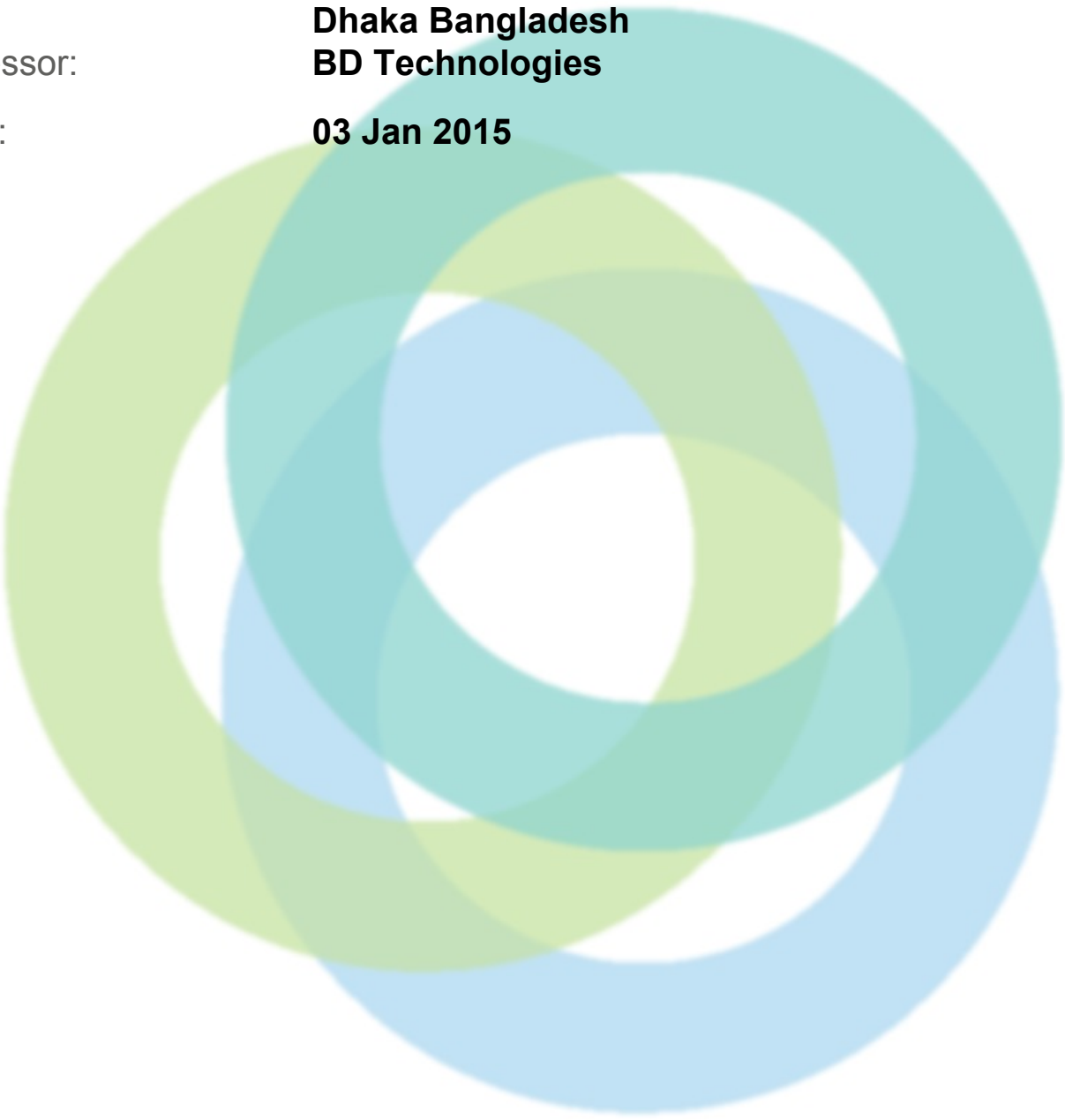


INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Tex Tech Co. Ltd.**
Address: **Safwan Tower, Sharifpur, Khanpara, Gazipur Gazipur
Dhaka Bangladesh**
Assessor: **BD Technologies**
Date: **03 Jan 2015**





Introduction to the Report

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

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

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





GENERAL INFORMATION

General Information	
Factory Name:	Tex Tech Co. Ltd.
Address:	Safwan Tower, Sharifpur, Khanpara, Gazipur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	1704
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	January 5, 2015
Final Report Date :	March 23, 2015
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	Two main factory building and one ancillary building.
Number of Building Levels (Stories) :	Building-1 & 2 are 4-storied R.C.C. main factory building. Ancillary building-1 is 3-storied R.C.C. building.
Approximate Building Area (SF) :	Building # 1 & 2 are interconnected, Total area of two buildings (together), Area = 5 x 26,580 =132,900 sq.ft.
Date of Building Construction :	Date of Building Construction: Building-1 & 2= 2010-2014. And Ancillary Building=2014.
Date of Last Building Renovation/Addition :	No Renovation or Addition done.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	Ancillary # 1:3-story R.C.C building using as boiler operation and maintenance room.
Number of Ancillary Levels (Stories) :	3-storied Ancillary Building, Number of level=3.
Approximate Ancillary	Approximate Ancillary Structures Area: 812 x 4= 3,248 sq.ft.

Factory Name: **Tex Tech Co. Ltd.**
 Address: **Safwan Tower, Sharifpur, Khanpara, Gazipur Gazipur Dhaka Bangladesh**

Assessor: **BD Technologies**

Date: **03 Jan 2015**



ALLIANCE
 FOR BANGLADESH WORKER SAFETY

Structures Area (SF) :	
Number of Occupants :	Building # 1 & 2: (GF = 55, 1st floor = 334, 2nd floor = 353, 3rd floor = 0, Roof = 0.) Number of total Occupants: 742. Ancillary Building: (GF = 1, 1st floor = 3, 2nd floor = 0, Roof = 0.) Number of total Occupants: 4.
Exterior Facade Description :	Brick masonry infill walls between structural elements (beams, slabs, columns) with aluminium framed glass windows.
Structural System Description :	Reinforced concrete moments frames with slabs between beams and beams between columns. Foundation system consists of Isolated Footing.
Issues were not found during the structural integrity assessment that required the Emergency Escalation Protocol (and referral to NTC Review Panel)?:	Yes



ASSESSMENT FINDINGS

Structural System Design

Question:	Are the available FoS for the columns adequate based on Preliminary calculation?	 
Priority Level:	High	
Non-Compliance Level:	3	
Description:	FoS calculations are based on a concrete compressive strength of 2,370 psi (Alliance Standard minimum for Stone Chips) for main factory buildings and 2045 psi (minimum for MCAC) for ancillary building. Nondestructive compressive strength (rebound hammer) testing was conducted as part of this assessment. Reinforcement configuration was verified via ferro-scanning. Main factory building 1 FoS results, 42 psf live load (current 4-story configuration): Central Column - 3.61; Corner Column - 3.02; Edge Column - 2.99. Main factory building 2 FoS results, 42 psf live load (current 4-story configuration): Central Column - 4.16; Corner Column - 4.59; Edge Column - 3.18. Main factory building 1 FoS results, 42 psf live load (approved 7-story configuration): Central Column - 2.07; Corner Column - 1.73; Edge Column - 1.71. Main factory building 2 FoS results, 42 psf live load (approved 7-story configuration): Central Column - 2.38; Corner Column - 2.62; Edge Column - 1.82. Ancillary building FoS results, 42 psf live load: Central Column - 5.52; Corner Column - 3.10; Edge Column - 3.68. As several of the main building FoS results fall below 1.86, the main buildings should not be vertically extended any further prior to additional investigation into their load-bearing capacity by a qualified structural engineer.	
Source of Findings:	Uploaded Document: Column stress Calculation Spread Sheets, Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Prior to any further vertical extension of the main buildings, conduct destructive core testing under the guidance of a qualified structural engineer to validate the in-situ concrete compressive strength of structural elements.	
Suggested Deadline Date:	15 May 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:	Are credible structural design documents available for review and kept on site?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	A few as-built structural documents for the main factory building are available for review and kept on site but the documents are not credible as per BNBC	



	part 6 section 1.9 and the requirements of Part 8 Section 8.19/8.20 of the Alliance Standard.	
Source of Findings:	Document Review: Document reviewed during visit 3rd January 2015. , Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19/8.20 of the Alliance Standard. The documents should be prepared for all buildings within the factory complex.	
Suggested Deadline Date:	15 May 2015	
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories	
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:	3	
Description:	Credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code could not be produced.	
Source of Findings:	Document Review: Document reviewed during visit 3rd January 2015. , Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with Alliance Standard Part 8 Section 8.19 and 8.20.	
Suggested Deadline Date:	15 May 2015	
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:	3	
Description:	A few structural drawings are available but are not in compliance with Part 8 Section 8.20 of the Alliance Standard and do not indicate compliance with the seismic and wind requirements of the 2006 BNBC.	
Source of Findings:	Document Review: Document reviewed during visit 3rd January 2015. , Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	



Suggested Plan of Action:	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC.	
Suggested Deadline Date:	15 May 2015	
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:	3	
Description:	No credible documentation is available to indicate 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: Document reviewed during visit 3rd January 2015. , Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind and storm surge loadings..	
Suggested Deadline Date:	15 May 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:	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:	3	
Description:	The following concentrated load conditions were noted during the visual review: Rooftop water tank made by brick, Rooftop PVC water tank No evidence was available to indicate that the structural impact of these concentrated loads were considered.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
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:	15 May 2015	



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 ² (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:	3	
Description:	In the structural drawing the design live loads was not mentioned. During audit over loading condition were not found but the load capacity of floor should be evaluated and analytically confirmed and certified by a qualified structural engineer.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
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:	15 May 2015	
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads	
Question:	Are Certificates of Occupancy available for review?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	No certificates of occupancy are available for review.	
Source of Findings:	Document Review: Document reviewed during visit 3rd January 2015. , Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Provide Certificates of Occupancy for review.	
Suggested Deadline Date:	15 May 2015	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
Structural System Construction		



Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?
Priority Level:	High
Non-Compliance Level:	2
Description:	There is a crack in 3rd floor brick wall.
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of cracking in walls and provide a remediation plan to correct noted issues.
Suggested Deadline Date:	15 May 2015
Standard:	Alliance Standard Part 8 Section 8.3.3
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:	3
Description:	The following areas of needed maintenance are not addressed: standing water on rooftop, dampness in second floor brick wall, corrosion in roof top reinforcement.
Source of Findings:	Photograph: Attached Photos, Visual Assessment: Visual Assessment on Site visit 3rd January 2015.
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:	15 May 2015
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance
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:	3





Description:	In the ancillary building all structural member are constructed with MCAC. Thus protective coating to prevent water intrusion is required in ancillary building.
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.
Suggested Plan of Action:	Provide a protective coating at the structural elements constructed with MCAC exposed to rainfall or other sources of water. Have protective coating approved by the Alliance or a qualified structural engineer.
Suggested Deadline Date:	15 May 2015
Standard:	Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC).
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:	3
Description:	Storage racks without seismic bracing were observed at the ground floor of the main factory building.
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.
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:	15 May 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:	3
Description:	Water staining and dampness were observed on the facade in several locations, indicating a potential lack of performance of the facade.
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.
Suggested Plan of Action:	Repair the exterior façade system to prevent water intrusion.
Suggested Deadline Date:	15 May 2015
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:	2	
Description:	There was a crack in exterior façade.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Have a qualified structural engineer provide further analysis of the identified cracks to determine the appropriate course of corrective action.	
Suggested Deadline Date:	15 May 2015	
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:	2	
Description:	Expansion joints are not provided at appropriate intervals on the exterior façade.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Have a qualified structure engineer identify the locations where a expansion joint is needed and then have a remediation plan developed.	
Suggested Deadline Date:	15 May 2015	
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is expansion joint material free from cracking and other forms of deterioration?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Cracking was observed at the expansion joint between the two main building sections.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of Action:	Remove deteriorated expansion joint material and provide new approved material at the expansion joint.	
Suggested Deadline Date:	15 May 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:	3	
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:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
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:	15 May 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:	3	
Description:	Load Plans have not been prepared for each floor documenting the actual maximum operational loading that is intended and/or allowable on each floor.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
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:	15 May 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:	3	
Description:	Floor Load Plans are not posted as required.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
Suggested Plan of	Have a qualified structural engineer prepare load plans including the	



Action:	information required in Section 8.20 of the Alliance Standard. Floor load plans should be visibly posted on all levels of the building.	
Suggested Deadline Date:	15 May 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:	3	
Description:	Areas used for storage of work materials and work products are not clearly marked to indicate a acceptable loading limits.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
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:	15 May 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?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	There is no designated representative (Factory Load Manager), who is onsite full time, trained regarding the structural floor capacity, and serves as an ongoing vendor resource and monitor of operational factory floor loadings.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit 3rd January 2015.	
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:	15 May 2015	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	

Factory
Name:

Tex Tech Co. Ltd.

Address:

**Safwan Tower, Sharifpur, Khanpara, Gazipur Gazipur Dhaka
Bangladesh**

Assessor: **BD Technologies**

Date: **03 Jan 2015**



ALLIANCE
FOR BANGLADESH WORKER SAFETY