

# GIS and New Pipeline Construction: Best Practice for Validating GIS Data

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# Why does it matter?



# Why does it matter?

Trust in GIS

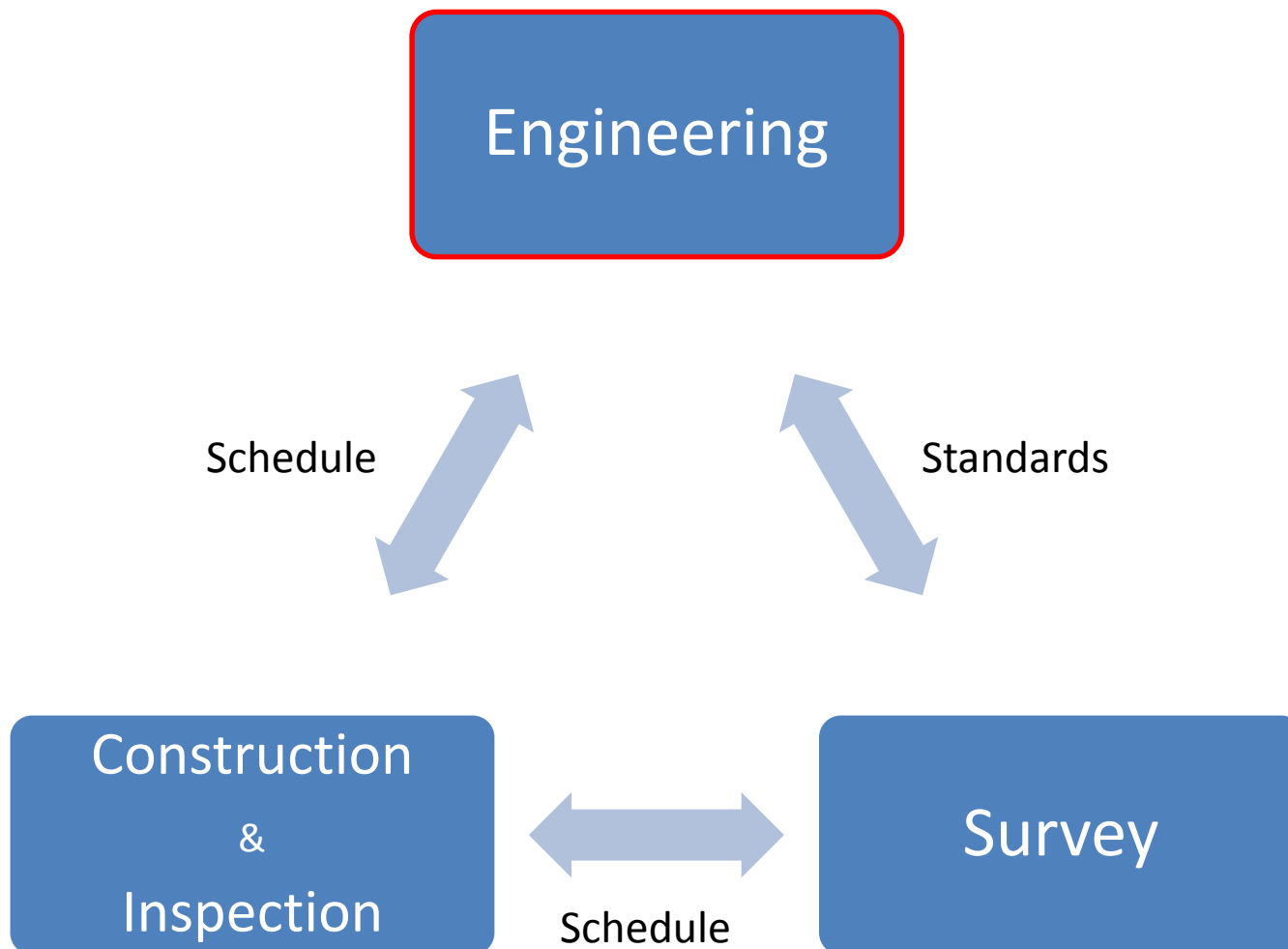
# The Secret Sauce

Predictable Project Deliverable

# Ensuring Predicable & Transparent GIS Data Deliveries

- Communication
- Documented GIS Workflows
- Automated Data QC and Reporting
- Feedback to all systems/stakeholders

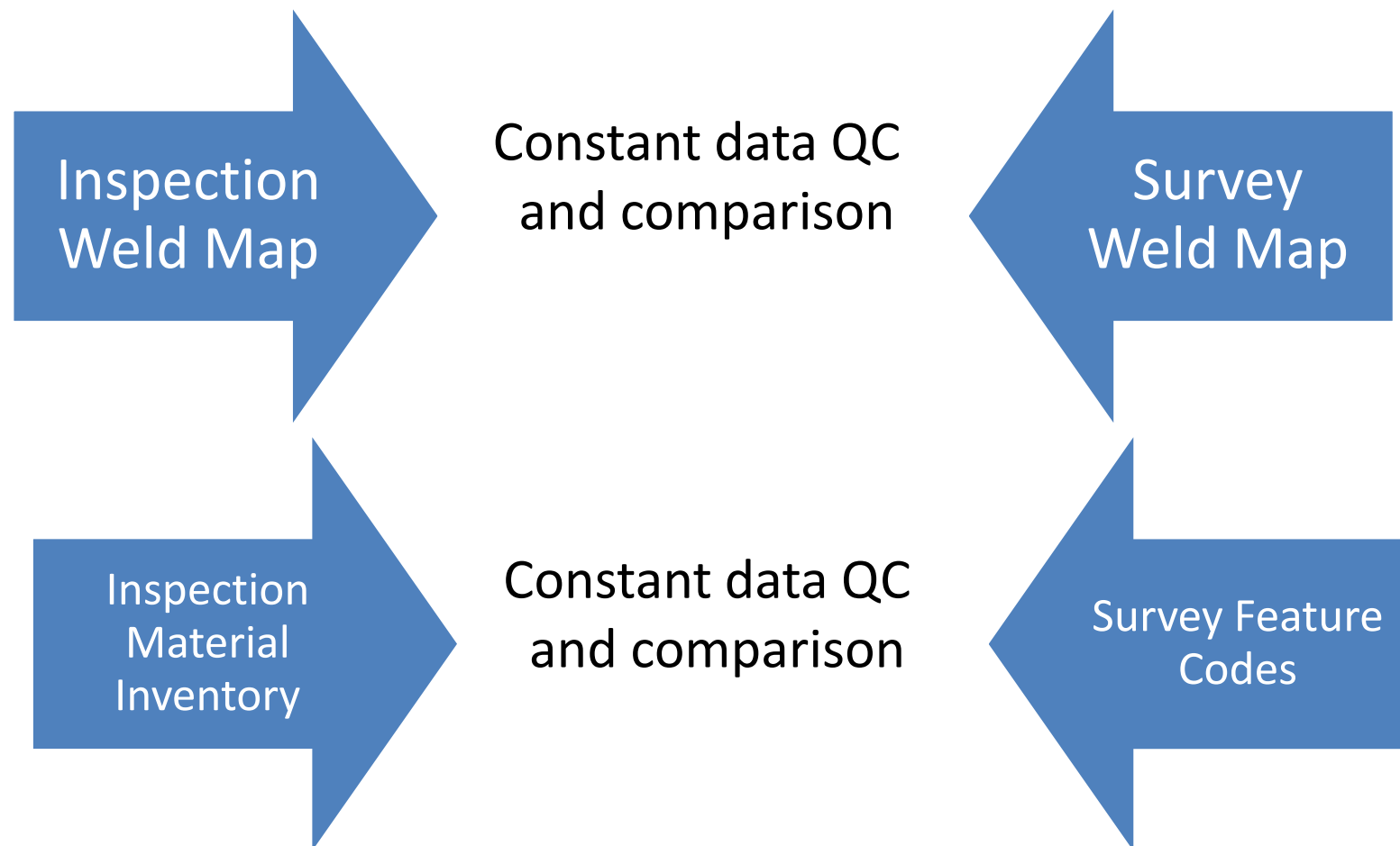
# Communication is KEY!



# Project Pre-Planning

- Project kickoff meeting to issue required documents, files, and databases to survey contractors and convey expectations.
  - Survey Standard
  - Data Dictionary
  - Blue Sky Project Database Seed File
  - Procurement Data for Purchased Materials

# Project Communication



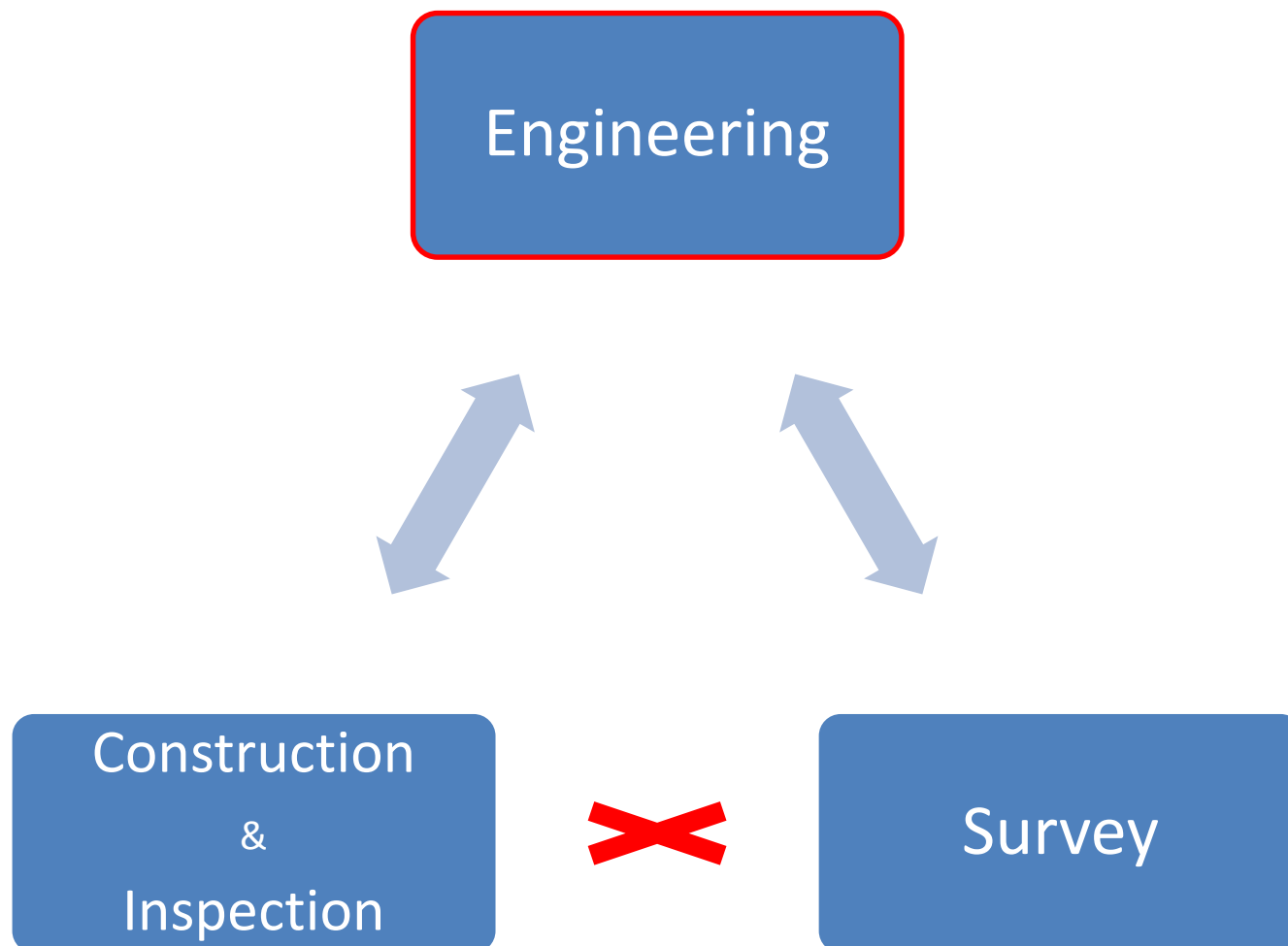


# Provide Feedback with Metrics

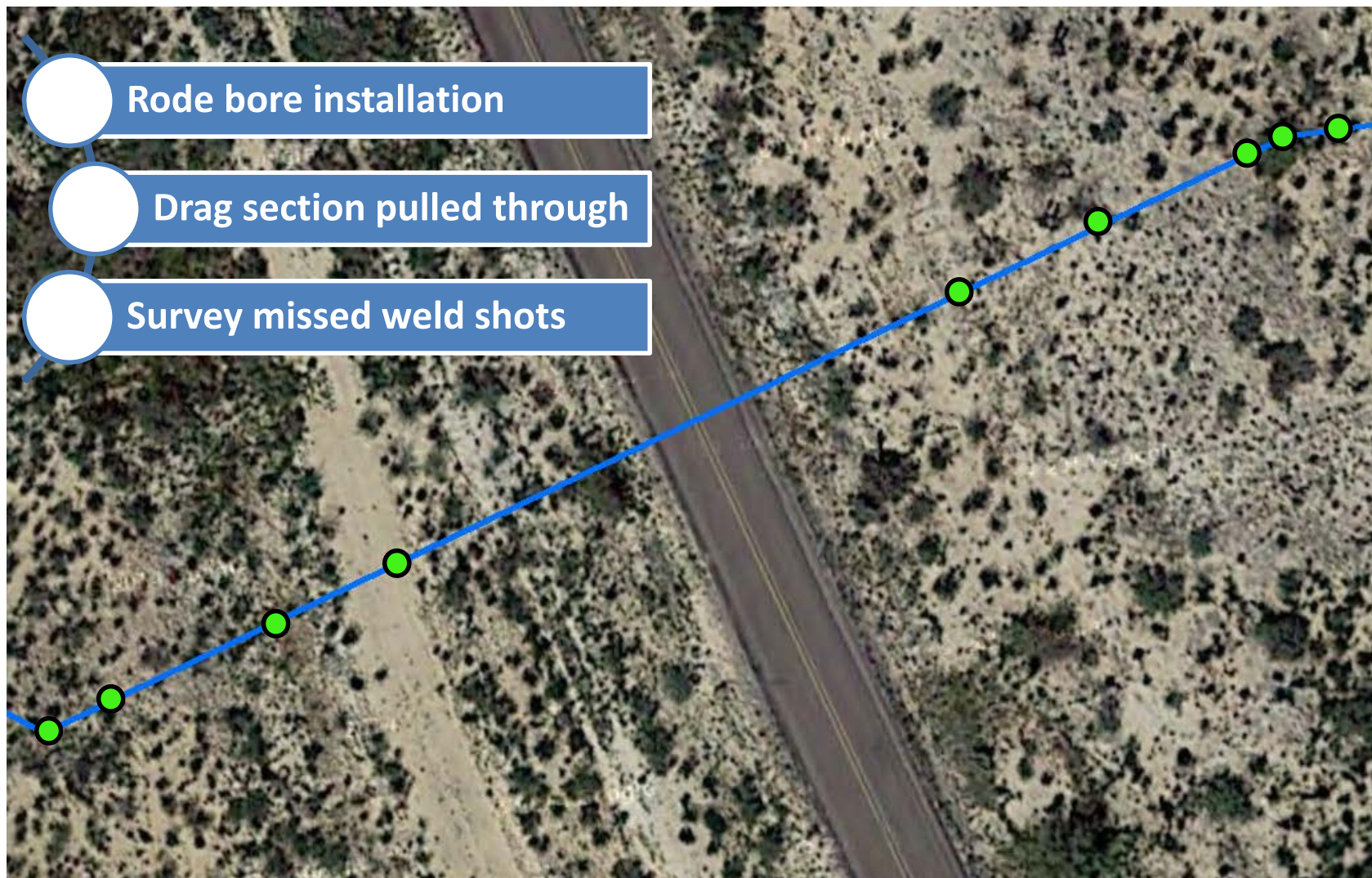
- QC data for quality weekly/bi-weekly
- Creates training opportunity between operator and contractor.

<b>PAA Project No.:</b>		<b>Report Date:</b>	10/27/2015
<b>Project Name:</b>		<b>Master CSV Version/Date:</b>	09/28/2015
<b>Survey Contractor:</b>			
<b>Survey Type</b>	As-Built (Complete)	<b>DDF Version:</b>	V4
<b>Projection:</b>	NAD 1983 StatePlane Texas South Central FIPS 4204 Feet	<b>Project File Version:</b>	V4
<b>Total Number of Points:</b>		990	
<b>Overall Correction as % Total:</b>		2.32 %	
<b>Overall Cleanup as % Total:</b>		0.71 %	
<b>Survey Point file approved for use in PAA Project File and Alignment Sheets</b>		<b>File Approved with Exceptions</b>	
<b>Survey Data Summary:</b>		<b>Codes for Correction:</b>	
<b>Survey Code</b>	<b>Points in Code</b>	<b>Survey Code</b>	<b>Points in Code</b>
BEND	25	BEND	1
BORE	3	FL	2
CAD	10	LINE_PIPE	18
CONC	64	VLV	2
CP_TS	7	<b>Grand Total</b>	<b>23</b>
FC	51	<b>23 Points require correction</b>	
FL	2		
LE	11		
LINE_PIPE	188		
NG	210		
RD	3		
SGN_MKR	15		
STK	324		
TAP	6		
TEE	3		
TOP	7		
UT	35		
UT_STRUC	23		
VLV	2		
WTR	1		
<b>Grand Total</b>	<b>990</b>		
		<b>Codes for Cleanup:</b>	
		<b>Survey Code</b>	<b>Points in Code</b>
		LINE_PIPE	7
		<b>Grand Total</b>	<b>7</b>
		<b>7 Points require cleanup</b>	
<b>Action Items:</b>		<b>Contractor Comments</b>	
Contractor to perform updates for the following action items:			
1. Correct pipe material data issues for code LINE_PIPE highlighted in the CSV Data tab (refer to PAA construction inspection Form 1500, Weld Map Report, if needed).			

# Communication Breakdown Leads to Data Gaps

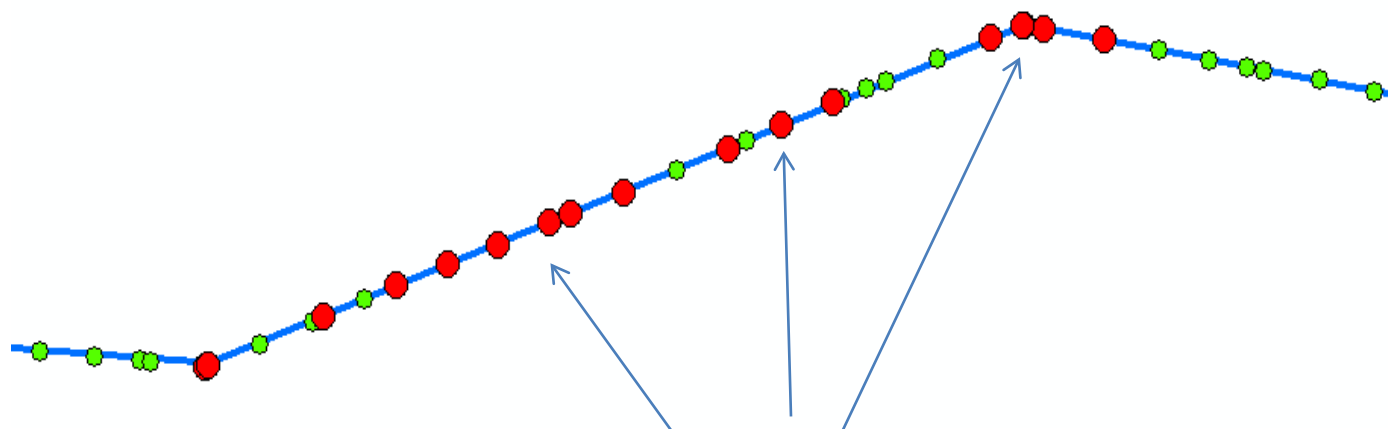


# Construction and Survey Scheduling



# Communication Breakdown

## Missing Welder Stencil



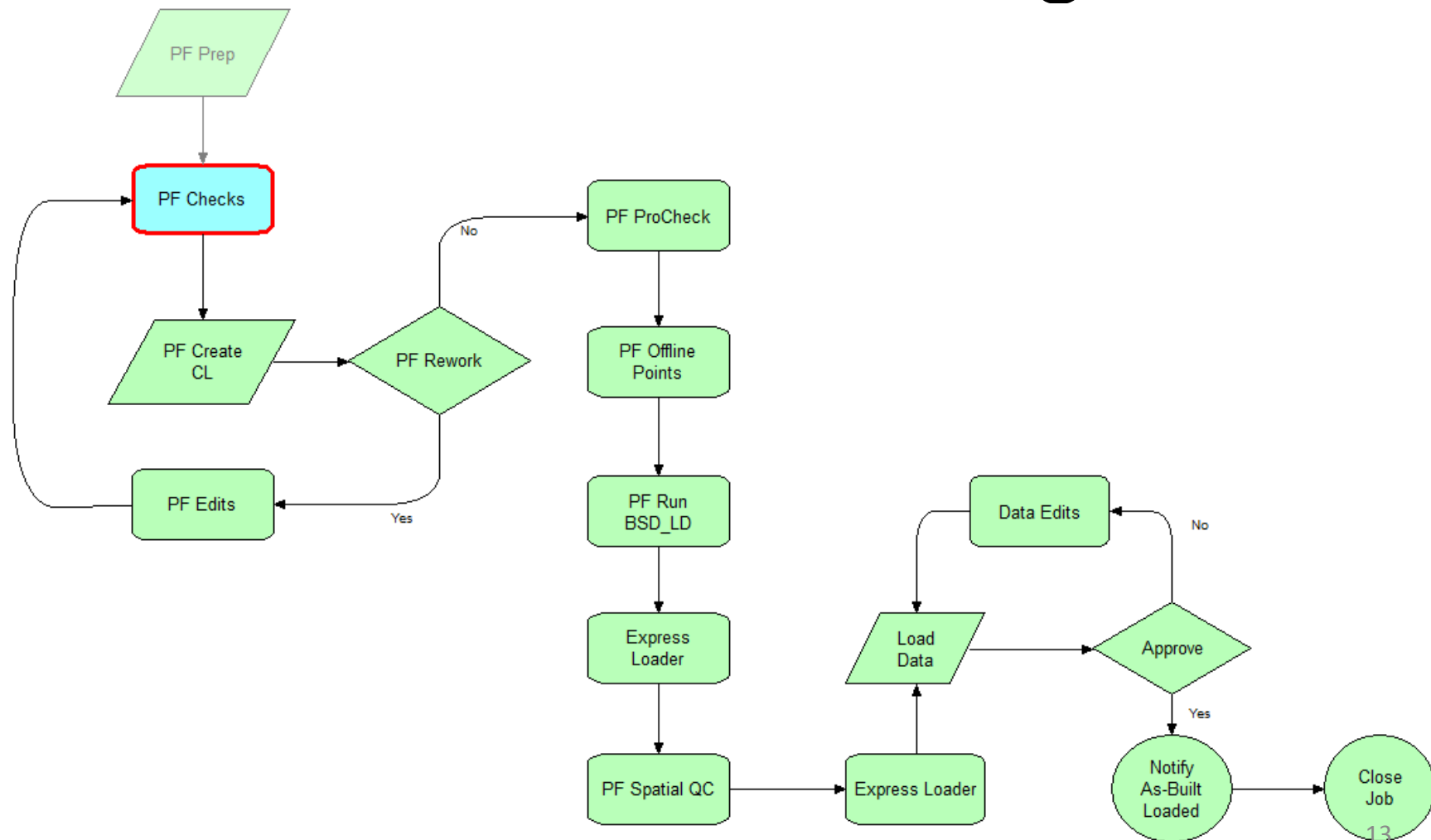
Girth Weld Data Points

### Welder Initials

PE MN R	
X/X/X	
X/X/X	
X/X/X	
X/X/X	
X/X/X	
X/X/H/H	
X/X/H/H	
X/X/X	
X/X/X	
EP MN R	
X/X/X	
X/X/X	
X/X/X	
PE MN MN	
PE MN P	
PE MN MN	
X/X/X	
X/X/X	
X/X/X	
X/X/X	12

# Documented GIS Workflows:

## ESRI Workflow Manager



# Blue Sky Project Database Validation

- Verify survey data is delivered in format defined in survey standard.

AlignFM PLAALP V. 2015.08.25 - Data Dictionary Version 4

Data Entry Reports Data Load Load - LINE/ROUTE/SERIES

All Codes Report

Project File Record Counts:

IMPORT Tables
SC Tables
BSD Tables

Duplicate Point #s

CASING	DEPTH OF COVER	EXTERNAL COATING	FLANGE
FOREIGN LINE CROSSING	GROUND BED	HDD	LAUNCHER RECEIVER
MARKER	PIPE BEND	PIPE JOIN	PIPE SEGMENT
RAILROAD	RECTIFIER	REDUCER	RIGHT OF WAY
ROAD	ROUTING NOTE	SHEET NOTE	TAP
TEE	TEST LEAD	VALVE	WATERWAY

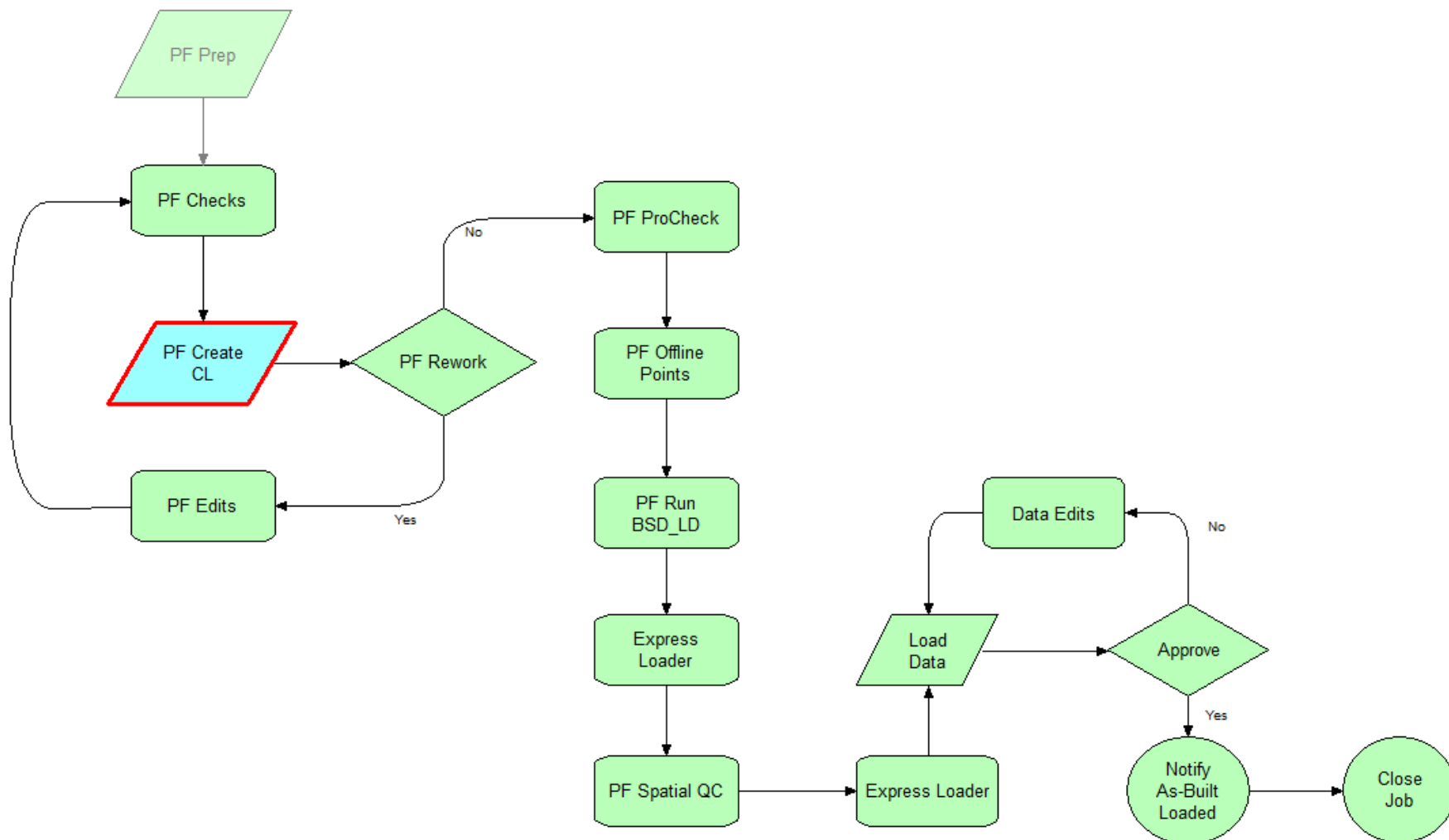
For questions on delivery requirements, please contact [jwmarino@paalp.com](mailto:jwmarino@paalp.com)

AlignFM V. 2015.08.25

# Duplicate Point Numbers Report

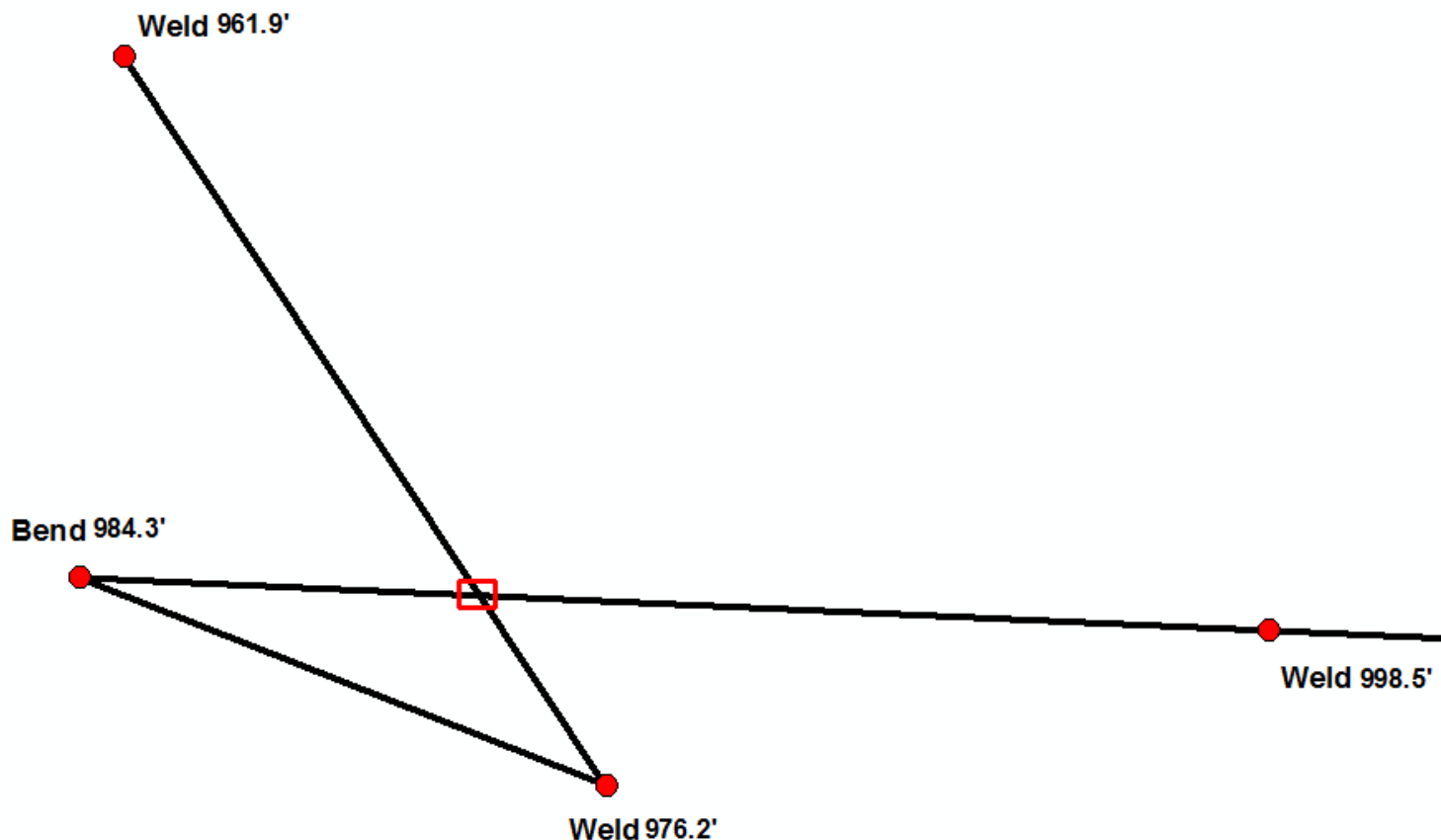
IMPORT Table Duplicate Point Numbers		Total Duplicates:	47
PT	Desc		
113268	CKS		
113268	CKS		
136629	UT		
136629	UT		
154999	FC		
154999	LINE_PIPE		
155000	FC		
155000	NG		
155436	LINE_PIPE		
155436	UT		
155589	RD		
155589	NG		

# Centerline Checks



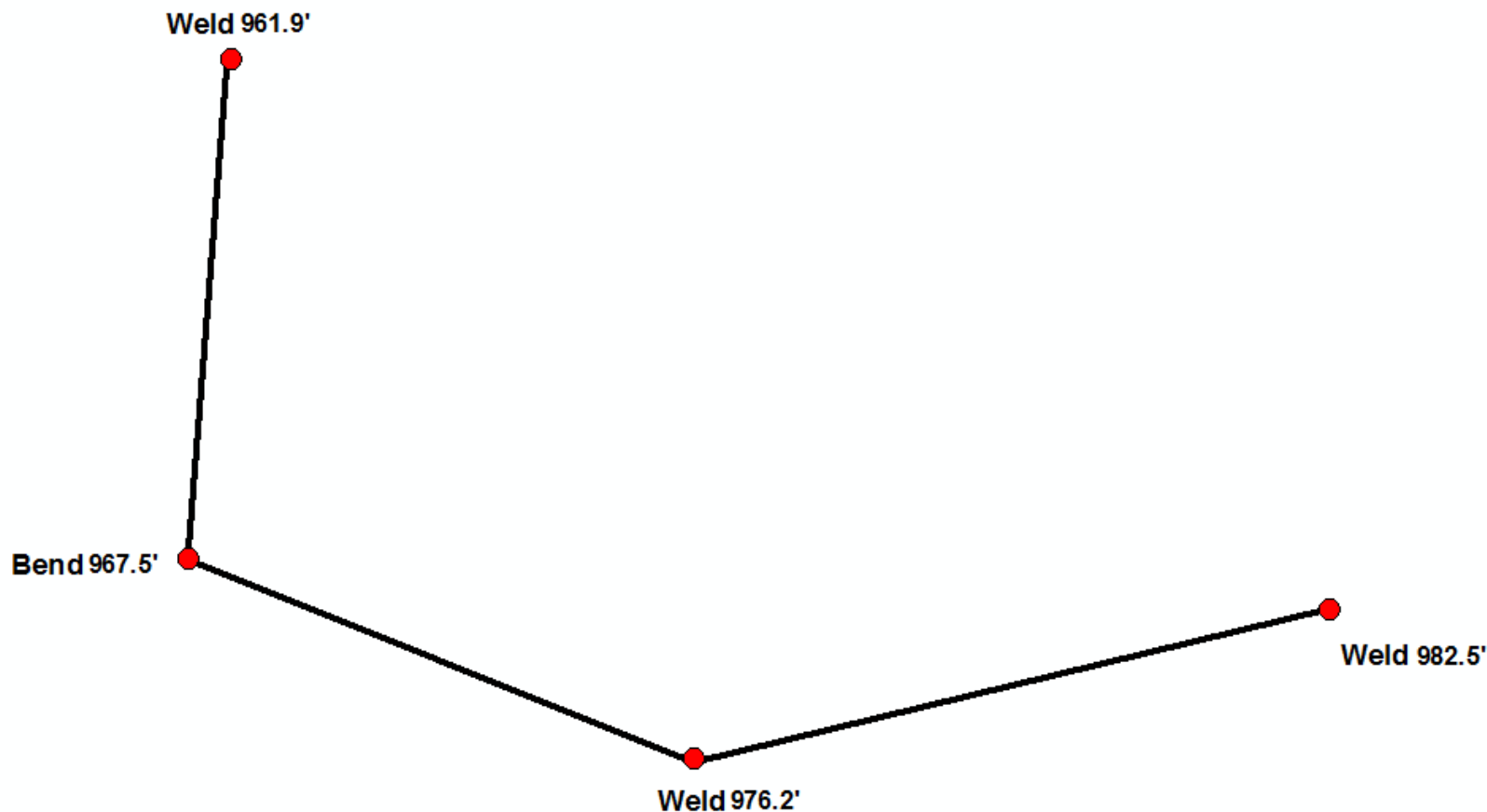


# Centerline Topology: Spatial Check for self intersecting centerline (2D Environment)



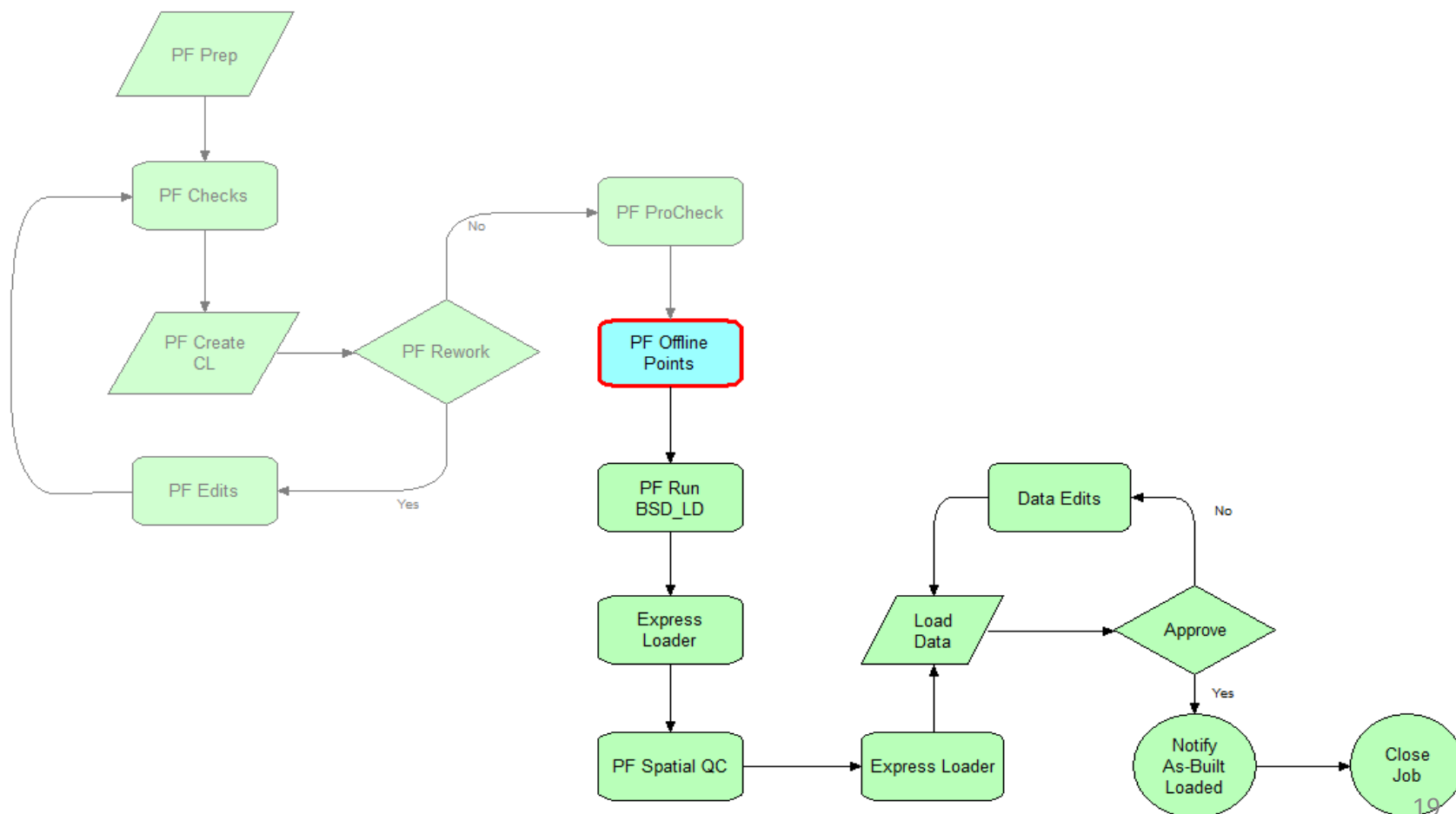
# Corrected Centerline

A difference of 16 linear feet.



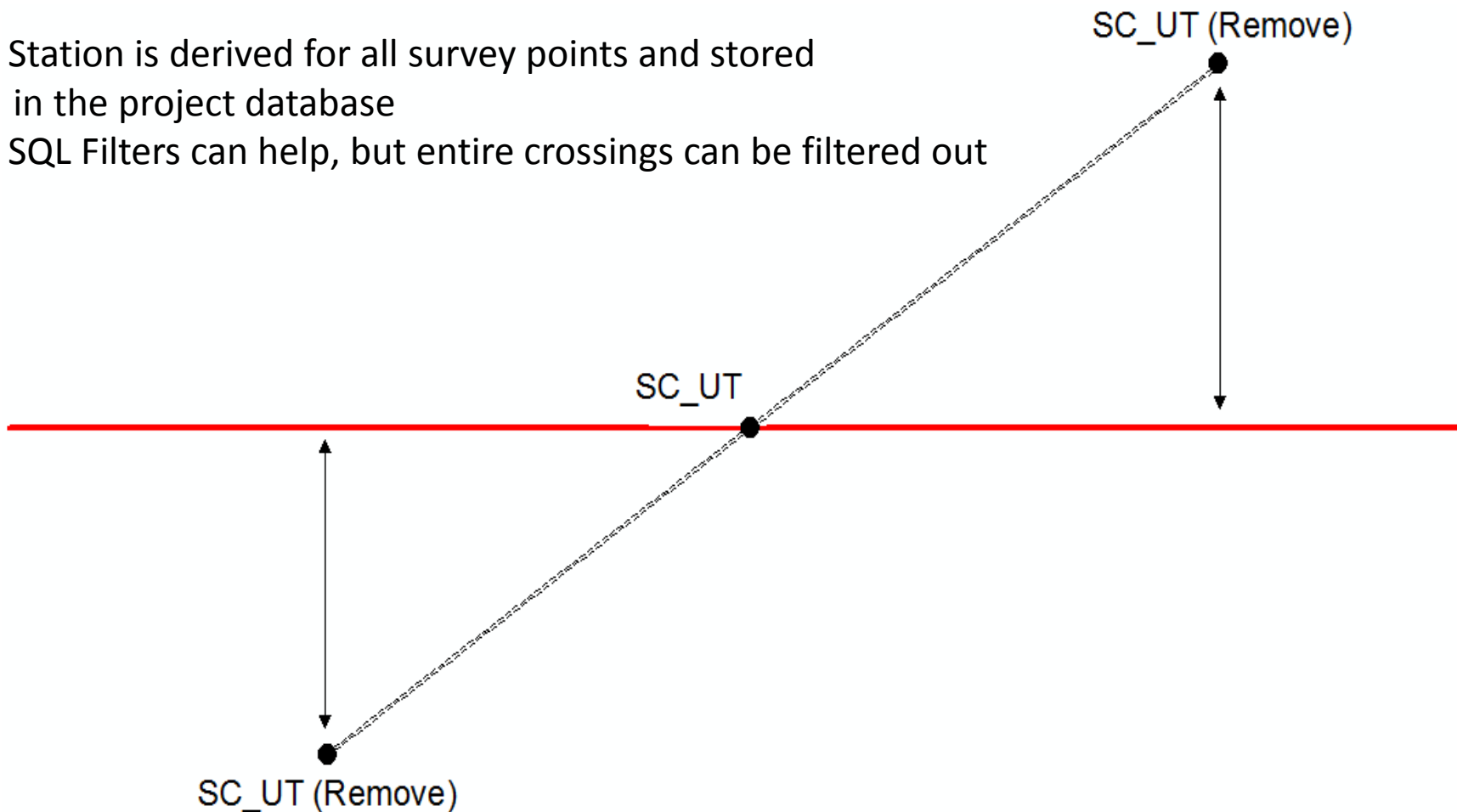
# Offline Events Checks

- Walk key subcode tables in ArcMap and remove survey shots not located on the centerline

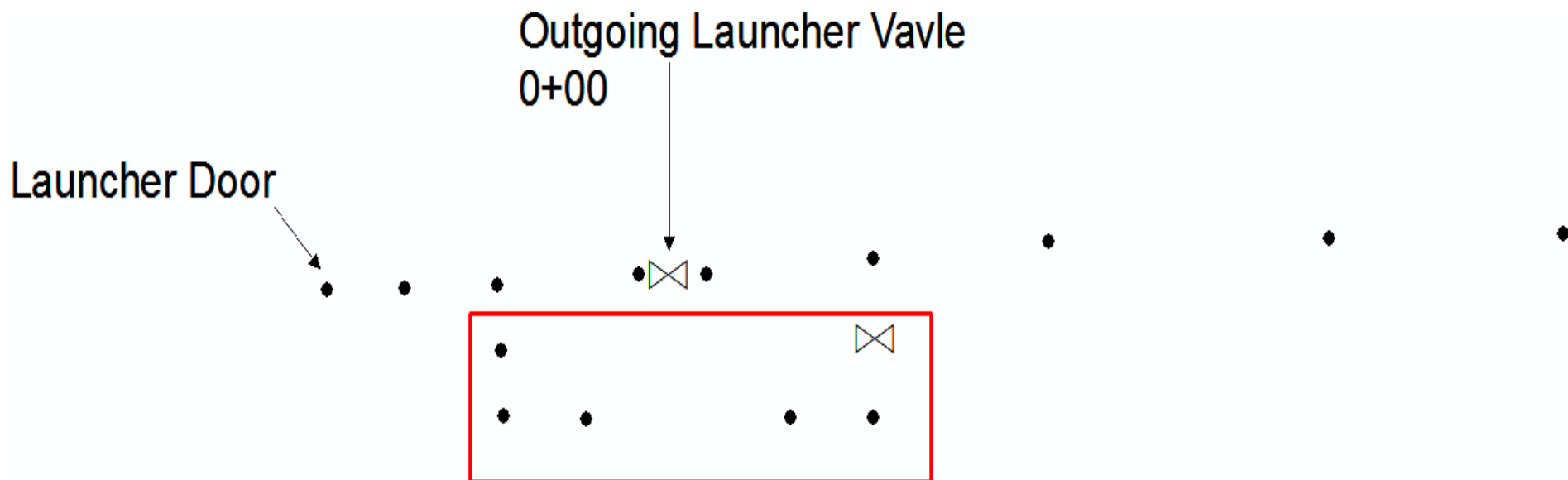


# Address Offline Events

- Station is derived for all survey points and stored in the project database
- SQL Filters can help, but entire crossings can be filtered out



# Offline Events Continued



- Offline weld data can cause errors when striking the centerline and loading data to PODS

What does all the project  
management buy us??

# Successful PODS Data Load

- Load data within 60 days of delivery of Final Approved As-built Point File from Survey Contractor
- Accurate centerline alignment and linear reference
- Records of compliance and due diligence

# Questions?