

DOCUMENT FRONT SHEET

PURCHASERS NAME	Mighty Engineering & Technology Pte
PURCHASE ORDER NO	
EXHEAT REFERENCE	004146
SDR DOCUMENT NO	004146.01.01A
CLIENT DOCUMENT NO	
DOCUMENT TITLE	Heater General Arrangement

Doc Num	Revision	Issue	Date	Initials	Supplier's Approval Signature	Approval By
B01	3	1	12/08/2010	julia		26/08/2010

PAGES (Including this one)

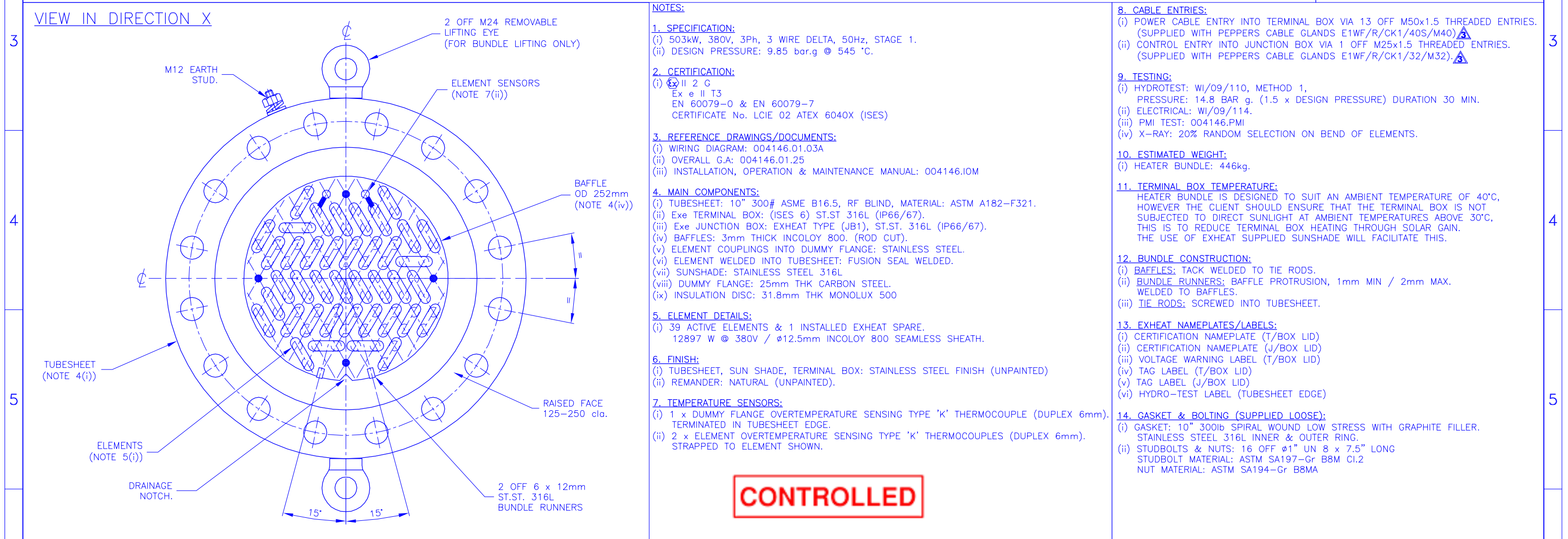
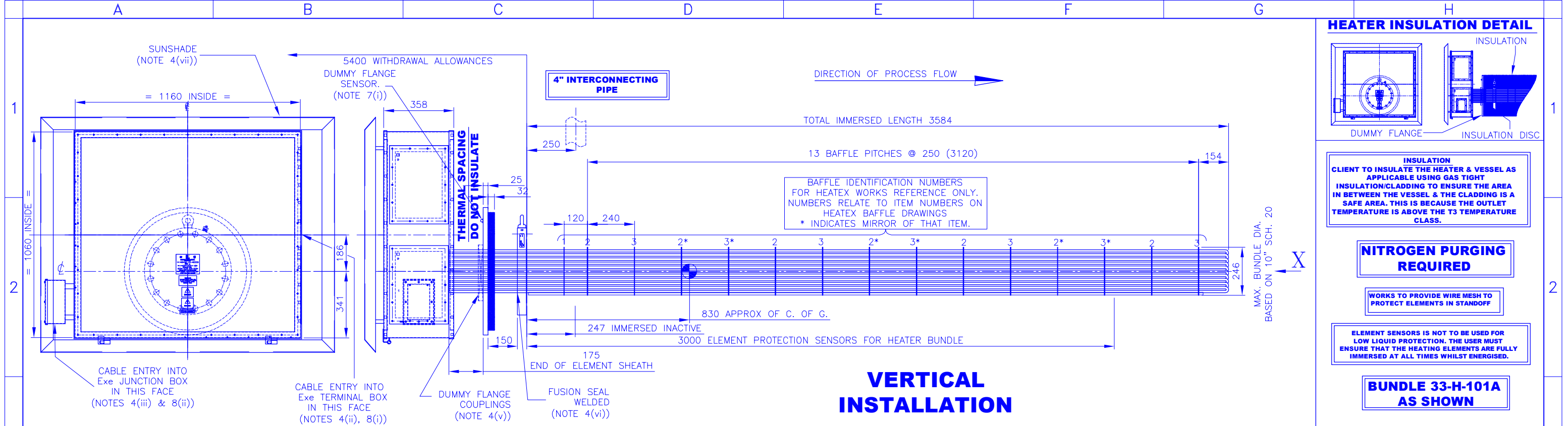
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COMMENTS

EXHEAT PTE LTD

11 Chang Charn Road, (off Hoy Fatt Road), #04-03, Shriro House, Singapore, 159640, SINGAPORE

Tel: +65 6496 4600, Fax: +65 6496 4601, Email: sales.asia@exheat.com.sg, Web: www.exheat.com

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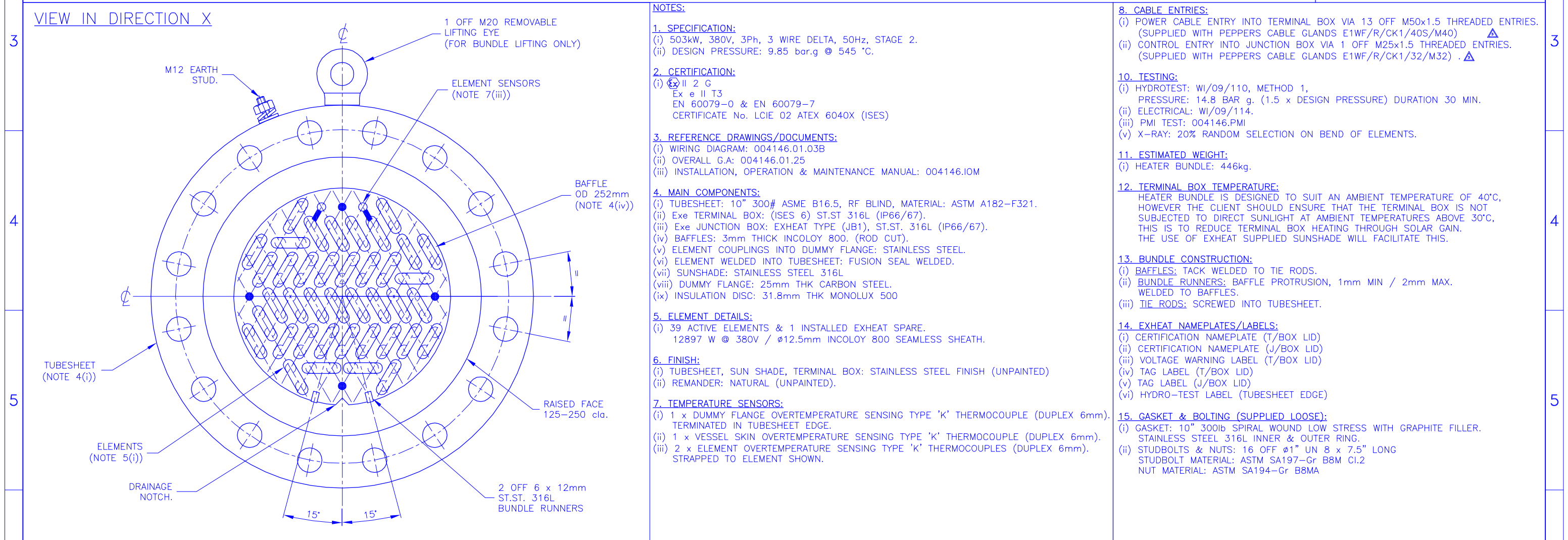
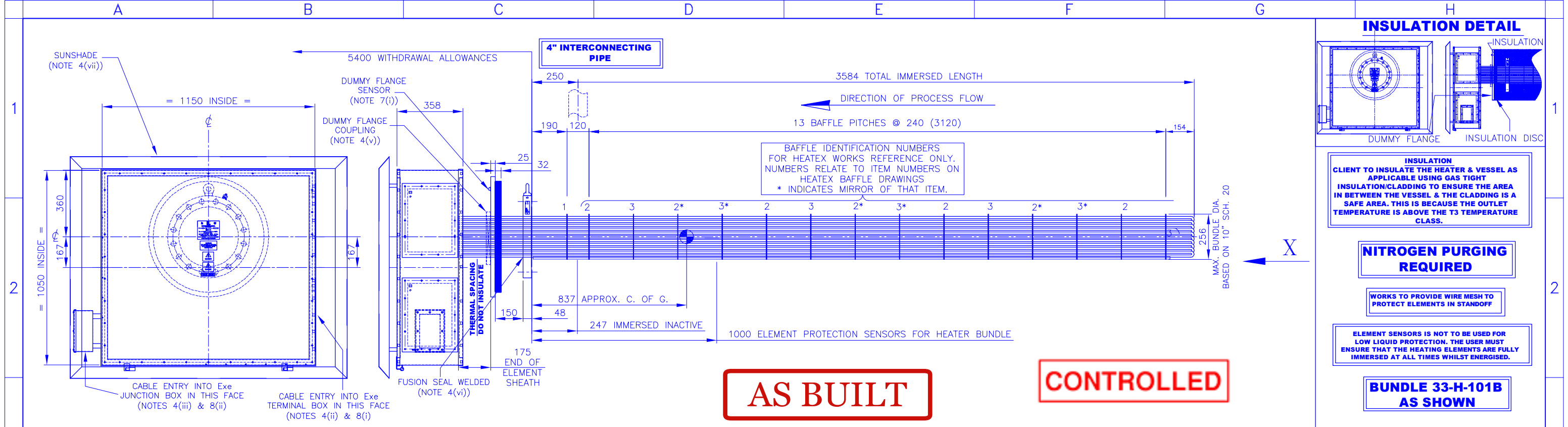
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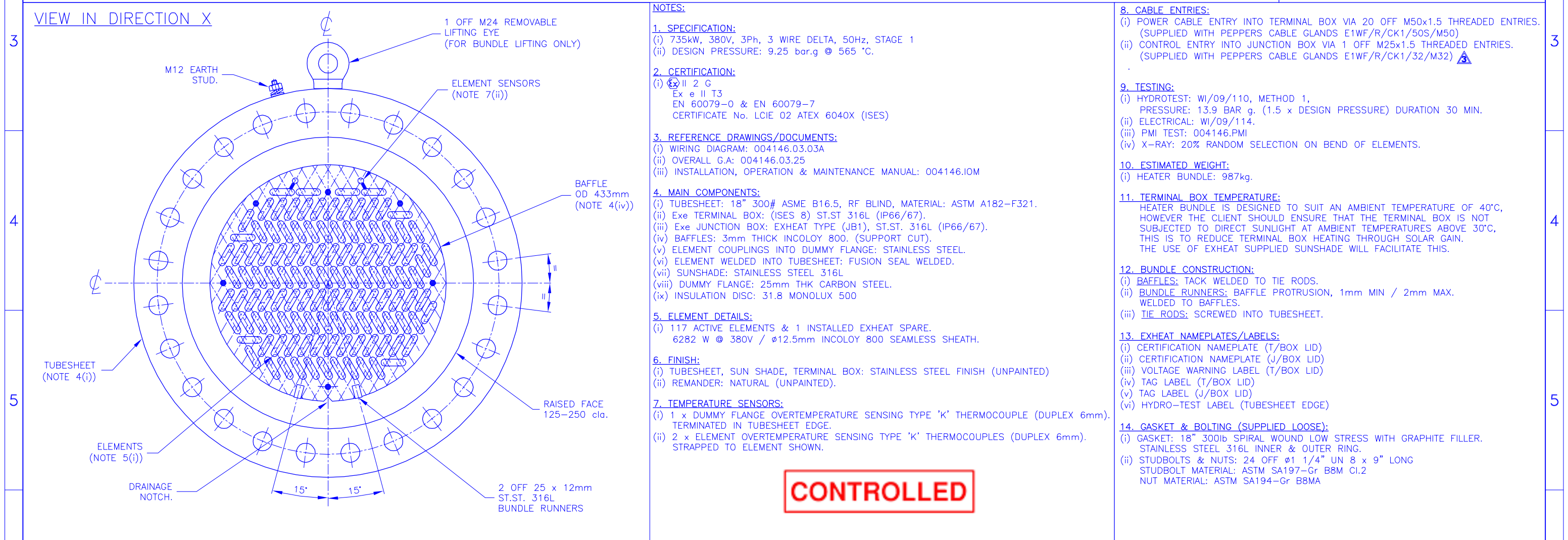
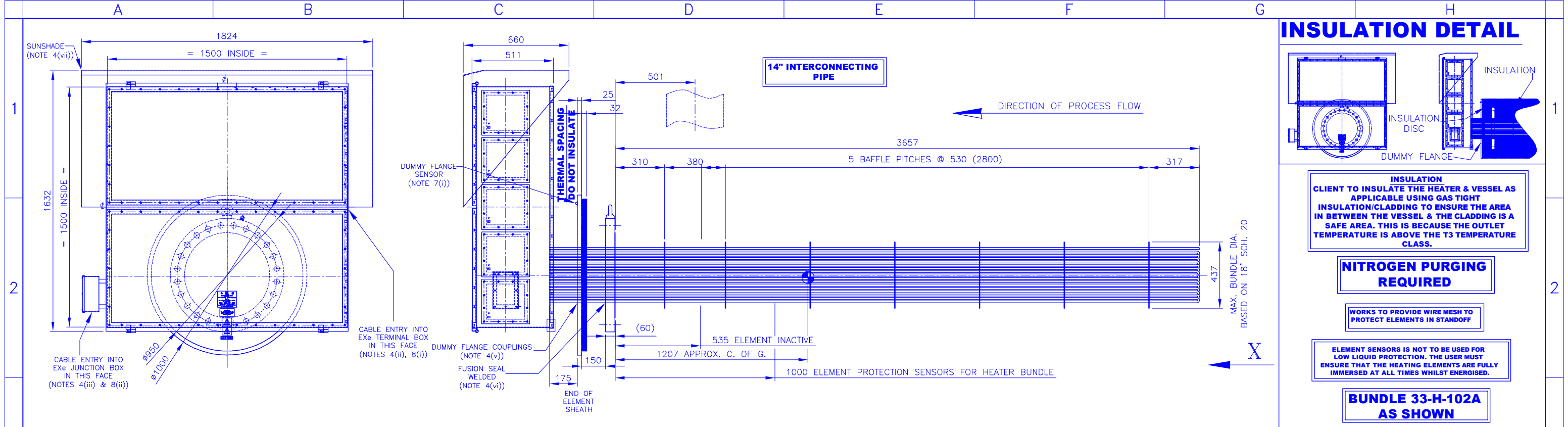
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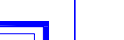
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	NO MODIFICATIONS PERMITTED WITHOUT THE APPROVAL OF THE QA MANAGER.																										LW		
	DOES THIS CHANGE AFFECT ANY CERTIFICATION OR CERTIFICATE SCHEDULE DRAWING?																										LW	LVH	FN
	IF YES, RECORD THE DCN No. IN THE COLUMN TO THE RIGHT.																										CC	LVH	FN
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A			B			C			D			E			F			G			H								

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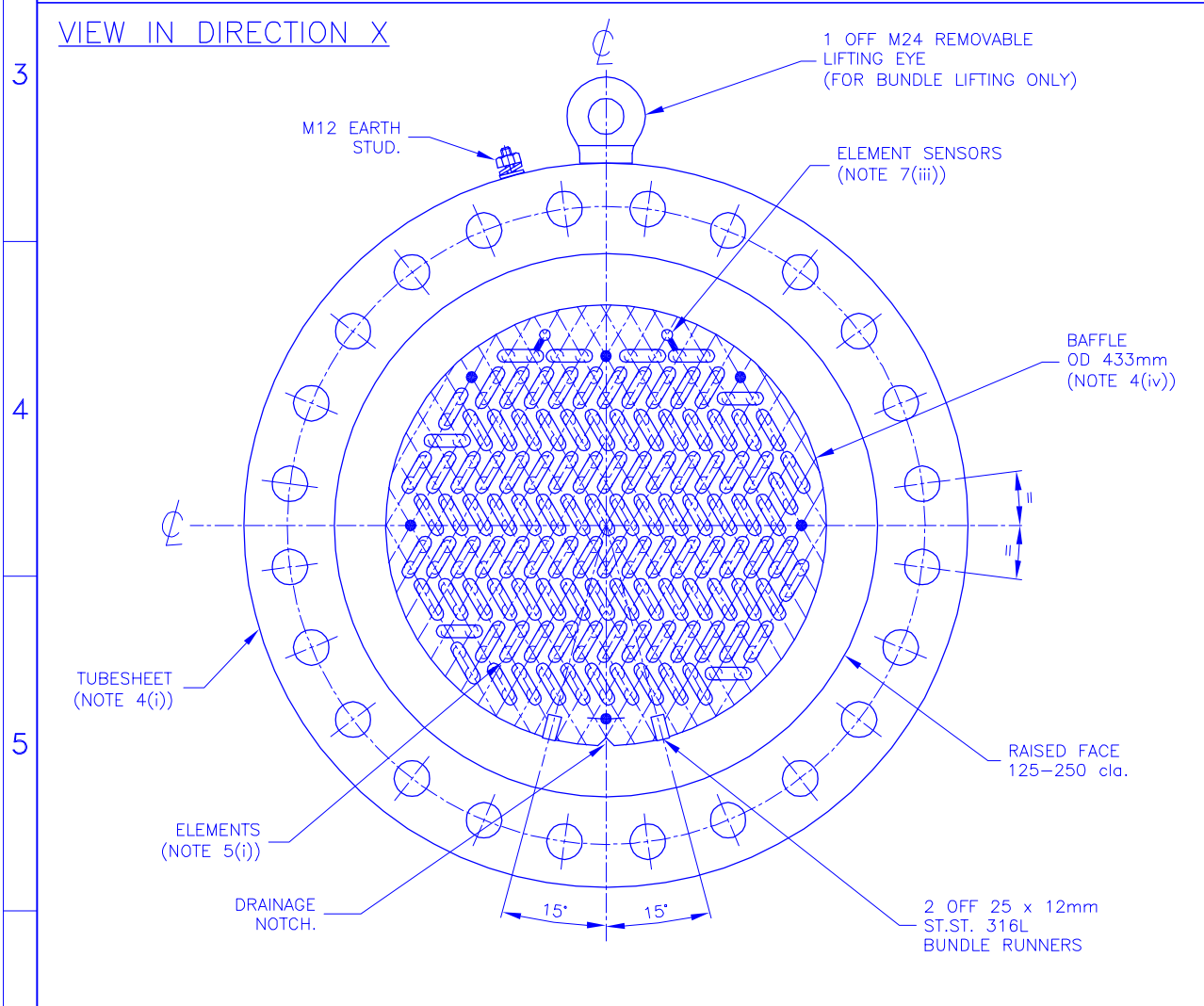
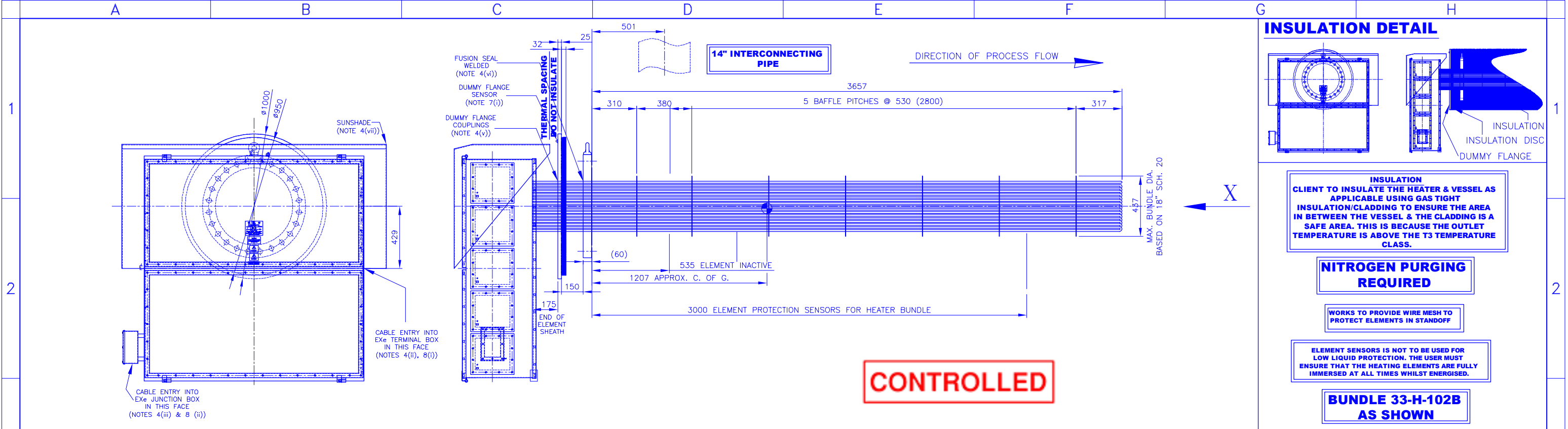
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- NOTES:**
- 1. SPECIFICATION:**
(i) 735kW, 380V, 3Ph, 3 WIRE DELTA, 50Hz, STAGE 2.
(ii) DESIGN PRESSURE: 9.25 bar.g @ 565 °C.
- 2. CERTIFICATION:**
(i) Ex II 2 G
Ex e II T3
EN 60079-0 & EN 60079-7
CERTIFICATE No. LCIE 02 ATEX 6040X (ISES)
- 3. REFERENCE DRAWINGS/DOCUMENTS:**
(i) WIRING DIAGRAM: 004146.03.03A
(ii) OVERALL G.A: 004146.03.25
(iii) INSTALLATION, OPERATION & MAINTENANCE MANUAL: 004146.IOM
- 4. MAIN COMPONENTS:**
(i) TUBESHEET: 18" 300# ASME B16.5, RF BLIND, MATERIAL: ASTM A182-F321.
(ii) Exe TERMINAL BOX: (ISES 8) ST.ST 316L (IP66/67).
(iii) Exe JUNCTION BOX: EXHEAT TYPE (JB1), ST.ST. 316L (IP66/67).
(iv) BAFFLES: 3mm THICK INCOLOY 800. (SUPPORT CUT).
(v) ELEMENT COUPLINGS INTO DUMMY FLANGE: STAINLESS STEEL.
(vi) ELEMENT WELDED INTO TUBESHEET: FUSION SEAL WELDED.
(vii) SUNSHADE: STAINLESS STEEL 316L
(viii) DUMMY FLANGE: 25mm THK CARBON STEEL.
(ix) INSULATION DISC: 31.8 MONOLUX 500
- 5. ELEMENT DETAILS:**
(i) 117 ACTIVE ELEMENTS & 1 INSTALLED EXHEAT SPARE.
6282 W @ 380V / Ø12.5mm INCOLOY 800 SEAMLESS SHEATH.
- 6. FINISH:**
(i) TUBESHEET, SUN SHADE, TERMINAL BOX: STAINLESS STEEL FINISH (UNPAINTED)
(ii) REMANDER: NATURAL (UNPAINTED).
- 7. TEMPERATURE SENSORS:**
(i) 1 x DUMMY FLANGE OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm).
TERMINATED IN TUBESHEET EDGE.
(ii) 1 x VESSEL SKIN OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm).
(iii) 2 x ELEMENT OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLES (DUPLEX 6mm).
STRAPPED TO ELEMENT SHOWN.

- 8. CABLE ENTRIES:**
(i) POWER CABLE ENTRY INTO TERMINAL BOX VIA 20 OFF M50x1.5 THREADED ENTRIES.
(SUPPLIED WITH PEPPERS CABLE GLANDS E1WF/R/CK1/50S/M50)
(ii) CONTROL ENTRY INTO JUNCTION BOX VIA 1 OFF M25x1.5 THREADED ENTRIES.
(SUPPLIED WITH PEPPERS CABLE GLANDS E1WF/R/CK1/32/M32). ⚠
- 10. TESTING:**
(i) HYDROTEST: WI/09/110, METHOD 1,
PRESSURE: 13.9 BAR g. (1.5 x DESIGN PRESSURE) DURATION 30 MIN.
(ii) ELECTRICAL: WI/09/114.
(iii) PMI TEST: 004146.PMI
(iv) X-RAY: 20% RANDOM SELECTION ON BEND OF ELEMENTS.
- 11. ESTIMATED WEIGHT:**
(i) HEATER BUNDLE: 987kg.
- 12. TERMINAL BOX TEMPERATURE:**
HEATER BUNDLE IS DESIGNED TO SUIT AN AMBIENT TEMPERATURE OF 40°C,
HOWEVER THE CLIENT SHOULD ENSURE THAT THE TERMINAL BOX IS NOT
SUBJECTED TO DIRECT SUNLIGHT AT AMBIENT TEMPERATURES ABOVE 30°C,
THIS IS TO REDUCE TERMINAL BOX HEATING THROUGH SOLAR GAIN.
THE USE OF EXHEAT SUPPLIED SUNSHADE WILL FACILITATE THIS.
- 13. BUNDLE CONSTRUCTION:**
(i) BAFFLES: TACK WELDED TO TIE RODS.
(ii) BUNDLE RUNNERS: BAFFLE PROTRUSION, 1mm MIN / 2mm MAX.
WELDED TO BAFFLES.
(iii) TIE RODS: SCREWED INTO TUBESHEET.
- 14. EXHEAT NAMEPLATES/LABELS:**
(i) CERTIFICATION NAMEPLATE (T/BOX LID)
(ii) CERTIFICATION NAMEPLATE (J/BOX LID)
(iii) VOLTAGE WARNING LABEL (T/BOX LID)
(iv) TAG LABEL (T/BOX LID)
(v) TAG LABEL (J/BOX LID)
(vi) HYDRO-TEST LABEL (TUBESHEET EDGE)
- 15. GASKET & BOLTING (SUPPLIED LOOSE):**
(i) GASKET: 18" 300lb SPIRAL WOUND LOW STRESS WITH GRAPHITE FILLER.
STAINLESS STEEL 316L INNER & OUTER RING.
(ii) STUDBOLTS & NUTS: 24 OFF Ø1 1/4" UN 8 x 9" LONG
STUDBOLT MATERIAL: ASTM SA197-Gr B8M Cl.2
NUT MATERIAL: ASTM SA194-Gr B8MA

6	CERTIFIED PRODUCT					AS BUILT				3rd ANGLE PROJECTION 	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DO NOT SCALE ! IF IN DOUBT, ASK ! WHERE ELECTRONIC DOCUMENTS ARE SUPPLIED, THE END PRODUCT MUST CONFORM TO THE PAPER ORIGINAL. FORMAT: AUTOCAD	 www.exheat.com THIS DRAWING IS THE COPYRIGHT AND PROPERTY OF EXHEAT PTE LTD SINGAPORE  BSI REGISTERED  UKAS QUALITY MANAGEMENT 003 Certificate No. FM 26078 <td colspan="2" rowspan="2"> TITLE 735KW/380V BURNING HEATER GENERAL ARRANGEMENT DRAWING TAG No: 33-H-102B </td> <td rowspan="2">6</td>	TITLE 735KW/380V BURNING HEATER GENERAL ARRANGEMENT DRAWING TAG No: 33-H-102B		6						
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	IF YES, RECORD THE DCN No. IN THE COLUMN TO THE RIGHT.												004146.03.01B		3						
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	-	-	2	29.07.10	CLIENT COMMENTS INCORPORATED								LW	LVH	FN						
-	-	1	12.04.10	CLIENT COMMENTS INCORPORATED	CC	LVH	FN														
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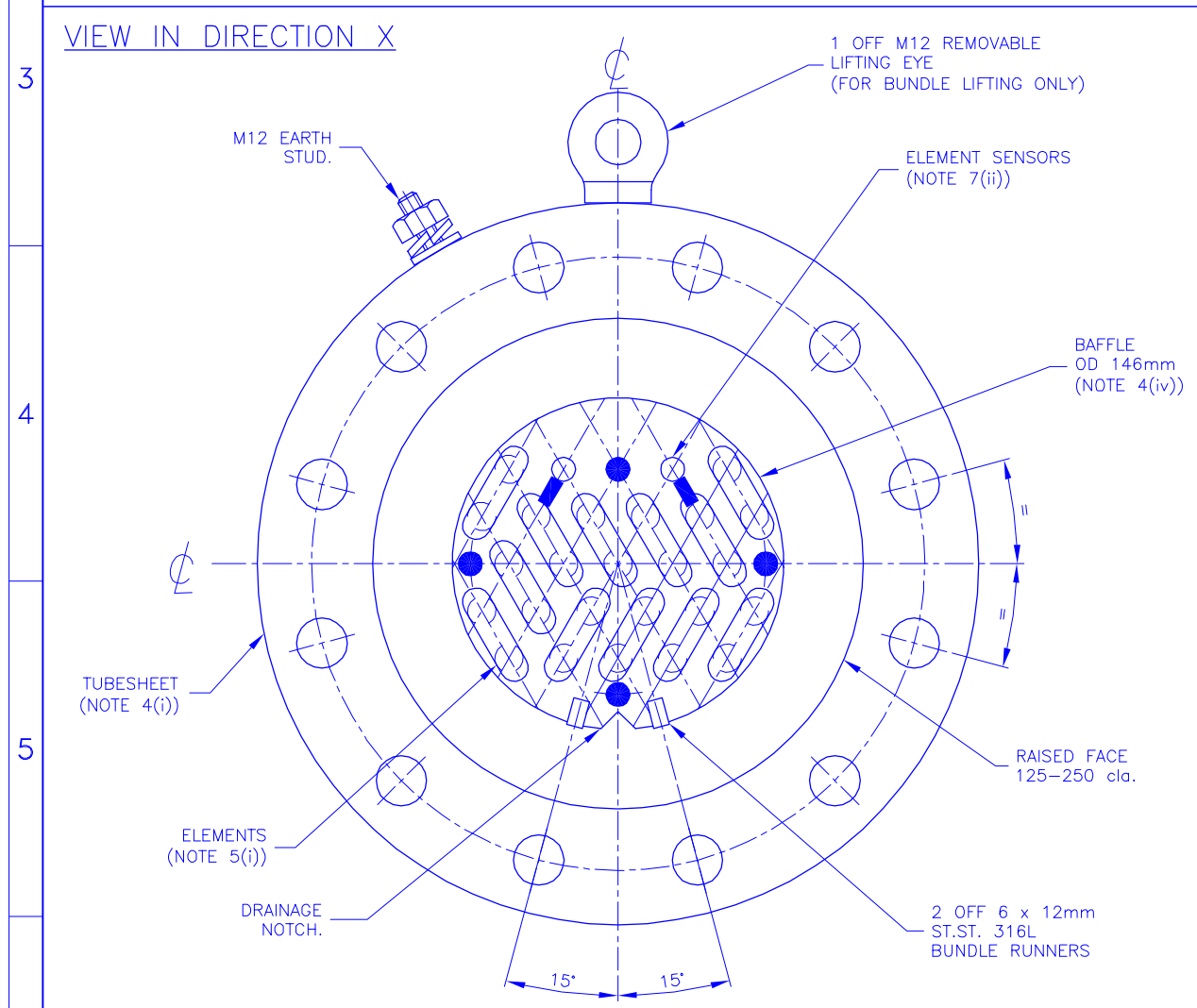
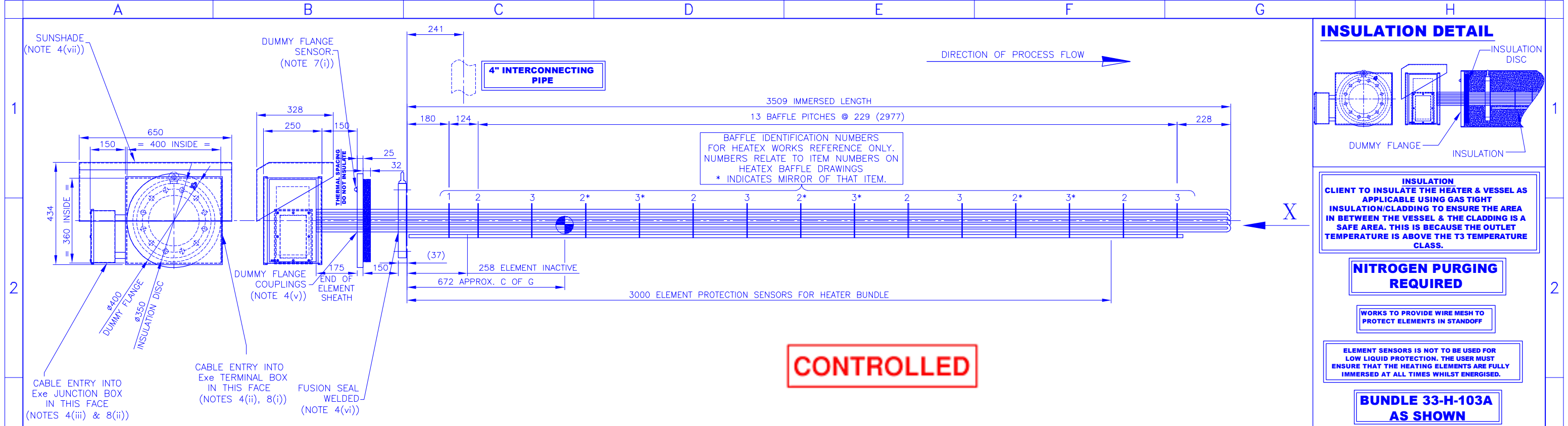
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NOTES:

1. SPECIFICATION:

- (i) 56kW, 380V, 3Ph, 3 WIRE DELTA, 50Hz, STAGE 1.
- (ii) DESIGN PRESSURE: 9.25 bar.g @ 565 °C.

2. CERTIFICATION:

- (i) ~~Ex~~ II 2 G
Ex e II T3
EN 60079-0 & EN 60079-7
CERTIFICATE No. LCIE 02 ATEX 6040X (ISES)

3. REFERENCE DRAWINGS/DOCUMENTS:

- (i) WIRING DIAGRAM: 004146.05.03A
- (ii) OVERALL G.A: 004146.05.25
- (iii) INSTALLATION, OPERATION & MAINTENANCE MANUAL: 004146.10M

4. MAIN COMPONENTS:

- (i) TUBESHEET: 6" 300# ASME B16.5, RF BLIND, MATERIAL: ASTM A182-F321.
- (ii) Exe TERMINAL BOX: (ISES 2) ST.ST 316L (IP66/67).
- (iii) Exe JUNCTION BOX: EXHEAT TYPE (JB1), ST.ST. 316L (IP66/67).
- (iv) BAFFLES: 3mm THICK INCOLOY 800. (ROD CUT).
- (v) ELEMENT COUPLINGS INTO DUMMY FLANGE: STAINLESS STEEL.
- (vi) ELEMENT WELDED INTO TUBESHEET: FUSION SEAL WELDED.
- (vii) SUNSHADE: STAINLESS STEEL 316L
- (viii) DUMMY FLANGE: 25mm THK CARBON STEEL.
- (ix) INSULATION DISC: 31.8mm THK MONOLUX 500

5. ELEMENT DETAILS:

- (i) 12 ACTIVE ELEMENTS.
4667 W @ 380V / ϕ 12.5mm INCOLOY 800 SEAMLESS SHEATH.

6. FINISH:

- (i) TUBESHEET, SUN SHADE, TERMINAL BOX: STAINLESS STEEL FINISH (UNPAINTED)
- (ii) REMANDER: NATURAL (UNPAINTED).

7. TEMPERATURE SENSORS:

- (i) 1 x DUMMY FLANGE OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm TERMINATED IN TUBESHEET EDGE.
- (ii) 2 x ELEMENT OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm). STRAPPED TO ELEMENT SHOWN.

8. CABLE ENTRIES:

- POWER CABLE ENTRY INTO TERMINAL BOX VIA 2 OFF M40x1.5 THREADED ENTRIES.
(SUPPLIED WITH PEPPERS CABLE GLANDS E1WF/CK1/40/M40)
- CONTROL ENTRY INTO JUNCTION BOX VIA 1 OFF M25x1.5 THREADED ENTRIES.
(SUPPLIED WITH PEPPERS CABLE GLANDS E1WF/CK1/32/M32).

9. TESTING:

- HYDROTEST: WI/09/110, METHOD 1,
PRESSURE: 14.0 BAR g. (1.5 x DESIGN PRESSURE) DURATION 30 MIN.
- ELECTRICAL: WI/09/114.
- PMI TEST: 004146.PMI
- X-RAY: 20% RANDOM SELECTION ON BEND OF ELEMENTS.

11. ESTIMATED WEIGHT:

- HEATER BUNDLE: 163kg.

12. TERMINAL BOX TEMPERATURE:

HEATER BUNDLE IS DESIGNED TO SUIT AN AMBIENT TEMPERATURE OF 40°C, HOWEVER THE CLIENT SHOULD ENSURE THAT THE TERMINAL BOX IS NOT SUBJECTED TO DIRECT SUNLIGHT AT AMBIENT TEMPERATURES ABOVE 30°C, THIS IS TO REDUCE TERMINAL BOX HEATING THROUGH SOLAR GAIN. THE USE OF EXHEAT SUPPLIED SUNSHADE WILL FACILITATE THIS.

13. BUNDLE CONSTRUCTION:

- BAFFLES: TACK WELDED TO TIE RODS.
- BUNDLE RUNNERS: BAFFLE PROTRUSION, 1mm MIN / 2mm MAX.
WELDED TO BAFFLES.
- TIE RODS: SCREWED INTO TUBESHEET.

14. EXHEAT NAMEPLATES/LABELS:

- CERTIFICATION NAMEPLATE (T/BOX LID)
- CERTIFICATION NAMEPLATE (J/BOX LID)
- VOLTAGE WARNING LABEL (T/BOX LID)
- TAG LABEL (T/BOX LID)
- TAG LABEL (J/BOX LID)
- HYDRO-TEST LABEL (TUBESHEET EDGE)

15. GASKET & BOLTING (SUPPLIED LOOSE):

- GASKET: 6" 300lb SPIRAL WOUND LOW STRESS WITH GRAPHITE FILLER.
STAINLESS STEEL 316L INNER & OUTER RING.
- STUDBOLTS & NUTS: 12 OFF $\phi 3/4"$ UN 8 x 6" LONG
STUDBOLT MATERIAL: ASTM SA197-Gr B8M Cl.2
NUT MATERIAL: ASTM SA194-Gr B8MA

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DOCUMENT FRONT SHEET

PURCHASERS NAME	Mighty Engineering & Technology Pte
PURCHASE ORDER NO	
EXHEAT REFERENCE	004146
SDR DOCUMENT NO	004146.05.01B
CLIENT DOCUMENT NO	
DOCUMENT TITLE	Heater General Arrangement

Doc Num	Revision	Issue	Date	Initials	Supplier's Approval Signature	Approval By
B01	3	1	12/08/2010	julia		26/08/2010

PAGES (Including this one)

2

COMMENTS**EXHEAT PTE LTD**

11 Chang Charn Road, (off Hoy Fatt Road), #04-03, Shriro House, Singapore, 159640, SINGAPORE
Tel: +65 6496 4600, Fax: +65 6496 4601, Email: sales.asia@exheat.com.sg, Web: www.exheat.com

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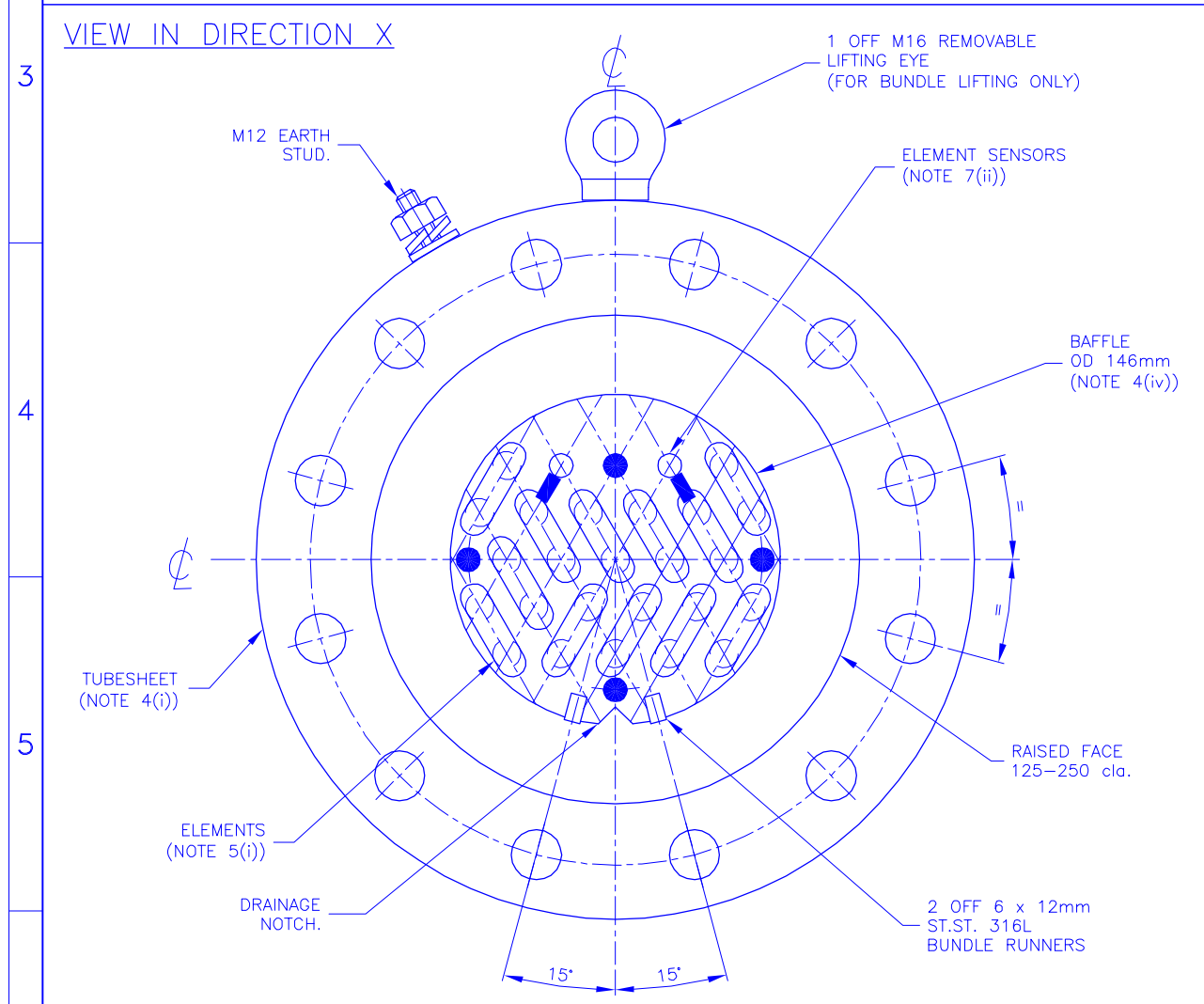
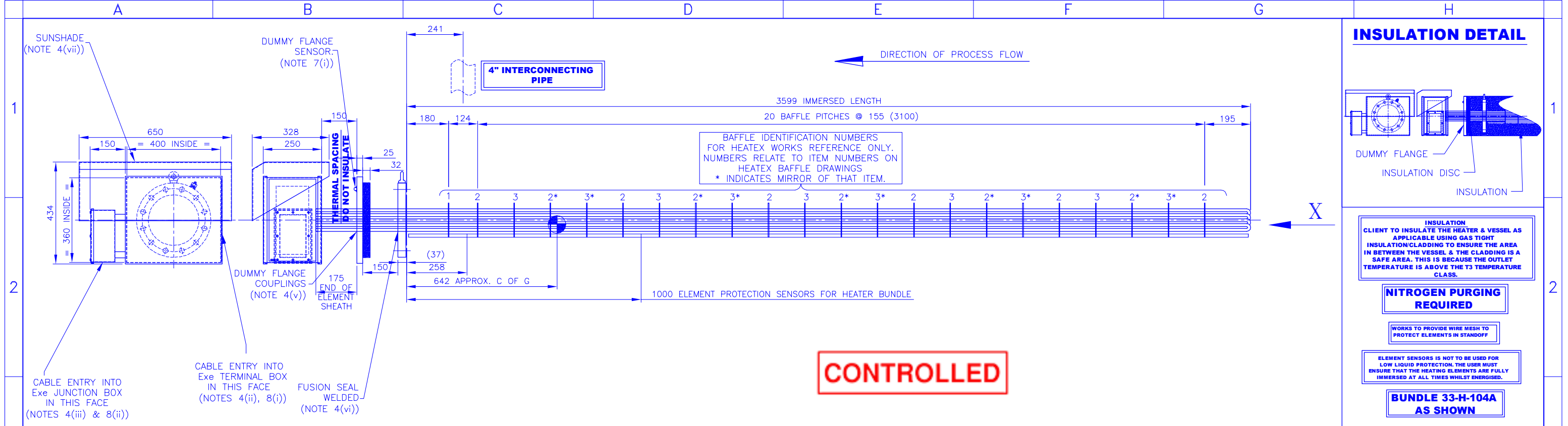
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NOTES:

1. SPECIFICATION:

(i) 101.5kW, 380V, 3Ph, 3 WIRE DELTA, 50Hz, STAGE 1.

(ii) DESIGN PRESSURE: 9.25 bar.g @ 565 °C.

2. CERTIFICATION:

(i) ~~Ex~~ II 2 G
Ex e II T3
EN 60079-0 & EN 60079-7
CERTIFICATE No. LCIE 02 ATEX 6040X (ISES)

3. REFERENCE DRAWINGS/DOCUMENTS:

(i) WIRING DIAGRAM: 004146.07.03A

(ii) OVERALL G.A: 004146.07.25

(iii) INSTALLATION, OPERATION & MAINTENANCE MANUAL: 004146.IOM

4. MAIN COMPONENTS:

(i) TUBESHEET: 6" 300# ASME B16.5, RF BLIND, MATERIAL: ASTM A182-F321.

(ii) Exe TERMINAL BOX: (ISES 3) ST.ST 316L (IP66/67).

(iii) Exe JUNCTION BOX: EXHEAT TYPE (JB1), ST.ST. 316L (IP66/67).

(iv) BAFFLES: 3mm THICK INCOLOY 800. (ROD CUT).

(v) ELEMENT COUPLINGS INTO DUMMY FLANGE: STAINLESS STEEL.

(vi) ELEMENT WELDED INTO TUBESHEET: FUSION SEAL WELDED.

(vii) SUNSHADE: STAINLESS STEEL 316L

(viii) DUMMY FLANGE: 25mm THK CARBON STEEL.

(ix) INSULATION DISC: 31.8mm THK MONOLUX 500

5. ELEMENT DETAILS:

(i) 12 ACTIVE ELEMENTS.
8458 W @ 380V / ø12.5mm INCOLOY 800 SEAMLESS SHEATH.

6. FINISH:

(i) TUBESHEET, SUN SHADE, TERMINAL BOX: STAINLESS STEEL FINISH (UNPAINTED)

(ii) REMANDER: NATURAL (UNPAINTED).

7. TEMPERATURE SENSORS:

(i) 1 x DUMMY FLANGE OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm TERMINATED IN TUBESHEET EDGE.

(ii) 2 x ELEMENT OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm). STRAPPED TO ELEMENT SHOWN.

8. CABLE ENTRIES:
 - (i) POWER CABLE ENTRY INTO TERMINAL BOX VIA 4 OFF M40x1.5 THREADED ENTRIES.
(SUPPLIED WITH PEPPERS CABLE GLANDS E1WF/CK1/40/M40)
 - (ii) CONTROL ENTRY INTO JUNCTION BOX VIA 1 OFF M25x1.5 THREADED ENTRIES.
(SUPPLIED WITH PEPPERS CABLE GLANDS E1WF/CK1/32/M32) 
9. .
10. TESTING:
 - (i) HYDROTEST: WI/09/110, METHOD 1,
PRESSURE: 14.0 BAR g. (1.5 x DESIGN PRESSURE) DURATION 30 MIN.
 - (ii) ELECTRICAL: WI/09/114.
 - (iii) PMI TEST: 004146.PMI
 - (iv) X-RAY: 20% RANDOM SELECTION ON BEND OF ELEMENTS.
11. ESTIMATED WEIGHT:
 - (i) HEATER BUNDLE: 178kg.
12. TERMINAL BOX TEMPERATURE:

HEATER BUNDLE IS DESIGNED TO SUIT AN AMBIENT TEMPERATURE OF 40°C,
HOWEVER THE CLIENT SHOULD ENSURE THAT THE TERMINAL BOX IS NOT
SUBJECTED TO DIRECT SUNLIGHT AT AMBIENT TEMPERATURES ABOVE 30°C,
THIS IS TO REDUCE TERMINAL BOX HEATING THROUGH SOLAR GAIN.
THE USE OF EXHEAT SUPPLIED SUNSHADE WILL FACILITATE THIS.
13. BUNDLE CONSTRUCTION:
 - (i) BAFFLES: TACK WELDED TO TIE RODS.
 - (ii) BUNDLE RUNNERS: BAFFLE PROTRUSION, 1mm MIN / 2mm MAX.
WELDED TO BAFFLES.
 - (iii) TIE RODS: SCREWED INTO TUBESHEET.
14. EXHEAT NAMEPLATES/LABELS:
 - (i) CERTIFICATION NAMEPLATE (T/BOX LID)
 - (ii) CERTIFICATION NAMEPLATE (J/BOX LID)
 - (iii) VOLTAGE WARNING LABEL (T/BOX LID)
 - (iv) TAG LABEL (T/BOX LID)
 - (v) TAG LABEL (J/BOX LID)
 - (vi) HYDRO-TEST LABEL (TUBESHEET EDGE)
15. GASKET & BOLTING (SUPPLIED LOOSE):
 - (i) GASKET: 6" 300lb SPIRAL WOUND LOW STRESS WITH GRAPHITE FILLER.
STAINLESS STEEL 316L INNER & OUTER RING.
 - (ii) STUDBOLTS & NUTS: 12 OFF $\phi 3/4"$ UN 8 x 6" LONG
STUDBOLT MATERIAL: ASTM SA197-Gr B8M Cl.2
NUT MATERIAL: ASTM SA194-Gr B8MA

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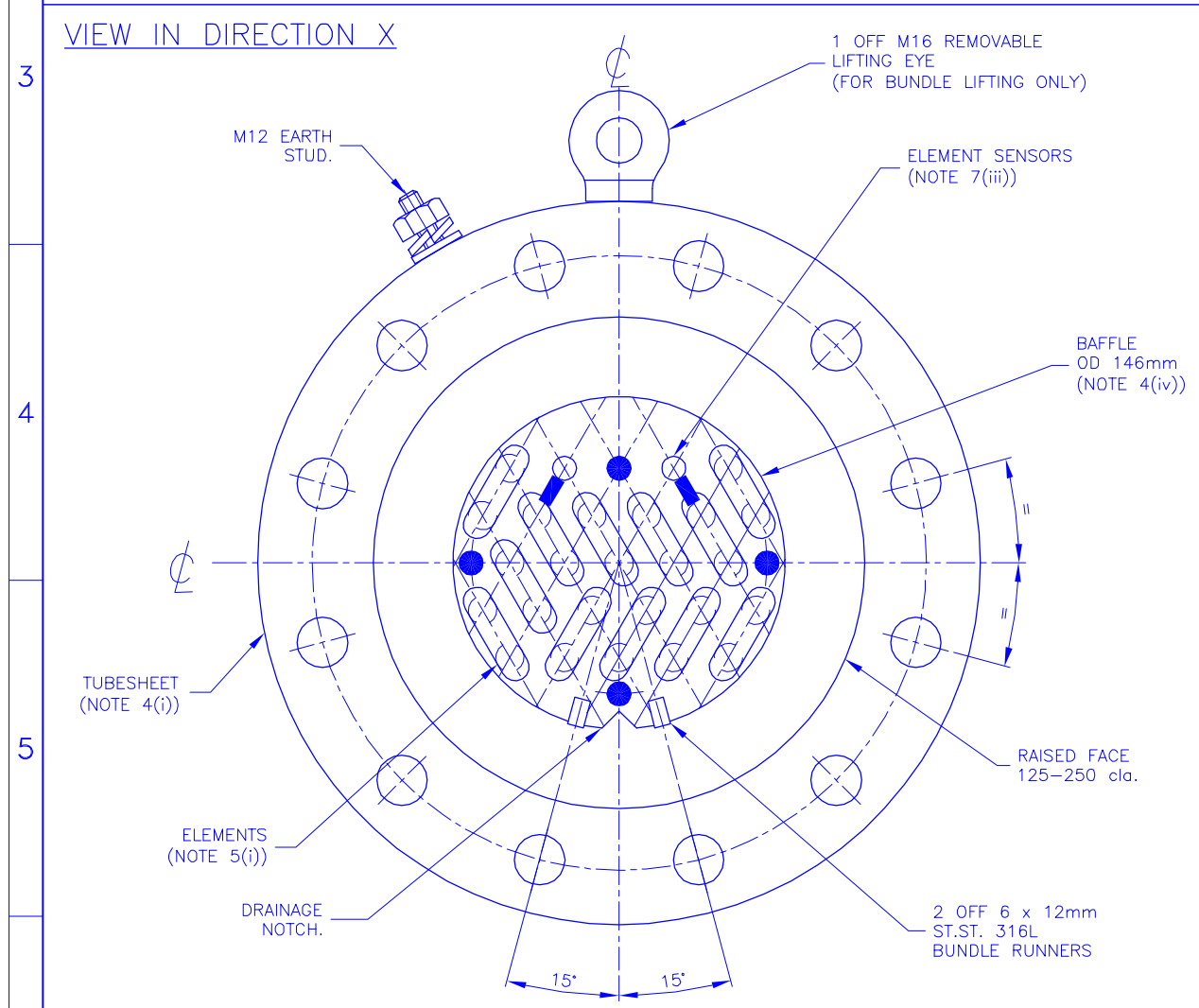
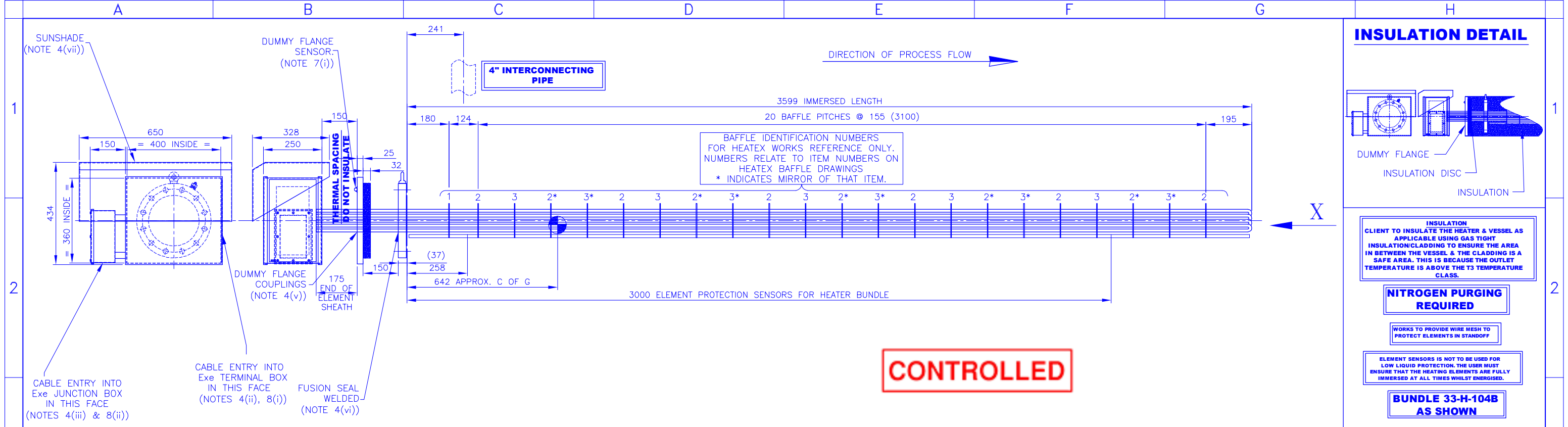
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Doc Num	Revision	Issue	Date	Initials	Supplier's Approval Signature	Approval By
B01	0	1	12/08/2010	julia		26/08/2010

PAGES (Including this one)
2
COMMENTS

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NOTES:

1. SPECIFICATION:

(i) 101.5kW, 380V, 3Ph, 3 WIRE DELTA, 50Hz, STAGE 2.

(ii) DESIGN PRESSURE: 9.25 bar.g @ 565 °C.

2. CERTIFICATION:

(i) ~~Ex~~ II 2 G
Ex e II T3
EN 60079-0 & EN 60079-7
CERTIFICATE No. LCIE 02 ATEX 6040X (ISES)

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(iii) INSTALLATION, OPERATION & MAINTENANCE MANUAL: 004146.IOM

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(iii) Exe JUNCTION BOX: EXHEAT TYPE (JB1), ST.ST. 316L (IP66/67).

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(v) ELEMENT COUPLINGS INTO DUMMY FLANGE: STAINLESS STEEL.

(vi) ELEMENT WELDED INTO TUBESHEET: FUSION SEAL WELDED.

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(i) TUBESHEET, SUN SHADE, TERMINAL BOX: STAINLESS STEEL FINISH (UNPAINTED)

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7. TEMPERATURE SENSORS:

(i) 1 x DUMMY FLANGE OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm) TERMINATED IN TUBESHEET EDGE.

(ii) 1 x VESSEL SKIN OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm).

(iii) 2 x ELEMENT OVERTEMPERATURE SENSING TYPE 'K' THERMOCOUPLE (DUPLEX 6mm). STRAPPED TO ELEMENT SHOWN.

AS BUILT

8. CABLE ENTRIES:

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