



**2012**

**Build Safe | Live Safe  
Conference**

*3D Site Safety Plans*

*John Chiusano, RA*

*April 23, 2012 – Times Square Marriott Marquis*

# 2012 Build Safe | Live Safe Conference

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# Course Description

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Three-dimensional representations of site safety construction logistics is becoming more common, and this technology is expected to become the construction industry's standard. This software provides site managers and construction regulators with an interactive, animated 3D model, allowing users to take virtual tours of a project and "view" the safety challenges – all before the first shovel hits the ground. This seminar will help participants gain a broad understanding of this emerging technology, why it is important to use and how it could prevent potential safety issues.

Through electronic visual examples and written samples, participants will complete the program with an understanding of the provisions outlined in Chapter 33 of the NYC Building Code and be able to submit acceptable site safety plans as required by the Department of Buildings. In addition, they will comprehend the critical importance of pre-planning and collaboration between the contractor, designer and site safety managers. Finally, participants will understand the limitations of two-dimensional plans and how to improve upon them if they are not yet using 3D software.



# Learning Objectives

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At the end of this program, participants will have learned:

- Common construction site safety plan obstacles through the use of examples and analyze logistics
- The complexities of two-dimensional site safety plans and their limitations
- How to virtual tour a project to demonstrate a design that meets the requirements of Chapter 33 of the NYC Building Code
- How to use 3D modeling software to identify potential safety issues

# Common Construction **Site Plan** Obstacles

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## The Evolution

- 2D submittals using hand drafting and Visio
- 2D submittals using CAD
- Now, there are 3D plans using:
  - Revit
  - Navisworks
  - Auto CAD

# 2D Site Safety Plans Submitted

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## Today: A Phased Approach

Sheet #1 Title sheet job identification information

Sheet #2 General Information

Sheet #3 Egress

Sheet #4 Demolition Phase

Sheet #5 Excavation Phase

Sheet #6 Foundation Phase

Sheet #7 Superstructure Phase

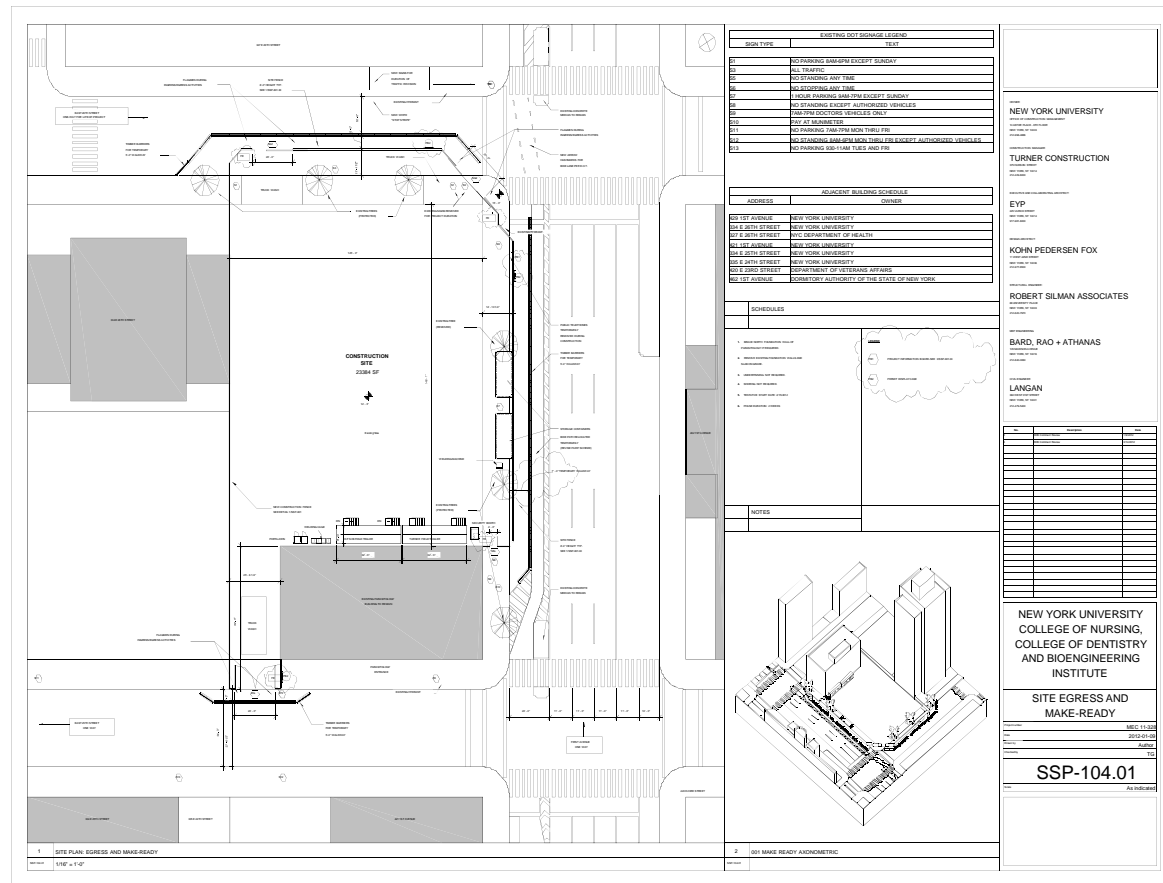
Sheet #8 Adjoining Property Protection Plan

Sheet #9 Sections/Elevations Showing Horizontal Protection

Sheet #10 Standard Details

Sheet #11 General notes

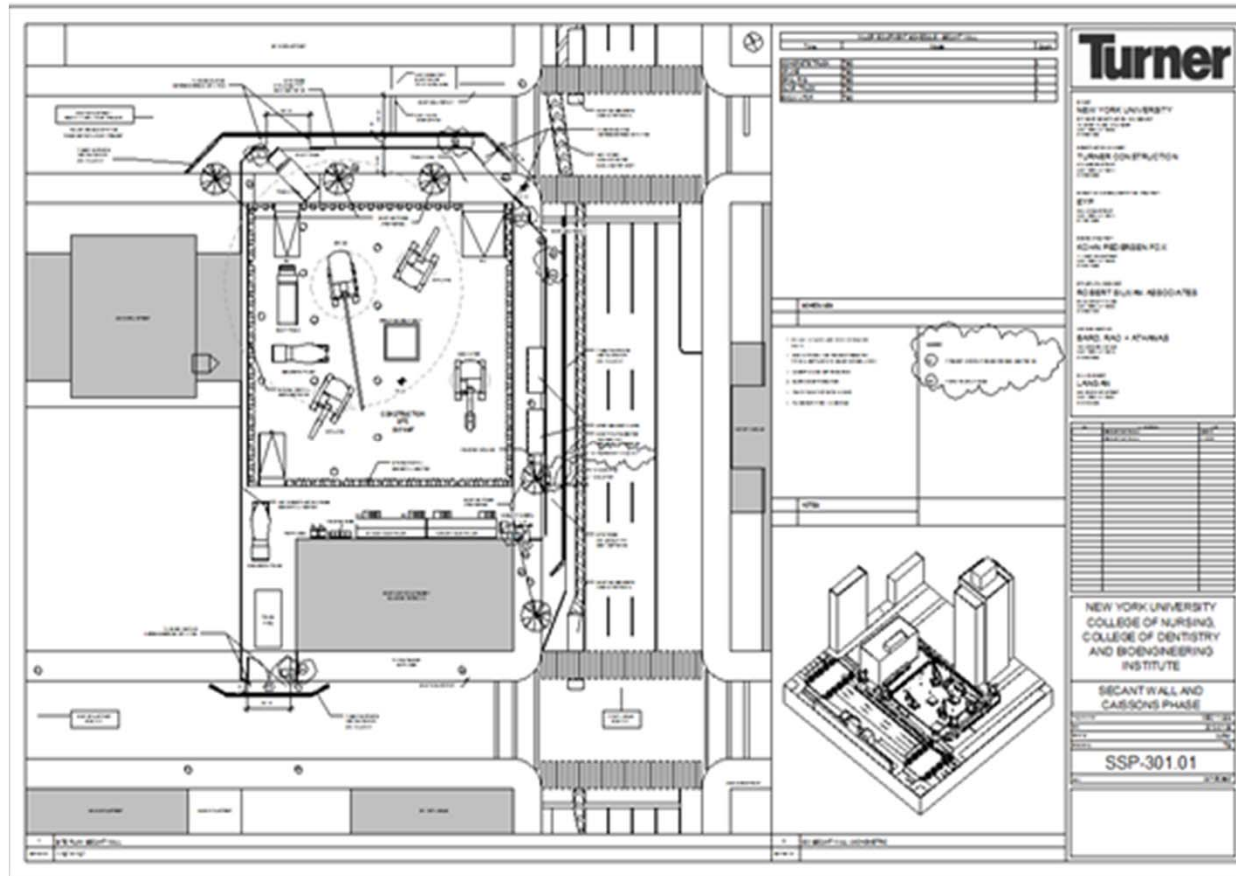
# Basic 2D CAD Drawing



A 3D architectural rendering of a city street scene. The scene features several tall, grey buildings of varying heights and widths. A wide, dark road with white lane markings and crosswalks runs through the center. A green tree is visible on the left side of the road. The sky is a light blue gradient. A semi-transparent orange banner with a grid pattern is overlaid across the middle of the image, containing the text "Basic 3D DWG File".

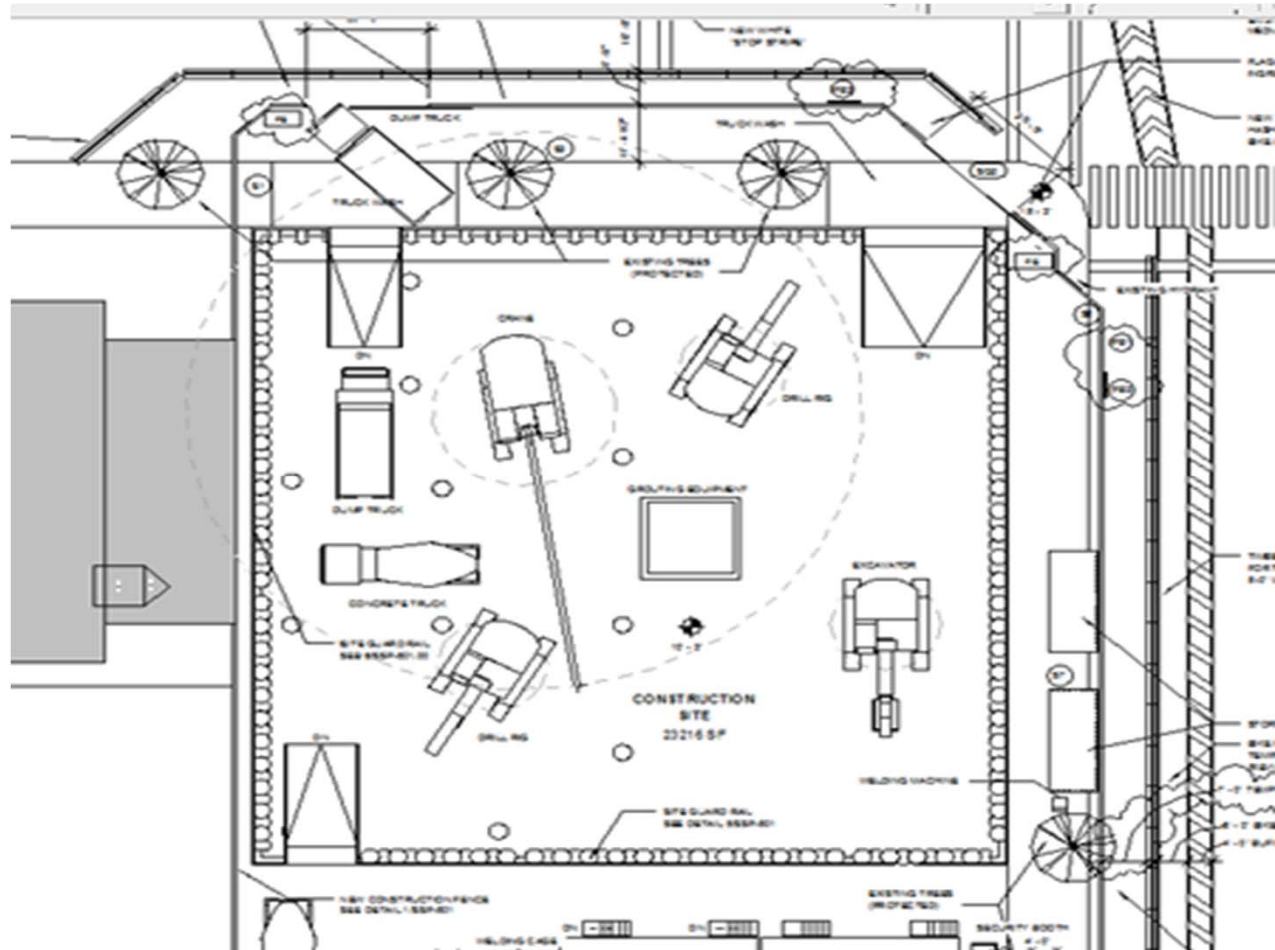
# Basic 3D DWG File

# Basic 2D CAD Drawing





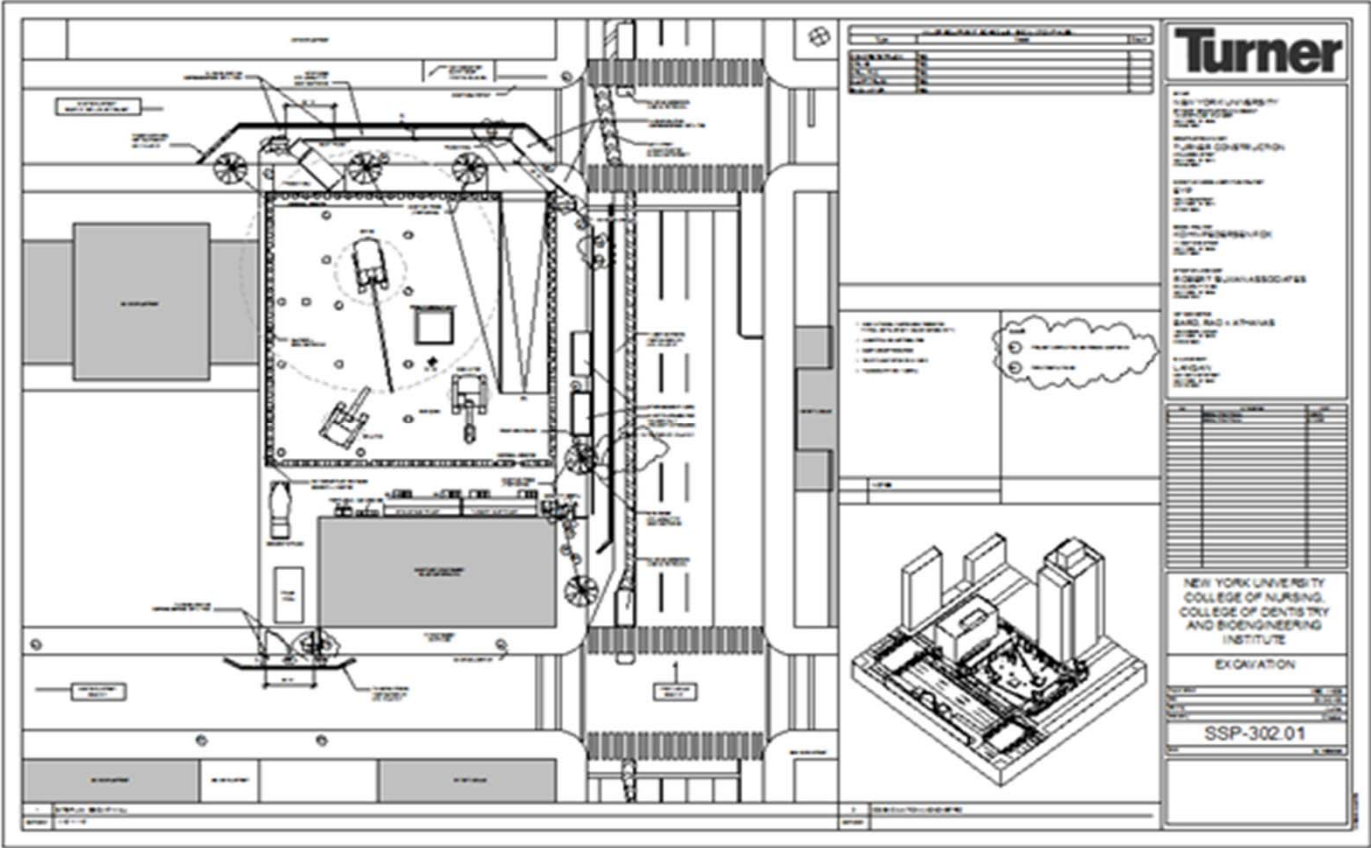
# Basic 2D CAD Expanded Drawing

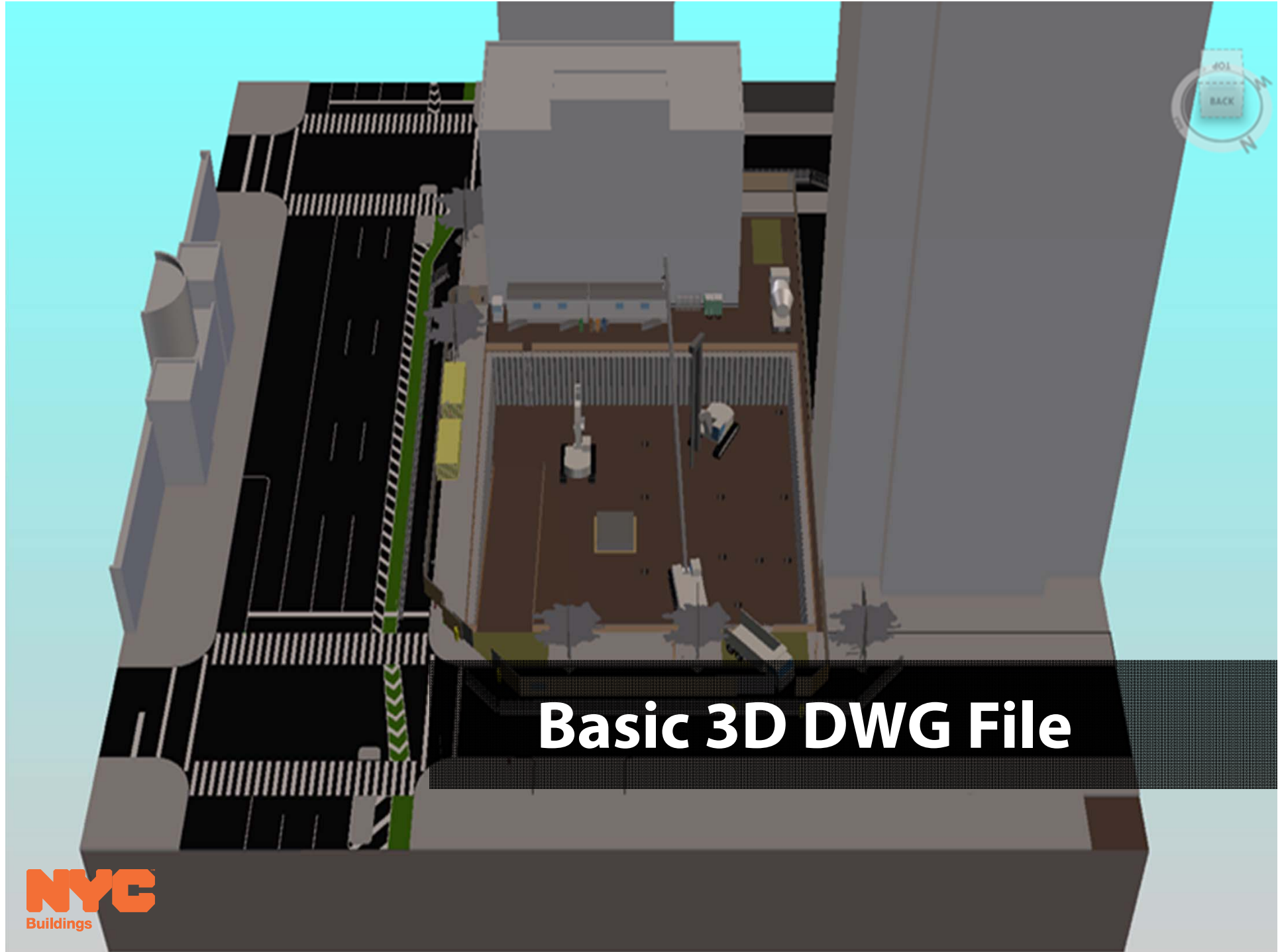




Basic 3D DWG File

# Basic 2D CAD File





# Basic 3D DWG File

# **Limitations of 2D Plans vs. 3D Models**

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Let's look at and discuss some examples

- 2D Submittals done using CAD
- 3D plans in Revit, Navisworks & Auto CAD







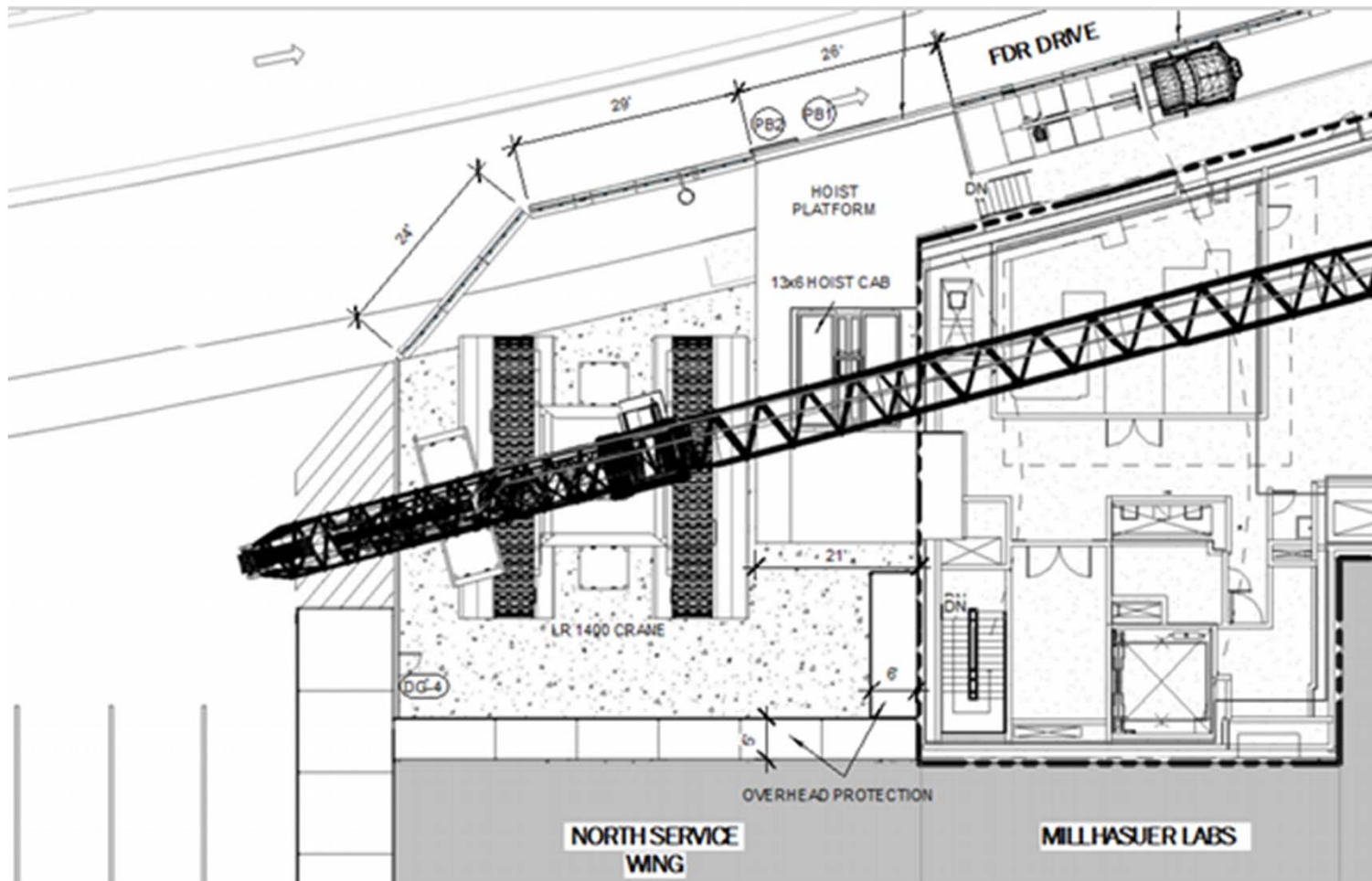
A 3D CAD rendering of a roof protection system. The image shows a series of parallel metal beams or rails supported by vertical posts, forming a grid-like structure. The beams are dark grey, and the posts are a lighter grey. The background is a light yellowish-green color, suggesting a sky or a light-colored wall. The overall scene is a technical illustration of a roof protection structure.

# Basic 3D CAD Drawing: Roof Protection

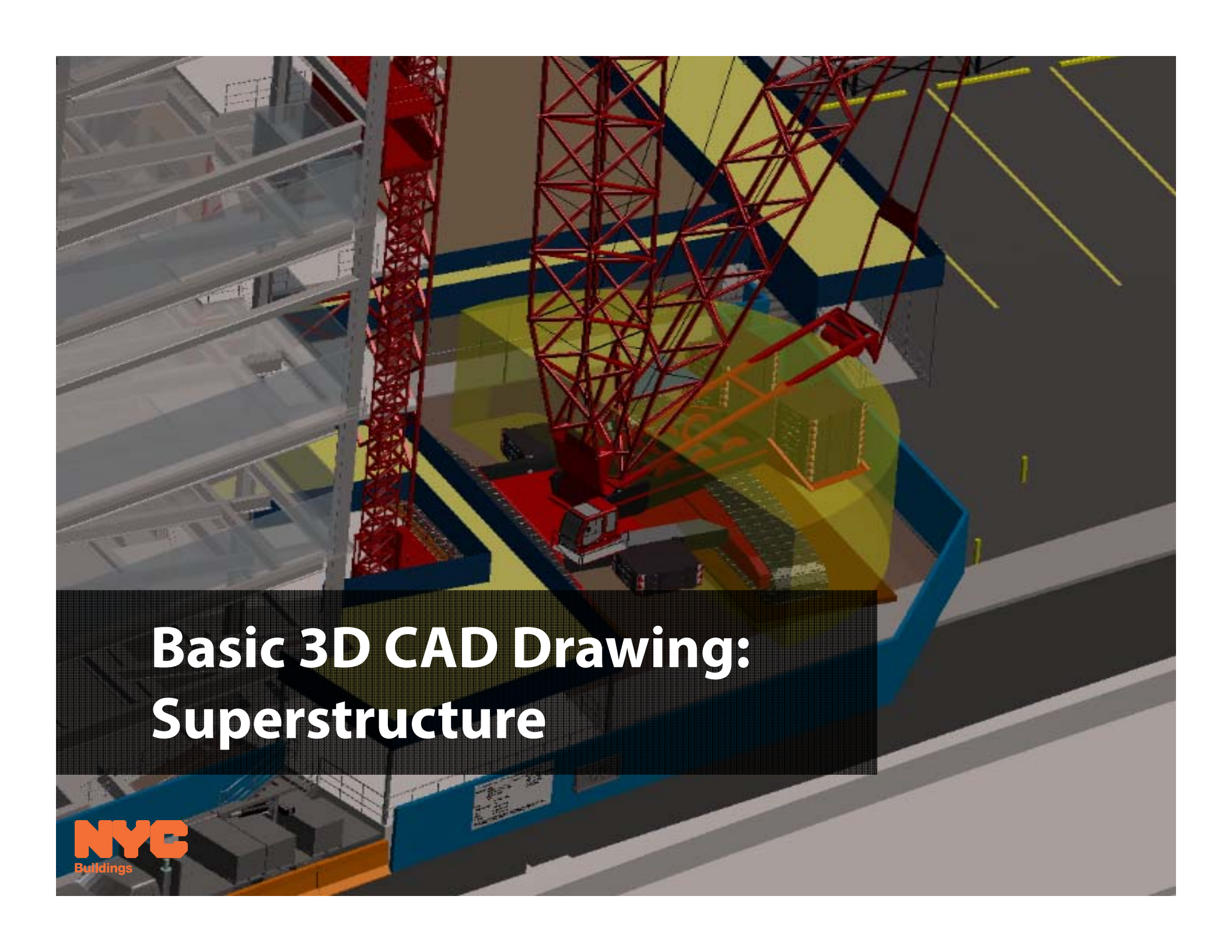
A 3D CAD rendering of a building under construction. The building is partially covered in a grey metal scaffolding system. A section of the roof is highlighted in a light yellow color, indicating the area of focus for the roof protection project. The word "COLES" is visible on the side of the building. The scene is set against a dark, muted background.

# Basic 3D CAD Drawing: Roof Protection

# Basic 2D CAD Drawing: Superstructure

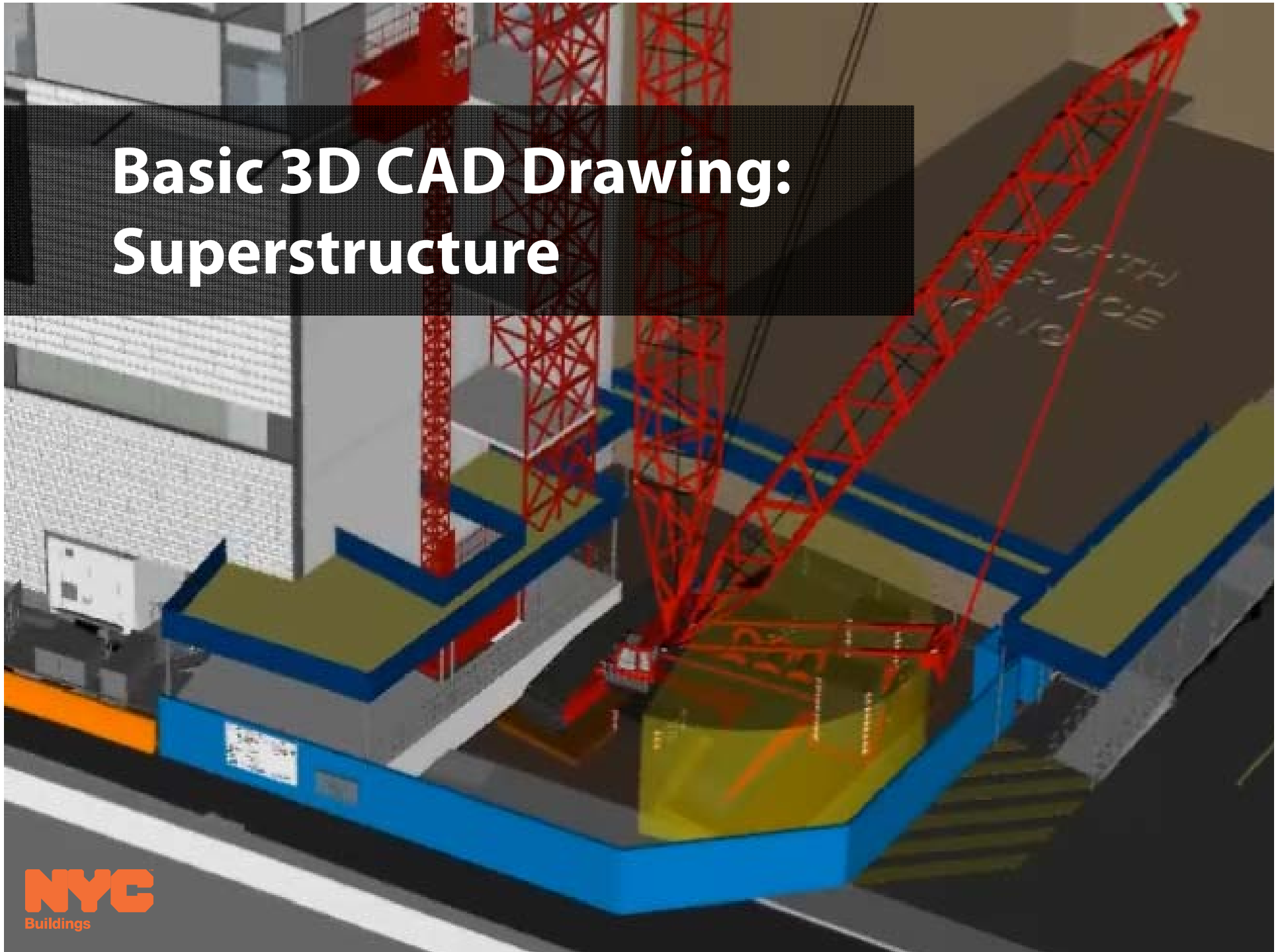




A 3D CAD rendering of a construction site. The scene shows a large red lattice crane on a red base, positioned on a blue concrete foundation. To the left, a grey steel building frame is visible. The ground is a mix of red, blue, and yellow surfaces, with yellow lines indicating a road or parking area. The overall style is a clean, technical 3D model.

# Basic 3D CAD Drawing: Superstructure

# Basic 3D CAD Drawing: Superstructure



# Using 3D Walkthroughs for Compliance Reviews

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3D Perimeter

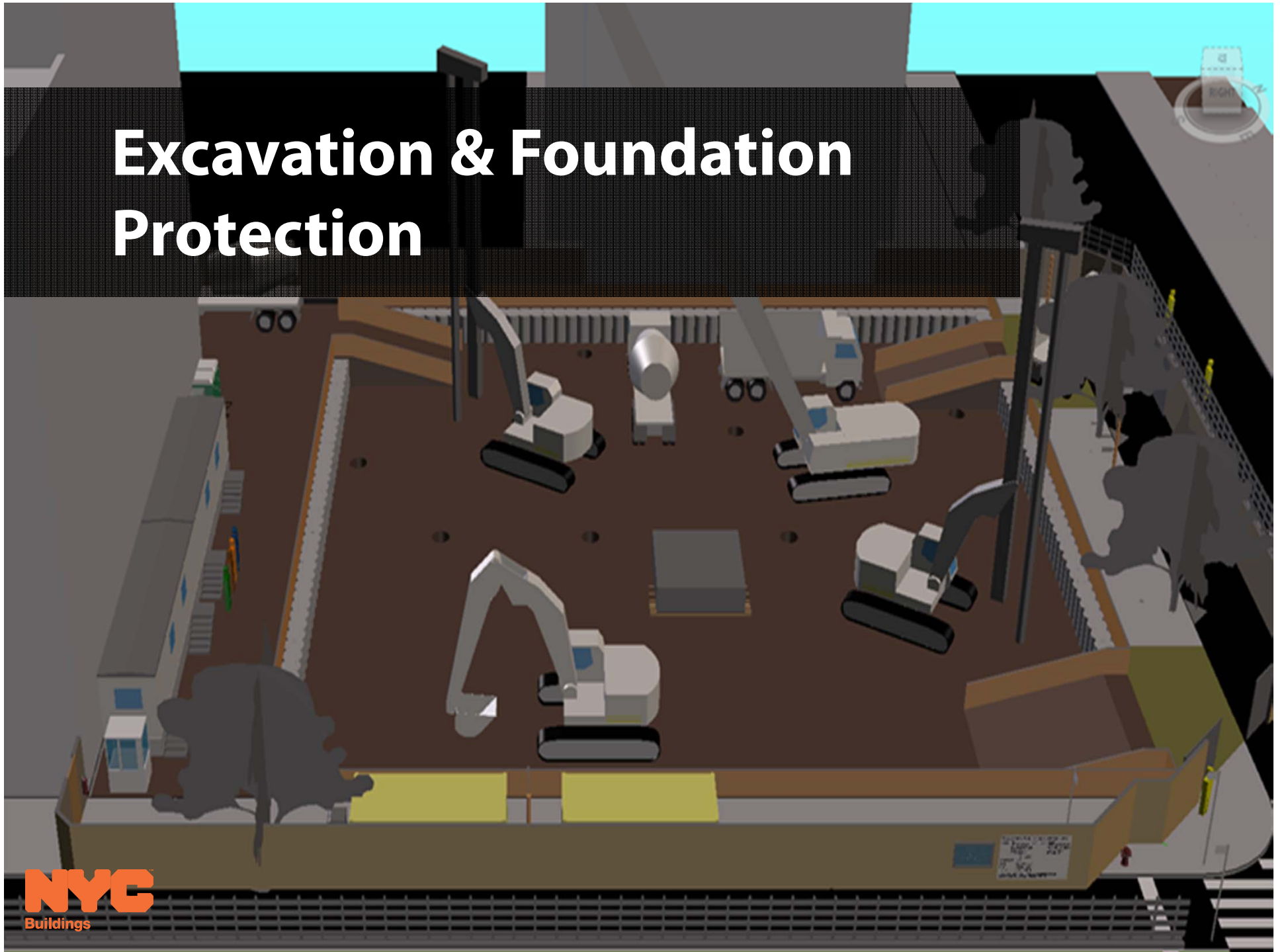
3D Exterior



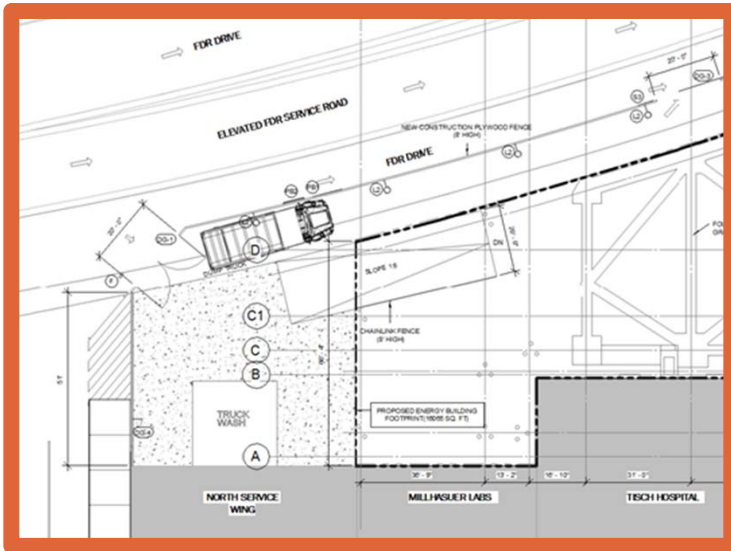
# Using 3D Models to Identify Safety Issues

- Edge of the excavation/foundation protection
- Elevation changes and protective measures
- Checking for issues of clearance
- Checking if areas at the perimeter are unprotected

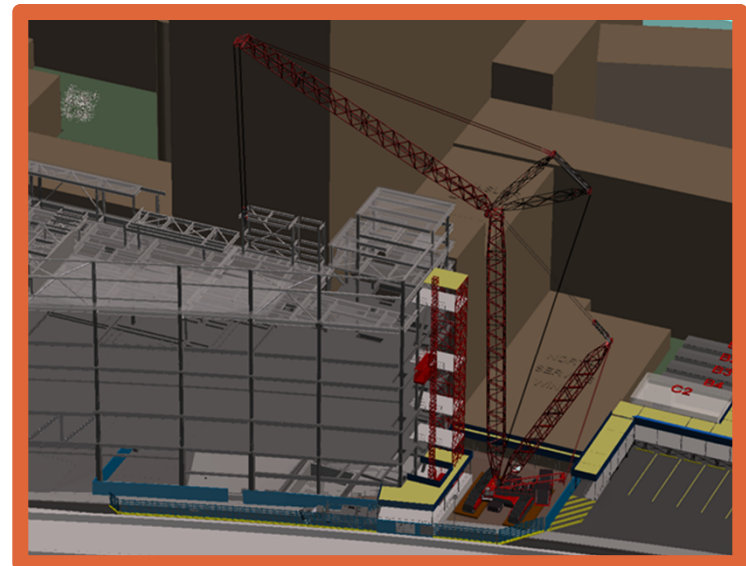
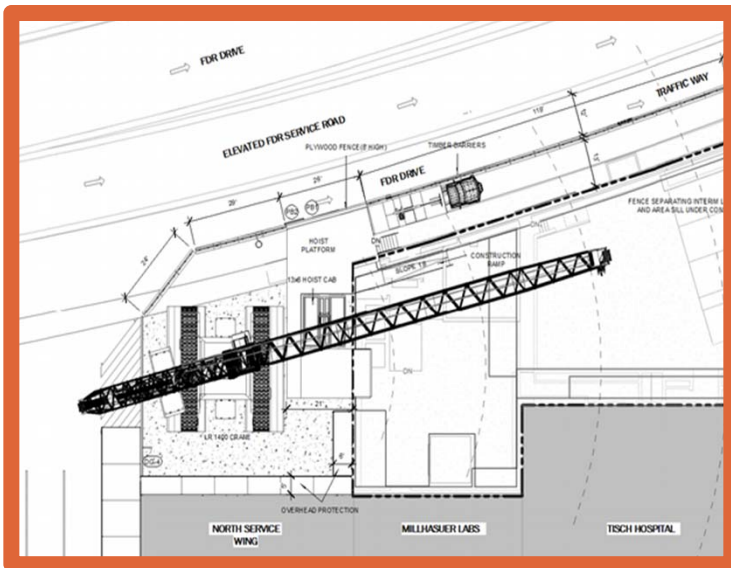
# Excavation & Foundation Protection



# Changes in Elevation



# Clearance Issues







A 3D architectural rendering of a construction site. The scene shows a large, multi-story building under construction with a grey facade and a white grid pattern. Several red tower cranes are positioned around the building. A prominent crane in the foreground is angled towards the right, with its lattice structure clearly visible. The ground is a mix of grey and blue, with a yellow and black striped hazard zone. The text 'Clearance Issues' is overlaid in white on a dark, semi-transparent rectangular background in the lower-left quadrant. The NYC Buildings logo is in the bottom-left corner.

# Clearance Issues

A 3D architectural rendering of a building construction site. The scene shows a multi-story building under construction with various levels, including a roof and a ground floor. A blue and yellow safety fence runs along the edge of the site. A large white structure, possibly a crane or a piece of equipment, is positioned on the right side. The text "Clearance Issues" is overlaid in the center of the image.

# Clearance Issues





# Clearance Issues

An architectural rendering of a building's exterior showing a protected perimeter. The building is a multi-story structure with a grid of windows. A large section of the facade is covered with bright orange safety netting, which is suspended from a metal framework. The netting is held in place by a series of horizontal and vertical cables. A central vertical column of blue structural elements is visible. In the upper right corner, there is a circular navigation icon with a 'TOP' button, a 'BACK' button, and a north arrow labeled 'N'. The overall scene is set against a dark background, suggesting a night or low-light environment.

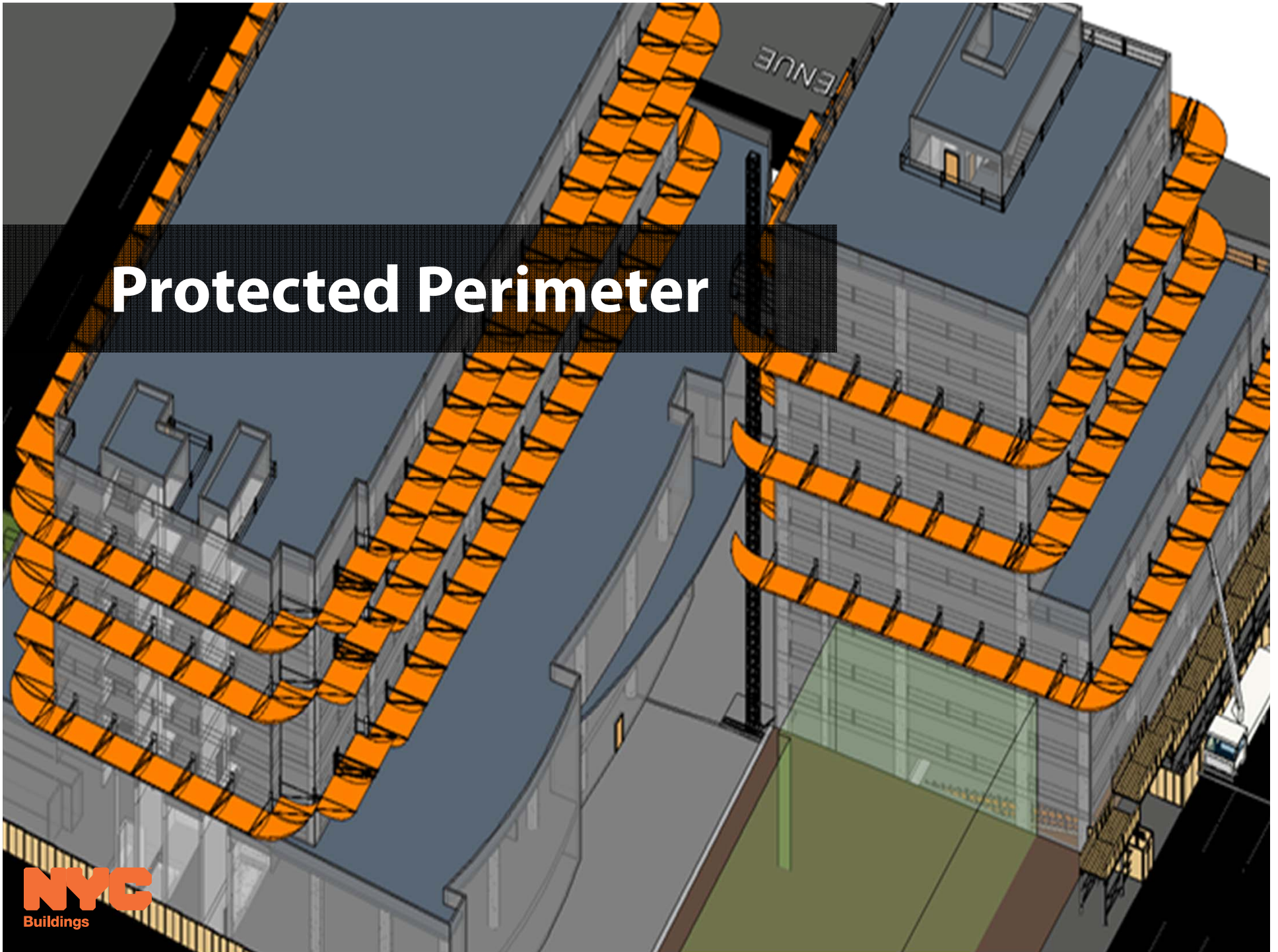
# Protected Perimeter

A 3D architectural rendering of a building's protected perimeter. The image shows a multi-story building with a complex facade of windows and balconies. A prominent feature is a thick, orange, curved protective barrier that runs along the edge of a balcony or walkway. The building's structure is rendered in shades of gray and black, with white dashed lines indicating the grid of the building's frame. The overall scene is set against a dark background, emphasizing the building's form and the protective barrier.

# Protected Perimeter



# Protected Perimeter



# 3D Site Safety Plans: User Guide

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- Getting Started
- Registering to Share 3D Site Safety Plans with the Department
- Uploading 3D Site Safety Plan Files
- Sharing Uploaded 3D Site Safety Plans with the Department
- 3D Site Safety Plan Modeling Program Object Naming and Item Detail Requirements
- Technical Considerations
- Contact Information and Troubleshooting

# Getting Started

1. Open your desktop web browser and visit <http://www.zoho.com/docs>
2. Click on “Sign-Up Free” which appears in red text in the top-right portion of the web page



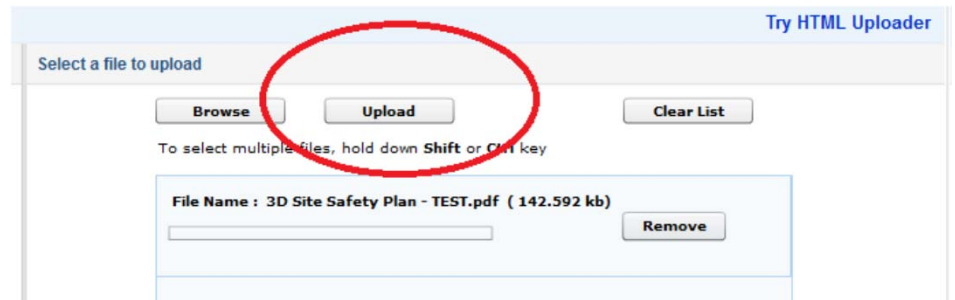
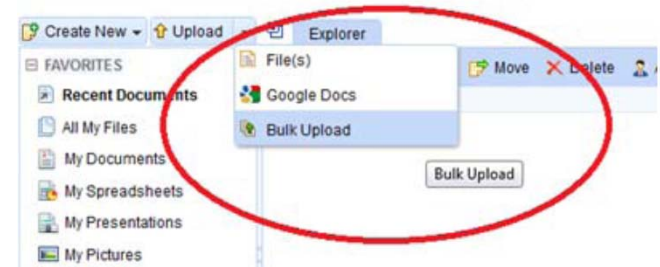
# Registering to Share 3D Site Safety Plans

The “Account Information” window should then display. Complete the information requested in the window and click on “Sign-Up Now” to continue

The screenshot shows a registration form titled "Account Information". It includes fields for Username, Email Address, Password, and Re-enter Password. A tooltip for the Username field states: "Use 6 to 30 characters, with letters, numbers, underscores and dot (.). This name you select will be used for your zoho email address". Below the password fields is a "Word Verification" section with a text input field and a CAPTCHA image showing the word "stokes" in green. At the bottom, there are checkboxes for "I agree to the Terms of Service and Privacy Policy" and "Yes, Subscribe me to Zoho Newsletter (Optional)", followed by a blue "Sign Up Now" button.

# Uploading 3D Site Safety Plan Files

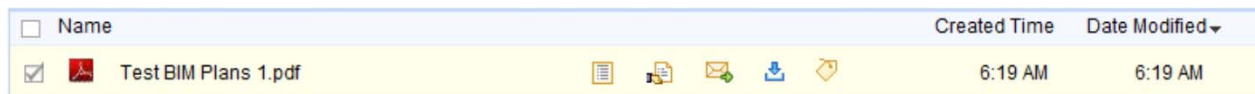
1. Log into your Zoho Docs account
2. Click the down arrow next to "Upload" and select the Bulk Upload
3. Click on "Browse" to find the file on your local computer to upload. Then click on "Upload" when you are ready to upload that file to Zoho Docs.



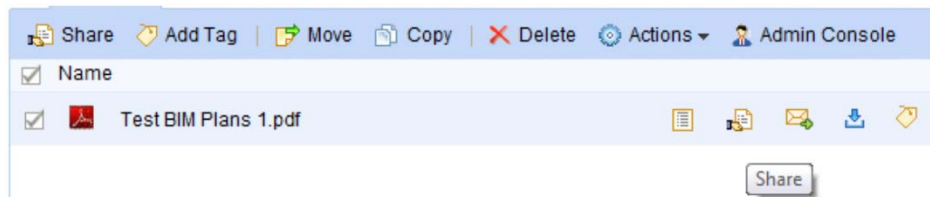


# Sharing Uploaded **3D Site Safety** **Plans with the Department**

1. From your Zoho Docs main page, click in the check box next to the file(s) you want to share with/submit to the Department



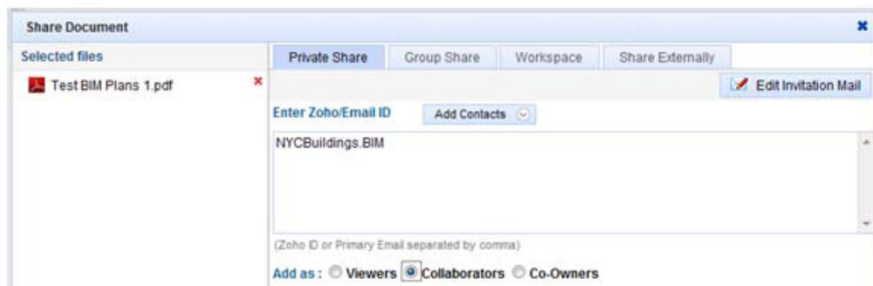
2. Click on either the “Share” tab at the top of the page or on the share icon that displays to the right of the file you want to share with the Department



# Sharing Uploaded **3D Site Safety**

## **Plans with the Department**

3. On the "Share Document" screen that appears, enter "NYCBuildings.BIM" under "Enter Zoho/Email ID" and select the "Collaborators" radio button option from "Add as:" on the "Private Share" tab. Once done, click on "Share"



4. If your file was shared successfully with the Department, "Shared Successfully" will appear

# Object Naming & Item Detail Requirements

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1. Perimeter Enclosure
2. Street and Sidewalk Information
3. Trucks, Earthmovers, Mobile Cranes
4. Standpipe Riser
5. Vertical Netting & Guardrails
6. Temporary & Permanent Stair and Egress
7. Fire Extinguishers
8. Shoring/Underpinning
9. Ramps
10. Project Board
11. Permit Board
12. Owner
13. Contractor
14. Construction Superintendent/  
Project Executive
15. Site Safety Coordinator/Manager
16. Concrete Safety Manager
17. Construction Site Fire Safety  
Manager
18. Flag Persons

# Technical Considerations

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- Web Browsers – Zoho Docs supports the current versions of popular web browsers such as Internet Explorer, Firefox, and Safari
- Firewalls – the Zoho service is designed to work automatically with most firewalls as long as the end user has internet access
- File Size Limitations – 50 MB is the maximum file size supported by the Zoho Docs “Bulk Upload”

# Contact Information & Troubleshooting

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- For issues related to registering your account on ZOHO or with uploading / accessing your 3D Site Safety
- Plan files to your ZOHO account, contact ZOHO Doc support directly at:

<http://www.zoho.com/docs/zoho-docs-overview.html>

- For additional information or to ask questions regarding the Department's 3D Site Safety Plans Program, please contact [BIM@buildings.nyc.gov](mailto:BIM@buildings.nyc.gov)

# Electronic **Objection**



THE CITY OF NEW YORK  
**DEPARTMENT OF BUILDINGS**  
[www.nyc.gov/buildings](http://www.nyc.gov/buildings)

**MANHATTAN (1)** 290 BROADWAY 3<sup>RD</sup> FLOOR New York, NY 10007  
**BRONX (2)** 1932 ARTHUR AVENUE BRONX, NY 10457  
**BROOKLYN (3)** 210 JORALEMON STREET BROOKLYN, NY 11201  
**QUEENS (4)** 120-55 QUEENS BLVD. QUEENS, NY 11424  
**STATEN ISLAND (5)** BORO HALL- ST. GEORGE STATEN ISLAND, NY 10301

DOB Application #	Examiner: John Chiusano, R.A.	Date: 1/5/2011
402191702	Application Type: NB	Doc (s):
402191711	Address / Location: 40-22 Collage point Blvd	Block: 5066
	Zoning District: C4-2 General Commerical District	Lot: 1

Examiner's Signature:

To discuss and resolve these objections, please call 212-227-8133 to schedule an appointment with the Plan Examiner listed above. You will need the application number and document number found at the top of this objection sheet. To make the best possible use of the plan examiners and your time, please make sure you are prepared to discuss and resolve these objections before arriving for your scheduled plan exam appointment.

Obj. #	Doc #	Section of Code	Objections	Date Resolved	Comments
1.		Sht. 002.08	1. Provide the location of all exist in the location of the glass canopy. 2. Proved a description on how the glass will be installed 3. Provide all necessary plans, section and elevations to show the work in this location. 4. For the crane picking of the coolers what safety protection will be in place? 5. Provide the OSHA notes for lifting over an occupied building. 6. Provide the general location for the coolers. 7. Provide all necessary plans, section and elevations to show the work in this location.		
2.			Provide a tenant protection plan for all work.		

\*\*\* Please submit this objection form and disapproved drawing copy along with re-submission



# Where to **Begin**

The screenshot shows the NYC Buildings website interface. At the top, there is a navigation bar with links for Search, Email Updates, and Contact Us. Below this, there are links for Residents, Business, Visitors, Government, and Office of the Mayor. The main header features the NYC Buildings logo and a search box. A secondary navigation bar includes links for Newsletter Sign-up, Weather Advisories, Printer Friendly, Translate This Page, and Text Size (A A A). The left sidebar contains a menu with categories: Home, About the Buildings Department, Buildings Information, Development (with sub-links for Applications & Permits, Forms, Licensing, and NYC Development Hub), Safety & Enforcement, Community Partnerships, Homeowners & Tenants, Sustainability, Codes & Reference, and News & Services. The main content area features a large image of a construction site with a blue overlay box containing the text "3D Site Safety Plans". To the right of the image is a blue box titled "Construction Information Panel Pilot Program" with a description: "This new program encourages New York City contractors to consolidate permit postings & signage into one information panel on construction sites to make it easier for the public to learn about ongoing projects & improve the overall appearance of sites." Below the image, there is a "Development" section with a blue header and text stating: "All construction projects in New York City must comply with the NYC Construction Codes and the City's Zoning Resolution. The NYC Construction Codes consist of the 2008 Building Code, the Plumbing Code, the Mechanical Code, the Fuel and Gas Code, the Electrical Code and the NYC Energy Conservation Code. The Zoning Resolution is written by the NYC Department of City Planning and enforced by the Department of Buildings." The footer of the page includes "Local intranet | Protected Mode: Off" and a zoom level of "125%".



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## Questions?

This concludes the American Institute of Architects  
Continuing Education Systems Course



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212-566-4415