|  |  |
| --- | --- |
| CoverLogo | Oregon Department of Transportation |
| Asset Management Integration Program |
| TransInfo System |

P490S - Signs Asset Specification

Version 0.6

Charlotte Daniel

History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Description | Signature/Outcome | Date |
| 0.1 | First Draft | Charlotte Daniel | 12/2/14 |
| 0.2 | Updated Asset info and added extract info | Charlotte Daniel | 12/18/14 |
| 0.3 | Added Cross Attribute Validation rules | Charlotte Daniel | 12/22/14 |
| 0.4 | Added extract and lov source | Charlotte Daniel | 1/15/15 |
| 0.5 | Added Graphic, Action, Cause as un-located assets & XSP values. Split out Extract & Table definitions into separate 490 | Charlotte Daniel | 2/5/15 |
| 0.6 | Corrected Asset Diagram and minor corrections throughout the document | Charlotte Daniel | 3/3/15 |

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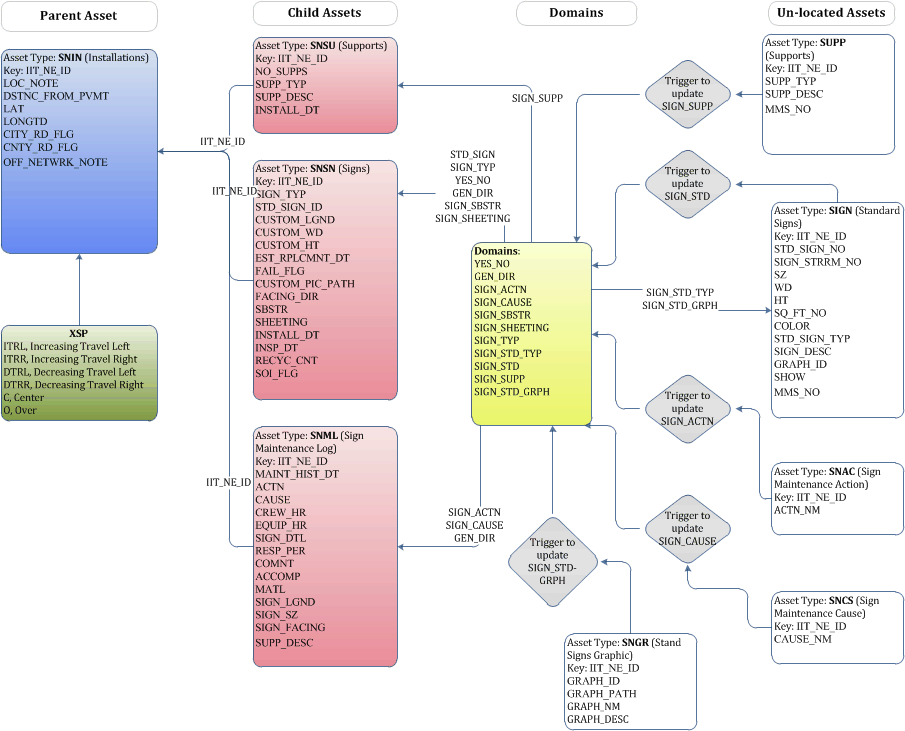
# Introduction

The purpose of this 490 is to document the changes that will be made in TransInfo to add the Sign Assets to the system. There are two other documents that will document the changes needed to the Signs (R2) database/system and the new synchronization process between TransInfo and Signs (R2) database/system. Most of the changes documented here will be made in the forms within the TransInfo system. The rest will be extracts using the TIG tool that is part of TransInfo.

The following is a summary of what will be added to TransInfo;

* Four hierarchy assets
* Five un-located assets
* Two Triggers
* Six domains
* TIG extracts
* Report schema tables
* Procedure to update the report schema tables

The Sign Assets will be set up as Hierarchy Assets as described in the figure below. IIT\_NE\_ID is the unique ID for assets in TransInfo that is automatically created. The hierarchical relationship is maintained in the NM\_INV\_TYP\_GROUPING table in TransInfo.



# Assets

The four new assets (Installations, Signs, Supports, Signs Maintenance Log) will be created in TransInfo as hierarchy assets to allow for the one-to-many relationship between them. All assets will be located according to Highway Number, Roadway ID, Suffix, Mileage Type, Overlap Code, Mile Point Number. The LRS location determines Route, Sign Crew, District, and Region.

## Installations (SNIN)

The Installations asset is the Top in Hierarchy and will contain location information about the where the panels (signs) and supports are located. A location can have one to many supports and one to many panels as well as have a maintenance log.

**Asset Meta Data Form**

**Asset Type: \_SNIN\_\_** **Description/Short description:** \_Sign Installation Location\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:** SEGM

Asset Roles: TI\_APPROLE\_SIGN\_USER, TI\_APPROLE\_ASSET\_RO

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties**

**~~[] Linear~~ [X]** XSP Allowed **[ ]** Contiguous **[X]** Replaceable **[]** Exclusive [ ] Use XY **[X]** Multiple Allowed **[ ]** End Location **[X]** Top in Hierarchy

Located on the network? [X]

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**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Location Notes | 50 |  | VarChar2 |  | LOC\_NOTE |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Distance from End of Pavement |  |  | Number |  | DSTNC\_FROM\_PVMT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Latitude | 12 | 9 | Number |  | LAT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Longitude | 12 | 9 | Number |  | LONGTD |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | City Road Flag | 1 |  | VarChar2 | YES\_NO | CITY\_RD\_FLG |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | County Road Flag | 1 |  | VarChar2 | YES\_NO | CNTY\_RD\_FLG |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Off Network Notes | 255 |  | VarChar2 |  | OFF\_NETWRK\_NOTE |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| XSP | C | CENTER |
|  | DTRL | DECREASING TRAVEL LEFT |
|  | DTRR | DECREASING TRAVEL RIGHT |
|  | ITRL | INCREASING TRAVEL LEFT |
|  | ITRR | INCREASING TRAVEL RIGHT |
|  | O | OVER |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

Rule 34: If CITY\_RD\_FLG = N and CNTY\_RD\_FLG = N then OFF\_NETWRK\_NOTE should be null

Rule 35: If CITY\_RD\_FLG IS NULL AND CNTY\_RD\_FLG IS NULL then OFF\_NETWORK\_NOTE should be null

## Signs (SNSN)

The Signs asset will contain both the Standard Signs and Custom Signs. When it is a Standard sign, it will have a link to the Domain Sign Standard (SIGN\_STD) .

**Asset Meta Data Form**

**Asset Type: \_SNSN\_\_** **Description/Short description:** \_Standard and Custom Signs\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: \_\_**ASST**\_\_**

**Network Type:** SEGM

Asset **Roles:** \_\_\_ TI\_APPROLE\_SIGN\_USER, TI\_APPROLE\_ASSET\_RO

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties**

**~~[] Linear~~ [X]** XSP Allowed **[ ]** Contiguous **[X]** Replaceable **[]** Exclusive [ ] Use XY **[]** Multiple Allowed **[ ]** End Location **[ ]** Top in Hierarchy

Located on the network? [**X**]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Sign Type | 8 |  | VarChar2 | SIGN\_TYP | SIGN\_TYP |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Standard Sign Identification | 25 |  | VarChar2 | SIGN\_STD | STD\_SIGN\_ID |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Custom Legend | 255 |  | VarChar2 |  | CUSTOM\_LGND |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Custom Width | 3 | 0 | Number |  | CUSTOM\_WD |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Custom Height | 3 | 0 | Number |  | CUSTOM\_HT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Estimate Replacement Date | 10 |  | Date |  | EST\_RPLCMNT\_DT |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Fail Flag | 1 |  | VarChar2 | YES\_NO | FAIL\_FLG |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Custom Picture Path | 255 |  | VarChar2 |  | CUSTOM\_PIC\_PATH |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Facing Direction | 1 |  | VarChar2 | GEN\_DIR | FACING\_DIR |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Substrate | 1 |  | VarChar2 | SIGN\_SBSTR | SBSTR |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Sheeting | 8 |  | VarChar2 | SIGN\_SHEETING | SHEETING |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Installation Date | 10 |  | Date |  | INSTALL\_DT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Inspection Date | 10 |  | Date |  | INSP\_DT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Recycle Count |  |  | Number |  | RECYC\_CNT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | SOI Flag | 1 |  | VarChar2 | YES\_NO | SOI\_FLG |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| XSP | C | CENTER |
|  | DTRL | DECREASING TRAVEL LEFT |
|  | DTRR | DECREASING TRAVEL RIGHT |
|  | ITRL | INCREASING TRAVEL LEFT |
|  | ITRR | INCREASING TRAVEL RIGHT |
|  | O | OVER |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

Rules: 30 & 31 - If SIGN\_TYP = C then STD\_SIGN\_ID must be null and CUSTOM\_LGND must not be null

Rules: 32 & 33 - If SIGN\_TYP = S then CUSTOM\_ LGND, CUSTOM\_WD, CUSTOM\_HT must be null and Standard Sign Identification is required

## Supports (SNSU)

The Support asset contains data about the sign supports at the installation. It will have a link to the Domain Sign Support (SIGN\_SUPP).

**Asset Meta Data Form**

**Asset Type: \_SNSU\_\_** **Description/Short description:** \_Sign Supports\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:** SEGM

Asset Roles: TI\_APPROLE\_SIGN\_USER, TI\_APPROLE\_ASSET\_RO

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties**

**~~[] Linear~~ [X]** XSP Allowed **[ ]** Contiguous **[X]** Replaceable **[]** Exclusive [ ] Use XY **[]** Multiple Allowed **[ ]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Number of Supports |  |  | Number |  | NO\_SUPPS |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Support Type | 50 |  | VarChar2 | SIGN\_SUPP | SUPP\_TYP |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Installation Date | 10 |  | Date |  | INSTALL\_DT |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| XSP | C | CENTER |
|  | DTRL | DECREASING TRAVEL LEFT |
|  | DTRR | DECREASING TRAVEL RIGHT |
|  | ITRL | INCREASING TRAVEL LEFT |
|  | ITRR | INCREASING TRAVEL RIGHT |
|  | O | OVER |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

## Sign Maintenance Log (SNML)

The Sign Maintenance Log contains information about any maintenance that was done at the installation to the Panels or Supports.

**Asset Meta Data Form**

**Asset Type: \_SNML\_\_** **Description/Short description:** \_Sign Maintenance Log\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:** SEGM

Asset Roles: TI\_APPROLE\_SIGN\_USER, TI\_APPROLE\_ASSET\_RO

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties**

**~~[] Linear~~ [X]** XSP Allowed **[ ]** Contiguous **[X]** Replaceable **[ ]** Exclusive [ ] Use XY **[]** Multiple Allowed **[ ]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | History Date | 10 |  | Date |  | MAINT\_HIST\_DT |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Action | 10 |  | VarChar2 | SIGN\_ACTN | ACTN |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Cause | 15 |  | VarChar2 | SIGN\_CAUSE | CAUSE |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Crew Hours |  |  | Number |  | CREW\_HR |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Equipment Hours |  |  | Number |  | EQUIP\_HR |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Sign Detail | 15 |  | VarChar2 |  | SIGN\_DTL |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Responsible Person | 30 |  | VarChar2 |  | RESP\_PER |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Comments | 255 |  | VarChar2 |  | COMNT |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Accomplishments |  |  | Number |  | ACCOMP |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Materials | 255 |  | VarChar2 |  | MATL |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Sign Description | 150 |  | VarChar2 |  | SIGN\_DESC |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Sign Size | 50 |  | VarChar2 |  | SIGN\_SZ |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Sign Facing | 1 |  | VarChar2 | GEN\_DIR | SIGN\_FACING |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Support Description | 255 |  | VarChar2 |  | SUPP\_DESC |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| XSP | C | CENTER |
|  | DTRL | DECREASING TRAVEL LEFT |
|  | DTRR | DECREASING TRAVEL RIGHT |
|  | ITRL | INCREASING TRAVEL LEFT |
|  | ITRR | INCREASING TRAVEL RIGHT |
|  | O | OVER |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

# Un-located Assets

The five un-located assets will be used as domains and will each have a trigger to update the corresponding domains when a record is update or added.

## Standard Sign Descriptions (SIGN)

The Standard Sign Description asset is an un-located asset that will populate a domain called SIGN\_STD via a trigger. The domain will be linked to the Sign asset. The trigger function is documented in the Bentley 490.

**Asset Meta Data Form**

**Asset Type: \_SIGN\_\_** **Description/Short description:** \_Standard Signs\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:**

Asset Roles: TI\_APPROLE\_ASSET\_RO, TI\_APPROLE\_SIGN\_ADMIN

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties (Not sure which ones (if any) should be selected)**

**~~[] Linear~~ []** XSP Allowed **[ ]** Contiguous **[]** Replaceable **[]** Exclusive [ ] Use XY **[]** Multiple Allowed **[X]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Standard Sign Number | 25 |  | VarChar2 |  | STD\_SIGN\_NO |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Sign Storeroom Number | 10 |  | VarChar2 |  | SIGN\_STRRM\_NO |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Size | 10 |  | VarChar2 |  | SZ |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Width | 3 |  | Number |  | WD |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Height | 3 |  | Number |  | HT |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Square Foot | 10 |  | Number |  | SQ\_FT\_NO |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Color | 50 |  | VarChar2 |  | COLOR |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Standard Sign Type | 50 |  | VarChar2 | SIGN\_STD\_TYP | STD\_SIGN\_TYP |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Sign Description | 150 |  | VarChar2 |  | SIGN\_DESC |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Graphic ID |  |  | Number | SIGN\_STD\_GRAPH | GRAPH\_ID |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Show | 1 |  | VarChar2 | YES\_NO | SHOW |  |  |  | 01-JAN-1901 |  |  |  |  |
|  | MMS Number | 10 |  | VarChar2 |  | MMS\_NO |  |  |  | 01-JAN-1901 |  |  | Y |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| Standard Sign | Custom Trigger | See the SIGN\_STD domain |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Conversion Rules**

Replace Commas with a Dash “-“ in the Color and Graphic Description fields

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

This asset will populate a domain by a custom trigger.

## Standard Sign Graphics (SNGR)

The Standard Sign Description asset is an un-located asset that will populate a domain called SIGN\_STD via a trigger. The domain will be linked to the Sign asset. The trigger function is documented in the Bentley 490.

**Asset Meta Data Form**

**Asset Type: \_SNGR\_\_** **Description/Short description:** \_Standard Signs Graphics\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:**

Asset Roles: TI\_APPROLE\_ASSET\_RO, TI\_APPROLE\_SIGN\_ADMIN

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties (Not sure which ones (if any) should be selected)**

**~~[] Linear~~ []** XSP Allowed **[ ]** Contiguous **[]** Replaceable **[]** Exclusive [ ] Use XY **[]** Multiple Allowed **[X]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Graphic ID |  |  | Number |  | GRAPH\_ID |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Graphic Path | 100 |  | VarChar2 |  | GRAPH\_PATH |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Graphic Name | 30 |  | VarChar2 |  | GRAPH\_NM |  |  |  | 01-JAN-1901 |  |  | Y |  |
|  | Graphic Description | 80 |  | VarChar2 |  | GRAPH\_DESC |  |  |  | 01-JAN-1901 |  |  | Y |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| Standard Sign Graphic | Custom Trigger | See the SIGN\_STD\_GRAPH domain. |
|  |  |  |
|  |  |  |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

This asset will populate a domain by a custom trigger.

Graphic Path will contain the full file path to the Graphic location.

## Support Descriptions (SUPP)

The Support Description asset is an un-located asset that will populate a domain called SIGN\_SUPP via a trigger. The domain will be linked to the Support asset. The trigger function is documented in the Bentley 490.

**Asset Meta Data Form**

**Asset Type: \_SUPP\_\_** **Description/Short description:** \_Support Information\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:**

Asset Roles: TI\_APPROLE\_ASSET\_RO, TI\_APPROLE\_SIGN\_ADMIN

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties (Not sure which ones (if any) should be selected)**

**~~[] Linear~~ []** XSP Allowed **[ ]** Contiguous **[ ]** Replaceable **[ ]** Exclusive [ ] Use XY **[ ]** Multiple Allowed **[X]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Support Type | 30 |  | VarChar2 |  | SUPP\_TYP |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | Support Description | 80 |  | VarChar2 |  | SUPP\_DESC |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  | MMS Number | 10 |  | VarChar2 |  | MMS\_NO |  |  |  | 01-JAN-1901 |  |  | Y |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| Sign | Custom Trigger | See the SIGN\_SUPP domain. |
|  |  |  |
|  |  |  |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

This asset will populate a domain by a custom trigger.

## Action (SNAC)

The Support Description asset is an un-located asset that will populate a domain called SIGN\_SUPP via a trigger. The domain will be linked to the Support asset. The trigger function is documented in the Bentley 490.

**Asset Meta Data Form**

**Asset Type: \_SNAC\_\_** **Description/Short description:** \_Sign Maintenance Action\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:**

Asset Roles: TI\_APPROLE\_ASSET\_RO, TI\_APPROLE\_SIGN\_ADMIN

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties (Not sure which ones (if any) should be selected)**

**~~[] Linear~~ []** XSP Allowed **[ ]** Contiguous **[ ]** Replaceable **[ ]** Exclusive [ ] Use XY **[ ]** Multiple Allowed **[X]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Action Name | 30 |  | VarChar2 |  | ACTN\_NM |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| Sign Action | Custom Trigger | See the SIGN\_ACTN domain. |
|  |  |  |
|  |  |  |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

This asset will populate a domain by a custom trigger.

## Cause (SNCS)

The Support Description asset is an un-located asset that will populate a domain called SIGN\_SUPP via a trigger. The domain will be linked to the Support asset. The trigger function is documented in the Bentley 490.

**Asset Meta Data Form**

**Asset Type: \_SNCS\_\_** **Description/Short description:** \_Sign Maintenance Cause\_\_\_\_\_

S**tart Date**: 01-JAN-1901  **Admin Unit Type: ASST**

**Network Type:**

Asset Roles: TI\_APPROLE\_ASSET\_RO, TI\_APPROLE\_SIGN\_ADMIN

**BD10290_**

**Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Continuous/Point** | **Elec/Drain/Carr** | **Category** | **View Name** | **Short Description** |
| P | C | I | (Not required) | (As above) |

**Properties (Not sure which ones (if any) should be selected)**

**~~[] Linear~~ []** XSP Allowed **[ ]** Contiguous **[ ]** Replaceable **[ ]** Exclusive [ ] Use XY **[ ]** Multiple Allowed **[X]** End Location **[ ]** Top in Hierarchy

Located on the network? [ ]

**BD10290_**

**Attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seq** | **Screen Text** | **Length** | **Dec** | **Format** | **Domain** | **View Attrib / Column Name** | **Min** | **Max** | **Units** | **Start Date** | **Mandatory?** | **Exclusive?** | **Displayed** | **Width** |
|  | Identification | 9 |  | Number |  | IIT\_NE\_ID |  |  |  | 01-JAN-1901 | Y |  | N |  |
|  | Cause Name | 30 |  | VarChar2 |  | CAUSE\_NM |  |  |  | 01-JAN-1901 | Y |  | Y |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Attribute and XSP Values/Domains and Descriptions:**

|  |  |  |
| --- | --- | --- |
| **Domain** | **Value** | **Meaning** |
| Sign Cause | Custom Trigger | See the SIGN\_CAUSE domain. |
|  |  |  |
|  |  |  |

**Conversion Rules**

**Business Rules / Special Instructions – use this area to note any relationships not modeled above, or unresolved issues you discover.**

This asset will populate a domain by a custom trigger.

# Domains

In addition to the three existing Domains (lookup tables) in TransInfo that will be used, five new ones will also be added to TransInfo.

## Domains Already in TI

### Yes\_No

| Domain | Value | Meaning |
| --- | --- | --- |
| Yes\_No |  |  |
|  | Y | Yes |
|  | N | No |

### XSP

| Domain | Value | Meaning |
| --- | --- | --- |
| XSP (Side of Road) |  |  |
|  | ITRL | Increasing Travel Left |
|  | ITRR | Increasing Travel Right |
|  | DTRL | Decreasing Travel Left |
|  | DTRR | Decreasing Travel Right |
|  | C | Center |
|  | O | Over |

### General Direction (GEN\_DIR)

| Domain | Value | Meaning |
| --- | --- | --- |
| General Direction |  |  |
|  | N | North |
|  | S | South |
|  | E | East |
|  | W | West |

## New Domains to TI

### Actions (SIGN\_ACTN)

The Sign Action Domain is populated from the un-located asset SNAC.

| Domain | Value | Meaning |
| --- | --- | --- |
| Actions | *Populated by Trigger* | *Populated by Trigger* |
|  | Inspection | Inspection |
|  | Installation | Installation |
|  | Maintenance | Maintenance |
|  | New | New |
|  | Relocation | Relocation |
|  | Remount Sign | Remount Sign |
|  | Removal | Removal |
|  | Replace Post | Replace Post |
|  | Replace Sign | Replace Sign |
|  | Replace Sign And Post | Replace Sign And Post |
|  | Reset Post | Reset Post |
|  | Service | Service |

### Causes (SIGN\_CAUSE)

The Sign Cause Domain is populated from the un-located asset SNCS.

| Domain | Value | Meaning |
| --- | --- | --- |
| Causes | *Populated by Trigger* | *Populated by Trigger* |
|  | Accident | Accident |
|  | Brush Cut | Brush Cut |
|  | Graffiti | Graffiti |
|  | New Install | New Install |
|  | New Sign | New Sign |
|  | Other | Other |
|  | Reflectivity | Reflectivity |
|  | Requested | Requested |
|  | Rotten Post | Rotten Post |
|  | Snow Damage | Snow Damage |
|  | Stolen | Stolen |
|  | Storm | Storm |
|  | Straightened | Straightened |
|  | Vandalized | Vandalized |
|  | Visibility | Visibility |
|  | Washed | Washed |
|  | Wornout | Wornout |

### Substrate (SIGN\_SBSTR)

| Domain | Value | Meaning |
| --- | --- | --- |
| Substrate |  |  |
|  | E | Extruded Aluminum |
|  | S | Sheet Aluminum |
|  | W | Plywood |

### Sheeting (SIGN\_SHEETING)

| Domain | Value | Meaning |
| --- | --- | --- |
| Sheeting |  |  |
|  | Type I | Engineering Grade |
|  | Type II | Super Engineering Grade |
|  | Type III | High Intensity |
|  | Type IV | Prismatic |
|  | Type VII | Super High Intensity |
|  | Type IX | Diamond Grade |
|  | Type XI | Diamond Grade |

### Sign Type (SIGN\_TYP)

| Domain | Value | Meaning |
| --- | --- | --- |
| Sign Type |  |  |
|  | C | Custom |
|  | S | Standard |



### Standard Sign Type (SIGN\_STD\_TYP)

| Domain | Value | Meaning |
| --- | --- | --- |
| Standard Sign Type |  |  |
|  | CULTR | CULTURAL |
|  | GUIDE | GUIDE |
|  | HIST | HISTORICAL |
|  | PRMSV | PERMISSIVE |
|  | REC | RECREATIONAL |
|  | REGLTY | REGULATORY |
|  | RTE | ROUTE MARKER |
|  | SRVC | SERVICE |
|  | WRN | WARNING |

### Sign Standard (SIGN\_STD)

The Sign Standard Domain is populated from the un-located asset SIGN.

| Domain | Value | Meaning |
| --- | --- | --- |
| SIGN\_STD | Populated by Trigger | Populated by Trigger |

### Sign Standard Graphic (SIGN\_STD\_GRAPH)

The Sign Standard Domain is populated from the un-located asset SNGR.

| Domain | Value | Meaning |
| --- | --- | --- |
| SIGN\_STD\_GRAPH | Populated by Trigger | Populated by Trigger |

### Sign Support (SIGN\_SUPP)

The Sign Support Domain is populated from the un-located asset SUPP.

| Domain | Value | Meaning |
| --- | --- | --- |
| SIGN\_SUPP | Populated by Trigger | Populated by Trigger |

## Managed In Access

* Major Minor (tblMajorMinor)
* SOI (tblSOIDefaultValues)
* District Lookup (tblDistrictLkup)
* Version Control (tblVersionControl)
* Default District (tblDfltDist)

# Triggers

## Populate Standard Sign Domain

The Sign Standard Domain is populated from the un-located asset SIGN. When a new standard sign is added or an existing record is updated, a trigger then populates the value in the domain.

|  |  |  |  |
| --- | --- | --- | --- |
| Domain | Value | Meaning | Rules |
| SIGN\_STD | STD\_SIGN\_NO | SIGN\_STRRM\_NO  + HT  + WD  + COLOR  + STD\_SIGN\_TYP  + SIGN\_DESC | Trim to 7  Trim to 3  Trim to 3  Trim to 20  Trim to 7  Trim to 40 or 35\* |
| *Example* | OR16-6-42 | 405518|42|30|BLK/SIL|REGLTY|$500 PENALTY FOR THROWING AWAY BURN |  |

\*This is for space allowance between the different fields when they are concatenated.

See the Bentley Specification document for additional details.

## Populate Standard Sign Graphic Domain

The Sign Standard Graphic Domain is populated from the un-located asset SNGR. When a new standard sign graphic is added or an existing record is updated, a trigger then populates the value in the domain.

|  |  |  |
| --- | --- | --- |
| Domain | Value | Meaning |
| SIGN\_STD\_GRAPH | GRAPH\_NM | GRAPH\_DESC |
| *Example* | CD-1 | Evacuation Route |

See the Bentley Specification document for additional details.

## Populate Support Domain

The Sign Support Domain is populated from the un-located asset SUPP. When a new support is added or an existing record is updated, upon save a trigger then populates the value in the domain.

| Domain | Value | Meaning |
| --- | --- | --- |
| SIGN\_SUPP | SUPP\_TYP | SUPP\_DESC |
| *Example* | ST 2 1/2" x 10ga x 12' | SQUARE TUBE 2 1/2" x 10ga x 12' |

See the Bentley Specification document for additional details.

## Populate Action Domain

The Sign Action Domain is populated from the un-located asset SNAC. When a new support is added or an existing record is updated, upon save a trigger then populates the value in the domain.

| Domain | Value | Meaning |
| --- | --- | --- |
| SIGN\_ACTN | ACTN\_NM | ACTN\_NM |

See the Bentley Specification document for additional details.

## Populate Cause Domain

The Sign Cause Domain is populated from the un-located asset SNCS. When a new support is added or an existing record is updated, upon save a trigger then populates the value in the domain.

| Domain | Value | Meaning |
| --- | --- | --- |
| SIGN\_CAUSE | CAUSE\_NM | CAUSE\_NM |

See the Bentley Specification document for additional details.

# Cross Attribute Validate Setup

## Conditions

|  |  |  |  |
| --- | --- | --- | --- |
| Asset Type | Type Attribute | Condition | Values |
| SNSN | SIGN\_TYP | = | ‘C’ |
| SNSN | SIGN\_TYP | = | ‘S’ |
| SNSN | CUSTOM\_LGND | IS NOT NULL |  |
| SNSN | CUSTOM\_LGND | IS NULL |  |
| SNSN | CUSTOM\_WD | IS NOT NULL |  |
| SNSN | CUSTOM\_WD | IS NULL |  |
| SNSN | CUSTOM\_HT | IS NOT NULL |  |
| SNSN | CUSTOM\_HT | IS NULL |  |
| SNSN | CUSTOM\_PIC | IS NOT NULL |  |
| SNSN | STD\_SIGN\_ID | IS NULL |  |
| SNSN | STD\_SIGN\_ID | IS NOT NULL |  |
| SNIN | CITY\_FLG | = | ‘N’ |
| SNIN | CITY\_FLG | IS NULL |  |
| SNIN | CNTY\_FLG | = | ‘N’ |
| SNIN | CNTY\_FLG | IS NULL |  |
| SNIN | OFF\_NETWRK\_NOTE | IS NOT NULL |  |

## Errors

|  |  |  |
| --- | --- | --- |
| Error Number | Error Text | Class |
| -20000020 | If Sign Type is 'Custom' then Custom Legend, Width, Height must be filled | I |
| -20000021 | If Sign Type is 'Custom' then Standard Sign ID must not be used | I |
| -20000022 | If Sign Type is 'Standard' then Custom fields must not be used | I |
| -20000023 | If Sign Type is 'Standard' then Standard Sign ID must be used | I |
| -20000024 | Either City or Count Flag must be 'Y' to use this field | I |

## Rules

|  |  |  |  |
| --- | --- | --- | --- |
| Seq No | Description | Error Number | |
| 30 | Custom Sign required data | -20000020 | |
| Driving Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.SIGN\_TYP = 'C' | |  |
| Validation Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.CUSTOM\_HT IS NULL | |  |
| 2 | SNSN.CUSTOM\_LGND IS NULL | | OR |
| 3 | SNSN.CUSTOM\_WD IS NULL | | OR |

|  |  |  |  |
| --- | --- | --- | --- |
| Seq No | Description | Error Number | |
| 31 | Custom signs cannot have a Standard Sign ID | -20000021 | |
| Driving Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.SIGN\_TYP = 'C' | |  |
| Validation Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.STD\_SIGN\_ID IS NOT NULL | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Seq No | Description | Error Number | |
| 32 | Standard Signs cannot have custom data | -20000022 | |
| Driving Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.SIGN\_TYP = 'S' | |  |
| Validation Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.CUSTOM\_HT IS NOT NULL | |  |
| 2 | SNSN.CUSTOM\_LGND IS NOT NULL | | OR |
| 3 | SNSN.CUSTOM\_WD IS NOT NULL | | OR |
| 4 | SNSN.CUSTOM\_PIC IS NOT NULL | | OR |

|  |  |  |  |
| --- | --- | --- | --- |
| Seq No | Description | Error Number | |
| 33 | Standard Signs require Standard Sign ID | -20000023 | |
| Driving Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.SIGN\_TYP = 'S' | |  |
| Validation Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNSN.STD\_SIGN\_ID IS NULL | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Seq No | Description | Error Number | |
| 34 | A ‘Yes’ City or County flag required | -20000024 | |
| Driving Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNIN.OFF\_NETWRK\_NOTE IS NOT NULL | |  |
| Validation Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNIN.CITY\_FLG = 'N' | |  |
| 2 | SNIN.CNTY\_FLG = 'N' | | AND |

|  |  |  |  |
| --- | --- | --- | --- |
| Seq No | Description | Error Number | |
| 35 | A ‘Yes’ City or County flag required | -20000024 | |
| Driving Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNIN.OFF\_NETWRK\_NOTE IS NOT NULL | |  |
| Validation Conditions | | | |
| Seq No | IF Condition | | Boolean Connector |
| 1 | SNIN.CITY\_FLG IS NULL | |  |
| 2 | SNIN.CNTY\_FLG IS NULL | | AND |

# TIG Extracts

There will be four extracts set up in the TIG tool within TransInfo that will be used to populate the lookup tables that are based on highway and boundary data. These are documented in detail in the P490 Highway Extract Specification document.

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Extract Name | Description/Comments | New/Existing |
|  | MP Hundredths | A record at each hundredth of a mile, including lat/long in WGS84. All highways that are not preliminary. | Update Existing |
|  | MP Hundredths Preliminary | A record at each hundredth of a mile, including lat/long in WGS84. Preliminary highways only. | New |
|  | Maintenance Crew Hierarchy | Crew hierarchy lookup containing all the maintenance crews, district, region, LRS, MP | New |
|  | Route/Highways Location | Highway lookup containing the highway number, name, routes and segment description | New |

## LOV Rules

The following LOVs will be generated from the Extracts

| Districts | Select Distinct from ODS\_MAINT\_ HIER |
| --- | --- |
| District | DIST |
| Region | REG |
| Crew | CREW where CREW\_TYP = ‘SNCW’ |

| Highways | Select Distinct from ODS\_RTE\_HWY\_LOC |
| --- | --- |
| Hwy No | HWY\_NO |
| Hwy Name | HWY\_NM |

| Highway EA | Select from ODS\_RTE\_HWY\_LOC & ODS\_MAINT\_ HIER |
| --- | --- |
| EA | M.EA\_NO |
| HWY | H.HWY\_NO |
| Mileage Type | H.LRM\_KEY (trim to just the 7th character) |
| Beg MP | H.BEG\_MP\_NO |
| End MP | H.END\_MP\_NO |
| Description | M. CNT\_SECT\_DESC |
| Crew | M.CREW where CREW\_TYP = ‘SNCW’ |

| HWY Lookup | Select from ODS\_RTE\_HWY\_LOC & ODS\_MAINT\_ HIER |
| --- | --- |
| ID | ???? (I think this is an Access key field) |
| Mileage Type | H.LRM\_KEY (trim to just the 7th character) |
| RD\_ID | H.LRM\_KEY (trim to just the first 5 character) |
| RDWY ID | H.LRM\_KEY (trim to just the 6th character) |
| Beg MP | H.BEG\_MP\_NO |
| End MP | H.END\_MP\_NO |
| District | M.DIST |
| IS RTE | H.IS\_RTE |
| US RTE | H.US\_RTE\_1 |
| OR RTE | H.OR\_RTE\_1 |

| Route IS | Select Distinct from ODS\_RTE\_HWY\_LOC |
| --- | --- |
| IS RTE | IS\_RTE |

| Route US | Select Distinct from ODS\_RTE\_HWY\_LOC |
| --- | --- |
| US RTE | US\_RTE\_1 |

| Route State | Select Distinct from ODS\_RTE\_HWY\_LOC |
| --- | --- |
| OR RTE | OR\_RTE\_1 |

| Milepoint Prefixes | Select from ODS\_RTE\_HWY\_LOC & Mileage Type Domain | *Example* | *Example* |
| --- | --- | --- | --- |
| MPPrefix | MLGE\_TYP||OVLP\_CD | *00* | *Z1* |
| Description | When MLGE\_TYP = ‘Z’  Then MLGE\_TYP DOMAIN MEANING||OVLP\_CD  Else MLGE\_TYP DOMAIN MEANING | *Regular Mileage* | *Overlap Mileage 1* |

| HWY GPS Data (MP Hundredths) | Select from ODS\_MP\_HUND & ODS\_MAINT\_ HIER |
| --- | --- |
| GIS\_PRC\_DT | H.GIS\_PRC\_DT |
| HWYNUMB | H.HWY\_NO |
| LAT | H.LAT |
| LONGTD | H.LONGTD |
| MLGE\_TYP | H.MLGE\_TYP |
| MP | H.MP |
| OVLP\_CD | H.OVLP\_CD |
| RDWY\_ID | H.RDWY\_ID |
| RDWY\_TYP | H.RDWY\_TYP |
| CREW | M.CREW where CREW\_TYP = ‘SNCW’ |
| LAST\_UPDT\_DT | H.LAST\_UPDT\_DT |

## Reporting Extracts

TBD Need to determine what data/tables are needed for reporting.

The Report Schema is used to house data that is made available to other systems. This will require the set-up of a new procedure and the creation of several tables.

* Procedure to automatically run the TIG Extracts with a dependency on the HTDR1 refresh job
  + Procedure: LOAD\_SIGN\_DATA

# Data Conversion Considerations

* District IDs in Access do not all match what is in TransInfo.
  + Broker will put district 2b and 2c on all district 2 toughbooks, but will populate the location district field with the proper district (2b or 2c)
  + Jason will verify with the district 7 manager that we can put all district 7 data on all district 7 toughbooks and merge district 7 back into one district in Access
* Crew boundaries in TI need to be validated that they match what is expected in Access. This could impact the extracts and synch process.

# Security

A SIGN user will be created within the TransInfo application so that all users requiring access to the TransInfo data will be able to get access The role TI\_APPROLE\_SIGN\_USER will be created and associated to the sign asset type used in the creation and maintenance of Signs (SNIN – Sign Installations, SNSN – Signs, SNSU – Sign Supports, SNML – Sign Maintenance). The role of TI\_APPROLE\_SIGN\_ADMIN will be created to maintain the five un-located asset SIGN (Standard Sign) and SUPP (Supports).

Only TransInfo System administrators should be able to change metadata for the Sign related assets. Using a role based access approach; it will enforce metamodel rules and prevent a User from end-dating network segments that have Sign locations.

The role SIGN\_BROKER\_ROLE will be created for the Broker to talk with TransInfo.

Backend (Oracle) user accounts will be created for each ToughBook and assigned the SIGN\_BROKER\_ROLE. They will use the naming convention of SIGN\_DIST\_TBID (TBID=ToughBook Identifier). Assign a start date of 01-JAN-1901 and create the account as a copy of TRANSINFO. The DBA will grant the appropriate roles to the identified user accounts that are set up. The username and password will exist in an encrypted XML file on each ToughBook for the Broker to read and use.

# Asset Notes

This contains the data that will be put into the Notes field for each of the assets. In TransInfo, this is where we put the data definitions for each asset.

**Asset:** Standard Signs (SIGN) - Is an unlocated asset that contains a list of all available standard signs that is used to populate the SIGN\_STD domain.

**Attributes:**

-Color: The color codes of the sign. (e.g. SIL/RED)

-Graphic Identification: The identifier of the graphic for this sign

-Height: The height of the sign

-MMS Number: The unique 4 digit # for that Standard Sign assigned by the Sign Construction Shop. Crew can order a Standard sign by the MMS number, or by the description. (Materials Management System Sign number)

-Show: Indicates if this sign will display or not

-Sign Description: A short description of what the sign is

-Sign Size: The height and width of the sign

-Sign Storeroom Number: The storeroom number for the standard sign

-Square Foot Number: The square footage of the sign

-Standard Sign Number: The unique number for the standard sign

-Standard Sign Type: The category of sign (e.g. Guide, Construction, Guide, etc.)

-Width: The width of the sign

**Asset:** Sign Maintenance Action (SNAC) - Is an unlocated asset that contains a list of all available maintenance action that is used to populate the SIGN\_ACTN domain.

**Attributes:**

-Action Name: Short description of the action taken by the maintenance crew on the sign/support/installation

**Asset:** Sign Maintenance Cause (SNCS) - Is an unlocated asset that contains a list of all available maintenance causes that is used to populate the SIGN\_CAUSE domain.

**Attributes:**

-Cause Name: Short description of the cause that triggered a need for the maintenance crew’s work

**Asset:** Standard Sign Graphics (SNGR) – Is an unlocated asset that contains the filenames and description for images files of all Standard Signs that is used to populate the SIGN\_STD\_GRAPH domain.

**Attributes:**

-Graphic Description: The full graphic description that is used to populate the meaning field of the domain

-Graphic Identification: The unique id for the standard sign graphic

-Graphic Name: The short name of the graphic that is used to populate the value field of the domain

-Graphic Path: The file path to the location of the sign graphic

**Asset:** Installations (SNIN) – Is the parent asset of SNSN, SNSU, and SNML. It contains information about the installation

**Attributes:**

-City Road Flag: Used to indicate that the sign is physically located on a City street.

-County Road Flag: Used to indicate that the sign is physically located on a County street.

-Distance from End of Pavement: Distance from End Of Pavement to support

-Latitude: The Latitude location of the installation

-Location Notes: Freeform location notes entered by the sign crew

-Longitude: The Longitude location of the installation

-Off Network Notes: Free-form text field for additional information about the installation when it is off network

**Asset:** Sign Maintenance Log (SNML) – Is a child asset of SNIN. It contains maintenance History Data on work done to the installation, signs, and supports.

**Attributes:**

-Accomplishments:

-Action: The type of action that was taken at the installation - selected from a drop-down list

-Cause: The type of cause that required action at the installation

-Comments: Text field for additional information about the action that was taken

-Crew Hours: The number of hours that the crew spent on the action at the installation

-Equipment Hours: The number of hours that equipment was used to complete the action at the installation

-Maintenance History Date: The date that work was performed on the installation, sign, or supports

-Materials: Text field to list additional materials that were used

-Responsible Person: The initials of the person that performed the action at the installation

-Sign Details: The ID of the sign that was worked on

-Sign Facing: The direction that the sign is facing (N,S,E,W)

-Sign Legend: Legend or description of the sign

-Sign Size: The size of the sign that was worked on

-Support Description: The description of the sign that was worked on

**Asset:** Installed Signs (SNSN) - Is a child asset of SNIN. It contains data for standard and custom signs that have been installed.

**Attributes:**

-Custom Height: The height of the sign

-Custom Legend: The lines of text that are on the custom sign that is installed

-Custom Picture Path: The path where the photo of the custom sign is located on the computer

-Custom Width: The width of the sign

-Estimate Replacement Date: The date the sign needs to be reviewed for replacement. 15 years from the date of installation

-Facing Direction: The direction that the sign is facing (N,S,E,W)

-Fail Flag: A checkbox that indicates if the sign has failed or not

-Inspection Date: The date that the sign was inspected

-Installation Date: The date that the sign was installed

-Recycle Count:

-SOI Flag: Indicates if the Storeroom Order Invoice number is used

-Sheeting: The quality/grade level of material that the sign is made out of

-Sign Type: Indicates if the sign is Standard (S) or Custom (C)

-Standard Sign Identification: Short description of the standard sign that is installed.

-Substrate: The Type of material that the sign is made out of

**Asset:** Installed Sign Supports (SNSU) – Is a child asset of SNIN. The sign supports that are installed

**Attributes:**

-Installation Date: The date that the support was installed

-Number of Supports: The number of supports at the installation

-Support Type: The abbreviated description of the support

**Asset:** Available Sign Supports (SUPP) – Is an unlocated asset that contains a list of all available support types and sizes that is used to populate the SIGN\_SUPP domain.

**Attributes:**

-Support Type: The abbreviated description of the support that becomes the domain value.

-Support Description: The full description of the support type and size.

-MMS Number: Materials Management System Sign number