

# HISTORIC AND DESIGN REVIEW COMMISSION

November 20, 2024

**HDRC CASE NO:** 2024-383  
**ADDRESS:** 105 S ST MARYS ST  
**LEGAL DESCRIPTION:** DRURY PLAZA-RIVERWALK, LOT 28  
**ZONING:** D, H, RIO-3  
**CITY COUNCIL DIST.:** 1  
**APPLICANT:** Chris Baker/FSG Electric  
**OWNER:** Eduardo Robinson/ALAMO NATIONAL BUILDING  
**TYPE OF WORK:** Signage  
**APPLICATION RECEIVED:** October 29, 2024  
**60-DAY REVIEW:** December 28, 2024  
**CASE MANAGER:** Edward Hall  
**REQUEST:**

The applicant is requesting a Certificate of Appropriateness for approval to install a blade sign at the northeast (E Commerce at N St Mary's) corner of the building. The proposed blade sign will feature an overall height of 20' – 0" and three (3) sign faces, each featuring 5' – 0" on width, for a total size of three-hundred (300) square feet.

## APPLICABLE CITATIONS:

*Historic Design Guidelines, Chapter 6, Guidelines for Signage*

### 3. Projecting and Wall-Mounted Signs

#### A. GENERAL

- i. Mounting devices*—Construct sign frames and panels that will be used to be attach signs to the wall of a building of wood, metal, or other durable materials appropriate to the building's period of construction.
- ii. Structural supports*—Utilize sign hooks, expansion bolts, or through bolts with washers on the inside of the wall depending upon the weight and area of the sign, and the condition of the wall to which it is to be attached.
- iii. Appropriate usage*—Limit the use of projecting and wall-mounted signs to building forms that historically used these types of signs, most typically commercial storefronts. To a lesser degree, these signage types may also be appropriate in areas where residential building forms have been adapted for office or retail uses, if sized accordingly.

#### B. PROJECTING SIGNS

- i. Placement*—Mount projecting signs perpendicularly to a building or column while allowing eight feet of overhead clearance above public walkways.
- ii. Public right-of-way*—Limit the extension of projecting signs from the building facade into the public right-of-way for a maximum distance of eight feet or a distance equal to two-thirds the width of the abutting sidewalk, whichever distance is greater.
- iii. Area* – Projecting signs should be scaled appropriately in response to the building façade and number of tenants.

#### C. WALL-MOUNTED SIGNS

- i. Area*—Limit the aggregate area of all wall-mounted signs to twenty-five percent of a building facade.
- ii. Projection*—Limit the projection of wall-mounted signs to less than twelve inches from the building wall.
- iii. Placement*—Locate wall signs on existing signboards—the area above the storefront windows and below the second story windows—when available. Mount wall signs to align with others on the block if an existing signboard is not available.
- iv. Channel letters*—Avoid using internally-illuminated, wall-mounted channel letters for new signs unless historic precedent exists. Reverse channel letters may be permitted.

## FINDINGS:

- a. The Historic Structure at 105 S St Mary's was constructed circa 1930 in the Art Deco style and is an individual

landmark. The structure was originally known as the Alamo National Bank Building.

- b. ALLOWABLE SIGNAGE – The Unified Development Code recommends one major and two minor signs per application, not to exceed fifty (50) square feet total. Additionally, the Guidelines for Signage notes that signage should be designed to be in proportion to the façade. The Commission may approve additional signage and square footage.
- c. BLADE SIGN (Size and Design) – The Guidelines for Signage A note that requested signage should not exceed fifty (50) square feet. Additionally, the Guidelines note that the type of sign used should be based on evidence of historic signs. Historic blade signs found in the vicinity typically feature two sign faces, not three, as proposed. Staff finds that the total size of the proposed sign should be reduced as it is proposed at six (6) times the recommended amount. Staff finds that a double-sided blade sign would be appropriate.
- d. BLADE SIGN (Materials and Lighting) – The applicant is requesting a Certificate of Appropriateness for approval to install a blade sign at the northeast (E Commerce at N St Mary's) corner of the building. The proposed blade sign will feature an overall height of 20' – 0" and three (3) sign faces, each featuring 5' – 0" on width, for a total size of three hundred (300) square feet. The Guidelines for Signage A. and C. note that signs should be constructed of durable materials such as metal; should not use plastic, fiberglass, or other synthetic materials; should use indirect or bare bulb lighting that do not produce a glare, and should not be internally illuminated. Staff finds that the proposed sign should feature metal sign faces that allow for only text to be illuminated.

## **RECOMMENDATION:**

Staff recommends approval based on findings a through d with the following stipulations:

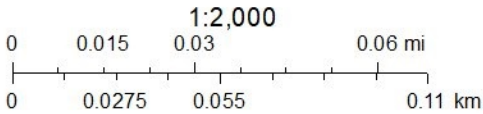
- i. That the sign be reduced to only two faces, as noted in finding c.
- ii. That the sign feature metal sign faces where only text is illuminated, as noted in finding d. Plastic should only be used where letters are routed out from the sign face.



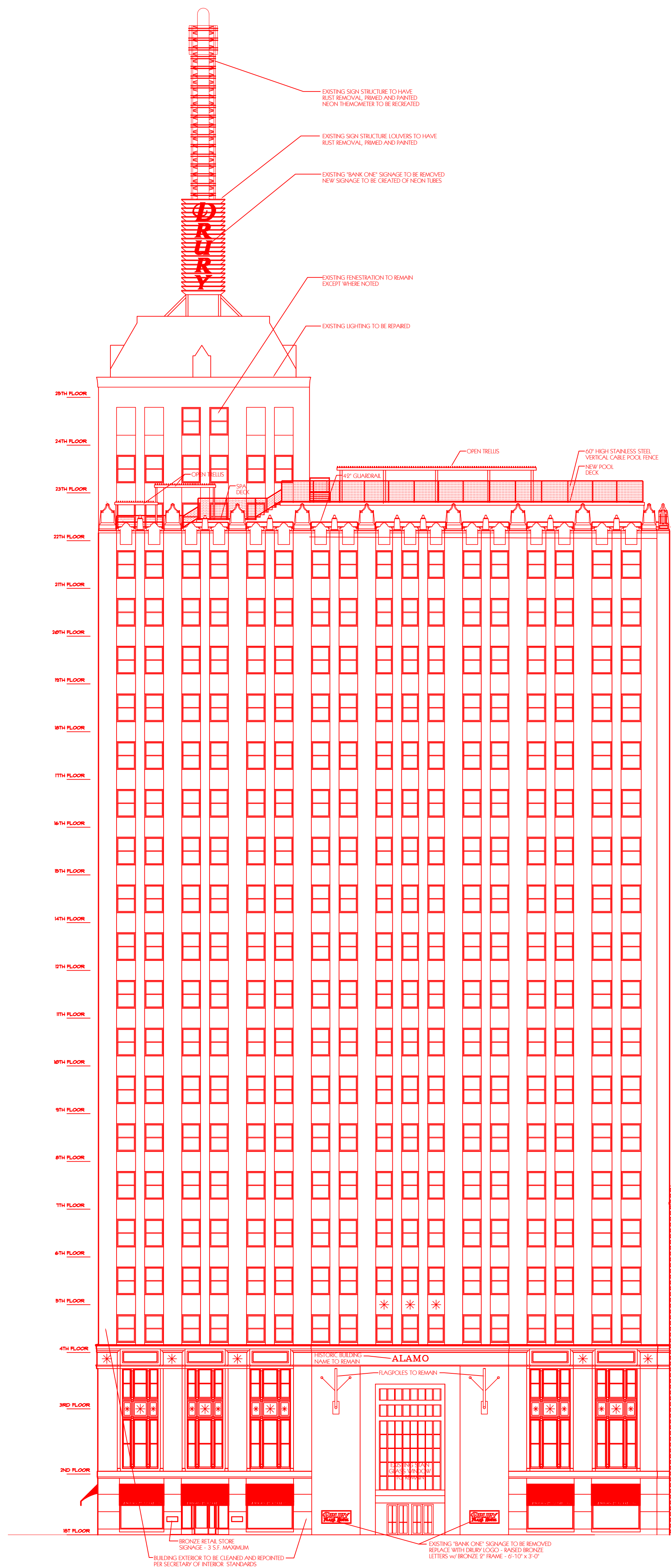
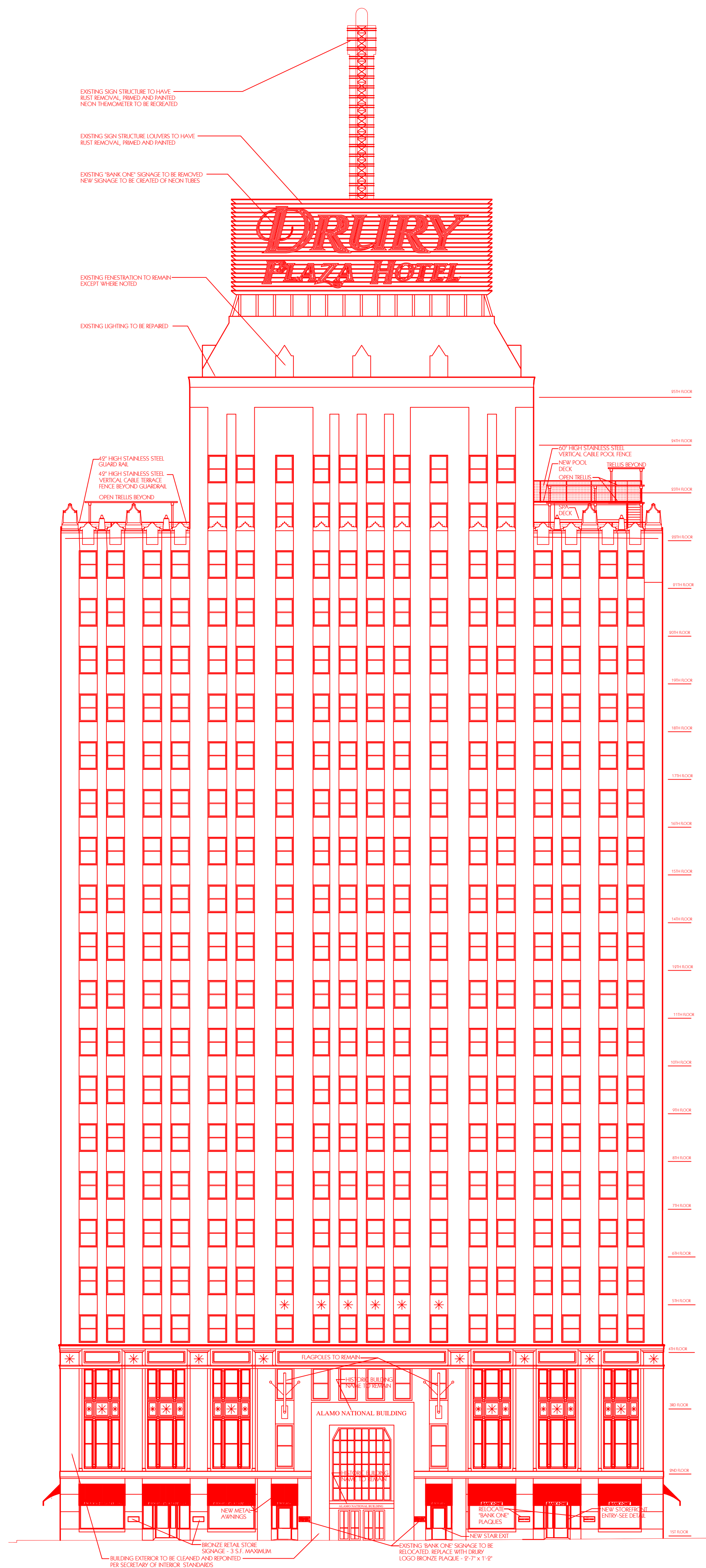
City of San Antonio One Stop



November 15, 2024







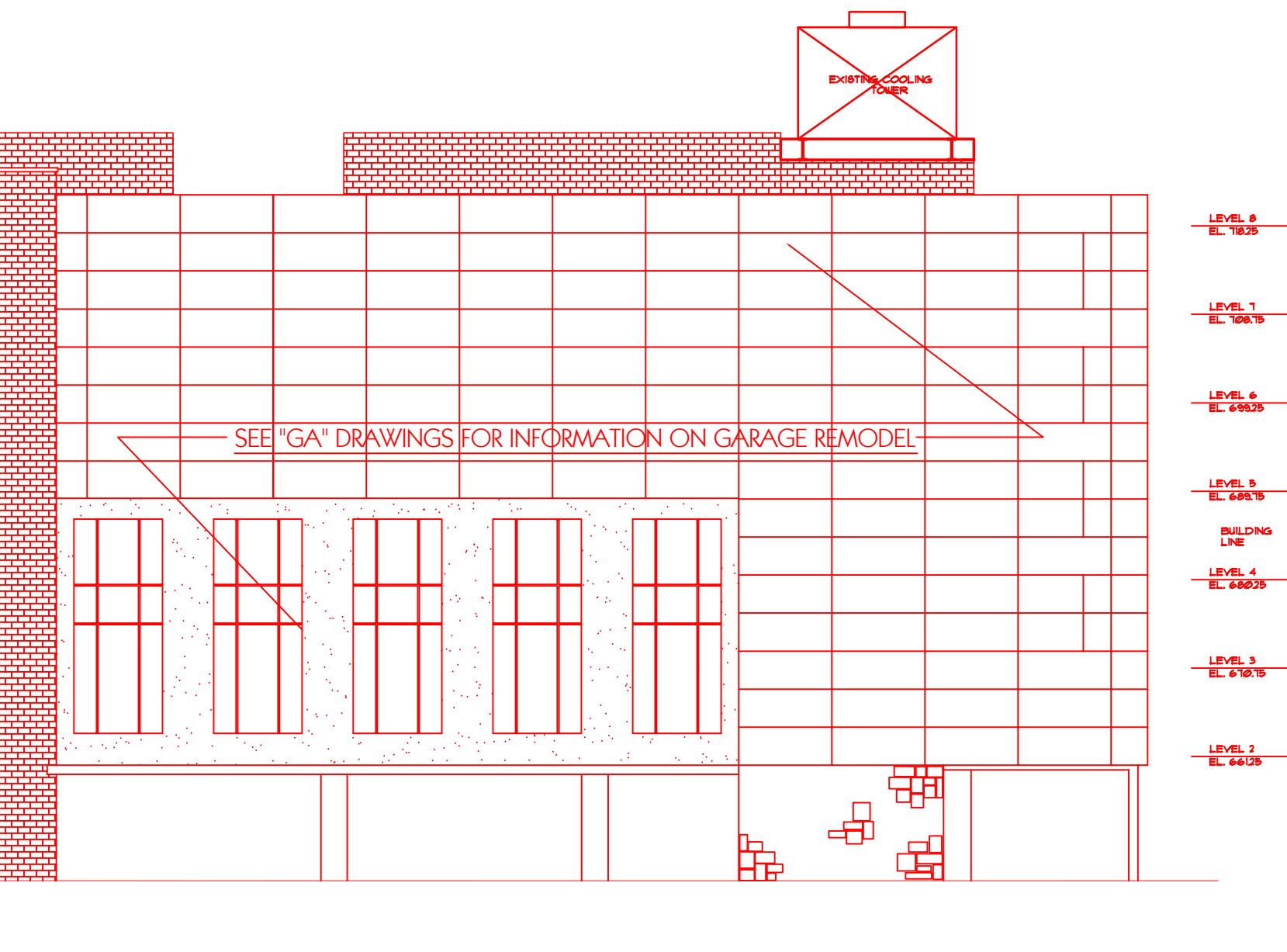
**GENERAL NOTE:**

EXISTING FIRE-ESCAPES SHALL BE REMOVED. APPROPRIATE PATCHES SHALL BE MADE WHERE SUPPORTS ARE REMOVED. BROKEN BRICKS SHALL BE REPLACED AS NEEDED WITH BRICK MATCHING COLOR AND COMPOSITION. MORTAR SHALL MATCH EXISTING MORTAR IN COLOR AND COMPOSITION.

BRICK SHALL BE CLEANED - USING METHODS RECOMMENDED BY NATIONAL PARK SERVICE PRESERVATION BRIEFS/TECH NOTES. REPOINT WERE REQUIRED, USING MATCHING MORTAR COLOR, AND MORTAR MATCHING THE COMPOSITION OF EXISTING MORTAR.

GRANITE SHALL BE CLEANED USING METHODS RECOMMENDED BY NATIONAL PARK SERVICE PRESERVATION BRIEFS/TECH NOTES. REPOINT AS NECESSARY, USING MORTAR MATCHING IN COLOR AND COMPOSITION.

EXTREME CARE SHALL BE TAKEN WHEN CLEANING SCULPTED OR MOLDED PIECES - TO PREVENT DAMAGE. TEST CLEANING SHALL BE DONE IN INCONSPICUOUS LOCATION PRIOR TO GENERAL CLEANING



COMMERCE STREET ELEVATION  
18" = 1'

REVISIONS:	BY:

**DRURY SOUTHWEST, INC.**  
**CAPE GIRARDEAU, MISSOURI**  
ARCHITECTURAL OFFICES  
1820 COUNTY ROAD 319  
CAPE GIRARDEAU, MISSOURI 63702  
PHONE (673) 335-3134  
FAX (673) 335-3125

101 SO. FARRAR DRIVE, P.O. BOX 1214  
CAPE GIRARDEAU, MISSOURI 63701-1214  
PHONE (673) 335-3134  
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St. Mary's and Commerce Street Elevations

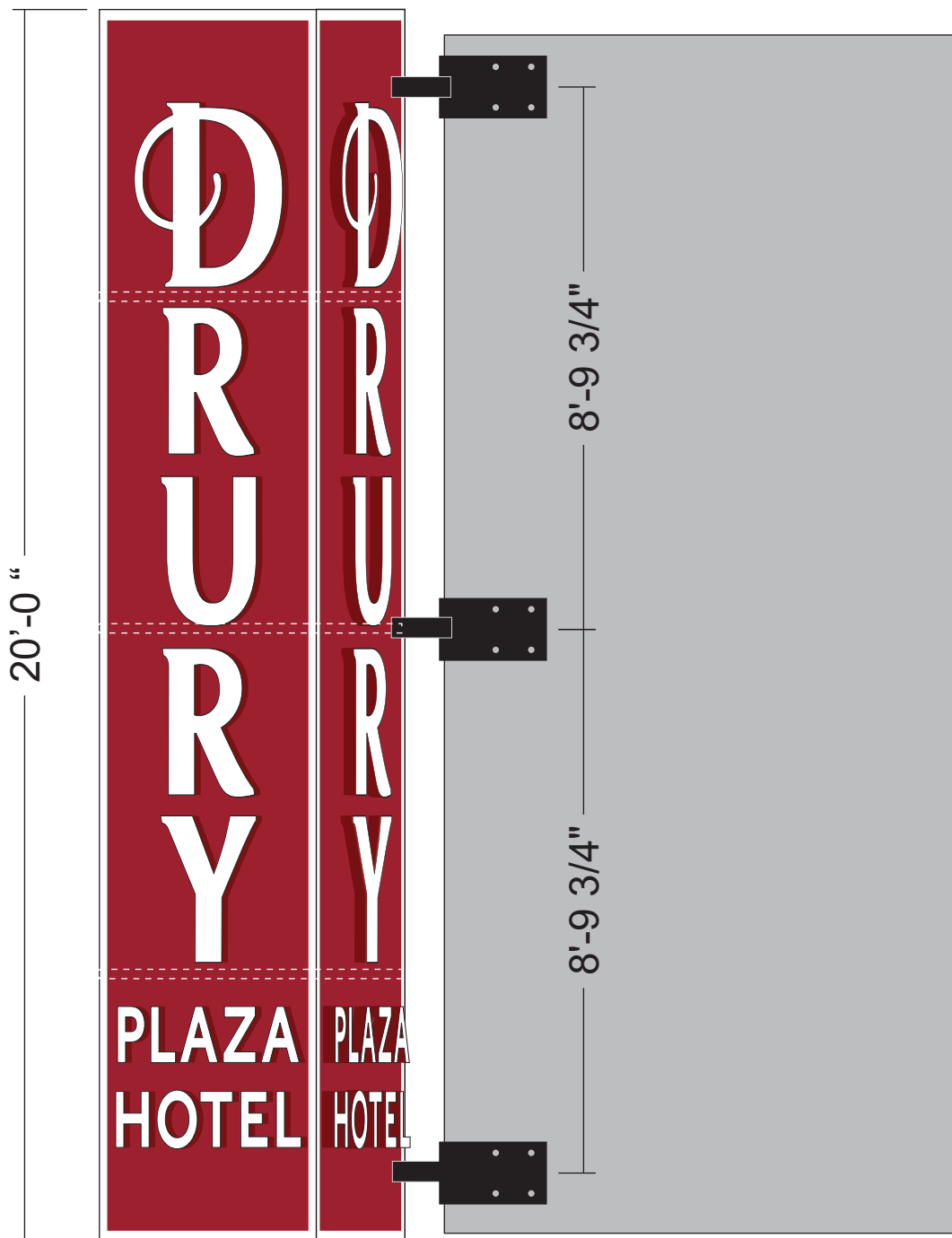
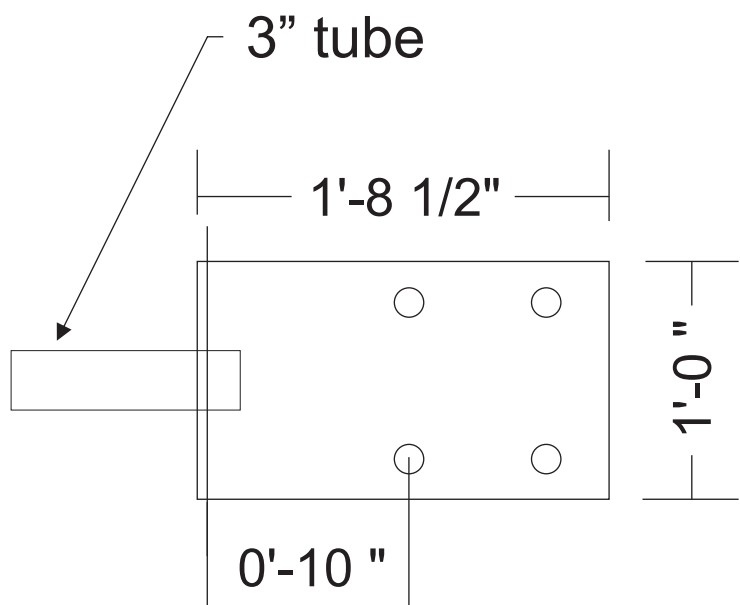
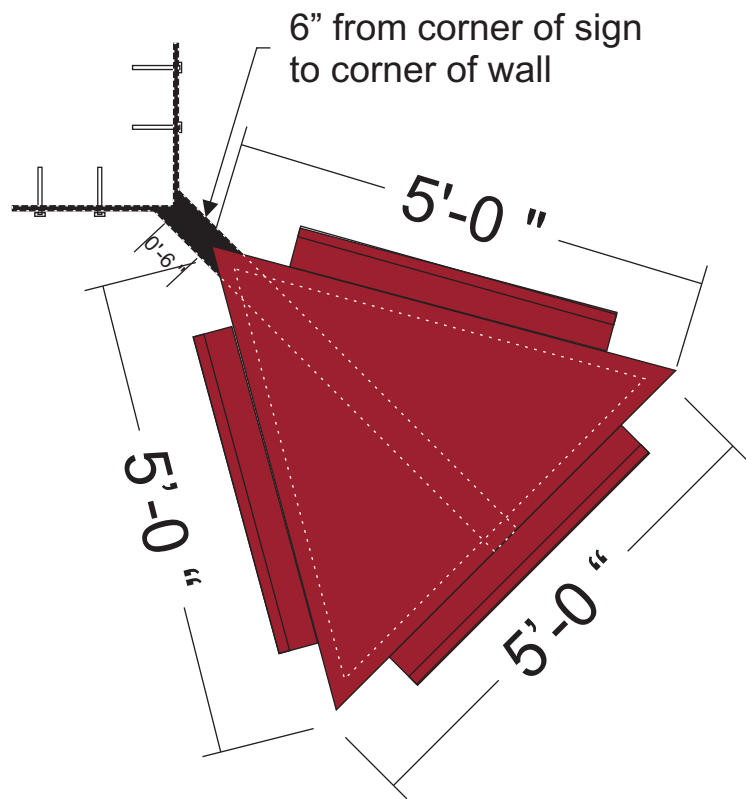
**DRURY PLAZA HOTEL**  
SAN ANTONIO  
TEXAS

DRAWING BY:

DATE:  
1-17-05

SCALE:  
1/16" = 1'-0"

SHEET NO.  
**A200**



# Trubolt® Wedge Anchors

**Dependable,  
Heavy-Duty,  
Inspectable,  
Wedge Type  
Expansion  
Anchor**



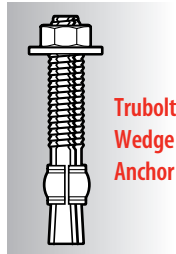
**Trubolt®**  
Wedge Anchors

## DESCRIPTION/SUGGESTED SPECIFICATIONS

### Wedge Type Anchors—

#### SPECIFIED FOR ANCHORAGE INTO CONCRETE

Trubolt Wedge anchors feature a stainless steel expansion clip, threaded stud body, nut and washer. Anchor bodies are made of plated carbon steel, hot-dipped galvanized carbon steel, type 304 stainless steel or type 316 stainless steel as identified in the drawings or other notations.



The exposed end of the anchor is stamped to identify anchor length. Stampings should be preserved during installation for any subsequent embedment verification.

Use carbide tipped hammer drill bits made in accordance with ANSI B212.15-1994 to install anchors.

Anchors are tested to ACI 355.2 and ICC-ES AC193. Anchors are listed by the following agencies as required by the local building code: ICC-ES, UL, FM, City of Los Angeles, California State Fire Marshal and Caltrans.

See Appendix B (pages 101-102) for performance values in accordance to 2006 IBC.

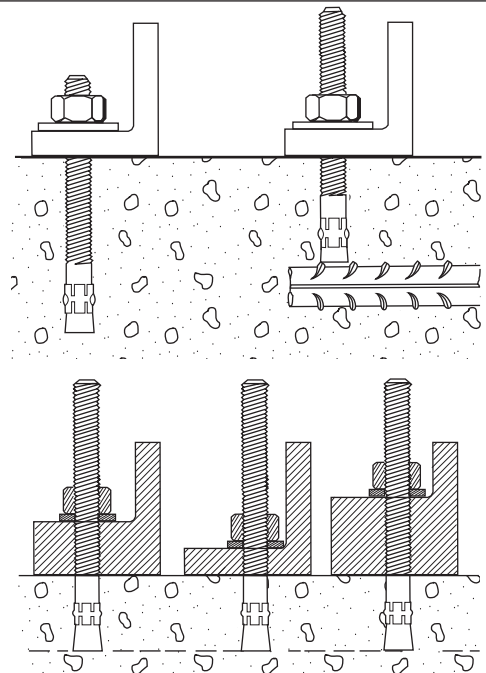
## ADVANTAGES

- 2006 International Building Code (IBC) Compliant
- Versatile fully threaded design is standard on sizes up to 3/4" diameter and 10" length
- Anchor diameter equals hole diameter
- Standard carbon and stainless steel anchors
- 360° contact with concrete assures full expansion for reliable working loads
- Non bottom-bearing, may be used in hole depth exceeding anchor length
- Can be installed through the work fixture, eliminating hole spotting
- Inspectable torque values, indicating proper installation

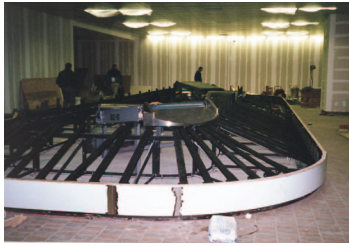
### Fully Threaded Advantage

Trubolt's fully threaded feature eliminates subsurface obstruction problems.

Fully threaded design accommodates various material thicknesses at the same embedment. One anchor length saves time and money.



## APPLICATIONS



Anchoring machinery and conveyors is a common wedge anchor application. The Trubolt is fully threaded to allow a large range of embedment and fixture thickness.



Seismic Wedge Anchor cracked concrete approval controls tension & shear simultaneously.

## LENGTH INDICATION CODE\*

CODE	LENGTH OF ANCHOR	CODE	LENGTH OF ANCHOR
A	1-1/2 < 2 (38.1 < 50.8)	K	6-1/2 < 7 (165.1 < 177.8)
B	2 < 2-1/2 (50.8 < 63.5)	L	7 < 7-1/2 (177.8 < 190.5)
C	2-1/2 < 3 (63.5 < 76.2)	M	7-1/2 < 8 (190.5 < 203.2)
D	3 < 3-1/2 (76.2 < 88.9)	N	8 < 8-1/2 (203.2 < 215.9)
E	3-1/2 < 4 (88.9 < 101.6)	O	8-1/2 < 9 (215.9 < 228.6)
F	4 < 4-1/2 (101.6 < 114.3)	P	9 < 9-1/2 (228.6 < 241.3)
G	4-1/2 < 5 (114.3 < 127.0)	Q	9-1/2 < 10 (241.3 < 254.0)
H	5 < 5-1/2 (127.0 < 139.7)	R	10 < 11 (254.0 < 279.4)
I	5-1/2 < 6 (139.7 < 152.4)	S	11 < 12 (279.4 < 304.8)
J	6 < 6-1/2 (152.4 < 165.1)	T	12 < 13 (304.8 < 330.2)

\*Located on top of anchor for easy inspection.

## FEATURES



**Length ID Head Stamp**—provides for embedment inspection after installation

**Fully Threaded Design**

**Cold-Formed**—manufacturing process adds strength

**Stainless steel split expansion ring**

**Anchor Body**—available in zinc-plated steel, hot-dipped galvanized steel, 304 stainless steel and 316 stainless steel

## TRUBOLT® WEDGE ANCHOR

## APPROVALS/LISTINGS

### Trubolt® Wedge Anchors

ICC Evaluation Service, Inc. # ESR-2251

- Category 1 performance rating
- 2006 IBC compliant
- Meets ACI 318 ductility requirements
- Tested in accordance with ACI 355.2 and ICC-ES AC193
- For use in seismic zones A & B
- 1/4", 3/8" & 1/2" diameter anchors listed in ESR-2251

Underwriters Laboratories

Factory Mutual

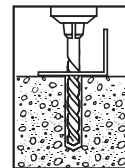
City of Los Angeles - #RR2748

California State Fire Marshall

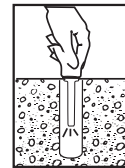
Caltrans

Meets or exceeds U.S. Government G.S.A. Specification A-A-1923A Type 4 (formerly GSA: FF-S-325 Group II, Type 4, Class 1)

## INSTALLATION STEPS



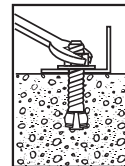
1. Select a carbide drill bit with a diameter equal to the anchor diameter. Drill hole to any depth exceeding the desired embedment. See chart for minimum recommended embedment.



2. Clean hole or continue drilling additional depth to accommodate drill fines.



3. Assemble washer and nut, leaving nut flush with end of anchor to protect threads. Drive anchor through material to be fastened until washer is flush to surface of material.



4. Expand anchor by tightening nut 3-5 turns past the hand tight position, or to the specified torque requirement.

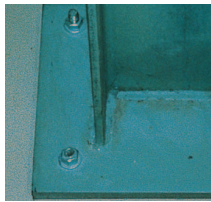
**\*\* ONLY FOR USE IN CONCRETE\*\***



## SELECTION CHARTS

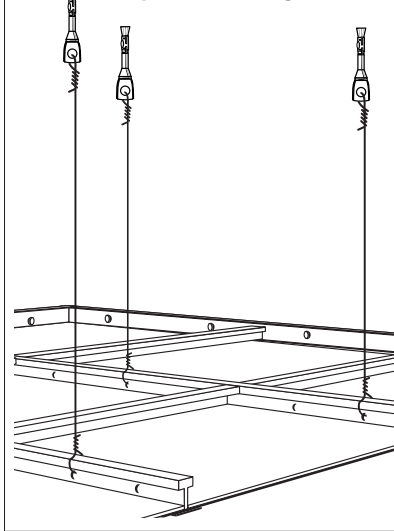
### Trubolt Carbon Steel with Zinc Plating

Meets ASTM B633 SC1, Type III specifications for electroplating of 5um = .0002" thickness.  
This material is well suited for non-corrosive environments.



**Typical Applications**—  
Structural Columns,  
Machinery, Equipment, etc.  
**Environment**—Interior  
(non-corrosive)  
**Level of Corrosion**—Low

#### Tie Wire Wedge for hanging suspended ceiling



PART NUMBER	THREAD LENGTH In. (mm)	ANCHOR DIA. & DRILL BIT SIZE (THREADS) PER INCH	OVERALL LENGTH In. (mm)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
WS-1416	3/4 (19.1)	1/4" - 20	1-3/4 (44.5)	3/8 (9.5)	100/ 3.1	1000/ 32
WS-1422	1-1/4 (31.8)		2-1/4 (57.2)	7/8 (22.2)	100/ 3.6	1000/ 37
WS-1432	2-1/4 (57.2)		3-1/4 (82.6)	1-7/8 (47.6)	100/ 4.7	800/ 39
WS-3822	1-1/8 (28.6)	3/8" - 16	2-1/4 (57.2)	3/8 (9.5)	50/ 4.1	500/ 41
WS-3826	1-5/8 (41.3)		2-3/4 (69.9)	7/8 (22.2)	50/ 4.7	400/ 39
WS-3830	1-3/4 (44.5)		3 (76.2)	1-1/8 (28.6)	50/ 5.0	400/ 41
WS-3836	2-1/2 (63.5)		3-3/4 (95.3)	1-7/8 (47.6)	50/ 5.9	300/ 36
WS-3850	3-3/4 (95.2)		5 (127.0)	3-1/8 (79.4)	50/ 7.4	250/ 38
WS-3870	3-7/8 (98.4)		7 (177.8)	5-1/8 (130.2)	50/ 10.4	250/ 53
WS-1226	1-1/4 (31.8)	1/2" - 13	2-3/4 (69.9)	1/8 (3.2)	25/ 4.6	200/ 38
WS-1236	2-1/4 (57.2)		3-3/4 (95.3)	1 (25.4)	25/ 5.7	150/ 35
WS-1242	2-3/4 (69.9)		4-1/4 (108.0)	1-1/2 (38.1)	25/ 6.2	150/ 38
WS-1244	3 (76.2)		4-1/2 (114.3)	1-3/4 (44.5)	25/ 6.5	150/ 39
WS-1254	4 (101.6)		5-1/2 (139.7)	2-3/4 (69.9)	25/ 7.7	150/ 47
WS-1270	5-1/2 (139.7)		7 (177.8)	4-1/4 (108.0)	25/ 9.3	150/ 57
WS-5834	1-3/4 (44.5)	5/8" - 11	3-1/2 (88.9)	1/8 (3.2)	10/ 3.6	100/ 37
WS-5842	2-1/2 (63.5)		4-1/4 (108.0)	7/8 (22.2)	10/ 4.1	100/ 42
WS-5850	3-1/4 (82.6)		5 (127.0)	1-5/8 (41.3)	10/ 4.7	100/ 48
WS-5860	4-1/4 (107.9)		6 (152.4)	2-5/8 (66.7)	10/ 5.4	50/ 28
WS-5870	5-1/4 (133.4)		7 (177.8)	3-5/8 (92.1)	10/ 6.2	30/ 19
WS-5884	5-3/4 (146.0)		8-1/2 (215.9)	5-1/8 (130.2)	10/ 8.0	30/ 25
WS-58100	5-3/4 (146.0)		10 (254.0)	6-5/8 (168.3)	10/ 9.4	30/ 29
WS-3442	2-3/8 (60.3)	3/4" - 10	4-1/4 (108.0)	1/4 (31.8)	10/ 6.8	60/ 42
WS-3446	2-7/8 (73.0)		4-3/4 (120.7)	3/4 (19.1)	10/ 7.4	60/ 45
WS-3454	3-5/8 (92.1)		5-1/2 (139.7)	1-1/2 (38.1)	10/ 8.1	50/ 41
WS-3462	4-3/8 (111.1)		6-1/4 (158.8)	2-1/4 (57.2)	10/ 9.1	30/ 28
WS-3470	5-1/8 (130.2)		7 (177.8)	3 (76.2)	10/ 9.7	30/ 30
WS-3484	5-3/4 (146.0)		8-1/2 (215.9)	4-1/2 (114.3)	10/ 12.3	30/ 38
WS-34100	5-3/4 (146.0)		10 (254.0)	6 (152.4)	10/ 14.0	30/ 43
WS-34120	1-3/4 (44.5)		12 (304.8)	8 (203.2)	10/ 16.6	30/ 51
WS-7860	2-1/2 (63.5)	7/8" - 9	6 (152.4)	1-3/8 (34.9)	5/ 6.3	25/ 32
WS-7880	2-1/2 (63.5)		8 (203.2)	3-3/8 (85.7)	5/ 8.1	15/ 25
WS-78100	2-1/2 (63.5)		10 (254.0)	5-3/8 (136.5)	5/ 9.8	15/ 30
WS-10060	2-1/2 (63.5)	1" - 8	6 (152.4)	1/2 (12.7)	5/ 8.3	25/ 43
WS-10090	2-1/2 (63.5)		9 (228.6)	3-1/2 (88.9)	5/ 11.6	15/ 36
WS-100120	2-1/2 (63.5)		12 (304.8)	6-1/2 (165.1)	5/ 15.0	15/ 46
<b>TIE WIRE</b>						
TW-1400	N/A	1/4"	2-1/8 (54.0)	9/32-hole (7.1)	100/ 3.6	1000/ 36
TW-1400 K	N/A		2-1/8 (54.0)	9/32-hole (7.1)	BULK	1500/ 73

## SELECTION CHARTS

### Trubolt Carbon Steel with Hot-Dipped Galvanizing

Meets ASTM A153 Class specifications for hot-dipped galvanizing > 45um = .002". It is highly recommended for damp, humid environments near coastal regions. Hot-dipped galvanized Trubolts have a coating thickness of zinc that is almost 10 times as thick as electroplating. This creates greater corrosion resistance at a minimal cost.



**Typical Applications**—  
Railings, Signage, Awnings, etc.  
**Environment**—Rural/  
Suburban (exterior environ-  
ment—  
essentially unpolluted areas)  
**Level of Corrosion**—  
Low to Medium

PART NUMBER	THREAD LENGTH In. (mm)	ANCHOR DIA. & DRILL BIT SIZE (THREADS) PER INCH	OVERALL LENGTH In. (mm)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
WS-1226G	1-1/4 (31.8)	1/2" - 13	2-3/4 (69.9)	1/8 (3.2)	25/ 4.8	200/ 39
WS-1242G	2-3/4 (69.9)		4-1/4 (108.0)	1-1/2 (38.1)	25/ 6.7	150/ 41
WS-1254G	4 (101.6)		5-1/2 (139.7)	2-3/4 (69.9)	25/ 8.0	150/ 49
WS-1270G	5-1/2 (139.7)		7 (177.8)	4-1/4 (108.0)	25/ 9.7	150/ 59
WS-5834G	1-3/4 (44.5)	5/8" - 11	3-1/2 (88.9)	1/8 (3.2)	10/ 3.7	100/ 38
WS-5860G	4-1/4 (107.9)		6 (152.4)	2-5/8 (66.7)	10/ 5.6	50/ 29
WS-3446G	2-7/8 (73.0)	3/4" - 10	4-3/4 (120.7)	3/4 (19.1)	10/ 7.5	60/ 46
WS-3454G	3-5/8 (92.1)		5-1/2 (139.7)	1-1/2 (38.1)	10/ 8.4	50/ 42
WS-3484G	5-3/4 (146.0)		8-1/2 (215.9)	4-1/2 (114.3)	10/ 12.5	30/ 38



## SELECTION CHARTS

### Trubolt Type 304 Stainless Steel

Serves many applications well. It withstands rusting in architectural and food processing environments and resists organic chemicals, dye stuffs and many inorganic chemicals.



**Typical Applications—**  
Cladding, Stadium Seating, etc.

**Environment—**Urban  
(slight to moderate  
degree of pollution)

**Level of Corrosion—**Medium

PART NUMBER	THREAD LENGTH In. (mm)	ANCHOR DIA. & DRILL BIT SIZE (THREADS) PER INCH	OVERALL LENGTH In. (mm)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
WW-1416	3/4 (19.1)	1/4" - 20	1-3/4 (44.5)	3/8 (9.5)	100/ 3.2	1000/ 32
WW-1422	1-1/4 (31.8)		2-1/4 (57.2)	7/8 (22.2)	100/ 3.7	1000/ 37
WW-1432	2-1/4 (57.2)		3-1/4 (82.6)	1-7/8 (47.6)	100/ 4.8	800/ 39
WW-3822	1-1/8 (28.6)	3/8" - 16	2-1/4 (57.2)	3/8 (9.5)	50/ 4.1	500/ 41
WW-3826	1-5/8 (41.3)		2-3/4 (69.9)	7/8 (22.2)	50/ 4.8	400/ 39
WW-3830	1-3/4 (44.5)		3 (76.2)	1-1/8 (28.6)	50/ 5.1	400/ 42
WW-3836	2-1/2 (63.5)		3-3/4 (95.3)	1-7/8 (47.6)	50/ 6.0	300/ 37
WW-3850	3-3/4 (95.3)		5 (127.0)	3-1/8 (79.4)	50/ 7.5	250/ 39
WW-1226	1-1/4 (31.8)	1/2" - 13	2-3/4 (69.9)	1/8 (3.2)	25/ 4.7	200/ 38
WW-1236	2-1/4 (57.2)		3-3/4 (95.3)	1 (25.4)	25/ 5.8	150/ 36
WW-1242	2-3/4 (69.9)		4-1/4 (108.0)	1-1/2 (38.1)	25/ 6.3	150/ 39
WW-1254	3 (76.2)		5-1/2 (139.7)	2-3/4 (69.9)	25/ 7.7	150/ 47
WW-1270	3-1/2 (88.9)		7 (177.8)	4-1/4 (108.0)	25/ 9.4	150/ 57
WW-5834	1-3/4 (44.5)	5/8" - 11	3-1/2 (88.9)	1/8 (3.2)	10/ 3.6	100/ 37
WW-5842	2-1/2 (63.5)		4-1/4 (108.0)	7/8 (22.2)	10/ 4.2	100/ 43
WW-5850	3-1/4 (82.6)		5 (127.0)	1-5/8 (41.3)	10/ 4.8	100/ 49
WW-5860	4-1/4 (107.9)		6 (152.4)	2-5/8 (66.7)	10/ 5.5	50/ 28
WW-5870	3-1/2 (88.9)		7 (177.8)	3-5/8 (92.1)	10/ 6.2	30/ 20
WW-5884	3-1/2 (88.9)		8-1/2 (215.9)	5-1/8 (130.2)	10/ 8.0	30/ 25
WW-3442	2-3/8 (60.3)	3/4" - 10	4-1/4 (108.0)	1/4 (1.6)	10/ 6.8	60/ 42
WW-3446	2-7/8 (73.0)		4-3/4 (120.7)	3/4 (19.1)	10/ 6.7	60/ 41
WW-3454	3-5/8 (92.1)		5-1/2 (139.7)	1-1/2 (38.1)	10/ 7.5	50/ 38
WW-3470	3-1/2 (88.9)		7 (177.8)	3 (76.2)	10/ 9.2	30/ 28
WW-3484	3-1/2 (88.9)		8-1/2 (215.9)	4-1/2 (114.3)	10/ 12.3	30/ 38
WW-34100	1-3/4 (44.5)		10 (254.0)	6 (152.4)	10/ 13.5	30/ 42
WW-10060	2-1/2 (63.5)	1" - 8	6 (152.4)	1/2 (12.7)	5/ 8.3	25/ 43
WW-10090	2-1/2 (63.5)		9 (228.6)	3-1/2 (88.9)	5/ 11.4	15/ 35

\* For continuous extreme low temperature applications, use stainless steel.

## SELECTION CHARTS

### Trubolt Type 316 Stainless Steel

Contains more nickel and chromium than Type 304, and 2%-3% molybdenum, which gives it better corrosion resistance. It is especially more effective in chloride environments that tend to cause pitting.



**Typical Applications—**  
Pumps, Diffusers, Gates,  
Weir Plates, etc.

**Environment—**Industrial  
(moderate to heavy  
atmospheric pollution)

**Level of Corrosion—**  
Medium to High



**Typical Applications—**  
Tunnels, Dams, Tiles,  
Lighting Fixtures, etc.

**Environment—**  
Marine (heavy atmospheric  
pollution)

**Level of Corrosion—**High

PART NUMBER	THREAD LENGTH In. (mm)	ANCHOR DIA. & DRILL BIT SIZE (THREADS) PER INCH	OVERALL LENGTH In. (mm)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
SWW-1422	1-1/4 (31.8)	1/4" - 20	2-1/4 (57.2)	7/8 (22.2)	100/ 3.7	1000/ 37
SWW-1432	2-1/4 (57.2)		3-1/4 (82.6)	1-1/8 (28.6)	100/ 4.8	1000/ 39
SWW-3822	1-1/8 (28.6)	3/8" - 16	2-1/4 (57.2)	3/8 (9.5)	50/ 4.1	500/ 41
SWW-3826	1-5/8 (41.3)		2-3/4 (69.9)	7/8 (22.2)	50/ 4.8	400/ 39
SWW-3830	1-3/4 (44.5)		3 (76.2)	1-1/8 (28.6)	50/ 5.2	400/ 42
SWW-3836	2-1/2 (63.5)		3-3/4 (95.3)	1-7/8 (47.6)	50/ 6.0	300/ 37
SWW-3850	3-3/4 (95.3)		5 (127.0)	3-1/8 (79.4)	50/ 7.5	250/ 39
SWW-1226	1-1/4 (31.8)	1/2" - 13	2-3/4 (69.9)	1/8 (3.2)	25/ 4.7	200/ 39
SWW-1236	2-1/4 (57.2)		3-3/4 (95.3)	1 (25.4)	25/ 5.8	150/ 36
SWW-1242	2-3/4 (69.9)		4-1/4 (108.0)	1-1/2 (38.1)	25/ 6.5	150/ 40
SWW-1254	3 (76.2)		5-1/2 (139.7)	2-3/4 (69.9)	25/ 7.8	150/ 48
SWW-5842	2-1/2 (63.5)	5/8" - 11	4-1/4 (108.0)	7/8 (22.2)	10/ 4.2	100/ 43
SWW-5850	3-1/4 (82.6)		5 (127.0)	1-5/8 (41.3)	10/ 4.8	100/ 49
SWW-5870	3-1/2 (88.9)		7 (177.8)	3-5/8 (92.1)	10/ 6.7	30/ 21
SWW-3446	2-1/4 (57.2)	3/4" - 10	4-3/4 (120.7)	3/4 (19.1)	10/ 6.8	60/ 41
SWW-3454	3 (76.2)		5-1/2 (139.7)	1-1/2 (38.1)	10/ 8.1	50/ 41

\* For continuous extreme low temperature applications, use stainless steel.

## PERFORMANCE TABLE

# Trubolt

## Wedge Anchors

## Ultimate Tension and Shear Values (Lbs/kN) in Concrete\*

ANCHOR DIA. In. (mm)	INSTALLATION TORQUE Ft. Lbs. (Nm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	f'c = 2000 PSI (13.8 MPa)		f'c = 4000 PSI (27.6 MPa)		f'c = 6000 PSI (41.4 MPa)	
				TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
1/4 (6.4)	4 (5.4)	1-1/8 (28.6) 1-15/16 (49.2) 2-1/8 (54.0)	WS-Carbon or WS-G Hot-Dipped Galvanized or WW-304 S.S. or SWW-316 S.S.	1,180 (5.2) 2,100 (9.3) 2,260 (10.1)	1,400 (6.2) 1,680 (7.5) 1,680 (7.5)	1,780 (7.9) 3,300 (14.7) 3,300 (14.7)	1,400 (6.2) 1,680 (7.5) 1,680 (7.5)	1,900 (8.5) 3,300 (14.7) 3,300 (14.7)	1,400 (6.2) 1,680 (7.5) 1,680 (7.5)
3/8 (9.5)	25 (33.9)	1-1/2 (38.1) 3 (76.2) 4 (101.6)		1,680 (7.5) 3,480 (15.5) 4,800 (21.4)	2,320 (10.3) 4,000 (17.8) 4,000 (17.8)	2,240 (10.0) 5,940 (26.4) 5,940 (26.4)	2,620 (11.7) 4,140 (18.4) 4,140 (18.4)	2,840 (12.6) 6,120 (27.2) 6,120 (27.2)	3,160 (14.1) 4,500 (20.0) 4,500 (20.0)
1/2 (12.7)	55 (74.6)	2-1/4 (57.2) 4-1/8 (104.8) 6 (152.4)		4,660 (20.7) 4,660 (20.7) 5,340 (23.8)	4,760 (21.2) 7,240 (32.2) 7,240 (32.2)	5,100 (22.7) 9,640 (42.9) 9,640 (42.9)	4,760 (21.2) 7,240 (32.2) 7,240 (32.2)	7,040 (31.3) 10,820 (48.1) 10,820 (48.1)	7,040 (31.3) 8,160 (36.3) 8,160 (36.3)
5/8 (15.9)	90 (122.0)	2-3/4 (69.9) 5-1/8 (130.2) 7-1/2 (190.5)		6,580 (29.3) 6,580 (29.3) 7,060 (31.4)	7,120 (31.7) 9,600 (42.7) 9,600 (42.7)	7,180 (31.9) 14,920 (66.4) 15,020 (66.8)	7,120 (31.7) 11,900 (52.9) 11,900 (52.9)	9,720 (43.2) 16,380 (72.9) 16,380 (72.9)	9,616 (42.8) 12,520 (55.7) 12,520 (55.7)
3/4 (19.1)	110 (149.2)	3-1/4 (82.6) 6-5/8 (168.3) 10 (254.0)		7,120 (31.7) 10,980 (48.8) 10,980 (48.8)	10,120 (45.0) 20,320 (90.4) 20,320 (90.4)	10,840 (48.2) 17,700 (78.7) 17,880 (79.5)	13,720 (61.0) 23,740 (105.6) 23,740 (105.6)	13,300 (59.2) 20,260 (90.1) 23,580 (104.9)	15,980 (71.1) 23,740 (105.6) 23,740 (105.6)
7/8 (22.2)	250 (339.0)	3-3/4 (95.3) 6-1/4 (158.8) 8 (203.2)		9,520 (42.3) 14,660 (65.2) 14,660 (65.2)	13,160 (58.5) 20,880 (92.9) 20,880 (92.9)	14,740 (65.6) 20,940 (93.1) 20,940 (93.1)	16,580 (73.8) 28,800 (128.1) 28,800 (128.1)	17,420 (77.5) 24,360 (108.4) 24,360 (108.4)	19,160 (85.2) 28,800 (128.1) 28,800 (128.1)
1 (25.4)	300 (406.7)	4-1/2 (114.3) 7-3/8 (187.3) 9-1/2 (241.3)		13,940 (62.0) 14,600 (64.9) 18,700 (83.2)	16,080 (71.5) 28,680 (127.6) 28,680 (127.6)	20,180 (89.8) 23,980 (106.7) 26,540 (118.1)	22,820 (101.5) 37,940 (168.8) 37,940 (168.8)	21,180 (94.2) 33,260 (148.0) 33,260 (148.0)	24,480 (108.9) 38,080 (169.4) 38,080 (169.4)

\* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

\* For Tie-Wire Wedge Anchor, TW-1400, use tension data from 1/4" diameter with 1-1/8" embedment.

\* For continuous extreme low temperature applications, use stainless steel.

## PERFORMANCE TABLE

# Trubolt

## Wedge Anchors

## Ultimate Tension and Shear Values (Lbs/kN) in Lightweight Concrete\*

ANCHOR DIA. In. (mm)	INSTALLATION TORQUE Ft. Lbs. (Nm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	LIGHTWEIGHT CONCRETE f'c = 3000 PSI (20.7 MPa)		LOWER FLUTE OF STEEL DECK WITH LIGHTWEIGHT CONCRETE FILL f'c = 3000 PSI (20.7 MPa)	
				TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	25 (33.9)	1-1/2 (38.1) 3 (76.2)	WS-Carbon or WS-G Hot-Dipped Galvanized or WW-304 S.S. or SWW-316 S.S.	1,175 (5.2) 2,825 (12.6)	1,480 (6.6) 2,440 (10.9)	1,900 (8.5) 2,840 (12.6)	3,160 (14.1) 4,000 (17.8)
1/2 (12.7)	55 (74.6)	2-1/4 (57.2) 3 (76.2) 4 (101.6)		2,925 (13.0) 3,470 (15.4) 4,290 (19.1)	2,855 (12.7) 3,450 (15.3) 3,450 (15.3)	3,400 (15.1) 4,480 (19.9) 4,800 (21.4)	5,380 (23.9) 6,620 (29.4) 6,440 (28.6)
5/8 (15.9)	90 (122.0)	3 (76.2) 5 (127.0)		4,375 (19.5) 6,350 (28.2)	4,360 (19.4) 6,335 (28.2)	4,720 (21.0) 6,580 (29.3)	5,500 (24.5) 9,140 (40.7)
3/4 (19.1)	110 (149.2)	3-1/4 (82.6) 5-1/4 (133.4)		5,390 (24.0) 7,295 (32.5)	7,150 (31.8) 10,750 (47.8)	5,840 (26.0) 7,040 (31.3)	8,880 (39.5) N/A

\* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

## PERFORMANCE TABLE

### Trubolt Wedge Anchors

### Recommended Edge and Spacing Distance Requirements for Shear Loads\*

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	EDGE DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. EDGE DISTANCE AT WHICH THE LOAD FACTOR APPLIED = .60 In. (mm)	MIN. EDGE DISTANCE AT WHICH THE LOAD FACTOR APPLIED = .20 In. (mm)	SPACING REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. ALLOWABLE SPACING BETWEEN ANCHORS In. (mm) LOAD FACTOR APPLIED = .40
1/4 (6.4)	1-1/8 (28.6) 1-15/16 (49.2)	WS-Carbon or WS-G Hot-Dipped Galvanized or WW-304 S.S. or SWW-316 S.S.	2 (50.8) 1-15/16 (49.2)	1-5/16 (33.3) 1 (25.4)	N/A N/A	3-15/16 (100.0) 3-7/8 (98.4)	2 (50.8) 1-15/16 (49.2)
3/8 (9.5)	1-1/2 (38.1) 3 (76.2)		2-5/8 (66.7) 3-3/4 (95.3)	1-3/4 (44.5) 3 (76.2)	N/A 1-1/2 (38.1)	5-1/4 (133.4) 6 (152.4)	2-5/8 (66.7) 3 (76.2)
1/2 (12.7)	2-1/4 (57.2) 4-1/8 (104.8)		3-15/16 (100.0) 5-3/16 (131.8)	2-9/16 (65.1) 3-1/8 (79.4)	N/A 1-9/16 (39.7)	7-7/8 (200.0) 6-3/16 (157.2)	3-15/16 (100.0) 3-1/8 (79.4)
5/8 (15.9)	2-3/4 (69.9) 5-1/8 (130.2)		4-13/16 (122.2) 6-7/16 (163.5)	3-1/8 (79.4) 3-7/8 (98.4)	N/A 1-15/16 (49.2)	9-5/8 (244.5) 7-11/16 (195.3)	4-13/16 (122.2) 3-7/8 (98.4)
3/4 (19.1)	3-1/4 (82.6) 6-5/8 (168.3)		5-11/16 (144.5) 6-5/16 (160.3)	3-3/4 (95.3) 5 (127.0)	N/A 2-1/2 (63.5)	11-3/8 (288.9) 9-15/16 (252.4)	5-11/16 (144.5) 5 (127.0)
7/8 (22.2)	3-3/4 (95.3) 6-1/4 (158.8)		6-9/16 (166.7) 8-1/2 (215.9)	4-5/16 (109.5) 6-1/4 (158.8)	N/A 3-1/8 (79.4)	13-1/8 (333.4) 12-1/2 (317.5)	6-9/16 (166.7) 6-1/4 (158.8)
1 (25.4)	4-1/4 (108.0) 7-3/8 (187.3)		7-7/8 (200.0) 10-1/16 (255.6)	5-1/8 (130.2) 7-3/8 (187.3)	N/A 3-11/16 (93.7)	15-3/4 (400.1) 14-3/4 (374.7)	7-7/8 (200.0) 7-3/8 (187.3)

\* Spacing and edge distances shall be divided by 0.75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

## PERFORMANCE TABLE

### Trubolt Wedge Anchors

### Recommended Edge and Spacing Distance Requirements for Tension Loads\*

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	EDGE DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. ALLOWABLE EDGE DISTANCE AT WHICH THE LOAD FACTOR APPLIED = .65 In. (mm)	SPACING REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. ALLOWABLE SPACING AT WHICH THE LOAD FACTOR APPLIED = .70 In. (mm)
1/4 (6.4)	1-1/8 (28.6) 1-15/16 (49.2) 2-1/8 (54.0)	WS-Carbon or WS-G Hot-Dipped Galvanized or WW-304 S.S. or SWW-316 S.S.	2 (50.8) 1-15/16 (49.2) 1-5/8 (41.3)	1 (25.4) 1 (25.4) 13/16 (20.6)	3-15/16 (100.0) 3-7/8 (98.4) 3-3/16 (81.0)	2 (50.8) 1-15/16 (49.2) 1-5/8 (41.3)
3/8 (9.5)	1-1/2 (38.1) 3 (76.2) 4 (101.6)		2-5/8 (66.7) 3 (76.2) 3 (76.2)	1-5/16 (33.3) 1-1/2 (38.1) 1-1/2 (38.1)	5-1/4 (133.4) 6 (152.4) 6 (152.4)	2-5/8 (66.7) 3 (76.2) 3 (76.2)
1/2 (12.7)	2-1/4 (57.2) 4-1/8 (104.8) 6 (152.4)		3-15/16 (100.0) 3-1/8 (79.4) 4-1/2 (114.3)	2 (50.8) 1-9/16 (39.7) 2-1/4 (57.2)	7-7/8 (200.0) 6-3/16 (157.2) 9 (228.6)	3-15/16 (100.0) 3-1/8 (79.4) 4-1/2 (114.3)
5/8 (15.9)	2-3/4 (69.9) 5-1/8 (130.2) 7-1/2 (190.5)		4-13/16 (122.2) 3-7/8 (98.4) 5-5/8 (142.9)	2-7/16 (61.9) 1-15/16 (49.2) 2-13/16 (71.4)	9-5/8 (244.5) 7-1/16 (195.3) 11-1/4 (285.8)	4-13/16 (122.2) 3-7/8 (98.4) 5-5/8 (142.9)
3/4 (19.1)	3-1/4 (82.6) 6-5/8 (168.3) 10 (254.0)		5-11/16 (144.5) 5 (127.0) 7-1/2 (190.5)	2-7/8 (73.0) 2-1/2 (63.5) 3-3/4 (95.3)	11-3/8 (288.9) 9-15/16 (252.4) 15 (381.0)	5-11/16 (144.5) 5 (127.0) 7-1/2 (190.5)
7/8 (22.2)	3-3/4 (95.3) 6-1/4 (158.8) 8 (203.2)		6-9/16 (166.7) 6-1/4 (158.8) 6 (152.4)	3-5/16 (84.1) 3-1/8 (79.4) 3 (76.2)	13-1/8 (333.4) 12-1/2 (317.5) 12 (304.8)	6-9/16 (166.7) 6-1/4 (158.8) 6 (152.4)
1 (25.4)	4-1/2 (114.3) 7-3/8 (187.3) 9-1/2 (241.3)		7-7/8 (200.0) 7-3/8 (187.3) 7-1/8 (181.0)	3-15/16 (100.0) 3-11/16 (93.7) 3-9/16 (90.5)	15-3/4 (400.1) 14-3/4 (374.7) 14-1/4 (362.0)	7-7/8 (200.0) 7-3/8 (187.3) 7-1/8 (181.0)

\* Spacing and edge distances shall be divided by 0.75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

### Combined Tension and Shear Loading—for Trubolt Anchors

Allowable loads for anchors subjected to combined shear and tension forces are determined by the following equation:

$$(P_s/P_t)^{2/3} + (V_s/V_t)^{2/3} \leq 1$$

$P_s$  = Applied tension load     $V_s$  = Applied shear load     $P_t$  = Allowable tension load     $V_t$  = Allowable shear load



# APPENDIX B: Strength Design Performance values in accordance to 2006 IBC

## ITW RED HEAD TRUBOLT WEDGE ANCHOR

### DESIGN INFORMATION TESTED TO ICC-ES AC193 AND ACI 355.2, IN ACCORDANCE WITH 2006 IBC

**Trubolt®**  
Wedge Anchors

#### TRUBOLT WEDGE ANCHOR DESIGN INFORMATION<sup>1,2,3</sup>

DESIGN INFORMATION	Symbol	Units	Nominal Anchor Diameter									
			1/4		3/8		1/2		5/8		3/4	
Anchor O.D.	$d_o$	in	0.250		0.375		0.500		0.625		0.750	
Effective embedment	$h_{ef}$	in	1-1/2	2	1-3/4	2-5/8	1-7/8	3-3/8	2-1/2	4	3-1/2	4-3/4
Minimum member thickness	$h_{min}$	in	4	4	4	5	5	6	5	8	6	8
Critical edge distance	$c_{ac}$	in	2-5/8	3	2-5/8	5-1/4	3-3/4	6-3/4	5	8	7	9
Minimum edge distance	$c_{min}$	in	1-3/4	1-1/2	2-1/4	2	3-3/4	3-3/4	4-1/4	3-1/4	3-3/4	3-1/2
Minimum anchor spacing	$s_{min}$	in	1-3/4	1-1/2	2-1/4	2	3-3/4	3-3/4	4-1/4	3-1/4	3-3/4	3-1/2
Min. Specified Yield Strength	$f_y$	lb/in <sup>2</sup>	55,000									
Min. Specified Ultimate Strength	$f_{uta}$	lb/in <sup>2</sup>	75,000									
Effective tensile stress area	$A_{se}$	in <sup>2</sup>	0.032		0.078		0.142		0.226		0.334	
Steel strength in tension	$N_s$	lb	2,385		5,815		10,645		16,950		25,050	
Steel strength in shear	$V_s$	lb	1,430		2,975	3,490	4,450	6,385	6,045	10,170	10,990	15,030
Pullout strength, uncracked concrete	$N_{p,uncr}$	lb	1,392	1,706	2,198	3,469	2,400	4,168	4,155	6,638	8,031	10,561
Anchor Category (All anchors are ductile)			1									
Effectiveness factor $k_{uncr}$ uncracked concrete			24									
Axial stiffness in service load range	$\beta$	lb/in	14,651	9,385	17,515	26,424	32,483	26,136	42,899	21,749	43,576	28,697
Coefficient for variation for axial stiffness in service load range			34	47	28	45	17	33	55	22	63	28
Strength reduction factor $\phi$ for tension, steel failure modes			0.75									
Strength reduction factor $\phi$ for shear, steel failure modes			0.65									
Strength reduction factor $\phi$ for tension, concrete failure modes, Condition B			0.65									
Strength reduction factor $\phi$ for shear, concrete failure modes, Condition B			0.70									

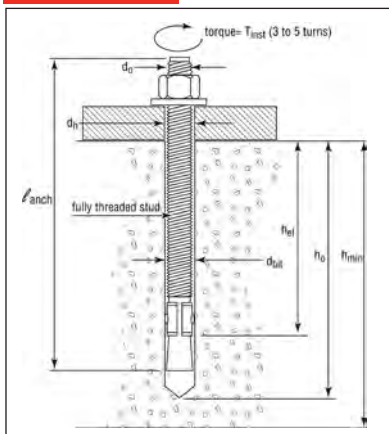
<sup>1</sup> Trubolt+ Anchor Design Strengths must be determined in accordance with ACI 318-05 Appendix D and this table

<sup>2</sup> The Trubolt+ Wedge Anchor is a ductile steel element as defined by ACI 318 D.1

<sup>3</sup> 1/4", 3/8", & 1/2" diameter data is listed in ICC-ES ESR-2251.

**Trubolt®**  
Wedge Anchors

#### TRUBOLT WEDGE ANCHOR (INSTALLED)



#### TRUBOLT WEDGE INSTALLATION INFORMATION

	Symbol	Units	Nominal Anchor Diameter (in.)									
			1/4		3/8		1/2		5/8		3/4	
Anchor outer diameter	$d_o$	in	0.25		0.375		0.5		0.625		0.750	
Nominal carbide bit diameter	$d_{bit}$	in	1/4		3/8		1/2		5/8		3/4	
Effective embedment depth	$h_{ef}$	in	1-1/2	2	1-3/4	2-5/8	1-7/8	3-3/8	2-1/2	4	3-1/2	4-3/4
Min hole depth	$h_o$	in	2	2-1/2	2-1/2	3-3/8	2-3/4	4-1/4	3-3/4	5-1/4	4-3/4	6
Min slab thickness	$h_{min}$	in	4	4	4	5	5	6	5	8	6	8
Installation torque	$T_{inst}$	ft-lb	4		25		55		90		110	
Min hole diameter in fixture	$d_h$	in	5/16		7/16		9/16		11/16		13/16	



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# APPENDIX B: Strength Design Performance values in accordance to 2006 IBC

**Trubolt®**  
Wedge Anchors

## TRUBOLT WEDGE PULLOUT STRENGTH ( $N_{p, unc}$ ) (POUNDS) <sup>1</sup>

Nominal Anchor Diameter (in.)	Effective Embedment Depth (in.)	Concrete Compressive Strength			
		$f'_c = 2,500$ psi	$f'_c = 3,000$ psi	$f'_c = 4,000$ psi	$f'_c = 6,500$ psi
1/4	1-1/2	1,392	1,525	1,610	1,822
	2	1,706	1,869	1,947	2,151
3/8	1-3/4	2,198	2,408	2,621	3,153
	2-5/8	3,469	3,800	3,936	4,275
1/2	1-7/8	2,400	2,629	3,172	4,520
	3-3/8	4,168	4,520	4,520	4,520
5/8	2-1/2	4,155	4,155	4,376	5,578
	4	6,638	6,900	7,968	10,157
3/4	3-1/2	8,031	8,322	9,610	12,251
	4-3/4	10,561	10,561	10,561	12,251

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 0.006895 Mpa

<sup>1</sup> Values are for single anchors with no edge distance or spacing reduction.

## TRUBOLT WEDGE ANCHOR ALLOWABLE STATIC TENSION (ASD), NORMAL-WEIGHT UNCRACKED CONCRETE <sup>1-6</sup>

Nominal Anchor Diameter (in.)	Effective Embedment Depth (in.)	Concrete Compressive Strength			
		$f'_c = 2,500$ psi	$f'_c = 3,000$ psi	$f'_c = 4,000$ psi	$f'_c = 6,500$ psi
1/4	1-1/2	611	670	707	800
	2	749	821	855	945
3/8	1-3/4	965	1,058	1,151	1,385
	2-5/8	1,524	1,669	1,729	1,878
1/2	1-7/8	1,054	1,155	1,393	1,985
	3-3/8	1,831	1,985	1,985	1,985
5/8	2-1/2	1,825	1,825	1,922	2,450
	4	2,915	3,030	3,499	4,461
3/4	3-1/2	3,527	3,655	4,221	5,381
	4-3/4	4,638	4,638	4,638	5,381

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 0.006895 Mpa

Design Assumptions:

<sup>1</sup> Single anchor with static tension load only.

<sup>2</sup> Concrete determined to remain uncracked for the life of the anchorage.

<sup>3</sup> Load combinations from 2006 IBC, Sections 1605.2.1 and 1605.3.1 (no seismic loading).

<sup>4</sup> Thirty percent dead load and 70 percent live load, controlling load combination  $1.2D + 1.6L$ .

<sup>5</sup> Calculation of weighted average:  $1.2D + 1.6L = 1.2(0.3) + 1.6(0.7) = 1.48$

<sup>6</sup> Values do not include edge distance or spacing reductions.



## TRUBOLT WEDGE ANCHOR ALLOWABLE STATIC SHEAR (ASD), STEEL (POUNDS)<sup>1-5</sup>

Nominal Anchor Diameter (in.)	Effective Embedment Depth (in.)	Allowable Steel Capacity, Static Shear
1/4	1-1/2	628
	2	
3/8	1-3/4	1,307
	2-5/8	1,533
1/2	1-7/8	1,954
	3-3/8	2,804
5/8	2-1/2	2,655
	4	4,467
3/4	3-1/2	4,827
	4-3/4	6,601

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 0.006895 Mpa

Design Assumptions:

<sup>1</sup> Single anchor with static shear load only.

<sup>3</sup> Load combinations from 2006 IBC, Sections 1605.2.1 and 1605.3.1 (no seismic loading).

<sup>3</sup> Thirty percent dead load and 70 percent live load, controlling load combination  $1.2D + 1.6L$ .

<sup>4</sup> Calculation of weighted average:  $1.2D + 1.6L = 1.2(0.3) + 1.6(0.7) = 1.48$

<sup>5</sup> Values do not include edge distance or spacing reductions.



