

Underground Damage Prevention Guidelines



**Know what's below.
Call before you dig.**

811 or 1-800-272-1000

New Jersey Underground Damage Prevention Program
A Guide to Safe Excavation Practices in New Jersey

CALL FOR A FREE MARKOUT!

Published January 2011



**Know what's below.
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**New Jersey Damage Prevention
is a Shared Responsibility**

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Preface

The purpose of this document is to provide a basic understanding of responsibilities as set forth in the New Jersey Underground Facilities Protection Act (NJUFPA) concerning safe excavation practices and the protection of underground facilities.

This document is not intended as a legal reference. It does not contain the complete text of the NJUFPA and is not intended to be a guide for dealing with specific utility companies or products.

Additional copies of these guidelines are available at:

**New Jersey One Call
811 or 1-800-272-1000**

The State of New Jersey Board of Public Utilities regulates and enforces the NJUFPA.

New Jersey Board of Public Utilities
Division of Reliability and Security
2 Gateway Center
Newark, NJ 17102

<http://www.bpu.state.nj.us/bpu/divisions/reliability/>

What is New Jersey One Call?

The operator of the New Jersey one call damage prevention system, New Jersey One Call, is contracted by the State of New Jersey to serve as a link between the excavator and the facility operators.

The call center was established to collect information about upcoming excavation projects and to notify the appropriate facility operators in the area of the excavation. The facility operators mark the location of their facilities or use subcontractors to mark the facility location.

This is a free service for all excavators to use, including homeowners.

Note: NJ One Call is a call center and does not mark underground facilities.

Hours of Operation

NJ One Call is open 7 days a week, 24 hours a day for all locate requests by telephone at 811 or 1-800-272-1000.

Call Center Operation

After you have given all appropriate information to a NJ One Call representative, the information will be read back to you. Please listen carefully to verify its accuracy.

Write down the list of facility operators notified for the markout request so you can verify their response on the job site.

You will be given a nine digit markout request confirmation number or ticket number. Please keep this number for your records and at the job site.



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Locate Request Information

There are three (3) ways to request a markout.

1. Call 811 or 1-800-272-1000
2. Fax-A-Locate (contact the One Call Center for info)
3. ITIC - <http://www.nj1-call.org/itic.aspx>

Note: Visit the New Jersey One Call Center website at www.nj1-call.org for further information regarding Fax-A-Locate or Internet Ticketing.

Required Information for Markout Requests

Location Information

- Municipality and County
- Physical location of work address
- Nearest Intersection
- Other intersecting street (optional)
- Latitude/Longitude (optional)
- Block and Lot Number posted (optional)
- Type of work
- Extent of work
- How deep are you digging?
- Work begin date

Excavator Information

- Caller and phone number
- Excavator name
- Excavator phone/cell/fax/email
- Contact person and phone

Property Owner Information

- Property owner you are working for
- Mailing address
- Phone number/email
- Property type
Residential/Commercial

Call Before You Dig

- It is the LAW!
- Call 811 or 1-800-272-1000.
- You must call for a markout request at least three (3) business days before excavating.
- Do not start excavation prior to the three (3) full business days after calling in the markout request (See matrix on Page 9).
- Excavation must begin not more than ten (10) business days after calling for the markout request.
- If you do not begin excavation within ten (10) business days, the markout request is no longer valid and a new request is required.
- Markout requests are valid for forty-five (45) business days.
- Scope changes require a new locate request.
- Weekends and recognized New Jersey State holidays are not considered business days.
- Notify the One Call Center prior to using a rented equipment operator.
- Review the markout request form so you know the information you need before calling.
- Know where you are digging.
- Visit the site prior to calling for a markout request.
- Plan excavation, demolition, or blasting to avoid damage and minimize interference to underground facilities.
- White paint is optional to clearly define the dig location for spot types of excavation (signs, trees, poles, test holes, oil tank removals), and prior to notifying the One Call Center.
- Do not rely on old marks...YOU MUST CALL!
- For an emergency excavation notify NJ One Call at 811 or 1-800-272-1000. An Emergency is a sudden or unexpected occurrence that poses a threat to public safety, life, or property.



What is an Excavation or Demolition?

- Any operation 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 to a depth greater than six inches, trenching, tunneling, scraping, tree and root removal, cable or pipe plowing, fence post or pile driving and wrecking, razing, rending, or removing any structure or mass material, including utility pole removal.

Excavation does not include:

- Routine maintenance of residential property or of a residential right-of way performed with nonmechanized equipment to a depth of six inches or less. (NJAC 14:2-2.1)
- Routine use of a hand tool on a residential property or a right-of-way to remove earth for repair of a sprinkler system or to locate a property boundary marker that does not remove earth to a depth of more than six inches.
- Excavation or demolition that remains entirely within the flexible or rigid paving box within a right-of-way such that it does not disturb any material except for the pavement.
- Tilling of soil for agricultural purposes to a depth of 18 inches or less on land that has received or is eligible to receive a farmland assessment under the New Jersey Farmland Assessment Act, N.J.S.A. 54:4-23.1 et seq.
- Routine landscaping activities with mechanized equipment that are intended to cut only vegetation including lawn edging and de-thatching.

Safe Excavating Practices

- Before beginning excavation walk through the site to familiarize yourself with the markings and locations of underground facilities.
- Observe and preserve facility markings.
- Hand dig within two feet of any underground facility to locate underground facilities before operating any mechanized equipment.
- When an excavation crosses underground facilities, hand dug test holes should be used to expose the facilities at the crossing point; this also applies to trenchless installations, such as boring or drilling.
- If an on-going excavation associated with the original request will exceed 45 business days, obtain a new request at least three full business days before the original request expires.
- Use reasonable care during excavation or demolition to avoid damaging underground facilities.
- Pay special attention to any direction changes that underground facilities may take.
- Make sure that everyone involved in your excavation is aware of any offset markings that have been established, any marks that have been compromised, or any other information regarding underground facility locations.
- Throughout the excavation or demolition, the excavator must provide support for facilities in accordance with general accepted engineering practices and maintain physical support during excavation and backfilling. Support specifications should be reviewed with the facility operator.



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Dig with Care

- Use care when excavating around underground facilities with any type of equipment.
- Do not assume that underground facilities are at a certain depth.
- Underground facilities may have been installed at a prescribed depth but erosion or grade changes may have caused the facilities to have a shallow or deep cover.
- If after a diligent search, the excavator is unable to determine the location of underground facilities, the Facility Operator or the New Jersey One Call Center should be notified.
- If the excavator finds an unmarked or unknown facility, notify the New Jersey One Call Center and contact the Facility Operator, if known
- For excavations parallel to underground facilities, test holes should be dug approximately 20ft. apart to verify facility location.
- When excavating close to an underground facility, the excavator should have a spotter to assist and guide the excavation equipment operator.



Respect the Marks

- If the excavation causes the removal or disturbance of facility markings, establish offset marks in order to maintain a reference point for the underground facilities.
- Do not put spoil piles over facility markings. Avoid driving machinery over stakes and flags. Paved areas should also be periodically swept so marks remain visible.
- If marks have faded or have been compromised to the point where proper and safe excavation is no longer possible, request a new ticket and wait three (3) business days before continuing excavation.
- You are responsible for maintaining the underground facility markings.

TIMEFRAME MATRIX											
MON	TUES	WED	THUR	FRI	SAT	SUN	MON	TUES	WED	THUR	FRI
CALL	MARK OUT	MARK OUT	MARK OUT	DIG							
	CALL	MARK OUT	MARK OUT	MARK OUT	DIG	DIG					
		CALL	MARK OUT	MARK OUT	*	*	MARK OUT	DIG			
			CALL	MARK OUT	*	*	MARK OUT	MARK OUT	DIG		
				CALL	*	*	MARK OUT	MARK OUT	MARK OUT	DIG	
					CALL	*	CALL	MARK OUT	MARK OUT	MARK OUT	DIG
						CALL	CALL	MARK OUT	MARK OUT	MARK OUT	DIG

New Jersey State Holidays

New Years Day
Martin Luther King Jr.'s Birthday
President's Day

Good Friday
Memorial Day
Independence Day

Labor Day
Columbus Day
Election Day

Veteran's Day
Thanksgiving Day
Christmas Day

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Guide to Utility Marks

- Underground facilities shall be marked using the current color codes. (see chart below)
- The type of facility shall be noted by appropriate letter designation with at least three (3) markings at no more than 25ft intervals.
- Off-set marks may be used when there is a likelihood that the markings may be destroyed if placed directly over the facilities.
- To avoid placing paint, 8" whiskers may be used on decorated gravel, stone, or pavers.

COLOR CODE CHART FOR MARKING UNDERGROUND UTILITY LINES

	ELECTRIC
	GAS-OIL-STEAM
	COMMUNICATION CATV
	WATER
	SEWER
	PROPOSED EXCAVATION

Steps to Take in the Event of a Damage

- Any damage caused or discovered to natural gas, liquid petroleum, or any hazardous liquid facilities, underground facilities, must be immediately reported to 911 in addition to the facility operator.
- All other damages are to be reported to the facility operator and New Jersey One Call Center at 811 or 1-800-272-1000.
- Take care not to damage the protective coating or tracer wire of any facility. If you do, leave the damaged facility exposed and contact the facility operator.
- You should keep emergency contact information of the facility operators on hand.
- If you do not know who owns the facility, call New Jersey One Call and they will send a message to the facility operators.

Damages to Natural Gas, Liquid Petroleum, or Hazardous Liquid Facilities:

- Call 911 immediately
- Call the facility operator immediately thereafter to report the damage
- Call the New Jersey One Call Center at 811 or 1-800-272-1000.
- Stop all work and evacuate the site
- Do not create a spark or ignition source.
- Keep the public and traffic away.
- Tape, rope, or secure the area.
- Stay upwind of blowing gas.
- Do not try to fix the damaged facility
- Do not attempt to extinguish a natural gas fire unless it is an immediate hazard to life; you may cause an explosion.



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Steps to Take in the Event of a Damage

Damages to Electric Facilities:

- Call the facility operator
- Contact the New Jersey One Call Center at 811 or 1-800-272-1000.
- Stop work immediately and warn all persons in the area that the ground - and any object near the dig area, excavator, and equipment - may be energized.
- Tape, rope, or secure the area.
- The excavation equipment operator should remain on the mechanized equipment.
- Personnel on the ground and near the excavating equipment or point of contact should remain still with both feet together.
- Do not touch the excavating equipment, structures, or materials near the point of contact.
- Evacuate the excavating equipment and the area near the point of contact only after an official from the facility operator has deemed the area safe.
- If immediate evacuation is required due to the threat of life, fire, explosion, or other hazard: Jump, do not step, clear of the equipment and land on both feet, Move a safe distance (at least 25-30ft) away using short hops or shuffling steps to keep both feet together at all times, and do not take normal walking steps.
- Do not resume work until an official from the electric facility operator has deemed the area safe.

Steps to Take in the Event of a Damage

Damages to Telephone, Cable TV, or Fiber Optics:

- Call the facility operator.
- Contact the New Jersey One Call Center at 811 or 1-800-272-1000.
- Stop work immediately.
- Tape, rope, or secure the area.
- Move a safe distance away from the damaged facility
- Do not view broken fiber optic cables with any optical instruments.
- Do not examine or stare into broken or severed fiber optic cables.

Damages to Water and Sewer:

- Call the facility operator
- Contact the New Jersey One Call Center at 811 or 1-800-272-1000.
- Evacuate the area immediately and keep people away. Leaking water can fill a trench quickly making escape extremely difficult.
- Do not close valves in order to stop flooding. Closing the wrong valve may affect fire flows and/or lead to possible contamination of potable systems.
- Be careful of damaged high-pressure water lines because even the slightest scratch or vibration can cause pipelines to break.
- Move carefully around trenches with wet walls. Wet soil can easily cave in and cause suffocation.
- Avoid contact with wastewater. Do not wade in or work around wastewater.
- Sewer gas is flammable; avoid open flames or anything that might be an ignition source or start a fire.
- Contact the facility operator immediately to report the condition.



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Gas Leak Recognition and Response

A gas leak may be recognized by smell, sight or sound.

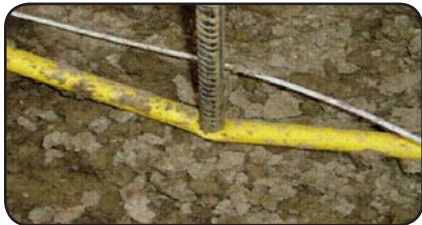
Smell: Natural gas is colorless and odorless. A distinctive pungent odor is added as a safety measure but can not always be detected.

Sight: 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.

Sound: Depending on the pressure in the damaged facility, you may hear an unusual noise like roaring, hissing, or whistling. Not all damaged gas facilities will make noise.

What to do if you suspect a gas leak:

- Move to a safe environment
- Call 911
- Contact the facility operator
- Provide the exact location, including cross streets.
- Let them know of any construction or digging activities in the area.
- Do not smoke or operate electrical switches, equipment, or appliances as they may produce a spark that could ignite the gas and cause an explosion.
- Do not assume someone else will report the condition.



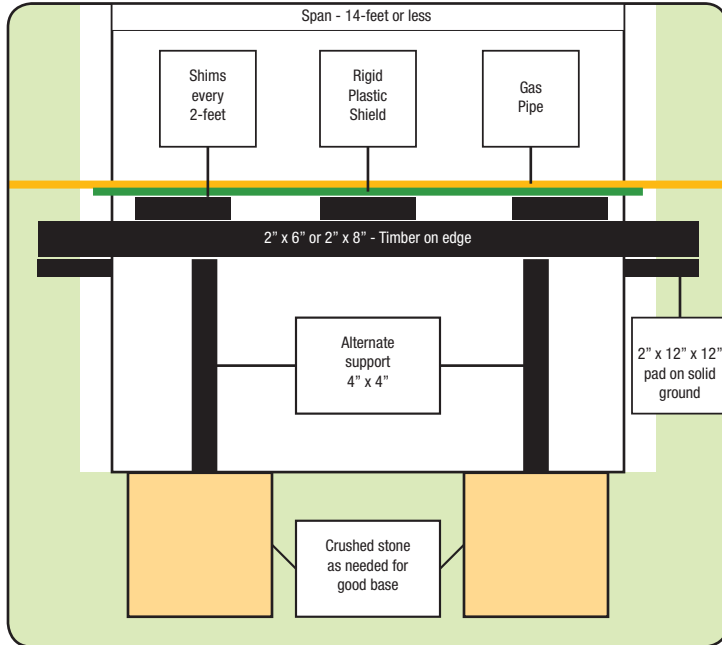
Supporting Gas Facilities

- Gas facilities that are exposed or in the dig area must to be supported and protected.
- Shoring or shielding to keep soil from caving in or collapsing should be used to protect gas facilities within the dig area.
- Good backfill practices and proper compaction is required to ensure that underground facilities are not damaged as the soil settles.
- A professional engineer should be retained to design the shoring, shielding, and support systems.
- Care should be used when installing and removing shoring and shielding. If shoring is used to protect facilities, it may be best to leave the shoring in place after work is completed.
- If underground facilities may be undermined during excavation, soil above the facilities should be removed to reduce the weight on the facility.
- Support is generally not required on steel service pipe when the trench width is less than 5 feet.
- All plastic services, regardless of trench width, are to be supported and protected by rigid plastic shield.
- Refer to the typical blocking and support for gas facilities perpendicular to trench excavations and to the Timber Size per Trench Width diagrams on the following pages for examples of proper support.

Note: The use of these methods does not relieve the excavator or other agency of responsibility for any damage to gas facilities. Consult a professional engineer to insure the work being conducted will not damage existing underground facilities.

Supporting Gas Facilities

Typical example of blocking support for gas facilities perpendicular to trench excavation.



Note: For specific support design consult the gas utility company

Supporting Gas Facilities

SUGGESTED TIMBER SIZE PER TRENCH WIDTH (ALWAYS CONSULT WITH A PROFESSIONAL ENGINEER)

Facility Size and Kind	4' - 6' Width	7' - 10' Width	11' - 14' Width
All Plastic *	2' x 6'	(2)- 2' x 6'	(2)- 2' x 6'
1-1/4', 2', 3', & 4' Steel	2' x 6'	(2)- 2' x 6'	(2)- 2' x 6'
6" & 8" Steel	---	(2)- 2' x 6'	(2)- 2' x 8'
6" & 8" Cast Iron	2' x 6'	(2)- 2' x 6'	(2)- 2' x 8'

Note:

* Plastic requires support down to trenches 2' wide

1. Sizes 10" and above and/or trench widths greater than 15' require special engineering consideration.
2. Mains and services running parallel to trench excavations require special engineering considerations.
3. Excavation in unstable soil requires special blocking.

Note: For specific support design consult the gas utility company

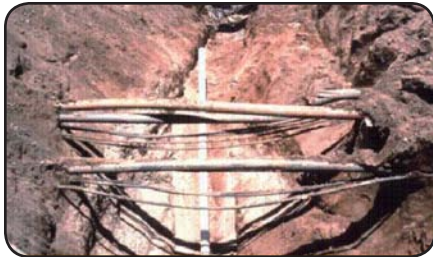


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Suggestions and Reminders

- Design and pre-plan to avoid underground facilities.
- Consider limiting the markout scope or taking a phased approach to the requests.
- Use white paint especially for spot excavations. Remember that excavation can only take place inside the white paint area.
- Visit the New Jersey One Call web site at www.nj1-call.org for specific information and guidance on requesting markouts.
- Develop working relationships with facility operators.
- Know what the facility marks mean. If you have questions about excavating near underground facilities, contact the facility operator.
- Consider incorporating the material in this booklet into your written operating procedures.
- Take advantage of additional references and resources to develop safety standards and damage prevention action. Other contractors and safety organizations may provide additional relevant information.
- Always retain a professional engineer to design shoring, shielding, and support structures.
- If there are concerns that underground facilities cannot be safely protected during excavation, notify the utility owner to arrange for the relocation or temporary suspension of service.



Other References

- New Jersey Board of Public Utilities
<http://www.state.nj.us/bpu>
- New Jersey One Call
<http://www.nj1-call.org>
- Common Ground Alliance
<http://www.commongroundalliance.com/>
- OSHA
<http://www.osha.gov>
- National Safety Council
<http://www.nsc.org>
- USDOT—PHMSA Office of Pipeline Safety damage prevention
<http://ops.dot.gov/init/prevent/damage.htm>
- Excavations
<http://www.osha.gov/doc/outreachtraining/htmlfiles/excavate.html>
- Excavation Safety
http://www.worksafesask.ca/topics/specific_hazards/safety/trenching_excavation.html
- National Institute for Occupational Safety and Health
<http://www.cdc.gov/niosh/homepage.html>
- National Transportation Safety Board
<http://www.nts.gov>

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Common
Ground
Alliance



Building Your Quality of Life

