Structural Specifications for Paneling System

PART 1 - DESCRIPTION

The shop-fabricated panels consist of a three dimensional welded wire space frame utilizing a truss concept for stress transfer and stiffness. Each surface of the wire space frame has a 2 inch square welded mesh pattern of longitudinal and transverse wires of the same diameter (gauge 11, 12.5 or 14).

Individually welded internal strut wires or diagonals extend through the panel core between each surface. These galvanized strut wires are welded continuously in the required spacing so they form, with the welded wire fabric, into a triangulated truss system which greatly increases the panel strength.

When welded in place, these strut wires pierce through a modified expanded polystyrene core placed between the two layers of welded wire fabric, maintain the required distance apart and provide the shear transfer between the panel surfaces.

The modified expanded polystyrene core (minimum density 0.9 pounds per cubic foot) is held 1/2" or 3/4" from each face of the wire frame to permit the wire to be embedded in an application of approximately 1" - 2" thick concrete mixture with 2,500 psi minimum.

PART 2 - SCOPE

2 - 1 The Contractor Shall:

A. Furnish all labor, materials, equipment, supervision and services necessary for the installation of the Paneling System in accordance with these specifications and applicable drawings. Thepanels shall be manufactured only by Paneling System, and marketed only by Paneling System or their authorized representatives.

B. Fully coordinate the Paneling building system with other structural, mechanical, electrical and architectural components of the building structure.

PART 3 - TYPICAL SPECIFICATION

3 - 1 CODES:

All panel and mesh fabrication shall be in strict accordance with the Paneling System Manufacturing Practice and Quality Assurance Proceedures. Structural and fire characteristics shall meet the requirements of the Southern Building Code Congress International, Inc. (SBCCI), the Standard Building Code (SBC), the Council of American Building Code Officials (CABO), the International Conference of Building Officials (ICBO), Building Officials and Code Administrators International, Inc. (BOCA) and Uniform Building and Mechanical Codes (UBC).

3 - 2 DESIGN:

A. All design shall be in accordance with that specified in the Paneling System literature. Concrete design shall be in accordance with ACI 318-71 or ACI 506R-85 and ACI 506.2-77 (Revised 1983). Steel design shall be in accordance with the American Institute of Steel Construction Specification for Design Fabrication and Erection of Structural Steel. Calculations for loads and

loading conditions shall be based on Chapter 12 of the Standard Building Code. The calculations shall confirmthat the panel loads do not exceed those allowed by Section IV of the Southern Building Code Congress International, Inc. Report No. 9019.

B. Modified expanded polystyrene should be designed in accordance with American Society of Testing and Materials C578-87a (formerly HH-I-524C).

3 - 3 QUALIFICATIONS:
A. All materials used in fabrication and methods of fabrication shall comply with the requirements of the Paneling System Manufacturing Practice and Quality Assurance Proceedure.

B. All field erection, including panel splice fabrication, shall comply with the Instructions for installing Paneling System.

3 - 4 PLANS:
The manufacture's published installation instructions plus the plans and specifications shall be strictly adhered to and a copy of these instructions shall be available at all times on the job site installation.

3 - 5 STORAGE:
3 - D construction panels can be stored out of doors on well drained flat surfaces without protective covering. However, due to their light weight, care must be taken to prevent damage from winds. Care must be taken not to store any objects on top of the panels that would break the welds, puncture the polystyrene or warp the panels. Improper storage could result in subsequent alignment problems.

PART 4 - PRODUCTS

4 -1 MATERIALS:
The Paneling System consists of a three-dimensional welded wire frame, integrated with a modified expanded polystyrene insulation core. Each panel consists of the following:

A. Type 1 expanded poltstyrene foam core with a minimum density of 0.9 pounds per cubic foot; a flame spread index of 25 or less and a smoke developed rating of 450 or less when tested in accordance with ASTM E84; a potential heat of 6,000 BTU/sq. ft. or less when tested in accordance with NfiPA259. Thickness of panels can vary.

B. The reinforcement module (RIM) is manufactured with highly automated equipment. The welded wire fabric conforms to ASTM A185. The diagonal cross wires, as well as wire used in the fabrication of the welded wire fabric, conform to ASTM A82. Different configurations of RIM are manufactured depending on the end use.

PART 5 - PERFORMANCE CHARACTERISTICS

5 - 1 SIZES:

A. Panels are 4 feet wide and can be produced in lengths from 8 feet to 25 feet in increments of 8". Panel thickness ranges from 3 1/4" to 5 1/4" depending on thickness of polystyrene specified.

B. Dimensional tolerance - the tolerances shall comply with values listed in the manufacturers quality assurance procedures.

Note: Overall length ± 1/4" - 12' L or less, ± 1/2" - 12' L or more.
Overall width ± 1/8"
Overall thickness ± 1/4"
Location of truss wires within units ± 1/2"

	Fire Resistance	Polystyrene Core	Concrete Each Side
Standard Panel	1½ Hrs.	2½"	1½"
Light Panel	1½ Hrs.	1½"	1½"
Maximum Panel	1¾ Hrs.	2½"	1¾"
2 Hour Section	2 Hrs.	2½"	2"
3 Hour Section	3 Hrs.	2½"	2½"
4 Hour Section	4 Hrs.	2½"	3⅛"

5 - 2 STRUCTURAL TESTING:
Testing values of each panel shall meet or exceed those loads on Manufacturer's Load Design Charts. These charts were developed from results of tests conducted in accordance with ASTM E-72 and with provisions of ACI-318.

5 - 3 FIRE RESISTANCE:
Based on fire resistance calculations and the results of the Modified E - 108 Fire Test performed at Southwest Research Institute (SW RI Project No. 01-2601-407) the following fire resistance ratings may be assigned to thepanels provided carbonate shotcrete is applied:

PART 6 - INSTALLATION

6 -1 Erection:

A. Prior to erection the contractor or his representative shall inspect the site and report to the construction manager any condition that may affect the proper installation of the panels. Installation should not proceed until these conditions are corrected.

B. Paneling installation shall be carried out in strict accordance with the latest edition of the Manufacture's Instructions for Paneling System Erection. For any field deviation from standard load design, values shall be calculated and approved and signed or sealed by a qualified architect/engineer.

6 - 2 Concreting Practice:
Concrete can be applied by several methods; however, all concrete shall meet a minimum of 2,500 psi. All shotcrete construction, including materials, equipment, preliminary preparation, proportioning, shotcrete placement, curing and quality control shall comply with ACI 506R-85 Guide to shotcrete.

6 - 3 Testing:

A. An important aspect of quality control is the physical testing of the concrete during and after placement. ACI 506.2 describes in full the procedures to be followed in construction testing.

B. Normal testing ages for compressive strength are 7 and 28 days; however, shorter periods may be required under particular application or conditions.

SECTION 1: MILL ORDER REVIEW

A. Upon receipt of customer's purchase order, it will be transferred to a Paneling System sales order form by the sales department.

B. Special care will be taken to verify:

1. Quantities
2. Panel sizes
3. Gauge of wire used
4. Amount and gauge of accessory material
5. Thickness of expanded polystyrene to be used

C. After review and scheduling of production, the customer will be advised concerning delivery.

SECTION 2: RAW MATERIALS

A. Specification to suppliers

1. Welded Mesh: All suppliers of welded mesh will be informed in writing that 100% of the product delivered to Paneling System shall meet American Society of Testing Materials (ASTM) Specification A-185. In addition, suppliers will be charged with supplying mesh that conforms to "Specifications for Paneling System Paneling Building System" sheet.

2. Polystyrene: The polystyrene foam core shall have a minimum density of 0.9 pounds per cubic foot and shall comply with ASTM Specification C578-07a. Suppliers will have the following information printed on each panel:

a. The foam density
b. ASTM E84 test results
c. NFiPA 259 test results
d. Manufacturers label

The panels are to be delivered straight and damage free.

3. Gavanized Wire: All galvanized wire used in the manufacture of the Paneling will conform to ASTM A82.

B. All suppliers of incoming raw materials shall be inspected at the time of arrival for conditions mentioned in Section (A.) above. The steel shall be further inspected to see that it did not incur

water damage during transit. Any damage or poor quality shall be indicated on the shipping papers and the appropiate supplier will be notified.

C. Rejected material shall be identified at the time of reject using the appropriate tag which shall include the "reason for reject." If practical, the rejected material shall be stored in a separate location. Following notification of the supplier, the material will be disposed of in the appropiate manner that complies with environmental regulations, preferably returned for credit to the supplier.

SECTION III - PRODUCTION PROCEDURES

A. Prepartory Inspection: After mesh coils are mounted on the uncoiler mandrels, the first six feet of the coil will be measured to determine if spacing is within limits. Likewise, as polystrene panels are unpacked and loaded into the entry magazine, they will be examined for defects (cracks or gouges). Wire will be inspected in a similar manner as it is rewound onto spools. Observations here will focus on the quality and continuity of the zinc coating. Any quality problems detected will be reported at once to the supervisor.

B. Manufacturing Controls: It is the responsibility of the operating crew and supervisor to monitor all phases of production activity to insure that only quality product is being is being produced. Any equipment producing unacceptable product is to be stopped immediately and the necessary action taken to remedy the source of the trouble. Any products produced that fail to meet the quality standards are to be removed to the reject area at once.

1. Welds: Welds on both sides of the panel are to bevisually inspected during fabrication. No more than 1% of broken welds will be allowed on either side of any prime panel. Panels failing to meet this requirement may be successfully reconditioned using the portable patch welder.

2. Shearing off excess staywire: No more than 4% of the total staywire welds in any one panel shall have staywires protruding beyond 3/8" above the surface of the panel. Panels failing to meet this requirement may be successfully reconditioned.

3. Broken wires: Breaks in wires are permissible only if the number of breaks do not exceed more than 2% of the total number of wires in any one panel. It is permissible to have patch wires welded in place to bridge over breaks in mesh wires.

4. Overall dimensions: Overall panel dimensions shall comply with tolerances listed below:

Overall length	± ¼" panels less than 12' ± ½" panels 12' and greater
Overall width	± ⅛"
Overall thickness	± ¼"
Location of inserts within units	± ½"

SECTION IV - RECONDITIONING STATION RESPONSIBILITY

Besides the items listed below, workers in this area are charged to see that panels leaving the station are in overall prime condition including no bent wires and the correct identification is securely attached.

A. Staywire: Occasionally staywires are missing. They must be replaced with straight lengths of the proper gauge wire secured within 1/2" of the position of the original wire.

B. Welds and broken wires: Welds can be successfully be repaired using the Miller WT 2530 Spot Welder. Caution will be exercised to see that the proper heat setting and compression is achieved. Broken wires can be successfully repaired using another short piece of the same gauge wire welded adjacent to the break.

C. Dimensions: Panel can successfully be lengthened by adding the correct size of a loke panel utilizing cover mesh to bridge the connection on both sides of the panel. Cover mesh must be attached using a minimum of 30 connector clips per piece of cover mesh. (This procedure will not be used unless agreed to by the customer ahead of time.).

SECTION V - PACKAGING AND LOADING

Loading instructions are typically received at the time the order is taken. Special packaging and shipping instructions are included on the mill order. Due to the light weight of the product, every effort will be made by the plant to insure loading is conducted in such a manner so as to maximize the effecient use of space.

Panels will be stretch-wrapped and/or tarped according to the customers wishes. (Paneling System can not insure that damage will not incur to a covering tarp during transit.) On a flatbed truck, bands will be attached to the bundles of panels in such a manner as to prevent damage. Sufficient blocking lumber to secure the load along with instructions and assistance will be provided to all truckers.