SPECIAL CONDITIONS
FOR SEISMIC EXPLORATIONS

This permit is issued subject to the acceptance of the following provisions:

A. LIMITED ACCESS ROW

1. No drilling and blasting, or vibratory exploration is allowed within limited access ROW.
2. Operations within limited access ROW are restricted only to the placement of seismic cable crossing the right of way and as detailed on the permit.
3. All operations within limited access ROW are subject to the following constraints unless specifically approved by the Michigan Department of Transportation (MDOT):
   a. Access to the work area shall be from private property or country roads and shall not be from the roadway.
   b. Equipment, vehicles or personnel shall not operate within 30 feet from the edge of pavement of roadways or ramps.

B. DRILL AND BLAST METHOD

1. Holes shall not be drilled closer than 15 feet to the outside shoulder point or curb of the roadway. The minimum depth of holes drilled shall be 10 feet.
2. MDOT reserves the right to prohibit blasting if the blasting traverses critical swamp or other sensitive areas. However, the permit holder is responsible to assure that all permitted activities are conducted in full compliance with all pertinent laws and regulations -including those intended to protect the environment.
3. Blasting Operations:
   a. Prior to the detonation of any explosives, the permit holder shall provide maintaining traffic signs in accordance with the Michigan Manual of Uniform Traffic Control Devices, plan 6F.38 (Signs for Blasting Areas).
   b. The permit holder shall gather and remove all wire, debris and other material which may have resulted from the operation at the end of each day of operation.
   c. Blast locations shall be checked by the permit holder after each detonation to assure that all explosives have been discharged. Any explosive not discharged shall immediately be removed or detonated.
   d. All holes shall be backfilled according to section E of these special conditions.

C. VIBRATORY METHOD

1. The vibratory method may be conducted on full-width stable gravel shoulders or full-width bituminous shoulders of adequate section. MDOT may also occasionally allow this method on the traveled lane of highways constructed of concrete, or bituminous on stable base, when shoulders are deemed inadequate and when the operation is deemed to not be a hazard to the traveling public.
2. The vibratory method shall not be permitted on bituminous roadways consisting of bituminous material placed on sand in high water table areas, or within muck or swamp areas. Operations on gravel or bituminous shoulders may be prohibited in similar areas.
3. Operations shall be conducted only in the direction of traffic; and when on multi-lane highways, confined to the outer lane.

D. GENERAL REQUIREMENTS FOR ALL OPERATIONS

1. No work shall be performed on Sundays or from 3:00 p.m. on the day preceding a holiday until the normal starting time on the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.
2. All work shall be performed during daylight hours.
3. Work shall cease during periods of inclement weather -when reduced visibility or slippery conditions impair trunkline traffic.
4. MDOT may require the operation be restricted to off-peak traffic periods.
5. Operations may be prohibited during periods of highway load restrictions.
6. No operation shall be permitted within 150 feet of a grade separation or bridge.
7. In addition to the maintaining traffic warning signs required in blasting areas, the permit holder shall provide "flag persons" and advance signing as may be necessary to protect the traveling public in accordance with the "Michigan Manual of Uniform Traffic Control Devices."
8. This permit is valid only for the period of time stated on the permit.
9. Prior to starting any operation, the permit holder shall send an Advance Notice of Permitted Activity in Highway Right of Way, (Form 2204) to the appropriate Transportation Service Center (TSC). Such notification shall be accompanied by a "Certification of permission of Abutting Property Owner" for operations proposed on easement right of way. **In addition, when operating under an annual permit**, **Form 2204 shall be submitted a minimum of ten (10) days prior to commencing operations instead of the five (5) days as noted on Form 2204. Failure to do so may result in the revocation of the annual permit.**
10. In addition to the flagging and signing required in condition 7, the permit holder is responsible to sign, flag, or otherwise protect seismic exploration facilities and equipment from accidental damages or from interfering with normal highway operations and MDOT personnel.
11. The permit holder is responsible to assure that no damage occurs to the trunkline road and right of way; and to restore the road and right of way whenever damage occurs as a result of seismic exploration operations.
12. Any costs incurred by MDOT in correcting damages caused by the permit holders operations shall be billed to the permit holder.
13. The permit applicant shall provide a Blanket Bond, (Form 2232) in the amount of $50,000 which will be retained on file in the Central Real Estate office until completion of the work, or until such time as claims identified within this period are resolved. If a TSC requires additional performance bonding, an individual bond (Form 2202) shall be kept on the file with the individual permit.
14. The Certificate of Insurance, (Form 2020) shall be used to certify appropriate levels of insurance are held by the permit holder.

E. Acceptable Methods for Plugging Drill Holes

1. Ordinary Conditions

All test holes, except as listed below, shall be filled completely with suitable material removed from the hole or like material from another source. The top five feet will be compacted by hand tamping or hydraulic auger pressure. The surface area around the test hole site shall be restored to the original conditions.

2. Multiple Aquifers

When multiple aquifers (water-bearing sands between clay layers) are encountered, the impervious zones or zones between aquifers shall be sealed with a bentonite slurry or cement grout as deemed suitable.

3. Bedrock Corning

All water-bearing bedrock shall be cement grouted.

4. Artesian Water

When artesian water is encountered in hydraulic (wash) boring utilizing 2-inch flush joint casing, the flow shall be terminated by inserting a 2 ½ inch diameter plugged steel pipe into the hole a minimum of 5-foot. This plugged pipe shall be driven to the top of the aquifer with the remainder of the hole filled with cement grout or concrete.

5. Gas

When either methane or hydrogen sulfide gas is encountered, immediately contact MDOT's Emergency Administrator at 517-373-1898 (office) or 517-719-0505 (cell).

a. Methane

When methane gas is encountered, the gas shall be vented into the air and allowed to deplete itself. Burning will depend on surrounding conditions such as open country, rural areas, or commercial and residential areas. Where conditions will not allow the burning of the gas, it will be vented into the air until the gas pocket is depleted. After depleting of the gas, the hole will be grouted as above. The local authorities shall be notified and corrective methods coordinated with them.

b. Hydrogen Sulfide

When hydrogen sulfide gas is encountered in wash boring using 2-inch diameter casing, the hole shall be sealed by inserting a 2 ½ inch diameter plugged steel pipe into the hole a minimum of 5-foot. The pipe will be driven to the lowest elevation possible and the remainder of the hole filled with cement grout or concrete. When hydrogen sulfide gas is encountered with a hollow-tem auger, the seal shall be made by pouring or pumping cement grout or concrete down the augers and raising the augers as the grout or concrete fills the hole.

6. Cement Grout

Cement grout shall consist of a thick slurry of Portland cement and water to which may be added sand and calcium chloride. The ratio of five to six gallons of water to a 94-pound sack of cement is recommended.