



INFORMATION SHEET

NO. S-16

DATE : April 13, 2017

CATEGORY : Structural

SUBJECT : **Proposal to use steel tension rod or cable to strengthen the wood diaphragm**

PURPOSE : This Information Sheet is to clarify whether proposal to use steel tension rod or cable to strengthen the wood diaphragm is acceptable.

REFERENCE : San Francisco Building Code
San Francisco Existing Building Code
ASCE 7-10 Minimum Design Loads for Buildings and other Structures
AB-082

DISCUSSION :

In reinforcing existing woodframe buildings to resist lateral loads, some of the existing floor/roof diaphragm may be weak and not comparable with the new buildings and in need of strengthening.

Steel tension rods or steel cables are proposed to be used to strengthen the diaphragm.

However, ASCE 7-10 Section 12.2.1 said: "The basic lateral and vertical seismic force-resisting system shall conform to one of the types indicated in Table 12.2-1 or a combination of systems as permitted in Sections 12.2.2, 12.2.3, and 12.2.4."

Since steel tension rods and steel cables are not listed in Table 12.2-1 or a combination of systems as permitted in Sections 12.2.2, 12.2.3, and 12.2.4, the proposal to use steel tension rods or steel cables to strengthen the diaphragm is unacceptable without proper technical documentation of strength, stiffness and connector adequacy and subject to Structural Design Review.

CONCLUSION :

The proposal to use steel tension rods or steel cables to strengthen the diaphragm in soft story retrofit is unacceptable.

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4/13/17
Date

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