# Table of Contents

**Guidelines on Existing Features (X30 Criteria)**

## Summary and Overview

### *Introduction:*

**Purpose:**  This document is to fully describe and document the specific procedures and scenarios for mapping and using the FLH Existing Features (Exfeat) criteria files.  In the past, there has been confusion on what and how to survey roadway elements so that the cross section criteria files can process and draw cross sections correctly.  This document is intended to provide guidance to field survey personnel, survey/mapping office personnel and the roadway design work staff.

**Preliminary Remarks:**  Existing Pavement, Existing Gravel, Existing Topsoil, Existing Sidewalk and Existing Building Pads are the only elements that are drawn into cross sections.  Existing Shoulders, Existing Road (Dirt Edge), Existing Curb, Existing Retaining Walls, Existing Barriers, Existing Fences, and other non-pavement features are only labeled.  Existing Pavement and Existing Gravel are the primary mapped elements from which earthwork volumes can be taken.

### *Important Criteria Rules:*

- The Exfeat criteria files will handle multiple instances of the above listed existing features.  It will check to make sure an **even number** of edges of rigid or gravel pavements, sidewalks, and building pad foundations exist in the plan view.  If an odd number of pavement edges are found (either rigid or gravel), then a warning message will be drawn stating "**Irregular Pavement Found**" and no pavement will be drawn for pavement.  In other words the criteria must be able to find two lines to connect.  If there were three lines found then there is not a way for the criteria to determine which two lines are to be connected.  If an odd number of sidewalk or building pad foundation edges are found, a warning message will be drawn stating "**Irregular Non-Topsoil Found**" and no building pads nor sidewalks will be drawn.  In addition, if this error does exist, then no existing topsoil will be drawn if the topsoil thickness is set to a value greater than zero.  Therefore, it is important to understand that **the topo file must contain even numbers of edges that are parallel to the roadway and intersect the cross section pattern lines** of these four existing items.  See example below:
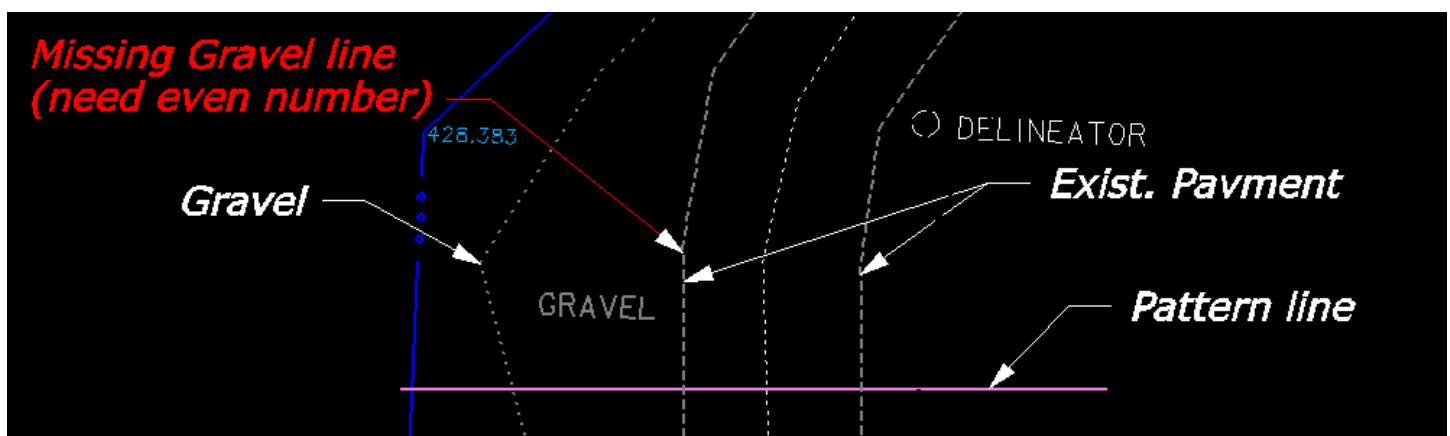
# Guidelines on Existing Features (X30 Criteria)
**11/24/2009**

- Plan View Overrides, which are placed in the MicroStation "design" files, are provided for <u>Existing Pavement Thickness 1, Existing Pavement Thickness 2 and Existing Topsoil Thickness</u>. These overrides supersede the redefinable variable that is set within a proposed cross sections run. It is important to understand that this particular override for topsoil depth works from **right to left** across the cross section always starting with a default value established by the redefinable variable. In other words, the criteria will first move to the far right end of the cross section pattern line and begin tracing the ground at a depth set by the redefinable variable. In the event an override line is encountered before the existing ground becomes present the override line will take precedence over the redefinable variable. It will remain at this depth until a plan view override line forces a different depth. Note that no topsoil will be placed under existing pavement, sidewalks, or buildings.

- The software uses tolerances that do have an effect with the procedures. Standard tolerances are **0.01 (US Customary)** and **0.003 (Metric).**

## *Typical Section for Existing Features:*
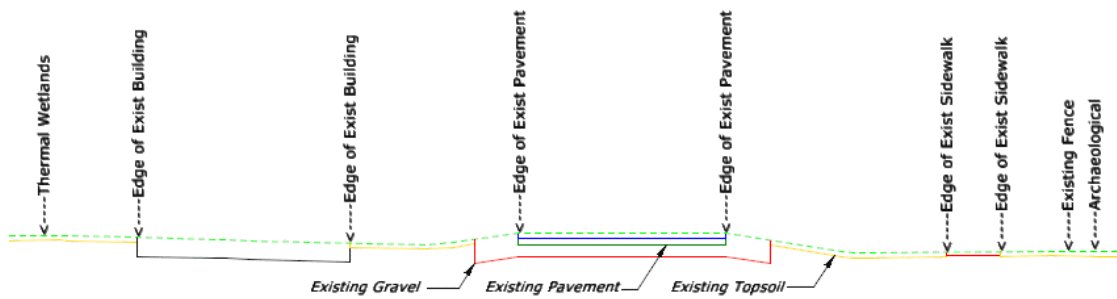


EXISTING FEATURES TYPICAL SECTION

1. EXIST PAVEMENT
2. EXIST SHOULDER
3. EXIST CURB FACE
4. EXIST WATER EDGE
5. EXIST LAKE EDGE
6. EXIST UNDEGROUND UTILITIES *
7. EXIST OVERHEAD UTILITIES *
8. EXIST 2,10,20,50 YEAR FLOODS
9. EXIST WETLANDS
10. EXIST TREE LINE
11. EXIST ARCHAEOLOGICAL
12. EXIST THERMAL WETLAND
13. EXIST FENCE LINE
14. EXIST TOPSOIL
15. EXIST SIDEWALK
16. EXIST BUILDING
17. EXIST RETAINING WALL FACE
18. EXIST BARRIER WALL FACE

* REFER TO THE DOCUMENTATION FOR A COMPLETE LISTING

## Procedures and Instructions

Many different scenarios can exist for mapping and designing with existing features.  These guidelines describe and illustrate some of the more common situations that exist for CFLHD projects.  Field surveyors, office mapping specialists and roadway designers each have individual responsibilities with existing feature processes in order to have correct representation.  The scenarios below describe these responsibilities.

### Scenario 1:  Existing paved roadway with continuous gravel shoulders

> ***Description:***  This process will be followed when a paved roadway has continuous gravel shoulders on both sides of the roadway.  Shoulders should only be surveyed and mapped if the shoulder is well defined, significant and continuous.
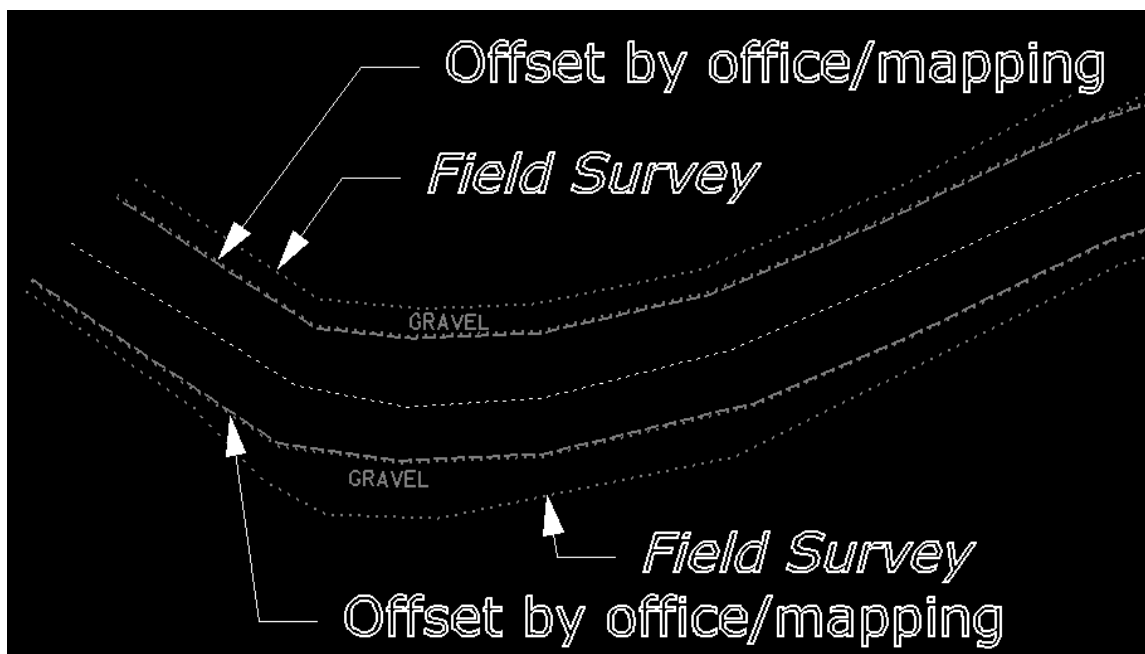


> ***Field Instructions:***  In addition to the existing pavement edges, only survey both outside edges of the gravel shoulders.  The outside gravel edge should be coded as gravel.  Do not use the code for Exist. Shoulder or Exist. Road.   It is not necessary to double-code the pavement/gravel edge.

> ***Mapping Instructions:***   Place a gravel line that is offset from the surveyed existing edge of pavement. The line should be placed outside of the existing pavement at an offset that is greater than the cross section tolerances. *Consult with the design staff for the case where it is desired to show existing gravel underneath the existing pavement.  See the Typical Section for Existing Features for an example.  In this case, do not place the offset gravel lines adjacent to the existing pavement.*
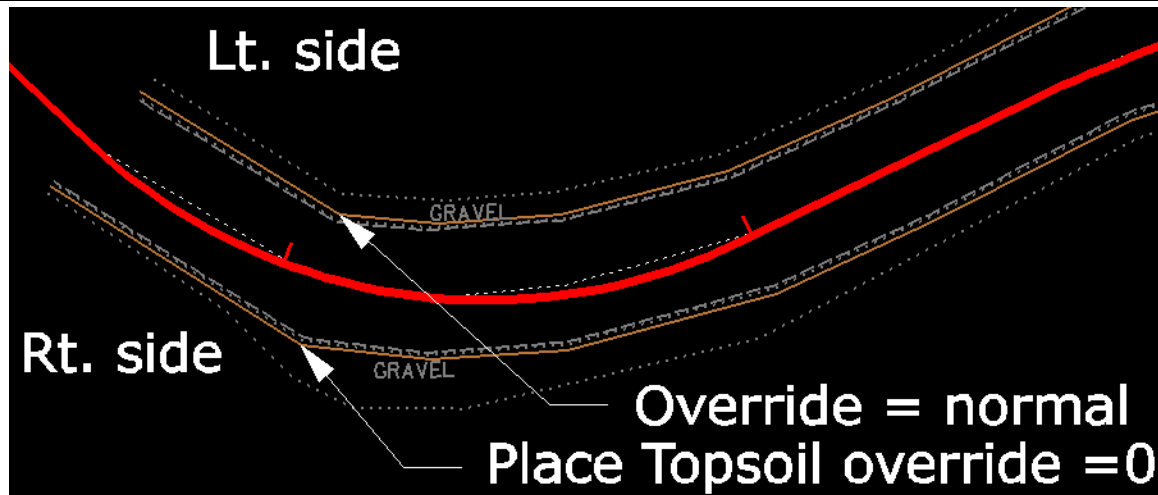
***Design Instructions:*** Follow normal procedures for placing existing features. If existing topsoil is drawn in cross section view, a small sliver of topsoil may be placed between the existing pavement and gravel sections. The designer must use the plan view override for topsoil to eliminate this sliver. Earthwork process errors may exist if this step is not completed. *In the case where it is desired to show existing gravel underneath the existing pavement, the designer needs to inform the survey staff not to draw the offset gravel lines adjacent to the existing pavement.*

## *Results:*
(Gravel shoulders only – with offset gravel lines drawn adjacent to the existing pavement)
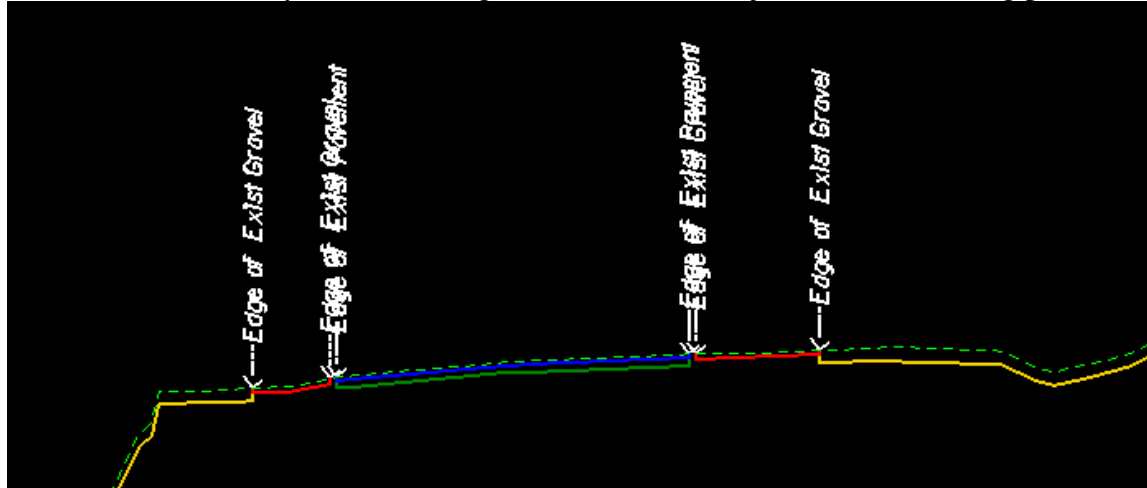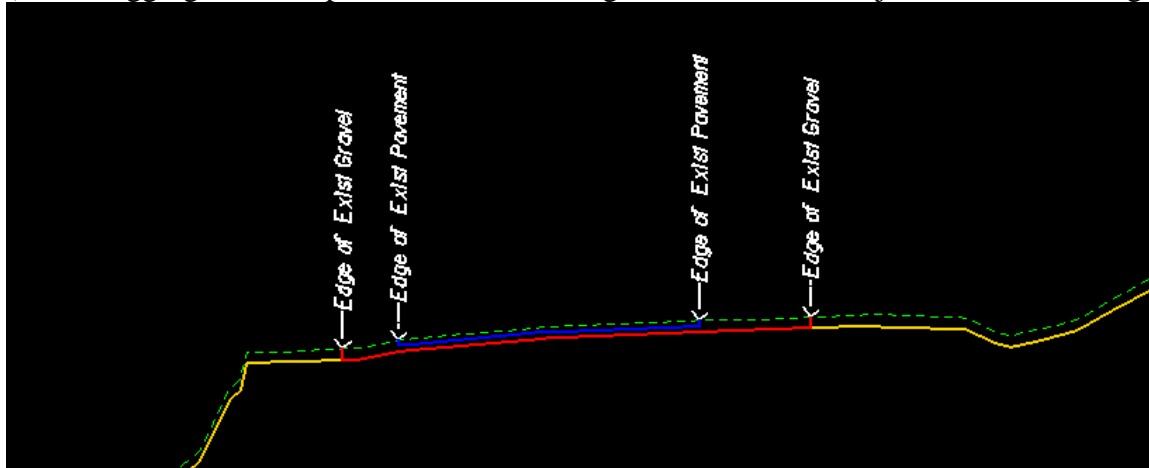
Or,
(Gravel/aggregate under pavement – no offset gravel lines drawn adjacent to the existing pavement)



## Scenario 2:  Existing paved roadway with non-continuous gravel pullout/shoulders

*Description:*  This process will be followed when a paved roadway does not have a continuous gravel shoulders on both sides of the roadway.  Instead, only one side has a shoulder or gravel pullout.
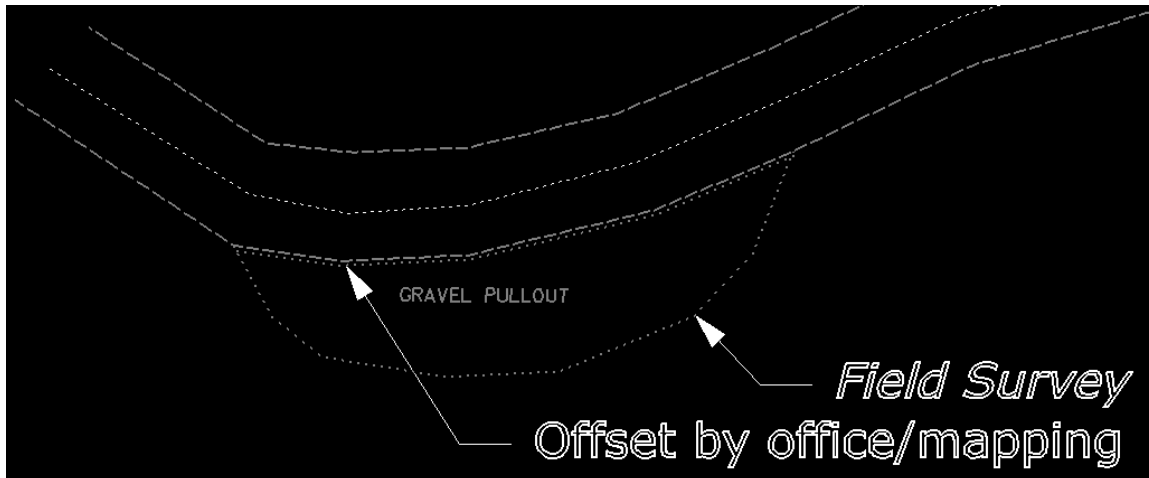


*Field Instructions:*  In addition to the existing pavement edges, survey only the outside edges of the gravel shoulder or pullout.  The outside gravel edge should be coded as gravel.  Do not use the code for Exist. Shoulder or Exist. Road.   It is not necessary to double-code the pavement/gravel edge.

*Mapping Instructions:*   Place a gravel line that is offset from the existing edge of pavement line.  The line should be placed outside of the existing pavement at an offset that is greater than the cross section tolerances.
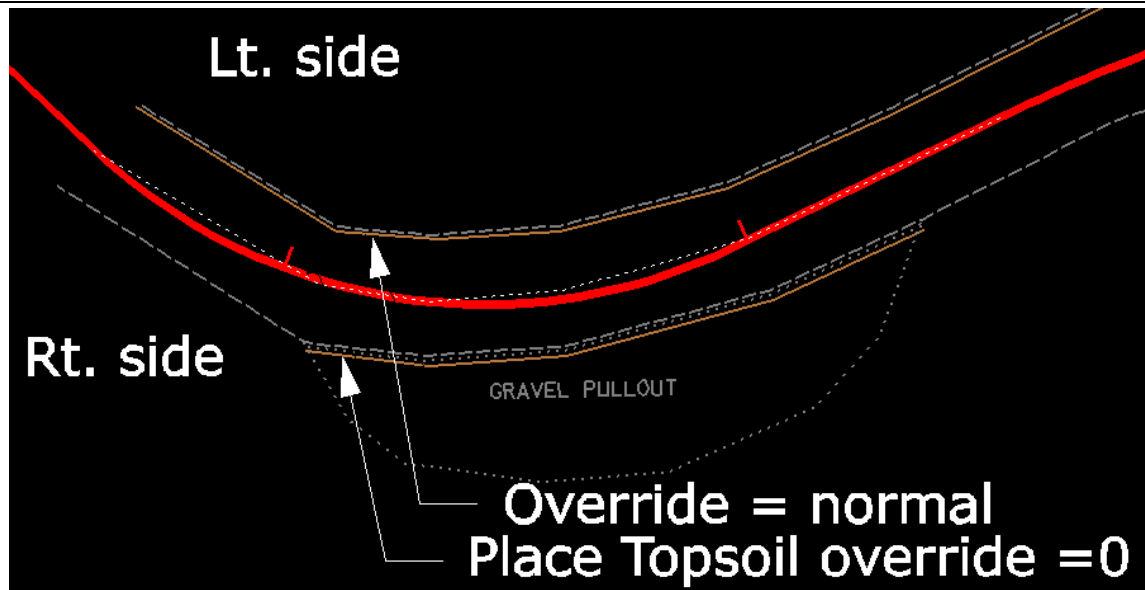
*Design Instructions:* Follow normal procedures for placing existing features. . If existing topsoil is drawn in cross section view, a small sliver of topsoil may be placed between the existing pavement and gravel sections. The designer must use the plan view override for topsoil to eliminate this sliver. Earthwork process errors may exist if this step is not completed.
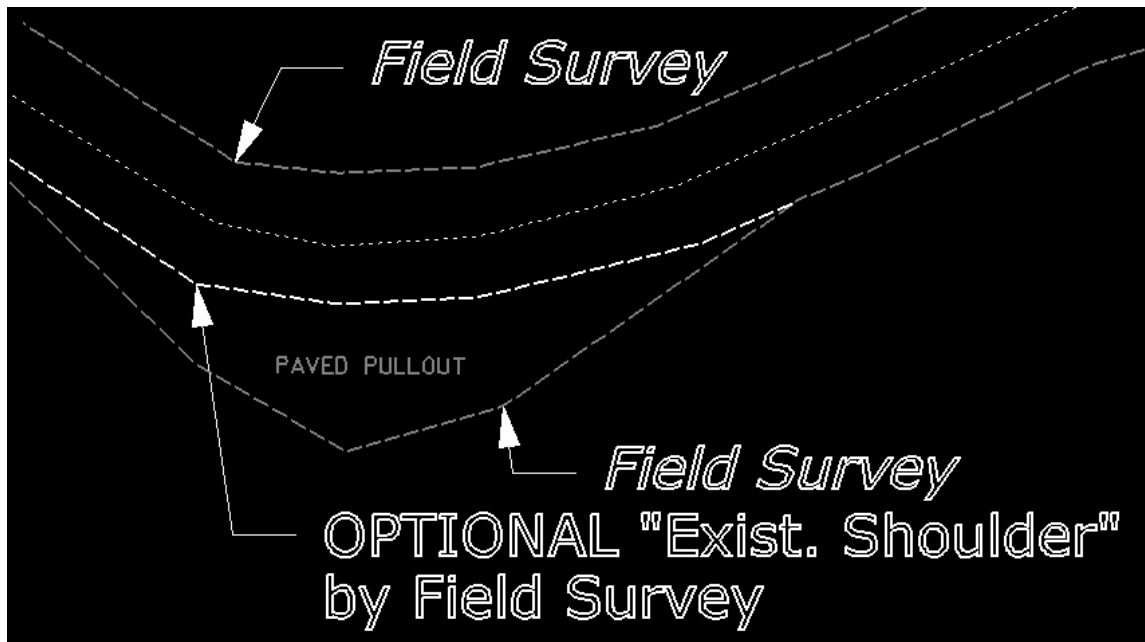
*Results:*
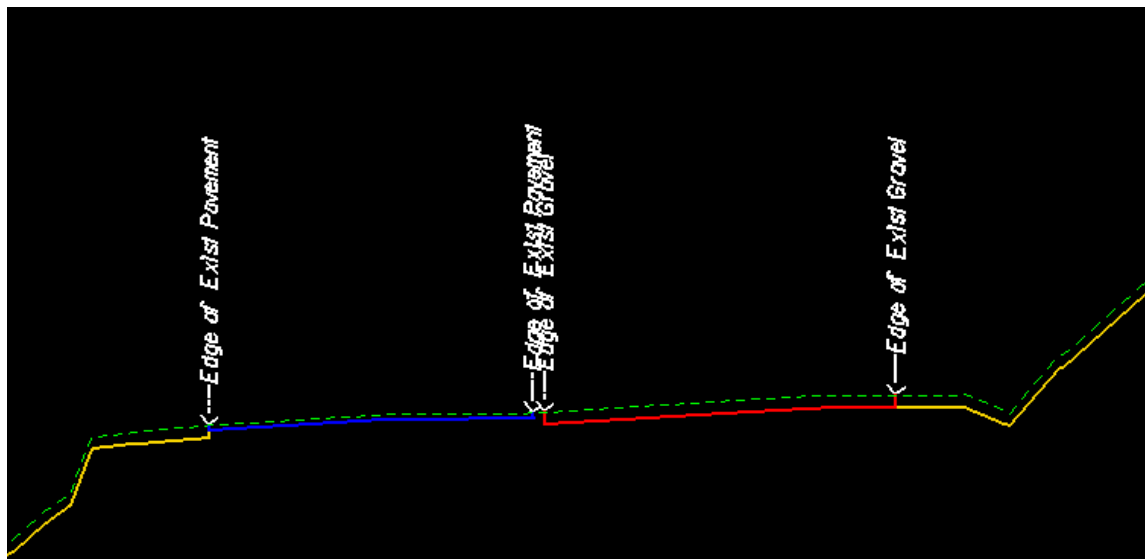


## Scenario 3:  Existing paved roadway with a paved pullout, widening or shoulder (same pavement thickness)

*Description:*  This process will be followed when a paved roadway has an adjacent paved pullout, shoulder or widening.
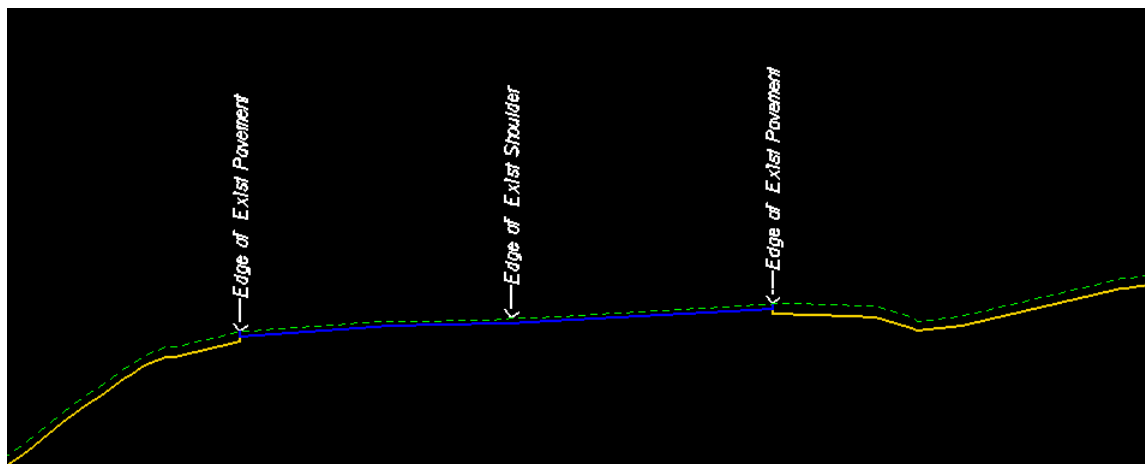
*Field Instructions:*  Survey only the outside edges of the paved shoulder or pullout.  Do not code the normal edge of roadway that is connected to the pullout/widening.  *Use judgment whether or not the existing shoulder/fog-line should be surveyed.  If so, use the existing shoulder element/code which will place only a label in the cross sections.*

*Mapping Instructions:*   Follow normal procedures.  No extra work needed.

*Design Instructions:*  Follow normal procedures for placing existing features.  *If the pavement depths vary from the normal roadway to the pullout/widening, see scenario 4.*
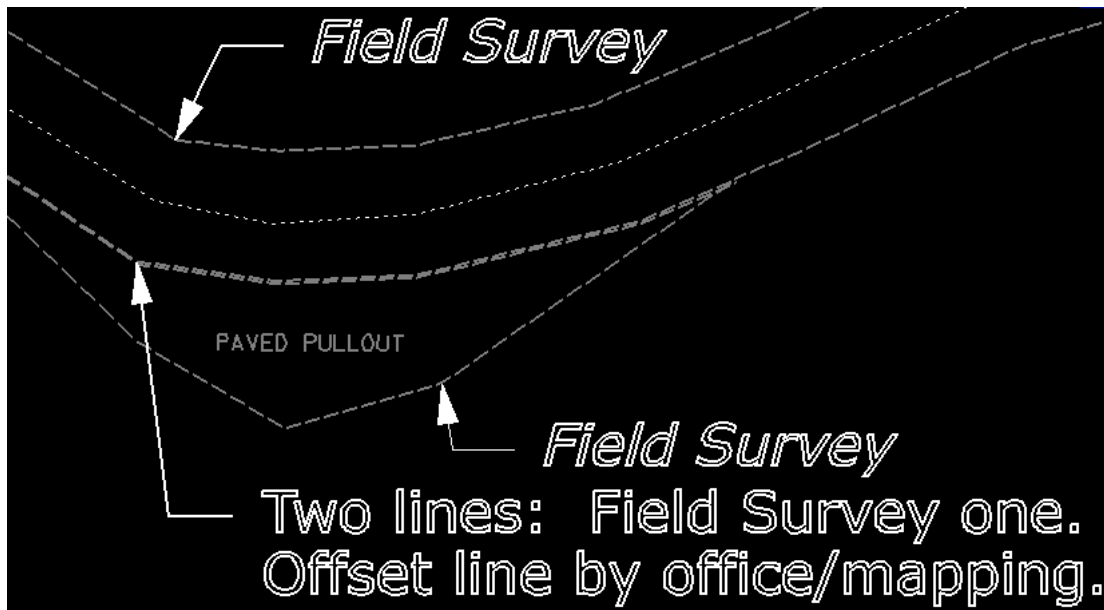
*Results:*

## Scenario 4: Existing paved roadway with a paved pullout, widening or shoulder (varying pavement thickness)

*Description:* This process will be followed when a paved roadway has an adjacent paved pullout, shoulder or widening. Follow this procedure if it is known that the pavement thickness varies from roadway to pullout/widening.



*Field Instructions:* Survey the outside edges of the normal roadway and the paved shoulder or pullout.

*Mapping Instructions:* Add an offset pavement line from the normal edge of roadway that is adjacent to the widening/pullout. The line should be placed outside of the normal edge of existing pavement at an offset that is greater than the cross section tolerances.
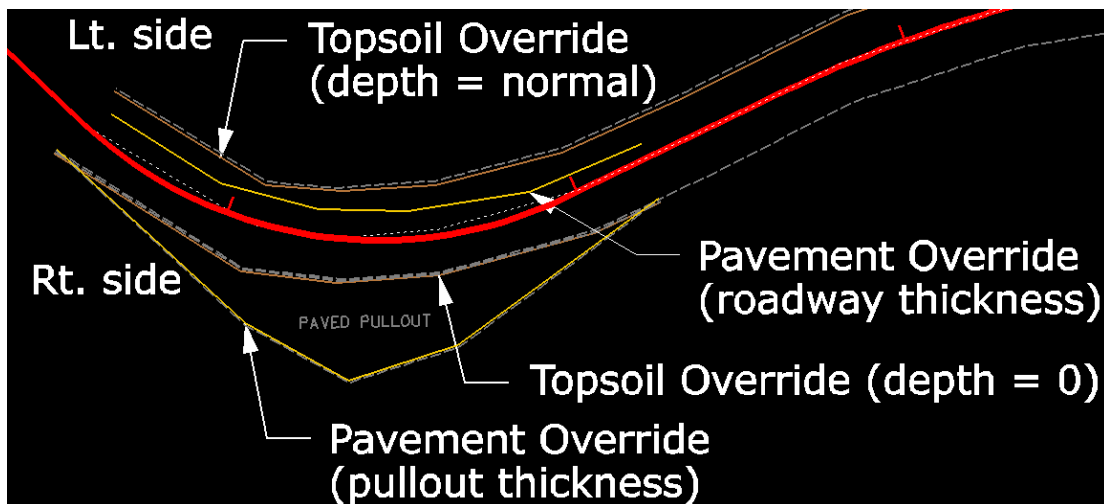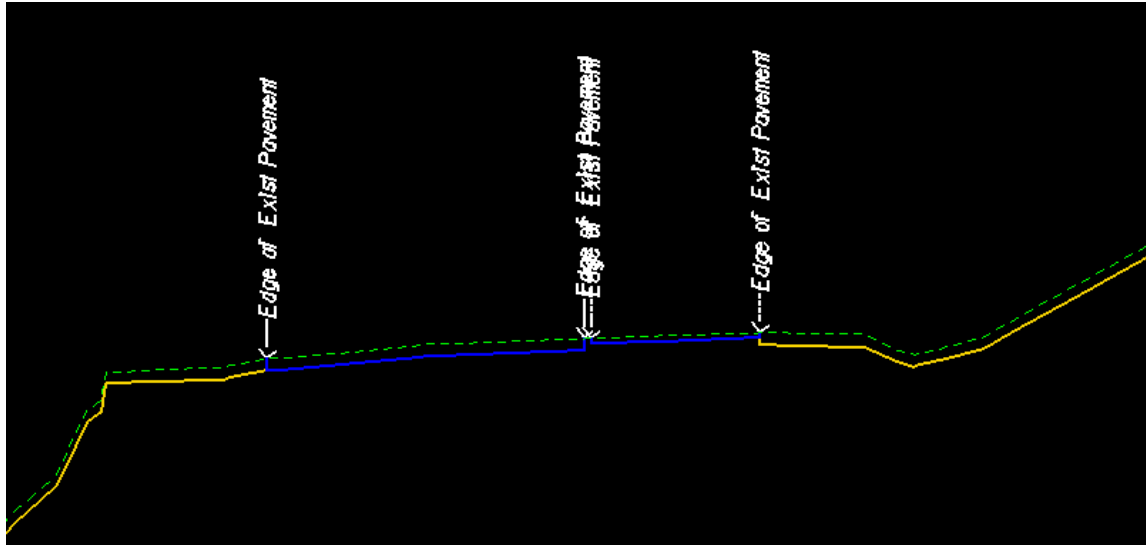
*Design Instructions:*  Two plan view override line types are needed.  Place pavement thickness override lines within the area of the widened area or pullout and the normal roadway.  No specific offset is needed.  Also, place topsoil override lines to eliminate topsoil from being drawn between the pavement edges.

*Results:*



## Scenario 5:  Existing adjacent concrete (curb, gutter & sidewalk)

*Description***:**  This process will be followed when surveying any existing concrete that is adjacent to a paved road.  *Note there the X30 criteria only has Existing sidewalk or Existing Building Pad features that can be placed into cross sections.  Only labels will be placed for mapped curb lines.*

*Field Instructions:*  Survey the outside edges of the paved road using the "Exist. Pavement" point codes.  Use judgment for which sidewalk "concrete" lines should be surveyed for labeling.  Typically either flow-line or top-front of curb is needed.  At a minimum, the outer edge of concrete including curb and/or gutter needs to be surveyed and coded as "Existing Sidewalk".  An additional pair of "Existing Sidewalk" lines needs to be coded if there is an open or grass separation between curb/gutter and sidewalk.

*Mapping Instructions:*   Place a sidewalk "concrete" line that is offset from the surveyed existing edge of pavement.  The line should be placed outside of the existing pavement at an offset that is greater than the cross section tolerances.

*Design Instructions:*  Follow normal procedures for placing existing features.  If existing topsoil is drawn in cross section view, a small sliver of topsoil may be placed between the existing pavement and

concrete "sidewalk" sections.  The designer must use the plan view override for topsoil to eliminate this sliver.  Earthwork process errors may exist if this step is not completed.

## Scenario 6:  Existing asphalt curbs

*Description***:**  This process will be followed when surveying any existing asphalt curbs that are either adjacent or interior to a paved road.  *Note there is not cross section criteria that will place curb features into cross sections.  Only labels will be placed.*

*Field Instructions:*  Survey the outside edges of the paved road using the "Exist. Pavement" point codes.  Use the outside edge of curb as "Existing Pavement" if the curb is adjacent to the roadway. Survey the top front of curb using the curb point codes so that a label will be placed in the cross sections.

*Mapping Instructions:*   Follow normal mapping procedures.  No additional steps should be necessary for this scenario.

*Design Instructions***:**  Follow normal procedures for placing existing features.  Curb removal may need to be added into the summary of quantities based upon the method of reconstruction.  Often the curb is just treated as existing pavement and removal is not necessary.

## Scenario 7:  Existing gravel road

*Description***:**  This process will be followed when surveying an existing gravel road.

*Field Instructions:*  Survey the outside edges of the gravel road using the "Exist. Gravel" point codes. *Do not use Exist. Road (Dirt Edge).  Only use Exist. Road (Dirt Edge) for labeling purposes.  An example would be a parallel dirt road which will not be reconstructed.*

*Mapping Instructions:*   Follow normal mapping procedures.  Draw gravel road edges and Exist. Gravel (Gravel Edge).

*Design Instructions***:**  Follow normal procedures for placing existing features.