

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(60)	1990	18	24

SYMBOLS & ABBREVIATIONS

EQUIPMENT IDENTIFICATION

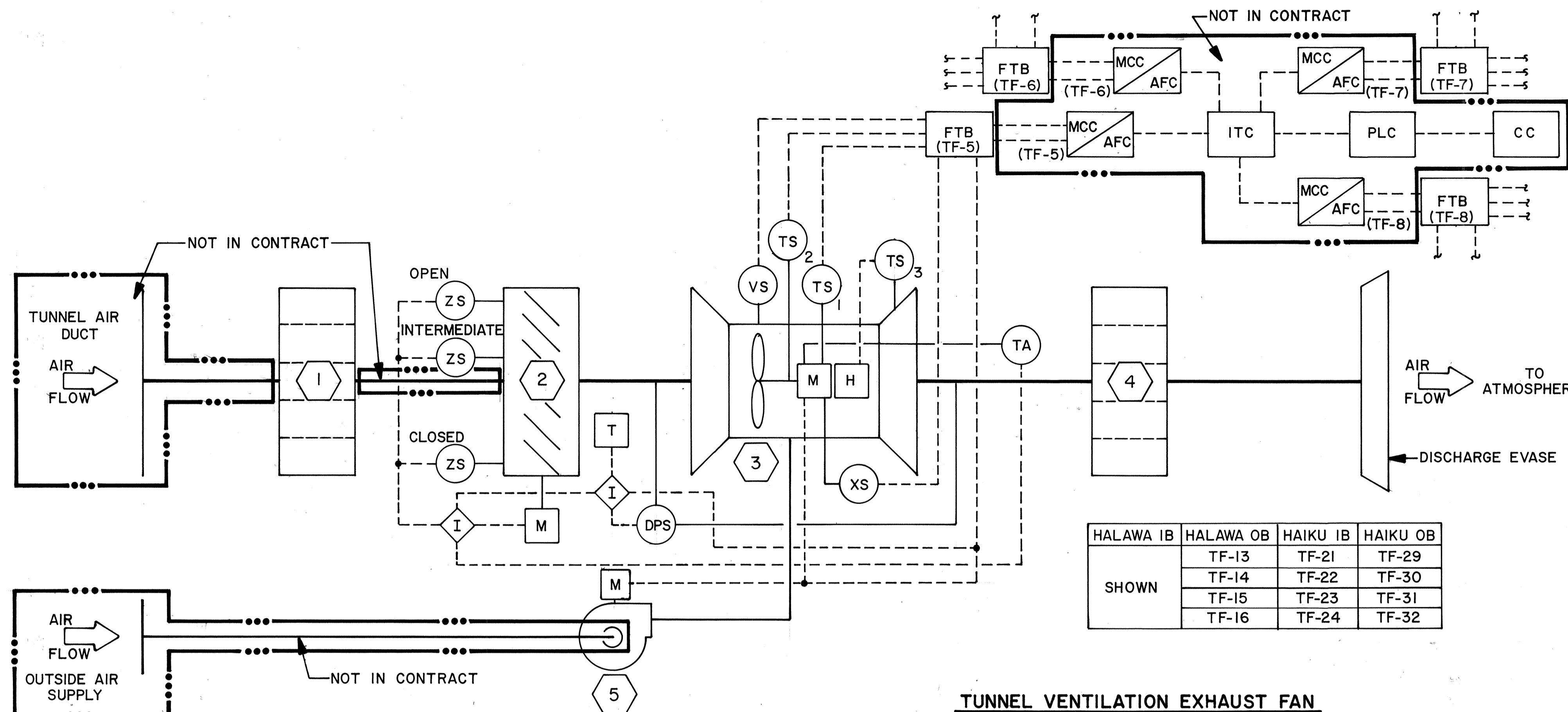
- 1 TUNNEL SIDE ATTENUATOR
- 2 DAMPER
- 3 TUNNEL VENTILATION FAN
- 4 AMBIENT SIDE ATTENUATOR
- 5 AUXILIARY COOLING FAN

LEGEND

- VS VIBRATION SWITCH
- TS TEMPERATURE SWITCH
- ZS DAMPER POSITION SWITCH
- DPS DIFFERENTIAL PRESSURE SWITCH
- XS MOTOR OVERLOAD SWITCH
- TA TACHOMETER
- M MOTOR
- T TIMER
- H MOTOR WINDING HEATER
- I INTERLOCK
- ITC INTERFACE TERMINAL CABINET
- PLC PROGRAMMABLE LOGIC CONTROLLER
- CC CONTROL CENTER
- FTB FAN TERMINAL BOX
- CONTRACT LIMITS
- MCC/AFC MOTOR CONTROL CENTER/ADJUSTABLE FREQUENCY CONTROLLER

NOTES

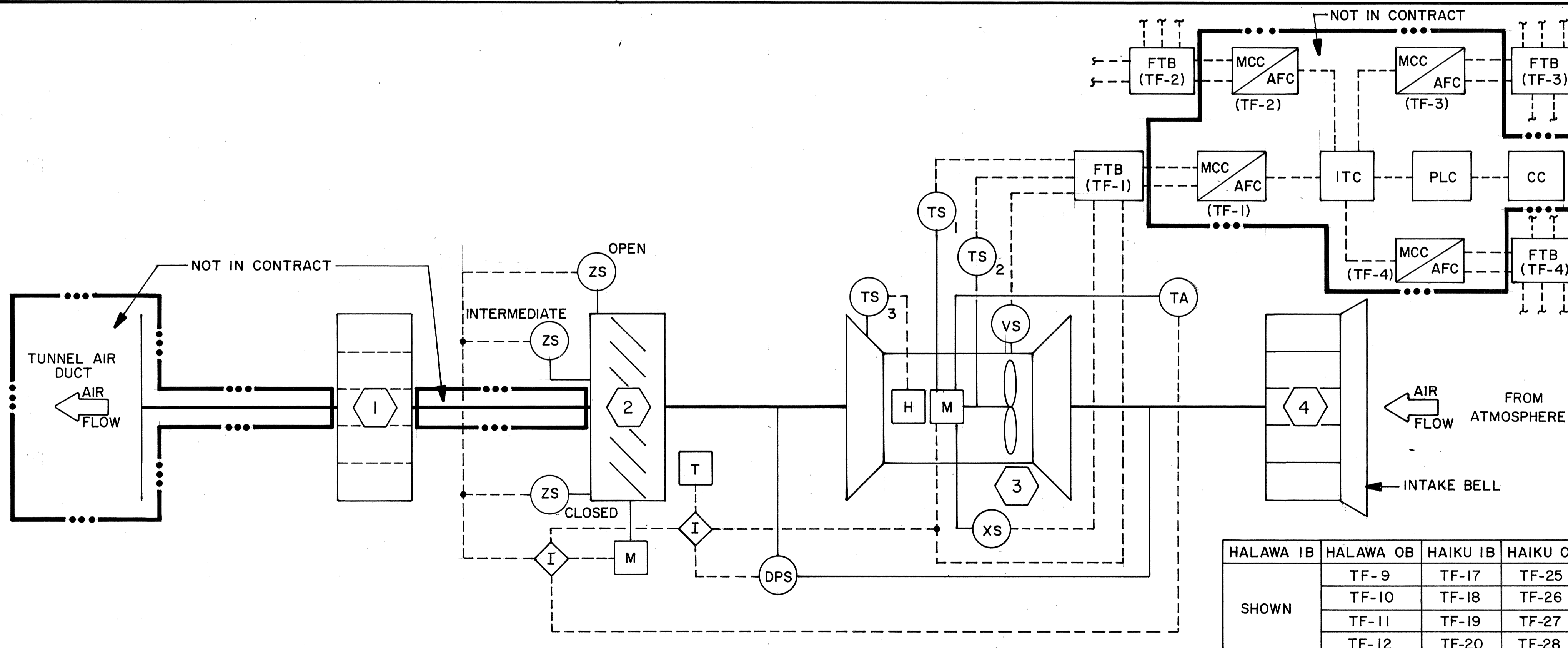
- SEQUENCE OF MULTIPLE VENTILATION FAN OPERATION REQUIREMENTS FOR EACH SET OF SUPPLY AND EXHAUST FANS SHALL BE AS FOLLOWS:
 - ALL OFF
 - ONE FAN SLOW SPEED
 - TWO FANS SLOW SPEED
 - THREE FANS SLOW SPEED
 - FOUR FANS SLOW SPEED
 - THREE FANS HIGH SPEED
 - FOUR FANS HIGH SPEED
 EMERGENCY EXHAUST—
FOUR EXHAUST FANS HIGH SPEED
- DURING NORMAL OPERATION, THE SEQUENCE OF FAN START-UP WILL BE SELECTED BY COMPUTER (NOT IN CONTRACT).
- THE FOLLOWING PROTECTIVE FEATURES SHALL BE OVERRIDDEN DURING EMERGENCY EXHAUST OPERATION:
 - EXCESSIVE VIBRATION
 - EXCESSIVE WINDING TEMPERATURE
 - EXCESSIVE BEARING TEMPERATURE
 - MOTOR OVERLOAD
 - PHASE CURRENT UNBALANCE
 - GROUND OVERCURRENT
- CONFIRM CONDUIT AND CONDUCTOR REQUIREMENTS AS SHOWN ON SHEET NO. 24
- EACH BULKHEAD DAMPER SHALL BE IDENTICAL TO THE DAMPER AS SHOWN ON THIS PLAN. PROVIDE POSITION SWITCHES AND JUNCTION BOXES FOR POWER AND CONTROL WIRING.



HALAWA IB	HALAWA OB	HAIKU IB	HAIKU OB
TF-13	TF-21	TF-29	
TF-14	TF-22	TF-30	
TF-15	TF-23	TF-31	
TF-16	TF-24	TF-32	

TUNNEL VENTILATION EXHAUST FAN

ARRANGEMENT SHOWN IS TYPICAL FOR FOUR EXHAUST FANS IN EACH PORTAL BUILDING. TOTAL 16 FANS.



HALAWA IB	HALAWA OB	HAIKU IB	HAIKU OB
TF-9	TF-17	TF-25	
TF-10	TF-18	TF-26	
TF-11	TF-19	TF-27	
TF-12	TF-20	TF-28	

TUNNEL VENTILATION SUPPLY FAN

ARRANGEMENT SHOWN IS TYPICAL FOR FOUR SUPPLY FANS IN EACH PORTAL BUILDING. TOTAL 16 FANS.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TUNNEL VENTILATION
INSTRUMENTATION DIAGRAM**

F & I VENTILATION FANS

INTERSTATE ROUTE H-3
F.A.I. PROJ. NO. I-H3-1(60)

SCALE: NONE DATE: NOV 1989

SHEET NO. 18 OF 24 SHEETS

DATE: 11/18/88
DRAWN BY: M. SOPER
DESIGNED BY: R. MATRISIAN
CHECKED BY: J. QUE
NO. 18