

Memorandum

To:	Brian Station, P.Eng.	Date:	September 16, 2021
		Project No.:	21-0107-001
From:	Jason Smith, P.Eng. Andrew Fustey, EIT	Cc:	Adam Pawlikewich, P.Eng. Prasan Silva, P.Eng.
Re:	NEWPCC - RAS Gallery 3-D Model User Guide		

1.0 INTRODUCTION









The purpose of this document is to serve as a guide for the use of the NEWPCC RAS gallery 3-D model. The model is in the form of a Navisworks *.nwd* file, therefore it may be opened with Autodesk Navisworks Freedom (freely available software application). The model is intended to be used as a visualization tool in conjunction with the associated drawings and documents for the Non-Metallic Composite Repair System for NEWPCC RAS Piping System Refurbishment.

The model contains RAS trains 1, 2, 3, and WAS piping to be refurbished or replaced under the scope of the current project, with all associated manual and automated valves, flowmeters and couplings. It also contains all existing pipe supports and new permanent pipe supports to be constructed, items in proximity to the RAS piping, locations of existing pipe leaks and repairs, and extents of the composite wrap repair system with associated termination sleeves. A colour scheme has been applied to the model to facilitate identification of components. Additionally, the use of the “Sets” function within Navisworks Selection Tree and Viewpoints feature have been used to organize the model and identify the various sub-components contained therein.

2.0 COLOUR LEGEND

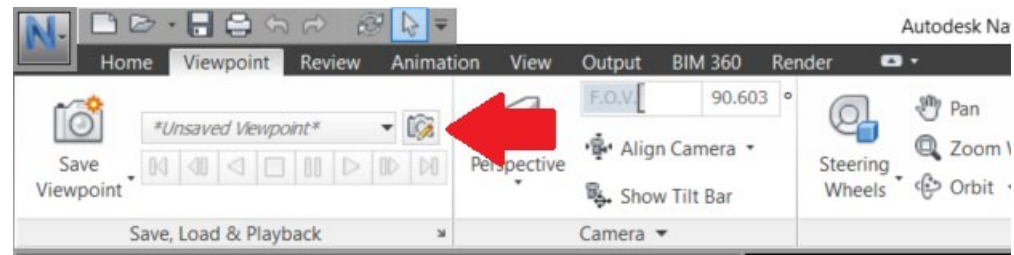
A colour legend has been applied to the model in order to quickly identify different items and sections of piping. The below table outlines the colour scheme of the model.

TABLE 1: COLOUR LEGEND

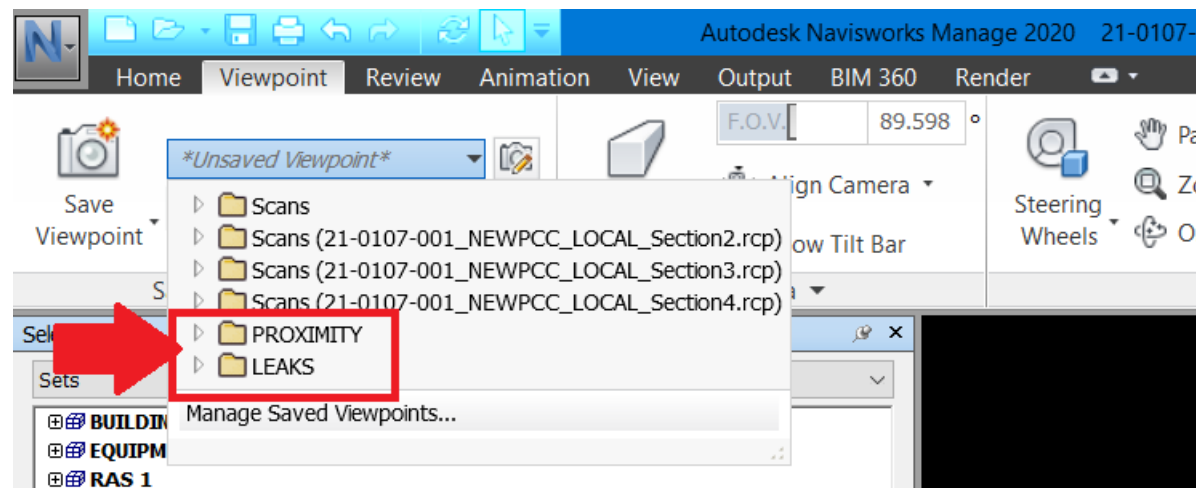
Colour	Image	Description
Beige		RAS 1 Header
Orange		RAS 2 Header
Yellow		RAS 3 Header
Brown		WAS piping
Green		Piping and valves to be replaced, and sleeves for composite wrap termination
Magenta		Instruments and Automated Valves
Cyan		Existing piping supports
Blue		Future permanent piping supports
Grey		Building Structure and Platforms
Red		Proximity piping

3.0 VIEWPOINTS

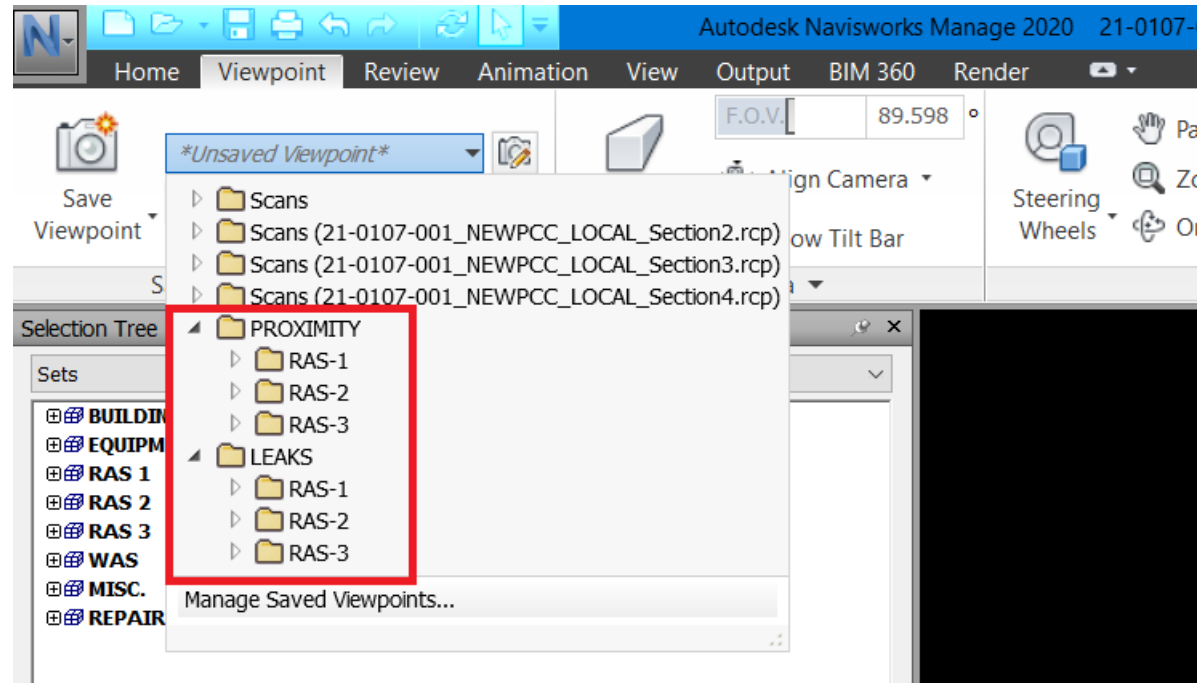
The Navisworks Viewpoints function has been employed to observe Proximity Items and Leak Locations around the model.



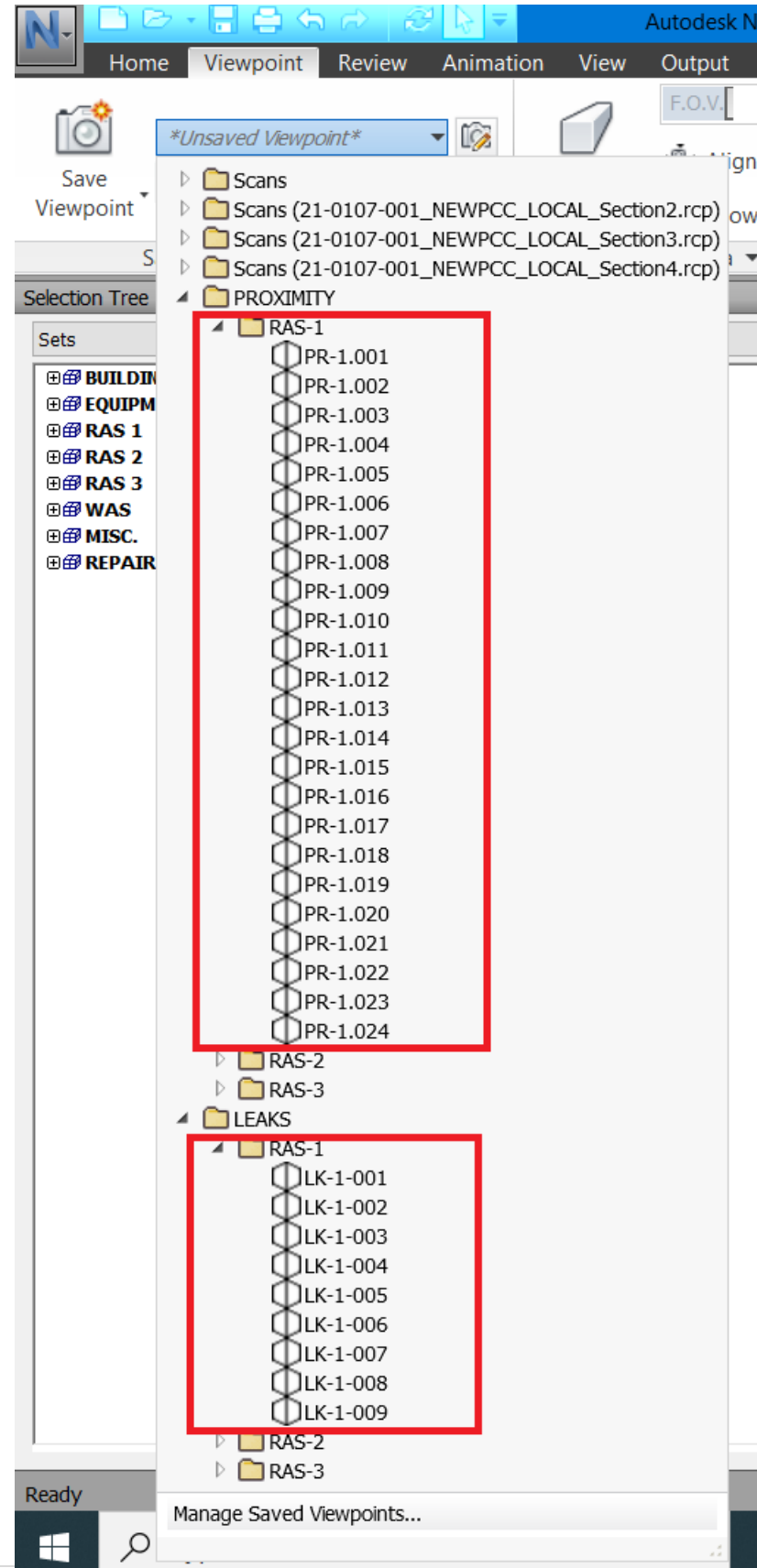
1. Click the drop down of the “*Unsaved Viewpoint*” button on the “Save, Load & Playback” panel of the Viewpoint Ribbon.



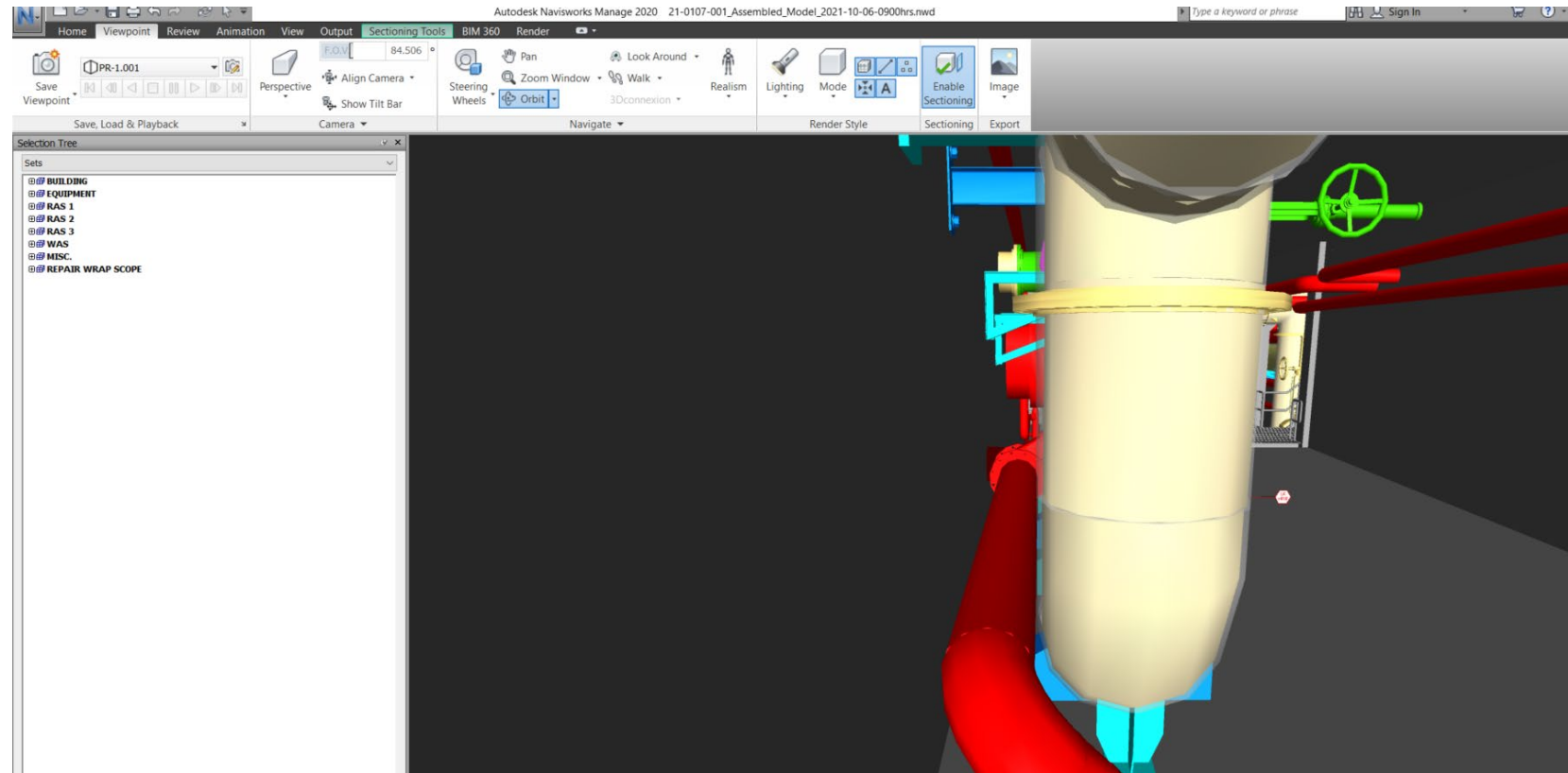
2. Once the drop down is open, a “PROXIMITY” folder and a “LEAKS” folder will appear.



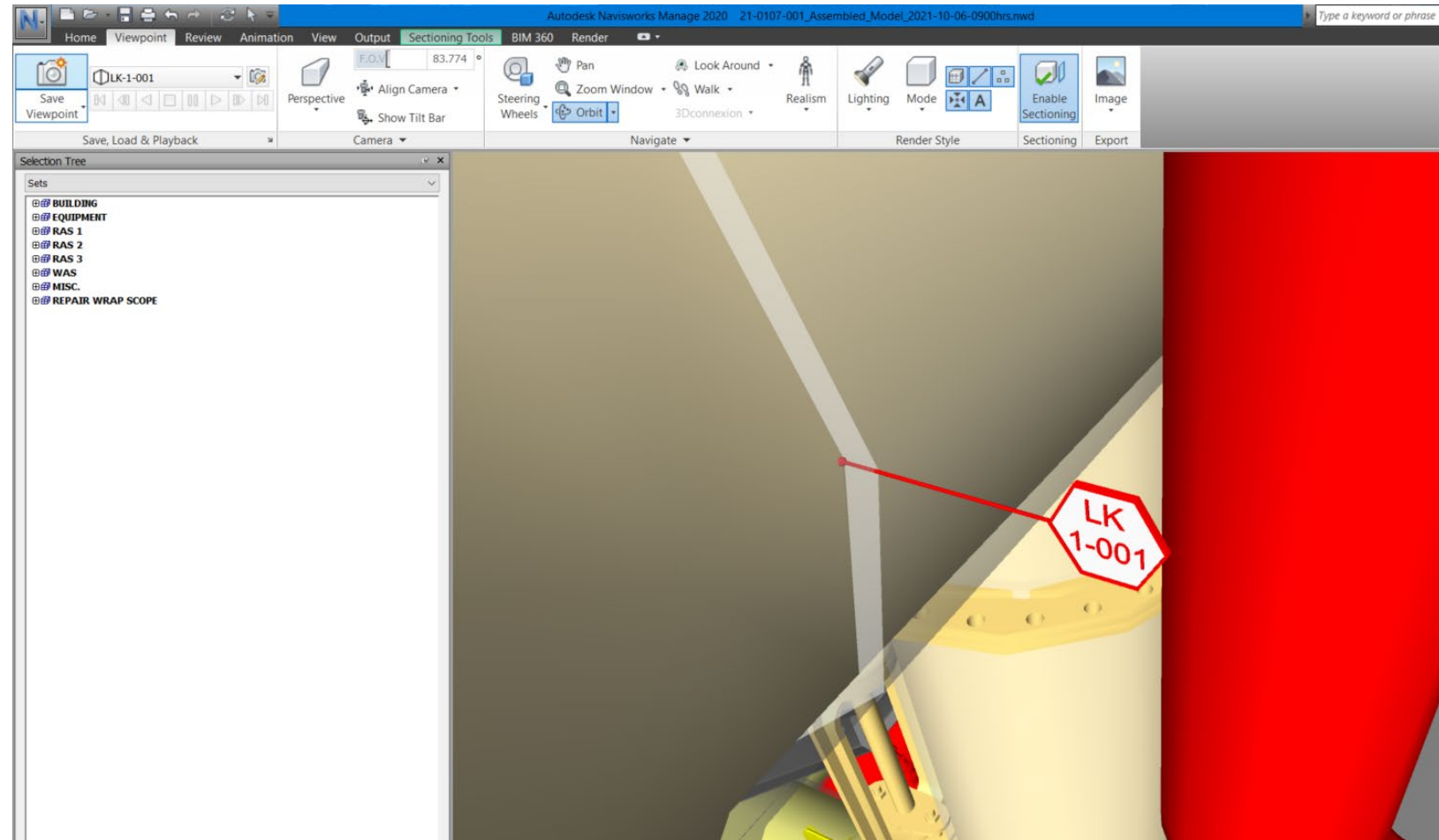
3. Both the PROXIMITY and LEAKS folders have been broken into sub folders for RAS-1, 2 and 3.



4. Opening one of the “RAS” sub folders will reveal individually saved Viewpoints of the model. Clicking on one of these Viewpoints will snap the model to the view that was saved.
 - a. With this menu, the user can navigate to all the Proximity Items and Leak Locations within the model.



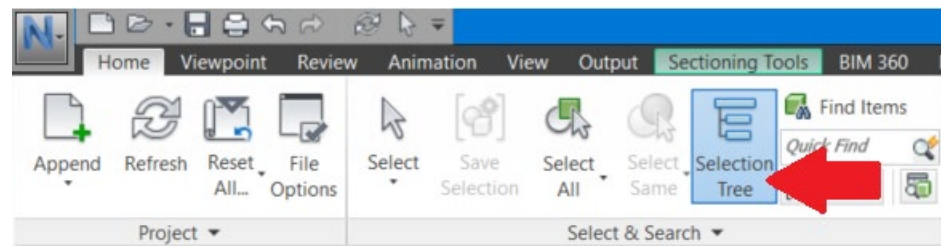
5. For example, clicking on Proximity Item “PR-1.001” will navigate the user to this screen. Here, a Proximity Pipe in red is shown near the RAS-1 header.



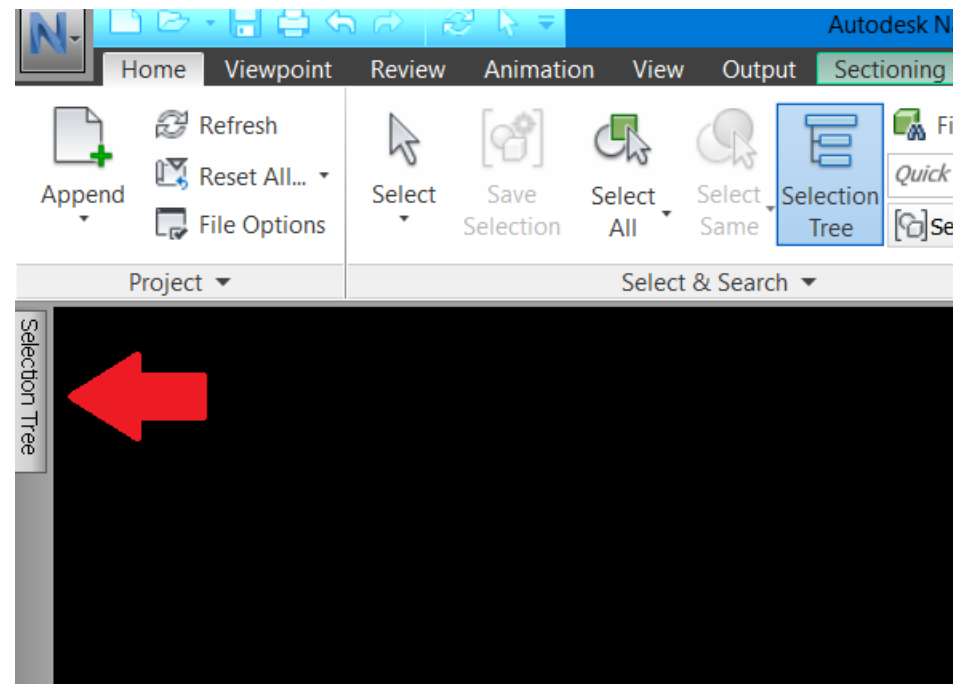
6. The same method is followed for the Leak Locations. For example, clicking on Leak Location “LK-1-001” will navigate the viewer to LK-1-001 on the RAS-1 header.
 - a. Both the LEAKS and PROXIMITY Viewpoint folders are to be used in conjunction with lists LST-M-001 and LST-M-003.
 - b. Each Leak Location and Proximity Item in these lists appear in the Viewpoints feature of the Navisworks model.

4.0 NAVISWORKS SELECTION TREE SETS

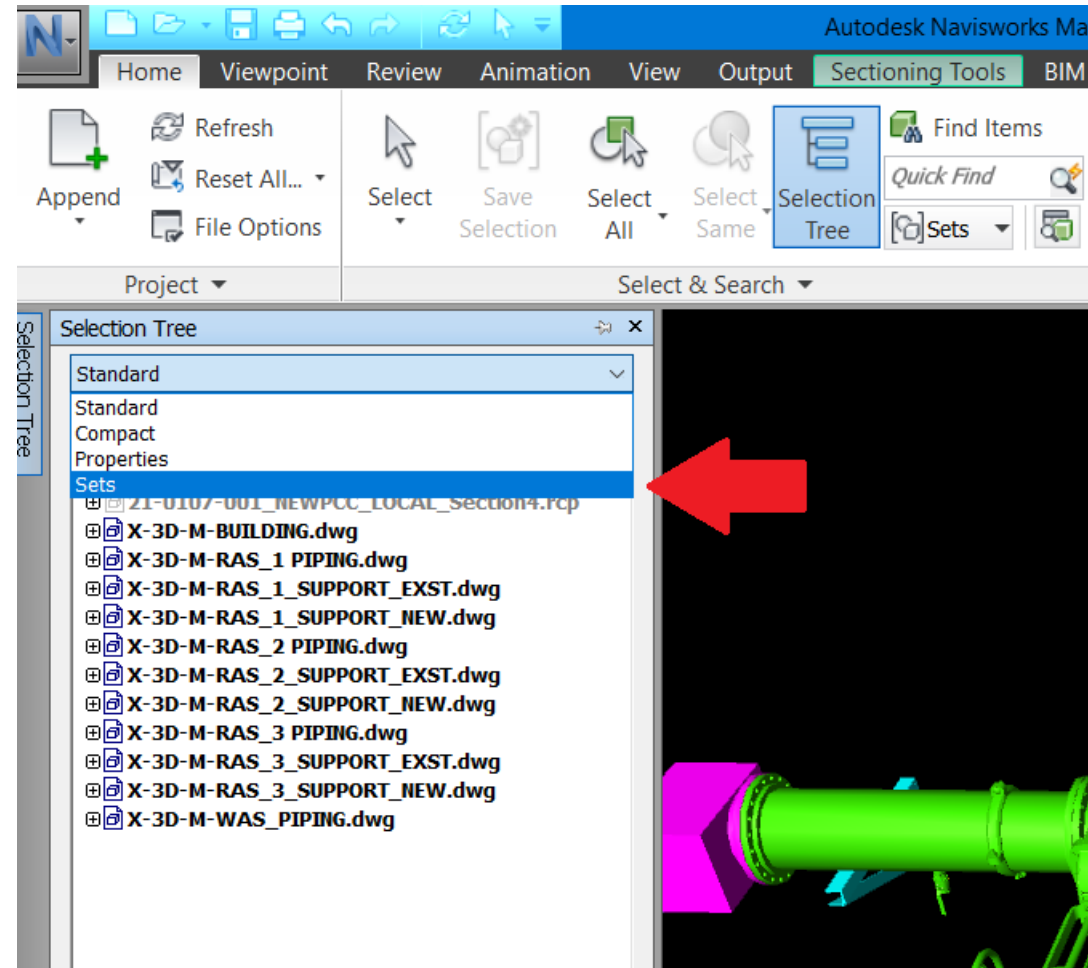
The Navisworks Sets function has been employed to effectively organize the model within the Selection Tree. The following are a list of steps to navigate to the Sets menu:



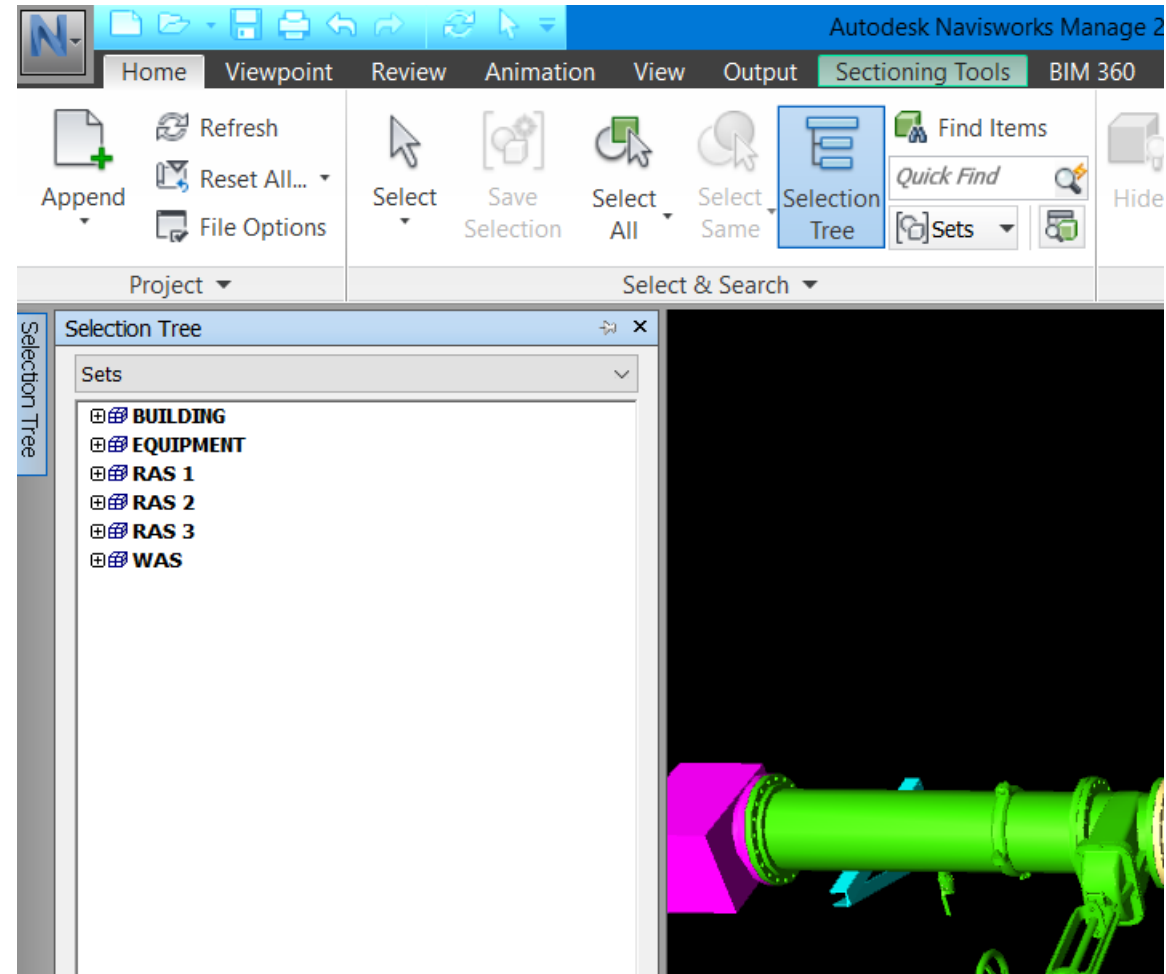
1. Click “Selection Tree” on the “Select and Search” panel of the Home Ribbon.



2. Click the Selection Tree tab on the left-hand side of the screen to open the Selection Tree.



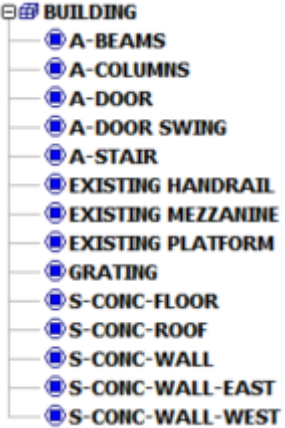
3. Once the Selection Tree panel has opened, use the drop-down menu located at the top of the panel, to navigate to the Sets organization tree.



4. The Sets organization is now open and can be used to find specific items or groups of items within the model.
 - a. Right-clicking on an item either in the Selection Tree, or in the model, enables a menu allowing the item to be hidden or unhidden.
 - b. When an item is selected in the Selection Tree, it will highlight in the model. Using "Zoom Selected" in the Navigation Bar will zoom to the selected item in the model.

The model has been organized into the main categories of BUILDING, EQUIPMENT, RAS 1, RAS 2, RAS 3, WAS, MISC. and REPAIR WRAP SCOPE. The following are a breakdown of the sub categories and their descriptions within each of the main category. These category breakdowns are an example and may not include all items found within the Sets of the model.

TABLE 2: SETS ORGANIZATION BREAKDOWN

Category Name	Category Breakdown	Description
BUILDING		
BUILDING	 <pre> graph TD BUILDING --> A-BEAMS BUILDING --> A-COLUMNS BUILDING --> A-DOOR BUILDING --> A-DOOR_SWING[A-DOOR SWING] BUILDING --> A-STAIR BUILDING --> EXISTING_HANDRAIL[EXISTING HANDRAIL] BUILDING --> EXISTING_MEZZANINE[EXISTING MEZZANINE] BUILDING --> EXISTING_PLATFORM[EXISTING PLATFORM] BUILDING --> GRATING BUILDING --> S-CONC-FLOOR BUILDING --> S-CONC-ROOF BUILDING --> S-CONC-WALL BUILDING --> S-CONC-WALL-EAST BUILDING --> S-CONC-WALL-WEST </pre>	Items related to building structure including: floor, walls, roof, concrete columns, walkways, handrails, etc.

	EQUIPMENT	
EQUIPMENT	<ul style="list-style-type: none"> [-] [E] EQUIPMENT <ul style="list-style-type: none"> [-] [E] INTERCOMS <ul style="list-style-type: none"> [+] M-EQIP-INTERCOM EXST [+] M-EQIP-INTERCOM NEW [-] [E] CABLE TRAYS <ul style="list-style-type: none"> [+] M-EQIP-CBL SUPRT [+] M-EQIP-CBL SUPRT NEW [+] M-EQIP-CBL TRAY [-] [E] POWER EQUIPMENT <ul style="list-style-type: none"> [+] E-CONDUIT [+] E-PLATE [+] E-POWER-EQUIPMENT [+] E-POWER-EQUIPMENT-WAS_S942 [+] E-POWER-EQUIPMENT-WAS_S943 [+] E-SUPPORT [+] E-UNISTRUT [-] [E] PUMPS <ul style="list-style-type: none"> [+] M-EQIP-PUMP [+] M-EQIP-S951-WAP1 [+] M-EQIP-S952-WAP2 [+] M-EQIP-S953-WAP3 [+] M-EQIP-S954-WAP4 	Items related to mechanical equipment including pumps, tanks, etc.

<h1>RAS 1</h1>		
RAS 1	<ul style="list-style-type: none"> [-] RAS 1 <ul style="list-style-type: none"> [-] PIPING <ul style="list-style-type: none"> ● M-PIPE-RAS 1_100 ● M-PIPE-RAS 1_300 ● M-PIPE-RAS 1_450 ● M-PIPE-RAS 1_500 ● M-PIPE-RAS 1_500_REPLACEMENT ● M-PIPE-RAS 1_600 ● M-PIPE-RAS 1_750 ● M-PIPE-RAS 1_900 [-] VALVES - AUTO <ul style="list-style-type: none"> ● M-VALVE-AUTO-R810-BV-1A ● M-VALVE-AUTO-R815-BV-1B [-] VALVES - MANUAL <ul style="list-style-type: none"> ● M-VALVE-MANUAL-R810-KV-1A ● M-VALVE-MANUAL-R815-KV-1B ● M-VALVE-MANUAL-S801-HV ● M-VALVE-MANUAL-S801-HV-2 ● M-VALVE-MANUAL-S901-HV4-1 ● M-VALVE-MANUAL-S902-HV4-2 ● M-VALVE-MANUAL-S903-HV4-3 ● M-VALVE-MANUAL-S904-HV4-4 ● M-VALVE-MANUAL-S905-HV4-5 ● M-VALVE-MANUAL-S906-HV4-6 ● M-VALVE-MANUAL-S907-HV2-7 ● M-VALVE-MANUAL-S908-HV4-8 ● M-VALVE-MANUAL-S909-HV4-9 ● M-VALVE-MANUAL-S910-HV4-10 ● M-VALVE-MANUAL-HPV-1.01 ● M-VALVE-MANUAL-HPV-1.02 ● M-VALVE-MANUAL-HPV-1.03 ● M-VALVE-MANUAL-LPD-1.01 ● M-VALVE-MANUAL-LPD-1.02 ● M-VALVE-MANUAL-LPD-1.03 ● M-VALVE-MANUAL-LPD-1.04 [-] COUPLINGS <ul style="list-style-type: none"> ● M-COUPLING-CPLG-1.01 ● M-COUPLING-CPLG-1.02 ● M-COUPLING-CPLG-1.03 ● M-COUPLING-CPLG-1.04 [-] FLOW METERS <ul style="list-style-type: none"> ● M-FLOWMETER-R810-FE ● M-FLOWMETER-R815-FE [-] SUPPORTS - EXISTING 	<p>Items related to the RAS 1 Header including valves, couplings, piping, flow meters, supports and CFRP termination sleeves.</p>

RAS 1

WALL BRACKETS

- PSE-1.02.01
- PSE-1.02.02
- PSE-1.02.03
- PSE-1.02.04
- PSE-1.02.05
- PSE-1.02.06
- PSE-1.02.07
- PSE-1.02.08
- PSE-1.02.09
- PSE-1.02.10
- PSE-1.02.11
- PSE-1.02.12

CONCRETE SADDLES

- PSE-1.03.01
- PSE-1.03.02
- PSE-1.03.03
- PSE-1.03.04

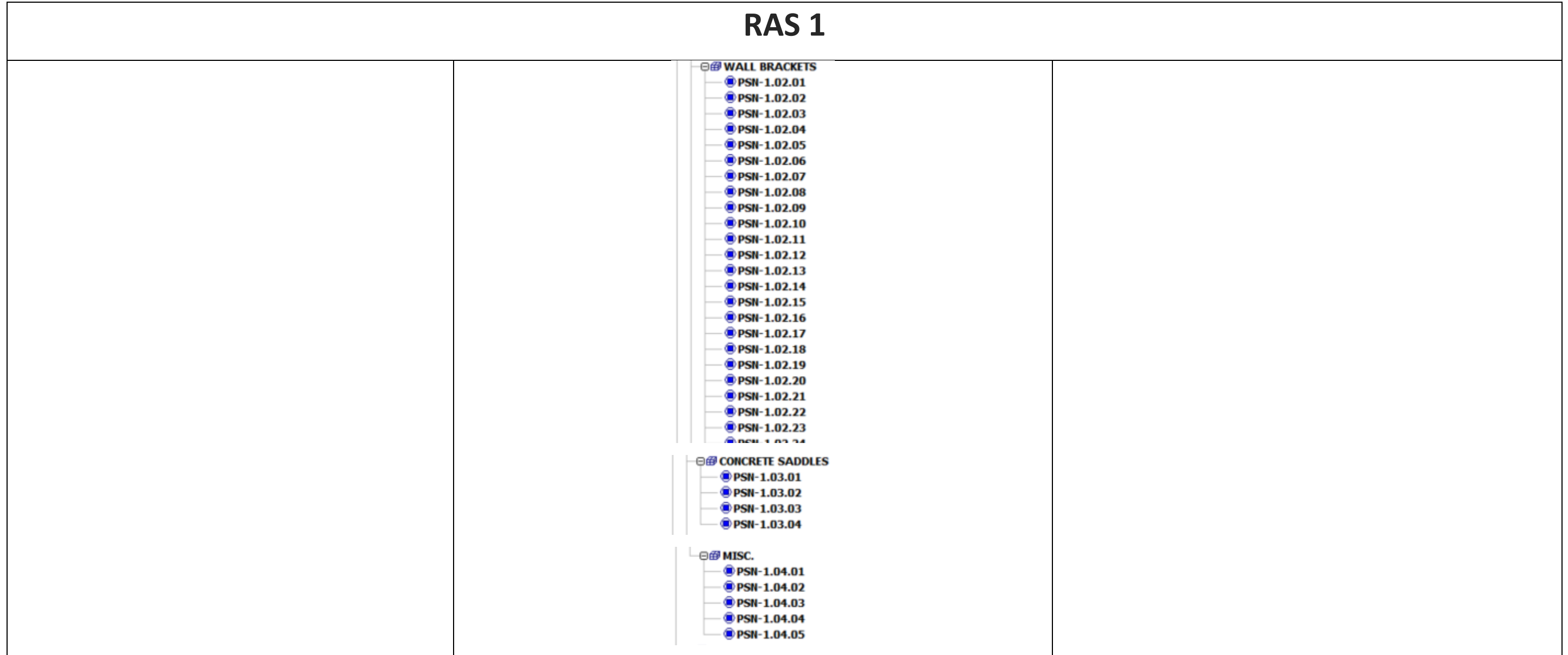
MISC.

- PSE-1.04.01
- PSE-1.04.02
- PSE-1.04.03
- PSE-1.04.04
- PSE-1.04.05
- PSE-1.04.06
- PSE-1.04.07
- PSE-1.04.08
- PSE-1.04.09
- PSE-1.04.10
- PSE-1.04.11
- PSE-1.04.12
- PSE-1.04.13
- PSE-1.04.14
- PSE-1.04.15
- PSE-1.04.16

SUPPORTS - NEW

POSTS

- PSN-1.01.01
- PSN-1.01.02
- PSN-1.01.03
- PSN-1.01.04
- PSN-1.01.05
- PSN-1.01.06
- PSN-1.01.07
- PSN-1.01.08



RAS 1

- [-] LEAKS
 - M-LEAK-LK-1-001
 - M-LEAK-LK-1-002
 - M-LEAK-LK-1-003
 - M-LEAK-LK-1-004
 - M-LEAK-LK-1-005
 - M-LEAK-LK-1-006
 - M-LEAK-LK-1-007
 - M-LEAK-LK-1-008
 - M-LEAK-LK-1-009
- [-] SLEEVES
 - M-SLEEVE-SLV-CLO-1
 - M-SLEEVE-SLV-2907-HV2-7
 - M-SLEEVE-SLV-R810-KV-1A
 - M-SLEEVE-SLV-R815-KV-1B
 - M-SLEEVE-SLV-S801-HV-01
 - M-SLEEVE-SLV-S802-HV-01
 - M-SLEEVE-SLV-S901-HV4-1
 - M-SLEEVE-SLV-S902-HV4-2
 - M-SLEEVE-SLV-S903-HV4-3
 - M-SLEEVE-SLV-S904-HV4-4
 - M-SLEEVE-SLV-S905-HV4-5
 - M-SLEEVE-SLV-S906-HV4-6
 - M-SLEEVE-SLV-S908-HV4-8
 - M-SLEEVE-SLV-S909-HV4-9
 - M-SLEEVE-SLV-S910-HV4-10

RAS 2

RAS 2

- [-] RAS 2
 - [-] PIPING
 - M-PIPE-RAS 2_100
 - M-PIPE-RAS 2_300
 - M-PIPE-RAS 2_450
 - M-PIPE-RAS 2_500
 - M-PIPE-RAS 2_500 REPLACEMENT
 - M-PIPE-RAS 2_600
 - M-PIPE-RAS 2_750
 - M-PIPE-RAS 2_900
 - [-] VALVES - AUTO
 - M-VALVE-AUTO-R820-BV-2A
 - M-VALVE-AUTO-R825-BV-2B
 - [-] VALVES - MANUAL
 - M-VALVE-MANUAL-HPV-2.01
 - M-VALVE-MANUAL-HPV-2.02
 - M-VALVE-MANUAL-LPD-2.01
 - M-VALVE-MANUAL-LPD-2.02
 - M-VALVE-MANUAL-LPD-2.03
 - M-VALVE-MANUAL-R820-KV-2A
 - M-VALVE-MANUAL-R825-KV-2B
 - M-VALVE-MANUAL-S802-HV
 - M-VALVE-MANUAL-S802-HV-2
 - M-VALVE-MANUAL-S911-HV-11.12
 - M-VALVE-MANUAL-S911-HV1-11
 - M-VALVE-MANUAL-S911-HV4-11
 - M-VALVE-MANUAL-S912-HV1-12
 - M-VALVE-MANUAL-S912-HV4-12
 - M-VALVE-MANUAL-S913-HV-13.14
 - M-VALVE-MANUAL-S913-HV1-13
 - M-VALVE-MANUAL-S913-HV4-13
 - M-VALVE-MANUAL-S914-HV1-14
 - M-VALVE-MANUAL-S914-HV4-14
 - M-VALVE-MANUAL-S915-HV-15.16
 - M-VALVE-MANUAL-S915-HV1-15
 - M-VALVE-MANUAL-S915-HV4-15
 - M-VALVE-MANUAL-S916-HV1-16
 - M-VALVE-MANUAL-S916-HV4-16
 - M-VALVE-MANUAL-S917-HV-17.18
 - M-VALVE-MANUAL-S917-HV1-17
 - M-VALVE-MANUAL-S917-HV4-17
 - M-VALVE-MANUAL-S918-HV1-18
 - M-VALVE-MANUAL-S918-HV4-18
 - [-] COUPLINGS
 - M-COUPLING-CPLG-2.01
 - M-COUPLING-CPLG-2.02
 - M-COUPLING-CPLG-2.03

Items related to the RAS 2 Header including, valves, couplings, piping, flow meters, supports and CFRP termination sleeves.

RAS 2

- [-] FLOW METERS
 - [-] M-FLOWMETER-R820-FE
 - [-] M-FLOWMETER-R825-FE
- [-] SUPPORTS - EXISTING
 - [-] POSTS
 - [-] PSE-2.01.01
 - [-] PSE-2.01.02
 - [-] PSE-2.01.03
 - [-] PSE-2.01.04
 - [-] PSE-2.01.05
 - [-] PSE-2.01.06
 - [-] PSE-2.01.07
 - [-] PSE-2.01.08
 - [-] PSE-2.01.09
 - [-] PSE-2.01.10
 - [-] PSE-2.01.11
 - [-] PSE-2.01.12
 - [-] PSE-2.01.13
 - [-] PSE-2.01.14
 - [-] PSE-2.01.15
 - [-] PSE-2.01.16
 - [-] PSE-2.01.17
 - [-] PSE-2.01.18
 - [-] PSE-2.01.19
 - [-] PSE-2.01.20
 - [-] PSE-2.01.21
 - [-] PSE-2.01.22
 - [-] PSE-2.01.23
 - [-] PSE-2.01.24
 - [-] PSE-2.01.25
 - [-] WALL BRACKETS
 - [-] PSE-2.02.01
 - [-] PSE-2.02.02
 - [-] PSE-2.02.03
 - [-] CONCRETE SADDLES
 - [-] PSE-2.03.01
 - [-] PSE-2.03.02
 - [-] PSE-2.03.03
 - [-] PSE-2.03.04
 - [-] PSE-2.03.05
 - [-] MISC.
 - [-] PSE-2.04.01
 - [-] PSE-2.04.02
 - [-] PSE-2.04.03

RAS 2

- [-] SUPPORTS - NEW
 - [-] STEEL PEDESTAL
 - PSN-2.05.01
 - PSN-2.05.02
 - PSN-2.05.03
 - PSN-2.05.04
 - PSN-2.05.05
 - PSN-2.05.06
 - [-] POSTS
 - PSN-2.01.01
 - PSN-2.01.02
 - PSN-2.01.03
 - PSN-2.01.04
 - PSN-2.01.05
 - PSN-2.01.06
 - PSN-2.01.07
 - PSN-2.01.08
 - PSN-2.01.09
 - PSN-2.01.10
 - PSN-2.01.11
 - PSN-2.01.12
 - PSN-2.01.13
 - PSN-2.01.14
 - PSN-2.01.15
 - PSN-2.01.16
 - PSN-2.01.17
 - PSN-2.01.18
 - PSN-2.01.19
 - PSN-2.01.20
 - PSN-2.01.21
 - PSN-2.01.22
 - PSN-2.01.23
 - PSN-2.01.24
 - PSN-2.01.25
 - PSN-2.01.26
 - [-] MISC.
 - PSN-2.04.01

RAS 2

- LEAKS
 - M-LEAK-LK-2-001
 - M-LEAK-LK-2-002
 - M-LEAK-LK-2-003
 - M-LEAK-LK-2-004
 - M-LEAK-LK-2-005
 - M-LEAK-LK-2-006
- SLEEVES
 - M-SLEEVE-SLV-CLO-2
 - M-SLEEVE-SLV-CLAR-11
 - M-SLEEVE-SLV-CLAR-12
 - M-SLEEVE-SLV-CLAR-13
 - M-SLEEVE-SLV-CLAR-14
 - M-SLEEVE-SLV-CLAR-15
 - M-SLEEVE-SLV-CLAR-16
 - M-SLEEVE-SLV-CLAR-17
 - M-SLEEVE-SLV-CLAR-18
 - M-SLEEVE-SLV-R820-KV-2A
 - M-SLEEVE-SLV-R825-KV-2B
 - M-SLEEVE-SLV-S802-HV-02
 - M-SLEEVE-SLV-S803-HV-02
 - M-SLEEVE-SLV-S911-HV1-11
 - M-SLEEVE-SLV-S911-HV4-11
 - M-SLEEVE-SLV-S912-HV1-12
 - M-SLEEVE-SLV-S912-HV4-12
 - M-SLEEVE-SLV-S913-HV1-13
 - M-SLEEVE-SLV-S913-HV4-13
 - M-SLEEVE-SLV-S914-HV1-14
 - M-SLEEVE-SLV-S914-HV4-14
 - M-SLEEVE-SLV-S915-HV1-15
 - M-SLEEVE-SLV-S915-HV4-15
 - M-SLEEVE-SLV-S916-HV1-16
 - M-SLEEVE-SLV-S916-HV4-16
 - M-SLEEVE-SLV-S917-HV1-17
 - M-SLEEVE-SLV-S917-HV4-17
 - M-SLEEVE-SLV-S918-HV1-18
 - M-SLEEVE-SLV-S918-HV4-18

RAS 3

RAS 3

- [-] RAS 3
 - [-] PIPING
 - M-PIPE-RAS 3_100
 - M-PIPE-RAS 3_300
 - M-PIPE-RAS 3_450
 - M-PIPE-RAS 3_500
 - M-PIPE-RAS 3_500_REPLACEMENT
 - M-PIPE-RAS 3_600
 - M-PIPE-RAS 3_750
 - M-PIPE-RAS 3_900
 - [-] VALVES - AUTO
 - M-VALVE-AUTO-R830-BV-3A
 - M-VALVE-AUTO-R835-BV-3B
 - [-] VALVES - MANUAL
 - M-VALVE-MANUAL-HPV-3.01
 - M-VALVE-MANUAL-HPV-3.02
 - M-VALVE-MANUAL-HPV-3.03
 - M-VALVE-MANUAL-HPV-3.04
 - M-VALVE-MANUAL-LPD-3.05
 - M-VALVE-MANUAL-LPD-3.01
 - M-VALVE-MANUAL-LPD-3.02
 - M-VALVE-MANUAL-LPD-3.03
 - M-VALVE-MANUAL-LPD-3.04
 - M-VALVE-MANUAL-R830-KV-3A
 - M-VALVE-MANUAL-R835-KV-3B
 - M-VALVE-MANUAL-S803-HV
 - M-VALVE-MANUAL-S803-HV-2
 - M-VALVE-MANUAL-S919-HV-19.20
 - M-VALVE-MANUAL-S919-HV1-19
 - M-VALVE-MANUAL-S919-HV4-19
 - M-VALVE-MANUAL-S920-HV1-20
 - M-VALVE-MANUAL-S920-HV4-20
 - M-VALVE-MANUAL-S921-HV-21.22
 - M-VALVE-MANUAL-S921-HV1-21
 - M-VALVE-MANUAL-S921-HV4-21
 - M-VALVE-MANUAL-S922-HV1-22
 - M-VALVE-MANUAL-S922-HV4-22
 - M-VALVE-MANUAL-S923-HV-23.24
 - M-VALVE-MANUAL-S923-HV1-23
 - M-VALVE-MANUAL-S923-HV4-23
 - M-VALVE-MANUAL-S924-HV1-24
 - M-VALVE-MANUAL-S924-HV4-24
 - M-VALVE-MANUAL-S925-HV-25.26
 - M-VALVE-MANUAL-S925-HV1-25
 - M-VALVE-MANUAL-S925-HV4-25
 - M-VALVE-MANUAL-S926-HV1-26
 - M-VALVE-MANUAL-S926-HV4-26

Items related to the RAS 3 Header including, valves, couplings, piping, flow meters, supports and CFRP termination sleeves.

RAS 3

- [-] COUPLINGS
 - [-] M-COUPPING-CPLG-3.01
 - [-] M-COUPPING-CPLG-3.02
 - [-] M-COUPPING-CPLG-3.03
 - [-] M-COUPPING-CPLG-3.04
 - [-] M-COUPPING-CPLG-3.05
 - [-] M-COUPPING-CPLG-3.06
- [-] FLOW METERS
 - [-] M-FLOWMETER-R830-FE
 - [-] M-FLOWMETER-R835-FE
- [-] SUPPORTS - EXISTING
 - [-] POSTS
 - [-] PSE-3.01.01
 - [-] PSE-3.01.02
 - [-] PSE-3.01.03
 - [-] PSE-3.01.04
 - [-] PSE-3.01.05
 - [-] PSE-3.01.06
 - [-] PSE-3.01.07
 - [-] PSE-3.01.08
 - [-] PSE-3.01.09
 - [-] PSE-3.01.10
 - [-] PSE-3.01.11
 - [-] PSE-3.01.12
 - [-] PSE-3.01.13
 - [-] PSE-3.01.14
 - [-] PSE-3.01.15
 - [-] PSE-3.01.16
 - [-] PSE-3.01.17
 - [-] PSE-3.01.18
 - [-] PSE-3.01.19
 - [-] PSE-3.01.20
 - [-] PSE-3.01.21
 - [-] PSE-3.01.22
 - [-] PSE-3.01.23
 - [-] PSE-3.01.24
 - [-] PSE-3.01.25
 - [-] PSE-3.01.26

RAS 3

WALL BRACKETS

- PSE-3.02.01
- PSE-3.02.02
- PSE-3.02.03
- PSE-3.02.04
- PSE-3.02.05
- PSE-3.02.06
- PSE-3.02.07
- PSE-3.02.08
- PSE-3.02.09
- PSE-3.02.10
- PSE-3.02.11
- PSE-3.02.12
- PSE-3.02.13
- PSE-3.02.14
- PSE-3.02.15
- PSE-3.02.16
- PSE-3.02.17
- PSE-3.02.18
- PSE-3.02.19
- PSE-3.02.20
- PSE-3.02.21
- PSE-3.02.22

CONCRETE SADDLES

- PSE-3.03.01
- PSE-3.03.02
- PSE-3.03.03
- PSE-3.03.04
- PSE-3.03.05
- PSE-3.03.06
- PSE-3.03.07
- PSE-3.03.08
- PSE-3.03.09
- PSE-3.03.10
- PSE-3.03.11
- PSE-3.03.12

MISC.

- PSE-3.04.01
- PSE-3.04.02
- PSE-3.04.03
- PSE-3.04.04
- PSE-3.04.05
- PSE-3.04.06

RAS 3

- ☐ SUPPORTS - NEW
- ☐ POSTS
- PSN-3.01.01
- PSN-3.01.02
- PSN-3.01.03
- PSN-3.01.04
- PSN-3.01.05
- PSN-3.01.06
- PSN-3.01.07
- PSN-3.01.08
- PSN-3.01.09
- PSN-3.01.10
- PSN-3.01.11
- PSN-3.01.12
- PSN-3.01.13
- PSN-3.01.14
- PSN-3.01.15
- PSN-3.01.16
- PSN-3.01.17
- PSN-3.01.18
- PSN-3.01.19
- PSN-3.01.20
- PSN-3.01.21
- PSN-3.01.22
- PSN-3.01.23
- PSN-3.01.24
- PSN-3.01.25
- PSN-3.01.26

RAS 3

- WALL BRACKETS
 - PSN-3.02.01
 - PSN-3.02.02
 - PSN-3.02.03
 - PSN-3.02.04
 - PSN-3.02.05
 - PSN-3.02.06
 - PSN-3.02.07
 - PSN-3.02.08
 - PSN-3.02.09
 - PSN-3.02.10
 - PSN-3.02.11
 - PSN-3.02.12
 - PSN-3.02.13
 - PSN-3.02.14
 - PSN-3.02.15
 - PSN-3.02.16
 - PSN-3.02.17
 - PSN-3.02.18
 - PSN-3.02.19
 - PSN-3.02.20
- STEEL PEDESTAL
 - PSN-3.05.01
 - PSN-3.05.02
 - PSN-3.05.03
 - PSN-3.05.04
 - PSN-3.05.05
 - PSN-3.05.06
 - PSN-3.05.07
 - PSN-3.05.08
 - PSN-3.05.09
 - PSN-3.05.10
 - PSN-3.05.11
 - PSN-3.05.12
- MISC.
 - PSN-3.04.01
 - PSN-3.04.02
 - PSN-3.04.03
 - PSN-3.04.04
 - PSN-3.04.05
 - PSN-3.04.06
 - PSN-3.04.07
 - PSN-3.04.08
 - PSN-3.04.09

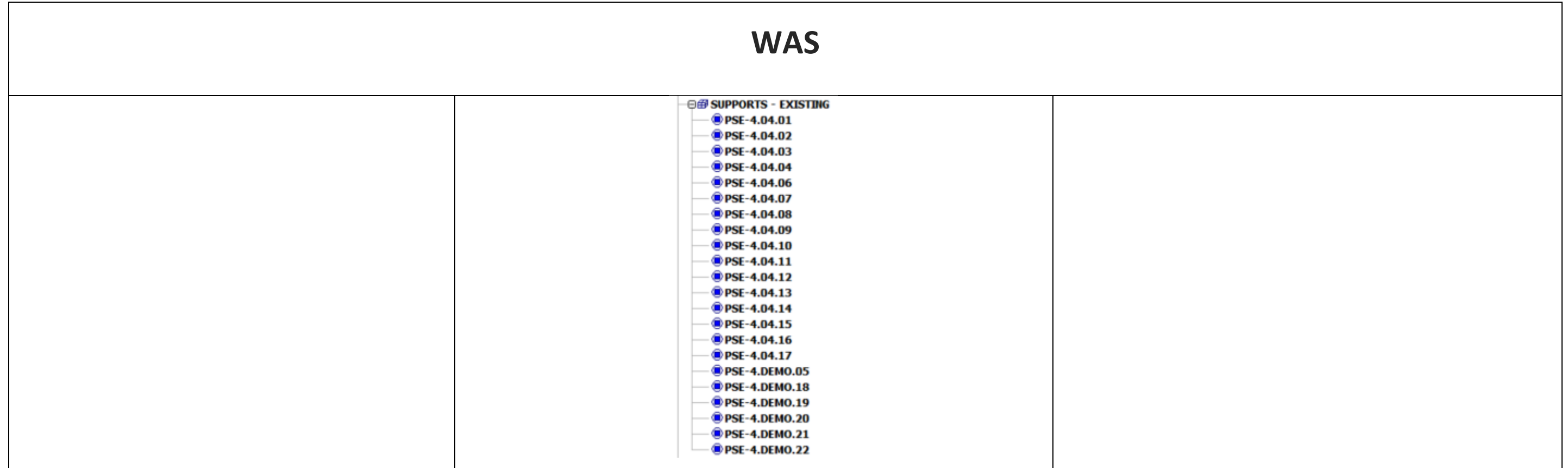
RAS 3

- LEAKS
 - M-LEAK-LK-3-001
 - M-LEAK-LK-3-002
 - M-LEAK-LK-3-003
 - M-LEAK-LK-3-004
 - M-LEAK-LK-3-005
 - M-LEAK-LK-3-006
 - M-LEAK-LK-3-007
 - M-LEAK-LK-3-008
 - M-LEAK-LK-3-009
 - M-LEAK-LK-3-010
- SLEEVES
 - M-SLEEVE-SLV-CLO-3
 - M-SLEEVE-SLV-CLAR-19
 - M-SLEEVE-SLV-CLAR-20
 - M-SLEEVE-SLV-CLAR-21
 - M-SLEEVE-SLV-CLAR-22
 - M-SLEEVE-SLV-CLAR-23
 - M-SLEEVE-SLV-CLAR-24
 - M-SLEEVE-SLV-CLAR-25
 - M-SLEEVE-SLV-CLAR-26
 - M-SLEEVE-SLV-R830-KV-3A
 - M-SLEEVE-SLV-R835-KV-3B
 - M-SLEEVE-SLV-S801-HV-02
 - M-SLEEVE-SLV-S803-HV-01
 - M-SLEEVE-SLV-S803-HV-02
 - M-SLEEVE-SLV-S919-HV1-19
 - M-SLEEVE-SLV-S919-HV4-19
 - M-SLEEVE-SLV-S920-HV1-20
 - M-SLEEVE-SLV-S920-HV4-20
 - M-SLEEVE-SLV-S921-HV1-21
 - M-SLEEVE-SLV-S921-HV4-21
 - M-SLEEVE-SLV-S922-HV1-22
 - M-SLEEVE-SLV-S922-HV4-22
 - M-SLEEVE-SLV-S923-HV1-23
 - M-SLEEVE-SLV-S923-HV4-23
 - M-SLEEVE-SLV-S924-HV1-24
 - M-SLEEVE-SLV-S924-HV4-24
 - M-SLEEVE-SLV-S925-HV1-25
 - M-SLEEVE-SLV-S925-HV4-25
 - M-SLEEVE-SLV-S926-HV1-26
 - M-SLEEVE-SLV-S926-HV4-26

<h1>WAS</h1>		
WAS	<pre> graph TD WAS[WAS] --> PIPING[PIPING] WAS --> DISCHARGE[DISCHARGE] WAS --> SUCTION[SUCTION] WAS --> EXISTING[EXISTING] PIPING --> NEW[NEW] PIPING --> EXISTING_PIPE[M-PIPE-WAS_2-WRAPPED] NEW --> WAS_1[WAS-1] NEW --> WAS_2[WAS-2] NEW --> WAS_3[WAS-3] WAS_1 --> M_FLOWMETER_WAS_1_NEW[M-FLOWMETER-WAS 1_NEW] WAS_1 --> M_PIPE_WAS_1_200_NEW[M-PIPE-WAS 1_200_NEW] WAS_1 --> M_PIPE_WAS_1_250_NEW[M-PIPE-WAS 1_250_NEW] WAS_2 --> M_FLOWMETER_WAS_2_NEW[M-FLOWMETER-WAS 2_NEW] WAS_2 --> M_PIPE_WAS_2_150_NEW[M-PIPE-WAS 2_150_NEW] WAS_2 --> M_PIPE_WAS_2_250_NEW[M-PIPE-WAS 2_250_NEW] WAS_2 --> M_PIPE_WAS_2_250_KV_NEW[M-PIPE-WAS 2_250_KV_NEW] WAS_3 --> M_FLOWMETER_WAS_3_NEW[M-FLOWMETER-WAS 3_NEW] WAS_3 --> M_PIPE_WAS_3_150_NEW[M-PIPE-WAS 3_150_NEW] WAS_3 --> M_PIPE_WAS_3_250_NEW[M-PIPE-WAS 3_250_NEW] WAS_3 --> M_PIPE_WAS_3_250_KV_NEW[M-PIPE-WAS 3_250_KV_NEW] DISCHARGE --> M_PIPE_WAS_PUMP_DISCH_NEW[M-PIPE-WAS PUMP DISCH_NEW] SUCTION --> M_PIPE_WAS_SUCTION_MANIFOLD_300_NEW[M-PIPE-WAS_SUCTION MANIFOLD_300_NEW] SUCTION --> M_PIPE_WAS_PUMP_SUCT_NEW[M-PIPE-WAS PUMP SUCT_NEW] EXISTING --> M_PIPE_RAS_1_300[M-PIPE-RAS 1_300] EXISTING --> M_PIPE_WAS_1_200[M-PIPE-WAS 1_200] EXISTING --> M_PIPE_WAS_1_250[M-PIPE-WAS 1_250] EXISTING --> M_PIPE_WAS_2_150[M-PIPE-WAS 2_150] EXISTING --> M_PIPE_WAS_2_250[M-PIPE-WAS 2_250] EXISTING --> M_PIPE_WAS_DISCHARGE_HDR_150[M-PIPE-WAS DISCHARGE HDR_150] EXISTING --> M_PIPE_WAS_DISCHARGE_HDR_150_REPLACED[M-PIPE-WAS DISCHARGE HDR_150 REPLACED] EXISTING --> M_PIPE_WAS_DISCHARGE_HDR_300[M-PIPE-WAS DISCHARGE HDR_300] EXISTING --> M_PIPE_WAS_PVC_200[M-PIPE-WAS-PVC_200] EXISTING --> M_PIPE_WAS_150_REPLACED[M-PIPE-WAS_150 REPLACED] EXISTING --> M_PIPE_WAS_300_REPLACED[M-PIPE-WAS_300 REPLACED] EXISTING --> M_PIPE_WAS_3_WRAPPED[M-PIPE-WAS_3-WRAPPED] EXISTING --> M_PIPE_WAS_2_WRAPPED[M-PIPE-WAS_2-WRAPPED] </pre>	<p>Items related to the WAS system including, valves, couplings, piping, flow meters, supports and CFRP termination sleeves.</p>

WAS

- [-] VALVES - AUTO
 - [-] M-VALVE-AUTO-S941-HV-3
 - [-] M-VALVE-AUTO-S942-HV-2
 - [-] M-VALVE-AUTO-S943-HV-1
- [-] VALVES - MANUAL
 - [-] M-VALVE-MANUAL-KV-1.01 (NEW)
 - [-] M-VALVE-MANUAL-KV-1.02 (NEW)
 - [-] M-VALVE-MANUAL-KV-1.03 (NEW)
 - [-] M-VALVE-MANUAL-S941-HV1-3
 - [-] M-VALVE-MANUAL-S942-HV1-2
 - [-] M-VALVE-MANUAL-S943-HV1-1
 - [-] M-VALVE-MANUAL-S943-HV2-1
 - [-] M-VALVE-MANUAL-S951-HV1-1
 - [-] M-VALVE-MANUAL-S951-HV2-1
 - [-] M-VALVE-MANUAL-S951-HV3-1
 - [-] M-VALVE-MANUAL-S951-HV4-1
 - [-] M-VALVE-MANUAL-S952-HV1-2
 - [-] M-VALVE-MANUAL-S952-HV2-2
 - [-] M-VALVE-MANUAL-S952-HV3-2
 - [-] M-VALVE-MANUAL-S952-HV4-2
 - [-] M-VALVE-MANUAL-S953-HV1-3
 - [-] M-VALVE-MANUAL-S953-HV2-3
 - [-] M-VALVE-MANUAL-S953-HV3-3
 - [-] M-VALVE-MANUAL-S953-HV4-3
 - [-] M-VALVE-MANUAL-S954-HV1-4
 - [-] M-VALVE-MANUAL-S954-HV2-4
 - [-] M-VALVE-MANUAL-S954-HV3-4
 - [-] M-VALVE-MANUAL-S954-HV4-4
- [-] FLOW METERS
 - [-] M-FLOWMETER-S941-FE
 - [-] M-FLOWMETER-S942-FE
 - [-] M-FLOWMETER-S943-FE
 - [-] M-FLOWMETER-S951-AE
 - [-] M-FLOWMETER-S952-AE
 - [-] M-FLOWMETER-S953-AE
 - [-] M-FLOWMETER-S954-AE



WAS

- [-] SUPPORTS - NEW
 - [-] POST
 - PSN-4.01.01
 - [-] MISC.
 - PSN-4.04.01
 - PSN-4.04.02
 - PSN-4.04.03
 - PSN-4.04.04
 - PSN-4.04.05
 - PSN-4.04.06
 - PSN-4.04.07
 - PSN-4.04.08
 - PSN-4.04.09
 - PSN-4.04.10
 - PSN-4.04.11
 - PSN-4.04.12
 - PSN-4.04.13
 - PSN-4.04.14
 - PSN-4.04.15
 - PSN-4.04.16
 - PSN-4.04.17
 - PSN-4.04.18
 - PSN-4.04.19
 - PSN-4.04.20
 - PSN-4.04.21
 - PSN-4.04.22
 - PSN-4.04.23
 - PSN-4.04.24
 - PSN-4.04.25

<h1>WAS</h1>		
	<ul style="list-style-type: none"> WALL BRACKETS PSN-4.02.01 PSN-4.02.02 PSN-4.02.03 PSN-4.02.04 PSN-4.02.05 PSN-4.02.06 PSN-4.02.07 PSN-4.02.08 PSN-4.02.09 PSN-4.02.10 PSN-4.02.11 PSN-4.02.12 PSN-4.02.13 PSN-4.02.14 PSN-4.02.15 PSN-4.02.16 PSN-4.02.17 PSN-4.02.18 PSN-4.02.19 PSN-4.02.20 PSN-4.02.21 PSN-4.02.22 PSN-4.02.23 PSN-4.02.24 <ul style="list-style-type: none"> SLEEVES M-SLEEVE-SLV-S941-HV-3 M-SLEEVE-SLV-S942-HV-2 M-SLEEVE-SLV-S943-HV-1 M-SLEEVE-SLV-WAS-1 M-SLEEVE-SLV-S954-HV4-4 M-SLEEVE-SLV-S951-HV4-1 	

<h1>MISC.</h1>		
MISC.	<ul style="list-style-type: none"> MISC. M-PIPE-MISC 	Miscellaneous piping that is in proximity to the scope of work.

REPAIR WRAP SCOPE		
REPAIR WRAP SCOPE		Scope of pipe to be wrapped.

5.0 CONCLUSION

For questions related to this document, or use of the Navisworks 3D model, please do not hesitate to contact the undersigned.

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