

**Pima County Regional Wastewater Reclamation Department
Ina Road Wastewater Reclamation Department
Ina Road WRF Electrical One-Line Diagrams**

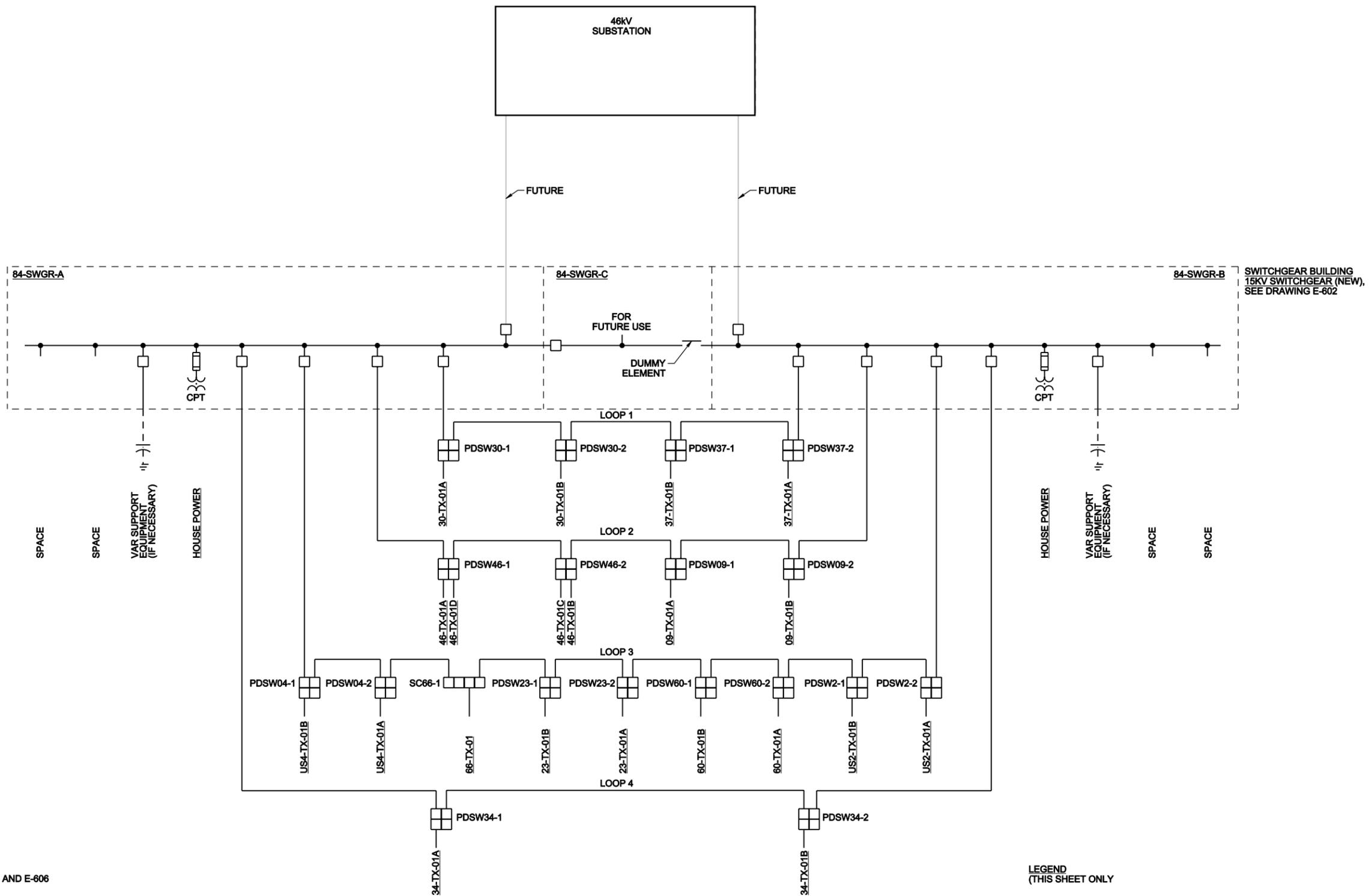
April 30, 2013

The Ina Road Water Reclamation Facility (WRF) electrical power is supplied by a 13.8kV distribution system, which serves all plant electrical loads. The 13.8kV system is supplied through a new 46kV substation. Tucson Electrical Power serves the substation from a 46kV overhead line and transformers the voltage down to 13.8kV for distribution throughout the Ina Road WRF plant site. Switchgear in a new building serves as the central distribution point for power. The switchgear is configured as a double-ended bus (called a “main-tie-main” configuration).

The attached figures depict the Ina Road WRF Overall One-Line Diagram and the Main Switchgear One-Line Diagram.



Expires 3/31/2012



SWITCHGEAR BUILDING
15KV SWITCHGEAR (NEW),
SEE DRAWING E-602

FOR FUTURE USE
DUMMY ELEMENT

LOOP 1

LOOP 2

LOOP 3

LOOP 4

NOTES:

- 1. LOOP 1, SEE E-605 AND E-606
- 2. LOOP 2, SEE E-606
- 3. LOOP 3, SEE E-607 AND E-608
- 4. LOOP 4, SEE E-605

OVERALL ONE-LINE DIAGRAM
NTS

LEGEND
(THIS SHEET ONLY)

- PADMOUNT SWITCH
- SECTIONALIZING CABINET

PIMA COUNTY
REGIONAL WASTEWATER
RECLAMATION DEPARTMENT

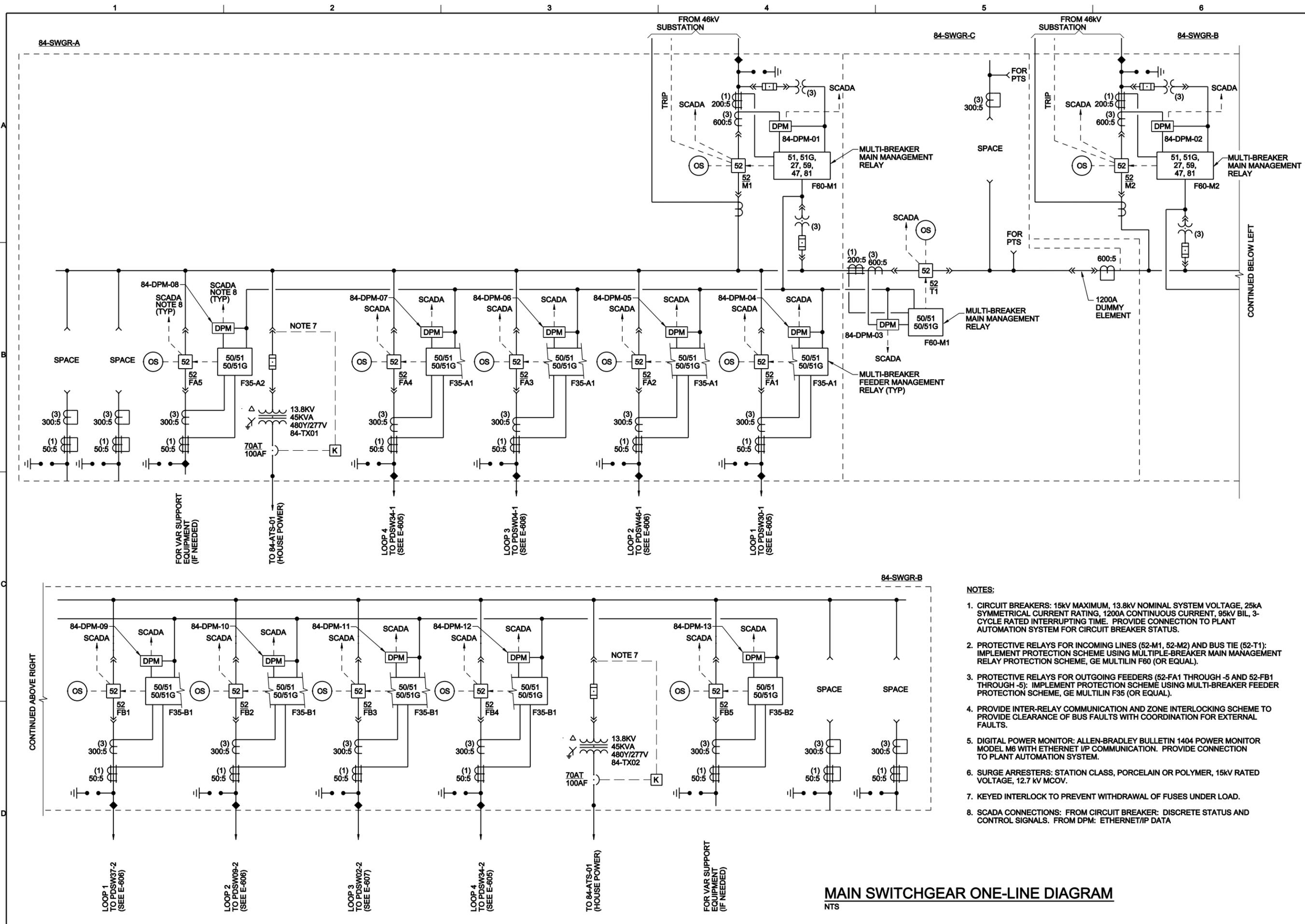


CH2MHILL
ELECTRICAL
OVERALL ONE-LINE DIAGRAM

INA ROAD WRF
CAPACITY AND EFFLUENT
QUALITY UPGRADE
C-364

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	AUG 2010
DWG	E-601
SHEET	1157

NO.	DATE	BY	APVD
E	08/22/2010	JUSL	RW
DSGN		REVISION	CHK
		CONSTRUCTION DOCUMENT SUBMITTAL	APVD
		DR	K. LYMAN
		DW. CLARK	R. WILLIAMS



- NOTES:**
1. CIRCUIT BREAKERS: 15KV MAXIMUM, 13.8KV NOMINAL SYSTEM VOLTAGE, 25KA SYMMETRICAL CURRENT RATING, 1200A CONTINUOUS CURRENT, 95KV BIL, 3-CYCLE RATED INTERRUPTING TIME. PROVIDE CONNECTION TO PLANT AUTOMATION SYSTEM FOR CIRCUIT BREAKER STATUS.
 2. PROTECTIVE RELAYS FOR INCOMING LINES (52-M1, 52-M2) AND BUS TIE (52-T1): IMPLEMENT PROTECTION SCHEME USING MULTIPLE-BREAKER MAIN MANAGEMENT RELAY PROTECTION SCHEME, GE MULTILIN F60 (OR EQUAL).
 3. PROTECTIVE RELAYS FOR OUTGOING FEEDERS (52-FA1 THROUGH -5 AND 52-FB1 THROUGH -5): IMPLEMENT PROTECTION SCHEME USING MULTI-BREAKER FEEDER PROTECTION SCHEME, GE MULTILIN F35 (OR EQUAL).
 4. PROVIDE INTER-RELAY COMMUNICATION AND ZONE INTERLOCKING SCHEME TO PROVIDE CLEARANCE OF BUS FAULTS WITH COORDINATION FOR EXTERNAL FAULTS.
 5. DIGITAL POWER MONITOR: ALLEN-BRADLEY BULLETIN 1404 POWER MONITOR MODEL M6 WITH ETHERNET I/P COMMUNICATION. PROVIDE CONNECTION TO PLANT AUTOMATION SYSTEM.
 6. SURGE ARRESTERS: STATION CLASS, PORCELAIN OR POLYMER, 15KV RATED VOLTAGE, 12.7 KV MCOV.
 7. KEYED INTERLOCK TO PREVENT WITHDRAWAL OF FUSES UNDER LOAD.
 8. SCADA CONNECTIONS: FROM CIRCUIT BREAKER: DISCRETE STATUS AND CONTROL SIGNALS. FROM DPM: ETHERNET/I/P DATA

MAIN SWITCHGEAR ONE-LINE DIAGRAM
NTS



DATE	08/12/2010	NO.	E	DSGN	R DAVEY	DR	R DAVEY
REVISION		CHK	DW CLARK	CHK	DW CLARK	CHK	DW CLARK
CONSTRUCTION DOCUMENT SUBMITTAL		BY	RW	APVD	R WILLIAMS	APVD	R WILLIAMS

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INA ROAD WRF
CAPACITY AND EFFLUENT
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ELECTRICAL
MAIN SWITCHGEAR ONE-LINE DIAGRAM

VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING.
DATE	AUG 2010
DWG	E-602
SHEET	1158