GENERAL FOUNDATION/ CONCRETE NOTES

MISCELLANEOUS:

The structure and its several parts have been designed for the in–service loads only. The methods, means, procedures, and sequences of construction are the responsibility of the Contractor. The Contractor shall take all necessary precautions to insure safe working conditions and maintain the integrity of the structure during all stages of construction. The adequacy of the design of temporary bracing, shoring, etc. is the contractor's responsibility.

The bracing design for cast–in–place concrete, tilt–up concrete, precast concrete and masonry walls is the complete responsibility of the Contractor. Temporary bracing for walls shall be adequate to resist the forces imposed during construction. Bracing for a wall shall not be removed until all supporting levels or units have been erected and the concrete of the supporting levels has attained the specified compressive strength (F'c). In the case of walls supporting soil, the braces shall additionally remain in place until the backfilling procedures have been completed.

FOUNDATIONS:

Foundation excavations shall be made to plan elevations. Foundations are to bear on firm, undisturbed soil. The soil conditions beneath foundations shall then be inspected by a qualified Geotechnical Engineer. Where unacceptable soils occur, excavate and replace with an acceptable engineered fill or lower the bottom of the footing to an accepable elevation.

The foundation design is based on recommendations contained in the soils report prepared by Langan and dated June 18, 2021.

Foundations and soils related work shall be performed in accordance with the geotechnical report and inspected by a qualified Geotechnical Engineer.

Design Net Soil Pressures:

Spread Footings:	3,000 psf
Continuous Wall Footings:	3,000 psf

Foundation conditions noted during construction, which differ from those described in the geotechnical report shall be reported to the Architect, Structural Engineer and Geotechnical Engineer before construction is continued.

CONCRETE:

Reinforced concrete has been designed in accordance with "Building Code Requirements for Reinforced Concrete" Chapter 19 of the 2018 IBC & ACI 318.

Mixing, transporting, and placing of concrete shall conform to the latest edition of the "Specifications for Structural Concrete for Buildings" (ACI 301).

Cold and hot weather concreting procedures shall be followed in accordance with ACI 318 sections 5.12 and 5.13, ACI 306R, and ACI 305R.

Concrete in the following areas shall consist of natural sand fine aggregate and normal weight coarse aggregates conforming to ASTM C33, Type 1 Portland Cement conforming to ASTM C150, and shall have the following compressive strength (F'c) at 28 days:

Footings and Mats:	3,000 psi
Slabs–on–Grade:	4,000 psi
Retaining Walls, Curbs, Sidewalks and Slabs Exposed to De–icers:	4,500 psi (6% +/– 1% entrained air by volume)
Tilt–Wall Panels:	4,000 psi

Concrete (flowable fill or lean concrete) used as fill under footings or as backfill behind walls shall consist of natural sand fine aggregate, Type V Portland Cement conforming ASTM C150 (50 pounds minimum), and type C or F Fly Ash, and have a compressive strength (F'c) at 28 days of 75 psi.

Slump for pumped concrete shall be measured at point of discharge from pipe.

Concrete compressive strength tests shall be performed in accordance with ASTM C39. Copies of the test results shall be forwarded directly to the Structural Engineer. One set of specimens shall be taken for each day's pour of appreciable size and for each 100 cubic yards in accordance with the latest edition of ASTM C31. Each set shall include one specimen tested at 7 days, 2 specimens tested at 28 days and one specimen retained in reserve. This set of test cylinders shall be protected against freezing.

Slump tests shall be made prior to the addition of plasticizers. Where concrete is placed by pumping methods, concrete for test cylinders and slump tests shall be taken at the point of final placement.

Protect the concrete surface between finishing operations on hot, dry days or any time plastic shrinkage cracks could develop by using wet burlap, plastic membranes or fogging. Protect concrete deck at all times from rain, hail or other injurious effects.

Use of construction joints at locations other than those indicated on the drawings shall be submitted to the Structural Engineer for approval.

Principal openings in the structure are indicated on the contract documents. Refer to the architectural, mechanical, electrical, and plumbing drawings for sleeves, curbs, inserts, etc. not herein indicated. Openings in slabs with a maximum side dimension or diameter of 10 inches or less shall not require additional framing or reinforcement, unless noted otherwise. The Structural Engineer shall approve the location of sleeves or openings in structural members.

The Contractor shall verify the location of sleeves, openings, embedded items, etc. and shall insure that they are in place prior to the placement of the concrete.

The Contractor shall submit for review by the Structural Engineer a mix design for each proposed class of concrete. Mix designs shall show weight proportions for components of the mix. The Contractor shall not vary from the mix design without the approval of the Structural Engineer.

CONCRETE SLABS–ON–GRADE:

Slabs–on–grade shall be constructed in accordance with the latest edition of the "Guide for Concrete Floor and Slab Construction" (ACI 302.1R).

In addition to the specifications noted elsewhere, the normal weight concrete for flatwork shall conform to the following:

Minimum Cement Content:	5 sacks / cyd min.
Maximum Water Cement Ratio by Weight:	0.48–0.52
Maximum Slump Prior to Addition of Plasticizers:	3 inches
Maximum Slump if Plasticizers are not used:	4.5" +/– 1"

Dry Shrinkage for the slab on grade sheel not to exceed 0.04% in 28 days.

Minimum cement content shall be 6 sacks/cyd and max w/c ratio shall be 0.43 for Curbs, Sidewalks and Slabs exposed to de–icers.

Slabs–on–grade shall be placed to achieve the following minimum tolerances:

Overall Values: Ff = 50 Fl = 35
Local Values: Ff = 35 Fl = 25

Place concrete in a manner so as to prevent segregation of the mix. Floating and troweling operations shall not occur until the concrete has lost surface water sheen or all free water. Do not sprinkle free cement on the slab surface. Slab to be finished using power trowels.

Provide curing of concrete slabs immediately after finishing with Ashford formula. Other methods may be used with the Structural Engineer's approval.

Subgrade modulus for slab on grade design: 150 p.c.i.

CONCRETE REINFORCEMENT:

Reinforcing bar detailing, fabricating, and placing shall conform to the latest edition of the following standards: "Specifications for Structural Concrete Buildings" (ACI 301) and "ACI Detailing Manual" (SP66).

Reinforcing steel shall be deformed bars of new billet steel conforming to ASTM A615 and shall have a minimum yield strength of 60,000 psi.

Provide standard bar chairs and spacers as required to maintain concrete protection specified.

Welded wire fabric shall be supplied in flat sheets and lapped a minimum of 14 inches.

Welded wire fabric in slabs–on–grade shall be placed 2" down from the top of the slab unless otherwise noted. All w.w.f. to be placed on chairs or bricks. Hooking and pulling wire during placement is unacceptable.

Unless otherwise shown or noted, splicing of reinforcing bars shall conform to the current ACI 318. Where the length of lap is not shown or noted, provide a Class "B" lap at splices.

The Concrete Contractor shall prepare detailed working or shop drawings to enable fabrication, erection and construction of the work in accordance with the drawings and specifications and shall submit one electronic copy (PDF) to the Structural Engineer for approval. These shop drawings will be reviewed for design concepts expressed in the contract documents only. The Contractor shall be responsible for all dimensions, accuracy, and fit of work.

MASONRY:

All masonry walls are designed in accordance with allowable stress design method for 5 psf lateral load per the Building Code.

Engineered concrete masonry has been designed in accordance with the latest edition of the "Building Code Requirements for Masonry Structures" (ACI 530) by the American Concrete Institute (ACI).

Concrete masonry construction shall conform to the latest edition of the "Specification for Masonry Construction" (ACI530.1).

Provide special inspections of all masonry construction. (Level 1).

Masonry construction shall have a minimum compressive strength (F'm) of 1,500 psi at 28 days.

Mortar shall be Type M below grade and Type M or S above grade proportioned in accordance with the latest edition of ASTM C 270 or C 476.

Reinforcing steel for bond beams and vertical block cores shall be deformed bars of new billet steel complying with ASTM A 615 and having a minimum yield strength of 60,000 psi.

Unless otherwise noted, masonry cores (where specified on drawings) and bond beams shall be filled with concrete meeting the following requirements.

Minimum 2,500 psi 28–day compressive strength with 3/4–inch maximum aggregate and 7 inch maximum slump.

Unless otherwise noted, provide a steel bearing plate with two 3/8–inch x 6" stud anchors at beam bearings.

Bearings for beams, lintels, joists, etc. shall be bond beams or hollow masonry units with cores filled solid with concrete. See drawings for minimum bearing requirements.

NON–SHRINK GROUT:

Grout shall be a non–metallic, shrinkage resistant (when tested in accordance with the latest edition of ASTM C827 or CRD–C621), premixed, non–corrosive, non–staining product containing Portland Cement, silica sands, shrinkage compensating agents and fluidity improving compounds. Grout shall have a minimum compressive strength (F'c) of 5,000 psi in 28 days.

Grout compressive strength tests shall be performed in accordance with the latest edition of ASTM C109.

DESIGN DATA:

The structure and its components are designed for loads as defined by the 2018 International Building Code, New York Bldg. Code.

The roof has been designed for the following loads:

Roof Loads
Dead Load: 10 psf (13 psf @ Office Area)

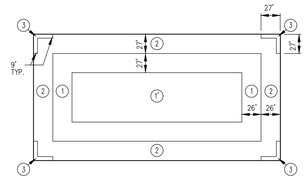
Roofing Material, Insulation	2 psf
Metal Deck	2 psf
Joists	3 psf
Sprinklers	3 psf
HVAC/Misc.	As Required
Office Collateral	3 psf
Live Load:	20 psf
Snow Load (Ground)	30 psf
Flat Roof Snow Load (P_f =30 psf, C_s =1.0, C_e =1.0, I=1.0)	21 psf
Total Load Warehouse:	31 psf
Total Load Office:	34 psf

Wind Design Data
*Basic Wind Speed: 90 mph (Nominal), 115 mph (Ultimate)
*Wind Importance Factor: 1.00
*Wind Exposure: C
*Internal Pressure Coeff: 0.18 +/–
*Components and Cladding Loads: vary with zone and area

Components And Cladding Loads: vary with zone and area (Service Loads)

Area (Walls)	10 SFT	100 SFT	200 SFT	500 SFT
In field of Wall:	–21.6, +19.9	–18.7, +17.0	–17.8, +16.1	–16.6, +15.0
Within 27'–0" of Corners:	–26.6, +19.9	–20.7, +17.0	–19.0, +16.1	–16.6, +15.0

Area (Roof)	10 SFT	50 SFT	100 SFT	200 SFT	500 SFT
Negative Zone 1	–34.7	–29.4	–27.1	–24.8	–21.8
Negative Zone 1'	–19.9	–19.9	–19.9	–17.2	–13.5
Negative Zone 2	–45.8	–39	–36	–33.1	–29.2
Negative Zone 3	–62.4	–48.8	–42.9	–37	–29.2
Positive All Zones	10	10	10	10	10



Seismic Design Data
*Occupancy Category: II
*Seismic Importance Factor: 1.00
*Mapped Spectral Response Accelerations:
S_s = 24.0% S_1 = 5.8%
*Site Class: D
*Cesign Spectral Response Accelerations:
S_{ds} = 0.256 S_{d1} = 0.093
*Seismic Design Category: B
*Basic Seismic force resisting system: Structural steel not specifically detailed for seismic resistance
Ordinary Concrete Shear walls
*Seismic Response Coefficient: C_s = 0.084
*Response Modification Factor: R = 3
*Analysis Procedure: Equivalent Lateral Force Procedure

SPECIAL INSPECTIONS

ALL INSPECTIONS, TESTINGS AND VERIFICATIONS SHALL BE IN ACCORDANCE WITH CHAPTER 17 OF THE 2018 IBC.

	FREQUENCY	
1. SOILS	CONTINUOUS	PERIODIC
A. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X
B. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X
C. PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X
D. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL	X	
E. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X
2. CONCRETE VERIFICATION AND INSPECTION		
A. INSPECTION OF REINFORCING STEEL AND PLACEMENT		X
B. REINFORCEMENT BAR WELDING 1. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706 2. INSPECT SINGLE PASS WELDS; MAXIMUM 5/16"		X
C. VERIFYING USE OF REQUIRED DESIGN MIX		X
D. SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT AND DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS	X	
E. INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	
F. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X
G. VERIFICATION OF IN–SITU CONCRETE STRENGTH, PRIOR TO ERECTION OF TILT–UP PANELS		X
H. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED		X
3. SPREAD FOOTINGS AND CONTINUOUS FOOTINGS		
A. INSPECT PLAN DIMENSIONS AND DEPTH		X
B. INSPECT QUANTITY AND SPACING OF BARS		X
C. INSPECT PROPER CLEARANCE TO BARS AT TOP AND BOTTOM IS PROVIDED		X
D. VERIFY PROPER LAPS ARE PROVIDED		X
E. INSPECT FOR PROPER DOWEL EMBEDMENT INTO FOOTING AND EXTENSION ABOVE FOOTING	X	
F. INSPECT FOR CORNER BARS, STEP BARS, DOWELS, ANCHOR BOLTS, OR EMBEDDED MATERIAL		X
G. VERIFY SOILS ENGINEER HAS APPROVED DESIGN BEARING CAPACITY	X	
H. VERIFY THAT ALL LOOSE MATERIAL IS REMOVED FROM BOTTOM OF FOOTING, NO SIDE FORMING IS PERMITTED		X
I. INSPECT BOLTS TO BE INSTALLED IN FOOTINGS PRIOR TO AND DURING CONCRETE PLACEMENT		X
4. CONCRETE TILT–UP WALLS		
A. INSPECT DOWEL LENGTH AND OFFSET REQUIREMENTS		X
B. INSPECT TIE ARRANGEMENT AND SPACING		X
C. INSPECT HORIZONTAL REINFORCING AND LAPS		X
D. INSPECT PROPER CLEARANCE TO BARS ARE AS REQUIRED		X
E. CHECK NUMBER AND SIZE OF BARS. CHECK SPACING AND EXTENSION OF BARS		X
F. INSPECT OF EMBEDDED ITEMS	X	
G. ERECTION OF TILT–UP WALLS		X
5. MASONRY VERIFICATION AND INSPECTION (ACI 530/ASCE 5/TMS 402) (ACI 530.1/ASCE 6/TMS 602)		
A. PROPORTIONS OF SITE PREPARED MORTAR		X
B. CONSTRUCTION OF MORTAR JOINTS		X
C. LOCATION OF REINFORCING		X
D. SPECIFIED SIZE AND GRADE OF REINFORCEMENT		X
E. PROTECTION OF MASONRY DURING HOT AND COLD WEATHER		X
F. GROUT SPACE IS CLEAN		X
G. PLACEMENT OF REINFORCEMENT		X
H. WELDING OF REINFORCEMENT	X	
I. GROUT PLACEMENT	X	
J. PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS, AND OR PRISMS.		X
6. STRUCTURAL STEEL – AISC 360 – CHAPTER N		
A. MATERIAL VERIFICATION OF STEEL MEMBERS, HIGH STRENGTH BOLTS, NUTS, WASHERS, AND WELD MATERIAL. 1. OBTAIN MANUFACTURE'S CERTIFICATE OF COMPLIANCE AND MILL TEST REPORTS		X
B. CHECK ANCHOR BOLTS AND GROUTING OF BASE PLATES		X
C. INSPECT COMPLETE PENETRATION OF GROOVE WELDS (ULTRASONIC 25%)	X	
D. INSPECT COMPLETE PENETRATION OF GROOVE WELDS (VISUAL REMAINDER)	X	
E. INSPECT COMPLETE PENETRATION OF MULTI–PASS FILLET WELDS	X	
F. INSPECT COMPLETE PENETRATION OF SINGLE PASS FILLET WELDS > 5/16		X
G. INSPECT COMPLETE PENETRATION OF SINGLE PASS FILLET WELDS = OR < 5/16		X
H. INSPECT HIGH–STRENGHT BOLTING 1. BEARING CONNECTION 2. SLIP–CRITICAL CONNECTION		X
I. INSPECT ALL JOISTS ARE WELDED DOWN OR CONNECTED TO STEEL PER SJI SPECIFICATION		X
J. INSPECT ALL BRIDGING, "X" BRIDGING, AND MISCELLANEOUS STEEL IS IN PLACE PER SJI SPECIFICATION		X
K. INSPECT THAT FIELD WELDED AREAS ARE PAINTED		X
L. INSPECT WELDED CONNECTIONS TO EMBEDDED PLATES IN TILT–UP PANELS	X	
M. INSPECT THAT METAL DECK IS ATTACHED AS CALLED FOR ON DRAWINGS		X
N. INSPECT THAT PROPER BEARING IS PROVIDED FOR JOISTS, JOIST GIRDERS AND BEAMS ON STEEL OR CONCRETE		X
O. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS: 1. MEMBER LOCATIONS 2. APPLICATION OF JOINT DETAILS AT EACH CONNECTION 3. BRACING AND STIFFENING DETAIL		X
7. SPECIAL CASES – EPOXY ANCHORS AND EXPANSION BOLTS		
A. INSPECT FOR ANCHOR TYPE, ANCHOR DIMENSIONS, HOLE DIMENSIONS, HOLE CLEANING PROCEDURES, ANCHOR SPACING, EDGE DISTANCES, ANCHOR EMBEDMENT AND TIGHTENING TORQUE.		X
B. VERIFY INITIAL INSTALLATION OF EACH ANCHOR TYPE AND SIZE BY CONSTRUCTION PERSONNEL ON SITE. SUBSEQUENT INSTALLATION OF THE SAME ANCHOR TYPE AND SIZE BY THE SAME CONSTRUCTION PERSONNEL SHALL BE PERMITTED TO BE PERFORMED IN THE ABSENCE OF THE SPECIAL INSPECTOR. ANY CHANGES IN THE ANCHOR PRODUCT BEING INSTALLED OR THE PERSONNEL PERFORMING THE INSPECTION SHALL REQUIRED AN INITIAL INSPECTION. FOR ONGOING INSTALLATIONS OVER AN EXTENDED PERIOD OF TIME, THE SPECIAL INSPECTOR SHALL MAKE REGULAR INSPECTIONS TO CONFIRM CORRECT HANDLING AND INSTALLATION.		X

NOTES:
1. REPORTS OF INSPECTIONS, VERIFICATIONS, AND/OR TESTINGS SHALL BE SUMITTED EVERY TWO WEEKS OF LESS AS REQUIRED TO ALLOW FOR TIMELY REVIEW AND FIELD MODIFICATIONS IF ANY ARE REQUIRED.
2. INSPECTIONS DESIGNATED AS CONTINUOUS REQUIRE FULL TIME MONITORING OF THE WORK BY SPECIAL INSPECTOR.
3. INSPECTIONS DESIGNATED AS PERIODIC REQUIRE INTERMITTENT OBSERVATION DURING THE PERFORMANCE OF THE WORK AND A FINAL OBSERVATION UPON THE COMPLETION OF THE WORK BY THE SPECIAL INSPECTOR.

NON–DESTRUCTIVE TESTING

NONDESTRUCTION TESTING OF ALL WELDS IN THE BRACED AND MOMENT FRAME MEMBERS IS REQUIRED AS FOLLOWS:
A. GROOVE WELDS SHALL BE TESTED ON 25% BY ULTRASONIC TESTING, REMAINDER VISUAL.
B. ALL FILLET WELDS SHALL BE VISUALLY INSPECTED.
C. ULTRASONIC TESTING SHALL BE IN ACCORDANCE WITH AWS D1.1–96, PART F.

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SEAL

THOMAS G. SMITH | NY: 042383

KEY PLAN

N TRUE NORTH
N PROJECT NORTH

SUBMITTALS

NO.	DATE	DESCRIPTION
	2.1.2022	PROGRESS
	2.28.2022	95% PROGRESS
	6.9.2022	PERMIT
1	7.8.2022	FTG. STEPS
2	9.6.2022	AS NOTED
3	9.30.2022	100% BUILDING SET

PROJECT NO. AS286-21 | NY131 | 21-155A
DRAWN BY DTC

SHEET TITLE
FOUNDATION DETAILS

SHEET NO.
F2.3

PRINTED ARCH E 36" x 42"