INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**Apex Group**
Address:	**Chandora, Kaliakoir, Gulshan, Dhaka Gazipur Dhaka Bangladesh**
Assessor:	**Bureau Veritas**
Date:	**19 Jun 2014**

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ALLIANCE FOR BANGLADESH WORKER SAFETY

Introduction to the Report

The following report contains a site profile and summary of non-conformities identified during an onsite assessment commissioned by the Alliance for Bangladesh Worker Safety (Alliance) and conducted by a third-party Qualified Assessment Firm (QAF). The assessment was conducted against the Alliance for Bangladesh Worker Safety Assessment Protocols (APs) and Fire Safety and Structural Integrity Standard, which is harmonized with the factory assessment guidelines developed by Bangladesh University of Engineering and Technology (BUET) for the Bangladesh National Tripartite Plan of Action (NTPA). The goal of the Alliance process is to provide clear and practical technical requirements by which Bangladeshi Ready Made Garment (RMG) Factories producing for Alliance members may be consistently and fairly evaluated for fire, structural, and electrical safety in a non-duplicative manner. Each assessment will prompt action plans that will be used by RMG factories to systematically and sustainably improve safety conditions for garment workers. Beyond tracking and reporting on action steps taken in a transparent manner, the Alliance organization and its members will seek to further support factory improvements through technical assistance, training, implementation support for functional Worker Committees, and in some cases financial assistance and wage support for workers if factories are closed for remediation.

The contents of the report do not constitute a guarantee of compliance with the applicable laws, the Alliance Standard or the absolute or continued safety against fire, electrical and/or structural integrity issues that may lead to injury or loss of life. The report is designed to provide a non-exhaustive summary of risk issues, based on a limited sampling and duration of time onsite by the named QAF. Neither the QAF nor the Alliance can certify or guarantee the quality, outcome, or effectiveness of actions taken in response to the report.

For more information and report feedback please go to: www.bangladeshworkersafety.org.

GENERAL INFORMATION

General Information	
Factory Name:	Apex Group
Address:	Chandora, Kaliakoir, Gulshan, Dhaka Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	06-25-2014
Final Report Date :	12-23-2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are 25 buildings in 1the factory premises out of which twelve are main production buildings and thirteen are ancillary buildings. The buildings are named as: 1) ASKML building, 2) Dying shed, 3) Dying finishing shed-1, 4) Dying finishing shed-2, 5) Raising shed, 6) ASKML knitting shed, 7) Winding shed, 8) Dying shed, 9) ATPML building, 10) Chemical store building, 11) Apex Lingerie building, 12) Dying shed (Apex Lingerie), 13) Corporate office building, 14) Childcare & medical building, 15) Fire pump building, 16) Acid shed, 17) Generator shed (Yarn dying), 18) Pump shed (Yarn dying), 19) Boiler shed (Yarn dying), 20) Workers dining (Apex Lingerie), 21) Generator and work shop shed (ATPML), 22) Boiler shed (ATPML), 23) Generator building (ATPML), 24) Stenter MC Building, 25) Mosque.
Number of Building Levels (Stories) :	1) ASKML building: (Above grade: 5, below grade: 0),2) Dying shed: (Above grade: 1, below grade: 0),3) Dying finishing shed-1: (Above grade: 1, below grade: 0),4) Dying finishing shed-2: (Above grade: 1, below grade: 0),5) Raising shed: (Above grade: 1, below grade: 0),6) ASKML knitting shed: (Above grade: 1, below grade: 0),7) Winding shed: (Above grade: 1, below grade: 0),8) Dying shed: (Above grade: 3, below grade: 0),9) ATPML building: (Above grade: 7, below grade: 0),10) Chemical store building: (Above grade: 8, below grade: 0),11) Apex Lingerie building: (Above grade: 6, below grade: 0),12) Dying shed: (Above grade: 1, below grade: 0),13) Corporate office building: (Above grade: 4, below grade: 0), 14) Stenter M/C Building: (Above grade: 2, below grade: 0), 15) Mosque: (Above grade: 4, below grade: 0), Remaining ten buildings are single story having : (Above grade: 1, below grade: 0).
Approximate Building Area (SF) :	Total area of all buildings in the factory premises: 1304926 sft. Building wise breakdown as follows: 1)1) Four story with mezzanine ASKML building:: 103414 sft 2) Single story dying shed: 51561 sft, 3) Single story dying finishing shed-1: 21223 sft, 4) Single story dying finishing shed-2: 9160 sft, 5) Single story raising shed: 6144 sft, 6) Single story ASKML knitting shed: 48410 sft, 7) Single story winding shed: 65158 sft, 8) Three story dying shed: 9801 sft 9) Seven story ATPML building: 506181 sft 10) Eight story chemical store building: 51560 sft 11) Six story Apex Lingerie building: 208625 sft 12) Single story dying shed (Apex Lingerie): 19620 sft, 13) Four story corporate office building: 16821 sft, 14) Stneter MC Building:21223 sft, 15) Mosque: 12868 sft and rest ten single story buildings area 32041 sft.
Date of Building Construction :	Factory personnel informed the date of construction as follows: 1) Dying shed & dying finishing shed: Finished in 2009,2) Single story dying finishing shed-1: Finished in 1992,3) ASKML knitting shed & raising shed: Finished in 1991,4) ATPML building & chemical store buiding: Finished in 2013,5) Six story Apex Lingerie building: Finished in 2010,6) Dying shed (Apex Lingerie) & corporate office building: Finished in 2006,7) Single story childcare & medical building: Finished in 2007,8) Single story fire pump building: Finished in 2014,9) Single story acid shed: Finished in 2001,10) Generator shed, pump shed, boiler shed (Yarn dying), Boiler shed & generator building(ATPML), ASKML building, winding shed, dying shed: Finished in 2002,11) Workers dining (Apex Lingerie)& generator, wrok shop shed: Finished in 2003, 12) Stenter building: Finished in 2009. No date of construction was found for the mosque.

Date of Last Building Renovation/Addition :	Factory personnel informed the date of last building renovation as follows: 1) Four story ASKML building: Finished in 2004, 2) Six story Apex Lingerie building: Finished in 2010. For rest of the buildings no record for date of renovation or addition was found.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	1) Four story corporate office building, 2) Single story childcare & medical building, 3) Single story fire pump building, 4) Single story acid shed, 5) Single story generator shed (Yarn dying), 6) Single story pump shed (Yarn dying), 7) Single story boiler shed (Yarn dying), 8) Single story workers dining (Apex Lingerie), 9) Single story generator & work shop shed (ATPML), 10) Single story boiler shed (ATPML), 11) Single story generator building (ATPML). 12) Two story stenter M/C building. 13) Four story mosque.
Number of Ancillary Levels (Stories) :	1) Four story corporate office building: Stories above grade: 4,below grade: 0, 2) Single story childcare & medical shed: Stories above grade: 1,below grade: 0, 3) Single story fire pump building: Stories above grade: 1,below grade: 0, 4) Single story acid shed: Stories above grade: 1,below grade: 0, 5) Single story generator shed (Yarn dying): Stories above grade: 1,below grade: 0, 6) Single story pump shed (Yarn dying): Stories above grade: 1,below grade: 0, 7) Single story boiler shed (Yarn dying): Stories above grade: 1,below grade: 0, 8) Single story workers dining: Stories above grade: 1, below grade: 0, 9) Single story generator & work shop shed (ATPML): Stories above grade: 1,below grade: 0, 10) Single story boiler shed (ATPML): Stories above grade: 1,below grade: 0, 11) Single story generator building (ATPML): Stories above grade: 1,below grade: 0, 12) Two story Stenter M/C building: Stories above grade: 2,below grade: 0, 13) Four story mosque: Stories above grade: 4,below grade: 0,
Approximate Ancillary Structures Area (SF) :	1) Four story corporate office building: 20181 sft, 2) Single story childcare & medical building: 3293 sft, 3) Single story fire pump building: 250 sft, 4) Single story acid shed: 300 sft, 5) Single story generator shed (Yarn dying): 9648 sft, 6) Single story pump shed (Yarn dying): 300 sft, 7) Single story boiler shed (Yarn dying): 2450 sft, 8) Single story workers dining (Apex Lingerie): 9500 sft, 9) Single story generator & work shop shed (ATPML): 700 sft, 10) Single story boiler shed (ATPML): 4500 sft, 11) Single story generator building (ATPML): 1100 sft. 12) Stneter MC Building:21223 sft, 13) Mosque: 12868 sft
Number of Occupants :	Total number of occupants: 11831.1) Four story ASKML building: 2004.2) Single story dying shed: 400,3) Single story dying finishing shed-1: 50,4) Single story dying finishing shed-2: 25,5) Single story raising shed: 40,6) Single story ASKML knitting shed: 55,7) Single story winding shed: 380,8) Three story dying shed: 140,9) Seven story ATPML building: 5120,10) Eight story chemical store building: 183.11) Six story Apex Lingerie building: 3303,12) Single story dying shed (Apex Lingerie): 85,13) Four story corporate office building: 10,14) Single story childcare & medical building: 12,15) Single story fire pump building: 1,16) Single story acid shed: 1,17) Single story generator shed (Yarn dying): 2,18) Single story pump shed (Yarn dying): 1,19) Single story boiler shed (Yarn dying): 2,20) Single story workers dining (Apex Lingerie): 5,21) Single story generator & work shop shed (ATPML): 2,22) Single story boiler shed (ATPML): 2,23) Single story generator building (ATPML): 1.24) Two story stenter M/C building: 5, 25) Four story mosque: 2.
Exterior Facade Description :	Apex yarn dyeing -winding & dyeing: The exterior face of the masonry walls have plaster and are painted. The main door of the building is metallic and the windows are of swinging glass type. Apex Lingerie: Infill masonry walls. The main door of the building is metallic and the windows are of sliding glass type. Stenter M/C building: Infill masonry. The main door of the building is made of angle with MS sheet and the windows are of sliding glass type. AL-winding section, ATPML, ASKML (Garments & Dyeing): The building is RCC frame structure with infill masonry walls. The exterior face of the masonry walls have plaster and are painted. The main door of the building is collapsible gate and the windows are of sliding glass type. ASKML(unit-1): Infill masonry. The main door of the building is made of angle with reinforcement frame and the windows are of sliding glass type. ASKML(washing plant): Infill masonry. The main door of the building is shutter and the windows are of swinging type. ASKML(knitting building): The exterior face of the masonry walls have plaster and are painted. The main door of the building is a sliding gate and the windows are of swinging type.
Structural System Description :	The structure of the buildings Apex lingerie limited (Garments) & AYDL (Dyeing) & ASKML Garments & Dyeing & chemical store consist of RCC moment-resisting frames. AL (Dyeing Section) is a one storied PEB moment-resisting frame system and the foundation system consists of isolated column footings. AYDL (winding section) is one storied tin shed that rest on the steel truss supported on the RCC columns. Stenter Machine Building is a two storied building. The first-floor consists of a flat slab and the roof consists of a PEB roof shed. The structure consists of reinforced-concrete frames. Apex spinning & knitting mills ltd (Dyeing Building) unit-1 is one storied PEB shed with multiple steel beams and purlins and with RCC framing in the periphery. ASKML washing plant is a three-storied flat slab system with peripheral beams. ASKML knitting building is a one-storied tin shed that rests on the steel truss supported on the RCC columns. Apex Textile and Printing mills Ltd are 7-storied flat slab structures with edge beams. ATPML Dyeing Building is a one-storied tin shed that rests on steel trusses supported on the RCC and steel columns. The foundation of all the buildings consist of isolated column footings.

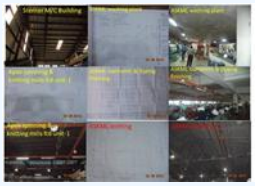
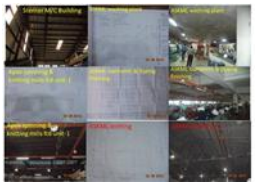
ASSESSMENT FINDINGS

Structural System Design		
Question:	Are Certificates of Occupancy available for review?	
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	There are twelve main buildings in the primes but the Occupancy certificate is not available for any building.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Apply for issuance of Certificate of Occupancy and pursue the matter to obtain the same.	
Suggested Deadline Date:	14 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
Question:	Structural Engineer of Record	
Priority Level:		
Non-Compliance Level:		
Description:	There are twelve main buildings out of the 11 nos. of buildings were designed by Mr. Ahmed Jubayed, IEB fellowship no. F-7976. Stenter Machine Building has no record of structural Engineer.	
Source of Findings:	Document Review: Document review shows that the following things: Building name: Apex yarn dyeing limited-winding & dyeing section: Document Review reveals that the Structural Engineer on Record is Mr. Ahmed Jubayed, PEng Whose IEB no. is F-7976 and the signature is available on the record. Building name: Stenter M/C building: Document Review reveals that there is no Structural Engineer of Record available. Building name: Apex lingerie limited-winding section: Document Review reveals that the Structural Engineer on Record is Mr. Ahmed Jubayed, PEng Whose IEB no. is F-7976 and the signature is available on the record. Building name: Apex textile printing mills ltd.: Document Review reveals that the Structural Engineer on Record is Mr. Ahmed Jubayed, PEng Whose IEB no. is F-7976 and the signature is available on the record. Building name: Apex textile printing mills ltd. Dyeing building unit-2: Mr. Ahmed Jubayed, PEng is the Structural Engineer of Record whose IEB fellowship no. F-7976.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Provide the name and firm of the structural engineer of record.	
Question:	Architect of Record	
Priority Level:		
Non-Compliance Level:		
Description:	There are twelve main buildings and only four of these buildings have the Architect of Record available. Apex lingerie ltd(Garments and Dyeing) were designed by Architect Md. Shafiul Quader & A. B. Farook Ahmed, but there is	

	no professional ID and signature of them in it. Apex Yarn dyeing ltd(Winding and Dyeing) these two buildings were designed by Architect Mr. Akter Ul Azim Parvez, but there is no professional ID and signature of him. The Architect of Record of the other eight main buildings is not available.
Source of Findings:	Document Review: Documentation reviewed.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Provide the name and firm of the architect of record.
Question:	Are credible structural design documents available for review and kept on site?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Some structural drawings are available for ten buildings but there are no structural drawings for the Stenter Machine building and for the Apex textile and printing mills ltd building (Dyeing Building). There are no design reports for any of these twelve buildings. The Architect of Record is only available in four main buildings (Apex lingerie ltd -Garments and Dyeing-, and Apex Yarn Dyeing ltd -Winding and Dyeing-).
Source of Findings:	Document Review: Documentation reviewed.
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
Suggested Deadline Date:	13 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories
Question:	Is a Geotechnical Report available for review and kept on site?
Priority Level:	Low
Non-Compliance Level:	2
Description:	Geotechnical Reports are available for following eight buildings- Apex lingerie ltd.(Garments & Dyeing),Apex yarn Dyeing(Winding & Dyeing), Apex textile and Printing mills ltd, ASKML washing plant , ASKML Garments and dyeing finishing Building, Chemical Store building. The other four main buildings have no geotechnical report available.
Source of Findings:	Document Review: Documentation reviewed.
Suggested Plan of Action:	Under guidance from a qualified structural engineer arrange geotechnical investigation at close vicinity of the structure and make the report available for review.
Suggested Deadline Date:	13 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings
Question:	Can credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code be produced?
Priority Level:	Medium

Non-Compliance Level:	2	
Description:	There are twelve main buildings in the complex out of them ten buildings have been constructed before 2006. Only one building (Stenter Machine Building) has been constructed after 2006 and it has no structural documents. Apex textile and printing mills buildings were constructed in 2013. The design document of the building indicates conformity to the requirements of BNBC 1993.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with Alliance Standard Part 8 Section 8.19 and 8.20	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	If built after 2006, can documented compliance with the seismic and wind requirements of the 2006 BNBC be provided?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Out of the twelve main buildings only the Stenter Machine Building was built after 2006 and it has no structural documentation.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standards Part 8 Section 8.17 Design for Lateral Loads and 2006 BNBC Part 6 Section 1.5	
Question:	Can documentation be provided that the building is compliant with the requirements for wind loading and storm surge loadings as detailed in BNBC Part 6 Section 1.5.3?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	There is no clear information available on the design document to understand the consideration of storm surge and wind loading in the design of the buildings.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	2006 BNBC Part 6 Section 1.5. Compliance may be waived if the Factory Owner provides satisfactory evidence of a cyclone operations plan that includes full evacuation of the factory in advance of any approaching cyclone"	

Question:	Has evidence of structural integrity been provided using a Preliminary Structural Assessment?	
Priority Level:	High	
Non-Compliance Level:		
Description:	There are preliminary Structural Assessment for Apex lingerie ltd. (Garments building) & Apex textiles printing mills ltd. out of twelve buildings and the report outlines that the buildings are safe.	
Source of Findings:	Document Review: Document review shows that, there are preliminary Structural Assessment for Apex lingerie ltd. (Garments building) & Apex textiles printing mills ltd. out of twelve buildings and the report outlines that the buildings are safe.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	If the structure has been previously expanded, was the structural impact on the entire structure analytically evaluated and confirmed by a qualified structural engineer.	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	ASKML Garments & Dyeing Finishing Building was expanded previously, but the authority have removed the extended portion recently. There is no evidence of previous expansion in other structures.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.	
Question:	Structural System Type as defined by 2006 BNBC Part 6 Chapter 1 Table 6.1.2.	
Priority Level:		
Non-Compliance Level:		
Description:	1. Apex lingerie limited(Garments) is a six storied RCC moment resisting frame structure and the foundation system is isolated column footing. 2. Apex lingerie limited(Dyeing Section) is a one storied PEB moment resisting framing system and the foundation system is isolated column footing. 3. Apex yarn Dyeing limited(winding section) is one storied tin shed rested on the steel truss supported on the RCC column. Foundation system of the building is isolated column footing. 4. Apex yarn Dyeing limited(Dyeing section)is three storied RCC moment resisting framing system. Foundation system of the building is isolated column footing. 5. Stenter Machine Building is a two storied building, which ground floor is flat slab and 1st floor is PEB roof shed with RCC framing and foundation system is isolated column footing. 6. Apex spinning & knitting mills ltd (Dyeing Building) unit-1 is one storied PEB shed of multiple steel beam and purlin with RCC framing in the periphery and foundation system is isolated column footing. 7. ASKML washing plant is a three storied flat slab	

	system with drop panel & peripheral beam structure and the foundation system is isolated column footing. 8. ASKML Garments & Dyeing finishing Building is a four storied RCC moment resisting frame structure and the foundation system is isolated column footing. 9. ASKML knitting Building is one storied tin shed rested on the steel truss supported on the RCC column. Foundation system of the building is isolated column footing. 10. Apex Textile and Printing mills Ltd is 7 storied flat slab structure with edge beam. Foundation system of the building is isolated column footing. 11. ATPML Dyeing Building is is one storied tin shed rested on the steel truss supported on the RCC and steel columns. Outer columns are Foundation system of the building is isolated column footing. 12. Chemical Store Building is eight storied RCC moment resisting frame structure. Foundation system of this building is isolated column footing.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	2006 BNBC Part 6 Chapter 1 Table 6.1.2	
Question:	What is the Structural Configuration?	
Priority Level:		
Non-Compliance Level:		
Description:	Ten main buildings are regular in both horizontally and vertically. Stenter building has plan irregularity and Apex Textile and printing mills ltd has vertical irregularity.	
Source of Findings:	Document Review: Document review shows that ten main buildings are regular in both horizontally and vertically. Stenter building has plan irregularity and Apex Textile and printing mills ltd has vertical irregularity., Visual Assessment: Visual inspection shows that ten main buildings are regular in both horizontally and vertically. Stenter building has plan irregularity and Apex Textile and printing mills ltd has vertical irregularity.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	2006 BNBC Part 6 Chapter 1 Section 1.3.4	
Question:	Is a clear and redundant load path to resist lateral loads provided?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	The buildings Apex Lingerie Ltd(Garments Building), Apex Lingerie Ltd(Dyeing Building), Apex Yarn Dyeing ltd (Winding Section), Apex Yarn Dyeing ltd (Dyeing Section), ASKML Garments and Dyeing Finishing Building, ASKML Dyeing Building unit-01, ATPML Dyeing Building, Chemical Store Building have structures that consist of multiple bays of RCC moment-resisting frames, steel moment-resisting frames or multiple bays of steel trusses, so the lateral load path is clear and redundancy is available for these buildings. The Stenter Machine Building, ASKML Washing Plant, and Apex Textile and Printing mills Ltd have structures that consist of flat plate systems and therefore lateral load path is not redundant.ASKML knitting Building is one storied tin shed rested on the steel truss supported on the RCC column.	
Source of Findings:	Visual Assessment: Visually confirmed.	

Suggested Plan of Action:	Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required for the Stenter Machine Building, ASKML Washing Plant, and Apex Textile and Printing mills, ASKML knitting Building.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standards Part 8 Section 8.17 Design for Lateral Loads and 8.3.3. 2006 BNBC Part 6 Section 1.5	
Question:	Are the available FoS for the columns adequate based on Preliminary calculation?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	1) Apex Textile And Printing mills Ltd (B-1): Concrete strength 3284 psi (core test) Yield strength of Steel 60ksi. -Center column: 2.62, -Corner Column: 6.34, -Edge Column: 1.65, -Edge column: 3.33 (Mezzanine floor portion). 2) Chemical Store Building Concrete strength 2045 psi (Minimum) Yield strength of Steel 60ksi. -Center column: 2.64, -Corner Column: 2.60, -Edge Column: 2.01, The result of FoS are Adequate. 3) Apex Lingerie ltd_Garments Concrete strength 2370 psi (Minimum) Yield strength of Steel 60 ksi. -Center column: 2.18, -Corner Column: 3.10, -Edge Column : 2.12, 4) Apex Yarn and Dyeing _Dyeing Concrete strength 2370 psi (Minimum) Yield strength of Steel 40 ksi. -Center column: Not present -Corner Column: 4.79, -Edge Column : 3.76, 5) ASKLM Washing Plant Concrete strength 2370 psi (Minimum) Yield strength of Steel 60 ksi. -Center Column: 4.47, -Corner Column: 6.58, -Edge Column: 4.44, 6) ASKML Garments & Dyeing Finish Concrete strength 2045 psi (Minimum) Yield strength of Steel 60 ksi. -Center Column: 5.33, -Corner Column: 4.01, -Edge Column: 3.78, 7) Stenter Machine Building Concrete strength 2370 psi (Minimum) Yield strength of Steel 40 ksi. Center Column: 9.71, Corner Column: 22.78, Edge Column: 14.54, 8) Corporate office Building Concrete strength 2370 psi (Minimum) Yield strength of Steel 60 ksi. -Center Column: 2.79, -Corner Column: 4.67, -Edge Column: 3.41, 9) Central Mosque Concrete strength 2370 psi (Minimum) Yield strength of Steel 60 ksi. -Center Column: 3.58, -Corner Column: 2.66, -Edge Column: 1.92,	
Source of Findings:	Uploaded Document: Calculations uploaded.	
Suggested Plan of Action:	Apex Textile And Printing mills Ltd (B-1): Conduct semi-destructive core test to validate the insitu concrete compressive strength of structural elements.	
Suggested Deadline Date:	30 Jan 2015	
Standard:	Provide results of preliminary calculations in space provided. a) column capacity; FoS > 1.86 - Safe b) column capacity; FoS 1.5 -1.86 - Needs Evaluation c) Column capacity; FoS 1.25-1.5 - Needs Evaluation d) Column capacity; FoS <1.25 - Unsafe In case of a critically low FoS (<1.25), consider Immediate Escalation Protocol	
Question:	Results of ferro-scanning for confirmation of steel rebar in the columns of the lowest tier were satisfactory.	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	There are eight RCC structure out of twelve main buildings in the complex. The result of the ferro-scanner tests in seven of these buildings matched with the structure drawings. The Stenter Machine building has no structural drawings. The other four main buildings have steel structures.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of		

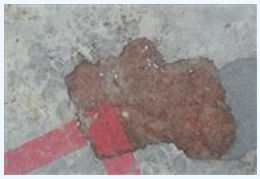
Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
Question:	What are the full dead and live loads of the floor slabs and decks?	
Priority Level:		
Non-Compliance Level:		
Description:	1. Apex Lingerie Ltd (Garments Building)- Measured slab thickness is 5". Therefore, dead load is 62.5 Psf (No FF). and the estimated floor live is 42 psf. 2. Apex Lingerie Ltd (Dyeing Building) is a one storied PEB shed. 3. Apex Yarn Dyeing ltd (Winding Section) is a one storied steel truss structure. 4. Apex Yarn Dyeing ltd (Dyeing Section) is a three storied RCC structure where the roof is tin shed rested on the truss. Slabs are decking slab with 5.5" thickness. Therefore, dead load is 93.75 psf (including 25 psf FF) and the estimated floor live is 42 psf. 5. Stenter Machine Building - Measured slab thickness is 8.5". Therefore, dead load is 131.25 psf (Inclusing 25 psf FF). and the estimated floor live is 42 psf. 6. ASKML Washing Plant -Measured slab thickness is 9". Therefore, dead load is 112.5+25(FF)=137.5 psf. and the estimated floor live is about 50 psf in first and second floor. 7. ASKML Garments and Dyeing Finishing Building- The measured slab thickness is 6". Therefore, dead load is 100 psf (including 25 psf FF). The estimated live load is not more than 42 psf. 8. ASKML Knitting Building- It is one storied angle truss roof shed. 9. ASKML Dyeing Building unit-01- This is one storied PEB steel shed. 10. Apex Textile and Printing mills Ltd- The measured slab thickness is 10". Therefore, dead load is 125 psf (No floor finish). The estimated live load is 42 psf. 11. ATPML Dyeing Building- It is one storied angle truss roof shed. 12. Chemical Store Building- The measured slab thickness is 8". Therefore, dead load is 125 psf (including 25 psf FF). The estimated live load is 42 psf. 13) Corporate building & Mosque: asured slab thickness is 5". Therefore, dead load is 62.5 Psf (No FF). and the estimated floor live is 42 psf.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Provide information regarding the dead and live loads of the floor slabs and decks.	
Question:	Have provisions been made in floors or decks for a concentrated load (such as heavy equipment, water tanks, stored materials, etc) applied at a location wherever this load acting upon an otherwise unloaded floor would produce stresses greater than those caused by a uniform load?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	There is a 5000 liter plastic water tanks on the roof of ASKML Garments and Dyeing finishing building. There is no evidence that the effects of the tanks on the structure were considered in the design.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate concentrated loads. If provisions have not been made, have a qualified structural engineer develop a remediation plan.	
Suggested Deadline	13 Aug 2014	

Date:		
Standard:	Alliance Standard Part 8 Section 8.13 and 8.14	
Question:	Where density of operations, storage of materials, or equipment weights require live load capacity in excess of 2.0 kN/m2 (42 psf), do the design documents confirm that the required load capacity exists? Or has the load capacity been analytically confirmed and certified by an Alliance-qualified structural engineer?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	ASKL Washing plant: The density of operation (storage) exceeds 42 psf (estimated 50 psf) in first and second floor.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.	
Suggested Deadline Date:	30 Dec 2014	
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads	
Structural System Construction		
Question:	Have all areas of needed maintenance, including areas with efflorescence, dampness, standing water on rooftops, and corrosion been addressed.	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Apex Lingerie limited (Garments): The beams and columns are not properly plastered. There is no efflorescence, dampness or standing water on the roof top. Apex Lingerie limited (Dyeing): One storied PEB shed and steel members are free from corrosion. Apex Yarn dyeing limited (Winding): Is one storied tin shed and some corrosion have been observed on shed of the tin. Apex Yarn dyeing limited (Dyeing section): is a three storied RCC moment resisting frame structure. Roof of the building is made by tin on the steel truss. Stenter M/C Building: Some dampness found in the exterior walls Apex spinning & knitting mills ltd unit-1: There is no efflorescence, dampness or standing water on the roof top. ASKML washing plant: Dampness is found in the exterior façade and some internal infill brick wall of the building. Also, standing water is observed on the roof of the building. ASKML Garments & Dyeing finishing Building: dampness have been found in the exterior façade, ground floor and 2nd floor of the building. Also, standing water is observed on the roof of the building. ASKML knitting: There is no efflorescence, dampness or standing water on the roof top. Stenter M/C Building: Some dampness have been found in the exterior walls Apex spinning & knitting mills ltd unit-1: There is no efflorescence, dampness or standing water on the roof top. ASKML washing plant: Dampness is found in the exterior façade and some internal infill brick wall of the building. Also, standing water is observed on the roof of the building. ASKML Garments & Dyeing finishing Building: Dampness have been found in the exterior façade, ground floor and 2nd floor of the building. Also, standing water is found on the roof of the building. ASKML knitting: There is no efflorescence, dampness or standing water on the roof top. Chemical store: Some Dampness are found on ground floor. There is no maintenance program for all areas including areas with efflorescence, dampness, standing water on rooftops, and corrosion.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.	

Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
Question:	The exterior façade is free of cracking.	
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	Apex Lingerie Limited (Garments and Dyeing section)and Apex yarn dyeing Limited-winding & dyeing section: The exterior façade is free of cracking. Stenter M/C Building, Apex spinning & knitting mills ltd unit-1,ASKML washing plant, ASKML Garments & Dyeing finishing Building and ASKML knitting: Cracks have been identified in the exterior façade of the building Stenter M/C Building and ASKML Garments & Dyeing finishing Building. The exterior façade of other buildings are free from crack.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Have a qualified structural engineer provide further analysis of the identified cracks to determine the appropriate course of corrective action.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.2	
Question:	Are expansion joints provided at appropriate intervals on the exterior façade?	
Priority Level:	Low	
Non-Compliance Level:		
Description:	Only the following the ASKML Garments and Dyeing Finishing Building & the Apex Textile and Printing Mills ltd buildings have expansion joints. The other ten main buildings do not have expansion joints.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is expansion joint material free from cracking and other forms of deterioration?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	There are usually no expansion joint materials in the Apex Textile and printing mills ltd. The expansion joints are open type. Expansion joint of the ASKML Garments and Dyeing Finishing Building beam and slab portion have been filled by fabric and the column face have been filled by plaster. ATPML: Expansion joints present in the building which are filled with synthetic fiber. Water leakage through expansion joint found therefore dampness is observed.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Remove deteriorated expansion joint material and provide new approved material at the expansion joint.	

Suggested Deadline Date:	24 Sep 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
Question:	Is the building free of active signs of water intrusion or ponding due to lack of performance of the façade system?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Some plaster dampness have been observed in the exterior wall of the following buildings- Stenter M/C Building, ASKML washing plant and ASKML Garments & Dyeing finishing Building and Apex textile and printing mills ltd. There is no dampness, ponding or water intrusion in the others buildings.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Repair the exterior façade system to prevent water intrusion.	
Suggested Deadline Date:	24 Sep 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
Question:	Are the performance of key structural elements such as columns, slender columns, flat plates and transfer structures satisfactory?	
Priority Level:	High	
Non-Compliance Level:		
Description:	The performance of the key structural elements of all buildings are satisfactory.	
Source of Findings:	Visual Assessment: Visual inspection shows that the performance of the key structural elements of all buildings are satisfactory.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Is the structural system free of settlement cracking, excessive perimeter separations, and unlevel floors attributable to foundation settlements?	
Priority Level:	High	
Non-Compliance Level:		
Description:	Structural system of the all buildings are free of settlement cracking, excessive perimeter separations, and unlevel floors attributable to foundation settlements.	
Source of Findings:	Visual Assessment: Visual observation shows that the structural system of the all buildings are free of settlement cracking, excessive perimeter separations, and unlevel floors attributable to foundation settlements.	
Suggested Plan of Action:		
Suggested Deadline Date:		

Standard:	Reference Alliance Standards Part 8 Structural Design Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is the structural system free of deflections (sagging), rotations (twisting), perceivable vibrations, or other noticeable movements of the structure?	
Priority Level:	High	
Non-Compliance Level:		
Description:	Structural system of the all buildings are free of deflections (sagging), rotations (twisting), perceivable vibrations, or other noticeable movements of the structure.	
Source of Findings:	Visual Assessment: Visual observation shows that structural system of the all buildings are free of deflections (sagging), rotations (twisting), perceivable vibrations, or other noticeable movements of the structure.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 8 Structural Design Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is the structural system free of distress, separations, or cracking that indicates lack of performance or overstress of the lateral load-carrying system?	
Priority Level:	High	
Non-Compliance Level:		
Description:	There is no visible sign of distress or crack in all building's that may indicate lack of performance or over-stress of the lateral load-carrying system.	
Source of Findings:	Visual Assessment: Visual observation shows that there is no visible sign of distress or crack in all building's that may indicate lack of performance or over-stress of the lateral load-carrying system.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?	
Priority Level:	High	
Non-Compliance Level:		
Description:	Structural system of all the buildings are free of distress, settlement, shifting, or cracking in columns or walls.	
Source of Findings:	Visual Assessment: Visual observation shows that the structural system of all the buildings is free of distress, settlement, shifting, or cracking in columns or walls.	
Suggested Plan of Action:		
Suggested Deadline Date:		

Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Have any previous repairs to correct structural deficiencies or to reinforce the existing structure been completed?	
Priority Level:		
Non-Compliance Level:		
Description:	No strengthening or retrofitting has been done on all the structural members of these buildings.	
Source of Findings:	Visual Assessment: Visual Assessment and documents reviews shows that no strengthening or retrofitting has been done on the structural members of these buildings.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:		
Question:	Was masonry-chip aggregate concrete (MCAC) used in the construction of the building?	
Priority Level:		
Non-Compliance Level:		
Description:	Only ASKML Garments & Dyeing finishing buildings and chemical stores were constructed with MCAC. The other structural elements of this buildings and all the structural members of the other buildings were constructed with stone-chip aggregate.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	
Question:	If yes, have the structural members constructed with MCAC been investigated by an appropriate program of in-situ testing and representative destructive testing or core samples?	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	Chemical store and ASKML Dyeing & Finishing: The structural members constructed with MCAC have not been investigated by an appropriate program of in-situ testing and representative destructive testing or core samples. The column stress calculated taking into account the strength of concrete either from standard or from test result of NDT, does not show any overstress.	
Source of Findings:	Visual Assessment: Visual inspection and calculation shows that the columns are not over-stressed.	
Suggested Plan of Action:		
Suggested Deadline		

Date:		
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	
Question:	Are any structural elements constructed with MCAC exposed to rainfall or other sources of water sealed with a protective coating to prevent water intrusion?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	Only the roof of the ASKML Garments & Dyeing finishing building and chemical store is of MCAC, but no protective sealing is available.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Provide a protective coating at the structural elements constructed with MCAC exposed to rainfall or other sources of water. Have protective coating approved by the Alliance or a qualified structural engineer. Or provide 2% slope on the exposed surface to prevent accumulation of water.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC).	
Question:	Are structural steel members free of corrosion, physical damage or other types of deterioration?	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	Structural steel members are free from corrosion and other types of deterioration.	
Source of Findings:	Visual Assessment: Visual observation shows that structural steel members are free from corrosion and other types of deterioration.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.26	
Question:	For post-tensioned reinforced concrete systems or elements, cored holes have not compromised the post-tensioned strands.	
Priority Level:	High	
Non-Compliance Level:		
Description:	There are no post-tensioned reinforced concrete systems or elements, cored holes in the all structures.	
Source of Findings:	Visual Assessment: Visual assessment supported by document review shows that there is no post-tensioned reinforced concrete systems or elements, cored holes in the structure.	
Suggested Plan of Action:		
Suggested Deadline		

Date:		
Standard:	Not Applicable	
Question:	Is the structure free from any major/progressive distress?	
Priority Level:	High	
Non-Compliance Level:		
Description:	The buildings are free from major and Progressive distress.	
Source of Findings:	Visual Assessment: Visual inspection shows that there is no sign of progressive distress visible in the buildings.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standards Part 8 Section 8.3.3	
Question:	Are all non-structural elements suspended from, attached to, or resting atop the structure adequately anchored and braced to resist earthquake forces?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	There are some storage racks in the following buildings- Apex Textile and Printing mills Ltd, Apex Lingerie Ltd (Garments Building), Apex Yarn Dyeing ltd (Dyeing Section), ASKML Garments and Dyeing Finishing Building which require seismic bracing. One Plastic water tank has been found on the roof of the ASKML Garments and Dyeing Finishing Building which is not properly braced. Chemical store: Racks of 2nd and 3rd floor needs to be braced and anchored. ASKML Washing: Accessories racks at 2nd floor needs bracing and anchorage.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.	
Suggested Deadline Date:	24 Sep 2014	
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6	
Question:	If the building is currently being renovated or expanded, are the Construction Practices and Safety requirements of Section 9 being followed?	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	No renovation or expansion work is ongoing in this complex.	
Source of Findings:	Visual Assessment: From visual inspection, no renovation work is ongoing in this complex.	
Suggested Plan of Action:		
Suggested Deadline Date:		

Standard:	Alliance Standard Part 9 Construction Practices and Safety.	
Structural Safety Programs		
Question:	Have Load Plans been prepared for each floor documenting the actual maximum operational loading that is intended and/or allowable on each floor.	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	There is no load plan available showing the actual maximum operational loading that is allowable.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans)	
Question:	Are Floor Load Plans posted as required?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	There is no load plan available showing the actual maximum operational loading that is allowable.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard and have it posted in all required location.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.20.5.3	
Question:	Are floor loads in compliance with posted plans?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	There is no load plan available showing the actual maximum operational loading that is allowable. The comparison is not possible.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard and have it posted in all required location.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans).	
Question:	Are areas used for storage of work materials and work products, clearly marked to indicate the acceptable loading limits as described in the Load Plan for that floor?	

Priority Level:	Low	
Non-Compliance Level:	3	
Description:	There is no load plan. Also, there is no marking on the floor to designate spaces and height for storage of work materials.	
Source of Findings:	Visual Assessment: Visually confirmed.	
Suggested Plan of Action:	Have a qualified structural engineer prepare a load plan for each floor and have the floors marked for designating storage area as per the developed load plan.	
Suggested Deadline Date:	13 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.11 Floor Load Markings	
Question:	Is a program in place to ensure that the live loads for which a floor or roof is or has been designed will not be exceeded?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	There is no program that will ensure that the designated load in each floor will not be exceeded.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Develop a program to ensure that all live loads for which a floor or roof has been designed for will not be exceeded. The designated Load Manager shall oversee this program and ensure it is enforced.	
Suggested Deadline Date:	30 Jul 2014	
Standard:	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.	
Question:	Is a designated representative (Factory Load Manager), who is onsite full time, trained regarding the structural floor capacity, and serves as an ongoing vendor resource and monitor of operational factory floor loadings?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	There is no designated representative (Factory Load Manager), who is onsite full time, trained regarding the structural floor capacity, and serves as an ongoing vendor resource and monitor of operational factory floor loadings.	
Source of Findings:	Document Review: Documentation reviewed.	
Suggested Plan of Action:	Designate a representative as the Factory Load Manager. The Factory Owner shall ensure that at least one individual, the Factory Load Manager who is located onsite full time at the factory, is trained in calculating operational load characteristics of the specific factory. The Factory Load Manager shall serve as an ongoing resource to RMG vendors and be responsible to ensure that the factory operational loads do not at any time exceed the factory floor loading limits as described on the Floor Loading Plans.	
Suggested Deadline Date:	30 Jul 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	
Question:	For post-tensioned reinforced concrete systems or elements, is a program in place to ensure post-tensioned strands are located before core drilling begins?	

Priority Level:	Medium
Non-Compliance Level:	
Description:	There is no post-tensioned reinforced concrete systems or elements in the complex.
Source of Findings:	Visual Assessment: Visual assessment supported by document review shows that, there is no post-tensioned reinforced concrete systems or elements.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance