



INFORMATION SHEET

NO. S-08

DATE : August 3, 2015

SUBJECT : Structural

TITLE : Miscellaneous Clarification of AB-107 on Engineering Criteria in SFBC Chapter 34B

PURPOSE : The purpose of this Information Sheet is to clarify the interpretation of AB-107 on horizontal diaphragms

REFERENCES : 2013 San Francisco Building Code
AB-107 Application of Engineering Criteria in SFBC Chapter 34B
ASCE 7-10 Minimum Design Loads for Buildings and Other Structures
AISC 341-10 Seismic Provisions for Structural Steel Buildings

DISCUSSION :

A. Notes on Horizontal Diaphragms:

1. Where new vertical elements are added or existing vertical elements are strengthened, completion of the load path requires demonstration that the expected forces in the vertical elements can be transferred to and developed into the diaphragm above.
2. The engineer is required to locally evaluate the adequacy of this part of the load path.
3. The force in the vertical element(s) being connected to the diaphragm is divided by the length of the vertical element(s), or by the length of the vertical element plus collector if a collector is provided, to derive the unit shear demand.
4. The shear demand is then compared to the unit shear capacity of the diaphragm.
5. Where demand is greater than capacity, either the diaphragm is strengthened or the length of the collector is increased.

6. The engineer is not required to check the diaphragm capacity at existing vertical elements that are not strengthened as it is assumed that the unit capacities of the existing vertical elements and diaphragm are comparable.
7. Shear transfer capacity between existing vertical elements and the horizontal diaphragm must be evaluated and provided if inadequate.

B. Frequently asked questions (FAQ) on Section A6.3. Use of Cantilevered Column Systems:

1. What is the source, standard or reference for “Cantilevered Column Systems”?

These systems are defined in ASCE 7-10. We are permitting a higher R factor for this particular situation.

2. What is the requirement for the beam-column connections?

There are no upper-level beams in cantilevered column systems. The connection to the grade beam below must develop the expected plastic moment at the base of each column.

3. Under what condition can the cantilevered column system be considered as Special Moment Frame?

The column must qualify for use in a special moment frame in AISC 341-10.

4. Under what condition can the cantilevered column system be considered as Intermediate Moment Frame?

The column must qualify for use in an intermediate moment frame in AISC 341-10.

5. Under what condition can the cantilevered column system be considered as Ordinary Moment Frame?

Any condition.

6. Any other requirements on the frame besides the columns?

See items 3 and 4 in Section A6.3 of AB107.

7. Is bracing required?

No.

8. Where in the code that justify an increase in R?

This is not a Code design. The increase in R is justified by judgment of SEAONC Existing Building Committee (EBC) and the Code Advisory Committee (CAC) as appropriate under the limitations in Section A6.3 of AB107.

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8/3/15

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on Date

Director

Department of Building Inspection

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