

Engineers guide to structural steel savings with B-Line series cable ladder system



Powering Business Worldwide

Table of Contents

Cable Ladder Best Practice	3-4
Evolution of Project Savings	5
Structural Steel Savings Technical White Paper	6-7
Vertical Inside / Outside Bend Recommendations	
Option 1 ½ Span	8
Option 2 Dual Support	9
Option 3 Dual Support	10
Option 4 Floating	11
Horizontal Bend Recommendations	
Option 1 ½ Span	12
Option 2 Dual Support	13
Option 3 Floating	14
Horizontal Tee Recommendations	
Option 1 ½ Span	15
Option 2 ½ Span / Dual Support	16
Option 3 Dual Support	17
Option 4 Floating	18
Horizontal Cross Recommendations	
Option 1 ½ Span	19
Option 2 ½ Span / Dual Support	20
Option 3 Dual Support	21
Option 4 Floating	22
Reducer Fitting Recommendations	23
Vertical Adjustable Splice Plate Recommendations	24
Heavy Duty Expansion Splice Plate Recommendations	25
Case Study	26
Additional Resources	27

Lower total install cost solution through reduction of structural steel supports

Eaton provides solutions that de-risk by design and drive value to our end customers. With Eaton's B-Line series cable ladder, Eaton provides support recommendations that meet and exceed NEMA VE-2 requirements. These methods have been applied across the globe on multiple applications and projects, and have saved customers millions of dollars on structural steel.

This brochure provides an overview of Eaton's recommendations for structural steel supports when utilizing Eaton's B-Line series cable ladder, fittings and splice plates. For additional information, and online resources and tools, visit Eaton.com/SSS.

Cable ladder best practice

To maximize cost savings on any cable ladder project, it is essential that:

- Electrical and structural engineers and contractors communicate effectively
- Support plans and layouts are discussed early on within the project life cycle (FEED - Front End Engineering Design) to ensure proper support placement, minimize construction complexity, and reduce budget spend

Support location best practice

1/4 Span - The method of placing supports at 1/4 span away from a splice plate location on continuous runs.

- Recommended installation method by NEMA VE 2 and Eaton's B-Line series
- Up to 50% deflection reduction over simple beam or mid span installations
- Eliminates hold down clamp and splice hardware interference issues during thermal expansion and contraction
- See Fig. 1A and Fig. 1B for visual stress comparison

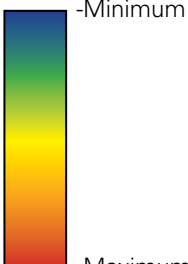
For best performance

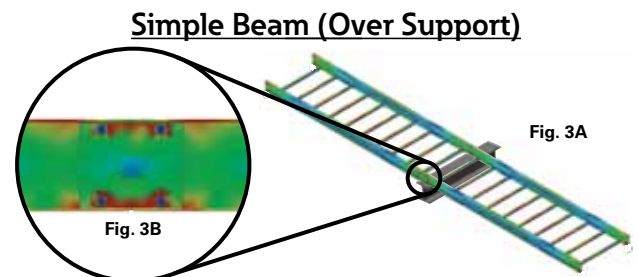
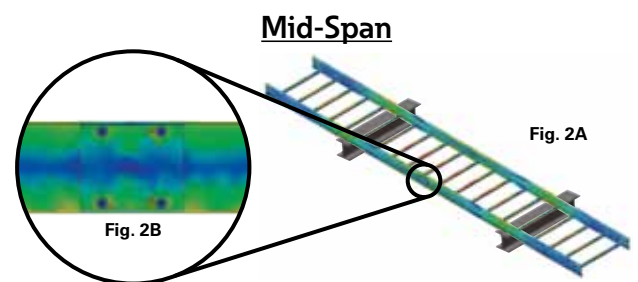
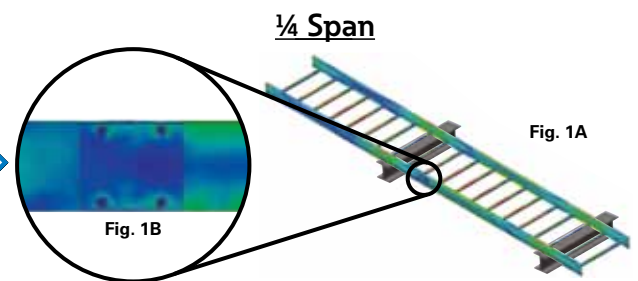
Mid-Span - The method of placing supports at 1/2 span away from a splice plate location on continuous runs.

- Excessive system deflection and stress experienced compared to 1/4 span support methodology
- Requires additional supports to account for proper thermal expansion and contraction
- Splice plate performance becomes more influential on deflection
- See Fig. 2A and Fig. 2B for visual stress comparison

Simple Beam (Over Support) - The method of placing supports directly under the splice plate locations on continuous runs.

- Maximum system deflection and stress experienced
- Leads to possible installation issues not allowing for proper thermal expansion and contraction
- See Fig. 3A and Fig. 3B for visual stress comparison

Support Location	System Stress and Deflection
1/4 Span	 <p>-Minimum</p> <p>-Maximum</p>
Mid-Span	
Over Support	



NEMA vs IEC Standards

National Electrical Manufacturer Association vs. International Electrotechnical Commission. NEMA & IEC both provide technical requirements regarding the construction, testing, and performance of metallic cable tray systems. However, testing methods differ drastically, showing different performance results. Choosing a manufacturer with proven success with both standards, such as Eaton's B-Line Division, is crucial to help ensure proper system design.

- IEC has 5 continuous span testing methods where NEMA has only 1 simple beam test method
- IEC test methods are deflection based while NEMA tests to destruction
- Splice plates are included within IEC test methods and not for NEMA
- IEC does not detail support recommendations, the IEC standard refers back to NEMA VE 2
- IEC requires 3rd party witness verification (such as DNV) while NEMA is internal. However 3rd party verification for NEMA (such as CSA or DNV) is common practice among top cable tray manufacturers.
- IEC requires product impact testing with extreme temperatures

Understanding Electrical Continuity

The National Electric Code (NEC) Article 392 states that a cable tray system can be utilized as an EGC (equipment grounding conductor) per the limitations of table 392.60(A).

- Only mechanically discontinuous locations (i.e. expansion splice plates & gaps) need bonding jumpers (required on both side rails)
- Indoor cable tray runs (when temperature controlled) do not require expansion joints, and therefore, bonding jumpers are not required to maintain electrical continuity
- Please see Fig. (4): Cable Ladder Amperage
- Cable tray and ladder systems are tested per UL, CSA, and/or IEC standards

Understanding Thermal Expansion

- Understanding where and how often to allow for thermal expansion and contraction is an essential measure to the longevity of a cable tray system
- Reduced system performance or failure is often due to improper system design NOT allowing for adequate thermal expansion and contraction
 - o See Fig. (5): Max Spacing Between Expansion Locations
 - o See Fig. (6): Thermal Gap Settings
 - o See Fig. (7): Guide vs. Clamp - HD Expansion Considerations

Fig (4): Cable Ladder Amperage

NEC Table 392.60(A). Metal Area Requirements for Cable Trays Used as Equipment Grounding Conductors		
Maximum Fuse Ampere Rating, Circuit Breaker Ampere Trip Setting, or Circuit Breaker Protective Relay Ampere Trip Setting for Ground-Fault Protection of Any Cable Circuit In the Cable Tray System	Minimum Cross-Section Area of Metal* In Square Inches	
	Steel Cable Trays	Aluminum Cable Trays
60	0.20	0.20
100	0.40	0.20
200	0.70	0.20
400	1.00	0.40
600	1.50**	0.40
1000	---	0.60
1200	---	1.00
1600	---	1.50
2000	---	2.00**

For SI units: one square inch=645 square millimeters.
 * Total cross-sectional area of both side rails for ladder or trough cable trays; or the minimum cross-sectional area of metal in channel cable trays or cable trays of one-piece construction.
 ** Steel cable trays shall not be used as equipment grounding conductors for circuits with ground-fault protection above 600amperes. Aluminum cable trays shall not be used as equipment grounding conductors for circuits with ground-fault protection above 2000 amperes.

Fig (5): Max Spacing Between Expansion Locations

Temperature Differential °F (°C)	Maximum Spacing Between Expansion Joints For 1" Movement					
	Steel Feet (m)	Aluminum Feet (m)	Stainless Steel		304 Feet (m)	316 Feet (m)
25 (13.9)	512 (156.0)	260 (79.2)	347 (105.7)	379 (115.5)		
50 (27.8)	256 (78.0)	130 (39.6)	174 (53.0)	189 (57.6)		
75 (41.7)	171 (52.1)	87 (26.5)	116 (35.4)	126 (38.4)		
100 (55.6)	128 (39.0)	65 (19.8)	87 (26.5)	95 (29.0)		
125 (69.4)	102 (31.1)	52 (15.8)	69 (21.0)	76 (23.2)		
150 (83.3)	85 (25.9)	43 (13.1)	58 (17.7)	63 (19.2)		
175 (97.2)	73 (22.2)	37 (11.3)	50 (15.2)	54 (16.4)		

Note: every pair of expansion splice plates requires two bonding jumpers for grounding continuity.

Fig (6): Thermal Gap Settings

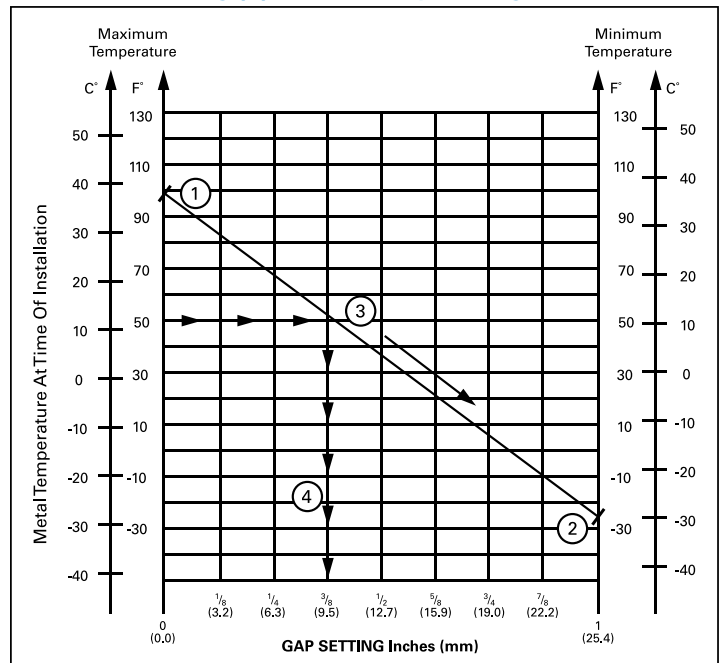
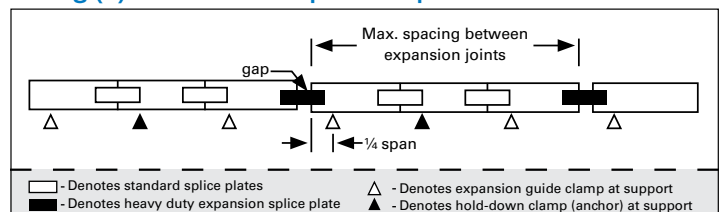
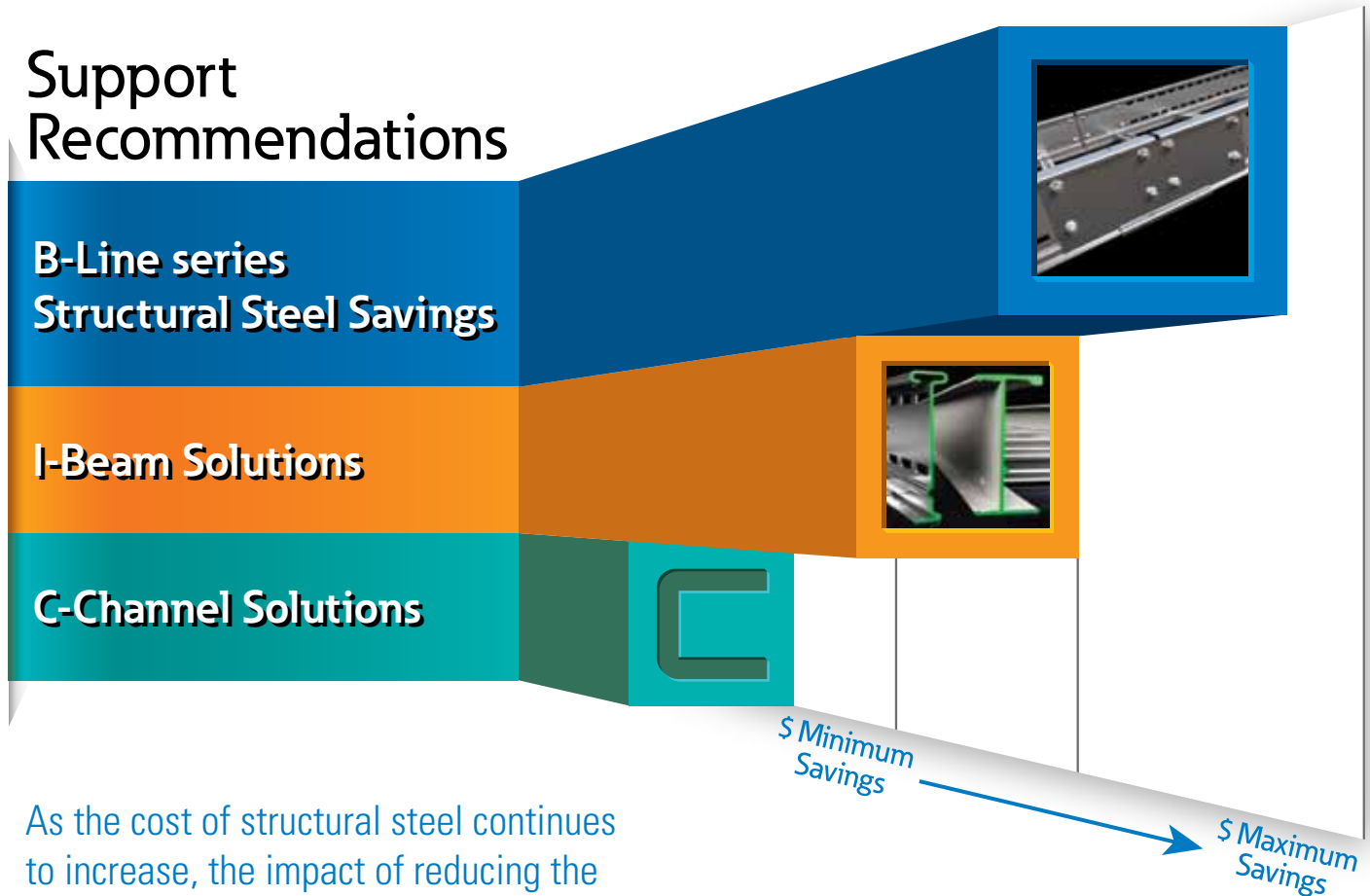


Fig (7): Guide vs. Clamp - HD Expansion Considerations

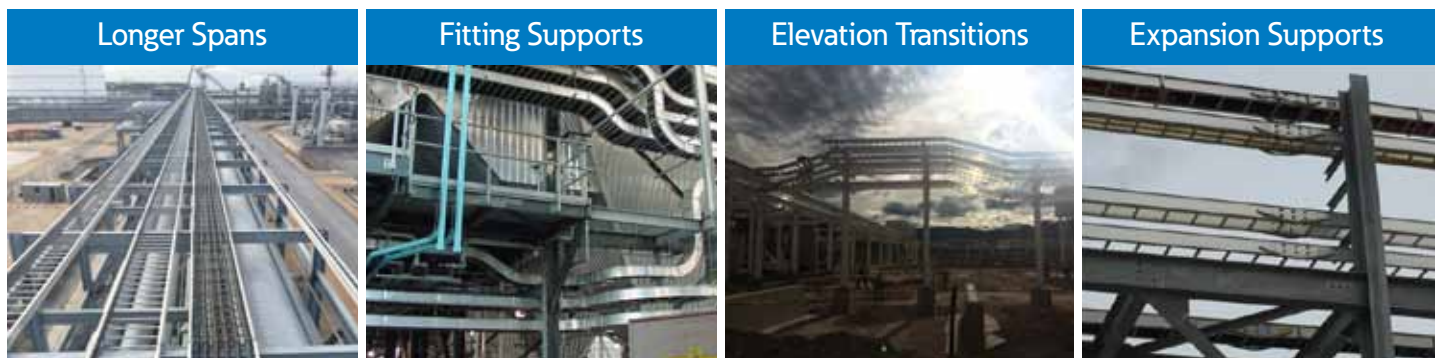


Evolution of Project Savings

Eaton's B-Line series engineered cable ladder solutions are leading the way for lower total installed cost.*



As the cost of structural steel continues to increase, the impact of reducing the quantity of supports on a projects can offset the cost of the cable ladder system all together.



*All support details will meet and exceed NEMA VE-2 requirements.



Lowering your total installed cost through structural steel savings

Matt Combes

Product Line Manager
Cable Management - North America
B-Line series solutions
Eaton, Highland, IL, USA

Overview / Introduction

Eaton's B-Line series metallic cable ladder systems are engineered to provide superior strength to weight ratio while providing the lowest total installed cost of any cable management system in the industry today. This is achieved through continuous innovation, market and customer based knowledge.

To achieve the lowest total installed cost, Eaton's engineers developed an innovative means to significantly reduce the number of structural steel supports needed in cable ladder installations, without diminishing the load carrying capacity of the system.

In addition, extensive laboratory testing has enabled the Eaton B-Line series cable ladder to exceed the National Electrical Manufacturer's Association (NEMA) VE-2 support recommendations for cable ladder installations.

The NEMA recommendations are created by active cable ladder manufacturers in North America, and are intended to provide a basic installation guideline for all cable ladder systems.

However, individual manufacturers can provide recommendations for their systems that exceed the basic guidelines outlined by NEMA VE-2 (section 3.5.1).



Eaton has been an active member of NEMA for two decades and our representative has held the chair position with the NEMA VE-2 Technical Committee. NEMA guidelines are written by cable tray manufacturers for cable tray manufacturers. "Unless otherwise recommended by the manufacturer" allows cable tray manufacturers to highlight differentiating factors for their cable tray.

When assessing a project for the lowest total installed cost, Eaton recommends focusing on four key design considerations:

- (1) Longer straight section spans
- (2) Fittings support locations
- (3) Vertical adjustable support locations
- (4) Thermal expansion support locations

Utilizing Longer Straight Section Spans

NEMA VE-2, (section 3.4.1) defines an allowable straight section support span as the following: "straight section support span should not exceed the straight section length".

Therefore, to eliminate supports, one option is to increase the length of cable ladder.

For example, transitioning from 10ft (3m) spans to 20ft (6m) spans reduces supports by 50%.

To create even more savings, Eaton offers B-Line series cable ladder systems that are capable of 30ft (9m) and 40ft (12m) support spans; dramatically reducing the overall quantity of structural supports needed on a job site.

The B-Line series cable ladder features a highly engineered I-beam rail, which maximizes the strength to weight ratio of the system, and allows for longer span capability.



Powering Business Worldwide

Effective June 2017

The breadth of materials and sizes enables Eaton to offer the ideal B-Line series solution to meet a variety of customer applications and load criteria. (Refer to *Structural Steel Savings (SSS-17) technical reference for support design considerations.*)



B-Line series aluminum cable ladder can range up to 40ft (12m) in length while steel can range up to 24ft (7.3m). This difference in length is due to the strength to weight ratio of aluminum.

Fitting Support Location Recommendations

When it comes to installing supports, cable tray fittings are one of the biggest challenges. Eaton's B-Line series cable ladder is engineered to provide flexibility in selecting the proper support locations for fittings.

Eaton's industry-leading 3in (75mm) or 4in (100mm) tangents help maximize the strength and load carrying capacity of splice plates at fitting locations which allows for a reduction in support requirements.

In fact, NEMA documentation does not require the testing of fitting locations altogether. However, Eaton has conducted extensive testing on its B-Line series cable ladder to provide several alternative options for supporting horizontal bends, tees, crosses, and vertical bends as compared to the NEMA VE-2 section 3.5.1 recommendations.



NEMA VE-2 (section 3.5.1) states, "Recommended support locations follow, unless otherwise recommended by the manufacturer". (Refer to *Structural Steel Savings (SSS-17) technical reference for support design considerations.*) Supports are not limited to structural steel, but can be defined as strut channel and angle iron. The same recommendations apply to these supports as well.

Vertical Adjustable Supports Locations

For changes in elevation, with intermediate angles, and for cables not requiring a large radius, vertical adjustable splice plates are often the best solution.

NEMA VE-2 (section 3.4.3) states that a support is required within 2ft (600mm) on both sides of every vertical adjustable splice plate regardless of series or span.

Eaton has conducted extensive testing to prove that pairing B-Line series cable ladder and vertical splice plate, installers can forego transitional supports up to half span for steel, stainless steel, and aluminum cable ladder systems (2-5 and metric cable ladder series). This allows a 20ft (6m) ladder to span 10ft (3m) unsupported between adjustable splice plates.

Similarly, cable ladder series are designed for 30ft (9m) spans and can be unsupported up to 15ft (4.5m) between vertical adjustable splice plates and up to 20ft (6m) unsupported spans can be utilized with 40ft (12m) ladders.



Refer to *Structural Steel Savings (SSS-17) technical reference for support design considerations.* The vertical adjustable splice plate is an unparalleled "Eaton B-Line series only solution", and is applicable for both NEMA and IEC industrial style cable ladders.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

© 2017 Eaton
All Rights Reserved
Printed in USA
Publication No. WP302012EN
July 2017 WPS-17



Powering Business Worldwide

Thermal Expansion Support Location

Designing and accounting for proper thermal expansion and contraction is key to the longevity of a cable ladder installation.

As NEMA VE-2 details in section 3.4.1, "it is ideal to lay out the system so that splice joints fall between the support and the quarter point."

It is important to note that placing expansion splice plates directly on top of supports does not comply with NEMA VE 2 section 3.4.2, and is therefore not recommended.

Conversely, Eaton's patented B-Line series heavy duty expansion splice plate eliminates the need to install additional supports within 2ft (600 mm) on each side of the expansion location when placed at the quarter point of a support span.

Similar to the fitting supports detailed above, the performance of Eaton's highly engineered B-Line series heavy duty expansion splice plate complies with and exceeds NEMA VE-2 recommendations as detailed in section 3.4.2.

This equates to the elimination of 2 supports every 65ft (20m) with the typical 20ft (6m) aluminum ladder with a 100°F temperature differential.



The heavy duty expansion splice plate is available for all industrial B-Line series cable ladder. Reach out to B-Line series technical sales for more information.

Conclusion

In conclusion, Eaton is committed to supplying its customers with innovative solutions that will result in the lowest total installed cost.

The most significant cost driver of cable ladder installations is the cost of the supports, whether it is an industrial or commercial application.

Depending on the complexity and location of the project, supports can range anywhere from \$500 to over \$15,000 each.

By incorporating Eaton's support recommendations with straight sections, fittings, vertical adjustable splice plates, and heavy duty expansion splice plates, B-Line series cable ladder solutions can help eliminate substantial costs in both labor and support materials on any given project.

Please feel free to contact your local Eaton B-Line series cable ladder representative to address any additional questions regarding this information or for assistance in optimizing your support layout.

For more information, visit Eaton.com/sss

Eaton is a registered trademark.

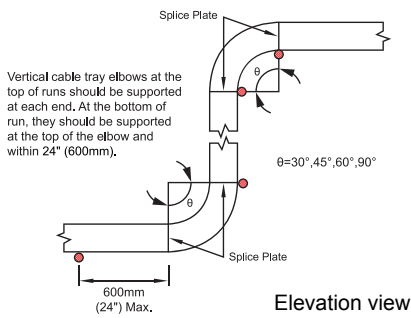
All other trademarks are property of their respective owners.

Eaton B-Line Division
509 West Monroe Street
Highland, IL 62249
United States
800-851-7415
Eaton.com/sss

Follow us on social media to get the latest product and support information.



NEMA Recommendation

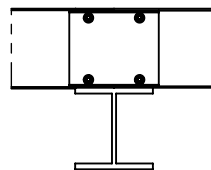
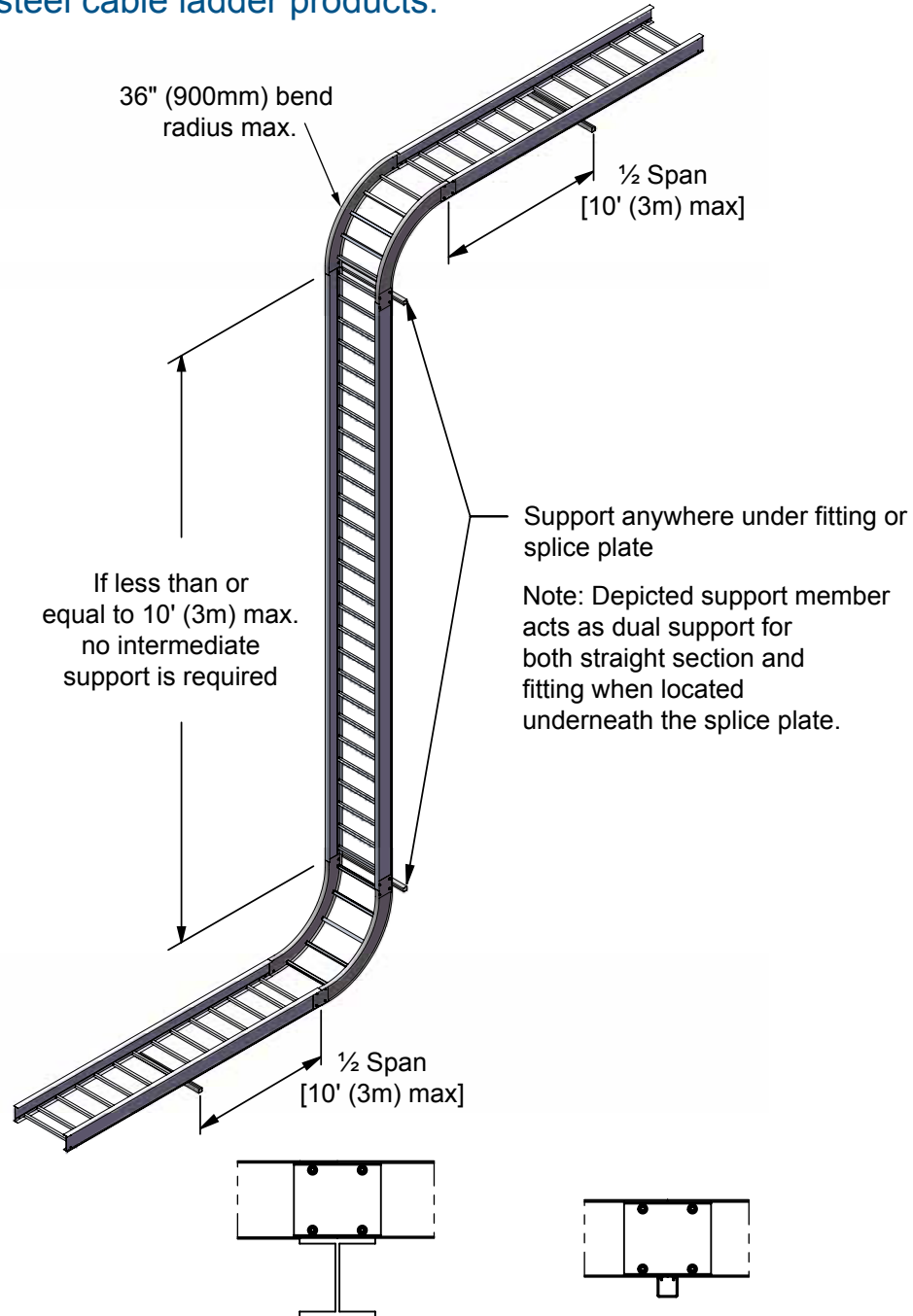


Vertical Inside / Outside Bend Support Recommendation

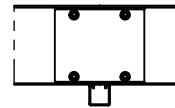
Option 1

"1/2 Span"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



I-Beam support method

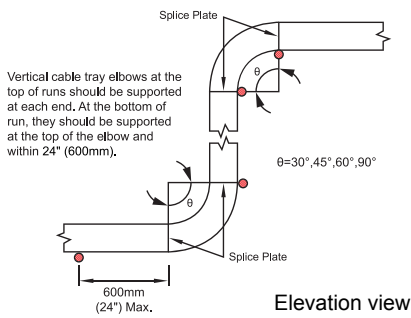


*Strut support method

Isometric view

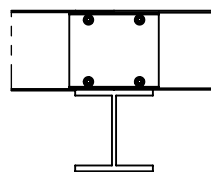
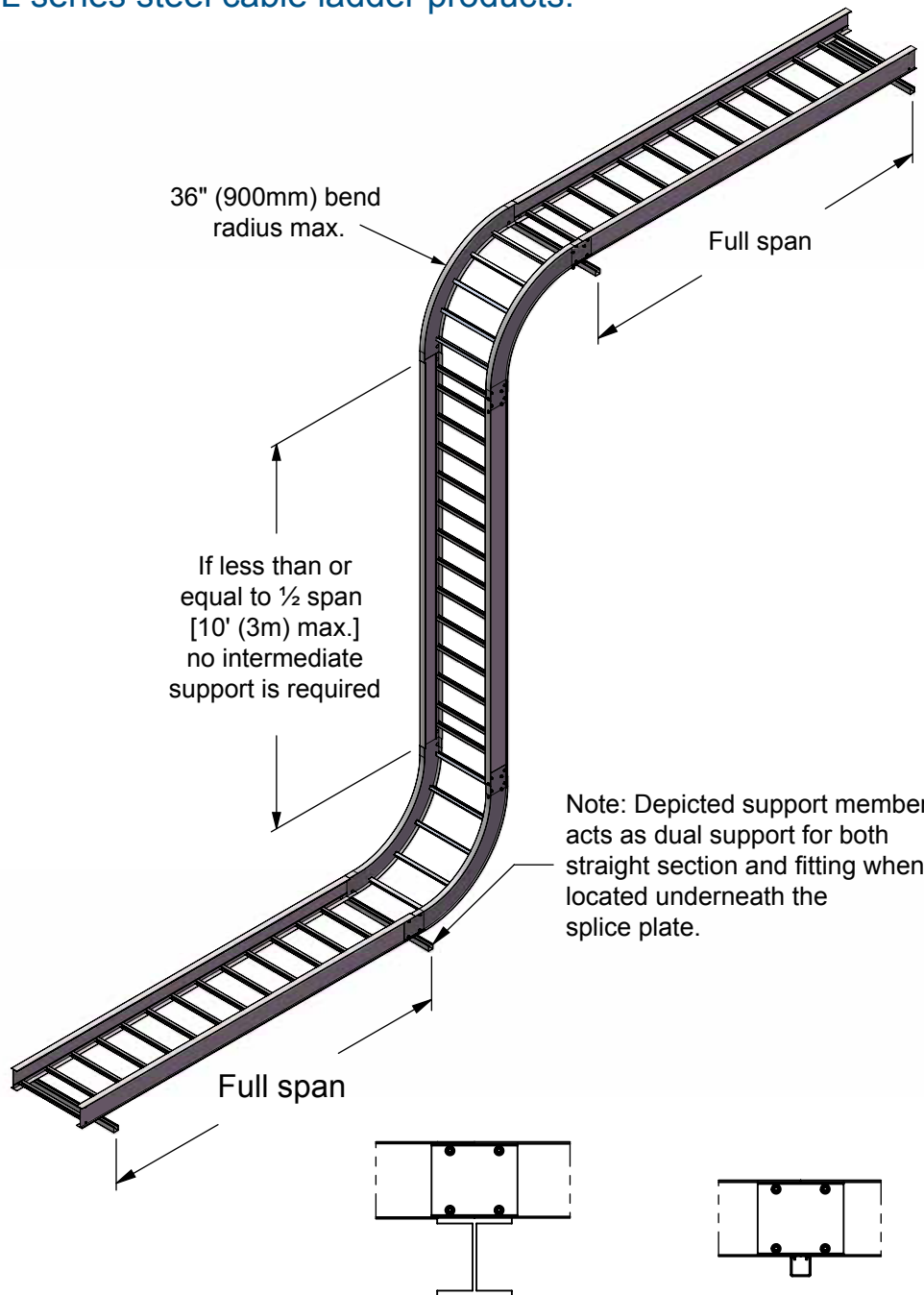
*Note: Support profile may be placed at any location underneath splice plate.

NEMA Recommendation

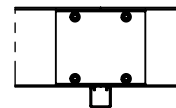


Vertical Inside / Outside Bend Support Recommendation Option 2 "Dual Support"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



I-Beam support method



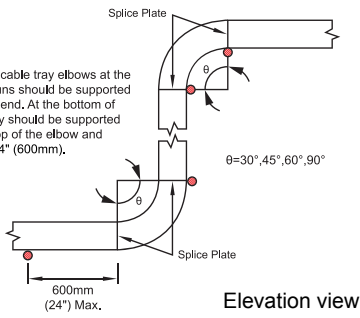
*Strut support method

*Note: Support profile may be placed at any location underneath splice plate.

Isometric view

NEMA Recommendation

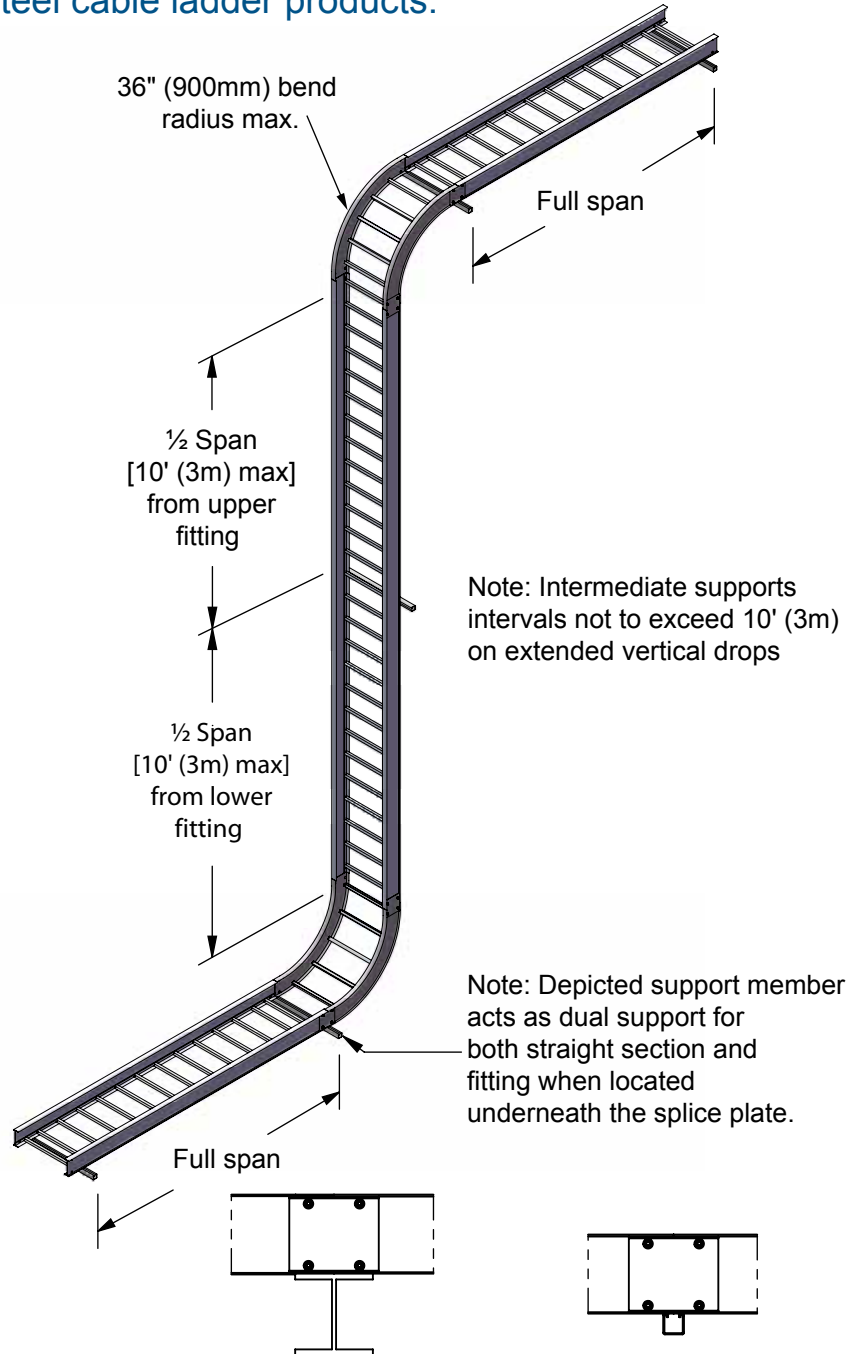
Vertical cable tray elbows at the top of runs should be supported at each end. At the bottom of run, they should be supported at the top of the elbow and within 24" (600mm).



Vertical Inside / Outside Bend Support Recommendation

Option 3 "Dual Support"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.

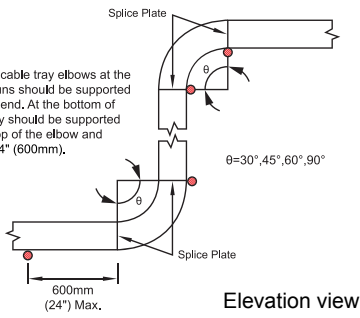


*Note: Support profile may be placed at any location underneath splice plate.

Isometric view

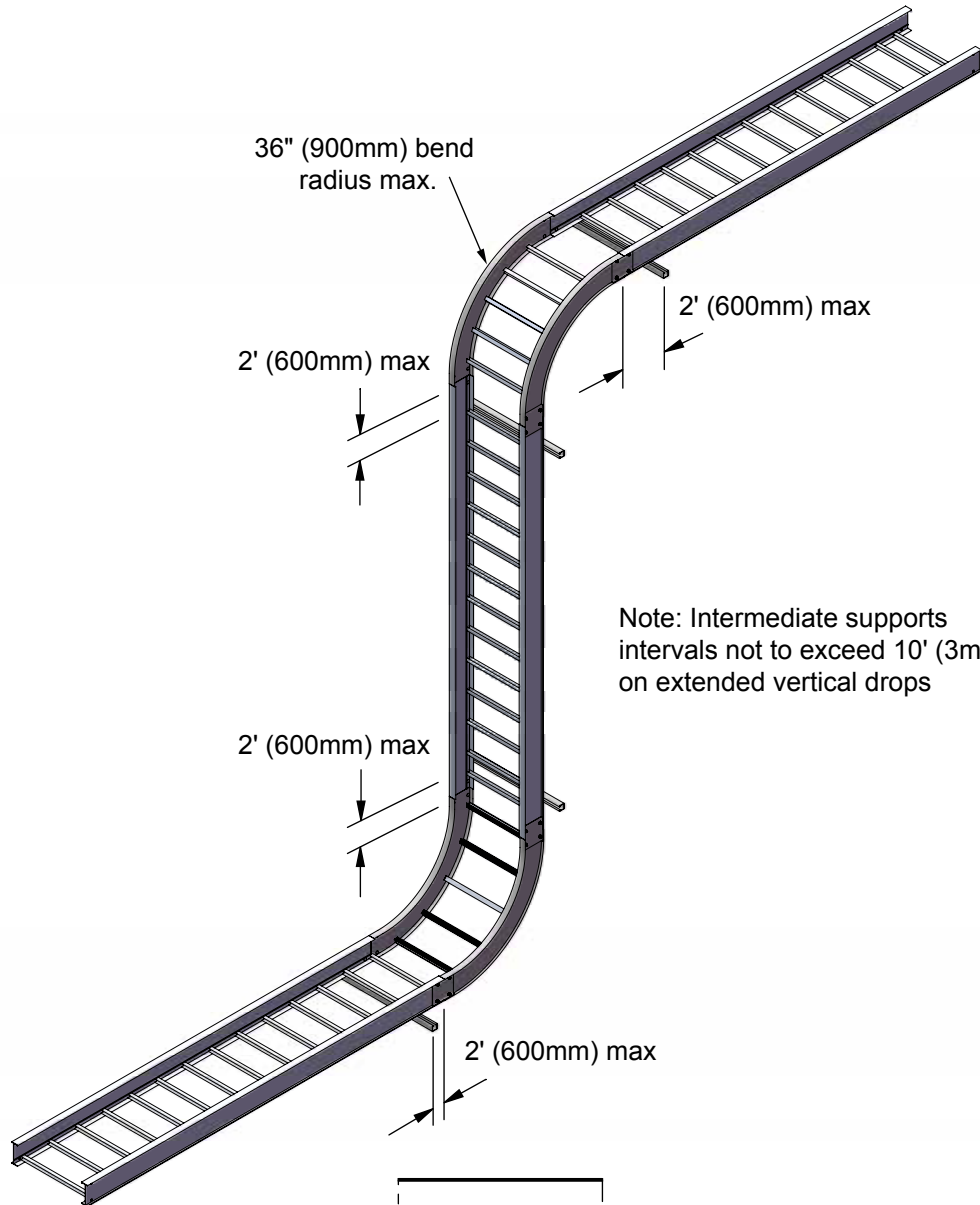
NEMA Recommendation

Vertical cable tray elbows at the top of runs should be supported at each end. At the bottom of run, they should be supported at the top of the elbow and within 24" (600mm).

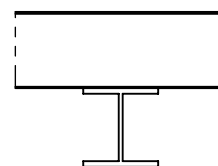


Vertical Inside / Outside Bend Support Recommendation Option 4 "Floating"

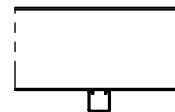
Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



Note: Intermediate supports intervals not to exceed 10' (3m) on extended vertical drops



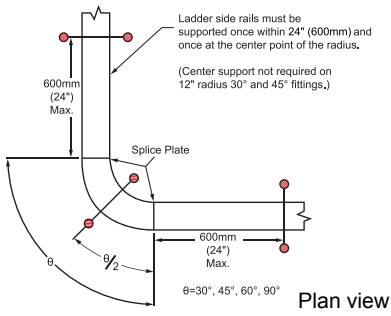
I-Beam support method



Strut support method

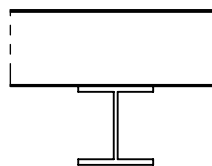
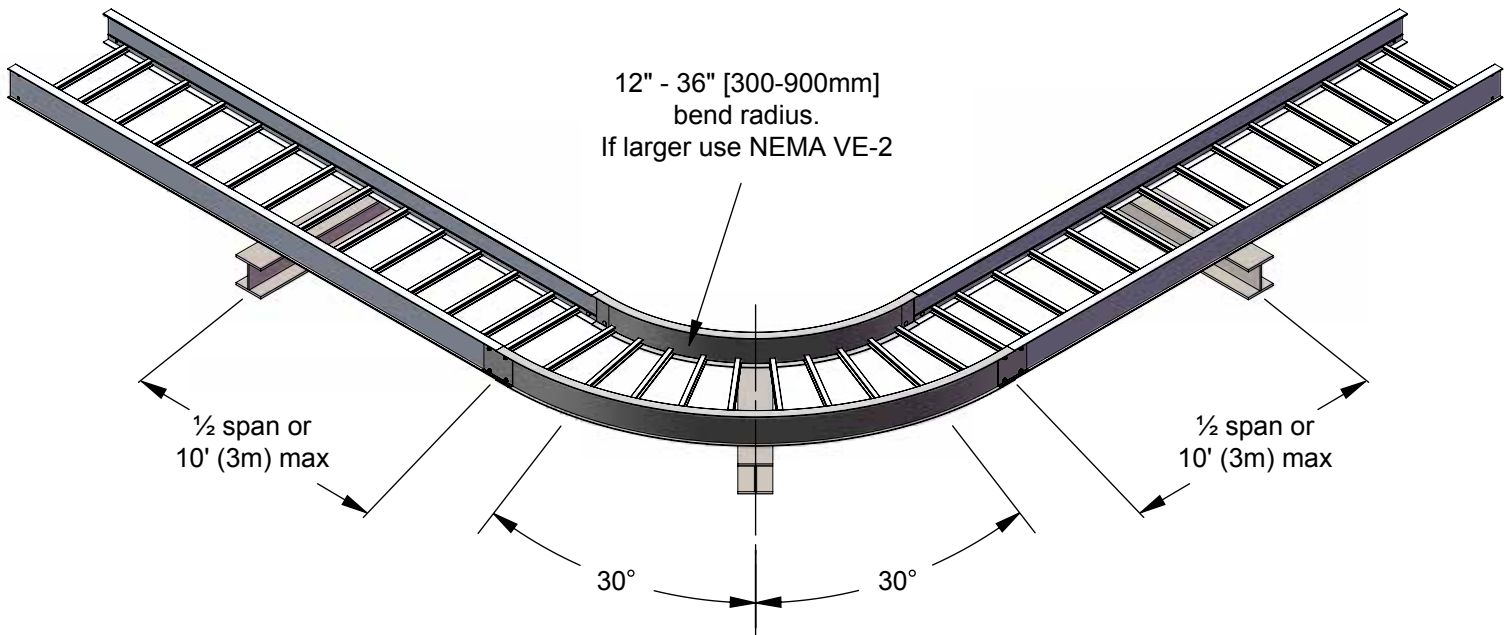
Isometric view

NEMA Recommendation

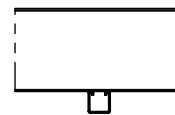


Horizontal Bend Support Recommendation Option 1 "1/2 Span"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



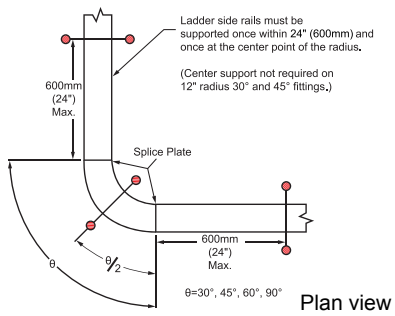
I-Beam support
method



Strut support
method

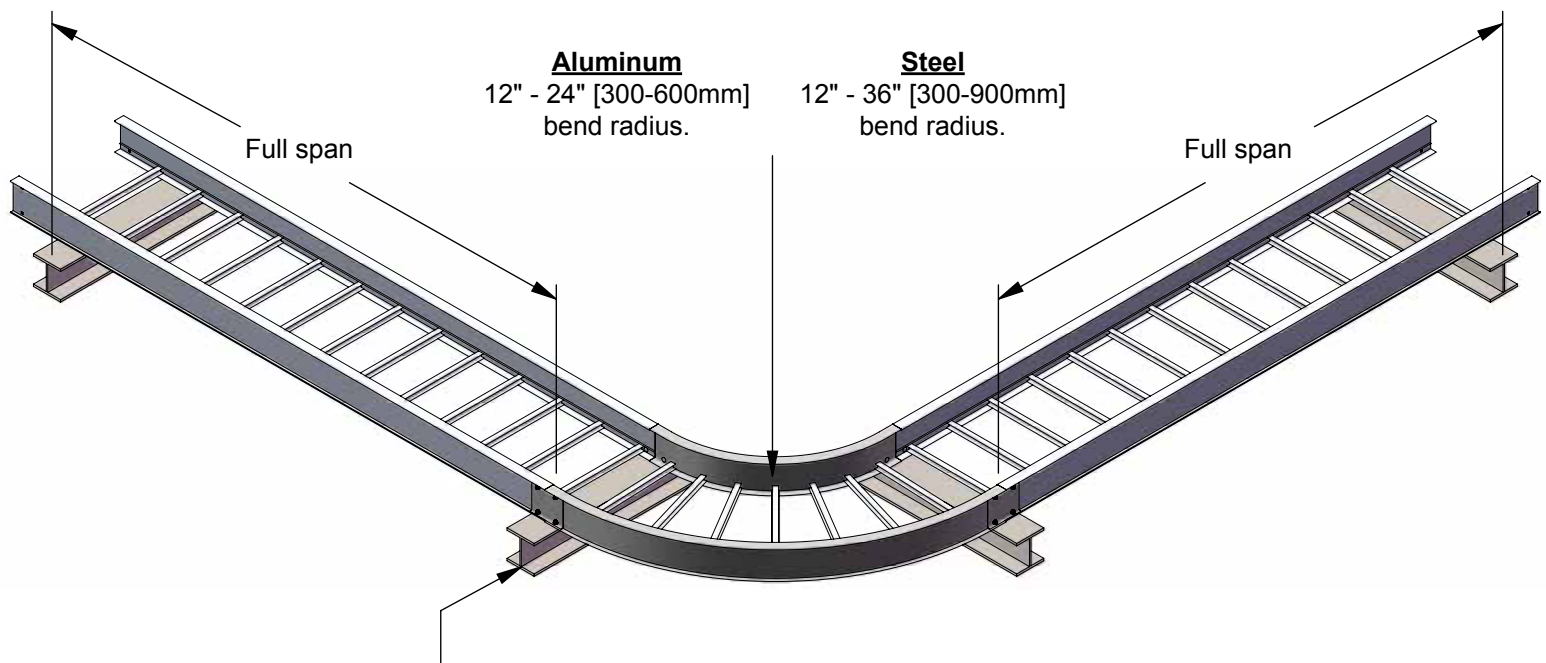
Isometric view

NEMA Recommendation

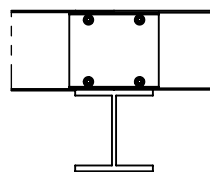


Horizontal Bend Support Recommendation Option 2 "Dual Support"

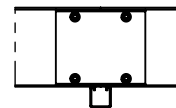
Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



Note: Depicted support member acts as dual support for both straight section and fitting when located underneath the splice plate.



I-Beam support method

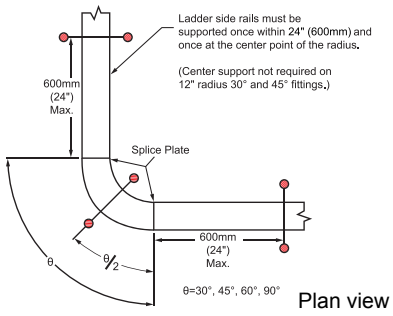


*Strut support method

*Note: Support profile may be placed at any location underneath splice plate.

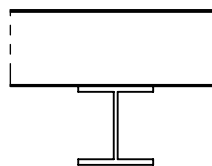
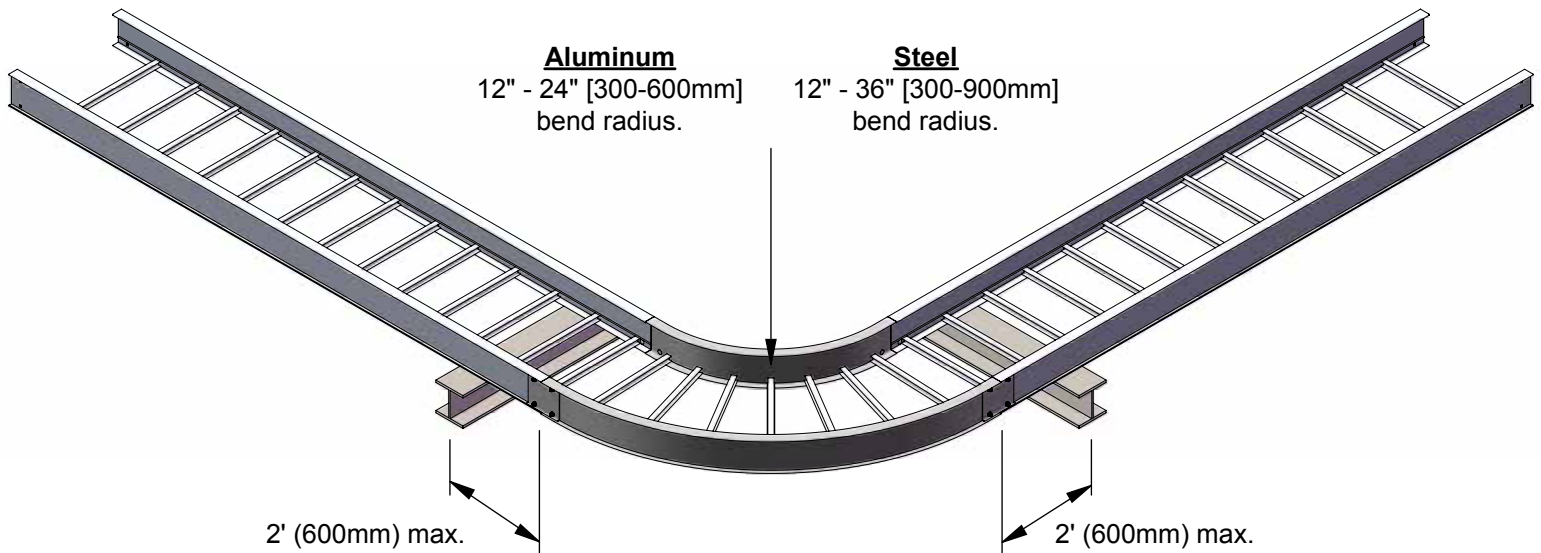
Isometric view

NEMA Recommendation

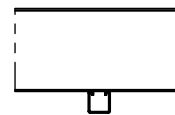


Horizontal Bend Support Recommendation Option 3 "Floating"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



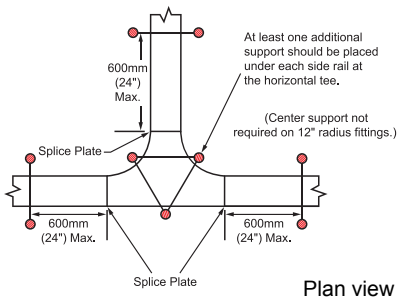
I-Beam support
method



Strut support
method

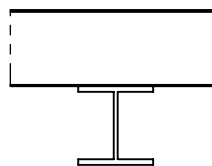
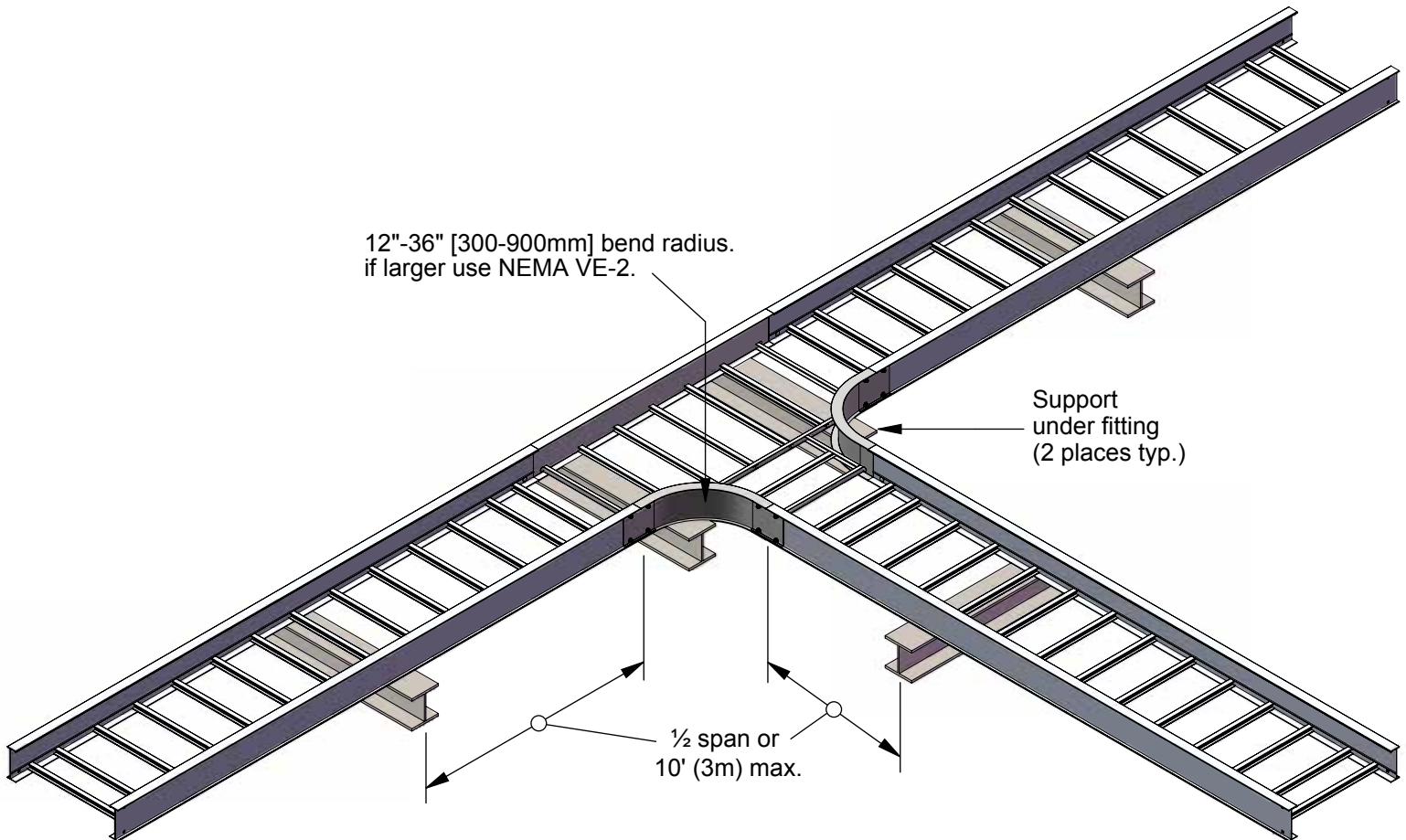
Isometric view

NEMA Recommendation

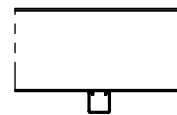


Horizontal Tee Support Recommendation Option 1 "1/2 Span"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



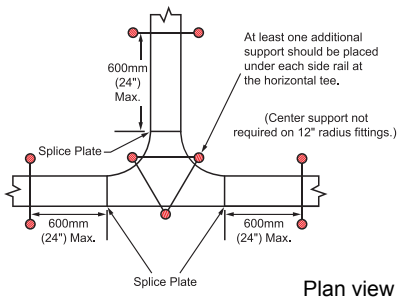
I-Beam support
method



Strut support
method

Isometric view

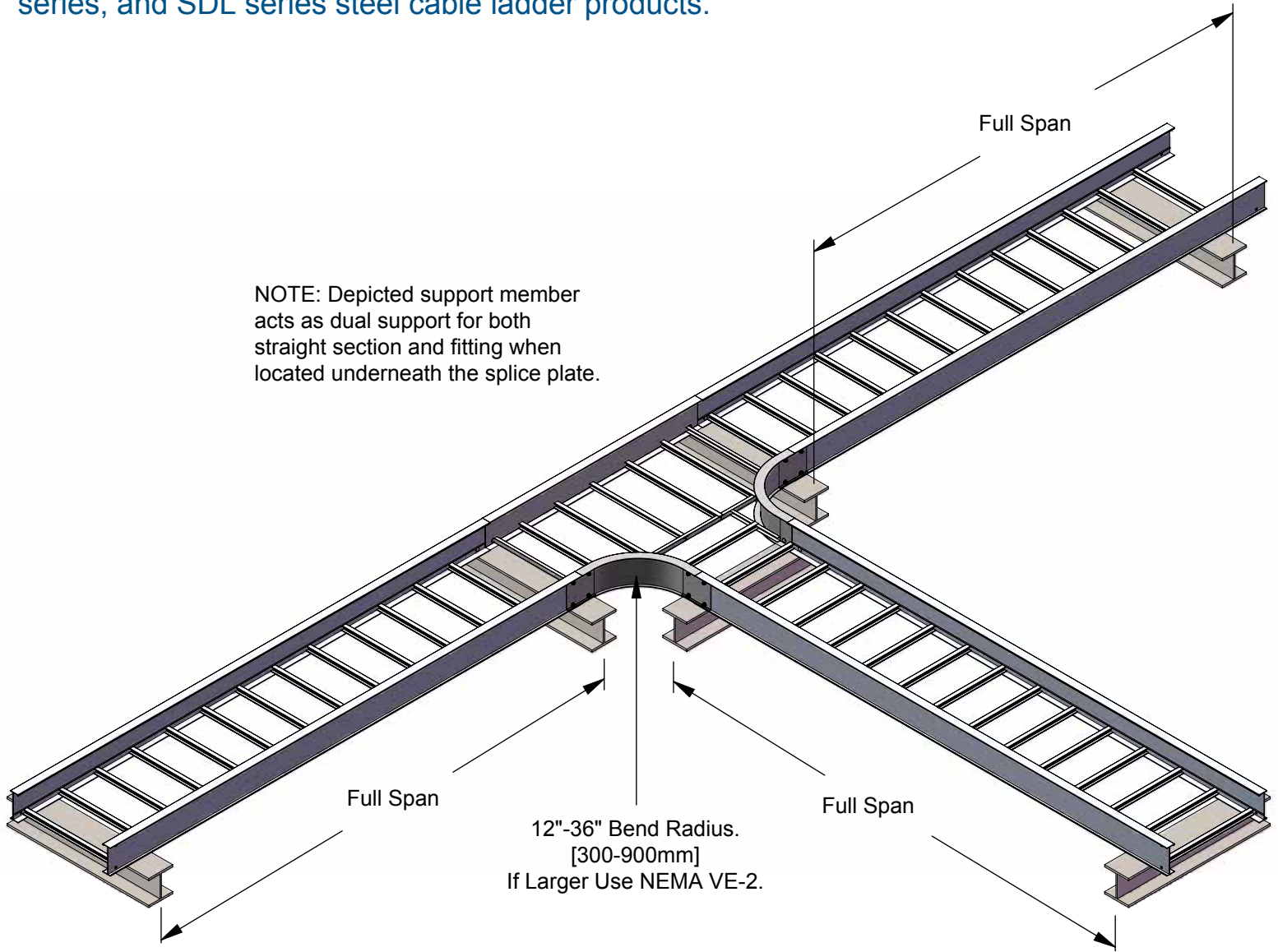
NEMA Recommendation



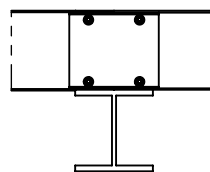
Horizontal Tee Support Recommendation Option 2 "Dual Support"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.

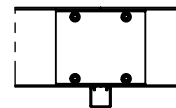
NOTE: Depicted support member acts as dual support for both straight section and fitting when located underneath the splice plate.



*Note: Support profile may be placed at any location underneath splice plate.



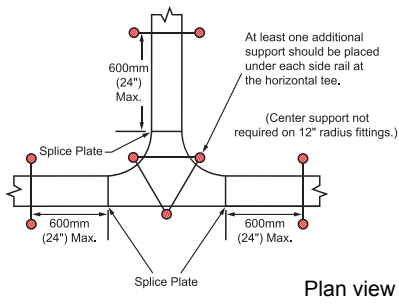
I-Beam support method



*Strut support method

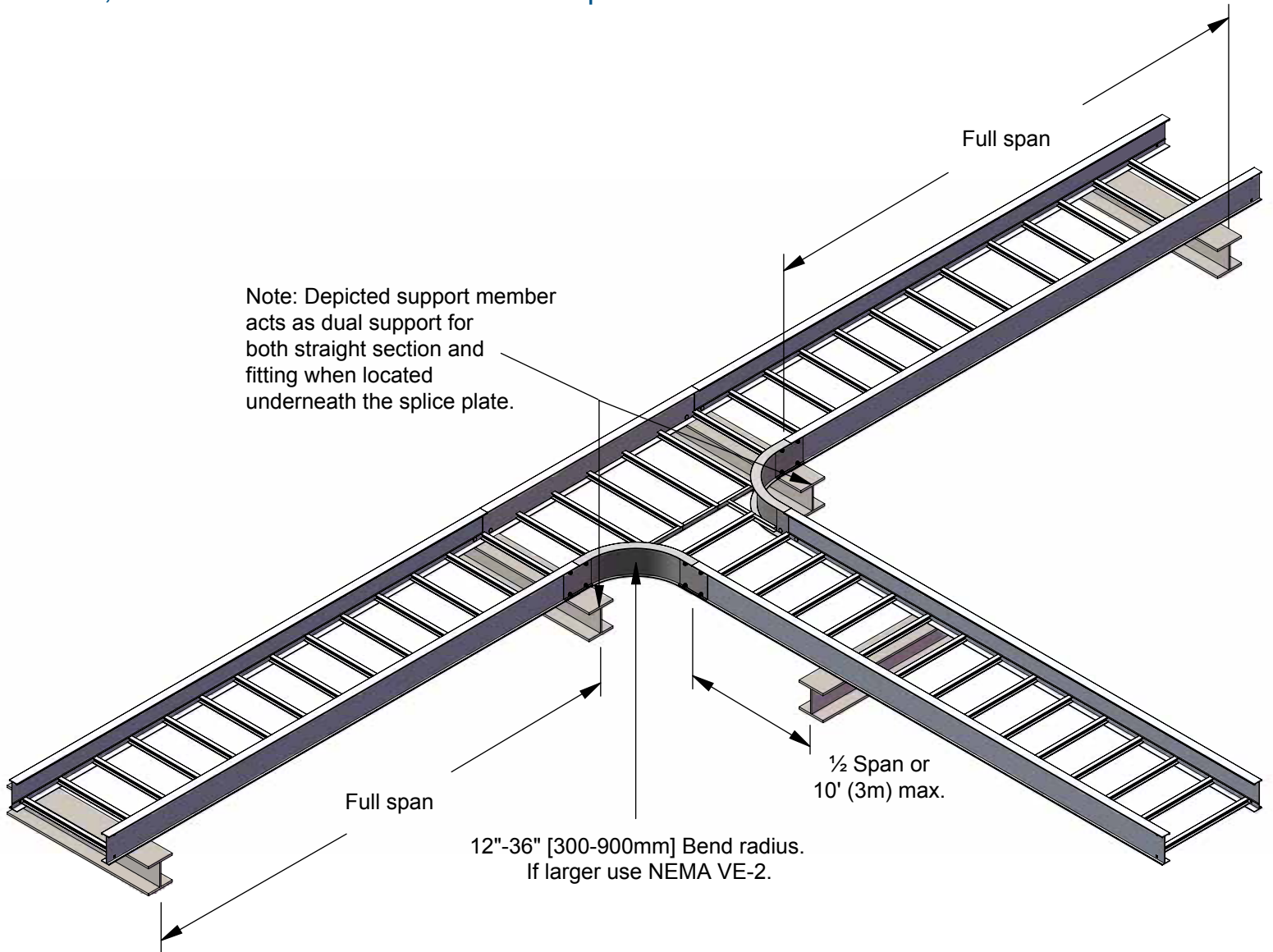
Isometric view

NEMA Recommendation

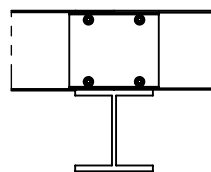


Horizontal Tee Support Recommendation Option 3 "½ Span / Dual Support"

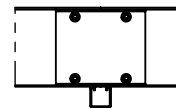
Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



*Note: Support profile may be placed at any location underneath splice plate.



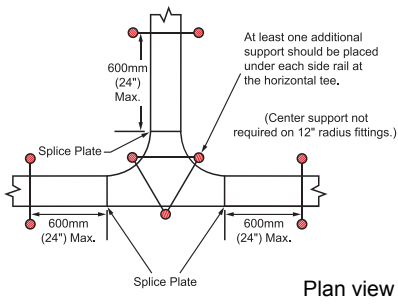
I-Beam support method



*Strut support method

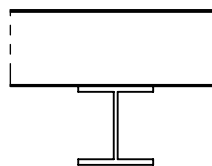
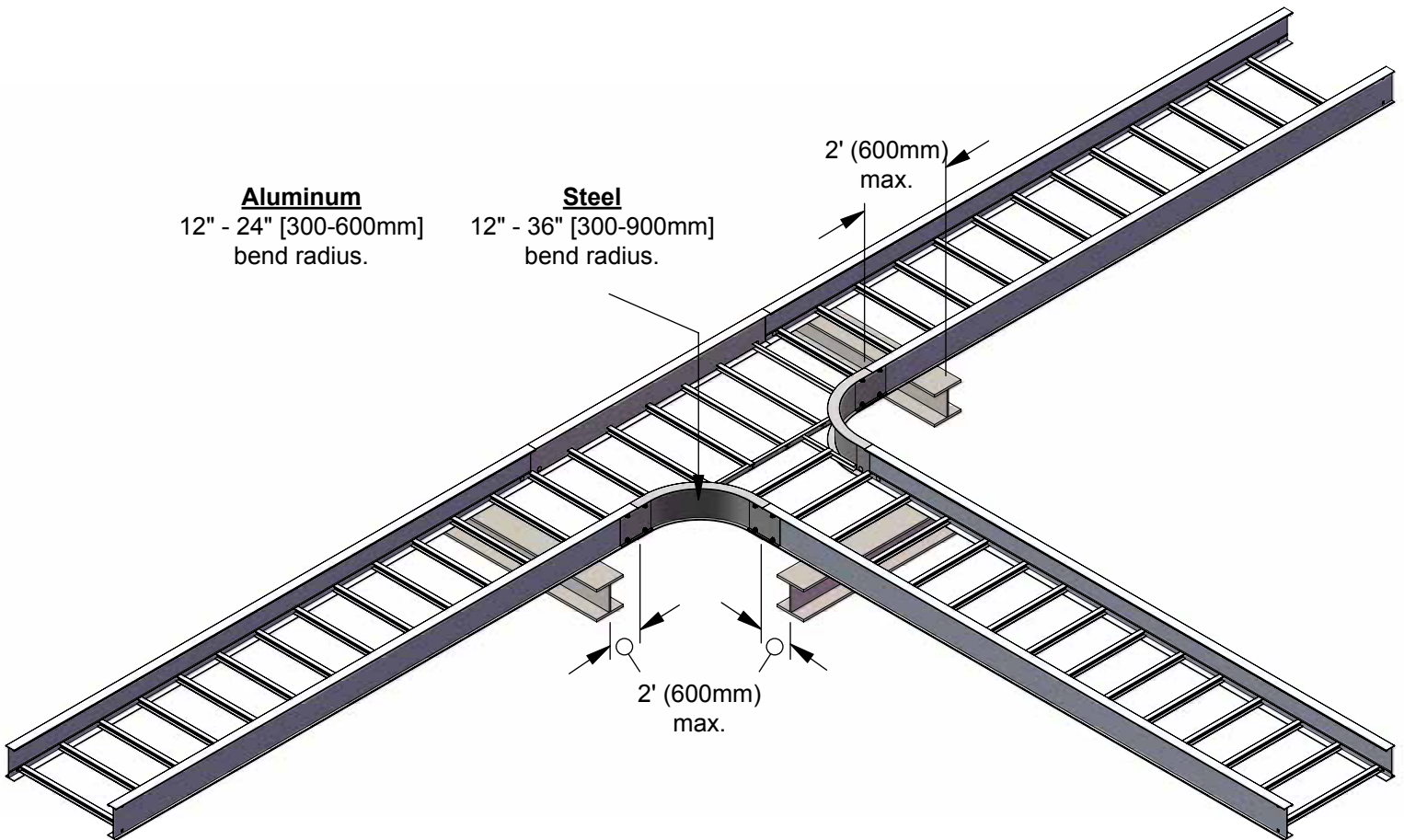
Isometric view

NEMA Recommendation

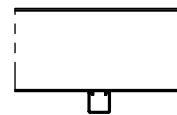


Horizontal Tee Support Recommendation Option 4 "Floating"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



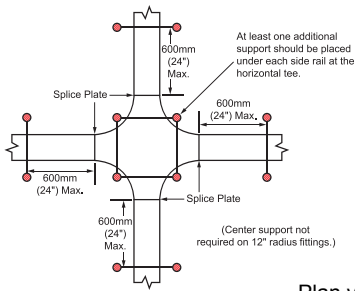
I-Beam support
method



Strut support
method

Isometric view

NEMA Recommendation

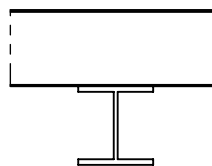
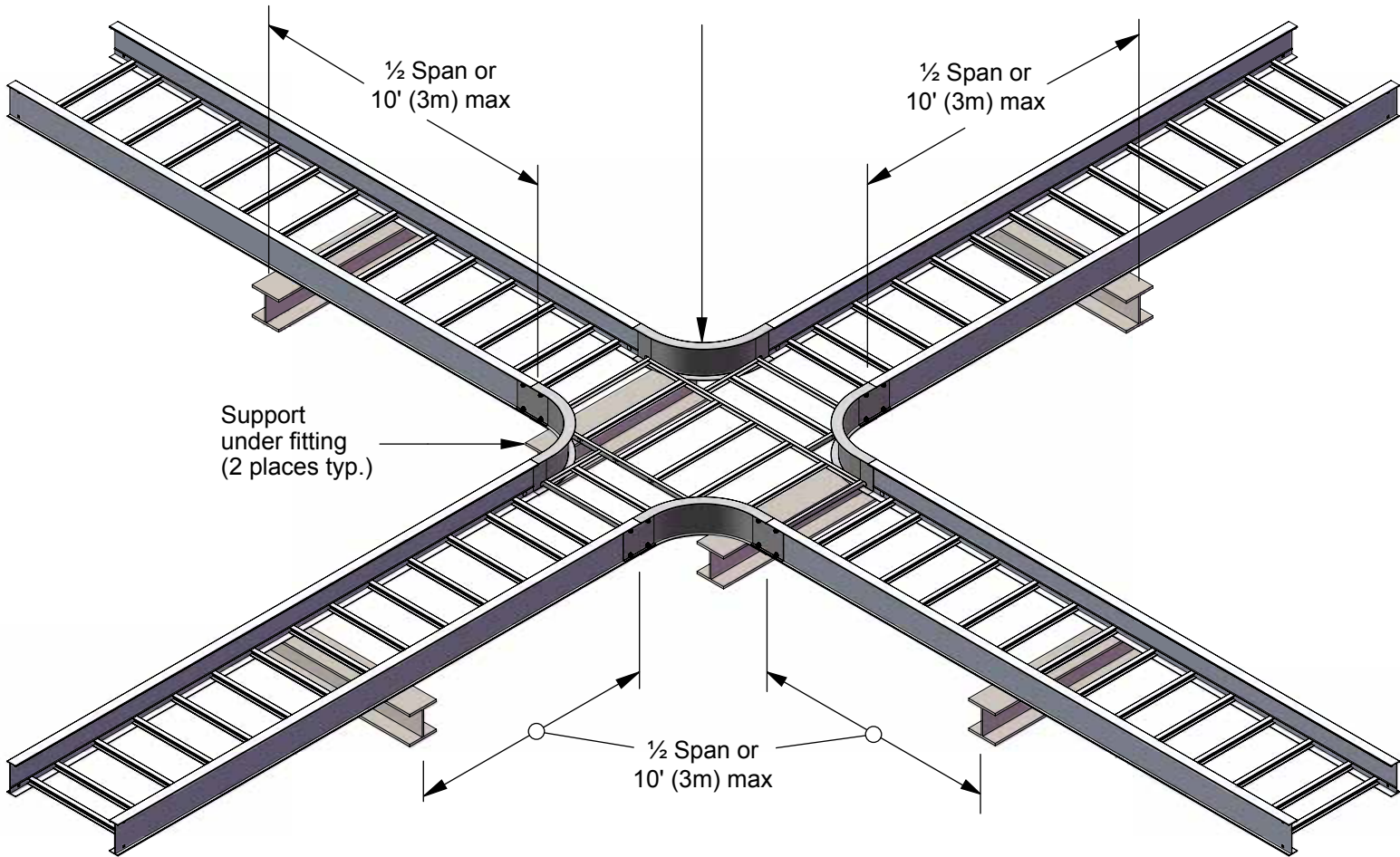


Plan view

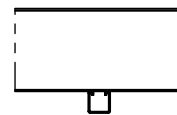
Horizontal Cross Support Recommendation Option 1 "1/2 Span"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.

12" - 36" [300-900mm] bend radius
If larger use NEMA VE-2.



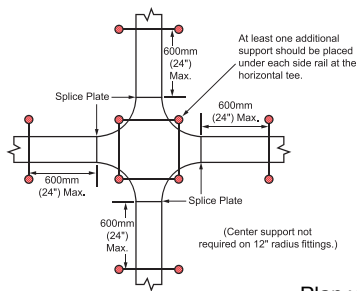
I-Beam support method



Strut support method

Isometric view

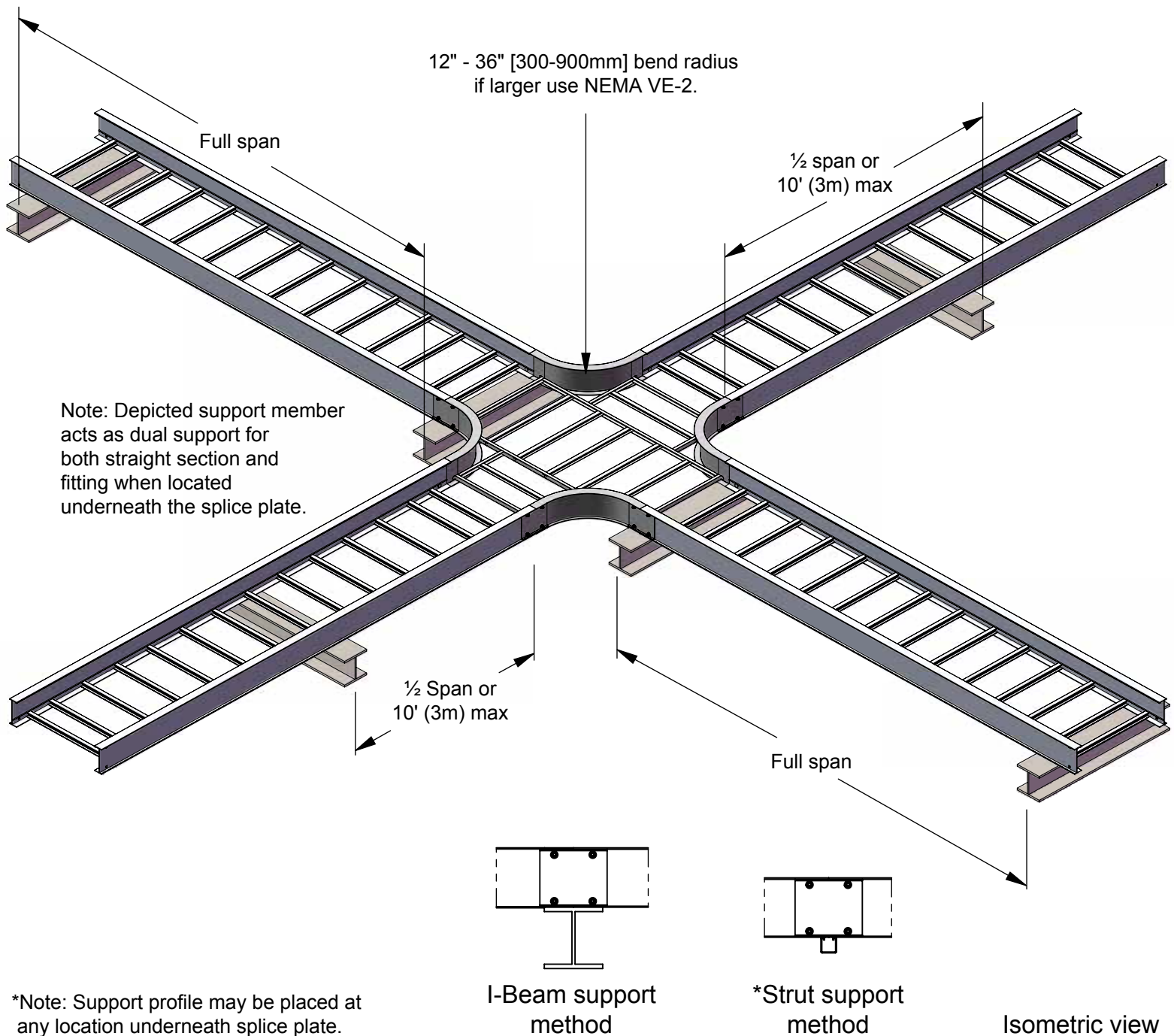
NEMA Recommendation



Plan view

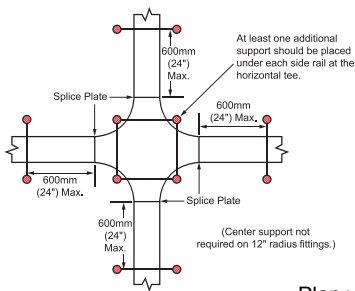
Horizontal Cross Support Recommendation Option 2 "1/2 Span / Dual Support"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



*Note: Support profile may be placed at any location underneath splice plate.

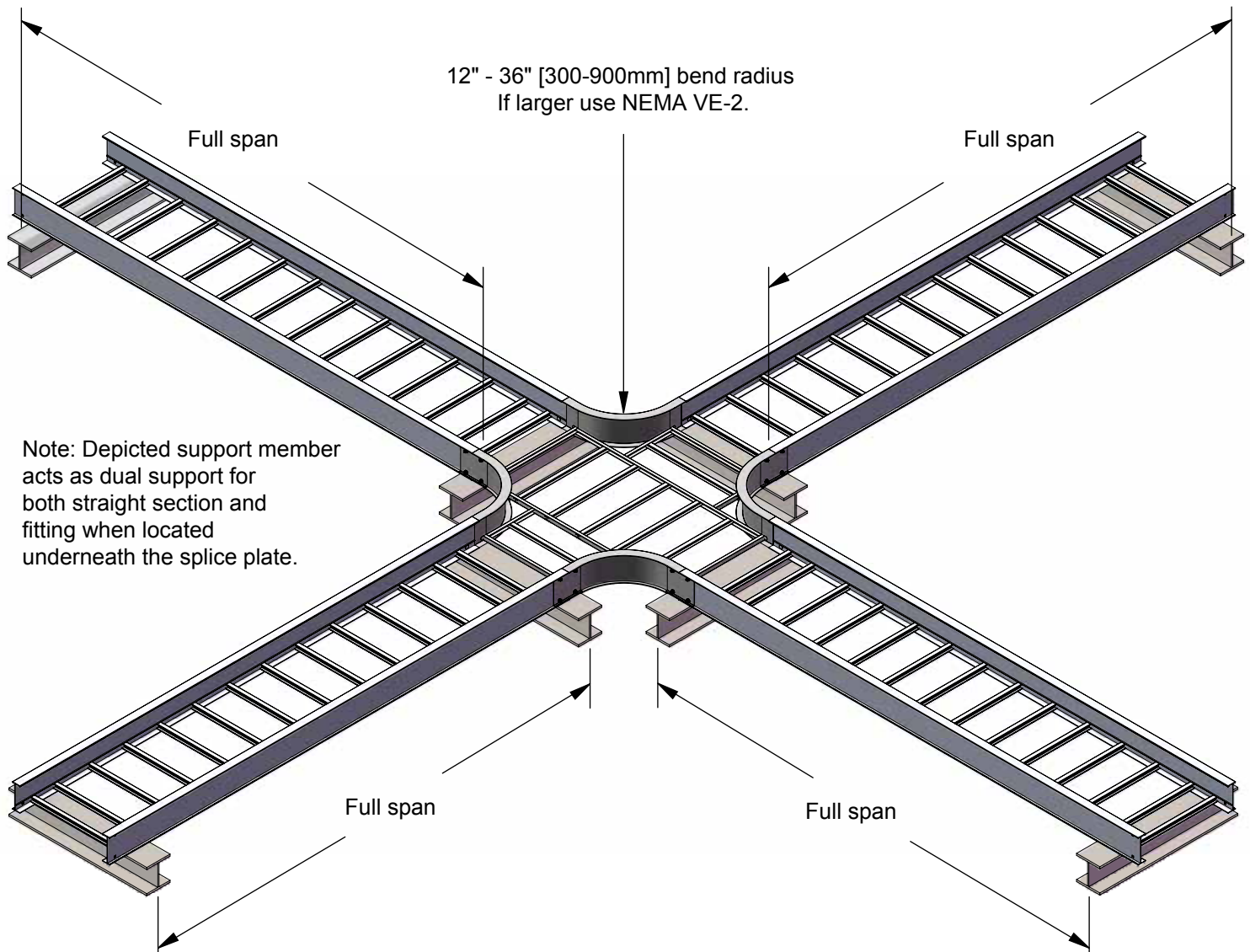
NEMA Recommendation



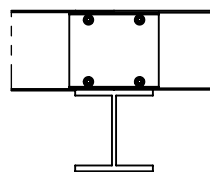
Plan view

Horizontal Cross Support Recommendation Option 3 "Dual Support"

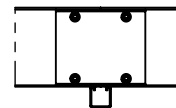
Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



Note: Depicted support member acts as dual support for both straight section and fitting when located underneath the splice plate.



I-Beam support method

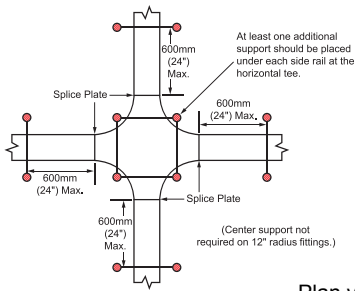


*Strut support method

Isometric view

*Note: Support profile may be placed at any location underneath splice plate.

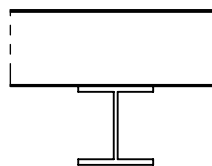
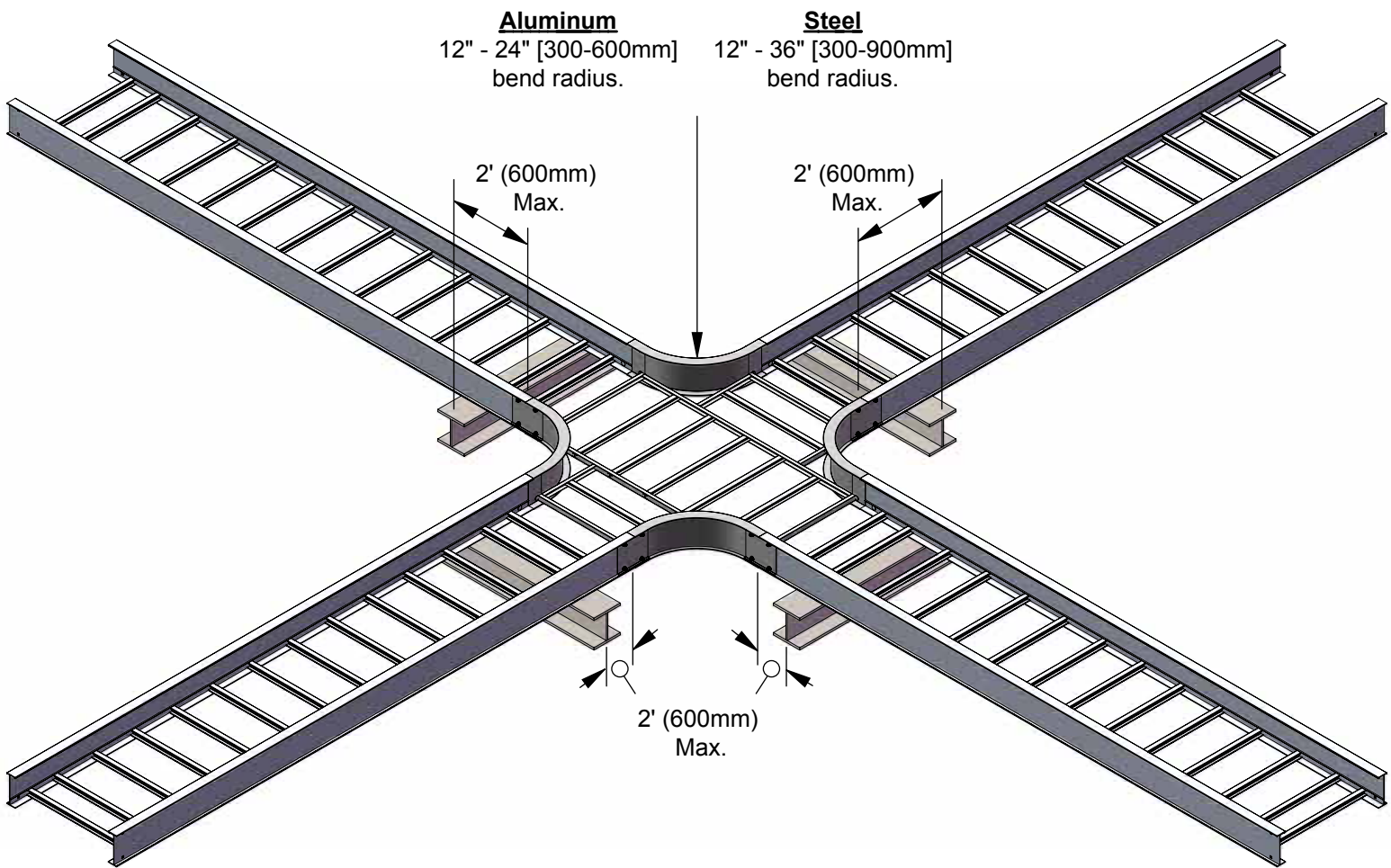
NEMA Recommendation



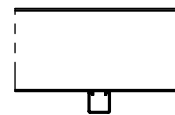
Plan view

Horizontal Cross Support Recommendation Option 4 "Floating"

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



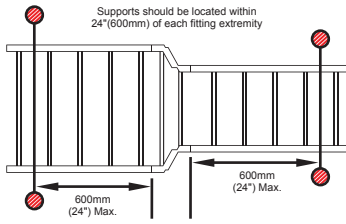
I-Beam support method



Strut support method

Isometric view

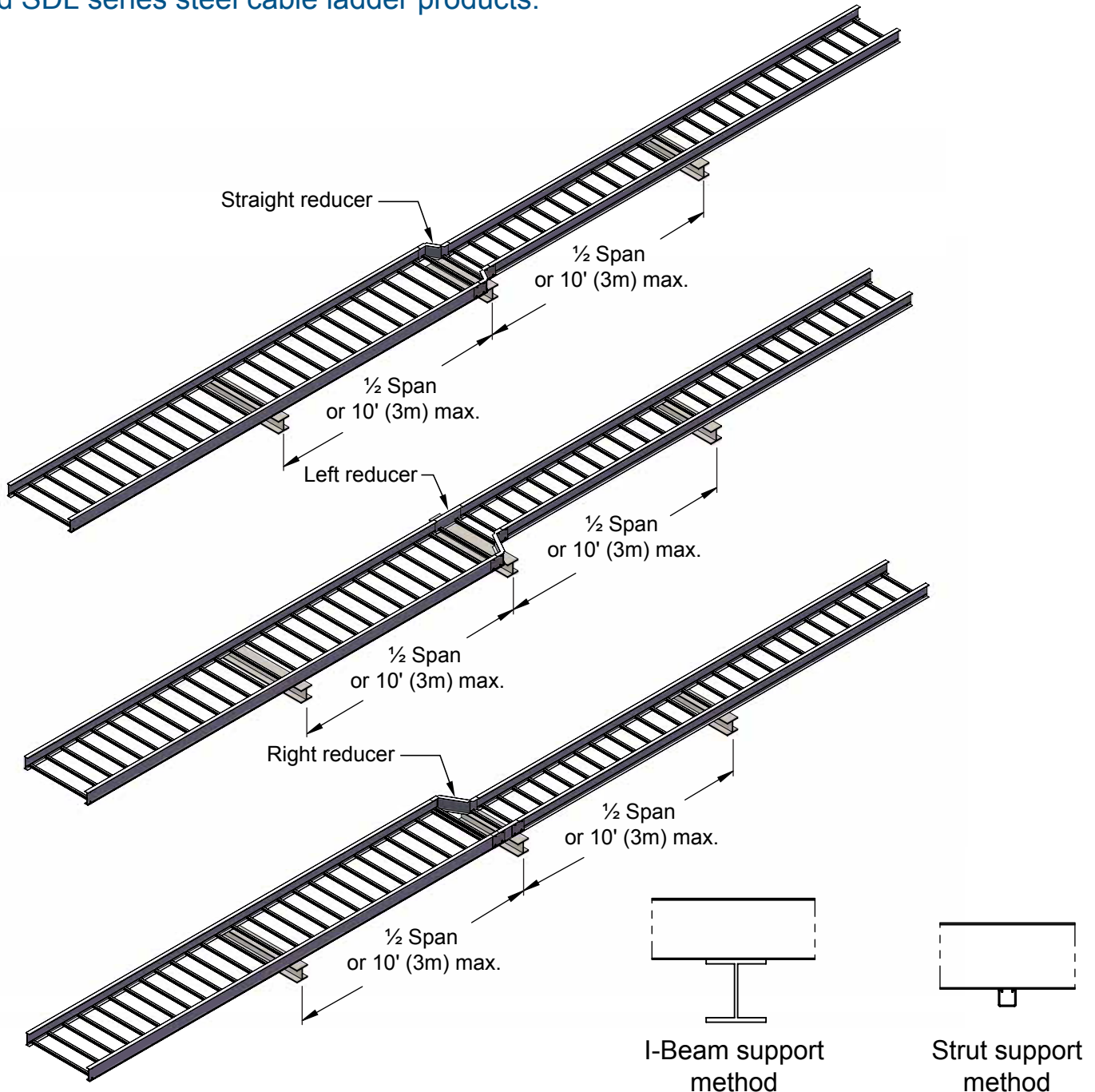
NEMA Recommendation



Plan view

Reducer Fitting Support Recommendation Standard Option 1 "1/2 Span"

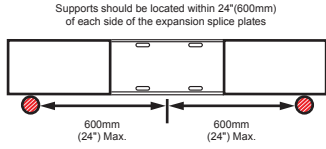
Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.



Note: Fitting support profile may be placed at any location underneath reducer or splice plate.

Isometric view

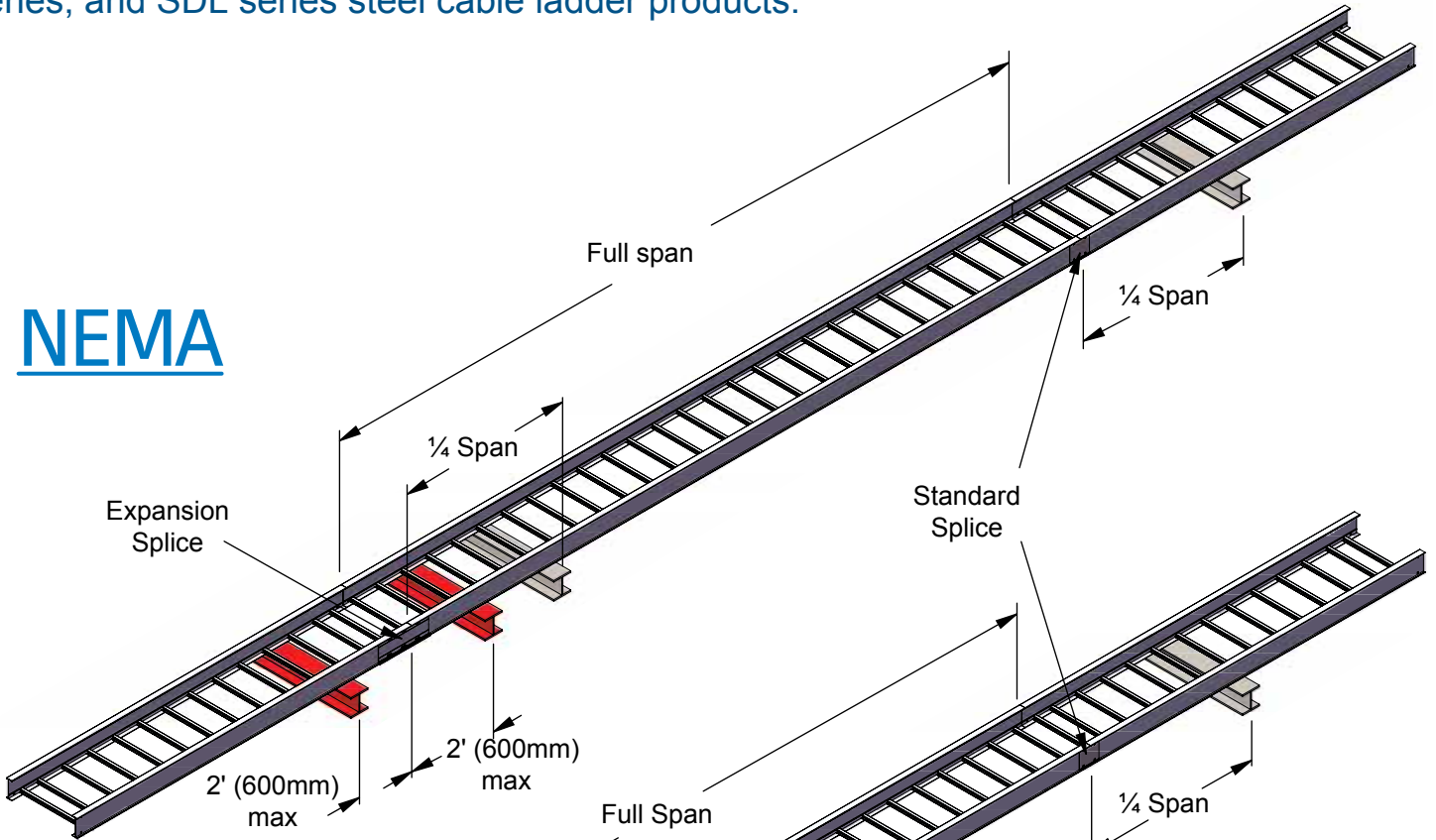
Heavy Duty Expansion Splice Support Recommendation



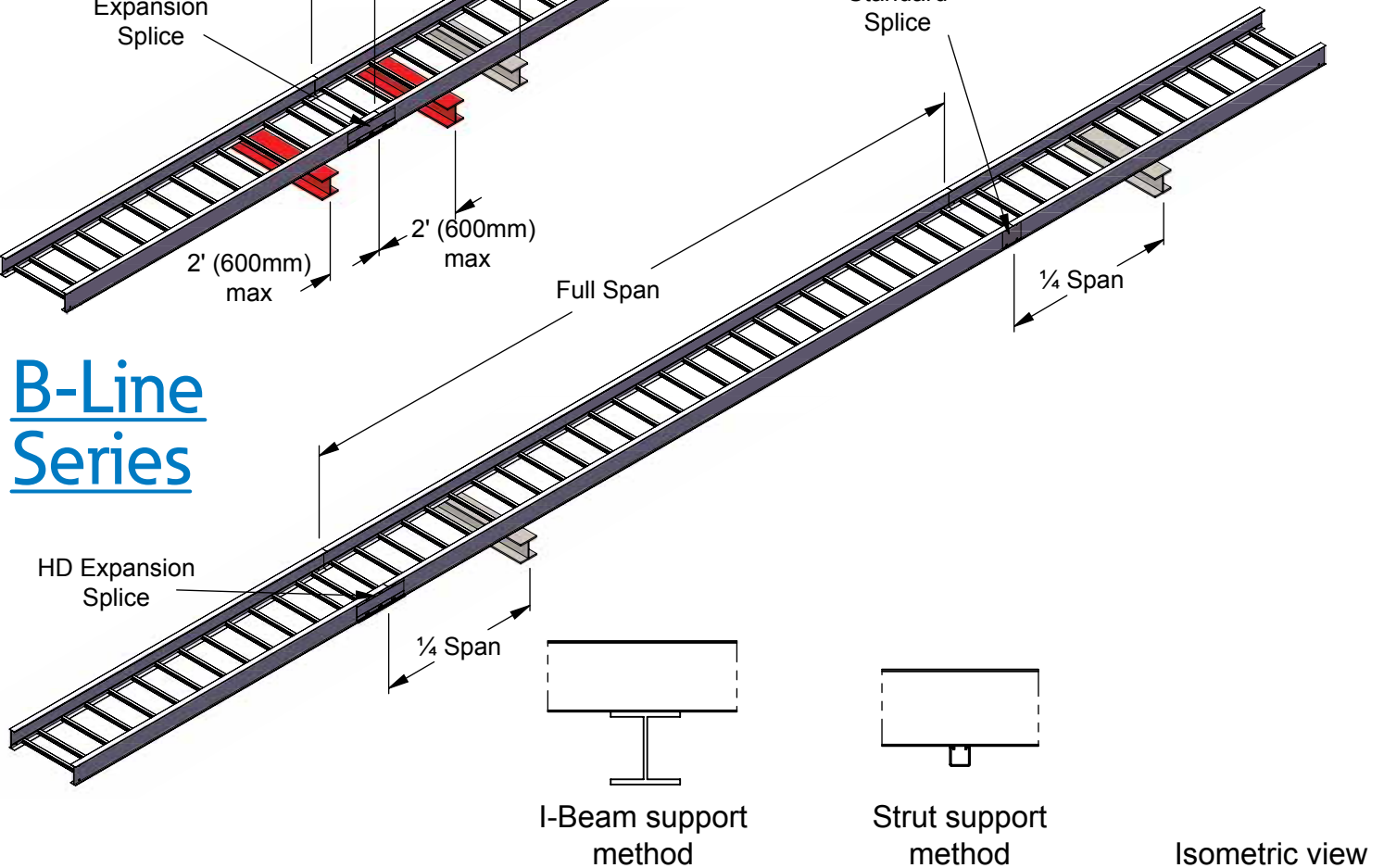
Elevation view

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.

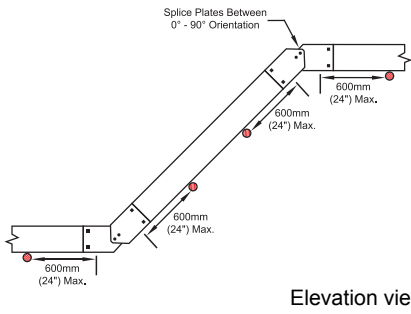
NEMA



B-Line Series



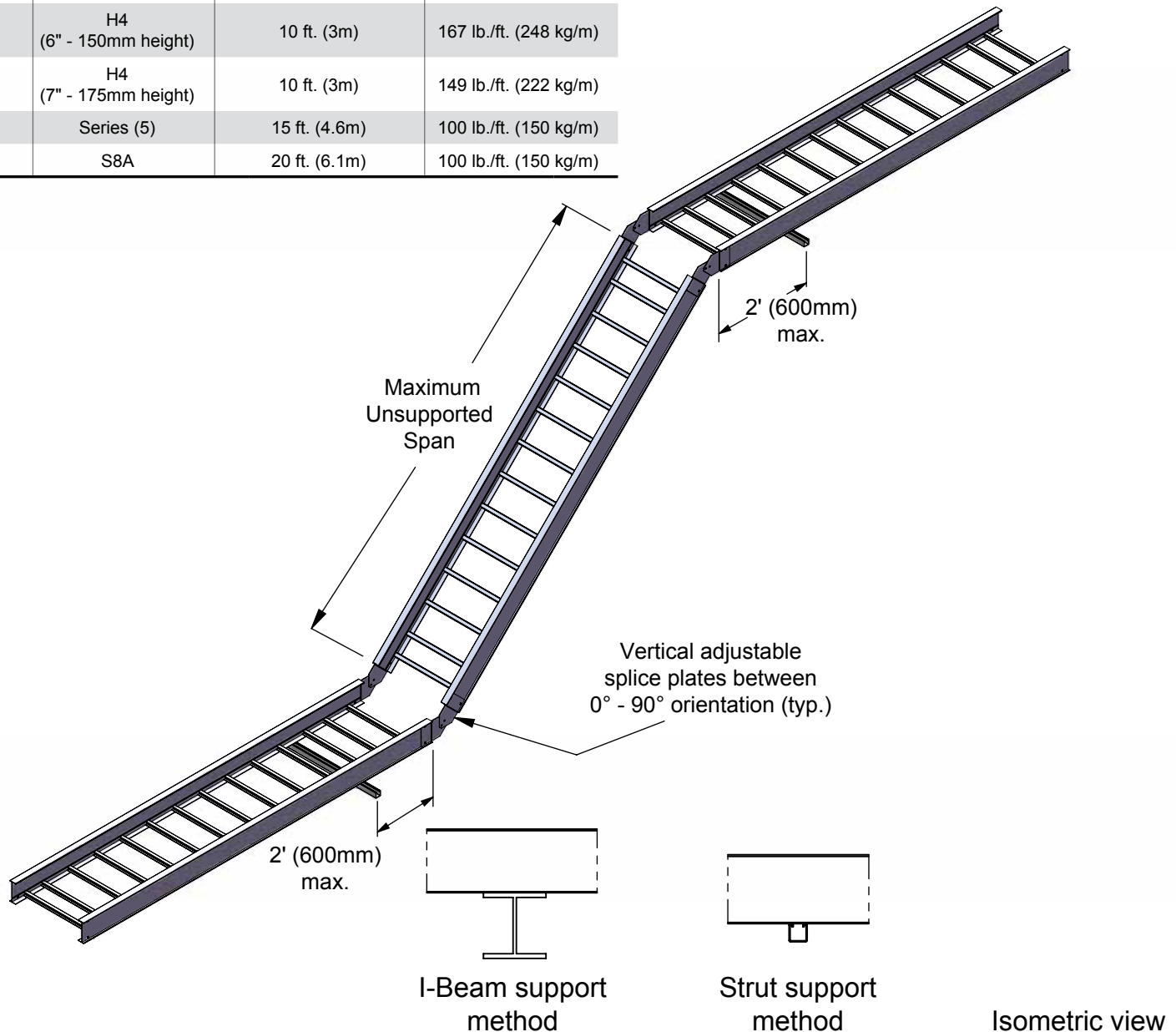
NEMA Recommendation



Vertical Adjustable Splice Plates Support Recommendation

Support recommendations apply to B-Line series 2-5 steel and aluminum cable ladder, HDL series, and SDL series steel cable ladder products.

Material	Cable Ladder Series	Maximum Unsupported Span	Load Capacity
Steel and Stainless Steel	Series (2-5) [HPL, SDL, HDL]	10 ft. (3m)	100 lb./ft. (150 kg/m)
Aluminum	Series (2-4)	10 ft. (3m)	100 lb./ft. (150 kg/m)
Aluminum	H4 (6" - 150mm height)	10 ft. (3m)	167 lb./ft. (248 kg/m)
Aluminum	H4 (7" - 175mm height)	10 ft. (3m)	149 lb./ft. (222 kg/m)
Aluminum	Series (5)	15 ft. (4.6m)	100 lb./ft. (150 kg/m)
Aluminum	S8A	20 ft. (6.1m)	100 lb./ft. (150 kg/m)



Case Study

Due to Eaton's B-Line series cable ladder solutions, engineers across the globe have experienced significant support savings on various commercial, industrial, oil and gas, and other cable management projects. This has yielded significant savings for our customers, and they are speaking up.

"This is going to save our company a lot of money, especially on lump sum, turn-key projects," stated a Lead Electrical Engineer, at a major EPC Firm.

"This solution gives my team the flexibility on site to place supports, and not increase project risk," said Project Contractor Foreman.

So, how much can you really save? Let's take a look at a case study based on a typical bill of materials for a liquified natural gas (LNG) terminal facility and its cable management requirements.*

LNG Facility - \$1.1M Total Bill of Materials

Length of Cable Ladder System	Horizontal Bends	Horizontal Tees	Horizontal Crosses	Reducers	Vertical Inside/ Vertical Outside	Vertical Adjustable Splice Plates	Temperature Differential
25,000ft (7620m)	225	130	25	40	208	28	100°F (38°C)

#1 Longer Span Savings

Cable ladder series	Support Span	Cable Ladder Material Cost	Supports Required	Support Cost (\$100)	Support Cost (\$1000)	Support Cost (\$5000)	Longer Span Savings
24A	10ft (3m)	\$500,000	2500	\$1,187,500	\$3,437,500	\$13,437,500	\$343,750 - \$6,468,750
46A	20ft (6m)	\$750,000	1250	\$593,750	\$1,718,750	\$5,718,750	

#2 Fitting Support Savings

Installation Method	Supports Required	Support Cost (\$100)	Support Cost (\$1000)	Support Cost (\$5000)	Fitting Support Savings
NEMA	2,832	\$1,247,640	\$3,688,440	\$14,536,440	\$528,120 - \$10,553,920
B-Line "Floating Fitting"	1,644	\$719,520	\$2,127,120	\$8,383,120	
B-Line "1/2 span / Dual Support"	783	\$341,820	\$1,010,520	\$3,982,520	

#3 Vertical Adjustable Support Savings

Installation Method	Supports Required	Support Cost (\$100)	Support Cost (\$1000)	Support Cost (\$5000)	Vertical Adjustable Support Savings
NEMA	112	\$12,040	\$112,840	\$560,840	\$5,600 - \$280,000
B-Line	56	\$6,440	\$56,840	\$280,840	

#4 Expansion Splice Locations

Installation Method	Supports Required	Support Cost (\$100)	Support Cost (\$1000)	Support Cost (\$5000)	HD Expansion Splice Support Savings
Standard Expansion Splice	416	\$214,108	\$588,208	\$2,250,875	\$214,108 - \$2,250,875
HD Expansion Splice	-	-	-	-	

Total Project Savings (\$USD)

\$1,091,578 - \$19,553,545

*Based on 2017 standard bill of materials for this type of project, and its representative cost savings potential.

By incorporating any or all of Eaton's B-Line series cable ladder support recommendations, customers often realize support savings greater than the full cable ladder cost, resulting in a lower total installed cost solution. To learn more, visit at Eaton.com/SSS.

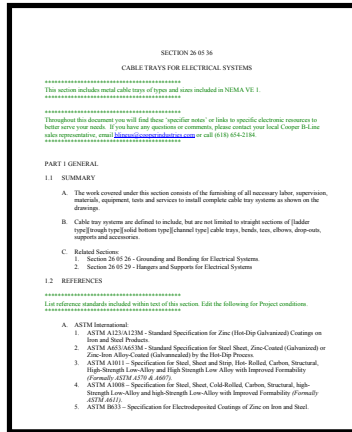
Additional Resources

For additional information, visit Eaton.com/SSS.

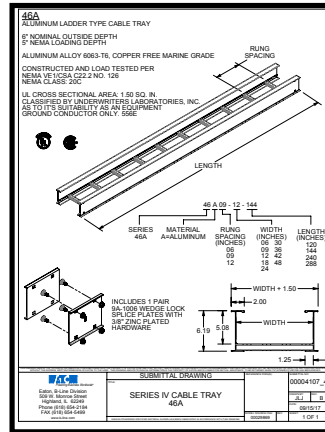
Catalog



Specification Templates



Technical Submittals



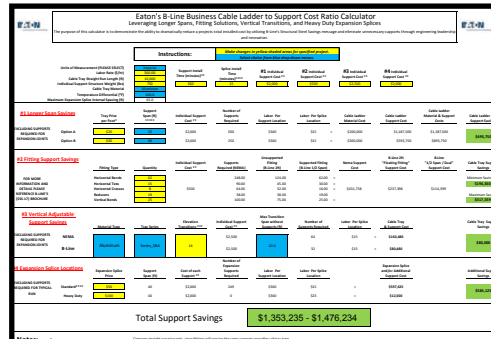
White Paper



Video



Savings Calculator



Technical Guide



For more information or to schedule a technical presentation conducted by B-Line personnel, please visit Eaton.com/SSS.



For more information, visit
Eaton.com/SSS.

**U.S. Customer Service Center is staffed
Monday through Friday from 7 a.m. to 5 p.m. Central Standard Time.**

Eaton
509 West Monroe Street
Highland, IL 62249
United States
800-851-7415
www.eaton.com/b-lineseries

Eaton
13201 Dahlia St., Ste. 200
Fontana, CA 92337
United States

Eaton
5925 McLaughlin Road
Mississauga, ON L5R 1B8
Canada
800-569-3660
www.cooperblineline.com/contactca

Eaton
Building 2, Argosy Court,
Whitley Business Park, Scimitar Way
Coventry, CV3 4GA
United Kingdom
www.eaton.com/b-lineseries

Eaton
PO Box 70160 - Al Khobar - 31952
Kingdom of Saudi Arabia
00966 3 812 2236
www.cooperblineline.com/contactme

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

B-Line Division
509 West Monroe Street
Highland, IL 62249
Eaton.com

© 2017 Eaton
All Rights Reserved
Printed in USA
Publication No. CA302004EN
September 2017 SSS-17

Eaton is a registered trademark.

All other trademarks are property
of their respective owners.

Follow us on social media to get the
latest product and support information.

