

April 23, 2007

10 CFR 54

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWEN P1-35
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of)	Docket Nos. 50-259
Tennessee Valley Authority)	50-260
		50-296

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 -
SUBMITTAL OF UNIT 1 PERIODIC INSPECTION PROGRAM FOR LICENSE
RENEWAL PROCEDURE IN FULFILLMENT OF LICENSE RENEWAL
COMMITMENT**

By letter dated April 21, 2006 ADAMS Accession No. ML061140322), TVA submitted its revised commitment lists for license renewal. The second portion of item 49. of Table 2 was for TVA to "Develop and submit implementing procedure(s) for the Unit 1 Periodic Inspection Program for NRC review." Enclosure 1 contains 1-TI-521 (Unit 1 Periodic Inspection Program for License Renewal).

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If you have any questions regarding this information, please contact me at (256) 729-2636.

Sincerely,

Original signed by:

William D. Crouch
Manager of Licensing
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Enclosures:

cc: See page 3

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s://Licensing/Lic/Subs/Submittal of 1-TI-521 to NRC.doc

ENCLOSURE 1

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 -
SUBMITTAL OF UNIT 1 PERIODIC INSPECTION PROGRAM FOR LICENSE
RENEWAL PROCEDURE IN FULFILLMENT OF LICENSE RENEWAL
COMMITMENT**

(See attached.)



Browns Ferry Nuclear Plant

Unit 1

Technical Instruction

1-TI-521

Unit 1 Periodic Inspection Program for License Renewal

Revision 0003

Quality Related

Level of Use: Reference Use

Effective Date: 04-19-2007

Responsible Organization: SCE, System Eng - Component

Prepared By: Tom Lydon

Approved By: Robert Moll

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Current Revision Description

Pages Affected: 4

Type of Change: Revision

Tracking Number: 004

Revised part of Scope for inspection locations that fail to meet acceptance criteria.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this Technical Instruction (TI) is to provide instructions for Unit 1 Periodic Inspection Program for License Renewal (PIP-LR) of the non-replaced piping, fittings and welds that were not in service following the extended Unit 1 shutdown. This procedure is being written to implement a commitment made to the NRC for License Renewal. (Item 49 of Table 2 of the SER for the renewed license.)

1.2 Scope

The Unit 1 Periodic Inspection Program provides periodic monitoring of the Unit 1 non-replaced piping / fittings in systems that were not in service as required by the Unit 1 defueled status or supporting operations of Units 2 or 3. The piping in the program is carbon/low alloy or stainless steel that: 1) was exposed to air, treated water or raw water during the extended Unit 1 Shutdown; and 2) will be exposed to treated water or raw water during normal operation.

The sample selected for periodic inspection was based on a distribution of common material and environment bases, using engineering judgment and design as-built knowledge of the replaced piping in the plant. The inspection locations were selected from the systems listed in Section 1.2.1 and have been distributed among the various systems. For a large or infinite lot size, NUREG-1475 requires a minimum sample size of 59 locations for each material and environment combination. This distribution cannot be applied to Browns Ferry Unit 1 due to the extensive replacement of candidate piping of one inch diameter or greater. All inspection locations must meet the acceptance criteria, based on the manufacturing mill tolerance of 0.875 of the nominal wall thickness. If any inspection location fails to meet the acceptance criteria, then the minimum design wall thickness shall be determined. The measured wall thickness shall be compared to the minimum design thickness and this condition will be evaluated and dispositioned using the Corrective Action Program.

For the Unit 1 Periodic Inspection Program, the selected sample will be examined by UT thickness for piping and welds not covered by ASME Section XI. The common material and environment groupings for the samples are as follows:

Stainless Steel / Treated Water

Stainless Steel / Raw Water

Carbon Steel / Treated Water

Carbon Steel / Closed Cooling (Treated) Water

Carbon Steel / Raw Water

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1.2 Scope (continued)

The inspection locations were selected from non-replaced piping which is in-scope for license renewal and includes areas where degradation would be expected as well as areas where degradation would not be expected. The FAC (Flow-Accelerated Corrosion) Program inspects a number of piping locations of concern for the Periodic Inspection Program, and ALARA, and safety concerns dictate that these same locations be used. Since the Periodic Inspection Program is looking for a different type of degradation mechanism, the data will be kept and evaluated separately from the FAC data. This advantage was taken in the Main Steam System (001), Condensate System (002), Feedwater System (003), Heater Drains and Vents System (006), and one location in the HPCI System (073). There are numerous other inspection points selected in these systems, assuring inspection of a variety of pipe sizes and location types.

As described above there are a limited number of candidate piping locations for two of the material and environments. Stainless steel / raw water piping is found in the instrument piping for the raw water system components, none of which is greater than one inch in diameter. Pipe diameters of 1" or smaller present difficulty in obtaining wall thickness measurements, due to the UT equipment used. Therefore wall thickness measurements of 1" and smaller piping is considered impractical. Stainless steel / treated water piping of significant size exists primarily in the Reactor Recirculation, Standby Liquid Control and Reactor Water Cleanup Systems, which were almost completely replaced. The small sections of remaining pipe will be inspected (RWCU and SLC). The balance of the points to be inspected will be distributed among the remaining systems listed below that contain significant amounts of non-replaced piping meeting the criteria for this inspection. Considering the above information and conditions, there were no appropriate inspection locations identified for the Sampling and Water Quality System (043), Containment System (064), and Radiation Monitoring System (090).

1.2.1 Targeted Locations

The locations selected for the targeted restart inspection (areas where degradation would be expected) are based upon identifying areas where water may have accumulated, if the lay-up process was not successful (i.e., low places), or where engineering judgment indicated that service induced wear may have occurred. For the areas where degradation would not be expected, the Unit 1 Periodic Inspection Program will select inspection locations which were not inspected because degradation was not expected, as well as locations from other water systems containing Unit 1 non-replaced piping. The following systems are in the scope of the Unit 1 Periodic Inspection Program:

- A. Main Steam System (001)
- B. Condensate and Demineralized Water System (002)
- C. Feedwater System (003)

<p align="center">BFN Unit 1</p>	<p align="center">Unit 1 Periodic Inspection Program for License Renewal</p>	<p align="center">1-TI-521 Rev. 0003 Page 6 of 61</p>
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1.2.1 Targeted Locations (continued)

- D. Heater Drains and Vents System (006)
- E. Reactor Vessel Vents and Drains System (010)
- F. Residual Heat Removal Service Water System (023) - A & C loops in the tunnels
- G. Raw Cooling Water System (024)
- H. Fire Protection System (026)
- I. Standby Liquid Control System (063)
- J. Emergency Equipment Cooling Water System (067)
- K. Reactor Water Cleanup System (069)
- L. Reactor Building Closed Cooling Water System (070)
- M. Reactor Core Isolation System (071)

1.2.2 Areas Where Degradation Is Not Expected

At least 20% of the inspection locations will contain areas where degradation would not be expected. A selection of piping from the systems not covered by ASME Section XI will be included in the program. Periodic Inspection will perform ultrasonic thickness inspections to identify metal loss.

1.3 Frequency

The baseline inspections will be performed on the selected sample locations prior to restart to ensure accurate repeatable baseline values are available.

1.3.1 First Periodic Inspection

The first Unit 1 periodic inspection of all sample locations will be performed after Unit 1 is returned to operation but prior to the end of the current operating period. The responsible Engineer will determine the percentage of locations to be inspected during each refueling outage.

1.3.2 Second Periodic Inspection

The second periodic inspection of all sample locations will be completed within the first ten years of the period of extended operation.

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1.3.3 Frequency Evaluation

The inspections will continue until the trend of the results provides a basis to discontinue the inspections. However, as a minimum, periodic inspections of all selected sample locations must be performed: 1) after Unit 1 is returned to operation but prior to the end of the current operating period; and 2) within the first ten years of the period of extended operation. Subsequent inspection frequency will be re-evaluated after the inspection is performed during the period of extended operation, and can be changed based on the trend of the results.

2.0 REFERENCES

2.1 Plant Instructions

Ultrasonic Test Inspection Procedure, N-UT-26

Monitoring Program for Flow-Accelerated Corrosion, 0-TI-140

2.2 Mechanical Design Engineering Calculations

MD-Q0001-870170 BFN Minimum Wall Thickness/Corrosion Allowance Of Main Steam System

MD-Q0002-870357 BFN Minimum Wall Thickness For Condensate And Demineralized Water System

MD-Q0003-920210 Reactor Feedwater Minimum Pipe Wall Thickness

MD-Q0010-920200 BFN Minimum Pipe Wall Thickness And Corrosion Allowances -Boiler Vents And Drains And Blowdown System

MD-Q0023-870104 BFN Minimum Wall Thickness For Residual Heat Removal Service Water Piping (RHRSW)

MD-Q1024-870389 BFN Minimum Wall Thickness - Raw Cooling Water System

MD-Q0063-870384 BFN Minimum Wall, Hydrotest And Flushing Pressures For Standby Liquid Control System Piping

MD-Q0067-870244 BFN Minimum Pipe Wall Thickness - Emergency Equipment Cooling Water (EECW) System

MD-Q0069-920373 BFN Minimum Pipe Wall Thickness for Reactor Water Cleanup System (RWCU) Piping

MD-Q0070-920146 BFN Minimum Pipe Wall Thickness - Reactor Building Closed Cooling Water System

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2.2 Mechanical Design Engineering Calculations (continued)

MD-Q0071-920215 BFN Minimum Pipe Wall Thickness for Reactor Core Isolation Cooling (RCIC) System Piping

EWR 07MEB000009, Determine Piping Nominal and Minimum Wall Thickness Requirements for the Selected Inspection Points

2.3 Plant Drawings

47E801-2, Mechanical Flow Diagram Main Steam

1-47E803, Mechanical Flow Diagram Reactor Feedwater

1-47E804-1, Flow Diagram Condensate

1-47E805-1, Flow Diagram Heater Drains & Vents & Miscellaneous Piping

0-47W401-1, 2, and 6, MSRV Piping

1-47E600-714, 717, 719, Mechanical Instruments and Controls Isometric

0-47W462-1, Mechanical Standby Liquid Control

1-47E810-1, Flow Diagram Reactor Water Cleanup System

1-47E813-1, Flow Diagram Reactor Core Isolation Cooling System

2.4 Correspondence

Letter from TVA to NRC dated March 7, 2006, "BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - LICENSE RENEWAL APPLICATION (LRA) - SUPPLEMENTAL INFORMATION FOR THE UNIT 1 PERIODIC INSPECTION (R08 060307 742)

Letter from TVA to NRC dated April 4, 2006, "BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - LICENSE RENEWAL APPLICATION (LRA) - UNIT 1 LOWER DRYWELL LINER INSPECTIONS, UNIT 1 PERIODIC INSPECTION PROGRAM, AND RESIDUAL HEAT REMOVAL SERVICE WATER PIPING INSPECTIONS" (R08 060404 762)

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Date _____

3.0 DEFINITIONS

- A. PIP-LR Engineer - SE-M/N (Site Engineering - Mechanical/Nuclear) employee, or designee, with responsibilities as indicated by SPP-9.7.
- B. Inspection Data Package - Normally contains the component inspection data collected in the field by ISO and submitted to the Responsible Engineer for evaluation. (May contain NDE data sheets, weld toe (TOW) scan data sheets, grid sketches, verification information.)
- C. Inspection Location - A selected area on piping consisting of a band around the circumference of the pipe. The exact position on the pipe of the minimum thickness found will be recorded.
- D. T_{manu. min.} - Minimum thickness stated in specifications which manufacturer must supply. Thickness varies based on product form. (Examples: 87.5% for nominal pipe, nominal thickness minus 0.010" for plate ordered to thickness and for pipe made from plate, other as specified in engineering documents.)
- E. T_{nom} - Nominal thickness of pipe or fitting specified in the applicable industry standard for the item.

4.0 PRECAUTIONS AND LIMITATIONS

- A. Each person operating test equipment, recording data, performing calculations or verifying calculations must be qualified in accordance with N-UT-26.
- B. Inspections may be performed in any order.
- C. Follow plant industrial safety guidelines for removal of asbestos insulation and lead paint when found on the selected components.
- D. All test deficiencies shall be processed in accordance with SPP-8.1.

5.0 PREREQUISITES

- [1] **VERIFY** this copy of 1-TI-521 is the most current revision. _____
- [2] **CONDUCT** pre-job briefing(s) with personnel involved with the PIP-LR program or appropriate representatives of support groups prior to performance of activities associated with this TI (Grid Installation, Inspections, and Evaluations). More than one Pre-Job may be required due to additional personnel and different organizations involved. _____

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Date _____

6.0 EQUIPMENT

6.1 Measuring and Test Equipment (M&TE)

A. NDE equipment provided by ISO or plant M&TE.

6.2 Tools

None

7.0 PROCEDURE

7.1 Permission and Notifications

- [1] [NRC/C] **OBTAIN** permission from the Unit Supervisor to perform test. [RPT 82-16, LER 256/8232] _____
- [2] **NOTIFY** the Unit Operator (UO) that this TI is being performed. _____
- [3] **IF** an RWP is required to gain access to test areas piping, **THEN**

NOTIFY Radiation Protection. _____

7.2 Location Preparation.

- [1] **VERIFY** PIP-LR component IDs, location, and grid information using the PIP-LR Component Data Sheets, Component Location Sketches, and Grid Sketches that have been provided [Appendix C through G and Attachment 1]. _____
- [2] **PROVIDE** Scaffold, ladders, insulation tents, etc. for access as required to support insulation removal/reinstallation, component cleaning, grid installation, and inspections. _____
- [3] **REMOVE** insulation to provide access to components selected for inspection. _____
- [4] **PREPARE** surface as required to support installation of grid marks and to allow performance of any required inspections. _____
- [5] **INSTALL** grids (lines or dots) using a high temperature paint, low stress stencils, or other approved permanent/semi-permanent marking system that will provide contrast with the surface. _____

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Date _____

7.2 Location Preparation. (continued)

- [6] For existing grids **VERIFY** legibility and accuracy of installation, then renew or revise, as required to meet Grid Sketch. When existing grids are found to be illegible (smeared, burned off, missing, etc.), strong consideration should be given to re-labeling using the new origin, alpha-numeric, direction, and spacing conventions. _____
- [7] **REQUEST** PIP-LR Engineer or designee to verify all grids as adequate for UT inspection. **DOCUMENT** verification, and note any deviation in grid layout from this instruction on the Component Data Sheets and Grid Sketches. _____

7.3 Inspection

- [1] **PERFORM** pipe wall measurements in accordance with N-UT-26 on components and piping as described on Component Data Sheets, PIP-LR Component Location Sketches and Grid Sketches (Appendix B-F and Attachment 1). Utilize thickness values provided by the PIP-LR Engineer as required. _____
- [2] **RECORD** the low measurement at each grid intersection on the N-UT-26 data sheet or similar form (such as a computer generated printout). **ENTER** the low measurement for each PIP location in the appropriate inspection column in the appropriate Appendix (C through G). _____
- [3] **REPORT** all inspection results to the PIP-LR Engineer or designee. _____
- [4] **PERFORM** inspection of non-replaced components as directed by PIP-LR Engineer. _____
- [5] **PROVIDE** the Inspection Data Package (NDE data sheets, TOW Scan Data Sheets, mapping data, etc.) to the PIP-LR Engineer when the particular grid inspection is complete. _____
- [6] **NOTIFY** the UO of the completion of this TI and **PROVIDE** status of all test problems. _____

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Date _____

7.4 Engineering Evaluation

- [1] **PROVIDE** and **REVIEW** pertinent component information addressing the component description, design data/parameters, historical inspection information and/or references, and current inspection method (from the PIP-LR-FIL, CIL, or other appropriate databases), as required, to support the inspected component evaluation. _____
- [2] **ENTER** or **VERIFY** appropriate data entry on the appropriate Appendix for the inspection location. _____
- [3] **REVIEW** the Inspection Data Package. _____
- [4] **ENTER** the minimum measured wall thickness (T_{lim}) from Grid, weld toe (TOW) scan, or other mapped/scanned location on the Component Evaluation Summary Sheet or similar form. _____

7.5 Documentation Closure

- [1] **VERIFY** that all inspection points on the Data Sheet have been evaluated, unless deleted, for the current license period. For deleted inspection points, state reason on FIL. _____
- [2] **NOTIFY** appropriate Site Management that all component evaluations for the current revision of this instruction are complete. _____
- [3] **ASSEMBLE** data package with cover sheet and all pages of this procedure, plus any additional forms, data sheets, sketches, etc. **INSERT** copies of Grid Sketches, Location Sketches, Component Evaluation Summary Sheets, and other documentation in Attachment 1 as appropriate. _____
- [4] **SUBMIT** completed package to Records Management (RM). _____
- [5] **CONDUCT** Post-Job Review upon completion of activities associated with this TI. _____

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8.0 ACCEPTANCE CRITERIA

The acceptance criteria for these periodic inspections is that the pipe wall will remain above the minimum design acceptable wall thickness until the next periodic inspection. If any inspection location fails to meet the acceptance criteria, the entire material and environment combination sampled is considered suspect and the unacceptable degradation must be evaluated and dispositioned using the Corrective Action Program.

9.0 APPENDICES AND ATTACHMENTS

Appendix A: Technical Instruction Review Form

Appendix B: Grid Marking and Layout

Appendix C: Stainless Steel / Treated Water

Appendix D: Stainless Steel / Raw Water

Appendix E: Carbon Steel / Treated Water

Appendix F: Carbon Steel / Closed Cooling (Treated) Water

Appendix G: Carbon Steel / Raw Water

Appendix H: Inspection Conclusions

Attachment 1 Sketches

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**Appendix A
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Technical Instruction Review Form

Performed by: _____
Engineer Signature
Date

Instruction criteria satisfied? Yes No

Results reviewed: _____
Mechanical System Engineering Supervisor
Date

Reason for test:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Required by NRC Commitment
<input type="checkbox"/> After maintenance (explain in Remarks)
<input type="checkbox"/> Another system inoperable | <input type="checkbox"/> Plant condition (explain in Remarks)
<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Required by schedule |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Signature attests that I understand the scope and purpose of this instruction and that, to the best of my knowledge, it was properly performed in accordance with instruction in that: the recording, reduction, and evaluation of data were complete and correct; acceptance criteria were met or justification for exceptions provided; deficiencies were evaluated and dispositioned; and instruction was fully complete except as noted.

Cognizant Org.
Cognizant Reviewer Signature
Date

Remarks: _____

**Appendix B
(Page 1 of 2)**

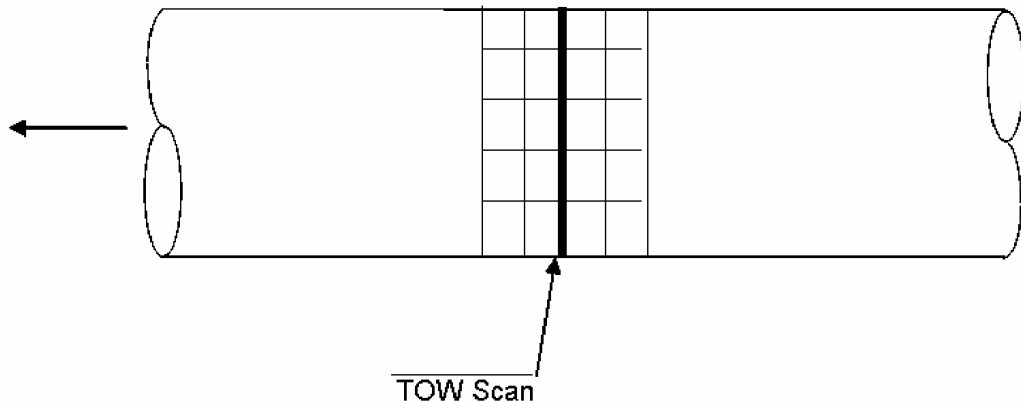
Grid Marking and Layout

1.0 GRID MARKING OF SELECTED AREAS

- 1.1 Components with a nominal diameter greater than 14 inches should use a 4 inch nominal grid spacing for a distance of 12 inches.
- 1.2 Components with a nominal diameter greater than 6 inches, up to and including 14 inches should use a 2 inch nominal grid spacing for a distance of 8 inches.
- 1.3 Components with a nominal diameter greater than 3 inches up to and including 6 inches should use a 1 inch nominal grid spacing for a distance of 4 inches
- 1.4 Components with a nominal diameter less than 3 inches will have thickness readings taken every 90 degrees in circumferential bands spaced longitudinally in 1 inch increments for 4 inches
- 1.5 If a selected component location contains a weld, toe scans will be performed on both sides of the weld. The lowest reading observed will be documented on the ultrasonic report.

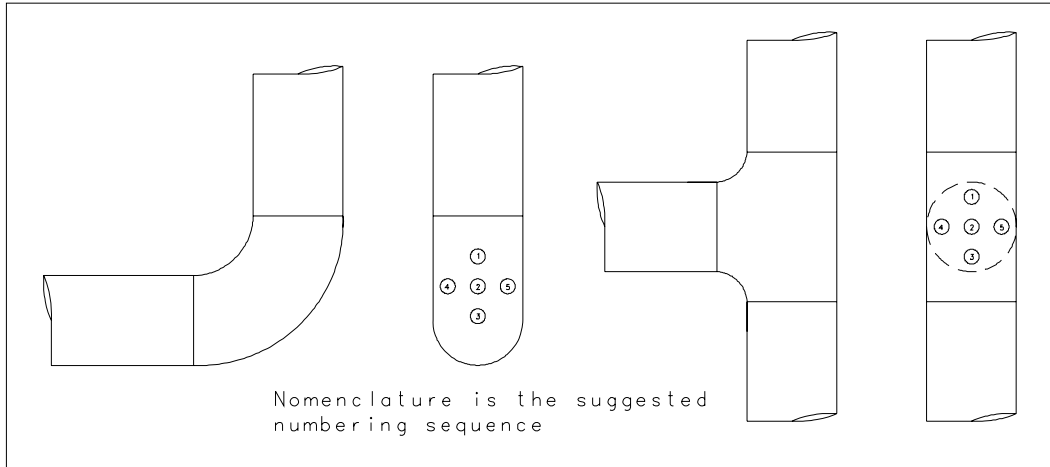
2.0 LAYOUT OF GRIDS

Top dead center of horizontal will be designated as A1 and progress around the component when facing the direction of flow. "Alpha" direction is measured circumferentially around the components. The numerical values will be in sequence with the direction of the flow. See illustration of a typical grid installation.



**Appendix B
(Page 2 of 2)**

For selected locations that have a nominal diameter ≥ 2 inches NPS and contain a fitting that is either an elbow or tee, a five star location pattern shall be utilized. Thickness readings for an elbow will be taken on the extrados. See Figure below for examples.



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**Appendix C
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Stainless Steel / Treated Water**

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
063	Sketch PIP-SLC-1	1-1/2	0.200	PIP-SLC-1-01	RB EI 639 at Tank			
063	Sketch PIP-SLC-1	2-1/2	0.203	PIP-SLC-1-02	RB EI 639 at Tank			
063	Sketch PIP-SLC-1	2-1/2	0.203	PIP-SLC-1-03	RB EI 639 at Tank			
063	Sketch PIP-SLC-1	1-1/2	0.200	PIP-SLC-1-04	RB EI 639 A pmp disc			
063	Sketch PIP-SLC-1	1-1/2	0.200	PIP-SLC-1-05	RB EI 639 ctr of hdr			
063	Sketch PIP-SLC-1	1-1/2	0.200	PIP-SLC-1-06	RB EI 639 B pmp disc			
069	Sketch PIP-RWCU-1	4	0.337	PIP-RWCU-1-01	RB EI 565 Stm Tnl			
069	Sketch PIP-RWCU-1	4	0.337	PIP-RWCU-1-02	RB EI 565 Stm Tnl			
069	Sketch PIP-RWCU-1	4	0.337	PIP-RWCU-1-03	RB EI 565 Stm Tnl			

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**Appendix D
(Page 1 of 1)**

Stainless Steel / Raw Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
ALL			ALL 1" or smaller	None				

**Appendix E
(Page 1 of 3)**

Carbon Steel / Treated Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
001	Sketch PIP-MS-1	26	1.012	PIP-MS-1-01	DW MS-A EI 584			
001	Sketch PIP-MS-1	26	1.012	PIP-MS-1-02	DW MS-B EI 584			
001	Sketch PIP-MS-1	26	1.012	PIP-MS-1-03	DW MS-B EI 563			
001	Sketch PIP-MS-2	26	1.012	PIP-MS-2-01	DW MS-C EI 584			
001	Sketch PIP-MS-2	26	1.012	PIP-MS-2-02	DW MS-D EI 584			
001	Sketch PIP-MS-2	26	1.012	PIP-MS-2-03	DW MS-D EI 563			
001	Sketch PIP-MS-3	26 to 24	1.218	PIP-MS-3-01	RB EI 565 Stim Tnl			
001	Sketch PIP-MS-3	24	1.218	PIP-MS-3-02	RB EI 565 Stim Tnl			
001	Sketch PIP-MS-3	26 to 24	1.218	PIP-MS-3-03	RB EI 565 Stim Tnl			
001	Sketch PIP-MS-4	18	0.937	PIP-MS-4-01	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	24	1.218	PIP-MS-4-02	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	24 to 18	1.218	PIP-MS-4-03	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	28	1.250	PIP-MS-4-04	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	18	0.937	PIP-MS-4-05	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	24	1.218	PIP-MS-4-06	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	24 to 18	1.218	PIP-MS-4-07	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	18	0.937	PIP-MS-4-08	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	28	1.250	PIP-MS-4-09	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	24	1.218	PIP-MS-4-10	TB EI 586 MSep Rm			
001	Sketch PIP-MS-4	24	1.218	PIP-MS-4-11	TB EI 586 MSep Rm			
002	Sketch PIP-CON-1A	18	0.438	PIP-CON-1A-03	TB EI 586 FWH 1A3 Rm			
002	Sketch PIP-CON-1B	18	0.438	PIP-CON-1B-06	TB EI 586 CND Rm			

**Appendix E
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Carbon Steel / Treated Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
002	Sketch PIP-CON-1C	18	0.438	PIP-CON-1C-03	TB EI 586 FWH 1C3 Rm			
002	Sketch PIP-CON-1C	18	0.438	PIP-CON-1C-06	TB EI 586 CND Rm			
003	Sketch PIP-FW-1	12	0.736	PIP-FW-1-01	DW EI 584			
003	Sketch PIP-FW-1	12 to 20	1.102	PIP-FW-1-02	DW EI 584			
003	Sketch PIP-FW-1	20	1.102	PIP-FW-1-03	DW EI 584			
003	Sketch PIP-FW-1	12	0.736	PIP-FW-1-04	DW EI 616			
003	Sketch PIP-FW-1	12	0.736	PIP-FW-1-05	DW EI 616			
003	Sketch PIP-FW-1	12	0.736	PIP-FW-1-06	DW EI 616			
003	Sketch PIP-FW-1	24	1.304	PIP-FW-1-07	DW EI 584			
003	Sketch PIP-FW-1	24 to 20	1.304	PIP-FW-1-08	DW EI 584			
003	Sketch PIP-FW-1	24	1.304	PIP-FW-1-09	DW EI 563			
003	Sketch PIP-FW-2	12	0.736	PIP-FW-2-01	DW EI 584			
003	Sketch PIP-FW-2	12	0.736	PIP-FW-2-02	DW EI 616			
003	Sketch PIP-FW-2	12	0.736	PIP-FW-2-03	DW EI 616			
003	Sketch PIP-FW-2	12	0.736	PIP-FW-2-04	DW EI 584			
003	Sketch PIP-FW-2	12	0.736	PIP-FW-2-05	DW EI 584			
003	Sketch PIP-FW-2	20	1.102	PIP-FW-2-06	DW EI 584			
003	Sketch PIP-FW-2	20 to 12	.0736	PIP-FW-2-07	DW EI 584			
003	Sketch PIP-FW-3	18	0.937	PIP-FW-3-01	TB EI 617 RFP 1C Rm			
003	Sketch PIP-FW-3	18	0.937	PIP-FW-3-02	TB EI 617 RFP 1C Rm			
003	Sketch PIP-FW-3	18	0.937	PIP-FW-3-03	TB EI 617 RFP 1C Rm			
003	Sketch PIP-FW-3	18	0.937	PIP-FW-3-04	TB EI 617 RFP 1C Rm			

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**Appendix E
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Carbon Steel / Treated Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
003	Sketch PIP-FW-3	18	0.937	PIP-FW-3-05	TB EI 617 RFP 1C Rm			
003	Sketch PIP-FW-3	18	0.937	PIP-FW-3-06	TB EI 617 RFP 1C Rm			
003	Sketch PIP-FW-3	8 to 6 red	0.322	PIP-FW-3-07	TB EI 617 RFP 1C Rm			
003	Sketch PIP-FW-3	8	0.322	PIP-FW-3-08	TB EI 617 RFP 1C Rm			
006	Sketch PIP-HDV-1	8	0.322	PIP-HDV-1-01	TB EI 586 FW HTR Rm			
006	Sketch PIP-HDV-1	8	0.322	PIP-HDV-1-02	TB EI 586 FW HTR Rm			
006	Sketch PIP-HDV-1	8	0.322	PIP-HDV-1-03	TB EI 586 FW HTR Rm			
006	Sketch PIP-HDV-1	8	0.322	PIP-HDV-1-04	TB EI 586 FW HTR Rm			
006	Sketch PIP-HDV-1	8	0.322	PIP-HDV-1-05	TB EI 586 FW HTR Rm			
006	Sketch PIP-HDV-1	8	0.322	PIP-HDV-1-06	TB EI 586 FW HTR Rm			
010	Sketch PIP-MSR-1	10	0.365	PIP-MSR-1-01	DW EI 563 S Hatch			
010	Sketch PIP-MSR-1	10	0.365	PIP-MSR-1-02	DW EI 563 S Hatch			
071	Sketch PIP-RCIC-2	6	0.562	PIP-RCIC-2-01	Torus below walkway			
071	Sketch PIP-RCIC-2	6	0.562	PIP-RCIC-2-02	Torus below walkway			
071	Sketch PIP-RCIC-2	6	0.562	PIP-RCIC-2-03	Torus below walkway			

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**Appendix F
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Carbon Steel / Closed Cooling (Treated) Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
070	Sketch PIP-RBCCW-1	4	0.237	PIP-RBCCW-1-01	RB EI 639 R2/R3-S			
070	Sketch PIP-RBCCW-1	4	0.237	PIP-RBCCW-1-02	RB EI 639 R1/R2-S			
070	Sketch PIP-RBCCW-1	4	0.237	PIP-RBCCW-1-03	RB EI 639 R1-S			
070	Sketch PIP-RBCCW-1	4	0.237	PIP-RBCCW-1-04	RB EI 639 R1-S/R			
070	Sketch PIP-RBCCW-1	4	0.237	PIP-RBCCW-1-05	RB EI 639 R1-S/R			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-01	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-02	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-03	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-04	RB EI 593 R2-Q/R			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-05	RB EI 593 R2-R/S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-06	RB EI 593 R2-S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-07	RB EI 593 R2-S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-08	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-09	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-10	RB EI 593 R2-R			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-11	RB EI 593 R2-R			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-12	RB EI 593 R2-R			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-13	RB EI 593 R2-S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-14	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-15	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-16	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-17	RB EI 593 R4-S			

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Carbon Steel / Closed Cooling (Treated) Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
070	Sketch PIP-RBCCW-2	10	0.365	PIP-RBCCW-2-18	RB EI 593 R4-S			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-19	RB EI 593 R4-S			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-20	RB EI 593 R4-S			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-21	RB EI 593 R4-S			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-22	RB EI 593 R5-S/R			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-23	RB EI 593 R5-S/R			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-24	RB EI 593 R5-S/R			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-25	RB EI 593 R5-R			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-26	RB EI 593 R5-R			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-27	RB EI 593 R6-R			
070	Sketch PIP-RBCCW-2	6	0.280	PIP-RBCCW-2-28	RB EI 593 R6-R			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-01	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-02	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-03	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-04	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-05	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-06	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-3	8	0.322	PIP-RBCCW-3-07	RB EI 621 FPC Cage			
070	Sketch PIP-RBCCW-4	10	0.365	PIP-RBCCW-4-01	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-4	10	0.365	PIP-RBCCW-4-02	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-4	10	0.365	PIP-RBCCW-4-03	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-4	10	0.365	PIP-RBCCW-4-04	RB EI 593 R3-S			

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Carbon Steel / Closed Cooling (Treated) Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
070	Sketch PIP-RBCCW-4	10	.0365	PIP-RBCCW-4-05	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-5	10	.0365	PIP-RBCCW-5-01	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-5	10	.0365	PIP-RBCCW-5-02	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-5	10	.0365	PIP-RBCCW-5-03	RB EI 593 R3-S			
070	Sketch PIP-RBCCW-6	10	.0365	PIP-RBCCW-6-01	RB EI 593 R3-Q			
070	Sketch PIP-RBCCW-6	10	.0365	PIP-RBCCW-6-02	RB EI 593 R3-Q			
070	Sketch PIP-RBCCW-6	10	.0365	PIP-RBCCW-6-03	RB EI 593 R3-Q			
070	Sketch PIP-RBCCW-7	10	.0365	PIP-RBCCW-7-01	RB EI 593 R2-S			
070	Sketch PIP-RBCCW-7	10	.0365	PIP-RBCCW-7-02	RB EI 593 R2-S			
070	Sketch PIP-RBCCW-8	10	.0365	PIP-RBCCW-8-01	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-8	10	.0365	PIP-RBCCW-8-02	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-8	10	.0365	PIP-RBCCW-8-03	RB EI 593 R2-Q			
070	Sketch PIP-RBCCW-9	8	.0322	PIP-RBCCW-9-01	RB EI 593 R2-U			
070	Sketch PIP-RBCCW-9	8	.0322	PIP-RBCCW-9-02	RB EI 593 R2-U			
070	Sketch PIP-RBCCW-9	8	.0322	PIP-RBCCW-9-03	RB EI 593 R2-U			

**Appendix G
(Page 1 of 3)**

Carbon Steel / Raw Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1A-01	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1A-02	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1A-03	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1A-04	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1A-05	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1C-01	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1C-02	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1C-03	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1C-04	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	16	0.375	PIP-RHRWSW-1C-05	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	14	0.365	PIP-RHRWSW-1R-01	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	14	0.365	PIP-RHRWSW-1R-02	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	14	0.365	PIP-RHRWSW-1R-03	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	14	0.365	PIP-RHRWSW-1R-04	RHRWSW Tunnel 1A/C			
023	Sketch PIP-RHRWSW-1A/C	14	0.365	PIP-RHRWSW-1R-05	RHRWSW Tunnel 1A/C			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-01	RB EI 593 west pmp			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-02	RB EI 593 west pmp			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-03	RB EI 593 west pmp			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-04	RB EI 593 east pmp			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-05	RB EI 593 east pmp			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-06	RB EI 593 east pmp			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-07	RB EI 593 east side			
024	Sketch PIP-RCW-1	12	0.250	PIP-RCW-1-08	RB EI 593 east side			
024	Sketch PIP-RCW-2	10	0.365	PIP-RCW-2-01	RB EI 593 west side			

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**Appendix G
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Carbon Steel / Raw Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
024	Sketch PIP-RCW-2	10	0.365	PIP-RCW-2-02	RB EI 593 west side			
024	Sketch PIP-RCW-2	12	0.250	PIP-RCW-2-03	RB EI 593 west side			
024	Sketch PIP-RCW-2	12	0.250	PIP-RCW-2-04	RB EI 593 west side			
024	Sketch PIP-RCW-2	10	0.365	PIP-RCW-2-05	RB EI 593 west side			
024	Sketch PIP-RCW-2	10	0.365	PIP-RCW-2-06	RB EI 593 west side			
024	Sketch PIP-RCW-2	10	0.365	PIP-RCW-2-07	RB EI 593 west side			
024	Sketch PIP-RCW-2	12	0.250	PIP-RCW-2-08	RB EI 593 west side			
024	Sketch PIP-RCW-2	12	0.250	PIP-RCW-2-09	RB EI 593 west side			
026	Sketch PIP-FP-1	6	0.280	PIP-FP-1-01	RB EI 565 west o/h			
026	Sketch PIP-FP-1	6	0.280	PIP-FP-1-02	RB EI 565 west o/h			
026	Sketch PIP-FP-1	6	0.280	PIP-FP-1-03	RB EI 565 west o/h			
026	Sketch PIP-FP-1	8	0.322	PIP-FP-1-04	RB EI 565 south o/h			
026	Sketch PIP-FP-1	8	0.322	PIP-FP-1-05	RB EI 565 south o/h			
026	Sketch PIP-FP-1	6	0.280	PIP-FP-1-07	RB EI 565 east o/h			
026	Sketch PIP-FP-1	6	0.280	PIP-FP-1-08	RB EI 565 east o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-01	RB EI 565 east o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-02	RB EI 593 west o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-03	RB EI 593 west o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-04	RB EI 593 west o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-05	RB EI 593 south o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-06	RB EI 593 south o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-07	RB EI 593 south o/h			
026	Sketch PIP-FP-2	6	0.280	PIP-FP-2-08	RB EI 593 east o/h			

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**Appendix G
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Carbon Steel / Raw Water

System	Drawing Ref	Pipe Size OD (in)	T _{nom} (IN)	Data Point	Location	Baseline Data	Periodic Insp 1	Periodic Insp 2
026	Sketch PIP-FP-3	6	0.280	PIP-FP-3-01	TB EI 586 T5-G			
067	Sketch PIP-EECW-1	18	0.250	PIP-EECW-1-01	RB EI 593 P-R3			
067	Sketch PIP-EECW-1	18	0.250	PIP-EECW-1-02	RB EI 593 P-R3			
067	Sketch PIP-EECW-1	18	0.250	PIP-EECW-1-03	RB EI 593 P-R3			
067	Sketch PIP-EECW-2	6	0.280	PIP-EECW-2-01	RB EI 565 U-R2			
067	Sketch PIP-EECW-2	6	0.280	PIP-EECW-2-02	RB EI 593 U-R2			
067	Sketch PIP-EECW-2	6	0.280	PIP-EECW-2-03	RB EI 593 U-R2			
067	Sketch PIP-EECW-3	6	0.280	PIP-EECW-3-01	RB EI 593 T-R2			
067	Sketch PIP-EECW-3	6	0.280	PIP-EECW-3-02	RB EI 593 S/T-R2			
067	Sketch PIP-EECW-3	6	0.280	PIP-EECW-3-03	RB EI 593 S/R-R2			
067	Sketch PIP-EECW-3	6	0.280	PIP-EECW-3-04	RB EI 593 Q-R2			
067	Sketch PIP-EECW-3	6	0.280	PIP-EECW-3-05	RB EI 593 P/Q-R2			

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**Appendix H
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Inspection Conclusions

Baseline Inspection

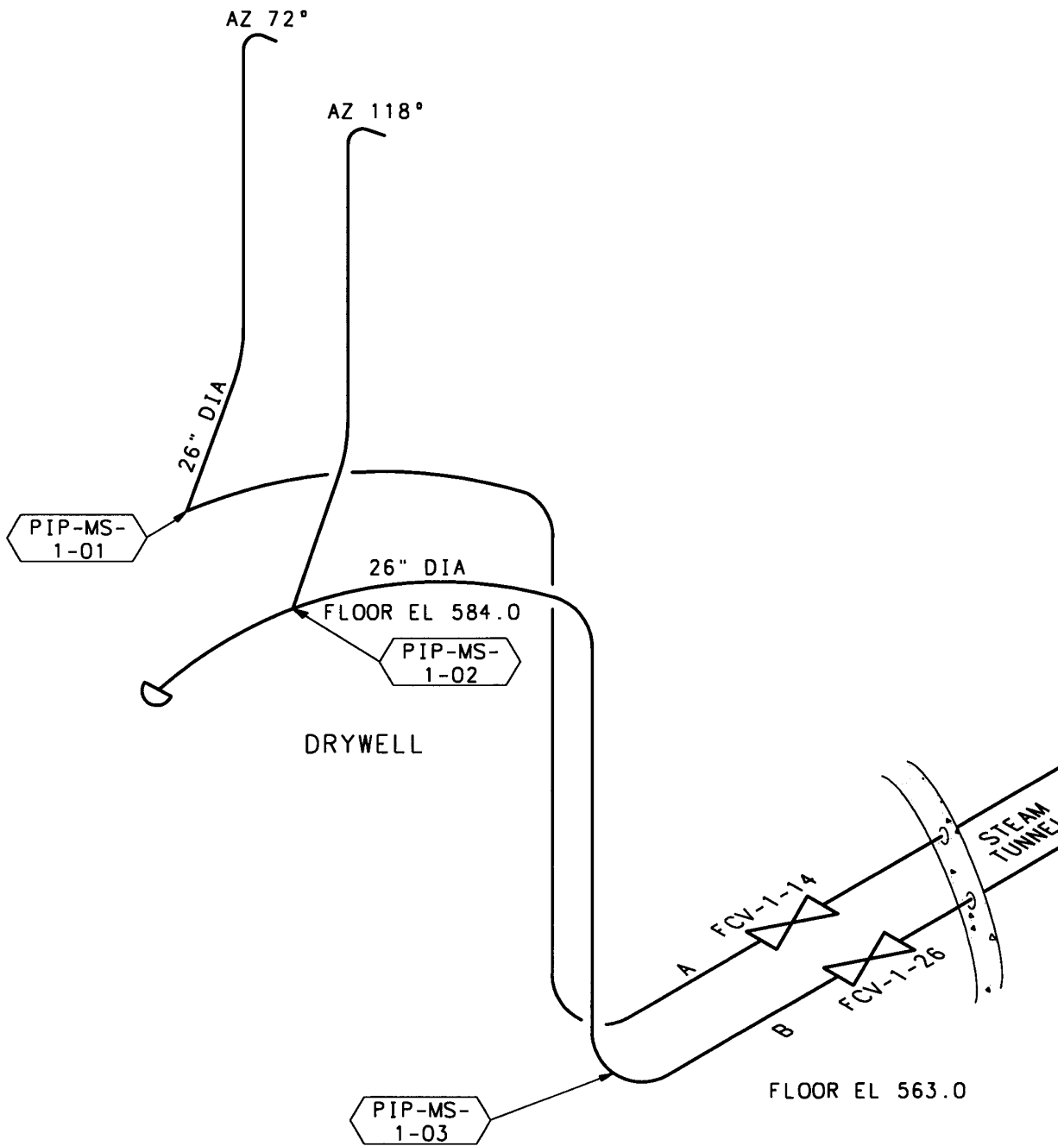
Periodic Inspection 1

Periodic Inspection 2

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**Attachment 1
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Grid Location Sketches

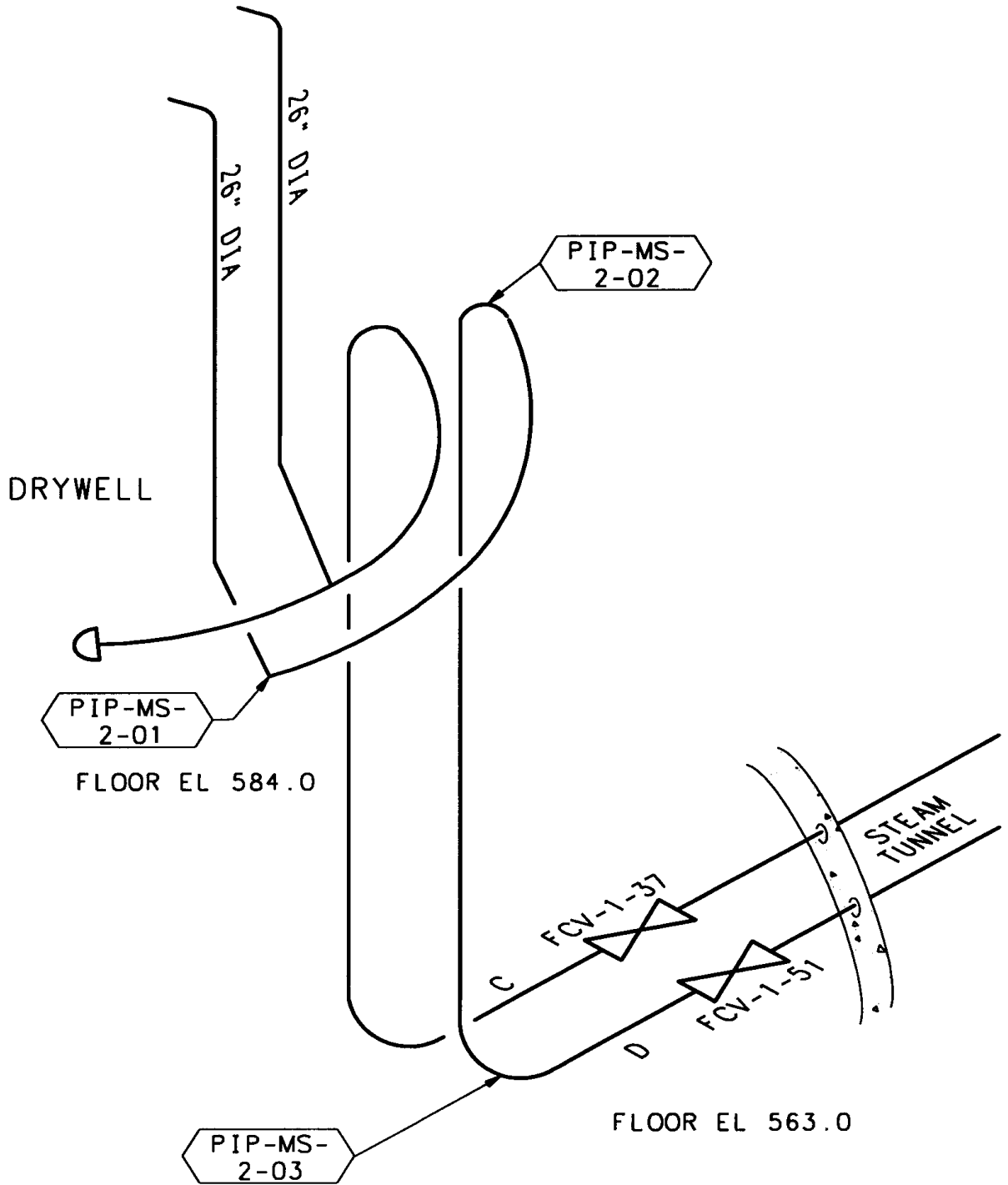


**SKETCH PIP-MS-1
SYSTEM 001**

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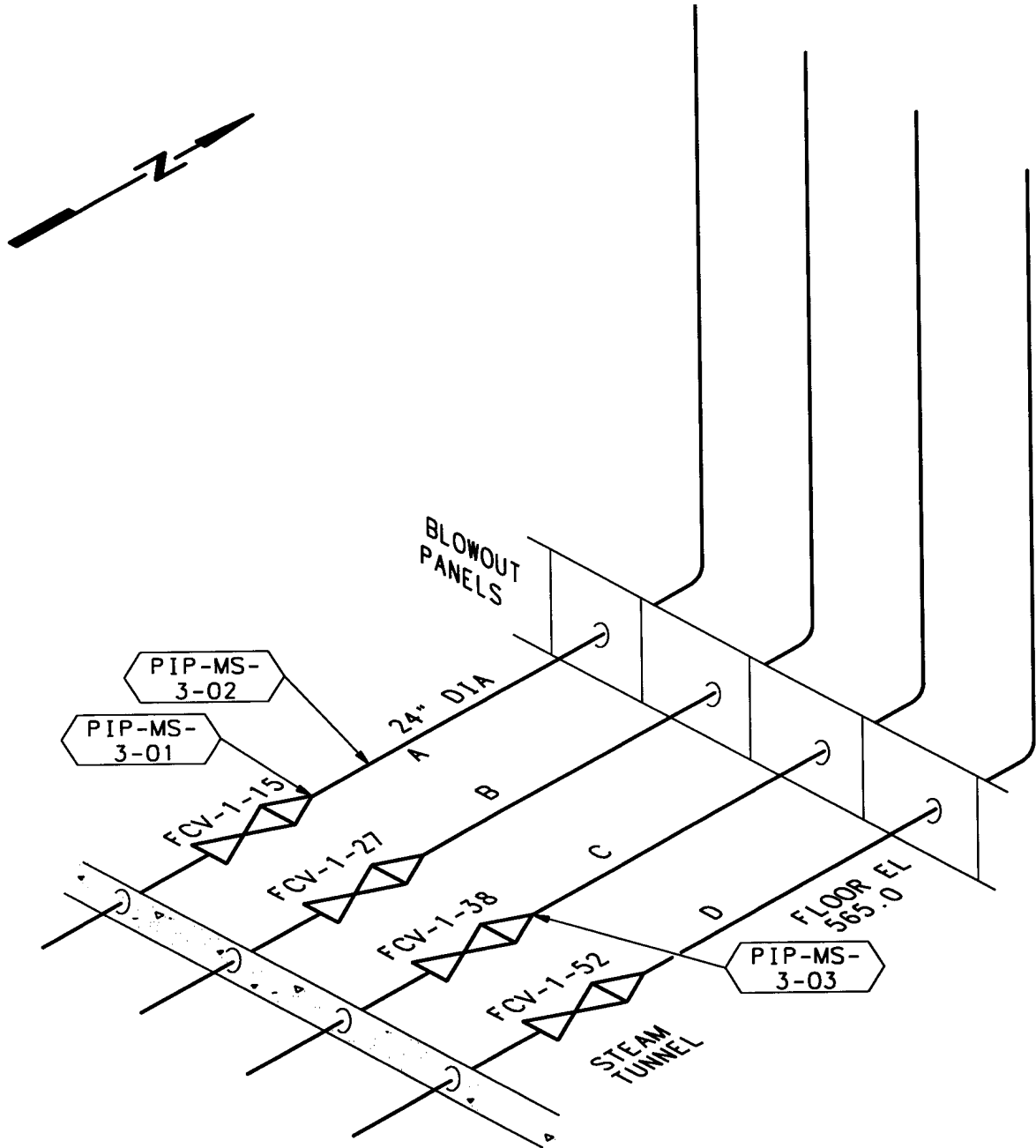
Grid Location Sketches



**SKETCH PIP-MS-2
SYSTEM 001**

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Grid Location Sketches

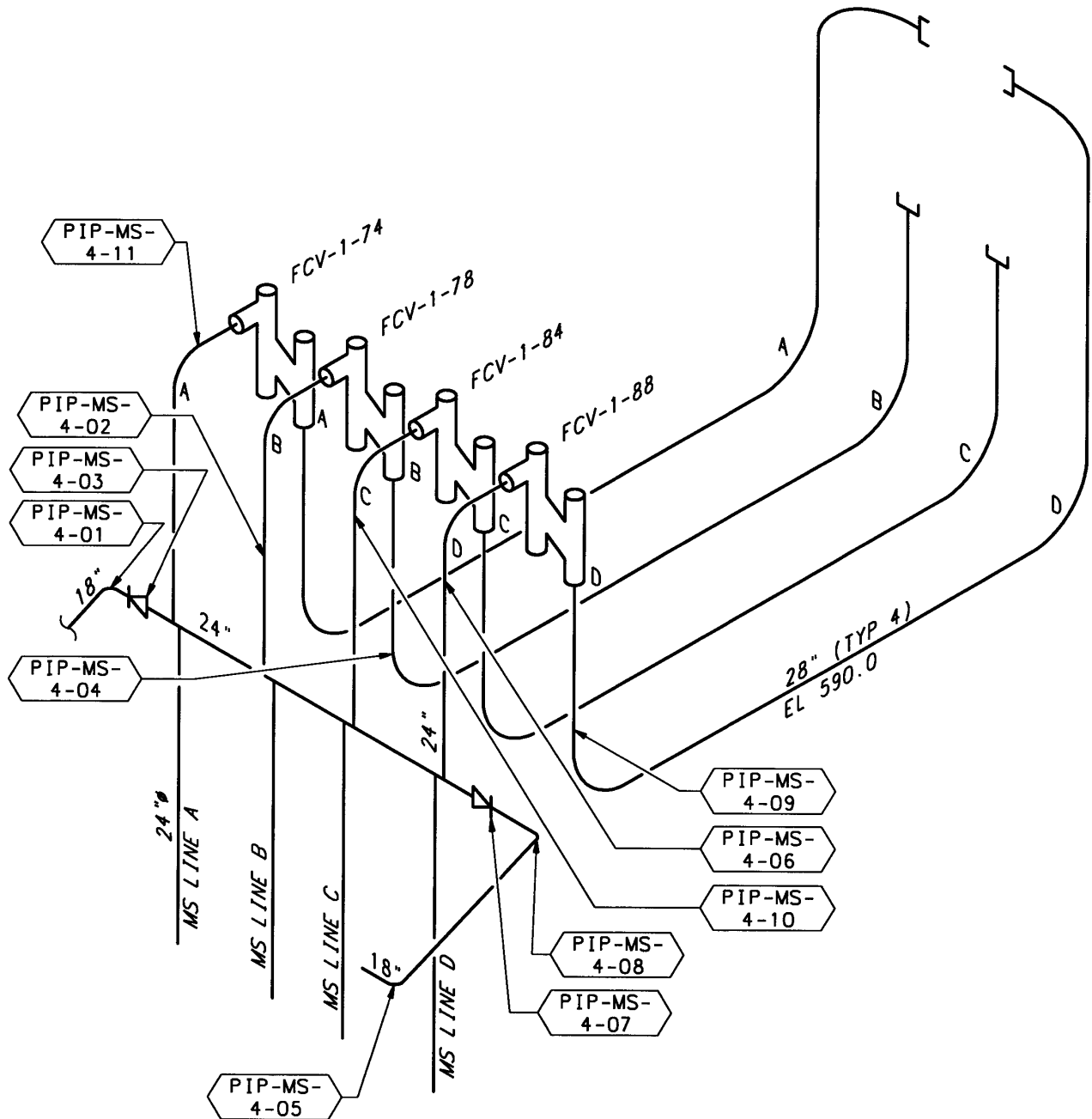


**SKETCH PIP-MS-3
SYSTEM 001**

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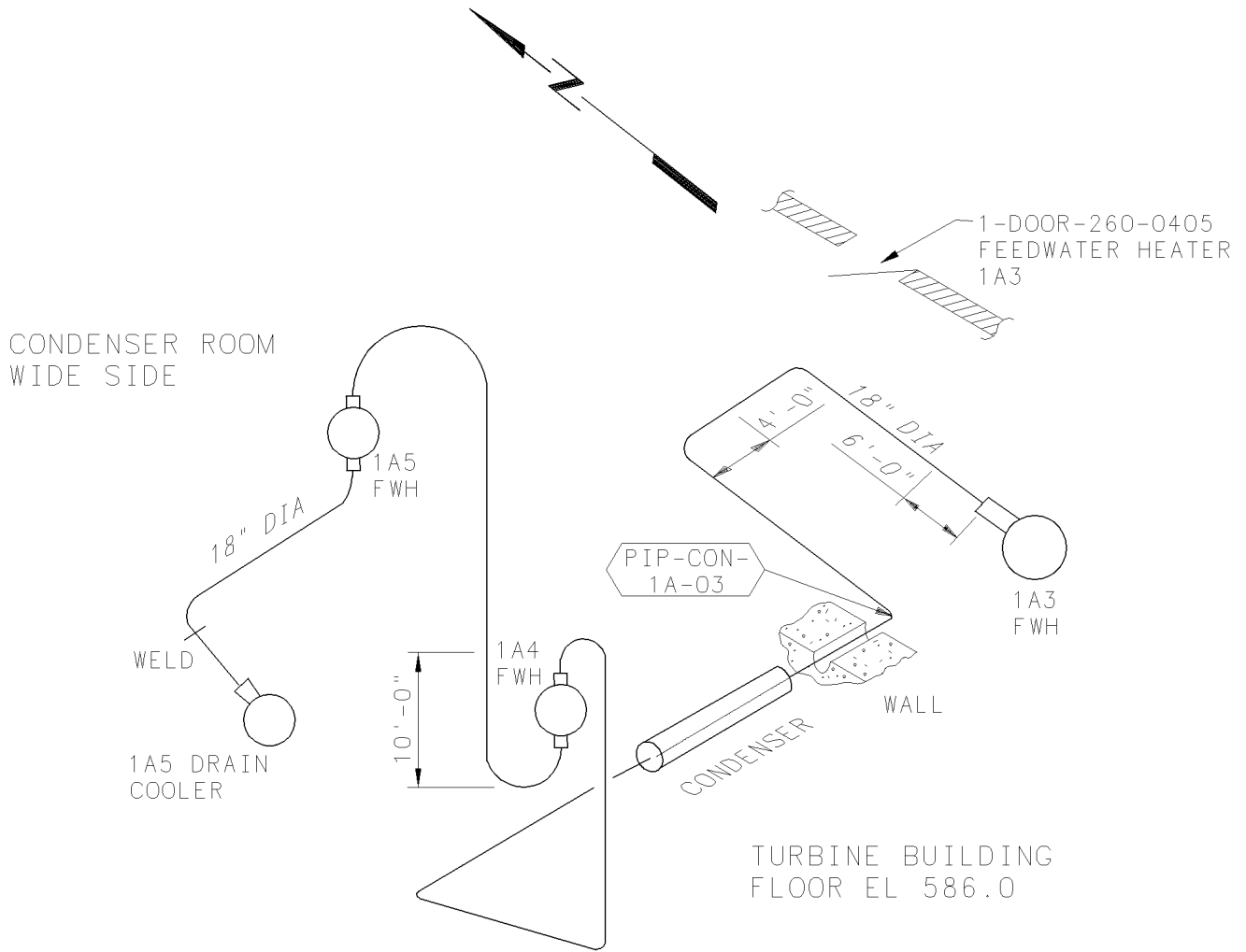
Grid Location Sketches



**SKETCH PIP-MS-4
MOISTURE SEPARATOR
ROOM TB EL 586.0**

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Grid Location Sketches



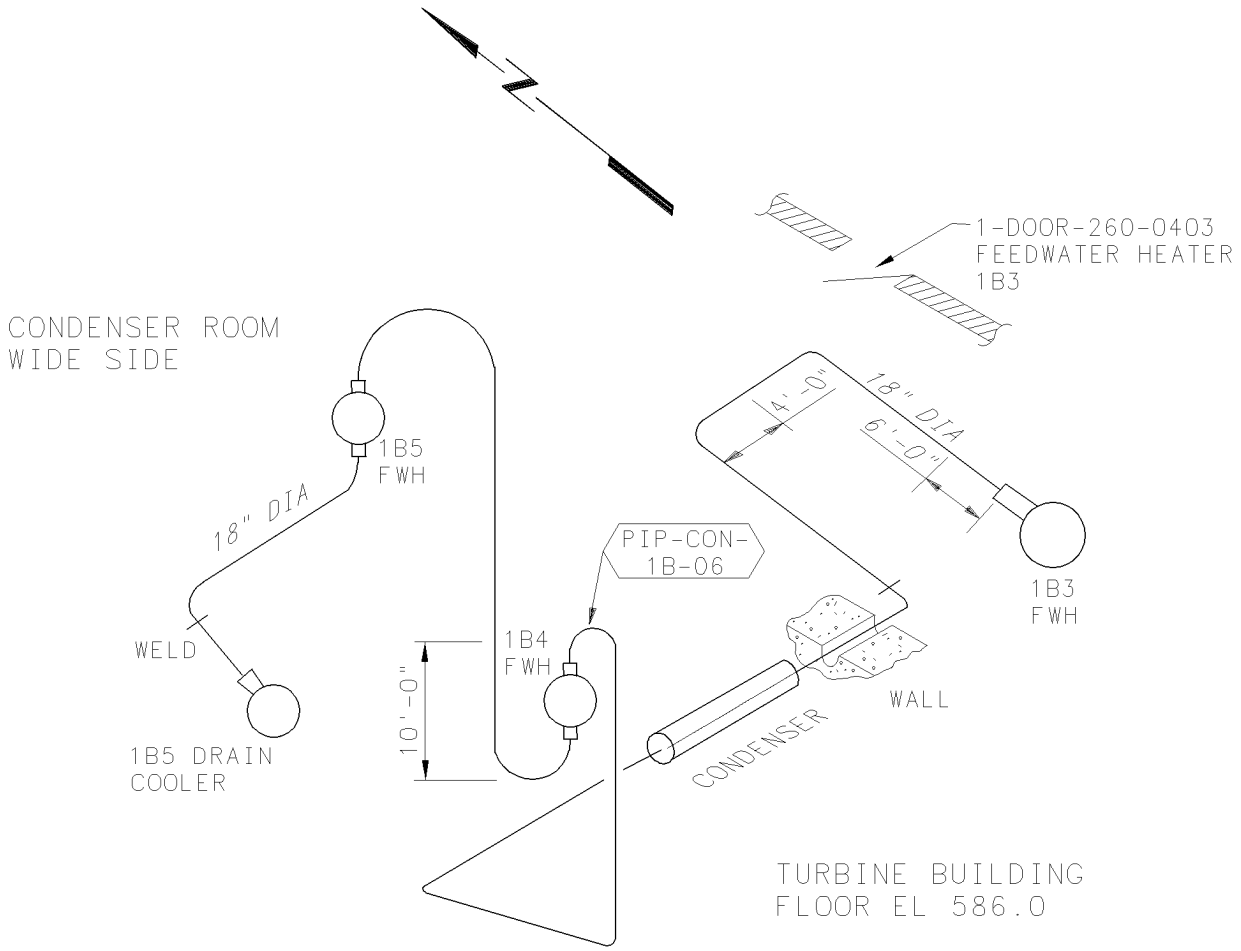
SKETCH PIP-CON-1A

SYSTEM 002

REF: 1-47E804-1
0-47W420-4

Attachment 1
(Page 6 of 33)

Grid Location Sketches



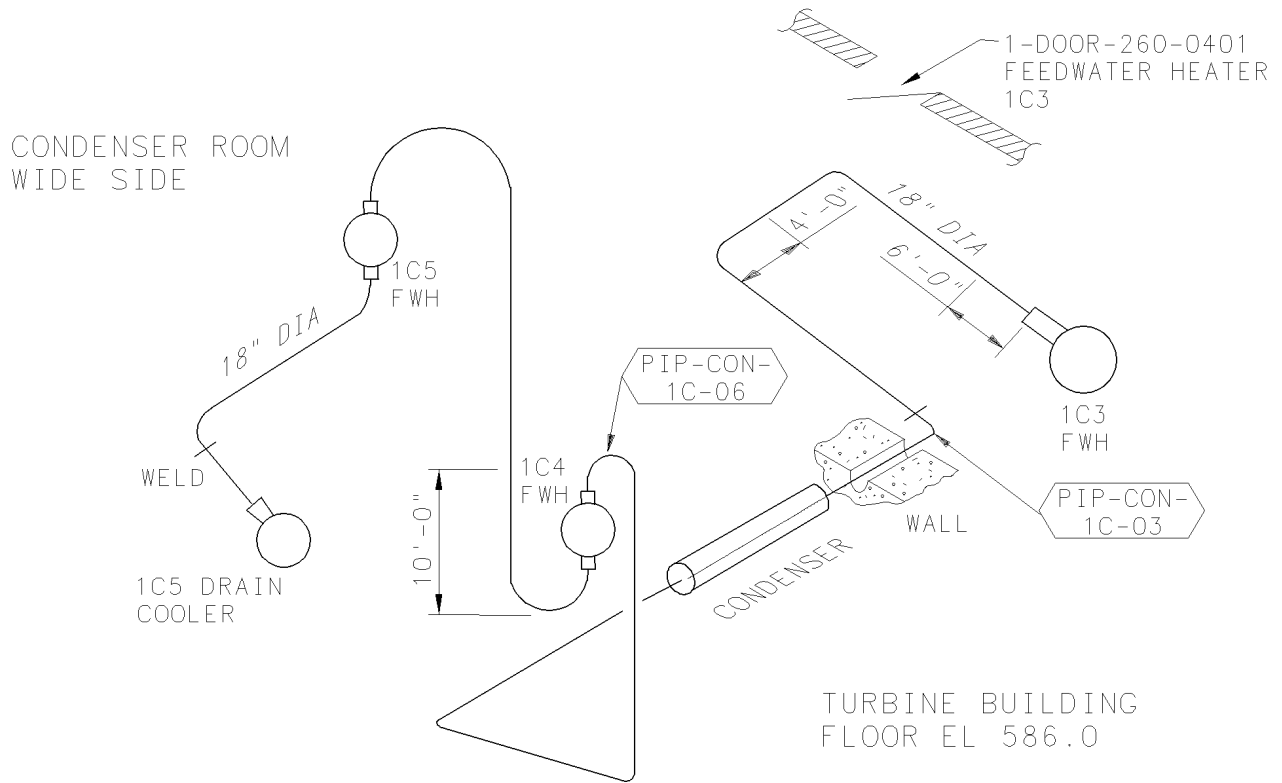
SKETCH PIP-CON-1B

SYSTEM 002

REF: 1-47E804-1
0-47W420-4

Attachment 1
(Page 7 of 33)

Grid Location Sketches



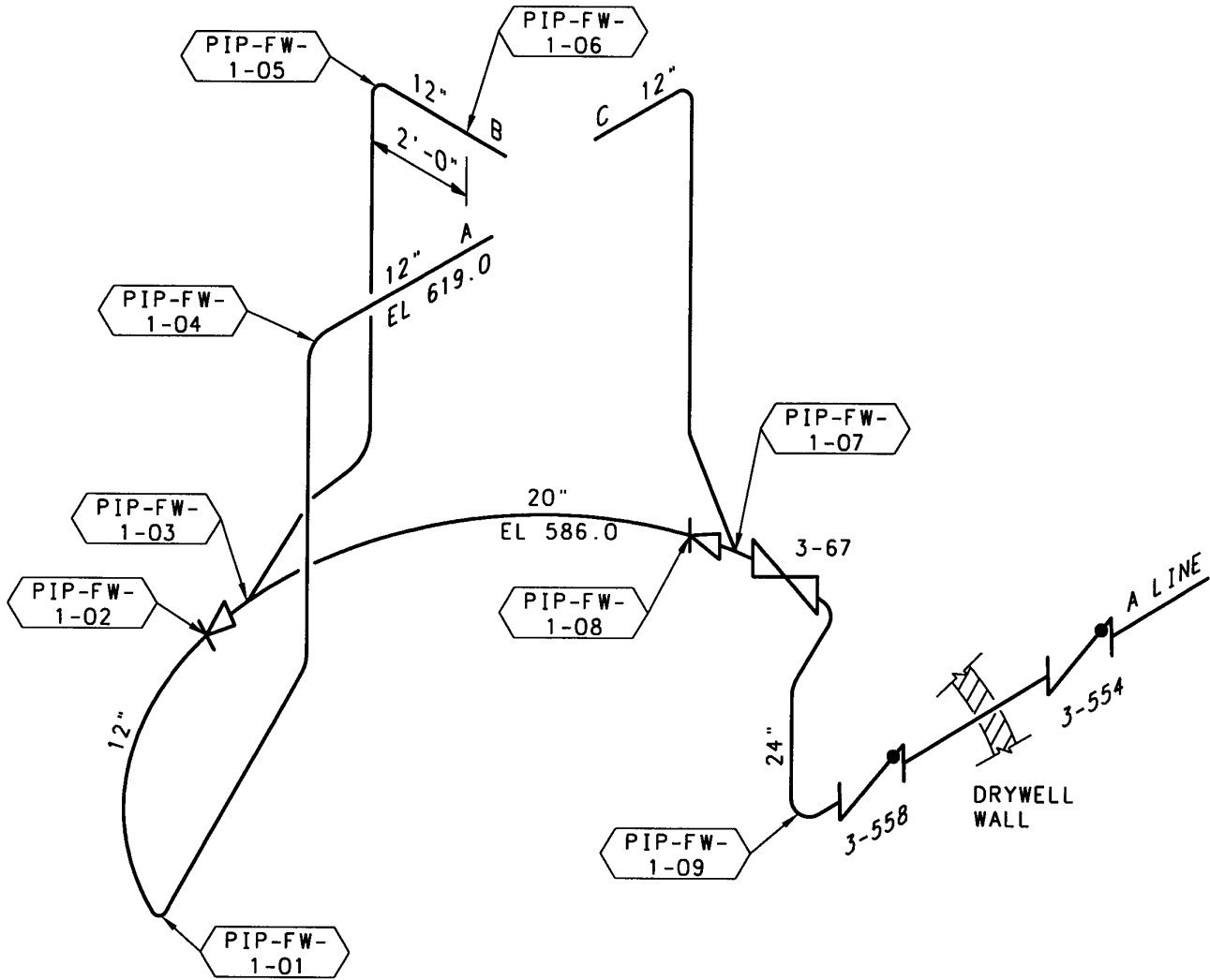
SKETCH PIP-CON-1C
SYSTEM 002

REF : 1-47E804-1
0-47W420-4

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 36 of 61</p>
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**Attachment 1
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Grid Location Sketches

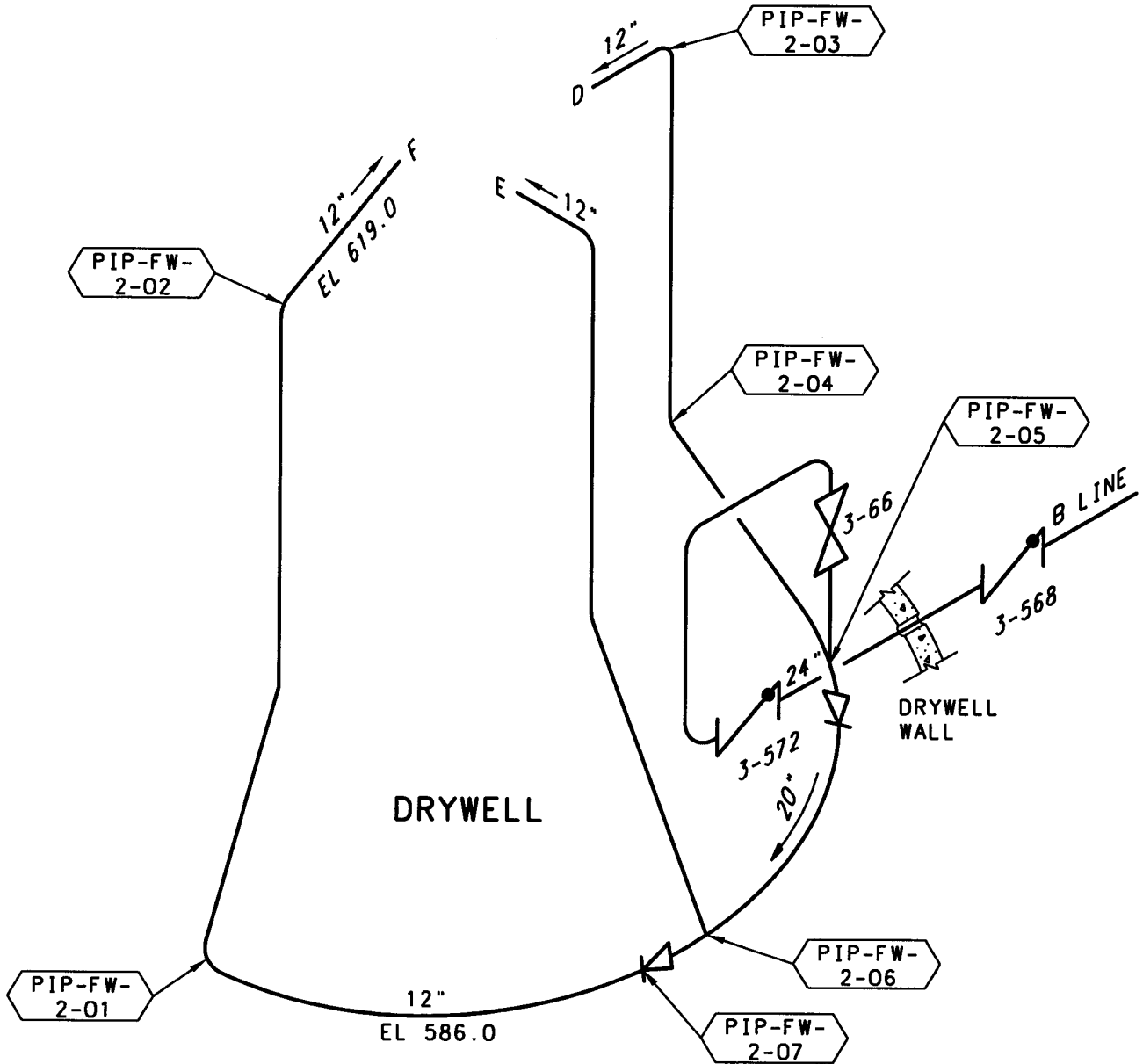


**SKETCH PIP-FW-1
SYSTEM 003**

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 37 of 61</p>
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**Attachment 1
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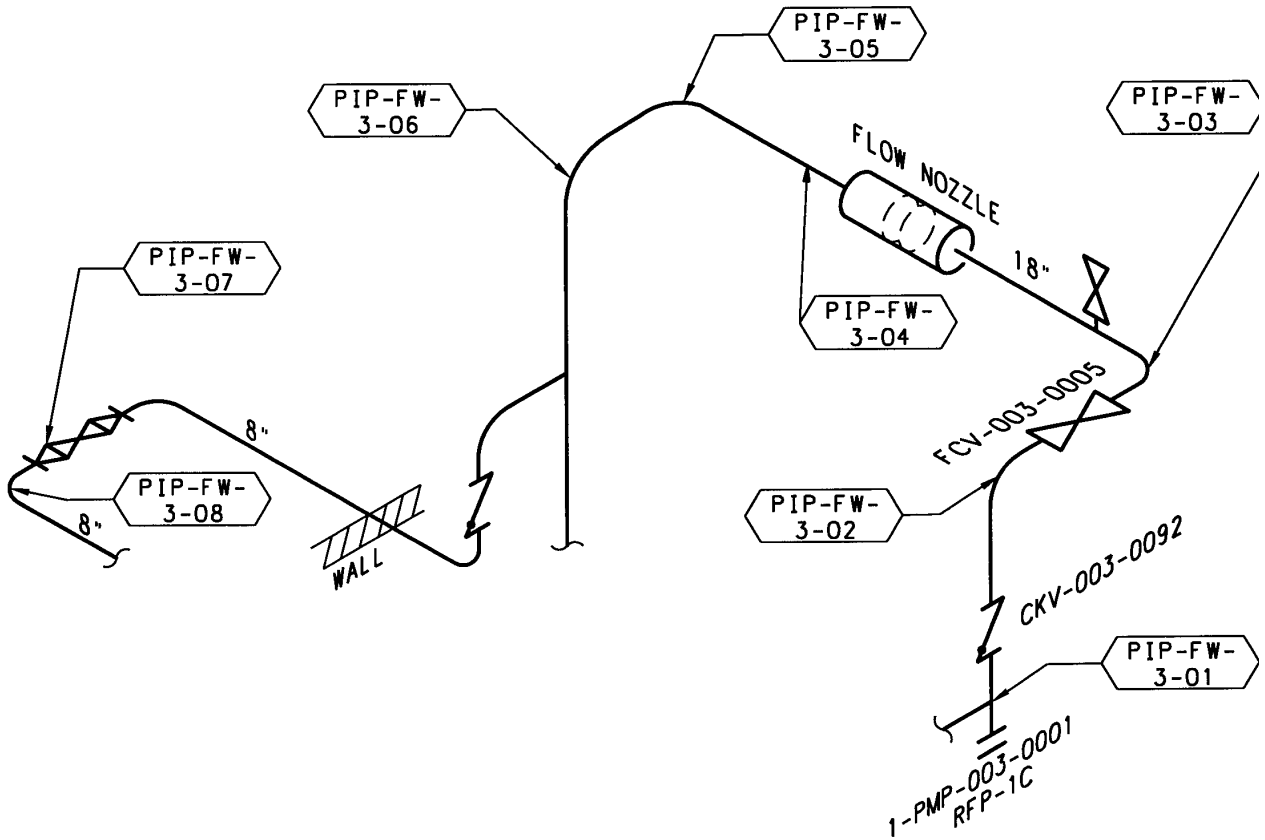
Grid Location Sketches



**SKETCH PIP-FW-2
SYSTEM 003**

BFN Unit 1	Unit 1 Periodic Inspection Program for License Renewal	1-TI-521 Rev. 0003 Page 38 of 61
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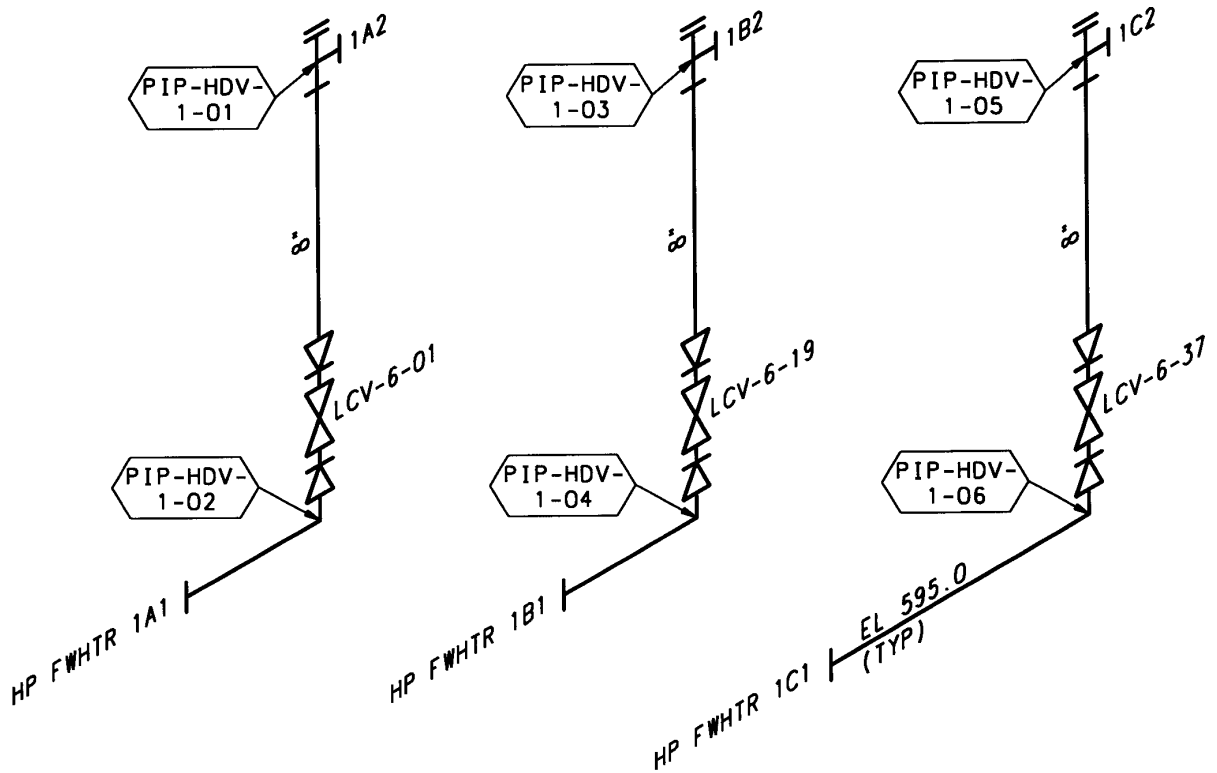
**Attachment 1
(Page 10 of 33)
Grid Location Sketches**



SKETCH PIP-FW-3
 SYSTEM 003
 TB RFP RM 1C
 EL 617.0

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 39 of 61</p>
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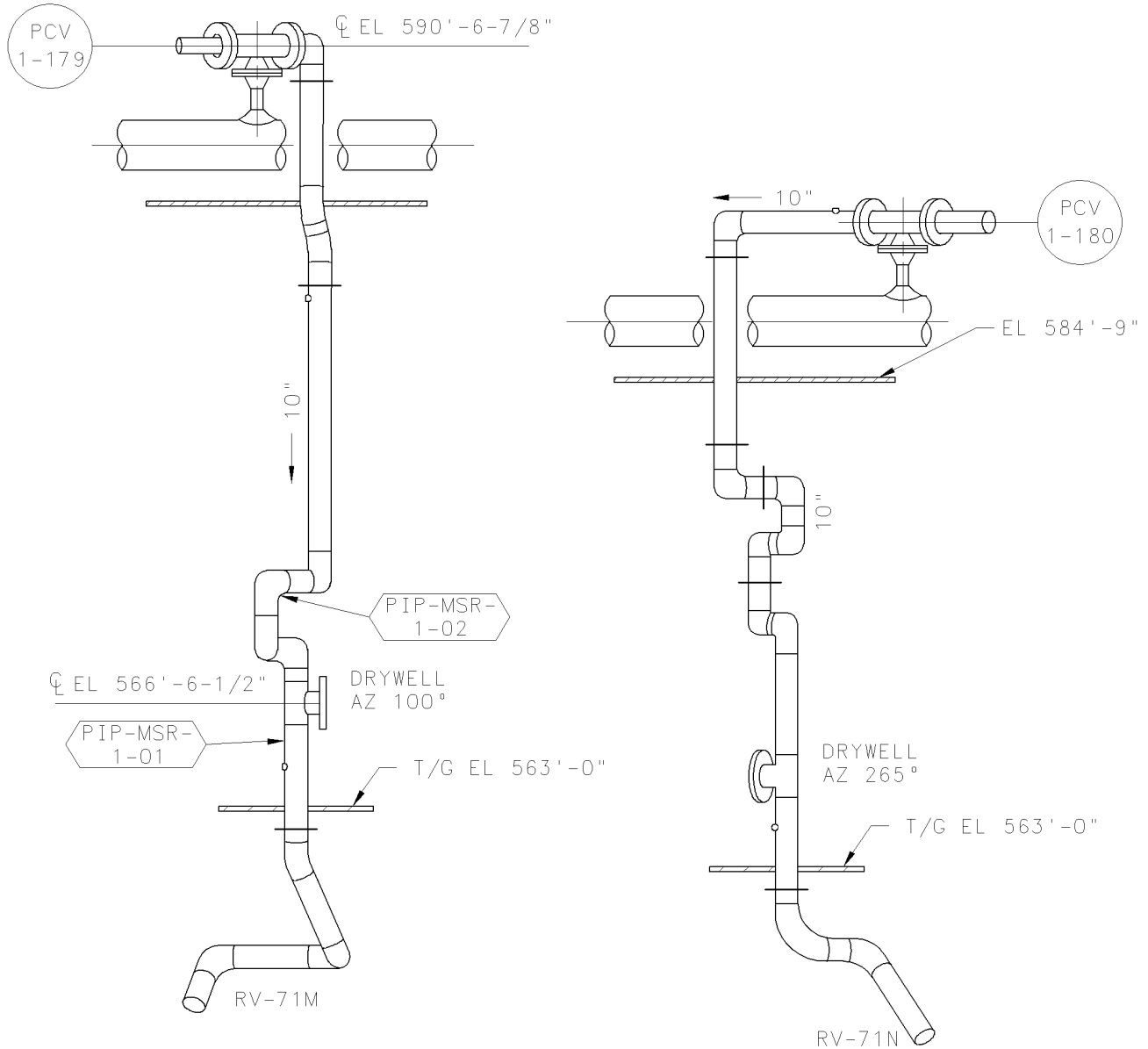
**Attachment 1
(Page 11 of 33)
Grid Location Sketches**



**SKETCH PIP-HDV-1
SYSTEM 006
TR HP FW HTR RM**

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 40 of 61</p>
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**Attachment 1
(Page 12 of 33)
Grid Location Sketches**

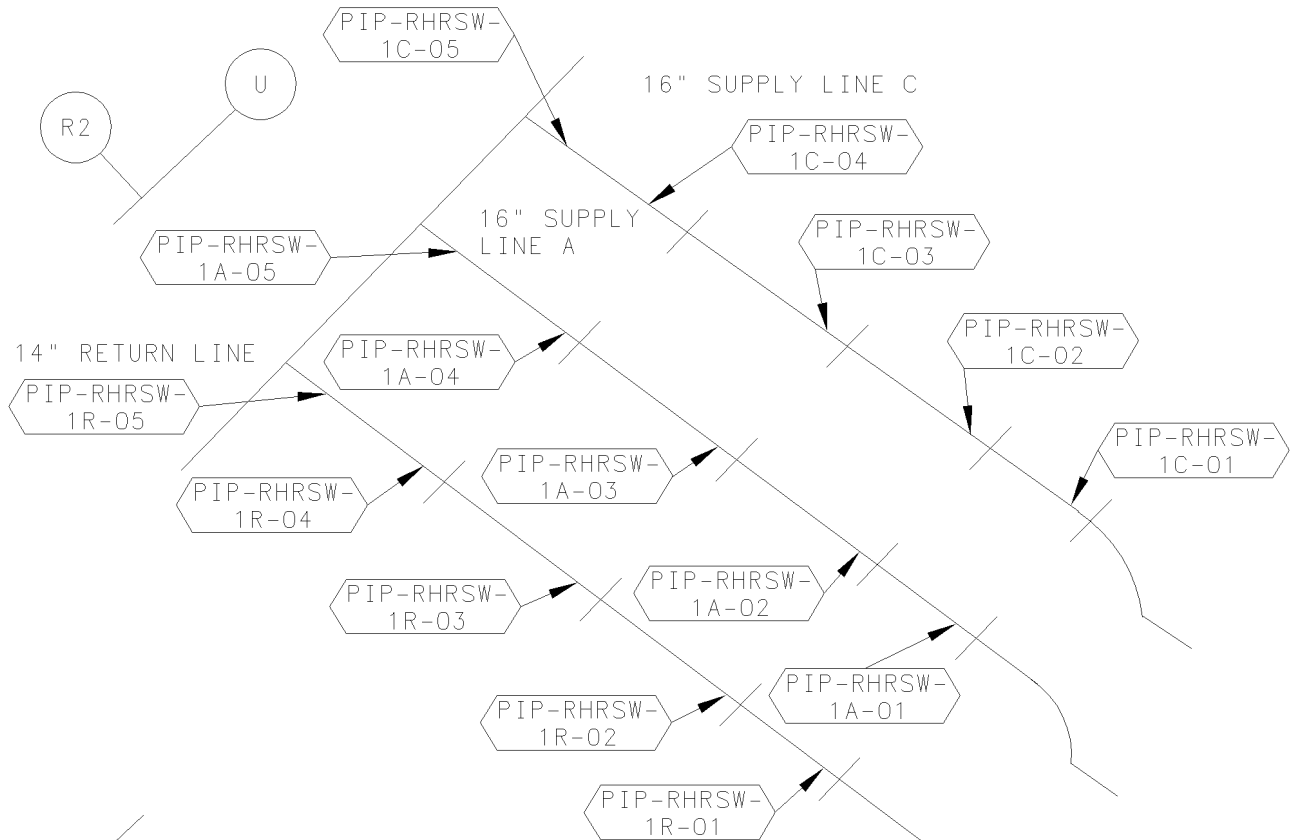


SKETCH PIP-MSR-1
SYSTEM 010

BFN Unit 1	Unit 1 Periodic Inspection Program for License Renewal	1-TI-521 Rev. 0003 Page 41 of 61
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**Attachment 1
(Page 13 of 33)
Grid Location Sketches**

RHR SW TUNNEL A/C



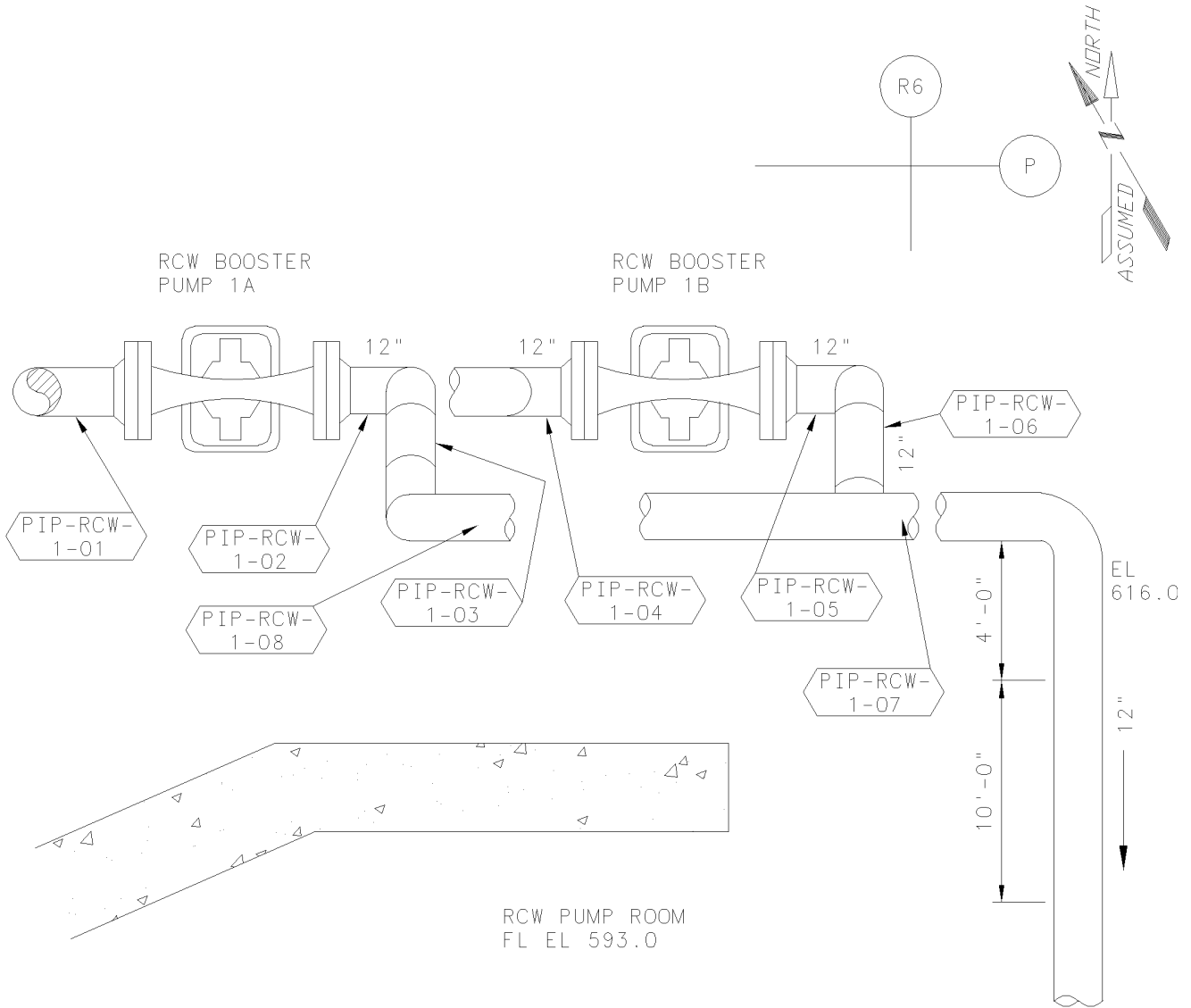
INDICATES SUPPORT LOCATION
INSPECTION POINTS ARE 4" NORTH
OF SUPPORT 1A-05, 1C-05, 1R-05
ARE TWO FEET INSIDE WALL

EL 562

SKETCH PIP-RHRSW 1 A/C
SYSTEM 023

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 42 of 61</p>
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**Attachment 1
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Grid Location Sketches**

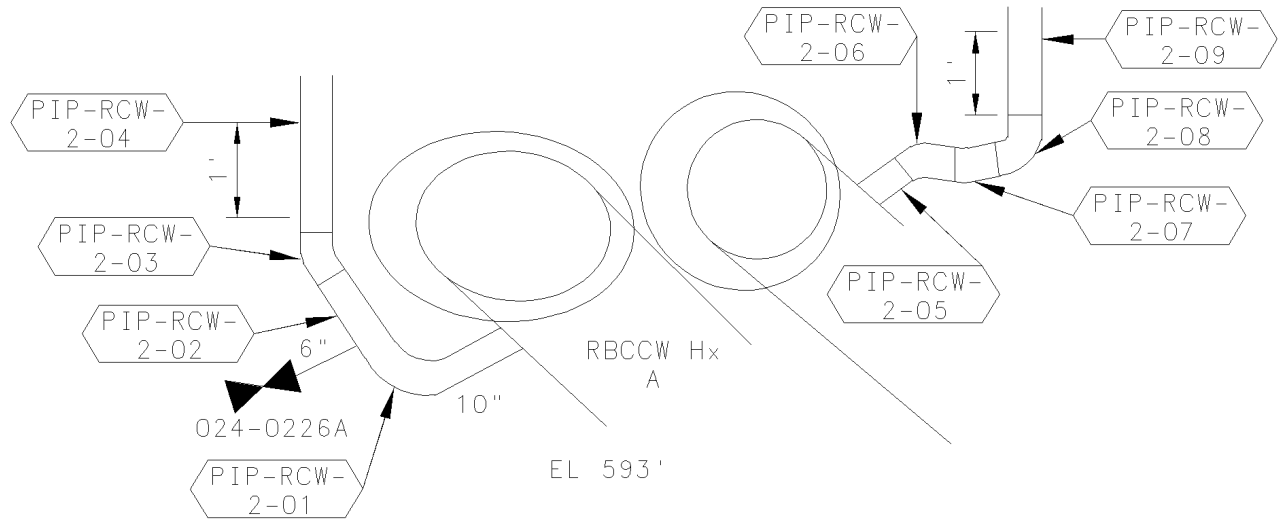
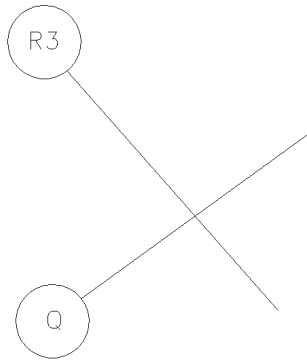


REF : 47W446-4

SKETCH PIP-RCW-1
SYSTEM 024

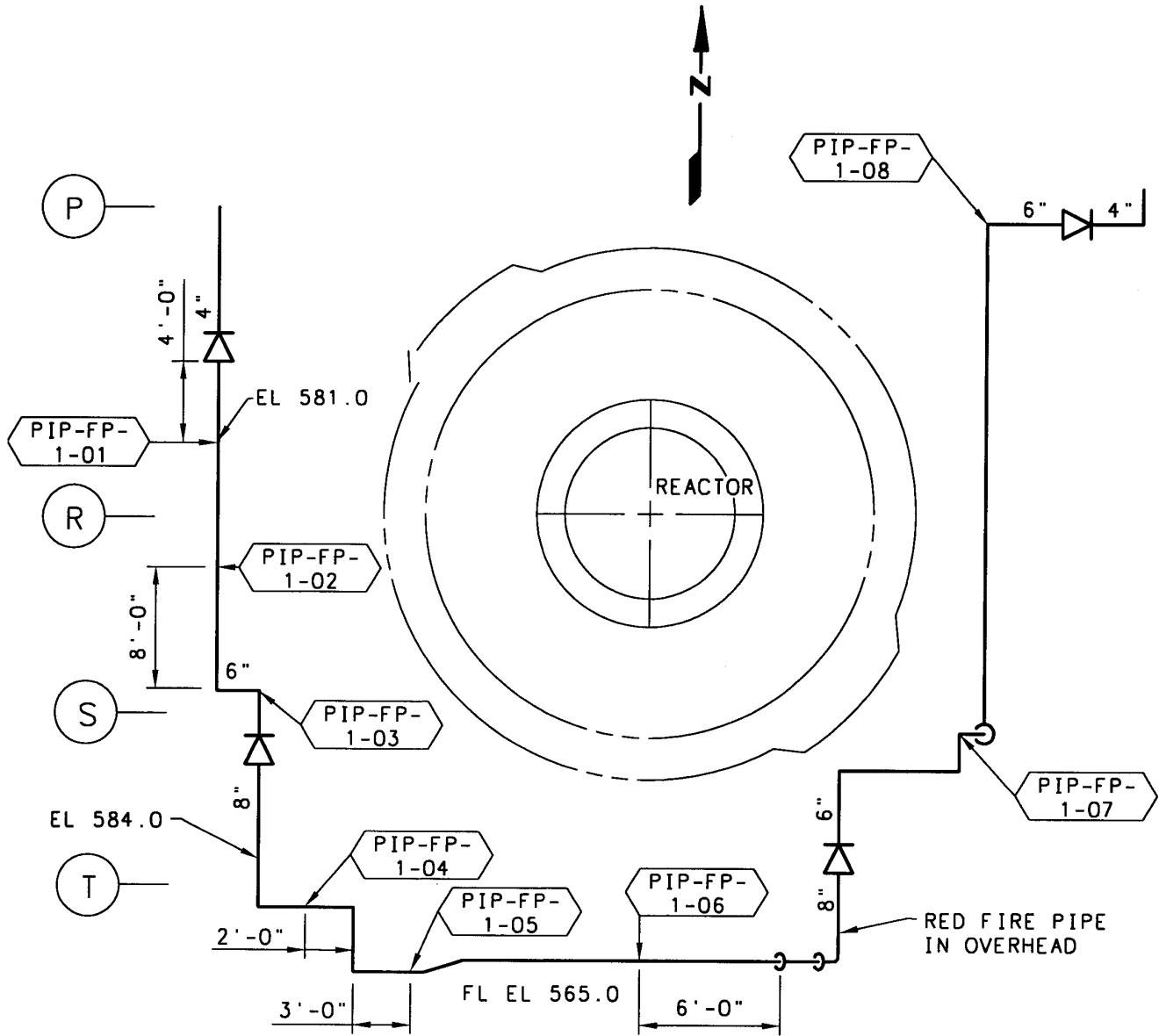
<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 43 of 61</p>
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**Attachment 1
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Grid Location Sketches**



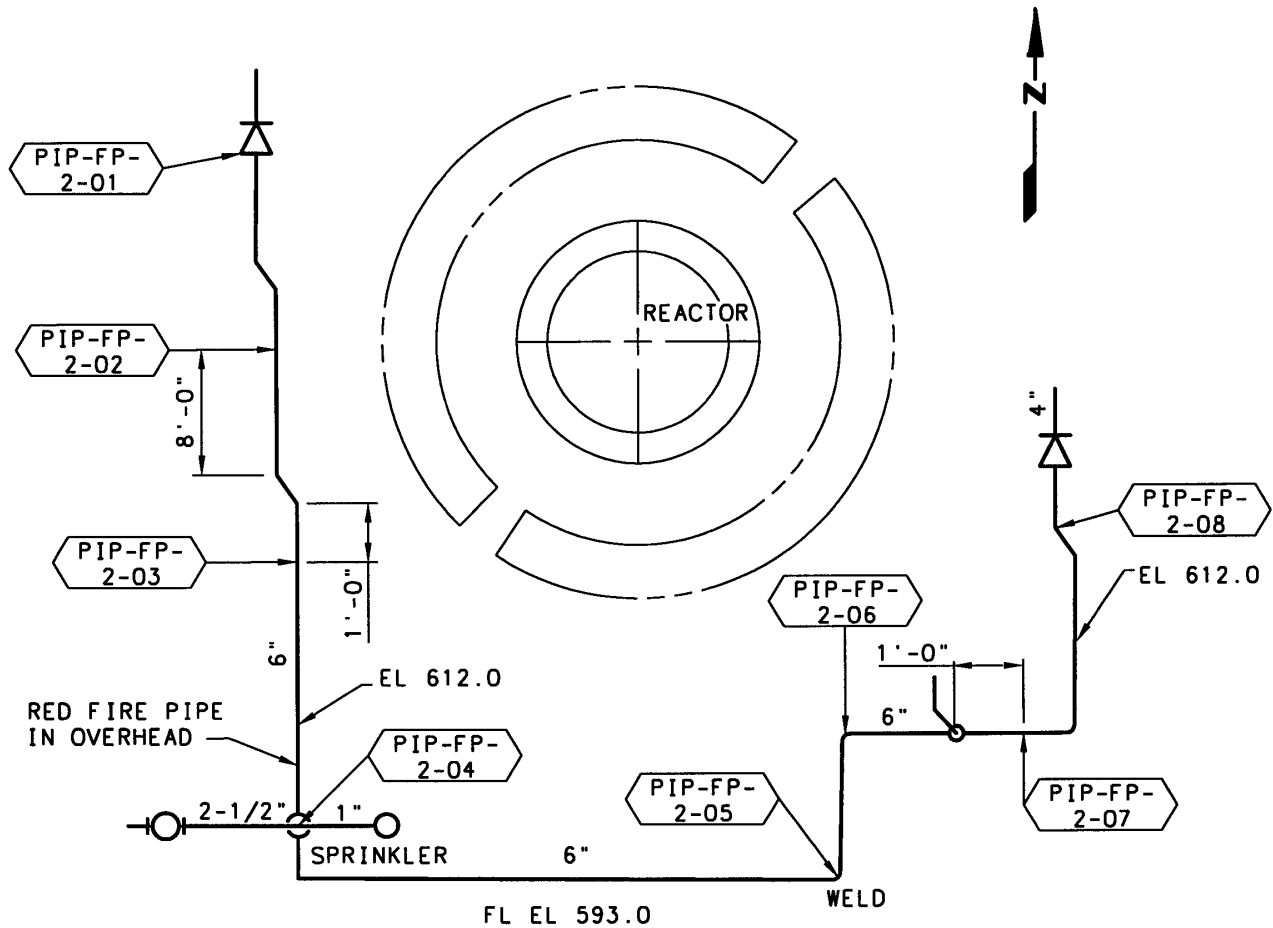
SKETCH PIP-RCW-2
SYSTEM 024

**Attachment 1
(Page 16 of 33)
Grid Location Sketches**



**SKETCH PIP-FP-1
SYSTEM 026
REF : 1-47W491-27**

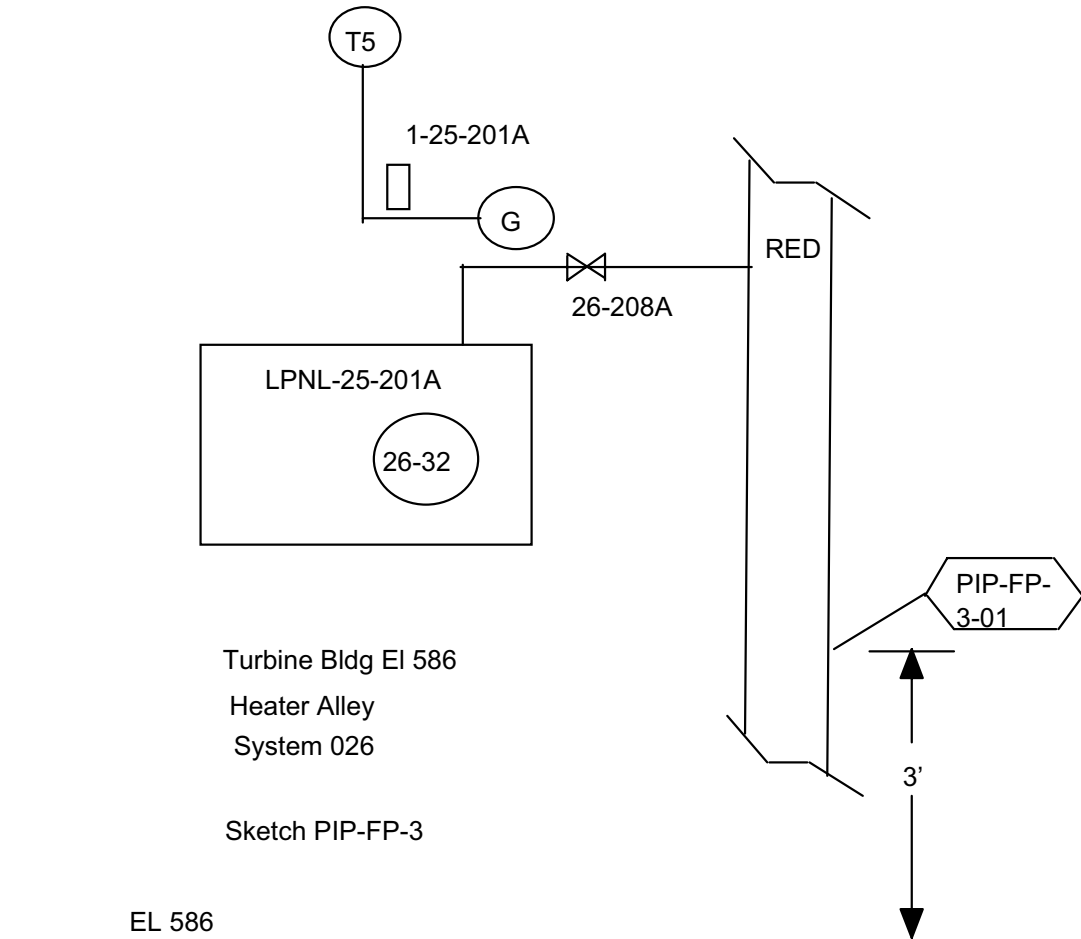
**Attachment 1
(Page 17 of 33)
Grid Location Sketches**



**SKETCH PIP-FP-2
SYSTEM 026
REF: 1-47W491-29**

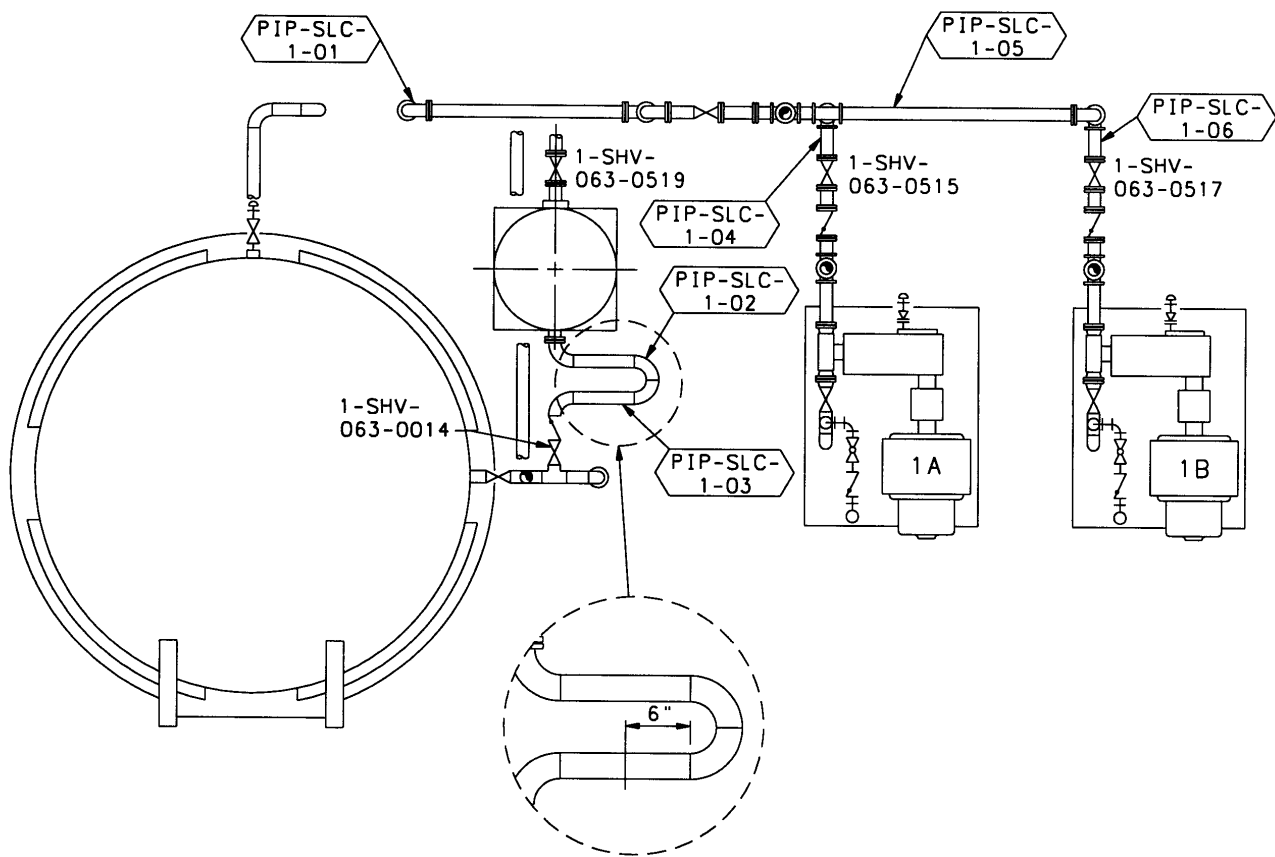
Attachment 1
(Page 18 of 33)

Grid Location Sketches



Attachment 1
(Page 19 of 33)

Grid Location Sketches

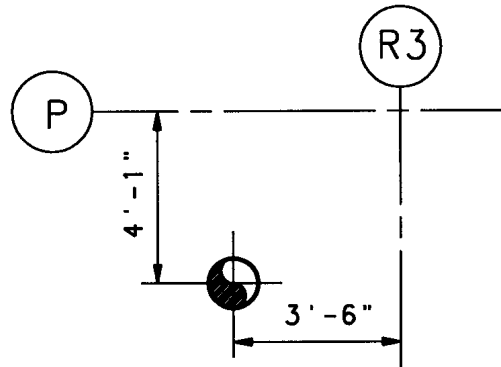


SKETCH PIP-SLC-1
SYSTEM 063

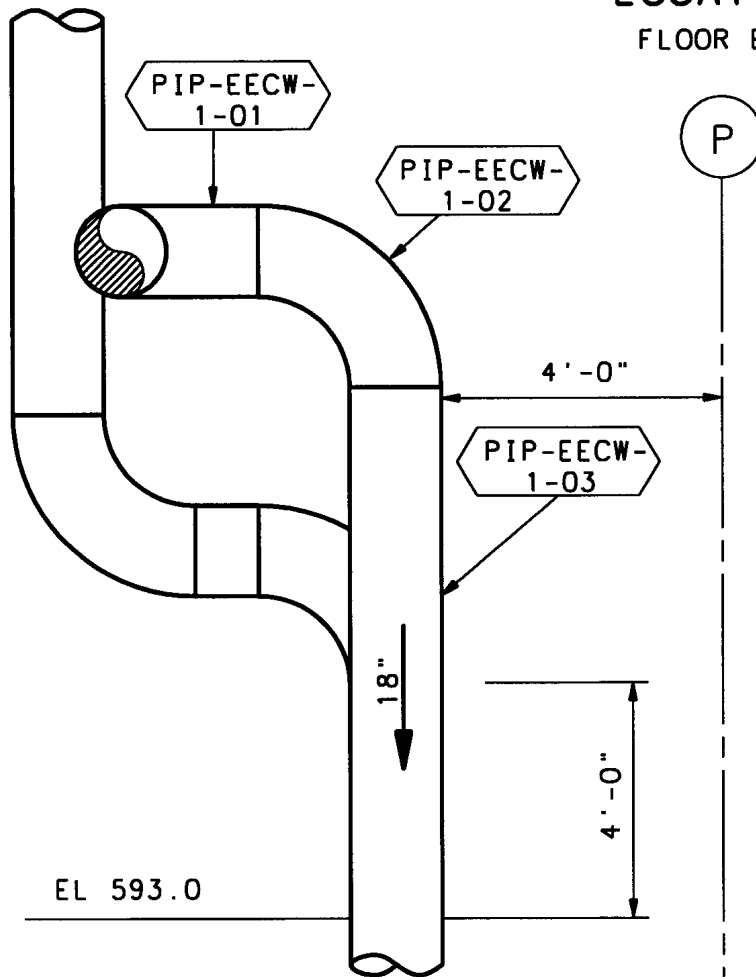
BFN Unit 1	Unit 1 Periodic Inspection Program for License Renewal	1-TI-521 Rev. 0003 Page 48 of 61
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**Attachment 1
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Grid Location Sketches



**LOCATION PLAN:
FLOOR EL 593.0**



VIEW LOOKING WEST

SKETCH PIP-EECW-1

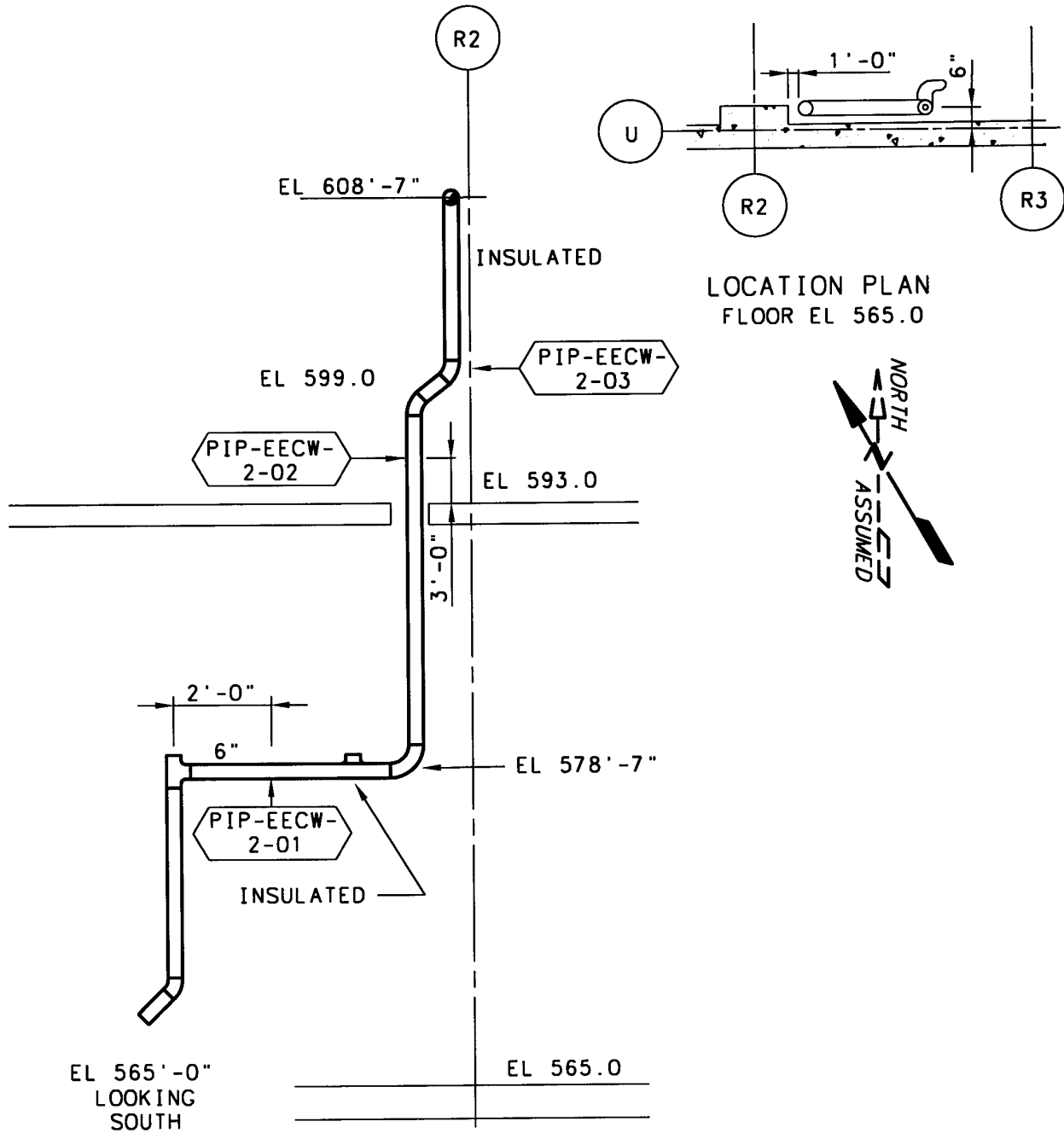
SYSTEM 067

REF: 1-47W451-4

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 49 of 61</p>
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**Attachment 1
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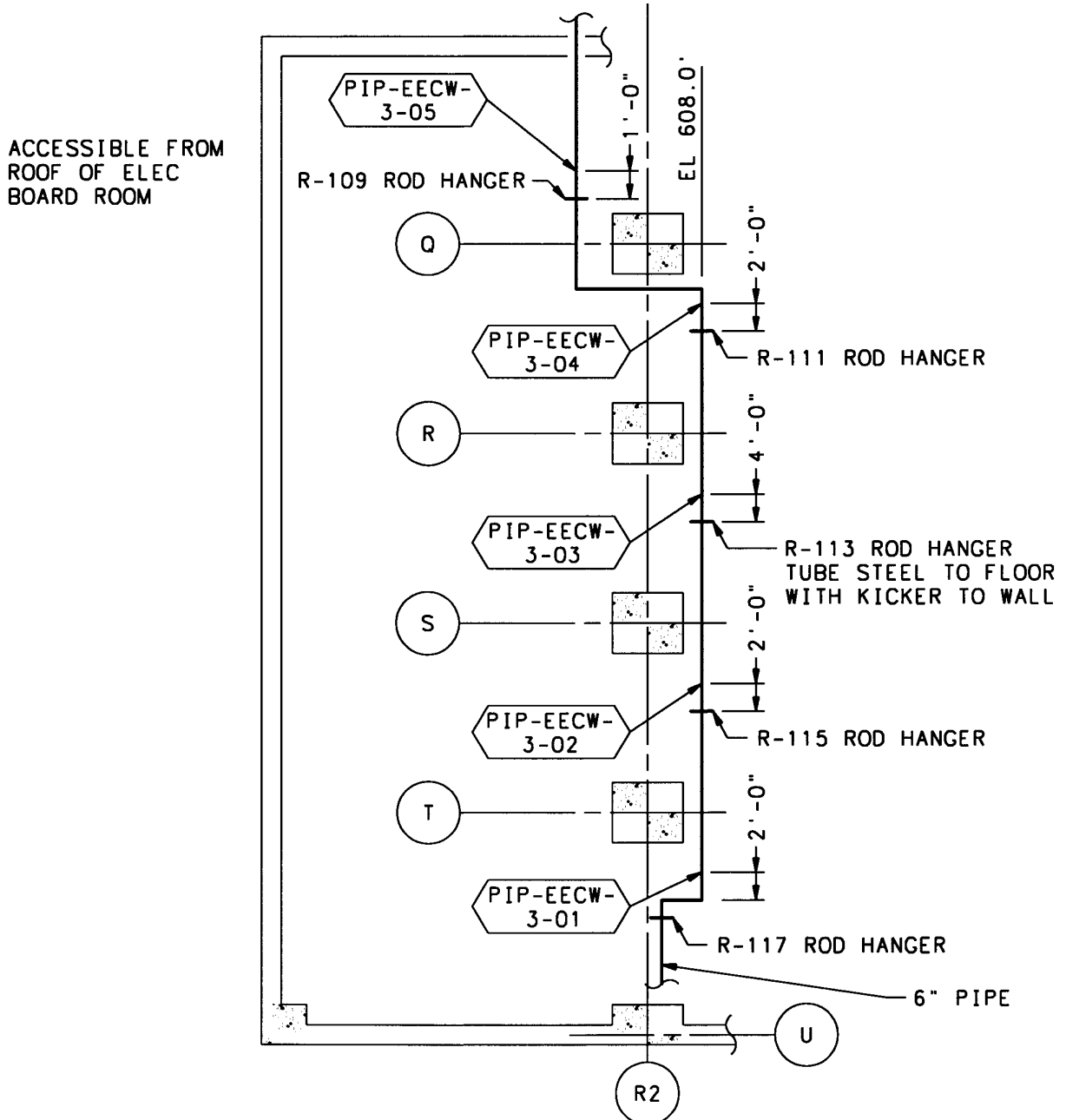
Grid Location Sketches



**SKETCH PIP-EECW-2
SYSTEM 067
REF : 0-47W451-10**

Attachment 1
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Grid Location Sketches



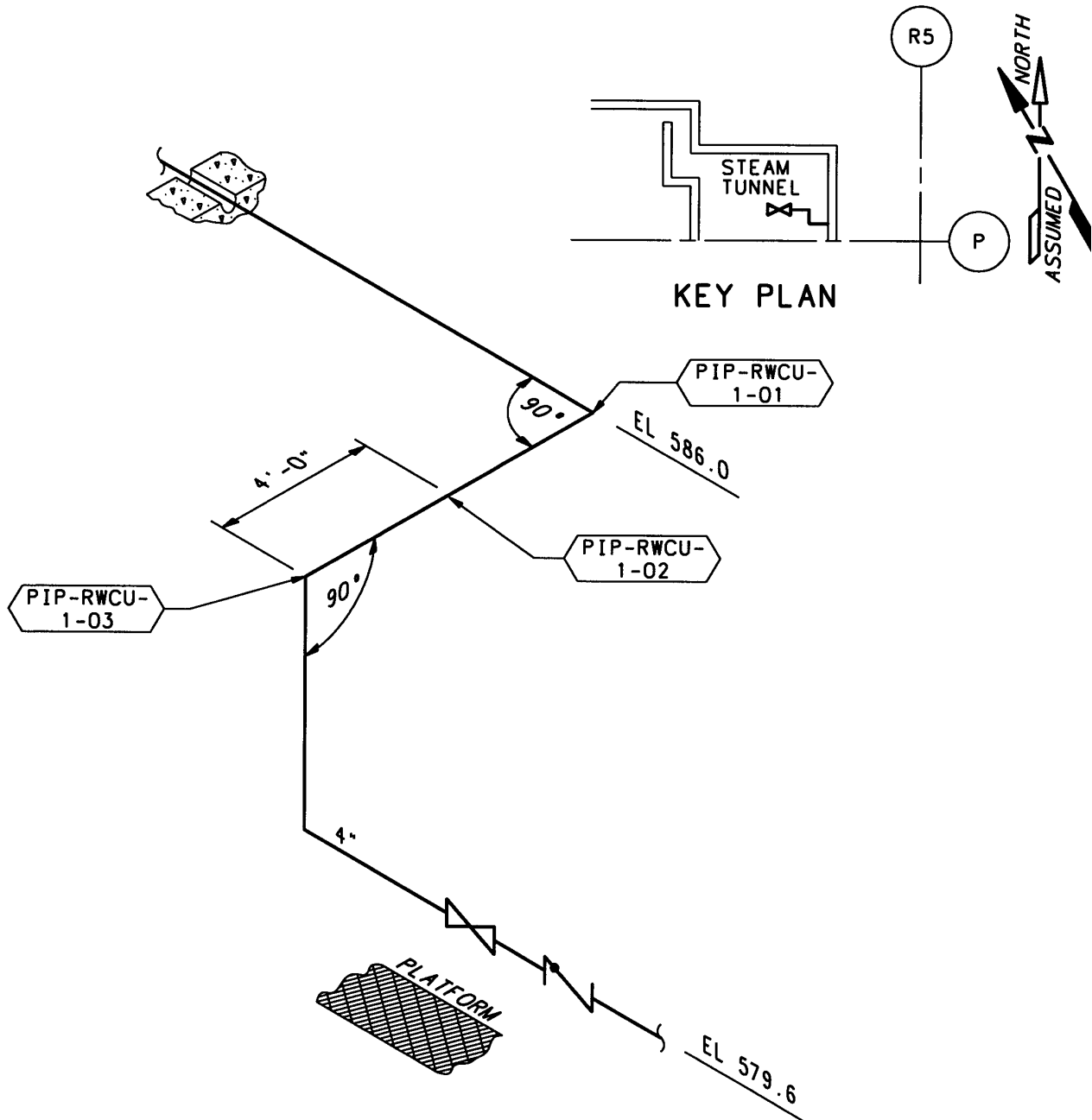
SKETCH PIP-EECW-3
SYSTEM 067
FL EL 593.0

REF: 0-47W451-10

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 51 of 61</p>
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**Attachment 1
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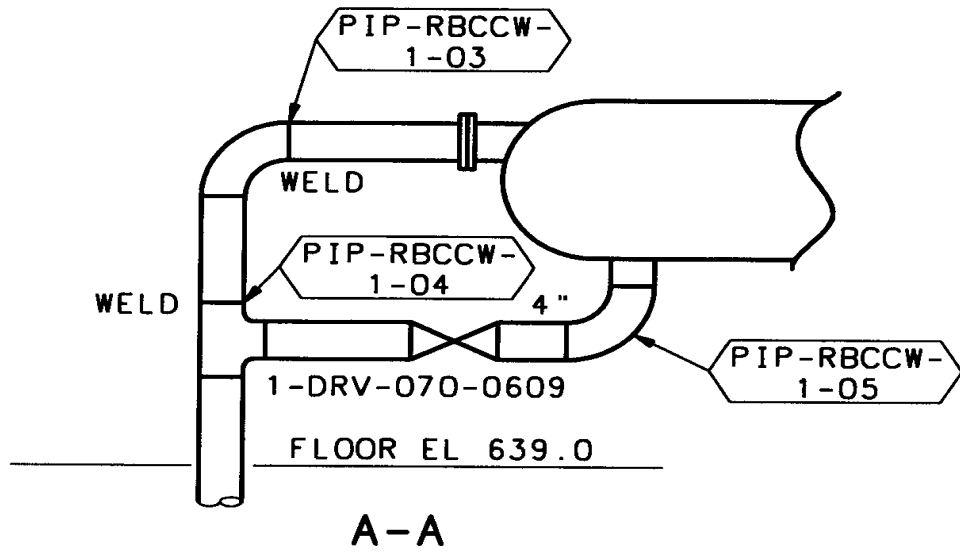
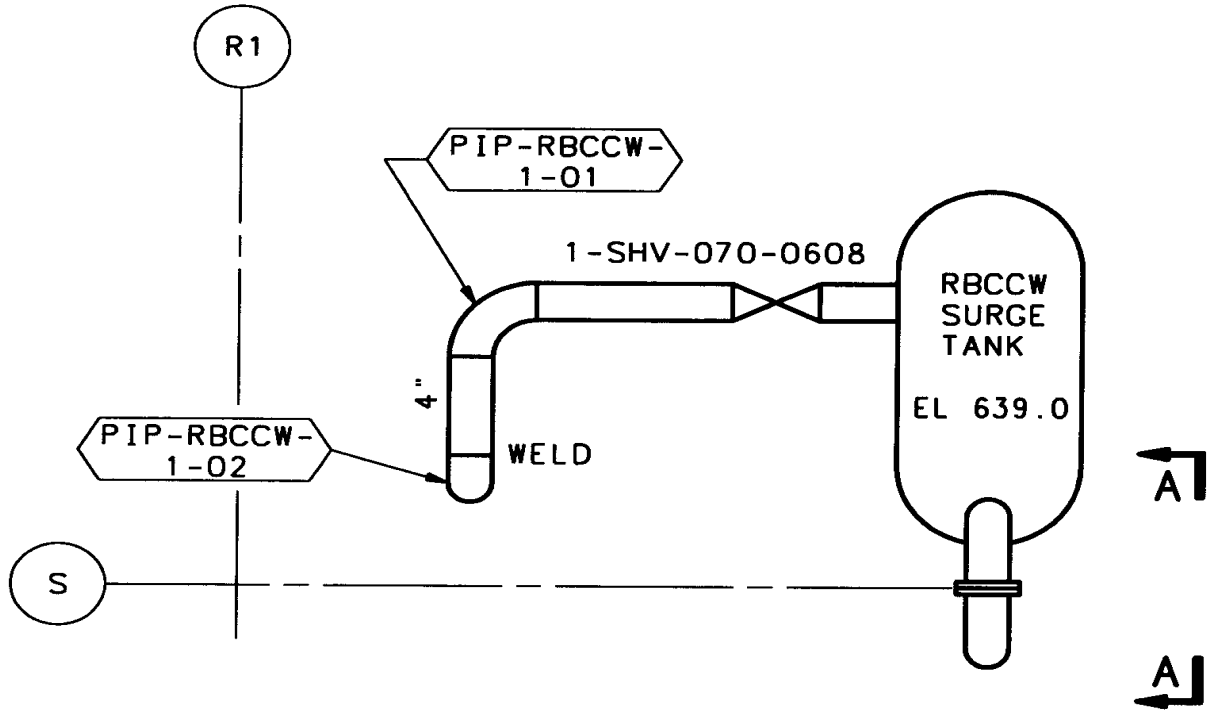
Grid Location Sketches



SKETCH PIP-RWCU-1
 SYSTEM 069
 STEAM TUNNEL
 RB EL 565.0

**Attachment 1
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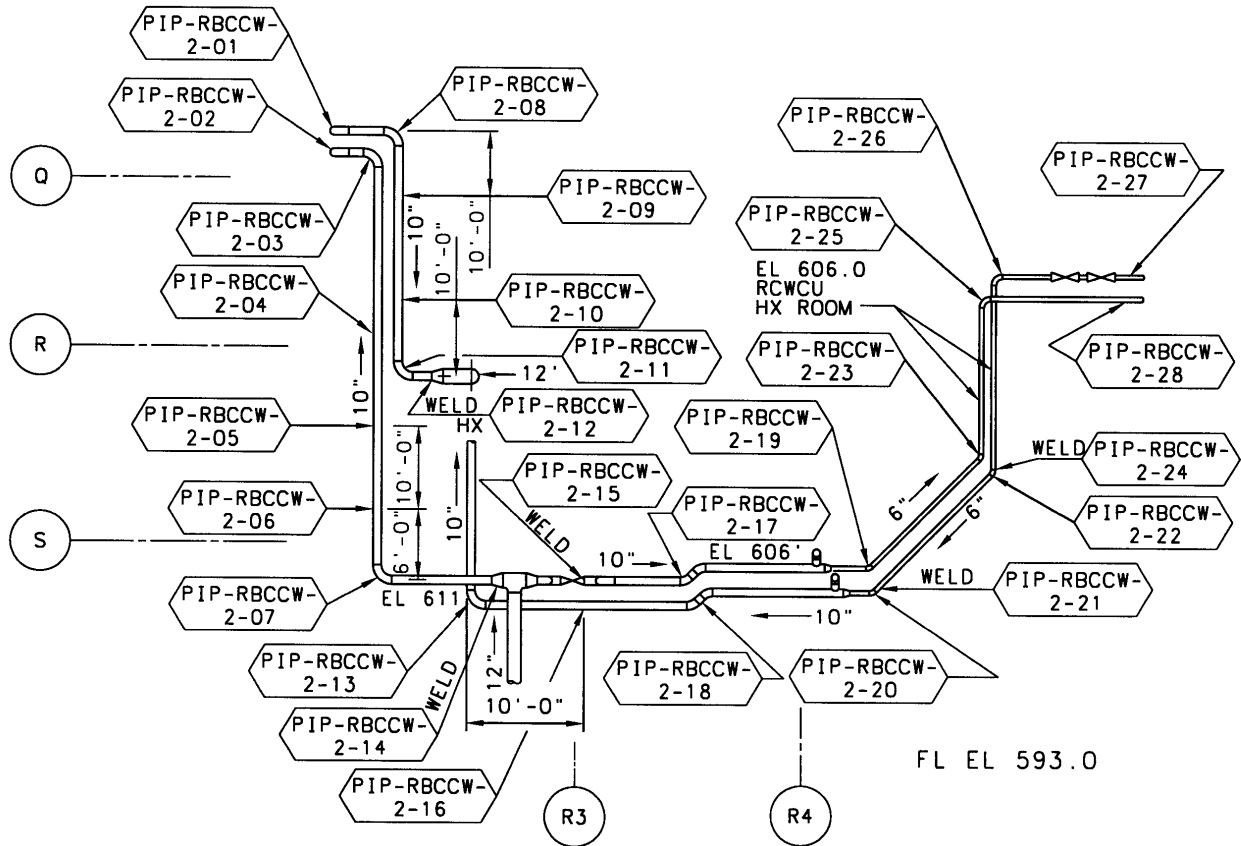
Grid Location Sketches



**SKETCH PIP-RBCCW-1
SYSTEM 070
REF : 1-47W469-9**

Attachment 1
(Page 25 of 33)

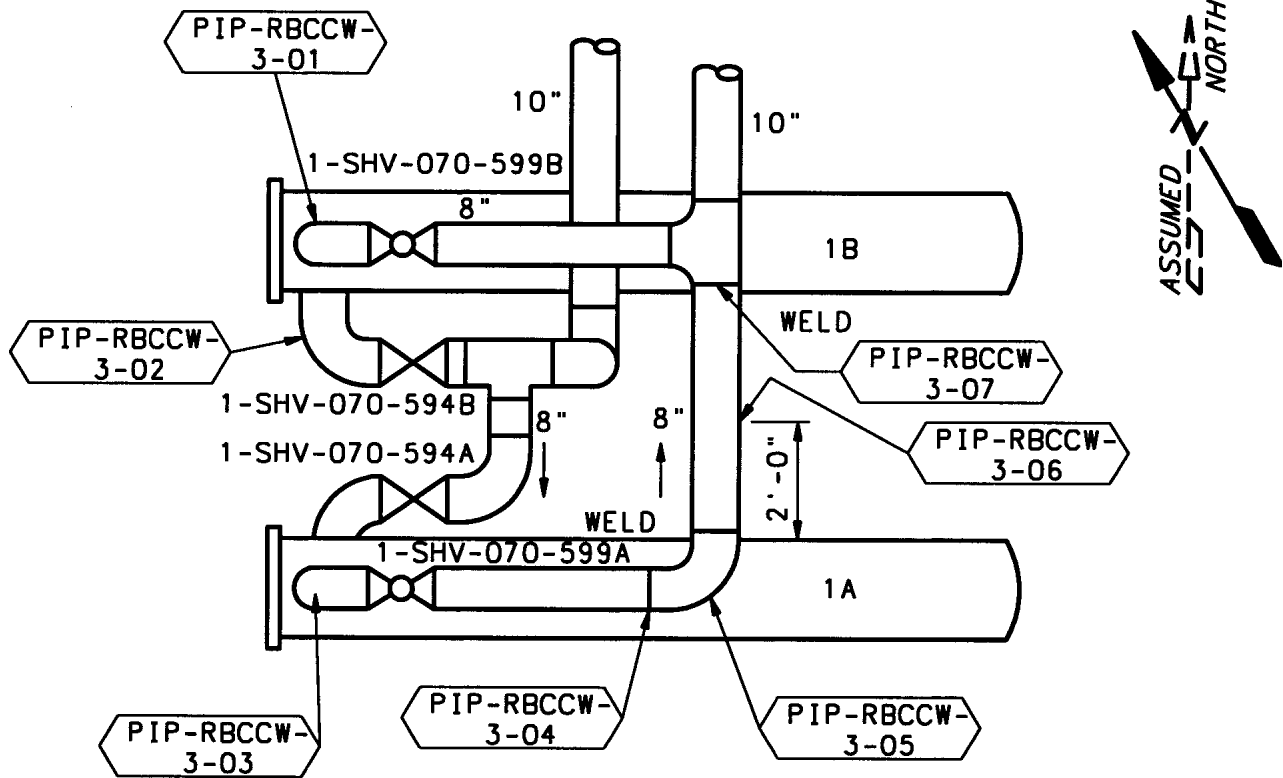
Grid Location Sketches



SKETCH PIP-RBCCW-2
SYSTEM 70

**Attachment 1
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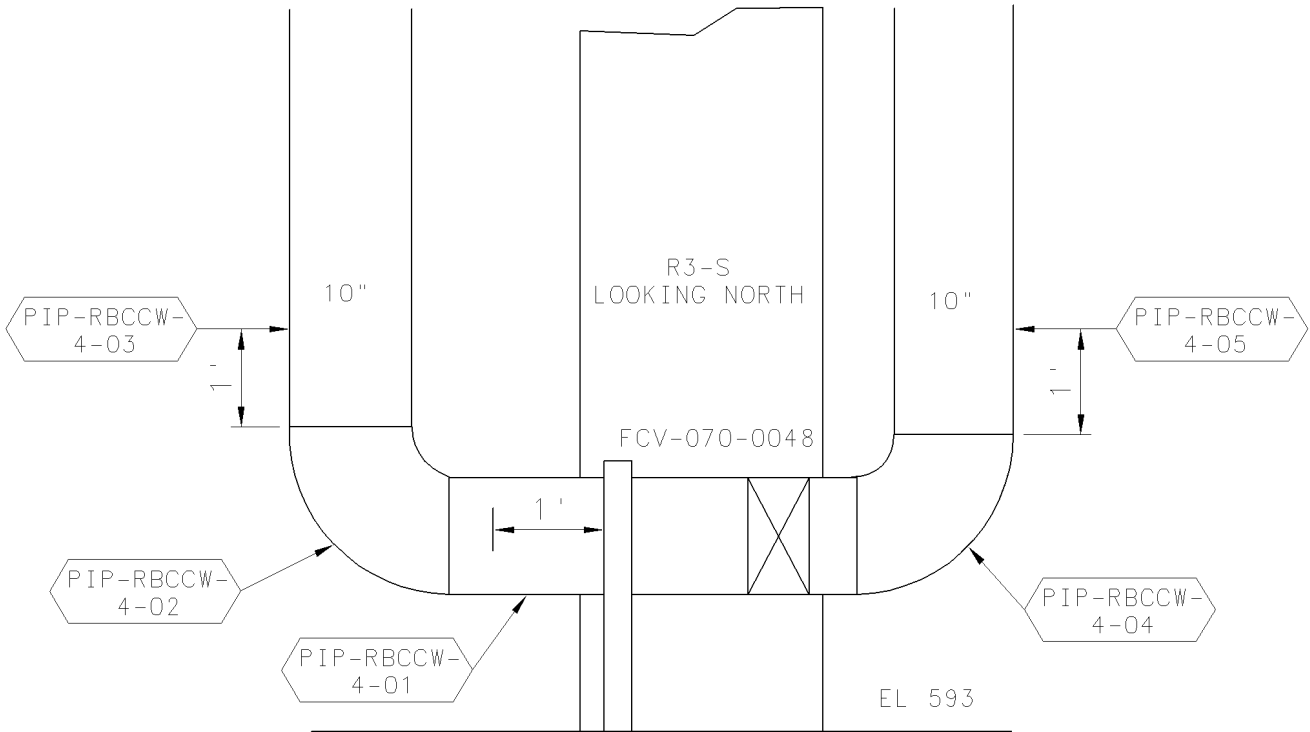
Grid Location Sketches



SKETCH PIP-RBCCW-3
INSIDE FUEL POOL HEAT EXCHANGER CAGE
SYSTEM 070
EL 621.0

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 55 of 61</p>
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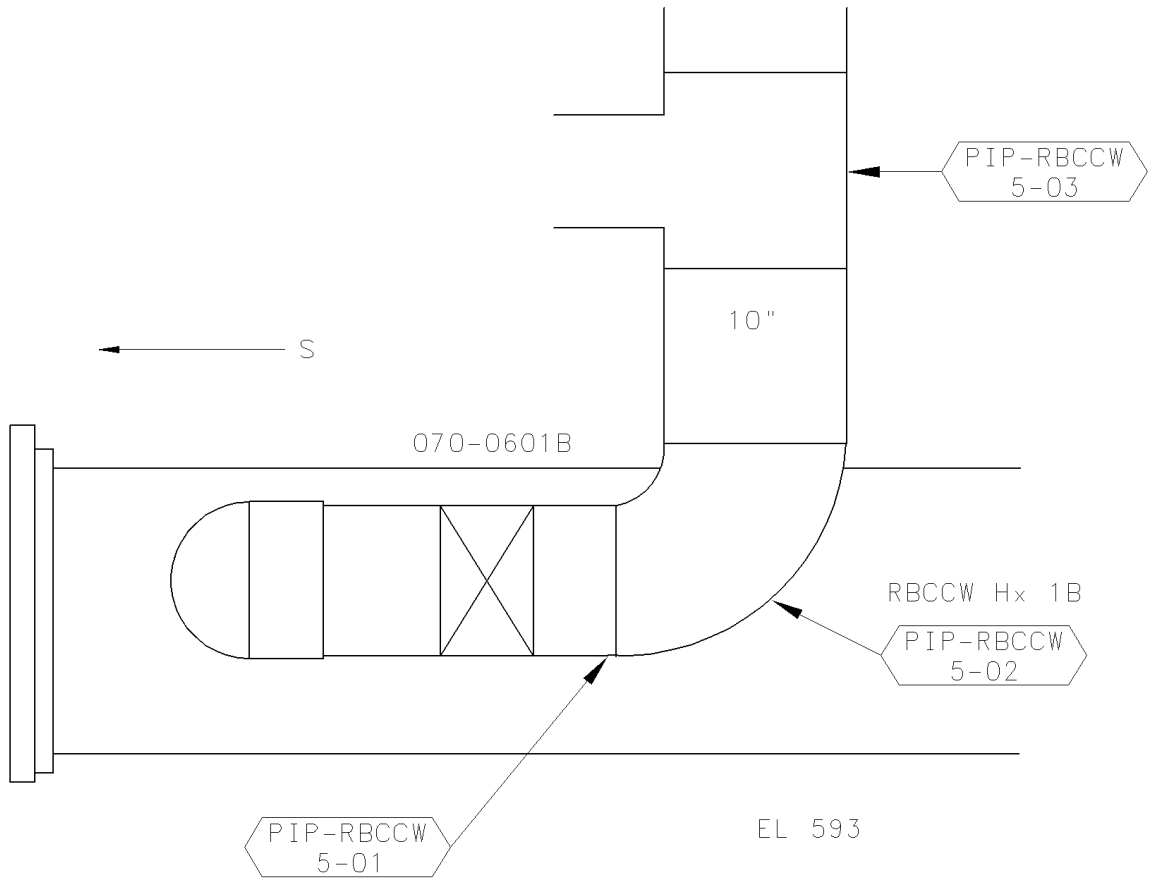
**Attachment 1
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Grid Location Sketches**



SKETCH PIP-RBCCW-4
 SYSTEM 070

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**Attachment 1
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Grid Location Sketches**

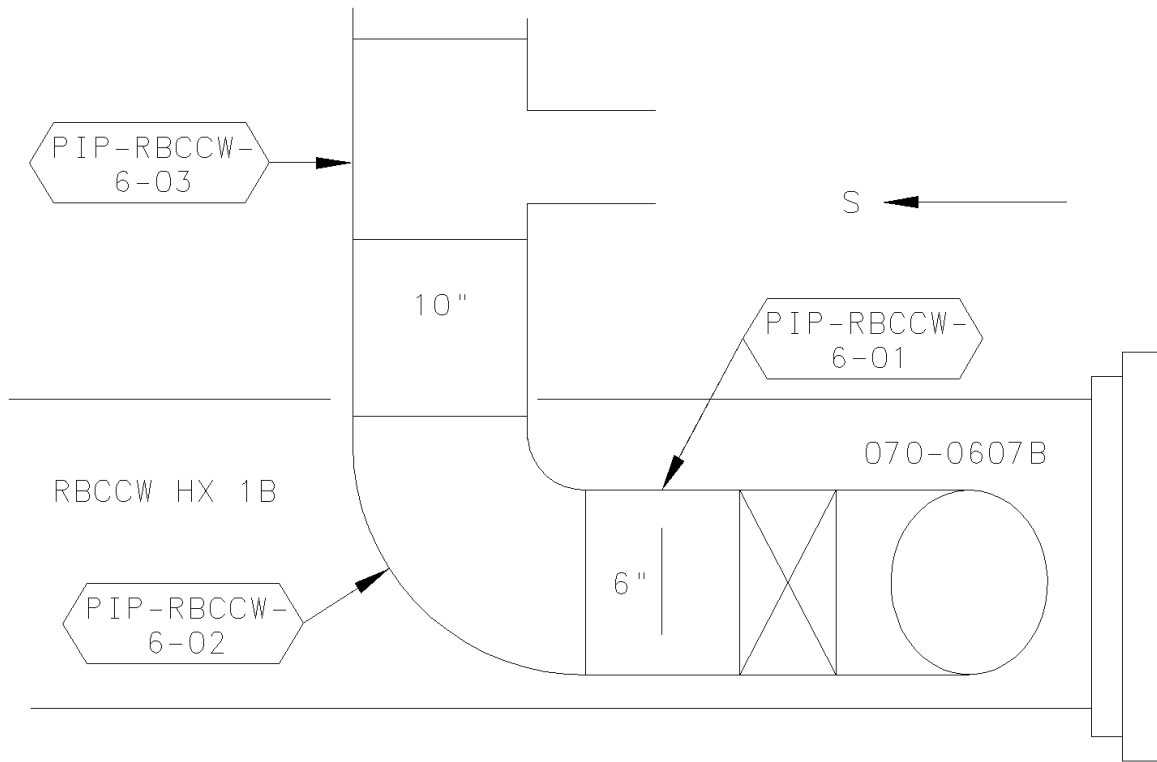


REF : DWG 0-47W464-7
SECTION D7-D7

SOUTH END LOOKING WEST
 SKETCH PIP-RBCCW-5
 SYSTEM 070

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**Attachment 1
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Grid Location Sketches**



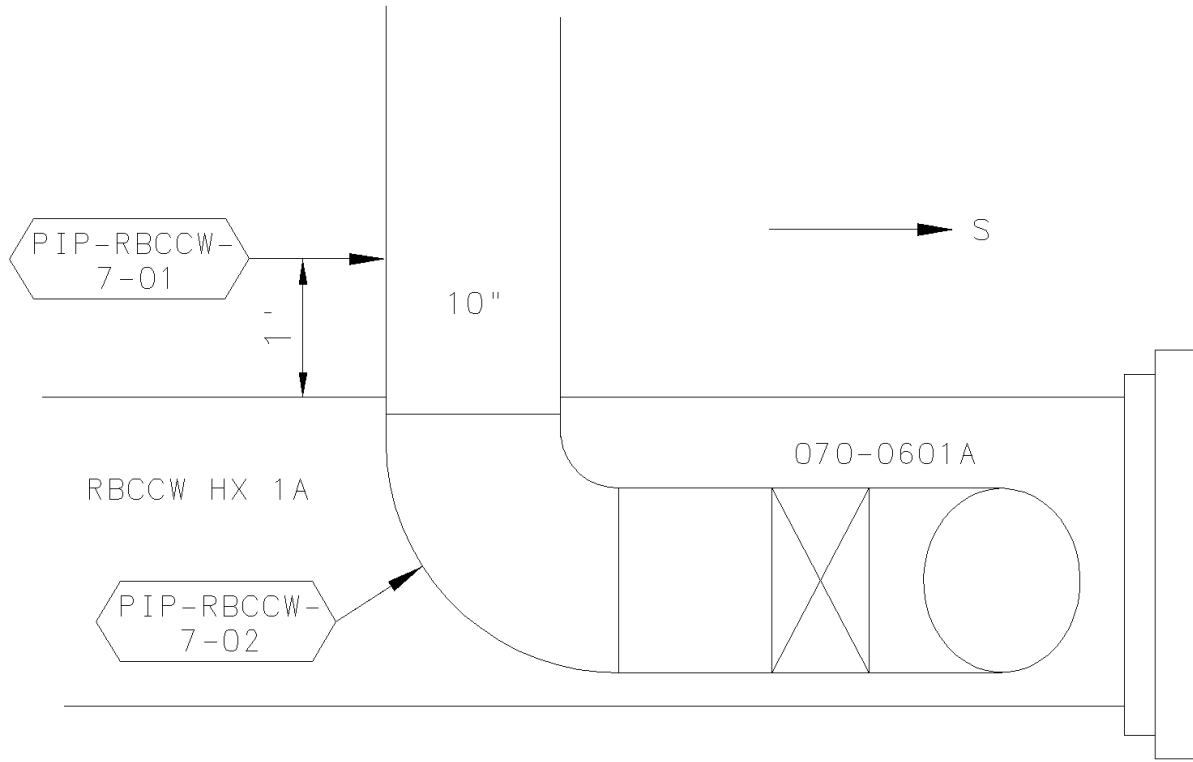
EL 593

REF DWG 0-47W464-7

NORTH END LOOKING WEST
 SKETCH PIP-RBCCW-6
 SYSTEM 070
 SECTION D7-D7

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**Attachment 1
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Grid Location Sketches**

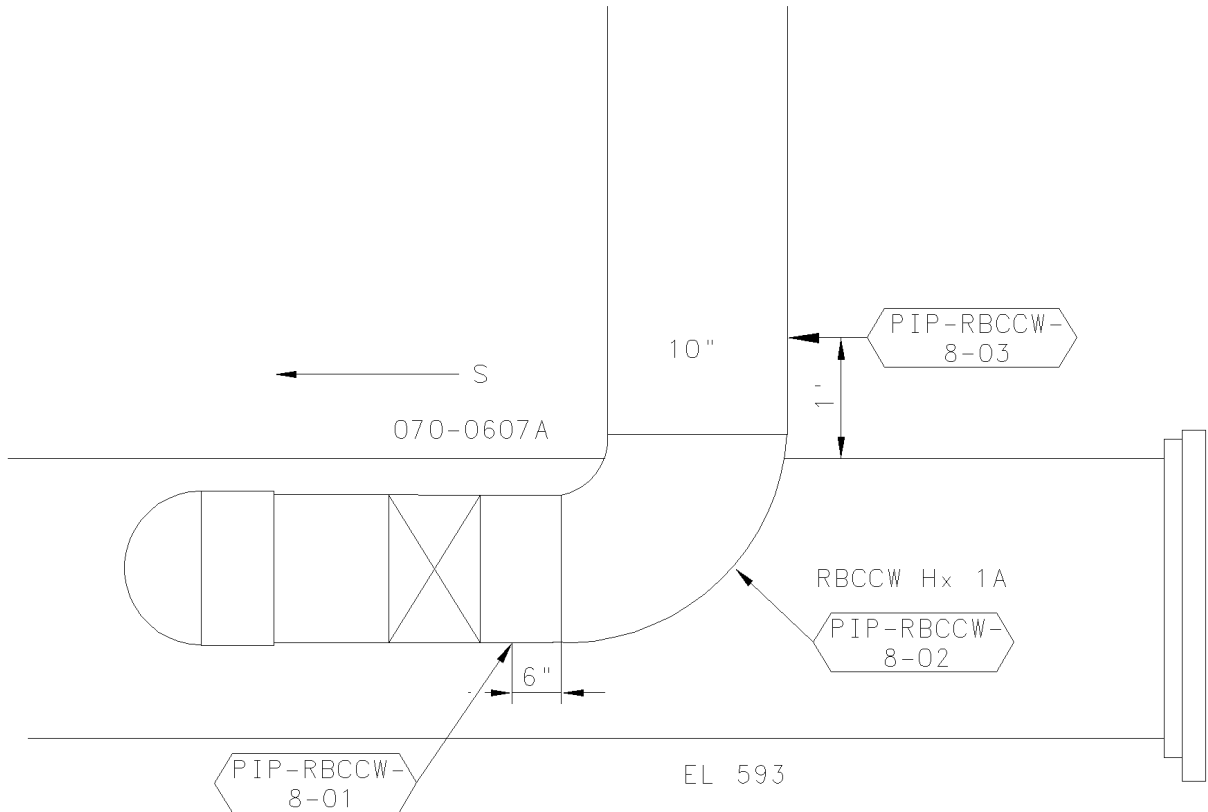


REF DWG 0-47W464-7

SOUTH END LOOKING EAST
 SKETCH PIP-RBCCW-7
 SYSTEM 070

BFN Unit 1	Unit 1 Periodic Inspection Program for License Renewal	1-TI-521 Rev. 0003 Page 59 of 61
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**Attachment 1
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Grid Location Sketches**



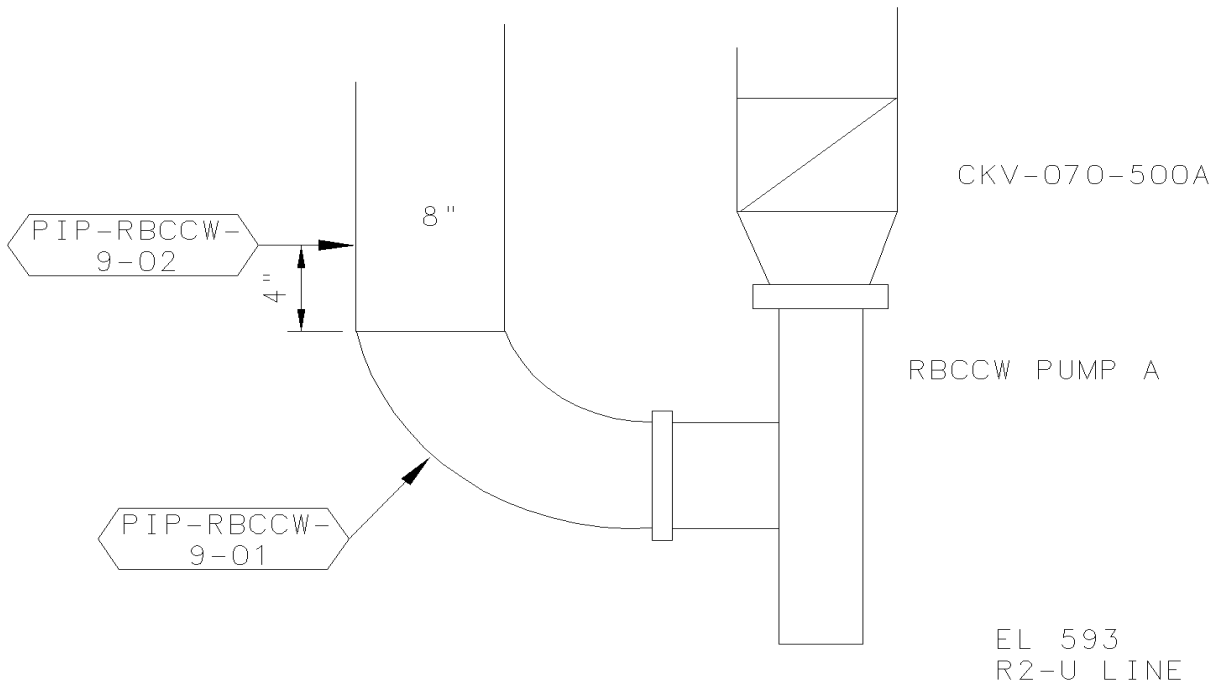
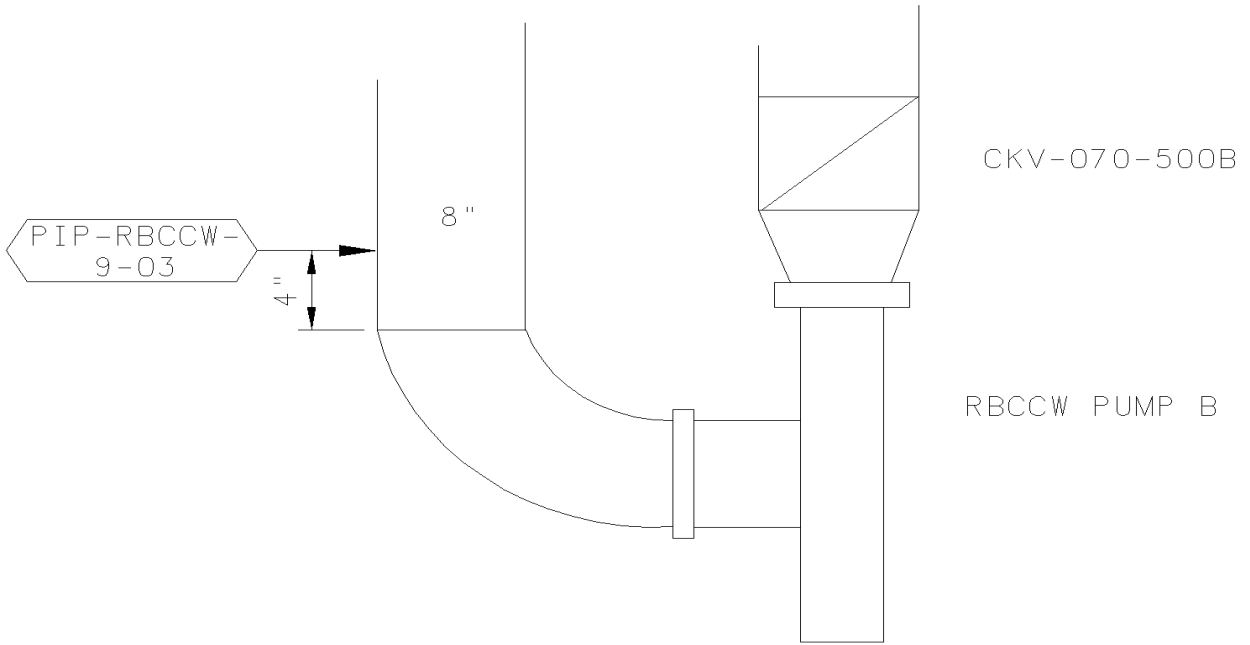
REF : DWG O-47W464-7

NORTH END LOOKING EAST
 SKETCH PIP-RBCCW-8
 SYSTEM 070

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 60 of 61</p>
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**Attachment 1
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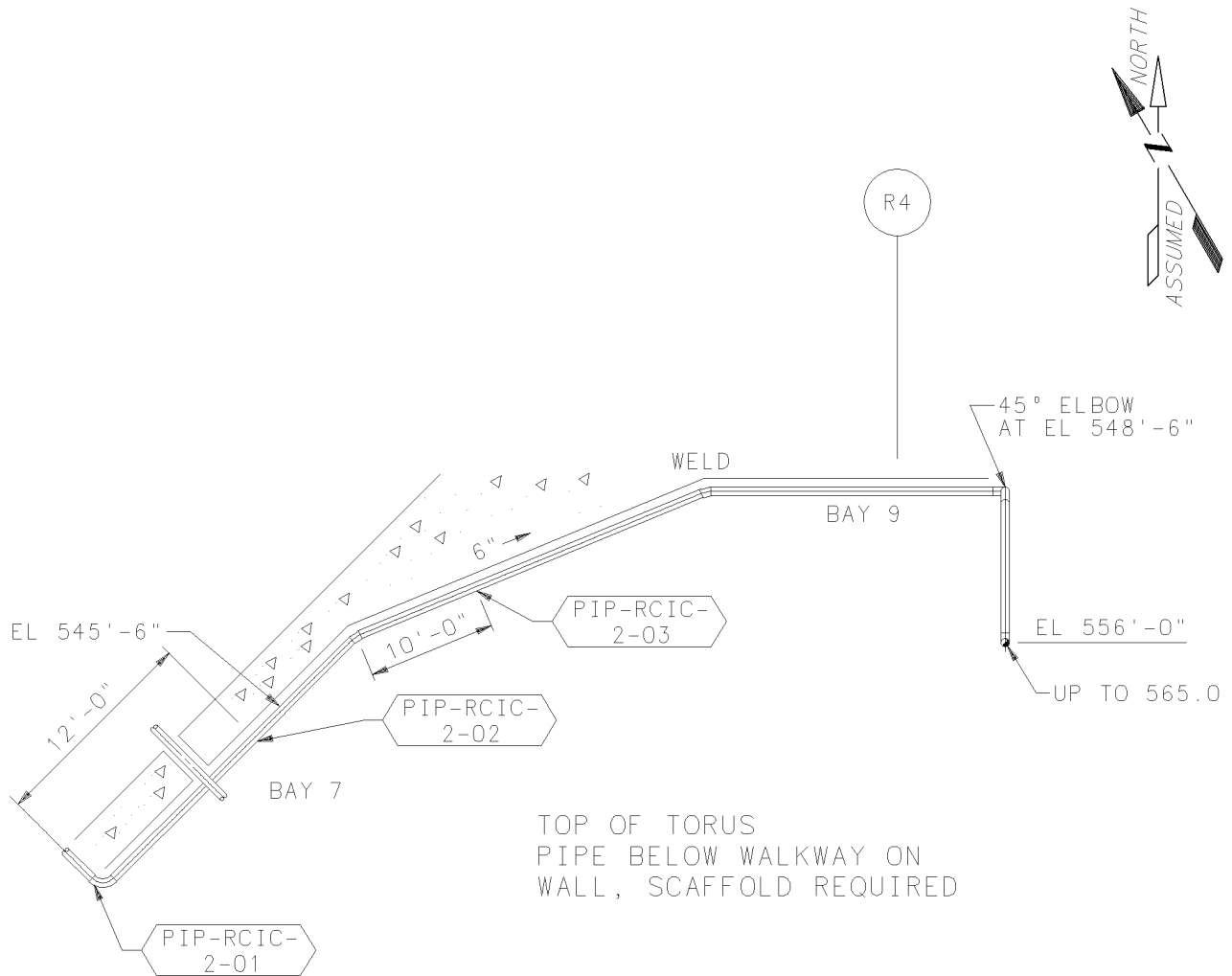
Grid Location Sketches



SKETCH PIP-RBCCW-9
SYSTEM 070

<p>BFN Unit 1</p>	<p>Unit 1 Periodic Inspection Program for License Renewal</p>	<p>1-TI-521 Rev. 0003 Page 61 of 61</p>
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**Attachment 1
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Grid Location Sketches**



SKETCH PIP-RCIC-2
SYSTEM 071
REF: 0-47E456-1