3.3.5 KWIK HUS-EZ I (KH-EZ I) Carbon Steel Screw Anchor

Listings/Approvals

ICC-ES (International Code Council)
ESR-3027
(Cracked & Uncracked Concrete)
FM Approved

Independent Code Evaluation

IBC® / IRC® 2009 (AC 193 / ACI 355.2)
IBC® / IRC® 2006 (AC 193 / ACI 355.2)
IBC® / IRC® 2003 (AC 193 / ACI 355.2)

3.3.5.1 Product Description

Hilti KWIK HUS-EZ I (KH-EZ I) anchors are comprised of a body with an internally threaded hex washer head. The anchor is manufactured from carbon steel and is heat treated. It has a minimum 0.0003 inch (8 µm) zinc coating in accordance with DIN EN ISO 4042. The internally threaded head is larger than the diameter of the anchor and is formed with serrations on the underside. The anchor body is formed with threads running most of the length of the anchor body. The anchor is installed in a predrilled hole with a powered impact wrench or torque wrench. The anchor threads cut into the concrete on the sides of the hole and interlock with the base material during installation. Applicable base materials include normal-weight concrete, structural lightweight concrete and lightweight concrete over metal deck.

Guide Specifications

Screw anchors shall be KWIK HUS-EZ I as supplied by Hilti, Inc. Anchors shall be manufactured from heat treated carbon steel material, zinc plated to a minimum thickness of 8µm. Anchors shall be installed using a drill bit of same nominal diameter as anchor.

Product Features

- Suitable for cracked and uncracked normal weight and lightweight concrete, and lightweight concrete over metal deck.
- Suitable for seismic and nonseismic loads.
- Quick and easy to install.
- Thread design enables quality setting and exceptional load values in wide variety of base material strengths.
- Anchor is fully removable
- Anchor size is same as drill bit size and uses standard ANSI B212.15 – 1994 drill bits.
- Suitable for reduced edge distances and spacing.

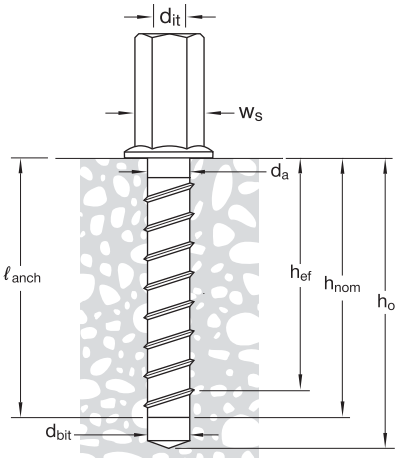
3.3.5.2 Material Specifications

Hilti KWIK HUS-EZ I anchors are manufactured from carbon steel. The anchors are bright zinc plated to a minimum thickness of 8µm.

3.3.5.3 Technical Data

The data contained in Tables 1-4 of this section have been evaluated in accordance with AC 193. For more detail, see ICC-ES ESR 3027.

Figure 1 — KWIK HUS-EZ I anchor installation details



KWIK HUS-EZ I (KH-EZ I) Carbon Steel Screw Anchor 3.3.5

Table 1 – KWIK HUS-EZ I (KH-EZ I)

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Design Guidelines For KWIK HUS-EZ I[1]				
Values for Normal Weight and Lightweight Concrete				
Characteristic	Symbol	Units	Value	
Internal Thread Diameter of Head	d_{it}	in.	1/4 or 3/8	
Wrench Socket Size	w_s	in.	3/8 or 1/2	
Nominal Diameter	d_a	in.	1/4	
Drill Bit Diameter	d_{bit}	in.	1/4	
Maximum Installation Torque[4]	$T_{inst,max}$	ft-lbf	18	
Maximum Impact Wrench Torque Rating[3]	$T_{impact,max}$	ft-lbf	114	137
Minimum Nominal Embedment Depth	h_{nom}	in.	1 5/8	2 1/2
Minimum Hole Depth	h_{hole}	in.	2	2 7/8
Critical Edge Distance[2]	c_{ac}[5]	in.	2.00	2.78
Minimum Spacing at Critical Edge Distance	$s_{min,cac}$[5]	in.	1.50	
Minimum Edge Distance	c_{min}[5]	in.	1.50	
Minimum Spacing at Minimum Edge Distance	s_{min}[5]	in.	3.0	
Minimum Concrete Thickness	h_{min}	in.	3.25	4.125
Anchor Category			3	1
Steel Strength in Tension (ACI 318 D.5.2)				
Tension Resistance of Steel	N_{sa}	lb.	6,070	
Reduction Factor for Steel Strength	Φ_{sa}	-	0.65	
Concrete Breakout Strength in Tension (ACI 318 D.5.2)				
Effective Embedment Depth	h_{ef}	in.	1.18	1.92
Effectiveness Factor - Uncracked Concrete	K_{uncr}	-	24	
Effectiveness Factor - Cracked Concrete	K_{cr}	-	17	
Modification Factor for cracked and uncracked concrete	$\Psi_{c,N}$	-	1	
Reduction Factor for Concrete Breakout Strength	Φ_{cb}	-	0.45	0.65
Pullout Strength in Tension (ACI 318 D.5.3)				
Characteristic pullout strength, uncracked concrete (2500 psi)	$N_{p,uncr}$	lb	1305[6]	2358[7]
Characteristic pullout strength, cracked concrete	$N_{p,cr}$	lb	667[6]	1166[7]
Reduction Factor for pullout strength	Φ_p	-	0.45	0.65
Characteristic Pullout Strength, Seismic (2500 psi)	$N_{p,eq}$	lb	534[6]	1166[7]
Reduction Factor for pullout strength	Φ_{eq}	-	0.45	0.65
Values for Installation in the underside of Concrete-Filled Profile Steel Deck Assemblies[2]				
Pullout Resistance, (uncracked concrete) - Lower Flute	$N_{p,deck,uncr}$	lb	1210[8]	1875[9]
Pullout Resistance, (uncracked concrete) - Upper Flute	$N_{p,deck,uncr}$	lb	1490[8]	1960[9]
Pullout Resistance, (cracked concrete and seismic loads) - Lower Flute	$N_{p,deck,cr}$	lb	620[8]	930[9]
Pullout Resistance, (cracked concrete and seismic loads) - Upper Flute	$N_{p,deck,cr}$	lb	760[8]	975[9]

1 The data presented in this table is to be used in conjunction with the design criteria of ACI 318 Appendix D.

2 For installations through the soffit of steel deck into concrete, anchors installed in the lower flute may be installed with a maximum one inch offset in either direction from the center of the flute. See Figure 2.

3 Because of variability in measurement procedures, the published torque of an impact tool may not correlate properly with the above setting torques. Over-torquing can damage the anchor and/or reduce its holding capacity.

4 $T_{inst,max}$ applies to installations using a calibrated torque wrench.

5 Additional combinations for minimum edge distance, c_{min} and minimum spacing distance, s_{min} or $s_{min,cac}$ may be derived by linear interpolation between the given boundary values.

6 The characteristic pullout resistance for concrete compressive strengths greater than 2,500 psi may be increased by multiplying the value in the table by $(f'c/2{,}500)^{0.3}$

7 The characteristic pullout for concrete compressive strengths greater than 2,500 psi may be increased by multiplying the value in the table by $(f'c/2{,}500)^{0.5}$

8 The characteristic pullout resistance for concrete compressive strengths greater than 3,000 psi may be increased by multiplying the value in the table by $(f'c/3{,}000)^{0.3}$

9 The characteristic pullout for concrete compressive strengths greater than 2,500 psi may be increased by multiplying the value in the table by $(f'c/2{,}500)^{0.5}$

3.3.5 KWIK HUS-EZ I (KH-EZ I) Carbon Steel Screw Anchor

Table 2 - Calculated ACI 318-08 Appendix D Strength Design Capacity for Single anchor in Tension[3,4,5,6,7]

Anchor Size (in.)	Internally Threaded Head (in.)	Nominal Embedment Depth (in.)	Normal Weight Concrete						LWCOMD			
			2500 psi[1]			4000 psi			3000 psi[2]			
			Uncracked Concrete	Cracked Concrete	Seismic	Uncracked Concrete	Cracked Concrete	Seismic	Uncracked Concrete		Cracked Concrete	
									Lower Flute	Upper Flute	Lower Flute	Upper Flute
1/4 x 1-5/8	1/4	1-5/8	587	300	240	675	346	277	545	670	280	342
	3/8	1-5/8	587	300	240	675	346	277	545	670	280	342
1/4 x 2-1/2	1/4	2-1/2	1533	758	758	1940	958	958	1218	1275	605	634
	3/8	2-1/2	1533	758	758	1940	958	958	1218	1275	605	634

1 Values for other strengths can be calculated per $(f'c/2500)^{0.3}$ for 1-5/8" embedment and $(f'c/2500)^{0.5}$ for 2-1/2" embedment

2 Values for other strength can be calculated per $(f'c/3000)^{0.3}$ for 1-5/8" embedment and $(f'c/3000)^{0.5}$ for 2-1/2" embedment

3 Based on single anchor with edge and spacing values greater than those given as critical values in Table 1.

4 Based on lower value of concrete breakout or pullout strength

5 These loads are factored resistance loads in accordance with Chapter 9 of ACI 318-08 (ΦN_n).

6 Interpolation of values for other embedments is not permitted

7 Minimum concrete thickness and edge distance must comply with Table 1.

Table 3 – KWIK HUS-EZ I (KH-EZ I) Allowable Stress Design Values for Illustrative Purposes[1,2,3,4,5,6,7,8,9,10,11]

Internal Thread Diameter of Head (in.)	Nominal Anchor Diameter (in.)	Embedment Depth, h_{nom} (in.) (mm)	Effective Embedment Depth, h_{ef} (in.) (mm)	Allowable Tension Load lb (kN)
1/4 or 3/8	1/4	1-5/8 (41)	1.18 (30)	470 (2.1)
		2-1/2 (64)	1.92 (49)	1340 (6.0)

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

1 Single anchor with static tension load only.

2 Concrete determined to remain uncracked for the life of the anchorage.

3 Load combinations are taken from ACI 318 Section 9.2 (no seismic loading).

4 40% dead load and 60% live load, controlling load combination 1.2D + 1.6L.

5 Calculation of weighted average for conversion factor $\alpha = 1.2(0.4) + 1.6(0.6) = 1.44$.

6 f'_c = 4,000 psi (27.6 MPa) (normal weight concrete).

7 $c_{a1} = c_{a2} \geq c_{ac}$, see Table 1.

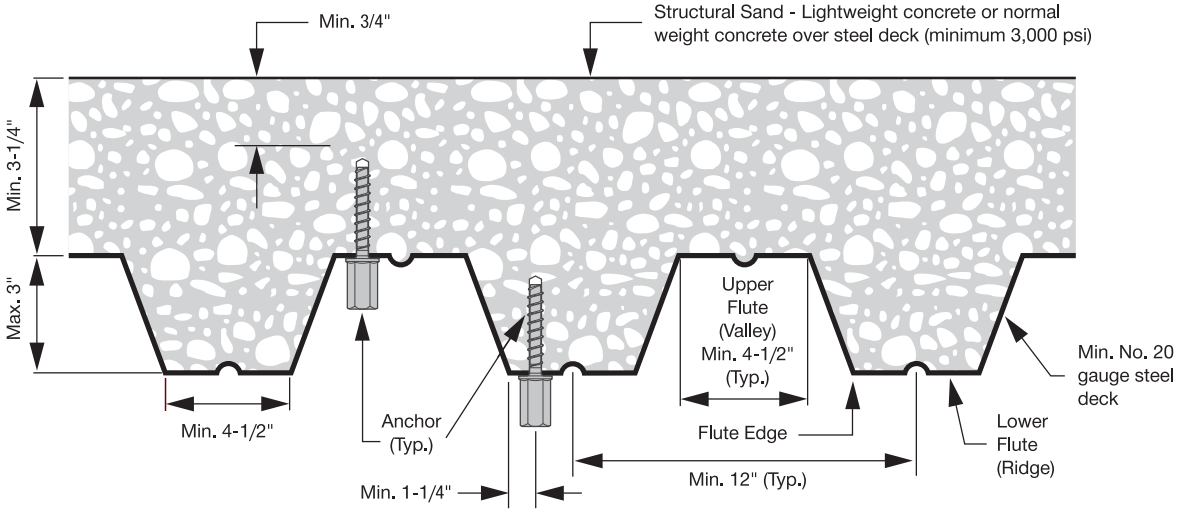
8 $h \geq h_{min}$, see Table 1.

9 Values are for Condition B where supplementary reinforcement in accordance with ACI 318 D.4.4 is not provided.

10 Allowable Tension Load = factored Load (Lesser of N_p or Concrete Breakout from Table 1) ÷ 1.44

11 Values are for single anchors installed without influence of base material edge distance or adjacent anchors.

Figure 2 – Installation of KWIK HUS-EZ I (KH-EZ I) in Soffit of Concrete Over Steel Deck Floor and Roof Assemblies



1 Anchors may be placed in the upper or lower flute of the steel deck profile provided the minimum concrete cover above the drilled hole is satisfied. Anchors in the lower flute may be installed with a maximum 1-inch offset in either direction from the center of the flute. The offset distance may be increased proportionally for profiles with lower flute widths greater than those shown provided the minimum lower flute edge distance is also satisfied.

KWIK HUS-EZ I (KH-EZ I) Carbon Steel Screw Anchor 3.3.5

Table 4 - KWIK HUS EZ I (KH-EZ I) Allowable Stress Design Tension Values for Installations in Soffit of Concrete Over Steel Deck Floor and Roof Assemblies

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Internal Thread Diameter of Head (in.)	Nominal Anchor Diameter (in.)	Embedment Depth (in.) (mm)	Effective Embedment Depth (in.) (mm)	Allowable Tension Load lb (kN)	
				Upper Flute	Lower Flute
1/4 or 3/8	1/4	1-5/8 (41)	1.18 (30)	466 (2.1)	378 (1.7)
		2-1/2 (64)	1.92 (49)	885 (3.9)	846 (3.7)

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

1 Single anchor with static tension load only.
2 Concrete determined to remain uncracked for the life of the anchorage.
3 Load combinations are taken from ACI 318 Section 9.2 (no seismic loading).
4 40% dead load and 60% live load, controlling load combination 1.2D + 1.6L.
5 Calculation of weighted average for conversion factor α = 1.2(0.4) + 1.6(0.6) = 1.44.
6 f'_c = 3,000 psi (27.6 MPa) (light weight concrete).
7 $c_{a1} = c_{a2} \geq c_{ac}$, see Table 1.
8 $h \geq h_{min}$, see Table 1.
9 Values are for Condition B where supplementary reinforcement in accordance with ACI 318 D.4.4 is not provided.
10 Allowable Tension Load = factored Load (Lesser of N_p or Concrete Breakout from Table 1) ÷ 1.44
11 Values are for single anchors installed without influence of base material edge distance or adjacent anchors.

Table 5 - Kwik HUS-EZ I (KH-EZ) Tested Load Values for FM Approval for Automatic Sprinkler Systems

Hanger Rod Size (in.)	Screw Length (in.)	FM Test Load Tension lb (kN))	FM Maximum Pipe Diameter (in.)
3/8	1 5/8	1475 (6.6)	4
	2 1/2		

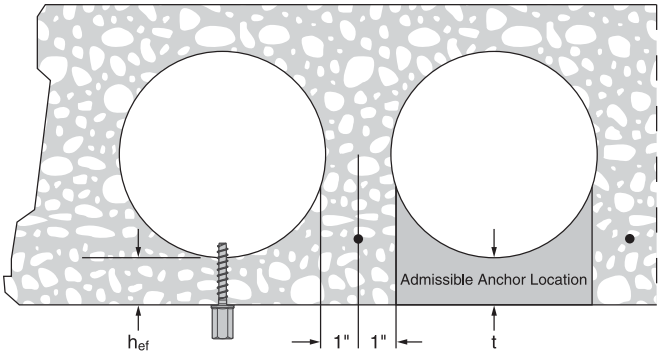
1 Tested in accordance with FM Approval Standard for Pipe Hanger Components for Automatic Sprinklers Systems Class Numbers 1951, 1952 and 1953.

Table 6 - Kwik HUS-EZ I (KH-EZ I) Allowable Stress Design Values for Installations into Hollow Core Concrete Panels[1,2]

Hanger Rod Size (in.)	Min. Effective Embedment h_{ef} (in.)	Allowable Load[3]		Ultimate Load	
		Tension lb (kN)	Shear lb (kN)[4,5]	Tension lb (kN)	Shear lb (kN)[4,5]
1/4	1 3/8	455 (2.0)	485 (2.2)	1810 (8.1)	1,930 (8.6)
3/8			755 (3.4)		3,025 (13.5)

1 The Admissible Anchor Location must be established to prevent damage to the prestressed cable during the drilling process. Verify the location and height of the cable with the hollow core plank supplier to confirm Admissible Anchor Location.
2 Minimum compressive strength of prestressed concrete is 7,000 psi. Published ultimate loads represent the average results conducted in local base materials. Due to variations in materials and dimensionl configurations, on-site testing is required to determine the actual performance.
3 Allowable loads calculated with a 4:1 factor of safety.
4 The bottom of the shear plane adjacent to the top of the coupler.
5 Shear values controlled by the steel strength of ASTM A193, Grade B7 (min. tensile strength 125 ksi) screws used to fasten the shear fixturing. Shear values should consider the screw or threaded rod strength.

Figure 3 – Installation of KWIK HUS–EZ I (KH-EZ I) in Hollow Core Concrete



3.3.5.4 Installation Instructions

Use the installation instructions that are including with the Kwik HUS-EZ I packaging box. To obtain a digital copy of the Installation Instructions, visit www.us.hilti.com, www.hilti.ca or contact Hilti Technical Support.

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3.3.5 KWIK HUS-EZ I (KH-EZ I) Carbon Steel Screw Anchor

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The data below is developed from testing performed in accordance with ACI 355.2. It is intended for applications designed according to CSA A23.3-04 Update No. 3 (August 2009) Design Of Concrete Structures Annex D and is generally suitable for the conditions described in the introduction of Annex D.

Table 7 – KWIK HUS-EZ I (KH-EZ I)

Design Guidelines For KWIK HUS-EZ I[1]				
Values for Normal Weight and Lightweight Concrete				
Characteristic	Symbol	Units	Value	
Internal Thread Diameter of Head		in.	1/4 or 3/8	
Wrench Socket Size		in.	3/8 or 1/2	
Nominal Diameter	d_a	in.	1/4	
Drill Bit Diameter	d_{bit}	in.	1/4	
Maximum Installation Torque[4]	$T_{inst,max}$	ft-lbf (Nm)	18 (24)	
Maximum Impact Wrench Torque Rating[3]	$T_{impact,max}$	ft-lbf (Nm)	114 (154)	137 (186)
Minimum Nominal Embedment Depth	h_{nom}	mm	41	64
Concrete material resistance factor	Φ_c	-	0.65	
Steel material resistance factor	Φ_s	-	0.85	
Ultimate Strength of anchor steel	f_{ut}	MPa	924	
Effective cross-sectional area of anchor	A_{se}	mm^2	29.0	
Minimum Hole Depth	h_{hole}	mm	51	73
Minimum Spacing at Critical Edge Distance	$s_{min,cac}$[5]	mm	38	
Minimum Edge Distance	c_{min}[5]	mm	38	
Minimum Spacing at Minimum Edge Distance	s_{min}[5]	mm	76	
Minimum Concrete Thickness	h_{min}	mm	83	105
Anchor Category			3	1
Steel Strength in Tension (CSA A23.3 D.6.1)				
Factored Steel Resistance in Tension	N_{sr}	kN	15.9	
Reduction Factor for Steel Strength	R	-	0.70	
Concrete Breakout Strength in Tension (CSA A23.3 D.6.2)				
Effective Embedment Depth	h_{ef}	mm	30	49
Critical Edge Distance[2]	c_{ac}[5]	mm	51	71
Effectiveness Factor - Uncracked Concrete	K_{uncr}	-	10	
Effectiveness Factor - Cracked Concrete	K_{cr}	-	7	
Modification Factor for cracked and uncracked concrete	$\Psi_{c,N}$	-	1.4	
Reduction Factor for Concrete Breakout Strength	R	-	0.70	1.00
Pullout Strength in Tension - Non Seismic Applications (CSA A23.3 D.6.3}				
Factored Pullout Resistance, uncracked concrete (17.23 MPa)	$N_{pr,uncr}$	kN	2.6[6]	6.8[7]
Factored Pullout Resistance, cracked concrete (17.23 MPa)	$N_{pr,cr}$	kN	1.3[6]	3.4[7]
Concrete Resistance Factor for pullout strength	$\Phi_{c,pull}$	-	0.65	
Factored Pullout Strength, Seismic (17.23 MPa)	$N_{pr,eq}$	kN	1.1[6]	3.4[7]
Concrete Resistance Factor for pullout strength	$\Phi_{c,seis}$	-	0.65	
Values for Installation in the underside of Concrete-Filled Profile Steel Deck Assemblies[2]				
Factored Pullout Resistance, (uncracked concrete 20.68 MPa) - Lower Flute	$N_{pr,deck,uncr}$	kN	2.4[8]	5.4[9]
Factored Pullout Resistance, (uncracked concrete 20.68 MPa) - Upper Flute	$N_{pr,deck,uncr}$	kN	3.0[8]	5.7[9]
Factored Pullout Resistance, (cracked concrete and seismic loads 20.68 MPa) - Lower Flute	$N_{pr,deck,cr}$	kN	1.3[8]	2.7[9]
Factored Pullout Resistance, (cracked concrete and seismic loads 20.68 MPa) - Upper Flute	$N_{pr,deck,cr}$	kN	1.5[8]	2.8[9]

1 The data presented in this table is to be used in conjunction with the design criteria of CSA A23.3-04.

2 For installations through the soffit of steel deck into concrete, anchors installed in the lower flute may be installed with a maximum one inch offset in either direction from the center of the flute.

3 Because of variability in measurement procedures, the published torque of an impact tool may not correlate properly with the above setting torques. Over-torquing can damage the anchor and/or reduce its holding capacity.

4 $T_{inst,max}$ applies to installations using a calibrated torque wrench.

5 Additional combinations for minimum edge distance, c_{min} and minimum spacing distance, $s_{min\ or\ smin,cac}$ may be derived by linear interpolation between the given boundary values.

6 The characteristic pullout resistance for concrete compressive strengths greater than 17.23 MPa may be increased by multiplying the value in the table by $(f'c/17.23)^{0.3}$

7 The characteristic pullout for concrete compressive strengths greater than 17.23MPa may be increased by multiplying the value in the table by $(f'c/17.23)^{0.5}$

8 The characteristic pullout resistance for concrete compressive strengths greater than 20.68 MPa may be increased by multiplying the value in the table by $(f'c/20.68)^{0.3}$

9 The characteristic pullout for concrete compressive strengths greater than 20.68 MPa may be increased by multiplying the value in the table by $(f'c/20.68)^{0.5}$

KWIK HUS-EZ I (KH-EZ I) Carbon Steel Screw Anchor 3.3.5

3.3.5.6 Ordering Information

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Order Information

Description	Internal Thread Diameter	Internal Thread Length	Hole Diameter	Minimum Embedment	Qty (pcs) / Box
KH-EZ 1/4"x1-5/8" | 1/4"	1/4"	3/8"	1/4"	1-5/8"	100
KH-EZ 1/4"x2-1/2" | 1/4"	1/4"	3/8"	1/4"	2-1/2"	100
KH-EZ 1/4"x1-5/8" | 3/8"	3/8"	7/16"	1/4"	1-5/8"	100
KH-EZ 1/4"x2-1/2" | 3/8"	3/8"	7/16"	1/4"	2-1/2"	100

WM TAO & ASSOCIATES
CONSULTING ENGINEERS

Shop Drawing Submittal Review

Transmitted To: Cannon Design

Date: December 20, 2016

Attention: **stl-cac@cannondesign.com**

Contact Person / WTA Field Inspector: Patrick Garner

Project Name: Webster University-**ISB**

Reviewed by: Mike Whitworth (WES)

Project No. WT 14127.01
WES 607

[ ] UPS [ ] Courier [X] **Email**

Copies	No.	Description
1 PDF	211313F02	(Submittal No.'s:)
		(Cannon #211313-015) - (Paric #15051-0349) – (WES #607)
		➢ **Wet Pipe Sprinkler System Product Data**

*Remarks: See Submittal Review from Webb Enginnering.

c: **Kelvin Patel**
Kpatel@cannondesign.com

[X] ***Reviewed**

[X] ***No Exceptions Taken -**

[X] ***Amend and Resubmit**

[X] ***Make Corrections As Noted, No Resubmittal Required**

Corrections or comments made on shop drawings during this review do not relieve contractor from compliance with requirements of drawings and specifications. This check is only for review of general conformance with the design concept of project and general compliance with information given in contract documents. Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

WEBB
ENGINEERING
SERVICES INC.

1400 S. 3rd Street, Suite 201
St. Louis, Missouri 63104
Phone: (314) 588-0600
Fax: (314) 588-0604

Letter of Transmittal

To: wtashop@wmtao.com

From: Mike Whitworth

Date: December 20, 2016

Re: Webster University ISB

WES No: 607

☐ For your Files ☐ For Review ☐ Please Comment ☐ Please Reply

Item No.	Description	No. of Copies	Date
1	Shop Drawing Review – (213113-015) 211313 Wet Pipe Sprinkler System	1	12/20/16

•Signature: Mike Whitworth

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The review of this submittal is limited to the general conformance with the designated design concept and intent of this project and with the general compliance of the information provided in the contract documents. All comments, remarks and notations made on the submittal(s) as a result of this review do not relieve the contractor from full compliance with requirements of the contract documents. Approval for a specific item shall not include approval of an assembly of which the item is not a component. The contractor is solely responsible for rough-in and installation confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordination of this work with that of other trades on this project; and in a safe and satisfactory manner. All work shall be installed in full compliance with the manufacturer's recommendation, Federal, State and Local rules and regulation and the Authority Having Jurisdiction (AHJ) and applicable adopted codes and standards.

PROJECT NAME: Webster University I
LOCATION: St. Louis Missouri
CLIENT PROJ. NO.: N/A
WES PROJ. NO.: 607
SPECIFICATION SECTION: 211313 Wet Pipe Sprinkler System
SUBMITTAL ITEM: See Below -

CONTRACTOR: J.F. Ahern Co.
CTR. SUBMITTAL #: 21 1313-015
SUBMITTAL DATE: November 29, 2016
DATE RECEIVED: December 07, 2016
RECEIVED VIA: E-Mail
RECEIVED FROM: WTA
DATE RETURNED: DECEMBER 20, 2016
RETURNED VIA: E-MAIL
RETRURNED TO: WTASHOP@WMTAO.COM

STATUS KEY:

NO EXCEPTION TAKEN
MAKE CORRECTIONS NOTED, NO RESUBMITTAL:
AMEND AND RESUBMIT
REJECTED, SEE REMARKS:
REVIEWED ONLY

NEC	MCN	AAR	REJ	REV	ITEM	REMARKS
Pages numbers have been added to cut sheets for referencing						
X					Page 001 Schedule 10 Pipe Various Manufacturers	
X					Page 002 Schedule 40 Pipe Various Manufacturers	
X					Pages 003 – 004 Test and Drain Valve AGF Manufacture ring Model – 1011A	
X					Pages 005 – 006 Backflow Preventer Zurn Industries Model – 350A	
X					Pages 007 – 008 Standard Duty Loop Hanger Caddy Model – 115 Series	

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X					Pages 009 – 010 Universal Beam Clamp Caddy Model – 300 Series	
X					Pages 011 – 016 Carbon Steel Anchor Screw Hilti Model – 3.3.5 KWIK HUS-EZ (KH-EZ1)	
X					Page 017 Riser Clamp PHD Manufacturing Model – Fig. 550-551-553	
X					Page 018 Universal Restraining Strap Afcon Model - 162	
X					Pages 019 – 027 Sleeve Expansion Anchors Powers Fasteners Model – Lok-Bolt Hex Head and Rod Hanger	
X					Pages 028 – 031 Strut Channel Gregory Strut Products Model – G712OS, G712A, G5820S, G582A and G1320OS	
X					Page 032 Surge Restraint 115 Caddy Model – SR6	
X					Page 033 Screw Anchor/Hanger ITW Model – Sammy X-Press	
		X			Pages 034 – 039 Quick Response Dry Pendent Sprinkler Viking Model - SIN Not Specified	1. SIN numbers listed in submittal (VK172, VK176, VK180 on pages 037/038) is not listed on the FP drawings in the Sprinkler schedule.
X					Pages 040 -043 Microfast Quick Response Upright Sprinkler Viking Model – SIN VK300	
		X			Pages 044 -049 Microfast Quick Response Pendent Sprinkler Viking Model – SIN VK302	1. SIN number listed in submittal (VK302 on pages 047/048) is not listed on the FP drawings in the Sprinkler schedule.

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X					Pages 050 – 055 Microfast Quick Response Horizontal Sidewall Sprinkler Viking Model – SIN VK305	
X					Pages 056 – 059 Microfast Quick Response Upright Sprinkler Viking Model – SIN VK350	
		X			Pages 060 – 065 Microfast Quick Response Pendent Sprinkler Viking Model – SIN VK352 (K8.0)	1. SIN number listed in submittal (VK352 on pages 063/064) is not listed on the FP drawings in the Sprinkler schedule.
		X			Pages 066 – 071 Microfast Quick Response Pendent Sprinkler Viknig Model – SIN VK352 (K8.0)	1. SIN number listed in submittal (VK352 on pages 069/070) is not listed on the FP drawings in the Sprinkler schedule.
X					Pages 072 – 077 Mirage Standard and QR Concealed Pendent Sprinkler Viking Model – SIN VK462	
X					Page 078 Spare Sprinkler Head Cabinet FPPI Model – Not indicated	
X					Page 079 – 089-091 Spare Sprinkler Head Cabinet TYCO Model – Not Indicated	
X					Pages 080 – 088 Sprinkler Escutcheons Viking Model -	
X					Pages 092 – 094 Sprinkler Guards Viking Model – D-1	
X					Pages 095 – 100 Standard / QR Extended Coverage Upright Sprinkler Viking Model – SIN VK532	
X					Pages 101 – 106 Standard / QR Extended Coverage Pendent Sprinkler Viking Model – SIN VK534	

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X					Pages 107 – 112 Mirage QR Extended Coverage Concealed Pendent Sprinkler Viking Model – SIN VK634	
		X			Pages 113 – 120 Concealed Dry Pendant Sprinkler Reliable Model – G5-56 Dry (SIN RA5114)	1. Manufacturer and model/SIN number listed in submittal is not listed on the FP drawings in the Sprinkler schedule. 2. Color/finish of cover plate to be submitted to the Architect for review and approval.
X					Pages 121 - 124 Flexible Coupling Victaulic Model – Style 75	
X					Pages 125 - 128 Reducing Coupling Victaulic Model – Style 750	
X					Pages 129 – 131 FireLock Fittings Victaulic Model – Fire lock	
X					Pages 132 – 134 FireLock Rigid Coupling Victaulic Model – Style 005H	
X					Pages 135 – 136 Fire lock Flange Adapter Victaulic Model – Style 744	
X					Pages 137 – 144 Mechanical T Bolted Branch Outlets Victaulic Model – Styles 920 and 920N	
X					Pages 145 – 149 Firelock Rigid Coupling Victaulic Model – Style 009N	
X					Pages 150 – 151 Threaded Mechanical Branch Tee Anvil Model – Fig. MT-30	
X					Pages 152 – 153 Grooved Welded Steel Pipe Outlets Vandewater International Inc. Model - Various	
X					Pages 154 – 155 Welded Steel Pipe Outlets Vandewater International Inc. Model - Various	

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X					Page 156 DI Threaded Fitting – 90 Elbow Anvil Model – Fig 3201	
X					Page 157 DI Threaded Fitting – 45 Elbow Anvil Model – Fig 3202	
X					Page 158 DI Threaded Fitting – Reducing 90 Elbow Anvil Model – Fig 3201R	
X					Page 159 DI Threaded Fitting – Straight T Anvil Model – Fig 3205	
X					Pages 160 - 161 DI Threaded Fitting – Reducing T Anvil Model – Fig 3205R	
X					Page 162 DI Threaded Fitting Anvil Model – Bull Head T	
X					Page 163 DI Threaded Fitting Cross Anvil Model - 3207	
X					Page 164 DI Threaded Fitting Anvil Model – 3221R	
X					Page 165 DI Threaded Fitting Anvil Anvil Model - 3121	
X					Page 166 DI Threaded Fitting Cap Anvil Model - 3224	
X					Page 167-168 DI Threaded Fitting Bushing Anvil Model - 3283	

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				X	Pages 169 – 183 Flexible Sprinkler Hose Victaulic Model – Series AH2 Bracket AB1, AB7 and AB7 Adjustable	1. This product is not listed in the construction documents for use on this project. Contractor has elected to incorporate into the delegated design.
X					Pages 184 – 185 Water Flow Detector System Sensor Model – WFD Series	
X					Pages 186 – 192 Supervisory Switch Potter Electrical Model – PCVS Series	
	X				Pages 193 – 194 Electric Bell Potter Electric Model – Not Indicated	1. Specified to be 10 inch diameter. Refer to specification section 211313, part 2.6, B4 and B-7.
X					Page 195 Service Gauge Ashcroft Model – 35W1005PH02LXUL300	
X					Pages 196 – 199 Intumescent Sealent STI Model - Series LCI	
X					Page 200 Fire Pump Suction and Discharge Gauges Alenco Series AG-1000L	
X					Page 201 Suction and Discharge Gauge Assembly A-C Fire Pump systems Model – Not Indicated	
	X				Pages 202 – 203 Fire Pump Test Header Potter Roemer Model – 5864-x-x-6-D-NST	1. Assembly to be mounted vertically, in space available.
Note: Fire protection drawings list sprinkler Viking model Mirage, SIN VK464 (31 total) and Viking model Dry, Sin VK194, (24 total) in the Sprinkler Schedule. These two sprinkler heads are not included in this submittal.						

REVIEWED BY: Michael R. Whitworth DATE: December 20, 2016

THESE COMMENTS ARE TO BE ATTACHED TO ALL COPIES OF THE SHOP DRAWING REFERENCED ABOVE.

CANNONDESIGN

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

WEBSTER UNIVERSITY ISB
PROJECT NAME

8274 BIG BEND BLVD
ADDRESS

NUMBER

WEBSTER UNIVERSITY
OWNER

CANNON DESIGN
ARCHITECT / ENGINEER

Joe Voypick
SUBMITTED BY

211313-015
CONTRACTOR / CM SUBMITTAL NO.

CANNON DESIGN SUBMITTAL NO.

DRAWING / DETAIL REFERENCE

211313
SPECIFICATION SECTION / PARAGRAPH

Ahern Fire Protection
MANUFACTURER / SUPPLIER

ITEM / PRODUCT ID

REQUIRED DATE

PRIORITY

◯ CRITICAL

ITEM BEING SUBMITTED (check only one)

- ◯ Shop Drawings
- ◯ Samples (_____ copies)
- ◯ LEED Submittal
- ◯ Certification / Qualifications
- ◯ Record Documents
- ◉ Product Data
- ◯ Coordination Drawing
- ◯ Calculations
- ◯ Schedules
- ◯ O&M Manuals
- ◯ Other _____

ITEM BEING SUBMITTED FOR (check only one)

◉ Action ◯ Information Only ◯ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)

PARIC

PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

By:
Devin D. Gates

Joe Voypick
REVIEWED BY

11/30/16
DATE

To be completed by Reviewer

21 1313-015
CANNON DESIGN SUBMITTAL NUMBER

11/30/16
RECEIVED DATE

- ◯ A. No Exceptions Taken
  No further review of submittal is required.
- ◯ B. Make Corrections Noted
  Incorporate corrections in work; resubmission is not required.
- ◯ C. Revise and Resubmit
  Revise as noted, and resubmit for review.
- ◯ D. Rejected
  Submittal is not in compliance with Contract Documents; provide new submittal.
- ◯ E. For Record / Information Only
  Submittal was reviewed for Record / Information purposes only.
- ◯ F. Not Required for Review
  Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

A/E COMMENTS ◯ See attached sheet(s) for additional comments

REVIEWED BY

DATE

77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0349

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 11/29/2016

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

Fax;
314-241-2203

RE: Wet Pipe Sprinkler System Product Data

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings	☑ Approval	☐ Approved as Submitted
☐ Letter	☐ Your Use	☐ Approved as Noted
☐ Prints	☐ As Requested	☐ Returned After Loan
☐ Change Order	☐ Review and Comment	☐ Resubmit
☐ Plans		☐ Submit
☐ Samples	**SENT VIA:**	☐ Returned
☐ Specifications	☐ Attached	☐ Returned for Corrections
☑ Other: Product Data	☐ Separate Cover Via:	☐ Due Date:

Item	*Package*	*Code*	*Rev.*	*Copies*	*Date*	*Description*	*Status*
Submittal		211313-015	1		11/29/2016	Wet Pipe Sprinkler System Product Data	Submitted

NOTES:

CC:

Signed: _____

Devin Gates