

STRUCTURAL MATERIALS TESTING BRANCH
OFFICE OF STRUCTURAL MATERIALS TESTING
CALIFORNIA DEPARTMENT OF TRANSPORTATION

AUTHORIZED SHELL-TYPE MECHANICAL EXPANSION ANCHORS

| Type | Manufacturer | Name | Stud Diameter | Installation Torque | Model | Hole Depth | Drill Bit Diameter | Drill Bit Tip Tolerance | Installation Tool |
|---------------|-----------------------|---------------------|---------------|---------------------|---------------------------------|----------------|--------------------|--------------------------------|-------------------|
| Internal Plug | ITW Ramset / Red Head | Multi Set II Anchor | 1/4 inch | 4 ft-lbs | RM-14 1/4" φ x 1" | 1-1/2" | 3/8" | 0.390"/0.398" (min/max) | RT-14 |
| Internal Plug | ITW Ramset / Red Head | Multi Set II Anchor | 1/2 inch | 22 ft-lbs | RM-12 1/2" φ x 2" | 2-1/2" | 5/8" | 0.650"/0.660" (min/max) | RT-12 |
| Internal Plug | ITW Ramset / Red Head | Multi Set II Anchor | 3/4 inch | 80 ft-lbs | RM-34 3/4" φ x 3" | 3-1/2" | 1" | 1.030"/1.042" (min/max) | RT-34 |
| External Plug | ITW Ramset / Red Head | Non-Drilling Anchor | 1/4 inch | 4 ft-lbs | J-14 1/4" φ x 1- 1/8" | 1-5/8" | 7/16" | 0.458"/0.468" (min/max) | JD-14 |
| External Plug | ITW Ramset / Red Head | Non-Drilling Anchor | 1/2 inch | 22 ft-lbs | J-12 1/2" φ x 2- 1/16" | 2-9/16" | 11/16" | 0.713"/ 0.723" (min/max) | JD-12 |
| External Plug | ITW Ramset / Red Head | Non-Drilling Anchor | 3/4 inch | 80 ft-lbs | J-34 | Not Authorized | Not Authorized | Not Authorized | Not Authorized |

Notes: (No changes have been made to the content of this list since Nov. 20, 1997)

1. Authorized shell-type anchors shown in the above tables have been creep tested per CT 681.
2. The table lists basic installation details for authorized anchors.
3. The hole depths are the minimum required by Caltrans and include a 1/2-inch recess (See Caltrans Bridge Design Aids, Section 5).
4. Shell-type units shown above are electroplated with zinc, and these are not suitable in an corrosive environment.
5. These anchors are generally not tapped oversize to accept a hot-dip galvanized stud or cap screw, and are not furnished with a stud, nut, or washer.

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| Type | Manufacturer | Name | Stud Diameter | Model | Hole Depth | Drill Bit Diameter | Drill Bit Tip Tolerance | Installation Tool |
|---------------|---------------------------|-------------------------|---------------|----------------------------|----------------|--------------------|--------------------------------|-------------------|
| Internal Plug | POWERS FASTNERS (Rawplug) | Steel Drop-In | 1/4 inch | 6304 | Not Authorized | Not Authorized | Not Authorized | Not Authorized |
| Internal Plug | POWERS FASTNERS (Rawplug) | Steel Drop-In | 1/2 inch | 6308 1/2" φ x 2-3/8" | 2-7/8" | 5/8" | 0.650"/0.660" (min/max) | 6309 |
| Internal Plug | POWERS FASTNERS (Rawplug) | Steel Drop-In | 3/4 inch | 6312 3/4" φ x 3-1/2" | 4" | 1" | 1.030"/1.042" (min/max) | 6313 |
| External Plug | POWERS FASTNERS (Rawplug) | Steel Drop-In Ext. Plug | 1/4 inch | 6460 | Not Authorized | Not Authorized | Not Authorized | Not Authorized |
| External Plug | POWERS FASTNERS (Rawplug) | Steel Drop-In Ext. Plug | 1/2 inch | 6465 1/2" φ x 2" | 2-1/2" | 11/16" | 0.713"/ 0.723" (min/max) | 6808 |
| External Plug | POWERS FASTNERS (Rawplug) | Steel Drop-In Ext. Plug | 3/4 inch | 6468 3/4" φ x 3" | 3-1/2" | 1" | 1.030"/1.042" " (min/max) | 6812 |

Notes: (No changes have been made to the content of this list since Nov. 20, 1997)

6. Authorized shell-type anchors shown in the above tables have been creep tested per CT 681.
7. The table lists basic installation details for authorized anchors.
8. The hole depths are the minimum required by Caltrans and include a 1/2-inch recess (See Caltrans Bridge Design Aids, Section 5).
9. Shell-type units shown above are electroplated with zinc, and these are not suitable in an corrosive environment.
10. These anchors are generally not tapped oversize to accept a hot-dip galvanized stud or cap screw, and are not furnished with a stud, nut, or washer.