

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

PERMIT ISSUED

Permit No: 02-1309	Issue Date: MAY 27 2003	BL: 153 A025001
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Location of Construction: 191 Harvard St Kimberly Ct	Owner Name: Sturdivant Lawrence J	Owner Address: 15 Garsoe Rd	Phone: 207-878-0680
Business Name: n/a	Contractor Name: Nail Construction	Contractor Address: 15 Garsoe Drive Portland 04103	Phone: 2078780680
Lessee/Buyer's Name: n/a	Phone: n/a	Permit Type: Multi Family	Zone: R-3 PRUD

Past Use: Vacant Land	Proposed Use: New 33 Unit PRUD / Application for units 3, 4, 5, 6, 7, 8, 9, and 10.	Permit Fee: \$7,189.00	Cost of Work: \$938,000.00	CEO District: 2
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Proposed Project Description: New 33 Unit PRUD / Application for units 3, 4, 5, 6, 7, 8, 9, and 10.	FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	INSPECTION: Use Group: R3 Type: 5B 1/21/03
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Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>
PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)	
Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied	
Signature:	Date:

Permit Taken By: gg	Date Applied For: 11/20/2002	Zoning Approval	
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<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..</p>	<p>Special Zone or Reviews</p> <p><input type="checkbox"/> Shoreland <i>N/A</i></p> <p><input type="checkbox"/> Wetland</p> <p><input type="checkbox"/> Flood Zone <i>Panelly Zone X</i></p> <p><input checked="" type="checkbox"/> Subdivision</p> <p><input checked="" type="checkbox"/> Site Plan <i>original #2002-0060</i></p> <p>Maj <input checked="" type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/></p> <p>Date: <i>1/21/03</i></p>	<p>Zoning Appeal</p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Denied</p> <p>Date:</p>	<p>Historic Preservation</p> <p><input checked="" type="checkbox"/> Not in District or Landmark</p> <p><input type="checkbox"/> Does Not Require Review</p> <p><input type="checkbox"/> Requires Review</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Approved w/Conditions</p> <p><input type="checkbox"/> Denied</p> <p>Date: <i>[Signature]</i></p>
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CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

752 0091

SIGNATURE OF APPLICANT _____ ADDRESS _____ DATE _____ PHONE _____

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE _____ DATE _____ PHONE _____

11/4/03 Unit # 6 C.J.O. ^{cellar} (1) Stairs need connection
Also (2) permit for gas fireplace and chimney
certificates. AR

11/4/03 Unit 6 C.J.O. Stairs OK. Still
needs items 2 & 3. Unit 2 needs items
2 & 3. AR

11/7/03 OK C.J.O. for Unit 6, and 2. AR

11/13/03 OK Close in #7. AR

11/20/03 Close in for #8 OK. AR

2/15/04 Final on #10 OK. See c/o file

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

BUILDING INSPECTION

PERMIT

Permit Number: 021309

Please Read Application And Notes, If Any, Attached

This is to certify that Sturdivant Lawrence J / Nail Construction
has permission to New 33 Unit PRUD / Application for units 3, 4, 5, 7, 8, 9, & 10.
AT 197 Harvard St, Cambridge, MA 02142 153 A025001

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and written permission procured before this building or part thereof is altered or closed-in.
48 HOUR NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. [Signature]
Health Dept. _____
Appeal Board _____
Other _____
Department Name _____

[Signature] 1/21/23
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 02-1309	Date Applied For: 11/20/2002	CBL: 153 A025001
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Location of Construction: Kimberly Court	Owner Name: Sturdivant Lawrence J	Owner Address: 15 Garsoe Rd	Phone: 207-878-0680
Business Name: n/a	Contractor Name: Nail Construction	Contractor Address: 15 Garsoe Drive Portland	Phone: (207) 878-0680
Lessee/Buyer's Name n/a	Phone: n/a	Permit Type: Multi Family	

Proposed Use: New 33 Unit Prud / Application for units 3, 4, 5, 6, 7, 8, 9, and 10. - 2 bldgs in Radcliff Glen	Proposed Project Description: New 33 Unit PRUD / Application for units 3, 4, 5, 6, 7, 8, 9, and 10.
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Dept: Zoning Note:	Status: Approved	Reviewer: Marge Schmuckal	Approval Date: 01/02/2003 Ok to Issue: <input checked="" type="checkbox"/>
Dept: Building Note:	Status: Pending	Reviewer: Mike Nugent	Approval Date: 01/22/2003 Ok to Issue: <input checked="" type="checkbox"/>
Dept: Fire Note:	Status: Approved	Reviewer: Lt. McDougall	Approval Date: 01/08/2003 Ok to Issue: <input checked="" type="checkbox"/>

ELECTRICAL PERMIT

City of Portland, Me.



To the Chief Electrical Inspector, Portland Maine:
 The undersigned hereby applies for a permit to make electrical installations
 in accordance with the laws of Maine, the City of Portland Electrical Ordinance,
 National Electrical Code and the following specifications:

Date 12/30/02
 Permit # 2002-5072
 CBL# 153 A 025

LOCATION: 173 HARVARD ST METER MAKE & # _____
 CMP ACCOUNT # _____ OWNER NIAL COAST
 TENANT UNIT 18 PHONE # 752-0091

TOTAL EACH FEE 13.00

OUTLETS	Receptacles	40	Switches	20	Smoke Detector	50		.20	<u>5.00</u>
FIXTURES	Incandescent	18	Fluorescent	3	Strips			.20	<u>4.20</u> <u>2.20</u>
SERVICES	Overhead		Underground		TTL AMPS	<u>200</u> <u><800</u>		15.00	<u>15.00</u>
	Overhead		Underground			<u>>800</u>		25.00	
Temporary Service	Overhead		Underground		TTL AMPS			25.00	
								25.00	
METERS	(number of)	1						1.00	<u>1.00</u>
MOTORS	(number of)							2.00	
RESID/COM	Electric units							1.00	
HEATING	oil/gas units	1	Interior		Exterior			5.00	<u>5.00</u>
APPLIANCES	Ranges	1	Cook Tops	0	Wall Ovens			2.00	<u>0.00</u>
	Insta-Hot		Water heaters		Fans	2		2.00	<u>4.00</u>
	Dryers	1	Disposals	1	Dishwasher	1		2.00	<u>6.00</u>
	Compactors		Spa		Washing Machine	1		2.00	<u>1.00</u>
MISC. (number of)	Others (denote)							2.00	<u>1.00</u>
	Air Cond/win							3.00	
	Air Cond/cent					Pools		10.00	
	HVAC		EMS		Thermostat			5.00	
	Signs							10.00	
	Alarms/res							5.00	
	Alarms/com							15.00	
	Heavy Duty(CRKT)							2.00	
	Circus/Carnv							25.00	
	Alterations							5.00	
	Fire Repairs							15.00	
	E Lights							1.00	
	E Generators							20.00	
PANELS	Service		Remote		Main			4.00	
TRANSFORMER	0-25 Kva							5.00	
	25-200 Kva							8.00	
	Over 200 Kva							10.00	
TOTAL AMOUNT DUE									<u>51.20</u>
MINIMUM FEE/COMMERCIAL 45.00									<u>44.00</u>
MINIMUM FEE							35.00		<u>50.00</u>

CONTRACTORS NAME PLACE ELECTRIC INC MASTER LIC. # 10626
 ADDRESS 173 SUMMIT ST PORTLAND LIMITED LIC. # _____
 TELEPHONE 777-9954

SIGNATURE OF CONTRACTOR Charles Be



CITY OF PORTLAND MAINE

389 Congress St., Rm 315

Portland, ME 04101

Tel. - 207-874-8704

Fax - 207-874-8716

TO: Inspector of Buildings City of Portland, Maine
Planning & Urban Development
Division of Housing & Community Services

FROM DESIGNER: Michael P. Charek

Michael Charek Architects

DATE: 9/18/02

Job Name: Radcliffe Glen

Address of Construction: Harvard St, Portland, ME

THE BOCA NATIONAL BUILDING CODE/1999 Fourteenth EDITION

To the best of my belief, Construction project was designed according to the building code criteria listed below:

Building Code and Year BOCA 1999 Use Group Classification(s) R-3
Type of Construction 5B Bldg. Height 28'-0" ± to Ridge Per bldg. Bldg. Sq. Footage Ground Floor = 6160 sf
2nd Floor = 1752 sf

Seismic Zone _____ Group Class 1-C

Roof Snow Load Per Sq. Ft. P_f = 50 Dead Load Per Sq. Ft. 15

Basic Wind Speed (mph) 90 Effective Velocity Pressure Per Sq. Ft. 20.7

Floor Live Load Per Sq. Ft. 50

Structure has full sprinkler system? Yes _____ No X Alarm System? Yes _____ No X
Sprinkler & Alarm systems must be installed according to BOCA and NFPA Standards with approval from the Portland Fire Department.

Is structure being considered unlimited area building: Yes _____ No X

If mixed use, what subsection of 313 is being considered _____

List Occupant loading for each room or space, designed into this Project.

→ Seismic Hazard Exposure Group = 1
Seismic Performance Category = C

PSH 6/07/2K

occupant load 200 sf/person
of gross building area

(Designers Stamp & Signature)



Michael R. Charek



**CITY OF PORTLAND
ACCESSIBILITY CERTIFICATE**

Designer: Michael R. Charek

Address of Project Herward St, Portland, ME

Nature of Project Planned Residential Unit Development/
Condominium

Date 9/18/02

The undersigned, to the best of his knowledge, agrees that

The technical submissions covering the proposed construction work as described above have been have been designed in compliance with applicable referenced standards found in the Maine Human Rights Law and Federal Americans with Disability Act.

(SEAL)

Signature M.R.C.

Title Principal

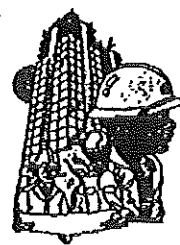
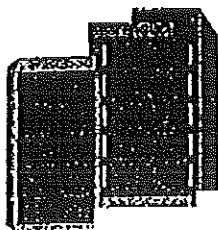
Firm Michael Charek Architects

Address 25 Hartley St

Portland, ME 04103

Telephone 761-0556





CITY OF PORTLAND
BUILDING CODE CERTIFICATE
389 Congress St., Rm 315
Portland, ME 04101

TO: Inspector of Buildings City of Portland, Maine
Department of Planning & Urban Development
Division of Housing & Community Service

FROM: Michael R. Charek

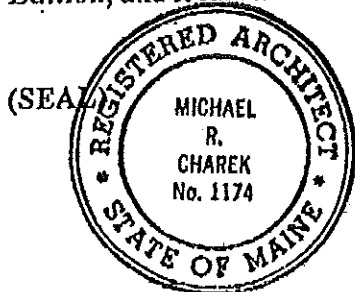
RE: Certificate of Design

DATE: 9/10/02

These plans and/or specifications covering construction work on:

Radcliffe Glen
Harvard St, Portland, ME

Have been designed and drawn up by the undersigned, a Maine registered architect/engineer according to the BOCA National Building Code/1999 Fourteenth Edition, and local amendments. and, to the best of his knowledge and belief, in accordance with



Signature Michael R. Charek

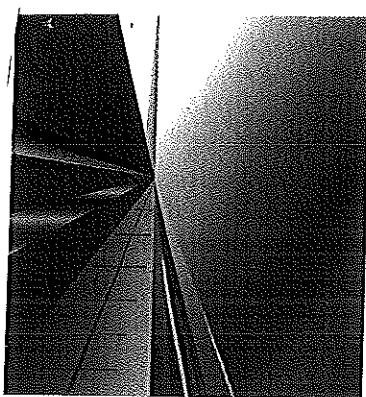
Title Principal

Firm Michael Charek Architects

Address 25 Hartley St
Portland, ME 04103

As per Maine State Law:

\$50,000.00 or more in new construction, repair, expansion, addition, or modification for Building or Structures, shall be prepared by a registered design Professional.



Michael Charek Architects

September 25, 2002

25 Hartley Street
Portland, ME 04103
Phone 207 761 0556
Fax 207 761 7260
www.charekarchitects.com

Michael Nugent
Inspection Services Manager
Housing and Neighborhood Services
Portland City Hall, Room 315
389 Congress Street
Portland, ME 04101

Re: Radcliffe Glen

Dear Mr. Nugent:

I am writing in response to the memo you faxed me yesterday. In response to the questions you raised, I offer the attached set of full-size and reduced drawings, which include updated information. Regarding the specific questions, please note the following:

- Fire wall and partition details: See sheets A305 and A306 for sections through those walls. See also the attached brochure from USG with information about the two-hour area separation walls. The walls and partitions are fireblocked in the stud cavities at each level by continuous 2 x 4 plates. In addition, the space between stud walls will be fireblocked at each level with firesafing insulation. STC rating for the two-hour walls is approximately 60; STC rating for the one-hour partitions is approximately 49.
- I believe there is no need for draftstopping in the first floor because there is no ceiling in the basement. The concealed spaces in the second floor are subdivided by floor girders into areas not larger than 500 square feet. The attic spaces are subdivided by area separation walls or fire partitions into areas smaller than 3,000 square feet.
- The stairs are all 3'-0" wide, with 10" treads and a maximum riser dimension of 7-3/4". There will be a 3/4" nosing on the treads. Headroom is a minimum of 7'-0".
- Foundation anchorage details can be found on Sheet S2.
- Garages will be separated from the living units by one-hour rated partitions and floor-ceiling assemblies. The door from the unit into the garage is

MICHAEL R. CHAREK
PRINCIPAL
Member
The American
Institute
Of Architects

Michael Nugent
9/25/02

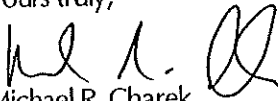
Page 2

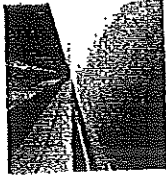
— NOT ENOUGH.
scheduled as a metal door with a minimum 20-minute fire rating, which I believe exceeds the requirements of 407.6. The door that is likely to be used actually carries a B label, for a 90-minute fire rating. ~~OK~~ WHAT ABOUT EXTERIOR WALLS

- Heating systems will be oil-fired boilers, attached to masonry chimneys.
- Headers and fasteners are noted in the structural drawings.
- Egress windows are noted on the Window Schedule on Sheet A601.
- Column spacings and girder sizes have been designed by a Maine licensed structural engineer, not selected from a table. If you need to see structural calculations I could arrange for them to be sent to you.

I hope this answers all of your questions satisfactorily. If you need any other information, please let me know.

Yours truly,


Michael R. Charek
Encl.



Michael Charek Architects
25 Hartley Street
Portland, ME 04103
207-761-0556
Fax 207-761-7260

MEMORANDUM

Project:	Radcliffe Glen	Project No.:	
TO:	Michael Nugent Inspection Services Manager City of Portland	DATE:	9/30/02

Mr. Nugent:

Attached please find a copy of the memo from Summit Geoengineering Services outlining the details of the foundation drainage system.

Also please note that attic access openings with minimum dimension of 22 inches by 30 inches will be located in each unit, in an area to be determined during construction.

SENT BY FAX: 5 PAGES TOTAL

Copies to:	Larry Sturdivant	(with enclosures)	By: Michael R. Charek
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SUMMIT GEOENGINEERING SERVICES

640 Main Street
Lewiston, Maine 04240
Telephone: 207/795-6009
Fax: 207/795-6128

MEMORANDUM

Date: September 16, 2002
JN: 7516.1
To: Ed Cundy, P.E. Swift Engineering
Cc: Michael R. Charek, Architect
Dan L. Riley, P.E., Sebago Technics
From: Erik J. Wiberg, P.E. *EJW*
RE: Foundation Plan Review, Units 11 through 18, Radcliffe Glen Condominiums

As requested and authorized by Mr. Dan Riley, we have reviewed design plans for Units 11 through 18 relative to foundation and slab-on-grade drainage. Summit reviewed Sebago Technics' Sheets 5 & 6, Revision E dated 8/2/02 and architectural and structural drawing set provided by Michael R. Charek dated 8/15/02. Summit conducted the review based on the above referenced plans and previously conducted geotechnical evaluation. This memorandum summarizes the results our evaluation and our conversation on Friday, September 13, 2002.

Foundation and Slab-on-Grade Drainage

Based on subsurface conditions encountered at test pit TP-10, which was excavated within the footprint of the Units 11-14 building, and TP-12, which was excavated within the footprint of the Units 15-18 building, and the proposed finish floor elevations of the units, we recommend that foundation drains be placed at the bottom of footings where the basement slabs-on-grade step down in elevation in addition to the perimeter foundation drains recommended in our geotechnical report dated June 14, 2002. The proposed internal foundation drain locations are illustrated on Figure 1.

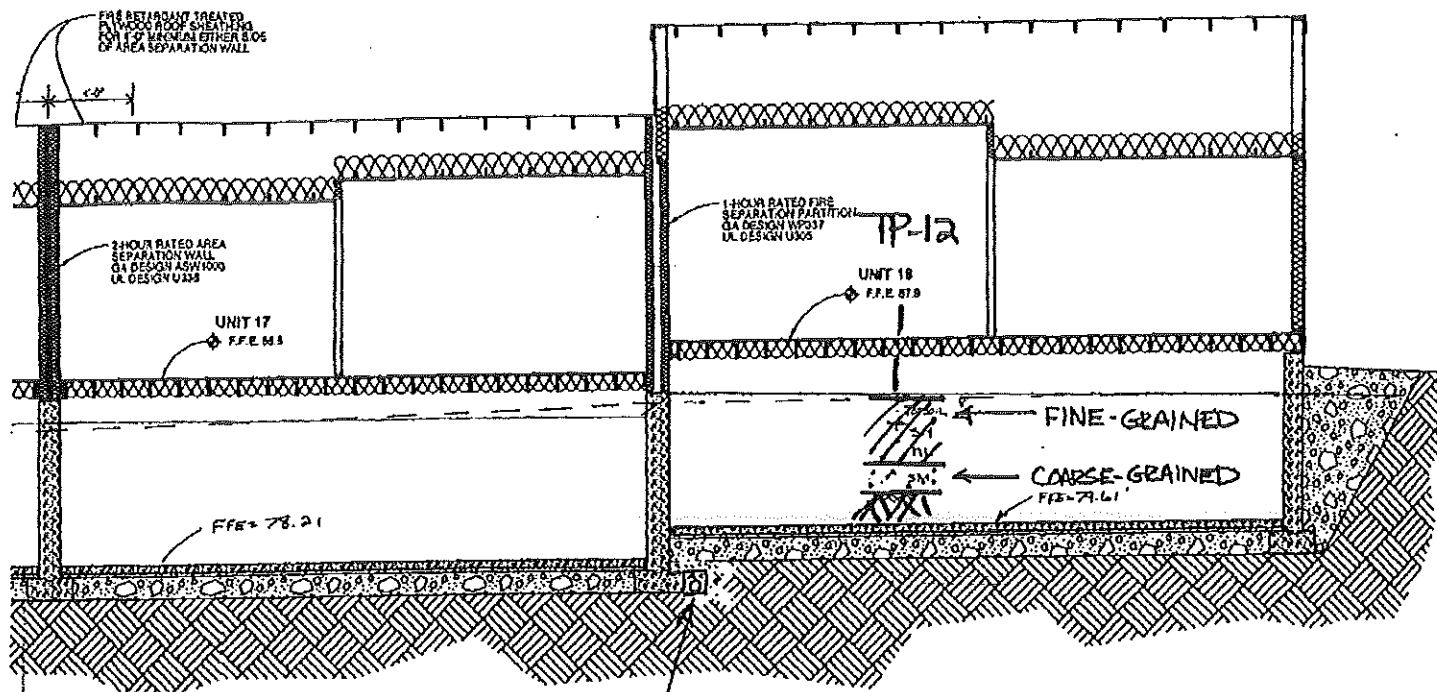
The internal wall footings at Units 11-14 could be located in coarse-grained glacial marine stratum overlying bedrock based on the proposed elevations and profile illustrated on Section A304. At the time of the exploration, groundwater levels were below the projected bottom of footings. Depending on the prevailing hydrogeologic conditions, the bottom of the footings could be located in groundwater during wetter periods of the year. Internal foundation drains will provide drainage relief for migrating groundwater and prevent buildup of groundwater behind the internal footings.

Based on soil conditions encountered at TP-12 and proposed slab elevations, bedrock excavation will likely be required to construct the basement slabs and footings. Removal of rock for footing trenches could create low areas in the rock that will collect groundwater. In addition, fracturing of bedrock could provide pathways for groundwater to flow below upgradient footing drains. Therefore, internal footing drains are recommended at steps in elevation of the partition wall footings.

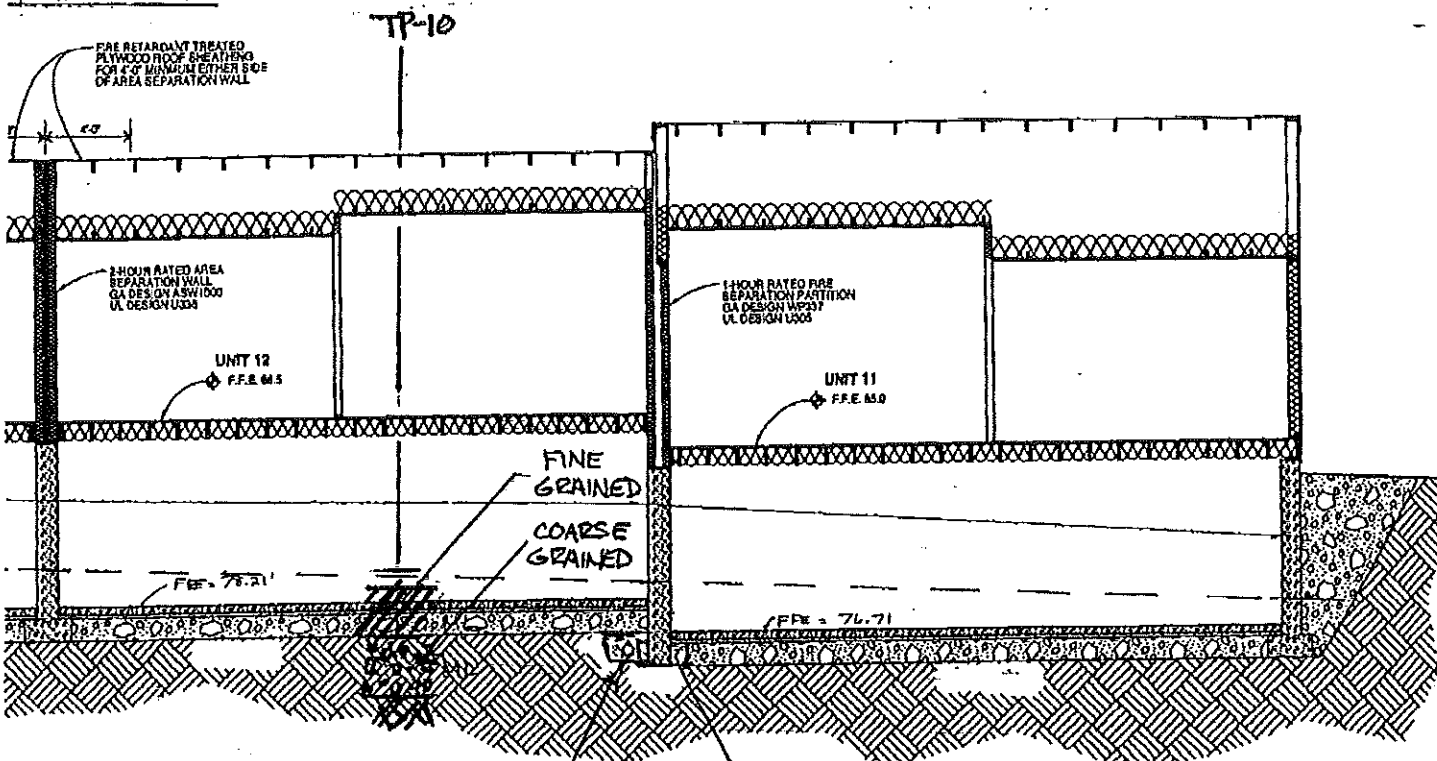
Underdrains should consist of 4 inch rigid perforated PVC surrounded by a minimum of 6 inches crushed stone wrapped in filter fabric to prevent clogging from the migration of the fine soil particles from the native soils and Foundation Backfill. The crushed stone should be placed up to the bottom of the Structural Fill. The footing underdrains should be graded to provided positive drainage to a free-flowing outlet. Depending on the grading of the perimeter foundation drains, it may be possible to connect the internal foundation drains to the perimeter foundation drain system. The ends of the underdrain pipes exposed to the atmosphere should be covered with screening or other device to prevent nesting of wildlife.

It is our understanding perimeter foundation wall profile could allow for the internal foundation drain outlet pipe to be routed around steps in the perimeter foundation. Where the internal foundation drain outlet pipe will pass below a footing, we recommend that the outlet pipe be carried beneath the footing in a ductile steel pipe casing or encased in reinforced concrete to protect the drain pipe from concentrated foundation loads. The steel casing should only be larger enough to pass the drain pipe through the casing.

Weep tubes through foundation walls are not necessary provided that internal foundation drains are used as recommended above. Please do not hesitate to contact me if you have any questions.



EQUAL FOOTING DRAINS
 B-ON-GRADE ELEVATION
 WATER FLOW

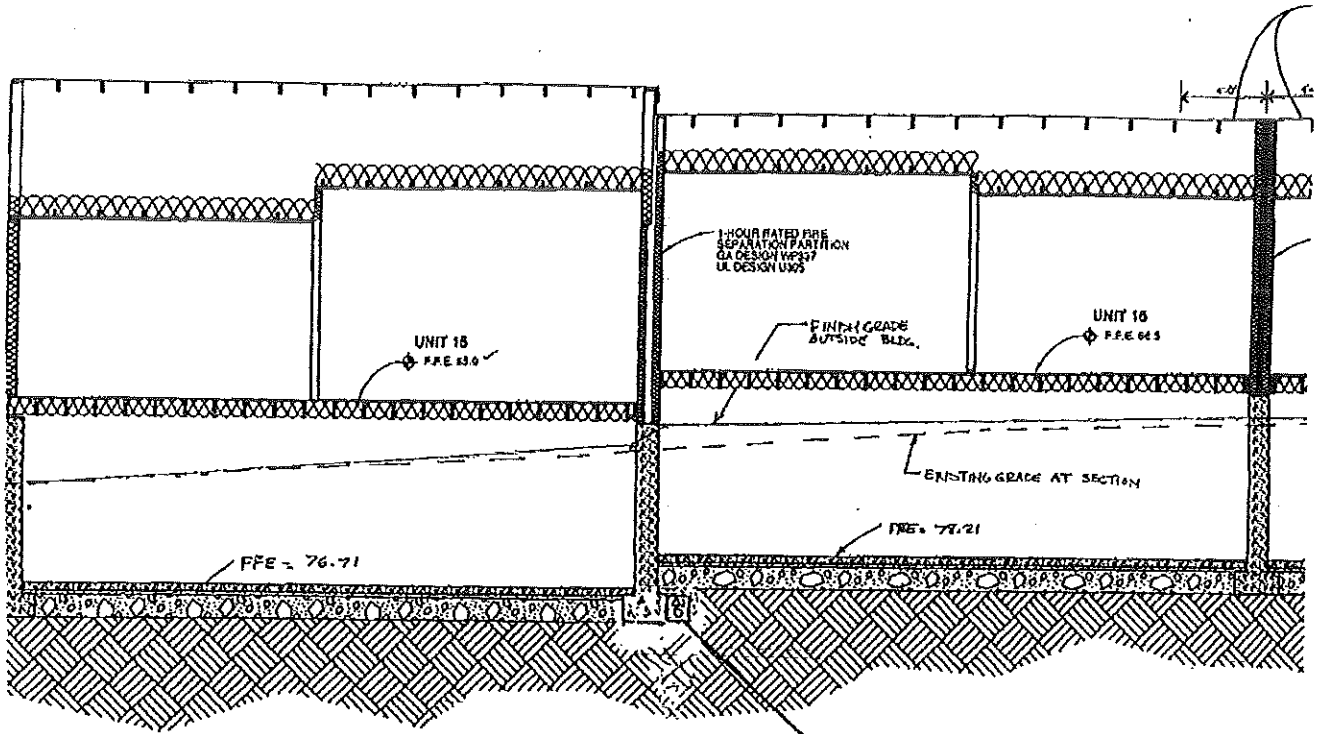


AL FOOTING DRAINS
 -GRADE ELEVATION

FOOTING TO BE RAISED
 TO BELOW SLAB PER
 ED. CONDY

OW →

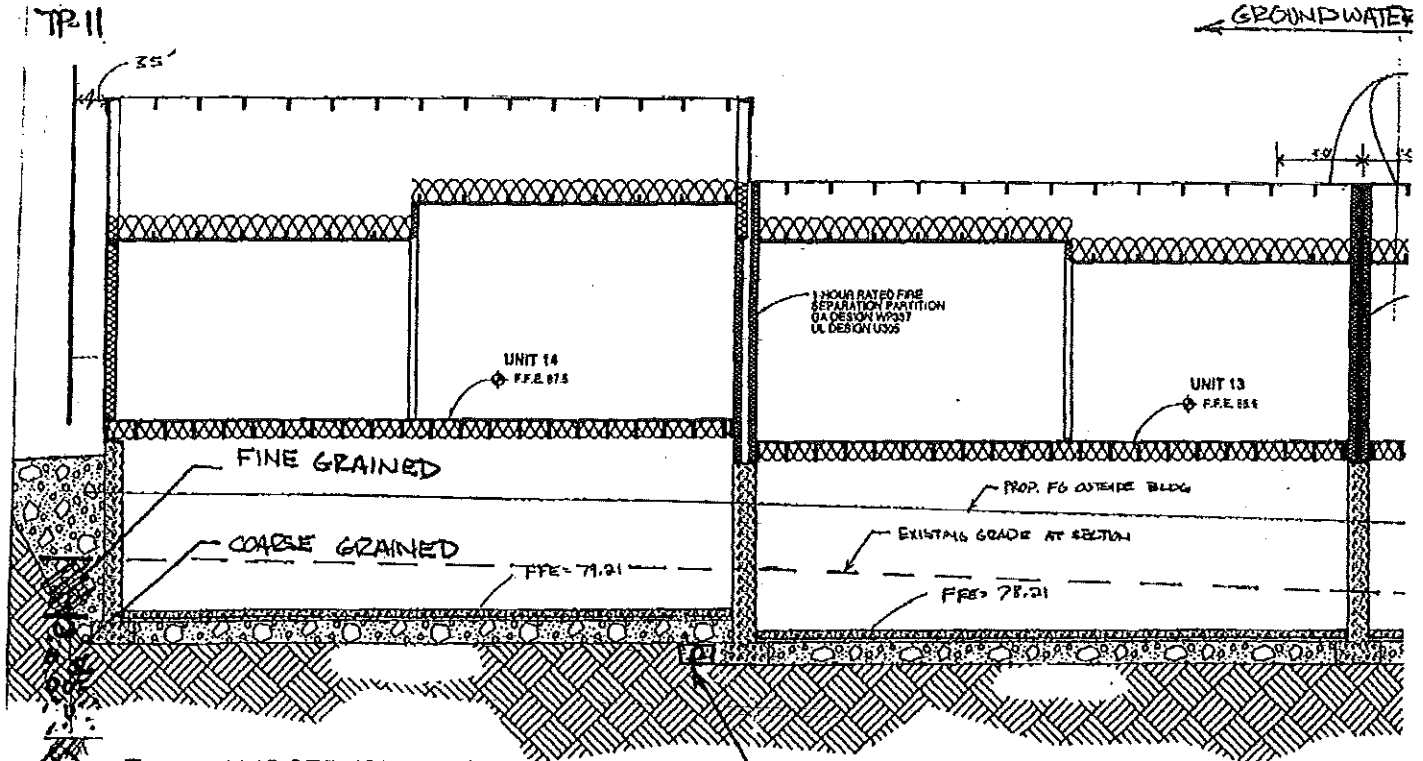
7516.1 9/16/02 FIGURE 1



2 BUILDING SECTION UNITS 15-18
SCALE: 1/4" = 1'-0"

RECOMMENDED INTERNAL
AT STEPS IN SLAB-ON-

← GROUNDWATER



1 BUILDING SECTION UNITS 11-14
SCALE: 1/4" = 1'-0"

RECOMMENDED INTERNAL FI
AT STEPS IN SLAB-ON-GRA

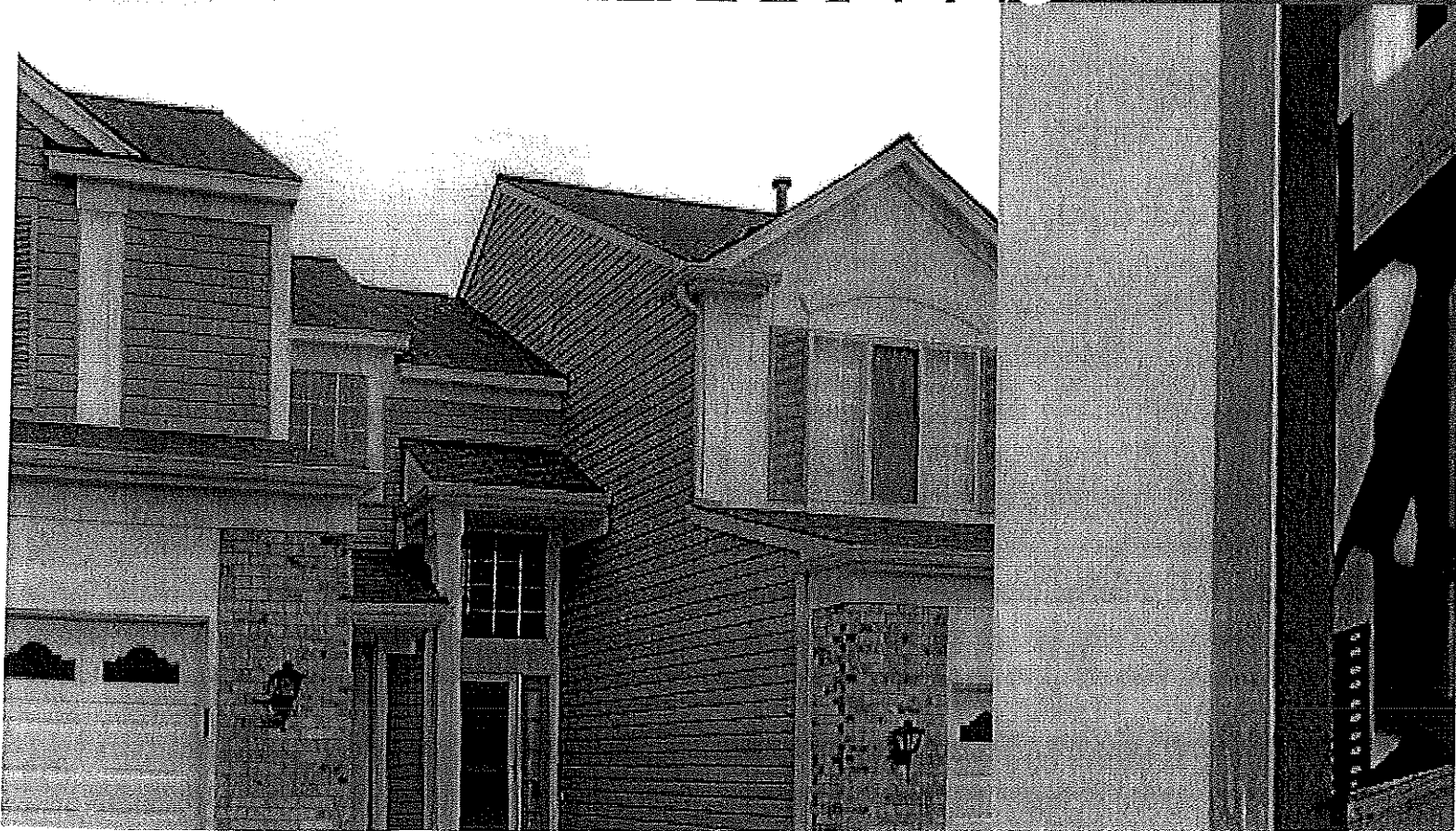
GROUNDWATER FLOW

SA925 09250

Fire Wall/Party Wall

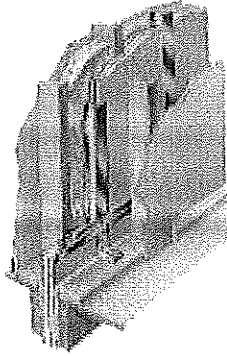


area separation wall systems

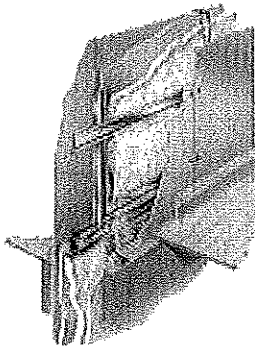


USG Area Separation Fire Wall/Party Wall Systems

Description



Solid-type



Cavity-type

USG Area Separation Fire Walls/Party Walls are used for constructing common walls with fire-resistive protection for adjacent properties. These lightweight, non-load-bearing gypsum drywall assemblies are designed as vertical fire barriers for fire walls and party walls separating occupancies in wood-frame apartments and townhouses. Large-size gypsum panels used in conjunction with steel studs and runners quickly become thin, space-saving walls offering excellent privacy. Their engineered performance and low labor and material costs make these systems superior to masonry construction.

Available in two basic systems both providing fire-resistant walls from ground level to roof:
Solid Type, with independently framed interior gypsum panel surfaces both sides of fire wall or party wall.
Cavity Type, with integral interior gypsum panel surfaces for commonly shared party walls between apartments.
Solid-Type Wall consists of two 1" thick SHEETROCK Brand Gypsum Liner Panels installed vertically between 2" USG Steel C-Runners. Panel edges are inserted in 2" USG Steel H-Studs spaced 24" o.c. C-runners are installed at top and bottom of wall and back-to-back between vertical panels at a convenient height above each intermediate floor. H-Studs are attached on both sides to adjacent wood framing at intermediate floors, the bottom chords of attic trusses, and at the roof line with 0.063" USG aluminum angle clips designed to break away when exposed to fire, thus permitting a fire-damaged structure to fall while the fire barrier remains intact. Refer to specifications for exact clip placement.

With aluminum angle clips attached on both sides of 25 gauge H-studs, the assemblies are suitable for spans (between clip angle supports) up to 10' under 5 psf lateral load without exceeding L/240 allowable deflection (for walls with exterior exposure, see section 3.4 of the specification).

With 2" THERMAFIBER Sound Attenuation Fire Blankets (SAFB) stapled each side of liner panels, the assembly has obtained a 3 hr. fire resistance rating allowing separate selection and construction of tenant walls.
Cavity-Type Wall consists of steel C-H Studs and SHEETROCK Brand Gypsum Liner Panels set in steel runners and faced both sides with SHEETROCK Brand Gypsum Panels, Water-Resistant, FIRECODE C Core. Liner panels, 1" thick, are erected vertically with ends set into 2-1/2" USG C-Runners and edges inserted into specially formed 2-1/2" USG Steel C-H Studs. C-runners are installed singly at top and bottom of wall and back-to-back between vertical liner panels on a line above each intermediate floor, the bottom chords of attic trusses, and at roof line. Aluminum clips, which attach the C-H Studs on both sides to adjacent wood framing, break away in the same fashion as with solid-type walls. To improve sound transmission loss, THERMAFIBER SAFB are inserted in the stud cavity and RC-1 Resilient Channels or equivalent may be used to isolate the face layer on the cavity side.

With aluminum angle clips attached on both sides of 212CH25 steel studs, the assemblies are suitable for spans (between clip angle supports) up to 10' under 5 psf lateral load without exceeding L/240 allowable deflection (for walls with exterior exposure see section 3.4 of the specification).

Components used in these systems are designed to permit temporary exposure to inclement weather during construction.

USG STEEL H-stud slides in place over SHEETROCK Brand Gypsum Liner Panels.



USG Steel C-Runner fits over studs and panels. Second C-runner is then screw-attached back-to-back to lower runner to hold next level of studs and liner panels.



USG Aluminum Breakaway Clip is screw-attached to studs and framing. Under fire exposure, clip breaks away, permits fire-damaged wall to fall, leaving separation wall intact.



USG Area Separation Fire Wall/Party Wall Systems

Features

These systems may be used in buildings up to four stories high (44') and with all common floor-ceiling heights found in multi-family housing. Both cavity and solid types are suitable for exterior walls with appropriate weather-resistant cladding when building offsets are desired.

Fire Resistance: Both types of Separation Walls offer 2 hr. and 3 hr. fire ratings.

Sound Isolation: STC ratings up to 60 with the solid system and 57 with the cavity system are available.

Lightweight: These drywall assemblies weigh at least 50% less than masonry walls, allowing rapid installation.

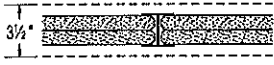
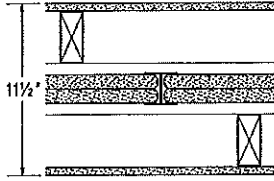
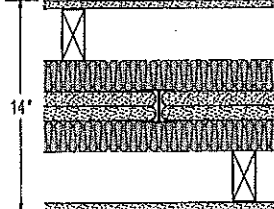
Space-Saving: Use of these assemblies gains valuable floor space. Thickness is 3-1/2" to 4" for Cavity Type Walls, compared to 8" to 12" for a masonry wall without interior finish.

Weather Resistance: Moisture-resistant components permit temporary exposure to inclement weather during construction.

Code Compliance: In compliance with fire resistance requirements under evaluation reports of BOCA Report No. 89-13 and SBCCI PST ES Report No. 9834.




Limitations

Non-load-bearing; max. frame spacing: 24"; not to be used for shear walls; max. wall height: 44'.

Test Data— Solid Walls	Fire-rated Construction		Acoustical Performance			
	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
	2 hr.*		Solid Area Separation Wall—two 1" SHEETROCK Brand Gypsum Liner Panels set betw USG H-Studs 24" o.c.—min. 3/4" air space both sides separating liner panels from adjacent framing—UL Des U336	N/A		A
	2 hr.*		Solid Area Separation Wall—two 1" SHEETROCK Brand Gypsum Liner panels set in USG H-Studs 24" o.c. 2 x 4 wd studs 16" o.c. each side on 2 x 4 plates min. 3/4" from liner panels—optional 1/2" SHEETROCK Brand Gypsum Panels—UL Des U336	46 54 58 57 60 45 54 57	TL-88-353 Based on 2" THERMAFIBER on one side— TL-88-348 Based on 2 x 4s and 2" SAFB on both sides— TL-88-347 Based on 2 x 4s and 3" SAFB on one side— TL-88-351 Based on 2 x 4s and 3" SAFB both sides— TL-88-350 Based on 2 x 3s, 5/8" gypsum panels, no SAFB— BBN-730104 Based on 2 x 3s, 5/8" gypsum panels, 2" SAFB one side— BBN-730103 Based on 2 x 3s, 5/8" gypsum panels, 2" SAFB both sides— BBN-730102	B
	3 hr.*		Solid Area Separation Wall—two 1" SHEETROCK Brand Gypsum Liner Panels set in USG H-Studs 24" o.c.—2" THERMAFIBER SAFB both sides—bits appl horiz with joints stag and staple-att to liner panels—WHI-495-0393/0394	N/A		C

*These systems do not provide a fire rating for adjacent wood-stud wall construction.

**USG Area Separation
Fire Wall/Party Wall
Systems**

Test Data— Cavity Walls	Fire-rated Construction		Acoustical Performance		
	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.
2 hr.		Cavity Area Separation Wall—1/2" SHEETROCK Brand Gypsum Panels, FIRECODE C core, both sides—1" SHEETROCK Brand Gypsum Liner Panels in USG 25 ga. C-H Studs 24" o.c.—single layer panels ea side appl vert & screw att—joints of gypsum panels stag on opp sides & fin—perim caulked— UL Des U415 wt 9 width 3-1/2"	47	Based on 1" SAFB in cavity— BBN-760704	A
2 hr.		Cavity Area Separation Wall—1/2" SHEETROCK Brand Gypsum Panels, FIRECODE C core—1" SHEETROCK Brand Gypsum Liner Panels set in USG 25 ga. C-H Studs 24" o.c.—RC-1 chan or equivalent 24" o.c. screw att to side opp liner panels—1-1/2" THERMAFIBER SAFB optional for fire rating—single layer panels ea side appl vert & screw att—joints stag on opp sides & fin—perim caulked— UL Des U415 wt 10 width 4"	50	Based on 1-1/2" SAFB in cavity	B
3 hr.		Cavity Area Separation Wall—5/8" SHEETROCK Brand Gypsum Panels, FIRECODE C core—1" SHEETROCK Brand Gypsum Liner Panels in USG 25 ga. C-H Studs 24" o.c., one side—1-1/2" THERMAFIBER SAFB optional for fire rating—RC-1 chan 24" o.c. screw att to side opp liner panels—2 layers of 5/8" SHEETROCK Brand Gypsum Panels, FIRECODE C Core, screw att to RC-1 chan—joints fin—perim caulked— UL Des U415 wt 14 width 4-7/8"	57	Based on 1-1/2" SAFB in cavity BBN-730622	C

Where RC-1 Resilient Channel is indicated, RC-1 or an equivalent may be used. Where insulation is shown in assembly drawings, the specific product is required in the assembly to achieve the stated fire rating. Glass fiber insulation cannot be substituted for THERMAFIBER Insulation.

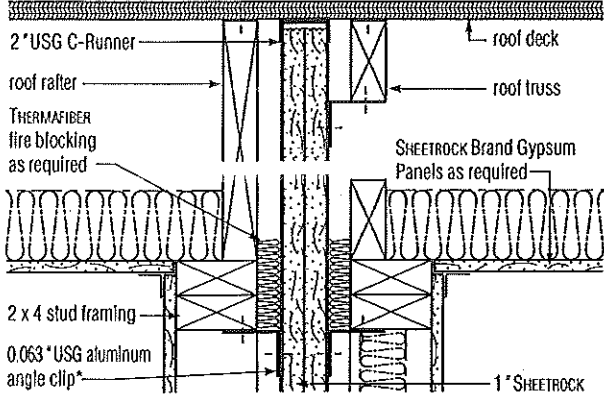
Sound Transmission Loss	Solid Wall Sound Transmission Loss—db	Test no.	Band center frequency—Hz															STC		
			Method	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500		3150	4000
		TL-88-350	Lab	40	45	50	49	53	53	55	57	62	65	67	69	72	70	68	71	60
		TL-88-347	Lab	34	40	48	48	50	52	55	56	61	64	66	69	72	70	69	73	58
		BBN-730102	Lab	36	38	46	52	53	56	57	56	59	59	59	60	59	57	58	66	57
		TL-88-351	Lab	36	36	45	47	51	52	54	56	61	64	66	69	72	71	69	73	57
		BBN-730103	Lab	34	33	43	51	52	54	57	56	60	60	58	60	60	57	58	66	54
		TL-88-348	Lab	31	33	42	45	48	49	52	54	59	63	65	68	70	68	67	71	54
		TL-88-346	Lab	29	32	44	45	49	49	50	51	57	62	65	68	71	69	67	69	53
		TL-88-344	Lab	29	29	37	43	46	44	47	49	55	61	64	66	70	70	69	71	50
		TL-88-234	Lab	31	28	31	34	38	42	44	49	52	55	58	60	61	62	61	63	47
		TL-88-353	Lab	26	25	29	35	39	45	47	52	58	61	65	69	71	67	67	70	46
		BBN-730104	Lab	28	24	28	37	40	46	50	53	58	60	59	60	58	57	59	66	45
				Band center frequency—Hz																
		Test no.	Method	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	STC
		BBN-730622	Lab	35	38	44	50	51	55	56	55	61	63	62	65	65	60	57	64	57
		BBN-750411	Lab	26	32	42	44	48	51	53	54	58	60	59	61	61	57	66	60	50
		BBN-750704	Lab	23	26	35	39	43	48	49	51	54	58	58	60	60	55	51	53	47

**Cavity Wall Sound
Transmission Loss—db**

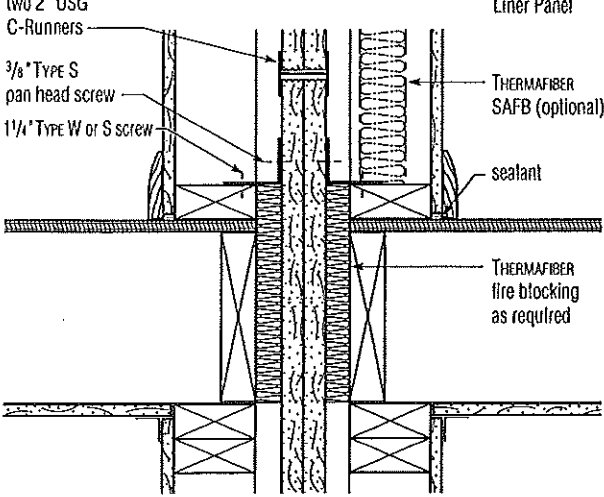
USG Area Separation Fire Wall/Party Wall Systems

Solid System

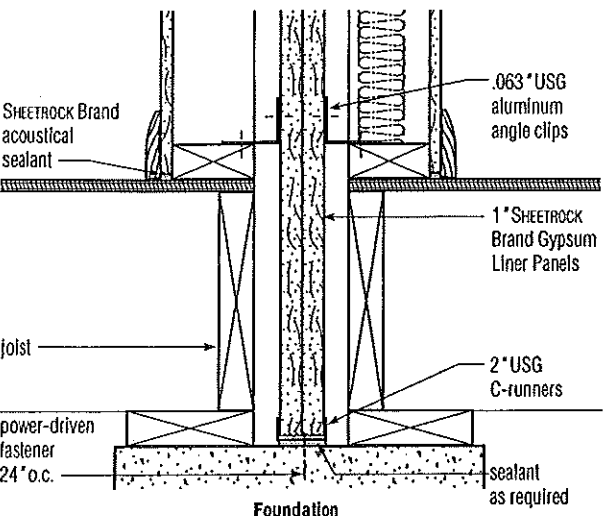
Note: As required by code, 5/8" SHEETROCK Brand gypsum panels, FIRECODE core, may be used as underlayment to untreated roof sheathing with panels extending 4" on both sides of area separation wall and possibly roof side at rake end. Clip placement below is for typical construction.



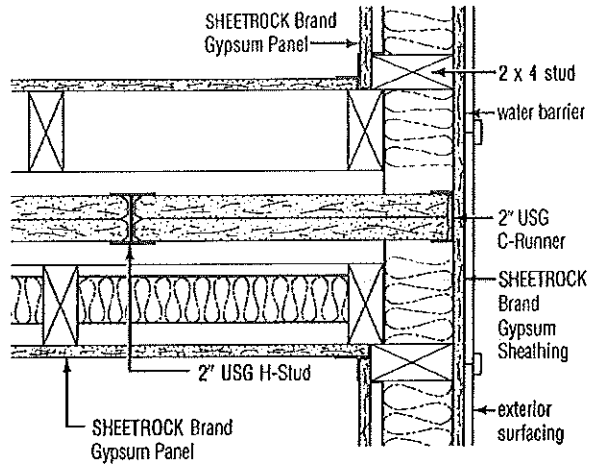
Intersection at roof



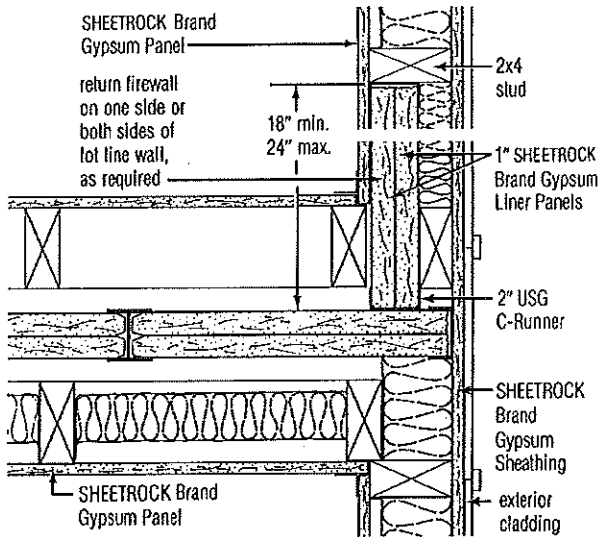
Intermediate floor



Foundation



Exterior wall intersection
(as required)

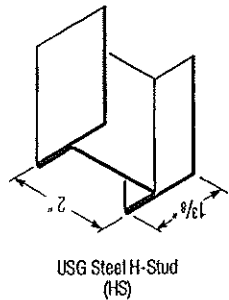
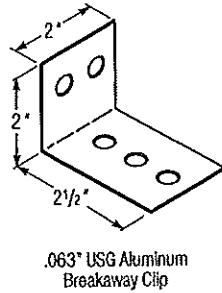
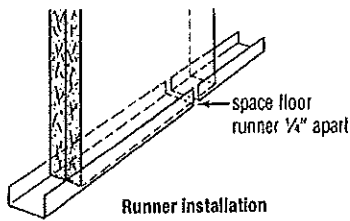
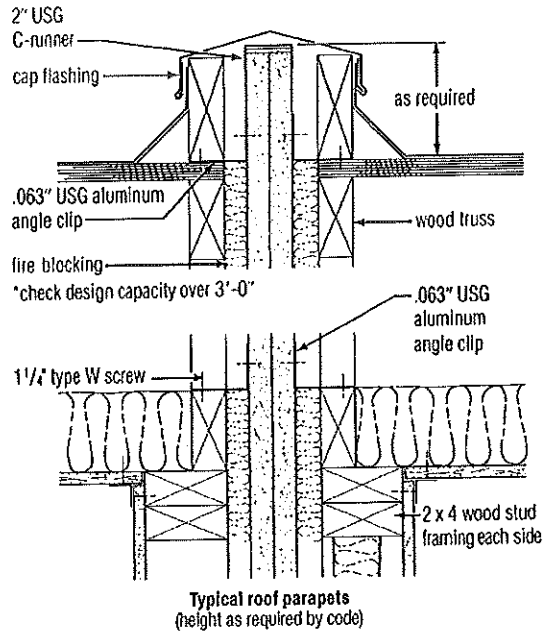
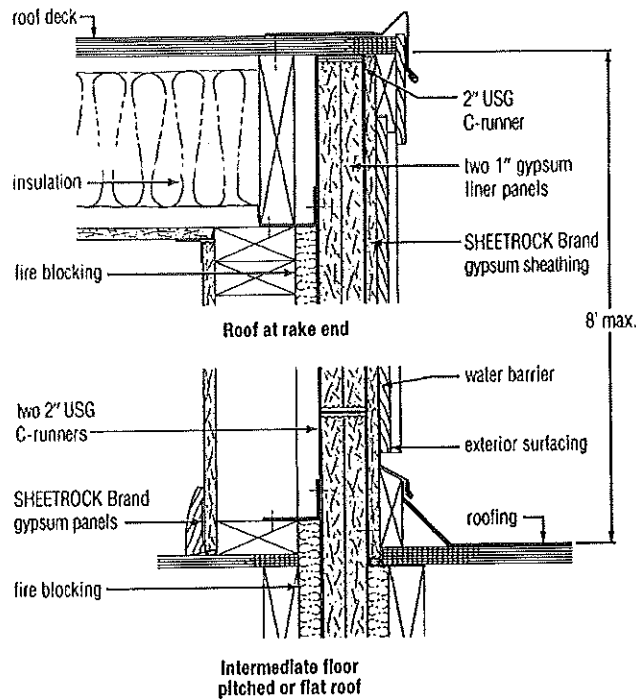


Exterior wall intersection
(as required)

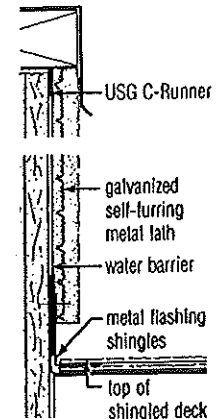
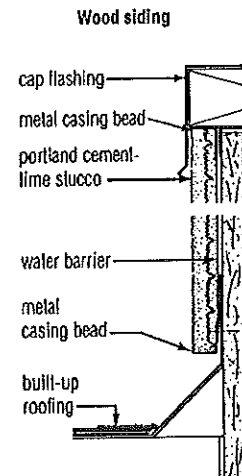
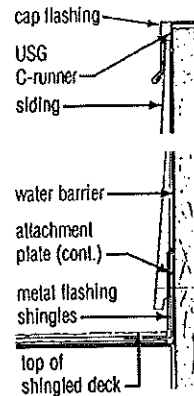
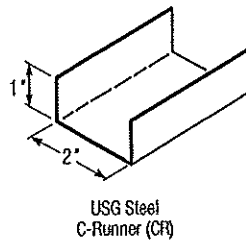
*Note: See illustration on p. 8 for clip spacing requirements.

USG Area Separation Fire Wall/Party Wall Systems

Solid System

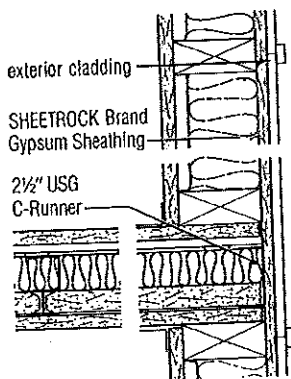
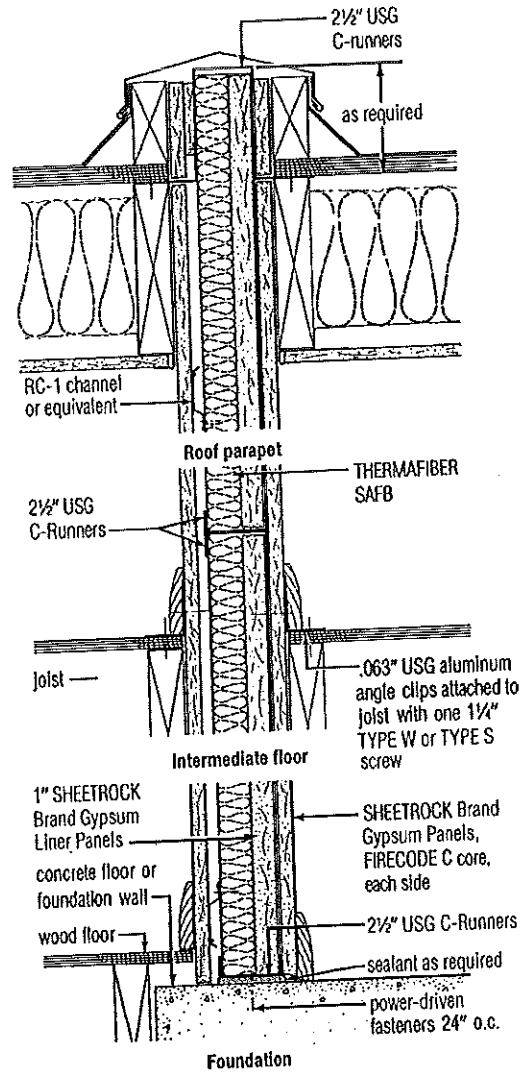
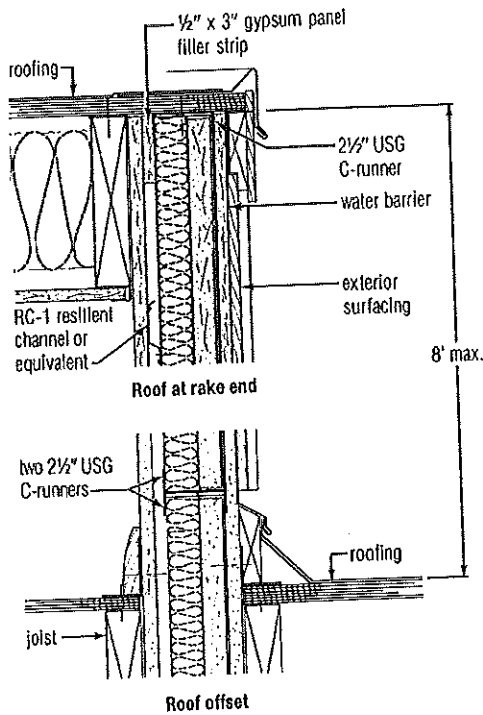


Steel components (solid wall)



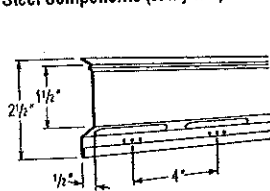
USG Area Separation Fire Wall/Party Wall Systems

Cavity System

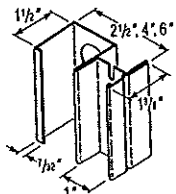


Exterior wall intersection
(as required)

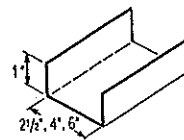
Steel Components (cavity wall)



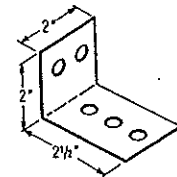
RC-1 Resilient Channel (or equivalent)



USG Steel C-H Stud (CH)



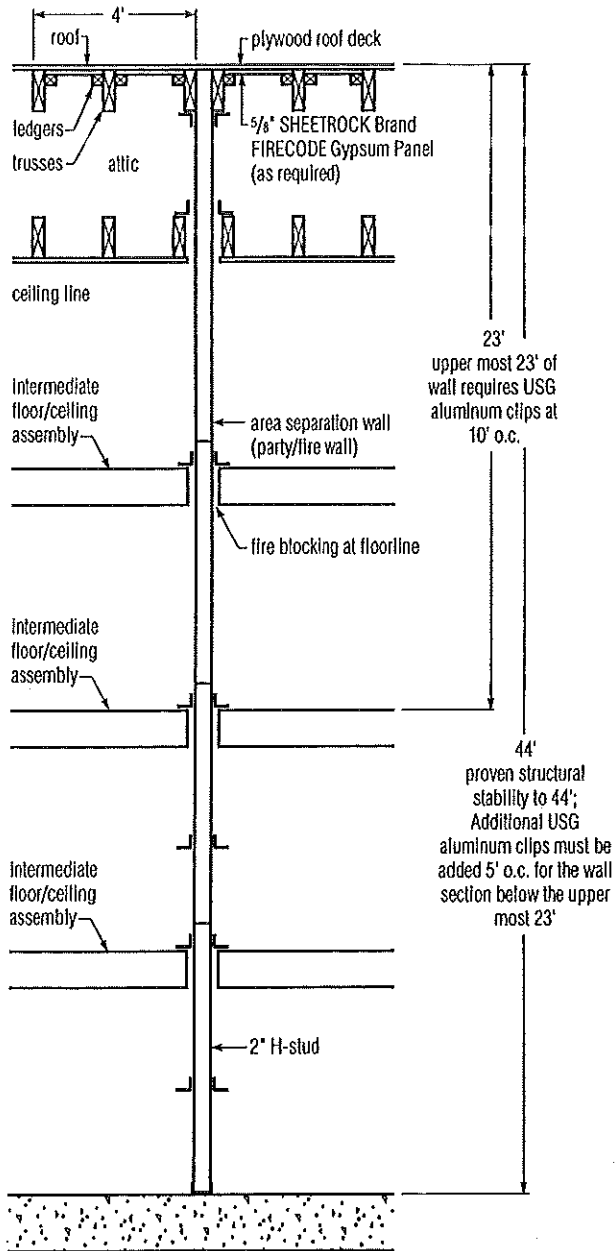
USG Steel C-Runner (CR)



.063" USG Aluminum Angle Clip

**USG Area Separation
Fire Wall/Party Wall
Systems**

2" Solid System Clip Spacing Requirements



**USG Area Separation
Fire Wall/Party Wall
Systems**

Good Design Practices	<p>This section is an overview of design, application, installation and safety concerns that should be addressed when USG's products and systems are used at professional construction sites or at home in do-it-yourself projects. This section is not intended to be a comprehensive review but instead outline some major issues. No attempt is made at completeness. We recommend that architects and contractors seek the assistance of safety professionals, especially at the professional construction site, because there are many factors to be considered that are not included here. In addition, for more detailed information and references, please refer to Chapter 13 of the USG Gypsum Construction Handbook, Centennial Edition.</p>
Solid and Cavity Systems	<p>1 System Performance</p> <p>United States Gypsum Company will provide certification for published fire, sound and structural data covering systems designed and constructed according to its published specifications. Tests are conducted on USG products manufactured and assembled to meet performance requirements of established test procedures specified by various agencies. System performance following substitution of materials or compromise in assembly design cannot be certified; failure may result under critical conditions.</p>
2 Clip Attachment	<p>Both solid and cavity area separation wall systems require attachment of aluminum breakaway clips to adjacent wood framing on both sides of the H-Stud or CH-Stud. Clips are attached to each stud and vertical C-Runners (not resilient channel) with one 3/8" TYPE S screw, and to adjacent framing with one 1-1/4" TYPE W or TYPE S screw. These systems may be stacked to a maximum height of 44', and normally require a vertical clip spacing of 10' o.c. max. However, when the solid area separation wall has a stacked height exceeding 23', clip spacing along each stud below the 23' stacked height must be reduced to 5' o.c. max. (see illustration on p. 8).</p> <p>When the solid or cavity area separation wall system is used as an exterior wall, with adjacent wood framing on only one side, clips must be spaced as noted in Section 3.4 of the specifications. Note, for this case, that two 3/8" TYPE S screws are required for clip attachment to the vertical steel framing members.</p>
3 Sound Control Construction	<p>For maximum sound control with both the solid and cavity wall systems, seal the entire perimeter and between the horizontal, back-to-back C-Runners at the intermediate levels with a minimum 1/4" bead of SHEETROCK Brand Acoustical Sealant. Carefully seal around all gaps and cutouts for lights, cabinets, pipes, ducts, electrical boxes, etc. to minimize sound leakage. Back-to-back penetrations of the gypsum panel diaphragm and flanking paths should be eliminated.</p>
4 Fixture Attachment	<p>Lightweight fixtures and trim should be installed using expandable anchors for screw attachment. Medium and heavyweight fixtures are not recommended on resilient surfaces, but, if required, they should be supported from the primary framing.</p>
5 Additional Information	<p>See technical folders in this series: <i>Construction Selector SA100</i> for fire and sound-rated systems; <i>Gypsum Panels and Accessories Folder SA927</i> for information on systems components; <i>Textures and Finishing Products Folder SA933</i> for texturing information; <i>THERMAFIBER Life-Safety Fire Containment Systems Folder SA707</i> for insulation specifications.</p>
Specifications	
Part 1: General	<p>1.1 Scope Specify to meet project requirements.</p>
1.2 Qualifications	<p>A All materials, unless otherwise indicated, shall be manufactured by United States Gypsum Company, and shall be installed in accordance with its current printed directions. B System must be built in accordance with applicable model code research reports.</p>
1.3 Delivery and Storage of Materials	<p>All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises. Installed panels should be protected from the environment and dry before enclosing the wall. Warning: Store all SHEETROCK Brand Gypsum Panels flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized.</p>
1.4 Environmental Conditions	<p>In cold weather during gypsum panel joint finishing, temperature within the building shall be maintained within the range of 55 to 70 °F (13 to 21 °C). Adequate ventilation shall be provided to carry off excess moisture.</p>

**USG Area Separation
Fire Wall/Party Wall
Systems**

Part 2: Products	2.1 Materials	<p>A Gypsum Board—48" wide, (1/2") (5/8") thick (Regular) SHEETROCK Brand (Water-Resistant) (FIRECODE C) (FIRECODE) Gypsum Panels—lengths as required.</p> <p>B Liner Panel—24" wide, 1" SHEETROCK Brand Gypsum Liner Panels, beveled edge, lengths as required.</p> <p>C USG Steel H-Studs (200HS25), hot-dipped galvanized, lengths as required.</p> <p>D USG Steel C-H Studs (212CH25) (212CH20), hot-dipped galvanized, lengths as required.</p> <p>E USG Steel C-Runners (200CR25) (212CR25), hot-dipped galvanized, x 10' length.</p> <p>F USG Aluminum Angle Clip—2" x 2-1/2" x 0.063" Aluminum Breakaway Clips.</p> <p>G Joint Treatment—(select a United States Gypsum Company Joint System).</p> <p>H Fasteners—Screws (1-1/4" Type W) (1", 1-1/4", 1-5/8" Type S) (3/8" Type S, pan head) (Galvanized staples, 9/16" crown, 1-1/2" leg).</p> <p>I RC-1 Resilient Channel or equivalent.</p> <p>J THERMAFIBER Sound Attenuation Fire Blankets (1") (1-1/2") (2") (3") x 16" or 24" x 48".</p> <p>K SHEETROCK Brand Acoustical Sealant.</p>
Part 3: Execution	3.1 Solid Wall	<p>A Foundation—Position 2" C-Runner and securely attach to foundation with power-driven fasteners at both ends and spaced 24" o.c. Space adjacent runner sections 1/4" apart. When specified, caulk under runner at foundation with min. 1/4" bead of acoustical sealant.</p> <p>B First Floor—Install H-studs and liner panels to a convenient height (max. 2') above the floor line. Install two thicknesses of 1" liner panels vertically in C-Runner with long edges in H-Stud. Erect H-Studs and liner panels alternately until wall is completed. Cap top of panels with horizontal C-Runner. Fasten C-Runner flanges at all corners both sides with 3/8" Type S screws.</p> <p>C Intermediate Floors and Bottom of Trusses—Cap top of liner panels and H-Studs with C-Runner. Attach C-Runner for next row of panels to the C-Runner below with end joints staggered at least 12". Fasten the C-Runners together with double 3/8" screws at ends and 24" o.c. Attach all H-Studs to adjacent framing with an aluminum breakaway clip. Clips attaching H-Studs and vertical C-Runners to adjacent wood framing on both sides require attachment to the H-Stud and C-Runner with one 3/8" Type S screw. Clips attaching H-Studs and vertical C-Runners to adjacent wood framing on only one side and with exterior exposure on the other side require attachment to the H-Stud and C-Runner with two 3/8" Type S screws. Attachment to the wood framing is with one 1-1/4" Type W or Type S screw. Locate horizontal C-Runner joint within 2' of the intermediate floor. Install fire blocking between the solid wall system and adjacent framing at floor lines, bottom of truss line, and any other locations required by the applicable code.</p> <p>D Roof—Continue erecting H-Studs and liner panels for succeeding stories as described. Cut the liner panels and H-Studs to roof pitch and length as necessary to follow the roof pitch. At roof, cap liner panels and H-Studs with C-Runner. Attach all H-Studs to adjacent framing with an aluminum breakaway clip. Clips attaching H-Studs and vertical C-Runners to adjacent wood framing on only one side and with exterior exposure on the other side require attachment to each vertical framing member with two 3/8" Type S screws.</p> <p>E Sound Attenuation Fire Blankets—For direct attachment to 1" liner panels, install blankets with joints staggered and attach blankets with seven staples driven through each blanket. Blanket installation within cavities is friction fit between stud framing.</p> <p>F Interior Finish—Apply specified gypsum panels to wood studs and joists in conventional manner.</p>
	3.2 Cavity Wall	<p>A Foundation—Position 2-1/2" C-Runner at floor and attach to foundation with power-driven fasteners at both ends and spaced 24" o.c. When specified, caulk under runner at foundation with min. 1/4" bead of SHEETROCK Brand Acoustical Sealant.</p> <p>B First Floor—Install 1" liner panels and steel studs to a convenient height (max. 2') above floor line. Erect liner panels vertically in C-Runner with long edges in groove of C-H stud. Install C-H Studs between panels. Cap top of panels with horizontal C-runner, and cap ends of the wall with C-Runner. Fasten C-Runner flanges at all corners on both sides with 3/8" Type S screws both sides.</p>

**USG Area Separation
Fire Wall/Party Wall
Systems**

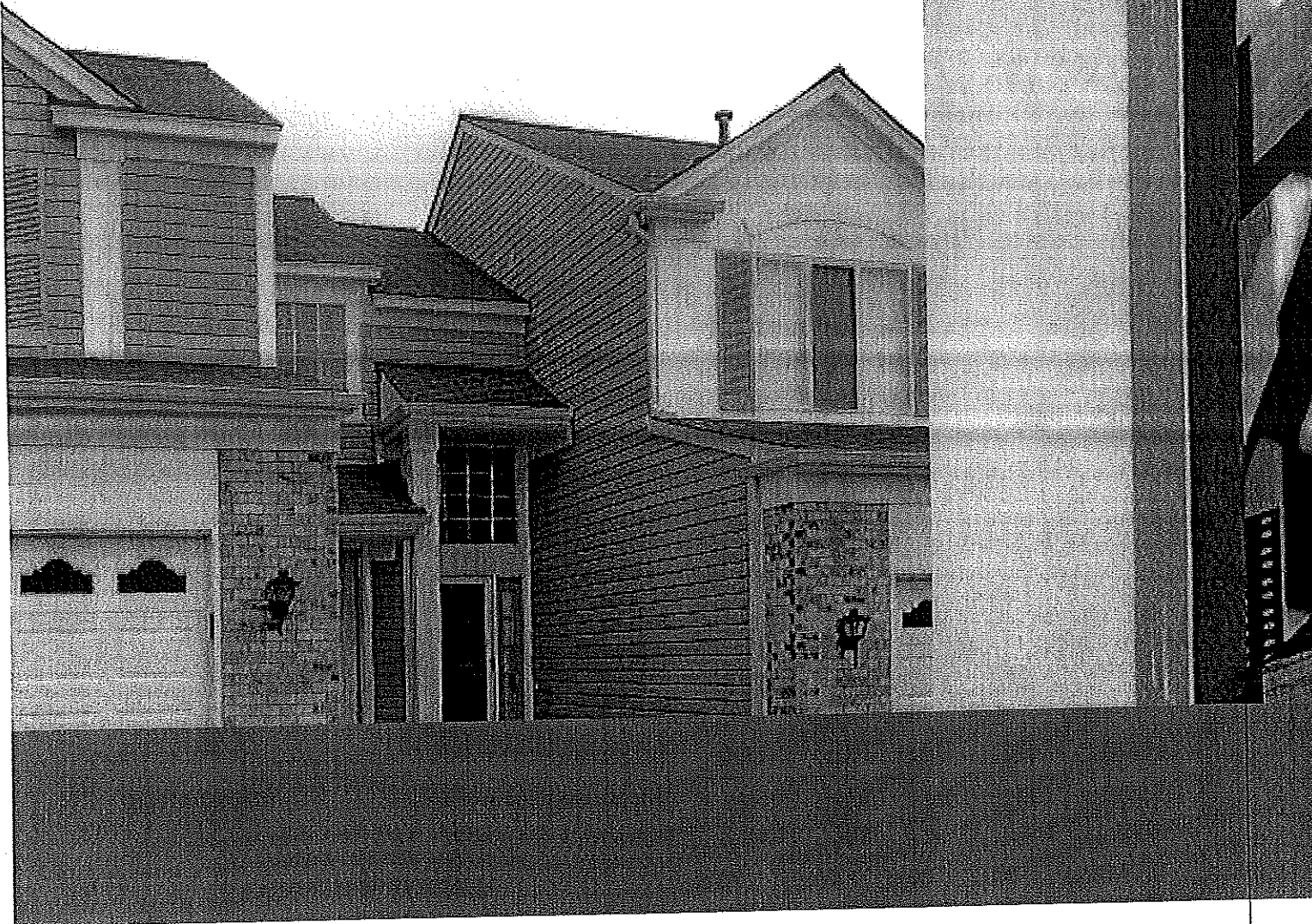
- C Intermediate Floors and Bottom of Trusses**—Cap top of liner panels and CH-Studs with C-Runner and fasten CH-Studs to the C-Runner flanges on alternate sides with 3/8" Type S screws. Attach C-Runner for next row of panels to the C-Runner below with end joints staggered at least 12" o.c. Fasten the C-Runners together with double 3/8" screws at ends and 24" o.c. Attach all CH-Studs to adjacent framing with an aluminum breakaway clip. Clips attaching CH-Studs to adjacent wood framing on both sides require attachment to the CH-Stud (not the resilient channel) with one 3/8" Type S screw. Clips attaching CH-Studs and vertical C-Runners to adjacent wood framing on only one side and with exterior exposure on the other side require attachment to the CH-Stud and C-Runner (not the resilient channel) with two 3/8" Type S screws. Attachment to the wood framing is with one 1-1/4" Type W or Type S screw. Locate horizontal C-Runner joint within 2' of the Intermediate floor. As required by the applicable code, install fire blocking in the wall cavity at floor lines, bottom-of-truss line, and any other required locations.
- D Roof**—Continue erecting CH-Studs and liner panels for succeeding stories as described. Cut the liner panels and CH-Studs to roof pitch and length as necessary to follow the roof pitch. At roof, cap liner panels and CH-Studs with C-Runner. Attach all CH-Studs and vertical C-Runners to adjacent framing with an aluminum breakaway clip. Clips attaching CH-Studs and C-Runner to adjacent wood framing on only one side and with exterior exposure on the other side require attachment to the CH-Stud and vertical C-Runner (not the resilient channel) with two 3/8" Type S screws.
- E Sound Attenuation Fire Blankets**—When specified, install blankets in cavity butting blankets closely and filling all voids.
- F Resilient Channels**—When specified, install RC-1 Resilient Channels or equivalent horizontally to face side of studs, 6" below ceiling joists and max. 24" o.c. Attach channels to C-H Studs with 3/8" Type S screws driven through holes in mounting flange. Extend channels to ends of runs and attach to C-Runners. Splice channel by nesting directly over stud; screw-attach through both flanges. Reinforce with screws at both ends of splice.
- G Gypsum Panels**—Apply 1/2" SHEETROCK Brand Gypsum Panels, FIRECODE C Core, vertically to both sides of C-H Studs. Stagger joints on opposite partition sides. Fasten panels with 1" Type S screws spaced 12" o.c. in field and along edges and runner flanges.
- H Resilient Single-layer**—Apply 1/2" SHEETROCK Brand Gypsum Panels, FIRECODE C Core vertically to resilient channels and fasten with 1-1/4" Type S screws placed 6" from C-H Studs and 12" o.c. Do not place screws directly over C-H Studs.
- I Resilient Double-layer**—Apply 5/8" SHEETROCK Brand Gypsum Panels, FIRECODE C Core base layer perpendicular to resilient channels with joints staggered; fasten with 1-1/4" Type S screws placed 6" away from stud and 12" o.c. Apply 5/8" gypsum panel face layer vertically over base layer with edge joints staggered and attach with 1-5/8" Type S screws spaced 12" o.c. and staggered from those in base layer.

**3.3
Accessory
Application**

- A Joint System**—Finish all face panel joints and internal angles with a United States Gypsum Company Joint System installed according to manufacturer's directions. Treat exposed fasteners on face layers and finish corner bead, control joints, and trim as required.
- B Metal Trim**—Where partition or ceiling terminates against masonry or other dissimilar material, apply metal trim over drywall edge; fasten with nails or galvanized staples 9" o.c.
- C Control Joints**—Gap gypsum panels behind joint and back with double framing. Attach control joint on the face layer with nails, screws, or 9/16" galvanized staples spaced 6" o.c. on both flanges along entire length of joint.

**3.4
Exterior Wall**

Both solid and cavity systems are suitable for exterior walls with an appropriate water barrier installed over the system and under an exterior cladding. Exterior exposure is limited to 15 psf wind load and requires vertical clip spacing of 4' o.c. maximum. Exterior exposure requires attachment of the aluminum breakaway clips to each vertical steel framing member (do not attach clips to resilient channels) with two 3/8" Type S screws. Attachment of the clips to adjacent wood framing is with one 1-1/4" Type W or Type S screw. Uppermost clips should be placed as close to the roof line as practical attachment allows.



Technical Service

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Website

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Samples/Literature/Fax

888 874.2348

Customer Service

800 950.3839

Metric Specifications

USG Corporation, through its operating subsidiaries, will provide metric conversions on its products and systems to help specifiers match metric design sizes. In addition, some products are available in metric dimensions from selected manufacturing plants. Refer to SA100

Construction Selector for additional information and a Table of Metric Equivalents.

Trademarks

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THERMAFIBER is a trademark of THERMAFIBER LLC.

Notice

We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived

unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

Note

All products described here may not be available in all geographic markets. Consult your local sales office or representative for information.

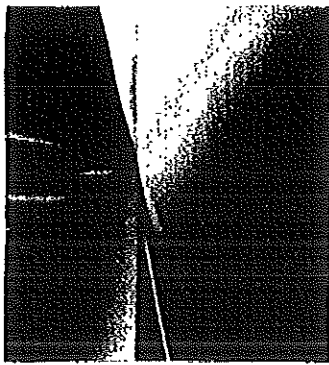
Safety First!

Follow good safety and industrial hygiene practices during handling and installing all products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read material safety data sheets and related literature on products before specification and/or installation.



Manufactured by
United States Gypsum Company
125 South Franklin Street
Chicago, IL 60606

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Michael Charek Architects

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www.charekarchitects.com

September 27, 2002

Michael Nugent
Inspection Services Manager
Housing and Neighborhood Services
Portland City Hall, Room 315
389 Congress Street
Portland, ME 04101

Re: Radcliffe Glen

Dear Mr. Nugent:

The following should address questions you raised in the memo you faxed this morning, and will confirm the telephone conversation we had:

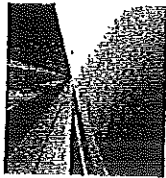
- Exterior walls of garages will have 5/8" firecode GWB on their interior surface.
- Door from unit into garage will have at least 45 minute rating; as I stated in my previous letter they will likely have a 90 minute rating.
- No penetrations of dwelling unit separation walls are presently contemplated. If penetrations are made, they will be firestopped with appropriate materials and details to maintain the fireresistance rating of the wall.
- See attached literature on deck railing materials and details.
- Second floor bathroom windows will be provided with safety glazing.

I hope this answers all of your questions satisfactorily. If you need any other information, please let me know.

Yours truly,

Michael R. Charek
Encl.

MICHAEL R. CHAREK
PRINCIPAL
Member
The American
Institute



Michael Charek Architects
 25 Hartley Street
 Portland, ME 04103
 207-761-0556
 Fax 207-761-7260

TRANSMITTAL

Project: Radcliffe Glen

Project No.:

TO: Michael Nugent
 Inspection Services Manager
 City of Portland

DATE: 9/27/02
 If enclosures are not as noted, please inform us immediately.

We Transmit:

- Herewith
 By fax: 12 pages including this one
 Under separate cover via:

For your:

- Approval
 Review & Comment
 Use
 Distribution to parties
 Record
 Information

The following:

- Drawings
 Specifications
 Change Order
 Shop Drawings
 Correspondence
 Minutes
 Samples
 Product Literature
 Other

Copies	Date	Rev. No.	Description	Action
1	9/27/02		Copy of letter	E.
1			Copy of 10 pages from Certainteed literature	E.

Action Codes:

- A. Action indicated on item transmittal.
 B. No action required.
 C. For signature and return to this office.
 D. For signature and forwarding as noted below under Remarks.
 E. See Remarks below.

Remarks: These documents are transmitted in response to the memo you faxed me today.

Copies to: _____ (with enclosures)

By: Michael R. Charek

6

Boardwalk® Composite Railing Systems

Railing Assemblies and Railing Components

Boardwalk Composite Railing Systems are designed to complement the use of Boardwalk Composite Decking planks. Together they provide the complete low maintenance decking system.

Boardwalk Composite Railing Components include:

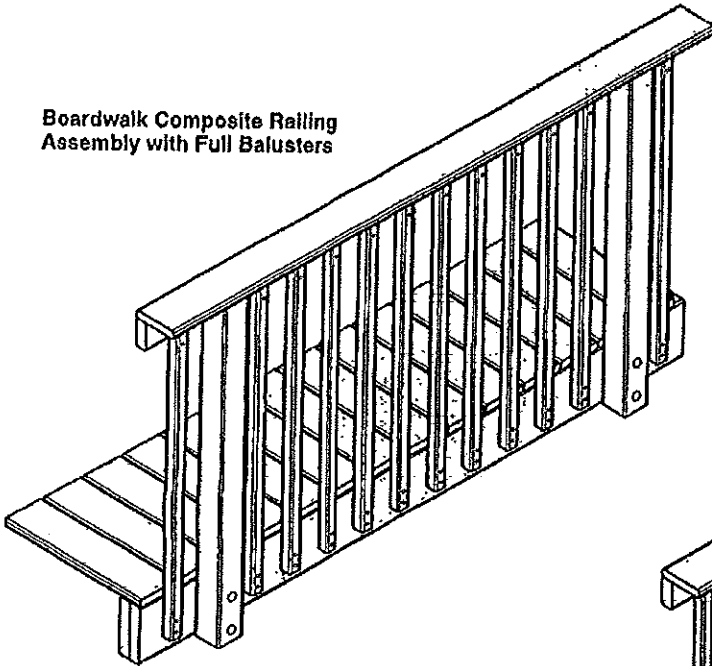
- Boardwalk 2x2 Baluster
- Boardwalk 2x4 Rail
- Boardwalk 4x4 Post
- Boardwalk Post Cap

Boardwalk Composite Railing Systems have been designed and tested to meet building code requirements including BOCA, SBC/SBCCI, UBC/ICBO and IBC. When designed and built in accordance with the following instructions, Boardwalk Composite Railing Systems meet the lateral load requirements of the codes listed including the applicable required safety factors. Check with your local building code official for actual railing requirements.

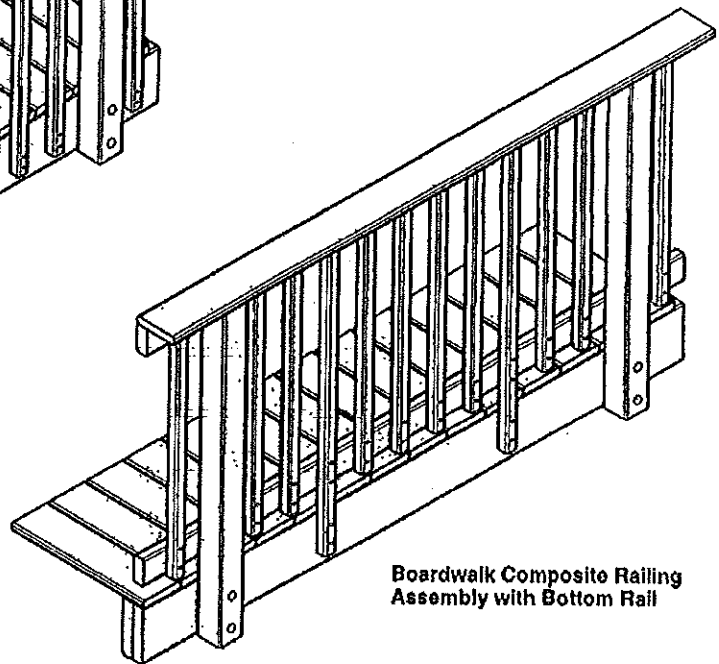
Design and construction of Boardwalk Composite Railing Systems outside the scope of these instructions must be reviewed and approved prior to construction in accordance with your local building codes. Check with your local building code official for actual railing requirements.

Boardwalk Composite Railing Assemblies

Boardwalk Composite Railing
Assembly with Full Balusters

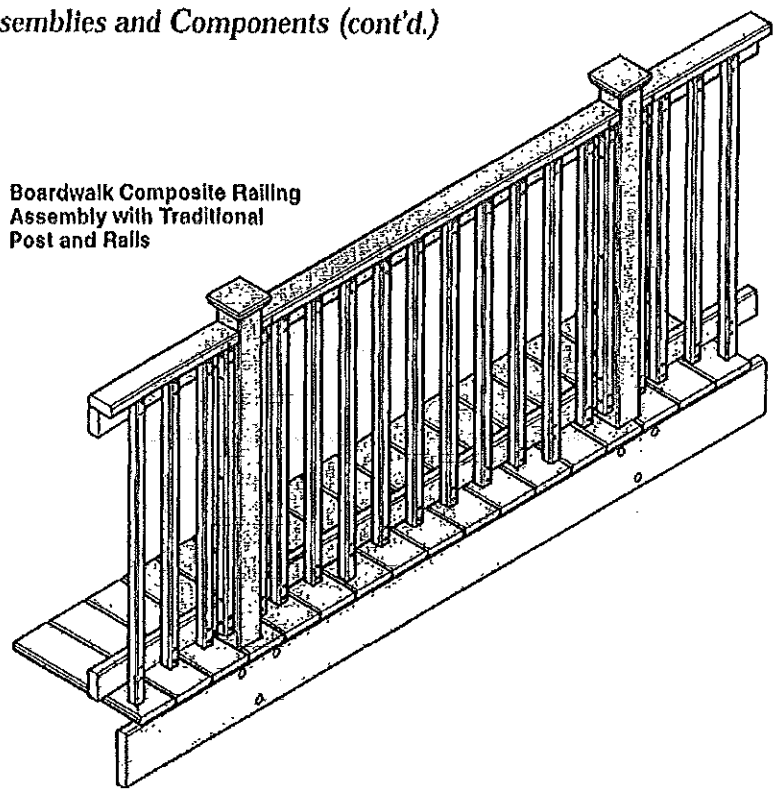


Boardwalk Composite Railing
Assembly with Bottom Rail



Railing Assemblies and Components (cont'd.)

Boardwalk Composite Railing Assembly with Traditional Post and Rails



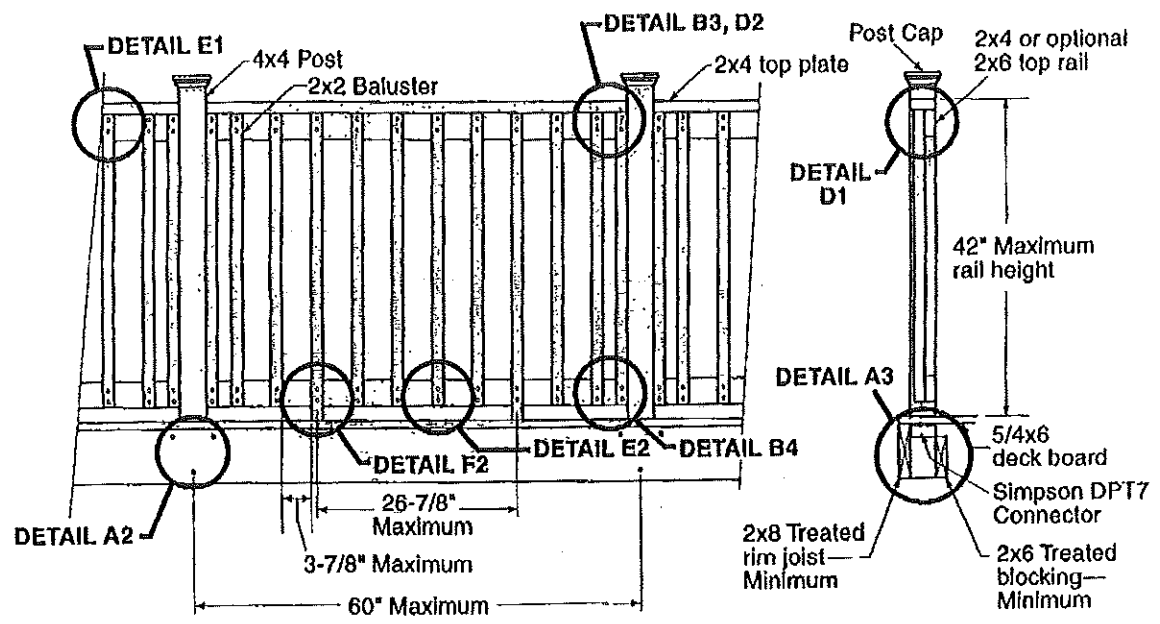
Boardwalk Composite Railing Components

Whether you are building the Boardwalk Composite Railing Assembly with full balusters, bottom rail or traditional post and rails, consult the table below for the component descriptions and installation requirements. Note that the railing components listed include the Boardwalk 5/4x6 and 2x6 Composite Decking planks. They are included as part of the assemblies and offer you aesthetic and cost options in the design and construction of your Boardwalk Composite Railing Assembly.

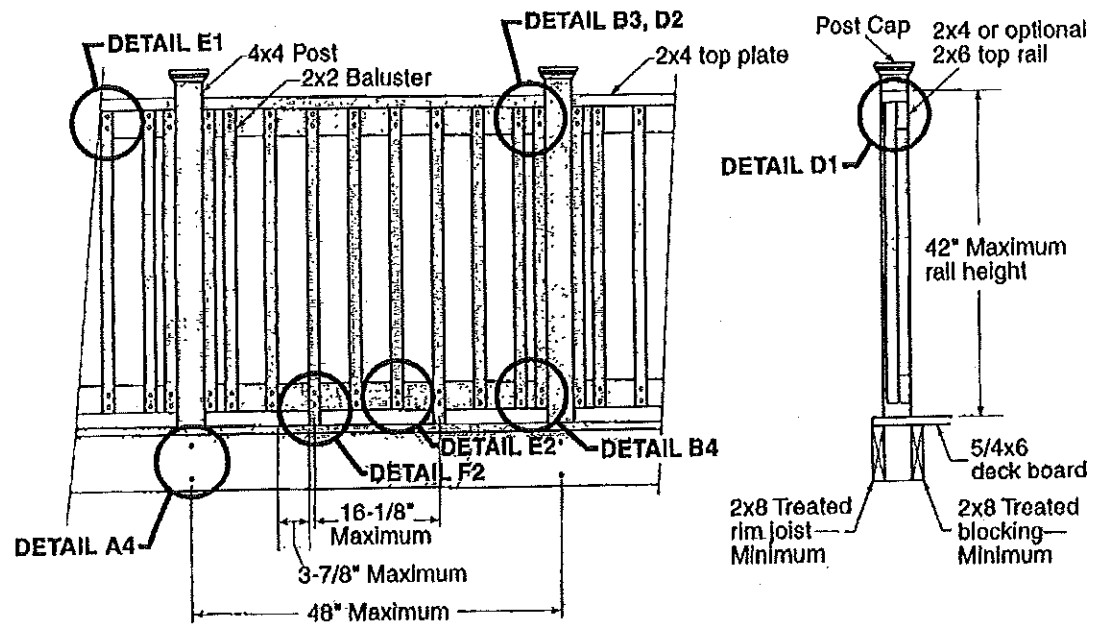
COMPONENT		INSTALLATION REQUIREMENTS
Posts		Boardwalk 4x4. Maximum post spacing shall be 4 to 6 feet (48"-72") on center (see Railing Assembly Illustrations). Posts shall not be notched.
Railings	Top Plate	Boardwalk 5/4x6, 2x6 or 2x4. The 2x4 is the top plate for the Traditional Post and Rail Assembly.
	Top Rail	Boardwalk 2x4 or 2x6.
	Bottom Rail	Boardwalk 2x4 or 2x6. Bottom rails shall be supported and/or attached to the deck structure at a maximum of 26-7/8" on center. Supports must be equally spaced over the railing span. Bottom rail is not required when full-length balusters are attached directly to the deck structure.
Balusters		Boardwalk 2x2. Balusters shall be spaced at a maximum of 5-3/8" on center. BALUSTERS FABRICATED FROM MODIFIED 2X2 OR ANY OTHER BOARDWALK COMPOSITE LUMBER PROFILES ARE NOT PERMITTED.
Post Caps		Boardwalk Post Cap. Post Caps are used at the top of 4x4 posts in traditional post and rail assembly.

Railing Installation Instructions (cont'd.)

Boardwalk Composite Railing Assembly with Traditional Post and Rails (5 ft. Maximum Span)



Boardwalk Composite Railing Assembly with Traditional Post and Rails (4 ft. Maximum Span)



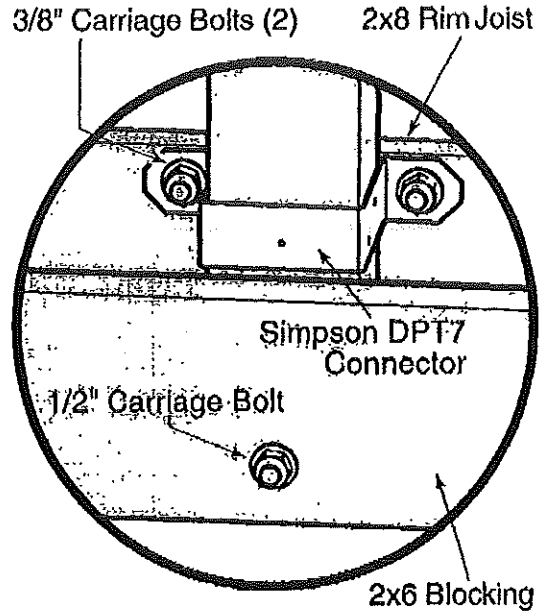
Railing Installation Instructions (cont'd.)

DETAIL A3

Fastening Boardwalk 4x4 Posts to Rim Joists

Detail A3 illustrates the backside of the fastening method outlined in Detail A2. It shows the required carriage bolts, Simpson DPT7 Strong Tie Connector and 2x6 blocking.

NOTE: VIEW SHOWN IS FROM THE INTERIOR WITH THE DECKING PLANKS REMOVED.



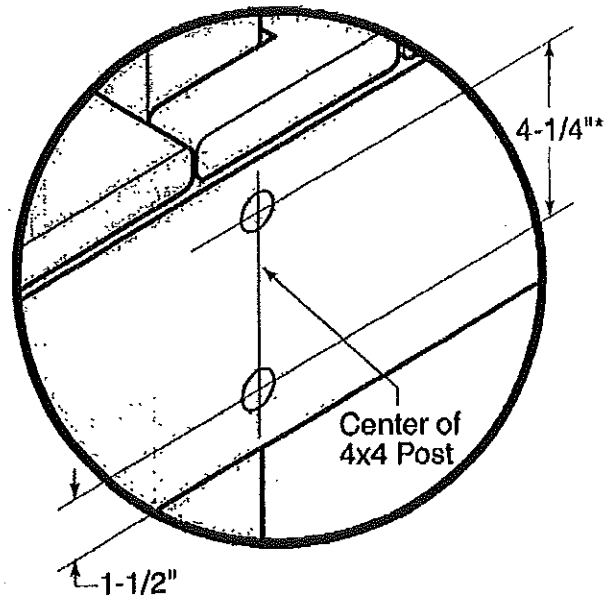
DETAIL A4

Fastening Boardwalk 4x4 Posts to Rim Joists

Detail A4 illustrates the fastening method for the traditional post and rail assembly (4 ft. maximum span). The 4x4 posts are mounted inboard of the 2x8 rim joist. The posts must be thru-bolted to the deck rim joist using two (2) 1/2 inch carriage bolts. Clearance holes are required at the dimensions shown—9/16 inch diameter maximum. To provide proper load bearing, the posts must be bolted to a minimum 2x8 rim joist with minimum 2x8 blocking at the backside of the 4x4 post. Post spans must not exceed the maximum spans shown on the assembly illustrations.

*The 4-1/4 inch minimum dimension shown is from the fastener center to the centerline. It is based on the minimum 2x8 joist framing and this dimension may be adjusted for 2x10 and 2x12 joist framing.

NOTCHING OF BOARDWALK 4X4 POSTS IS NOT PERMITTED.



Railing Installation Instructions (cont'd.)

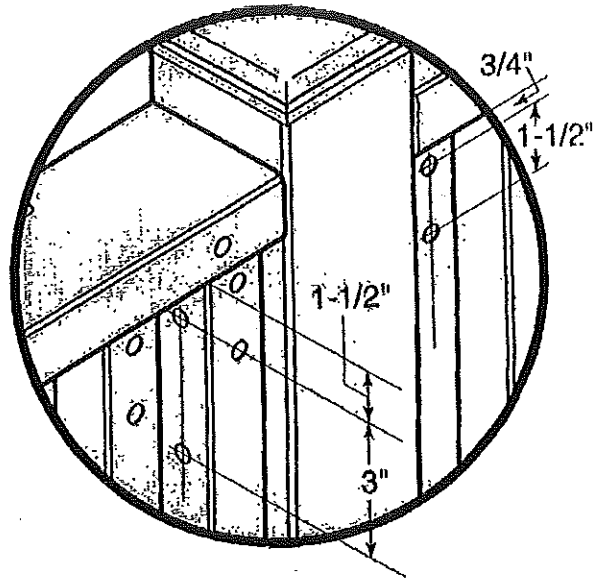
DETAIL B3

Fastening Boardwalk Top Rail to 4x4 Post

The top rail for the traditional post and rail assemblies are anchored to the 4x4 posts through the end 2x2 baluster. Use the specified deck screws at the 1-1/2 inch and 3 inch locations shown to anchor the end baluster to the 4x4 post. The bottom of the end baluster is anchored similarly (see Detail B4, below).

Once the end balusters are anchored, the top rail is positioned between the 4x4 posts and anchored using the specified deck screws at the 3/4 inch and 1-1/2 inch locations shown at right.

NOTE: THE END BALUSTER MUST ALSO BE ANCHORED TO THE 4X4 POST AT ITS VERTICAL MIDPOINT IN THE SAME FASHION AS THE 1-1/2 INCH AND 3 INCH LOCATIONS SHOWN.

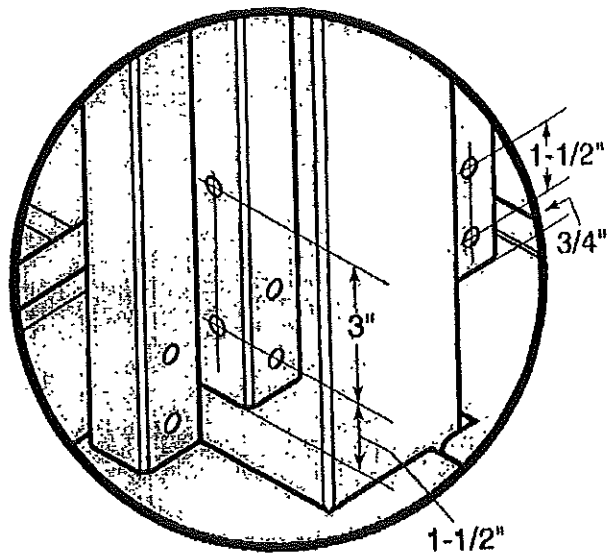


DETAIL B4

Fastening Boardwalk Bottom Rail to 4x4 Post

Similar to the top rail anchoring method described above, the bottom rail of the traditional post and rail assemblies are anchored to the 4x4 posts through the end 2x2 baluster. Use the specified deck screws at the 1-1/2 inch and 3 inch locations shown to anchor the end baluster to the 4x4 post.

Once the end balusters are anchored, the bottom rail is positioned between the 4x4 posts and anchored using the specified deck screws at the 3/4 inch and 1-1/2 inch locations shown.



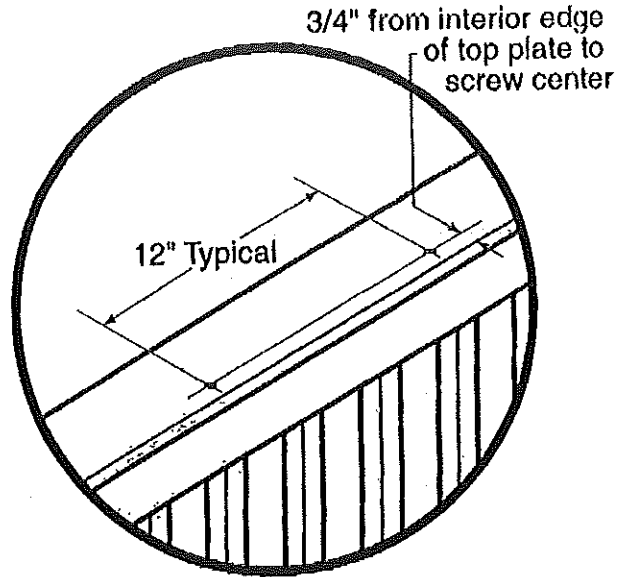
Railing Installation Instructions (cont'd.)

DETAIL D1

Fastening Boardwalk Top Plate to Top Rail
(Viewed from interior)

After the Boardwalk top plate is fastened to the 4x4 posts, use the specified deck screws at the locations shown to fasten the top plate continuously to the top rail. The interior surface of the top plate should be flush with the interior surface of the top rail.

The 5/4x6 decking plank is shown; the 2x6 plank is an optional top plate. See the Boardwalk Composite Railing Component table.

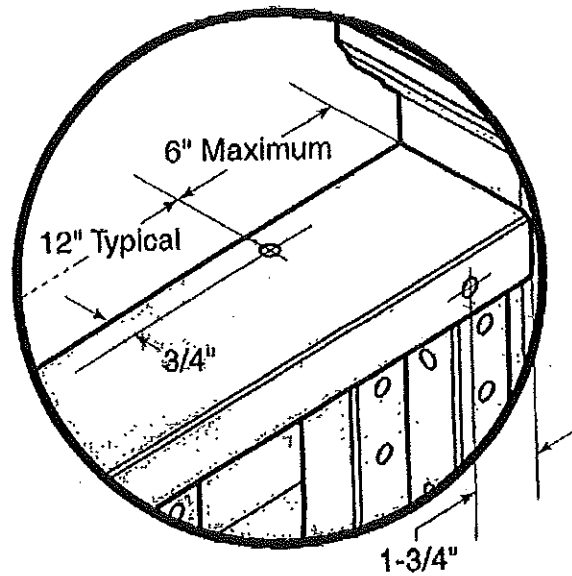


DETAIL D2

Fastening Boardwalk Top Plate to Top Rail

Fasten the 2x4 top plate to the 4x4 post and top rail of the traditional post and rail assemblies at the locations shown with the specified deck screws.

NOTE: THE FASTENERS AT THE 1-3/4 INCH LOCATION SHOWN ARE INSTALLED AT AN APPROXIMATE 45 DEGREE ANGLE INTO THE 4X4 POST. PRE-DRILLING IS RECOMMENDED FOR PROPER APPLICATION. TWO FASTENERS ARE REQUIRED AT EACH END (ONE INTERIOR AND ONE EXTERIOR).



16

Railing Installation Instructions (cont'd.)

DETAIL E1

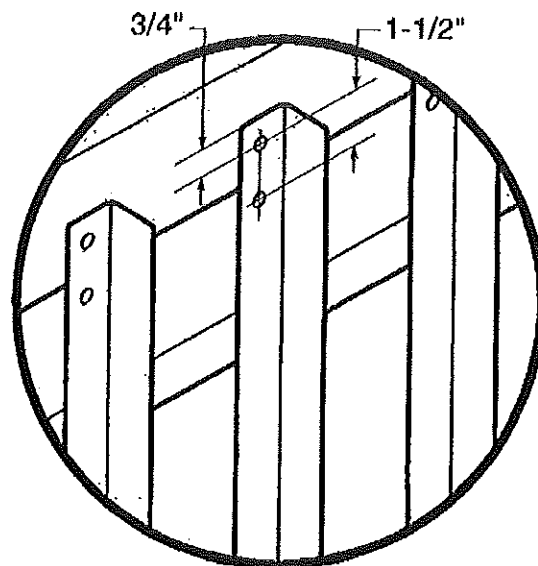
Fastening Boardwalk 2x2 Balusters to Top Rail

(Viewed from underside)

The Boardwalk 2x2 balusters are the last components installed in the deck railing assembly.

Using the maximum 3-7/8 inch spacing shown in the Assembly Illustrations, center the appropriate number of balusters between the 4x4 post spans. Make sure that the spacing from the last baluster to the 4x4 post on each end also meets the maximum 3-7/8 inch requirement. Hint: A block of wood cut to the desired spacing works well to locate each baluster while fastening.

Use the specified deck screws at the locations shown to fasten the balusters to the top rail. The top surface of the baluster should be tight to the underside of the top plate.



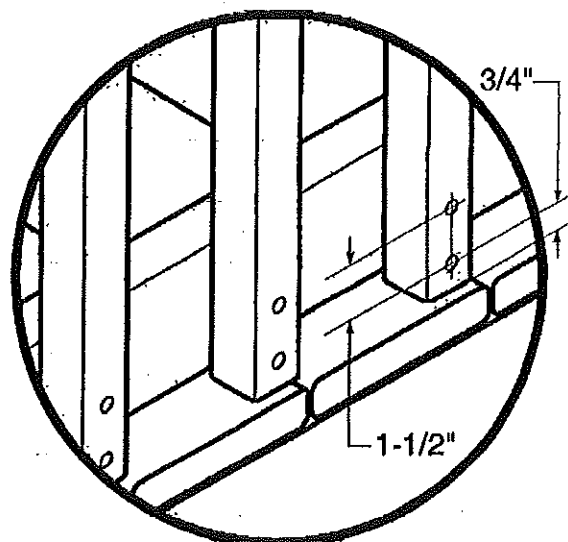
DETAIL E2

Fastening Boardwalk 2x2 Balusters to Bottom Rail

If your assembly includes a bottom rail, fasten the bottom of the Boardwalk 2x2 balusters to the bottom rail.

With the same maximum 3-7/8 inch spacing and layout used for the top rail connection, fasten the balusters to the bottom rail using the specified deck screws at the locations shown. The bottom surface of the baluster should be flush with the underside of the bottom rail.

NOTE: TO PROVIDE THE NECESSARY VERTICAL SUPPORT, AT LEAST TWO BALUSTERS IN THIS ASSEMBLY MUST BE CUT LONG ENOUGH TO BE ANCHORED TO THE BOTTOM RAIL AND THE RIM JOIST. SEE THE RAILING ASSEMBLY ILLUSTRATIONS FOR LOCATION AND MAXIMUM SPACING. SEE DETAIL F FOR ADDITIONAL FASTENING INSTRUCTIONS.



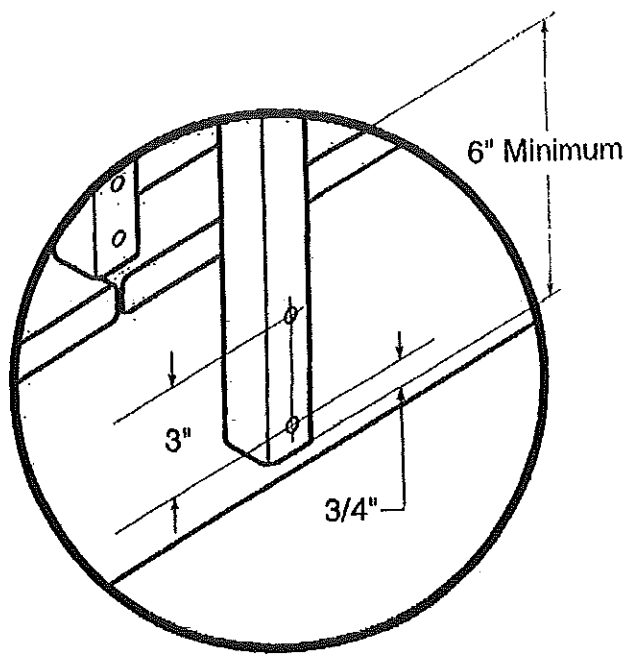
Railing Installation Instructions (cont'd.)

DETAIL F1 Fastening Boardwalk 2x2 Balusters to Rim Joist

If your assembly does not include a bottom rail, all of the balusters must be fastened to the rim joist.

With the same maximum 3-7/8 inch spacing and layout used for the top rail connection, fasten the balusters to the rim joist using the specified deck screws at the locations shown.

NOTE: THE LENGTH OF EACH BALUSTER MUST OVERLAP THE RIM JOIST A MINIMUM OF 6 INCHES AS SHOWN. THIS DIMENSION IS MEASURED FROM THE TOP OF THE DECK PLANK TO THE BOTTOM OF THE BALUSTER.

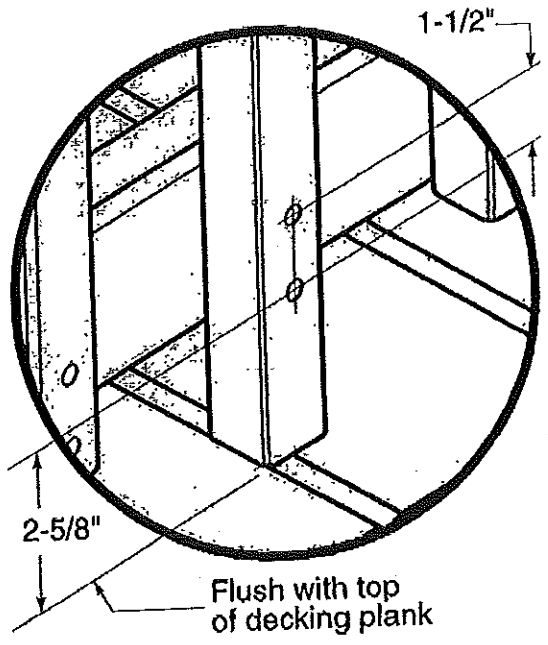


AS NOTED IN DETAIL E2: If your assembly includes a bottom rail, a minimum of two Boardwalk balusters must be fastened to the rim joist for vertical support. Use the same procedure noted above for baluster length, fastener type and location.

DETAIL F2 Fastening Boardwalk 2x2 Balusters to Deck Surface

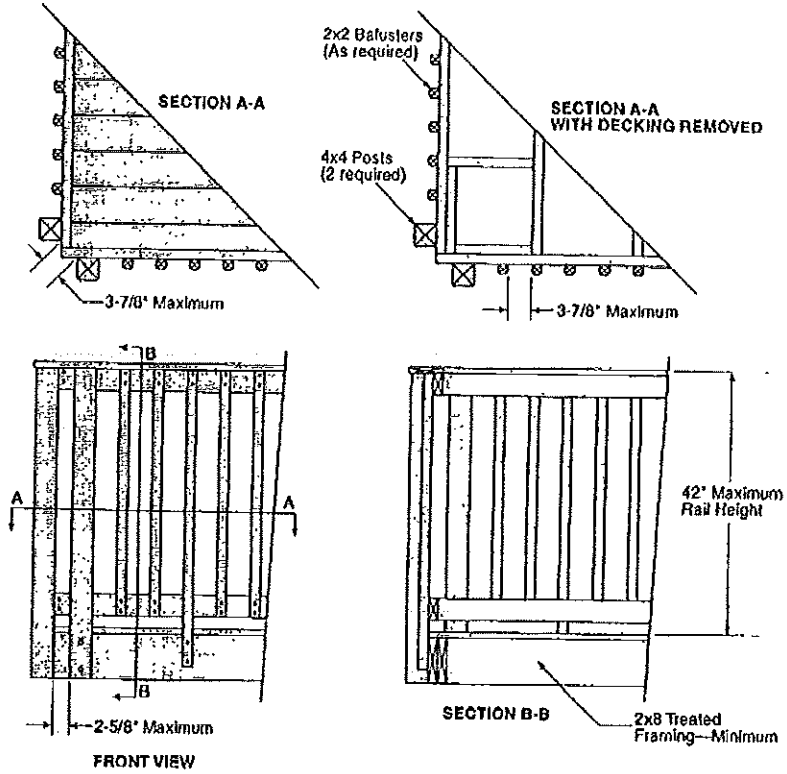
As noted in the Railing Assembly Illustrations, two of the 2x2 balusters in the traditional post and rail assemblies must be cut long enough to extend to the deck surface to provide vertical support. They are anchored to the bottom rail using the specified deck screws and same 3-7/8 inch spacing noted in Detail E1 at the locations shown.

NOTE: THE TWO LONGER-LENGTH BALUSTERS REST ON THE TOP SURFACE OF THE DECKING PLANKS. THEY ARE NOT ANCHORED TO THE DECK SURFACE.

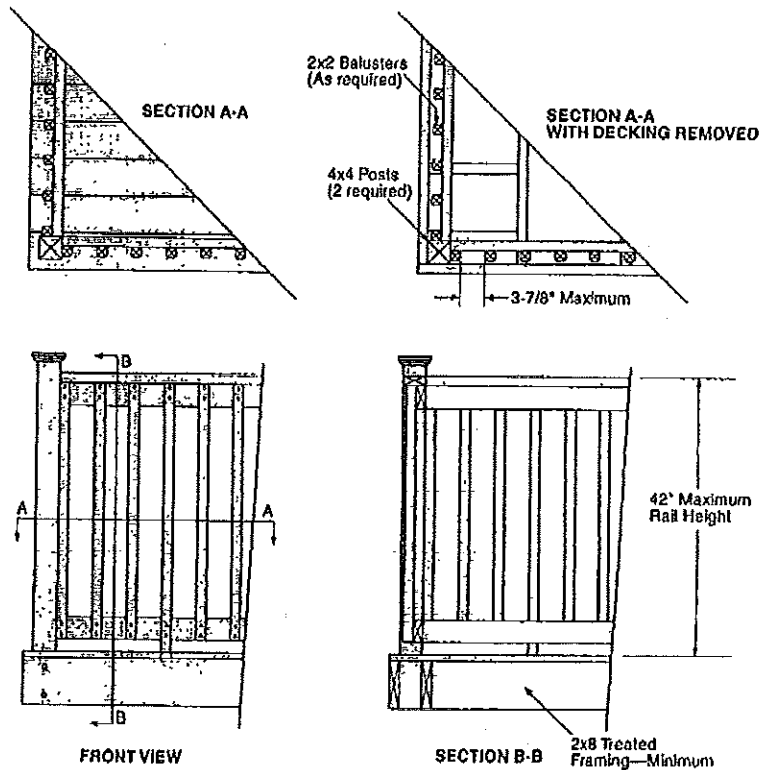


Railing Installation Instructions (cont'd.)

Boardwalk Composite Railing Corner Assembly with Bottom Rail



Boardwalk Composite Railing Corner Assembly with Traditional Post and Rails



Railing Installation Instructions (cont'd.)

Boardwalk® Composite Railing Systems

Fastener Schedule

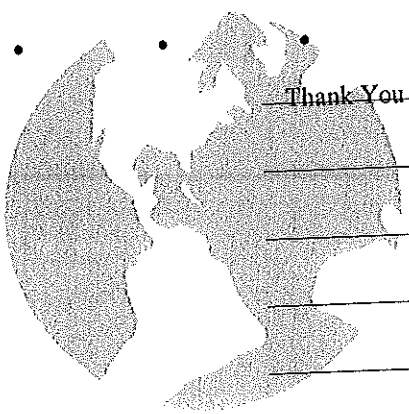
Use the fasteners specified in the table below to construct the Boardwalk Composite Railing Assemblies. See the referenced details for complete fastener location and spacing.

LOCATION	QTY.	TYPE	SPACING	DETAIL
4x4 Post to Rim Joist	2	1/2" Carriage Bolt, Flat Washer and Nut	1-1/2" from bottom, 4-1/4" on center vertically	A1, A4
4x4 Post to Rim Joist	1	1/2" Carriage Bolt, Flat Washer and Nut	1-1/2" from bottom,	A2, A3
	1	Simpson DPT7 Strong Tie Connector	6-1/2" from bottom to centerline	
	2	3/8" Carriage Bolt, Flat Washer and Nut	6-1/2" from bottom to centerline	
2x4 or 2x6 Top/Bottom Rail to 4x4 Post	2	#8x3" Deck Screw	2" on center vertically	B1, B2
5/4x6 or 2x6 Top Plate to 4x4 Post	2	#8x3" Deck Screw	2" on center	C1, C2
2x4 Top Plate to 4x4 Post	2	#9x3" Deck Screw	2" each end at approx. 45 degree angle	D2
5/4x6 or 2x6 Top Plate to Top Rail	1	#8x2-1/2" Deck Screw	Every 12" on center	D1
2x4 Top Plate to Top Rail	1	#8x3" Deck Screw	Every 12" on center	D2
2x2 Baluster to Top/Bottom Rail	2	#8x2-1/2" Deck Screw	1-1/2" on center vertically	B3, B4 E1, E2, F2
2x2 Baluster to Rim Joist	2	#8x2-1/2" Deck Screw	3" on center vertically	F1
2x2 End Baluster to 4x4 Post	5	#9x3-1/2" Deck Screw	1-1/2" from top and bottom 3" center to center vertically and midpoint of baluster length	B3, B4
Post Cap to 4x4 Post	N/A	Construction Adhesive	N/A	N/A

facsimile transmittal

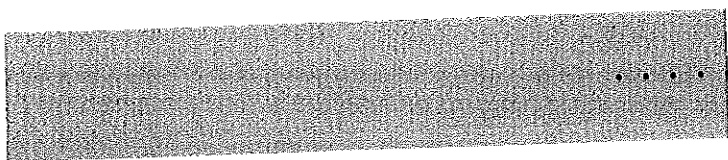
To: Michael Charek From: Mike Nugent
Fax: 761-7260 Date: September 27, 2002
Phone: Pages: 1
Re: Radcliffe Glenn (153 A025)

- Urgent For Review Please Comment Please Reply Please Recycle



Thank You for the information I have a couple of questions as I wrap this up;

- 1) The exterior walls of the residential garages must be one hour rated.
- 2) A 20 Minute garage to living space door would not work in this circumstances. (see Table 717.1.) Because the wall is a one hour fire partition, the door must be 45 min.
- 3) Will there be any penetrations in the dwelling unit separation walls?
- 4) Can we get product information and installation guidelines on the Guardrails for the decks?
- 5) The second floor bathroom windows in 11, 14, 15 & 18 must be safety glazing (see section 2406.2(5))



NOTES: N.R. — Not required
N.A. — Not applicable

ADMINISTRATION (Chapter 1)

Complete construction documents
(107.5, 107.6, 107.7)

Signed/sealed construction documents
(107.7, 114.1)

BUILDING PLANNING (Chapters 3, 4, 5, 6)

R-3 USE OR OCCUPANCY CLASSIFICATION (302.0-313.0)

Single Use Group

_____ Specific occupancy areas (302.1.1)

_____ Mixed Use Groups

_____ Accessory areas (302.1.2)

GENERAL BUILDING LIMITATIONS (Chapters 5 & 6)

Apply Case 1 to determine the allowable height and area and permitted types of construction for a building containing a single use group or nonseparated mixed use groups. Apply Case 2 to determine the allowable height and area and permitted types of construction for a building containing separated mixed use groups.

AREA MODIFICATIONS TO TABLE 503

% of Allowable tabular area (Table 503) 100%

% Reduction for height (Table 506.4) - 0%

% Increase for open perimeter (506.2) + 0%

% Increase for automatic sprinklers (506.3) + 0%

Total percentage factor = 100%

Conversion factor $\frac{1 \times 100\%}{(Total\ percentage\ factor/100\%)} = 100\%$

Open perimeter (506.2)	_____	_____	_____	_____
	North	East	South	West
Open perm.	_____ ft.		Perimeter _____ ft.	
% Open perimeter = $\frac{(\text{Open perm.}/\text{perim.}) \times 100\%}{}$				
% Tab. area increase = $\frac{2 \times (\% \text{ Open perm.} - 25\%)}{(506.2)}$				

CASE 1 — SINGLE USE OR NONSEPARATED MIXED USE GROUPS (313.1.1, 503.0)

Using Table 503, identify the allowable height and area of the single use group or the most restrictive of the nonseparated mixed use groups. Construction types that provide an allowable tabular area equal to or greater than the adjusted floor area and allowable heights (as modified by Section 504.0) equal to or greater than the actual building height are permitted.

Actual floor area $\frac{6160}{2} = 3080$ ft.² Actual building height ~~20~~ 22 feet 2 stories
Adjusted floor area* 4800 ft.² Allowable building height 35 feet 2 stories

*Adjusted floor area = actual floor area/conversion factor

Permitted types of construction All Type of construction assumed for review (602.3) SB

ATRIUMS'

- Automatic sprinkler system (404.2)
- Occupancy (404.3)
- Smoke control (404.4)
- Enclosure (404.5)
- Fire alarm system (404.6)
- Travel distance (404.7)

OTHER SPECIAL USE AND OCCUPANCY

- Underground structures (405.0)
- Open parking structures (406.0)

- Private garages (407.0)
- Public garages (408.0)
- Use Group I-2 (409.0)
- Use Group I-3 (410.0)
- Stages and platforms (412.0)
- Special amusement buildings (413.0)
- HPM facilities (416.0)
- Hazardous materials (307.8, 417.0)
- Use Groups H-1, H-2, H-3 and H-4 (418.0)
- Swimming pools (421.0)

FIRE PROTECTION (Chapters 6, 7, 8, 9)

FIRERESISTANT MATERIALS AND CONSTRUCTION (Chapter 7 and Table 602)

Note: Entry in indicates required rating in hours. NC indicates noncombustible construction required.

COMBUSTIBILITY (603.0, 604.0, 605.0, 606.0)

- Exterior walls
- Interior elements
- Roof

CONSTRUCTION DOCUMENTS (703.0)

- Fire tests (704.0)

EXTERIOR WALLS (507.2, 705.0, 716.5)

	North	East	South	West
Fire separation distance				
Loadbearing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Nonloadbearing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- N/R Exterior opening protectives (705.3, 706.0)
- N/R Parapet walls (705.6)

FIRE SEPARATION ASSEMBLIES

- N/A Exit enclosures (709.0, 710.0, 1014.11)
- N/A Other shafts (709.0, 710.0)
- N/A Mixed use and fire area separations (313.1.2)
- N/A Other separation assemblies (302.1.1, Table 602)

FIRE PARTITIONS

- N/A Exit access corridors (711.0, 1011.4)
- N/A Tenant separations (711.0)
- 1 HR + 2 HR Dwelling unit separations (711.0)
- N/A Guestroom separations (711.0)

OTHER FIRERESISTANT CONSTRUCTION

- 2 HR Fire and party walls (707.0 and Table 707.1) *to Double Stud*
- N/A Smoke barriers (712.0)
- 0 Nonloadbearing partitions (Table 602)
- 0 Interior loadbearing walls, columns, girders, trusses (716.0)
- 0 Supporting construction (716.0)
- 0 Floor construction (713.0, 1006.3.1)
- 0 Roof construction (713.0, 715.0)
- ? Penetrations (714.0) *2nd floor*
- ? Opening protectives (717.0, 719.0, 720.0)
- N/A Fire dampers (718.0)
- SEL N/A Fireblocking/draftstopping (721.0)
- 49+60 STC Thermal and sound-insulating materials (723.0)

STANDPIPE SYSTEMS

- W/A Building height (915.2.1)
- W/A Building area (915.2.2)
- W/A Malls (915.2.3)
- W/A Stages (915.2.4)
- W/A Approved system (915.3, 915.3.1)
- W/A Piping design (915.4)
- W/A Water supply (915.5)
- W/A Control valves (915.6)
- W/A Hose connection (915.7)

FIRE DEPARTMENT CONNECTIONS

- W/A Required (916.1)
- W/A Connections (916.2)

YARD HYDRANTS

- W/A Fire hydrants (917.1)

FIRE ALARM SYSTEMS

- W/A Approval (918.3)
- W/A Assembly (A-4), Educational (E) (918.4.1)
- W/A Business (B) (918.4.2)
- W/A High-hazard (H) (918.4.3)
- W/A Institutional (I) (918.4.4)
- W/A Residential (R-1) (918.4.5)
- W/A Residential (R-2) (918.4.6)
- W/A Location/details (918.5)
- W/A Power supply/wiring (918.6, 918.7)
- W/A Alarm-notification appliances (918.8)
- W/A Voice/alarm signaling system (918.9)

AUTOMATIC FIRE DETECTION SYSTEMS

- W/A Approval (919.3)
- W/A Institutional (I) (919.4.1, 919.4.2, 919.4.3)
- W/A Residential (R-1) (919.4.4)
- W/A Sprinklered buildings exception (919.5)
- W/A Zones (919.6)

SINGLE- AND MULTIPLE-STATION SMOKE DETECTORS

- W/A Residential (R-1) (920.3.1)
- W/A Residential (R-2, R-3) (920.3.2)
- W/A Institutional (I-1) (920.3.3)
- W/A Interconnection (920.4)
- W/A Battery backup (920.5)

FIRE EXTINGUISHERS

- W/A Approval (921.1)
- W/A Required (921.2)

SMOKE CONTROL SYSTEMS

- W/A Passive system (922.2.1)
- W/A Mechanical system (922.2.2)
- W/A Smoke removal (922.3)
- W/A Activation (922.4)
- W/A Standby power (922.5)

SMOKE AND HEAT VENTS

- W/A Size and spacing (923.2)

SUPERVISION

- W/A Fire suppression systems (924.1)
- W/A Fire alarm systems (924.2)

ROOFS AND ROOF STRUCTURES (Chapter 15)

✓ Performance requirements (1505.0)

CLASS C Fire classification (1506.0)

NO Steep-slope roof coverings (1507.4)

NO

YES

TRUSSES

Low-slope roof coverings (1507.5)

Flashing (1508.0)

Roof structures (1510.0)

STRUCTURAL SYSTEMS (Chapters 16, 17, 18)

STRUCTURAL LOADS (Chapter 16)

DESIGN LOADS ON CONSTRUCTION DOCUMENTS (1603.1)

Uniformly distributed floor live loads (1603.2, 1606.0)

Floor Area Use GIRDERS? Loads Shown

1ST FLOOR LIVING - 50 + 10

2ND BEDROOM - 50 + 10

~~STAIRS~~ STAIRS - 60

NONE Live load reduction (1603.2, 1606.7)

50 Roof live loads (1603.3, 1607.0)

Roof snow loads (1603.4, 1608.0)
60 - DESIGNED FOR
Ground snow load, P_g (1608.3)

50 If $P_g > 10$ psf, flat-roof snow load, P_f (1608.4)

1.0 If $P_g > 10$ psf, snow exposure factor, C_e (Table 1608.4)

Sloped roof snowload, P_s (1608.5)

1.0 If $P_g > 10$ psf, snow load importance factor, I (Table 1609.5)

Wind loads (1603.5, 1609.0)
90 DESIGNED FOR
Basic wind speed (1609.3)

B Wind exposure category (1609.4)

1.1 Wind importance factor, I (Table 1609.5)

20.7 Wind design pressure, P (1609.7)

Earthquake loads (1603.6, 1610.0)

0.1

Peak velocity-related acceleration, A_v (1610.1.3)

0.1

Peak acceleration, A_a (1610.1.3)

1

Seismic hazard exposure group (1610.1.5)

C

Seismic performance category (1610.1.7)

Soil-profile type (Table 1610.3.1)

LIGHT FRAMED WALLS
Basic structural system and seismic-resisting system (Table 1610.3.3)

0.5/4

Response modification factor, R , and deflection amplification factor, C_d (Table 1610.3.3)

ELFP

Analysis procedure (1610.4, 1610.5)

Other loads

Attic load (1606.2.2, 1606.2.3)

N/A

Partition loads (1606.2.4)

N/A

Concentrated loads (1606.3)

N/A

Impact loads (1606.6)

Misc. loads (1606.4, 1606.8, 1606.9, 1607.5, 1612.0)

STRUCTURAL DESIGN CALCULATIONS

YES

Submitted for all structural members (107.7)

YES

Signed/sealed (107.7, 114.1)

YES

Deflection limits considered (1604.5)

STEEL (Chapter 22)

_____ Structural steel design/construction standard specified (2203.1, 2203.2)
_____ Shop drawing preparation specified (2203.4)
_____ Open-web steel joist design/construction standard specified (2205.1)

_____ Formed steel design/construction standard specified (2206.1)
_____ Formed steel member identification (2206.6)

WOOD (Chapter 23)

_____ Installation inspections (2301.2)
_____ Design/construction standard specified (2303.1)
_____ Grade mark specified (2303.1.1)
HEAVY TIMBER CONSTRUCTION
_____ Minimum dimensions (605.1, 2304.0)
_____ Design/construction standard specified (2304.1)

_____ Seismic bracing (2305.8)
3/4" BOARDS 4' O.C.
_____ Foundation anchorage (2305.17)
_____ Wood structural panels (2307.0)
_____ Particleboard (2308.0)
_____ Fiberboard (2309.0)
_____ Fireretardant-treated wood (2310.0)
_____ Decay and termite protection (2311.0)
CI/S3 YES SIMPSON LUSAS
_____ Joist hangers (2312.0)

WOOD FRAME CONSTRUCTION

_____ Fastening and construction details (2305.0, Table 2305.2)
_____ Wind bracing design required (2305.7)

_____ Prefabricated components (2313.1, 2313.3)
ROOF S...
_____ Metal-plate-connected trusses (2313.3.2)

NONSTRUCTURAL MATERIALS (Chapters 24, 25, 26)

GLASS AND GLAZING (Chapter 24)

_____ Skylights (2404.0)

11 + 14 A102
SHUT A104 UNIT 15 + 18 BARRA
_____ Safety glazing (2405.0, 2406.0, 2407.0)

GYPSUM BOARD AND PLASTER (Chapter 25)

_____ Gypsum board materials (2503.0, Table 2503.2, Table 2503.3)

_____ Plaster (2504.0, 2505.0, 2506.0)

PLASTIC (Chapter 26)

_____ Approved materials (2601.2)
_____ Identification (2601.4)
_____ Interior trim (2603.7)
_____ Alternative approval (2603.8)

FOAM PLASTIC (2603.0)

_____ Labeling (2603.2)
_____ Surface-burning characteristics (2603.3)
_____ Thermal barrier (2603.4)
_____ Exterior walls (2603.5, 2603.6)

LIGHT-TRANSMITTING PLASTIC (2603.5, 2604.0)

Diffusing systems (2604.5)

Wall panels (2605.0)

Unprotected openings (2606.0)

Roof panels (2607.0)

Skylight glazing (2608.0)

BUILDING SERVICES (Chapters 28, 30)

MECHANICAL SYSTEMS (Chapter 28)

Waste- and linen-handling systems (2807.0)

Refuse vaults (2808.0)

ELEVATORS AND CONVEYING SYSTEMS (Chapter 30)

Construction standard specified (3001.2)

Venting (3007.3 - 3007.6)

Elevator emergency operation (3006.2)

Opening protectives (3008.2)

Holstway enclosure (3007.1)

Conveyors and escalators (3010.0, 3011.0)

SPECIAL DEVICES AND CONDITIONS (Chapters 31, 34)

SPECIAL CONSTRUCTION (Chapter 31)

Membrane structures (3103.0)

PEDESTRIAN WALKWAYS (3106.0)

Flood-resistant construction (3107.0)

Construction and use (3106.1 - 3106.3)

Towers (3108.0)

Separation (3106.4)

Local approval (3106.5)

Egress and size (3106.6 - 3106.8)

EXISTING STRUCTURES (Chapter 34)

ADDITIONS, ALTERATIONS OR CHANGE OF OCCUPANCY

General requirements (3402.0)

Additions/alterations (3403.0; 3404.0)

Structural loads (1614.0, 3402.5)

Change of occupancy (1110.3, 3405.0)

Accessibility (1110.0, 3402.7)

Compliance alternative evaluation (3408.0)

BUILDING EVALUATION SUMMARY (Table 3408.7)

Existing use group _____	Proposed use group _____	Number of stories _____	Height in feet _____
Year building was constructed _____		Area per floor _____	Percentage of height reduction _____ %
Type of construction _____		Corridor wall rating _____	Required door closers: Yes _____ No _____
Percentage of open perimeter _____ %			
Completely suppressed: Yes _____ No _____			
Compartmentation: Yes _____ No _____			
Fire-resistance rating of vertical opening enclosures _____			
Type of HVAC system _____			_____ serving number of floors _____

Applicant: Sturdivant
Address: Kimberly Court

Date: 1/2/03
C-B-L: 153-A-25
154-B-16

CHECK-LIST AGAINST ZONING ORDINANCE

Date - New construction

Zone Location - R-3 for these bldgs - PRUD
(both sections of project in R-5)

Interior or corner lot -

Proposed Use/Work - construct 2-4 unit bldgs
Bldg# unit 3,4,5,6
one Bldg# - unit 7,8,9,10

Sewage Disposal - City

Lot Street Frontage - I - min Bldg setback from external subdivision property lines

Front Yard - (R-3) → 40' max units in bldg - 35' min req - 38' scaled 50' to front

Rear Yard -

Side Yard - II MAX, length of Bldg - 140' for bldgs with garages
140' shown

Projections - III min. Distances between detached PRUD D.U.

Width of Lot -

Height - 35' max - 28.5' to ridge scaled 16' min req ≈ 40' + shown

Lot Area - IV Recreation Areas req to be min of 25' from D.U.
Not close to rec. Areas well over 25'

Lot Coverage/Impervious Surface - (R-3) - min 3 Gross Acres req - 6.37 Acres Shown

Area per Family - (R-3) Net Land Area = 182,520^{sq ft} ÷ 6,500 = 28 Allowed - 26 Shown

Off-street Parking - 28 spaces total shown

Loading Bays - N/A
2 x 33 = 66 + 6 = 72 min req

Site Plan - YES - Major Subdivision # 2002-0060

Shoreland Zoning/Stream Protection - N/A

Flood Plains - Panel 7 - Zone X

CITY OF PORTLAND, MAINE
MEMORANDUM

Milee Nugent
153-A-025

TO: Mayor Geraghty and Members of the City Council
Joseph E. Gray, Jr., City Manager

FROM: Sarah Hopkins, Development Review Services Manager

DATE: October 3, 2002

RE: Blasting Activities at Radcliff Glenn

I. Description of Radcliff Glen

Radcliff Glen is a 33-unit condominium Planned Unit Residential Development that was approved by the Planning Board on July 9, 2002. The development consists of seven 4-unit, one 3-unit and one 2-unit buildings. The site is accessed through two driveways off Harvard Street and a third driveway located at the terminus of University Street. The project is split into north and south parts that do not allow vehicular movement between but is integrated by means of internal pedestrian sidewalks and paths. Site amenities include areas for passive and active recreation in addition to substantial landscaping and preservation areas. See attached site plan.

II. Blasting Plan

As part of the Planning Board's review, a blasting plan was required to be submitted by the applicant, Lawrence Sturdivant. The plan, prepared by Sebago Technics, indicated that rock blasting is required for foundation installation for units 1 through 18 at the north end of the site. The blasting depths will range from four to nine feet below existing grade. Additional blasting will be required for construction of the northern entrance drive, utility trenches and possibly at the southern entrance. Depths will range from four to eight feet. Anticipated blasting for the road in other areas without utilities is expected to be one to five feet. The contractor is required to meet local and state blasting criteria (permit from Fire Department, adherence to U.S Bureau of Mines specifications). Hours of blasting are to be confined between 9:00am and 4:00pm. All blasts must be monitored by seismographs and the applicant is required to submit a blasting report to the City once the records are available.

III. Chronology of Construction

Planning Board Approval:	July 9
Pre-construction meeting:	August 16
Tree clearing began:	August 20
Start of blasting:	September 10
Estimated end of blasting:	October 11
Estimated end of construction:	Fall 2003/Spring of 2004

IV. Description of Blasting

On September 19, both the Fire Department and Planning Department received a complaint for a neighbor along University St. The neighbor was concerned about the hours of operation, dust and notification.

That day, the Planning and Development Department placed a Stop Work Order on the job and requested a meeting with the applicant, his contractor, and the blasting contractor. The meeting was held on the following day. During the meeting, the blasting contractor indicated that he was not aware of the restricted hours of blasting (9:00am to 4:00pm), as stipulated in the Blasting Plan. Noticing had been provided, however, to neighbors within 500ft of the blast sites, as well as the opportunity for pre-blast surveys. The Planning Division, Fire Department, the applicant, his contractor and the blasting contractor thoroughly reviewed the blasting plan.

The blasting contractor was notified during the September 20 meeting in City Hall and out at the site on September 26 that if the applicant desires to blast outside of the planned areas in the future, additional noticing will have to be provided to neighbors within 500 feet of any additional blast sites.

On September 20, the Planning Division requested that paperwork be submitted, prior to further blasting regarding the preblast survey addresses and notification of blasting. That same day, the Planning Division sent a letter to residents in the neighborhood describing the blasting and offering telephone numbers to call with any questions.

Blasting resumed on Monday, September 23.

From the records calculated by the seismographs located at the site, the blasting has been kept below a peak particle velocity of 2.0, which is the limit recommended by the U.S. Bureau of Mines, based on certain frequencies. According to reports submitted by the blasting contractor to date, there have been occasions when the peak particle velocity exceeded 2.0.

IV. Complaints Received

The City has received a number of complaints from neighbors regarding the speed of trucks associated with the construction. Dust, noise, hours of operation, tree clearing, the steep grade at end of Woodlawn Ave., and truck traffic have also been concerns for neighbors. Lt. McDougall and Jay Reynolds, our Development Review Coordinator, passed complaints on to the applicant and his contractors and required cessation of speeding and the mitigation of dust. A water truck was brought to the site to reduce dust, and the contractor agreed to treat the site with calcium chloride. The applicant has also been sweeping the streets in the vicinity. The hours of operation were also restricted to meet the stipulation of the blast plan.

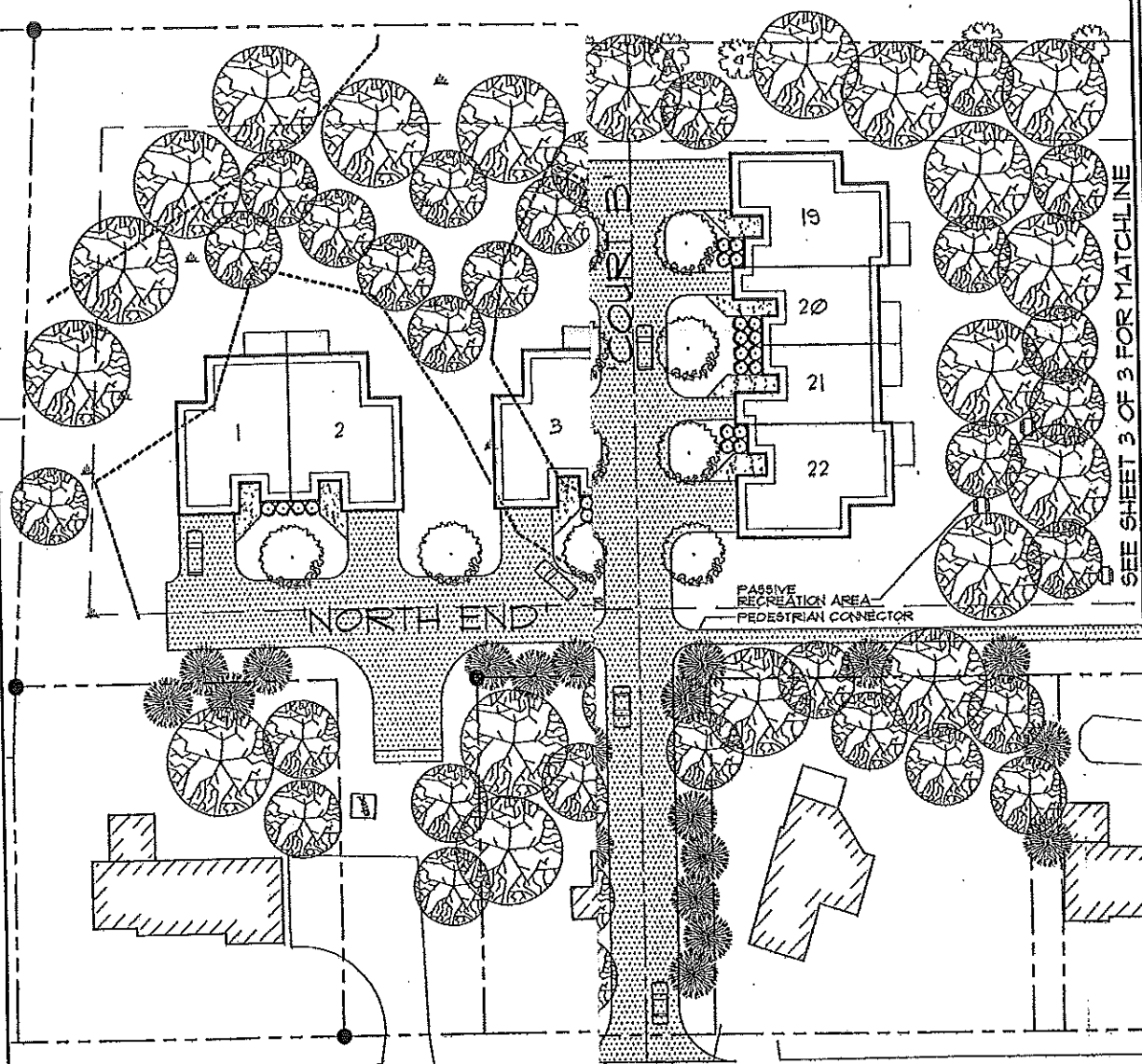
Vibrations associated with the blast have been a tremendous source of concern for neighbors in the area. Neighbors have complained of cracks in their foundations, falling dishes, and fear of the blasts themselves.

Lt. McDougall and FF Jay Kelley of Fire Prevention have maintained a consistent presence at the site, as has Jay Reynolds. I have also visited the site several times to monitor the blasts and to check in with neighbors.





cc.: Lee Urban, Director of Planning and Development
Alexander Jaegerman, Director, Planning Division

Attachments

1. Site Plan
2. Blasting Plan (see memo from Gary Wood)
3. Letter to Neighbors from Planning and Development Department
4. Pre-Blast Survey responses
5. Blasting notice sent
6. Seismograph Readings



LEGEND

-  EXISTING VEGETATION TO REMAIN
-  PROPOSED EVERGREEN SCREENING
-  PROPOSED STREET/ COURTYARD TREES
-  PROPOSED UNIT LANDSCAPING

Sebago Technics
 Engineering Discipline You Can Build On
 One Church Street
 Portland, Maine 04101
 Tel: (207) 856-0277

SKETCH DETAIL PLAN
 OF:
RADCLIFFE GLEN
 HARVARD STREET
 PORTLAND, MAINE
 FOR:
 LARRY STUBBIVANT

DATE	S
03/05/02	1

SHEET 2 OF 3

Department of Planning & Development
Lee D. Urban, Director



CITY OF PORTLAND

Division Directors
Mark B. Adelson
Housing & Neighborhood Services

Alexander Q. Jaegerman, AICP
Planning

John N. Lufkin
Economic Development

September 20, 2002

Re: Blasting along Harvard Street

Dear Neighbor:

Over the past week, the Planning Office and Fire Department have received a number of calls regarding the recent blasting along Harvard Street. Concerns have been raised about the allowed hours of blasting, as well as whom to call with questions or complaints. We also received complaints about high levels of dust.

Yesterday, the City asked the blasting company to stop blasting until the City could be assured that the hours of operation would be adhered to and that all neighbors within 500ft of the blasting had received sufficient notification.

Today, we met with the developer, his contractor, and his blasting contractor. They assured us that the hours for blasting would be kept between 9:00am and 4:00pm; however, preparation for blasting may be done outside of those times. They will continue to monitor the blasts with seismographic equipment, and make the data available to the City. The blasting contractor will also supply the City with a list of all properties to which a video survey was offered, within 500 ft. of the blast site and a list of neighbors to whom notices were sent. The contractor has also agreed to use calcium chloride and water to reduce the dust.

During our ongoing monitoring of the seismographs at the site, we have found that the blasting contractor has kept the vibration of the blasts well below the limits allowed.

We expect the developer to submit the required information early on Monday, so that the blasting may resume.

Representatives from the City's Planning and Development Department and Fire Department will continue to inspect the site and monitor the blasting.

Please do not hesitate to call if you have any questions or concerns.

Numbers to Call

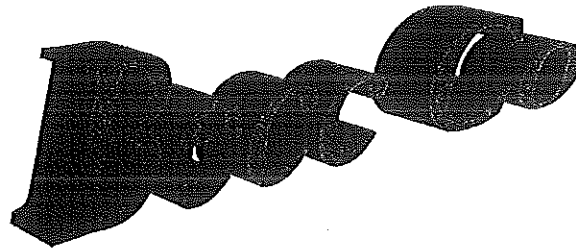
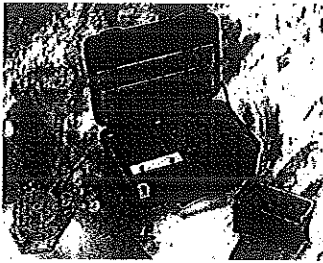
Jay Reynolds, Development Review Coordinator	874-8632
Sarah Hopkins, Development Review Services Manager	874-8720
Lt. McDougal, Fire Prevention	874-8405

Shawn McGoldrick, McGoldrick Bros., Blasting Services 1-800-281-5989

Sincerely,

Sarah Hopkins
Development Review Services Manager

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS



September 20, 2002

Shawn McGoldrick
McGoldrick Brothers Blasting Services
Windham, Maine

Dear Mr. McGoldrick:

Enclosed in the following report is an excel spreadsheet which include the address of all the letters that were delivered as well as the Pre-Blast Survey list.

Following is the **LEGEND** for that spreadsheet.

1st column: (#) the number for the street address.

2nd column: (Address) the street on which the letter were delivered or the PBS was completed.

3rd column: (Ext PBS) the (Z) indicates that an exterior of the structures was video documented and a Pre-Blast Condition Survey was completed.

4th column: (Int PBS) as in the 3rd column the (Z) indicates a completed interior PBS, the (NR) indicates no response {in each case that a NR appears the address has had two notices regarding the PBS and one notice regarding the blasting schedule}, and the ® indicates a refusal.

5th column: (4th) the (Z) indicates the notice dated September 4, 2002 was delivered to this address.

6th column: (13th) the (X) indicates that the property in column 1 & 2 have had a September 13, 2002 notice delivered to that address.

7th column: (500/blst) the (Z) indicates that the property at this address was within 500 feet of the expected blasting area.

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS

Following is the LEGEND for that spreadsheet. (Continued)

8th column: (X) the city supplied a list of addresses. The (x) indicates the addresses of that list.

Becc Company does Pre-Blast Condition surveys in compliance with the following specifications: Becc Company conducts pre-blast condition surveys prior to blasting. The surveys are done in compliance with local, state, and federal guidelines. A pre-blast condition survey (PBS) consists of an interior and exterior video document. A PBS includes video taped recordings of any visible defects existing within a structure before blasting begins. A PBS inspection establishes for the Property Owner and the Blasting Contractor a clear record of the condition of a property prior to the beginning of blasting. The inspection makes all parties aware of any existing damage or deterioration.

These documents are considered "**confidential**" and are kept in the vaults at Becc Co. Materials included in the pre-blast survey are **not** public record and are not reviewed unless a property owner has reason to believe blasting has damaged his property. These documents can only be used if a valid blasting claim has been submitted to the Blasting Company. The documents can be used either by the Blasting Company's insurance or by the structure-owner's insurance company for resolution of said claim.

The homeowners in the above residences asked Becc Company to specifically not violate the "**confidential**" clause. Therefore we are submitting this report to clarify Becc Company's legal obligation to respect the "confidential" clause stated in the September 4th notice.

As we keep these records confidential, any party that has legal authorization may view and reproduce these Pre-Blast Condition Survey (video).

Respectfully Submitted:



D.C. Blakeman
President Becc Company

enclosures:

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS

#	Address	Ext PBS	Int PBS	4th	13th	500/blst	CITY LIST
28	Berry				X		X
34	Berry				X		X
40	Berry				X		X
54	Berry				X		X
60	Berry				X		X
276	Canco Rd				X		X
360	Canco Rd				X		X
183	Cornell	Z	NR	Z	X		
185	Harvard	Z	Z	Z	X	Z	X
189	Harvard	Z	Z	Z	X	Z	X
201	Harvard	Z	Z	Z	X	Z	X
211	Harvard	Z	Z	Z	X	Z	X
223	Harvard	Z	Z	Z	X	Z	X
224	Harvard	Z	Z	Z	X	Z	X
234	Harvard	Z	R	Z	X	Z	X
235	Harvard	Z	Z	Z	X	Z	X
246	Harvard	Z	NR	Z	X	Z	X
251	Harvard	Z	Z	Z	X	Z	X
256	Harvard	Z	Z	Z	X	Z	X
261	Harvard	Z	Z	Z	X	Z	X
270	Harvard	Z	NR	Z	X		X
273	Harvard	Z	Z	Z	X	Z	X
276	Harvard	Z	Z	Z	X	Z	X
281	Harvard	Z	Z	Z	X	Z	X
288	Harvard	Z	NR	Z	X		X
297	Harvard	Z	Z	Z	X	Z	
298	Harvard	Z	NR	Z	X	Z	X
20	Harvard Common				X		X
22	Harvard Common				X		X
24	Harvard Common				X		X
26	Harvard Common				X		X

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS

28	Harvard Common				X		X
30	Harvard Common				X		X
32	Harvard Common				X		X
34	Harvard Common				X		X
36	Harvard Common				X		X
38	Harvard Common				X		X
40	Harvard Common				X		X
42	Harvard Common				X		X
44	Harvard Common				X		X
46	Harvard Common				X		X
48	Harvard Common				X		X
50	Harvard Common				X		X
32	University	Z	NR	Z	X		
35	University	Z	NR	Z	X		
40	University	Z	NR	Z	X		
45	University	Z	NR	Z	X		
46	University	Z	R	Z	X		
50	University	Z	NR	Z	X		
61	University	Z	NR	Z	X	Z	
64	University	Z	R	Z	X	Z	
67	University	Z	NR	Z	X	Z	
71	University	Z	NR	Z	X	Z	
72	University	Z	NR	Z	X		
75	University	Z	NR	Z	X	Z	
76	University	Z	NR	Z	X		
81	University	Z	NR	Z	X	Z	
1058	Washington				X		X
1064	Washington				X		X
1066	Washington				X		X
1072	Washington				X		X
1084	Washington				X		X
1088	Washington				X		X

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS

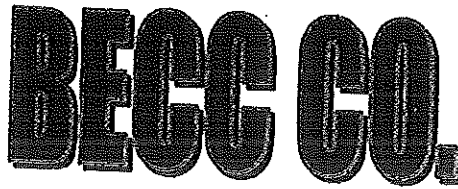
1092	Washington				X		X
1100	Washington				X		X
1106	Washington				X		X
1118	Washington	Z	R	Z	X		X
1122	Washington	Z	R	Z	X		X
1152	Washington				X		X
1156	Washington				X		X
100	WoodLawn				X		X
112	WoodLawn				X		X
116	WoodLawn				X		X
122	WoodLawn				X		X
126	WoodLawn				X		X
134	WoodLawn				X		X
137	WoodLawn	Z	R	Z	X		
142	WoodLawn	Z	NR	Z	X		X
147	WoodLawn	Z	Z	Z	X		
150	WoodLawn	Z	NR	Z	X		X
155	WoodLawn	Z	Z	Z	X		
157	WoodLawn	Z	Z	Z	X		
158	WoodLawn	Z	R		X		X
162	WoodLawn	Z	Z	Z	X		X
165	WoodLawn	Z	R	Z	X		
170	WoodLawn	Z	Z	Z	X	Z	X
173	WoodLawn	Z	Z	Z	X	Z	
174	WoodLawn	Z	Z	Z	X	Z	
175	WoodLawn	Z	Z	Z	X	Z	
179	WoodLawn	Z	Z	Z	X	Z	
180	WoodLawn	Z	Z	Z	X	Z	
181	WoodLawn	Z	Z	Z	X	Z	
1	Woodwinds	Z	NR	Z	X		
2	Woodwinds	Z	NR	Z	X		
3	Woodwinds	Z	NR	Z	X		

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS

7	Woodwinds	Z	NR	Z	X		
8	Woodwinds	Z	NR	Z	X		
9	Woodwinds	Z	NR	Z	X		
10	Woodwinds	Z	NR	Z	X		

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS

Attachment 5



September 4, 2002

NOTICE TO AREA RESIDENTS

Chase Excavation is working on the construction of a housing project in your neighborhood. Access to the project is via Washington Ave. General earthwork has begun and will continue until completion of the project. Beginning Sept.9, 2002 Chase Excavation will begin the installation of the infrastructure (installation of utilities).

The engineers have determined that there is ledge in this area. In order to remove the ledge it must first be broken into sizes the excavators can handle. This means that the contractor will need to use explosives in your area to break up the ledge.

McGoldrick Brothers Blasting Services (the blasting contractor) has hired an Independent Geotechnical Firm (Becc Company) to complete the "Pre-Blast Condition Survey" (PBS). A PBS consists of a video document of the interior and exterior of your residence. These Pre-Blast Survey's are confidential and will be treated as such. They will be kept in the safes of the Geotechnical Firm unless needed for claim resolution. There will be **NO COST** to the property owner.

Following the drilling of the rock the blasting company will be using the international blasting warning system:

3 signals
2 signals
1 signal

5 minutes prior to blast
ready to blast
all clear

Chase Excavating

Excavation **CONTRACTOR**
1-207-797-9093

MCGOLDRICK BROTHERS
MCGOLDRICK
BLASTING SERVICES

BLASTING FIRM
1-207-892-5989

SHAWN

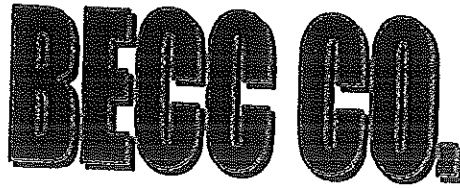
BECC COMPANY
BLAKEMAN

GEOTECHNICAL FIRM
1-888-846-9268

CHUCK

Please contact Becc Company (anytime day or night) to schedule an appointment for the completion of the pre-blast survey.

SERVING NEW ENGLAND AND THE MOUNTAIN STATES FOR 20 YEARS



September 13, 2002

NOTICE TO AREA RESIDENTS

Chase Excavation is working on the construction of a housing project (Radcliffe Glen Condominiums) which is within 500 feet of your neighborhood. Access to the project is via Washington Ave. General earthwork has begun and will continue until completion of the project. Beginning Sept.9, 2002 Chase Excavation will begin the installation of the infrastructure (installation of utilities).

The blasting has begun on the project and will continue for approximately three (3) weeks. The blaster will be blasting between the hours of 8:00 AM and 6:00 PM.

Following the drilling of the rock the blasting company will be using the international blasting warning system:

3 signals
2 signals
1 signal

5 minutes prior to blast
ready to blast
all clear

Chase Excavating

Excavation *CONTRACTOR*
1-207-797-9093

Dave Chase

MCGOLDRICK BROTHERS
BLASTING SERVICES

BLASTING FIRM
1-207-892-5989

SHAWN MCGOLDRICK

BECC COMPANY

GEOTECHNICAL FIRM
1-888-846-9268

CHUCK BLAKEMAN

Event Report

Attachment 6

Date/Time Vert at 10:40:03 September 19, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498W5.MR0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 08:15:44 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

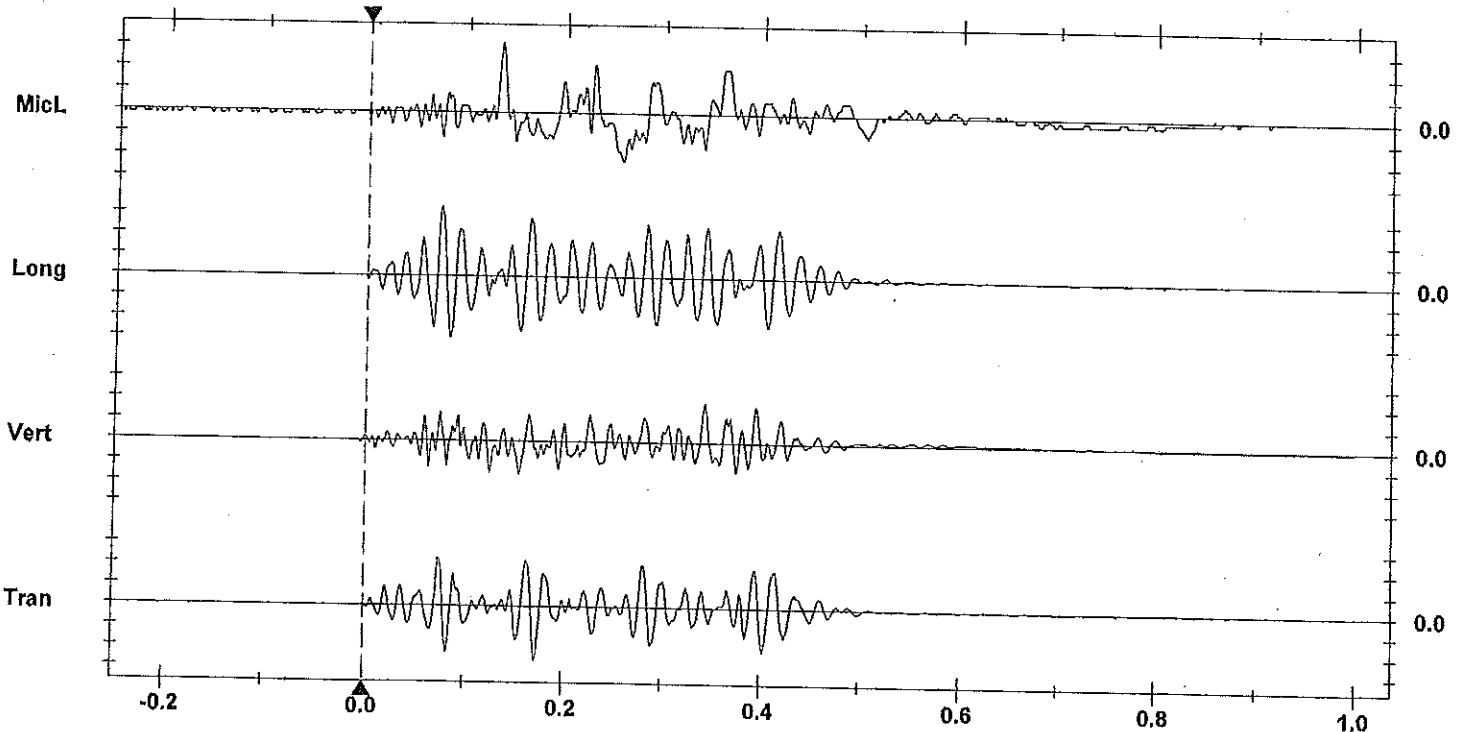
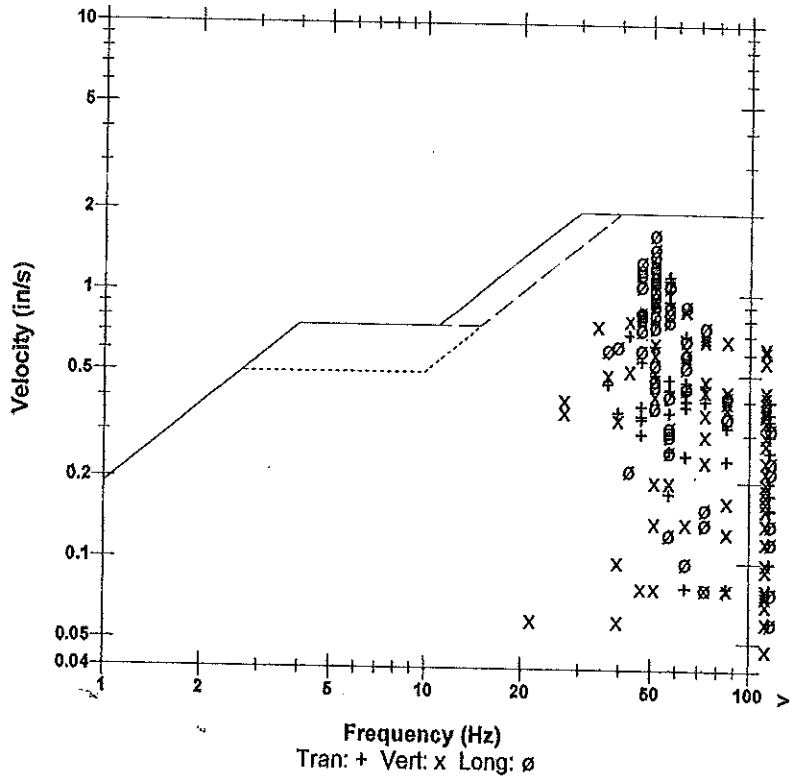
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00638 psi(L) at 0.135 sec
 ZC Freq 47 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 452 mv)

	Tran	Vert	Long	
PPV	1.32	0.960	1.68	in/s
ZC Freq	51	51	51	Hz
Time (Rel. to Trig)	0.174	0.345	0.075	sec
Peak Acceleration	1.22	1.14	1.54	g
Peak Displacement	0.00396	0.00453	0.00549	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.13 in/s at 0.075 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = \blacktriangleleft

Event Report

Date/Time Vert at 16:45:51 September 18, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by Instatel Inc.
 File Name E15498UR.WF0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:36:50 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

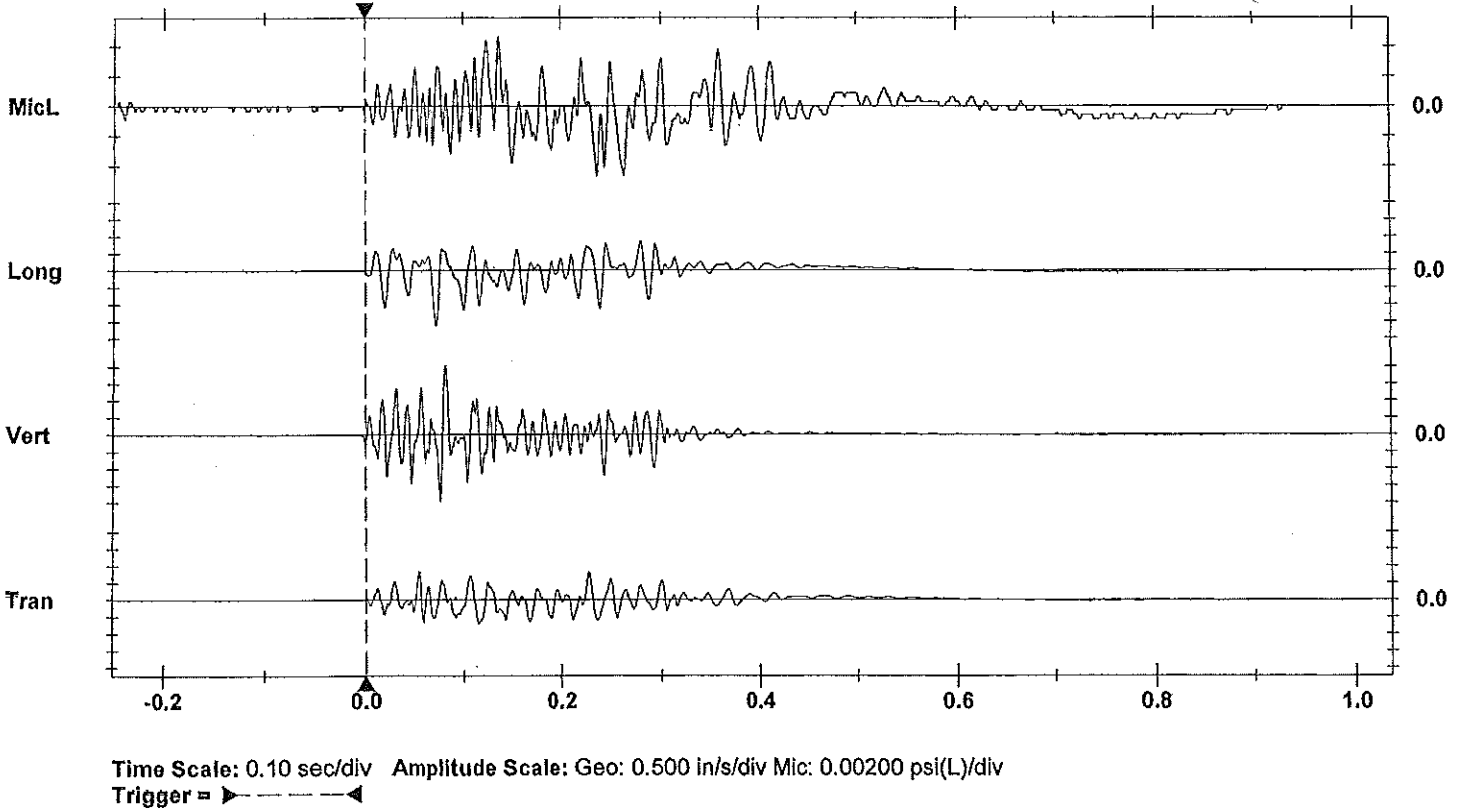
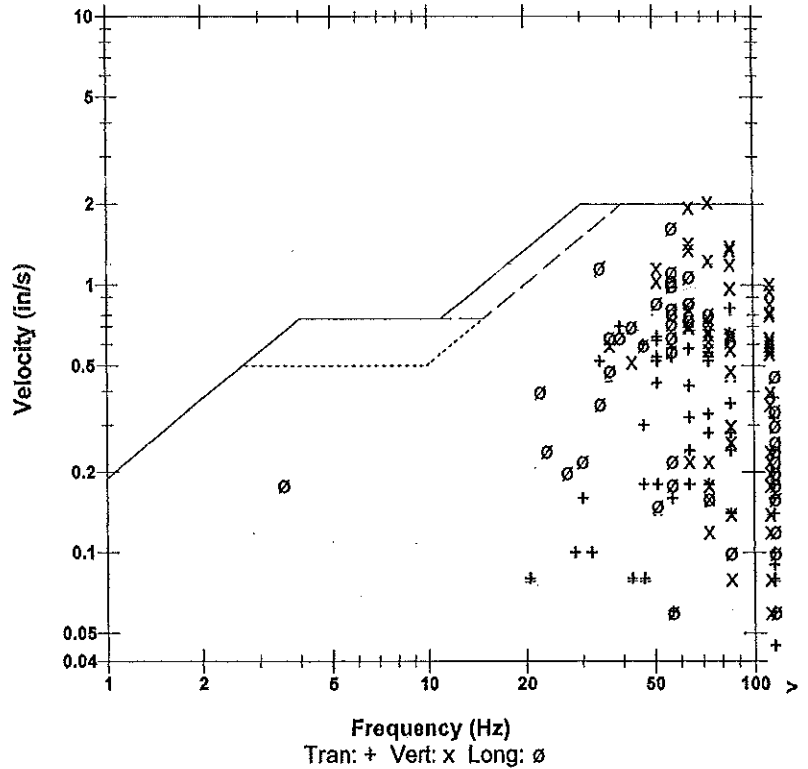
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00464 psi(L) at 0.139 sec
 ZC Freq 39 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	0.820	2.04	1.64	in/s
ZC Freq	85	73	57	Hz
Time (Rel. to Trig)	0.054	0.084	0.074	sec
Peak Acceleration	1.11	3.08	2.01	g
Peak Displacement	0.00413	0.00466	0.00735	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.12 in/s at 0.084 sec

USBM RI8507 And OSMRE



Event Report

Date/Time Vert at 14:00:40 September 18, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo: 5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by Instatel Inc.
 File Name E15498UK.940

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:36:40 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

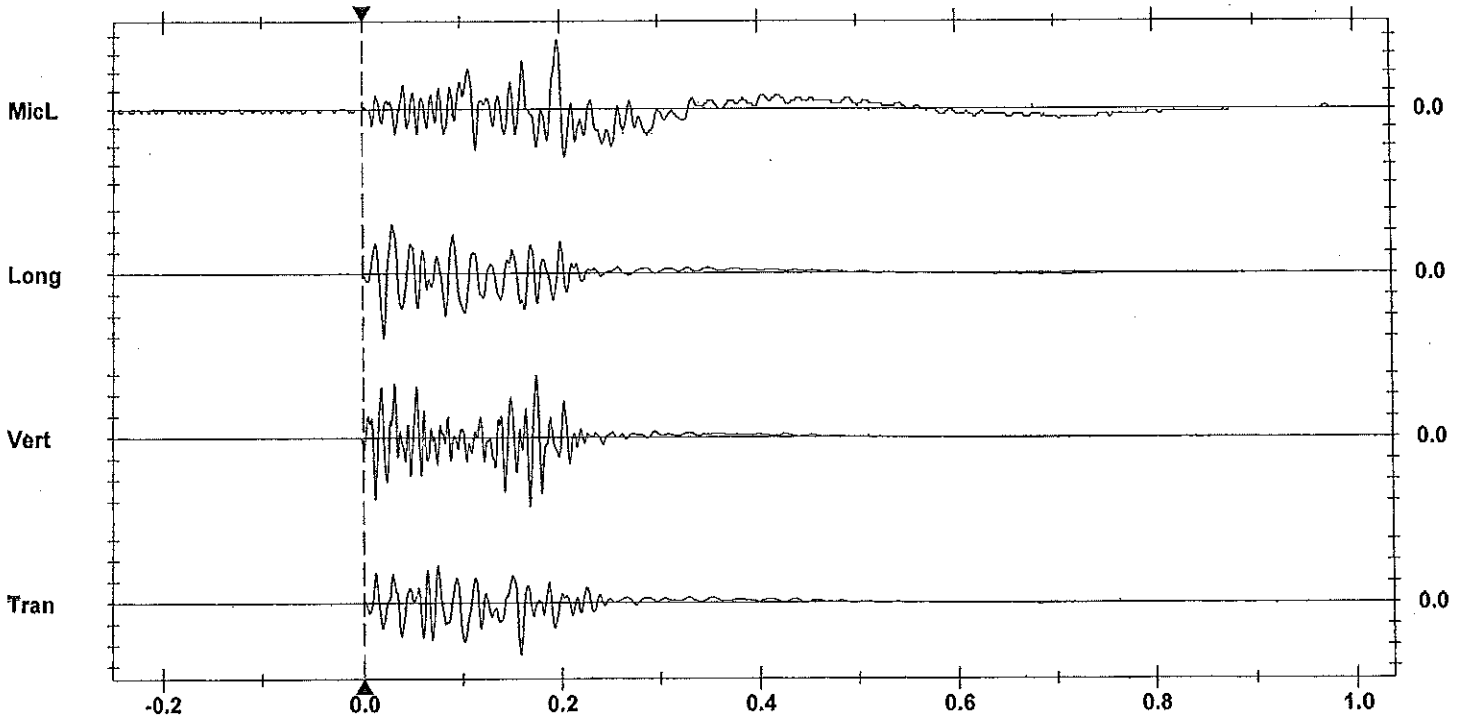
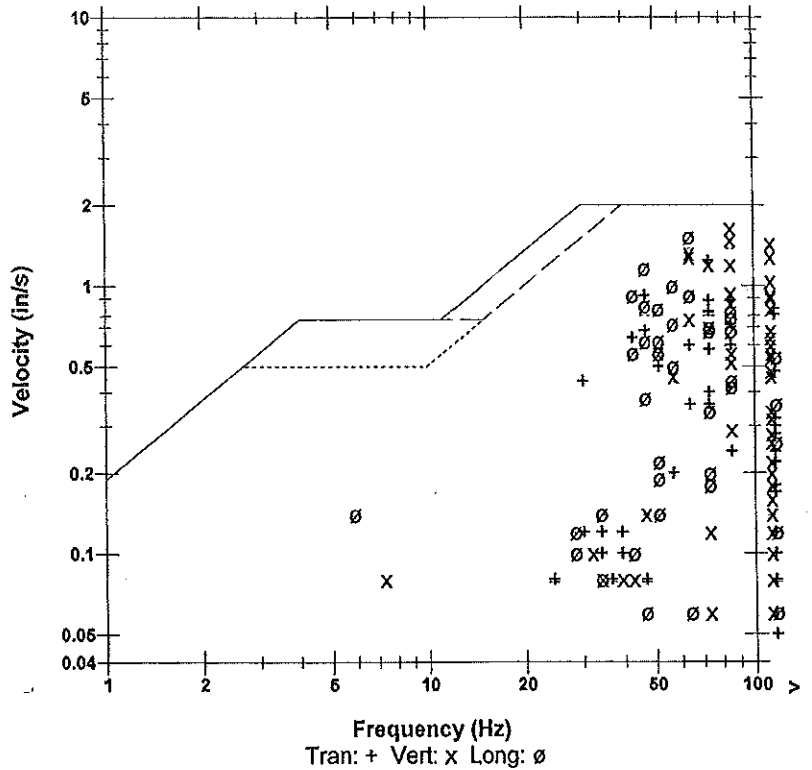
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00754 psi(L) at 0.199 sec
 ZC Freq 47 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 454 mv)

	Tran	Vert	Long	
PPV	1.24	1.64	1.52	in/s
ZC Freq	73	85	64	Hz
Time (Rel. to Trig)	0.160	0.170	0.022	sec
Peak Acceleration	1.38	2.49	1.70	g
Peak Displacement	0.00438	0.00529	0.00663	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.75 in/s at 0.014 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = >-----<

Event Report

Date/Time Vert at 16:34:39 September 17, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498SW.PRO

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:36:25 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

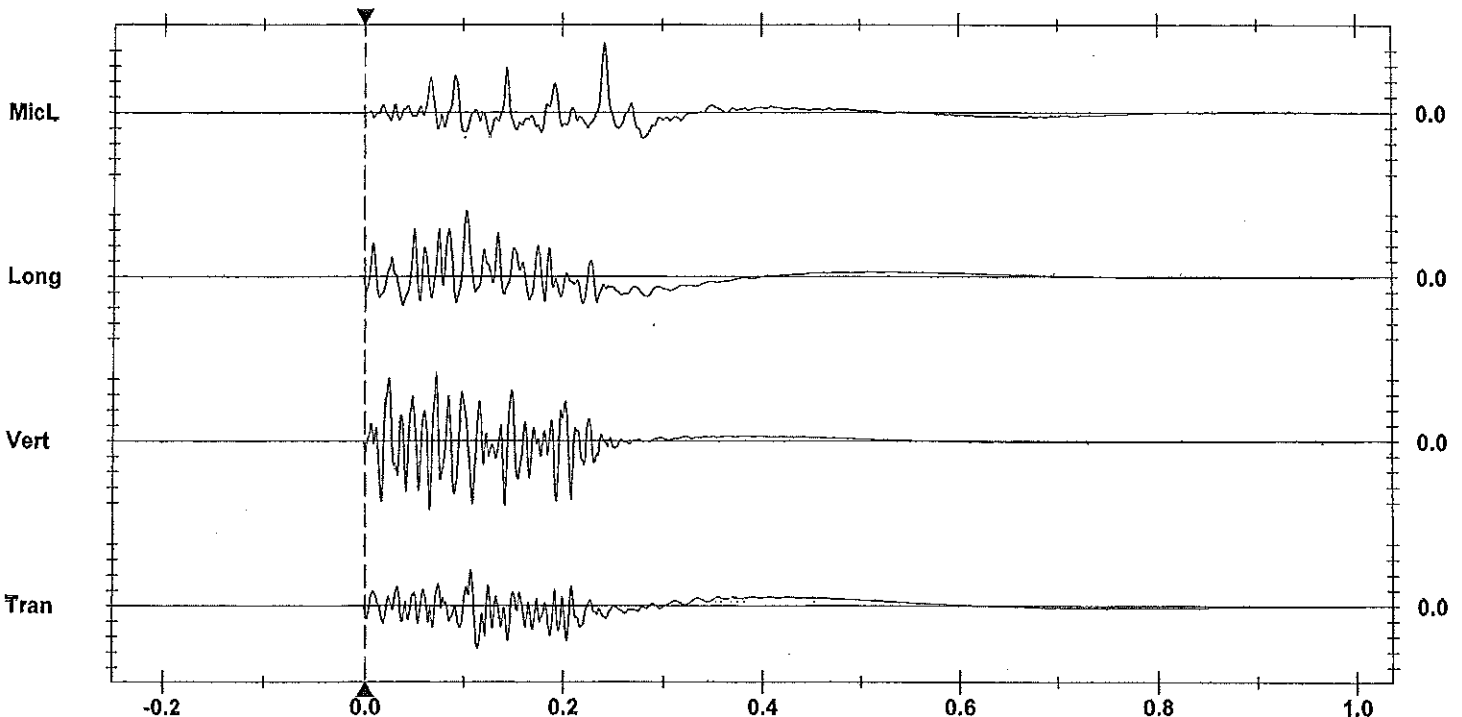
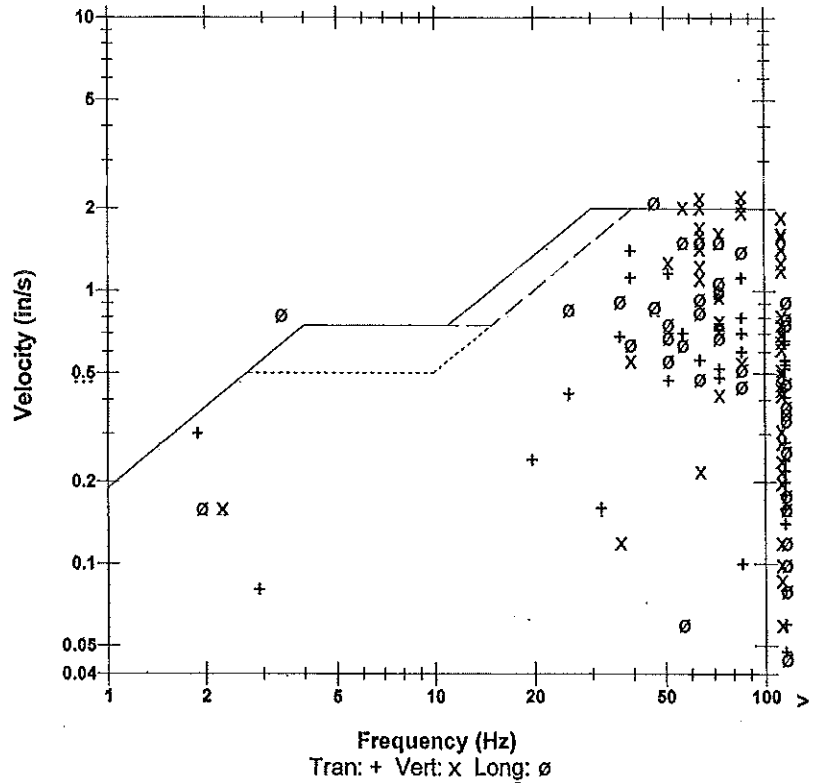
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0223 psi(L) at 0.243 sec
 ZC Freq 32 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	1.40	2.24	2.12	in/s
ZC Freq	39	85	47	Hz
Time (Rel. to Trig)	0.114	0.066	0.104	sec
Peak Acceleration	1.70	3.29	1.91	g
Peak Displacement	0.0272	0.0144	0.0252	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.30 in/s at 0.074 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = >-----<

Event Report

Date/Time Vert at 15:35:32 September 17, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498ST.Z80

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:36:20 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

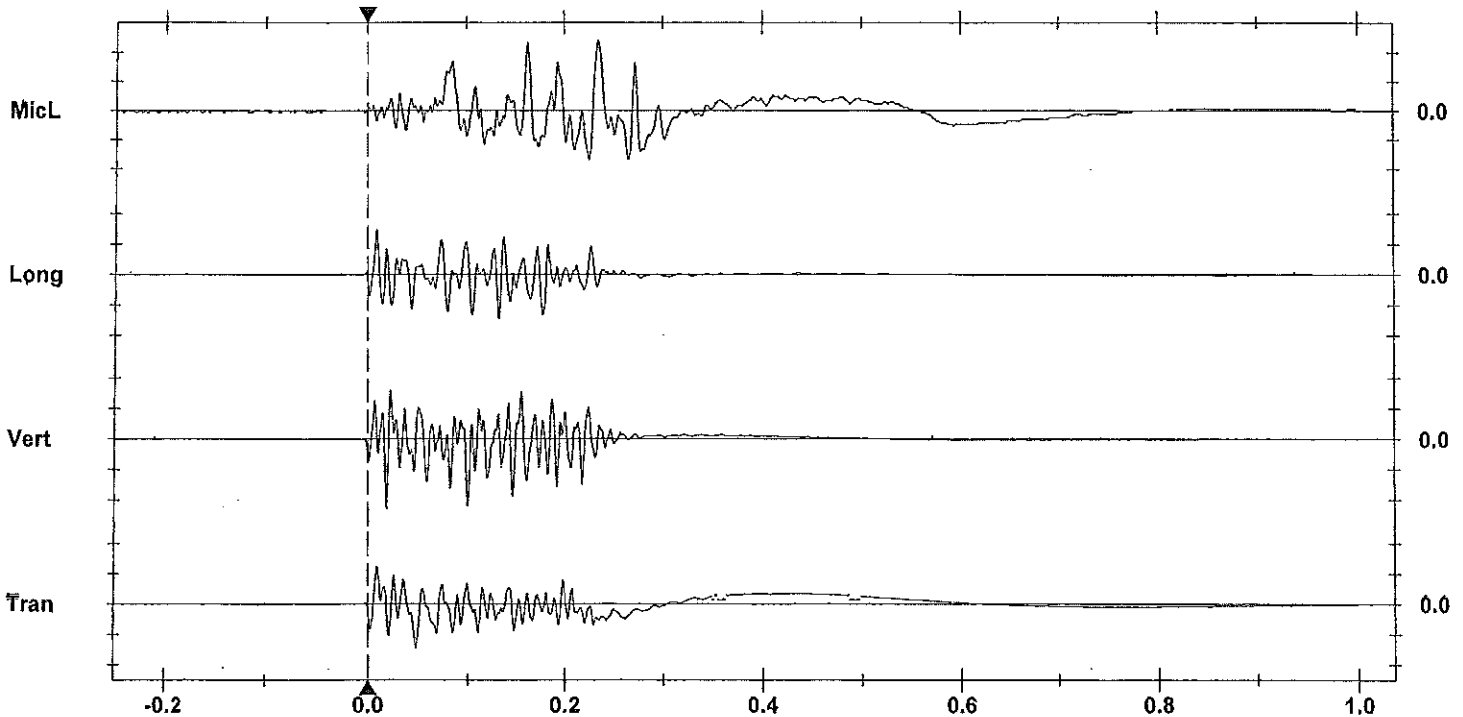
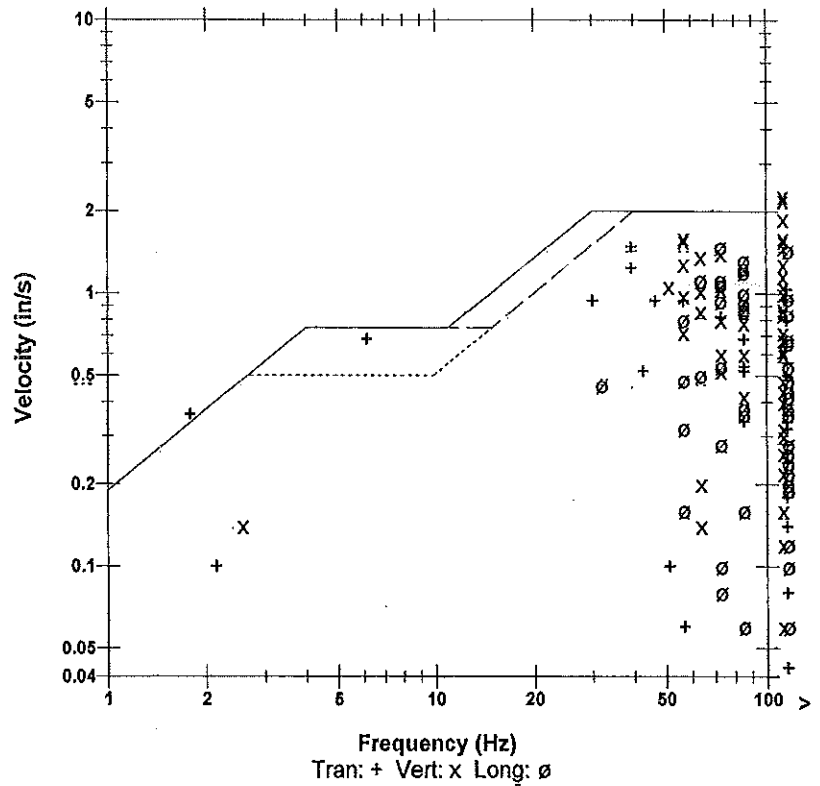
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0119 psi(L) at 0.235 sec
 ZC Freq 39 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 452 mv)

	Tran	Vert	Long	
PPV	1.48	2.28	1.48	in/s
ZC Freq	37	>100	64	Hz
Time (Rel. to Trig)	0.048	0.020	0.010	sec
Peak Acceleration	1.91	3.92	2.17	g
Peak Displacement	0.0338	0.0101	0.00275	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.47 in/s at 0.020 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 1.000 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = \blacktriangleleft \blacktriangleright

Event Report

Date/Time Long at 13:49:39 September 17, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo: 5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498SP.2R0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:36:14 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

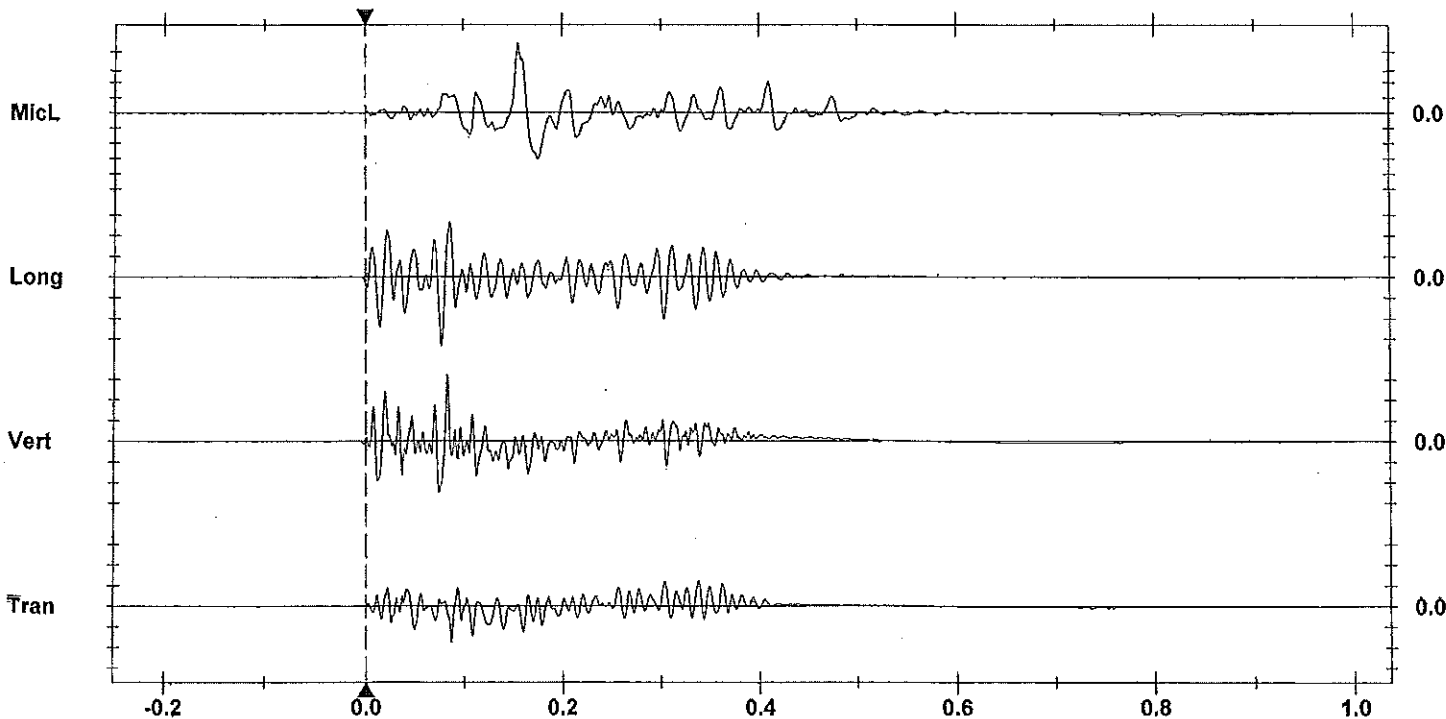
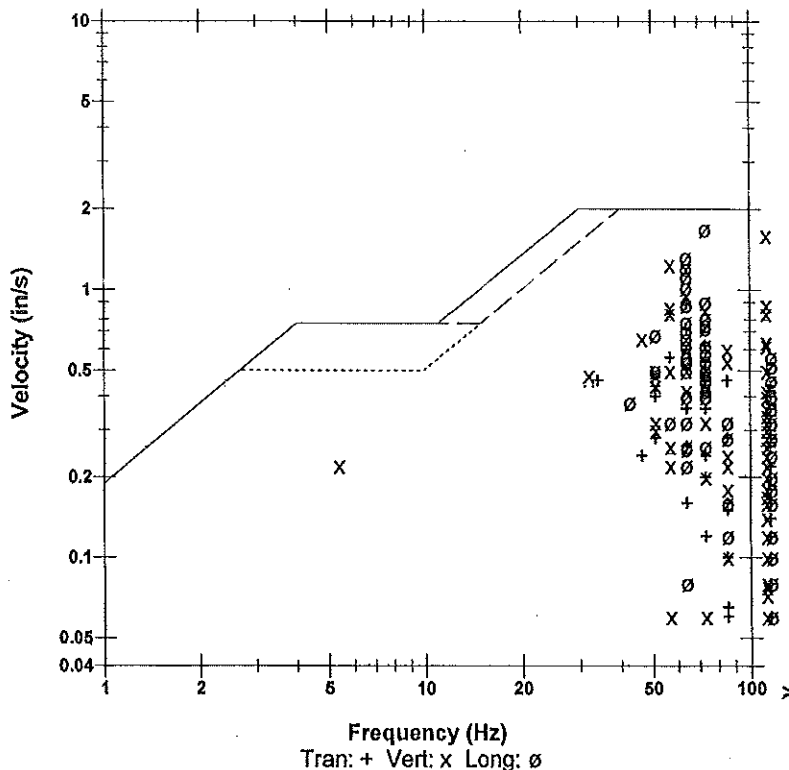
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0226 psi(L) at 0.156 sec
 ZC Freq 30 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 454 mv)

	Tran	Vert	Long	
PPV	0.880	1.60	1.68	in/s
ZC Freq	57	>100	73	Hz
Time (Rel. to Trig)	0.089	0.085	0.079	sec
Peak Acceleration	1.11	2.12	1.48	g
Peak Displacement	0.00205	0.00534	0.00393	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.96 in/s at 0.079 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = \blacktriangleleft \blacktriangleright

Event Report

Date/Time Vert at 11:49:25 September 17, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo: 5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by Insteel Inc.
 File Name E15498SJ.ID0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:36:09 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

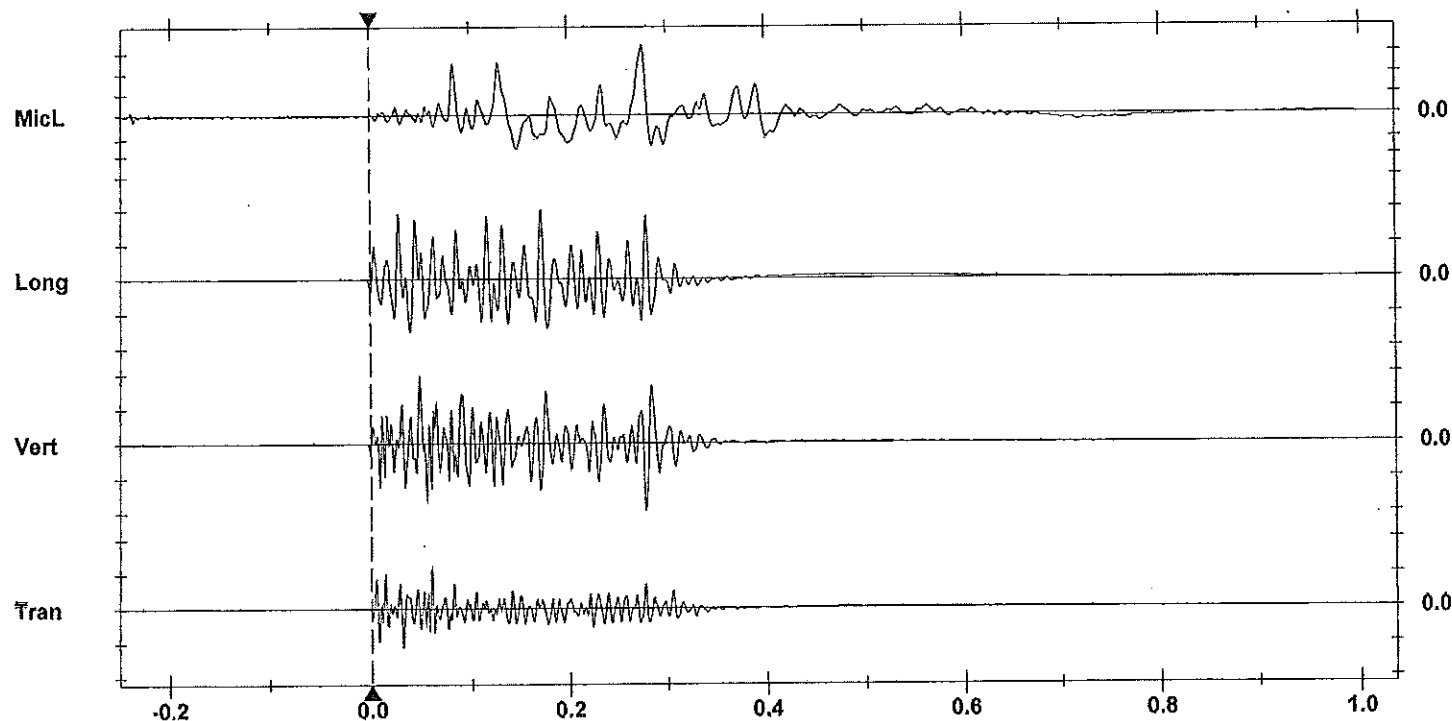
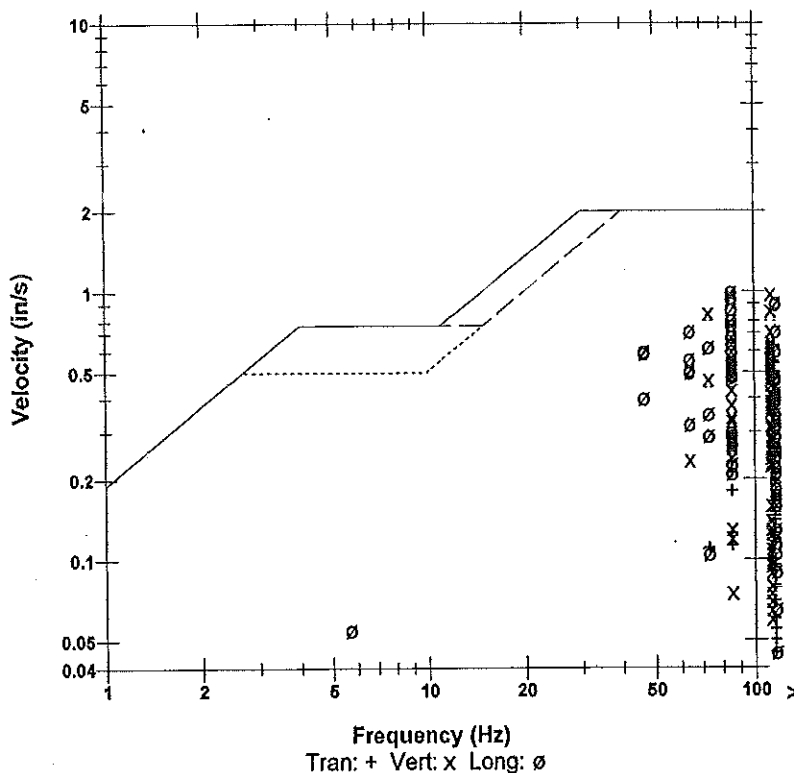
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0168 psi(L) at 0.277 sec
 ZC Freq 28 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 452 mv)

	Tran	Vert	Long	
PPV	0.630	0.980	1.00	in/s
ZC Freq	>100	>100	85	Hz
Time (Rel. to Trig)	0.062	0.049	0.174	sec
Peak Acceleration	1.50	1.72	1.56	g
Peak Displacement	0.00153	0.00192	0.00484	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.29 in/s at 0.279 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = \blacktriangleleft \blacktriangleright

Event Report

Date/Time Vert at 14:24:24 September 13, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498LC.000

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:54 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

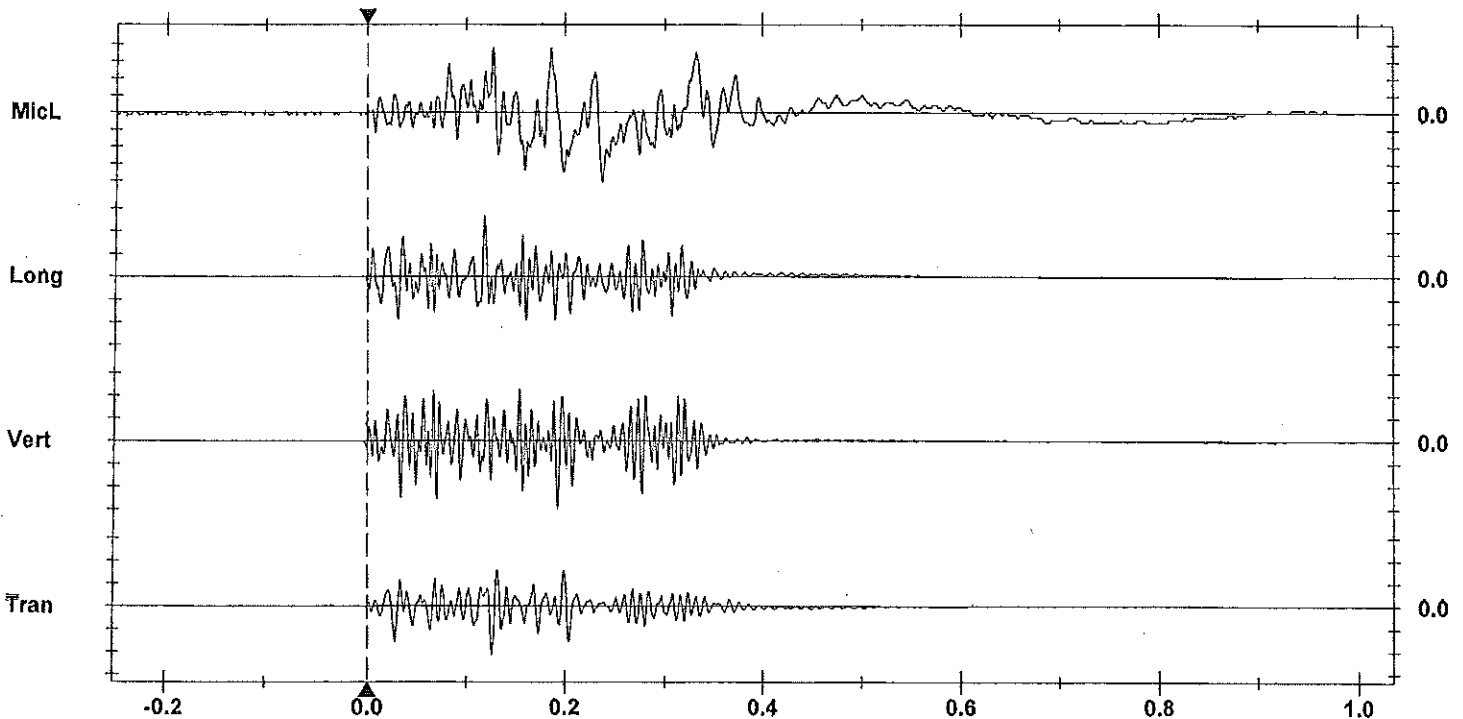
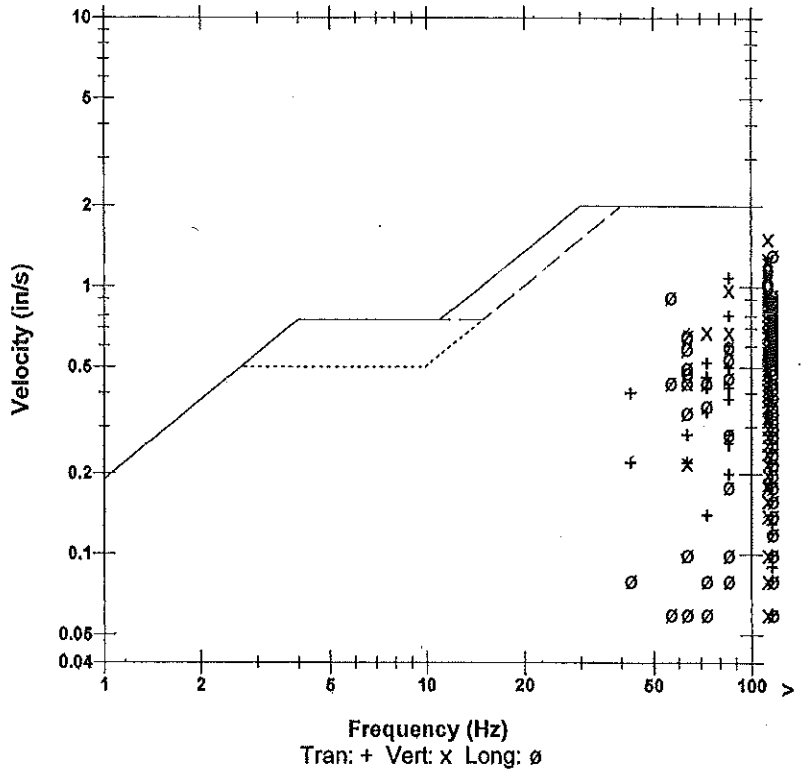
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00812 psi(L) at 0.239 sec
 ZC Freq 15 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	1.08	1.52	1.32	in/s
ZC Freq	85	>100	>100	Hz
Time (Rel. to Trig)	0.127	0.194	0.119	sec
Peak Acceleration	1.43	2.70	2.12	g
Peak Displacement	0.00202	0.00222	0.00408	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.55 in/s at 0.194 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = >-----<

Event Report

Date/Time Vert at 11:32:09 September 13, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498L4.1L0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:49 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

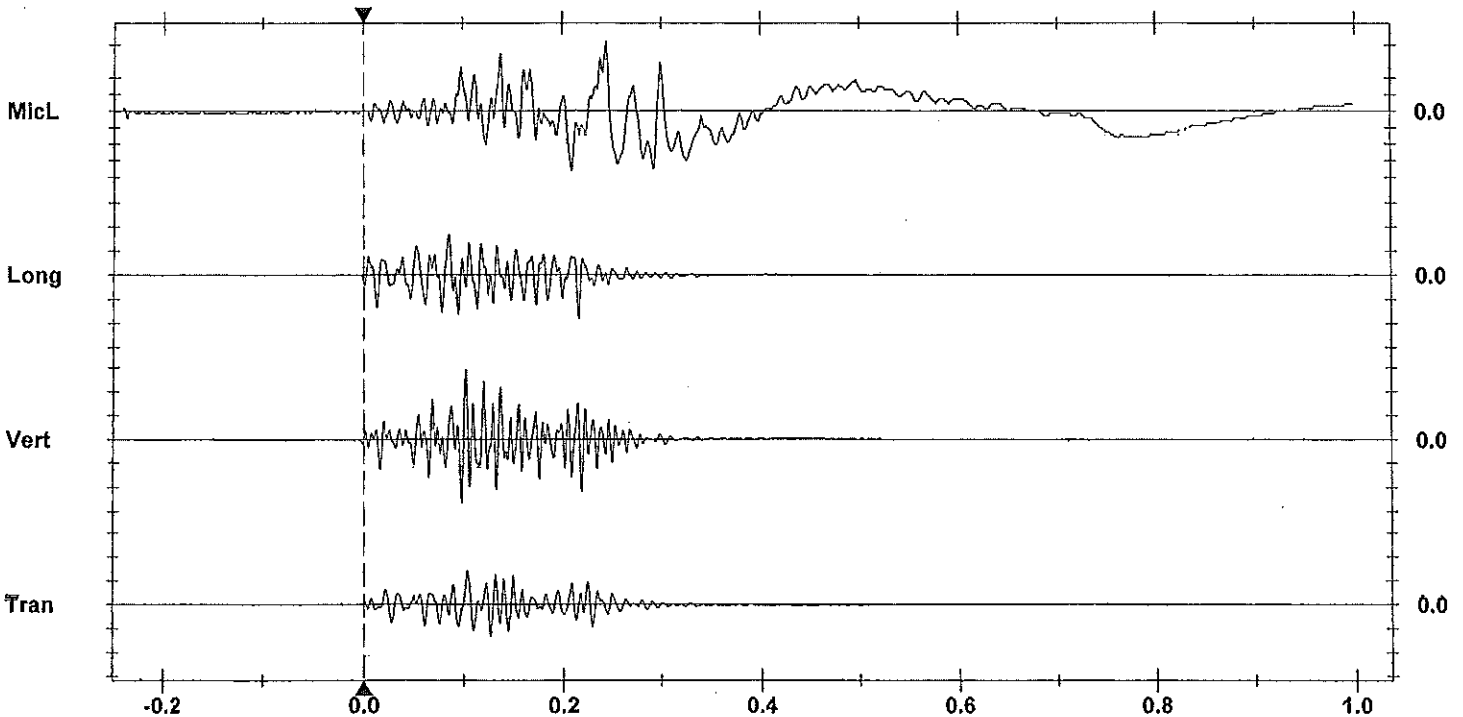
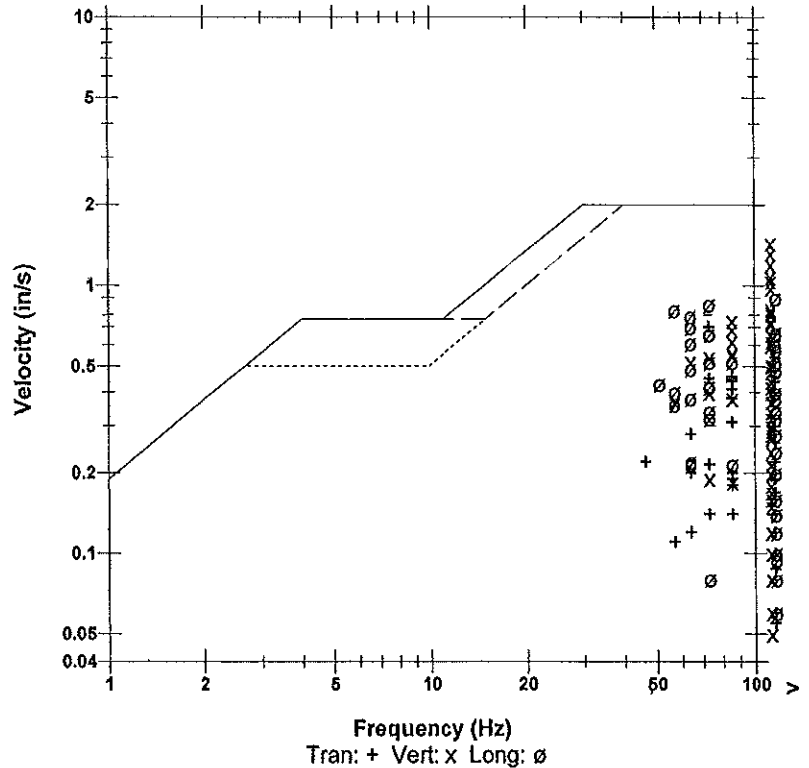
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00841 psi(L) at 0.245 sec
 ZC Freq 23 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	0.700	1.44	0.900	in/s
ZC Freq	73	>100	>100	Hz
Time (Rel. to Trig)	0.104	0.104	0.217	sec
Peak Acceleration	1.01	2.76	1.33	g
Peak Displacement	0.00138	0.00184	0.00170	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.58 in/s at 0.104 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = \blacktriangleright \dashleftarrow

Event Report

Date/Time Vert at 09:47:23 September 13, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498KZ.6Z0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:44 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

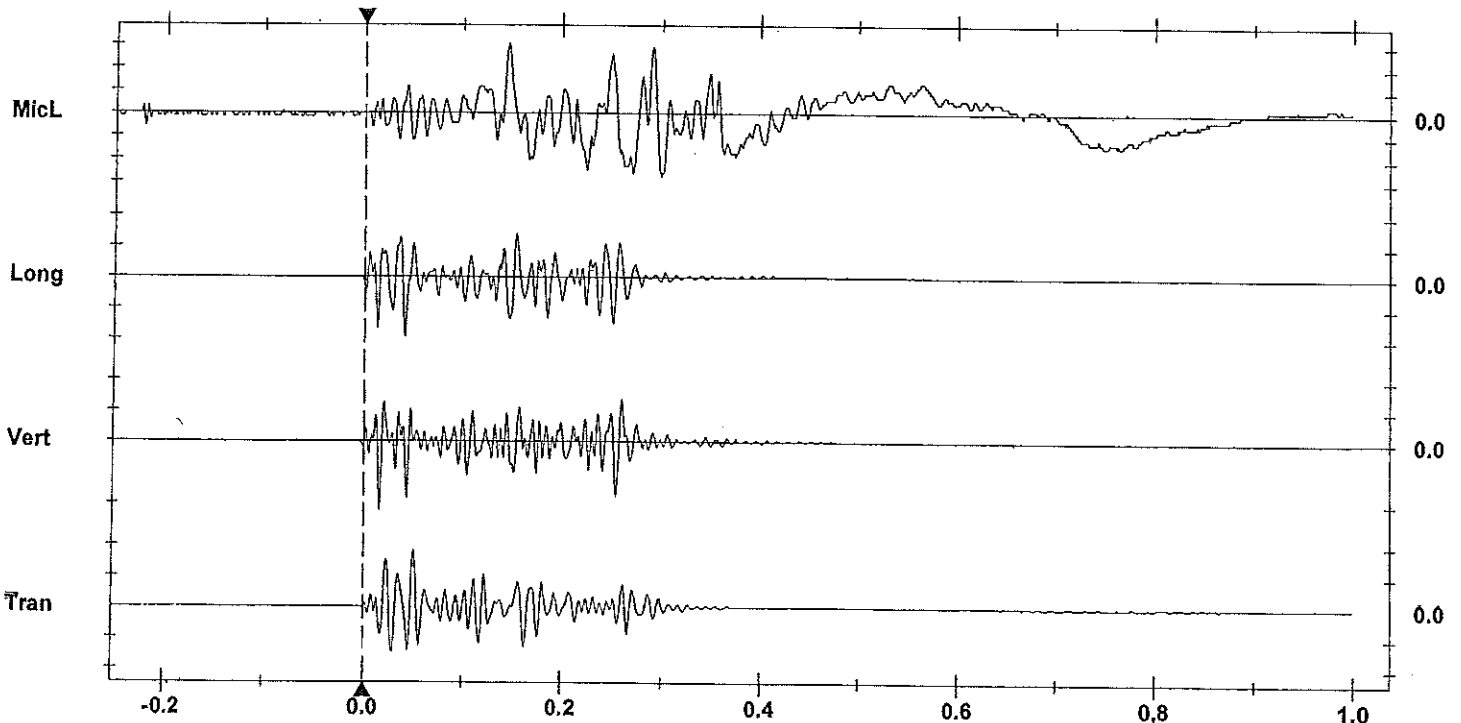
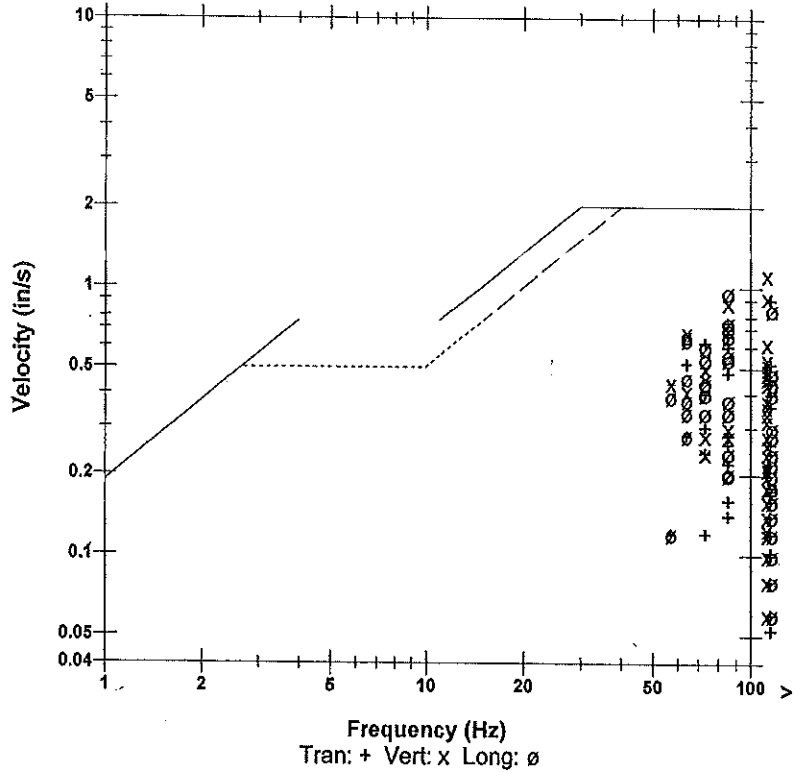
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00609 psi(L) at 0.147 sec
 ZC Freq 39 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	0.900	1.12	0.960	in/s
ZC Freq	>100	>100	73	Hz
Time (Rel. to Trig)	0.051	0.018	0.042	sec
Peak Acceleration	1.27	1.91	1.64	g
Peak Displacement	0.00168	0.00159	0.00187	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.23 in/s at 0.018 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = >-----<

Event Report

Date/Time Vert at 15:34:59 September 12, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by Instante! Inc.
 File Name E15498JK.MB0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:39 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

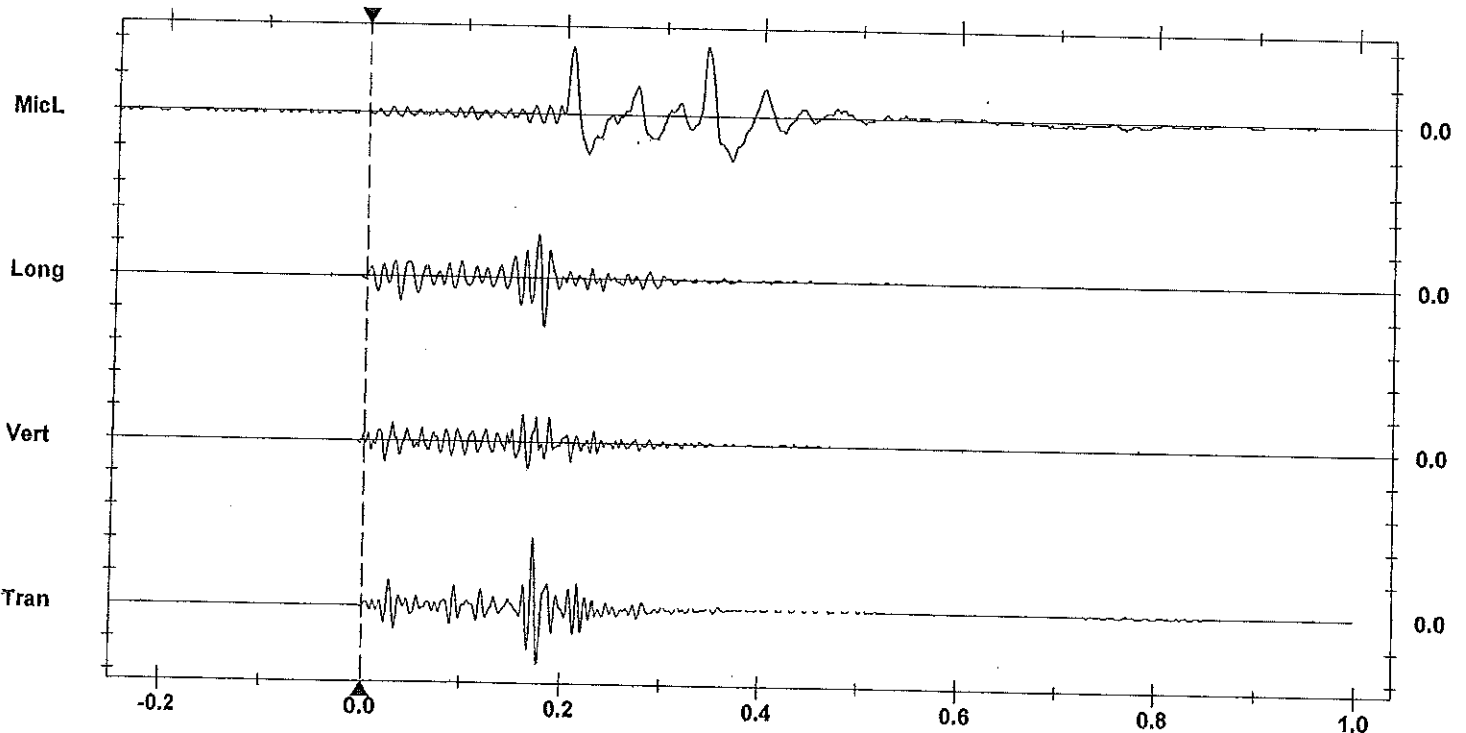
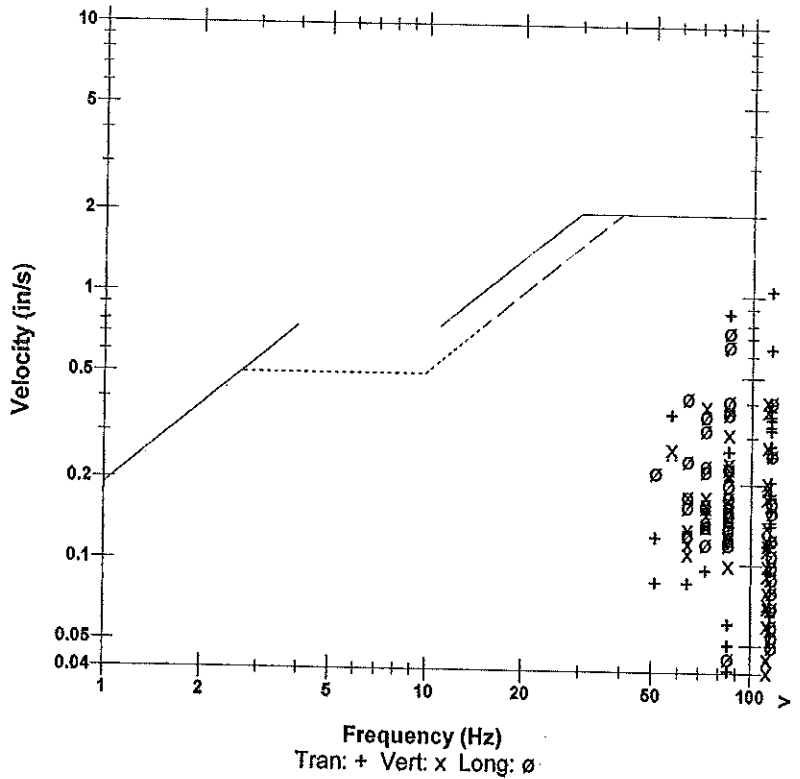
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00957 psi(L) at 0.343 sec
 ZC Freq 28 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	1.05	0.410	0.740	in/s
ZC Freq	>100	>100	85	Hz
Time (Rel. to Trig)	0.173	0.161	0.181	sec
Peak Acceleration	1.54	0.689	1.11	g
Peak Displacement	0.00168	0.00080	0.00136	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.18 in/s at 0.174 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = \blacktriangleleft \blacktriangleright

Event Report

Date/Time Vert at 14:06:08 September 12, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498.JG.180

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:34 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

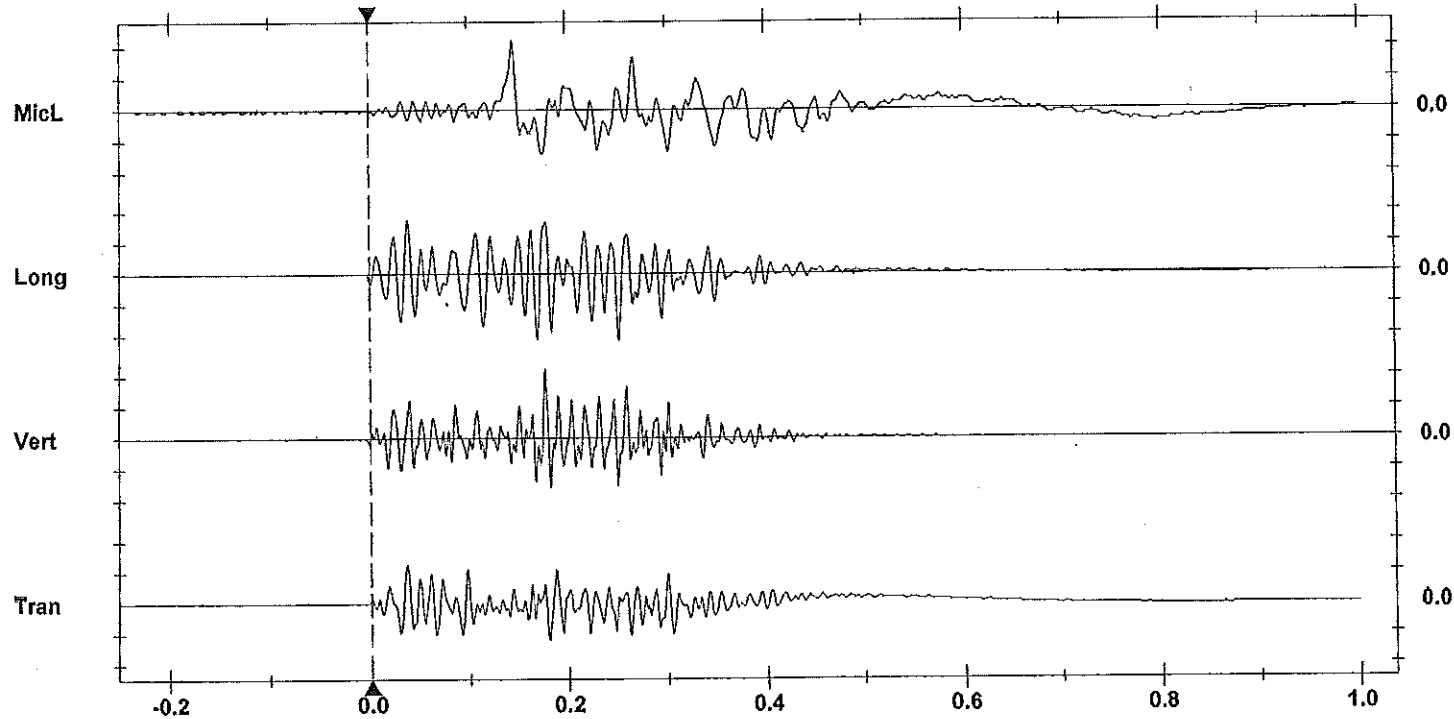
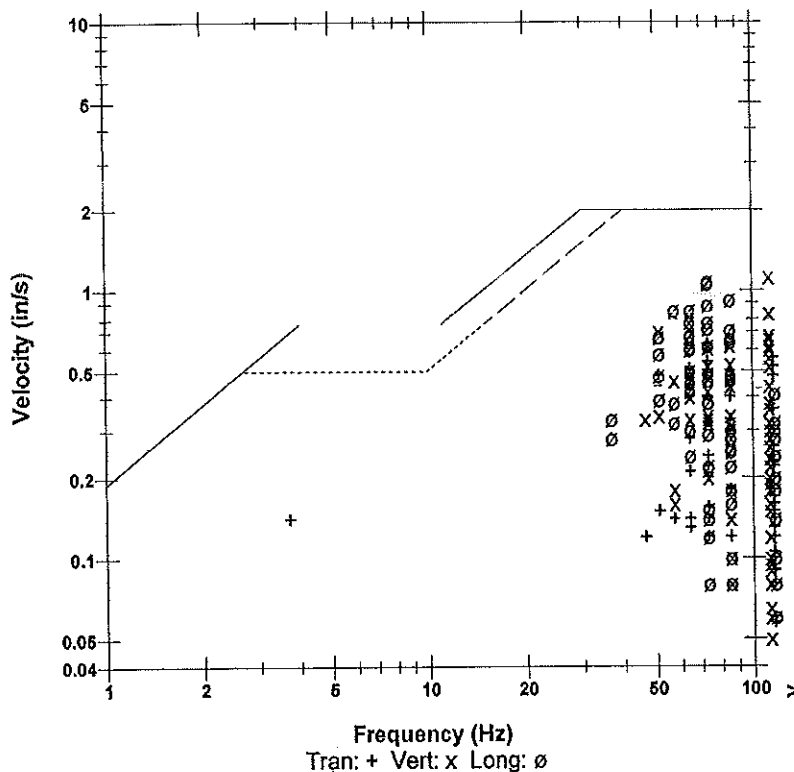
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0110 psi(L) at 0.147 sec
 ZC Freq 20 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 452 mv)

	Tran	Vert	Long	
PPV	0.630	1.12	1.08	in/s
ZC Freq	73	>100	73	Hz
Time (Rel. to Trig)	0.036	0.179	0.254	sec
Peak Acceleration	0.822	1.38	1.48	g
Peak Displacement	0.00730	0.00182	0.00265	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.38 in/s at 0.179 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = $\blacktriangleleft \text{---} \text{---} \text{---} \blacktriangleright$

Event Report

Date/Time Vert at 09:55:00 September 12, 2002
 Trigger Source Geo. 0.0600 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by Instatel Inc.
 File Name E15498J4.V00

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:29 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

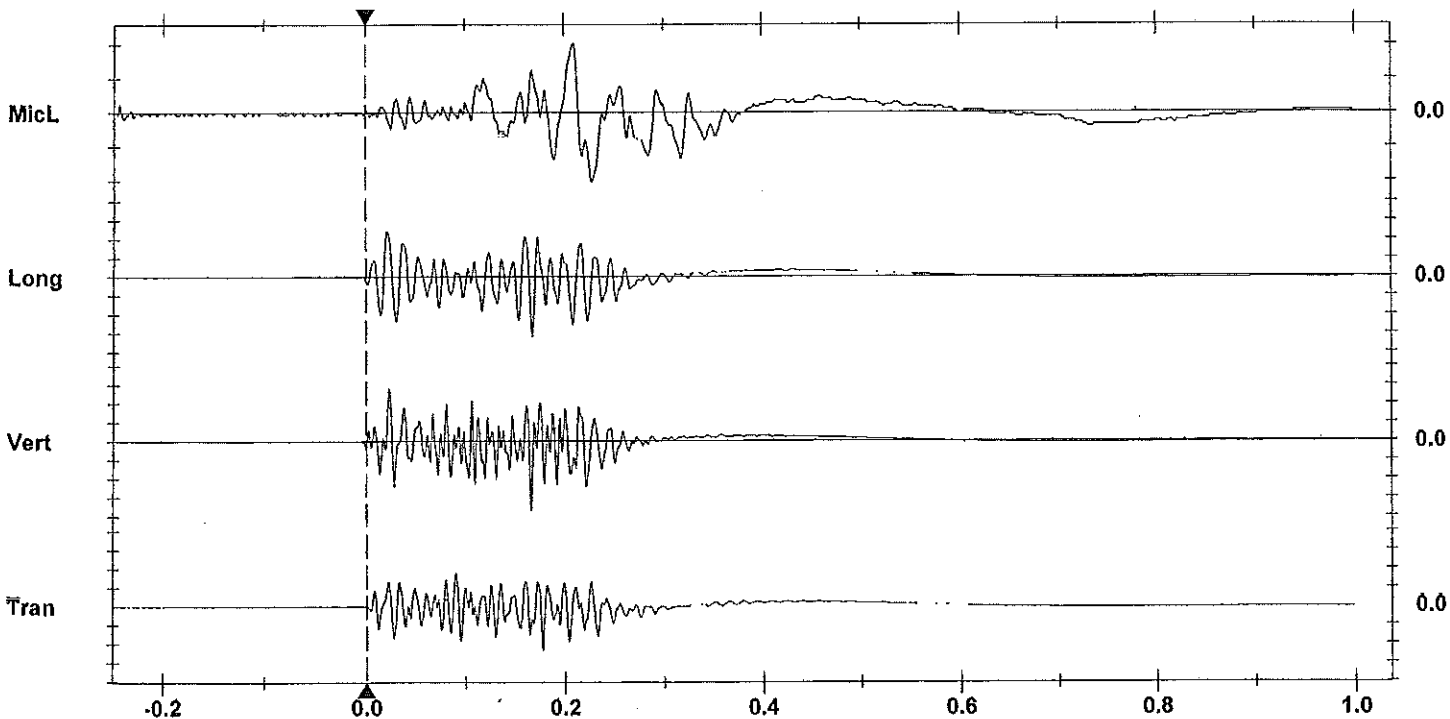
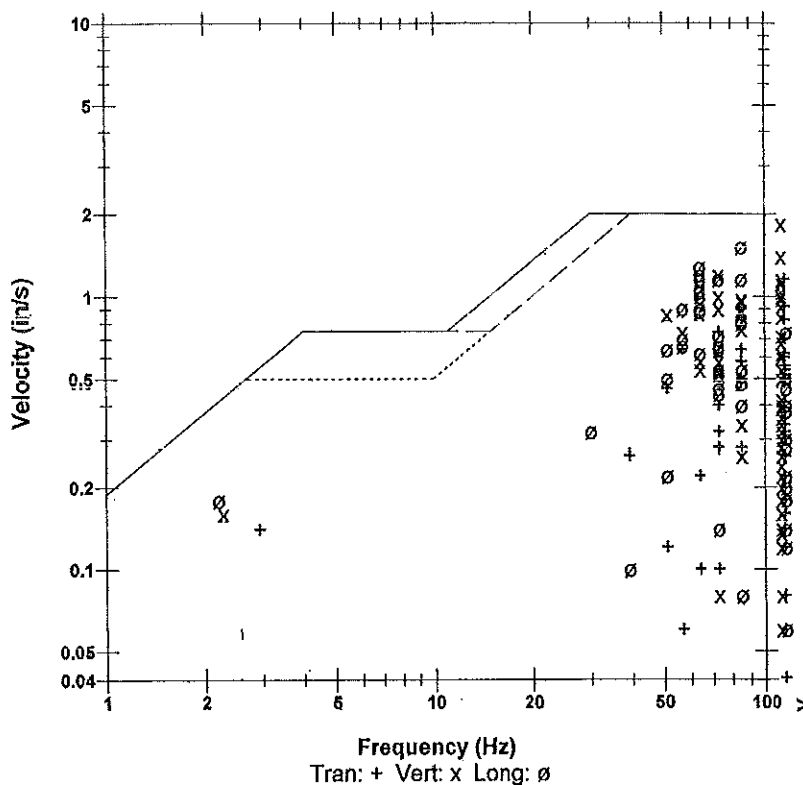
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0102 psi(L) at 0.211 sec
 ZC Freq 28 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 454 mv)

	Tran	Vert	Long	
PPV	1.16	1.84	1.52	in/s
ZC Freq	>100	>100	85	Hz
Time (Rel. to Trig)	0.179	0.167	0.169	sec
Peak Acceleration	1.86	3.08	1.86	g
Peak Displacement	0.00906	0.0128	0.0157	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.14 in/s at 0.167 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = >-----<

Event Report

Date/Time Vert at 15:56:39 September 11, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498HQ.YF0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:25 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

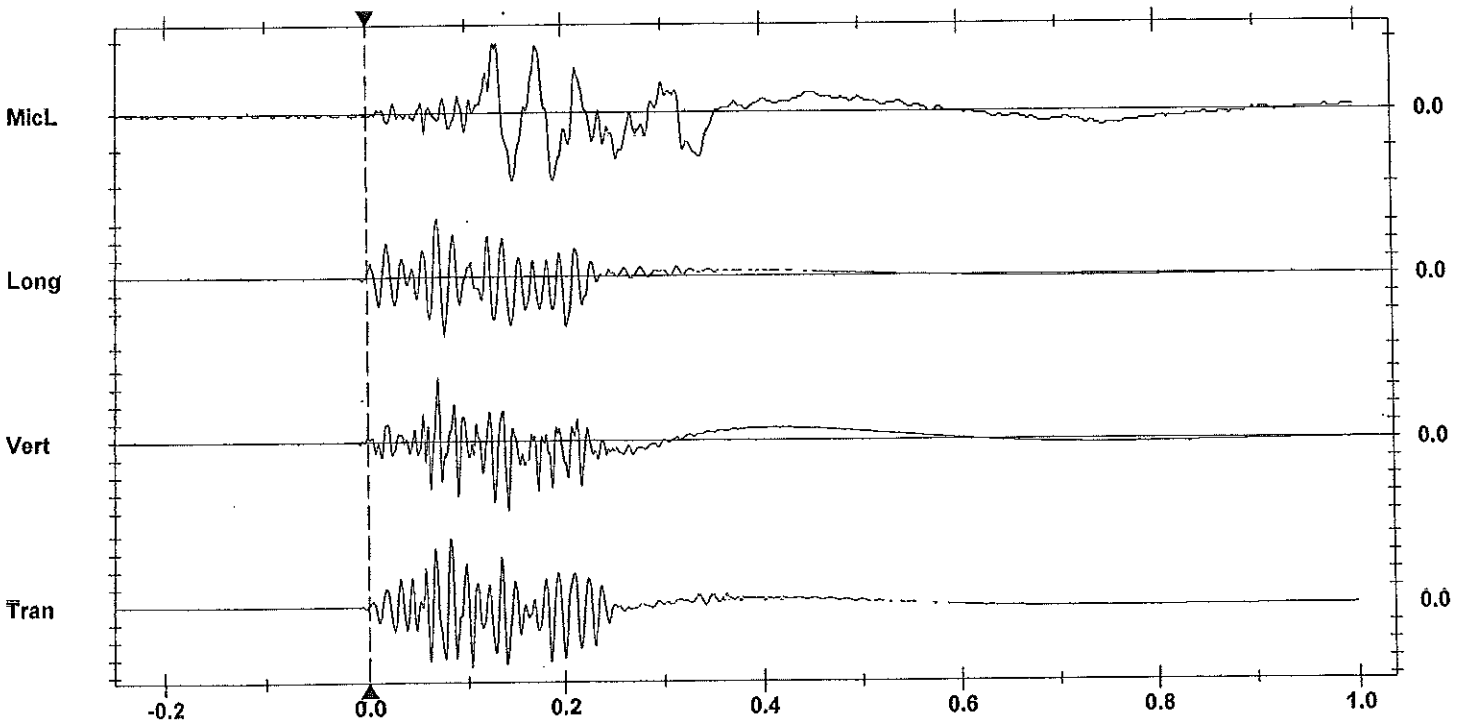
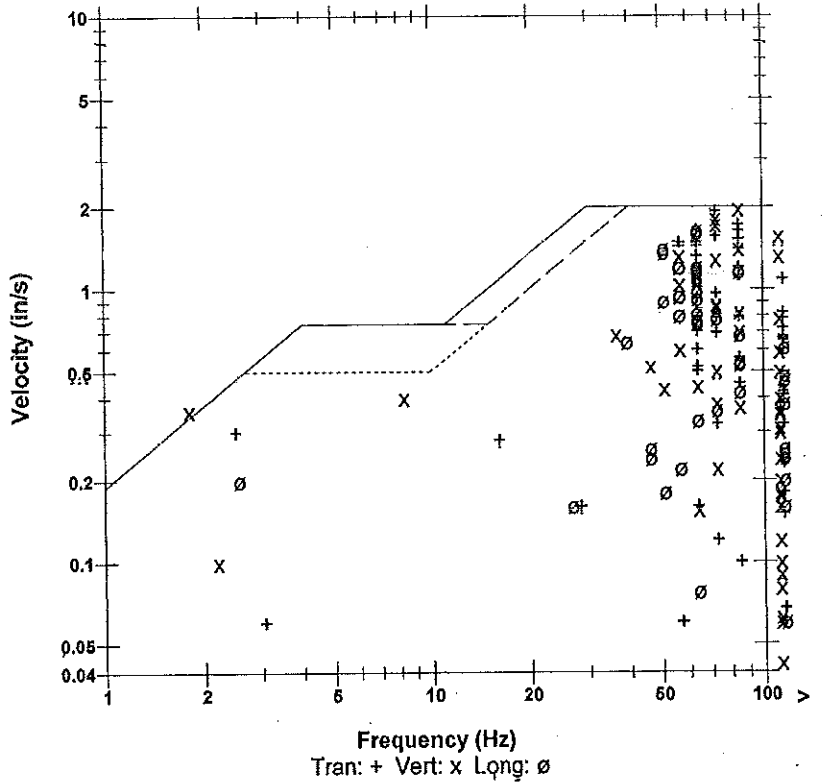
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00957 psi(L) at 0.131 sec
 ZC Freq 16 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mV)

	Tran	Vert	Long	
PPV	1.92	1.96	1.64	in/s
ZC Freq	73	85	64	Hz
Time (Rel. to Trig)	0.084	0.145	0.072	sec
Peak Acceleration	3.18	2.65	1.80	g
Peak Displacement	0.0165	0.0335	0.0127	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.48 in/s at 0.130 sec

USBM R18507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = \blacktriangleleft

Event Report

Date/Time Vert at 15:55:14 September 10, 2002
 Trigger Source Geo: 0.0600 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by InstanTel Inc.
 File Name E15498FW.820

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:11 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

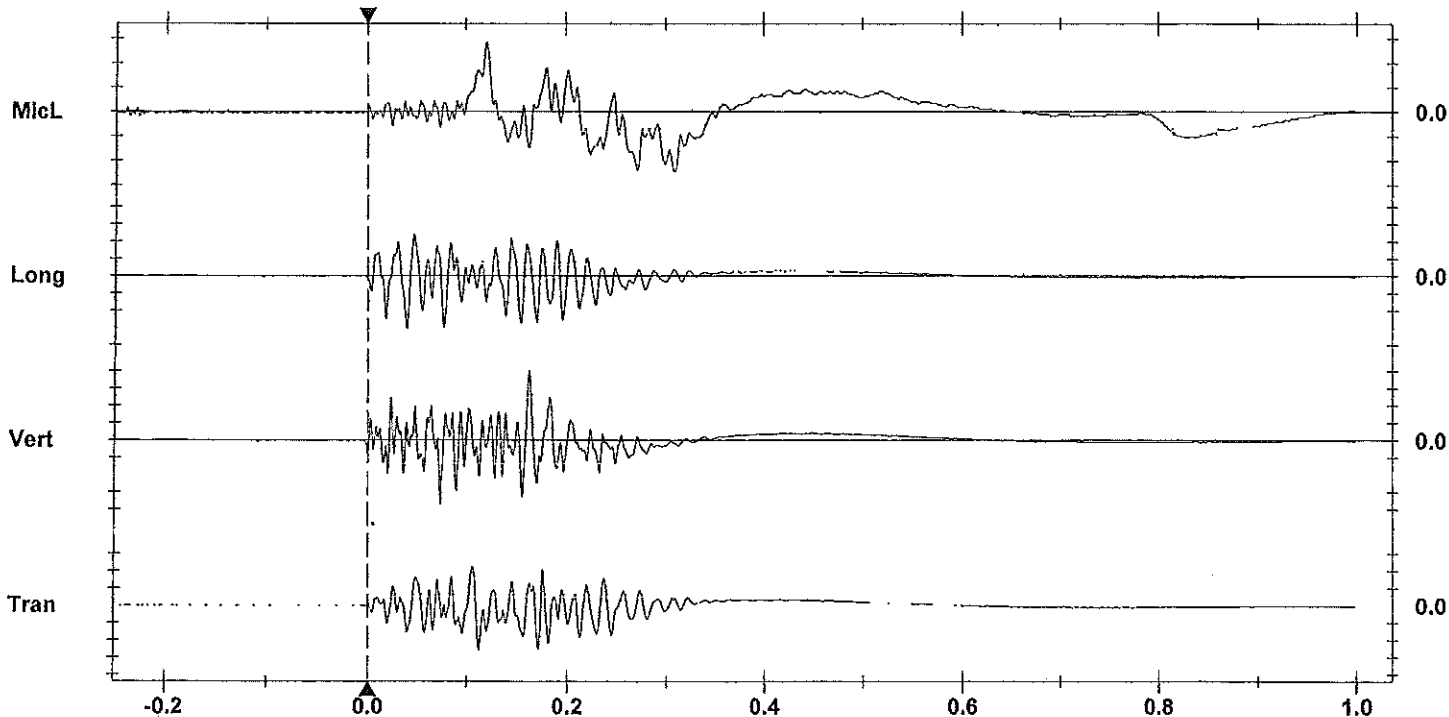
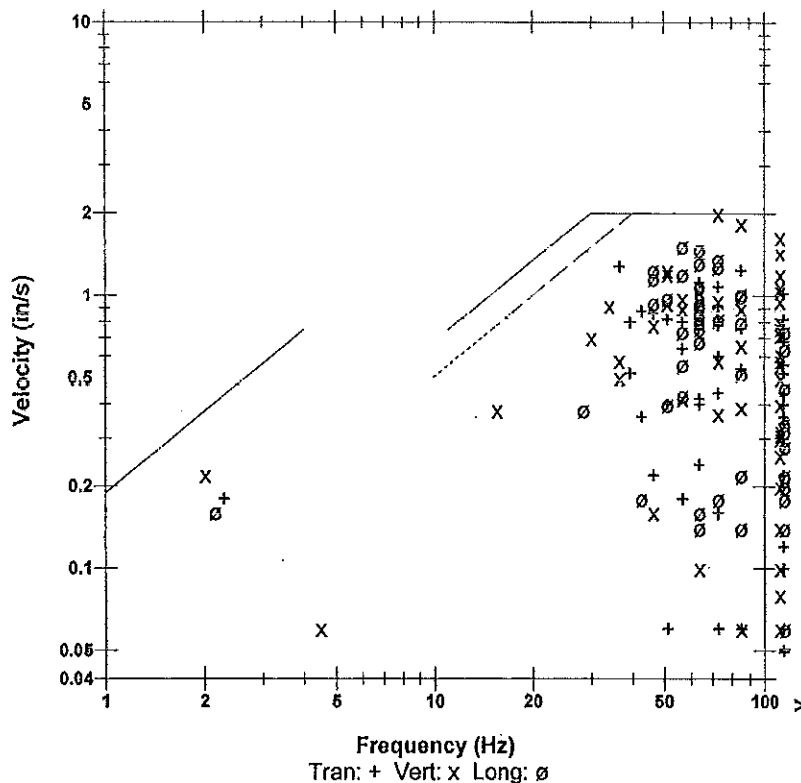
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0142 psi(L) at 0.121 sec
 ZC Freq 16 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	1.28	2.00	1.52	in/s
ZC Freq	37	73	57	Hz
Time (Rel. to Trig)	0.112	0.164	0.040	sec
Peak Acceleration	1.91	2.76	1.75	g
Peak Displacement	0.0146	0.0188	0.0133	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 2.20 in/s at 0.164 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = \blacktriangleright \blacktriangleleft

Event Report

Date/Time Vert at 11:22:28 September 10, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by Instantel Inc.
 File Name E15498FJ.LG0

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:06 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

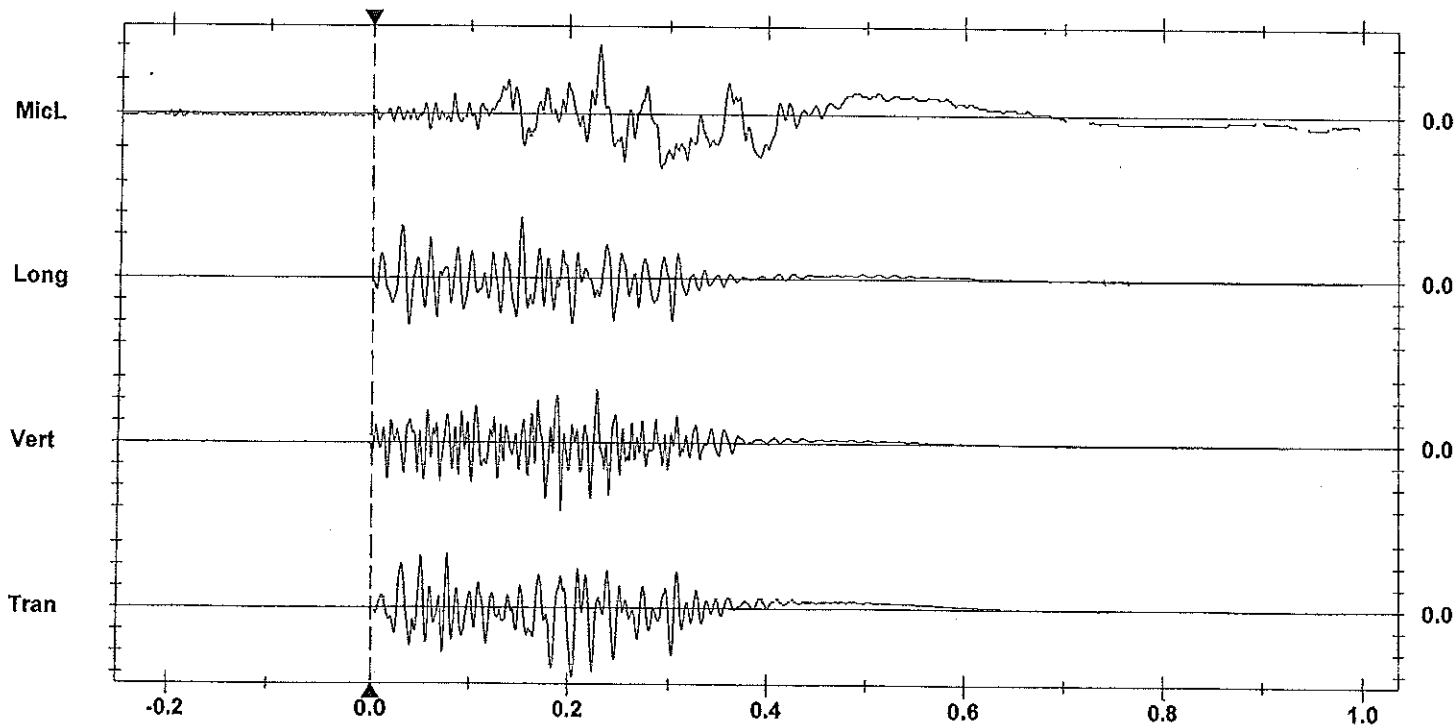
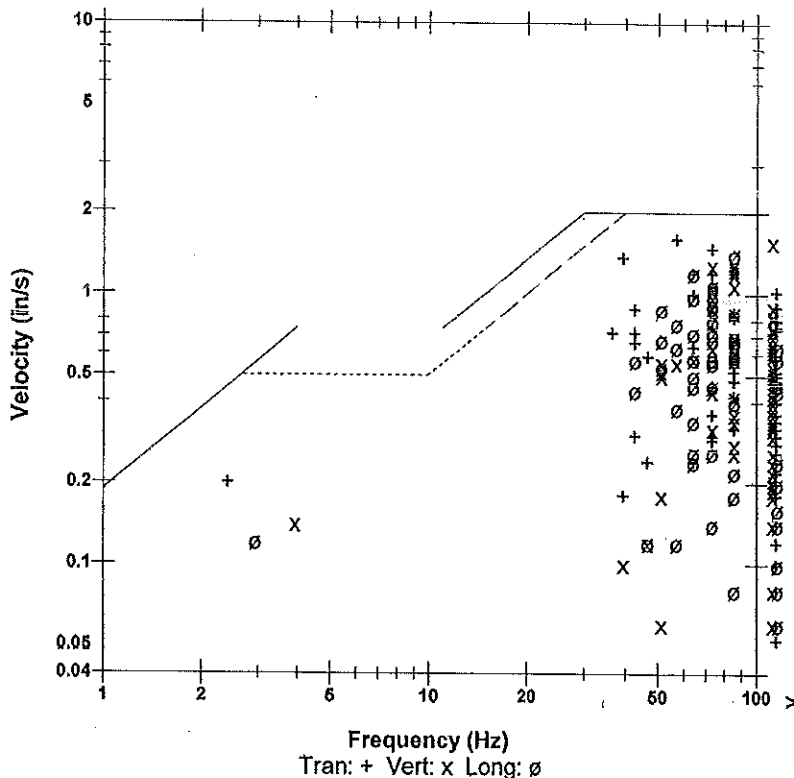
Post Event Notes

Microphone Linear Weighting
 PSPL 0.0102 psi(L) at 0.231 sec
 ZC Freq 27 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 453 mv)

	Tran	Vert	Long	
PPV	1.60	1.56	1.40	in/s
ZC Freq	51	>100	85	Hz
Time (Rel. to Trig)	0.205	0.193	0.153	sec
Peak Acceleration	1.70	2.92	1.80	g
Peak Displacement	0.0150	0.00735	0.00814	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.95 in/s at 0.205 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00500 psi(L)/div
 Trigger = >-----<

Event Report

Date/Time Vert at 17:23:27 September 9, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo :5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.3 Volts
 Calibration September 4, 2001 by Instatel Inc.
 File Name E15498E5.N30

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:35:01 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilites & condo buildings.

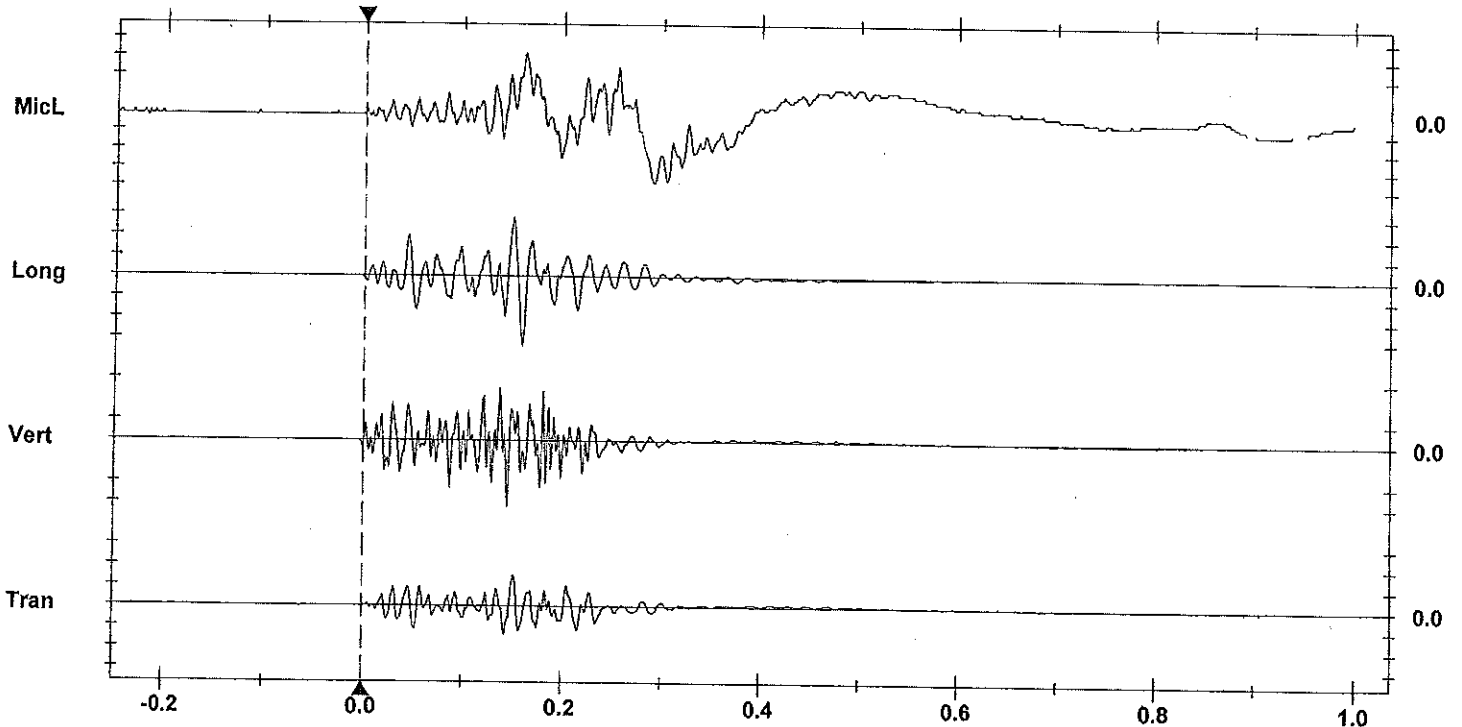
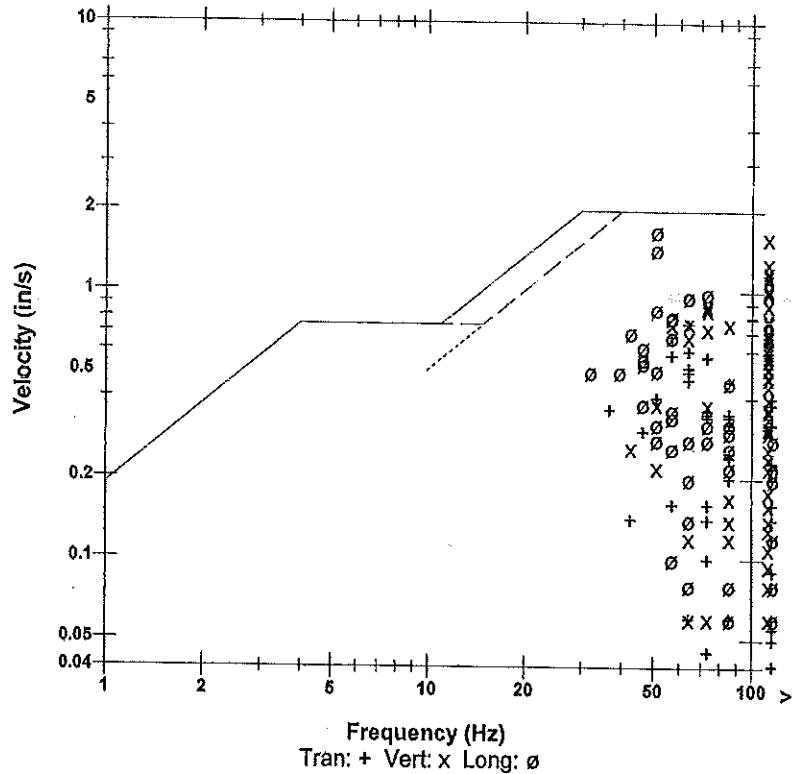
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00754 psi(L) at 0.291 sec
 ZC Freq 4.0 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 454 mv)

	Tran	Vert	Long	
PPV	0.760	1.60	1.68	in/s
ZC Freq	64	>100	51	Hz
Time (Rel. to Trig)	0.153	0.146	0.161	sec
Peak Acceleration	1.06	3.13	1.38	g
Peak Displacement	0.00263	0.00267	0.00479	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.86 in/s at 0.160 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = \blacktriangleleft \blacktriangleright

Event Report

Date/Time Vert at 09:50:03 September 9, 2002
 Trigger Source Geo: 0.0800 in/s
 Range Geo: 5.00 in/s
 Record Time 1.0 sec at 1024 sps

Serial Number 3154 V 2.61 MiniMate
 Battery Level 6.4 Volts
 Calibration September 4, 2001 by Instatel Inc.
 File Name E15498DK.NFO

Notes

Location: Harvard St. Portland, Me.
 Client: Chase Excavating
 User Name: Shawn McGoldrick
 Converted: September 27, 2002 07:34:51 (V4.30)

Extended Notes

Drilling & blasting services for new road, utilities & condo buildings.

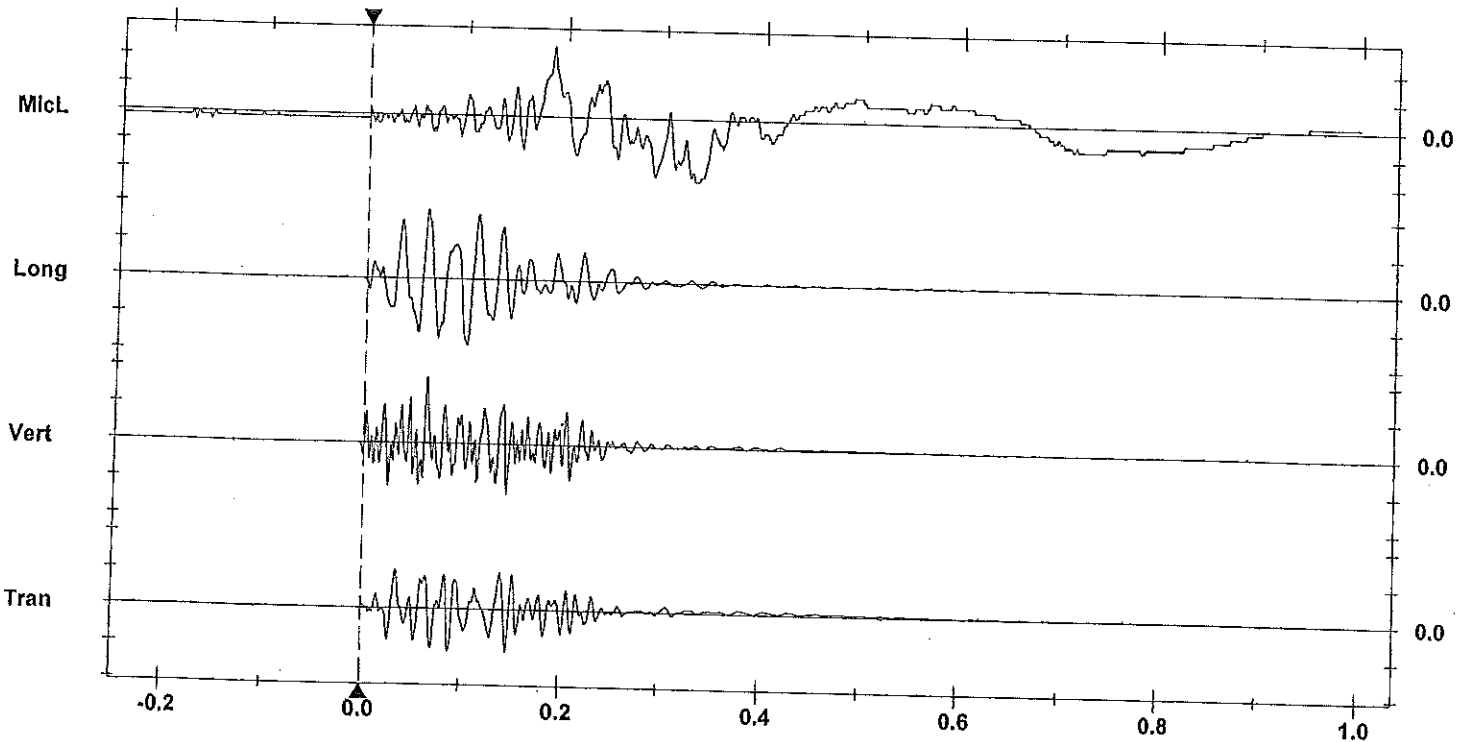
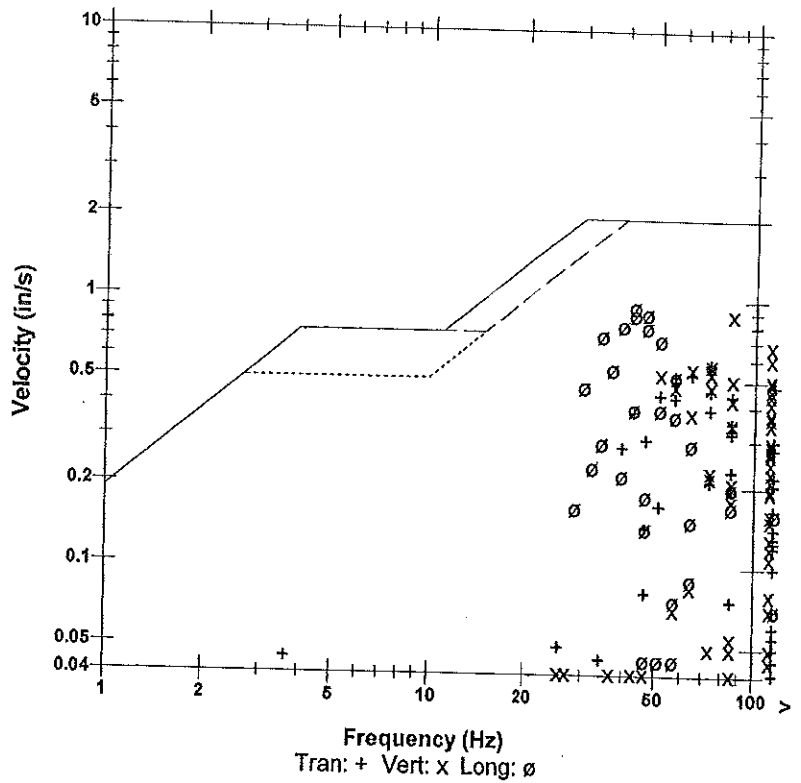
Post Event Notes

Microphone Linear Weighting
 PSPL 0.00493 psi(L) at 0.188 sec
 ZC Freq 16 Hz
 Channel Test Passed (Freq = 20.0 Hz Amp = 454 mv)

	Tran	Vert	Long	
PPV	0.580	0.890	0.940	in/s
ZC Freq	73	85	43	Hz
Time (Rel. to Trig)	0.089	0.063	0.061	sec
Peak Acceleration	0.981	1.54	0.769	g
Peak Displacement	0.00307	0.00159	0.00338	in
Sensorcheck	Passed	Passed	Passed	

Peak Vector Sum 1.27 in/s at 0.063 sec

USBM RI8507 And OSMRE



Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 in/s/div Mic: 0.00200 psi(L)/div
 Trigger = >-----<