

2007

UltraScreen - Sight and Sound Barrier Partition Walls

Purdue ECT Team

Purdue University, ectinfo@ecn.purdue.edu

DOI: 10.5703/1288284315711

Follow this and additional works at: <http://docs.lib.purdue.edu/ectfs>



Part of the [Civil Engineering Commons](#), and the [Construction Engineering and Management Commons](#)

Recommended Citation

ECT Team, Purdue, "UltraScreen - Sight and Sound Barrier Partition Walls" (2007). *ECT Fact Sheets*. Paper 2.
<http://dx.doi.org/10.5703/1288284315711>

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact epubs@purdue.edu for additional information.



ULTRASCREEN: SIGHT AND SOUND BARRIER

THE NEED

Panels have been widely used for many years to act as sight and sound barriers in most of the highways and in residential areas where visual privacy is needed. Also, panels are used by persons living close to roadways and where it is desirable to minimize distractions caused by noise. The need of privacy fencing around commercial property and residential areas most of the times can be satisfied with cement or wood panels among others.

THE TECHNOLOGY

The United States Gypsum Company, early in the 1980's started developing technologies to improve and reduced costs using lightweight cement panels. Recently, USG along with AFM Corporation introduced ULTRASCREEN: Sight and Sound Barrier. This lightweight panels require no special equipment for installation, maintenance, or replacement making them beneficial. This latest development also creates a system with good acoustical performance and excellent strength to weight ratio.

The USG (United States Gypsum Company) pioneered major advances in the development of Durock Cement Board, which is an aggregated portland cement board reinforced with a polymer-coated glass fiber mesh. These panels have been of wide acceptance for a huge number of systems used to clad the exteriors of residential and commercial structures all over the North America.



FIGURE 1 ULTRASCREEN PANELS

The Sight and Sound Barrier panel are sold under the name ULTRASCREEN. The panels consist of a perform guard termite, mold, and mildew resistant EPS foam core with DUROCK cement board laminated to both sides. The panel may contain steel strip or



similar structural reinforcement sandwiched between the Durock and foam. The panel can be engineered to resist a specific design wind load by varying the panel thickness, reinforcement or number of cement board layers. The Sight and Sound Barrier (SSB) is pre-finished with a number of finishes including Stone or Exterior Texture Finish.

The SSB panels are designed to be slid into place between steel or pre-cast concrete wide flange columns, and stacked to the desired height. Standard panels are approximately 4 feet tall and 12 feet long, but can be customized to suit specific project requirements. Panel edges interlock, and are factory coated at this horizontal joint. The top panel is then finished across the top of the EPS Form core. Due to their light weight (a panel of 4' x 12' weighs 450 lbs.) the panels are lifted using a conventional boom truck and a function clapping jersey - wall lifting unit.

This system is typically designed to be used without a panel to post connection. For the more typical case where the panels is friction-fit between the columns, a high density polyethylene or hard rubber shim is used to close the small gap between the panel and the column. In the absence of this panel to post connection, the system is designed to ensure that all the loads are adequately transferred from the panel to the post, and that there is no possibility of slipping out. Also, this system has many features that withstand the harsh environment in which it will be placed. For example, the exterior of the panels include: perform guard top panel is finished, the EPS foam at the panel ends is coated with a weather resistant elastomeric finish. All of the above to protect it from ultraviolet degradation, exposure to road salts, corrosion, etc.

THE BENEFITS

- These light weight panels, can be quickly and easily installed using a boom truck. It takes much less time to install than masonry, therefore reduces traffic interruption for construction.
- All the components of the panels, are made from abundant raw materials and have recycled ingredients, such as fly ash, and recyclable products such as plastic and steel.
- ULTRASCREEN acts as a sound barrier because panels are sound-reflective and can be designed to provide even greater noise reduction by adding additional Durock Cement Board face layers.
- Another attractive feature of the panels is its low cost, because they are more inexpensive than current systems of screens. The costs are also reduced because of the system's rapid speed of installation.
- With the field installations it was demonstrated that signage can be bonded to the system successfully and how curved walls can be created to enhance design possibilities.



Figure 2 Another attractive feature of the panels is its low cost



Figure 4 Easy Panel Installation



Figure 3 Installation in Libertyville, where curved walls were used

STATUS

The performance assurance of ULTRASCREEN Sight and Sound Barrier was put to the test at USG Research Center in Libertyville, Illinois and at the USG plant at Santa Fe Springs, California.

The next step in the development process was to have the system evaluated by an independent engineering firm. Thus, ULTRASCREEN underwent a two year evaluation by the Highway Innovative Technology Evaluation Center (HITEC) of the Civil Engineering Research Foundation (CERF). Five trial installations were inspected during or immediately following the installation by the HITEC consultants. The installations range in size from four test panels erected in Toronto, Canada, to a 110 panel installation on a bridge along State Route 17 in Courning, New York. The sites were selected to cover a broad range of geography and site conditions.



POINTS OF CONTACT

AFM Corporation/ULTRASCREEN,

Phone: (952) 474-0809 Email: info@AFMcorporation.com

REFERENCES

1. UltraScreen - Sight and Sound Barrier, U.S. Gypsum Corporation 1998, Chicago IL
2. An Evaluation of Laboratory Test Results for the U.S. Gypsum Sight and Sound Screen System
<http://www.cerf.org/hitec/news/gypsum.htm>
3. An Evaluation of Field Installations of the U.S. Gypsum UltraScreen Sound Wall System,
<http://www.cerf.org/hitec/news/usg.htm>

REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

Purdue University does not endorse this technology or represents that the information presented can be relied upon without further investigation.

PUBLISHER

Emerging Construction Technologies, Division of Construction Engineering and Management, Purdue University, West Lafayette, Indiana