

Terms of Reference

Roof Renovation on Casualty/ Physiotherapy building of the National Chest Hospital, Jamaica

Project Title:	Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector
Beneficiary countries:	Jamaica
Contracting Authority:	United Nations Development Programme (UNDP)
Contract Type:	Civil Works
Duration of Assignment:	20 Days
Start Date:	September, 2020

1. BACKGROUND

Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector project is being implemented from the 1st of September 2016 to the 31st of August 2019. The project is funded by the Global Environment Facility (GEF) Trust Fund, the Ministry of Energy and Technology (MSET) of the Government of Jamaica through its agency The Petroleum Corporation of Jamaica (PCJ) and other partners. The project implementation is being executed by the United Nations Development Programme (UNDP) in Jamaica in partnership with PCJ.

This project seeks to advance a low carbon development path and reduce Jamaica's public sector energy bill through the introduction of renewable energy (RE) and improvement in energy efficiency (EE) in the health sector. The project will build relevant capacity in the public sector by increasing the knowledge base of its operatives on matters pertinent to RE and EE as well as developing the appropriate technical skills necessary to support investments in the sector. It will strengthen the regulatory framework that governs the development and deployment of RE and EE technologies. The project will support and investigate a potential mechanism involving public-private partnerships (PPPs) that will engender a greater uptake of RE and EE.

A Structural Integrity Assessment (SIA) was carried out on the Casualty /Physiotherapy Building, National Chest Hospital, as a pre-requisite for any solar PV project. The objective of the SIA was to determine if there are existing inadequacies in the roof, to verify the structural integrity and soundness of the roof structures and their components to support the installations of roof mounted solar panels and metal mounting frames for grid-tied solar photovoltaic (PV) systems, in addition to providing recommendations for improvements to the roofs where necessary. The report concluded that the roof of the Casualty/Physiotherapy Building is capable of supporting the solar panels by connecting directly to the joints of the existing timber roof trusses. These trusses span the width of the building. The central vertical truss member (the king post) and the top chords of the truss are to be stiffened and strengthened by attaching wooden strips on two faces to widen their narrower dimension. Some truss joints are recommended for bolting and some others that could not be visually inspected due to inaccessibility are recommended for detailed examination prior to or during construction and strengthening if necessary.

2. DESCRIPTION OF SITE

The National Chest Hospital is located at 35 ½ Barbican Road, Kingston 6, Jamaica. The Casualty/Physiotherapy Building is a two-storey building, rectangular in plan measuring 99.7 metres by 14.2 metres (327 ft. x 46.5 ft.) The building has a basement at its western end with height of the basement from floor level to ceiling of approximately 2.1m (7 ft.). The height of the building from ground floor to eave is approximately 9.0m (30 ft.) and another 3.6m

(12 ft.) from eave to the apex of the roof. It is constructed of block walls, reinforced concrete column and beam framing, reinforced concrete floor slab and timber roof truss with metal sheeting cover. It has a basic hipped end roof with blank dormer windows on both long faces of the roof. Drawings 1819/01 to 03 attached illustrate the arrangement of the building. A building of similar size, shape and structure is aligned with this building and located to the south of this building, a clear distance 50m (150 ft.) away. There are other smaller buildings on the property. Contractors tendering are advised to visit the site in order to inspect the nature and extent of the works to be removed, altered, etc. and of the new works. Prices inserted will be deemed to include for all costs necessary to carry out and complete the works to the reasonable satisfaction of the Project Manager.

3. SCOPE OF WORK

The firm with guidance of the GEF5 Project Manager and supervision of the Ministry of Health and Wellness, through the South East Regional Health Authority (SERHA) will undertake structural modification to existing National Chest – Casualty/Physiotherapy Buildings. The following structural modifications will be necessary to the members for them to accommodate proposed PV panels under Category 4 hurricane winds as described below and detailed in the Bills of Quantities attached:

1. Review of approved plans and the structural assessment of the targeted site to guide construction activities in relation to the proposed modifications.
2. The proposed modifications are illustrated on Drawing 1819/04 in annex below:
 - a The 3.3m (11 ft.) long vertical king post at the mid-span of the trusses being only 76mm (3") thick is quite slender and has a low allowable compressive stress capacity which is exceeded under wind loads. The member thickness need to be increased by bolting to it two termite treated wooden members each of size 38 x 138 mm (1.5" x 5.5").
 - b The truss top chords are too small and are overstressed under wind loads. Their size need to be increased by bolting on two 38 mm x 240 mm x 4.8m long (1.5" x 9.5" x 16 ft.) wooden members
 - c The bottom chords of the trusses need to be maintained in a braced condition. Currently the ceiling framing provides that bracing. Should there be any unbraced bottom chord members then wooden 89 x 89 mm (3.5" x 3.5") members are to be installed as bracing,
 - d The web members which join Joints 3 to Joints 4 are in tension under wind loads and are to have tension connectors fitted. The tension force to be resisted under wind load is 34.7 kN (7,800 lbs).
 - e All joints of the truss and anchorage to the building at the truss bearing are to be checked for adequate connection capacity and improved where necessary. The estimated uplift force at each truss bearing due to wind only is 70.0 kN (15,700 lbs)
3. Closely inspect Joints 1 to ascertain the strength and suitability of both the joint connection and the truss anchorage to the building against uplift and to undertake structural modifications where required.

The specifications shall be read in conjunction with the established national building codes and in accordance to the approved engineer drawings provided in the Structural Integrity Assessment and by the Ministry of Health. All drawings have been provided in Annex A.

The Contractor should note that the building will be occupied, and that the hospital will be in operation throughout the period of works and the Contractor will be required to take all necessary precautions to protect the staff and patients.

The firm is required to provide all materials, labour and equipment needed to undertake the work that is outlined above. All approved drawings have been provided in Annex A along with the established Bill of Quantities, which details the material and construction requirements.

4. INSTITUTIONAL ARRANGEMENT

The firm will report directly to the GEF5 Project Manager (PM) with relevant support for oversight and approvals being provided by a designated Chief Engineer/ Maintenance Manager within South East Regional Health Authority (SERHA) of the Ministry of Health and Wellness. The firm will also be required to provide an initial detailed schedule of works and progress reports to all parties on work progress, challenges encountered, risks foreseen, proposed or taken mitigation measures, and where UNDP support may be required. The GEF5 Project Manager (PM) and SERHA will review for certification of acceptance the outputs produced by the contracted firm.

5. REPORTING REQUIREMENTS

The contracted firm will report in accordance to the approved schedule of works to GEF5 Project Manager, and the designated focal point in the Ministry of Health to ensure a timely delivery of the expected outputs.

6. REMUNERATION

Payment will be remitted subject to sign off on all work and approval of final deliverables by the GEF5 Project Manager and based on the contractor's price proposal. Expected days of work are as follows:

Deliverable	No. of days	Percentage Payment
Detailed Schedule of works and Site Preparation	4 days	30%
Stiffening and strengthen of the "King post", top chord trusses and bolting roof members on the Casio Physiotherapy building	15 days	60%
Post construction site cleanup and clearance	1 days	10%
Total	20days	100%

The contractor's price proposal will include **all expected costs for materials, labor and equipment for this assignment.**

7. QUALIFICATIONS

The firm most suited to complete this assignment should comprise a team which has the following:

- Three or more years' experience in the design, construction and renovation of roofing structures.
- Demonstrated experience in at least 2 previous assignments in the past 10 years of a similar nature to the scope of works of this tender.
- Experience with development agencies or the Government of Jamaica would be an asset

8. SUBMISSIONS

Interested firms must submit the following to demonstrate their suitability:

1. Short company profile which highlights the following:
 - Number of years of experience in undertaking similar work
 - Experience in the design and installation of small scale engineered structures for river defense or slope stabilization
2. Portfolio/picture evidence of successfully completed relevant civil works (particularly for development/UN agencies/GOSVG and within the scope of the items listed in the TOR)
3. Three written references from clients for who work has been successfully completed in the last 3 years

9. WORKMANSHIP

The entire project shall therefore be professionally executed having immaculate installations with respect to both appearance as well as conformance to all relevant local building codes, standards and guidelines. The work shall be inspected by the UNDP with support from SERHA Project Engineer prior to acceptance.

10. WARRANTY

The project shall have at least 6-months warranty which begins at the certified completion date for the project. Failures due to workmanship that occur within the warranty period after the project completion date shall be resolved at the expense of the contractor if, the cause of the failure is as a result of:

- A. Sub-standard workmanship inclusive of;
 - I. Unsuitable application
 - II. Improper installation
 - III. Defective parts
- B. Components failures within the offered manufacturers and/or contractors warranty period shall be addressed according to warranty stipulations and shall include, but not limited to:
 - I. Defects in construction materials
 - II. Faulty manufacturing

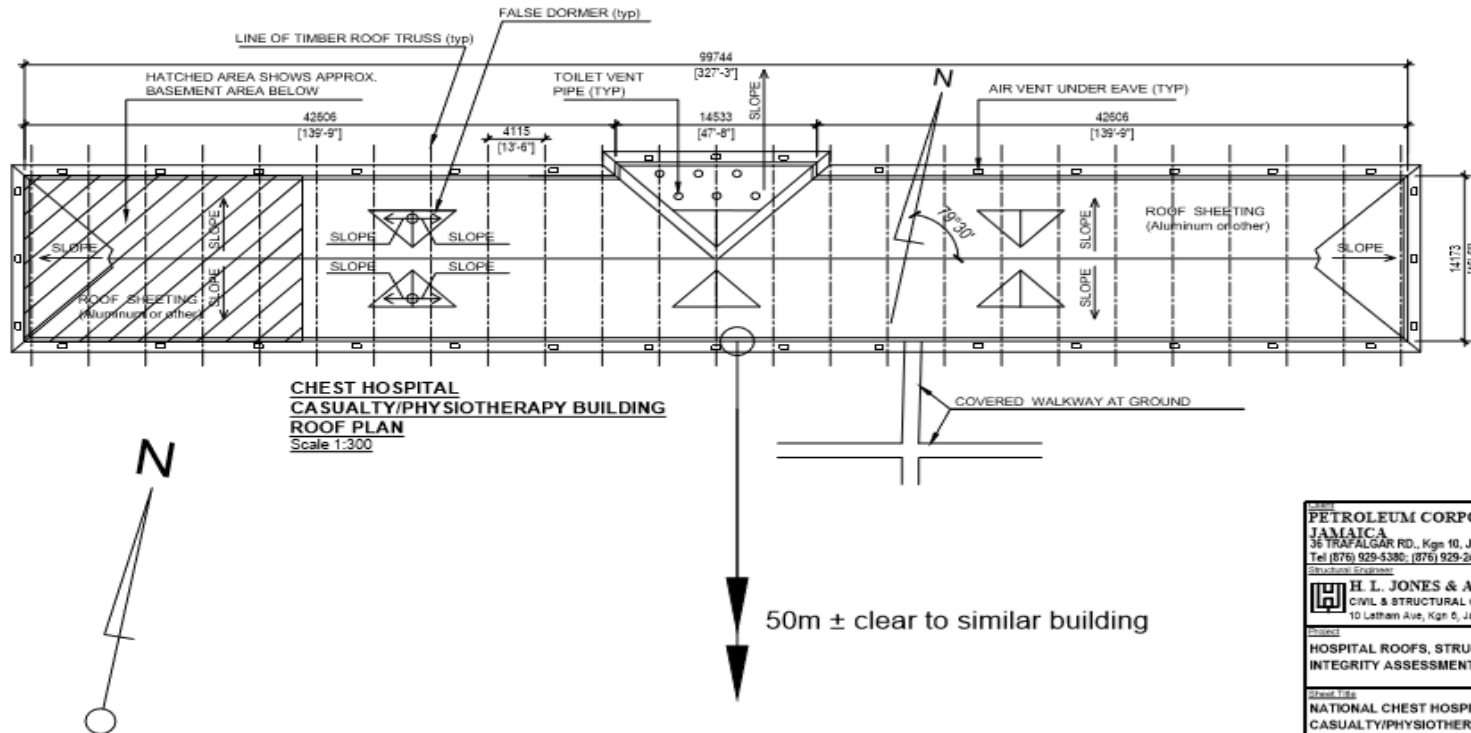
11. SAFETY

All personnel shall therefore have formal authorization to be on project site, be appropriately trained in relevant safety procedures and exhibit the highest level of professionalism in both attire and conduct while on site.

UNDP is not liable for any accidents, injury or loss of life due to any violation of proper health and safety procedures.

Detail Drawings

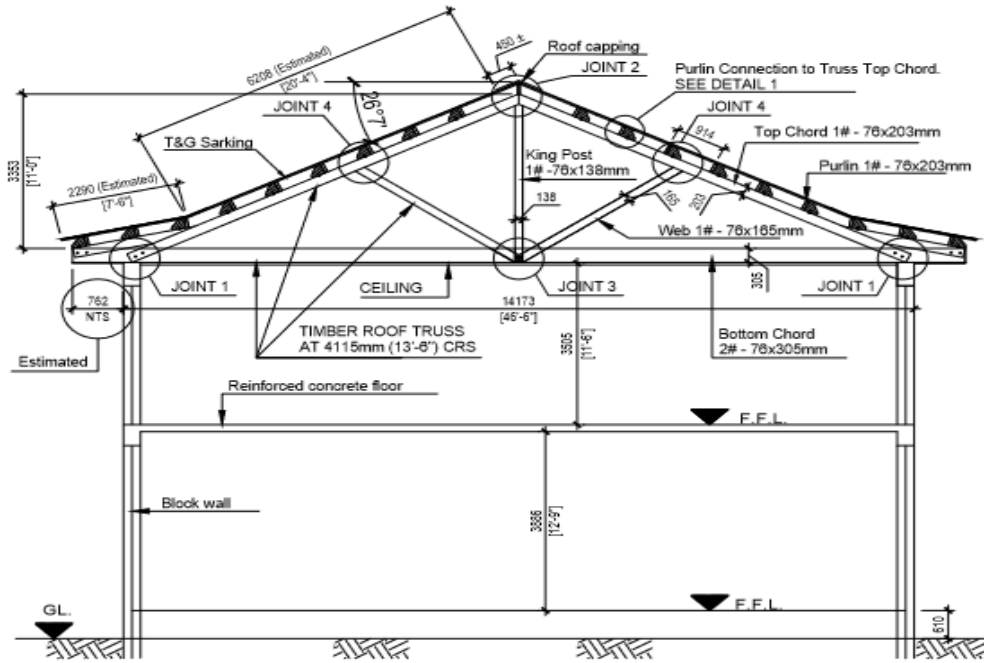
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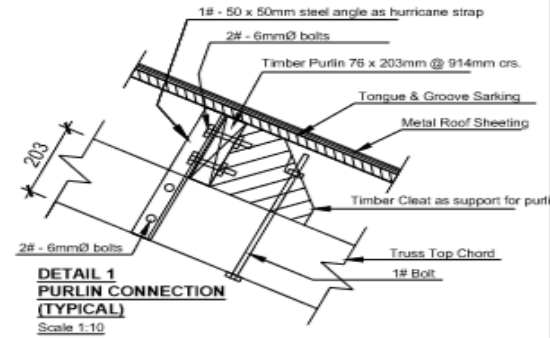
**CHEST HOSPITAL
CASUALTY/PHYSIOTHERAPY BUILDING
ROOF PLAN**
Scale 1:300

PETROLEUM CORPORATION OF JAMAICA 35 TRAFALGAR RD., Kgn 10, Jamaica Tel (876) 929-5396; (876) 929-2499 <small>Structural Engineer</small>		
H. I. JONES & ASSOC. CIVIL & STRUCTURAL CONS. ENGINEERS 10 Latham Ave, Kgn 6, Jam. Tel 876-927-555		
HOSPITAL ROOFS, STRUCTURAL INTEGRITY ASSESSMENT		
NATIONAL CHEST HOSPITAL, CASUALTY/PHYSIOTHERAPY BUILDING, EXISTING ROOF		
Date	Drawing No.	Sheet No.
25 Aug 2018	1819/01	1 of 4

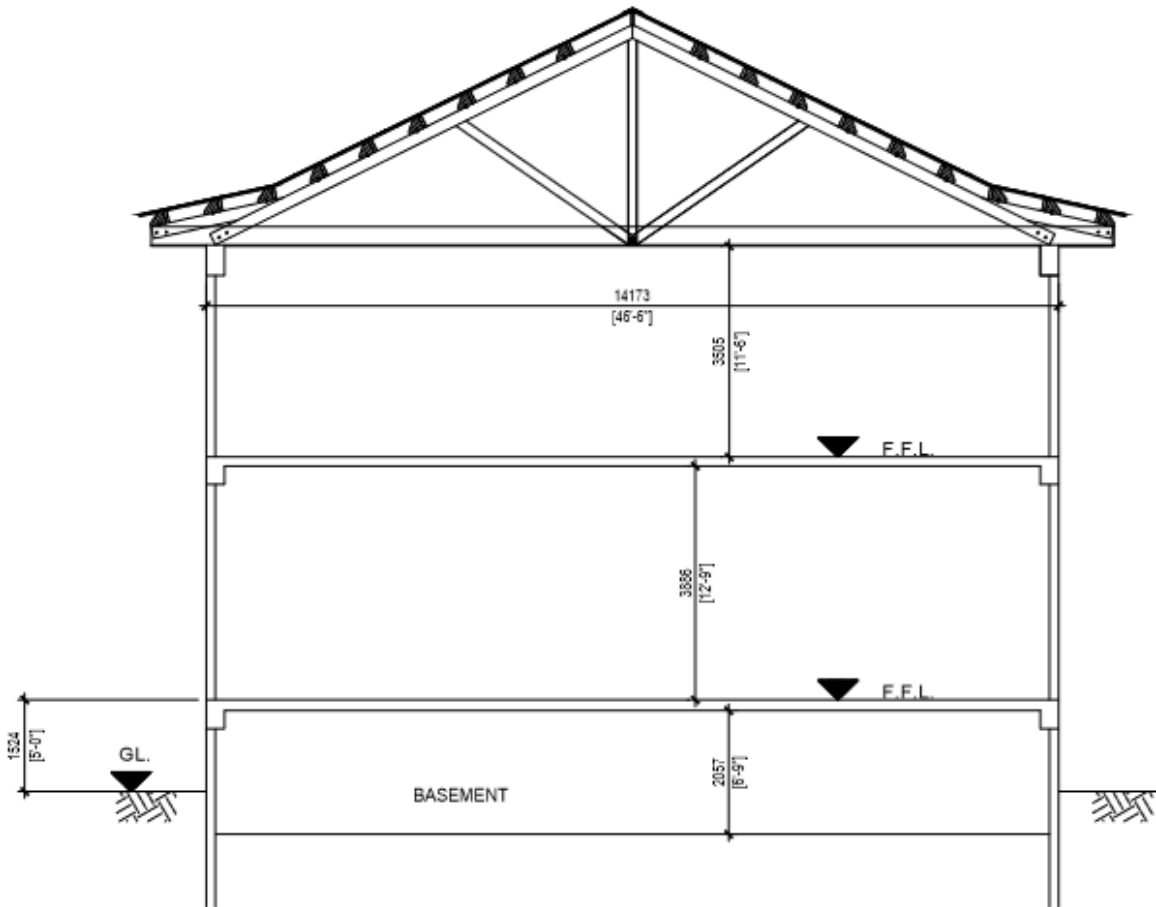
2.



**CHEST HOSPITAL
CASUALTY/PHYSIOTHERAPY BUILDING
TYPICAL SECTION**
Scale 1:75

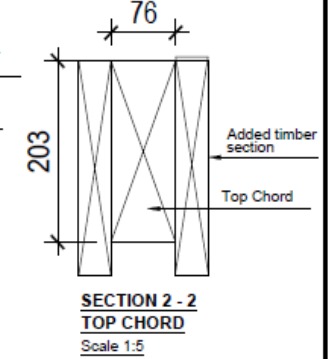
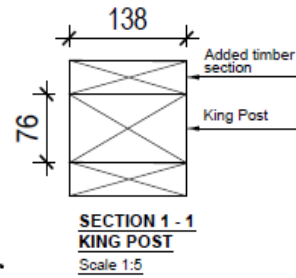
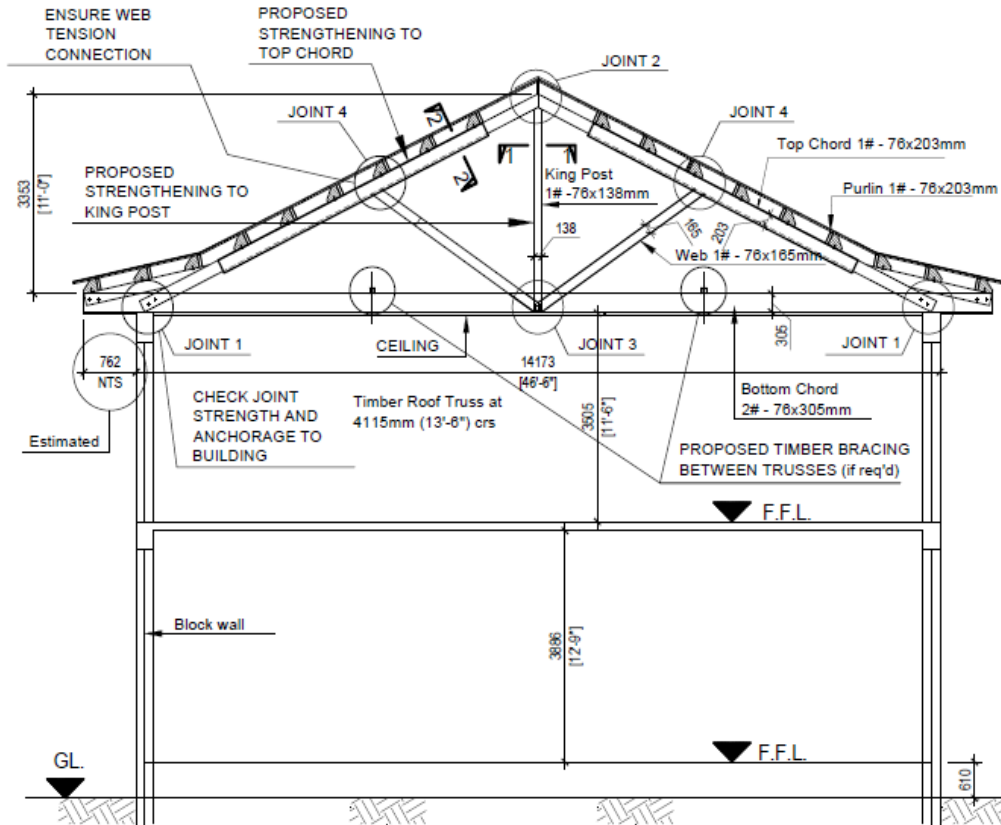


PETROLEUM CORPORATION OF JAMAICA 36 TRAFALGAR RD., Kgr 10, Jamaica Tel (876) 929-5390; (876) 929-2409 <small>Structural Engineers</small>		
H. L. JONES & ASSOC. CIVIL & STRUCTURAL CONS. ENGINEERS 10 Latham Ave, Kgr 5, Jam. Tel 876-927-8557		
PROJECT HOSPITAL ROOFS, STRUCTURAL INTEGRITY ASSESSMENT		
CLIENT NATIONAL CHEST HOSPITAL, CASUALTY/PHYSIOTHERAPY BUILDING. BUILDING SECTIONS		
Date 25 Aug 2018	Drawing No. 1819/02	Sheet No. 2 of 4



**CHEST HOSPITAL
CASUALTY/PHYSIOTHERAPY BUILDING
SECTION WITH BASEMENT**
Scale 1:75

PETROLEUM CORPORATION OF JAMAICA 36 TRAFALGAR RD., Kgn 10, Jamaica Tel (876) 929-5380; (876) 929-2409		
Structural Engineer H. L. JONES & ASSOC. CIVIL & STRUCTURAL CONS. ENGINEERS 10 Letham Ave, Kgn 6, Jam. Tel 876-927-0557		
Project HOSPITAL ROOFS, STRUCTURAL INTEGRITY ASSESSMENT		
Sheet Title NATIONAL CHEST HOSPITAL, CASUALTY/PHYSIOTHERAPY BUILDING. BUILDING SECTIONS		
Date 25 Aug 2018	Drawing No. 1819/03	Sheet No. 3 of 4



**CHEST HOSPITAL
CASUALTY/PHYSIOTHERAPY BUILDING
TYPICAL SECTION**
Scale 1:75

NOTES

1. Recommendations shown are considered the most crucial. Other structural modifications could be necessary. Structural designer to check all elements of the truss.
2. Structural designer could choose other methods of strengthening the truss

Client: PETROLEUM CORPORATION OF JAMAICA 36 TRAFALGAR RD., Kgn 10, Jamaica Tel (876) 522-5380 / (876) 929-2409 Structural Engineer		
 H. L. JONES & ASSOC. CIVIL & STRUCTURAL CONS. ENGINEERS 10 Latham Ave, Kgn 6, Jam. Tel 876-927-6557		
Project: HOSPITAL ROOFS, STRUCTURAL INTEGRITY ASSESSMENT		
Sheet Title: NATIONAL CHEST HOSPITAL, CASUALTY/PHYSIOTHERAPY BUILDING. RECOMMENDED TRUSS MODIFICATIONS		
Date: 24 Oct 2018	Drawing No.: 1819/04	Sheet No.: 4 of 4
Plot: 11x17		

