Connecticut DOT

Data Management for Asset Management

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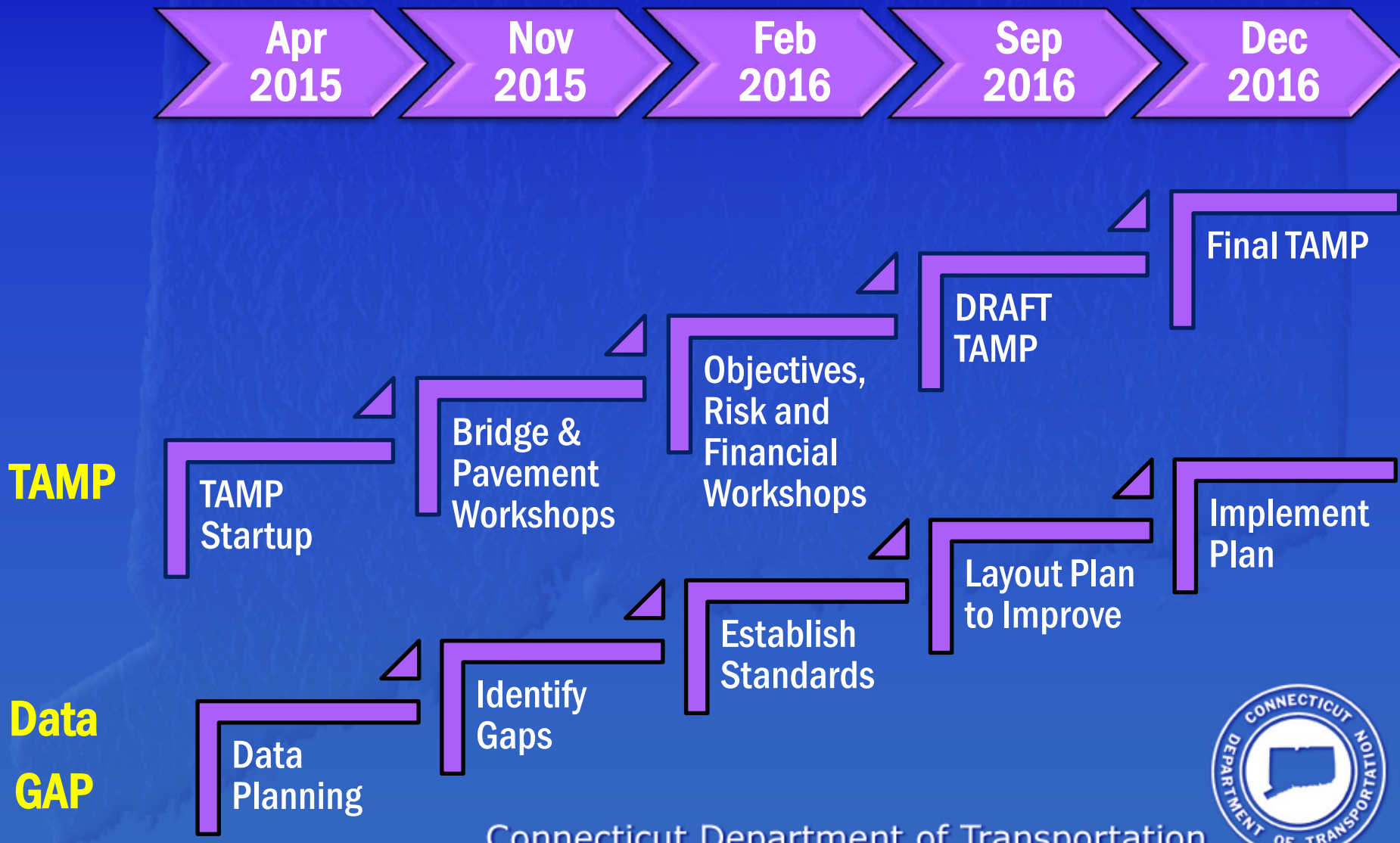
TAMP and Data GAP Timelines



Highway TAMP Assets

Initial TAMP

- Pavements
- Bridges
- Sign Supports
- Signals
- Signs
- Pavement Markings

Future TAMPs

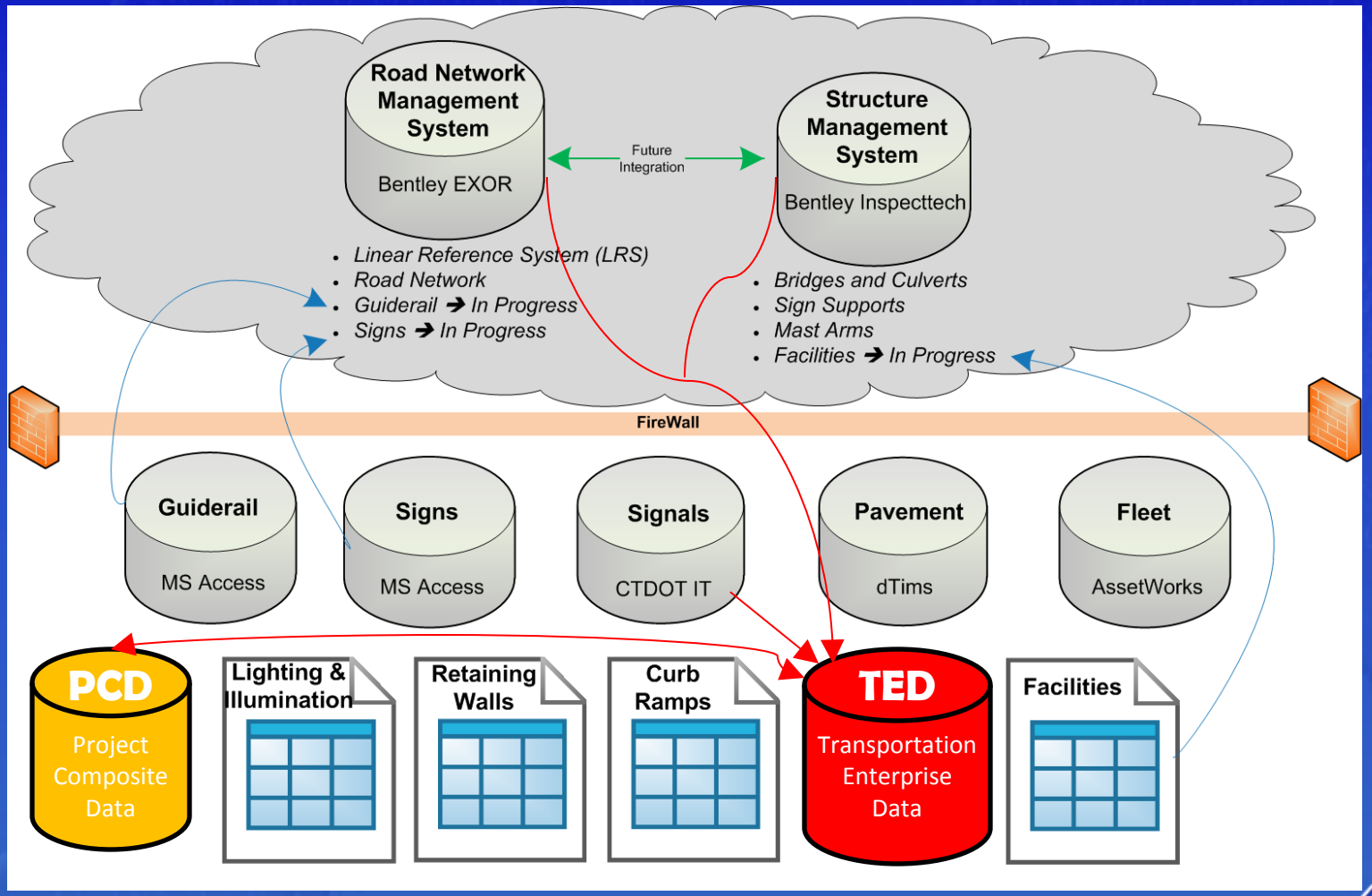
- Retaining Walls
- Guiderail
- Curb Ramps
- Lighting & Illumination
- Fleet
- Buildings
- ITS
- …

Goals

1. Keep Asset Inventories Updated

2. Maximize Data Integration

Current Asset Inventory Systems

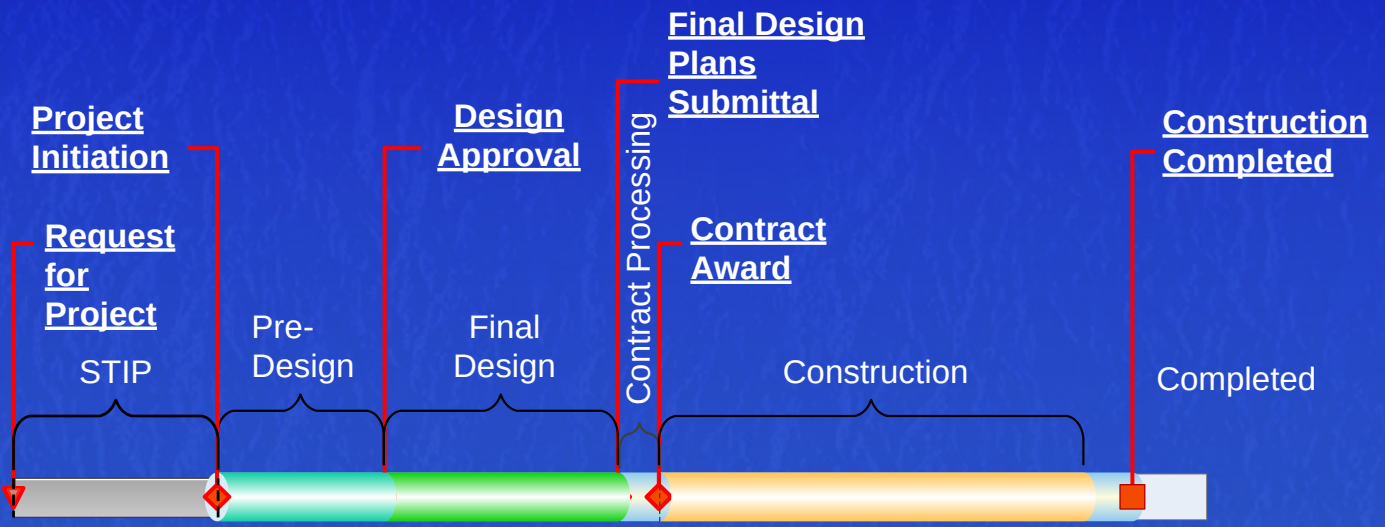


Where do the assets get changed during their life?

- Construction
- Maintenance
- Permits

Identifying Assets in Capital Construction Projects

Project Timeline



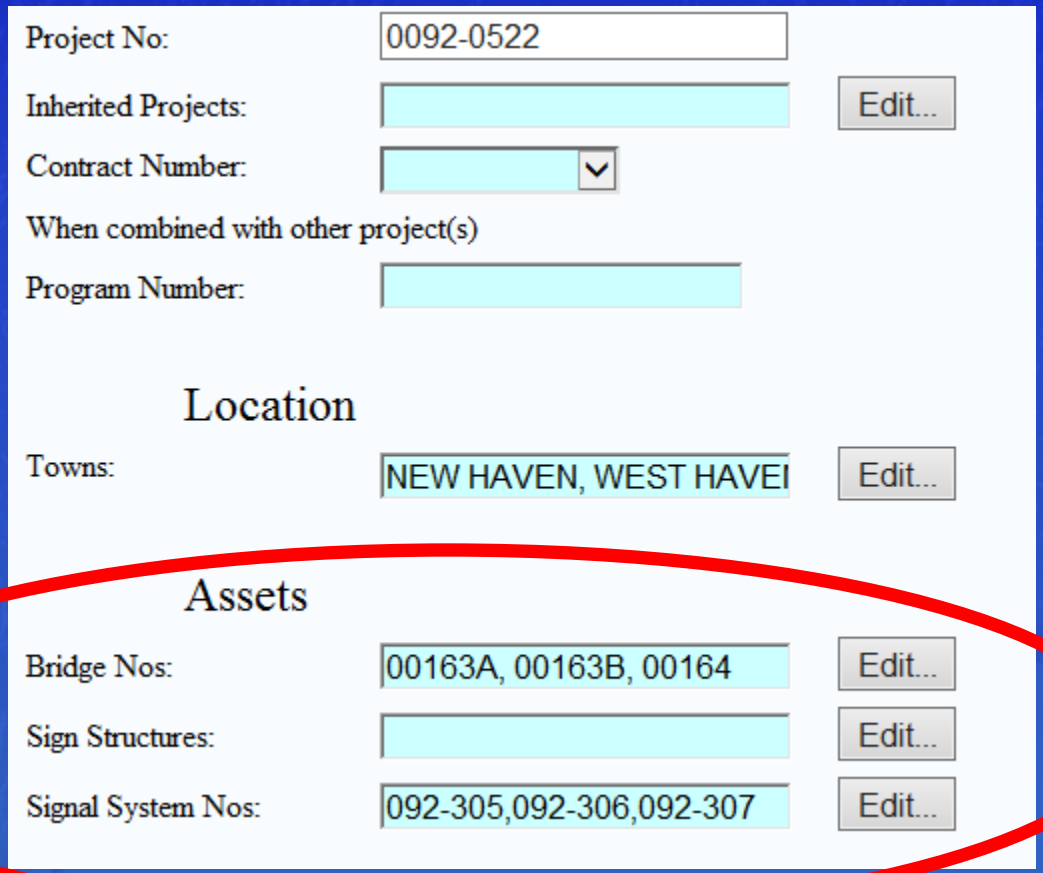
Asset s Timeline

Preliminary Identification of Assets @ Project Request

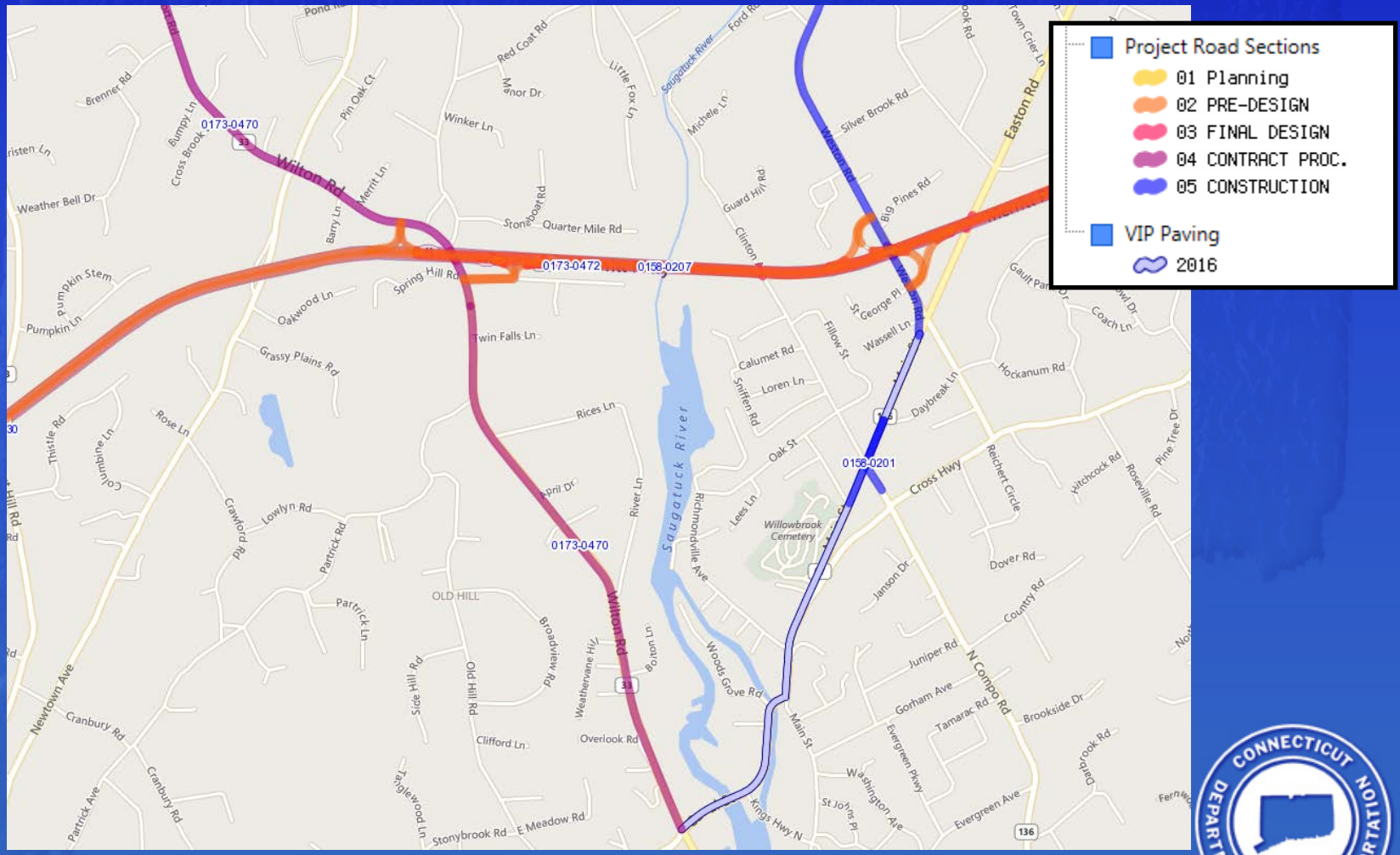
Update Identification of Assets @ Final Design Plans

Update Asset Inventory and Conditions @ Construction Complete

Identifying Assets in Capital Construction Projects



Identifying Assets in Capital Construction Projects



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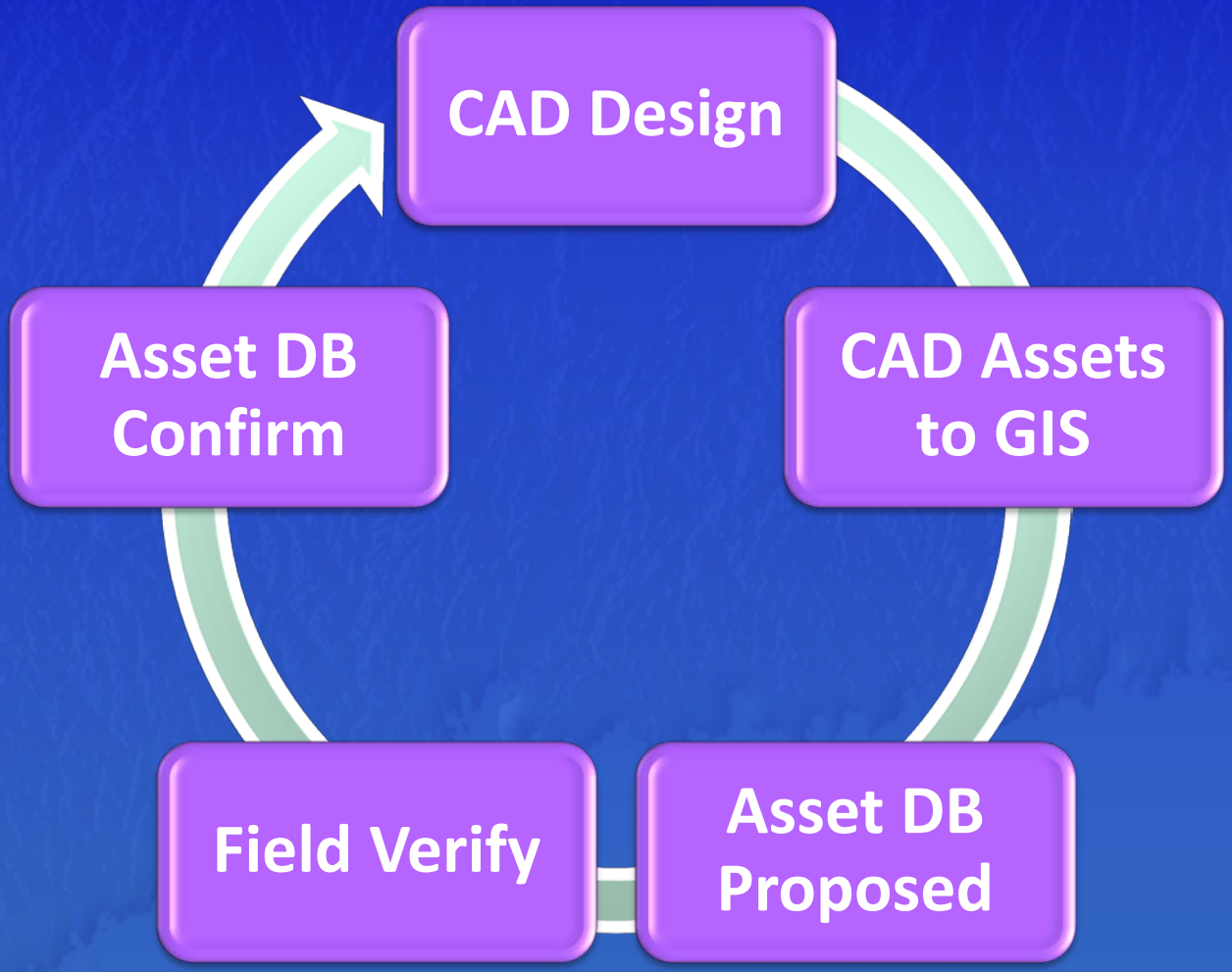
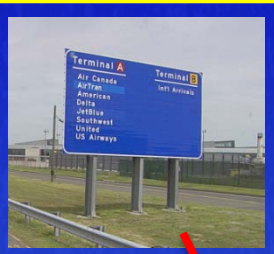
Harvesting Assets in Capital Construction Projects

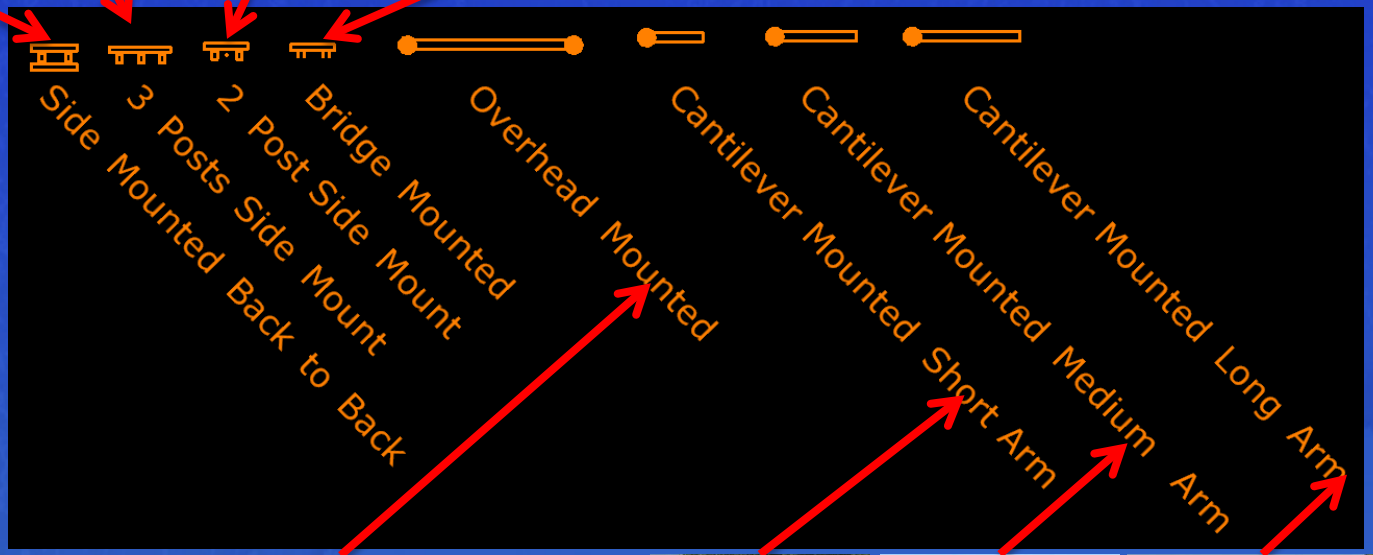


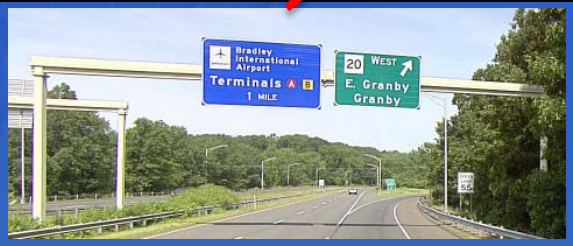
Harvesting Assets in Capital Construction Projects



SF of Sign Face

Extruded Aluminum





SF of Sign Face
+
Structure
+
Foundation

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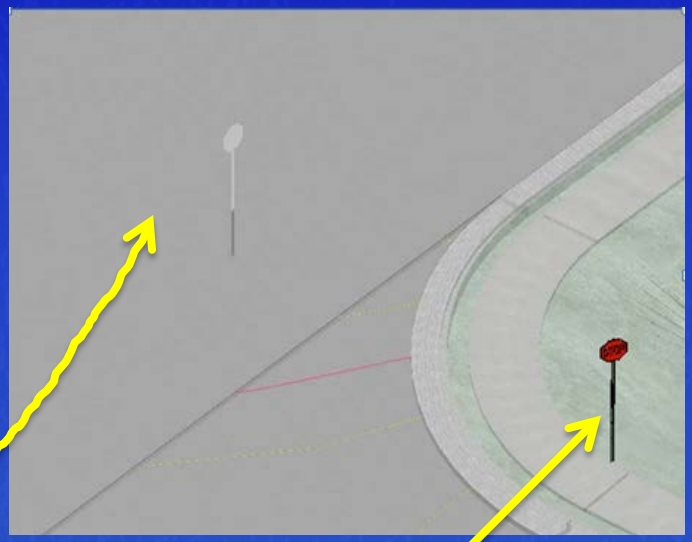
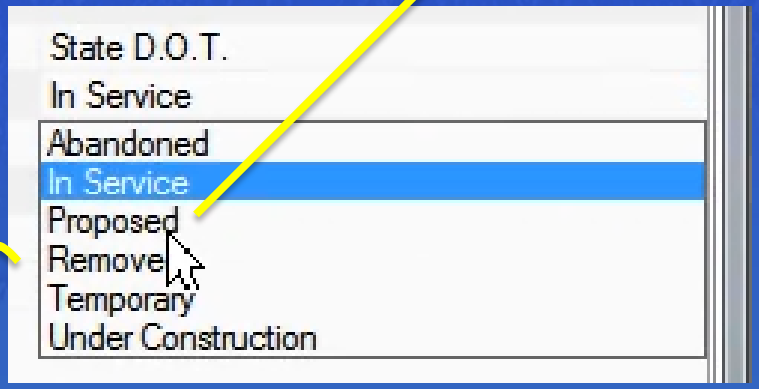
Harvesting Assets in Capital Construction Projects





Identified Who Will Collect and When

SIGNS	GUIDERAIL
Origin • Construction Project Who • Design Traffic Engineer When • During Semi-Final Inspection	Origin • Construction Project Who • District Maintenance Rep When • During Semi-Final Inspection
Origin • Permits Who • District Permits Engineer When • During Inspection	Origin • Permits Who • District Maintenance Rep When • During Inspection
Origin • Maintenance Who • District Sign Replacement Crew When • During Installation	Origin • Maintenance Who • District Maintenance Rep When • During Inspection

Identified What Will Be Collected

Signs

- Sign Id
- Location
- Mounting Type
- Sheeting Type
- Installation/Removal Date
- Manufacturer
- Manufacture Date
- Images / Photos

Guiderail

- Guiderail Segment
- Location
- Type
- End Terminals
- Installation/Removal/Repair Date
- Installer
- Images / Photos

White → Verify CAD Attributes

Orange → Field Capture Input

Challenges CTDOT Faces:

- Implementing Business Processes (Users, Technology, QA/QC)
  - Harvesting Assets at Design
  - Field Capture of Asset Data at Work Completion

- Incorporate Pavement Asset Data

- Integrate all Asset, Road Network and Project Management Systems wherever possible to avoid duplication of efforts and out-of-date data.

Progress CTDOT Made:

- Developed a Common Linear Reference System (LRS)
- Identified Authoritative Asset Databases
- Tracking Assets within Projects

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Asset & Project Data Gap Assessment & Implementation Plan

Frances Harrison

Spy Pond Partners, LLC

spy pond partners, llc

Data Vision

Integrated Asset and Project Data

- Leverage spatial integration for project attribution
- Provide visibility into proposed, planned and completed work
- Update asset info as work is done

Standard Architecture

- Designated systems for business and location data maintenance
- Standard approach to field data collection/updating
- Standard approach to reporting and distribution – internal/external

Data Governance

- Stewardship roles and responsibilities
- Authoritative sources, data updating and sharing processes
- Criteria and process for new data investments

Process Vision

Asset Readiness Assessment → Asset Data Management Plan → Baseline Data Collection

Baseline Data Collection → Data Updates on Work Completion

- STIP Entry
- State Force Maintenance)
- Final Design
- Maintenance Contract
- Final Inspection
- Permit Work

Current Capabilities & Gaps

LRS & GIS

- ✓ Official LRS & GIS map with all CT roads
- ✗ LRS Sync with external systems

Asset Data Systems

- ✓ Pavement
- ✓ Bridge
- ✓ Sign Supports
- ✓ Signals
- ➢ Guiderail
- ➢ Signs
- ✗ Pavement Markings
- ✗ Lighting
- ✗ Walls
- ✗ Etc.

Work Tracking Systems

- ✓ Composite Project DB – capital projects
- ✗ Disparate and inconsistent systems for other work

Tools

- ✓ Mapping/ Publishing
- ✓ Project & Asset Locator
- ✓ Project-Asset Linkage
- ➢ CAD-GIS
- ✗ Field Data Collectors
- ✗ SLD

Roles & Processes

- ➢ Project-Asset Data Updating
- ✗ Pavement Work History (consistent across types)
- ✗ Asset Data Capture for maintenance, permit work

To Do…

Architecture

- Agree on "to be" state
- Establish roadmap with near term steps

Systems & Tools

- Identify "homes" for new assets
- LRS sync with PMS
- Standard field data collection tool(s)
- Other components supporting target architecture

Roles & Processes

- Workflow by asset
- Asset steward responsibilities
- Roles of others for data updates
- Contractor data requirements

Policies & Guidelines

- Asset data management directive
- Readiness for new asset data collection
- Formalize architecture & standard processes

Data Governance

- Own, support and enforce policies & guidelines
- Manage roles and authoritative source designation
- Metadata & glossary

Institutionalizing the Vision

Asset Data Foundation

Baseline Inventory

Construction Tracking

Maintenance Tracking

Permit Work Tracking

Institutionalizing the Vision: Asset Data Foundation

Asset Data Foundation → Baseline Inventory → Construction Tracking → Maintenance Tracking → Permit Work Tracking

Asset Fundamentals

- Definition
- Identification & Units of Measure
- Life Cycle

Ownership

- Asset Steward
- Stakeholders
- Responsibilities

Data Requirements

- Data Needs & Business Case
- Data Dictionary
- Collection & Update Strategy