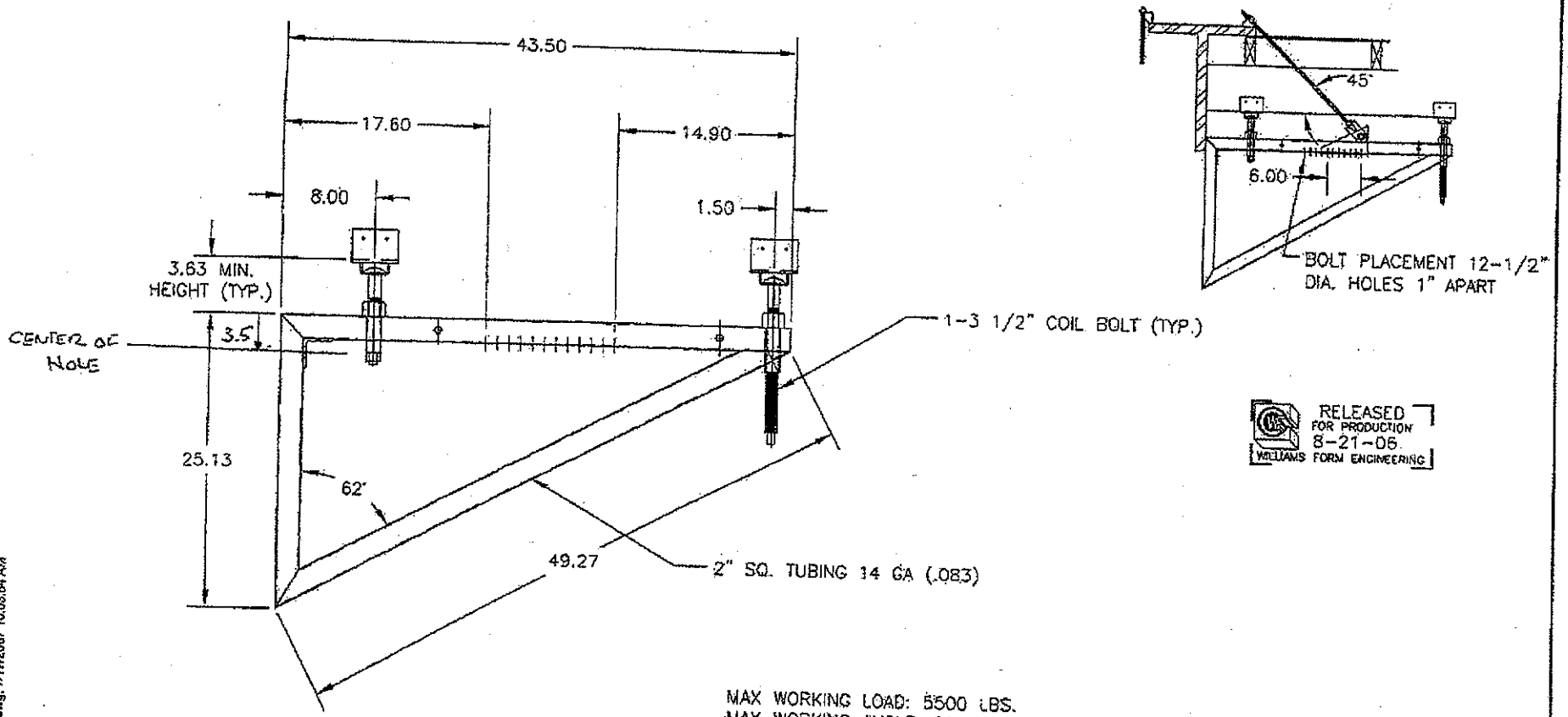


RELEASED
FOR PRODUCTION
8-21-06
WILLIAMS FORM ENGINEERING

MAX WORKING LOAD: 5500 LBS.
MAX WORKING ANGLE: 20°

REV	DATE	NAME	CHK.	CHANGE DESCRIPTION
A	8/27/02	AJT		REDRAWN

TOLERANCES UNLESS
OTHERWISE SPECIFIED
.XX, +/-.01, .XXX +/-.005
ANGLES +/- 0°-30'

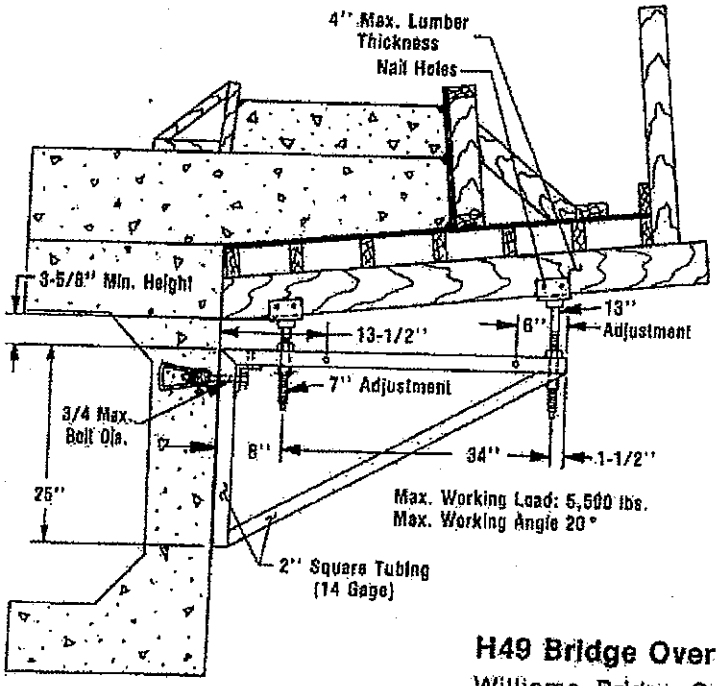
WILLIAMS
FORM ENGINEERING CORP.
2825 ANN ST. N.W., GRAND RAPIDS, MI 49510, PH: 616.365.9220 - FX: 616.365.2668

Customer:
Project: OVERHANG BRACKET

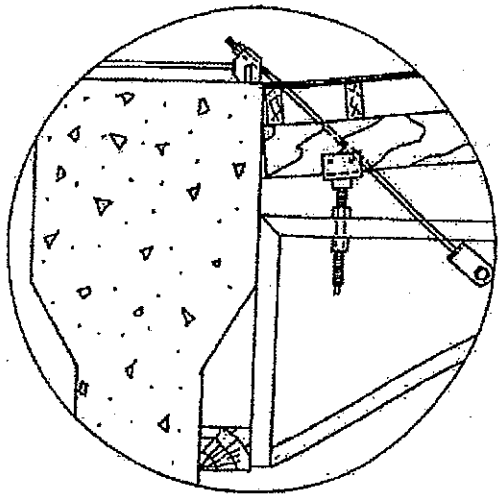
DRAWN BY: TM		ECO NO.: 350-363	
SCALE: 3/4=1		CO: ---	
DATE: 8-14-84		APPROVED:	
SHEET NO.: 1	TOTAL SHEETS: 1	DESIGNED BY: ---	
		TECH REV: ---	

PRINT NO.: 15B-FH-7-180

WILLIAMS BRIDGE BEAM HANGERS AND ACCESSORIES



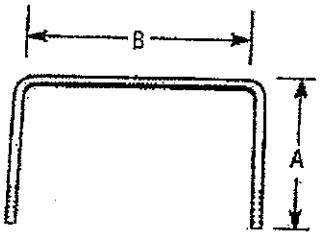
Precast Hanger Method



Optional Hanger Method

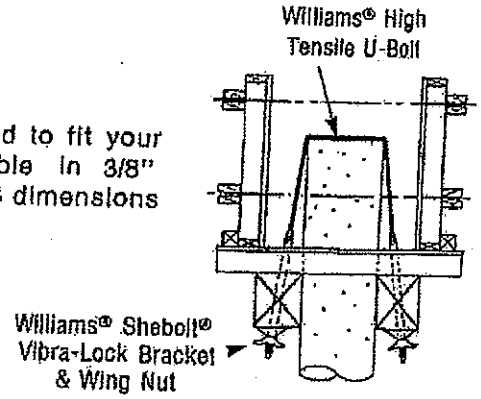
H49 Bridge Overhang Brackets

Williams Bridge Overhang Bracket is used to provide an easy method of forming bridge overhangs. The maximum working load is 5,500 lbs.



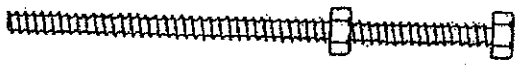
B2S U-Bolts

Round or square U-bolts manufactured to fit your measurement requirements. Available in 3/8" through 1" diameters. Specify A and B dimensions along with thread type and length.



B12 ADJUSTABLE COIL BOLT

The adjustable coil bolt was designed for those situations where a specific bolt length is not desired. This bolt consist of a coil nut welded firmly to the end of a continuous threaded rod, and a free running nut.



Diameter	Lengths				
1/2"(12mm)	12"(305mm)	16"(406mm)	18"(441mm)	20"(508mm)	24"(610mm)
3/4"(20mm)	12"(305mm)	16"(406mm)	18"(441mm)	20"(508mm)	24"(610mm)

SAFETY NOTES AND PRODUCT APPLICATION

WILLIAMS

Williams urges that the provisions of the Occupational Safety and Health Administration and "Building Code Requirements for Reinforced Concrete" (ACI 318-83) be followed by all persons and organizations designing in precast lifting inserts. We especially advise that the safety factors shown be adhered to. If there are unusual job conditions of shock, impact or vibration, safety factors should be increased.

ACI 318-83 BUILDING CODE

Lifting devices shall have a capacity sufficient to support four times the appropriate portion of the member's dead weight. The inclination of the lifting force shall be considered.

WALL PANEL CONNECTION ASSEMBLIES

Wall panel units should be safely and adequately sealed and fastened in position by positive mechanical connections with anchors capable of sustaining all loads and stresses due to compression, shear, tension, bending and torsion which may be applied to the wall panel, including positive and negative wind pressures and earthquake forces where required by code.

Safety Factors on Inserts

A.C.I. 318-83 and O.S.H.A. Part 1910 require that lifting inserts used in fabrication, handling and erection of precast concrete elements have a safety factor of 4 to 1. Inserts normally used in precast operations are now shown in this catalog with a safe working load based on a safety factor of 4 to 1. Other inserts used in precast operation not showing a safe working load based on 4 to 1 safety factor must be re-evaluated by the user to permit a 4 to 1 safety factor. All inserts showing a 4 to 1 safety factor, have an approximate ultimate strength based on the mechanical strength of the strut wires and welds. The safety factor of 4.0 provides at least 100 percent impact possibilities during erection. The intent of this factor is to avoid a brittle failure of the insert. It is not intended that any additional ø factor or load factor be used.

There are several factors which will affect the performance of an insert. The safe work load ratings and safety factors which are shown on the following pages were established with the following considerations:

TENSION

The safe working loads shown on the following charts are based on these conditions:

- The insert is embedded and completely surrounded in sound, uncracked concrete.
- Concrete compressive strength at time of loading is no less than that shown in charts.
- The insert is located at such distance, in relation to corners and edges, to allow the development of an adequate shear cone. Minimum edge distance for inserts in unreinforced panels and loaded axially are twice the length of insert or twice the panel thickness, whichever is greater.
- The tension load on the insert must be calculated to include the effects of both axial and transverse loads.
- The attachment bolt must be fully threaded into the insert and must extend at least 1½ threads beyond the end of the coil.

SHEAR

It is our experience that inserts embedded in concrete do not fail in shear. Failure of the insert is generally due to failure of the concrete above an insert when in the edge of a panel, or due to tensile stresses from application of transverse forces at a point some fixed distance from the face of the concrete.

The magnitude of these forces can be calculated and the values obtained must be added to the tension component to arrive at the total tension on the insert. The total tension must be the value used to properly select an insert.

For the unusual condition where pure shear loading must be considered, use the AISC allowable values in single shear for unfinished bolts which is 10,000 p.s.i.

Bolt Diameter	1/2"	5/8"	3/4"	7/8"	1"	1¼"	1½"
Allowable Shear (lbs.)	1950	3060	4410	6010	7850	12270	17670

To safely and effectively achieve these values, edge and corner distances must be great enough to prevent concrete failure.

DYNAMIC LOADS

All rated safe working loads and safety factors shown in this catalog are for "static" loading conditions. If shock, dynamic, or impact forces are anticipated, appropriate safety factors must be applied.

FOR SAFETY FACTORS FOR FORMWORK ACCESSORIES see page 47