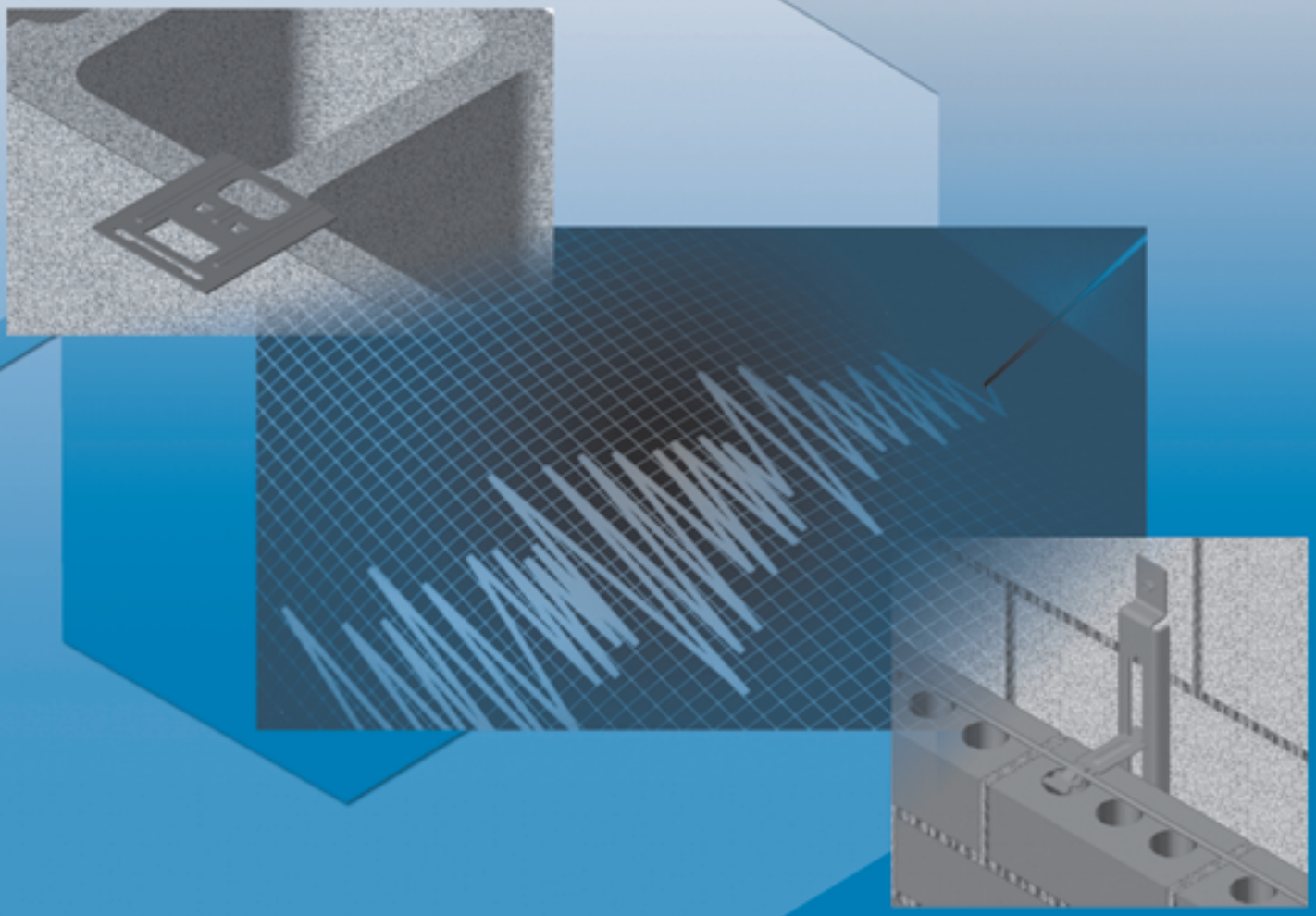
DUR-O-WAL
BY DAYTON SUPERIOR

SEISMIC PRODUCTS



Code Approved Masonry Connections
for Seismic Conditions and High Wind Loads

TECHNICAL DATA

MATERIAL CHOICES

Product	Sizes / Thickness
DA3700S Seismic Dur-O-Eye and	Wire: Std. 9 gage; Extra Heavy 3/16" Wire Side
DA3600S Seismic Ladur-Eye	Rods and 9 gage Cross Rods; Super Heavy all 3/16" Wire (Note: 3/16" wire is not recommended. Ask for Technical bulletin 93-1) Plates: 16 gage Seismic Pintles: 12 gage or 11 gage
DA8706 Pencil Rod (Deformed)	9 gage or 3/16" Wire
DA3200S Seismic Ladur	Std. 9 gage Side and Cross Rods; Extra Heavy 3/16" Wire Side Rods and 9 gage Cross Rods; Super Heavy all 3/16" Wire
DA813 Seismic Combs	3/16" Wire
DA5000 Series Repair Anchors	See Repair Manual
DA519 Seismic Adjustable Wall Ties	Plates: 16 gage Seismic Pintles: 12 gage or 11 gage
DA213S and DA5213S Seismic Anchors	Plates: 14 gage or 12 gage Seismic Pintles: 12 gage or 11 gage
DA131 Seismic Dovetail Anchor	16 gage, 14 gage and 12 gage
DA931 Seismic Channel Anchor	16 gage, 14 gage and 12 gage
DA431 and DA5431 Seismic Anchors	14 gage and 12 gage

MATERIAL AND PRODUCT SPECIFICATIONS	
Carbon Steel Wire	ASTM A82
Stainless Steel Wire	ASTM A580, Type 304
Carbon Sheet Steel	ASTM A1008, A109 or A1011
Stainless Sheet Steel	ASTM A167, Type 304
Joint Reinforcement	ASTM A951; UBC 2106.1.1

GALVANIZED FINISH SPECIFICATIONS	
Galvanized Sheet Steel	ASTM A653 (DA100 Slot Only)
Hot Dipped Galvanized	ASTM A153, Class B2

ASSEMBLY CAPACITIES

Seismic Dur-O-Eye; Seismic Ladur-Eye; DA213S Veneer Anchors			
DESCRIPTION	Average Ultimate Loads	Deflection @ 100 lbs.	Stiffness lbs./ in.
Heavy Duty Assembly - 12 ga. Plate / 11 ga. Pintle Capacity - Tension/Compression			
0" Eccentricity	1256 lbs.	0.013	7780
3/4" Eccentricity	380 lbs.	0.024	4120
1-1/4" Eccentricity	360 lbs.	0.047	2110
Standard Seismic Dur-O-Eye/Seismic Ladur-Eye Assembly - 16 ga. Plate* Standard DA213S 14 ga. Plate/12 ga. Pintle Capacity-Tension Compression**			
0" Eccentricity	730 lbs.	0.015	6666
3/4" Eccentricity	240 lbs.	0.037	2700
1-1/4" Eccentricity NOTE: Where anticipated eccentricity exceeds 1" DUR-O-WAL recommends 11 ga. Pintle	180 lbs.	0.170	588
Pintle Pull Out / Push Out From Mortar (Bed Joint)			
Without Continuous Joint Reinforcement	1160 lbs.	N/A	N/A
With Continuous Joint Reinforcement	1590 lbs.	N/A	N/A

*** NOTE: Loads shown are for DAS213S Veneer Anchors. Capacity and stiffness of Seismic Dur-O-Eye and Seismic Ladur-Eye assembly is greater.

DA3700S Seismic Dur-O-Eye® and DA3600S Seismic Ladur-Eye®

General Product Information

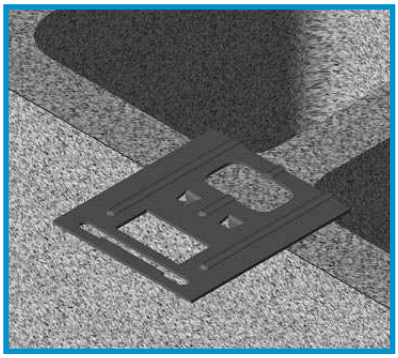
Current building codes are placing greater requirements on masonry construction in areas with significant seismic activity and/or wind loads. Included in these requirements is the need for more precise placement of reinforcing materials as well as special configurations which better distribute the load. DUR-O-WAL recommends the use of Seismic Dur-O-Eye® or Seismic Ladur-Eye® to tie two masonry wythes together where seismic or high wind loads may occur. Both products have been specifically engineered to simplify installation while providing more accurate placement. They allow for on-site vertical and horizontal adjustment. The design will help keep projects on schedule while assuring the integrity of the installation.

Seismic Dur-O-Eye® and Seismic Ladur-Eye® come in 10 ft. lengths with the Eye Plates welded 16 inches on center.

Code Approvals

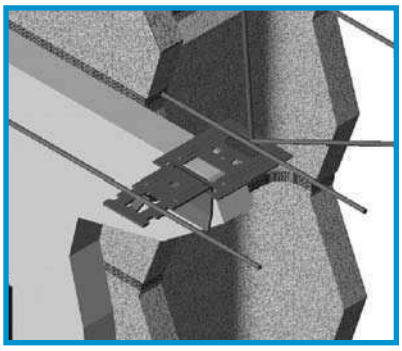
Both Eye assemblies meet the building code requirements for earthquake design UBC Chapter 21 for reinforcement and Chapter 14 for veneers. They also meet ASTM A951 for joint reinforcement and the requirements of ACI530/ASCE5/TMS402.

Fast, Easy Installation



The key to this system is its Steel Plate and Seismic Pintle. The welded steel Plate features positioning tabs on the underside which align the assembly with the masonry wall. Once in place these tabs assure proper mortar coverage for corrosion protection as well as proper embedment for maximum strength.

The Seismic Pintle has a pair of shear lugs to hold pencil rod or Seismic Ladur in place for greater pullout resistance and ductility in Seismic Zones 3 and 4 or in Seismic Performance Categories D and E. The mortar locks on the pintle sides help assure excellent pullout strength. The stiffening gussets provide added strength and the pintle hole allows moisture to pass through to minimize moisture problems.

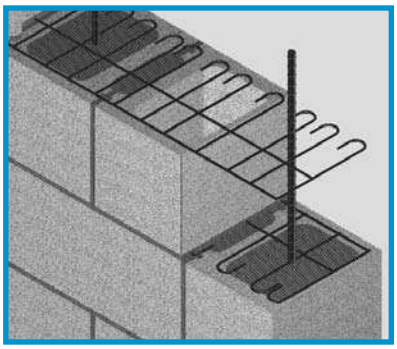


DA3600S

The Seismic Pintles adjust 1-1/4" either up or down for different course heights and allow for at least 1/2" horizontal in-plane movement to accommodate expansion and contraction.

With the plate and joint reinforcement as a single ready-to-use unit, there is no job site assembly or pieces with which to fumble. Besides the speed of erection, there is the assurance that every section is properly installed.

DA813 Seismic Comb

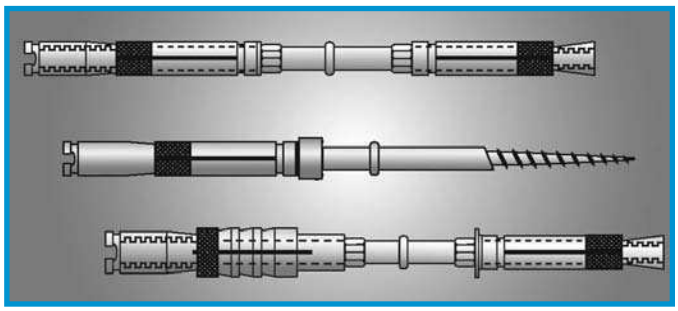


DA813 Seismic Comb

Seismic Combs are masonry confinement reinforcement or boundary members that are placed in the horizontal mortar joint to improve seismic performance of shear walls. They provide the vertical rebar confinement necessary to meet shear wall confinement requirements in the UBC Section 2108.2.5.6. Combs are fabricated of 3/16" diameter wire in a specific configuration. The length of each comb is 3 times the actual width of the masonry unit on which they are to be placed, ICC-ES approval is pending.

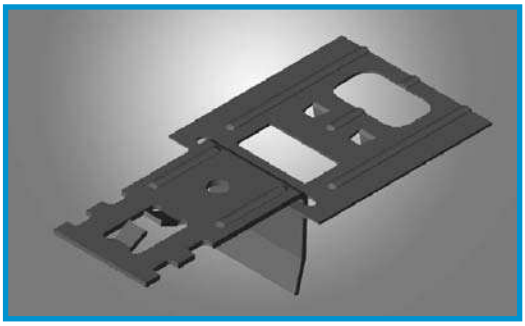
DA5000 Seismic Repair Anchors

The DA5000 series Seismic Repair Anchors are unique solutions to retrofit existing brick veneers with reinforcement and anchorage. They are mechanically activated in an efficient two-step installation technique and are manufactured of corrosion resistant materials. Installation occurs without demolition of the existing veneer or leaving exposed hardware on the brick surface thus leaving the aesthetic value of the masonry structure intact.



DA519 Seismic Adjustable Wall Ties

Seismic Adjustable Wall Ties are the same Plate and Seismic Pintle used in the seismic eye products but without the horizontal joint reinforcement in the back-up wall. The Plate can be cast into concrete or placed on the face shell of the block or bricknot quite sure how I got on this woman's email list.



DA519 Plate and Seismic Pintle

SEISMIC VENEER ANCHORING

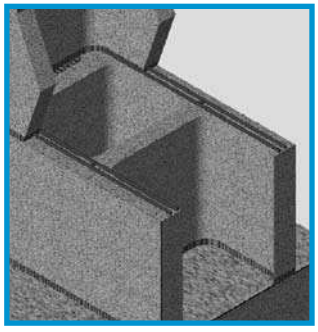
General Product Information

DUR-O-WAL's seismic veneer anchors are designed to meet performance criteria as defined by building codes such as the ACI530/ASCE5/TMS402 and UBC Chapter 14 for Seismic Zones 3 and 4 and Seismic Performance Categories D and E. Different anchors can be used to anchor brick veneer to metal stud, wood stud, concrete, block, brick and structural steel. The connectors are individually mounted and are easily installed. They all are fabricated with shear lugs to engage a piece of joint reinforcement, either Pencil Rod or Seismic Ladur, to provide for greater pull out stress resistance and ductility.

DA8706 Pencil Rod

This is a single deformed wire used as joint reinforcement particularly with clay brick.

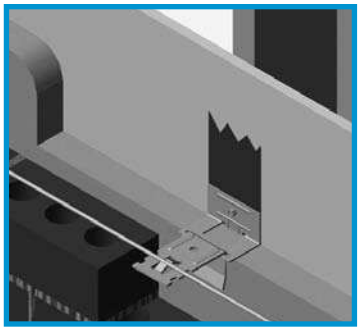
DA320S Seismic Ladur



DA320S Seismic Ladur

This is a prefabricated joint reinforcement measuring 5/8" out to out for embedment in horizontal mortar joints of reinforced masonry. It eliminates the need for intermediate bond beams (use of chord beams at top of walls is always recommended) and reduces grout requirements, wall shrinkage potential and dead weight of walls. It can also be used in external veneers for seismic requirements in Zones 3 and 4 and Seismic Performance Categories D and E. The double parallel wires distribute loads more evenly along entire length and welded cross rods and provide better anchorage for stress transfer.

DA213 Seismic Veneer Anchor



DA5213S with Pencil Rod

This anchor, has the same plate and pintle design as the Seismic Eye products. The plate is engineered to be attached to the substrate or back-up material and is designed to accommodate rigid insulation. The Seismic Pintles adjust 1-1/4" either up or down for different course heights and allow for at least 1/2" horizontal in plane movement to accommodate expansion and contraction. For wood or metal stud applications it is recommended that two screws be used.

Metal Stud: Use DA807 Veneer Stud Screws with co-polymer coating.

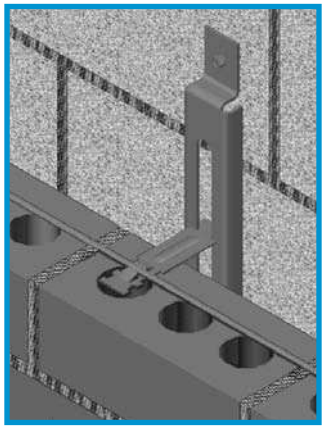
Wood Stud: Use DA808 Veneer Stud Screws with a corrosive resistant coating.

Stainless Steel applications: Use DA995 Stainless Steel Type 304 Screws for Metal Stud.

Concrete, block or brick: Specify DA5213S and the assembly is provided with an Expansion Anchor Fastener. The 1/4" bolt and washer is either Zinc Plated Carbon Steel or Stainless Steel, each with a brass sleeve and cone.

DA931 Seismic Channel Anchor

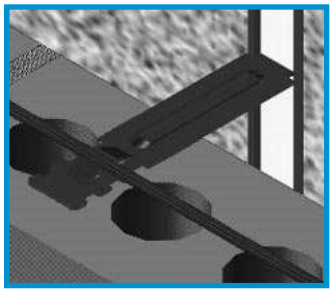
This is designed for use with DA900 Series Channel Anchor Slots to anchor veneer to structural steel or against concrete, block or brick substrates. This system is not recommended against wood or metal stud unless the DA903 Slot is used.



DA901 with DA931 with Pencil Rod

DA131 Seismic Dovetail Anchor

This is designed for use with the DA100 Dovetail Anchor Slot to anchor veneer to a concrete substrate. The DA100 is embedded in the concrete. The DA100 Slot is available in mill galvanized finish or Type 304 Stainless Steel.



DA131

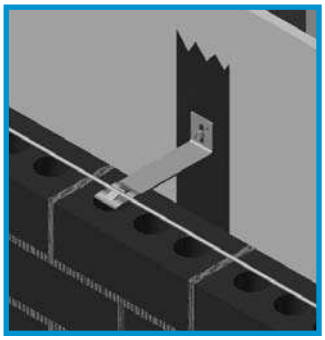
DA431 Seismic Veneer Anchor

This adjustable Seismic Veneer Anchor is especially effective where there is no air cavity or it does not exceed 3/4" inch. The T slot in the right angle bend allows for adjustability.

Metal Stud: Use DA807 Veneer Stud Screw with co-polymer coating.

Wood Stud: Use DA808 Veneer Stud Screw with a corrosive resistant coating.

Stainless Steel applications: Use DA995 Stainless Steel Type 304 Screw for metal stud, concrete, block or brick: Specify DA5431 and the assembly will be provided with an Expansion Anchor Fastener. The 1/4" bolt and washer is either Zinc Plated Carbon Steel or Stainless Steel each with a brass sleeve and cone.



DA431

Lite Duty Seismic Products

DUR-O-WAL has a line of Lite Duty seismic products for all applications using a Wire Pintle or a Triangular Tie with a welded Quake Tie to engage the joint reinforcement as required for Seismic-Zones 3 and 4 and Seismic Performance Categories D and E. For details and information, contact a DUR-O-WAL representative.

TECHNICAL DATA

FASTENER CAPACITY (LBS.)

Metal Stud Screw (Ultimate Load)		**Stud Thickness**		
		20 Gage	**18 Gage**	**16 Gage**
DA807 #10-16 Coated Screw		368 lbs.	547 lbs.	784 lbs.
DA995 #12-14 Stainless Steel 300 Series Screw		315 lbs.	472 lbs.	787 lbs.
Wood Stud Screw (Embedment in 2 x 4 Stud - Ultimate Tension)	**1/2 Inch**	**3/4 Inch**	**1 inch**	**1-1/4 Inch**
DA808 #9 Coated Screw	233 lbs.	312 lbs.	555 lbs.	676 lbs.
7/16" Expansion Anchor Fastener (Ultimate Load by Substrate)				
Concrete		3400 lbs.		
Hollow Brick		1300 lbs.		
Brick		2000 lbs.		
Mortar Joint		1300 lbs.		

FOR ADDITIONAL PRODUCT INFORMATION ASK FOR OUR CURRENT CATALOG AND/OR THE FOLLOWING:

Product	Ask For
DA3700S Seismic Dur-O-Eye	"Masonry Wall Reinforcement" Product Information Sheet
DA3600S Seismic Ladur-Eye	"Masonry Wall Reinforcement" Product Information Sheet
DA8706 Pencil Rod (Deformed)	Curent Catalog
DA3200S Seismic Ladur	"Masonry Wall Reinforcement" Product Information Sheet
DA813 Seismic Combs	"Seismic Combs" Product Information Sheet
DA5000 Series Repair Anchors	Repair Manual
DA519 Seismic Adjustable Wall Ties	Current Catalog
DA213S Seismic Anchors	"Veneer Anchoring Systems" Product Information Sheet
DA5213S and DA5431 Anchors	"Veneer Anchor Assemblies" Product Information Sheet
DA131 Seismic Dovetail Anchor	"Standard Anchors" Product Information Sheet
DA931 Seismic Channel Anchor	"Standard Anchors" Product Information Sheet
DA431 and DA5431 Seismic Anchors	"Ties and Anchors" Product Information Sheet
	"Veneer Anchoring Systems" Product Information Sheet
DA807, DA808, DA995 Screws	"Veneer Anchoring Systems" Product Information Sheet
DA5410 and DA5610 Expansion Anchors	Repair Manual and Technical Bulletin 92-1
Additional Test Data	Technical Bulletin 92-1 "Detailing and Selection Guide"
DA431 and DA213	Independent Test Data is Available

General Warranty

Seller makes no warranty of any kind, except that the goods sold under this agreement shall be of the standard quality of the seller, and buyer assumes all risk and liability resulting from the use of the goods, whether used singly or in combination with other goods. Seller neither assumes nor authorizes any person to assume for seller any other liability in conjunction with the sale or use of the goods sold, and there is no oral agreement or warranty collateral to or affecting this transaction.