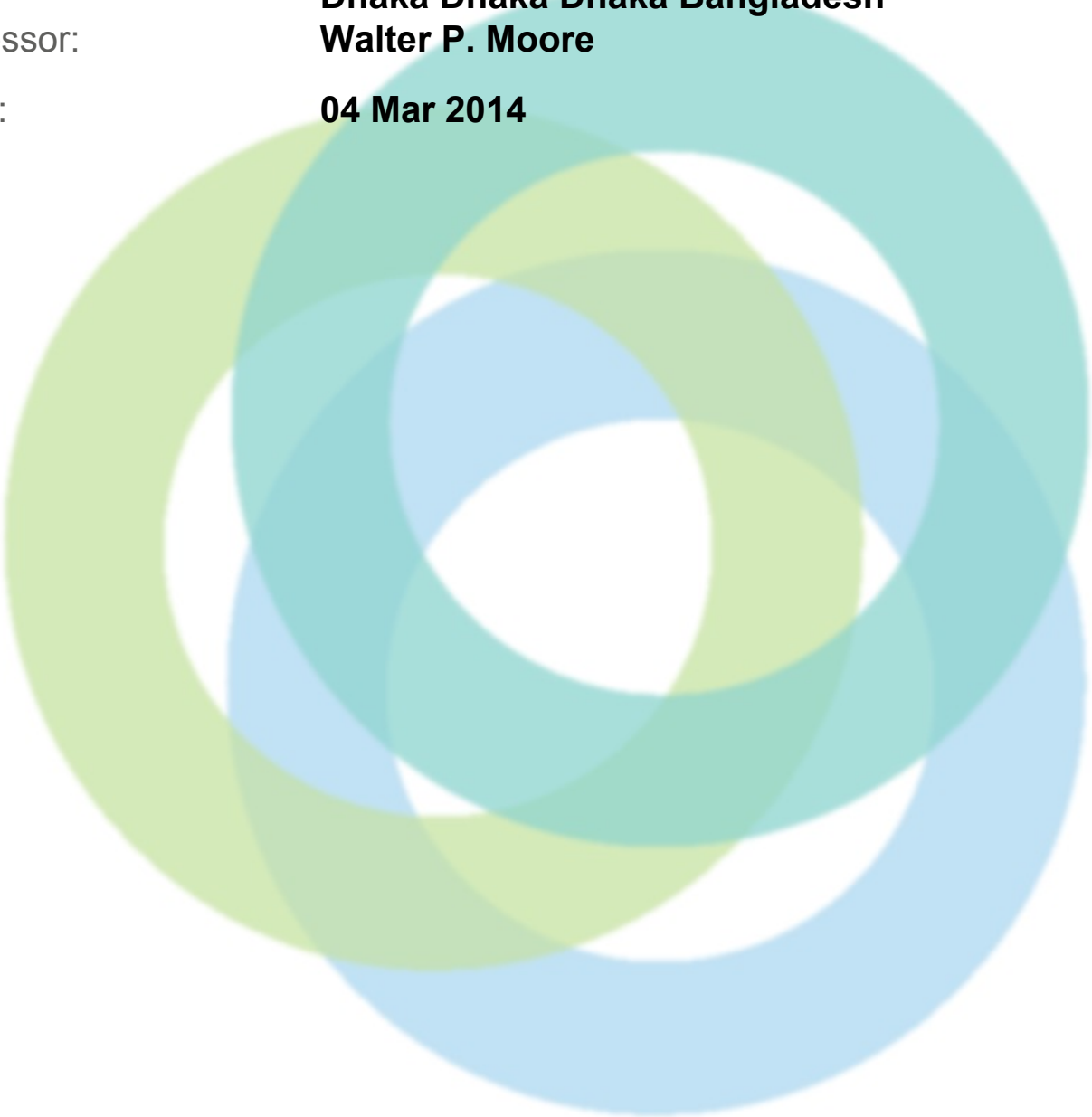


# INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Zyta Apparels Ltd**  
Address: **Industrial Plot NO. 4, Milk Vita Road Section 7, Mirpur,  
Dhaka Dhaka Dhaka Bangladesh**  
Assessor: **Walter P. Moore**  
Date: **04 Mar 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:                                             | Zyta Apparels Ltd                                                                     |
| Address:                                                  | Industrial Plot NO. 4, Milk Vita Road Section 7, Mirpur, Dhaka Dhaka Dhaka Bangladesh |
| Country:                                                  | Bangladesh                                                                            |
| Province:                                                 | Dhaka                                                                                 |
| City:                                                     | Dhaka                                                                                 |
| Zip Code:                                                 |                                                                                       |
| Audit Duration:                                           | 1 Days                                                                                |
| Re-Audit:                                                 | Re-Audit After 0 Months                                                               |
| Draft Report Date :                                       | May 8, 2014                                                                           |
| Final Report Date :                                       | March 11, 2015                                                                        |
| Are all Action Items From Previous Assessment Completed?: | N/A                                                                                   |
| Buildings in Complex :                                    | 1 Main Building                                                                       |
| Number of Building Levels (Stories) :                     | B+G+9+R+SR                                                                            |
| Approximate Building Area (SF) :                          | 11,000                                                                                |
| Date of Building Construction :                           | 2002                                                                                  |
| Date of Last Building Renovation/Addition :               | None                                                                                  |
| Is the Building mixed use?:                               | No                                                                                    |
| Ancillary Structures in Complex :                         | ETP Plant                                                                             |
| Number of Ancillary Levels (Stories) :                    | 1                                                                                     |
| Approximate Ancillary                                     | Unknown                                                                               |

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|                                 |                                                                               |
|---------------------------------|-------------------------------------------------------------------------------|
| Structures Area (SF) :          |                                                                               |
| Number of Occupants :           | Unknown                                                                       |
| Exterior Facade Description :   | Brick in-fill wall                                                            |
| Structural System Description : | Monolithic reinforced concrete slab with beams on reinforced concrete columns |



## ASSESSMENT FINDINGS

### Structural System Design

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Question:                 | Are the available FoS for the columns adequate based on Preliminary calculation?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Priority Level:           | High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Non-Compliance Level:     | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| Description:              | Column FoS calculations were conducted by Uttaron following the site visit by Walter P Moore. FoS calculations were performed assuming the Alliance Standard minimum concrete compressive strength value for stone chip aggregate concrete (2,370 psi) and a reinforcing steel strength of 40 ksi. Reinforcement configuration was verified via ferro-scanning. The results of these calculations were determined to be unsatisfactory. FoS results are listed below. Column FoS results, 60 psf live load (elevated live loads observed throughout building): Central Column - 1.52 Corner Column - 1.34 Edge Column - 2.19 Column FoS results, 20 psf live load: Central Column - 1.72 Corner Column - 1.49 Edge Column - 2.42 |  |
| Source of Findings:       | Uploaded Document: Column FoS calculations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Suggested Plan of Action: | Under guidance from a qualified structural engineer arrange Detail Engineering Assessment of the structure. This assessment should be conducted within 6 weeks and should include destructive core testing to validate the in-situ concrete compressive strength of structural elements.                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| Standard:                 | Provide results of preliminary calculations in space provided. a) column capacity; FoS > 1.86 - Safe b) column capacity; FoS 1.5 -1.86 - Needs Evaluation c) Column capacity; FoS 1.25-1.5 - Needs Evaluation d) Column capacity; FoS <1.25 - Unsafe In case of a critically low FoS (<1.25), consider Immediate Escalation Protocol                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Question:                 | Where density of operations, storage of materials, or equipment weights require live load capacity in excess of 2.0 kN/m2 (42 psf), do the design documents confirm that the required load capacity exists? Or has the load capacity been analytically confirmed and certified by an Alliance-qualified structural engineer?                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| Priority Level:           | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Non-Compliance Level:     | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| Description:              | Design live load is indicated as 60 psf. 1. Level 9: fabric rolls are stacked 5 rolls high at isolated locations on the cutting floor. This loading is close to 200 psf. 2. Level 4: Finished garments were stacked 10' - 12' up to the height of the ceiling near the NW stair. 3. Level 3: At multiple locations on the entire floor flatstacked cardboard cartons were stacked between 8' and 9' high. This corresponds to loads between 72 psf and 81 psf. 4. Level 2: The entire Level 2                                                                                                                                                                                                                                    |  |



|                           |                                                                                                                                                                                                                                                                                         |                                                                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                           | floor was used as fabric roll storage. These rolls were observed to be stacked up to 7' in height (6 rolls of denim). we also observed up to 11 smaller rolls stacked at various locations on this level, and noted that the aisles were blocked in some locations.                     |                                                                                       |
| Source of Findings:       | Visual Assessment: Per our observations at the time of our visit.                                                                                                                                                                                                                       |                                                                                       |
| Suggested Plan of Action: | Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.                                                                                              |                                                                                       |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                                                                             |                                                                                       |
| Standard:                 | Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads                                                                                                                                                                                                                       |                                                                                       |
| Question:                 | Are credible structural design documents available for review and kept on site?                                                                                                                                                                                                         |    |
| Priority Level:           | Medium                                                                                                                                                                                                                                                                                  |                                                                                       |
| Non-Compliance Level:     | 1                                                                                                                                                                                                                                                                                       |                                                                                       |
| Description:              | Roof shed was not shown on the drawings.                                                                                                                                                                                                                                                |                                                                                       |
| Source of Findings:       | Photograph: Roof top shed.                                                                                                                                                                                                                                                              |                                                                                       |
| Suggested Plan of Action: | Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.                                                                                                                                     |                                                                                       |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                                                                             |                                                                                       |
| Standard:                 | Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories                                                                                                                                                                                  |                                                                                       |
| Question:                 | Have provisions been made in floors or decks for a concentrated load (such as heavy equipment, water tanks, stored materials, etc) applied at a location wherever this load acting upon an otherwise unloaded floor would produce stresses greater than those caused by a uniform load? |  |
| Priority Level:           | Medium                                                                                                                                                                                                                                                                                  |                                                                                       |
| Non-Compliance Level:     | 1                                                                                                                                                                                                                                                                                       |                                                                                       |
| Description:              | Plastic water tanks were noted at the roof level that were not shown on the building drawings.                                                                                                                                                                                          |                                                                                       |
| Source of Findings:       | Visual Assessment: Per our observations at the time of our visit.                                                                                                                                                                                                                       |                                                                                       |
| Suggested Plan of Action: | Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate concentrated loads. If provisions have not been made, have a qualified structural engineer develop a remediation plan.                                                     |                                                                                       |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                                                                             |                                                                                       |



|                                       |                                                                                                                                                                                      |                                                                                       |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Standard:                             | Alliance Standard Part 8 Section 8.13 and 8.14                                                                                                                                       |                                                                                       |
| Question:                             | Are Certificates of Occupancy available for review?                                                                                                                                  |                                                                                       |
| Priority Level:                       | Low                                                                                                                                                                                  |                                                                                       |
| Non-Compliance Level:                 | 1                                                                                                                                                                                    |                                                                                       |
| Description:                          | Certificates of Occupancy were not available for our review.                                                                                                                         |                                                                                       |
| Source of Findings:                   | Document Review: Documents reviewed on-site.                                                                                                                                         |                                                                                       |
| Suggested Plan of Action:             | Provide Certificates of Occupancy for review.                                                                                                                                        |                                                                                       |
| Suggested Deadline Date:              | 30 Apr 2015                                                                                                                                                                          |                                                                                       |
| Standard:                             | Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment                                                                                                               |                                                                                       |
| <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:                 | 1                                                                                                                                                                                    |                                                                                       |
| Description:                          | Water seepage identified at northwest corner of basement. Water is most likely from washing operation at ground level above. Water intrusion also located at stairs near roof level. |                                                                                       |
| Source of Findings:                   | Visual Assessment: Per our observations at the time of our visit.                                                                                                                    |                                                                                       |
| Suggested Plan of Action:             | Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.                                                    |                                                                                       |
| Suggested Deadline Date:              | 30 Apr 2015                                                                                                                                                                          |                                                                                       |
| Standard:                             | Alliance Standard Part 8 Section 8.26 Durability and Maintenance                                                                                                                     |                                                                                       |
| 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:                 | 1                                                                                                                                                                                    |                                                                                       |
| Description:                          | Pipes and racks at multiple levels are not provided with seismic bracing.                                                                                                            |                                                                                       |
| Source of Findings:                   | Visual Assessment: Per our observations at the time of our visit.                                                                                                                    |                                                                                       |
| Suggested Plan of Action:             | Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.                                                   |                                                                                       |



|                           |                                                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                         |
| Standard:                 | Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6          |
| 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:     | 1                                                                                                                   |
| Description:              | Moisture intrusion was observed in some stairwells.                                                                 |
| Source of Findings:       | Visual Assessment: Per our observations at the time of our visit.                                                   |
| Suggested Plan of Action: | Repair the exterior façade system to prevent water intrusion.                                                       |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                         |
| Standard:                 | Alliance Standard Part 8 Section 8.26 Durability and Maintenance                                                    |

### Structural Safety Programs

|                           |                                                                                                                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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:     | 1                                                                                                                                                                                                       |
| Description:              | No program is in place to ensure that designed live loads will not be exceeded.                                                                                                                         |
| Source of Findings:       | Visual Assessment: Per our observations and discussions at the time of our visit.                                                                                                                       |
| Suggested Plan of Action: | Develop a program to ensure that all live loads for which a floor or roof has been designed for will not be exceeded. The designated Load Manager shall oversee this program and ensure it is enforced. |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                             |
| Standard:                 | Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.                                                                                                                                          |
| 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:     | 1                                                                                                                                                                                                       |



|                           |                                                                                                                                                                                                                              |  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description:              | Load plans have not been prepared for any of the factory building floors.                                                                                                                                                    |  |
| Source of Findings:       | Document Review: Per the available documents reviewed at the time of our visit.                                                                                                                                              |  |
| Suggested Plan of Action: | Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.                                                                                                            |  |
| Suggested Deadline Date:  | 30 Apr 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:              | We did not observe posted load plans.                                                                                                                                                                                        |  |
| Source of Findings:       | Visual Assessment: Per our observations at the time of our visit.                                                                                                                                                            |  |
| Suggested Plan of Action: | Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard. Floor load plans should be visibly posted on all levels of all buildings.               |  |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                  |  |
| Standard:                 | Alliance Standard Part 8 Section 8.20.5.3                                                                                                                                                                                    |  |
| 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:              | Acceptable loading limits are not clearly marked.                                                                                                                                                                            |  |
| Source of Findings:       | Visual Assessment: Per our observations at the time of our visit.                                                                                                                                                            |  |
| Suggested Plan of Action: | Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.                                                                               |  |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                  |  |
| Standard:                 | Alliance Standard Part 8 Section 8.11 Floor Load Markings                                                                                                                                                                    |  |
| 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? |  |

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Date: **04 Mar 2014**



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|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Priority Level:           | Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Non-Compliance Level:     | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description:              | No Factory Load Manager was assigned at the time of our visit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Source of Findings:       | Visual Assessment: Per our observations and discussions at the time of our visit.                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Suggested Plan of Action: | Designate a representative as the Factory Load Manager. The Factory Owner shall ensure that at least one individual, the Factory Load Manager who is located onsite full time at the factory, is trained in calculating operational load characteristics of the specific factory. The Factory Load Manager shall serve as an ongoing resource to RMG vendors and be responsible to ensure that the factory operational loads do not at any time exceed the factory floor loading limits as described on the Floor Loading Plans. |
| Suggested Deadline Date:  | 30 Apr 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Standard:                 | Alliance Standards Part 8 Section 8.9 Factory Load Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |