

*"You unlock this door with the key of imagination.  
Beyond it is another dimension - a dimension of sound,  
a dimension of sight, a dimension of mind."*

The HNTB logo is displayed in white, bold, sans-serif capital letters. The letter 'H' is unique, featuring a small orange square on its left vertical bar. The logo is centered within a light blue square, which is itself enclosed by a thin grey border.

## **Exploring the 5th Dimension of Virtual Design and Construction**

2019 Engineering @ Esri UC

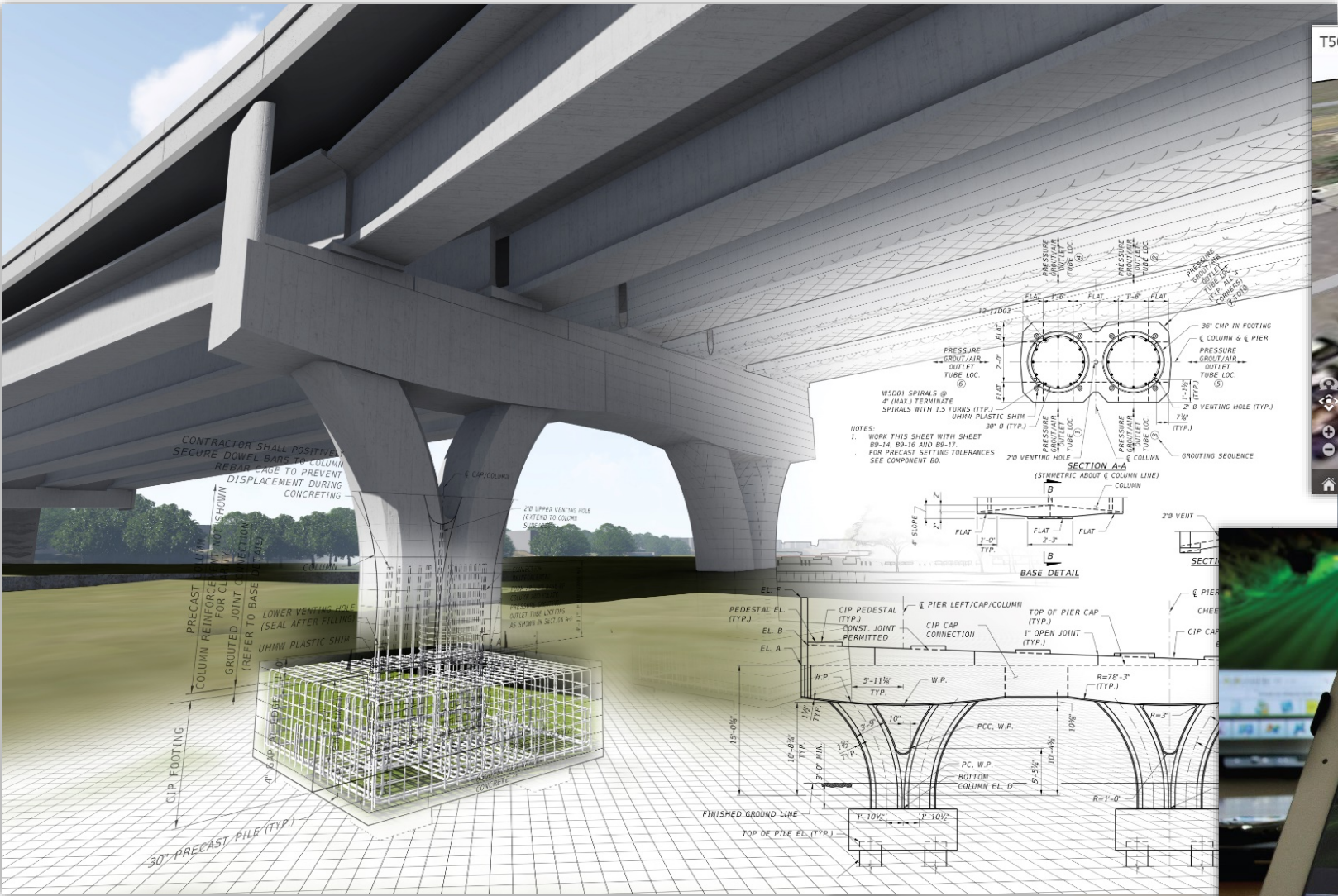
July 7<sup>th</sup>

*You're moving into a land of both  
shadow and substance, of things and ideas."*

~Rod Serling, 'The Twilight Zone'



# VDC (Virtual Design & Construction)



T500\_365\_TMD1-MUB

SHARE HELP SIGN OUT (ADAM HORN)

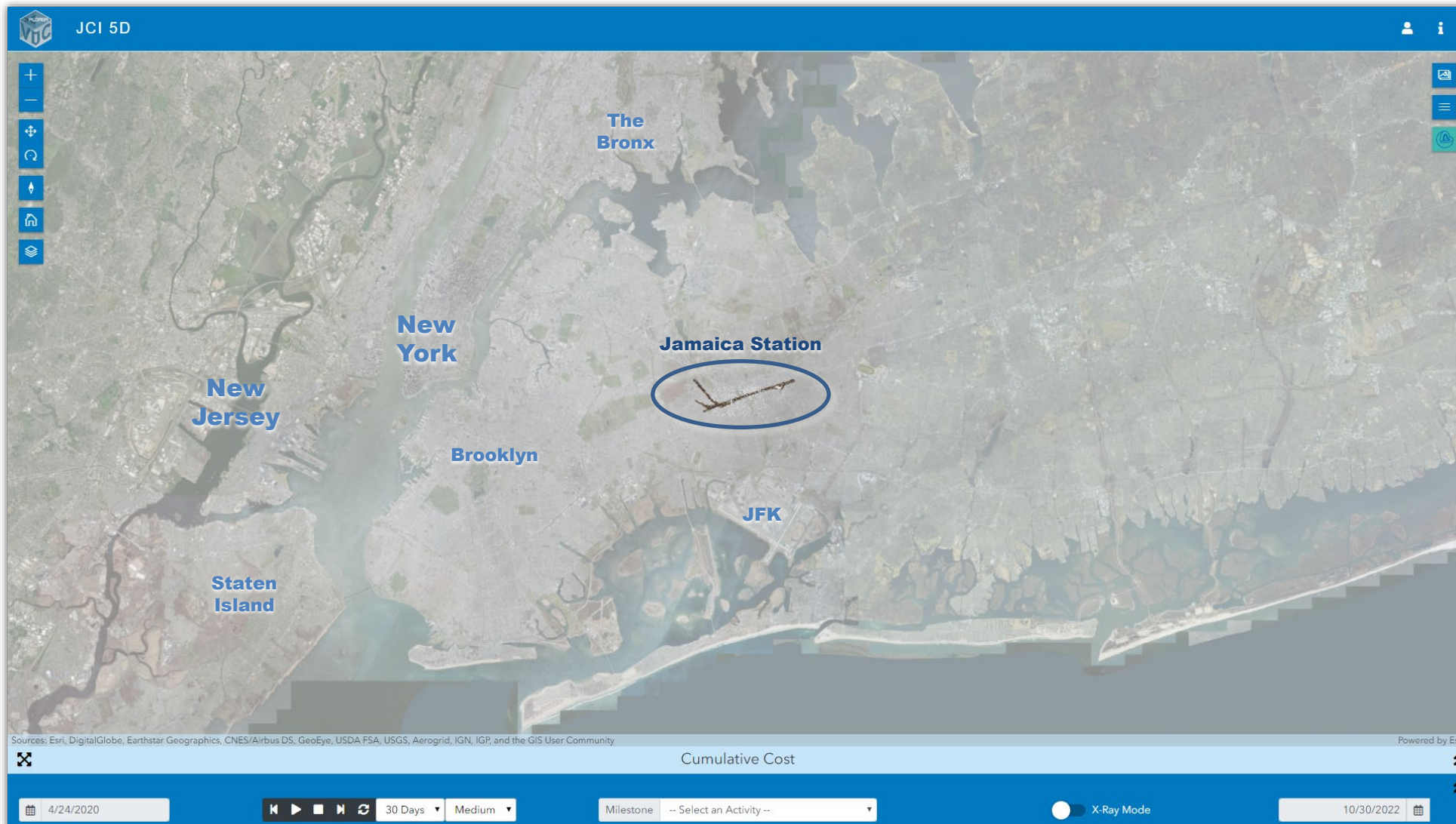




# Project Area

## Jamaica Capacity Improvements

A comprehensive reconfiguration currently underway to improve capacity and reliability.

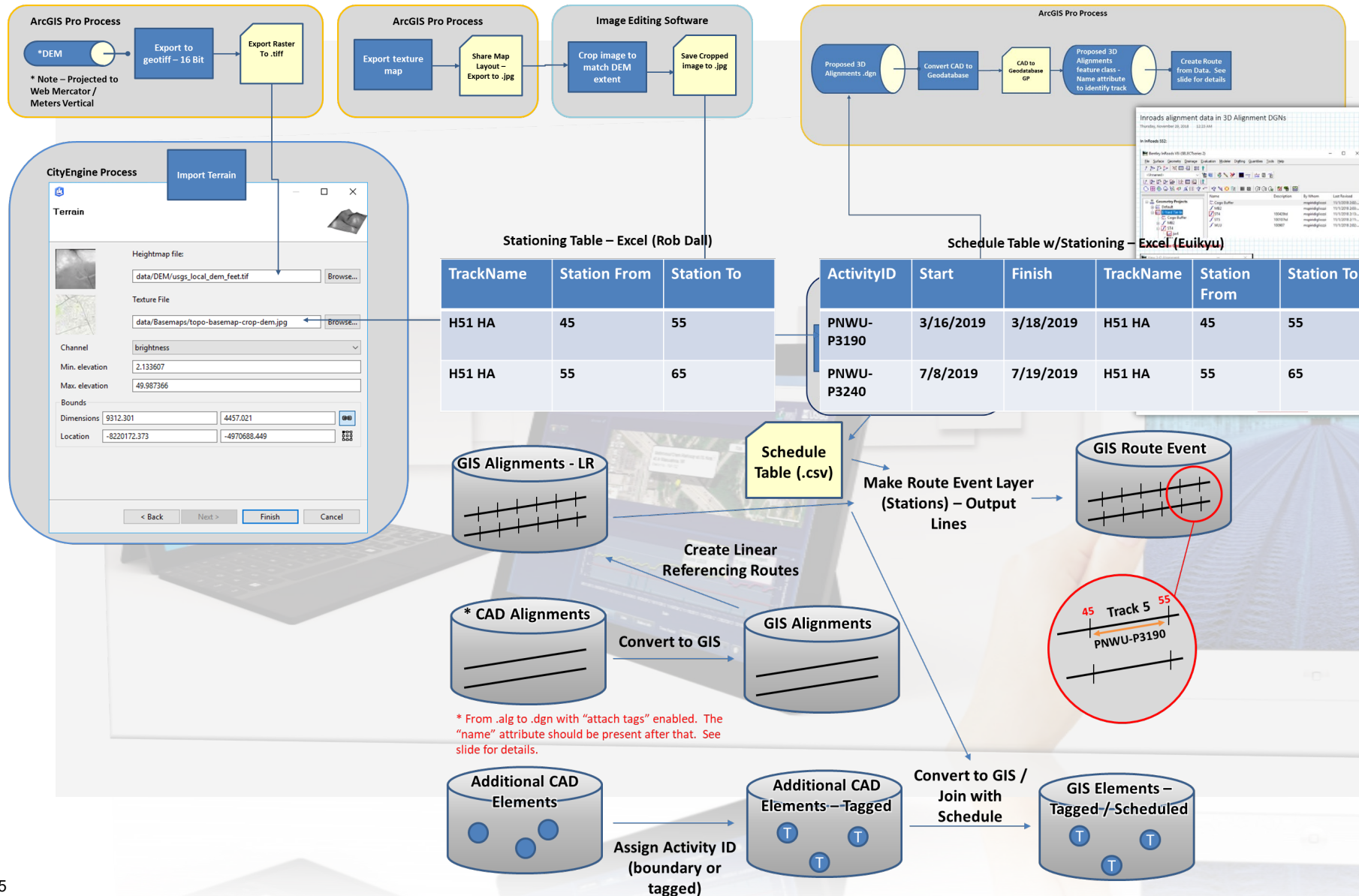


# Big Shoes to Fill

- Using latest:
  - Design
  - Schedule
  - Cost Estimate
- 10 main stages & 29 sub-stages
- Visualize from start to finish



# Plan & Approach



## Multi-Step Process

- DGN & InRoads
- 3D Studio Max
- CityEngine
- MS Project
- MS Excel
- LRS

## 5D Framework

- Esri JS API 4.11
- CityEngine
- AGOL Scene Viewer

# Spatial Orientation

- Staging as spatial bookmarks
- Highlight staging area
- Legend for quick reference



# Simple Tools

- Data driven
- Expanded views
- Scenario loading





# 5D Exploration

- Set a date
- Set a Duration
- Step forward and backward



# 3D Slicing

- Exclude the non-important
- Explored the important





# 5D Auto-Play

- Select date range
- Select speed
- Maintain immersive experience



# Shoes filled, and then some...



- Updated within **24 hours** of data receipt
- Depicts **project conflicts** between disciplines
- Used as important **QaQc** process
- Validates **constructability** and overall **sequencing**
- Support train operations simulation for **track usage**
- Seamlessly process **multi-day/week scenarios**
- Briefs **upper management** to plan for work ahead
- 3P contractors can update the model and return as an **as-built condition**.
- Utilized by LIRR EAM that can create **O&M activities** and validate work forces can gain safe access.

# Thank You!



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*“With our clients’ sustained pursuit for innovation by leveraging emerging technologies, we envision continued growth through diversification and successful active partnerships.”*



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*“Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.”*