Outline

• Sustainable Construction and Housing
• Building codes and sustainable development
• Impacts of natural and other hazards
• Status of building codes
• TTBS codes and standards
• Current testing and enforcement activities
• Getting involved
TTBS Mandate

• National Standards Body
  – Standards Act No. 18 of 1997

• To ensure industrial efficiency and development; promote public and industrial welfare, health and safety; and protect the environment.

• Standards developed in support of:
  – Economic development
  – Sustainable development
  – Vision 2030 agenda
Sustainable Development

Goal 11

• access to adequate, safe and affordable housing...

• reduce the number of deaths, people affected and economic losses caused by disasters,

• ensure universal access to safe, inclusive and accessible, public spaces and green areas,
National Development Strategy

The foundation of Trinidad and Tobago will be strong families and safe, sustainable communities

*Theme 1, Goal 4*

Strengthen environmental governance – “national building codes must also be developed.”

*Theme 5, Goal 4*
National Planning Dimension

• Planning and Facilitation of Development Act No. 10 of 2014
  – “provide for the structural and fire safety of buildings and the safety, health and general welfare of persons occupying buildings..”
  – Preparation and review of the National Spatial Development Strategy
  – the development of codes and standards
  – Aspects dealing with National Planning Authority proclaimed.

• National Spatial Development Strategy
  – To replace 1984 National Physical Development Plan
  – Awaiting Parliamentary approval
  – Policy 4, Designing and Creating Spaces for People relates to the development of building standards

• 14 Municipal Development Plans
National Standardization Strategy

• To ensure that national standards meet national needs/priorities
  – 3-year horizon

• Key inputs
  – Economic data: CSO trade data, labour force bulletin
  – Gov’t policy: Vision 2030, MTI’s Trade Policy and Strategy
  – Stakeholder forums & surveys

• Prioritization by
  – Economic impact
  – Social impact
  – Government priority
TTBS’ Standards Development Mandate

• Activities governed by
  – Standards Act No. 18 of 1997
  – WTO-TBT (Technical Barriers to Trade) Code of Good Practice

• Standards Development
  – Based on consensus and internationally accepted approach
  – Expert driven
  – All comments/feedback considered

• Key international and regional partnerships
  – ISO, ASTM, ICC, CSA, NFPA, UL, CROSQ, Regional NSBs
TTBS Codes and Standards

- **Small buildings**
  - TTS 599, Guide to the Design and Construction of Small Buildings

- **Electrical installations**
  - TTS 171, Trinidad and Tobago Electrical Wiring Code – Low voltage installations, high voltage installations and renewable energy systems

- **Accessibility**
  - TTS/ICC/ANSI A117.1, Accessible buildings and facilities

- **Driveway gates**
  - TTS 461, Driveway gates – Requirements

- **Energy Efficiency**
  - CARICOM Regional Energy Efficiency Building Code
What is a Building Code?

• A code of practice is a set of written rules which explains how people working in a particular profession should behave.

• **building code**, is a systematic statement of a body of rules that govern and constrain the design, construction, alteration, and repair of buildings

• Can become law when formally **enacted** by an appropriate authority.
Weather and climate

Soil type

Seismic conditions

Design

Construction

Materials

Safe and Resilient Building

STRUCTURAL & FIRE REQUIREMENTS
HEALTH/WELFARE/OCCUPANCY REQUIREMENTS

Water & Sewage

Ventilation

Design

Construction

Lighting

Accessibility

Habitable Building
SUSTAINABILITY REQUIREMENTS

- Water conservation
- Energy Efficient (EE) HVAC
- Design
- Construction
- EE Lighting
- Renewable Energy

Sustainable Building
Safe, Habitable & Sustainable Buildings

Building Code Requirements
Are buildings in Trinidad and Tobago capable of withstanding natural disasters?

<table>
<thead>
<tr>
<th>Location</th>
<th>GDP Percentage</th>
<th>Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haiti (2011)</td>
<td>70% GDP</td>
<td>2444/100000</td>
</tr>
<tr>
<td>Mexico (2017)</td>
<td>0.2% GDP</td>
<td>0.26/100000</td>
</tr>
<tr>
<td>Dominica (2017)</td>
<td>200% GDP</td>
<td>86/100000</td>
</tr>
<tr>
<td>Puerto Rico (2017)</td>
<td>73% GDP</td>
<td>1.9/100000</td>
</tr>
</tbody>
</table>
Are we prepared?

• Earthquakes
  – Largest earthquake - Magnitude 7.5 (1766)
  – Recent Magnitude 6.4 in 2013
  – 5 Earthquakes greater than Magnitude 6.0 since 1988
  – 16 earthquakes for 2018

• Storms
  – Brett (2017), 66km/h winds & $20M damage
  – Alma (1977), 147 km/h winds & $5M damage
  – Increased frequency of Category 5 storms
Existing Building Fatalities

Crushed by falling gate

A 52-year-old Claxton Bay man died on Tuesday three days after being hit by a falling metal gate at his home.

Pathologist rules accidental electrocution in girl’s death

The death of eight-year-old Breanna Jessica Jaglal has been ruled as an “accidental electrocution” by attending pathologist Dr Valery Alexandrov following an autopsy done yesterday at the Forensic Science Center, St James.

Fire incidents rise, 14 deaths this year

WITH three months to go before year’s end, the Trinidad and Tobago Fire Service (TTFS) is reporting a drastic increase in reports of structural fires leading to losses which have run into the tens of millions of dollars. For this year so far, 14 lives including those of three children, have been lost.

Carpenter crushed by wall

SHARLENE RAMPERSAD

An Erin carpenter was killed on Tuesday when high winds knocked over a wall and it crushed him on a job site. Percival Laing, 72, of St Francis Village, Erin died on
Need for a National Building Code

• Investment in built infrastructure at risk
  – Huge economic and social costs in the event of disasters

• Many residential buildings and small commercial buildings built by informal construction sector

• Need for clearly defined and objective requirements to guide building professionals and regulatory agencies
Status of Building Codes

• A formal and accepted National Building Code does not exist at this time.

• Existing elements of a Building Code in place
  – *Guide for the Design and Construction of Small Buildings*
  – *Electrical Wiring Code*
  – *Accessible Buildings and Facilities*
  – *MOWT Structural Design Guidelines*
  – *National Plumbing Code*
TTBS Codes and Standards

• Small buildings

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Background to the Small Building Guide

• **CUBiC Caribbean Uniform Building Code**
  – Developed 1980 – 1985
  – Published as five volumes
  – Not adopted or enforced by member states

• **National Building code**
  – More than 80% of buildings are ‘small buildings’
  – Priority given to development of Small Building Guide

• **Small Building Guide**
  – Developed by TTBS/BOETT 1997-2006,
  – Documents used CUBiC, IRC, OECS Building Guidelines
  – TTS 599 declared as a voluntary national standard in 2006.
  – Not formally adopted by approval agencies.
Challenges to Code Development

• Process can be lengthy
• Low public awareness/feedback
• Voluntary committee work
• ICC and NFPA building classifications
• Risk-coefficient seismic hazard maps
• Soil maps
• Need to ensure a robust regulatory framework
National Standards for Construction Products

- **Steel reinforcing bars**
  - TTS/ASTM A615 & TTS/ASTM A706

- **Roofing Sheets**
  - Roofing Sheets: TTS 69

- **Purlins & Framing members**
  - TTS 598, *Cold formed steel framing members for structural applications* : *Specification*

- **Cement**
  - TTS/CRS 33, *Specification for cement*

- **Concrete blocks**
  - TTS/ASTM C90:2010, *Concrete blocks*

- **Clay blocks**
  - TTS 587:1, *Hollow clay blocks – Vertical core*
  - TTS 588, *Hollow clay blocks – Horizontal core*
TTBS Enforcement Activities

• Mandatory Product Certification Schemes
  – Cement
  – Roofing Sheets

• Inspection Scheme
  – Cement
  – Steel bars
  – Paints
  – Electrical products and components
TTBS Testing Labs

Chemical Products

Fibre Products

Electrical Products

Material Products
Testing of Steel Construction Products
How to get involved?

• Participate in code and standards development projects
  – Voluntary technical expertise
  – Comment on draft standards
  – Stakeholder requests

• Voluntarily use Codes and Standards
  – Future proof projects
  – Safety, Inclusivity and Sustainability

• Utilize TTBS Conformity Assessment services
  – Verify product quality
  – Incorporate standards in procurement processes
Thank you

Any Questions?

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