

STRUCTURAL GENERAL NOTES:

DESIGN CRITERIA

1. DESIGN LIVE LOADS ARE IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2009 EDITION, WITH THE FOLLOWING MINIMUM CRITERIA:
- FLOOR LOADS:**
- | OCCUPANCY OR USE:                      | LIVE LOAD: | CONCENTRATED LOAD:                        |
|--|------------|---|
| FLOORS (UNLESS NOTED OTHERWISE).....   | 150 p.s.f. | 4,000 lbs.                                |
| VEHICLE BAY FLOOR – HS20–44 TRUCK..... | 640 p.s.f. | 18 kips(FOR MOMENT)<br>28 kips(FOR SHEAR) |
| EXIT CORRIDORS.....                    | 100 p.s.f. | N/A                                       |
| STAIRS.....                            | 100 p.s.f. | 300lbs @ TREADS                           |
- SNOW LOADS:**
- |   |           |
|---|-----------|
| ROOF DESIGN SNOW LOAD, P <sub>f</sub> (NON–REDUCIBLE) ..... | 30 p.s.f. |
| EXPOSURE FACTOR, C <sub>e</sub> .....                       | 1.0       |
| IMPORTANCE FACTOR, I <sub>s</sub> .....                     | 1.1       |
| THERMAL FACTOR, C <sub>t</sub> .....                        | 1.0       |
| GROUND SNOW LOAD, P <sub>g</sub> .....                      | 20 p.s.f. |
| FOR DRIFTING CALCULATIONS                                   |           |
- SEISMIC LOADS:**
- IMPORTANCE FACTOR, I<sub>E</sub> ..... 1.25
- MAPPED SPECTRAL RESPONSE ACCELERATIONS:
- |                      |       |
|----------------------|-------|
| S <sub>g</sub> ..... | 0.185 |
| S <sub>1</sub> ..... | 0.059 |
- SITE CLASS ..... D
- SPECTRAL RESPONSE COEFFICIENTS:
- |                       |       |
|-----------------------|-------|
| S <sub>ps</sub> ..... | 0.197 |
| S <sub>p1</sub> ..... | 0.094 |
- SEISMIC DESIGN CATEGORY ..... B
- BASIC SEISMIC–FORCE–RESISTING SYSTEMS: ..... ORDINARY STEEL MOMENT FRAME
- DESIGN BASE SHEAR: ..... BY PRE ENGINEERED METAL BUILDING MANUFACTURER
- RESPONSE MODIFICATION FACTOR, R: ..... 3.5
- ANALYSIS PROCEDURE: .....EQUIVALENT LATERAL FORCE PROCEDURE
- WIND LOADS:**
- BASIC WIND SPEED (3–SECOND GUST): ..... 100 m.p.h.
- WIND EXPOSURE ..... C
- IMPORTANCE FACTOR, I<sub>w</sub> ..... 1.15
- INTERNAL PRESSURE COEFFICIENT, GC<sub>pi</sub>..... 0.18±
- FLOOD LOADS:**
- NOT IN FLOOD HAZARD ZONE
2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LOCATION OF MECHANICAL OPENINGS, FLOOR DRAINS, INSERTS, DEPRESSIONS, BURIED CABLES AND UTILITIES, ETC. WITH ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS.
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS, NOTIFY ENGINEER OF DISCREPANCIES. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.

SOILS AND FOUNDATIONS

1. FOUNDATION DESIGN IS IN ACCORDANCE WITH THE SOIL REPORT BY HEPWORTH–PAWLAK GEOTECHNICAL, INC, NUMBER 308121B, DATED MARCH 4, 2009, AND THE UPDATED LETTER DATED NOVEMBER 22, 2010.
2. DESIGN OF DRILLED PIERS IS BASED ON THE FOLLOWING CRITERIA:
- |  |               |
|--|---------------|
| MAXIMUM ALLOWABLE END BEARING PRESSURE ..... | 30,000 p.s.f. |
| MINIMUM ALLOWABLE END BEARING PRESSURE ..... | 15,000 p.s.f. |
| MAXIMUM ALLOWABLE SKIN FRICTION .....        | 2,500 p.s.f.  |
| MINIMUM PENETRATION INTO BEDROCK .....       | 8.0 feet      |
| MINIMUM DRILLED PIER LENGTH .....            | 20.0 feet     |
- THE MAXIMUM VARIATION OF THE CENTER OF ANY DRILLED PIER AT ITS TOP FROM THE REQUIRED LOCATION SHALL NOT BE MORE THAN 5–1/2% OF ITS DIAMETER AND NO PIER SHALL BE OUT OF PLUMB MORE THAN 1% OF ITS LENGTH.
3. SOIL BENEATH SLABS ON GRADE SHALL BE NATIVE, SOLID UNDISTURBED MATERIAL FREE OF WATER, FROST OR FOREIGN DEBRIS, OR STRUCTURAL FILL COMPACTED IN ACCORDANCE WITH THE SOILS REPORT AND SPECIFICATIONS WITH MINIMUM DENSITY AS FOLLOWS:
- SLABS–ON–GRADE: 95% OF STANDARD PROCTOR, ASTM D698.
4. A REPRESENTATIVE OF THE SOILS ENGINEER SHALL INSPECT THE OPEN EXCAVATION TO DETERMINE THAT THE SOIL TYPE AND CONDITIONS ARE CONSISTENT WITH DESIGN CRITERIA OF THE SOILS REPORT. IF THE SOIL PROPERTIES ARE FOUND TO BE DIFFERENT FROM THIS CRITERIA, THEN THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT THE FOUNDATION DESIGN MAY BE REVIEWED.
5. THE FOUNDATION HAS BEEN DESIGNED FOR STRUCTURAL LOADINGS FROM FRAME REACTIONS SHOWN BELOW. MGA STRUCTURAL ENGINEERS INC. IS RESPONSIBLE FOR THE FOUNDATION DESIGN ONLY BASED ON THESE LOADINGS. THE GENERAL CONTRACTOR SHALL VERIFY THAT THE FINAL METAL BUILDING LOADINGS MATCH THOSE SHOWN IN THE TABLE ON THIS SHEET. IF THE LOADINGS SHOWN DIFFER FROM THE FINAL METAL BUILDING LOADINGS, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT THE FOUNDATION DESIGN MAY BE REVIEWED. THE PRE–ENGINEERED BUILDING MANUFACTURER IS RESPONSIBLE FOR THE SUPERSTRUCTURE DESIGN FOR LIVE, SNOW, WIND AND SEISMIC LOADS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2009 EDITION.

PRE–ENGINEERED METAL BUILDING PRELIMINARY  
FRAME REACTIONS. SEE NOTE NO. 5

COLUMN LOCATION	MAXIMUM HORIZONTAL REACTION (KIPS)	MAXIMUM VERTICAL REACTION (KIPS)	MINIMUM VERTICAL REACTION (KIPS)
A–1, A–4	9.5	25.0	–14.3
B–1, B–4	15.8	41.7	–21.6
C–1, C–4	13.0	34.2	–17.7
D–1, D–4	13.9	36.7	–19.0
E–1, E–4	9.5	25.0	–14.3
A–2	8.8	13.7	–6.4
A–3	8.8	13.0	–6.4
E–1.7	6.7	10.4	–5.0
E–2.7	6.7	10.4	–5.0
E–3.4	6.3	9.9	–4.6

6. THE GENERAL CONTRACTOR SHALL COORDINATE ANCHOR BOLT LOCATIONS WITH THE FINAL METAL BUILDING DESIGN DRAWINGS.

CONCRETE:

1. ALL CONCRETE DESIGN, MATERIALS AND CONSTRUCTION SHALL CONFORM TO ACI STANDARD 318–08, THE INTERNATIONAL BUILDING CODE, 2009 EDITION, THE CRSI MANUAL OF STANDARD PRACTICE (CURRENT EDITION) AND THE PROJECT SPECIFICATIONS.
2. MATERIAL SPECIFICATIONS:
- |                                 |                   |
|---------------------------------|-------------------|
| REINFORCING BARS .....          | ASTM A615, GR. 60 |
| WELDED WIRE FABRIC .....        | ASTM A185         |
| REINFORCING BARS (WELDED) ..... | ASTM A706, GR. 60 |
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:
- A. GENERAL STRUCTURAL CONCRETE:
- |  |             |                  |
|--|-------------|------------------|
| GRADE BEAMS & WALLS .....                  | 4500 p.s.i. | CEMENT TYPE I/II |
| FLOOR SLABS .....                          | 4500 p.s.i. | CEMENT TYPE I/II |
| SLABS–ON–GRADE .....                       | 4500 p.s.i. | CEMENT TYPE I/II |
| (WITH 1.5 lbs OF FIBERMESH PER CUBIC YARD) |             |                  |
| EQUIPMENT PEDESTALS .....                  | 4500 p.s.i. | CEMENT TYPE I/II |
| DRILLED PIERS (5”–7” SLUMP) .....          | 3750 p.s.i. | CEMENT TYPE I/II |
4. REINFORCEMENT SHALL BE DETAILED IN ACCORDANCE WITH THE ACI DETAILING MANUAL, LATEST EDITION. FORMWORK SHALL BE DESIGNED, ERECTED AND REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS.
5. REINFORCEMENT SHALL BE PLACED SO THAT THE FOLLOWING MINIMUM CONCRETE PROTECTION IS PROVIDED, UNLESS NOTED OTHERWISE.
- CONCRETE SURFACES POURED AGAINST GROUND ..... 3” CLEAR
- FORMED SURFACES EXPOSED TO GROUND OR WEATHER:
- |                          |              |
|--------------------------|--------------|
| BARs #6 AND LARGER ..... | 2” CLEAR     |
| BARs #5 AND SMALLER..... | 1–1/2” CLEAR |
| SLABS–ON–GRADE .....     | AT CENTERS   |
6. REINFORCEMENT SHALL BE SECURELY TIED AND SHALL BE SUPPORTED WITH METAL CHAIRS OR HUNG FROM FORMS.
7. CONTINUOUS HORIZONTAL BARS AND CORNER BARS IN GRADE BEAMS AND SLABS SHALL BE LAPPED AS FOLLOWS AT SPLICES. SPLICE LOCATIONS SHALL BE STAGGERED WHERE POSSIBLE.
- | CONCRETE COMPRESSIVE STRENGTH | No. 6 BARS & SMALLER       | No. 7 BARS & LARGER |
|-------------------------------|----------------------------|---------------------|
| 4500 p.s.i                    | 38 db                      | 48 db               |
|                               | (WHERE db = BAR DIAMETERS) |                     |
- SPLICES IN GRADE BEAM REINFORCING, IF REQUIRED, SHALL BE AS FOLLOWS:
- |                   |                                |
|-------------------|--------------------------------|
| BOTTOM BARS ..... | AT DRILLED PIERS               |
| TOP BARS .....    | MID SPAN BETWEEN DRILLED PIERS |
8. ADDITIONAL (2) #6 BARS (ONE EACH FACE) WITH A 3”–0” PROJECTION SHALL BE PLACED DIAGONALLY ACROSS THE CORNERS OF ALL OPENINGS AND VERTICAL STEPS IN WALLS.
9. GRADE BEAMS BELOW GRADE SHALL HAVE BACKFILL PLACED EQUALLY ON BOTH SIDES UNTIL THE REQUIRED LEVELS ARE REACHED.
10. CONSTRUCTION JOINTS IN SLABS ON GRADE SHALL BE SPACED AT INTERVALS ENCLOSING NO MORE THAN 144 SQUARE FEET WITH A MAXIMUM OF 12 FEET IN ANY ONE DIRECTION UNLESS OTHERWISE NOTED ON DRAWINGS. CONSTRUCTION JOINTS SHALL BE FORMED WITH METAL LOAD KEY JOINT SUPPLIED BY JAHN CONCRETE PRODUCTS OR APPROVED EQUAL FOR CONSTRUCTION JOINTS IN SLABS 6” AND THICKER PROVIDE 1 INCH DIAMETER X 24” LONG SMOOTH DOWELS AT 18” ON CENTER OILED ONE END. REFER TO PROJECT MANUAL FOR SEALING OF CONSTRUCTION JOINTS.
11. CONSTRUCTION JOINTS (COLD JOINTS) SHALL BE PROVIDED IN GRADE BEAMS, WHICH ARE OVER 70 FEET IN A STRAIGHT RUN. KEYWAYS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS IN GRADE BEAMS.
12. CONTROL JOINTS IN SLABS MAY BE TOOLED OR SAWCUT AS INDICATED ON THE DRAWINGS.
13. ALL JOINTS SHALL BE APPROVED BY THE ENGINEER.

STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL DESIGN, MATERIALS, FABRICATION AND ERECTION SHALL CONFORM TO THE AISC SPECIFICATION, 13TH EDITION, THE INTERNATIONAL BUILDING CODE, 2009 EDITION AND THE PROJECT SPECIFICATIONS.
2. MATERIAL SPECIFICATIONS:
- |   |                  |
|---|------------------|
| CHANNELS (C AND MC), ANGLES (L), BARS AND PLATES..... | ASTM 36          |
| HOLLOW STRUCTURAL STEEL.....                          | ASTM 500 GRADE B |
| STAINLESS STEEL ANCHORS.....                          | ASTM F593        |
3. SHOP CONNECTIONS SHALL BE WELDED WITH E70XX ELECTRODES AND GROUND SMOOTH WHERE EXPOSED. FIELD WELDS SHALL BE WELDED WITH E70XX ELECTRODES AND GROUND SMOOTH WHERE EXPOSED. FIELD WELDS SHALL BE PAINTED WITH ZINC RICH PAINT. ALL WELDING SHALL BE DONE BY WELDERS CERTIFIED FOR THE WELD TYPES AND POSITIONS REQUIRED ACCORDING TO AWS D1.1 WELDING CODE LATEST EDITION. WELDING SHALL BE INSPECTED BY THE TESTING AND INSPECTION AGENCY TO INSURE CONFORMANCE WITH DETAILS AND AWS CODE.
4. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN CONFORMANCE WITH ASTM A123.

REVISIONS		
NO. <	DATE	DESCRIPTION
1	09/16/2011	ISSUED FOR FOUNDATION PERMIT SUBMITTAL TO PPBDO (PUMPING AND DISINFECTION BLDG)
2	10/17/2011	ISSUED FOR CONSTRUCTION PER PPBDO FOUNDATION PERMIT #88993 (PUMP AND DISINFECTION BLDG)
3	01/25/2012	ISSUED FOR PD BUILDING VALUE ENGINEERING REVIEW AND COMMENTS
4	04/18/2012	ISSUED FOR BUILDING PERMIT SUBMITTAL TO PPBDO (PUMPING AND DISINFECTION BLDG)
5	05/21/2012	ISSUED FOR CONSTRUCTION PER PPBDO BLDG PERMIT #88993 (PUMP AND DISINFECTION BLDG)

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STRUCTURAL GENERAL NOTES  
PUMPING AND DISINFECTION FACILITY  
HAROLD D. THOMPSON REGIONAL WATER RECLAMATION FACILITY  
LOWER FOUNTAIN METROPOLITAN SEWAGE DISPOSAL DISTRICT

DRAWN \_\_\_\_\_ GLY  
DESIGNED \_\_\_\_\_ MAM  
CHECKED \_\_\_\_\_ RJS  
DATE \_\_\_\_\_ AUGUST 2011  
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OF  
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