

GENERAL STRUCTURAL NOTES

GENERAL REQUIREMENTS

- THESE DRAWINGS HAVE BEEN PREPARED USING 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 WORKMEN 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.
- 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 DURING CONSTRUCTION. CONSTRUCTION MATERIALS SHALL BE UNIFORMLY SPREAD OUT SUCH THAT DESIGN LIVE LOAD PER SQUARE FOOT AS STATED HEREIN IS NOT EXCEEDED. VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH THE LOCAL BUILDING DEPARTMENT. ALL WORK OR CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES, REGULATIONS AND SAFETY REQUIREMENTS.
- 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 AND/OR STRUCTURAL 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.
- WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA.
- OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF ANY OPTION IS USED, THE CONTRACTOR SHALL USE THE LATEST EDITION AND/OR ADDENDA.
- ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR CIVIL AND ELECTRICAL REQUIREMENTS WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.
- OWNER SHALL BE RESPONSIBLE FOR THE COSTS OF ALL INSPECTIONS WHETHER PERFORMED BY AN AGENCY, INDEPENDENT CONSULTANT OR STRUCTURAL ENGINEER ALL INSPECTIONS REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS OR BY THESE PLANS SHALL BE PROVIDED BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT. SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN INSPECTION, UNLESS SPECIFICALLY CONTRACTED FOR.
- 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. SEDCO SHALL NOT BE RESPONSIBLE FOR THE ADEQUACY OF ENGINEERING DESIGNS PERFORMED BY THE OTHERS. ALLOW 5 WORKING DAYS FOR THE ENGINEER OF RECORD'S REVIEW. ONE COPY OF EACH SUBMITTAL WILL BE RETAINED BY THE ENGINEER OF RECORD.

DESIGN BASIS

- SPRING MOUNTAIN RANCH - UNIT 91 (1) 8'-0" x 4'-0" ARCH CULVERT
- CODE: AASHTO 1996 ed. STANDARD SPECIFICATIONS, ACI 506
- DEAD LOAD: STRUCTURE SELF WEIGHT CONCRETE = 150 pcf
VARYING COVER WITH A SOIL BACKFILL DENSITY = 120pcf
- LIVE LOAD: HS20-44 LOADING

FOUNDATION

- THE FOUNDATIONS FOR THE ABOVE REFERENCED PROJECT ARE DESIGNED WITH RECOMMENDATIONS FROM GEOTEK, INC. REPORT # 4090-1V6 DATED JULY 12, 2002 AND ADDENDUM LETTER DATED OCTOBER 7, 2002. ALL RECOMMENDATIONS LISTED WITH IN THIS REPORT REGARDING SITE PREPARATION, GRADING, COMPACTION TESTS, INSPECTIONS ETC., SHALL BE FOLLOWED WITH STRICT ADHERENCE.
- SHOULD THE GEOTECHNICAL REPORT NOT RECOMMEND FOUNDATION PREPARATION, THE FOLLOWING SPECIFICATION SHALL BE FOLLOWED:
 - EXISTING SUB BASE SHALL BE FREE OF COBBLES LARGER THAN A 12" SPHERE AND SILT OR CLAY DEPOSIT

CONCRETE

- MIN. 28 DAY COMPRESSIVE STRENGTH, f'c, SHALL BE 4500 PSI.
- CEMENT SHALL BE TYPE V. MAX WATER TO CEMENT RATIO SHALL BE 0.45.
- CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM C 42 SPECIFICATION.
- ALL CONCRETE SHALL BE NORMAL WEIGHT USING HARDROCK AGGREGATES.
- CONCRETE MIXES SHALL BE DESIGNED BY A CERTIFIED LABORATORY AND APPROVED BY SEDCO.
- ALL CONCRETE SHALL BE REGULAR WEIGHT OF 145 POUNDS PER CUBIC FOOT USING HARDROCK AGGREGATES CONFORMING TO TO ASTM C33. WATER SHALL BE CLEAN AND POTABLE.
- MECHANICALLY VIBRATE ALL POURED CONCRETE WHEN PLACED. SLABS ON GRADE NEED NOT BE VIBRATED. REMOVE ALL DEBRIS FROM FORMS BEFORE PLACING CONCRETE. CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL SO AS TO CAUSE SEGREGATION OF AGGREGATES. UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 5 FEET.
- ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOWELS, BOLTS, ANCHORS, SLEEVES, ETC., SHALL BE SECURELY POSITIONED PRIOR TO CONCRETE PLACEMENT.
- SHOTCRETE PROPORTIONS SHALL BE SELECTED THAT ALLOW SUITABLE PLACEMENT PROCEDURES USING THE DELIVERY EQUIPMENT SELECTED AND SHALL RESULT IN FINISHED IN-PLACE HARDENED SHOTCRETE MEETING THE STRENGTH REQUIREMENTS STATED HEREIN. COARSE AGGREGATE, IF USED, SHALL NOT EXCEED 3/8 INCH. ANY REBOUND OR ACCUMULATED LOOSE AGGREGATE SHALL BE REMOVED FROM THE SURFACES TO BE COVERED PRIOR TO PLACING THE INITIAL OR ANY SUCCEEDING LAYERS OF SHOTCRETE. REBOUND SHALL NOT BE REUSED AS AGGREGATE.
- SHOTCRETE PLACEMENT SHALL BE PLACED ACCORDING TO ACI 506R-90. PRE-CONSTRUCTION TESTING OF SHOTCRETE IS NOT REQUIRED PROVIDED THE CONTRACTOR DEMONSTRATES TO THE BUILDING OFFICIAL, BY MEANS APPROVED BY THE BUILDING OFFICIAL, ACCEPTED SHOTCRETE WORK USING SIMILAR EQUIPMENT UNDER SIMILAR CIRCUMSTANCES WITH THE SAME PERSONNEL.
- COMPLETED SHOTCRETE WORK SHALL BE CHECKED VISUALLY PRIOR TO FINAL APPROVAL OF SHOTCRETE FOR REINFORCING BAR EMBEDMENT, VOIDS, ROCK POCKETS, SAND STREAKS AND SIMILAR DEFICIENCIES. THE SPECIAL INSPECTOR SHALL EXAMINE A MINIMUM OF (3) 3" CORES PER INDIVIDUAL CULVERT OR EVERY 1,000 LINEAL FEET OF CULVERT TAKEN FROM AREAS AS SHOWN ON PLAN WHICH REPRESENT THE WORST CONGESTION OF REINFORCING BARS OCCURRING IN THE PROJECT. EXTRA REINFORCING BARS MAY BE ADDED TO NON-CONGESTED AREAS AND CORES MAY BE TAKEN FROM THESE AREAS. THE CORES SHALL BE EXAMINED AND GRADED PER ACI 506.2-95. A MEAN SCORE OF 2.5 CONSTITUTES ACCEPTABLE WORK. CORES SHALL BE TAKEN AFTER 28 DAYS CURING.

SHEET INDEX

SHEET NO.	SHEET TITLE
S0.1	CSN, STD ABBREVIATIONS, SHEET INDEX
S1.1	PLAN VIEWS
S1.2	PLAN VIEWS
S2.1	ELEVATION
S3.1	SECTIONS
S3.2	SECTIONS

CONCRETE CONT

- SURFACES OF STEEL FORMS SHALL BE COATED W/ AN ICBO APPROVED FORM RELEASE OIL.
- FINISHING
 - ACCORDING TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA NEVADA, SECTION 502.03.16, ONLY SURFACES EXPOSED TO VIEW AFTER BACKFILL IS PLACED REQUIRE FINISHING (EITHER ORDINARY OR FINE). HOWEVER, IT IS REQUIRED THAT THE EXTERIOR SHOTCRETE SURFACE IS MADE SMOOTH WITH A STEEL TROWEL OR FRESNO TO FACILITATE THE APPLICATION OF WATERPROOFING. THIS FINISH SHALL HAVE NO REQUIREMENTS FOR FLATNESS. HOWEVER, THE SURFACE SHALL BE FREE FROM STONE POCKETS, DEPRESSIONS OR PROJECTIONS IN EXCESS OF 1/4 INCH BEYOND THE SURFACE. INVERT EXPOSED SURFACE SHALL BE ORDINARY BROOM FINISH.
 - ADMIXTURES
 - ONLY ADMIXTURES PERMITTED BY THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA NEVADA SHALL BE ALLOWED.
 - CURING
 - CURING ON THE OUTSIDE SURFACE AND INSIDE SURFACE AFTER FORM REMOVAL SHALL BE BY MEANS OF LIQUID MEMBRANE-FORMING COMPOUND MEETING THE REQUIREMENTS OF SECTION 702.03.01 OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA NEVADA.
 - WATER PROOFING MATERIAL
 - WATER PROOFING MATERIAL SHALL BE APPLIED TO THE ARCH PORTION OF THE CULVERT. PROVIDE THE EPO WATER PROOFING SYSTEM OVER THE ARCH PORTION OF THE CULVERT, FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS.
- SHOTCRETE NOZZLEMAN SHALL BE CERTIFIED PER ACI 506.3R-91.

REINFORCING STEEL

- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615. REINFORCING SHALL BE GRADE 60 (FY = 60 KSI) DEFORMED BARS FOR ALL BARS #4 AND LARGER AND ALL BARS USED FOR CONCRETE WALLS. REINFORCING MAY BE GRADE 40 (FY = 40 KSI) DEFORMED BARS FOR ALL BARS #3 AND SMALLER UNLESS NOTED OTHERWISE ON PLANS OR DETAILS. ALL REINFORCING TO BE WELDED SHALL BE ASTM A706, GRADE 60 ALLOY WELDABLE STEEL.
- ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" OR "CLR" ARE TO CENTER OF STEEL. MINIMUM COVER FOR NON-PRESTRESSED CONCRETE REINFORCING SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS:

EXPOSURE CONDITION:	COVER:	TOLERANCES: (+/-)
FOOTINGS & SLABS ON GRADE:	3"	3/8"
WALLS & SLABS EXPOSED TO EARTH OR WEATHER:	1 1/2"	1/2"
#6 BAR OR LARGER:	2"	1/2"
INTERIOR SLABS:	1 1/2"	1/2"
- LAP SPLICES OF REINFORCING STEEL IN CONCRETE BEAMS, SLABS AND FOOTINGS SHALL BE ACCORDING TO UBC SECTION 1912, OR LAP SCHEDULE WHERE PRESENT, UNLESS NOTED OTHERWISE. STAGGER SPLICES A MINIMUM OF ONE LAP LENGTH. NO TACK WELDING OF REINFORCING BARS ALLOWED. LATEST ACI CODE AND DETAILING MANUAL APPLY. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS PER TYPICAL DETAILS. VERTICAL WALL BARS SHALL BE SPLICED AT OR NEAR FLOOR LINES. SPLICE BARS TOP BARS AT CENTER LINE OF SPAN AND BOTTOM BARS AT THE SUPPORT IN SPANDRELS, BEAMS, GRADE BEAMS, ETC., UNLESS NOTED OTHERWISE.

BAR	LAP
#3	31"
#4	31"
#5	39"
#6	48"

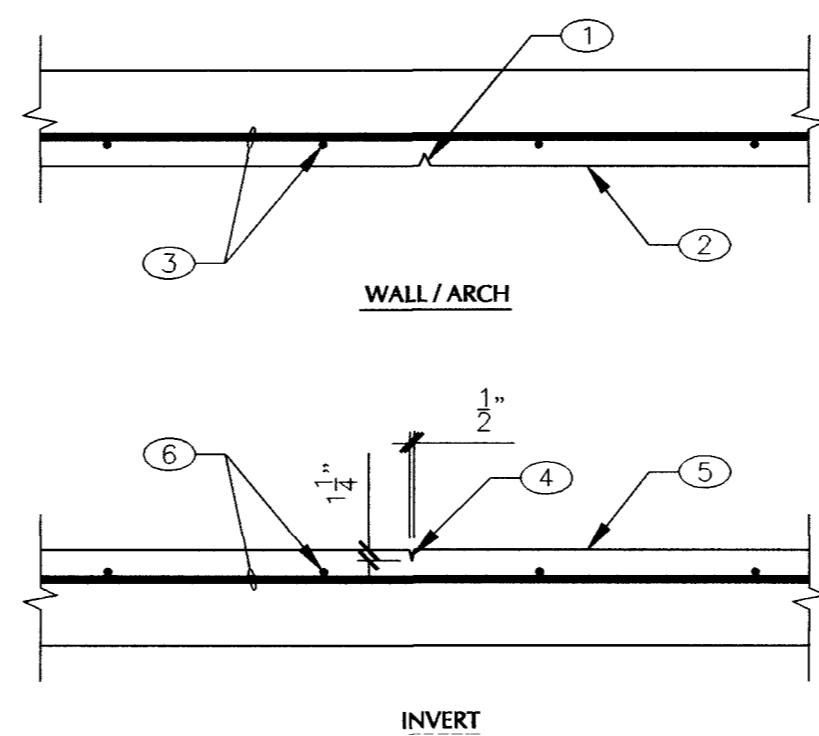
- ALL REINFORCING SHALL BE BENT COLD. BARS SHALL NOT BE UNBENT AND RE-BENT EXCEPT AS NOTED ON PLAN. FIELD BENDING OF REBAR SHALL NOT BE ALLOWED EXCEPT AS NOTED ON PLAN. BENDS AND HOOKS SHALL CONFORM TO ACI STANDARD 315-80.
- WELDING OF REINFORCING BARS, METAL INSERTS, AND CONNECTIONS SHALL CONFORM WITH ACI 318 CHAPTER 12, AND 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.
- REINFORCING BAR SPACING SHOWN ON PLANS ARE MAXIMUM ON CENTERS. ALL BARS SHALL BE DETAILED AND PLACED PER CRSI SPECIFICATIONS AND HANDBOOK. DOWEL ALL VERTICAL REINFORCING TO FOUNDATION. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE.

SPECIAL INSPECTIONS

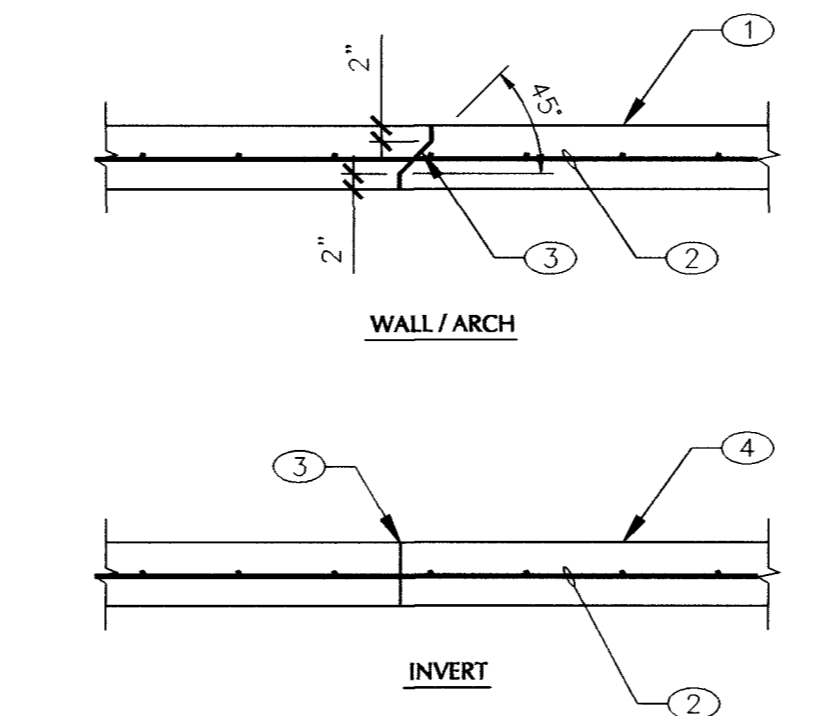
- THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR WHO SHALL PROVIDE INSPECTIONS DURING PLACEMENT OF THE BACKFILL, REINFORCEMENT, SHOTCRETE, CONCRETE, EPOXY DOWELING, AND CONCRETE CORES PER NOTE II OF CONCRETE SECTION. THE INSPECTOR SHALL SUBMIT A STATEMENT INDICATING COMPLIANCE WITH THE PLANS AND SPECIFICATIONS.
- SPECIAL INSPECTION OF THE FILL AROUND THE CULVERT SHALL BE PROVIDED AT A FREQUENCY AS NECESSARY TO ENSURE THAT PROPER FILL AND COMPACTION IS ACHIEVED. COMPACTION TESTS FOR EACH LIFT SHALL BE TAKEN PER EVERY 2500 SQUARE FEET PLACED AS A MINIMUM. THE SPECIAL INSPECTOR SHALL SUBMIT A COMPLIANCE REPORT DOCUMENTING FILL TYPE AND PROCEDURES OF PLACEMENT.

STANDARD ABBREVIATIONS

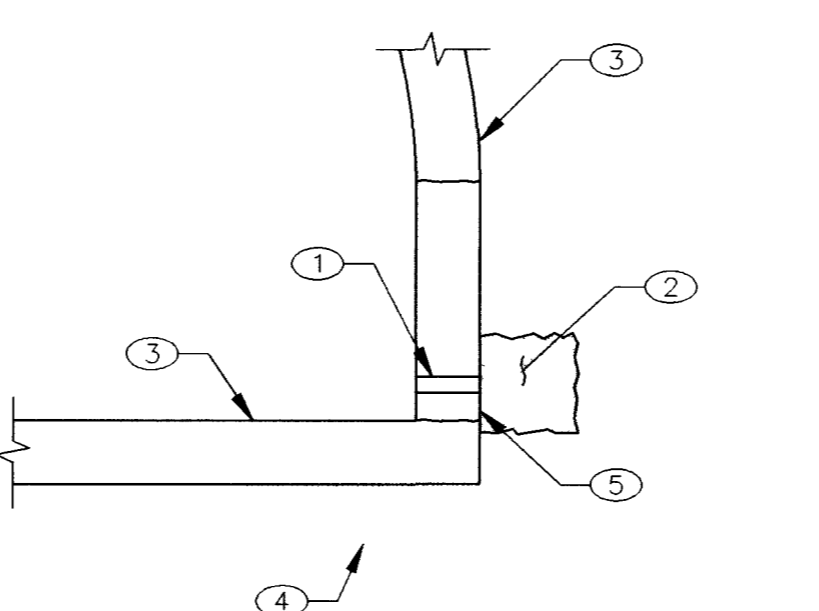
AB	ANCHOR BOLT	MCH	MECHANICAL
ACI	AMERICAN CONCRETE INSTITUTE	MIN	MINIMUM
ASC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MISC	MISCELLANEOUS
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	N/S	NOT TO SCALE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIAL	OC	ON CENTER
BOT	BOTTOM	OPP	OPPOSITE
CL	CENTER LINE	PSF	POUNDS PER SQUARE FOOT
CLR	CLEAR	PSI	POUNDS PER SQUARE INCH
CONC	CONCRETE	REQD	REQUIRED
CONT	CONTINUOUS	SIM	SIMILAR
DA OR Ø	DIAMETER	T&B	TOP AND BOTTOM
DWG	DRAWING	TYP	TYPICAL
EF	EACH FACE	UBC	UNIFORM BUILDING CODE
ELEV	ELEVATION	UNL	UNLESS OTHERWISE NOTED
EO	EQUAL	VERT	VERTICAL
EW	EACH WAY	W/O	WITHOUT
FLR	FLOOR	WT	WEIGHT
FT	FOOT		
FTG	FOOTING		
CSN	GENERAL STRUCTURAL NOTES		
KSI	KIPS PER SQUARE INCH		
MFR	MANUFACTURER		
MAX	MAXIMUM		



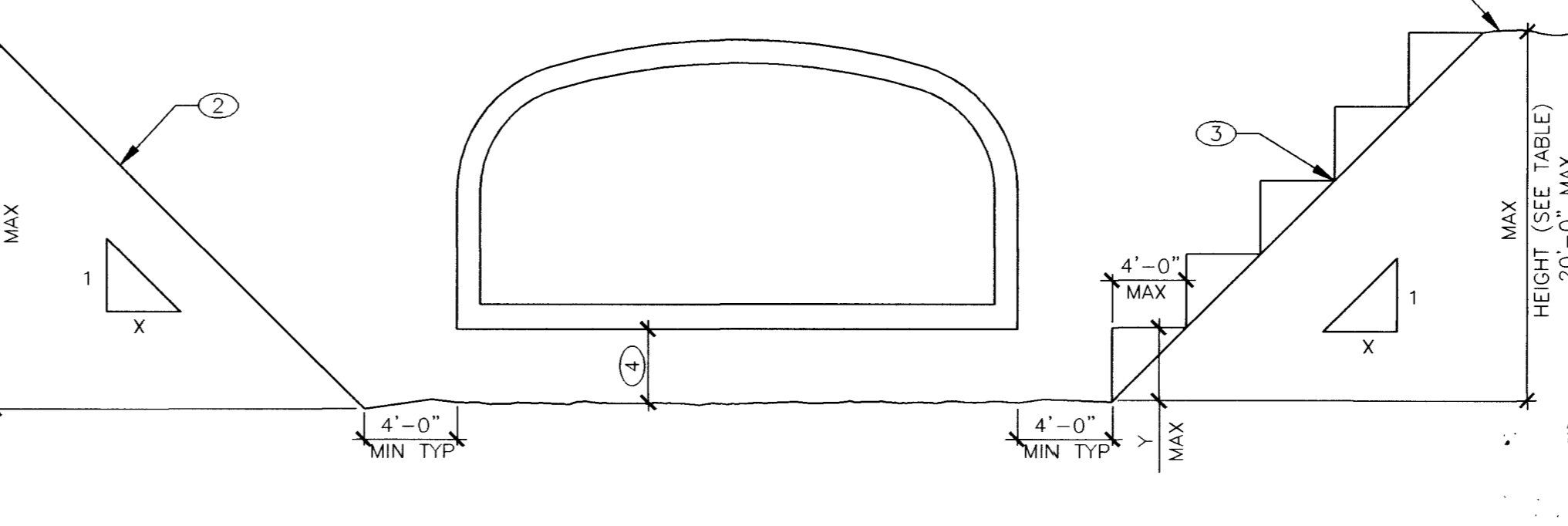
3 CONTROL JOINT
NO SCALE



4 CONSTRUCTION JOINT IN WALL, ARCH, OR INVERT
NO SCALE



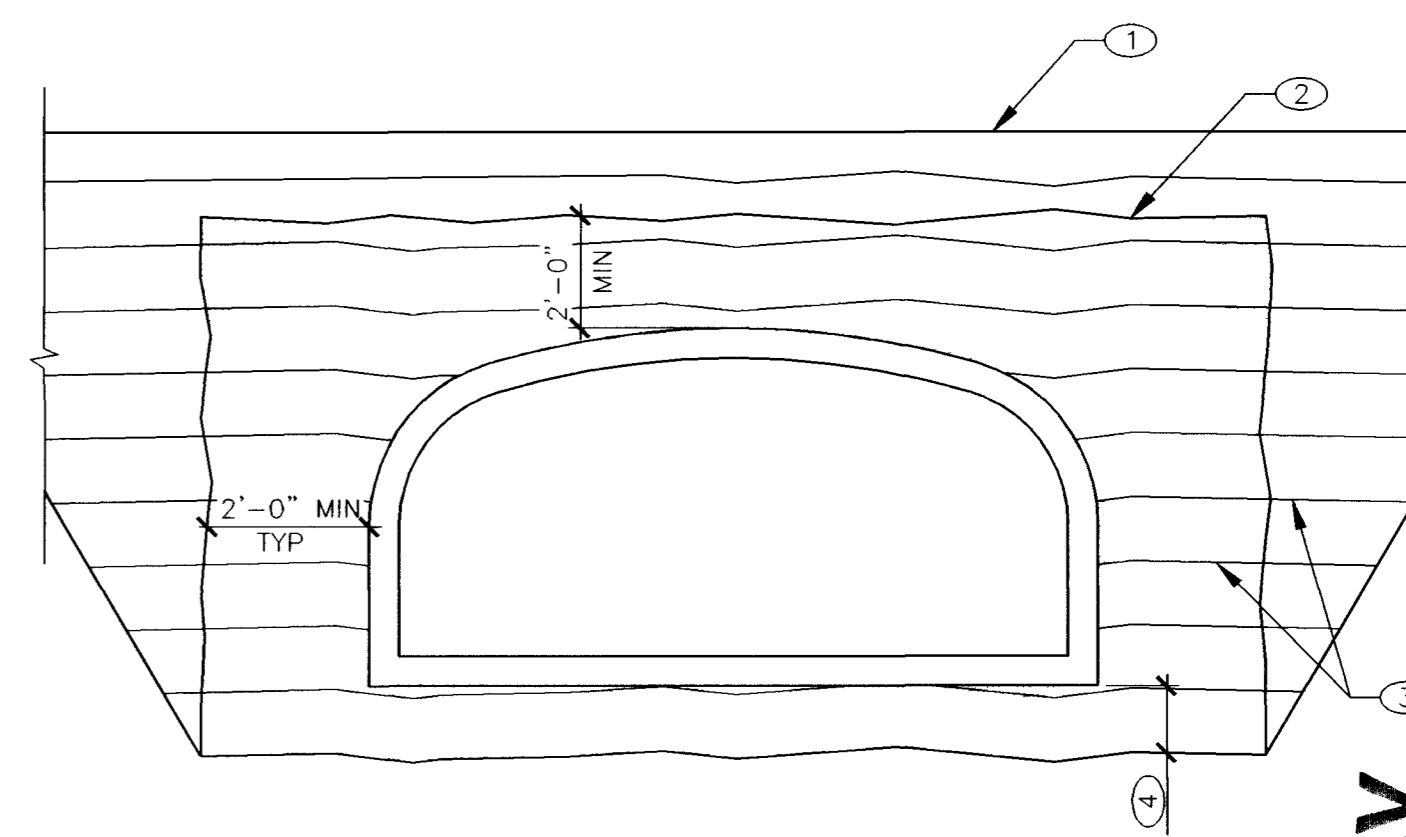
5 WEEP HOLE DRAIN REQUIREMENTS
NO SCALE



6 TYPICAL EXCAVATION REQUIREMENTS
NO SCALE

KEYNOTES:

- CONTROL JOINT USING 1 1/2" CHAMFER STRIP
- INSIDE FACE OF ARCH OR WALL
- REINFORCEMENT PER SECTIONS AND DETAILS
- FORMED GROOVE
- INSIDE FACE OF INVERT
- REINFORCEMENT PER SECTIONS AND DETAILS



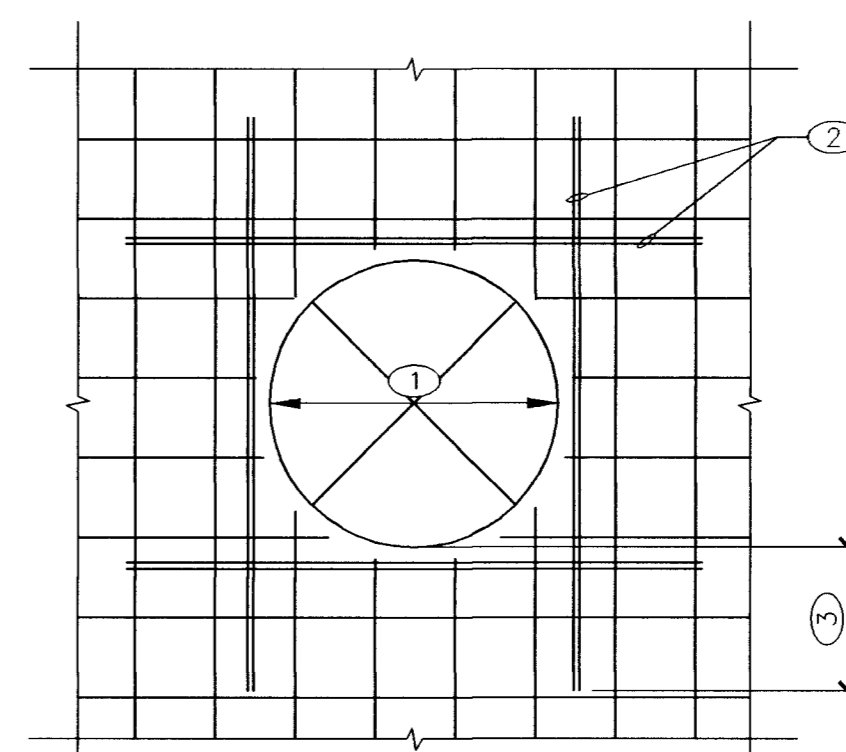
KEYNOTES:

- FINISHED GRADE
- MIN LIMITS OF BACKFILL ZONE (GEOTECHNICAL ENGINEER MAY REQUIRE ADDITIONAL)
- FOR FILL HEIGHT LESS THAN 2'-0" THE FINISH GRADE SHALL BE THE BOUNDARY LINE FOR THE BACK FILL ZONE. BACK FILLING OPERATIONS WITHIN THE BACK FILL ZONE SHALL BE PERFORMED PER THE GEOTECHNICAL REPORT.
- EXISTING SUB BASE SHALL BE SCARIFIED FOR A 1'-0" DEPTH AND COMPACTED TO 95% OF DRY DENSITY. 12" OF WELL-GRADED TYPE II SHALL BE PLACED ON EXISTING COMPACTED SUB BASE AND PROPERLY COMPACTED

NOTES:

- ALL BACKFILL FOR THE REFERENCED PROJECT SHALL CONSIST OF MATERIAL AS SPECIFIED IN THE REFERENCED GEOTECHNICAL REPORT. HOWEVER, SHOULD THE REPORT NOT RECOMMEND A MATERIAL TYPE THE FOLLOWING SPECIFICATION SHALL BE FOLLOWED. BACKFILL SHALL CONSIST OF WELL GRADED 3" MINUS GRANULAR MATERIAL WITH A MINIMUM OF 2'-0" COVER OVER THE ARCH AND 2'-0" ON EACH SIDE OF THE ARCH OR STEM WALLS.
- PLACEMENT OF THE FILL AT THE STEM WALLS AND OVER THE ARCH MAY BEGIN WHEN THE CONCRETE STRENGTH HAS REACHED 2800 psi COMPRESSIVE STRENGTH. FILL SHALL BE PLACED IN 8" MAXIMUM VERTICAL LIFTS AND COMPACTED TO 95% OF DRY DENSITY. LIFTS SHALL BE PLACED SYMMETRICALLY EACH SIDE ALONG THE FULL LENGTH OF CULVERT WITH A MAXIMUM BACKFILL LIFT HEIGHT DIFFERENTIAL OF 1'-0". MAXIMUM DRY DENSITY SHALL BE DETERMINED PER THE GEOTECHNICAL REPORT. BACKFILL SHALL BE COMPACTED PER GEOTECHNICAL REPORT.
- NO EQUIPMENT WEIGHING MORE THAN A 3 YARD RUBBER TIRE LOADER (928 CATERPILLAR OR EQUIVALENT) SHALL BE ALLOWED TO PASS OVER THE STRUCTURE UNTIL THE SPECIFIED FILL IS IN PLACE. HEAVY EQUIPMENT SUCH AS SCRAPERS AND CRANES SHALL NOT BE ALLOWED TO PASS OVER THE STRUCTURE UNLESS SPECIFIC WRITTEN PERMISSION IS OBTAINED BY THE STRUCTURAL ENGINEER.

1 BACKFILL REQUIREMENTS (ELEVATION)
NO SCALE



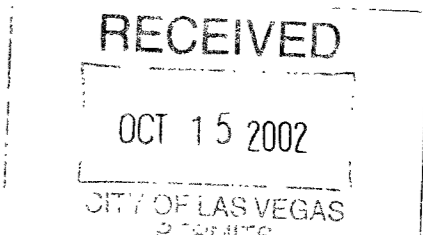
2 TYPICAL OPENING IN ARCHED CULVERT
NO SCALE

KEYNOTES:

- 2"Ø WEEP HOLE EA SIDE OF CULVERT 30'-0" O.C.
- (1) CUBIC FOOT OF FREE DRAIN MATERIAL WRAPPED IN MIRAFI 140N FILTER FABRIC OR APPROVED EQUAL AT EA WEEP HOLE
- CONCRETE ARCH AND INVERT
- COMPACT BACKFILL, SEE GEOTECHNICAL REPORT
- REMOVE WATER PROOFING AT AREAS WHERE DRAIN ROCK TOUCHES CULVERT WALL

KEYNOTES:

- OPENING DIAMETER 4'-0" MAX
 - NUMBER OF ADDED BARS EQUAL TO THE NUMBER OF BARS INTERRUPTED BY OPENING. ROUND UP TO AN EQUAL NUMBER OF BARS EACH SIDE OF OPENING
 - EXTEND BARS PAST EDGE OF OPENING EQUAL TO LAP LENGTH OF BAR PER LAP SCHEDULE
- NOTE:
LOCATION AS SHOWN PER CIVIL DRAWINGS AS OCCURS

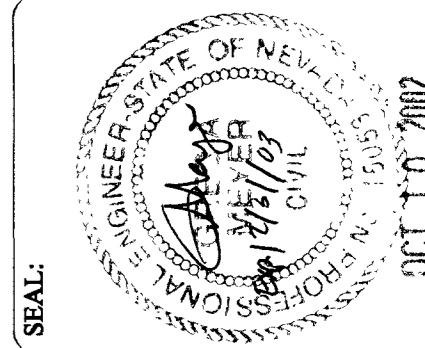


KEYNOTES:

- FINISHED GRADE
- SIMPLE SLOPE EXCAVATION
- MULTIPLE BENCH EXCAVATION
- OVER EXCAVATE AS REQUIRED FOR FILL PLACEMENT
- COORDINATE EXCAVATION SOIL WITH OSHA 29 CFR 1926 SUBPART P TO DETERMINE SOIL TYPE A, B OR C.
- THE INFORMATION PRESENTED IS A GUIDE LINE TO EXCAVATION BASED ON OSHA 29 CFR 1926 SUBPART P. TO DETERMINE WHERE SHORING IS REQUIRED AND FOR FURTHER INFORMATION SEE OSHA 29 CFR 1926

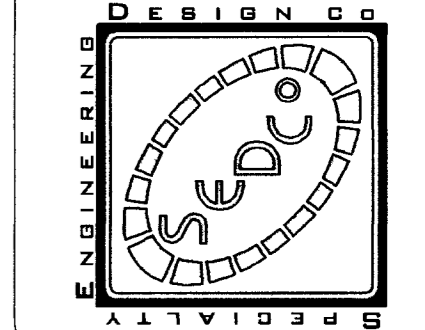
SOIL TYPE	(X) HORIZONTAL	(Y) MULT BENCH
A	3/4	5'-0"
B	1	4'-0"
C	1 1/2	NA

RECOMMEND EXCAVATION GUIDELINES PER OSHA 29 CFR 1926 SUBPART P



DESIGNED: GM
DRAWN: AM
CHECKED: GM
APPROVED: WM

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HYDRO-ARCH
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HENDERSON, NV 89014

PROJECT: 8' x 4' ARCH CULVERT
SPRING MOUNTAIN RANCH UNIT 91
LAS VEGAS, NV
FOR HYDRO-ARCH
GENERAL STRUCTURAL NOTES

SHEET TITLE: GENERAL STRUCTURAL NOTES

NO.	DATE	DESCRIPTION
1	10/8/02	PLAN CHECK COMMENTS
2	9/19/02	SUBMITTED FOR APPROVAL
3		DESCRIPTION

DATE: SEPTEMBER 19, 2002
PROJECT NUMBER: LV02124
SHEET NUMBER:

S0.1

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4/6/02

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