MONTANA
Department of Transportation

April 2026

Autodesk Civil 3D Naming Standards

FILE TYPES & REFERENCING RELATIONSHIPS

TABLE OF CONTENTS

Table of Contents **2**
Overview **2**
File Type Overview **3**
File Types 3
Overview 4
Naming of Design Files 4
Naming of Civil 3D Objects 8
File Referencing and Relationships **9**
Road Design/Traffic Safety Data Connections 9
Road Design Civil 3D Data Connections Diagram 10
RDALN File Diagram 11
RDCRR File Diagram 12
RDDICRR File Diagram 13
RDDISESU File Diagram 14
RDXSF File Diagram 15
RDTTL File Diagram 16
RDTRV File Diagram 17
RDTYP File Diagram 18
RDSUM File Diagram 19
RDDET File Diagram 20
RDPLP File Diagram 21

OVERVIEW

This is an overview of MDT Civil 3D files and their referencing relationships supported by the MDT Autodesk Civil 3D workspace.

FILE TYPE OVERVIEW

FILE TYPES

A variety of files are developed during the life of a project to achieve a complete plan set deliverable. The following is a summary of the common dwg file types and intended contents of each. The Naming Standards section of this document includes a listing of additional project file types and details on MDT file naming standards.

MDT's common standard design, modeling, and survey project file types are listed below:

Document Class	Document Class Description	File Contents
ALN	Alignment, Profile, Superelevation	All civil alignments and associated profiles. Superelevation calculated
ARE	Area File	Area shapes for acquisition calculations
CMA	3D Contour Map File	For criteria only
CRR	Corridor File	3D Models
DET	Details	Project design areas requiring more detail than plans allow
DRG	Drainage Model	All proposed and existing drainage pipes and structures
ERO	Erosion Control	Erosion control BMPs, notes, & details
ERT	Erosion Control Title Sheet	Title sheet for erosion control
ESM	Existing Surface Model	Existing project topography
EXH	Exhibits	Plan view of right-of-way acquisition with areas shaded by parcel for deed exhibit
HPS	Hydraulic Proposed Surface Model	Proposed hydraulic grading
MAP	2D Strip Map File	All COGO visualization of alignments and profiles, line work for edge of pavement, sidewalk, curb, etc.
MAP	PH/DI (District) Map File	Surveyed existing features
OWN	Ownership	Right-of-way land ownership data and acquisition area values by parcel
PCF	Project Calculation	Working document for internal calculations
PLN	Plan & Plan	Plan view of project design
PLP	Plan & Profile	Plan and profile view of project design
PSM	Proposed Surface Model	Grading proposed surfaces
PVP	Pavement Preservation Plan	Plan set for pavement preservation projects
SUE	Utilities SUE Survey	Surveyed utility locations
SUM	Summary Frame	Summary of project quantities and locations
TRV	Traverse & Control	Control point diagram with point name/number, northing, easting, and elevation
TTL	Title Sheet, Table of Contents, & Notes	Title Sheet - project type, project location, and other pertinent project information

TYP	Typical Sections	Project typical sections showing surfacing section, surfacing quantities, roadway widths, and cut/fill slope rates
UMA	Utilities Mapping	All existing dry utilities
WSU	Wetland Survey	Surveyed wetland boundaries and hatching
XSF	Cross Section File	Cross sections and annotations

OVERVIEW

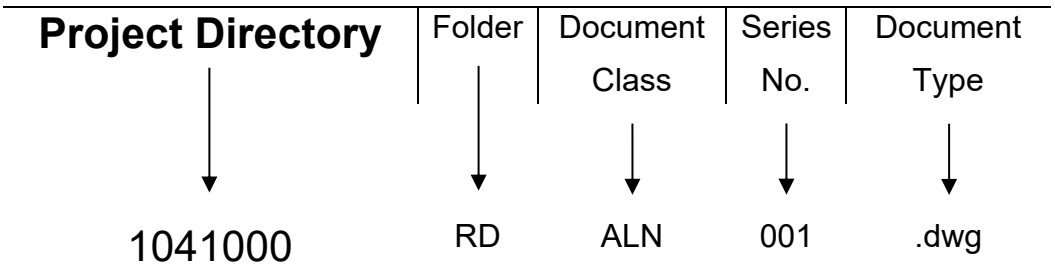
This document describes the details of the ACC – Autodesk Docs (Forma) document naming standards.

NAMING OF DESIGN FILES

1. Design files saved in ACC - Autodesk Docs (Forma) are required to follow the naming conventions established for PCMS. This is to ensure successful transfer of design files to PCMS at project closeout.

   ***Note: PCMS Phase 2 is currently under development and will include an enhancement to increase the flexibility of the naming standard.*

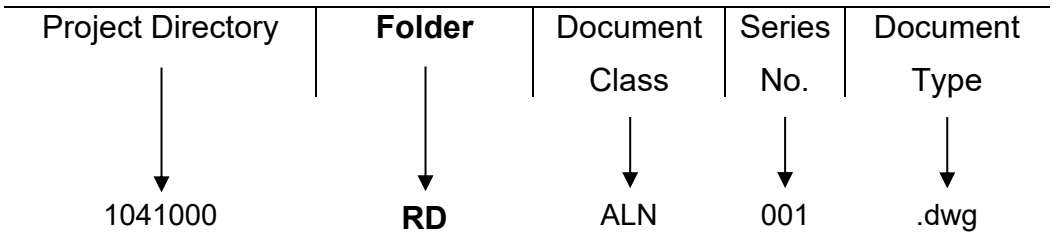
2. Project Directory – **1041000**RDALN001.dwg



Project Number +

Project	Agreement	Unit	Project ID	Description/Location
1041	013	000	NH 62-2(13)21 F	NW of Sidney-N

3. Folder - 1041000**RD**ALN001.dwg



The work area creates and maintains the document and manages them in the appropriate folder for the work area. The available folders are shown on the following page.

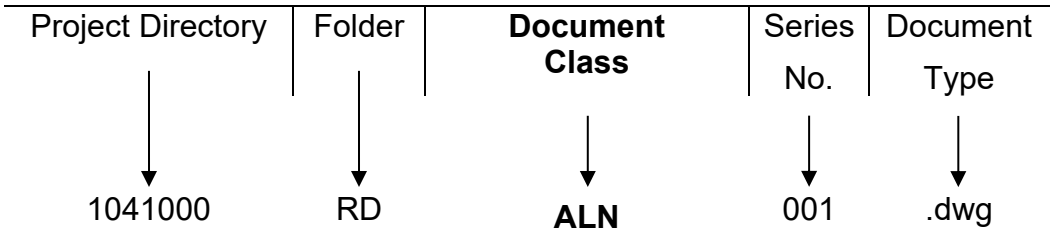
Sorted by Name

Alternative Contracting	AC
As-Builts	AB
Bridge	BR
Combined Survey	CS
Construction	CO
Consultant Design	CD
Contract Plans	CP
District Survey	DI
Environmental	EN
Geotechnical	GT
GIS	GS
Hydraulics	HY
Materials	MT
Photogrammetry	PH
Right-of-Way Design	RO
Road Design	RD
Surfacing Design	SD
Survey	SU
Traffic Electrical	EL
Traffic Geometrics Design	GE
Traffic Operations	TO
Traffic Safety	SA
Traffic Signing	SI
Utilities	UT
Visualization	VI

Sorted by Abbreviation

AB	As-Builts
AC	Alternative Contracting
BR	Bridge
CD	Consultant Design
CO	Construction
CP	Contract Plans
CS	Combined Survey
DI	District Survey
EL	Traffic Electrical
EN	Environmental
GE	Traffic Geometrics Design
GS	GIS
GT	Geotechnical
HY	Hydraulics
MT	Materials
PH	Photogrammetry
RD	Road Design
RO	Right-of-Way Design
SA	Traffic Safety
SD	Surfacing Design
SI	Traffic Signing
SU	Survey
TO	Traffic Operations
UT	Utilities
VI	Visualization

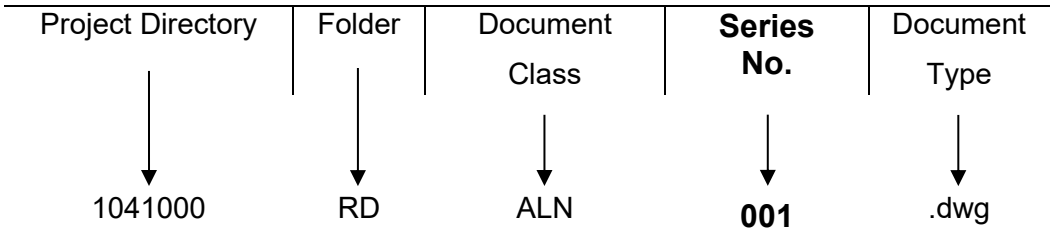
4. Document Class – 1041000RD**ALN**001.dwg



Document Class codes are used to categorize documents. The following class codes will be used for design files:

Code	Description	Code	Description	Code	Description
ABS	Control Abstract	**DTM**	Digital Terrain	**LSP**	Landscaping Plan Sheet
ALN	Alignment Information	**DTP**	Digital Terrain/Planimetric	**MAP**	Map File
ANC	Ancillary	**ECF**	Existing Culvert File	**MAS**	Mass Diagram
ARC	Building Architectural Plans	**EJD**	Expansion Joint Detail	**MDE**	Miscellaneous Details
ARE	Area	**ELD**	Experimental Layout Design	**MEC**	Building Mechanical Plans
ASU	Additional Survey	**ELE**	Building Electrical Plans	**MOD**	Bridge Model File
BMB	Beam Details (Bulb-T)	**EPL**	Erection Plans	**OHW**	Ordinary High Water Mark Survey
BNT	Bent or Abutment	**EQU**	Equation File	**OWN**	Ownership Sheet
CAD	Cadastral	**ERO**	Erosion Control Plans	**PBC**	Reinforced Precast Box Culvert
CAM	Camber Diagram	**ERT**	Erosion Control Title Sheet	**PCF**	Project Calculation File
CGP	Contour Grading Plan	**ESM**	Existing 3D Surface Model	**PLN**	Plan and Plan File
CHC	Channel Change	**EXH**	Exhibit Sheet	**PLP**	Plan and Profile File
CHK	Check File	**EXP**	Existing Plans	**PSM**	Proposed 3D Surface Model
CLV	Culverts	**FPL**	Footing Plan	**PVP**	Pavement Preservation Plans
CMA	Contour Map	**FXP**	Fencing Plans	**SDC**	Sign Design Calculation Sheets
CON	Control Survey	**FXT**	Fencing Title Sheet	**SUE**	Utilities SUE Survey File
COR	Core Logs	**GEN**	General Layout	**SUM**	Summary Frames
CRR	Corridors File	**GIR**	Girder Details	**TRV**	Traverse and Control
DET	Detail Sheets	**HDS**	Hydraulic Data Summary	**TTL**	Title Sheet
DIA	Diaphragm Details	**HPS**	Hydraulic Proposed Surface Model	**TYP**	Typical Sections
DIS	2D Display File	**HSU**	Hydraulic Survey	**UMA**	Utilities Mapping File
DRG	Drainage Model	**JNT**	Joint Details	**WSU**	Wetland Survey File
DSD	Drilled Shaft Details	**LOC**	Project Location Maps	**XSF**	Cross Sections File
DST	Autodesk Sheet Set	**LSD**	Landscaping Detail Sheet		

5. Series No. – 1041000RDALN**001**.dwg



Each work area decides what 3-digit alpha-numeric combination to use for their document classes.

001 – 999
A01 – Z99
AA1 – ZZ9
AAA – ZZZ

Examples:

Consultant documents use an X, Y, & Z in series numbering.

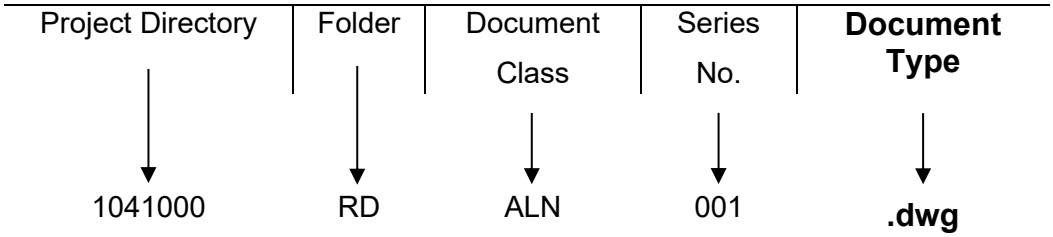
X01 – X99	Y01 – Y99	Z01 – Z99
XX1 – XX9	YY1 – YY9	ZZ1 – ZZ9
XXX	YYY	ZZZ

Environmental assigns incremental Series numbers for every project, workgroup, and class.

Class	Series
FXS	001, 002, 003, etc.
OMT	001, 002, 003, etc.

Road Design assigns incremental Series numbers for every project, workgroup, and class.

6. Document Type – 1041000RDALN001.**dwg**



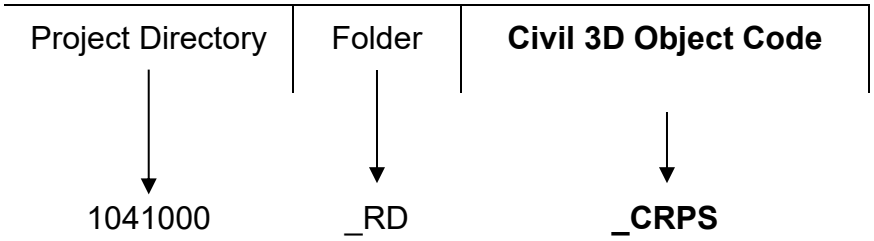
Only design files and other types of files that supplement and support design files will be stored in ACC – Autodesk Docs (BIM 360). Some examples of document types are:

Drawing files (.dwg)
Template files (.dwt)
Sheet Set files (.dst)
Image files (.tif, .shp)
Survey/Terrain files (.xml)
Excel QMG files (.xlsm)

NAMING OF CIVIL 3D OBJECTS

Civil 3D objects shall be named using the Project Directory Number followed by the Folder then the Civil 3D Object Code.

7. Civil 3D Corridor Proposed Surface – 1041000_RD_**CRPS_TOP**



Additional Examples:

Proposed Alignment object name = 1041000_RD_PA_descriptor

(Example: 104100_RD_PA_MAINLINE)

Proposed Surface for Grading Model = 104100_RD_PS_descriptor

(Example: 104100_RD_PS_BASIN A)

Civil 3D Object codes are used to organize Civil 3D objects in the design drawing's Prospector tab of the Toolspace and Data References located in the Data Shortcuts. The following Civil 3D Object codes will be used for design files:

Code	Description
ES	Existing Surface
PS	Proposed Surface
EA	Existing Alignments
PA	Proposed Alignments
EP	Existing Profiles
PP	Proposed Profiles
ED	Existing Drainage Network
PD	Proposed Drainage Network
CR	Corridor

FILE REFERENCING AND RELATIONSHIPS

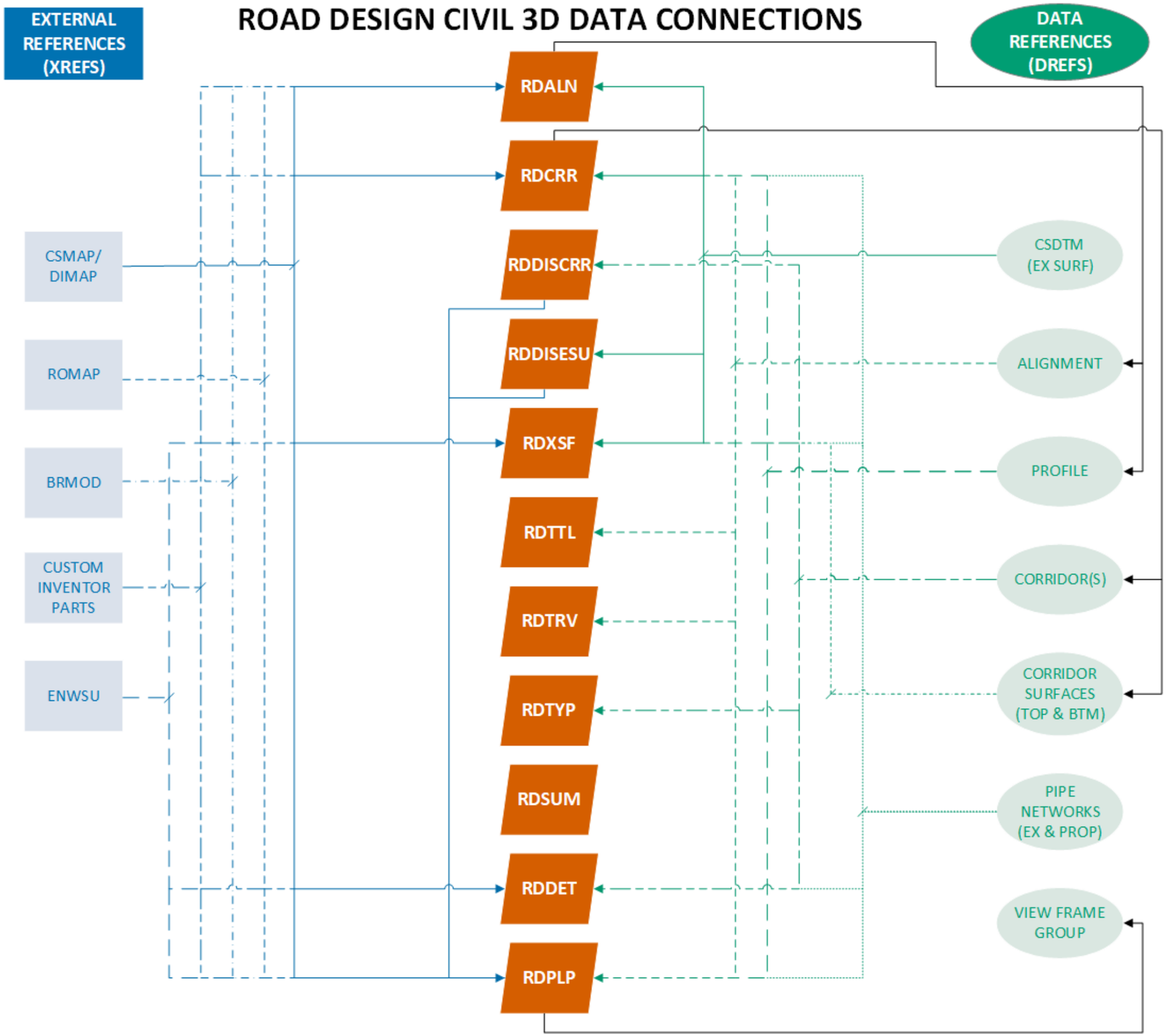
The following schematics show referencing relationships of MDT design files. These referencing relationships allow for successful application of procedures, the Autodesk Civil 3D workspace, and ancillary tools supported at MDT.

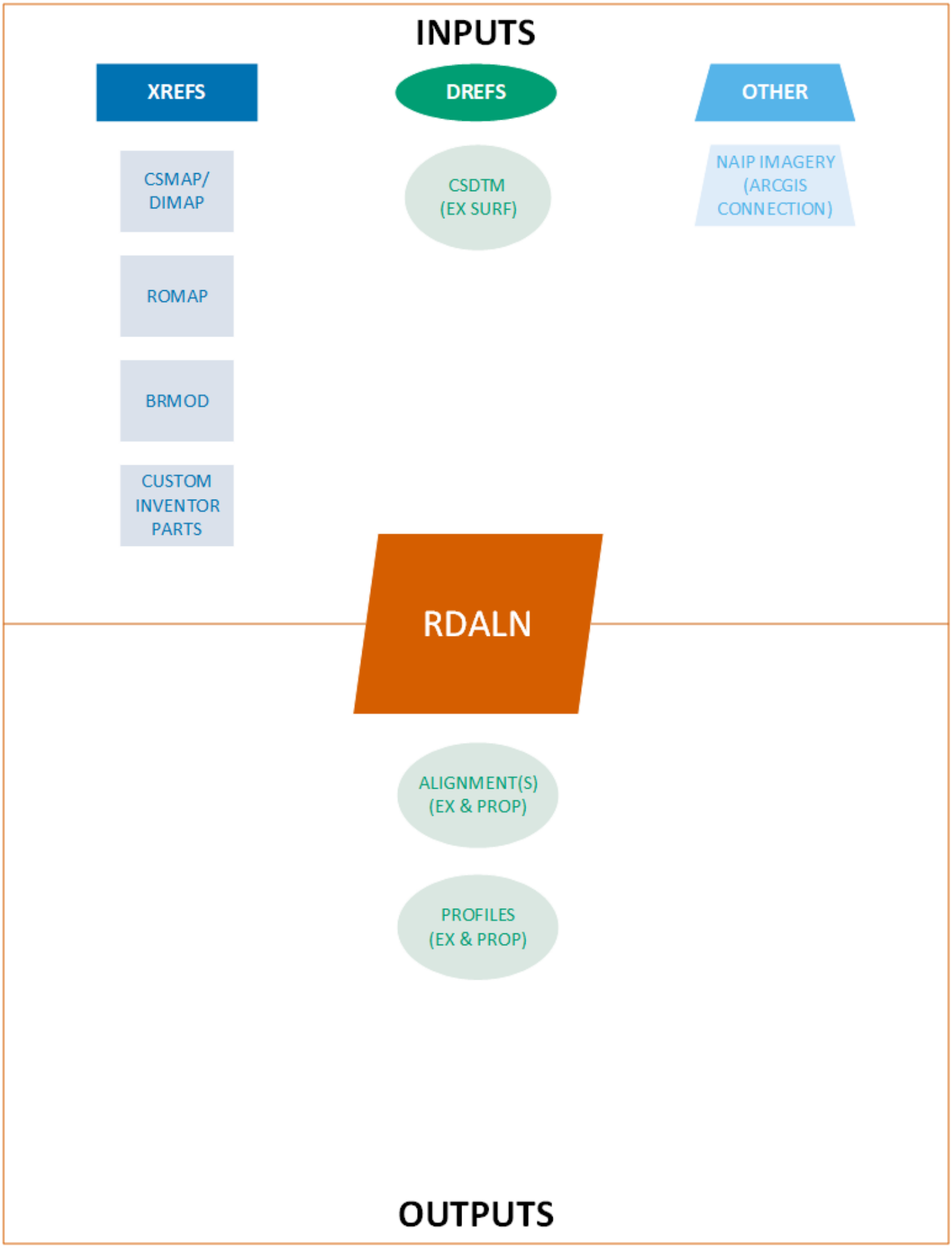
ROAD DESIGN/TRAFFIC SAFETY DATA CONNECTIONS

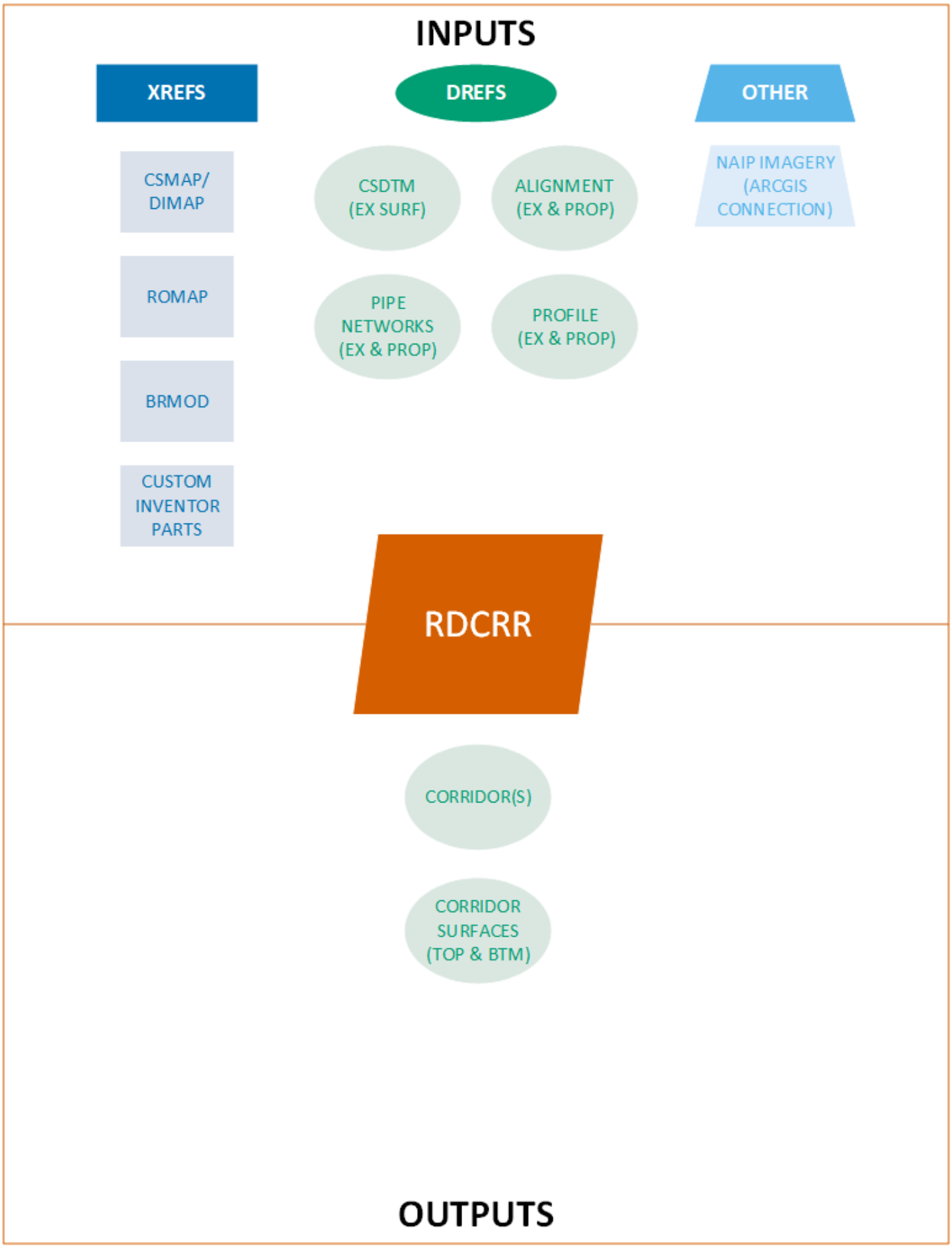
File Name	Data Connections					
	Data Referenced (DREF) objects	XREFed Files	Data Shortcuts Created	Other	Included in DST?	Remarks
RDALN	CSDTM (Existing Surface)* 	BRMOD CSMAP/DIMAP Custom Inventor parts ROMAP	Alignment(s) & Profiles []	NAIP imagery (ArcGIS Connection)	No	BRMOD may be a block representing a bridge durng early stages of design.
RDCRR	CSDTM (Existing Surface)* Alignment & Profile []** Pipe Networks []	BRMOD Custom Inventor parts CSMAP/DIMAP ROMAP	Corridor(s) Corridor Surface - Top and Bottom	NAIP imagery (ArcGIS Connection) or Online Maps	No	
RDDISCRR	Corridor(s) ***	None	None	N/A	No	Corridor style and code set style set to how it will be displayed in the PLP.
RDDISESU	CSDTM (Existing Surface)*	None	None	N/A	No	Existing surface set to appropriate display style for PLP.
RDXSF	Corridors(s)*** Corridor Surfaces - Top & Bottom CSDTM (Existing Surface)* Pipe Networks []	BRMOD Custom Inventor parts CSMAP/DIMAP ENWSU ROMAP	None	Survey Database as CSV****	Yes, its own DST	
RDTTL	Alignment (*)	None	None	QMG Excel Spreadsheet	Yes	Alignment users for centerline coordinate table. QMG used for approaches and wetland delineation tables.
RDTRV	Alignment (*)	None	None	NAIP Imagery (ArchGIS Connection) or Online Maps (UPN)SUCONXXX.csv	Yes	
RDTYP	Corridor(s) ***	None	None	N/A	Yes	
RDSUM	None	None	None	QMG Excel Spreadsheet	Yes	
RDDET	Corridor(s) *** Pipe Networks []	CSMAP/DIMAP Custom Inventor parts ENWSU ROMAP	None	NAIP Imagery (ArchGIS Connection) or Online Maps	Yes	These data connections assume approach or intersection details; however, connections will vary depending on the subject of the detail.
RDPLP	Alignment & Profile []** Pipe Networks []	BRMOD CSMAP/DIMAP Custom Inventor parts ENWSU RDDISCRR RDDISESU ROMAP	View Frame Group	NAIP Imagery (ArchGIS Connection) (UPN)GTBHL001.csv (if not in DIMAP)	Yes	Viewframe group created for R/W to utilize in their plans.

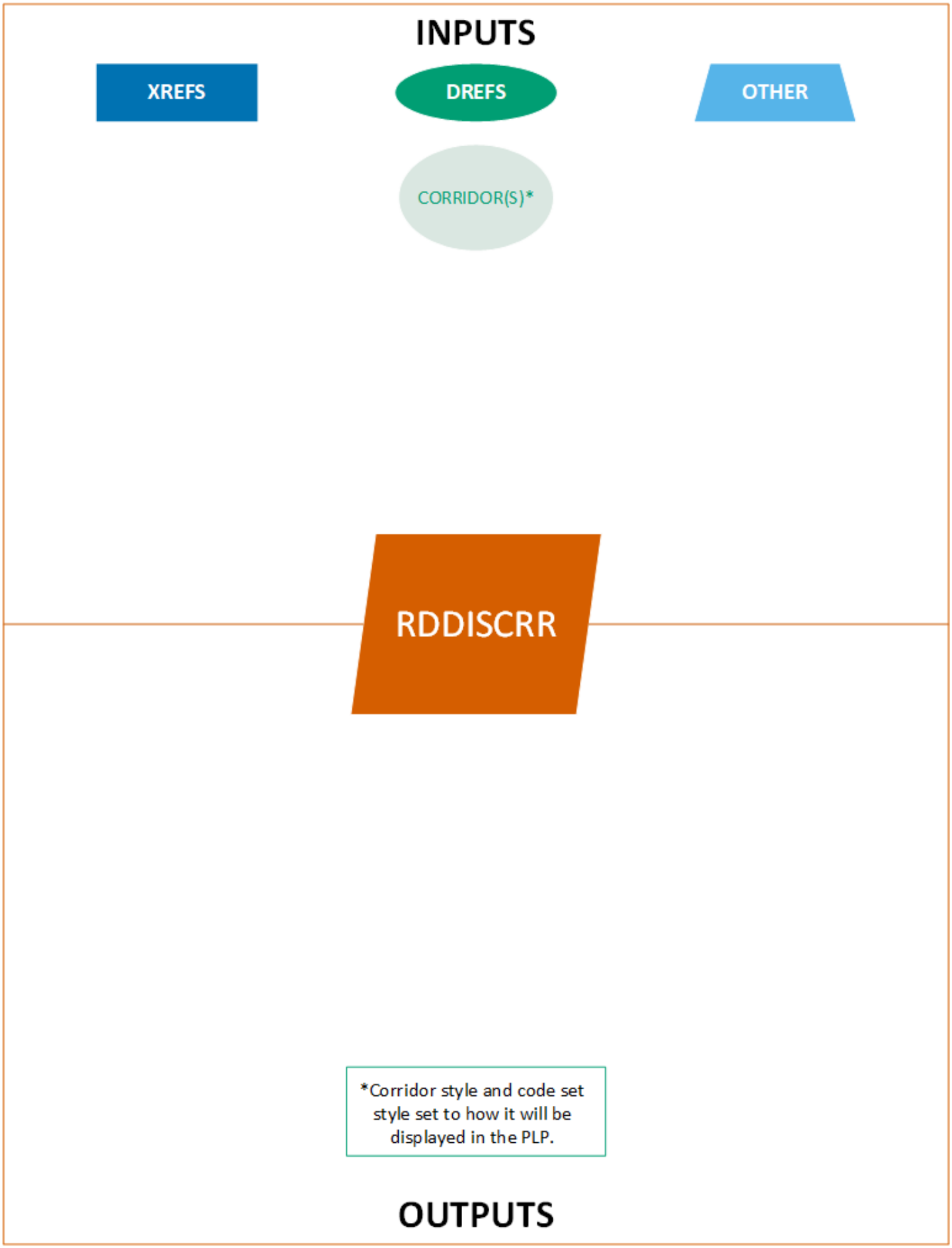
[] Existing and Proposed
(*) Proposed only
** May include surfaces created from point clouds.*
***Creating a data reference to the profile will automatically bring in the alignment tied to it.*
**** Corridor DREFs automatically bring in the alignment and profile used to create the corridor.*
***** Proposed workflow - otherwise XREF DIMAP file.*

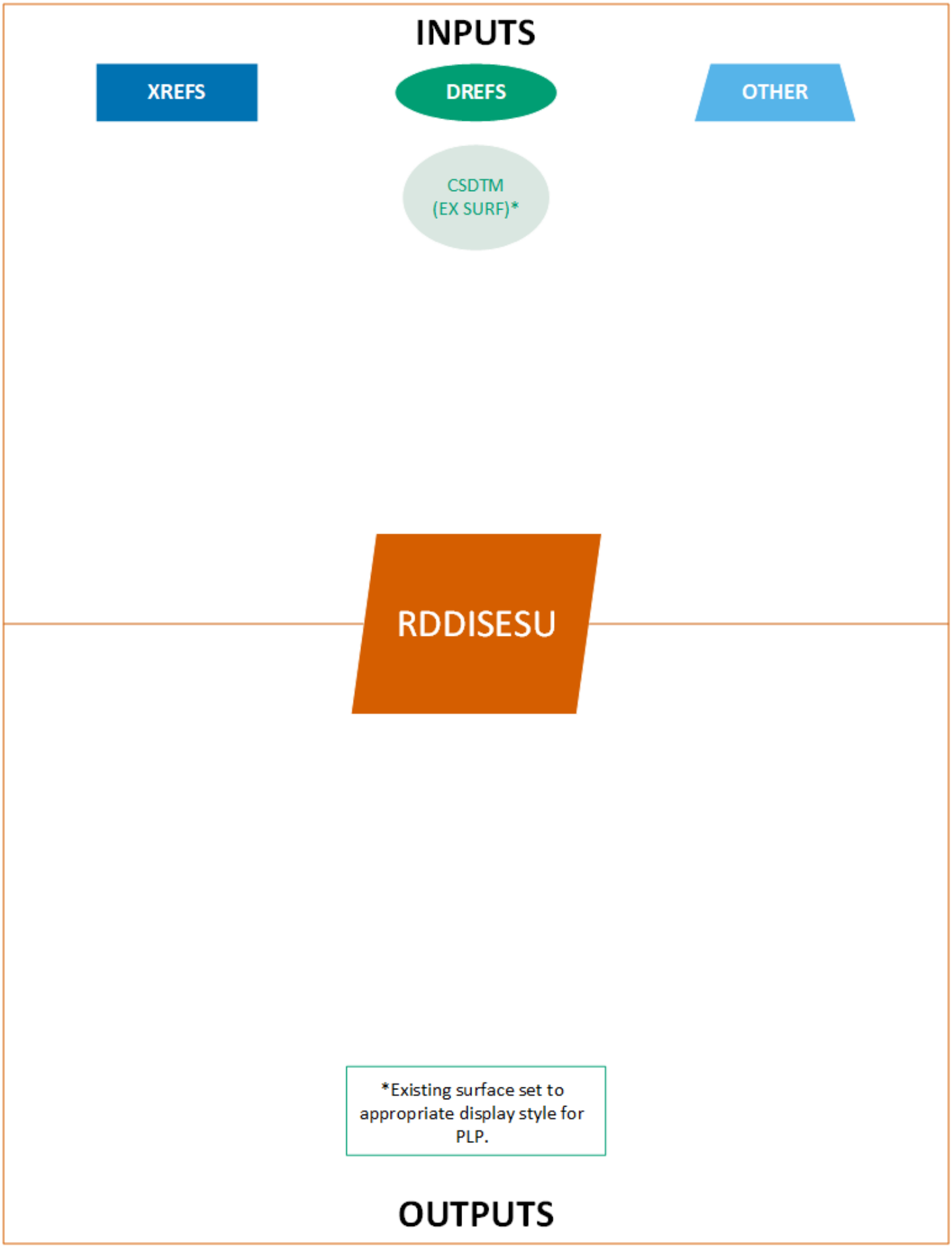
ROAD DESIGN CIVIL 3D DATA CONNECTIONS

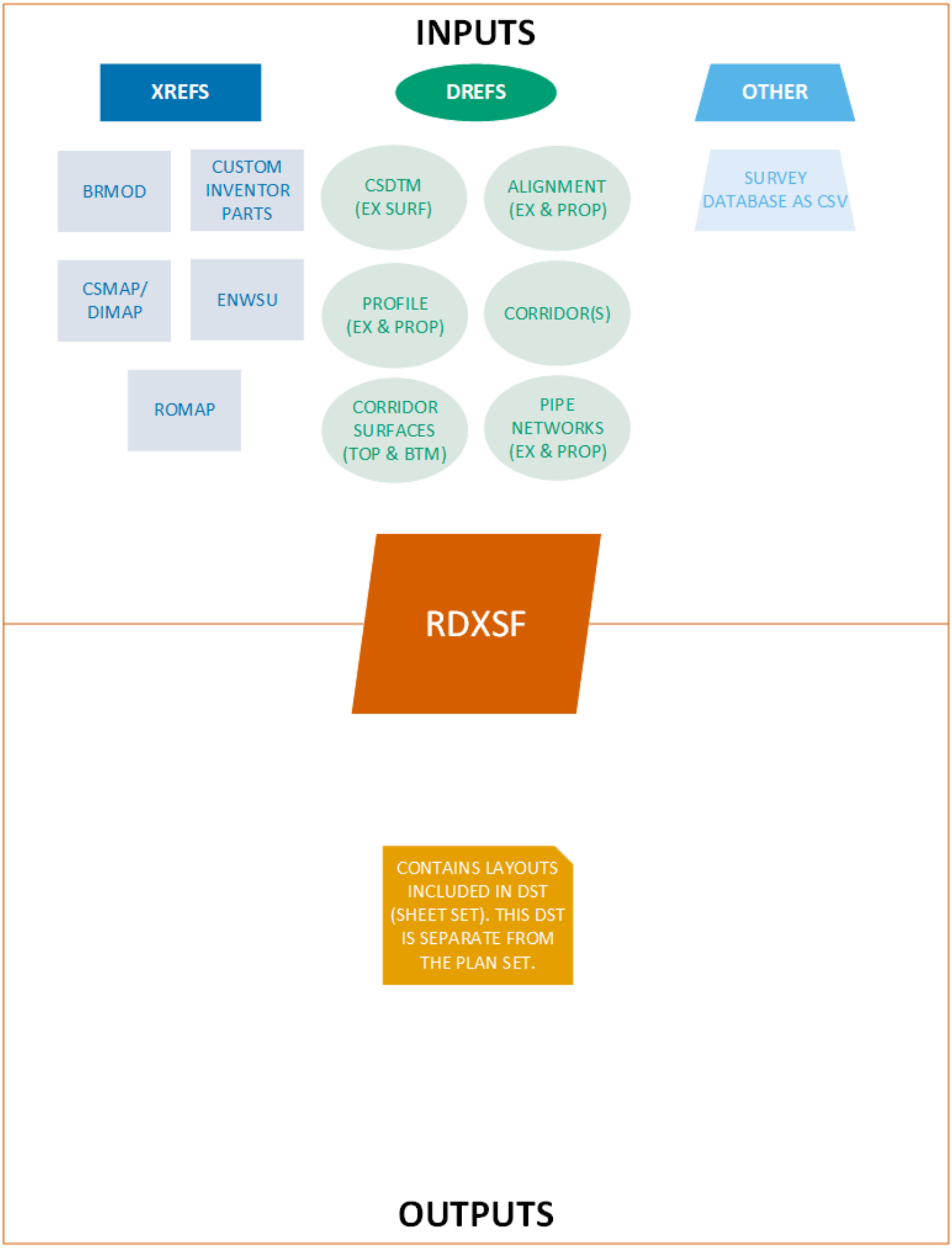


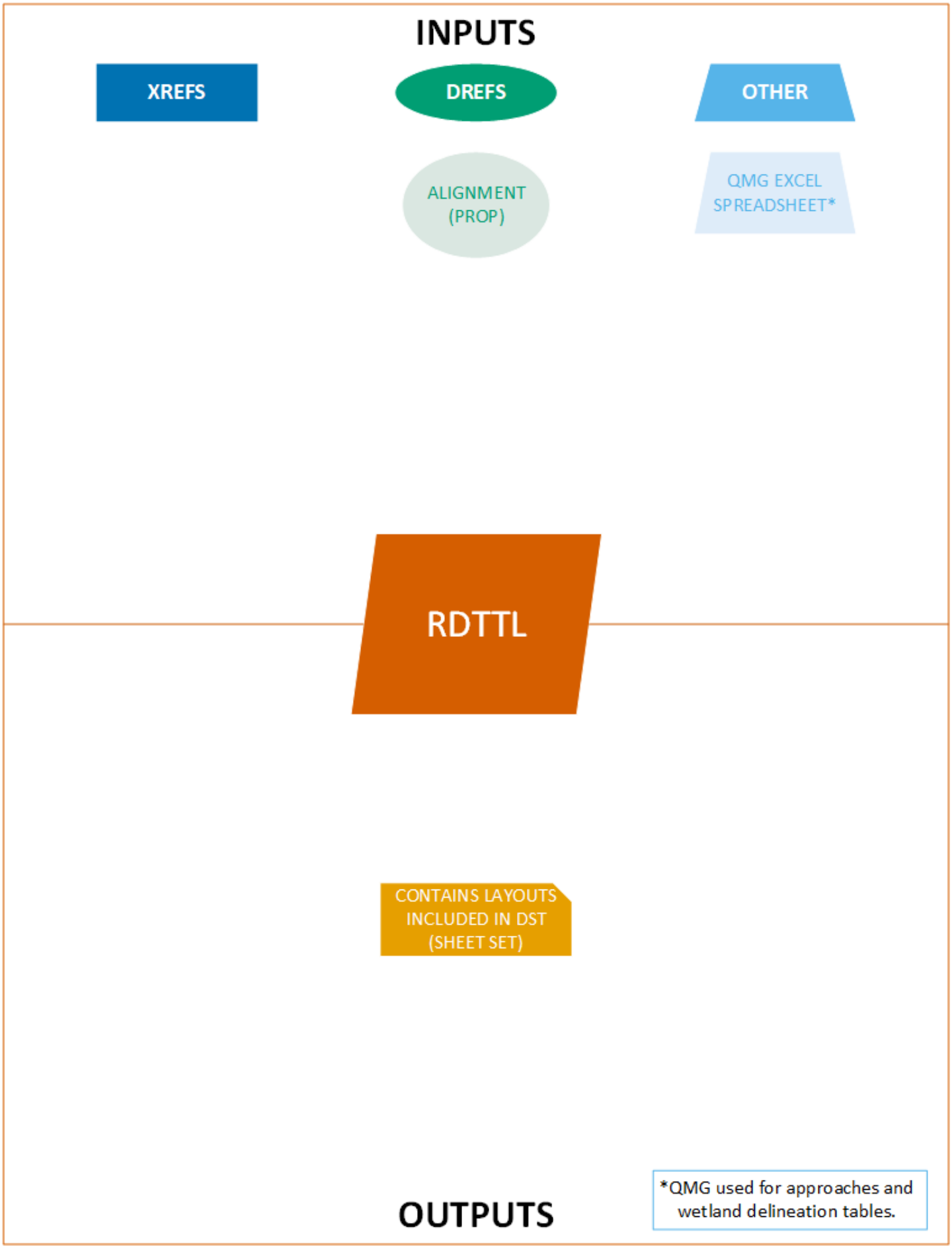

INPUTS
XREFS
DREFS
OTHER
CSMAP/
DIMAP
CSDTM
(EX SURF)
NAIP IMAGERY
(ARCGIS
CONNECTION)
ROMAP
BRMOD
CUSTOM
INVENTOR
PARTS
RDALN
ALIGNMENT(S)
(EX & PROP)
PROFILES
(EX & PROP)
OUTPUTS

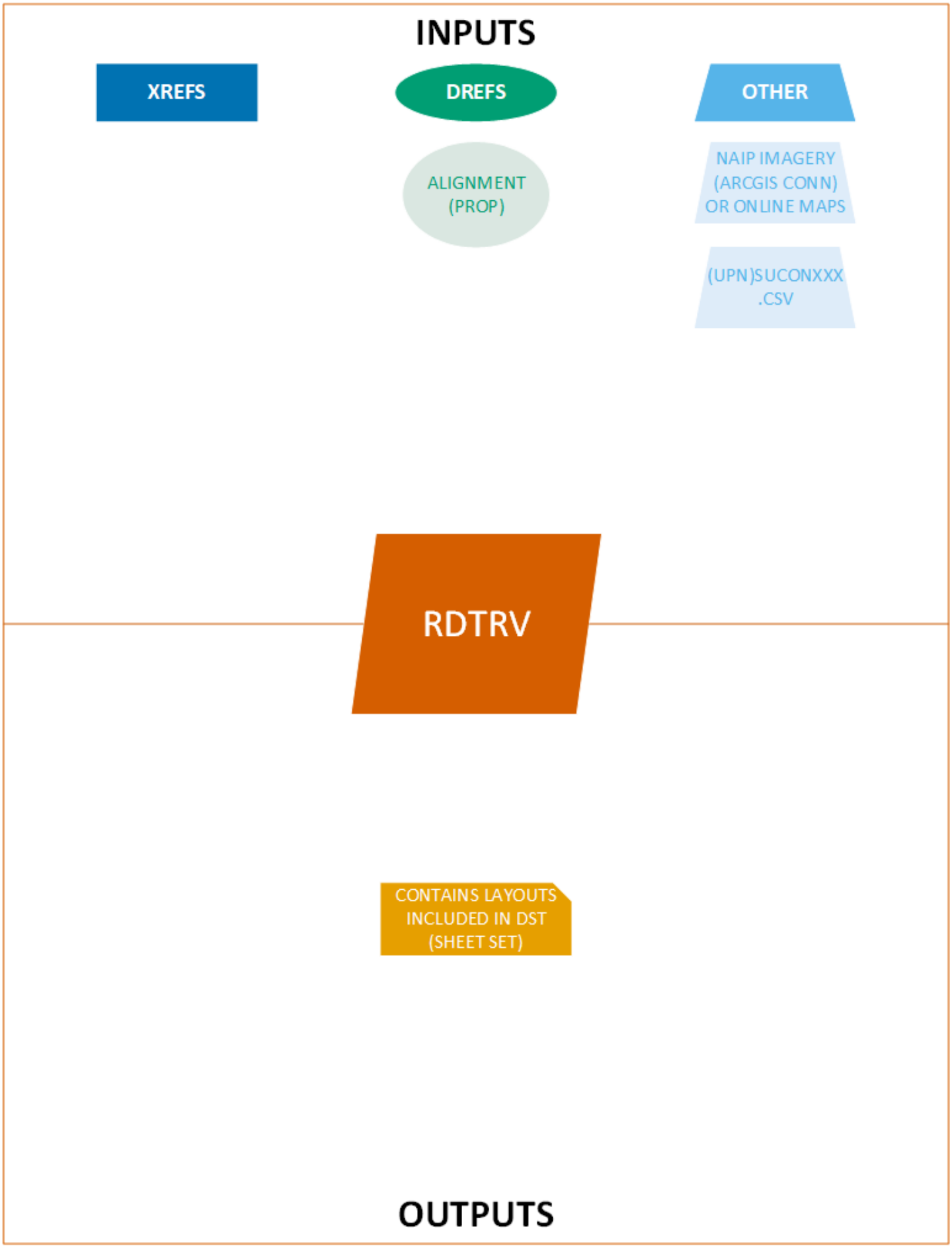

INPUTS
XREFS
DREFS
OTHER
CSMAP/ DIMAP
ROMAP
BRMOD
CUSTOM INVENTOR PARTS
CSDTM (EX SURF)
ALIGNMENT (EX & PROP)
PIPE NETWORKS (EX & PROP)
PROFILE (EX & PROP)
NAIP IMAGERY (ARCGIS CONNECTION)
RDCRR
CORRIDOR(S)
CORRIDOR SURFACES (TOP & BTM)
OUTPUTS

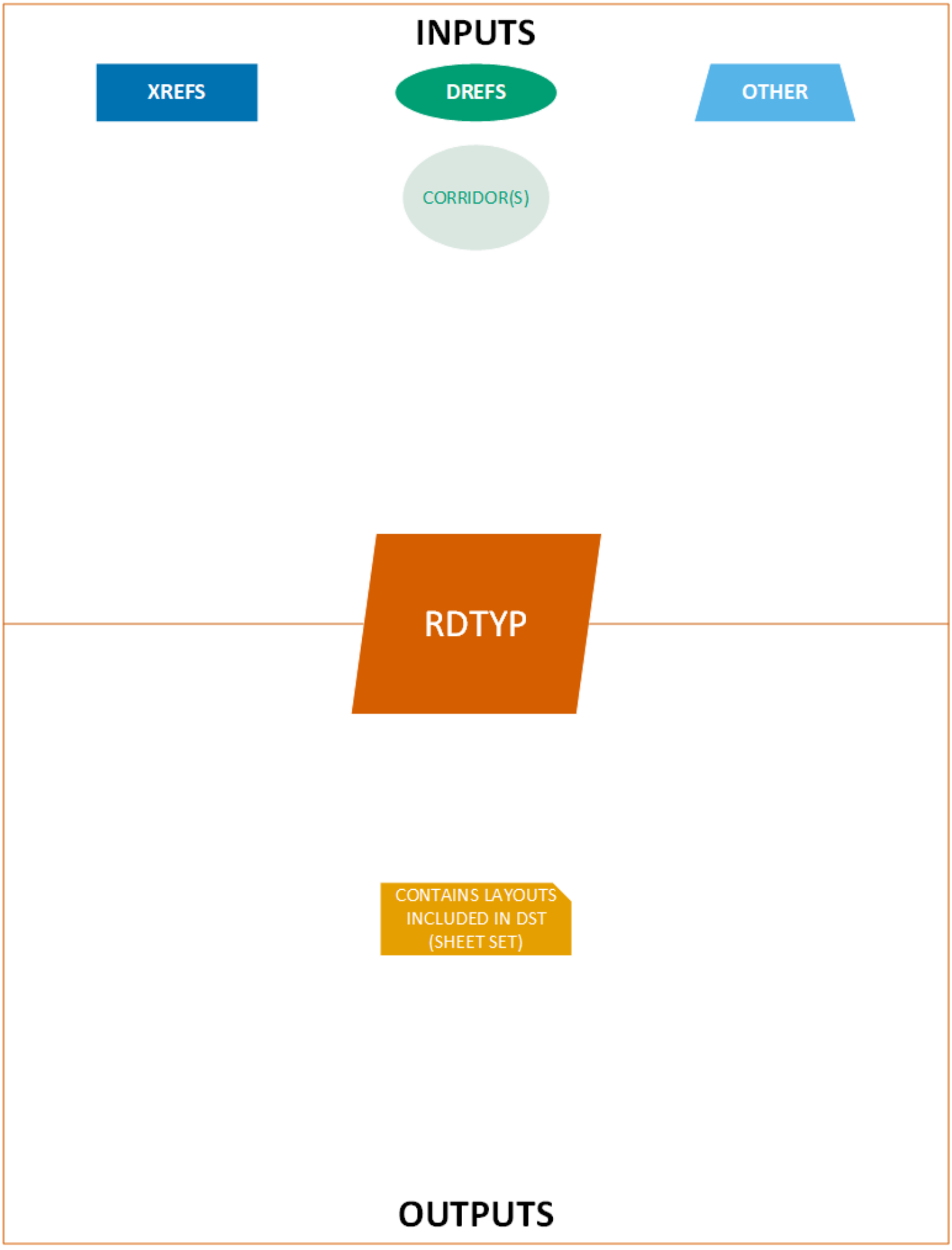

INPUTS
XREFS
DREFS
OTHER
CORRIDOR(S)*
RDDISCRR
*Corridor style and code set style set to how it will be displayed in the PLP.
OUTPUTS

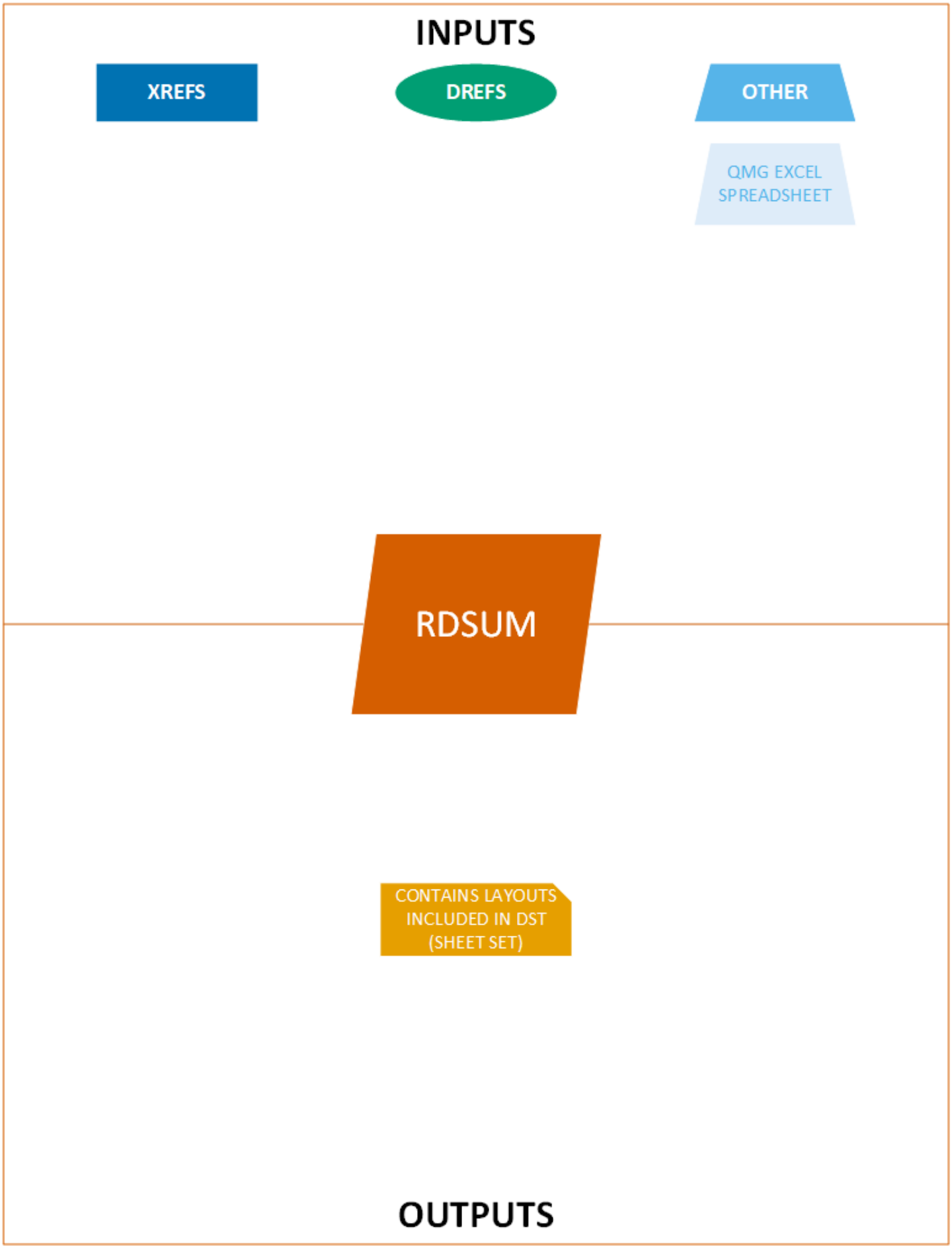

INPUTS
XREFS
DREFS
OTHER
CSDTM
(EX SURF)*
RDDISESU
*Existing surface set to appropriate display style for PLP.
OUTPUTS

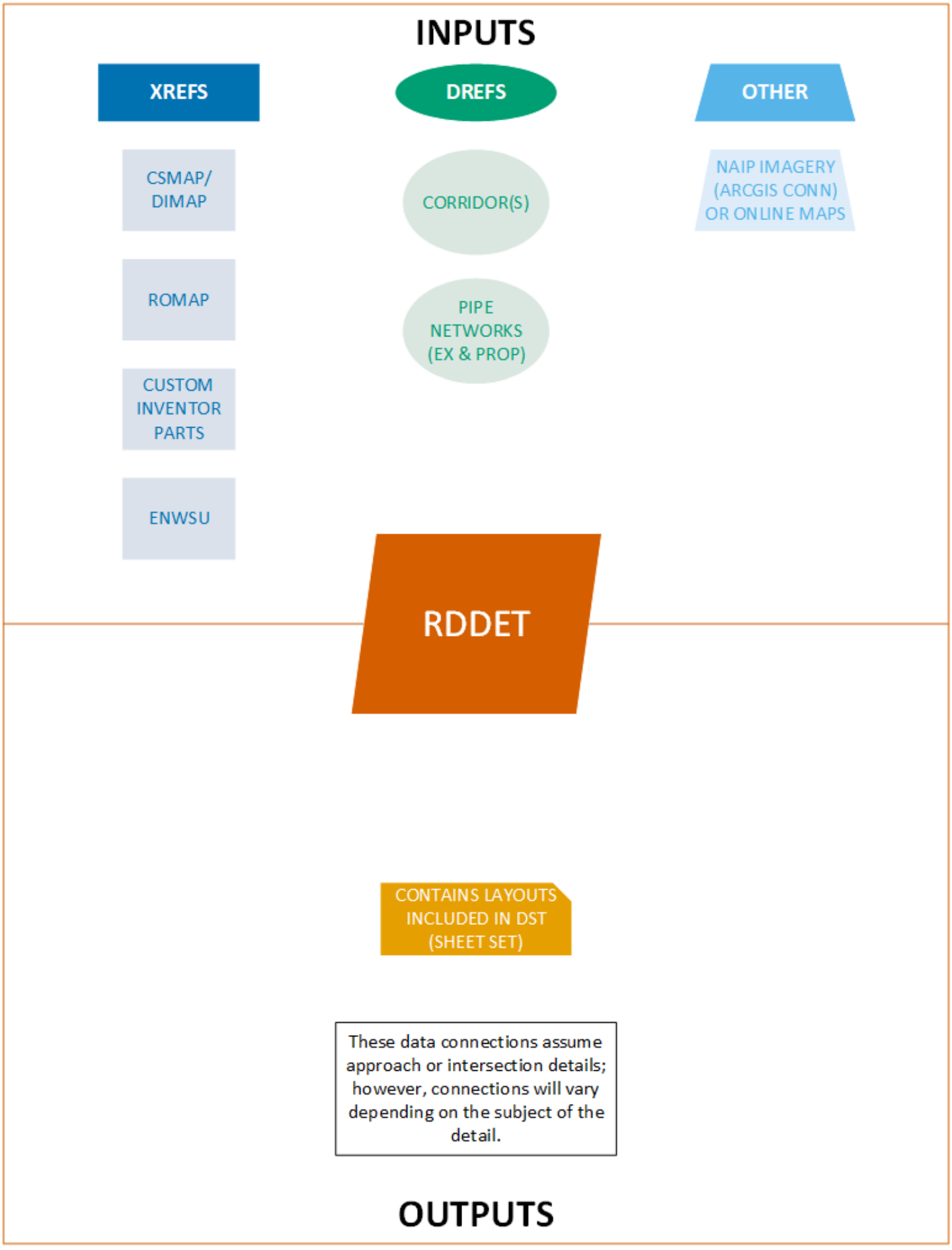

INPUTS
XREFS
DREFS
OTHER
BRMOD
CUSTOM INVENTOR PARTS
CSDTM (EX SURF)
ALIGNMENT (EX & PROP)
SURVEY DATABASE AS CSV
CSMAP/ DIMAP
ENWSU
PROFILE (EX & PROP)
CORRIDOR(S)
ROMAP
CORRIDOR SURFACES (TOP & BTM)
PIPE NETWORKS (EX & PROP)
RDXSF
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET). THIS DST IS SEPARATE FROM THE PLAN SET.
OUTPUTS

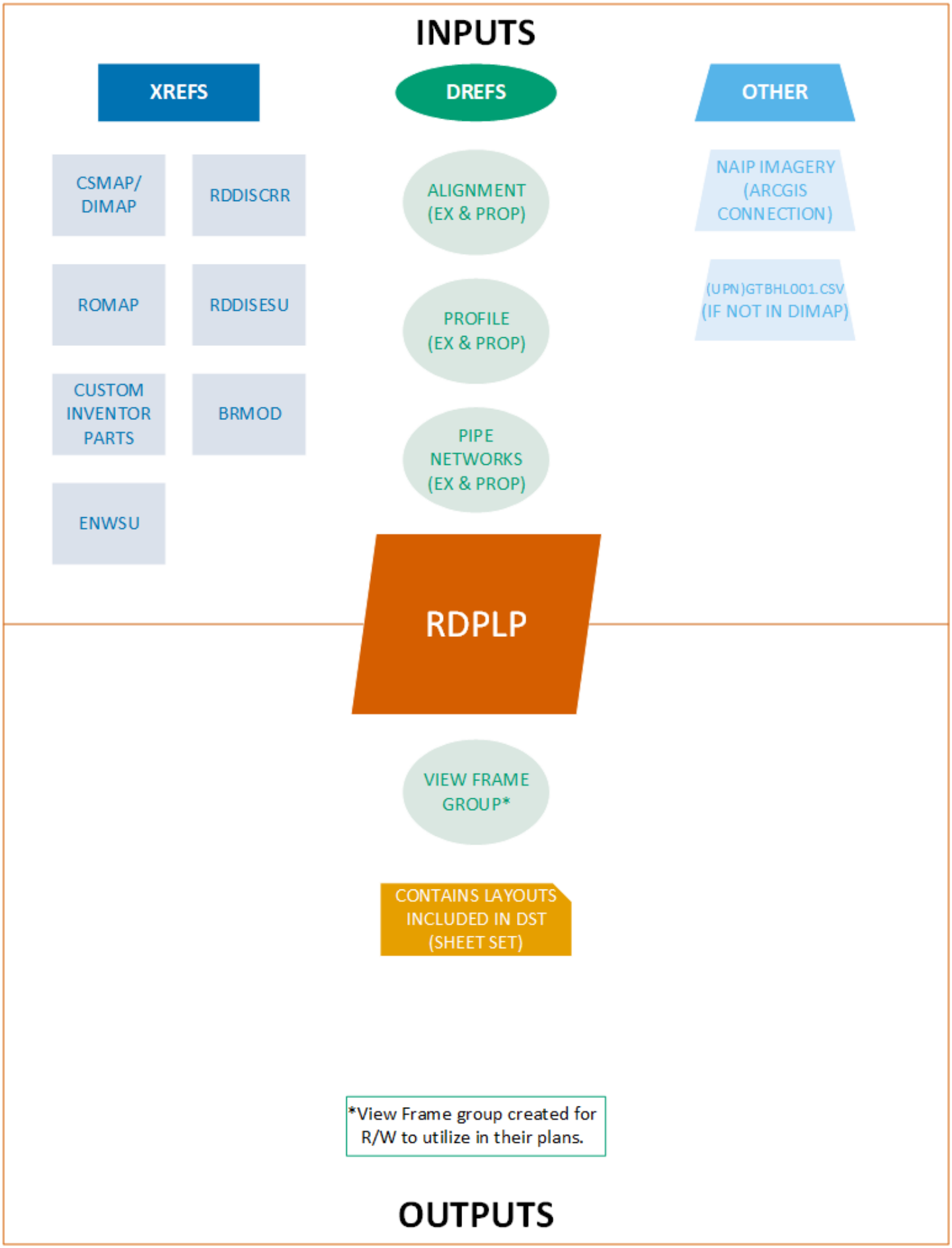

INPUTS
XREFS
DREFS
OTHER
ALIGNMENT (PROP)
QMG EXCEL SPREADSHEET*
RDTTL
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET)
OUTPUTS
*QMG used for approaches and wetland delineation tables.


INPUTS
XREFS
DREFS
OTHER
ALIGNMENT (PROP)
NAIP IMAGERY (ARCGIS CONN) OR ONLINE MAPS
(UPN)SUCONXXX .CSV
RDTRV
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET)
OUTPUTS


INPUTS
XREFS
DREFS
OTHER
CORRIDOR(S)
RDTYP
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET)
OUTPUTS


INPUTS
XREFS
DREFS
OTHER
QMG EXCEL SPREADSHEET
RDSUM
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET)
OUTPUTS


INPUTS
XREFS
DREFS
OTHER
CSMAP/ DIMAP
ROMAP
CUSTOM INVENTOR PARTS
ENWSU
CORRIDOR(S)
PIPE NETWORKS (EX & PROP)
NAIP IMAGERY (ARCGIS CONN) OR ONLINE MAPS
RDDET
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET)
These data connections assume approach or intersection details; however, connections will vary depending on the subject of the detail.
OUTPUTS


INPUTS
XREFS
DREFS
OTHER
CSMAP/ DIMAP
RDDISCRR
ROMAP
RDDISESU
CUSTOM INVENTOR PARTS
BRMOD
ENWSU
ALIGNMENT (EX & PROP)
PROFILE (EX & PROP)
PIPE NETWORKS (EX & PROP)
NAIP IMAGERY (ARCGIS CONNECTION)
(UPN)GTBHL001.CSV (IF NOT IN DIMAP)
RDPLP
VIEW FRAME GROUP*
CONTAINS LAYOUTS INCLUDED IN DST (SHEET SET)
*View Frame group created for R/W to utilize in their plans.
OUTPUTS