

Design Review
Ministry of Transportation and Civil Aviation, Phase II
drawings dated 09/29/10
WOA0051
Tetra Tech Back-Check 10/30/10

Response Legend
A - Agree
D - Disagree
O - out of scope
AE - Agree with exception

Comment #	Reviewer	Reference	Comment	Response Code	Response	Back-Check
ELECTRICAL COMMENTS						
1	EAN	E03	Note 5 should be revised to indicate that emergency lighting will be activated when power is lost to the building, the panel serving the normal lighting, or to the individual branch circuit. Typical for all lighting plans.	O	Emergency lights are not included in the Scope of work.	If out of scope the note should be deleted.
2	EAN	E03	Keyed Notes for Construction are missing from this plan. The notes should clearly detail what repairs are to be performed on individual fixtures (ballast, lamps, lenses, etc.). Also, if fixtures are to be replaced, a fixture schedule indicating the fixture types should be provided.	O	Basement area electrical renovation work not included in the Scope of work	Agree. But on floors where lighting is in scope the repairs/replacements should be defined.
3	EAN	E07	Note 1 should define the criteria for replacing receptacles. Those receptacles to be replaced should be indicated on plans. Typical for all power plans.	AE	VICC scope is only to replace the damaged receptacles. To determine the damaged receptacles, thorough inspection required and possible during installation. The replaced receptacles details will include in the As built.	Agree
4	EAN	E07	Note 2 calls for all panels to be replaced. Provide panel schedules indicating voltage, amperage, AIC rating, and breaker counts. Typical for all power plans.	AE	All the panels to be replaced from floor 1 to 4 as per the SOW. Recommended field changes in the locations of new panels. A shop drawing including DB schedule will be provided for approval once the load distribution of each DB is finalized as per the site existing condition.	Agree. But on floors where lighting is in scope the repairs/replacements should be defined.
5	EAN	E17	Are the feeders shown on the riser diagram to be replaced? If so, provide conductor and raceway sizes for each feeder.	AE	Field changes are required once the distribution of load on each panel is decided as per the site (location) requirement. A shop drawing with feeder sizes including voltage drop calculation will be provided for approval.	Agree.
6	EAN	E17	The riser diagram call for the neutral conductor to be bonded to ground at MDBP. MDBP is fed from MDP which is the service point where the ground will be established. The neutral should not be bonded at MDBP per NEC 250.32.	A	It is to be bonded when grounding conductor is not provided between buildings. If provided, bonding jumper at MDP along with grounding conductor between buildings as done in design, the bonding jumper is not required at MDBP.	Agree. However, 250.32(B) requires a grounding conductor be run with the feeder conductors to the remote building.
7	EAN	E18	The schedule for MDBP provides a load summary but does not direct the contractor as to what circuit breakers to provide in this panel. The schedule should be revised to clearly indicate these requirements.	AE	Please see responses on item 5&6	Agree.
8	EAN	E20	Is the replacement of the existing substation to be phased, or will a complete electrical shutdown be required for the duration of the work? Will a temporary service be required?	A	Since the entire substation is being remodeled including the existing transformer, it requires a complete electrical shutdown for the duration of the work. A temporary service is recommended.	Agree.
9	EAN	E20	The room for the new MV switchgear does not comply with NEC 110.33. For a single entrance room, without a clear and unobstructed exit, twice the clear working distance required by Table 110.34(A) must be provided. Also, the distance from the gear to the nearest edge of the entrance must comply with this table.	O	Not included in the present Scope of work	Disagree. If the switchgear is to be replaced in this scope of work then the proper working clearances must be provided. If the room does not comply it should be modified or an alternate location should be provided.

Design Review
Ministry of Transportation and Civil Aviation, Phase II
drawings dated 09/29/10
WOA0051
Tetra Tech Back-Check 10/30/10

Response Legend
A - Agree
D - Disagree
O - out of scope
AE - Agree with exception

Comment #	Reviewer	Reference	Comment	Response Code	Response	Back-Check
10	EAN	E20	Egress doors from the electric spaces must be equipped with panic hardware per NEC 110.26.C.3 and 110.33.A.3.	O	Not included in the present Scope of work	See Back Check comment #9.
11	EAN	E20	The ground busses in the MV Switchgear Room and LV switchgear Room should be tied together.	D	Since they are tied to the same grounding grid below new transformer, it is not necessary to tie again inside substation building. Please see sheet E20.	Agree. However, the ground busses should also include a connection to the substation building foundation rebar.
12	EAN	E20	Is the transformer to be provided by the power company or by the contractor?	A	800 KVA Transformer is to be provided by the Contractor.	See new comment #19 below re: transformer sizing.
13	EAN	E20	How will metering be provided? Primary or secondary?	O	N/A- Not included in the Scope of work.	Agree.
14	EAN	E20	3/E20 - Provide ratings for the MV switchgear (voltage, ampacity, CB ratings). Provide outgoing feeder sizes.	A	Ratings and detailed shop drawings of MV switch gear including manufactures specs will be provided for approval once the transformer size is finalized.	Agree.
15	EAN	E20	4/E20 - Indicate the LV switchboard will be grounded (neutral bonded to ground). Indicate that the main circuit breaker will be GFI type per NEC 230.95. Recommend that all outgoing feeder breakers also be GFI type to prevent loosing the entire service from a ground fault on any of the feeders.	O	The note 2 of MDP schedule indicates that main breaker shall be provided with ground fault protection. The feeders could be provided optionally with ground fault protection even though it is not required per code. A note shall be added indicating that neutral is to bonded to ground. This shall be the only point of neutral/grounding bonding connection since a grounding conductor has been specified to run between buildings per code.	Agree.
16	EAN	General	The drawings appear to be general and of a design -build nature. Is this acceptable to the client?	AE	The present scope is a renovation/ replacement nature. As per the contract only shop drawings and calculations are required. Please note that it is not a Design Build contract. As per existing site conditions, drawing E11, E12, E13 is revised with additional notes only and attached for review.	Agree.
17	EAN	E18	Review calculations for conversion of ammeter readings to VA. Single phase amps have been added together, resulting in a total single phase amperage for each feeder, but these have been multiplied with a 3 phase voltage. The voltage should be single phase to neutral. Example: Summary total amps =699. Total VA should be 699A x 220V x 1.25 = 192225 VA.. This is similar for all buildings in the Building Load data Ammeter Readings table, and in the calculation below that.			