

**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 2020



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

**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.

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

Additional information can be found at:

New Jersey One Call
811 or 1.800.272.1000
www.nj1-call.org



The State of New Jersey Board of Public Utilities
(regulates and enforces the NJUFPA)
www.bpu.state.nj.us



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NJ UNDERGROUND FACILITY PROTECTION ACT

48:2-74. Findings, declarations, determinations

The Legislature finds and declares that damage to underground facilities caused by excavation and the discharge of explosives poses a significant risk to public safety; that such damage to underground natural gas facilities poses a substantial risk to public safety; and, that the implementation of a comprehensive One Call Damage Prevention System can substantially reduce the frequency of damage caused by these activities.

The Legislature therefore determines that it is in the public interest for the State to require all operators of underground facilities to participate in a One Call Damage Prevention System and to require all excavators to notify the One Call Damage Prevention System prior to excavation or demolition. The Legislature further determines that the Board of Public Utilities is the appropriate State agency to designate the operator of, and provide policy oversight to, the One Call Damage Prevention System and enforce the provisions of this act.

48:2-87. Illegal excavation; disorderly persons offense, third degree crime

Any person who knowingly engages in an excavation without:

- a. First using the One Call Damage Prevention System to determine the location of underground facilities in the area being excavated; or
- b. Heeding appropriate location information or markings established by any operator; or
- c. Otherwise complying with the provisions of this act; is guilty of a disorderly persons offense. If, because of the violation, damage occurs to an underground facility resulting in death, serious bodily harm, or actual damage to property or loss of service revenue exceeding \$50,000, or damage occurs to an underground hazardous liquid pipeline facility resulting in the release of more than 50 barrels of product, the person shall, upon conviction, be guilty of a crime of the third degree.

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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 operator. The New Jersey One Call Center does NOT mark underground facilities.

This is a free service for anyone to use including homeowners.

Hours of operation

New Jersey One Call Center is open 24 hours a day, 7 days a week.

There are three ways to request a markout:

1. ITIC – www.nj1-call.org/itic
2. Call 811 or 1-800-272-1000
3. Fax-A-Locate (contact the New Jersey One Call Center for information).

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
- One site contact person and phone property owner information
- Property owner working for
- Mailing address
- Phone number/email
- Property type: residential/commercial/industrial



CALL BEFORE YOU DIG!







CALL BEFORE YOU DIG

- You must call for a markout request at least three business days before excavating.
- DO NOT start excavating prior to three business days.
- Excavation must begin within 10 business days of calling for the markout request.
- DO NOT begin excavation after 10 business days have passed because the mark out request is no longer valid and a new request is required.
- Markout requests are valid for 45 business days if excavation began before 10 business days.

Remember...

- Scope changes require a new markout request.
 - Do not rely on old marks...YOU MUST CALL!
 - All excavators must have their own markout request.
 - Where appropriate, white paint can be used to clearly identify the perimeter of a planned excavation or demolition, prior to notifying the One Call Center.
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For an EMERGENCY EXCAVATION notify New Jersey One Call Center at 811 or 1-800-272-1000.

Any condition constituting a clear and present danger to life, health, or property – caused by the escape of any material or substance transported by means of an underground facility or interruption of a vital communication or public service – that requires immediate action.



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WHAT IS AN EXCAVATION OR DEMOLITION?

By definition:

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 non-mechanized 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 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 dethatching.





CALL BEFORE YOU DIG!



SAFE EXCAVATING PRACTICES

To ensure safety, follow these guidelines:

- 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 dig test holes 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 routine 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 generally 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 20 ft. 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.



CALL BEFORE YOU DIG!

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 routine ticket and wait three business days before continuing excavation.
- You are responsible for maintaining the underground facility markings.

TIME FRAME 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
M. Luther King Jr.'s Birthday
Lincoln'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 markings at no more than 25-foot intervals.
- Off-set marks may be used when there is 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
	TEMPORARY SURVEY MARKINGS
	PROPOSED EXCAVATION



CALL BEFORE YOU DIG!



STEPS TO TAKE IN THE EVENT OF DAMAGE

Damage 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 do 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.



Remember...



- 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.
- 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.



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STEPS TO TAKE IN THE EVENT OF DAMAGE

Damage to electric facilities:

- Call the facility operator.
- Contact 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 25-30 ft.) 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.



CALL BEFORE YOU DIG!





STEPS TO TAKE IN THE EVENT OF DAMAGE

Damage to telephone, cable TV or fiber optics:

- Call the facility operator.
- Contact 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.

Damage to water and sewer facilities:

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- Call the facility operator.
 - Contact 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 cause 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 is usually recognized by SMELL, SIGHT or SOUND.

SMELL: Natural gas is colorless and odorless. A distinctive “rotten egg” odor is added as a safety measure.

SIGHT: White cloud, mist, fog, or bubbles in standing water or blowing dust. Vegetation that appears to be dead or dying for no apparent reason.

SOUND: Roaring, hissing, or whistling.

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 the operator know of any construction or digging activities.
- **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 that someone else will report the condition.



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SUPPORTING GAS FACILITIES

- Gas facilities that are exposed or in the dig area must 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 the underground facilities are not damaged as the soil settles.
- A professional engineer should be retained to design the shoring, shielding, and the 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 is less than 5 ft.
- 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.

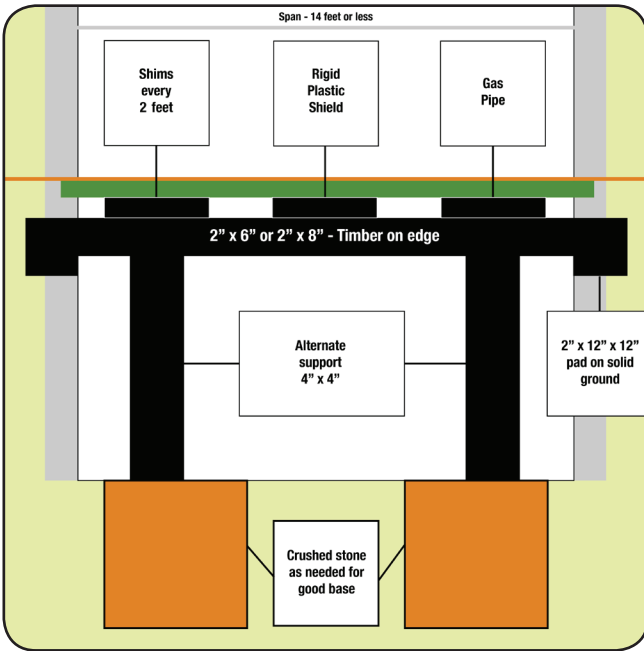


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SUPPORTING GAS FACILITIES

TYPICAL EXAMPLE OF BLOCKING AND SUPPORT FOR GAS FACILITIES PERPENDICULAR TO TRENCH EXCAVATION.



Note: For specific support design, consult the gas utility company



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SUPPORTING GAS FACILITIES

SUGGESTED TIMBER SIZE PER TRENCH WIDTH

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 using 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.
- Develop working relationships with facility operators.
- Know what the facility marks mean. If you have questions, contact the facility operator.
- Consider incorporating the material in this booklet into your written operating procedures.
- 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 facility operator to arrange for the relocation or temporary suspension of service.



CALL BEFORE YOU DIG!



OTHER REFERENCES

- New Jersey Board of Public Utilities
www.state.nj.us/bpu
 - New Jersey One Call
www.nj1-call.org
 - Common Ground Alliance
www.commongroundalliance.com
 - OSHA
www.osha.gov
 - Trenching and Excavation Safety
www.osha.gov/Publications/osha2226.pdf
 - National Safety Council
www.nsc.org
 - USDOT—PHMSA Office of Pipeline Safety
www.phmsa.dot.gov
 - National Institute for Occupational Safety and Health
www.cdc.gov/niosh
 - National Transportation Safety Board
www.nts.gov
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NOTES



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