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## PHOTOGRAMMETRIC MAPPING PROCEDURES

### GENERAL MAPPING PRINCIPLES

The amount and level of planimetric detail is a function of the scale of the mapping. Table 1 presents a general outline of the type of planimetric detail collected at different mapping scales. One can see that the resolution of the detail shown on the map will become increasingly generalized as the scale of the map gets smaller. One general rule is that if there is any doubt as to whether or not a feature should be collected, measure it. It is always easier to remove a feature in the editing stage than to have to reset the model to collect it later.

| MAP SCALE        | 1" = 20'                                    | 1" = 50' | 1" = 100'                    | 1" = 200'                 | 1" = 400'       |
|------------------|---|----------|------------------------------|---------------------------|-----------------|
| Contour Interval | 0.5'  | 1'       | 1'                           | 2'                        | 4'              |
| Large Buildings  | All buildings over 40' x 40' drawn to scale |          |                              |                           |                 |
| Small Buildings  | Drawn to scale                              |          |                              | Located & Symbolized      |                 |
| Roads            | All roads drawn to scale                    |          |                              |                           |                 |
| Railroads        | Tracks located & drawn to scale             |          |                              | Shown by symbol           |                 |
| Hydrograph       | All water drawn to scale                    |          |                              | Centerlines, small creeks |                 |
| Bridges          | All bridges drawn to scale                  |          |                              |                           |                 |
| Dams             | Drawn to scale                              |          |                              |                           | Shown by symbol |
| Culverts         | Drawn to scale                              |          |                              |                           | Shown by symbol |
| Fences           | Drawn to scale                              |          |                              | Cross country fences only |                 |
| Poles            | Located & symbolized                        |          |                              | Cross country             | None            |
| Driveways        | Drawn to scale                              |          |                              | Long drives               | None            |
| Sidewalks        | Drawn to scale                              |          | Public only                  | None                      | None            |
| Trees            | Drawn to scale                              |          | Group symbolized             |                           | Large groups    |
| Fire Hydrants    | Located & symbolized                        |          | May be shown if Identifiable | Not shown                 |                 |
| Manholes         | Located & symbolized                        |          |                              | Not shown                 |                 |
| Catch Basins     | Drawn to scale                              |          |                              | Not shown                 |                 |

Table 1. Normal first order mapping procedures.

| <b>PLANIMETRIC DETAIL</b>      | <b>1" = 50'<br/>and Larger</b> | <b>1" = 100'</b> | <b>1" = 200'</b> |
|--------------------------------|--------------------------------|------------------|------------------|
| Airports and Runways           |                                |                  |                  |
| Athletic Fields                |                                |                  |                  |
| Billboards                     |                                | (7)              | (1)              |
| Borrow Pits                    |                                |                  |                  |
| Boulders and Rocks             | (5)                            | (3)              | (1)              |
| Bridges and Viaducts           |                                |                  |                  |
| Buildings                      |                                |                  | (8)              |
| Bushes and Shrubs              | (6)                            |                  | (1)              |
| Canals and Creeks              |                                |                  |                  |
| Catch Basins and Inlets        |                                | (1)              | (1)              |
| Cemeteries                     |                                |                  |                  |
| Churches                       |                                |                  |                  |
| Crib and other Retaining Walls |                                | (2)              | (3)              |
| Culverts                       |                                | (9)              | (9)              |
| Curbs                          |                                | (1)              | (1)              |
| Dams                           |                                |                  |                  |
| Ditches and Channels           |                                |                  | (4)              |
| Drains                         |                                |                  |                  |
| Drives                         |                                | (11)             | (11)             |
| Fences                         |                                | (2)              | (4)              |
| Ferry Slips                    |                                |                  |                  |
| Field Roads                    |                                |                  | (2)              |
| Flood Plains (Boundaries)      |                                |                  |                  |
| Fords                          |                                |                  |                  |
| Foundations                    |                                |                  |                  |
| Gas Pumps and Islands          |                                | (1)              | (1)              |
| Golf Courses                   |                                |                  |                  |
| Greenhouses                    |                                |                  |                  |

Table 2. New Jersey DOT level of detail to be provided at various scales.

| <b>PLANIMETRIC DETAIL</b>                                       | <b>1" = 50'<br/>and Larger</b> | <b>1" = 100'</b> | <b>1" = 200'</b> |
|---|--------------------------------|------------------|------------------|
| Guiderails and Attenuators                                      |                                | (2)              | (1)              |
| Hedges  |                                | (2)              | (4)              |
| High Tension Lines  |                                |                  |                  |
| House Trailers (Permanent)                                      |                                |                  | (8)              |
| Hydrants  |                                | (1)              | (1)              |
| Lakes and Ponds   |                                |                  |                  |
| Lamp Posts (Private)  |                                | (1)              | (1)              |
| Light Poles   |                                | (1)              | (1)              |
| Mailboxes   |                                | (1)              | (1)              |
| Manholes  |                                | (1)              | (1)              |
| Marshes and Swamps  |                                |                  |                  |
| Mines   |                                |                  | (2)              |
| Nurseries and Orchards  |                                |                  |                  |
| Parking Areas and Lots  |                                |                  | (2)              |
| Parking Meters  |                                | (1)              | (1)              |
| Patios and Porches  |                                | (1)              | (1)              |
| Piers, Wharves and Docks  |                                |                  |                  |
| Pipe Lines (Utility)  |                                |                  | (4)              |
| Poles (Utility)   |                                | (4)              | (4)              |
| Pools (Inground)  |                                |                  |                  |
| Quarries  |                                |                  |                  |
| Radio Towers  |                                |                  |                  |
| Railroads – Rails   |                                | (12)             | (12)             |
| Railroads: Switches, Signal Boxes,<br>Power Stanchions, Bumpers |                                | (1)              | (1)              |
| Rapids  |                                |                  |                  |
| Recreation Areas and Parks                                      |                                |                  |                  |
| Reservoirs  |                                |                  |                  |

Table 2 (continued). New Jersey DOT level of detail to be provided at various scales.

| <b>PLANIMETRIC DETAIL</b>                      | <b>1" = 50'<br/>and Larger</b> | <b>1" = 100'</b> | <b>1" = 200'</b> |
|--|--------------------------------|------------------|------------------|
| Rivers and Tributaries                         |                                |                  |                  |
| Roads  |                                |                  |                  |
| Road Shoulders                                 |                                | (1)              | (1)              |
| Rock Outcrop                                   |                                | (2)              | (2)              |
| Ruins  |                                |                  |                  |
| Schools  |                                |                  |                  |
| Sidewalk                                       |                                | (2)              | (1)              |
| Signs  |                                | (7)              | (3)              |
| Silos  |                                |                  |                  |
| Smokestacks                                    |                                |                  |                  |
| Springs  |                                |                  |                  |
| Steps  |                                | (10)             | (1)              |
| Storage Tank                                   |                                |                  |                  |
| Streams  |                                |                  |                  |
| Substations (Transformers)                     |                                |                  |                  |
| Towers   |                                |                  |                  |
| Traffic Lights                                 |                                | (1)              | (1)              |
| Trails   |                                |                  | (11)             |
| Transportation Terminals                       |                                |                  |                  |
| Trees (Individual)                             |                                | (5)              | (3)              |
| Trestles                                       |                                |                  |                  |
| Tunnels  |                                |                  |                  |
| Utility Valve and Meter-Caps<br>(As Specified) |                                | (3)              | (3)              |
| Walls  |                                | (2)              | (3)              |
| Waterfalls (Wells)                             |                                | (1)              | (1)              |
| Woods (Boundaries)                             |                                |                  |                  |

Table 2 (continued). New Jersey DOT level of detail to be provided at various scales.

| PLANIMETRIC DETAIL  | 1" = 50'<br>and Larger | 1" = 100' | 1" = 200' |
|---|------------------------|-----------|-----------|
| <p><b><u>FOOTNOTES:</u></b></p> <ul style="list-style-type: none"> <li>(1) Details not to be shown at this scale.</li> <li>(2) Prominent only.</li> <li>(3) Landmark only.</li> <li>(4) Cross country only.</li> <li>(5) Shown if over ten feet in diameter.</li> <li>(6) Ornamental only.</li> <li>(7) Large only.</li> <li>(8) Larger than a one car garage.</li> <li>(9) On drainage plan only.</li> <li>(10) For large public buildings only.</li> <li>(11) <u>Prominent</u>: Over one inch long at map scale.</li> <li>(12) Centerline of track only.</li> </ul> |                        |           |           |

Table 2 (continued). New Jersey DOT level of detail to be provided at various scales.

Collecting detail on the stereoplotter should be as standardized as possible. This makes it easier for the operator when compiling features. Symbols, especially those with scallops, cause problems in that if the feature is collected in the wrong direction the scallops may be incorrectly placed about the feature. Therefore, it is always a good idea to collect the data in a clockwise manner so that the software properly orients the symbol used for the feature.

### ***DTM DATA COLLECTION***

A digital terrain model (DTM) is a series of spot elevations collected at some even increment on the ground. From these elevations, a contour interpolation program can model these heights and generate contours at some predefined interval. On an analytical plotter the plotter will automatically drive to each point and the operator has the chance to place the dot on the ground, move it to another location or bypass data collection at that point. If the plotter drives to a point that is not on the ground, i.e., a roof top, it is important to either move the point or bypass it because this will incorrectly apply the contours if the building top is included in the data collection.

A disadvantage of the equalized grid placement is that important terrain points, such as high points or low points, can be missed. Therefore, it is necessary to collect additional observations within the model. These additional points are referred to as either mass points or points on a break line.

A break line is a line of terrain where there is a significant change in slope. Break lines fall on ridge lines, valleys, ditches and other natural or artificial features where there is a change in slope. The

level of significance is a function of the scale. For example, mapping at a scale of 1:400 with 1' contours could mean collecting a spot elevation at every catch basin and numerous other points in a street intersection to more closely depict the water flow in that area. At a scale of 1:4,000, these points may not have the same significance. Mass points are just general spot elevations that may be collected to more closely help the program model the elevations in the area.