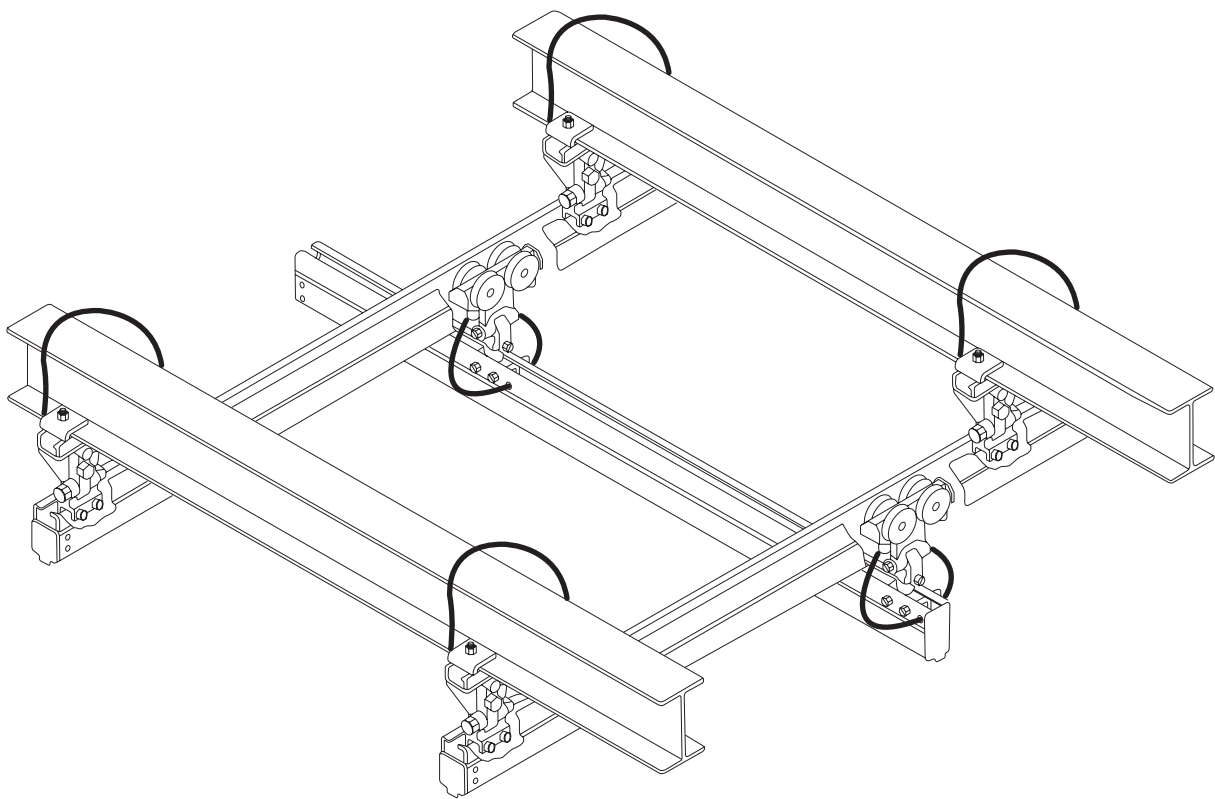


# Rail Systems

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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

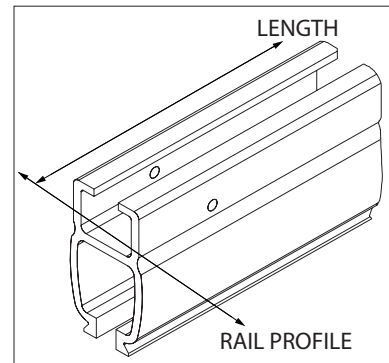
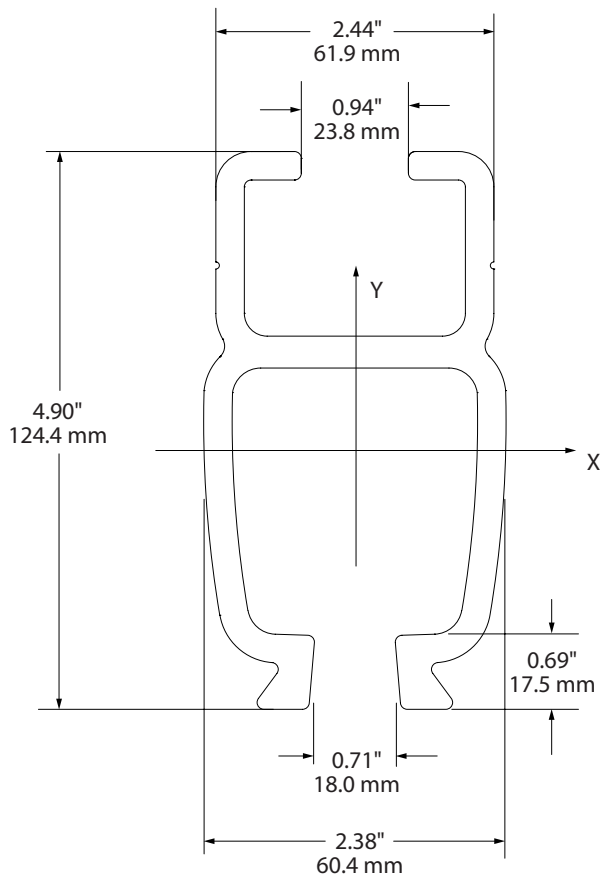
1. Enclosed rail turns will be pre-formed by **Ingersoll Rand**. All tension tubes will be aligned and installed by **Ingersoll Rand**.
2. The radius of all enclosed rail turns will be designed to allow the carriers or trolleys to freely negotiate each horizontal turn without binding.
3. The minimum 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

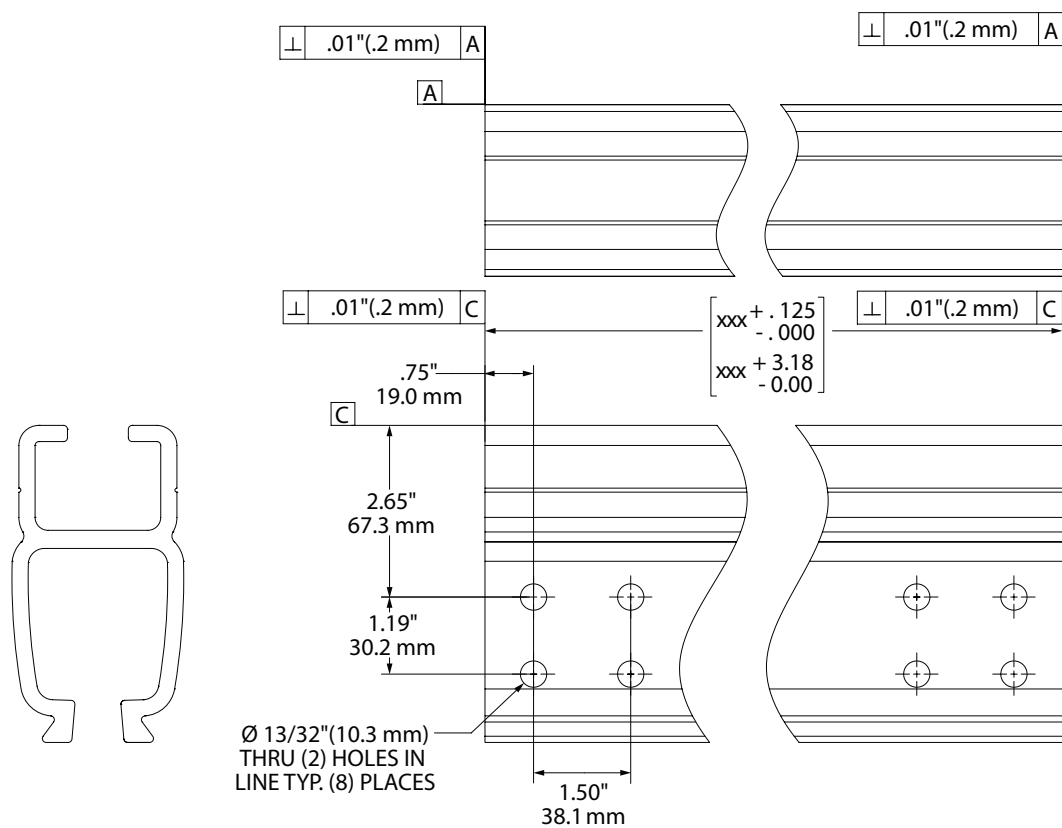
### ORDER NUMBER:

**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		

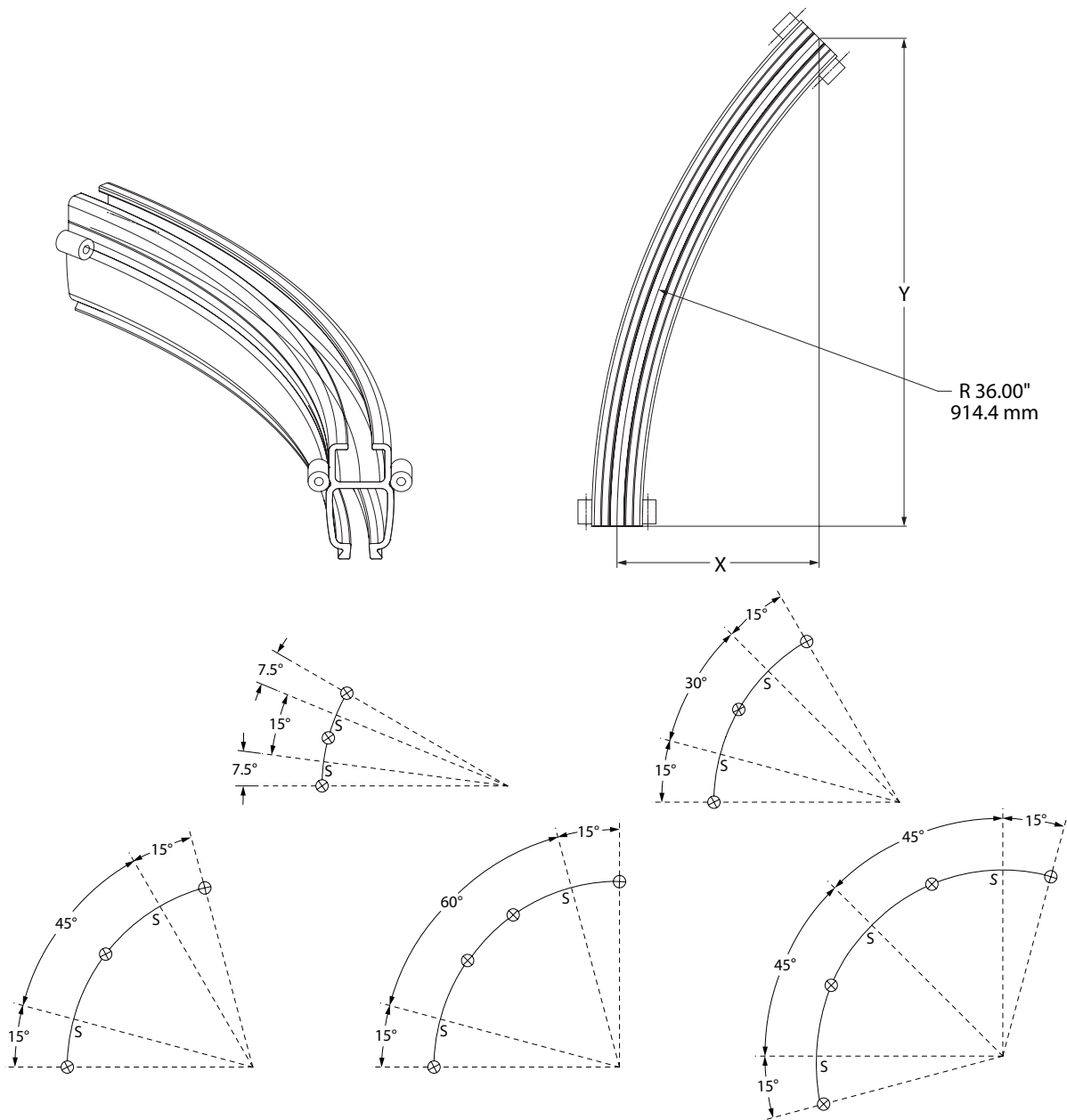
MAXIMUM LENGTH: 30 FT.[9146.34 mm]

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.

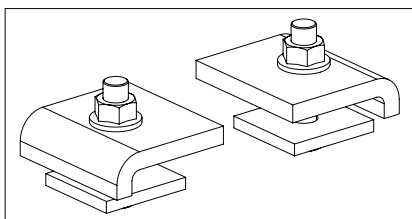
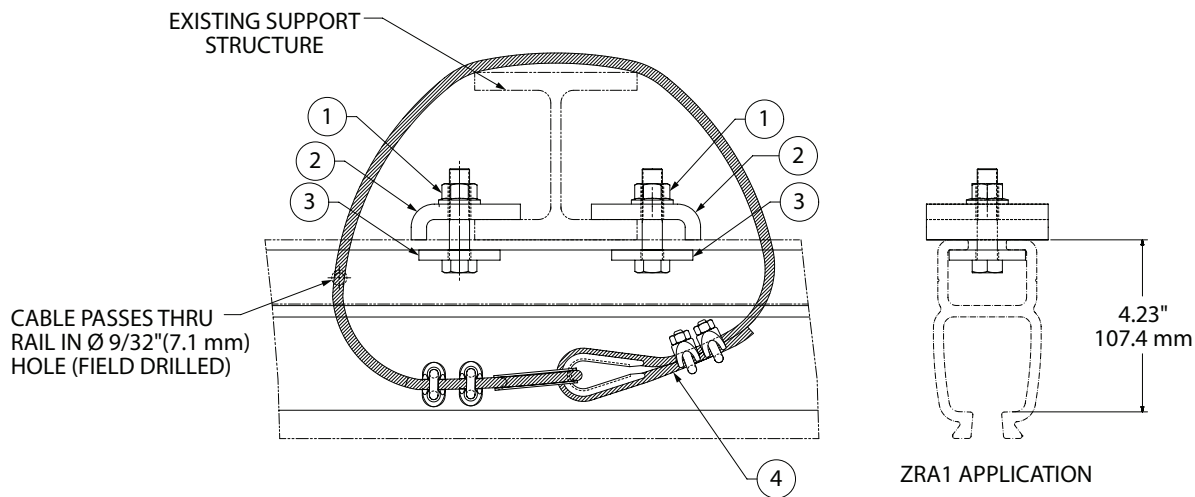
## CURVED RAIL SUSPENSION POINTS DIAGRAM

**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.

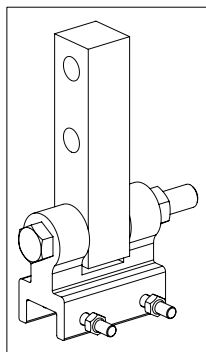
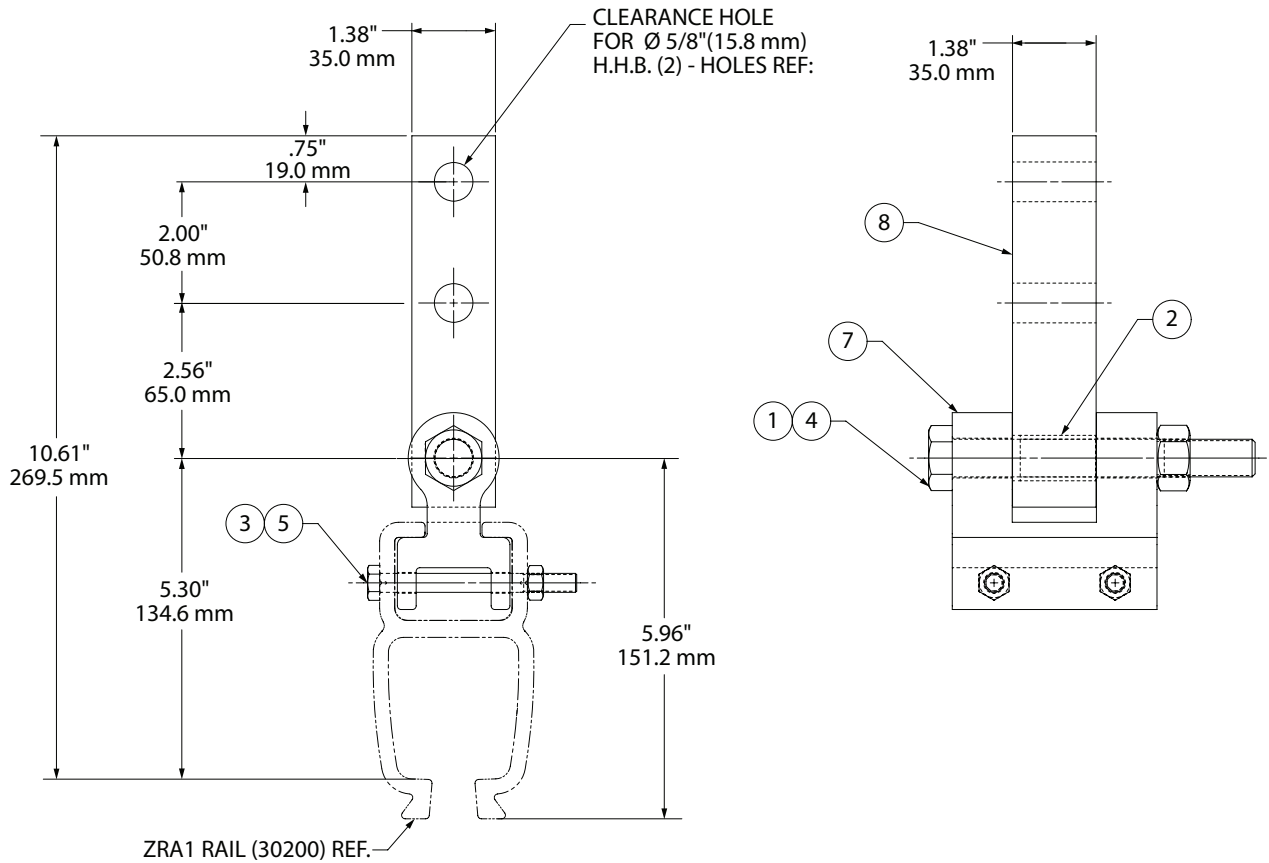
- ULTIMATE STRENGTH ..... 22,400 LBS.(10160.47 KG)
- YIELD STRENGTH ..... 14,000 LBS.(6350.3 KG)
- CAPACITY.....2,000 LBS.(907.18 KG)
- MINIMUM RAIL RADIUS.....36\"(914.4 mm)
- WEIGHT OF ASSEMBLY ..... 4 LBS.(1.81 KG)

(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



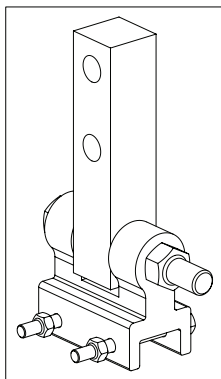
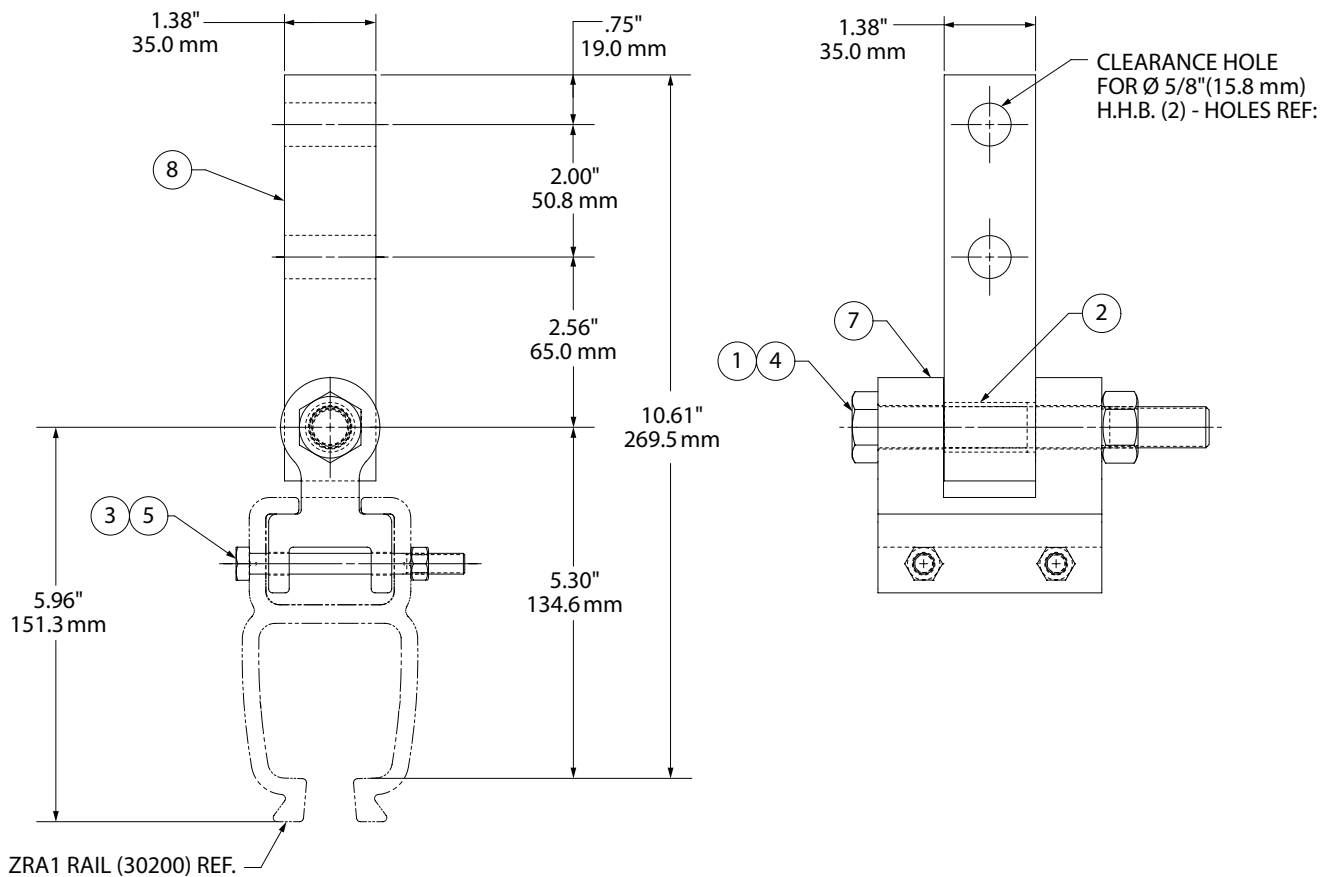
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

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



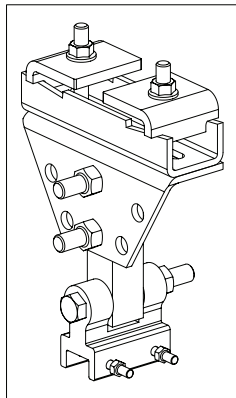
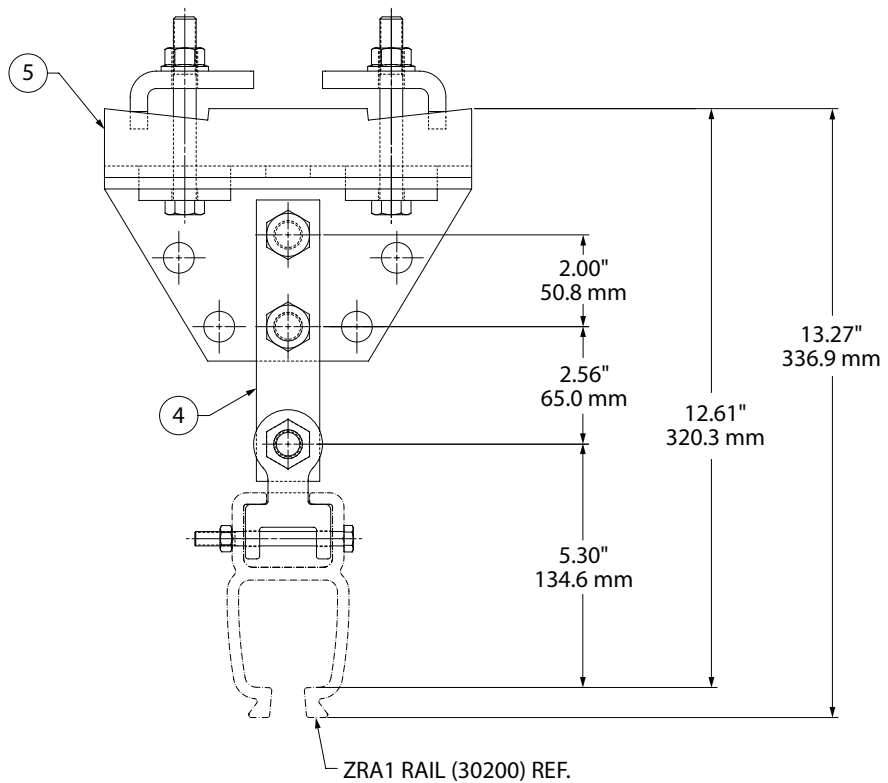
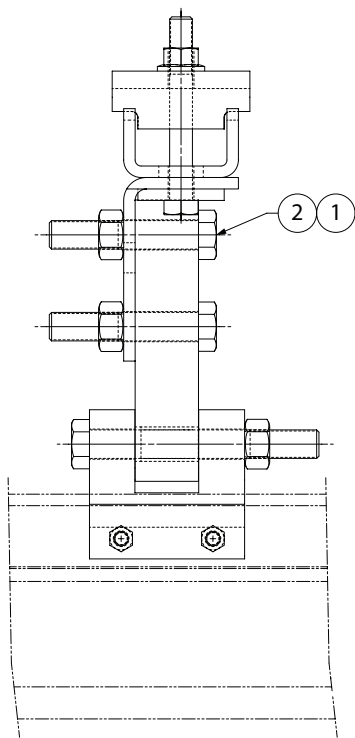
**NOTE:** SEE INSTALLATION MANUAL FOR EXPLODED VIEW.

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)

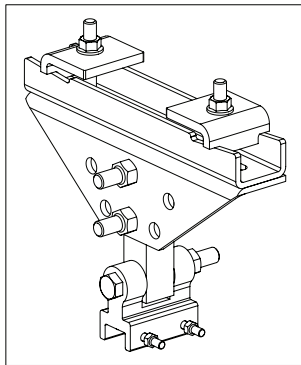
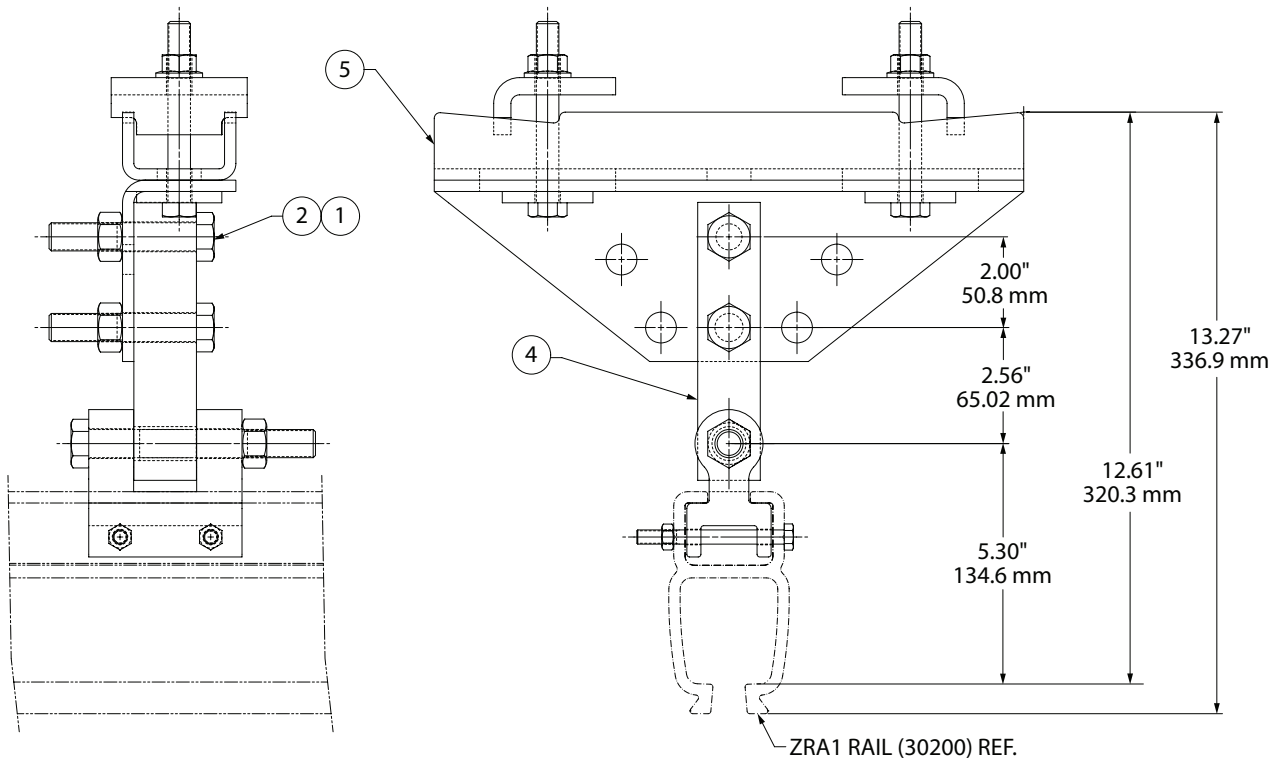
MINIMUM RAIL RADIUS ..... 36\"(914.4 mm)

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.

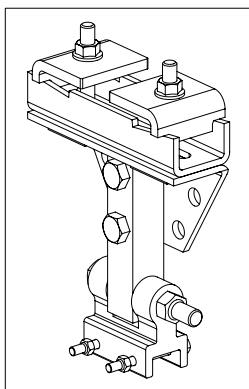
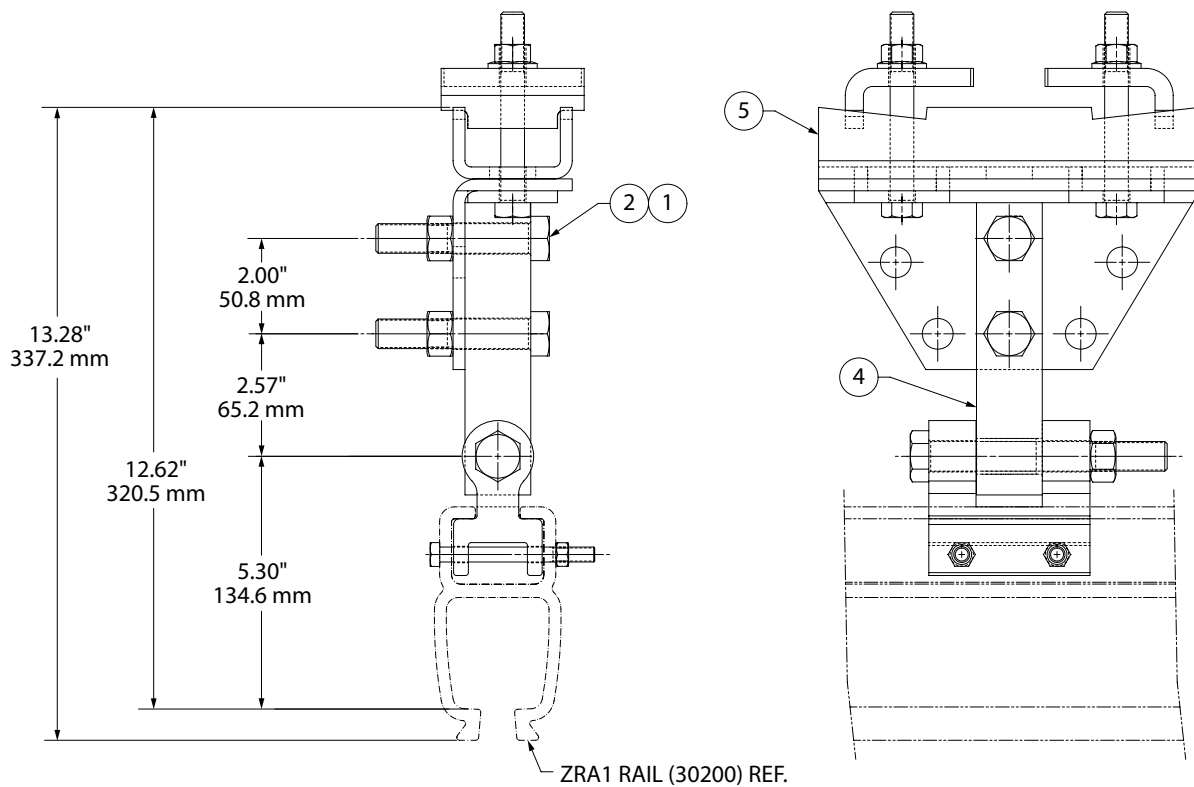
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5"(127.0 mm) TO 10"(127.0 mm) FLANGE WIDTH.

- 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)

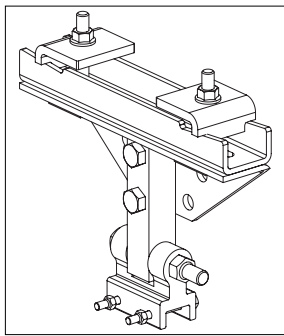
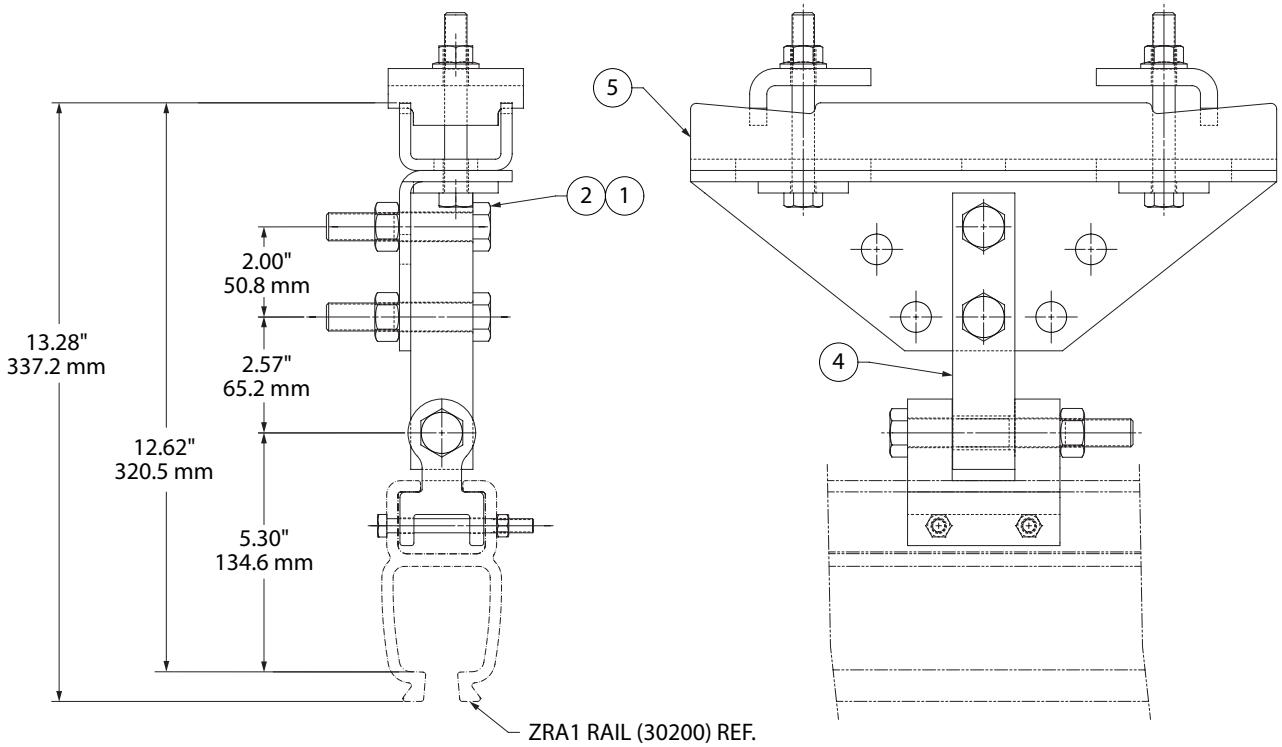
MINIMUM RAIL RADIUS .....36"(914.4 mm)

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.

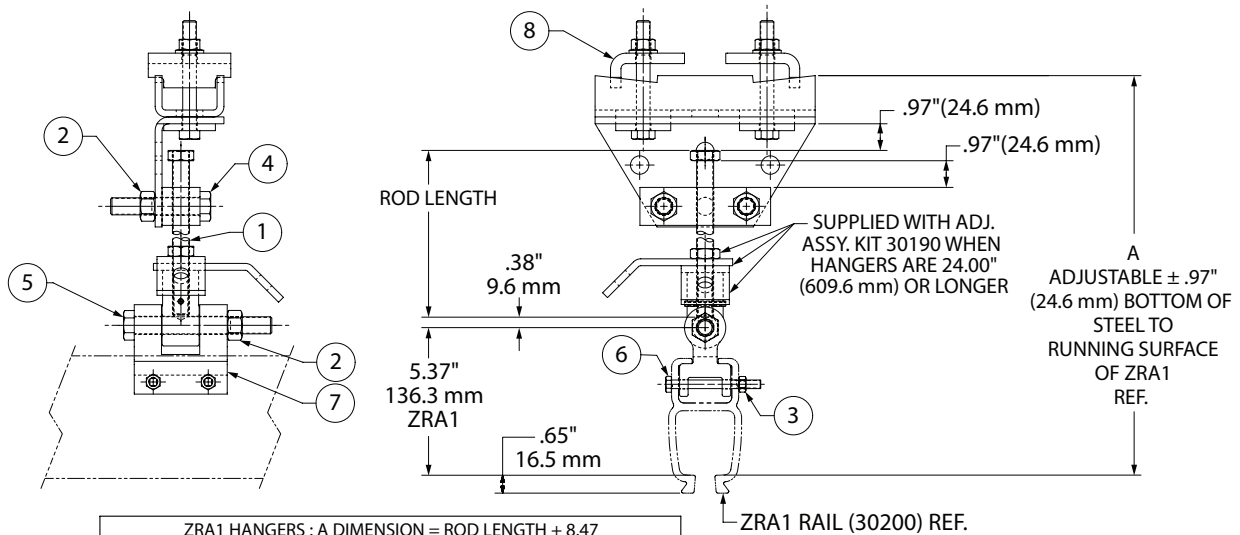
WIDE FLANGE HANGER KIT WILL ACCOMMODATE FROM 5" (127.0 mm) TO 10" (127.0 mm) FLANGE WIDTH.

- 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)

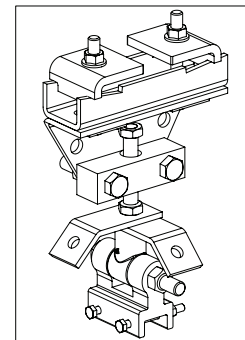
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75587	Lock Nut, 5/8 - 11	2
2	ZHS72646	5/8 - 11 x 3.25" HHB Grade 5	2
3	30907 - 06	Safety Cable Assembly, Close Kit (not shown)	1
4	30289	Hanger Kit, ZRA1/T, Block, Parallel, ZRA1/T	1
5	30187	Hanger Kit, Wide Flange Beam	1

# 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)

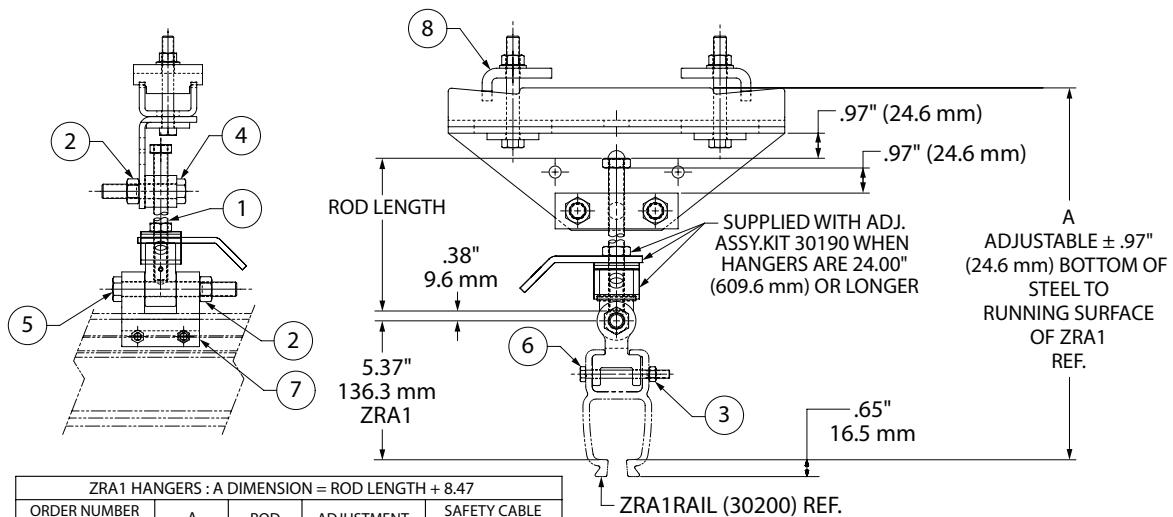
MINIMUM RAIL RADIUS ..... 36"(914.4 mm)

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

(Dwg. 16585903)

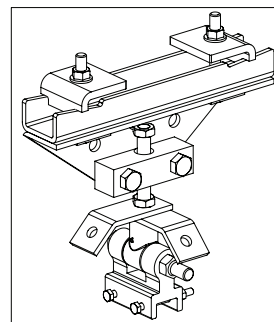
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	30190 - XXX	Hanger Adjustable Assembly	1
2	75587	Lock Nut, 5/8 - 11	3
3	75582	Lock Nut, 5/16 - 18 PT	2
4	ZHS72646	5/8 - 11 x 3.25" HCS Grade 5	2
5	72623	Hexagonal Bolt, 5/8 - 11 x 5"	1
6	ZHS70968	5/16 - 18 x 3.25" HCS Grade 5	2
7	ZHS30266	Hanger 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)

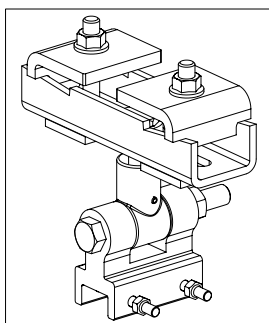
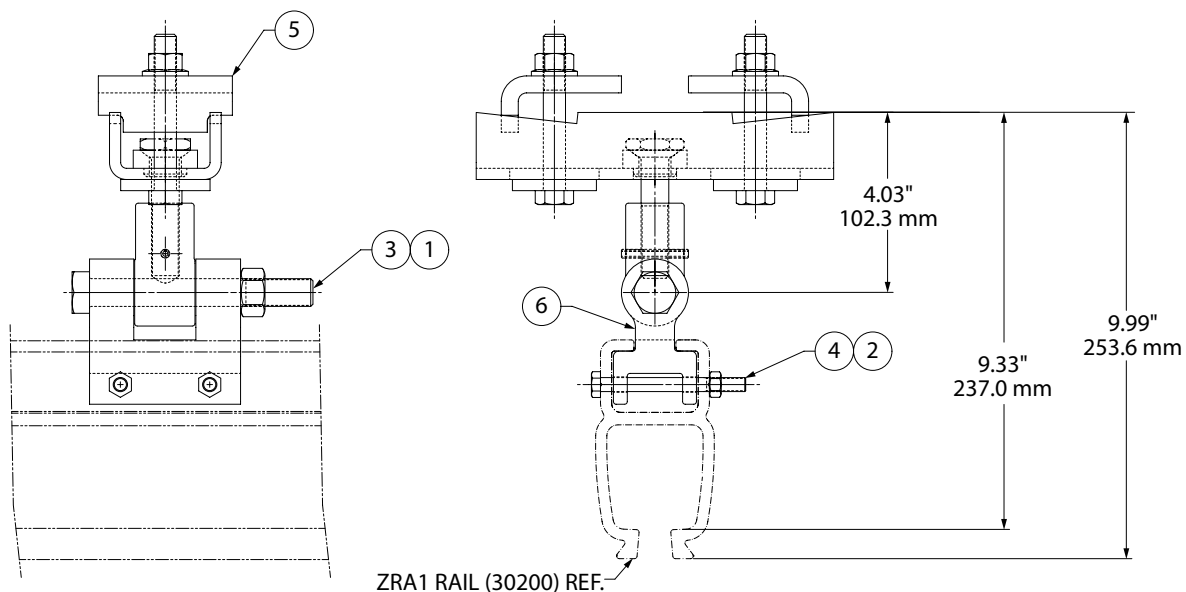
\*ROD LENGTH 24.00"(609.6 mm) AND LONGER REQUIRE CROSS BRACING. SEE ACCESSORIES SECTION.

(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)

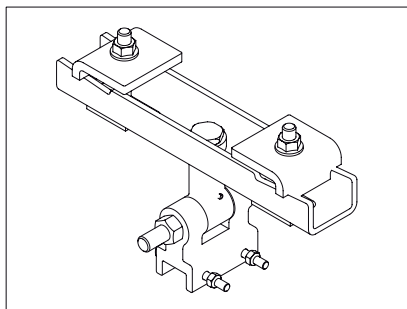
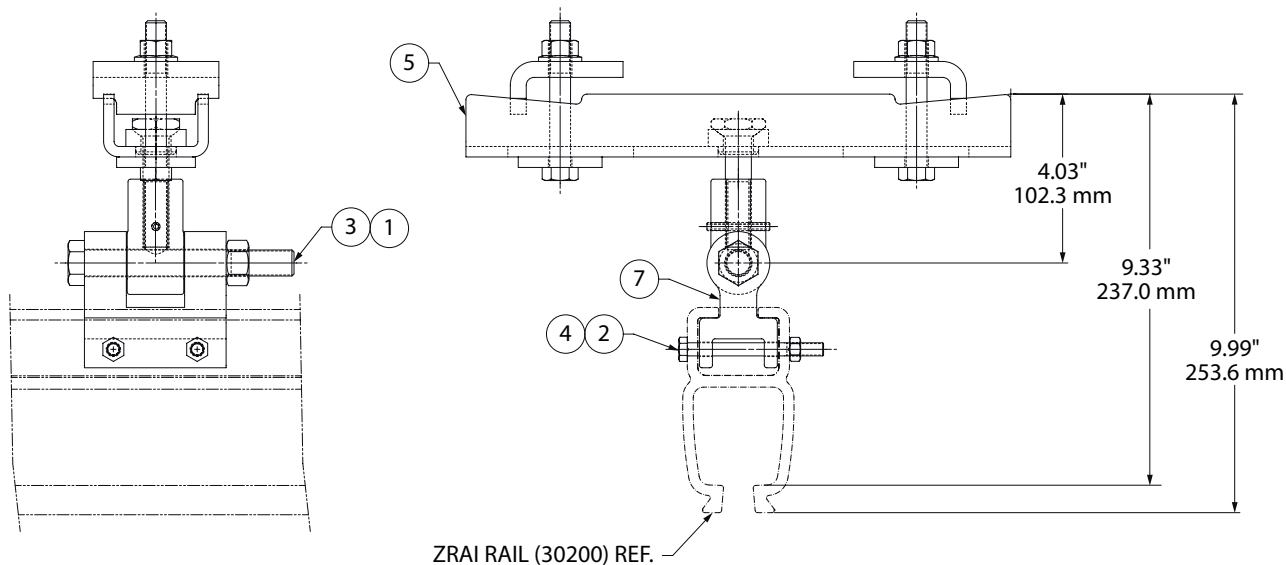
MINIMUM RAIL RADIUS ..... 36" (914.4 mm)

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)

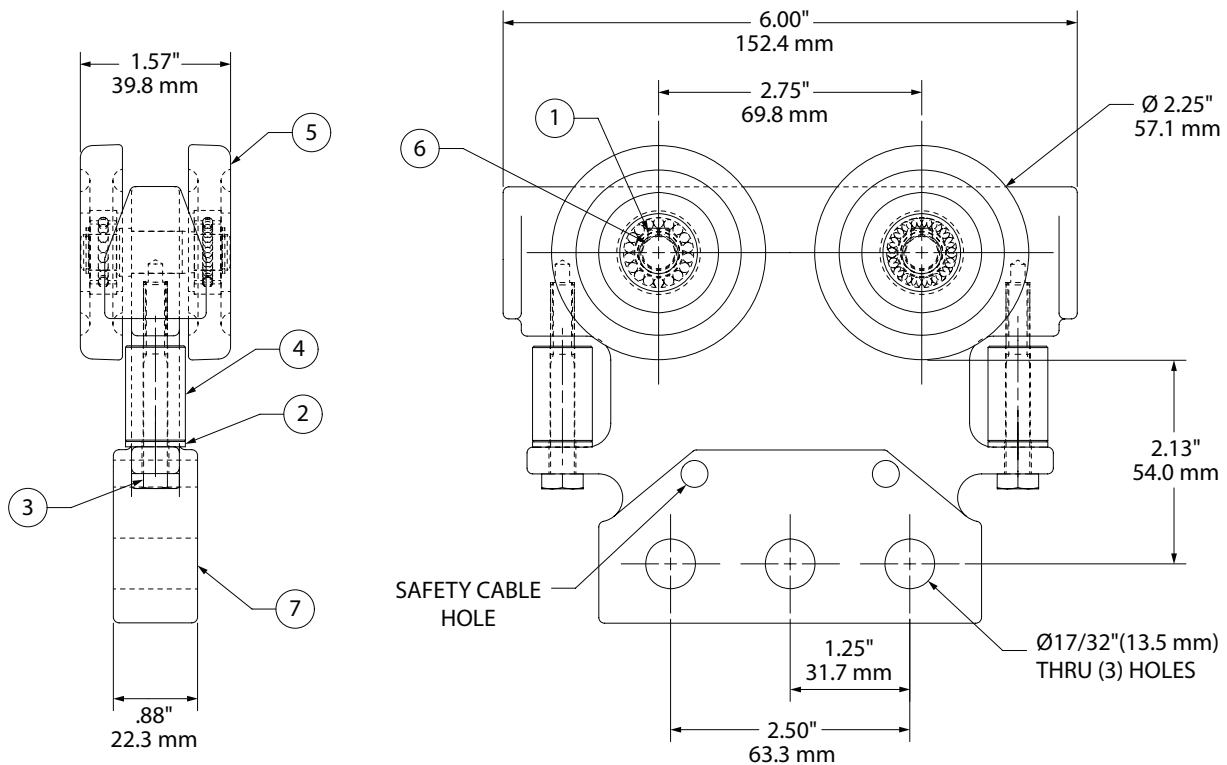
MINIMUM RAIL RADIUS ..... 36" (914.4 mm)

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

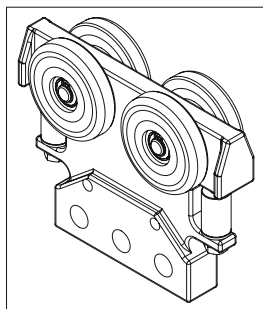
(Dwg. 54094370)

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)

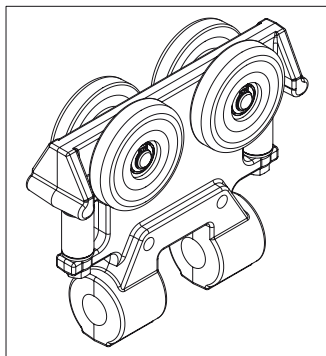
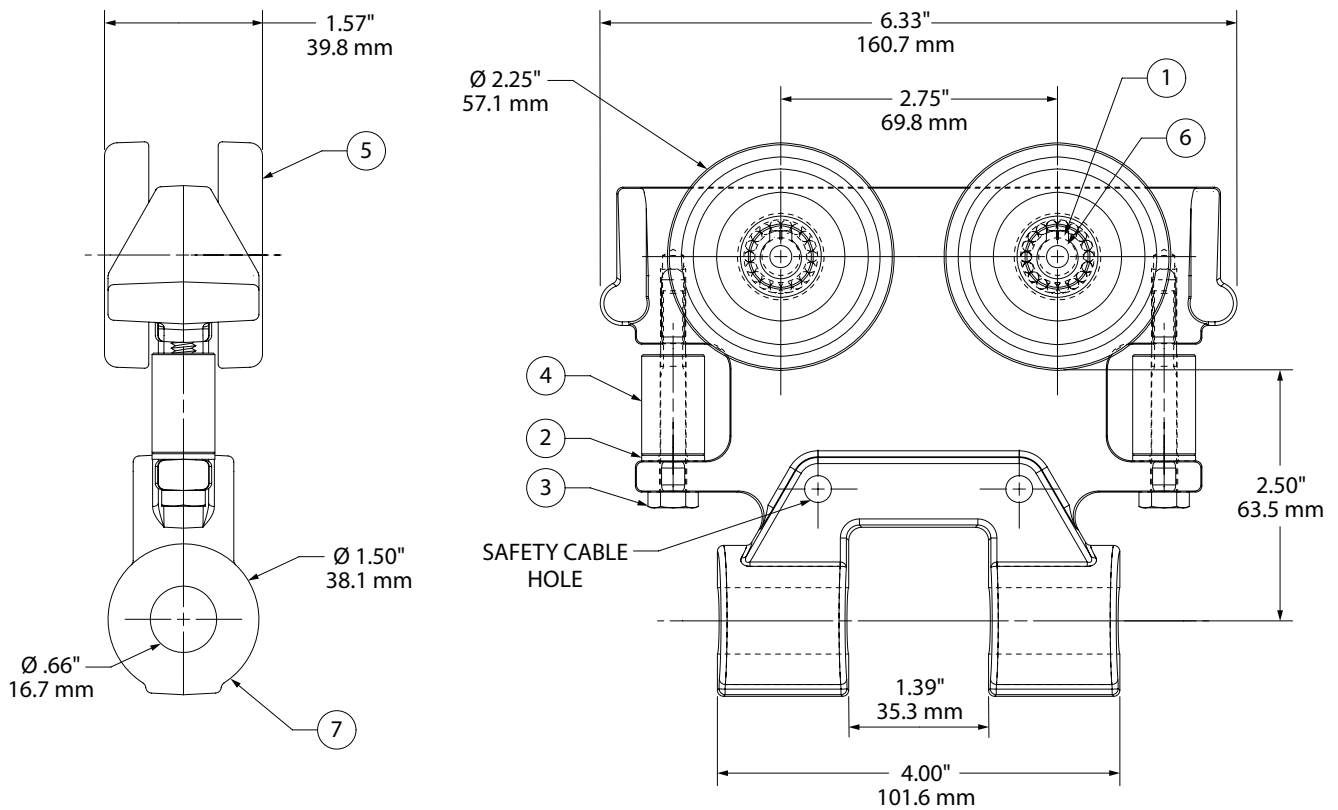
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

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)

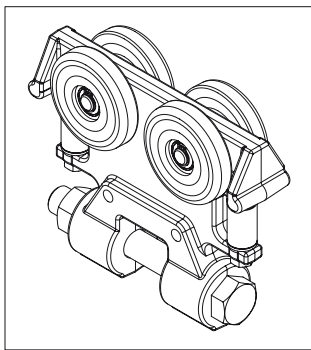
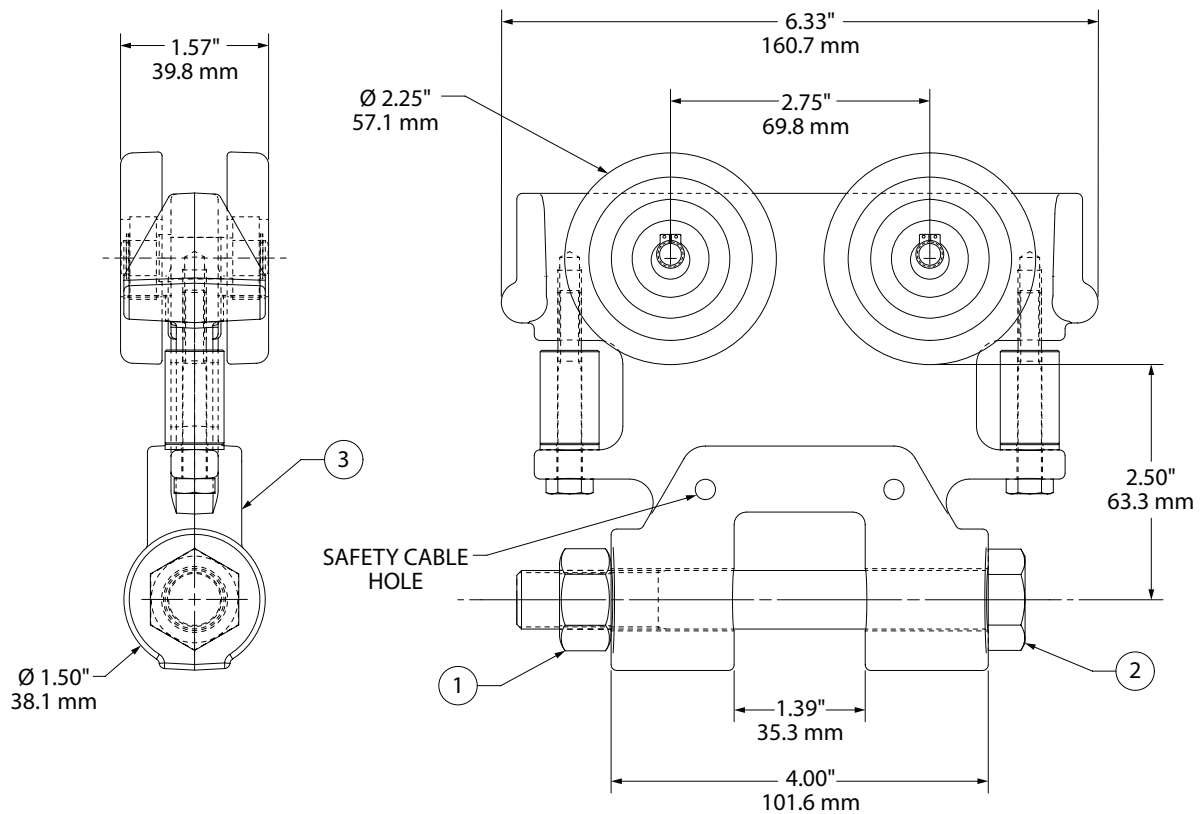
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

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)

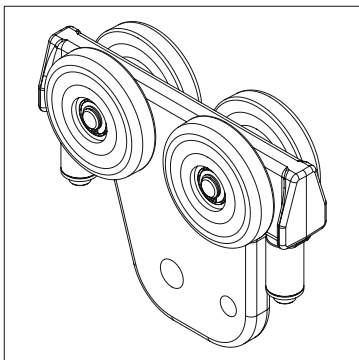
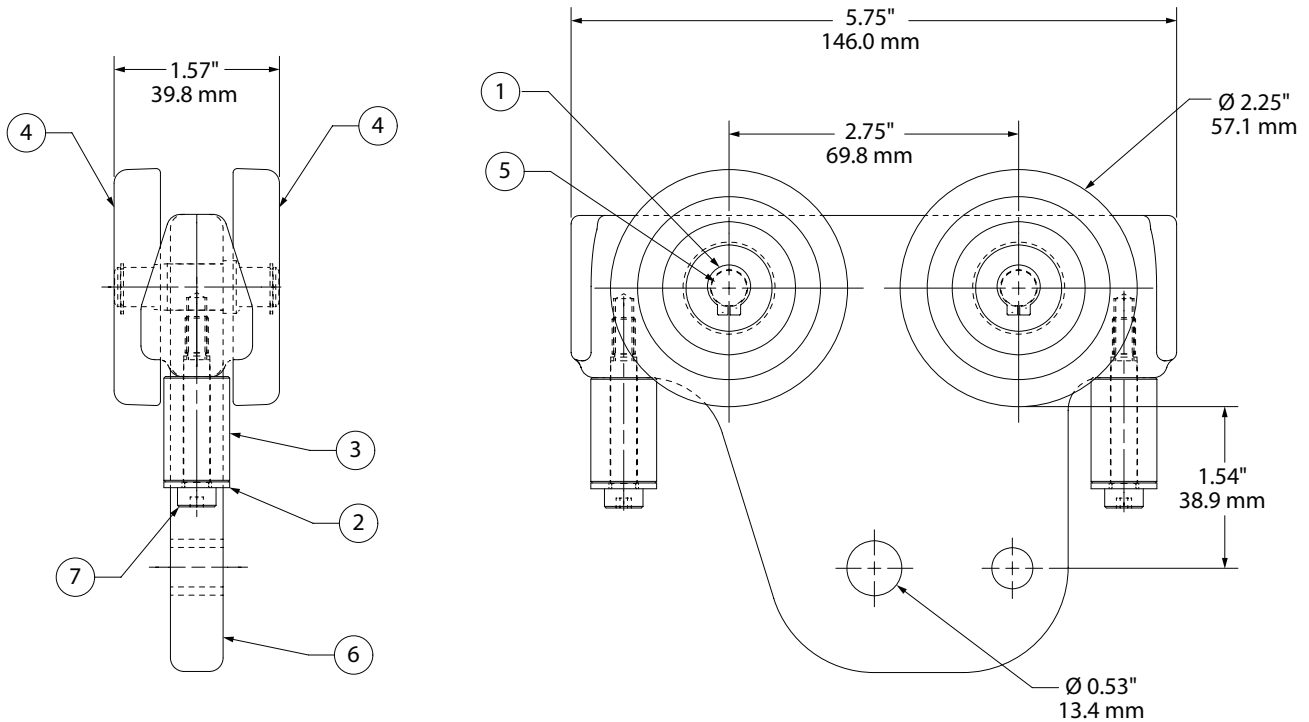
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

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)

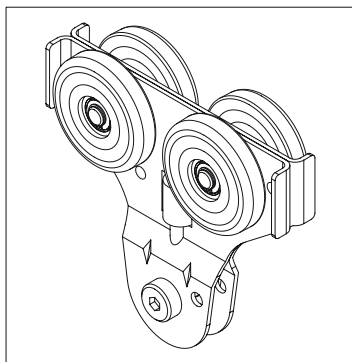
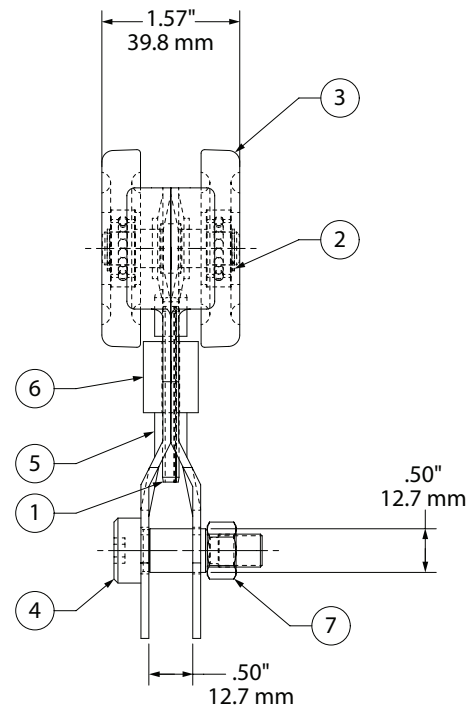
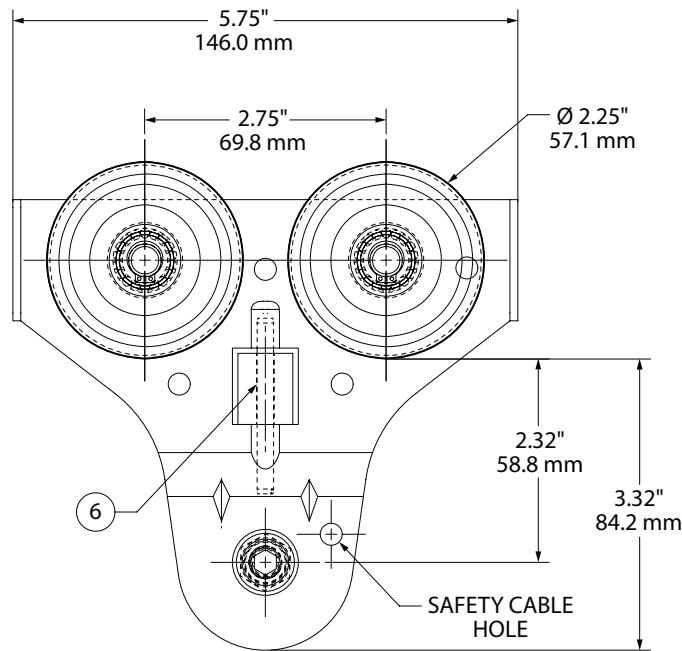
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

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)

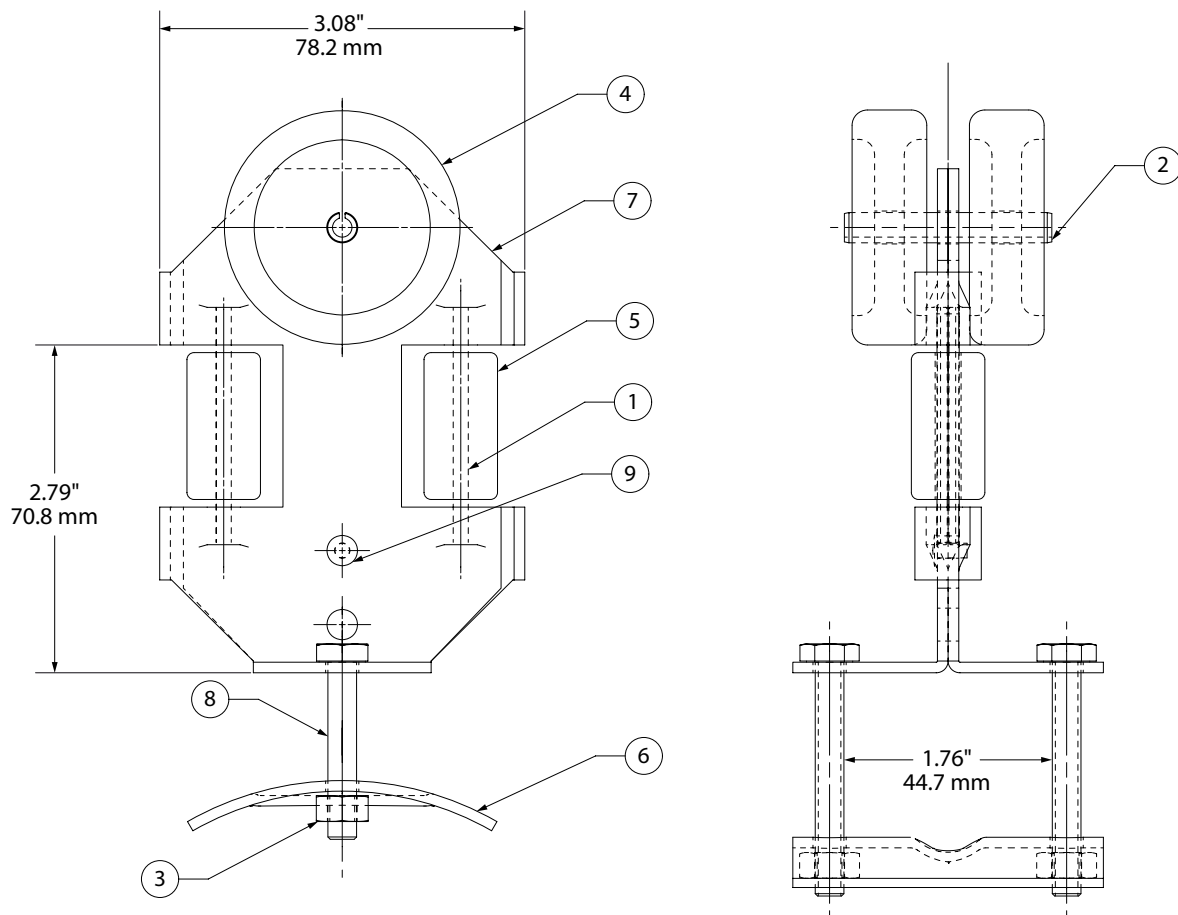
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS TROLLEY, YOU MUST ORDER IT SEPERATELY.

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.

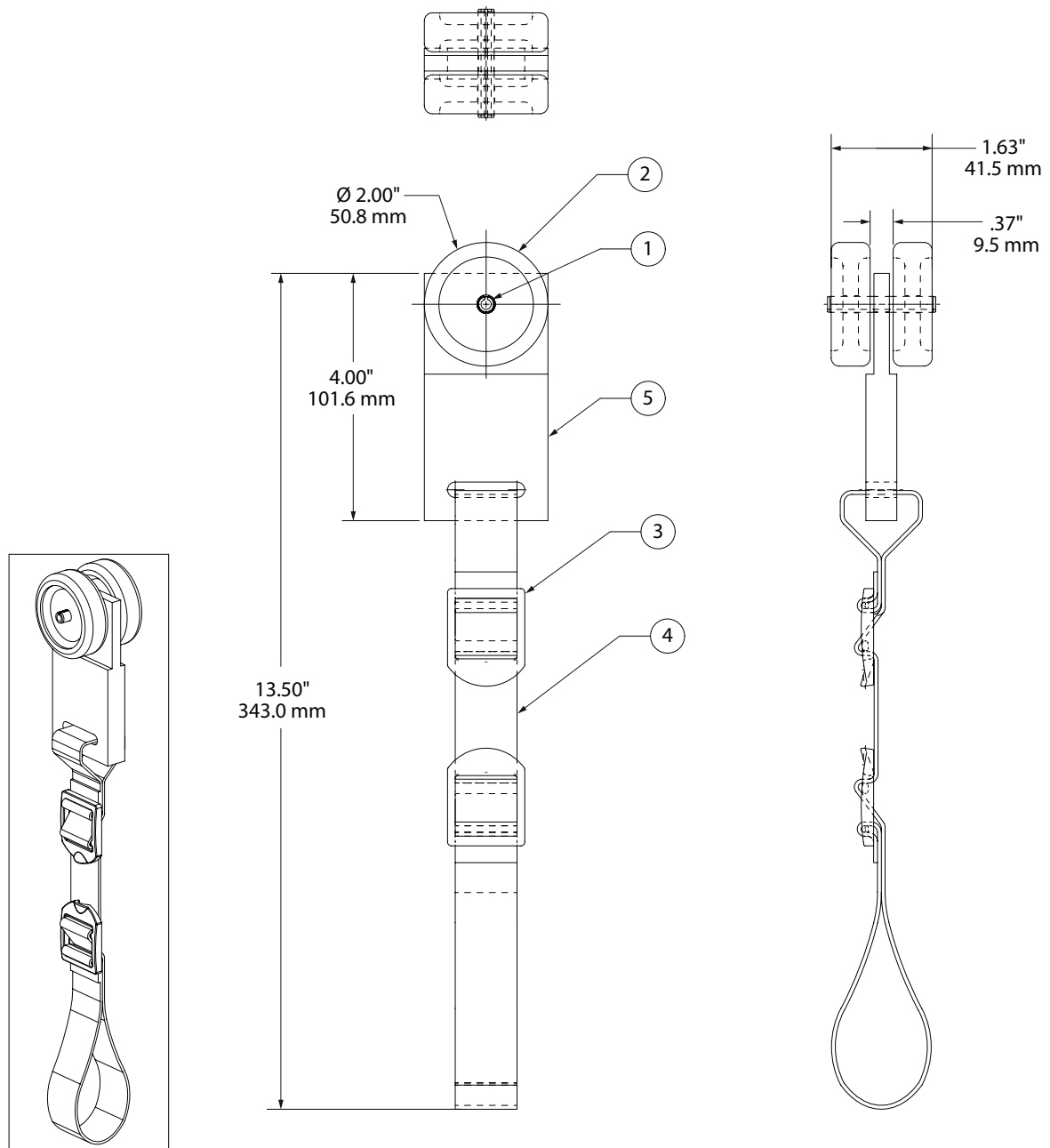
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)  
 THIS TROLLEY IS USED FOR FESTOONING FLAT WIRE OR AIR HOSE.

(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

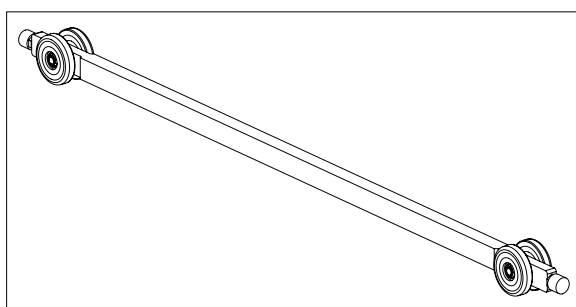
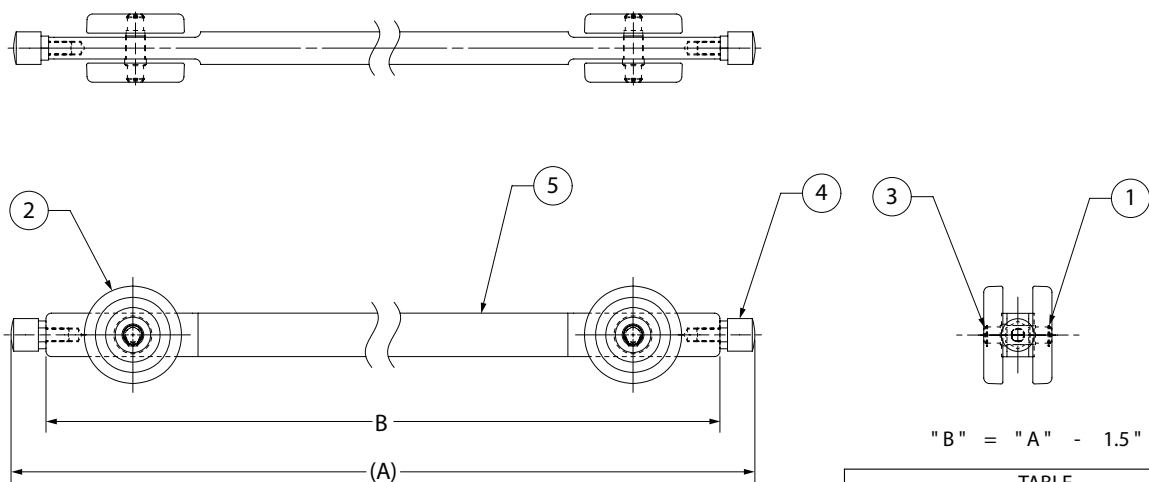
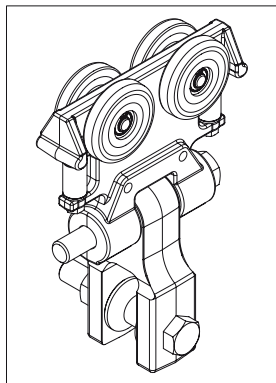
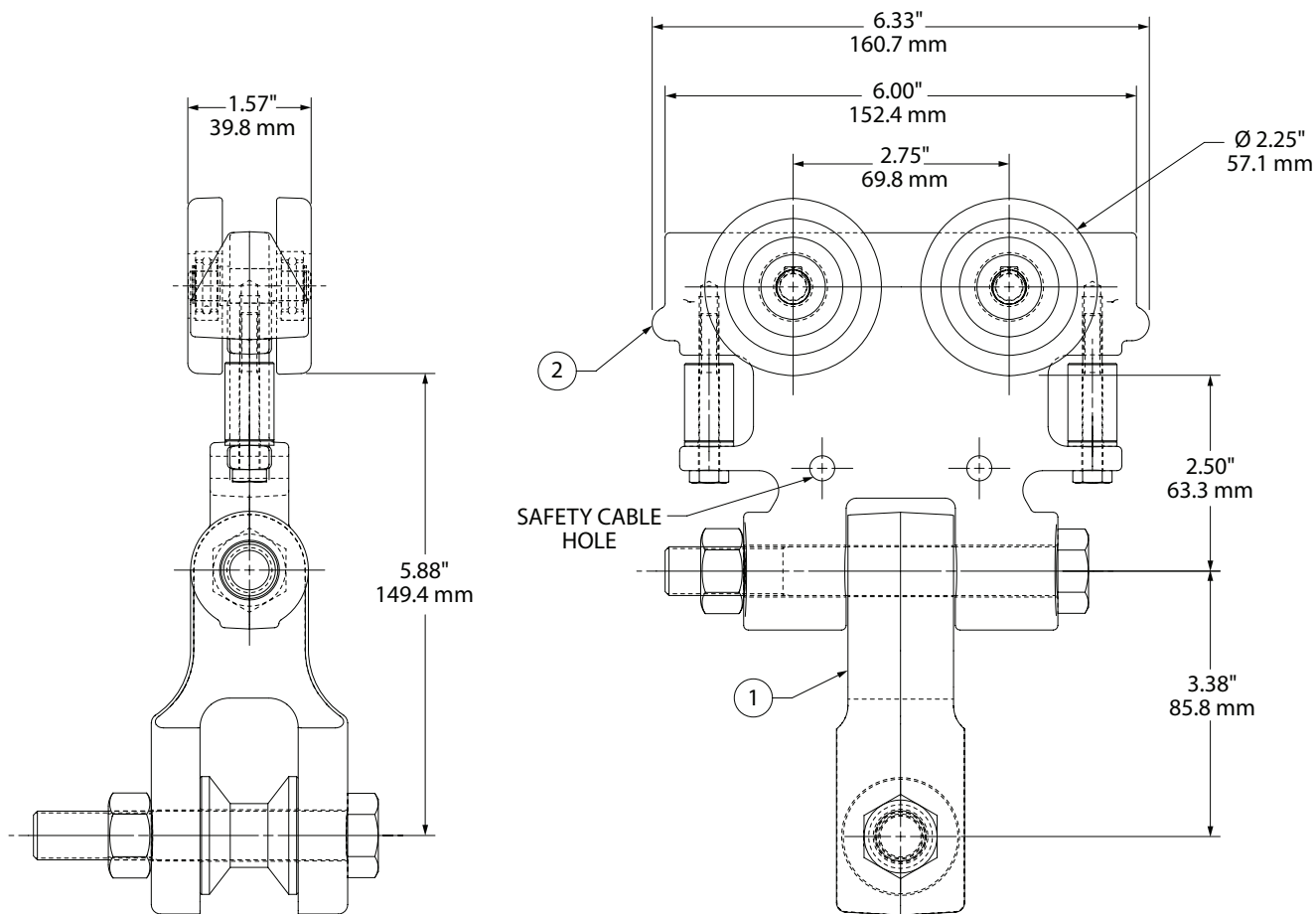


TABLE		
PART NO.	" A "	TROLLEY BRACKET
30307 - 3700	37.00	30311 - 3700
30307 - 3800	38.00	30311 - 3800
30307 - 3900	39.00	30311 - 3900
30307 - 4000	40.00	30311 - 4000
30307 - 4100	41.00	30311 - 4100
30307 - 4200	42.00	30311 - 4200
30307 - 4300	43.00	30311 - 4300
30307 - 4400	44.00	30311 - 4400
30307 - 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.

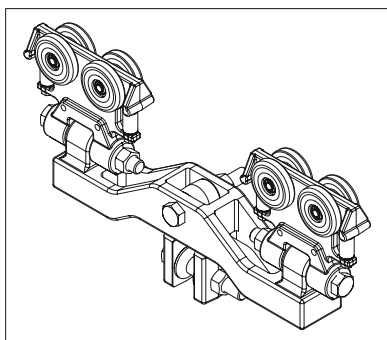
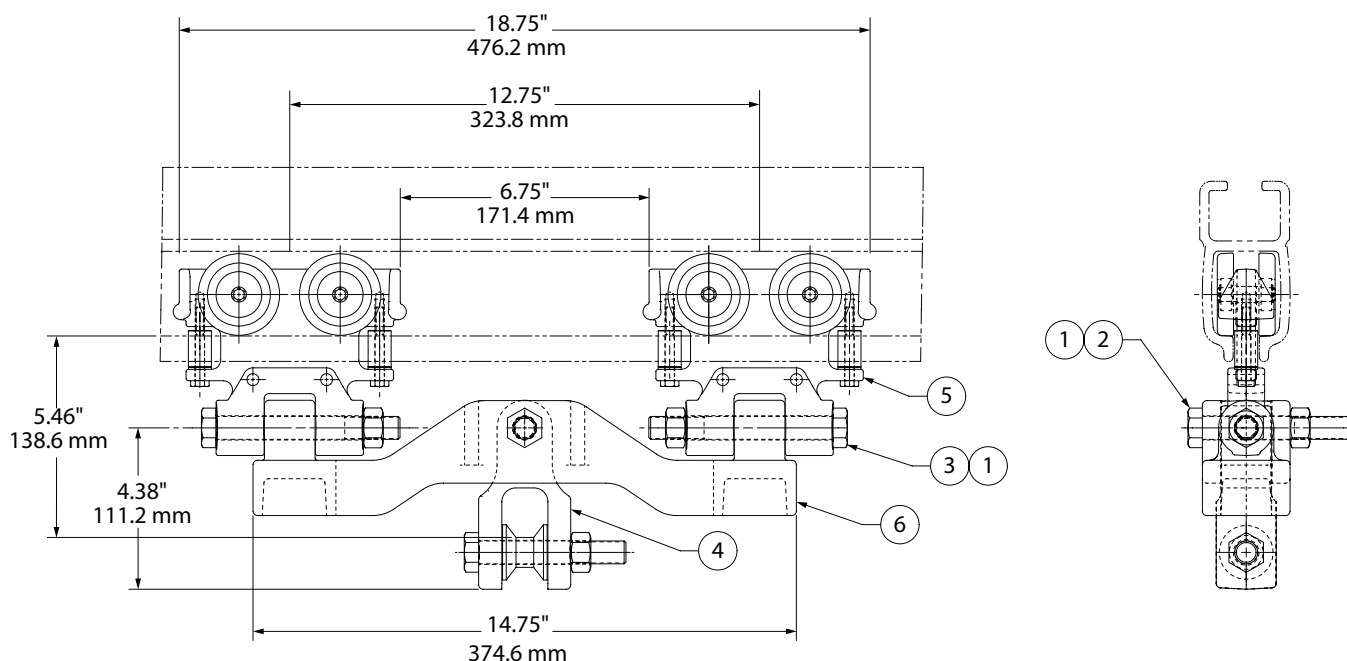
ROLLING FRICTION .....	ONE PERCENT
MAXIMUM WHEEL LOAD .....	125 LBS.(56.7 KG)
ULTIMATE STRENGTH .....	8,575 LBS.(3889.55 KG)
YIELD STRENGTH .....	7,500 LBS.(3401.94 KG)
CAPACITY.....	500 LBS.(226.8 KG)
WEIGHT OF ASSEMBLY .....	4.01 LBS.(1.81 KG)

**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)

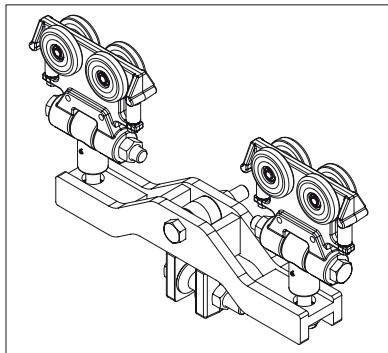
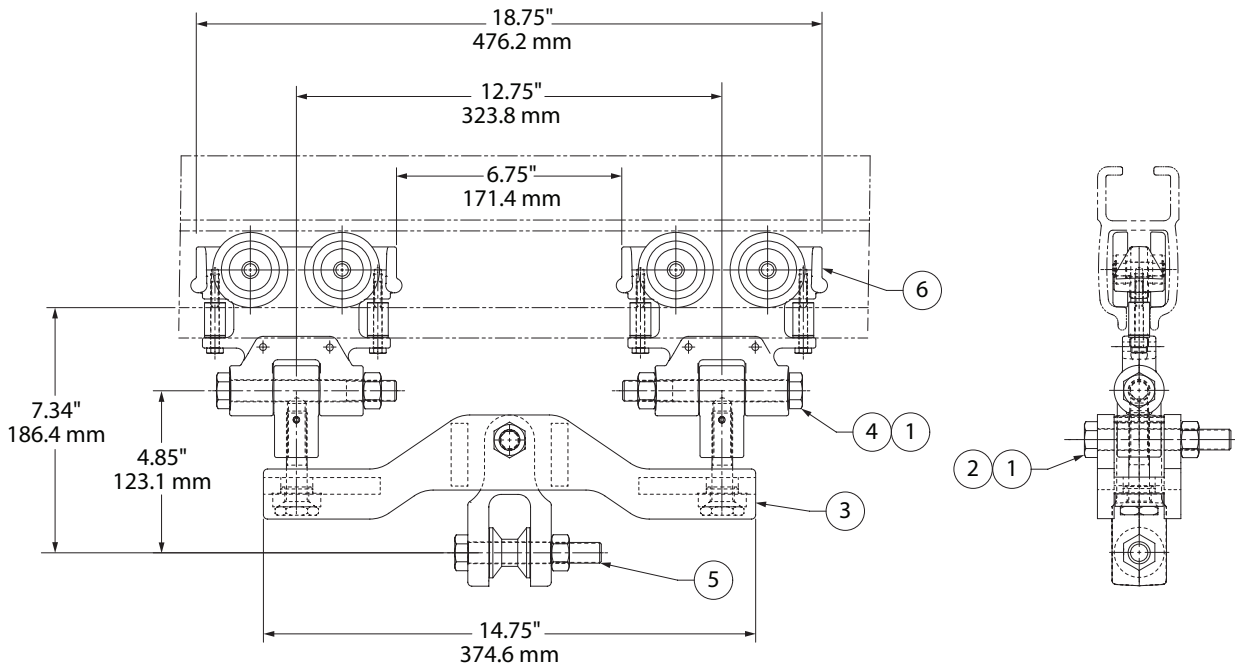
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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)

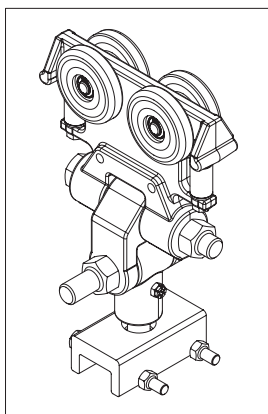
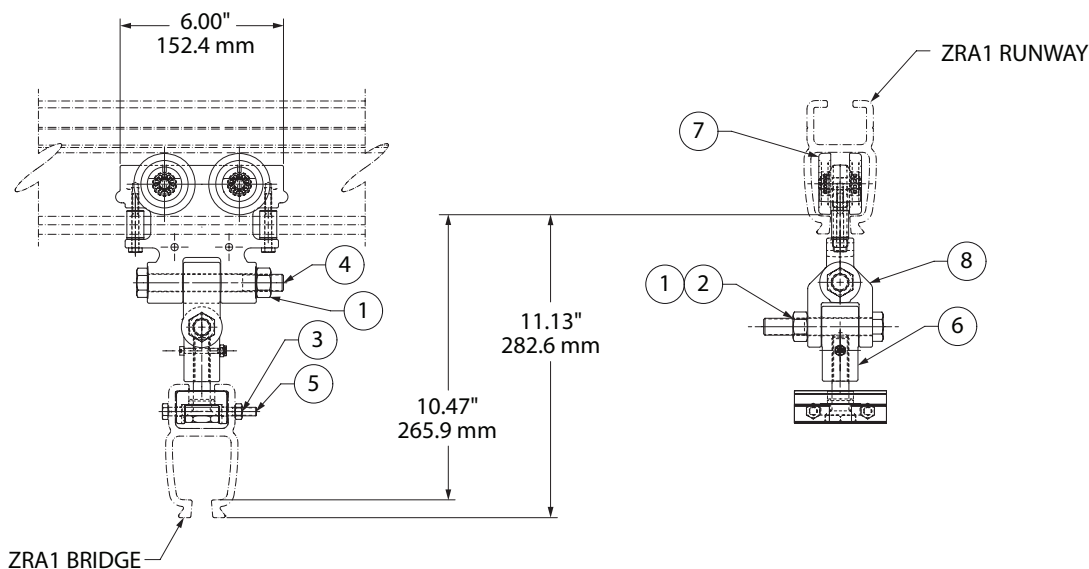
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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)

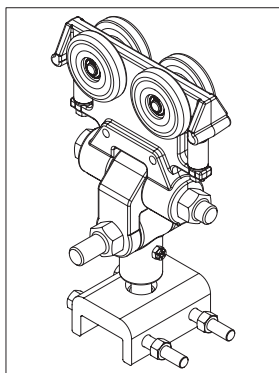
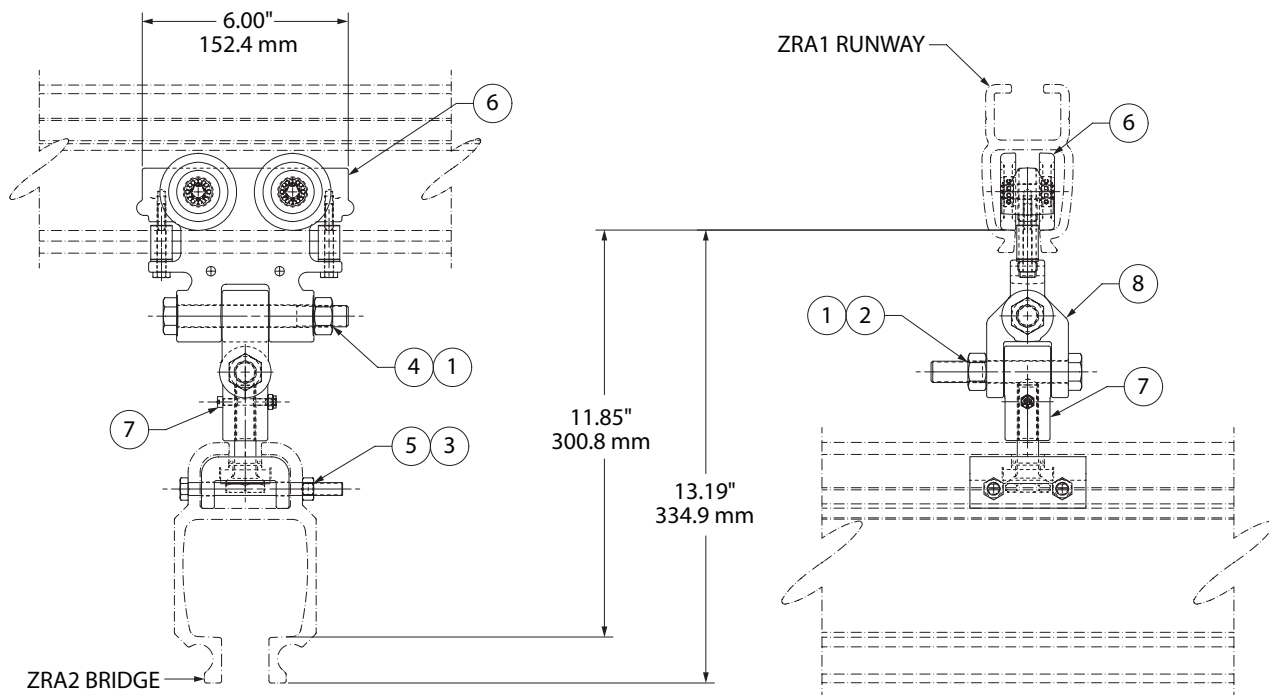
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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.

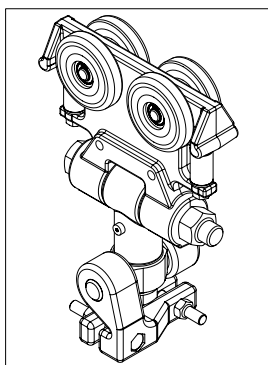
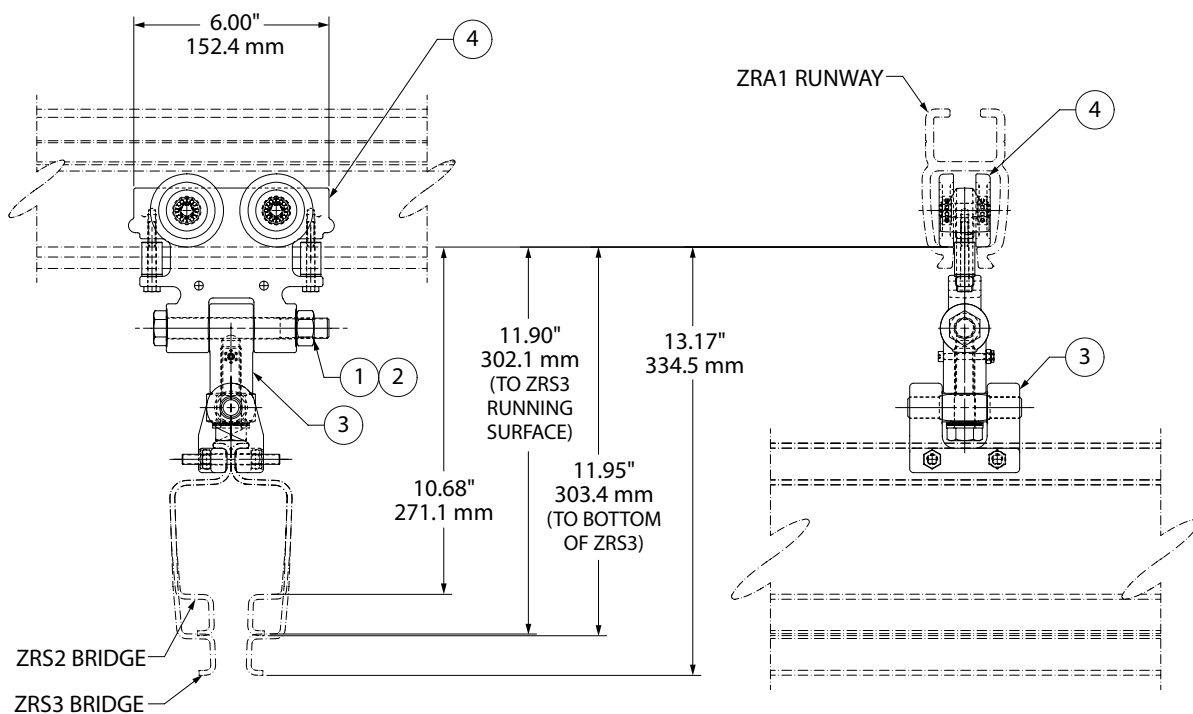
- ROLLING FRICTION ..... ONE PERCENT
- ULTIMATE STRENGTH ..... 8,575 LBS.(3889.55 KG)
- YIELD STRENGTH ..... 7,500 LBS.(3401.94 KG)
- CAPACITY ..... 500 LBS.(226.8 KG)
- MINIMUM RAIL RADIUS..... 36.00"(914.4 mm)
- WEIGHT OF ASSEMBLY ..... 6.5 LBS.(2.94 KG)

**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.

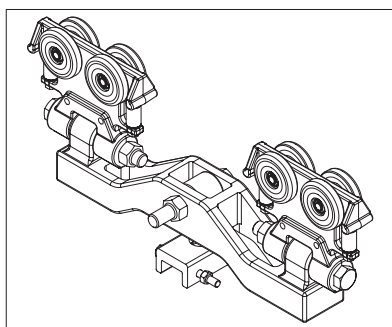
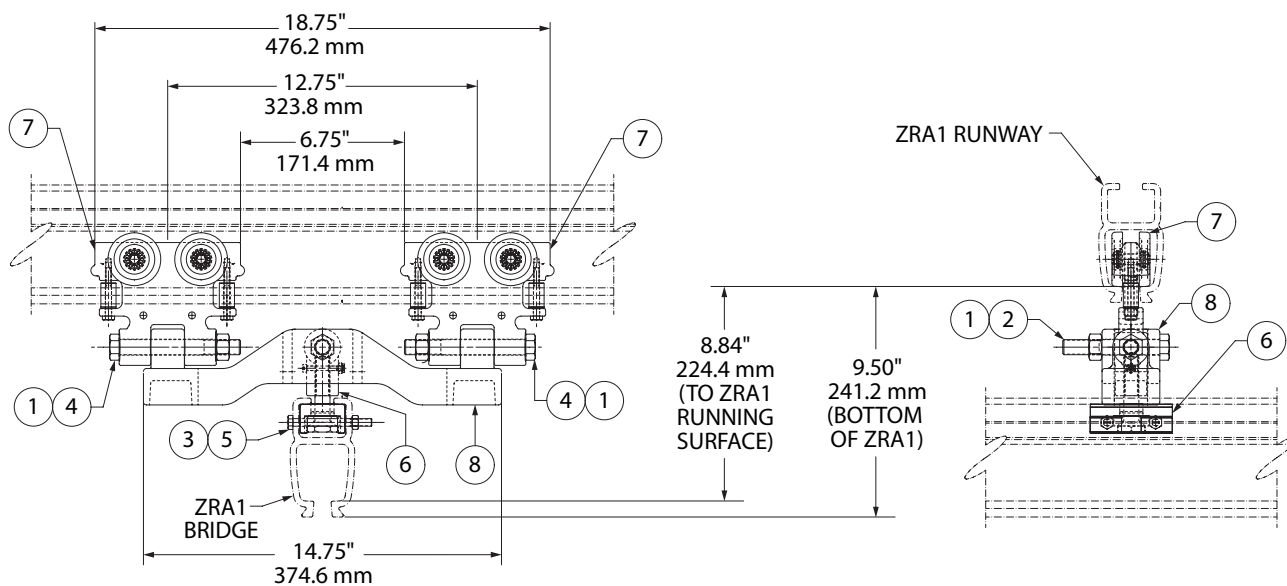
REF: PART NO. 30907 - LENGTH IN FEET (EXAMPLE: 06 = 6 FEET)

(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)

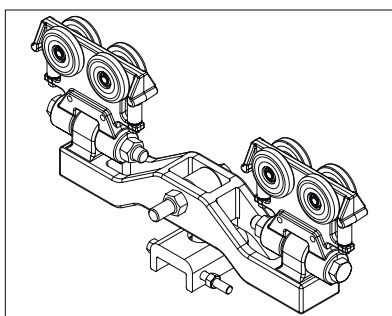
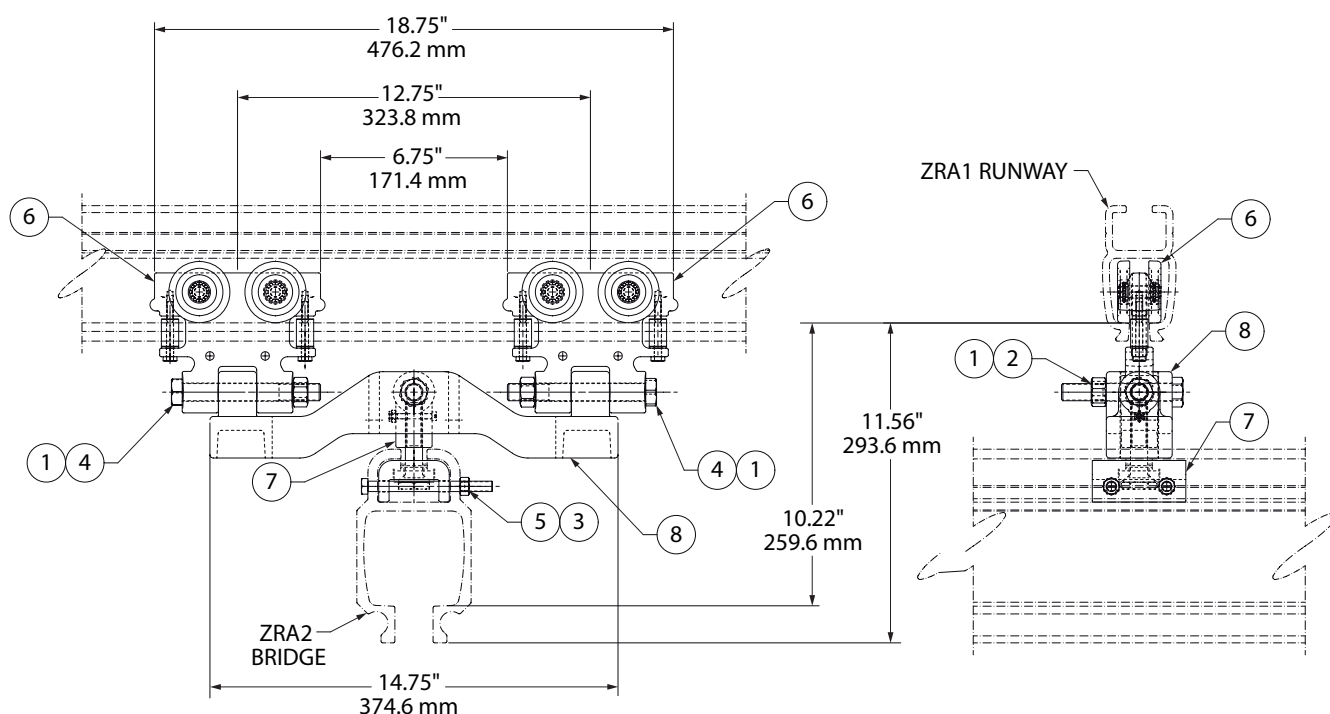
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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)

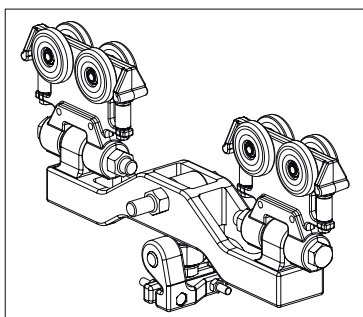
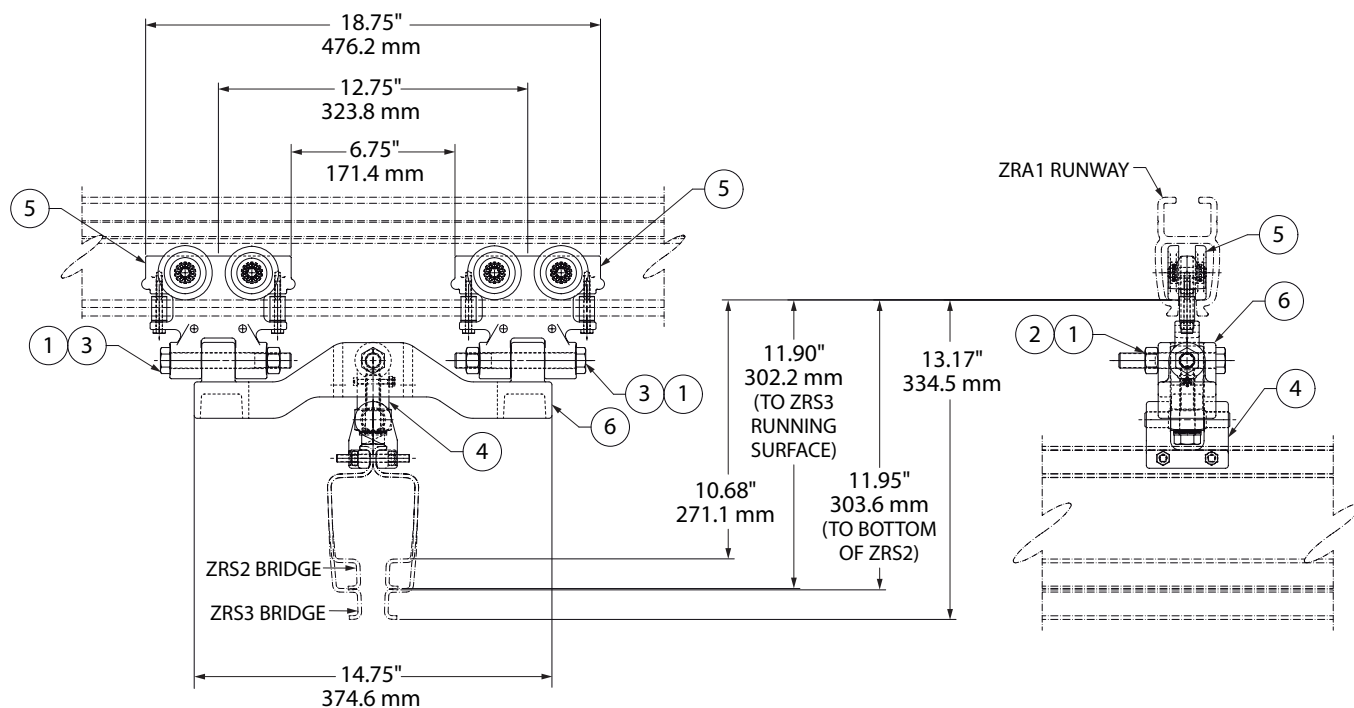
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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)

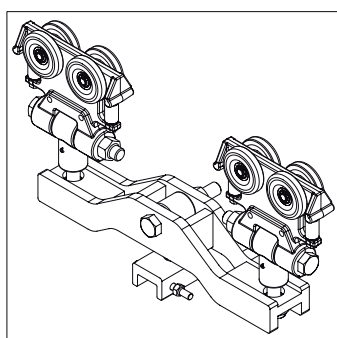
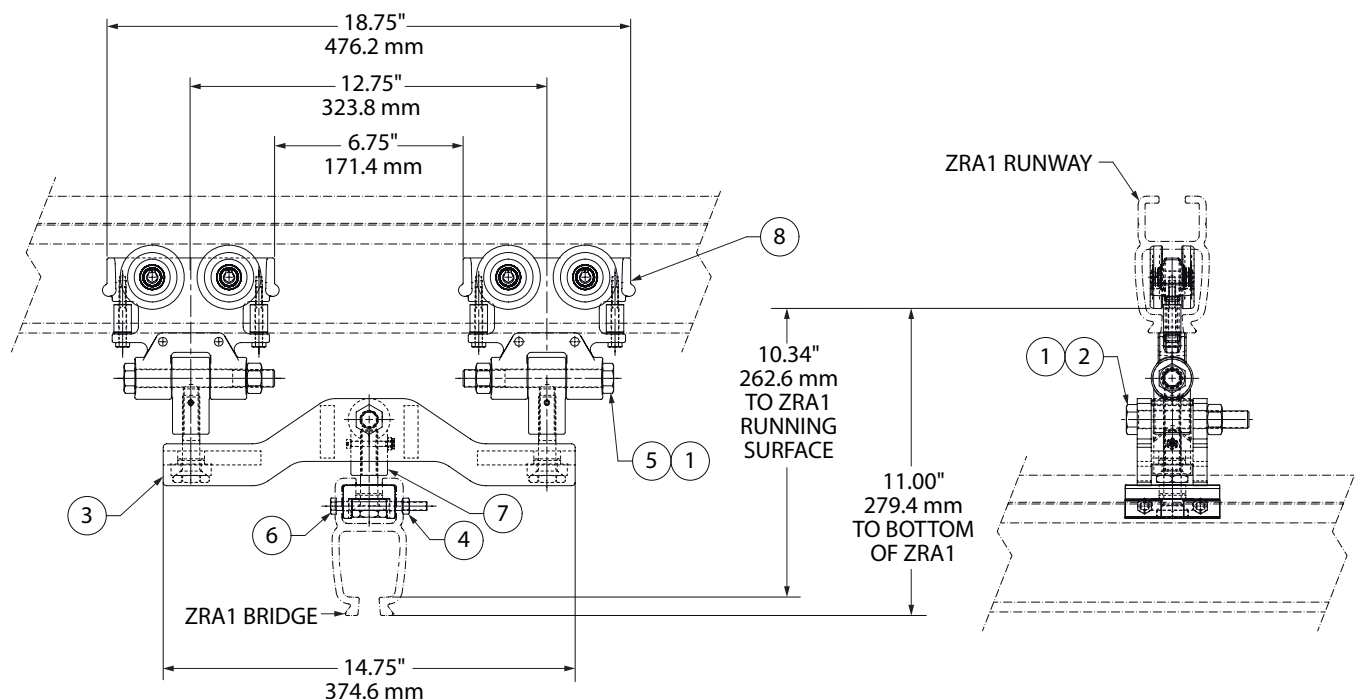
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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)

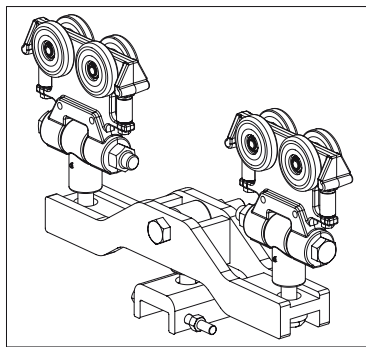
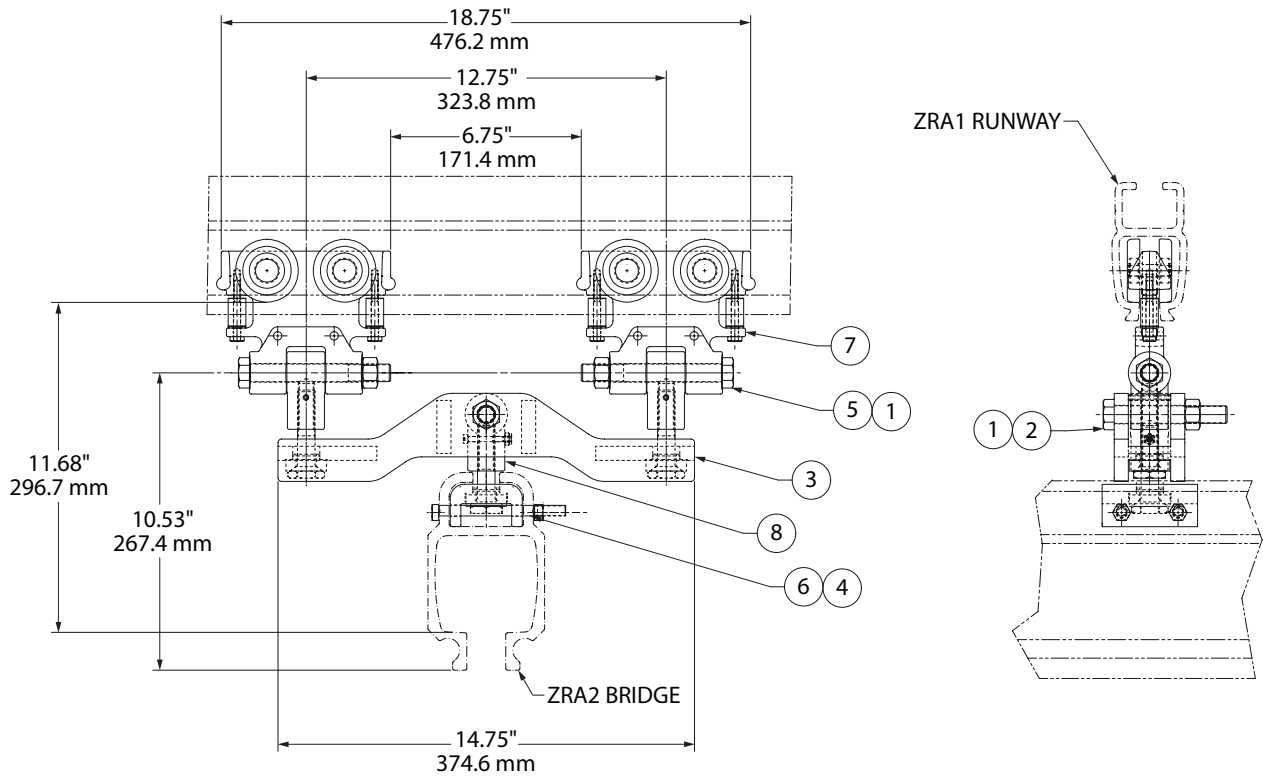
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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)

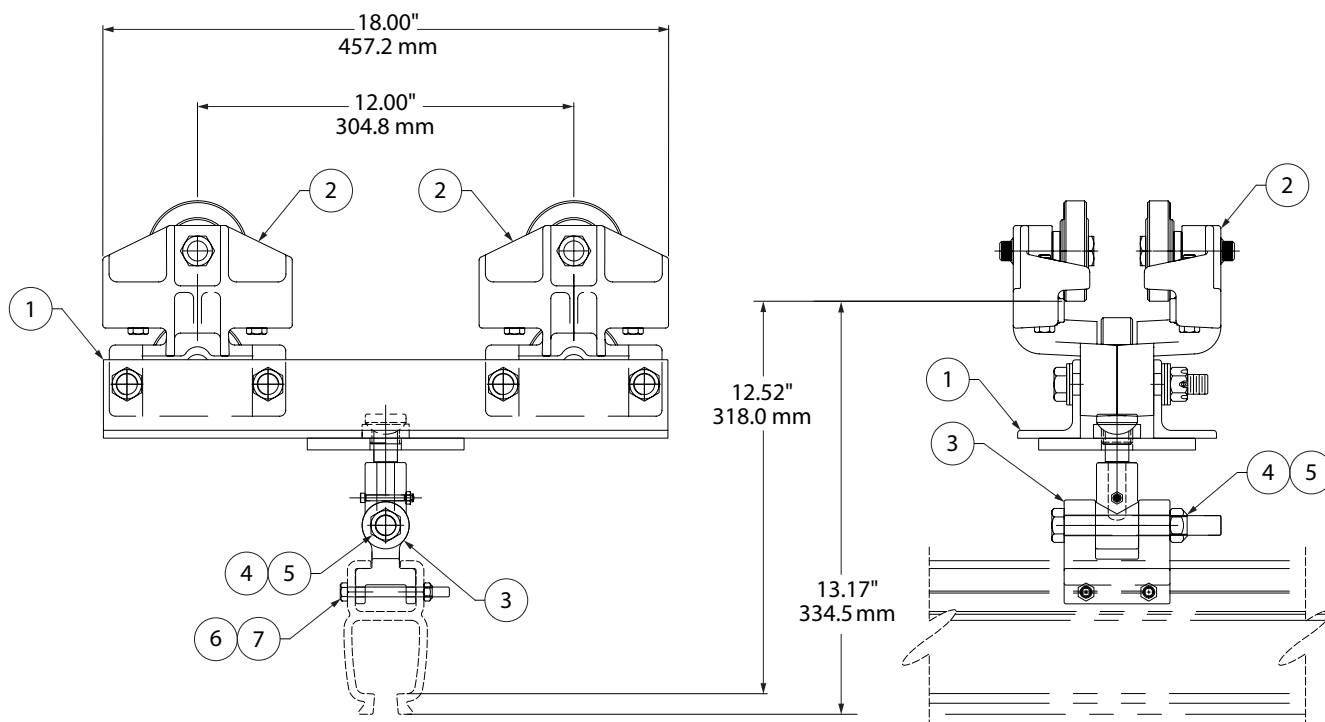
**NOTE:** SAFETY CABLE ASSEMBLIES ARE INCLUDED IN BRIDGE CRANE ASSEMBLY. IF YOU NEED TO ORDER AN END TRUCK ASSEMBLY SEPERATELY, YOU MUST ALSO ORDER A SAFETY CABLE ASSEMBLY.

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.

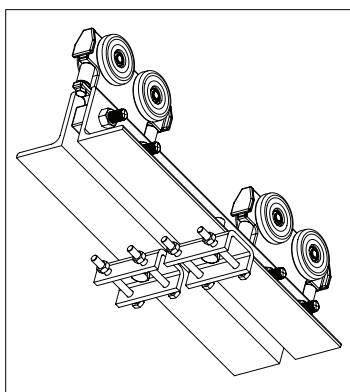
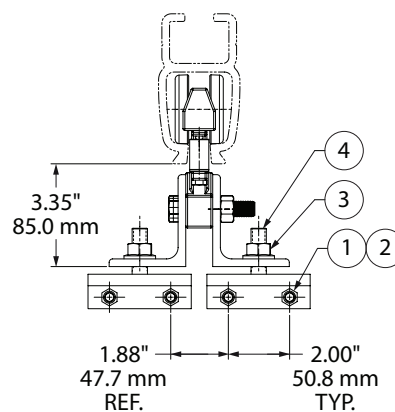
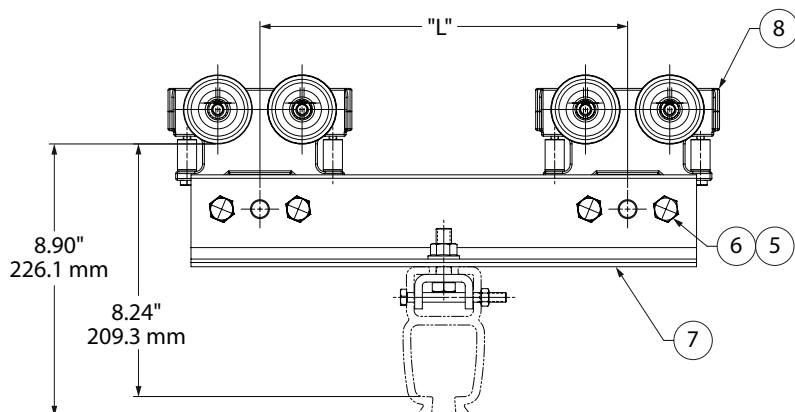
ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH ..... —  
 YIELD STRENGTH ..... —  
 CAPACITY..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY ..... 32 LBS.(14.51 KG)

**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



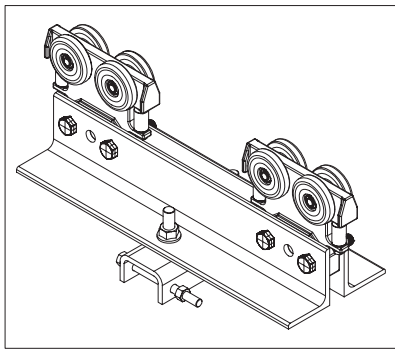
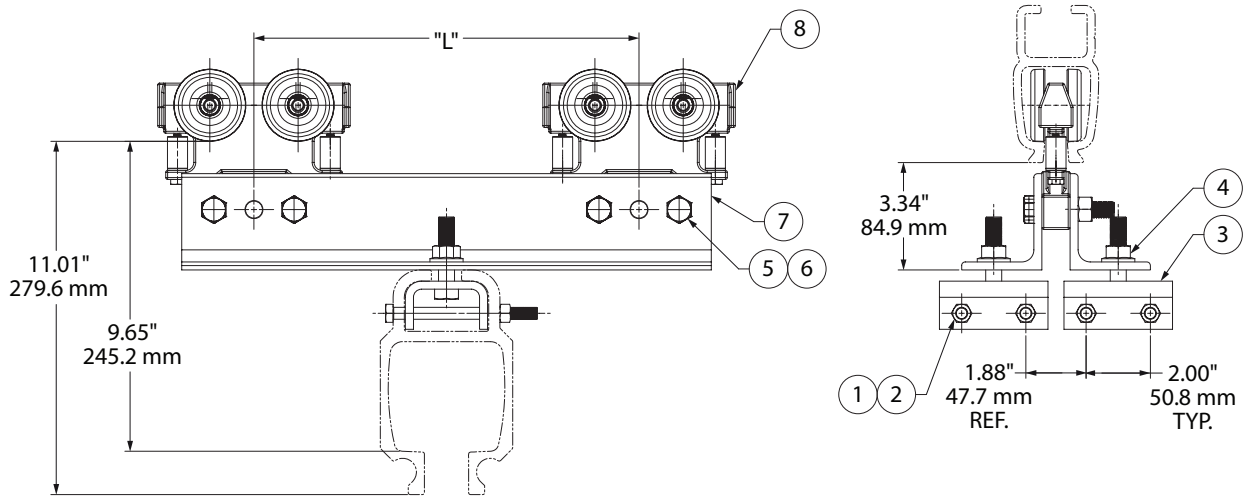
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	16024861 - 1200	30907 - 06	12"	16007890 - 1200
10' - 15'	16024861 - 1800	30907 - 06	18"	16007890 - 1800
15' - 20'	16024861 - 2400	30907 - 06	24"	16007890 - 2400
20' - 30'	16024861 - 3600	30907 - 08	36"	16007890 -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

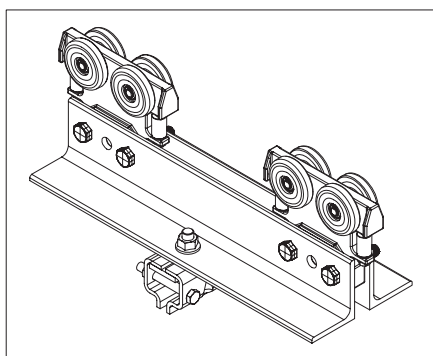
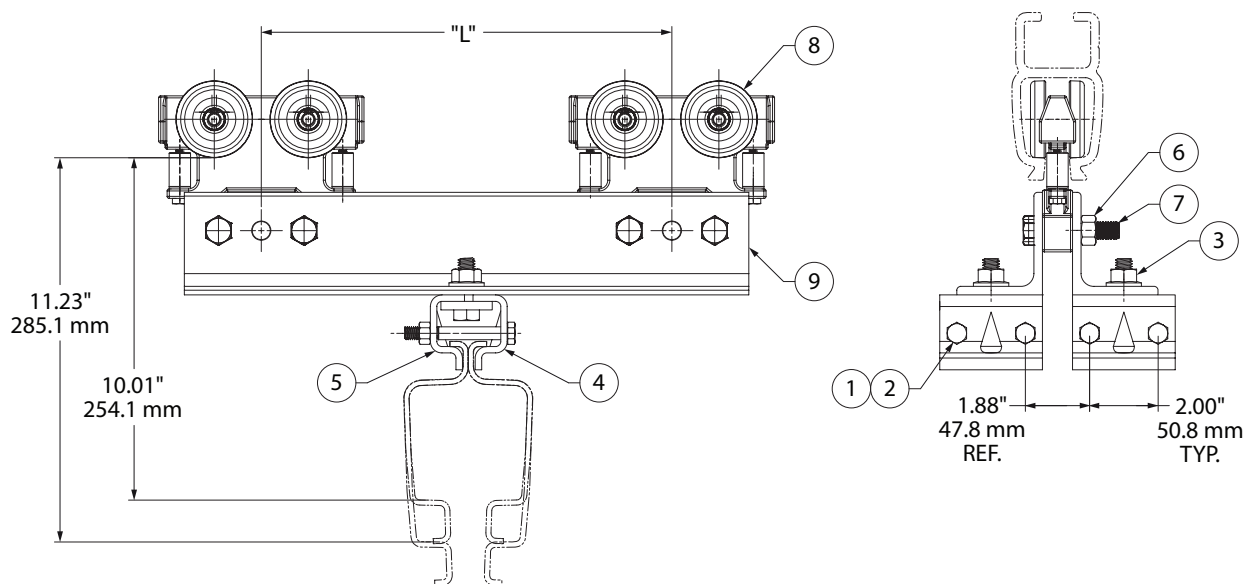
ROLLING FRICTION ..... ONE PERCENT  
 ULTIMATE STRENGTH .....  
 YIELD STRENGTH .....  
 CAPACITY..... 1,000 LBS.(453.6 KG)  
 WEIGHT OF ASSEMBLY .....

(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



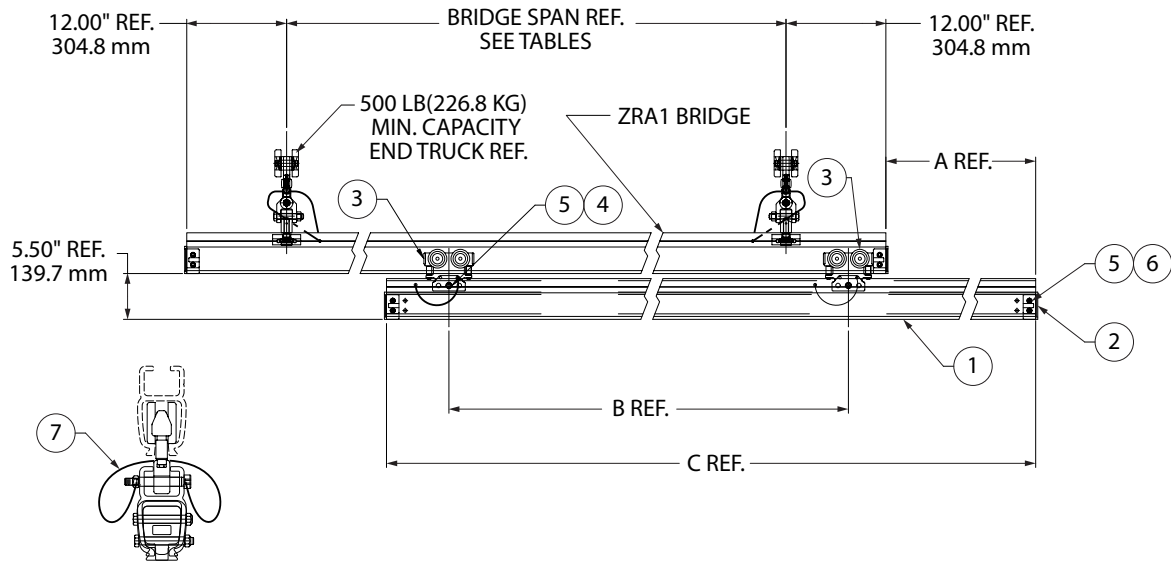
LEGEND				
BRIDGE LENGTH	END TRUCK	SAFETY CABLE KIT	"L"	END TRUCK BRACKET
LESS THAN 10'	45520343 - 1200	30907 - 06	12"	16007890 - 1200
10' - 15'	45520343 - 1800	30907 - 06	18"	16007890 - 1800
15' - 20'	45520343 - 2400	30907 - 06	24"	16007890 - 2400
20' - 30'	45520343 - 3600	30907 - 08	36"	16007890 -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

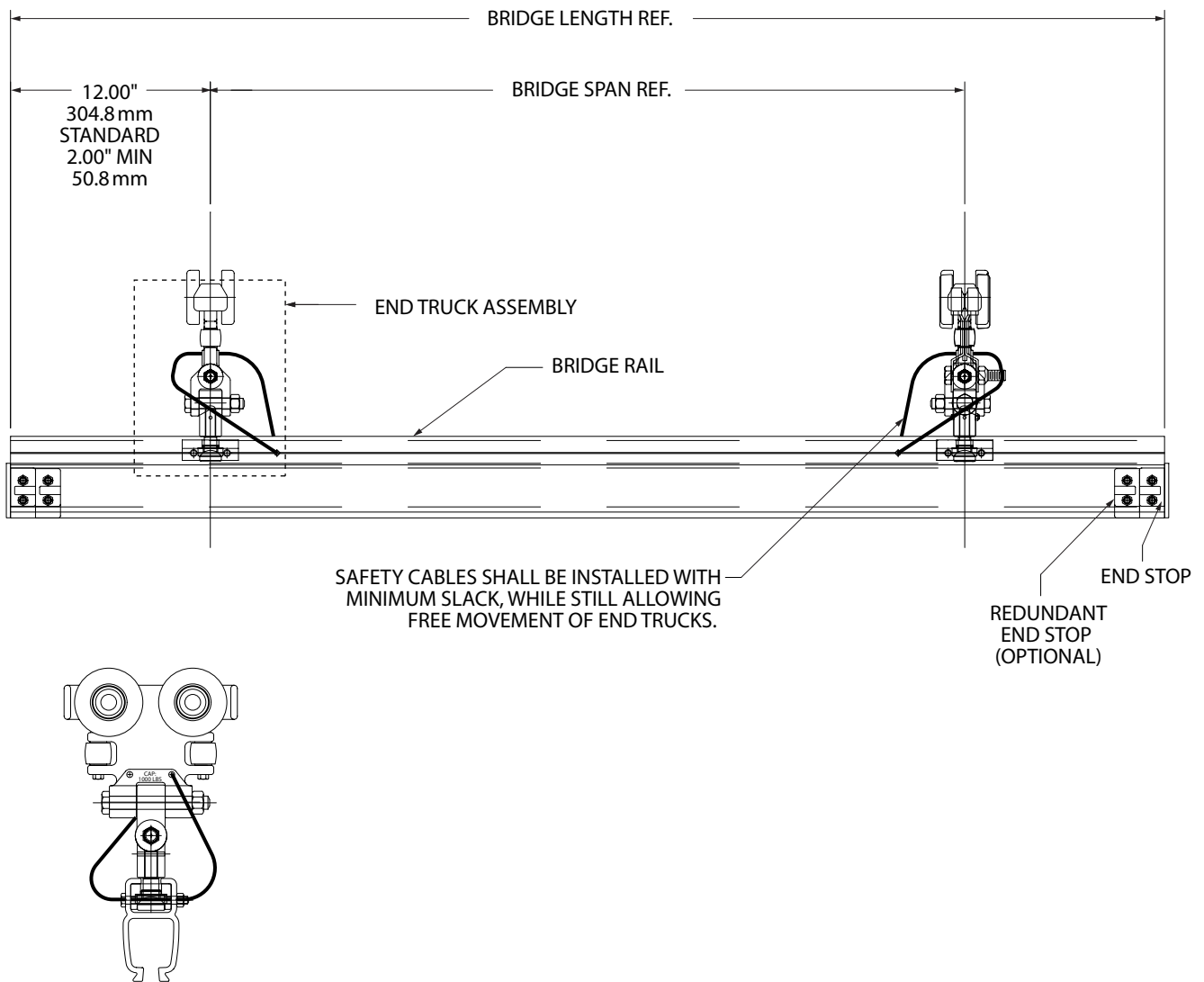
**NOTE:** BRIDGE EXTENSION ADDS 5.67" (144.0 mm) TO STACK-UP DIMENSION - FOR LONGER EXTENSIONS CONSULT THE FACTORY.

**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



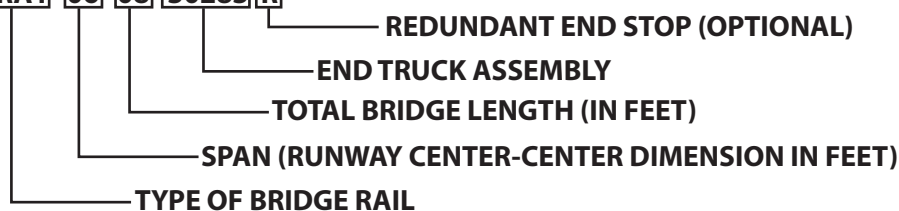
THE BRIDGE CRANE ASSEMBLY CONSISTS OF:

- 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)

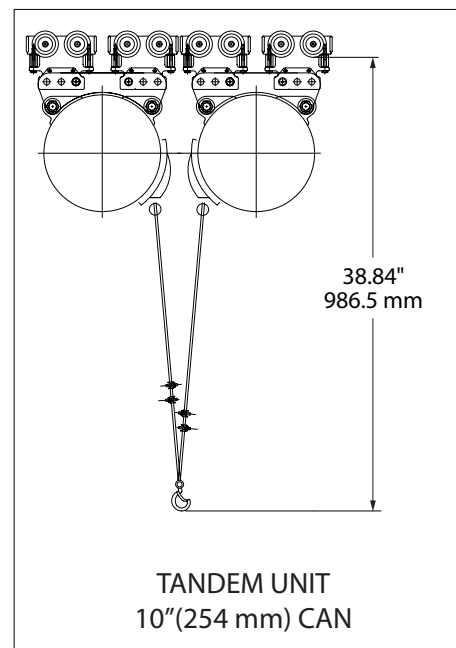
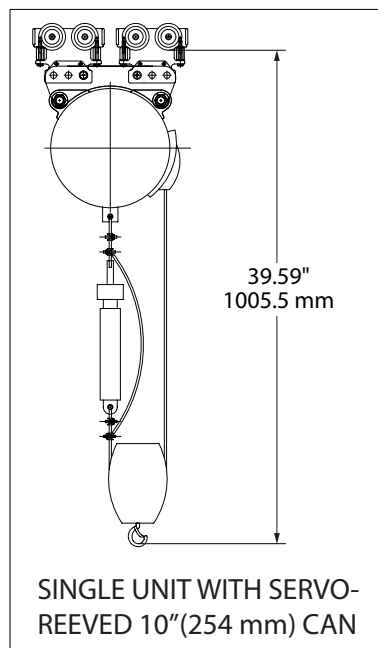
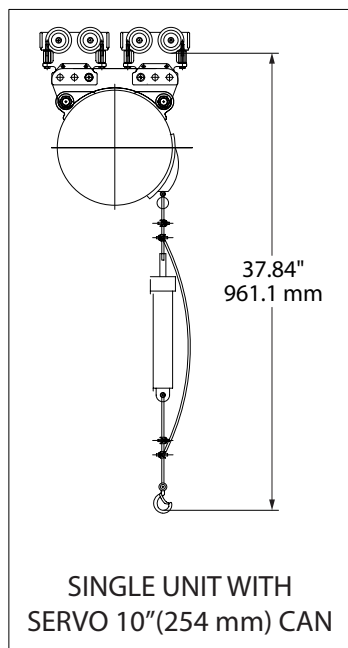
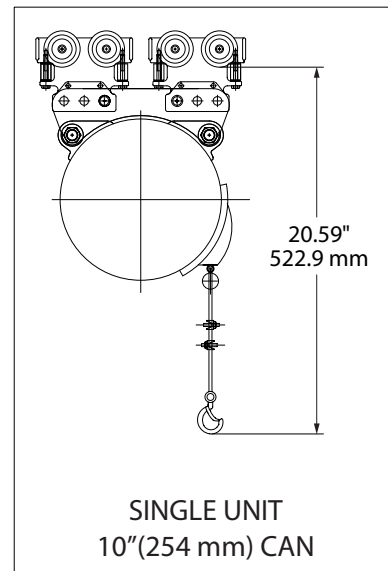
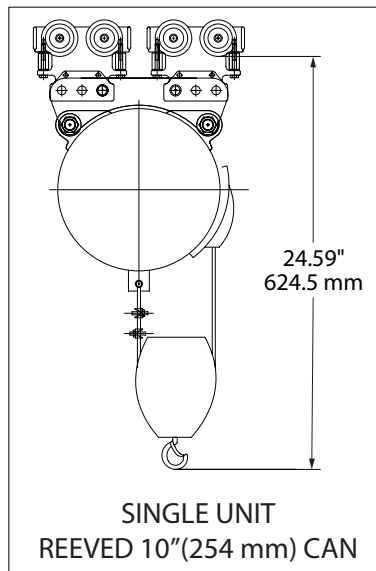
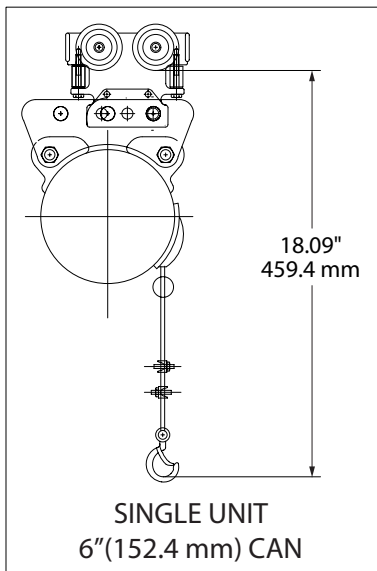
## EXAMPLE

**ORDER NUMBER:**

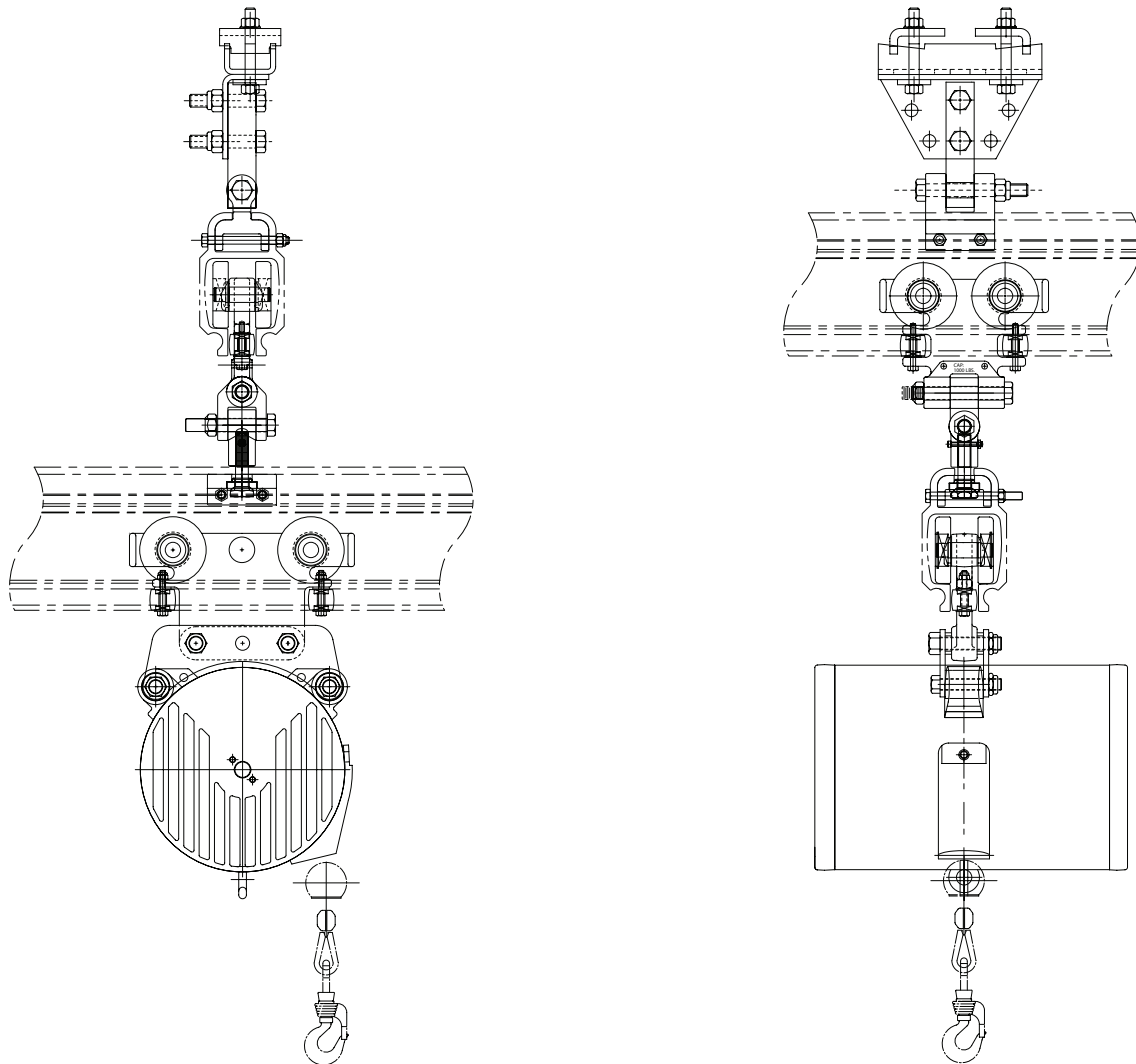
**ZRA1 | 06 | 08 | 30283 | R**



# Balancer Stack-up Dimension • For ZRA1 Aluminum Rail

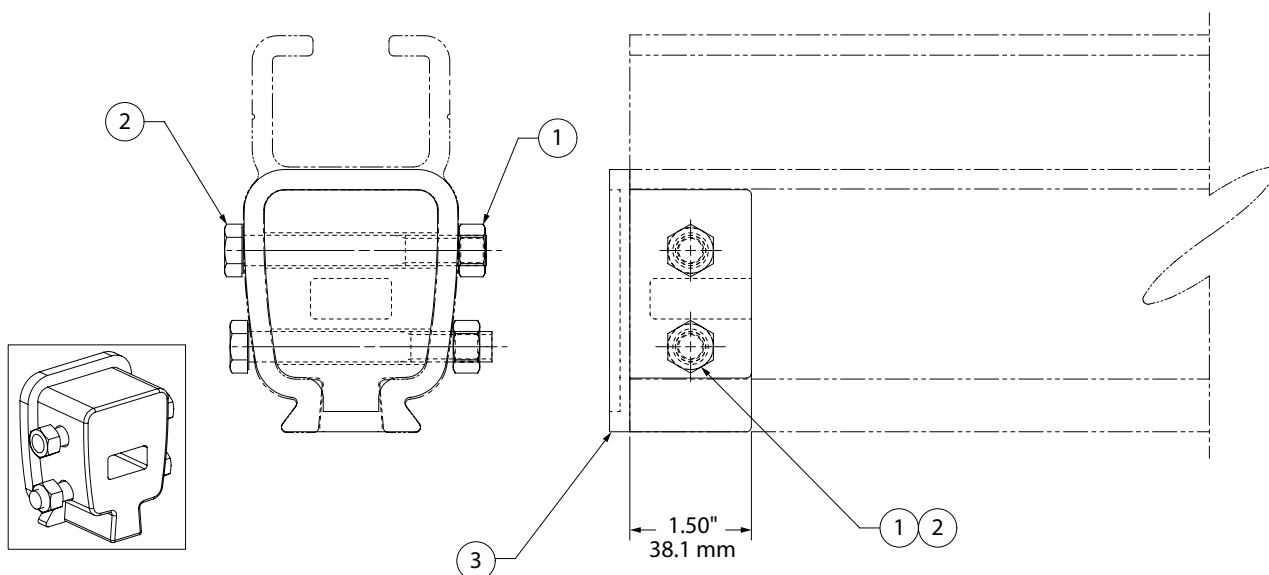


# System Stack-up Dimension • ZRA1/Quick Reference



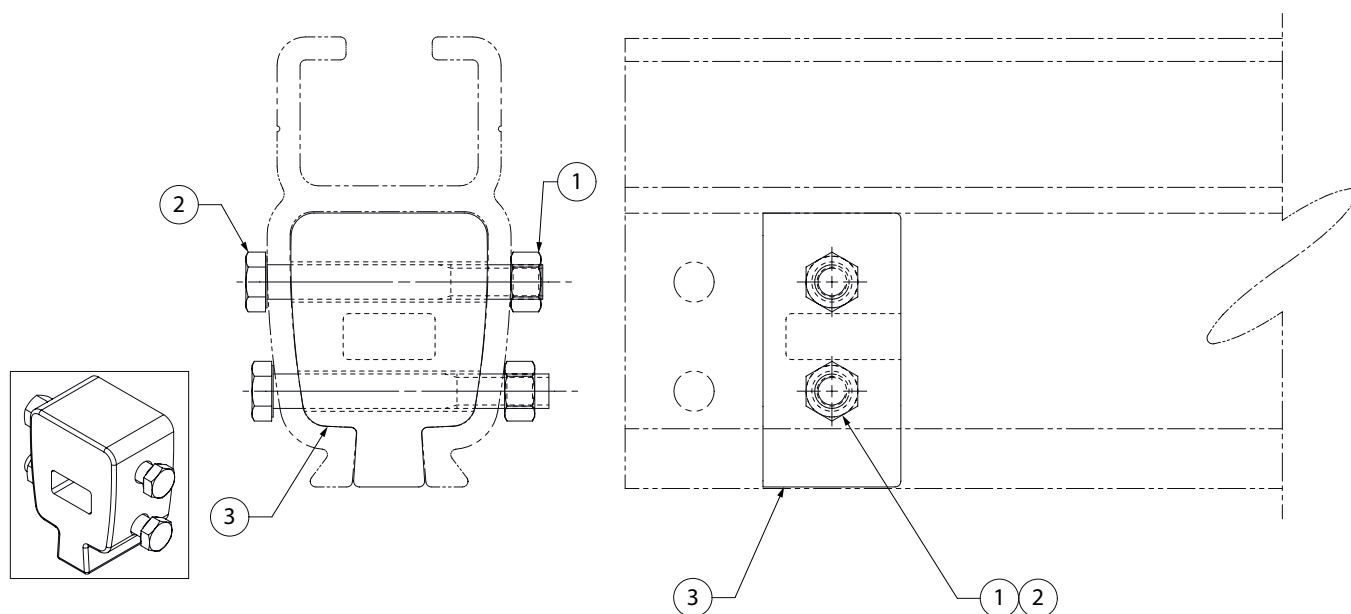
HANGER KITS	END TRUCKS	BALANCERS WITH SUSPENSION
30227 - 4.21"(106.9 mm)	30283 - 10.25"(260.3 mm)	SINGLE UNIT 10"(254 mm) - 20.59"(522.9 mm)
30285 - 6.84"(173.7 mm)	30295 - 11.75"(298.4 mm)	SINGLE UNIT REEVED 10"(254 mm) - 24.59"(624.5 mm)
30289 - 6.84"(173.7 mm)	30286 - 8.75"(222.2 mm)	SINGLE UNIT WITH 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)

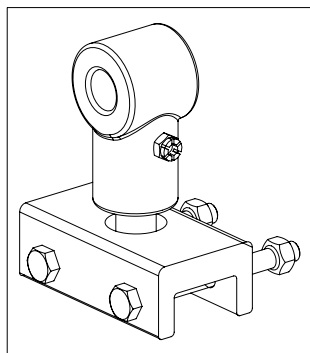
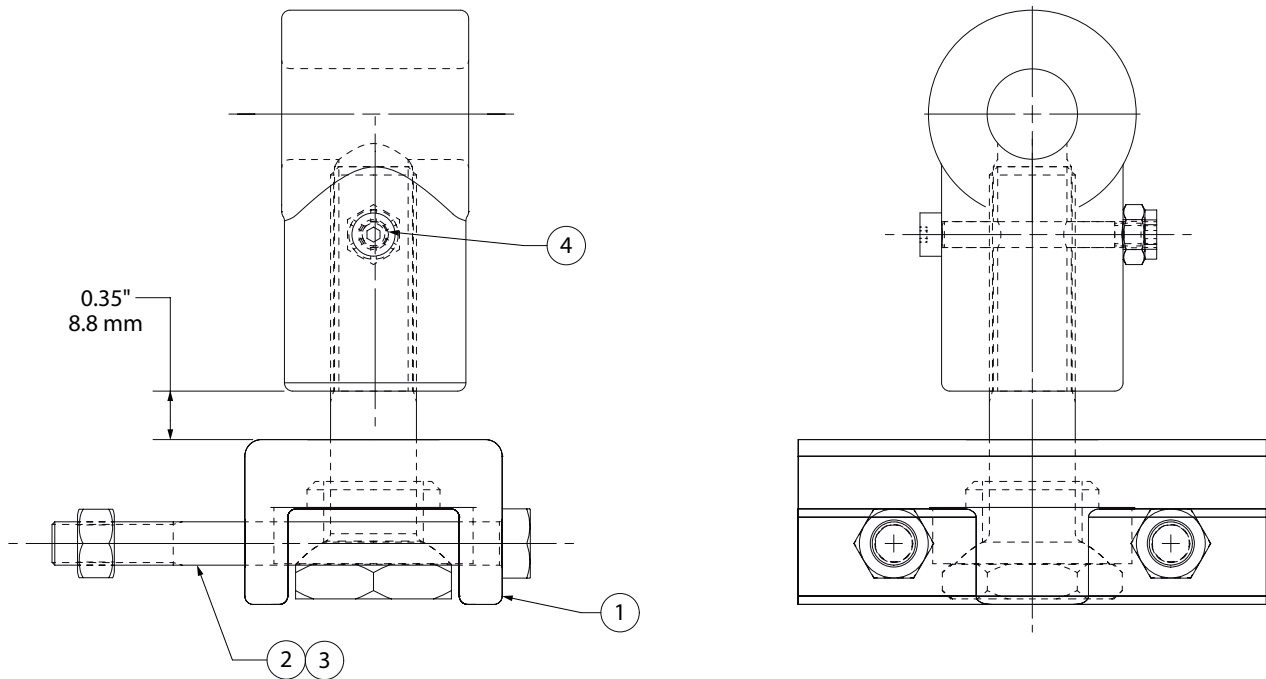
Bill of Materials			
Item No.	Part No.	Description	Amt.
1	75583	Lock Nut, 3/8-16	2
2	ZHS71479	3/8-16 x 3" HCS Grade 5	2
3	30274	End Stop - ZRA1	1



(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)

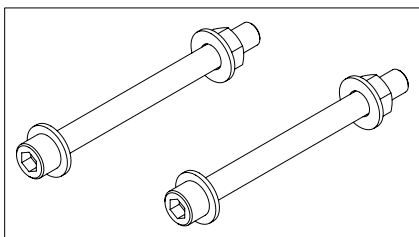
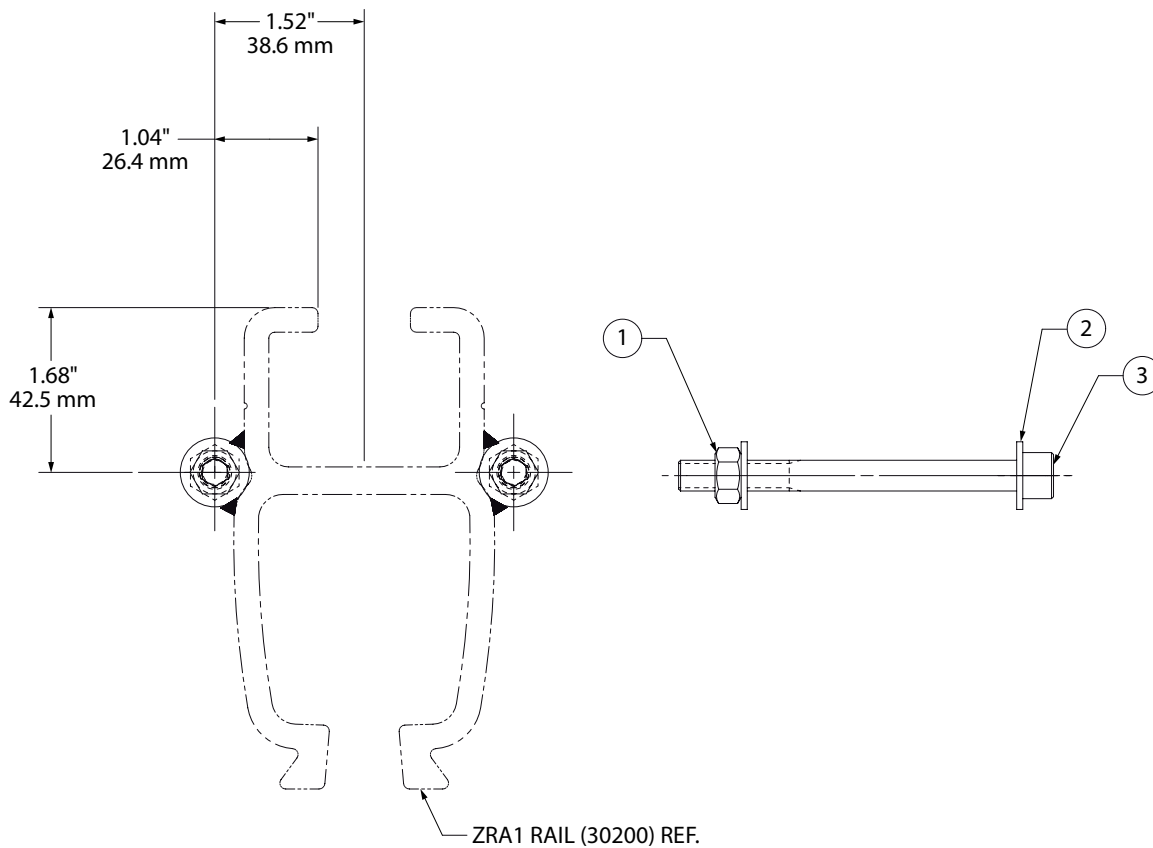
**NOTE:** A SAFETY CABLE ASSEMBLY IS NOT INCLUDED WITH THIS SUB-ASSEMBLY. YOU MUST ORDER IT SEPERATELY.

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.

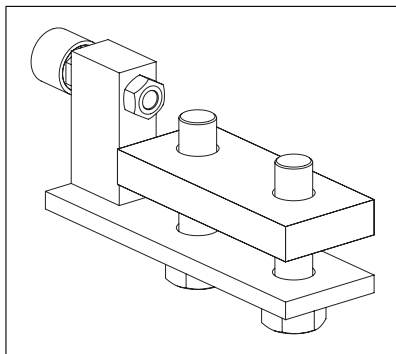
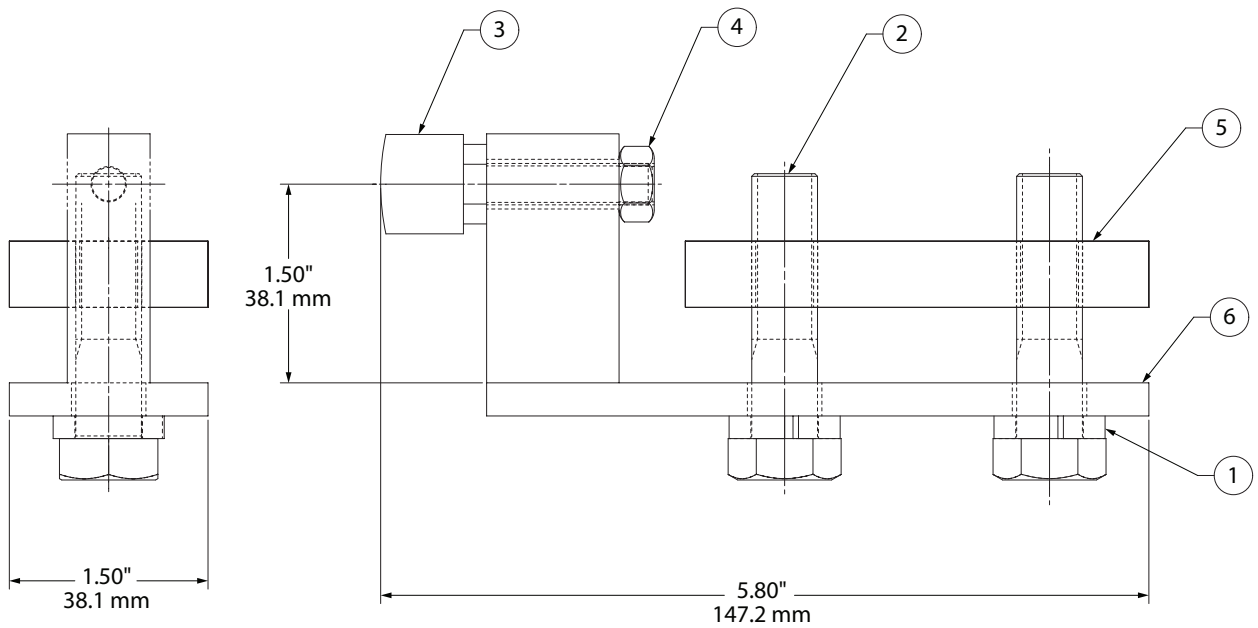
CONSULT THE FACTORY IF MODIFICATIONS NEED TO BE MADE TO SPLICE JOINTS THAT REQUIRE WELDING OF SPLICE LUGS.

(Dwg. 54093885)

Bill of Materials			
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



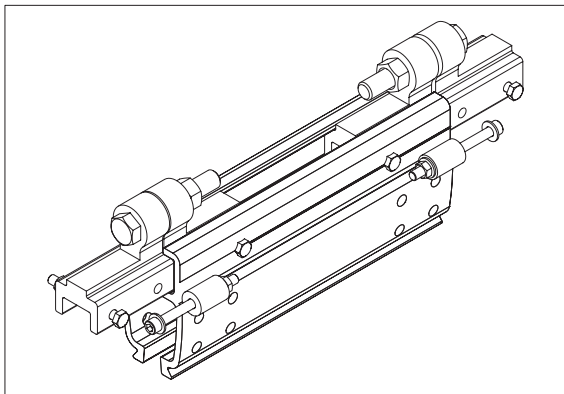
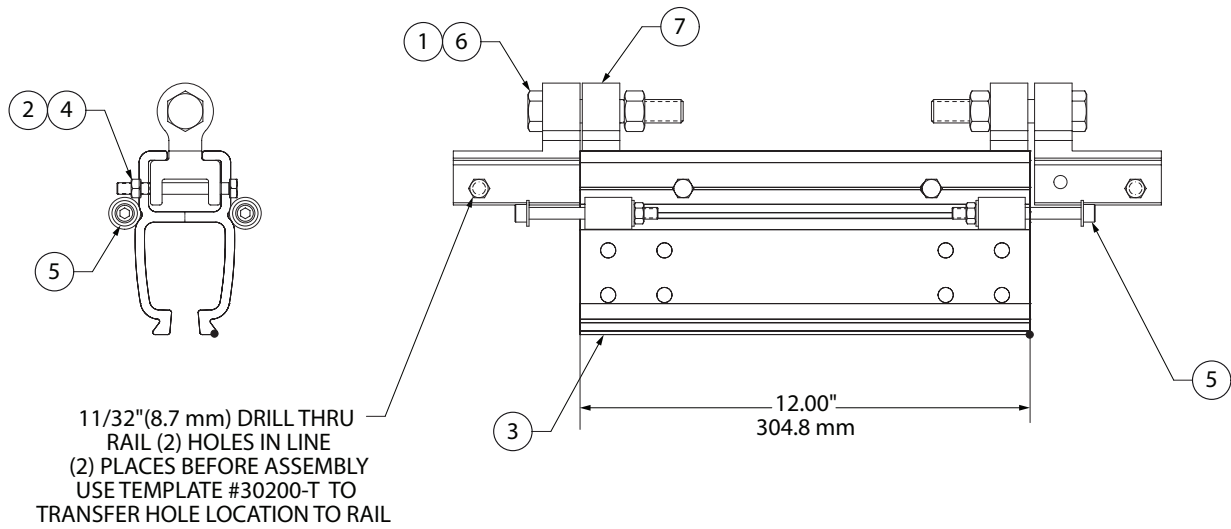
# ZRA1 Rail • Adjustable Stop/Part No. ZHS30738



(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