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THE WAY WE WORK SAYS A LOT ABOUT US

Message from the President

There has been a lot in the news recently about honor, ethics, and confidentiality issues in government, and it naturally makes me think about similar issues in our business. In this day and age, we all face technical, business, and ethical issues that can both startle us and make us pause from time to time.

I think the way we work says a lot about H-R. A fundamental principle of H-R throughout our 21 years of existence has been to 'do the right thing.' H-R has always taken the high road with respect to the way we conduct our business with others and with our own employees. That is why we try to resolve technical problems before they arise, and we deal with them if they are found later. That is why we honor our commitments. That is why we consider it important to treat everyone with courtesy and respect. That is why we value our business relationships and the trust, loyalty, and confidentiality that are inherent in such relationships. That is why we hold high ethical and professional standards. Not all firms nor all individuals do so.

Don't be naive, some may say. The business world is tough, and you've got to look out for Number One. Well, maybe so. But while dealing with such issues never fails to disconcert and disappoint me, I also never find it

difficult to decide the right direction. I know I simply will never allow H-R to compromise its high standards of ethics, integrity, or professionalism.

The way we work says a lot about H-R. And perhaps it says something about others as well.

*Trust H-R to do what is right for your geophysical project needs. **Call us!***

Cordially,

*Dorothy Richter
President*

Who We Are

It should come as no surprise that H-R takes pride in our exceptional professional, technical, and administrative staff.

- **Steven Grant**, P.G., Senior Geophysicist and new dad(!). Steve patiently balances the demands of work with the more enjoyable delights of fatherhood.
- **Jeffrey Reid**, P.G., Senior Geophysicist and father of two rapidly growing kids. Jeff manages to get to many games despite too many gypsy geophysical journeys.
- **José Carlos Cambero Calzada**, recently promoted to Senior Geophysicist. José Carlos is eager to expand our geophysical exploration capabilities in new areas based on his rich past experiences in Europe.
- **Mohammed Hayat**, Geophysicist and world traveler. Mohammed brings his global perspective to geophysical

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investigations.

- **Alexis Martinez**, Geophysicist and dad to two daughters. Alexis' daughters keep him well grounded, and it shows in his calm and cautious approach to geophysics.
- **Robert Garfield**, Geophysicist and gambler's man. Fortunately for H-R, Rob does not gamble on geophysics but logs a lotta time logging boreholes.
- **Suzanne LeFrancois**, Geophysicist and adventurer. Suzi never backs away from a geophysical challenge.
- **Michael Ryan**, Geophysicist and marathon runner. Mike is running geophysical data processing after several years on the Big Dig.
- **Jonathan Gillan**, Geophysicist and archeologist. Jonathon is new to H-R this year. He previously used geophysics on archeological projects around the world and has transitioned smoothly into the late industrial-age archeology(?) of our geophysical portfolio. Jonathan has a B.Sc. in Environmental Archeology from the University of Edinburgh and a Post-Graduate Diploma in Advanced Scientific Methods in Archeology from the University of Bradford in the UK.
- **William Desmarais**, CAD person, bowler of a perfect 300, and winner of a trip to a professional drag race in California. Bill turns his winning ways to careful CAD crafting at H-R.
- **Brian Robison**, CAD person, father of three, and a bowler, too. Brian is new to H-R this year and our first CAD guy dedicated to the NJ office. Brian served six years in the US Navy and was an ironworker prior to joining H-R.
- **Juraj Peroncik**, Intern. Juraj has a degree in Surveying and Cartography from the Slovak Technical University in Bratislava and is immersed in CAD tasks for the Big Dig in **BSC/Cullinan's** downtown digs.
- **Lyn Mercer**, Office Administrator, mother of two handsome sons, and best friend to the staff. Lyn takes care of clients' needs as well as the staff's.
- **Gene Simmons**, Ph.D., P.G., Vice President, Principal Geophysicist, and tennis player. Gene serves aces to our clients. He has been tapped to be an expert on several different projects

facing review and possible litigation.

- **Dorothy Richter**, P.G., President and dogged newsletter writer with perennial writer's block. She was recently reappointed by NH Governor John Lynch to serve a second five-year term as a member of the NH Board of Professional Geologists.

I was hoping to add a few more names to the list, because we are short-staffed at the moment and are actively seeking geophysical professionals for both our NH and NJ offices. When we do find the right new staff, you can trust that they will match the caliber of our existing staff members.

Trust H-R to have the right staff with the right stuff for your geophysical needs. **Call us!**

What We Do Well

- **Surface Geophysics** – Ground Penetrating Radar (GPR), Seismic Refraction & Reflection, Multi-channel Analysis of Surface Waves (MASW), Electromagnetic Induction (EM31, EM34, EM38, EM61), Earth Resistivity Soundings and 2D Imaging, Magnetics, VLF, Blast/Vibration Monitoring, Subsurface Utility Detection/Designation, and more.
- **Borehole Geophysics** – Borehole Geophysical Logging (Acoustic Televiewer - ATV, Optical Televiewer - OTV, Heat-Pulse Flow Meter - HPMF, 3-Arm Caliper, Fluid Temperature, Fluid Resistivity, Natural Gamma Ray, spontaneous potential - SP, Normal Resistivity, Single Point Resistance - SPR, Electromagnetic Induction - EM) Borehole Video Logging, Video Logging of Deep Drilled Shafts, Crosshole Seismic, Borehole Radar, and more.
- **Dimension Stone Testing & Evaluation Services** — ASTM Testing, Failure Analysis, Quarry Evaluations.
- **Litigation Support Services** — Document Review, Consulting, Expert Testimony.

Call us for the things we do well!

Where We've Been

We've commented before that projects seem to come in bunches that we can never predict. (That's my excuse for not forecasting, and I'm sticking with it.)

This year has seen an exciting assortment of more than usual crosshole seismic surveys at bridges and critical facilities, surface shear wave velocity surveys at increasing numbers of sites, extensive borehole geophysical logging for both geotechnical and geoenvironmental projects, more vibration monitoring for sensitive structures than we've seen in years, and subsurface utility designation at more service station sites than we can count. We actually had to turn down several interesting project opportunities this year simply because we have been overloaded, a circumstance we are not really used to experiencing.

Noteworthy projects include crosshole seismic testing at the **Verrazano Narrows Bridge Approaches** on Staten Island and in Brooklyn for **URS** (the deepest crosshole testing we've ever performed), crosshole seismic testing at the **Tri-Borough Bridge** for **Haley & Aldrich**, borehole geophysical logging and related testing for the **Second Avenue Subway Project** in NYC for **DMJM Harris-ARUP JV**, borehole geophysical logging for the **No. 7 Subway Line Extension Project** in NYC for the **PB Team**, and borehole geophysical logging for the **Upper Rouge CSO Project** in Detroit, Michigan for **Parsons Brinckerhoff**.

Noting where we've been is a good reason to **call us!**

Where We're Going

I was hoping I could write about our new New Jersey office location. We have outgrown our current facility in Orange, New Jersey and have been actively searching for new space since the spring. Unfortunately, the perfect place for our particular needs has not presented itself yet, and so the search goes on.

As for future geophysical project work,

where we're going depends on you. H-R has been the named geophysical subconsultant on several successful teams for multi-year task order contracts won in 2005, so we hope that some of those task orders will require surface and borehole geophysics. We've got some very intriguing possible large projects in the mid-Atlantic and Southeastern states that we also hope will materialize.

H-R is ready to go wherever you need quality geophysical services. **Call us!**

Why We Do What We Do

The reason why we do what we do is because every person at H-R is acutely aware that our surface and borehole geophysical services contribute to protecting the health and safety of the public and to preserving our cultural and natural resources.

That's probably similar to why you do what you do, too. **Call us!**

H-R & Seismic Building Codes

Shear wave velocity measurements of soil and rock have long been used to evaluate dynamic properties of those materials for seismic design and retrofit of critical structures such as bridges, dams, hospitals, etc. H-R has performed the industry standard test method, Crosshole Seismic Testing in accordance with ASTM D4428/D4428M, to determine shear wave velocities of soil and rock for about twenty years. H-R has also been using a less expensive, newer surface geophysical test method called Multi-Channel Analysis of Surface Waves (MASW) on increasing numbers of sites to provide continuous shear wave velocity profiles in recent years.

Shear wave velocity measurements have become even more important and more widely used as more states adopt versions of the International Building Code (IBC). An important element of the IBC is the definition of "seismic site classes" (A to F)

based on soil and rock properties to a depth of 100 feet. IBC seismic site class is determined on the basis of:

- Standard Penetration Tests (N-values) - uncorrected, as measured in the field
- Undrained Shear Strength Measurements - made in the laboratory
- Shear Wave Velocity Measurements - Think H-R here.

Sites where the N-values are between 15 and 50 are categorized as Seismic Class D under the IBC, and the seismic design requirements are far more rigorous and costly than for Seismic Class C sites. In some, but not all, cases, shear wave velocity measurements, which are more accurate than standard penetration tests, can be used to re-classify a site as Seismic Class C, thereby providing the owner a significant cost saving. H-R has conducted numerous shear wave velocity surveys specifically to help clients ascertain the proper seismic site classification under the IBC and related state codes.

There are four common methods to determine shear wave velocities, and H-R routinely performs the two methods mentioned at the start – Crosshole Seismic Testing (probably the most expensive, but the most accurate method), and MASW (probably the least expensive, and sufficiently accurate method). The two other methods (P-S wave suspension logging and Seismic Cone Penetrometer Testing) are performed by a few specialty contractors and have their own limitations.

The Crosshole Seismic Testing method is expensive, not because of the geophysical costs, but because it requires two or three carefully installed cased boreholes at each test location. Without going into all the details, the geophysical testing is performed by *direct* measurements of shear wave velocities between the boreholes as a function of depth. None of the other test methods is as direct or as accurate. So, although the Crosshole Seismic Method is expensive because of the required drilling costs, we always recommend its use for critical structures such as bridges because it is the most accurate method for determination of shear wave velocities as a function of depth.

The MASW method is less expensive because it is a surface geophysical method – i.e., no drilling costs are involved. The MASW inverts spectral data from surface waves, considered 'noise' in other seismic methods such as refraction, to determine shear wave velocities. A significant advantage of the MASW method is that so many shear wave velocity determinations are made as a function of distance and depth that the results can be contoured as shear wave velocity profiles. Thus, the MASW method can detect lateral variations of shear wave velocities across a site which, if present, may be useful to consider for a variety of reasons.

Accurate determination of shear wave velocities for seismic design and retrofit of critical structures obviously is a very serious matter. **Reason alone to call us!**

Our Mission

To fulfill our clients' needs in geoscience, using experienced professionals who enjoy their work and are totally committed to quality and professional development.

WBE/DBE Certifications

- New Hampshire DOT
- Vermont AOT
- Maine DOT
- SOMWBA (Massachusetts)
- Mass Highway, MassPort, MBTA
- Connecticut DOT
- Rhode Island Dept. of Development
- Empire State Development (NY)
- New York State DOT
- Metropolitan Trans. Authority (NY)
- The Port Authority of NY & NJ
- New Jersey Dept. of Commerce
- New Jersey DOT
- New Jersey Transit Authority
- Ohio DOT
- Indiana DOT
- Illinois DOT
- Texas DOT

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