuous mesh to avoid plugging the acoustic perforations during field painting.
- The type of Archdeck PA Acoustical panels and gage required shall be indicated on the structural drawings.
 - The structural drawings shall indicate required minimum design thicknesses.
 - The Archdeck PA Acoustical panels selected shall be capable of supporting the design loads indicated on the structural drawings.
 - Openings and reinforcement for openings shall be provided as indicated on the structural drawings.
 - Manufacturer's standard ridge plates, valley plates, transition plates, sump pans, and eave plates shall be provided unless indicated otherwise on the structural drawings.

PART 3: EXECUTION

3.1 GENERAL

- The Archdeck PA Acoustical panels shall be installed in strict accordance with the manufacturer's instructions, approved erection drawings, the *Steel Deck Institute's (SDI) Manual for Construction with Steel Deck*, and all applicable safety regulations.

3.2 INSTALLATION

- When it has been determined by the erector that it is safe to hoist bundles of material onto the supporting frame, it shall be located on the supporting frame in such manner that overloading of any of the individual framing members does not occur.
- Before being permanently fastened, Archdeck PA Acoustical panels shall be placed on the supporting frame and adjusted to final position with ends accurately aligned and adequately bearing on the supporting frame. Consistent coverage shall be maintained so that panels located in adjacent bays will be properly aligned.
- Cutting of Archdeck PA Acoustical panels to suit jobsite conditions, including all skew cuts, shall be performed in a neat and workmanlike manner. Only those openings indicated on the structural drawing shall be cut. Other openings shall be cut and reinforced by those requiring the opening as approved by the structural engineer.
- Archdeck PA Acoustical panels shall be fastened to all supporting members with 0.75"-diameter puddle welds at a spacing of 8" on center or as indicated on the manufacturer's erection drawings.
- The sidelaps of Archdeck PA Acoustical panels shall be fastened together with 1"-long welds or #12 screws (maximum length ¾") at a maximum spacing of 36" on center or less as indicated on the manufacturer's erection drawings.
- The sides of Archdeck PA Acoustical panels located at the perimeter of the building shall be fastened to supporting members at an interval equal to the sidelap spacing as indicated on the manufacturer's erection drawings.
- Construction loads shall not be applied to Archdeck PA Acoustical panels until after the panels are permanently fastened to supporting members and shall not exceed the load-carrying capacity of the panels shown in the table on page 4 or 5.
- Items such as ceilings, light fixtures, conduit, pipe, and ductwork shall not be suspended from Archdeck PA Acoustical panels without specific approval of the structural engineer.



Temple Beth, Las Cruces, New Mexico
Archdeck® PA - 29' Radius

Designer's Responsibilities & Warranty

Designer's Responsibility

The information presented in this brochure has been prepared in accordance with generally recognized engineering principles. We recommend that this information not be used or relied upon for any application without a thorough review by a licensed professional engineer, designer, or architect who will be competent to evaluate the significance and limitations of this material and who will accept responsibility for the application of this material for any specific application.

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Since hazards may be associated with the handling, installation, or use of steel and its accessories, prudent construction practices should always be followed. We recommend that the parties involved in such handling, installation, or use review all applicable manufacturer's material safety data sheets, applicable rules and regulations of the Occupational Safety and Health Administration and other government agencies having jurisdiction over such handling, installation, or use, and other relevant construction practice publications, including the Steel Deck Institute (SDI) *Manual for Construction with Steel Deck*.

Warranty

EPIC Metals warrants that materials to be furnished, insofar as they are manufactured by EPIC Metals, shall be free from structural defects. In the event of the failure of the material within one year from the date of delivery, and providing that such failure is attributed to defects found to have existed at the time of delivery, EPIC Metals' liability hereunder shall be limited to furnishing necessary replacement material. EPIC Metals assumes no liability for damages, losses, or injuries, direct or consequential, that may arise from use or inability to use the products.

Except as herein provided, there are no expressed or implied warranties as to merchantability or fitness of the materials for any particular purpose.



Lynn Family Stadium
Louisville, Kentucky
Archdeck P - 20' radius

Front Cover: Northside Forsyth
Women's Center
Cumming, Georgia
Archdeck® PA - 17' radius

Specifying EPIC Metals' Archdeck® Curved Roof Deck Ceiling Systems for your next project can bring the structural art of the building's design and acoustics to the appreciation of the public. Acoustic Archdeck enables the architect or engineer to control the interior sound environment of the building. EPIC Metals continues to be the innovative leader in the design and production of long-span roof and floor deck ceiling systems.



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EPIC Roof and Acoustical
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EPIC Composite Acoustical
Floor and Form Decks



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MEMBER



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Steel Deck with
EPICLAD® Finish
Red List Free

