DESIGN CRITERIA

BUILDING CODE	2006 INTERNATIONAL BUILDING CODE
COUNTY / STATE	PERRY / TENNESSEE
OCCUPANCY CATEGORY	III

WIND LOAD DATA

BASIC WIND SPEED (3 SECOND GUST)	90 MPH
WIND EXPOSURE CATEGORY	C
WIND IMPORTANCE FACTOR	Iw = 1.15

*SEE SPECIFIC BUILDING STRUCTURE SHEETS FOR ADDITIONAL WIND LOAD INFORMATION.

EARTHQUAKE LOAD DATA

SEISMIC SITE CLASS	D
MAPPED SHORT PERIOD SPECTRAL RESPONSE ACCELERATION	Ss = 0.292
MAPPED 1 SECOND SPECTRAL RESPONSE ACCELERATION	S1 = 0.142
DESIGN SHORT PERIOD SPECTRAL RESPONSE ACCELERATION	Sds = 0.305
DESIGN 1 SECOND PERIOD SPECTRAL RESPONSE ACCELERATION	Sd1 = 0.211

MATERIAL STRENGTHS USED IN DESIGN
(FOR REFERENCE IN CALCULATIONS - SEE SPECIFICATIONS OR NOTES FOR ACTUAL MATERIAL SPECIFICATIONS)

CONCRETE:			
CLASS A (SEE SPECIFICATIONS)	28 DAY f'c =	4,000	PSI
CLASS B (SEE SPECIFICATIONS)	28 DAY f'c =	3,000	PSI
REINFORCING BARS (ASTM A615 OR A706 GRADE 60)	fy =	60,000	PSI
WELDED WIRE FABRIC (ASTM A185)	fy =	65,000	PSI
PRESTRESSING STRAND (ASTM A416 GRADE 270 LO LAX)	fu =	270,000	PSI
DEFORMED BAR ANCHORS (ASTM A496)	fy =	80,000	PSI
STRUCTURAL STEEL SECTIONS W AND WT (ASTM A992)	fy =	50,000	PSI
STRUCTURAL STEEL SECTIONS C, L, M, S, HP, MT AND ST (ASTM A36)	fy =	36,000	PSI
STRUCTURAL STEEL PLATES BARS, AND RODS U.N.O. (ASTM A36)	fy =	36,000	PSI
STRUCTURAL STEEL SECTIONS HSS (ASTM A500 GRADE B)	fy =	46,000	PSI
STRUCTURAL STEEL PIPE (ASTM A53 GRADE B)	fy =	35,000	PSI
STRUCTURAL BOLTS (ASTM A325)	fu =	120,000	PSI
CONCRETE MASONRY (VARIOUS)	f'm =	1,500	PSI
SOIL ALLOWABLE BEARING PRESSURE FOR FOUNDATIONS (ASSUMED)	qa =	1,500	PSF
ROCK ALLOWABLE BEARING PRESSURE (ASSUMED)	qa =	8,000	PSF

GENERAL

1. THE REQUIREMENTS OF THESE GENERAL NOTES APPLY UNLESS OTHERWISE NOTED ON PLANS OR IN SPECIFICATIONS.
2. ALL DIMENSIONS OF EXISTING CONDITIONS SHALL BE VERIFIED PRIOR TO COMMENCING WORK. DISCREPANCIES BETWEEN EXISTING CONDITIONS OR BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE COMMUNICATED TO THE STRUCTURAL ENGINEER AND ARCHITECT.
3. THIS STRUCTURE IS DESIGNED TO BE STABLE AND SELF-SUPPORTING ONLY WHEN FULLY COMPLETED. STABILITY OF THE STRUCTURE DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL NECESSARY TEMPORARY BRACING REQUIRED TO STABILIZE AND SUPPORT THE STRUCTURE DURING ALL CONSTRUCTION PHASES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF REQUIRED, TEMPORARY BRACING SHALL BE DESIGNED BY A LICENSED ENGINEER EMPLOYED BY THE CONTRACTOR.
4. CONSTRUCTION LOADS IMPOSED ON THE STRUCTURAL FRAMING SHALL NOT EXCEED THE DESIGN CAPACITY OF THE FRAMING AT THE TIME SUCH LOADS ARE IMPOSED.
5. NON-STRUCTURAL ELEMENTS OF THE BUILDING (ARCHITECTURAL FINISHES, MASONRY VENEER AND ASSOCIATED TIES, INSULATION, SHEATHING, DUCTWORK, PIPING, ETC.) ARE GENERALLY NOT SHOWN ON THESE STRUCTURAL DRAWINGS. CERTAIN NON-STRUCTURAL ELEMENTS THAT ARE SHOWN ON THE STRUCTURAL DRAWINGS ARE SHOWN FOR REFERENCE ONLY. NON-STRUCTURAL ELEMENTS SHALL BE CONSTRUCTED AS SHOWN ON THE ARCHITECTURAL AND TRADE DRAWINGS.
6. ANY MATERIAL ORDERED OR WORK PERFORMED PRIOR TO THE ENGINEER'S REVIEW AND APPROVAL OF THE SHOP DRAWINGS IS AT THE CONTRACTOR'S SOLE RISK.

MATERIAL PATTERN LEGEND

- COMPETENT ROCK
- UNDISTURBED SOIL / ENGINEERED FILL
- CRUSHED STONE / DENSE GRADED AGGREGATE
- CONCRETE
- LEAN CONCRETE / FLOWABLE FILL / GROUT

FOUNDATIONS

1. THE FOUNDATIONS HAVE BEEN DESIGNED USING ASSUMED BEARING CAPACITIES, THEREFORE A QUALIFIED TESTING COMPANY SHALL BE ENGAGED BY THE CONTRACTOR TO VERIFY BEARING CAPACITIES PRIOR TO INSTALLING FOUNDATIONS. THE SELECTION OF THE TESTING COMPANY SHALL BE SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER AND ARCHITECT.
2. THE FOUNDATIONS HAVE BEEN DESIGNED USING THE FOLLOWING ASSUMED BEARING CAPACITIES.

UNDISTURBED SOIL	1,500 PSF
ENGINEERED FILL > 2'-0" THICK	3,000 PSF
COMPETENT BEDROCK	8,000 PSF

3. ALL FOOTINGS SHALL BE SUPPORTED ON UNDISTURBED SOIL, ENGINEERED FILL OR COMPETENT BEDROCK WHERE INDICATED.
4. FILL SHALL BE COMPACTED TO 98% OF OPTIMUM LABORATORY DENSITY IN ACCORDANCE WITH ASTM D698 STANDARD PROCTOR METHOD IN MAXIMUM 6" LIFTS UNLESS INDICATED OTHERWISE.
5. ALL PIERS AND SPREAD FOOTINGS ARE CENTERED ON COLUMN CENTERLINES AND ALL WALL FOOTINGS ARE CENTERED UNDER WALLS UNLESS NOTED OTHERWISE.
6. EXISTING FOUNDATIONS SHOWN ON DRAWINGS ARE APPROXIMATE. EXACT CONDITION SHALL BE VERIFIED AT TIME OF CONSTRUCTION.
7. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF SOFT, LOOSE OR LOWER BEARING CAPACITY SOILS OR ROCK ARE ENCOUNTERED.
8. EXISTING UNDERGROUND UTILITIES IN AREAS OF FOUNDATION CONSTRUCTION SHALL BE LOCATED PRIOR TO CONSTRUCTION OF FOUNDATIONS. APPROPRIATE MEASURES SHALL BE TAKEN TO AVOID DAMAGE TO EXISTING UTILITIES AND TO ENSURE ADEQUATE FOUNDATION BEARING AROUND UTILITIES.
9. FOUNDATIONS SHALL NOT BE PLACED ON MUD OR MUCK, SOFT OR LOOSE SOIL, IN STANDING WATER OR ON FROZEN GROUND.
10. ALL NON-CANTILEVER WALLS SHALL BE BE ADEQUATELY BRACED PRIOR TO BACKFILL.
11. CANTILEVER RETAINING WALLS SHALL NOT BE BACKFILLED UNTIL THE CONCRETE HAS DEVELOPED 100% OF THE REQUIRED 28-DAY COMPRESSIVE STRENGTH FOR THE CLASS OF CONCRETE SPECIFIED.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ACI 301-05, ACI 318-05, ACI 117-06, ACI 308, AND ACI SP-66, THE ACI DETAILING MANUAL-2004. HOT AND COLD WEATHER CONCRETE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ACI 305 AND ACI 306 AS REQUIRED. SHORING AND RESHORING OF CONCRETE STRUCTURES SHALL BE PERFORMED IN ACCORDANCE WITH ACI 347. STRUCTURAL DESIGN AND REMOVAL OF CONCRETE FORMWORK, SHORES AND RESHORES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. SHOP DRAWINGS SHOWING THE SIZE, LENGTH, QUANTITY, LOCATION AND MARK OF ALL REINFORCING BARS, SUPPORTS AND ACCESSORIES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
3. MIX DESIGNS AND ADMIXTURE PRODUCT DATA SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING CONCRETE.
4. CONCRETE PROPERTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
5. REINFORCING AND ACCESSORY PROPERTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
6. REINFORCING COMPRESSION SPLICES SHALL BE LAPPED 30 BAR DIAMETERS OF THE LARGER BAR.
7. REINFORCING SPLICES SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING TABLE:

BAR SIZE	3,000 PSI CONC. LAP LENGTH	4,000 PSI CONC. LAP LENGTH
#3	18"	15"
#4	23"	20"
#5	29"	25"
#6	35"	30"
#7	63"	54"
#8	72"	62"
#9	80"	70"

ADD 30% FOR HORIZONTAL TOP BARS WITH MORE THAN 12" OF CONCRETE BELOW.
ADD 50% FOR BAR SPACING LESS THAN TWO BAR DIAMETERS.
LAP LENGTH ADDS ARE CUMULATIVE.

8. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE (UNLESS NOTED OTHERWISE):

CONDITION	CLEAR COVER OVER BARS
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER	
#6 THROUGH #18 BARS	2"
#5 BAR, W31 OR D31 WIRE AND SMALLER	1 1/2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
SLABS, WALLS, AND JOISTS	
#14 AND #18 BARS	1 1/2"
#11 BAR AND SMALLER	3/4"

9. THE TYPICAL DETAILS ON THESE DRAWINGS CONTAIN ADDITIONAL GENERAL CONCRETE CONSTRUCTION NOTES AND INFORMATION.
10. ALL CONCRETE SHALL BE REINFORCED UNLESS NOTED OTHERWISE.
11. SUPPORTS TO ADEQUATELY POSITION REINFORCING BARS DURING CONSTRUCTION SHALL BE INSTALLED.
12. FOUNDATION DOWELS OF THE SAME SIZE AND SPACING AS VERTICAL STEEL SHALL BE INSTALLED FOR ALL WALLS, PIERS, AND COLUMNS.
13. ALL REINFORCING AT WALL AND FOOTING CORNERS AND INTERSECTIONS SHALL BE CONTINUOUS BY THE USE OF BENT BARS OR CORNER BARS UNLESS INDICATED OTHERWISE. SEE "CAST-IN-PLACE CONCRETE" NOTE #7 FORSPLICE LENGTHS.
14. CONSTRUCTION JOINTS SHALL BE POSITIONED SO AS NOT TO ADVERSELY AFFECT THE STRUCTURAL PERFORMANCE. CONSTRUCTION JOINT LOCATIONS NOT INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
15. PIPE SLEEVES AND INSERTS SHALL BE INSTALLED IN CONCRETE WORK AT ALL PENETRATIONS. PENETRATIONS OF BEAMS, JOISTS, COLUMNS OR STRUCTURAL SLABS NOT INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
16. ONLY WELDABLE REINFORCING BARS MAY BE WELDED.
17. ADMIXTURES CONTAINING CHLORIDE OR OTHER CORROSIVE CHEMICALS SHALL NOT BE USED IN CONCRETE.
18. AGGREGATES SHALL BE FREE OF DELETERIOUS OR NON-DURABLE MATERIALS SUCH AS CHERTS.
19. REINFORCING SHALL BE ADEQUATELY TIED AND SUPPORTED TO HOLD IT IN THE CORRECT POSITION DURING CONSTRUCTION.
20. CONCRETE SHALL BE CONSOLIDATED ADEQUATELY DURING PLACEMENT BY MECHANICAL VIBRATION IN ACCORDANCE WITH PUBLISHED PRACTICES.
21. UNSHORED SLAB CONSTRUCTION SHALL BE FINISHED LEVEL AND HAVE THE MINIMUM REQUIRED THICKNESS OF CONCRETE AT THE THINNEST SECTION. BEAM CAMBER SHALL BE VERIFIED PRIOR TO PLACING UNSHORED CONCRETE SLABS.
22. PLASTIC CHAIRS SHALL BE USED IN ALL CONCRETE THAT WILL BE EXPOSED TO VIEW IN THE COMPLETED STRUCTURE.
23. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED MINIMUM ¾".
24. FILL POCKETS AROUND CONNECTIONS WITH CONCRETE FLUSH AND SMOOTH UNLESS INDICATED OTHERWISE.
25. CONCRETE FINISHES SHALL BE INACCORDANCE WITH THE SPECIFICATIONS.
26. CONCRETE SLAB-ON-GRADE FLATNESS AND LEVELNESS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

EXPANSION ANCHORS

1. EXPANSION ANCHORS SHALL BE ONE OF THE FOLLOWING PRODUCTS:
   KWIK BOLT TZ BY HILTI
   TRUBOLT+ BY ITW RED HEAD
   STRONG-BOLT BY SIMPSON STRONG-TIE
2. ALL EXPANSION ANCHORS FOR THE PROJECT SHALL BE PRODUCED BY THE SAME MANUFACTURER UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
3. EXPANSION ANCHOR PRODUCT DATA AND A KEYED PLAN SHOWING THE LOCATION, DIAMETER, LENGTH, MATERIAL AND FINISH OF EACH EXPANSION ANCHOR SHALL BE SUBMITTED FOR APPROVAL.
4. THE EXPANSION ANCHOR MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE STRICTLY FOLLOWED, PARTICULARLY WITH REGARD TO DRILLING AND CLEANING OUT THE HOLE.
5. IF ANY OF THE FOLLOWING MINIMUM DISTANCES ARE NOT INDICATED OR AVAILABLE THEN VERIFY THE DETAIL AND FIELD CONDITIONS WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLING:

ANCHOR DIA	C TO C DISTANCE	EDGE DISTANCE	EMBED DISTANCE	MAT'L THICKNESS
1/2"	3 1/2"	4"	3 1/2"	5 1/2"
5/8"	4"	5"	4"	6"
3/4"	6"	6"	5"	8"

6. IF ANY OF THE FOLLOWING CONDITIONS ARE INDICATED OR PRESENT THEN VERIFY ACCEPTABILITY OF EXPANSION ANCHOR TYPE, MATERIAL OR FINISH WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLING:
   CRACKED CONCRETE OR MASONRY NEAR INSTALLATION (SEE EDGE DISTANCE ABOVE)
   CORROSIVE, CHEMICAL OR ABNORMAL TEMPERATURE ENVIRONMENT
   VIBRATORY OR FATIGUE LOADING OF ANCHOR
   IMPACT OR SHOCK LOADING OF ANCHOR
   CONTINUOUS TENSION (E.G. HANGING LOADS FROM CEILINGS)

CHEMICAL ADHESIVE AND PROPRIETARY ADHESIVE ANCHORS

1. CHEMICAL ADHESIVES AND PROPRIETARY ADHESIVE ANCHORS SHALL BE PRODUCED BY ONE OF THE FOLLOWING MANUFACTURERS:
   HILTI, INC.
   ITW RED HEAD
   SIMPSON STRONG-TIE
2. ALL CHEMICAL ADHESIVES AND PROPRIETARY ADHESIVE ANCHORS FOR THE PROJECT SHALL BE PRODUCED BY THE SAME MANUFACTURER UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
3. PROPRIETARY ADHESIVE ANCHORS SHALL BE FASTENED WITH COMPATIBLE CHEMICAL ADHESIVE FROM THE SAME MANUFACTURER.
4. CHEMICAL ADHESIVE AND PROPRIETARY ADHESIVE ANCHOR PRODUCT DATA AND A KEYED PLAN SHOWING THE LOCATION, TYPE OF CHEMICAL ADHESIVE AND INSTALLATION CONDITIONS OF EACH ADHESIVE ANCHOR SHALL BE SUBMITTED FOR APPROVAL. INSTALLATION CONDITIONS ARE:
   DRY, DAMP OR WET HOLE
   CORED HOLE OR HAMMER DRILLED HOLE
   STANDARD (PER MANUFACTURER) OR OVERSIZE HOLE
   HORIZONTAL, VERTICAL OR OVERHEAD SURFACE
   TEMPERATURE RANGE OF INSTALLATION
5. THE CHEMICAL ADHESIVE AND PROPRIETARY ADHESIVE ANCHOR MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE STRICTLY FOLLOWED, PARTICULARLY WITH REGARD TO DRILLING AND CLEANING OUT THE HOLE AND THE INSTALLATION CONDITIONS.
6. IF ANY OF THE FOLLOWING MINIMUM DISTANCES ARE NOT INDICATED OR AVAILABLE THEN VERIFY THE DETAIL AND FIELD CONDITIONS WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLING:

ANCHOR DIA	C TO C DISTANCE	EDGE DISTANCE	EMBED DISTANCE	MAT'L THICKNESS
1/2"	3 1/2"	4"	3 1/2"	5 1/2"
5/8"	4"	5"	4"	6"
3/4"	6"	6"	5"	8"

7. IF ANY OF THE FOLLOWING CONDITIONS ARE INDICATED OR PRESENT THEN VERIFY ACCEPTABILITY OF CHEMICAL ADHESIVE OR PROPRIETARY ADHESIVE ANCHOR TYPE, MATERIAL OR FINISH WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLING:
   CORROSIVE, CHEMICAL OR ABNORMAL TEMPERATURE ENVIRONMENT
   VIBRATORY OR FATIGUE LOADING OF ANCHOR
   IMPACT OR SHOCK LOADING OF ANCHOR
   CONTINUOUS TENSION (E.G. HANGING LOADS FROM CEILINGS)

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ENGINEER/ARCHITECT: MICHAEL J. WHITE

CONSTRUCTION COMPANY: QUINN CONS CORP.

09/27/2018

This document, originally issued, sealed, and signed by MICHAEL J. WHITE, Tennessee Professional Engineer, No. 117300, on JUNE 2015, shall not be used in lieu of a certified document.

GRW PROJECT NO. 3827-07

CLIENT PROJECT NO.

RECORD DRAWINGS

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STRUCTURAL GENERAL NOTES

WATER TREATMENT PLANT EXPANSION
CITY OF LOBELVILLE, TENNESSEE

DESIGNED:	MJW
DRAWN:	LN
REVIEWED:	MJW
APPROVED:	MJW

REVISIONS

NO	DESCRIPTION	DATE	BY

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED
SCALE CHECK:

DATE: JUNE 2015

SCALE: AS SHOWN

SHEET NO.

S-0-001