

HILGARTWILSON STANDARD ENGINEERING NOTES

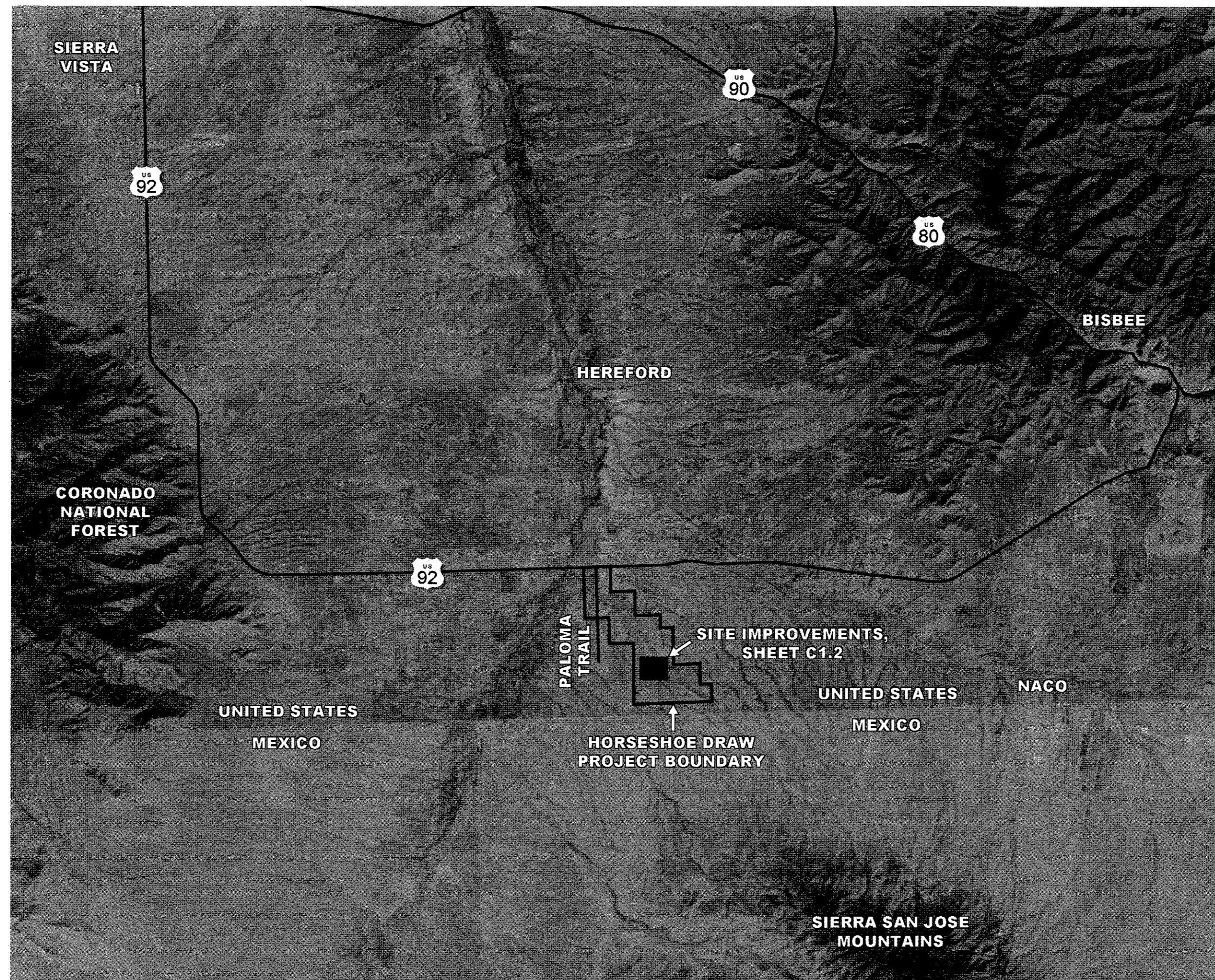
1. THESE PLANS ARE SUBJECT TO THE INTERPRETATION OF INTENT BY THE ENGINEER. ALL QUESTIONS REGARDING THESE PLANS SHALL BE PRESENTED TO THE ENGINEER. ANYONE WHO TAKES IT UPON THEMSELVES THE INTERPRETATION OF THE DRAWINGS OR MAKES REVISIONS TO THE SAME WITHOUT CONFERRING WITH THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR THE CONSEQUENCES THEREOF.
2. THE ESTIMATED QUANTITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETENESS AND ACCURACY OF A DETAILED ESTIMATE BASED ON THESE PLANS, CURRENT CODES, AND SITE VISITATION.
3. ALL EARTHWORK CONSTRUCTION SHALL CONFORM TO THE LATEST MARICOPA ASSOCIATION OF GOVERNMENTS STANDARD DETAILS AND/OR SPECIFICATIONS INCLUDING ANY SUPPLEMENTS THERETO, AND ALL ADDENDA.
4. PRIOR TO BIDDING THE WORK, THE CONTRACTOR SHALL THOROUGHLY SATISFY HIMSELF AS TO THE ACTUAL CONDITIONS, REQUIREMENTS OF THE WORK AND EXCESS OR DEFICIENCY IN QUANTITIES. NO CLAIMS SHALL BE MADE AGAINST THE OWNER/DEVELOPER OR ENGINEER FOR ANY EXCESS OR DEFICIENCY THEREIN, ACTUAL OR RELATIVE.
5. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY PRECAUTIONS OR PROGRAMS UTILIZED IN CONNECTION WITH THE WORK, AND WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR COORDINATING THE RELOCATION OF UTILITIES, POWER POLES, ETC.
7. THE CONTRACTOR SHALL MAKE NO CLAIM AGAINST THE OWNER OR THE SURVEYOR REGARDING ALLEGED INACCURACY OF CONSTRUCTION STAKES SET BY THE SURVEYOR UNLESS ALL SURVEY STAKES SET BY THE ENGINEER ARE MAINTAINED INTACT AND CAN BE VERIFIED AS TO THEIR ORIGIN. IF, IN THE OPINION OF THE SURVEYOR, THE STAKES ARE NOT MAINTAINED INTACT AND CANNOT BE VERIFIED AS TO THEIR ORIGIN, ANY REMEDIAL WORK REQUIRED TO CORRECT ANY ITEM OF IMPROPER CONSTRUCTION WORK SHALL BE PERFORMED AT THE SOLE EXPENSE OF THE RESPONSIBLE CONTRACTOR OR SUBCONTRACTOR.
8. THE SURVEYOR WILL MAKE FIELD AS-BUILT MEASUREMENTS OF THE WORK UPON NOTIFICATION BY THE CLIENT OR HIS REPRESENTATIVE THAT THE WORK IS COMPLETE AND READY FOR AS-BUILT SURVEY. FOR PIPE WORK, THE CONTRACTOR IS RESPONSIBLE FOR LEAVING TRENCHES OPEN SO THAT AS-BUILTS CAN BE PERFORMED TO COMPLY WITH THE AGENCY'S REQUIREMENTS. (IF THE TRENCHES ARE BACKFILLED AND OBTURED TO THE POINT THAT AS-BUILT MEASUREMENTS CANNOT BE PERFORMED, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POTHOLE UTILITY TRENCHES AS NECESSARY TO COMPLETE AN AS-BUILT SURVEY.)
9. THE CONTRACTOR IS TO VERIFY THE LOCATION, ELEVATION, CONDITION, AND PAVEMENT CROSS-SLOPE OF ALL EXISTING SURFACES AT POINTS OF TIE-IN AND MATCHING, PRIOR TO COMMENCEMENT OF GRADING, PAVING, CURB AND GUTTER OR OTHER SURFACE CONSTRUCTION. SHOULD EXISTING LOCATIONS, ELEVATIONS, CONDITIONS, OR PAVEMENT CROSS-SLOPES DIFFER FROM THAT SHOWN ON THESE PLANS, RESULTING IN THE DESIGN INTENT REFLECTED ON THESE PLANS NOT BEING ABLE TO BE CONSTRUCTED, THE CONTRACTOR SHALL NOTIFY THE OWNER'S AGENT IMMEDIATELY FOR DIRECTION ON HOW TO PROCEED PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR ACCEPTS RESPONSIBILITY FOR ALL COSTS ASSOCIATED WITH CORRECTIVE ACTION IF THESE PROCEDURES ARE NOT FOLLOWED.
10. EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED ACCORDING TO INFORMATION PROVIDED BY THE AGENCY OPERATING EACH UTILITY. LOCATIONS SHOWN ARE APPROXIMATE ONLY, AND ARE NOT RELIABLE FOR CONSTRUCTION PURPOSES. CALL BLUE STAKE FOR FIELD LOCATION AT (602) 263-1100. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITIES ON THE SITE. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN OR NOT ON THE DRAWING, SHALL BE REPAIRED/REPLACED AT THE CONTRACTOR'S EXPENSE. EXISTING SURFACE FEATURES AND FENCING SHALL BE REPLACED IN LIKE KIND.
11. PRIOR TO CONSTRUCTION, THE ENGINEER AND APPLICABLE AGENCY MUST APPROVE ANY ALTERATION, OR VARIANCE FROM THESE PLANS. ANY VARIATIONS FROM THESE PLANS SHALL BE PROPOSED ON CONSTRUCTION FIELD PRINTS AND TRANSMITTED TO THE ENGINEER.
12. ANY INSPECTION BY THE CITY, COUNTY, ENGINEER, OR OTHER JURISDICTIONAL AGENCY, SHALL NOT, IN ANY WAY, RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM THE WORK IN STRICT COMPLIANCE WITH APPLICABLE CODES AND AGENCY REQUIREMENTS.
13. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL STORM DRAIN PIPES, STORM WATER RETENTION PIPES AND DRAINAGE FACILITIES FROM DAMAGE DURING ALL STAGES OF CONSTRUCTION. THE DEPTH OF COVER ON THE STORM DRAIN PIPE IS DESIGNED FOR FINAL GRADE. THEREFORE, EXTRA CARE SUCH AS BERMING OVER PIPES, FLAGGING OR SIGNAGE SHOULD BE USED DURING CONSTRUCTION TO MAINTAIN COVER OR PROTECT THE PIPES.
14. THE ENGINEER MAKES NO REPRESENTATION OR GUARANTEE REGARDING EARTHWORK QUANTITIES OR THAT THE EARTHWORK FOR THIS PROJECT WILL BALANCE DUE TO THE VARYING FIELD CONDITIONS, CHANGING SOIL TYPES, ALLOWABLE CONSTRUCTION TOLERANCES AND CONSTRUCTION METHODS THAT ARE BEYOND THE CONTROL OF THE ENGINEER.
15. UNDERGROUND UTILITIES SHALL BE MARKED IN ACCORDANCE WITH SECTION 40-360 OF THE ARIZONA REVISED STATUTES AND LOCAL MUNICIPALITY REQUIREMENTS.
16. THE CONTRACTOR IS TO FOLLOW THE RECOMMENDATION OF THE GEOTECHNICAL EVALUATION REPORT FOR HORSESHOE DRAW BASIN, AS PREPARED BY NINYO & MOORE, PROJECT NO. 604915001, DATED OCTOBER 30, 2015.

GRADING AND DRAINAGE PLANS

HORSESHOE DRAW: EARTHEN EMBANKMENT AND DETENTION BASIN PLAN

COCHISE COUNTY, ARIZONA

LOCATED IN TOWNSHIP 24 SOUTH, RANGE 22 EAST
OF THE GILA AND SALT RIVER MERIDIAN, COCHISE COUNTY, ARIZONA



VICINITY MAP
1" = 10,000'

SITE AREA

42.0 ACRES

DISTURBED AREA

40.6 ACRES

OWNER/DEVELOPER

HEREFORD NATURAL RESOURCE
CONSERVATION DISTRICT (NRCD)
P.O. BOX 336
SIERRA VISTA, AZ 85636

ENGINEER

HILGARTWILSON
2141 EAST HIGHLAND AVENUE SUITE 250
PHOENIX, AZ 85016
PH: 602.490.0535
CONTACT: AUBREY THOMAS, P.E.

BENCHMARK

BRASS CAP, ELEVATION: 4430.30 (NAVD '88 DATUM)
NGS MONUMENT
DESIGNATION: TIGER, PID: CG1159.

BASIS OF BEARING

BASIS OF BEARING IS N00°00'03"E ALONG THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 3, TOWNSHIP 24 SOUTH, RANGE 22 EAST OF THE GILA AND SALT RIVER MERIDIAN, COCHISE COUNTY, ARIZONA.

FLOODPLAIN DESIGNATION

ZONE A (NO BASE FLOOD ELEVATIONS DETERMINED); THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD); ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SPECIAL FLOOD HAZARD AREA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD.

ZONE X (OTHER FLOOD AREAS): AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.

SHEET INDEX

- C1.1 GRADING & DRAINAGE PLAN COVER SHEET & NOTES
- C1.2 NORTHINGS & EASTINGS
- C1.3 GRADING & DRAINAGE PLAN
- C1.4 STORM DRAIN PROFILES
- C1.5 DETAILS
- SW01-SW02 SWPPP

ENGINEER'S ESTIMATED EARTHWORK QUANTITIES

GROSS CUT	190,000 C.Y.
GROSS FILL	189,850 C.Y.
NET EARTHWORK QUANTITY (CUT)	160 C.Y.

STORM DRAIN PIPE (36" COATED CMP)	936 L.F.
EROSION REVETMENT D50=15"	166 S.Y.
4" CONCRETE (MAG SPEC CLS. A, 3,000 PSI)	3,300 S.Y.
HEADWALL (MAG STD. DTL. 501-1 AND 501-2)	2 EA

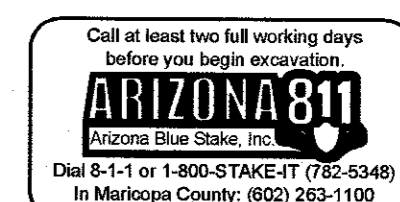
NOTES:
EQUIVALENT SIZED FRACTURED CONCRETE MAY BE USED AS SUBSTITUTE FOR RIPRAP/REVTMENT.

EARTHWORK QUANTITIES ARE ESTIMATED VOLUMES BASED ON RAW VOLUMES. THE CONTRACTOR SHALL PREPARE HIS OWN EARTHWORK ANALYSIS FOR BIDDING PURPOSES.

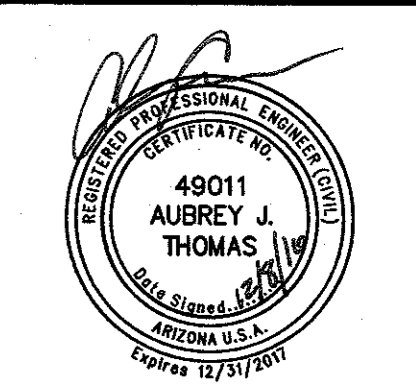
DATA CERTIFICATION

I HEREBY CERTIFY THAT THIS DESIGN IS BASED ON ACCURATE FIELD DATA WHICH HAS BEEN CHECKED IN THE FIELD PRIOR TO FIRST SUBMISSION OF THESE PLANS TO THE CITY FOR APPROVAL.

BY _____ DATE _____



HILGARTWILSON
ENGINEER | PLAN | SURVEY | MANAGE
2141 E. HIGHLAND AVE., STE. 250 | PHOENIX, AZ 85016
P: 602.490.0535 / F: 602.968.2436
www.hilgartwilson.com



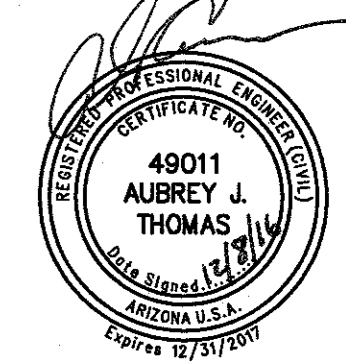
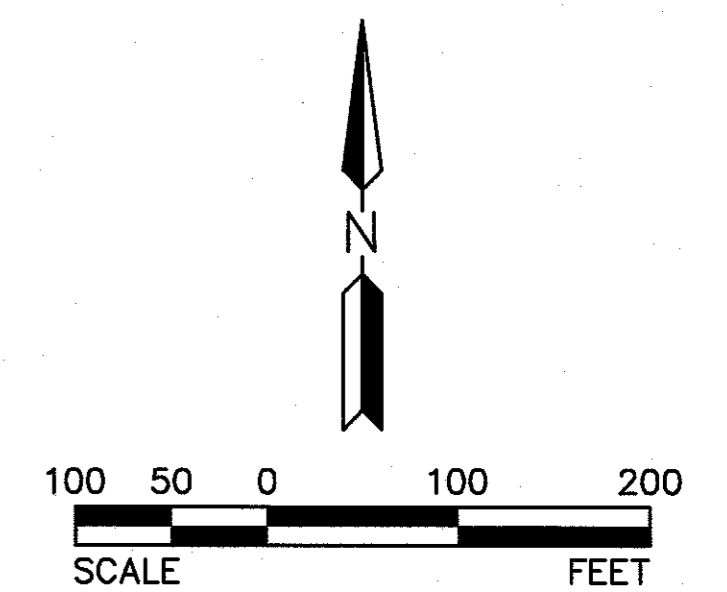
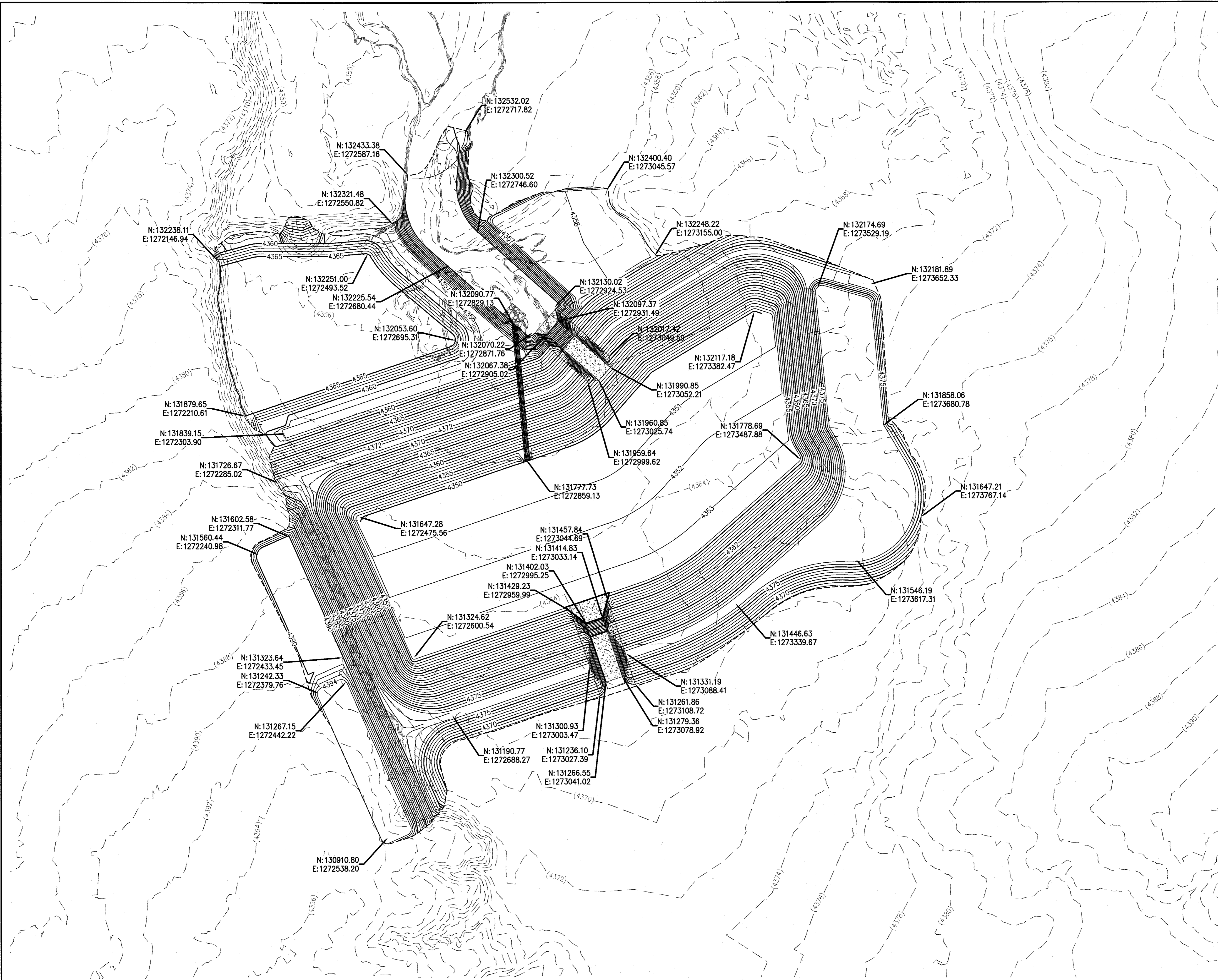
HORSESHOE DRAW
COCHISE COUNTY, ARIZONA
GRADING AND DRAINAGE PLAN COVER

HILGARTWILSON
PROJ. NO.: 1472
DATE: DEC. 2016
SCALE: AS SHOWN
DRAWN: ARK
DESIGNED: HW
APPROVED: AT

DWG. NO.
C1.1

SHT. 1 OF 7

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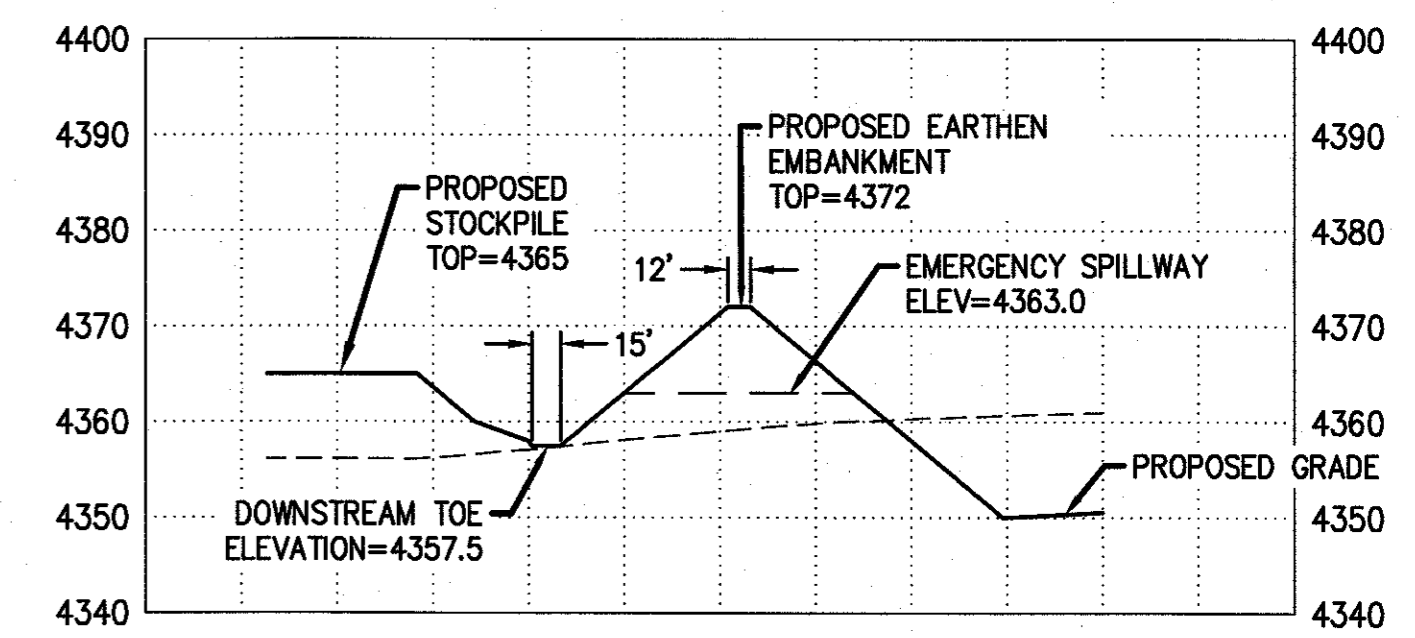
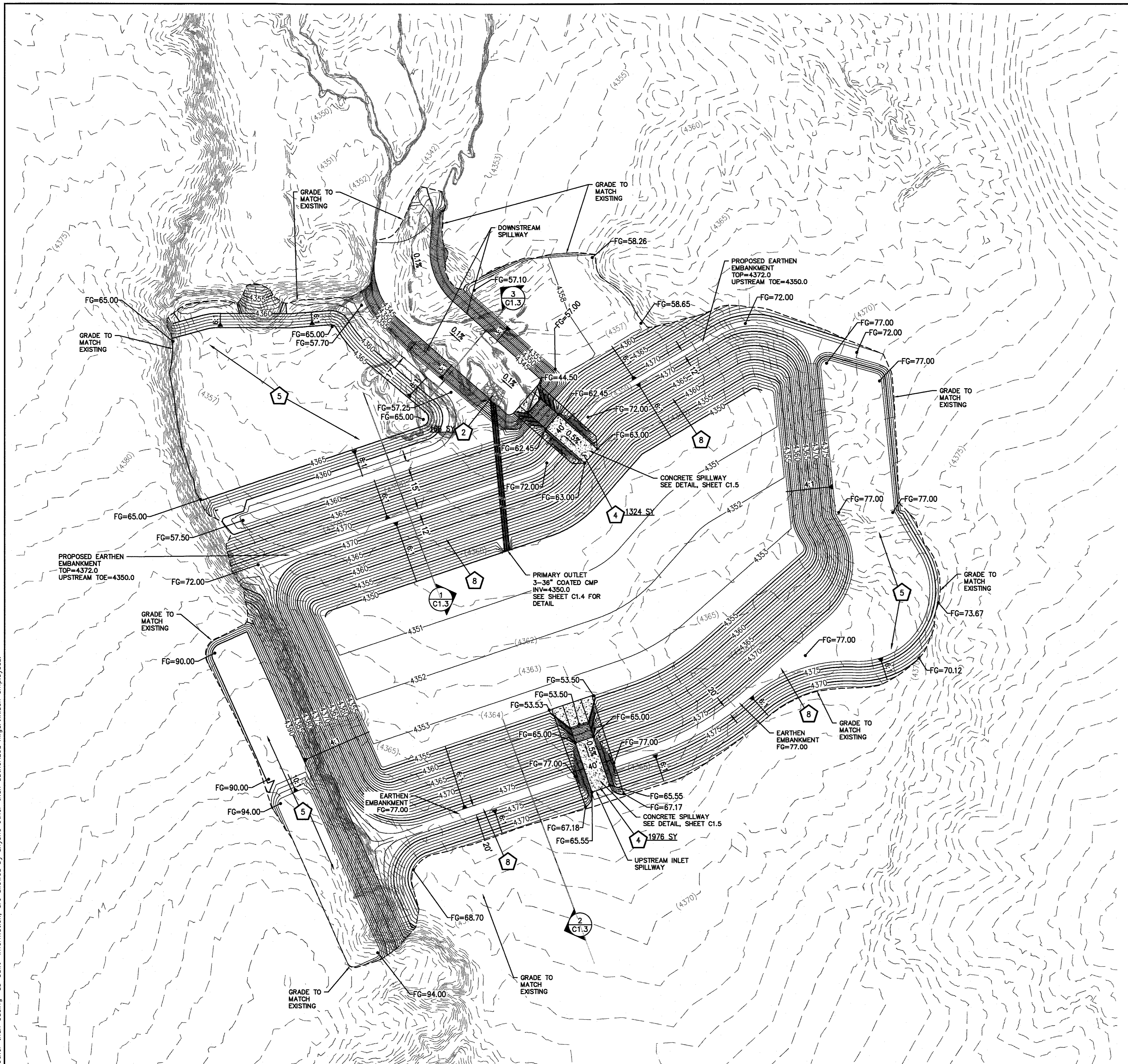
HORSESHOE DRAW

COCHISE COUNTY, ARIZONA

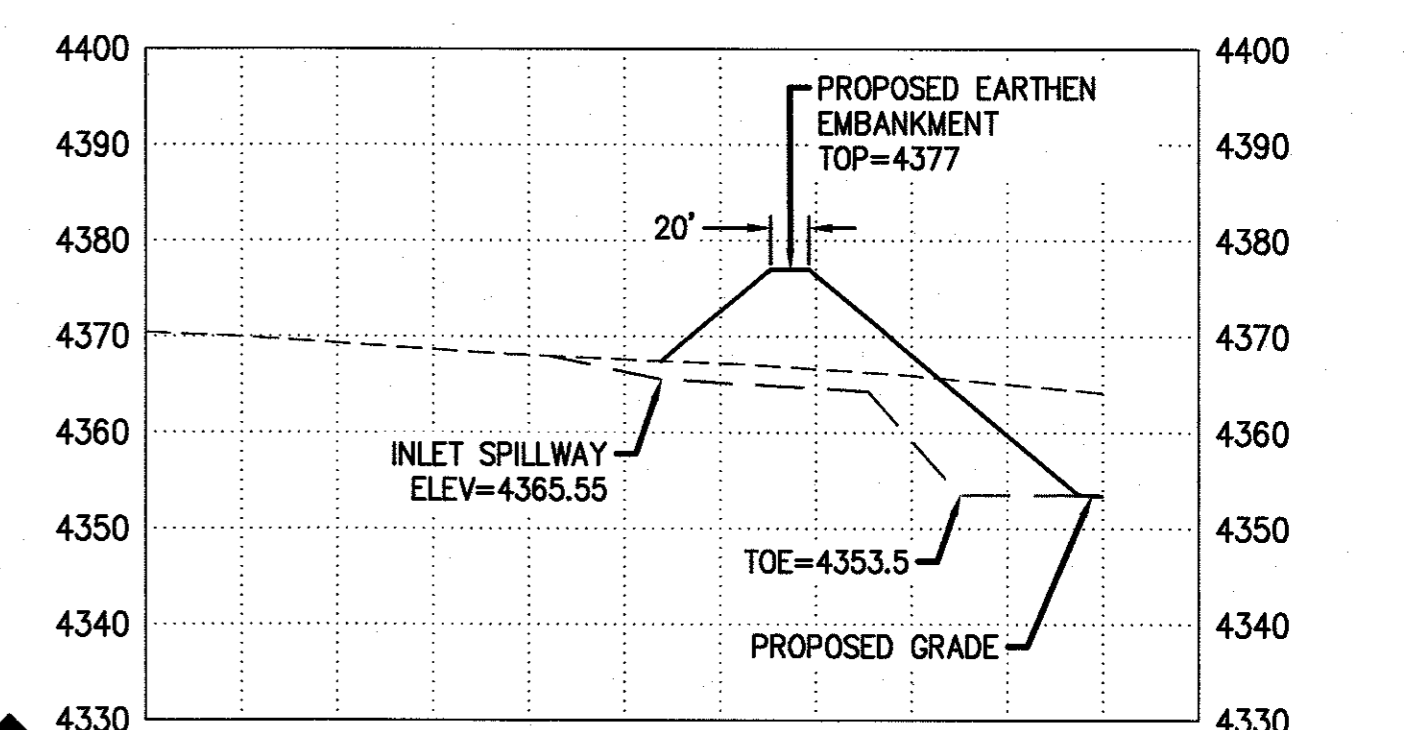
NORTHINGS AND EASTINGS

PROJ. NO.	1472				
DATE:	DEC. 2016				
SCALE:	AS SHOWN	HILGARTWILSON			
DESIGNED:	HW		DRAWN:	ARK	APPROVED:
REV.					
					DWG. NO.
					C1.2
					SHT. 2 OF 7

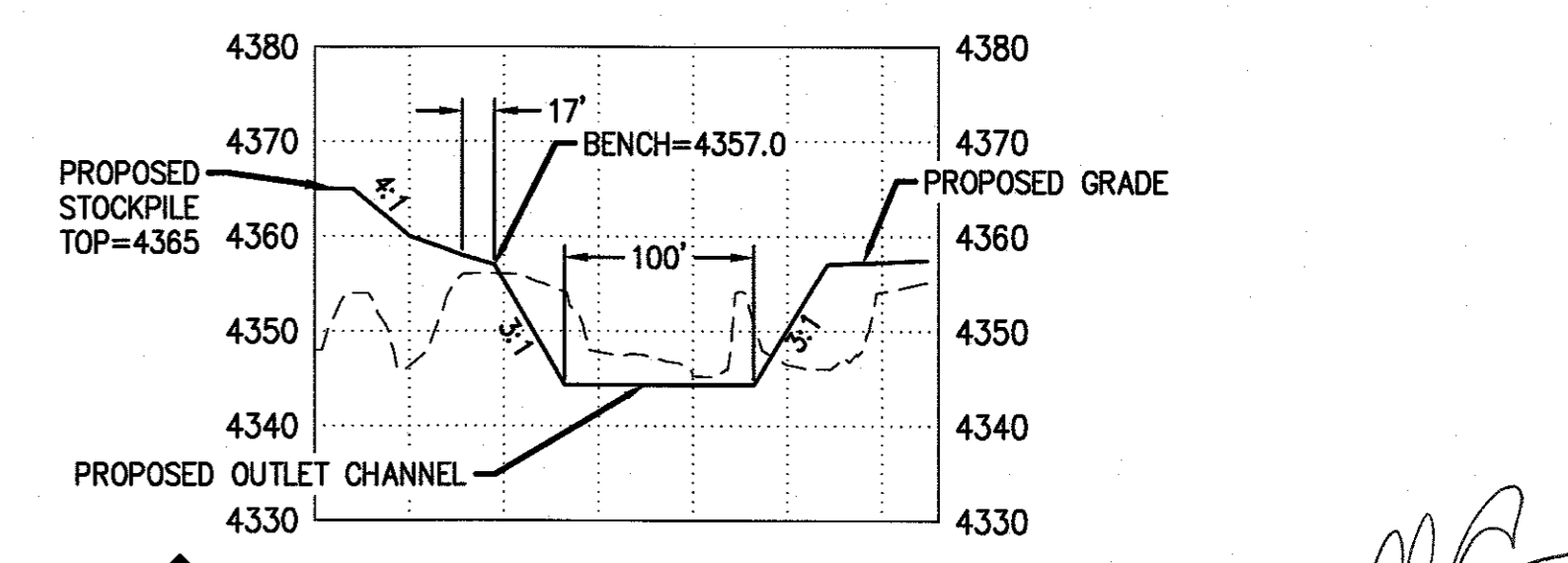
- GRADING CONSTRUCTION NOTES**
- 2 INSTALL LOOSE RIP-RAP, D50=15", (OR EQUIVALENT SIZED FRACTURED CONCRETE) WITH A DEPTH OF 24" 166 SY
 - 4 CONSTRUCT CONCRETE SPILLWAY PER DETAILS ON SHEET C1.5 3300 SY
 - 5 STOCKPILE AREA
 - 8 CONTRACTOR TO CONSTRUCT EARTHEN EMBANKMENT. LIFTS NOT TO EXCEED 8" AND TO BE COMPACTED BY APPROPRIATE MECHANICAL METHODS TO A RELATIVE COMPACTION OF 95% AS EVALUATED BY ASTM D698. CONTRACTOR TO OVER EXCAVATE AREA BELOW EMBANKMENT PER THE GEOTECHNICAL RECOMANDATIONS. NP



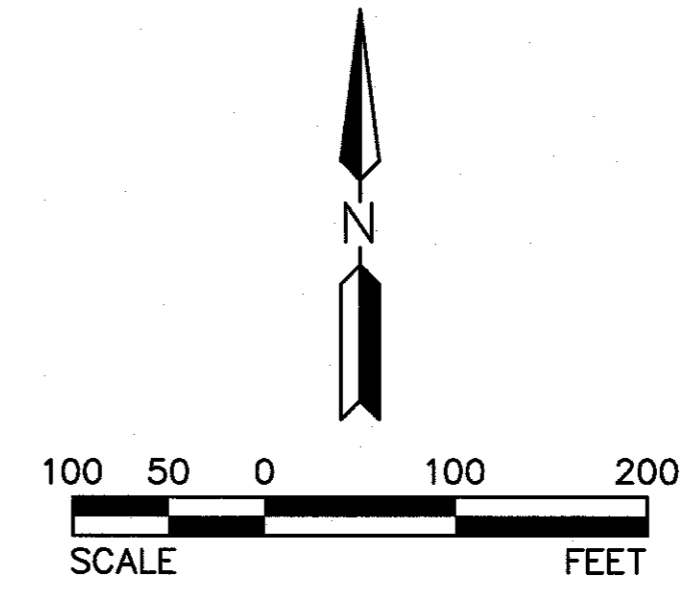
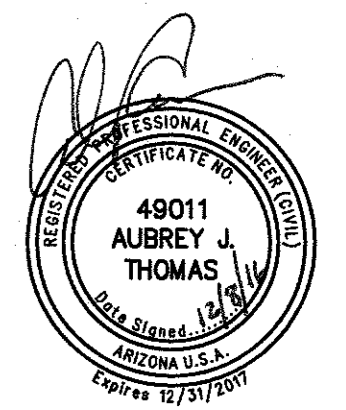
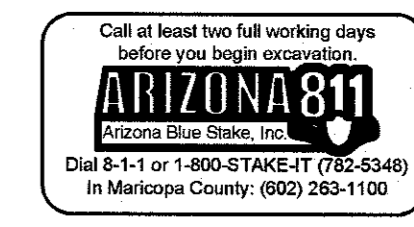
1
C1.3
EARTHEN EMBANKMENT AND DETENTION POND
PROFILE SCALE:
HORIZ: 1" = 100'
VERT: 1" = 20'



2
C1.3
EARTHEN EMBANKMENT AND DETENTION POND
PROFILE SCALE:
HORIZ: 1" = 100'
VERT: 1" = 20'



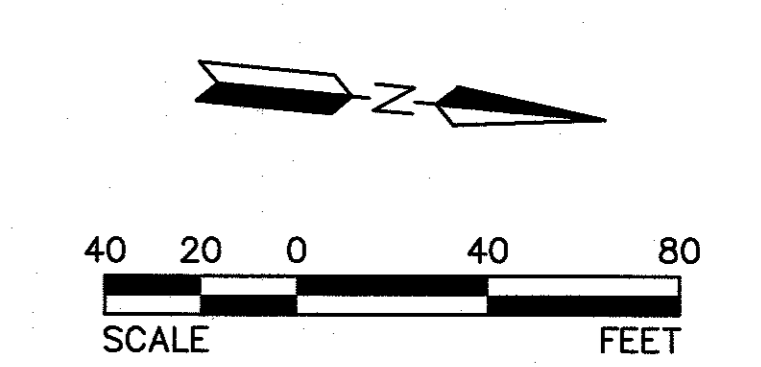
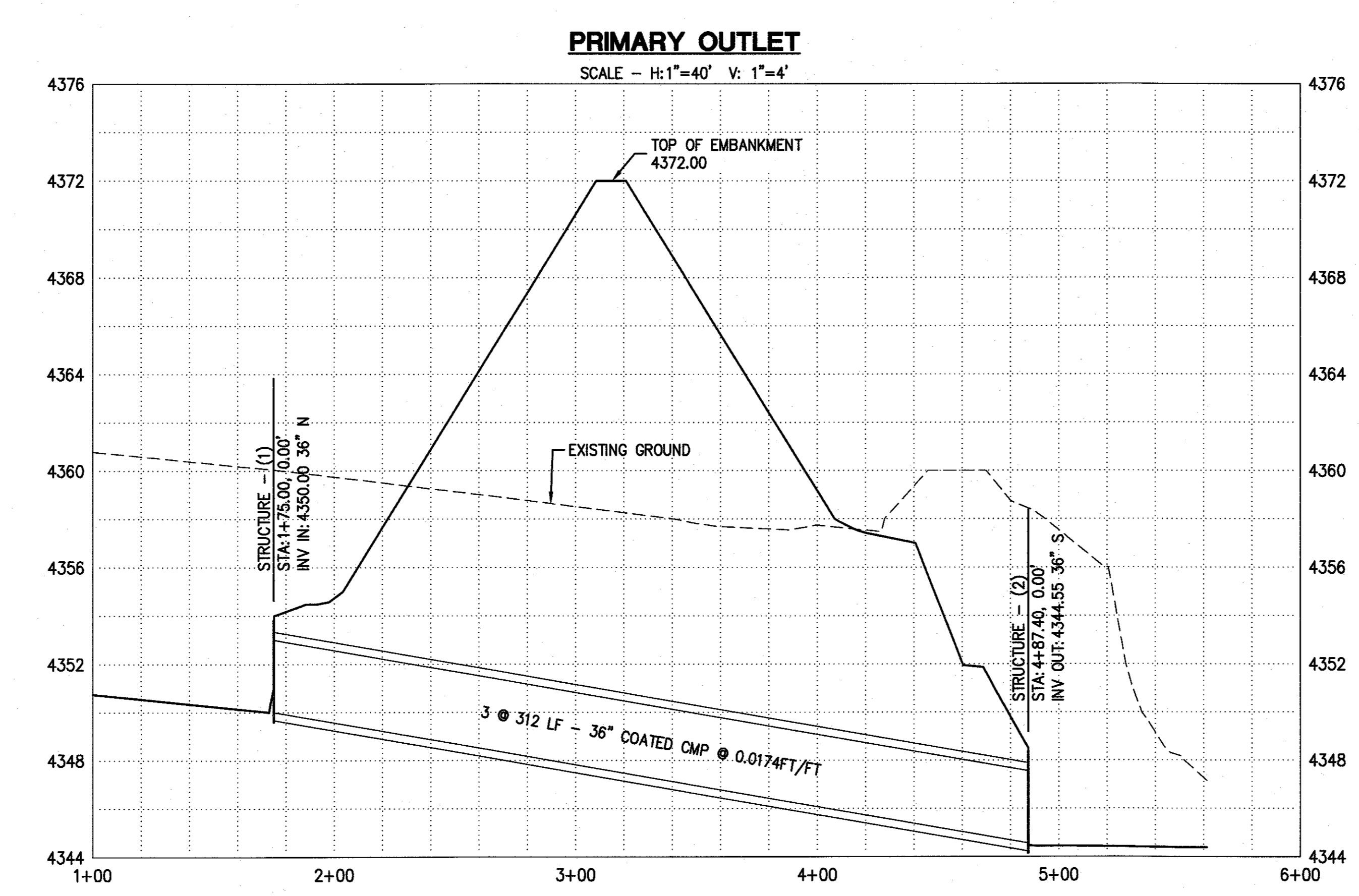
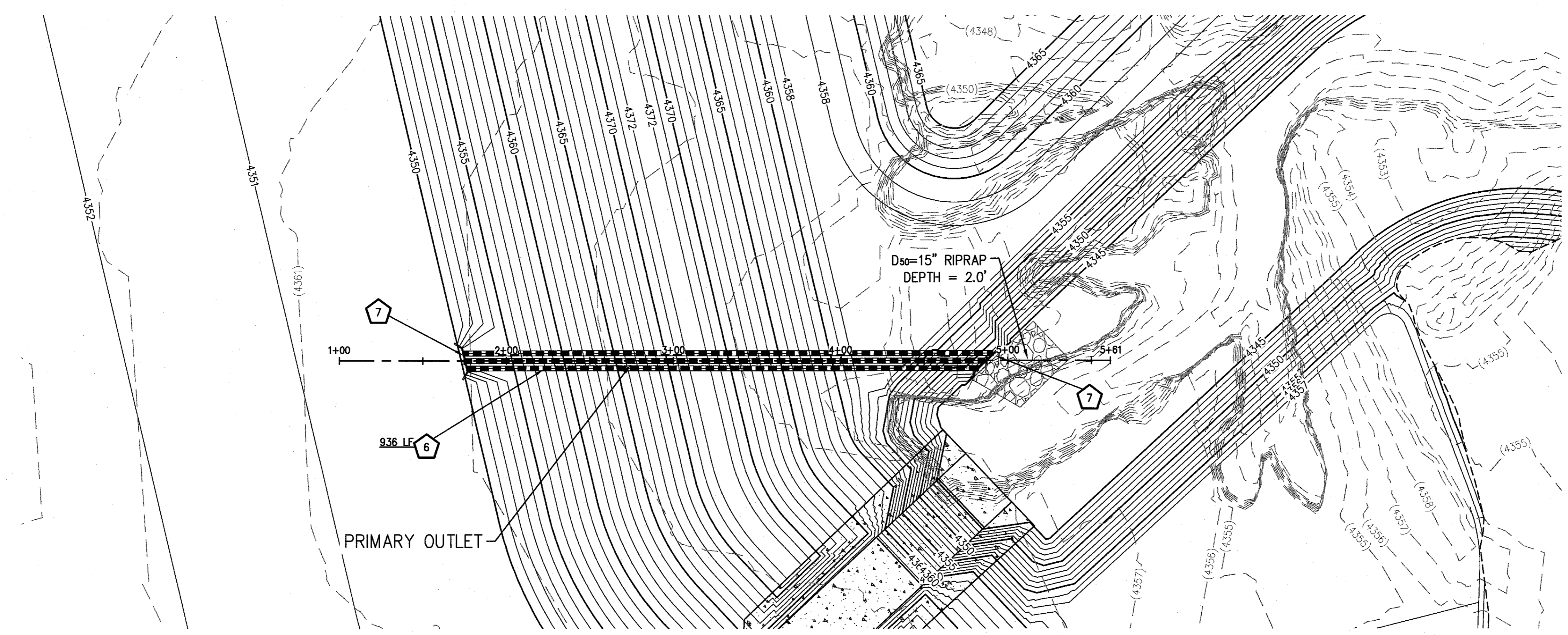
3
C1.3
OUTLET CHANNEL
PROFILE SCALE:
HORIZ: 1" = 100'
VERT: 1" = 20'



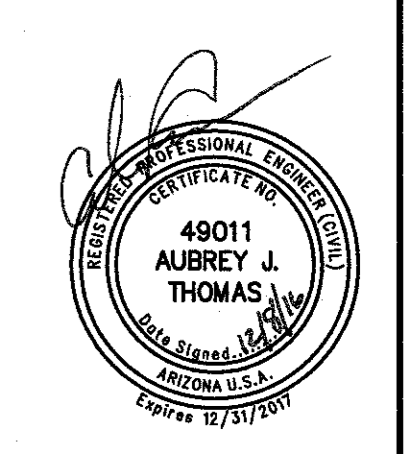
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COCHISE COUNTY, ARIZONA	
GRADING AND DRAINAGE PLAN	
PROJ. NO. 1472	
DATE: DEC. 2016	
SCALE: AS SHOWN	DESIGNED: HW
DESIGNED: HW	DRAWN: ARK
REV.	APPROVED: AT
	DWG. NO. C1.3
	SHT. 3 OF 7

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- GRADING CONSTRUCTION NOTES**
- 6 INSTALL 36" RGRCP, CLASS V STORM DRAIN PIPE. 936 LF
 - 7 INSTALL HEADWALL PER MAG STD DTL 501-1, 501-2 2 EA
(SEE DETAILS ON SHEET C1.5)

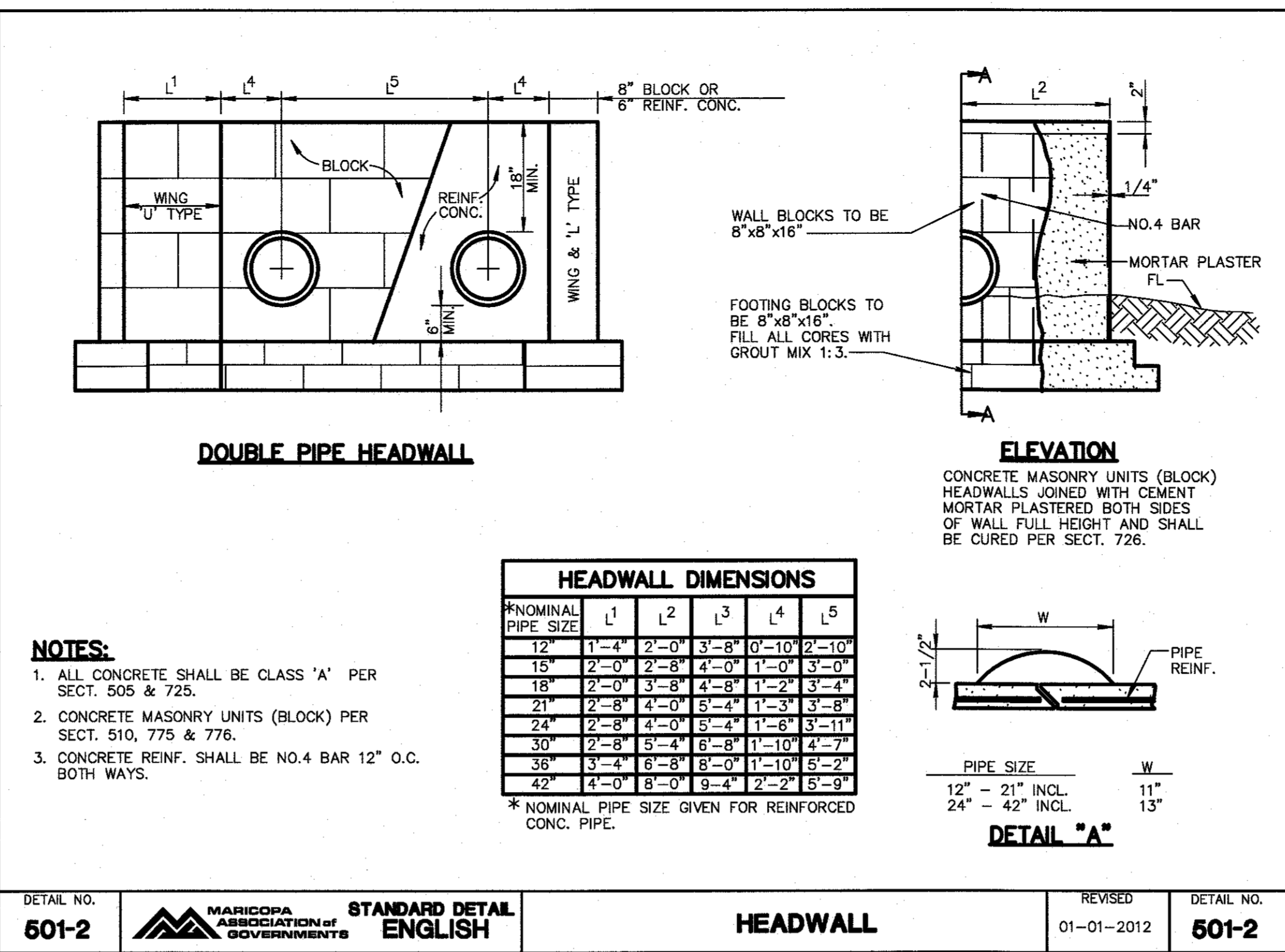
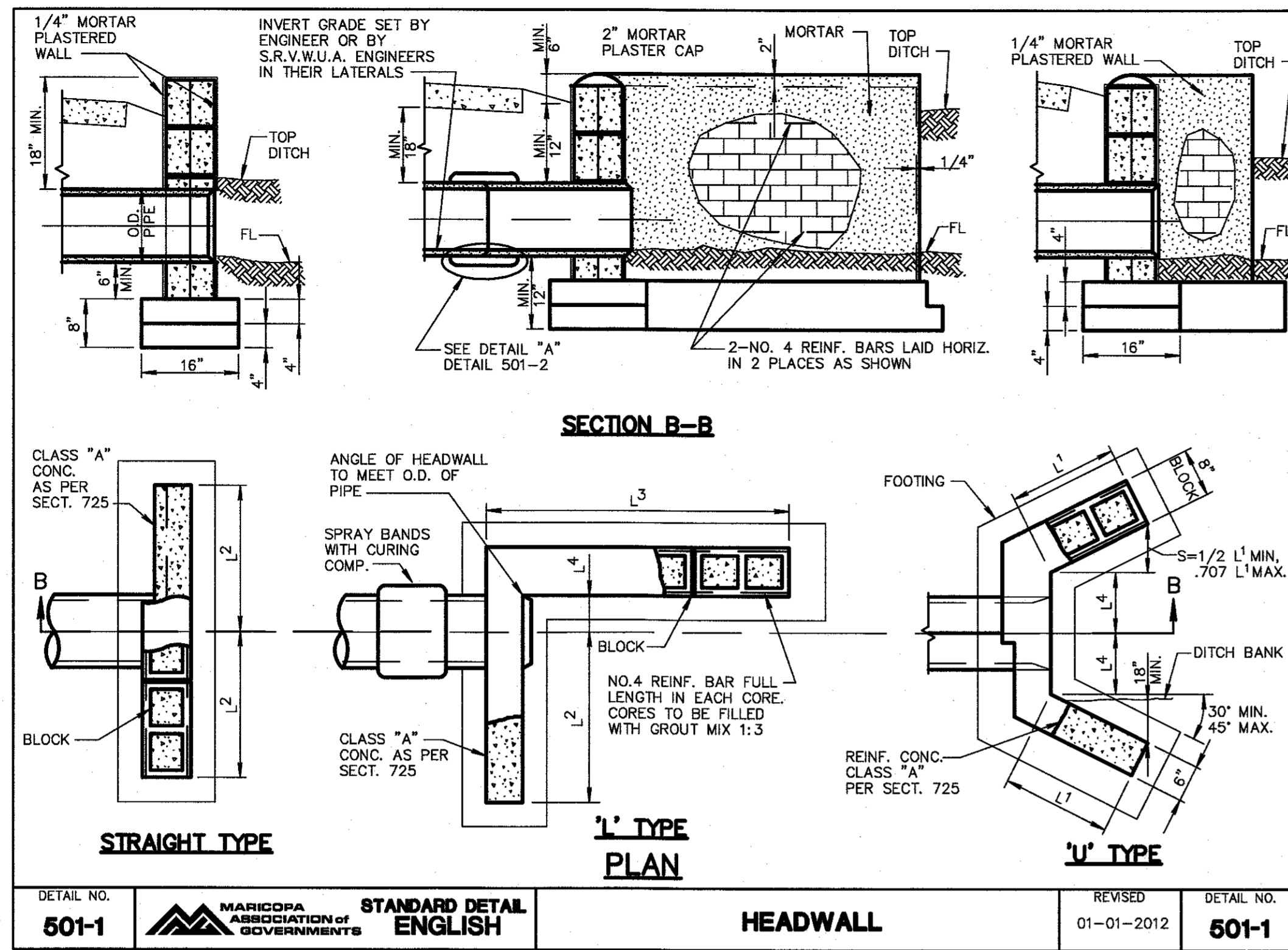


Call at least two full working days before you begin excavation.
ARIZONA811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (783-6346)
In Maricopa County: (602) 263-1100



HORSESHOE DRAW	
COCHISE COUNTY, ARIZONA	
STORM DRAIN PROFILE	
PROJ. NO. 1472	
DATE: DEC. 2016	
SCALE: AS SHOWN	HILGARTWILSON
DESIGNED: HW DRAWN: ARK APPROVED: AT	
REV.	DWG. NO. C1.4
SHT. 4 OF 7	

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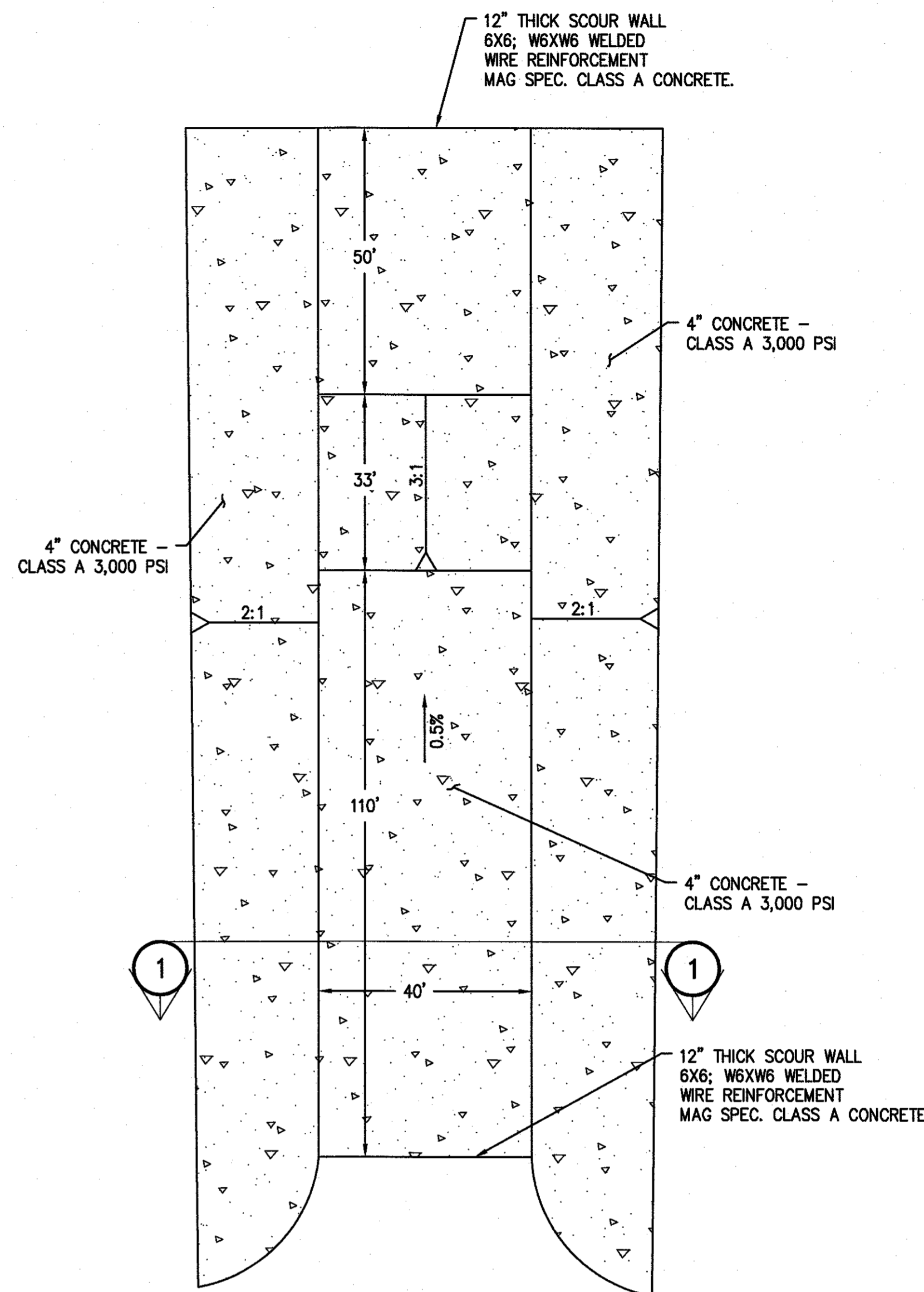


DETAIL NO. **501-1** MARICOPA ASSOCIATION OF GOVERNMENTS **STANDARD DETAIL ENGLISH** **HEADWALL** REVISED 01-01-2012 DETAIL NO. **501-1**

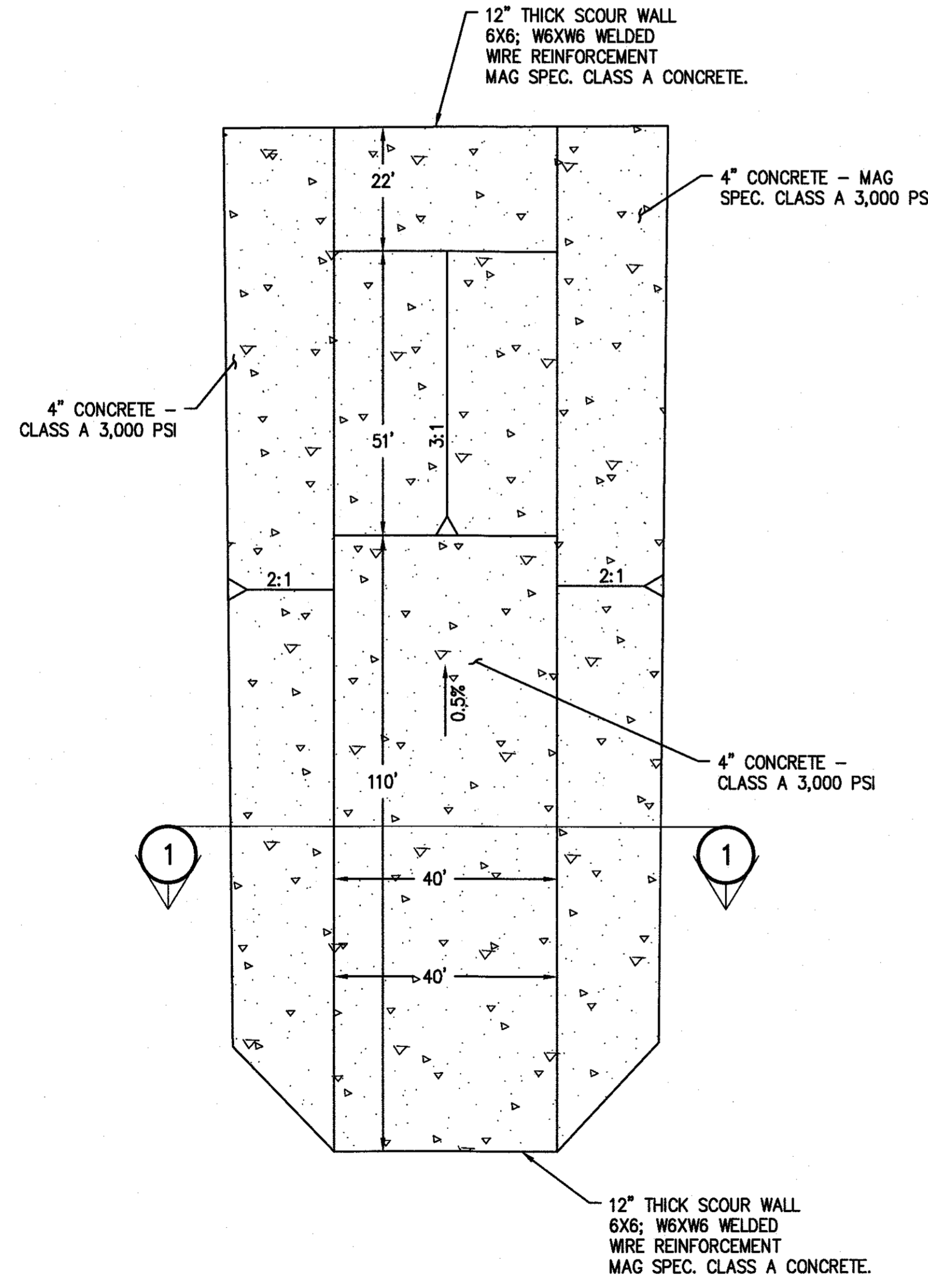
DETAIL NO. **501-2** MARICOPA ASSOCIATION OF GOVERNMENTS **STANDARD DETAIL ENGLISH** **HEADWALL** REVISED 01-01-2012 DETAIL NO. **501-2**

HEADWALL DIMENSIONS					
*NOMINAL PIPE SIZE	L1	L2	L3	L4	L5
12"	1'-4"	2'-0"	3'-8"	0'-10"	2'-10"
15"	2'-0"	2'-8"	4'-0"	1'-0"	3'-0"
18"	2'-0"	3'-8"	4'-8"	1'-2"	3'-4"
21"	2'-8"	4'-0"	5'-4"	1'-3"	3'-8"
24"	2'-8"	4'-0"	5'-4"	1'-8"	3'-11"
30"	2'-8"	5'-4"	6'-8"	1'-10"	4'-7"
36"	3'-4"	6'-8"	8'-0"	1'-10"	5'-2"
42"	4'-0"	8'-0"	9'-4"	2'-2"	5'-9"

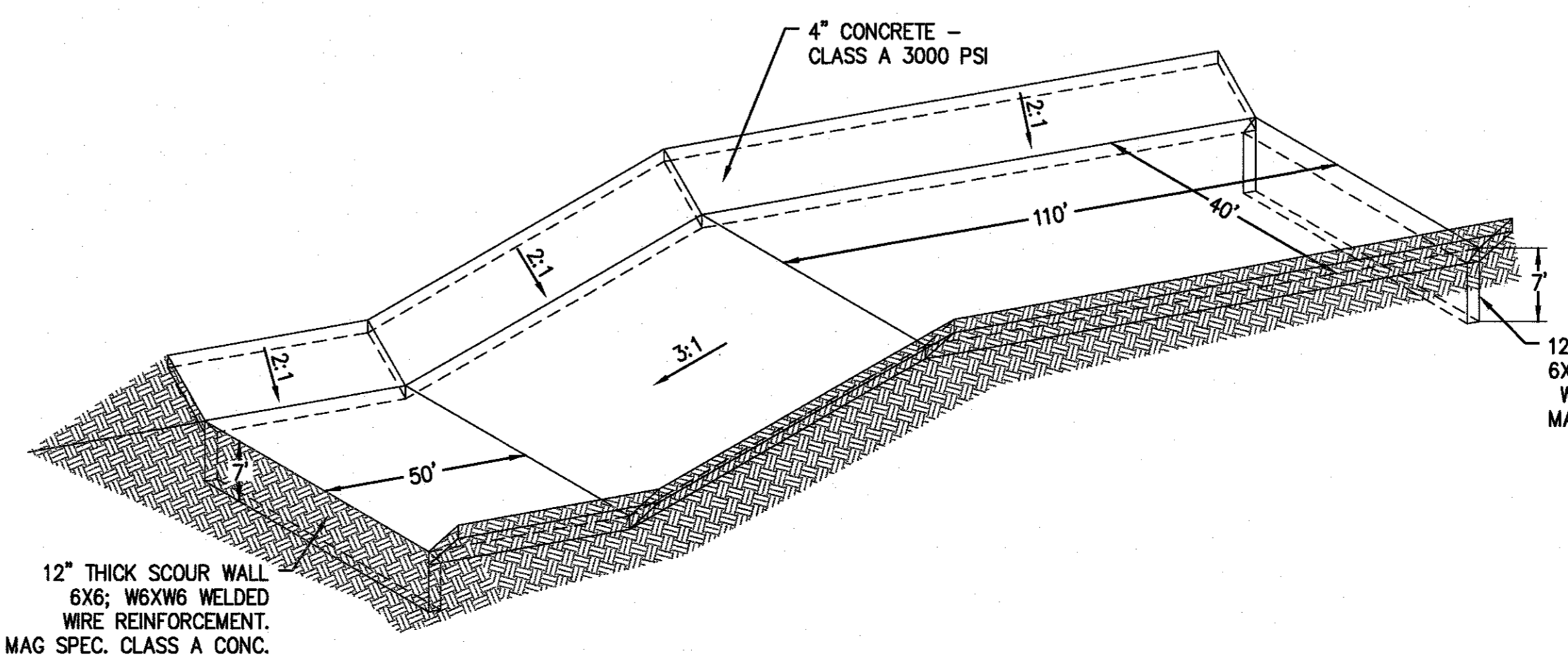
* NOMINAL PIPE SIZE GIVEN FOR REINFORCED CONC. PIPE.



2 INLET PLAN VIEW
N.T.S.

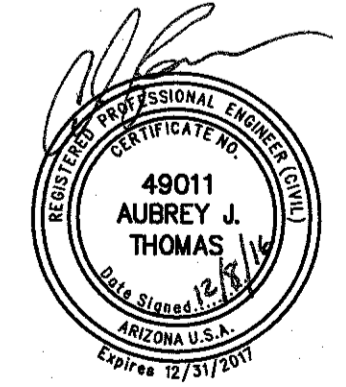


3 OUTLET PLAN VIEW
N.T.S.



1 INLET/OUTLET ISOMETRIC VIEW
N.T.S.

TYPE-III STILLING BASIN DETAIL
N.T.S.



HORSESHOE DRAW	
COCHISE COUNTY, ARIZONA	
DETAILS	
PROJ. NO.	1472
DATE:	DEC. 2016
SCALE:	AS SHOWN
DESIGNED: HW	DRAWN: ARK
REV.	APPROVED: AT
DWG. NO. C1.5	
SHT. 5 OF 7	

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