

# INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Dressmen Apparels Limited**

Address: **Pallirani, Connecting Road (Bhataria), Savar,  
Kaliakoir, Shahbajpur, Gazipur Gazipur Dhaka  
Bangladesh**

Assessor: **Shaheedullah**

Date: **11 Jun 2014**





## 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](http://www.bangladeshworkersafety.org).





## GENERAL INFORMATION

| General Information                                       |                                                                                                       |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Factory Name:                                             | Dressmen Apparels Limited                                                                             |
| Address:                                                  | Pallirani, Connecting Road (Bhataria), Savar, Kaliakoir, Shahbajpur, Gazipur Gazipur Dhaka Bangladesh |
| Country:                                                  | Bangladesh                                                                                            |
| Province:                                                 | Dhaka                                                                                                 |
| City:                                                     | Gazipur                                                                                               |
| Zip Code:                                                 | 1750                                                                                                  |
| Audit Duration:                                           | 3 Days                                                                                                |
| Re-Audit:                                                 | Re-Audit After 0 Months                                                                               |
| Draft Report Date :                                       | Oct 1, 2014                                                                                           |
| Final Report Date :                                       | Dec 11, 2014                                                                                          |
| Are all Action Items From Previous Assessment Completed?: | N/A                                                                                                   |
| Buildings in Complex :                                    | 03 nos. (01 Main Building, 02 Ancillary Buildings)                                                    |
| Number of Building Levels (Stories) :                     | Main factory building: 9-storied.                                                                     |
| Approximate Building Area (SF) :                          | Total building area: 106,200 sf.                                                                      |
| Date of Building Construction :                           | 2007                                                                                                  |
| Date of Last Building Renovation/Addition :               | None                                                                                                  |
| Is the Building mixed use?:                               | No                                                                                                    |
| Ancillary Structures in Complex :                         | 2                                                                                                     |
| Number of Ancillary Levels (Stories) :                    | Ancillary Shed 1: 2 stories ; Ancillary Shed 2: 1 story.                                              |
| Approximate Ancillary                                     | Ancillary buildings: 4600 SF total (Shed-1: 3,600 sf; Shed-2: 1,000sf.)                               |

Factory Name: **Dressmen Apparels Limited**  
Address: **Pallirani, Connecting Road (Bhataria), Savar, Kaliakoir, Shahbajpur, Gazipur Gazipur Dhaka Bangladesh**

Assessor: **Shaheedullah**

Date: **11 Jun 2014**



**ALLIANCE**  
FOR BANGLADESH WORKER SAFETY

|                                 |                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Structures Area (SF) :          |                                                                                                                                  |
| Number of Occupants :           | Total occupancy in the complex is 2556 (GF:76, 1st:71, 2nd:138, 3rd:392, 4th:368, 5th:397, 6th:321, 7th:322, 8th:117, Roof:354.) |
| Exterior Facade Description :   | 5 inch thick plastered masonry brick wall with 30% window opening enclosed by R.C Column.                                        |
| Structural System Description : | RC frame with RC column, beam, flat slab and RC foundation.                                                                      |



## ASSESSMENT FINDINGS

### Structural System Design

|                           |                                                                                                                     |  |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|--|
| Question:                 | Are Certificates of Occupancy available for review?                                                                 |  |
| Priority Level:           | Low                                                                                                                 |  |
| Non-Compliance Level:     | 1                                                                                                                   |  |
| Description:              | No certificates of occupancy available.                                                                             |  |
| Source of Findings:       | Document Review: Onsite documentation                                                                               |  |
| Suggested Plan of Action: | Obtain an occupancy certificate for each building and ancillary structures from the approving government authority. |  |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                         |  |
| Standard:                 | Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment                                              |  |
| Question:                 | Structural Engineer of Record                                                                                       |  |
| Priority Level:           |                                                                                                                     |  |
| Non-Compliance Level:     |                                                                                                                     |  |
| Description:              | Uttam Kumar Nande, B.Sc. in Civil Engg., MIEB (M-12901)                                                             |  |
| Source of Findings:       |                                                                                                                     |  |
| 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:              | No record found                                                                                                     |  |
| Source of Findings:       |                                                                                                                     |  |
| 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:     |                                                                                                                                                                   |  |
| Description:              | Yes                                                                                                                                                               |  |
| Source of Findings:       |                                                                                                                                                                   |  |
| Suggested Plan of Action: |                                                                                                                                                                   |  |
| Suggested Deadline Date:  |                                                                                                                                                                   |  |
| 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:     |                                                                                                                                                                   |  |
| Description:              | Yes                                                                                                                                                               |  |
| Source of Findings:       |                                                                                                                                                                   |  |
| Suggested Plan of Action: |                                                                                                                                                                   |  |
| Suggested Deadline Date:  |                                                                                                                                                                   |  |
| 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:     |                                                                                                                                                                   |  |
| Description:              | Yes                                                                                                                                                               |  |
| Source of Findings:       |                                                                                                                                                                   |  |
| Suggested Plan of         |                                                                                                                                                                   |  |



|                           |                                                                                                                                                                                                                             |  |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Action:                   |                                                                                                                                                                                                                             |  |
| Suggested Deadline Date:  |                                                                                                                                                                                                                             |  |
| 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:     |                                                                                                                                                                                                                             |  |
| Description:              | Yes                                                                                                                                                                                                                         |  |
| Source of Findings:       |                                                                                                                                                                                                                             |  |
| Suggested Plan of Action: |                                                                                                                                                                                                                             |  |
| Suggested Deadline Date:  |                                                                                                                                                                                                                             |  |
| 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:              | Documentation can not 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.                                                  |  |
| Source of Findings:       | Document Review: Onsite documentation                                                                                                                                                                                       |  |
| Suggested Plan of Action: | Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading and storm surge loading. This should be reflected in the design report.                           |  |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                                 |  |
| 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:              | No Preliminary Structural Assessment was done.                                                                                                                            |
| Source of Findings:       |                                                                                                                                                                           |
| 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:              | The structure has not been previously expanded.                                                                                                                           |
| Source of Findings:       |                                                                                                                                                                           |
| 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:              | Moment Resisting Frame                                                                                                                                                    |
| Source of Findings:       |                                                                                                                                                                           |
| 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:              | Regular Structure                                                                                                         |  |
| Source of Findings:       |                                                                                                                           |  |
| 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:     |                                                                                                                           |  |
| Description:              |                                                                                                                           |  |
| Source of Findings:       |                                                                                                                           |  |
| Suggested Plan of Action: |                                                                                                                           |  |
| Suggested Deadline Date:  |                                                                                                                           |  |
| 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:     |                                                                                                                           |  |
| Description:              | All the columns are adequate according to FoS calculations. Central column - 2.29 Corner column - 1.93 Edge column - 2.18 |  |
| Source of Findings:       | Uploaded Document: FOS calculation                                                                                        |  |
| Suggested Plan of Action: |                                                                                                                           |  |
| Suggested Deadline Date:  |                                                                                                                           |  |





|                           |                                                                                                                                                                                                                                                                                                                                      |  |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 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:              | Results of ferro-scanning is satisfactory.                                                                                                                                                                                                                                                                                           |  |
| Source of Findings:       | Uploaded Document: Ferro-scanning report                                                                                                                                                                                                                                                                                             |  |
| 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:              | Dead Load=6x12.5+25=100 psf, Live Load=42 psf.                                                                                                                                                                                                                                                                                       |  |
| Source of Findings:       | Visual Assessment: Visual Inspection                                                                                                                                                                                                                                                                                                 |  |
| 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:     |                                                                                                                                                                                                                                                                                                                                      |  |
| Description:              | Yes                                                                                                                                                                                                                                                                                                                                  |  |
| Source of Findings:       |                                                                                                                                                                                                                                                                                                                                      |  |



|                                       |                                                                                                                                                                                                                                                                                                                                          |  |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Suggested Plan of Action:             |                                                                                                                                                                                                                                                                                                                                          |  |
| Suggested Deadline 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/m <sup>2</sup> (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:                 |                                                                                                                                                                                                                                                                                                                                          |  |
| Description:                          | Yes                                                                                                                                                                                                                                                                                                                                      |  |
| Source of Findings:                   |                                                                                                                                                                                                                                                                                                                                          |  |
| Suggested Plan of Action:             |                                                                                                                                                                                                                                                                                                                                          |  |
| Suggested Deadline Date:              |                                                                                                                                                                                                                                                                                                                                          |  |
| Standard:                             | Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads                                                                                                                                                                                                                                                                        |  |
| <b>Structural System Construction</b> |                                                                                                                                                                                                                                                                                                                                          |  |
| 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:                 |                                                                                                                                                                                                                                                                                                                                          |  |
| Description:                          | No sign of efflorescence or dampness in members, roof top is water proofed.                                                                                                                                                                                                                                                              |  |
| Source of Findings:                   |                                                                                                                                                                                                                                                                                                                                          |  |
| Suggested Plan of Action:             |                                                                                                                                                                                                                                                                                                                                          |  |
| Suggested Deadline Date:              |                                                                                                                                                                                                                                                                                                                                          |  |
| 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:     |                                                                                                                     |  |
| Description:              | Yes                                                                                                                 |  |
| Source of Findings:       |                                                                                                                     |  |
| Suggested Plan of Action: |                                                                                                                     |  |
| Suggested Deadline Date:  |                                                                                                                     |  |
| 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:              | No expansion joint were noticed on the exterior façade.                                                             |  |
| Source of Findings:       |                                                                                                                     |  |
| 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:     |                                                                                                                     |  |
| Description:              | No expansion joint found.                                                                                           |  |
| Source of Findings:       |                                                                                                                     |  |
| Suggested Plan of Action: |                                                                                                                     |  |
| Suggested Deadline Date:  |                                                                                                                     |  |
| 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:     |                                                                                                                                                                                                                    |                                                                                     |
| Description:              | Yes                                                                                                                                                                                                                |                                                                                     |
| Source of Findings:       |                                                                                                                                                                                                                    |                                                                                     |
| Suggested Plan of Action: |                                                                                                                                                                                                                    |                                                                                     |
| Suggested Deadline Date:  |                                                                                                                                                                                                                    |                                                                                     |
| 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:     | 3                                                                                                                                                                                                                  |                                                                                     |
| Description:              | 2-Storied Ancillary steel Building: Lateral steel bracing shall be provided at the top of steel column to resist wind and seismic loads. The bracing size and geometry shall be determined by structural engineer. |                                                                                     |
| Source of Findings:       | Visual Assessment: Visual inspection.                                                                                                                                                                              |                                                                                     |
| Suggested Plan of Action: | A qualified structural engineer shall be engaged to provide further analysis and investigation of the structural deficiencies. Structural engineer shall also provide remediation documents if required.           |                                                                                     |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                        |                                                                                     |
| 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:     | 3                                                                                                                                                                                                                  |                                                                                     |
| Description:              | Foundation seems to be little over stressed of Ancillary 2-storied steel building.                                                                                                                                 |                                                                                     |
| Source of Findings:       | Document Review: Seen all documents.                                                                                                                                                                               |                                                                                     |
| Suggested Plan of Action: | A qualified structural engineer shall be engaged to provide further analysis for the foundation of Ancillary 2-storied steel building.                                                                             |                                                                                     |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                        |                                                                                     |
| 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:              | Yes                                                                                                                                                       |  |
| Source of Findings:       |                                                                                                                                                           |  |
| 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:              | Yes                                                                                                                                                       |  |
| Source of Findings:       |                                                                                                                                                           |  |
| 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:              | Yes                                                                                                                                                       |  |
| Source of Findings:       |                                                                                                                                                           |  |
| 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 such action has been taken.                                                                                                                                                   |  |
| Source of Findings:       |                                                                                                                                                                                  |  |
| 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:              | Stone chips used in the building.                                                                                                                                                |  |
| Source of Findings:       | Document Review: Seen all documents.                                                                                                                                             |  |
| 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:              | MCAC not in used in the Complex.                                                                                                                                                 |  |
| Source of Findings:       | Document Review: Seen all documents.                                                                                                                                             |  |
| 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:     |                                                                                                                                                              |  |
| Description:              | MCAC not used.                                                                                                                                               |  |
| Source of Findings:       |                                                                                                                                                              |  |
| Suggested Plan of Action: |                                                                                                                                                              |  |
| Suggested Deadline Date:  |                                                                                                                                                              |  |
| 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:              | Yes                                                                                                                                                          |  |
| Source of Findings:       |                                                                                                                                                              |  |
| 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:              | No such case here, no post tensioned members.                                                                                                                |  |
| Source of Findings:       |                                                                                                                                                              |  |



|                           |                                                                                                                                                        |  |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 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:              | Yes                                                                                                                                                    |  |
| Source of Findings:       |                                                                                                                                                        |  |
| 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:              | No anchoring and bracing are used in racks to resist earthquake forces.                                                                                |  |
| Source of Findings:       | Visual Assessment: Visual Inspection                                                                                                                   |  |
| Suggested Plan of Action: | Racks shall be adequately anchored and braced to resist earthquake force as per BNBC and Alliance Standard.                                            |  |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                            |  |
| 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 taking place.                                                                                                               |  |



|                           |                                                             |
|---------------------------|-------------------------------------------------------------|
| Source of Findings:       |                                                             |
| 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:     | 2                                                                                                                                                                                                                       |
| Description:              | Floor Load Plans have not been prepared for each floor.                                                                                                                                                                 |
| Source of Findings:       | Document Review: Onsite documentation                                                                                                                                                                                   |
| Suggested Plan of Action: | A qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.                                                                                                            |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                             |
| 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:     | 1                                                                                                                                                                                                                       |
| Description:              | Floor load plans not posted.                                                                                                                                                                                            |
| Source of Findings:       | Document Review: Load plan not found                                                                                                                                                                                    |
| Suggested Plan of Action: | Load plans must be prepared by a qualified engineer and posted clearly on each floor and as necessary to distribute floor loads to comply with the floor loading plans as per Alliance Standard Part 8 Section 8.20.5.3 |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                             |
| 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:     |                                                                                                                                                                                                                         |



|                           |                                                                                                                                                                                                                                                              |  |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description:              | No posted plans available to verify.                                                                                                                                                                                                                         |  |
| Source of Findings:       |                                                                                                                                                                                                                                                              |  |
| Suggested Plan of Action: |                                                                                                                                                                                                                                                              |  |
| Suggested Deadline Date:  |                                                                                                                                                                                                                                                              |  |
| 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:     | 1                                                                                                                                                                                                                                                            |  |
| Description:              | Assessment team did not observe any load plans posted as per Reference Alliance Standards Part 8 Structural Design Section 8.11 Floor Load Markings.                                                                                                         |  |
| Source of Findings:       | Document Review: No load plan available                                                                                                                                                                                                                      |  |
| Suggested Plan of Action: | Provide the load plans, signage, plus highlight these areas by physical marking; using different contrasting colours or materials so they are easy to differentiate between the storage areas, the normal working sections and the means of egress pathways. |  |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                                                                  |  |
| 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:     | 2                                                                                                                                                                                                                                                            |  |
| Description:              | There is no program in place to ensure that the live loads for which a floor or roof is or has been designed will not be exceeded.                                                                                                                           |  |
| Source of Findings:       | Document Review: Record of such program not found                                                                                                                                                                                                            |  |
| Suggested Plan of Action: | Produce, establish and enforce a written policy and procedure to ensure that the live loads, as detailed in the load plans for each floor, are not exceeded.                                                                                                 |  |
| Suggested Deadline Date:  | 31 Jan 2015                                                                                                                                                                                                                                                  |  |
| 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:     |                                                                                                                                                             |  |
| Description:              | Load Manager present on site.                                                                                                                               |  |
| Source of Findings:       | Visual Assessment: Visual Inspection                                                                                                                        |  |
| Suggested Plan of Action: |                                                                                                                                                             |  |
| Suggested Deadline Date:  |                                                                                                                                                             |  |
| 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:              | No post-tensioning available.                                                                                                                               |  |
| Source of Findings:       |                                                                                                                                                             |  |
| Suggested Plan of Action: |                                                                                                                                                             |  |
| Suggested Deadline Date:  |                                                                                                                                                             |  |
| Standard:                 | Alliance Standard Part 8 Section 8.26 Durability and Maintenance                                                                                            |  |