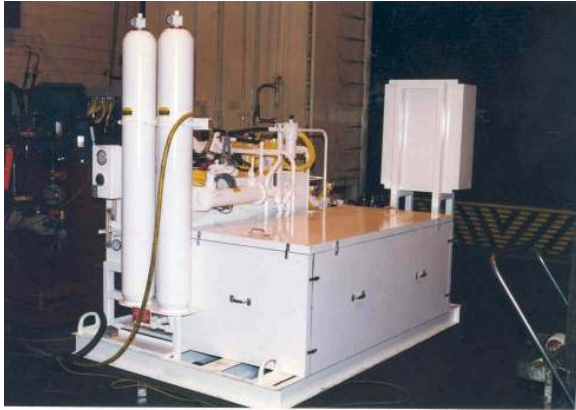


Product Data Section

Modular, Durable, Easy To Install Acoustical Panels For Maximum Noise Reductions



OEM enclosure for hydraulic pump unit utilizes HUSH GUARD™ type HG-QR-200 quick release design.



Minster punch press enclosure using type HG-400 panels.

Advantages:

- Modular design to form partial or complete enclosures, partitions, dividers and walls
- Standard 2', 3' & 4' wide panels can be combined with any size special width panels
- Turnkey design including doors, windows, silenced ventilation systems, lighting, structural steel and more
- Removable panels provide easy service access
- Durable rugged construction for long life
- Maximum noise reduction STC ratings of 37-48
- Highly customized designs to meet all customer needs/requirements
- Standard galvanized steel construction; also available in stainless steel and aluminum
- Readily assembled, demounted, relocated and/or reassembled without sacrificing structural integrity or acoustic performance

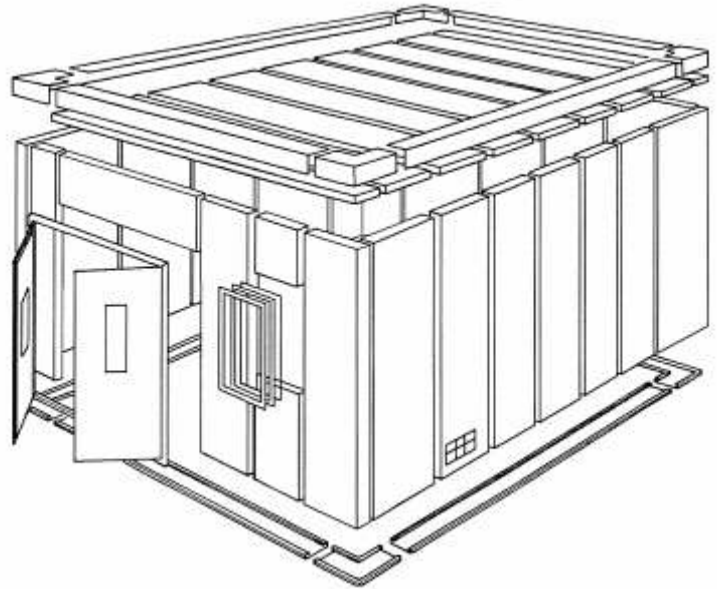
Applications:

- Machinery and equipment enclosures
- Shop offices and control pulpits
- Test environments
- Outdoor environmental barriers for HVAC, mass transportation, industrial and highway applications
- Broadcasting/recording studios
- Machine tool presses and equipment
- Music practice/educational study rooms
- Audiometric/medical test rooms
- Ovens
- Transformer stations
- Gas and electric utility equipment enclosures and barriers
- Partial personnel barriers
- Grinders, shredders and other size reduction equipment
- Wind tunnels
- HVAC fan plenums

Product Data Section

About BRD HUSH GUARD™ Products:

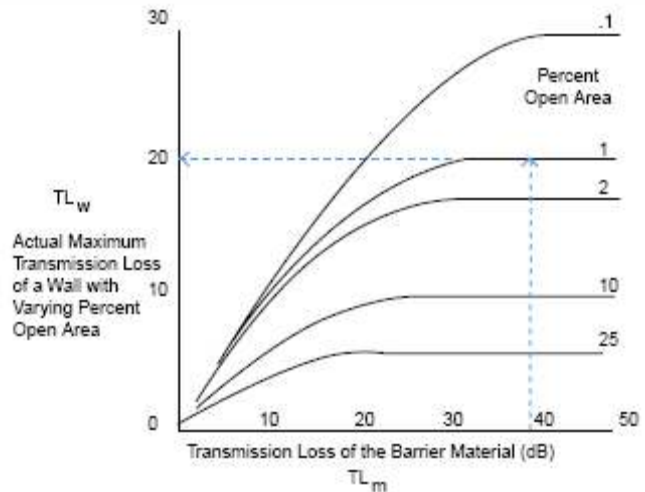
BRD HUSH GUARD™ acoustical panels are formed using sheet metal perimeter reinforcing channels spot welded or pop riveted to a solid and a perforated sheet filled with high density acoustical insulation for an overall thickness of 2", 4" or 6" as standard. The perforated sheet acts as a retaining screen for the insulation but is acoustically transparent allowing sound waves from the noise source to be absorbed. The outside solid sheet acts as a sound barrier reflecting incident sound waves back through the acoustic fill where further absorption takes place. Standard and custom manufactured panels assemble together using "H" joiners or by tongue and groove and are further secured using sheet metal self-tapping screws.



Exploded view of typical HUSH GUARD™ acoustical panel enclosure.

Panel Vs. Enclosure Performance

The tables on the next page list laboratory test data for an individual one piece panel. This will not always be indicative of the enclosure performance because of noise leakage (flanking) over the surface area of the enclosure walls and roof. Leakage around pipe penetrations, under doors and around windows, through air ventilation openings, etc. can drastically compromise the panel performance as shown on the graph at right. In the example, an enclosure design that has as little as 1% open area over the entire surface area of the enclosure exhibits an actual transmission loss of about 20 even though the panels are rated for almost 40 dB transmission loss. The lesson to learn is that design drives the enclosure performance as much or more than the panel ratings.



Product Data Section

Acoustic Performance Data:

Product	Sound Transmission Loss (dB) Frequency (Hz)						STC
	125	250	500	1000	2000	4000	
HG-200	17	23	34	47	55	57	37
HG-210	24	25	33	43	50	55	38
HG-400	21	28	39	48	56	58	40
HG-410	23	31	40	49	56	62	42
HG-420	27	34	41	46	53	59	44
HG-500	18	26	35	45	49	52	37

Product	Sound Absorption Coefficients Per Frequency (Hz)						NRC
	125	250	500	1000	2000	4000	
HG-200	0.15	0.66	1.07	1.06	0.97	0.86	0.95
HG-210	0.26	0.53	1.00	1.03	0.97	1.02	0.90
HG-400	0.60	1.13	1.12	1.09	1.03	0.91	1.00
HG-410	0.68	1.06	1.12	1.08	1.03	0.98	1.05
HG-420	0.45	0.96	1.15	1.10	1.05	0.97	1.05
HG-500	0.92	1.15	1.22	1.13	1.08	1.04	1.15

Panel Constructions:

	Thick- ness	Solid ¹ Skin	Perf. ¹ Skin ²	Weight per sq. ft.
HG-200	2"	18 ga.	22 ga.	4.0 lbs.
HG-210	2"	16 ga.	22 ga.	4.7 lbs.
HG-400	4"	18 ga.	22 ga.	5.0 lbs.
HG-410	4"	16 ga.	22 ga.	5.7 lbs.
HG-420	4"	16 ga.	22 ga.	9.6 lbs.
HG-500	5"	16 ga.	22 ga.	6.0 lbs.

1. Panel skins are all galvanized cold rolled steel.
2. Perf. skins have 3/32" holes on 3/16" staggered centers
3. Optional aluminum and high density polyethylene constructions.
4. All stiffeners and panel channel framing is minimum 18 ga. steel with face sheets spot welded in place.
5. Panels are designed to withstand wind loads of 25 lbs/sq. ft., both negative and positive.
6. Panel fill is non-combustible high density semi-rigid non-hygroscopic HUSH BATT™ packed under 5% compression.

Panel Finishes:

1. Galvanized steel (std.)
2. Galvanneal "Paint Ready" steel
3. Air dried shop applied
4. Thermosetting TGIC Polyester Powder Coating in color selected by Architect
5. Custom as specified

Steel Finishes:

1. Prime Painted (standard)
2. Primer with air dried shop applied finish paint
3. Hot dip galvanized (availability dependent on final steel member sizing)
4. Colors available to match panels
5. Sand blasting prep only as specified by contractor
6. Custom as specified

Product Data Section



Foundation with anchor bolts for columns.



Structural steel columns are erected.



Type HG-400 acoustical panels erected in the structural framework.

Installation Guidelines

1) PLANNING

Review the CAD erection drawings and bill of materials which will list all panels, trim (flashing) and other accessory items required for the job.

2) INSTALLATION OF STRUCTURAL STEEL

Most HUSH GUARD™ enclosures up to a size that does not exceed a 12' roof span in any one direction or height are completely self-supporting without the use of supplementary structural steel. When required, the structural steel will be detailed on the drawings and should be installed according to the instructions.

3) INSTALLATION OF BASE CHANNEL

Like all trim and flashing, the base channel is supplied in standard lengths and must be cut to size by the installing contractor. It is the customer's responsibility to be sure that the foundation or bearing surface is suitable for the support of the enclosure.

4) ERECTION OF WALL PANELS

Start at a corner and set panels on each side of the corner into the floor channel. Secure corner panels with outside corner flashing using sheet metal screws. Tongue and groove panels or supplementary H joiners are used to sequentially connect additional panels in either direction until all perimeter walls have been erected.

5) DOOR FRAMES AND DOORS

Door frames and doors are installed during the natural panel sequence with adjacent panels fitting against the frame on both sides for standard doors. Depending on the size, some standard and premium doors will be pre-installed in a larger panel.

6) INSTALLATION OF ROOF PANELS

Install the roof panels according to the erection sequence shown on the drawing.

7) INSTALLATION OF TRIM

Install all outside and inside trim and flashing. It is recommended to fasten inside flashing at all panel joints and at all internal panel stiffeners.

8) ACCESSORY ITEMS

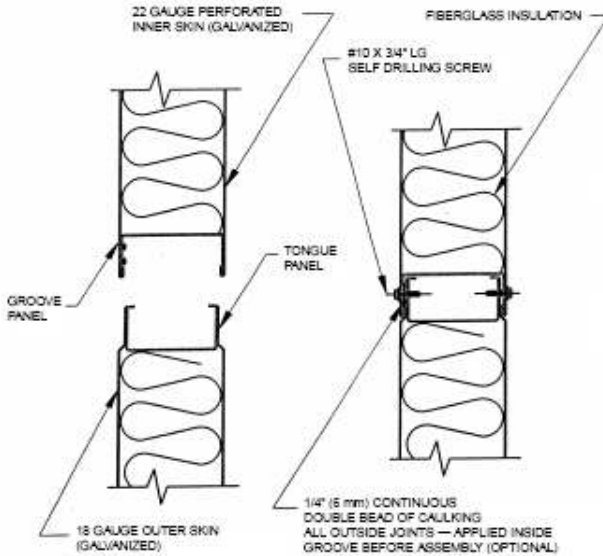
Lighting, ventilation systems and other accessories should be installed as per the drawings.

9) CUTOUTS

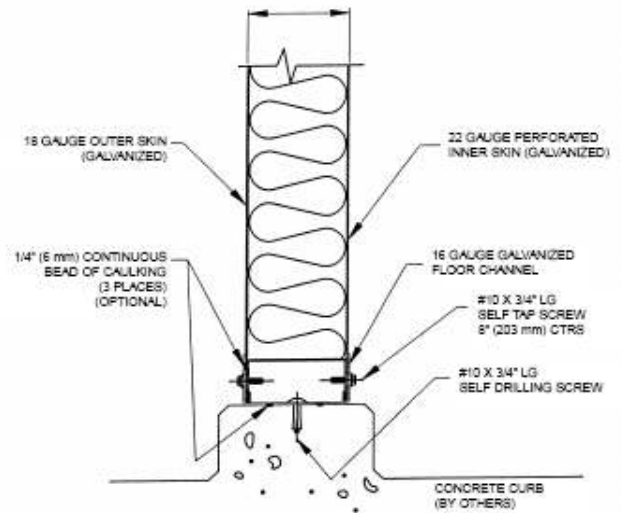
Factory and field cutouts must be sealed in accordance with BRD guidelines described in a separate bulletin.

Product Data Section

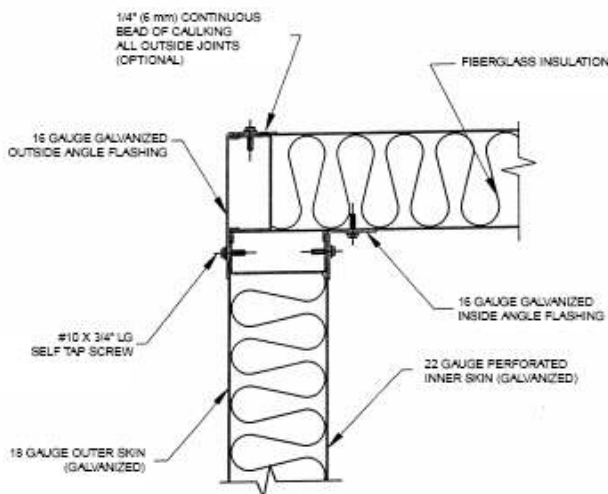
Typical Installation Details



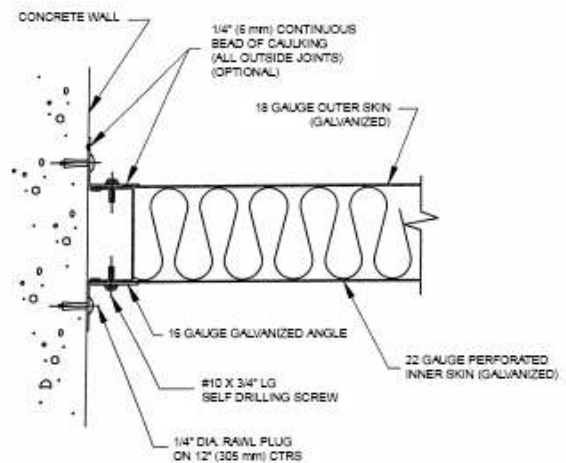
Typical Tongue And Groove Panel Connection



Typical Panel To Curb Connection



Typical 90 Degree Panel Connection



Typical Panel To Wall Connection

Product Data Section



Grinder enclosure using HUSH GUARD™ HG-400-SC panels. Scrap feed conveyor requires a separate feed tunnel complete with access doors to meet the 85 dBA requirement.



Type HG-400 panels are used to quiet an Amada automatic punch press. Design features include sliding access doors for material flow and integration of the control panel in the right side of the enclosure.

Minimum Design Goals For All HUSH GUARD™ Enclosures:

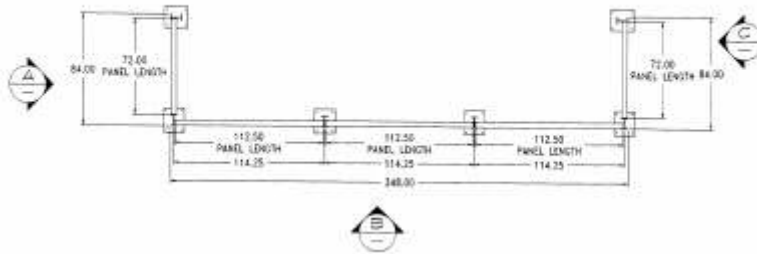
- Noise abatement/reduction
- Lowest dollar per dB reduction
- Provide for maintenance/service access
- Accommodate work flow
- Occupy minimum floor space
- Meet ventilation requirements
- Provide adequate lighting
- Facilitate necessary visual access
- Aesthetic design and appearance
- Maintain maximum productivity

Architectural Applications For HUSH GUARD™ Enclosures:

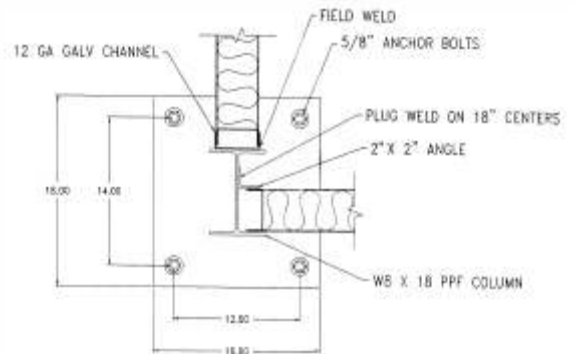
- Band practice rooms (see right)
- Recording/broadcast studios
- Language labs
- Medical and life sciences
- Test chambers
- Anechoic and hemi-anechoic chambers
- Rooftop barriers and screens
- Voice over booths
- Educational study rooms
- Music and choral rooms
- Tape recording rooms
- Dubbing rooms
- Interview/examination rooms
- Audiometric booths
- Radio rooms



Multiple room installation of HUSH GUARD™ HG-400 band practice rooms.



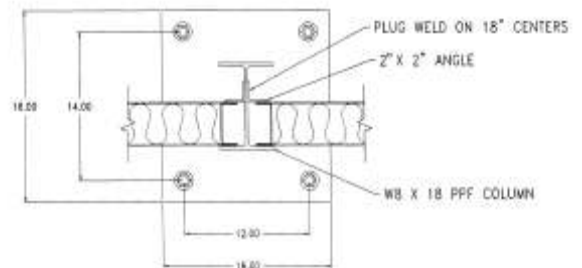
Plan View



Typical Corner Detail



Elevation "B"



Typical Column Detail

Typical Outdoor Sound Barrier Applications

- Utilities and substations
- Mass transportation
- Highway barriers
- Rooftop and HVAC equipment
- Airports and military bases
- Race tracks and open recreational areas
- Industrial, commercial and residential
- Any outdoor equipment or noise source
- Construction barriers (portable designs available for purchase or rent)



Rooftop sound barrier wall for HVAC unit

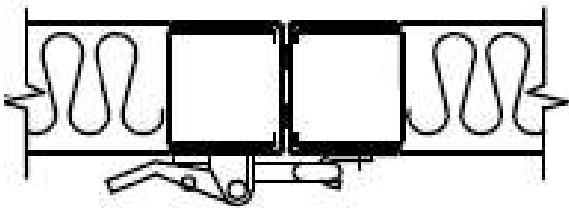


Metering station sound barrier wall

Product Data Section

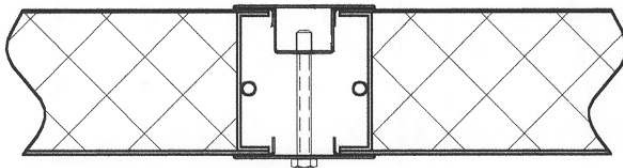
Non-Progressive Panel Joining Systems

- Free standing roof allows removal of individual components or complete walls without disturbing roof panels
- Individual panels can be quickly and selectively removed for service access
- Minimal sheet metal screws to cause erection or reassembly problems
- No tongue and groove fastening required
- Panels and components may be removed, reconfigured or relocated to meet future enclosure needs
- Three fastening systems available
- Highest degree of design flexibility, service access and ease of installation



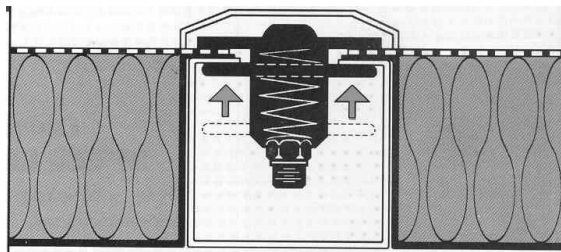
TYPE QR

Panel joining is done with tension latches and sponge gasketing



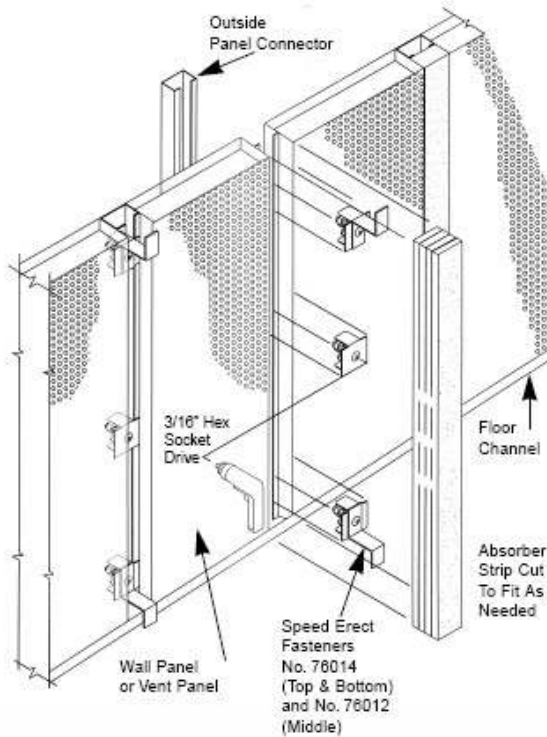
TYPE RH

Panel joining is done with two-piece removable "H" channels

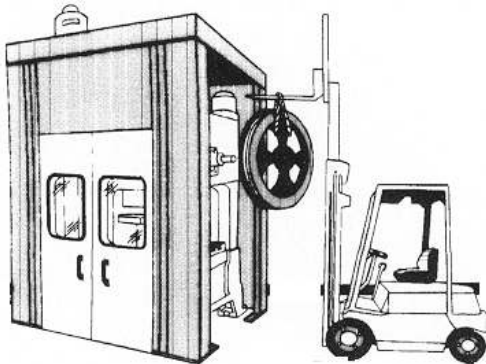


TYPE SE

Panel joining is done with Speed-Erect patented features



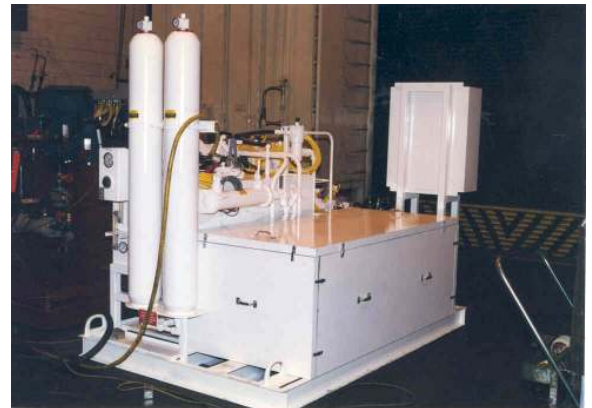
HUSH GUARD™ type SE panel joining as shown in above exploded view allows quick and easy access to areas not serviced through doors. The illustration below shows a model HGNP-401 enclosure with partially removed roof and side wall to access the punch press fly wheel.



Type QR panel joining with tension latches.



HUSH GUARD™ type SE enclosure with side wall panels removed.



Hydraulic pump enclosure using HG-QR-200 panel fastening.

Product Data Section

Non-Progressive Panel Constructions

Product	STC Rating	NRC Rating	Thickness	Panel Construction
HGNP-201	37	1.0	2"	16 gauge damped solid outer skin and 22 gauge perforated inner skin sandwiched around 2" of high density acoustical insulation.
HGNP-401	40	1.0	4"	16 gauge damped solid outer skin and 22 gauge perforated inner skin sandwiched around 4" of high density acoustical insulation.
HGNP-402	42	1.1	4"	14 gauge damped solid outer skin and 22 gauge perforated inner skin sandwiched around 4" of high density acoustical insulation.
HGNP-403	48	.95	4"	Same as construction for HGNP-402 with the addition of a septum barrier layer for increased low frequency performance (acoustic performance data is estimated).



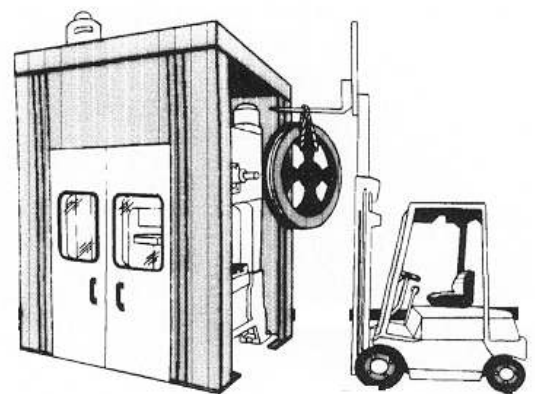
Header equipment enclosure with telescoping HGNP-201 access doors.



Custom OEM machinery enclosure with pneumatically operated access door.



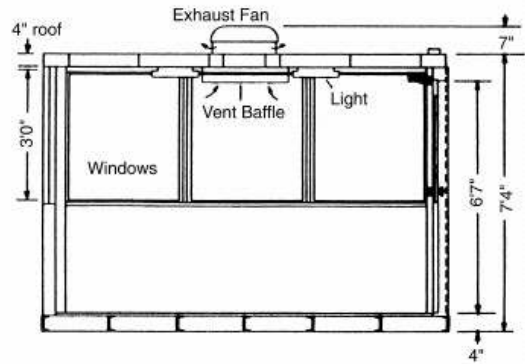
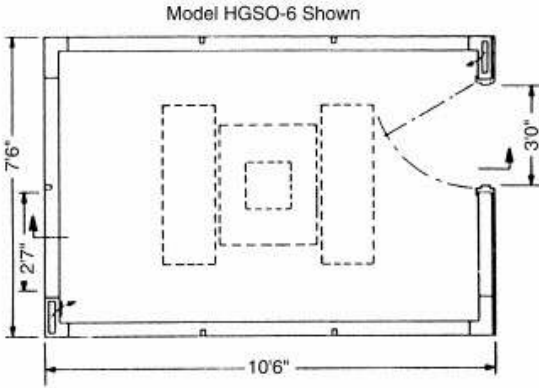
HGNP-402 enclosure with lift-out sliding access doors forming machine tool.



Non-progressive design allows easy access to areas not serviced through door openings.

Product Data Section

Standard And Custom Acoustical Shop Offices



MODEL	LENGTH	WIDTH	HEIGHT	WEIGHT (LBS.)
HGSO-1	48"	60"	88"	1,100
HGSO-2	48"	90"	88"	1,400
HGSO-3	78"	90"	88"	1,700
HGSO-4	90"	90"	88"	1,800
HGSO-5	108"	90"	88"	2,000
HGSO-6	126"	90"	88"	2,300
HGSO-7	153"	90"	88"	2,600

Dimensions do not include wall or roof mounted fans.



Custom modification of a model HGSO-2 at a cement plant.

Custom Designs:

- Custom dimensions
- Clam shell split designs
- Polycarbonate or other window materials
- Can ship fully assembled or knocked-down
- Can be integrated with control consoles
- Sloped windows for pulpit applications
- Platform mounted personnel enclosures

Optional Accessories:

- Drop ceilings and custom interior finishes
- Explosion proof electrical wiring
- Air filters
- Recessed lighting
- Integral vibration Isolation
- Heaters and air conditioners
- Eyebolts for lifting