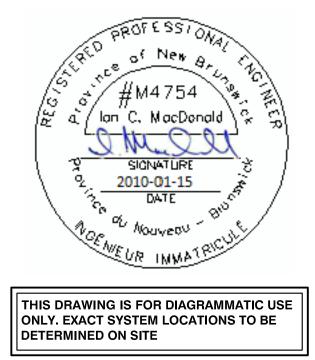


	DRAWIN	G N	OTES
1	PIPE DRAIN TO EXTERIOR OR SUITABLE FLOOR DRAIN.	18	PROVIDE WATERSHIELD/HEAD GUARD ON SPRINKLER HEADS.
2	BRANCH PIPING TO FOLLOW SLOPE OF CEILING IN THIS AREA.	19	
3	NEW VALVE ROOM IN MAINTENANCE SHOP. VALVES FOR SPRINKLER ZONE # 1, 2, 3, 4, 5, AND 10. REFER TO NEW VALVE ROOM RISER SCHEMATIC.		ASSEMBLY FOR ZONE #9. REFER TO SECOND FLOOR STORAGE RISER SCHEMATIC.
4	EXISTING BRANCH PIPING TO REMAIN IN THIS AREA AND	20	PIPE ALL SYSTEM DRAINS FOR THE VALVE HEADERS IN THE MAINTENANCE SHOP TO THIS LOCATION.
	MAIN TO BE REPLACED. OPEN NOZZLES TO BE REPLACED WITH NEW UPRIGHT SPRINKLERS. NEW SPRINKLER HEADS ARE TO BE LOCATED WITHIN 12" OF THE CEILING.	21	PROVIDE STEEL SUPPORT BETWEEN EXISTING COLUMNS FOR SUPPORTING NEW BRANCH PIPING.
5	EXISTING VALVE ROOM TO BE EQUIPPED WITH NEW DOOR AND NEW CEILING. VALVES FOR SPRINKLER ZONES #21, 22, AND 23 TO BE LOCATED IN THIS ROOM.	22	PROVIDE NEW FIRE DEPARTMENT CONNECTION AT THIS LOCATION. FIRE DEPARTMENT CONNECTION AND PIPING TO BE SECURED TO ADJACENT COLUMN. LOCATE BETWEEN 36" AND 48" ABOVE GRADE.
6	PROVIDE AND INSTALL SPRINKLER HEADS DIRECTLY ABOVE WINDOWS. SPRINKLER HEADS SHALL BE COMPLETE WITH WATERSHIELD/HEAD GUARD. PROVIDE 1 SPRINKLER PER PANE OF GLASS. ALLOW FOR A MINIMUM	23	PROVIDE NEW BULKHEAD TO CONCEAL SPRINKLER SYSTEM MAIN. PAINT COLOUR TO MATCH ADJACENT WALLS.
	OF 6 SPRINKLERS.	24	PROVIDE SPRINKLER PROTECTION IN THIS ROOM. CONNECT TO MAINTENANCE SHOP SPRINKLER ZONE.
$\overline{()}$	AND PIT OPERATIONS.	25	PROVIDE NEW NORMALLY OPEN SUPERVISED CONTROL VALVE ON EXISTING HOSE SUPPLY PIPING. VALVE TO BE
(8)	PROVIDE A NORMALLY OPEN SUPERVISED CONTROL VALVE ON RISER. LOCATE IN ACCESSIBLE AREA.		IN ACCESSIBLE LOCATION.
9	LOCATE LOW POINT DRAIN TO ALLOW FOR HOSE OR PAIL TO BE CONNECTED FOR DRAINING SYSTEM.	26	PROVIDE NEW WALL HYDRANT $c/w 2-2\frac{1}{2}$ " VALVES.
(10)	EXISTING SPRINKLER HEADS AND ATTACHED 1"		INSTALLATION DETAIL.
	ELBOWS AND TEES ARE TO BE DEMOLISHED AND REPLACED WITH NEW. MAINTAIN EXISTING MAIN.	28	PROVIDE NEW 2½" HOSE VALVES AT EACH STAIR LANDING AND CONNECT TO NEW 4" RISER. ALLOW FOR 6 IN TOTAL.
(1)	PROVIDE SPLASH GUARD AT 9'-0" ABOVE FLOOR OVER EQUIPMENT. MATCH EXISTING ADJACENT SPLASH GUARD MATERIAL AND HANGING ARRANGEMENT.	29	PROVIDE STAND TO SUPPORT NEW HOSE CABINET. BOTTOM OF CABINET TO BE 36" ABOVE GRADE. STAND TO BE MOUNTED ON CONCRETE FOOTINGS.
12	PROVIDE ADEQUATE PIPE SUPPORTS AND BRACING TO STEEL AND/OR CONCRETE STRUCTURE.	30	ALL PIPING AND COMPONENTS IN TURBINE HALL SHALL BE COORDINATED TO AVOID EXISTING OVERHEAD CRANE.
13	PROVIDE BOLLARD PROTECTION AROUND HOSE VALVES AND WATER CANNONS TO PROTECT FROM PLANT OPERATIONS.	31	PROVIDE NEW HOSE CABINET AT THIS LOCATION, c/w 2½", AND 1½" CONNECTION, HOSE AND NOZZLE. A NORMALLY OPEN SUPERVISED CONTROL VALVE IS TO
14	CONNECT TO NEW 4" RISER AS SHOWN ON BURNER FRONT RISER SCHEMATIC. PROVIDE NEW DRAIN RISER AND DRAIN TO BOILER HOUSE GROUND LEVEL WHERE NOTED.	32	BE PROVIDED ON THE SUPPLY PIPING. DEMOLISH EXISTING 6" UNDERGROUND PIPING AND CAP AT THIS LOCATION.
(15)	PROVIDE NEW CABINET c/w HOSE AT THIS LOCATION.	33	NEW 6" MAIN TO BE INSTALLED AND CONNECTED TO EXISTING MAIN AS SHOWN ON FIRE RING MAIN DRAWING.
16	PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRANT.		IERAL NOTES: INSTALL POKE UPS, SWING JOINTS AND DEEP CUP
17	PROVIDE NEW HOSE FOR FIRE DEPARTMENT USE IN NEW EQUIPMENT CABINET. CUT ROCK AS REQUIRED FOR INSTALLATION OF CABINET.		INSTALL FORE OF 3, SWING DOINTS AND DEEL CON ESCUTCHEONS AS REQUIRED.

	LEGEND
0	STANDARD RESPONSE UPRIGHT SPRINKLER, 200°F, ½" ORIFICE, K = 8.0
Ø	STANDARD RESPONSE UPRIGHT SPRINKLER, 286°F, $\frac{1}{2}$ " ORIFICE, K = 8.0
۲	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER 155°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
Ø	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER 286°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
	QUICK RESPONSE DRY PENDENT SPRINKLER, 200° F, K = 5.6
•	HIGH VELOCITY OPEN SPRAY NOZZLE, $3/8$ " ORIFICE, K = 1.6
\bigcirc	SPRINKLER HEAD GUARD
	PIPE DOWN
0	RISER UP
	TEE DOWN
	PREACTION VALVE
\Diamond	DELUGE VALVE
\bowtie	CONTROL VALVE
N.C.	NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED TAMPER SWITCH
N.O.	NORMALLY OPEN CONTROL VALVE c/w SUPERVISED
	OS&Y GATE VALVE
	FLOW SWITCH
 [-	FLUSHING/CAPPED CONNECTION
\bowtie	AUXILIARY DRAIN VALVE
Ż	CHECK VALVE
AS	ALARM SWITCH
>	FIRE DEPARTMENT CONNECTION
+	FIRE HYDRANT
\supset	REMOTE INSPECTOR'S TEST CONNECTION
HR	HOSE REEL c/w 1- $\frac{1}{2}$ " HOSE CONNECTION AND HOSE
PAP	PREACTION RELEASING PANEL (BY OTHERS)
WM	WATER MONITOR c/w PROTECTIVE COVER
EC	FIRE HYDRANT EQUIPMENT CABINET
FP	FIRE PUMP
S	STRAINER
AC	AIR COMPRESSOR
AMD	AIR MAINTENANCE DEVICE
	LOW AIR PRESSURE SWITCH
	PREACTION PANEL
FM	FLOW METER
RV]	RELIEF VALVE
FPC	FIRE PUMP CONTROLLER
	INTERIOR HOSE CABINET c/w 1½"
	HOSE AND 21/2" HOSE VALVE
	INSPECTOR'S TEST CONNECTION
\bowtie	2½" HOSE VALVE

DEPARTMENT OF OPERATIONS AND ENGINEERING P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151 Fax: (441) 295-0170



CONSULTANT



ISSUE / REVISION

No.	Da	ate:
\triangle	-	-
5	ISSUED FOR TENDER	10/01/15
4	ISSUED FOR PERMIT APPLICATION	09/05/11
3	ISSUED FOR FINAL REVIEW	08/02/29
2	ISSUED FOR 99% REVIEW	08/01/04
1	ISSUED FOR 75% REVIEW	07/11/22

SCALE: AS NOTED **SURVEY** Prepared By: <u>DESIGN</u> Prepared By: *AM/LD* Checked By: AM

DRAWING	
Prepared By: LD	Date:
Checked By: IM	Date:
Approved By:	

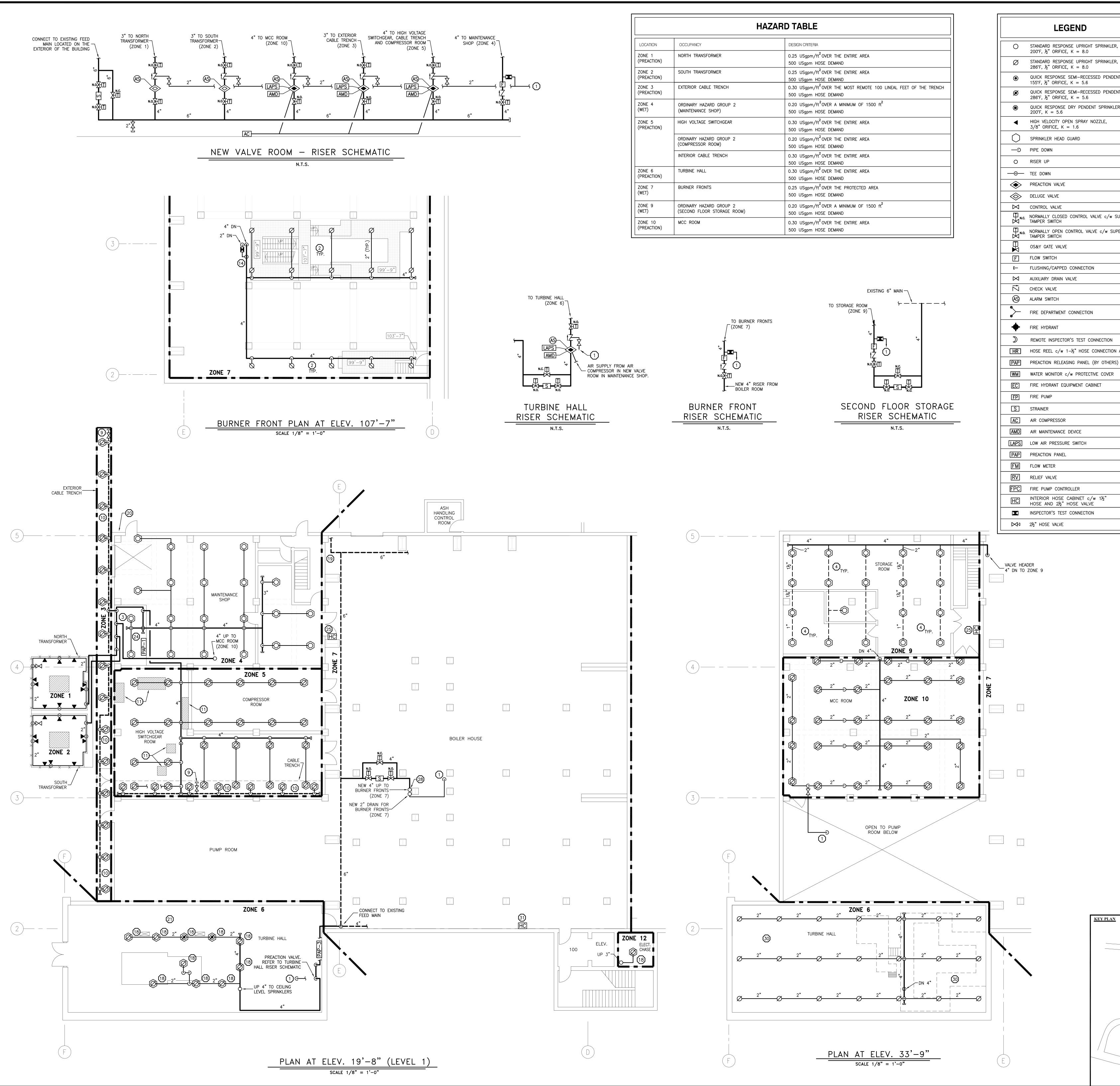
Project Number: 07031

Project Title: TYNES BAY ENERGY FACILITY FIRE PROTECTION

UPGRADE

Sheet Title: SPRINKLER SYSTEM FIRE PROTECTION RING MAIN





HAZARD TABLE		
	DESIGN CRITERIA	
	0.25 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	
	0.25 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	
1	0.30 USgpm/ft ² OVER THE MOST REMOTE 100 LINEAL FEET OF THE TRENCH 500 USgpm HOSE DEMAND	
IP 2	0.20 USgpm/ft ² OVER A MINIMUM OF 1500 ft ² 500 USgpm HOSE DEMAND	
AR	0.30 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	
P 2	0.20 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	
	0.30 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	
	0.30 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	
	0.25 USgpm/ft ² OVER THE PROTECTED AREA 500 USgpm HOSE DEMAND	
P 2 E ROOM)	0.20 USgpm/ft ² OVER A MINIMUM OF 1500 ft ² 500 USgpm HOSE DEMAND	
	0.30 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND	

EXISTING 6"	
D STORAGE ROOM (ZONE 9)	۶ <u> </u>
	* 4
	OOR STORAGE SCHEMATIC

 STANDARD RESPONSE UPRIGHT SPRINKLER, 200'F, ½" ORIFICE, K = 8.0 STANDARD RESPONSE UPRIGHT SPRINKLER, 286'F, ½" ORIFICE, K = 8.0 QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 155'F, ½" ORIFICE, K = 5.6 QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 286'F, ½" ORIFICE, K = 5.6 QUICK RESPONSE DRY PENDENT SPRINKLER, 200'F, K = 5.6 QUICK RESPONSE DRY PENDENT SPRINKLER, 3/8" ORIFICE, K = 1.6 SPRINKLER HEAD GUARD PIPE DOWN
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3/8" ORIFICE, K = 1.6 SPRINKLER HEAD GUARD
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O RISER UP
PREACTION VALVE
DELUGE VALVE
CONTROL VALVE
Normally closed control valve c/w supervised tamper switch
NORMALLY OPEN CONTROL VALVE C/W SUPERVISED
OS&Y GATE VALVE
F FLOW SWITCH
E- FLUSHING/CAPPED CONNECTION
CHECK VALVE
AS ALARM SWITCH
FIRE DEPARTMENT CONNECTION
FIRE HYDRANT
D REMOTE INSPECTOR'S TEST CONNECTION
HR HOSE REEL c/w 1-1/2" HOSE CONNECTION AND HOSE
PAP PREACTION RELEASING PANEL (BY OTHERS)
WM WATER MONITOR c/w PROTECTIVE COVER
EC FIRE HYDRANT EQUIPMENT CABINET
FP FIRE PUMP
S STRAINER
AC AIR COMPRESSOR
AMD AIR MAINTENANCE DEVICE
LAPS LOW AIR PRESSURE SWITCH
PAP PREACTION PANEL
FM FLOW METER
RV RELIEF VALVE
FPC FIRE PUMP CONTROLLER
HC INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE
INSPECTOR'S TEST CONNECTION
₩ 2½" HOSE VALVE

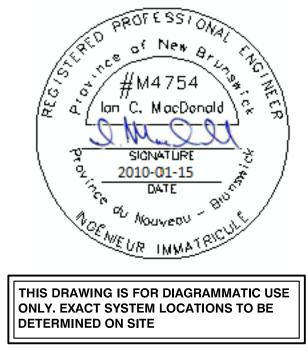
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 AND NEW CELLING. VALVES FOR SPRINKLER ZONES #21 22, AND 23 TO BE LOCATED IN THIS ROOM. PROVIDE AND INSTALL SPRINKLER HEADS DIRECTLY ABOVE WINDOWS. SPRINKLER HEADS SHALL BE COMPLETE WITH WATERSHIELD/HEAD GLARD. PROVIDE SPRINKLER PER PARE OF GLASS. ALLOW FOR A MINID OF 6 SPRINKLER PARE PARE OF GLASS. ALLOW FOR A MINID OF 6 SPRINKLER PARE PARE OF GLASS. ALLOW FOR A MINID OF 6 SPRINKLER NEAR OF OR LOSE OCTIVAL VALVE ON RISER. LOCATE IN ACCESSIBLE AREA. LOCATE HOW POINT DRAIN TO ALLOW FOR HOSE OF PALL TO BE CONNECTED FOR DRAINING SYSTEM. EXISTING SPRINKLER HEADS AND ATTACHED 1" ELBOWS AND TEES ARE TO BE DEMOLISHED AND REPLACED WITH NEW. MAINTAIN EXISTING MAIN. PROVIDE SPLASH GUARD AT 9'-0' ABOVE FLOOR OVER EQUIPMENT. MATCH EXISTING ADJACENT SPLASH GUARD MATERNAL AND HANGING ARRANGEMENT. PROVIDE ADEQUATE PIPE SUPPORTS AND BRACING TO STEEL AND/OR CONCRETE STRUCTURE. PROVIDE ADEQUATE PIPE SUPPORTS AND BRACING TO STEEL AND/OR CONCRETE STRUCTURE. PROVIDE NEW HOSE VALVES ON EXISTING AND REACING TO STEEL AND/OR CONCRETE STRUCTURE. PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRAIT. PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRAIT. PROVIDE NEW HOSE FOR FIRE DEPARTMENT USE IN NEW EQUIPMENT CABINET. CUT ROCK AS REQUIRED FOR INSTALLATION OF CABINET. PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRAIT. PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRAIT. PROVIDE NEW HOSE FOR FIRE DEPARTMENT USE IN NEW EQUIPMENT CABINET. CUT ROCK AS REQUIRED FOR INSTALLATION OF CABINET. PROVIDE NEW HOSE FOR FIRE DEPARTMENT CONNECTION. PROVIDE NEW HOSE FOR FIRE DEPARTMENT CONNECTION AT THIS LOCATION. FIRE DEPARTMENT CONNECTION AT THIS LOCATION. FIRE DEPARTMENT CONNECTION AND PIPING. PROVIDE NEW HOSE SCHEMATIC. PROVIDE NEW MORALLY OPEN SUPERVISED CONTROL VALVE ON EXISTING DALL HYDRANT C/W 2-2¹ VALVES. PROVIDE	4	EXISTING BRANCH PIPING TO REMAIN IN THIS AREA AND MAIN TO BE REPLACED. OPEN NOZZLES TO BE REPLAC WITH NEW UPRIGHT SPRINKLERS. NEW SPRINKLER HEAD ARE TO BE LOCATED WITHIN 12" OF THE CEILING.
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	31	2½", AND 1½" CONNECTION, HOSE AND NOZZLE. A NORMALLY OPEN SUPERVISED CONTROL VALVE IS TO

PIPE SIZE TABLE				
No. OF HEADS (BRANCH LINE) PIPE SIZE CROSSMAIN FEED MAIN SIZE SIZE				
1 & 2 1"				
3	11⁄4"	SEE DWG	SEE DWG.	
4	1½"		SEL DWG.	
REMAINDER 2"				
NOTES: – PIPE SIZES ARE TO BE AS STATED ABOVE UNLESS NOTED OTHERWISE. – RISER NIPPLES ARE TO FOLLOW SAME PIPE SIZE FORMAT AS BRANCH LINES.				

SEA WATER PUMPING STATION ////// NORTH SHORE ROAD NEW ASH PROCESSING BUILDING ANNEX TIPPING BAILING HALL ANALYZER HOUSE /HÓÚŚÉ? ΗΔΙΙ TURBINE ADMIN. PALMETTO ROAD

MINISTRY OF WORKS AND ENGINEERING

DEPARTMENT OF OPERATIONS AND ENGINEERING P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151 Fax: (441) 295-0170



CONSULTANT



ISSUE / REVISION

	Da	nte:
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5	ISSUED FOR TENDER	10/01/15
4	ISSUED FOR PERMIT APPLICATION	09/05/11
3	ISSUED FOR FINAL REVIEW	08/02/29
2	ISSUED FOR 99% REVIEW	08/01/04
1	ISSUED FOR 75% REVIEW	07/11/22
SCA	LE: AS NOTED	
	VEY	
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	ared By: Da	nte: -
Prep - DES	IGN ared By: Da	nte: - nte: -

DRAWING Prepared By: LD Checked By: IM **Approved By:**

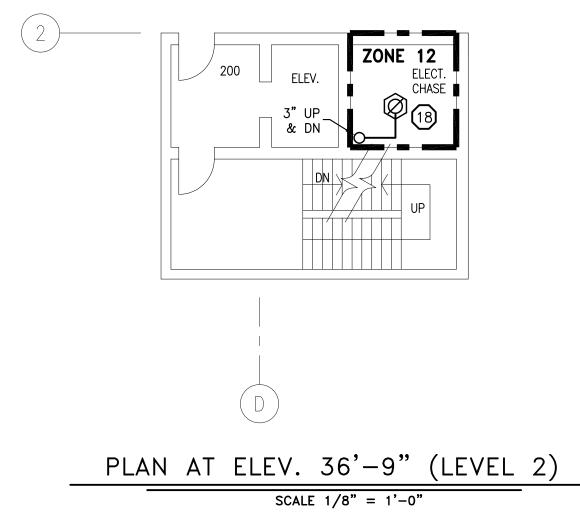
Project Number: 07031

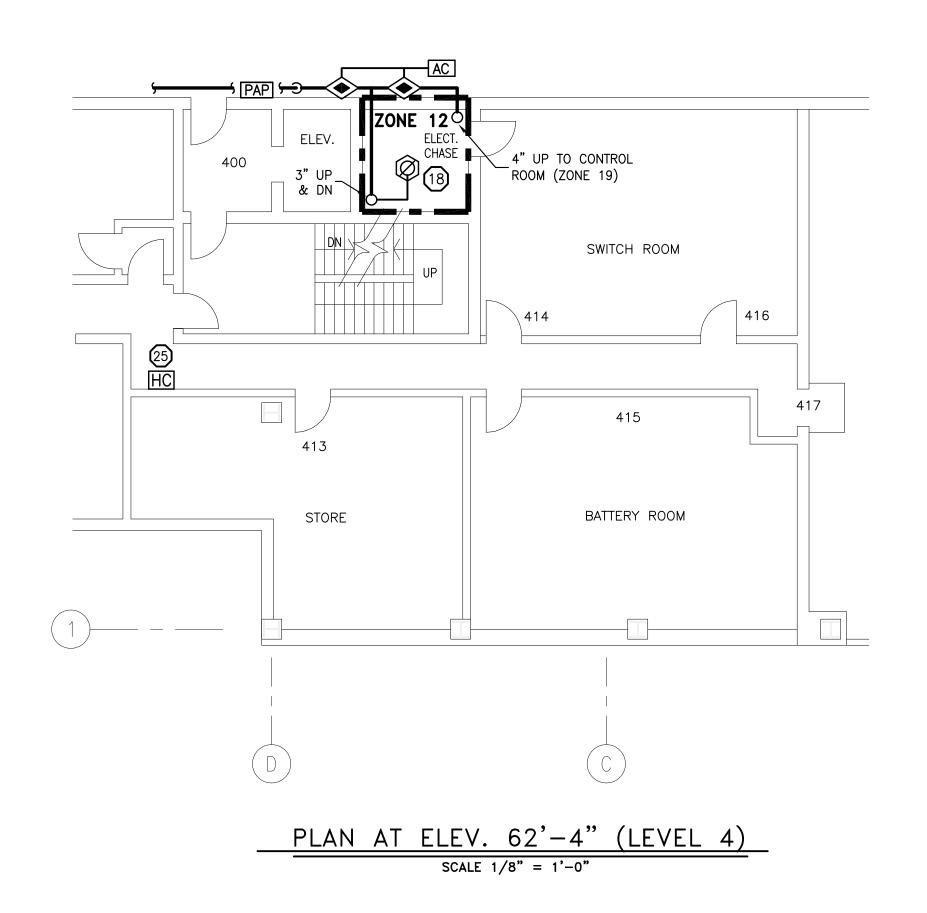
Project Title: TYNES BAY ENERGY FACILITY FIRE PROTECTION UPGRADE

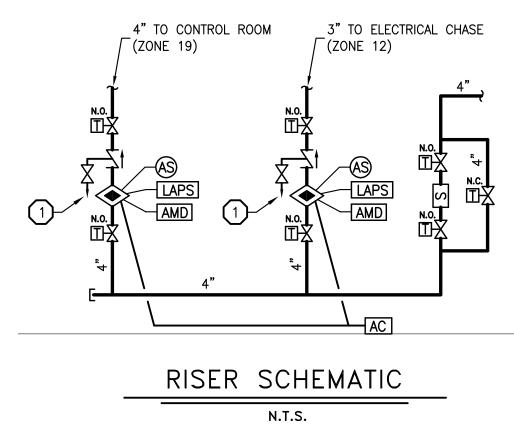
Sheet Title:

SPRINKLER SYSTEM ANNEX BUILDING, TURBINE HALL AND BOILER HOUSE

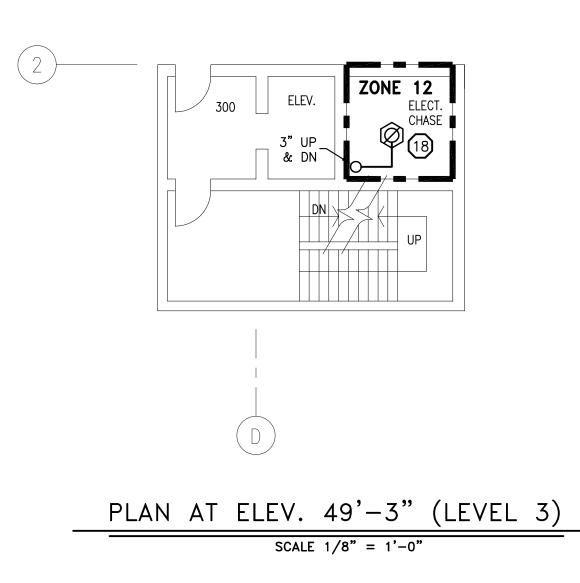


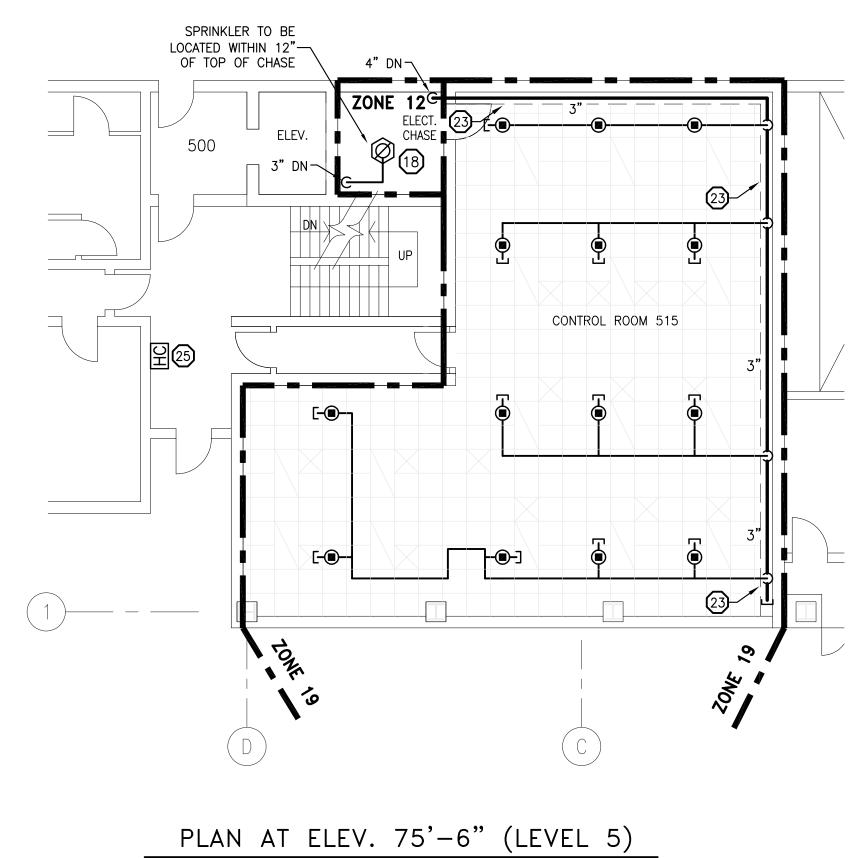








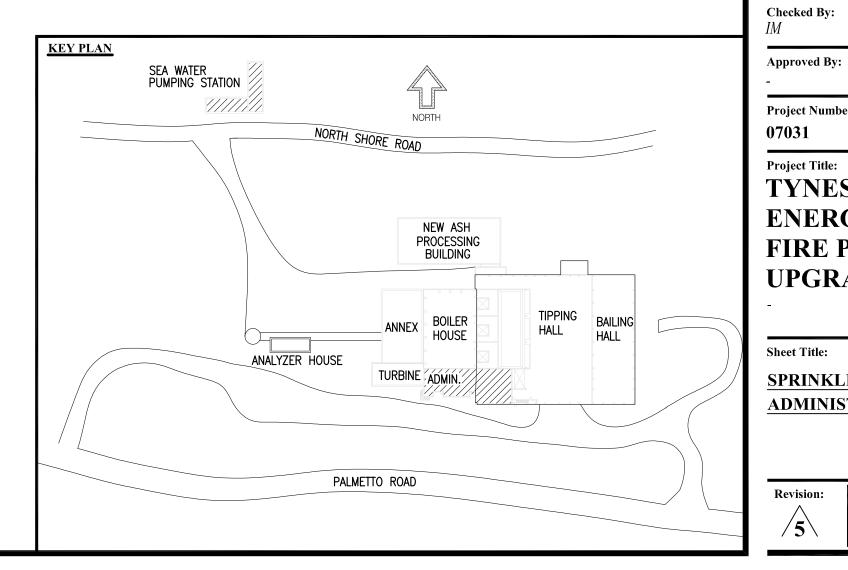




SCALE 1/8" = 1'-0"

	DRAWING NOTES	
1	PIPE DRAIN TO EXTERIOR OR SUITABLE FLOOR DRAIN.	
2	BRANCH PIPING TO FOLLOW SLOPE OF CEILING IN THIS AREA.	
3	NEW VALVE ROOM IN MAINTENANCE SHOP. VALVES FOR SPRINKLER ZONE # 1, 2, 3, 4, 5, AND 10. REFER TO NEW VALVE ROOM RISER SCHEMATIC.	
4	EXISTING BRANCH PIPING TO REMAIN IN THIS AREA AND MAIN TO BE REPLACED. OPEN NOZZLES TO BE REPLACED WITH NEW UPRIGHT SPRINKLERS. NEW SPRINKLER HEADS ARE TO BE LOCATED WITHIN 12" OF THE CEILING.	
5	EXISTING VALVE ROOM TO BE EQUIPPED WITH NEW DOOR AND NEW CEILING. VALVES FOR SPRINKLER ZONES #21, 22, AND 23 TO BE LOCATED IN THIS ROOM.	
6	PROVIDE AND INSTALL SPRINKLER HEADS DIRECTLY ABOVE WINDOWS. SPRINKLER HEADS SHALL BE COMPLETE WITH WATERSHIELD/HEAD GUARD. PROVIDE 1 SPRINKLER PER PANE OF GLASS. ALLOW FOR A MINIMU OF 6 SPRINKLERS.	
7	LOCATE MAIN TIGHT TO WALL TO AVOID OBSTRUCTIONS AND PIT OPERATIONS.	
8	PROVIDE A NORMALLY OPEN SUPERVISED CONTROL VALVE ON RISER. LOCATE IN ACCESSIBLE AREA.	
9	LOCATE LOW POINT DRAIN TO ALLOW FOR HOSE OR PAIL TO BE CONNECTED FOR DRAINING SYSTEM.	
10	EXISTING SPRINKLER HEADS AND ATTACHED 1" ELBOWS AND TEES ARE TO BE DEMOLISHED AND REPLACED WITH NEW. MAINTAIN EXISTING MAIN.	
(1)	PROVIDE SPLASH GUARD AT 9'-0" ABOVE FLOOR OVER EQUIPMENT. MATCH EXISTING ADJACENT SPLASH GUARD MATERIAL AND HANGING ARRANGEMENT.	
(12)	PROVIDE ADEQUATE PIPE SUPPORTS AND BRACING TO STEEL AND/OR CONCRETE STRUCTURE.	
13	PROVIDE BOLLARD PROTECTION AROUND HOSE VALVES AND WATER MONITORS TO PROTECT FROM PLANT OPERATIONS.	
14	CONNECT TO NEW 4" RISER AS SHOWN ON BURNER FRONT RISER SCHEMATIC. PROVIDE NEW DRAIN RISER AND DRAIN TO BOILER HOUSE GROUND LEVEL WHERE NOTED.	
(15)	PROVIDE NEW CABINET c/w HOSE AT THIS LOCATION.	
(16)	PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRANT.	
17	PROVIDE NEW HOSE FOR FIRE DEPARTMENT USE IN NEW EQUIPMENT CABINET. CUT ROCK AS REQUIRED FOR INSTALLATION OF CABINET.	
18	PROVIDE WATERSHIELD/HEAD GUARD ON SPRINKLER HEADS.	
19	DEMOLISH EXISTING DELUGE VALVE HEADER AND PROVIDE NEW CONTROL VALVE AND FLOW SWITCH ASSEMBLY FOR ZONE #9. REFER TO SECOND FLOOR STORAGE RISER SCHEMATIC.	
20	PIPE ALL SYSTEM DRAINS FOR THE VALVE HEADERS IN THE MAINTENANCE SHOP AT THIS LOCATION.	
21	PROVIDE STEEL SUPPORT BETWEEN EXISTING COLUMNS FOR SUPPORTING NEW BRANCH PIPING.	
22	PROVIDE NEW FIRE DEPARTMENT CONNECTION AT THIS LOCATION. FIRE DEPARTMENT CONNECTION AND PIPING TO BE SECURED TO ADJACENT COLUMN. LOCATE BETWEEN 36" AND 48" ABOVE GRADE.	
23	PROVIDE NEW BULKHEAD TO CONCEAL SPRINKLER SYSTEM MAIN. PAINT COLOUR TO MATCH ADJACENT WALLS.	
24	PROVIDE SPRINKLER PROTECTION IN THIS ROOM. CONNECT TO MAINTENANCE SHOP SPRINKLER ZONE.	
25	PROVIDE NEW NORMALLY OPEN SUPERVISED CONTROL VALVE ON EXISTING HOSE SUPPLY PIPING. VALVE TO BE IN ACCESSIBLE LOCATION.	
26	PROVIDE NEW WALL HYDRANT $c/w 2-2^{1"}_{2}$ VALVES.	
27	REFER TO WATER MONITOR SCHEMATIC FOR INSTALLATION DETAIL.	
28	PROVIDE NEW $2\frac{1}{2}$ " HOSE VALVES AT EACH STAIR LANDING AND CONNECT TO NEW 4" RISER. ALLOW FOR 6 IN TOTAL.	
29	PROVIDE STAND TO SUPPORT NEW HOSE CABINET. BOTTOM OF CABINET TO BE 36" ABOVE GRADE. STAND TO BE MOUNTED ON CONCRETE FOOTINGS.	
30	ALL PIPING AND COMPONENTS IN TURBINE HALL SHALL BE COORDINATED TO AVOID EXISTING OVERHEAD CRANE.	
31	PROVIDE NEW HOSE CABINET AT THIS LOCATION, c/w 2½", AND 1½" CONNECTION, HOSE AND NOZZLE. A NORMALLY OPEN SUPERVISED CONTROL VALVE IS TO BE PROVIDED ON THE SUPPLY PIPING.	
GEN	IERAL NOTES:	
	INSTALL POKE UPS, SWING JOINTS AND DEEP CUP ESCUTCHEONS AS REQUIRED.	
2. INSTALL HANGERS AND BRACING AS REQUIRED.		

LOCATION	OCCUPANCY
ZONE 12 (PREACTION)	ELECTRICAL CHA
ZONE 19 (PREACTION)	LIGHT HAZARD CONTROL ROOM





155°F, ½" ORIFICE, К = 5.6		LEGEND
286F, ½" ORIFICE, K = 8.0 ● QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLEF 155F, ½" ORIFICE, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200F, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200F, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200F, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200F, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200F, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200F, K = 5.6 ● SPRINKLER HEAD GUARD → PIPE DOWN ● TEE DOWN ● PREACTION VALVE ● TEE DOWN ● PREACTION VALVE ● DELUGE VALVE ● REACTION VALVE ● REACTION VALVE ● NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ■ NORMALTRY OPEN CONTROL VALVE	0	
155°F, ½" ORIFICE, K = 5.6 ØUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 200°F, K = 5.6 QUICK RESPONSE DRY PENDENT SPRINKLER, 200°F, K = 5.6 HIGH VELOCITY OPEN SPRAY NOZZLE, 3/8" ORIFICE, K = 1.6 SPRINKLER HEAD GUARD → PIPE DOWN O RISER UP → TEE DOWN ◆ PREACTION VALVE ØUICK RESPONSE CONTROL VALVE c/w SUPERVISED TAMPER SWITCH ØNARMALLY OLOSED CONTROL VALVE c/w SUPERVISED TAMPER SWITCH ØNARMER SWITCH F FLUSHING/CAPPED CONNECTION AUXILIARY DRAIN VALVE N CHECK VALVE S ALARM SWITCH F FIRE DEPARTMENT CONNECTION AUXILIARY DRAIN VALVE FIRE HYDRANT N REMOTE INSPECTOR'S TEST CONNECTION AND HOSE EPAP PREACTION RELEASING PANEL (BY OTHERS) WM WATER MONTOR c/w PROTECTIVE COVER EC FIRE HYDRANT EQUIPMENT CABINET PIRE PIREACTION RELEASING PANEL (BY OTHERS) WM WATER MONTOR c/w PROTECTIVE COVER EC FIRE HYDRANT CAUIPMENT CABINET IFF FIRE PUMP	Ø	
286'F, ½" ORIFICE, K = 5.6 ● QUICK RESPONSE DRY PENDENT SPRINKLER, 200'F, K = 5.6 ▲ HIGH VELOCITY OPEN SPRAY NOZZLE, 3/8" ORIFICE, K = 1.6 ● SPRINKLER HEAD GUARD → PIPE DOWN ● RISER UP ● TEE DOWN ● RECTION VALVE ● PREACTION VALVE ● CONTROL VALVE ● CONTROL VALVE ● NorMALLY CLOSED CONTROL VALVE c/w SUPERVISED ● NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED ● NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ● NORMALY ORAIN VALVE ● SAY GATE VALVE ● FLOW SWITCH ● FILE HYDRANT ● FIRE HYDRANT ● FIRE HYDRANT ● REMOTE INSPECTOR'S TEST CONNECTION	۲	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER 155°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
200°F, K = 5.6 HIGH VELOCITY OPEN SPRAY NOZZLE, 3/8" ORIFICE, K = 1.6 SPRINKLER HEAD GUARD → PIPE DOWN ○ RISER UP → PREACTION VALVE ◇ PREACTION VALVE ◇ DELUGE VALVE ✓ CONTROL VALVE ✓ NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED ✓ NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ✓ NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ✓ NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ✓ NORMARLY OPEN CONTROL VALVE c/w SUPERVISED ✓ OS&Y GATE VALVE ✓ OS&Y GATE VALVE ✓ FLUSHING/CAPPED CONNECTION ✓ FIRE HYDRANT ✓ REMOTE INSPECTOR'S TEST CONNECTION AND	Ø	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER 286°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
3/8" ORIFICE, K = 1.6 SPRINKLER HEAD GUARD → PIPE DOWN Q RISER UP → TEE DOWN ◆ PREACTION VALVE ◆ PREACTION VALVE ◆ DELUGE VALVE ↓ CONTROL VALVE ↓ CONTROL VALVE ↓ NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED ↓ NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ↓ RELOW SWITCH F FLUSHING/CAPPED CONNECTION ↓ ALARM SWITCH ↓ FIRE DEPARTMENT CONNECTION ↓ Y ↓ FIRE HYDRANT ↓ REMOTE INSPECTOR'S TEST CONNECTION AND HOSE PAP PREACTION RELEASING PANEL (BY OTHERS) ↓ Y		
→ PIPE DOWN ○ RISER UP ◆ TEE DOWN ◆ PREACTION VALVE ◆ PREACTION VALVE ◆ PREACTION VALVE ◆ NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED ★ NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED ★ NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ★ FLOW SWITCH ► FLUSHING/CAPPED CONNECTION ★ ALARM SWITCH ★ FIRE DEPARTMENT CONNECTION ★ FIRE HYDRANT ★ FIRE HYDRANT ★ FIRE HYDRANT ★ REMOTE INSPECTOR'S TEST CONNECTION AND HOSE FEAP PREACTION RELEASING PANEL (BY OTHERS) ★ FIRE HYDR	•	•
○ RISER UP → TEE DOWN ◆ PREACTION VALVE ◆ DELUGE VALVE ◆ CONTROL VALVE ◆ NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED ↓ NORMALLY OPEN CONTROL VALVE c/w SUPERVISED ↓ REMOTE NORCH ↓ FLUSHING/CAPPED CONNECTION ↓ AUXILIARY DRAIN VALVE ↓ AUXILIARY DRAIN VALVE ↓ FIRE DEPARTMENT CONNECTION ↓ FIRE DEPARTMENT CONNECTION ↓ FIRE HYDRANT ↓ REMOTE INSPECTOR'S TEST CONNECTION AND HOSE ↓ PREACTION RELEASING PANEL (BY OTHERS) ↓ WATER MONITOR c/w PROTECTIVE COVER ↓ FIRE HYDRANT EQUIPMENT CABINET	\bigcirc	SPRINKLER HEAD GUARD
Image: Section value Image: Section value <td></td> <td>PIPE DOWN</td>		PIPE DOWN
Image: Section valve Image: Section valve <td>0</td> <td>RISER UP</td>	0	RISER UP
Image: Instantion and the second		TEE DOWN
Image: Normally Closed Control Valve c/w SUPERVISED Image: Switch Image: S		PREACTION VALVE
Image: Image	\sim	DELUGE VALVE
Image: Image	\sim	CONTROL VALVE
Image: Section Pressure of the pressure section pressure pressure pressure section pressure	N.C.	NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED
Image: Strain of the second secon		TAMPER SWITCH
F FLOW SWITCH ► FLUSHING/CAPPED CONNECTION ▲ AUXILIARY DRAIN VALVE ▲ CHECK VALVE ▲ ALARM SWITCH ▲ FIRE DEPARTMENT CONNECTION ▲ FIRE DEPARTMENT CONNECTION ▲ FIRE HYDRANT ▶ REMOTE INSPECTOR'S TEST CONNECTION ★ FIRE HYDRANT ▶ REMOTE INSPECTOR'S TEST CONNECTION AND HOSE FAP PREACTION RELEASING PANEL (BY OTHERS) ₩M WATER MONITOR c/w PROTECTIVE COVER EC FIRE HYDRANT EQUIPMENT CABINET FPP FIRE PUMP S STRAINER ▲C AIR COMPRESSOR ▲MD AIR MAINTENANCE DEVICE LAPS LOW AIR PRESSURE SWITCH PAP PREACTION PANEL FM FLOW METER FM FLOW METER FPC FIRE PUMP CONTROLLER FPC FIRE PUMP CONTROLLE		
Image: Free Pression of the pr		
► AUXILIARY DRAIN VALVE ► CHECK VALVE ▲ ALARM SWITCH ▲ FIRE DEPARTMENT CONNECTION ▲ FIRE DEPARTMENT CONNECTION ▲ FIRE HYDRANT ● REMOTE INSPECTOR'S TEST CONNECTION AND HOSE ● PREACTION RELEASING PANEL (BY OTHERS) ● FIRE PUMP ● STRAINER ▲ AIR COMPRESSOR ▲ AIR MAINTENANCE DEVICE ▲ LOW AIR PRESSURE SWITCH ● PREACTION PANEL ● FLOW METER ● FLOW METER ● FUMP CONTROLLER ● HOSE AND 2½" HOSE VALVE ■ INSPECTOR'S		
N CHECK VALVE ▲ ALARM SWITCH ▲ FIRE DEPARTMENT CONNECTION ▲ FIRE HYDRANT ▲ FIRE HYDRANT ▲ FIRE HYDRANT ▲ PREMOTE INSPECTOR'S TEST CONNECTION ● REMOTE INSPECTOR'S TEST CONNECTION AND HOSE ● PREACTION RELEASING PANEL (BY OTHERS) ● FIRE HYDRANT EQUIPMENT CABINET ● FIRE PUMP S STRAINER ▲ AIR COMPRESSOR ▲ AIR MAINTENANCE DEVICE ▲ PREACTION PANEL ● PREACTION PANEL ● PREACTION PANEL ● FIRE PUMP CONTROLLER ● INTERIOR HOSE CABINET c/w 1½" ● INSPECTOR'S TEST CONNECTION		· · · · · · · · · · · · · · · · · · ·
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▶ FIRE DEPARTMENT CONNECTION ▶ FIRE HYDRANT ▶ REMOTE INSPECTOR'S TEST CONNECTION ■ HOSE REEL c/w 1-½" HOSE CONNECTION AND HOSE ■ PREACTION RELEASING PANEL (BY OTHERS) ■ WM WM WATER MONITOR c/w PROTECTIVE COVER ■ FIRE HYDRANT EQUIPMENT CABINET ■ FIRE PUMP S STRAINER ▲ AIR COMPRESSOR ▲ AIR MAINTENANCE DEVICE ■ PREACTION PANEL ■ PREACTION PANEL ■ FLOW METER ■ FLOW METER ■ RELIEF VALVE ■ FIRE PUMP CONTROLLER ■ INTERIOR HOSE CABINET c/w 1½" ■ HOE AND 2½" HOSE VALVE		
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Image: Laps Low AIR PRESSURE SWITCH PAP PREACTION PANEL FM FLOW METER RV RELIEF VALVE FPC FIRE PUMP CONTROLLER IHC INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE IMSPECTOR'S TEST CONNECTION	AC	AIR COMPRESSOR
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FM FLOW METER RV RELIEF VALVE FPC FIRE PUMP CONTROLLER HC INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE INSPECTOR'S TEST CONNECTION	LAPS	LOW AIR PRESSURE SWITCH
RV RELIEF VALVE FPC FIRE PUMP CONTROLLER HC INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE INSPECTOR'S TEST CONNECTION	PAP	PREACTION PANEL
FPC FIRE PUMP CONTROLLER INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE INSPECTOR'S TEST CONNECTION	FM	FLOW METER
HC INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE INSPECTOR'S TEST CONNECTION	RV	RELIEF VALVE
HOSE AND 2½" HOSE VALVE	FPC	FIRE PUMP CONTROLLER
INSPECTOR'S TEST CONNECTION	HC	
▷>>> 2½" HOSE VALVE		
		2½" HOSE VALVE
		-
		PIPE SIZE TABLE

PIPE SIZE SIZE SIZE SIZE (BRANCH LINE) 1" 1 & 2 11⁄4" 3 SEE DWG. SEE DWG. 1½" 4 REMAINDER 2"
 NOTES:

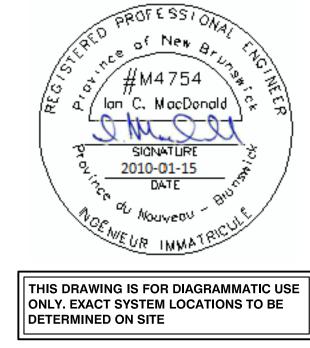
 – PIPE SIZES ARE TO BE AS STATED ABOVE UNLESS NOTED OTHERWISE.

 – RISER NIPPLES ARE TO FOLLOW SAME PIPE SIZE FORMAT AS BRANCH LINES.

HAZARD TABLE DESIGN CRITERIA 0.30 USgpm/ft²OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND 0.10 USgpm/ft²OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND

MINISTRY OF WORKS AND ENGINEERING

DEPARTMENT OF OPERATIONS AND ENGINEERING P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151 Fax: (441) 295-0170



<u>CONSULTANT</u>



ISSUE / REVISION

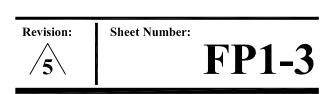
No.	D	ate:
\wedge	-	-
5	ISSUED FOR TENDER	10/01/15
4	ISSUED FOR PERMIT APPLICATION	09/05/11
3	ISSUED FOR FINAL REVIEW	08/02/29
2	ISSUED FOR 99% REVIEW	08/01/04
1	ISSUED FOR 75% REVIEW	07/11/22
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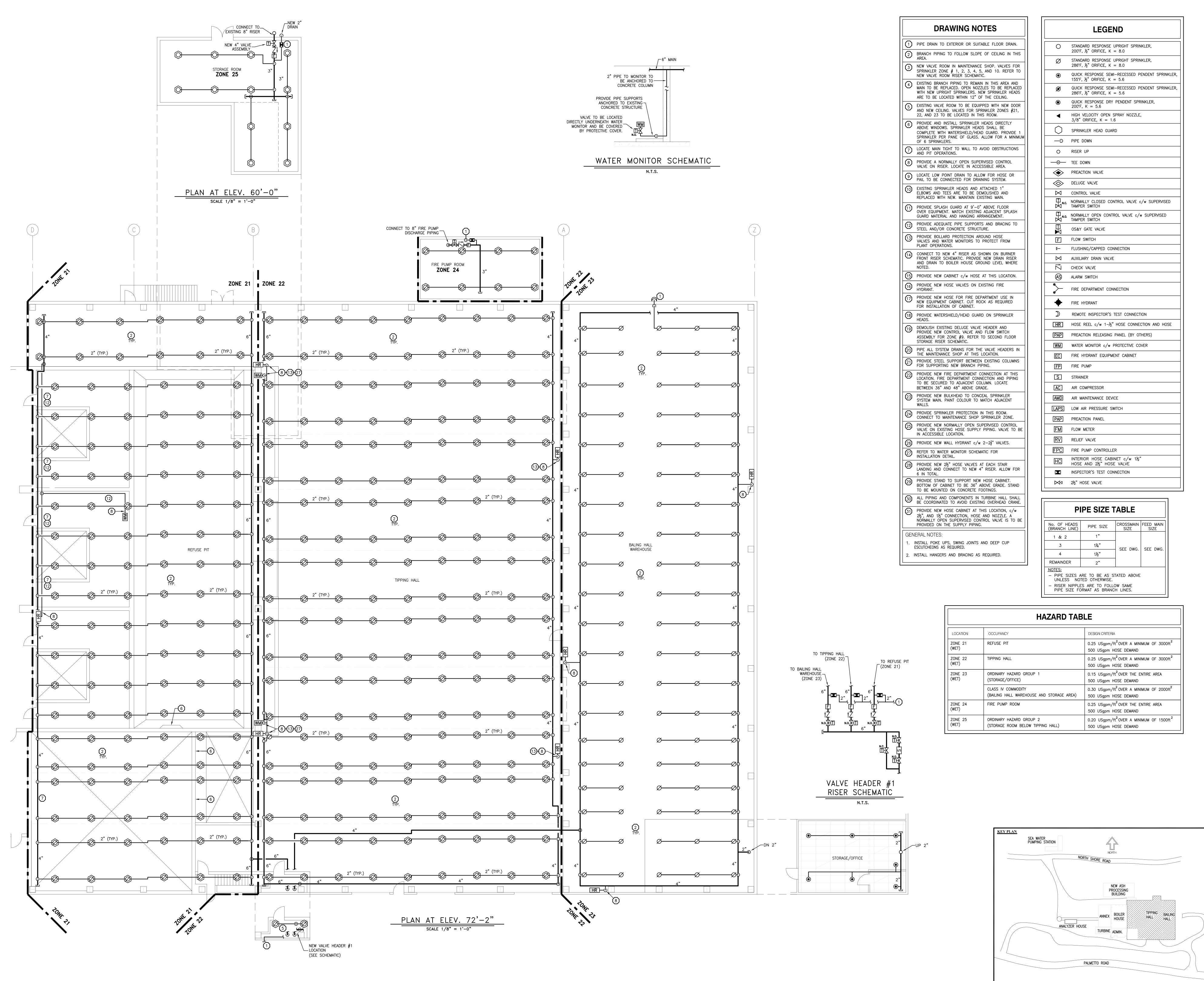
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Checked By: IM	Date:

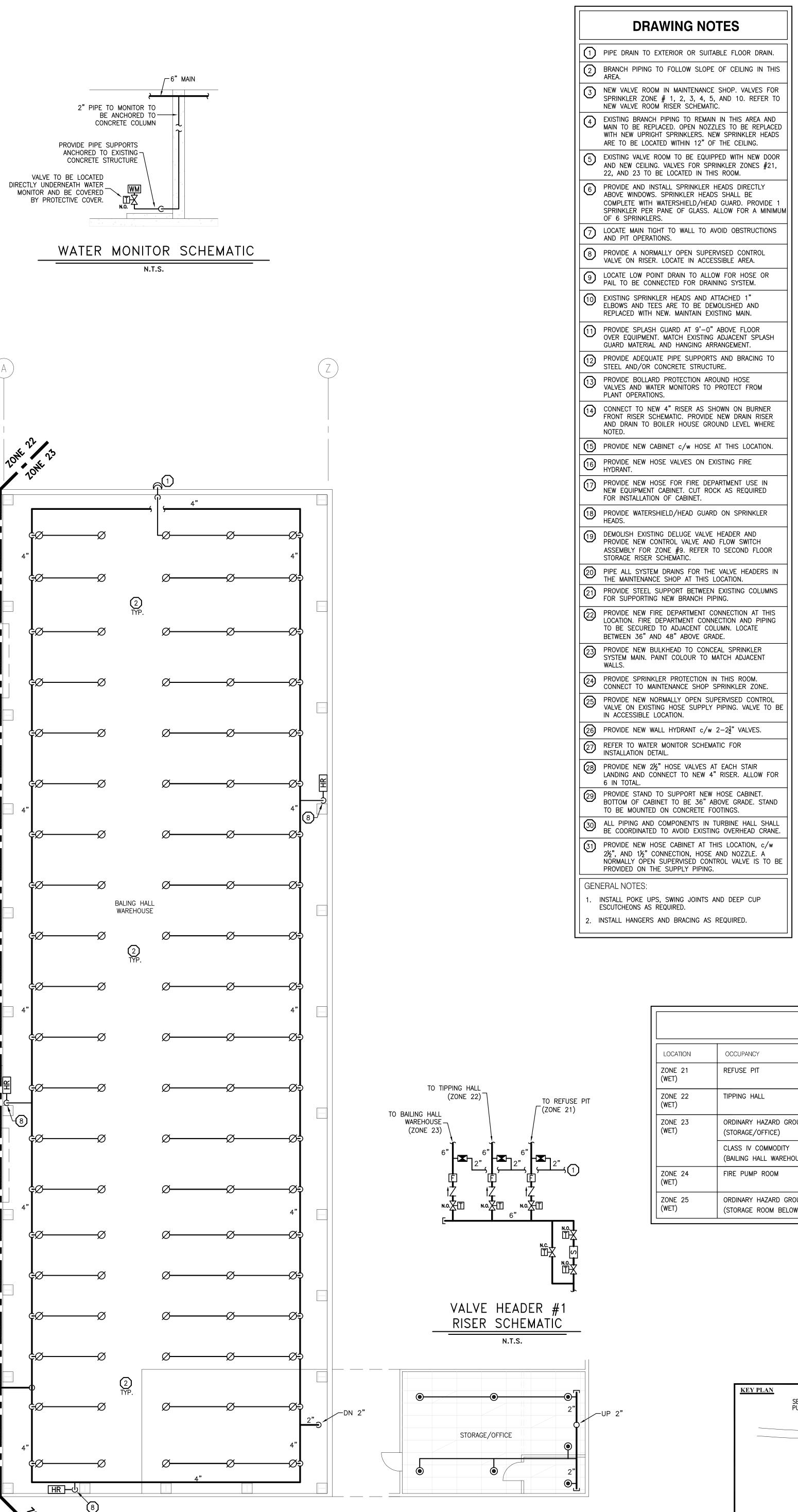
Project Number: 07031

Project Title: TYNES BAY ENERGY FACILITY FIRE PROTECTION UPGRADE

Sheet Title: <u>SPRINKLER SYSTEM</u> ADMINISTRATION BUILDING





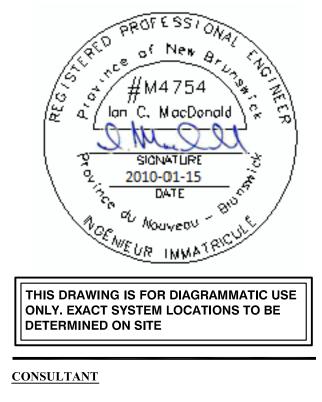


	LEGEND
0	STANDARD RESPONSE UPRIGHT SPRINKLER, 200°F, $\frac{1}{2}$ " ORIFICE, K = 8.0
Ø	STANDARD RESPONSE UPRIGHT SPRINKLER, 286°F, $\frac{1}{2}$ " ORIFICE, K = 8.0
۲	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER 155°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
Ø	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER 286°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
۲	QUICK RESPONSE DRY PENDENT SPRINKLER, 200° F, K = 5.6
•	HIGH VELOCITY OPEN SPRAY NOZZLE, 3/8" ORIFICE, K = 1.6
\bigcirc	SPRINKLER HEAD GUARD
—)	PIPE DOWN
0	RISER UP
	TEE DOWN
$\langle \! \diamond \! \rangle$	PREACTION VALVE
\Diamond	DELUGE VALVE
\bowtie	CONTROL VALVE
П.с.	NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED TAMPER SWITCH
₩.o.	NORMALLY OPEN CONTROL VALVE c/w SUPERVISED TAMPER SWITCH
	OS&Y GATE VALVE
F	FLOW SWITCH
Ē	FLUSHING/CAPPED CONNECTION
\bowtie	AUXILIARY DRAIN VALVE
Ň	CHECK VALVE
AS	ALARM SWITCH
<u> </u>	FIRE DEPARTMENT CONNECTION
+	FIRE HYDRANT
\mathbb{D}	REMOTE INSPECTOR'S TEST CONNECTION
HR	HOSE REEL c/w 1- $\frac{1}{2}$ " HOSE CONNECTION AND HOSE
PAP	PREACTION RELEASING PANEL (BY OTHERS)
WM	WATER MONITOR c/w PROTECTIVE COVER
EC	FIRE HYDRANT EQUIPMENT CABINET
FP	FIRE PUMP
S	STRAINER
AC	AIR COMPRESSOR
AMD	AIR MAINTENANCE DEVICE
LAPS	LOW AIR PRESSURE SWITCH
PAP	PREACTION PANEL
FM	FLOW METER
RV	RELIEF VALVE
FPC	FIRE PUMP CONTROLLER
HC	INTERIOR HOSE CABINET c/w 1½"
	HOSE AND 2½" HOSE VALVE
	2½" HOSE VALVE

PIPE SIZE TABLE			
No. OF HEADS (BRANCH LINE)	PIPE SIZE	CROSSMAIN SIZE	FEED MAIN SIZE
1 & 2	1"		
3	11⁄4"	SEE DWG.	SEE DWG.
4	1½"		SEE DWG.
REMAINDER	2"		
NOTES: – PIPE SIZES ARE TO BE AS STATED ABOVE			

	DESIGN CRITERIA
	0.25 USgpm/ft ² OVER A MINIMUM OF 3000ft ² 500 USgpm HOSE DEMAND
	0.25 USgpm/ft ² OVER A MINIMUM OF 3000ft ² 500 USgpm HOSE DEMAND
OUP 1	0.15 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND
USE AND STORAGE AREA)	0.30 USgpm/ft ² OVER A MINIMUM OF 2000ft ² 500 USgpm HOSE DEMAND
	0.25 USgpm/ft ² OVER THE ENTIRE AREA 500 USgpm HOSE DEMAND
OUP 2 N TIPPING HALL)	0.20 USgpm/ft ² OVER A MINIMUM OF 1500ft ² 500 USgpm HOSE DEMAND

DEPARTMENT OF **OPERATIONS AND ENGINEERING** P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151 Fax: (441) 295-0170



RJ Bartlett Engineering Fire Protection Engineers Building Code Consultants www.rjbartlett.com

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SUR	VEY	
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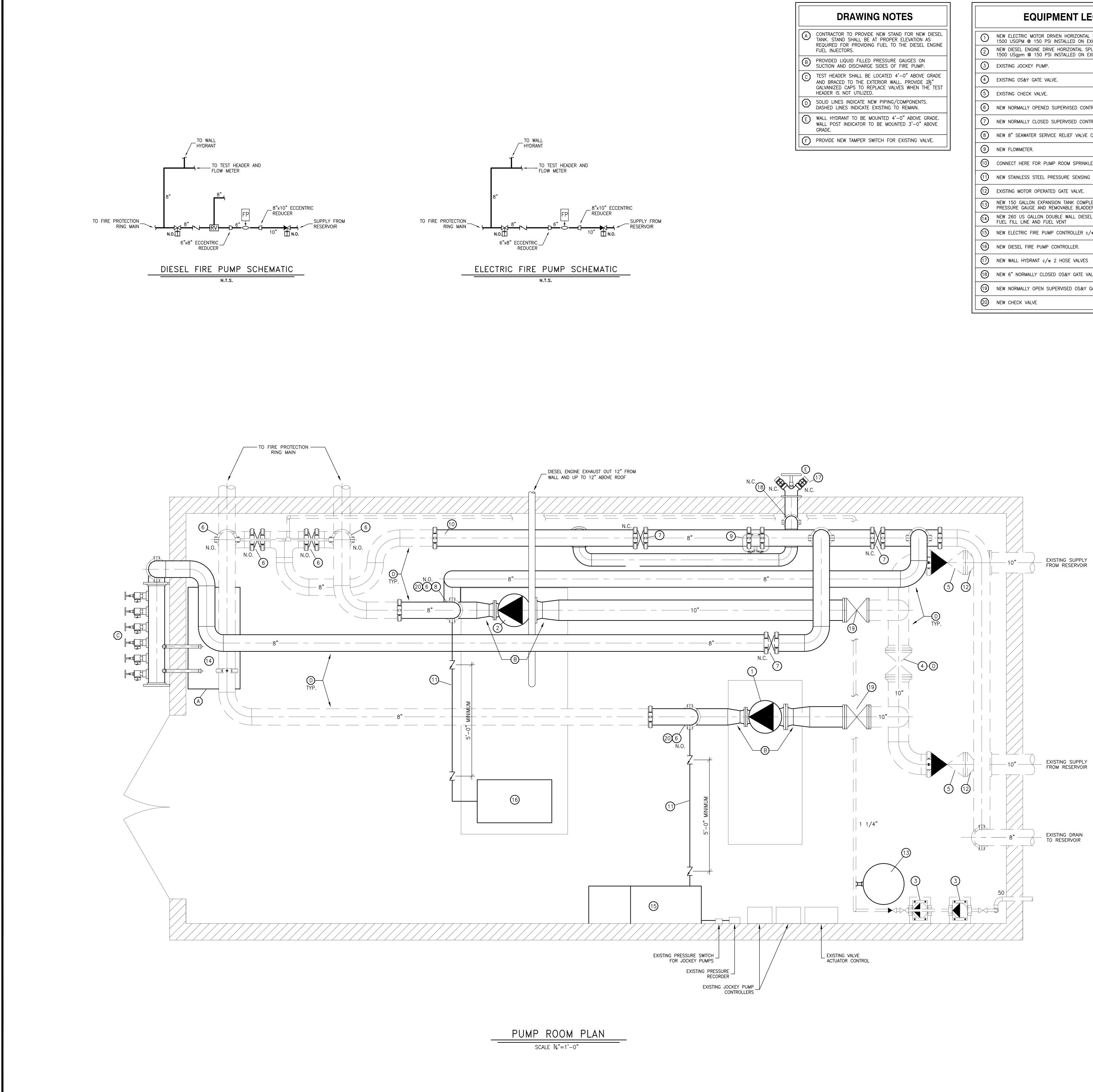
#### **Project Number:**

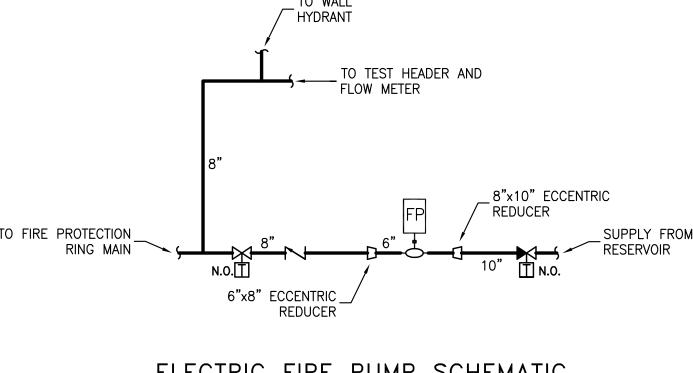
#### 07031 Project Title: TYNES BAY **ENERGY FACILITY** FIRE PROTECTION UPGRADE

Sheet Title: SPRINKLER SYSTEM

**REFUSE PIT, TIPPING HALL** AND BAILING HALL







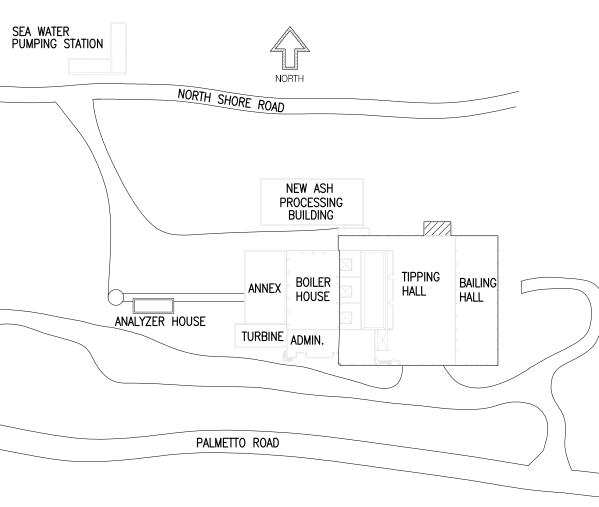
A	CONTRACTOR TO PROVIDE NEW STAND FOR NEW DIESEL TANK. STAND SHALL BE AT PROPER ELEVATION AS REQUIRED FOR PROVIDING FUEL TO THE DIESEL ENGINE FUEL INJECTORS.
B	PROVIDED LIQUID FILLED PRESSURE GAUGES ON SUCTION AND DISCHARGE SIDES OF FIRE PUMP.
©	TEST HEADER SHALL BE LOCATED 4'-0" ABOVE GRADE AND BRACED TO THE EXTERIOR WALL. PROVIDE 2½" GALVANIZED CAPS TO REPLACE VALVES WHEN THE TEST HEADER IS NOT UTILIZED.
0	SOLID LINES INDICATE NEW PIPING/COMPONENTS. DASHED LINES INDICATE EXISTING TO REMAIN.
E	WALL HYDRANT TO BE MOUNTED 4'-0" ABOVE GRADE. WALL POST INDICATOR TO BE MOUNTED 3'-0" ABOVE GRADE.
F	PROVIDE NEW TAMPER SWITCH FOR EXISTING VALVE.

## EQUIPMENT LEGEND

1	NEW ELECTRIC MOTOR DRIVEN HORIZONTAL SPLIT CASE PUMP 1500 USGPM @ 150 PSI INSTALLED ON EXISTING CONCRETE PAD.
2	NEW DIESEL ENGINE DRIVE HORIZONTAL SPLIT CASE PUMP 1500 USgpm @ 150 PSI INSTALLED ON EXISTING CONCRETE PAD.
3	EXISTING JOCKEY PUMP.
4	EXISTING OS&Y GATE VALVE.
5	EXISTING CHECK VALVE.
6	NEW NORMALLY OPENED SUPERVISED CONTROL VALVE.
7	NEW NORMALLY CLOSED SUPERVISED CONTROL VALVE.
8	NEW 8" SEAWATER SERVICE RELIEF VALVE C/W WASTE CONE.
9	NEW FLOWMETER.
10	CONNECT HERE FOR PUMP ROOM SPRINKLER SYSTEM.
(1)	NEW STAINLESS STEEL PRESSURE SENSING LINE.
12	EXISTING MOTOR OPERATED GATE VALVE.
13	NEW 150 GALLON EXPANSION TANK COMPLETE WITH ACCESS HATCH, PRESSURE GAUGE AND REMOVABLE BLADDER.
(14)	NEW 260 US GALLON DOUBLE WALL DIESEL FUEL TANK c/w FUEL FILL LINE AND FUEL VENT
(15)	NEW ELECTRIC FIRE PUMP CONTROLLER c/w TRANSFER SWITCH.
(16)	NEW DIESEL FIRE PUMP CONTROLLER.
(17)	NEW WALL HYDRANT c/w 2 HOSE VALVES
(18)	NEW 6" NORMALLY CLOSED OS&Y GATE VALVE c/w WALL POST INDICATOR.
(19)	NEW NORMALLY OPEN SUPERVISED OS&Y GATE VALVE
20	NEW CHECK VALVE

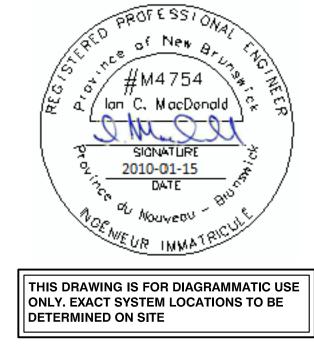
KEY PLAN

	LEGEND
0	STANDARD RESPONSE UPRIGHT SPRINKLER, 200°F, $\frac{1}{2}$ " ORIFICE, K = 8.0
Ø	STANDARD RESPONSE UPRIGHT SPRINKLER, 286°F, $\frac{1}{2}$ " ORIFICE, K = 8.0
۲	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 155°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
Ø	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 286°F, $\frac{1}{2}$ " ORIFICE, K = 5.6
۲	QUICK RESPONSE DRY PENDENT SPRINKLER, $200^{\circ}F$ , K = 5.6
4	HIGH VELOCITY OPEN SPRAY NOZZLE, 3/8" ORIFICE, K = 1.6
$\bigcirc$	SPRINKLER HEAD GUARD
	PIPE DOWN
0	RISER UP
	TEE DOWN
$\diamond$	PREACTION VALVE
	DELUGE VALVE
$\overline{\bowtie}$	CONTROL VALVE
N.C.	NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED TAMPER SWITCH
N.O.	NORMALLY OPEN CONTROL VALVE c/w SUPERVISED TAMPER SWITCH
	OS&Y GATE VALVE
F	FLOW SWITCH
Ŀ	FLUSHING/CAPPED CONNECTION
$\bowtie$	AUXILIARY DRAIN VALVE
Ń	CHECK VALVE
AS	ALARM SWITCH
<u>~</u>	FIRE DEPARTMENT CONNECTION
+	FIRE HYDRANT
$\mathbb{D}$	REMOTE INSPECTOR'S TEST CONNECTION
HR	HOSE REEL c/w 1- $\frac{1}{2}$ " HOSE CONNECTION AND HOSE
PAP	PREACTION RELEASING PANEL (BY OTHERS)
WM	WATER MONITOR c/w PROTECTIVE COVER
EC	FIRE HYDRANT EQUIPMENT CABINET
FP	FIRE PUMP
S	STRAINER
AC	AIR COMPRESSOR
AMD	AIR MAINTENANCE DEVICE
LAPS	LOW AIR PRESSURE SWITCH
PAP	PREACTION PANEL
FM	FLOW METER
RV	RELIEF VALVE
FPC	FIRE PUMP CONTROLLER
	INTERIOR HOSE CABINET c/w 1½"
	HOSE AND 2½" HOSE VALVE
<b>∑</b>	2½" HOSE VALVE



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1	ISSUED FOR 75% REVIEW	07/11/22

scale: AS NOTED <u>SURVEY</u> Prepared By:

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DESIGN Prepared By: AM/LD	Date:
Checked By: AM	Date:
DRAWING	
Prepared By: LD	Date:
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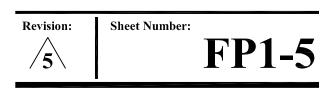
#### Approved By: **Project Number:**

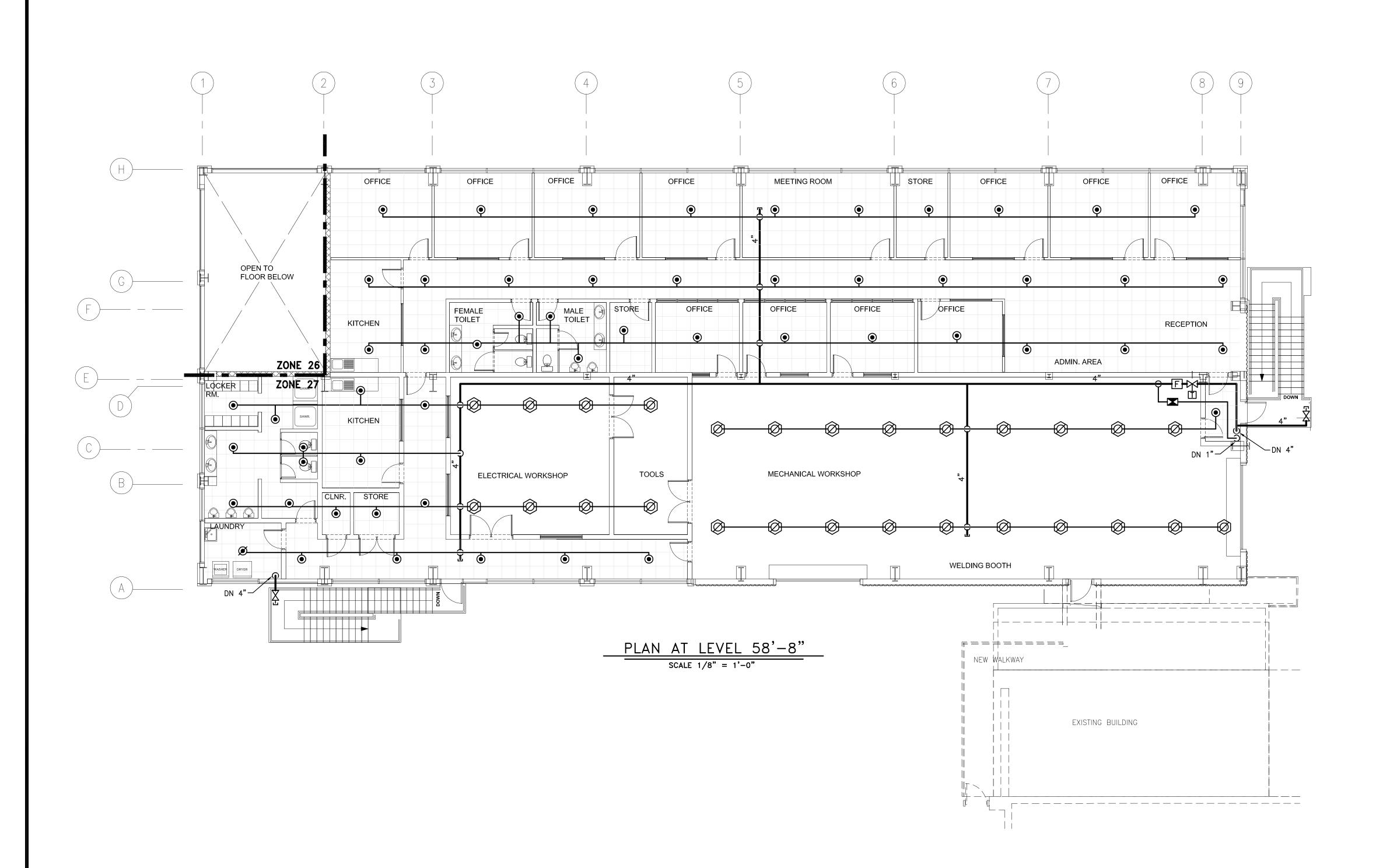
07031 Project Title: TYNES BAY

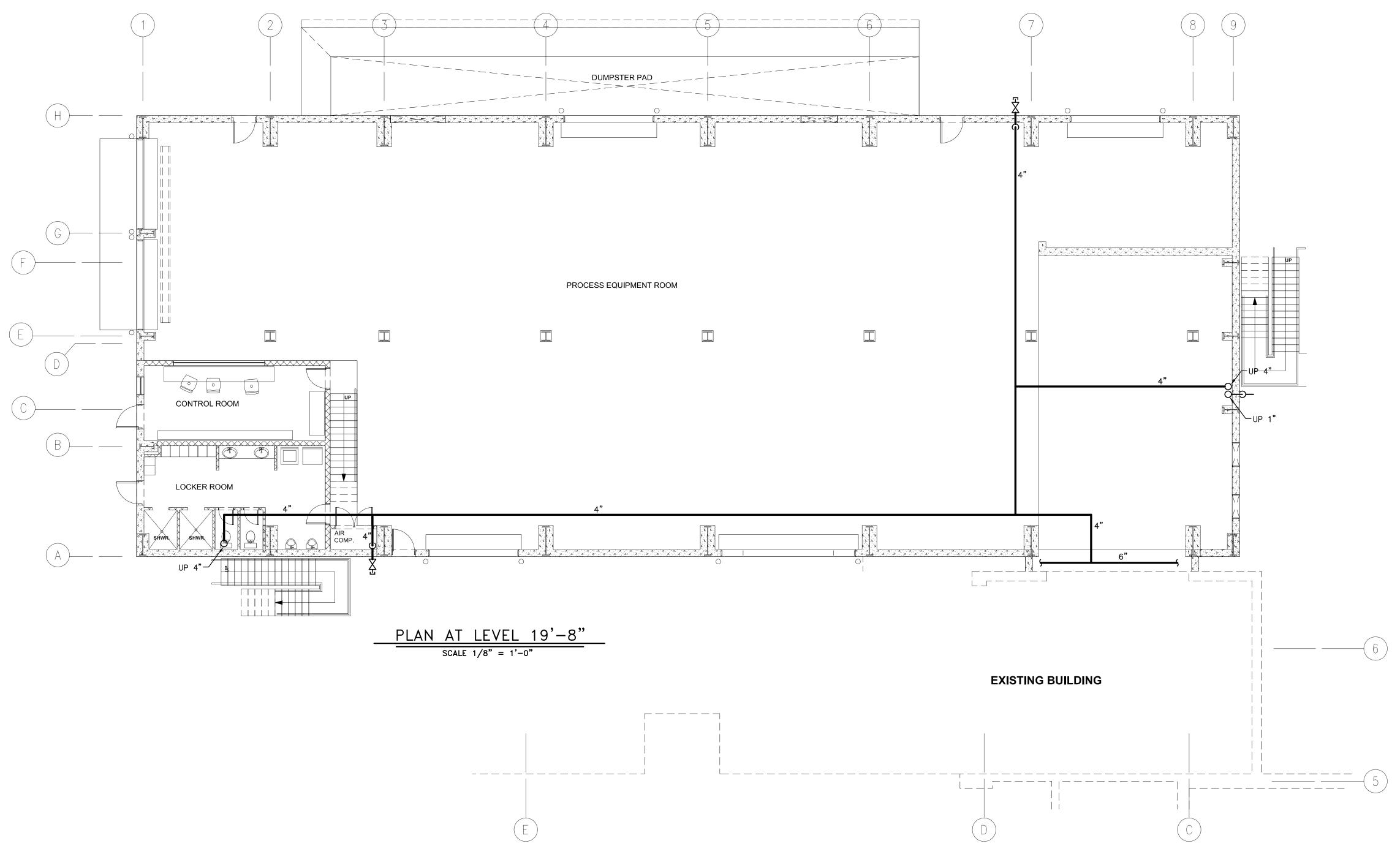
# ENERGY FACILITY FIRE PROTECTION UPGRADE

Sheet Title:

SPRINKLER SYSTEM FIRE PUMP ROOM







	DRAWING NOTES			
	PIPE DRAIN TO EXTERIOR OR SUITABLE FLOOR DRAIN.			
2	BRANCH PIPING TO FOLLOW SLOPE OF CEILING IN THIS AREA.			
3	NEW VALVE ROOM IN MAINTENANCE SHOP. VALVES FOR SPRINKLER ZONE # 1, 2, 3, 4, 5, AND 10. REFER TO NEW VALVE ROOM RISER SCHEMATIC.			
4	EXISTING BRANCH PIPING TO REMAIN IN THIS AREA AND MAIN TO BE REPLACED. OPEN NOZZLES TO BE REPLACED WITH NEW UPRIGHT SPRINKLERS. NEW SPRINKLER HEADS ARE TO BE LOCATED WITHIN 12" OF THE CEILING.			
5	EXISTING VALVE ROOM TO BE EQUIPPED WITH NEW DOOR AND NEW CEILING. VALVES FOR SPRINKLER ZONES #21, 22, AND 23 TO BE LOCATED IN THIS ROOM.			
6	PROVIDE AND INSTALL SPRINKLER HEADS DIRECTLY ABOVE WINDOWS. SPRINKLER HEADS SHALL BE COMPLETE WITH WATERSHIELD/HEAD GUARD. PROVIDE 1 SPRINKLER PER PANE OF GLASS. ALLOW FOR A MINIMUM OF 6 SPRINKLERS.			
$\overline{\mathcal{O}}$	LOCATE MAIN TIGHT TO WALL TO AVOID OBSTRUCTIONS AND PIT OPERATIONS.			
8	PROVIDE A NORMALLY OPEN SUPERVISED CONTROL VALVE ON RISER. LOCATE IN ACCESSIBLE AREA.			
9	LOCATE LOW POINT DRAIN TO ALLOW FOR HOSE OR PAIL TO BE CONNECTED FOR DRAINING SYSTEM.			
10	EXISTING SPRINKLER HEADS AND ATTACHED 1" ELBOWS AND TEES ARE TO BE DEMOLISHED AND REPLACED WITH NEW. MAINTAIN EXISTING MAIN.			
(1)	PROVIDE SPLASH GUARD AT 9'-O" ABOVE FLOOR OVER EQUIPMENT. MATCH EXISTING ADJACENT SPLASH GUARD MATERIAL AND HANGING ARRANGEMENT.			
12	PROVIDE ADEQUATE PIPE SUPPORTS AND BRACING TO STEEL AND/OR CONCRETE STRUCTURE.			
13	PROVIDE BOLLARD PROTECTION AROUND HOSE VALVES AND WATER MONITORS TO PROTECT FROM PLANT OPERATIONS.			
14	CONNECT TO NEW 4" RISER AS SHOWN ON BURNER FRONT RISER SCHEMATIC. PROVIDE NEW DRAIN RISER AND DRAIN TO BOILER HOUSE GROUND LEVEL WHERE NOTED.			
15	PROVIDE NEW CABINET c/w HOSE AT THIS LOCATION.			
16	PROVIDE NEW HOSE VALVES ON EXISTING FIRE HYDRANT.			
17	PROVIDE NEW HOSE FOR FIRE DEPARTMENT USE IN NEW EQUIPMENT CABINET. CUT ROCK AS REQUIRED FOR INSTALLATION OF CABINET.			
18	PROVIDE WATERSHIELD/HEAD GUARD ON SPRINKLER HEADS.			
19	DEMOLISH EXISTING DELUGE VALVE HEADER AND PROVIDE NEW CONTROL VALVE AND FLOW SWITCH ASSEMBLY FOR ZONE #9. REFER TO SECOND FLOOR STORAGE RISER SCHEMATIC.			
20	PIPE ALL SYSTEM DRAINS FOR THE VALVE HEADERS IN THE MAINTENANCE SHOP AT THIS LOCATION.			
21	PROVIDE STEEL SUPPORT BETWEEN EXISTING COLUMNS FOR SUPPORTING NEW BRANCH PIPING.			
22	PROVIDE NEW FIRE DEPARTMENT CONNECTION AT THIS LOCATION. FIRE DEPARTMENT CONNECTION AND PIPING TO BE SECURED TO ADJACENT COLUMN. LOCATE BETWEEN 36" AND 48" ABOVE GRADE.			
23	PROVIDE NEW BULKHEAD TO CONCEAL SPRINKLER SYSTEM MAIN. PAINT COLOUR TO MATCH ADJACENT WALLS.			
24	PROVIDE SPRINKLER PROTECTION IN THIS ROOM. CONNECT TO MAINTENANCE SHOP SPRINKLER ZONE.			
25	PROVIDE NEW NORMALLY OPEN SUPERVISED CONTROL VALVE ON EXISTING HOSE SUPPLY PIPING. VALVE TO BE IN ACCESSIBLE LOCATION.			
26	PROVIDE NEW WALL HYDRANT $c/w 2-2\frac{1}{2}$ VALVES.			
27	REFER TO WATER MONITOR SCHEMATIC FOR INSTALLATION DETAIL.			
28	PROVIDE NEW 2½" HOSE VALVES AT EACH STAIR LANDING AND CONNECT TO NEW 4" RISER. ALLOW FOR 6 IN TOTAL.			
29	PROVIDE STAND TO SUPPORT NEW HOSE CABINET. BOTTOM OF CABINET TO BE 36" ABOVE GRADE. STAND TO BE MOUNTED ON CONCRETE FOOTINGS.			
30	ALL PIPING AND COMPONENTS IN TURBINE HALL SHALL BE COORDINATED TO AVOID EXISTING OVERHEAD CRANE.			
31	PROVIDE NEW HOSE CABINET AT THIS LOCATION, c/w 2½", AND 1½" CONNECTION, HOSE AND NOZZLE. A NORMALLY OPEN SUPERVISED CONTROL VALVE IS TO BE PROVIDED ON THE SUPPLY PIPING.			
GEN	GENERAL NOTES:			
	INSTALL POKE UPS, SWING JOINTS AND DEEP CUP ESCUTCHEONS AS REQUIRED.			
2.	NSTALL HANGERS AND BRACING AS REQUIRED.			

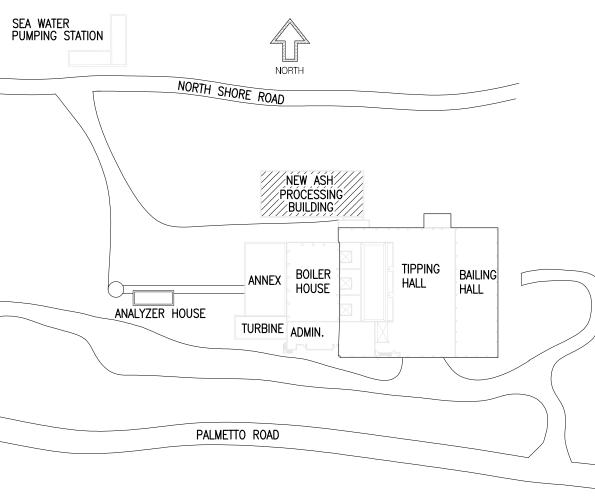
HAZARD TABLE		
LOCATION	OCCUPANCY	DESIGN CRITERIA
MAIN BUILDING (ZONE 27)	LIGHT HAZARD (OFFICES, CORRIDORS, WASHROOMS)	0.10 USgpm/ft ² OVER A MINIMUM OF 900ft ² 100 USgpm HOSE DEMAND
	ORDINARY HAZARD GROUP 1 (STORAGE, MECH./ELECT. ROOMS)	0.15 USgpm/ft ² OVER A MINIMUM OF 900ft ² 250 USgpm HOSE DEMAND

KEY PLAN

_____6

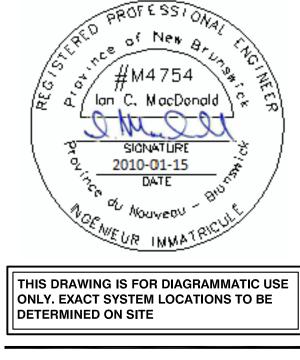
LEGEND		
0	STANDARD RESPONSE UPRIGHT SPRINKLER, 200°F, $\frac{1}{2}$ " ORIFICE, K = 8.0	
Ø	STANDARD RESPONSE UPRIGHT SPRINKLER, 286°F, $\frac{1}{2}$ " ORIFICE, K = 8.0	
۲	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 155°F, $\frac{1}{2}$ " ORIFICE, K = 5.6	
ø	QUICK RESPONSE SEMI-RECESSED PENDENT SPRINKLER, 286°F, $\frac{1}{2}$ " ORIFICE, K = 5.6	
	QUICK RESPONSE DRY PENDENT SPRINKLER, $200^{\circ}$ F, K = 5.6	
◄	HIGH VELOCITY OPEN SPRAY NOZZLE, 3/8" ORIFICE, K = 1.6	
$\bigcirc$	SPRINKLER HEAD GUARD	
— <b>Э</b>	PIPE DOWN	
0	RISER UP	
<del></del>	TEE DOWN	
$\sim$	PREACTION VALVE	
	DELUGE VALVE	
$\overline{\boxtimes}$	CONTROL VALVE	
	NORMALLY CLOSED CONTROL VALVE c/w SUPERVISED	
N.o.	NORMALLY OPEN CONTROL VALVE c/w SUPERVISED TAMPER SWITCH	
MI	OS&Y GATE VALVE	
F	FLOW SWITCH	
Ē	FLUSHING/CAPPED CONNECTION	
$\bowtie$	AUXILIARY DRAIN VALVE	
Υ	CHECK VALVE	
AS	ALARM SWITCH	
<u> </u>	FIRE DEPARTMENT CONNECTION	
•	FIRE HYDRANT	
$\mathbb{D}$	REMOTE INSPECTOR'S TEST CONNECTION	
HR	HOSE REEL c/w 1- $\frac{1}{2}$ " HOSE CONNECTION AND HOSE	
PAP	PREACTION RELEASING PANEL (BY OTHERS)	
WM	WATER MONITOR c/w PROTECTIVE COVER	
EC	FIRE HYDRANT EQUIPMENT CABINET	
FP	FIRE PUMP	
S	STRAINER	
	AIR COMPRESSOR	
	AIR MAINTENANCE DEVICE	
	LOW AIR PRESSURE SWITCH	
	PREACTION PANEL	
[FM]	FLOW METER	
RV	RELIEF VALVE	
FPC	FIRE PUMP CONTROLLER	
HC	INTERIOR HOSE CABINET c/w 1½" HOSE AND 2½" HOSE VALVE	
	INSPECTOR'S TEST CONNECTION	
$\bowtie$	2½" HOSE VALVE	

PIPE SIZE TABLE			
No. OF HEADS (BRANCH LINE)	PIPE SIZE	CROSSMAIN SIZE	FEED MAIN SIZE
1 & 2	1"		
3	1¼"	SEE DWG.	SEE DWG.
4	1½"		
REMAINDER	2"		
NOTES: - PIPE SIZES ARE TO BE AS STATED ABOVE UNLESS NOTED OTHERWISE. - RISER NIPPLES ARE TO FOLLOW SAME PIPE SIZE FORMAT AS BRANCH LINES.			



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_____ **SURVEY** Prepared By: <u>DESIGN</u> Prepared By: *AM/LD* Checked By: AMDRAWING Prepared By: Checked By

**Approved By: Project Number:** 

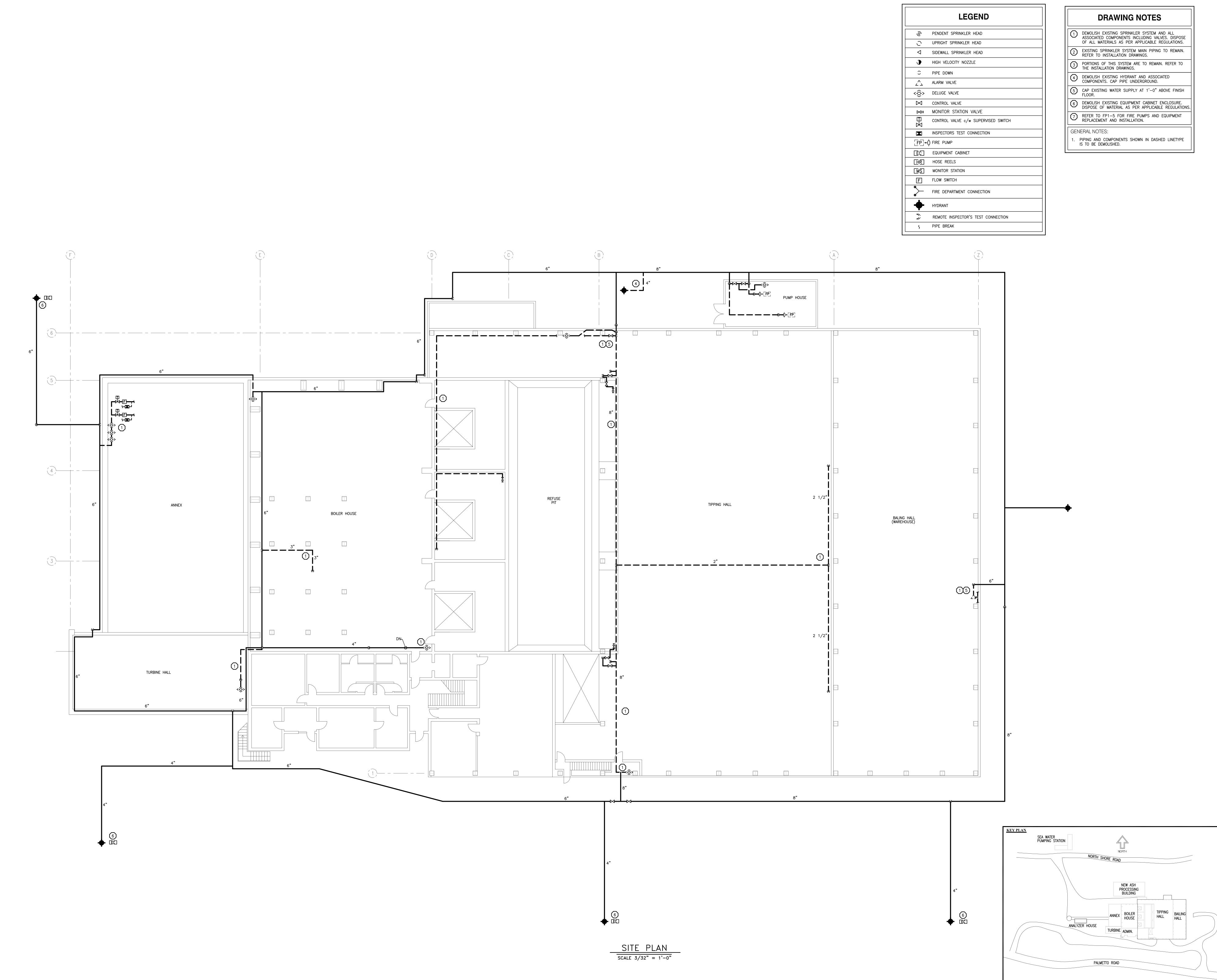
## 07031

# Project Title: TYNES BAY ENERGY FACILITY FIRE PROTECTION UPGRADE

Sheet Title:

SPRINKLER SYSTEM NEW ASH PROCESSING BUILDING

<b>Revision:</b>	Sheet Number:	
5		<b>FP1-6</b>
/ U \		



	LEGEND
Q	PENDENT SPRINKLER HEAD
C	UPRIGHT SPRINKLER HEAD
4	SIDEWALL SPRINKLER HEAD
•	HIGH VELOCITY NOZZLE
С	PIPE DOWN
	ALARM VALVE
<ô>	DELUGE VALVE
$\bowtie$	CONTROL VALVE
<b>⊠</b>	MONITOR STATION VALVE
Хн	CONTROL VALVE c/w SUPERVISED SWITCH
	INSPECTORS TEST CONNECTION
[FP]-•Q	FIRE PUMP
EC	EQUIPMENT CABINET
HR	HOSE REELS
MS	MONITOR STATION
F	FLOW SWITCH
<u>~</u>	FIRE DEPARTMENT CONNECTION
•	HYDRANT
	REMOTE INSPECTOR'S TEST CONNECTION
\$	PIPE BREAK

DRA	WING	NO1	<b>TES</b>

1	DEMOLISH EXISTING SPRINKLER SYSTEM AND ALL ASSOCIATED COMPONENTS INCLUDING VALVES. DISPOSE OF ALL MATERIALS AS PER APPLICABLE REGULATIONS.		
2	EXISTING SPRINKLER SYSTEM MAIN PIPING TO REMAIN. REFER TO INSTALLATION DRAWINGS.		
3	PORTIONS OF THIS SYSTEM ARE TO REMAIN. REFER TO THE INSTALLATION DRAWINGS.		
4	DEMOLISH EXISTING HYDRANT AND ASSOCIATED COMPONENTS. CAP PIPE UNDERGROUND.		
5	CAP EXISTING WATER SUPPLY AT 1'-0" ABOVE FINISH FLOOR.		
6	DEMOLISH EXISTING EQUIPMENT CABINET ENCLOSURE. DISPOSE OF MATERIAL AS PER APPLICABLE REGULATIONS.		
0	REFER TO FP1-5 FOR FIRE PUMPS AND EQUIPMENT REPLACEMENT AND INSTALLATION.		
GENERAL NOTES:			
	PIPING AND COMPONENTS SHOWN IN DASHED LINETYPE		

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PROFESSIONAL GUNATURE CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT CO
THIS DRAWING IS FOR DIAGRAMMATIC USE ONLY. EXACT SYSTEM LOCATIONS TO BE DETERMINED ON SITE
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RJ Bartlett Engineers Building Code Consultants www.rjbartlett.com

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SCA	LE: AS NOTED	

## <u>SURVEY</u> Prepared By: DESIGN Prepared By: AM/LD

Checked By: AM <u>DRAWING</u> Prepared By: LD Checked By: IM Approved By:

# Project Number: 07031

# Project Title: TYNES BAY ENERGY FACILITY FIRE PROTECTION UPGRADE

Sheet Title: <u>SPRINKLER SYSTEM DEMOLITION</u> <u>SITE PLAN</u>



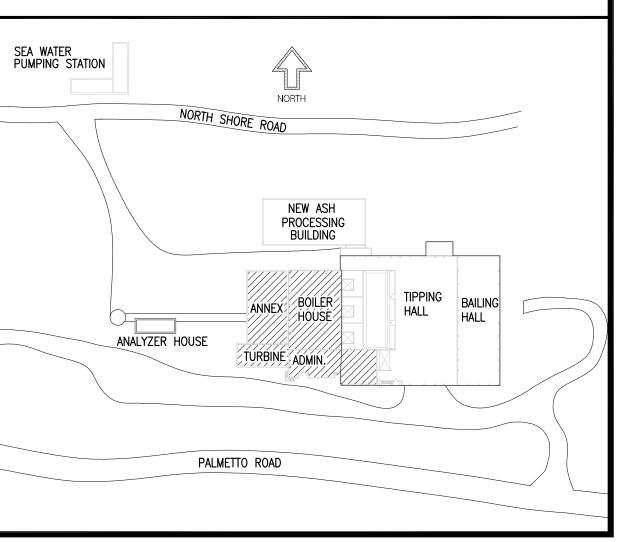


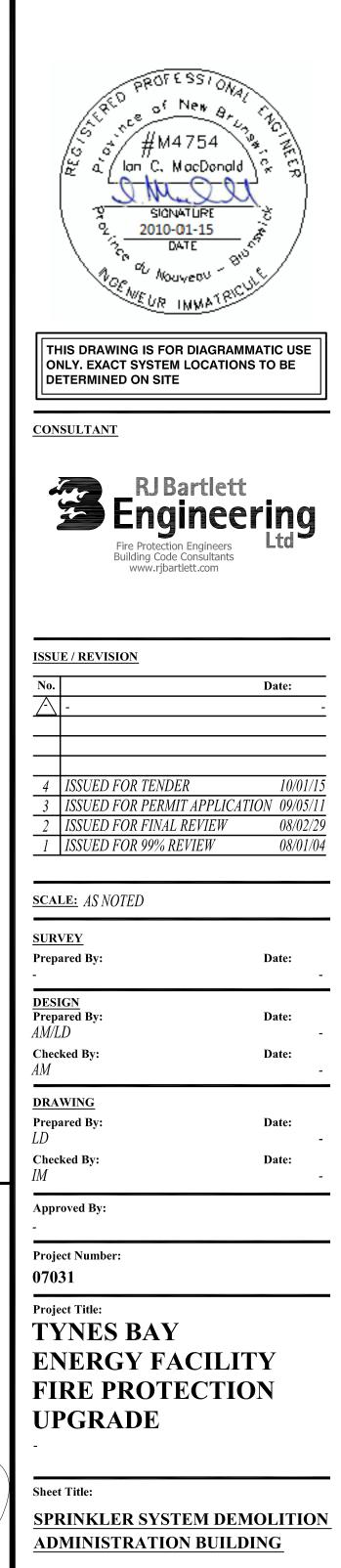
	LEGEND
ම	PENDENT SPRINKLER HEAD
C S	UPRIGHT SPRINKLER HEAD
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J	HIGH VELOCITY NOZZLE
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$\bowtie$	CONTROL VALVE
<b>M</b> →	MONITOR STATION VALVE
	CONTROL VALVE c/w SUPERVISED SWITCH
	INSPECTORS TEST CONNECTION
[FP]+¢	FIRE PUMP
ĒĊ	EQUIPMENT CABINET
[HR]	HOSE REELS
MS	MONITOR STATION
F	FLOW SWITCH
<u> </u>	FIRE DEPARTMENT CONNECTION
•	HYDRANT
$\sum$	REMOTE INSPECTOR'S TEST CONNECTION
5	PIPE BREAK

DRAWING NO	DTES
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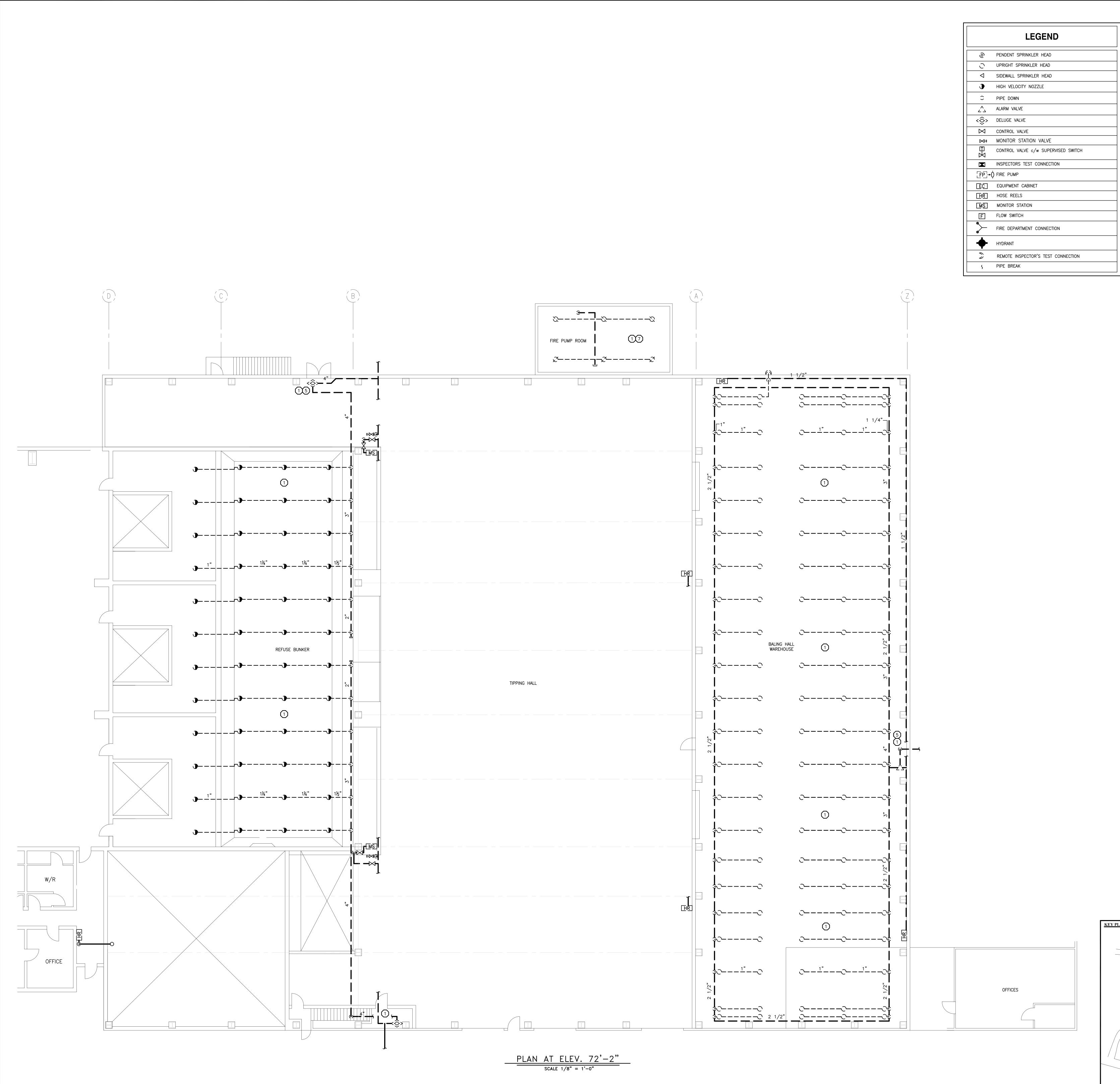
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3	PORTIONS OF THIS SYSTEM ARE TO REMAIN. REFER TO THE INSTALLATION DRAWINGS.			
4	DEMOLISH EXISTING HYDRANT AND ASSOCIATED COMPONENTS. CAP PIPE UNDERGROUND.			
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6	DEMOLISH EXISTING EQUIPMENT CABINET ENCLOSURE. DISPOSE OF MATERIAL AS PER APPLICABLE REGULATIONS.			
0	REFER TO FP1-5 FOR FIRE PUMPS AND EQUIPMENT REPLACEMENT AND INSTALLATION.			
GENERAL NOTES:				
1. PIPING AND COMPONENTS SHOWN IN DASHED LINETYPE IS TO BE DEMOLISHED.				

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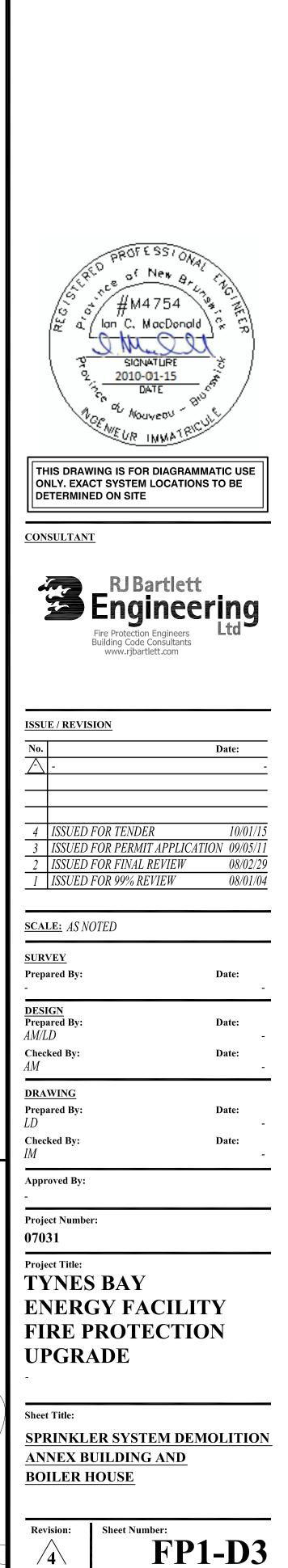
	LEGEND
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	ALARM VALVE
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[HR]	HOSE REELS
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F	FLOW SWITCH
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•	HYDRANT
	REMOTE INSPECTOR'S TEST CONNECTION
5	PIPE BREAK

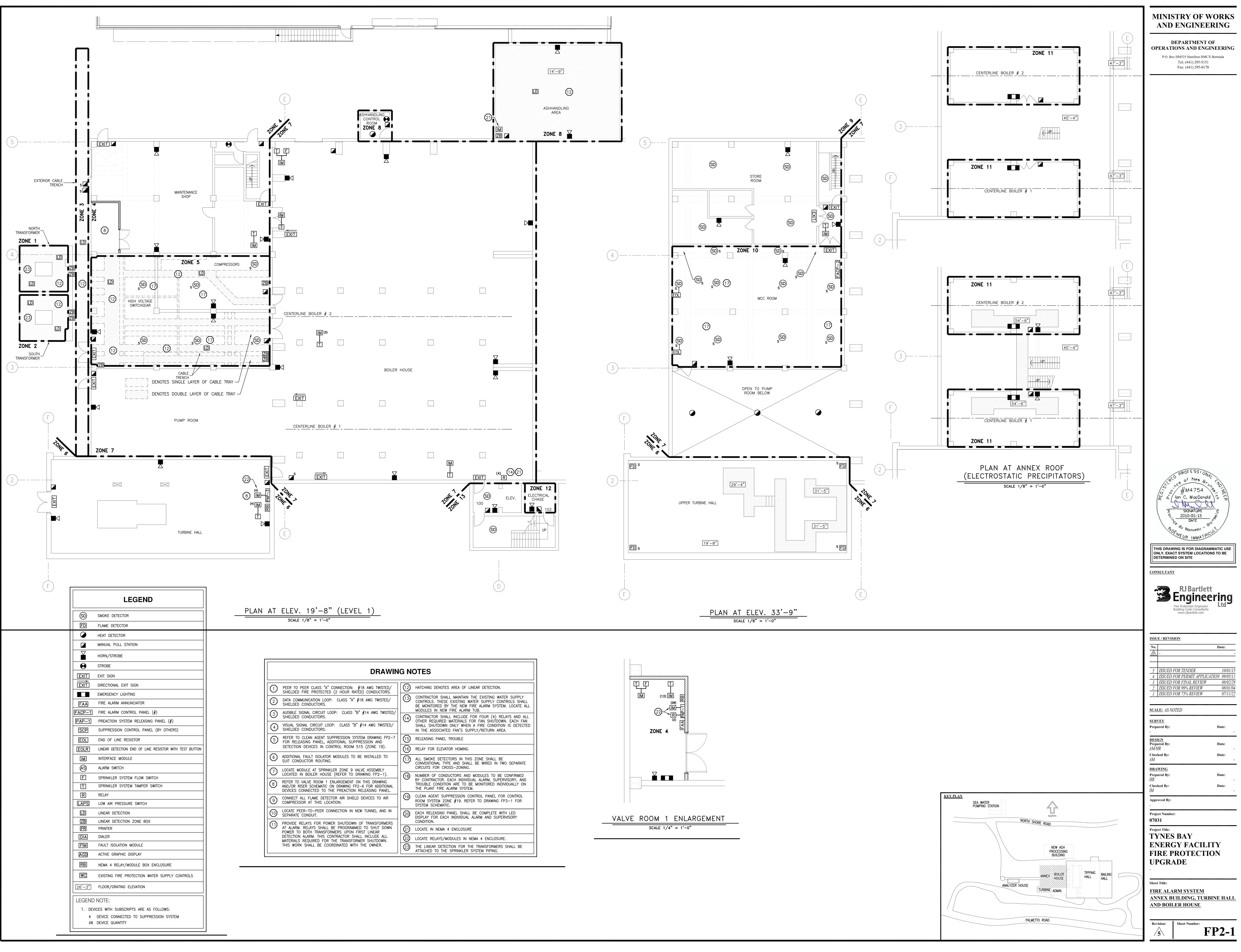


	DRAWING NOTES
1	DEMOLISH EXISTING SPRINKLER SYSTEM AND ALL ASSOCIATED COMPONENTS INCLUDING VALVES. DISPOSE OF ALL MATERIALS AS PER APPLICABLE REGULATIONS.
2	EXISTING SPRINKLER SYSTEM MAIN PIPING TO REMAIN. REFER TO INSTALLATION DRAWINGS.
3	PORTIONS OF THIS SYSTEM ARE TO REMAIN. REFER TO THE INSTALLATION DRAWINGS.
4	DEMOLISH EXISTING HYDRANT AND ASSOCIATED COMPONENTS. CAP PIPE UNDERGROUND.
5	CAP EXISTING WATER SUPPLY AT 1'-0" ABOVE FINISH FLOOR.
6	DEMOLISH EXISTING EQUIPMENT CABINET ENCLOSURE. DISPOSE OF MATERIAL AS PER APPLICABLE REGULATIONS.
7	REFER TO FP1-5 FOR FIRE PUMPS AND EQUIPMENT REPLACEMENT AND INSTALLATION.
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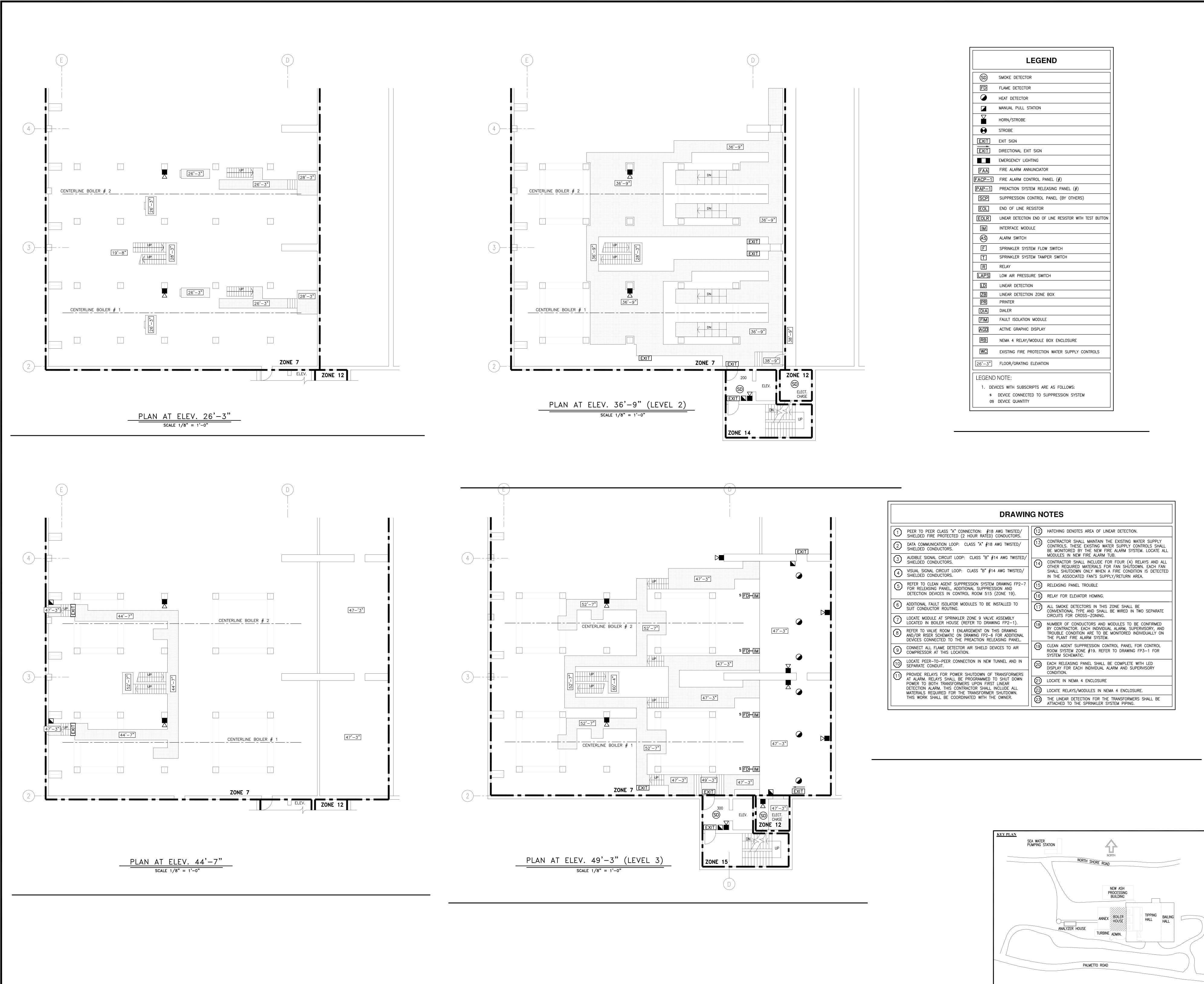
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TA WATER IMPING STATION NORTH S	NORTH HORE ROAD		-
ANALYZER HOUSE	NEW ASH PROCESSING BUILDING ANNEX BOILER HOUSE TURBINE ADMIN.	TIPPING HALL HALL HALL	
PALM	ETTO ROAD		





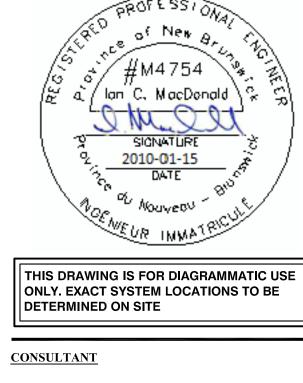
DRAWING NOTES				
ER TO PEER CLASS "A" CONNECTION: #18 AWG TWISTED/ IELDED FIRE PROTECTED (2 HOUR RATED) CONDUCTORS.	12 HATCHING DENOTES AREA OF LINEAR DETECTION.			
TA COMMUNICATION LOOP: CLASS "A" #18 AWG TWISTED/ IELDED CONDUCTORS.	(13) CONTRACTOR SHALL MAINTAIN THE EXISTING WATER SUPPLY CONTROLS. THESE EXISTING WATER SUPPLY CONTROLS SHALL BE MONITORED BY THE NEW FIRE ALARM SYSTEM. LOCATE ALL			
DIBLE SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ IELDED CONDUCTORS.	MODULES IN NEW FIRE ALARM TUB. (14) CONTRACTOR SHALL INCLUDE FOR FOUR (4) RELAYS AND ALL OTHER REQUIRED MATERIALS FOR FAN SHUTDOWN. EACH FAN			
SUAL SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ IELDED CONDUCTORS.	SHALL SHUTDOWN ONLY WHEN A FIRE CONDITION IS DETECTED IN THE ASSOCIATED FAN'S SUPPLY/RETURN AREA.			
FER TO CLEAN AGENT SUPPRESSION SYSTEM DRAWING FP2-7 R RELEASING PANEL, ADDITIONAL SUPPRESSION AND	15 RELEASING PANEL TROUBLE			
TECTION DEVICES IN CONTROL ROOM 515 (ZONE 19).	16 RELAY FOR ELEVATOR HOMING.			
DITIONAL FAULT ISOLATOR MODULES TO BE INSTALLED TO IT CONDUCTOR ROUTING.	17 ALL SMOKE DETECTORS IN THIS ZONE SHALL BE CONVENTIONAL TYPE AND SHALL BE WIRED IN TWO SEPARATE			
CATE MODULE AT SPRINKLER ZONE 9 VALVE ASSEMBLY CATED IN BOILER HOUSE (REFER TO DRAWING FP2—1).	CIRCUITS FOR CROSS-ZONING.			
FER TO VALVE ROOM 1 ENLARGEMENT ON THIS DRAWING D/OR RISER SCHEMATIC ON DRAWING FP2—6 FOR ADDITIONAL VICES CONNECTED TO THE PREACTION RELEASING PANEL.	BY CONTRACTOR. EACH INDIVIDUAL ALARM, SUPERVISORY, AND TROUBLE CONDITION ARE TO BE MONITORED INDIVIDUALLY ON THE PLANT FIRE ALARM SYSTEM.			
NNECT ALL FLAME DETECTOR AIR SHIELD DEVICES TO AIR MPRESSOR AT THIS LOCATION.	(19) CLEAN AGENT SUPPRESSION CONTROL PANEL FOR CONTROL ROOM SYSTEM ZONE #19. REFER TO DRAWING FP3-1 FOR SYSTEM SCHEMATIC.			
CATE PEER—TO—PEER CONNECTION IN NEW TUNNEL AND IN PARATE CONDUIT.	20 EACH RELEASING PANEL SHALL BE COMPLETE WITH LED DISPLAY FOR EACH INDIVIDUAL ALARM AND SUPERVISORY			
OVIDE RELAYS FOR POWER SHUTDOWN OF TRANSFORMERS ALARM. RELAYS SHALL BE PROGRAMMED TO SHUT DOWN	CONDITION.			
WER TO BOTH TRANSFORMERS UPON FIRST LINEAR	21) LOCATE IN NEMA 4 ENCLOSURE			
TECTION ALARM. THIS CONTRACTOR SHALL INCLUDE ALL TERIALS REQUIRED FOR THE TRANSFORMER SHUTDOWN.	22 LOCATE RELAYS/MODULES IN NEMA 4 ENCLOSURE.			
S WORK SHALL BE COORDINATED WITH THE OWNER.	23 THE LINEAR DETECTION FOR THE TRANSFORMERS SHALL BE ATTACHED TO THE SPRINKLER SYSTEM PIPING.			



	DRAWING NOTES				
	PEER TO PEER CLASS "A" CONNECTION: #18 AWG TWISTED/ SHIELDED FIRE PROTECTED (2 HOUR RATED) CONDUCTORS.	(12)	HATCHING DENOTES AREA OF LINEAR DETECTION.		
2	DATA COMMUNICATION LOOP: CLASS "A" #18 AWG TWISTED/ SHIELDED CONDUCTORS.		CONTRACTOR SHALL MAINTAIN THE EXISTING WATER SUPPLY CONTROLS. THESE EXISTING WATER SUPPLY CONTROLS SHALL BE MONITORED BY THE NEW FIRE ALARM SYSTEM. LOCATE AL		
3	AUDIBLE SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.	14	MODULES IN NEW FIRE ALARM TUB. CONTRACTOR SHALL INCLUDE FOR FOUR (4) RELAYS AND ALL		
4	VISUAL SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.		OTHER REQUIRED MATERIALS FOR FAN SHUTDOWN. EACH FAN SHALL SHUTDOWN ONLY WHEN A FIRE CONDITION IS DETECTE IN THE ASSOCIATED FAN'S SUPPLY/RETURN AREA.		
5	REFER TO CLEAN AGENT SUPPRESSION SYSTEM DRAWING FP2-7 FOR RELEASING PANEL, ADDITIONAL SUPPRESSION AND	15	RELEASING PANEL TROUBLE		
	DETECTION DEVICES IN CONTROL ROOM 515 (ZONE 19).	16	RELAY FOR ELEVATOR HOMING.		
6	ADDITIONAL FAULT ISOLATOR MODULES TO BE INSTALLED TO SUIT CONDUCTOR ROUTING.	17	ALL SMOKE DETECTORS IN THIS ZONE SHALL BE CONVENTIONAL TYPE AND SHALL BE WIRED IN TWO SEPARATE CIRCUITS FOR CROSS-ZONING.		
	LOCATE MODULE AT SPRINKLER ZONE 9 VALVE ASSEMBLY LOCATED IN BOILER HOUSE (REFER TO DRAWING FP2-1).	18	NUMBER OF CONDUCTORS AND MODULES TO BE CONFIRMED		
8	REFER TO VALVE ROOM 1 ENLARGEMENT ON THIS DRAWING AND/OR RISER SCHEMATIC ON DRAWING FP2-6 FOR ADDITIONAL DEVICES CONNECTED TO THE PREACTION RELEASING PANEL.		BY CONTRACTOR. EACH INDIVIDUAL ALARM, SUPERVISORY, AND TROUBLE CONDITION ARE TO BE MONITORED INDIVIDUALLY ON THE PLANT FIRE ALARM SYSTEM.		
9	CONNECT ALL FLAME DETECTOR AIR SHIELD DEVICES TO AIR COMPRESSOR AT THIS LOCATION.	(19)	CLEAN AGENT SUPPRESSION CONTROL PANEL FOR CONTROL ROOM SYSTEM ZONE #19. REFER TO DRAWING FP3—1 FOR SYSTEM SCHEMATIC.		
	LOCATE PEER-TO-PEER CONNECTION IN NEW TUNNEL AND IN SEPARATE CONDUIT.	20	EACH RELEASING PANEL SHALL BE COMPLETE WITH LED DISPLAY FOR EACH INDIVIDUAL ALARM AND SUPERVISORY		
	PROVIDE RELAYS FOR POWER SHUTDOWN OF TRANSFORMERS AT ALARM. RELAYS SHALL BE PROGRAMMED TO SHUT DOWN POWER TO BOTH TRANSFORMERS UPON FIRST LINEAR DETECTION ALARM. THIS CONTRACTOR SHALL INCLUDE ALL MATERIALS REQUIRED FOR THE TRANSFORMER SHUTDOWN. THIS WORK SHALL BE COORDINATED WITH THE OWNER.	21	CONDITION. LOCATE IN NEMA 4 ENCLOSURE		
		22	LOCATE RELAYS/MODULES IN NEMA 4 ENCLOSURE.		
		23	THE LINEAR DETECTION FOR THE TRANSFORMERS SHALL BE ATTACHED TO THE SPRINKLER SYSTEM PIPING.		

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TEM FLOW SWITCH
TEM TAMPER SWITCH
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ON ZONE BOX
N MODULE
DISPLAY
MODULE BOX ENCLOSURE
PROTECTION WATER SUPPLY CONTROLS
ELEVATION
RIPTS ARE AS FOLLOWS:

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#### **ISSUE / REVISION**

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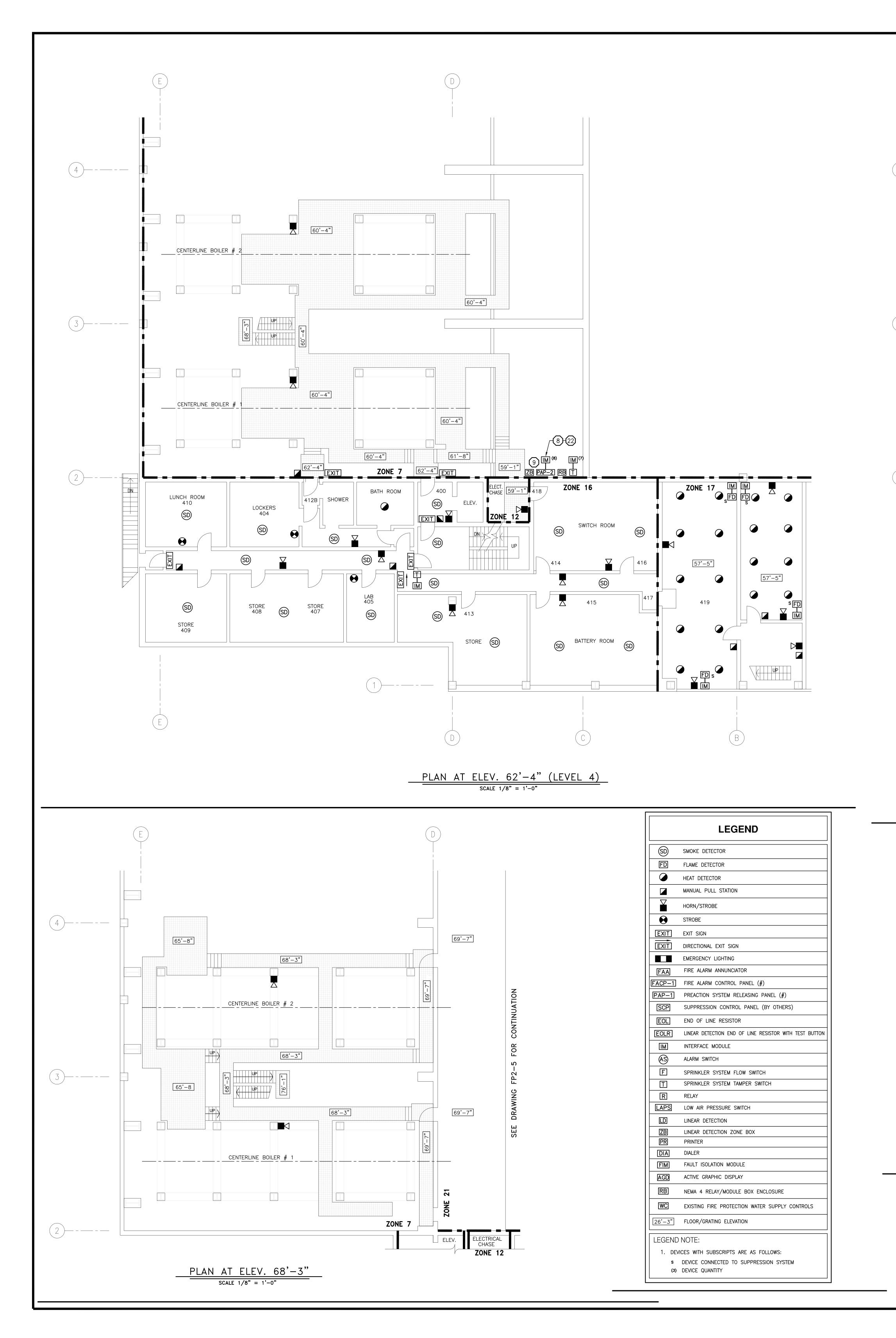
No.	Da	ate:
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_5	ISSUED FOR TENDER	10/01/15
	ISSUED FOR PERMIT APPLICATION	09/05/11
3	ISSUED FOR FINAL REVIEW	08/02/29
_2	ISSUED FOR 99% REVIEW	08/01/04
1	ISSUED FOR 75% REVIEW	07/11/22
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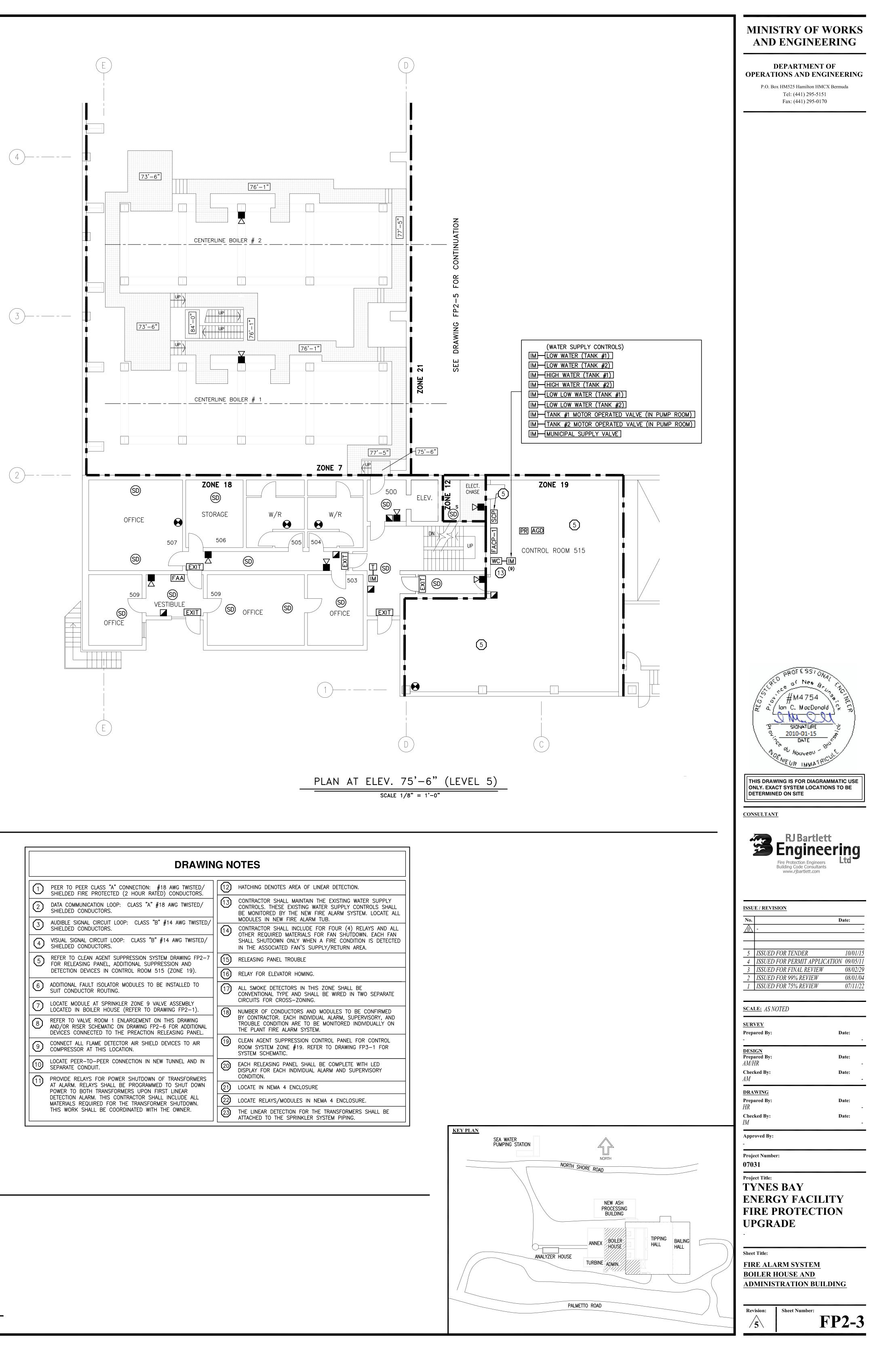
## **Approved By:** Project Number: 07031 Project Title: TYNES BAY

ENERGY FACILITY FIRE PROTECTION UPGRADE

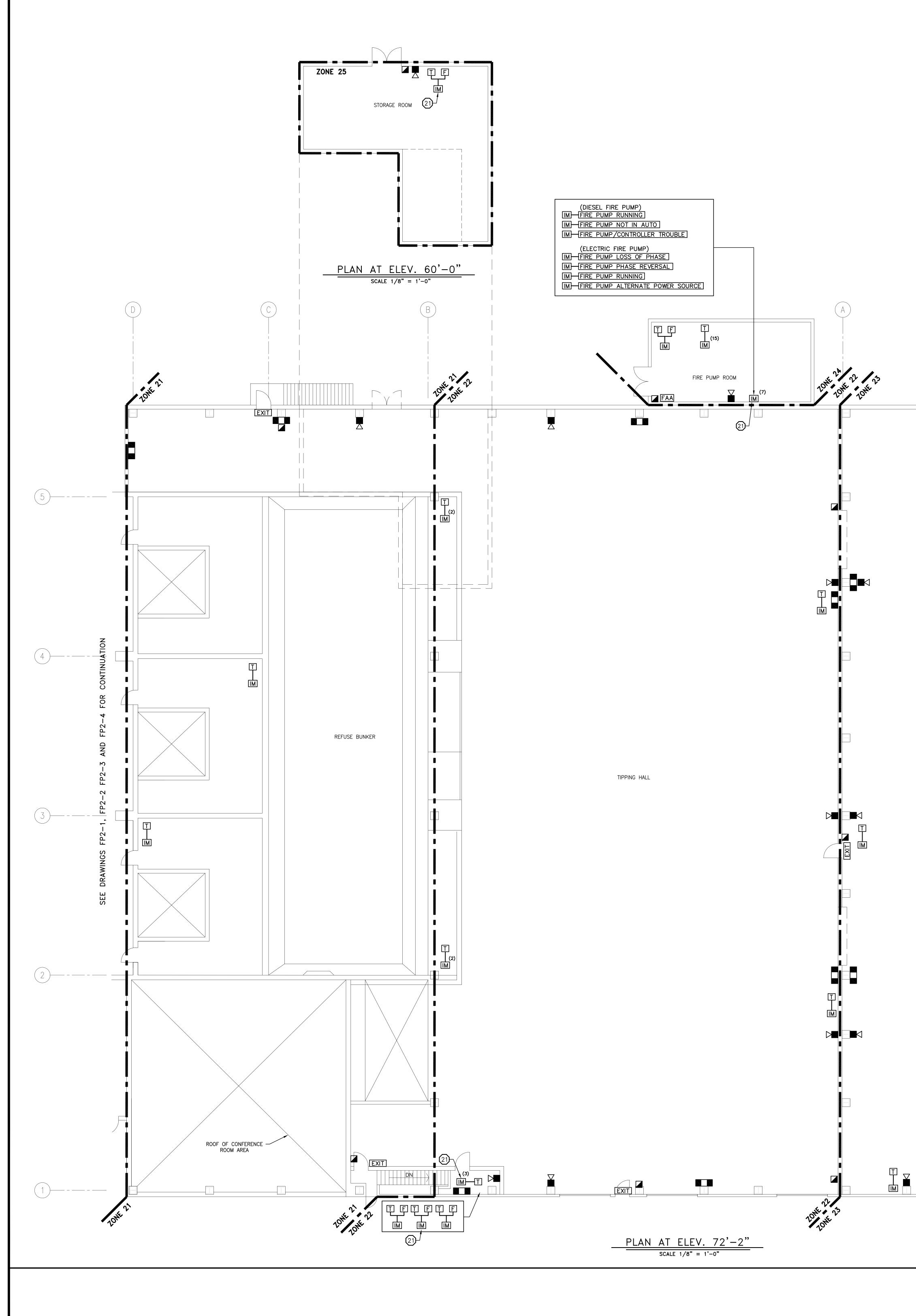
## Sheet Title: FIRE ALARM SYSTEM BOILER HOUSE

<b>Revision:</b>	Sheet Number:	
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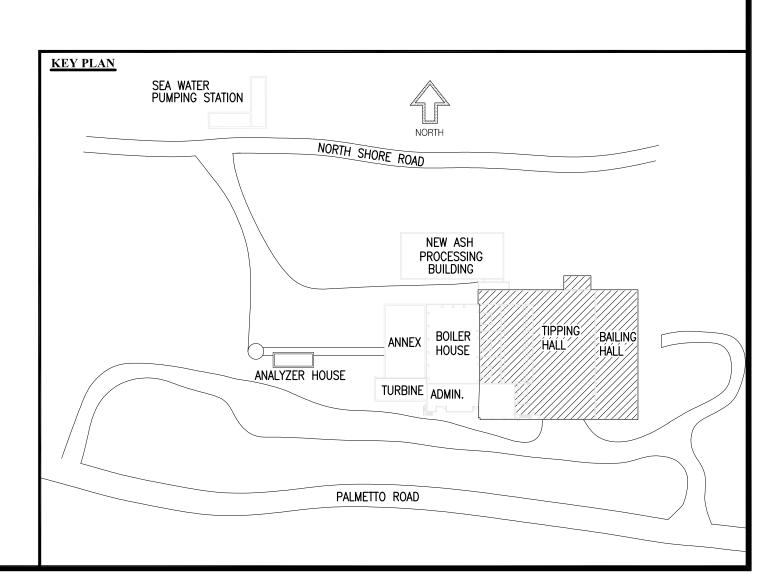


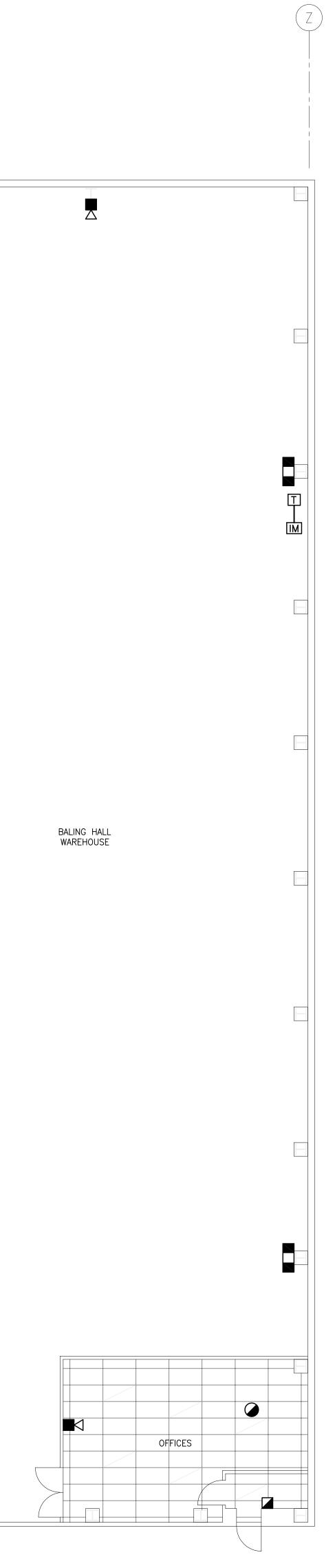
	PEER TO PEER CLASS "A" CONNECTION: #18 AWG TWISTED/ SHIELDED FIRE PROTECTED (2 HOUR RATED) CONDUCTORS.	12	HATCHING DENOTES AREA OF LINEAR DETECTION.
2	DATA COMMUNICATION LOOP: CLASS "A" #18 AWG TWISTED/ SHIELDED CONDUCTORS.		CONTRACTOR SHALL MAINTAIN THE EXISTING WATER SUPPLY CONTROLS. THESE EXISTING WATER SUPPLY CONTROLS SHALL BE MONITORED BY THE NEW FIRE ALARM SYSTEM. LOCATE ALL
3	AUDIBLE SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.	(14)	MODULES IN NEW FIRE ALARM TUB. CONTRACTOR SHALL INCLUDE FOR FOUR (4) RELAYS AND ALL
4	VISUAL SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.		OTHER REQUIRED MATERIALS FOR FAN SHUTDOWN. EACH FAN SHALL SHUTDOWN ONLY WHEN A FIRE CONDITION IS DETECTED IN THE ASSOCIATED FAN'S SUPPLY/RETURN AREA.
5	REFER TO CLEAN AGENT SUPPRESSION SYSTEM DRAWING FP2-7 FOR RELEASING PANEL, ADDITIONAL SUPPRESSION AND	15	RELEASING PANEL TROUBLE
	DETECTION DEVICES IN CONTROL ROOM 515 (ZONE 19).		RELAY FOR ELEVATOR HOMING.
6	ADDITIONAL FAULT ISOLATOR MODULES TO BE INSTALLED TO SUIT CONDUCTOR ROUTING.	17	ALL SMOKE DETECTORS IN THIS ZONE SHALL BE CONVENTIONAL TYPE AND SHALL BE WIRED IN TWO SEPARATE
$\overline{7}$	LOCATE MODULE AT SPRINKLER ZONE 9 VALVE ASSEMBLY LOCATED IN BOILER HOUSE (REFER TO DRAWING FP2-1).	(18)	CIRCUITS FOR CROSS-ZONING.
8	REFER TO VALVE ROOM 1 ENLARGEMENT ON THIS DRAWING AND/OR RISER SCHEMATIC ON DRAWING FP2-6 FOR ADDITIONAL DEVICES CONNECTED TO THE PREACTION RELEASING PANEL.		BY CONTRACTOR. EACH INDIVIDUAL ALARM, SUPERVISORY, AND TROUBLE CONDITION ARE TO BE MONITORED INDIVIDUALLY ON THE PLANT FIRE ALARM SYSTEM.
9	CONNECT ALL FLAME DETECTOR AIR SHIELD DEVICES TO AIR COMPRESSOR AT THIS LOCATION.	(19)	CLEAN AGENT SUPPRESSION CONTROL PANEL FOR CONTROL ROOM SYSTEM ZONE #19. REFER TO DRAWING FP3—1 FOR SYSTEM SCHEMATIC.
10	LOCATE PEER-TO-PEER CONNECTION IN NEW TUNNEL AND IN SEPARATE CONDUIT.	20	EACH RELEASING PANEL SHALL BE COMPLETE WITH LED DISPLAY FOR EACH INDIVIDUAL ALARM AND SUPERVISORY
	D PROVIDE RELAYS FOR POWER SHUTDOWN OF TRANSFORMERS		CONDITION.
	POWER TO BOTH TRANSFORMERS UPON FIRST LINEAR DETECTION ALARM. THIS CONTRACTOR SHALL INCLUDE ALL MATERIALS REQUIRED FOR THE TRANSFORMER SHUTDOWN.	21	LOCATE IN NEMA 4 ENCLOSURE
		22	LOCATE RELAYS/MODULES IN NEMA 4 ENCLOSURE.
	THIS WORK SHALL BE COORDINATED WITH THE OWNER.		THE LINEAR DETECTION FOR THE TRANSFORMERS SHALL BE ATTACHED TO THE SPRINKLER SYSTEM PIPING.



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2	DATA COMMUNICATION LOOP: CLASS "A" #18 AWG TWISTED/ SHIELDED CONDUCTORS.	13	CONTRACTO CONTROLS. BE MONITO
3	AUDIBLE SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.	(14)	MODULES I
4	VISUAL SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.		OTHER REG SHALL SHU IN THE ASS
5	REFER TO CLEAN AGENT SUPPRESSION SYSTEM DRAWING FP2-7 FOR RELEASING PANEL, ADDITIONAL SUPPRESSION AND	15	RELEASING
	DETECTION DEVICES IN CONTROL ROOM 515 (ZONE 19).	16	RELAY FOR
6	ADDITIONAL FAULT ISOLATOR MODULES TO BE INSTALLED TO SUIT CONDUCTOR ROUTING.		ALL SMOKE
$\bigcirc$	LOCATE MODULE AT SPRINKLER ZONE 9 VALVE ASSEMBLY LOCATED IN BOILER HOUSE (REFER TO DRAWING FP2–1).	(18)	CIRCUITS F
8	REFER TO VALVE ROOM 1 ENLARGEMENT ON THIS DRAWING AND/OR RISER SCHEMATIC ON DRAWING FP2-6 FOR ADDITIONAL DEVICES CONNECTED TO THE PREACTION RELEASING PANEL.		BY CONTRACT TROUBLE C THE PLANT
9	CONNECT ALL FLAME DETECTOR AIR SHIELD DEVICES TO AIR COMPRESSOR AT THIS LOCATION.	(19)	CLEAN AGE ROOM SYST SYSTEM SC
10	LOCATE PEER-TO-PEER CONNECTION IN NEW TUNNEL AND IN SEPARATE CONDUIT.	20	EACH RELE DISPLAY FO
	PROVIDE RELAYS FOR POWER SHUTDOWN OF TRANSFORMERS AT ALARM. RELAYS SHALL BE PROGRAMMED TO SHUT DOWN	6	CONDITION.
	POWER TO BOTH TRANSFORMERS UPON FIRST LINEAR DETECTION ALARM. THIS CONTRACTOR SHALL INCLUDE ALL	(21)	LOCATE IN
	MATERIALS REQUIRED FOR THE TRANSFORMER SHUTDOWN. THIS WORK SHALL BE COORDINATED WITH THE OWNER.		LOCATE REI
		(23)	THE LINEAR

	LEGEND
SD	SMOKE DETECTOR
FD	FLAME DETECTOR
	HEAT DETECTOR
	MANUAL PULL STATION
$\nabla$	HORN/STROBE
$\bullet$	STROBE
EXIT]	EXIT SIGN
EXIT	DIRECTIONAL EXIT SIGN
	EMERGENCY LIGHTING
FAA	FIRE ALARM ANNUNCIATOR
FACP-1	FIRE ALARM CONTROL PANEL (#)
PAP-1	PREACTION SYSTEM RELEASING PANEL (#)
SCP	SUPPRESSION CONTROL PANEL (BY OTHERS)
EOL	END OF LINE RESISTOR
EOLR	LINEAR DETECTION END OF LINE RESISTOR WITH T
IM	INTERFACE MODULE
(S)	ALARM SWITCH
F	SPRINKLER SYSTEM FLOW SWITCH
T	SPRINKLER SYSTEM TAMPER SWITCH
R	RELAY
LAPS	LOW AIR PRESSURE SWITCH
	LINEAR DETECTION
ZB PR	LINEAR DETECTION ZONE BOX PRINTER
DIA	DIALER
FIM	FAULT ISOLATION MODULE
AGD	ACTIVE GRAPHIC DISPLAY
RB	NEMA 4 RELAY/MODULE BOX ENCLOSURE
WC	EXISTING FIRE PROTECTION WATER SUPPLY CON
26'-3"	FLOOR/GRATING ELEVATION
s	NOTE: ces with subscripts are as follows: device connected to suppression system device quantity

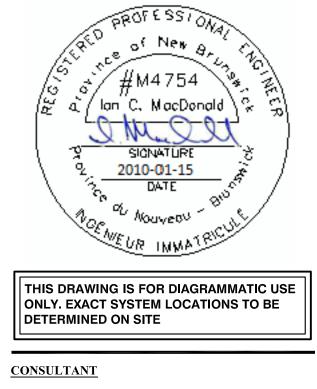




DENOTES AREA OF LINEAR DETECTION.
TOR SHALL MAINTAIN THE EXISTING WATER SUPPLY S. THESE EXISTING WATER SUPPLY CONTROLS SHALL FORED BY THE NEW FIRE ALARM SYSTEM. LOCATE ALL IN NEW FIRE ALARM TUB.
TOR SHALL INCLUDE FOR FOUR (4) RELAYS AND ALL EQUIRED MATERIALS FOR FAN SHUTDOWN. EACH FAN HUTDOWN ONLY WHEN A FIRE CONDITION IS DETECTED SSOCIATED FAN'S SUPPLY/RETURN AREA.
G PANEL TROUBLE
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OF CONDUCTORS AND MODULES TO BE CONFIRMED RACTOR. EACH INDIVIDUAL ALARM, SUPERVISORY, AND CONDITION ARE TO BE MONITORED INDIVIDUALLY ON IT FIRE ALARM SYSTEM.
GENT SUPPRESSION CONTROL PANEL FOR CONTROL STEM ZONE #19. REFER TO DRAWING FP3-1 FOR SCHEMATIC.
EASING PANEL SHALL BE COMPLETE WITH LED FOR EACH INDIVIDUAL ALARM AND SUPERVISORY N.
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COTECTION WATER SUPPLY CONTROLS
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IPTS ARE AS FOLLOWS:

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# RJ Bartlett Engineering Fire Protection Engineers Building Code Consultants www.rjbartlett.com **ISSUE / REVISION** Date:

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5	ISSUED FOR TENDER	10/01/15	
4	ISSUED FOR PERMIT APPLICATION	09/05/11	
3	ISSUED FOR FINAL REVIEW	08/02/29	
2	ISSUED FOR 99% REVIEW	08/01/04	
1	ISSUED FOR 75% REVIEW	07/11/22	
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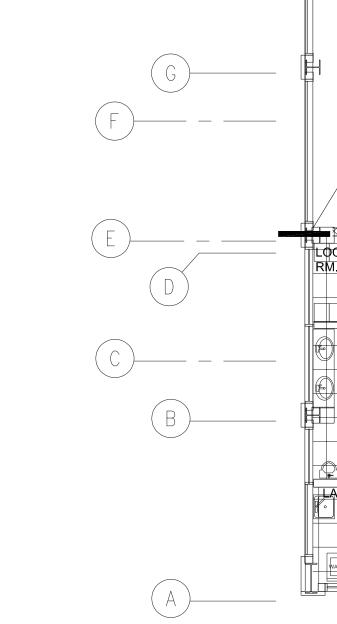
Checked By: IM **Approved By: Project Number:** 07031

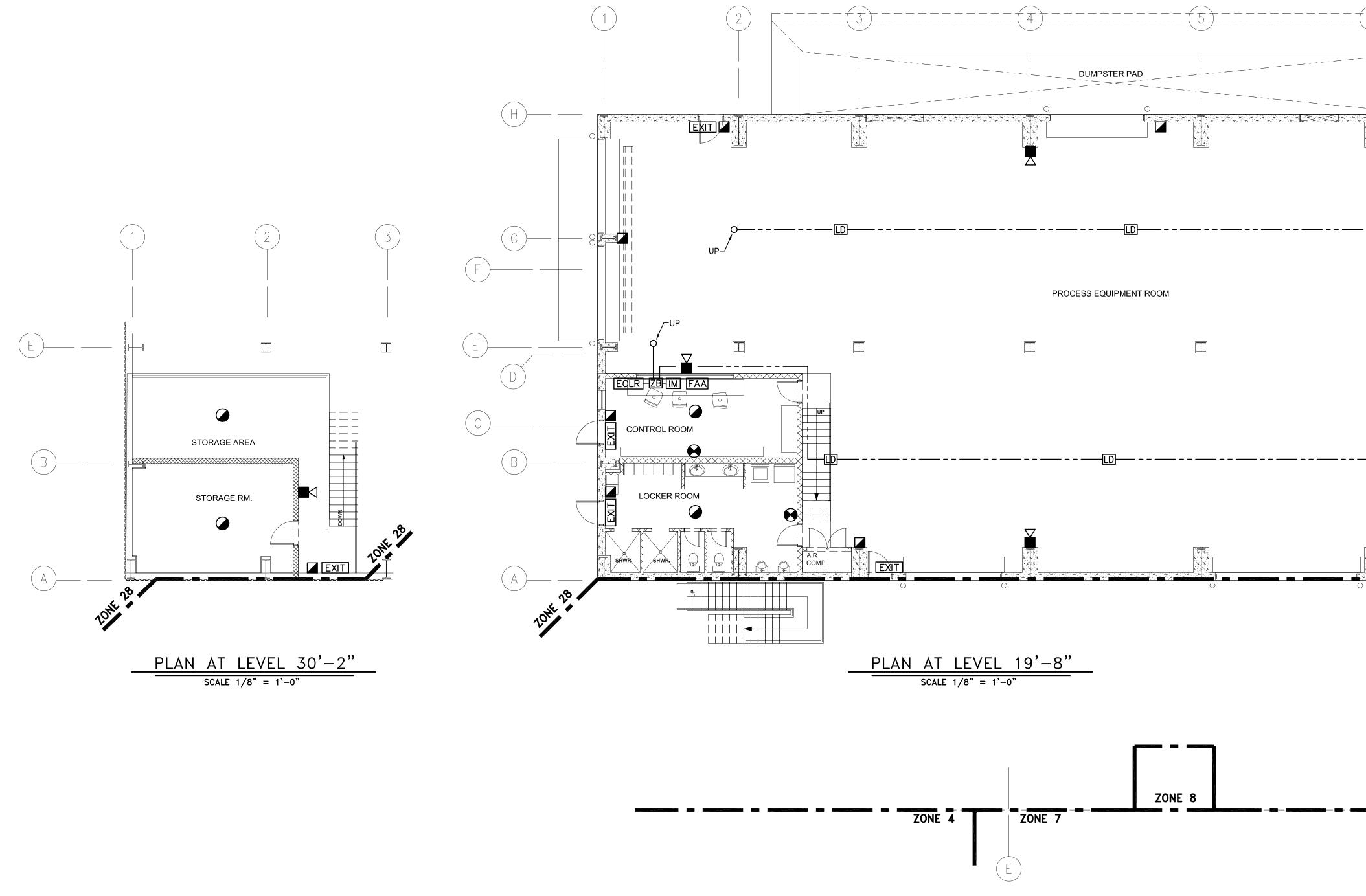
# Project Title: TYNES BAY ENERGY FACILITY FIRE PROTECTION UPGRADE

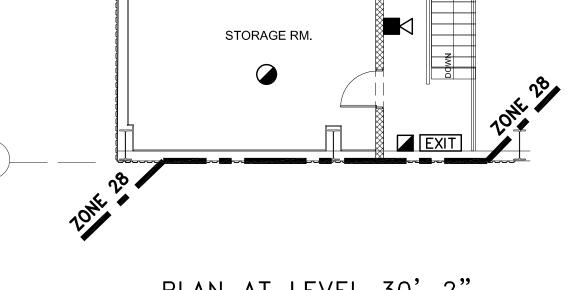
Sheet Title: <u>FIRE ALARM SYSTEM</u> BAILING HALL, TIPPING HALL AND FIRE PUMP ROOM



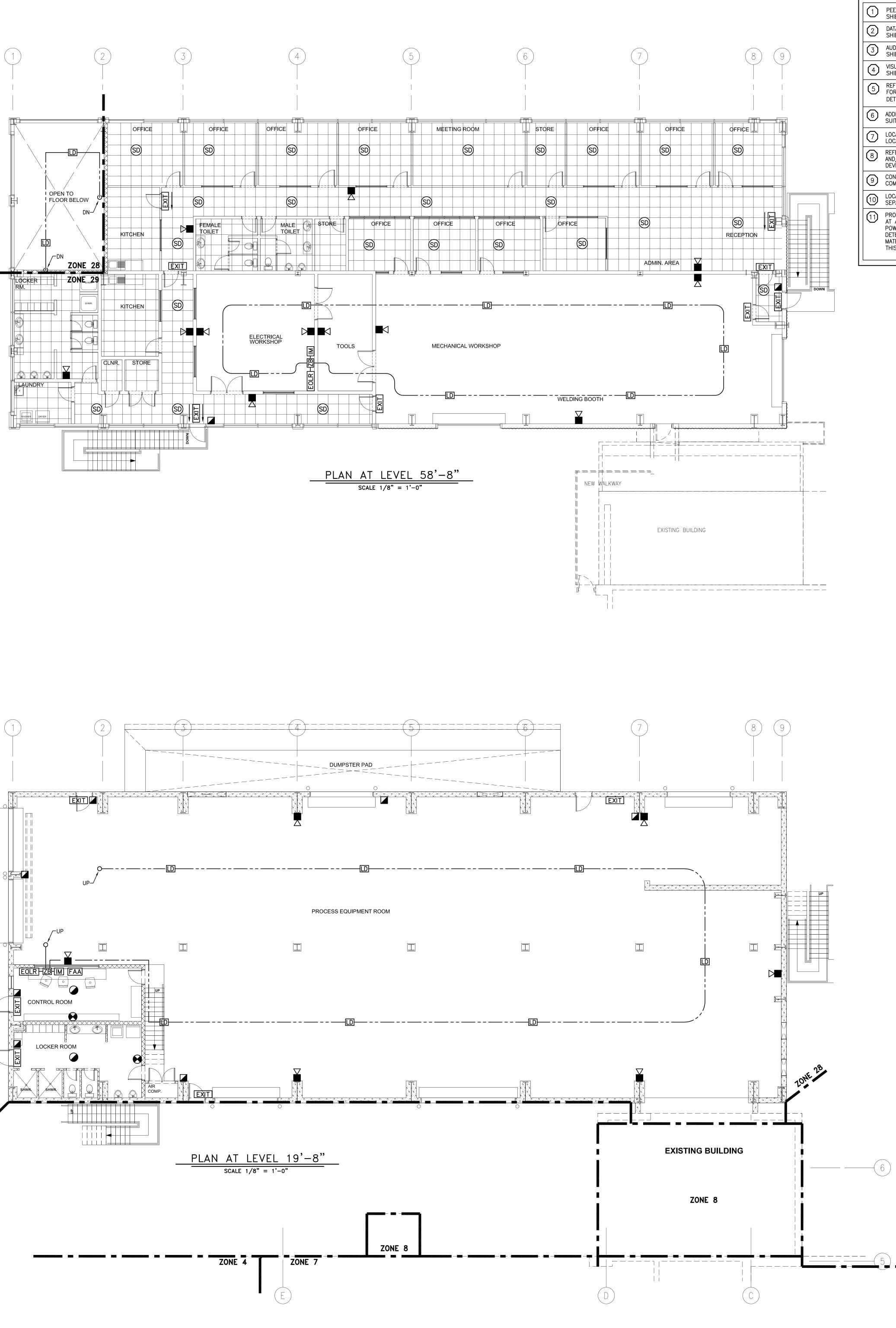




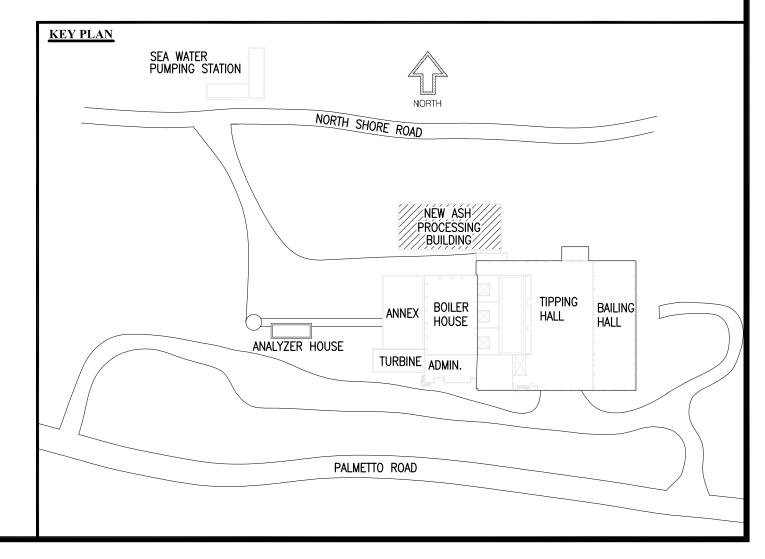






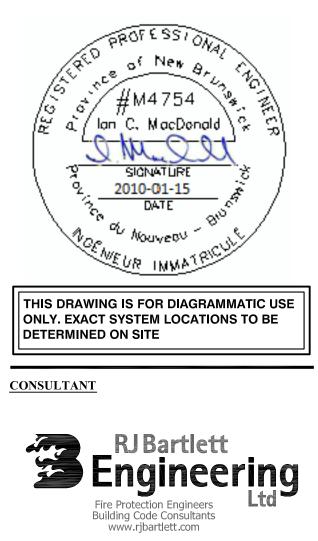


DRAWING NOTES					
	PEER TO PEER CLASS "A" CONNECTION: #18 AWG TWISTED/ SHIELDED FIRE PROTECTED (2 HOUR RATED) CONDUCTORS.	(12)	HATCHING DENOTES AREA OF LINEAR DETECTION.		
2	DATA COMMUNICATION LOOP: CLASS "A" #18 AWG TWISTED/ SHIELDED CONDUCTORS.	13	CONTRACTOR SHALL MAINTAIN THE EXISTING WATER SUPPLY CONTROLS. THESE EXISTING WATER SUPPLY CONTROLS SHALL BE MONITORED BY THE NEW FIRE ALARM SYSTEM. LOCATE ALL		
3	AUDIBLE SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.	14	MODULES IN NEW FIRE ALARM TUB. CONTRACTOR SHALL INCLUDE FOR FOUR (4) RELAYS AND ALL OTHER REQUIRED MATERIALS FOR FAN SHUTDOWN. EACH FAN		
4	VISUAL SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.		SHALL SHUTDOWN ONLY WHEN A FIRE CONDITION IS DETECTED IN THE ASSOCIATED FAN'S SUPPLY/RETURN AREA.		
5	REFER TO CLEAN AGENT SUPPRESSION SYSTEM DRAWING FP2-7 FOR RELEASING PANEL, ADDITIONAL SUPPRESSION AND	15	RELEASING PANEL TROUBLE		
	DETECTION DEVICES IN CONTROL ROOM 515 (ZONE 19).		RELAY FOR ELEVATOR HOMING.		
6	ADDITIONAL FAULT ISOLATOR MODULES TO BE INSTALLED TO SUIT CONDUCTOR ROUTING.	17	ALL SMOKE DETECTORS IN THIS ZONE SHALL BE CONVENTIONAL TYPE AND SHALL BE WIRED IN TWO SEPARATE		
$\overline{7}$	LOCATE MODULE AT SPRINKLER ZONE 9 VALVE ASSEMBLY LOCATED IN BOILER HOUSE (REFER TO DRAWING FP2-1).	(18)	CIRCUITS FOR CROSS-ZONING.		
8	REFER TO VALVE ROOM 1 ENLARGEMENT ON THIS DRAWING AND/OR RISER SCHEMATIC ON DRAWING FP2-6 FOR ADDITIONAL DEVICES CONNECTED TO THE PREACTION RELEASING PANEL.		BY CONTRACTOR. EACH INDIVIDUAL ALARM, SUPERVISORY, AND TROUBLE CONDITION ARE TO BE MONITORED INDIVIDUALLY ON THE PLANT FIRE ALARM SYSTEM.		
9	CONNECT ALL FLAME DETECTOR AIR SHIELD DEVICES TO AIR COMPRESSOR AT THIS LOCATION.	(19	CLEAN AGENT SUPPRESSION CONTROL PANEL FOR CONTROL ROOM SYSTEM ZONE #19. REFER TO DRAWING FP3-1 FOR SYSTEM SCHEMATIC.		
10	LOCATE PEER-TO-PEER CONNECTION IN NEW TUNNEL AND IN SEPARATE CONDUIT.	20	EACH RELEASING PANEL SHALL BE COMPLETE WITH LED DISPLAY FOR EACH INDIVIDUAL ALARM AND SUPERVISORY		
	PROVIDE RELAYS FOR POWER SHUTDOWN OF TRANSFORMERS AT ALARM. RELAYS SHALL BE PROGRAMMED TO SHUT DOWN	6	CONDITION.		
	POWER TO BOTH TRANSFORMERS UPON FIRST LINEAR DETECTION ALARM. THIS CONTRACTOR SHALL INCLUDE ALL MATERIALS REQUIRED FOR THE TRANSFORMER SHUTDOWN. THIS WORK SHALL BE COORDINATED WITH THE OWNER.	21			
		22	LOCATE RELAYS/MODULES IN NEMA 4 ENCLOSURE.		
		23	THE LINEAR DETECTION FOR THE TRANSFORMERS SHALL BE ATTACHED TO THE SPRINKLER SYSTEM PIPING.		



LEGEND				
SD	SMOKE DETECTOR			
FD	FLAME DETECTOR			
	HEAT DETECTOR			
	MANUAL PULL STATION			
	HORN/STROBE			
$\mathbf{\Theta}$	STROBE			
EXIT	EXIT SIGN			
EXIT	DIRECTIONAL EXIT SIGN			
	EMERGENCY LIGHTING			
FAA	FIRE ALARM ANNUNCIATOR			
FACP-1	FIRE ALARM CONTROL PANEL (#)			
PAP-1	PREACTION SYSTEM RELEASING PANEL (#)			
SCP	SUPPRESSION CONTROL PANEL (BY OTHERS)			
EOL	END OF LINE RESISTOR			
EOLR	LINEAR DETECTION END OF LINE RESISTOR WITH TEST BUTTON			
IM	INTERFACE MODULE			
AS	ALARM SWITCH			
F	SPRINKLER SYSTEM FLOW SWITCH			
Т	SPRINKLER SYSTEM TAMPER SWITCH			
R	RELAY			
LAPS	LOW AIR PRESSURE SWITCH			
LD	LINEAR DETECTION			
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PR	PRINTER			
DIA	DIALER			
FIM	FAULT ISOLATION MODULE			
AGD	ACTIVE GRAPHIC DISPLAY			
RB	NEMA 4 RELAY/MODULE BOX ENCLOSURE			
WC	EXISTING FIRE PROTECTION WATER SUPPLY CONTROLS			
26'-3"	FLOOR/GRATING ELEVATION			
LEGEND	NOTE:			
1. DEVICES WITH SUBSCRIPTS ARE AS FOLLOWS:				
<ul><li>S DEVICE CONNECTED TO SUPPRESSION SYSTEM</li><li>(3) DEVICE QUANTITY</li></ul>				

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## **ISSUE / REVISION** 2ISSUED FOR TENDER10/01/151ISSUED FOR PERMIT APPLICATION09/05/11 <u>scale:</u> AS NOTED **SURVEY** Prepared By: <u>DESIGN</u> Prepared By: *AM/HR* Checked By: AMDRAWING Prepared By:

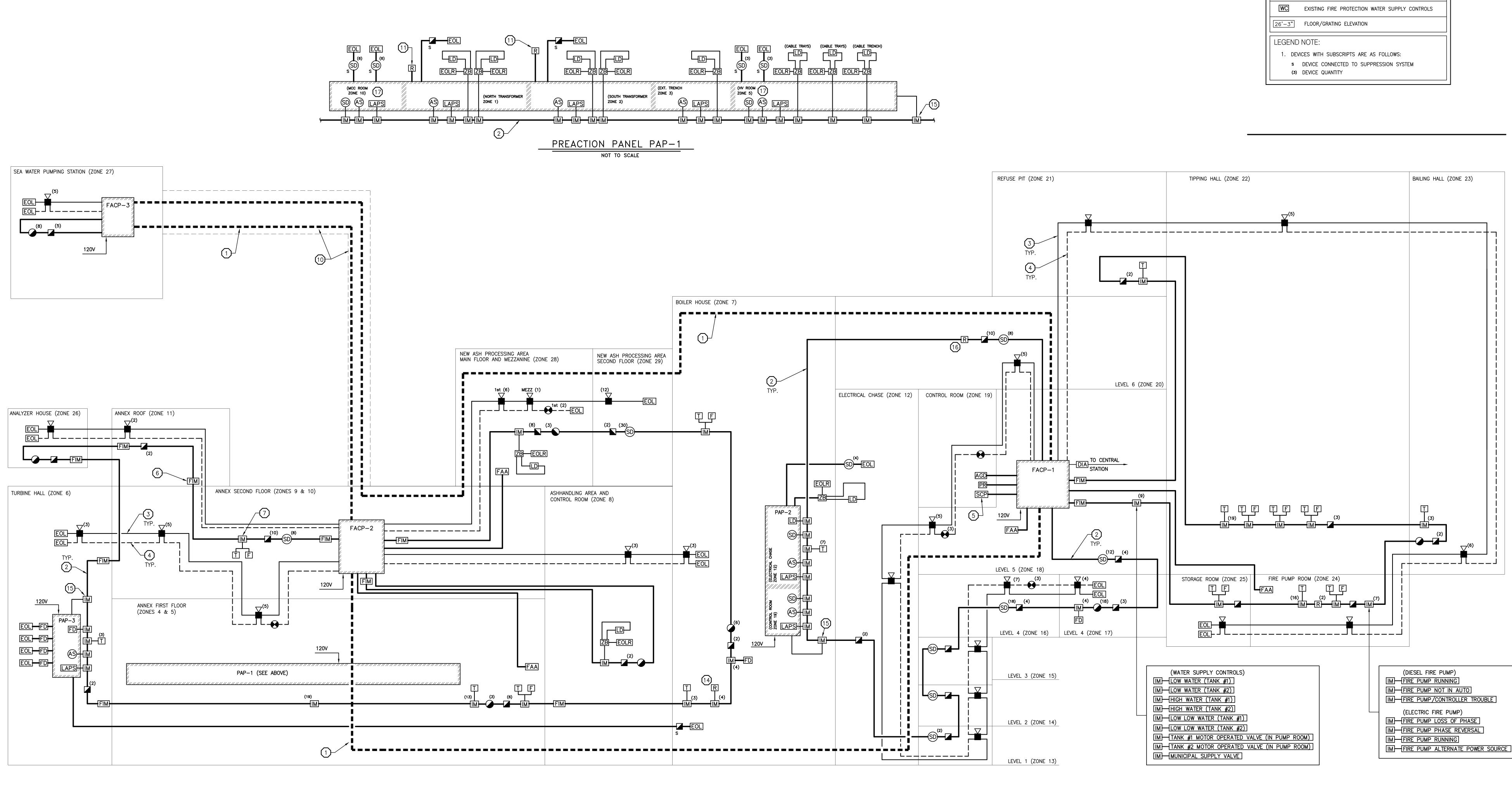
Checked By: **Approved By:** Project Number: 07031 Project Title: TYNES BAY

# ENERGY FACILITY FIRE PROTECTION UPGRADE

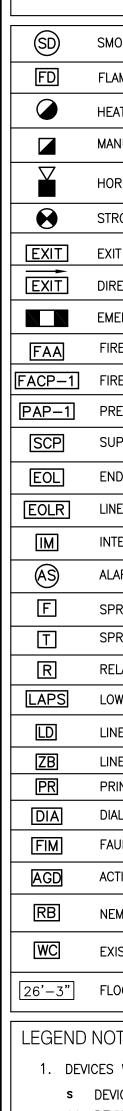
Sheet Title: FIRE ALARM SYSTEM NEW ASH PROCESSING BUILDING

Revision:	Sheet Number:	
2		<b>FP2-6</b>

	DRAWING NOTES			
	PEER TO PEER CLASS "A" CONNECTION: #18 AWG TWISTED/ SHIELDED FIRE PROTECTED (2 HOUR RATED) CONDUCTORS.	12	HATCHING DENOTES AREA OF LINEAR DETECTION.	
2	DATA COMMUNICATION LOOP: CLASS "A" #18 AWG TWISTED/ SHIELDED CONDUCTORS. AUDIBLE SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/	(13)	CONTROLS. THESE EXISTING WATER SUPPLY CONTROLS SH BE MONITORED BY THE NEW FIRE ALARM SYSTEM. LOCATE MODULES IN NEW FIRE ALARM TUB.	
(3) (4)	AUDIBLE SIGNAL CIRCUIT LOOP: CLASS B #14 AWG TWISTED/ SHIELDED CONDUCTORS. VISUAL SIGNAL CIRCUIT LOOP: CLASS "B" #14 AWG TWISTED/ SHIELDED CONDUCTORS.	(14)	CONTRACTOR SHALL INCLUDE FOR FOUR (4) RELAYS AND OTHER REQUIRED MATERIALS FOR FAN SHUTDOWN. EACH I SHALL SHUTDOWN ONLY WHEN A FIRE CONDITION IS DETE IN THE ASSOCIATED FAN'S SUPPLY/RETURN AREA.	
5	REFER TO CLEAN AGENT SUPPRESSION SYSTEM DRAWING FP2-7 FOR RELEASING PANEL, ADDITIONAL SUPPRESSION AND	(15)	RELEASING PANEL TROUBLE	
	DETECTION DEVICES IN CONTROL ROOM 515 (ZONE 19).	16	RELAY FOR ELEVATOR HOMING.	
6	ADDITIONAL FAULT ISOLATOR MODULES TO BE INSTALLED TO SUIT CONDUCTOR ROUTING.	17	ALL SMOKE DETECTORS IN THIS ZONE SHALL BE CONVENTIONAL TYPE AND SHALL BE WIRED IN TWO SEPARA CIRCUITS FOR CROSS-ZONING.	
	LOCATE MODULE AT SPRINKLER ZONE 9 VALVE ASSEMBLY LOCATED IN BOILER HOUSE (REFER TO DRAWING FP2-1).	(18)	NUMBER OF CONDUCTORS AND MODULES TO BE CONFIRME	
8	REFER TO VALVE ROOM 1 ENLARGEMENT ON THIS DRAWING AND/OR RISER SCHEMATIC ON DRAWING FP2–6 FOR ADDITIONAL DEVICES CONNECTED TO THE PREACTION RELEASING PANEL.		BY CONTRACTOR. EACH INDIVIDUAL ALARM, SUPERVISORY, A TROUBLE CONDITION ARE TO BE MONITORED INDIVIDUALLY THE PLANT FIRE ALARM SYSTEM.	
9	CONNECT ALL FLAME DETECTOR AIR SHIELD DEVICES TO AIR COMPRESSOR AT THIS LOCATION.	(19)	CLEAN AGENT SUPPRESSION CONTROL PANEL FOR CONTRO ROOM SYSTEM ZONE #19. REFER TO DRAWING FP3-1 FOR SYSTEM SCHEMATIC.	
	LOCATE PEER-TO-PEER CONNECTION IN NEW TUNNEL AND IN SEPARATE CONDUIT.	20	EACH RELEASING PANEL SHALL BE COMPLETE WITH LED DISPLAY FOR EACH INDIVIDUAL ALARM AND SUPERVISORY CONDITION.	
	PROVIDE RELAYS FOR POWER SHUTDOWN OF TRANSFORMERS AT ALARM. RELAYS SHALL BE PROGRAMMED TO SHUT DOWN POWER TO BOTH TRANSFORMERS UPON FIRST LINEAR	21	LOCATE IN NEMA 4 ENCLOSURE	
	DETECTION ALARM. THIS CONTRACTOR SHALL INCLUDE ALL MATERIALS REQUIRED FOR THE TRANSFORMER SHUTDOWN.	22	LOCATE RELAYS/MODULES IN NEMA 4 ENCLOSURE.	
	THIS WORK SHALL BE COORDINATED WITH THE OWNER.	23	THE LINEAR DETECTION FOR THE TRANSFORMERS SHALL BE ATTACHED TO THE SPRINKLER SYSTEM PIPING.	



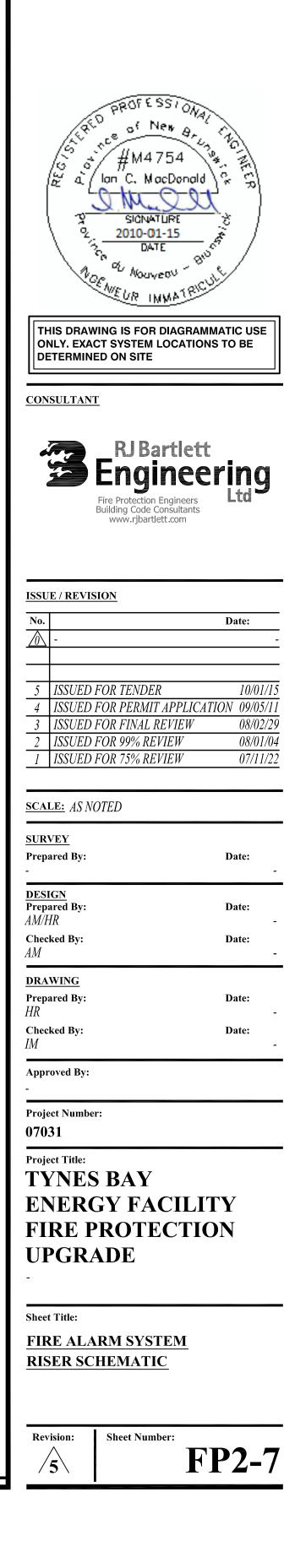
RISER SCHEMATICS

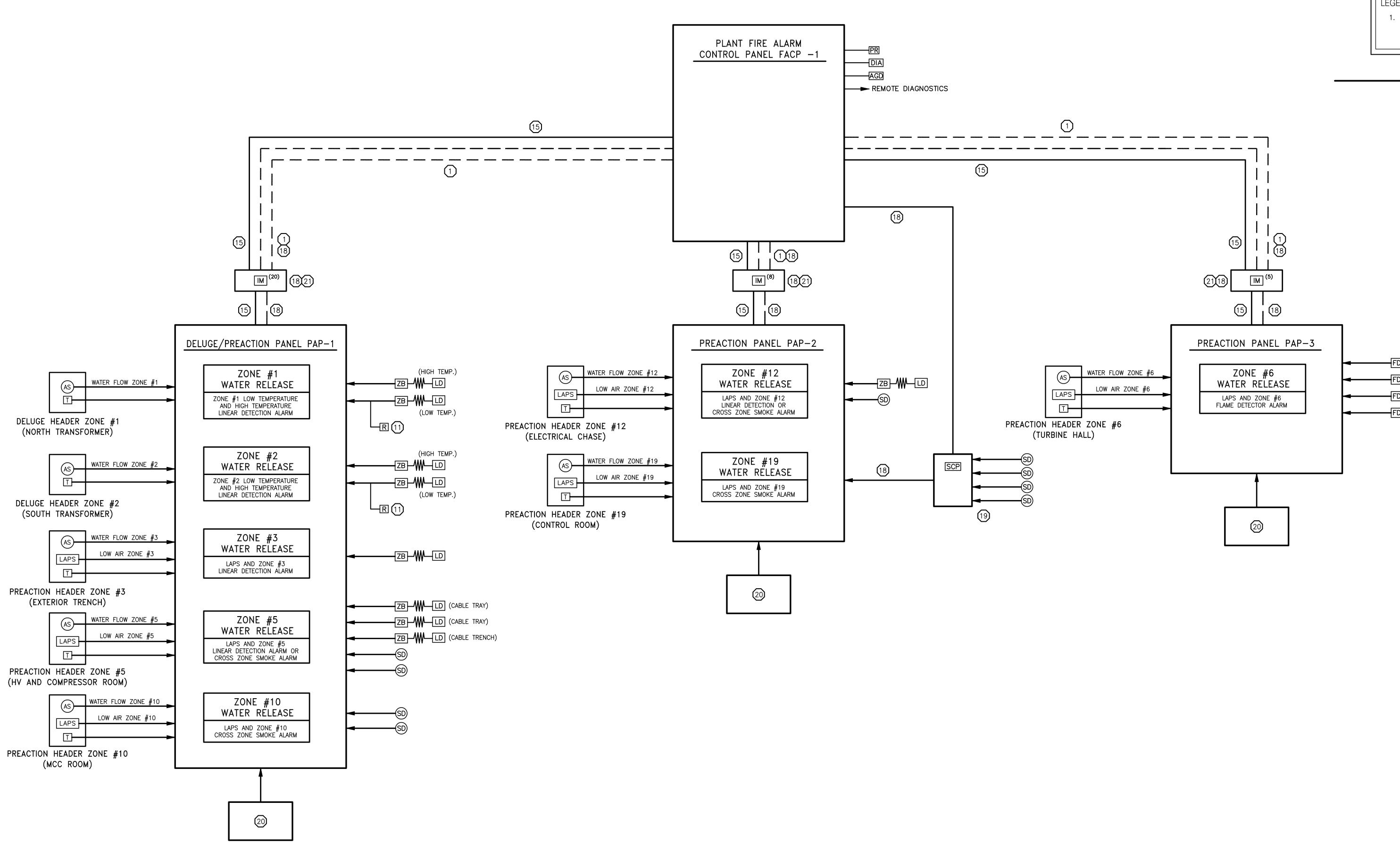


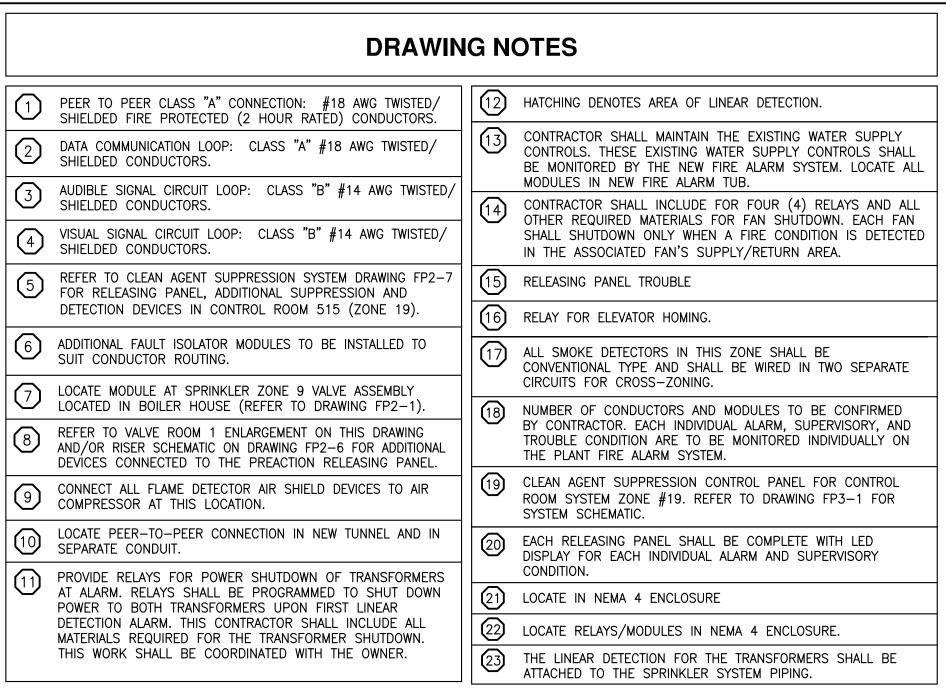
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RE ALARM ANNUNCIATOR
RE ALARM CONTROL PANEL (#)
REACTION SYSTEM RELEASING PANEL (#)
JPPRESSION CONTROL PANEL (BY OTHERS)
ND OF LINE RESISTOR
NEAR DETECTION END OF LINE RESISTOR WITH TEST BUTTON
TERFACE MODULE
ARM SWITCH
PRINKLER SYSTEM FLOW SWITCH
PRINKLER SYSTEM TAMPER SWITCH
ELAY
DW AIR PRESSURE SWITCH
NEAR DETECTION
NEAR DETECTION ZONE BOX
ALER
AULT ISOLATION MODULE
CTIVE GRAPHIC DISPLAY
EMA 4 RELAY/MODULE BOX ENCLOSURE
KISTING FIRE PROTECTION WATER SUPPLY CONTROLS
OOR/GRATING ELEVATION
DTE:
VICE CONNECTED TO SUPPRESSION SYSTEM

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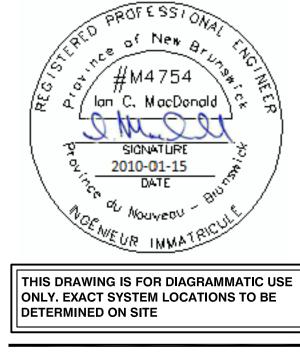




	LEGEND
SD	SMOKE DETECTOR
FD	FLAME DETECTOR
	HEAT DETECTOR
	MANUAL PULL STATION
$\nabla$	HORN/STROBE
$\mathbf{\Theta}$	STROBE
EXIT	EXIT SIGN
EXIT	DIRECTIONAL EXIT SIGN
	EMERGENCY LIGHTING
FAA	FIRE ALARM ANNUNCIATOR
ACP-1	FIRE ALARM CONTROL PANEL (#)
AP-1	PREACTION SYSTEM RELEASING PANEL (#)
SCP	SUPPRESSION CONTROL PANEL (BY OTHERS)
EOL	END OF LINE RESISTOR
EOLR	LINEAR DETECTION END OF LINE RESISTOR WITH TEST BUTTON
IM	INTERFACE MODULE
AS	ALARM SWITCH
F	SPRINKLER SYSTEM FLOW SWITCH
Т	SPRINKLER SYSTEM TAMPER SWITCH
R	RELAY
APS	LOW AIR PRESSURE SWITCH
LD	LINEAR DETECTION
ZB	LINEAR DETECTION ZONE BOX
PR	PRINTER
DIA FIM	DIALER FAULT ISOLATION MODULE
AGD	ACTIVE GRAPHIC DISPLAY
RB	
	NEMA 4 RELAY/MODULE BOX ENCLOSURE
WC	EXISTING FIRE PROTECTION WATER SUPPLY CONTROLS
6'-3"	FLOOR/GRATING ELEVATION
EGEND	NOTE:
1. DEVI s (3)	CES WITH SUBSCRIPTS ARE AS FOLLOWS: DEVICE CONNECTED TO SUPPRESSION SYSTEM DEVICE QUANTITY

FD	
FD	
FD	

DEPARTMENT OF **OPERATIONS AND ENGINEERING** P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151 Fax: (441) 295-0170



**CONSULTANT** 



ISSU	E / REVISION		
No.		Date:	
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4	ISSUED FOR TENDER	10/01/15	
3	ISSUED FOR PERMIT APPLICA	TION 09/05/11	
2	ISSUED FOR FINAL REVIEW	08/02/29	
1	ISSUED FOR 99% REVIEW	08/01/04	
<u>SCA</u>	Le: NOT TO SCALE		
SUR	VEY		
Prep	ared By:	Date:	
-		-	
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AM/F		Date.	
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	ked By:	Date:	
IM		-	
Appr	oved By:		
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Proje	ect Number:		
070	31		
Proje	ect Title:		
	<b>NES BAY</b>		

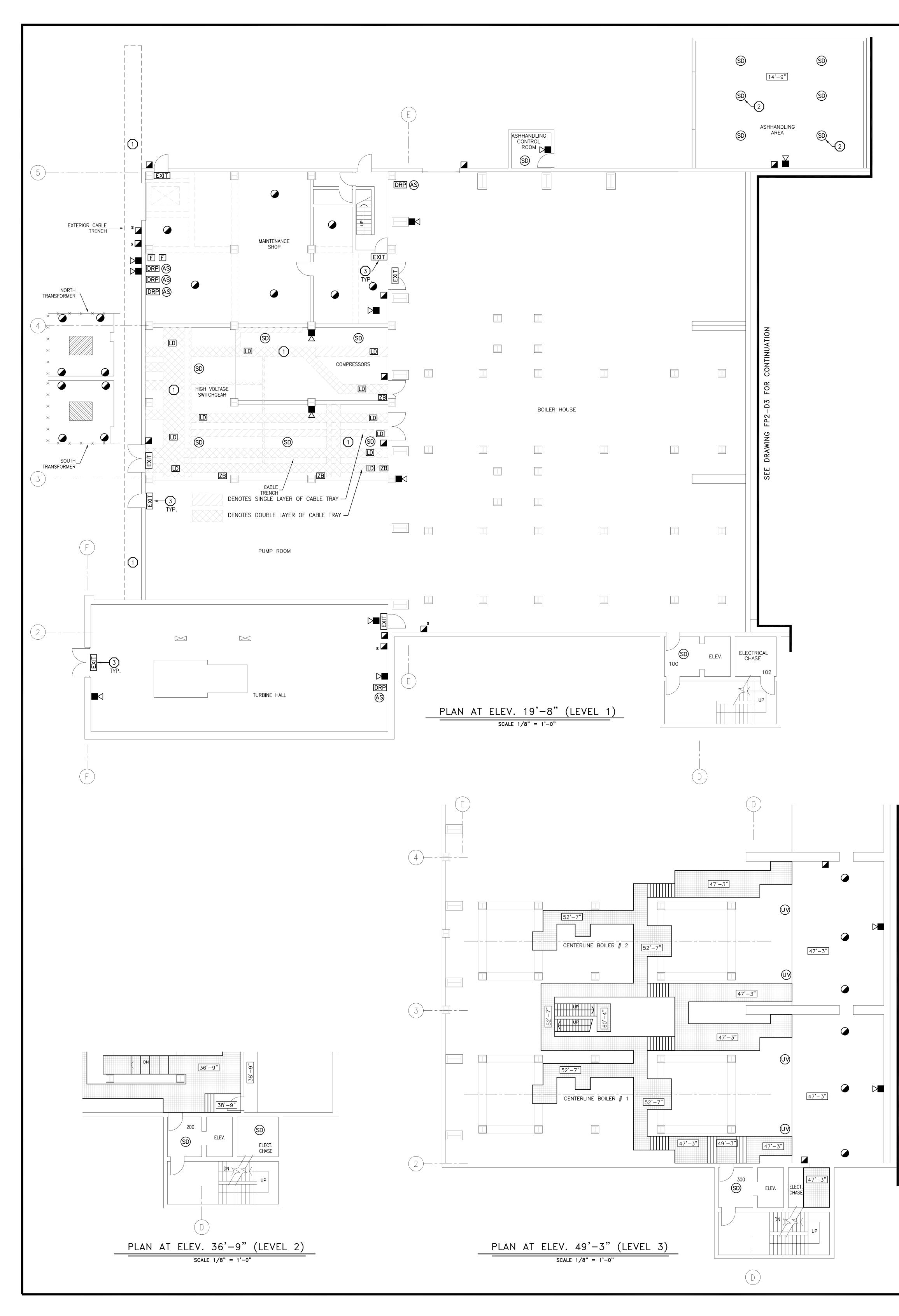
TYNES BAY **ENERGY FACILITY** FIRE PROTECTION UPGRADE

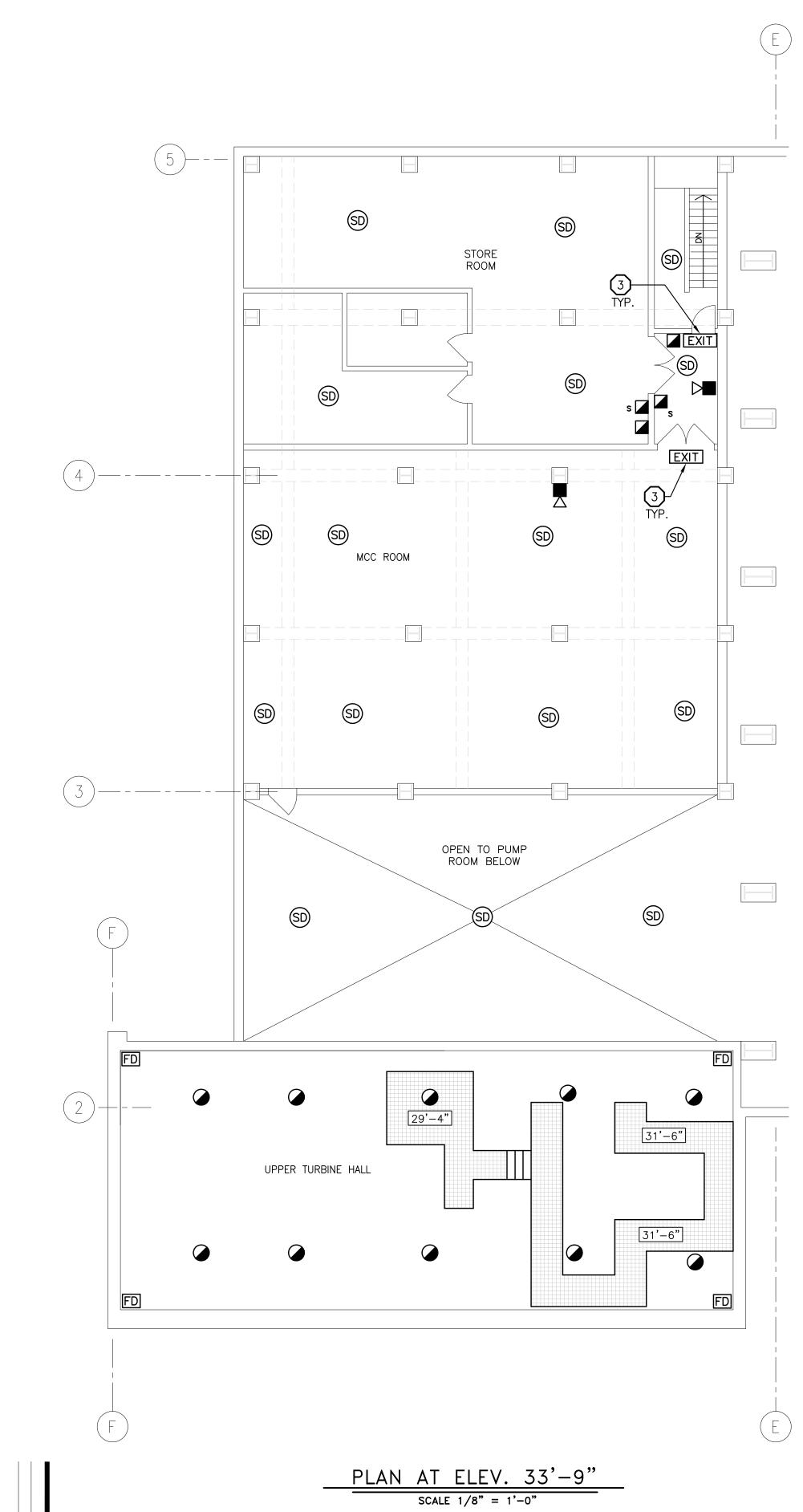
Sheet Title: FIRE ALARM SYSTEM **RELEASING PANELS** WIRING SCHEMATIC

Revision: Sheet Number:

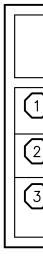
/4

**FP2-8** 









KEY PLAN

	LEGEND
SD	SMOKE DETECTOR
(SD)	BELOW FLOOR SMOKE DETECTOR
FD	FLAME DETECTOR
UV	ULTRA VIOLET DETECTOR
	HEAT DETECTOR
	MANUAL PULL STATION
	HORN
$\bigtriangledown$	HORN/STROBE
	BELL
XIT	EXIT SIGN
	EMERGENCY LIGHTING
ACP	FIRE ALARM CONTROL PANEL
DRP	DELUGE SYSTEM RELEASING PANEL
EOL	END OF LINE RESISTOR
AS	ALARM SWITCH
F	SPRINKLER SYSTEM FLOW SWITCH
Т	SPRINKLER SYSTEM TAMPER SWITCH
R	RELAY
-PC	FIRE PUMP CONTROLLER
JPC	JOCKEY PUMP CONTROLLER
APS	LOW AIR PRESSURE SWITCH
ZB	ZONE BOX
LD	LINEAR DETECTION
8'-3"	FLOOR/GRATING ELEVATION
EGEND 1. devi	NOTE: ces with subscripts are as follows:

S DEVICE CONNECTED TO SUPPRESSION SYSTEM

2. ALL DEVICES SHOWN ARE TO BE DEMOLISHED UNLESS OTHERWISE NOTED.

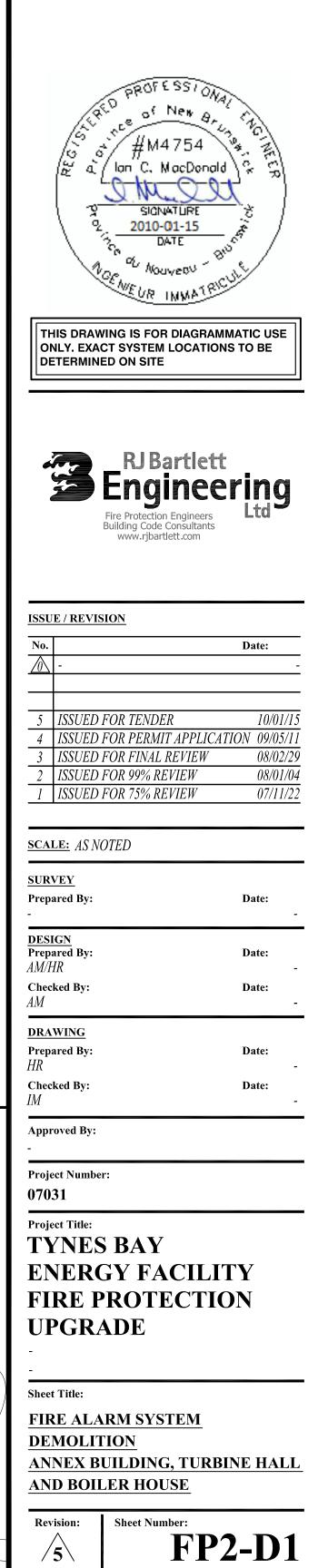
## REMOVE ALL LINEAR DETECTION INCLUDING ZONE BOXES ON ALL LEVELS OF CABLE TRAYS AND TRENCHES.

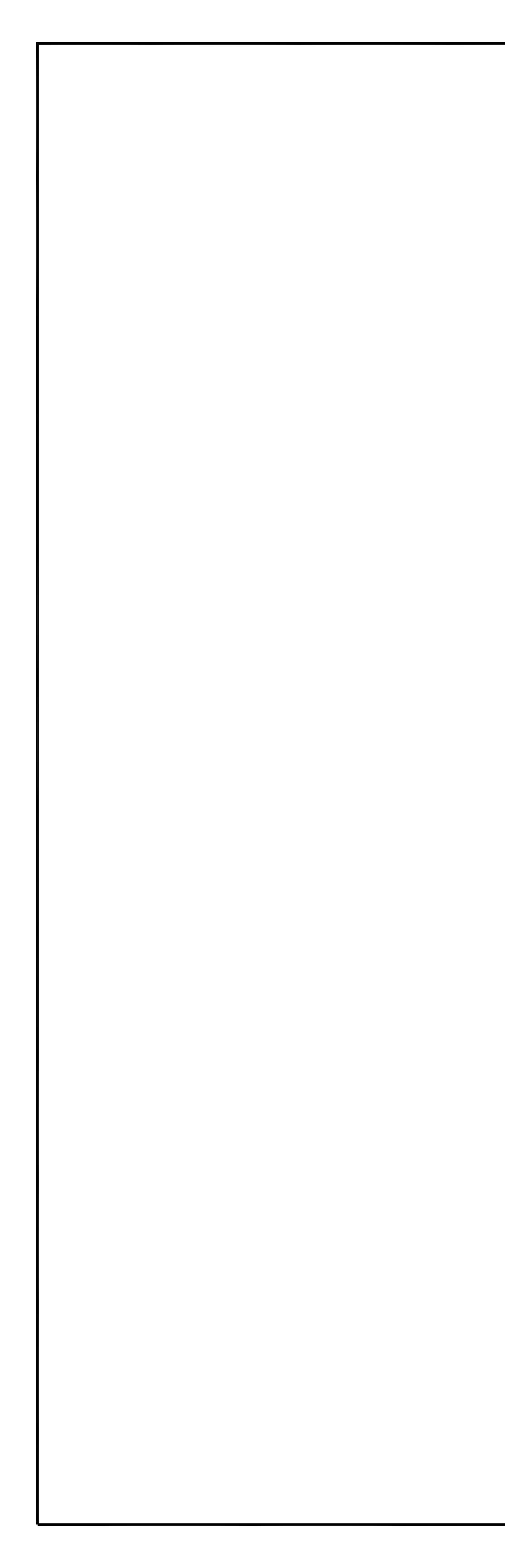
DETECTORS INSTALLED TO UNDERSIDE OF STRUCTURE AT APPROX. ELEVATION 37'-9".	
REMOVE ALL EXIT SIGNS, INCLUDING EXISTING WIRING AND CONDUIT. THESE EXISTING SIGNS SHALL BE REMOVED WHEN DURING THE INSTALLATION OF THE NEW EXIT SIGNS.	

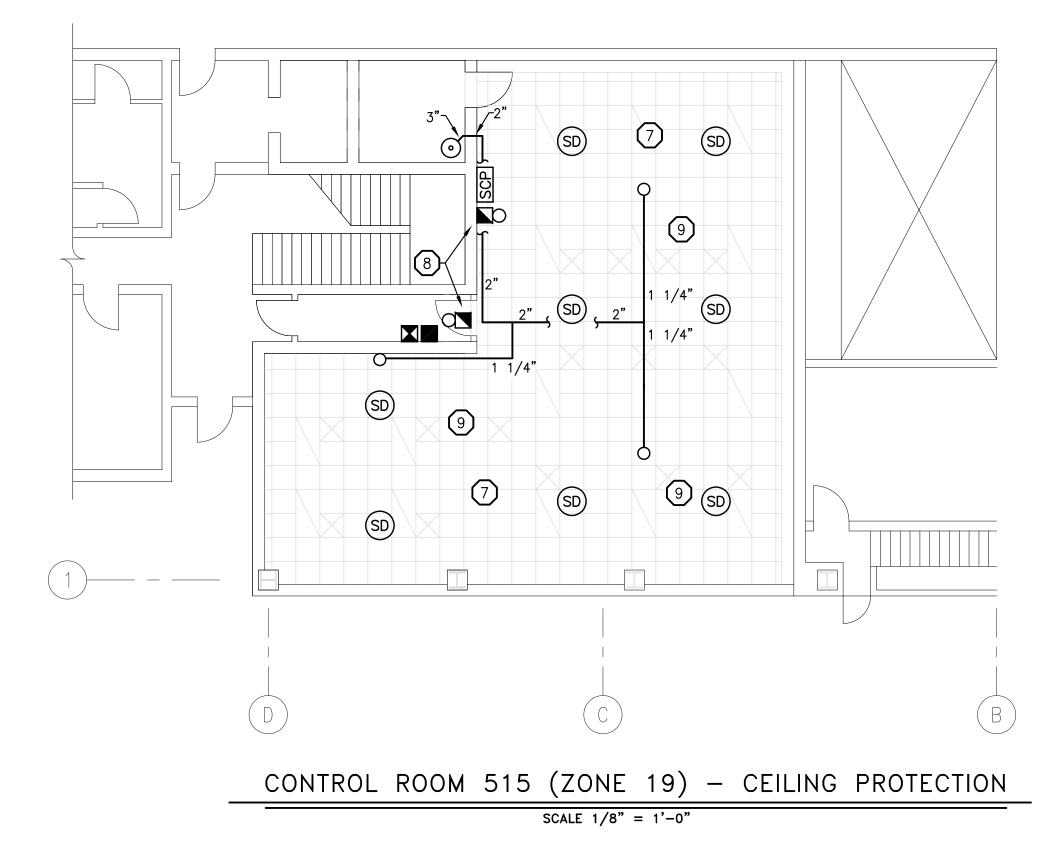
EA WATER UMPING STATION	NORTH H SHORE ROAD			-
ANALYZER HOUSE	NEW ASH PROCESSING BUILDING ANNEX: BOILER HÓÚSÉ TURBINE ADMIN.	TIPPING HALL	BAILING HALL	
PA	ALMETTO ROAD			

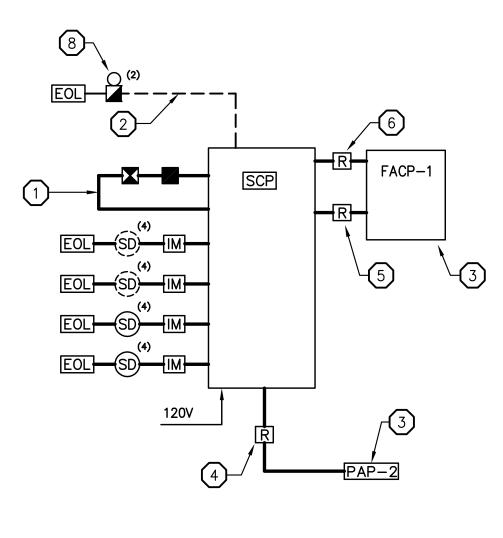
#### MINISTRY OF WORKS AND ENGINEERING

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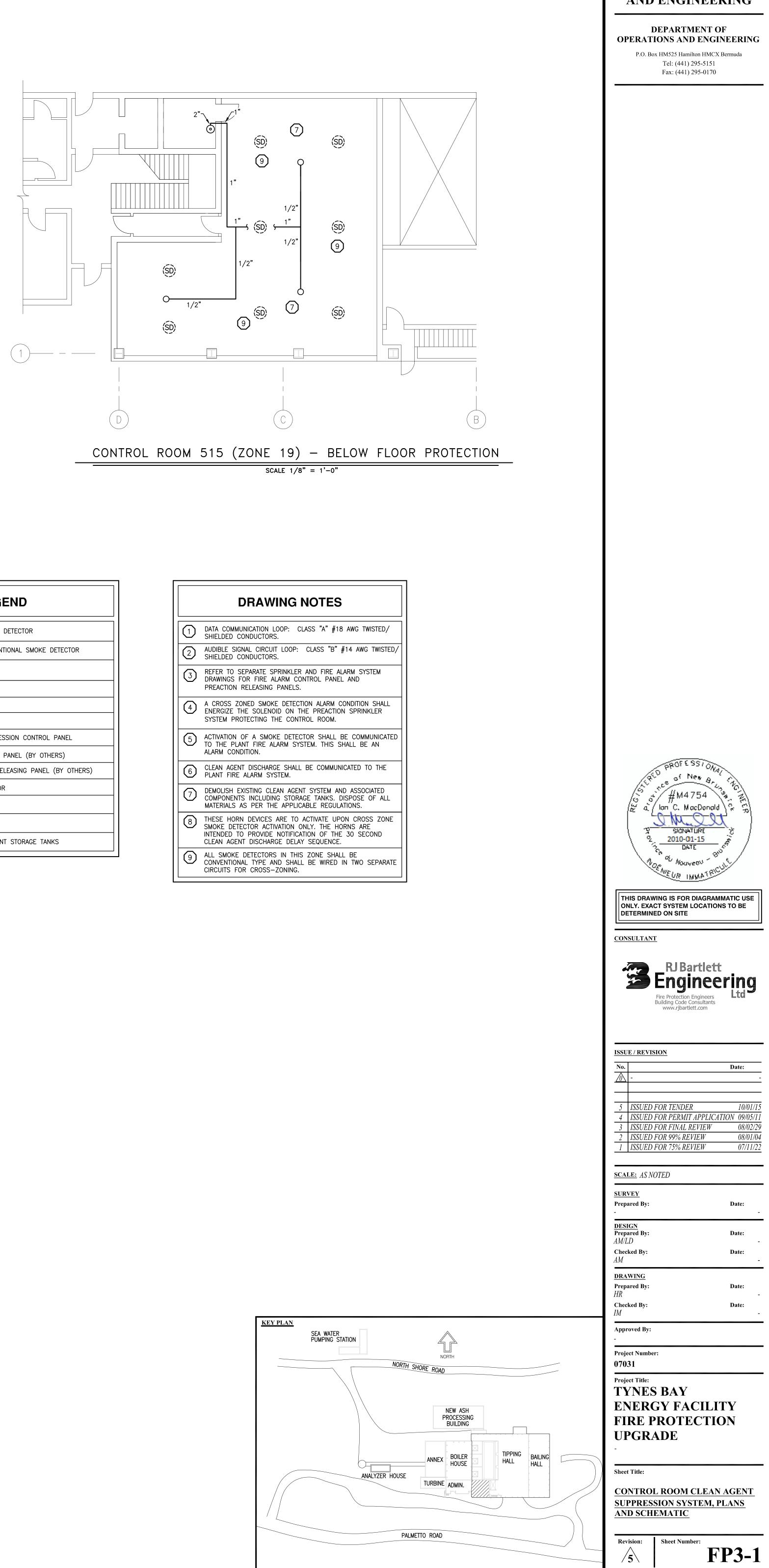






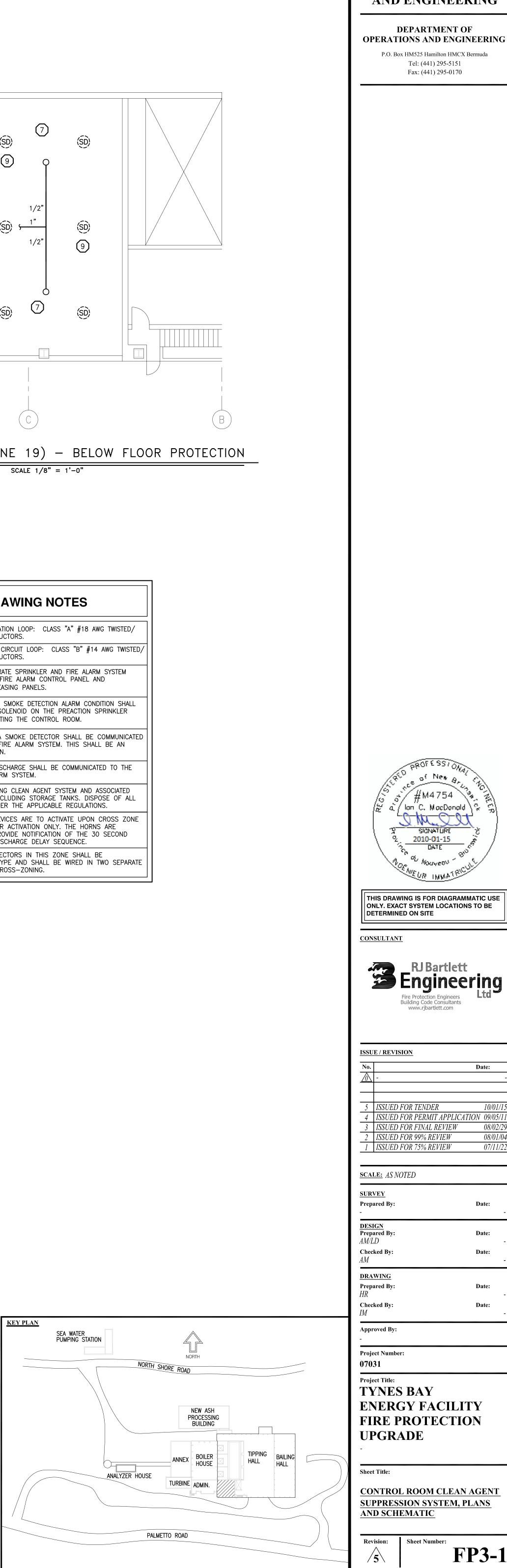


RISER SCHEMATIC



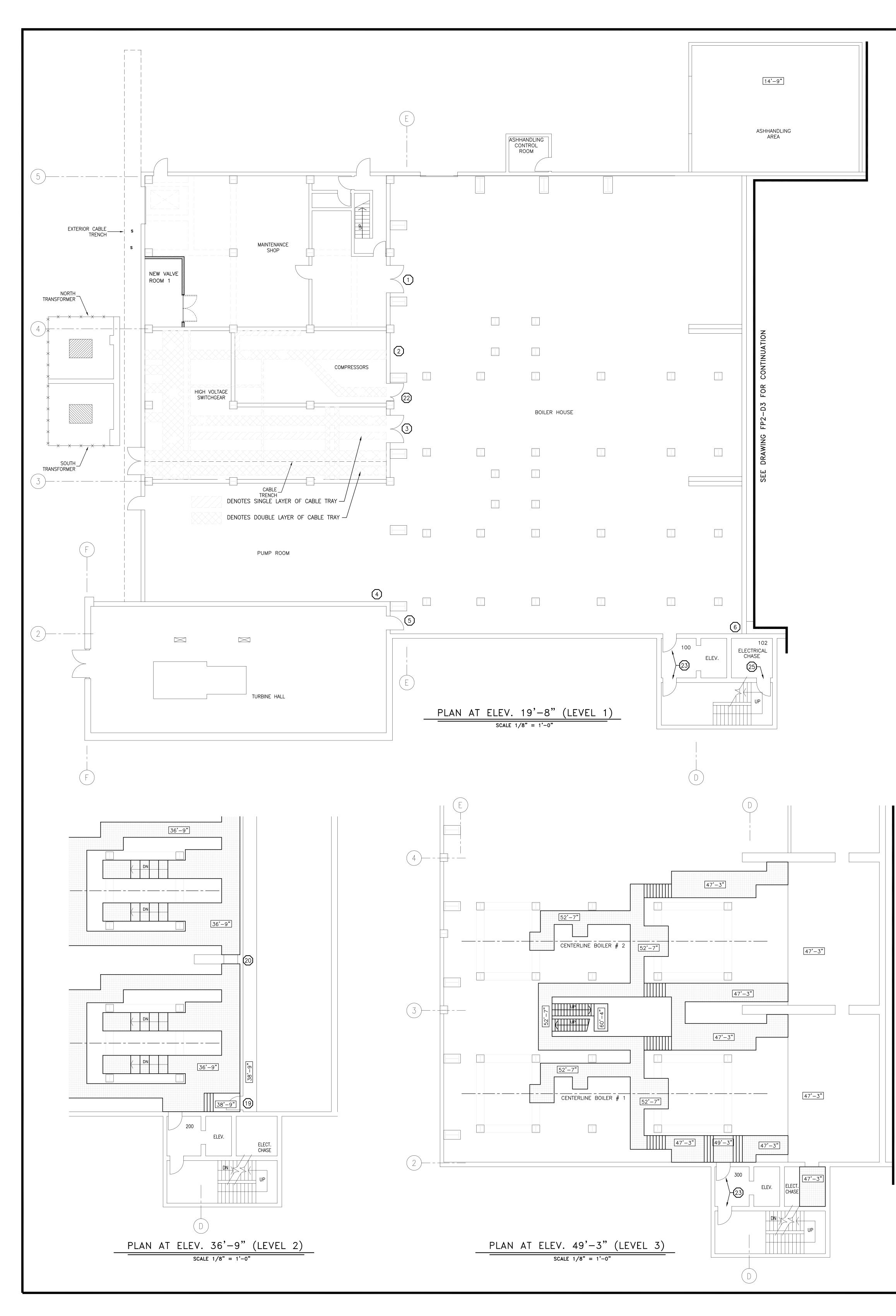
	LEGEND
SD	CONVENTIONAL SMOKE DETECTOR
(SD)	BELOW FLOOR CONVENTIONAL SMOKE DETECTOR
	4" BELL
	ABORT STATION
	RELEASE STATION
R	RELAY
SCP	CLEAN AGENT SUPPRESSION CONTROL PANEL
FACP-1	FIRE ALARM CONTROL PANEL (BY OTHERS)
PAP-2	PREACTION SYSTEM RELEASING PANEL (BY OTHERS)
EOL	END OF LINE RESISTOR
IM	ISOLATION MODULE
0	NOZZLE
0	SAPPHIRE CLEAN AGENT STORAGE TANKS

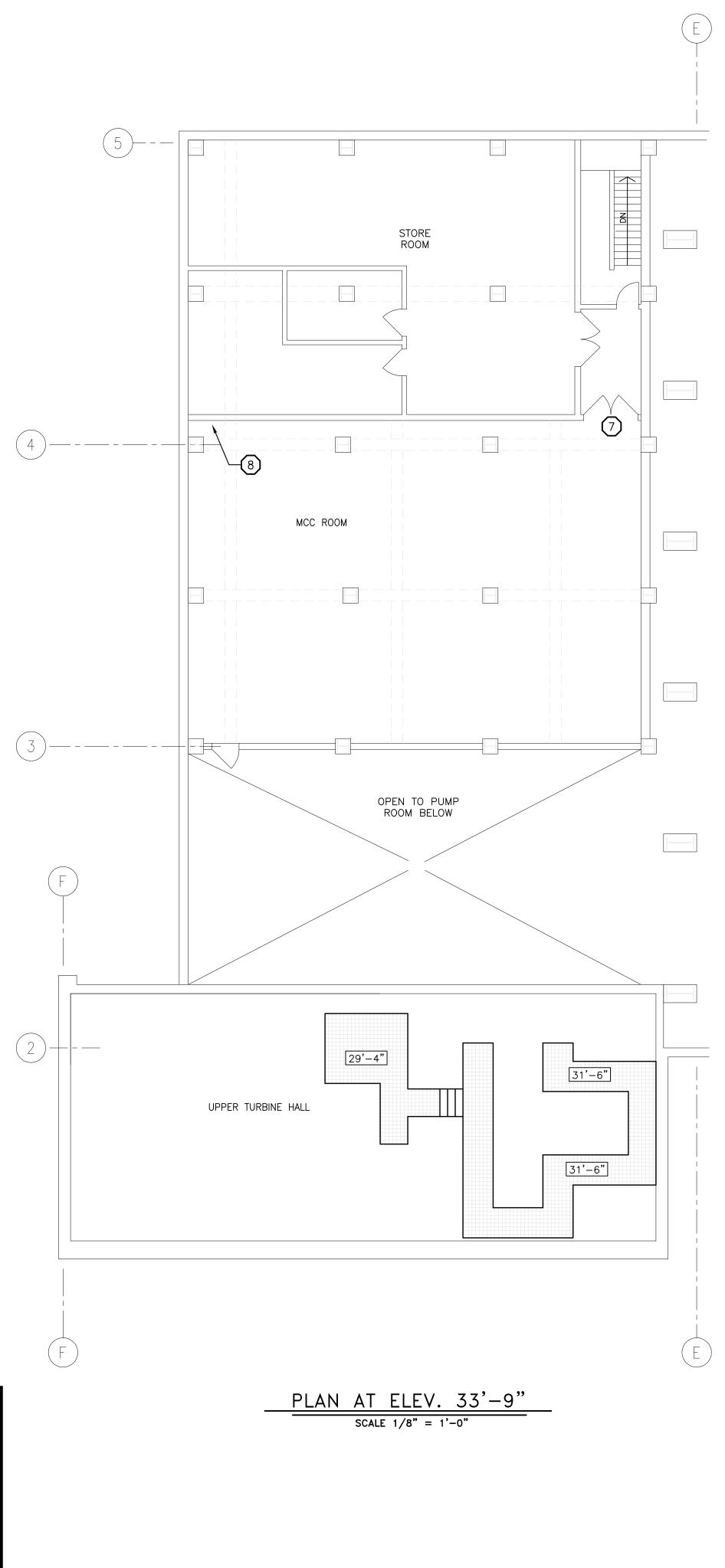
	DRAWING NO
	DATA COMMUNICATION LOOP: CLASS SHIELDED CONDUCTORS.
2	AUDIBLE SIGNAL CIRCUIT LOOP: CLAS SHIELDED CONDUCTORS.
3	REFER TO SEPARATE SPRINKLER AND DRAWINGS FOR FIRE ALARM CONTROL PREACTION RELEASING PANELS.
4	A CROSS ZONED SMOKE DETECTION A ENERGIZE THE SOLENOID ON THE PR SYSTEM PROTECTING THE CONTROL F
5	ACTIVATION OF A SMOKE DETECTOR S TO THE PLANT FIRE ALARM SYSTEM. ALARM CONDITION.
6	CLEAN AGENT DISCHARGE SHALL BE C PLANT FIRE ALARM SYSTEM.
7	DEMOLISH EXISTING CLEAN AGENT SYS COMPONENTS INCLUDING STORAGE TA MATERIALS AS PER THE APPLICABLE
8	THESE HORN DEVICES ARE TO ACTIVA SMOKE DETECTOR ACTIVATION ONLY. INTENDED TO PROVIDE NOTIFICATION CLEAN AGENT DISCHARGE DELAY SEQ
9	ALL SMOKE DETECTORS IN THIS ZON CONVENTIONAL TYPE AND SHALL BE CIRCUITS FOR CROSS-ZONING.

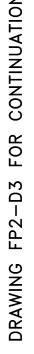


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4	ISSUED FOR PERMIT APPLICATION	09/05/11
3	ISSUED FOR FINAL REVIEW	08/02/29
2	ISSUED FOR 99% REVIEW	08/01/04
1	ISSUED FOR 75% REVIEW	07/11/22
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<u>SURVEY</u> Prepared By: -	Date:
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Checked By: AM	Date:
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Prepared By: HR	Date:
Checked By:	Date:

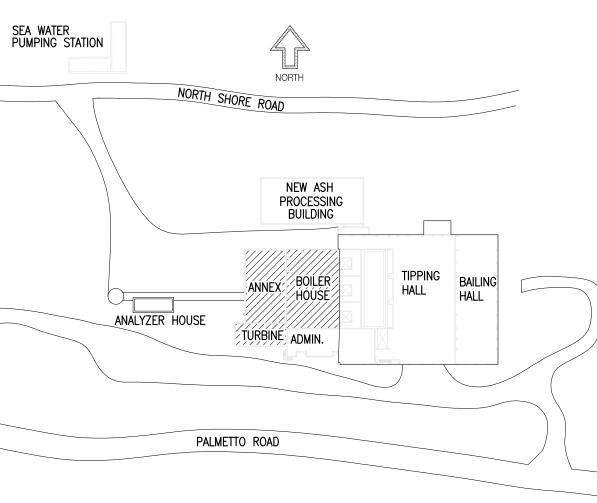






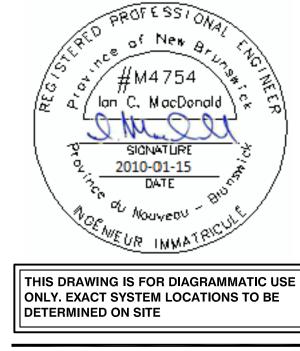
KEY PLAN

	DRAWING NOTES
1	PROVIDE LISTED COORDINATOR ON FIRE DOORS.
2	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
3	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
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6	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
$\overline{\mathcal{O}}$	REPLACE LATCH ASSEMBLY WITH LISTED LATCH.
8	INFILL OPENING WITH 6" MASONRY.
9	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
10	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
(11)	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
12	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
13	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
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16	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
17	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
18	FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.
(19)	REPAIR LATCH ON DOOR AND SEAL GAPS BETWEEN WALL AND FRAME.
20	REPAIR DOOR SO AS TO CLOSE AND HATCH VIA SELF—CLOSING DEVICE.
21	REPLACE DOOR AND FRAME WITH NEW LISTED FIRE DOOR AND FRAME ASSEMBLY HAVING A 1½ HOUR FIRE PROTECTION RATING EQUIPPED WITH LISTED SELF—CLOSING AND LATCHING HARDWARE.
22	REPLACE LATCH ASSEMBLY WITH LISTED LATCH.
23	REPLACE EXISTING GASKETS AND SWEEPS WITH LISTED GASKETS AND SWEEPS.
24	REPAIR LATCH
25	PROVIDE LISTED GASKETS AND SWEEPS.
26	SEAL GAPS BETWEEN DOOR FRAME AND WALL.
27	TYPICAL BOLLARDS PROTECTING HOSE REELS AND WATER MONITORS. REFER TO BOLLARD DETAIL ON DRAWING FP4-4.



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#### **ISSUE / REVISION**

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No.	Da	nte:
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4	ISSUED FOR TENDER	10/01/15
3	ISSUED FOR PERMIT APPLICATION	09/05/11
2	ISSUED FOR FINAL REVIEW	08/02/29
1	ISSUED FOR 99% REVIEW	08/01/04

SURVEYPrepared By:Date:--DESIGNPrepared By:AM/HRDate:Checked By:Date:

 AM

 DRAWING

 Prepared By:
 Date:

 HR

 Checked By:
 Date:

 IM

Project Number:

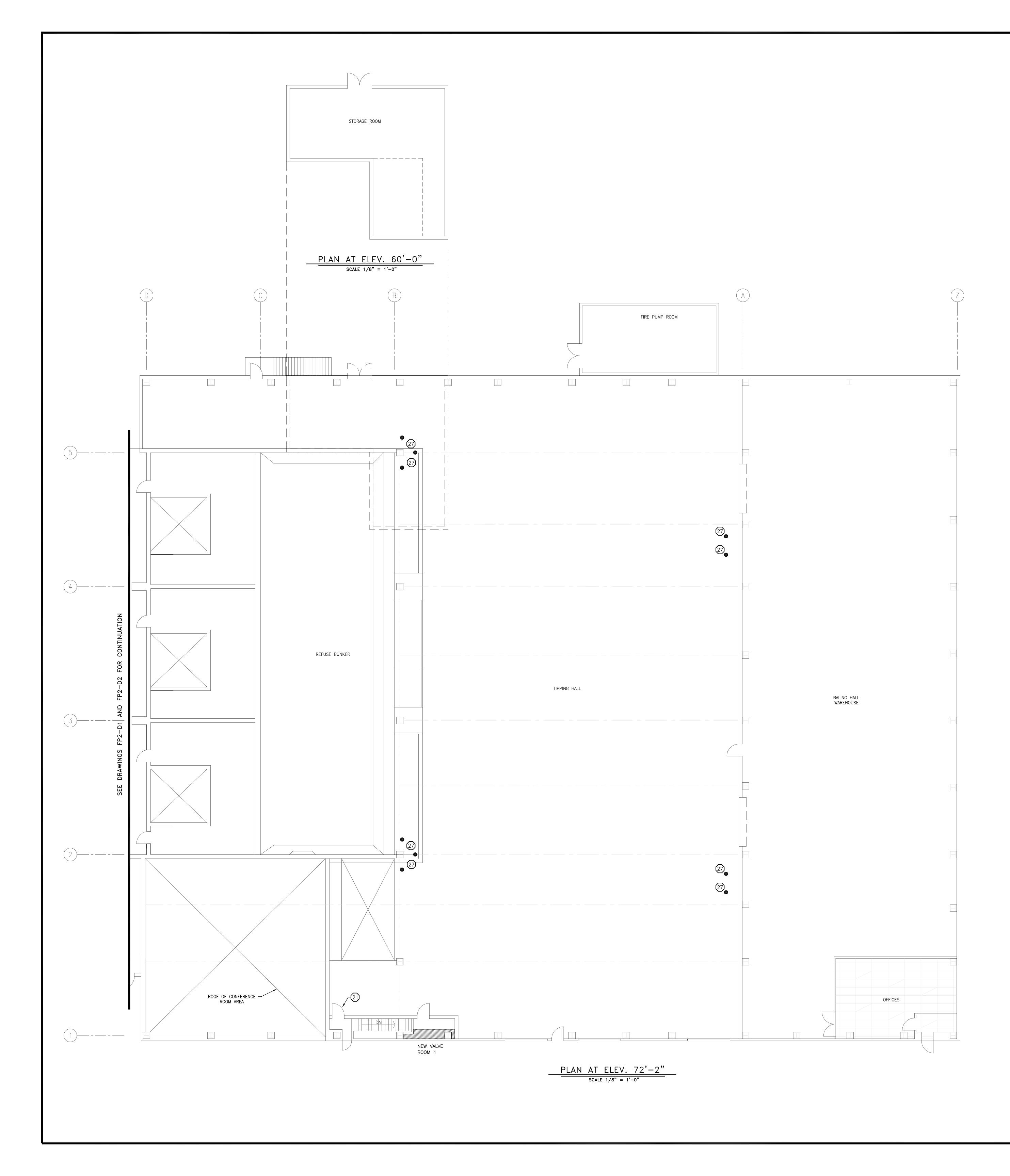
Approved By:

#### 07031

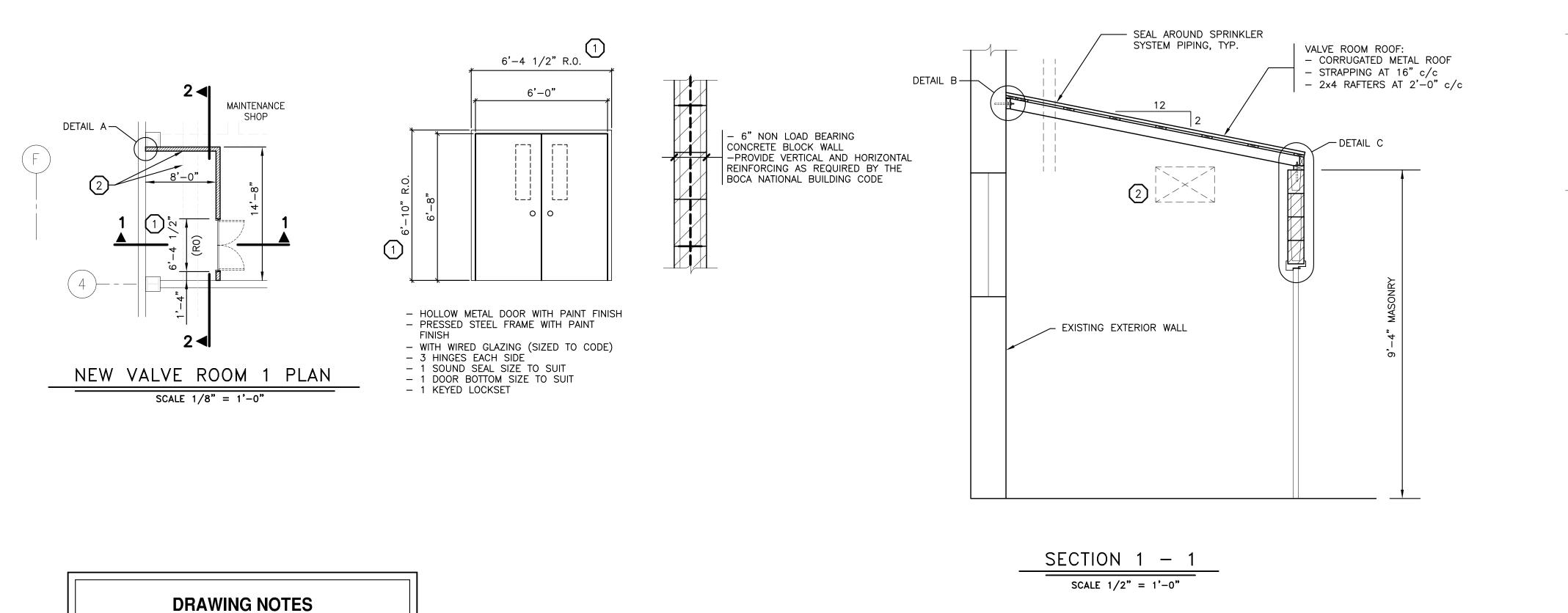
Project Title: TYNES BAY WASTE TREATMENT FACILITY FIRE PROTECTION

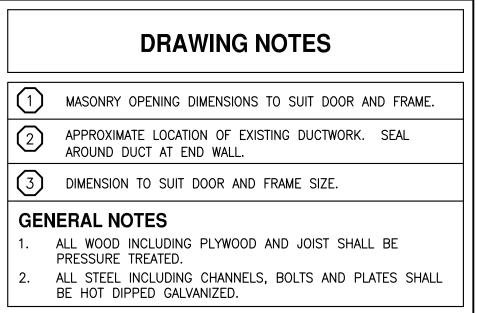
FIRE SEPARATION ANNEX BUILDING, TURBINE HALL AND BOILER HOUSE

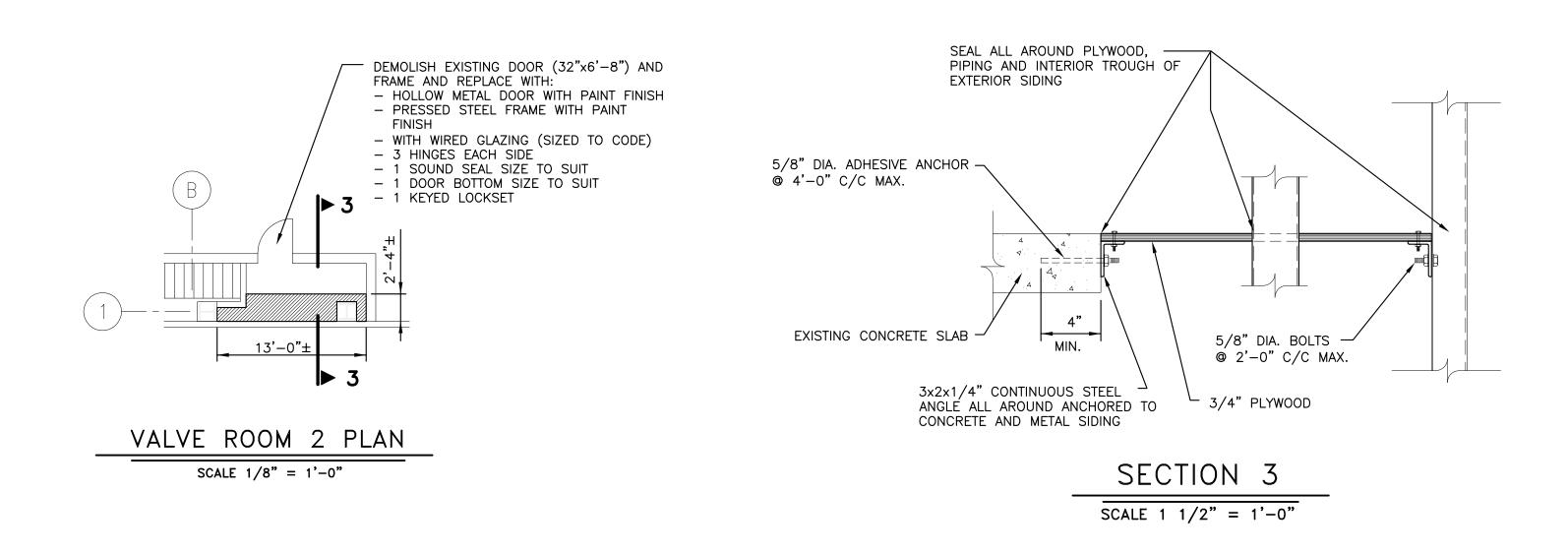
Revision: Sheet Number: **FP4-1** 

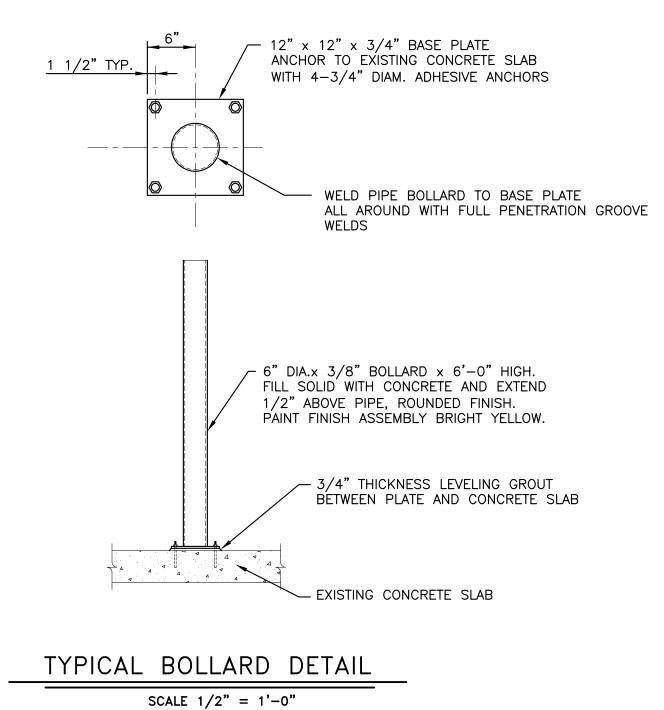


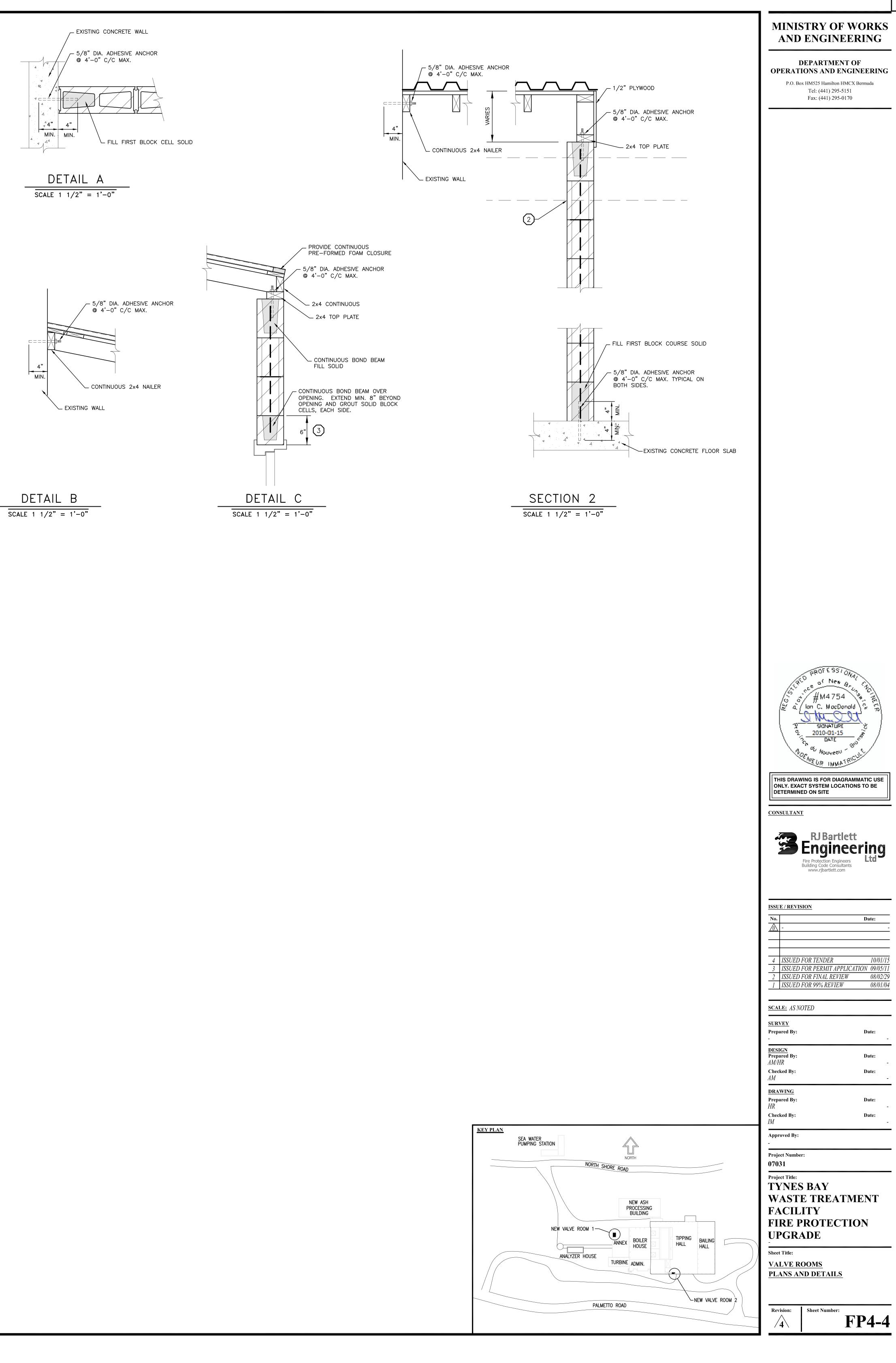
	MINISTRY OF WORKS AND ENGINEERING
DRAWING NOTES	DEPARTMENT OF OPERATIONS AND ENGINEERING
1       PROVIDE LISTED COORDINATOR ON FIRE DOORS.         2       FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.	P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151 Fax: (441) 295-0170
<ul> <li>FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.</li> <li>FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.</li> </ul>	
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7     REPLACE LATCH ASSEMBLY WITH LISTED LATCH.       8     INFILL OPENING WITH 6" MASONRY.	
<ul> <li>FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.</li> <li>FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.</li> </ul>	
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<ul> <li>REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.</li> <li>FIRESTOP PENETRATIONS WITH LISTED FIRESTOPPING SYSTEM. REFER TO SPECIFICATIONS FOR SCHEDULE OF PENETRATIONS.</li> </ul>	
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AND FRAME.         20       REPAIR DOOR SO AS TO CLOSE AND HATCH VIA SELF-CLOSING DEVICE.	
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(22)       REPLACE LATCH ASSEMBLY WITH LISTED LATCH.         (23)       REPLACE EXISTING GASKETS AND SWEEPS WITH LISTED GASKETS AND SWEEPS.	
(24)       REPAIR LATCH         (25)       PROVIDE LISTED GASKETS AND SWEEPS.	
26SEAL GAPS BETWEEN DOOR FRAME AND WALL.27TYPICAL BOLLARDS PROTECTING HOSE REELS AND WATER MONITORS. REFER TO BOLLARD DETAIL ON DRAWING FP4-4.	
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	4ISSUED FOR TENDER10/01/153ISSUED FOR PERMIT APPLICATION 09/05/112ISSUED FOR FINAL REVIEW08/02/291ISSUED FOR 99% REVIEW08/01/04SCALE: AS NOTED
	SURVEY Prepared By: Date: 
	DESIGNPrepared By:Date:AM/HR-Checked By:Date:AM
	AM - DRAWING Prepared By: Date: HR -
KEY PLAN SEA WATER	Checked By: Date: IM - Approved By:
SEA WATER PUMPING STATION NORTH SHORE ROAD	- Project Number: 07031
NEW ASH PROCESSING BUILDING BUILDING BOILER TIPPING BAILING	Project Title: TYNES BAY WASTE TREATMENT FACILITY FIRE PROTECTION UPGRADE
ANALYZER HOUSE TURBINE ADMIN.	Sheet Title: <u>FIRE SEPARATION</u> <u>BAILING HALL, TIPPING HALL</u> <u>AND FIRE PUMP ROOM</u>
PALMETTO ROAD	Revision: Sheet Number: FP4-3

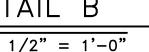


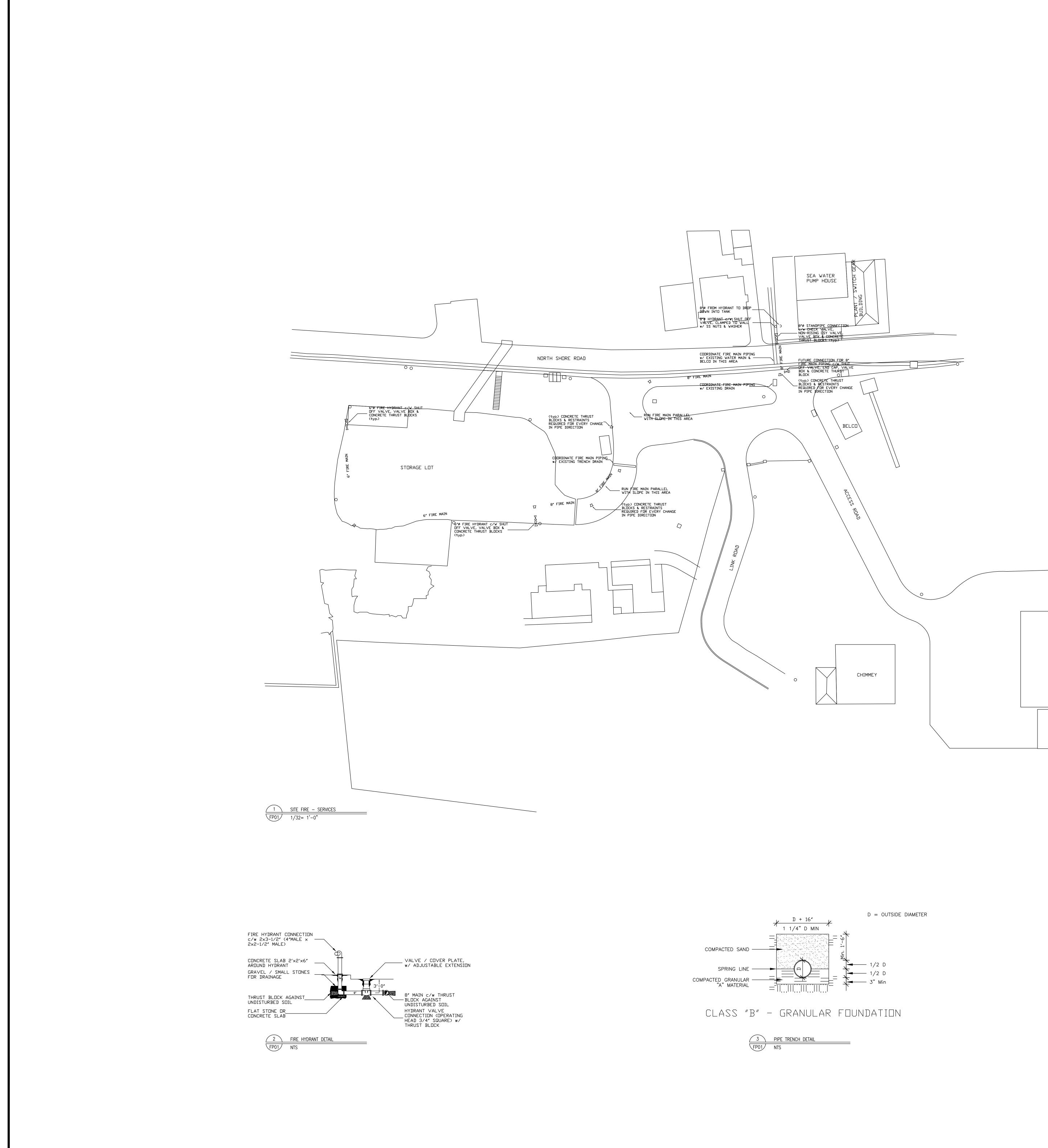












		THRUS	T BLOCK	SCHEDUL	_E	
PIPE Ø	DEAD END	90° BEND	45° BEND	22,5° BEND	11.25° BEND	5.125° BEND
4 Ø	1810	2559	1385	706	355	162
6 Ø	3739	5288	2862	1459	733	334
8 Ø	6433	9097	4923	2510	1261	575
10 Ø	9677	13685	7406	3776	1897	865
12 Ø	13685	19353	10474	5340	2683	1224
– THRUST FITTING @ 100 psi (6.9 bar) WATER PRESSURE FOR DUCTILE IRON & PVC PIPE						

BLOC	(Sb)	RENGTH	BEARING ST
Ab -	kN/m^2	lb∕ft^2	SOIL
h - b -	0	0	MUCK
T - Sf -	47.9	1000	SOFT CLAY
Sb -	71.8	1500	SILT
HORI	143.6	3000	SANDY SILT
A –	191.5	4000	SAND
Sf -	287.3	6000	SANDY CLAY
Sb - P -	430.9	9000	HARD CLAY

INCINERATOR BOILER HOUSE

_OCK AREA (Ab) = (h)(b) = T(Sf)/Sb

0 – REQUIRED BLOCK AREA – BLOCK HEIGHT – CALCULATED BLOCK WIDTH – THRUST FORCE F – SAFETY FACTOR 0 – BEARING STRENGHT

IRIZONTAL BEND b = 2((Sf)(P)(A)sin(O/2))/(h)(Sb)

- CROSS SECTIONAL AREA OF THE PIPE INTERIOR - BLOCK HEIGHT f - SAFETY FACTOR (usually 1.5 for thrust block design) b - HORIZONTAL BEARING STRENGHT FOR THE SOIL - WATER PRESSURE

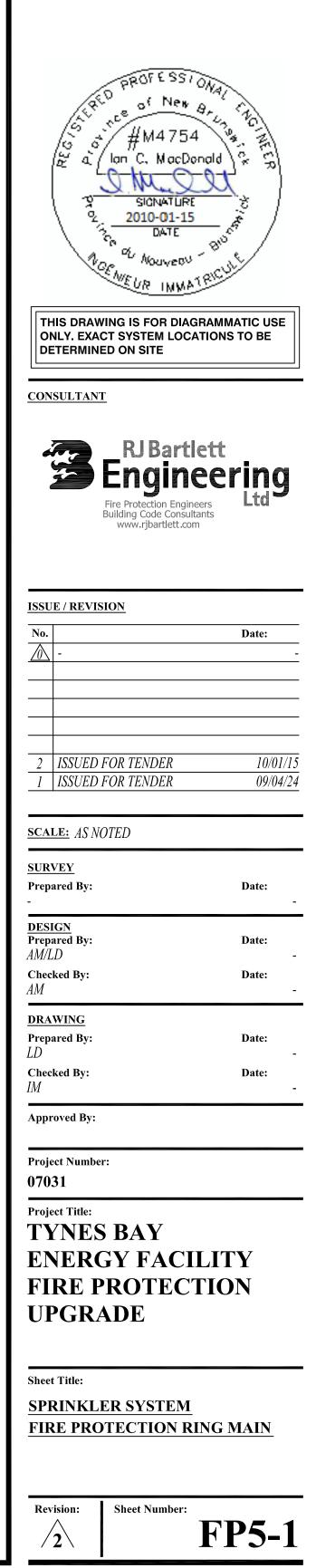
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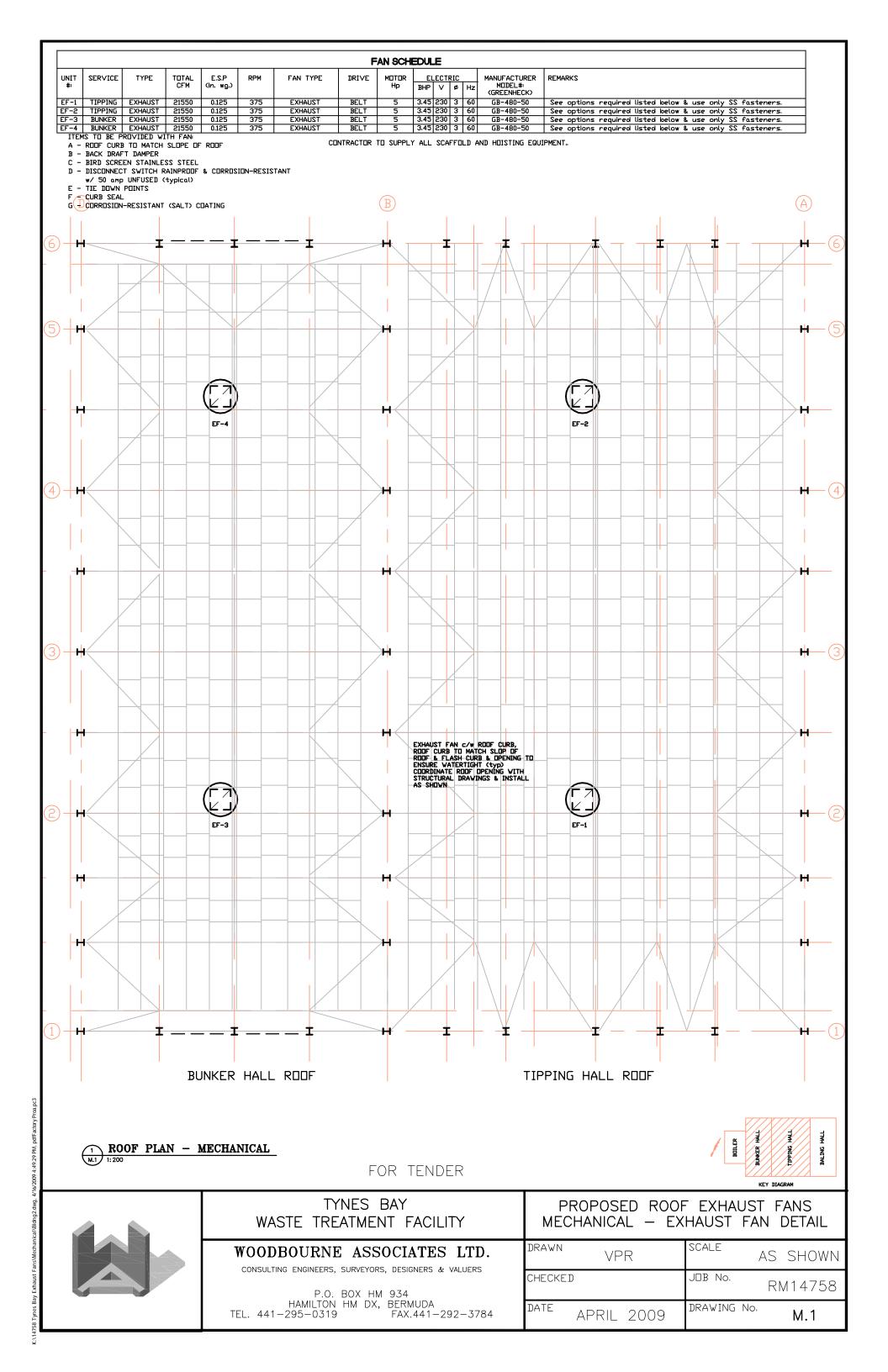
**DEPARTMENT OF OPERATIONS AND ENGINEERING** P.O. Box HM525 Hamilton HMCX Bermuda Tel: (441) 295-5151

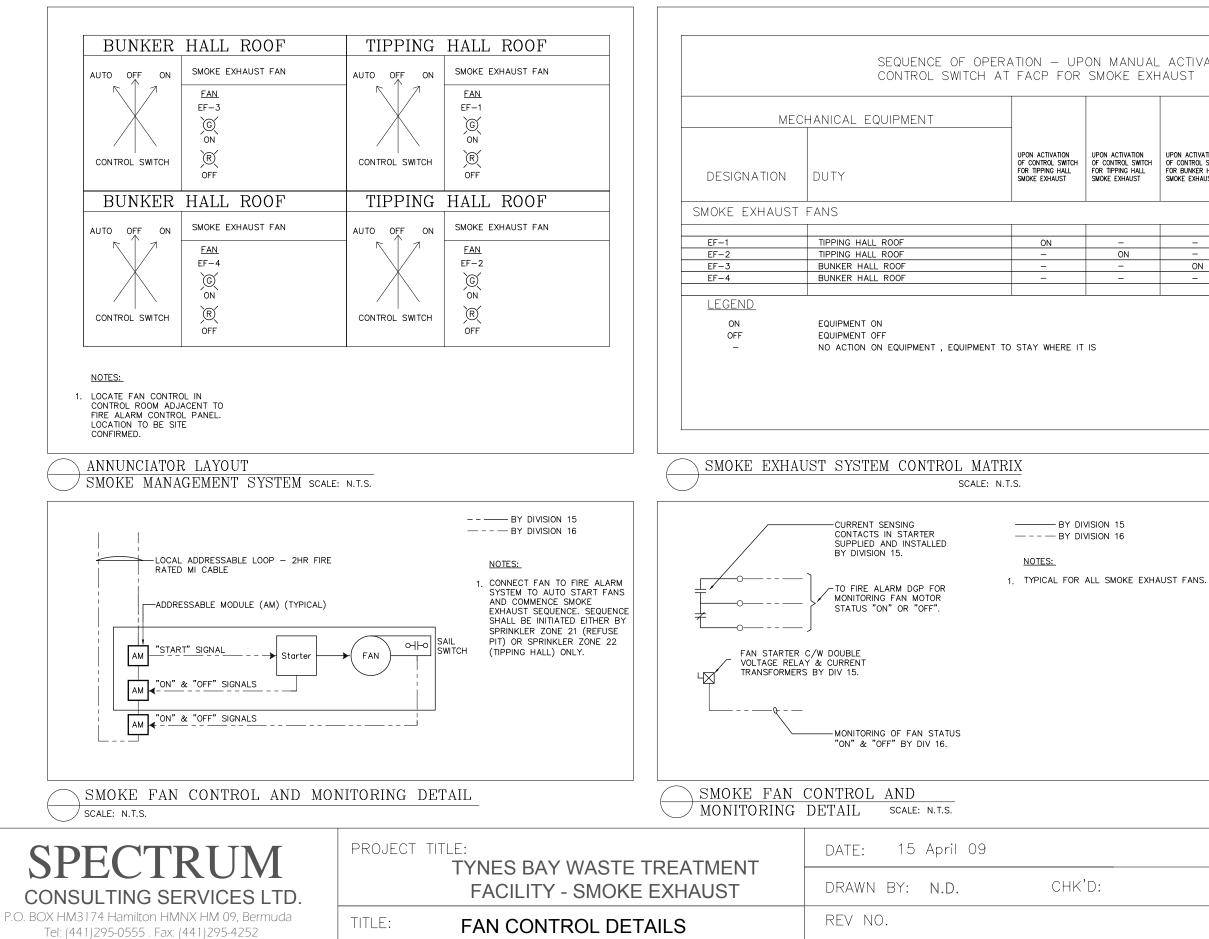
Fax: (441) 295-0170 



Woodbourne Associates Limited.

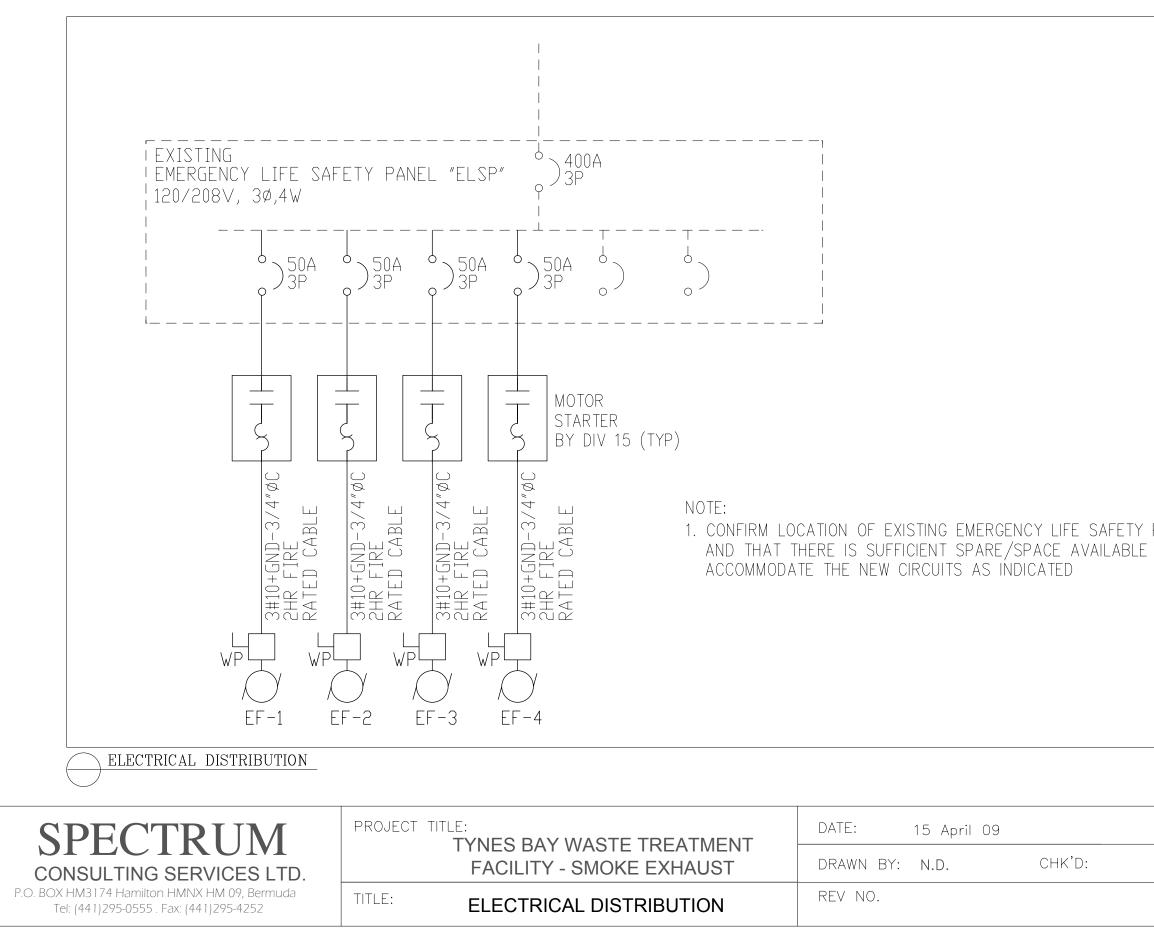




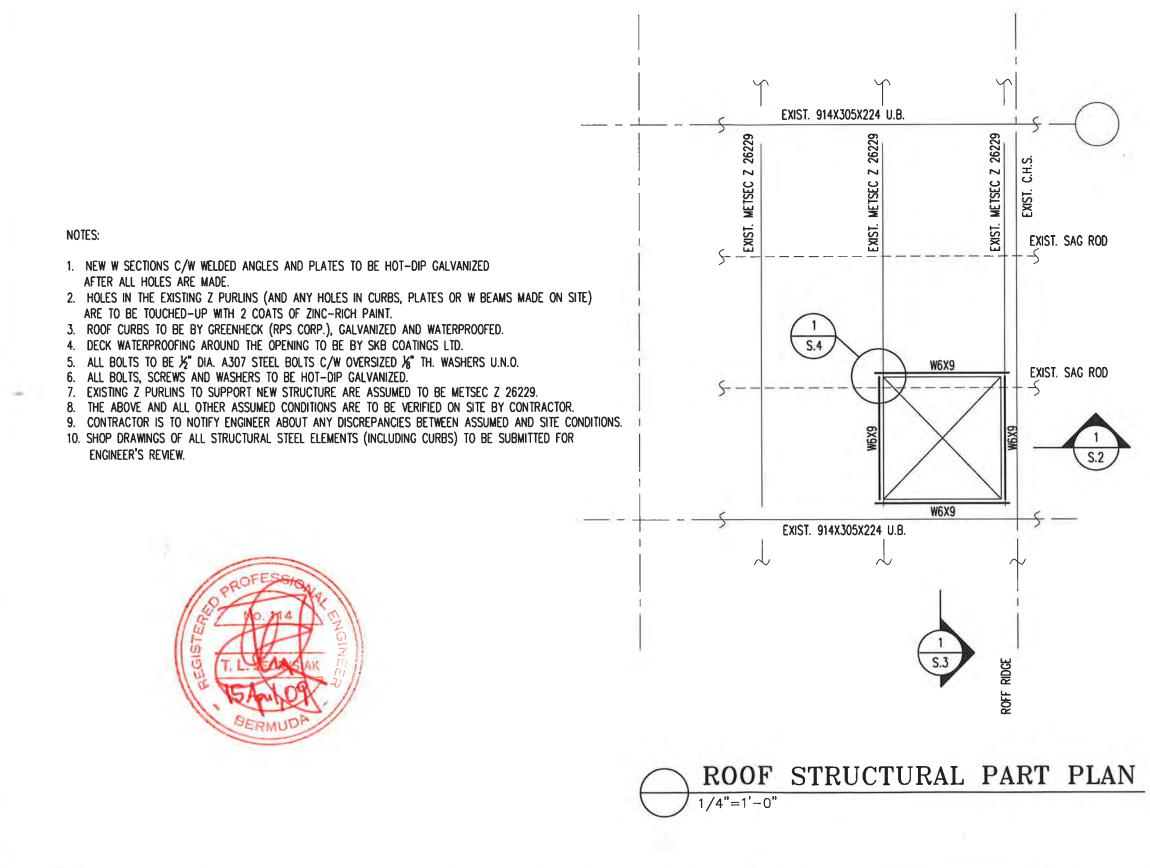


ACTIVATION	N OF
JPON ACTIVATION OF CONTROL SWITCH TOR BUNKER HALL SMOKE EXHAUST	UPON ACTIVATION OF CONTROL SWITCH FOR BUNKE HALL SMOKE EXHAUST
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-	_
ON —	ON

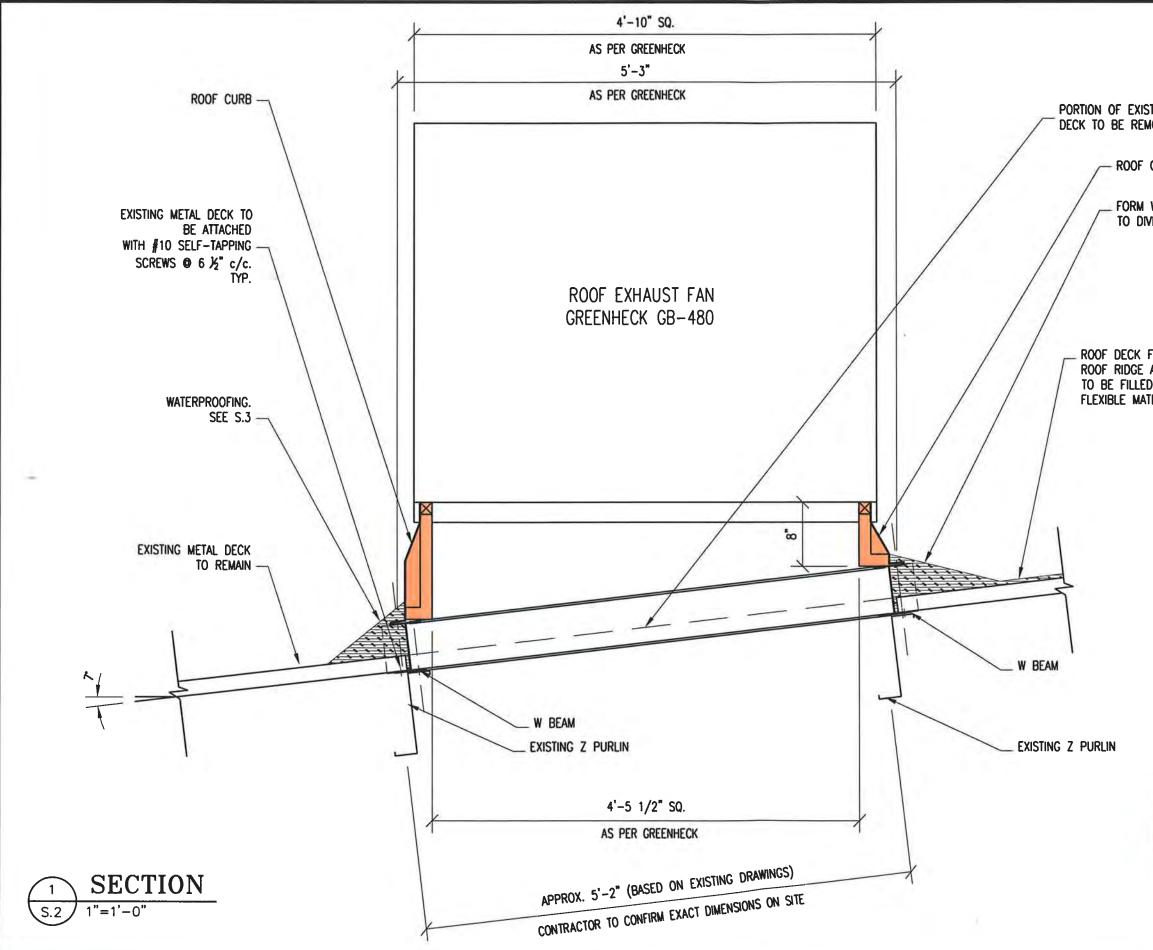
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DRAWING NUMBER: E-01
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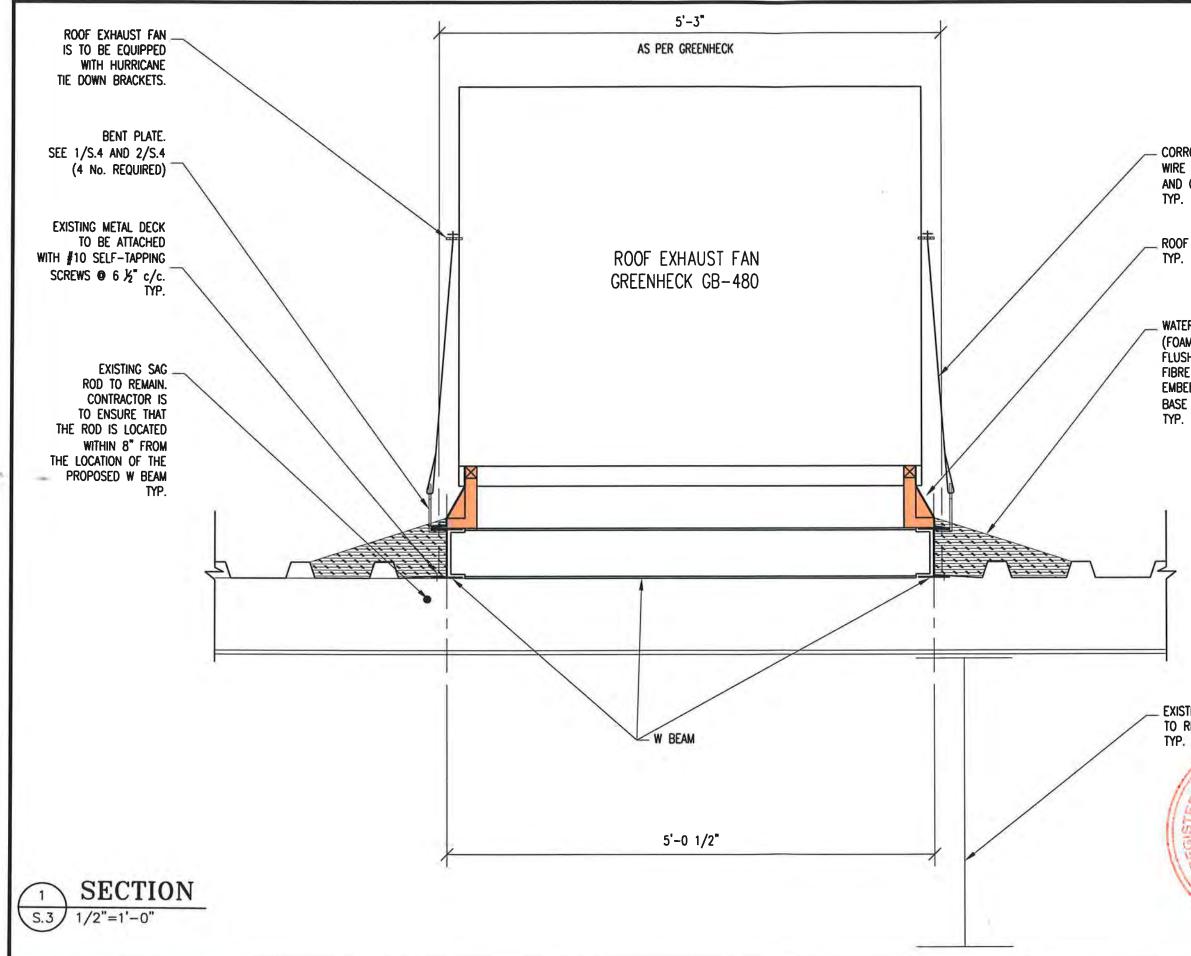
PANEL						
ТО						
		 SCALE:	nts			
		 ISSUED:				
	1	DRAWING	, NUMB	ER:	E-02	



ACILITY PROPOSED ROOF EXHAUST FANS	TES LTD. DRAWN TJ SCALE AS SHOWN	ERS & VALUERS CHECKED TJ JUB NO. RM14758	DX, BERMUDA FAX.441-292-3784 DATE APRIL 2009 DRAWING No. S.1
TYNES BAY WASTE TREATMENT FACILITY	WOODBOURNE ASSOCIATES LTD.	CONSULTING ENGINEERS, SURVEYORS, DESIGNERS & VALUERS P.O. BOX HM 9.34	HAMILTON HM DX, BERMU TEL. 441–295–0319 FAX.4
	<		



STING METAL MOVED. CURB WATER-GLIDES IVERT RAIN-WATER FLUTES BETWEEN AND FAN LOCATION ID WITH APPROVED ITERIAL AND WATERPROOFED.	PROPOSED ROOF EXHAUST FANS SUPPORT STRUCTURAL DETAILS	DRAWN TJ SCALE AS SHOWN	CHECKED TJ JOB No. RM14758	4 DATE APRIL 2009 DRAWING NO. S.2
OFESS	TYNES BAY WASTE TREATMENT FACILITY	WOODBOURNE ASSOCIATES LTD.	CONSULTING ENGINEERS, SURVEYORS, DESIGNERS & VALUERS P.O. BOX HM 934	HAMILTON HM DX, BERMUDA TEL. 441–295–0319
Sermude				



CORROSION RESISTANT ¼" DIA. WIRE STRAP C/W TURNBUCKLE AND CLAMPS. TYP.

ROOF CURB. TYP.

WATERPROOFING.

(FOAM/EPS TILES ADHERED TO DECK, FLUSH CLOTH WHERE REQUIRED, FIBRE-BOND COATING WITH TENAMESH EMBEDDED IN IT, LASTISHIELD FILL BASE AND TOP-COATS). TYP.

SHOWN RM14758  $\mathbf{N}$ Ś ROOF EXHAUST FANS STRUCTURAL DETAILS AS 2 Z DRAWING JOB No. SCAL 2009 PROPOSED SUPPORT  $\mathbf{P}$ P APRIL CHECKED DRAWN DATE 934 BERMUDA FAX.441-292-3784 WOODBOURNE ASSOCIATES LTD CONSULTING ENCINEERS, SURVEYORS, DESIGNERS & VALUERS TYNES BAY TREATMENT FACILITY BOX HM HM DX, F P.O. E HAMILTON 1 441-295-0319 WASTE TEL.

Existing Girder To Remain.

