April 13, 2020
L-2020-073
10 CFR 50.55a
10 CFR 2.390

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555-0001

Re: Turkey Point Unit 3
Docket Nos. 50-250
Subsequent Renewed License No. DPR-31
Fifth Ten-Year Inservice Inspection Interval Revised Relief Request No. 6 and Supplemental Information for Train B CCW Return Piping

References:

1. Florida Power & Light Company (FPL) letter L-2020-056, Turkey Point Unit 3, Fifth Ten-Year Inservice Inspection Interval Relief Request No. 6, dated March 30, 2020. NRC's document management system (ADAMS) ML accession number: ML20090K520

FPL requested (Reference 1) relief from the applicable American Society of Mechanical Engineers Section XI Code (ASME Code) requirements to repair certain sections of the degraded Unit 3 Component Cooling Water (CCW) supply and return piping by installing a welded proprietary repair device, PMCap Restoration Method – US Patent 6,860,297 without removing the sections of degraded piping.

Based on recent nondestructive examination (NDE) to characterize the degraded Train B CCW piping, it was determined that relief is not needed for the B CCW supply piping. As such, Attachment 1 includes the Revised Relief Request No.6, which deletes any references requesting relief on the B CCW supply piping. The Revised Relief Request No. 6 supersedes in its entirety the previous relief request (Reference 1). Attachment 2, contains supplemental information specific to the B CCW return piping discussed the during the April 10th, 2020 FPL's presentation.

The PMCap proprietary information is provided separately in Attachment 3. Attachment 4 contains the Affidavit of Mr. Paul S. Manzon of PMC Engineering, certifying that the material provided in Attachment 3 is proprietary in nature and FPL requests that the material in Attachment 3 be withheld from public disclosure under the provisions of 10 CFR 2.390, Public Inspections, Exemptions, Requests for Withholding

The Train A CCW return piping NDE is currently scheduled to be performed in the near future. FPL plans to provide additional Train A CCW return piping specifics as soon as the information becomes available.

If you have any questions or require additional information, please contact Robert J. Hess, Licensing Manager, at (305) 246-4112.

Sincerely,

Robert J. Hess
Licensing Manager
Turkey Point Nuclear Plant

Enclosure
Attachment

cc: USNRC Regional Administrator, Region II, USNRC
USNRC Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant
USNRC Project Manager, Turkey Point Nuclear Plant

ATTACHMENT 1

L-2020-073

Enclosure

TURKEY POINT UNIT 3

REVISED RELIEF REQUEST No. 6

Turkey Point, Unit 3
Fifth 10-Year Interval Revised Relief Request No. 6
Component Cooling Water Welded Repairs for External Corrosion
L-2020-073

In Accordance with 10 CFR 50.55a(z)(2)
--Hardship or Unusual difficulty
without a compensating increase in the level of quality and Safety--

1.0 ASME CODE COMPONENT(S) AFFECTED

The affected components are the Turkey Point Unit 3 Component Cooling Water (CCW) Train A & B return piping.

The 18-inch carbon steel return piping are located outside of the Turkey Point Unit 3 containment. The locations of interest are in the vicinity of the floor penetration in the CCW heat exchanger room.

The return CCW piping was constructed to construction code for pressure piping USAS B31.1-1955 and was later reconciled to code of record ANSI B31.1 1973 Edition through Winter 1976 Addenda. For the purpose of this relief request, the safety significance and quality class of the code of record ANSI B31.1 1973, is considered equivalent to ASME Code Section III, Class 3 piping (References 4 and 5). Accordingly, this piping is subject to repair/replacement requirements of ASME Code, Section XI, IWA 4000.

The following design data pertains to these moderate energy Class 3 CCW return pressure boundary piping:

- Pipe Schedule: 18-inch Sch. STD (t_{nom} = 0.375-inch)
- Design Pressure: 150 psig
- Design Temperature: 200°F
- Material Specification: Carbon Steel, ASME SA-53 Grade A welded

The CCW System loop is the heat sink for the residual heat removal System, the Chemical and Volume Control System, the spent fuel cooling loop and various Reactor Coolant System components. The design basis of the CCW System is to provide sufficient heat removal from the Engineered Safety Features to the ultimate heat sink, post-accident. The system, which is normally operated in an open configuration, is designed with sufficient capability to accommodate the failure of any single, active component without resulting in undue risk to the health and safety of the public following a Maximum Hypothetical Accident.

2.0 APPLICABLE CODE EDITION AND ADDENDA

The Turkey Point, Unit 3 applicable Code for the fifth 10-year Inservice inspection (ISI) Interval is the ASME Code Section XI 2007 Edition with 2008 Addenda (Reference 1). The Turkey Point Unit 3 Fifth ISI 10-Year interval started on February 22, 2014 and ends on February 21, 2024.

3.0 APPLICABLE CODE REQUIREMENTS

The applicable Code sections for which the relief is requested are ASME Code, Section XI, 2007 Edition, with 2008 Addenda. Article IWA-4421, General requirements, of Section XI of the ASME Code, requires that defects be removed in accordance with IWA-4340, IWA-4411, IWA-4412, IWA-4461 or IWA-4462.

It should be noted that use of IWA-4340 is prohibited by 10 CFR 50.55a(b)(2)(xxv), which states: "The use of the provisions of IWA-4340, Mitigation of Defects by Modification, Section XI, 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section are prohibited."

4.0 REASON FOR REQUEST

The Train A CCW return piping degradation has not yet been characterized using ISI non-destructive examination (NDE) techniques. Upon discovery of the actual degraded piping conditions during the Turkey Point Unit 3 refueling outage, which started March 30, 2020, additional evaluation will be performed and additional information will be provided to NRC to supplement this relief request. Hence, for the A CCW return piping this relief request contains two potential options which are deemed to be the two worst possible degraded piping conditions. These options are:

1. Option 1: A through-wall leak.

2. Option 2: Thinning beyond code allowable minimum.

The piping degradation for the Train B CCW return piping has been characterized as a through-wall leak. Additional proprietary and non-proprietary information related to the defect found in Train B CCW return piping and repairs are included in Attachments 2-4 to supplement this relief with the specific information discussed during the FPL/NRC presentation held on April 10, 2020.

10 CFR 50.55a(z) authorizes the Director, Office of Nuclear Reactor Regulation, to approve alternatives to the requirements of paragraphs (b) through (h) of 10 CFR 50.55a, including relief from the prohibition on IWA-4340 specified in 10 CFR 50.55a(b)(2)(xxv). Accordingly,

- Relief is requested from the requirements of IWA-4421 to remove defects in accordance with IWA-4411, IWA-4461, or IWA-4462 on the subject piping identified in this request, prior to performing repair/replacement activities.

- Relief is also requested from the prohibition of IWA-4340 in 10 CFR 50.55a(b)(2)(xxv).

This revised relief request is submitted to allow the installation of pressure retaining parts that will be used to restore areas with unacceptable wall thickness loss or through wall leakage caused by corrosion. Installation of replacement pressure retaining parts without first removing the degraded portions of the subject CCW supply and return piping does not comply with the requirements of IWA-4421.

The proposed alternative has been developed because other repair/replacement options that would fully comply with IWA-4421 create a hardship or unusual difficulty without a compensating increase in the level of quality and safety for reasons detailed in this request.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

Proposed Alternative

In lieu of the requirement of IWA-4421 to remove the defective portion of the component prior to performing repair/replacement activities by welding, unacceptable wall thickness loss or through-wall leakage caused by localized general or pitting corrosion shall be corrected by installation of replacement pressure retaining parts that fully restore the degraded piping. Accordingly,

- In the case of a through-wall leakage in the subject components, an IWA-4340 modification/repair is needed to be installed around the circumference of the degraded piping without removal of the degraded area. The through-wall leak is to be first sealed using a housekeeping repair, to enable additional welding activities on a dry surface. ASME Code Case N-513-3 will be used to justify the structural stability of the CCW piping for past operability, as well as continued operation during the outage, prior to installation of the IWA-4340 modification /repair.

- In the case of localized thinning that results in stresses that exceed the Code allowable stresses in the subject components, an IWA-4340 modification/repair is to be installed around the circumference of the degraded piping without removal or local repair of the degraded area.

- The modification/repair is a welded proprietary repair device, PMCap Restoration Method – US Patent 6,860,297, hereafter referred to as PMCap, installed on the outside of the pipe, and is designed in accordance with ASME B31.1, 1973 edition

w/Addenda through Winter 1976, to replace the pressure boundary and to maintain the structural integrity of the degraded piping. The proposed repair is to restore the entire sections of 18-inch CCW piping containing the degradation (pipe/elbow external wall loss due to corrosion) with 20" OD PMCaps. The modification shall provide for the structural integrity of the pipe, such that it no longer relies on the defective area, including projected corrosion growth.

- The PMCaps are ASME Code compliant components that replace existing Code pressure boundary components with new Code pressure boundary components.

- The PMCaps are constructed of carbon steel and will be protected from future external corrosion by coating the PMCaps per FPL Protective Coatings for Areas Outside the Reactor Containment requirements and use of a redesigned boot seal to prevent exposure to corrosive environments and/or flood water.

- The PMCaps are constructed with all welds being full penetration and are configured to be full penetration to the existing 18" piping. Existing piping locations where PMCaps are to be attached will be examined to assure adequate soundness and material thickness.

- The PMCap weld designs are per the requirements of ANSI B31.1-1973, the piping code of construction for the CCW system at Turkey Point Nuclear Units 3 and 4 (Reference 6).

- The fabrication/assembly of the PMCap follows the welding guidelines for Code Class 3 components.

- All welding for the installation of the PMCap is accomplished per requirements of the FPL Welding Control Manual and vendor drawings and qualified as pressure boundary welds.

- The proposed alternative is the installation of PMCap in accordance with IWA-4340 of the 2013 Edition of Section XI (Reference 2), except as noted below regarding flaw growth and future examinations, with the repair being for extended acceptance. NRC is proposing to allow use of IWA-4340 of Section XI, 2011 Addenda through 2017 Edition in the Federal Register (Reference 3) with the following three conditions:

  1) Cannot be used for crack-leak defects or those associated with flow accelerated corrosion.
  2) Have to include a rate of degradation equal to either two times the actual measured corrosion rate at the location, or four times the estimated maximum corrosion rate for the piping system.

3) Wall thickness measurements to be taken in the vicinity of the modification and relevant base metal during at least the next two refueling outages.

These conditions related to the form of degradation, future degradation, and future examination. The subject CCW pipe degradation is caused by external corrosion not cracking, and not flow accelerated corrosion, therefore IWA-4340 is applicable. Regarding Condition # 2, since the component will be metallized and externally coated, the degradation mechanism is mitigated, corrosion is no longer a valid degradation mechanism. Regarding Condition # 3, because external corrosion is no longer a valid degradation mechanism, future wall thickness examinations are not required.

- Applicable only for the case that a through-wall leak is discovered, prior to installation of the modification/repair, the through-wall leakage will be stopped with a seal. Stopping the leakage is only necessary to enable installation of the PMCap.

- The PMCap is to be installed around the circumference of the degraded piping without removal of the degraded area. The localized flaw appears to be due to external corrosion caused by drainage water in a salt air environment contacting the outside surface of the piping. The localized wall thickness in the degraded area of piping will be further characterized using ultrasonic (UT) examination techniques, and a PMCap will be applied which covers the degraded area and accounts for any future wall loss.

- Where the PMCap is to be welded to the 18-inch pipe, a UT thickness measurement shall also be performed to confirm that material thickness is adequate for the repair design.

- The locations where the PMCap is to be welded to the system pressure boundary shall be located sufficiently far from locations of identified wall thinning to preclude the growth of identified corrosion from challenging the integrity of the repair for the remaining life of the component to which the PMCap is welded.

- The PMCap repair is designed such that it shall not rely on the existing pipe wall. After installation, an aluminum coating will be applied to the outer surface of the component in order to prevent any future external degradation. Therefore, future external wall loss will not be considered.

- Restoration of the defective or locally thinned area(s) at each location shall be performed only once.

- Welding of the PMCap to the CCW pipe and all required non-destructive examination (NDE) are per FPL controlled processes for ASME Class 3 components.

- The PMCaps will include ports to perform post-installation pressure testing.

- Future NDE will be in accordance with ASME Code, Section XI, Table IWD-2500-1 for Examination Category D-A. The piping internal to the PMCap boundary is inaccessible and will not be examined in the future because credit will no longer be taken for its pressure retaining function, thus, it will be outside the Inservice examination requirements of Section XI of the ASME Code. Since the outer surface is being coated external corrosion will not recur.

Basis for the Request

Complying with IWA-4421 requirements to remove degraded portions of this piping prior to performing a repair/replacement activity represents a hardship or unusual difficulty without a compensating increase in the level of quality and safety for the following reasons:

Removal of defective portions of this piping would require that the piping be isolated and depressurized. The 18-inch piping cannot be isolated for the following reasons:

- The Turkey Point Unit 3 isolation valves that are needed to close are:

    - CCW "A" Train Return Piping – Valves 3-835A, 3-835B;
    - CCW "B" Train Supply Piping – Valves 3-787H, 3-713C;
    - CCW "B" Train Return Piping – Valves 3-835B, MOV-3-749B.

  Previous attempts to close these isolation valves (upstream of the PMCap locations) have not provided adequate isolation of the CCW piping to be able to perform piping repair work. These isolation butterfly valves are leaking by preventing a moisture free environment to allow welding. The proposed weld area for the pipe butt-welds must be dry as required by the FPL Welding Control Manual.

- CCW system isolation to allow maintenance work on the leaking upstream valves, is operationally not possible due to requirements of the CCW system to remain operational at all plant modes (Operable for Modes 1, 2, 3 and 4 per Technical Specification 3.7.2; and functional for Modes 5 and 6 as heat sink for residual heat removal system and for the Spent Fuel pool heat exchangers).

- Installation of a mechanical stop in the 18 inch piping for system isolation is potentially possible. However, installation of a line stop will result in a permanent branch connection on the CCW piping that may require the design of a new support/restraint in an otherwise congested piping area. Also, installation of the new branch line is not entirely desirable because this activity could result in metal shavings due to the boring process and the removed portion of the pipe wall dislodging, entering the system, and becoming debris that could hinder system operation and make it difficult to retrieve the loose foreign material.

- Use of a freeze seal to isolate the 18-inch CCW pipes in order to replace the degraded piping section presents some complications in establishing a freeze plug on this large bore vertical piping with fluid flow in the pipe. The size of the pipe presents some problem with this method and situating the freeze seal equipment in the CCW Heat Exchanger Room is a challenge in the congested piping area. The installed freeze seal equipment on the piping will impose new added design loads on the piping and will require the provision of new or temporary pipe supports and re-analysis of the affected piping portion of the CCW system.

In conclusion, the ASME B & PV Code Section XI requirement, IWD-3120(b), is to correct a component containing a flaw(s). The proposed alternative is to relocate the pressure boundary by restoring the area, with a twenty (20) inch diameter PMCap with a full penetration weld at locations previously confirmed to have adequate material thickness and not correct the piping containing the flaw(s) but show by qualitative assessment that the material and the presence of the postulated worst case flaw(s) will not be detrimental to the pressure retaining function of the component cooling water piping system. For these reasons, Turkey Point believes that the proposed alternative will provide reasonable assurance of continued structural integrity of the subject CCW components.

6.0 DURATION OF PROPOSED ALTERNATIVE

The licensee requests approval of the proposed alternative for the remaining life of the plant, as supported by the PMCap design documentation, or until such time that further repair/replacement activities are required for the affected portions of the CCW system piping, whichever occurs first.

7.0 PRECENDENT

1. Duke Energy Carolinas, LLC, Oconee Nuclear Station, Units 1 and 2, Relief Request Serial #15-ON-001, ADAMS Accession No. ML15349A453.

8.0 REFERENCES

1) American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code, Section XI, 2007 Edition, 2008 Addenda.
2) American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2013 Edition.
3) Federal Register, Volume 83, Number 218, November 9, 2018, "Proposed Rules".
4) Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-Steam-, and Radioactive-waste-containing Components of Nuclear Power Plants".
5) NextEra Energy Engineering Design Standard, STD-M-027, Rev. 6, "ASME Section XI Repair and Replacement".
6) ASME/ANSI B31.1, 1973 Edition w/Addenda through Winter 1976

Attachment 2

L-2020-073

Supplemental Information
on
B CCW Return Piping

Supplemental Information on Train B CCW Return Piping

Attachment 2 contains the supplemental information for Train B CCW return degraded piping to supplement the revised response to questions discussed during the April 10, 2020 NRC/FPL presentation. It should be noted that the proprietary information regarding the design, installation and welding details is provided in Attachment 3. Additionally, the corresponding Affidavit is provided in Attachment 4.

NRC Requested Information:

1. Provide a Map of as found pipe wall thickness and the NDE thickness profile as it applies to the total length of the PMCap
2. Drawing and design spec of the PMCap
3. Drawing showing placement of the PMCap overlayed on the pipe wall thickness
4. Weld details for the installation of the PMCap
5. NDE performed on PMCap Installation weld
6. Analysis of effect of the extra weight of the PMCap on supports
7. Future monitoring of the area
8. Justification for this being a permanent repair.

FPL Responses

Response to No. 1
Map of as found pipe wall thickness and NDE report is enclosed in Attachment 2.

Response to No. 2
Drawing and design specs of the PMCap are provided in Attachment 3. (Information is of proprietary nature).

Response to No. 3
Drawing showing placement of the PMCap overlayed on the pipe wall thickness is enclosed in Attachment 2.

Response to No 4
Weld details for the installation of the PMCap are provided in Attachment 3. (Information is of proprietary nature).

Response to No 5
The PMCap welding process included a combination of GTAW and SMAW (GTAW Root/SMAW Fill) welds.
• Preheat – Ambient (>50F)
• PWHT – Not required by construction code due to thickness.
• NDE – Visual and Surface (MT or PT) Exams of Root and Final for all fabrication and installation groove welds.

Response to No 6

The support system for the CCW lines affected by the installation of the PMCaps has been analyzed for the additional loading from the PMCaps. The additional loading due to the PMCaps is within the design margins of the support system; therefore, no additional supports or support modifications are required.

Response to No 7

After installation of the PMCap, the CCW piping and PMCap components will be applied with an aluminum oxide thermal spray coating to prevent future corrosion. To facilitate future Inservice Inspection Program activities, a hole will be drilled into the underlying CCW piping to pressurize the annulus between the pipe and PMCap components.

Future NDE will be in accordance with ASME Code, Section XI, Table IWD-2500-1 for Examination Category D-A. The piping internal of the PMCap boundary will be inaccessible and will not be examined in the future because credit will no longer be taken for its pressure retaining function, and hence it will be outside the Inservice Examination requirements of Section XI of the ASME Code.

Response to No 8

The PMCaps are ASME Code compliant components that replace existing Code pressure boundary components with new Code pressure boundary components, and relocate the pressure boundary to the twenty 20” diameter PMCaps. The PMCaps are constructed of carbon steel and will be protected from future external corrosion by installation of coatings on the PMCaps. A redesigned boot seal will be used to prevent exposure to corrosive environments and/or flood water. PMCaps are constructed with all welds being full penetration and are configured with full penetration welds to the existing 18” piping. PMCaps have been designed to function as the pressure boundary of the piping system. The CCW piping system has been evaluated to qualify the additional loading from the installation of the PMCaps without any additional modifications required for the remaining life of the component to which the PMCap is welded.

FPL

General Engineering Examination

Report Turkey Point

GIR Number #	
20-057	
WO #	6 KW 05APR2020
40548548-16	
Unit/Common/Other (Shop, etc)	
Unit 03	

Subject / Component:	Photo Attached:	Outage:
CCW "B" Return Piping	Yes	U3R31
Reference / Procedure:	Requestor:	Request Date:
See Below / NDE 5.28 Rev. 1	PTN Engineering	04 April 2020

Inspection Objective / Criteria: Ultrasonic Thickness Measurement of the Component Cooling Water "B" train Return Line prior to installation of the PM Cap per EC291917. / Report results to PTN Engineering for evaluation.

Results / Objective Evidence: Ultrasonic Thickness Measurement was performed on the CCW "B" train Return line piping from 15'-6" elevation to 18'-2" elevation using Olympus 38DL Plus S/N 100113812, Panametrics D791-RM 5MHz transducer (S/N 712895), and Steel calibration block 0.100" – 0.500" (S/N 07-4764).

Grid was established on pipe in 2" x 2" blocks, with the extra-dose of the upstream elbow orienting the ZERO Reference Line (see Diagram 2) and labeled based upon direction of flow. Original inspection area: 360° circumferentially (1 through 29), and 24" longitudinally (A through L) ending 2" above the CCW HX Room floor (18' elevation). An additional 8" upstream (DD through AA) was added due to PM Cap alignment (see Diagram 1 & 3).

Recorded readings within the grid blocks were the lowest thickness measurement identified during a 100% scan of the grid block.

Grid location: E23 is the existing 5/8" diameter through-wall hole (Ref. AR 02350581), E21 is below screening value at 0.104", and G23 is lowest above screening at 0.109" (see Table 1). At each of these locations (E23, E21 and G23) readings were taken ½" on either side of the low point in both longitudinal and circumferential directions, and distances measured between where the material returns to at/above screening value (see Table 2).

See: Table 1 and 2 for all thickness readings, Diagram 1, 2, & 3 for grid and flaw orientation, and Pages 6 through 7 for pictures.

Note: Piping is 18" Schedule 40s/STD Carbon Steel with Nominal Wall Thickness of: 0.375"

Reference: AR#: 02350581, 02211843, 01981540
Drawings: 5613-P-614-S Sh. 2 Rev. 2; 5613-M-3030 Sh. 1 Rev. 27, and Sh. 2 Rev. 21

Comments: Due to O.D surface condition of the piping, "100%" scanning in the grid blocks was "best effort/ to extent possible".

Keith Arsenault / Joshua Block / Wheeler Morley — 05 April 2020
Examination Performed By — Date

Reviewed By: Donna R Slivon — 4/12/2020
Signature — Date

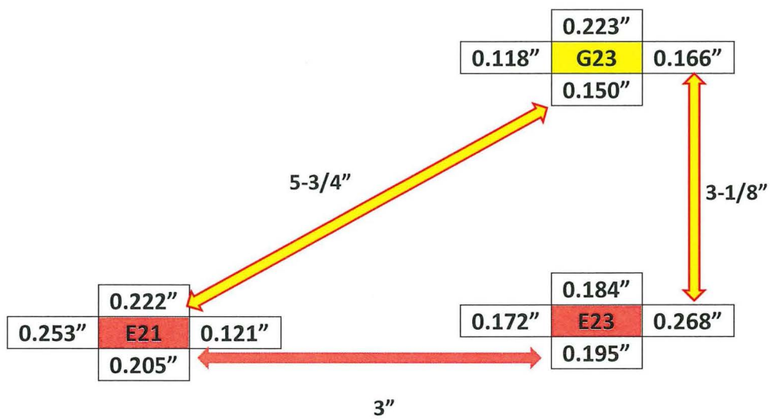
TABLE 1:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
L	0.351”	0.363”	0.362”	0.368”	0.367”	0.364”	0.368”	0.369”	0.362”	0.371”	0.370”	0.380”	0.376”	0.371”	0.375”	0.381”	0.370”	0.370”	0.370”	0.368”	0.366”	0.365”	0.361”	0.368”	0.364”	0.364”	0.362”	0.356”	0.364”	L
K	0.343”	0.334”	0.360”	0.368”	0.360”	0.362”	0.363”	0.370”	0.368”	0.380”	0.379”	0.385”	0.388”	0.383”	0.382”	0.346”	0.360”	0.364”	0.327”	0.360”	0.248”	0.354”	0.308”	0.359”	0.340”	0.350”	0.351”	0.343”	0.352”	K
J	0.352”	0.358”	0.351”	0.363”	0.363”	0.350”	0.352”	0.375”	0.378”	0.380”	0.386”	0.391”	0.390”	0.391”	0.323”	0.324”	0.321”	0.328”	0.326”	0.310”	0.258”	0.288”	0.249”	0.331”	0.329”	0.329”	0.308”	0.310”	0.349	J
I	0.360”	0.371”	0.375”	0.365”	0.378”	0.370”	0.374”	0.380”	0.384”	0.386”	0.390”	0.388”	0.351”	0.348”	0.309”	0.211”	0.336”	0.331”	0.323”	0.327”	0.301”	0.280”	0.316”	0.309”	0.343”	0.312”	0.312”	0.291”	0.355”	I
H	0.367”	0.372”	0.376”	0.378”	0.379”	0.380”	0.379”	0.382”	0.384”	0.387”	0.390”	0.378”	0.352”	0.334”	0.333”	0.330”	0.326”	0.329”	0.325”	0.314”	0.270”	0.254”	0.236”	0.267”	0.311”	0.312”	0.312”	0.279”	0.151”	H
G	0.355”	0.377”	0.375”	0.380”	0.383”	0.380”	0.380”	0.384”	0.386”	0.385”	0.384”	0.382”	0.345”	0.321”	0.320”	0.324”	0.309”	0.308”	0.304”	0.310”	0.191”	0.218”	0.109”	0.224”	0.290”	0.315”	0.287”	0.286”	0.136”	G
F	0.352”	0.356”	0.374”	0.369”	0.377”	0.376”	0.374”	0.378”	0.378”	0.380”	0.379”	0.375”	0.341”	0.345”	0.312”	0.292”	0.292”	0.295”	0.310”	0.286”	0.123”	0.336”	0.145”	0.181”	0.300”	0.342”	0.348”	0.341”	0.328”	F
E	0.369”	0.358”	0.370”	0.377”	0.377”	0.378”	0.377”	0.380”	0.380”	0.378”	0.377”	0.375”	0.338”	0.315”	0.302”	0.318”	0.273”	0.184”	0.150”	0.188”	0.104”	0.215”	0	0.193”	0.318”	0.336”	0.343”	0.342”	0.312”	E
D	0.346”	0.363”	0.367”	0.377”	0.378”	0.380”	0.376”	0.378”	0.379”	0.380”	0.382”	0.355”	0.319”	0.297”	0.309”	0.318”	0.183”	0.162”	0.135”	0.170”	0.145”	0.212”	0.218”	0.276”	0.252”	0.248”	0.365”	0.339”	0.298”	D
C	0.365”	0.336”	0.332”	0.358”	0.377”	0.376”	0.372”	0.379”	0.379”	0.382”	0.373”	0.312”	0.297”	0.306”	0.282”	0.218”	0.270”	0.246”	0.198”	0.141”	0.201”	0.185”	0.165”	0.227”	0.256”	0.236”	0.137”	0.368”	0.374”	C
B	0.290”	0.272”	0.315”	0.307”	0.376”	0.378”	0.347”	0.219”	0.379”	0.331”	0.217”	0.219”	0.265”	0.286”	0.277”	0.149”	0.294”	0.284”	0.203”	0.210”	0.181”	0.191”	0.138”	0.255”	0.249”	0.290”	0.270”	0.303”	0.275”	B
A	0.240”	0.341”	0.342”	0.318”	0.376”	0.380”	0.370”	0.376”	0.379”	0.170”	0.170”	0.253”	0.284”	0.289”	0.304”	0.271”	0.297”	0.279”	0.233”	0.275”	0.220”	0.264”	0.245”	0.261”	0.291”	0.300”	0.318”	0.323”	0.236”	A
AA	0.358”	0.363”	0.366”	0.371”	0.368”	0.369”	0.369”	0.374”	0.374”	0.378”	0.376”	0.376”	0.344”	0.337”	0.364”	0.345”	0.346”	0.335”	0.318”	0.296”	0.295”	0.322”	0.320”	0.336”	0.355”	0.346”	0.363”	0.313”	0.255”	AA
BB	0.364”	0.365”	0.368”	0.373”	0.375”	0.371”	0.376”	0.377”	0.379”	0.379”	0.375”	0.379”	0.370”	0.369”	0.371”	0.370”	0.269”	0.361”	0.359”	0.357”	0.349”	0.332”	0.347”	0.354”	0.360”	0.362”	0.326”	0.364”	0.262”	BB
CC	0.372”	0.370”	0.374”	0.379”	0.380”	0.384”	0.382”	0.384”	0.386”	0.386”	0.383”	0.384”	0.374”	0.369”	0.372”	0.371”	0.371”	0.364”	0.364”	0.360”	0.357”	0.351”	0.351”	0.355”	0.356”	0.363”	0.366”	0.369”	0.306”	CC
DD	0.342”	0.377”	0.380”	0.381”	0.378”	0.381”	0.380”	0.381”	0.380”	0.381”	0.379”	0.378”	0.372”	0.365”	0.369”	0.366”	0.362”	0.367”	0.362”	0.362”	0.354”	0.355”	0.354”	0.359”	0.362”	0.367”	0.367”	0.370”	0.294”	DD
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	

ZERO Reference Line

FLOW

TABLE 2:



KEY to Readings/Measurements in Table 2: (See Left)

½” Longitudinal Downstream

½” Circumferential Left | Lowest Recorded Thickness Point | ½” Circumferential Right

½” Longitudinal Upstream

Distance measured between where the material returns to at/above screening value – edge to edge of below screening areas.

ZERO Reference Line

Diagram 1:

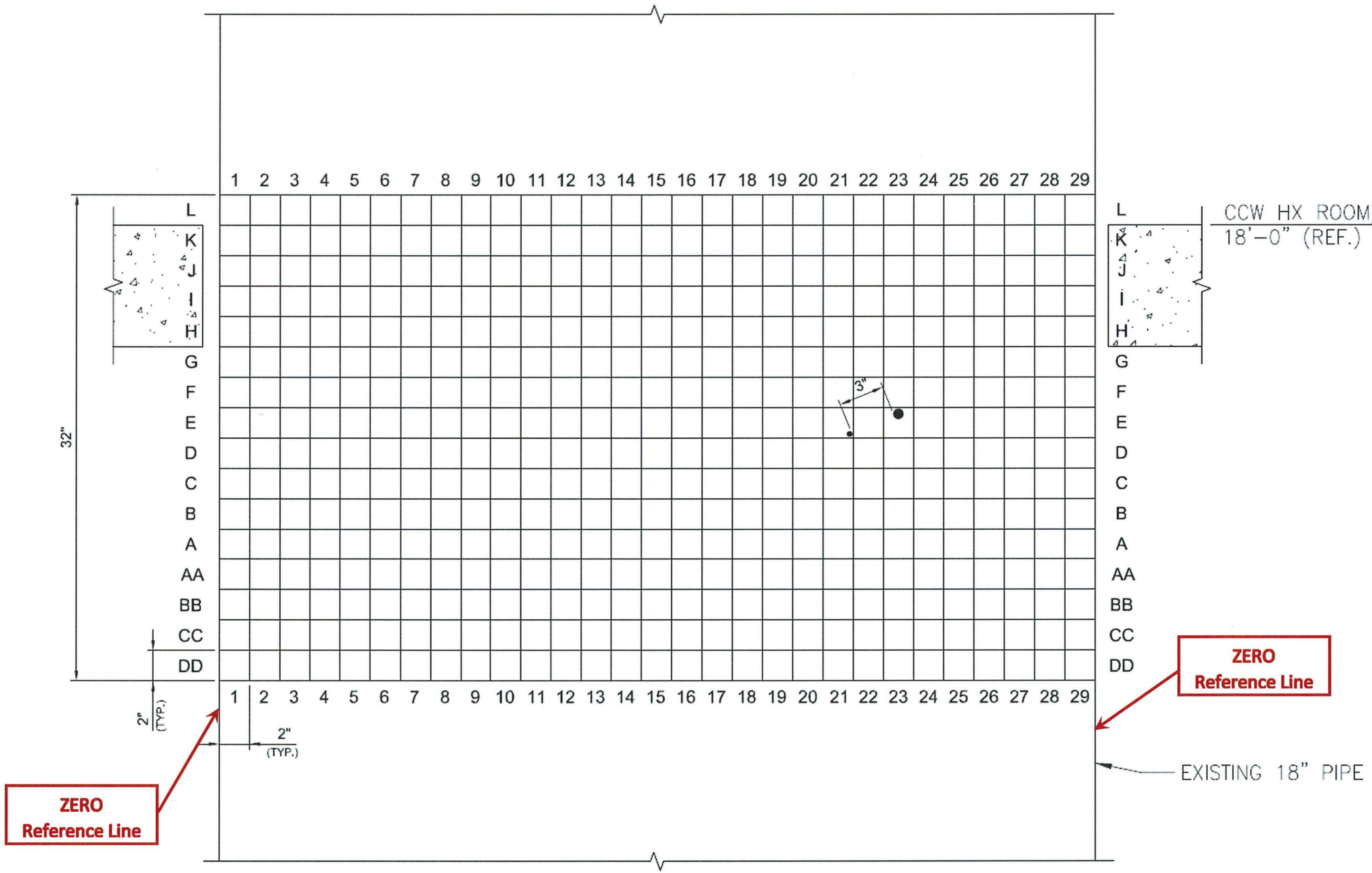
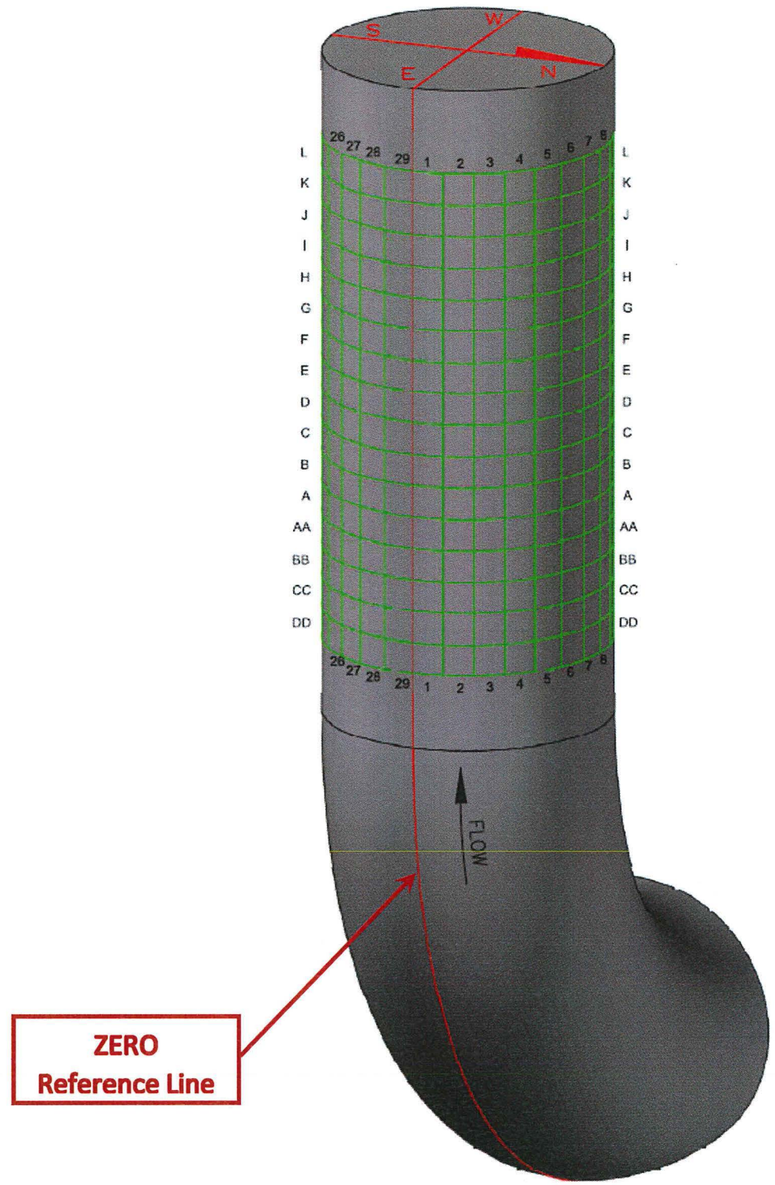

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
L K J I H G F E D C B A AA BB CC DD
32"
2" (TYP.)
2" (TYP.)
3"
CCW HX ROOM/FLR EL:
18'-0" (REF.)
ZERO Reference Line
ZERO Reference Line
EXISTING 18" PIPE

Diagram 2:


S
W
E
N
L
K
J
I
H
G
F
E
D
C
B
A
AA
BB
CC
DD
26 27 28 29 1 2 3 4 5 6 7 8
FLOW
ZERO
Reference Line

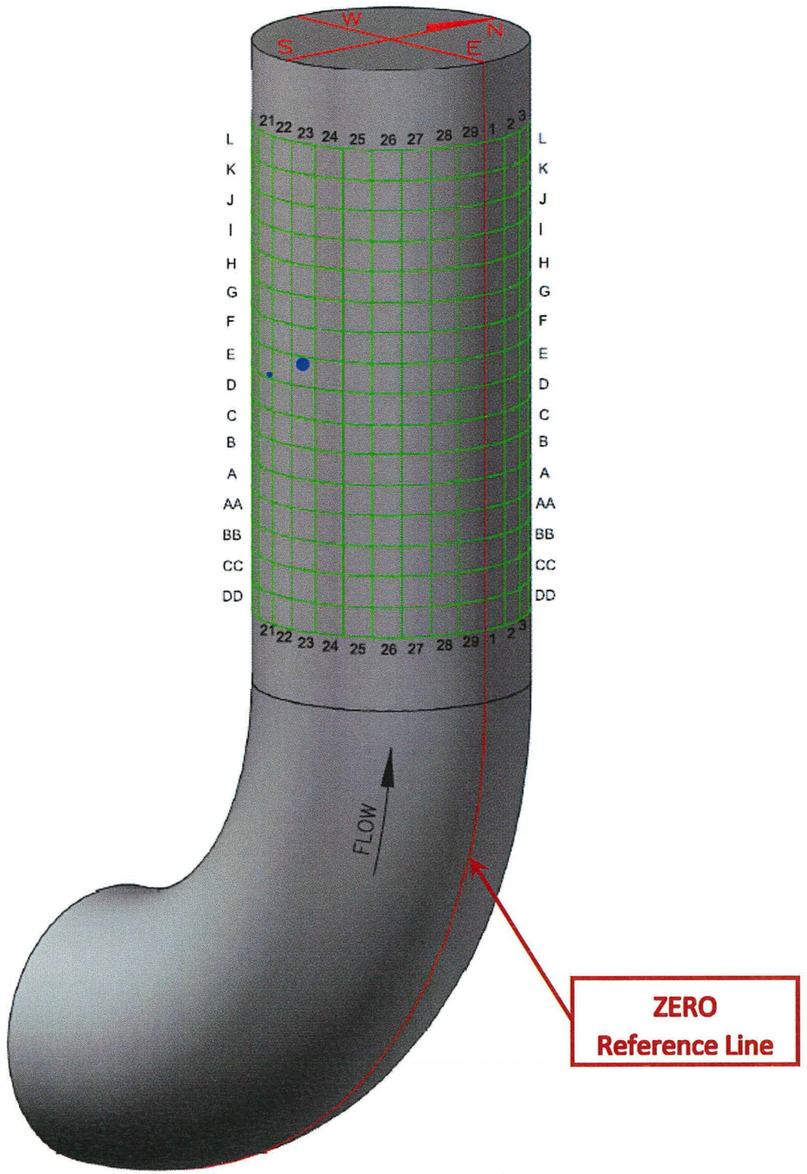
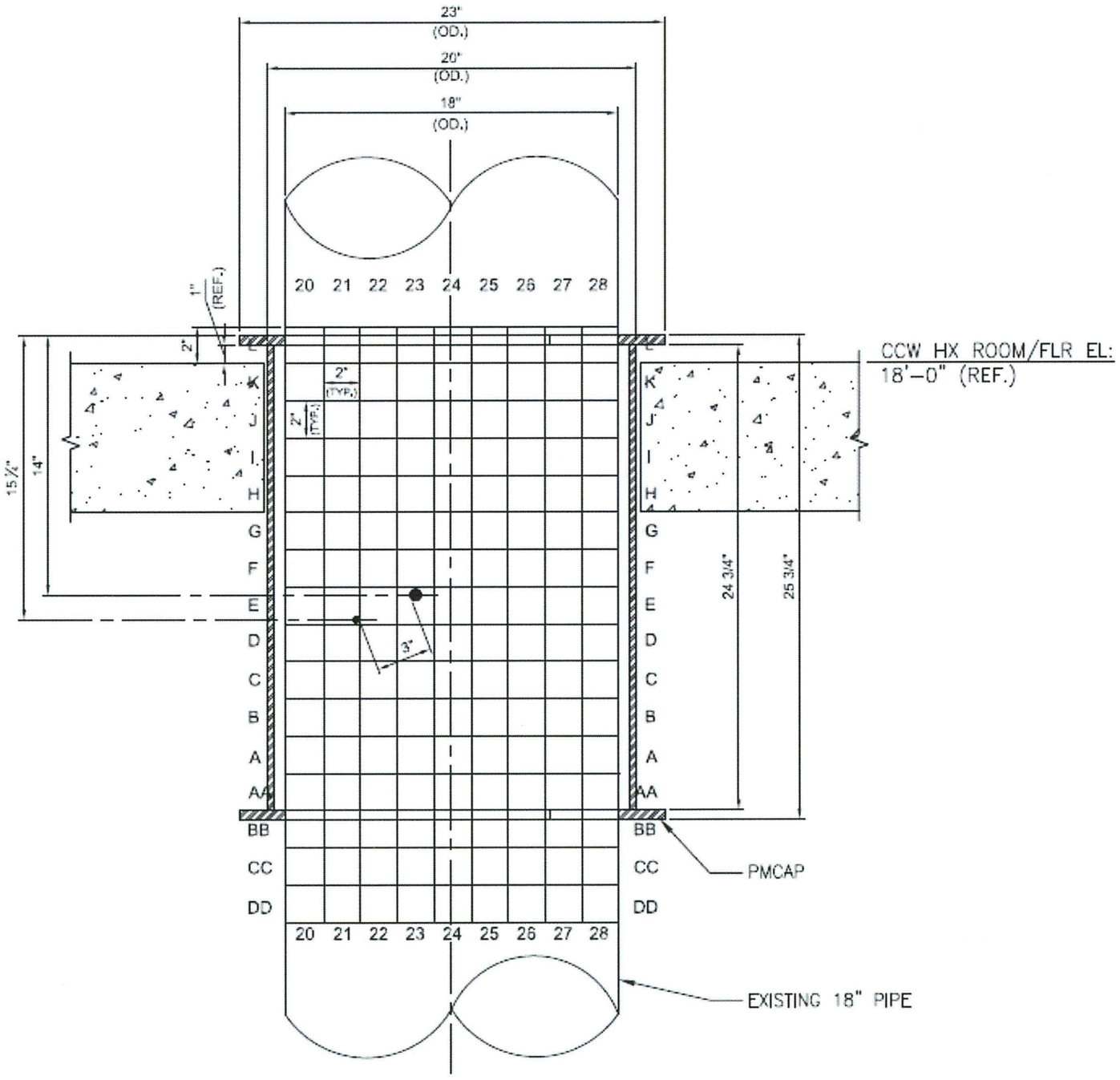
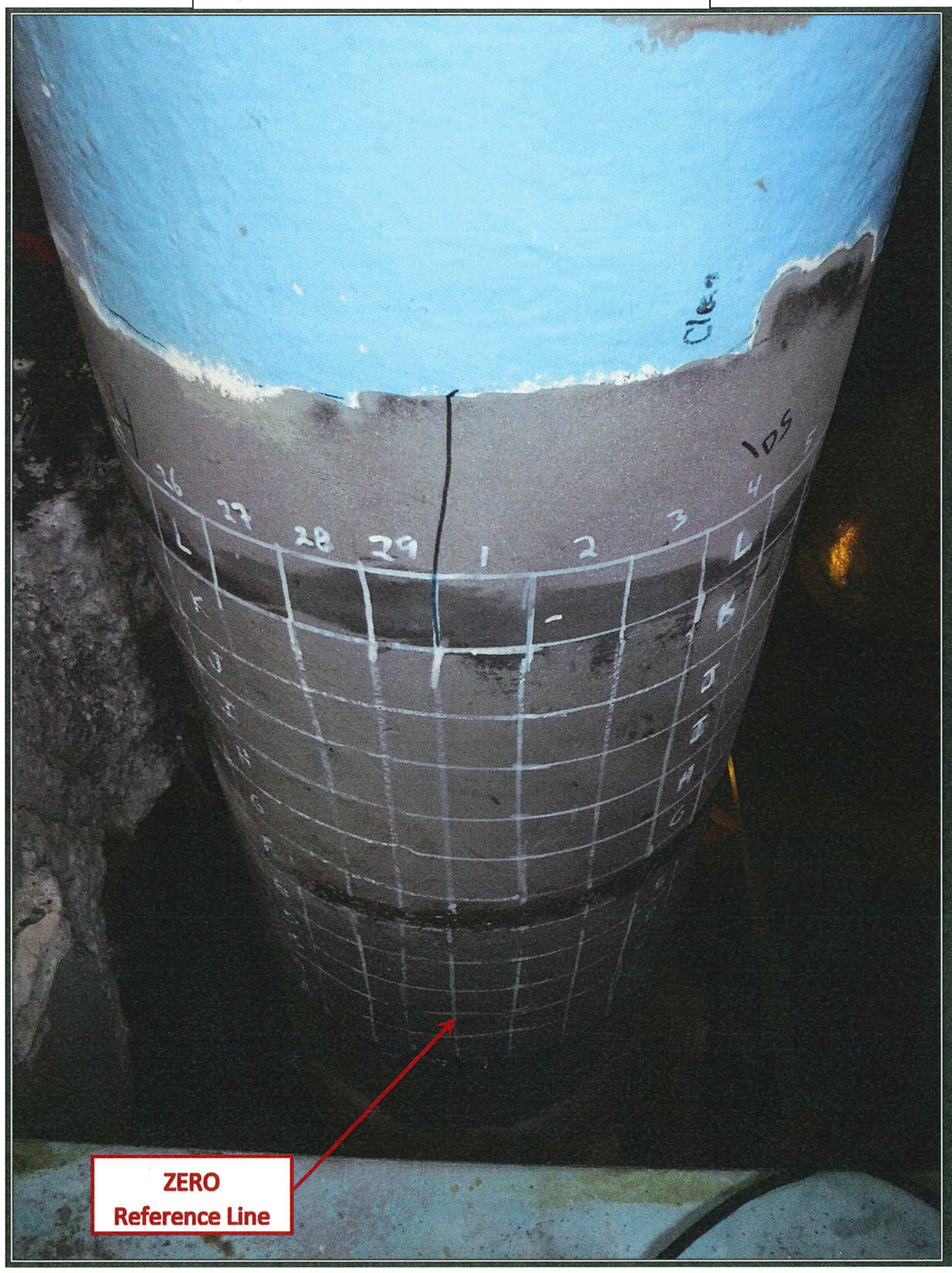

S
W
E
N
L
K
J
I
H
G
F
E
D
C
B
A
AA
BB
CC
DD
21 22 23 24 25 26 27 28 29 1 2 3
FLOW
ZERO
Reference Line

Diagram 3:


23"
(OD.)
20"
(OD.)
18"
(OD.)
20 21 22 23 24 25 26 27 28
1" (REF.)
2"
2" (TYP.)
2" (TYP.)
3"
15¼"
14"
K
J
I
H
G
F
E
D
C
B
A
AA
BB
CC
DD
CCW HX ROOM/FLR EL:
18'-0" (REF.)
24 3/4"
25 3/4"
PMCAP
EXISTING 18" PIPE

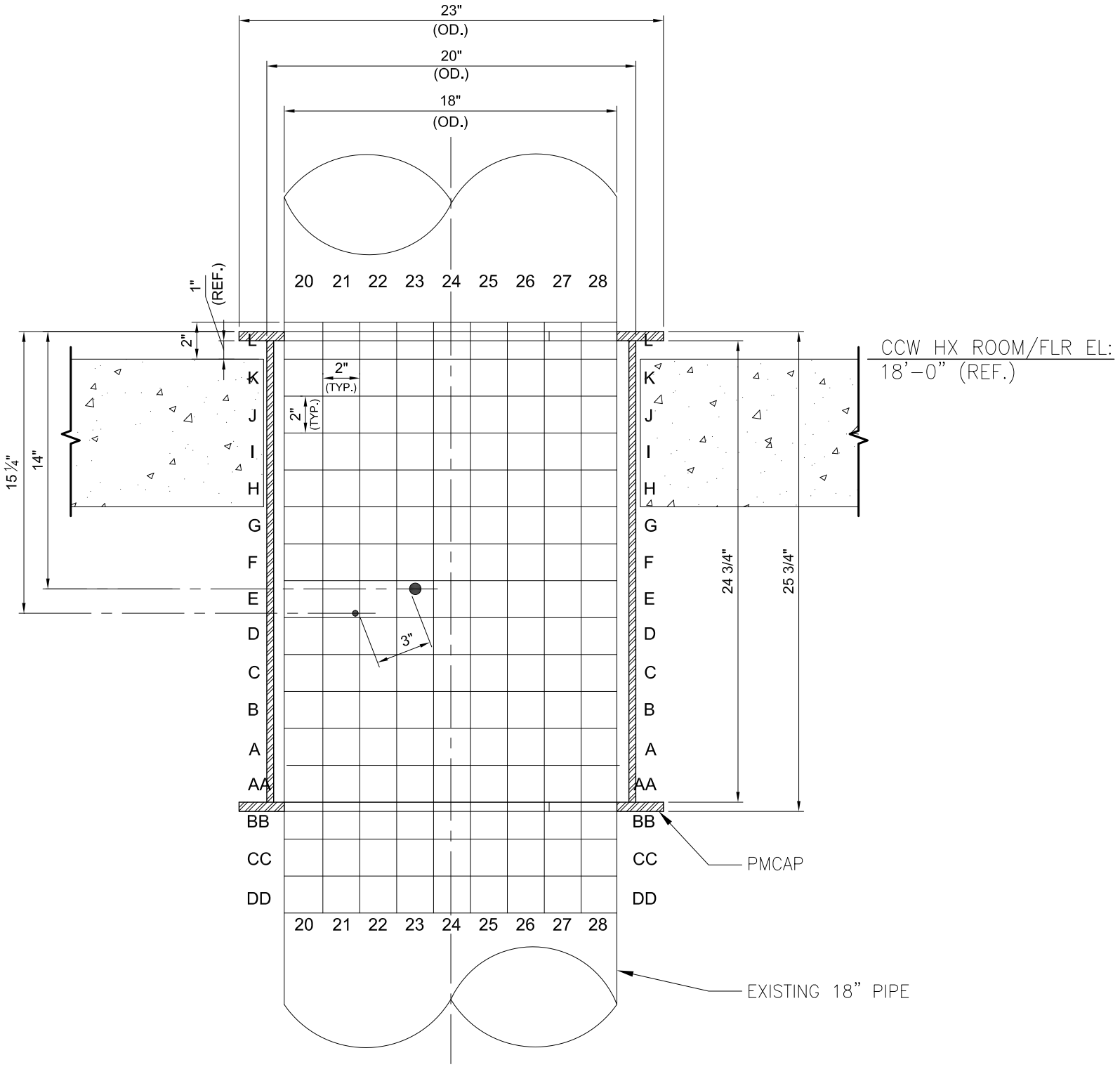
Original Grid / ZERO Reference Line (Looking West)



Original Grid (Looking South West)

PM Cap Installed (Looking South)

L-2020-073, Attachment 2, Pipe overlay Figure
Response to NRC Request No. 3



L-2020-073

Attachment 4

Proprietary Information Affidavit Supporting Request for Withholding

272 Grubb Rd • Pottstown, PA 19465 | tel. 610.495.9750 | fax. 440.425.9750 | www.pmcengineering.com

AFFIDAVIT- Rev. 3

I, Paul S. Manzon, state as follows:

1. I am the owner of PMC Engineering Solutions, Inc., Pottstown, PA, 19465. I am the inventor and owner of United States Patent 6,860,297, "Local degraded area repair and restoration component for pressure retaining items", and am addressing the proprietary documents listed in (2) below, containing information which is sought to be withheld, and am applying for its withholding.

2. The information sought to be withheld is contained in the following PMC Engineering Solutions, Inc. documents:

    a. PMC Engineering Drawing - PMCap shop fabrication details drawing, “CCW Line “A” and “B” Train PMCap Restoration Hardware Shop Fabrication Details”, Drawing No. 201927-M-0001, R5, Sheets 1, 2, 3, 5, and 6.

    b. PMC Engineering Drawing - PMCap installation details drawing, “CCW Line “A” and “B” Train Piping PMCap Restoration Hardware Installation Details”, Drawing No. 201927-M-0002, R2, Sheets 1, 2, 3, and 4.

3. In making this application for withholding of proprietary information of which it is the owner, PMC Engineering Solutions, Inc. relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4) and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The information for which exemption from disclosure is here sought also qualifies under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission. 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA. 704F2d1280 (DC Cir. 1983).

4. Some examples of categories of information which fit into the definition of proprietary information are:

    a. Information that discloses a process, method, or apparatus, including supporting data and analysis, where prevention of its use by PMC Engineering Solutions, Inc.'s competitors without license from PMC Engineering Solutions, Inc. constitutes an economic advantage over other companies;

b. Information which, if used by a competitor, would reduce their expenditure of resources or improve their competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals aspects of past, present, or future PMC Engineering Solutions, Inc. customer funded development plans and programs, resulting in potential products to PMC Engineering Solutions, Inc.

d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4) a., (4) b., and (4) d., above.

5. To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to the NRC in confidence. The information is of a sort customarily held in confidence by PMC Engineering Solutions, Inc., and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by PMC Engineering Solutions, Inc. No public disclosures to third parties including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions which provide for the maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are set forth in paragraphs (6) and (7) following.

6. Approval of proprietary treatment of a document is made by me, Paul S. Manzon, owner of PMC Engineering Solutions, Inc. I am the person most acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within PMC Engineering Solutions, Inc. is limited on a "need to know" basis.

7. The procedure for approval of external release of such a document requires review by me, Paul S. Manzon, owner, PMC Engineering Solutions, Inc., for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside PMC Engineering Solutions, Inc. are limited to regulatory bodies, customers, potential customers, and their agents, suppliers, and business and licensees, Authorized ASME Code Nuclear Inspectors, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

8. The documents identified in paragraph (2) above, are classified as proprietary because they contain "know-how" and "unique information" developed by PMC Engineering Solutions, Inc. within our product development programs. The development of these documents, supporting methods, and information constitutes a major PMC Engineering Solutions, Inc. asset in this current market. Supporting aspects for the application to withhold information specific to each of the document containing proprietary information are as follows:

   a. "CCW Line "A" and "B" Train PMCap Restoration Hardware Shop Fabrication Details", Drawing No. 201927-M-0001, R5, Sheets 1, 2, 3, 5, and 6.

      i. Drawing 201927-M-0001, Revision 5, contains specific shop fabrication details required to construct ASME B31.1 Code Safety-Related restoration hardware (*PMCaps).* The development of these shop fabrication details applicable to and supporting ASME B31.1 Code Safety-Related material, design, fabrication, examination, and testing requirements are a major PMC Engineering Solutions, Inc. asset in this current market. These shop fabrication details were developed at a very high level of effort and expense over the past several years during which PMC Engineering Solutions, Inc. has been offering the nuclear power industry its comprehensive PMC Restoration Method (U.S. Patent 6,860,297) products and services which include those protected by U.S. Patent 6,860,297.

   b. "CCW Line "A" and "B" Train Piping PMCap Resto ration Hardware Installation Details", Drawing No. 201927-M-0002, R2, Sheet 1,2, 3, and 4.

      i. Drawing 201927-M-0002, Revision 2, contains specific field installation details required to install ASME Section Ill, Code stamped restoration hardware *(PMCaps).* The development of these field installation details applicable to and supporting ASME Section Ill Code compliance of the *PMCaps* and the pipe with *PMCaps* installed are a major PMC Engineering Solutions, Inc. asset in this current market. These installation details were developed at a very high level of effort and expense over the past several years during which PMC Engineering Solutions, Inc. has been offering the nuclear power industry its comprehensive PMC Restoration Method (U.S. Patent 6,860,297) products and services which include those protected by U.S. Patent 6,860,297.

9. The entirety of the information contained in the documents listed in 2.a. and 2.b. above is sought to be withheld from Public Disclosure under 10 CFR 2.390:

10. Public disclosure of the information sought to be withheld is likely to cause substantial harm to PMC Engineering Solutions, Inc.'s competitive position and foreclose or reduce availability of profit-making opportunities. The information is part of PMC Engineering Solutions, Inc.'s comprehensive PMC Restoration Method products and services offerings which include those protected by U.S. Patent 6,860,297, and its commercial value extends beyond the original development costs. The value of the technology base goes beyond the information contained in the documents and includes development of the expertise to determine and apply the appropriate data, requirements, criteria, limitations, approaches and methodologies used in the development and preparation of the design, design details, and supporting documentation for the restoration covered by the information sought to be withheld.

The research, development, engineering and analytical costs comprise substantial investment of time and money by PMC Engineering Solutions, Inc.

The precise value of the expertise to devise a restoration method and apply the appropriate and correct Code and regulatory requirements to the restoration is difficult to quantify, but it clearly is substantial.

PMC Engineering Solutions, Inc.'s competitive advantage will be lost if its competitors are able to use the results of the PMC Engineering Solutions, Inc. experience to develop or modify their own restoration method or if they are able to claim an equivalent understanding by demonstrating that they can develop the same or similar restoration method.

The value of this information to PMC Engineering Solutions, Inc. would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive PMC Engineering Solutions, Inc. of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Sincerely,

Paul S. Manzon
Owner
PMC Engineering Solutions, Inc.

04.13.2020
Date