Facilities & Auxiliary Services Procedure

Utility Stakeout Procedure
FOM-0011.01

1.0 Purpose and Scope:

The purpose of this procedure is to ensure the University of Delaware Facilities & Auxiliary Services compliance with applicable sections of the Delaware Underground Utility Damage Prevention and Safety Act, the Utilities Service Protection Center of Delmarva, Inc. (commonly known as “Miss Utility”) information guide, and existing University of Delaware procedures. The goal of the procedure is to provide a safe work environment for the public, prevent damage to University of Delaware property, and to ensure timely response to Miss Utility requests. The University of Delaware places a high value on the esthetics of the campus. As such marking excavation areas and utilities in high visibility and high traffic areas (i.e. walkways, the Green, building entrances, major thoroughfares, etc.) should be minimized while providing necessary information for safety and elimination of property damage. Additionally, requests in high visibility areas should only be marked with paint for imminent excavations. (Note: University of Delaware Network Services has its own membership with the Utilities Service Protection Center of Delmarva, Inc. and as such is not administratively governed by this procedure. However, Network Services has agreed to abide by the marking standards specified herein.)

2.0 Definitions:

2.1 Log – a log of Miss Utility requests that includes (among other data) the date and time received and the date and time a response was issued.

2.2 Miss Utility – Utilities Services Protection Center of Delmarva, Inc.

2.3 Paint – paint, spray paint, or marking chalk

2.4 Stakeout – a request to mark-out the location of underground utilities and the process used to mark them.

2.5 Stakeout Shops – all shops that potentially have underground utilities. The Facilities & Auxiliary shops falling into this group are Electric, UPS, HVAC, and Plumbing. In the event that an excavation request crosses into an FP&C project area, FP&C will be considered a stakeout shop.
2.6 Types of requests

2.6.1 Emergency Locate Request – A request receive to support an emergency. Emergencies exist ONLY when one or more of the following conditions exist:

2.6.1.1 The condition poses a clear and present danger to life, health or property by reason of escaping gas or petroleum products, exposed or broken wires, other breaks or defects in a utility line.

2.6.1.2 The excavation is required to repair a service outage.

2.6.1.3 Excavation is required in order to prevent property damage.

2.6.1.4 An unstable condition exists which may result in any of the above listed conditions.

2.6.2 Routine Locate Request – These are routine stakeout requests.

2.6.3 Insufficient Notice Locate Request

2.6.3.1 A request to identify utilities with less than a two (2) working day notice, but otherwise can not be classified as an emergency.

2.6.4 Request for Design Information

2.6.4.1 Requests for information as to the approximate location and type of utilities. Responses may be in the form of detailed drawing markup unless otherwise specified.

2.7 University – the University of Delaware

2.8 Utility Operator – the firm, corporation, municipality, etc. that furnishes or transports materials or services by means of a utility line. For example, the University is the Utility Operator for steam lines, electrical distribution, plumbing, sprinklers, UD networking, chilled water, etc.

3.0 Responsibilities:

3.1 Director – Facilities Maintenance and Operations

3.1.1 The Director – Facilities Maintenance and Operations or their designee is responsible for the administration of this procedure.

3.2 Contractor/Excavator

3.2.1 Notify the Miss Utility notification center two (2) working days (excluding weekends and holidays) and no more than 10 days prior to any proposed excavation. (Note Paragraph 3.2.3)
3.2.2 Accurately identify the proposed areas of excavation by including the following information:

3.2.2.1 State, County, City or Town, and Road or Street address
3.2.2.2 Nearest intersecting street or road
3.2.2.3 Direction from intersection
3.2.2.4 Correct dimensioning from nearby landmarks. Provide a dimensioned location map or sketch if at all possible.
3.2.2.5 Side of road (north, east, south, west)
3.2.2.6 Page, map number and grid from county map book
3.2.2.7 Type of work
3.2.2.8 Mark the areas of proposed excavation using white stakes, white flags, or white paint when practical as shown in Attachment A. This is a prerequisite to submittal of the excavation/location request. Note: Care is to be taken if marking with paint, to minimize disfigurement of University property. Mark only as necessary to describe the area of excavation.

3.2.3 After approval, hand-dig test holes to locate utilities where apparent conflict is present, prior to using mechanical excavators. On University property no excavation will be permitted until all stake-out requests have been returned.

3.2.4 If an underground facility utility is damaged, follow the damage reporting requirements of section 4.

3.2.5 The contractor must ensure the excavation permits being used are valid each day prior to starting or restarting an excavation.

3.2.6 Be aware that both utility operators and the University have natural gas lines on the premises.

3.3 Utility Operator

3.3.1 Determine involvement and locate, as accurately as possible, all existing utilities in the defined area.

3.3.2 Identify excavation location boundary marking problems to the Operations Center.

3.4 Operations Center

3.4.1 Periodically during the day checks "Miss Utility" printer to see if any "locates" have been received.

3.4.2 Makes an initial determination whether or not a Miss Utility request affects University property.
3.4.3 Prepares and processes Stakeout Service Requests for all requests affecting University property.

3.4.4 Refers all stakeouts promptly to all stakeout shops.

3.4.5 Maintains a log of incoming Miss Utility notifications and University responses.

3.4.6 Notifies appropriate managers and directors of overdue responses daily.

3.4.7 Assists Operations and Maintenance shops with submittal of requests to Miss Utility as requested.

3.4.8 Communicates stakeout request problems such as excavation boundary marking with the excavator.

3.5 Facilities Projects & Construction

3.5.1 Ensures project managers and construction companies comply with this procedure.

3.5.2 Project managers perform all functions of a stakeout shop for excavations crossing into construction project areas. This ensures that new utilities are given appropriate consideration in these areas.

3.5.3 Generates as-built drawings of underground utilities and maintains control of construction areas until as-built drawings of the underground utilities in the area are completed.

4.0 Instructions:

4.1 Damage Reporting

4.1.1 If an underground facility utility is damaged:

4.1.1.1 Call 911 if a dangerous condition exists.

4.1.1.2 Ensure immediate safety to the public.

4.1.1.3 DO CALL the utility operator and notify them of the damage.

4.1.1.4 DO NOT try to repair it.

4.1.1.5 DO NOT try to hide the damage.

4.1.1.6 DO NOT leave the site until a representative of the utility operator arrives.

4.2 Timeliness of processing

4.2.1 Routine locate requests must be received, processed, marked out, and returned within two (2) business days.

4.2.2 Insufficient notification requests should be received, processed, marked out, and returned as soon as possible if manpower permits. Otherwise, they must be received, processed, marked out, and returned within two (2) business days.
4.2.3 Emergency notification requests must be received, processed, and marked out immediately. This type of excavation is going to take place quickly and it is in the Universities interest to respond immediately to prevent damage.  

4.2.3.1 All groups are expected to respond to emergency notification requests without delay.

4.3 Processing Miss Utility requests  

4.3.1 It is important to understand that prompt responses to Miss Utility excavation notifications protect the University utilities from damage. By following the process we help ensure the use of the Miss Utility process and help minimize damage to property.

4.3.2 The Operations Center receives all Miss Utility requests. The station will be checked several times daily (work days) for new requests. As received the requests will be logged in the stakeout log (Attachment B), an initial determination of the request on University property and operations will be made, and, if there is an impact or potential impact on University property, a Stakeout (STO) Service Request will be issued to the following stakeout shops on purple paper:

- **4.3.2.1.1** Electric
- **4.3.2.1.2** UPS (steam)
- **4.3.2.1.3** HVAC (chilled water)
- **4.3.2.1.4** Plumbing (water, sewer, UD natural gas)
- **4.3.2.1.5** Other – used for other potential Service Request recipients (i.e. FP&C for excavations in construction areas).

4.3.3 The Operations Center also receives emergency Miss Utility requests. In addition to normal processing the Operations Center will contact the stakeout shops immediately by phone or radio.

4.3.4 If the excavation area is not clearly marked and supplied excavation area sketches or information is not clear, the stakeout shops will notify the excavator immediately to obtain clarifications. If the requests for additional information are not fulfilled promptly (i.e. with adequate time to meet the stakeout required date and time), the shop locator should notify the excavator the request is going to be rejected and
notify the Operations Center of the rejection. (Note: This should be a last resort.)

4.3.5 If the area is clearly marked or identified, the stakeout shops will proceed with stakeout markings. This includes review of all available information and physically marking the utilities in the area. Marking utilities will be done in accordance with Attachment C and the following:

4.3.5.1 Mark the utilities only in the specified area plus and additional five foot surrounding area.

4.3.5.2 If marking with paint, use only the minimum required to locate subject utilities.

4.3.5.3 Use offsets, tape, or other approved methods to avoid using paint on patios, brickwork, or walks.

4.3.5.4 When marking on concrete or blacktop is unavoidable use small (less than 2 inch diameter) dots widely spaced (4 foot minimum).

4.3.5.4.1 Gross over marking must be avoided (see Attachment D).

4.3.5.4.2 Offset marking on grass is preferred.

4.3.5.5 Do not mark on plants, bushes, or shrubs.

4.3.5.6 When painting in a planting bed, brush away a thin layer (1/2 to 1 inch) of mulch prior to painting.

4.3.6 If the shop locator is unable to meet the time requirements of the request, they shall contact the excavator for an extension (either 24 or 48 hours). Once agreement is obtained the Operations Center will be notified to ensure the request is properly tracked and statused.

4.3.7 The stakeout shops will complete the STO Service Requests promptly. Completed STO Service Requests shall be returned to the Operations Center by the end of the shift in which the stakeout was completed. These must include the following:

4.3.7.1 No involvement or clear (no facilities in the area).

4.3.7.2 Unable to meet the time schedule.

4.3.7.3 Unable to locate due to insufficient or inaccurate information.

4.3.7.4 Utilities in the area have been marked and the method(s) used.
4.3.7.5 Plumbing will also mark UD owned natural gas lines or clearly note on the stakeout request “no UD natural gas lines present”.

4.3.8 As the Operations Center is notified of extensions (24 or 48 hours):

4.3.8.1 The log will be updated to ensure requests due dates are properly tracked.

4.3.8.2 The Miss Utility database will be updated to reflect the change.

4.3.9 The Operations Center will complete the stakeout log. Once all stakeout shops have responded the Operations Center will proceed with updating the Miss Utility database with the results. In the event that the initial determination indicates that there is no impact on University property or operations, this will be noted in the log and the Miss Utility database will be updated as ‘clear’.

4.3.10 Excavation boundary clarifications

4.3.10.1 If the Operations Center has been notified by a shop locator that a stakeout request does not provide the detail necessary to identify the excavation area and the excavator is unresponsive:

4.3.10.1.1 The Operations Center will note the problem in the stakeout log.

4.3.10.1.2 The Operations Center will notify Miss Utility the stakeout is rejected.

4.4 From time to time Miss Utility requests are processed that request stakeouts to support design concepts. For the most part these can be sketched onto existing drawings. However, in some cases the underground utility drawings at the University are inadequate. In these cases the stakeout shops will arrange with FP&C to have the underground utility drawings marked up as the utilities are being located. FP&C will provide a person to physically markup the underground utility drawings as the stakeouts are being performed.

4.5 Marking Utilities

4.5.1 Determine involvement and locate, as accurately as possible, all existing utilities in the defined area. Underground utilities will be marked with stakes, flags, or paint according to Table 1.
<table>
<thead>
<tr>
<th>Utility Type</th>
<th>Miss Utility Color Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric</td>
<td>Safety Red</td>
</tr>
<tr>
<td>Gas</td>
<td>High Visibility Safety Yellow</td>
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<tr>
<td>Petroleum</td>
<td>High Visibility Safety Yellow</td>
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<tr>
<td>Steam</td>
<td>High Visibility Safety Yellow</td>
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<tr>
<td>Tele-communications</td>
<td>Safety Alert Orange</td>
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<tr>
<td>CATV</td>
<td>Safety Alert Orange</td>
</tr>
<tr>
<td>Water</td>
<td>Safety Precaution Blue</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Safety Green</td>
</tr>
</tbody>
</table>

Table 1 – Utility Color Codes

4.5.2 Mark utilities only within the proposed excavation area plus five feet. If marking with paint, use only the minimum required to locate subject utilities. Do not use paint on any walkways, patios, or brickwork. Minimize the use of paint on parking lots or other surfaces. Use offset markings on lawns (or flower beds), flags, or tape to identify utilities in these areas.

4.5.2.1 Upon receipt of location request, provide a positive response within two (2) working days (i.e. excluding weekends and holidays) of the original request.

4.5.3 Provide the contractor/excavator with any additional information that will help prevent damage to facilities. This will include the methods used to stakeout the proposed excavation area (i.e. stakes, flags, paint).

4.5.4

4.6 University of Delaware excavation request submittal

4.6.1 University departments performing excavations shall contact Miss Utility (1-800-282-8555) at least two (2) working days and not more that 10 days prior to performing an excavation. (Note: excavation requests are only valid for up to 10 days from the time of the request.) For emergencies, the notification to Miss Utility shall be clearly identified as an emergency.

4.6.1.1 Contractors performing excavations for the University will be clearly directed to follow the
4.6.2 As a minimum, University departments will provide the following excavation information with their Miss Utility notification:

4.6.2.1 State, County, City, and Road or Street address
4.6.2.2 Nearest intersecting street or road
4.6.2.3 Direction (north, south, east, or west) from intersection
4.6.2.4 Correct dimensioning from nearby landmarks. Provide a location sketch.
4.6.2.5 Side of road (north, south, east, or west)
4.6.2.6 Page, map number and grid from county map book
4.6.2.7 Type of work
4.6.2.8 The proposed excavation areas will be clearly marked using white stake, white flags, or white paint when practical as shown in Attachment A. This is a prerequisite to submittal of the excavation/location request. Note: Care is to be taken if marking with paint, to minimize disfigurement of University property. Mark only as necessary to describe the area of excavation.

5.0 References:
5.1 Attachment A – Marking excavation areas
5.2 Attachment B – Stakeout Log
5.3 Attachment C – Marking Utility Do’s
5.4 Attachment D – Marking Utility Don’ts
5.5 Attachment E – University of Delaware Contact Information
5.6 Delaware Underground Utility Damage Protection Safety Act
5.7 Utilities Service Protection Center of Delmarva, Inc.

Effective Date: Sept. 4, 2007

Approved by: Brian Schuster
Attachment A - Marking excavation areas

For small excavation areas (less than 10 feet on a side or 10 feet in diameter, use either the Four Corner Method or the Radius or Arc Method. Lines and dots may be up to 2 in. except in high visibility or high traffic areas.

All stakes, flags, and lines and/or dots must be white.

All excavation areas will be marked prior to submitting an excavation notification.

Four Corner Marking

Radius or Arc Marking

Dash Line Marking
## Attachment B – Stakeout Log

<table>
<thead>
<tr>
<th>Ticket No.</th>
<th>Location &amp; Description</th>
<th>Date/Time Rec’d</th>
<th>Originator &amp; Contact</th>
<th>Original Req’d Date/Time</th>
<th>Extension Date/Time</th>
<th>EL</th>
<th>HVAC</th>
<th>PL</th>
<th>UPS</th>
<th>SR No / Date Completed by Shops</th>
<th>Resp. Code</th>
<th>Date/Time Responded</th>
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</table>
Attachment B – Stakeout Log Instructions

1. Ticket No. – Miss Utility Request Number
2. Location & Description – Request location and description
3. Date/Time Rec’d – Date the Miss Utility request was received
4. Originator & Contact – Name, company, and phone number of requestor
5. Original Req’d Date/Time – The original date and time by which a response to Miss Utility is due.
6. Extension Date/Time – Extended date and time the shop locator and excavator have agreed to.
   a.
7. SR No. / Date Completed by Shop
   a. Upper half is for the SR number
   b. Lower half is for the date the request was completed
   c. The ‘other’ column should be used for additional Service Requests that may need to be issued (i.e. FP&C for excavations in construction areas).
8. Resp. Code - Date/Time Responded – Response Code shall be entered in the upper block and the date and time that Miss Utility was sent the response.
Attachment C – Marking utility Do’s

1. Consider the UD image prior to marking an area.
2. Consider the visibility of the area to be marked.
3. Be neat and professional while marking the utilities.
4. Obtain necessary excavation clarifications and details to prevent excessive markings.
5. Use offset markings to identify utilities under walkways, patios, pavers, and other high visibility areas. Offset markings must show the distance to the underground utility.
6. Avoid over spraying paint onto pavers, patios, walkways, etc.
7. Use flags or stakes to mark areas in planting beds where paint would otherwise have to be used on vegetation.
8. Make markings clear and understandable.
9. Identify the methods used to mark areas to the requestor. For example, ensure the requestor knows that offsets were used.
10. Include line size in the marking if 12 inches in diameter or width or greater.
Attachment D – Marking Utility Don’ts

1. Do not use paint on pavers or patios.
2. Do not use paint on high visibility walkways.
3. Do not use paint on buildings and structures.
4. Do not use paint on high visibility manhole covers, storm drain inlets, etc.
5. Do not use paint on vegetation in planting beds such as ivy.
6. Do not use solid, continuous paint lines.
7. Do not use ANY paint if the request is for information/design concept purposes only.
## Attachment E – University of Delaware Contact Information

<table>
<thead>
<tr>
<th>Department</th>
<th>Contact</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Operations and Maintenance</td>
<td>Brian Schuster</td>
<td>831-6097</td>
</tr>
<tr>
<td>Facilities Operations Center</td>
<td>John Schwander</td>
<td>831-1141</td>
</tr>
<tr>
<td>Facilities Project and Construction</td>
<td>Dave McNamara</td>
<td>831-1746</td>
</tr>
<tr>
<td>Grounds</td>
<td>Mike Loftus</td>
<td>831-2797</td>
</tr>
<tr>
<td>Grounds</td>
<td>Roger Bowman</td>
<td>831-1816</td>
</tr>
<tr>
<td>Network Services</td>
<td>John Hall</td>
<td>831-3789</td>
</tr>
</tbody>
</table>