REQUEST FOR PROPOSAL
FOR
SHEATHING BRACED DESIGN OF WALL STUDS

1. SCOPE

The scope of work shall include the following:

a) Perform a literature search and propose an analytical approach for the study
b) Develop a suitable test program
c) Fabricate test specimens and conduct tests
d) Validate the analytical approach
e) Establish/modify design provisions for sheathing braced design of wall studs for axial, bending and combined axial and bending loading conditions

A report that can serve as technical substantiation for a ballot shall also be provided and submitted to the Wall Stud Design Task Group of the AISI Committee on Framing Standards (COFS) to allow adoption of the provisions in the AISI *Standard for Cold-Formed Steel Framing – Wall Stud Design* [*Wall Stud Standard*].

A testing program shall be developed to minimize the number of tests but statistically defend the results. The sponsor must approve the test program in advance of any testing. All the test data should be available to other researchers in an electronic format. The preferred format is Windows compatible Microsoft Excel.

2. BACKGROUND

The *Wall Stud Standard* currently provides a rational methodology for the sheathing braced design of wall studs in compression that is based on a combination of available test data and engineering judgment. The *Wall Stud Standard* currently has the following limitation:

> *"Wall stud assemblies using a sheathing braced design shall be designed assuming that identical sheathing is attached to both sides of the wall stud and connected to the bottom and top horizontal members of the wall to provide lateral and torsional support to the wall stud in the plane of the wall. Wall studs with sheathing attached to both sides that is not identical shall be permitted to be designed based on the assumption that the weaker of the two sheathings is attached to both sides."*

The methodology for the design of wall studs in bending is based on the assumption that sheathed walls would develop the full flexural strength of the studs.

3. OBJECTIVE

The objective of this project is to broaden the provisions for the sheathing braced design of wall studs in compression and bending to include similar, dissimilar and single-sided sheathing options, including the following:

- 1/2 " plywood fastened with No.8 screws spaced at 6 to 12 inches
- 7/16" OSB fastened with No.8 screws spaced at 6 to 12 inches
- 1/2" gypsum board fastened with No.6 screws spaced at 6 to 12 inches
- 5/8" gypsum board fastened with No.6 screws spaced at 6 to 12 inches

Single-sided sheathing should be considered with 33-mil x 1.5” wide horizontal steel straps equally spaced at 4 and 6-foot maximum, with blocking, on the unsheathed side.

> Note: When gypsum board is used, a limited number of tests shall include out-of-plane lateral load cycling to eliminate composite action and determine its influence on axial and lateral behavior.

The results must be applicable for the following range of parameters:

- Wall heights from 8 to 12 feet
- Stud spacing from 12 to 24 inches
- Stud depths from 3.5 to 8 inches
- Stud thickness from 27 to 118 mils
- Stud grades of 33 and 50 ksi

A further objective of this study would be to define the minimum wall length for which the provisions are applicable.

3. WORK PLAN

The proposal shall include a description of the research approach.

4. SCHEDULE

This is intended to be a multi-year project, to start in September 2006. Progress reports shall be given to the COFS Wall Stud Task Group at its regular spring and fall meetings, the next of which is presently scheduled during the week of October 23, 2006. The final report is due within 30 days of completion of the necessary work.

5. FORM OF THE FINAL PRODUCT

The contractor shall submit one camera-ready copy to facilitate the publishing of findings as an AISI Report. The contractor shall also provide an electronic copy of the report. The preferred format is Windows compatible Microsoft Word. An electronic document in PDF format is also encouraged.

6. IMPACT ON INDUSTRY

The development of a North American suite of standards, including one on wall stud design, is the goal of the Committee on Framing Standards. Establishing an effective and well accepted method for sheathing braced design would increase the reliability and cost effectiveness of cold-formed steel wall framing and acceptance of the suite of standards. Broadening the provisions for the sheathing braced design to address additional sheathing options will help expand the application of cold-formed steel framing in residential and non-residential construction.

7. BUDGET AND CO-FUNDING

The proposal shall include the total project cost, as well as any outside co-funding that has been secured. The proposal shall indicate the project cost by year.

8. QUALIFICATIONS

All proposals must be accompanied by a brief resume of personnel who will work on the project. The resume should identify those qualities and experiences which relate to cold-formed steel design, development of technical manuals, and similar. Subcontracts must be approved by the AISI prior to award of the contract.

Proposed contractors will designate a Project Director responsible for all phases of the work. The Contractor may use sub-contractors for portion of the work, but the Contractor retains responsibility for the final product. The Subcontractor must be approved by AISI.

9. PROPOSAL SUBMITTAL

Proposals shall be received no later than July 21, 2006 (e-mail is preferable), at the following address:

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