

## Overhead Rail System

Models ZRAT, ZRA1, ZRA2 & ZRS2/3



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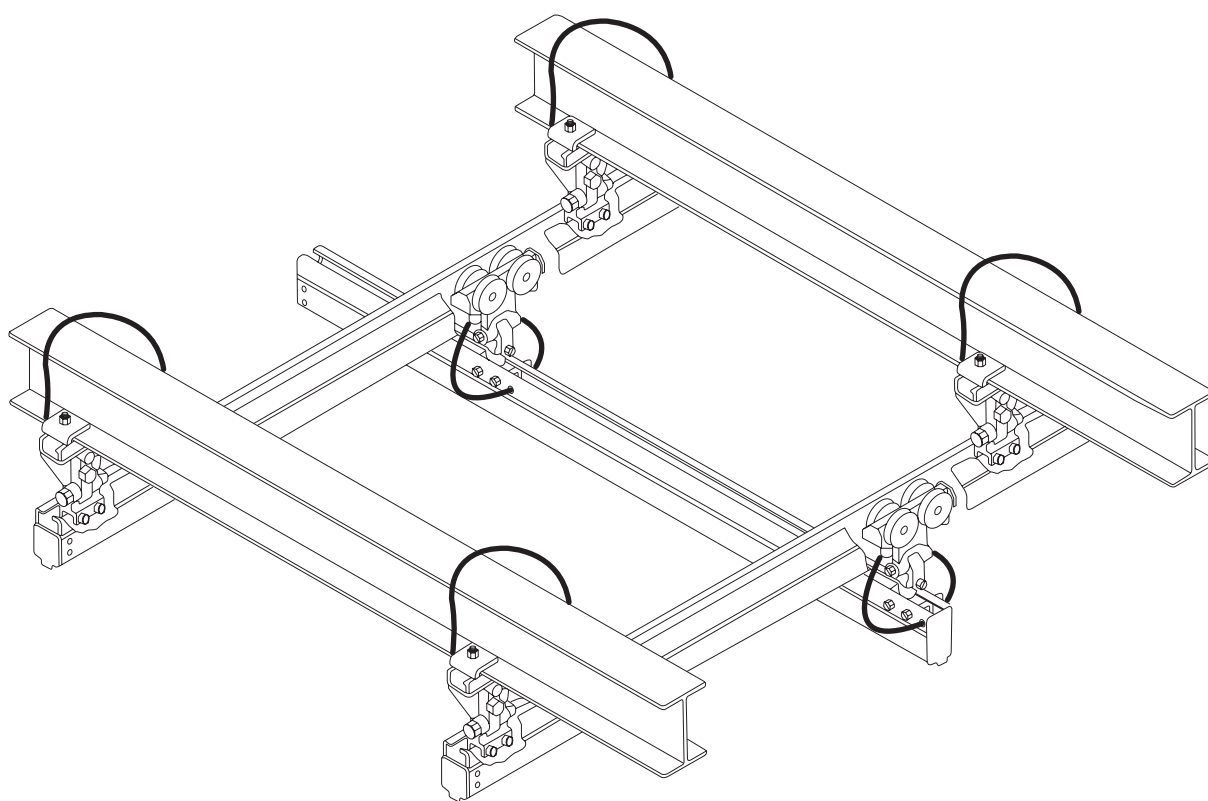
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# Rail Systems

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## ZRAT Aluminum Rail & Components



# Engineering Data for ZRAT Aluminum Rail

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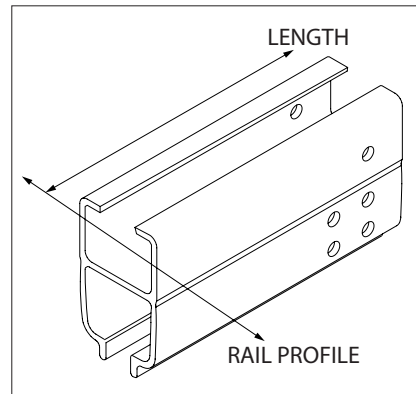
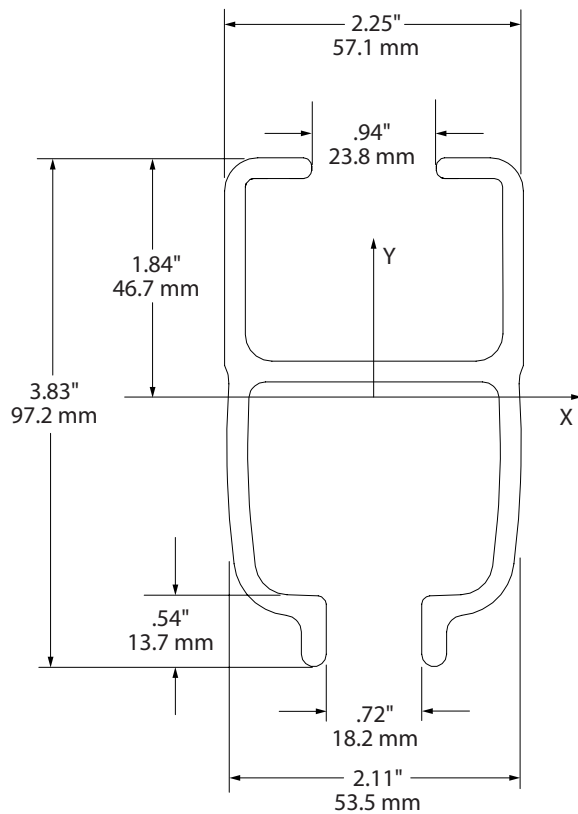
1. All rail and hangers must be installed in accordance with **Ingersoll Rand** instructions. See Overhead Rail System Installation, Operation, and Maintenance Manual (MHD56159)
2. ZRAT Rail is made of high strength aluminum alloy extrusion.
3. The rail or bridge beam provided is modular design, weld free application, and self aligning with complete bolt-together capability at all splice joints and hangers.
4. All rail sections provided are saw cut square to required length by **Ingersoll Rand**. All rail joints should be flush when installation is completed.
5. The capacity of the rail, monorail or bridge crane will be determined so that deflection under rated load shall not exceed 1/450 of the span. Lateral deflection will not be accepted.
6. The allowable stresses applied must not exceed 20% of the **minimum yield strength** of the materials used.
7. The maximum capacity for all rail provided by the contractor including hoist, product, process equipment, and all attachments, etc, must not exceed the capacity specified below: ZRAT Aluminum Rail – acceptable for maximum capacities up to and including 500 lbs (226.8 kg).
8. For bridge crane or hoist application(s), the maximum overhang of the bridge girder to the centre of a runway rail, must not exceed 12.00" ( 304.8 mm). (For larger overhangs consult the factory).
9. All bridge cranes, runway and monorail, must be installed straight, parallel, level and at the same elevation. Installation tolerance cannot exceed the values specified below:
  - a. **Longitudinal leveling.** Multiple runways and single rail systems 0.25"(6.3 mm) in overall length, with a maximum rate of change of no more than 0.12"(3.0 mm) on 20 ft (6 m) centers.
  - b. **Elevation runway to runway.** 0.25"(6.35 mm) in span, maximum rate of change 0.12" (3.0 mm) on 20 ft (6 m) centers.
  - c. **Centering to runway to runway.** 0.25" (6.3 mm) in overall length, maximum rate of change 0.12" (3.17 mm) on 20 ft (6 m) centers.
  - d. **Centering for single rail.** to a parallel conveyor of workstation will be  $\pm 0.50"$ (12.7 mm) in overall length of the system, maximum rate of change 0.12" (3.17 mm) on 20 ft (6 m) centers.
10. Sway bracing should be used when the hanger meets or exceeds 24.00"(609.6 mm) in length. (See system installation manual).
11. One month after system buy off, the enclosed rail system should be inspected and re-leveled by the installation contractor. All bolts at the splice joints, hangers and support structure should be re-checked for proper torque. Abnormalities noted by the inspector must be reported to **Ingersoll Rand** immediately.
12. All splice connections shall not exceed 12.00"(304.8 mm) from the hanger points.
13. All trolley running surfaces must be aligned flush in accordance with his specification and present no shock loading at splice connections. Transverse tilt will not be accepted
14. Tension tubes at all splice connections will be aligned and welded by **Ingersoll Rand**.
15. Joint modification or holes required in track section(s) will be by drilling or saw cutting only. Flame cutting of holes or splice joints is not permitted.
16. Where hanger rods are used, the allowable stress will be 20% of the minimum yield strength of the material provided.
17. All hangers must be installed true and vertical. All suspension fitting should bear the load equally.
18. All bolts, nuts, fasteners, attachments etc, required for enclosed rail systems will be provided by **Ingersoll Rand**.
19. All double girder bridge cranes provided will incorporate diagonal bracing for parallel stabilization.

## Trolleys

1. All trolleys are manufactured by **Ingersoll Rand**.
2. All aluminum trolleys consist of high tensile aluminum alloy body.
3. All steel trolleys consist of a welded, stamped steel body.
4. All trolley wheels provided for hoists, bridge cranes, and related equipments must conform to **Ingersoll Rand** standards.
5. Trolley wheels are delrin, with sealed precision ground ball bearings permanently molded in. All trolley wheels mount to an axle that is press-fitted into the trolley body.
6. Trolley side guide rollers are delrin machined symmetrically true with the axis.
7. All trolleys are equipped with safety lugs so in the event of a wheel failure the trolley cannot come out of the rail.
8. All bearings are protected by grease and dust seals.



# How to Order • ZRAT Aluminum Runway or Monorail



$$\begin{matrix} & 4 & 4 \\ \text{MOMENT OF INERTIA: } I_{xx} = & 2.206 \text{ IN} & [9.182\text{E}5 \text{ mm}^4] \\ & 4 & 4 \\ I_{yy} = & 1.348 \text{ IN} & [5.611\text{E}5 \text{ mm}^4] \end{matrix}$$

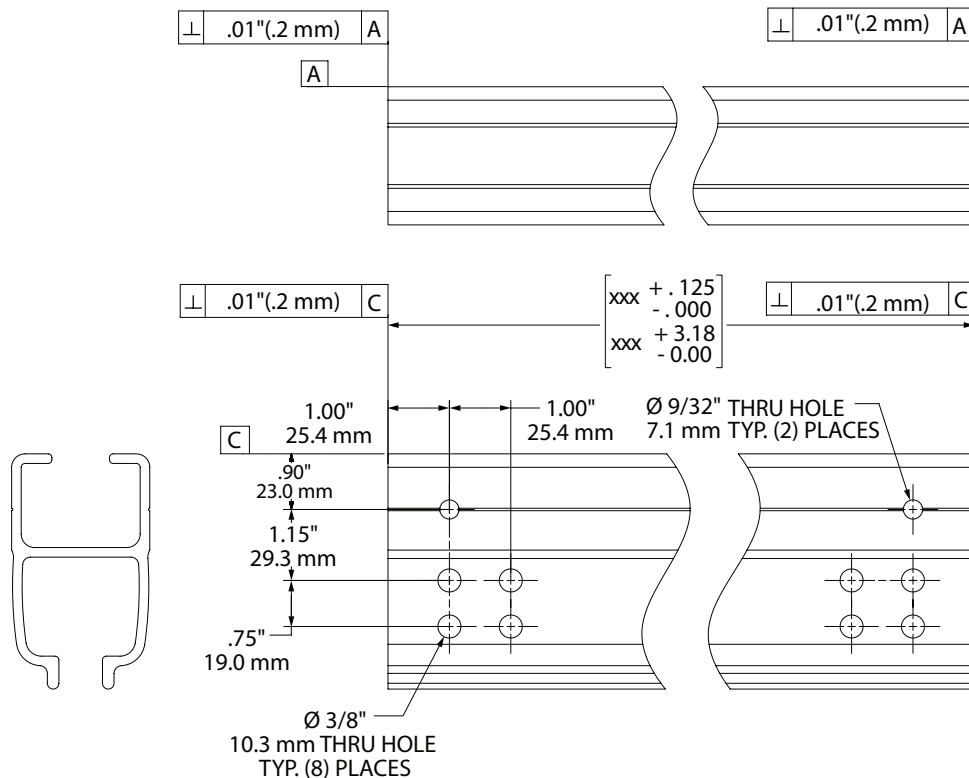
**PART NUMBER:**

**[31000]-[150]**

**INDICATES LENGTH OF RAIL IN FEET (150 = 15 FEET)**  
**INDICATES RAIL PROFILE**

**NOTE:** ALL RUNWAY RAIL WILL BE DRILLED FOR BOTH END STOPS AND SPLICE HOLES.

# Standard Lengths • ZRAT/Part No. 31000 - XXX



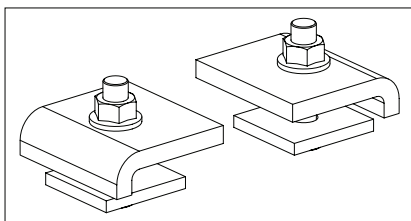
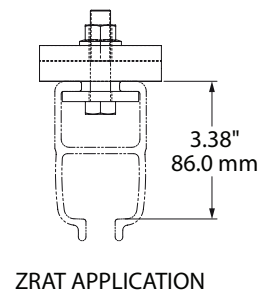
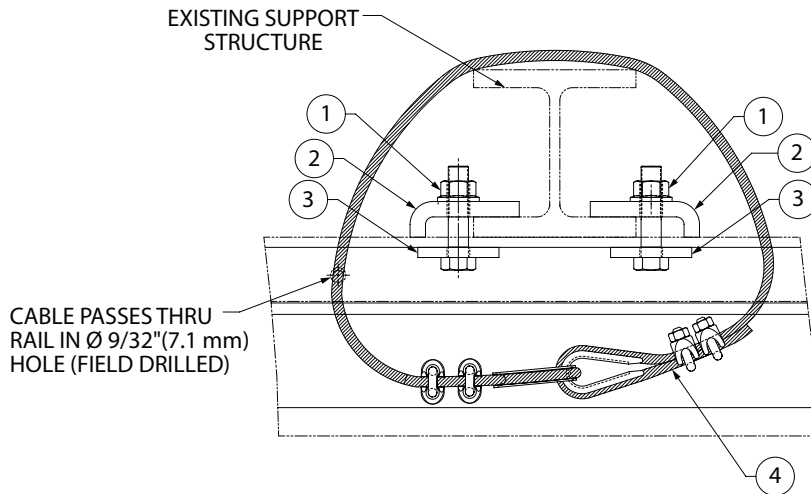
STANDARD		METRIC	
PART NO.	XXX - LENGTH	PART NO.	XXX - LENGTH
31000 - 040	4 FT	31000 - 1000	1000 mm
31000 - 050	5 FT	31000 - 1500	1500 mm
31000 - 060	6 FT	31000 - 2000	2000 mm
31000 - 070	7 FT	31000 - 2500	2500 mm
31000 - 080	8 FT	31000 - 3000	3000 mm
31000 - 090	9 FT	31000 - 3500	3500 mm
31000 - 100	10 FT	31000 - 4000	4000 mm
31000 - 110	11 FT	31000 - 4500	4500 mm
31000 - 120	12 FT	31000 - 5000	5000 mm
31000 - 130	13 FT	31000 - 5500	5500 mm
31000 - 140	14 FT	31000 - 6000	6000 mm
31000 - 150	15 FT		
31000 - 160	16 FT		
31000 - 170	17 FT		
31000 - 180	18 FT		
31000 - 190	19 FT		
31000 - 200	20 FT		

MAXIMUM LENGTH: 20 FT  
WEIGHT: 2.146 LB./FT.[3.194 kg/m]

# Live Load Deflections • ZRAT/Part No. 31000

Rail / Bridge Span				Deflection Limits						Point Load					
ft.	in.	m	mm	L/450 in.	L/450 mm	L/550 in.	L/550 mm.	L/600 in.	L/600 mm.	L/450 lbs.	L/450 kg.	L/550 lbs.	L/550 kg.	L/600 lbs.	L/600 kg.
4	48	1.22	1219.2	0.107	2.70	0.089	2.20	0.080	2.00	877	398	836	379	766	347
5	60	1.52	1524.0	0.13	3.40	0.11	2.80	0.100	2.50	654	297	535	243	490	222
6	72	1.83	1828.8	0.16	4.10	0.13	3.30	0.120	3.00	454	206	371	168	340	154
7	84	2.13	2133.6	0.19	4.70	0.15	3.90	0.140	3.60	334	151	273	124	250	113
8	96	2.44	2438.4	0.21	5.40	0.17	4.40	0.160	4.10	255	116	209	95	192	87
9	108	2.74	2743.2	0.24	6.10	0.20	5.00	0.180	4.60	202	92	165	75	151	69
10	120	3.05	3048.0	0.27	6.80	0.22	5.50	0.200	5.10	163	74	134	61	123	56
11	132	3.35	3352.8	0.29	7.50	0.24	6.10	0.220	5.60	135	61	111	50	101	46
12	144	3.66	3657.6	0.32	8.10	0.26	6.70	0.240	6.10	113	51	93	42	85	39
13	156	3.96	3962.4	0.35	8.80	0.28	7.20	0.260	6.60	97	44	79	36	73	33
14	168	4.27	4267.2	0.37	9.50	0.31	7.80	0.280	7.10	83	38	68	31	63	28
15	180	4.57	4572.0	0.40	10.20	0.33	8.30	0.300	7.60	73	33	59	27	54	25
16	192	4.88	4876.8	0.43	10.80	0.35	8.90	0.320	8.10	64	29	52	24	48	22
17	204	5.18	5181.6	0.45	11.50	0.37	9.40	0.340	8.60	57	26	46	21	42	19
18	216	5.49	5486.4	0.48	12.20	0.39	10.00	0.360	9.10	50	23	41	19	38	17
19	228	5.79	5791.2	0.51	12.90	0.41	10.50	0.380	9.70	45	21	37	17	34	15
20	240	6.10	6096.0	0.53	13.50	0.44	11.10	0.400	10.20	41	19	33	15	31	14
21	252	6.40	6400.8	0.56	14.20	0.46	11.60	0.420	10.70	37	17	30	14	28	13
22	264	6.71	6705.6	0.59	14.90	0.48	12.20	0.440	11.20	34	15	28	13	25	11
23	276	7.01	7010.4	0.61	15.60	0.50	12.70	0.460	11.70	31	14	25	11	23	11
24	288	7.32	7315.2	0.64	16.30	0.52	13.30	0.480	12.20	28	13	23	11	21	10

# Rigid Mount Hanger Kit • ZRAT/Part No. 30227



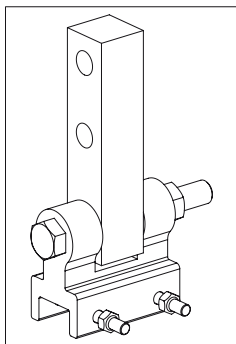
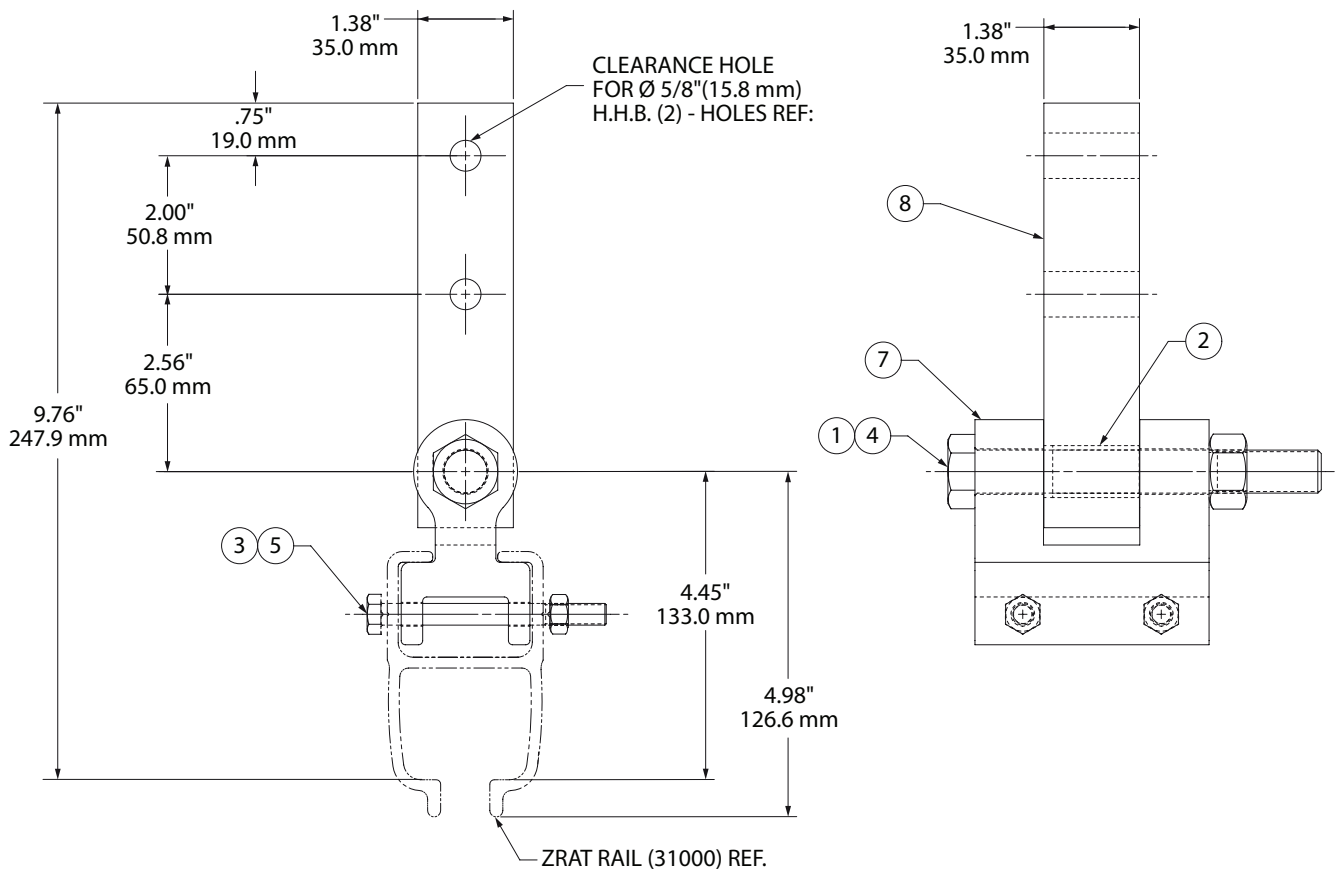
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS..... 36\"(914.4 mm)  
 WEIGHT OF ASSEMBLY ..... 4 LBS.(1.81 KG)

(Dwg. 54093877)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Lock Nut 1/2 - 13 Flanged PT	2
2	30160	Toe Clamp, Top Plate	2
3	30218	Suspension Bracket, Rigid Mount, ZRAT	2
4	30907-06	Safety Cable Assembly - 6 ft.	1

# Block Hanger Kit • ZRAT Perpendicular/Part No. 30285



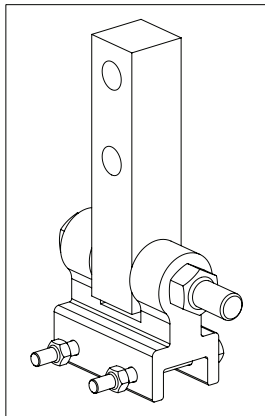
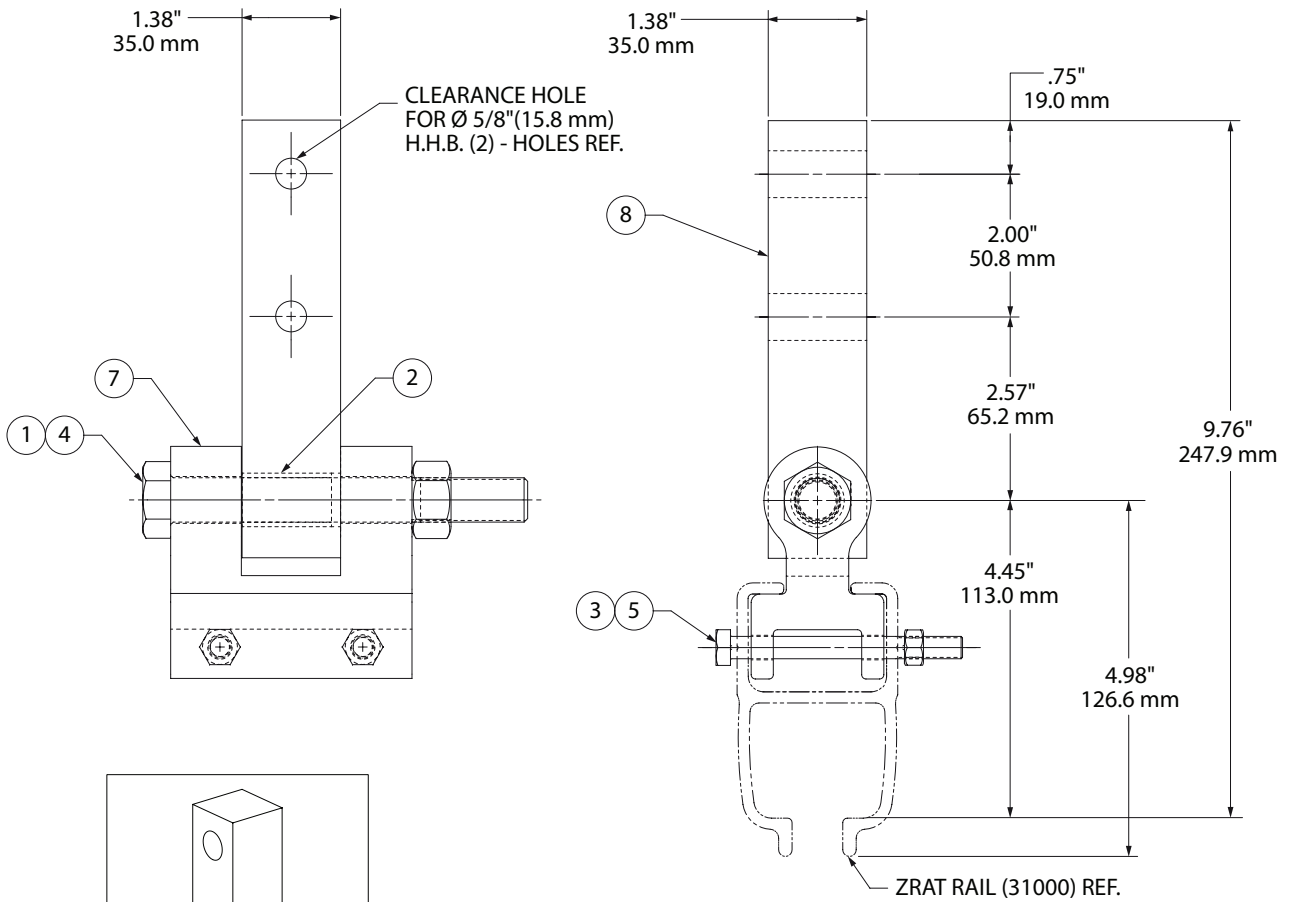
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH..... 22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH..... 14,000 LBS.(6350.3 KG)  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS ..... 36"(914.4 mm)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

(Dwg. 54094081)

Bill of Materials			
Item No.	Part no.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75582	5/16 - 18 PT Lock Nut	2
4	72623	Hexagonal Bolt 5/8 - 11 x 5"	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30907-06	Safety Cable Assembly Close Kit (not shown)	1
7	ZHS30266	Hanger Bracket, ZRAT, Machining	1
8	30162	Hanger Block	1

# Block Hanger Kit • ZRAT/Parallel/Part No. 30289



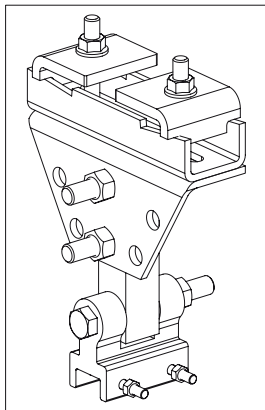
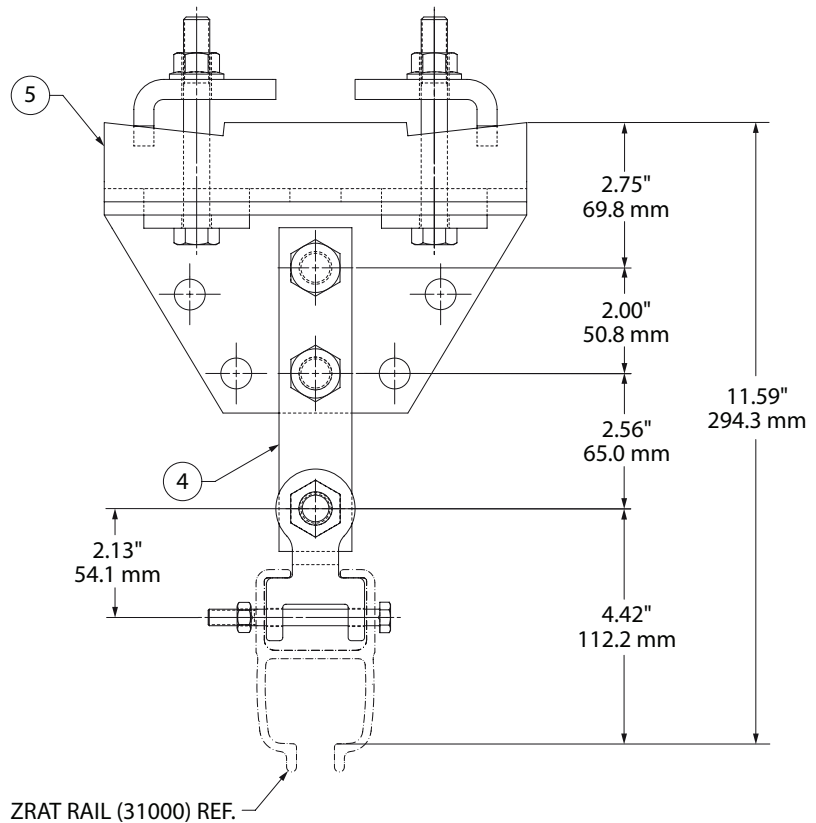
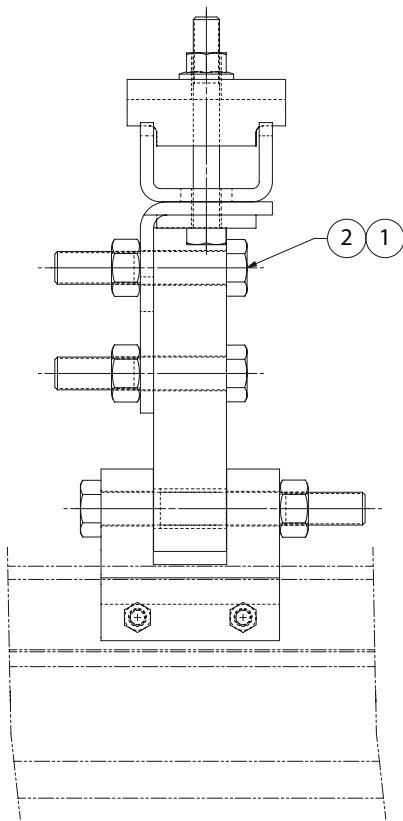
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 CAPACITY..... 2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS..... 36"(914.4 mm)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

(Dwg. 54094263)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75582	5/16 - 18 PT Lock Nut	2
4	72623	Hexagonal Bolt 5/8 - 11 x 5"	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30907-06	Safety Cable Assembly Close Kit (not shown)	1
7	ZHS30266	Hanger Bracket, ZRAT, Machining	1
8	ZHS30197	Hanger Block	1

# Beam Hanger Kit • ZRAT/Parallel/Standard Flange/Part No. 30290



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

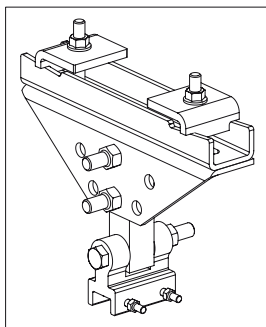
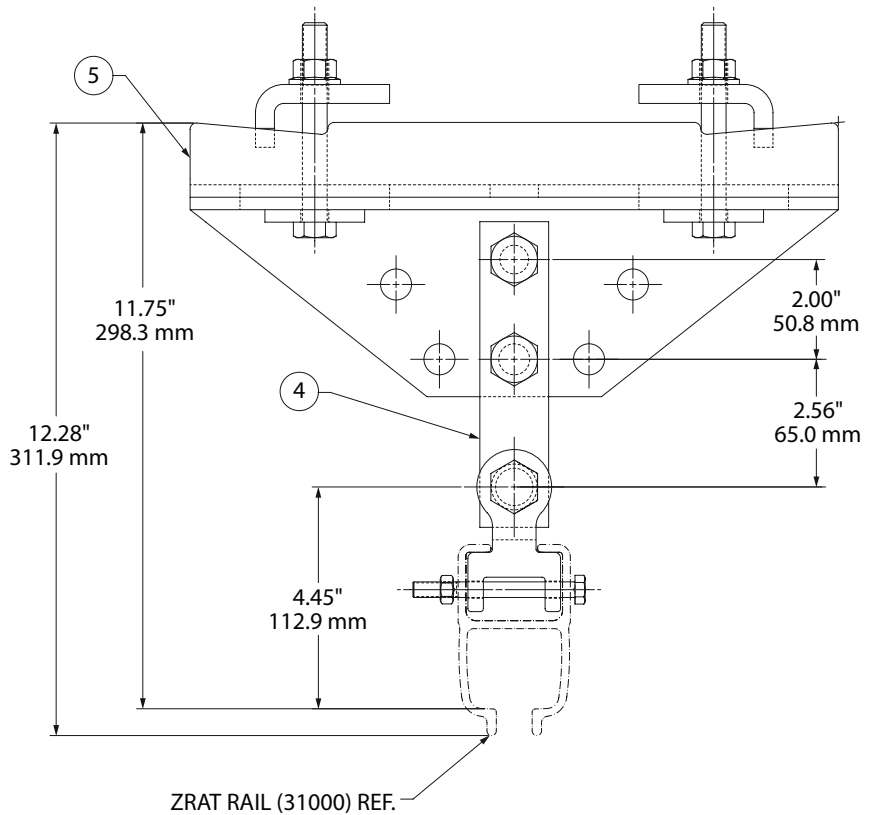
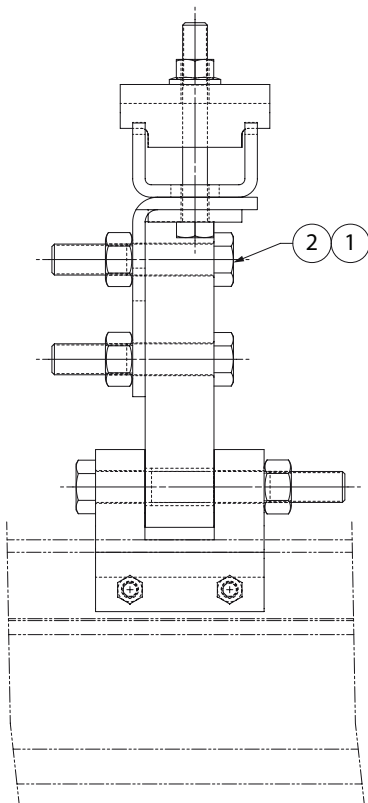
STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

- ULTIMATE STRENGTH ..... 22,400 LBS. (10160.47 KG)
- YIELD STRENGTH ..... 14,000 LBS. (6350.3 KG)
- CAPACITY ..... 2,000 LBS. (907.18 KG)
- MINIMUM RAIL RADIUS ..... 36" (914.4 mm)
- WEIGHT OF ASSEMBLY ..... 15 LBS. (6.80 KG)

(Dwg. 54094271)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30285	Hanger Kit, ZRAT, Block, Perpendicular	1
5	30186	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRAT/Parallel/Wide Flange/Part No. 30291



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)

YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

MINIMUM RAIL RADIUS..... 36" (914.4 mm)

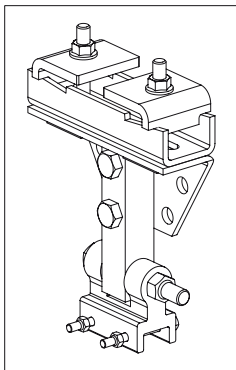
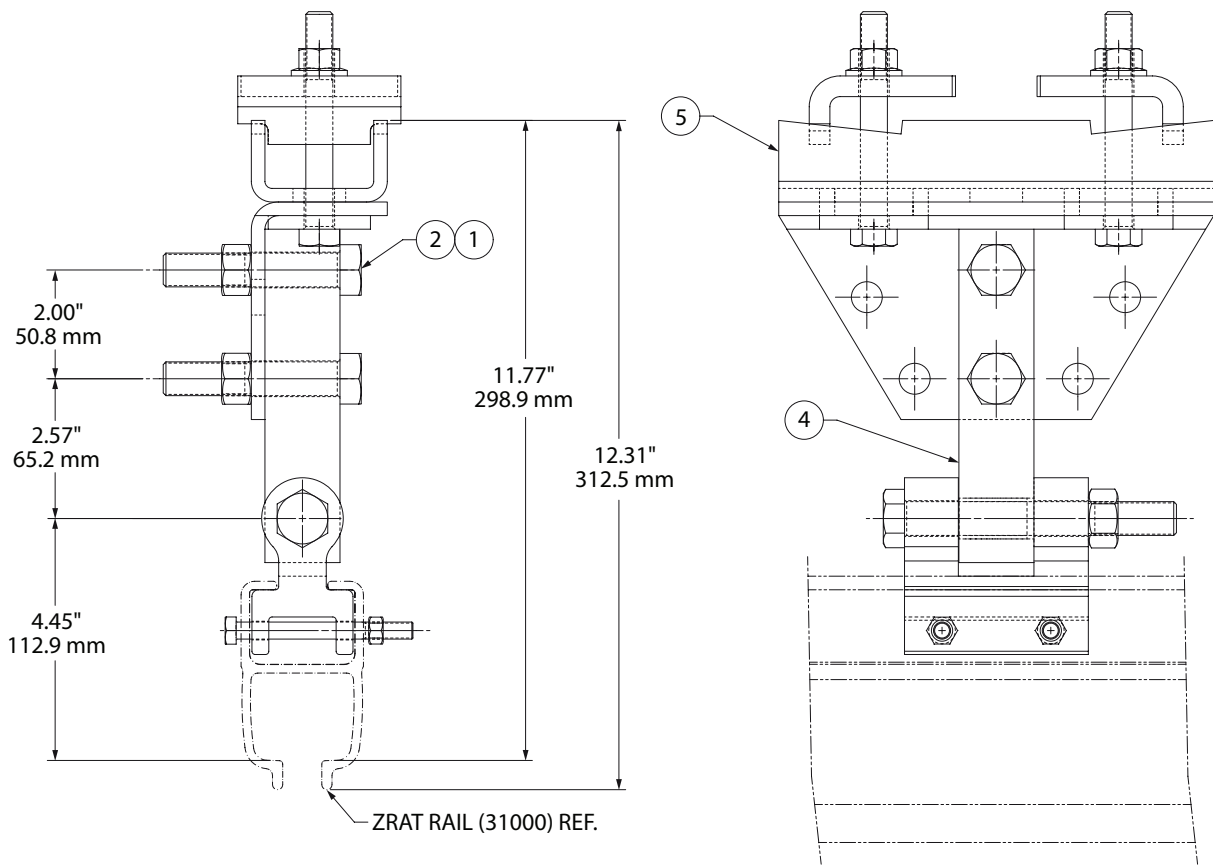
WEIGHT OF ASSEMBLY ..... 16 LBS.(7.25 KG)

(Dwg. 54094289)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30285	Hanger Kit, ZRAT, Block, Perpendicular	1
5	30187	Hanger Kit, Wide Flange Beam	1



# Beam Hanger Kit • ZRAT/Perpendicular/Standard Flange/Part No. 30292



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)

YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

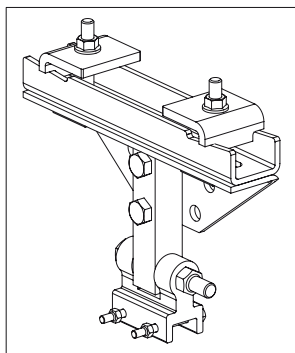
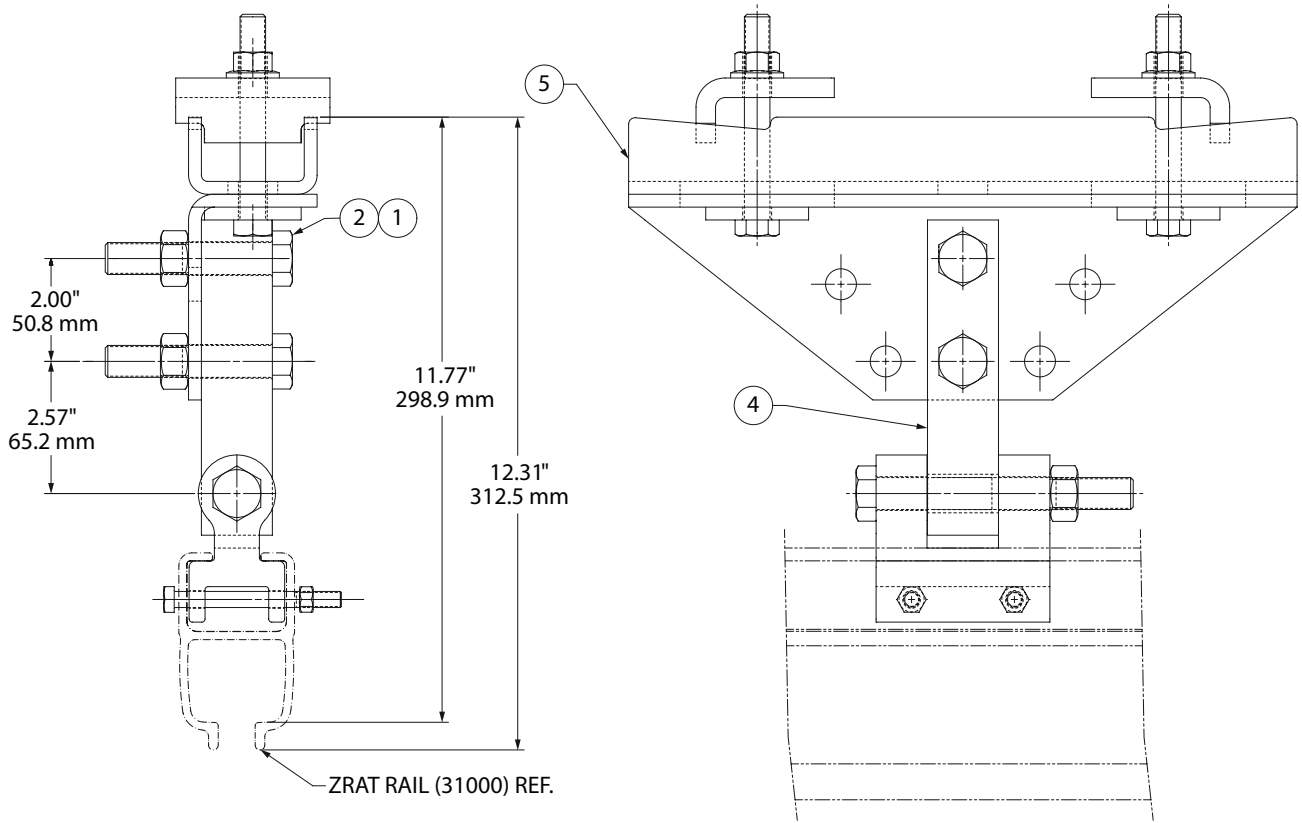
MINIMUM RAIL RADIUS..... 36" (914.4 mm)

WEIGHT OF ASSEMBLY ..... 15 LBS.(6.80 KG)

(Dwg. 54094297)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30289	Hanger Kit, ZRAT, Block, Parallel	1
5	30186	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRAT/Perpendicular/Wide Flange/Part No. 30293



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

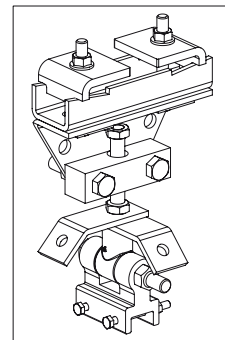
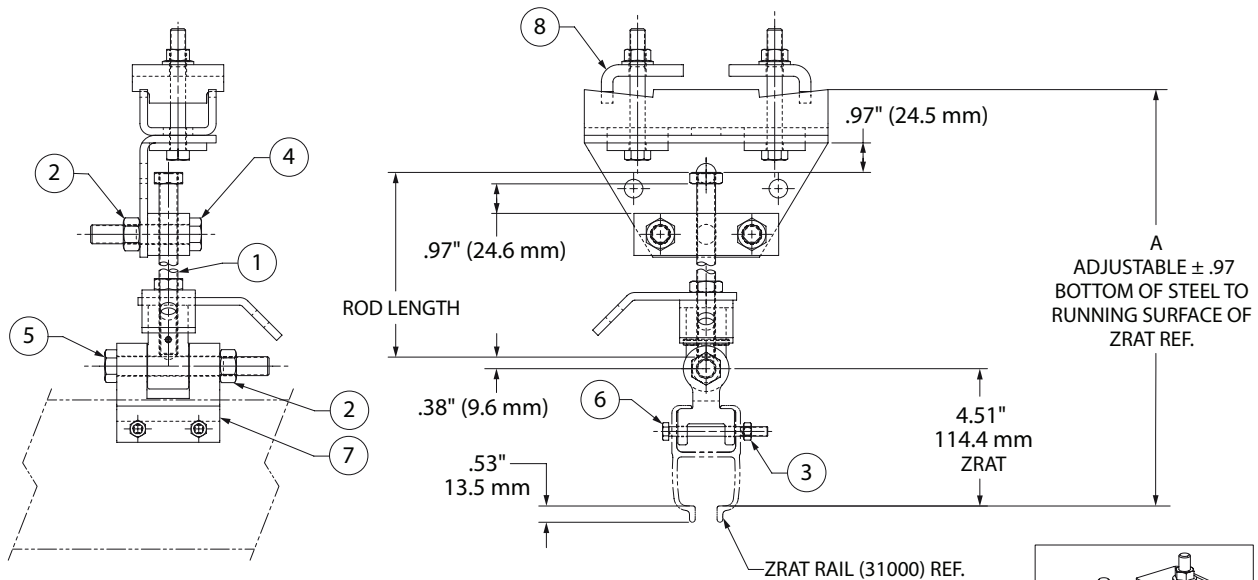
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 CAPACITY..... 2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS..... 36"(914.4 mm)  
 WEIGHT OF ASSEMBLY ..... 16 LBS.(7.25 KG)

(Dwg. 54094305)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30289	Hanger Kit, ZRAT, Block, Parallel	1
5	30187	Hanger Kit, Wide Flange Beam	1

# Adjustable Hanger Kit • ZRAT/Standard Flange/Part No. 30287 - XXX



ZRAT HANGERS : A DIMENSION = ROD LENGTH + 7.61				
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30287 - 006	13.61	6.00	30190 - 006	30907 - 06
30287 - 012	19.61	12.00	30190 - 012	30907 - 08
30287 - 018	25.61	18.00	30190 - 018	30907 - 10
30287 - 024	31.61	24.00	30190 - 024	30907 - 10
30287 - 036	43.61	36.00	30190 - 036	30907 - 12
30287 - 048	55.61	48.00	30190 - 048	30907 - 14
30287 - 060	67.61	60.00	30190 - 060	30907 - 16
30287 - 072	79.61	72.00	30190 - 072	30907 - 18
30287 - 084	91.61	84.00	30190 - 084	30907 - 20
30287 - 096	103.61	96.00	30190 - 096	30907 - 22
30287 - 108	105.61	108.00	30190 - 108	30907 - 24
30287 - 120	117.61	120.00	30190 - 120	30907 - 26

WIRE ROPE LENGTH IN FEET \_\_\_\_\_

**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH ..... 19,000 LBS.(8618.25 KG)

YIELD STRENGTH ..... 12,000 LBS.(5443.10 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

MINIMUM RAIL RADIUS ..... 36"(914.4 mm)

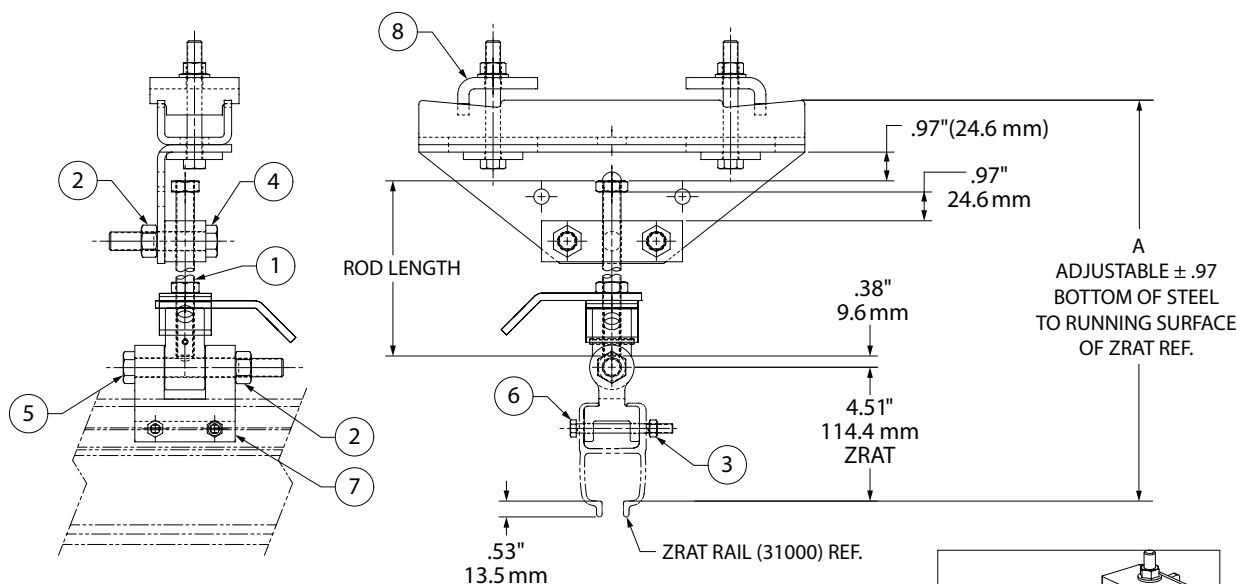
\*ROD LENGTHS 24.00"(609.6 mm) AND LONGER

REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585903)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30190-XXX	Hanger Adjustment Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS70968	5/16 - 11 x 3.25" HCS Grade 5	2
7	ZHS30266	Hanger Bracket, ZRAT, Machining	1
8	30186	Hanger Kit, Standard, Flange Beam	1
9	30907-XX	Safety Cable Assembly (not shown)	1

# Adjustable Hanger Kit • ZRAT/Wide Flange/Part No. 30288 - XXX



ZRAT HANGERS : A DIMENSION = ROD LENGTH + 7.61				
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30288 - 006	13.61	6.00	30190 - 006	30907 - 06
30288 - 012	19.61	12.00	30190 - 012	30907 - 08
30288 - 018	25.61	18.00	30190 - 018	30907 - 10
30288 - 024	31.61	24.00	30190 - 024	30907 - 10
30288 - 036	43.61	36.00	30190 - 036	30907 - 12
30288 - 048	55.61	48.00	30190 - 048	30907 - 14
30288 - 060	67.61	60.00	30190 - 060	30907 - 16
30288 - 072	79.61	72.00	30190 - 072	30907 - 18
30288 - 084	91.61	84.00	30190 - 084	30907 - 20
30288 - 096	103.61	96.00	30190 - 096	30907 - 22
30288 - 108	115.61	108.00	30190 - 108	30907 - 24
30288 - 120	127.61	120.00	30190 - 120	30907 - 26
30288 - 132	139.61	132.00	30190 - 132	30907 - 28
30288 - 144	151.61	144.00	30190 - 144	30907 - 30
30288 - 156	163.61	156.00	30196A02 - 156	30907 - 32
30288 - 168	175.61	168.00	30196A02 - 168	30907 - 34

WIRE ROPE LENGTH IN FEET

**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

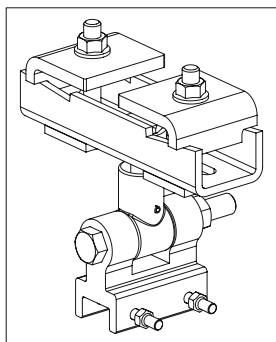
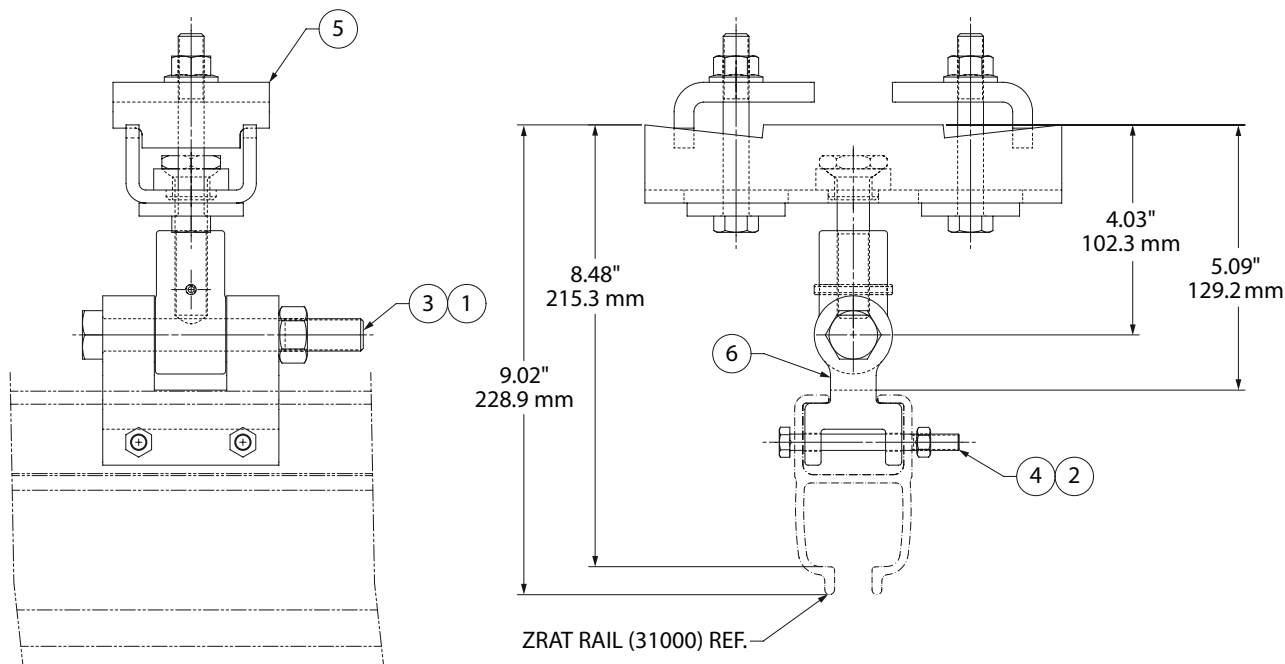
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH ..... 19,000 LBS.(8618.25 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 WEIGHT OS ASSEMBLY ..... 14 LBS.(6.35 KG)  
 CAPACITY.....2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS.....36"(914.4 mm)  
 \*ROD LENGTHS 24.00"(609.6 mm) AND LONGER REQUIRE CROSS BRACING.

(Dwg. 16585929)

Bill of Materials			
Item no.	Part no.	Description	Amt.
1	30190-XXX	Hanger Adjustment Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS70968	5/16 - 11 x 3.25" HCS Grade 5	2
7	ZHS30266	Hanger Bracket, ZRAT, Machining	1
8	30187	Hanger Kit, Wide, Flange Beam	1
9	30907-XX	Safety Cable Assembly (not shown)	1

# Close Hanger Kit • ZRAT/Standard Flange/Part No. ZHS30300



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

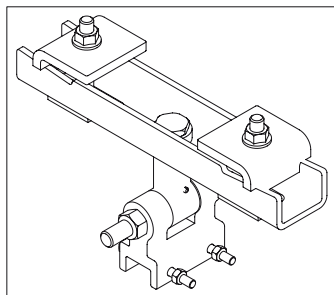
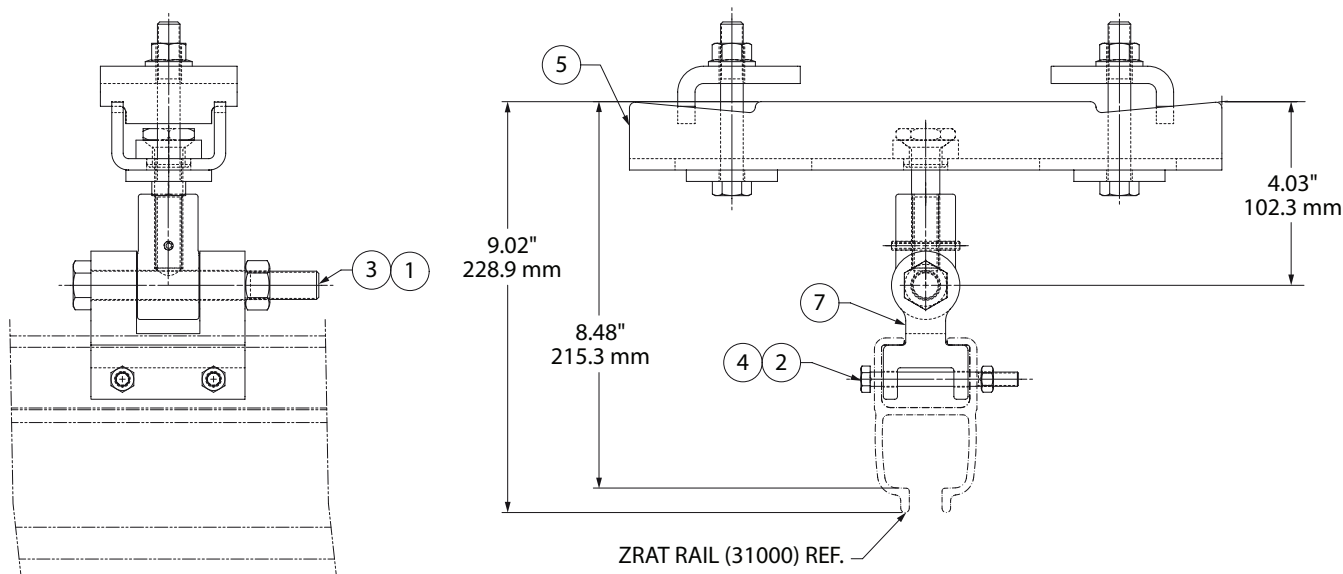
STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH.....19,500 LBS.(8845.05 KG)  
 YIELD STRENGTH.....12,000 LBS.(5443.10 KG)  
 CAPACITY .....2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS .....36"(914.4 mm)  
 WEIGHT OF ASSEMBLY .....9 LBS.(4.08 KG)

(Dwg. 54094362)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75582	Lock Nut, 5/16 - 18 PT	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	ZHS70968	5/16 - 11 x 3.25" HCS Grade 5	2
5	30919	Close Hanger Kit Sub-assembly	1
6	ZHS30266	Hanger Bracket, ZRAT, Machining	1
7	30907-XX	Safety Cable Assembly (not shown)	1

# Close Hanger Kit • ZRAT/Wide Flange/Part No. ZHS30301



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

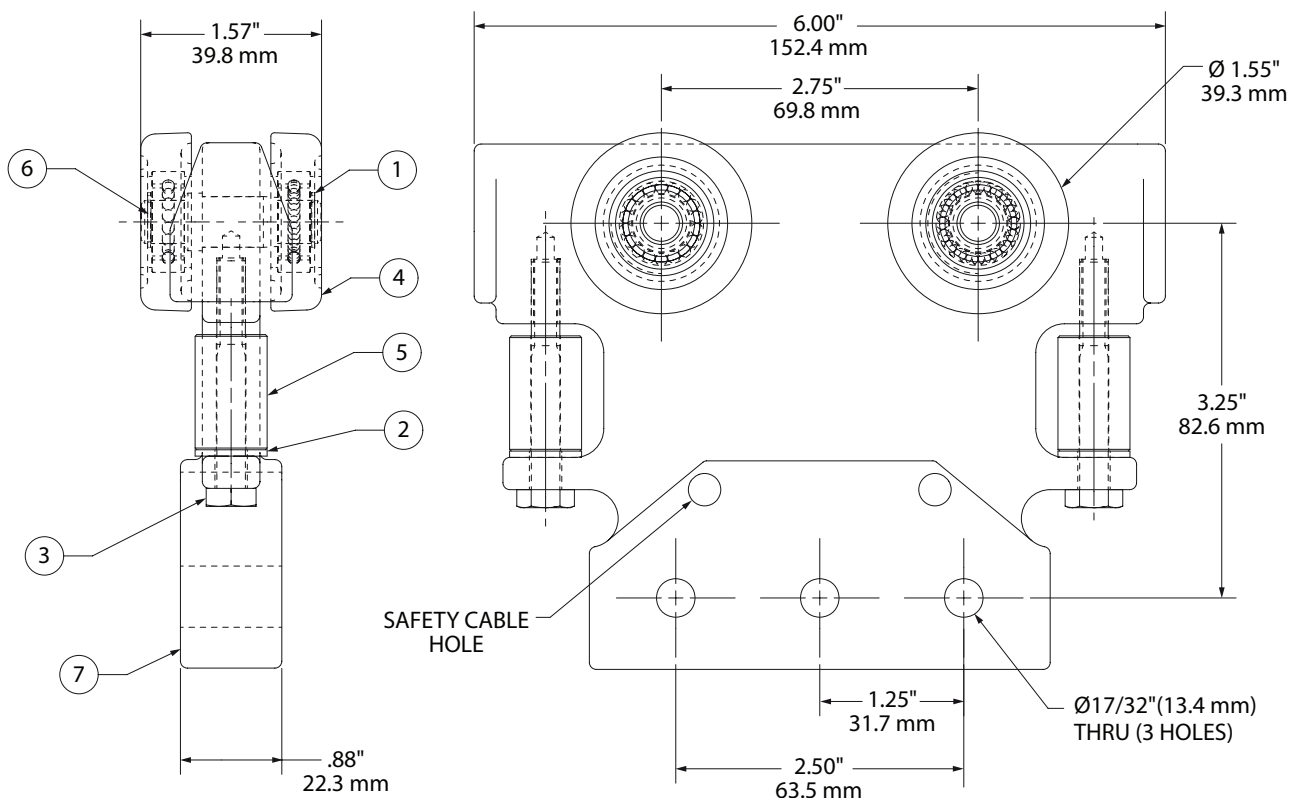
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)  
 YIELD STRENGTH..... 12,000 LBS.(5443.10 KG)  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS ..... 36" (914.4 mm)  
 WEIGHT OF ASSEMBLY ..... 10 LBS.(4.53 KG)

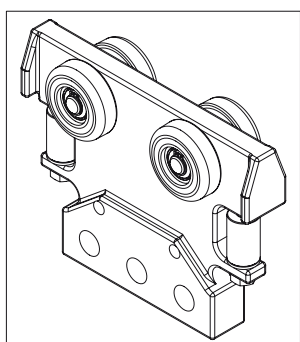
(Dwg. 54094370)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75582	Lock Nut, 5/16 - 18 PT	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	ZHS70968	5/16 - 11 x 3.25" HCS Grade 5	2
5	30920	Close Hanger Kit Sub-assembly, Wide Beam	1
6	30907-06	Safety Cable Assembly (not shown)	1
7	ZHS30266	Hanger Bracket, ZRAT, Machining	1

# ZRAT Aluminum Trolley • 500 lbs. (226.8 kg) Capacity/Part No. 31056



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.



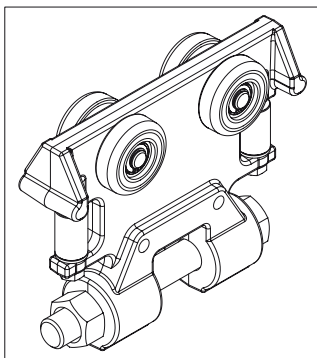
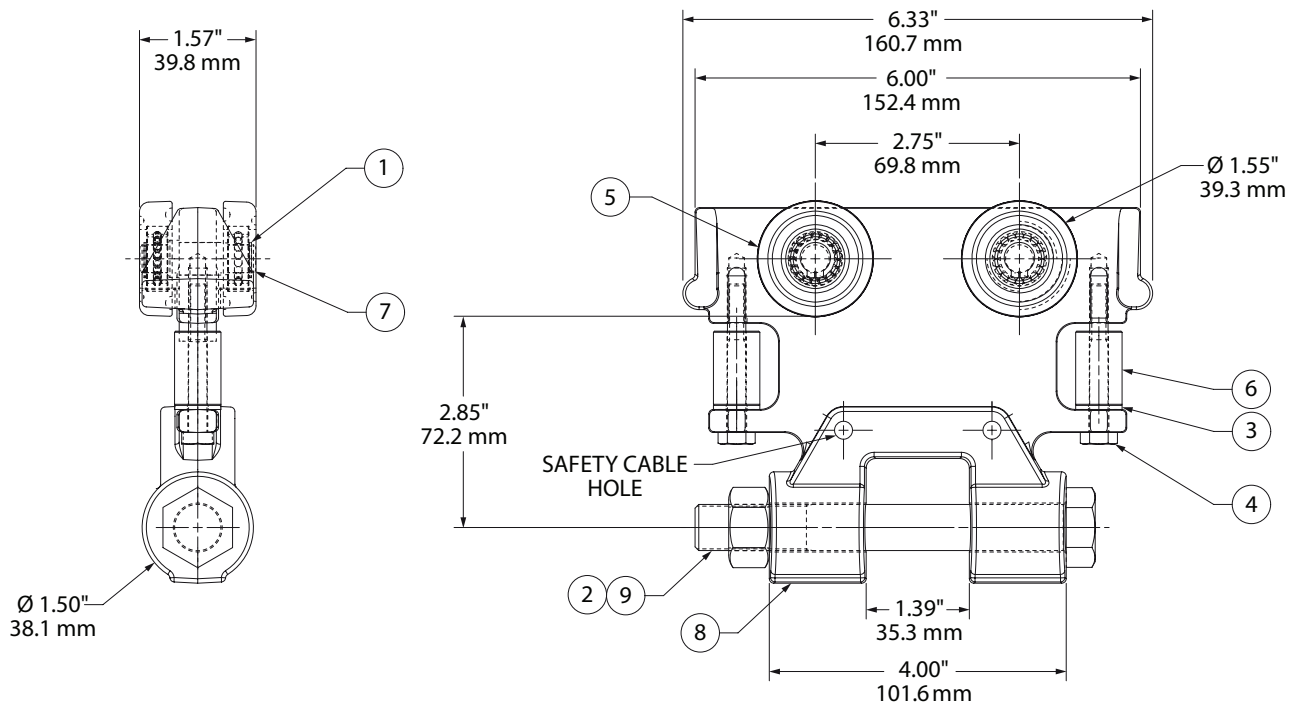
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	1.55"(39.3 mm) DIA. DELRIN
BEARINGS.....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY.....	4 LBS.(1.81 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 56743677)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	External Retaining Ring, 3/8"	4
2	74504	Flat Washer, 1/4"	2
3	ZHS70484	HCS 1/4 - 20 x 2, Z5	2
4	31007	Trolley Wheel Assembly	4
5	30223	Trolley Guide Wheel	2
6	30203	Trolley Axle	2
7	ZHS30278	Trolley Bracket	1

# ZRAT Aluminum Trolley • 500 lbs. (226.8 kg) Capacity/Part No. 31057



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY .....	500 LBS.(226.8 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	1.55"(39.3 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY.....	4 LBS.(1.81 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

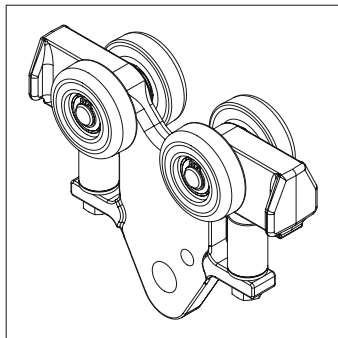
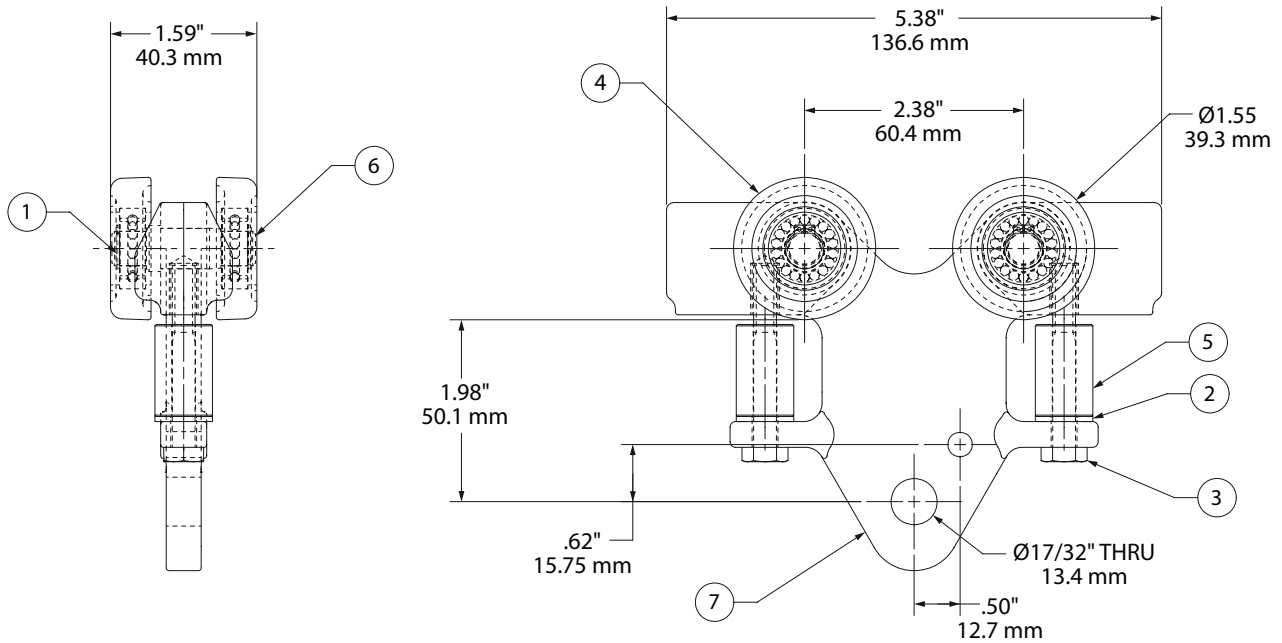
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54065271)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	External Retaining Ring, 3/8"	4
2	75587	Lock Nut, 5/8 - 11	1
3	74504	Flat Washer, 1/4"	2
4	ZHS70484	HCS 1/4 - 20 x 2 Z5	2
5	31007	Trolley Wheel Assembly	4
6	30223	Trolley Guide Wheel	2
7	30203	Trolley Axle	2
8	30280	Trolley Body, Machining	1
9	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1



# ZRAT Universal Trolley • 250 lbs. (113.4 kg) Capacity/Part No. 31005



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

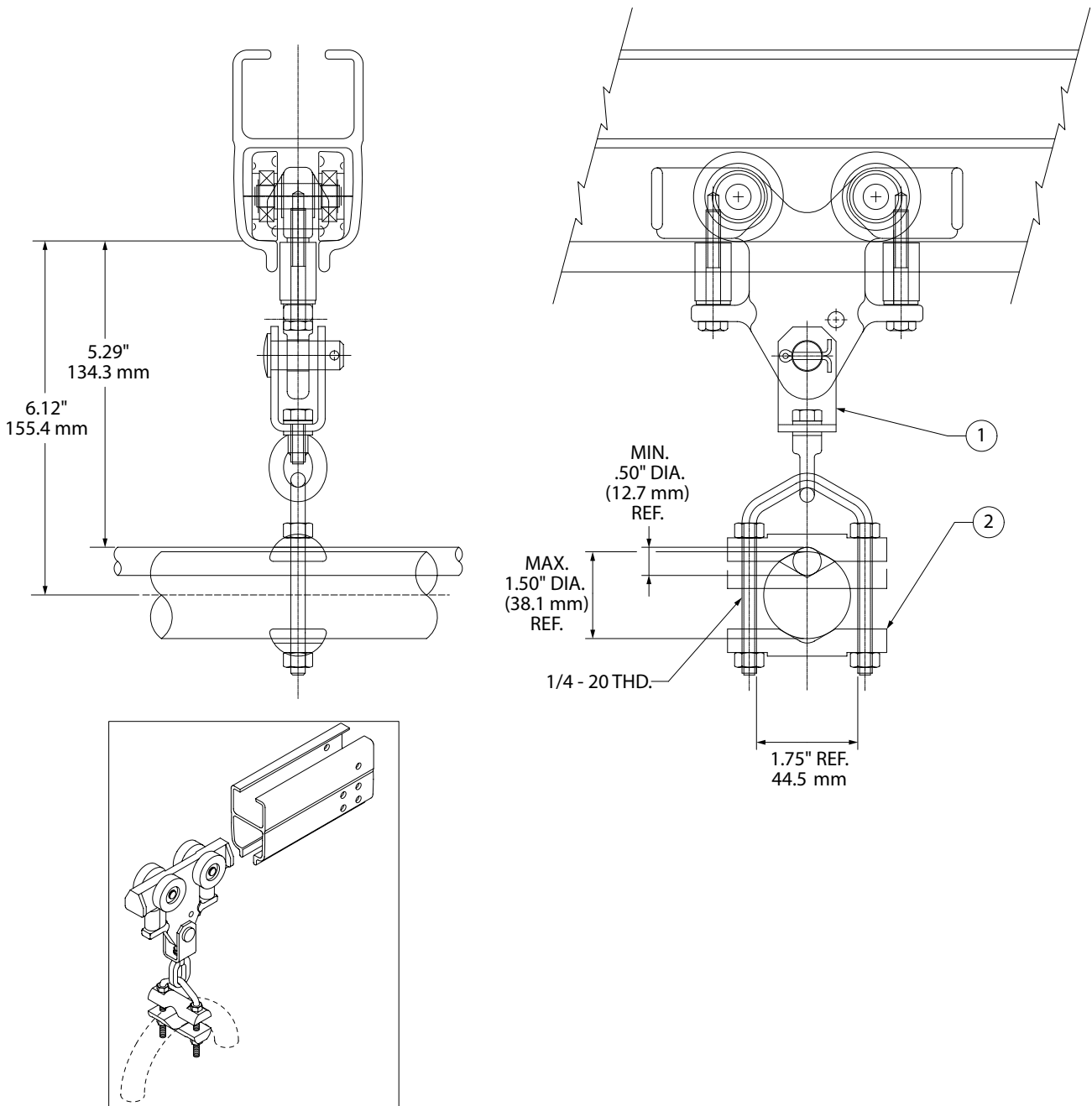
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	5,000 LBS.(2267.96 KG)
YIELD STRENGTH .....	1,250 LBS.(567 KG)
CAPACITY.....	250 LBS.(113.4 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	1.55"(39.3 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY .....	1.0 LBS.(0.45 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54097209)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	External Retaining Ring, 3/8"	4
2	74504	Washer	2
3	ZHS70484	HCS 1/4 - 20 x 2, Z5	2
4	31007	Trolley Wheel Assembly	4
5	30223	Trolley Guide Wheel ZRA1	2
6	30203	Trolley Axle	2
7	31006	Trolley Body, Machining	1

# ZRAT Swivel Assembly • Hose and Cable Adapter/Part No. 31011

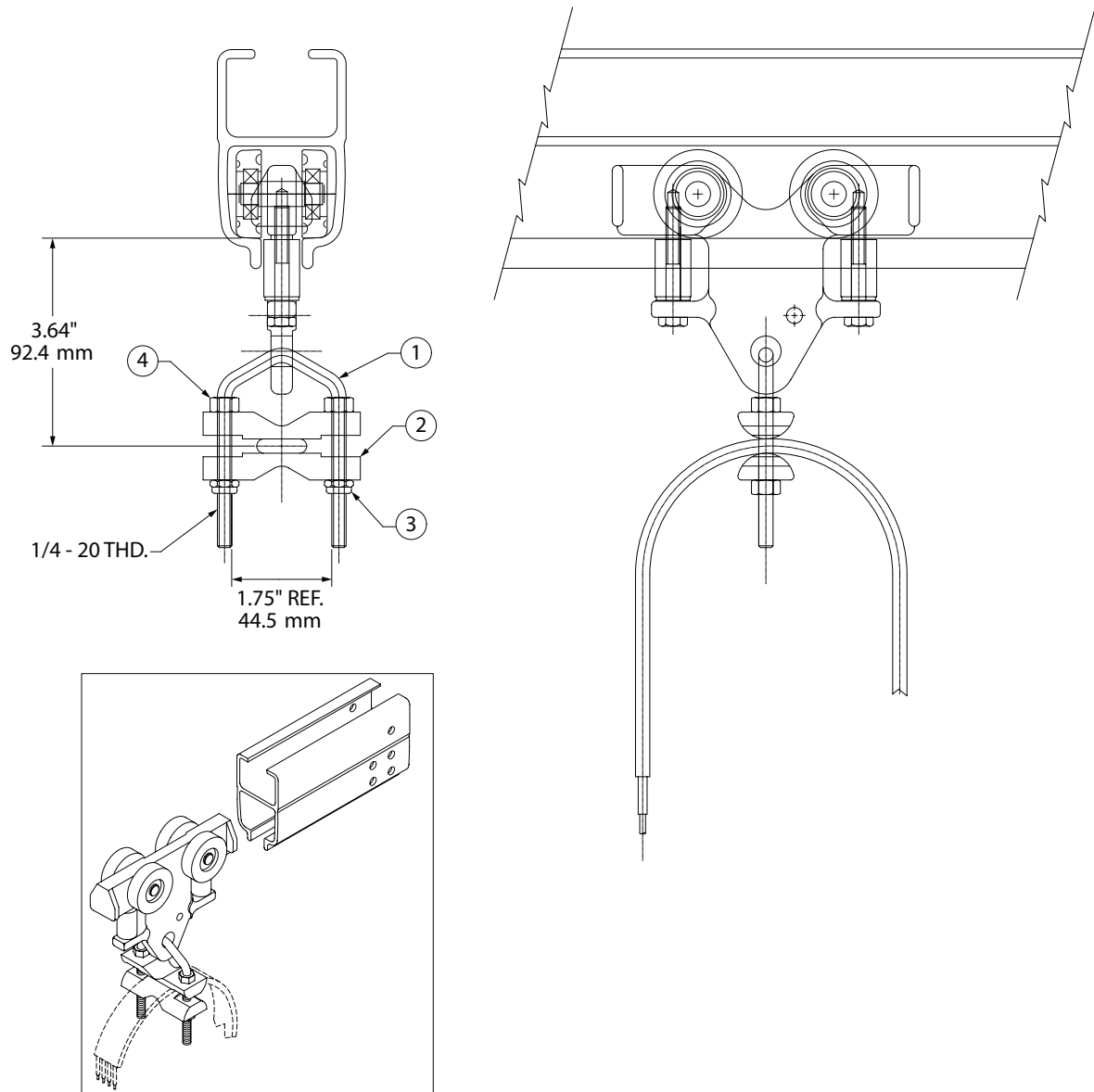


**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54065263)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	31013	Swivel Assembly	1
2	31012	Hose and Cable Adaptor Assembly	1

# ZRAT Hose and Cable Adapter Assembly/Part No. 31012

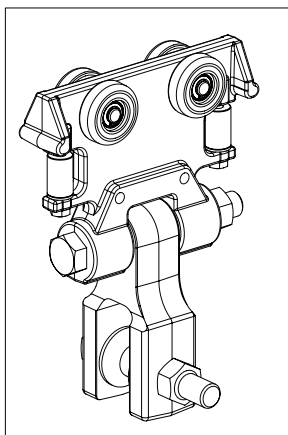
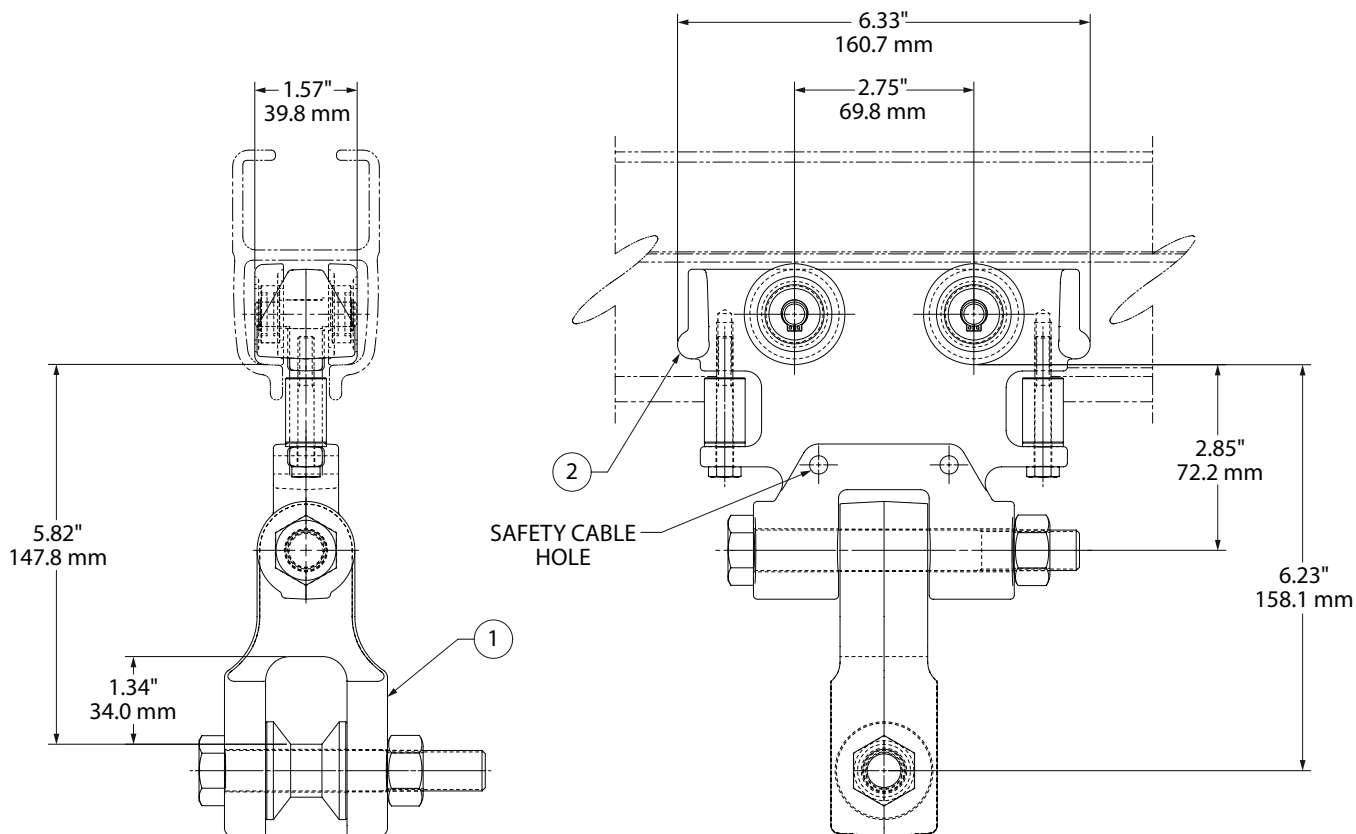


**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54067376)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	31014	Hanger	1
2	31015	Clamp	2
3	75528	Hexagonal Lock Nut, 1/4 - 20 ~ ESNA NTE	2
4	75541	Hexagonal Nut, 1/4 - 20	2

# Hoist Trolley - Single • ZRAT/500 lbs. (226.8 kg) Capacity/ Part No. ZHS31058



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

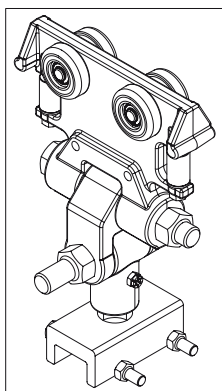
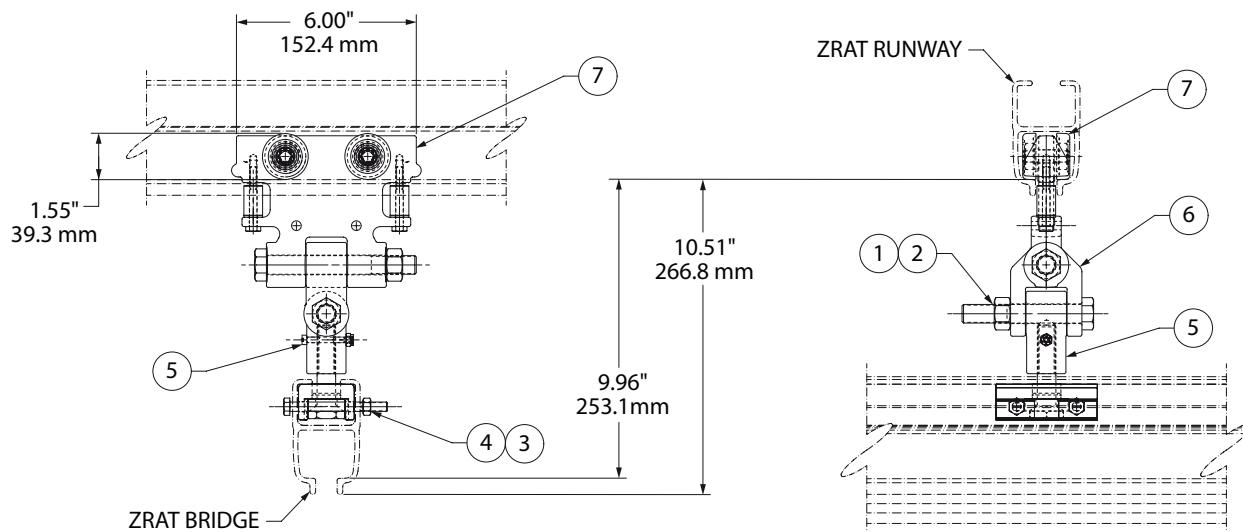
ROLLING FRICTION .....ONE PERCENT  
 MAXIMUM WHEEL LOAD .....125 LBS.(56.7 KG)  
 ULTIMATE STRENGTH .....8,575 LBS.(3889.55 KG)  
 YIELD STRENGTH .....7,500 LBS.(3401.94 KG)  
 CAPACITY.....500 LBS.(226.8 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54038526)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30903	Hoist Bracket Assembly	1
2	31057	ZRAT Aluminum Trolley W/Bolt	1

# End Truck Assembly - Single • ZRAT to ZRAT/500 lbs. (226.8 KG) Capacity/ Part No. 31059



ULTIMATE STRENGTH ..... 8,575 LBS.(3889.55 KG)  
 YIELD STRENGTH ..... 7,500 LBS.(3401.94 KG)  
 CAPACITY..... 500 LBS.(226.8 KG)  
 WEIGHT OF TROLLEY..... 5.75 LB.(2.60 KG)

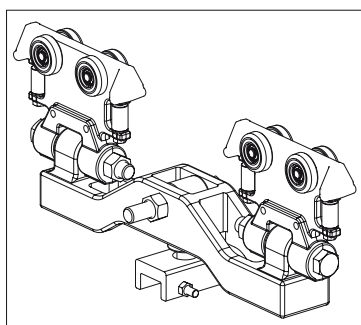
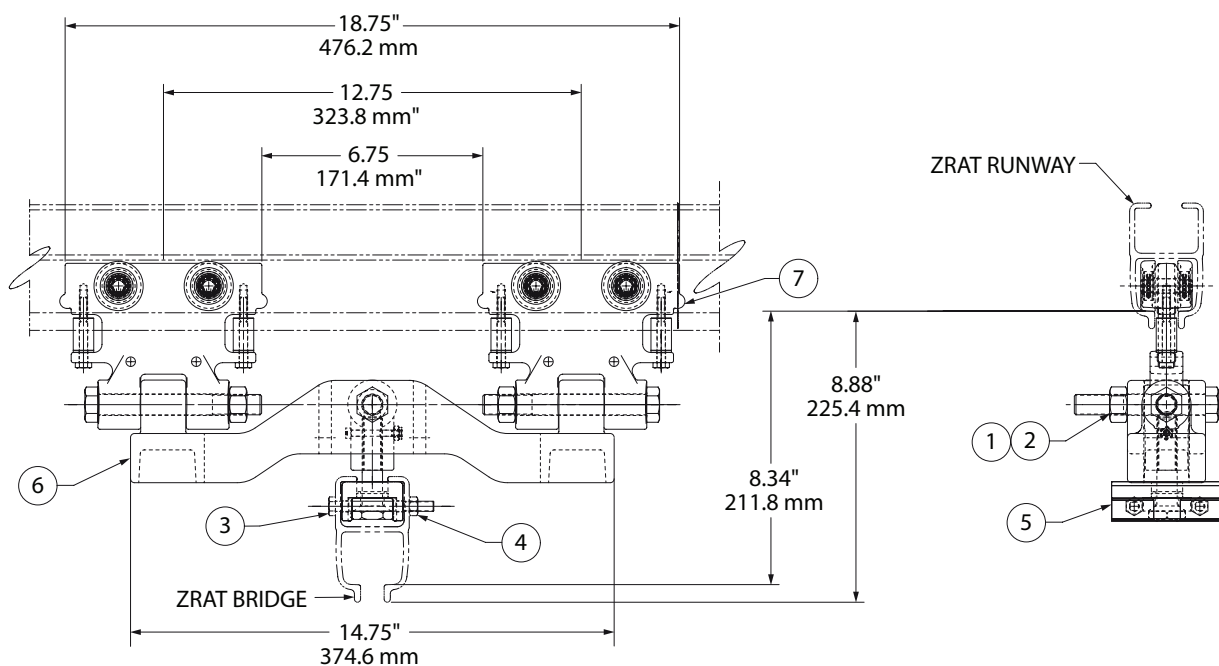
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54097241)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	ZHS72644	Hexagonal Bolt, 5/8 -11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS70968	HCS 5/16 - 18 x 3.25" Grade 5	2
5	30282	Bridge Suspension Sub-assembly	1
6	30166	Female Clevis	1
7	31057	ZRAT Aluminum Trolley W/bolt	1

# End Truck Assembly - Dual • ZRAT to ZRAT/1000 lbs. (453.6 kg) Capacity/ Part No. 31060



ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)  
 YIELD STRENGTH ..... 10,600 LBS.(4808.07 KG)  
 CAPACITY..... 1000 LBS.(453.6 KG)  
 WEIGHT OF TROLLEY ..... 15.5 LB.(7.03 KG)

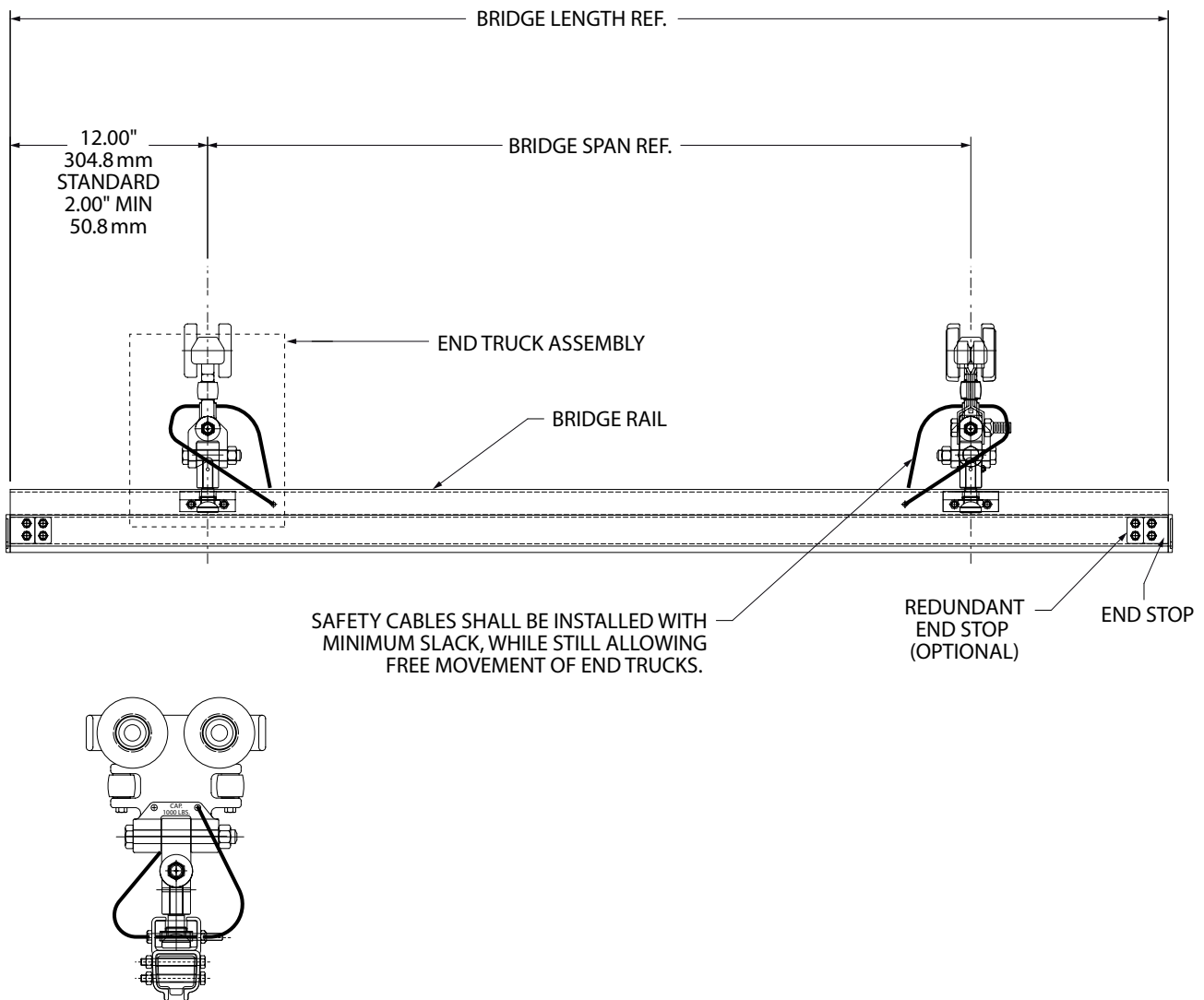
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54097258)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	ZHS72644	Hexagonal Bolt, 5/8 -11 x 4.00 Grade 5	1
3	70964	HCS 5/16 - 18 x 3" Grade 5	2
4	75582	Lock Nut, 5/16 - 18 PT	2
5	30282	Bridge Suspension Sub-assembly	1
6	30173	Dual Trolley Tie Bar, Machining	1
7	31057	ZRAT Aluminum Trolley W/bolt	2

# Bridge Crane Assembly • Example of How to Order



THE BRIDGE CRANE ASSEMBLY CONSISTS OF:

- ONE BRIDGE BEAM (SECTION OF RAIL)
- TWO END TRUCK ASSEMBLIES (MOUNTED TO THE BRIDGE WITH A TROLLEY TO ROLL INSIDE OF THE RUNWAY, SAFETY CABLES WILL BE PRE-INSTALLED)
- TWO END STOPS (ONE INSTALLED AT EACH END OF THE BRIDGE)
- REDUNDANT END STOPS ARE AVAILABLE (PLEASE SPECIFY)

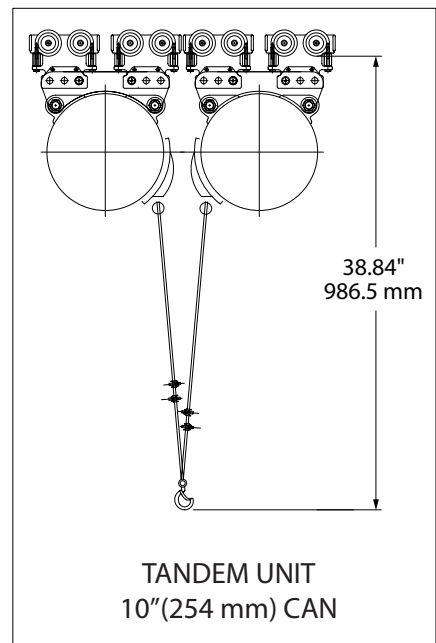
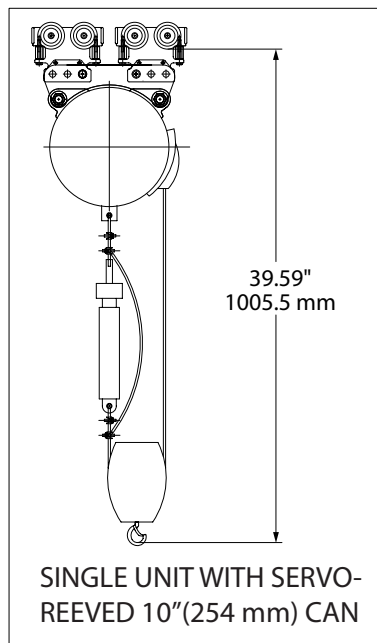
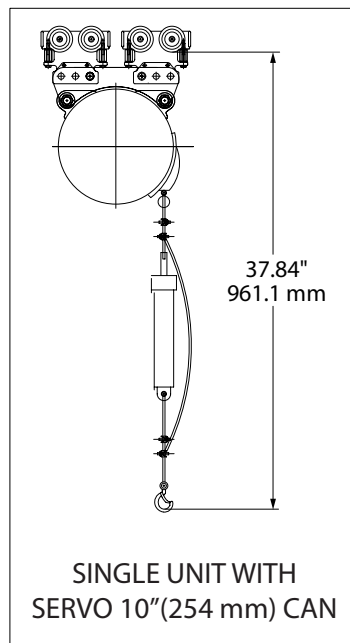
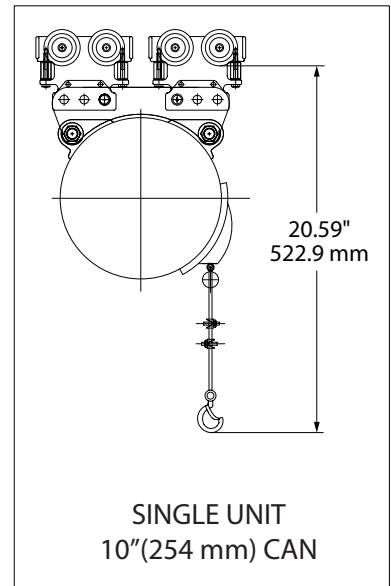
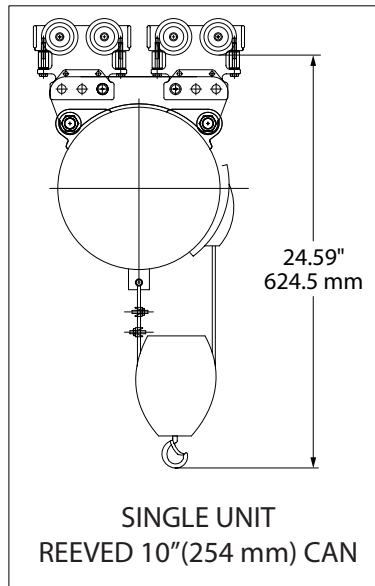
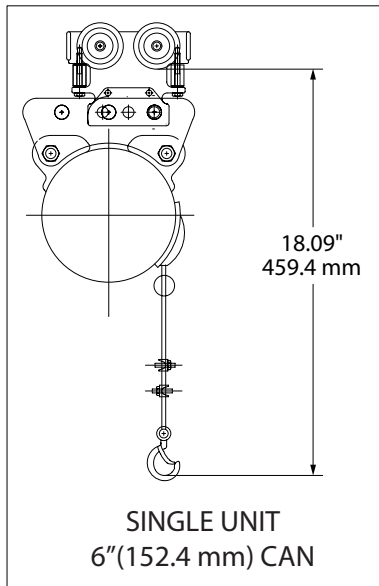
## EXAMPLE

### ORDER NUMBER:

**ZRAT** | **06** | **08** | **31059** | **R**

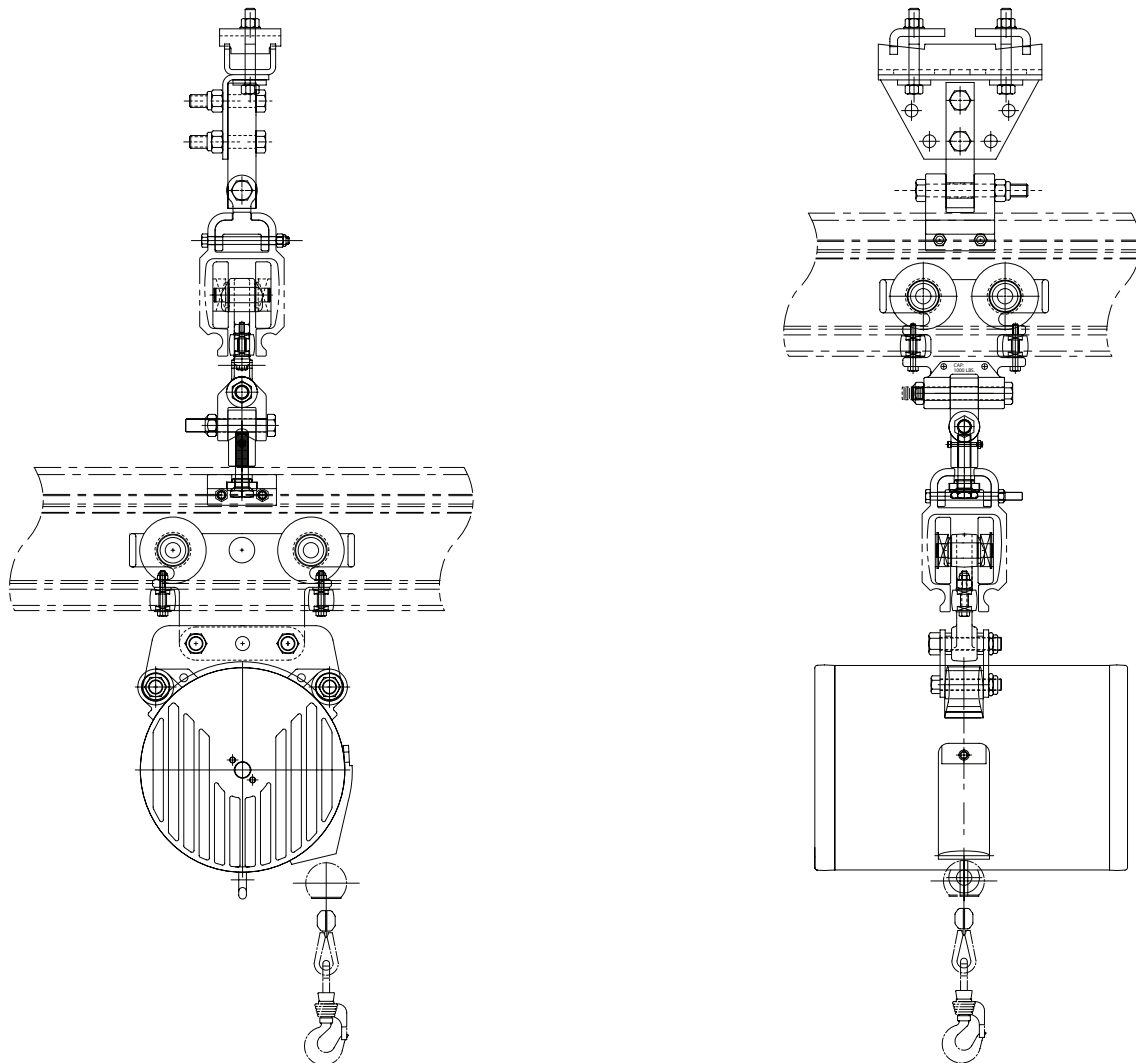
- REDUNDANT END STOP (OPTIONAL)
- END TRUCK ASSEMBLY
- TOTAL BRIDGE LENGTH (IN FEET)
- SPAN (RUNWAY CENTER-CENTER DIMENSION IN FEET)
- TYPE OF BRIDGE RAIL

# Balancer Stack-up Dimension • For ZRAT Aluminum Rail



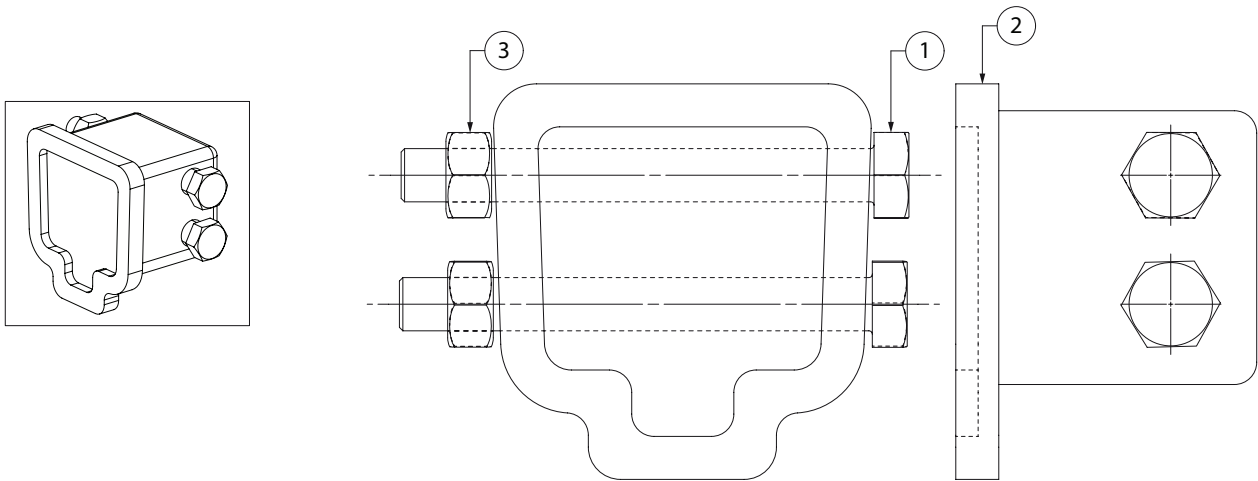


# System Stack-up Dimension • ZRAT/Quick Reference



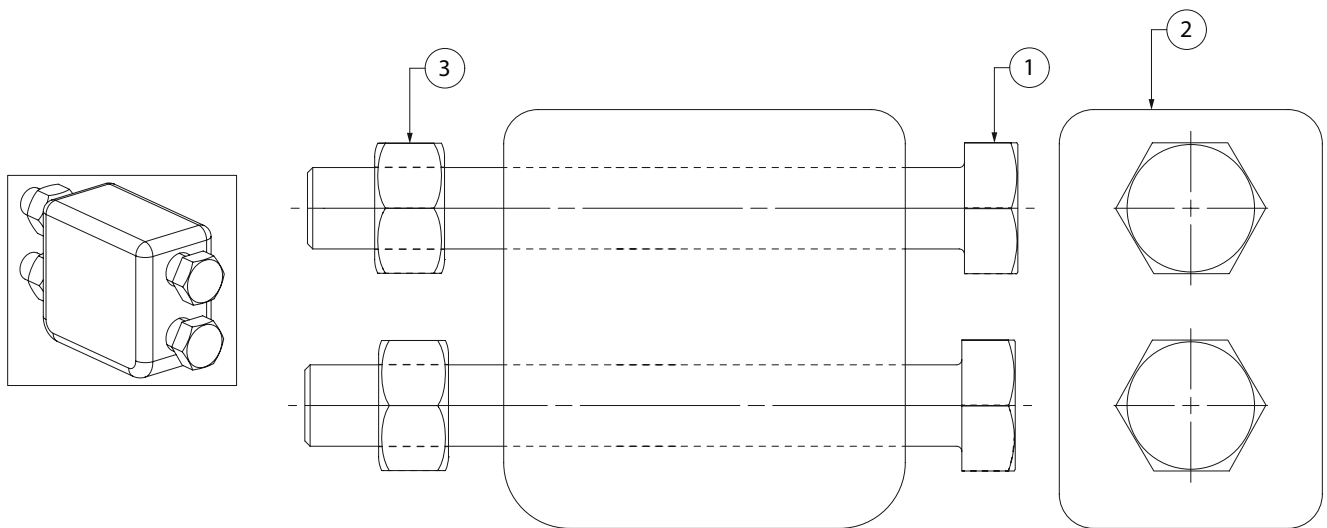
HANGER KITS	END TRUCKS	BALANCERS WITH SUSPENSION
30227 - 3.30"(83.8 mm)	31059 - 9.88"(250.9 mm)	SINGLE UNIT 10"(254 mm) - 20.59"(522.9 mm)
30285 - 6.98"(177.3 mm)	31060 - 8.21"(208.5 mm)	SINGLE UNIT REEVED 10"(254 mm) - 24.59"(624.5 mm)
30289 - 6.98"(177.3 mm)	31059 - 10.70"(271.7 mm)	SINGLE UNIT WITH SERVO 10"(254 mm) - 39.59"(1005.5 mm)
30290 - 11.59"(294.3 mm)	31060 - 9.03"(229.3 mm)	SINGLE UNIT 6"(152.4 mm) - 18.09"(459.4 mm)
30291 - 11.59"(294.3 mm)		TANDEM UNIT 10"(254 mm) - 400 LBS.(181.43 KG) 35.25"(895.3 mm)
30292 - 11.59"(294.3 mm)		- 700 LBS.(317.51 KG) 40.25"(1022.3 mm)
30293 - 11.59"(294.3 mm)		- 1000 LBS.(453.6 KG) 35.25"(895.3 mm)
30297 - (ADJUSTABLE)		
30288 - (ADJUSTABLE)		
30300 - 8.47"(215.1 mm)		
30301 - 8.47"(215.13 mm)		

# End Stops • ZRAT/Part No. Single - ZHS31022/Redundant - ZHS31024



(Dwg. 54097225)

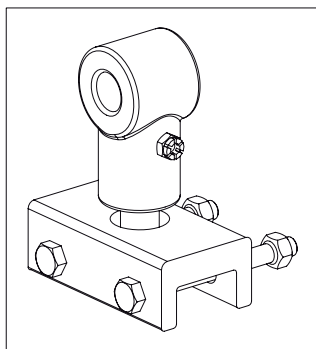
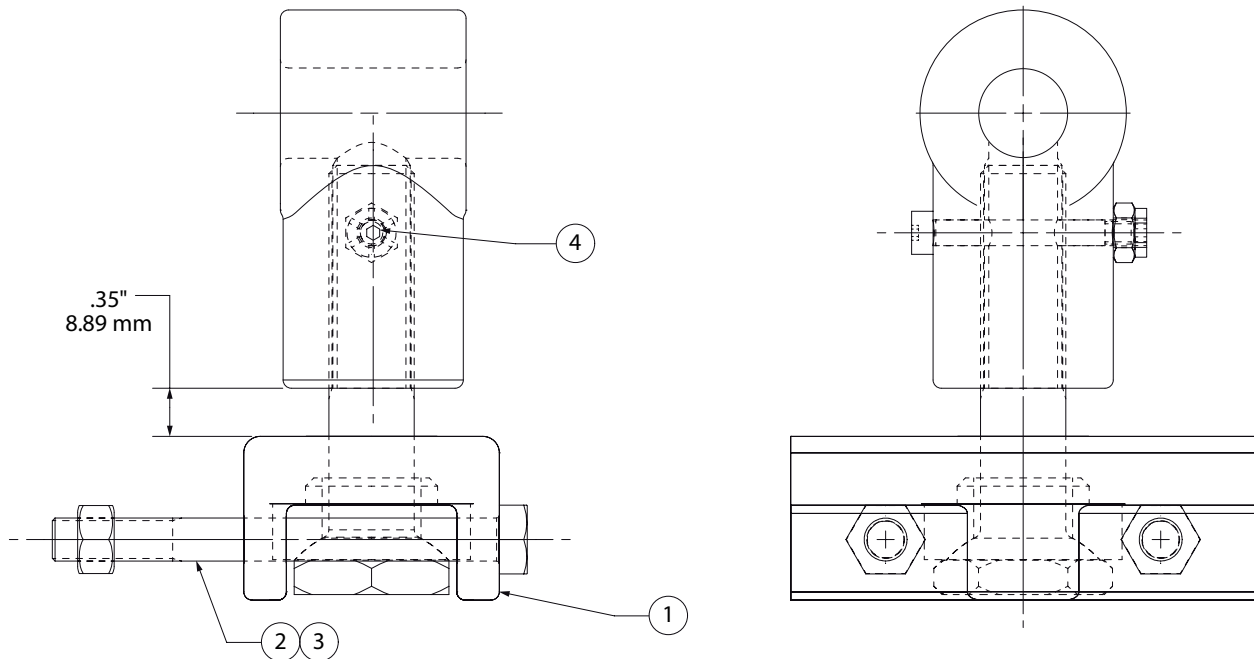
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS70972	HCS 5/16 - 18 x 2.75" Grade 5	2
2	ZHS31019	ZRAT End Stop	1
3	75582	Lock Nut, 5/16 - 18 PT	2



(Dwg. 54097233)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS70972	HCS 5/16 - 18 x 2.75" Grade 5	2
2	ZHS31023	ZRAT Redundant End Stop	1
3	75582	Lock Nut, 5/16 - 18 PT	2

# ZRAT Rail • Bridge Suspension Sub-Assembly/Part No. ZHS30305



ULTIMATE STRENGTH .....8,575 LBS.(3889.55 KG)  
 YIELD STRENGTH .....7,500 LBS.(3401.94 KG)  
 CAPACITY.....1000 LBS.(453.6 KG)  
 WEIGHT OF TROLLEY.....3 LBS.(1.36 KG)

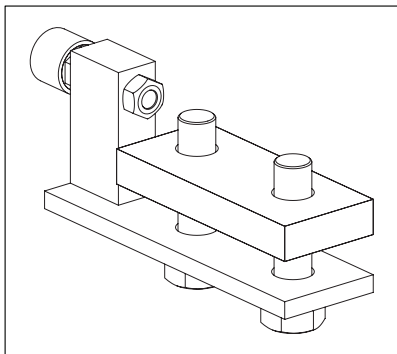
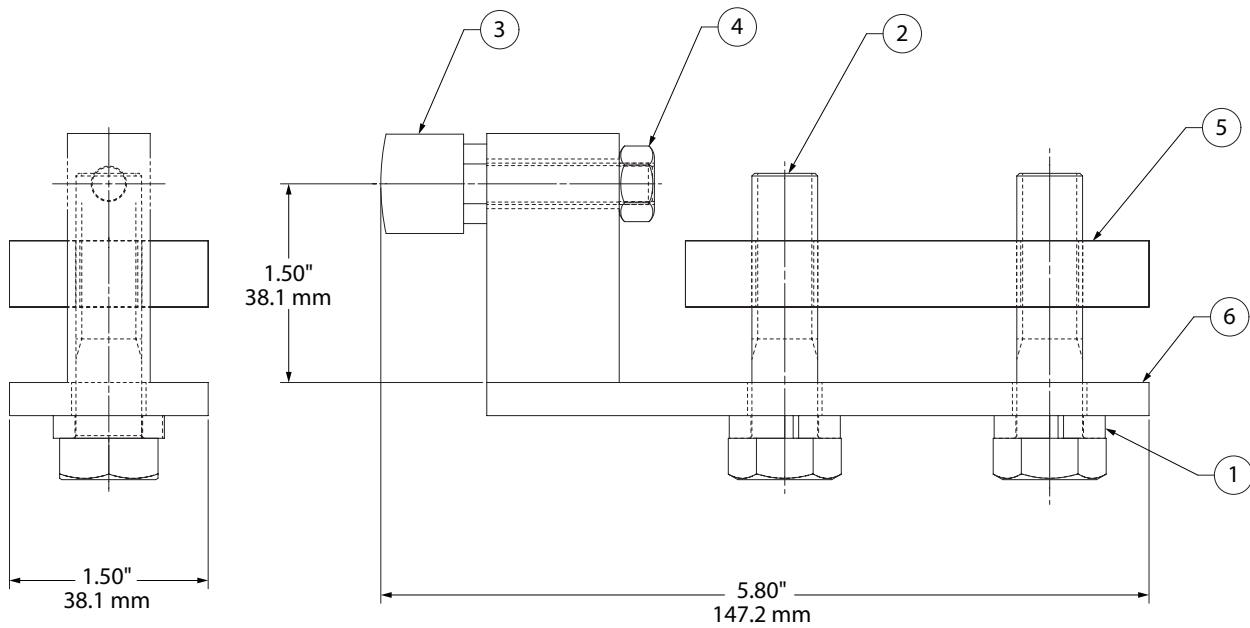
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094404)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30282	Bridge Suspension Sub-assembly	1
2	70986	5/16 - 18 x 3.25" H.H.B	1
3	75582	Lock Nut, 5/16 - 18	1
4	99118	Screw and Nut Assembly	2

# ZRAT Rail • Adjustable Stop/Part No. ZHS30738

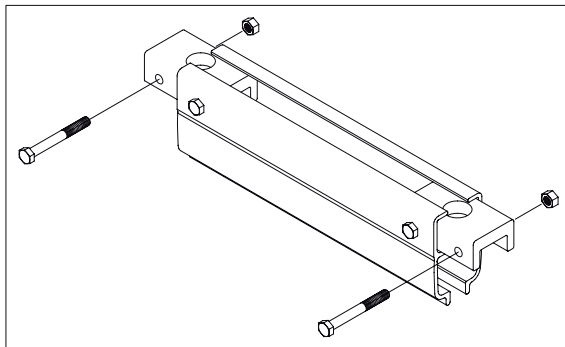
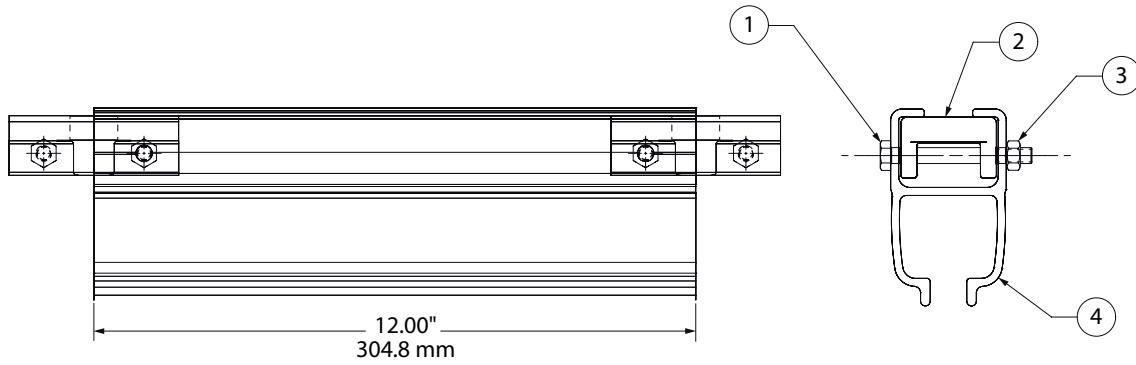


**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54125612)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	74513	Spring Lock Washer, 1/2" Medium	2
2	ZHS72002	HCS 1/2 -13 x 2" Grade 5	2
3	ZHS30744	BN-516M-20 Stilson Round Bumper with Male Thread and Hex. Shoulder	1
4	75582	Lock Nut, 5/16 - 18 PT	1
5	30736	Adjustable Stop ZRAT Tapped Plate	1
6	30734	Adjustable Stop, Bar Weldment	1

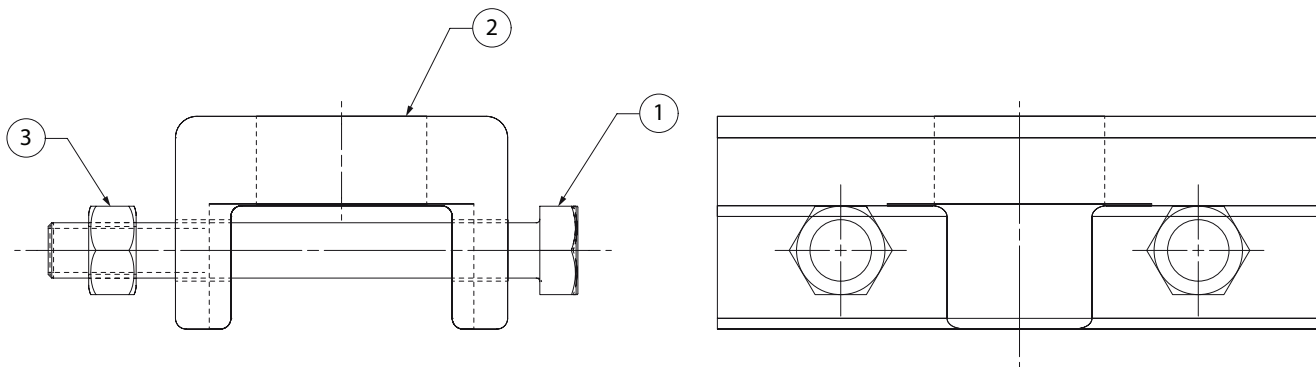
# ZRAT Rail • Inspection Gate/Part No. 31034



(Dwg. 54127386)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS70972	HCS 5/16 - 18 x 2.75" Grade	4
2	30267	Suspension Bracket	2
3	75582	Lock Nut, 5/16 - 18 PT	4
4	31035	ZRAT Inspection Gate	1

# Splice Kit • ZRAT/Part No. 31020



**CAUTION:** THERE MUST BE A HANGER KIT ON EACH SIDE OF THE GATE WITHIN 12"(304.8 mm) OF THE SPLICE JOINT.

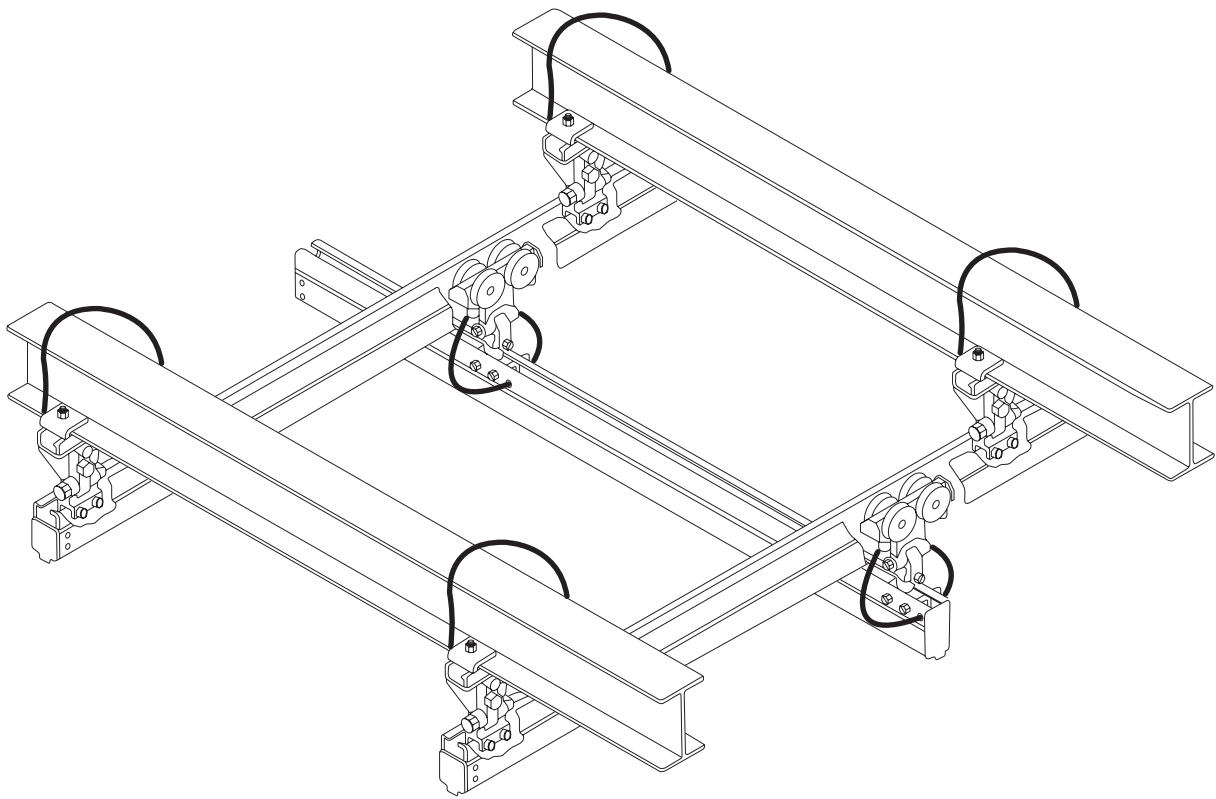
(Dwg. 54097217)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS70972	HCS 5/16 - 18 X 2.75" Grade 5	2
2	30267	Suspension Bracket, Machining	1
3	75582	Lock Nut, 5/16 - 18 PT	2

# Rail Systems

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## ZRA1 Aluminum Rail & Components



## Engineering Data for ZRA1 Aluminum Rail

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1. All rail and hangers must be installed in accordance with **Ingersoll Rand** instructions.
2. Rail provided is ZRA1 aluminum alloy.
3. The rail or bridge beam provided is modular design, weld free application, and self aligning with complete bolt-together capability at all splice joints and hangers.
4. All rail sections provided are saw cut square to required length by **Ingersoll Rand**. All rail joints should be flush when installation is completed.
5. The capacity of the rail, monorail or bridge crane will be determined so that deflection under rated load shall not exceed 1/450 of the span. Lateral deflection will not be accepted.
6. The allowable stresses applied must not exceed 20% of the **minimum yield strength** of the materials used.
7. The maximum capacity for all rail provided by the contractor including hoist, product, process equipment, and all attachments, etc, must not exceed the capacity specified below: ZRA1 Aluminum Rail-acceptable for maximum capacities up to and including 500 lbs (226.8 kg).
8. For bridge crane or hoist application(s), the maximum overhang of the bridge girder to the centre of a runway rail, must not exceed 12.00"(304.8 mm). (For larger overhangs consult the factory).
9. All bridge cranes, runway and monorail, must be installed straight, parallel, level and at the same elevation. Installation tolerance cannot exceed the values specified below:
  - a. **Longitudinal leveling.** Multiple runways and single rail systems 0.25"(6.35 mm) in overall length, with a maximum rate of change of no more than 0.12"(3.04 mm) on twenty-foot centers.
  - b. **Elevation runway to runway.** 0.25"(6.3 mm) in span, maximum rate of change 0.12"(3.04 mm) on twenty-foot centers.
  - c. **Centering to runway to runway.** 0.25"(6.3 mm) in overall length, maximum rate of change 0.12"(3.04 mm) on twenty-foot centers.
  - d. **Centering for single rail.** to a parallel conveyor of workstation will be  $\pm 0.50$ "(12.7 mm) in overall length of the system, maximum rate of change 0.12"(3.04 mm) on twenty-foot centers.
10. Sway bracing should be used when the hanger meets or exceeds 24.00"(609.6 mm) in length. (See system installation manual.)
11. One month after system buy off, the enclosed rail system should be inspected and re-leveled by the installation contractor. All bolts at the splice joints, hangers and support structure should be re-checked for proper torque. Abnormalities noted by the inspector must be reported to **Ingersoll Rand** immediately.
12. All splice connections shall not exceed 12.00"(304.8 mm) from the hanger points.
13. All trolley running surfaces must be aligned flush in accordance with his specification and present no shock loading at splice connections. Transverse tilt will not be accepted
14. Tension tubes at all splice connections will be aligned and welded by **Ingersoll Rand**.
15. Joint modification or holes required in track section(s) will be by drilling or saw cutting only. Flame cutting of holes or splice joints is not permitted.
16. Where hanger rods are used, the allowable stress will be 20% of the minimum yield strength of the material provided.
17. All hangers must be installed true and vertical. All suspension fitting should bear the load equally.
18. All bolts, nuts, fasteners, attachments etc, required for enclosed rail systems will be provided by **Ingersoll Rand**.
19. All double girder bridge cranes provided will incorporate diagonal bracing for parallel stabilization.

### Curved Rail

1. Enclosed rail turns will be pre-formed by **Ingersoll Rand**. All tension tubes will be aligned and installed by **Ingersoll Rand**.
2. The radius of all enclosed rail turns will be designed to allow the carriers or trolleys to freely negotiate each horizontal turn without binding.
3. The minimum radius for ZRA1 aluminum rail is 36.00"(914.4 mm).
4. Short radius turns with a radius that is less than the standard specified above must be pre-approved by **Ingersoll Rand**.
5. The maximum overhang of a straight track to the tangent point of a horizontal turn cannot exceed 12.00"(304.8 mm).

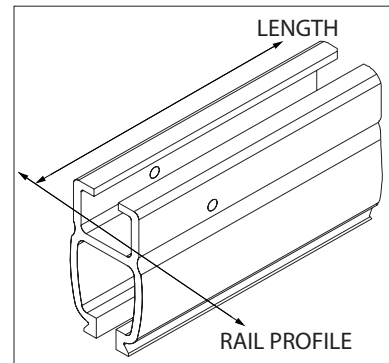
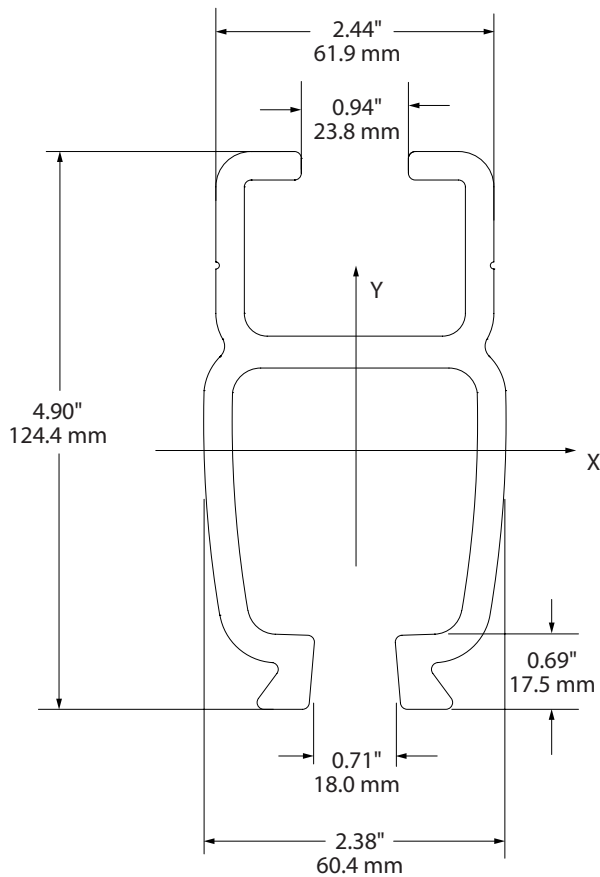


6. A minimum of two hangers should be used in the radius of each 90-degree turn, the two hangers should be in addition to one hanger at each splice joint. The maximum distance between hanger centers cannot exceed 36.00"(914.4 mm). If required, additional hangers can be provided in accordance with the design and calculated distance based on the trolley or carrier loading.
7. Special curves will be supported and braced in accordance with **Ingersoll Rand** requirements. Under no condition will rail hanger center exceed 36.00"(914.4 mm).
8. Curved rail sections will be installed with uniform bolt tension to insure that the load trolley do not bind at splice joints.
9. A straight section of rail will be provided between each horizontal turn. For single trolley systems the length will be 12.00"(304.8 mm), for dual trolley systems the length will be 28.00"(711.2 mm).
10. All hangers provided must be installed true to the vertical plane.

## **Trolleys**

1. All trolleys are manufactured by **Ingersoll Rand**.
2. All aluminum trolleys consist of high tensile aluminum alloy body.
3. All steel trolleys consist of a welded, stamped steel body.
4. All trolley wheels provided for hoists, bridge cranes, and related equipments must conform to **Ingersoll Rand** standards.
5. Trolley wheels are delrin, with sealed precision ground ball bearings permanently molded in. All trolley wheels mount to an axle that is press-fitted into the trolley body.
6. Trolley side guide rollers are delrin machined symmetrically true with the axis.
7. All trolleys are equipped with safety lugs so in the event of a wheel failure the trolley cannot come out of the rail.
8. All bearings are protected by grease and dust seals.

# How to Order • ZRA1 Aluminum Runway or Monorail



MOMENT OF INERTIA:  $I_{yy} = 2.80 \text{ IN}^4 [1.16\text{E}6 \text{ mm}^4]$

$I_{xx} = 6.81 \text{ IN}^4 [2.83\text{E}6 \text{ mm}^4]$

## EXAMPLE

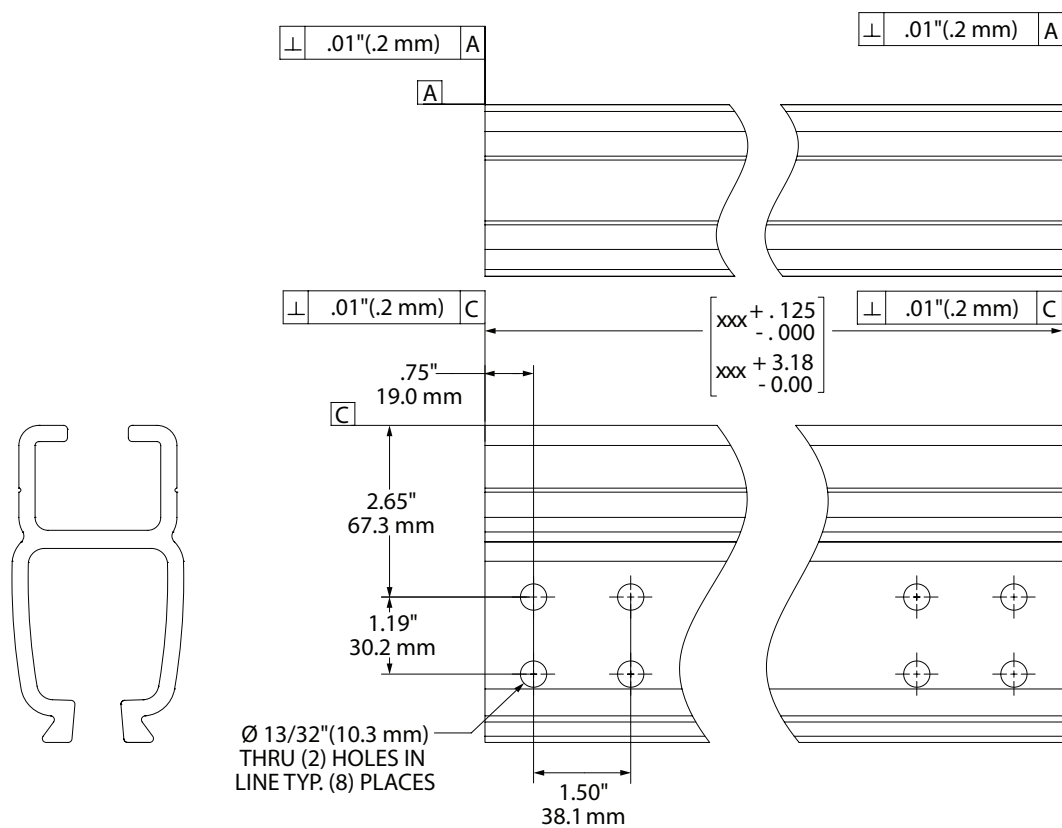
### ORDER NUMBER:

**[30200] - [210] - [2]**



**NOTE:** ALL RUNWAY RAIL WILL BE DRILLED FOR BOTH END STOPS AND WILL HAVE SPLICE LUGS WELDED ON.

# Standard Lengths • ZRA1/Part No. 30200 - XXX



STANDARD		METRIC	
PART NO.	XXX - LENGTH	PART NO.	XXX - LENGTH
30200 - 050	5 FT	30200 - 1000	1000 mm
30200 - 060	6 FT	30200 - 1500	1500 mm
30200 - 070	7 FT	30200 - 2000	2000 mm
30200 - 080	8 FT	30200 - 2500	2500 mm
30200 - 090	9 FT	30200 - 3000	3000 mm
30200 - 100	10 FT	30200 - 3500	3500 mm
30200 - 110	11 FT	30200 - 4000	4000 mm
30200 - 120	12 FT	30200 - 4500	4500 mm
30200 - 130	13 FT	30200 - 5000	5000 mm
30200 - 140	14 FT	30200 - 5500	5500 mm
30200 - 150	15 FT	30200 - 6000	6000 mm
30200 - 160	16 FT	30200 - 6500	6500 mm
30200 - 170	17 FT	30200 - 7000	7000 mm
30200 - 180	18 FT	30200 - 7500	7500 mm
30200 - 190	19 FT	30200 - 8000	8000 mm
30200 - 200	20 FT	30200 - 8500	8500 mm
30200 - 210	21 FT	30200 - 9000	9000 mm
30200 - 220	22 FT		
30200 - 230	23 FT		
30200 - 240	24 FT		
30200 - 250	25 FT		
30200 - 260	26 FT		
30200 - 270	27 FT		
30200 - 280	28 FT		
30200 - 290	29 FT		
30200 - 300	30 FT		

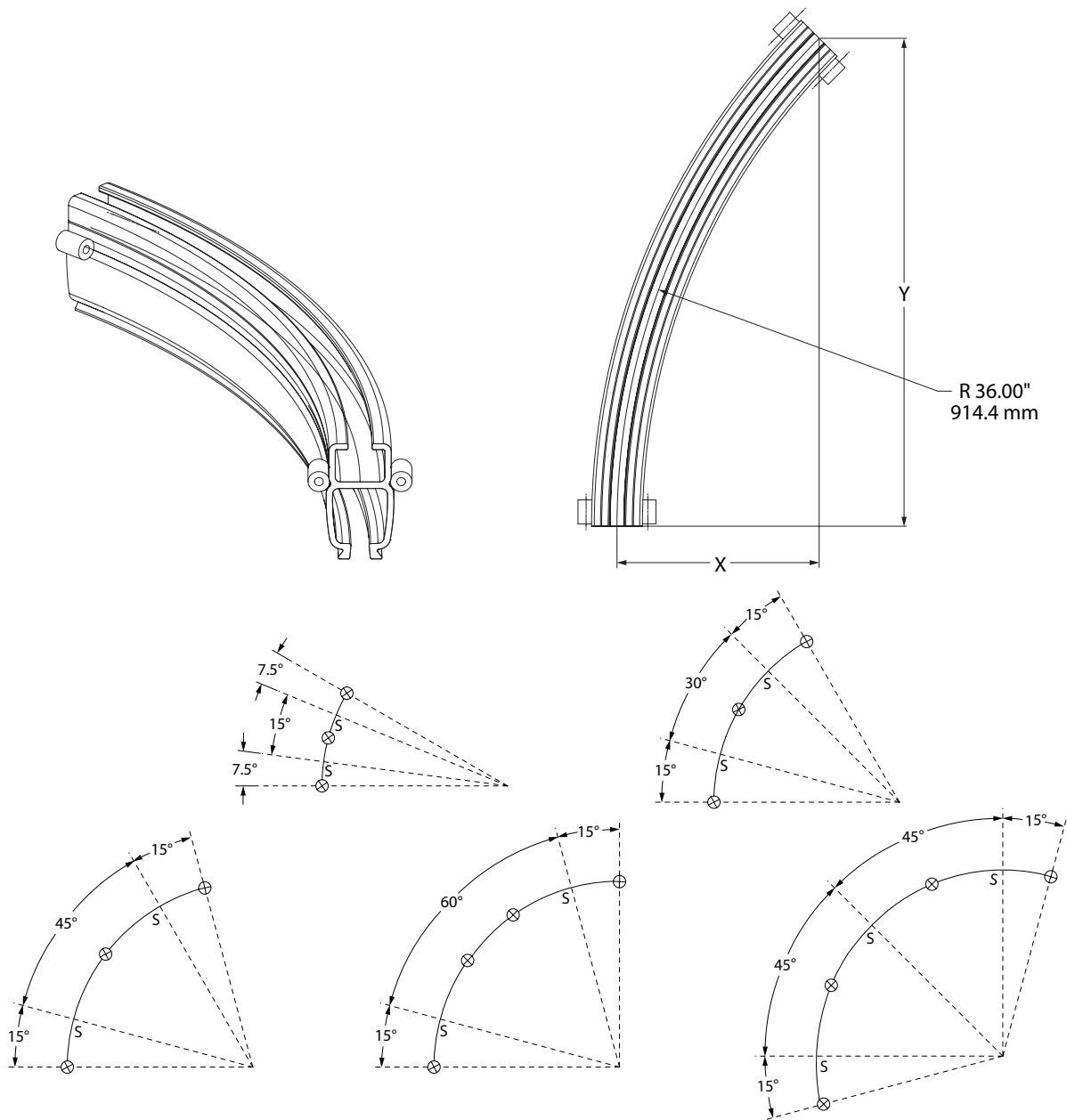
MAXIMUM LENGTH: 30 FT.[9146.34 mm]

WEIGHT: 3.96 LB./FT.[5.90 kg/m]

# Live Load Deflections • ZRA1/Part No. 30200

Rail / Bridge Span				Deflection Limits						Point Load					
ft.	in.	m	mm	L/450 in.	L/450 mm	L/550 in.	L/550 mm.	L/600 in.	L/600 mm.	L/450 lbs.	L/450 kg.	L/550 lbs.	L/550 kg.	L/600 lbs.	L/600 kg.
4	48	1.22	1219.2	0.107	2.7	0.087	2.2	0.080	2.0	2000	907	2000	907	2000	907
5	60	1.52	1524.0	0.133	3.4	0.109	2.8	0.100	2.5	1896	860	1823	827	1671	758
6	72	1.83	1828.8	0.160	4.1	0.131	3.3	0.120	3.0	1547	702	1266	574	1160	526
7	84	2.13	2133.6	0.187	4.7	0.153	3.9	0.140	3.6	1137	516	930	422	852	387
8	96	2.44	2438.4	0.213	5.4	0.175	4.4	0.160	4.1	870	395	712	323	653	296
9	108	2.74	2743.2	0.240	6.1	0.196	5.0	0.180	4.6	688	312	563	255	516	234
10	120	3.05	3048.0	0.267	6.8	0.218	5.5	0.200	5.1	557	253	456	207	418	189
11	132	3.35	3352.8	0.293	7.5	0.240	6.1	0.220	5.6	460	209	377	171	345	157
12	144	3.66	3657.6	0.320	8.1	0.262	6.7	0.240	6.1	387	175	316	144	290	132
13	156	3.96	3962.4	0.347	8.8	0.284	7.2	0.260	6.6	330	149	270	122	247	112
14	168	4.27	4267.2	0.373	9.5	0.305	7.8	0.280	7.1	284	129	232	105	213	97
15	180	4.57	4572.0	0.400	10.2	0.327	8.3	0.300	7.6	248	112	203	92	186	84
16	192	4.88	4876.8	0.427	10.8	0.349	8.9	0.320	8.1	218	99	178	81	163	74
17	204	5.18	5181.6	0.453	11.5	0.371	9.4	0.340	8.6	193	87	158	72	145	66
18	216	5.49	5486.4	0.480	12.2	0.393	10.0	0.360	9.1	172	78	141	64	129	58
19	228	5.79	5791.2	0.507	12.9	0.415	10.5	0.380	9.7	154	70	126	57	116	52
20	240	6.10	6096.0	0.533	13.5	0.436	11.1	0.400	10.2	139	63	114	52	104	47
21	252	6.40	6400.8	0.560	14.2	0.458	11.6	0.420	10.7	126	57	103	47	95	43
22	264	6.71	6705.6	0.587	14.9	0.480	12.2	0.440	11.2	115	52	94	43	86	39
23	276	7.01	7010.4	0.613	15.6	0.502	12.7	0.460	11.7	105	48	86	39	79	36
24	288	7.32	7315.2	0.640	16.3	0.524	13.3	0.480	12.2	97	44	79	36	73	33
25	300	7.62	7620.0	0.670	16.9	0.550	13.9	0.500	12.7	89	40	73	33	67	30
26	312	7.92	7924.8	0.690	17.6	0.570	14.4	0.520	13.2	82	37	67	31	62	28
27	324	8.23	8229.6	0.720	18.3	0.590	15.0	0.540	13.7	76	35	63	28	57	26
28	336	8.53	8534.4	0.750	19.0	0.610	15.5	0.560	14.2	71	32	58	26	53	24

# Curved Rail Dimensions • ZRA1 Aluminum Rail



RAIL MUST BE SUPPORTED WITH A SUSPENSION HANGER IN THE CENTER AND ONE SUSPENSION HANGER NEAR EACH SPLICE JOINT. FOR MULTIPLE CURVED RAILS BEING SPLICED TOGETHER, SUSPENSION HANGERS WILL BE AS SHOWN ABOVE.

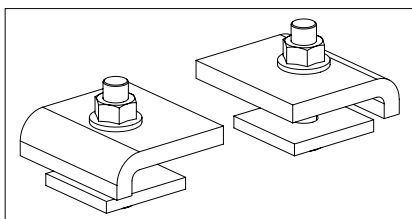
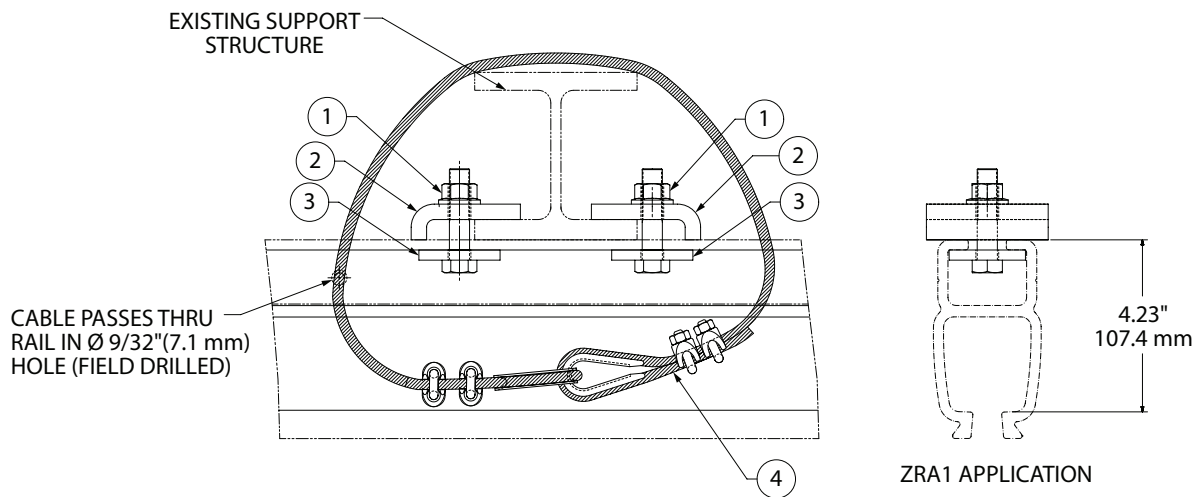
### CURVED RAIL SUSPENSION POINTS DIAGRAM

**S** - DENOTES SPLICE JOINTS

**X** - DENOTES SUSPENSION POINTS

Curved Rail Dimensions ZRA1 Aluminum Rail					
	Degrees	X	Y	Approximate Weight	Part Number
ZRA1 R=36"	15	1.22	9.32	3.212	30254
	30	4.82	18.00	6.22	30255
	45	10.54	25.56	9.33	30256
	60	18.00	31.18	12.44	30257
	90	36.00	36.00	18.66	30258

# Rigid Mount Hanger Kit • ZRA1/Part No. 30227



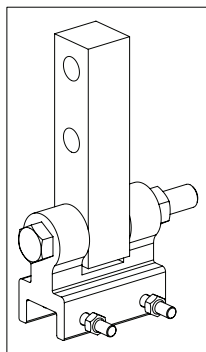
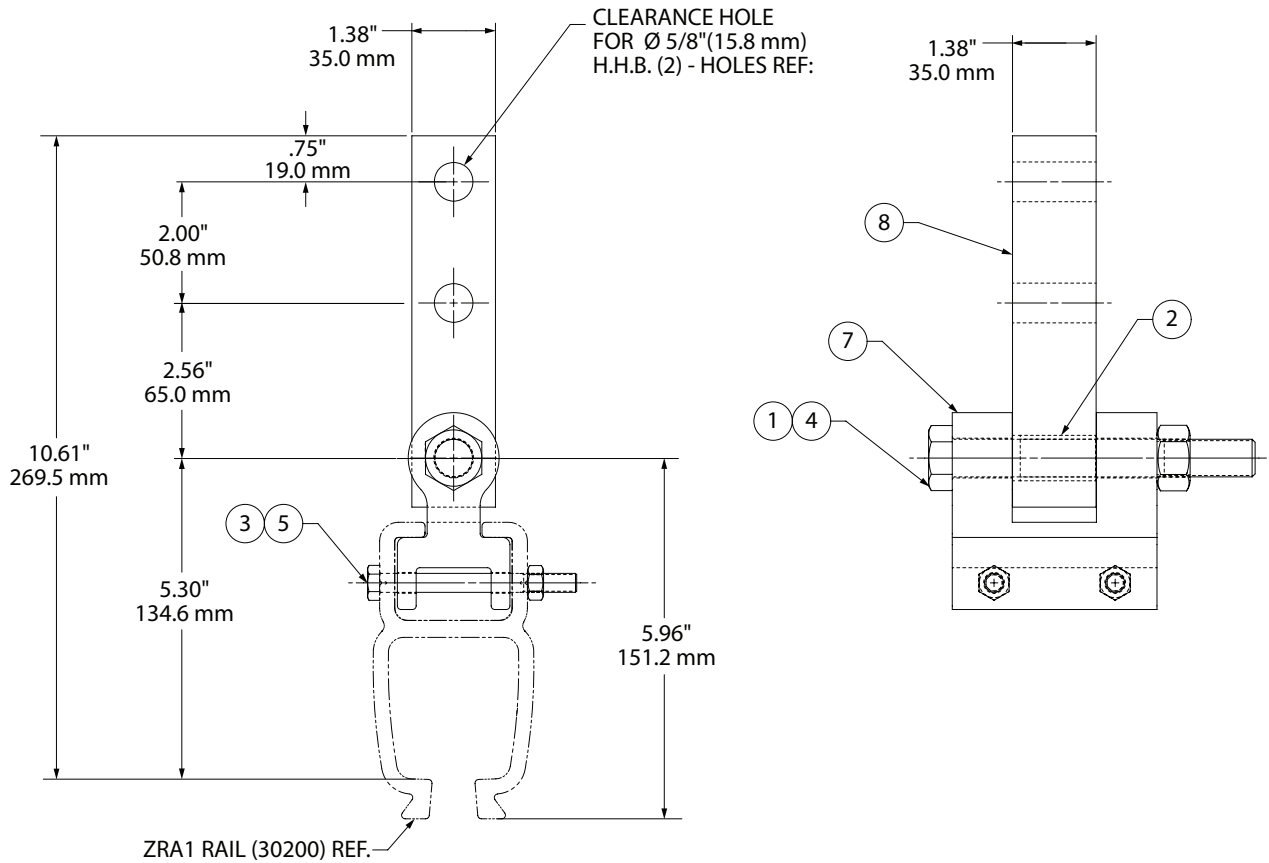
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH .....	22,400 LBS.(10160.47 KG)
YIELD STRENGTH .....	14,000 LBS.(6350.3 KG)
CAPACITY.....	2,000 LBS.(907.18 KG)
MINIMUM RAIL RADIUS.....	36"(914.4 mm)
WEIGHT OF ASSEMBLY .....	4 LBS.(1.81 KG)

(Dwg. 54093877)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Flanged PT Lock Nut, 1/2 - 13	2
2	30160	Toe Clamp, Top Plate	2
3	30218	Suspension Bracket, Rigid Mount, ZRA1/T	2
4	30907 - 06	Safety Cable Assembly - 6 FT	1

# Block Hanger Kit • ZRA1/Perpendicular/Part No. 30285



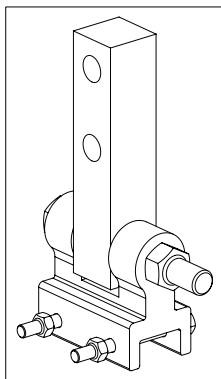
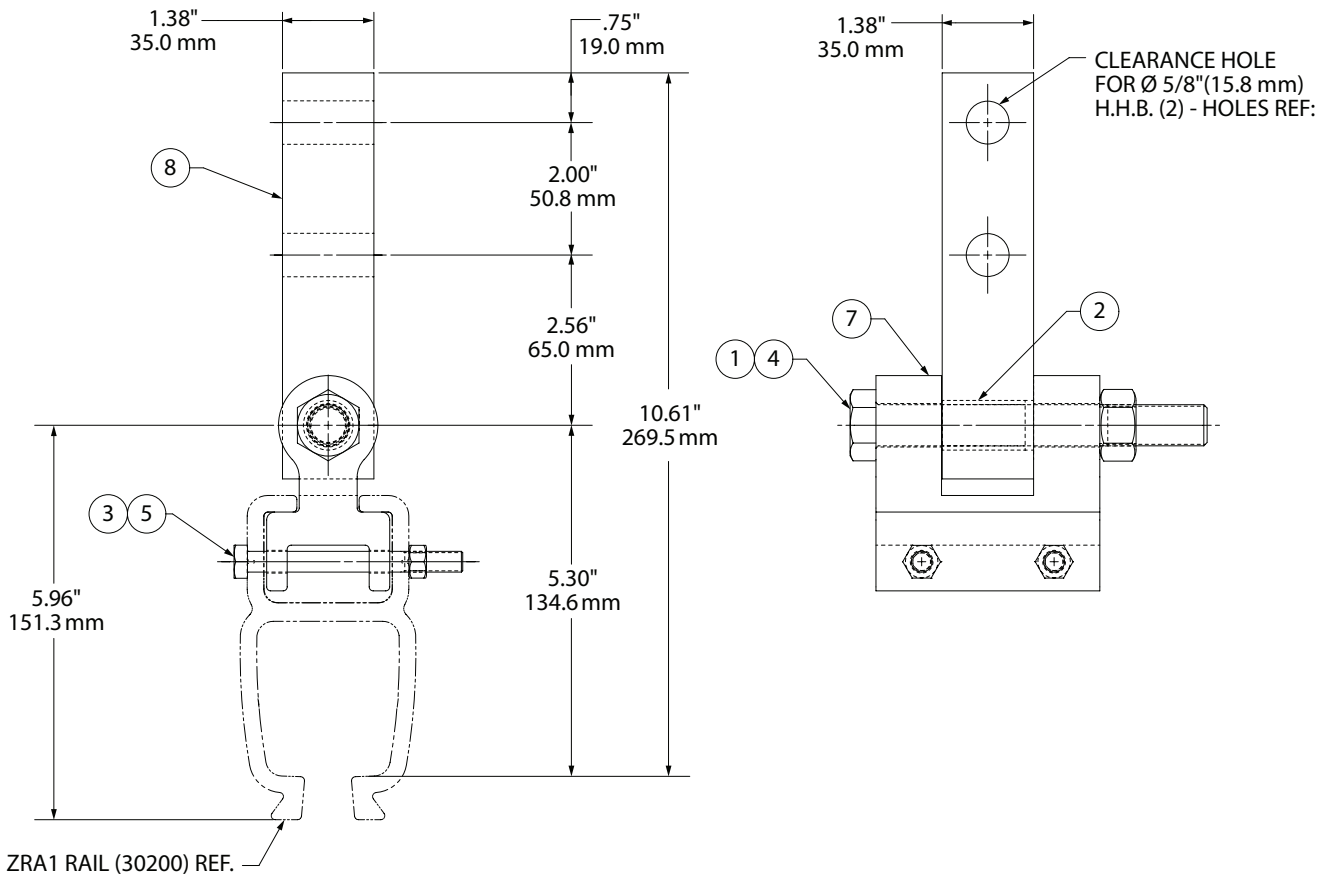
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS ..... 36"(914.4 mm)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

(Dwg. 54094081)

Bill of Materials			
Item No.	Part no.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
7	ZHS30266	Hanger Bracket, ZRA1/T, Machining	1
8	30162	Hanger Block	1

# Block Hanger Kit • ZRA1/Parallel/Part No. 30289



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

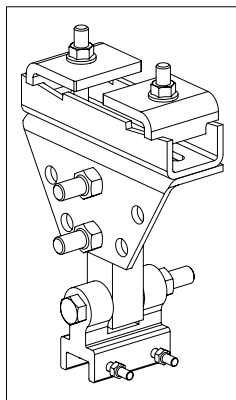
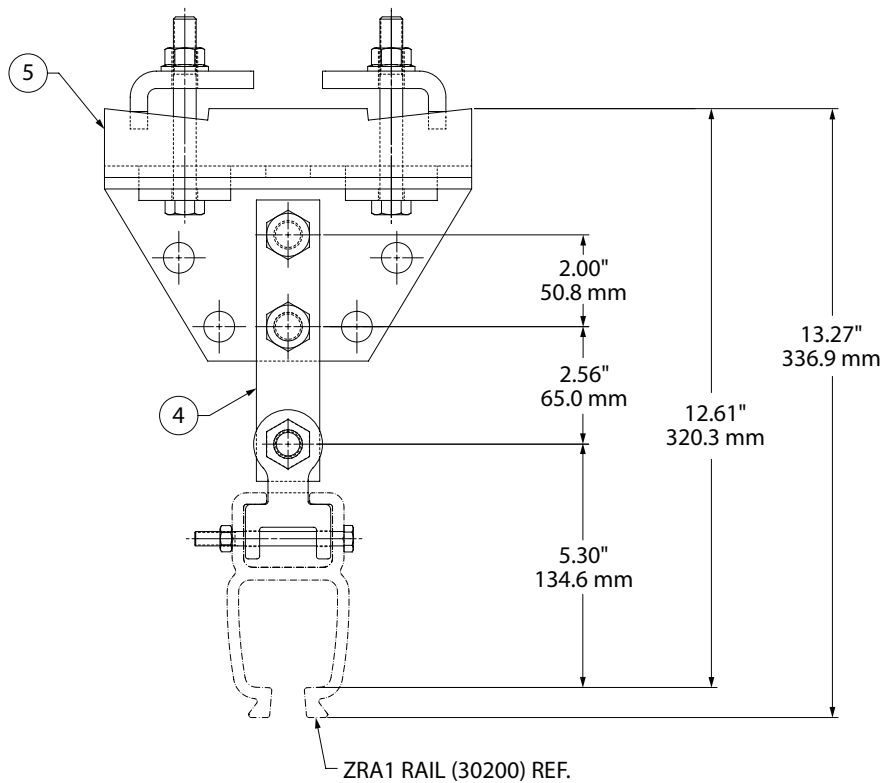
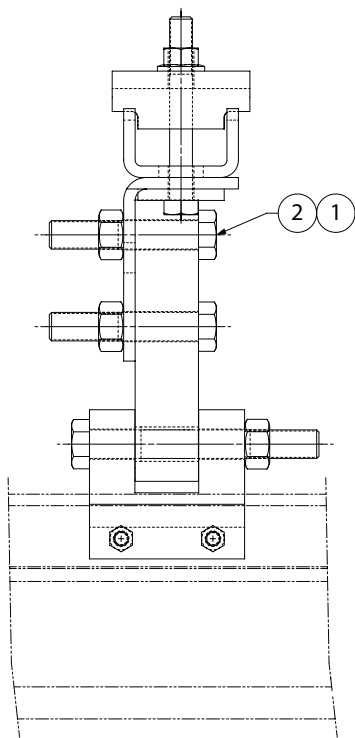
ULTIMATE STRENGTH .....22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 CAPACITY.....2,000 LBS.(907.18 KG)  
 MINIMUM RAIL RADIUS.....36"(914.4 mm)  
 WEIGHT OF ASSEMBLY .....5 LBS.(2.26 KG)

(Dwg. 54094263)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
7	ZHS30266	Hanger Bracket, ZRA1/T, Machining	1
8	ZHS30197	Hanger Block	1



# Beam Hanger Kit • ZRA1/Parallel/Standard Flange/Part No. 30290



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 22,400 LBS.(10160.4 KG)

YIELD STRENGTH..... 14,000 LBS.(6350.3 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

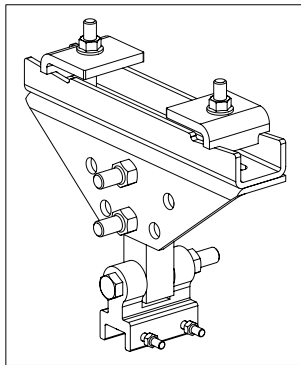
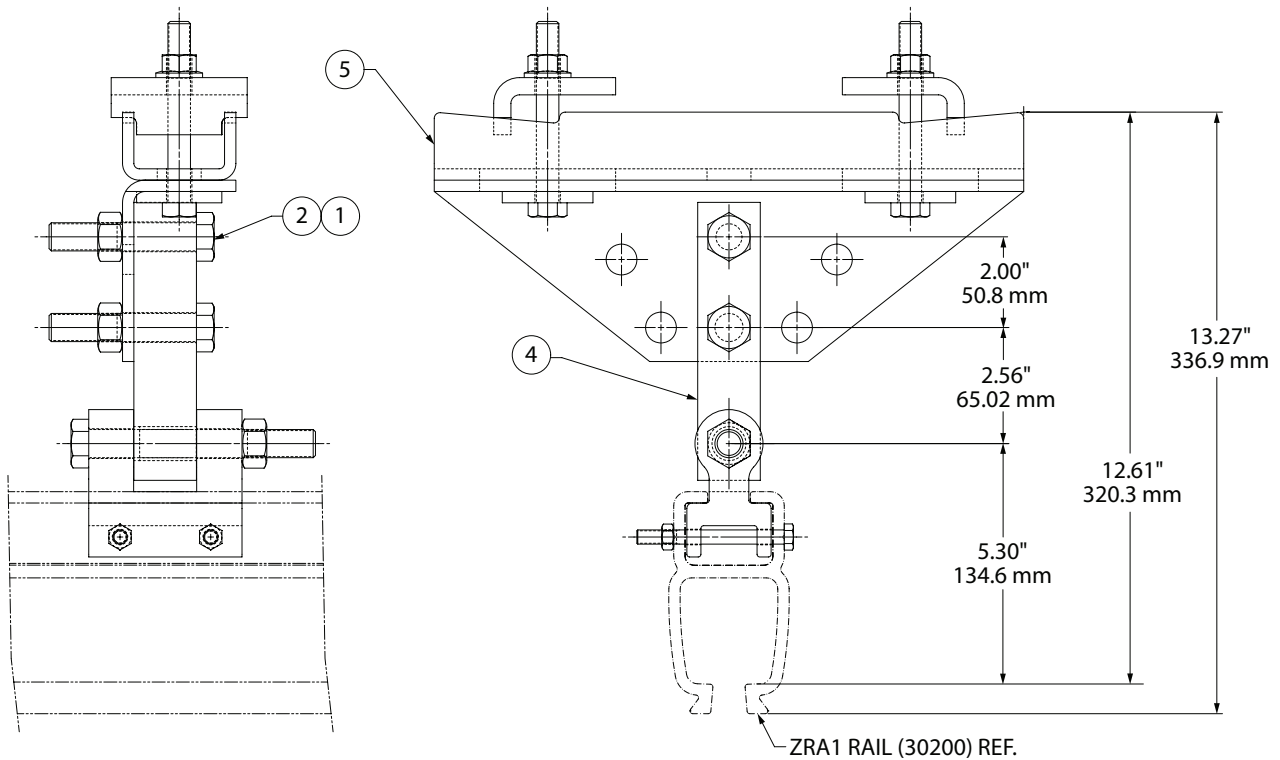
MINIMUM RAIL RADIUS ..... 36" (914.4 mm)

WEIGHT OF ASSEMBLY ..... 15 LBS.(6.80 KG)

(Dwg. 54094271)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
4	30285	Hanger Kit, ZRA1/T, Block, Perpendicular	1
5	30186	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRA1/Parallel/Wide Flange/Part No. 30291



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

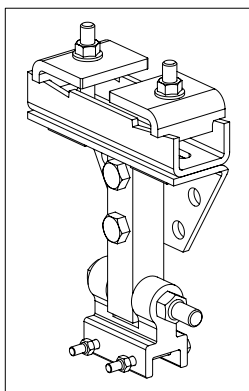
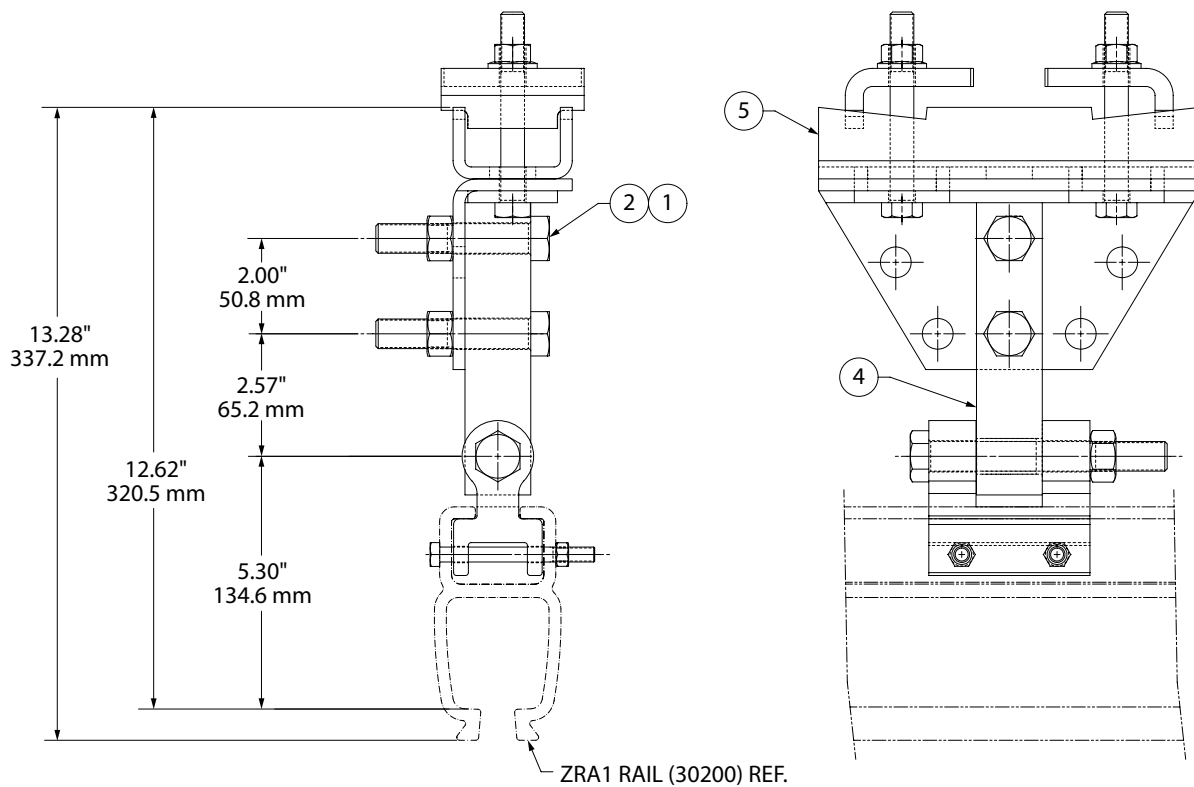
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (127.0 mm) FLANGE WIDTH.

- ULTIMATE STRENGTH..... 22,400 LBS.(10160.4 KG)
- YIELD STRENGTH..... 14,000 LBS.(6350.3 KG)
- CAPACITY ..... 2,000 LBS.(907.18 KG)
- MINIMUM RAIL RADIUS ..... 36" (914.4 mm)
- WEIGHT OF ASSEMBLY ..... 16 LBS.(7.25 KG)

(Dwg. 54094289)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
4	30285	Hanger Kit, ZRA1/T, Block, Perpendicular	1
5	30187	Hanger Kit, Wide Flange Beam	1

# Beam Hanger Kit • ZRA1/Perpendicular/Standard Flange/Part No. 30292



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH.....22,400 LBS.(10160.4 KG)

YIELD STRENGTH.....14,000 LBS.(6350.3 KG)

CAPACITY .....2,000 LBS.(907.18 KG)

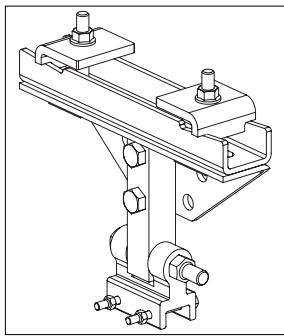
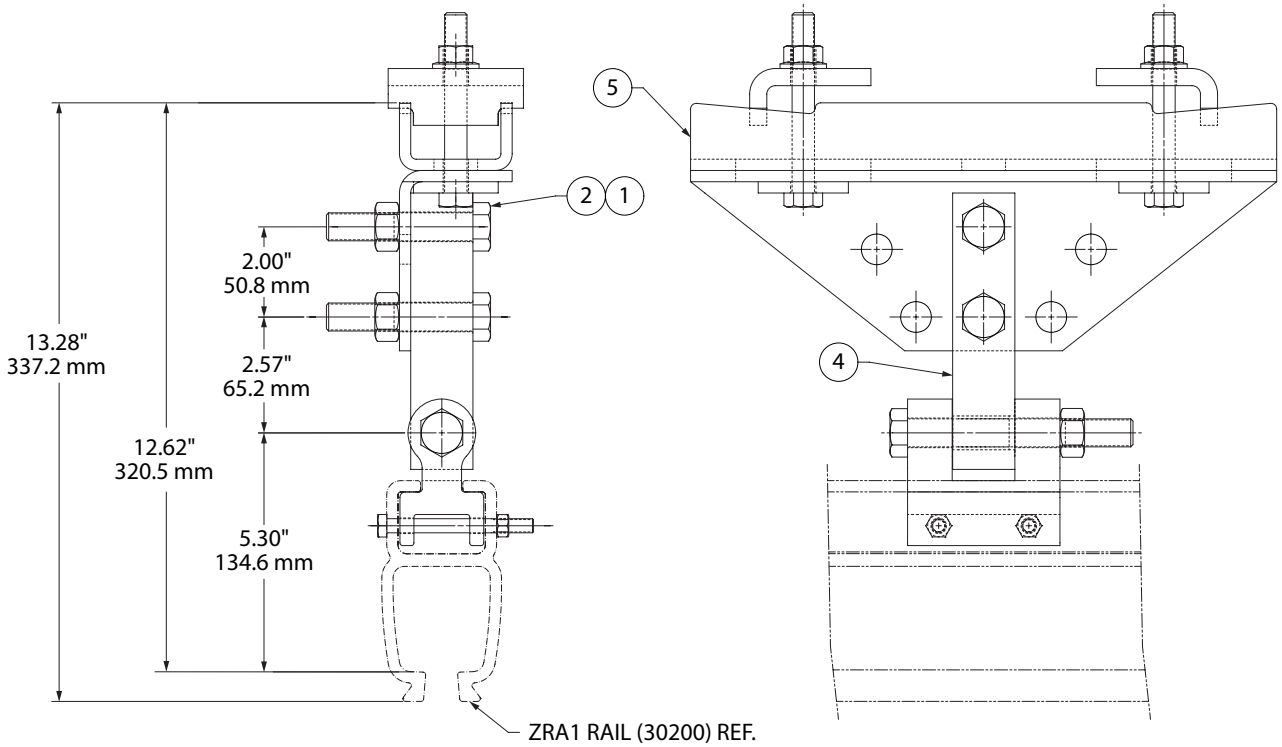
MINIMUM RAIL RADIUS .....36"(914.4 mm)

WEIGHT OF ASSEMBLY .....15 LBS.(6.80 KG)

(Dwg. 54094297)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
4	30289	Hanger Kit, ZRA1/T, Block, Prallel, ZRA1/T	1
5	30186	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRA1/Perpendicular/Wide Flange/Part No. 30293



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

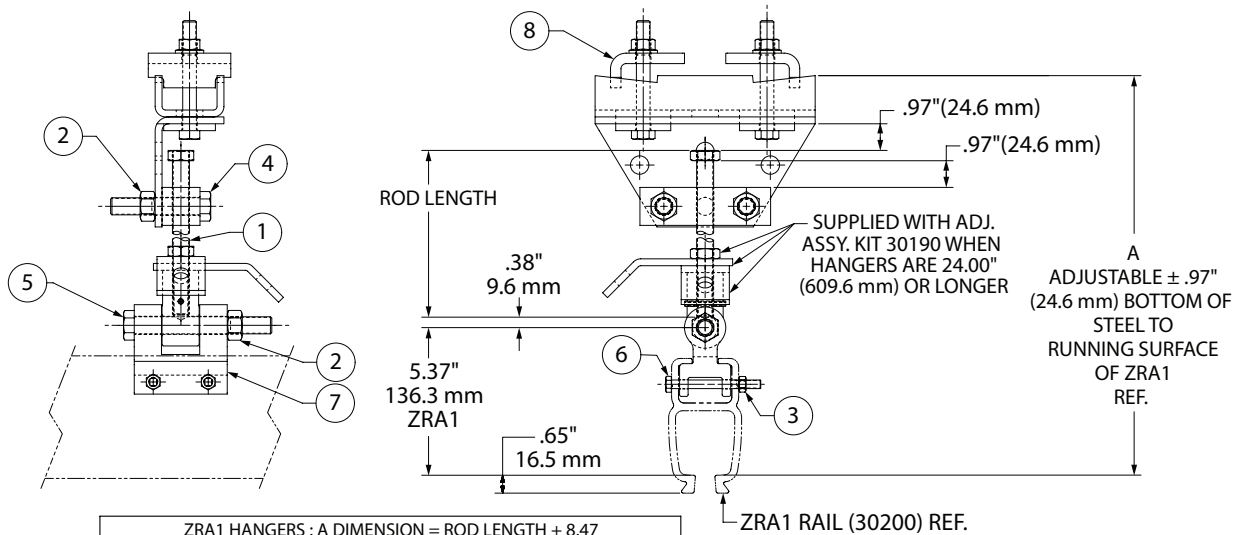
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (127.0 mm) FLANGE WIDTH.

- ULTIMATE STRENGTH.....22,400 LBS.(10160.4 KG)
- YIELD STRENGTH.....14,000 LBS.(6350.3 KG)
- CAPACITY .....2,000 LBS.(907.18 KG)
- MINIMUM RAIL RADIUS .....36"(914.4 mm)
- WEIGHT OF ASSEMBLY .....16 LBS.(7.25 KG)

(Dwg. 54094305)

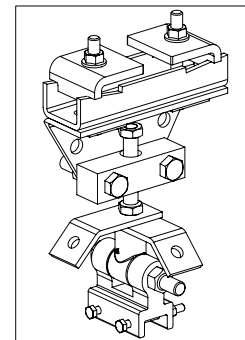
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
4	30289	Hanger Kit, ZRA1/T, Block, Parallel, ZRA1/T	1
5	30187	Hanger Kit, Wide Flange Beam	1

# Adjustable Hanger Kit • ZRA1/Standard Flange/Part No. 30287 - XXX



ZRA1 HANGERS : A DIMENSION = ROD LENGTH + 8.47				
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30287 - 006	14.47	6.00	30190 - 006	30907 - 06
30287 - 012	20.47	12.00	30190 - 012	30907 - 08
30287 - 018	26.47	18.00	30190 - 018	30907 - 10
30287 - 024	32.47	24.00	30190 - 024	30907 - 10
30287 - 036	44.47	36.00	30190 - 036	30907 - 12
30287 - 048	56.47	48.00	30190 - 048	30907 - 14
30287 - 060	68.47	60.00	30190 - 060	30907 - 16
30287 - 072	80.47	72.00	30190 - 072	30907 - 18
30287 - 084	92.47	84.00	30190 - 084	30907 - 20
30287 - 096	104.47	96.00	30190 - 096	30907 - 22
30287 - 108	116.47	108.00	30190 - 108	30907 - 24
30287 - 120	128.47	120.00	30190 - 120	30907 - 26

WIRE ROPE LENGTH IN FEET



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,000 LBS.(8618.25 KG)

YIELD STRENGTH..... 12,000 LBS.(5443.10 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

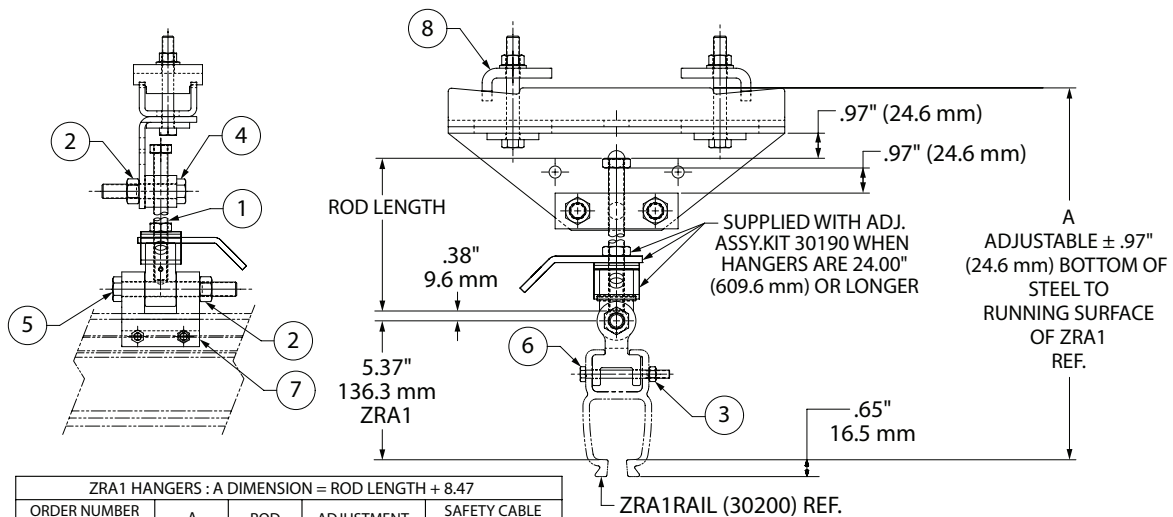
MINIMUM RAIL RADIUS ..... 36"(914.4 mm)

\*ROD LENGTH 24.00"(609.6 mm) AND LONGER REQUIRE CROSSBRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585903)

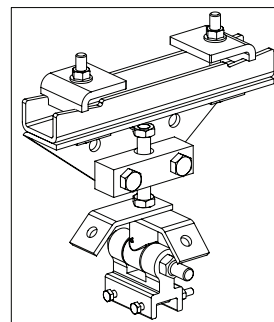
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30190 - XXX	Hanger Adjustable Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
7	ZHS30266	Hanger Bracket, ZRA1/T, Machining	1
8	30186	Hanger Kit, Standard Flange Beam	1
9	30907 - XX	Safety Cable Assembly (not shown)	1

# Adjustable Hanger Kit • ZRA1/Wide Flange/Part No. 30288 - XXX



ZRA1 HANGERS : A DIMENSION = ROD LENGTH + 8.47				
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30288 - 006	14.47	6.00	30190 - 006	30907 - 06
30288 - 012	20.47	12.00	30190 - 012	30907 - 08
30288 - 018	26.47	18.00	30190 - 018	30907 - 10
30288 - 024	32.47	24.00	30190 - 024	30907 - 10
30288 - 036	44.47	36.00	30190 - 036	30907 - 12
30288 - 048	56.47	48.00	30190 - 048	30907 - 14
30288 - 060	68.47	60.00	30190 - 060	30907 - 16
30288 - 072	80.47	72.00	30190 - 072	30907 - 18
30288 - 084	92.47	84.00	30190 - 084	30907 - 20
30288 - 096	104.47	96.00	30190 - 096	30907 - 22
30288 - 108	116.47	108.00	30190 - 108	30907 - 24
30288 - 120	128.47	120.00	30190 - 120	30907 - 26
30288 - 132	140.47	132.00	30190 - 132	30907 - 28
30288 - 144	152.47	144.00	30190 - 144	30907 - 30
30288 - 156	164.47	156.00	30196A02 - 156	30907 - 32
30288 - 168	176.47	168.00	30196A02 - 168	30907 - 34

WIRE ROPE LENGTH IN FEET



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5"(127.0 mm) TO 10"(254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,000 LBS.(8618.25 KG)

YIELD STRENGTH..... 14,000 LBS.(6350.3 KG)

WEIGHT OF ASSEMBLY ..... 14 LBS. (6.35 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

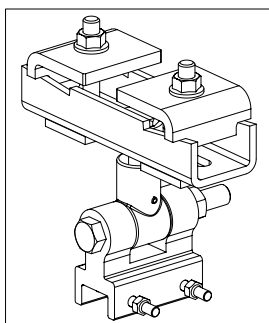
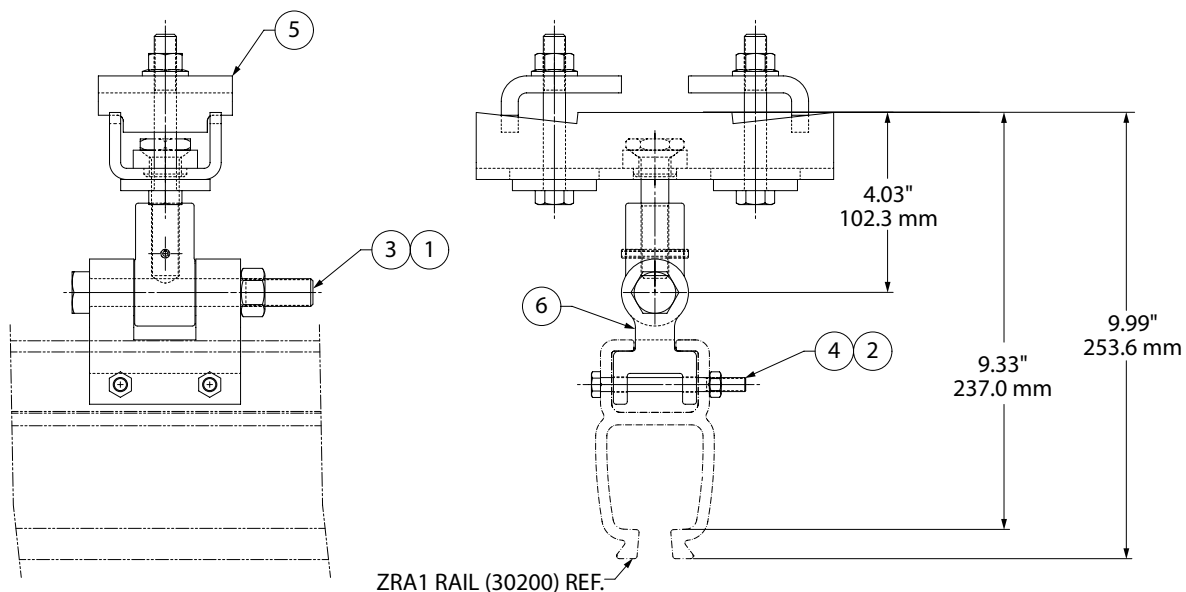
MINIMUM RAIL RADIUS ..... 36"(914.4 mm)

\*ROD LENGTH 24.00"(609.6 mm) AND LONGER REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585929)

Bill of Materials			
Item no.	Part no.	Description	Amt.
1	30190 - XXX	Hanger Adjustable Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
7	ZHS30266	Hanger Bracket, ZRA1/T, Machining	1
8	30187	Hanger Kit, Wide Flange Beam	1
9	30907 - XX	Safety Cable Assembly (not shown)	1

# Close Hanger Kit • ZRA1/Standard Flange/Part No. ZHS30300



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)

YIELD STRENGTH..... 12,000 LBS.(5443.10 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

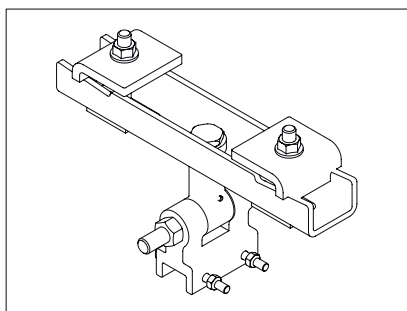
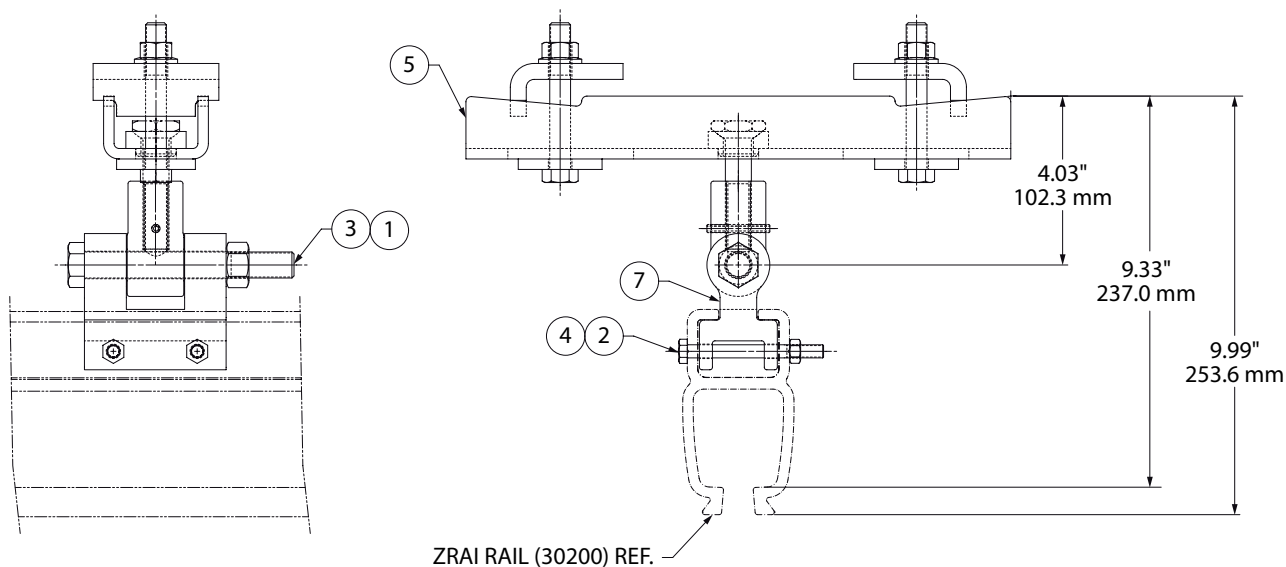
MINIMUM RAIL RADIUS ..... 36" (914.4 mm)

WEIGHT OF ASSEMBLY ..... 9 LBS.(4.08 KG)

(Dwg. 54094362)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75582	Lock Nut, 5/16 - 18 PT	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	ZHS70968	5/16 - 18 x 3.25" HCS Grade	2
5	30919	Close Hanger Kit Sub-assembly	1
6	ZHS30266	Hanger Bracket, ZRA1/T, MA	1
7	30907 - 06	Safety Cable Assembly - 6 FT (not shown)	1

# Close Hanger Kit • ZRA1/Wide Flange/Part No. ZHS30301



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)

YIELD STRENGTH..... 12,000 LBS.(5443.10 KG)

CAPACITY ..... 2,000 LBS.(907.18 KG)

MINIMUM RAIL RADIUS ..... 36" (914.4 mm)

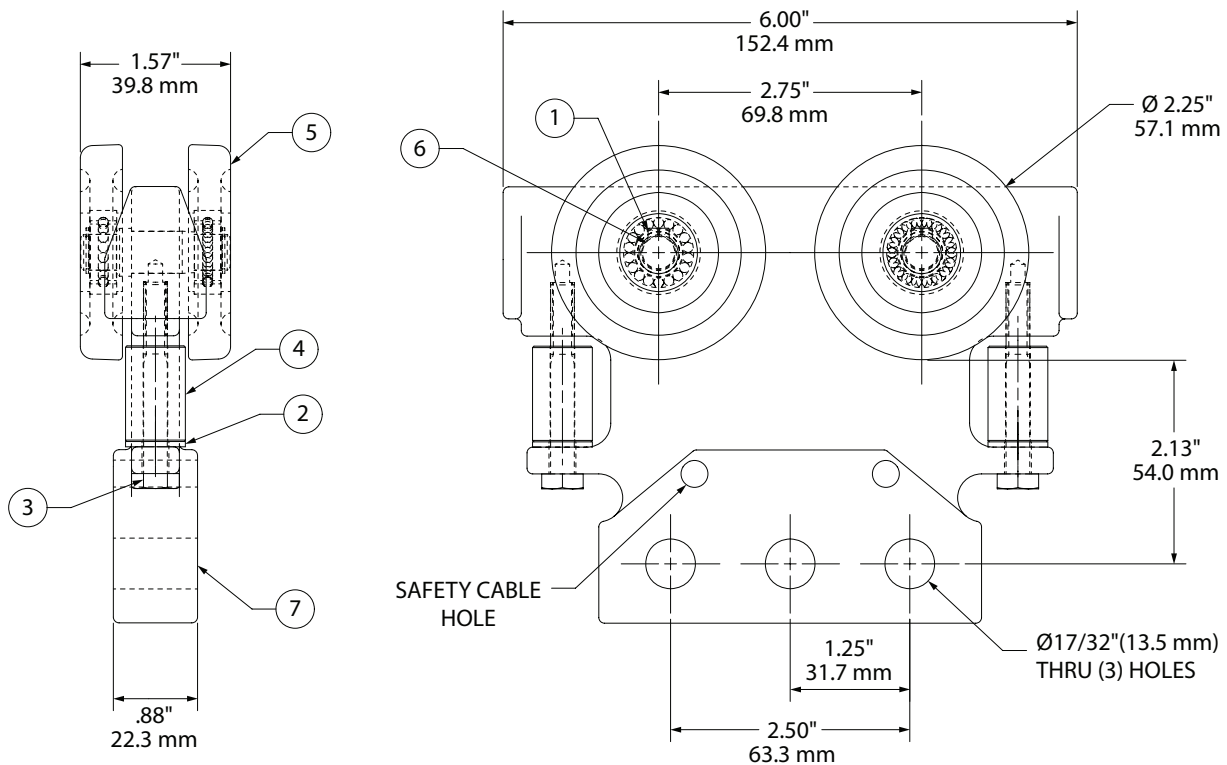
WEIGHT OF ASSEMBLY ..... 10 LBS. (4.53 KG)

(Dwg. 54094370)

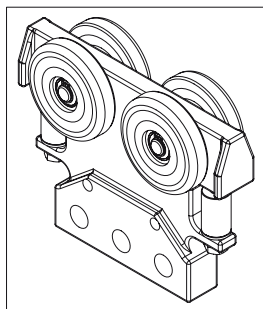
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75582	Lock Nut, 5/16 - 18 PT	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
5	30920	Close Hanger Kit Sub-assembly	1
6	30907-06	Safety Cable Assembly (not shown)	1
7	ZHS30266	Hanger Bracket, ZRA1/T, Machining	1



# ZRA1 Aluminum Trolley • 500 lbs. (226.8 kg) Capacity/Part No. 30279



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.



ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	2.25"(57.1 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY.....	1.9 LBS.(0.86 KG)

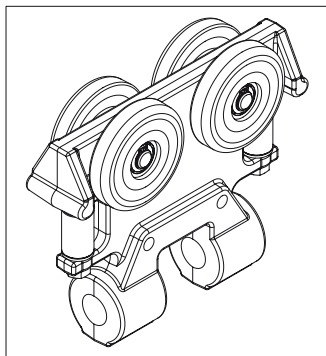
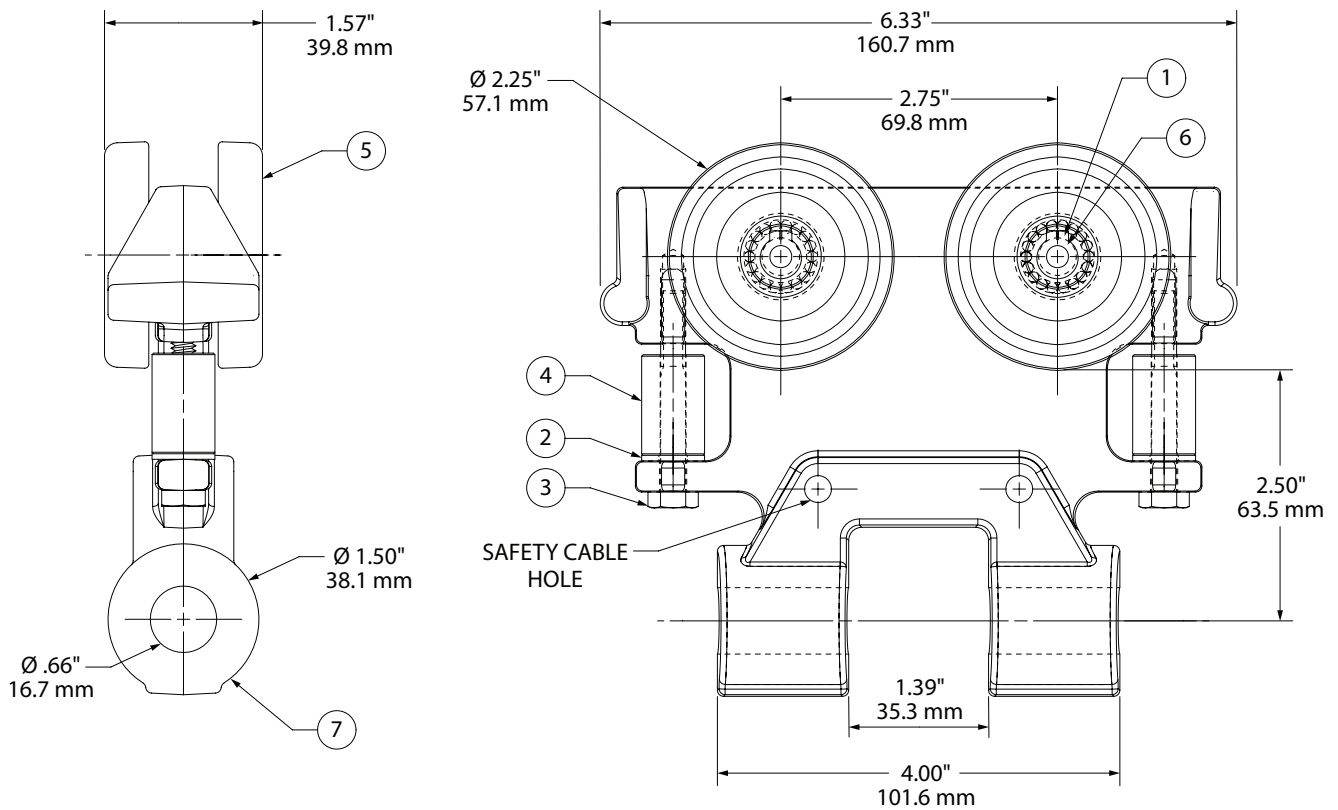
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094040)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	External Retaining Ring, 3/8"	4
2	74504	Flat Washer, 1/4"	2
3	ZHS70484	HCS 1/4 - 20 x 2, Z5	2
4	30223	Trolley Guide Wheel ZRA1	2
5	30208	Trolley Wheel Assembly	4
6	30203	Trolley Axle - ZRA1 Rail	2
7	ZHS30278	Trolley Body	1

# ZRA1 Aluminum Trolley • 500 lbs. (226.8 kg) Capacity/Part No. 30281



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY .....	500 LBS.(226.8 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	2.25"(57.1 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY .....	1.9 LBS.(0.86 KG)

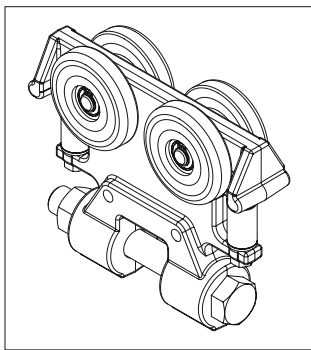
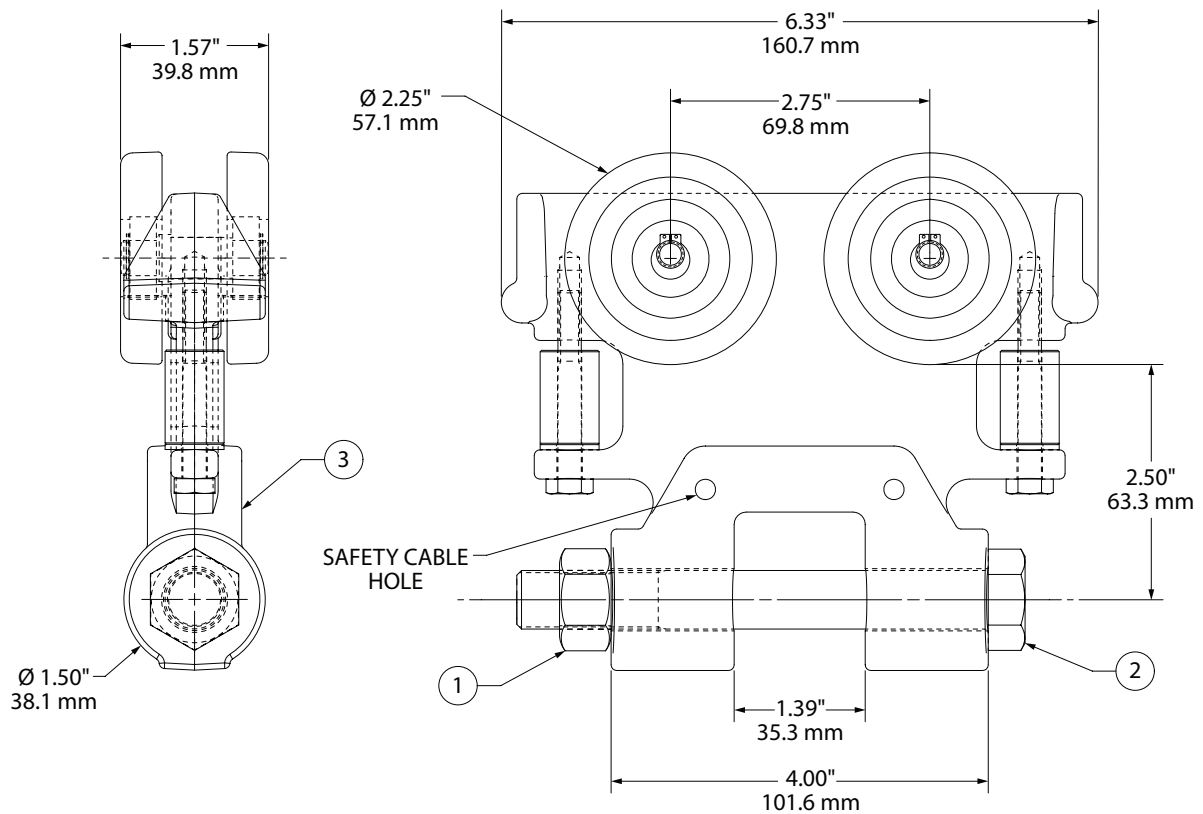
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094057)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	External Retaining Ring, 3/8"	4
2	74504	Flat Washer, 1/4"	2
3	ZHS70484	HCS 1/4 - 20 x 2, Z5	2
4	30223	Trolley Guide Wheel ZRA1	2
5	30208	Trolley Wheel Assembly	4
6	30203	Trolley Axle - ZRA1 Rail	2
7	30280	Trolley Body, Machining	1

# ZRA1 Aluminum Load Trolley • 500 lbs. (226.8 kg) Capacity/ Part No. ZHS30304



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS.....	2.25"(57.1 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY.....	2.0 LBS.(0.90 KG)

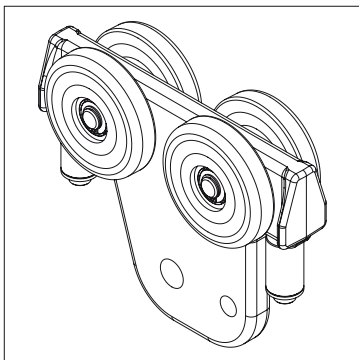
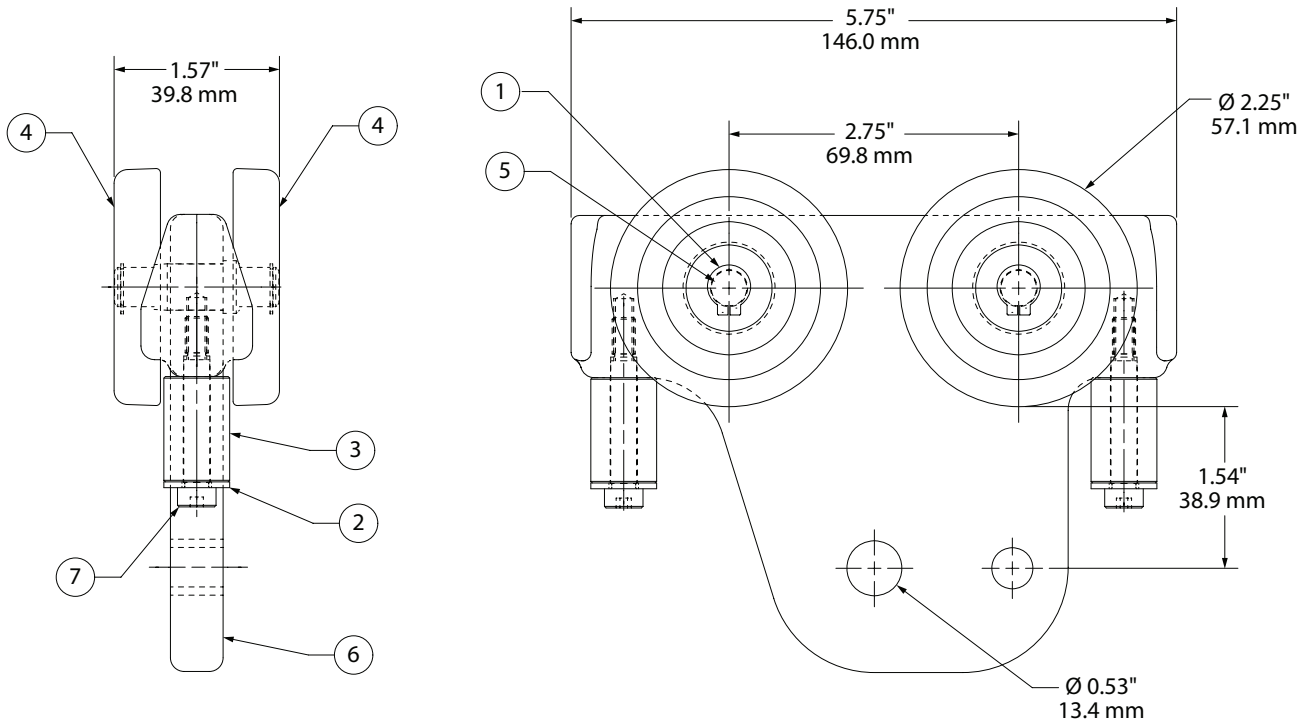
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094396)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut , 5/8 - 11"	1
2	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
3	30281	ZRA1 Aluminum Trolley	1

# ZRA1 Universal Trolley • Aluminum/500 lbs. (226.8 kg) Capacity/ Part No. 30204



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	2.25"(57.15 mm) DIA. DELRIN
BEARINGS.....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY.....	1.4 LBS.(0.63 KG)

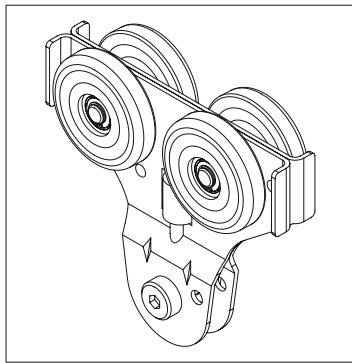
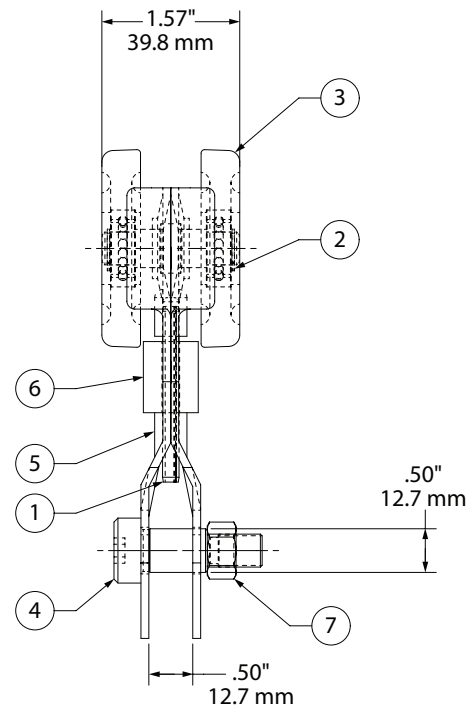
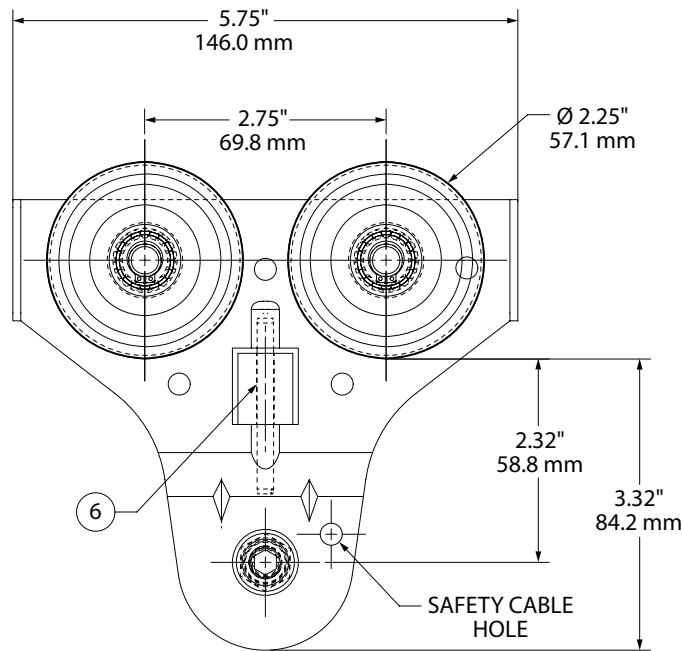
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093786)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	External Retaining Ring, 3/8"	4
2	74504	Flat Washer, 1/4"	2
3	30223	Trolley Guide Wheel ZRA1	2
4	30208	Trolley Wheel Assembly	4
5	30203	Trolley Axle - Rail ZRA1	2
6	ZHS30201	ZRA1 Trolley Body	1
7	ZHS70476	Shoulder Screw, 1/4 x 1.25"	2

# ZRA1 Universal Trolley • Steel/500 lbs. (226.8 kg) Capacity/Part No. 30259



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	2.25"(57.15 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF TROLLEY.....	3.5 LBS.(1.58 KG)

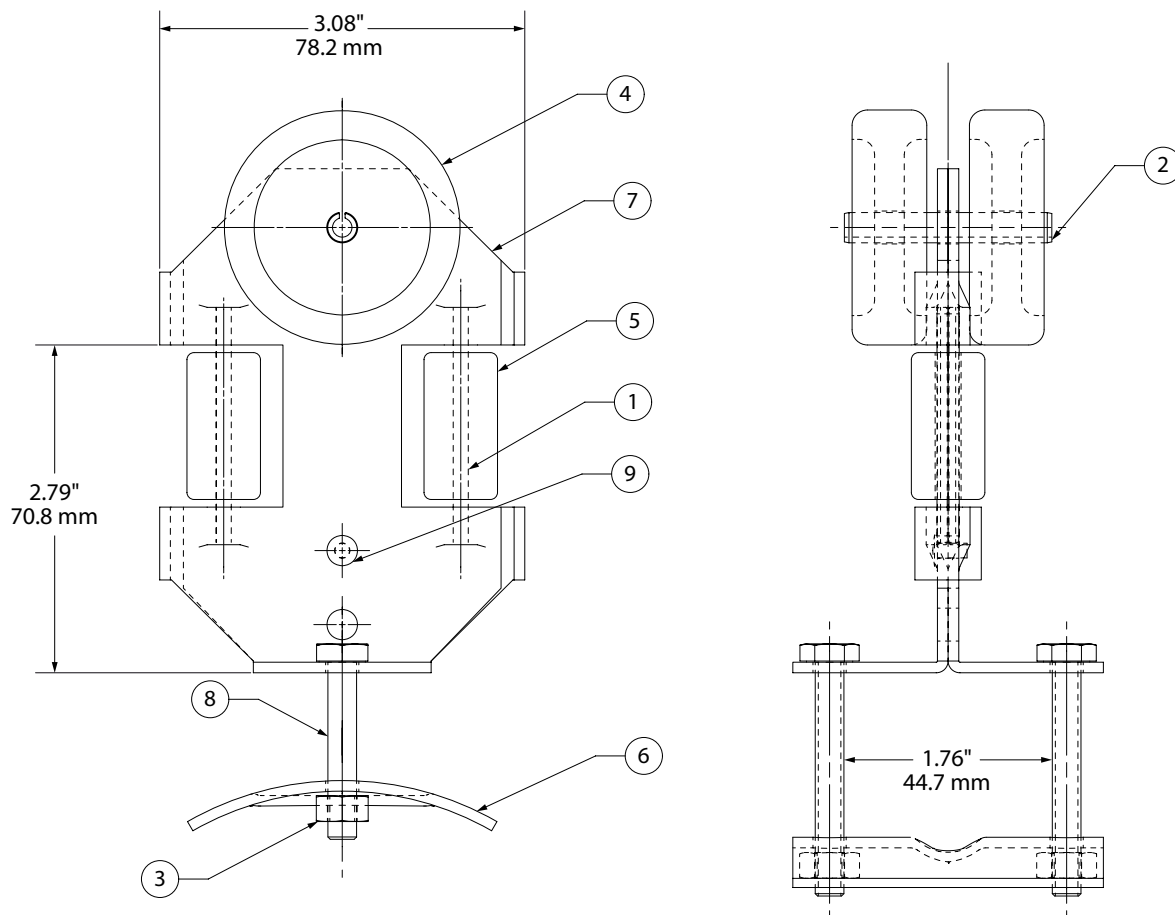
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093976)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS77057	Roll Pin, 3/16 x 2"	1
2	99085	External Retaining Ring, 3/8"	4
3	30208	Trolley Wheel Assembly	4
4	72013	Screw, Shoulder, 1/2 x 3/4"	1
5	ZHS30602	Trolley Body Sub Assembly	1
6	ZHS30262	Guide Roller	1
7	75583	Lock Nut, 3/8 - 16"	1

# Festoon Trolley • ZRA1/Aluminum Rail/Part No. 30579



CAPACITY..... 50 LBS.(22.67 KG)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

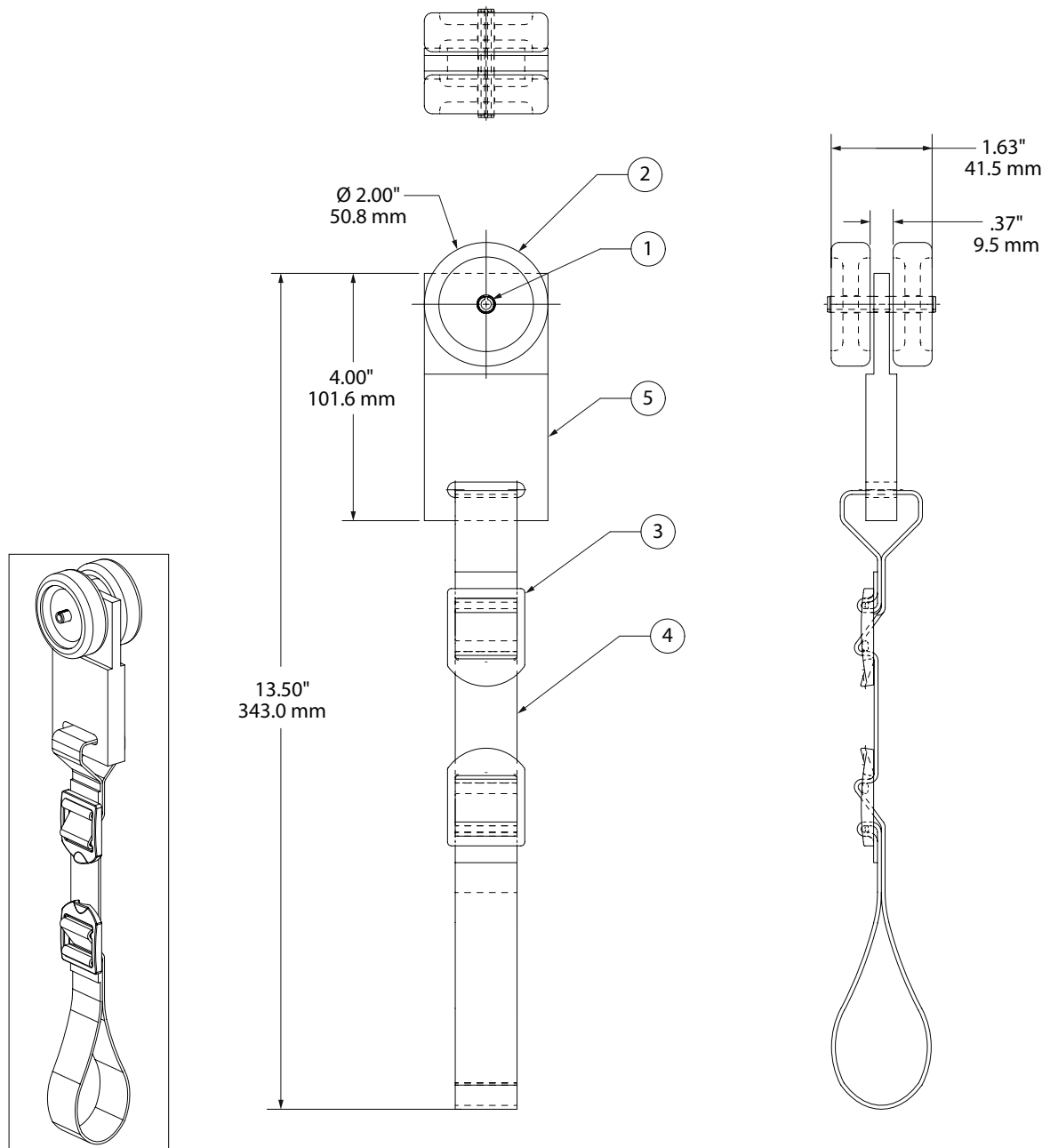
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)  
 THIS TROLLEY IS USED FOR FESTOONING FLAT WIRE OR AIR HOSE.

(Dwg. 54095757)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS77057	Roll Pin, 3/16 x 2"	2
2	77010	Spring Pin, 0.25 x 1.75"	1
3	75581	Lock Nut, 1/4 - 20 PT	2
4	99069	Festooning Trolley Wheel	2
5	30582	Trolley Guide Roller	2
6	30578	Trolley Bracket - Clip	1
7	30577	Trolley Bracket - Half	2
8	ZHS70498	Tap Bolt, 1/4 - 20 x 2"	2
9	16006769	Steel Rivet, 1/8" Dia. x 0.188" - 0.25"	1

# Festoon Trolley • ZRA1/Aluminum Rail/Part No. 54039086



CAPACITY.....50 LBS.(22.67 KG)  
 WEIGHT OF ASSEMBLY ..... 1.01 LBS.(0.45 KG)

(Dwg. 54039086)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	77010	Spring Pin, 0.25 x 1.75"	1
2	99069	Festooning Trolley Wheel	2
3	54039300	Slide Buckle	2
4	54039292	1" x 18", Strap	1
5	54039102	Trolley Body	1

# Bumper Trolley • ZRA1 Aluminum Rail/Part No. 30307 - XXXX

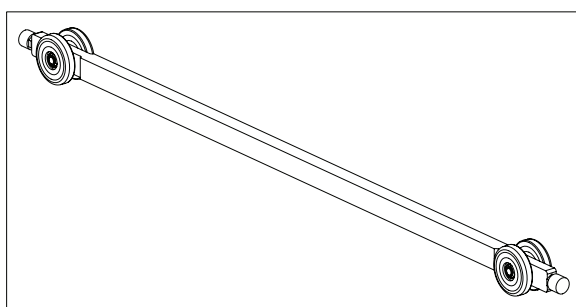
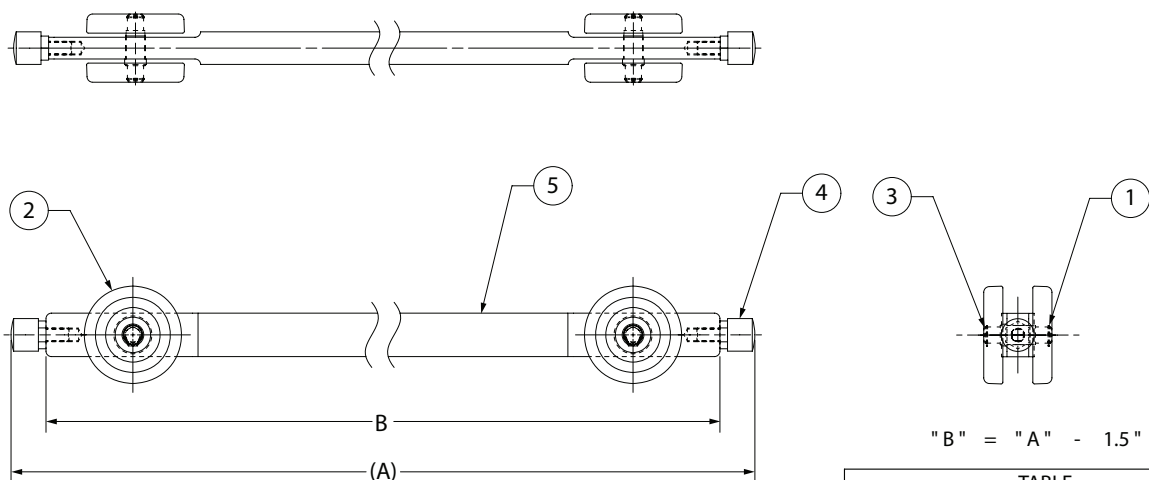


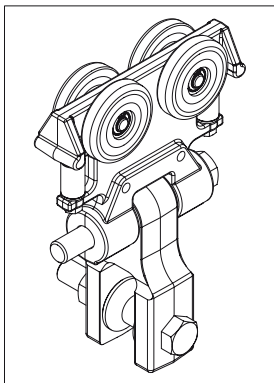
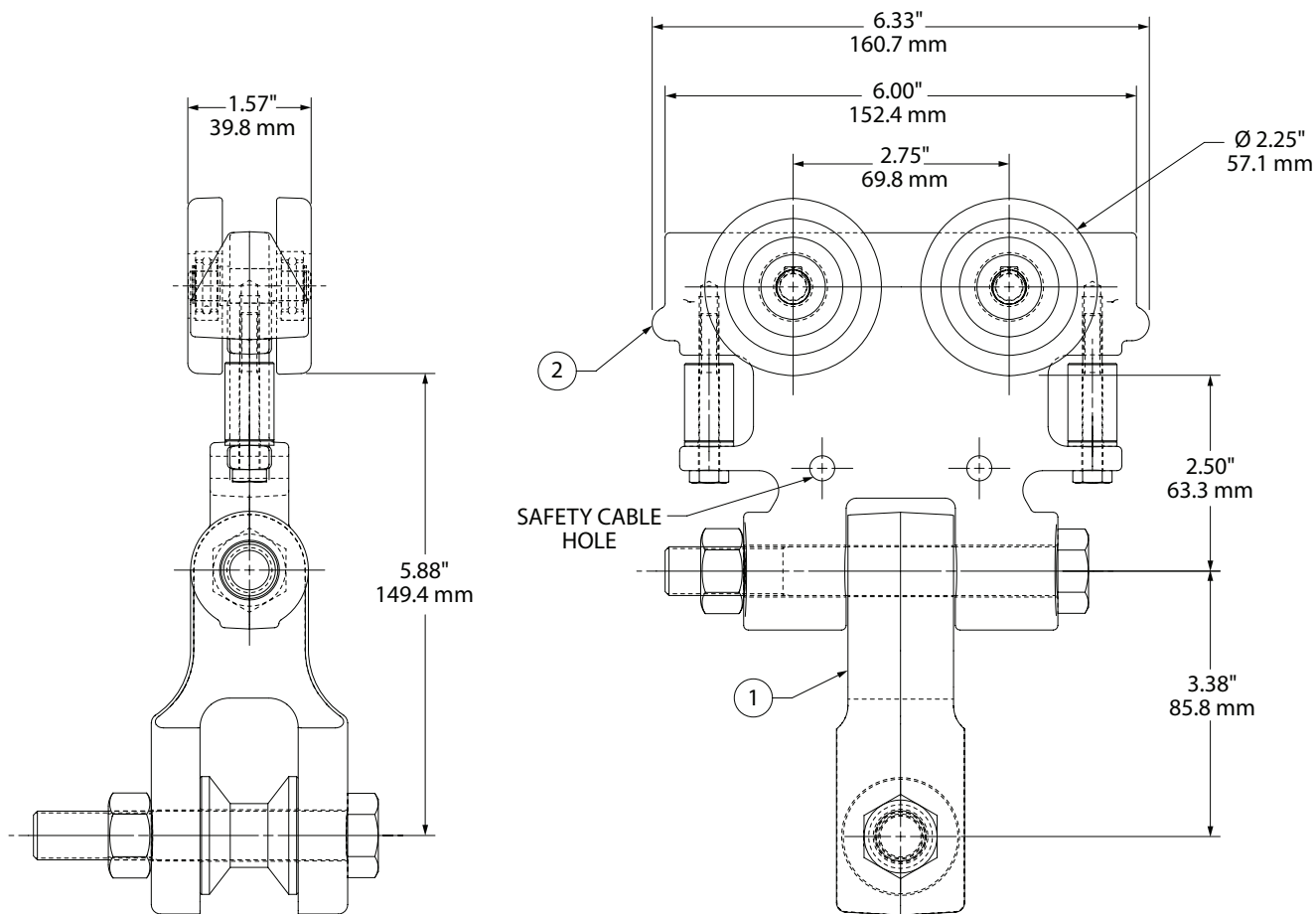
TABLE		
PART NO.	"A"	TROLLEY BRACKET
30307 - 3700	37.00	30311 - 3700
30307 - 3800	38.00	30311 - 3800
30307 - 3900	39.00	30311 - 3900
30307 - 4000	40.00	30311 - 4000
30307 - 4100	41.00	30311 - 4100
30307 - 4200	42.00	30311 - 4200
30307 - 4300	43.00	30311 - 4300
30307 - 4400	44.00	30311 - 4400
30307 - 4500	45.00	30311 - 4500
30307 - 4600	46.00	30311 - 4600
30307 - 4700	47.00	30311 - 4700
30307 - 4800	48.00	30311 - 4800
30307 - 4900	49.00	30311 - 4900
30307 - 5000	50.00	30311 - 5000
30307 - 5100	51.00	30311 - 5100
30307 - 5200	52.00	30311 - 5200
30307 - 5300	53.00	30311 - 5300
30307 - 5400	54.00	30311 - 5400
30307 - 5500	55.00	30311 - 5500
30307 - 5600	56.00	30311 - 5600
30307 - 5700	57.00	30311 - 5700
30307 - 5800	58.00	30311 - 5800
30307 - 5900	59.00	30311 - 5900
30307 - 6000	60.00	30311 - 6000

(Dwg. 16588345)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99085	Eternal Retaining Ring 3/8	4
2	30208	Trolley Wheel Assembly	4
3	30203	Trolley Axle - ZRA1 Rail	2
4	99097	Stilson Neoprene Bumper	2
5	30311 - XXXX	Bumper Trolley Bracket	1



# Hoist Trolley - Single • ZRA1/500 lbs. (226.8 kg) Capacity/ Part No. ZHS30313



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

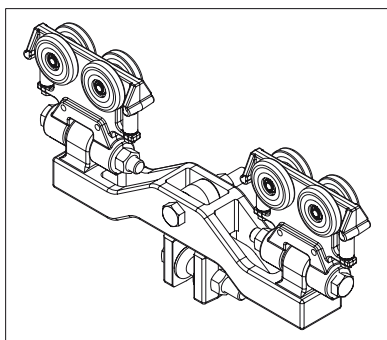
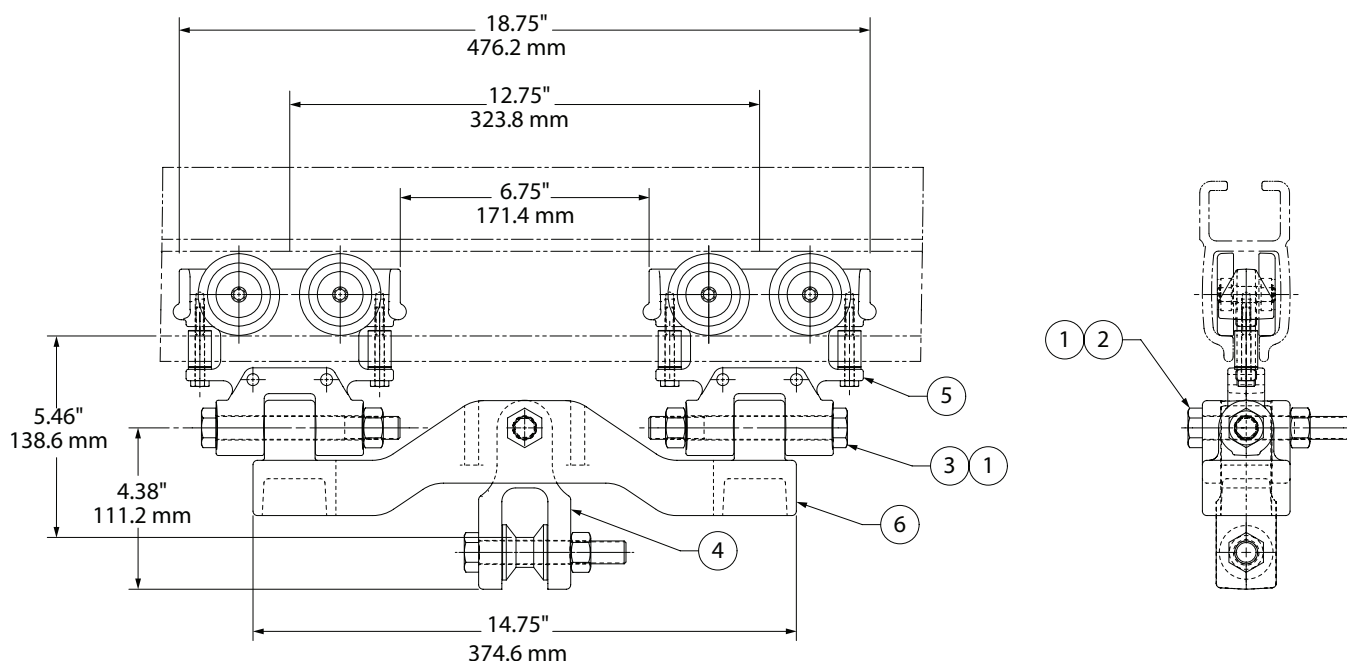
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
WEIGHT OF ASSEMBLY .....	4.01 LBS.(1.81 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS ASSEMBLY. YOU MUST ORDER IT SEPERATELY.  
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094735)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30903	Hoist Bracket Assembly	1
2	ZHS30304	ZRA1 Aluminum Trolley W/Bolt	1

# Hoist Trolley - Dual • ZRA1/1000 lbs. (453.6 kg) Capacity/Part No. 30303



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
WEIGHT OF ASSEMBLY .....	10.5 LBS.(4.76 KG)
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	10.5 LBS.(4.76 KG)

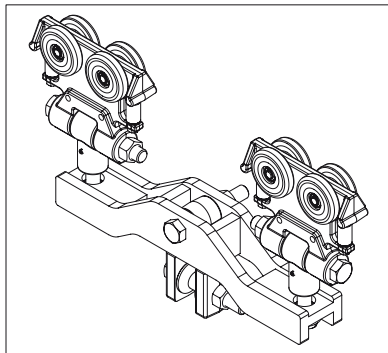
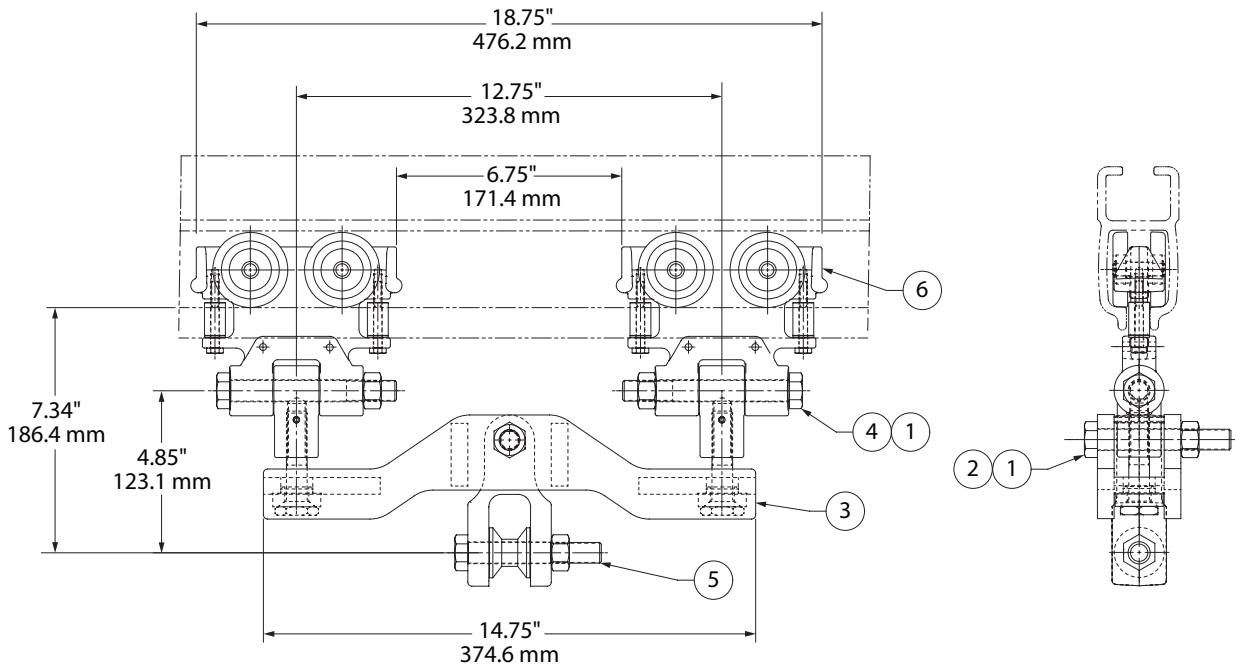
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094388)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 -11 x 4.00 Grade 5	1
3	72623	Hexagonal Bolt, 5/8 -11 x 5"	2
4	30903	Hoist Bracket Assembly	1
5	30281	ZRA1 Aluminum Trolley	2
6	30173	Dual Trolley Tie Bar, Machining	1

# Curve Hoist Trolley-Dual • ZRA1/1000 lbs.(453.6 kg) Capacity/ Part No. ZHS30318



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,500 LBS.(6123.5 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF ASSEMBLY .....	19 LBS.(8.61 KG)

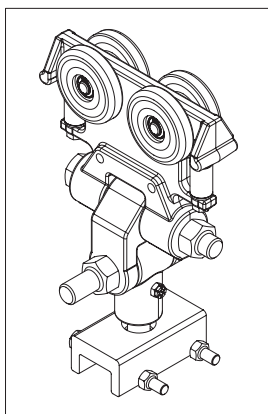
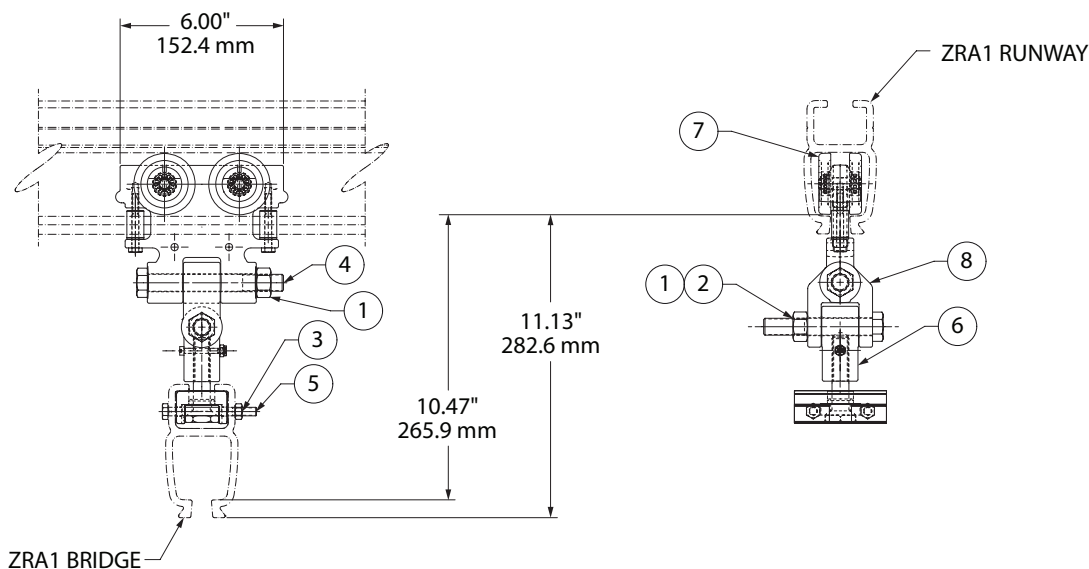
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094768)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 -11 x 4.00 Grade 5	1
3	30832	Dual Trolley Tie Bar for Curved Rail	1
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	30903	Hoist Bracket Assembly	1
6	30281	ZRA1 Aluminum Trolley	2

# End Truck Assembly • ZRA1 on ZRA1/500 lbs. (226.8 kg) Capacity/ Single Trolley/Part No. 30283



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF ASSEMBLY .....	6 LBS.(2.72 KG)

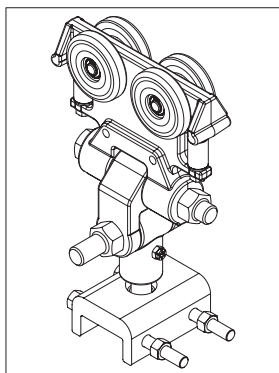
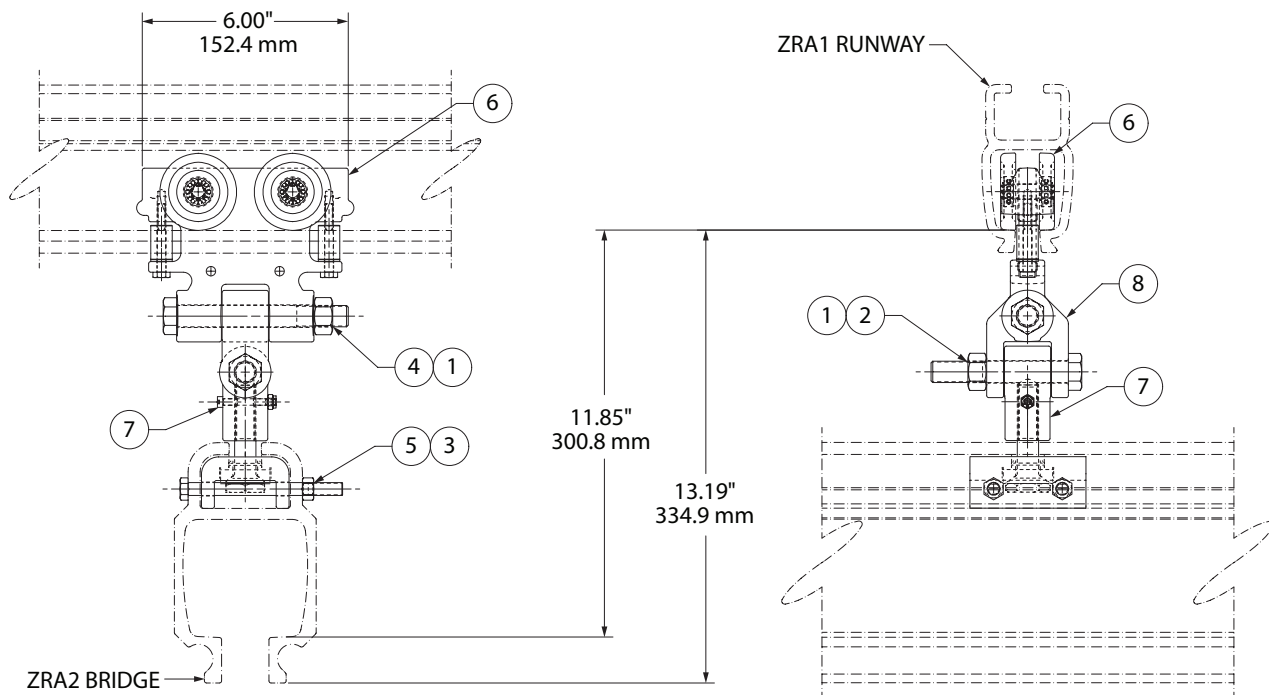
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094073)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 -11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS70968	5/16 -18 x 3.25" HCS Grade 5	2
6	30282	Brigde Suspension Sub-assembly, ZRA1	1
7	30281	ZRA1 Aluminum Trolley	1
8	30166	Female Clevis	1

# End Truck Assembly • ZRA2 on ZRA1/500 lbs. (226.8 kg) Capacity/ Single Trolley/Part No. 30295



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

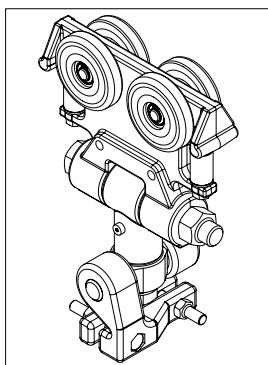
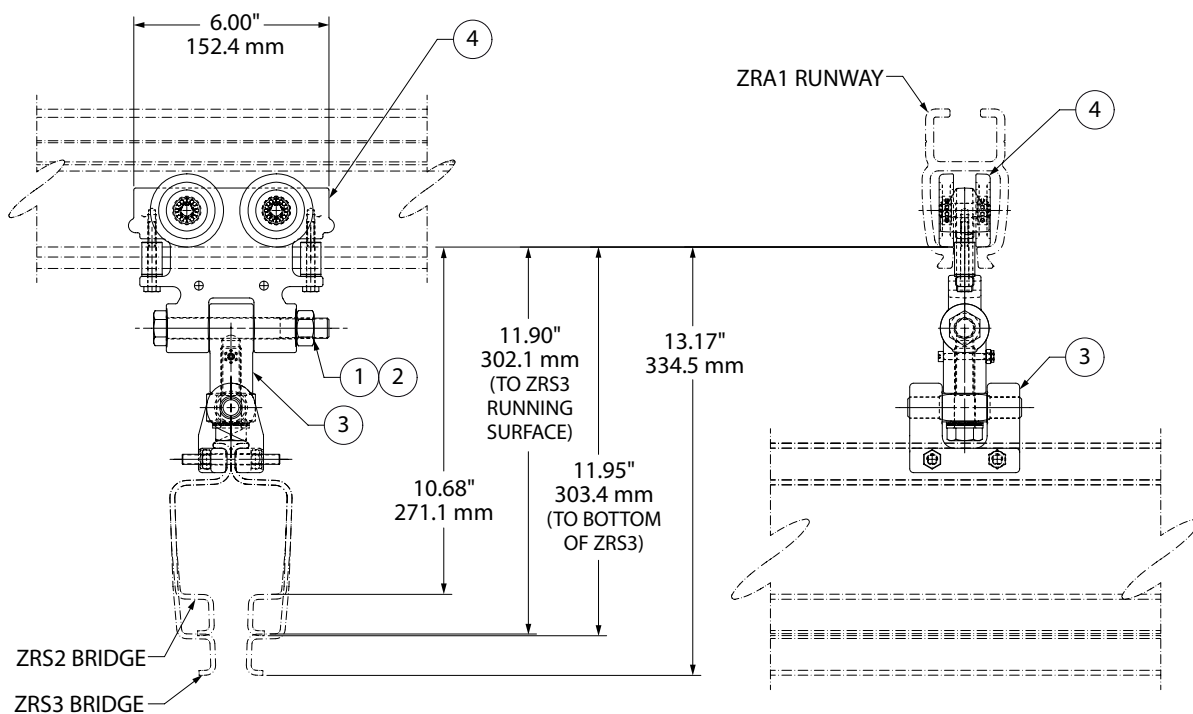
- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 8,575 LBS.(3889.55 KG)
- YIELD STRENGTH ..... 7,500 LBS.(3401.94 KG)
- CAPACITY ..... 500 LBS.(226.8 KG)
- MINIMUM RAIL RADIUS..... 36.00"(914.4 mm)
- WEIGHT OF ASSEMBLY ..... 6.5 LBS.(2.94 KG)

**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.  
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094313)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 -11 x 4.00 Grade 5	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS71481	3/8 -16 x 4.5" HCS Grade 5	2
6	30281	ZRA1 Aluminum Trolley	1
7	30175	Bridge Suspension Sub-assembly, ZRA2	1
8	30166	Female Clevis	1

# End Truck Assembly • ZRS2/3 on ZRA1/500 lbs. (226.8 kg) Capacity/ Single Trolley/Part No. 30320



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY .....	500 LBS.(226.8 KG)
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF ASSEMBLY .....	6.5 LBS.(2.94 KG)

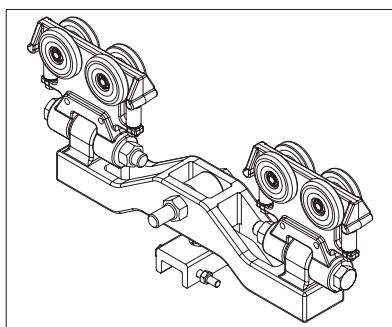
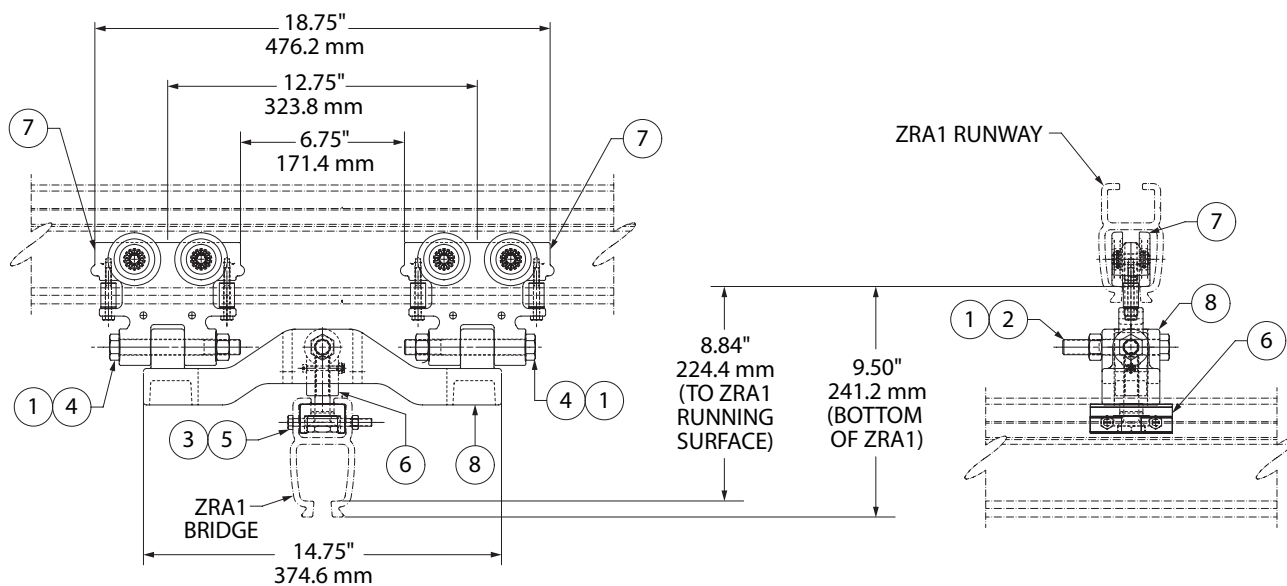
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094784)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	72623	Hexagonal Bolt, 5/8 -11 x 5"	1
3	30596	Bridge Suspension Sub-assembly, ZRS	1
4	30281	ZRA1 Aluminum Trolley	1

# End Truck Assembly • ZRA1 on ZRA1/1000 lbs. (453.6 kg) Capacity/ Dual Trolley/Part No. 30286



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION .....ONE PERCENT
- ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)
- YIELD STRENGTH ..... 10,600 LBS.(4808.07 KG)
- CAPACITY ..... 1,000 LBS.(453.6 KG)
- WEIGHT OF ASSEMBLY ..... 12 LBS.(5.44 KG)

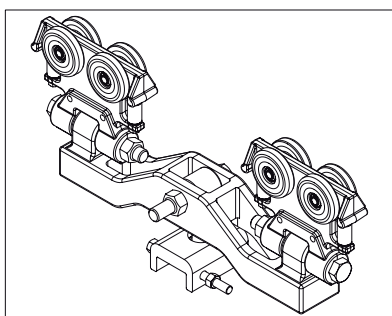
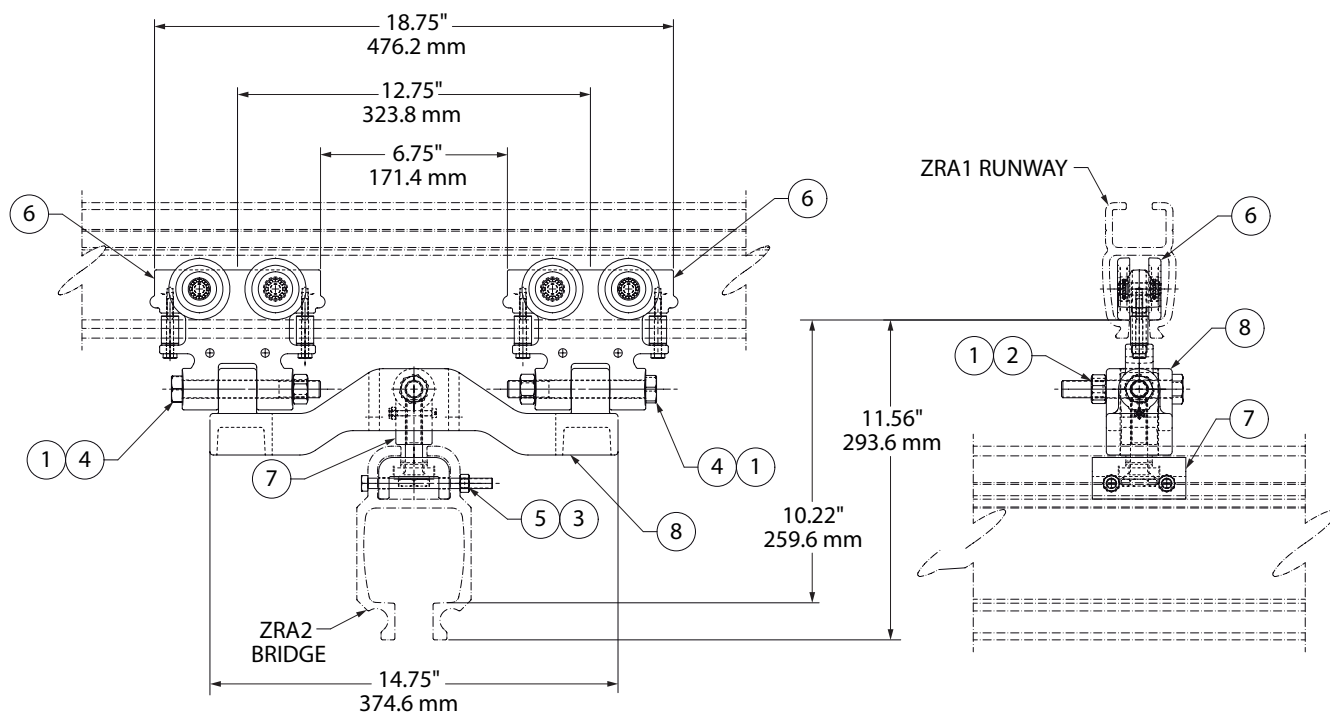
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094099)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30282	Bridge Suspension Sub-assembly, ZRA1	1
7	30281	Aluminum Trolley, ZRA1	2
8	30173	Dual Trolley Tie Bar, Machining	1

# End Truck Assembly • ZRA2 on ZRA1/1000 lbs. (453.6 kg) Capacity/ Dual Trolley/Part No. 30272



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	12 LBS.(5.44 KG)

**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

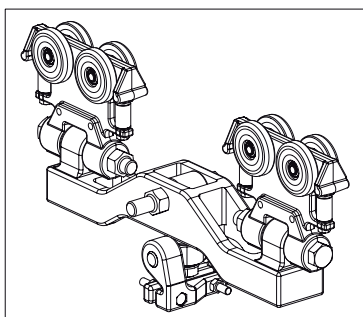
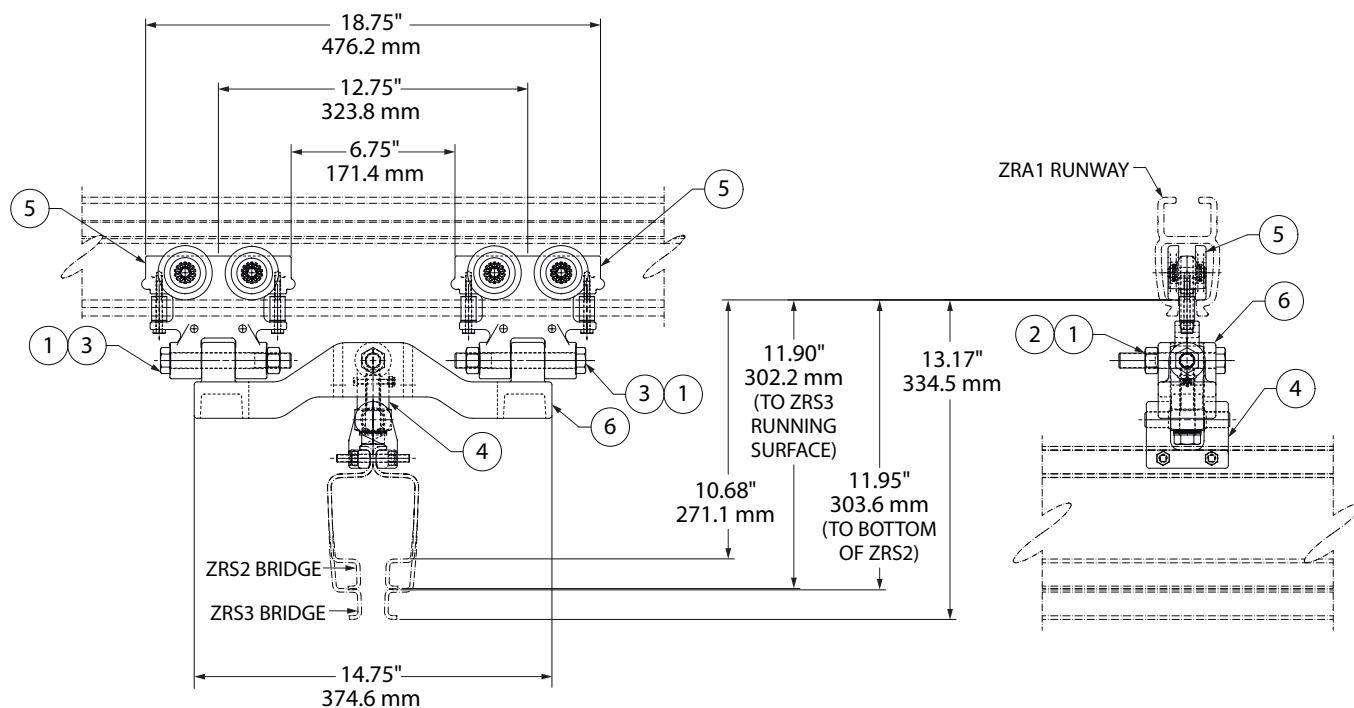
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094016)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	2
6	30281	Aluminum Trolley, ZRA1	2
7	30175	Bridge Suspension Sub-assembly, ZRA2	1
8	30173	Dual Trolley Tie Bar, Machining	1



# End Truck Assembly • ZRS2/3 on ZRA1/1000 lbs. (453.6 kg) Capacity/ Dual Trolley/Part No. 30298



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)
- YIELD STRENGTH ..... 10,600 LBS.(4808.07 KG)
- CAPACITY ..... 1,000 LBS.(453.6 KG)
- WEIGHT OF ASSEMBLY ..... 13 LBS.(5.9 KG)

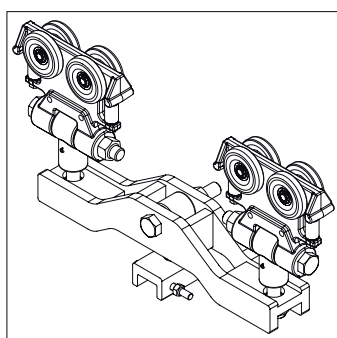
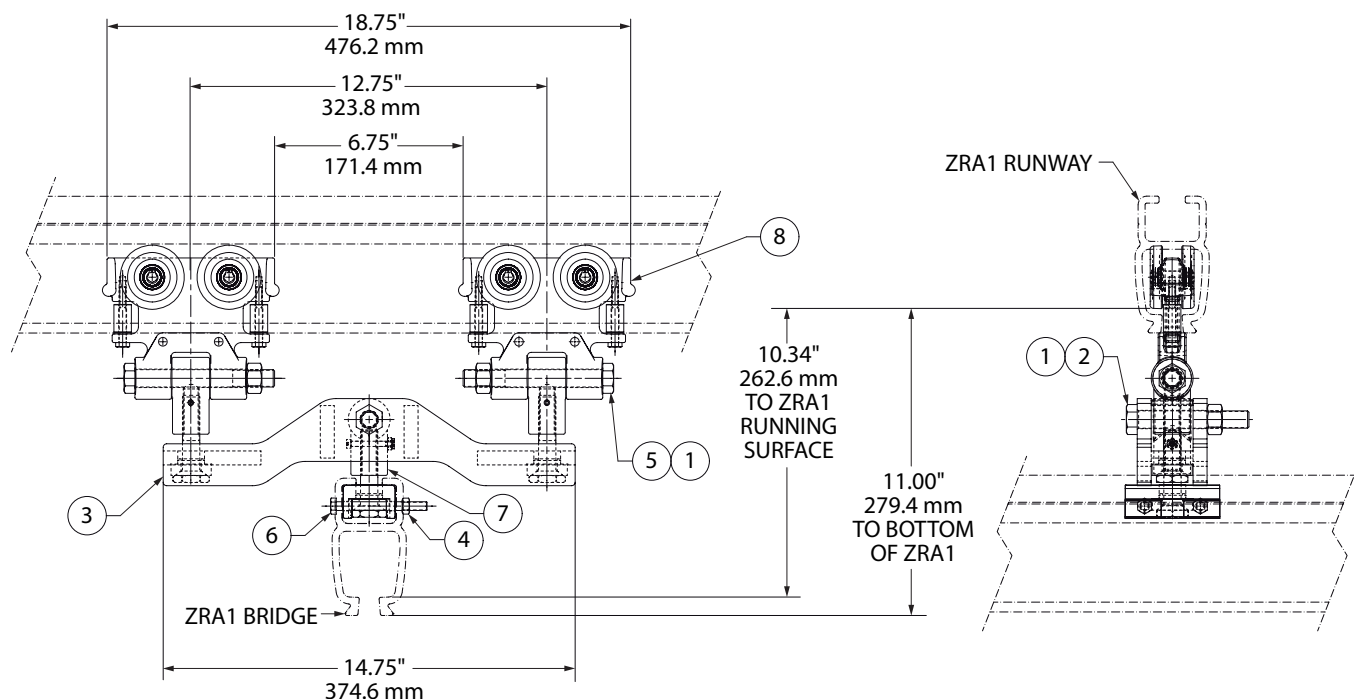
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094347)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
4	30596	Bridge Suspension Sub-assembly, ZRAS	1
5	30281	Aluminum Trolley ZRA1	2
6	30173	Dual Trolley Tie Bar, Machining	1

# End Truck Assembly • ZRA1 on ZRA1 Curved Rail/1000 lbs. (453.6 kg) Capacity/Dual Trolley/Part No. 30296



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)
- YIELD STRENGTH ..... 10,600 LBS.(4808.07 KG)
- CAPACITY ..... 1,000 LBS.(453.6 KG)
- MINIMUM RAIL RADIUS..... 36.00\"(914.4 mm)
- WEIGHT OF ASSEMBLY ..... 18.8 LBS.(8.52 KG)

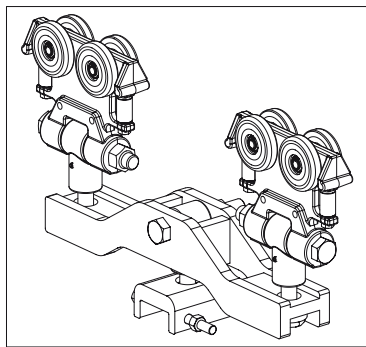
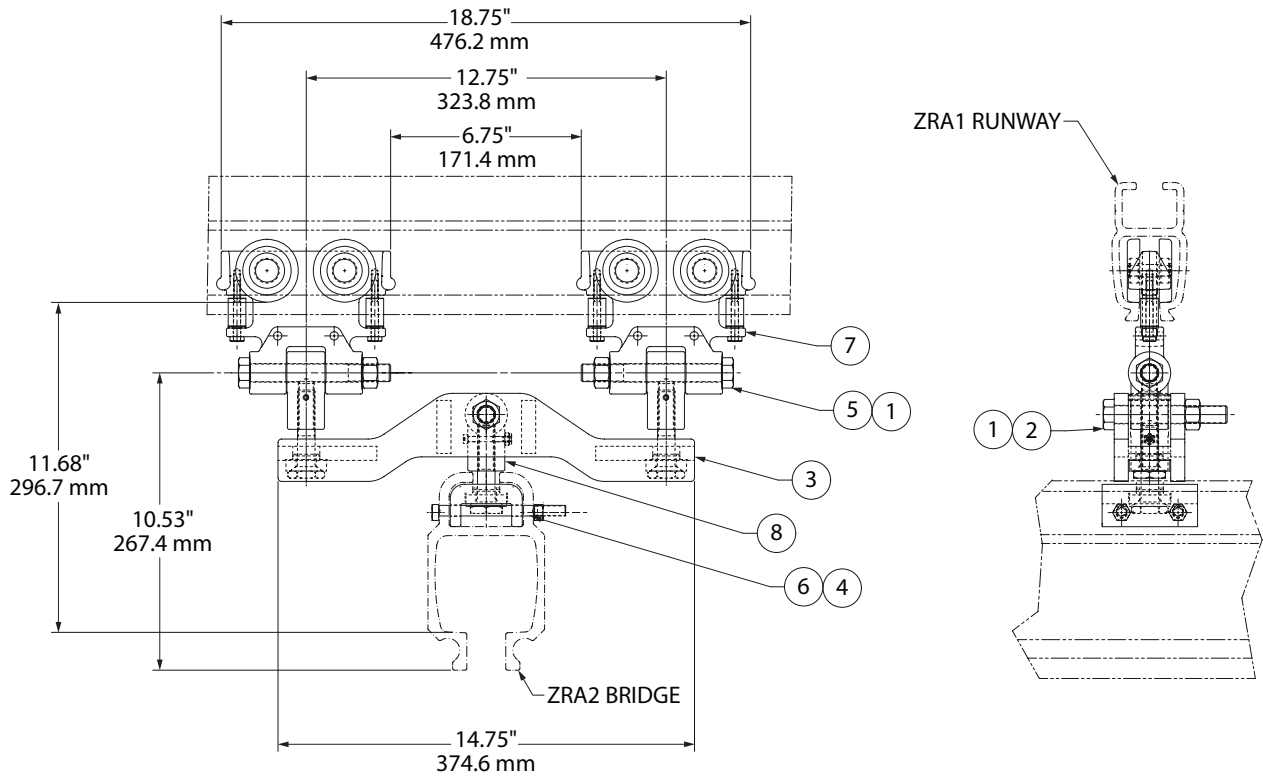
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094321)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	30832	Dual Trolley Tie Bar for Curved Rail	1
4	75582	Lock Nut, 5/16 - 18 PT	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
6	ZHS70968	HCS 5/16 - 18 x 3.25" Grade 5	2
7	30282	Bridge Suspension Sub-assembly, ZRA1	1
8	30281	Aluminum Trolley, ZRA1	2

# End Truck Assembly • ZRA2 on ZRA1 Curved Rail/1000 lbs. (453.6 kg) Capacity/Dual Trolley/Part No. ZHS30297



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY .....	1,000 LBS.(453.6 KG)
MINIMUM RAIL RADIUS.....	36.00"(914.4 mm)
WEIGHT OF ASSEMBLY .....	16.5 LBS.(7.48 KG)

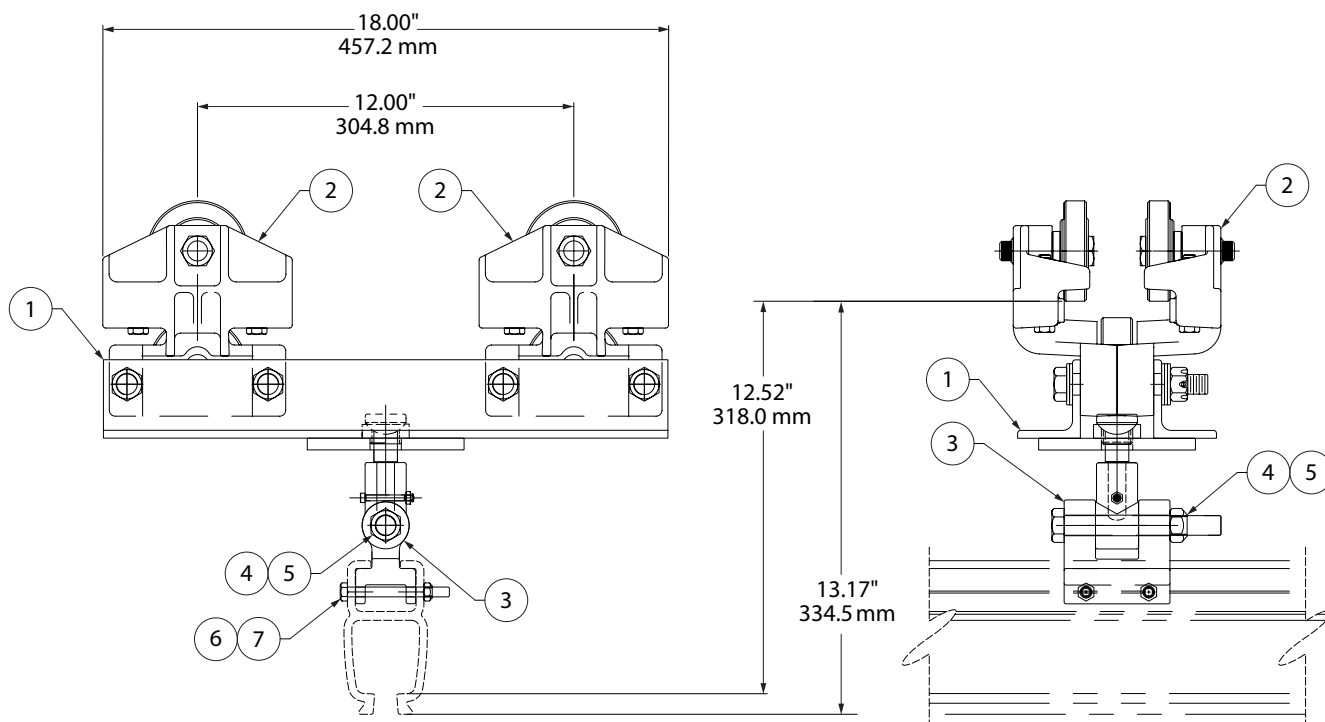
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094339)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11"	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	30832	Dual Trolley Tie Bar for Curved Rail	1
4	75583	Lock Nut, 3/8 - 16	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
6	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	2
7	30281	Aluminum Trolley, ZRA1	2
8	30175	Bridge Suspension Sub-assembly, ZRA2	1

# End Truck Assembly • ZRA1 on Patent Track/1000 lbs. (453.6 kg) Capacity/ Dual Trolley/Part No. 30299



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

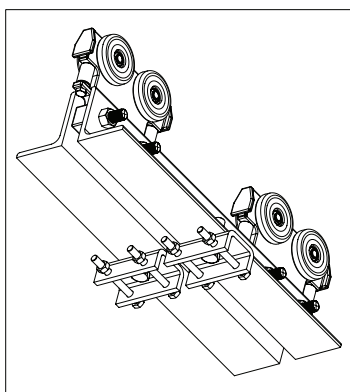
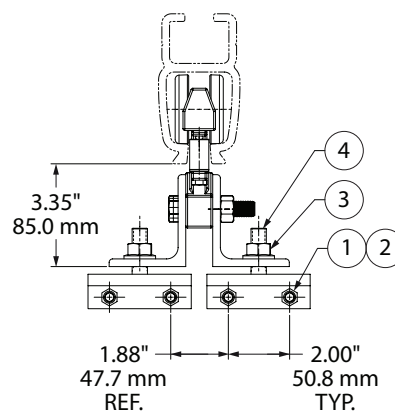
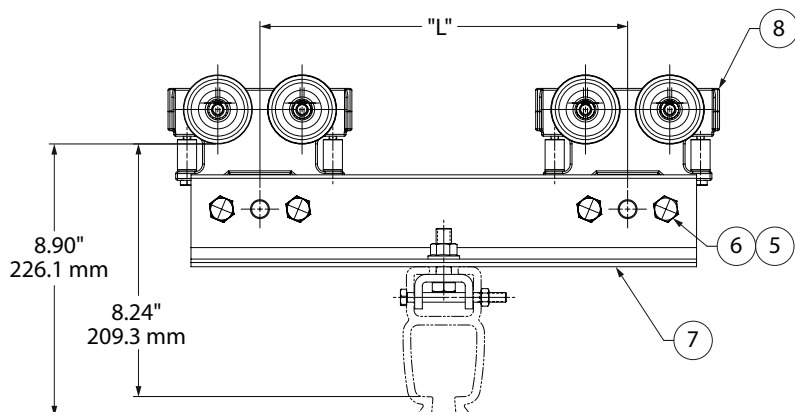
ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY ..... 32 LBS.(14.51 KG)

**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094354)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30917	Dual End Truck Sub-assembly	1
2	93814	Patent Track Trolley, 500 LB Capacity	2
3	ZHS30266	Hanger Bracket, ZRA1	1
4	72623	Screw, 5/8 - 11 x 5.00 HCS	1
5	75587	Lock Nut, 5/8 - 11 PT	1
6	ZHS70968	Screw, 5/16 - 18 x 3.25 HCS	2
7	75582	Lock Nut, 5/16 - 18 PT	2

# Rigid End Truck • ZRA1/T on ZRA1/1000 lbs. (453.6 kg) Capacity/ Part No. 16024861 - XXXX



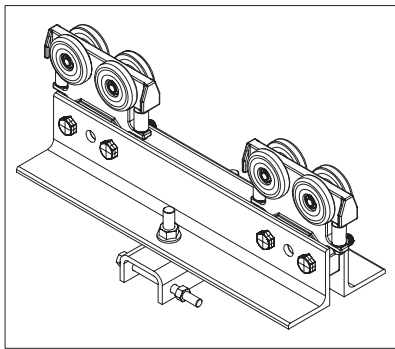
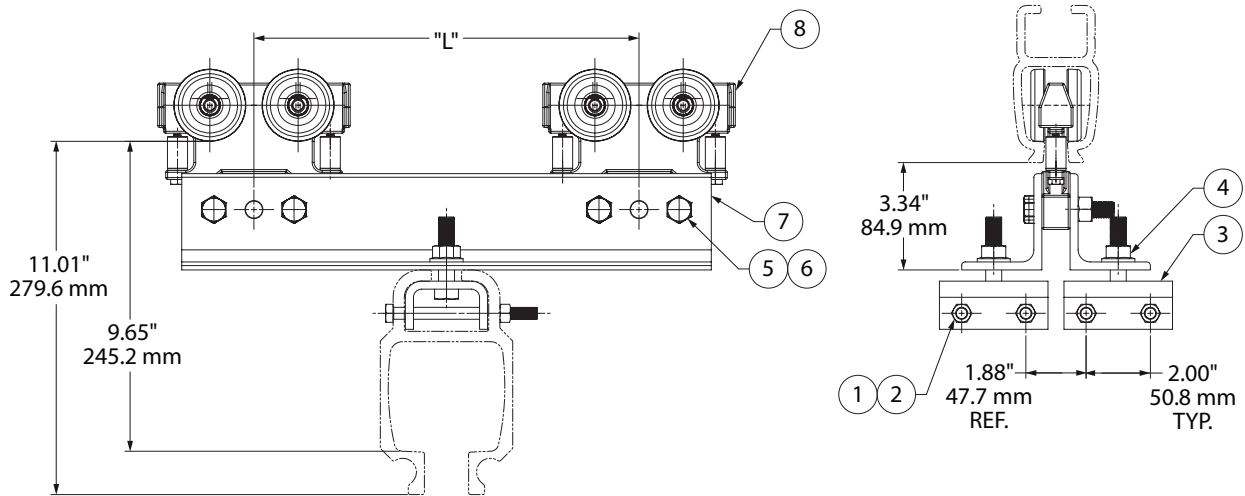
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	16024861 - 1200	30907 - 06	12"	16007890 - 1200
10' - 15'	16024861 - 1800	30907 - 06	18"	16007890 - 1800
15' - 20'	16024861 - 2400	30907 - 06	24"	16007890 - 2400
20' - 30'	16024861 - 3600	30907 - 08	36"	16007890 - 3600

ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH .....  
 YIELD STRENGTH .....  
 CAPACITY ..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY .....

(Dwg. 16024861)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75582	Lock Nut, 5/16 - 18 PT	4
2	ZHS70968	HCS 5/16 - 18 x 3.25" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	30326	ZRA1 Rigid Mount Suspension Bracket	2
5	75585	Lock Nut, 1/2 - 13 PT	4
6	ZHS72023	HCS 1/2 - 13 x 2.50	4
7	16007890-XXXX	Rigid End Truck Bracket	2
8	30279	ZRA1 Aluminum Trolley	2
9	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Rigid End Truck • ZRA2 on ZRA1/1000 lbs. (453.6 kg) Capacity/ Part No. 45519758 - XXXX



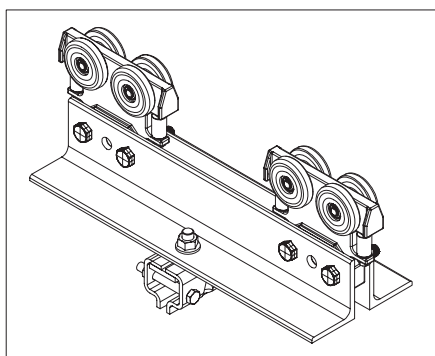
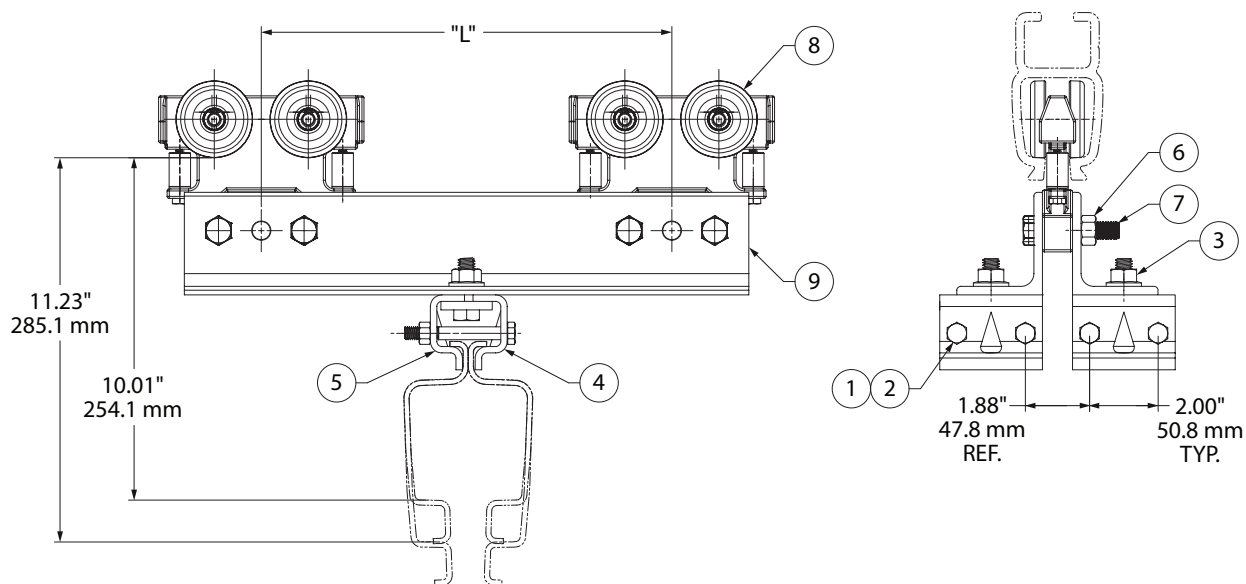
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45519758 - 1200	30907 - 06	12"	16007890 - 1200
10' - 15'	45519758 - 1800	30907 - 06	18"	16007890 - 1800
15' - 20'	45519758 - 2400	30907 - 06	24"	16007890 - 2400
20' - 30'	45519758 - 3600	30907 - 08	36"	16007890 - 3600

ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH .....  
 YIELD STRENGTH .....  
 CAPACITY..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY .....

(Dwg. 45519758)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	4
2	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	4
3	ZHS30109	ZRA2 Rigid Mount Suspension Bracket	2
4	75589	Flanged Lock Nut, 1/2 - 13 PT	2
5	75585	Lock Nut, 1/2 - 13 PT	4
6	ZHS72023	HCS 1/2 - 13 x 2.50	4
7	16007890-XXXX	End Truck Bracket	2
8	30279	ZRA1 Aluminum Trolley	2
9	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Rigid End Truck • ZRS2/3 on ZRA1/1000 lbs. (453.6 kg) Capacity/ Part No. 45520343 - XXXX



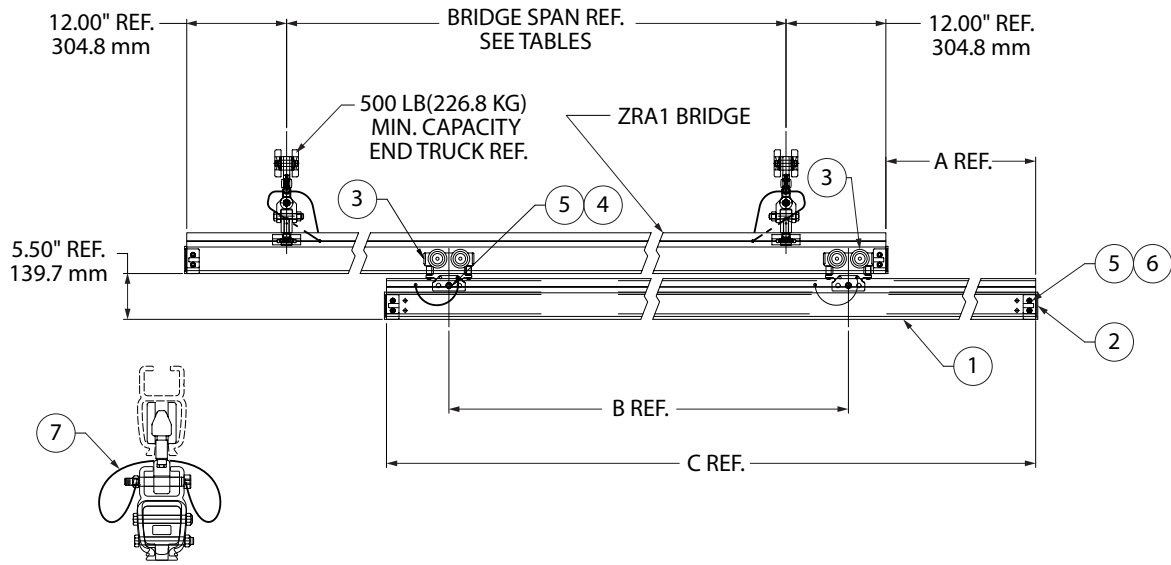
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45520343 - 1200	30907 - 06	12"	16007890 - 1200
10' - 15'	45520343 - 1800	30907 - 06	18"	16007890 - 1800
15' - 20'	45520343 - 2400	30907 - 06	24"	16007890 - 2400
20' - 30'	45520343 - 3600	30907 - 08	36"	16007890 - 3600

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....—  
 YIELD STRENGTH .....—  
 CAPACITY.....1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY .....—

(Dwg. 45520343)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	4
2	ZHS71479	HCS 3/8 - 16 x 3" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	30502	Rail Clamp	2
5	ZHS30773	Suspension Clamp Weldment	4
6	75585	Lock Nut, 1/2 - 13 PT	4
7	ZHS72023	HCS 1/2 - 13 x 2.50	4
8	30279	ZRA1 Aluminum Trolley	2
9	16007890-XXXX	End Truck Bracket	2
10	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Bridge Extensions • ZRA1/Single Trolley/Part No. 30308 - XX



"A" DIM. = 2'-0" FOR 2' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA1 BRIDGE SPAN	MINIMUM RECOMMENDED BRIDGE CAPACITY
30308-22	2'-0"	5'-0"	225 LBS.	10 FT	500 LBS.
30308-23	3'-0"	6'-0"	275 LBS.	10 FT	500 LBS.
30308-24	4'-0"	7'-0"	300 LBS.	10 FT	500 LBS.

"A" DIM. = 4'-0" FOR 4' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA1 BRIDGE SPAN	MINIMUM RECOMMENDED BRIDGE CAPACITY
30308-42	2'-0"	7'-0"	125 LBS.	11 FT	450 LBS.
30308-43	3'-0"	8'-0"	175 LBS.	10 FT	475 LBS.
30308-44	4'-0"	9'-0"	200 LBS.	10 FT	475 LBS.

"A" DIM. = 3'-0" FOR 3' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA1 BRIDGE SPAN	MINIMUM RECOMMENDED BRIDGE CAPACITY
30308-32	2'-0"	6'-0"	175 LBS.	10 FT	500 LBS.
30308-33	3'-0"	7'-0"	225 LBS.	10 FT	500 LBS.
30308-34	4'-0"	8'-0"	250 LBS.	10 FT	500 LBS.

"A" DIM. = 5'-0" FOR 5' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA1 BRIDGE SPAN	MINIMUM RECOMMENDED BRIDGE CAPACITY
30308-52	2'-0"	8'-0"	125 LBS.	10 FT	500 LBS.
30308-53	3'-0"	9'-0"	150 LBS.	11 FT	450 LBS.
30308-54	4'-0"	10'-0"	125 LBS.	13 FT	325 LBS.

**NOTE:** BRIDGE EXTENSION ADDS 5.67" (144.0 mm) TO STACK-UP DIMENSION - FOR LONGER EXTENSIONS CONSULT THE FACTORY.

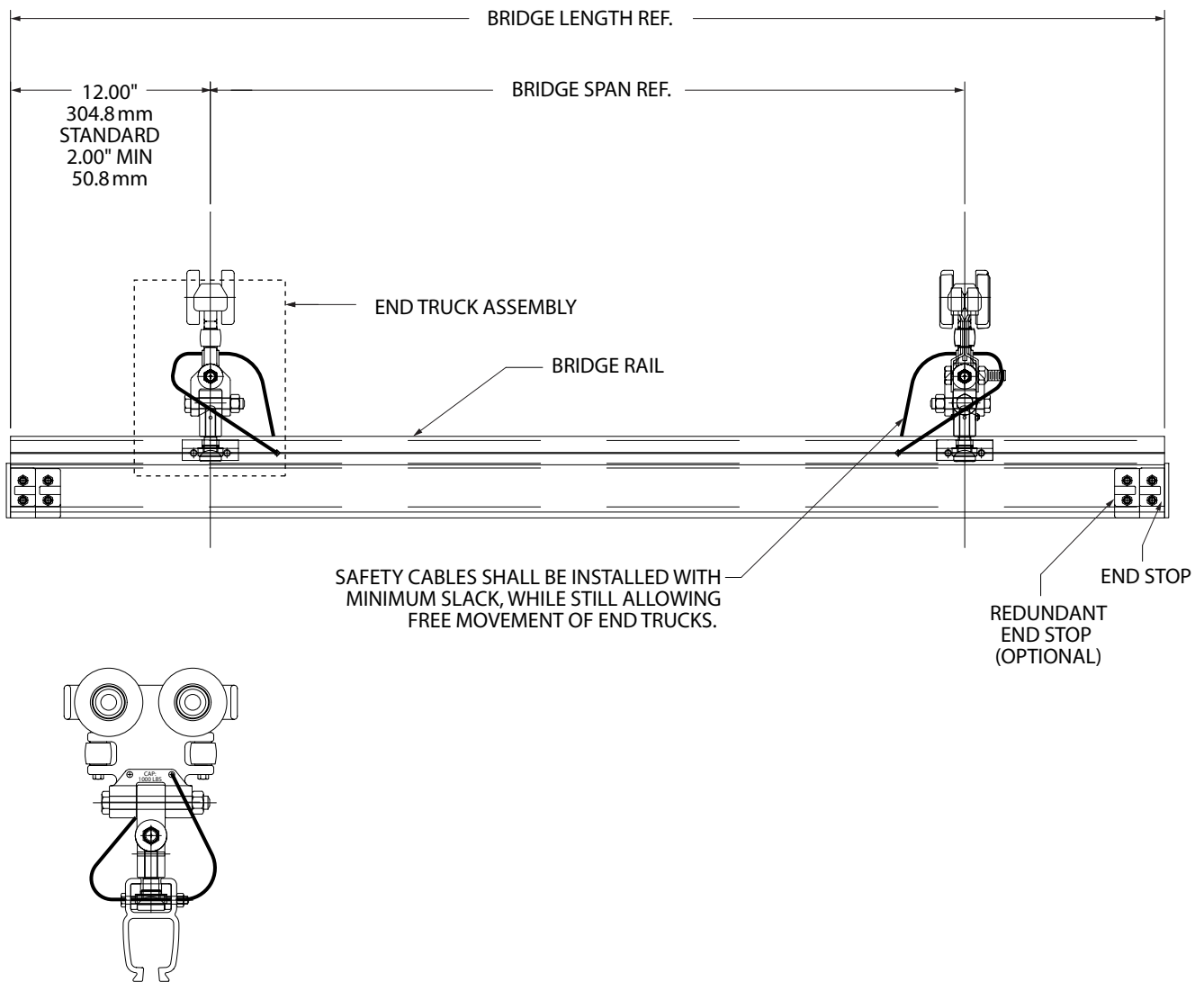
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY.

(Dwg. 45265915)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30200	ZRA1 Rail x "C" Long	1
2	30274	ZRA1 End Stop	2
3	30279	Trolley	2
4	72050	Shoulder Screw, 1/2 x 2.50	2
5	75583	Lock Nut, 3/8 - 16 PT	6
6	71479	HCS, 3/8 - 16 x 3.00	4
7	30908	Safety Cable Assembly	2



# Bridge Crane Assembly • Example of How to Order



THE BRIDGE CRANE ASSEMBLY CONSISTS OF:

- ONE BRIDGE BEAM (SECTION OF RAIL)
- TWO END TRUCK ASSEMBLIES (MOUNTED TO THE BRIDGE WITH A TROLLEY TO ROLL INSIDE OF THE RUNWAY, SAFETY CABLES WILL BE PRE-INSTALLED)
- TWO END STOPS (ONE INSTALLED AT EACH END OF THE BRIDGE)
- REDUNDANT END STOPS ARE AVAILABLE (PLEASE SPECIFY)

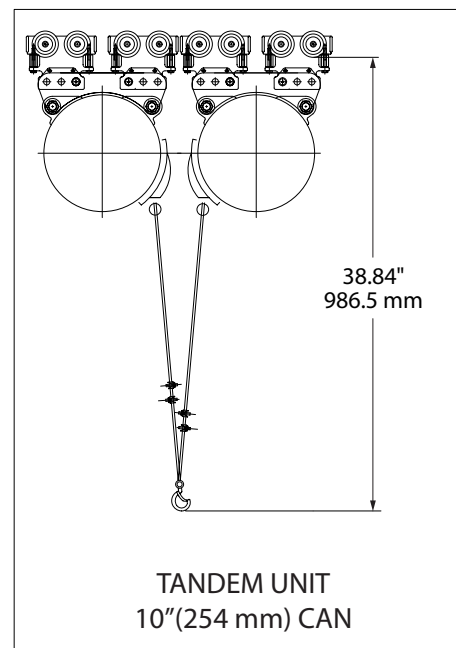
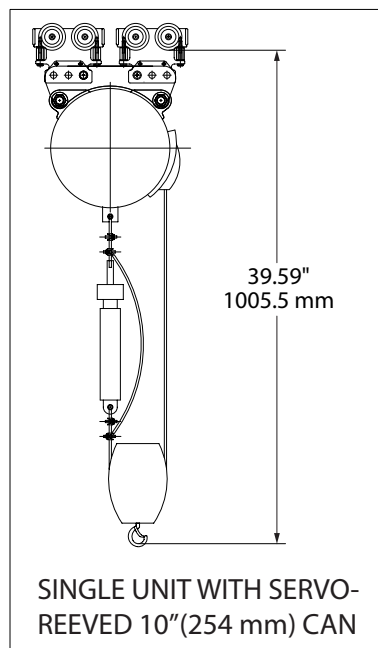
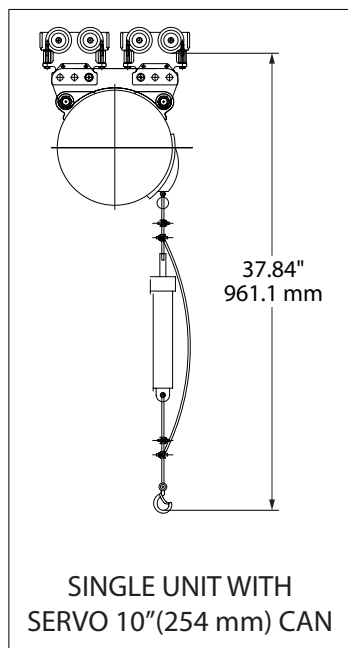
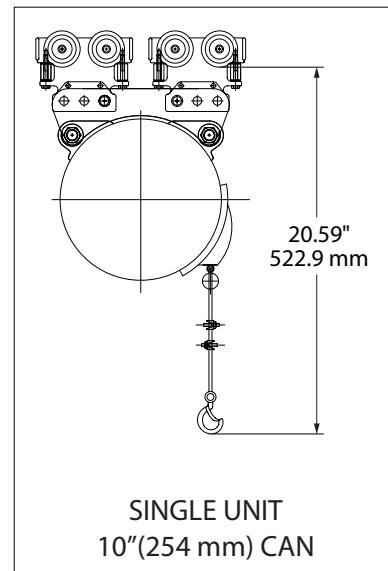
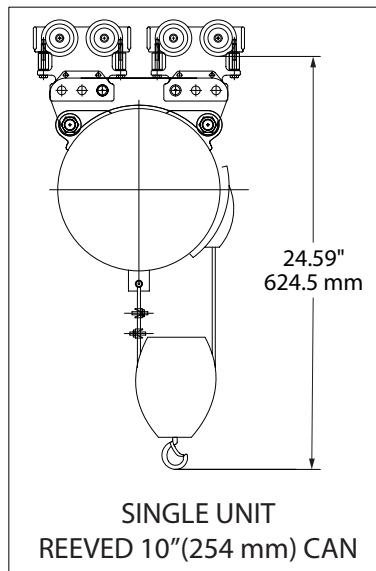
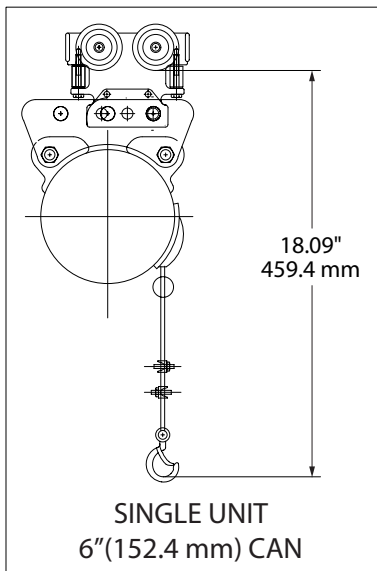
## EXAMPLE

### ORDER NUMBER:

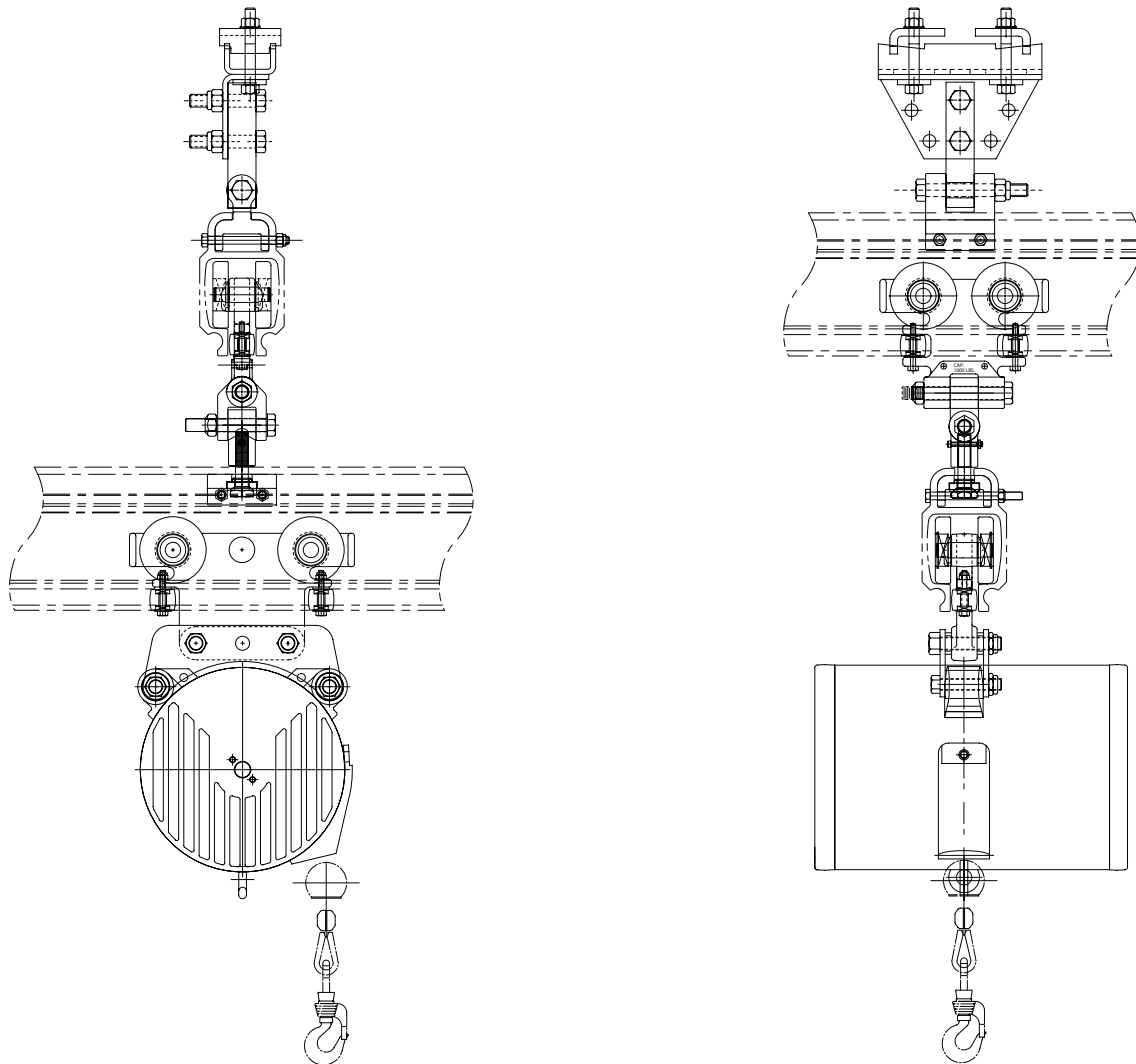
**ZRA1|06|08|30283|R**

- REDUNDANT END STOP (OPTIONAL)
- END TRUCK ASSEMBLY
- TOTAL BRIDGE LENGTH (IN FEET)
- SPAN (RUNWAY CENTER-CENTER DIMENSION IN FEET)
- TYPE OF BRIDGE RAIL

# Balancer Stack-up Dimension • For ZRA1 Aluminum Rail

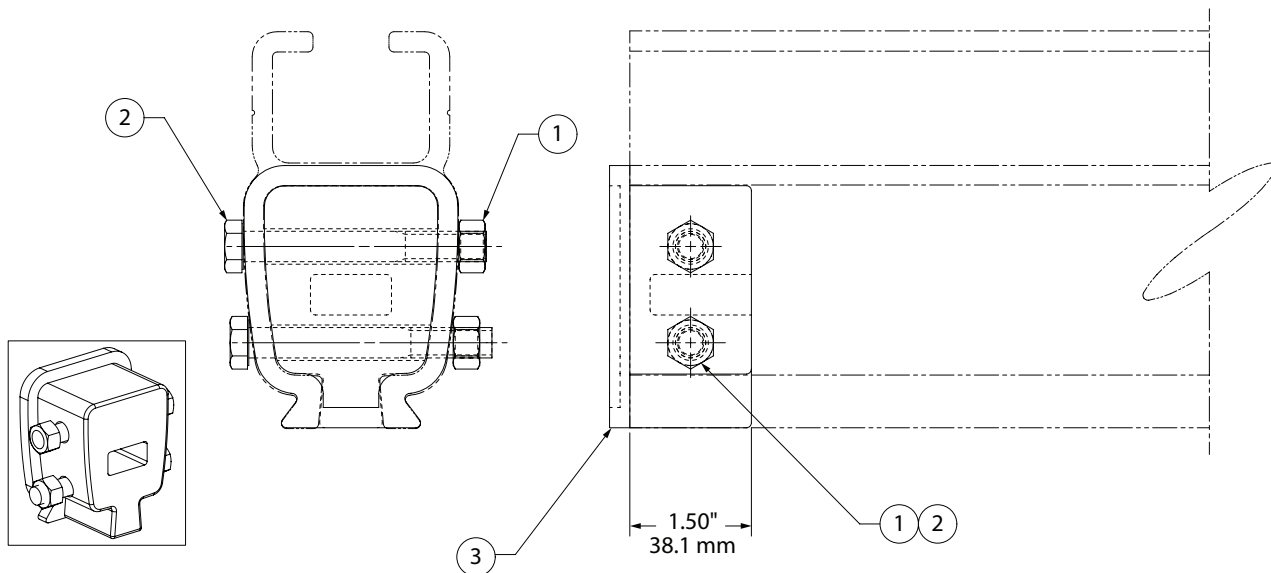


# System Stack-up Dimension • ZRA1/Quick Reference



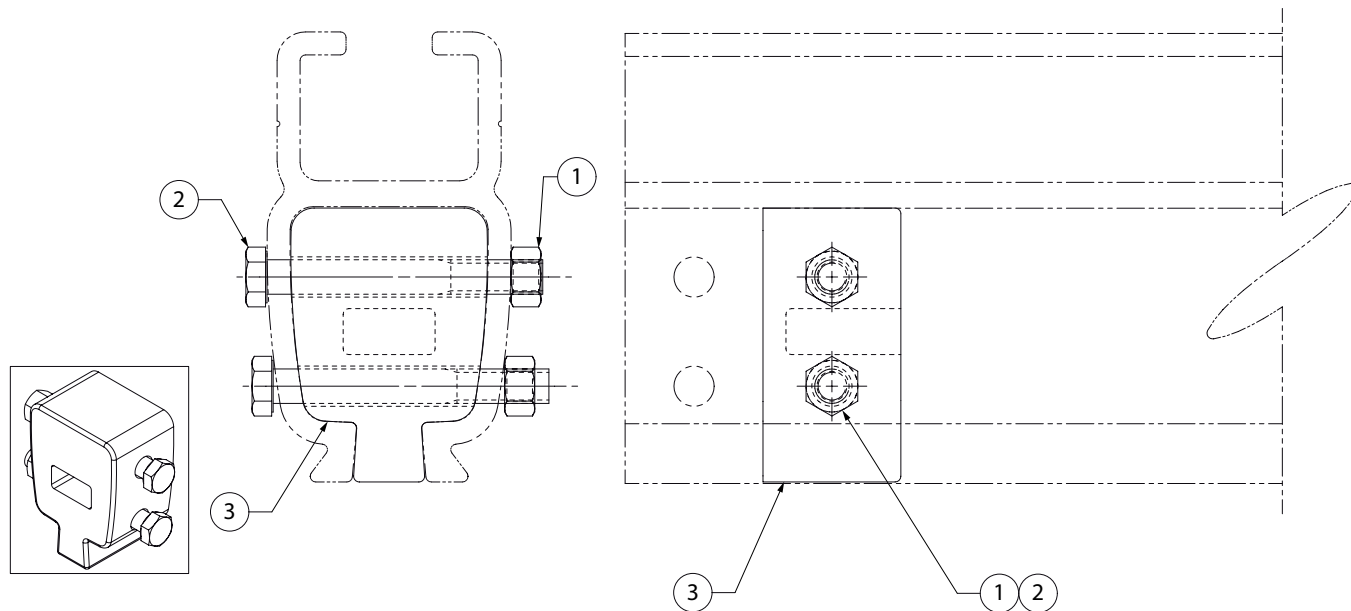
HANGER KITS	END TRUCKS	BALANCERS WITH SUSPENSION
30227 - 4.21"(106.9 mm)	30283 - 10.25"(260.3 mm)	SINGLE UNIT 10"(254 mm) - 20.59"(522.9 mm)
30285 - 6.84"(173.7 mm)	30295 - 11.75"(298.4 mm)	SINGLE UNIT REEVED 10"(254 mm) - 24.59"(624.5 mm)
30289 - 6.84"(173.7 mm)	30286 - 8.75"(222.2 mm)	SINGLE UNIT WITH SERVO 10"(254 mm) - 37.84"(961.1 mm)
30290 - 12.50"(317.5 mm)	30272 - 10.13"(257.3 mm)	SINGLE UNIT 6"(152.4 mm) - 18.09"(459.4 mm)
30291 - 12.50"(317.5 mm)	30289 - 10.63"(270.0 mm)	TANDEM UNIT 10"(254 mm) - 400 LBS.(181.43 KG). 35.25"(895.3 mm)
30292 - 12.50"(317.5 mm)	30296 - 10.50"(266.7 mm)	- 700 LBS.(317.51 KG). 40.25"(1022.3 mm)
30293 - 12.50"(317.5 mm)	30297 - 12.00"(304.8 mm)	- 1000 LBS.(453.6 KG). 35.25"(895.3 mm)
30287 - (ADJUSTABLE)	30299 - 10.00"(254.0 mm)	
30288 - (ADJUSTABLE)	30320 - 10.56"(268.22 mm)	
30300 - 9.38"(238.2 mm)		
30301 - 9.38"(238.2 mm)		

# End Stops • ZRA1/Part No. Single - 30275/Redundant - 30277



(Dwg. 54094024)

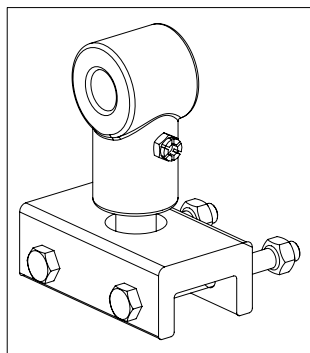
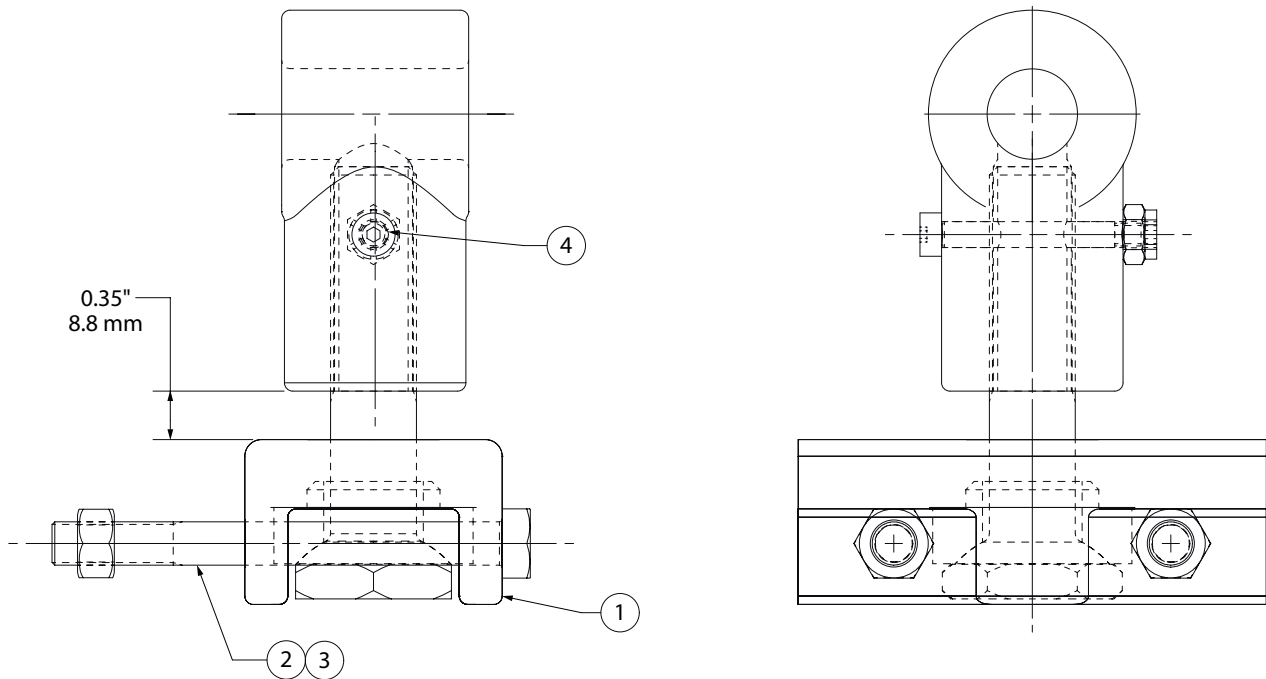
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8-16	2
2	ZHS71479	3/8-16 x 3" HCS Grade 5	2
3	30274	End Stop - ZRA1	1



(Dwg. 54094032)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8-16	2
2	ZHS71479	3/8 - 16 x 3" HCS Grade 5	2
3	30276	Redundant End Stop, ZRA1	2

# ZRA1 Rail • Bridge Suspension Sub-Assembly/Part No. ZHS30305



ULTIMATE STRENGTH .....8,575 LBS.(3889.55 KG)  
 YIELD STRENGTH .....7,500 LBS.(3401.94 KG)  
 CAPACITY..... 1000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY ..... 3 LBS.(1.36 KG)

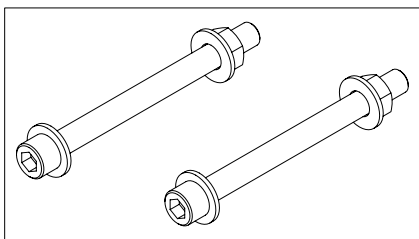
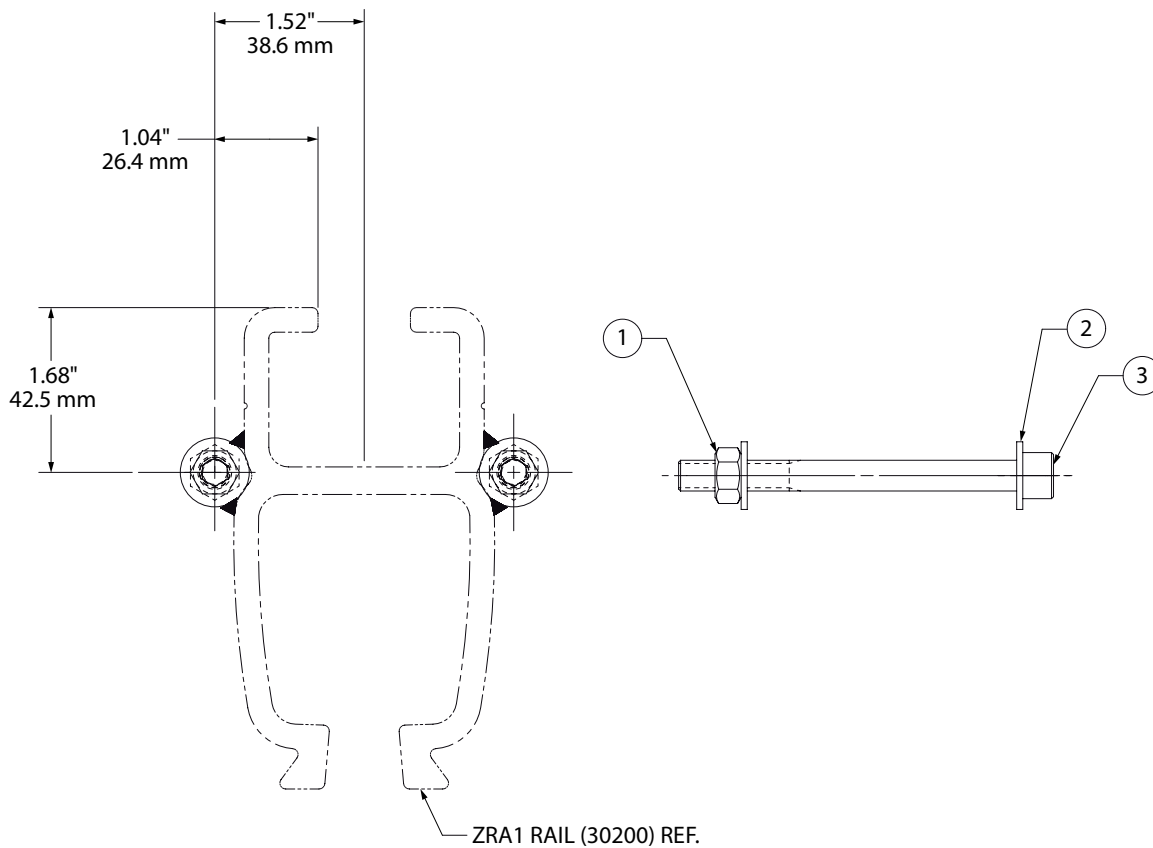
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094404)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30282	Bridge Suspension Sub-assembly	1
2	70968	5/16 - 18 x 3.25" H.H.B	1
3	75582	Lock Nut, 5/16 - 18	1
4	99118	Screw and Nut Assembly	2

# Splice Bolt Kit • ZRA1/Part No. 30231



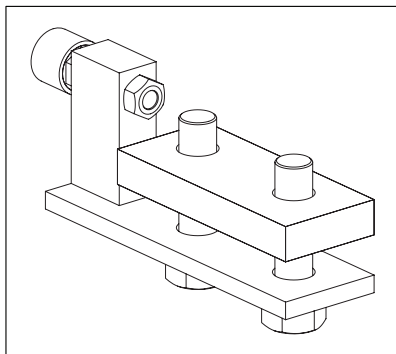
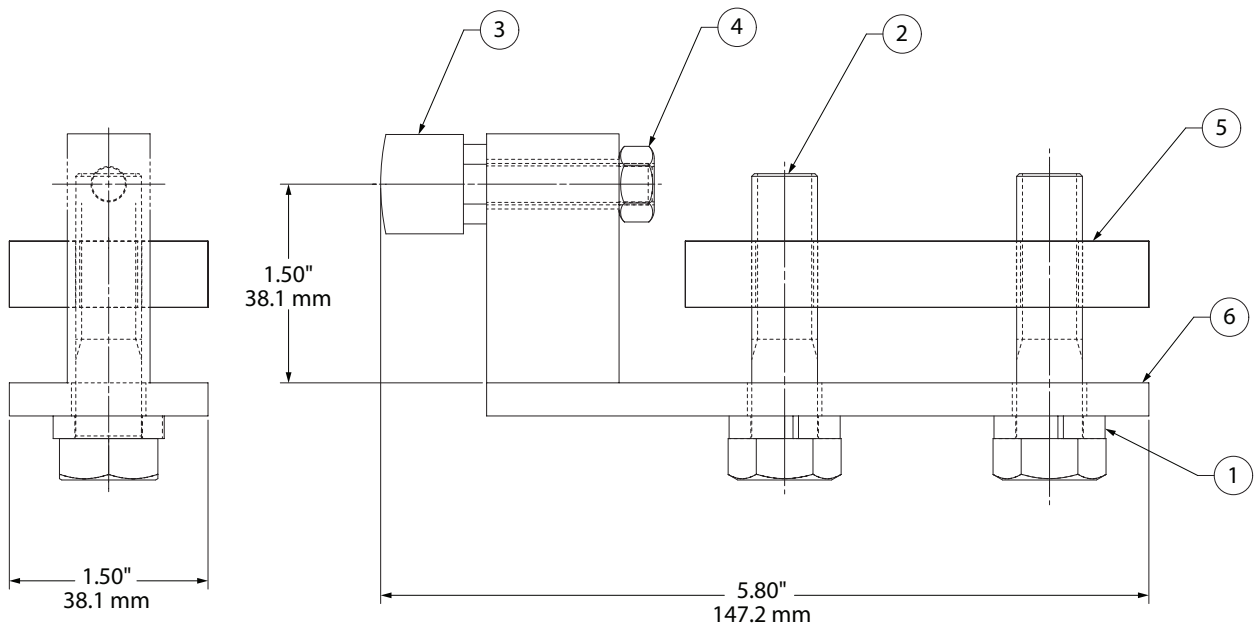
**NOTE:** THERE MUST BE A HANGER KIT WITHIN 12" (304.8 mm) OF THE SPLICE JOINT ON THE RUNWAY.

CONSULT THE FACTORY IF MODIFICATIONS NEED TO BE MADE TO SPLICE JOINTS THAT REQUIRE WELDING OF SPLICE LUGS.

(Dwg. 54093885)

<b>Bill of Materials</b>			
Item No.	Part No.	Description	Amt.
1	75518	5/16 - 18, Nylon Insert Lock	2
2	74505	5/16, SAE Flat Washer	4
3	70926	5/16 - 18 x 3.5" SCS	2

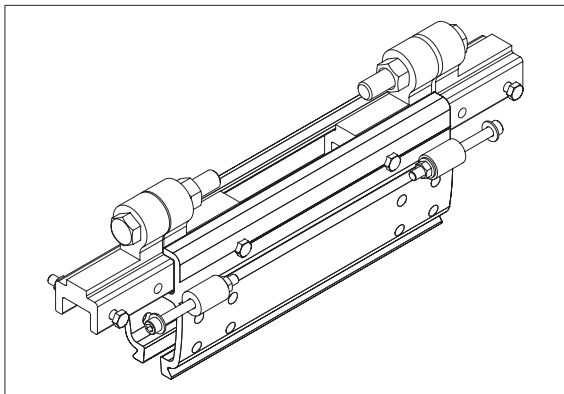
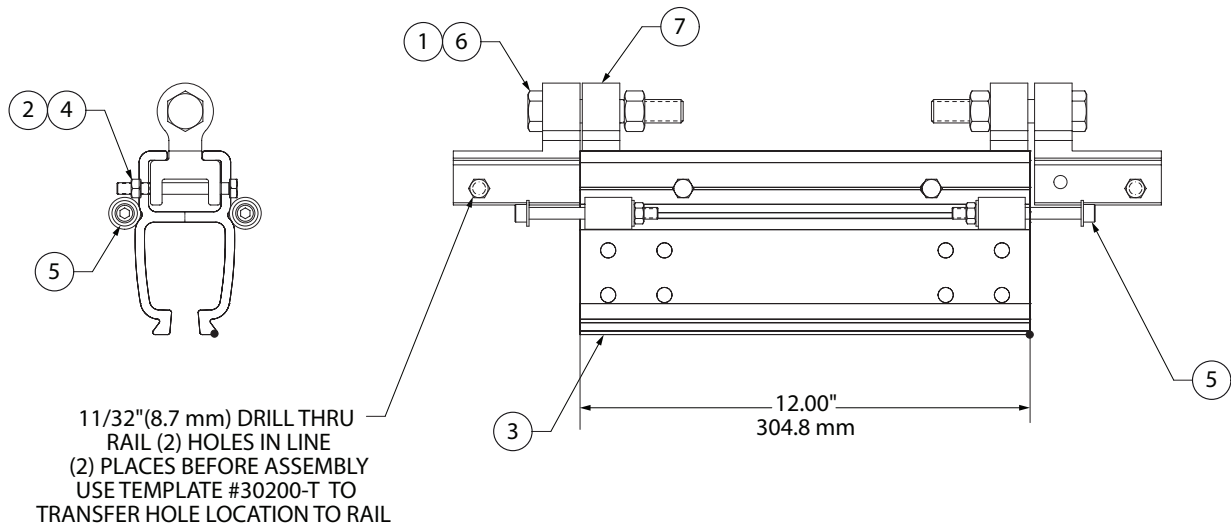
# ZRA1 Rail • Adjustable Stop/Part No. ZHS30738



(Dwg. 54125612)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	74513	Spring Lock Washer, 1/2" Medium	2
2	ZHS72002	1/2 - 13 x 2" HCS Grade 5	2
3	ZHS30744	BN - 516M - 20, Stilson Round Bumper with Male Thread and Hex. Shoulder	1
4	75582	Lock Nut, 5/16 - 18 PT	1
5	30736	Adjustable Stop ZRA1 Tapped Plate	1
6	30734	Adjustable Stop, Bar Weldment	1

# ZRA1 Rail • Inspection Gate/Part No. ZHS30998



(Dwg. 54127139)

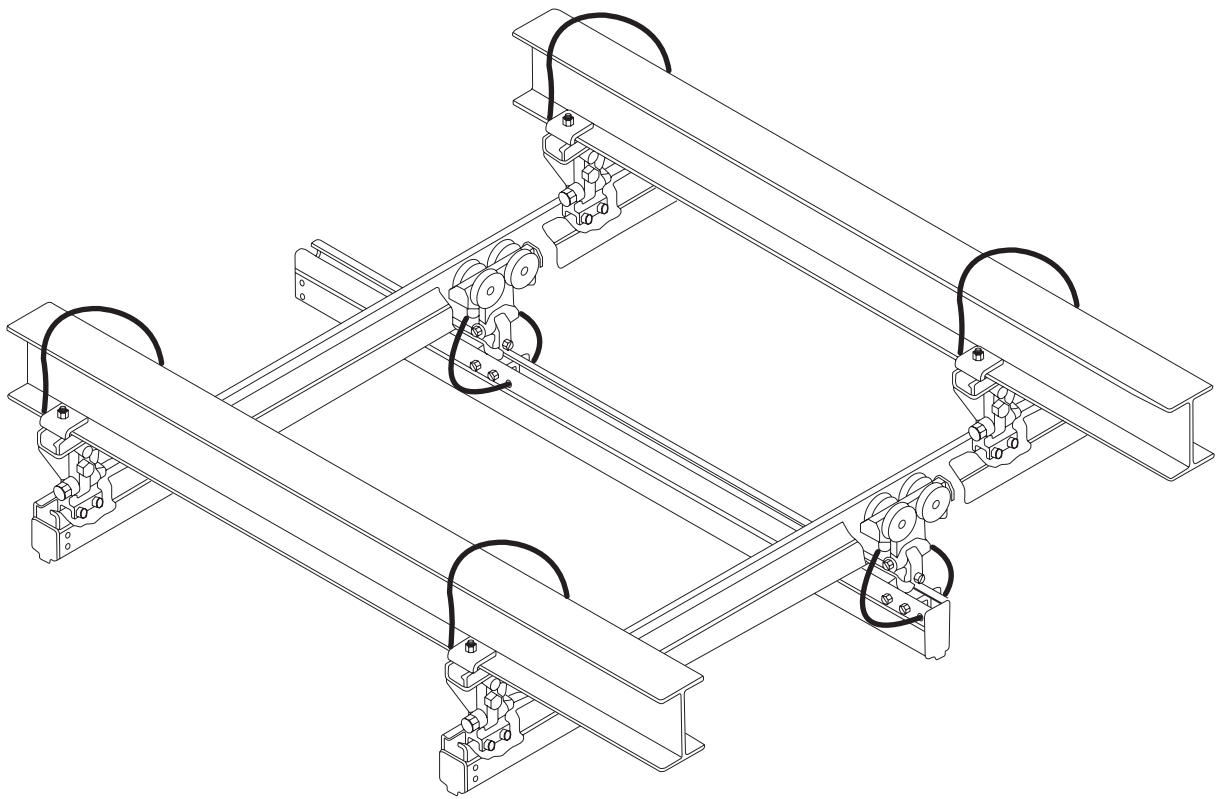
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/18 - 11	2
2	70964	5/16 - 18 x 3" HCS Grade 5	4
3	ZHS30997	Inspection Gate, ZRA1	1
4	75582	Lock Nut, 5/16 - 18 PT	4
5	30231	Splice Bolt Kit	2
6	ZHS72652	5/8 - 11 x 3.75" HCS Grade	2
7	30996	Inspection Gate Hinge Bracket	4



# Rail Systems

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## ZRA2 Aluminum Rail & Components



## Engineering Data for ZRA2 Aluminum Rail

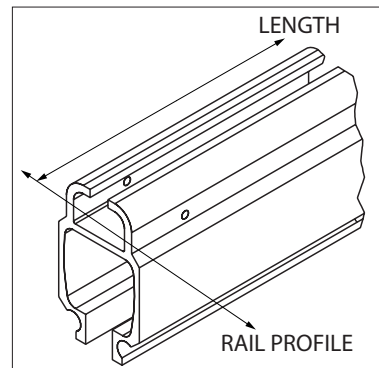
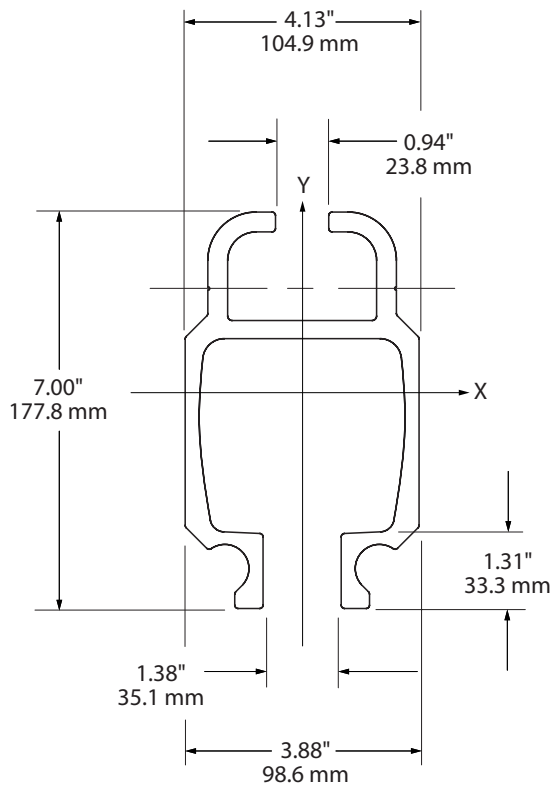
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1. All rail and hangers must be installed in accordance with **Ingersoll Rand** instructions.
2. Rail provided is ZRA2 aluminum alloy.
3. The rail or bridge beam provided is modular design, weld free application, and self aligning with complete bolt-together capability at all splice joints and hangers.
4. All rail sections provided are saw cut square to required length by **Ingersoll Rand**. All rail joints should be flush when installation is completed.
5. The capacity of the rail, monorail or bridge crane will be determined so that deflection under rated load shall not exceed 1/450 of the span. Lateral deflection will not be accepted.
6. The allowable stresses applied must not exceed 20% of the **minimum yield strength** of the materials used.
7. The maximum capacity for all rail provided by the contractor including hoist, product, process equipment, and all attachments, etc, must not exceed the capacity specified below: ZRA2 Aluminum Rail-acceptable for maximum capacities up to and including 2000 lbs(907.18 kg).
8. For bridge crane or hoist application(s), the maximum overhang of the bridge girder to the centre of a runway rail, must not exceed 12.00"(304.8 mm). (For larger overhangs consult the factory).
9. All bridge cranes, runway and monorail, must be installed straight, parallel, level and at the same elevation. Installation tolerance cannot exceed the values specified below:
  - a. **Longitudinal leveling.** Multiple runways and single rail systems 0.25"(6.3 mm) in overall length, with a maximum rate of change of no more than 0.12"(3.0 mm) on twenty-foot centers.
  - b. **Elevation runway to runway.** 0.25"(6.3 mm) in span, maximum rate of change 0.12"(3.0 mm) on twenty-foot centers.
  - c. **Centering to runway to runway.** 0.25"(6.3 mm) in overall length, maximum rate of change 0.12"(3.0 mm) on twenty-foot centers.
  - d. **Centering for single rail.** to a parallel conveyor of workstation will be  $\pm 0.50$ "(12.7 mm) in overall length of the system, maximum rate of change 0.12"(3.0 mm) on twenty-foot centers.
10. Sway bracing should be used when the hanger meets or exceeds 24.00"(609.6 mm) in length. (See system installation manual.)
11. One month after system buy off, the enclosed rail system should be inspected and re-leveled by the installation contractor. All bolts at the splice joints, hangers and support structure should be re-checked for proper torque. Abnormalities noted by the inspector must be reported to **Ingersoll Rand** immediately.
12. All splice connections shall not exceed 12.00"(304.8 mm) from the hanger points.
13. All trolley running surfaces must be aligned flush in accordance with his specification and present no shock loading at splice connections. Transverse tilt will not be accepted
14. Tension tubes at all splice connections will be aligned and welded by **Ingersoll Rand**.
15. Joint modification or holes required in track section(s) will be by drilling or saw cutting only. Flame cutting of holes or splice joints is not permitted.
16. Where hanger rods are used, the allowable stress will be 20% of the minimum yield strength of the material provided.
17. All hangers must be installed true and vertical. All suspension fitting should bear the load equally.
18. All bolts, nuts, fasteners, attachments etc, required for enclosed rail systems will be provided by **Ingersoll Rand**.
19. All double girder bridge cranes provided will incorporate diagonal bracing for parallel stabilization.

### Trolleys

1. All trolleys are manufactured by **Ingersoll Rand**.
2. All aluminum trolleys consist of high tensile aluminum-magnesium alloy body.
3. All steel trolleys consist of a welded, stamped steel body.
4. All trolley wheels provided for hoists, bridge cranes, and related equipment must conform to **Ingersoll Rand** standards.
5. Trolley wheels are delrin, machined symmetrically true with axis. All trolley wheels are retainer type, designed for a single row of high quality, precision-ground ball bearings. All trolley wheels have a stud that is press-fitted into trolley body.
6. Trolley side guide rollers are delrin machined symmetrically true with the axis.
7. All trolleys are equipped with safety lugs so in the event of a wheel failure the trolley cannot come out of the rail.
8. All bearings are protected by grease and dust seals.

# How to Order • ZRA2 Aluminum Runway or Monorail

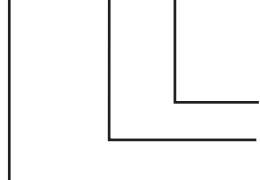


MOMENT OF INERTIA:  $I_{yy} = 14.05 \text{ IN}^4 [5.84\text{E}6 \text{ mm}^4]$

$I_{xx} = 28.06 \text{ IN}^4 [11.6\text{E}6 \text{ mm}^4]$

**PART NUMBER:**

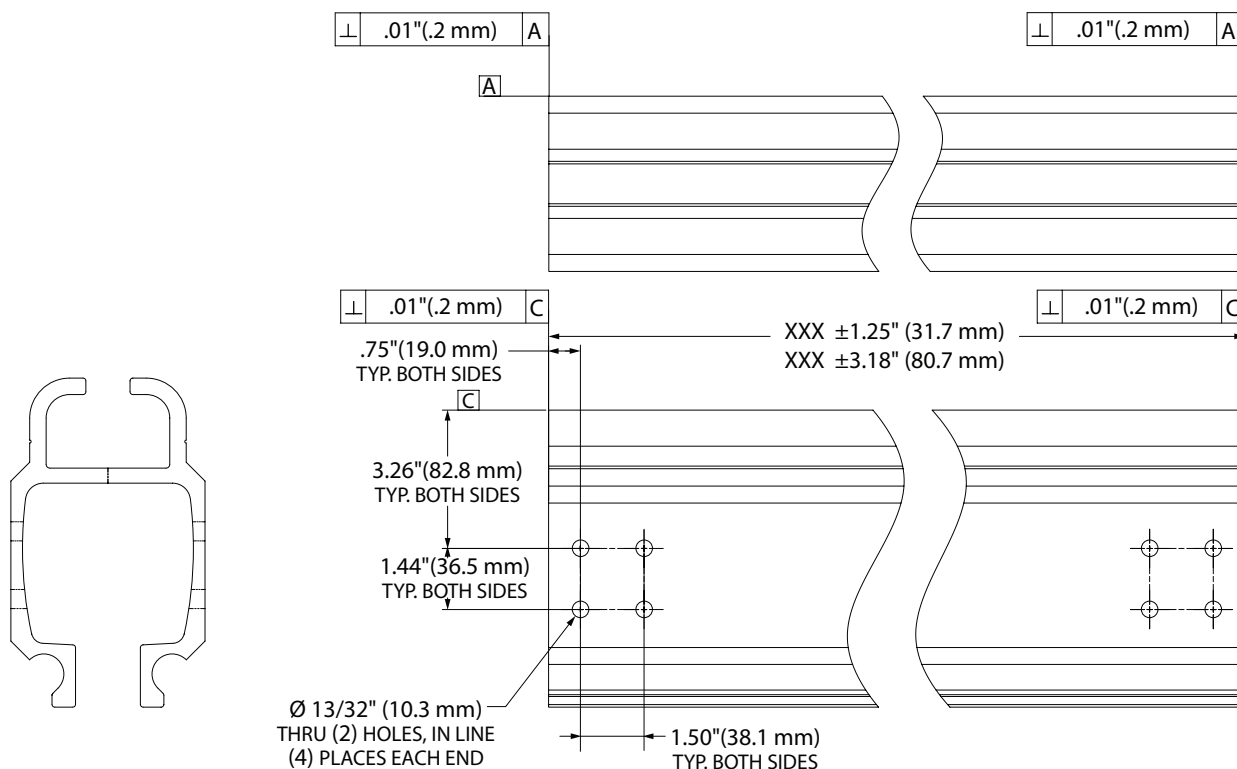
**30000** - **210** - **2**



- INDICATES SPLICE LUGS WELDED ON**
- INDICATES LENGTH OF RAIL IN FEET (210=21 FEET)**
- INDICATES RAIL PROFILE**

**NOTE:** ALL RUNWAY RAIL WILL BE DRILLED FOR BOTH END STOPS AND WILL HAVE SPLICE LUGS WELDED ON.

# Standard Lengths • ZRA2/Part No. 30000 - XXX



STANDARD		METRIC	
PART NO.	XXX - LENGTH	PART NO.	XXX - LENGTH
30000 - 050	5 FT	30000 - 1000	1000 mm
30000 - 060	6 FT	30000 - 1500	1500 mm
30000 - 070	7 FT	30000 - 2000	2000 mm
30000 - 080	8 FT	30000 - 2500	2500 mm
30000 - 090	9 FT	30000 - 3000	3000 mm
30000 - 100	10 FT	30000 - 3500	3500 mm
30000 - 110	11 FT	30000 - 4000	4000 mm
30000 - 120	12 FT	30000 - 4500	4500 mm
30000 - 130	13 FT	30000 - 5000	5000 mm
30000 - 140	14 FT	30000 - 5500	5500 mm
30000 - 150	15 FT	30000 - 6000	6000 mm
30000 - 160	16 FT	30000 - 6500	6500 mm
30000 - 170	17 FT	30000 - 7000	7000 mm
30000 - 180	18 FT	30000 - 7500	7500 mm
30000 - 190	19 FT	30000 - 8000	8000 mm
30000 - 200	20 FT	30000 - 8500	8500 mm
30000 - 210	21 FT	30000 - 9000	9000 mm
30000 - 220	22 FT		
30000 - 230	23 FT		
30000 - 240	24 FT		
30000 - 250	25 FT		
30000 - 260	26 FT		
30000 - 270	27 FT		
30000 - 280	28 FT		
30000 - 290	29 FT		
30000 - 300	30 FT		

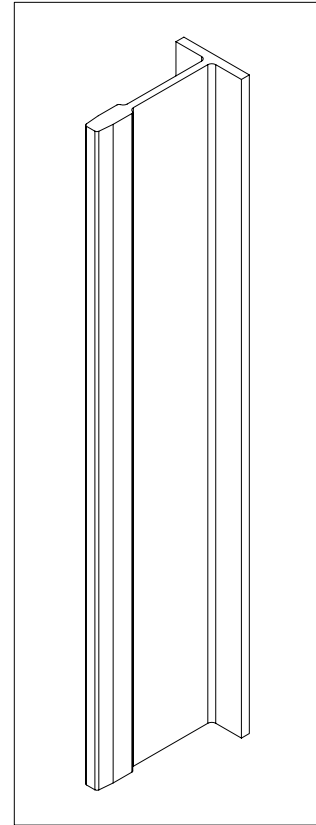
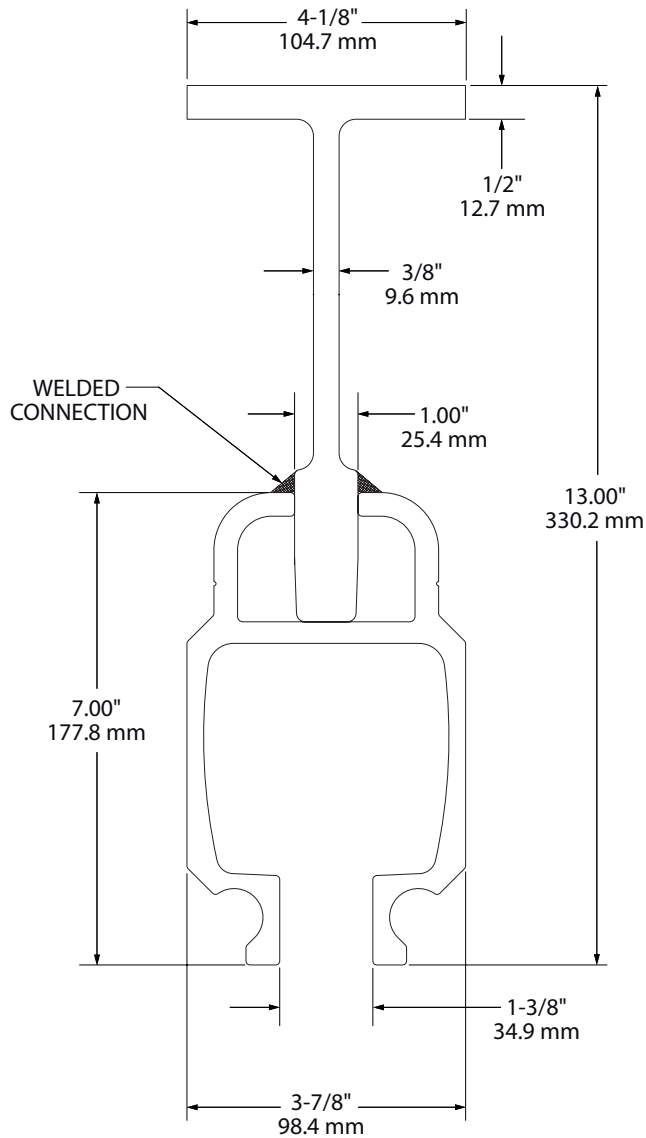
MAXIMUM LENGTH: 30 FT.[9144 mm]

WEIGHT: 7.50 LB./FT.[11.16 kg/m]

# Live Load Deflections • ZRA2/Part No. 30000

Rail / Bridge Span				Deflection Limits						Point Load					
ft.	in.	m	mm	L/450 in.	L/450 mm	L/550 in.	L/550 mm.	L/600 in.	L/600 mm.	L/450 lbs.	L/450 kg.	L/550 lbs.	L/550 kg.	L/600 lbs.	L/600 kg.
4	48	1.22	1219.2	0.107	2.7	0.087	2.2	0.080	2.0	3000	1361	3000	1361	3000	1361
5	60	1.52	1524.0	0.133	3.4	0.109	2.8	0.100	2.5	3000	1361	3000	1361	3000	1361
6	72	1.83	1828.8	0.160	4.1	0.131	3.3	0.120	3.0	3000	1361	3000	1361	3000	1361
7	84	2.13	2133.6	0.187	4.7	0.153	3.9	0.140	3.6	3000	1361	3000	1361	3000	1361
8	96	2.44	2438.4	0.213	5.4	0.175	4.4	0.160	4.1	3000	1361	2718	1233	2492	1130
9	108	2.74	2743.2	0.240	6.1	0.196	5.0	0.180	4.6	2625	1191	2148	974	1969	893
10	120	3.05	3048.0	0.267	6.8	0.218	5.5	0.200	5.1	2126	965	1740	789	1595	723
11	132	3.35	3352.8	0.293	7.5	0.240	6.1	0.220	5.6	1757	797	1438	652	1318	598
12	144	3.66	3657.6	0.320	8.1	0.262	6.7	0.240	6.1	1477	670	1208	548	1108	502
13	156	3.96	3962.4	0.347	8.8	0.284	7.2	0.260	6.6	1258	571	1029	467	944	428
14	168	4.27	4267.2	0.373	9.5	0.305	7.8	0.280	7.1	1085	492	888	403	814	369
15	180	4.57	4572.0	0.400	10.2	0.327	8.3	0.300	7.6	945	429	773	351	709	322
16	192	4.88	4876.8	0.427	10.8	0.349	8.9	0.320	8.1	831	377	680	308	623	283
17	204	5.18	5181.6	0.453	11.5	0.371	9.4	0.340	8.6	736	334	602	273	552	250
18	216	5.49	5486.4	0.480	12.2	0.393	10.0	0.360	9.1	656	298	537	244	492	223
19	228	5.79	5791.2	0.507	12.9	0.415	10.5	0.380	9.7	589	267	482	219	442	200
20	240	6.10	6096.0	0.533	13.5	0.436	11.1	0.400	10.2	532	241	435	197	399	181
21	252	6.40	6400.8	0.560	14.2	0.458	11.6	0.420	10.7	482	219	395	179	362	164
22	264	6.71	6705.6	0.587	14.9	0.480	12.2	0.440	11.2	439	199	359	163	330	149
23	276	7.01	7010.4	0.613	15.6	0.502	12.7	0.460	11.7	402	182	329	149	301	137
24	288	7.32	7315.2	0.640	16.3	0.524	13.3	0.480	12.2	369	167	302	137	277	126
25	300	7.62	7620.0	0.667	16.9	0.545	13.9	0.500	12.7	340	154	278	126	255	116
26	312	7.92	7924.8	0.693	17.6	0.567	14.4	0.520	13.2	315	143	257	117	236	107
27	324	8.23	8229.6	0.720	18.3	0.589	15.0	0.540	13.7	292	132	239	108	219	99
28	336	8.53	8534.4	0.747	19.0	0.611	15.5	0.560	14.2	271	123	222	101	203	92

# Cross Section • ZRA2 Strong Back Rail/Part No. 3000T

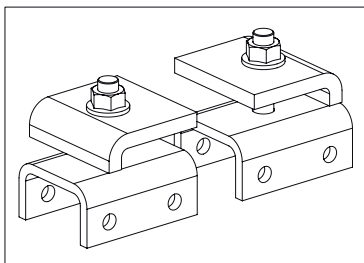
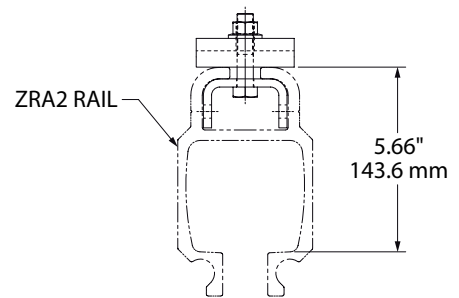
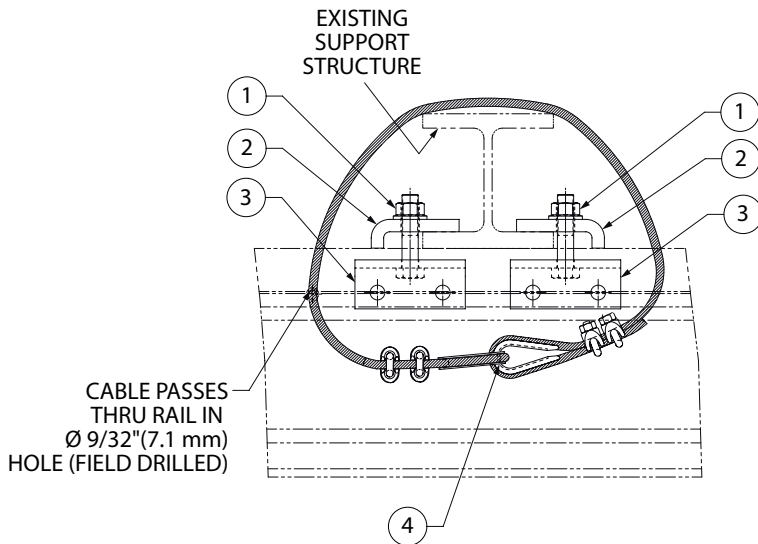


**CONSULT FACTORY FOR APPLICATIONS**

MAXIMUM LENGTH: 30 FT.[6400.8 mm]

WEIGHT: 14.96 LB./FT.[11.90 kg/m]

# Rigid Mount Hanger Kit • ZRA2/Part No. 30052



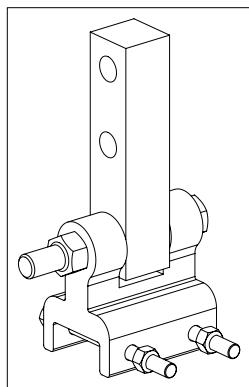
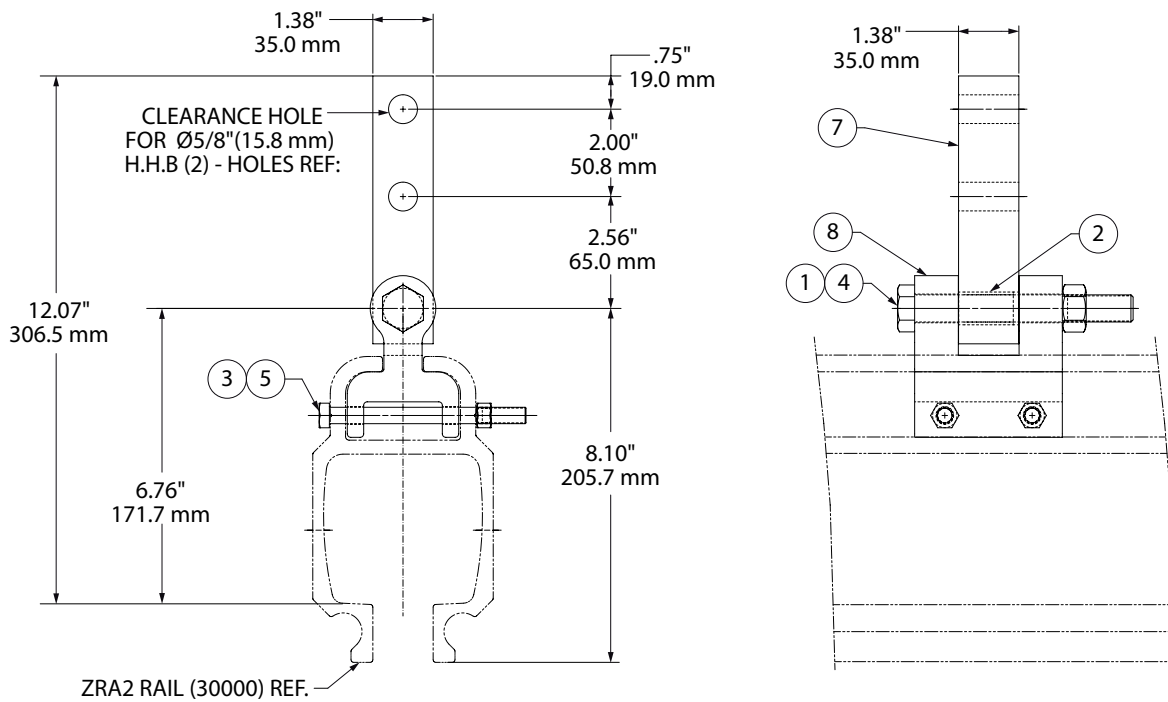
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)  
 YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)  
 CAPACITY..... 2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... 4 LBS.(1.81 KG)

(Dwg. 54092515)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	1/2 - 13 Flanged PT Lock Nut	2
2	30160	Toe Clamp, Top Plate	2
3	ZHS30109	ZRA2 Rigid Mount Suspension Bracket	2
4	30907-06	Safety Cable Assembly, Close Kit	1

# Block Hanger Kit • ZRA2/Perpendicular/Part No. 30193



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

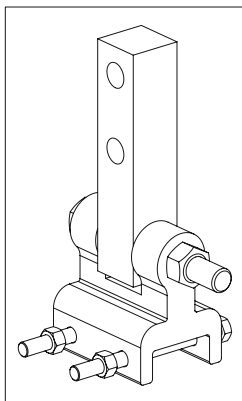
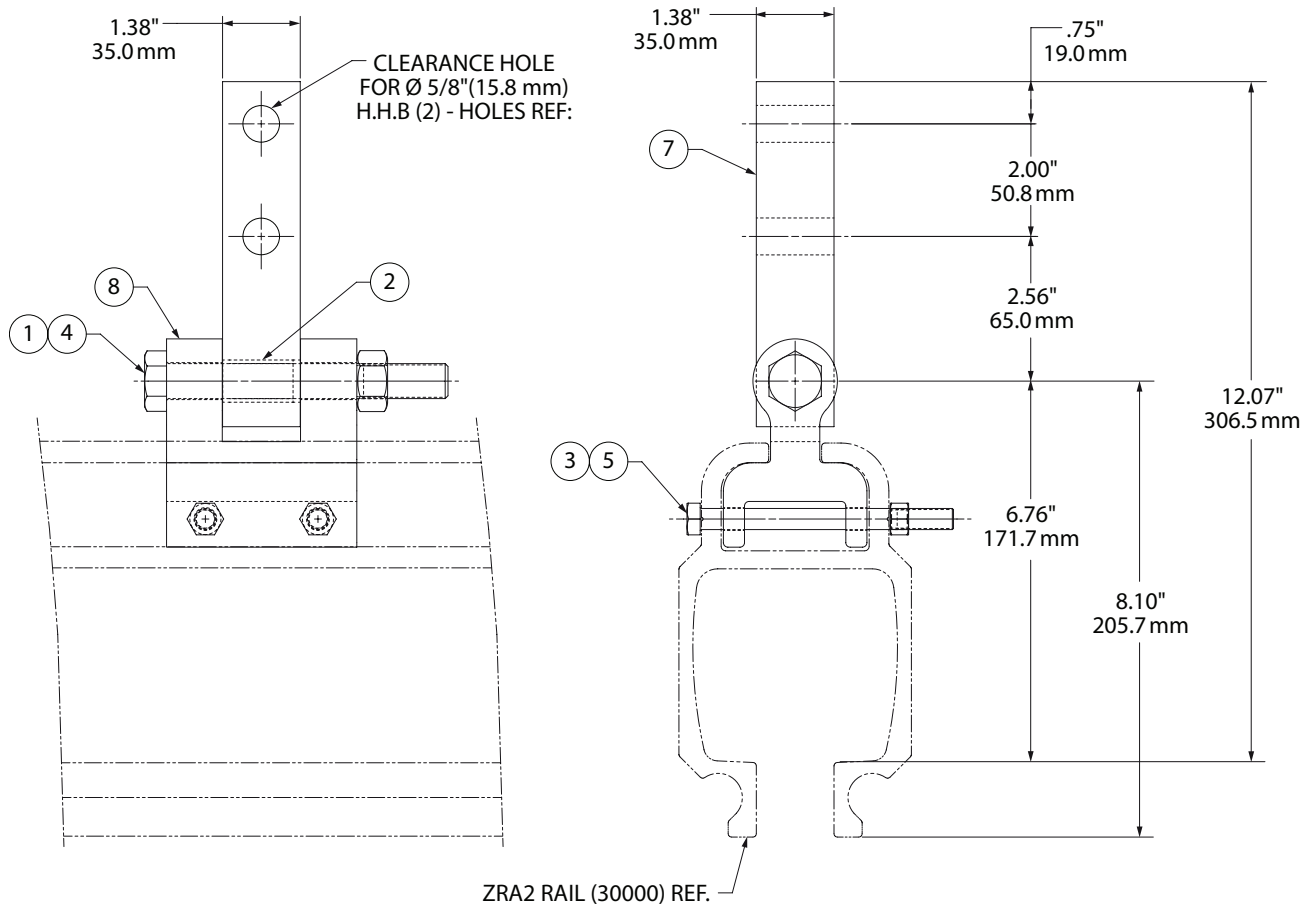
ULTIMATE STRENGTH ..... 24,200 LBS.(10976.94 KG)  
 YIELD STRENGTH ..... 15,000 LBS.(6803.88 KG)  
 CAPACITY ..... 3,000 LBS.(1360.77 KG)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

(Dwg. 54093216)

Bill of Materials			
Item No.	Part no.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75583	3/8 - 16 PT Lock Nut	2
4	72623	Hexagonal Bolt 5/8 - 11 x 5"	1
5	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
6	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
7	30162	Hanger Block	1
8	30165	Hanger Bracket	1



# Block Hanger Kit • ZRA2/Parallel/Part No. ZHS30198



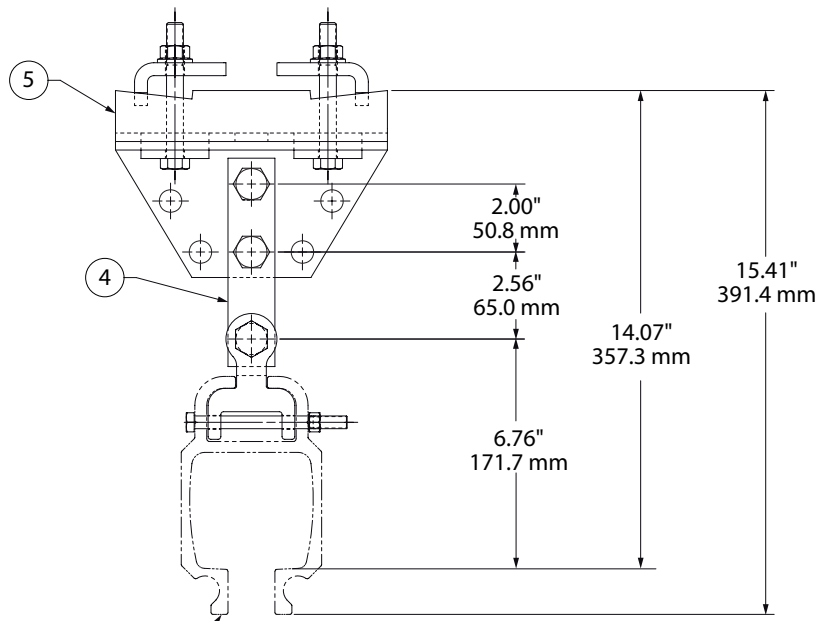
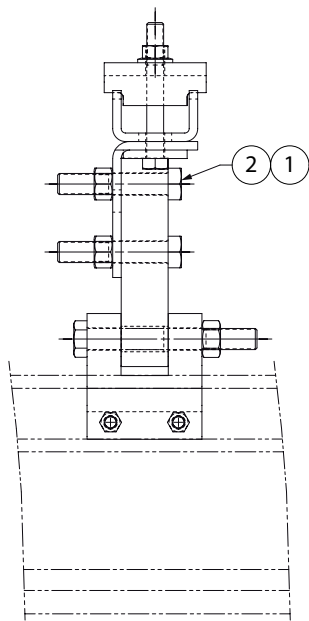
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 24,200 LBS.(10976.94 KG)  
 YIELD STRENGTH ..... 15,000 LBS.(6803.88 KG)  
 CAPACITY..... 3,000 LBS.(1360.77 KG)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

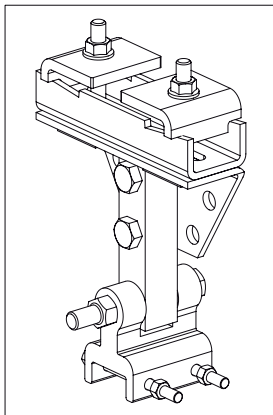
(Dwg. 54093380)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
6	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
7	ZHS30197	Hanger Block	1
8	30165	Hanger Bracket	1

# Beam Hanger Kit • ZRA2/Parallel/Standard Flange/Part No. ZHS30199



ZRA2 RAIL (30000) REF.



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KITS WILL ACCOMMODATE FROM 2.5\"(63.5 mm) TO 5\"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH.....24,200 LBS.(10976.94 KG)

YIELD STRENGTH.....15,000 LBS.(6803.88 KG)

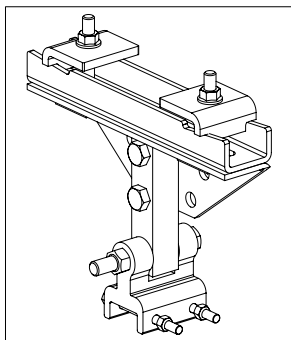
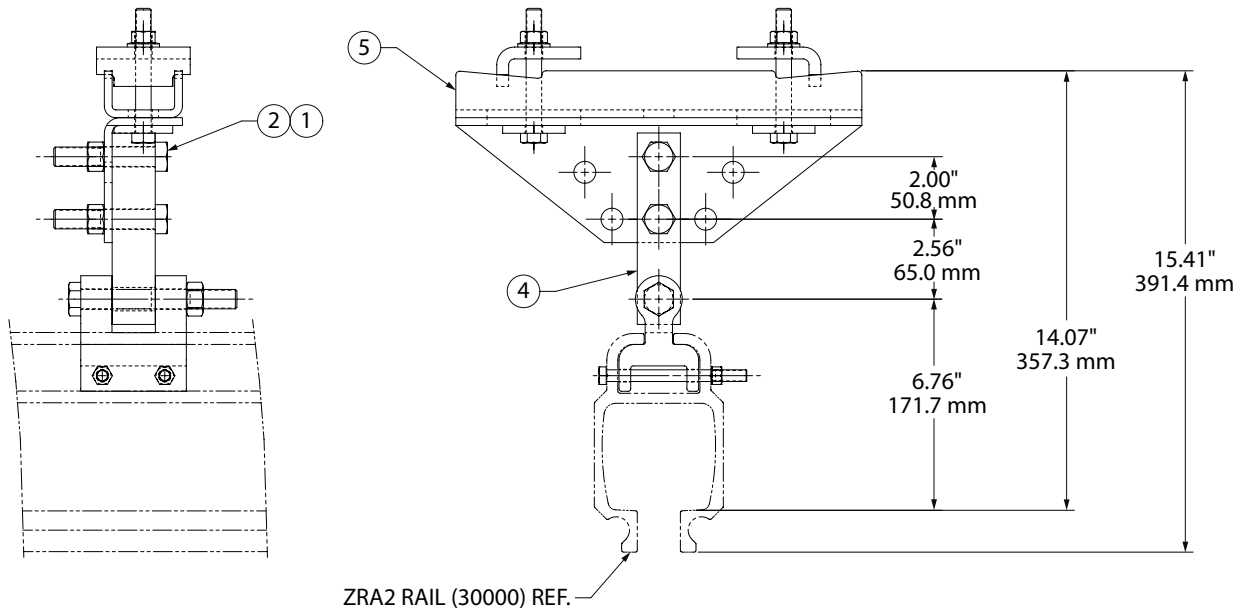
CAPACITY .....3,000 LBS.(1360.77 KG)

WEIGHT OF ASSEMBLY .....15 LBS.(6.80 KG)

(Dwg. 54093398)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25\" HHB Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30193	Hanger Kit, ZRA2 Block, Perpendicular	1
5	30186	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRA2/Parallel/Wide Flange/Part No. 30900



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 24,200 LBS.(10976.94 KG)

YIELD STRENGTH..... 15,000 LBS.(6803.88 KG)

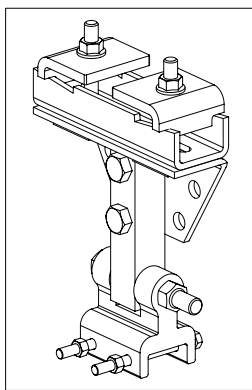
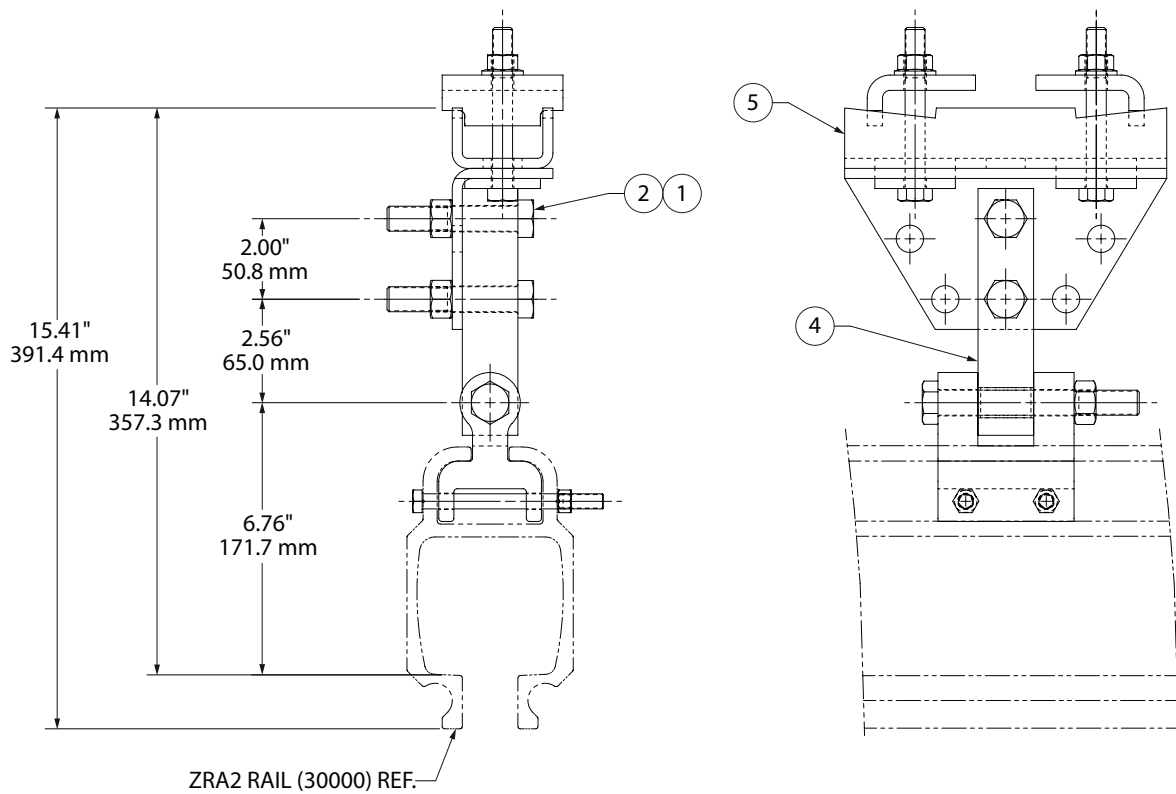
CAPACITY ..... 3,000 LBS.(1360.77 KG)

WEIGHT OF ASSEMBLY ..... 16 LBS.(7.25 KG)

(Dwg. 54096649)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
4	30193	Block Hanger Kit Perpendicular	1
5	30187	Hanger Kit, Wide Flange Beam	1

# Beam Hanger Kit • ZRA2/Perpendicular/Standard Flange/Part No. 30901



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KITS WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH.....24,200 LBS.(10976.94 KG)

YIELD STRENGTH.....15,000 LBS.(6803.88 KG)

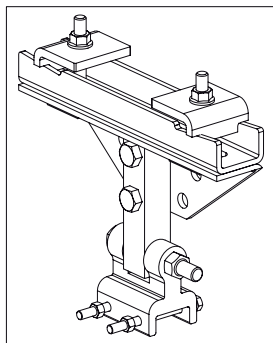
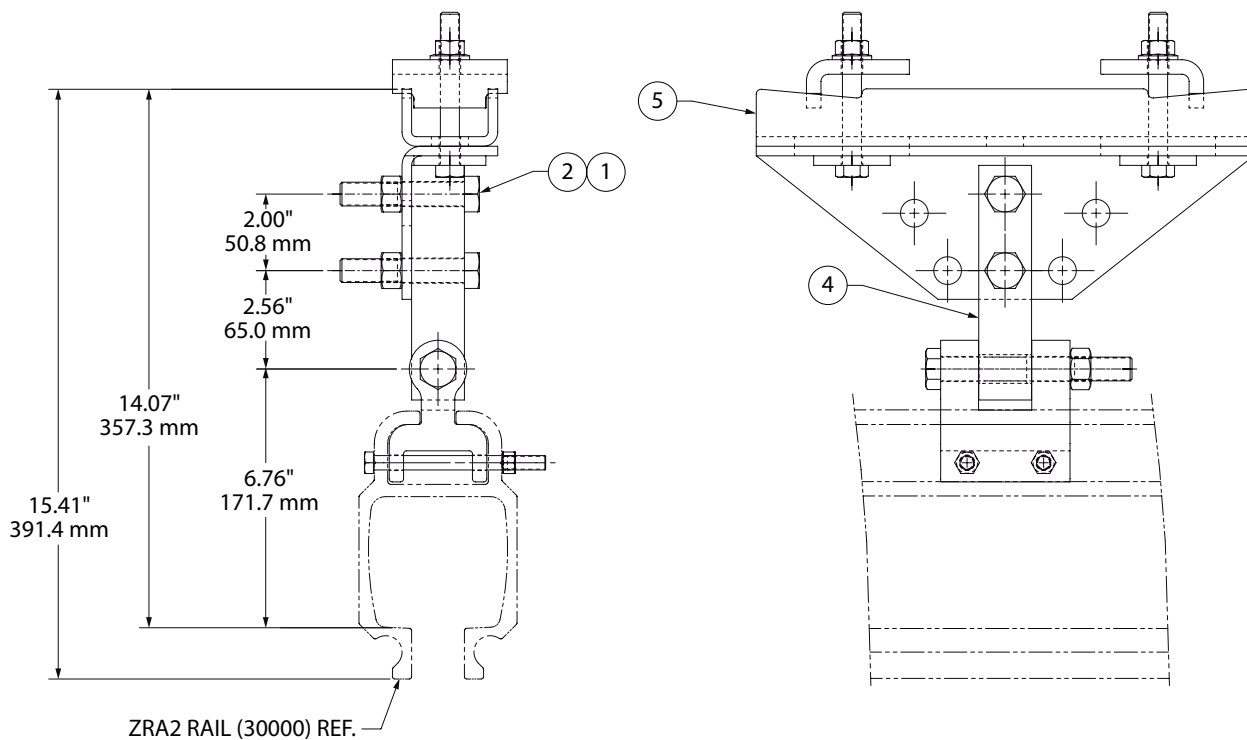
CAPACITY .....3,000 LBS.(1360.77 KG)

WEIGHT OF ASSEMBLY .....15 LBS.(6.80 KG)

(Dwg. 54096656)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
4	ZHS30198	Block Hanger Kit - Parallel - ZRA2	1
5	30186	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRA2/Perpendicular/Wide Flange/Part No. 30902



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

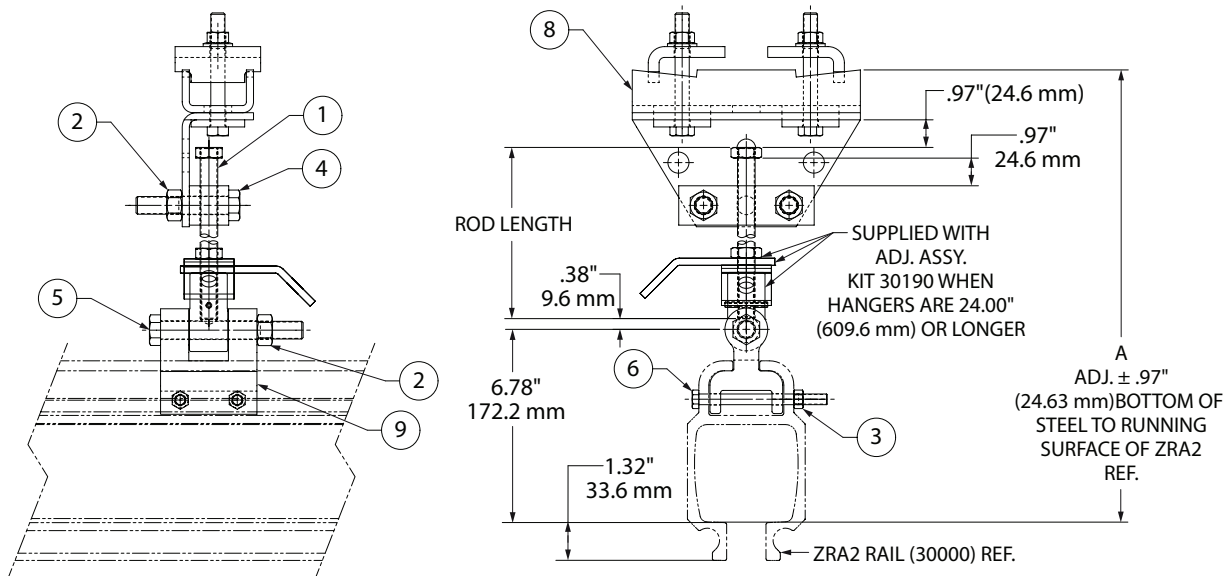
WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 24,200 LBS.(10976.94 KG)  
 YIELD STRENGTH..... 15,000 LBS.(6803.88 KG)  
 CAPACITY ..... 3,000 LBS.(1360.77 KG)  
 WEIGHT OF ASSEMBLY ..... 16 LBS.(7.25 KG)

(Dwg. 54096664)

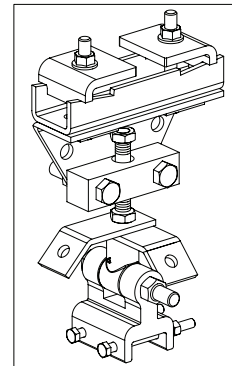
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
4	ZHS30198	Hanger Kit, ZRA2, Block, Parallel	1
5	30187	Hanger Kit, Wide Flange Beam	1

# Adjustable Hanger Kit • ZRA2/Standard Flange/Part No. 30195 - XXX



ZRA2 HANGERS : A DIMENSION = ROD LENGTH + 9.87				
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30195 - 006	15.87	6.00	30190 - 006	30907 - 06
30195 - 012	21.87	12.00	30190 - 012	30907 - 08
30195 - 018	27.87	18.00	30190 - 018	30907 - 10
30195 - 024	33.87	24.00	30190 - 024	30907 - 10
30195 - 036	45.87	36.00	30190 - 036	30907 - 12
30195 - 048	57.87	48.00	30190 - 048	30907 - 14
30195 - 060	69.87	60.00	30190 - 060	30907 - 16
30195 - 072	81.87	72.00	30190 - 072	30907 - 18
30195 - 084	93.87	84.00	30190 - 084	30907 - 20
30195 - 096	105.87	96.00	30190 - 096	30907 - 22
30195 - 108	117.87	108.00	30190 - 108	30907 - 24
30195 - 120	129.87	120.00	30190 - 120	30907 - 26

WIRE ROPE LENGTH IN FEET



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)

YIELD STRENGTH..... 15,600 LBS.(7076.04 KG)

WEIGHT OF ASSEMBLY ..... 14 LBS.(6.35 KG)

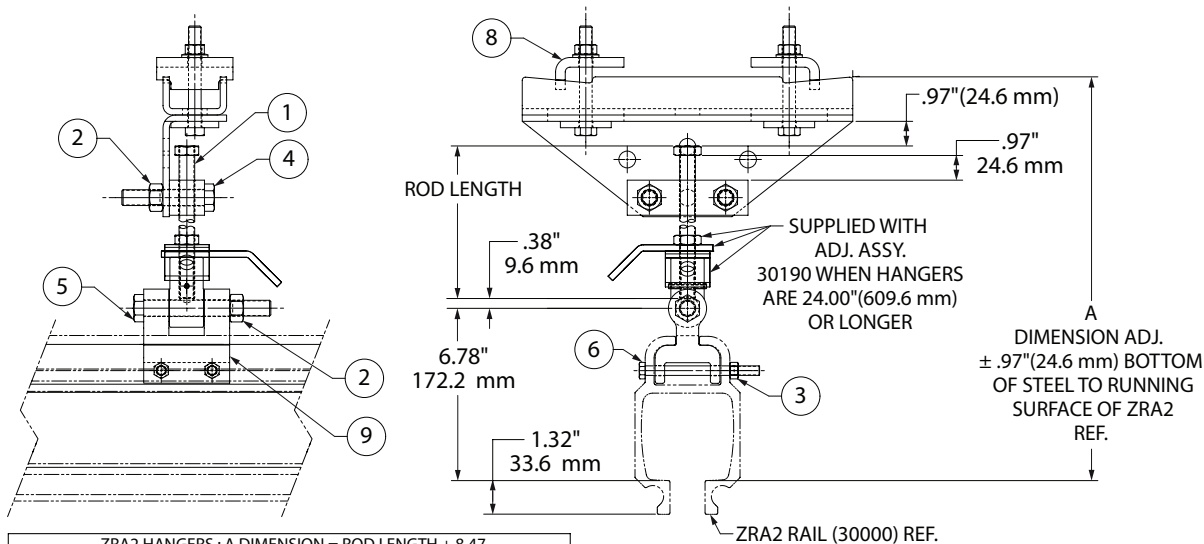
CAPACITY ..... 3,000 LBS.(1360.77 KG)

\*ROD LENGTHS 24.00" (609.6 mm) AND LONGER REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585911)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30190-XXX	Hanger Adjustment Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75583	Lock Nut, 3/8 - 16	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
7	30907-XX	Safety Cable Assembly, Close Kit (not shown)	1
8	30186	Hanger Kit, Standard, Flange Beam	1
9	30165	Hanger Bracket	1

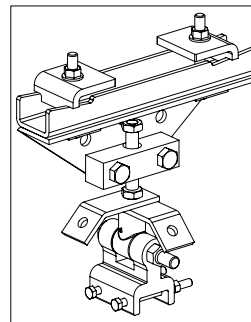
# Adjustable Hanger Kit • ZRA2/Wide Flange/Part No. 30196 - XXX



ZRA2 HANGERS : A DIMENSION = ROD LENGTH + 8.47

ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30196 - 006	15.87	6.00	30190 - 006	30907 - 06
30196 - 012	21.87	12.00	30190 - 012	30907 - 08
30196 - 018	27.87	18.00	30190 - 018	30907 - 10
30196 - 024	33.87	24.00	30190 - 024	30907 - 10
30196 - 036	45.87	36.00	30190 - 036	30907 - 12
30196 - 048	57.87	48.00	30190 - 048	30907 - 14
30196 - 060	69.87	60.00	30190 - 060	30907 - 16
30196 - 072	81.87	72.00	30190 - 072	30907 - 18
30196 - 084	93.87	84.00	30190 - 084	30907 - 20
30196 - 096	105.87	96.00	30190 - 096	30907 - 22
30196 - 108	117.87	108.00	30190 - 108	30907 - 24
30196 - 120	129.87	120.00	30190 - 120	30907 - 26
30196 - 132	141.87	132.00	30190 - 132	30907 - 28
30196 - 144	153.87	144.00	30190 - 144	30907 - 30
30196 - 156	165.87	156.00	30190 - 156	30907 - 32
30196 - 168	177.87	168.00	30190 - 168	30907 - 34

WIRE ROPE LENGTH IN FEET



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)

YIELD STRENGTH..... 15,600 LBS.(7076.04 KG)

WEIGHT OF ASSEMBLY ..... 15 LBS.(6.80 KG)

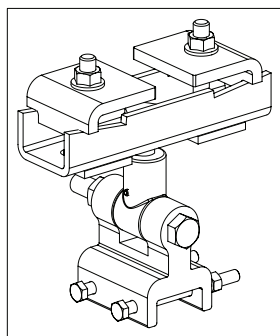
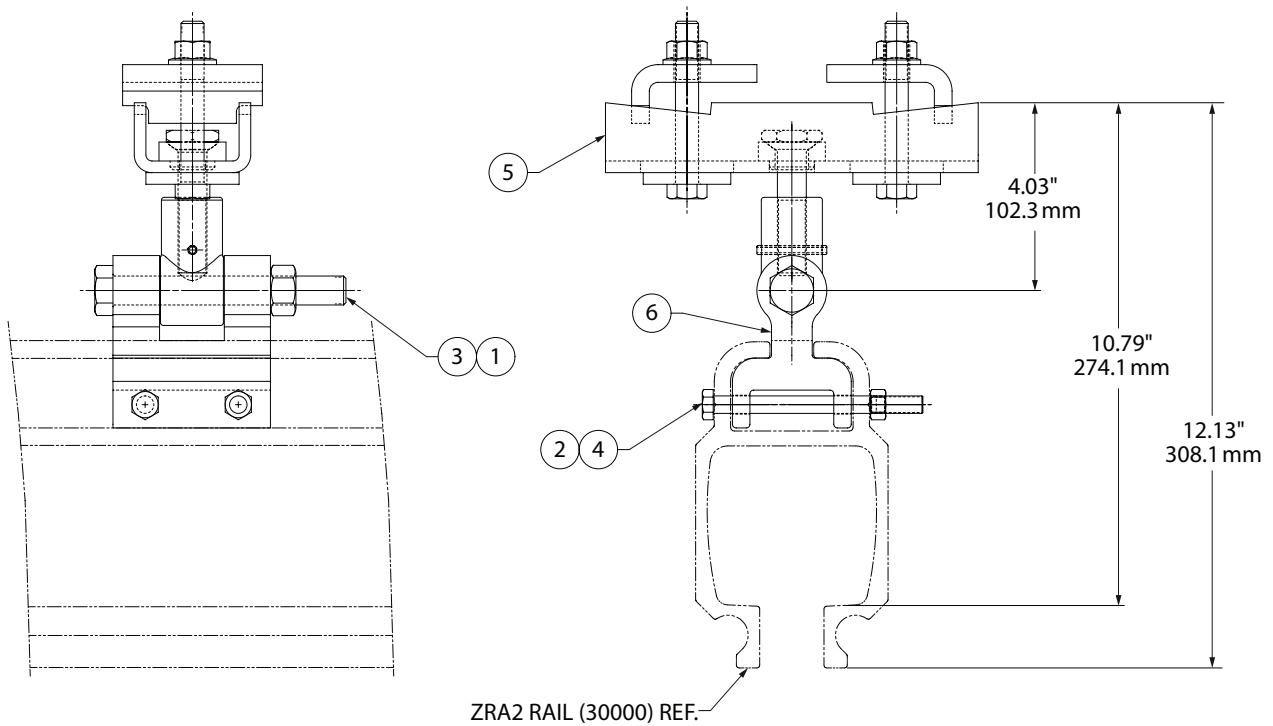
CAPACITY ..... 3,000 LBS.(1360.77 KG)

\*ROD LENGTHS 24.00" (609.6 mm) AND LONGER REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585937)

Bill of Materials			
Item no.	Part no.	Description	Amt.
1	30190-XXX	Hanger Adjustment Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75583	Lock Nut, 3/8 - 16 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS71481	3/16 - 11 x 4.5" HCS Grade 5	2
7	30907-XX	Safety Cable Assembly, Close Kit (not shown)	1
8	30187	Hanger Kit, Wide Flange Beam	1
9	30165	Hanger Bracket	1

# Close Hanger Kit • ZRA2/Standard Flange/Part No. 30921



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KITS WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)

YIELD STRENGTH..... 15,600 LBS.(7076.04 KG)

CAPACITY ..... 3,000 LBS.(1360.77 KG)

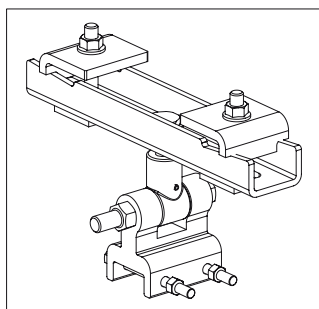
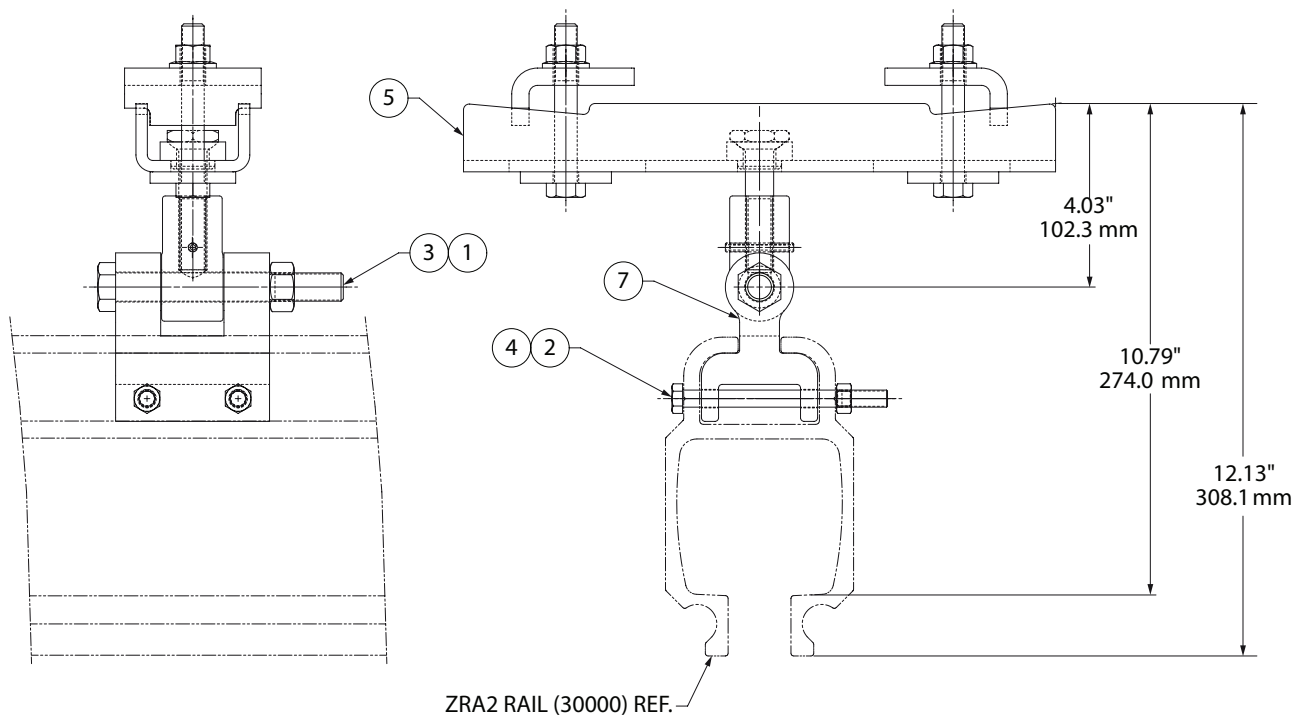
WEIGHT OF ASSEMBLY ..... 10 LBS.(4.53 KG)

(Dwg. 54096912)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75583	Lock Nut, 3/8 - 16	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
5	30919	Close Hanger Kit Sub-assembly	1
6	30165	Hanger Bracket	1
7	30907-06	Safety Cable Assembly, Close Kit (not shown)	1



# Close Hanger Kit • ZRA2/Wide Flange/Part No. 30922



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

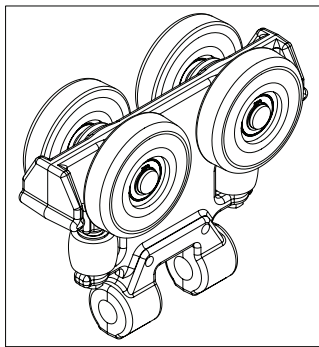
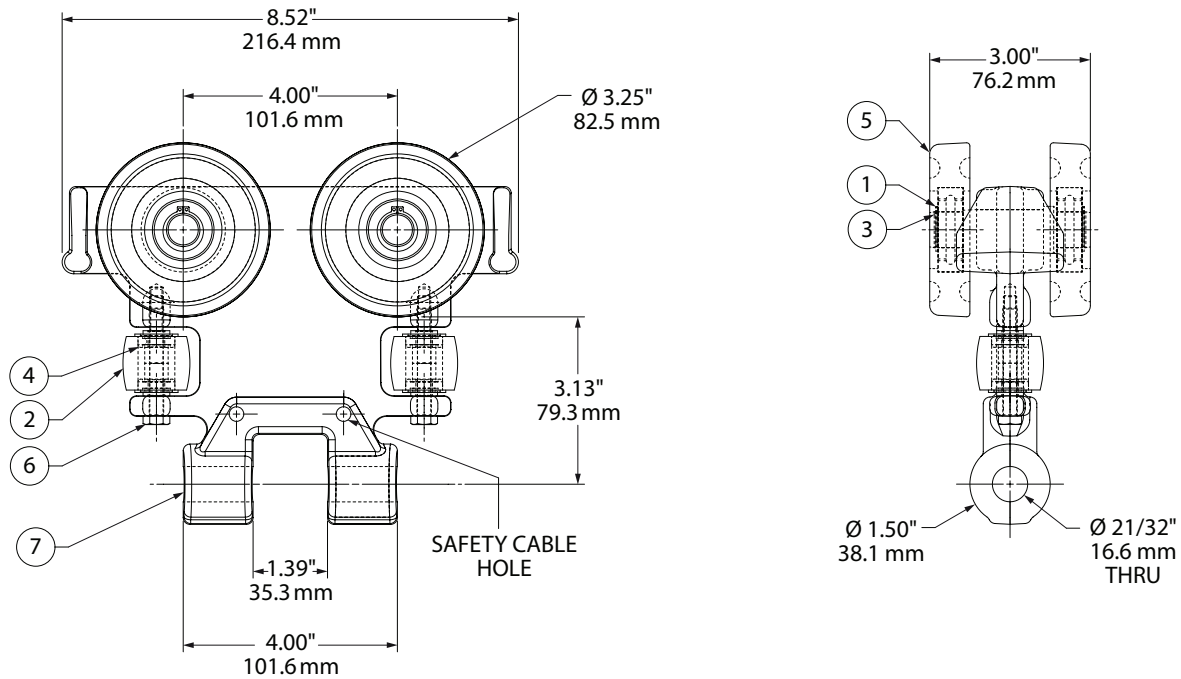
WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 19,500 LBS.(8845.05 KG)  
 YIELD STRENGTH..... 15,600 LBS.(7076.04 KG)  
 CAPACITY .....3,000 LBS.(1360.77 KG)  
 WEIGHT OF ASSEMBLY ..... 11 LBS.(4.98 KG)

(Dwg. 54096920)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75583	Lock Nut, 3/8 - 16	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
5	30920	Close Hanger Kit Sub-assembly, Wide Beam	1
6	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
7	30165	Hanger Bracket.	1

# ZRA2 Aluminum Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. ZHS30172



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

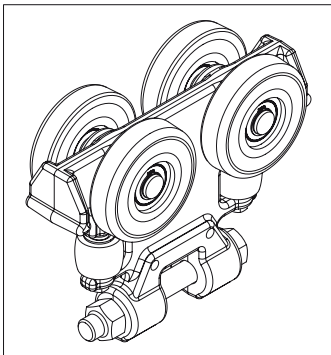
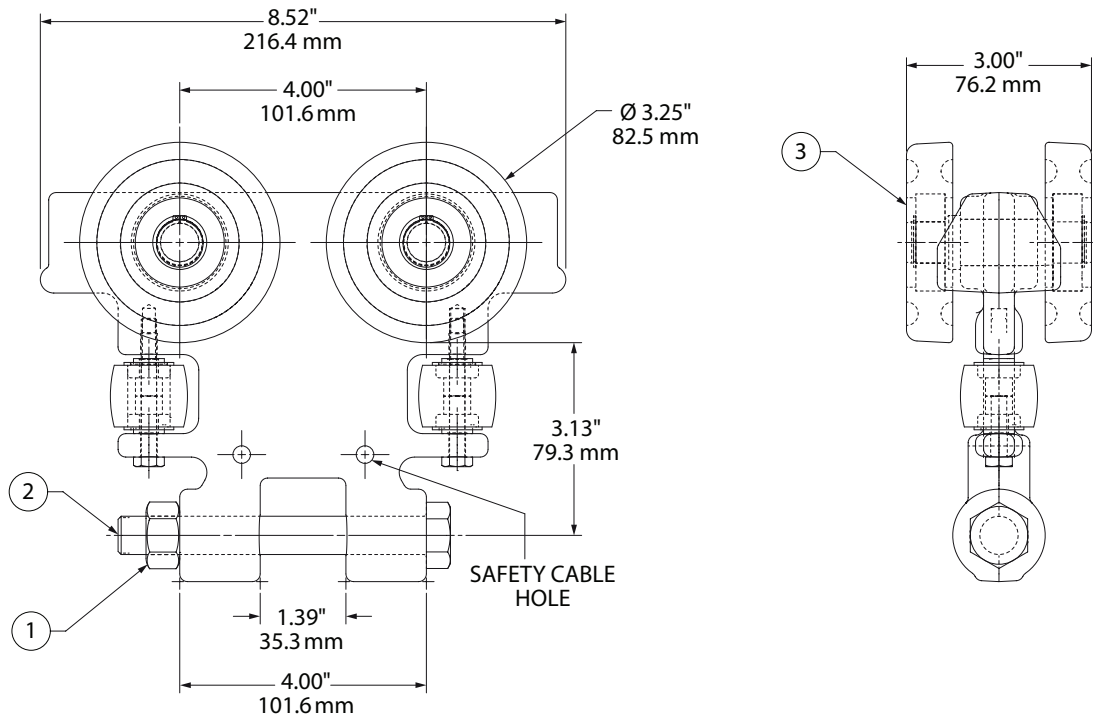
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,500 LBS.(7030.68 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	5 LBS.(2.26 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093034)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93935	Trolley Guide Roller	2
3	93934	Axle	2
4	65038	Radial Ball Bearing	4
5	30056	Trolley Wheel Assembly	4
6	ZHS70416	1/4 - 20 x 2.25" HCS Grade	2
7	ZHS30171	Trolley Body Machining	1

# ZRA2 Aluminum Load Trolley • 1000 lbs.(453.6 kg) Capacity/Part No.30923



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

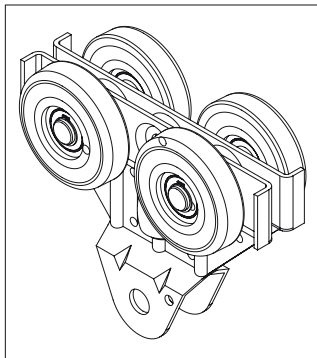
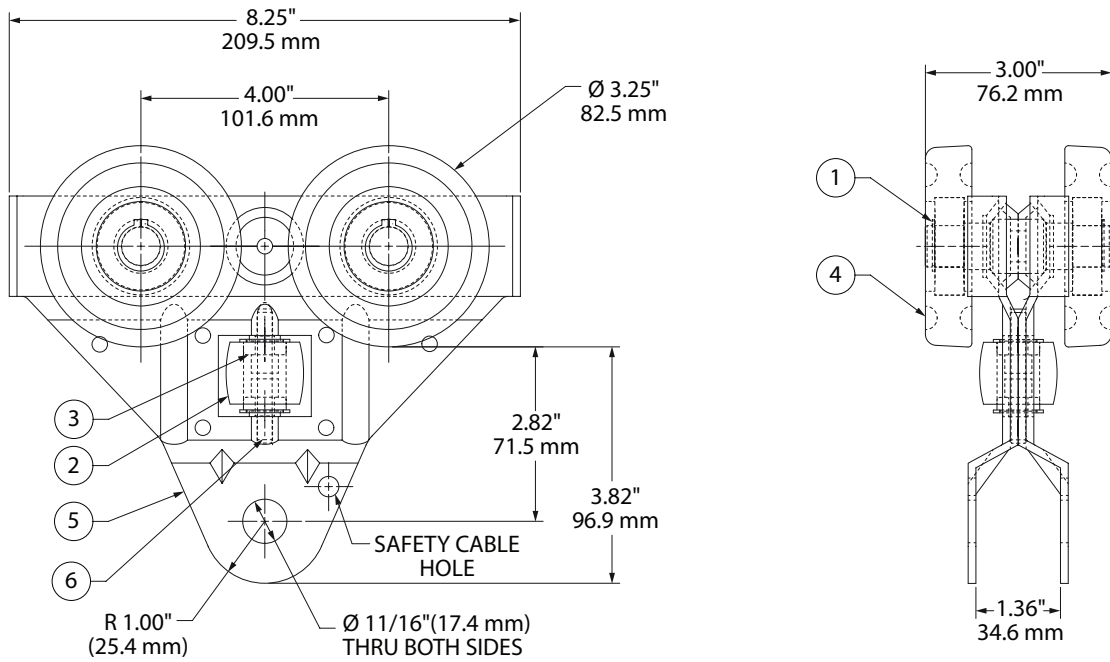
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,000 LBS.(6803.88 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	5.5 LBS.(2.5 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096938)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
3	ZHS30172	ZRA2 Aluminium Trolley	1

# ZRA2 Steel Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30126



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	8,925 LBS.(4048.31 KG)
YIELD STRENGTH .....	7,140 LBS.(3238.65 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	3.25"(82.55 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELIN
WEIGHT OF TROLLEY.....	4 LBS.(1.81 KG)

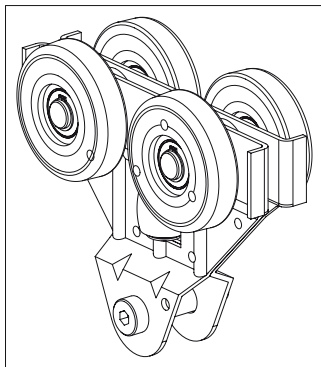
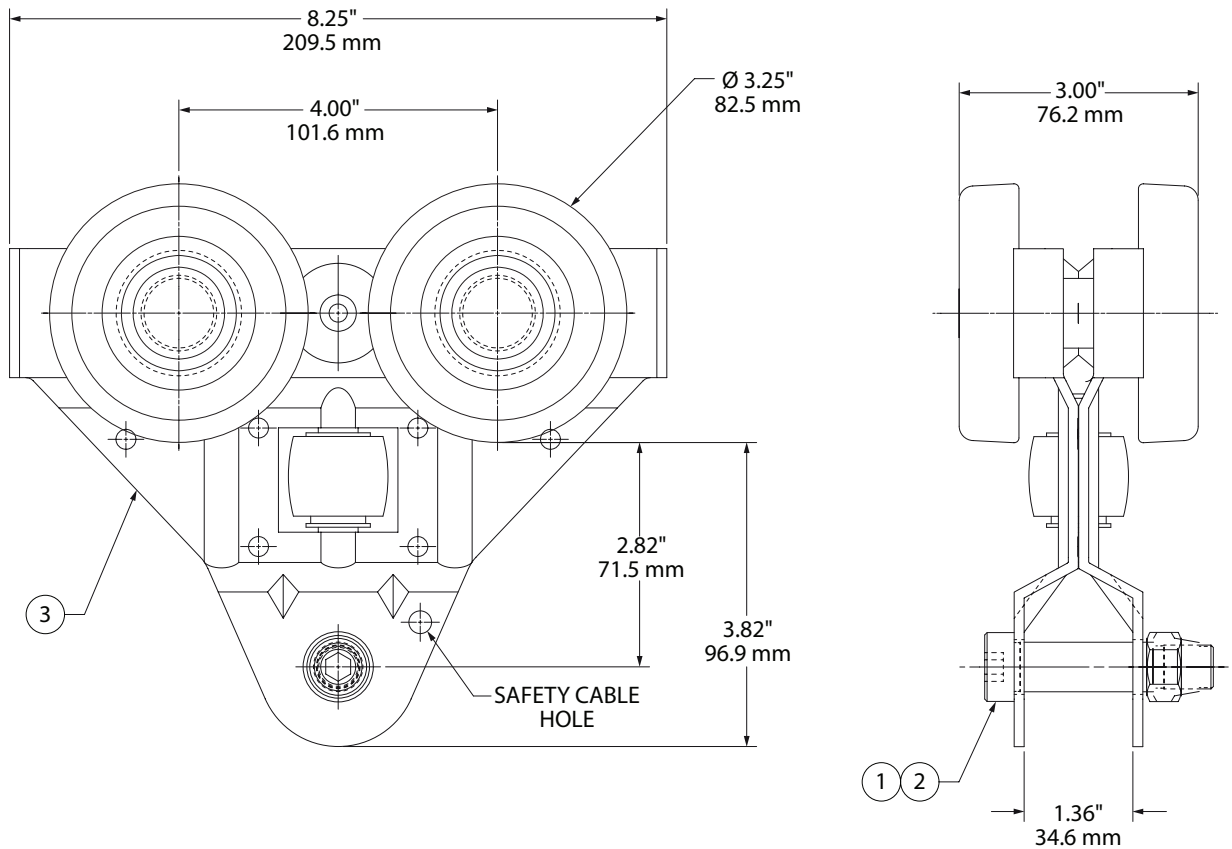
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54092903)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93935	Trolley Guide Roller	1
3	65038	Radial Ball Bearing	2
4	30056	Trolley Wheel Assembly	4
5	30125	Trolley Bracket, Weldment	1
6	77062	Spring Pin, 6 mm x 55 mm	1

# ZRA2 Steel Load Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. ZHS30131



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	8,925 LBS.(4048.31 KG)
YIELD STRENGTH .....	7,140 LBS.(3238.65 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.55 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELIN
WEIGHT OF TROLLEY .....	4.5 LBS.(2.04 KG)

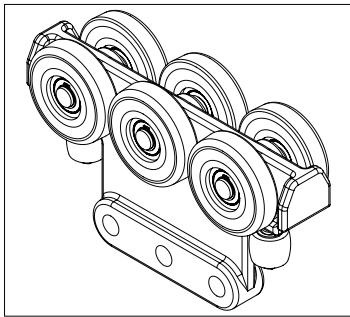
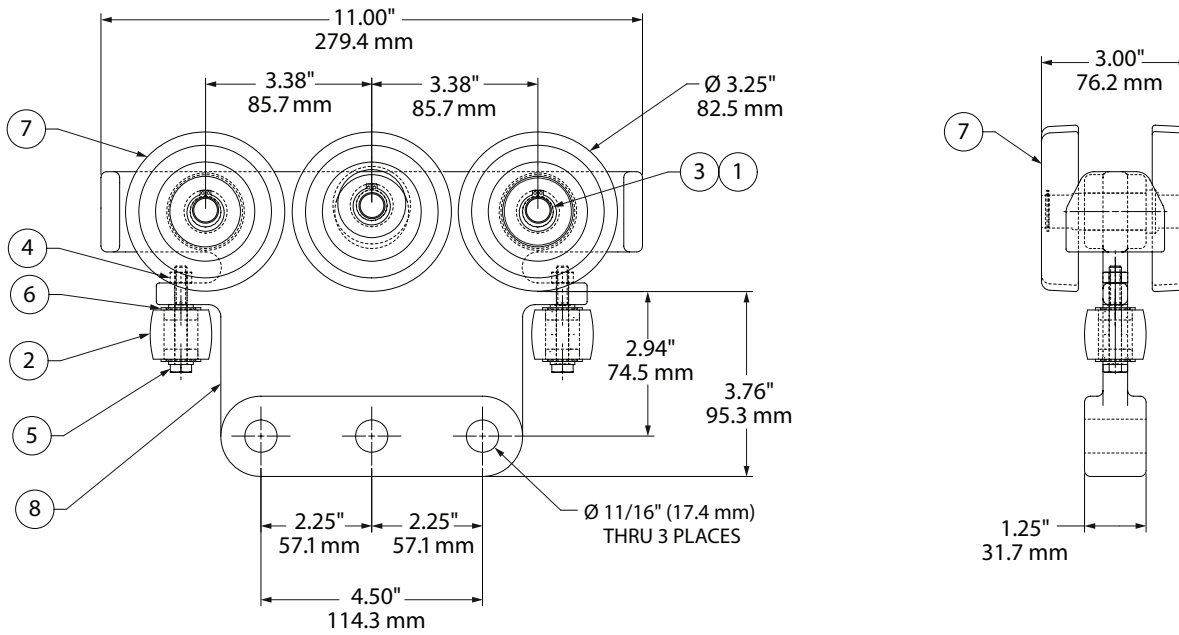
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54092929)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75585	Lock Nut, 1/2 - 13 PT	1
2	72608	Shoulder Bolt, 5/8 x 1.75"	1
3	30126	ZRA2 Steel Trolley	1

# ZRA2 Reaction Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. ZHS30016



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,250 LBS.(7824.46 KG)
YIELD STRENGTH .....	14,575 LBS.(6611.10 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.55 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY .....	6 LBS.(2.72 KG)

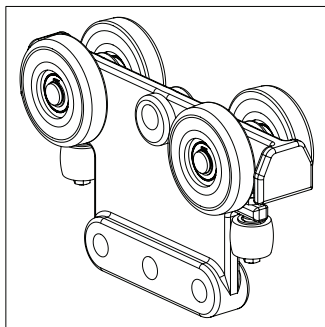
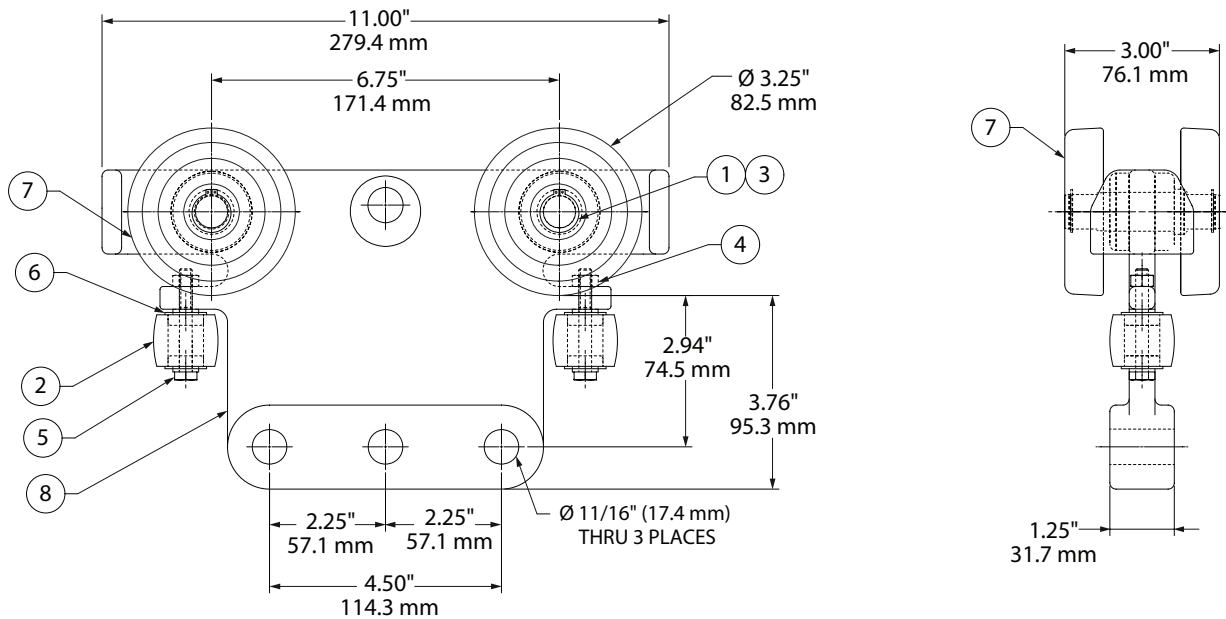
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54092416)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	6
2	93935	Trolley Guide Roller	2
3	93934	Axle	3
4	75581	Lock Nut, 1/4 - 20 PT	2
5	ZHS70484	HCS 1/4 - 20 x 2 Z5	2
6	65038	Radial Ball Bearing	4
7	30056	Trolley Wheel Assembly	6
8	30014	Trolley Body, Machining	1

# ZRA2 Load Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30015



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

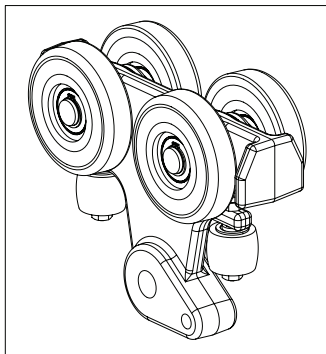
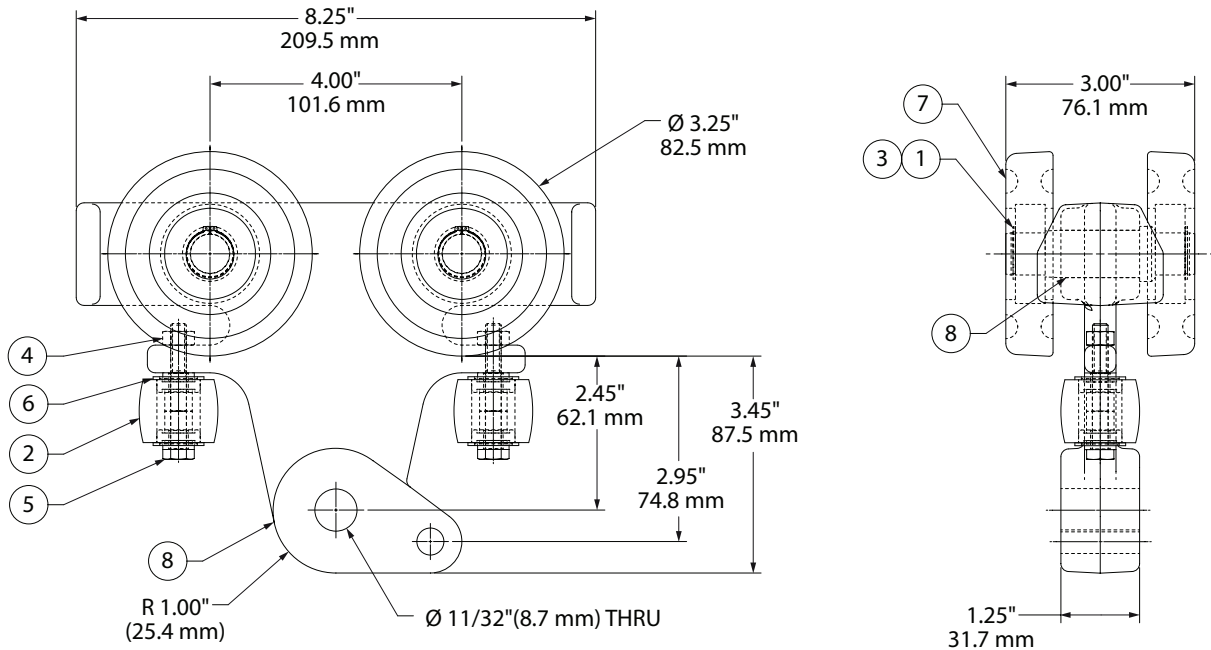
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,250 LBS.(7824.46 KG)
YIELD STRENGTH .....	14,575 LBS.(6611.10 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.55 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	5.5 LBS.(2.5 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 56742869)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93935	Trolley Guide Roller	2
3	93934	Axle	2
4	75581	Lock Nut, 1/4 - 20 PT	2
5	ZHS70484	HCS 1/4 - 20 x 2 Z5	2
6	65038	Radial Ball Bearing	4
7	30056	Trolley Wheel Assembly	4
8	30014	Trolley Body, Machining	1

# ZRA2 Universal Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30011



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	18,000 LBS.(8164.66 KG)
YIELD STRENGTH .....	14,950 LBS.(6781.20 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.55 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY .....	4 LBS.(1.81 KG)

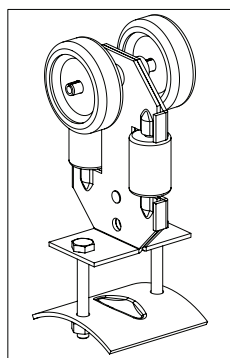
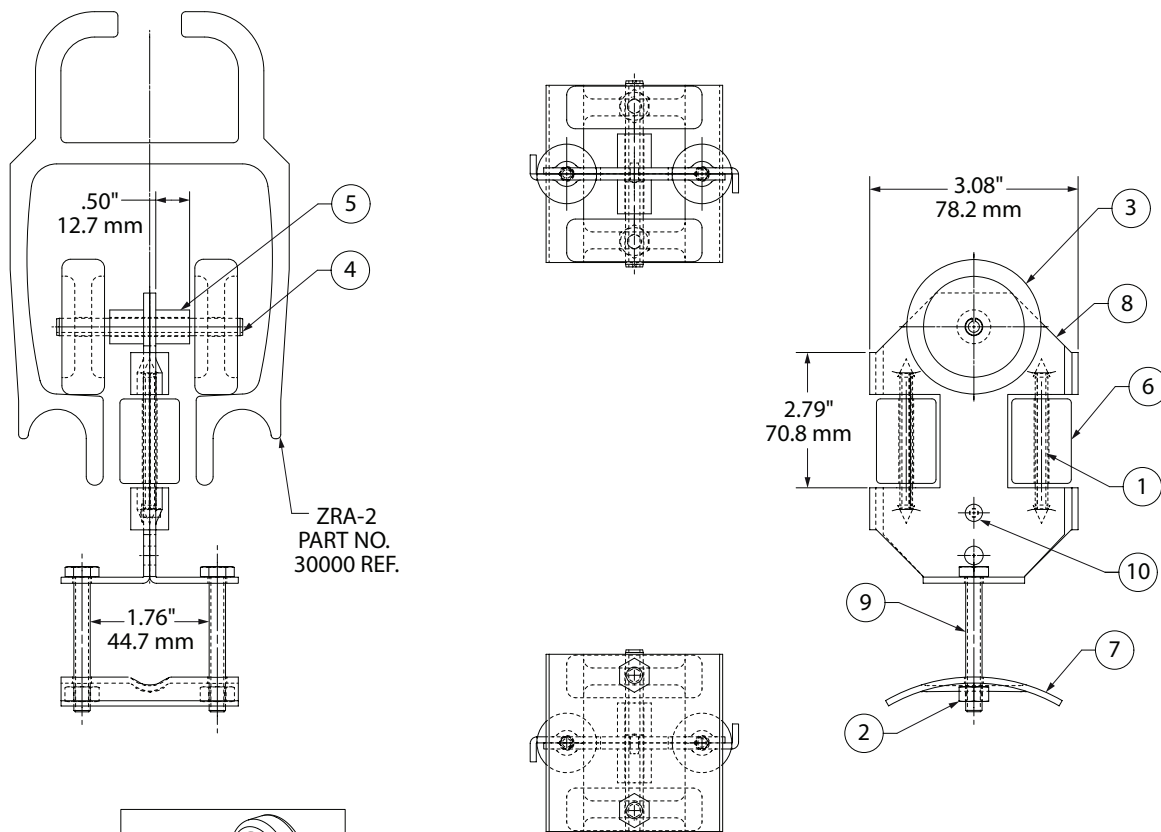
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54092408)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93935	Trolley Guide Roller	2
3	93934	Axle	2
4	75581	Lock Nut, 1/4 - 20 PT	2
5	ZHS70484	HCS 1/4 - 20 x 2 Z5	2
6	65038	Radial Ball Bearing	4
7	30056	Trolley Wheel Assembly	4
8	30010	Trolley Body	1



# Festoon Trolley • ZRA2 Aluminum Rail/Part No. 30581



CAPACITY..... 50 LBS.(22.67 KG)  
 WEIGHT OF ASSEMBLY ..... 6 LBS.(2.72 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

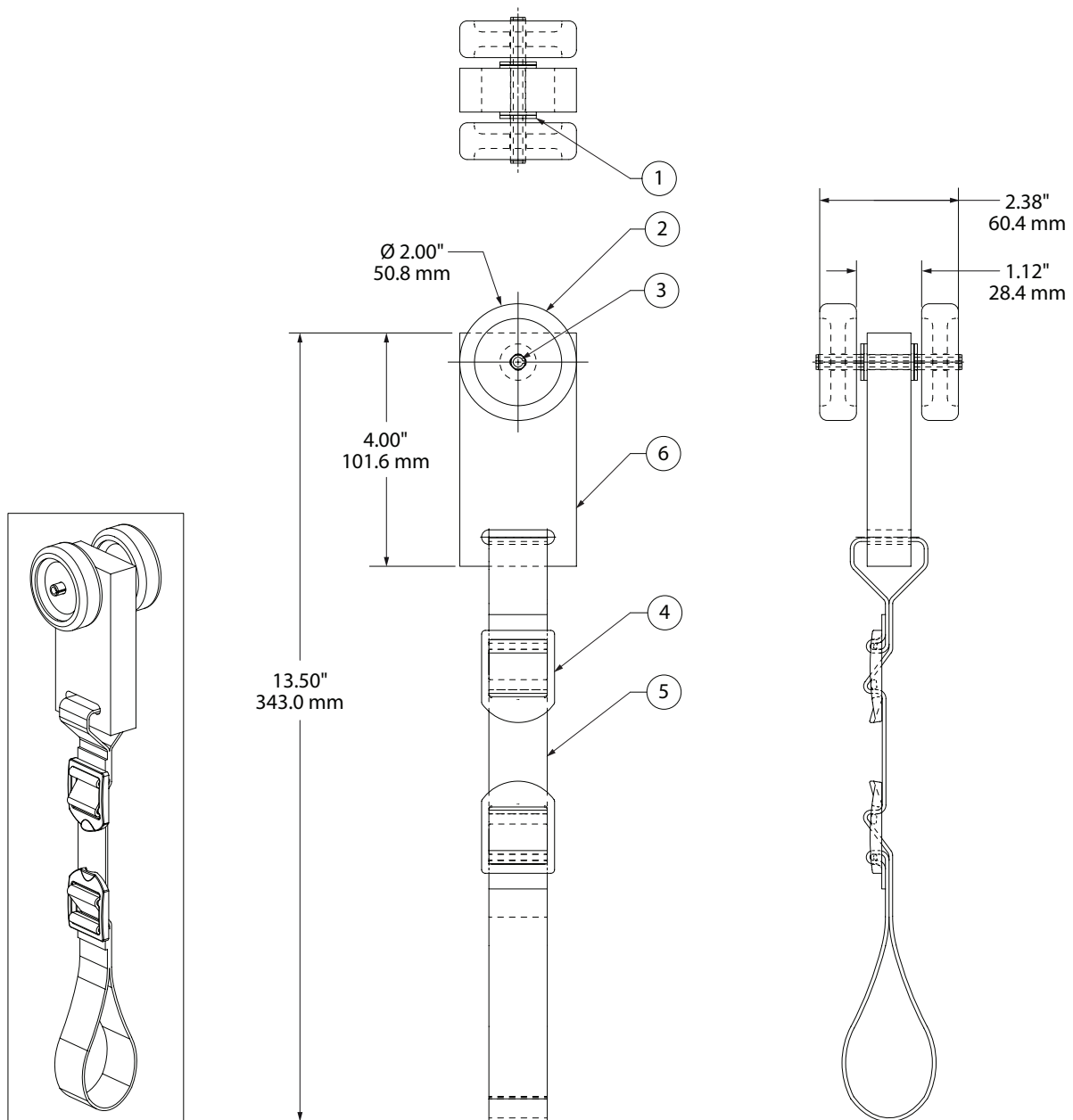
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

THIS TROLLEY IS USED FOR FESTOONING FLAT WIRE OR AIR HOSE.

(Dwg. 54095773)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS77057	Roll Pin, 3/16 x 2"	2
2	75581	Lock Nut, 1/4 - 20 PT	2
3	99069	Festooning Trolley Wheel	2
4	77011	Spring Pin, 0.25" x 2.75"	1
5	30585	Festooning Trolley Spacer	2
6	30584	Festooning Trolley Guide Roller	2
7	30578	Trolley Bracket - Clip	1
8	30577	Trolley Bracket - Half	2
9	ZHS70498	Tap Bolt, 1/4 - 20 x 2"	2
10	16006769	Steel Rivet, 1/8" Dia. x 0.188" - 0.25"	1

# Festoon Trolley • ZRA2 Aluminum Rail/Part No. 54039078

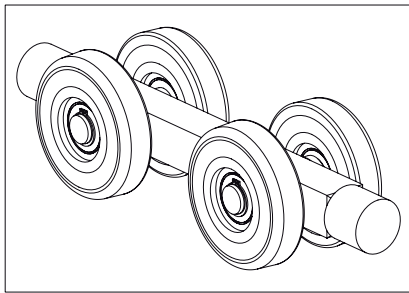
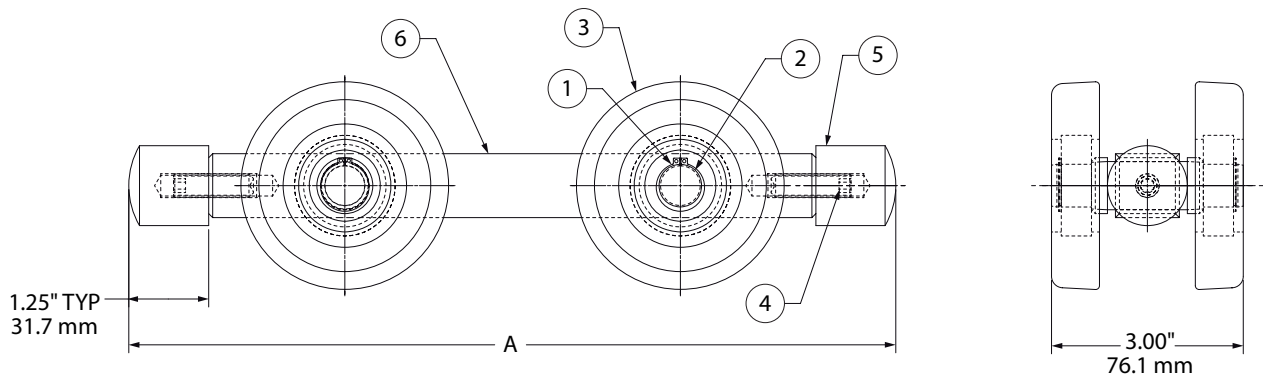


CAPACITY.....50 LBS.(22.67 KG)

(Dwg. 54039078)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	74504	Flat Washer, 1/4"	4
2	99069	Festooning Trolley Wheel	2
3	77048	Spring Pin, 0.25" x 2.5"	1
4	54039300	Slide Buckle	2
5	54039292	Strap, 1" x 18"	1
6	54039094	Trolley Body	1

# Bumper Trolley • ZRA2 Aluminum/Part No. 30148 - XXXX

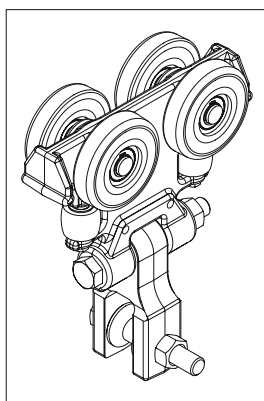
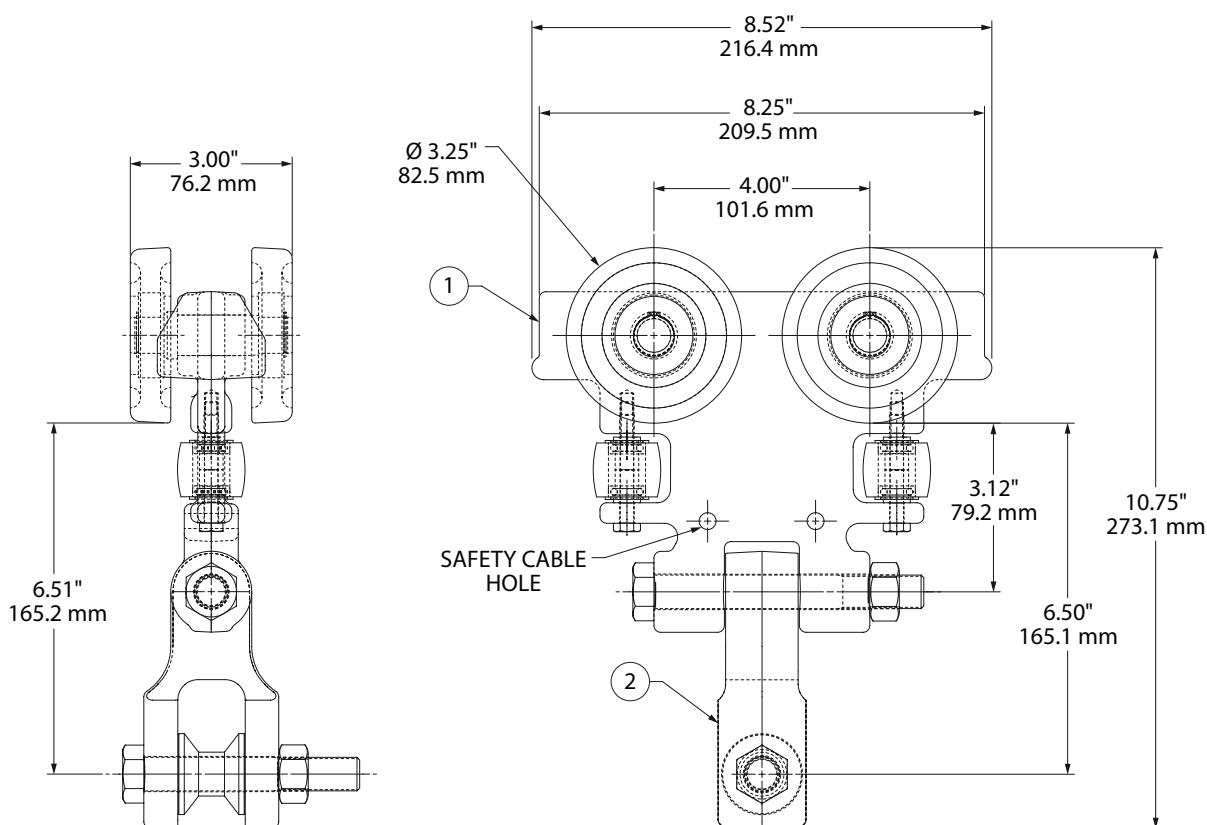


DIMENSIONS		
TROLLEY NO.	A (INCHES)	BRACKET NO.
30148 - 1200	12.00	30149 - 1200
30148 - 2400	24.00	30149 - 2400
30148 - 3600	36.00	30149 - 3600
30148 - 4800	48.00	30149 - 4800
30148 - 6000	60.00	30149 - 6000
30148 - 7200	72.00	30149 - 7200

(Dwg. 16588659)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93934	Axle	2
3	30056	Trolley Wheel Assembly	4
4	71492	Set Screw, 3/8 - 16 x 1.25"	2
5	ZHS93809	Urethane Bumper 1.25" Dia.	2
6	30149 - XXXX	Bumper Trolley Bracket	1

# Hoist Trolley - Single • ZRA2/1000 lbs. (453.6 kg) Capacity/ Part No. ZHS30314



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	13,750 LBS.(6236.9 KG)
YIELD STRENGTH .....	11,000 LBS.(4989.51 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	6.4 LBS.(2.90 KG)

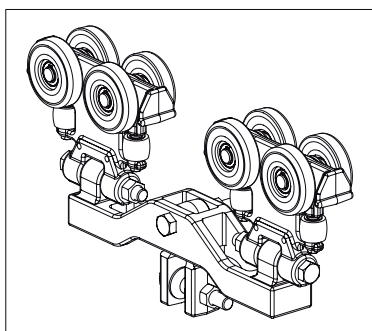
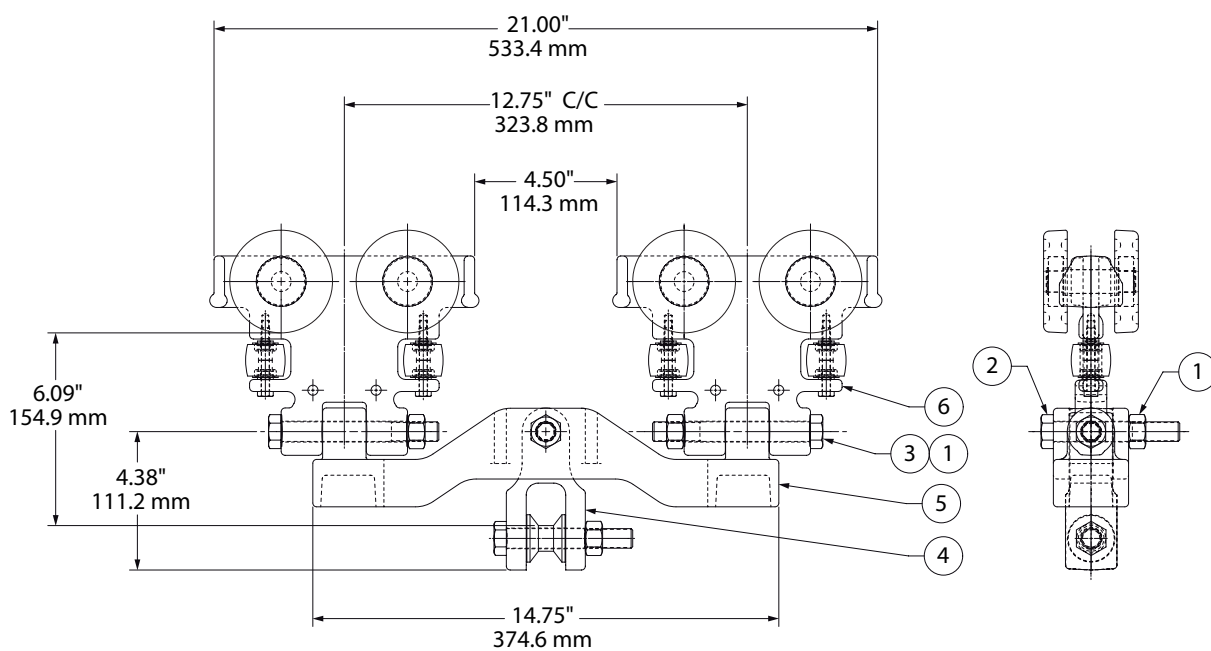
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY.  
YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094743)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30923	ZRA2 Aluminium Trolley W/Bolt	1
2	30903	Hoist Bracket Assembly.	1

# Hoist Trolley - Dual • 2000 lbs. (907.18 kg) Capacity/Part No. 30906



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	2000 LBS.(907.18 KG)
WEIGHT OF ASSEMBLY .....	19 LBS.(8.61 KG)

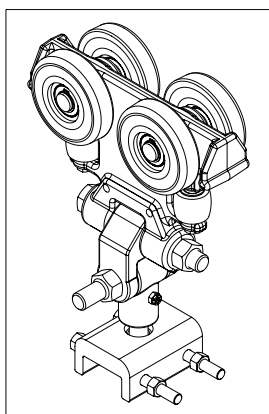
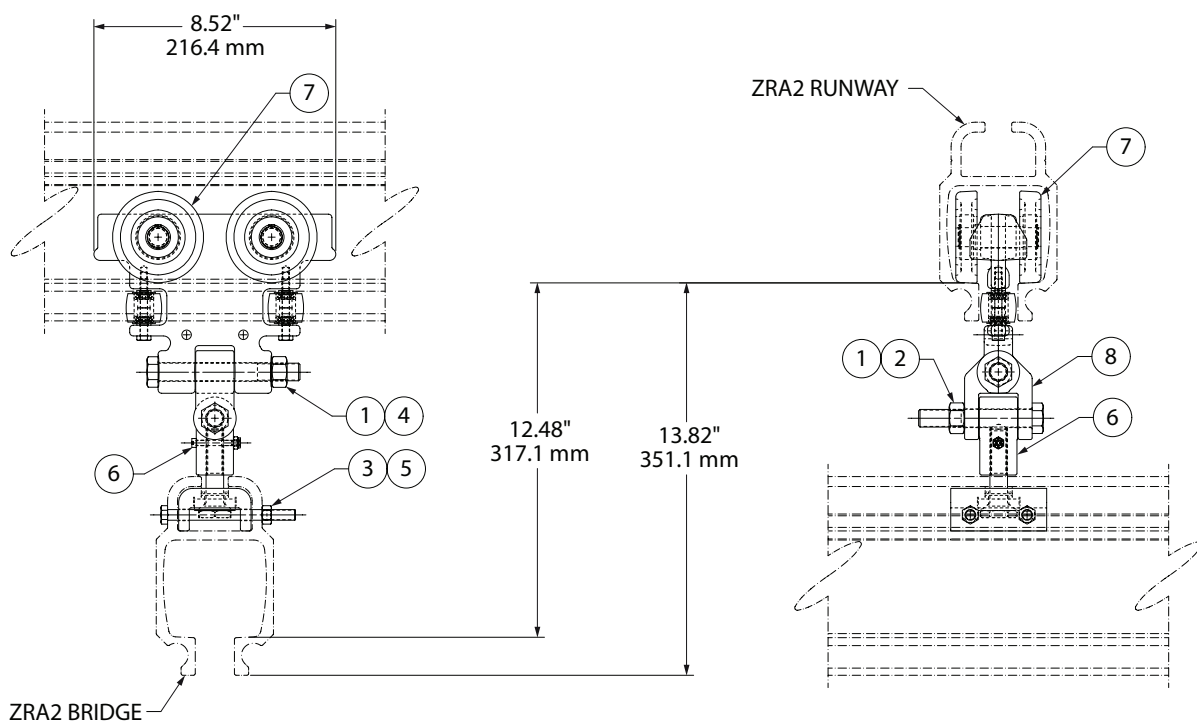
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096680)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
4	30903	Hoist Bracket Assembly	1
5	30173	Dual Trolley Tie Bar, Machining	1
6	ZHS30172	ZRA2 Aluminium Trolley	2

# End Truck Assembly • ZRA2 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Single Aluminum Trolley/Part No. 30176



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,000 LBS.(6803.88 KG)
CAPACITY .....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	10 LBS.(4.53 KG)

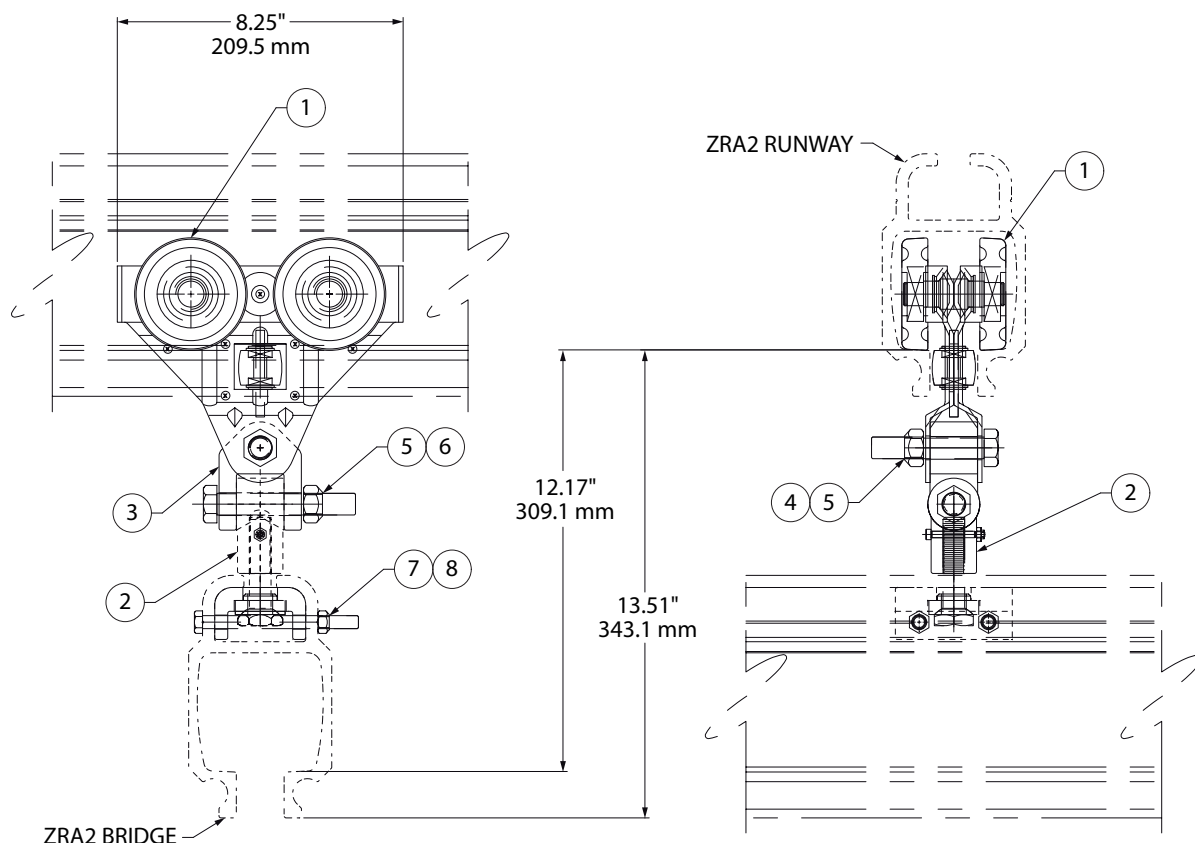
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093067)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
6	30175	Bridge Suspension Sub-assembly, ZRA2	1
7	ZHS30172	ZRA2 Aluminium Trolley	1
8	30166	Female Clevis	1

# End Truck Assembly • ZRA2 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Single Steel Trolley/Part No. 30167



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....8,925 LBS.(4048.31 KG)  
 YIELD STRENGTH .....7,140 LBS.(3238.65 KG)  
 CAPACITY.....1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY .....8 LBS.(3.62 KG)

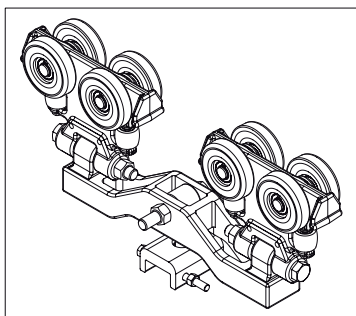
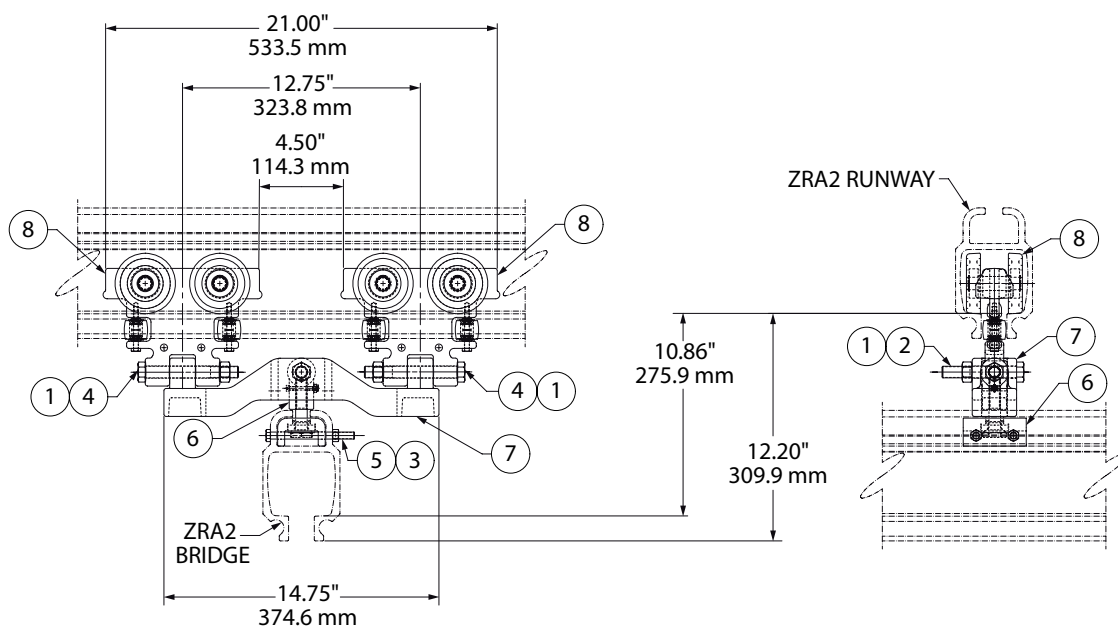
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093026)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30126	Trolley - 1000#, Capacity - for ZRA2 (S)	1
2	30175	Bridge Suspension Sub-assembly - ZRA2	1
3	30166	Female Clevis - ZRA/ZRS Rail	1
4	72646	Screw 5/8 - 11 x 3.25 HCS	1
5	75587	Lock Nut, 5/8 - 11 PT	2
6	ZHS72644	Screw 5/8 - 11 x 4.00 HCS	1
7	ZHS71481	Screw 3/8 - 16 x 4.50 HCS	2
8	75583	Lock Nut, 3/8 - 16 PT	2

# End Truck Assembly • ZRA2 on ZRA2/2000 lbs. (907.18 kg) Capacity/ Dual Aluminum Trolley/Part No. ZHS30177



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	2,000 LBS.(907.18 KG)
WEIGHT OF ASSEMBLY .....	16 LBS.(7.25 KG)

**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

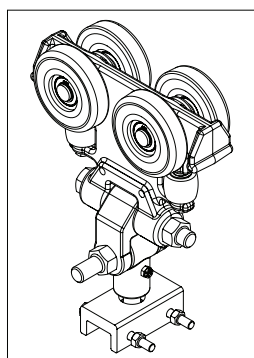
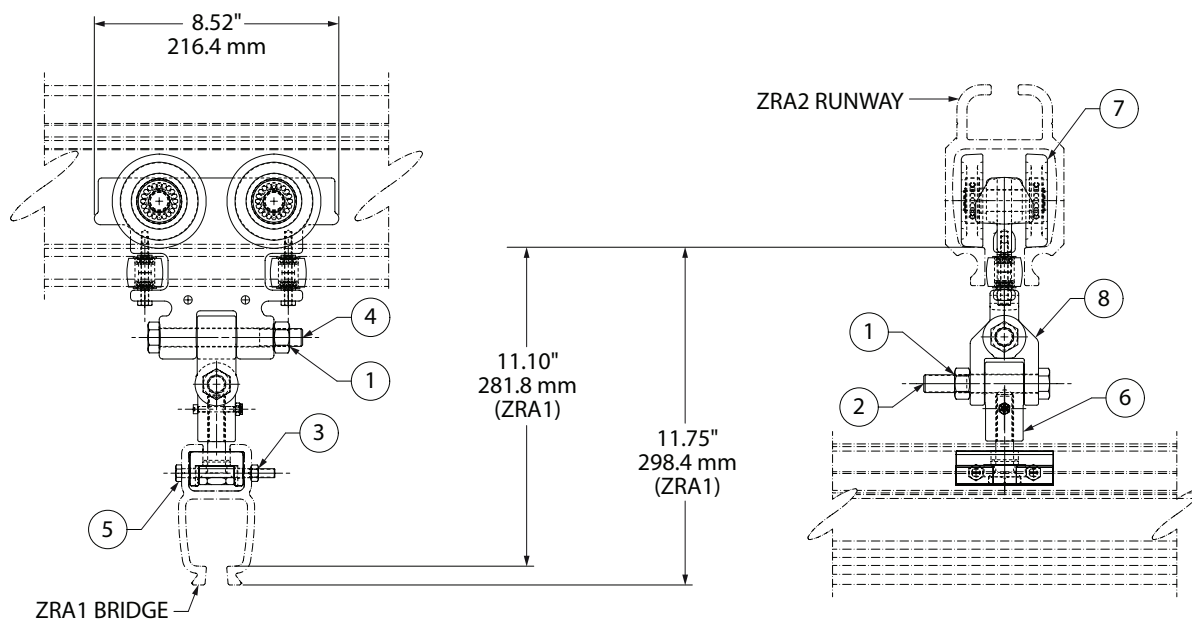
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093075)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	2
6	30175	Bridge Suspension Sub-assembly, ZRA2	1
7	30173	Dual Trolley Tie Bar, Machining	1
8	ZHS30172	ZRA2, Aluminium Trolley	2



# End Truck Assembly • ZRA1 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Single Aluminum Trolley/Part No. 30909



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,000 LBS.(6803.88 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	8 LBS.(3.62 KG)

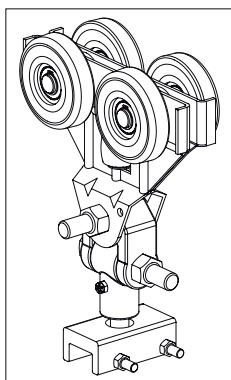
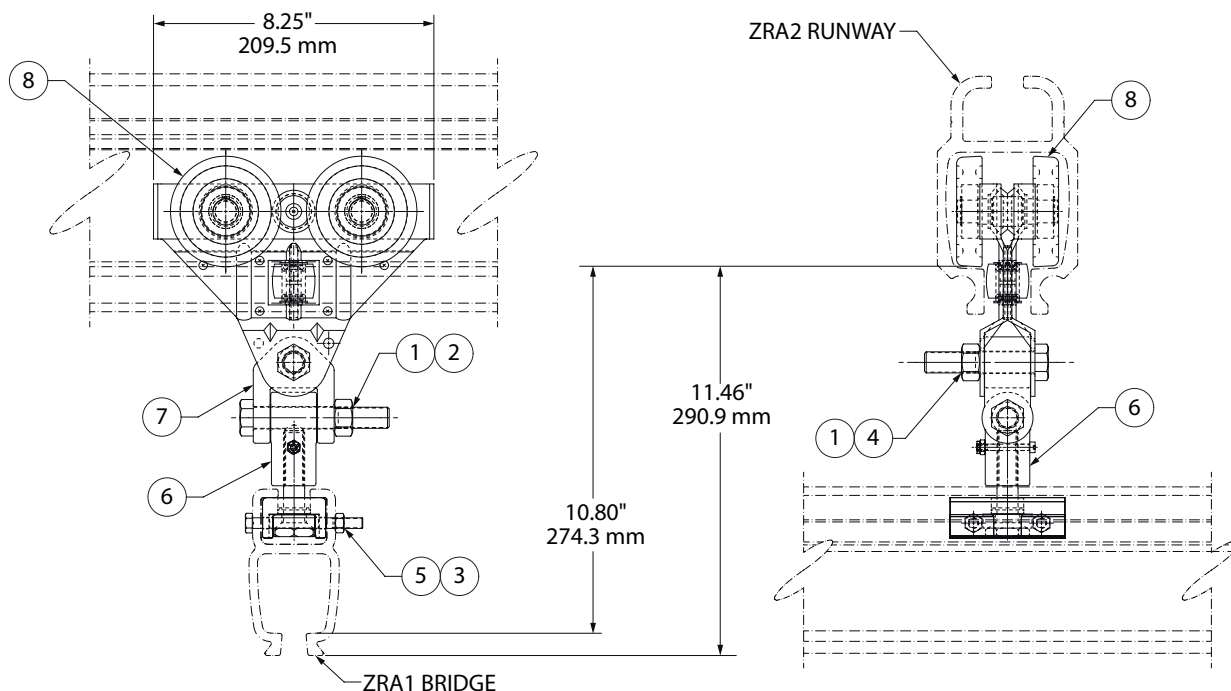
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096805)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30282	Bridge Suspension Sub-assembly	1
7	ZHS30172	ZRA2 Aluminium Trolley	1
8	30166	Female Clevis	1

# End Truck Assembly • ZRA1 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Single Steel Trolley/Part No. 30910



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	8,925 LBS.(4048.31 KG)
YIELD STRENGTH .....	7,140 LBS.(3238.65 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	9 LBS.(4.08 KG)

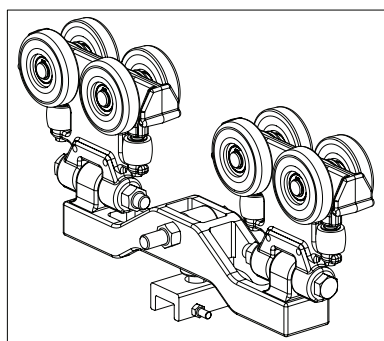
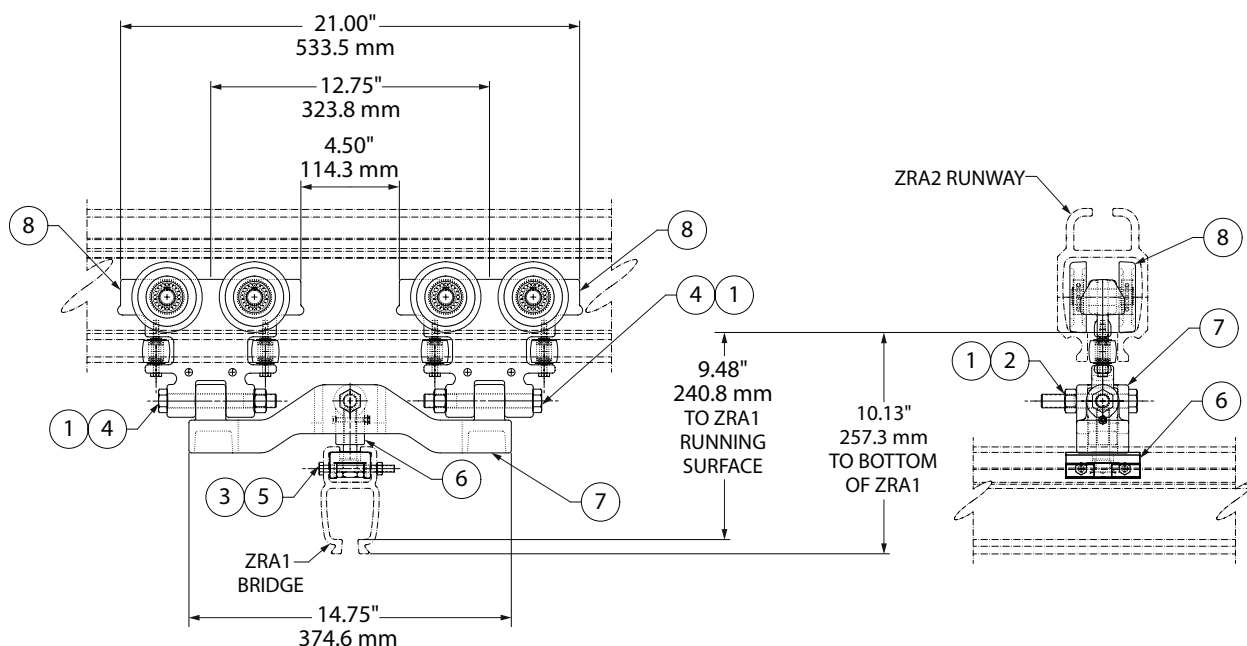
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096813)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30282	Bridge Suspension Sub-assembly	1
7	30166	Female Clevis	1
8	30126	ZRA2, Steel Trolley	1

# End Truck Assembly • ZRA1 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Dual Aluminum Trolley/Part No. 30911



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	15 LBS.(6.80 KG)

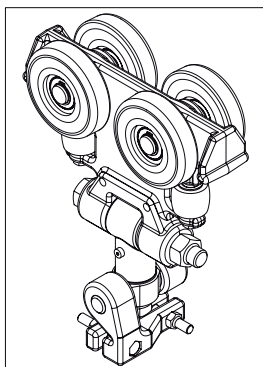
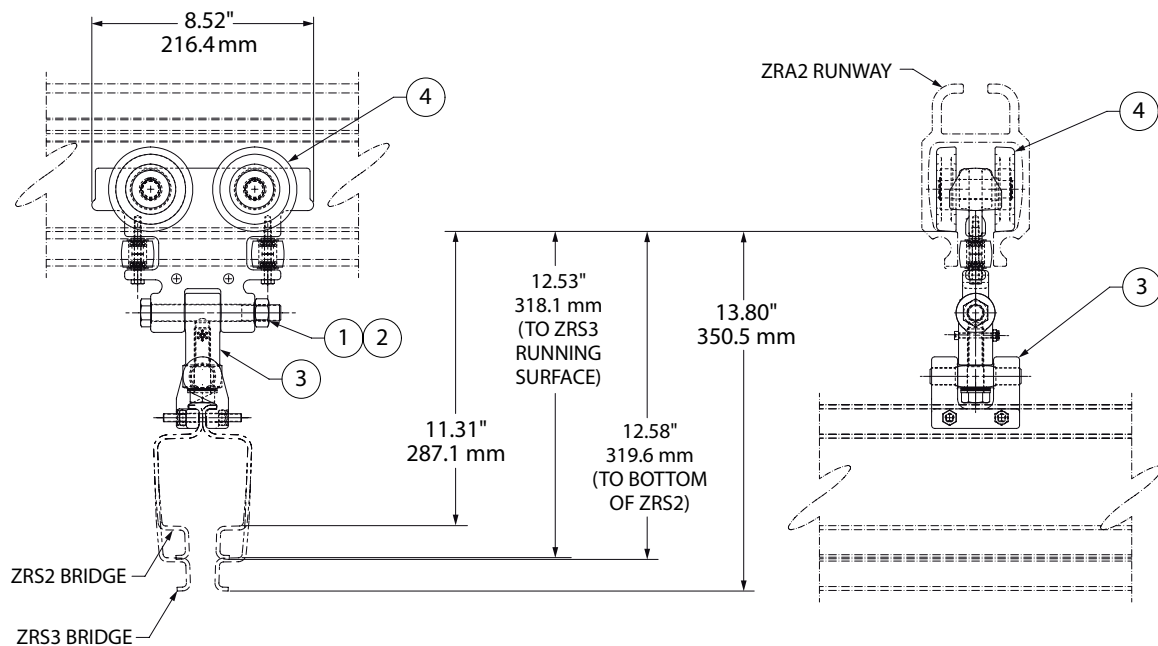
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096821)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30282	Bridge Suspension Sub-assembly	1
7	30173	Dual Trolley Tie Bar, Machining	1
8	ZHS30172	Aluminum Trolley, ZRA2	2

# End Truck Assembly • ZRS2/3 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Single Aluminium Trolley/Part No. 30913



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	17,250 LBS.(7824.46 KG)
YIELD STRENGTH .....	14,250 LBS.(6463.7 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	10 LBS.(4.53 KG)

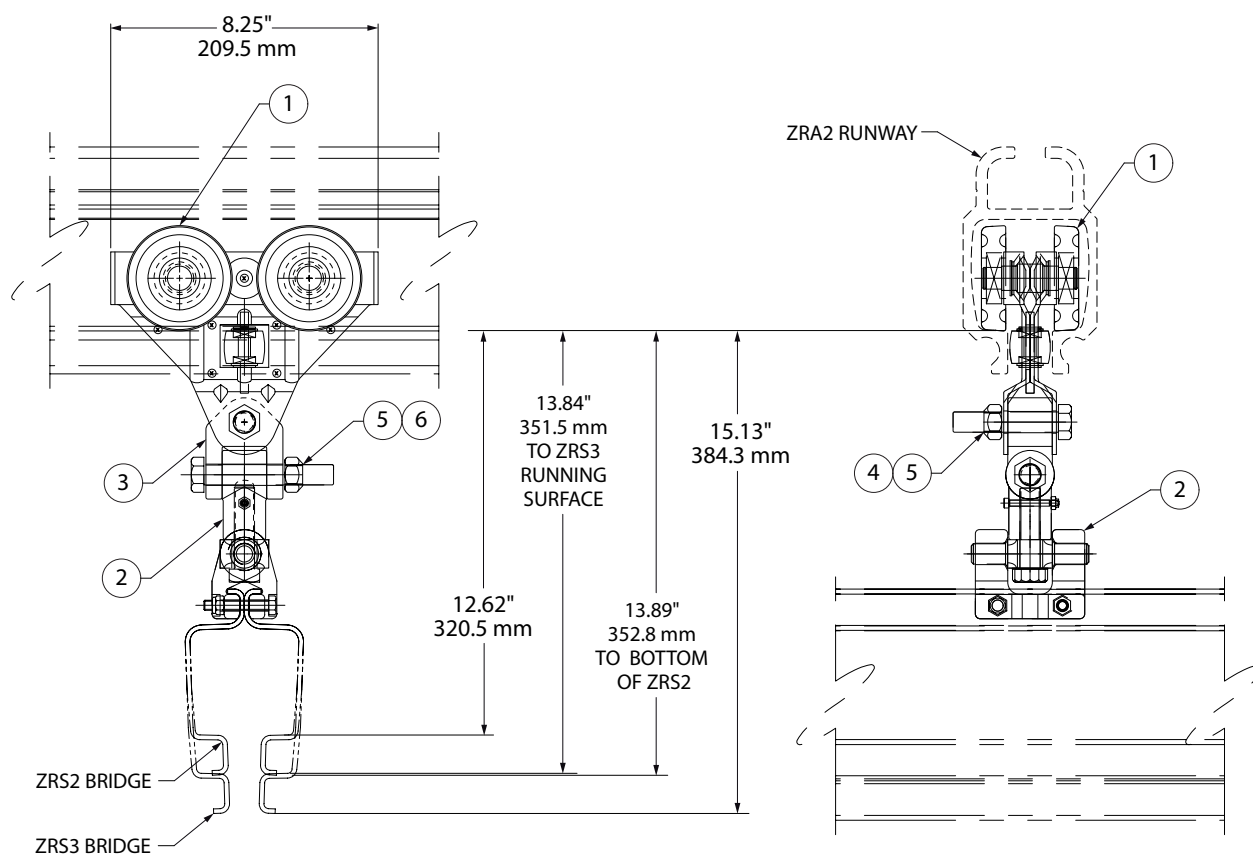
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096847)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
3	30596	Bridge Suspension Sub-assembly	1
4	ZHS30172	ZRA2 Aluminium Trolley	1

# End Truck Assembly • ZRS2/3 on ZRA2/1000 lbs. (453.6 kg) Capacity/ Single Steel Trolley/Part No. 30914



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	8,925 LBS.(4048.31 KG)
YIELD STRENGTH .....	7,140 LBS.(3238.65 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	10 LBS.(4.53 KG)

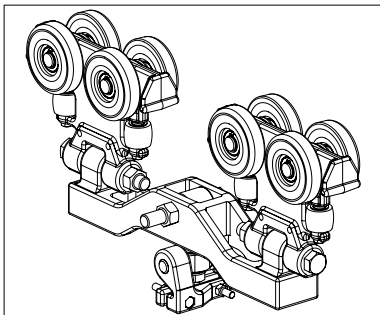
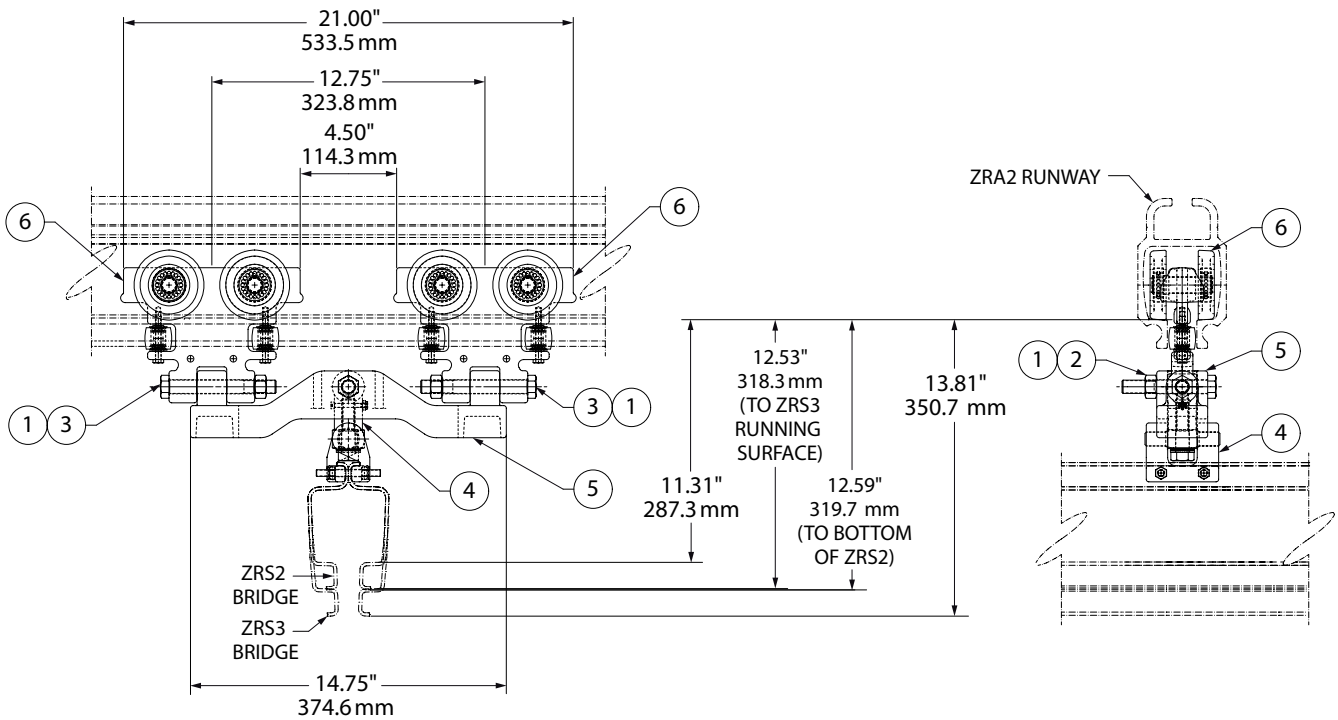
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096854)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30126	Trolley - 1000# Capacity - for ZRA2 (S)	1
2	30596	Bridge Suspension Sub-assembly, ZRS	1
3	30166	Female Clevis - ZRA/ZRS Rail	1
4	ZHS72644	Screw 5/8 - 11 x 4.00 HCS	1
5	75587	Lock Nut, 5/8 - 11 PT	2
6	72646	Screw 5/8 - 11 x 3.25 HCS	1

# End Truck Assembly • ZRS2/3 on ZRA2/2000 lbs. (907.18 kg) Capacity/ Dual Aluminum Trolley/Part No. 30915



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	2,000 LBS.(907.18 KG)
WEIGHT OF ASSEMBLY .....	19 LBS.(8.61 KG)

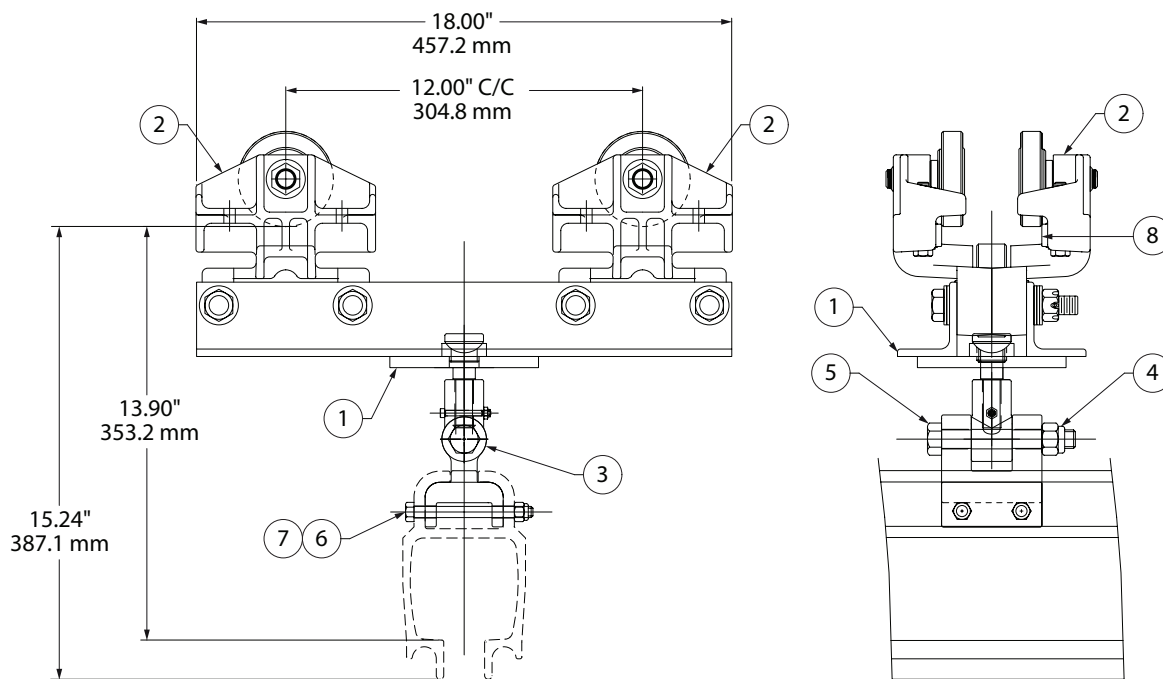
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096862)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
4	30596	Bridge Suspension Sub-assembly	1
5	30173	Dual Trolley Tie Bar, Machining	1
6	ZHS30172	ZRA2 Aluminium Trolley	2

# End Truck Assembly • ZRA2 on Patent Track/1000 lbs. (453.6 kg) Capacity/ Dual Trolley/Part No. ZHS30918



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY ..... —

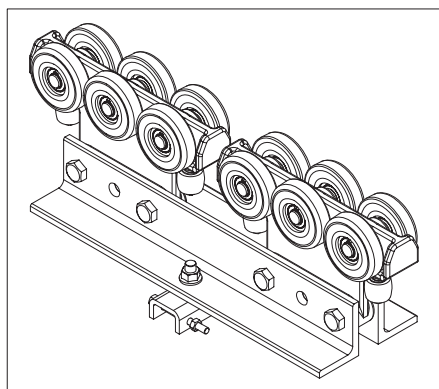
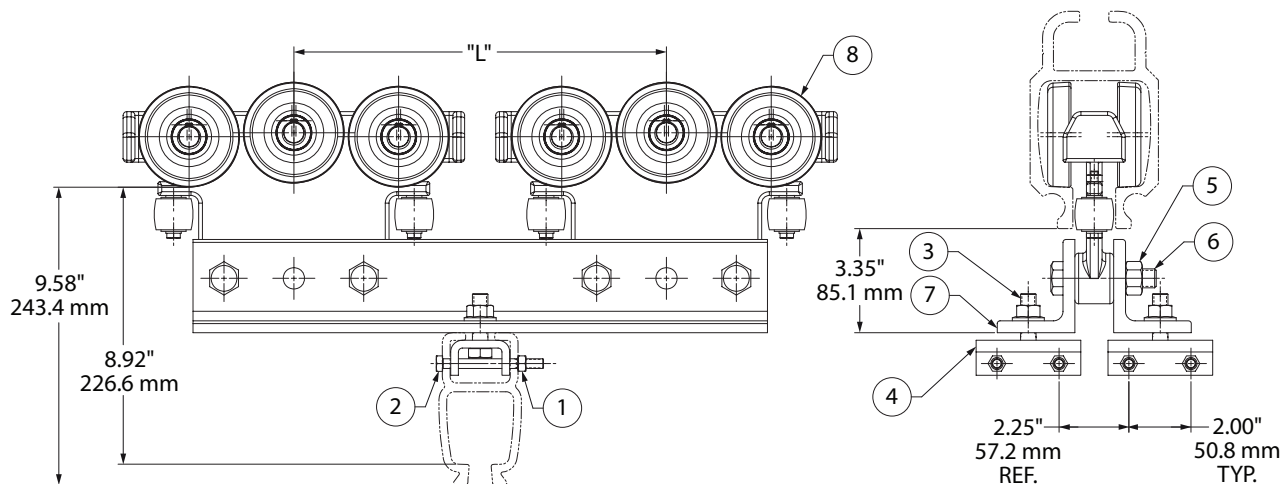
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096888)

<b>Bill of Materials</b>			
<b>Item No.</b>	<b>Part No.</b>	<b>Description</b>	<b>Amt.</b>
1	30917	Dual End Truck Sub-assembly	1
2	30918 - 1	S6 x 1.25 Beam, 3.33" Flange Width	2
	30918 - 2	Flat Rail, 3.25" Flange Width or Special Flat Track, 3.33" Flange Width	2
	30918 - 3	S4 x 7.7 Beam, 2.66" Flange Width	2
3	30165	Hanger Bracket	1
4	75587	Lock Nut, 5/8 - 11 PT	1
5	72623	5/8 - 1 x 5.00" HCS Grade 5	1
6	71481	3/8 - 16 x 4.50" HCS Grade 5	2
7	75583	Lock Nut, 3/8 - 16 PT	2
8	65116	Yoke Roller Bearing - Needle	4

# Rigid End Truck • ZRA1/T on ZRA2/2000 lbs. (907.18 kg) Capacity/ Part No. 45519618 - XXXX



LEGEND				
BRIDGE LENGTH	END TRUCK ASSEMBLY	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45519618 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	45519618 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	45519618 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	45519618 - 3600	30907 - 08	36"	30327 - 3600

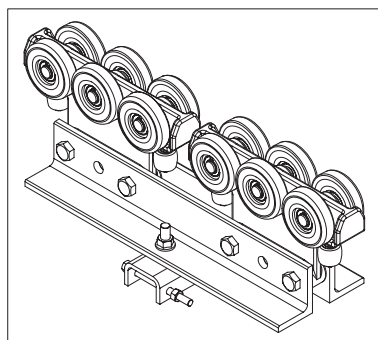
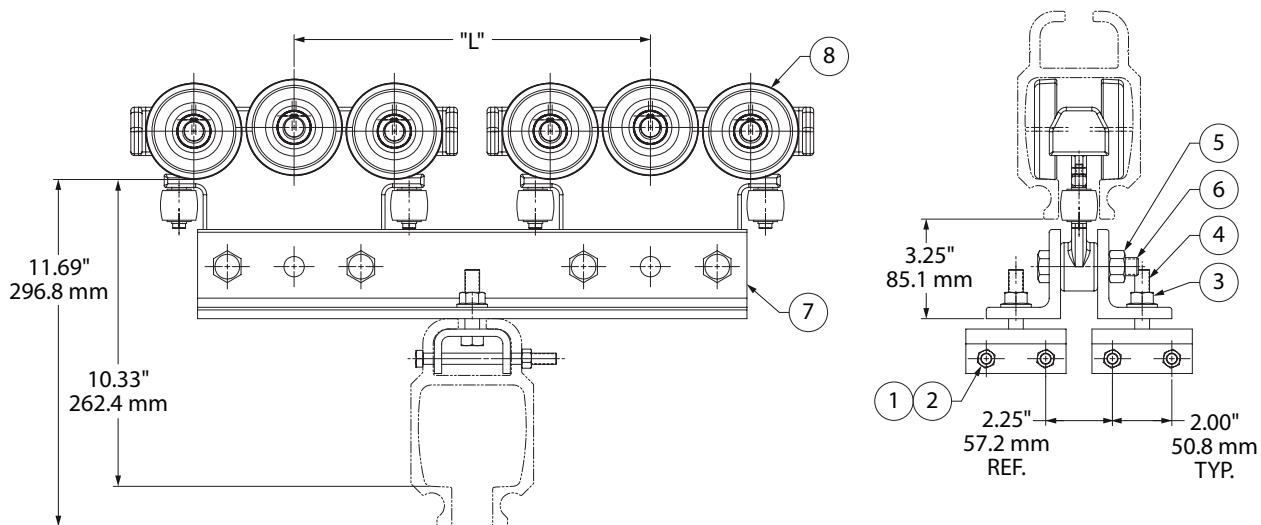
ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY..... 2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... —

(Dwg. 45519618)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75582	Lock Nut, 5/16 - 18 PT	4
2	ZHS70968	HCS 5/16 - 18 x 3.25" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	30326	ZRA1 Rigid Mount Suspension Bracket	2
5	75587	Lock Nut, 5/8 - 11	4
6	72626	HCS 5/8 - 11 x 3" Grade 5	4
7	30327-XXXX	End Truck Bracket	2
8	ZHS30016	ZRA2 Aluminum Reaction Trolley	2
9	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1



# Rigid End Truck • ZRA2 on ZRA2/2000 lbs. (907.18 kg) Capacity/ Part No. 30329 - XXXX



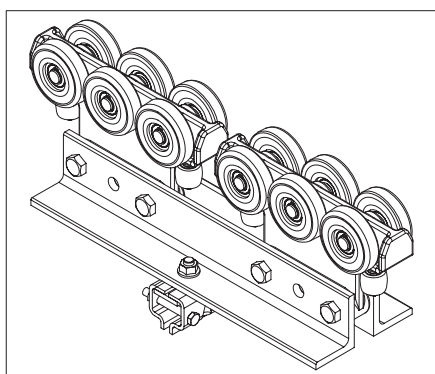
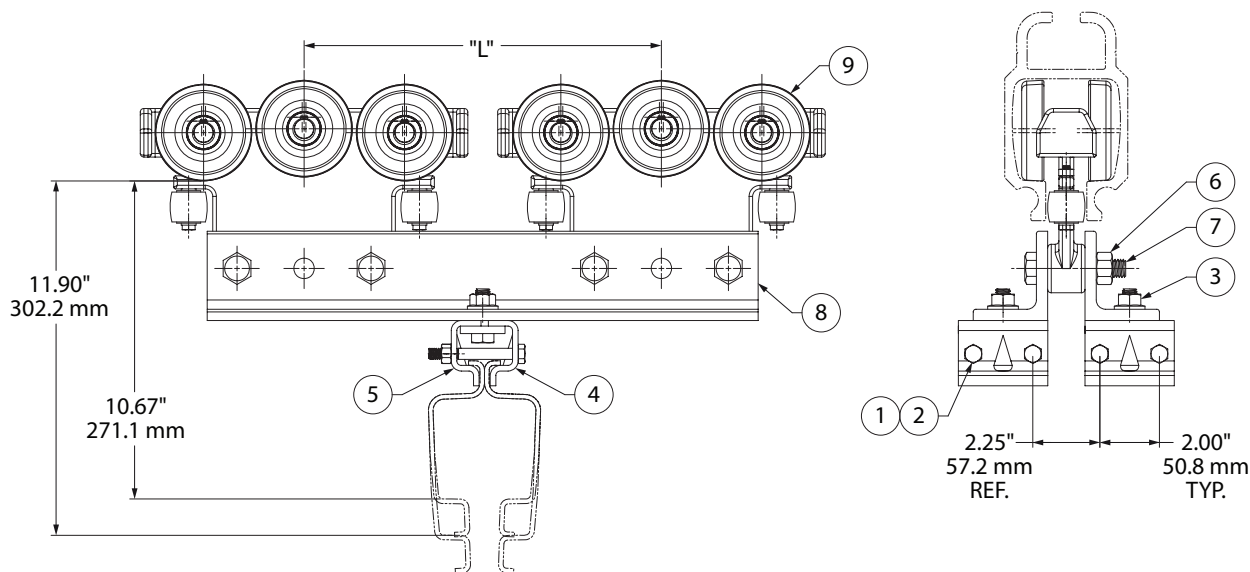
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	30329 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	30329 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	30329 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	30329 - 3600	30907 - 08	36"	30327 - 3600

ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... —

(Dwg. 45265873)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	4
2	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	ZHS30109	ZRA2 Rigid Mount Suspension Bracket	2
5	75587	Lock Nut, 5/8 - 11	4
6	72626	HCS 5/8 - 11 x 3" Grade 5	4
7	30327-XXXX	End Truck Bracket	2
8	ZHS30016	ZRA2 Aluminum Reaction Trolley	2
9	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Rigid End Truck • ZRS2/3 on ZRA2/2000 lbs. (907.18 kg) Capacity/ Part No. 45520574 - XXXX



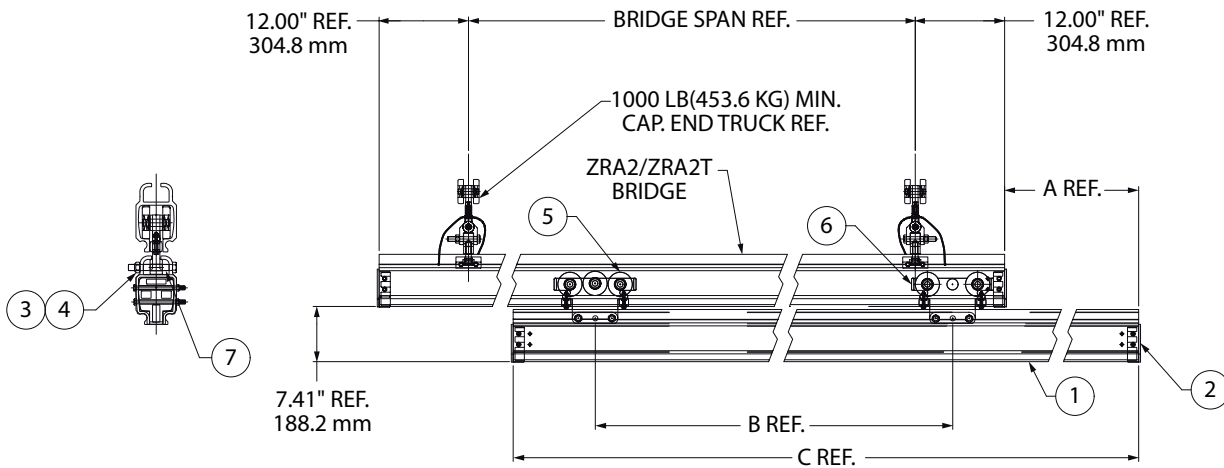
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45520574 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	45520574 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	45520574 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	45520574 - 3600	30907 - 08	36"	30327 - 3600

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....—  
 YIELD STRENGTH .....—  
 CAPACITY.....2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY .....—

(Dwg. 45520574)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	4
2	ZHS71479	HCS 3/8 - 16 x 3" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	30502	Rail Clamp	2
5	ZHS30773	Suspension Clamp Weldment	2
6	75587	Lock Nut, 5/8 - 11	4
7	72626	HCS 5/8 - 11 x 3" Grade 5	4
8	30327-XXXX	End Truck Bracket	2
9	ZHS30016	ZRA2 Aluminum Reaction Trolley	2
10	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Bridge Extensions • ZRA2 Aluminum Rail/Single Trolley/Part No. 30309-XX



"A" DIM. = 2'-0" FOR 2' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRA2T BRIDGE SPAN
30309-22	2'-0"	5'-6"	450 LBS.	14 FT	30 FT
30309-23	3'-0"	6'-6"	550 LBS.	14 FT	30 FT
30309-24	4'-0"	7'-6"	625 LBS.	14 FT	30 FT
30309-25	5'-0"	8'-6"	650 LBS.	14 FT	30 FT

"A" DIM. = 4'-0" FOR 4' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRA2T BRIDGE SPAN
30309-42	2'-0"	7'-6"	225 LBS.	16 FT	30 FT
30309-43	3'-0"	8'-6"	350 LBS.	15 FT	30 FT
30309-44	4'-0"	9'-6"	450 LBS.	14 FT	30 FT
30309-45	5'-0"	10'-6"	500 LBS.	14 FT	30 FT

"A" DIM. = 3'-0" FOR 3' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRA2T BRIDGE SPAN
30309-32	2'-0"	6'-6"	325 LBS.	15 FT	30 FT
30309-33	3'-0"	7'-6"	450 LBS.	14 FT	30 FT
30309-34	4'-0"	8'-6"	525 LBS.	14 FT	30 FT
30309-35	5'-0"	9'-6"	575 LBS.	14 FT	30 FT

"A" DIM. = 6'-0" FOR 6' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRA2T BRIDGE SPAN
30309-63	3'-0"	10'-6"	225 LBS.	16 FT	30 FT
30309-64	4'-0"	11'-6"	300 LBS.	16 FT	30 FT
30309-65	5'-0"	12'-6"	375 LBS.	14 FT	30 FT
30309-66	6'-0"	13'-6"	325 LBS.	16 FT	30 FT

"A" DIM. = 5'-0" FOR 5' EXTENSION					
PART NO:	"B" DIM.	"C" DIM.	CAPACITY STICKER	MAXIMUM RECOMMENDED ZRA2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRA2T BRIDGE SPAN
30309-52	2'-0"	8'-6"	175 LBS.	16 FT	30 FT
30309-53	3'-0"	9'-6"	275 LBS.	15 FT	30 FT
30309-54	4'-0"	10'-6"	375 LBS.	14 FT	30 FT
30309-55	5'-0"	11'-6"	425 LBS.	14 FT	30 FT

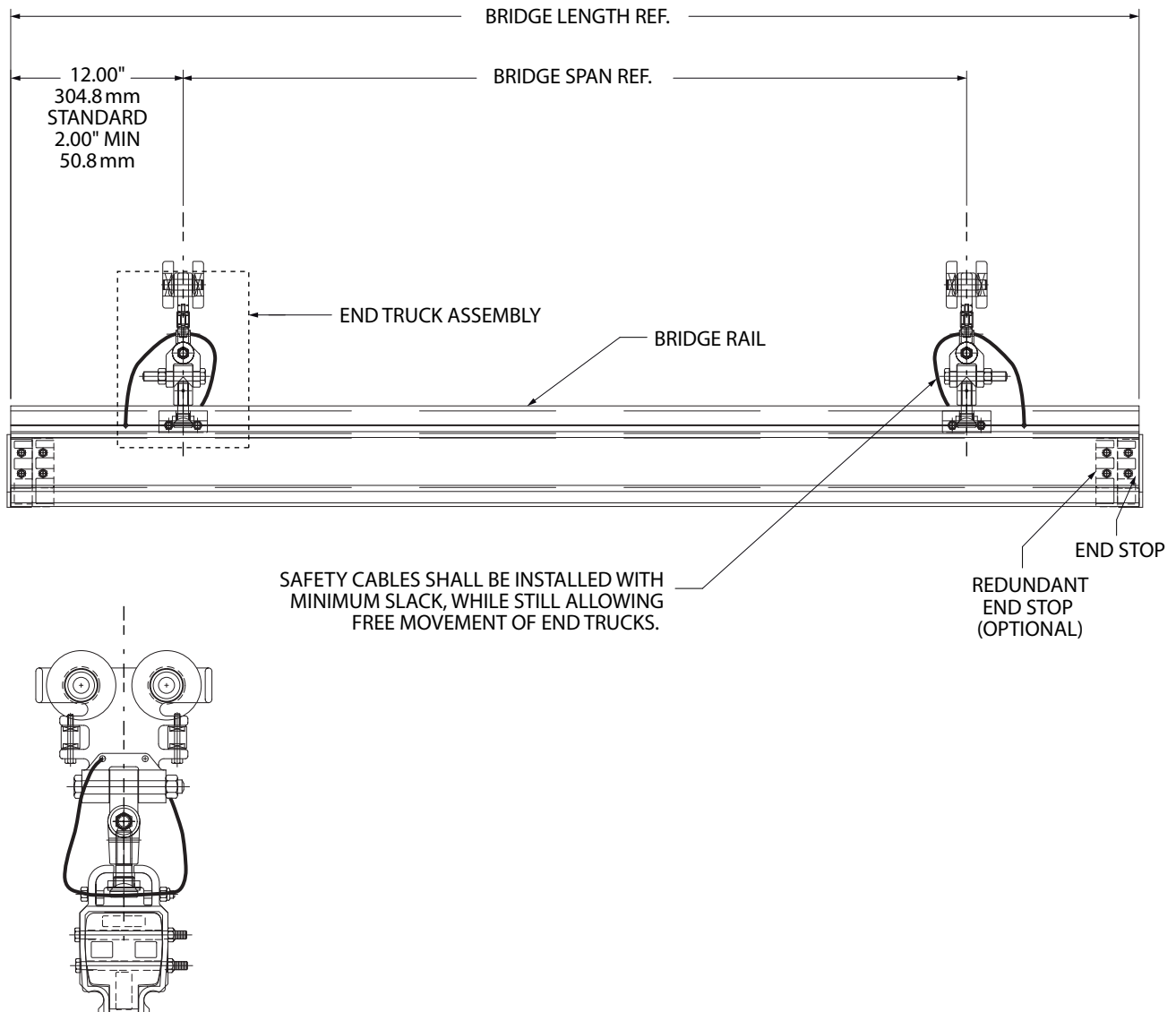
**NOTE:** BRIDGE EXTENSION ADDS 5.67"(144.0 mm) TO STACK-UP DIMENSION - FOR LONGER EXTENSIONS CONSULT THE FACTORY.

**NOTE:** SAFETY CABLES ARE SWAGGED IN PLACE.

(Dwg. 45265907)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30000	ZRA2 Rail x "C" Long	1
2	30183	ZRA2 End Stop Kit	2
3	72615	5/8 - 11 x 4.50" HCS Grade 5	4
4	75587	Lock Nut, 5/8 - 11 PT	4
5	30016A	Trolley Assembly (Altered)	1
6	30015A	Trolley Assembly (Altered)	1
7	30079	Spacer - Bridge Extension Trolley	8

# Bridge Crane Assembly • Example of How to Order



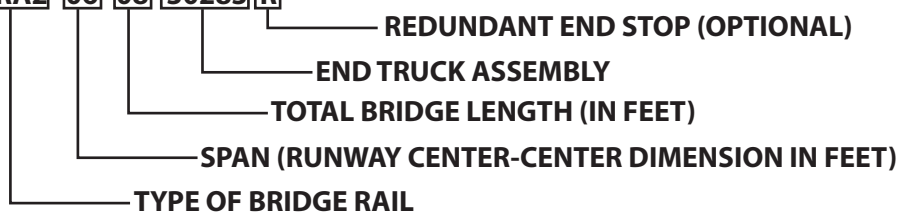
THE BRIDGE CRANE ASSEMBLY CONSISTS OF:

- ONE BRIDGE BEAM (SECTION OF RAIL)
- TWO END TRUCK ASSEMBLIES (MOUNTED TO THE BRIDGE WITH A TROLLEY TO ROLL INSIDE OF THE RUNWAY, SAFETY CABLES WILL BE PRE-INSTALLED)
- TWO END STOPS (ONE INSTALLED AT EACH END OF THE BRIDGE)
- REDUNDANT END STOPS ARE AVAILABLE (PLEASE SPECIFY)

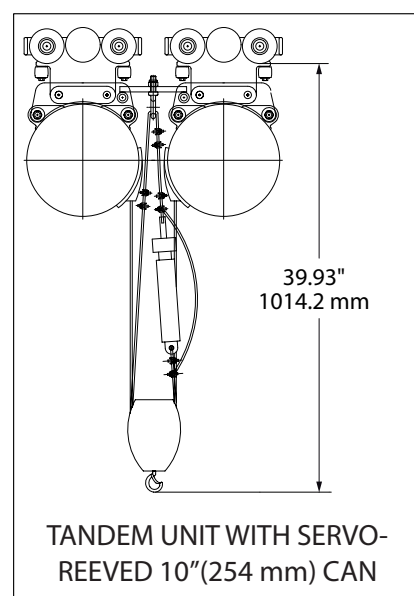
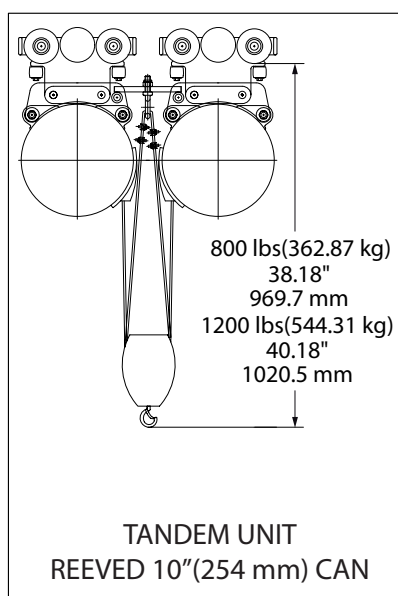
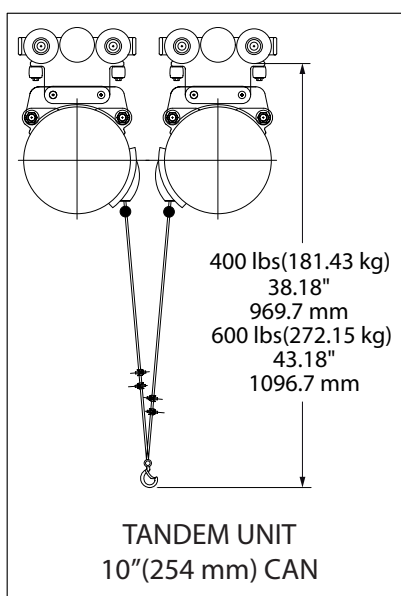
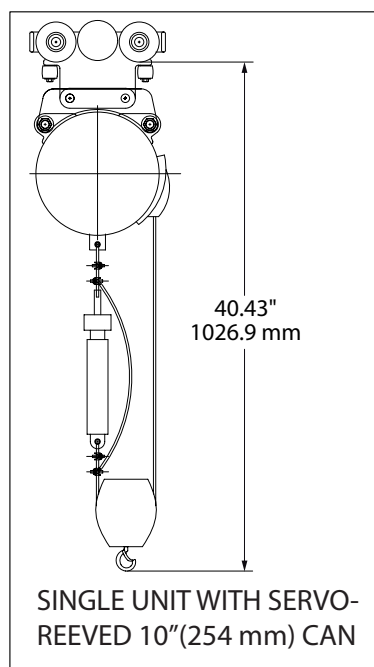
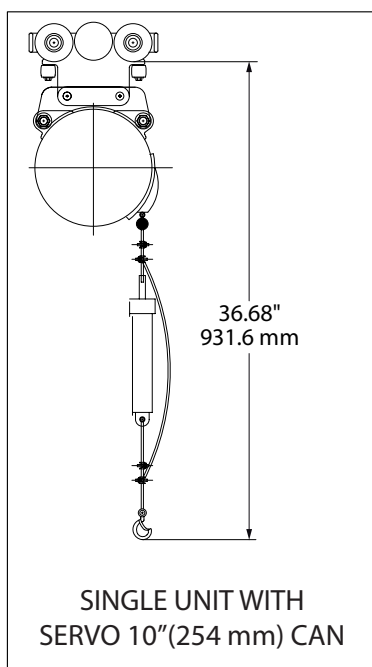
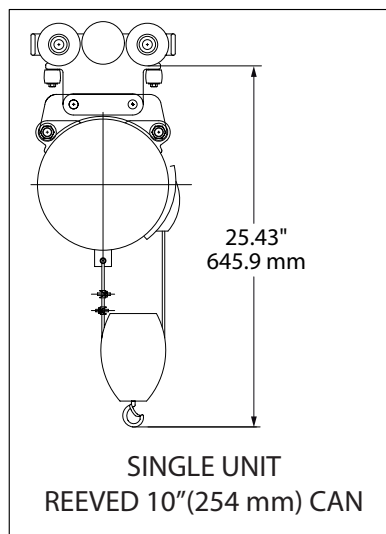
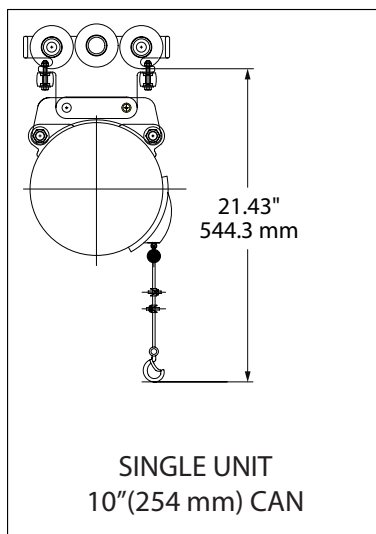
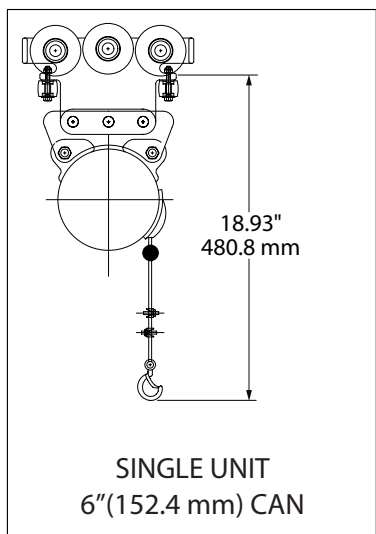
## EXAMPLE

ORDER NUMBER:

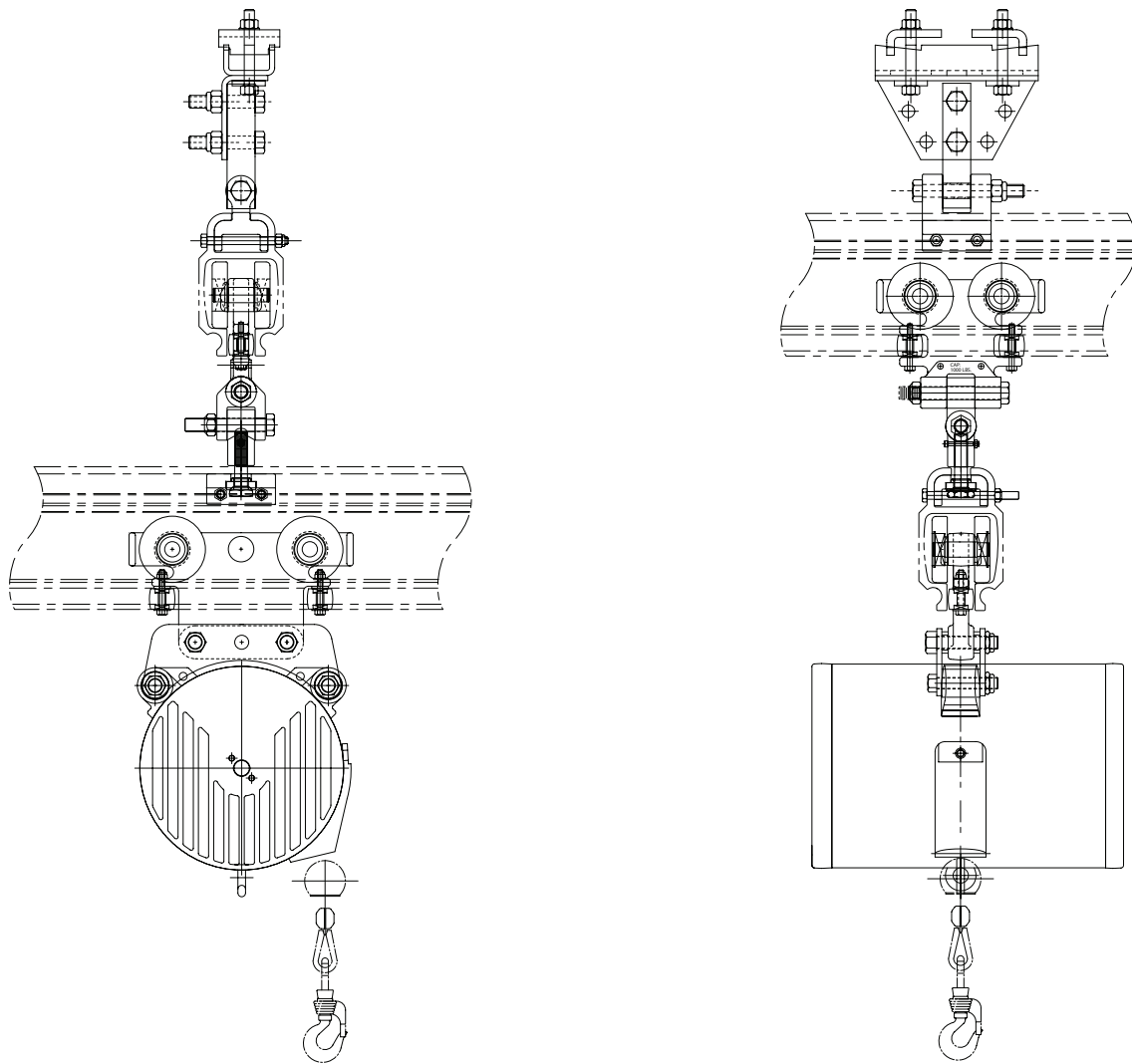
**ZRA2 | 06 | 08 | 30283 | R**



# Balancer Stack-up Dimension • for ZRA2 Aluminum Rail

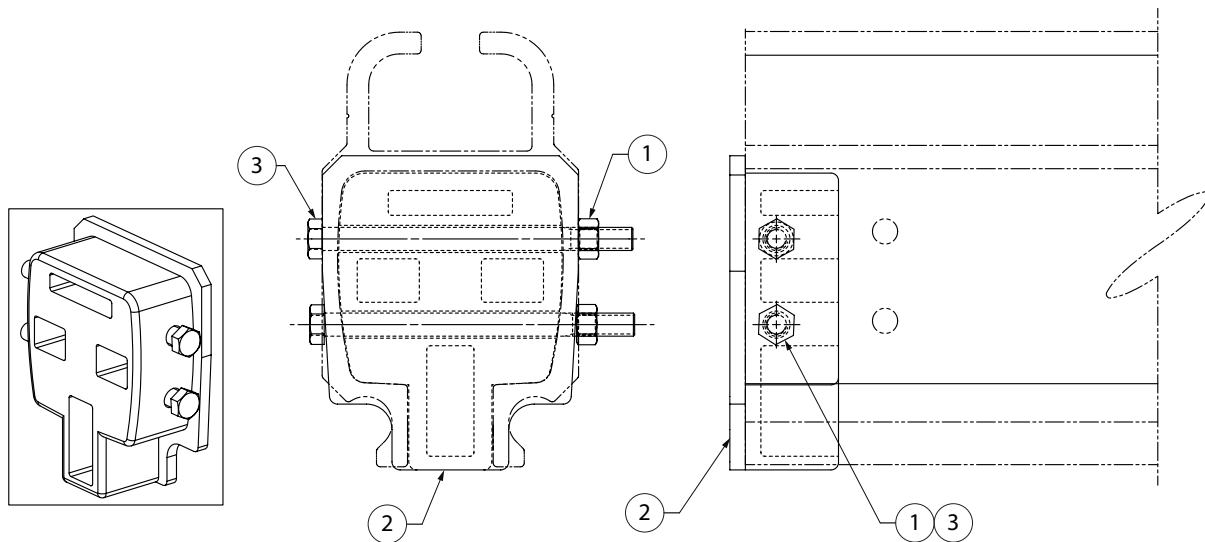


# System Stack-up Dimension • ZRA2 - Quick Reference



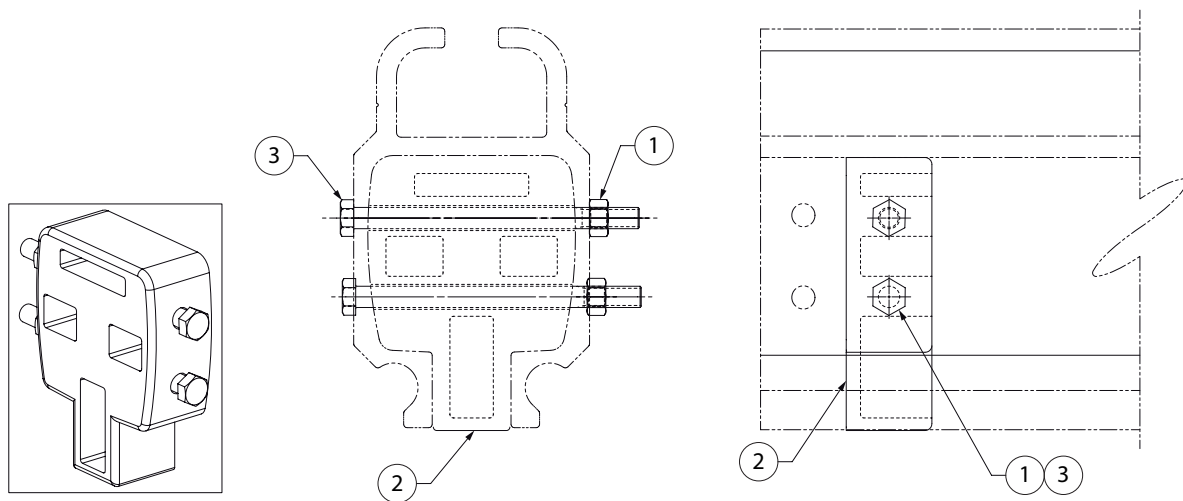
HANGER KITS	END TRUCKS	BALANCERS WITH SUSPENSION
30052 - 5.69"(144.5 mm)	30167 - 12.13"(312.6 mm)	SINGLE UNIT 6"(152.4 mm) - 20.88"(530.3 mm)
30193 - 8.31"(211.0 mm)	30176 - 12.38"(314.4 mm)	SINGLE UNIT 10"(254 mm) - 21.43"(544.3 mm)
30198 - 8.31"(211.0 mm)	30177 - 10.88"(276.3 mm)	SINGLE UNIT REEVED 10"(254 mm) - 25.43"(645.9 mm)
30199 - 14.00"(355.6 mm)	30178 - 12.13"(308.1 mm)	SINGLE UNIT WITH SERVO 10"(254 mm) - 36.68"(931.6 mm)
30900 - 14.00"(355.6 mm)	30909 - 11.00"(279.4 mm)	SINGLE UNIT REEVED SERVO 10"(254 mm) - 40.43"(1026.9 mm)
30901 - 14.00"(355.6 mm)	30910 - 10.63"(270 mm)	TANDEM UNIT 10"(254 mm) - 400 LBS.(181.43 KG), 38.18"(969.7 mm)
30902 - 14.00"(355.6 mm)	30911 - 9.38"(238.2 mm)	600 LBS.(272.15 KG), 43.18"(1096.7 mm)
30195 - (ADJUSTABLE)	30912 - 10.63"(270 mm)	1000 LBS.(453.6 KG), 38.18"(969.7 mm)
30196 - (ADJUSTABLE)	30913 - 11.25"(285.7 mm)	TANDEM UNIT REEVED 10"(254 mm) - 800 LBS.(362.87 KG), 30.18"(766.5 mm)
30921 - 10.75"(273 mm)	30914 - 12.50"(317.5 mm)	1200 LBS.(544.31 KG), 40.18"(1020.5 mm)
30922 - 10.75"(273 mm)	30915 - 11.25"(285.7 mm)	2000 LBS.(907.18 KG), 30.18"(766.5 mm)
	30916 - 12.50"(317.5 mm)	TANDEM UNIT REEVED WITH SERVO 10"(254 mm) -
	30917 - 12.75"(323.8 mm)	800 LBS.(362.87 KG), 39.93"(1014.2 mm)
		1200 LBS.(544.31 KG), 40.18"(1020.5 mm)

# End Stops • ZRA2 Aluminum Rail/Part No. (Single - 30183) (Redundant - 30185)



(Dwg. 54093091)

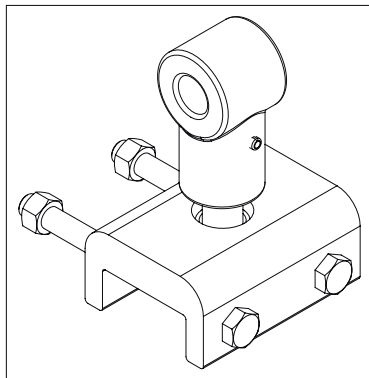
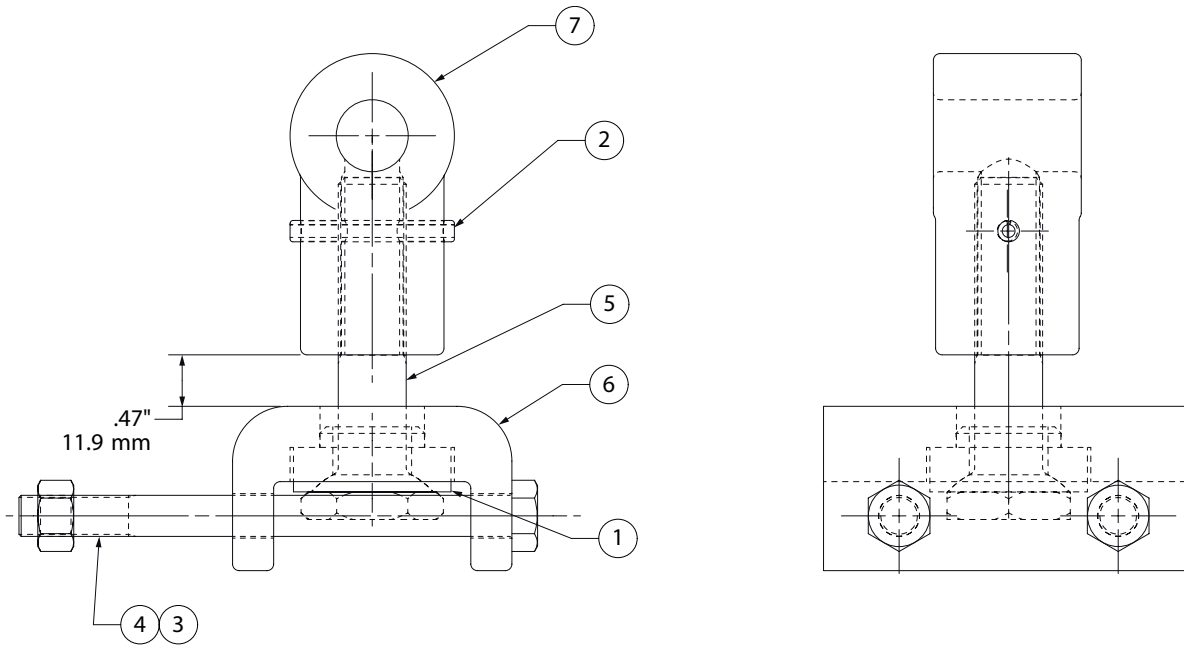
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	2
2	30182	End Stop - ZRA2	1
3	71472	3/8 - 16 x 5" HCS Grade 5	2



(Dwg. 54093109)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	2
2	30184	End Stop - ZRA2	1
3	71472	3/8 - 16 x 5" HCS Grade 5	2

# ZRA2 Rail/Bridge Suspension Sub-assembly/Part No. 30924



ULTIMATE STRENGTH ..... 17,575 LBS.(7971.88 KG)  
 YIELD STRENGTH ..... 15,000 LBS.(6803.88 KG)  
 CAPACITY..... 2000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... 3 LBS.(1.36 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

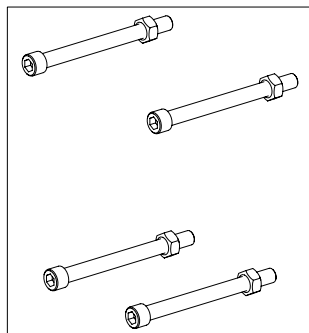
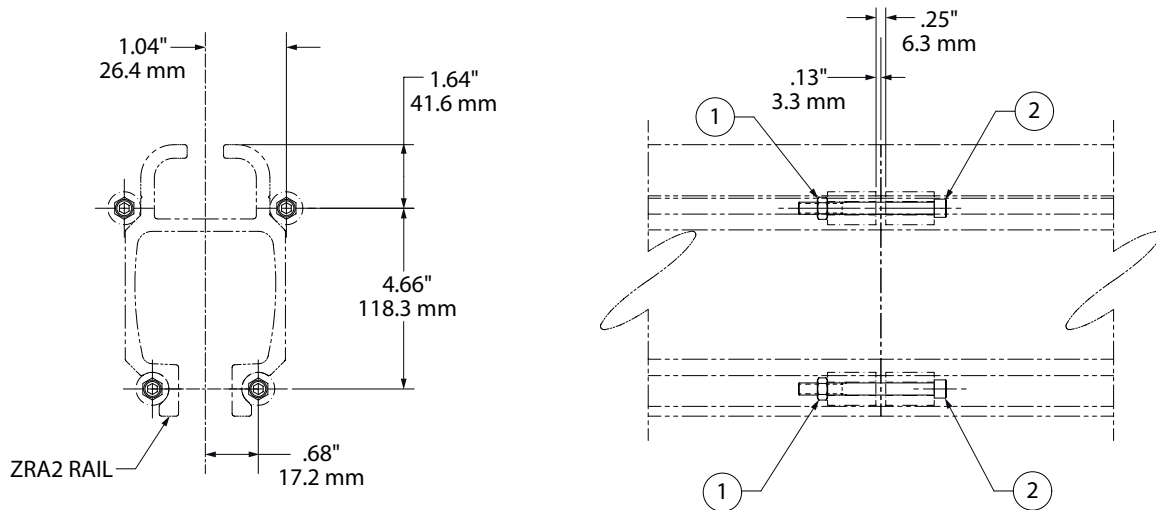
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096946)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	91105	Chair Washer, 1/2"	1
2	ZHS77058	3/16 x 1.5", Spring Pin	1
3	75583	Lock Nut, 3/8 - 16	2
4	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
5	30174	Screw, Chair Washing Mount	1
6	30164	Suspension Bracket, ZRA2	1
7	30163	Male Clevis, Machining	1



# Splice Bolt Kit • ZRA2/Part No. 30057

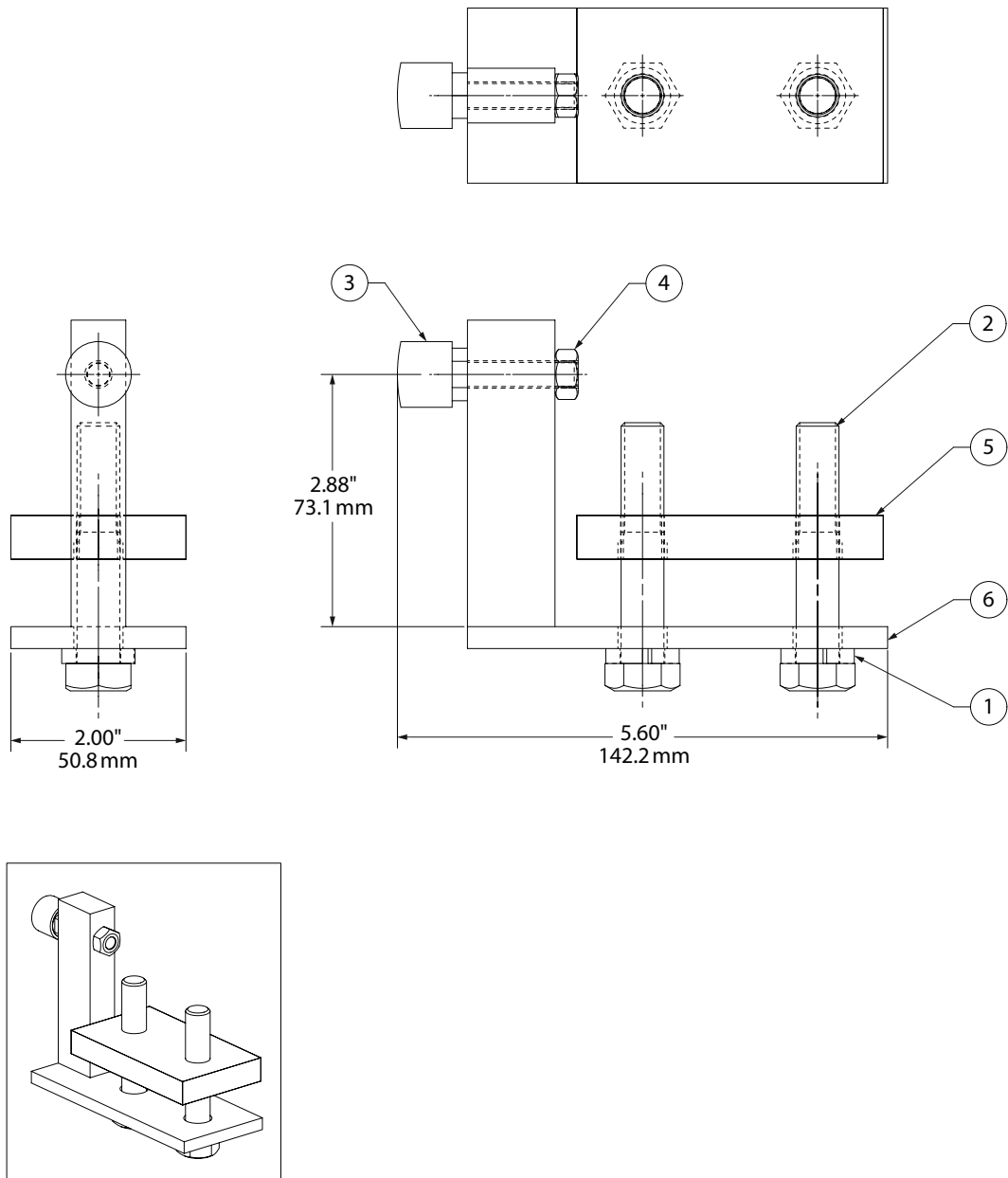


**NOTE:** THERE MUST BE A HANGER KIT WITHIN 12" (305 mm) OF THE SPLICE JOINT ON THE RUNWAY. CONSULT THE FACTORY IF MODIFICATIONS NEED TO BE MADE TO SPLICE JOINTS THAT REQUIRE WELDING OF SPLICE LUGS.

(Dwg. 54092523)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75582	Lock Nut, 5/16 - 18 PT	4
2	70926	5/16 - 18 x 3.5" SCS	4

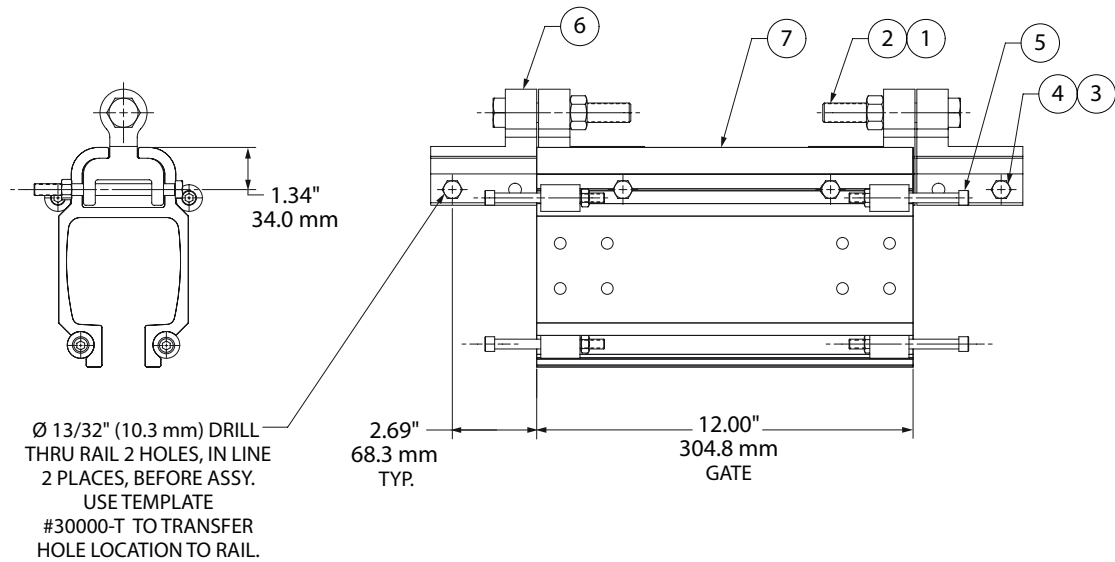
# ZRA2 Rail • Adjustable Stop/Part No. ZHS30733



(Dwg. 54068697)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	74513	Spring Lock Washer, 1/2" Medium	2
2	ZHS72002	1/2 - 13 x 2.75" HCS Grade 5	2
3	ZHS30744	BN-516M - 20 Stilson Round Bumper with Male Thread and Hex. Shoulder	1
4	75582	Lock Nut, 5/16 - 18 PT	1
5	30737	Tapped Plate, ZRA2 Adjustable Stop	1
6	30735	Stop, Adjustable - ZRA2, Bar Weldment	1

# ZRA2 Rail • Inspection Gate/Part No. 30995



**CAUTION:** THERE MUST BE A HANGER ON EACH SIDE OF THE GATE WITHIN 12.00"(304.8 mm) OF THE SPLICE JOINT.

(Dwg. 54127105)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	2
3	75583	Lock Nut, 3/8 - 16	4
4	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	4
5	30057	Splice Bolt Kit - ZRA2	2
6	30994	Hanger Bracket	4
7	30993	ZRA2 Gate	1

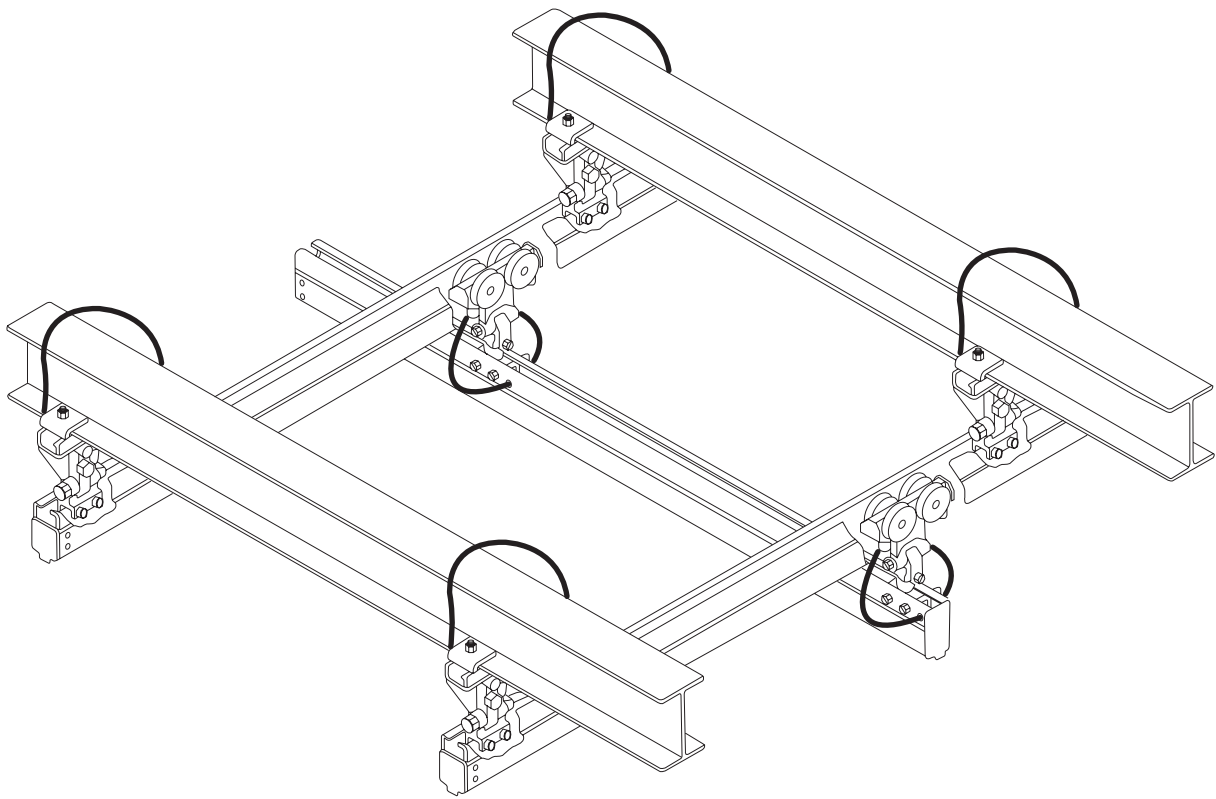
**Notes:**

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# Rail Systems

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## ZRS2/3 Steel Rail & Components



## Engineering Data for ZRS2/3 Steel Rail

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1. All rail and hangers must be installed in accordance with **Ingersoll Rand** instructions.
2. Rail provided is ZRS2/3 steel.
3. The rail or bridge beam provided is modular design, weld free application, and self aligning with complete bolt-together capability at all splice joints and hangers.
4. All rail sections provided are saw cut square to required length by **Ingersoll Rand**. All rail joints should be flush when installation is completed.
5. The capacity of the rail, monorail or bridge crane will be determined so that deflection under rated load shall not exceed 1/450 of the span. Lateral deflection will not be accepted.
6. The allowable stresses applied must not exceed 20% of the **minimum yield strength** of the materials used.
7. The maximum capacity for all rail provided by the contractor including hoist, product, process equipment, and all attachments, etc, must not exceed the capacity specified below: ZRS2 Steel Rail – acceptable for maximum capacities up to and including [2000 lbs.(907.18 kg)]. ZRS3 Steel Rail - acceptable for maximum rated load up to and including [3000 lbs.(1360.77 kg)].
8. For bridge crane or hoist application(s), the maximum overhang of the bridge girder to the centre of a runway rail, must not exceed 12.00”(304.8 mm). (For larger overhangs consult the factory).
9. All bridge cranes, runway and monorail, must be installed straight, parallel, level and at the same elevation. Installation tolerance cannot exceed the values specified below:
  - a. **Longitudinal leveling.** Multiple runways and single rail systems 0.25”(6.3 mm) in overall length, with a maximum rate of change of no more than 0.12”(3.0 mm) on twenty-foot centers.
  - b. **Elevation runway to runway.** 0.25”(6.3 mm) in span, maximum rate of change 0.12”(3.0 mm) on twenty-foot centers.
  - c. **Centering runway to runway.** 0.50”(12.7 mm) in overall length, maximum rate of change 0.12”(3.0 mm) on twenty-foot centers.
  - d. **Centering for single rail.** to a parallel conveyor of workstation will be  $\pm 0.50$ ”(12.7 mm) in overall length of the system, maximum rate of change 0.12”(3.0 mm) on twenty-foot centers.
10. Sway bracing should be used when the hanger meets or exceeds 24.00”(609.6 mm) in length. (See system installation manual.)
11. One month after system buy off, the enclosed rail system should be inspected and re-leveled by the installation contractor. All bolts at the splice joints, hangers and support structure should be re-checked for proper torque. Abnormalities noted by the inspector must be reported to **Ingersoll Rand** immediately.
12. All trolley running surfaces must be aligned flush in accordance with his specification and present no shock loading at splice connections. Transverse tilt will not be accepted.
13. Tension tubes at all splice connections will be aligned and welded by **Ingersoll Rand**.
14. Joint modification or holes required in track section(s) will be by drilling or saw cutting only. Flame cutting of holes or splice joints is not permitted.
15. Where hanger rods are used, the allowable stress will be 20% of the minimum yield strength of the material provided.
16. All hangers must be installed true and vertical. All suspension fitting should bear the load equally.
17. All bolts, nuts, fasteners, attachments etc, required for enclosed rail systems will be provided by **Ingersoll Rand**.
18. All double girder bridge cranes provided will incorporate diagonal bracing for parallel stabilization.
19. All splice connections shall not exceed 12”(304.8 mm) from the hanger points.

### ZRS2 Curved Rail

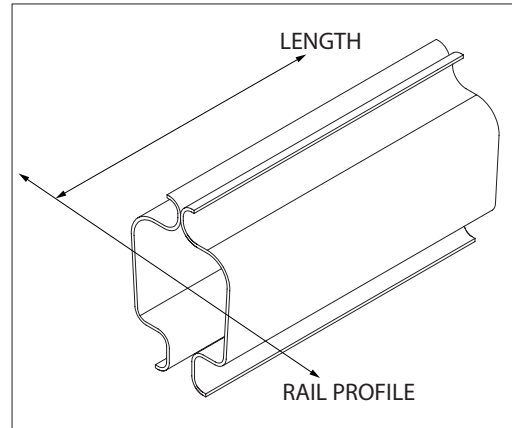
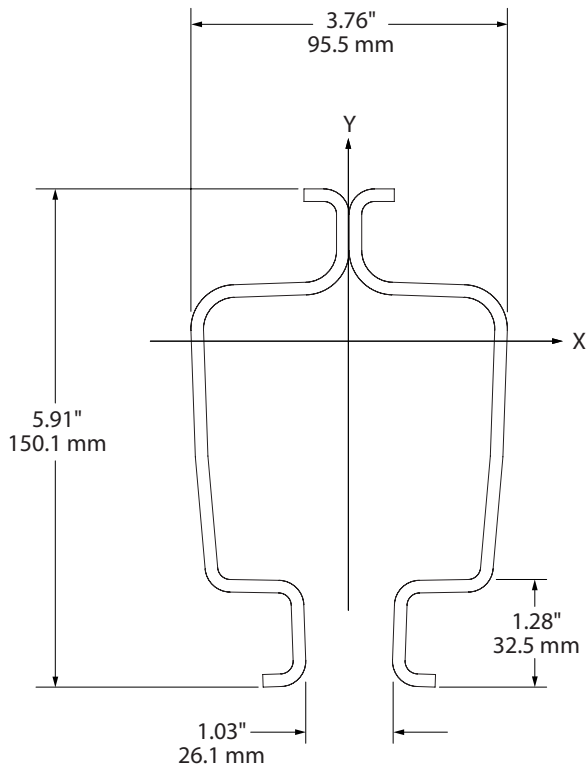
1. Enclosed rail turns will be pre-formed by **Ingersoll Rand**. All tension tubes will be aligned and installed by **Ingersoll Rand**.
2. The radius of all enclosed rail turns will be designed to allow the carriers or trolleys to freely negotiate each horizontal turn without binding.
3. The minimum radius for ZRS2 steel rail is 60.00”(1524 mm).
4. Short radius turns with a radius that is less than the standard specified above must be pre-approved by **Ingersoll Rand**.
5. The maximum overhang of a straight track to the tangent point of a horizontal turn cannot exceed 12.00”(304.8 mm).

6. A minimum of two hangers should be used in the radius of each 90° turn, the two hangers should be in addition to one hanger at each splice joint. The maximum distance between hanger centers cannot exceed 36.00"(914.4 mm). If required, additional hangers can be provided in accordance with the design and calculated distance based on the trolley or carrier loading.
7. Special curves will be supported and braced in accordance with **Ingersoll Rand's** requirement. Under no condition will rail hanger center exceed 36.00"(914.4 mm).
8. Curved rail sections will be installed with uniform bolt tension to insure that the load trolley do not bind at splice joints.
9. A straight section of rail will be provided between each horizontal turn. For single trolley systems the length will be 12.00"(304.8 mm), for dual trolley systems the length will be 28.00"(711.2 mm).
10. All hangers provided must be installed true to the vertical plane.

## **Trolleys**

1. All trolleys are manufactured by **Ingersoll Rand**.
2. All aluminum trolleys consist of high tensile aluminum-magnesium alloy body.
3. All steel trolleys consist of a welded, stamped steel body.
4. All trolley wheels provided for hoists, bridge cranes, and related equipments must conform to **Ingersoll Rand** standards.
5. Trolley wheels are delrin, machined symmetrically true with axis. All trolley wheels are retainer type, designed for a single row of high quality, precision-ground ball bearings. All trolley wheels have a stud that is press-fitted into trolley body.
6. Trolley side guide rollers are delrin machined symmetrically true with the axis. All trolley side guide rollers are designed for single row, ball bearings.
7. All trolleys are equipped with safety lugs so in the event of a wheel failure the trolley cannot come out of the rail.
8. All bearings are protected by grease and dust seals.

# How to Order • ZRS2 Steel Runway or Monorail



MOMENT OF INERTIA:  $I_{xx} = 7.32 \text{ IN}^4 [3.04\text{E}6 \text{ mm}^4]$

$I_{yy} = 3.58 \text{ IN}^4 [1.49\text{E}6 \text{ mm}^4]$

**PART NUMBER:**

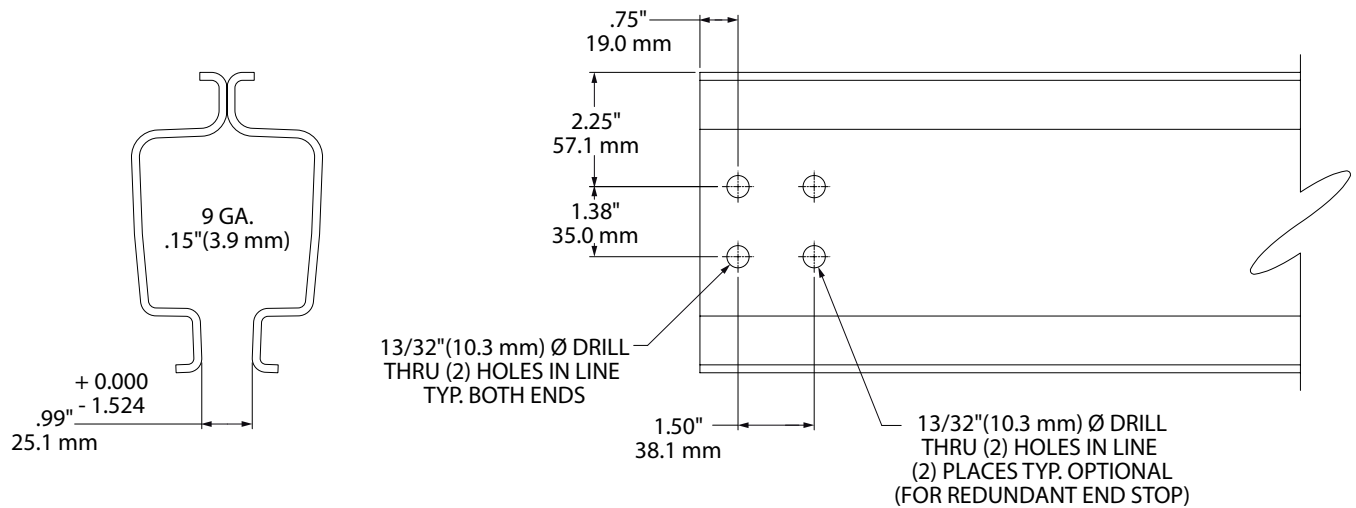
**30500 - 210 - 2**

- INDICATES SPLICE LUGS WELDED ON
- INDICATES LENGTH OF RAIL IN FEET (210=21 FEET)
- INDICATES RAIL PROFILE

**NOTE:** ALL RUNWAY RAIL WILL BE DRILLED FOR END STOPS AND WILL HAVE SPLICE LUGS WELDED ON.



# Standard Lengths • ZRS2 Steel Rail/Part No. 30500 - XXX



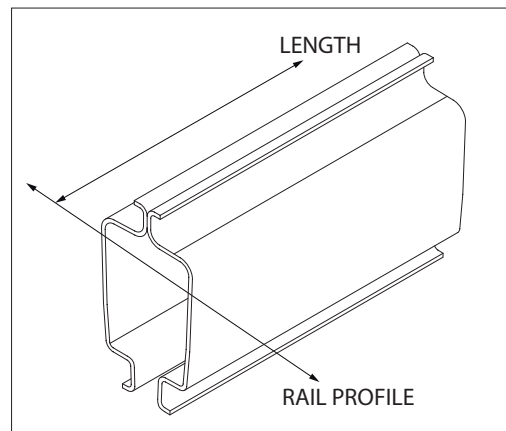
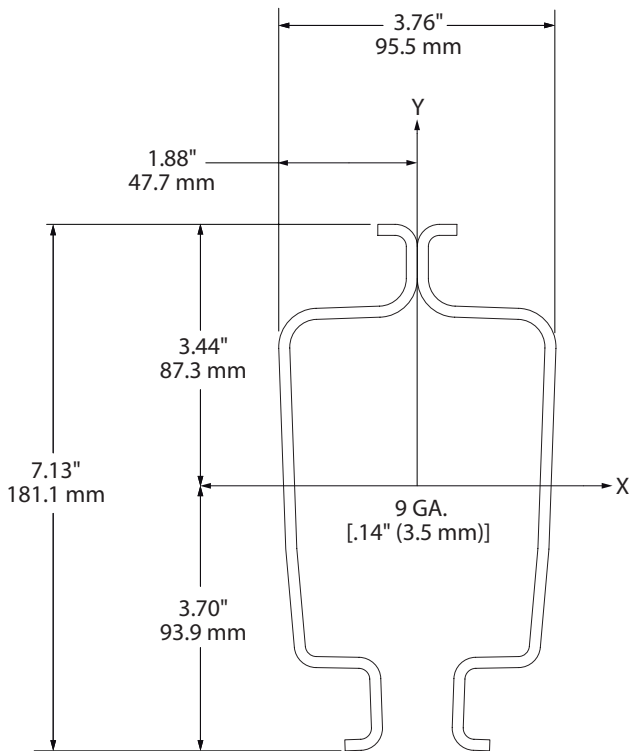
PART NO.	XXX LENGTH	PART NO.	XXX LENGTH
30500 - 050	5 FT	30500 - 150	15 FT
30500 - 060	6 FT	30500 - 160	16 FT
30500 - 070	7 FT	30500 - 170	17 FT
30500 - 080	8 FT	30500 - 180	18 FT
30500 - 090	9 FT	30500 - 190	19 FT
30500 - 100	10 FT	30500 - 200	20 FT
30500 - 110	11 FT	30500 - 210	21 FT
30500 - 120	12 FT	30500 - 220	22 FT
30500 - 130	13 FT	30500 - 230	23 FT
30500 - 140	14 FT	30500 - 240	24 FT

MAXIMUM LENGTH: 24 FT.[6400.8 mm]  
 WEIGHT: 8.64 LB./FT.[12.86 kg/m]

# Live Load Deflections • ZRS2/Part No. 30500

Rail / Bridge Span				Deflection Limits						Point Load					
ft.	in.	m	mm	L/450 in.	L/450 mm	L/550 in.	L/550 mm.	L/600 in.	L/600 mm.	L/450 lbs.	L/450 kg.	L/550 lbs.	L/550 kg.	L/600 lbs.	L/600 kg.
4	48	1.22	1219.2	0.107	2.7	0.087	2.2	0.080	2.0	2850	1293	2850	1293	2850	1293
5	60	1.52	1524.0	0.133	3.4	0.109	2.8	0.100	2.5	2850	1293	2850	1293	2850	1293
6	72	1.83	1828.8	0.160	4.1	0.131	3.3	0.120	3.0	2850	1293	2850	1293	2850	1293
7	84	2.13	2133.6	0.187	4.7	0.153	3.9	0.140	3.6	2826	1282	2826	1282	2772	1258
8	96	2.44	2438.4	0.213	5.4	0.175	4.4	0.160	4.1	2473	1122	2316	1050	2123	963
9	108	2.74	2743.2	0.240	6.1	0.196	5.0	0.180	4.6	2198	997	1830	830	1677	761
10	120	3.05	3048.0	0.267	6.8	0.218	5.5	0.200	5.1	1811	822	1482	672	1358	616
11	132	3.35	3352.8	0.293	7.5	0.240	6.1	0.220	5.6	1497	679	1225	556	1123	509
12	144	3.66	3657.6	0.320	8.1	0.262	6.7	0.240	6.1	1258	571	1029	467	943	428
13	156	3.96	3962.4	0.347	8.8	0.284	7.2	0.260	6.6	1072	486	877	398	804	365
14	168	4.27	4267.2	0.373	9.5	0.305	7.8	0.280	7.1	924	419	756	343	693	314
15	180	4.57	4572.0	0.400	10.2	0.327	8.3	0.300	7.6	805	365	659	299	604	274
16	192	4.88	4876.8	0.427	10.8	0.349	8.9	0.320	8.1	708	321	579	263	531	241
17	204	5.18	5181.6	0.453	11.5	0.371	9.4	0.340	8.6	627	284	513	233	470	213
18	216	5.49	5486.4	0.480	12.2	0.393	10.0	0.360	9.1	559	254	457	207	419	190
19	228	5.79	5791.2	0.507	12.9	0.415	10.5	0.380	9.7	502	228	411	186	376	171
20	240	6.10	6096.0	0.533	13.5	0.436	11.1	0.400	10.2	453	205	370	168	340	154
21	252	6.40	6400.8	0.560	14.2	0.458	11.6	0.420	10.7	411	186	336	152	308	140
22	264	6.71	6705.6	0.587	14.9	0.480	12.2	0.440	11.2	374	170	306	139	281	127
23	276	7.01	7010.4	0.613	15.6	0.502	12.7	0.460	11.7	342	155	280	127	257	116
24	288	7.32	7315.2	0.640	16.3	0.524	13.3	0.480	12.2	314	143	257	117	236	107

# How to Order • ZRS3 Steel Runway or Monorail



MOMENT OF INERTIA:  $I_{xx} = 14.54 \text{ IN}^4 [6.05\text{E}6 \text{ mm}^4]$

$I_{yy} = 5.08 \text{ IN}^4 [2.11\text{E}6 \text{ mm}^4]$

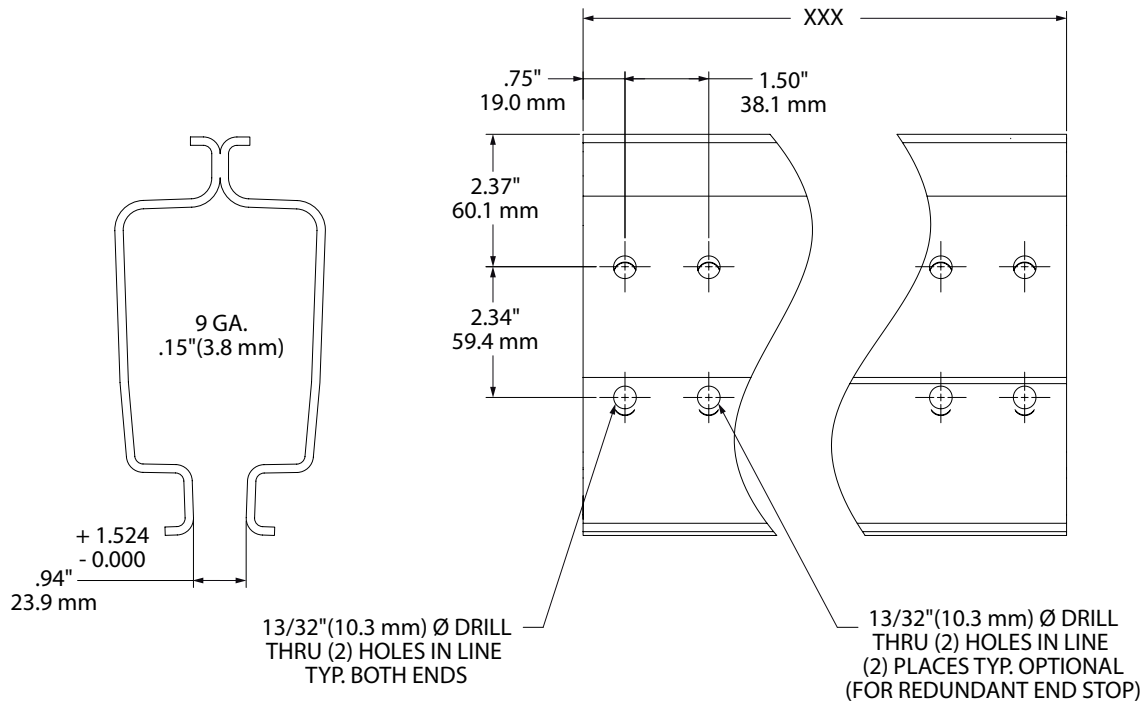
**PART NUMBER:**

**30550 - 210 - 2**

- INDICATES SPLICE LUGS WELDED ON
- INDICATES LENGTH OF RAIL IN FEET (210=21 FEET)
- INDICATES RAIL PROFILE

**NOTE:** ALL RUNWAY RAIL WILL BE DRILLED FOR END STOPS AND WILL HAVE SPLICE LUGS WELDED ON.

# Standard Lengths • ZRS3 Steel Rail/Part No. 30550 - XXX



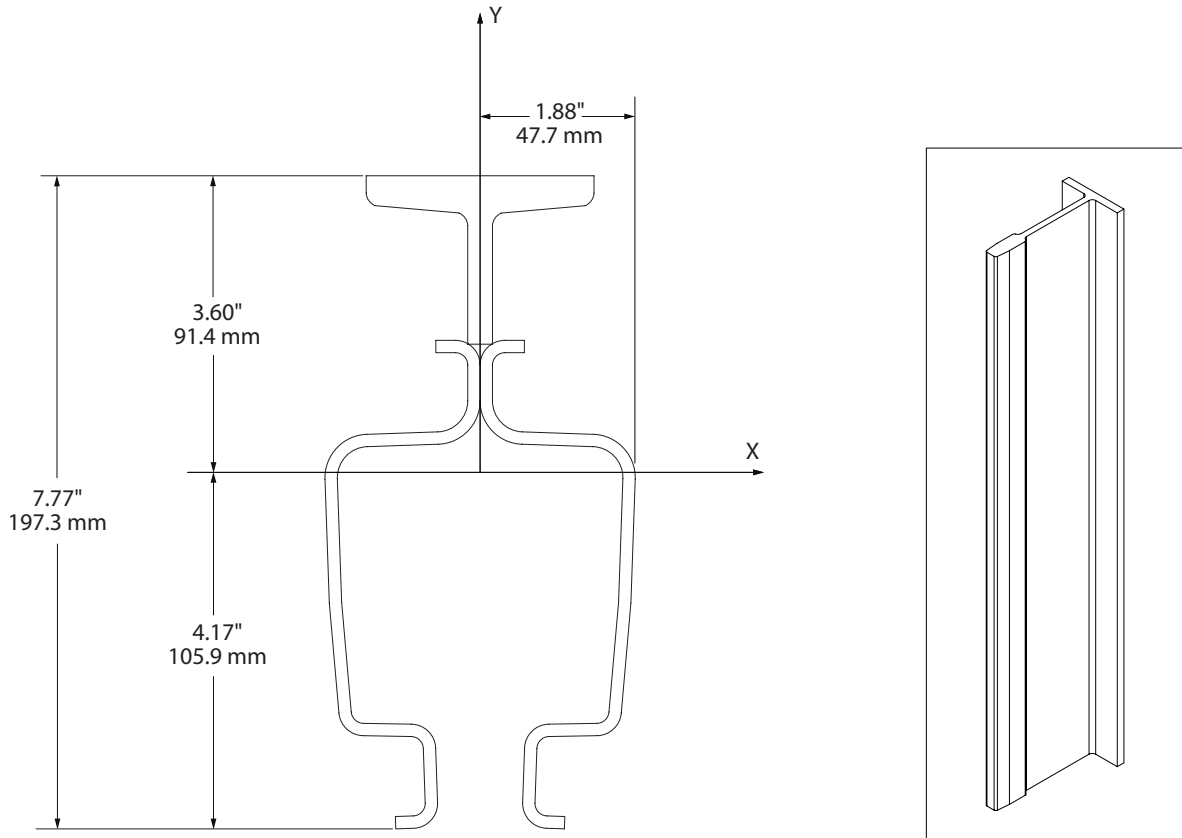
PART NO.	XXX LENGTH	PART NO.	XXX LENGTH
30550 - 050	5 FT	30550 - 150	15 FT
30550 - 060	6 FT	30550 - 160	16 FT
30550 - 070	7 FT	30550 - 170	17 FT
30550 - 080	8 FT	30550 - 180	18 FT
30550 - 090	9 FT	30550 - 190	19 FT
30550 - 100	10 FT	30550 - 200	20 FT
30550 - 110	11 FT	30550 - 210	21 FT
30550 - 120	12 FT	30550 - 220	22 FT
30550 - 130	13 FT	30550 - 230	23 FT
30550 - 140	14 FT	30550 - 240	24 FT

MAXIMUM LENGTH: 24 FT.[6400.8 mm]  
 WEIGHT: 10.06 LB./FT.[14.97 kg/m]

## Live Load Deflections • ZRS3 Steel Rail/Part No. 30550

Rail / Bridge Span				Deflection Limits						Point Load					
ft.	in.	m	mm	L/450 in.	L/450 mm	L/550 in.	L/550 mm.	L/600 in.	L/600 mm.	L/450 lbs.	L/450 kg.	L/550 lbs.	L/550 kg.	L/600 lbs.	L/600 kg.
4	48	1.22	1219.2	0.107	2.7	0.087	2.2	0.080	2.0	2850	1293	2850	1293	2850	1293
5	60	1.52	1524.0	0.133	3.4	0.109	2.8	0.100	2.5	2850	1293	2850	1293	2850	1293
6	72	1.83	1828.8	0.160	4.1	0.131	3.3	0.120	3.0	2850	1293	2850	1293	2850	1293
7	84	2.13	2133.6	0.187	4.7	0.153	3.9	0.140	3.6	2850	1293	2850	1293	2850	1293
8	96	2.44	2438.4	0.213	5.4	0.175	4.4	0.160	4.1	2850	1293	2850	1293	2850	1293
9	108	2.74	2743.2	0.240	6.1	0.196	5.0	0.180	4.6	2850	1293	2850	1293	2850	1293
10	120	3.05	3048.0	0.267	6.8	0.218	5.5	0.200	5.1	2831	1284	2555	1159	2342	1063
11	132	3.35	3352.8	0.293	7.5	0.240	6.1	0.220	5.6	2574	1168	2112	958	1936	878
12	144	3.66	3657.6	0.320	8.1	0.262	6.7	0.240	6.1	2169	984	1775	805	1627	738
13	156	3.96	3962.4	0.347	8.8	0.284	7.2	0.260	6.6	1848	838	1512	686	1386	629
14	168	4.27	4267.2	0.373	9.5	0.305	7.8	0.280	7.1	1593	723	1304	591	1195	542
15	180	4.57	4572.0	0.400	10.2	0.327	8.3	0.300	7.6	1388	630	1136	515	1041	472
16	192	4.88	4876.8	0.427	10.8	0.349	8.9	0.320	8.1	1220	553	998	453	915	415
17	204	5.18	5181.6	0.453	11.5	0.371	9.4	0.340	8.6	1081	490	884	401	811	368
18	216	5.49	5486.4	0.480	12.2	0.393	10.0	0.360	9.1	964	437	789	358	723	328
19	228	5.79	5791.2	0.507	12.9	0.415	10.5	0.380	9.7	865	392	708	321	649	294
20	240	6.10	6096.0	0.533	13.5	0.436	11.1	0.400	10.2	781	354	639	290	586	266
21	252	6.40	6400.8	0.560	14.2	0.458	11.6	0.420	10.7	708	321	579	263	531	241
22	264	6.71	6705.6	0.587	14.9	0.480	12.2	0.440	11.2	645	293	528	239	484	220
23	276	7.01	7010.4	0.613	15.6	0.502	12.7	0.460	11.7	590	268	483	219	443	201
24	288	7.32	7315.2	0.640	16.3	0.524	13.3	0.480	12.2	542	246	444	201	407	184

# Cross Section • ZRS2 Strong Back Rail/Part No. 30500T



CONSULT FACTORY FOR APPLICATIONS

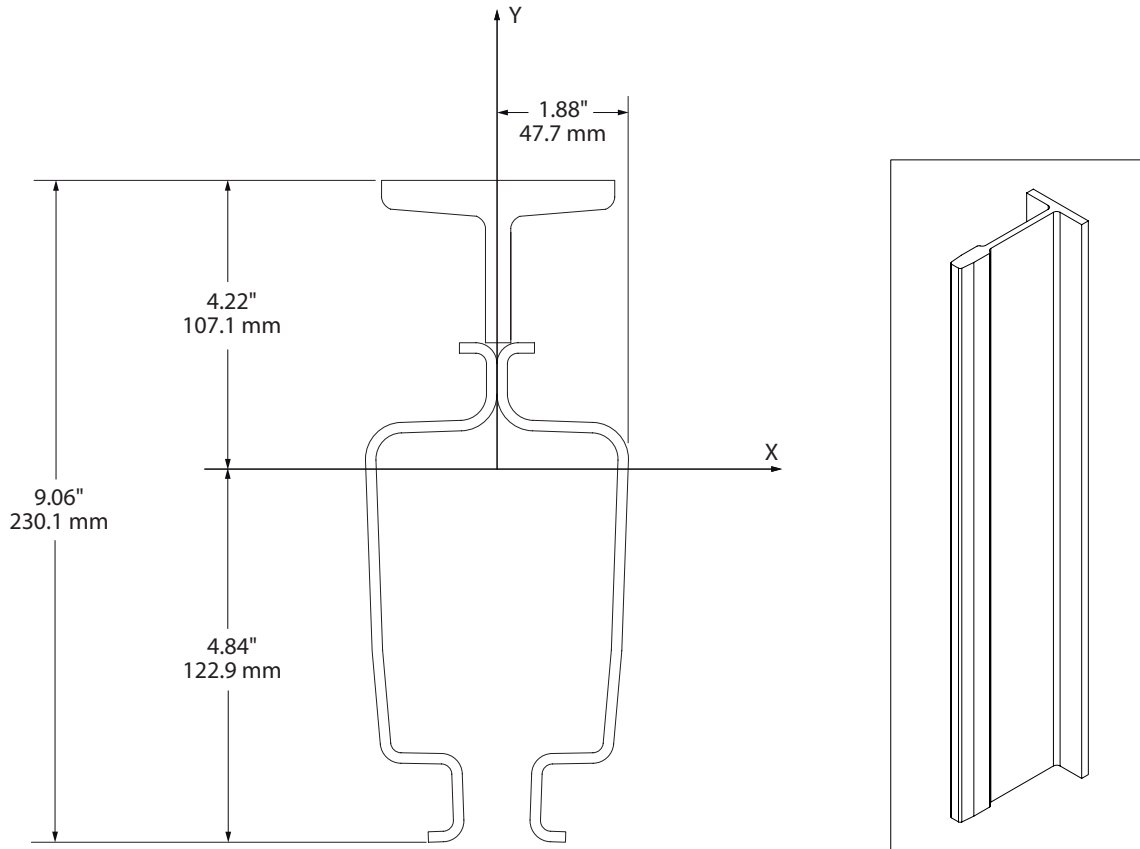
$$\text{MOMENT OF INERTIA: } I_{xx} = 20.65 \text{ IN}^4 [8.60\text{E}6 \text{ mm}^4]$$

$$I_{yy} = 4.27 \text{ IN}^4 [1.78\text{E}6 \text{ mm}^4]$$

MAXIMUM LENGTH: 24 FT. [6400.8 mm]

WEIGHT: 11.62 LB./FT. [17.19 kg/m]

# Cross Section • ZRS3 Strong Back Rail/Part No. 30550T



CONSULT FACTORY FOR APPLICATIONS

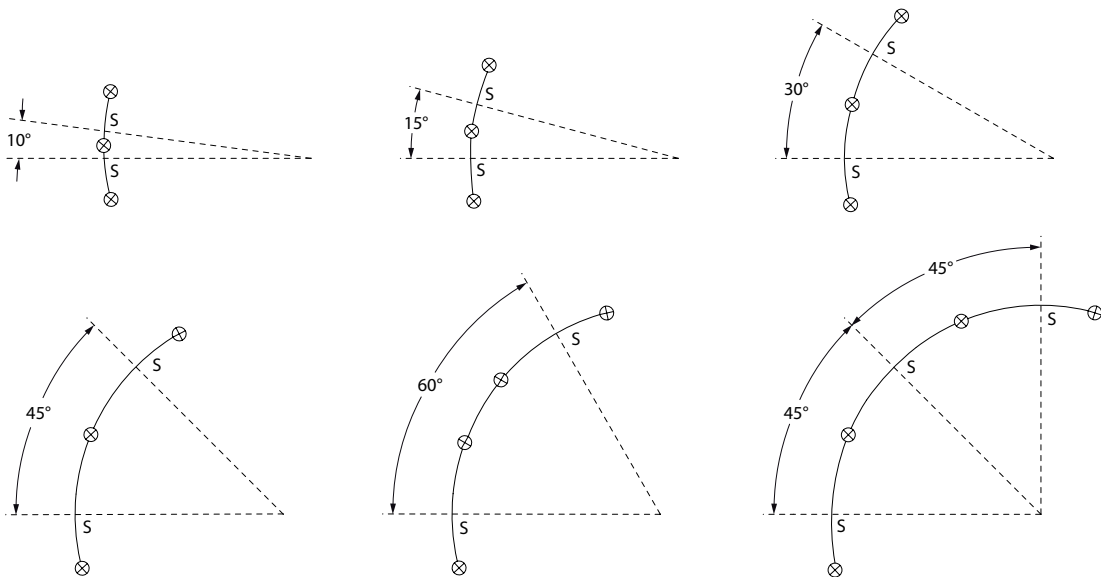
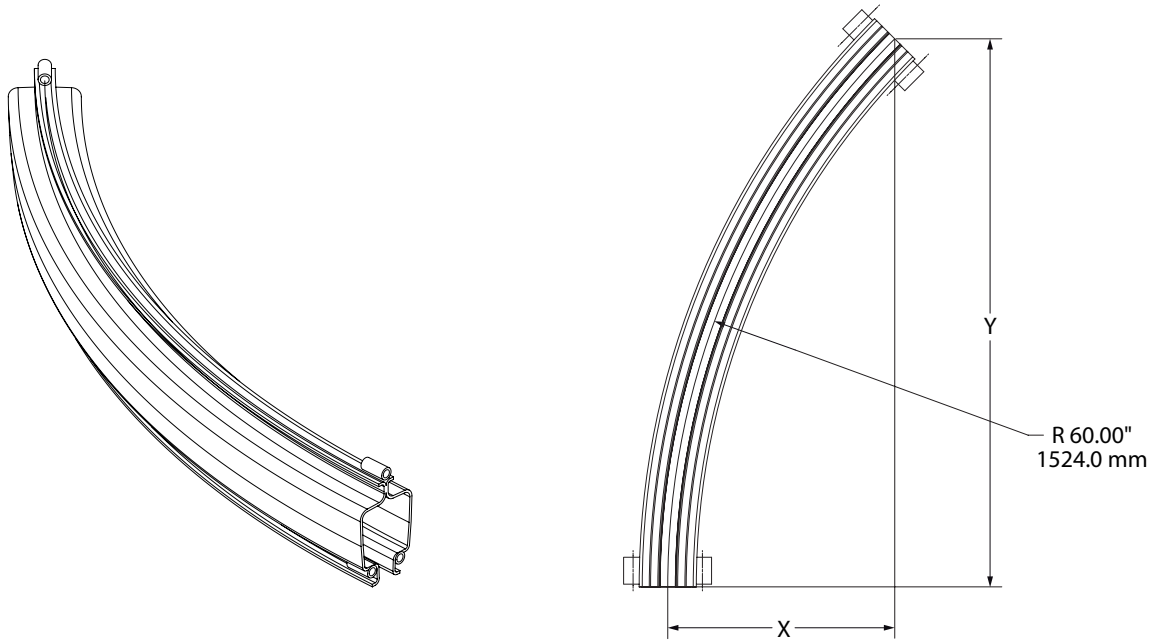
MOMENT OF INERTIA:  $I_{xx} = 30.87 \text{ IN}^4 [1.28\text{E}6 \text{ mm}^4]$

$I_{yy} = 5.25 \text{ IN}^4 [2.19\text{E}6 \text{ mm}^4]$

MAXIMUM LENGTH: 24 FT. [6400.8 mm]

WEIGHT: 12.52 LB./FT. [18.52 kg/m]

# Curved Rail Dimensions • ZRS2 Steel Rail



RAIL MUST BE SUPPORTED WITH A SUSPENSION HANGER IN THE CENTER AND ONE SUSPENSION HANGER NEAR EACH SPLICE JOINT. FOR MULTIPLE CURVED RAILS BEING SPLICED TOGETHER, SUSPENSION HANGERS WILL BE AS SHOWN ABOVE.

## CURVED RAIL SUSPENSION POINTS DIAGRAM

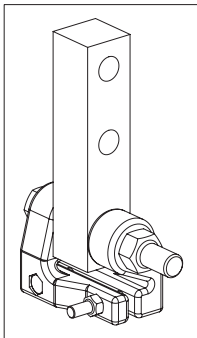
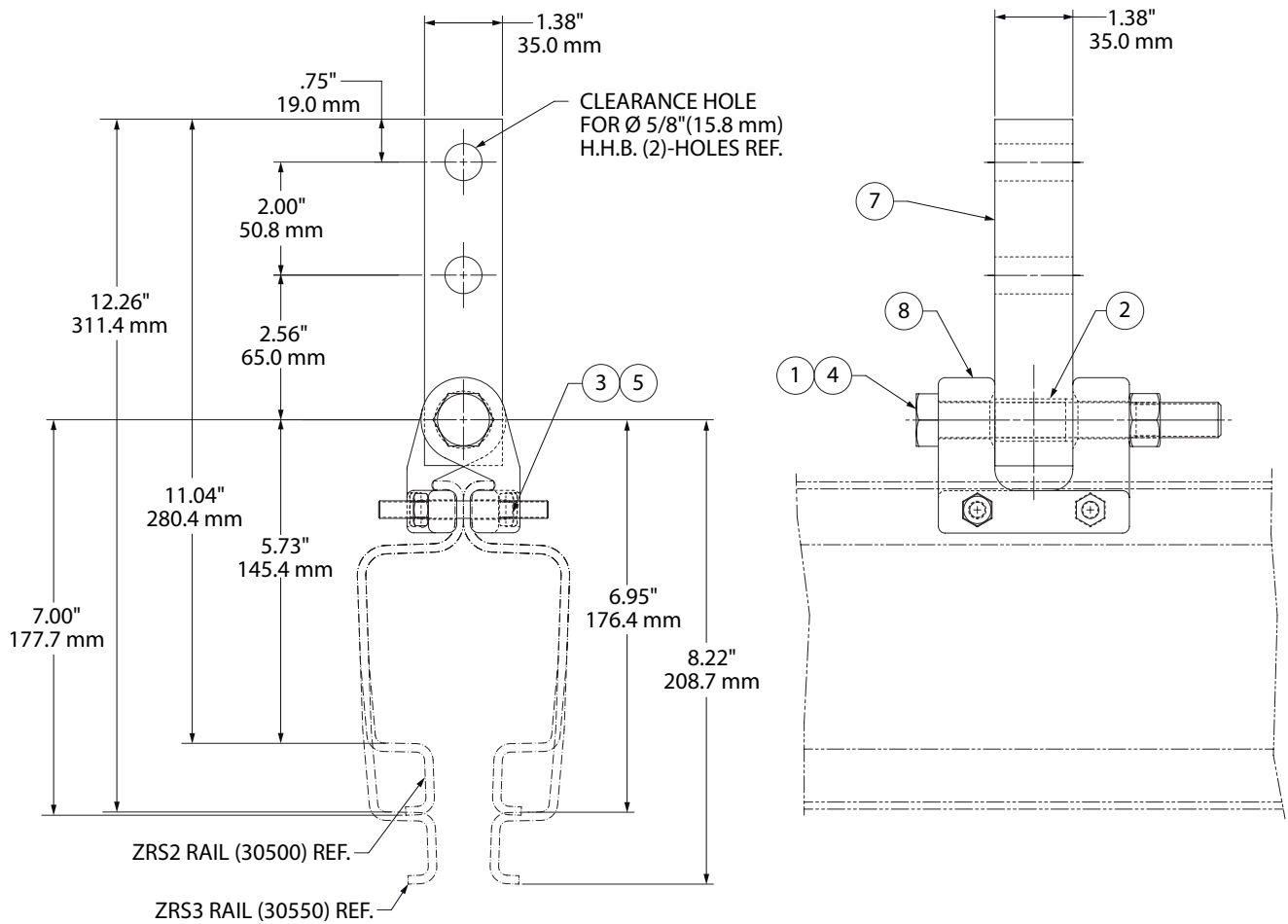
**S** - DENOTES SPLICE JOINTS

**X** - DENOTES SUSPENSION POINTS

Curved Rail Dimensions ZRS2 Steel Rail					
	Degrees	X	Y	Approximate Weight	Part Number
ZRS2 R = 60"	10	.91	10.42	6.98	30567
	15	2.04	15.53	10.47	30569
	30	8.04	30.00	20.94	30571
	45	17.57	42.43	31.44	30573



# Block Hanger Kit • ZRS2/3 Steel Rail/Perpendicular/Part No. 30813



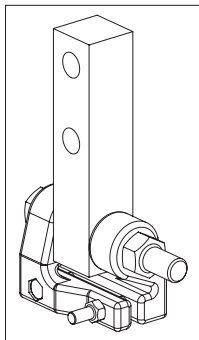
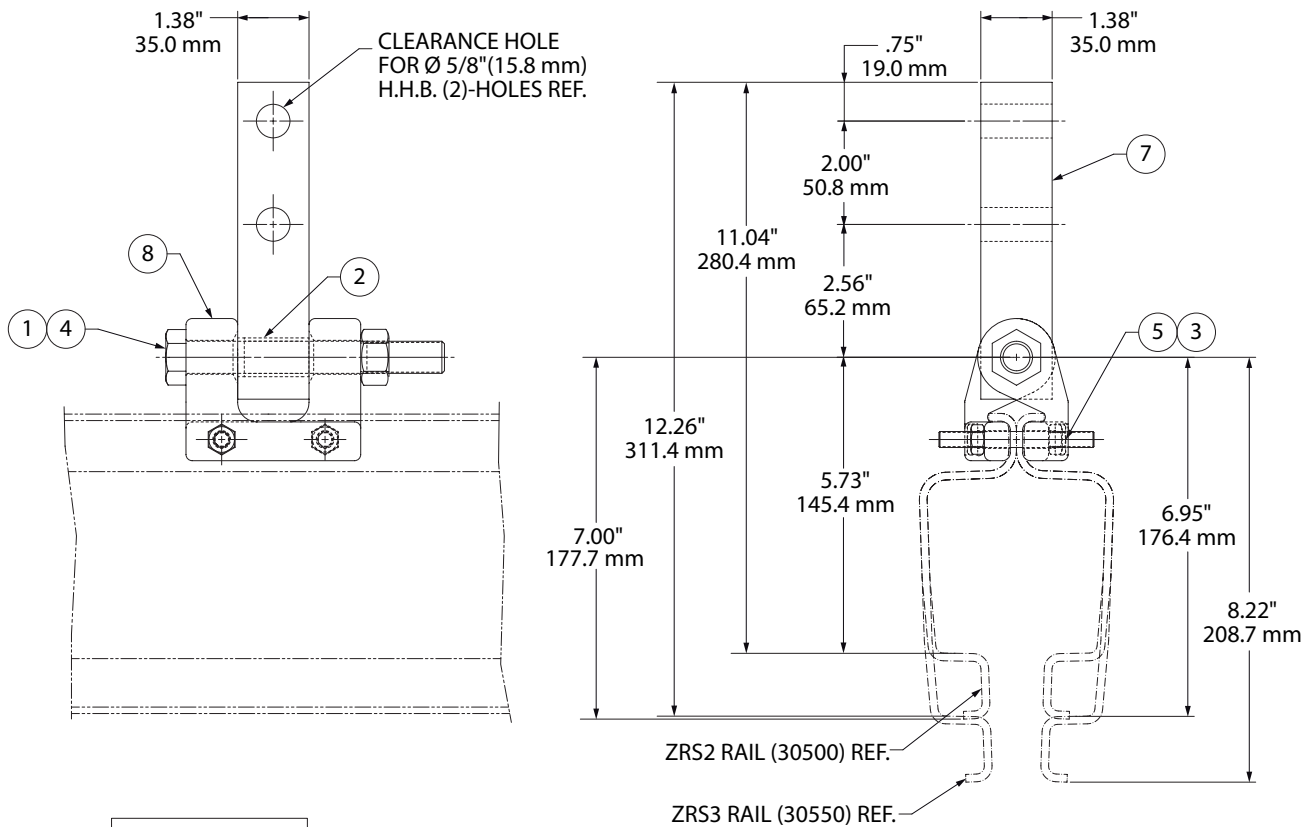
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 17,250 LBS.(7824.46 KG)  
 YIELD STRENGTH ..... 14,250 LBS.(6463.69 KG)  
 CAPACITY ..... 2,850 LBS.(1292.73 KG)  
 MINIMUM RAIL RADIUS (ZRS2) ..... 60"(1524.0 mm)  
 WEIGHT OF ASSEMBLY ..... 6.7 LBS.(3.03 KG)

(Dwg. 54096169)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	70967	5/16 x 2.25" HCS Grade 5	2
6	30907-06	Safety Cable Assembly (not shown)	1
7	30162	Hanger Block	1
8	30801S	Hanger Bracket, ZRS	2

# Block Hanger Kit • ZRS2/3 Steel Rail/Parallel/Part No. 30816



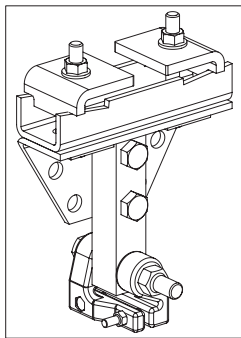
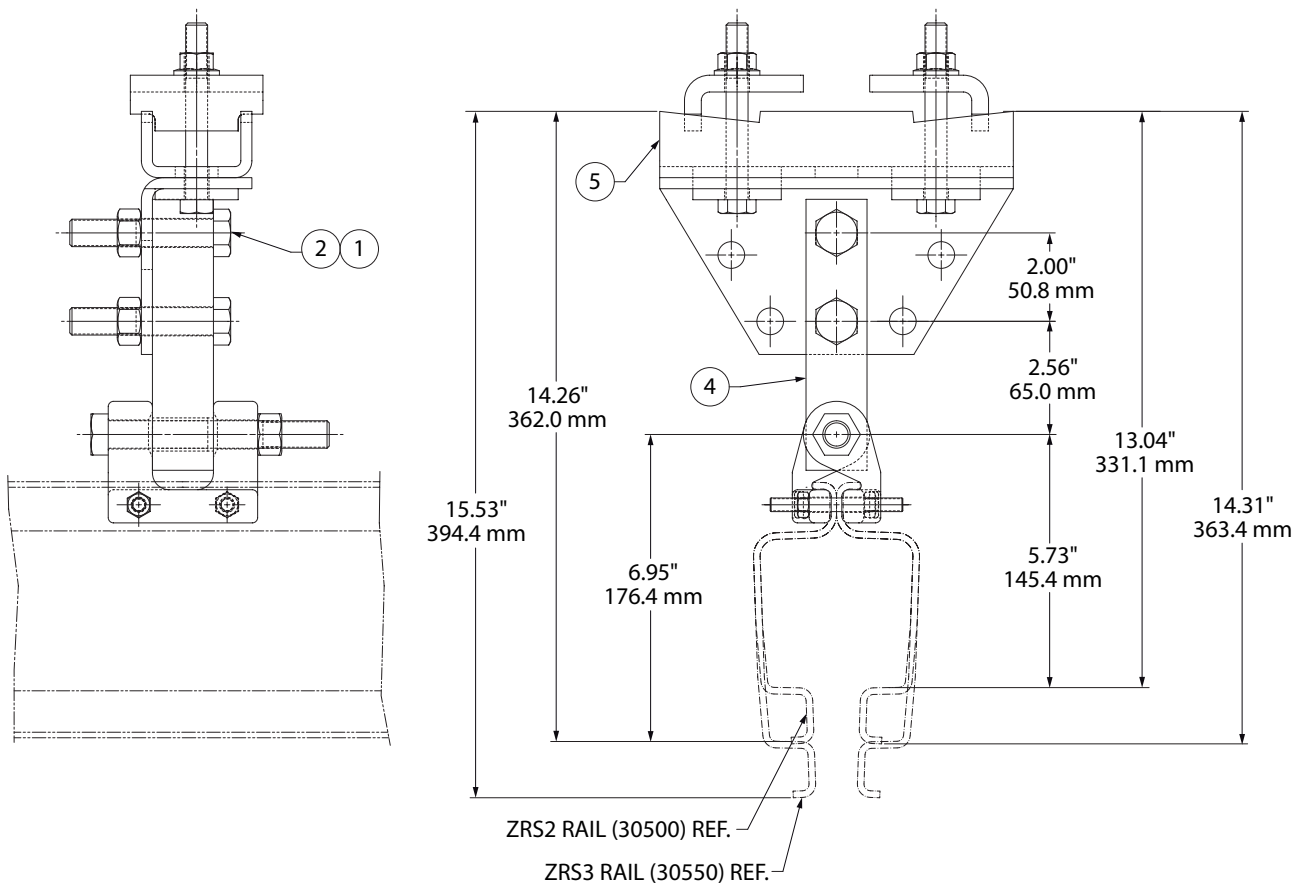
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ULTIMATE STRENGTH ..... 17,250 LBS.(7824.46 KG)
- YIELD STRENGTH ..... 14,250 LBS.(6463.69 KG)
- CAPACITY.....2,850 LBS.(1292.73 KG)
- MINIMUM RAIL RADIUS (ZRS2).....60"(1524.0 mm)
- WEIGHT OF ASSEMBLY .....6.7 LBS.(3.03 KG)

(Dwg. 54096342)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	65075	Bushing, Hanger Block, Bronze	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	70967	5/16 x 2.25" HCS Grade 5	2
6	30907-06	Safety Cable Assembly Close Kit (not shown)	1
7	ZHS30197	Hanger Block	1
8	30801S	Hanger Bracket, ZRS	2

# Beam Hanger Kit • ZRS2/3 Steel Rail/Parallel/Standard Flange/Part No. 30817



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KITS WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)

YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)

CAPACITY ..... 2,850 LBS.(1292.73 KG)

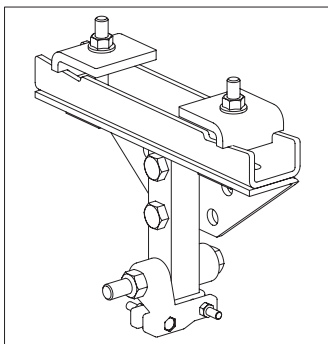
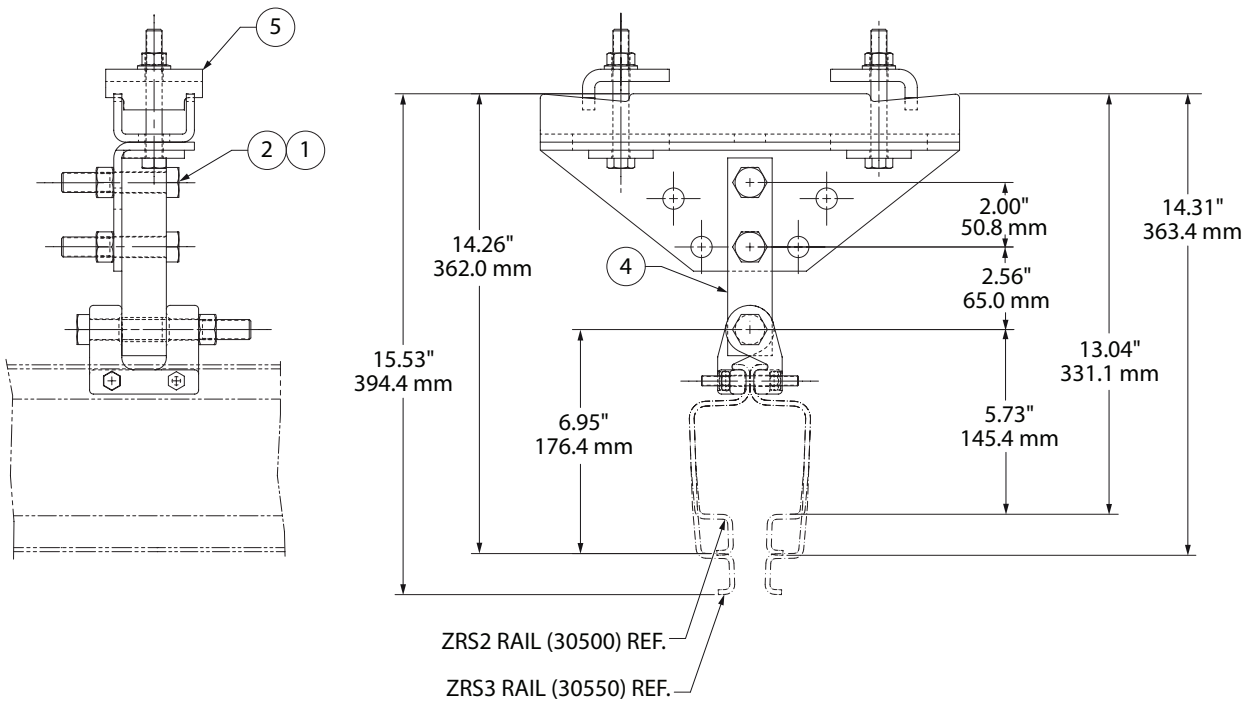
MINIMUM RAIL RADIUS (ZRS2) ..... 60"(1524.00 mm)

WEIGHT OF ASSEMBLY ..... 16.3 LBS.(7.39 KG)

(Dwg. 54096359)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 32.25 HHS Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30813	Block Hanger Kit (Perpendicular) - ZRS2/3	1
5	30816	Hanger Kit, Standard Flange Beam	1

# Beam Hanger Kit • ZRS2/3 Steel Rail/Parallel/Wide Flange/Part No. 30818



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)

YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)

CAPACITY ..... 2,850 LBS.(1292.73 KG)

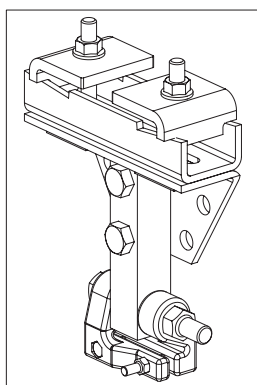
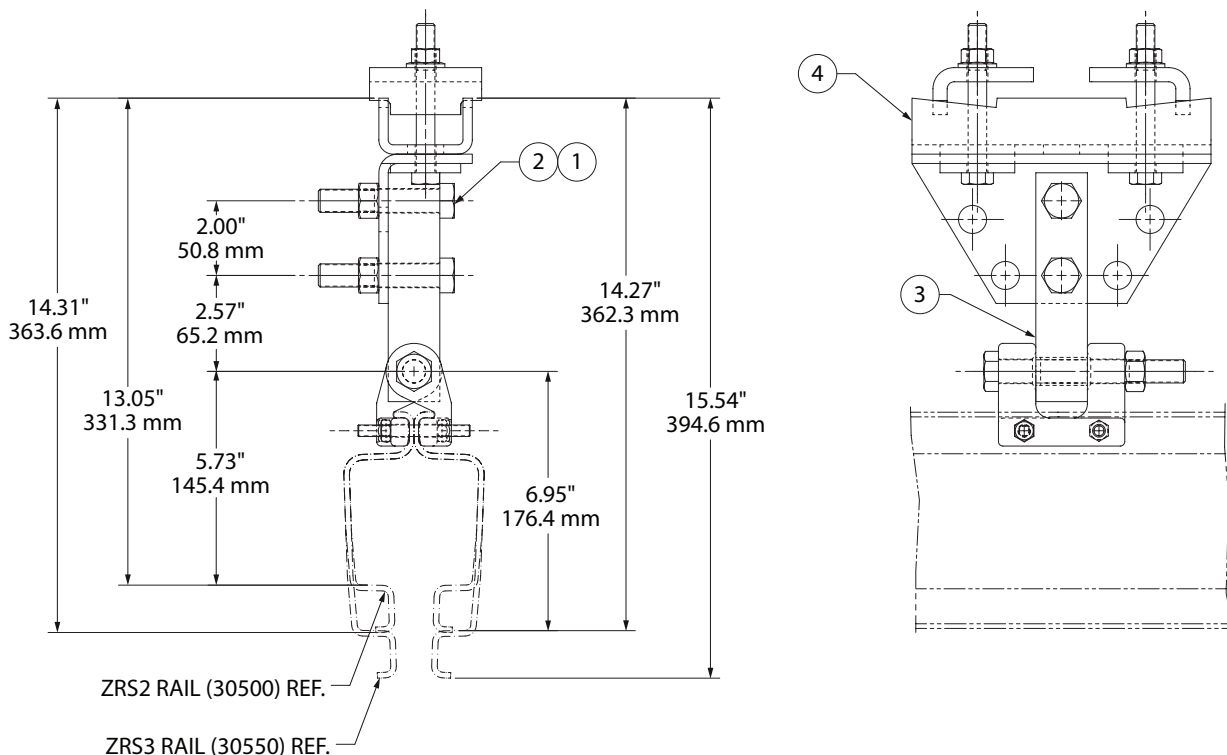
MINIMUM RAIL RADIUS (ZRS2) ..... 60" (1524.00 mm)

WEIGHT OF ASSEMBLY ..... 19.2 LBS.(8.70 KG)

(Dwg. 54096367)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907-06	Safety Cable Assembly Close Kit (not shown)	1
4	30813	Block Hanger Kit (Perpendicular) - ZRS2/3	1
5	30187	Hanger Kit, Wide Flange Beam	1

# Beam Hanger Kit • ZRS2/3 Steel Rail/Perpendicular/Standard Flange/ Part No. 30819



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KITS WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)

YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)

CAPACITY ..... 2,850 LBS.(1292.73 KG)

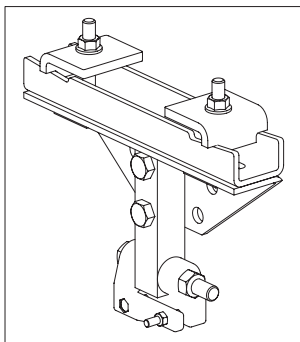
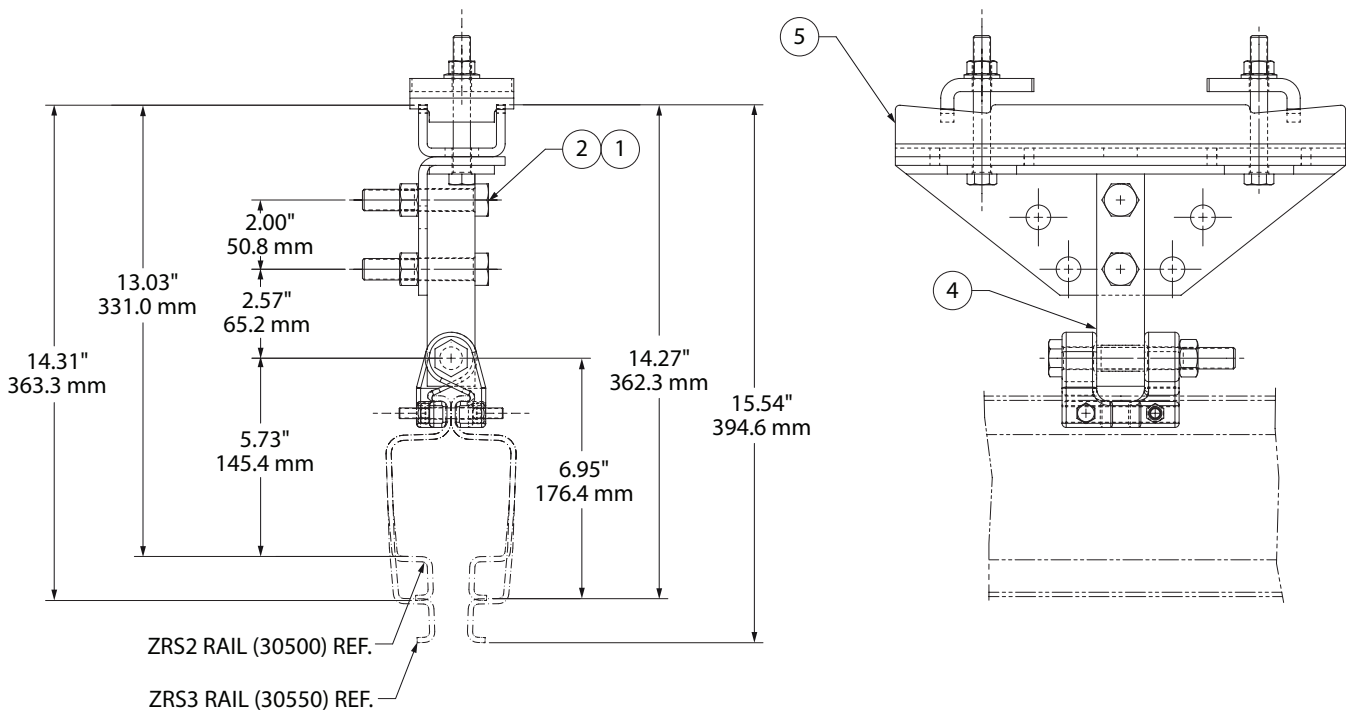
MINIMUM RAIL RADIUS (ZRS2) ..... 60" (1524.00 mm)

WEIGHT OF ASSEMBLY ..... 16.3 LBS.(7.39 KG)

(Dwg. 54096375)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30816	Block Hanger Kit (Parallel) - ZRS2/3	1
4	30186	Hanger Kit, Standard Flange Beam	1
5	30907-06	Safety Cable Assembly, Close Kit (not shown)	1

# Beam Hanger Kit • ZRS2/3 Steel Rail/Perpendicular/Wide Flange/ Part No. 30820



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)

YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)

CAPACITY ..... 2,850 LBS.(1292.73 KG)

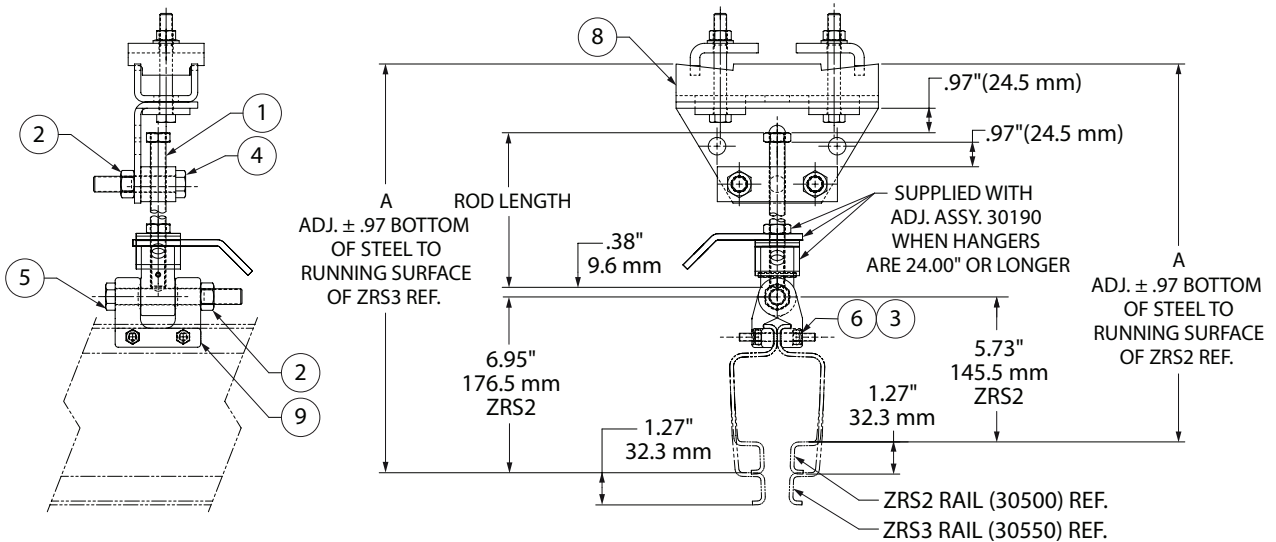
MINIMUM RAIL RADIUS (ZRS2) ..... 60"(1524.00 mm)

WEIGHT OF ASSEMBLY ..... 19.5 LBS.(8.84 KG)

(Dwg. 54096383)

Bill of Materials			
Item no.	Part no.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	3
3	30907-06	Safety Cable Assembly Close Kit (not shown)	2
4	30816	Block Hanger Kit (Parallel) - ZRS2/3	2
5	30187	Hanger Kit, Wide Flange Beam	1

# Adjustable Hanger Kit • ZRS2/3 Steel Rail/Standard Flange/Part No. 30814 - XXX



ZRS2 HANGERS : A DIMENSION = ROD LENGTH + 8.83

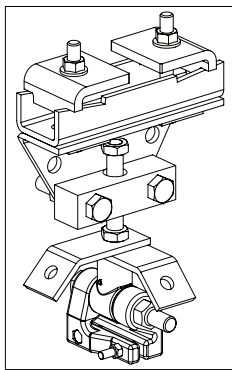
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30814 - 006	14.83	6.00	30190 - 006	30907 - 06
30814 - 012	20.83	12.00	30190 - 012	30907 - 08
30814 - 018	26.83	18.00	30190 - 018	30907 - 10
30814 - 024	32.83	24.00	30190 - 024	30907 - 10
30814 - 036	44.83	36.00	30190 - 036	30907 - 12
30814 - 048	56.83	48.00	30190 - 048	30907 - 14
30814 - 060	68.83	60.00	30190 - 060	30907 - 16
30814 - 072	80.83	72.00	30190 - 072	30907 - 18
30814 - 084	92.83	84.00	30190 - 084	30907 - 20
30814 - 096	104.83	96.00	30190 - 096	30907 - 22
30814 - 108	116.83	108.00	30190 - 108	30907 - 24
30814 - 120	128.83	120.00	30190 - 120	30907 - 26

WIRE ROPE LENGTH IN FEET

ZRS3 HANGERS : A DIMENSION = ROD LENGTH + 10.05

ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30814 - 006	16.05	6.00	30190 - 006	30907 - 06
30814 - 012	22.05	12.00	30190 - 012	30907 - 08
30814 - 018	28.05	18.00	30190 - 018	30907 - 10
30814 - 024	34.05	24.00	30190 - 024	30907 - 10
30814 - 036	36.05	36.00	30190 - 036	30907 - 12
30814 - 048	58.05	48.00	30190 - 048	30907 - 14
30814 - 060	70.05	60.00	30190 - 060	30907 - 16
30814 - 072	82.05	72.00	30190 - 072	30907 - 18
30814 - 084	94.05	84.00	30190 - 084	30907 - 20
30814 - 096	106.05	96.00	30190 - 096	30907 - 22
30814 - 108	118.05	108.00	30190 - 108	30907 - 24
30814 - 120	130.05	120.00	30190 - 120	30907 - 26

WIRE ROPE LENGTH IN FEET



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

STANDARD FLANGE HANGER KIT WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)

YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)

CAPACITY ..... 2,850 LBS.(1292.73 KG)

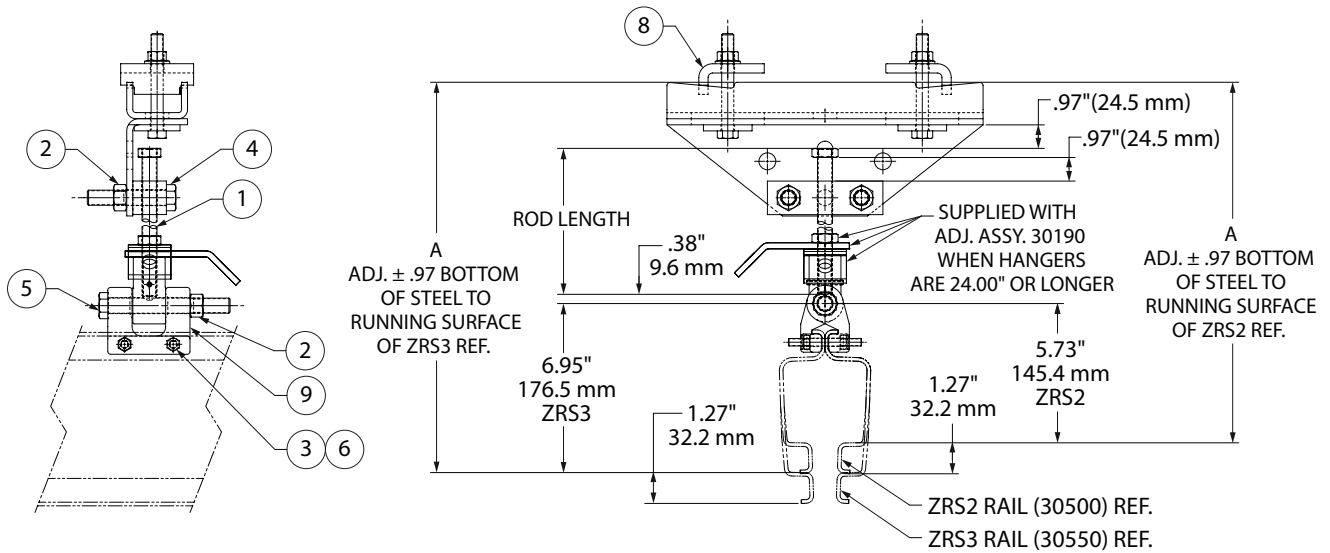
MINIMUM RAIL RADIUS (ZRS2) ..... 60"(1524.00 mm)

\*ROD LENGTHS 24.00"(609.6 mm) AND LONGER REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585994)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30190-XXX	Hanger Adjustment Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	70967	5/16 x 2.25" HCS Grade 5	2
7	30907-XX	Safety Cable Assembly, Close Kit (not shown)	1
8	30186	Hanger Kit, Standard Flange Beam	1
9	30801S	Hanger Bracket, ZRS	2

# Adjustable Hanger Kit • ZRS2/3 Steel Rail/Wide Flange/Part No. 30815-XXX



ZRS2 HANGERS : A DIMENSION = ROD LENGTH + 8.83

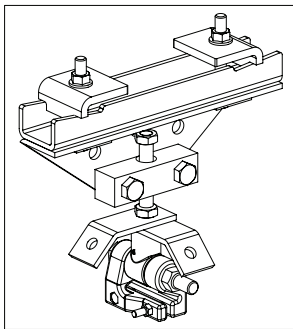
ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30815 - 006	14.83	6.00	30190 - 006	30907 - 06
30815 - 012	20.83	12.00	30190 - 012	30907 - 08
30815 - 018	26.83	18.00	30190 - 018	30907 - 10
30815 - 024	32.83	24.00	30190 - 024	30907 - 10
30815 - 036	44.83	36.00	30190 - 036	30907 - 12
30815 - 048	56.83	48.00	30190 - 048	30907 - 14
30815 - 060	68.83	60.00	30190 - 060	30907 - 16
30815 - 072	80.83	72.00	30190 - 072	30907 - 18
30815 - 084	92.83	84.00	30190 - 084	30907 - 20
30815 - 096	104.83	96.00	30190 - 096	30907 - 22
30815 - 108	116.83	108.00	30190 - 108	30907 - 24
30815 - 120	128.83	120.00	30190 - 120	30907 - 26

ZRS3 HANGERS : A DIMENSION = ROD LENGTH + 10.05

ORDER NUMBER HANGER KIT ASSEMBLY NO.	A DIM.	ROD LENGTH	ADJUSTMENT ASSEMBLY	SAFETY CABLE ASSEMBLY NUMBER
30815 - 006	16.05	6.00	30190 - 006	30907 - 06
30815 - 012	22.05	12.00	30190 - 012	30907 - 08
30815 - 018	28.05	18.00	30190 - 018	30907 - 10
30815 - 024	34.05	24.00	30190 - 024	30907 - 10
30815 - 036	36.05	36.00	30190 - 036	30907 - 12
30815 - 048	58.05	48.00	30190 - 048	30907 - 14
30815 - 060	70.05	60.00	30190 - 060	30907 - 16
30815 - 072	82.05	72.00	30190 - 072	30907 - 18
30815 - 084	94.05	84.00	30190 - 084	30907 - 20
30815 - 096	106.05	96.00	30190 - 096	30907 - 22
30815 - 108	118.05	108.00	30190 - 108	30907 - 24
30815 - 120	130.05	120.00	30190 - 120	30907 - 26

WIRE ROPE LENGTH IN FEET

WIRE ROPE LENGTH IN FEET



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5"(127.0 mm) TO 10"(254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)

YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)

WEIGHT OF ASSEMBLY ..... 17 LBS.(7.71 KG)

CAPACITY ..... 2,850 LBS.(1292.73 KG)

MINIMUM RAIL RADIUS (ZRS2) ..... 60"(1524.00 mm)

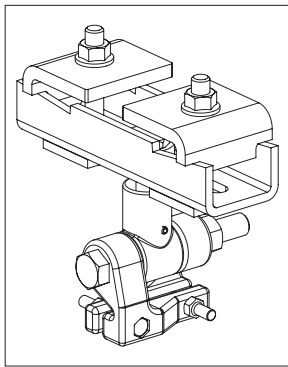
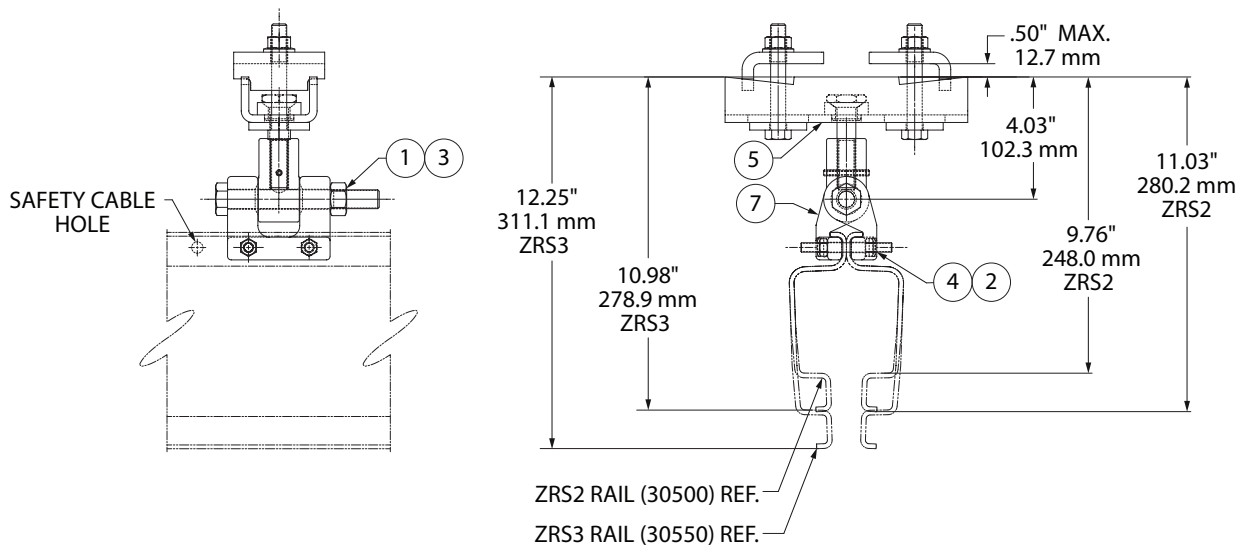
\*ROD LENGTHS 24.00"(609.6 mm) AND LONGER REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(Dwg. 16585895)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30190-XXX	Hanger Adjustment Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	70967	5/16 x 2.25" HCS Grade 5	2
7	30907-XX	Safety Cable Assembly, Close Kit (not shown)	1
8	30187	Hanger Kit, Wide Flange Beam	1
9	30801S	Hanger Bracket, ZRS	2



# Close Hanger Kit • ZRS2/3 Steel Rail/Standard Flange/Part No. 30840



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

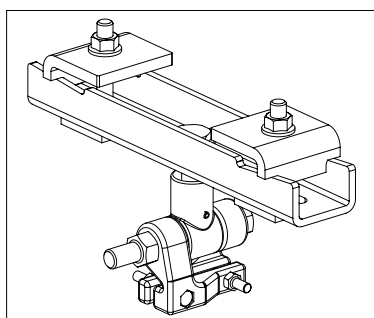
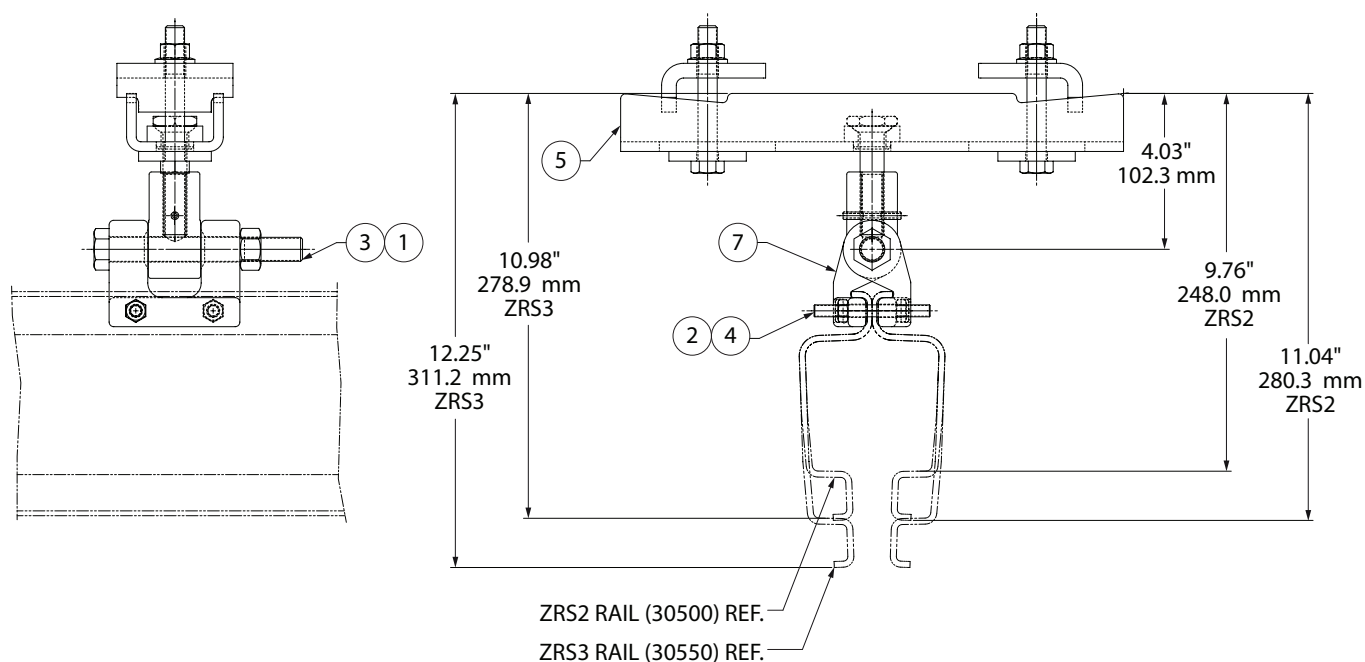
STANDARD FLANGE HANGER KITS WILL ACCOMMODATE FROM 2.5"(63.5 mm) TO 5"(127.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)  
 YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)  
 CAPACITY ..... 2,850 LBS.(1292.73 KG)  
 MINIMUM RAIL RADIUS (ZRS2) ..... 60"(1524.00 mm)  
 WEIGHT OF ASSEMBLY ..... 10.2 LBS.(4.62 KG)

(Dwg. 54096565)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75582	Lock Nut, 5/16 - 18 PT	2
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
4	70967	5/16 x 2.25" HCS Grade 5	2
5	30919	Closer Hanger Kit, Sub-assembly	1
6	30907-06	Safety Assembly, Close Kit (not shown)	1
7	30801S	Hanger Bracket, ZRS	2

# Close Hanger Kit • ZRS2/3 Steel Rail/Wide Flange/Part No. 30841



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

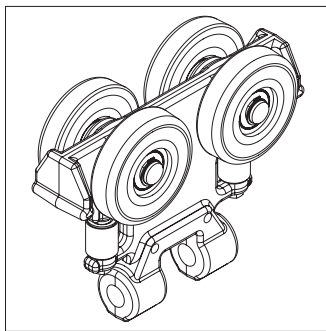
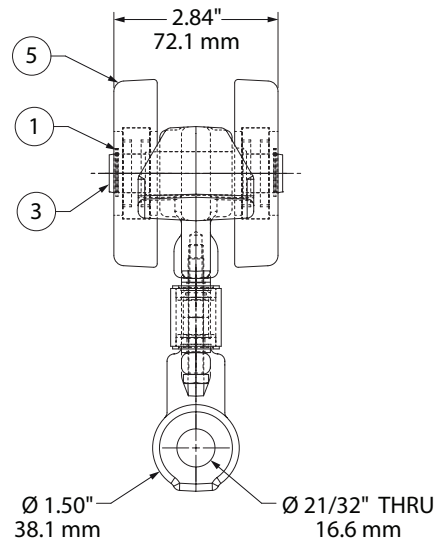
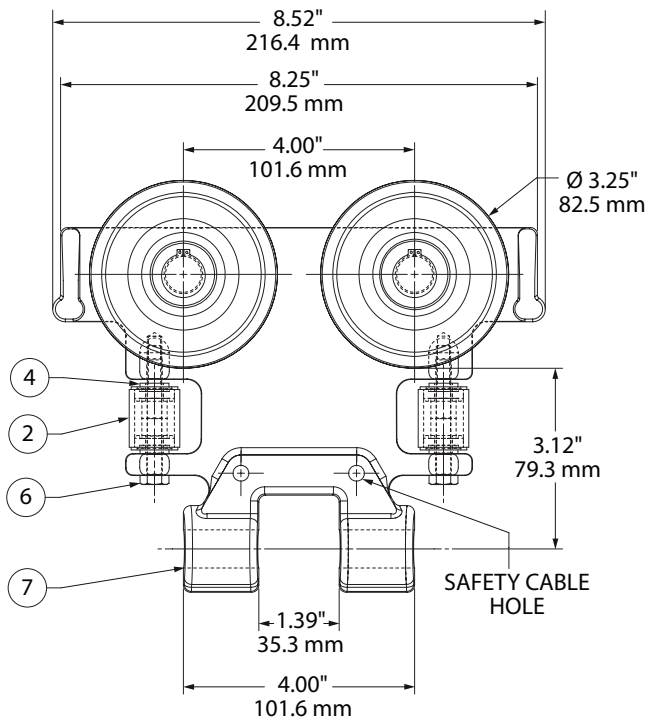
WIDE FLANGE HANGER KITS WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (254.0 mm) FLANGE WIDTH.

ULTIMATE STRENGTH..... 17,250 LBS.(7824.46 KG)  
YIELD STRENGTH..... 14,250 LBS.(6463.69 KG)  
CAPACITY ..... 2,850 LBS.(1292.73 KG)  
MINIMUM RAIL RADIUS (ZRS2) ..... 60" (1524.00 mm)  
WEIGHT OF ASSEMBLY ..... 11.9 LBS.(5.39 KG)

(Dwg. 54096573)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	75582	Lock Nut, 5/16 - 18 PT	2
3	72623	Hexagonal Bolt, 5/8 - 5"	1
4	70967	5/16 x 2.25" HCS Grade 5"	2
5	30920	Closer Hanger Kit Sub-assembly, Wide Beam	1
6	30907-06	Safety Cable Assembly, Close Kit (not shown)	1
7	30801S	Hanger Bracket, ZRS	2

# ZRS2/3 Aluminum Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30821



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,000 LBS.(6803.88 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	3.25\"(82.5 mm) DIA. DELRIN
BEARINGS.....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELIN
WEIGHT OF TROLLEY.....	5 LBS.(2.26 KG)
MINIMUM RAIL RADIUS.....	60.00\"(1524.0 mm)

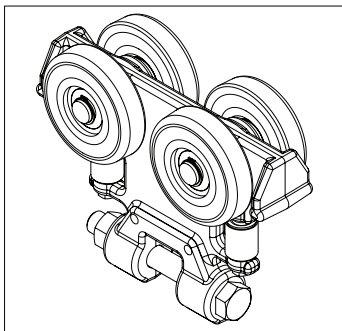
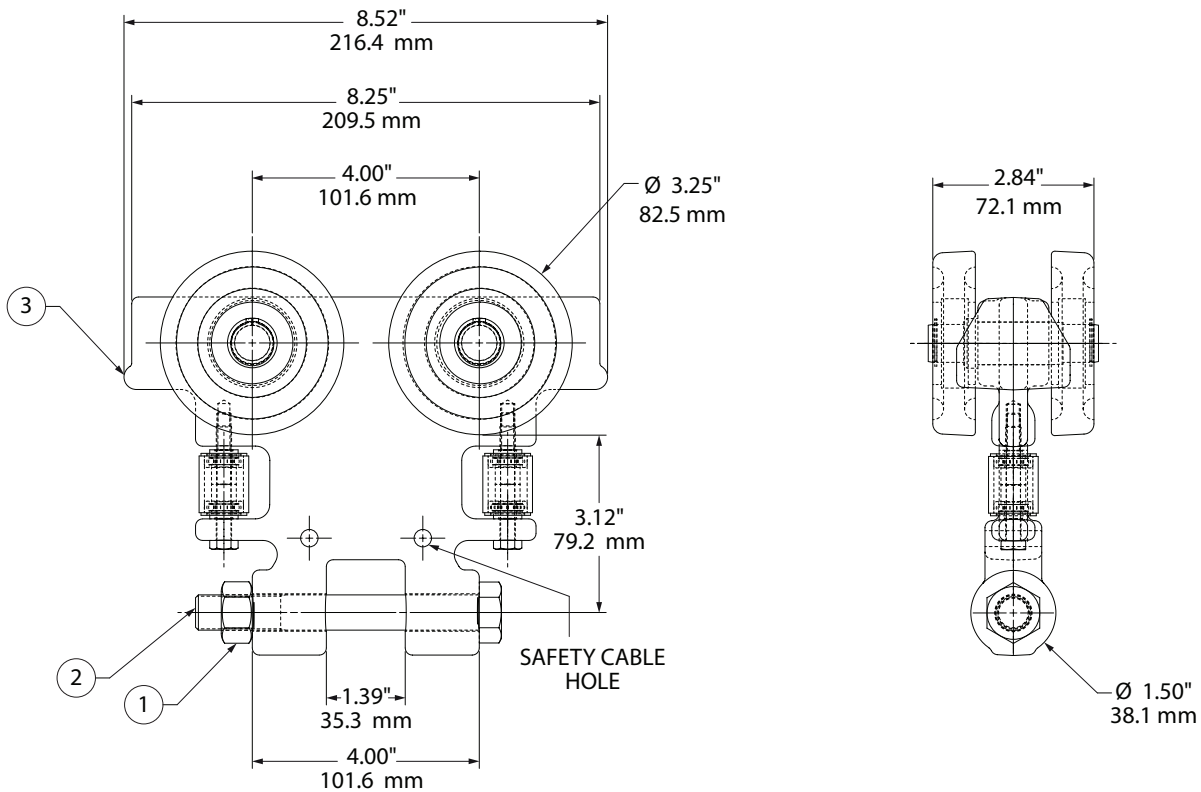
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096391)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93936	Guide Roller	2
3	93934	Axle	2
4	65038	Radial Ball Bearing	4
5	30056	Trolley Wheel Assembly	4
6	ZHS70416	1/4 - 20 x 2.25\" HCS Grade 5	2
7	ZHS30171	Trolley Body, Machining	1

# ZRS2/3 Aluminum Load Trolley • 1000 lbs. (453.6 kg) Capacity/ Part No. 30842



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,000 LBS.(6803.88 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	5.5 LBS.(2.5 KG)
MINIMUM RAIL RADIUS.....	60.00"(1524.0 mm)

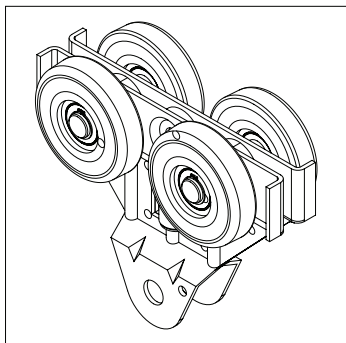
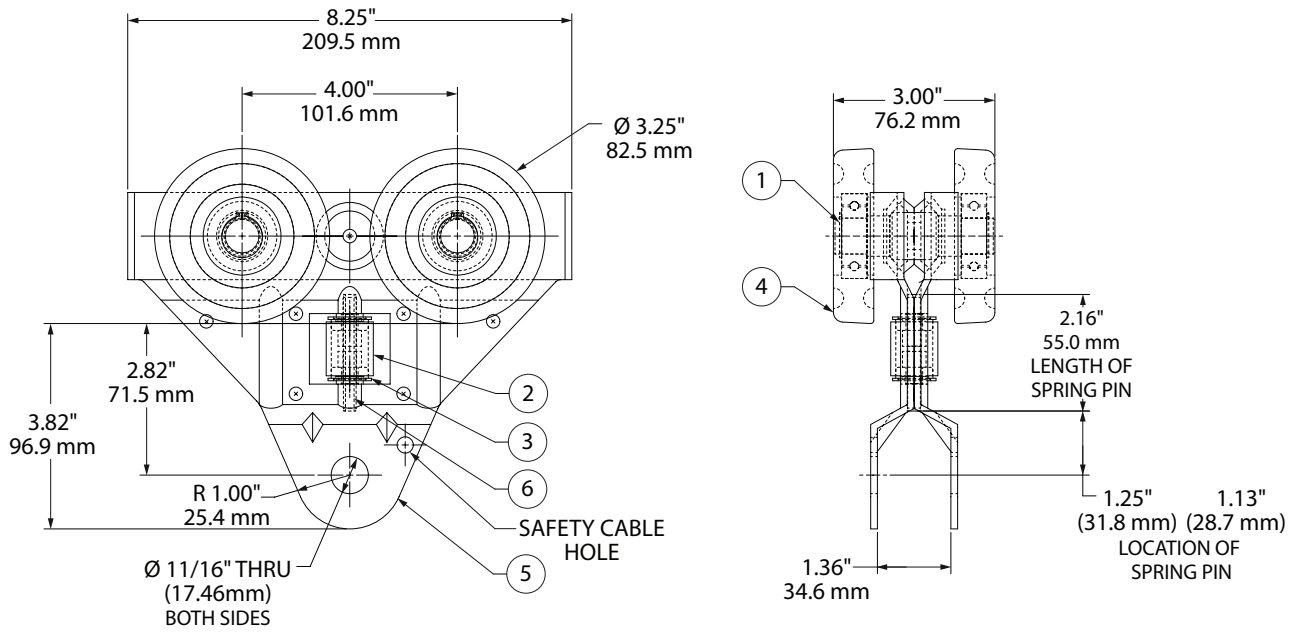
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096581)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
3	30821	ZRS2/3 Alluminum Trolley	1

# ZRS2/3 Steel Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30561



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	8,925 LBS.(4048.31 KG)
YIELD STRENGTH .....	7,140 LBS.(3238.65 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	4 LBS.(1.81 KG)
MINIMUM RAIL RADIUS.....	60.00"(1524.0 mm)

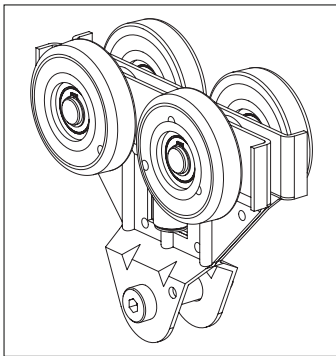
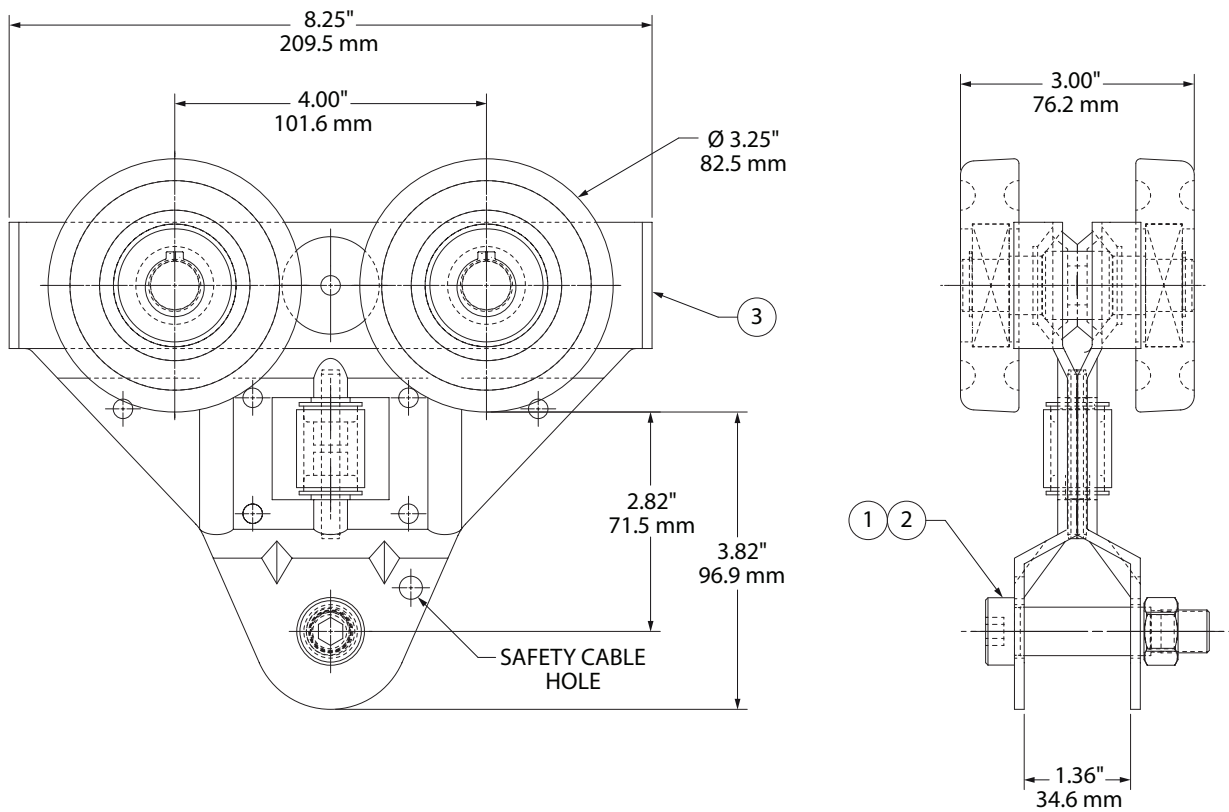
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54095658)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93936	Guide Roller	1
3	65038	Radial Ball Bearing	2
4	30056	Trolley Wheel Assembly	4
5	30125	Trolley Bracket, Weldment	1
6	77062	Spring Pin, 6 mm x 55 mm	1

# ZRS2/3 Steel Load Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30565



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	8,925 LBS.(4048.31 KG)
YIELD STRENGTH .....	7,140 LBS.(3238.65 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS.....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	4.5 LBS.(2.04 KG)
MINIMUM RAIL RADIUS.....	60.00"(1524.0 mm)

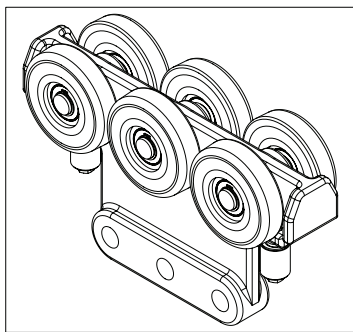
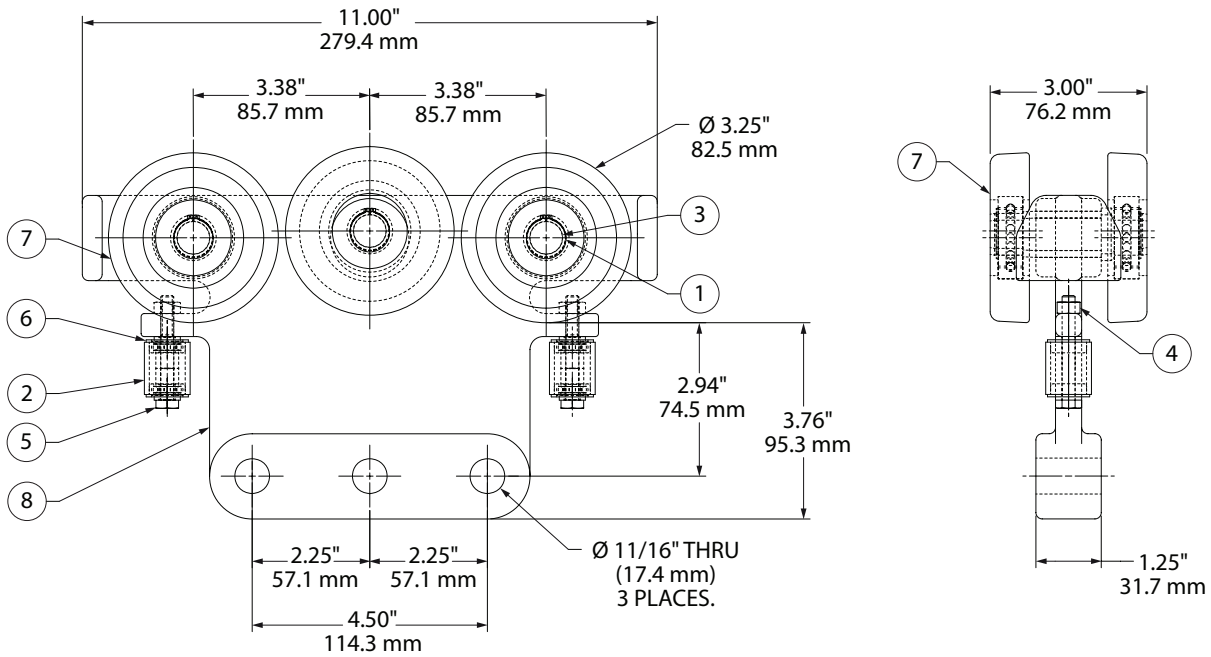
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54095690)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75585	Lock Nut, 1/2 - 13 PT	1
2	72608	Shoulder Bolt, 5/8 x 1.75"	1
3	30561	ZRS2/3 Steel Trolley	1

# ZRS2 Reaction Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. 30511



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,250 LBS.(7824.46 KG)
YIELD STRENGTH .....	14,575 LBS.(6611.10 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS.....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	6.4 LBS.(2.90 KG)
MINIMUM RAIL RADIUS (ZRS2).....	60.00"(1524.0 mm)

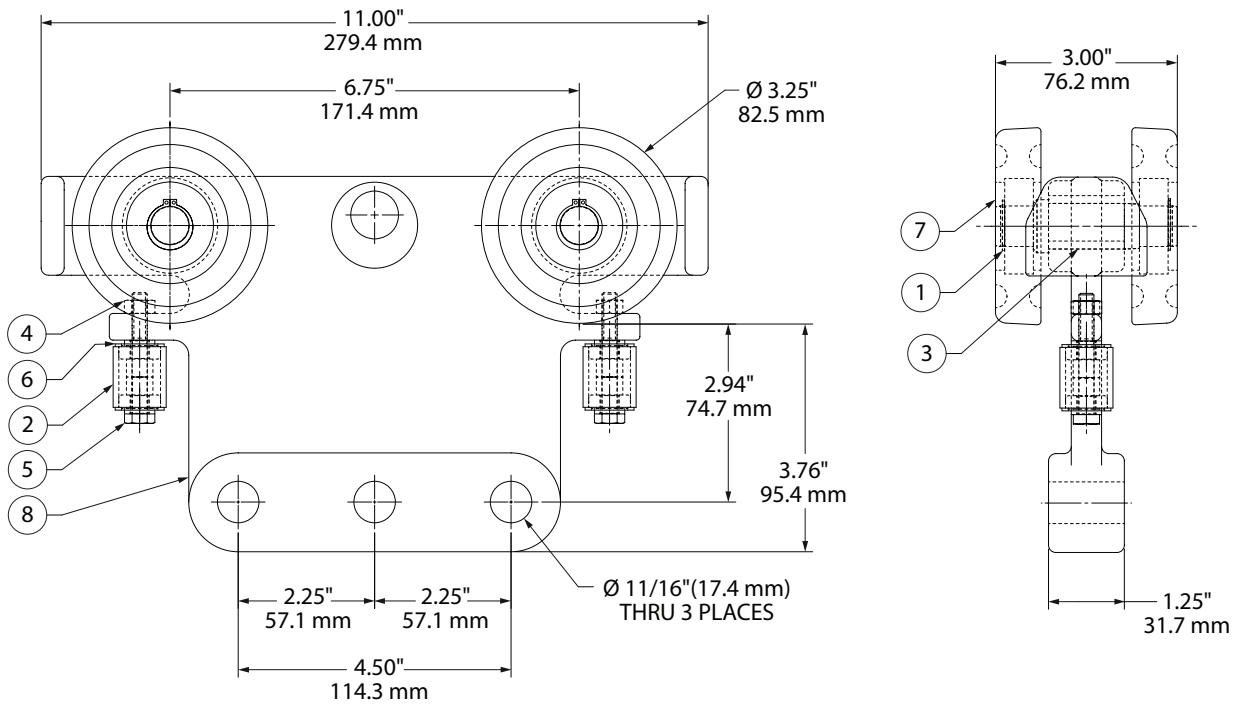
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

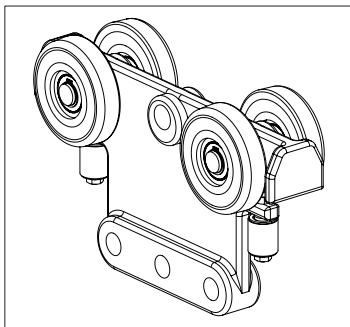
(Dwg. 54095211)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	6
2	93936	Guide Roller	2
3	93934	Axle	3
4	75581	Lock Nut, 1/4 - 20 PT	2
5	ZHS70484	HCS 1/4 - 20 x 2 Z5	2
6	65038	Radial Ball Bearing	4
7	30056	Trolley Wheel Assembly	6
8	30014	Trolley Body, Machining	1

# ZRS2/3 Load Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. ZHS30510



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.



ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	17,250 LBS.(7824.46 KG)
YIELD STRENGTH .....	14,575 LBS.(6611.10 KG)
CAPACITY .....	1000 LBS.(453.6 KG)
BODY .....	HIGH TENSILE ALMAG
WHEELS .....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY .....	5.3 LBS.(2.40 KG)
MINIMUM RAIL RADIUS (ZRS2) .....	60.00"(1524.0 mm)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

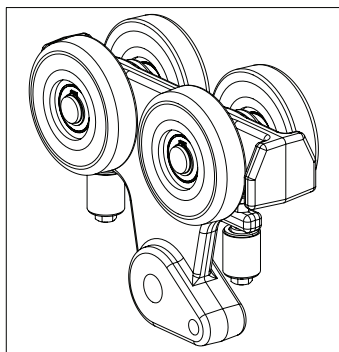
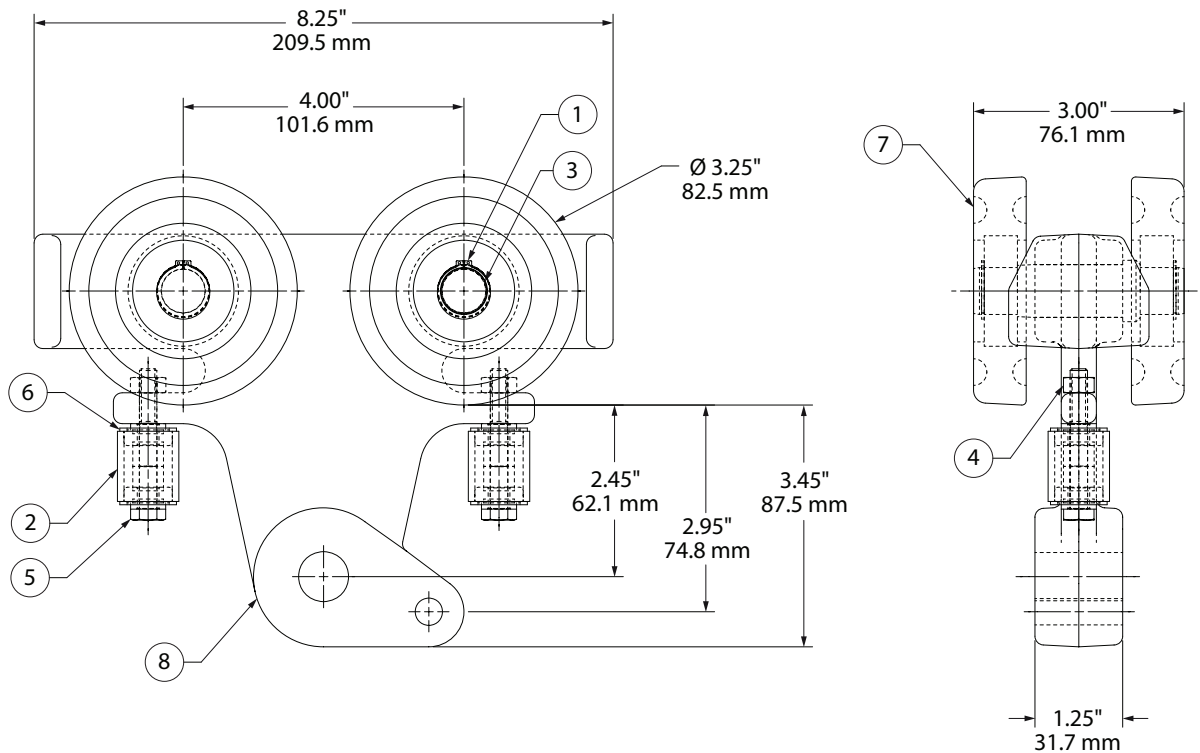
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 56742950)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93936	Guide Roller	2
3	93934	Axle	2
4	75581	Lock Nut, 1/4 - 20 PT	2
5	ZHS70484	HCS 1/4 - 20 x 2 Z5	2
6	65038	Radial Ball Bearing	4
7	30056	Trolley Wheel Assembly	4
8	30014	Trolley Body, Machining	1



# ZRS2/3 Universal Trolley • 1000 lbs. (453.6 kg) Capacity/Part No. ZHS30512



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	18,000 LBS.(8164.66 KG)
YIELD STRENGTH .....	14,950 LBS.(6781.20 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
BODY.....	HIGH TENSILE ALMAG
WHEELS.....	3.25"(82.5 mm) DIA. DELRIN
BEARINGS .....	BALL, LUBRICATED
SIDE GUIDE ROLLERS.....	DELRIN
WEIGHT OF TROLLEY.....	4.5 LBS.(2.04 KG)
MINIMUM RAIL RADIUS (ZRS2).....	60.00"(1524.0 mm)

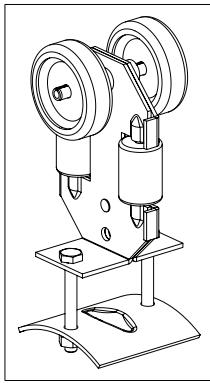
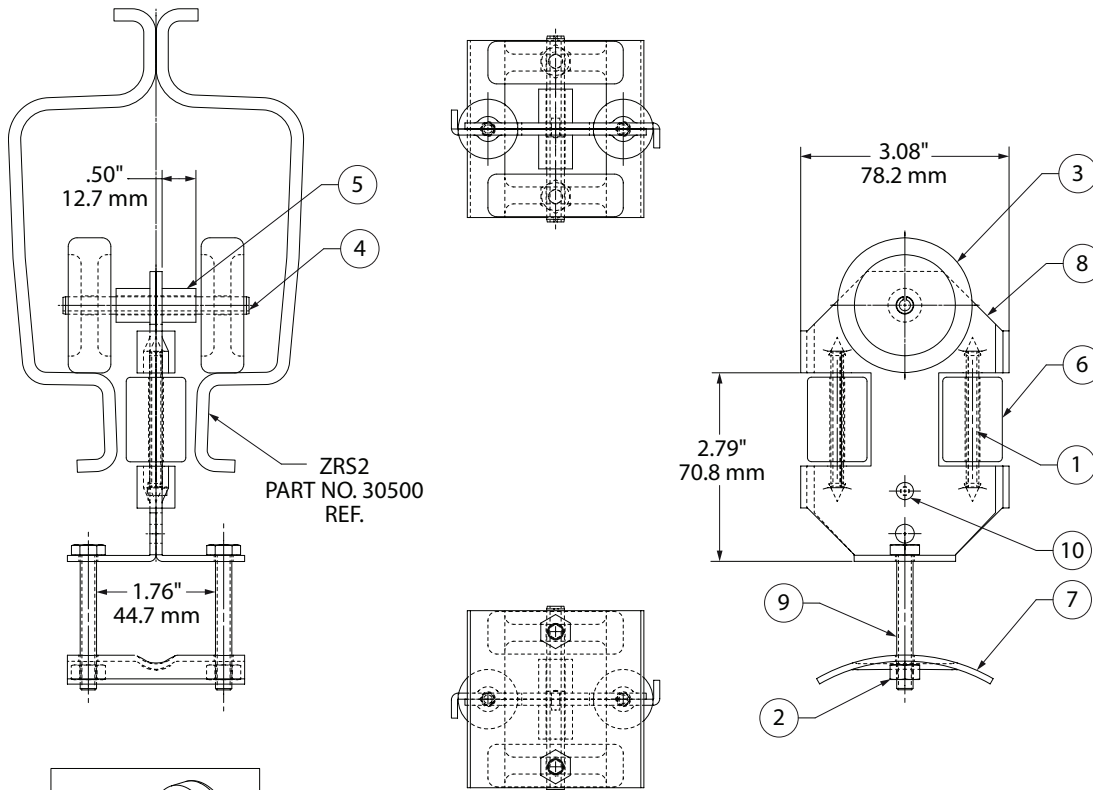
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54095229)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	2
2	93936	Guide Roller	1
3	93934	Axle	4
4	75581	Lock Nut, 1/4 - 20 PT	2
5	ZHS70484	HCS 1/4 - 20 x 2 Z5	1
6	65038	Radial Ball Bearing	2
7	30056	Trolley Wheel Assembly	1
8	30010	Trolley Body	1

# Festoon Trolley • ZRS2/3 Steel Rail/Part No. 30581



CAPACITY.....50 LBS.(22.67 KG)  
WEIGHT OF ASSEMBLY .....1 LBS.(0.45 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY. YOU MUST ORDER IT SEPERATELY.

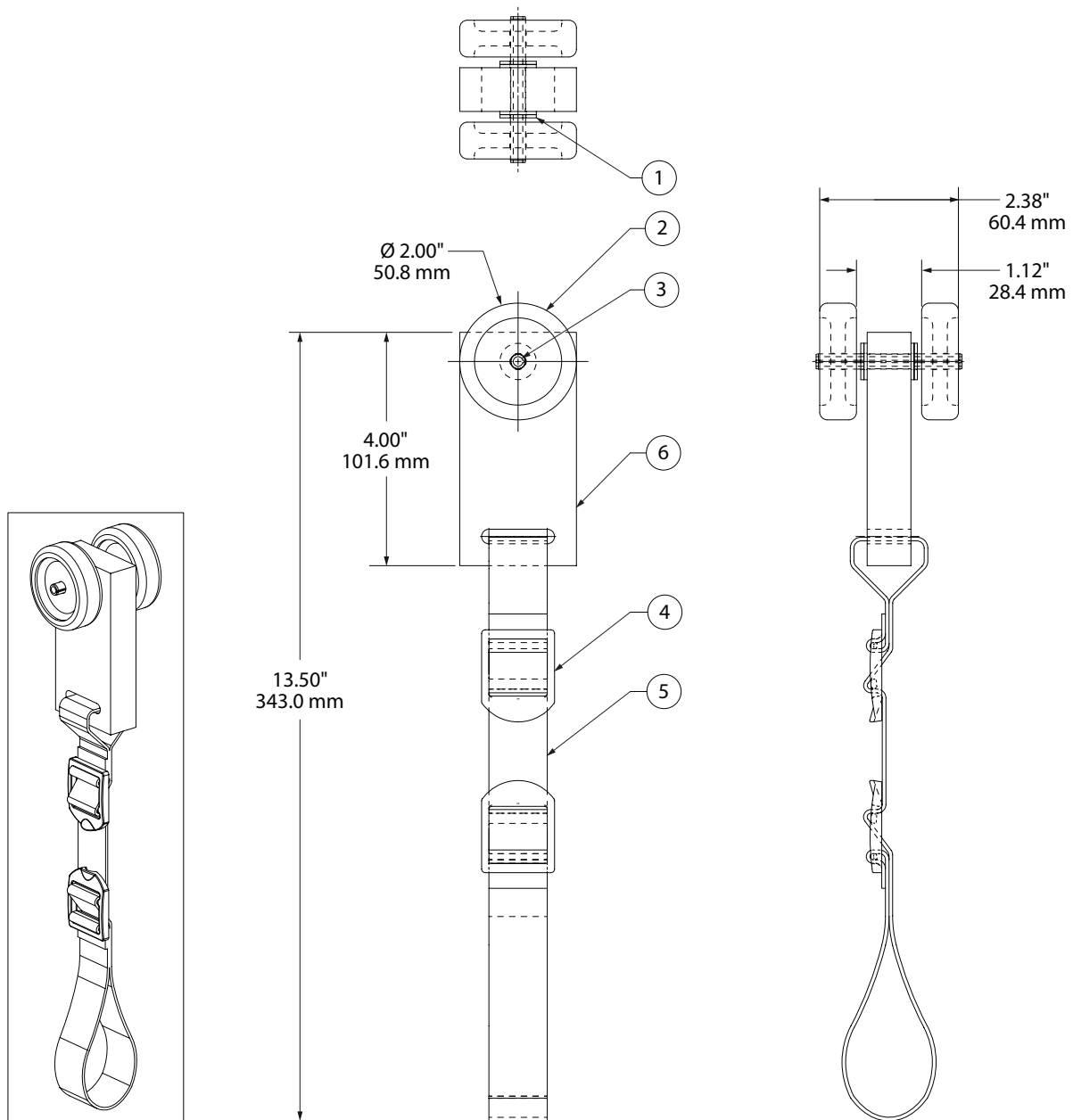
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

THIS TROLLEY IS USED FOR FESTOONING FLAT WIRE OR AIR HOSE.

(Dwg. 54095773)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	ZHS77057	Roll Pin, 3/16 x 2"	2
2	75581	Lock Nut, 1/4 - 20 PT	2
3	99069	Festooning Trolley Wheel	2
4	77011	Spring Pin, .25" x 2.75"	1
5	30585	Festooning Trolley Spacer	2
6	30584	Festooning Trolley Guide Roller	2
7	30578	Trolley Bracket - Clip	1
8	30577	Trolley Bracket - Half	2
9	ZHS70498	Tap Bolt, 1/4 - 20 x 2"	2
10	16006769	Steel Rivet, 1/8" Dia. x .188"	1

# Festoon Trolley • ZRS2/3 Steel Rail/Part No. 54039078

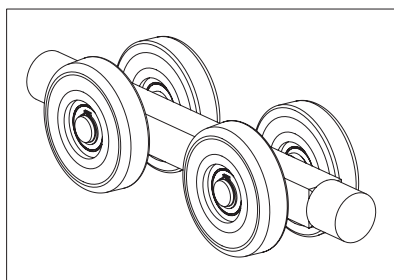
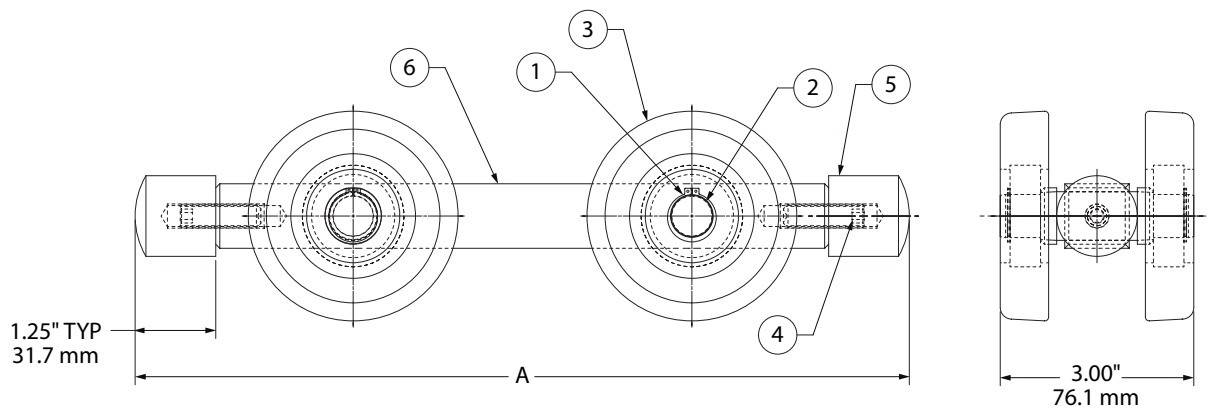


CAPACITY.....50 LBS.(22.67 KG)

(Dwg. 54039078)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	74504	Flat Washer, 1/4"	4
2	99069	Festooning Trolley Wheel	2
3	77048	Spring Pin, 0.25" x 2.5"	1
4	54039300	Slide Buckle	2
5	54039292	Strap, 1" x 18"	1
6	54039094	Trolley Body	1

# Bumper Trolley • ZRS2/3 Steel Rail/Part No. 30148 - XXXX

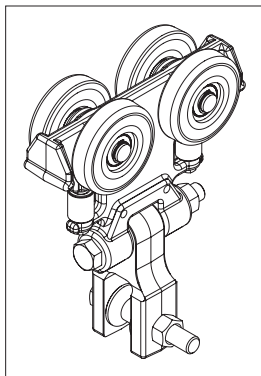
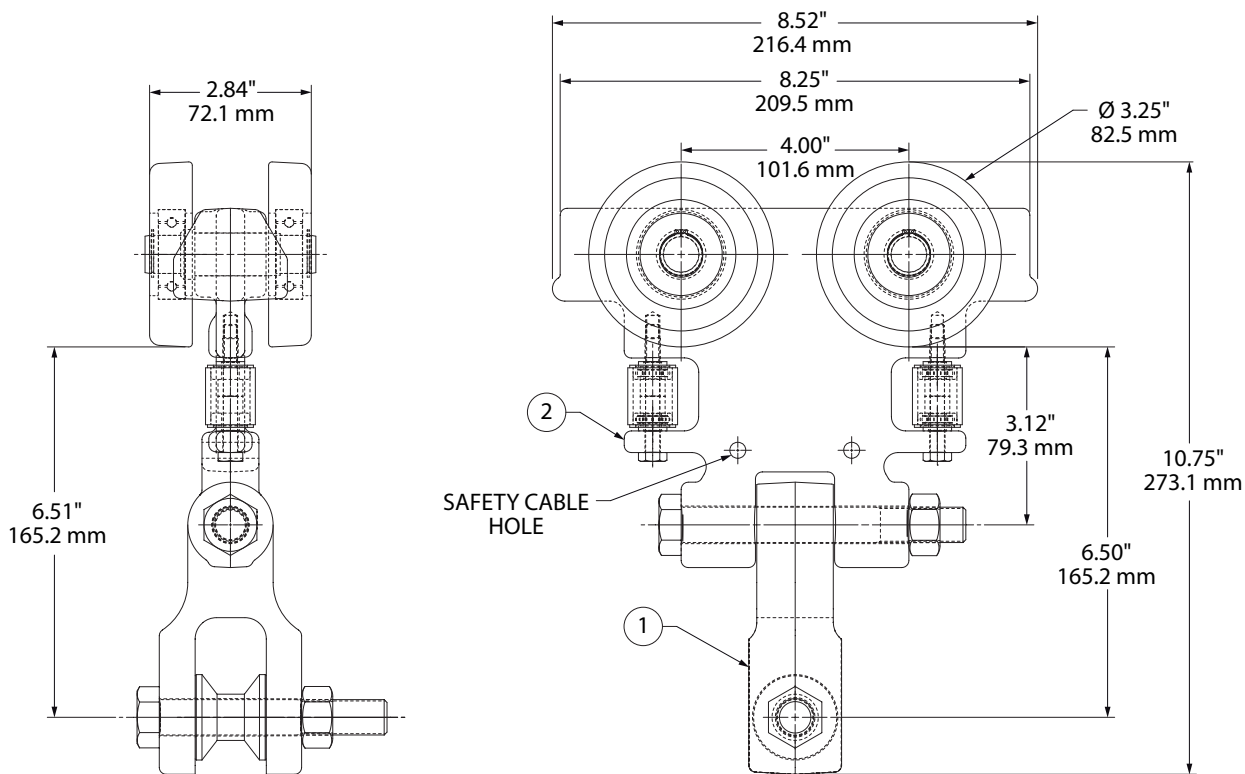


DIMENSIONS		
TROLLEY NO.	A (INCHES)	BRACKET NO.
30148 - 1200	12.00	30149 - 1200
30148 - 2400	24.00	30149 - 2400
30148 - 3600	36.00	30149 - 3600
30148 - 4800	48.00	30149 - 4800
30148 - 6000	60.00	30149 - 6000
30148 - 7200	72.00	30149 - 7200

(Dwg. 16588659)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	93939	External Retaining Ring	4
2	93934	Axle	2
3	30056	Trolley Wheel Assembly	4
4	71492	Set Screw, 3/8 - 16 x 1.25"	2
5	ZHS93809	Urethane Bumper 1.25" Dia.	2
6	30149-XXXX	Bumper Trolley Bracket	1

# Hoist Trolley - Single • ZRS2/3/ 1000 lbs. (453.6 kg) Capacity/Part No. 30315



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	250 LBS.(113.4 KG)
ULTIMATE STRENGTH .....	13,750 LBS.(6236.9 KG)
YIELD STRENGTH .....	11,000 LBS.(4989.51 KG)
CAPACITY.....	1000 LBS.(453.6 KG)
WEIGHT OF ASSEMBLY .....	6.5 LBS.(2.94 KG)

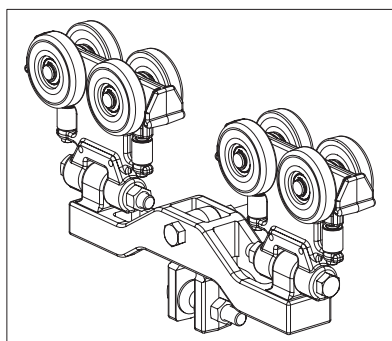
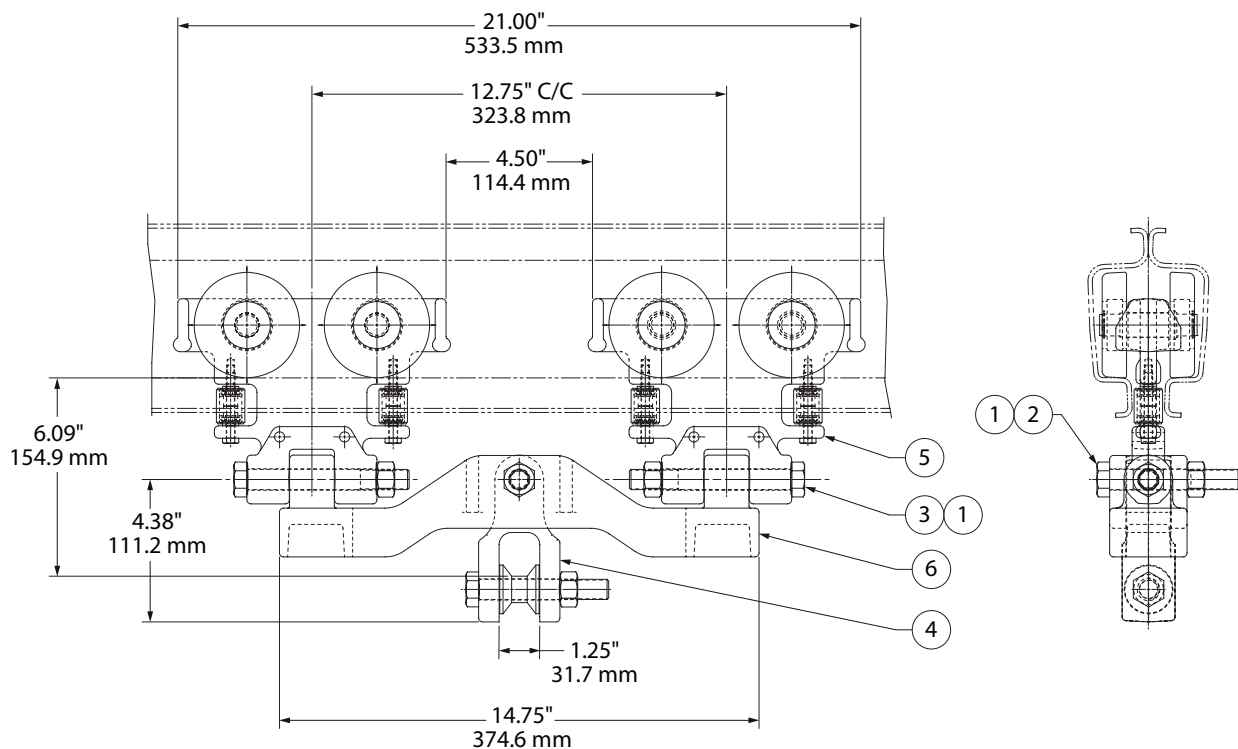
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094750)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30903	Hoist Bracket Assembly	1
2	30842	ZRS2/3 Aluminum Trolley W/Bolt.	1

# Hoist Trolley - Dual • 2000 lbs. (907.18 kg) Capacity/Part No. 30830



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	2,000 LBS.(907.18 KG)
WEIGHT OF ASSEMBLY .....	15.3 LBS.(6.93 KG)

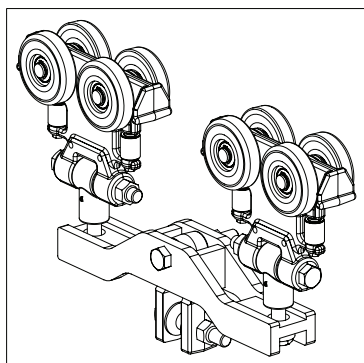
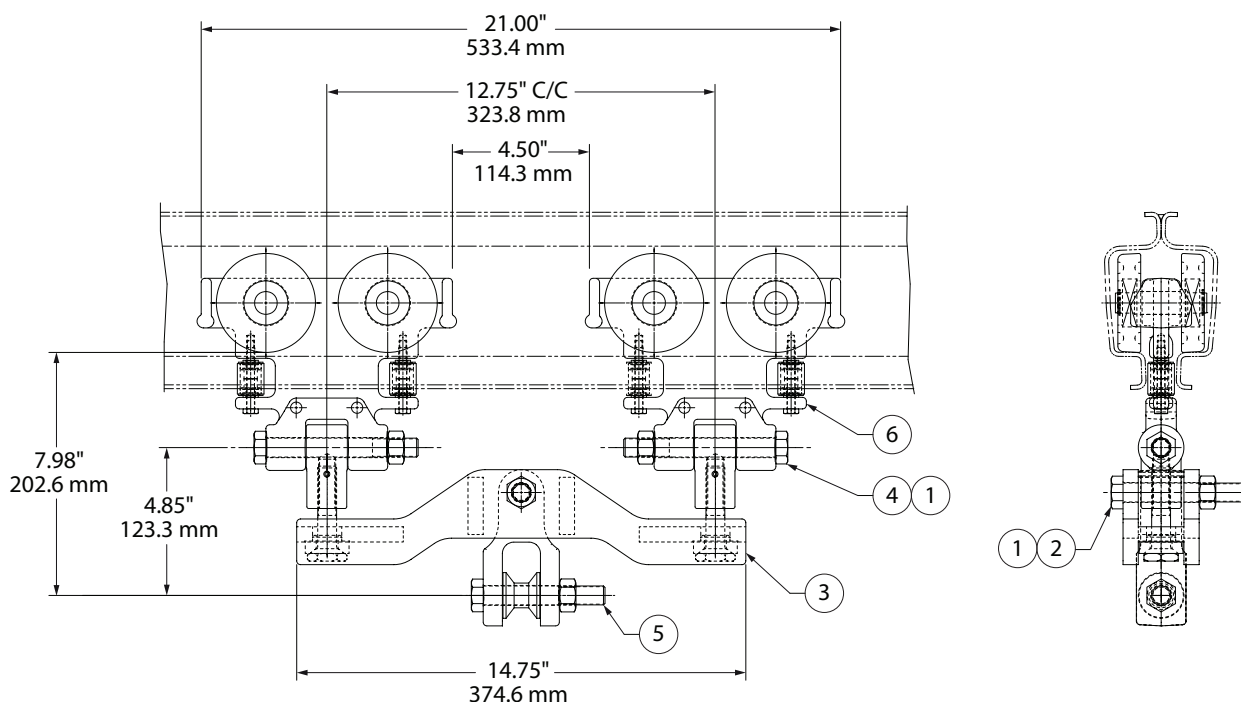
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096482)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
4	30903	Hoist Bracket Assembly	1
5	30821	ZRS2/3 Aluminum Trolley	2
6	30173	Dual Trolley Tie Bar, Machining	1

# Hoist Trolley - Dual • 2000 lbs. (907.18 kg) Capacity/Curved Runway/ Part No. 30319



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	2,000 LBS.(907.18 KG)
MINIMUM RAIL RADIUS.....	60.00"(1524.0 mm)
WEIGHT OF ASSEMBLY .....	23.6 LBS.(10.70 KG)

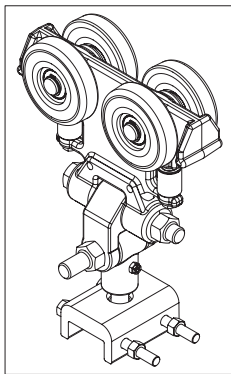
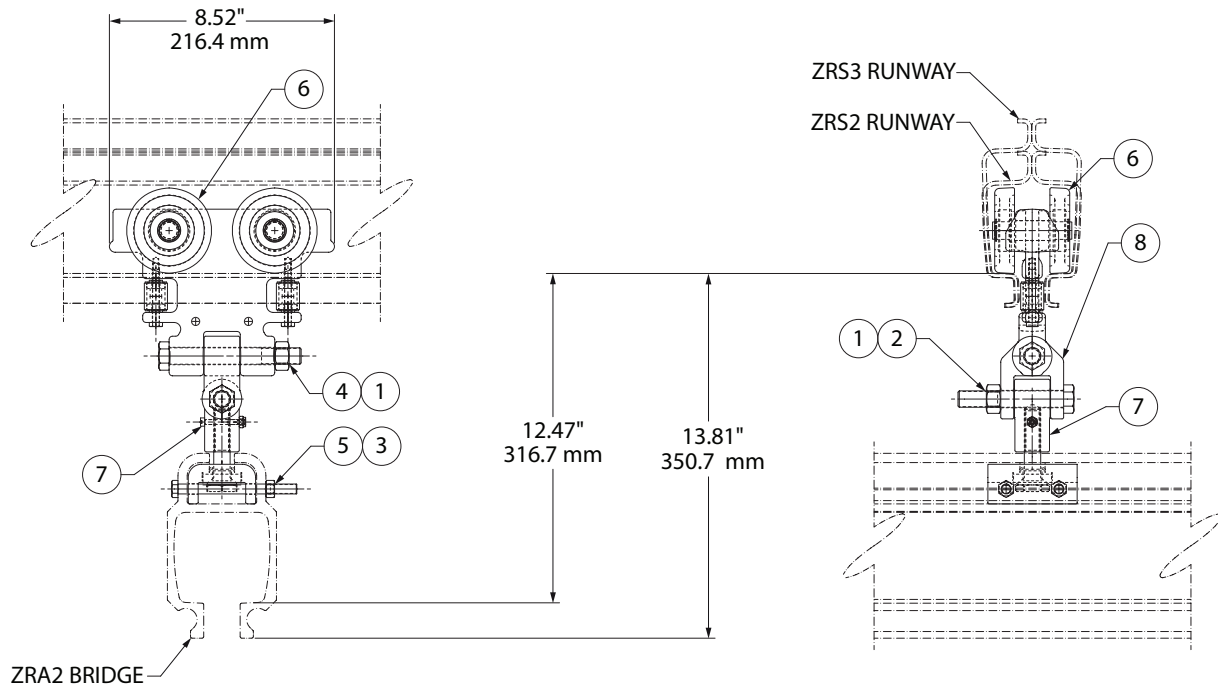
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094776)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	30832	Dual Trolley Tie Bar for Curved Rail	1
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	30903	Hoist Bracket Assyembly	1
6	30821	ZRS2/3 Aluminum Trolley	2

# End Truck Assembly • ZRA2 on ZRS2/3/1000 lbs. (453.6 kg) Capacity/ Single Aluminum Trolley/Part No. 30824



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	17,575 LBS.(7971.88 KG)
YIELD STRENGTH .....	15,000 LBS.(6803.88 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
MINIMUM RAIL RADIUS (ZRS2).....	60.00"(1524.0 mm)
WEIGHT OF ASSEMBLY .....	9.1 LBS.(4.12 KG)

**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

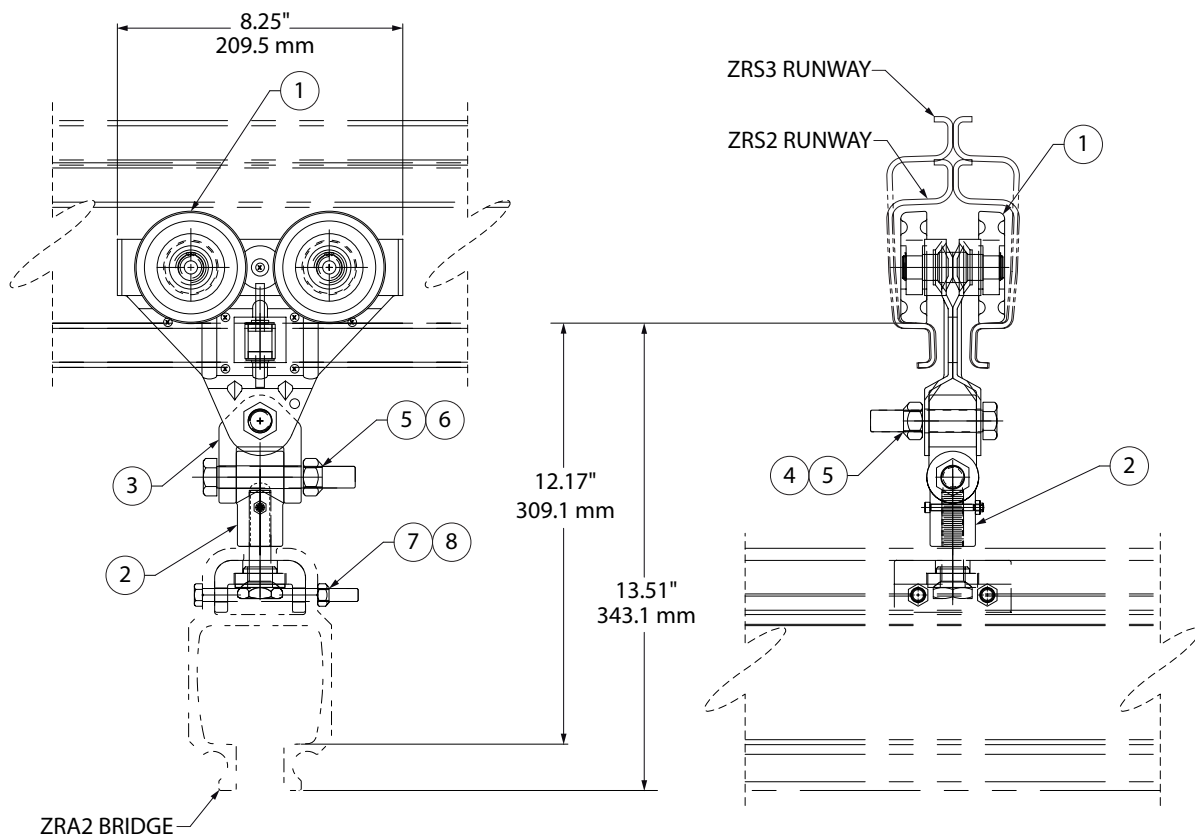
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096425)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
6	30821	ZRS2/3 Aluminum Trolley	1
7	30175	Bridge Suspension Sub-assembly, ZRA2	1
8	30166	Female Clevis	1



# End Truck Assembly • ZRA2 on ZRS2/3/1000 lbs. (453.6 kg) Capacity/ Single Steel Trolley/Part No. 30825



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....8,925 LBS.(4048.31 KG)  
 YIELD STRENGTH .....7,140 LBS.(3238.65 KG)  
 CAPACITY.....1,000 LBS.(453.6 KG)  
 MINIMUM RAIL RADIUS (ZRS2).....60.00"(1524.0 mm)  
 WEIGHT OF ASSEMBLY .....8.4 LBS.(3.81 KG)

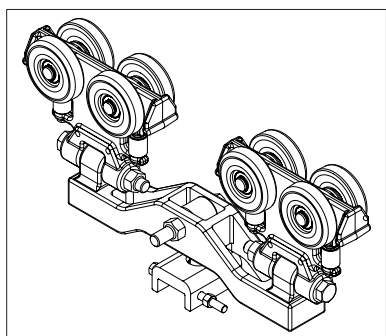
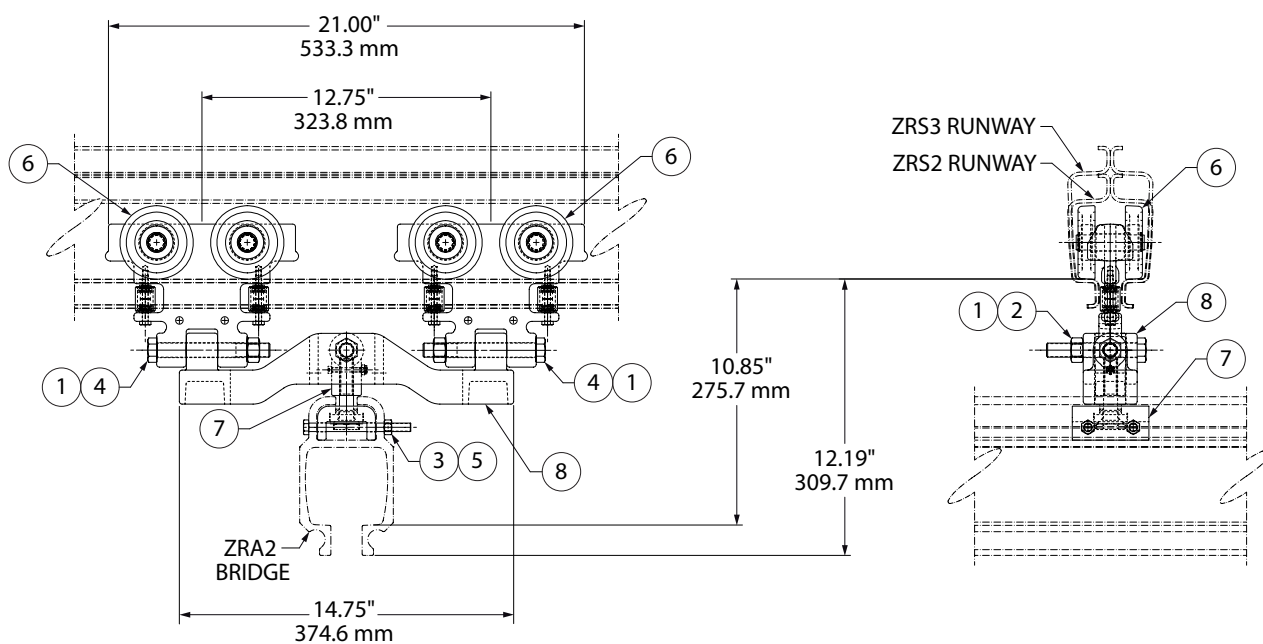
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096433)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30561	Trolley 1000 LB. (453.6 KG) Capacity - ZRS2/3 (S)	1
2	30175	Bridge Suspension Sub-assembly - ZRA2	1
3	30166	Female Clevis - ZRA/ZRS Rail	1
4	72646	Screw, 5/8 - 11 x 3.25 HCS	1
5	75587	Lock Nut, 5/8 - 11 PT	2
6	ZHS72644	Screw, 5/8 - 11 x 4.00 HCS	1
7	ZHS71481	Screw, 3/8 - 16 x 4.50 HCS	2
8	75583	Lock Nut, 3/8 - 16 PT	2

# End Truck Assembly • ZRA2 on ZRS2/3/2000 lbs. (907.18 kg) Capacity/ Dual Aluminum Trolley/Part No. 30828



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)
- YIELD STRENGTH ..... 10,600 LBS.(4808.07 KG)
- CAPACITY ..... 2,000 LBS.(907.18 KG)
- WEIGHT OF ASSEMBLY ..... 15.8 LBS.(7.16 KG)

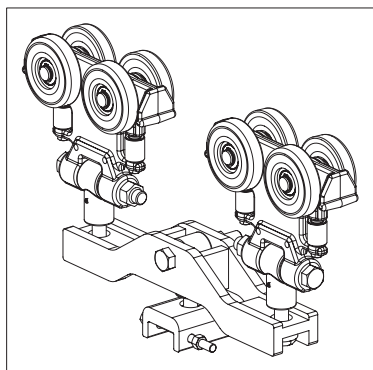
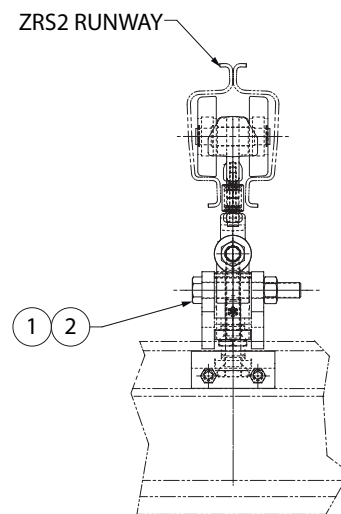
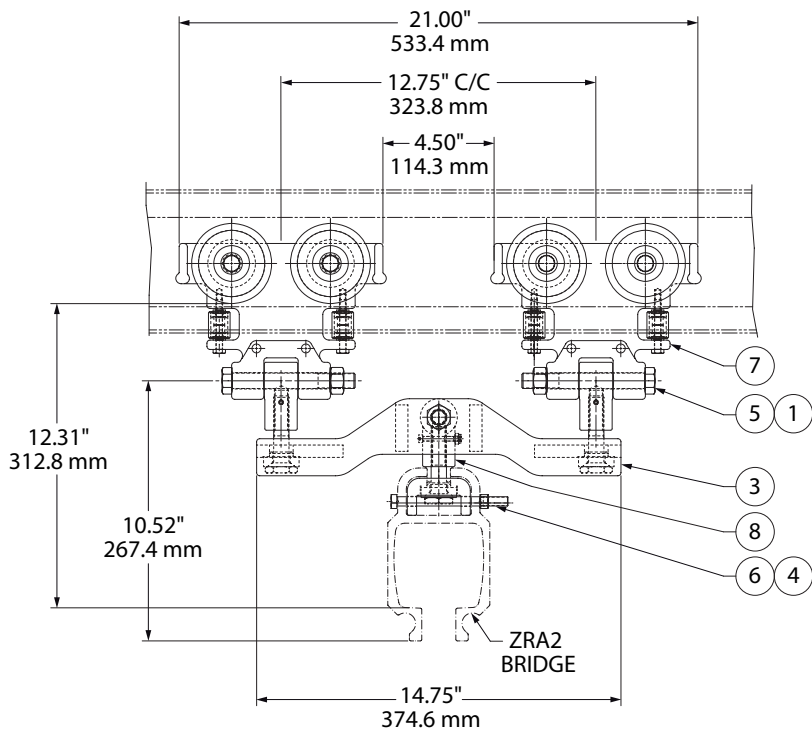
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096466)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75583	Lock Nut, 3/8 - 16	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
6	30821	Aluminum Trolley, ZRS2/3	2
7	30175	Bridge Suspension Sub-assembly, ZRA2	1
8	30173	Dual Trolley Tie Bar, Machining	1

# End Truck Assembly • ZRA2 on ZRS2 Curved Rail/2000 lbs. (907.18 kg) Capacity/Dual Aluminum Trolley/Part No. 30835



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY .....	2,000 LBS.(907.18 KG)
MINIMUM RAIL RADIUS (ZRS2) .....	60.00"(1524.0 mm)
WEIGHT OF ASSEMBLY .....	24 LBS.(10.88 KG)

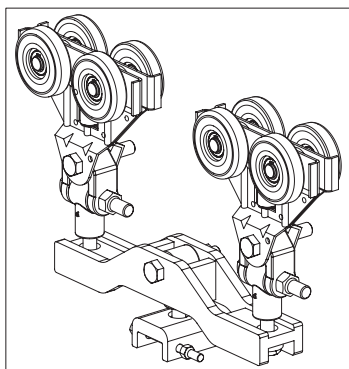
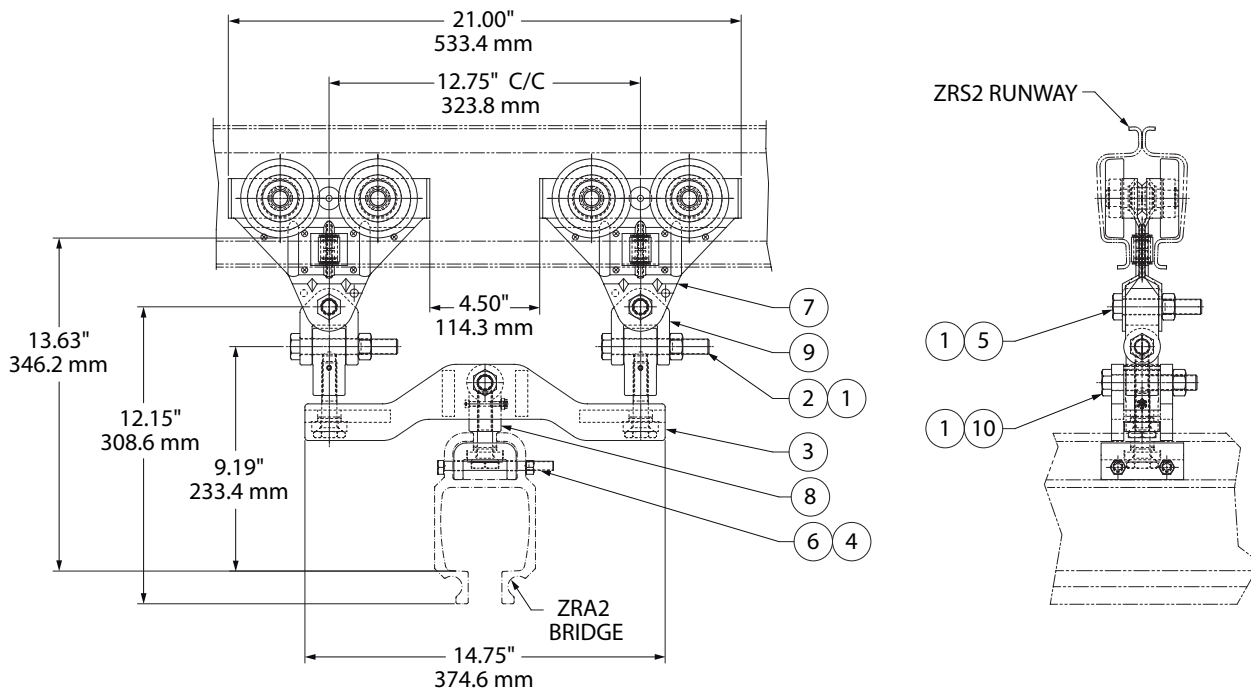
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096516)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	30832	Dual Trolley Tie Bar for Curved Rail	1
4	75583	Lock Nut, 3/8 - 16	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
6	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
7	30821	Aluminum Trolley, ZRS2/3	2
8	30175	Bridge Suspension Sub-assembly, ZRA2	1

# End Truck Assembly • ZRA2 on ZRS2 Curved Rail/2000 lbs. (907.18 kg) Capacity/Dual Steel Trolley/Part No. 30836



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION .....ONE PERCENT
- ULTIMATE STRENGTH .....13,250 LBS.(6010.1 KG)
- YIELD STRENGTH .....10,600 LBS.(4808.07 KG)
- CAPACITY .....2,000 LBS.(907.18 KG)
- MINIMUM RAIL RADIUS (ZRS2) .....60.00"(1524.0 mm)
- WEIGHT OF ASSEMBLY .....27.1 LBS.(12.3 KG)

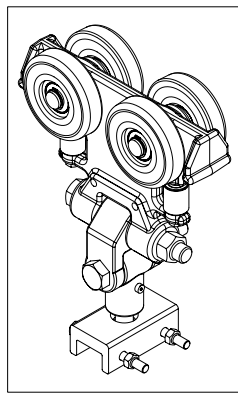
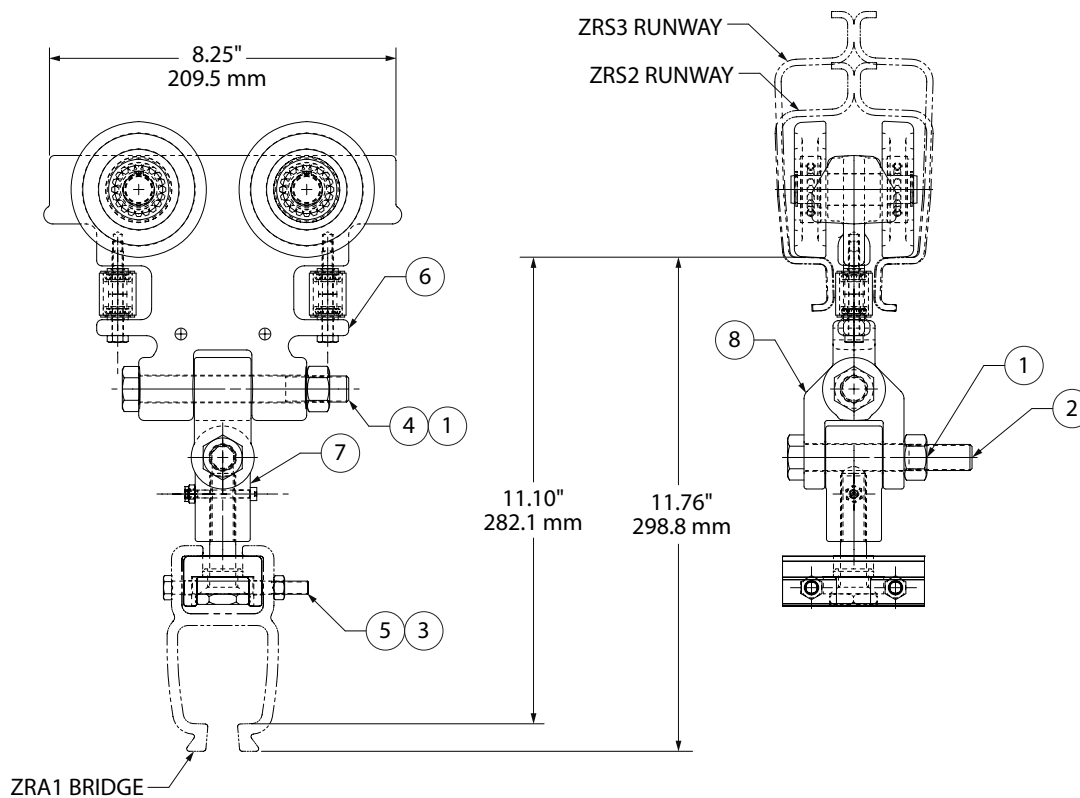
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096524)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	5
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	2
3	30832	Dual Trolley Tie Bar for Curved Rail	1
4	75583	Lock Nut, 3/8 - 16	2
5	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
6	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
7	30561	Steel Trolley, ZRS2/3	2
8	30175	Bridge Suspension Sub-assembly, ZRA2	1
9	30166	Female Clevis	2
10	72620	5/8 - 11 x 3.5" HCS Grade 5	1

# End Truck Assembly • ZRA1 on ZRS2/3/1000 lbs. (453.6 kg) Capacity/ Single Aluminum Trolley/Part No. 30822



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH ..... 17,575 LBS.(7971.88 KG)  
 YIELD STRENGTH ..... 15,000 LBS.(6803.88 KG)  
 CAPACITY ..... 1,000 LBS.(453.6 KG)  
 MINIMUM RAIL RADIUS (ZRS2) ..... 60.00"(1524.0 mm)  
 WEIGHT OF ASSEMBLY ..... 8.6 LBS.(3.90 KG)

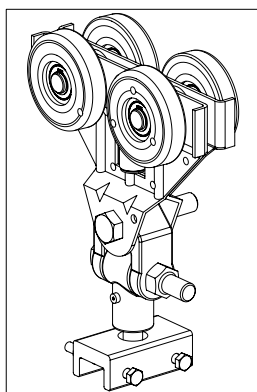
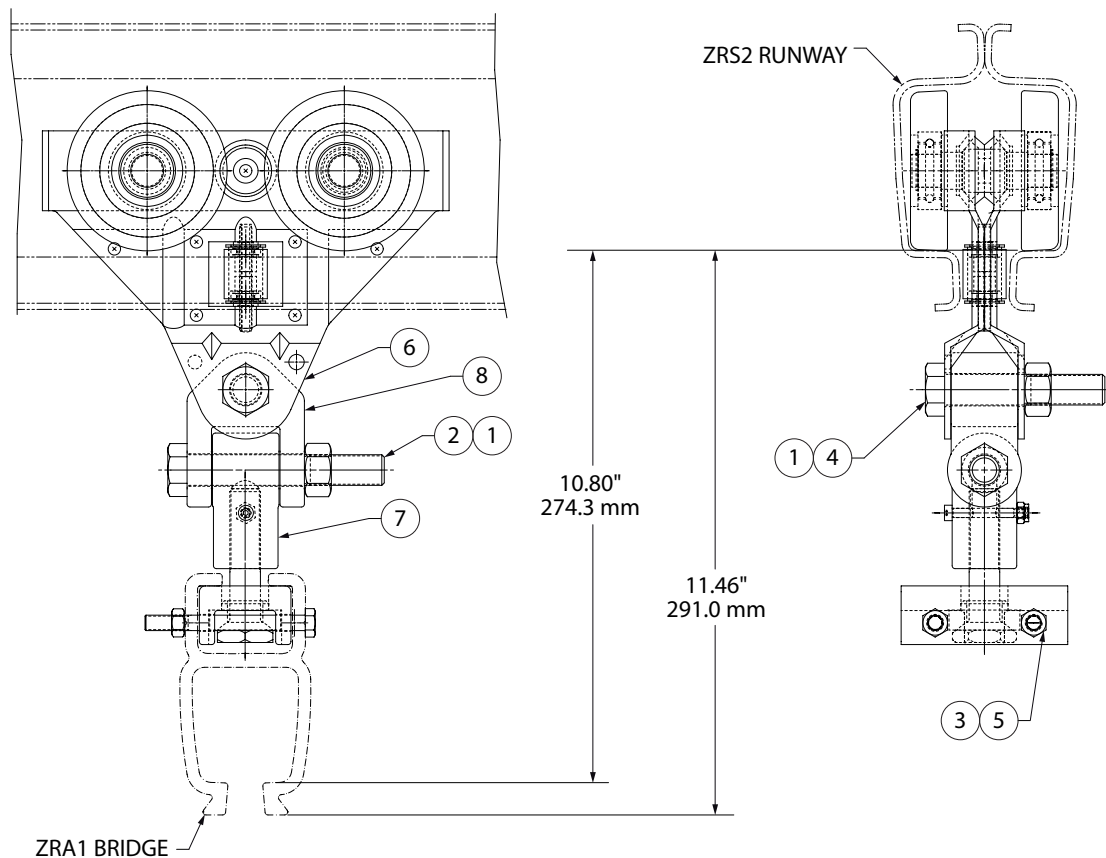
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096409)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30821	Aluminum Trolley, ZRS2/3	1
7	30282	Bridge Suspension Sub-assembly, ZRA1	1
8	30166	Female Clevis	1

# End Truck Assembly • ZRA1 on ZRS2/3/1000 lbs. (453.6 kg) Capacity/ Single Steel Trolley/Part No. 30823



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 8,925 LBS.(4048.31 KG)
- YIELD STRENGTH ..... 7,140 LBS.(3238.65 KG)
- CAPACITY ..... 1,000 LBS.(453.6 KG)
- MINIMUM RAIL RADIUS (ZRS2) ..... 60.00"(1524.0 mm)
- WEIGHT OF ASSEMBLY ..... 8.3 LBS.(3.76 KG)

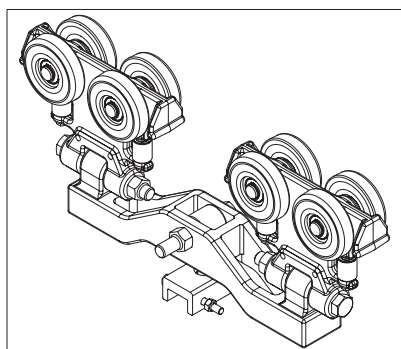
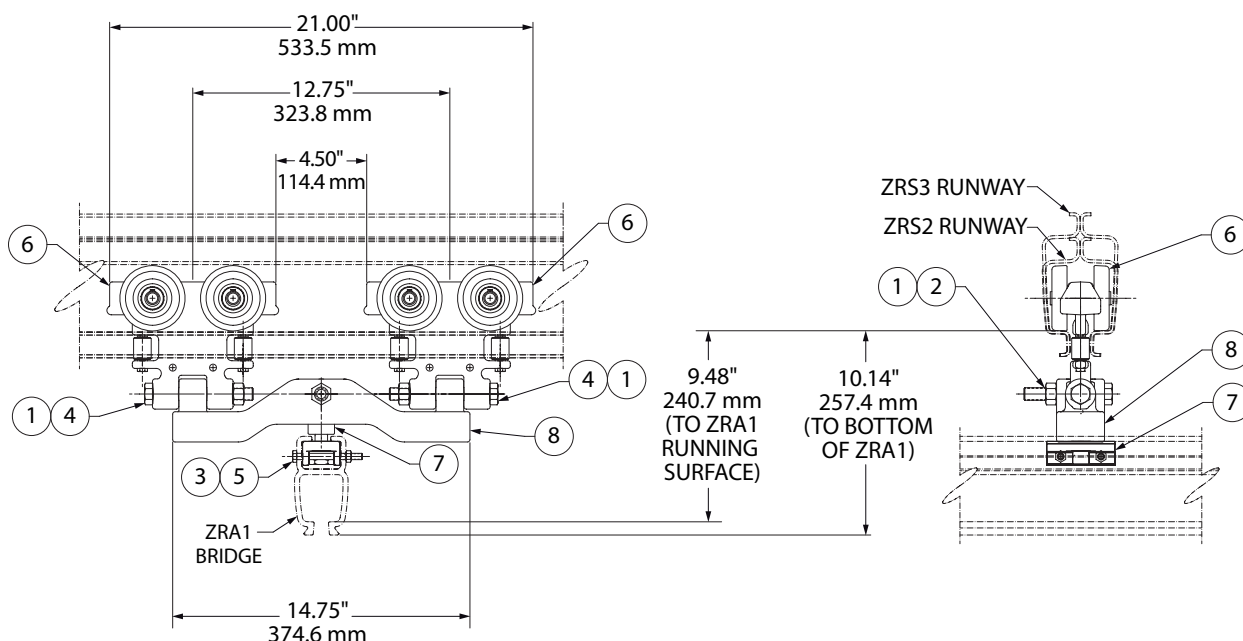
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096417)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	1
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30561	Steel Trolley, ZRS2/3	1
7	30282	Bridge Suspension Sub-assembly, ZRA1	1
8	30166	Female Clevis	1

# End Truck Assembly • ZRA1 on ZRS2/3/1000 lbs. (453.6 kg) Capacity/ Dual Aluminum Trolley/Part No. 30826



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION .....ONE PERCENT
- ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)
- YIELD STRENGTH ..... 14,600 LBS.(6622.44 KG)
- CAPACITY ..... 1,000 LBS.(453.6 KG)
- WEIGHT OF ASSEMBLY ..... 15.7 LBS.(7.12 KG)

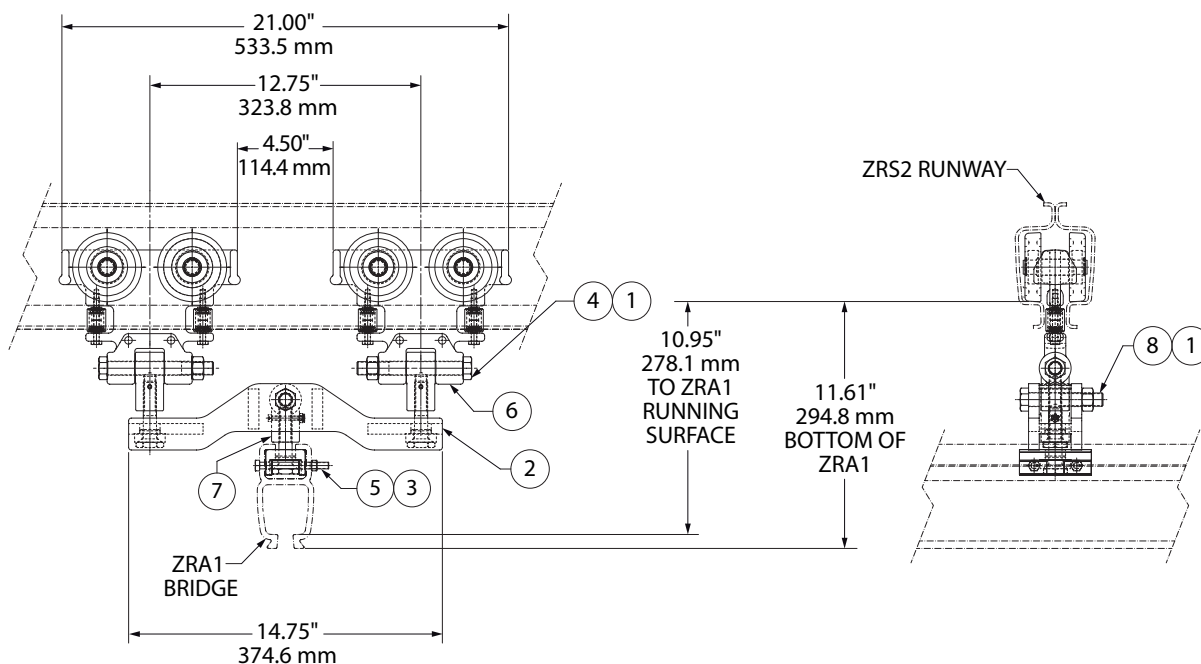
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096441)

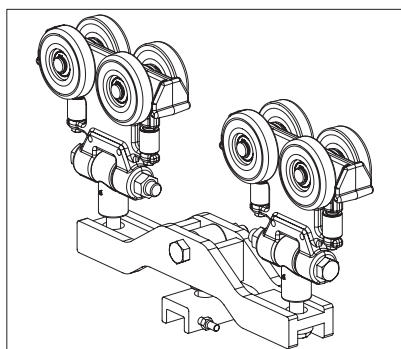
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30821	Aluminum Trolley, ZRS2/3	2
7	30282	Bridge Suspension Sub-assembly, ZRA1	1
8	30173	Dual Trolley Tie Bar, Machining	1

# End Truck Assembly • ZRA1 on ZRS2 Curved Rail/1000 lbs. (453.6 kg) Capacity/Dual Aluminum Trolley/Part No. 30833



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 13,250 LBS.(6010.1 KG)
- YIELD STRENGTH ..... 10,600 LBS.(4808.07 KG)
- CAPACITY ..... 1,000 LBS.(453.6 KG)
- MINIMUM RAIL RADIUS (ZRS2) ..... 60.00"(1524.0 mm)
- WEIGHT OF ASSEMBLY ..... 23.9 LBS.(10.84 KG)



**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

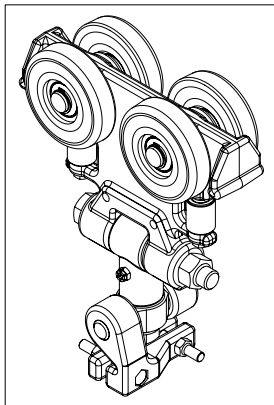
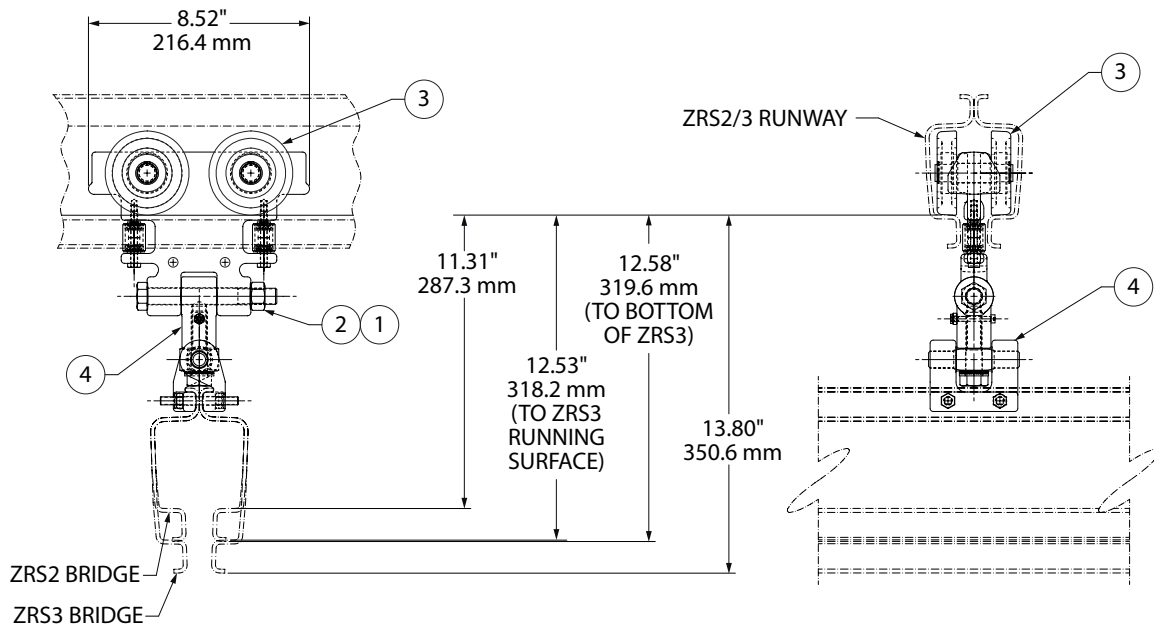
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096490)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	30832	Dual Trolley Tie Bar for Curved Rail	1
3	75582	Lock Nut, 5/16 - 18 PT	2
4	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
5	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
6	30821	Aluminum Trolley, ZRS2/3	2
7	30282	Bridge Suspension Sub-assembly, ZRA1	1
8	72620	5/8 - 11 x 3.25" HCS Grade 5	1



# End Truck Assembly • ZRS2/3 on ZRS2/3/1000 lbs. (453.6 kg) Capacity/ Single Aluminum Trolley/Part No. 30597



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	17,250 LBS.(7824.46 KG)
YIELD STRENGTH .....	14,250 LBS.(6463.69 KG)
CAPACITY.....	1,000 LBS.(453.6 KG)
MINIMUM RAIL RADIUS (ZRS2).....	60.00"(1524.0 mm)
WEIGHT OF ASSEMBLY .....	8.6 LBS.(3.90 KG)

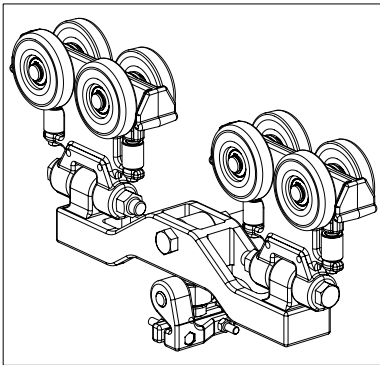
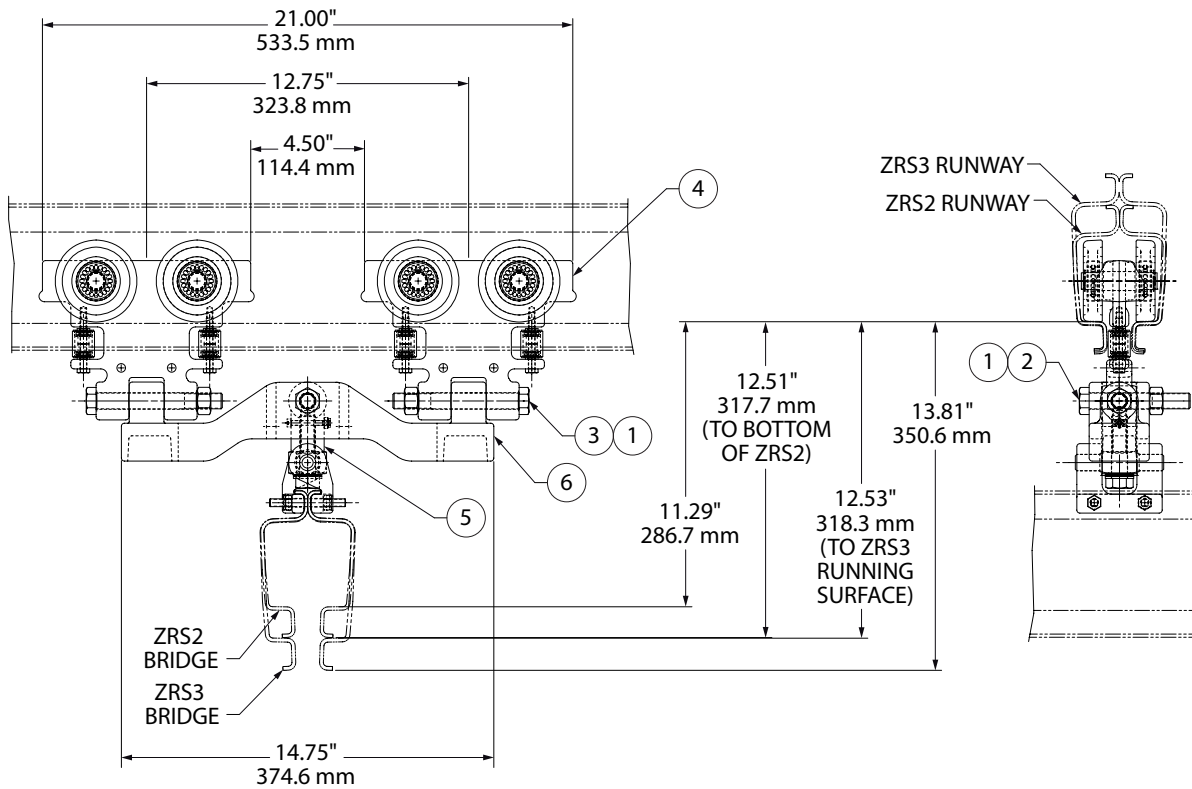
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY. DIMENSIONS REFLECT ZRS2 RAIL.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54095807)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
3	30821	Aluminum Trolley, ZRS2/3	1
4	30596	Bridge Suspension Sub-assembly	1

# End Truck Assembly • ZRS2/3 on ZRS2/3/2000 lbs. (907.18 kg) Capacity/ Dual Aluminum Trolley/Part No. 30599



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY .....	2,000 LBS.(907.18 KG)
WEIGHT OF ASSEMBLY .....	17.6 LBS.(7.98 KG)

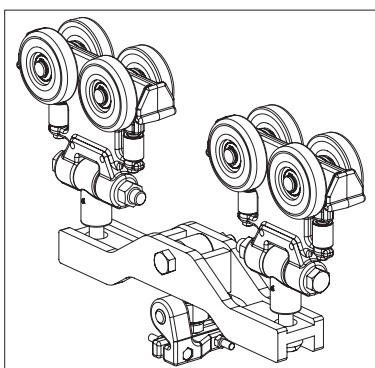
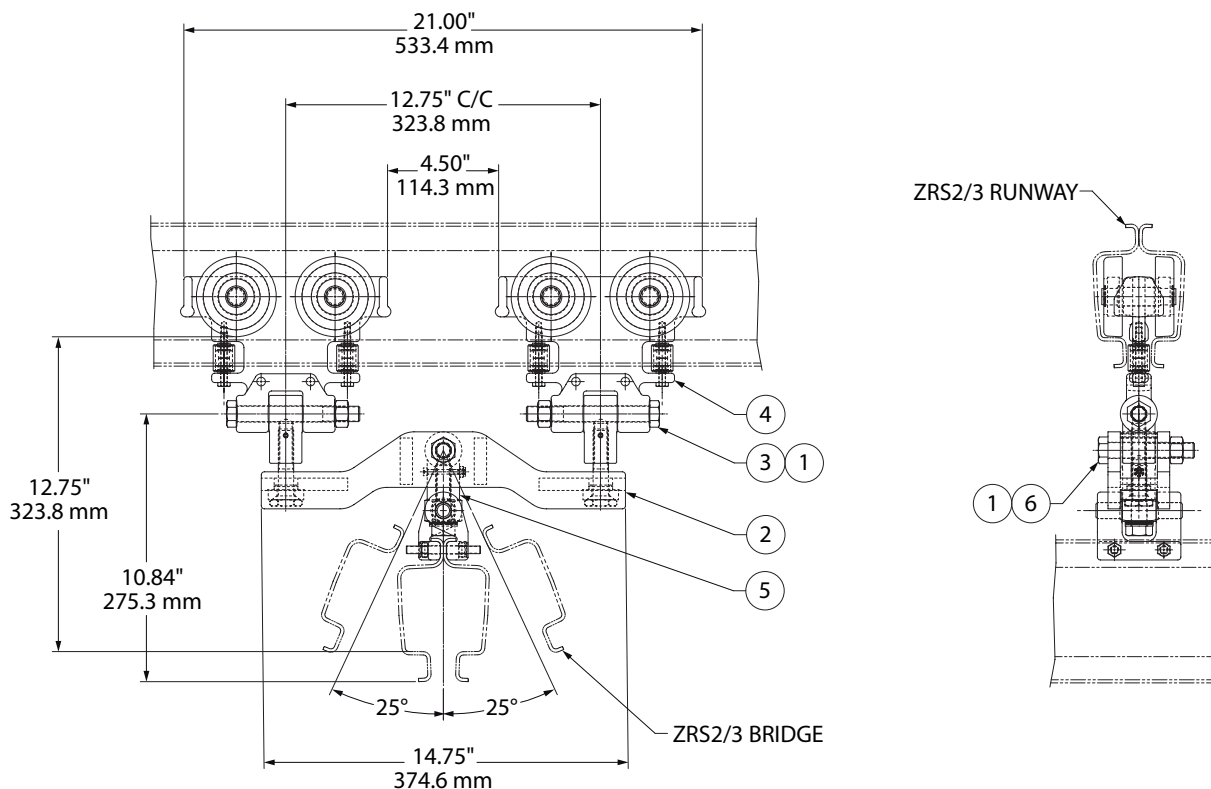
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY. DIMENSIONS REFLECT ZRS2 RAIL.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54095823)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
4	30821	Aluminum Trolley, ZRS2/3	2
5	30596	Bridge Suspension Sub-assembly, ZRS	1
6	30173	Dual Trolley Tie Bar, Machining	1

# End Truck Assembly • ZRS2/3 on ZRS2/3 Curved Rail/2000 lbs. (907.18 kg) Capacity/Dual Aluminum Trolley/Part No. 30837



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....	ONE PERCENT
ULTIMATE STRENGTH .....	13,250 LBS.(6010.1 KG)
YIELD STRENGTH .....	10,600 LBS.(4808.07 KG)
CAPACITY.....	2,000 LBS.(907.18 KG)
MINIMUM RAIL RADIUS (ZRS2).....	60.00"(1524.0 mm)
WEIGHT OF ASSEMBLY .....	25.8 LBS.(11.70 KG)

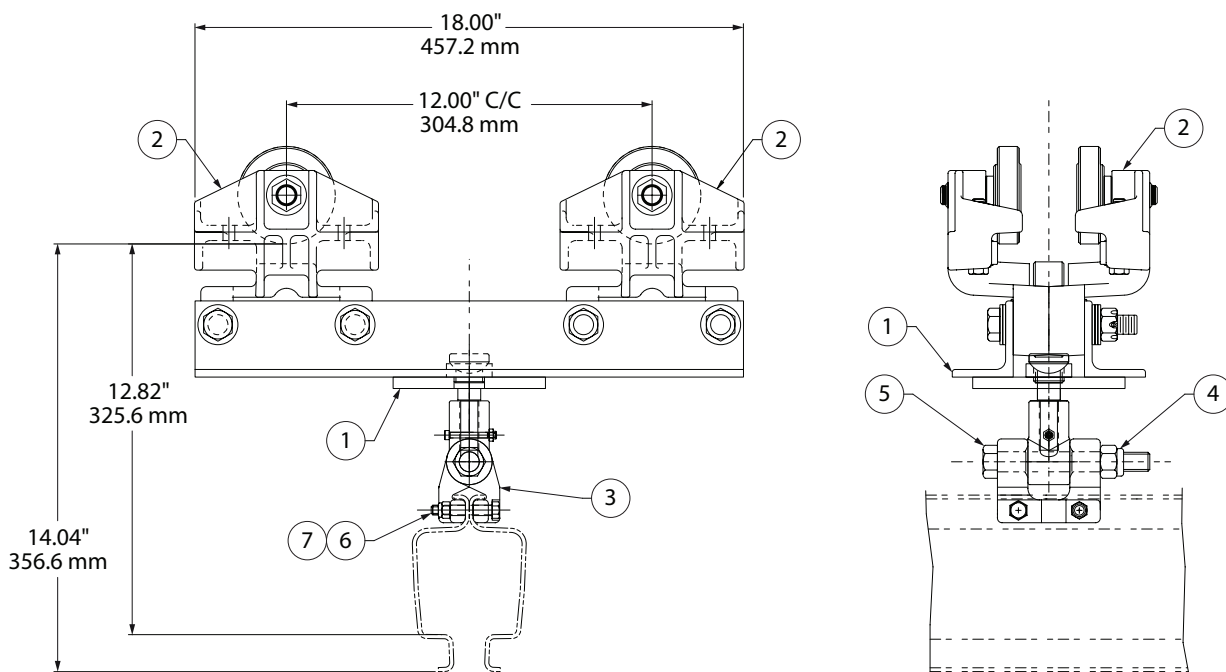
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY. DIMENSIONS REFLECT ZRS2 RAIL.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096532)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	3
2	30832	Dual Trolley Tie Bar for Curved Rail	1
3	72623	Hexagonal Bolt, 5/8 - 11 x 5"	2
4	30821	Aluminum Trolley, ZRS2/3	2
5	30596	Bridge Suspension Sub-assembly, ZRS	1
6	72620	5/8 - 11 x 3.5" HCS Grade 5	1

# End Truck Assembly • ZRS2/3 on Patent Track/1000 lbs. (453.6 kg) Capacity/Dual Trolley/Part No. 30839



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....—  
 YIELD STRENGTH .....—  
 CAPACITY..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY .....—

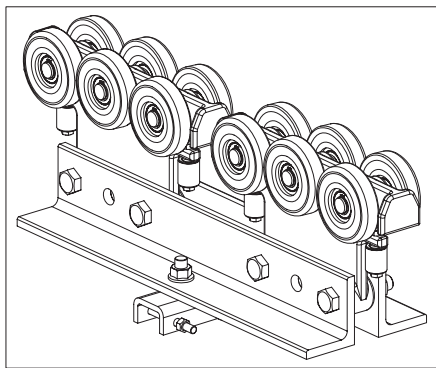
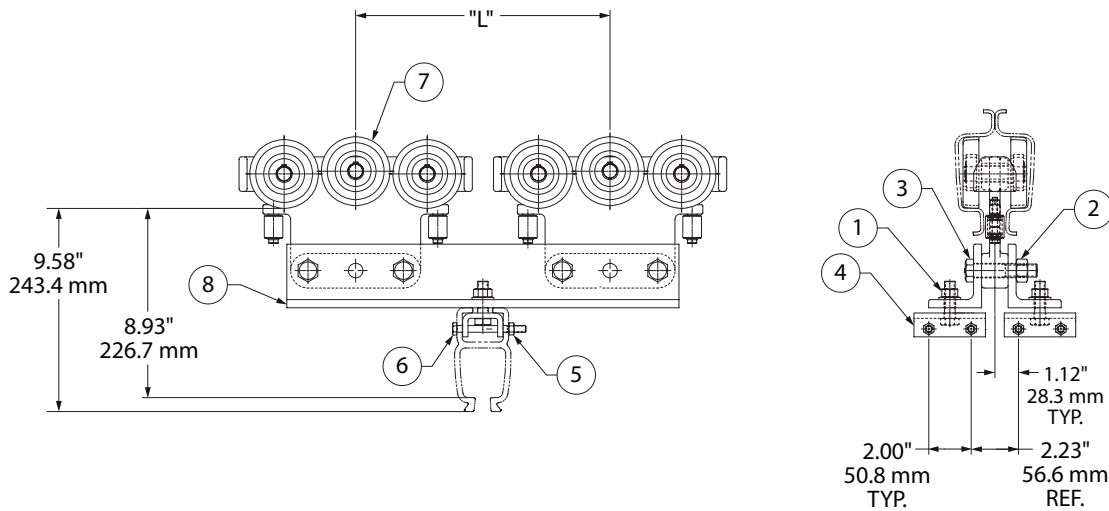
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY. DIMENSIONS REFLECT ZRS2 RAIL.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54096557)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30917	Dual End Truck Sub-assembly	1
2	93814	500 LB.(226.8 KG) Patent Track Trolley MBC-500	2
3	30801S	Hanger Bracket	2
4	75587	Lock Nut, 5/8 - 11 PT	1
5	72623	5/8 - 11 x 5.00 HCS Grade 5	1
6	70967	5/16 - 18 x 2.25 HCS Grade 5	2
7	75582	Lock Nut, 5/16 - 18 PT	2

# Rigid End Truck • ZRA1/T on ZRS2/2000 lbs. (907.18 kg) Capacity/ Part No. 30634 - XXXX



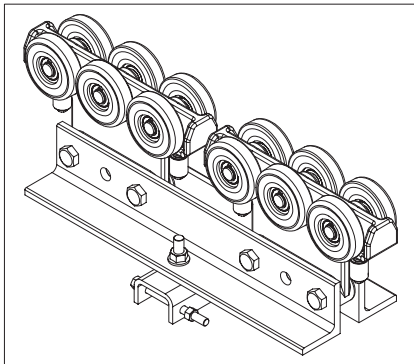
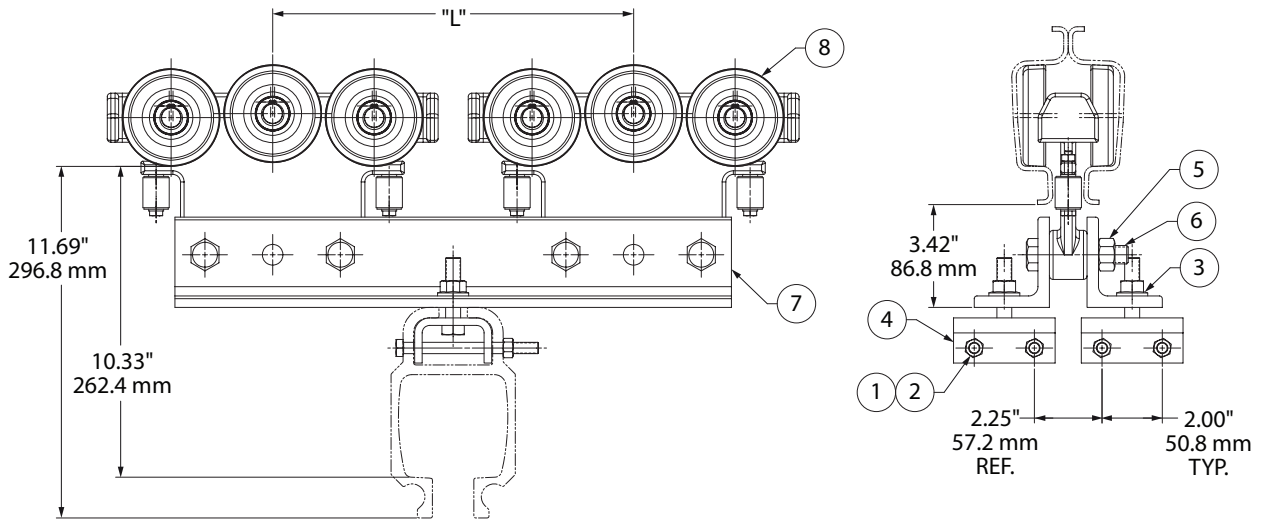
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	30634 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	30634 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	30634 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	30634 - 3600	30907 - 08	36"	30327 - 3600

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....—  
 YIELD STRENGTH .....—  
 CAPACITY.....2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY .....—

(Dwg. 16588592)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Flanged Lock Nut, 1/2 - 13 PT	2
2	75587	Lock Nut, 5/8 - 11	4
3	72626	HCS 5/8 - 11 x 3" Grade 5	4
4	30326	ZRA1 Rigid Mount Suspension Bracket	2
5	75582	Lock Nut, 5/16 - 18 PT	4
6	ZHS70968	HCS 5/16 - 18 x 3.25" Grade 5	4
7	30511	ZRS2/3 Aluminum Reaction Trolley	2
8	30327-XXXX	End Truck Bracket	2
9	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Rigid End Truck • ZRA2 on ZRS2/2000 lbs. (907.18 kg) Capacity/ Part No. 16045577 - XXXX



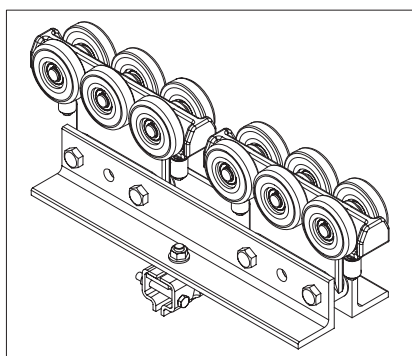
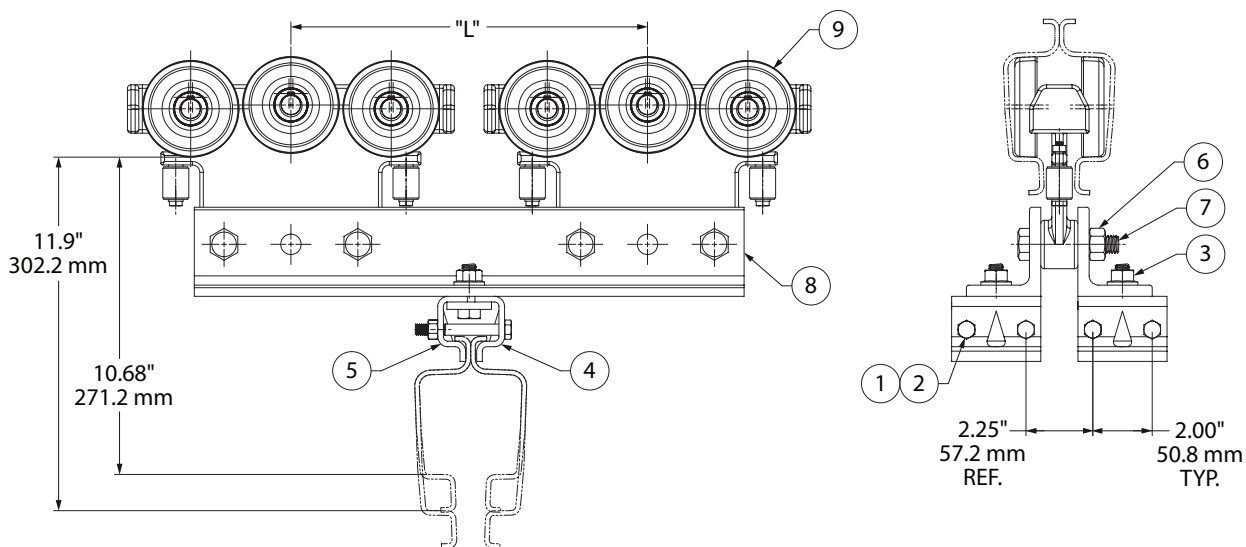
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	16045577 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	16045577 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	16045577 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	16045577 - 3600	30907 - 08	36"	30327 - 3600

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....—  
 YIELD STRENGTH .....—  
 CAPACITY.....2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY .....—

(Dwg. 16045577)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	4
2	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	ZHS30109	ZRA2 Rigid Mount Suspension Bracket	2
5	75587	Lock Nut, 5/8 - 11	4
6	72626	HCS 5/8 - 11 x 3" Grade 5	4
7	30327-XXXX	End Truck Bracket	2
8	30511	ZRS2/3 Aluminum Reaction Trolley	2
9	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Rigid End Truck • ZRS2/3 on ZRS2/2000 lbs. (907.18 kg) Capacity/ Part No. 16031189 - XXXX



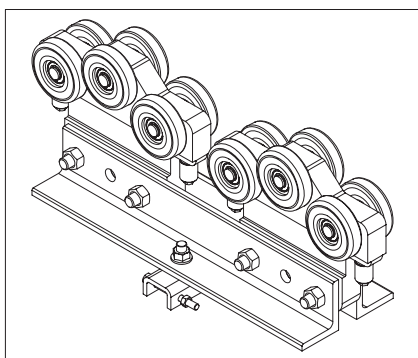
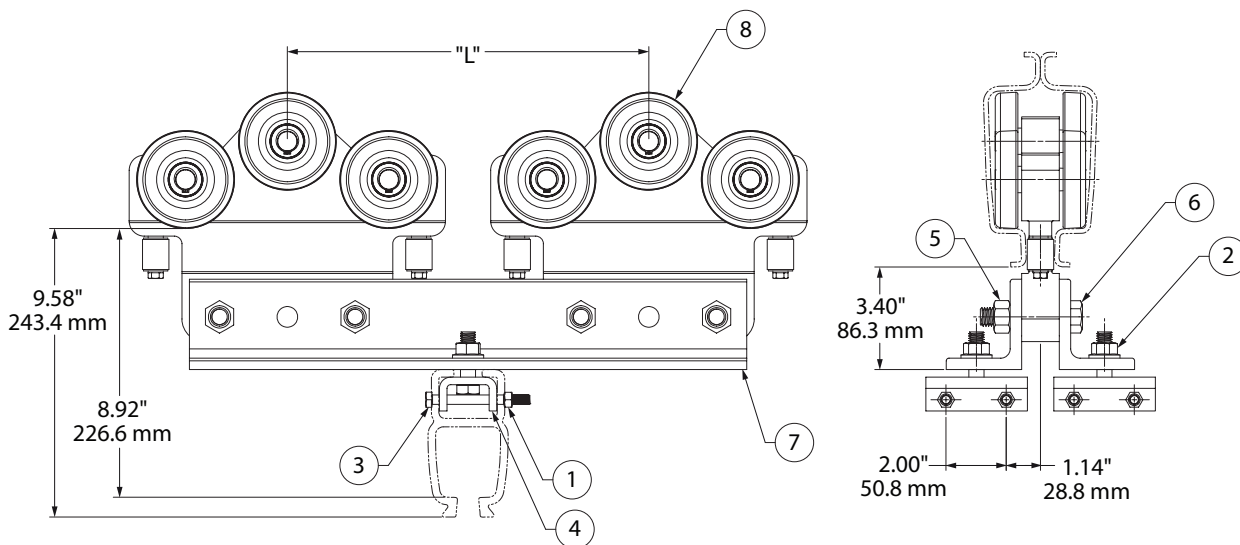
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	16031189 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	16031189 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	16031189 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	16031189 - 3600	30907 - 08	36"	30327 - 3600

ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... —

(Dwg. 16031189)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	4
2	ZHS71479	HCS 3/8 - 16 x 3" Grade 5	4
3	75589	Flanged Lock Nut, 1/2 - 13 PT	2
4	30502	Rail Clamp	2
5	ZHS30773	Suspension Clamp Weldment	2
6	75587	Lock Nut, 5/8 - 11	4
7	72626	HCS 5/8 - 11 x 3" Grade 5	4
8	30327-XXXX	End Truck Bracket	2
9	30511	ZRS2/3 Aluminum Reaction Trolley	2
10	30907-XX	Safety Cable Kit - Not Shown (See Legend)	1

# Rigid End Truck • ZRA1/T on ZRS3/2000 lbs. (907.18 kg) Capacity/ Part No. 45520830 - XXXX



LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45520830 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	45520830 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	45520830 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	45520830 - 3600	30907 - 06	36"	30327 - 3600

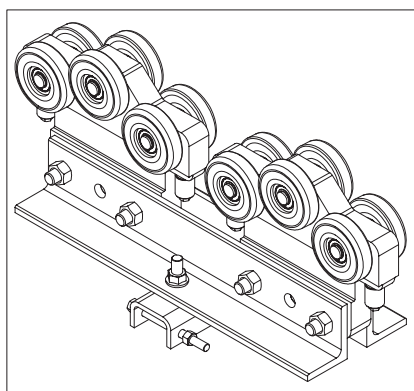
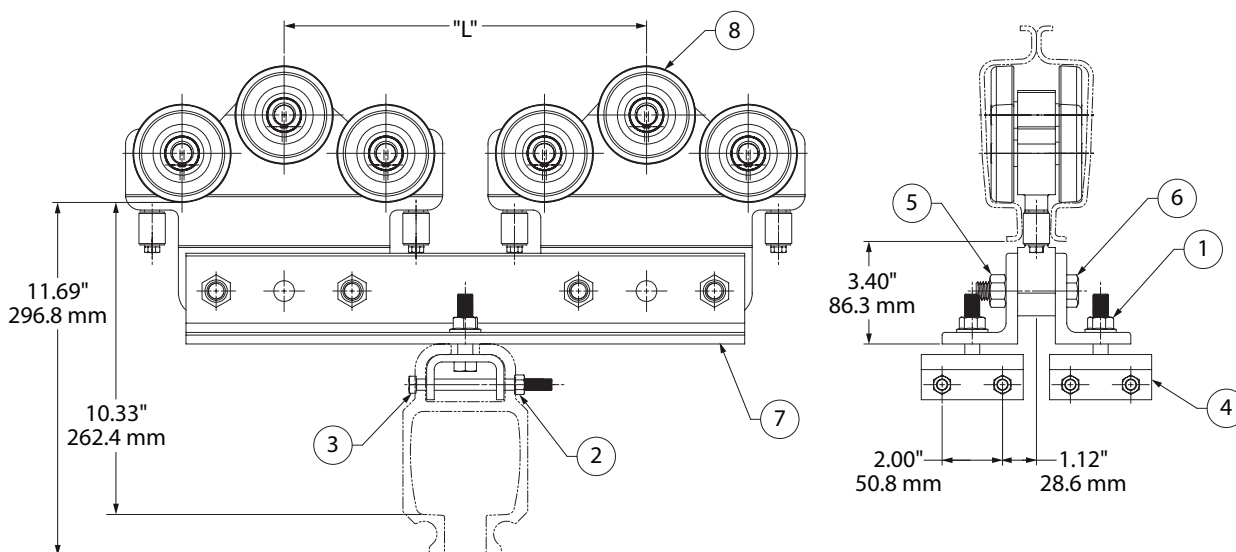
ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... —

(Dwg. 45520830)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75582	Lock Nut, 5/16 - 18 PT	4
2	75589	Flanged Lock Nut, 1/2 - 13 PT	2
3	ZHS70968	HCS 5/16 - 18 x 3.25" Grade 5	4
4	30326	ZRA1 Rigid Mount Suspension Bracket	2
5	75587	Lock Nut, 5/8 - 11	4
6	72626	HCS 5/8 - 11 x 3" Grade 5	4
7	30327-XXXX	End Truck Bracket	2
8	45520079	Rigid Reaction ZRS3 Trolley	2
9	30907-XX	Safety Cable Assembly - Not Shown (See Legend)	1



# Rigid End Truck • ZRA2 on ZRS3/2000 lbs. (907.18 kg) Capacity/ Part No. 45520566 - XXXX



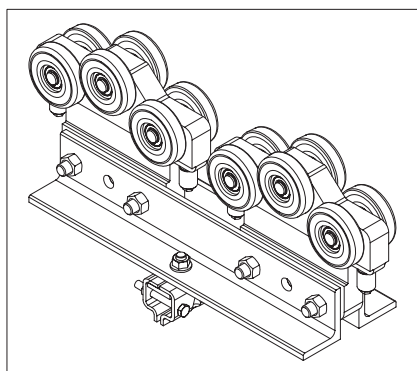
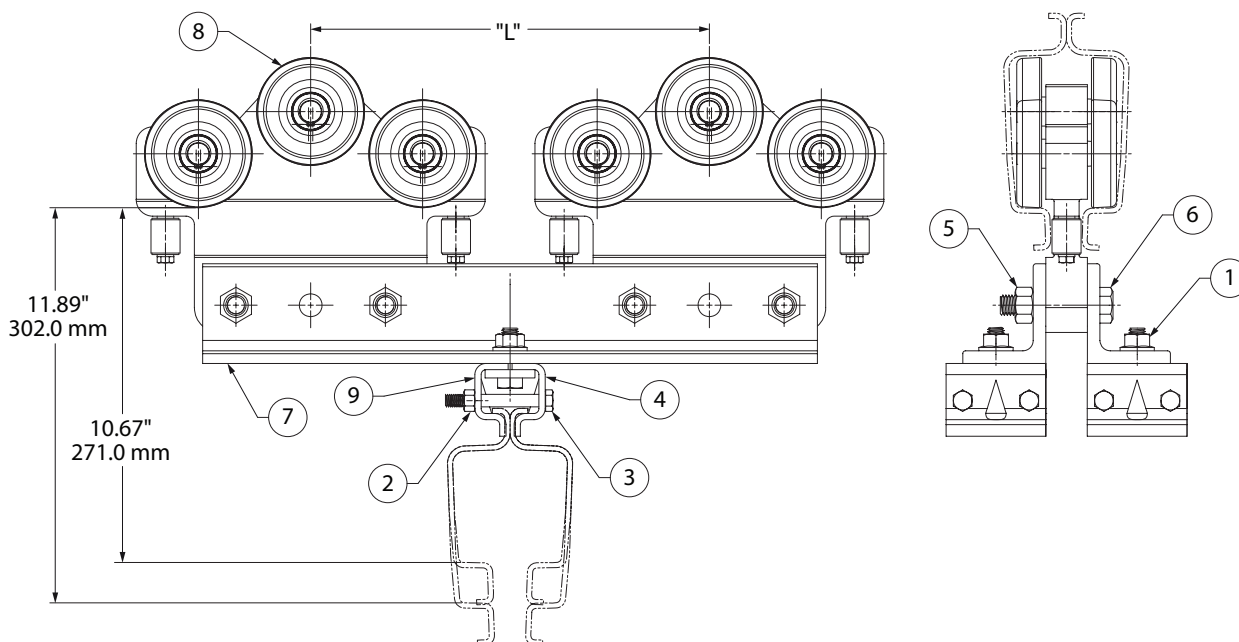
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45520566 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	45520566 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	45520566 - 2400	30907 - 06	24"	30327 - 2400
20' - 30'	45520566 - 3600	30907 - 08	36"	30327 - 3600

ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY ..... 2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... —

(Dwg. 45520566)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Flanged Lock Nut, 1/2 - 13 PT	2
2	75583	Lock Nut, 3/8 - 16	4
3	ZHS71481	HCS 3/8 - 16 x 4.5" Grade 5	4
4	ZHS30109	ZRA2 Rigid Mount Suspension Bracket	2
5	75587	Lock Nut, 5/8 - 11	4
6	72626	HCS 5/8 - 11 x 3" Grade 5	4
7	30327-XXXX	End Truck Bracket	2
8	45520079	Rigid Reaction ZRS3 Trolley	2
9	30907-XX	Safety Cable Assembly - Not Shown (See Legend)	1

# Rigid End Truck • ZRS2/3 on ZRS3/2000 lbs. (907.18 kg) Capacity/ Part No. 45520152 - XXXX



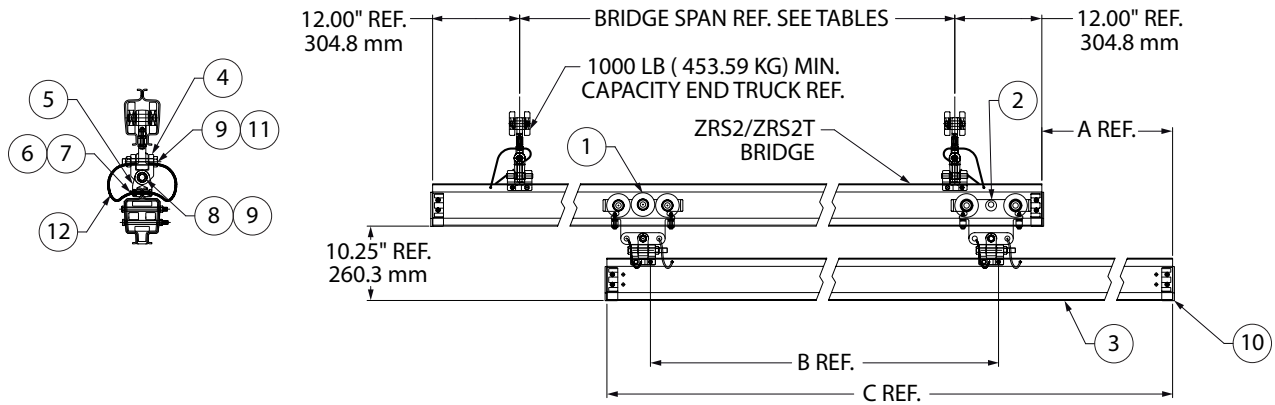
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45520152 - 1200	30907 - 06	12"	30327 - 1200
10' - 15'	45520152 - 1800	30907 - 06	18"	30327 - 1800
15' - 20'	45520152 - 2400	30907 - 08	24"	30327 - 2400
20' - 30'	45520152 - 3600	30907 - 10	36"	30327 - 3600

ROLLING FRICTION .....ONE PERCENT  
 ULTIMATE STRENGTH .....—  
 YIELD STRENGTH .....—  
 CAPACITY.....2,000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY .....—

(Dwg. 45520152)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Flanged Lock Nut, 1/2 - 13 PT	2
2	75583	Lock Nut, 3/8 - 16	4
3	ZHS71479	HCS 3/8 - 16 x 3" Grade 5	4
4	30502	Rail Clamp	2
5	75587	Lock Nut, 5/8 - 11	4
6	72626	HCS 5/8 - 11 x 3" Grade 5	4
7	30327-XXXX	End Truck Bracket	2
8	45520079	Rigid Reaction ZRS3 Trolley	2
9	ZHS30773	Suspension Clamp Weldment	2
10	30907-XX	Safety Cable Assembly - Not Shown (See Legend)	1

# Bridge Extensions • ZRS2/Single Trolley/Part No. 30721 - XX



"A" DIM. = 2'-0" FOR 2' EXTENSION						
PART NO:	"B" DIM.	"C" DIM.	RATED CAPACITY	MINIMUM RECOMMENDED BRIDGE CAPACITY	MAXIMUM RECOMMENDED ZRS2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRS2T BRIDGE SPAN
30721-22	2'-0"	5'-0"	450 LBS.	975 LBS.	13 FT	22 FT
30721-23	3'-0"	6'-0"	550 LBS.	1000 LBS.	13 FT	22 FT
30721-24	4'-0"	7'-0"	600 LBS.	975 LBS.	13 FT	22 FT
30721-25	5'-0"	8'-0"	650 LBS.	1000 LBS.	13 FT	22 FT

"A" DIM. = 4'-0" FOR 4' EXTENSION						
PART NO:	"B" DIM.	"C" DIM.	RATED CAPACITY	MINIMUM RECOMMENDED BRIDGE CAPACITY	MAXIMUM RECOMMENDED ZRS2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRS2T BRIDGE SPAN
30721-42	2'-0"	7'-0"	225 LBS.	800 LBS.	15 FT	24 FT
30721-43	3'-0"	8'-0"	350 LBS.	925 LBS.	14 FT	23 FT
30721-44	4'-0"	9'-0"	450 LBS.	1000 LBS.	13 FT	22 FT
30721-45	5'-0"	10'-0"	500 LBS.	1000 LBS.	13 FT	22 FT

"A" DIM. = 3'-0" FOR 3' EXTENSION						
PART NO:	"B" DIM.	"C" DIM.	RATED CAPACITY	MINIMUM RECOMMENDED BRIDGE CAPACITY	MAXIMUM RECOMMENDED ZRS2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRS2T BRIDGE SPAN
30721-32	2'-0"	6'-0"	325 LBS.	900 LBS.	14 FT	23 FT
30721-33	3'-0"	7'-0"	450 LBS.	1000 LBS.	13 FT	22 FT
30721-34	4'-0"	8'-0"	525 LBS.	1000 LBS.	13 FT	22 FT
30721-35	5'-0"	9'-0"	575 LBS.	1000 LBS.	13 FT	22 FT

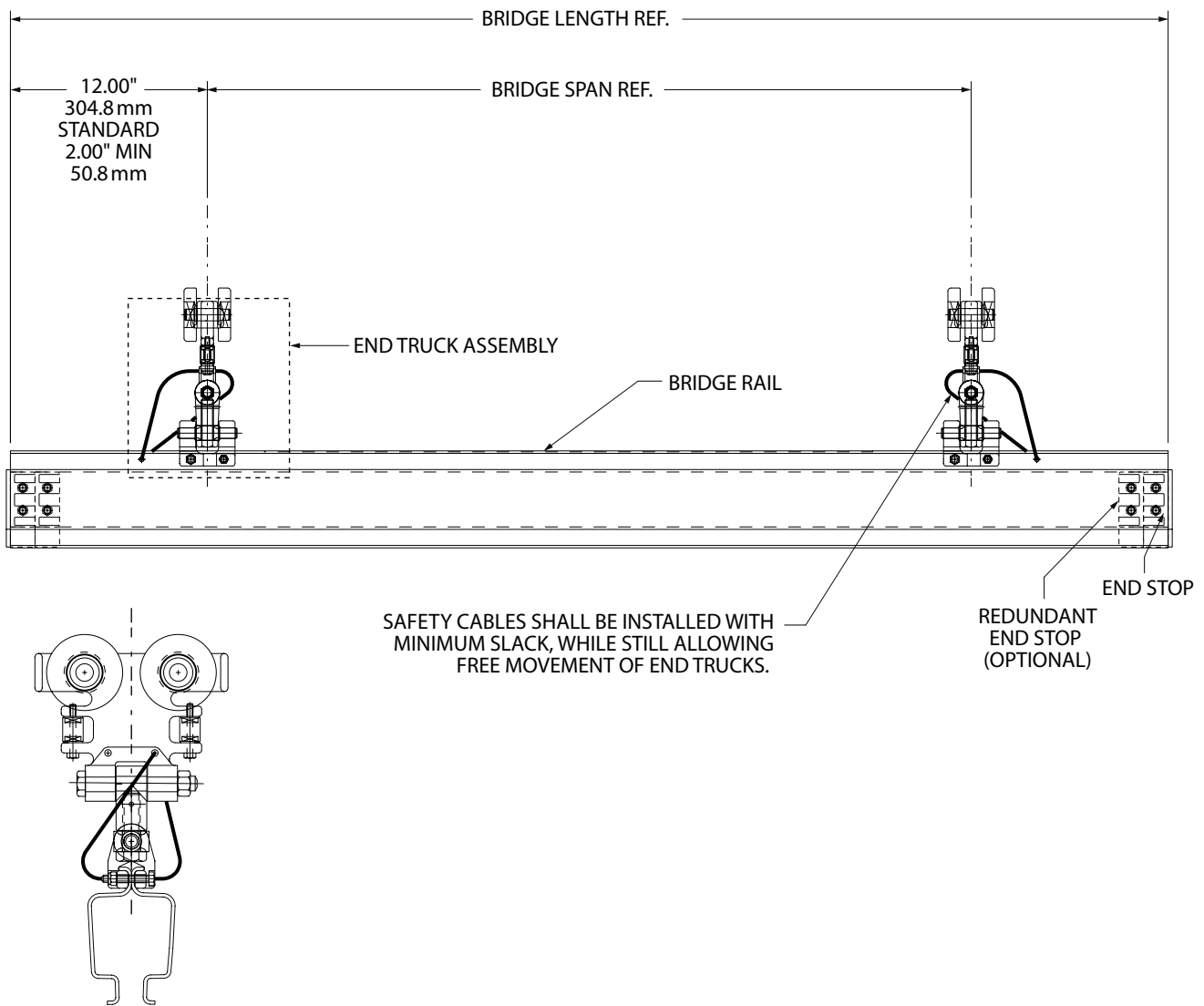
"A" DIM. = 6'-0" FOR 6' EXTENSION						
PART NO:	"B" DIM.	"C" DIM.	RATED CAPACITY	MINIMUM RECOMMENDED BRIDGE CAPACITY	MAXIMUM RECOMMENDED ZRS2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRS2T BRIDGE SPAN
30721-63	3'-0"	10'-0"	225 LBS.	825 LBS.	15 FT	24 FT
30721-64	4'-0"	11'-0"	300 LBS.	900 LBS.	14 FT	23 FT
30721-65	5'-0"	12'-0"	300 LBS.	800 LBS.	15 FT	24 FT
30721-66	6'-0"	13'-0"	275 LBS.	700 LBS.	16 FT	24 FT

"A" DIM. = 5'-0" FOR 5' EXTENSION						
PART NO:	"B" DIM.	"C" DIM.	RATED CAPACITY	MINIMUM RECOMMENDED BRIDGE CAPACITY	MAXIMUM RECOMMENDED ZRS2 BRIDGE SPAN	MAXIMUM RECOMMENDED ZRS2T BRIDGE SPAN
30721-52	2'-0"	8'-0"	175 LBS.	750 LBS.	15 FT	24 FT
30721-53	3'-0"	9'-0"	275 LBS.	875 LBS.	14 FT	23 FT
30721-54	4'-0"	10'-0"	375 LBS.	975 LBS.	13 FT	22 FT
30721-55	5'-0"	11'-0"	400 LBS.	925 LBS.	14 FT	23 FT

(Dwg. 45265683)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30511	ZRS2 Reaction Trolley, (1000 LB.(453.6 KG) Capacity)	1
2	30510	ZRS2 Load Trolley, (1000 LB.(453.6 KG) Capacity)	1
3	30500	ZRS2 Rail x "C" Long	1
4	30166	Female Clevis	2
5	30801S	Hanger Bracket - ZRS Rail	4
6	70967	5/16 - 18 x 2.25 HHB	4
7	75582	Lock Nut, 5/16 - 18 PT	4
8	72623	5/16 - 11 x 5.00 HHB	2
9	75587	Lock Nut, 5/8 - 11 PT	4
10	30804	ZRS2 End Stop Kit	2
11	72646	5/8 - 11 x 3.25 HHB	2
12	30907-06	Safety Cable Assembly	2

# Bridge Crane Assembly • Example of How to Order



THE BRIDGE CRANE ASSEMBLY CONSISTS OF:

- ONE BRIDGE BEAM (SECTION OF RAIL)
- TWO END TRUCK ASSEMBLIES (MOUNTED TO THE BRIDGE WITH A TROLLEY TO ROLL INSIDE OF THE RUNWAY, SAFETY CABLES WILL BE PRE-INSTALLED)
- TWO END STOPS (ONE INSTALLED AT EACH END OF THE BRIDGE)
- REDUNDANT END STOPS ARE AVAILABLE (PLEASE SPECIFY)

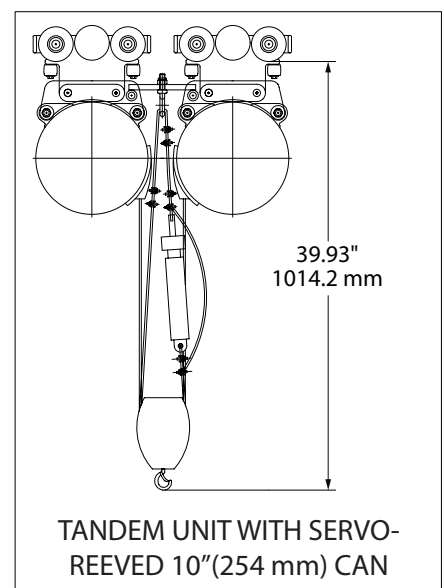
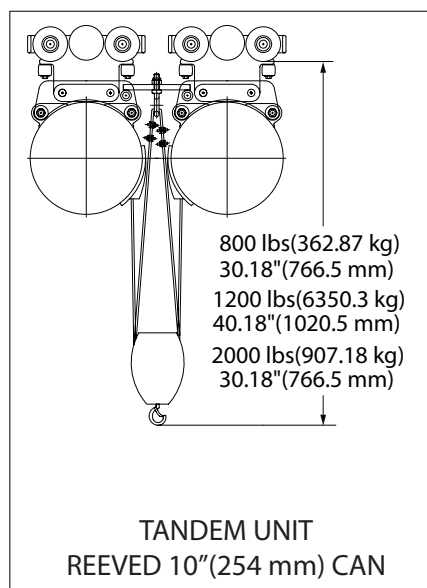
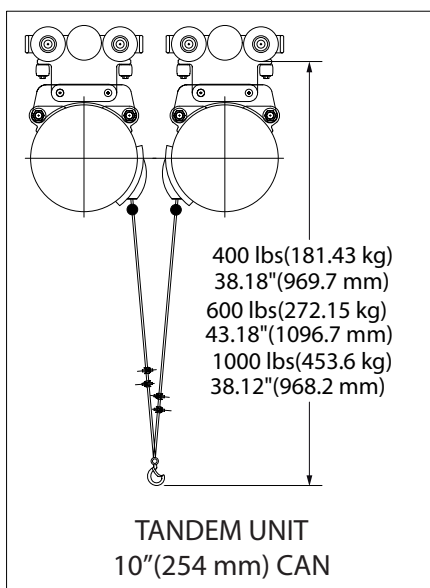
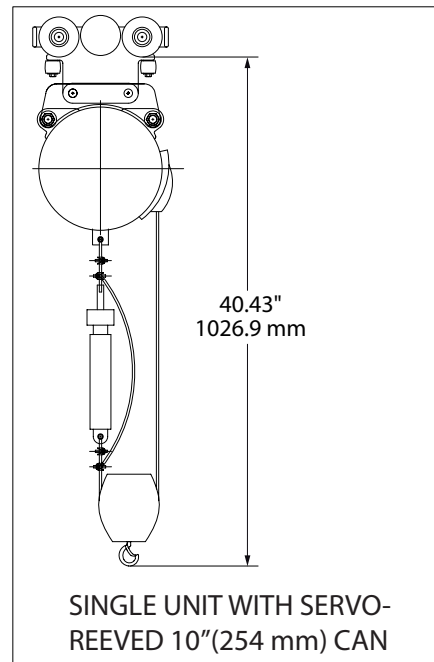
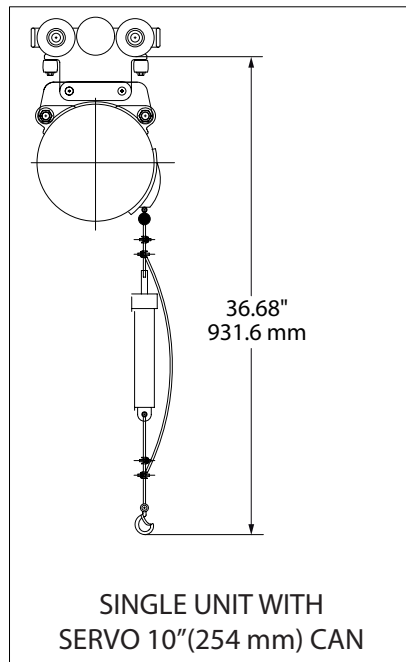
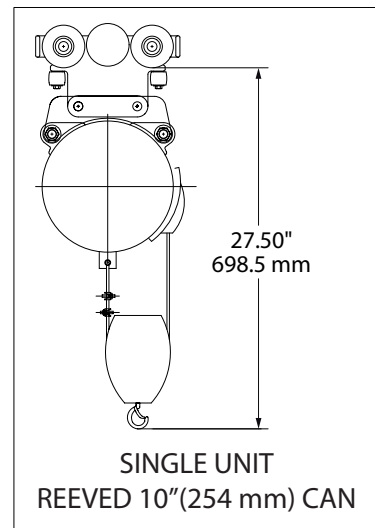
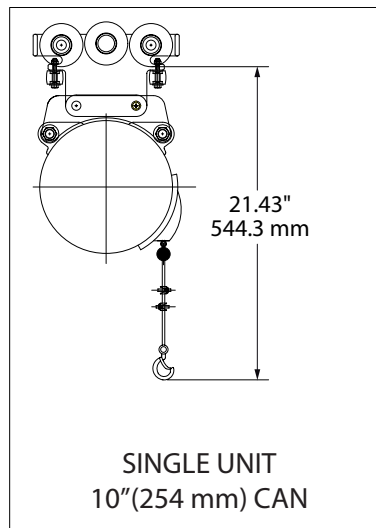
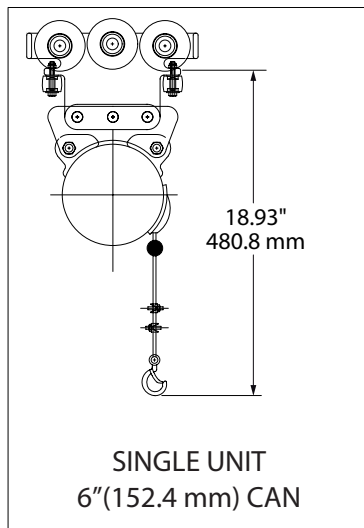
## EXAMPLE

ORDER NUMBER:

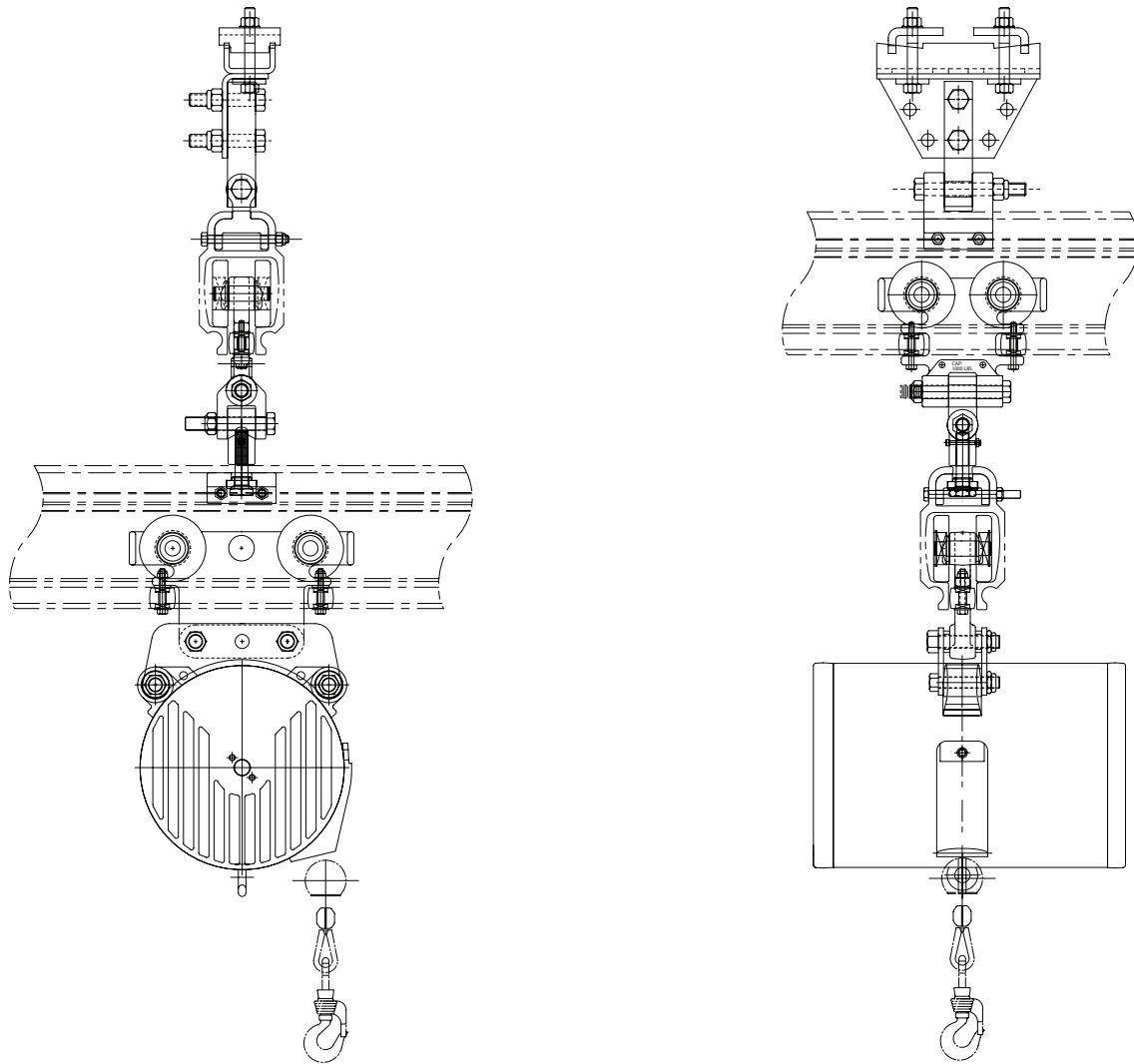
**ZRS2 | 06 | 08 | 30599 | R**

- ZRS2** — TYPE OF BRIDGE RAIL
- 06** — SPAN (RUNWAY CENTER-CENTER DIMENSION IN FEET)
- 08** — TOTAL BRIDGE LENGTH (IN FEET)
- 30599** — END TRUCK ASSEMBLY
- R** — REDUNDANT END STOP (OPTIONAL)

# Balancer Stack-up Dimension • For ZRS2/3 Steel Rail

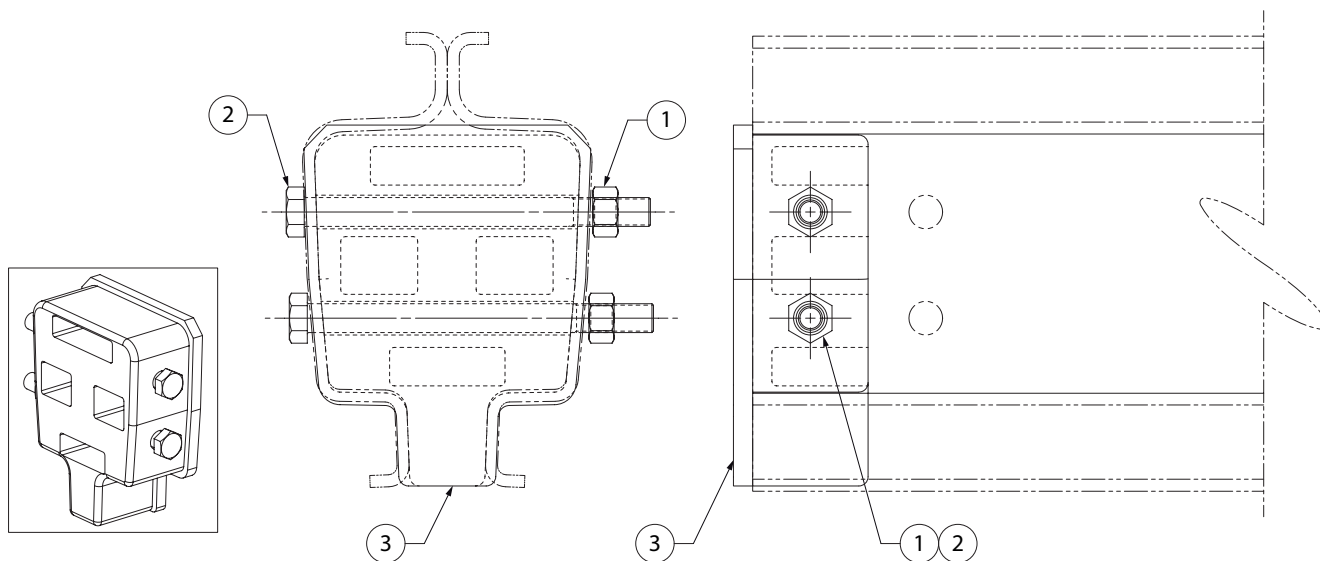


# System Stack-up Dimension • ZRS2/3 - Quick Reference



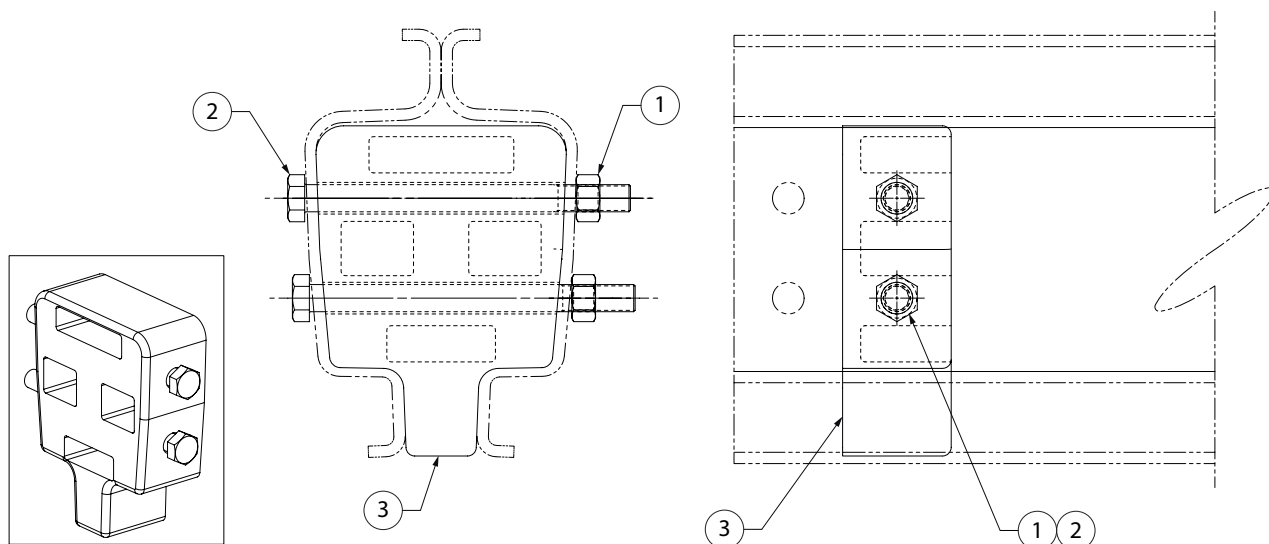
HANGER KITS	S3	S2	END TRUCKS	BALANCERS WITH SUSPENSION
30813	8.57	7.30	30824 - 12.44"(315.9 mm)	SINGLE UNIT 6"(152.4 mm) - 18.93"(480.8 mm)
30813S	8.57	7.30	30825 - 12.44"(315.9 mm)	SINGLE UNIT 10"(254 mm) - 21.43"(544.3 mm)
30816	8.57	7.30	30828 - 10.88"(276.3 mm)	SINGLE UNIT REEVED 10"(254 mm) - 27.50"(698.5 mm)
30816S	8.57	8.57	30829 - 12.13"(308.1 mm)	SINGLE UNIT WITH SERVO 10"(254 mm) - 36.68"(931.6 mm)
30819	14.32	13.05	30835 - 12.63"(320.8 mm)	SINGLE UNIT REEVED WITH SERVO 10"(254 mm) - 40.43"(1026.9 mm)
30819S	14.32	13.05	30836 - 12.94"(328.6 mm)	TANDEM UNIT 10"(254 mm) - 400 LBS.(181.43 KG). 38.18"(969.7 mm)
30820	14.32	13.05	30822 - 10.94"(277.8 mm)	600 LBS.(272.15 KG). 43.18"(1096.7 mm)
30820S	14.32	13.05	30823 - 10.63"(270.0 mm)	1000 LBS.(453.6 KG). 38.18"(969.7 mm)
30817	14.32	13.05	30826 - 9.38"(238.2 mm)	TANDEM UNIT REEVED 10"(254 mm) - 800 LBS.(362.8 KG). 30.18"(766.5 mm)
30817S	14.32	13.05	30827 - 10.68"(271.2 mm)	1200 LBS.(544.31 KG). 40.18"(1020.5 mm)
30818	14.32	13.05	30833 - 11.18"(283.9 mm)	2000 LBS.(907.18 KG). 30.18"(766.5 mm)
30818S	14.32	13.05	30834 - 12.50"(317.5 mm)	TANDEM UNIT REEVED WITH SERVO 10"(254 mm) - 39.93"(1014.2 mm)
30814 - (Adj.)			30597 - 11.25"(285.7 mm)	
30815 - (Adj.)			30598 - 12.50"(317.5 mm)	
30840	11.03	9.76	30599 - 11.25"(285.7 mm)	
30841	11.03	9.76	30800 - 12.68"(322.0 mm)	
			30837 - 13.13"(333.5 mm)	
			30838 - 15.04"(382.0 mm)	
			30830 - 5.94"(150.8 mm)	
			30839 - 12.97"(329.4 mm)	

# End Stops • ZRS2 Steel Rail/Part No. (Single-30804) (Redundant-30806)



(Dwg. 54096110)

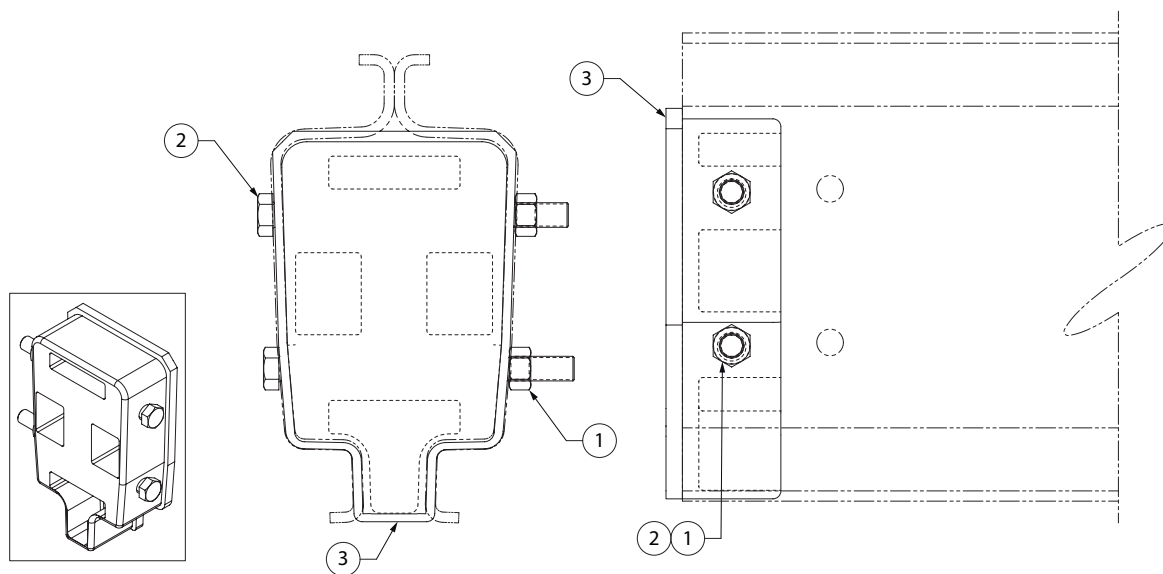
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	2
2	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
3	30803	End Stop - ZRS2	1



(Dwg. 54096136)

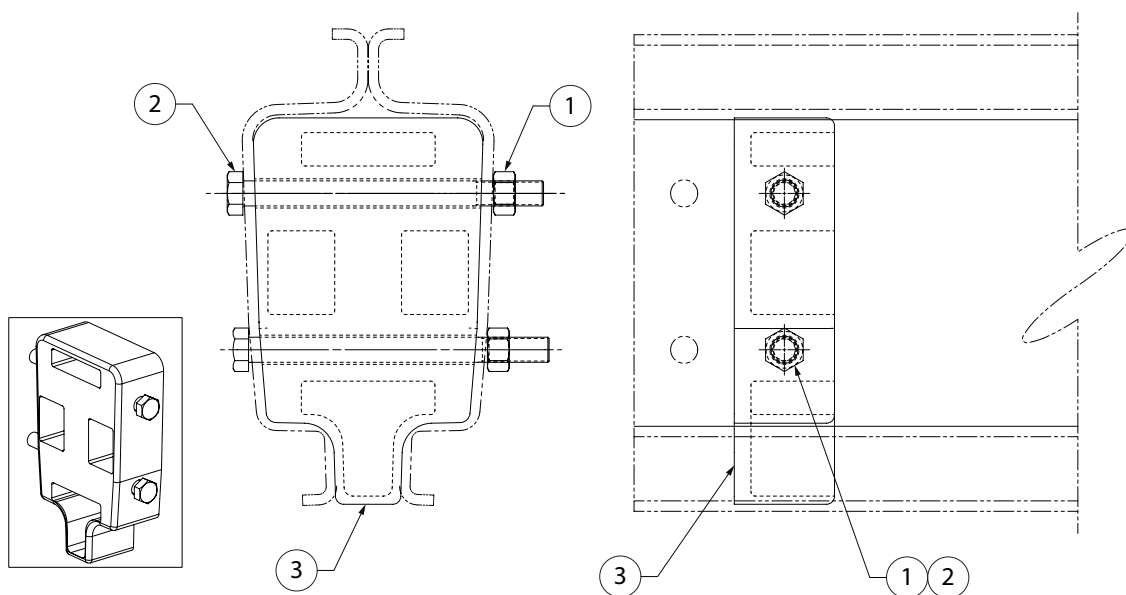
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	2
2	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
3	30805	Redundant End Stop - ZRS2	1

# End Stops • ZRS3 Steel Rail/Part No. (Single-30808) (Redundant-30810)



(Dwg. 54096144)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	2
2	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
3	30807	End Stop - ZRS3	1

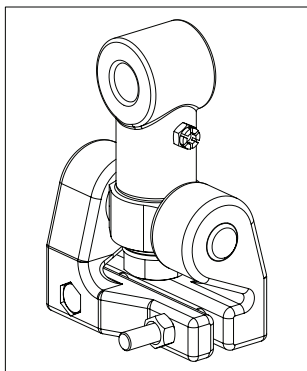
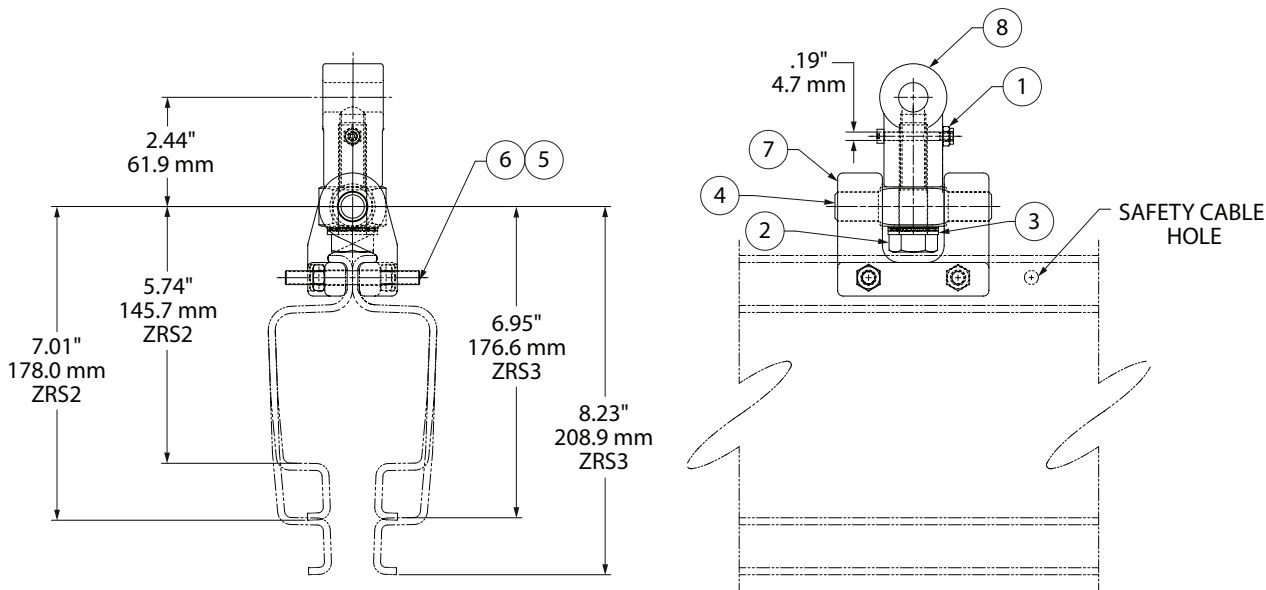


(Dwg. 54096151)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8 - 16	2
2	ZHS71481	3/8 - 16 x 4.5" HCS Grade 5	2
3	30809	Redundant End Stop - ZRS3	1



# Bridge Suspension • ZRS2/3 Steel Rail/Part No. 30596



**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH ..... 17,250 LBS.(7824.46 KG)  
 YIELD STRENGTH ..... 14,250 LBS.(6463.69 KG)  
 CAPACITY ..... 2000 LBS.(907.18 KG)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

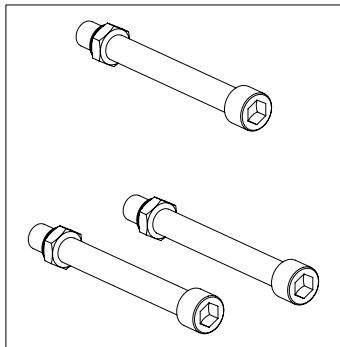
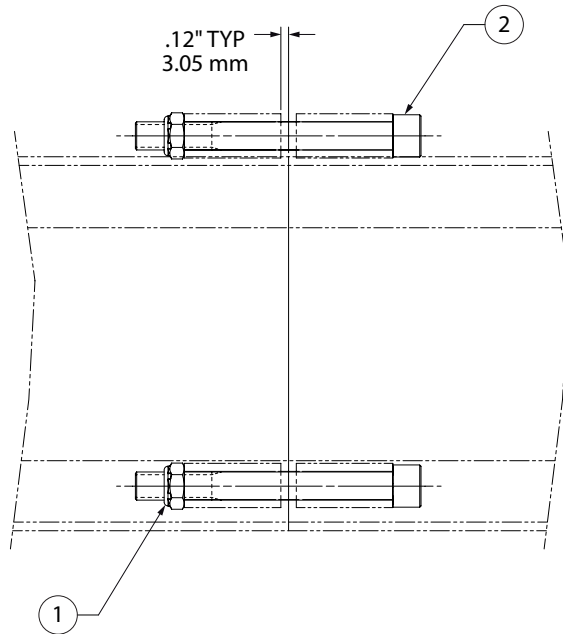
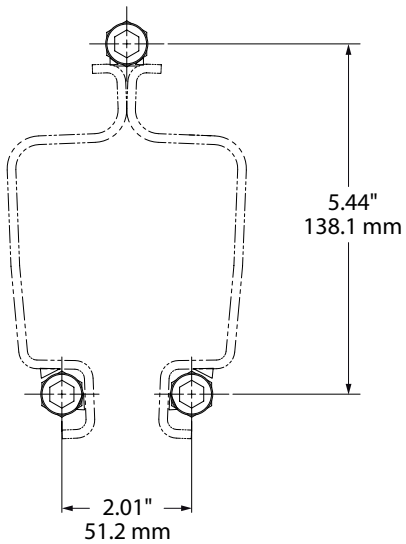
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54095799)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	99118	Shoulder Screw and Nut Assembly	1
2	72647	5/8 - 18 x 2.25" HCS Grade 5	1
3	65076	Thrust Washer, TRA - 1018	1
4	30802	Gimbal Bridge Adapter, ZRS	1
5	75582	Lock Nut, 5/16 - 18	2
6	70967	5/16 x 2.25" HCS Grade 5	2
7	308015	Hanger Bracket, ZRS	2
8	30163	Male Clevis, Machining	1

# Splice Bolt Kit • ZRS2/3/Part No. 30515



**NOTE:**

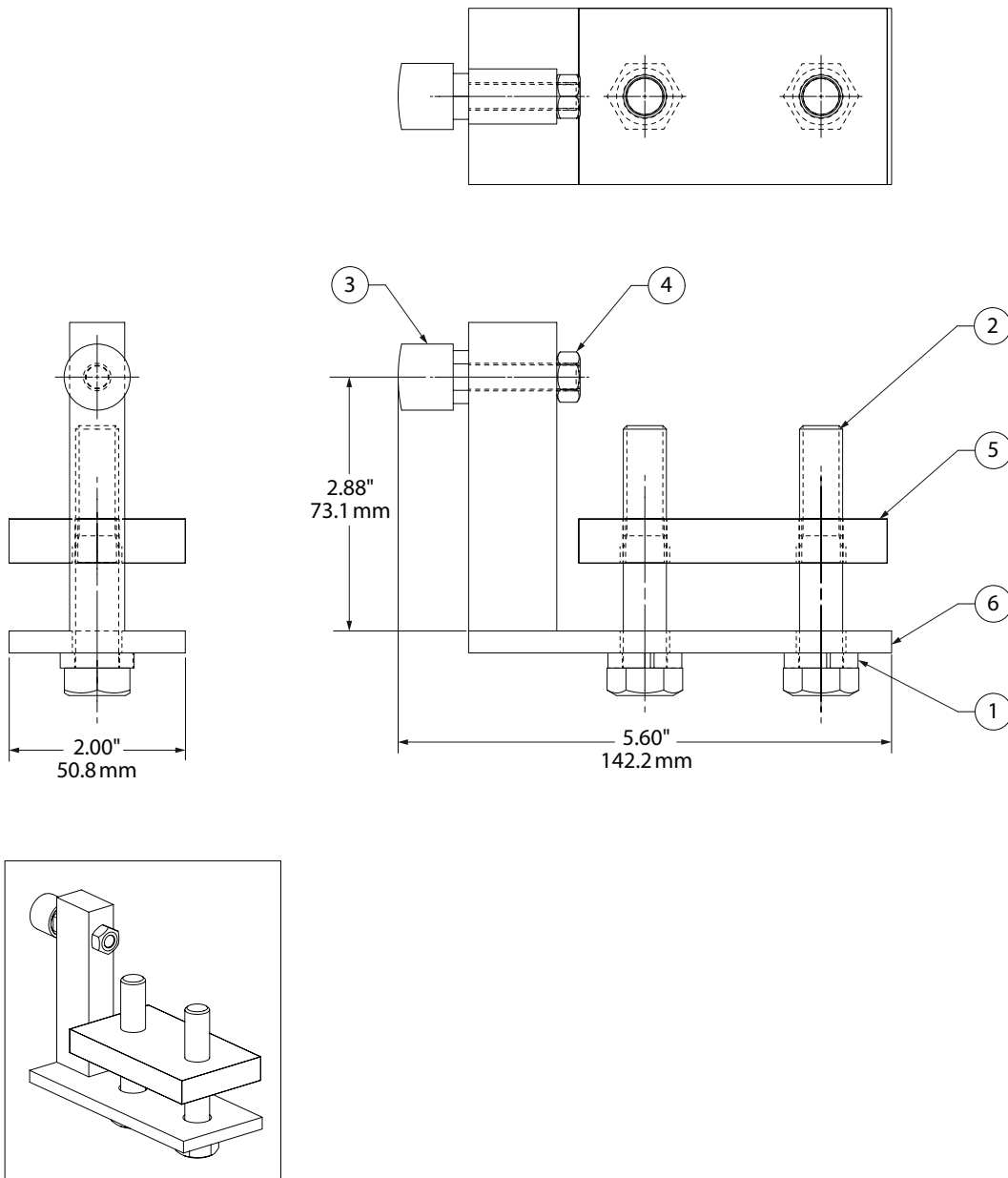
THERE MUST BE A HANGER KIT WITHIN 12" (305 mm) OF THE SPLICE JOINT ON THE RUNWAY.

CONSULT THE FACTORY IF MODIFICATIONS NEED TO BE MADE TO SPLICE JOINTS THAT REQUIRE WELDING OF SPLICE LUGS.

(Dwg. 54095237)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75532	7/16 - 14 Nylon Insert Lock	3
2	ZHS71910	7/16 - 14 x 4" SCS	3

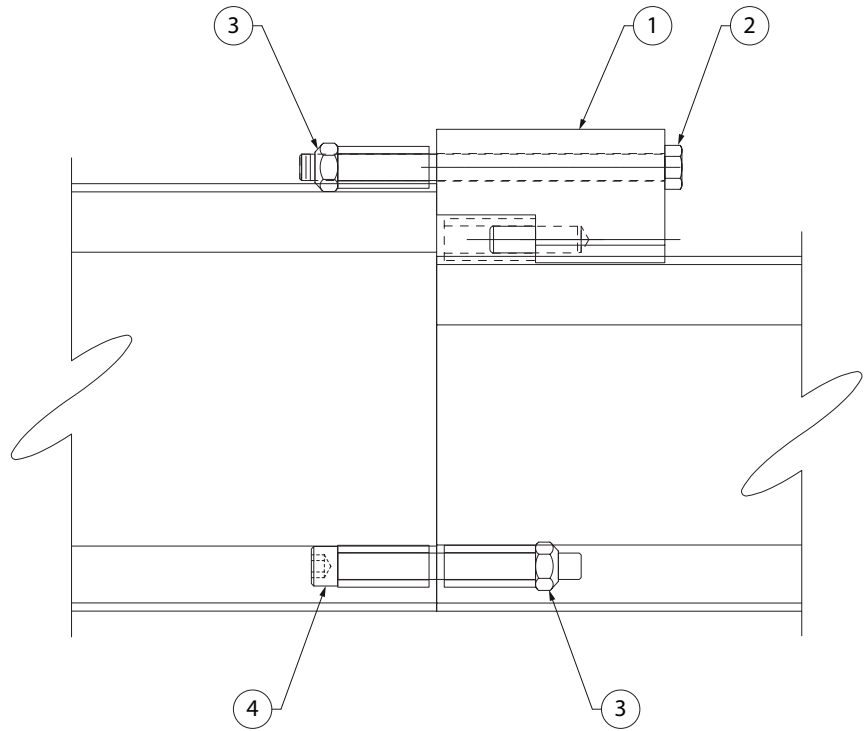
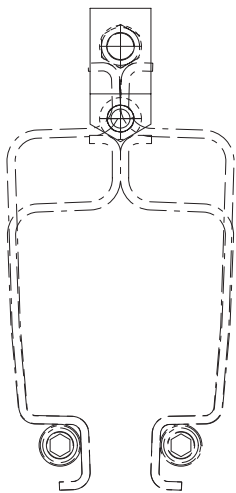
# ZRS2/3 Rail • Adjustable Stop/Part No. ZHS30733



(Dwg. 54068697)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	74513	Spring Lock Washer, 1/2" Medium	2
2	ZHS72002	1/2 - 13 x 2.75" HCS Grade 5	2
3	ZHS30744	BN-516M-20 Stilson Round Bumper with Male Thread and Hex. Shoulder	1
4	75582	Lock Nut, 5/16 - 18 PT	1
5	30737	Tapped Plate, ZRS2/3, Adjustable Stop	1
6	30735	Stop, Adjustable - ZRS2/3 Bar Weldment	1

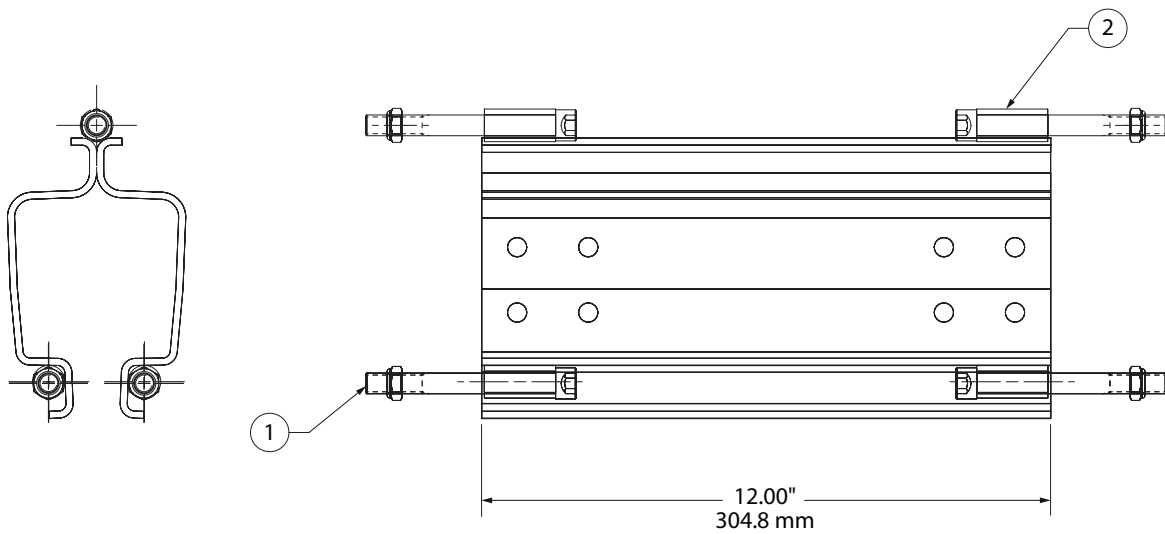
# ZRS2 to ZRS3 • Splice Kit/Part No. 30723



(Dwg. 54096086)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30724	Splice Block Assembly	1
2	71919	7/16 - 14 x 6.00 HCS Grade 5	1
3	75532	Lock Nut , 7/16 - 14 PT	3
4	71910	7/16 - 14 x 4.00 SHCS	2

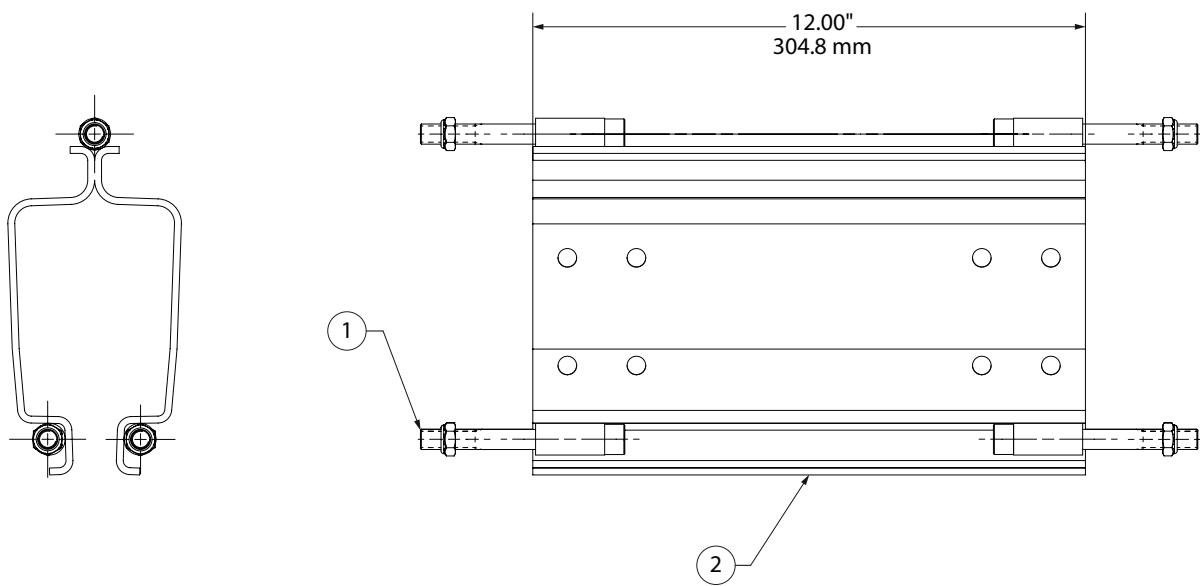
# ZRS2 Rail • Inspection Gate/Part No. ZHS30889



(Dwg. 04064051)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30515	Splice Bolt Kit - ZRS2/3	2
2	30500 - 010 - 2	ZRS2 Runway 1 FT	1

# ZRS3 • Inspection Gate/Part No. 30892



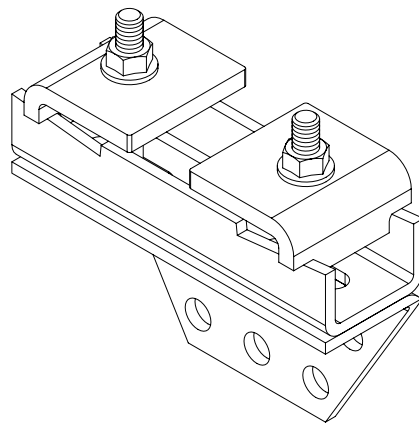
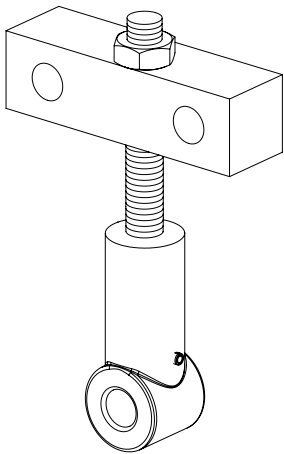
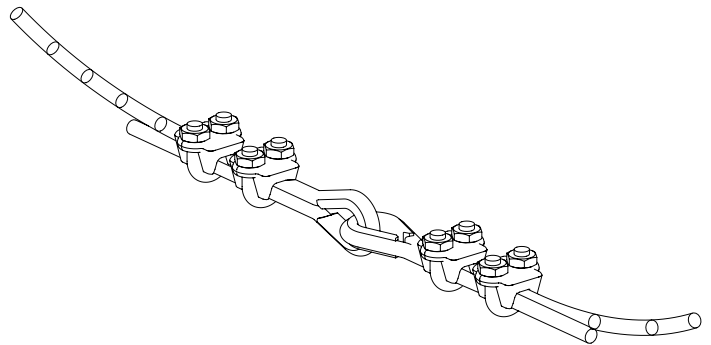
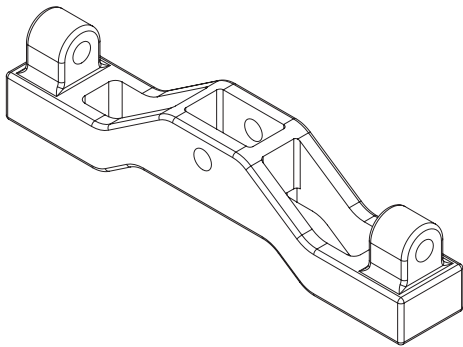
(Dwg. 54126214)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30515	Splice Bolt Kit - ZRS2/3	2
2	30550 - 010 -2	ZRS3 Steel Rail - 1 FT	1

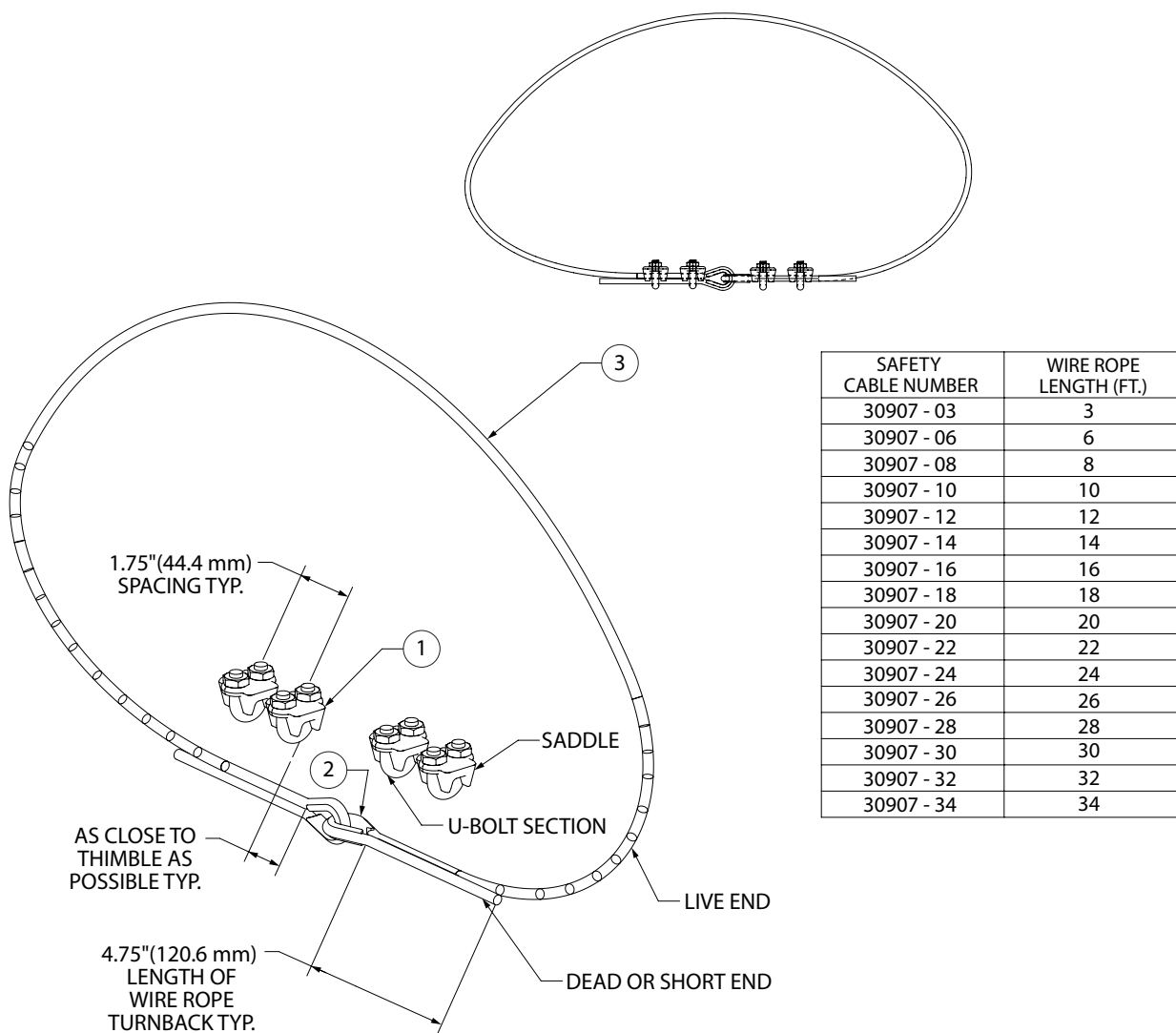
# Rail Systems

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## Miscellaneous • Components & Accessories



# Safety Cable Assembly • Part No. 30907 - XX



1. Safety cables are to be assembled as illustrated above and installed to allow free movement of the Hanger Kit, to provide minimum free drop of the components if the primary support should fail.
2. The "U" bolt portion of the Wire Rope Clamp should be positioned on the dead end of the cable as shown.
3. Thimble must be used on both ends of the cable.
4. Inboard clamps should be positioned to retain thimble in place. Outboard clamps should be placed one clamp saddle width from dead end of cable.
5. If cable is too long, it should be cut to a suitable length.

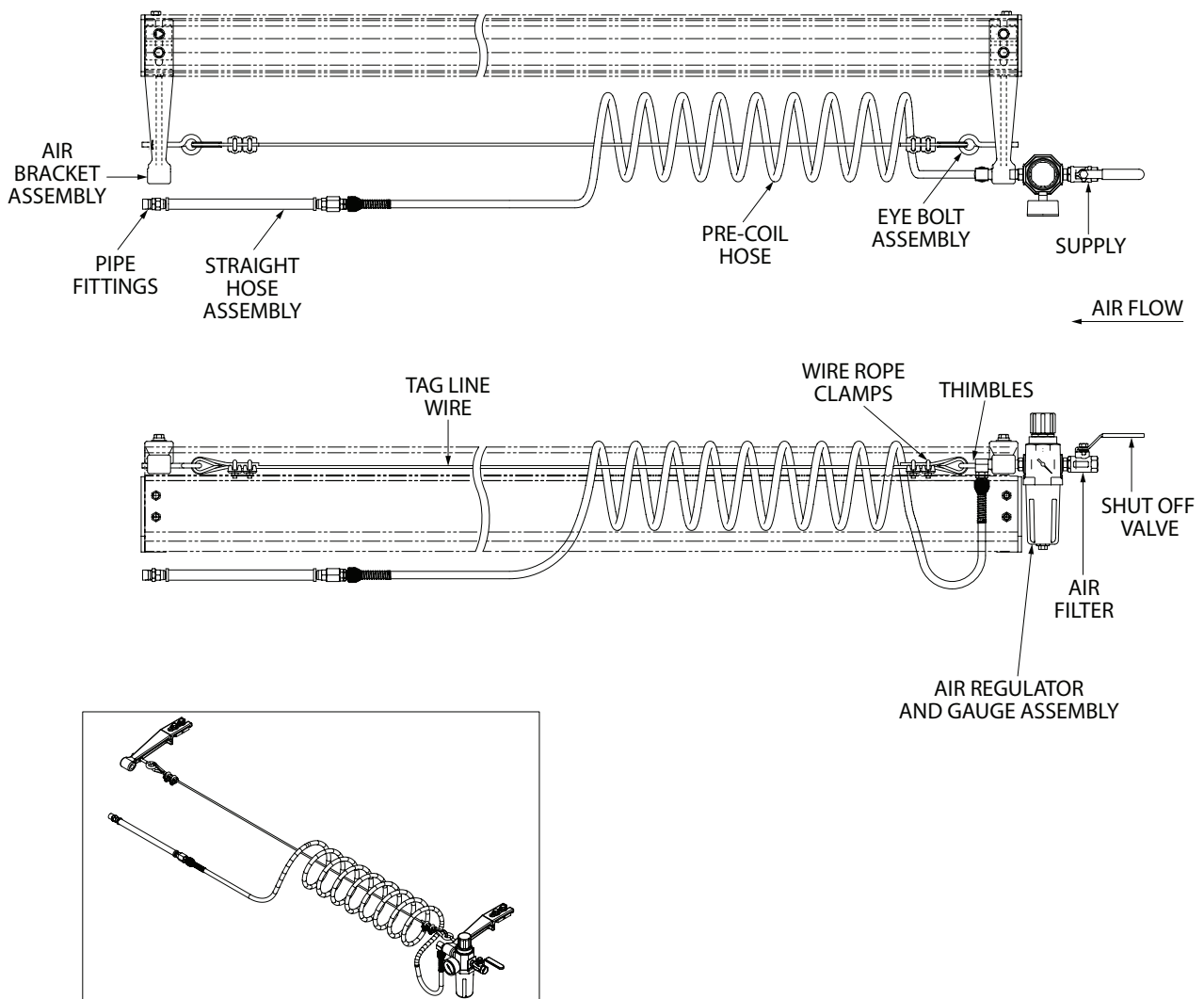
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

(Dwg. 54096698)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	10235	Wire Rope Clamp, 1/4 U-Bolt	4
2	10212	Thimble, 1/4 Wire Rope	2
3	10099	Wire Rope, 1/4 Galvanized (Measured in FT.)	1



# Air Supply Assembly • Runway System/Part No. 90000 - X & 90001 - X



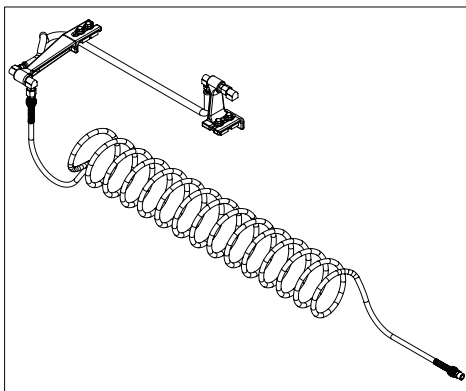
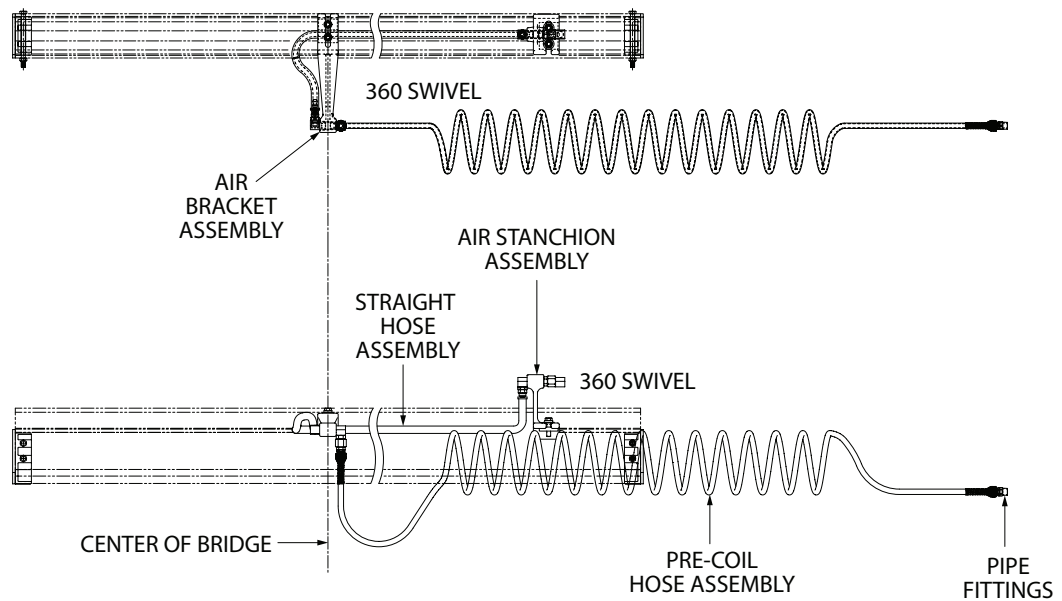
(Dwg. 54100888)

## RAIL SYSTEM AIR SUPPLY KIT

Rail systems Air Supply kits are available in 3/8" and 1/2" Hose I.D. and in 50Ft., and 100 Ft. Coverage lengths. The 90000 (3/8") or 90001 (1/2") Component Package includes the above:

Part Number	Description
90000-1	ALL RAIL SYSTEMS - 50 FOOT COVERAGE - 3/8" DIA. HOSE
90000-2	ALL RAIL SYSTEMS - 75 FOOT COVERAGE - 3/8" DIA. HOSE
90000-3	ALL RAIL SYSTEMS - 100 FOOT COVERAGE - 3/8" DIA. HOSE
90001-1	ALL RAIL SYSTEMS - 50 FOOT COVERAGE - 1/2" DIA. HOSE
90001-2	ALL RAIL SYSTEMS - 75 FOOT COVERAGE - 1/2" DIA. HOSE
90001-3	ALL RAIL SYSTEMS - 100 FOOT COVERAGE - 1/2" DIA. HOSE

# Air Supply Assembly • Bridge System/Part No. 90020 - X & 90021 - X



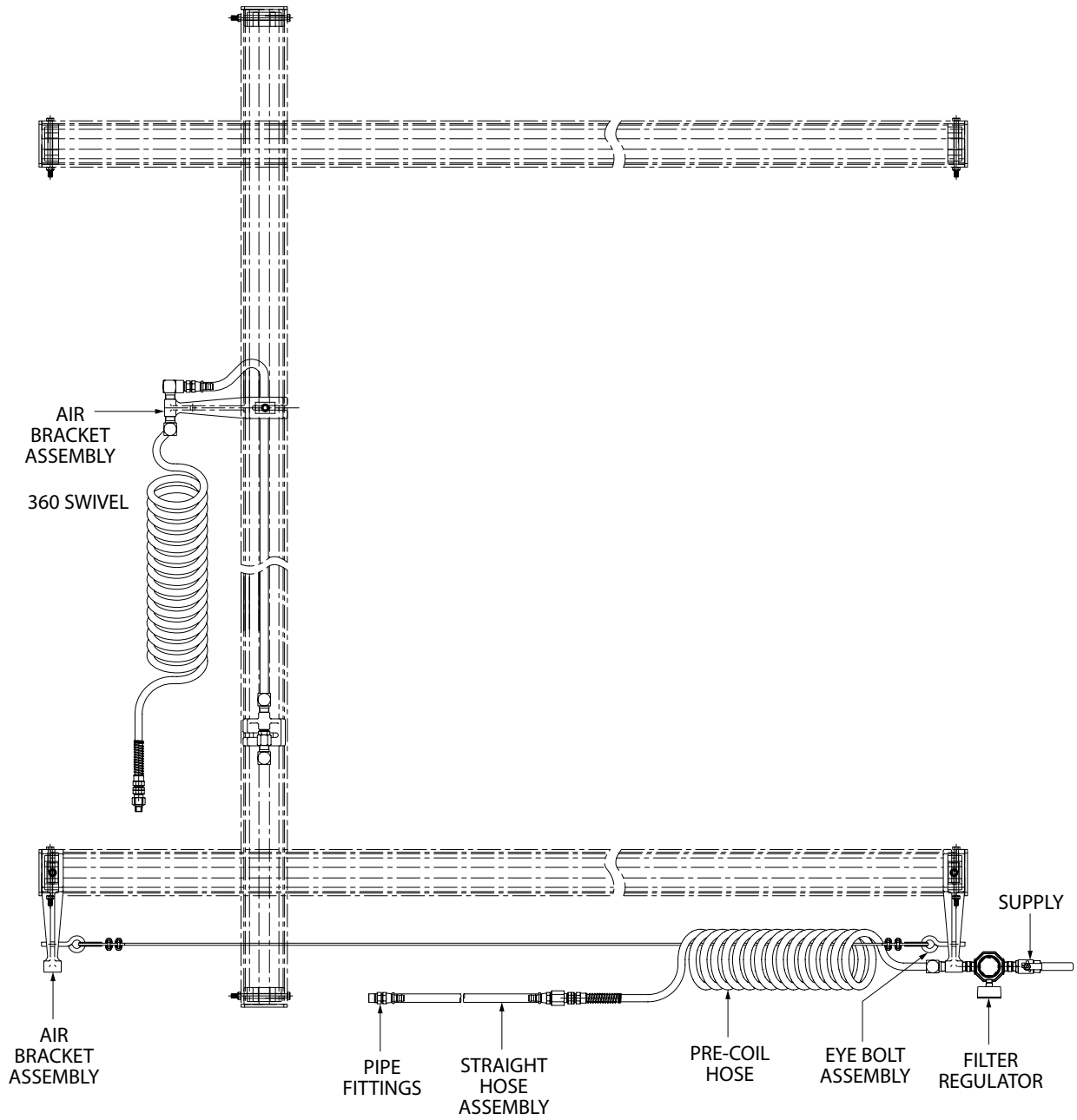
(Dwg. 16589434)

## BRIDGE CRANE AIR SUPPLY KIT

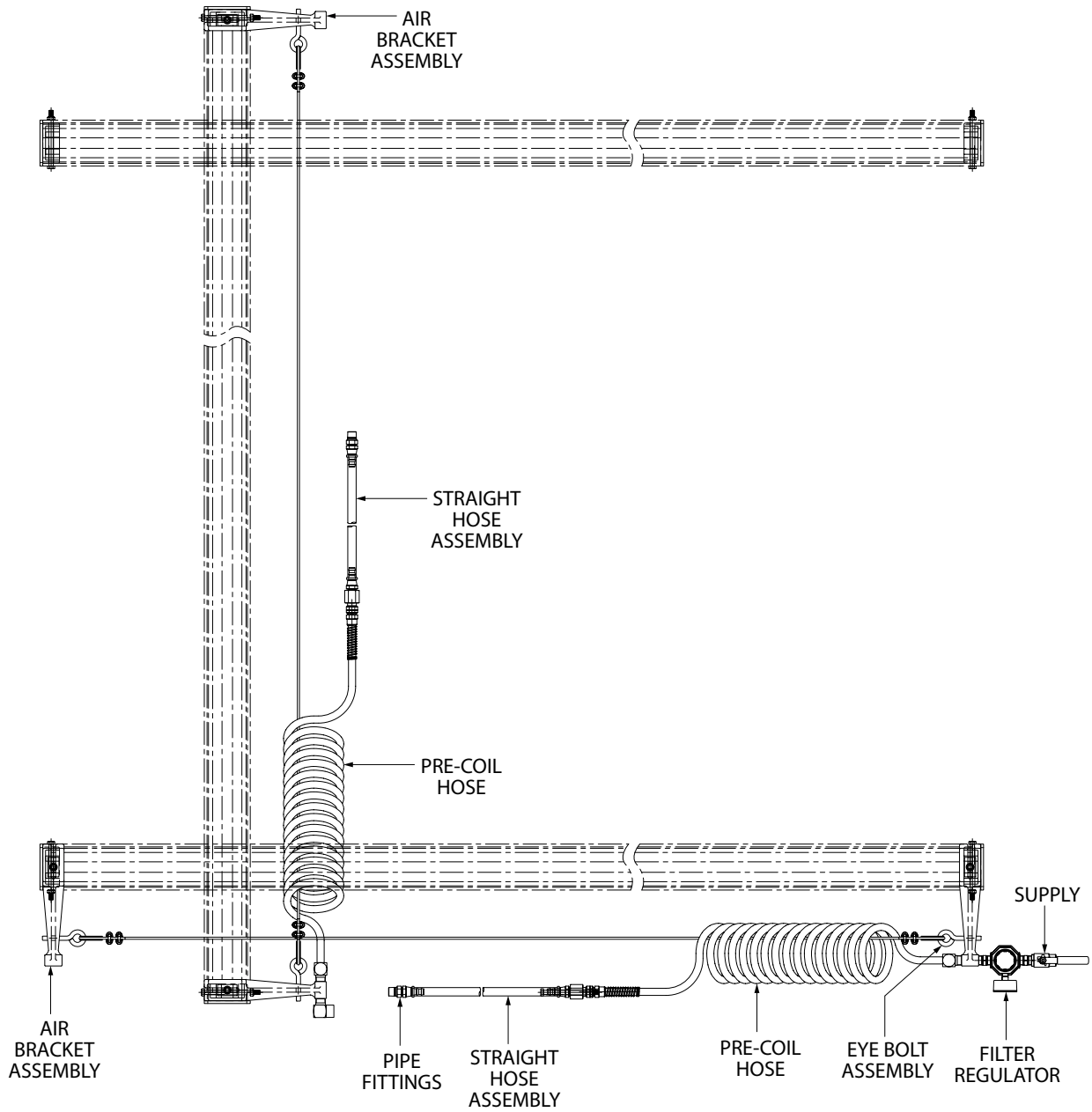
Bridge Crane Air Supply kits are available in 3/8" and 1/2" Hose I.D. and (5) lengths to suit standard bridge lengths. The 90002 (3/8") or 90021 (1/2") Component Package includes the above:

Part Number	Description
90020-1	ALL BRIDGES - 5 FOOT TO 8 FOOT LENGTHS - 3/8" HOSE
90020-2	ALL BRIDGES - 9 FOOT TO 11 FOOT LENGTHS - 3/8" HOSE
90020-3	ALL BRIDGES - 12 FOOT TO 14 FOOT LENGTHS - 3/8" HOSE
90020-4	ALL BRIDGES - 15 FOOT TO 18 FOOT LENGTHS - 3/8" HOSE
90020-5	ALL BRIDGES - 19 FOOT TO 21 FOOT LENGTHS - 3/8" HOSE
90021-1	ALL BRIDGES - 5 FOOT TO 8 FOOT LENGTHS - 1/2" HOSE
90021-2	ALL BRIDGES - 9 FOOT TO 11 FOOT LENGTHS - 1/2" HOSE
90021-3	ALL BRIDGES - 12 FOOT TO 14 FOOT LENGTHS - 1/2" HOSE
90021-4	ALL BRIDGES - 15 FOOT TO 18 FOOT LENGTHS - 1/2" HOSE
90021-5	ALL BRIDGES - 19 FOOT TO 21 FOOT LENGTHS - 1/2" HOSE

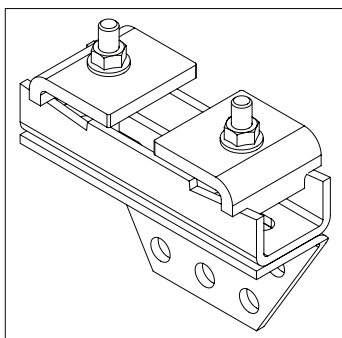
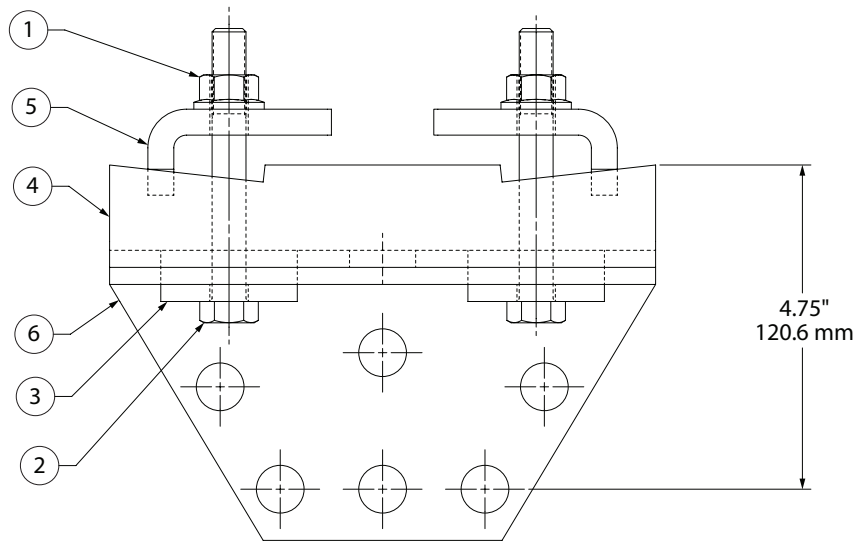
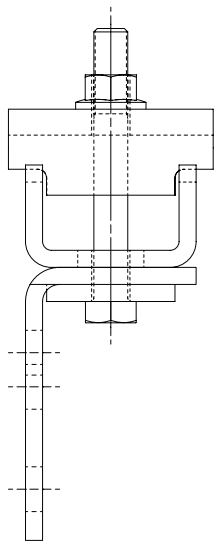
# Typical Bridge/Runway Center Station Air System



# Typical Bridge/Runway Air System



# Beam Clamp • Standard Flange/Part No. 30186



**NOTE:** STANDARD FLANGE BEAM CLAMP WILL ACCOMMODATE FROM 2.5" (63.5 mm) TO 5" (127.0 mm) FLANGE WIDTH.

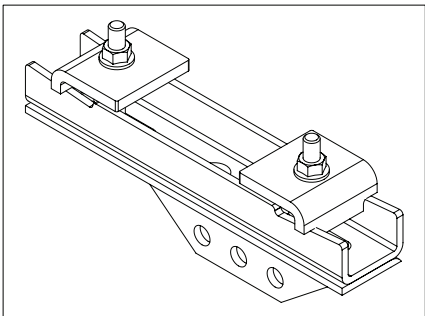
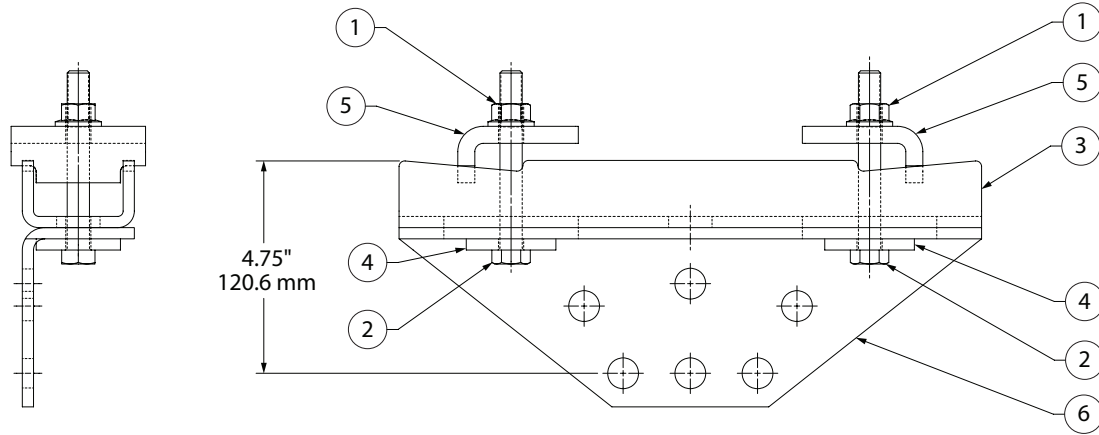
ULTIMATE STRENGTH ..... 24,200LBS.(10976.94 KG)  
 YIELD STRENGTH ..... 15,000 LBS.(6803.88 KG)  
 CAPACITY ..... 3,000 LBS.(1360.77 KG)  
 WEIGHT OF ASSEMBLY ..... 6 LBS.(2.72 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

(Dwg. 54093117)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Lock Nut, 1/2 - 13 Flanged PT	2
2	ZHS72037	1/2 - 13 x 4" HCS Grade 5	2
3	30094	Washer, Rectangular	2
4	30091	Clamp Bracket, Standard Flange	1
5	30062	Toe Clamp	2
6	30188	Hanger Bracket, Standard Flange	1

# Beam Clamp • Wide Flange/Part No. 30187



**NOTE:** WIDE FLANGE BEAM CLAMP WILL ACCOMMODATE FROM 5”(127.0 mm) TO 10”(254.0 mm) FLANGE WIDTH.

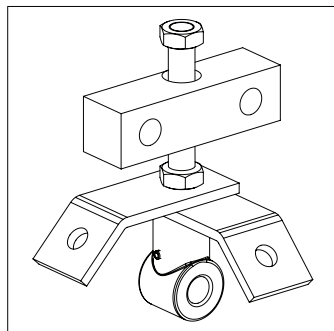
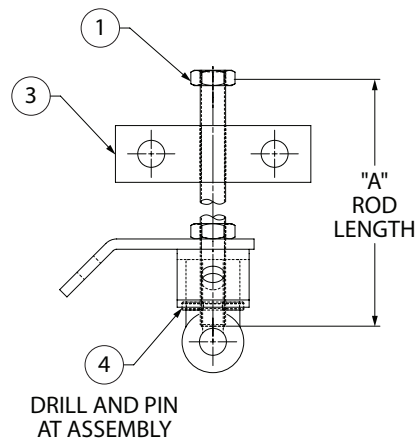
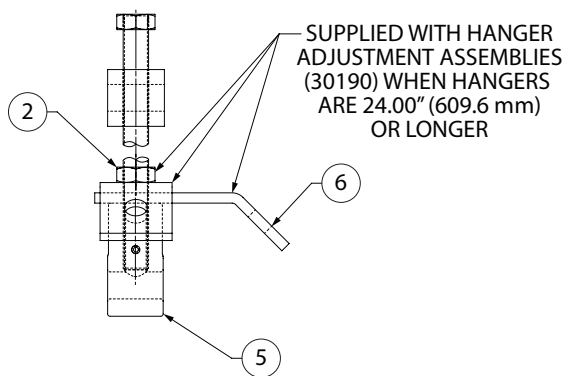
ULTIMATE STRENGTH..... 24,200LBS.(10976.94 KG)  
 YIELD STRENGTH..... 15,000 LBS.(6803.88 KG)  
 CAPACITY ..... 3,000 LBS.(1360.77 KG)  
 WEIGHT OF ASSEMBLY ..... 7 LBS.(3.17 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

(Dwg. 54093125)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75589	Lock Nut, 1/2 - 13 Flanged PT	2
2	ZHS72037	1/2 - 13 x 4” HCS Grade 5	2
3	ZHS30154	Clamp Bracket, Wide Flange	1
4	30094	Washer Rectangular	2
5	30062	Toe Clamp	2
6	ZHS30189	Hanger Bracket, Wide Flange	1

# Hanger Adjustment Assembly • Part No. 30190 - XXX



ADJUSTMENT ASSEMBLY NO.	ROD NO.	DIM. "A"
30190 - 006	30192 - 006	6.00
30190 - 012	30192 - 012	12.00
30190 - 018	30192 - 018	18.00
30190 - 024	30192 - 024	24.00
30190 - 036	30192 - 036	36.00
30190 - 048	30192 - 048	48.00
30190 - 060	30192 - 060	60.00
30190 - 072	30192 - 072	72.00
30190 - 096	30192 - 096	96.00
30190 - 108	30192 - 108	108.00
30190 - 120	30192 - 120	120.00
30190 - 132	30192 - 132	132.00
30190 - 144	30192 - 144	144.00

**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

ULTIMATE STRENGTH..... 19,000 LBS.(8618.25 KG)

YIELD STRENGTH..... 14,000 LBS.(6350.3 KG)

CAPACITY ..... 2,000 LBS.(907.2 KG)

WEIGHT OF ASSEMBLY ..... 14 LBS.(6.35 KG)

MINIMUM RAIL RADIUS ..... 36"(914.4 mm)

\*ROD LENGTHS 24.00" AND LONGER REQUIRE CROSS BRACING.

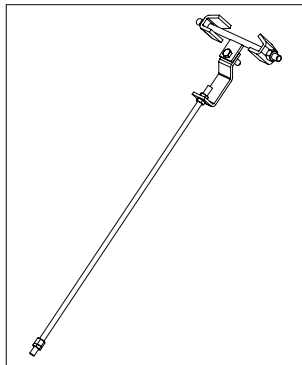
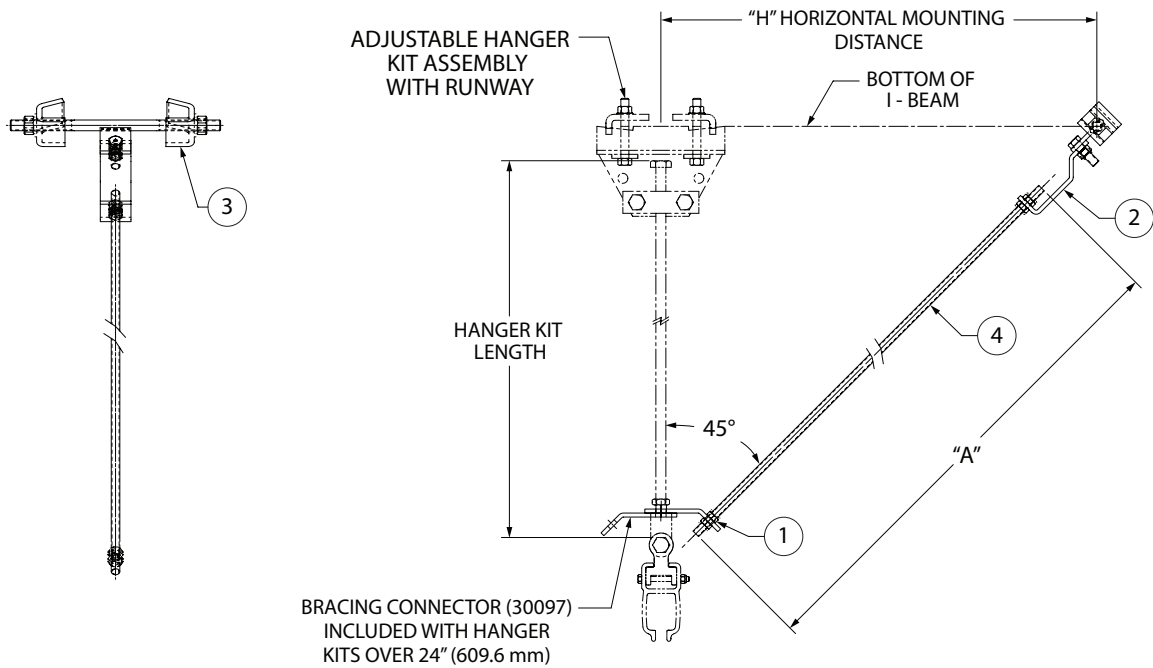
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

REF: PART NO.30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 80163504)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30192 - XXX	Adjustment Rod	1
2	75515	Jam Nut, 5/8 - 18	1
3	30194	Adjustment Block	1
4	ZHS77058	Spring Pin, 3/16 x 1.5"	1
5	30163	Male Clevis, Machining	1
6	30097	Bracing Connector	2

# Cross Bracing Kit • Part No. 30081 - XX/"A" Dimension Length in Inches



HOW TO ORDER CROSS BRACE KITS		
IF "A" DIMENSION IS:	IF "A" DIMENSION IS:	IF "A" DIMENSION IS:
24.00"	3-1/8"	30081-24
36.00"	48-5/16"	30081-36
40.00"	56-5/16"	30081-40
48.00"	64-7/16"	30081-48
60.00"	80-9/16"	30081-60
72.00"	96-11/16"	30081-72

**NOTE:** THE CROSS BRACE ROD LENGTH ("B" DIMENSION) IS BASED ON A 45 DEGREE ANGLE AND CLAMPING TO THE HEADER STEEL. AT THE SAME ELEVATION AS THE ADJUSTABLE HANGER KIT.

**NOTE:** BRACING CONNECTOR (#4) AND 5/8 - 18 LOCK NUT WILL BE PRE-INSTALLED AT THE FACTORY FOR ADJUSTABLE HANGER KITS WITH ROD LENGTHS OF 24.00"(609.6 mm) AND LONGER

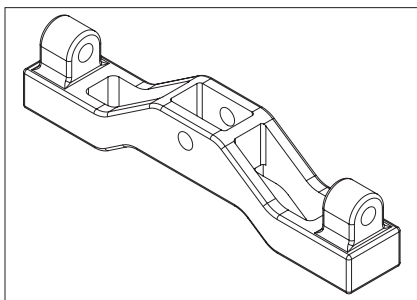
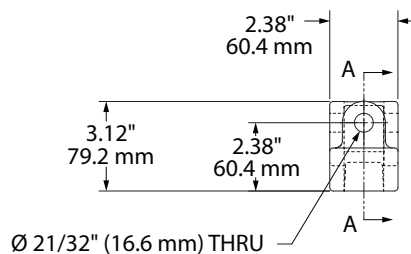
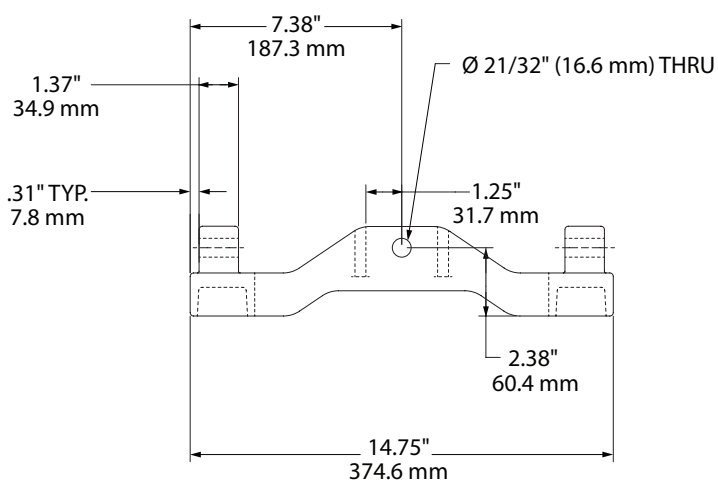
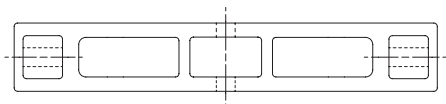
\*FOR LONGER BRACING KIT LENGTHS CONSULT THE FACTORY.

(Dwg. 54120431)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75558	Jam Nut, 1/2 - 13	4
2	30099	Hanger Bracket	1
3	30098	Beam Clamp Assembly	1
4	30522 - XX	1/2 - 13 Threaded Rod x "B"	1



# Dual Trolley • Tie Bar/Part No. 30173



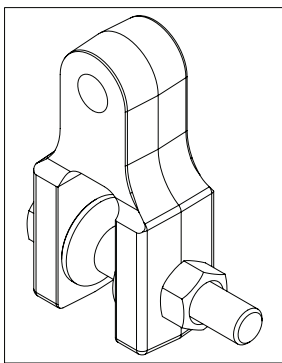
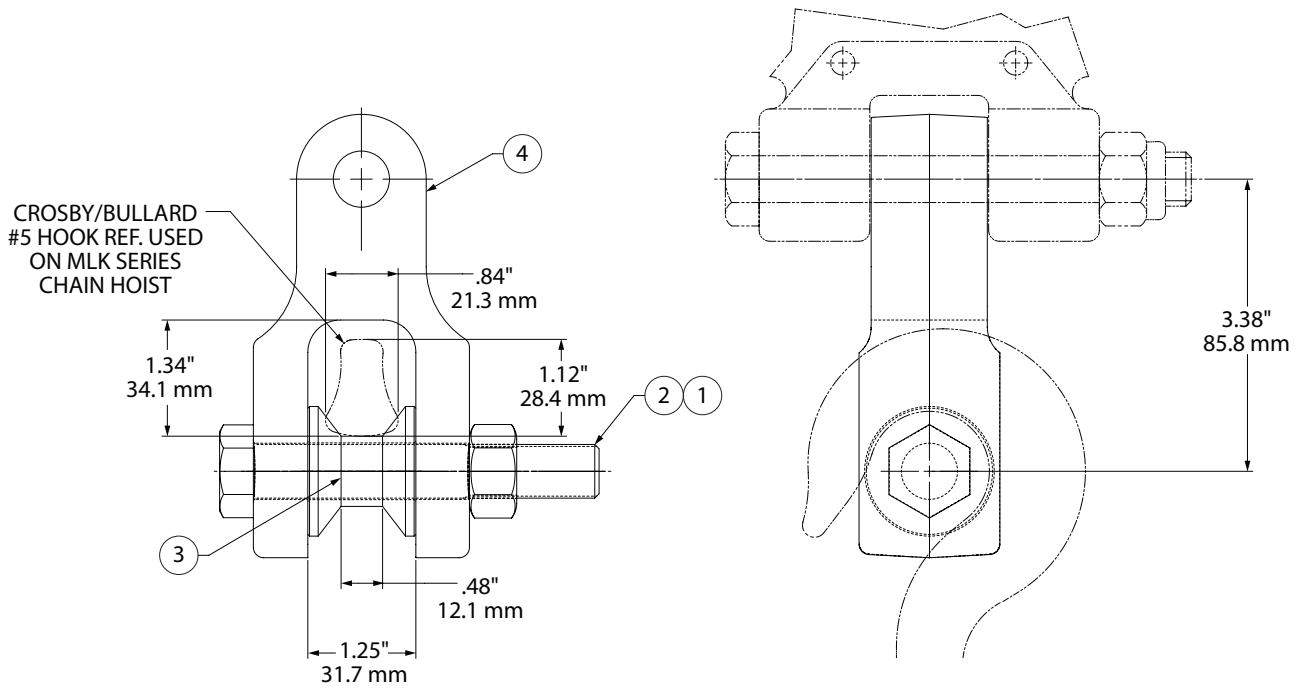
ULTIMATE STRENGTH..... 13,250 LBS.(6010.1 KG)  
 YIELD STRENGTH..... 10,600 LBS.(4808.07KG)  
 CAPACITY ..... 2,000 LBS.(907.2 KG)  
 WEIGHT OF ASSEMBLY ..... 5 LBS.(2.26 KG)

**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.  
 REF: PART NO.30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54093042)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30173 - 5	Dual Trolley Tie Bar, Casting	1

# Hoist Hook Bracket • Universal/Part No. 30903

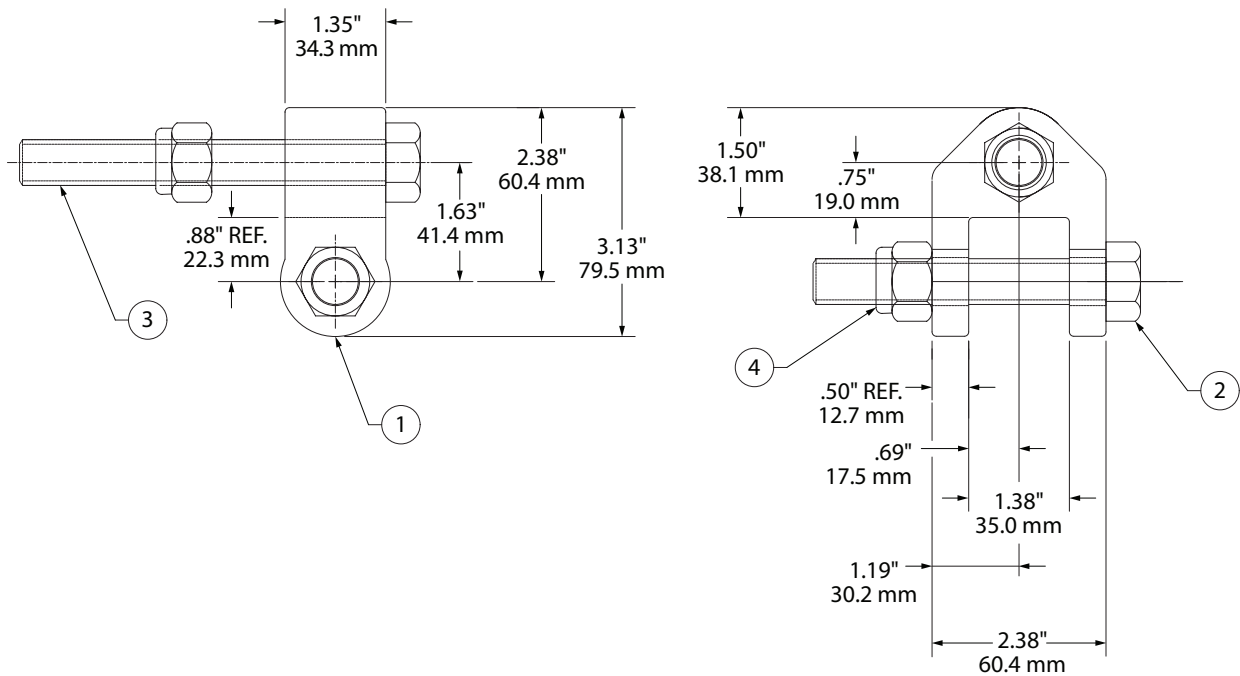


WEIGHT OF ASSEMBLY ..... 2 LBS.(0.90 KG)

(Dwg. 54096672)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	1
2	ZHS72644	Hexagonal Bolt, 5/8 - 11 x 4.00 Grade 5	1
3	ZHS30905	Hook Roller	1
4	30904	Hoist Hook Bracket	1

# Female Clevis • Sub-assembly/Part No. 30312



WEIGHT OF ASSEMBLY ..... 4 LBS.(1.81 KG)

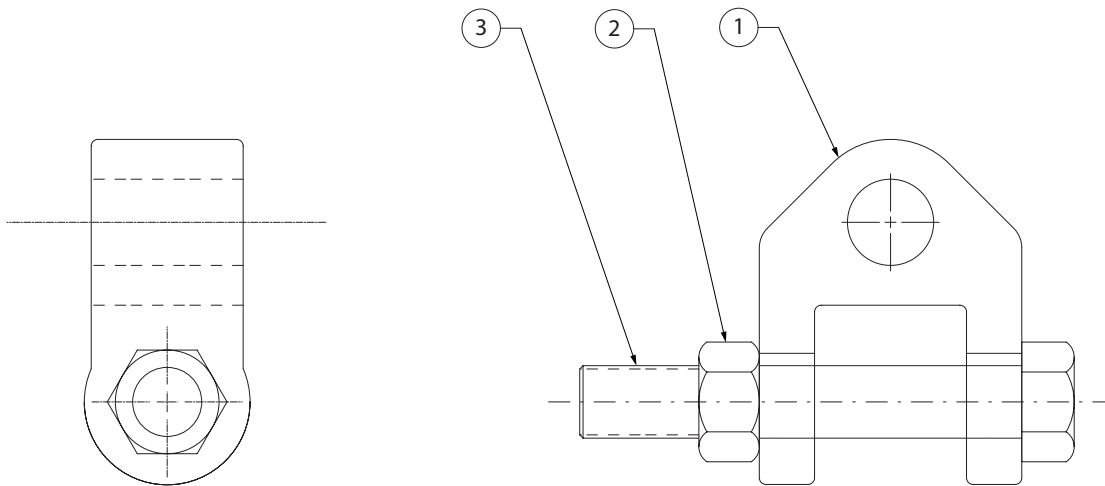
**NOTE:** SAFETY CABLE ASSEMBLIES ARE NOT INCLUDED IN THIS SUB-ASSEMBLY. YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO.30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(Dwg. 54094727)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30166	Female Clevis	1
2	ZHS72644	5/8 - 11 x 4.00" H.H.B	1
3	ZHS72646	5/8 - 11 x 5.00" H.H.B	1
4	75587	Lock Nut, 5/8 - 11	2

# 3/4 Female Clevis Adapter • Sub-assembly/Part No. 30321



WEIGHT OF ASSEMBLY .....4 LBS.(1.81 KG)

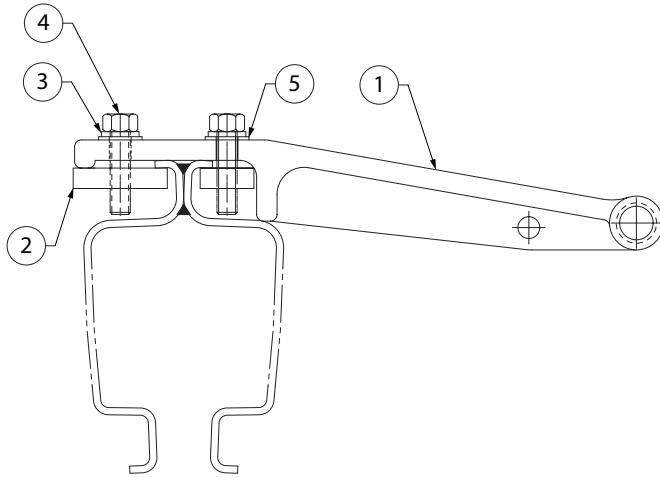
**NOTE:** SAFETY CABLE ASSEMBLIES ARE NOT INCLUDED IN THIS SUB-ASSEMBLY. YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

REF: PART NO.30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

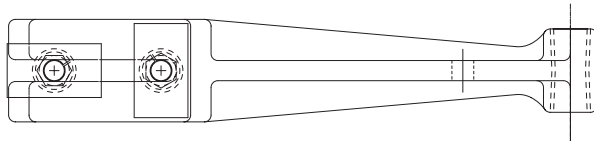
(Dwg. 54094792)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30322	3/4", Female Clevis Adaptor.	1
2	75587	Stover Lock Nut, 5/8 - 11	1
3	ZHS72644	5/8 - 11 x 4" LG. H.H.B. Grade 5	1

# Air Bracket Assembly • Part No. 30517 - XXXX



KEY	
PART NUMBER	DESCRIPTION
30517-0375	3/8" AIR BRACKET ASSEMBLY
30517-0500	1/2" AIR BRACKET ASSEMBLY

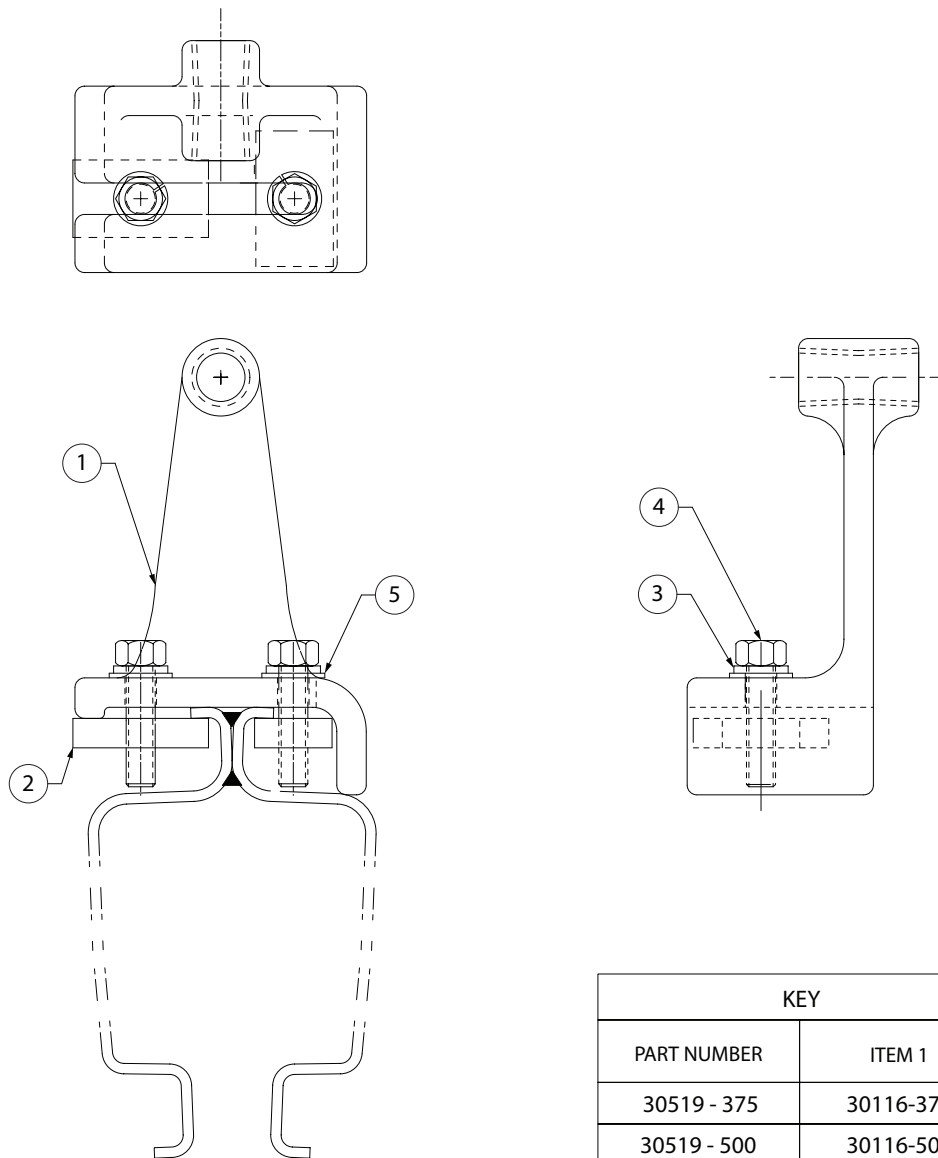


WEIGHT OF ASSEMBLY ..... 3 LBS.(1.36 KG)

(Dwg. 54123898)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30114	Air Bracket	1
2	30038	3/8 x 1 Bar x 0' - 1 3/4" 1018 CRS	2
3	74507	Washer - 3/8" Lock - Medium Spring	2
4	71480	3/8 - 24 x 1 1/2" HCS. Bolt	2
5	74540	Washer - 3/8" U.S.S. Flat	2

# Air Stanchion Assembly • Part No. 30519 - XXX

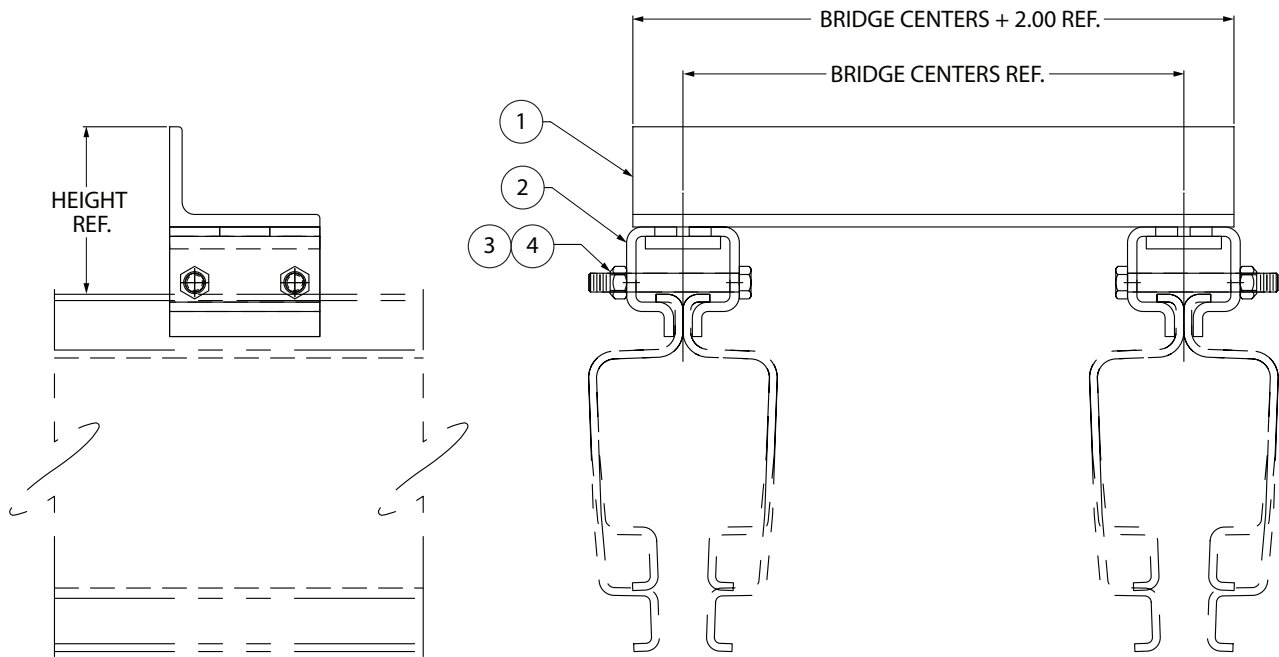


WEIGHT OF ASSEMBLY ..... 3 LBS.(1.36 KG)

(Dwg. 54123914)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30116 - XXX	Air Stanchion (See Table)	1
2	30038	3/8 x 1 x 1 - 3/4 CRS. Flat Bar 1018	2
3	74507	Washer - 3/8" Lock - Medium Spring	2
4	71480	3/8 - 24 x 1 - 1/2 HCS. Bolt	2
5	74540	Washer - 3/8" U.S.S Flat	2

# ZRS2/3 Dual Bridge Tie Bar/Part No. 30535 - XXXX

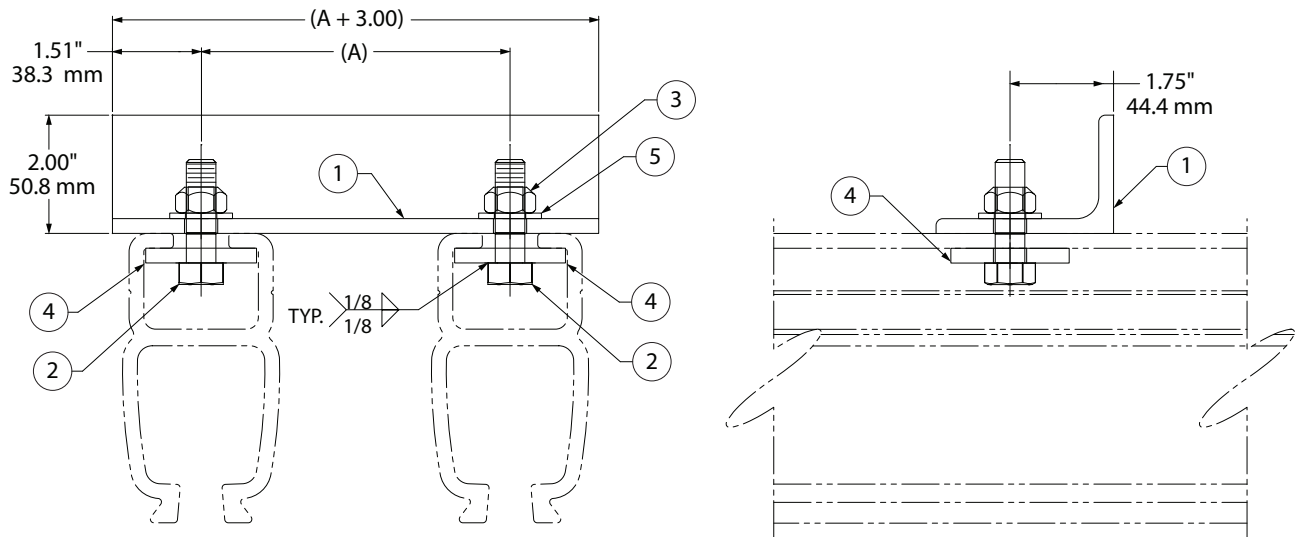


DIMENSIONS		
TIE BAR KIT	BRIDGE CENTERS	HEIGHT
30535-1800	18.00	3.34
30535-2400	24.00	
30535-2850	28.50	
30535-3600	36.00	
30535-XXXX	36.00 MAX	
30535-4800	48.00	3.84
30535-6000	60.00	
30535-7200	72.00	
30535-XXXX	72.00 MAX	
30535-8400	84.00	4.84
30535-9600	96.00	
30535-XXXX	99.00 MAX	

(Dwg. 45265840)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30799	Tie Bar Weldment	1
2	30502	Side Plate	2
3	71479	3/8 - 16 x 3.00 HCS	4
4	75583	Lock Nut, 3/8 - 16 PT	4

# ZRA1 Dual Bridge Tie Bar/Part No. 30221 - XXXX



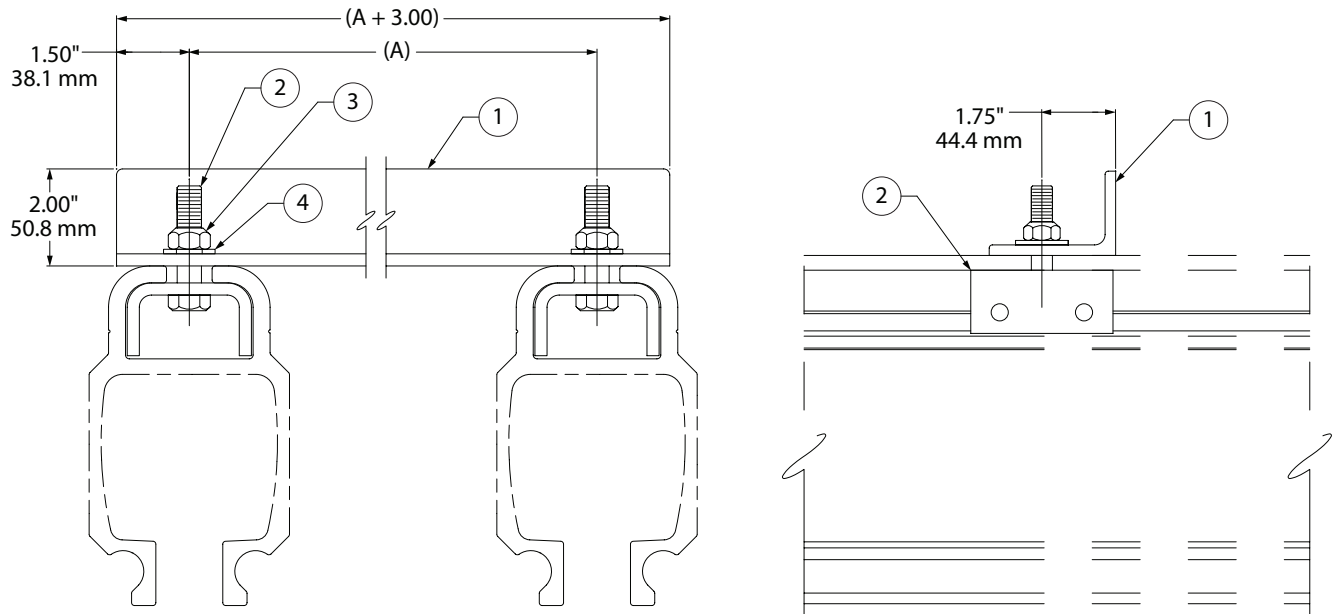
DIMENSIONS		
TIE BAR KIT	"A" DIMENSION	TIE BAR
30221-1800	18.00	42499-1800
30221-2400	24.00	42499-2400
30221-2850	28.50	42499-2850
30221-3600	36.00	42499-3600

(Dwg. 45266004)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	42499 - XXXX	Dual Bridge Tie Bar ( See Dimensions Table )	1
2	72021	Screw 1/2 - 13 x 1.75 HCS	2
3	75585	Lock Nut, 1/2 - 13 PT	2
4	30094	Washer - Rectangular	2
5	74517	Washer - 1/2" Flat SAE	2



# ZRA2 Dual Bridge Tie Bar/Part No. 30101 - XXXX

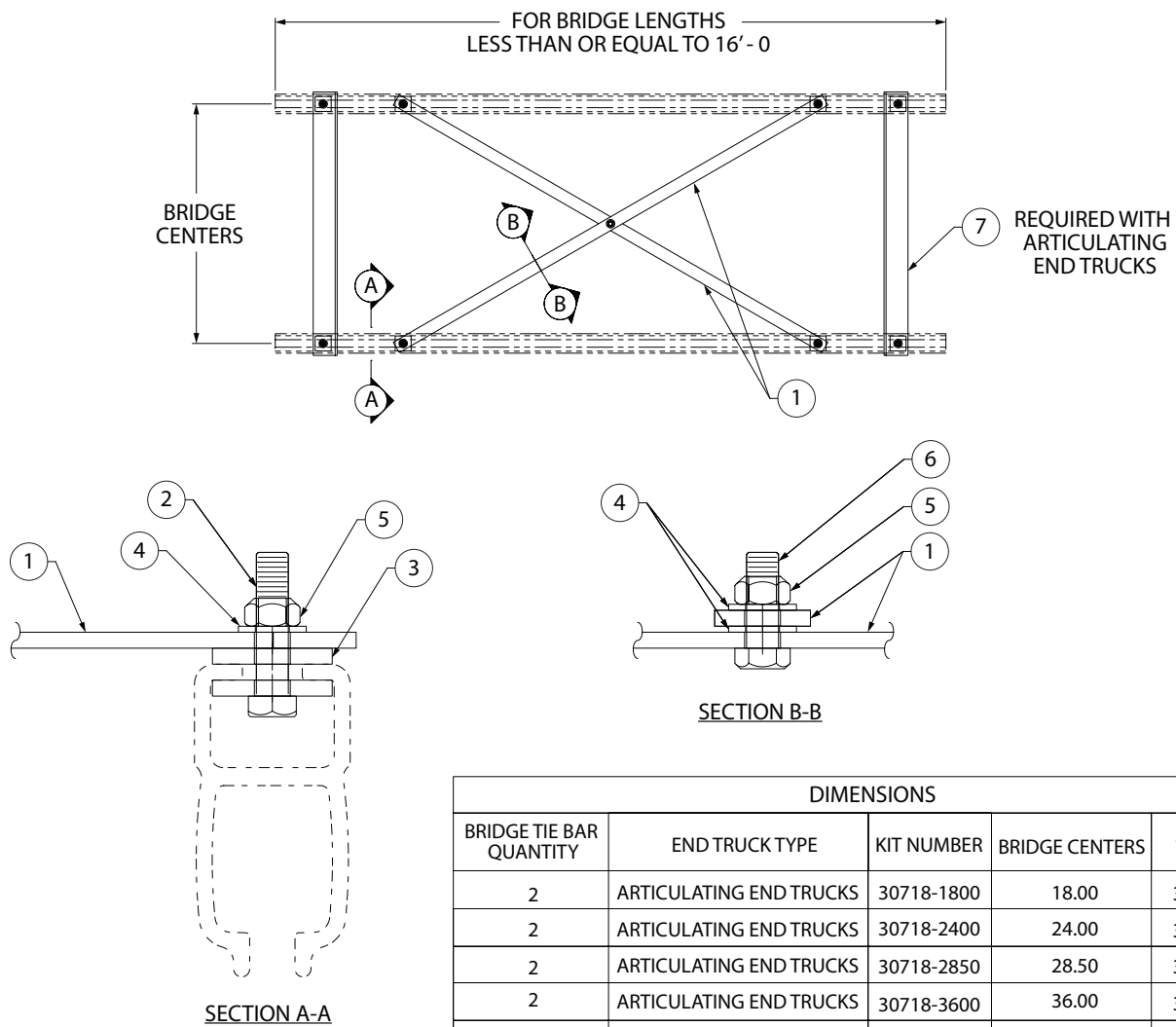


DIMENSIONS		
TIE BAR KIT	"A" DIMENSION	TIE BAR
30101-1600	16.00	42499-1600
30101-1800	18.00	42499-1800
30101-2400	24.00	42499-2400
30101-2850	28.50	42499-2850
30101-3000	30.00	42499-3000
30101-3600	36.00	42499-3600

(Dwg. 45266186)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	42499 - XXXX	Bridge Tie - Bar Angle ( See Dimensions Table )	1
2	30109	Suspension Plate Assembly	2
3	75585	Lock Nut, 1/2" - 13 PT	2
4	74517	Washer - 1/2" Flat SAE	2

# ZRA1 Dual Bridge Cross Brace Kit/Part No. 30718 - XXXX



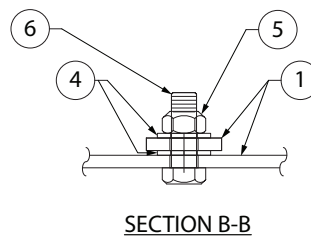
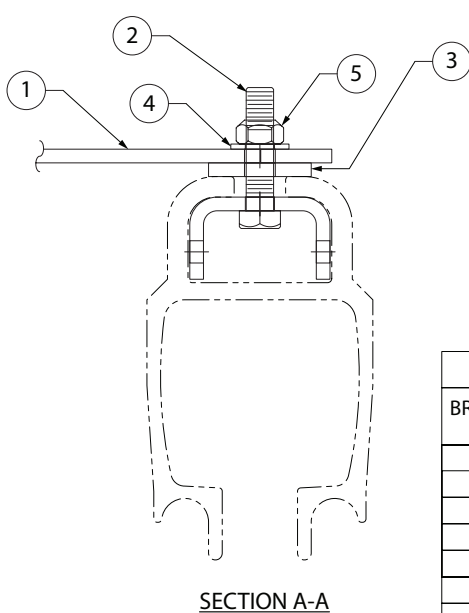
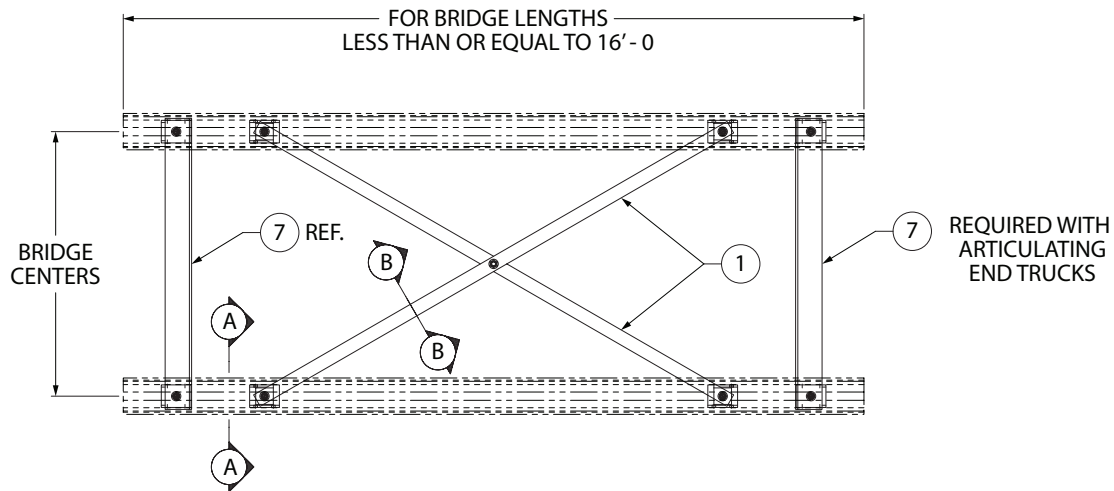
DIMENSIONS				
BRIDGE TIE BAR QUANTITY	END TRUCK TYPE	KIT NUMBER	BRIDGE CENTERS	TIE BAR KIT
2	ARTICULATING END TRUCKS	30718-1800	18.00	30221-1800
2	ARTICULATING END TRUCKS	30718-2400	24.00	30221-2400
2	ARTICULATING END TRUCKS	30718-2850	28.50	30221-2850
2	ARTICULATING END TRUCKS	30718-3600	36.00	30221-3600
0	RIGID END TRUCKS	30718	36.00 MAX	NOT INCLUDED

**NOTE:** CROSS BRACE KITS SHOULD BE USED ON ANY BRIDGE SPANS OVER 10' - 0".

(Dwg. 54125489)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30717	Cross Brace Bar	2
2	30218	Suspension Plate Assembly	4
3	30094	Washer - Rectangular	4
4	74517	1/2", SAE Flat Washer	6
5	75585	Lock Nut, 1/2 - 13 PT	5
6	72010	1/2 - 13 x 1.50 HCS	1
7	30221 - XXXX	ZRA1 Bridge Tie Bar Kit (See Dimensions Table)	*

# ZRA2 Dual Bridge Cross Brace Kit/Part No. 30719 - XXXX



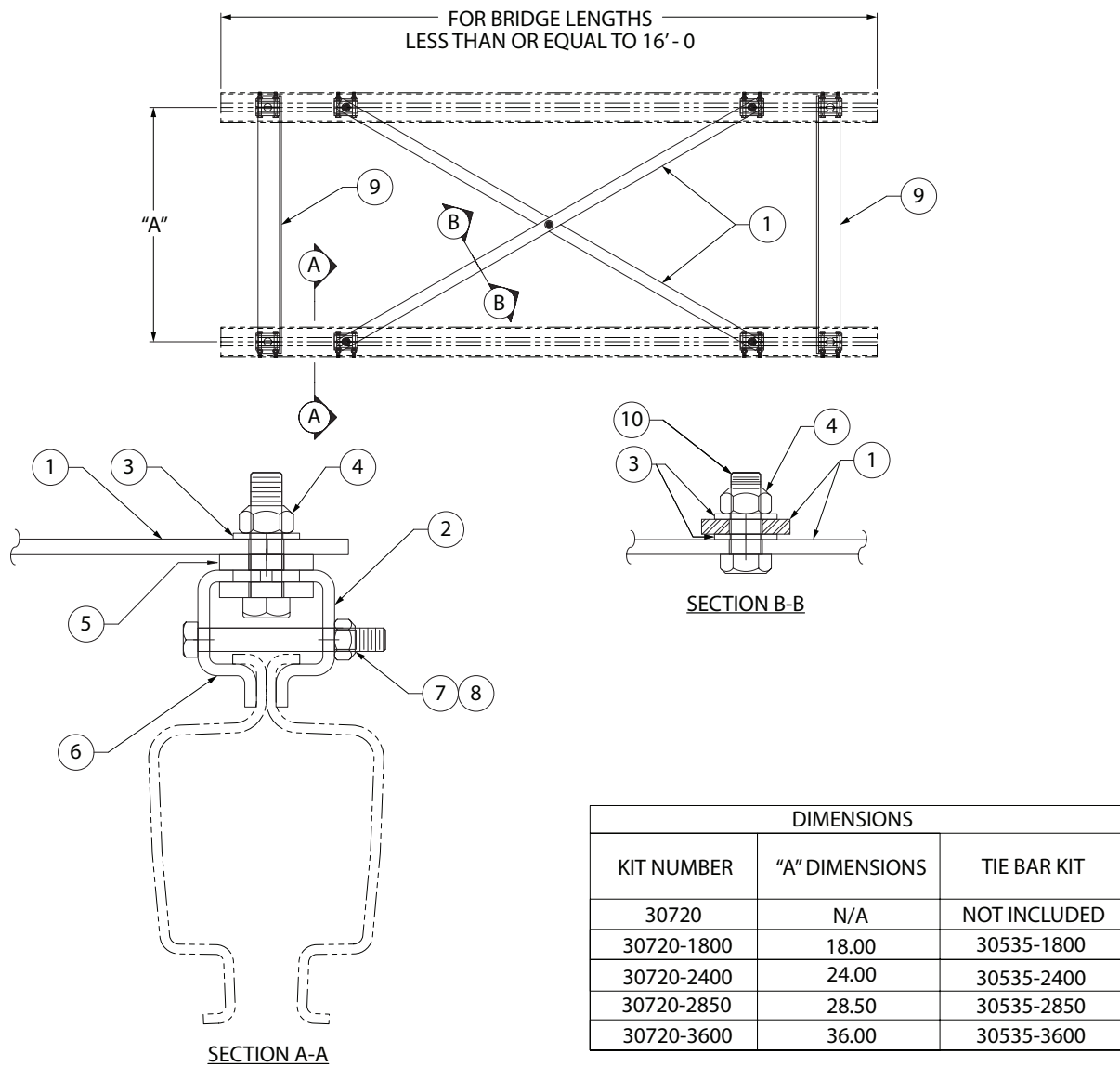
DIMENSIONS				
BRIDGE TIE BAR QUANTITY	END TRUCK TYPE	KIT NUMBER	BRIDGE CENTERS	TIE BAR KIT
2	ARTICULATING END TRUCKS	30719-1600	16.00	30101-1600
2	ARTICULATING END TRUCKS	30719-1800	18.00	30101-1800
2	ARTICULATING END TRUCKS	30719-2400	24.00	30101-2400
2	ARTICULATING END TRUCKS	30719-2850	28.50	30101-2850
2	ARTICULATING END TRUCKS	30719-3000	30.00	30101-3000
2	ARTICULATING END TRUCKS	30719-3600	36.00	30101-3600
0	RIGID END TRUCKS	30719	36.00 MAX.	NOT INCLUDED

**NOTE:** CROSS BRACE KITS SHOULD BE USED ON ANY BRIDGE SPANS OVER 10' - 0"

(Dwg. 54125497)

Bill of Materials				
Item No.	Part No.	Description	Amt.	
1	30717	Cross Brace Bar	2	
2	30109	Suspension Plate Assembly	4	
3	30094	Washer - Rectangular	4	
4	74517	1/2", SAE Flat Washer	6	
5	75585	Lock Nut, 1/2 - 13 PT	5	
6	72010	1/2 - 13 x 1.50 HCS	1	
7	30101 - XXXX	ZRA1 Bridge Tie Bar Kit (See Dimensions Table)	*	

# ZRS2 Dual Bridge Cross Brace Kit/Part No. 30720 - XXXX



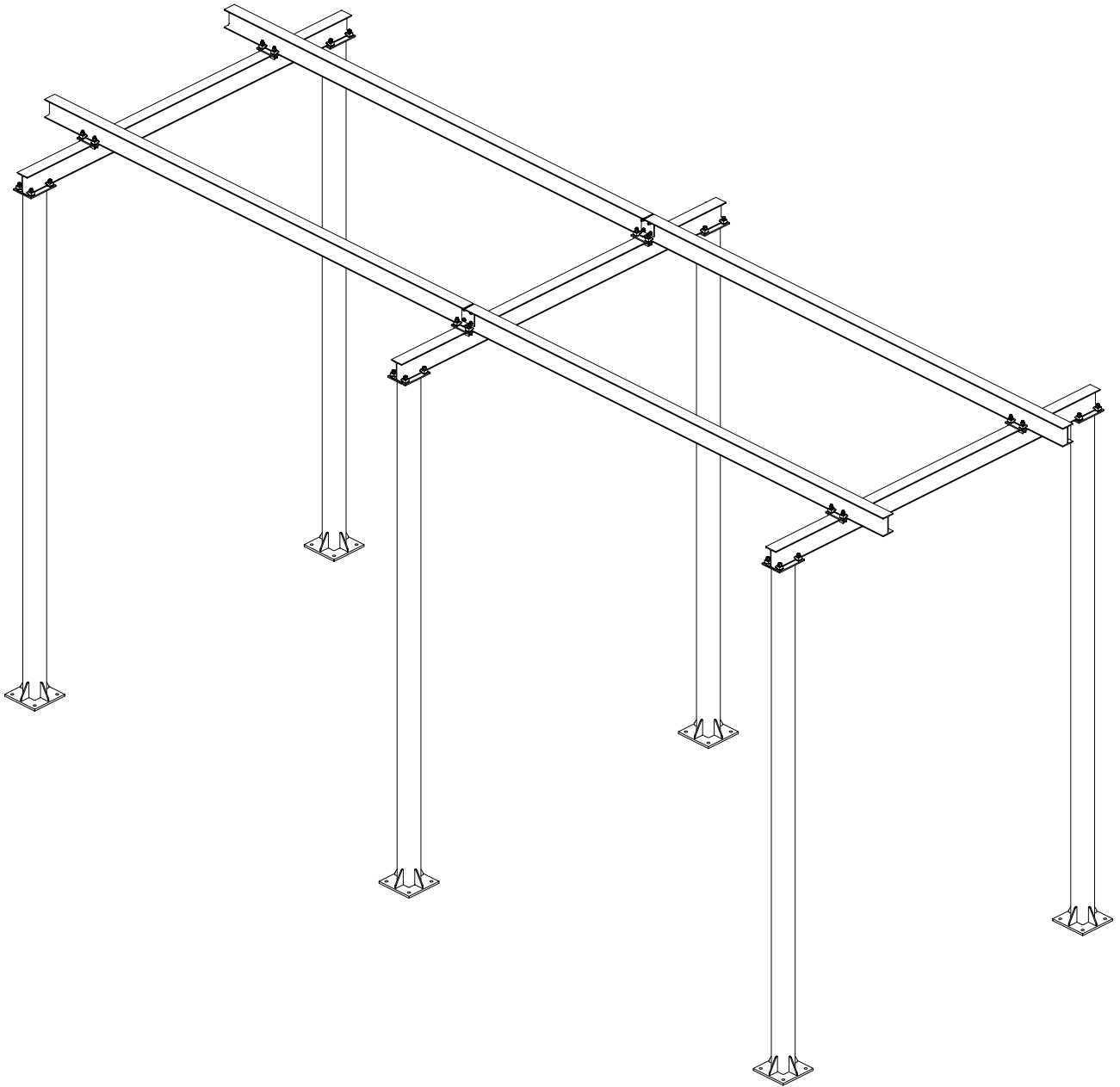
**NOTE:** CROSS BRACE KITS SHOULD BE USED ON ANY BRIDGE SPANS OVER 10' - 0".

(Dwg. 54125505)

Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30717	Cross Brace Bar	2
2	30773	Suspension Clamp Weldment	4
3	74517	1/2", SAE Flat Washer	6
4	75585	Lock Nut, 1/2 - 13 PT	5
5	30774	Suspension Clamp Plate	4
6	30502	Side Plate	4
7	71479	3/8 - 16 x 3.00 HCS	8
8	75583	Lock Nut, 3/8 - 16 PT	8
9	30535 - XXXX	ZRS2 Bridge Tie Bar Assembly (See Dimensions Table)	2
10	72010	1/2 - 13 x 1.50 HCS	1

# Typical Floor Support

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**Notes:**

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**Notes:**

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