

General

1.

The Contractor shall verify all dimensions prior to starting construction. The Architect shall be notified of any discrepancies or inconsistencies.

2.

Structure noted in the drawings as existing shall be field verified by the contractor and any discrepancies noted shall be reported to the Architect/Structural Engineer.

3.

Do not scale the drawings.

4.

Notes and details on the drawings shall take precedence over these general notes, typical details, and the project specifications.

5.

Typical details and schedules indicated may not be specifically referenced on the drawings. The contractor is responsible to determine where each typical detail or schedule applies. If locations are found where no typical detail, typical schedule, or specific detail applies, notify the Architect/Structural Engineer.

6.

All work shall conform to the minimum standards of following codes:

The 2003 edition of the International Building Code (IBC), and other regulating agencies which have authority over any portion of the work, and those codes and standard listed in these notes and in the project specifications.

7.

See the architectural drawings for the following:
Size and location of door and window openings, size and location of interior and exterior non-bearing partitions, size and location of concrete curbs, floor drains, slopes, depressed areas, changes in level, chamfers, grooves, inserts, etc., size and location of floor and roof openings, floor and roof finishes, stair framing and details, dimensions not shown on the structural drawings, ceiling assemblies, exterior wall assemblies.

8.

See mechanical, plumbing, and electrical drawings for the following:
Pipes, sleeves, hangers, trenches, wall floor and roof openings, duct penetration etc., except as shown or noted, electrical conduit runs, boxes, outlets in walls and slabs, concrete inserts for electrical, mechanical or plumbing fixtures, size and location of machine or equipment bases, anchor bolts for mounts.

9.

For mechanical and electrical equipment anchorage to be designed by others, see IBC section 1621 and ASCE 7-02. Use isolators, fasteners and bracing approved by ICBO-ES capable of transmitting code required lateral loads. Secure suspended equipment with lateral bracing.

10.

For piping and ductwork bracing to be designed by others, see the latest edition of "Guidelines for Seismic Restraints of Mechanical Systems" by the Sheet Metal and Air Conditioning Contractors National Association.

11.

The contract Structural drawings and specifications represent the finished structure. They do not indicate the method of construction. Contractor to provide construction means, methods, techniques, sequences and procedures as required. Contractor to provide adequate excavation procedures, shoring, bracing and erection procedures complying with national, state and local safety ordinances. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to: bracing and shoring for loads due to hydrostatic, earth, wind or seismic forces, construction equipment, etc.

12.

Observation visits (site visits) by representatives of Architect/Structural Engineer do not include inspection of construction means and methods. Site visits during construction are not continuous and detailed inspection services which are to be performed by others. Observations are performed solely for the purpose of determining if the Contractor understands design intent shown in the contract drawings. Observations do not guarantee Contractor's performance and are not to be construed as supervision or verification of construction.

13.

Notify the Structural Engineer when drawings by others show openings, pockets, etc., not shown on the structural drawings, but which are located in the structural members.

14.

All specifications and codes noted shall be the latest approved editions and revisions by the governmental agency having jurisdiction over this project.

15.

Contractor shall investigate the site during clearing and earth work operations for filled excavations or buried structures such as cesspools, cisterns, foundations, utilities, etc. If any such structures are found, the Structural Engineer shall be notified immediately.

16.

Construction materials shall be spread out when placed on framed floors or roofs. The construction material load shall not exceed the design live load per square foot. Provide adequate shoring and/or bracing where structure has not attained design strength.

Contractor shall review and stamp shop drawings prior to submission to the Architect/Structural Engineer. Contractor shall review for completeness and compliance with contract documents.
Submit shop drawings to the Architect/Structural Engineer as indicated or specified for review prior to fabrication. Review will be for general conformance with design intent conveyed in contract documents.
When an engineer is required to sign and stamp shop drawings and calculations, ensure seal indicates engineer as registered in state where project site occurs.
Shop drawings are not a part of contract documents. Therefore, Architect's/Structural Engineer's review does not constitute an authorization to deviate from terms and conditions of the contract.
Shop drawings will be rejected for incompleteness, lack of coordination with other portions of contract documents, lack of calculations (if required), or where modifications or substitutions are indicated without prior review per paragraph above.
Submit shop drawings and calculations to governing code authority when specifically indicated or requested.
Structural Engineer requires 10 working days after receipt of shop drawings and calculations for processing.

17.

Shop drawings submitted to the Structural Engineer for review shall consist of (1) blue line set and (1) sepiat set. No modifications or substitution of drawings and specifications will be accepted via shop drawing review.

18.

IBC Table 1904.3 Sulfate Exposure (See General Notes - Concrete Item #3 for concrete water cement ratio limits): Severe

Quality Assurance and Special Inspection

Testing Laboratory: Retained by owner and satisfactory to Architect/Structural Engineer and governing code authority to perform required tests and inspections of this contract and applicable code.

Material Certification: Submit laboratory test reports certifying materials are of identifiable tested stock to owner, testing laboratory, Architect/Structural Engineer and, upon request, to governing code authority. If laboratory test reports cannot be made available, testing laboratory will perform tests as directed by Architect/Structural Engineer. Contractor shall pay testing laboratory for costs related to tests and inspections of unidentifiable materials or materials furnished without laboratory test reports, materials found deficient after initial tests and inspections, or materials replacing deficient materials.

1. Concrete.

Testing laboratory will review concrete mix design data and will perform the following concrete tests at frequency indicated in IBC section 1905.6:
(a) Slump tests in compliance with ASTM C143.
(b) Prepare four test cylinders for compressive strength testing in compliance with ASTM C39, ACI 318 and IBC section 1905.6. Test one cylinder at 7 days, two cylinders at 28 days and retain remaining cylinder for tests until completion of project. Determine concrete compressive strength at 28 days based on average of two cylinders tested.
(c) Entrained air content in compliance with ASTM C231 for air entrained concrete.

2. Reinforcing Steel
(a) During placement

3. Structural masonry.

4. Special cases:
(a) Epoxy and grout set bolts and reinforcing bars

5. Ten percent of drilled-in, epoxy, or grout set anchors shall be proof tested to 2 times allowable tension. Notify Architect/Structural Engineer of any failures so additional testing of adjacent anchors can be directed.

6. Excavation and back-filling.

All special inspection shall be performed in accordance with the requirements of IBC section 1704.

Epoxy Instructions for Anchoring Rebar and Bolts

1. Epoxy may not be used unless specifically detailed on the drawings or without prior approval of the Structural Engineer.
2. Bars must be deformed or threaded for the full embedment depth in epoxy.
3. Over-drill bar diameter by 1/4 in., unless indicated otherwise by the Epoxy Manufacturer, and to the depth indicated on the structural drawings.
4. Remove all dirt, dust, water, and ice by vacuum from the drilled holes.
5. Any dirt, rust, and oil on the bars shall be removed.
6. During the epoxy mixing and application process, follow the Epoxy Manufacturer's specifications exactly.
7. Fill the holes drilled for the bars partially with epoxy and then insert the bars. Work the bars in and out to compact the epoxy, then fill the remainder of the holes.
8. Vertical holes to be filled from the bottom are to use an epoxy gel.
9. The following epoxy systems are acceptable:

RAWL POWER-FAST ICBO-ES ER-4514
EPCON SYSTEM BY ITW RAMSET ICBO-ES ER-4285
HILTI HIT HY-150 ICBO-ES ER-5193
SIMPSON ET ICBO-ES ER-4945

The use of any other epoxy system must be submitted for approval to the Structural Engineer.

Foundation

1. The design of the foundation system is based on the geotechnical report (and any addenda) prepared by the following company:

Company:	TERRACON
Report no:	64045083
Dated:	May 27, 2004

Copies are available for review at the Architect's office and contractor shall have a copy at the jobsite.

2. The foundation system is designed based on the following:

Allowable Soil Bearing Pressure	Continuous Footings	2000
Equivalent Fluid Pressure Unconstrained	35 pcf	
Passive Pressure	250 pcf	
Friction Coefficient	0.35	

A 1/3 increase is allowed for seismic or wind loading where asterisk (*) is indicated.

3. The contractor shall provide for proper dewatering of excavations from surface water, ground water, seepage, etc.

4. The Contractor shall provide for the installation and design of all cribbing, sheathing and shoring required to safely and adequately retain the earth banks and support any existing structures in accordance with all national, state and local safety ordinances.

5. All abandoned utilities, footings, etc., that interfere with the new construction shall be removed. Notify the Structural Engineer should any foundations for existing structures be encountered that are not shown on the structural drawings.

6. Footings shall be placed and estimated according to depths shown on the drawings. Excavations for footings shall be approved by the Geotechnical Engineer prior to placing the concrete and reinforcing. The Contractor shall notify the Geotechnical Engineer when the excavations are ready for inspection. The Geotechnical Engineer shall submit a letter of compliance to the Owner. Should soil encountered at these depths not be approved by the Geotechnical Engineer, footing elevations or footing designs will be altered by change order.

7. All excavations shall be properly backfilled. Footing backfill and utility trench backfill within the building perimeter shall be mechanically compacted in layers, to the approval of the Geotechnical Engineer. See geotechnical report for requirements. Flooding will not be permitted.

8. The Contractor shall not backfill behind retaining walls before the concrete or masonry walls have reached full design strength. The Contractor shall brace or protect all building and pit walls below grade from lateral loads until attaching floors are completely in place and have reached full design strength. The Contractor shall provide for the design, any required permits and the installation of such bracing and protection.

9. Sub-base below slabs on grade shall be supported on natural grade or structural fill as directed in the geotechnical report. See typical details and geotechnical report for vapor barrier and sub-base requirements.

Reinforcing Steel (for Concrete and Masonry)

1. All reinforcing steel shall be detailed and placed in accordance with the "Building Code Requirements for Reinforced Concrete" (ACI 318-02) and the "Manual of Standard Practices for Reinforced Concrete Construction" by CRSI and WCRSI as modified by the project drawings and specifications.
2. Deformed reinforcing bars shall conform to the requirements of ASTM A615 grade 60 and ASTM A706 grade 60 for deformed weldable bars.
3. All reinforcing bar bends shall be made cold.
4. Lap splices shall be made only where shown on the structural drawings.
5. Reinforcing dowels between footings and walls or columns shall be the same number, size, spacing and grade as the specified vertical reinforcing, u.n.a.
6. All reinforcing bars shall be marked so their identification can be made when the final in-place inspection occurs.
7. Welded wire fabric shall conform to ASTM A185.
8. Minimum lap of welded wire fabric shall be 6 inches or one full mesh and one half, whichever is greater.
9. In addition to all the reinforcing steel indicated on the drawings, the contractor shall provide for an allowance of two tons of reinforcing bars to be furnished, fabricated and placed during the progression of work as may be directed by the Structural Engineer.

Masonry

1. The masonry units shall conform to ASTM C90 grade N-1 and IBC Standard C90-99.
2. Mortar and grout shall comply with the provisions of Section 2103 of the IBC
3. Mortar mix shall conform to requirements for IBC Table 2103.7 (1), Type S, and project specifications.
4. Grout shall be coarse grout. Use sufficient water for grout to flow into all joints of the masonry without segregation.
5. Cement - see notes under "CONCRETE" for requirements and type of cement.
6. The design strength f'm shall be 1500 psi unless noted otherwise in the drawings. The f'm shall be verified by the prism method (IBC Section 2105.3).

The minimum required 28-day compressive strengths for grout, mortar, and block shall be as follows:

Masonry Design Strength						
f'm =	1500 psi	2000 psi	2500 psi	3000 psi	3500 psi	4000 psi
Grout	2000 psi	2500 psi	3125 psi	3750 psi	4375 psi	5000 psi
Mortar	1800 psi	1800 psi	2500 psi	2500 psi	2500 psi	2500 psi
Type S	Type S	Type M	Type M	Type M	Type M	Type M
Block(*)	2000 psi	2500 psi	3125 psi	3750 psi	4375 psi	5000 psi

* Minimum compressive strength at 28-days on the net area.
Note: These strengths are minimum requirements only. If greater strengths are required to reach the required f'm for the combined system, these greater strengths shall be used.

7. Mortar and grout mix designs shall be submitted to the Structural Engineer for review. All mix designs shall be designed by a qualified testing laboratory and be wet stamped by a Civil Engineer licensed in the State of Nevada.
8. Testing data by a qualified testing laboratory for the masonry block shall be submitted to the Structural Engineer for review.
9. All masonry shall be solid grouted unless noted otherwise on the drawings.
10. Refer to architectural drawings for surface and height of units, laying pattern and joint type.
11. Grout lift provisions shall be in accordance with ACI 530-02 Masonry Standards S-23 Section 3.5.
12. Reinforcing bars shall be ASTM A615, grade 60, unless noted otherwise. See notes under 'reinforcing steel' for additional requirements.
13. Placement of reinforcing bars shall conform to ACI 530-02 Masonry standards S-22 Section 3.4. A minimum of 1/2 inch grout between the main reinforcing and masonry units shall be provided.
14. Minimum dimensions of grout spaces and cells shall be in accordance with ACI 530.1, S-24, Table 7. All cells shall be in vertical alignment and footing dowels shall align with cells containing vertical reinforcing steel.
15. Unless noted otherwise all vertical reinforcing shall have a minimum tension lap splice of 72-bar diameters. When two bars occur in one cell, the splice shall be increased to 94-bar diameters.
16. All horizontal reinforcing shall have a minimum lap splice of 48-bar diameters, stagger all horizontal rebar splices.
17. No pipes or electrical conduit shall pass through masonry lintels unless specifically detailed.
18. No pipes or electrical conduit shall pass through masonry lintels unless specifically detailed.
19. Mechanical pipes and electrical conduits which pass through masonry walls do not require sleeves, unless otherwise indicated in the project specifications, mechanical and/or electrical drawings. If sleeves are required, install sleeves before grouting. Do not cut any reinforcing which may interfere with sleeve placement. Notify the Structural Engineer in advance of conditions not shown on the structural drawings.

Concrete

1. All aspects of work pertaining to the concrete construction shall be in accordance with ACI 318-02, "Building Code Requirements for Structural Concrete" and the latest edition of "Specifications for Structural Concrete for Buildings", ACI 301, with modifications as noted on the project drawings and/or specifications.
2. Concrete mix designs shall be submitted to the Structural Engineer for review. All mix designs shall be designed by a qualified testing laboratory and shall be wet stamped by a Civil Engineer licensed in the State of Nevada. Base design mix on field experience or trial mixtures as stipulated in IBC, Section 1905.3
3. Portland cement shall conform to ASTM C150 Type V where the concrete is in contact with soil. Concrete that will be exposed to sulfate - containing solutions shall comply with IBC Section 1904.3 For IBC Table 1904.3. Severe and Very Severe sulfate exposures as identified in the project geotechnical report, the water cement ratio shall not exceed 0.45 and shall not exceed 0.50 for Moderate sulfate exposure. Type II cement shall be used at all other locations in the structure.
4. Fly ash may be used in concrete mixes. The fly ash shall conform to ASTM C618 Class F. The loss of ignition shall be limited to 2%. The addition rate for fly ash shall be limited to 15% of the cement weight. The contractor shall submit all certificates showing the fly ash is in accordance with the above criteria.
5. Do not use concrete or grout containing chlorides.
6. All concrete exposed to freeze - thaw cycles shall contain 6% +/- 1% of entrained air.
7. Hard rock concrete - aggregate shall conform to all requirements and tests of ASTM C33 and project specifications. Exceptions may be used only with approval of the Structural Engineer. Provide concrete mix design with proven shrinkage characteristics of less than 0.0005 inches/inch.
8. Lightweight concrete - aggregate shall be in accordance with ASTM C330 and project specifications. Lightweight concrete mix designs shall be tested prior to approval, for shrinkage in accordance with ASTM C157. Shrinkage shall not exceed 0.0005 inches / inch.
9. Structural concrete 28-day strengths & types are as follows:

Location of Concrete	Strength, psi	Type
Footings	4500	Hard Rock

10. The modulus of elasticity of concrete, shall be tested in accordance with ASTM C469 for framed concrete slabs and beams and shall be at least the value given by the equations in section 8.5.1 of ACI 318 for the specified concrete 28-day strength.
11. Concrete mixing operations, etc., shall be in accordance with ASTM C94.
12. Dry pack or grout under baseplates, sill plates, etc., see specifications. Strength requirements are as required for concrete.
13. Concrete forms shall be laid out and constructed to provide the specified cambers indicated on the structural drawings.
14. Submit shop drawings to Architect/Structural Engineer indicating locations of concrete joints for review prior to placing concrete. Place joints at locations to minimize effects of shrinkage as well as being placed at points of low stress.

15. Concrete placement shall be in accordance with ACI standard 304 and project specifications. Provide keys in construction joints unless detailed otherwise. Thoroughly clean, remove laitance and thoroughly wet and remove standing water in construction joints before placing new concrete. At vertical joints, flush with a coat of neat cement before placing new concrete.
16. Roughen concrete surface to a full amplitude of 1/4 inch where masonry walls intersect concrete or where new concrete interfaces with existing concrete.
17. If columns and walls are placed with a floor, two hours must elapse between end of column or wall placement and beginning of the floor placement.
18. Clear coverage of concrete over reinforcing bars shall be as follows:

Location of Concrete	Minimum Concrete Cover
Concrete cast against and permanently exposed to earth	3"
Concrete exposed to earth or weather: #6 through #18 bar #5 bar and smaller	2" 1 1/2"

19. Prior to concrete placement, all reinforcing bars, anchor bolts and other concrete inserts shall be well secured in position.
20. Mechanical pipes or electrical conduit shall not pass through concrete columns or beams unless specifically detailed.
21. Unless otherwise indicated in the mechanical or electrical drawings or project specifications, mechanical pipes and electrical conduits which pass through slab on grade, concrete on steel deck, framed concrete floors and walls do not require sleeves. If sleeves are required, the sleeves shall be installed prior to placing concrete. Do not cut any reinforcing which may interfere with sleeve placement. Coring openings in concrete is not permitted. Notify the Structural Engineer in advance of conditions not shown on the structural drawings.
22. With the exception of slabs on grade and concrete on steel deck, the outside diameter of mechanical pipes and/or embedded electrical conduits (other than those passing through) shall not exceed 1/3 of the slab thickness and shall be centered between the top and bottom reinforcing, unless specifically detailed otherwise. Concentrations of mechanical pipes and/or electrical conduits shall be avoided except where detailed openings are provided. Conduit and pipe shall be spaced at 3' or 3 diameters on center, whichever is larger.
23. For slabs on grade no pipes or conduits shall be placed within the indicated concrete slab thickness and shall be located below the slab unless specifically detailed otherwise.
24. The projecting corners of columns, beams, and walls, etc., shall be formed with a 3/4 in. chamfer, unless otherwise noted on architectural drawings or specifications.
25. Maintain concrete above 50 degrees Fahrenheit and in a moist condition for a minimum of 7 days after placement unless otherwise accepted by Architect/Structural Engineer.
26. Any curing compounds used on concrete that is to receive a resilient tile finish shall be approved by the Finish Applicator before use.

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STRUCTURAL
GENERAL NOTES

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EARLY CHILDHOOD
DEVELOPMENT CENTER

08-03-07

DRAWN BY: WER
DESIGNED BY: BR
CHECKED BY: GM
PROJECT NO.: 6741.04

DATE: 07-25-06
DATE: 07-25-06
DATE: 07-25-06
SCALE: AS SHOWN

SHEET
C6.01
SHEET 10 of 11
DRAWING No
107V4517

SEALED
GUY M. MORRIS
EXP. 12-31-05
CIVIL
No. 14576

REVISIONS

REV. DATE BY DESCRIPTION: