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GENERAL APPROVAL – 4", 6", and 8" Clevis Hanger Assembly and Seismic Bracing Attachment Brackets of Support on Non Structural Components and Seismic Hold- down Clamps for Cable Tray.

DETAILS

1. 4", 6", and 8" Clevis Hanger Assembly:
Each size assembly consists of the following components:
   a) Fig. 1 CBS cross bolt spacer and Fig. B3100 Standard Clevis Hanger.
   b) 5/8" threaded rod for the 4" standard clevis hanger, ¾" threaded rod for the 6" and 8" standard clevis hanger.
   c) Fig. 980 sway brace attachment

The maximum allowable transverse load applied at the center of the pipe for each assembly is shown in Table 1.

2. Fig. 985 Mechanical Fast Clamp:
The Fig. 985 mechanical fast clamp is a low carbon steel used for attachment of seismic bracing to pipe hanger or trapeze. This clamp fits a rod size of 1/2" through 5/8" in diameter.

The maximum allowable load applied to a bracing member attached to the clamp at 30 or 45 degrees from a vertical plane are shown in Table 2.

3. Fig. 986 Mechanical Fast Clamp:
The Fig. 986 mechanical fast clamp is a low carbon steel used for attachment of seismic bracing to pipe hanger or trapeze. This clamp fits a rod size of ½" in diameter, or ½" bolt to attach to the structure.

The maximum allowable load applied to a bracing member attached to the clamp at 30 or 45 degrees from a vertical plane are shown in Table 2.

4. Fig. 981 Sway Brace Attachment:
The Fig. 981 sway brace attachment is a low carbon steel multi-functional attachment to hanger rod, strut or structural steel in a lateral or longitudinal brace assembly. The TOLCO Fig. 981 was designed to be used with B-Line B22 solid channel or steel pipe.

The maximum allowable load applied to a bracing member attached to the Fig. 981 sway brace at 30 or 45 degrees from a vertical plane are shown in Table 2.

5. Fig. 990 Cable Sway Brace Attachment:
The cable sway brace attachment is a carbon steel material with pre galvanized finish and is used to attach min 3/16” diameter pre-stretched galvanized aircraft cable to structure or hanger with a rod size of 1/2” in diameter, or ½” bolt to attach to the structure.

The maximum allowable load applied to the aircraft cable attached to the clamp at 30 or 45 degrees from a vertical plane are shown in Table 2.

6. Fig. 991 Cable Sway Brace Attachment:
The cable sway brace attachment is a carbon steel material with pre galvanized finish and is used to attach min 3/16” diameter pre-stretched galvanized aircraft cable to structure or hanger with a rod size of 3/8” through 5/8” in diameter.

The maximum allowable load applied to the aircraft cable attached to the clamp at 30 or 45 degrees from a vertical plane are shown in Table 2.

7. Fig. 9ZN-1205, 9ZN-1208, 9ZN-1241 & B335 Hold Down Clamps:
The hold down clamps hold B-Line branded cable tray to trapezes’ utilizing B-Line branded strut.

The Maximum allowable loads applied to the hold down clamps are shown in Table 3.

Table 1. Allowable Values (lbf) for Pipe Hangers with Clevis Assembly.

No.	Configuration	Brace Orientation from Vertical Plane 45 degree	30 degree
1	4" Clevis Hanger/Fig. 980	303	310
2	6" Clevis Hanger/Fig. 980	665	503
3	8" Clevis Hanger/Fig. 980	450	390

Note

1. The allowable loads are for design loads applied in the transverse direction at the center of the pipes.
2. Braces in the assembly and threaded rods & their connection to structure above must be designed per 2014LABC.
3. A factor of safety of 3.0 was applied to the lowest of three ultimate loades.

Table 2. Allowable Values (lbf) for Brace Attachments.

No.	Configuration	Brace Orientation from Vertical Plane 45 degree	30 degree
1	Fig. 981 with B-Line B22 Brace and 1/2" diameter rod.	N/A	1225
2	Fig. 981 with B-Line B22 Brace and 3/4" diameter rod.	1263	1225
3	Fig. 985 with B-Line B22 Brace and 5/8" diameter rod.	813	693
4	Fig. 986 with B-Line B22 Brace and 1/2" diameter rod.	786	796
5	Fig. 990 with 3/16" diameter cable and 1/2" diameter rod.	1386	1506
6	Fig. 991 with 3/16" diameter cable and 1/2" diameter rod.	1023	1073

Note

1. The allowable values are for the brace attachments only. Braces and other components must be designed per 2014 LABC
2. A factor of safety of 3.0 was applied to the lowest of three ultimate loades.

Table 3. Allowable Values (lbf) for Hold Down Clamps

No.	Part Number	Clamp			Guide		
		Design Load	Pt	Pl	Design Load	Pt	Pl
1	9ZN- 1205	570	482	154	570	482	-
2	9ZN-1208	570	482	154	570	482	-
3	9G-1241	1031	1239	702	-	-	-
4	B355	1195	502	168	-	-	-

Note

1. The allowable values are based on clamps being used in pairs.
2. The allowable values are applicable only with B-Line Strut
3. A factor of safety of 3.0 was applied to the average of three ultimate loads.
4. Load directions for design load, Pt and Pl are shown in detail HC01

The approval is subject to the following conditions:

1. Allowable capacities of brace attachments and clevis hanger assemblies are listed in Tables 1 and 2.

2. Existing ceiling, walls, or other structures that support hanger rods and brace attachments shall be evaluated by an architect, civil or structural engineer licensed in the State of California. The plans and calculations shall be submitted to structural plan check for review and approval.

3. Approval of the supported systems is outside the scope of the research report.

4. Calculations for the Design of hanger rods and brace elements in accordance with the 2014 Los Angeles City Building Code shall be submitted to structural plan check for review and approval.

5. Installation of the brace system shall be in accordance with the manufacturer’s instructions.

6. The design of the connection used to attach the clamps and sway braces to the supporting structure shall be evaluated by an architect, civil or structural engineer licensed in the State of California. The plans and calculations shall be submitted to structural plan check for review and approval.

7. The mechanical fast clamps, hold down clamps, and the sway braces shall not be used to resist forces produced by the effects of gravity.

8. The use of the clamps and sway braces is limited to the support of Non Structural components.

9. The design of the clamps and sway braces shall be in accordance with Chapter 13 of ASCE 7-10.

10. Cable Sway braces must be used in opposing pairs.

11. The brace attachments listed in Table 2 are only approved as specified under the Details section of this Research Report.

12. The allowable loads shall not be increased for duration of load.

DISCUSSION

The report is in compliance with the 2014 Los Angeles City Building Code.

The approval is based on load tests.

For this General Approval to be valid on any individual construction project in the City of Los Angeles, an engineer or inspector of the Department of Building and Safety must make a determination that all conditions of the General Approval required to provide equivalency have been met in the case of each construction project under consideration.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

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Attachments: detail drawings (15 Pages)