

Design Review
MoPH
Drawings Dated August 31, 2010
WO-LT-0004

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A - Agree
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Comment #	Reviewer	Reference	Comment	Response Code	Response	Back-Check
CIVIL COMMENTS						
C1	CTJ	Drawings C-105 & 106	There are drainage openings on the perimeter wall identified on the plans, however no information is provided regarding the size of these openings.			
C2	CTJ	C-109 & 110	There are no details and/or sections provided for SWM areas 1, 2 & 3. Are they vegetated, gravel or concrete-lined? If vegetated, then riprap protection may be required at the inlet pipes.			
C3	CTJ	C-109 & 110	There appear to be walkways and stairs leading to the SWM areas. There are no details for the stairs. Also, since the SWM area are designed to detain a significant depth of water, consider providing railings or fencing.			
C4	CTJ	C-109 & 110	The SWM areas do not appear to have any type of emergency overflow spillways. Portions of the site and possibly buildings could become flooded if there were any significant blockage in the storm drain system.			
C5	CTJ	C-109	Finish grades at the north side of building 5 (Multipurpose) are up to 1m higher than the building FF. Is the building foundation stepped or is there a retaining wall? If not, the grades should be lowered.			
C6	CTJ	C-109	Finish grades at the northwest corners of buildings 7 (DFAC) and 10-11 (Heating & Generator) are set at the building FF. These grades should be lowered.			
C7	CTJ	C-110	The 68.5m contour adjacent to the north side of building 2 (Office) is higher than the building FF. The grading adjacent to the building should be lowered.			
C8	CTJ	C-110	The 69m contour adjacent to the northwest corner of building 3 (Office) is higher than the building FF. The grading adjacent to the building should be lowered.			
C9	CTJ	C-110	There are no details or elevations provided for the outlet of the proposed retention basin.			
C10	CTJ	C-114	What type of gates are proposed in detail views 1 and 2? If they are slide gates, show which direction they will open. When open, gate 1 will block access to the guard booth.			
C11	CTJ	C-115	The enlarged utility clearance views show a distance of 1.5m between the sanitary sewer and domestic water lines. This should be changed to 3m to coordinate with detail 4 on sheet C-509.			
C12	CTJ	C-119 & C-120	How is roof drainage handled? Downspouts or internal roof drains?			
C13	CTJ	C-120	For the drainage opening in the perimeter wall adjacent to the retention basin, what is the size of the opening? This opening is not detailed in the drawing set. Also, how is the perimeter wall security maintained?			
C14	CTJ	C-128	Note number 8 references a phasing plan for building construction. This plan was not provided for review.			

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C15	CTJ	C-129 & C-130	Provide inlet protection at low level inlets for the riser inlets (RI) at SWM areas 1, 2 & 3.			
C16	CTJ	C-201 thru C-203	Show all utilities on profile sheets to identify conflicts.			
C17	CTJ	C-502	Provide storm drain pipe trench detail.			
C18	CTJ	C-503	For trench drain detail, show how pipe exits trench drain.			
C19	JWH	Specification Section 14000	Who is "Owners Representative"? This party needs to be identified and must have authority over the site. The specifications put a lot of responsibility on the Owner's Representative and the Owner's Representative needs to be clear about what they will be expected to do. (Typ Throughout Specifications)			
C20	JWH	14000	1.6 E Verify that the requirement for professional engineers can be met.			
C21	JWH	24116	1.3 A. Verify that regulations are available to define "legally dispose."			
C22	JWH	24116	1.5 F. Verify that licensed landfills are available to accept waste.			
C23	JWH	24116	1.7 C 1&3 Confirm that these conditions can be met by the owner's representative.			
C24	JWH	24116	1.7 C 2. Consider requiring the contractor to develop a waste management plan for material disposal, identifying disposal of hazardous vs. non hazardous materials.			
C25	JWH	311000	3.3 A Ref "Section 015639 Temporary Tree and Plant Protection." - section not included in specifications.			
C26	JWH	311000	3.3 A Responsibilities for action shifted from Owner's Representative to Owner. Specification should be consistent regarding the Point of Contact for the contractor. Correct throughout specification.			
C27	JWH	312000	3.8 C&D Provides conflicting direction regarding Trench Bottom.			
C28	JWH	312000	3.8 F 3. Specify which section of division 1 applies.			
C29	JWH	321313	Concrete pavement/road section details on the plans would be helpful.			
C30	JWH	321313	Make spec clear as to what type of reinforcement is being used, galvanized, epoxy of plain steel. Confirm that coated tie wire is available and practical. Eliminate unused products from spec.			
C31	JWH	321313	3.8 Detectable warnings - define location and purpose of the warnings on the plan. Are these required/common in Afghanistan?			
C32	JWH	334100	1.5 A&B Calls for the Contractor to supply plans and profiles showing combined utilities. These should be shown on the drawings.			
C33	JWH	334100	1.5 C Calls for product certificates for cast iron pipe, include other pipe materials.			

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CIVIL COMMENTS						
C34	JWH	334100	2.9 Stormwater Detention Structures- Cast in Place. We presume these are detention basin outlet structures - call out on the plans. Provide details.			
C35	JWH	334100	3.3 Eliminate materials that are not being used.			
C36	JWH	334100	3.4 Cleanout Installation - are these included on the plans, if so provide call outs.			
C37	JWH	334100	3.6 C&D Clarify these spec's, rim grade should be flush with pavement not manhole.			
C38	JWH	334100	3.11 A&B Section 221413 "Facility Storm Drainage Piping" not provided			
C40	JWH	334100	3.11 D Describe the connection to "Sanitary Waste Interceptors."			
C41	JWH	334100	3.13 B. 6. Elaborate on "Force Main."			
C42	CTJ	Narrative	There are calculations showing the capacity of the storm drain piping, however there are no calculations regarding sizing of the SWM areas or the Retention Basin.			
C43	CTJ	Narrative	Additionally, there are no calculations indicating the peak water elevation for the SWM areas and Retention Basin during the design storm.			
C44	CTJ	Narrative	Provide calculations for the time to infiltrate stormwater within the retention basin below the elevation of the outlet.			

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STRUCTURAL COMMENTS						
S1	FRS	General	Structural review based upon provided sheets C-501, C-503, C-506, C-509, C-511. No drawings were provided.			
S2	FRS	C-501	Longitudinal joints appear to be saw cut, while transverse joints appear to be formed. A jointing layout plan should be included.			
S3	FRS	C-503	Detail 2 Headwall - Show longitudinal reinforcement in footing and 90deg hook vertical headwall bars into footing. Suggest a roughened construction joint at top of footing.			
S4	FRS	C-503	Show additional reinforcing steel around opening to compensate for bars interrupted by pipe.			
S5	FRS	C-503	Detail 3 - Call out reinforcing in concrete.			
S6	FRS	C-506	Section 1 - Call out waterstop material and size. What is drawn appears to be a hydrophilic strip. Is the material compatible with sewage corrosives?			
S7	FRS	C-506	Will ACI 350 crack control requirements be met in the 250mm wall and only one layer of reinforcing?			
S8	FRS	C-506	Detail 1 - Provided a top cover plate capable of supporting a design truck wheel load or provided a 1550 mm curb or bollards to prevent this loading. Appears the 0.15 KG/M2 load rating is too low.			
S9	FRS	C-506	Detail 2 - Call out concrete strength.			
S10	FRS	C-511	Provide 75 clear cover on all reinforcement cast against earth.			
S11	FRS	C-511	Where is the CMU horizontal reinforcement called out?			

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WATER/WASTEWATER COMMENTS						
WW1	NJB	General	Recommend dividing site into more than 2 sheets so utilities can be shown at larger scale.			
WW2	NJB	Narrative - Civil/Utilities	No calcs provided showing water demands, potable water storage capacity, distribution flows/pressures.			
WW3	NJB	Narrative - Civil/Utilities	What is basis for 40,000 gpd WWTP? Total flows from pg. 1 of sanitary sewer pipe sizing calcs total 42,585 gpd. What is the organic loading basis for the WWTP?			
WW4	NJB	C-102	Recommend adding fence around WWTP.			
WW5	NJB	C-102	Recommend adding fence around wellhead and storage tank since it is outside of perimeter wall.			
WW6	NJB	C-103	Potable and heating hot water lines shown going through guard tower at SW corner of Building 13.			
WW7	NJB	C-115	Horizontal separation between potable water and sanitary sewer pipe shown at 1.5m, at least 3m separation should be provided.			
WW8	NJB	C-121	Show valving for potable water pipe in addition to heating hot water pipe.			
WW9	NJB	C-121	Gate valves orientation should be parallel to flow not perpendicular.			
WW10	NJB	C-121	Why is half of potable water loop 150mm and the other half 200mm? (no hydraulic calcs are provided in the narrative)			
WW11	NJB	C-121	DI pipe will likely be hard to obtain.			
WW12	NJB	C-122	There should be a valve on the intake line to the pump house.			
WW13	NJB	C-122	The size of the tee at the discharge from the pump house should be called out.			
WW14	NJB	C-122	Show valving for potable water pipe in addition to heating hot water pipe.			
WW15	NJB	C-122	Gate valves orientation should be parallel to flow not perpendicular.			
WW16	NJB	C-122	Is the potable water line to the north of the courts/fields 150mm or 200mm? Please clarify.			
WW17	NJB	C-122	There should be a 200mm to 150mm reducer shown for the transition between pipe sizes.			
WW18	NJB	C-122	As noted above, DI pipe will likely be difficult to obtain.			
WW19	NJB	C-123	Same comments on showing valves, valve orientation, and pipe material as on C-122.			
WW20	NJB	C-123	Use (2) 45 bends in place of 90 bend on service to Buildings 1, 8, and 13.			
WW21	NJB	C-124	Call out grease traps and oil water separators.			
WW22	NJB	C-124	Specify size and material of sanitary sewers.			
WW23	NJB	C-124	Discharge from WWTP and bypass around WWTP should be shown.			

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WATER/WASTEWATER COMMENTS						
WW24	NJB	C-124	Has analysis been done to show that WWTP will not flood?			
WW25	NJB	C-125	Specify size of grease trap serving Building 7.			
WW26	NJB	C-125	Specify size of oil/water separator serving Building 10-11.			
WW27	NJB	C-125	Move label/leader for grease trap so it does not cross text for Building 10-11.			
WW28	NJB	C-125	Clean up service connection for Building 12. Unclear if there are 2 connections.			
WW29	NJB	C-125	Legend states 200mm sewer, but labels on sewers show some 150mm sewers.			
WW30	NJB	C-125	Call out size of sanitary lateral to Building 7 grease trap and to connection to main sewer.			
WW31	NJB	C-125	Call out size of sanitary lateral to Building 10-11 oil/water separator.			
WW32	NJB	C-125	Call out size of sanitary lateral to Building 10-11 around oil/water separator.			
WW33	NJB	C-125	Call out wye for connection after oil/water separator.			
WW34	NJB	C-125	Specify material of sewers.			
WW35	NJB	C-126	Specify size of oil/water separator serving Building 13.			
WW36	NJB	C-126	Call out wetwell and valve box for sanitary pump station.			
WW37	NJB	C-126	Discharge from WWTP and bypass around WWTP should be shown.			
WW38	NJB	C-126	Call out wye for connection after oil/water separator.			
WW39	NJB	C-126	Legend states 200mm sewer, but labels on sewers show some 150mm sewers.			
WW40	NJB	C-126	Specify material of sewers.			
WW41	NJB	C-126	Elevations in Sanitary MH Schedule should be m not mm.			
WW42	NJB	C-126	Pipe lengths in Sanitary Pipe Schedule should be m not mm.			
WW43	NJB	C-126	SM-15 should be added to schedules.			
WW44	NJB	C-126	Provide pipe diameter and length from SM-14 to WWTP.			
WW45	NJB	C-127	Show continuation to SMH-13 for sewer north of SMH-14.			
WW46	NJB	C-127	How is sludged pumped? Need to show more detail.			
WW47	NJB	C-127	Guard tower shown adjacent to perimeter walls in SE corner of site. Previously shown at SW corner of Building 13.			
WW48	NJB	C-127	Provide detail of sewer through new 3m tall CMU wall.			
WW49	NJB	C-127	Provide detail of sewer outfall to existing drainage ditch.			
WW50	NJB	C-127	Layout of WWTP is unclear. Cannot see pad and plant.			
WW51	NJB	C-127	Reason for bypass around WWTP (wetwell to SMH-15) unclear. Bypass could be through the WWTP. If meant as overflow for pump station, collection system would likely surcharge before overflow because inlet inv is 3.2m below overflow inv.			
WW52	NJB	C-504	Specify units in Details 1, 6, and 7.			
WW53	NJB	C-504	Show utility marker tape in Detail 6.			
WW54	NJB	C-504	Move leader of pipe label to pipe for Detail 6.			

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WW55	NJB	C-504	Expand WWF in Detail 7 since no legend.			
WW56	NJB	C-505	Specify units on all dimensions on details (e.g. units are not provided for wall thickness, step height, etc. in Detail 1).			
WW57	NJB	C-505	Missing text in Detail 1 A-A "ladder rungs see."			
WW58	NJB	C-505	Detail 1 A-A lists the distance from the last step to the bottom is 600 [mm] and Detail 3 indicates that dimension is 500 mm max. Clarify.			
WW59	NJB	C-505	No info provided on bedding under MH.			
WW60	NJB	C-505	No detail for grouting and water stop between MH top and base slabs and walls.			
WW61	NJB	C-505	Add detail showing pipe penetration through MH and reinforcement around penetration.			
WW62	NJB	C-505	Specify material for MH steps in Detail 3.			
WW63	NJB	C-505	Recommend rounding dimensions in Detail 3 to more practical metric dimensions (e.g. 152 -> 150).			
WW64	NJB	C-505	Show utility marker tape in Detail 5.			
WW65	NJB	C-505	Move leader of pipe label to pipe for Detail 5.			
WW66	NJB	C-505	Recommend providing less detail or allowing equivalent for MH frame and cover because it is unlikely what is shown will be available locally.			
WW67	NJB	C-505	Recommend adding second cleanout detail for the end of the line.			
WW68	NJB	C-505	Specify fill material around top of cleanout (above concrete) in Detail 9.			
WW69	NJB	C-506	Consider maintaining size of pump discharge line at 100 mm until 100 x 200 mm reducer at WWTP connection (less fittings).			
WW70	NJB	C-506	Direction of arrow in wet well plan view for emergency overflow is reversed.			
WW71	NJB	C-506	Add detail showing pipe supports.			
WW72	NJB	C-506	Unlikely that Bilco doors will be found locally may want to change structure dimensions to more standard size so doors can be fabricated.			
WW73	NJB	C-506	Specify schedule of PVC piping.			
WW74	NJB	C-506	Recommend rounding dimensions to more practical metric dimensions (e.g. 152.4 mm -> 150 mm).			
WW75	NJB	C-506	Add concrete fillets in corners of wetwell to prevent solids from accumulating in corners.			
WW76	NJB	C-506	Note 4 refers to the Geotech Report for foundation design parameters and installation/construction procedures. All requirements should be covered in plans and specifications.			
WW77	NJB	C-506	Clarify "qualifying agency" in Note 9 or remove note.			
WW78	NJB	C-506	Recommend providing pump schedule to provide design basis and to assist contractor as Flowserve Model 4mSX7 is unlikely to be available locally.			

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WW79	NJB	C-506	Pump sized based on a peaking factor of 9 from ADF. Peaking factor was calculated based on daily flow over 8 hours. That does not seem realistic. Would expect at least usage would be comparable to office complex in US and daily flow could be used to calculate peaking factor.			
WW80	NJB	C-506	300mm between LWL and bottom of tank is provided, which would appear insufficient to submerge and cool pump (note info on Flowserve model 4msx7 could not be found).			
WW81	NJB	C-506	Wet well is undersized. Approx 1 CUM of effective storage provided. Pumps will cycle on and off too frequently. Recommend increasing depth/size of wetwell. Alternatively, if overall depth is concern, consider adding intermediate pump station or reducing slope of sewers.			
WW82	NJB	C-506	Show junction box, how and where the float switches are hung, and type of float switch.			
WW83	NJB	C-506	No info provided on control panel.			
WW84	NJB	C-507	Provide structural plans for pad.			
WW85	NJB	C-507	Note 11 refers to the Geotech Report for foundation design parameters and installation/construction procedures. All requirements should be covered in plans and specifications.			
WW86	NJB	C-507	Clarify "qualifying agency" in Note 16 or remove note.			
WW87	NJB	C-507	Specify units [m] of elevations.			
WW88	NJB	C-507	Change all units in metric (e.g. 4" supernatant line and basis of design table).			
WW89	NJB	C-507	Provide details for the control panel. The box at the top of sheet states the control panel is shown mounted on top of the tank, but it is not.			
WW90	NJB	C-507	What is the meaning of Note 9?			
WW91	NJB	C-507	Fill and backfill material should be in accordance with plans and Earthwork spec. Revise Note 12.			
WW92	NJB	C-507	Clarify where the finished grade is in relation to the WWTP in View A-A. On the influent side it is shown even with the top of the WWTP and there is also earth hatch and finished grade text at bottom of tank. On the effluent side the WWTP is shown as 15 cm above ground surface.			
WW93	NJB	C-507	View A-A shows access ladder buried.			
WW94	NJB	C-507	There is a discrepancy in the invert elev for the influent line. View A-A shows the CL at 1866.47 [m] and Detail 1 shows the top of the 200 mm pipe at 1865.74 [m]. Please clarify.			
WW95	NJB	C-507	No elevations are provided for alarm on, lag pump on, lead pump on, blower on, and pump/blower off.			
WW96	NJB	C-507	WWTP specified is special order and without more information on design standards (basis for organic loading) tank volumes cannot be verified.			
WW97	NJB	461000	No information on float switch provided.			

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WW98	NJB	461000	Same comment as WW80-81. Insufficient working volume provide in station operation and submergence for pump.			
WW99	NJB	461000	Same comment as WW79. Consider using smaller peaking factor to size pump.			
WW100	NJB	461000	Same comment as WW72. Consider allowing more generic access doors.			
WW101	NJB	460000	Inconsistent fonts.			
WW102	NJB	460000	Reduce the number of significant digits for metric values. Contractor will construct based on metric not English units.			
WW103	NJB	460000	As noted in WW3, the design flow should be at least 42,600 gpd per the SS calcs.			
WW104	NJB	460000	Organic loading is too low at 0.03 lb/d. Per UFC 3-240-09FA, the BOD loading rate is 0.1 lb/capita/d for non-resident personnel for an 8 hour shift and 0.2 lb/capita/d for 24 hours. Thus, for a population of 2649, the BOD load should be at least 264 lb/d. This would impact all tank volumes.			
WW105	NJB	460000	Add requirement to meet effluent standards.			
WW106	NJB	460000	Specify PCS PP-40-ESC-SP or equal. It is our understanding that USAID contracting requires this.			
WW107	NJB	460000	Should specify different coatings for below/above ground portion of plant and interior/exterior. Buried exterior is adequate as is. Others surfaces should be coated with epoxy. Add polyurethane finish for exposed surfaces.			
WW108	NJB	460000	Specify required freeboard for aeration chamber.			
WW109	NJB	460000	Recommend 2 airlift sludge returns per hopper.			
WW110	NJB	460000	Recommend add requirement for air diffuser system to deliver 200% of oxygen demand required to meet treatment requirements.			
WW111		460000	Min chlorine contact time is 30 min. Explain basis for 68 min.			
WW112	NJB	460000	Add requirement for manufacturer's field rep to be present during installation and start-up and commissioning.			
WW113	NJB	460000	Add requirement to provide O&M services for first year of operation and provide training to facility staff.			
WW114	NJB	460000	Add requirement to provide O&M Manual.			
WW115	NJB	460000	Add requirement to perform hydrostatic leak test.			
WW116	NJB	333000	Does not address pressure pipe, joints, fittings (pump station to WWTP).			
WW117	NJB	333000	1.6 Project Conditions does not seem applicable.			
WW118	NJB	333000	2.2 There are no pipes greater than 375mm. Remove.			
WW119	NJB	333000	2.4 Drawings do not indicate normal traffic vs. heavy traffic MHs. Either identify difference on plans or remove from spec.			
WW120	NJB	333000	2.4 Spec inconsistent with what is shown on drawings (wall thickness, base thickness, frames and covers, etc).			

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WW121	NJB	333000	2.7 Backwater valves not shown on drawings.			
WW122	NJB	333000	2.8B Specify schedule of PVC.			
WW123	NJB	333000	3.3C Only 100-200mm sewers on drawings.			
WW124	NJB	333000	3.5E Drawings indicate 800mm min cover.			
WW125	NJB	333000	3.9 None shown on drawings.			
WW126	NJB	333000	3.10A Drawings show PVC cleanouts in earth.			
WW127	NJB	333000	3.10B Drawings do not show concrete block for cleanouts in earth.			
WW128	NJB	333000	3.12 Delete references to "authorities having jurisdiction" as that is not applicable and specify requirements for project.			
WW129	NJB	333000	3.12 C There is no concrete pipe shown on the drawings.			
WW130	NJB	333000	3.12 Add requirement for deflection testing and hydrostatic testing of pressure sewers.			
WW131	NJB	331100	Delete all references to fire protection.			
WW132	NJB	331100	1.1A Revise to reflect what is applicable to this project: water distribution piping, valves, and fittings outside of the building.			
WW133	NJB	331100	1.1B There is no WTP shown on drawings. Delete.			
WW134	NJB	331100	1.1C There is no utility to provide products to the site. Remove.			
WW135	NJB	331100	1.1 Should this cover the heating hot water distribution pipe too? Or is that covered elsewhere?			
WW136	NJB	331100	1.2 Delete all references for fire protection.			
WW137	NJB	331100	1.3 Most this is not applicable to this project. Remove extraneous items.			
WW138	NJB	331100	1.4A, E, F, H Delete - not applicable.			
WW139	NJB	331100	1.4 Delete references to "authorities having jurisdiction."			
WW140	NJB	331100	1.5B Delete reference to hydrants.			
WW141	NJB	331100	1.5H Delete - not applicable			
WW142	NJB	331100	1.6 Delete - not applicable			
WW143	NJB	331100	1.7 Delete - not applicable			
WW144	NJB	331100	2.2-2.5 Drawings indicate DI pipe. Spec references PVC, mechanical joint connections (DIP), transition couplings, etc. <u>Need to select pipe material and revise drawings/specs.</u> As noted in WW10, DIP will likely be hard to obtain. Recommend using HDPE pipe as it is the easiest to obtain locally.			
WW145	NJB	331100	2.4 Delete - not applicable			
WW146	NJB	331100	2.6A.3., B.2, and C Delete - not applicable			
WW147	NJB	331100	2.7 Add requirement for bituminous paint coating.			
WW148	NJB	331100	2.9 Delete - not applicable			
WW149	NJB	331100	2.11 Delete - not applicable			
WW150	NJB	331100	2.12 Delete - not applicable			
WW151	NJB	331100	2.14 Delete - not applicable			
WW152	NJB	331100	2.15 Delete - not applicable			

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WW153	NJB	331100	3.1 Unclear why included here. Should have separate well spec and include any source water quality testing there.			
WW154	NJB	331100	3.3E Edit to only include piping used for this project.			
WW155	NJB	331100	3.3F Delete - not applicable			
WW156	NJB	331100	3.4A There are no valves shown on piping less than 100mm. Revise accordingly.			
WW157	NJB	331100	3.4B Drawings do not indicate where different valve types are to be used. Either revise drawings or spec.			
WW158	NJB	331100	3.6A, B Delete - not applicable			
WW159	NJB	331100	3.6D Drawings indicate 800mm min cover. Revise accordingly.			
WW160	NJB	331100	3.7 Delete references to fire protection.			
WW161	NJB	331100	3.9 Delete - not applicable			
WW162	NJB	331100	3.10 Delete - not applicable			
WW163	NJB	331100	3.11 Not shown on drawings. Update drawings or delete.			
WW164	NJB	331100	3.12 Delete - not applicable			
WW165	NJB	331100	3.13C There is no existing water system to connect to. Revise in accordance with this project.			
WW166	NJB	331100	3.13D Delete reference to fire suppression piping.			
WW167	NJB	331100	3.13F Misplaced? No electrical equipment shown for water system.			
WW168	NJB	331100	3.14B Require to hold at test pressure for 2 hours rather than 1 hour.			
WW169	NJB	331100	3.14 Add requirement for leakage test (can be conducted at same time as pressure test).			
WW170	NJB	331100	3.16A Delete reference to existing systems.			
WW171	NJB	331100	Add requirement for utility marking tape.			
WW172	NJB	SS calculations	Similar to comment WW79 above, would recommend use of smaller peaking factor.			
WW173	NJB	General	No plans showing well, potable water storage tank, or pump house provided.			
WW174	NJB	General	No structural drawings provided for grease interceptor and oil/water separators.			
WW175	NJB	General	No specs provided for well, well pump, booster pump station, and disinfection system (if provided).			

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

Comment #	Reviewer	Reference	Comment	Response Code	Response	Back-Check
SITE ELECTRICAL COMMENTS						
E1	EN	E-001	Coordinate symbols with drawings. Example - PDS shown on one-lines is not included. Site lighting fixtures do not match lighting plan.			
E2	EN	ESL-01	Indicate branch circuiting for site lighting.			
E3	EN	ESL-01	Provide site lighting fixture schedule.			
E4	EN	ESL-01	Provide pole base details.			
E5	EN	ESL-01	How will site lighting be controlled?			
E6	EN	ESL-01	Provide drawing scale.			
E7	EN	ESP-01	Provide ductbank details.			
E8	EN	ESP-01	Provide manhole details.			
E9	EN	ESP-01	Provide pad details for substations.			
E10	EN	ESP-01	How will the new 15 kV system be fed?			
E11	EN	ESP-01	Provide drawing scale.			
E12	EN	E-701	Spec service switchgear as unit sub-station or unit power centers.			
E13	EN/ML	E-701	500 kVA transformers should be protected on the secondary side with 1000A circuit breaker. If protected at this level Ground Fault Protection (GFP) is required per NEC 230.95.			
E14	EN/ML	E-701	Review loads. Provide a load letter. Could transformers be reduced to 300 kVA with forced fan cooling?			
E15	EN/ML	E-701	Define if service laterals or underground feeders are intended between USS and buildings. Provide NEC compliant service bonding.			
E16	EN	E-701	Transfer switches should be specified as 4 wire with switched neutral conductors.			
E17	EN	E-701	Delete drawing scale.			
E18	EN	E-701	Indicate feeder sizes for coordination with site power plans.			
E19	EN	E-701	Indicate what is being provided under this package - substations, building panels, conduits, conductors?			
E20	EN	EST-01	Provide drawing scale.			
E21	EN	EST-01	Provide manhole details.			
E22	EN	EST-01	Provide ductbank details. How many conduits are included? Sizes?			
E23	EN	EST-01	Where does service come from?			
E24	EN	260553	3.2.O. - Choose label types.			
E25	EN	261200	2.2. - Transformers are indicated as silicon filled on drawings, but dry-type is specified. Clarify.			
E26	EN	262913	2.3.A.1. - Will oil tight devices be required?			
E27	EN	263213	1.2.A. - Load banks are not specified. Outdoor enclosures are not specified, but drawings indicate generator will be indoors.			
E28	EN	263213	3.2.C. - Select isolator types.			
E29	EN	263213	2.2.G - Select switched neutral type - switched or overlapping.			
E30	EN	263213	2.2.K. - Select battery charger rating.			

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SITE ELECTRICAL COMMENTS						
E31	EN	263213	2.3.H. - Verify if closed transition transfer is required.			
E32	EN	263213	2.2.D. & E. - Select impulse ratings and for TVSS			
E33	EN	Specs	Specifications for sub-stations is missing.			
E34	ML	0 E-701	Tapping MV in manholes and feeding pad mounted transformers seems to me to be a poor design choice. Use loop fed primaries on the USS.			
E35	ML	0 E-701	The design choice involving the installation of four separate meters seems to me to be poorly considered. Using a single meter at medium voltage and feeding all four USS transformers from that point has many advantages. Putting the purchase of transformers in the hands of the MoPH would just be one of the advantages.			
E36	ML	0 E-701	Which panelboards are service entrances? Grounding electrode systems are shown from wiring troughs instead of clearly defined service entrance enclosures. Why do some buildings, like 002, seem to have two feeders entering from a wire trough that doesn't have a disconnect near to one of the panelboards? Where is the SE? Why do other buildings, like 13, have a 60-A feeder to them and don't seem to have a SE disconnect at all at the building?			
E37	ML	0 ESP-01	The existing customer on the site has their primary switch inside the building labeled "Existing Store" in section K-3 on your drawing. The 15-kV feeder needs to run to that location. The cable should enter the northeast corner of that building. It should not run underneath the existing building in section J-3.			