High Structural Erectors LLC
1915 Old Philadelphia Pike
Lancaster, PA 17602

Made By: WJL 2022-10-20
Checked By: BJT 2022-10-22

Job Title/Number: 2190542 Villanova Law School PG Jacking
Subject: General Notes

Summary
This document includes engineering calculations, sketches, and product technical specifications for the design of temporary shoring and a jacking system for the subject parking garage.

Terms and Conditions

1. The designs developed in the subsequent calculations reflect the available project information, including but not limited to plans, specifications, construction scheduling and sequencing, and measurements obtained during a site reconnaissance performed by the HSE Engineer on 8/2/2022.
2. Higher capacity rigging and equipment may be substituted within the specified parameters and without the approval of the HSE Engineer.
3. Deviation from the suggested bracing plan shall not be allowed without the express approval of the HSE Engineer.
4. All indicated utilities shall be removed by others prior to HSE performing work.
5. All indicated concrete wash areas shall be removed by other prior to HSE performing work.
6. All indicated connections shall be removed by others prior to HSE performing work.
7. All excavation, site preparation, and snow and ice accumulation in the project area and in the indicated areas shall be performed by others prior to HSE performing work.

Governing Design Specifications and Technical References

ACI. 2019. "Building Code Requirements for Structural Concrete." ACI 318-19.

AISC. 2017. "Steel Construction Manual, 15th Edition." AISC-15.

ASCE. 2022. "Minimum Design Loads and Associated Criteria for Buildings and Other Structures." ASCE 7-22.

ASCE. 2014. "Design Loads on Structures During Construction." ASCE 37-14.

High Concrete Group. For Construction Drawings, 5/25/2020.

Design Methodology

Design is in accordance with the Load and Resistance Factor Design (LRFD) methodology unless noted otherwise.

Analytical modeling for structural analysis is performed in the structural analysis software STAAD.pro CONNECT edition, Version 22.01.00.39.

The partially erected structure and falsework are considered Risk Category II as defined in ASCE 7-22.

The mapped Risk-Targeted MCE_R, 5 percent damped, spectral response acceleration parameter at a period of 1 second, $S_1 = 0.045\ g$ << $S_1 = 0.4\ g$; ∴ earthquake loads are not considered (*Ref: ASCE 37-14 § 6.5.1*).

Loads, Load Factors, and Load Combinations

Notation

D Dead load, self-weight of elements (5% surcharge included for fabrication variability)
I Impact; $I := 30\%$ of dead load
S Snow

Load Combinations - LRFD *Ref: ASCE 37-14 § 2.2.3*

1. $1.4\ D$
2. $1.2\ D + 1.6\ I + 0.5\ S$
3. $1.2\ D + I + 1.6\ S$