

GENERAL STRUCTURAL NOTES

GENERAL REQUIREMENTS

DRAWINGS
THESE DRAWINGS HAVE BEEN PREPARED UNDER STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE STRUCTURAL ENGINEERS IN THIS OR SIMILAR LOCALITIES. THEY NECESSARILY ASSUME THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKERS WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, IT IS UNDERSTOOD THAT THE CONTRACTOR WILL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR ALL MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

MISCELLANEOUS ITEMS
CALCULATION AND DESIGN OF MISCELLANEOUS NON-STRUCTURAL ITEMS, SUCH AS, RAILINGS, NON-STRUCTURAL WALLS AND PREFABRICATED STRUCTURAL ITEMS ARE NOT INCLUDED AND ARE TO BE PROVIDED BY OTHERS UNLESS SPECIFICALLY NOTED ON THESE DRAWINGS.

CONSTRUCTION MEANS AND METHODS
THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DESIGN AND PROVIDE ADEQUATE SHORING, BRACING, FORM-WORK, ETC., AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY (INCLUDING UTILITIES) DURING CONSTRUCTION. CONSTRUCTION MATERIALS SHALL BE PLACED ON THE STRUCTURE SUCH THAT THE DESIGN LOADS AS STATED HEREIN ARE NOT EXCEEDED.

DIMENSIONS, INSERTS AND OPENINGS
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, CONDITIONS AND ELEVATIONS WITH CIVIL DRAWINGS PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEER IN WRITING OF ANY DISCREPANCIES OR OMISSIONS NOTED ON THE DRAWINGS. ANY SUCH DISCREPANCY, OMISSION, OR VARIATION NOT REPORTED BEFORE START OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. WHERE DISCREPANCIES OCCUR IN THESE DRAWINGS, NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS.

CONTRACTOR SHALL ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.

STANDARDS
WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE EDITION REFERENCED IN THE GOVERNING BUILDING CODE.

TYPICAL DETAILS AND NOTES
TYPICAL DETAILS AND NOTES SHALL APPLY, THOUGH NOT NECESSARILY INDICATED AT A SPECIFIC LOCATION ON PLANS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT. DETAILS MAY SHOW ONLY ONE SIDE OF CONNECTION OR MAY OMIT INFORMATION FOR CLARITY.

SHOP DRAWINGS
SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL ITEMS. SHOP DRAWINGS ARE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE STRUCTURAL DRAWINGS. REVIEW DOES NOT INDICATE THAT THE SHOP DRAWINGS ARE CORRECT OR COMPLETE. RESPONSIBILITY FOR CORRECTNESS SHALL REST WITH THE CONTRACTOR. ANY CHANGES, SUBSTITUTIONS, OR DEVIATIONS FROM CONTRACT DRAWINGS SHALL BE CLOUDED. ANY OF THE AFOREMENTIONED SHALL NOT BE CONSIDERED APPROVED AFTER ENGINEER'S REVIEW UNLESS SPECIFICALLY NOTED ACCORDINGLY. THE SHOP DRAWINGS DO NOT SUPERSEDE OR REPLACE THE ORIGINAL CONTRACT DRAWINGS. ANY ENGINEERING PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL OF AN APPROPRIATELY REGISTERED ENGINEER. ENGINEERING SYSTEM SOLUTIONS SHALL NOT BE RESPONSIBLE FOR THE ADEQUACY OF ENGINEERING DESIGNS PERFORMED BY OTHERS. FIVE WORKING DAYS SHALL BE ALLOWED FOR THE ENGINEER'S REVIEW. CONTRACTOR SHALL PROVIDE A COPY OF EACH SUBMITTAL FOR ENGINEERING SYSTEM SOLUTIONS RECORDS.

MOLD
MOLD CONCERNS AND PREVENTION IS OUT OF ENGINEERING SYSTEM SOLUTIONS SCOPE OF SERVICES. ENGINEERING SYSTEM SOLUTIONS SHALL BE HELD HARMLESS, TO THE EXTENT OF THE LAW, FOR ALL MOLD PREVENTION AND MOLD RELATED CONCERNS.

BASIS FOR DESIGN

CODE: AASHTO STANDARD SPECIFICATIONS
2009 IBC (W/ SOUTHERN NEVADA AMENDMENTS)

DEAD LOAD: 150 PCF
STRUCTURE SELF WEIGHT CONCRETE
VARYING COVER WITH A SOIL BACKFILL DENSITY 125 PCF

LIVE LOAD: HL-93 LOADING

SOILS:
SOIL BEARING PRESSURE 2000 PSF
MINIMUM FOOTING EMBEDMENT DEPTH 18 INCHES
AT REST EARTH PRESSURE-LEVEL BACKFILL 80 PCF
PASSIVE EARTH PRESSURE 250 PCF
COEFFICIENT OF FRICTION FOR LATERAL SLIDING RESISTANCE 0.35

GEOTECHNICAL REPORT

1. THE FOUNDATIONS FOR THE ABOVE REFERENCED PROJECT ARE DESIGNED WITH RECOMMENDATIONS FROM:

FIRM: AMT SUNBELT, LLC, REPORT#: 12013 DATE: APRIL 11, 2012

ALL RECOMMENDATIONS LISTED WITHIN THIS REPORT REGARDING SITE PREPARATION, GRADING, COMPACTION TESTS, INSPECTIONS ETC. SHALL BE FOLLOWED WITH STRICT ADHERENCE AND SHALL BE COMPLETED PRIOR TO CONSTRUCTION.

DEFERRED SUBMITTALS

DEFERRED ITEMS
PREFABRICATED OR SPECIALTY ITEMS, AND THEIR COMPONENTS, WHICH ARE INDICATED BY THE STRUCTURAL DRAWINGS TO BE DESIGNED BY OTHERS, SHALL BE SUBMITTED TO THE ARCHITECT AND/OR ENGINEER OF RECORD FOR REVIEW AS A DEFERRED SUBMITTAL, PROVIDED THAT SUCH SUBMITTAL IS AUTHORIZED BY THE BUILDING DEPARTMENT. DEFERRED SUBMITTALS REQUIRED TO BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

- CONCRETE MIX DESIGN

DOCUMENTATION
ALL DEFERRED SUBMITTALS SHALL INCLUDE CALCULATIONS AND DRAWINGS PREPARED IN ACCORDANCE W/ ALL APPLICABLE BUILDING CODES AND STAMPED BY AN APPROPRIATELY LICENSED PROFESSIONAL ENGINEER. SUBMITTALS SHALL SHOW LOCATION AND MAGNITUDE OF LOADS, SIZE AND CONFIGURATION OF MEMBERS AND COMPATIBILITY W/ THE PRIMARY STRUCTURAL SYSTEM.

REVIEW
DEFERRED SUBMITTAL ITEMS SHALL BE REVIEWED IN ACCORDANCE W/ STANDARD SHOP DRAWING REVIEW PROCEDURES, AS DESCRIBED IN THE GENERAL REQUIREMENT SECTION OF THE GENERAL STRUCTURAL NOTES.

WATER PROOFING

THE EXTERIOR SURFACE OF THE CONCRETE WALLS SHALL BE WATERPROOFED W/ AN APPROVED WATER PROOFING MATERIAL AS PER CLARK COUNTY UNIFORM STANDARD SPECIFICATIONS SECTION 646. INSTALLATION SHALL BE IN ACCORDANCE W/ MANUFACTURE RECOMMENDATIONS AND SPECIFICATIONS.

POST-INSTALLED ANCHORAGE

INSTALLATION
INSTALL THE ITEMS BELOW PER THE CURRENT ICC REPORT (ESR) AND MFR'S RECOMMENDATIONS

ALTERNATE
ALTERNATE ANCHOR SYSTEMS WITH CURRENT ICC APPROVAL MAY BE USED WITH PRIOR WRITTEN APPROVAL BY ENGINEER

EPOXY-ADHESIVE ANCHORS
EPOXY-ANCHORED BOLTS, THREADED ROD AND REBAR SHALL BE INSTALLED USING ONE OF THE FOLLOWING EPOXY ADHESIVES:

- CONCRETE:
- HILTI HIT-RE 500-SD ADHESIVE ANCHOR SYSTEM (ESR-2322)
- SIMPSON SET-XP ADHESIVE ANCHOR SYSTEM (ESR-2508)

CONCRETE

MATERIAL
MIN 28 DAY STRENGTH: 4500 PSI (DESIGNED FOR 2500)
STRUCTURES: 0.45
MAX WATER CEMENT RATIO: 0.45
CONCRETE SLUMP: 4 - 6 INCHES
CEMENT TYPE: /

ALL CONCRETE SHALL BE REGULAR WEIGHT OF 145 POUNDS PER CUBIC FOOT UNO, USING HARD ROCK AGGREGATES CONFORMING TO ASTM C33.

BATCHING, MIXING, AND TRANSPORTING
CONCRETE MIXES SHALL BE DESIGNED BY A CERTIFIED LABORATORY AND APPROVED BY THE ENGINEER.

PORTLAND CEMENT SHALL CONFORM TO ACI 318, CHAPTER 3.2.

NO MORE THAN 90 MINUTES SHALL ELAPSE BETWEEN CONCRETE BATCHING AND CONCRETE PLACEMENT, UNLESS APPROVED BY THE ENGINEER OR AUTHORIZED TESTING AGENCY.

BATCHING, MIXING, AND TRANSPORTING CONCRETE SHALL BE PER ACI 304R.

WATER SHALL NOT BE ADDED AT THE JOB SITE SUCH THAT THE MAXIMUM W/C RATIO IS EXCEEDED.

ONLY ADMIXTURES PERMITTED BY THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY SHALL BE ALLOWED.

FORM WORK
FORM WORK SHALL BE PER ACI 347R.

PLACING
PLACING OF CONCRETE SHALL BE PER ACI 304R.

PLACING OF CONCRETE BY MEANS OF PUMPING SHALL BE PER ACI 304.2R.

REINFORCING STEEL AND EMBEDDED ITEMS SHALL BE CLEAN AND FREE FROM FOREIGN DEBRIS.

REINFORCING AND OTHER EMBEDDED ITEMS SHALL BE TIED IN PLACE AND CARE SHALL BE TAKEN TO ENSURE THAT EMBEDDED ITEMS ARE NOT DISPLACED WHILE PLACING CONCRETE.

CONTRACTOR SHALL ENSURE THAT PROPER COVER IS MAINTAINED AT ALL REINFORCING DURING PLACEMENT.

CONSOLIDATION
CONSOLIDATION OF FOOTINGS, WALLS, SLABS ON GRADE, BEAMS, COLUMNS, AND ELEVATED SLABS SHALL BE PER ACI 309R.

UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 5 FEET. WHERE THE CONGESTION OF REINFORCING RESTRICTS THE USE OF A STANDARD HOSE NOZZLE, A REDUCED HOSE NOZZLE MAY BE USED OR AT THE CONTRACTOR'S OPTION PORTS MAY BE BORED INTO THE SIDES OF THE WALL FORMS.

EMBEDDED ITEMS
EMBEDDED ITEMS SHALL BE PLACED PER ACI 318 SECTION 6.3.

CONDUITS AND PIPES SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OF RECORD.

EMBEDDED CONDUITS, PIPES, AND SLEEVES SHALL NOT BE LARGER IN DIAMETER THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, BEAM, OR WALL IN WHICH THEY ARE EMBEDDED AND SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS OR ELEMENT WIDTHS ON CENTER.

NO ALUMINUM EMBEDS SHALL BE IN DIRECT CONTACT WITH CONCRETE

WEATHER PROTECTION
PROTECT CONCRETE FROM DAMAGE OR REDUCED STRENGTH DUE TO COLD OR HOT WEATHER IN ACCORDANCE W/ ACI 308 AND 305, RESPECTIVELY.

COLD WEATHER CONDITIONS EXIST AS DEFINED BY ACI 306.

WHEN COLD WEATHER EXISTS, FOLLOW ALL COLD WEATHER SPECIFICATIONS AS DEFINED BY ACI 306 AND NOTED BELOW.

STEEL EMBEDDED IN CONCRETE HAVING A CROSS-SECTIONAL AREA GREATER THAN 1 IN² INCLUDING REINFORCING SHALL BE HEATED TO 10°F. THE HEATING PROCESS SHALL NOT ALTER THE MECHANICAL OR METALLURGICAL PROPERTIES OF THE METAL. THE CONTRACTOR SHALL SUBMIT THE PLAN FOR HEATING TO THE ENGINEER OF RECORD FOR APPROVAL.

ENSURE THAT ALL EMBEDDED ITEMS ARE FREE OF FROST OR SNOW.

FROZEN SUBGRADE SHALL BE THAWED TO THE MINIMUM FROST DEPTH AS SPECIFIED IN THE BASIS FOR DESIGN.

CONCRETE MIX TEMPERATURE WHILE PLACING SHALL BE 55° F TO 75° F AND MAINTAINED OVER THE NEXT 72 HOURS. THE MAXIMUM ALLOWABLE TEMPERATURE DROP OVER THE NEXT 24 HOURS IS 50°F. CONCRETE TEMPERATURES SHALL BE CHECKED AT LEAST 2 TIMES PER DAY AND NOT CLOSER THAN 8 HOUR INCREMENTS.

WHEN CONCRETE IS PLACED IN COLD WEATHER CONDITIONS, ACCELERATOR ADMIXTURES MAY BE USED WHEN CONCRETE STRENGTH IS INCREASED BY 25% (750 PSI MIN) AS SPECIFIED IN CONCRETE SECTION. PRIOR TO REMOVAL OF FORMS AND SHORING, CONCRETE STRENGTH SHALL REACH 1000 PSI COMPRESSIVE STRENGTH UNLESS NOTED OTHERWISE.

A DETAILED REPORT SHALL BE SUBMITTED WITH THE CONCRETE MIX DESIGN AND PROTECTION PROCEDURES PRIOR TO PLACEMENT OF CONCRETE TO THE ENGINEER.

INVERTS AND SLABS
1-1/2" MAX AGGREGATE SIZE.

CONTRACTOR SHALL FOLLOW ACI 302 AGGREGATE SPECIFICATION USING MIN OF #8 AND #4 AGGREGATES TO PROVIDE A WELL GRADED AGGREGATE MIX.

CONCRETE SHALL BE FINISHED ACCORDING TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY. INVERT EXPOSED SURFACE SHALL BE ORDINARY BROOM FINISH.

REINFORCING STEEL

USE OF EPOXY-COATED BARS IS NOT PERMITTED.

GRADE

TYPE	GRADE	ASTM STD
ALL WELDED BARS	60	A706
#4 OR LARGER	60	A615
#3 OR SMALLER	40	A615
WELDED WIRE FABRIC	60	A185

CLEAR COVER

ALL DIMENSIONS NOT NOTED AS "CLR" ARE TO THE CENTER OF THE BAR. MIN COVER FOR NON-PRESTRESSED STEEL (UNO):

STRUCTURAL ELEMENT	COVER	TOLERANCE
FOOTINGS AND SLAB ON GRADE	3"	3/8"
WALLS (#5 OR SMALLER)	1 1/2"	3/8"
WALLS (#6 OR LARGER)	2"	1/2"
ELEVATED SLABS, BEAMS AND COLUMNS	1 1/2"	3/8"

LAP SPLICES

LENGTHS SHALL BE PROVIDED PER THE FOLLOWING TABLE. (UNO TACK WELDING OF REINFORCING BARS NOT ALLOWED).

REBAR LAP SCHEDULE				
BAR	TOP REINFORCING		BOT REINFORCING	
	LAP	LAP/1.3	LAP	LAP/1.3
#3	18"	14"	14"	11"
#4	24"	19"	19"	14"
#5	30"	23"	23"	18"
#6	37"	28"	28"	22"
#7	53"	41"	41"	32"
#8	61"	47"	47"	36"
#9	69"	53"	53"	41"
#10	77"	59"	59"	46"
#11	86"	66"	66"	51"

(a) TOP REINFORCING IS DEFINED AS HORIZONTAL REINFORCING PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW.

(b) WHERE HALF OR MORE OF BAR SPLICES ARE STAGGERED AT LEAST ONE LAP LENGTH USE THESE LAP LENGTHS.

MECHANICAL SPLICE COUPLERS

MECHANICAL SPLICE COUPLERS SHALL HAVE CURRENT ICC APPROVAL AND SHALL BE CAPABLE OF DEVELOPING 125% OF THE STRENGTH OF THE BAR.

WELDING

WELDING OF REINFORCING BARS, METAL INSERTS, AND CONNECTIONS SHALL CONFORM TO AWS D1.4. ONLY A706 BAR SHALL BE WELDED.

BENDING

BENDING SHALL BE MADE ONLY AT LOCATIONS SHOWN ON PLANS OR DETAILS. ALL REINFORCING SHALL BE BENT COLD. BARS SHALL NOT BE UN-BENT AND RE-BENT. #6 BAR AND SMALLER MAY BE COLD FIELD BENT. #7 BAR AND LARGER SHALL NOT BE FIELD BENT WITHOUT PRIOR APPROVAL FROM ENGINEER.

PLACE AND DETAIL

ALL BARS SHALL BE DETAILED AND PLACED PER CRSI SPECIFICATIONS AND HANDBOOK. DOWEL ALL VERT REINFORCING TO FOUNDATION. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE.

SPECIAL INSPECTIONS

SPECIAL INSPECTION INDEPENDENT OF THE CONTRACTOR, ARCHITECT, OR ENGINEER OF RECORD SHALL BE PROVIDED BY OWNER ACCORDING TO IBC/CBC CHAPTER 17. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK FOR CONFORMANCE W/ THE CONTRACT DOCUMENTS, NOT THE SHOP DWGS. THE SPECIAL INSPECTOR SHALL SEND REPORTS TO THE OWNER, THE BUILDING OFFICIAL, THE ARCHITECT, THE ENGINEER, AND CONTRACTOR. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING THAT THE SPECIAL INSPECTION WORK WAS, TO THE BEST OF HIS KNOWLEDGE, IN OR NOT IN CONFORMANCE W/ THE PLANS, SPECIFICATIONS AND APPLICABLE WORKMANSHIP PROVISIONS OF THE IBC/CBC.

CONT OR PERIODIC SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING WORK:

VERIFICATION AND INSPECTION		
CONCRETE	CONT	PERIODIC
INSPECTION OF REINFORCING STEEL, AND/OR PRE STRESS TENDONS AND PLACEMENT		■
INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT	■	
VERIFYING USE OF REQUIRED DESIGN MIX		■
SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT AND DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS PER ACI 318	■	
WELDING OF REINFORCING STEEL:		
VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706	■	■
SHEAR REINFORCEMENT	■	■
OTHER REINFORCING STEEL		■
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.		■
VERIFICATION OF IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS		■
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		■
POST-INSTALLED ANCHORS (EPOXY, EXPANSION, SCREW)		
AS APPLICABLE THE INSPECTION PROGRAM SHALL VERIFY: ANCHOR TYPE, EMBEDMENT, TIGHTENING TORQUE, DIMENSIONS, HOLE DEPTH, DIA, AND CLEANOUT, EPOXY MIXING AND PLACEMENT PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CURRENT ICC REPORT (ESR)		DURATION OF INSPECTION SHALL BE IN ACCORDANCE W/ ICC REPORT (ESR)

STANDARD ABBREVIATIONS

AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
AD	ADDITIONAL
ASCE	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASI	AMERICAN IRON AND STEEL INSTITUTE
ATC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
AT	ALTERATIVE
AWA	AMERICAN WOODWORK ASSOCIATION
ARCH	ARCHITECTURAL
ASD	ALLOWABLE STRESS DESIGN
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BLDG	BUILDING
BLDG	BLOCKING
BN	BOUNDARY NAILING OR FASTENERS
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STEEL
BOT	BOTTOM
CB	CALIFORNIA BUILDING CODE
CL	CENTER LINE
CLC	CLEAR
CML	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DDMO	DEMOLITION
DIA OR Ø	DIAMETER
DWG	DRAWING
DM	DIMENSION
(E)	EXISTING
EA	EACH
ELEV	ELEVATION
EN	EDGE NAILING
ESR	EVALUATION SERVICES REPORT
EQ	EQUAL
EQUIP	EQUIPMENT
FF	FINISH FLOOR
FDN	FOUNDATION
FT	FOOT
FTS	FOOTING
GA	GAGE
GALV	GALVANIZED
GSN	GENERAL STRUCTURAL NOTES
GT	GRID TRUSS
H	HIGH
HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SHAPE
HT	HEIGHT
IBC	INTERNATIONAL BUILDING CODE
INFO	INFORMATION
ICC	INTERNATIONAL CODE COUNCIL
K	KIP (1000 LBS)
KLF	KIPS PER LINEAR FOOT
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
LL	DOUBLE ANGLE
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOW
LONG	LONGITUDINAL
LRFD	LOAD AND RESISTANCE FACTOR DESIGN
LT	LIGHT
MAX	MAXIMUM
MECH	MECHANICAL
MFD	MANUFACTURED
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
NIS	NOT TO SCALE
O.C.	ON CENTER
OPP	OPPOSITE HAND
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PREFAB	PREFABRICATION
PRELIM	PRELIMINARY
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
REIN	REINFORCING
REQ'D	REQUIRED
RMC	ROOF MOUNTED EQUIPMENT
SCHED	SCHEDULE
SHR	SHEDDING
SM	SIMILAR
SPEC	SPECIFICATION
SSMA	STEEL STUD MANUFACTURERS ASSOCIATION
STD	STANDARD
STL	STEEL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T O	TOP OF
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W	WITH
W/O	WITHOUT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

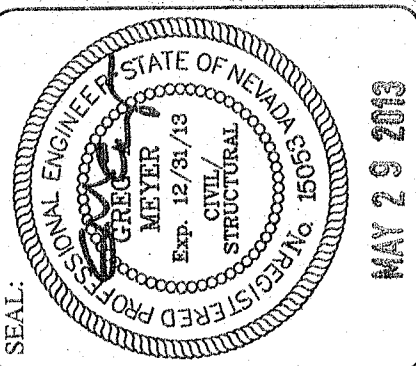
SHEET INDEX	
SHEET NO.	SHEET TITLE
S0.1	GENERAL STRUCTURAL NOTES
S0.2	TYPICAL DETAILS
S1.1	NEW 36"Ø RCP AT EXISTING MANHOLE STRUCTURE

PLANS APPROVED
STRUCTURAL
Building & Safety Dept.
City of Las Vegas, Nevada

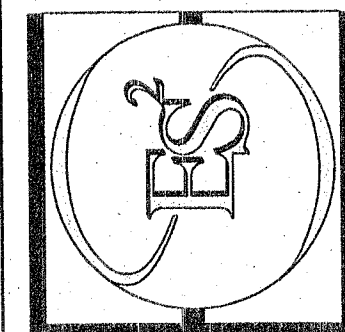
NMM JUL 11 2013

Does Not Include Electrical, Architectural, Plumbing/Mechanical or Off-Site Improvements. Make No Change Without Approval. Plan is Not a Permit to Violate Any Ordinance.

APPROVAL IS FOR CLOUDED AREAS
OR LATEST REVISIONS ONLY. SEE
ORIGINALS FOR OTHER DOCUMENTS.



ENGINEERING SYSTEM SOLUTIONS
7312 W CHEYENNE AVE, STE 1
LAS VEGAS, NV 89129
PHONE: (702) 616-3107
FAX: (702) 616-3725
WWW.ES2ENG.COM



STRUCTURAL • MEP • STEEL DETAILING • BUILDING COMMISSIONING

ESPERANZA PHASE 1
MANHOLE MODIFICATION
LAS VEGAS, NV

GENERAL STRUCTURAL NOTES

PROJECT:

SHEET TITLE:

REV.	DESCRIPTION	DATE
1	SHEET 00000	11/11/13

DRAWN: GTC CHECKED: SG/GAM

DATE: APRIL 9, 2013
PROJECT NUMBER: STR13.6012
SHEET NUMBER:

25 S0.1

H# 46516 DWG# 10715900