
Dig Safe Procedures

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INTRODUCTION

Any contractor or KSC employee who plans to excavate on Campus must follow the following protocols. This procedure applies to **ANYONE** who plans to dig a hole, install or replace a fence or sign post, plant or remove a tree, put up a tent, or any other procedure that involves driving stakes or otherwise disturbing the ground surface when working within 100 feet of buried underground facilities, on public or private property.

In some situations, groups on campus may plan events (carnivals, fairs, etc.) that require temporary structures (such as tents) or other activities that may require temporary staking. All departments will be notified of this procedure, and all contractors will be provided with this information and required to sign a statement indicating that they have been notified of this requirement.

If the proposed work involves trenching or excavation, the contractor/KSC employee must also follow the KSC Trenching and Excavation Protocols (http://www.keene.edu/ehs/Trenching_Excavation.pdf).

Dig Safe DOES NOT locate or mark underground facilities. Dig Safe creates a dig Safe ticket (or permit) and sends the ticket to member utilities. The utility employees (or contracted locators) are responsible for marking their own facilities.

IT IS THE LAW! However, Dig Safe does not regulate or enforce the "Dig Safe" law. It is enforced by the New Hampshire Public Utilities Commission, who can levy fines up to \$500 for the first offense, and up to \$5000 for additional offenses. When state regulators inspect an excavation site or investigate a damage prevention incident, they will check to see if you have a valid Dig Safe permit).

The following utilities are required to be members of Dig Safe:

- Gas
- Electric
- Telecommunications
- Cable Television

- Liquid Propane Companies
- Private Water Companies

These utilities will locate their lines up to the demarcation point (where the utility enters the Campus), but not beyond.

Keene State College is also a member of Dig Safe, but the City of Keene is not (municipalities are not required to protect water, sewer and drainage lines). There are storm, sewer and water lines owned by the City of Keene that run through the campus.

Key elements of a SAFE DIG include:

- Plan ahead!
- Pre-mark
- Call before you dig (≤ 30 days prior to excavation)
- Arrange a meeting with facility locators and the excavator
- Wait required 72 hours (excluding weekends and holidays)
- Maintain the marks
- Excavate carefully
- Notify the facility owner of any damages.

Simple Steps to the perfect excavation:

1. The excavator (either Keene State College or contractor, depending on who is doing the excavation) visits the site, and marks out every place he/she may be excavating with white paint, flags, stakes, or any combination of the three.
2. The excavator fills out all the information about the excavation on the Dig Safe Form (Attachment A) and then calls in the stake-out request to Dig Safe (or files a quick ticket request on line).
3. The Dig Safe Customer Service Representatives takes the information, and gives the excavator a Dig Safe Permit Number and a list of member facility owners notified (including Keene State College, who is a member of Dig Safe).
4. The excavator then notifies any non-member facility operators if known (for example, the City of Keene). Note that non-member companies are not notified by Dig Safe.
5. Each member facility company (including Keene State College), or its private locating company (such as On-Target Utility Services) marks out the facilities it owns or maintains in the area of excavation using the color coding system shown in Figure 1.
6. While working, the excavator takes care to find and maintain any markings that have been placed.
7. When digging near a buried facility, the excavator

Figure 1. Color Coding System

Color Coding System

Color coding is used to identify the type of underground facilities.

RED	Electric Power Lines, Cables, Conduit and Lighting Cables
YELLOW	Gas, Oil, Steam, Petroleum or Gaseous Materials
ORANGE	Communication, Alarm or Signal Lines, Cables or Conduit
BLUE	Potable Water
GREEN	Sewers and Drain Lines
PURPLE	Reclaimed Water, Irrigation and Slurry Lines
PINK	Temporary Survey Markings
WHITE	Proposed Excavation

observes the tolerance zone around that facility.

8. If exposing a facility, the excavator provides proper support and protection for it so that the facility will not be damaged.
9. When the excavation is complete, the excavator provides proper backfill for any facilities that have been exposed, and removes all utility markings.

DEFINITIONS:

“Excavate”, excavating”, or “excavation” in New Hampshire means:

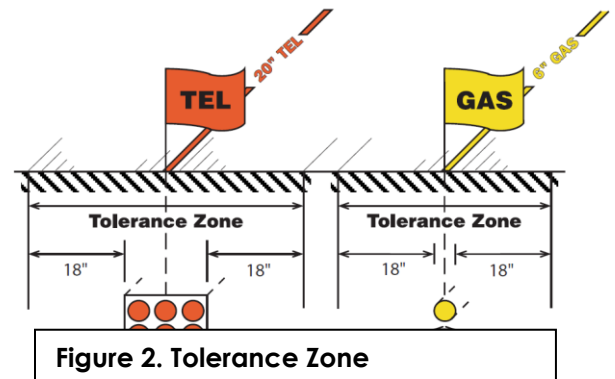
- any operation conducted on private property or in a public way, right-of-way, easement, public street, or other public place,
- in which earth, rock or other material in the ground is
- moved, removed, or otherwise displaced by means of any tools, equipment, or explosive, and
- includes but is not limited to: drilling, grading, boring, milling, trenching, tunneling, scraping, tree and root removal, cable or pipe plowing, fence or sign post installation, pile driving, wrecking, razing, rending or moving any structure or mass material
- does not include
 - the tilling of soil for agricultural purposes,
 - landscaping and maintenance of residential property performed with non-mechanized equipment,
 - landscaping activities performed with mechanized equipment that are intended to cut vegetation, including lawn edging, aeration, and de-thatching,
 - excavations permitted or grandfathered under RSA155-E, or
 - replacement of Department of Transportation-installed delineator posts in the same location.

Excavator means the person or company who will be excavating (including installing fences/sign posts, erecting tents, digging, planting/removing trees, etc.)

Locator means a person acting on behalf of an operator to identify and mark locations of underground facilities (utilities). T

Operator means any public utility, cable television system and any liquefied petroleum gas company that owns or operates underground facilities.

Underground facility means any private property or property which is buried, placed below ground, or submerged on a public way, right-of-way, easement, public street, or other public place and is being used or will be used for the conveyance of cable television, electricity, gas, sewerage, steam, telecommunications, or water.



Tolerance Zone is a zone designated on the surface by the use of standard color-coded markings, which contains the width of the facility plus 18 inches on each side of the facility.

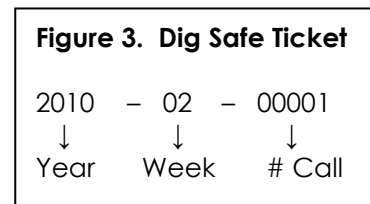
PRE-EXCAVATION PROCEDURES

A Dig Safe permit must be filed for any project that requires excavation or disturbing the ground surface, including (but not limited to) driving tent stakes, planting/replacing trees, installing or replacing fences or sign posts, digging, excavating, etc.

In some situations, groups on campus may plan events (carnivals, fairs, etc.) that require temporary structures (such as tents) or other activities that may require temporary staking. In most cases, the Assistant Director of Physical Plant/Grounds (or designee), is notified in advance of these activities. It will be his/her responsibility to ensure that Dig Safe is (or has been) notified.

CALL BEFORE YOU DIG!

1. You must give advance notice of at least 72 business hours
2. You must call when working within 100 feet of underground utility facilities, including on private property.
3. You must call for most earth penetrating activities (see above), even small jobs.
4. Don't rely on old marks.
5. Don't work on anyone else's Dig Safe request unless you are listed as a subcontractor on another party's permit.
6. Mark out the area that you plan to excavate with white paint, flags, or stakes. Pink paint can be used if there is snow (or anticipated snow). Include your name (or company if you are a KSC contractor).
7. Review the Locate Request Form (Attachment A) so that you will know what information you need when calling Dig Safe. You can also file a quick ticket on-line: <http://www.digsafe.com/quickticket.htm>.
8. Dig Safe Ticket will issue you a permit (see Figure 3).
9. Do not start excavating before your legal start date and time!
10. Refresh the marks yourself or call Dig Safe for a re-mark until the markings are no longer needed or if they are destroyed.
11. If your excavation has not started within 30 days from the permit date, the permit has expired and must be renewed at least 72 business hours before it has expired.
12. In an emergency, notify Dig Safe at 888-DIG-SAFE or 811 with the location of the emergency excavation as soon as possible (an emergency is a sudden or unexpected occurrence which poses a threat to public safety, life, health, property or essential utility service).



MARKING UTILITIES

Dig-safe will notify the Director of the Physical Plant or his/her designee when a dig-safe ticket on or near the College has been filed. If the proposed excavation work is on or adjacent to Keene State property, the Director of Physical Plant (or designee) will create a work order that will in turn notify the following "facility locators":

- Electrical Supervisor (or designee)- responsible for

- Locating and marking electric power lines, cables, conduit and lighting cables (red)
- Notifying and assisting IT in locating communication, alarm or signal lines, cables, or conduit

- Plumbing/Mechanical Supervisor (or designee) -- responsible for:

- Locating and marking oil, steam, petroleum, or gaseous materials (yellow).
- Coordinating with Rymes Oil and NH Gas to locate and mark gas lines.
- Notifying the City of Keene and locating and marking potable water (blue)
- Notifying the City of Keene and locating and marking sewers and drain lines (green), reclaimed water and slurry lines (purple)

- Assistant Director of Physical Plant/Grounds (or designee) - responsible for locating and marking irrigation (purple).

E	= Electrical
G	= Gas
PP	= Oil
ST	= Steam
CH	= Chemicals
T	= Telephone wires or cable
CATV	= Cable television
TC	= Traffic control information or signals
FA	= Fire alarm information or signals
W	= Water
RW	= Reclaimed water
S	= Sewage
SS	= Storm sewage
SD	= Storm drainage

In some cases the excavator who notifies Dig Safe may also be a locator.

New Hampshire regulations require that locators shall be trained in accordance with National Utility Locating Contractors Association (NULCA) standards (NH Adopted Rule 804.03).

Within 72 hours (not including Saturdays, Sundays, and holidays) after receipt of notice from a proposed excavator, the "facility locator: shall either mark the location of its underground facility in the area of proposed excavation or if there is no underground facility within the area, to notify the excavator by either:

- Marking the non-existence of facilities within the pre-marked area of the intended excavation
- Participating in a meeting where details of the job site are discussed and documented; or,
- Communicating with the operator via e-mail, fax, telephone or other electronic communication, provided that the excavator confirms receipt of such communication."

Utility lines should be indicated by markings using the color coding systems (Figure 1) and by the letters (Figure 4). Markings should be 18" to 24" in length and 2" in width. Utility marking guidelines are provided in Attachment B.

1. The owner of a facility should be indicated by initials or name in letters 6 in. high at the beginning and end of the locate (and at 100 ft intervals)

2. If there are multiple facilities within an excavation area (bundled or stacked facilities) the total number of lines within the ground should be indicated when known.
3. If a facility is known to be present but the total number of lines cannot be determined, a corridor marker may be used indicating the approximate length of the facility.
4. When known, the size of the line being located should be indicated. Line size should indicate the outside diameter of the pipe or structure.
5. Conduit or duct structures, whether single or multiple conduits or ducts, should be indicated by the conduit symbol indicating the approximate depth of the structure.
6. When known, the pressure of facility should be indicated.
7. When known, termination points, dead ends and stub outs should be indicated.
8. Offset marks should be used when there is a likelihood that the markings may be destroyed if placed directly over the facility.

Locating Equipment and Procedures

KSC-owned locating equipment includes the Metrotech Model 9800XT Utility Line Locator. All KSC locators must read the operator's manual and familiarize themselves with the safety precautions, operation and maintenance, and limitations of the locating equipment they intend to use. A copy of the operations manual is kept on file in the EHS Manager's office.

DIGGING/DRILLING/EXCAVATING

95% of locating is visual – Look for utility structures, man holes, light poles, transformers, marker posts, meters, etc.)--if you see any utility structures near your site with **NO** marks, you need to start communicating!

Excavation that affects the Tolerance Zone:

Before you excavate within the Tolerance Zone, you must:

- Verify the location, type, size, direction-of-run, and depth of the facility. The facility must be exposed to view; if after a diligent search the facility cannot be verified in this manner, notify the facility operator).
- For gas and liquid petroleum lines, verification must be by means of hand-dug test holes or vacuum excavation. The location of other utilities must also be verified by means of hand-dug test holes or vacuum excavation unless otherwise agreed upon by the facility operator.
- If the excavation is going to cross a Tolerance Zone, dig a test hole to expose the facility at the point of crossing.
- Do not assume that buried facilities will be at a certain depth (they may have been originally installed at a prescribed depth, but later erosion or grade changes cause them to now have a shallower or deeper cover.

-
- Powered equipment may be used for removing pavement, but only to the depth of the pavement.
 - If the excavation is going to parallel a utility, dig test holes at any marked change of direction, elevation, and at tee's.
 - For relatively straight excavations parallel to a utility, test-holes should be dug approximately every 20 to 25 feet.
 - Contact the facility owners or Dig Safe if you find an un-marked or unknown facility.
 - When excavating close to an underground facility, it is a good practice to have a spotter assist and guide the machine operator.
 - After you have verified the location of a facility by hand digging test holes (or by vacuum extraction), use due care when excavating around a facility with any type of equipment.
 - If the excavation work requires significant spans of the facility to be exposed, support them to prevent sagging or collapse.
 - Take care not to damage the protective coating or tracer wire of a facility. If you do, leave the damage facility exposed and immediately call the facility operator.

Damage to an Underground Facility

When an excavator causes any damage to an underground facility not owned or operated by the excavator, the excavator shall:

1. Call 911 when:
 - A gas underground facility is damaged and there is a release of gas
 - An electric underground facility is damaged and an excavator determines that a person may have received an electric shock, or
 - Any other facility is damaged and public safety is affected;
2. Evacuate nearby structures if necessary;
3. Contact the facility owner or operator;
4. Attempt no repairs, unless directed to by the facility owner or operator.
5. Call 811 or 888-DIG SAFE (Notification Center); and
6. Report damage to the Commission.

EMERGENCIES

In the event of an emergency involving danger to life, health or property immediately notify 911, and/or Campus Safety (358-2228), the owner of the affect facility, and the

New Hampshire Public Utilities Commission (603-271-2431) of the exact location and nature of the emergency.

A gas leak is usually recognized by smell, sight or sound. Natural gas is colorless and odorless. A distinctive, pungent odor (mercaptan) is added so that you will recognize it quickly. You may see a white cloud, mist, fog, or bubbles in standing water, or blowing dust. You may also see vegetation that appears to be dead or dying for no apparent reason. You may hear an unusual noise like roaring, hissing, or whistling. If you suspect a gas leak:

- Move to a safe environment.
- Call the gas company (they are available 24 hours a day, 7 days a week).
- Provide the exact location, including cross streets—let them know if sewer construction or digging activities are going on in the area.
- Do not smoke or operate electrical switches or appliances. These items may product a spark that might ignite the gas and cause an explosion.
- DO NOT ASSUME SOMEONE ELSE WILL REPORT THE CONDITION.

If a facility is contacted or damaged:

1. Immediately call the operator of the facility that has been damaged, even if you only scrape the protective coating. If left untreated, this type of damage can lead to a catastrophic failure.
2. Keep the emergency number of your local facility operators at hand.
3. If you are in doubt about whose facility it is, call Dig Safe to send a message to all member facility owners in the area.

If you break a natural gas, petroleum or propane line:

- 1. Stop work and evacuate the site.**
- 2. Call 911.**
3. Call the appropriate facility operator.
4. Don't do anything that could cause a spark.
5. Alert everyone on the premises.
6. Keep the public and traffic away.
7. Tape rope or place cones around the area.
8. Stay upwind of blowing gas.
9. Do not try to fix a gas pipe.

10. Do not try to extinguish a gas burning fire, unless there is a threat to life.

If you break a petroleum/oil line:

1. Implement spill control procedures immediately.
2. Notify Campus Safety/Office of Environmental Health and Safety. If it is a large spill or uncontrolled release Campus Safety/EHS will notify the Keene Fire Department and/or Clean Harbors for emergency response and spill cleanup.

If you break an electric line:

1. **Stop work immediately and warn all persons in the vicinity** (including emergency and rescue personnel) that the ground and objects near the excavator, and equipment around the point of contact may be energized.
2. **The operator should remain on the excavator.**
3. **Personnel on the ground near the excavator or point of contact should remain still with both feet together. DO NOT touch the excavator, nearby equipment, structures or material.**
4. Contact the electrical utility operator (PSNH) and the fire department immediately if a radio or phone is at hand. Otherwise, remain still and signal for help to relay a call for utility and emergency assistance.
5. Evacuate the excavator and the area near the point of contact only after an official of the electric utility deems it safe to do so.
6. If immediate evacuation is required due to threat of serious injury from fire, explosion, or other hazard:
 - **JUMP** – not step – clear of the equipment and land with both feet together
 - Move a safe distance away (at least 25 to 30 feet) using short hops or shuffling steps to keep both feet together at all times. **DO NOT TAKE NORMAL WALKING STEPS.**
7. Do not resume work until an electric utility official confirms the site is safe.

If you break a telephone or fiber optic line:

1. Stop excavation and secure the area for public safety.
2. Notify facility owner of the potential damage to copper/fiber cable.
3. Do not examine or stare into broken/severed/disconnected fibers/fiber cable. Do not view broken fiber cables with any optical instruments.
4. Move a safe distance away from a damaged fiber system (always assume that a laser signal is present).
5. Place warning or barricades around the fiber damage location to protect the public and other workers from exposure.

UPDATING UTILITY MAPS

Whenever a locator discovers a discrepancy where the location of an underground facility differs from the most current utility map, the locator will notify the EHS Manager and/or the Plans Office of the revised location, so that the maps can be updated in a timely manner. Likewise, if a new underground facility is installed at KSC, the GPS coordinates will be provided to the Plans Office so that they can be added to the existing maps.

CONTACT TELEPHONE NUMBERS

Dig Safe: 811 or 1-888-344-7233

Keene State College:

Campus Safety: 358-2228

Director of Infrastructure Services and Network Security: 358-2070

Electrical Supervisor: 358-2208

Environmental Health and Safety: 358-2228

Grounds Department: 358-2702

Plumbing/Mechanical Supervisor: 358-2207

City of Keene Fire Department: non-emergency: 357-9861 or 357-9869; emergency: 911

City of Keene Public Works Department: 352-6550

Clean Harbors: 1-800-OIL-TANK

Fairpoint Communications: 1-888-984-1515

New Hampshire Public Utilities Commission: 603-271-2431

NH Gas: 352-1230

Public Service of New Hampshire: 1-800-468-0034

Rymes Propane: 358-2493

REFERENCES

Common Ground Alliance (CGA™) Best Practices Manual Version 7.0, March 2010:

http://www.commongroundalliance.com/Content/NavigationMenu/Best_Practices/Best_Practices_2010/BP_7.0_Final_March2010.pdf

Dig Safe: <http://www.digsafe.com/>

Excavator Manual (March 2010):

<http://www.digsafe.com/documents/Excavator%20Manual%20Feb%2018%202010.pdf>

New Hampshire Underground Utility Damage Prevention Program Adopted Rule:

<http://www.digsafe.com/documents/Adopted%20NH%20Rule%2011-7-2008.pdf>

New Hampshire Underground Utility Damage Prevention System, Section RSA 374:48

(<http://www.digsafe.com/documents/NHLAW-Nov2007.pdf>)

ATTACHMENT A



888-DIG-SAFE digsafe.com

Dig Safe Ticket # _____ Date ____/____/____ Time _____

Contr I.D. _____ Caller's Name _____ Title _____

Phone # _____ Fax # _____ Alt # _____

Email address _____ Business Hours _____ to _____

Company _____

Address _____

City _____ State _____ Zip _____

State _____ Municipality _____

(optional) Latitude _____ Longitude _____

Address/Intersection _____

Buffer Distance (Please circle): 500' 600' 700' 800' 900' 1000' 1100' 1200' 1320'

Nearest Cross St 1 _____

Nearest Cross St 2 _____

Additional Information _____

Type of Work _____

Area of Work _____

Area Premarked? Y _____ N _____

Start Date ____/____/____ Time ____:____

Excavator Doing Work _____

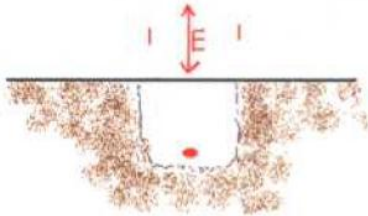
Member Companies Notified:

- There may be non-member utilities in the area that you need to notify.
- Electric and other companies may not mark lines they don't own or maintain. You may want to contact them for more information.
- The excavator is responsible to maintain marking placed by member utilities.
- This ticket will expire in exactly 30 days (from today) for tickets in ME, NH and VT; 60 days in RI.

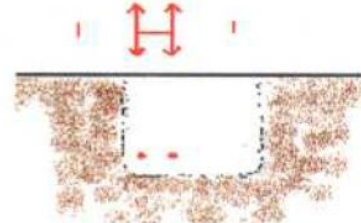
ATTACHMENT B

Utility Marking Guidelines

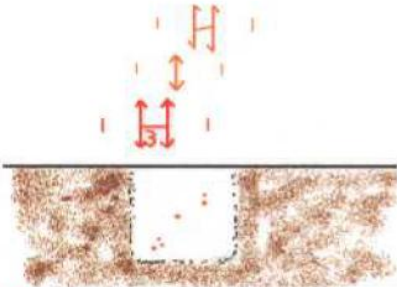
New Marking Procedures being used in New England for utilities that On Target Utility Serves. These may be used by other Utilities in New England BUT are not limiting anyone from using other marking techniques within the laws of any particular state. These markings were designed in part using CGA Best Practice Version 2.0.



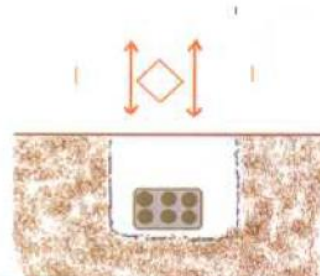
A Single Double Ended Arrow on the ground for a SINGLE cable or wire below. Corridor markings placed approx. 18" each side



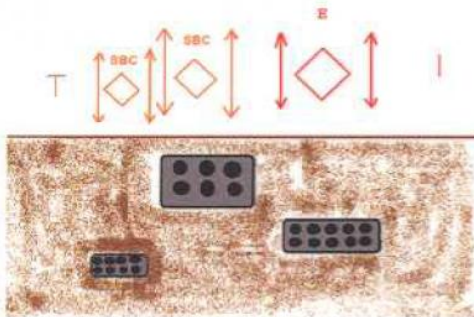
2 Single Double ended arrows with a line connecting to make an H. Will be on any markout when Multiple buried cables of Same utility are known.



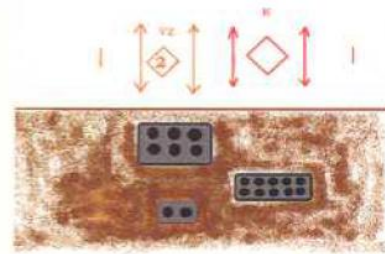
Multiple cables same trench. Staggered marks for different Utilities. Lightning bolt for CATV. Number # of cables inside H.



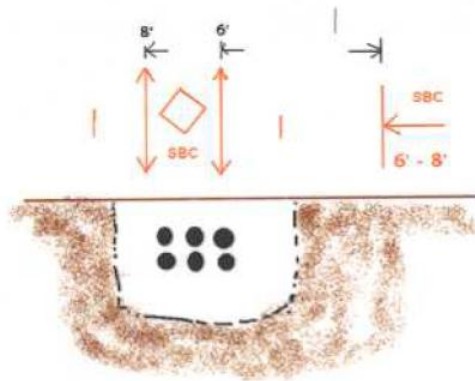
2 Single Double ended Arrows With a Diamond in between. This mark will be on any Multiple Duct Structure



Multiple Duct Structures Marked out separately with Utility ID and Proper Color Orange Telecommunication Red Electric



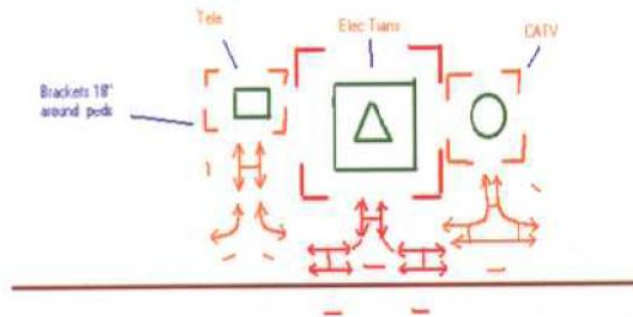
When multiple structures are known to be on top of each other the # will be placed inside the Diamond.



OFFSET Markers will be placed along roadways when Duct markings would be off pavement or destroyed during excavation.



Bracket's Outlining Manhole and Vault structures



Bracket's around Pedestals and Transformers and Poles. Markings start outside of brackets. Hand digging inside marked area.