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Basemap Standards

Data Collection and Drafting Procedures

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Purpose and Intended Use

The purpose of this document is to provide standards for collecting supporting electronic data for basemaps and for creating basemaps on typical Oregon Department of Transportation (ODOT) design projects, and to provide consistency throughout the department. It is the intent of this document to set standards for basemaps for both those individuals employed directly by ODOT, and private consultants doing work for ODOT under contract. Maps for reconnaissance and preliminary estimates do not need to comply with these standards. Standards for these maps will be developed, as required, by the requester.

These standards are to be adhered to by all ODOT employees involved in the process of the creation of basemaps and private consultants doing work for ODOT under contract.

As with any ODOT survey policy, deviation from the standards shall only be permitted in unusual situations, where logic and reason so dictate. Any deviation from the standards requires that the ODOT Chief of Surveys be notified and the deviation documented in the field survey narrative.

This is a living document, it may be updated often to adapt to new procedures developed in response to rapidly changing technology.

Suggested changes and any errors discovered in the document should be forwarded to the ODOT Chief of Surveys for consideration.

How to use this document

This document lists all the features ODOT currently uses to define survey data collected from the field for the purpose of constructing basemaps, and lists information related to those features. It is not necessary to go through every page of this document, but you can go directly to the feature category you are interested in for information on that feature. Under each feature chapter there is a Description, Field Procedure, Photogrammetry Procedure, and Final Product heading. Everyone should read the Final Product information for the feature they are researching. The level and symbology standards can be found in the CPDG, Volume I, Appendix H, and obtained by using ODOT's (Drafting) Menu in MicroStation.

Use of standards

The standards set forth in this document govern the creation of basemaps. Although projects

are created for specific purposes or goals and may have unique, individual requirements, perhaps requested by designers and customers, these requirements will not alter the standards set forth in this document. Features collected for a project are determined by that project's scope, therefore it may not be necessary to collect all the features listed in this document. It is only necessary to collect the features required for that project.

Digital Terrain Models

This document only applies to the development of basemaps. For the purpose of efficiency, data is collected simultaneously for use in creating basemaps and creating digital terrain models. This drastically reduces the number of measurements needed to complete a project.

References

The following is not a complete list, but for some other information on:

1. fieldnotes, refer to the ODOT 'Survey Field Note Standards' document.
2. certain feature 'types', refer to the 'Oregon Standard Drawings' document.
3. standard symbols for MicroStation V8, refer to the ODOT 'Contract Plans Development Guide'.
4. digital terrain models, refer to the ODOT 'DTM Creation Standards' document.
5. double tie procedure, refer to the ODOT 'Property Corner Ties and Strategic Points' document .
6. environmental concerns, refer to the ODOT 'Programmatic Biological Assessment (PBA)' document and refer to your contract or work request. Also, you may check with the ODOT Geo/Environmental Unit.
7. working on private property, refer to the:
ODOT Policy and Procedures Manual:
Research and Project Initiation:
Letter-Of-Entry.
and
ODOT Policy and Procedures Manual:
Locating Boundary Corners:
Public Contact.
8. marking location of underground facilities, refer to the 'Oregon Utilities Coordinating Council Standards Manual' document.

What constitutes an ODOT basemap?

A basemap is a coordinate correct (real or assumed), three dimensional (topographic) electronic representation made from surveys of topographic features (natural and man-made), vertical control (if desired), location of underground utilities, as-built drawings, and drainage studies as they exist in the field. A basemap also contains supporting information about topographic

features. Graphics for the basemap are dictated by the current ODOT Menu Standards, Contract Plans Development Guide and this document. Currently, 'Basemaps Standards' dictate that basemaps must be 'stand alone' when they are printed, or plotted. A 'stand alone' basemap must show all the necessary information on the 'hard copy' basemap without having to refer elsewhere for that information.

Basemaps in the future

ODOT is developing standards, or systems, to include all features in the 'electronic' basemap. The customers will then have the option to display and/or print any features and information they wish to see.

General 'Basemap Standards' Guidelines common to all data collection

- These standards shall not be dependent on the source of the data. It should not be necessary to know the source of the data to determine the accuracy or completeness of the data - all the data should be collected to meet the same minimum level of precision. Choose the correct tool(s) to deliver the required level of precision.
- It is vital to keep a record of the groomed and completed basemap prior to distribution to the customer.
- Contourable point and line features have valid X, Y & Z positions that are used to create a digital terrain model. These features accurately represent the surface at that point. The purpose of a digital terrain model is to create an accurate representation of any given surface.
- Contourable points may sometimes be referred to as Mass points or Data points.
- All basemap features must be displayed according to ODOT's drafting standards as portrayed in the ODOT Menu.
- You may encounter unusual situations in the field that will require you to collect the data in some logical manner and note any unique qualities of the feature and/or collection method.
- You may be entering a sensitive area when collecting data in the field. Be sure to check with the ODOT representative in charge of the project and refer to your contract or work request.
- Collecting more data than is required is not cost effective and may also be unsafe for the field people. It is vitally important that surveyors be aware of the project scope and/or be in direct communication with the designer or the customer.
- Any survey marks that need to be set at a depth greater than 12 inches will require locates

for underground facilities/utilities in that area. Locates for underground facilities/utilities are accurate within 24 inches of the outside lateral dimensions of both sides of an underground facility.

- Abbreviations noted in this document are intended for basemap use.

Positional Accuracy

- There is only one Positional Accuracy Specification for all points. This applies to both the horizontal and vertical position. It is an indication of how good any individual measurement is and should not be confused with Confidence Point Specifications. All points measured shall be within ± 0.10 ft (0.030 m) for X, Y, & Z, relative to the Control Points in the area they were collected from. Some exceptions to this may be possible on extremely rugged terrain. To achieve this with a Total Station shots should be taken no farther than ± 750 ft (230 m) from the instrument under most conditions.
- The standard spacing between all shots without regard to lines or points is 50 ft (15 m) intervals or less. Shot spacing must be close enough together that vertical separation between the ground and the triangle representing it should not exceed the Confidence Point Tolerance for that surface.
- Data for non-breakline line features need only be collected at horizontal changes, however the horizontal location of any line shall be within 0.30 ft (0.10 m) of the feature it represents. Some exceptions to this may be possible on extremely rugged terrain.

Elevations

Basemap elevations may be shown in one of 3 ways:

1. Valid, ground elevations.
2. At predetermined points on the features as described in the Features section of this document.
3. If the elevation of a feature is not valid it should be either:
 - removed
 - nulled out by changing the elevation to -99999.99 ft (-99999.999 m)
 - or zeroed out. Note: Elevations should not be zeroed out if the project is close to sea level.

Photogrammetry Differences

Photogrammetrists map from a different point of view than do surveyors on the ground. Typically, they look down and see the tops of buildings, trees, and other objects. The ground is often hidden, and points cannot always be measured on the ground. It is easy to map features

above the ground, like signals and luminaires, in their true positions. It is difficult, and time consuming, to transfer the elevations for such features to ground elevations solely for the purpose of matching the field procedures.

ODOT photogrammetrists map directly into MicroStation. MicroStation makes no distinction between contourable and non-contourable features, so we use levels to differentiate them, or separate design files. In MicroStation V8, photogrammetry, contourable or not, and mapping from other sources, can be in a single design file, with different types of work in different MicroStation models referenced to each other for a complete base map.

The difference between photogrammetric mapping and that of a ground survey may be shown in three ways:

1. With different models.
2. With unique levels.
3. With unique symbology.

Features

Arrow, Pavement Marking

Description

This refers to the white, painted directional arrows in the center of traffic lanes or in parking areas. Arrows may indicate a variety of directions.

Field Procedure

The objective is to collect the 3D position at the main point of the arrow.

Note: If the arrow is an 'Arrow, Left & Right', collect the 3D position at the point in the 'V', or crotch, where the arrow splits.

Note details (the orientation of the direction that the arrow points), as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Rotate the arrow to the direction noted. The cell origin, about which it rotated, is not the point of the arrow.

Additional information may be required by project scope:

Barrier

Description

The face is the widest part at the base, of the concrete barrier. For information on the different styles of barriers refer to the 'Oregon Standards Drawings' documentation.

Field Procedure

Collect the 3D positions at the base of the barrier where barrier intersects ground. Generally both sides of the base of the barrier are collected unless one side falls on (or close to) another collected breakline such as Edge of Pavement. These positions should be collected at the intersection of the base of the barrier and the ground.

Note the type of barrier, the side of the barrier that was shot (if only one side was collected), the breakline feature a side of the barrier may be common with, and the width of the base of the barrier (if necessary), as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Use the barrier line code at the top of the barrier. Break lines can be drawn at the base if needed to model the surface. Notes or observations can be included as notes as to width, height, etc.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label the barrier and show any special details from the field notes and/or as-built drawings.

Bench Mark

Description

A bench mark is a fixed object with a known elevation that serves as a reference point for levels.

Field Procedure

This 3D position of a bench mark is mainly collected to establish a 2D position for the bench mark and not to establish an elevation for the bench mark. The trigonometric elevation is valid as an elevation check.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Survey control stations are not generally visible in photography unless they are marked for that purpose. As such, they are not generally tied from aerial photography.

Final Product

Minimum required:

- The bench mark must be shown at the horizontal position as collected in the field, but must be shown at the published (record) elevation.

Additional information may be required by project scope, for example:

- Label:
 - ID (BM # or name).
 - Elevation, as published.
 - Type.
 - Any special details from the field notes.

Bench marks are sometimes used as references to verify that the basemap elevations and the digital terrain model elevations are the same, and to verify that the Right of Way map and the basemap were not accidentally translated or rotated.

Billboard

Description

A billboard is a large panel on which signs are posted to carry outdoor advertising.

Field Procedure

3D positions should be collected at any horizontal changes in the alignment of the billboard itself. This will require lining up the positions under the billboard itself, as the elevations will be valid ground elevations. The supporting structure of the billboard (poles, posts, concrete pads, etc.) should be collected with their appropriate feature codes.

Note billboard features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Show poles and sign board. Draw top of sign. As needed, show catwalks, luminaires, and other significant appurtenances.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes.

Bollard

Description

A bollard is a short post set in the ground to delimit an area.

Field Procedure

Collect the 3D position at the center of the base of the bollard, at ground level.

Note the type, height, diameter, and construction of the bollard.

Photogrammetry Procedure

Place the appropriate symbol at ground level and at the center of the feature, as in the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label the bollard and label with any special details from the field notes (type, height, diameter, and construction material).

Box Culvert

Description

A box culvert is a rectangular shaped, transverse drainage structure under a transportation system

Field Procedure

Collect the 3D positions at the inverts (inlet and outlet) of the box culvert. Collect any other features associated with the box culvert such as wingwalls and aprons.

Note dimensions, condition, and any other important characteristics of culvert such as end treatments, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as much of the feature as can be seen. Field survey may be necessary for culvert size, type and flow line.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label:
 - Culvert end dimensions (height and width).
 - Culvert type.
 - Flow line (invert) elevation at each end of the culvert.
 - Any special details from the field notes and/or as-built drawings.

Bridge

Description

The roadway (the part of a bridge used by vehicles) of a bridge.

Field Procedure

Collect the 3D positions on top of and at the outside edge of the bridge structure. If the edge of the bridge is visible (e.g. an expansion joint) where it crosses the road, continue collecting this line feature across the road.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with bridge number and name. Show any special details from the field notes and/or as-built drawings.

Bridge Bent

Description

A bridge bent is part of a bridge substructure. Bents are supports at the ends or intermediate points of a bridge used to retain (support) approach embankments and/or vertical and horizontal loads from the superstructure. A bent is a rigid frame commonly made of reinforced concrete, or steel, usually placed transverse to the length of a structure. An end bent is the supporting frame forming part of an abutment. Bents may be in water or on dry land.

Field Procedure

Collect the 3D positions of the bent centerline. These centerline positions are collected, if possible, at ground level at the base of the bent and at the top of the bent, but, if this is not possible, collect the positions for the bent centerline from above, on the bridge deck.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A. Bent structures are generally obscured from view. However, there may be times when mapping expansion joints, or pavement cracks, will provide needed information about the bent location.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label and show any special details from the field notes and/or as-built drawings.

Bridge Soffit

Description

A bridge soffit is the bottom (underside) surface of a beam or an arch rib of the bridge superstructure. Bridge soffit data is typically collected to determine clearance.

Field Procedure

Collect the 3D positions of the bottom (low part of the underside) of the bridge soffit at each end of the span and at the higher edge of each lane or shoulder, at leading and trailing sides of the bridge.

Photogrammetry Procedure

N/A. Soffits are obscured from aerial photography.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings.

Brush Line

Description

The brush line is the exterior perimeter of an area covered with brush, or bush, growth as would be seen from above.

Field Procedure

Collect the 3D positions around the perimeter of the brush line at ground level.

Photogrammetry Procedure

Collect the 3D positions around the perimeter of the brush line.

Final Product

Minimum required:

- Show feature.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes.

Building Eave

Description

An eave is the lower border of a roof that overhangs the wall.

Field Procedure

Collect the 3D positions at any horizontal changes in the perimeter of the building eave(s) as would be seen from above. Building eaves are not contourable and are not breaklines, so the elevation is not relevant. Note address, name of business and type of building.

Photogrammetry Procedure

Buildings are typically mapped from outline, or perimeter, of the eaves, as that is typical of what is visible from an aerial view.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings.

Building Wall

Description

A building wall is the outside perimeter of the exterior wall of a building.

Field Procedure

Collect the 3D positions at the base of the exterior perimeter of the building wall. Note address, name of business and type of building.

Photogrammetry Procedure

Building walls are often obscured by roof overhangs or by vegetation. Under most situations, building walls should be mapped from photogrammetry at the eaves. Any effort to map building walls should emulate what would be collected in the field and annotate any differences.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes, and/or as-built drawings, such as the address of the building or name of the business.

Camera Image

Description

An image is a photo, or photos, taken from a position in the field.

Field Procedure

Collect the 3D position at the point where the image (photo) was taken from.

Photogrammetry Procedure

Not applicable.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with image ID.

Canal, Top Edge

Description

A canal is an artificial waterway for navigation or for draining or irrigating land.

Field Procedure

Collect the 3D positions on each top edge of the canal.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the canal.

Additional information may be required by project scope, for example:

- Label:
 - Name.
 - Direction of flow.
 - Any special details from the field notes.

Cattle Guard

Description

A cattle guard is a man-made structure, set flush with the surface of the road, the purpose of which is to restrict cattle to a desired area, where it is not practical to fence across the road.

Field Procedure

Collect the 3D positions around the perimeter of the cattle guard.

Note: Some cattle guards are structures and some are just painted on the road. Such distinctions should be noted, as well as construction material and condition.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings.

Concrete, Edge of

Description

Edge of concrete is the outside perimeter of a concrete area or structure.

Field Procedure

Collect the 3D positions on the top edge of concrete.

Note which side of the line feature the concrete lies, if necessary.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label, if necessary, and label with any special details from the field notes and/or as-built drawings.

Crosswalk

Description

A crosswalk is a specially paved, or marked, path to provide a safe area from vehicular traffic for pedestrians to cross a street or road, usually consisting of two parallel, white, painted lines that run

across the roadway.

Field Procedure

Collect a 3D position at either end of each crosswalk boundary line.

Photogrammetry Procedure

Map along the crosswalk, placing a vertex at the crown and other grade breaks. Since the crosswalk strip is part of the DTM data, the mapped line should follow the contour of the road.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Crown

Description

The crown is the highest part of the roadway.

Field Procedure

Collect the 3D positions on the highest part of the roadway on a line that runs in the direction the roadway, or bridge deck, traffic runs. Be sure to collect data for the crown(s) when going through intersections.

Photogrammetry Procedure

Map as per the Field Procedure, but sometimes N/A.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Curb

Description

A curb is the concrete edging built along a street (or bridge) to form part of a gutter. The top back of curb is the top of the curb at the side furthest away from the gutter.

Field Procedure

Collect the 3D positions on the top back of the curb at the back, or the side furthest from the gutter, [which is, generally, approximately 0.5 ft (0.15 m) back from the face of the curb]. The reason for this is to try to eliminate the possibility of data collected for the curb feature from creating a crossing breakline with data collected for the gutter feature. As the curb line feature is so close to the gutter line feature, it is best to take the curb and the gutter measurements in approximately the same location (one above the other) to keep the lines representing them from crossing.

If the curb has a concrete apron, use the edge of pavement line feature where the concrete and asphalt meet.

Photogrammetry Procedure

Collect the 3D positions on the top back of the curb at the back, or the side furthest from the gutter, [which is, generally, approximately 0.5 ft (0.15 m) back from the face of the curb]. The reason for this is to try to eliminate the possibility of data collected for the curb feature from creating a crossing breakline with data collected for the gutter feature.

If the curb has a concrete apron, use the edge of pavement line feature where the concrete and asphalt meet.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with type, if known.

Ditch, Bottom

Description

A ditch is a long narrow excavation dug in the earth for drainage.

Field Procedure

Collect 3D positions at the bottom of the ditch. If the ditch is a flat bottom ditch, the data collected will reflect the two sides of the ditch. If the ditch is a V bottom ditch, only one ditch feature line will be collected.

Photogrammetry Procedure

Map as per field procedure. Ditches are often obscure due to grass and brush growing in them in which case the obscure area should be delineated..

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with ditch label, if necessary.

Drainfield, Edge of

Description

A drainfield is the field or area required by a septic system for the water to percolate in.

If the drainfield is fairly new, a map (sketch) may be on file with the county, and the drainfield can then be plotted on the basemap from this filed map (sketch). If the drainfield is old, or has not been previously mapped, the perimeter of the drainfield may be visible in the field or the owner may have knowledge of where the drainfield lies.

Field Procedure

Collect the 3D positions around the perimeter of the drainfield at ground level.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the drainfield.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Fence – Breakline

Description

This fence is a breakline.

Field Procedure

Collect the 3D positions at the base of the fence.

Note the fence features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum:

- Show feature.

Additional information may be required by project scope, for example:

- Label:
 - Type (posts and fencing material).
 - Height.
 - Condition.

Fence – Non Breakline

Description

This fence is not a breakline. The fence may also be a snow fence.

Field Procedure

Collect the 3D positions at the base of the fence.

Note the fence features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Same as field procedure except that base of fence may often be obscured, while the top may be easily visible. Map the top of the fence may be appropriate, but any differences from standard should be clearly labeled on map face. Fence height should be labeled. If unknown, label as such, but it may require a field visit if needed.

Final Product

Minimum required:

- Show feature.
- If the fence is a snow fence make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label:
 - Height.
 - Type (posts and fencing material).
 - Condition.

Fire Hydrant

Description

A fire hydrant is a discharge pipe with a valve and spout(s) at which water may be drawn from a water main. A hydrant may even be a stand pipe that is labeled 'fire hydrant' in the field.

Field Procedure

Collect the 3D position at the center of the base of the fire hydrant, at ground level.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings.

Found Monument

Description

A monument is a boundary or position marker. Examples of monuments are stones, stakes, hubs, nails, spikes, screws, iron rods, iron pipes, and metal disks.

Field Procedure

Monuments are not typically shown, but there may be special requests where monuments are required to be tied for the basemap. Examples may be some small, preservation projects and some maintenance projects. When they are required, collect the 3D position on the evident, marked point on the found monument. Monuments should be double tied. For information on the ODOT double tie procedure, refer to the ODOT 'Property Corner Ties and Strategic Points' document. Though a monument is a non-contourable feature it may be valuable to also have a valid elevation on the monument for possible future use as a control point.

Note the disk features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Monuments are not collectible from photogrammetry.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

This feature is typically not shown on a basemap.

- When it is required, label:
 - ID (Point number).
 - Type (description) and size.
 - Coordinates (N & E).
 - Any special details from the field notes.

Fuel Fill Cap

Description

A fuel fill cap is usually a metal cap set flush with the ground.

Field Procedure

Collect the 3D position on the center of the fuel fill cap. This feature applies to caps for underground tanks.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label the cap and show any special details from the field notes and/or as-built drawings.

Fuel Tank

Description

A fuel tank can be an aboveground tank or an underground tank.

Field Procedure

Collect the 3D positions around the perimeter of the tank.

Note features.

Photogrammetry Procedure

Map the aboveground tank as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the tank.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Fuel Tank Locate Marks

Description

The location, usually the perimeter, of the tank and related information should be marked on the surface with paint marks.

Field Procedure

Collect the 3D positions only where the painted marks are. Do not assume, and collect, any data for an assumed position of the underground tank.

Note any information (usually painted on ground), as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure, if required, but not normally visible or intelligible.

Final Product

Minimum required:

- Show feature.
- Label the feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Gas Meter

Description

A gas meter is generally an aboveground, in-line service meter.

Field Procedure

Collect a 3D position on the center of the gas meter.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the gas meter (GM).

Additional information may be required by project scope:

Gas Pump

Description

A gas pump is generally a gas fuel or diesel fuel pump found at a gas, or fueling, station.

Field Procedure

Collect the 3D position at the center of the base of the gas pump.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Gas Riser

Description

A gas riser is a tubular 'marker' for the underground gas line or it may be a standpipe for a gas meter, but generally the feature for a gas meter will be used for this.

Field Procedure

Collect the 3D position for the gas riser at the center of the base of the pipe.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the gas riser.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Gas Valve

Description

A gas valve will be housed in a steel monument box, with lid, set flush with the surface.

Field Procedure

Collect the 3D position on the top of the center of the gas valve feature. This means taking a 3D position on top of the steel lid that covers the gas valve.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the gas valve (GV).

Additional information may be required by project scope:

Gas Vault, Edge of

Description

A gas vault is an underground vault for a gas utility.

Field Procedure

Sometimes the top of the underground gas vault will be exposed and may be enclosed in a fenced compound.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the gas vault.

Additional information may be required by project scope:

Gas Vent Pipe

Description

A gas vent pipe is a vertical pipe for venting an underground gas line or station.

Field Procedure

Collect the 3D position for the vent pipe at the center of the base of the pipe

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Gate

Description

A gate is a moveable barrier in a fence.

Field Procedure

Collect a 3D position at each side of the gate, generally at the gate posts.

Note the gate features, as per the 'Survey Field Note Standards' document. If the gate is a locked gate, it should be noted in the field notes.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label:
 - Height and width.
 - Type (construction and/or fencing material).
 - condition.

Generic Breakline

Description

A generic breakline is used when a feature code does not exist for a feature found in the field.

Field Procedure

Collect 3D positions along the breakline.

Note features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.
- Change to the correct feature and describe as per survey field notes. If the feature is left as a generic line – put it on the general level for the type, label it with what it is and put the label on the general text level for that feature.

Additional information may be required by project scope:

Generic Line

Description

A generic line is used when a feature code does not exist for a feature found in the field.

Field Procedure

Collect 3D positions along this line feature.

Note features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.
- Change to the correct feature and describe as per survey field notes. If the feature is left as a generic line – put it on the general level for the type, label it with what it is and put the label on the general text level for that feature.

Additional information may be required by project scope:

Generic Point

Description

A generic point is used when a feature code does not exist for a feature found in the field.

Field Procedure

Collect the 3D position of the point feature.

Note features, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.
- Change to the correct feature and describe as per survey field notes. If the feature is left as a generic point – put it on the general level for the type, label it with what it is and put the label on the general text level for that feature.

Additional information may be required by project scope:

Gravel, Edge of – Breakline

Description

This edge of gravel is a breakline and refers to the outside perimeter of a gravel area.

Field Procedure

Collect the 3D positions on the edge of gravel.

Note which side of the line feature the gravel lies, if necessary.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Gravel, Edge of – Non Breakline

Description

This edge of gravel is not a breakline and refers to the outside perimeter of a gravel area.

Field Procedure

Collect the 3D positions on the edge of gravel.

Note which side of the line feature the gravel lies, if necessary.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Guardrail - Breakline

Description

The guardrail face is the smooth side of the guardrail that faces the traveled lanes.

Field Procedure

Collect the 3D positions against face of guardrail (side facing traveled lanes) on the ground or surface below.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings. Show guardrail ends, if noted.

Guardrail Face

Description

The guardrail face is the smooth side of the guardrail that faces the traveled lanes.

Field Procedure

Collect the 3D positions against face of guardrail (side facing traveled lanes).

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings. Show guardrail ends, if noted.

Gutter

Description

A gutter is the lowest part of the concrete generally directly below, and on the road side of, a curb.

Field Procedure

Collect the 3D positions on the gutter which is, generally, below the base of the face of the curb. As the gutter line feature is so close to the curb line feature, it is best to take the gutter and the curb measurements in approximately the same location (one above the other) to keep the lines representing them from crossing.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Guy wire

Description

This is the wire that, usually, goes from an anchor pole to a type of utility pole for support.

Field Procedure

Collect the 3D positions at either end of the guy wire.

If necessary, note pole numbers that the guy wire connects to, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Guy wire anchor

Description

A metal rod, with an eye, (anchor) usually driven into the ground that has a guy wire, or wires, attached to a pole, or poles, for the purpose of supporting that pole, or poles, at points of high stress or where the pole, or poles, are not solid enough (perhaps due to the ground type they are set in).

Field Procedure

Collect the horizontal and vertical position at the point where the anchor enters the ground.

Note which pole, or poles, (with pole numbers or running point numbers) the anchor is anchoring.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Rotate the anchor toward the pole(s) it anchors, or to the direction noted.
- Using the ODOT Menu, change the cell to agree with the utility it anchors.

Additional information may be required by project scope:

Handrail

Description

A handrail is a narrow rail for grasping with the hand as a support.

Field Procedure

Collect the 3D positions at the base of the handrail.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map top of handrail, if required.

Final Product

Minimum required:

- Show feature.
- Label the handrail.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Headgate

Description

A headgate is a gate used to control water flow into a channel, such as a stream or irrigation ditch, from a dam or water body.

Field Procedure

Collect the 3D position at the headgate, preferably at the center.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label the headgate and show any special details from the field notes and/or as-built drawings.
- Rotate the headgate to correct angle.

Hedge

Description

A hedge is a boundary formed by a dense row of shrubs or low trees.

Field Procedure

Collect the 3D positions at the center of the hedge.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Outline the hedge. An obscure line may be needed, depending on the size of the hedge and the terrain.

Final Product

Minimum required:

- Show feature.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label with the type of vegetation and show any special details from the field notes (such as dimensions).

Inlet

Description

An inlet is a grate used for collecting and dispersing runoff water from a roadway. For information on the different styles of inlets refer to the 'Oregon Standards Drawings' documentation.

Field Procedure

Collect the 3D position on the top of the center of the inlet (grate). Only collect a terrain breakline around an inlet if the inlet is unusual, such as an inlet that is significantly below the surface that, when added to the digital terrain model, will cause failing confidence points.

Note the dimensions and type of the inlet (as per the 'Survey Field Note Standards' document). Note any unusual inlets, configurations, or situations that exist in the field (as per the 'Survey Field Note Standards' document).

Photogrammetry Procedure

Map as per the Field Procedure, but it is not possible to note the dimensions and type of the inlet (as per the 'Survey Field Note Standards' document). Inlets at a curb are placed by edge, and rotated to match the feature on the ground.

Final Product

Minimum required:

- Show feature.
- Label the inlet.

Additional information may be required by project scope, for example:

- Label:
 - Elevation on top of inlet grate.
 - Grate dimensions.
 - Condition.
 - Additional pipe information if a drainage study is requested.
- Rotate inlet to correct angle. If angle is unknown, inlet should be parallel with road.

Irrigated Field, Edge of

Description

This feature represents a field that is either irrigated by:

1. flooding from a surrounding canal controlled by a headgate.
2. some sort of mechanical, agricultural irrigation system that draws it's water from a non-private water source.

The field is usually delineated by the surrounding perimeter canal or by the area irrigated by the irrigation system.

As the owner pays the Water Resource Department for the acreage irrigated, the purpose of collecting this data is to determine the remainder of the irrigated field after loss by right of way acquisition.

Field Procedure

Collect the 3D positions at the edge of the field.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

- Label the field.

Additional information may be required by project scope:

Junction Box

Description

A junction box is a box with a lid, generally set flush with the ground, used to join or access wires in for some underground utility.

Field Procedure

Collect the 3D position on the top of the junction box lid.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Rotate junction box to correct angle. If angle is unknown, junction box should be parallel with road.
- Color must match the utility color.
- Label the type and show any special details from the field notes and/or as-built drawings.

Landscaping/Lawn

Description

This is the perimeter of the lawn or landscaped area.

Field Procedure

Collect the 3D positions on the edge of the landscaping/lawn.

Note which side of the line feature the landscaping/lawn lies, if necessary.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the landscaping/lawn.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Luminaire

Description

A luminaire is a lighting unit, generally, mounted on a pole (can be mounted on building or other structure). A luminaire is a government regulated lighting system used for illuminating transportation systems, public areas, and commercial areas.

Field Procedure

Collect a 3D position for a point on the surface directly under the luminaire (light).

Photogrammetry Procedure

Place the pole at ground elevation. The luminaire cell should be at the light elevation.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Mailbox

Description

A mailbox is, generally, a metal or plastic box on a post, or some sort of stand, about breast height.

Field Procedure

Collect the 3D position at the center of the base of the mailbox post, at ground level.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Place one cell with a note for the number of boxes or use multiple cells.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with mailbox number (or as newspaper box), street name (if known), and rotate parallel to the road. If there are multiple mailboxes on a pole/post label with the number (of boxes) and list the mailbox numbers.

Manhole

Description

A manhole is a hole through which to gain access to an underground utility system or vault.

Field Procedure

Collect the 3D position at the center of the top of the manhole cover.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the type (ST MH, SAN MH, TEL MH, and Bridge access manholes).

Additional information may be required by project scope, for example:

- Show:
 - Elevation on top of center of manhole cover or lid.
 - Additional pipe information if a drainage study is requested.
 - Bridge access manholes on the same color and level as bridge.

Mechanically Stabilized Earth (MSE) Wall Face

Description

A 'mechanically stabilized earth' (MSE) wall face is a vertical retaining wall panel(s) that has been stabilized by the use of lifts of compacted earth (or gravel) on the side retained to hold long, horizontal ties attached to the wall.

Field Procedure

Collect the 3D positions at the toe of the face of the MSE wall.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label MSE wall.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Monitoring Well

Description

A monitoring well is generally recognized by a locking steel monument lid, with something on the lid indicating it is a monitoring well, or a locking plastic cap. The purpose of an ODOT monitoring well is, primarily, for monitoring soil samples and water is secondary. Other monitoring wells may be drilled for 'hazmat' (environmental) testing purposes.

Field Procedure

Collect the 3D position on the top of the monitoring well.

Note details (lid details, where the elevation was taken) as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the monitoring well.

Additional information may be required by project scope:

Monument Box

Description

A monument box is a metal box with a metal lid, usually, used to house a monument.

Field Procedure

Collect the 3D position at the center of the top of the monument box lid.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the monument box.

Additional information may be required by project scope:

Obscure Line

Description

This line may be provided by the office to indicate areas that were obscure to photogrammetry and need to be mapped by the field crew (ground survey).

or

This line may be used by the field crew to identify interior areas that have not or cannot be mapped in the field.

Field Procedure

If this is an area that was obscure to photogrammetry, collect the 3D positions of all features within the area delineated by the obscure line.

If there is an area that has not or cannot be mapped in the field, collect the 3D positions of a perimeter line around the area.

Photogrammetry Procedure

Map the ground completely around the area which is obscured. The line has the same function as a breakline. It models the ground on one side only. If necessary label the areas that are obscured from photography (such as at the edge of the mapping).

Final Product

Minimum required:

- Show feature.
- Label the obscure line.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Overhead Utility Line

Description

Overhead utility lines include power, telephone, television, signal, and signal span lines.

Field Procedure

Collect any horizontal changes in this line feature.

If necessary, note poles, towers, or structures the overhead utility line runs between, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure, except map the lines at actual elevation.

Final Product

Minimum required:

- Show feature.
- Label the utility line.

Additional information may be required by project scope, for example:

- Join wires, as necessary, according to the field notes and/or as-built drawings.

Pavement, Edge of

Description

Edge of pavement is the outside perimeter of a paved roadway or area.

Field Procedure

Collect the 3D positions on main part of the outside edge of pavement.

Note which side of the line feature the pavement lies, if necessary.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Pipe

Description

A pipe is a tubular, man-made structure, open at the ends, used for carrying liquid material (or sometimes utilities). Pipes can be coded as storm sewer pipes, sanitary sewer pipes, concrete pipes, corrugated metal pipes, generic pipes, or arch pipes.

- A storm sewer pipe is an underground pipe used to carry surface water (as from rainfall).
- A sanitary sewer pipe is an underground pipe used to carry sewage and sometimes surface water (as from rainfall).
- An arch pipe is a culvert that has an arch shape for the top, with curved sides that transition into a flat curved shape for the bottom. (An arch pipe is not the same as an elliptical pipe.)

Field Procedure

- All pipes, except arch pipes:

Collect the 3D positions at the inverts (inlet and outlet) of the pipe. If both ends of the pipe are not available, collect data for the found, accessible end, and estimate & collect a 3D position for the pipe direction. Data should also be collected where the pipe is visible and an accompanying height change recorded, if necessary, to reduce data to the correct invert elevation.

Note dimensions, condition, and any other important characteristics of pipe, as per the 'Survey Field Note Standards' document. Note if the 3D position is collected for direction only.

- Arch pipes:

Collect the 3D position at the inverts (inlet and outlet) of the pipe. If the pipe is buried, note that the elevation is at the top of the streambed material (as you may not be permitted to dig, or disturb, the

streambed). If both ends of the pipe are not available, collect data for the found, accessible end, and estimate & collect a 3D position for the pipe direction. Data should also be collected where the pipe is visible and an accompanying height change recorded, if necessary, to reduce data to the correct invert elevation.

Note the dimensions. You will need both the height and the width, as different manufacturers make different pipe configurations. The height is the interior rise. If the invert of the pipe is buried, note that the interior height is from the top of the pipe to the top of the streambed material. The width is the interior span and is measured at the widest part of the interior of the pipe. Note the condition, and any other important characteristics of the pipe such as end treatments. Note if the 3D position is collected for direction only.

Photogrammetry Procedure

Map as per the Field Procedure. Field survey may be necessary for pipe diameter, type and flow line.

Final Product

Minimum required:

- Show feature.
- If the pipe is coded as a generic pipe, change the feature according to the notes or the as-built drawings.

Additional information may be required by project scope, for example:

- Show:
 - Pipe diameter or pipe end dimensions (height and width) for arch pipes.
 - Pipe type.
 - Flow line (invert) elevation at each end of the pipe.
 - Any special details from the field notes and/or as-built drawings.

Pole

Description

A pole is used to support utilities (for example, a pole with a luminaire or a signal head) or it may also support a sign or a flag.

Field Procedure

Collect the 3D position at the center of the base of the pole, at ground level.

Note pole number, type or purpose of pole, number of wires (and what they connect to, identified by pole numbers or running numbers), number of transformers, and number of luminaries (or lights), as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure if possible. If not, the top of the pole will have to be mapped.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Match color to utility.
- Rotate pole in the direction of the wires. If the direction is unknown, pole should be approx. parallel with the road.
- Show:
 - Type.
 - Pole number (with map information numbers, if available).
 - Any special details from the field notes and/or as-built drawings.

Power Vault, Edge of

Description

A power vault is usually underground, but the top of the power vault may be visible or it may be marked by power utility locate paint marks.

Field Procedure

Collect the 3D positions around the edge of the power vault.

Photogrammetry Procedure

Map as per the Field Procedure. Sometimes field verification may be necessary for the true vault dimensions.

Final Product

Minimum required:

- Show feature.

- Label the power vault.

Additional information may be required by project scope:

Public Phone

Description

A pay phone refers to either a phone booth or a wall mounted phone (booth).

Field Procedure

Collect the 3D position at the center of the phone booth or at the center of a wall mounted phone.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Railroad (RR) Ballast, Edge of

Description

Railroad ballast is the crushed gravel or broken stone laid in a railroad bed.

Field Procedure

Collect the 3D positions at the toe (the outside edge/perimeter) of the ballast on either side of the railroad tracks as breaklines.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label the railroad ballast.

Railroad (RR) Track, Center of

Description

The center of the railroad track is midway between the two rails.

Field Procedure

Collect 3D positions midway between the railroad tracks. These positions should be collected on the top of the ballast, not on top of the track.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show the name of the railroad and show any special details from the field notes and/or as-built drawings.

Random Fill Line

Description

Random fill is the surplus fill that is staked out for permanent, or temporary, distribution for aesthetic purposes.

Field Procedure

Collect the 3D positions at the toe of the random fill line as a breakline.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Retaining Wall Face

Description

The retaining wall face is the visible side, not the side against the material retained.

Field Procedure

Collect the 3D positions at the toe of the face of the retaining wall.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map the top of the retaining wall. Keep in mind, the retaining wall line feature is non-contourable and a breakline will be needed to create contours.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- If known, note type of wall, dimensions, and show any other special details from the field notes and/or as-built drawings.

Retention Pond, Edge of

Description

A retention pond is a manmade pond created to hold water so as to control the flow or quality of water.

Field Procedure

Collect the 3D positions on the edge of the retention pond.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the pond.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Rip rap, Edge of

Description

Rip rap is large rock or chunks of concrete placed on an embankment slope to prevent erosion.

Field Procedure

Collect the 3D positions on the outside edge of the rip rap.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Note size and type of rip rap, if known.
- Use the rip rap cell to fill in the pattern between the rip rap line style.

Satellite Dish

Description

A satellite dish is a receiver for television signals that may be situated out-of-doors.

Field Procedure

Collect the 3D position of the base of the satellite dish.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Septic Tank

Description

A septic tank is an underground tank in which sewage is disintegrated by bacteria.

Field Procedure

If the septic tank is fairly new, a map (sketch) may be on file with the county, and the septic tank can then be plotted on the basemap from this filed map (sketch). If the septic tank is old, or has not been previously mapped, the area of the septic tank may be visible in the field or the owner may have knowledge of where the septic tank lies. Collect the 3D positions around the perimeter of the septic tank.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the septic tank.

Additional information may be required by project scope:

Sewer Clean Out

Description

A sewer clean out is a near vertical pipe that allows access to a sewer system pipe (or septic system pipe) for the purpose of cleaning that pipe of obstructions.

Field Procedure

Collect the 3D position on the top of the center of the sewer clean out cap.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the sewer cleanout.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Sign Face - Private

Description

A private sign face is just the sign itself, and not the post(s), of a privately owned sign.

Field Procedure

Collect the 3D position of the privately owned sign face at any horizontal changes in the face. If it is not practical to collect a valid elevation, collect a 2D position and change the elevation to -99999.99.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure. Use private sign symbol, or a rotated block at the top of the sign if it is larger than the symbol.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show the text that is on the sign and rotate the sign in the direction noted.

Sign Face - Public

Description

A public sign face is just the sign itself, and not the post(s), of a publicly owned sign.

Field Procedure

Collect the 3D position of the publicly owned sign face at any horizontal changes in the face. If it is not practical to collect a valid elevation, collect a 2D position and change the elevation to -99999.99.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure. Label as appropriate and rotate cell to face correct direction.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show the text that is on the sign and rotate the sign in the direction noted.

Sign on 1 Post - Private

Description

This is a privately owned sign that is supported by only one post.

Field Procedure

Collect the 3D position at the center of the base of the sign post, at ground level.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure. Label as appropriate and rotate cell to face correct direction.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show the text that is on the sign and rotate the sign in the direction noted.

Sign on 1 Post - Public

Description

This is a publicly owned sign that is supported by only one post.

Field Procedure

Collect the 3D position at the center of the base of the sign post, at ground level.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure. Label as appropriate and rotate cell to face correct direction.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show the text that is on the sign and rotate the sign in the direction noted.

Sign Post - Private

Description

This feature only refers to the post, or posts, for a privately owned sign.

Field Procedure

Collect the 3D position at the center of the base of the sign post, at ground level.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure. Label as appropriate and rotate cell to face correct direction.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Sign Post - Public

Description

This feature only refers to the post, or posts, for a publicly sign.

Field Procedure

Collect the 3D position at the center of the base of the sign post, at ground level.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure. Label as appropriate and rotate cell to face correct direction.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Signal Control Cabinet

Description

A signal control cabinet is usually a steel box that houses controls for traffic signals.

Field Procedure

Collect the 3D position of the center of the signal control cabinet. Signal control cabinets are generally on the ground, but if it is on a pole you may collect the 2D position at the center of the cabinet and the vertical position on the ground directly below the center of the cabinet.

Photogrammetry Procedure

Map the 3D position of the center of the top of signal control cabinet.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- If known, rotate the door opening to the proper direction it faces.

Signal Detector Loop

Description

A signal detector loop is a wire just under the surface of a traveled lane that triggers a traffic signal when traffic runs across it. Signal detector loops may be circular, diamond shaped or rectangular and the shape, and location, are evident from the surface.

Field Procedure

Collect the 3D position of this point feature at the center of the shape of the signal detector loop.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Signal Head

Description

A signal head is an illuminated (electric) traffic or pedestrian signal which may reside on poles, signal mast arms, signal span lines or other structures.

Field Procedure

Collect the 3D position of the signal head. If it is not practical to collect a valid elevation, collect a 2D position and change the elevation to -99999.99.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map the 3D position of the center of the top of signal head.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Rotate the signal head to face the correct direction and show any special details from the field notes and/or as-built drawings.

Signal Mast Arm

Description

A signal mast arm is an arm that extends from a pole out into a roadway, or into the line of sight of the traffic, to accommodate signal heads or signs.

Field Procedure

Collect the 3D position of the signal mast arm at any horizontal changes in the signal mast arm. If it is not practical to collect a valid elevation, collect a 2D position and change the elevation to -99999.99.

Photogrammetry Procedure

Map the 3D positions of the top of signal mast arm.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Slide Scarp

Description

A slide scarp is an area of slipped material (cliffs) produced by faulting or erosion.

Field Procedure

Collect the 3D positions on the perimeter around these areas.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the slide scarp.

Additional information may be required by project scope:

Slope Tube

Description

A slope tube is a special, permanent, plastic pipe that can accommodate an instrument that tracks vertical shift or movement for the purpose of monitoring landslides or other stability questions.

Field Procedure

Collect the 3D position at the center of the top of the slope tube.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the slope tube.

Additional information may be required by project scope:

Solar Panel

Description

A solar panel is a device for the absorption of solar radiation for the heating of water or buildings or the production of electricity that may be mounted in various positions or sites.

Field Procedure

Collect the 3D position of the center of the solar panel.

Note details.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Sound Berm, Edge of

Description

A sound berm is a compacted mound of earth, generally triangular shaped, built for the purpose of reducing sound produced from a highway. Sometimes sound berms are landscaped and occasionally they have sound walls on them.

Field Procedure

Collect the 3D positions at the perimeter of the base of the sound berm.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the sound berm.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope:

Sound Wall Face

Description

A sound wall is a barrier, which may be constructed of a range of materials, erected for the purpose of shielding a location from (traffic) noise. The face of the wall is the traffic side.

Field Procedure

Collect the 3D positions at the base of the face of the wall. The face of the wall is the traffic side.

Photogrammetry Procedure

Collect the 3D positions at the top of the wall.

Final Product

Minimum required:

- Show feature.
- Label the sound wall.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings (such as type and size).

Spring, Water

Description

A water spring is a point in the field where water naturally and continuously emanates to the surface from under the ground.

Field Procedure

Collect the 3D position for the center of the spring.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Sprinkler Head

Description

A sprinkler head is the device that sprays water for irrigation (or other purposes).

Field Procedure

Collect the 3D position for the center of the top of the sprinkler head.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Note the number of sprinkler heads and show any special details from the field notes and/or as-built drawings.

Sprinkler, Pivot

Description

A pivot sprinkler is a sprinkler system that rotates around a central point (water source).

Field Procedure

Collect the 3D position at the center of the pivot sprinkler.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.
- Label the pivot sprinkler.

Additional information may be required by project scope:

Stop Bar

Description

A stop bar is a solid, white, painted stripe that indicates to motorists where they must stop when they are required to stop.

Field Procedure

Collect a 3D position at each end of the stop bar.

Photogrammetry Procedure

The stop bar is a contourable feature, so map any changes in slope along the stop bar.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Stream Cross Section

Description

A stream cross section is a line approximately 90 degrees to the alignment of the stream along which the

configuration of the ground and stream bed is determined by obtaining elevations of points at known distances from the alignment.

Field Procedure

Collect the 3D positions at any vertical changes, and at any feature (changes), in a line that runs across the stream at approximately 90 degrees to the centerline of the stream. The length a stream x-section is usually determined by the project scope.

Photogrammetry Procedure

Not applicable for the stream bottom.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label each stream cross section line and label each point on each cross section line with its correct feature.
- Connect the points on each cross section with the correct points, with the same features, on the adjacent sections with the correct/same line feature.
- Label the high water marks.

Stream, Thalweg

Description

The thalweg is the deepest part of a channel.

Field Procedure

Collect the 3D positions along this line feature.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.
- Label the thalweg.

Additional information may be required by project scope:

Stream, Top of Water at Thalweg

Description

This is the top of the water profile above the thalweg (the thalweg is the deepest part of a channel).

Field Procedure

Collect 3D positions on the top of the water above the thalweg.

Photogrammetry Procedure

Map as per field procedure.

Final Product

Minimum required:

- Show feature.
- Label the top of water profile at the thalweg.

Additional information may be required by project scope:

Sump

Description

A sump is a pit or reservoir serving as a drain or receptacle for liquids. Sumps are generally located in parking lots or gas (service) stations and are usually covered by an inlet grate.

Field Procedure

Collect 3D position at the center of the top of the sump inlet grate.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the feature.

Additional information may be required by project scope, for example:

- Show:
 - Elevation on top of inlet grate.
 - Grate dimensions.

Telephone Riser

Description

A telephone riser (pedestal) is a service/access box, or a tubular marker, for an underground telephone line.

Field Procedure

Collect the 3D position at the center of base of the riser.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the telephone riser.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Telephone Vault, Edge of

Description

A telephone vault is usually concrete and underground. The top of the telephone vault may be visible or it may be marked by telephone utility locate paint marks.

Field Procedure

Collect the 3D positions around the edge of the telephone vault.

Photogrammetry Procedure

Map as in the Field Procedure, with any necessary labeling.

Final Product

Minimum required:

- Show feature.
- Label the vault.

Additional information may be required by project scope:

Television Riser

Description

A television riser (pedestal) is a service/access box, or a tubular marker, for an underground television line.

Field Procedure

Collect the 3D position at the center of base of the riser.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the television riser.

Additional information may be required by project scope, for example:

- Show any special details from the field notes.

Temporary Bench Mark

Description

A temporary bench mark is usually established from published bench marks for use during the location and construction phases of a project.

Field Procedure

The 3D position of a temporary bench mark is mainly collected to establish a 2D position for the temporary bench mark and not to establish the vertical elevation. This trigonometric elevation is valid though as an elevation check.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

This feature is not typically mapped in Photogrammetry.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show:
 - ID (TBM # or name).
 - Elevation.
 - Type.
 - Any special details from the field notes.

Temporary bench marks are sometimes used as references to verify that the basemap elevations and the digital terrain model elevations are the same, and to verify that the Right of Way map and the basemap were not accidentally translated or rotated.

Terrain Breakline

Description

A terrain breakline is a line that has no field features, but defines 3D changes in the field terrain. Terrain breaklines are also used to restrict or control the way the surface features join to form a digital terrain model.

Field Procedure

Collect the 3D positions along this line feature.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Terrain Point

Description

A terrain point is a point that has no field features but defines a 3D change for a point in the field terrain. Terrain points are also used to restrict or control the way the surface features join to form a digital terrain model.

Field Procedure

Collect the 3D position of the point feature.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Test Bore Hole

Description

A test bore hole is a hole that has been drilled in the ground for material testing or sampling.

Field Procedure

Collect a 3D position at the center of the hole at the ground elevation. Even though this feature is non-contourable the elevation must be valid for material testing purposes.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label (BH)

Additional information may be required by project scope, for example:

Show:

- Number.
- elevation on top of hole.

Tree, Coniferous

Description

Coniferous trees are mostly evergreen trees and shrubs including forms (as pines) with true cones and others (as yews) with an arillate fruit.

Field Procedure

Collect all ornamental trees and collect any natural growing, unplanted, individual trees equal to, or greater than, 6 inches in diameter at breast height, within the project limits. If the trees are in a grove or forest collect the 'tree line' (see the definition for 'tree line').

Collect the 3D position at the center of the base of the tree, at ground level. If the tree is on a root mound collect the vertical position on the average ground level closest to the tree.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as an individual tree symbol or treeline for several trees together. The dripline of the tree will be shown by photogrammetrists.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label:
 - Diameter of tree trunk at breast height.
 - Type of tree.

Tree, Deciduous

Description

A deciduous tree is one that loses or sheds its leaves seasonally or at a certain stage of development in its life cycle.

Field Procedure

Collect all ornamental trees and collect any natural growing, unplanted, individual trees equal to, or greater than, 6 inches in diameter at breast height, within the project limits. If the trees are in a grove or

forest collect the 'tree line' (see the definition for 'tree line').

Collect the 3D position at the center of the base of the tree, at ground level. If the tree is on a root mound collect the vertical position on the average ground level closest to the tree.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as an individual tree symbol or treeline for several trees together. The dripline of the tree will be shown by photogrammetrists.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label:
 - Diameter of tree trunk at breast height.
 - Type of tree.

Tree Line

Description

A tree line is defined by the outside edge of the tree canopy of a group of trees, a grove, or a forest as would be seen from above.

Field Procedure

Collect the 3D positions, at ground level, directly under the (outside) edge of the tree line.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map at the widest area at the elevation of the drip line.

Final Product

Minimum required:

- Show feature.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label the tree line (with type if known).

Underground Utility Line

Description

Data for an underground utility line is collected when the utility is exposed during construction or by potholing (digging a small hole). The underground utility may be a gas, power, telephone, signal, water, or fiber optic line. A fiber optic line is a very expensive and easily damaged line (be careful).

Field Procedure

Collect the 3D positions on the top of the utility line feature.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

N/A.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label:
 - Name of company.
 - Type.
 - Dimensions.
 - any special details from the field notes and/or as-built drawings.

Utility Locate Marks

Description

Utility locate marks (and, sometimes, related information) are painted on the ground to indicate the position of underground features (within 24 inches of the outside dimensions). Underground utilities that are marked are power, gas, telephone, signal, television, water, storm sewer and sanitary sewer.

Field Procedure

Collect the 3D positions only where the painted marks are. Do not assume, and collect, any data for an assumed position of the underground tank.

Note any information (usually painted on ground), as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure, if required, but not normally visible or intelligible.

Final Product

Minimum required:

- Show feature.
- Label with type of utility.

Additional information may be required by project scope, for example:

- Label:
 - Name (of utility company).
 - Dimensions.
 - Any special details from the field notes (such as the quantity).

Utility Pothole

Description

A utility pothole is a hole excavated for the purpose of locating and collecting the position of an underground utility feature.

Field Procedure

Collect the 3D position at the bottom of the hole. Data collected is feature coded as a utility pothole.

Note details on the utility, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the pothole.

Additional information may be required by project scope, for example:

- Show any special details from the field notes. If a number was provided by 'ODOT Utilities', label the pothole with the number and elevation.

Walk, Edge of

Description

Edge of walk is the outside perimeter of a sidewalk. A walk may be constructed of concrete, asphalt or some other material, and this feature may be used for both sides of the walk, if desired.

Field Procedure

Collect the 3D positions on the edge of the walk.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the walk.

Additional information may be required by project scope, for example:

- Show the type of construction material if it is different than ordinary concrete. Also, label with the condition if the condition is not good.

Wall

Description

A wall is a vertical barrier.

Field Procedure

Collect the 3D positions at the base of the face of the wall. The face of the wall is generally the traffic side or the side facing the street (traveled way). If it is not apparent which side is the face of the wall, collect a side as the face and the other side, if necessary, as a terrain breakline.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as in the Field Procedure, if conditions permit. If the top of the wall is measured, note it in the basemap. Also take into consideration any obscure areas.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Note the type of wall, dimensions, which side was shot (N,S,E,W) if needed, and show any other special details from the field notes and/or as-built drawings.

Water, Edge of

Description

The edge of water is the line where the water meets the shore.

Field Procedure

Collect the 3D positions at the edge of water where the water meets the land (on the shoreline).

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the edge of water.

Additional information may be required by project scope, for example:

- Label the water body.

Water Meter

Description

A water meter measures the water flow in a water pipe and is usually contained in a water meter box.

Field Procedure

Collect the 3D position on the top of the center of the water meter.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the water meter (WM).

Additional information may be required by project scope:

Water Pipe, Exposed

Description

An exposed water pipe is a pipe that is above ground or is exposed during construction.

Field Procedure

Collect the 3D positions along the top of the pipe.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the water pipe.

Additional information may be required by project scope, for example:

- Label:
 - Type.
 - Dimensions.
 - Any special details from the field notes and/or as-built drawings.

Water Pump

Description

A water pump is a pump used for pumping water when there is no connection to a water service.

Field Procedure

Collect the 3D position on the water pump.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Water Stand Pipe

Description

A water stand pipe is a vent pipe for a water system.

Field Procedure

Collect the 3D position at the center of the base of the water stand pipe.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the water stand pipe.

Additional information may be required by project scope, for example:

- Label:
 - Diameter.
 - Type of material.
 - If the pipe is vertical.

Water Valve

Description

A water valve regulates or controls the water flow in a water pipe and is usually contained in a water meter box.

Field Procedure

Collect the 3D position on the top of the center of the water valve.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the water valve (WV).

Additional information may be required by project scope:

Well, water

Description

A water well is a hole dug into the earth to reach a supply of water

Field Procedure

Collect the 3D position of the well at ground level, if possible.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Label the well.

Additional information may be required by project scope, for example:

- Show any special details from the field notes and/or as-built drawings.

Wetland, Edge of

Description

A wetland is, usually, a lake, pond or marsh. Initially, suspect wetland locations may be noted by the surveyors to provide information to the ODOT Geo-Environmental Unit for the purpose of determining if future mapping will be necessary. If mapping becomes necessary, the ODOT Geo-Environmental Unit will mark the approximate wetland boundary, in the field, for mapping by the surveyors.

Field Procedure

Collect the 3D positions at the edge of wetland.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- Make sure the line style is shown in the correct direction.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings.

White Skip Stripe

Description

A white skip stripe is a dashed or broken, painted, white stripe that usually defines the edge of a lane in the traveled roadway.

Field Procedure

Collect the 3D positions of the white skip stripe on the white skip lines as a linear feature.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

White Stripe

Description

The (solid) white stripe is the painted, white 'fog' line which, usually, defines the outside edge of the traveled roadway.

Field Procedure

Collect the 3D positions of the white stripe (generally, the white 'fog' line defines the outside edge of the traveled roadway).

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Yard Light

Description

A yard light is generally used to light a private business yard or home yard and may be mounted on a

building, pole or other structure.

Field Procedure

Collect a 3D position for a point on the surface directly under the yard light.

Note details, as per the 'Survey Field Note Standards' document.

Photogrammetry Procedure

Map the 3D position of the light itself.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope, for example:

- Label with any special details from the field notes and/or as-built drawings.

Yellow Skip Stripe

Description

A yellow skip stripe is a dashed or broken, painted, yellow stripe that usually separates the opposing traffic lanes.

Field Procedure

Collect the 3D positions of the yellow skip stripe.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.

Additional information may be required by project scope:

Yellow Stripe

Description

The (solid) painted, yellow stripe usually separates the opposing traffic lanes.

Field Procedure

Collect the 3D positions of the yellow stripe.

Photogrammetry Procedure

Map as per the Field Procedure.

Final Product

Minimum required:

- Show feature.
- If the feature, in the field, is a double line (two stripes, or one stripe & one skip) the line style will have to be changed to match the way it exists in the field.

Additional information may be required by project scope:

Features currently not shown on a basemap:

Confidence Point

Confidence Points are random points measured in the field within the boundary of a Digital Terrain Model. The elevation difference between a Confidence Point and the Digital Terrain Model reveals the error in the model at that position.

Refer to the ODOT "Survey Policy and Procedure" manual 'Confidence Point Standards' chapter.

Backsight Check-in

A backsight check-in is a check-in made to a known point with an established horizontal and vertical position.

Elevation Check-in

An elevation check-in is a check-in made to a known point with an established elevation.

Photogrammetry ID Point

If premarks are not visible in a photo for some reason, existing features that are seen in the photos can be surveyed on the ground and used for photo control. Features like the corner of an inlet or concrete slab, or a manhole can be used. These points are called Photogrammetry ID Points.

For more information refer to the ODOT "Survey Policy and Procedure" manual 'Photogrammetry' chapter.

Photogrammetry Premark

A premark is, typically, a X, V or T painted on the pavement or constructed of plaster board strips, approximately 4 inches wide and four feet in length. These marks surround the orientation point to make them visible in the photograph. The higher the elevation that the project has to be flown, the larger the premark needs to be to show up in the photograph. Conversely, the lower the flight, the smaller the premark. Low level helicopter photography flown at 300 feet requires, at minimum, a 6 inch premark. Typically, a premark with at least 2 arms 8 inches wide and 36 inches in length is painted on the pavement or other hard surface.

For more information refer to the ODOT "Survey Policy and Procedure" manual 'Photogrammetry' chapter.

Set Monuments

Includes:

- Set Monument
- Set Centerline Monument

- Set GPS Point
- Set Network Point
- Set Right of Way Point
- Set Reference Point
- Set Controlled Strategic Point
- Set Strategic Point

Other items that go on a basemap

- Vicinity Maps, Title Blocks, and North Arrows with Scale Bars should be on one level.
- A map, named numrout.dgn, that can be used to create vicinity maps can be found at <ftp://ftp.odot.state.or.us/tdb/trandata/maps/stmap/>.
- More detailed maps are located in the County Map Directory at <ftp://ftp.odot.state.or.us/tdb/trandata/maps/comap/>.
- Title Blocks, North Arrows, and Scale Bars are all cells that can be found on the ODOT Menu.

Vicinity Map

A vicinity map, shown on a basemap, is simply a general, small scale map that indicates the project location. A vicinity map is contained in its own border and contains the following:

- 'VICINITY MAP' title.
- Arrow pointing to the project location
- North arrow (oriented north) with 'NOT TO SCALE' text.
- Major cities or towns in the vicinity.
- Major highways with their 'State highway numbers'.

Title Block

A title block enclosed in its own border should be placed on the basemap. The title block should list (in order):

1. PROJECT NAME:
2. COUNTY:
3. KEY NUMBER:
4. HORIZONTAL DATUM:
5. LDP FACTOR:
6. VERTICAL DATUM:
7. RECOMMENDED PLOT SCALE: (UNITS)
8. CONTACT PERSON:
9. MANAGER:
10. TELEPHONE:
11. DATE:
12. REVISED:

Note: Item 7 is the recommended scale for plotting the basemap. Tree data and/or pipe flowline invert elevations may not be legible at this scale and may need to be displayed at a larger scale.

North Arrow

The north arrow must be oriented north and should be placed in multiple locations, for reading convenience, if the map is large.

Scale Bar

A basemap is drawn at a scale of 1:1, but a specific scale, indicated by scale text, may be assigned for plotting purposes only. The units must be shown on the scale bar and the scale bar must be at the correct scale. The scale information should be labeled, 'This scale is for plotting purposes only'.

Narrative

A basemap narrative should be included with the basemap. The narrative may be a compilation from several narratives, possibly including surveyors' narratives, photogrammetrists' narratives, and office, basemap drafters' narratives. A drafter groom's the basemap to comply with ODOT Standards, field survey notes and as-built drawings.

The narrative should be on a level where it may be turned off if it is not required to be plotted.

General Notes

Any general project notes can be placed here using the same text as used in the title block. General notes should be on the same level as the basemap narrative.

Labels

Labelling in MicroStation is governed by the ODOT Menu. If an element is self explanatory or conveyed through symbology inside the MicroStation design file, by viewing or snapping on it, we do not have to label it, or the labeling will be very sparse. Any labeling that is determined to be necessary may be done later. Label any special areas that are not clearly delineated by a feature or linestyle. If there are symbols that will look the same when they are plotted in black and white, they need to be labeled to distinguish them. Any unique features that are not in the ODOT Menu, with a pre-assigned level, can be created with their own level. MicroStation has 10 levels available for this.

All line features, for example building walls and bridge bents, that are hidden or partially obscured by other features shall be represented by a dashed line (MicroStation Line Style: 2).

ODOT Feature Table

The current versions of the feature table and code cards are available, on request, from ODOT Geometronics.