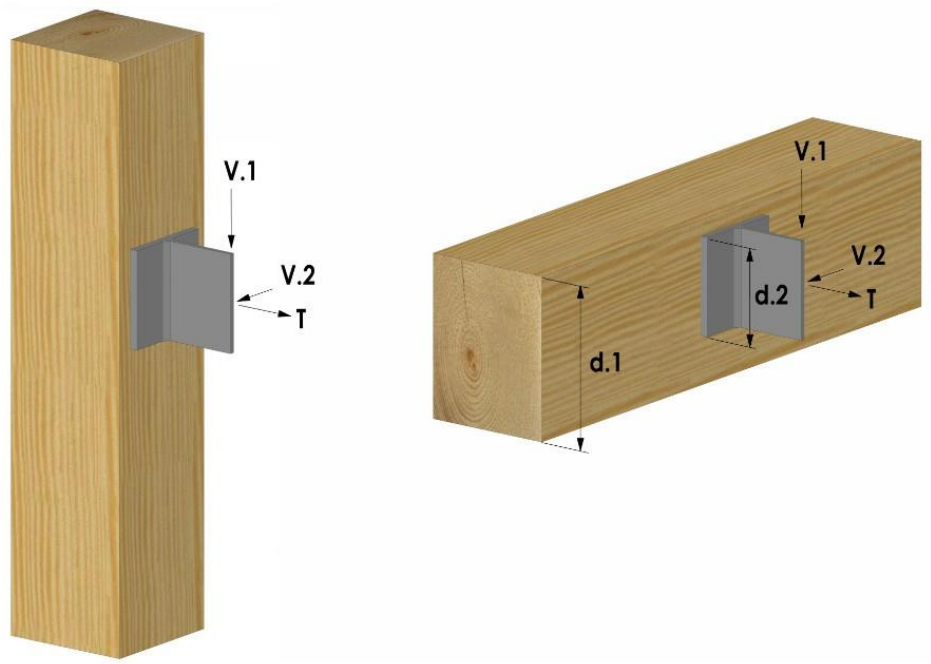
CONNEXT
POST & BEAM

Engineering Specifications for Connext Post and Beam Products

Updated 7/2023

104 5th Street ◦ Calumet, MI 49913 ◦ 401.654.5600

Standard Connext Connector



Connection A **Connection B**

Connection orientation and loading directions

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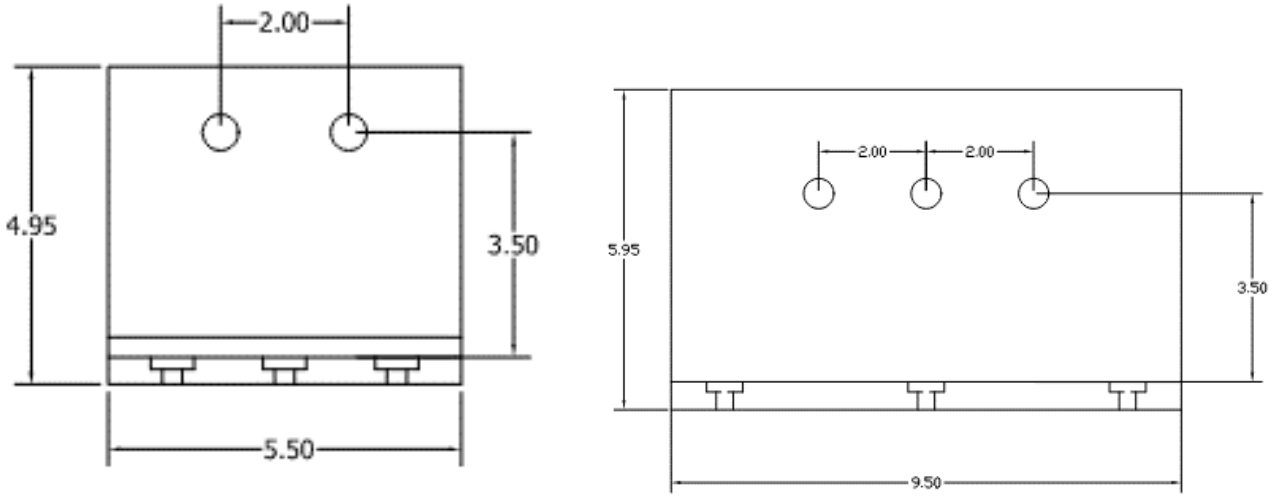
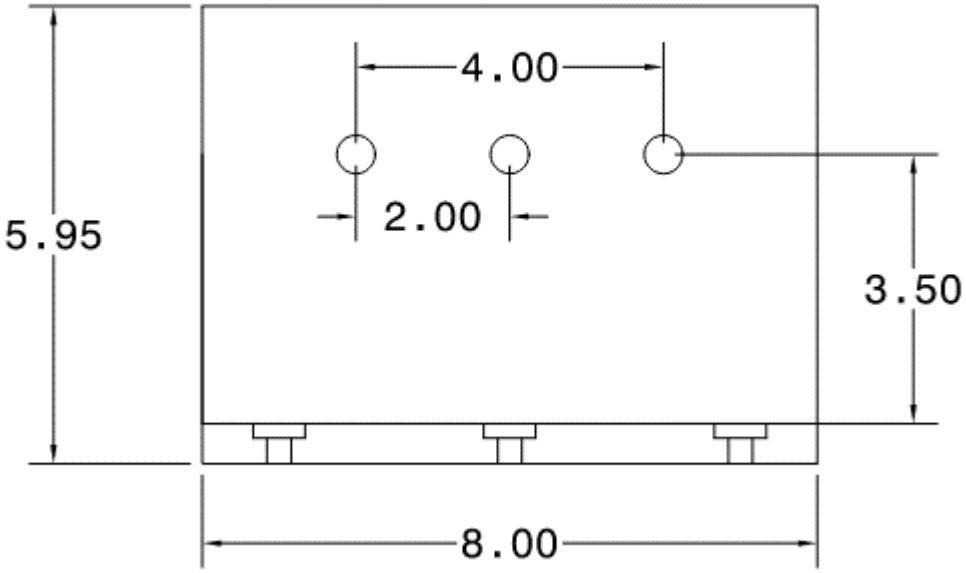


6x Connector plate, 2 and 3 pin connection layouts, Units: in



8x8 Connector plate, pin connection layout, Units: in

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Connection Capacity[1, 2], Units: lb.

5/16" x 3 1/8" GRK RSS Screws and ½" Pins							
Connector	# of Screws	# of Pins[3]	Timber Species[5, 8]	Load Duration, C_d[4]	T	V_1	V_2[6]
5555	6	2	EWP (G=0.36)	1.0	2072	1396	272
			DF (G=0.5)	1.0	3391	1811	371
			R. Oak (G=0.67)	1.0	3656	2253	338
5575	6	2	EWP (G=0.36)	1.0	2072	1396	372
			DF (G=0.5)	1.0	3391	1811	505
			R. Oak (G=0.67)	1.0	3656	2253	461
5595	6	3	EWP (G=0.36)	1.0	2072	1396	471
			DF (G=0.5)	1.0	3391	1811	640
			R. Oak (G=0.67)	1.0	5261	2253	584
55115	6	3	EWP (G=0.36)	1.0	2072	1396	570
			DF (G=0.5)	1.0	3391	1811	775
			R. Oak (G=0.67)	1.0	5261	2253	707
7575	8	3	EWP (G=0.36)	1.0	2763	2045	521
			DF (G=0.5)	1.0	4522	2643	708
			R. Oak (G=0.67)	1.0	6117	3273	645
7595	8	3	EWP (G=0.36)	1.0	2763	2045	659
			DF (G=0.5)	1.0	4522	2643	897
			R. Oak (G=0.67)	1.0	6117	3273	818
75115	8	3	EWP (G=0.36)	1.0	2763	2045	798
			DF (G=0.5)	1.0	4522	2643	1086
			R. Oak (G=0.67)	1.0	6117	3273	990

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5/16" x 5 1/8" GRK RSS Screws and ½" Pins							
Connector	# of Screws	# of Pins[3]	Timber Species[5, 8]	Load Duration, C_d[4]	T	V_1	V_2[6]
5555	6	2	EWP (G=0.36)	1.0	3037	1396	272
			DF (G=0.5)	1.0	3656	1811	371
			R. Oak (G=0.67)	1.0	3656	2253	338
5575	6	2	EWP (G=0.36)	1.0	3037	1396	372
			DF (G=0.5)	1.0	3656	1811	505
			R. Oak (G=0.67)	1.0	3656	2253	461
5595	6	3	EWP (G=0.36)	1.0	3413	1396	471
			DF (G=0.5)	1.0	5484	1811	640
			R. Oak (G=0.67)	1.0	5484	2253	584
55115	6	3	EWP (G=0.36)	1.0	3413	1396	570
			DF (G=0.5)	1.0	5484	1811	775
			R. Oak (G=0.67)	1.0	5484	2253	707
7575	8	3	EWP (G=0.36)	1.0	4550	2045	521
			DF (G=0.5)	1.0	5631	2643	708
			R. Oak (G=0.67)	1.0	6117	3273	645
7595	8	3	EWP (G=0.36)	1.0	4550	2045	659
			DF (G=0.5)	1.0	5631	2643	897
			R. Oak (G=0.67)	1.0	6117	3273	818
75115	8	3	EWP (G=0.36)	1.0	4550	2045	798
			DF (G=0.5)	1.0	5631	2643	1086
			R. Oak (G=0.67)	1.0	6117	3273	990

[1] Capacities for species not shown may be linearly interpolated based on specific gravity
[2] For connection B, depth of supporting member, d_1 must be at least 2" deeper than the supported member, d_2
[3] Pins are ½" diameter and assumed to be 5" minimum length for 6x connectors and 6" minimum for 8x connectors
[4] Capacities can be adjusted for Load Duration Factors other than 1.0
[5] Assumes the beam and post are the same species
[6] V_2 capacities are based on ½" under nominal timber connectors, if using true 6"x6" to 8"x12" connectors (ie. 6060 to 6012, 8080 to 8012), multiply values by 9/8. All other values are the same for either connector type.
[7] Connectors and pins are 6061 aluminum
[8] EWP = Eastern White Pine, DF = Douglas-Fir-Larch, R. Oak = Red Oak
[9] When using larger connectors in configuration B, review cross shrinkage affects for individual timber conditions

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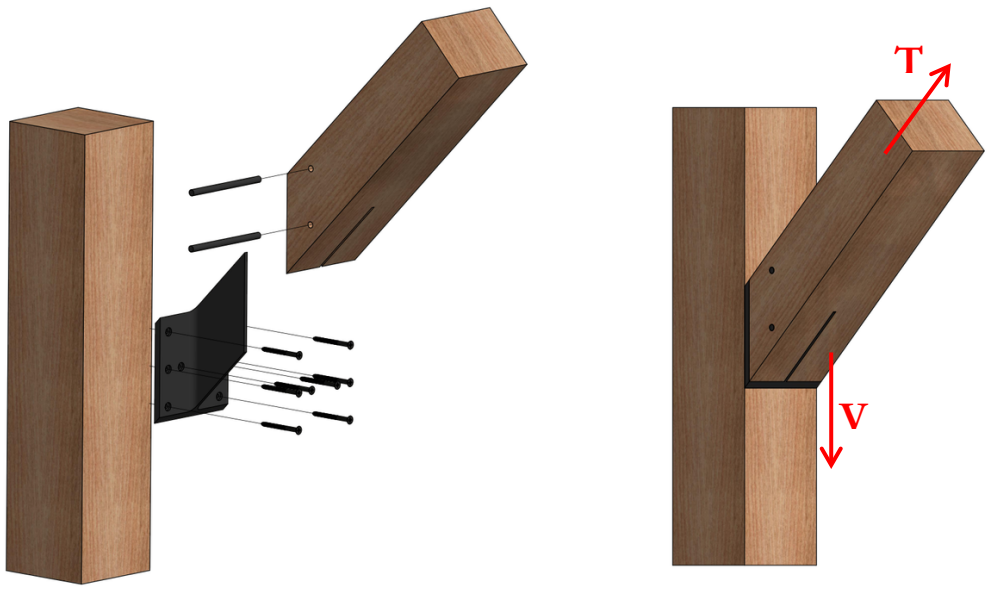
Standard Connext Connector



Connection orientation and loading directions

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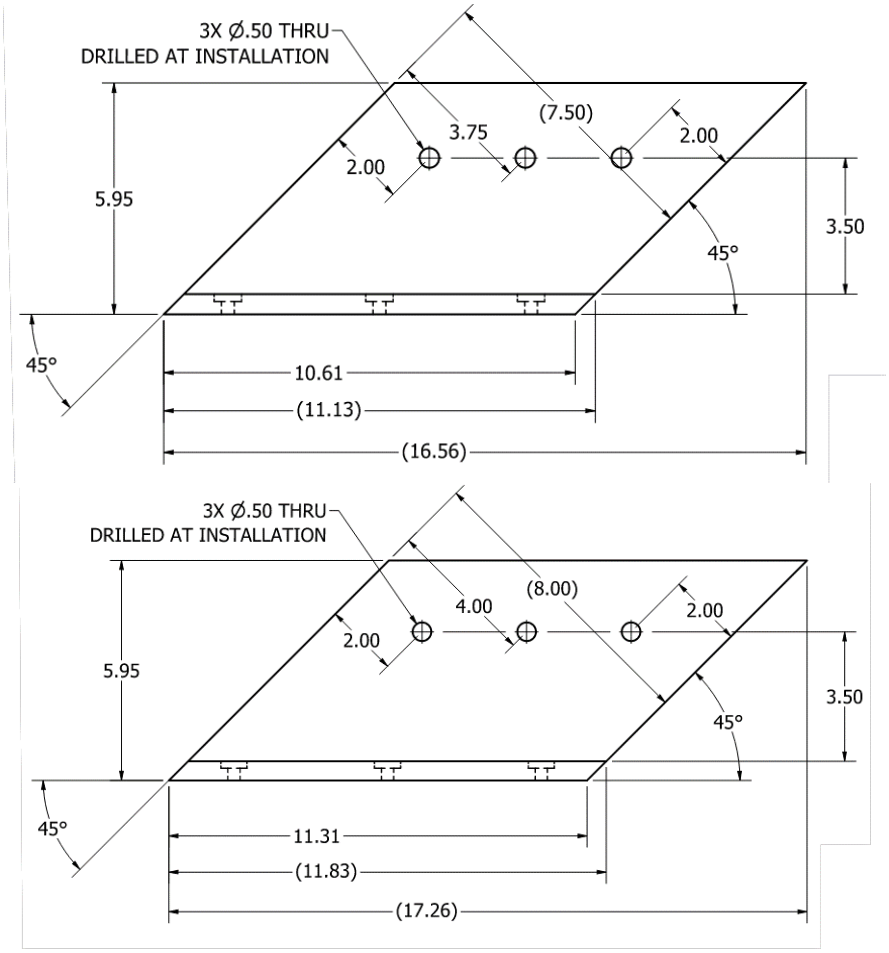
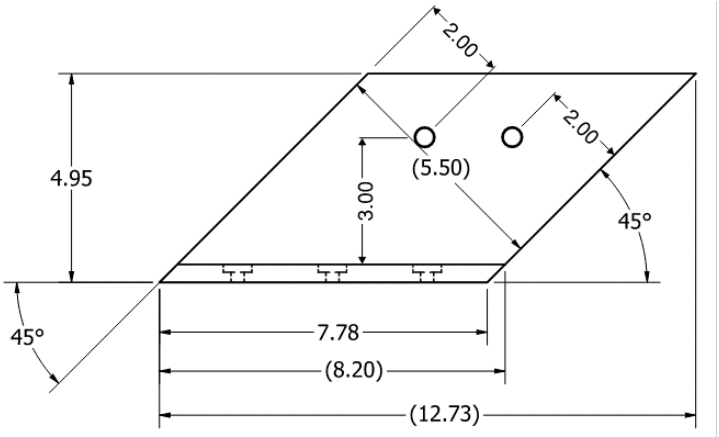


8x Connector plate, pin connection layout, Units: in



6x Connector plate, pin connection layout, Units: in

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Connection Capacity[1], Units: lb.

5/16" x 3 1/8" GRK RSS Screws and ½" Pins						
Connector	# of Screws	# of Pins[2]	Timber Species[4, 6]	Load Duration, C_d[3]	T	V
5575	6	2	EWP (G=0.36)	1.0	1465	1376
			DF (G=0.5)	1.0	2398	1786
			R. Oak (G=0.67)	1.0	3656	2224
75105	8	3	EWP (G=0.36)	1.0	1953	2101
			DF (G=0.5)	1.0	3197	2713
			R. Oak (G=0.67)	1.0	4959	3356
80115	8	3	EWP (G=0.36)	1.0	1953	2101
			DF (G=0.5)	1.0	3197	2713
			R. Oak (G=0.67)	1.0	4959	3356

5/16" x 5 1/8" GRK RSS Screws and ½" Pins						
Connector	# of Screws	# of Pins[2]	Timber Species[4, 6]	Load Duration, C_d[3]	T	V
5575	6	2	EWP (G=0.36)	1.0	1465	1376
			DF (G=0.5)	1.0	2398	1786
			R. Oak (G=0.67)	1.0	3656	2224
75105	8	3	EWP (G=0.36)	1.0	1953	2101
			DF (G=0.5)	1.0	3197	2713
			R. Oak (G=0.67)	1.0	4959	3356
80115	8	3	EWP (G=0.36)	1.0	1953	2101
			DF (G=0.5)	1.0	3197	2713
			R. Oak (G=0.67)	1.0	4959	3356

[1] Capacities for species not shown may be linearly interpolated based on specific gravity
[2] Pins are ½" diameter and assumed to be 5" minimum length for 6x connectors and 7" minimum for 8x connectors
[3] Capacities can be adjusted for Load Duration Factors other than 1.0
[4] Assumes the brace and post are the same species
[5] Connectors and pins are 6061 aluminum
[6] EWP = Eastern White Pine, DF = Douglas-Fir-Larch, R. Oak = Red Oak

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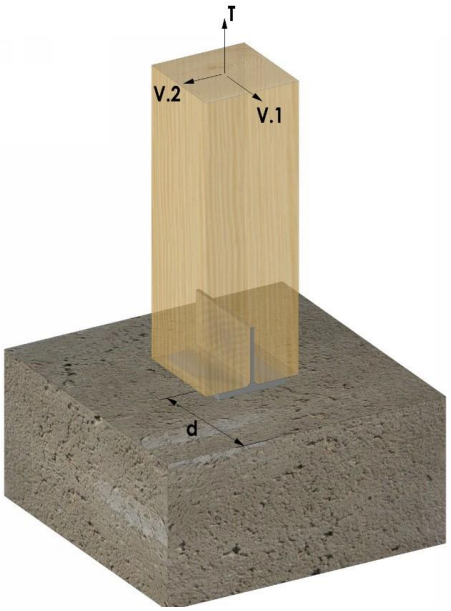
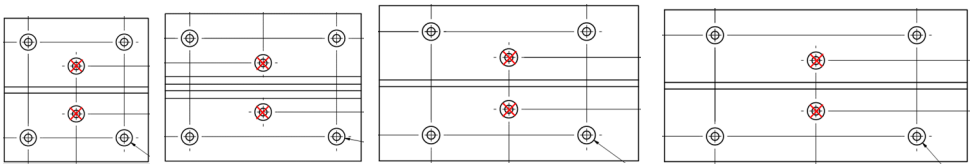
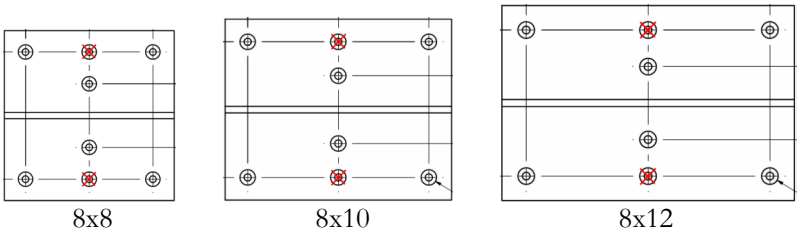
Connext Connector to Concrete



Connection orientation and loading directions



Screw holes to be use in concrete- 6x connectors



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Screw holes to be use in concrete- 8x connectors

Service-Level Connection Capacity[1], Units: lb.

Post Base- Timber Only							
Connector	# of Screws	# of Pins[2]	Timber Species	Load Duration, C_d[3]	T	V_1	V_2[4]
6x6	4	2	EWP (G=0.36)	1.0	3226	1495	272
			DF (G=0.5)	1.0	3656	2133	371
			R. Oak (G=0.67)	1.0	3656	2806	338
6x8	4	2	EWP (G=0.36)	1.0	3226	1495	372
			DF (G=0.5)	1.0	3656	2133	505
			R. Oak (G=0.67)	1.0	3656	2806	461
6x10	4	3	EWP (G=0.36)	1.0	4840	2243	471
			DF (G=0.5)	1.0	5484	3199	640
			R. Oak (G=0.67)	1.0	5484	4209	584
6x12	4	3	EWP (G=0.36)	1.0	4840	2243	570
			DF (G=0.5)	1.0	5484	3199	775
			R. Oak (G=0.67)	1.0	5484	4209	707
8x8	6	3	EWP (G=0.36)	1.0	4840	2335	521
			DF (G=0.5)	1.0	5631	3374	708
			R. Oak (G=0.67)	1.0	6117	4209	645
8x10	6	3	EWP (G=0.36)	1.0	4840	2335	659
			DF (G=0.5)	1.0	5631	3374	897
			R. Oak (G=0.67)	1.0	6117	4209	818
8x12	6	3	EWP (G=0.36)	1.0	4840	2335	798
			DF (G=0.5)	1.0	5631	3374	1086
			R. Oak (G=0.67)	1.0	6117	4209	990

[1] Capacities for species not shown may be linearly interpolated based on specific gravity
[2] Pins are ½" diameter and assumed to be 5" minimum length for 6x connectors and 6" minimum for 8x connectors
[3] Capacities can be adjusted for Load Duration Factors other than 1.0
[4] V_2 capacities are based on ½" under timbers, if using true 6"x6" to 8"x12" timbers multiply values by 9/8. All other values are the same for full sawn and ½" under timbers
[5] Connector and pins are 6061 aluminum
[6] EWP = Eastern White Pine, DF = Douglas-Fir-Larch, R. Oak = Red Oak
[7] Base is designed to hold 19/64" diameter, 5" long GRK Caliburn screws into concrete

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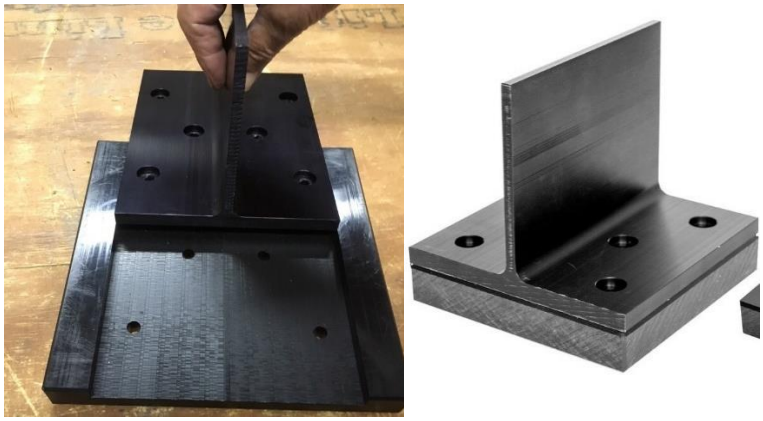
Notes:

The above capacities are for the timber only and do not include the concrete screws and resistance of the concrete foundation to breakout, side-face blowout, or pryout. Determination of the resistance for these limit states is the responsibility of a qualified design professional for each site-specific condition. The concrete design and unique edge distance conditions are too variable and thus need to be taken into consideration separately.

Post bases should not be used to resist permanent / long-term loading.

Post bases can be installed directly to the concrete. If the post base sits atop a 2x sill plate or riser rather than directly on the concrete, further design of the concrete anchors is required.



HDPE 1" Risers

HDPE risers further provide a protective space between the post end and the concrete. As mentioned above, the concrete lateral capacities of the connectors with these risers need to be determined with site specific information. The capacities of the timber component are the same as listed above. The compressive capacity of the riser matches or exceeds the available compressive capacity of the timber species list above. Please see below for the material specifications of the HDPE risers for further design.

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Setting the Standards

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Technical data sheet

Polystone® G (HDPE) Virgin Black

Product characteristics

- Excellent overall mechanical properties
- Easy to machine and weld
- High chemical resistance

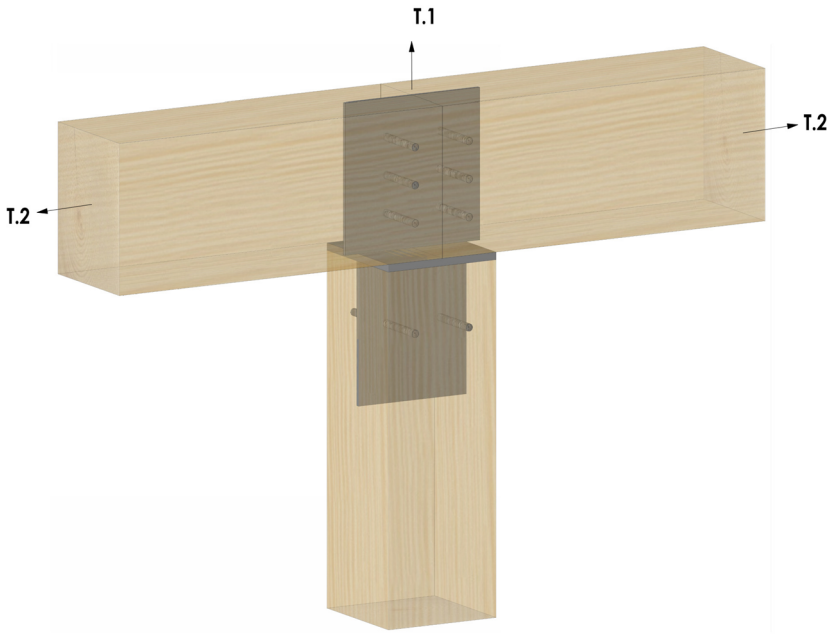
Typical field of application

- Tanks & Vessels
- Light-duty guides & rails

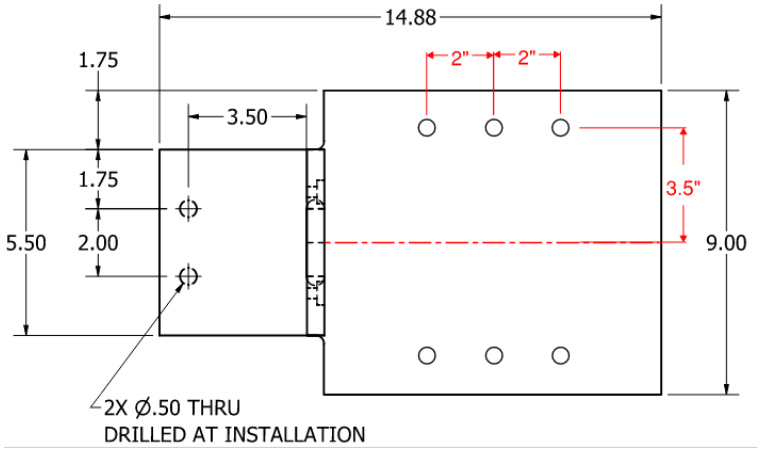
Physical Properties	tested method	unit	value
Specific Gravity	D792	g/cm^3	0.953
Water Absorption	D570	%	≤0.10
Mechanical Properties	**tested method**	**unit**	**value**
Hardness	D785	Shore D	65
Tensile Strength at yield 73 °F	D638	psi	4,000
Elongation at Break	D638	%	>500
Flexural Strength	D790	psi	181,000
Izod Impact, Notched	D256	ft-lb/in	3.5
Coefficient of Friction, Dynamic	-	-	0.20 - 0.29
Thermal Properties	**tested method**	**unit**	**value**
CTE, linear	D696	in/in/°F	6x10^{-5}
Melting Point	D1525	°F	260
Maximum Service Temperature, Air	-	°F	180
Deflection Temperature at 1.8Mpa (264psi)	D648	°F	165
Brittleness Temperature	D746	°F	<-103
Flammability, UL94	-	⅛ inch	HB
Electrical Properties	**tested method**	**unit**	**value**
Dielectric constant	D150	-	2.4
Surface resistivity	D257	Ohm/cm	≥10^{14}
Compliance Properties	**tested method**	**unit**	**value**
FDA	-	-	No
NSF	-	-	No
USDA	-	-	No

The data stated above are average values ascertained by statistical tests on a regular basis. The data above are provided purely for information and shall not be regarded as binding unless expressly agreed in a contract of sale.

Connext 3-Way Connector



Connection Orientation and Loading Directions



Standard Spacing Requirements for Pins

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Service-Level Connection Capacity[1], Units: lb.

Post Side of Connection Capacities Only						
Post Size	# of Screws	# of Pins[2]	Timber Species	Load Duration, C_d[3]	T.1	T.2
5.5x5.5 6x6	4	2	EWP (G=0.36)	1.0	3041	1436
			DF (G=0.5)	1.0	3516	2017
			R. Oak (G=0.67)	1.0	3516	2806
5.5x7.5 6x8	4	3	EWP (G=0.36)	1.0	4562	2154
			DF (G=0.5)	1.0	5273	3026
			R. Oak (G=0.67)	1.0	5273	4209
Beam Side of Connection Capacities Only						
5.5x9.5 6x10	0	3 each beam	EWP (G=0.36)	1.0	2154	4562
			DF (G=0.5)	1.0	3026	5273
			R. Oak (G=0.67)	1.0	4209	5273
5.5x1.5 6x12	0	3 each beam	EWP (G=0.36)	1.0	2154	4562
			DF (G=0.5)	1.0	3026	5273
			R. Oak (G=0.67)	1.0	4209	5273

- The beam and post parts of the connection are called out separately as there can be different combinations of sizes. Choose the lowest post/beam values for the connection conditions to apply to the connection as a whole.
- The beam capacities are assumed per beam with two coming together over the post. If it is a continuous beam with 6 pins running over top, the capacities can be doubled, however local timber failures need to be checked.

[1] Capacities for species not shown may be linearly interpolated based on specific gravity
[2] Pins are ½" diameter and assumed to be 5" minimum length for 6x connectors and 6" minimum for 8x connectors
[3] Capacities can be adjusted for Load Duration Factors other than 1.0
[4] Assumes the beam and post are the same species
[5] Timbers that are full sawm or planed to ½" under have the same listed capacities assuming the same pin size.
[6] Connectors and pins are 6061 aluminum
[7] EWP = Eastern White Pine, DF = Douglas-Fir-Larch, R. Oak = Red Oak

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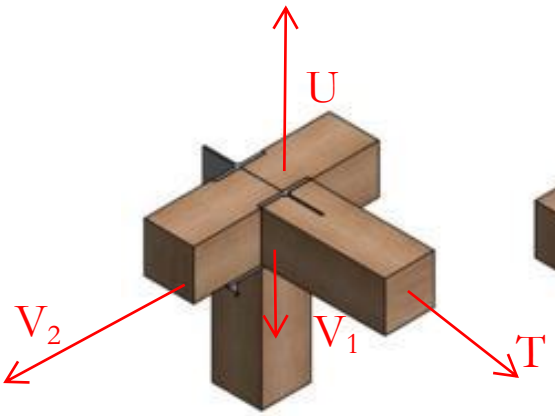
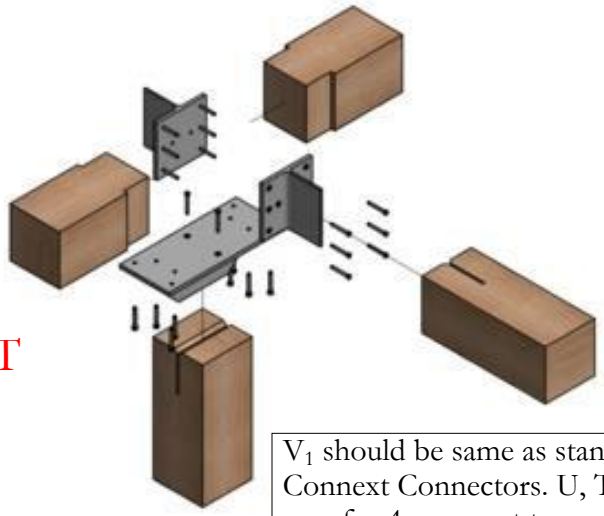
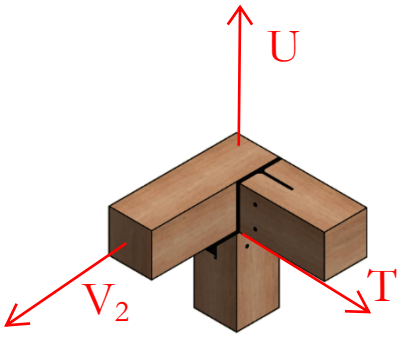
4 or 5-Way Connectors

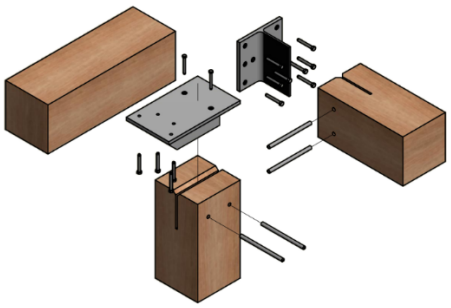


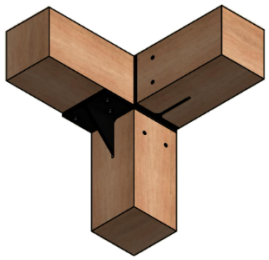


V_1 should be same as standard Connext Connectors. U, T, and V_2 are new for 4-way post top connector.

Corner Connectors







See standard Connext Connectors for the capacity and load directions of the T-bracket. U, T, and V_2 are for the post top corner connector.

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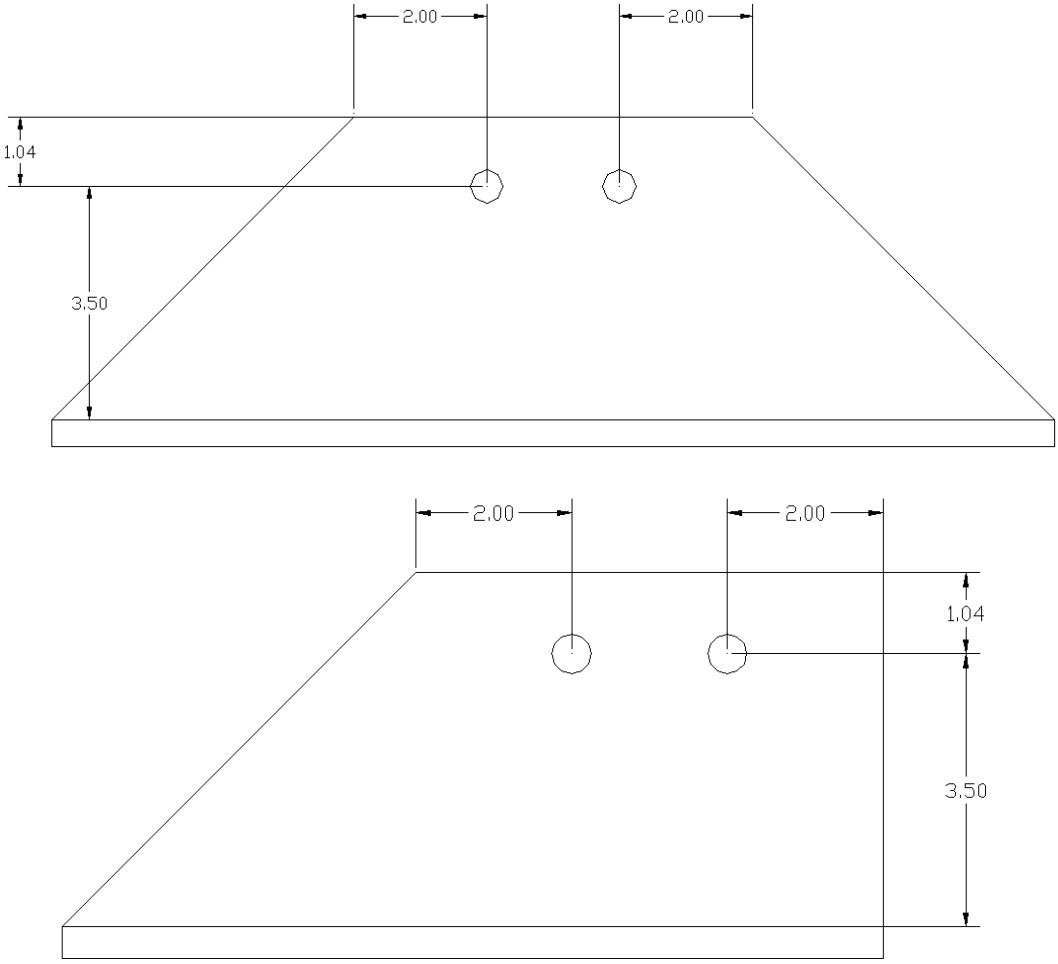
Evaluated connector orientation and loading direction



Pin connector layout of 6” 4-way and corner post top connector plate, Units: in

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Service-Level Connection Capacity[1], Units: lb.

5/16" x 3 1/8" GRK RSS Screws							
Connector	# of Screws	# of Pins	Timber Species	Load Duration, Cd	T^2	U	V2
6" Corner	4	2	EWP (G=0.36)	1.0	274	1381	1085
			DF (G=0.5)	1.0	373	2261	1450
			R. Oak (G=0.67)	1.0	340	3507	1848
8" Corner	4	2	EWP (G=0.36)	1.0	529	1381	1057
			DF (G=0.5)	1.0	720	2261	1450
			R. Oak (G=0.67)	1.0	656	3507	1848
8" Corner	4	3	EWP (G=0.36)	1.0	529	1381	1057
			DF (G=0.5)	1.0	720	2261	1450
			R. Oak (G=0.67)	1.0	656	3507	1848
6" Splice	4	2	EWP (G=0.36)	1.0	274	2763	1436
			DF (G=0.5)	1.0	373	3516	2017
			R. Oak (G=0.67)	1.0	340	3516	2806
8" Splice	4	2	EWP (G=0.36)	1.0	529	2763	1562
			DF (G=0.5)	1.0	720	3516	2260
			R. Oak (G=0.67)	1.0	656	3516	2806
8" Splice	4	3	EWP (G=0.36)	1.0	529	2763	2113
			DF (G=0.5)	1.0	720	4522	2899
			R. Oak (G=0.67)	1.0	656	5273	3696

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5/16" x 5 1/8" GRK RSS Screws							
Connector	# of Screws	# of Pins	Timber Species	Load Duration, Cd	T[2]	U	V2
6" Corner	4	2	EWP (G=0.36)	1.0	274	2275	1090
			DF (G=0.5)	1.0	373	3516	1450
			R. Oak (G=0.67)	1.0	340	3516	1848
8" Corner	4	2	EWP (G=0.36)	1.0	529	2275	1090
			DF (G=0.5)	1.0	720	3416	1450
			R. Oak (G=0.67)	1.0	656	3516	1848
8" Corner	4	3	EWP (G=0.36)	1.0	529	2275	1090
			DF (G=0.5)	1.0	720	3724	1450
			R. Oak (G=0.67)	1.0	656	5273	1848
6" Splice	4	2	EWP (G=0.36)	1.0	274	3041	1436
			DF (G=0.5)	1.0	373	3516	2017
			R. Oak (G=0.67)	1.0	340	3516	2806
8" Splice	4	2	EWP (G=0.36)	1.0	529	3226	1562
			DF (G=0.5)	1.0	720	3516	2260
			R. Oak (G=0.67)	1.0	656	3516	2806
8" Splice	4	3	EWP (G=0.36)	1.0	529	4550	2181
			DF (G=0.5)	1.0	720	5273	2899
			R. Oak (G=0.67)	1.0	656	5273	3696

[1] Capacities for species not shown may be linearly interpolated based on specific gravity
[2] Values in this table for load direction T are for the corner/splice to post top only. See Connext Connector for T capacity of knife plate from beam to beam.
[3] Pins are ½" diameter and assumed to be 5" minimum length for 6x connectors and 6" minimum for 8x connectors
[4] Capacities can be adjusted for Load Duration Factors other than 1.0
[5] Assumes the beam and post are the same species
[6] T capacities are based on ½" under timbers, if using true 6"x6" to 8"x12" timbers multiply values by 9/8. All other values are the same for full sawn and ½" under timbers
[7] Connectors and pins are 6061 aluminum
[8] EWP = Eastern White Pine, DF = Douglas-Fir-Larch, R. Oak = Red Oak

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