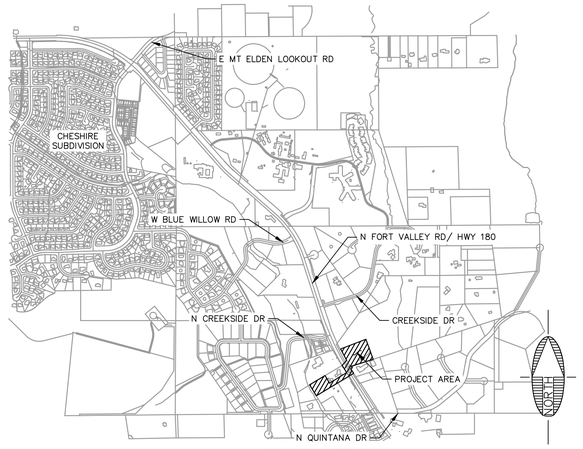
PLOTTED: Feb 16, 2024-5:01pm

90% CONSTRUCTION PLANS
FOR
HIGHWAY 180 CROSSING
FLAGSTAFF, ARIZONA

A PORTION OF THE SOUTHWEST QUARTER OF SECTION 4, TOWNSHIP 21 NORTH, RANGE 7 EAST, OF THE GILA AND SALT RIVER MERIDIAN COCONINO COUNTY, ARIZONA



VICINITY MAP

CITY CONCEPT APPROVAL

THE CITY APPROVES THESE PLANS FOR CONCEPT ONLY. ALL LIABILITY FOR ERRORS AND OMISSIONS IS THE RESPONSIBILITY OF THE DESIGN ENGINEER.

CITY ENGINEER:

BY: _____ DATE: _____

CITY PUBLIC WORKS DIRECTOR

BY: _____ DATE: _____

CITY WATER SERVICES DIRECTOR

BY: _____ DATE: _____

ADOT APPROVAL

ADOT ENGINEER:

BY: _____ DATE: _____

AUTHORIZATION TO CONSTRUCT:

THE SIGNATURES ABOVE ARE REQUIRED BEFORE THE CONTRACTOR CAN COMMENCE. UNSIGNED, THESE PLANS HAVE NOT BEEN COMPLETED WITH RESPECT TO AGENCY REVIEW AND APPROVAL.

UTILITY COMPANY CONTACTS

APS
CONTACT: CHAD BROOKS
2200 E. HUNTINGTON
FLAGSTAFF, AZ 86004
CHAD.BROOKS@APS.COM
PHONE: (928) 773-6440

UNISOURCE ENERGY SERVICES
CONTACT: MARTIN CONBOY
2901 W SHAMRELL BLVD #110
FLAGSTAFF, AZ 86001
MCONBOY@UESAZ.COM
PHONE: (928) 226-2269

LUMEN
CONTACT: MANUEL HERNANDEZ
SIGNER: RODNEY McKEE
112 NORTH BEAVER STREET
FLAGSTAFF, AZ 86001
MANUEL.HERNANDEZ4@CENTURYLINK.COM
PHONE: (928) 779-4935

ALTICE USA
CONTACT: JASON QUINLAN
1601 SOUTH PLAZA WAY
FLAGSTAFF, AZ 86001
JASON.QUINLAN@ALTICEUSA.COM
PHONE: (928) 266-0672

UTILITY COMPANY APPROVAL

ARIZONA PUBLIC SERVICE
NAME _____ BY LETTER DATED ------
BY: _____ DATE: _____

UNISOURCE ENERGY SERVICES
NAME _____ BY LETTER DATED ------
BY: _____ DATE: _____

LUMEN
NAME _____ BY LETTER DATED ------
BY: _____ DATE: _____

ALTICE USA
NAME _____ BY LETTER DATED ------
BY: _____ DATE: _____

UTILITY CONFLICTS

UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND WERE COMPILED FROM RECORD DRAWINGS, SURVEY, AND CONSTRUCTION PLANS FURNISHED BY OTHERS. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR DETERMINING THE ACTUAL LOCATIONS OF ALL UNDERGROUND LINES THAT MAY AFFECT WORK PRIOR TO CONSTRUCTION. SEE THE RESPECTIVE APPROVAL LETTERS FOR MORE INFORMATION REGARDING CONFLICTS AND CONSULT THE UTILITY CONFLICT TABLE BELOW.

HIGHWAY 180 CROSSING - UTILITY CONFLICTS

#	UTILITY OWNER	CONFLICT DESCRIPTION	APPROXIMATE LOCATION	SHEET NUMBER
1	APS	3" POWER CONDUIT – BOX CULVERT CROSSING	BOX CULVERT STA 3+47, CROSSING	CDM01
2	ALTICE	1" PVC CONDUIT FIBER – BOX CULVERT CROSSING	BOX CULVERT STA 5+06, CROSSING	CDM01
3	ALTICE	1" COMM. CONDUIT – BOX CULVERT CROSSING	BOX CULVERT STA 5+71, CROSSING	CDM01
4	LUMEN	2" D.B. COMMUNICATION – BOX CULVERT CROSSING	BOX CULVERT STA 5+71, CROSSING	CDM01
5	APS	3" POWER CONDUIT – BOX CULVERT CROSSING	BOX CULVERT STA 5+72, CROSSING	CDM01
6	ALTICE	1.5" COMM. CONDUIT – BOX CULVERT CROSSING	BOX CULVERT STA 5+84, CROSSING	ADM1
7	LUMEN	2" COMMUNICATION LINE	BOX CULVERT STA 5+86, CROSSING	ADM1
8	LUMEN	1" COMMUNICATION LINE	BOX CULVERT STA 5+88, CROSSING	ADM1
9	UNISOURCE	1.5" STEEL GAS SERVICE LINE	BOX CULVERT STA 6+30, CROSSING	ADM1
10	LUMEN	2--4" PVC CONDUITS	BOX CULVERT STA 6+75, CROSSING	ADM1
11	UNISOURCE	8" STEEL GAS MAIN	BOX CULVERT STA 6+88, CROSSING	ADM1

* STATIONING SHOWN IS BASED ON BOX CULVERT CENTERLINE AT ACTUAL CONFLICT LOCATION. SERVICE CROSSINGS ARE NOT LISTED.

** OVERHEAD APS, ALTICE & LUMEN LINES ON EAST SIDE OF HWY 180 CLEARANCE REQUIREMENTS TO BE VERIFIED.

LEGEND

- RIGHT-OF-WAY
- LOT LINE
- S — S — GRAVITY SEWER LINE
- PUBLIC WATER LINE
- G — G — G — EX. GAS
- OHE — EX. OVERHEAD ELEC
- TV — TV — EX. CABLE TV
- COMM — COMM — EX. COMMUNICATION
- W — W — EX. WATER LINE
- SS — SS — EX. SEWER LINE
- PROPOSED DRAINAGE EASEMENT
- PROPOSED TEMPORARY CONSTRUCTION EASEMENT
- STORM DRAIN PIPE
- FIRE HYDRANT
- GATE VALVE
- AIR RELEASE VALVE
- EX SEWER MANHOLE
- STORM DRAIN MANHOLE
- CATCH BASIN
- POWER POLE

PROJECT OWNER/DEVELOPER:

CITY OF FLAGSTAFF
211 W. ASPEN AVE
FLAGSTAFF, AZ 86001
CONTACT: EDWARD SCHENK

PROPERTY OWNERS/INFORMATION:

OWNERS: MUSEUM OF NORTHERN ARIZONA
SITE ADDRESS: 3101 N FORT VALLEY RD
FLAGSTAFF, AZ 86001
ASSESSOR'S PARCEL NUMBER: 111-010-25D
GROSS SITE AREA: 20.05 ACRES

OWNER: GRAND CANYON TRUST, CITY OF FLAGSTAFF
SITE ADDRESS: 2601 N FORT VALLEY RD
FLAGSTAFF, AZ 86001
ASSESSOR'S PARCEL NUMBER: 111-010-012C
GROSS SITE AREA: 1.15 ACRES

OWNER: ROY-MAILLOUX SANDRA CLAIRE PERSONAL REP O
SITE ADDRESS: 2601 N FORT VALLEY RD
FLAGSTAFF, AZ 86001
ASSESSOR'S PARCEL NUMBER: 111-010-009M
GROSS SITE AREA: 1.04 ACRES

OWNER: AMERICAN CONSERVATION EXPERIENCE
SITE ADDRESS: 2900 N FORT VALLEY RD
FLAGSTAFF, AZ 86001
ASSESSOR'S PARCEL NUMBER: 111-01-010G
GROSS SITE AREA: 1.54 ACRES

SHEET LIST TABLE

SHT. NO.	DWG. NO.	TITLE
1	CVR	COVER SHEET
2	GN01	GENERAL NOTES
3	DT01	DETAILS – CIVIL
4	DT02	DETAILS – C.O.F.
5	DT03	DETAILS – ADOT (1)
6	DT04	DETAILS – ADOT (2)
7	DT05	DETAILS – ADOT (3)
8	DT06	DETAILS – ADOT (4)
9	DT07	DETAILS – ADOT (5)
10	SC01	SURVEY CONTROL
11	ADM01	ADOT DEMOLITION PLAN
12	CDM01	C.O.F. AND COCONINO COUNTY DEMOLITION PLAN
13	TT01	TEMPORARY TRAVEL LANE
14	AIP01	ADOT IMPROVEMENT PLAN
15	CIP01	C.O.F. IMPROVEMENT PLAN
16	GD01	GRADING & DRAINAGE PLAN
17	EC01	EROSION CONTROL PLAN (1)
18	EC02	EROSION CONTROL PLAN (2)

CIVIL ENGINEER:

SHEPHARD-WESNITZER, INC. AN ARDURRA COMPANY
CONTACT: STEPHEN IRWIN, PE
110 WEST DALE AVE
FLAGSTAFF, AZ 86001
(928) 773-0354

GEOTECHNICAL REPORT:

SPEEDIE & ASSOCIATES, LLC
CONTACT: CONRAD SENIOR
REPORT #: XXXXXXX
DATE: XXXXXX
2026 N. THIRD STREET
FLAGSTAFF, ARIZONA 86004
(480) 719-9764

DRAINAGE REPORT:

SHEPHARD-WESNITZER, INC. AN ARDURRA COMPANY
CONTACT: STEPHEN IRWIN, PE
REPORT: TBD
DATED: TBD

SOURCE OF PROJECT INFORMATION

TOPOGRAPHIC INFORMATION BASED ON 2019 LIDAR PROVIDED BY JE FULLER. PLANIMETRIC ELEMENTS, SUCH AS CURBS, GUTTER, SIDEWALK, ETC, BASED ON 2021 LIDAR IMAGERY PROVIDED BY JE FULLER. BOUNDARY INFORMATION BASED ON CITY OF FLAGSTAFF GIS. TOPOGRAPHIC, BOUNDARY SURVEY/VERIFICATION AND TOPOGRAPHIC INFORMATION PROVIDED BY SWI AN ARDURRA COMPANY, DATED MAY THROUGH AUGUST 2023.

FEMA DESIGNATION

THIS PROJECT IS LOCATED WITHIN ZONE X, ZONE AE – FLOODWAY, AND ZONE AO (DEPTH=1FT) OF FEMA FIRM MAP #04005C6806G, EFFECTIVE SEPTEMBER 3, 2010.

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA
HIGHWAY 180 CROSSING
COVER SHEET

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

REVISIONS

NO.	DESCRIPTION	DATE	BY

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.8934 fax
www.ardurra.com
Shephard Wesnitzer, Inc.
An ARDURRA Company

Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

DRAWING NO.
CVR

SHT NO. 1 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 COVER SHEET.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:41pm

C.O.F. GENERAL NOTES

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS FOR A ONE (1) YEAR PERIOD, SUBSEQUENT TO THE DATE OF APPROVAL. IF CONSTRUCTION WORK IS NOT STARTED WITHIN THE ONE (1) YEAR PERIOD, OR HAS BEEN DISCONTINUED FOR ANY REASON FOR LONGER THAN ONE (1) YEAR, THE PLANS SHALL BE RESUBMITTED FOR REVIEW AND RE-APPROVAL.
2. PLAN REVIEW BY THE CITY DOES NOT EXTEND TO MATERIAL QUANTITIES SHOWN ON THE PLANS.
3. A PUBLIC WORKS PERMIT, ISSUED BY THE CITY, IS REQUIRED FOR ALL WORK IN CITY RIGHTS-OF-WAY OR EASEMENTS AND FOR CONSTRUCTION OF ANY IMPROVEMENTS INTENDED TO BECOME PUBLIC PROPERTY.
4. THE CITY SHALL BE NOTIFIED TWENTY-FOUR (24) HOURS PRIOR TO BEGINNING DIFFERENT PHASES OF CONSTRUCTION SO THAT CITY INSPECTORS MAY BE SCHEDULED.
5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH TITLE 13, ENGINEERING DESIGN AND STANDARDS AND SPECIFICATIONS FOR NEW INFRASTRUCTURE, CURRENT "MAG UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION". THE CITY OF FLAGSTAFF STORMWATER DESIGN MANUAL, AND WITH GENERALLY ACCEPTED ENGINEERING DESIGN AND CONSTRUCTION PRACTICE. ALL WORK AND MATERIALS, WHICH DO NOT CONFORM TO THE STANDARDS AND SPECIFICATIONS, ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING CHAPTER 13-21 OF THESE STANDARDS WHICH MAKES MINOR MODIFICATIONS TO CERTAIN MAG SPECIFICATIONS AND DETAILS.
6. ANY WORK PERFORMED WITHOUT THE KNOWLEDGE AND APPROVAL OF THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
7. THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE MAY SUSPEND THE WORK BY WRITTEN NOTICE WHEN, IN HIS JUDGMENT, PROGRESS IS UNSATISFACTORY, WORK BEING DONE IS UNAUTHORIZED OR DEFECTIVE, WEATHER CONDITIONS ARE UNSUITABLE, OR THERE IS DANGER TO THE PUBLIC HEALTH OR SAFETY.
8. THE CITY ENGINEER MAY ORDER ANY OR ALL MATERIALS USED IN THE WORK TO BE TESTED ACCORDING TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS. THE CONTRACTOR SHALL, AT HIS EXPENSE, SUPPLY ALL SAMPLES REQUIRED FOR TESTING.
9. ACCESS WHICH MEETS SECTION 13-13-004-0001, FIRE ACCESS SHALL BE IN PLACE AND APPROVED BEFORE AND AT ALL TIMES DURING ON-SITE COMBUSTIBLE CONSTRUCTION AND/OR PRIOR TO ISSUANCE OF BUILDING PERMITS IN NEW SUBDIVISIONS. FIRE DEPARTMENT AND ENGINEERING SECTION APPROVAL IS REQUIRED FOR OBSTRUCTION OF ACCESS OR WATER SYSTEM SHUTDOWN.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE STREETS AND OF PARTIALLY COMPLETED PORTIONS OF THE WORK UNTIL FINAL ACCEPTANCE OF THE WORK. THE CONTRACTOR SHALL SUBMIT TO THE CITY ENGINEER FOR APPROVAL A CONSTRUCTION SCHEDULE FOR ANY STREETS REQUIRED TO BE CLOSED OR PARTIALLY CLOSED FOR THE CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL REOPEN THE STREETS NO LATER THAN THE OPENING DATE SHOWN ON THE CONSTRUCTION SCHEDULE OR UPON ORDER OF THE CITY ENGINEER. THE REGULATION AND CONTROL OF CONSTRUCTION TRAFFIC SHALL BE AS DIRECTED BY THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.
11. APPROVAL OF A PORTION OF THE WORK IN PROGRESS DOES NOT GUARANTEE ITS FINAL ACCEPTANCE. TESTING AND EVALUATION MAY CONTINUE UNTIL WRITTEN FINAL ACCEPTANCE OF A COMPLETE WORKABLE UNIT. ANY DEFECTS WHICH APPEAR IN THE WORK WITHIN ONE (1) YEAR FROM THE DATE OF ACCEPTANCE AND WHICH ARE DUE TO IMPROPER WORKMANSHIP OR INFERIOR MATERIALS SUPPLIED SHALL BE CORRECTED BY OR AT THE EXPENSE OF THE OWNER/DEVELOPER OR THE CONTRACTOR.
12. ACCEPTANCE OF COMPLETED PUBLIC IMPROVEMENTS WILL NOT BE GIVEN UNTIL DEFECTIVE OR UNAUTHORIZED WORK IS REMOVED, AND FINAL CLEAN-UP IS COMPLETE.
13. LOCATION OF UNDERGROUND UTILITIES BEFORE WORK IS BEGUN IS TO BE ACCOMPLISHED IN ACCORDANCE WITH ARS 40-360.22.
14. IF WORK IS DONE ON PRIVATE PROPERTY IN RELATION TO A PROJECT CONSTRUCTED UNDER THESE STANDARDS, THE CONTRACTOR WILL PROVIDE THE CITY WITH WRITTEN AUTHORIZATION FROM THE PROPERTY OWNER TO DO SO.
15. THE ESTABLISHMENT AND USE OF TEMPORARY CONSTRUCTION YARDS SHALL CONFORM TO THE CURRENT CITY ZONING CODE STANDARDS FOR "TEMPORARY USES".
16. ALL EXCAVATED MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE CITY CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED CITY APPROVALS AND PERMITS, AS DEEMED NECESSARY BY THE CITY, TO DISPOSE OF EXCAVATED MATERIAL.
17. ALL CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR/DEVELOPER AND PERFORMED UNDER THE DIRECT SUPERVISION OF A REGISTERED LAND SURVEYOR OR CIVIL ENGINEER.
18. ALL TRAFFIC SIGN SHEETING SHALL BE TYPE VIII AS DESIGNED BY ASTM D4956-07E1 STANDARD SPECIFICATIONS FOR RETRO REFLECTIVE SHEETING FOR TRAFFIC CONTROL, UNLESS SPECIFIED OTHERWISE ON THE CONSTRUCTION PLANS.
19. WHEN THE CONSTRUCTION PLANS SPECIFY GRAFFITI CONTROL ON BRIDGES OR OTHER STRUCTURES, THE CONTRACTOR SHALL SEAL THE STRUCTURE FIRST USING MONOCHEM AQUASEAL ME 12 AND THEN APPLY MONOCHEM PERMASHIELD, SACRIFICIAL GRAFFITI CONTROL SYSTEM (OR APPROVED EQUAL).
20. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE STABILIZED AND RESEEDED IN ACCORDANCE WITH CHAPTER 13-17 OF THIS TITLE. IN THE EVENT THAT THE CONSTRUCTION ACTIVITY DISTURBS MORE THAN ONE (1) ACRE, A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED IN ORDER TO OBTAIN A CONSTRUCTION GENERAL PERMIT FROM ADEQ. (ORD. 2207-20, REP&REEN, 07/05/2017)
21. ALL SURVEY MONUMENTS WITHIN OR AROUND THE CONSTRUCTION AREA SHALL BE PROTECTED IN PLACE. ANY MONUMENTS THAT ARE DISTURBED OR DISPLACED BY CONSTRUCTION SHALL BE RESET BY THE RLS AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH CITY OF FLAGSTAFF ENGINEERING STANDARDS SECTION 13-03-005-004 AND A.R.S. 33-103

C.O.F. WATER AND SEWER NOTES

ALL DESIGN, CONSTRUCTION, TESTING AND INSPECTION SHALL CONFORM TO THE ADEQ REQUIREMENTS: WATER DISTRIBUTION IN ACCORDANCE WITH BULLETINS 10 AND 8, AND SEWER COLLECTION IN ACCORDANCE WITH AAC TITLE 18. IN THE EVENT THE ADEQ REQUIREMENTS CONFLICT WITH THESE STANDARDS, THE MORE RESTRICTIVE SHALL APPLY.

A. ROUGH GRADING SHALL BE COMPLETED WITHIN ONE-TENTH ($\frac{1}{10}$) OF A FOOT OF PLAN GRADE AND APPROVED BY THE CITY ENGINEER'S AUTHORIZED REPRESENTATIVES PRIOR TO INSTALLATION OF UNDERGROUND UTILITIES.

B. NO TRENCH SHALL BE FILLED WITH BEDDING MATERIAL OR BACKFILL UNTIL THE EXCAVATION AND PIPE LAYING, RESPECTIVELY, HAVE BEEN APPROVED BY THE CITY ENGINEER'S AUTHORIZED REPRESENTATIVE.

C. A WATER PRESSURE TEST IS REQUIRED OF ALL WATER LINES AND A HYDROSTATIC OR AIR TEST IS REQUIRED OF ALL SEWER LINES AND MANHOLES. TESTS ARE TO BE CONDUCTED AFTER BACKFILLING IS COMPLETE AND COMPACTED ON ALL PUBLIC AND/OR PRIVATE UNDERGROUND UTILITIES.

D. WATER AND SEWER SERVICE LINES ARE TO BE MARKED AS SHOWN ON THE STANDARD SERVICE DETAILS.

E. WATER LINE DISINFECTION IS TO BE ACCOMPLISHED AS OUTLINED IN ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) "BULLETIN NO. 8."

F. WATER PIPE CLASSIFICATION SHALL BE CLASS 305 FOR A.W.W.A. C-900 PVC AND CLASS 350 FOR DUCTILE IRON UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. C-900 SHALL CONFORM TO CAST-IRON-EQUIVALENT OUTSIDE DIAMETER AND HAVE ELASTROMERIC GASKETS AND COUPLINGS. ALL DUCTILE IRON PIPE LINES SHALL BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MAG SPECIFICATIONS.

G. ALL MATERIALS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 INCLUDING, BUT NOT LIMITED TO, GASKETS, LUBRICANTS, PIPE FITTINGS, AND VALVES. (NSF-PW SEAL) (R18-4-119B).

H. ALL PUBLIC SANITARY SEWER LINES AND PRIVATE SEWER SERVICE LINES WITHIN A PUBLIC UTILITY EASEMENT OR RIGHT-OF-WAY WILL BE INSPECTED PRIOR TO ACCEPTANCE BY THE CITY.

I. WATER AND SEWER MAINS SHALL BE SEPARATED IN ORDER TO PROTECT PUBLIC WATER SYSTEMS FROM POSSIBLE CONTAMINATION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE SEWER MAIN TO THE OUTSIDE OF THE WATER MAIN. SEPARATION REQUIREMENTS ARE AS FOLLOWS:

1. A WATER MAIN SHALL NOT BE PLACED:
   a. WITHIN SIX (6) FEET, HORIZONTAL DISTANCE, AND LESS THAN TWO (2) FEET, VERTICAL DISTANCE, ABOVE THE TOP OF A SEWER MAIN UNLESS EXTRA PROTECTION IS PROVIDED. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING THE SEWER MAIN WITH MECHANICAL JOINT DUCTILE IRON PIPE OR WITH SLIP-JOINT DUCTILE IRON PIPE IF JOINT RESTRAINT IS PROVIDED. ALTERNATE EXTRA PROTECTION SHALL CONSIST OF ENCASING BOTH THE WATER AND SEWER MAINS IN AT LEAST SIX (6) INCHES OF CONCRETE FOR AT LEAST TEN (10) FEET BEYOND THE AREA COVERED BY THIS SUBSECTION.
   b. WITHIN TWO (2) FEET HORIZONTALLY AND TWO (2) FEET BELOW THE SEWER MAIN. WHEN A WATER MAIN IS PLACED BELOW A SEWER MAIN, EXTRA PROTECTION IS ALWAYS REQUIRED REGARDLESS OF THE VERTICAL SEPARATION.

2. NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF A SEWER MANHOLE. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAINS AND MANHOLES SHALL BE SIX (6) FEET, MEASURED FROM THE CENTER OF THE MANHOLE.

3. THE MINIMUM SEPARATION BETWEEN FORCE MAINS OR PRESSURE SEWERS AND WATER MAINS SHALL BE TWO (2) FEET VERTICALLY AND SIX (6) FEET HORIZONTALLY UNDER ALL CONDITIONS. WHERE A SEWER FORCE MAIN CROSSES ABOVE OR LESS THAN SIX (6) FEET BELOW A WATER LINE, THE SEWER MAINS SHALL BE ENCASED IN AT LEAST SIX (6) INCHES OF CONCRETE OR CONSTRUCTED USING MECHANICAL JOINT DUCTILE IRON PIPE FOR TEN (10) FEET ON EITHER SIDE OF THE WATER MAIN.

4. EVEN WHEN EXTRA PROTECTION IS UTILIZED, THE MINIMUM CLEARANCE BETWEEN WATER AND SEWER SHALL BE ONE (1) FOOT.

5. THE SEPARATION REQUIREMENTS DO NOT APPLY TO BUILDING, PLUMBING, OR INDIVIDUAL HOUSE SERVICE CONNECTIONS.

J. WHEN HYDROSTATIC TESTING IS PERFORMED, SEWER LINES SHALL BE TESTED FOR INFILTRATION/EXFILTRATION PER ADEQ ENGINEERING BULLETIN NO. 11. MANHOLES SHALL BE TESTED BY FILLING THE MANHOLE WITH WATER. THE APPLICANT SHALL ENSURE THAT THE DROP IN WATER LEVEL DOES NOT EXCEED ONE-THOUSANDTH (0.001) OF THE TOTAL MANHOLE VOLUME IN ONE (1) HOUR.

   WHEN AIR TESTING IS PERFORMED, SEWER LINES SHALL BE TESTED IN ACCORDANCE WITH ASTM F1417-92. MANHOLES SHALL BE TESTED IN ACCORDANCE WITH ASTM C1244.

K. SEWER PIPE SHALL BE SDR 35, ASTM D3034 FOR PVC PIPE, OR CLASS 150 DIP LINED WITH PROTECTO 401 CERAMIC EPOXY OR HDPE ASTM F894. ALL DUCTILE IRON PIPELINES SHALL BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MAG SPECIFICATIONS. SPECIAL DESIGN CONSIDERATIONS MAY REQUIRE A HIGHER CLASS RATING OF DIP.

L. NO WATER SETTLING OF TRENCH FILL MATERIAL IS ALLOWED.

M. ALL WATER AND SEWER DESIGN AND CONSTRUCTION SHALL CONFORM TO THE CURRENT ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) REQUIREMENTS. WHEN ADEQ REQUIREMENTS ARE IN CONFLICT WITH THESE STANDARDS, THE MORE RESTRICTIVE SHALL APPLY.

N. TRACER WIRES AND TAPES SHALL BE INSTALLED PRIOR TO TESTING THE WATER OR SEWER MAIN AS REQUIRED BY SECTION 13-09-001-0002. (STRIP WIRE 2 INCHES AT TERMINATION OF THE SERVICE).

O. WATER VALVES SHALL BE ADJUSTED IN ACCORDANCE WITH CITY OF FLAGSTAFF ENGINEERING DETAIL NO. 9-03-060 AND MANHOLES SHALL BE ADJUSTED IN ACCORDANCE WITH CITY OF FLAGSTAFF DETAIL NO. 9-03-062.

P. ONE HUNDRED PERCENT (100%) OF THE SEWER LINE SHALL BE TESTED FOR UNIFORM SLOPE BY REMOTE CAMERA AND TESTED FOR SHORT-TERM DEFLECTION.

1. WHEN A SEWER SERVICE IS REQUIRED TO BE ABANDONED, IT SHALL BE ABANDONED AT THE PROPERTY LINE AND CAPPED USING THE APPROPRIATE MATERIALS (PVC, CLAY, OR CONCRETE).

2. WHEN AN EXISTING WATER SERVICE IS REQUIRED TO BE ABANDONED, IT SHALL BE ABANDONED AT THE MAIN. THE SADDLE AND CORP. STOP SHALL BE REMOVED AND THE MAIN CLAMPED WITH AN APPROVED FULL CIRCLE REPAIR CLAMP.

Q. THE LOCATION OF WATER SERVICES SHALL BE IDENTIFIED BY BRANDING A "W" ON THE TOP OR FACE OF CURB.

R. SEWER SERVICE LOCATIONS SHALL BE IDENTIFIED BY BRANDING AN "S" ON THE TOP OR FACE OF THE CURB. (ORD. 2017-22, REP&REEN, 07/05/2017)

C.O.F. PAVING NOTES

A. EXACT POINT OF MATCHING TERMINATION AND OVERLAY, IF NECESSARY, SHALL BE DETERMINED IN THE FIELD BY THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. WHEN A LONGITUDINAL JOINT ASSOCIATED WITH A TRENCH PATH, PAVEMENT MATCHUP OR OTHER OCCURS ON A STREET THAT INCLUDES A BIKE LANE, THE JOINT SHALL BE LOCATED OUTSIDE THE BIKE LANE.

B. NO JOB WILL BE CONSIDERED COMPLETE UNTIL:

1. ALL CURBS, PAVEMENTS, SIDEWALKS, CATCH BASINS, STORM DRAINS, AND MANHOLES HAVE BEEN CLEANED OF ALL DIRT AND DEBRIS;
2. SURVEY MONUMENTS ARE INSTALLED AND STAMPED; AND
3. ALL FRAMES, COVERS, AND VALVE BOXES ARE ADJUSTED TO GRADE.

C. NO PAVING CONSTRUCTION SHALL BE STARTED UNTIL ALL UTILITY LINES ARE COMPLETED AND APPROVED UNDER PROPOSED PAVED AREAS.

D. BASE COURSE WILL NOT BE PLACED UNTIL SUBGRADE HAS BEEN APPROVED BY THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.

E. THE LOCATION OF ALL WATER VALVES, FIRE HYDRANTS, AND MANHOLES MUST AT ALL TIMES DURING CONSTRUCTION BE REFERENCED AND MADE ACCESSIBLE TO THE CITY.

F. UTILITY FACILITIES IN CONFLICT WITH THIS WORK WILL BE RELOCATED BY THE PERMITTEE OR THE UTILITY OWNER. THIS ACTIVITY SHALL BE COORDINATED WITH THE OWNER OF THE UTILITY TO PREVENT ANY UNNECESSARY INTERRUPTION OF SERVICE TO EXISTING CUSTOMERS.

G. EXISTING STREET NAME SIGNS, TRAFFIC SIGNS AND DEVICES ASSOCIATED WITH THE PROJECT SHALL BE MAINTAINED DURING CONSTRUCTION AND RELOCATED BY THE CONTRACTOR AS SHOWN ON THE APPROVED PLANS.

H. ANY CHANGES OR ADDITIONS TO PAVEMENT MARKINGS CAUSED BY PAVEMENT OVERLAY, CHIP SEAL, OR INSTALLATION OF UNDERGROUND FACILITIES SHALL BE SHOWN ON THE APPROVED PLANS.

I. ON PROJECTS WHERE THE CONTRACTOR CAUSES EXCESSIVE DAMAGE TO AN EXISTING PAVED STREET OR THERE ARE MULTIPLE STREET CUTS (MAXIMUM OF FOUR (4) IN FIVE HUNDRED (500) FEET) AN ASPHALT OVERLAY SHALL BE REQUIRED.

J. A PRIME COAT IS NOT REQUIRED UNLESS SO SPECIFIED IN THE SOILS AND PAVEMENT REPORT AND/OR SHOWN ON THE PLANS.

K. ALL CURB AND GUTTER, SIDEWALK, DRIVEWAYS, AND SIDEWALK RAMPS SHALL BE CONSTRUCTED ON A MINIMUM THREE (3) INCHES OF AGGREGATE BASE COURSE (ABC). THE ABC SHALL BE CONSTRUCTED PER MAG SECTION 310, AND SHALL BE COMPACTED TO NINETY-FIVE (95%) RELATIVE DENSITY. ALL PRECAST STRUCTURES SUCH AS MANHOLE BASES, CATCH BASINS, AND BOX CULVERTS SHALL BE CONSTRUCTED ON A MINIMUM OF THREE (3) INCHES OF ABC.

L. PERMANENT PAVEMENT MARKINGS.

1. LONGITUDINAL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 13-16-006-0001.
2. TRANSVERSE PAVEMENT MARKINGS SUCH AS STOP BARS, CROSSWALKS, ARROWS, AND LEGENDS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 13-16-006-0002.

M. TEMPORARY PAVEMENT MARKINGS.

1. TEMPORARY PAVEMENT MARKINGS, WHEN APPROVED, SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 13-16-006-0001 AND 13-16-006-0002.

NOTES:

1. ALL TEMPORARY PAVEMENT MARKINGS TO USE 708 WATERBORNE TYPE I.

WHEN IT IS USED, THE CONTRACTOR MUST BE AVAILABLE TO RESTRIPE AS NEEDED UNTIL THE PERMANENT MARKINGS CAN BE INSTALLED.

2. WHEN IT IS IMPRACTICABLE FOR THE CONTRACTOR TO PROVIDE PERMANENT MARKINGS, THE CITY PUBLIC WORKS DEPARTMENT MAY INSTALL THE MARKINGS ON BEHALF OF THE CONTRACT PROVIDED THE FEE FOR THE WORK IS AGREED UPON AND PAID FOR IN ADVANCE.

N. THE MAXIMUM THICKNESS OF A SINGLE LIFT OF PAVEMENT SHALL BE FOUR (4) INCHES. (ORD. 2017-22, REP&REEN, 07/05/2017)

C.O.F. GRADING AND DRAINAGE NOTE:

"ADEQUATE DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES, BEST MANAGEMENT PRACTICES, AND/OR OTHER STORM WATER MANAGEMENT FACILITIES SHALL BE PROVIDED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. DAMAGES TO ADJACENT PROPERTY AND/OR THE CONSTRUCTION SITE CAUSED BY CONTRACTOR'S PROPERTY OR PROPERTY OWNER'S FAILURE TO PROVIDE AND MAINTAIN ADEQUATE DRAINAGE AND EROSION/SEDIMENT CONTROL FOR THE CONSTRUCTION AREA SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR PROPERTY OWNER."

C.O.F. SEEDING NOTES

TO BE APPLIED ON ALL CUT/FILL SLOPES.

THE CONTRACTOR SHALL RESEED ALL DISTURBED AREA ACCORDING TO THE PROVISIONS OF THIS SECTION. THE WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING, HAULING, PLACING, AND APPLYING EROSION CONTROL (SEED, MULCH, AND EROSION CONTROL BLANKETS) TO ALL DISTURBED AREAS WITHIN THE PROJECT AREAS AS SHOWN ON THE PLANS. REFER TO THE CITY OF FLAGSTAFF ENGINEERING STANDARDS, TITLE 13, CHAPTER 17 FOR SEEDING REQUIREMENT

SHEPHARD-WESNITZER GENERAL NOTES

PROJECT SPECIFICATIONS
ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING STANDARDS AND SPECIFICATIONS, AND ANY SPECIAL PROVISIONS PREPARED FOR THE PROJECT. THE TERM "CURRENT" MEANS THE DATE OF THE SPECIFICATIONS IN EFFECT AS OF THE DATE OF THE ENGINEERS SEAL ON THESE PLANS.

MARICOPA ASSOCIATION OF GOVERNMENTS (M.A.G.) UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION
CITY OF FLAGSTAFF ENGINEERING DESIGN AND CONSTRUCTION STANDARDS & SPECIFICATION
ADOT ROADWAY DESIGN GUIDELINES
AMERICAN WATER WORKS ASSOCIATION STANDARDS
ARIZONA ADMINISTRATIVE CODE
INTERNATIONAL PLUMBING CODE (IPC)
INTERNATIONAL BUILDING CODE (IBC)

THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS ARE REQUIRED TO OBTAIN COPIES OF THESE, AS WELL AS ANY OTHER STANDARDS OR SPECIFICATIONS REQUIRED TO SUCCESSFULLY COMPLETE THE WORK AS DESCRIBED IN THESE PLANS AND/OR ANY SPECIAL PROVISIONS PREPARED FOR THE PROJECT. THIS REQUIREMENT EXTENDS TO ANY STANDARDS, DETAILS, OR SPECIFICATIONS REFERENCED BY THE CONSTRUCTION DOCUMENTS AND NOT INCLUDED IN THE LIST ABOVE.

QUANTITY ESTIMATE AND PAYMENT PROVISIONS

IF ANY MATERIAL QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE TO BE CONSIDERED AS APPROXIMATE ONLY AND ARE FURNISHED AS A CONVENIENCE TO THE CONTRACTOR IN EVALUATING THE MAGNITUDE OF THE PROJECT SCOPE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACTUAL QUANTITIES OF WORK REQUIRED AND BASE HIS BID ON HIS OWN INDEPENDENT ESTIMATE OF THE WORK SCOPE AND QUANTITIES OF MATERIALS REQUIRED.

THE ESTIMATED QUANTITIES MAY NOT DIRECTLY CORRESPOND TO A BID SCHEDULE/SCHEDULE OF VALUES INCLUDED IN THE CONTRACT DOCUMENTS. PAYMENT FOR ANY WORK ACCOMPLISHED SHALL BE IN ACCORDANCE WITH THE PAYMENT PROVISIONS OUTLINED IN THE CONTRACT DOCUMENTS.

UTILITY COORDINATION
THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY FOR COORDINATING ALL UTILITY RELOCATIONS, VALVE BOX/MANHOLE OR OTHER SURFACE APPURTENANCE ADJUSTMENTS, COORDINATION OF UTILITY CONFLICTS, OBTAINING NECESSARY PERMITS, SCHEDULING BLUE STAKE, CONDUCTING EXPLORATORY EXCAVATIONS IN ADVANCE OF UTILITY INSTALLATIONS, AND GENERAL CONFORMANCE TO UTILITY AGENCY REQUIREMENTS AND SPECIFICATIONS FOR CONDUCTING THE WORK.

THE CONTRACTOR IS SPECIFICALLY ADVISED TO EXAMINE THE SITE FOR EVIDENCE OF AND CONFLICTS WITH EXISTING UTILITIES PRIOR TO SUBMITTING HIS BID. EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS IN THEIR APPROXIMATE LOCATIONS BASED ON FIELD OBSERVATIONS AND ANY FURNISHED RECORD INFORMATION, BUT THERE IS NO GUARANTEE THAT ALL UTILITY CONFLICTS HAVE BEEN IDENTIFIED. AT THE TIME OF CONSTRUCTION, THE EXACT SIZES, TYPES, AND LOCATIONS OF EXISTING UNDERGROUND IMPROVEMENTS SHALL BE DETERMINED BY THE CONTRACTOR AND HE SHALL FURNISH MATERIALS AS NECESSARY TO CONSTRUCT THE REQUIRED CONNECTIONS.
THE CONTRACTOR SHALL PERFORM ALL NECESSARY POTHOLES AND UTILITY LOCATING AT LEAST TWO WEEKS IN ADVANCE OF ALL UNDERGROUND UTILITY WORK TO ENSURE EXPEDIENT COMPLETION OF THE WORK IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. LOCATING EXISTING UTILITIES FOR THE PURPOSE OF IDENTIFYING CONFLICTS IN ADVANCE OF THE UTILITY RELOCATIONS IS AN IMPORTANT ELEMENT OF THE PROJECT. FAILURE OF THE CONTRACTOR TO LOCATE EXISTING UTILITIES AT LEAST TWO WEEKS IN ADVANCE OF THE CONSTRUCTION ACTIVITIES WILL DIMINISH HIS ABILITY TO MAKE A CLAIM FOR DELAYS FOR UTILITY RELOCATIONS.

ALL FRAMES, COVERS AND VALVE BOXES IN THE CONSTRUCTION AREA SHALL BE ADJUSTED TO FINAL FINISH GRADES, WHETHER INDICATED ON THE PLANS OR NOT. ANY NECESSARY ADJUSTMENTS WHICH ARE NOT SEPARATELY ITEMIZED IN THE BID SCHEDULE SHALL BE CONSIDERED INCIDENTAL TO THE WORK.

THE APPROPRIATE UTILITY COMPANIES SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION. "BLUE STAKE" NUMBER IS 1-800-STAKE-IT. CONTRACTOR SHALL ALLOW TWO WORKING DAYS AFTER "BLUE STAKE" IS NOTIFIED, BEFORE COMMENCING ANY EXCAVATION WORK IN PROXIMITY OF BURIED UTILITIES.

AT LEAST TWO WORKING DAYS PRIOR NOTICE IS REQUIRED BEFORE DISRUPTING EXISTING UTILITY SERVICES TO MAKE CONNECTIONS. THE NOTICE MUST INCLUDE THE EXACT TIME OF THE DISRUPTION OF SERVICE AND THE EXPECTED DURATION OF THE LOSS OF SERVICE. THE NOTICE SHALL BE FURNISHED TO THE OWNER OR OTHERS AS SPECIFIED IN THE CONTRACT DOCUMENTS.

THE LOCATION OF ALL WATER VALVES MUST AT ALL TIMES DURING CONSTRUCTION BE REFERENCED AND MADE AVAILABLE TO THE GOVERNING WATER COMPANY/DEPARTMENT.

PERMITS

CITY OF FLAGSTAFF PERMITS
A PUBLIC IMPROVEMENTS PERMIT AND A GRADING PERMIT ARE REQUIRED FOR THIS PROJECT, CONTACT COMMUNITY DEVELOPMENT AT 928-213-2606 TO INITIATE THE PROCESS. CONTACT THE ENGINEERING INSPECTION DEPARTMENT AND STORM WATER DEPARTMENT AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF THE PROJECT TO COORDINATE INSPECTIONS. GRADING CERTIFICATION IS REQUIRED, WHICH SHALL BE SEALED BY THE SURVEYOR AND GEOTECHNICAL ENGINEER; SPECIAL INSPECTION CERTIFICATION FOR ANY BUILT IN PLACE STRUCTURES WILL ALSO BE REQUIRED. AS-BUILTS ARE REQUIRED WITH THE CERTIFICATION.

A PRE-CONSTRUCTION MEETING WITH THE CITY OF FLAGSTAFF IS REQUIRED PRIOR TO THE START OF ANY WORK. CONTACT THE CITY OF FLAGSTAFF PROJECT MANAGER TO SCHEDULE THE MEETING.

AN ADOT ENCROACHMENT PERMIT WILL BE REQUIRED FOR ALL WORK WITHIN US-180 RIGHT-OF-WAY.

GENERAL PLAN NOTES-ADOT ENCROACHMENT PERMITS

A. "ALL WORK WITHIN THE ARIZONA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY, HELD EITHER IN EASEMENT, FEE OR DEDICATED, SHALL DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ADOT PUBLICATIONS AS CURRENTLY REVISED, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   (1). STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – 2021 EDITION.
   (2). CONSTRUCTION STANDARD DRAWINGS – MAY 2012 EDITION INCLUDING REVISIONS
   (3). TRAFFIC ENGINEERING STANDARDS, GUIDELINES AND REFERENCES
      (A). GUIDELINES AND PROCESSES – JUNE 2015
      (B). ARIZONA MANUAL OF APPROVED SIGNS (MOAS)
      (C). SIGNING AND MARKING STANDARD DRAWINGS.
      (D). SIGNALS AND LIGHTING STANDARD DRAWINGS
      (E). MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES – 2009 EDITION
      (F). ARIZONA SUPPLEMENT TO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES – 2009 EDITION
      (G). ANY AND ALL OTHER ADOT TRAFFIC ENGINEERING REFERENCES
   (4). APPROVED PRODUCTS LIST – CURRENT EDITION
   (5). EROSION AND POLLUTION CONTROL MANUAL FOR HIGHWAY DESIGN AND CONSTRUCTION – DECEMBER 2020
   (6). EROSION/SEDIMENT AND WATER QUALITY PROTECTION BEST MANAGEMENT PRACTICES (BMP) DETAILS – JANUARY 2016

B. IN ADDITION ANY AND ALL MATERIALS UTILIZED IN CONSTRUCTION WITHIN THE RIGHTS-OF-WAY OF THE ARIZONA DEPARTMENT OF TRANSPORTATION SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – 2021 EDITION AND/OR BE AN APPROVED MATERIAL LISTED IN THE CURRENT ADOT APPROVED PRODUCTS LIST ALSO KNOWN AS THE APL.

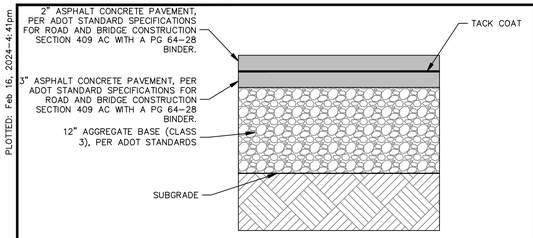
C. ADOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – 2021 EDITION SECTION 106.08 SHALL APPLY WHEN PLANS REQUIRE THE USE OF AN ALTERNATIVE OR A SUBSTITUTION ARTICLE OF EQUIPMENT, MATERIAL OR PROCESS.

D. ADDITIONALLY, SECTION 106.14 OF THE ADOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – 2021 EDITION SHALL APPLY WHEN A PRODUCT THAT IS NOT LISTED IN THE CURRENT APL PROPOSED FOR USE.

E. ALL MATERIALS UTILIZED FOR A PERMITTED ACTIVITY SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING UNLESS OTHERWISE APPROVED IN WRITING BY THE ADOT:
   –SECTION 106.04 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – 2021 EDITION
   –THE ADOT MATERIALS TESTING MANUAL.
   –THE ADOT MATERIALS POLICY AND PROCEDURES DIRECTIVES MANUAL
   –APPLICABLE FEDERAL, AASHTO OR ASTM SPECIFICATION OR TEST DESIGNATIONS.
   –APPLICABLE SPECIFICATION OR TEST DESIGNATIONS OF OTHER RECOGNIZED ORGANIZATIONS.

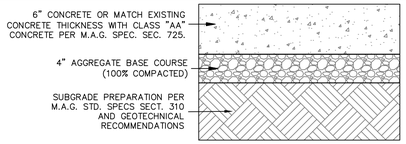
F. THE TERM "ENGINEER" AS STATED IN SECTION 106

PLOTTED: Feb 16, 2024-4:41pm



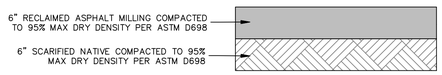
*SEE GEOTECHNICAL REPORT FOR COMPACTION AND EARTHWORK RECOMMENDATIONS

ADOT ASPHALT PAVEMENT
NO SCALE — A / DT01



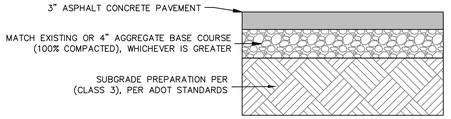
*SEE GEOTECHNICAL REPORT FOR COMPACTION AND EARTHWORK RECOMMENDATIONS

CONCRETE PAVEMENT SECTION
NO SCALE — B / DT01



*SEE GEOTECHNICAL REPORT FOR COMPACTION AND EARTHWORK RECOMMENDATIONS

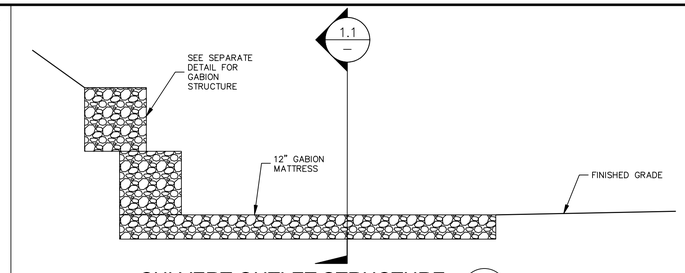
ACCESS ROAD
NO SCALE — C / DT01



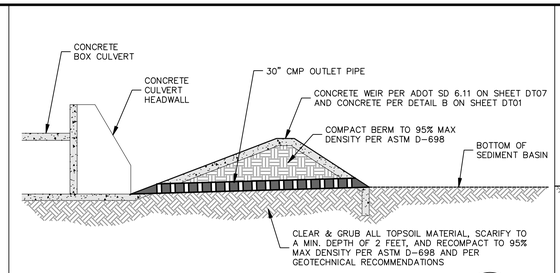
*SEE GEOTECHNICAL REPORT FOR COMPACTION AND EARTHWORK RECOMMENDATIONS

**SEE ADOT PAVEMENT DESIGN MANUAL SEPTEMBER 29, 2017 FOR REFERENCE

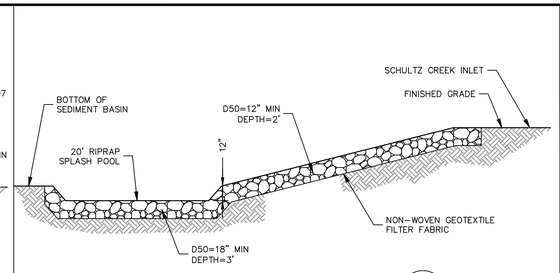
ADOT TEMPORARY ASPHALT PAVEMENT
NO SCALE — D / DT01



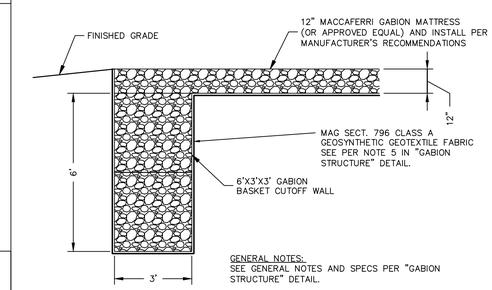
CULVERT OUTLET STRUCTURE
NO SCALE — 1 / DT01



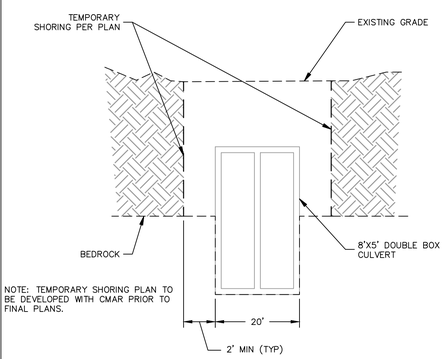
SEDIMENTATION BASIN WEIR
NO SCALE — 2 / DT01



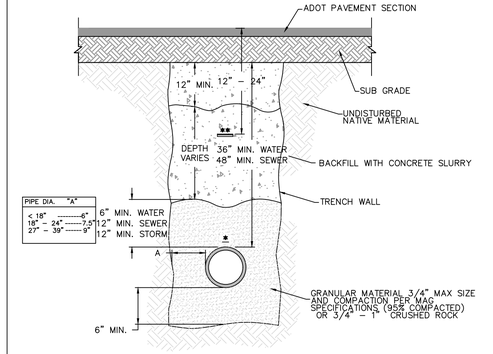
SEDIMENTATION BASIN INLET
NO SCALE — 3 / DT01



CUTOFF WALL
NO SCALE — 1.1 / DT01



TEMPORARY SHORING
NO SCALE — E / DT01



NOTES:
1. CONCRETE SLURRY BACKFILL SHALL BE PER ADOT SPECS.

* TRACER WIRE TAPED TO TOP CENTER OF MAIN WITH 10MIL PVC TAPE ON 4' CENTERS, SEE COF STD 9-01-020.

** WARNING TAPE

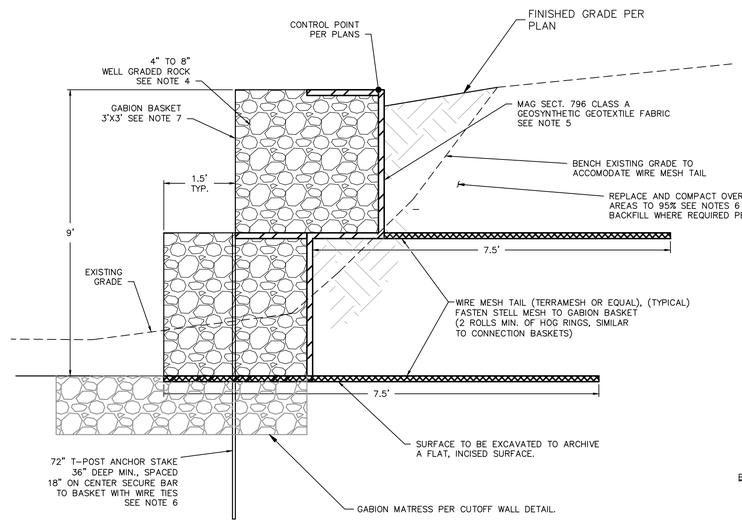
TRENCHING & BACKFILL DETAIL
NO SCALE — F / DT01

* FOR IMPROVEMENTS WITHIN ADOT R.O.W.

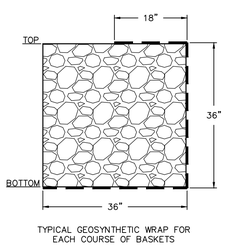
RIPRAP
-RIPRAP SHALL HAVE A BULK SPECIFIC GRAVITY OF 2.4 OR GREATER (PER ASTM C127) AND ALL ROCK SHALL BE ANGULAR
-RIPRAP SHALL BE BETWEEN 3-INCHES AND 12-INCHES IN DIAMETER, WITH 50% (BY WEIGHT) LARGER THAN 6-INCHES IN DIAMETER UNLESS OTHERWISE SPECIFIED BY THE CITY ENGINEER

RIPRAP GRADATION TABLE

PERCENT PASSING	SIZE	D-50 CLASS RIPRAP, INCHES						
		6	9	12	18	24	36	30
100 to 90	2.0 D-50	12	18	24	36	48	72	60
85 to 70	1.5 D-50	9	14	18	27	36	54	45
50 to 30	1.0 D-50	6	9	12	18	24	36	30
15 to 5	0.67 D-50	4	6	8	12	16	24	20
5 to 0	0.33 D-50	2	3	4	6	8	12	10



GABION STRUCTURE
NO SCALE — G / DT01



TYPICAL GEOSYNTHETIC WRAP FOR EACH COURSE OF BASKETS

NOTE:
SEE PROJECT SPECIAL PROVISIONS FOR GABION REQUIREMENTS. INSTALLATION SHALL BE PER THESE DETAILS AND THE MANUFACTURER'S RECOMMENDATIONS.

CONSTRUCTION INCLUDES ALL NECESSARY EXCAVATION, EMBANKMENT AND BACKFILL REQUIRED FOR THE BASKET INSTALLATIONS.

GENERAL NOTES:

1. CONNECT EDGES OF GABIONS TO ADJACENT BASKETS ON 12" CENTERS.
2. INSTALL INTERMEDIATE WIRE TIES, 2 PER CELL TO PREVENT BULGING OF GABION BASKETS UPON FILLING.
3. CONNECT TOP OF GABION TO EACH EDGE AND DIVIDER AT 12" SPACING.
4. HAND PLACE FILL GABION BASKET CELLS TO THE TOP WITH 4"-8" WELL GRADED RIP-RAP PER STANDARD SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS, USING WIRE GABION CONNECTORS AT 4" - 6" SPACING.
5. INSTALL GEOTEXTILE FABRIC PER THE DETAIL THIS SHEET.
6. THE BOTTOM COURSE OF GABIONS AND ALL GABION BASKET ENDS SHALL BE SECURED INTO EXISTING BANKS WITH 72" MINIMUM ANCHOR STAKES (T-POST). A MINIMUM OF 2 STAKES PER ROW OF GABIONS REQUIRED AT 2' SPACING.
7. BACKFILL AND COMPACT EXCAVATED AREAS USING NATIVE MATERIAL TO MATCH FINISHED GRADE.
8. BACKFILL AND COMPACT TO 95% DENSITY PER STANDARD SPECIFICATIONS.
9. GABION BASKETS SHALL HAVE THE FOLLOWING DIMENSIONS: LENGTH = 3', 6', 9' OR 12' AS NECESSARY., WIDTH = 3', DEPTH = 3'.
10. THE DISTANCE BETWEEN WIRE MESH DIVIDERS WILL NOT EXCEED 3'.
11. SECURELY ATTACH ANCHOR STAKE TO GABION TOP AT 2 POINTS WITH WIRE TIES PER MANUFACTURER'S RECOMMENDATIONS.
12. COMPACT OVEREXCAVATED ZONES PRIOR TO INSTALLATION OF GABIONS.
13. THE EXISTING GROUND SHALL BE FREE OF WEATHERED, LOOSE OR DEGRADED ROCK, CLAY POCKETS, GOUGE, OR SEAMS PRIOR TO THE PLACEMENT OF THE GABIONS.
14. ALL GABION MATERIAL TO BE GALVANIZED.

SPECIAL PROVISIONS:

GABION BASKETS SHALL MEET THE REQUIREMENTS OF ASTM A975-97 (TWISTED WIRE) OR ASTM A974-97 (WELDED WIRE) AND ASSOCIATED SPECIFICATIONS. INSTALLATION SHALL BE PER THE MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS AND THE CONSTRUCTION PLANS. SOURCES INCLUDE MACCAFERRI, CONTECH, TERRA AQUA GABIONS OR EQUAL. WIRE OR RINGS MAY BE USED FOR CONNECTORS PER THE MANUFACTURER'S RECOMMENDATIONS.

ALL GABION BASKET ROW ENDS AND THE CONTINUOUS FIRST ROW OF GABIONS (LOWEST ROW) SHALL BE ANCHORED TO THE EXISTING SUBGRADE AFTER LEVELING AND BENCHING WITH STANDARD 72' LONG BARBED WIRE T-POSTS SPACED 2' ON CENTER AND EMBEDDED 3' INTO THE SUBGRADE. POSTS SHALL BE LOCATED 1' FROM THE FRONT OF THE BASKETS. IF THE ROW ENDS INCLUDE MORE THAN ONE 3' CELL UNSUPPORTED BY A PRECEDING GABION BASKET (BELOW), ALL OF THOSE CELLS WILL REQUIRE ROW END STAKES.

WIRE MESH TAILS SHALL BE TERRAMESH OR EQUAL AND SHALL BE TIED TO THE GABION BASKETS WITH WIRE OR RINGS ON 12' CENTERS. TAILS SHALL BE TYPICALLY 6' IN LENGTH BEHIND THE BACK OF THE BASKETS.

ANY TEMPORARY SHORING REQUIRED FOR THE INSTALLATION OF THE GABION BASKETS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE BASKET INSTALLATIONS.

GABION INSTALLATION INCLUDES ALL EXCAVATION, EMBANKMENT AND/OR IMPORT FILL PER MAG SECTION 211 REQUIRED FOR INSTALLATION OF THE BASKETS AND TERRAMESH (OR EQUAL) TAILS AND ASSOCIATED EARTHWORK BACKFILLING TO MATCH THE ADJACENT FINISH GRADES.

GABION ROCK FILL SHALL BE A ANGULAR WELL GRADED 4" TO 8" SIZE RANGE WITH A SPECIFIC WEIGHT OF 165 LBS/CF PER THE YAVAPAI COUNTY DRAINAGE DESIGN MANUAL SECTION 6.3.1 FOR ROCK RIPRAP AND INSTALLED IN ACCORDANCE WITH MAG SECTION 703.

MEASUREMENT AND PAYMENT FOR GABION BASKETS, INCLUDING ALL SITE PREPARATION, 4" - 8" RIPRAP ROCK FILL, EXCAVATION, EMBANKMENT, FILL, T-POST ANCHORS, SHORING, CONNECTORS/TIE WIRE/HOG RING TIES, TERRAMESH TAILS, CLASS A GEOSYNTHETIC FABRIC, ETC. SHALL BE A LUMP SUM AT THE BID SCHEDULE QUANTITIES FOR FILLED BASKETS INSTALLED, COMPLETE IN PLACE. FOR MEASUREMENT PURPOSES, 1 CELL (3' X 3' X 3') EQUALS ONE CY OF INSTALLED GABION BASKET.

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

DETAILS - CIVIL

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

REVISIONS

NO.	DESCRIPTION	DATE	BY

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.6934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

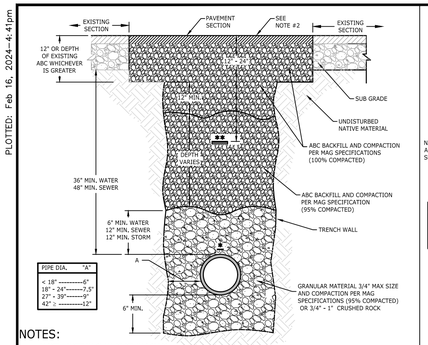
Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

DRAWING NO.
DT01

SHT NO. 3 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 DETAILS.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:41pm



NOTES:

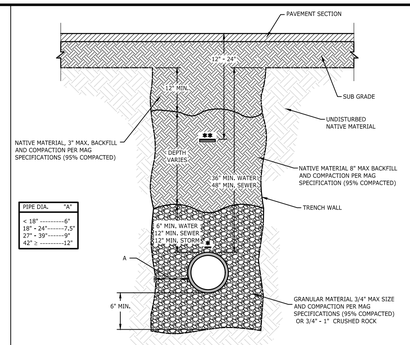
1. BACKFILL MATERIAL SHALL BE PER MAG SPECS.
2. THE DEPTH OF THE AC SHALL MATCH EXISTING OR TYPICAL MIN. PAVEMENT DEPTH FOR THE TYPE OF ROADWAY, WHICHEVER IS GREATER. THE TYPICAL MINIMUM PAVEMENT DEPTHS ARE AS FOLLOWS: ARTERIAL = 5", COLLECTOR = 4", LOCAL = 3"
3. NON-SHRINK BACKFILL IN ACCORDANCE WITH COF STD, 9-6-030 AND MAY BE USED FOR BACKFILL UP TO EXISTING SUBGRADE. THE NON-SHRINK BACKFILL SHALL BE PROPORTIONED AS FOLLOWS: 2600 LBS OF 3/8" MINUS AGGREGATE, 800 LBS SAND, 94 LBS CEMENT AND 11 GALLONS WATER.
4. A MIN. 2" OF UPM** MAY BE USED FOR TEMPORARY TRENCH PAVING IF HOT MIX IS NOT AVAILABLE. UPM** TEMPORARY PAVEMENT SHALL NOT REMAIN IN PLACE LONGER THAN 5 WORKING DAYS OR UNTIL HOT MIX ASPHALT IS AVAILABLE, AFTER 5 WORKING DAYS, THE CITY MAY PERFORM THE PERMANENT TRENCH PAVEMENT AT THE CONTRACTORS EXPENSE. IN LIEU OF PLACING UPM** THOUGH STILL TEMPORARY, THE CONTRACTOR MAY ELECT TO COMPLETELY BACKFILL THE TRENCH TO WITHIN 2" OF THE FINISH TRENCH GRADE WITH NON-SHRINK BACKFILL; THE FINAL 2" SHALL BE MAG CLASS "C" CONCRETE

■ TRACER WIRE TAPED TO TOP CENTER OF MAIN WITH 10MIL PVC TAPE ON 4' CENTERS, SEE COF STD 9-01-020.

■■ WARNING TAPE

NTS

City of Flagstaff	'TRENCHING & BACKFILL' EXISTING PAVED STREET		
ENGINEERING DETAIL	DETAIL NO. 09-01-030	REVISION DATE: 12/30/2017	1 / 1



NOTES:

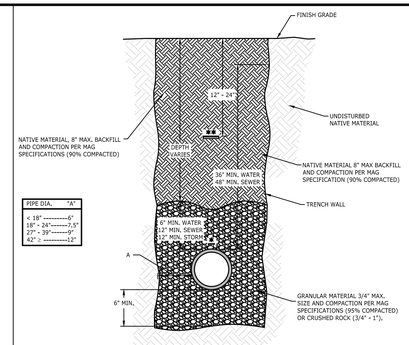
1. NATIVE BACKFILL SHALL BE PER MAG SPECS AND MAY BE SELECTED FROM THE EXCAVATION MATERIAL OR FROM A SOURCE SELECTED BY THE CONTRACTOR AND APPROVED BY THE CITY ENGINEER.
2. NON-SHRINK BACKFILL IN ACCORDANCE WITH COF STD, 9-6-030 AND MAY BE USED FOR BACKFILL UP TO EXISTING SUBGRADE. THE NON-SHRINK BACKFILL SHALL BE PROPORTIONED AS FOLLOWS: 2600 LBS OF 3/8" MINUS AGGREGATE, 800 LBS SAND, 94 LBS CEMENT AND 11 GALLONS WATER

■■ WARNING TAPE

■ TRACER WIRE TAPED TO TOP CENTER OF MAIN WITH 10MIL PVC TAPE ON 4' CENTERS, SEE COF STD 9-01-020.

NTS

City of Flagstaff	TRENCHING AND BACKFILL NEW PAVED STREET		
ENGINEERING DETAIL	DETAIL NO. 09-01-031	REVISION DATE: 12/30/2017	1 / 1



NOTES:

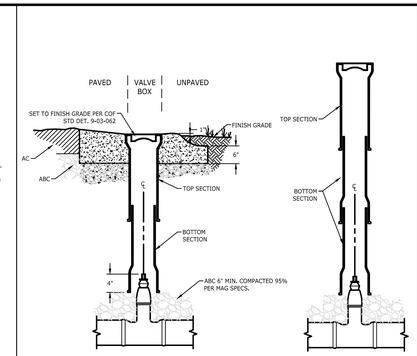
1. NATIVE BACKFILL SHALL BE PER MAG SPECS AND MAY BE SELECTED FROM THE EXCAVATION MATERIAL OR FROM A SOURCE SELECTED BY THE CONTRACTOR AND APPROVED BY THE CITY ENGINEER.
2. IF THE UNPAVED STREET HAS A SURFACE MATERIAL (ABC, CINDERS, ETC) OTHER THAN NATIVE, THE SURFACE MATERIAL SHALL BE REPLACED TO ITS EXISTING DEPTH.
3. NON-SHRINK BACKFILL IN ACCORDANCE WITH COF STD, 9-6-030 AND MAY BE USED FOR BACKFILL UP TO 6" BELOW FINISH GRADE, THE FINAL 6" SHALL BE NATIVE MATERIAL, 8" MAX. THE NON-SHRINK BACKFILL SHALL BE PROPORTIONED AS FOLLOWS: 2600 LBS OF 3/8" MINUS AGGREGATE, 800 LBS SAND, 94 LBS CEMENT AND 11 GALLONS WATER

■ TRACER WIRE TAPED TO TOP CENTER OF MAIN WITH 10MIL PVC TAPE ON 4' CENTERS, SEE COF STD 9-01-020.

■■ WARNING TAPE

NTS

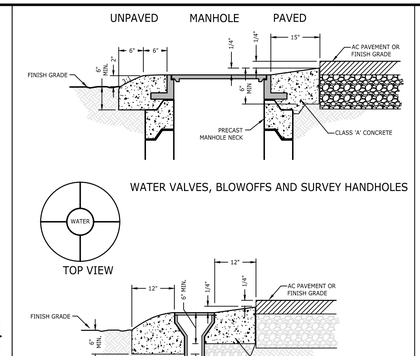
City of Flagstaff	TRENCHING AND BACKFILL UNPAVED EASEMENT OR STREET		
ENGINEERING DETAIL	DETAIL NO. 09-01-032	REVISION DATE: 12/30/2017	1 / 1



NOTES:
1. SEE COF STD. DETAIL 9-03-062 FOR NOTES RELATING TO THIS DETAIL

NTS

City of Flagstaff	VALVE BOX ADJUSTMENT		
ENGINEERING DETAIL	DETAIL NO. 09-03-060	REVISION DATE: 12/30/2017	1 / 1



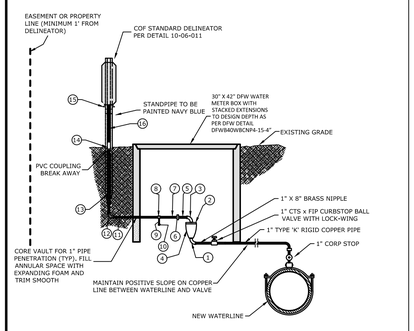
NOTE:

1. TOP OF VALVE BOX AND CONCRETE RING MUST BE 1/4" BELOW FINISHED GRADE.
2. CONCRETE RING FOR VALVES AND MANHOLES SHALL HAVE FOUR (4) STRESS JOINTS AT 90° ANGLES.
3. DEPTH OF CONCRETE SHALL BE A MIN. 6" OR SAME AS AC AND ABC SEC TION, NOT TO EXCEED 8".
4. VALVES AND MANHOLES LOCATED UNDER CONCRETE PAVING SHALL HAVE A COLD JOINT OR EXPANSION JOINT CONCRETE COLLAR.

NTS

City of Flagstaff	RING, FRAME or COVER INSTALLATION		
ENGINEERING DETAIL	DETAIL NO. 09-03-062	REVISION DATE: 12/30/2017	1 / 1

MUELLER 110 or FORD QUICK JOINT COMPRESSION WILL BE ACCEPTED



NOTE:

1. SHOP DRAWINGS REQUIRED ON ALL COMPONENTS OF AIR RELEASE VALVE ASSEMBLY VAULT.
2. SERVICE SADDLE AND CORP STOP PER COF STANDARD DETAIL 9-03-070-1

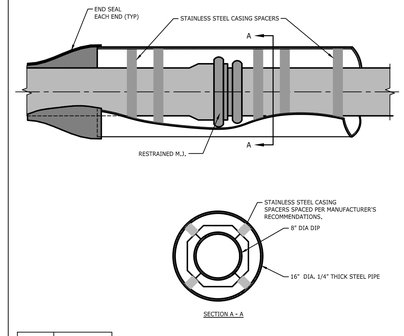
NTS

City of Flagstaff	AIR RELEASE VALVE 1"		
ENGINEERING DETAIL	DETAIL NO. 09-03-101-1	REVISION DATE: 03/17/2022	1 / 2

KEYNOTE

1. 1" BRASS STREET 90° BEND
2. TOP OR OUTLET OF VALVE BODY MUST BE 22" BELOW GRADE
3. 1" GALVANIZED STREET 90° ELBOW/BEND
4. 4 1" CRISPIN OR CLA-VAL COMBINATION AIR RELEASE VALVE
5. 1" X 3" GALVANIZED NIPPLE
6. 1" GALVANIZED UNION
7. 1" X 3" GALVANIZED NIPPLE
8. 1" X 1" X 1/2" FIP X FIP X FIP GALVANIZED TEE
9. 1/2" X 6" GALVANIZED NIPPLE
10. 1/2" BRASS CHECK VALVE
11. 1" x 18" MINIMUM LENGTH GALVANIZED NIPPLE
12. 1" FIP X FIP GALVANIZED 90° ELBOW/BEND
13. 1" X 18" GALVANIZED NIPPLE
14. 1" FIP X FIP PVC COUPLING
15. 1" NORTHTOWN MUSHROOM CAP OR APPROVED EQUAL
16. 1" X 3 FOOT GALVANIZED NIPPLE

City of Flagstaff	AIR RELEASE VALVE 1"		
ENGINEERING DETAIL	DETAIL NO. 09-03-101-2	REVISION DATE: 03/17/2022	2 / 2



PIPE SIZE	SLEEVE SIZE (MIN)
10"	20"
12"	24"

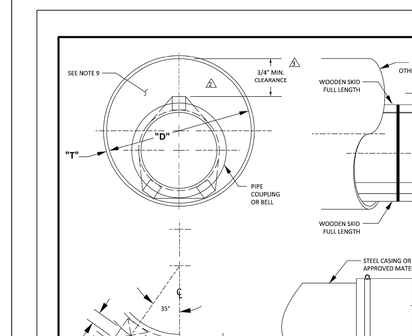
SEE SPECIFICATION 13-09-006-0001.8.5

NOTES:

1. THE END OF THE DIP PIPE IS RESTRAINED MECHANICALY JOINT AND NOT TO REST ON THE CASING.
2. ALL CASING SPACERS SHALL RUN THE LENGTH OF THE M3 DIP PIPE.
3. CASING SPACERS TO BE BY ADVANCE PRODUCTS & SYSTEMS, INC. OR APPROVED EQUAL.
4. SEAL ENDS OF CASING W/END SEALS BY ADVANCE PRODUCTS & SYSTEM, INC. OR APPROVED EQUAL

NTS

City of Flagstaff	WATER/SEWER LINE CASING		
ENGINEERING DETAIL	DETAIL NO. 09-06-010	REVISION DATE: 12/30/2017	1 / 1



NOTES:

1. THE STEEL CASING SHALL BE INSTALLED BY MEANS OF JACKING OR DRY BORING, EXCEPT WHERE SPECIFICALLY NOTED ON THE PLANS TO BE INSTALLED BY OPEN TRENCH CONSTRUCTION.
2. CASING DIAMETER SHALL BE A MINIMUM OF 4 INCHES GREATER THAN THE OUTSIDE BELL DIAMETER, AND SEWER PIPE CASING SHALL NOT BE LESS THAN 30 INCHES IN DIAMETER UNLESS SPECIFICALLY NOTED.
3. MINIMUM CASING THICKNESS SPECIFIED IN "TABLE A" IS REQUIRED FOR STEEL CASING IN PLACE, AND DOES NOT ACCOUNT FOR CONSTRUCTION LOADS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STRUCTURAL SUFFICIENCY OF THE CASING DURING CONSTRUCTION, AND ALSO THE METHOD OF INSTALLATION.
4. GRAVITY SEWER PIPELINES AND PRESSURE PIPELINES SHALL BE SUPPORTED ON PIPE SKIDS SUBJECT TO THE APPROVAL OF THE ENGINEER.
5. ALL SKIDS ARE TO BE SQUARE IN CROSS SECTION AND MAY BE MADE FROM REDWOOD, #2 OR BETTER DOUGLAS FIR, SOUND MATERIAL, TO BE WALMANIZED OR CREOSOTED (REDWOOD NEED NOT BE TREATED).
6. SKIDS SHALL BE ATTACHED TO PIPE BY STRAPPING WITH A STANDARD STRAPPING MACHINE TO HOLD SKIDS IN PLACE DURING PULLING OPERATIONS. USE STAINLESS STEEL BANDS, OR METHOD OF "CLEATING" SKIDS TOGETHER, AS APPROVED.
7. FLEXIBLE PIPE (PVC, ABS, ETC.) SHALL HAVE SPACER GUIDE ALONG ON THE TOP TO PREVENT PIPE FROM FLOATING. PIPE WITHIN CASING TO BE BONDED TOGETHER AT THE JOINTS FOR AN INTEGRAL UNIT PER MANUFACTURER'SRECOMMENDATIONS. TWO (2) APPROVED FLEXIBLE COUPLINGS SHALL BE USED AT EACH END OF CASING PER SB-63.
8. NOTICE AS REQUIRED BY THE DISTRICT SHALL BE GIVEN PRIOR TO CONSTRUCTION, FOR THE DISTRICT INSPECTION OF CASING PIPE AND CARRIER PIPE INSTALLATION. THE AS BUILT LOCATION AND GRADE OF CASING PIPE SHALL BE APPROVED BY THE DISTRICT PRIOR TO INSTALLATION OF THE CARRIER PIPE. DEPARTURES FROM PLANNED LOCATION OR GRADE OF THE CASING PIPE SHALL REQUIRE A FIELD SURVEY FOR CARRIER PIPE REDESIGN IF FEASIBLE, OR ABANDONMENT IN FAVOR OF A NEW INSTALLATION.
9. THE TOTAL ANNULAR SPACE SHALL BE GROUTED PER EMWD SPEC. SECT. 03604, UNLESS OTHERWISE SPECIFIED ON THE CONSTRUCTION DRAWINGS.
10. WOODEN SKIDS CAN BE REPLACED WITH ADVANCE PRODUCTS & SYSTEMS, INC. (APS) CASING SPACERS, MODEL SSI OR APPROVED EQUAL. THESE SPACERS SHALL BE INSTALLED 6 FEET ON CENTER.
11. IN LIEU OF MORTAR GROUTED BRICKS (TO SEAL STEEL CASING ENDS), ADVANCE PRODUCTS & SYSTEMS, INC. (APS) MOLDED END SEALS CAN BE USED, MODEL AM OR APPROVED EQUAL.

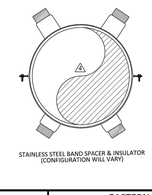


TABLE "A"

CASING O.D. "D"	STREETS & HWYS THICKNESS "T" MIN		RAILROADS
DIAMETER (INCHES)	UP TO 150' LENGTH	OVER 150' LENGTH	STEEL THICKNESS "T" (MINIMUM)
4"-10" ID	1/4"	1/4"	4"-12":1/4"
12"-16" OD	1/4"	1/4"	14"-16":9/32"
18"-20" OD	1/4"	1/4"	18":5/16" 20":11/32"
22" OD	1/4"	1/4"	3/8"
24" OD	1/4"	1/4"	11/32"
26" OD	1/4"	1/4"	7/16"
28" OD	1/4"	1/4"	15/32"
30" OD	3/8"	1/2"	15/32"
32" OD	3/8"	1/2"	1/2"
34"-36" OD	3/8"	1/2"	17/32"
38" OD	3/8"	1/2"	9/16"
40" OD	1/2"	3/4"	9/16"
42" OD	1/2"	3/4"	9/16"
48"-60" OD	1/2"	3/4"	AS REQUIRED
62"-72" OD	3/4"	3/4"	AS REQUIRED

REVISIONS				APPROVALS		
NO.	DATE	INITIAL	DESCRIPTION	APP'D	DATE	
4	6/28/19	GS	UPDATED TITLE BLOCK, FONT, LOGO, ADDED MOLDED END SEAL AND CASING SPACER	JKF	6-28-19	DESIGN JKF 3-29-72
3	4/14/10	RE	REVISED NOTE	SM	4-14-10	CONSTRUCTION RCM
2	8/29/03	CM	REVISED NOTES & ADDED TOP SKID	VJE	10-10-03	INSPECTION
1	1/22/99	GR	REDRAWN WITH CADD ON MYLAR			OPERATIONS CMC
						SUBMITTED LMM 6-29-72

REFERENCES:
FILE I.D.: \\asua\eng\std-dwgs\SB-49.dgn

SCALE: NONE
DRAWN BY: McM

RECOMMENDED _____ DIRECTOR OF ENGINEERING DATE

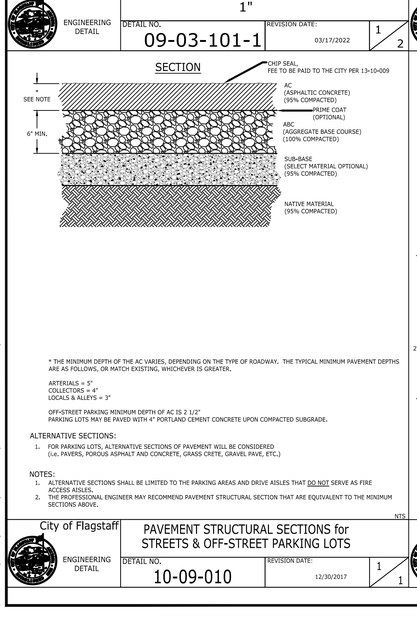
EASTERN MUNICIPAL WATER DISTRICT
STANDARD DRAWING

PIPE CASING
SEWER MAIN PIPELINE

APPROVED Doyle T. Brun
ASSISTANT GENERAL MANAGER DATE

SB-49

4



* THE MINIMUM DEPTH OF THE AC VARIES, DEPENDING ON THE TYPE OF ROADWAY. THE TYPICAL MINIMUM PAVEMENT DEPTHS ARE AS FOLLOWS, OR MATCH EXISTING, WHICHEVER IS GREATER.

ARTERIALS = 5"
COLLECTORS = 4"
LOCALS & ALLEYS = 3"

OFF-STREET PARKING MINIMUM DEPTH OF AC IS 2 1/2"
PARKING LOTS MAY BE PAVED WITH 4" PORTLAND CEMENT CONCRETE UPON COMPACTED SUBGRADE.

ALTERNATIVE SECTIONS:

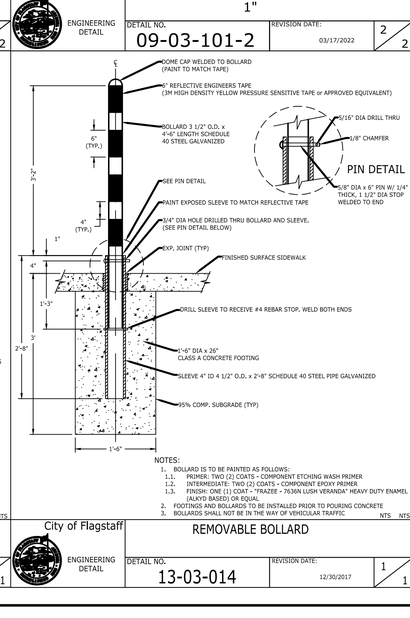
1. FOR PARKING LOTS, ALTERNATIVE SECTIONS OF PAVEMENT WILL BE CONSIDERED (i.e. PAVERS, POROUS ASPHALT AND CONCRETE, GRASS CRETE, GRAVEL PAVE, ETC.)

NOTES:

1. ALTERNATIVE SECTIONS SHALL BE LIMITED TO THE PARKING AREAS AND DRIVE AISLES THAT DO NOT SERVE AS FIRE ACCESS AISLES.
2. THE PROFESSIONAL ENGINEER MAY RECOMMEND PAVEMENT STRUCTURAL SECTION THAT ARE EQUIVALENT TO THE MINIMUM SECTIONS ABOVE.

NTS

City of Flagstaff	PAVEMENT STRUCTURAL SECTIONS for STREETS & OFF-STREET PARKING LOTS		
ENGINEERING DETAIL	DETAIL NO. 10-09-010	REVISION DATE: 12/30/2017	1 / 1

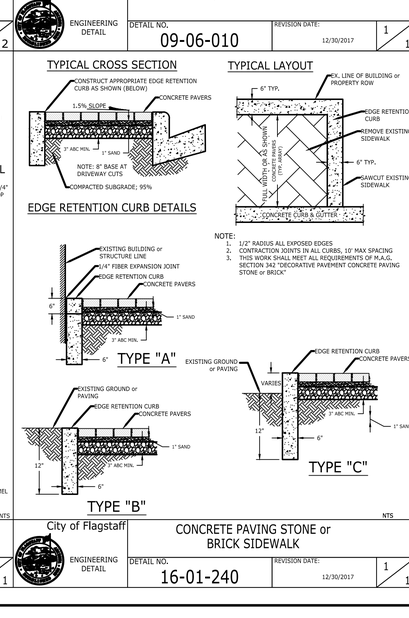


NOTES:

1. BOLLARD IS TO BE PAINTED AS FOLLOWS:
   1.1. PRIMER: TWO (2) COATS – COMPONENT ETCHING WASH PRIMER
   1.2. INTERMEDIATE: TWO (2) COATS – COMPONENT EPOXY PRIMER
   1.3. FINISH: ONE (1) COAT – "FRAZEE – 7636N LUSH VERANDA" HEAVY DUTY ENAMEL (ALKYD BASED) OR EQUAL
2. FOOTINGS AND BOLLARDS TO BE INSTALLED PRIOR TO POURING CONCRETE
3. BOLLARDS SHALL NOT BE IN THE WAY OF VEHICULAR TRAFFIC

NTS NTS

City of Flagstaff	REMOVABLE BOLLARD		
ENGINEERING DETAIL	DETAIL NO. 13-03-014	REVISION DATE: 12/30/2017	1 / 1



NOTE:

1. 1/2" RADIUS ALL EXPOSED EDGES
2. CONTRACTION JOINTS IN ALL CURBS, 10' MAX SPACING
3. THIS WORK SHALL MEET ALL REQUIREMENTS OF M.A.G. SECTION 342 "DECORATIVE PAVEMENT CONCRETE PAVING STONE or BRICK"

NTS

City of Flagstaff	CONCRETE PAVING STONE or BRICK SIDEWALK		
ENGINEERING DETAIL	DETAIL NO. 16-01-240	REVISION DATE: 12/30/2017	1 / 1

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

DETAILS - C.O.F.

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.6934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

REVISIONS

NO.	DESCRIPTION	DATE	BY

Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

DRAWING NO.
DT02

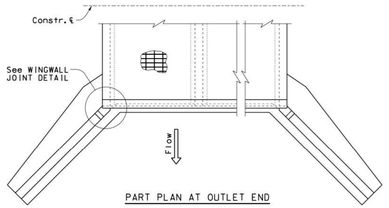
SHT NO. 4 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 DETAILS.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:41pm

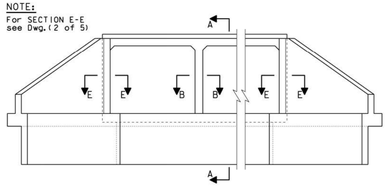
Note to Designer:
The information presented in this Standard Detail has been prepared in accordance with accepted engineering principles and is for general use. It should not be used for specific applications without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents which may not be applicable to your design are shown in dashed lines.

NO.	DESCRIPTION OF REVISION	DATE	BY
1	Signal Mast	2/2	
2	Signal Mast	3/6	
3		4/4	
4		5/5	
5		6/6	

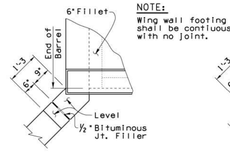


PART PLAN AT OUTLET END

NOTE:
For SECTION E-E see Dwg.(2 of 5)

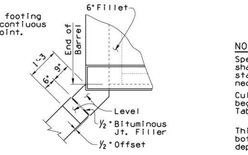


ELEVATION AT OUTLET END



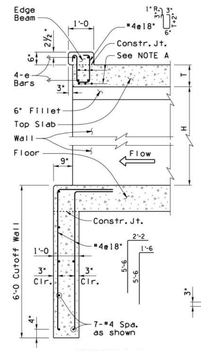
WINGWALL JOINT DETAIL
(For Barrel Height < 8 Ft.)

NOTE:
Wing wall footing shall be contiuous with no joint.



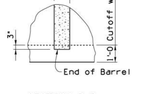
WINGWALL JOINT DETAIL
(For Barrel Height ≥ 8 Ft.)

NOTE A:
Use 3-#7 ø3"spa. top and bott bars for culverts skewed 6° to 30°.
Use 3-#8 ø3"spa. top and bott bars for culverts skewed 31° to 45°.
Culverts skewed over 45° require a special edge beam design.
Edge beam reinforcing quantity shall be added to table quantities.



SECTION A-A

'e' Bars				
Skew ∠	Span 6' & 8'	10'	12'
0° to 20°	#6	#6	#6
25° & 30°	#6	#6	#7
35°	#6	#7	#8
40° & 45°	#6	#7	#9



SECTION B-B

GENERAL NOTES:
Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 7th Edition 2014.

Loading Class - HL-93.

Design:
Soil weight = 120 p.c.f.

All Concrete shall be Class "S" (f'c = 3000 psi).

Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

All reinforcing steel shall have 2" clear cover unless noted otherwise.

Chamfer all exposed corners ¾" unless noted otherwise.

Compact backfill for footing and wing base minimum 100 percent of ASTM D698 maximum dry density.

All structures shall have formed Construction joints in the top slab and walls (optional in floor slab) and spaced not more than 38'-6" apart or as shown in Project Plans. Joints shall be perpendicular to the centerline of the box. Reinforcing steel shall project 1'-6 thru the joint. The joint shall be made with a ¾" plywood bulkhead which shall be left in place or the alternate joint detail shown on Dwg.(2 of 5) may be used.

See Project Plans for culvert layout, invert elevations, finished grade elevations, headwall, apron, and other site specific details.

Dimensions shall not be scaled from drawings.

Pay item quantities of concrete and reinforcing steel include all labor and materials for box culvert, footing, headwalls, and aprons.
Total Quantities include Barrel and Headwall Quantities shown in Tables (plus added quantity for apron when used). Barrel Quantities Table is per linear foot of box (multiply by length of box to obtain barrel total). Headwall Quantities Table includes wings, edge beam, and cutoff wall.

Culverts measuring 20 ft and greater to the inside faces of exterior walls, along the roadway centerline, shall be assigned a structure number. The structure number shall be referenced in the culvert summary sheet and drainage details.

NOTE:
For Dimensions, Quantities and additional Details, see SD 6.01 (2 to 5).

NOTE:
Special design sections shall be adjoined with standard barrels when necessary.
Culvert barrels always begin and end with Table No. I.

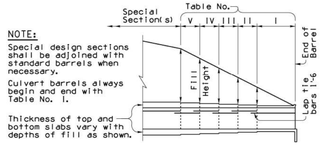
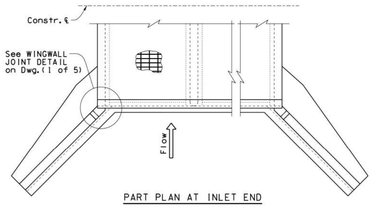


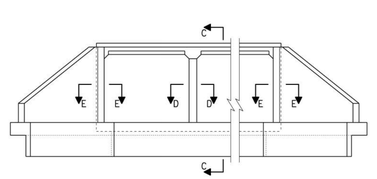
DIAGRAM SHOWING TABLE NO. TO BE USED FOR VARIOUS FILL HEIGHTS

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS MISCELLANEOUS DETAILS
ROUTE / PROJECT NO. / I.M. NO.	DRAWING NO. SD 6.01 (1 of 5)
LOCATION	SHEET NO. OF

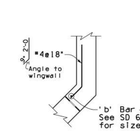
28-JAN-2016 16:26 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6.01-1 to 5\sd601-1.1916.dgn



PART PLAN AT INLET END

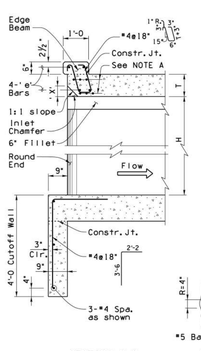


ELEVATION AT INLET END



SECTION E-E

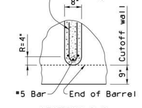
NOTE A:
Use 3-#7 ø3"spa. top and bott bars for culverts skewed 6° to 30°.
Use 3-#8 ø3"spa. top and bott bars for culverts skewed 31° to 45°.
Culverts skewed over 45° require a special edge beam design.
Edge beam reinforcing quantity shall be added to table quantities.



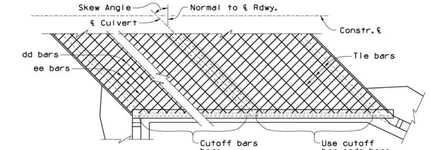
SECTION C-C

NOTE:
For 'e' Bars table, see Dwg.(1 of 5)

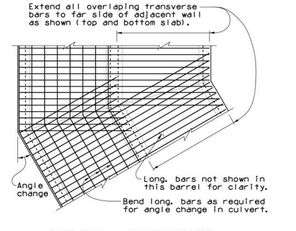
Span 'S'	Dia. 'X'
6'	3"
8'	4"
10'	5"
12'	6"



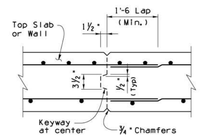
SECTION D-D



PART PLAN - SKEWED CULVERT
(Showing Reinf. Steel Placement)



PART PLAN - ANGLED CULVERT
(Showing Reinf. Steel Placement)

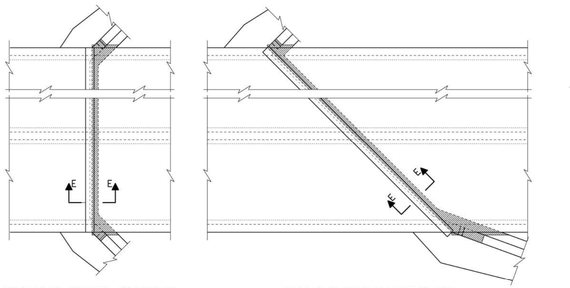


ALT. CONSTRUCTION JOINT DETAIL

NOTE:
For General Notes, Dimensions, Quantities and additional Details, see SD 6.01 (1 & 3,4,5).

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS MISCELLANEOUS DETAILS
ROUTE / PROJECT NO. / I.M. NO.	DRAWING NO. SD 6.01 (2 of 5)
LOCATION	SHEET NO. OF

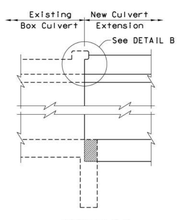
28-JAN-2016 16:28 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6.01-1 to 5\sd601-2.1916.dgn



PART PLAN CULVERT EXTENSION
(Showing Right Angle Culvert)

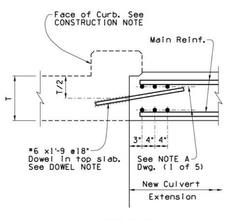
PART PLAN CULVERT EXTENSION
(Showing Skewed Culvert)

REMOVAL NOTE:
Indicates payment limits for removal of concrete.



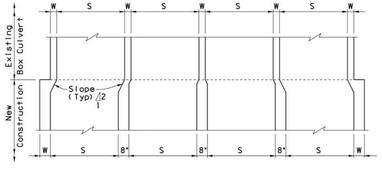
SECTION E-E

DOWEL NOTE:
Drill 1"ø hole, 8" deep, for #6 dowel. Epoxy dowel in hole with an approved epoxy adhesive. Epoxy anchorage shall develop a min. tensile pullout strength of 13 kips. Details of the Anchorage System shall be submitted to the Engineer for approval prior to installation.

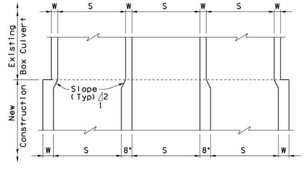


DETAIL B

CONSTRUCTION NOTE:
Remove existing headwall as required for new construction. If concrete headwall is removed to face of curb, no dowels are needed. Use projecting reinforcing steel for bond in new concrete. Curb to remain unless within 1'-0 of finish grade. Wingwalls to be removed a Min. of 1'-6 to provide steel for bond.



SECTION THRU CULVERT WALLS
(Even Number of Cells)



SECTION THRU CULVERT WALLS
(Odd Number of Cells)

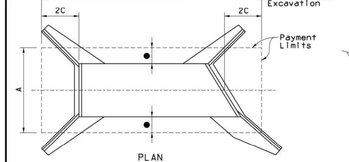
NOTE:
For General Notes, Dimensions, Quantities and additional Details, see SD 6.01 (1,2 & 4,5).

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS EXTENSION DETAILS
ROUTE / PROJECT NO. / I.M. NO.	DRAWING NO. SD 6.01 (3 of 5)
LOCATION	SHEET NO. OF

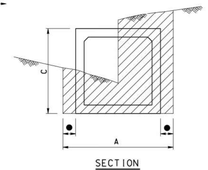
28-JAN-2016 16:38 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6.01-1 to 5\sd601-3.1916.dgn

Note to Designer:
The information presented in this Standard Detail has been prepared in accordance with accepted engineering principles and is for general use. It should not be used for specific applications without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents which may not be applicable to your design are shown in dashed lines.

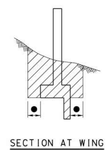
NO.	DESCRIPTION OF REVISION	DATE	BY
1	Signal Mast	2/2	
2	Signal Mast	3/6	
3		4/4	
4		5/5	
5		6/6	



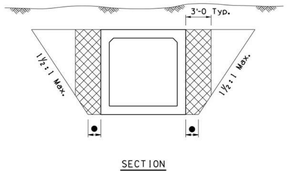
PLAN



SECTION



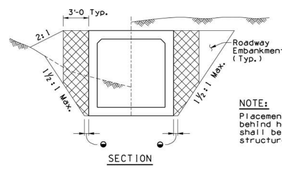
SECTION AT WING



SECTION

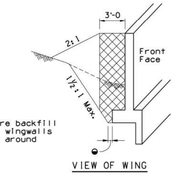
STRUCTURAL EXCAVATION - PAYMENT LIMITS

NOTE:
Payment limits shown include structural excavation for headwalls, cutoffwalls, wingwalls, end sections, etc.

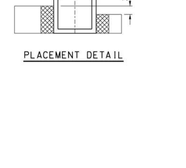


SECTION

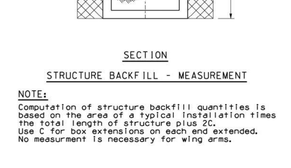
NOTE:
Placement of structure backfill behind headwalls and wingwalls shall be the same as around structures.



VIEW OF WING



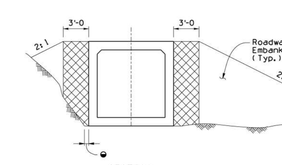
PLACEMENT DETAIL



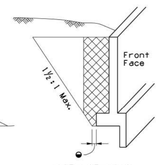
SECTION

STRUCTURE BACKFILL - MEASUREMENT

NOTE:
Computation of structure backfill quantities is based on the area of a typical installation times the total length of structure plus 2C.
Use C for box extensions on each end extended.
No measurement is necessary for wing arms.



SECTION



VIEW OF WING

STRUCTURE BACKFILL - PLACEMENT

LEGEND
A = Width
B = Length
C = Height of barrel or headwall without cutoff wall.
● = 6" Max. in rock and trench, 1'-6 max. all others
⊖ = 6" Min. in rock and trench, 1'-6 min. all others
Indicates Structural Excavation
Indicates Structure Backfill
Indicates Roadway Embankment

NOTE:
For General Notes, Dimensions, Quantities and additional Details, see SD 6.01 (1,2,3 & 5).

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS STRUCTURAL EXCAVATION & STRUCTURE BACKFILL
ROUTE / PROJECT NO. / I.M. NO.	DRAWING NO. SD 6.01 (4 of 5)
LOCATION	SHEET NO. OF

28-JAN-2016 16:33 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6.01-1 to 5\sd601-4.1916.dgn

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

DETAILS - ADOT (1)

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SCI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.6934 fax
www.ardurra.com

SWI Shephard Wesnitzer, Inc.
An ARDURRA Company

REVISIONS			
NO.	DESCRIPTION	DATE	BY

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click Arizona811.com

DRAWING NO.
DT03

SHT NO. 5 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 DETAILS.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:41pm

Note to Designer:
The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for design purposes without the review by a licensed professional engineer familiar with the unique conditions of the project. The use of this detail without professional engineering judgment by a licensed professional engineer familiar with the unique conditions of the project is the responsibility of the user and not the responsibility of the author(s).

DATE BY	DESCRIPTION OF REVISIONS
06/2024	PRIOR DISTRIBUTION DATE

DESIGNER'S INITIALS
1. Original design
2. Added 3.5' height for existing box extension only
3.
4.
5.

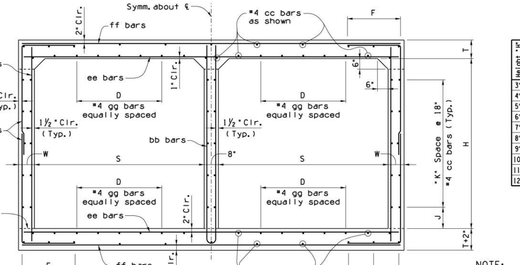
TABLE I
0'-10' FILL

Span -"S"	Height -"H"	Top Slab -"T"	Walls -"W"	aa Bar Size	aa Spacing	aa Length	bb Bar Size	bb Spacing	bb Length	cc	ee Bar Size	ee Spacing	ee Length	ff Bar Size	ff Spacing	ff Length	gg Bar Size	gg Spacing	gg Length	gg D	hh Bar Size	hh Spacing	hh Length	hh F
6'	3'	9½"	8"	5	12"	4'-4	5	12"	8'-9	48	5	7"	13'-7	5	8"	13'-7	20	3'-0	5	8"	5'-1	2'-5
	4'	9½"	8"	5	12"	5'-4	5	12"	10'-9	54	5	7"	13'-7	5	8"	13'-7	20	3'-0	5	8"	5'-7	2'-5
	5'	9½"	8"	5	12"	6'-4	5	12"	12'-9	54	5	7"	13'-7	5	8"	13'-7	20	3'-0	5	8"	6'-1	2'-5
	6'	9½"	8"	5	12"	7'-4	5	12"	14'-9	60	5	7"	13'-7	5	8"	13'-7	20	3'-0	5	8"	6'-7	2'-5
	7'	9½"	8"	5	12"	8'-4	5	12"	16'-9	66	5	7"	13'-7	5	8"	13'-7	20	3'-0	5	8"	7'-1	2'-5
8'	3'	9½"	9"	5	12"	4'-4	5	12"	8'-8	48	5	6"	17'-9	6	8"	17'-9	28	4'-0	5	6"	5'-6	2'-6
	4'	9½"	9"	5	12"	5'-4	5	12"	10'-8	54	5	6"	17'-9	6	8"	17'-9	28	4'-0	5	6"	6'-0	2'-6
	5'	9½"	9"	5	12"	6'-4	5	12"	12'-8	54	5	6"	17'-9	6	8"	17'-9	28	4'-0	5	6"	6'-6	2'-6
	6'	9½"	9"	5	12"	7'-4	5	12"	14'-8	60	5	6"	17'-9	6	8"	17'-9	28	4'-0	5	6"	7'-0	2'-6
	7'	9½"	9"	5	12"	8'-4	5	12"	16'-8	66	5	6"	17'-9	6	8"	17'-9	28	4'-0	5	6"	7'-5	2'-6
10'	3'	9½"	9"	5	12"	4'-4	5	12"	8'-8	48	5	6"	17'-9	6	8"	17'-9	28	4'-0	5	6"	5'-6	2'-6
	4'	10½"	11"	5	12"	5'-6	5	12"	10'-11	54	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	6'-7	2'-8
	5'	10½"	11"	5	12"	6'-6	5	12"	12'-11	54	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	6'-8	2'-8
	6'	10½"	11"	5	12"	7'-6	5	12"	14'-11	60	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	7'-2	2'-8
	7'	10½"	11"	5	12"	8'-6	5	12"	16'-10	66	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	7'-9	2'-8
	8'	10½"	11"	5	12"	9'-6	5	12"	18'-11	66	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	8'-3	2'-8
	9'	10½"	11"	5	12"	10'-6	5	12"	20'-11	72	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	8'-9	2'-8
	10'	10½"	11"	5	12"	11'-6	5	12"	22'-11	78	5	6"	22'-1	6	6"	22'-1	32	5'-0	5	6"	9'-3	2'-8
12'	8'	12½"	13"	5	12"	9'-10	5	12"	19'-7	66	6	7"	26'-5	7	7"	26'-5	40	6'-0	6	7"	8'-6	2'-10
	9'	12½"	13"	5	12"	10'-10	5	12"	21'-7	72	6	7"	26'-5	7	7"	26'-5	40	6'-0	6	7"	9'-0	2'-10
	10'	12½"	13"	5	12"	11'-10	5	12"	23'-7	78	6	7"	26'-5	7	7"	26'-5	40	6'-0	6	7"	9'-6	2'-10
	11'	12½"	13"	5	12"	12'-10	5	12"	25'-7	78	6	7"	26'-5	7	7"	26'-5	40	6'-0	6	7"	10'-0	2'-10
	12'	12½"	13"	5	12"	13'-10	5	12"	27'-7	84	6	7"	26'-5	7	7"	26'-5	40	6'-0	6	7"	10'-6	2'-10

TABLE NO. II
10'-15' FILL

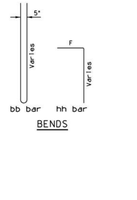
Span -"S"	Height -"H"	Top Slab -"T"	Walls -"W"	aa Bar Size	aa Spacing	aa Length	bb Bar Size	bb Spacing	bb Length	cc	ee Bar Size	ee Spacing	ee Length	ff Bar Size	ff Spacing	ff Length	gg Bar Size	gg Spacing	gg Length	gg D	hh Bar Size	hh Spacing	hh Length	hh F
6'	3'	9½"	8"	5	12"	4'-4	5	12"	8'-3	48	5	7"	13'-7	5	7"	13'-7	16	3'-0	5	8"	5'-0	2'-5
	4'	9½"	8"	5	12"	5'-4	5	12"	10'-3	54	5	7"	13'-7	5	7"	13'-7	16	3'-0	5	8"	5'-6	2'-5
	5'	9½"	8"	5	12"	6'-4	5	12"	12'-3	54	5	7"	13'-7	5	7"	13'-7	16	3'-0	5	8"	6'-0	2'-5
	6'	9½"	8"	5	12"	7'-4	5	12"	14'-3	60	5	7"	13'-7	5	7"	13'-7	16	3'-0	5	8"	6'-6	2'-5
	7'	9½"	8"	5	12"	8'-4	5	12"	16'-3	66	5	7"	13'-7	5	7"	13'-7	16	3'-0	5	8"	7'-0	2'-5
8'	3'	10½"	9"	5	12"	4'-6	5	12"	9'-1	48	5	6"	17'-9	6	7"	17'-9	20	4'-0	5	8"	5'-3	2'-6
	4'	10½"	9"	5	12"	5'-6	5	12"	11'-1	54	5	6"	17'-9	6	7"	17'-9	20	4'-0	5	8"	5'-9	2'-6
	5'	10½"	9"	5	12"	6'-6	5	12"	13'-1	54	5	6"	17'-9	6	7"	17'-9	20	4'-0	5	8"	6'-3	2'-6
	6'	10½"	9"	5	12"	7'-6	5	12"	15'-1	60	5	6"	17'-9	6	7"	17'-9	20	4'-0	5	8"	6'-9	2'-6
	7'	10½"	9"	5	12"	8'-6	5	12"	17'-1	66	5	6"	17'-9	6	7"	17'-9	20	4'-0	5	8"	7'-3	2'-6
10'	3'	12½"	11"	5	12"	4'-10	5	12"	9'-6	48	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	7'-9	2'-6
	4'	12½"	11"	5	12"	5'-10	5	12"	11'-7	54	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	6'-10	2'-8
	5'	12½"	11"	5	12"	6'-10	5	12"	13'-7	54	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	6'-4	2'-8
	6'	12½"	11"	5	12"	7'-10	5	12"	15'-7	60	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	7'-4	2'-8
	7'	12½"	11"	5	12"	8'-10	5	12"	17'-7	66	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	7'-10	2'-8
	8'	12½"	11"	5	12"	9'-10	5	12"	19'-7	66	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	8'-4	2'-8
	9'	12½"	11"	5	12"	10'-10	5	12"	21'-7	72	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	8'-10	2'-8
	10'	12½"	11"	5	12"	11'-10	5	12"	23'-7	78	5	6"	22'-1	7	7"	22'-1	24	5'-0	5	7"	9'-4	2'-8
12'	8'	15"	13"	5	12"	10'-3	5	12"	20'-4	66	6	7"	26'-5	7	7"	26'-5	28	6'-0	5	7"	8'-9	2'-11
	9'	15"	13"	5	12"	11'-3	5	12"	22'-4	72	6	7"	26'-5	7	7"	26'-5	28	6'-0	5	7"	9'-3	2'-11
	10'	15"	13"	5	12"	12'-3	5	12"	24'-4	78	6	7"	26'-5	7	7"	26'-5	28	6'-0	5	7"	9'-9	2'-11
	11'	15"	13"	5	10"	13'-3	5	12"	26'-4	78	6	7"	26'-5	7	7"	26'-5	28	6'-0	6	7"	10'-9	3'-5
	12'	15"	13"	5	10"	14'-3	5	12"	28'-4	84	6	7"	26'-5	7	7"	26'-5	28	6'-0	6	7"	11'-3	3'-5

+ Total number of bars in the cross-section.



TYPICAL SECTION
(Shown as 8'-0 x 8'-0 Table II)

Height -"H"	Ø Dia.	"K" Spaces
3'	9"	1
4'	5"	2
5'	12"	2
6'	9"	3
7'	6"	4
8'	12"	4
9'	9"	5
10'	6"	6
11'	12"	6
12'	9"	7



BENDS

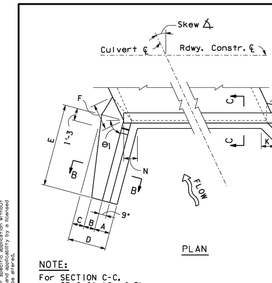
NOTE:
Reinforcing shown for 8'-0 x 8'-0 Table II box. Use the appropriate table to determine the reinforcing requirements of selected box.

NOTE:
For General Notes, Dimensions, and additional Details, see SD 6.01 (1 to 4). For Quantities and Tables III thru V see SD 6.02 (2 of 2).

New box culverts shall not be constructed using 3' or 4' heights without special approval from ADOT Bridge Group. Tables referencing these sizes are provided for extension of existing box culverts only.

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS DOUBLE BARREL (0' - 15' FILLS)
RTE. / PROJECT NO.	FA NO. / DRAWING NO. SD 6.02 (1 of 2)
LOCATION	SHEET NO. OF

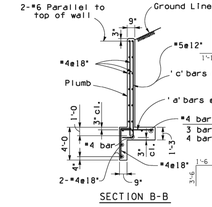
28-JAN-2016 16:47 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6802-1 to 2\sd6802-1.1916.dgn



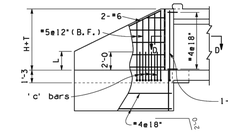
PLAN

NOTE:
For SECTION C-C, see SD 6.01 (2 of 5).

Skew ∆	G1
0°	45°
5°	55°
10°	65°
15°	75°
20°	85°



SECTION B-B



SHORT WING ELEVATION

LONG WING ELEVATION

Skew ∆	0°					5°					10°					15°					20°				
Height H	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'
A	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6
B	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3
C	6"	9"	1'-3	1'-8	2'-1	6"	9"	1'-3	1'-8	2'-1	6"	9"	1'-3	1'-8	2'-1	6"	9"	1'-3	1'-8	2'-1	6"	9"	1'-3	1'-8	2'-1
D	2'-8	3'-3	3'-10	4'-4	4'-10	2'-9	3'-3	3'-10	4'-4	4'-10	2'-9	3'-3	3'-10	4'-4	4'-10	2'-9	3'-3	3'-10	4'-4	4'-10	2'-9	3'-3	3'-10	4'-4	4'-10
E	6'-0	7'-6	8'-6	10'-0	11'-6	5'-6	7'-0	8'-6	10'-0	11'-0	5'-6	7'-0	8'-6	10'-0	11'-0	5'-6	7'-0	8'-6	9'-6	11'-0	6'-0	7'-6	8'-6	10'-0	11'-6
F	1'-5	2'-2	3'-0	3'-8	4'-5	1'-5	2'-2	3'-0	3'-8	4'-5	1'-5	2'-2	2'-11	3'-8	4'-4	1'-5	2'-1	2'-11	3'-7	4'-3	1'-4	2'-0	2'-9	3'-5	4'-1
G	6'-0	7'-6	8'-6	10'-0	11'-6	6'-0	7'-6	8'-6	10'-0	12'-0	6'-0	7'-6	8'-6	10'-0	12'-0	6'-0	7'-6	8'-6	10'-0	12'-0	7'-6	9'-0	10'-0	12'-0	13'-6
J	1'-5	2'-2	3'-0	3'-8	4'-5	1'-5	2'-2	3'-0	3'-8	4'-5	1'-5	2'-2	2'-11	3'-8	4'-4	1'-5	2'-1	2'-11	3'-7	4'-3	1'-4	2'-0	2'-9	3'-5	4'-1
K	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝	1'-4⅝
L	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½	1'-3½
M	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½	1'-1½
N	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅝	1'-5⅝	1'-5⅝	1'-5⅝	1'-5⅝

Skew ∆	0°					5°					10°					15°					20°				
Height H	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'
A	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6
B	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3
C	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3
D	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6
E	8'-6	11'-0	13'-0	15'-0	17'-0	9'-0	11'-0	13'-6	15'-6	17'-6	9'-6	11'-6	14'-0	16'-6	18'-6	10'-0	12'-6	15'-0	17'-6	19'-6	11'-0	13'-6	16'-0	19'-0	21'-6
F	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-9	2'-6	3'-2	3'-10	1'-1	1'-9	2'-5	3'-1	3'-9	1'-0	1'-8	2'-4	3'-0	3'-8
G	8'-6	11'-0	13'-0	15'-0	17'-0	9'-6	11'-6	14'-0	16'-0	18'-0	10'-0	12'-6	15'-0	17'-6	20'-0	11'-0	14'-0	16'-6	19'-6	22'-0	12'-6	15'-6	18'-6	21'-6	24'-6
J	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-9	2'-6	3'-2	3'-10	1'-1	1'-9	2'-5	3'-1	3'-9	1'-0	1'-8	2'-4	3'-0	3'-8
K	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞
L	3'-1	3'-9	4'-6	5'-4	6'-1	2'-10	3'-7	4'-3	4'-11	5'-8	2'-8	3'-4	3'-11	4'-7	5'-3	2'-5	3'-1	3'-8	4'-3	4'-11	2'-3	2'-10	3'-5	3'-11	4'-6
M	3'-1	3'-9	4'-6	5'-4	6'-1	2'-10	3'-7	4'-3	4'-11	5'-8	2'-8	3'-4	3'-11	4'-7	5'-3	2'-5	3'-1	3'-8	4'-3	4'-11	2'-3	2'-10	3'-5	3'-11	4'-6
N	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅝	1'-5⅝	1'-5⅝	1'-5⅝	1'-5⅝

Skew ∆	0°					5°					10°					15°					20°				
Height H	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'	3'	4'	5'	6'	7'
A	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6	1'-6
B	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3	9"	1'-0	1'-1	1'-2	1'-3
C	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3	3"	6"	9"	1'-0	1'-3
D	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6	2'-6	3'-0	3'-6	4'-0	4'-6
E	8'-6	11'-0	13'-0	15'-0	17'-0	9'-0	11'-0	13'-6	15'-6	17'-6	9'-6	11'-6	14'-0	16'-6	18'-6	10'-0	12'-6	15'-0	17'-6	19'-6	11'-0	13'-6	16'-0	19'-0	21'-6
F	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-9	2'-6	3'-2	3'-10	1'-1	1'-9	2'-5	3'-1	3'-9	1'-0	1'-8	2'-4	3'-0	3'-8
G	8'-6	11'-0	13'-0	15'-0	17'-0	9'-6	11'-6	14'-0	16'-0	18'-0	10'-0	12'-6	15'-0	17'-6	20'-0	11'-0	14'-0	16'-6	19'-6	22'-0	12'-6	15'-6	18'-6	21'-6	24'-6
J	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-10	2'-6	3'-3	3'-11	1'-1	1'-9	2'-6	3'-2	3'-10	1'-1	1'-9	2'-5	3'-1	3'-9	1'-0	1'-8	2'-4	3'-0	3'-8
K	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞
L	3'-1	3'-9	4'-6	5'-4	6'-1	2'-10	3'-7	4'-3	4'-11	5'-8	2'-8	3'-4	3'-11	4'-7	5'-3	2'-5	3'-1	3'-8	4'-3	4'-11	2'-3	2'-10	3'-5	3'-11	4'-6
M	3'-1	3'-9	4'-6	5'-4	6'-1	2'-11	3'-8	4'-5	5'-2	5'-11	2'-11	3'-7	4'-4	5'-0	5'-9	2'-6	3'-3	3'-11	4'-6	5'-3	2'-4	3'-0	3'-7	4'-3	5'-0
N	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-4⅞	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅜	1'-5⅝	1'-5⅝	1'-5⅝	1'-5⅝	1'-5⅝

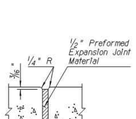
22-JAN-2016 18:05 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6801-1 to 8\sd6801-3.1816.dgn

'c' bars

Height H	Slope	Short Wing 0° to 10°	Long Wing 0° to 20°
3'	2:1	3'-*5	3'-*5
7'	2:1	5'-*5	5'-*5

'a' bars

Height H	Short Wing 0° to 10°	Long Wing 15° & 20°	Long Wing 0° to 20°
3'	*4	*4	*4
4'	*4	*4	*4
5'	*4	*4	*4
6'	*5	*4	*5
7'	*6	*4	*6



SECTION D-D

SECTION E-E

NOTE:
For General Notes, Dimensions, and additional Details, see SD 6.01 (2 of 5). For Headwall Quantities see SD 6.09 (1 to 3).

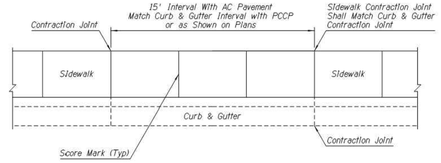
DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS INLET WINGS - SKEW 0° to 20° CULVERT HEIGHT 3' to 7'
RTE. / PROJECT NO.	FA NO. / DRAWING NO. SD 6.08 (3 of 8)
LOCATION	SHEET NO. OF

22-JAN-2016 18:05 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD6808-1 to 8\sd6808-3.1816.dgn

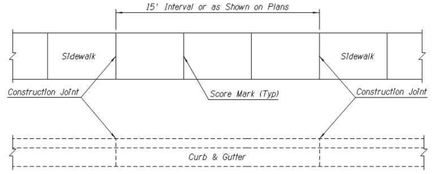
|

PLOTTED: Feb 16, 2024-4:41pm

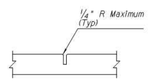
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW GENERAL NOTE 5, REARRANGED 3, 4 & 5	RLF	9/04
2	ADDED SLOPE SPECIFICATIONS & REVISED SECTION VIEWS	RLF	7/05
3	ADDED GENERAL NOTE FOR AB REQUIREMENT	RLF	5/07
4			



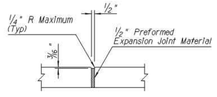
SIDEWALK ADJACENT TO CURB



SIDEWALK SETBACK FROM CURB



CONTRACTION JOINT DETAIL



EXPANSION JOINT DETAIL

① GENERAL NOTES

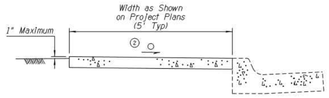
1. Unless otherwise specified, sidewalks shall be 4" thick.
2. One-inch deep transverse contraction joints shall be placed in sidewalks at intervals of approximately 15' or at a spacing that matches adjacent curb and gutter. If the sidewalk is over 7' in width, a 2" deep longitudinal contraction joint shall be placed in the center of the sidewalk. The maximum area of sidewalk without contraction joints or scoring lines shall be approximately 36 square feet. Joints shall be either formed or sawn. Formed joints shall be finished with a tool having a 1/4" radius.
3. Score marks shall be 1/4" in depth. They shall be placed at 5' spacing when the contraction joint interval is 15' and at 6' spacing when the contraction joint interval is 12'.
4. Expansion joints shall be located between sidewalks and driveways and all abutting structures. Expansion joints shall match the joints in the adjacent concrete pavement or existing concrete curb and sidewalk. Maximum length of sidewalk without an expansion joint shall be 60 transverse feet. The 1/2" joint filler shall extend the full depth of the concrete.
5. Concrete shall be finished by means of a float, then steel trowelled and then broomed with a fine brush in a transverse direction.

③ 6. Place AB under sidewalks when shown on plans.

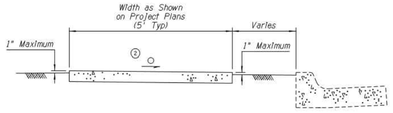
② LEGEND

Minimum slope = 0.01 ft/ft

Maximum slope = 0.02 ft/ft



CONCRETE SIDEWALK ADJACENT TO CURB



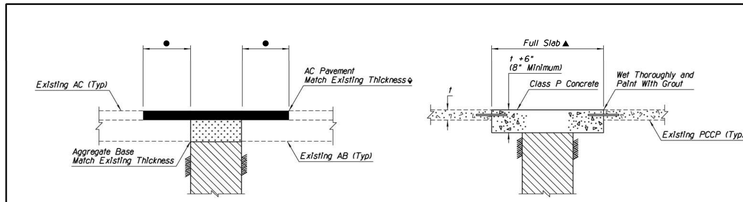
CONCRETE SIDEWALK SETBACK FROM CURB

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV: 5/12
APPROVED FOR DISTRIBUTION	CONCRETE DRIVEWAYS & SIDEWALKS SIDEWALKS	DRAWING NO. C-05.20 Sheet 2 of 2

Note to Designer:
Items in this Standard Drawing has been prepared in accordance with recognized engineering principles and practices. Users of this Standard Drawing are responsible for the correct and proper use of this Standard Drawing. Adaptations and modifications of this Standard Drawing are permissible provided the adapted or modified drawing is prepared, signed, sealed and dated by a professional engineer. Contents shall not be altered except by a licensed professional engineer.

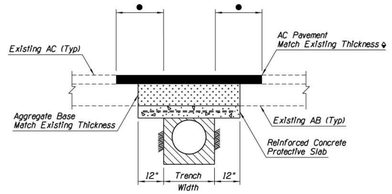
PRIOR DISTRIBUTION DATE: 05/12

V:\Roadway\users\tdb036\ 11:24:19 AM

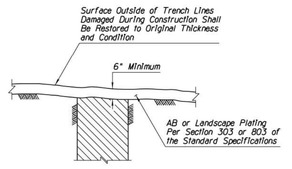


AC PAVEMENT

PCCP PAVEMENT



SHALLOW COVER ■



PLATED SURFACE

GENERAL NOTES

1. Backfill shall be in accordance with Section 501 bedding and pipe backfill requirements of the Standard Specifications.
2. Aggregate Base shall be in accordance with Section 303 requirements of the Standard Specifications.
3. Asphalt concrete shall be in accordance with Section 409 requirements of the Standard Specifications.
4. Portland Cement Concrete Pavement shall be in accordance with Section 401 requirements of the Standard Specifications. Match existing surface texture and grade.
5. See Std Dwg C-13.15 for pipe culvert installation.

● Replace 2 ft of AC on each side of the excavation along centerline unless otherwise directed by the Engineer. Replace full lane width of all disturbed lanes perpendicular to centerline.

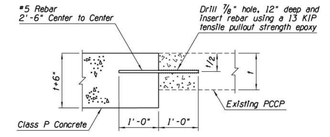
▲ All disturbed slabs shall be replaced in full and doweled into adjacent PCCP on each side. See Dowel Detail.

■ Use when shown on plans or as directed by the Engineer when minimum cover cannot be attained. See plans for protective slab thickness and reinforcement requirements.

◆ A thicker pavement section may be required if shown on plans or directed by the Engineer.

BACKFILL

AGGREGATE BASE



DOWEL DETAIL

STANDARDS ENGINEER: J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER: M. DENBLEYKER	
APPROVED: STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 08/21 DATE	TRENCH BACKFILL AND PAVEMENT REPLACEMENT — DRAWING NO. C-07.06

TABLE I NOTE:

Welded wire reinforcement areas provided in Table I represent the largest reinforcement areas for each precast culvert span "S" and the corresponding vertical rise "R" for fill height of 2 feet to less than 10 feet.

TABLE II NOTE:

Welded wire reinforcement areas provided in Table II represent the largest reinforcement areas for each precast culvert span "S" and the corresponding vertical rise "R" for fill height of 10 feet to no more than 20 feet.

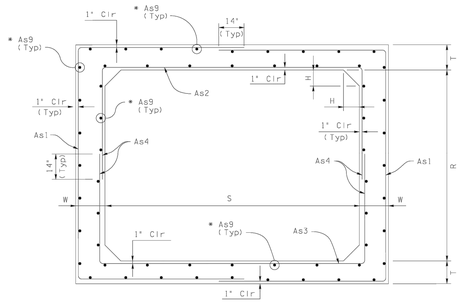
TABLE NO. I
2' TO LESS THAN 10' FILL HEIGHT

Span "S"	Rise "R"	Slab "T"	Walls "W"	Haunch "H" **	Welded Wire Reinforcement Circumferential Areas Square Inch / Foot As1	As2	As3	As4
6'	3'	7"	7"	7"	0.21	0.24	0.19	0.17
	4'	7"	7"		0.19	0.27	0.21	0.17
	5'	7"	7"		0.17	0.30	0.24	0.17
	6'	7"	7"		0.17	0.32	0.26	0.17
8'	3'	8"	8"	8"	0.35	0.29	0.28	0.19
	4'	8"	8"		0.31	0.54	0.32	0.19
	5'	8"	8"		0.28	0.37	0.35	0.19
	6'	8"	8"		0.25	0.40	0.38	0.19
	7'	8"	8"		0.23	0.43	0.41	0.19
	8'	8"	8"		0.21	0.45	0.44	0.19
10'	3'	10"	10"	10"	0.42	0.31	0.27	0.24
	4'	10"	10"		0.38	0.35	0.30	0.24
	5'	10"	10"		0.35	0.39	0.34	0.24
	6'	10"	10"		0.32	0.42	0.37	0.24
	7'	10"	10"		0.30	0.45	0.40	0.24
	8'	10"	10"		0.27	0.47	0.43	0.24
	9'	10"	10"		0.26	0.50	0.46	0.24
	10'	10"	10"		0.25	0.52	0.48	0.24
12'	8'	12"	12"	12"	0.33	0.49	0.42	0.29
	9'	12"	12"		0.30	0.51	0.45	0.29
	10'	12"	12"		0.29	0.54	0.48	0.29
	11'	12"	12"		0.29	0.56	0.51	0.29
	12'	12"	12"		0.29	0.59	0.53	0.29

TABLE NO. II
10' TO NO MORE THAN 20' FILL HEIGHT

Span "S"	Rise "R"	Slab "T"	Walls "W"	Haunch "H" **	Welded Wire Reinforcement Circumferential Areas Square Inch / Foot As1	As2	As3	As4
6'	3'	7"	7"	7"	0.28	0.31	0.31	0.17
	4'	7"	7"		0.24	0.34	0.35	0.17
	5'	7"	7"		0.20	0.37	0.38	0.17
	6'	7"	7"		0.18	0.38	0.39	0.17
8'	3'	8"	8"	8"	0.51	0.43	0.44	0.19
	4'	8"	8"		0.44	0.48	0.49	0.19
	5'	8"	8"		0.39	0.52	0.54	0.19
	6'	8"	8"		0.36	0.55	0.57	0.19
	7'	8"	8"		0.33	0.57	0.60	0.19
	8'	8"	8"		0.31	0.59	0.62	0.19
10'	3'	10"	10"	10"	0.68	0.48	0.49	0.24
	4'	10"	10"		0.61	0.54	0.55	0.24
	5'	10"	10"		0.55	0.59	0.61	0.24
	6'	10"	10"		0.50	0.63	0.65	0.24
	7'	10"	10"		0.46	0.67	0.69	0.24
	8'	10"	10"		0.43	0.69	0.72	0.24
	9'	10"	10"		0.40	0.71	0.75	0.24
	10'	10"	10"		0.38	0.73	0.77	0.24
12'	8'	12"	12"	12"	0.57	0.78	0.81	0.29
	9'	12"	12"		0.53	0.81	0.85	0.29
	10'	12"	12"		0.51	0.84	0.88	0.29
	11'	12"	12"		0.48	0.84	0.91	0.29
	12'	12"	12"		0.46	0.87	0.93	0.29

** In lieu of performing a special design, for the specific case where the actual haunch dimensions are larger than the standard dimensions and vertical and horizontal haunch dimensions are equal, the As1 steel area shall be increased by 1 percent for every 5 percent increase in the haunch dimension over that specified in Tables I and II.



TYPICAL SECTION

* See General Notes for As9 spacing

GENERAL NOTES:

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017.

Precast reinforced concrete box culverts sections shown conform to ASTM C1577-20.

Sections shown in tables 1 and 2 were designed for combined earth, dead load, and HL-93 live load without Lane Load as permitted by the AASHTO LRFD Bridge Design Specifications, using either the design truck or the design tandem and taking the controlling case.

All Concrete shall be Class "S" (f'c = 5,000 psi).

All reinforcing steel shall consist of welded wire reinforcement conforming to ASTM A1064/A1064M (AASHTO M 336).

Circumferential reinforcement area shown in Tables I and II are based solely on the use of welded wire reinforcement with 4 inch spacing of the circumferential wires.

Longitudinal distribution reinforcement A_{s4} is based on a D4.0 welded wire reinforcement with a 8" center to center spacing, and a minimum cross-sectional area of 0.03 in²/ft.

All circumferential reinforcing steel shall have a 1 inch clear cover unless noted otherwise.

Compact backfill for footing and wall base minimum 100 percent of ASTM D698 maximum dry density.

See Project Plans for wall layout, top of footing and finished grade elevations, footing step and wall joint locations. Construction joints shall match the locations of weakened plane joints.

Shop Drawings shall be provided for Precast box culverts showing dimensions and details of each box section type, joint ends, seals, lifting devices, full layout plan, box section numbering, and placement sequence.

See Special Provisions for additional requirements for leveling course material, installation, structural excavation and structure backfill.

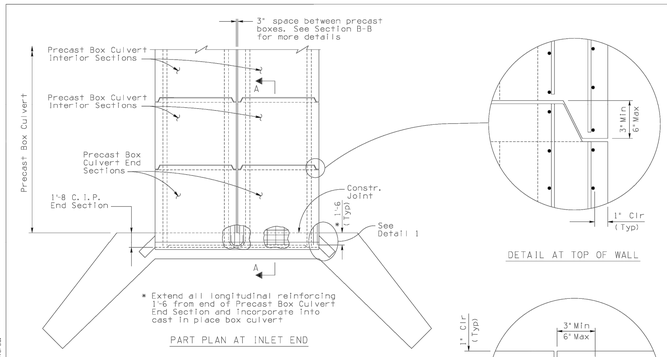
Pay item measure of linear foot of precast concrete culvert shall be along the central axis of the culvert per barrel, and shall include the length of joints and connections.

Dimensions shall not be scaled from drawings.

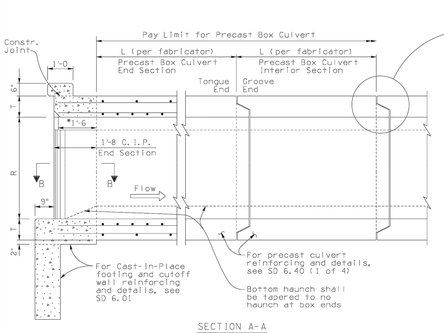
STANDARDS ENGINEER: A. ALZUBI	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER: D. BENTON	
APPROVED: STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 10/23 DATE	PRECAST REINFORCED CONCRETE BOX CULVERTS SINGLE BARREL NOTES & DIMENSIONS — DRAWING NO. SD 6.20 (1 of 5)

Note to Designer:
Items in this Standard Drawing has been prepared in accordance with recognized engineering principles and practices. Users of this Standard Drawing are responsible for the correct and proper use of this Standard Drawing. Adaptations and modifications of this Standard Drawing are permissible provided the adapted or modified drawing is prepared, signed, sealed and dated by a professional engineer. Contents shall not be altered except by a licensed professional engineer.

PRIOR DISTRIBUTION DATE:

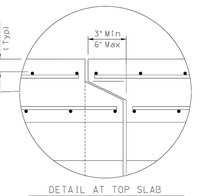


PART PLAN AT INLET END



SECTION A-A

DETAIL AT TOP OF WALL



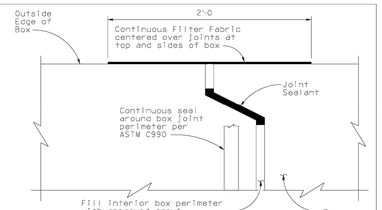
DETAIL AT TOP SLAB

Detail at bottom slab similar

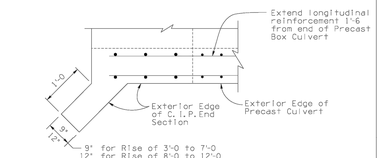
NOTES:

See SD 6 series for additional notes, details, dimensions, and quantities.

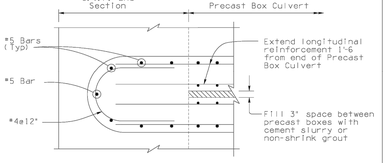
Footing for C.I.P. end section shall be continuous with no joints.



JOINT SEAL DETAIL



DETAIL 1



SECTION B-B

STANDARDS ENGINEER: A. ALZUBI	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER: D. BENTON	
APPROVED: STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 10/23 DATE	PRECAST REINFORCED CONCRETE BOX CULVERTS MISCELLANEOUS DETAILS 1 — DRAWING NO. SD 6.20 (2 of 5)

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 DETAILS.DWG HSCHNOEBELEN

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

DETAILS - ADOT (3)

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SCI

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.6934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

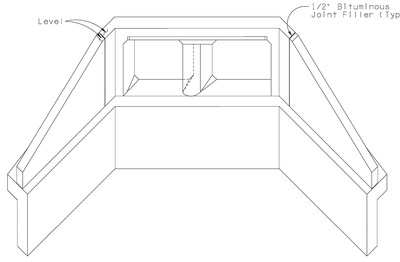
Contact Arizona 811 at least two full working days before you begin excavation

Call 811 or click Arizona811.com

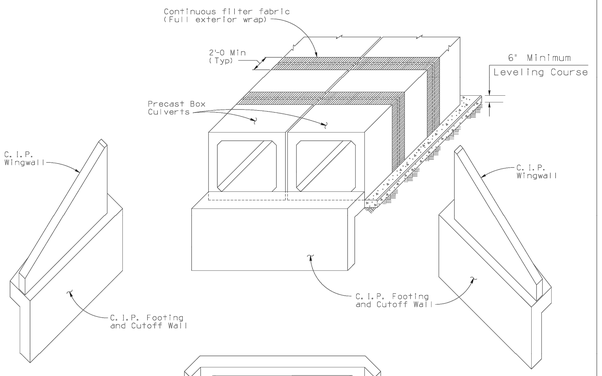
DRAWING NO. DT05

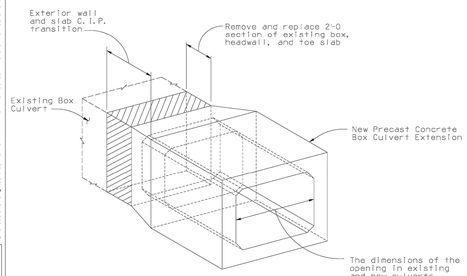
SHT NO. 7 OF 18

PLOTTED: Feb 16, 2024-4:42pm

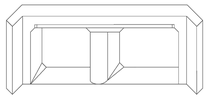


3D VIEW OF CAST-IN-PLACE END SECTION
(Double barrel culvert shown. Single or multiple barrels similar)





PICTORIAL VIEW OF EXTERIOR WALL AND SLAB TRANSITION



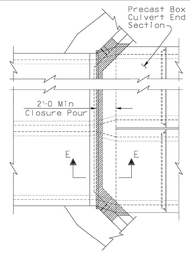
C. I. P. END SECTION

VIEW OF CONNECTIONS AT END OF CULVERT

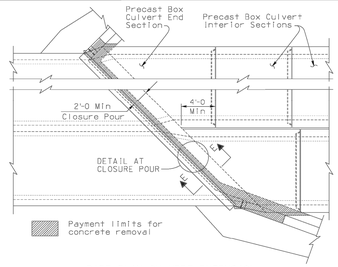
Note to Designer:
Information contained in this standard drawing has been prepared in conformance with standard engineering practices and is for general guidance only. It should not be used for specific applications without the review and approval of a professional engineer. Contents within the inner border line shall not be altered.

PRIOR DISTRIBUTION DATE:

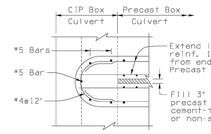
STANDARDS ENGINEER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING	
A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER	PRECAST REINFORCED CONCRETE BOX CULVERTS END SECTION & CONNECTION DETAILS	DRAWING NO. SD 6.20 (3 of 5)
D. BENTON APPROVED		
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 02/23 DATE		



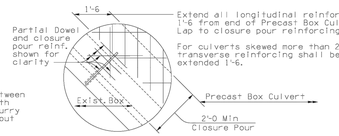
PART PLAN CULVERT EXTENSION
(Showing Right Angle Culvert)



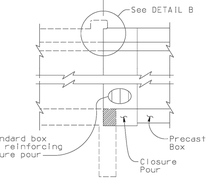
PART PLAN CULVERT EXTENSION
(Showing Skewed Culvert)



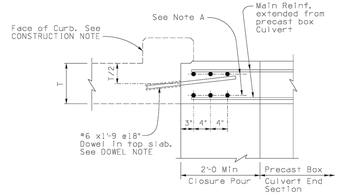
SECTION B-B



DETAIL AT CLOSURE POUR
(Culvert Extension)



SECTION E-E



DETAIL B

NOTES:

For General Notes, Dimensions, Quantities and additional details, see SD 6.40 (1 of 4).

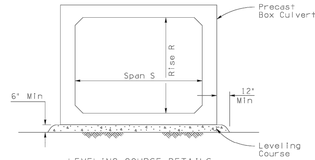
For Structure Backfill Details, see SD 6.01 (4 of 5).

DOWEL NOTE:

Drill 1" ø hole, 8" deep, for *6 dowel. Epoxy dowel in hole with an approved epoxy adhesive. Epoxy anchorage shall develop a tensile pullout strength of 13 kips. Details of the Anchorage System shall be submitted to the Engineer for approval prior to installation.

CONSTRUCTION NOTE:

Remove existing headwall as required for new construction. The Curb to remain unless within 1'-0 of finish grade. If concrete headwall is removed to face of curb, use projecting reinforcing steel for bond in new concrete (no dowels are needed). Wingwalls shall be removed a minimum of 1'-6 to provide steel for bond. Any use of mechanical couplers shall meet the requirements of the standard specifications. The approved products list, and shall be submitted to the Engineer for approval.



LEVELING COURSE DETAILS

NOTE A:

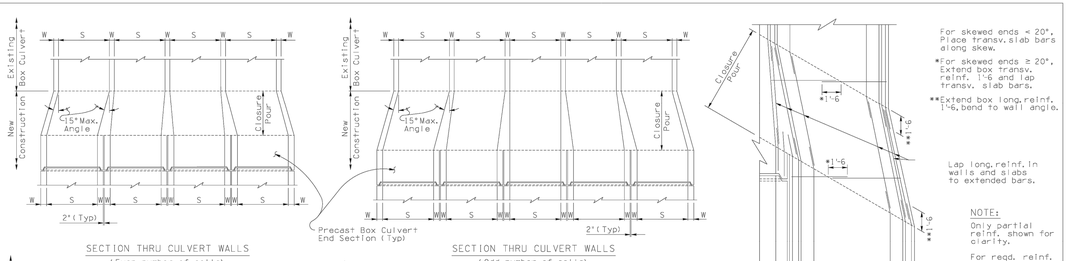
Use 3-*7 @ 4" spacing top and bottom bars for culverts skewed 6° to 30°.

Use 3-*8 @ 4" spacing top and bottom bars for culverts skewed 31° to 45°.

Culverts skewed more than 45° require a special edge beam design.

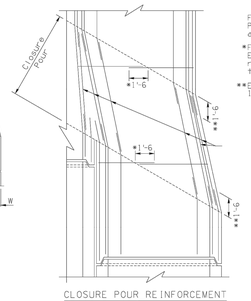
Edge beam reinforcing quantity shall be added to the quantity table.

STANDARDS ENGINEER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING	
A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER	PRECAST REINFORCED CONCRETE BOX CULVERTS MISCELLANEOUS DETAILS 2	DRAWING NO. SD 6.20 (4 of 5)
D. BENTON APPROVED		
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 02/23 DATE		



SECTION THRU CULVERT WALLS
(Even number of cells)

SECTION THRU CULVERT WALLS
(Odd number of cells)



CLOSURE POUR REINFORCEMENT

For skewed ends < 20°, Place transv. slab bars along skew.

*For skewed ends ≥ 20°, Extend box transv. reinf. 1'-6 and lap transv. slab bars.

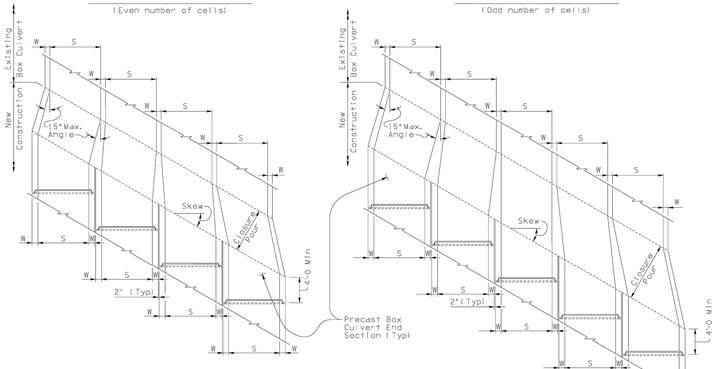
**Extend box long. reinf. 1'-6, bend to wall angle.

Lap long. reinf. in walls and slabs to extended bars.

NOTE:
Only partial reinf. shown for clarity.

For read. reinf. in closure pour area, See SD6.01 to SD6.06.

SPAN LENGTH	CLOSURE POUR LENGTH NO. OF BARRELS				
	2	3	4	5	6
6	2'-0	3'-9	5'-8	7'-6	9'-4
8	2'-4	4'-8	7'-0	9'-4	11'-8
10	2'-8	5'-4	8'-0	10'-7	13'-3
12	3'-0	5'-11	8'-11	11'-10	14'-10



SECTION THRU CULVERT WALLS
(Even number of cells)

SECTION THRU CULVERT WALLS
(Odd number of cells)

CLOSURE POUR NOTES:

Closure pour length determined by 15° max. wall angle for exterior box offset (Min. 2'-0).

For skewed culvert ends, length of closure pour measured along ℄ culvert is determined by dividing length in table by cosine of skew angle.

Culvert walls length and width varies within closure pour area to match adjoining walls. Top and bottom slab thickness may vary to match adjoining slabs.

NOTE:

For General Notes, Dimensions, Quantities and additional Details, see SD 6.40 (1 of 4).

STANDARDS ENGINEER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING	
A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER	PRECAST REINFORCED CONCRETE BOX CULVERTS MISCELLANEOUS DETAILS 3	DRAWING NO. SD 6.20 (5 of 5)
D. BENTON APPROVED		
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 02/23 DATE		

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 DETAILS.DWG HSCHNOEBELEN

FLAGSTAFF
ARIZONA

HIGHWAY 180 CROSSING

DETAILS - ADOT (4)

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SDI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.8934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click ArizonaBlueStake.com

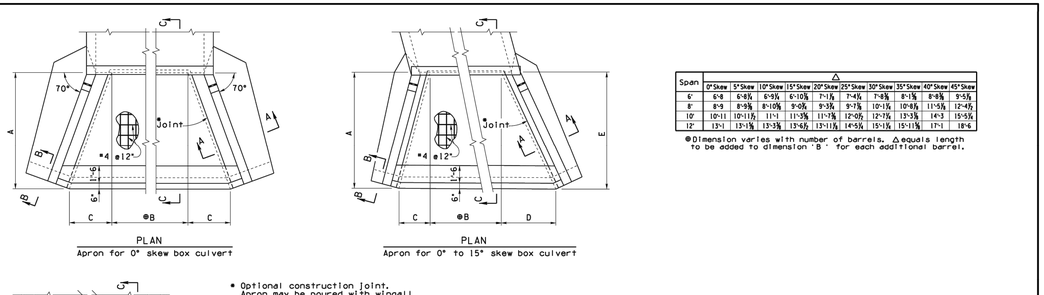
PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

DRAWING NO.
DT06

SHT NO. 8 OF 18

PLOTTED: Feb 16, 2024-4:42pm



Span	0° Skew	5° Skew	10° Skew	15° Skew	20° Skew	25° Skew	30° Skew	35° Skew	40° Skew	45° Skew
6'	6'-8	6'-8⅝	6'-9⅝	6'-10⅝	7'-1⅞	7'-4⅞	7'-8⅝	8'-1⅝	8'-8⅝	9'-5⅞
8'	8'-9	8'-9⅝	8'-10⅝	9'-0⅝	9'-3⅜	9'-7⅜	10'-1⅛	10'-8⅛	11'-5⅜	12'-4⅞
10'	10'-11	10'-11⅞	11'-1	11'-3⅝	11'-7⅜	12'-0⅝	12'-7⅛	13'-3⅝	14'-3	15'-5⅝
12'	13'-1	13'-1⅞	13'-3⅝	13'-6⅞	13'-11⅛	14'-5⅛	15'-1⅛	15'-11⅝	17'-1	18'-6

△Dimension varies with number of barrels. △as length to be added to dimension 'B' for each additional barrel.

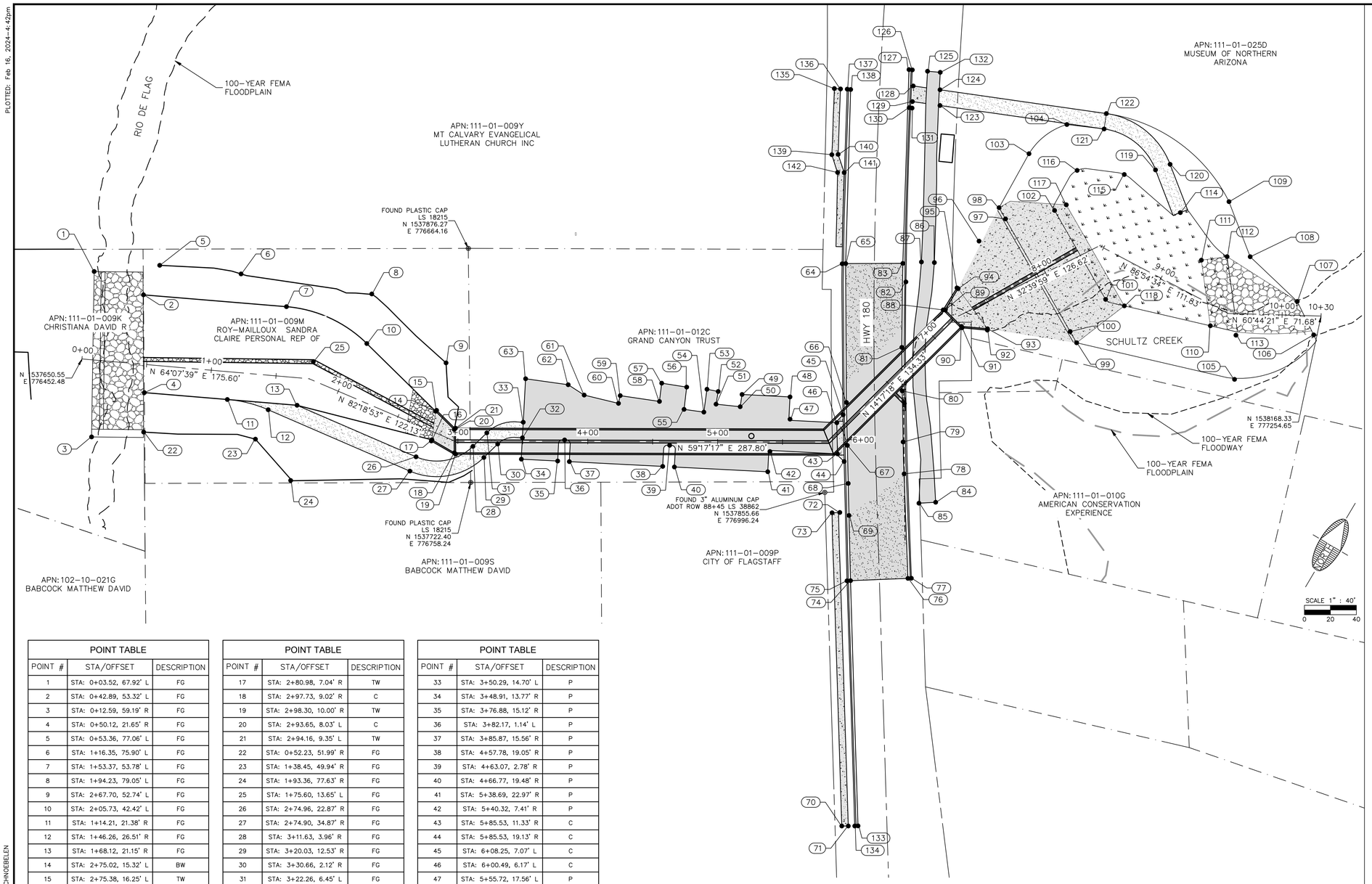
NOTE:
For General Notes, Dimensions, and additional Details, see SD 6.01 (1 & 2 of 5). For Dimensions and Quantities see SD 6.11 (2 to 4).

REVISION APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION	REINFORCED CONCRETE BOX CULVERTS OUTLET APRON DETAILS
ROUTE / PROJECT NO. / TR NO.	DRAWING NO. SD 6.11 (1 of 4)
LOCATION	SHEET NO. OF

22-JAN-2016 11:54 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Stuctures\SD 6.01-6.11 Series\SD611-1 to 4\sd611-1.0116.dgn

Span	Mat'l.	0° Skew			5° Skew			10° Skew			15° Skew			20° Skew			25° Skew			30° Skew			35° Skew			40° Skew			45° Skew		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
6'	3'	6'-7⅞	6'-8⅝	2'-4⅝	6'-8	6'-8⅝	1'-9⅜	7'-0⅝	6'-8⅝	1'-9⅜	7'-2⅝	7'-11⅛	6'-9⅝	6'-1⅝	6'-10⅛	1'-8⅞	7'-9	8'-2⅜	1'-9⅜	8'-0	9'-2⅜	1'-9⅜	8'-6	9'-6⅜	1'-9⅜	9'-0	10'-2⅜	1'-9⅜	9'-6	10'-6⅜	1'-9⅜
	4'	8'-0⅝	6'-8⅝	2'-11⅛	8'-1⅛	6'-8⅝	2'-2⅞	8'-2⅝	6'-8⅝	2'-2⅞	8'-4⅝	7'-11⅛	6'-9⅝	7'-1⅝	6'-10⅛	1'-8⅞	8'-9	8'-2⅜	1'-9⅜	9'-0	9'-2⅜	1'-9⅜	9'-6	9'-6⅜	1'-9⅜	9'-11	10'-2⅜	1'-9⅜	10'-4	10'-6⅜	1'-9⅜
	5'	9'-3⅛	6'-8⅝	3'-5⅜	9'-4⅛	6'-8⅝	2'-8⅜	9'-4⅝	6'-8⅝	2'-8⅜	9'-6⅝	7'-11⅛	6'-9⅝	8'-1⅝	6'-10⅛	1'-8⅞	9'-11	8'-2⅜	1'-9⅜	10'-2	9'-2⅜	1'-9⅜	9'-8	9'-6⅜	1'-9⅜	10'-1	10'-2⅜	1'-9⅜	10'-6	10'-6⅜	1'-9⅜
	6'	10'-1⅛	6'-8⅝	3'-11⅝	10'-5⅛	6'-8⅝	3'-3⅜	10'-5⅝	6'-8⅝	3'-3⅜	10'-7⅝	7'-11⅛	6'-9⅝	9'-1⅝	6'-10⅛	1'-8⅞	11'-1	8'-2⅜	1'-9⅜	11'-4	9'-2⅜	1'-9⅜	10'-9	9'-6⅜	1'-9⅜	11'-3	10'-2⅜	1'-9⅜	11'-8	10'-6⅜	1'-9⅜
	3'	6'-7⅞	6'-10⅝	2'-4⅝	6'-8	6'-10⅝	1'-9⅜	7'-0⅝	6'-8⅝	1'-9⅜	7'-2⅝	7'-11⅛	6'-9⅝	6'-1⅝	7'-1⅛	1'-8⅞	7'-9	8'-2⅜	1'-9⅜	8'-0	9'-2⅜	1'-9⅜	8'-6	9'-6⅜	1'-9⅜	9'-0	10'-2⅜	1'-9⅜	9'-6	10'-6⅜	1'-9⅜
	4'	8'-0⅝	6'-10⅝	2'-11⅛	8'-1⅛	6'-10⅝	2'-2⅞	8'-2⅝	6'-10⅝	2'-2⅞	8'-4⅝	7'-11⅛	6'-9⅝	7'-1⅝	7'-1⅛	1'-8⅞	8'-9	8'-2⅜	1'-9⅜	9'-0	9'-2⅜	1'-9⅜	9'-6	9'-6⅜	1'-9⅜	9'-11	10'-2⅜	1'-9⅜	10'-4	10'-6⅜	1'-9⅜
8'	5'	9'-3⅛	6'-10⅝	3'-5⅜	9'-4⅛	6'-10⅝	2'-8⅜	9'-4⅝	6'-10⅝	2'-8⅜	9'-6⅝	7'-11⅛	6'-9⅝	8'-1⅝	7'-1⅛	1'-8⅞	9'-11	8'-2⅜	1'-9⅜	10'-2	9'-2⅜	1'-9⅜	9'-8	9'-6⅜	1'-9⅜	10'-1	10'-2⅜	1'-9⅜	10'-6	10'-6⅜	1'-9⅜
	6'	10'-1⅛	6'-10⅝	3'-11⅝	10'-5⅛	6'-10⅝	3'-3⅜	10'-5⅝	6'-10⅝	3'-3⅜	10'-7⅝	7'-11⅛	6'-9⅝	9'-1⅝	7'-1⅛	1'-8⅞	11'-1	8'-2⅜	1'-9⅜	11'-4	9'-2⅜	1'-9⅜	10'-9	9'-6⅜	1'-9⅜	11'-3	10'-2⅜	1'-9⅜	11'-8	10'-6⅜	1'-9⅜
	3'	6'-7⅞	7'-0⅝	2'-4⅝	6'-8	7'-0⅝	1'-9⅜	7'-0⅝	6'-8⅝	1'-9⅜	7'-2⅝	7'-11⅛	6'-9⅝	6'-1⅝	7'-1⅛	1'-8⅞	7'-9	8'-2⅜	1'-9⅜	8'-0	9'-2⅜	1'-9⅜	8'-6	9'-6⅜	1'-9⅜	9'-0	10'-2⅜	1'-9⅜	9'-6	10'-6⅜	1'-9⅜
	4'	8'-0⅝	7'-0⅝	2'-11⅛	8'-1⅛	7'-0⅝	2'-2⅞	8'-2⅝	7'-0⅝	2'-2⅞	8'-4⅝	7'-11⅛	6'-9⅝	7'-1⅝	7'-1⅛	1'-8⅞	8'-9	8'-2⅜	1'-9⅜	9'-0	9'-2⅜	1'-9⅜	9'-6	9'-6⅜	1'-9⅜	9'-11	10'-2⅜	1'-9⅜	10'-4	10'-6⅜	1'-9⅜
	5'	9'-3⅛	7'-0⅝	3'-5⅜	9'-4⅛	7'-0⅝	2'-8⅜	9'-4⅝	7'-0⅝	2'-8⅜	9'-6⅝	7'-11⅛	6'-9⅝	8'-1⅝	7'-1⅛	1'-8⅞	9'-11	8'-2⅜	1'-9⅜	10'-2	9'-2⅜	1'-9⅜	9'-8	9'-6⅜	1'-9⅜	10'-1	10'-2⅜	1'-9⅜	10'-6	10'-6⅜	1'-9⅜
10'	6'	10'-1⅛	7'-0⅝	3'-11⅝	10'-5⅛	7'-0⅝	3'-3⅜	10'-5⅝	7'-0⅝	3'-3⅜	10'-7⅝	7'-11⅛	6'-9⅝	9'-1⅝	7'-1⅛	1'-8⅞	11'-1	8'-2⅜	1'-9⅜	11'-4	9'-2⅜	1'-9⅜	10'-9	9'-6⅜	1'-9⅜	11'-3	10'-2⅜	1'-9⅜	11'-8	10'-6⅜	1'-9⅜
	3'	6'-7⅞	7'-3⅝	2'-4⅝	6'-8	7'-3⅝	1'-9⅜	7'-0⅝	6'-8⅝	1'-9⅜	7'-2⅝	7'-11⅛	6'-9⅝	6'-1⅝	7'-1⅛	1'-8⅞	7'-9	8'-2⅜	1'-9⅜	8'-0	9'-2⅜	1'-9⅜	8'-6	9'-6⅜	1'-9⅜	9'-0	10'-2⅜	1'-9⅜	9'-6	10'-6⅜	1'-9⅜
	4'	8'-0⅝	7'-3⅝	2'-11⅛	8'-1⅛	7'-3⅝	2'-2⅞	8'-2⅝	7'-3⅝	2'-2⅞	8'-4⅝	7'-11⅛	6'-9⅝	7'-1⅝	7'-1⅛	1'-8⅞	8'-9	8'-2⅜	1'-9⅜	9'-0	9'-2⅜	1'-9⅜	9'-6	9'-6⅜	1'-9⅜	9'-11	10'-2⅜	1'-9⅜	10'-4	10'-6⅜	1'-9⅜
	5'	9'-3⅛	7'-3⅝	3'-5⅜	9'-4⅛	7'-3⅝	2'-8⅜	9'-4⅝	7'-3⅝	2'-8⅜	9'-6⅝	7'-11⅛	6'-9⅝	8'-1⅝	7'-1⅛	1'-8⅞	9'-11	8'-2⅜	1'-9⅜	10'-2	9'-2⅜	1'-9⅜	9'-8	9'-6⅜	1'-9⅜	10'-1	10'-2⅜	1'-9⅜	10'-6	10'-6⅜	1'-9⅜
12'	6'	10'-1⅛	7'-3⅝	3'-11⅝	10'-5⅛	7'-3⅝	3'-3⅜	10'-5⅝	7'-3⅝	3'-3⅜	10'-7⅝	7'-11⅛	6'-9⅝	9'-1⅝	7'-1⅛	1'-8⅞	11'-1	8'-2⅜	1'-9⅜	11'-4	9'-2⅜	1'-9⅜	10'-9	9'-6⅜	1'-9⅜	11'-3	10'-2⅜	1'-9⅜	11'-8	10'-6⅜	1'-9⅜
	3'	6'-7⅞	7'-6⅝	2'-4⅝	6'-8	7'-6⅝	1'-9⅜	7'-0⅝	6'-8⅝	1'-9⅜	7'-2⅝	7'-11⅛	6'-9⅝	6'-1⅝	7'-1⅛	1'-8⅞	7'-9	8'-2⅜	1'-9⅜	8'-0	9'-2⅜	1'-9⅜	8'-6	9'-6⅜	1'-9⅜	9'-0	10'-2⅜	1'-9⅜	9'-6	10'-6⅜	1'-9⅜
	4'	8'-0⅝	7'-6⅝	2'-11⅛	8'-1⅛	7'-6⅝	2'-2⅞	8'-2⅝	7'-6⅝	2'-2⅞	8'-4⅝	7'-11⅛	6'-9⅝	7'-1⅝	7'-1⅛	1'-8⅞	8'-9	8'-2⅜	1'-9⅜	9'-0	9'-2⅜	1'-9⅜	9'-6	9'-6⅜	1'-9⅜	9'-11	10'-2⅜	1'-9⅜	10'-4	10'-6⅜	1'-9⅜
	5'	9'-3⅛	7'-6⅝	3'-5⅜	9'-4⅛	7'-6⅝	2'-8⅜	9'-4⅝	7'-6⅝	2'-8⅜	9'-6⅝	7'-11⅛	6'-9⅝	8'-1⅝	7'-1⅛	1'-8⅞	9'-11	8'-2⅜	1'-9⅜	10'-2	9'-2⅜	1'-9⅜	9'-8	9'-6⅜	1'-9⅜	10'-1	10'-2⅜	1'-9⅜	10'-6	10'-6⅜	1'-9⅜
14'	6'	10'-1⅛	7'-6⅝	3'-11⅝	10'-5⅛	7'-6⅝	3'-3⅜	10'-5⅝	7'-6⅝	3'-3⅜	10'-7⅝	7'-11⅛	6'-9⅝	9'-1⅝	7'-1⅛	1'-8⅞	11'-1	8'-2⅜	1'-9⅜	11'-4	9'-2⅜	1'-9⅜	10'-9	9'-6⅜	1'-9⅜	11'-3	10'-2⅜	1'-9⅜	11'-8	10'-6⅜	1'-9⅜

Span	Mat'l.	0° Skew			5° Skew			10° Skew			15° Skew			20° Skew			25° Skew			30° Skew			35° Skew			40° Skew			45° Skew		
		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.	
		lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac	lBs/L	Ac
6'	3'	0.44	1.05	22	91	0.44	1.05	22	91	0.46	1.08	25	94	0.50	1.06	27	92	0.55	1.08	33	94	0.77	1.13	52	98	1.03	1.13	73	99	1.27	1.18	95	104
	4'	0.50	1.23	31	104	0.50	1.23	31	104	0.52	1.26	34	107	0.62	1.28	39	107	0.68	1.28	45	109	0.93	1.32	67	113	1.20	1.32	92	114	1.50	1.34	116	116
	5'	0.52	1.40	42	117	0.53	1.43	44	119	0.54	1.43	44	120	0.59	1.43	49	120	0.64	1.46	54	122	0.98	1.46	81	123	1.37	1.50	113	126	1.75	1.57	146	132
	6'	0.57	1.58	54	130	0.58	1.61	57	132	0.61	1.63	61	135	0.66	1.63	65	135	0.72	1.66	71	137	1.11	1.66	101	138	1.55	1.69	137	141	2.00	1.73	173	144
	3'	0.84	1.45	51	118	0.84	1.45	51	118	0.86	1.49	55	122	0.90	1.46	56	119	0.96	1.50	63	122	1.19	1.55	83	127	1.46	1.57	105	129	1.72	1.64	128	134
	4'	0.95	1.68	64	135	0.95	1.68	64	135	0.97	1.72	68	138	1.03	1.72	73	139	1.10	1.76	79	142	1.38	1.81	103	146	1.69	1.83	128	148	2.00	1.85	153	150
	5'	1.03	1.91	73	152	1.05	1.95	82	155	1.05	1.95	83	155	1.11	1.95	87	156	1.17	1.99	93	159	1.51	2.00	120	160	1.91	2.04	154	164	2.32	2.14	189	172
	6'	1.13	2.14	96	169	1.16	2.17	99	172	1.19	2.21	104	175	1.25	2.21	108	175	1.31	2.25	115	178	1.71	2.26	145	179	2.17	2.30	182	183	2.62	2.35	220	188
	7'	1.27	2.36	115	186	1.29	2.40	119	189	1.33	2.44	123	192	1.38	2.44	127	192	1.44	2.48	133	195	1.95	2.52	173	199	2.46	2.56	214	203	2.98	2.61	254	207
	8'	1.56	2.70	112	210	1.54	2.66	108	208	1.59	2.70	113	211	1.64	2.70	117	211	1.76	2.77	130	217	2.35	2.81	175	220	2.93	2.81	220	221	3.58	2.89	273	228
	3'	1.28	1.88	85	147	1.28	1.88	85	148	1.32	1.93	89	151	1.35	1.89	90	148	1.42	1.94	97	153	1.67	2.01	119	158	1.94	2.03	141	160	2.22	2.12	166	167
	4'	1.45	2.16	102	169	1.46	2.16	102	169	1.49	2.22	107	173	1.55	2.21	111	173	1.63	2.27	119	177	1.93	2.34	144	182	2.25	2.36	169	184	2.56	2.39	195	187
	5'	1.59	2.45	121	190	1.62	2.50	125	193	1.63	2.50	126	194	1.69	2.50	130	194	1.76	2.55	138	198	2.11	2.57	165	199	2.52	2.63	199	204	2.96	2.75	236	214
	6'	1.76	2.73	143	211	1.79	2.78	147	214	1.84	2.83	152	218	1.89	2.83	157	218	1.97	2.88	164	222	2.38	2.89	195	224	2.85	2.95	233	228	3.32	3.02	272	234
	7'	1.95	3.02	166	232	1.99	3.07	171	236	2.04	3.11	176	239	2.09	3.11	180	239	2.17	3.16	187	243	2.68	3.22	228	248	3.21	3.28	270	253	3.74	3.34	312	258
	8'	2.33	3.43	169	263	2.30	3.39	166	259	2.36	3.43	171	263	2.41	3.43	175	263	2.56	3.52	189	270	3.16	3.58	236	275	3.74	3.59	281	276	4.42	3.69	336	284
	3'	2.56	3.72	190	284	2.57	3.72	191	284	2.64	3.77	197	288	2.69	3.77	201	288	2.85	3.86	216	295	3.52	3.91	268	299	4.16	3.92	317	300	4.91	4.03	376	309
	4'	2.81	4.01	212	306	2.82	4.01	213	306	2.89	4.06	219	310	2.94	4.06	223	311	3.10	4.15	237	316	3.80	4.15	291	317	4.62	4.25	355	325	5.48	4.34	426	332
	5'	3.15	4.21	227	315	3.11	4.16	223	311	3.17	4.22	229	315	3.23	4.22	233	315	3.39	4.33	249	324	4.01	4.40	297	329	4.60	4.42	342	330	5.31	4.55	393	340
	6'	3.44	4.56	253	341	3.45	4.56	254	341	3.52	4.62	260	345	3.58	4.62	265	345	3.76	4.73	281	353	4.44	4.80	334	359	5.09	4.82	383	360	5.87	4.95	445	370
	7'	3.75	4.91	279	367	3.76	4.91	280	366	3.83	4.97	287	371	3.89	4.97	291	371	4.07	5.08	307	379	4.78	5.08	361	380	5.63	5.21	427	389	6.50	5.32	499	398
	8'	4.07	5.26	307	392	4.08	5.26	308	392	4.16	5.32	315	397	4.29	5.37	326	400	4.47	5.47	342	409	5.26	5.48	402	409	6.12	5.54	469	414	7.13	5.72	549	427
8'	3'	3.41	1.46	46	122	0.42	1.49	48	124	0.42	1.49	42	124	0.45	1.52	52	126	0.50	1.55	57	128	0.88	1.52	86	128	1.23	1.53	113	129	1.59	1.51	140	128
	4'	0.56	1.75	69	143	0.57	1.78	72	145	0.58	1.78	71	146	0.62	1.78	75	146	0.67	1.81	79	148	1.11	1.78	112	147	1.59	1.81	150	150	2.00	1.79	181	149
	5'	0.72	2.04	98	165	0.75	2.07	101	167	0.78	2.07	102	167	0.97	2.12	112	172	1.41	2.10	150	170	1.97	2.09	194	171	2.51	2.09	236	171	3.01	2.08	275	172
	6'	1.78	3.13	192	243	1.78	3.12	193	243	1.84	3.16	198	246	1.90	3.20	202	249	1.96	3.24	206	252	2.62	3.19	305	248	3.27	3.19	385	248	3.93	3.19	459	248
	7'	1.28	2.62	172	208	1.29	2.62	173	208	1.34	2.65	176	210	1.39	2.67	179	212	1.50	2.73	188	217	2.25	2.66	245	212	2.99	2.65	300	212	3.65	2.64	354	210
	8'	0.93	1.98	85	158	0.95	2.02	88	161	1.00	2.07	93	164	1.06	2.11	98	167	1.43	2.07	126	166	1.79	2.09	154	167	2.14	2.06	180	166	2.54	2.11	215	171
	3'	1.18	2.36	115	186	1.20	2.40	119	189	1.21	2.42	118	189	1.25	2.40	121	190	1.31	2.44	127	192	1.75	2.41	159	191	2.24	2.46	198	195	2.65	2.43	238	193
	4'	1.44	2.75	151	214	1.47	2.78	155	217	1.50	2.83	158	217	1.51	2.78	156	218	1.62	2.86	167	224	2.15	2.83	205	221	2.71	2.83	249	222	3.25	2.83	291	223
	5'	1.78	3.15	192	243	1.78	3.12	193	243	1.84	3.16	198	246	1.90	3.20	202	249	1.96	3.24	206	252	2.62	3.19	256	249	3.27	3.19	305	249	3.89	3.19	351	250
	6'	2.19	3.51	239	271	2.19	3.51	239	271	2.25	3.54	244	274	2.31	3.58	247	277	2.44	3.65	258	283	3.17	3.56	314	276	3.92	3.56	368	277	4.56	3.56	419	277
	7'	2.77	3.51	293	271	2.78	3.51	239	271	2.25	3.54	244	274	2.31	3.58	247	277	2.44	3.65	258	283	3.17	3.56	314	276	3.92	3.56	368	277	4.56	3.56	419	277
	8'	1.52	2.54	128	197	1.55	2.59	132	200	1.61	2.65	138	205	1.68	2.70	145	206	2.05	2.66	172	206	2.42	2.69	201	209	2.76	2.65	227	207	3.18	2.72	262	212
	3'	1.87	3.02	166	232	1.90	3.07	171	236	1.95	3.07	174	236	2.02	3.12	180	240	2.46	3.08	212	236	2.96	3.14	252	243	3.46	3.11	282	241	3.85	3.18	321	247
	4'	2.23	3.49	210	267	2.27	3.54	214	271	2.30	3.54	216	271	2.31	3.54	216	271	2.44	3.64	228	279	2.96	3.60	266	276	3.53	3.60	310	277	4.08	3.61	352	278
	5'	2.67	3.97	258	303	2.68	3.97	259	303	2.74	4.01	265	306	2.81	4.06	271	310	2.89	4.06	279	310	3.54	4.06	324	310	4.19	4.06	374	311	4.81	4.07	420	312
	6'	3.18	4.44	313	338	3.19	4.44	313	338	3.25	4.49	319	341	3.33	4.54	323	345	3.48	4.63	335	352	4.19	4.52	389	344	4.93	4.52	444	345	5.57	4.46	491	341
	7'	3.87	4.95	332	376	3.86	4.95	333	376	3.95	5.00	338	379	3.99	4.99	338	379	4.16	5.08	351	386	5.02	5.03	415	383	5.93	5.02	486	382	6.77	5.01	551	382
	8'	4.48	5.45	387	411	4.49	5.43	388	411	4.51	5.43	388	411	4.68	5.52	400	418	4.87	5.60	412	425	5.79	5.50	482	417	6.80	5.49	560	417	7.74	5.48	630	417
	3'	5.11	5.91	447	447	5.16	5.91	447	448	5.18	5.91	446	447	5.36	6.00	458	454	5.55	6.08	468	461	6.62	5.97	554	452	7.75	5.96	639	452	8.81	5.92	723	449
	4'	5.84	6.01	494	450	5.82	6.03	415	450	5.10	6.09	420	454	5.14	6.09	421	454	5.33	6.20	435	463	6.19	6.14	493	458	7.10	6.14	570	458	7.94	6.13	645	457
	5'	6.57	6.11	541	493	6.53	6.11	477	493	5.76	6.61	477	493	5.94	6.72	492	501	6.15	6.82	505	509	7.05	6.70	573	500	8.07	6.70	651	499	9.01	6.69	730	497
10'	6'	6.49	7.19	544	536	6.50	7.19	544	536	6.52	7.18	543	536	6.72	7.29	557	544	6.93	7.40	569	552	7.99	7.26	653	541	9.11	7.25	737	541	10.17	7.22	821	538
	7'	7.33	7.76	615	579	7.33	7.76	615	578	7.35	7.76	614	578	7.56	7.87	626	587	7.89	8.02	648	598	9.07	7.89	741	588	10.23	7.81	829	582	11.44	7.78	919	580
	8'	8.22	8.34	692	621	8.23	8.34	691	621	8.25	8.39	689	625	8.49	8.43	707	628	8.72	8.54	717	636	10.02	8.40	818	626	11.49	8.37	927	624	12.77	8.34	1023	622
12'	3'	5.41	7.46	473	564	5.46	7.46	473	565	5.48	7.46	472	564	5.67	7.52	484	572	5.87	7.68	496	582	7.00	7.52	586	570	8.19	7.52	675	570	9.31	7.47	765	567
	4'	6.19	7.59	523	572	6.17	7.62	524	572	6.19	7.62	524	572	6.38	7.68	538	581	6.58	7.78	551	590	7.58	7.62	651	578	8.68	7.62	751	578	9.86	7.57	851	575
	5'	6.97	7.72	581	581	6.93	7.72	581	581	6.95	7.72	581	581	7.18	7.84	597	590	7.40	7.96	613	599	8.54	7.84	724	587	9.77	7.84	835	587	11.04	7.81	947	584
	6'	7.74	7.84	646	590	7.74	7.84	646	590	7.74	7.84



COORDINATE SYSTEM DETAILS

LINEAR UNIT: INTERNATIONAL FEET
GEODETIC DATUM: NAD 83 (CONUS)
VERTICAL DATUM: NAVD 88, REFERENCED FROM SWI CONTROL POINT 1000
SYSTEM: ARIZONA STATE PLANE, CENTRAL ZONE

PROJECTION:
TRANSVERSE MERCATOR

LATITUDE OF GRID ORIGIN:	31° 00' 00" N
LONGITUDE OF CENTRAL MERIDIAN:	111° 55' 00" W
NORTHING AT GRID ORIGIN:	0 FT
EASTING AT CENTRAL MERIDIAN:	70,000 FT
CENTRAL MERIDIAN SCALE FACTOR:	0.9999 (EXACT)

ALL MEASURED DISTANCES AND BEARINGS SHOWN HEREON ARE GRID VALUES BASED ON THE PRECEDING PROJECTION DEFINITION.

THE BASIS OF BEARINGS IS TRUE GEODEDIC NORTH; NOTE THAT THE MEASURED GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

ORTHOMETRIC HEIGHTS (ELEVATIONS) WERE TRANSFERRED TO THE SITE FROM SWI CONTROL POINT 1000 USING GPS WITH NGS GEOID MODEL "GEOID18". ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE PUBLISHED ELEVATION OF THIS STATION.

THE SURVEY WAS CONDUCTED USING GPS REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM. A PARTIAL LIST OF POINT COORDINATES FOR THIS SURVEY IS GIVEN BELOW (ADDITIONAL COORDINATES ARE AVAILABLE UPON REQUEST). LOCAL NETWORK ESTIMATES ARE GIVEN AT THE 95% CONFIDENCE LEVEL AND ARE BASED ON A LEAST-SQUARES ADJUSTMENT OF STATISTICALLY INDEPENDENT OBSERVATIONS.

POINT #1006 = FOUND 3" ALUMINUM CAP "ADOT ROW 88+45.00 LS 38862" ON THE NORTH PARCEL LINE OF APN: 111-01-012C AND HIGHWAY 180 ROW LINE
NORTHING = 1537855.625 FT
EASTING = 776996.208 FT
ELEVATION = 7006.18 FT

POINT #1020 = FOUND PLASTIC CAP "LS 18215" ON THE SOUTHEAST PARCEL CORNER OF APN: 111-01-012C
NORTHING = 1537722.398 FT
EASTING = 776758.242 FT
ELEVATION = 7002.86 FT

POINT #1021 = FOUND PLASTIC CAP "LS 18215" ON THE SOUTHWEST PARCEL CORNER OF APN: 111-01-012C
NORTHING = 1537876.269. FT
EASTING = 776664.164 FT
ELEVATION = 7003.63 FT

GRADING PLAN NOTES

ALL ELEVATIONS ARE TO FINISHED GRADE/TOP OF PAVEMENT/TOP SLAB

FFE	FINISHED FLOOR ELEVATION
FL	FLOWLINE
INV	PIPE INVERT
P	TOP OF PAVEMENT
RIM	GRATE OR GUTTER ELEVATION
TC	TOP OF CURB
C	CONCRETE
FG	FINISH GRADE
ME	MATCH EXISTING GRADE

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
1	STA: 0+03.52, 67.92' L	FG
2	STA: 0+42.89, 53.32' L	FG
3	STA: 0+12.59, 59.19' R	FG
4	STA: 0+50.12, 21.65' R	FG
5	STA: 0+53.36, 77.06' L	FG
6	STA: 1+16.35, 75.90' L	FG
7	STA: 1+53.37, 53.78' L	FG
8	STA: 1+94.23, 79.05' L	FG
9	STA: 2+67.70, 52.74' L	FG
10	STA: 2+05.73, 42.42' L	FG
11	STA: 1+14.21, 21.38' R	FG
12	STA: 1+46.26, 26.51' R	FG
13	STA: 1+68.12, 21.15' R	FG
14	STA: 2+75.02, 15.32' L	BW
15	STA: 2+75.38, 16.25' L	TW
16	STA: 2+80.99, 6.04' R	BW

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
17	STA: 2+80.98, 7.04' R	TW
18	STA: 2+97.73, 9.02' R	C
19	STA: 2+98.30, 10.00' R	TW
20	STA: 2+93.65, 8.03' L	C
21	STA: 2+94.16, 9.35' L	TW
22	STA: 0+52.23, 51.99' R	FG
23	STA: 1+38.45, 49.94' R	FG
24	STA: 1+93.36, 77.63' R	FG
25	STA: 1+75.60, 13.65' L	FG
26	STA: 2+74.96, 22.87' R	FG
27	STA: 2+74.90, 34.87' R	FG
28	STA: 3+11.63, 3.96' R	FG
29	STA: 3+20.03, 12.53' R	FG
30	STA: 3+30.66, 2.12' R	FG
31	STA: 3+22.26, 6.45' L	FG
32	STA: 3+49.67, 2.72' L	P

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
33	STA: 3+50.29, 14.70' L	P
34	STA: 3+48.91, 13.77' R	P
35	STA: 3+76.88, 15.12' R	P
36	STA: 3+82.17, 1.14' L	P
37	STA: 3+85.87, 15.56' R	P
38	STA: 4+57.78, 19.05' R	P
39	STA: 4+63.07, 2.78' R	P
40	STA: 4+66.77, 19.48' R	P
41	STA: 5+38.69, 22.97' R	P
42	STA: 5+40.32, 7.41' R	P
43	STA: 5+85.53, 11.33' R	C
44	STA: 5+85.53, 19.13' R	C
45	STA: 6+08.25, 7.07' L	C
46	STA: 6+00.49, 6.17' L	C
47	STA: 5+55.72, 17.56' L	P
48	STA: 5+55.68, 34.71' L	P

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
49	STA: 5+18.73, 36.50' L	P
50	STA: 5+17.32, 27.06' L	P
51	STA: 4+98.71, 29.01' L	P
52	STA: 5+00.36, 38.75' L	P
53	STA: 4+91.70, 40.47' L	P
54	STA: 4+89.35, 22.84' L	P
55	STA: 4+74.10, 24.95' L	P
56	STA: 4+76.10, 42.08' L	P
57	STA: 4+56.85, 45.05' L	P
58	STA: 4+55.14, 30.99' L	P
59	STA: 4+24.91, 35.38' L	P
60	STA: 4+23.59, 29.41' L	P
61	STA: 3+97.15, 35.72' L	P
62	STA: 3+84.83, 43.68' L	P
63	STA: 3+52.04, 48.18' L	P
64	STA: 6+89.78, 90.05' L	TC

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
65	STA: 6+91.81, 88.26' L	P
66	STA: 6+16.74, 12.00' L	P
67	STA: 5+93.91, 12.00' R	P
68	STA: 5+85.53, 35.23' R	P
69	STA: 5+85.53, 58.63' R	P
70	STA: 5+85.53, 295.91' R	SW
71	STA: 5+85.53, 296.12' R	SW
72	STA: 5+85.53, 54.87' R	SW
73	STA: 5+85.53, 54.51' R	SW
74	STA: 5+85.53, 108.08' R	P
75	STA: 5+85.53, 107.81' R	TC
76	STA: 5+85.53, 121.42' R	P
77	STA: 5+85.53, 122.69' R	TC
78	STA: 6+09.44, 58.31' R	P
79	STA: 6+26.25, 40.35' R	P
80	STA: 6+53.46, 12.00' R	P

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
81	STA: 6+76.93, 12.00' L	P
82	STA: 7+14.73, 45.55' L	TC
83	STA: 7+19.86, 57.38' L	P
84	STA: 6+11.24, 90.98' R	P
85	STA: 6+01.61, 82.40' R	P
86	STA: 7+26.88, 45.12' L	P
87	STA: 7+19.86, 50.03' L	P
88	STA: 7+19.86, 10.00' L	TW
89	STA: 7+19.86, 9.06' L	C
90	STA: 7+23.65, 8.23' R	C
91	STA: 7+23.58, 9.30' R	TW
92	STA: 7+40.23, 19.60' R	TW
93	STA: 7+40.76, 18.74' R	C
94	STA: 7+34.30, 19.07' L	C
95	STA: 7+33.77, 19.92' L	TW
96	STA: 7+65.05, 44.59' L	FG

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
97	STA: 7+90.94, 50.81' L	WEIR
98	STA: 7+90.35, 60.80' L	WEIR
99	STA: 7+97.40, 59.00' R	WEIR
100	STA: 7+96.81, 49.01' R	WEIR
101	STA: 8+69.87, 34.34' R	FG
102	STA: 8+27.65, 39.82' L	FG
103	STA: 8+29.49, 87.71' L	FG
104	STA: 8+46.49, 96.78' L	FG
105	STA: 9+64.74, 50.61' R	FG
106	STA: 10+24.72, 14.67' R	FG
107	STA: 10+11.35, 10.74' L	FG
108	STA: 9+74.16, 44.14' L	FG
109	STA: 9+18.86, 76.53' L	FG
110	STA: 9+50.70, 14.74' R	FG
111	STA: 9+21.02, 26.74' L	FG
112	STA: 9+37.28, 38.38' L	FG

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
113	STA: 9+64.87, 16.58' R	FG
114	STA: 8+89.62, 51.62' L	FG
115	STA: 8+46.49, 58.14' L	FG
116	STA: 8+46.49, 60.57' L	FG
117	STA: 8+37.68, 39.66' L	FG
118	STA: 8+84.91, 32.03' R	FG
119	STA: 8+57.42, 71.83' L	FG
120	STA: 8+65.32, 80.86' L	FG
121	STA: 8+46.49, 90.07' L	FG
122	STA: 8+46.49, 102.02' L	FG
123	STA: 7+84.69, 151.52' L	P
124	STA: 7+90.13, 162.35' L	P
125	STA: 7+87.89, 179.43' L	C
126	STA: 7+77.87, 185.57' L	TC
127	STA: 7+75.67, 186.92' L	P
128	STA: 7+72.96, 174.20' L	C

POINT TABLE

POINT #	STA/OFFSET	DESCRIPTION
129	STA: 7+67.04, 163.71' L	C
130	STA: 7+62.71, 160.61' L	P
131	STA: 7+64.57, 159.33' L	TC
132	STA: 7+96.27, 174.30' L	C
133	STA: 5+85.53, 296.49' R	P
134	STA: 5+85.53, 296.42' R	TC
135	STA: 7+19.86, 199.48' L	SW
136	STA: 7+21.84, 197.09' L	SW
137	STA: 7+26.39, 194.63' L	TC
138	STA: 7+28.63, 193.20' L	P
139	STA: 7+19.86, 157.01' L	SW
140	STA: 7+19.86, 154.39' L	SW
141	STA: 7+19.86, 140.27' L	SW
142	STA: 7+19.86, 143.42' L	SW

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

SURVEY CONTROL

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SCI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.8934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

REVISIONS

NO.	DESCRIPTION	DATE	BY

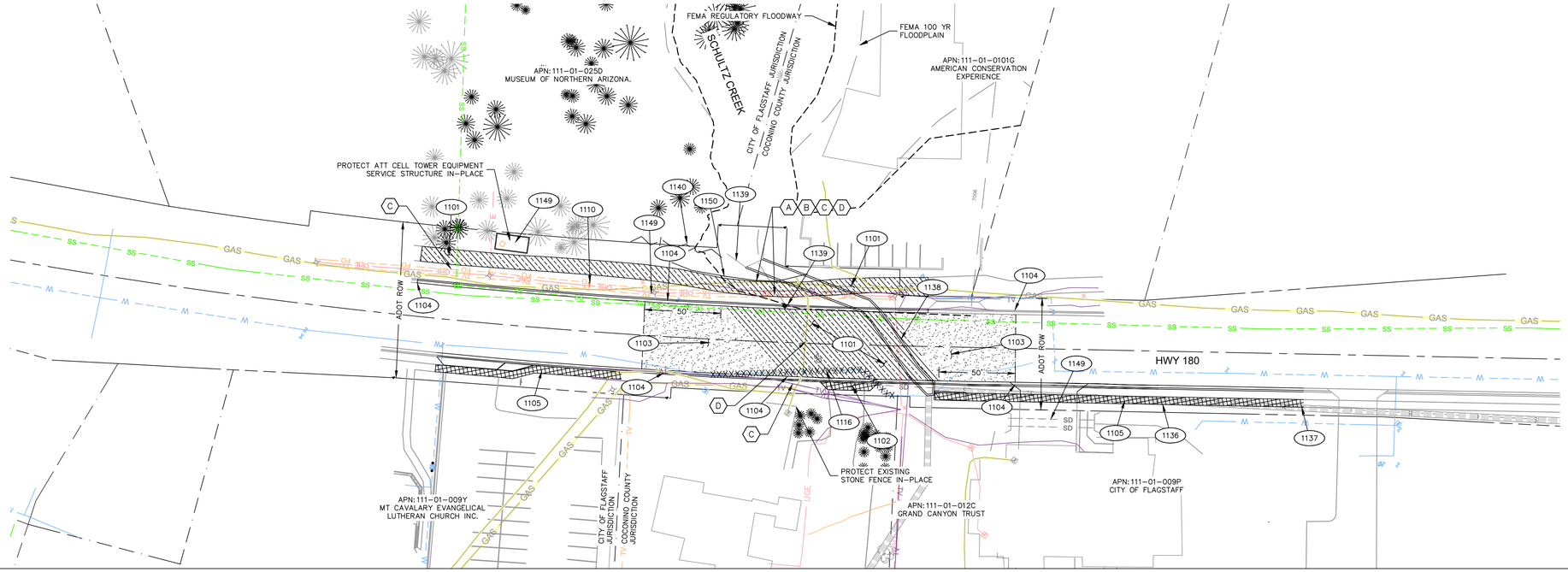
Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click Arizona811.com

DRAWING NO.
SC01

SHT NO. 10 OF 18

PLOTTED: Feb 16, 2024-4:42pm
FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 SURVEY CONTROL.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:43pm



ADOT DEMOLITION KEYNOTES

1101	883 SY	REMOVE & DISPOSE OF EXISTING ASPHALT PAVEMENT PER ADOT STANDARD SPEC. SECTION 202.
1102	270 SF	SAWCUT, REMOVE & DISPOSE OF EXISTING CONCRETE DRIVEWAY PER ADOT STANDARD SPEC. SECTION 202.
1103	667 SY	MILL 3" DEEP PER PLAN. MILLING OF ASPHALT CONCRETE SHALL CONFORM TO ADOT STANDARD SPEC. SECTION 202.
1104	1,001 LF	REMOVE AND DISPOSE OF EXISTING CONCRETE CURB AND GUTTER PER ADOT STANDARD SPEC. SECTION 202. CURB AND GUTTER SHALL BE REMOVED TO NEAREST JOINT.
1105	1,793 SF	REMOVE AND DISPOSE OF EXISTING SIDEWALK PER ADOT STANDARD SPEC. SECTION 202. SIDEWALK SHALL BE REMOVED TO NEAREST JOINT.
1110	1 EA	REMOVE & SALVAGE EXISTING SIGN PER ADOT STANDART SPEC. SECTION 202.
1116	131 LF	REMOVE AND DISPOSE OF EXISTING 20" WATERLINE PER ADOT STANDARD SPEC SECTION 202.
1135	1 EA	REMOVE AND DISPOSE OF EXISTING CONCRETE HEADWALL PER ADOT STANDARD SPEC SECTION 202.
1136	242 LF	REMOVE AND DISPOSE OF EXISTING 48" CMP PER ADOT STANDARD SPEC SECTION 202.
1137	1 EA	CUT, CAP AND ABANDON EXISTING 48" STORM DRAIN PER ADOT STANDARD SPEC SECTION 202.
1138	144 LF	REMOVE AND DISPOSE OF EXISTING CONCRETE BOX CULVERT PER ADOT STANDARD SPEC SECTION 202.
1139	1 EA	REMOVE AND DISPOSE OF EXISTING CATCH BASIN PER ADOT STANDARD SPEC SECTION 202.
1140	77 LF	REMOVE AND DISPOSE OF EXISTING WOOD FENCE PER ADOT STANDARD SPEC SECTION 202.
1149	1 LS	PROTECT IN PLACE
1150	90 LF	REMOVE EXISTING RAILING PER ADOT STANDARD SPEC. SECTION 202.

NON-CITY DRY UTILITY CONFLICTS

- (A) APS (POWER) – CONFLICT ANTICIPATED
- (B) ALTICE CABLE – CONFLICT ANTICIPATED
- (C) LUMEN – CONFLICT ANTICIPATED
- (D) UNISOURCE (GAS) – CONFLICT ANTICIPATED

SCALE 1" : 40'
0 20 40

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

ADOT DEMOLITION PLAN

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

REVISIONS

NO.	DESCRIPTION	DATE	BY

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.8934 fax
www.ardurra.com

SWI
Shephard Wesnitzer, Inc.
An ARDURRA Company

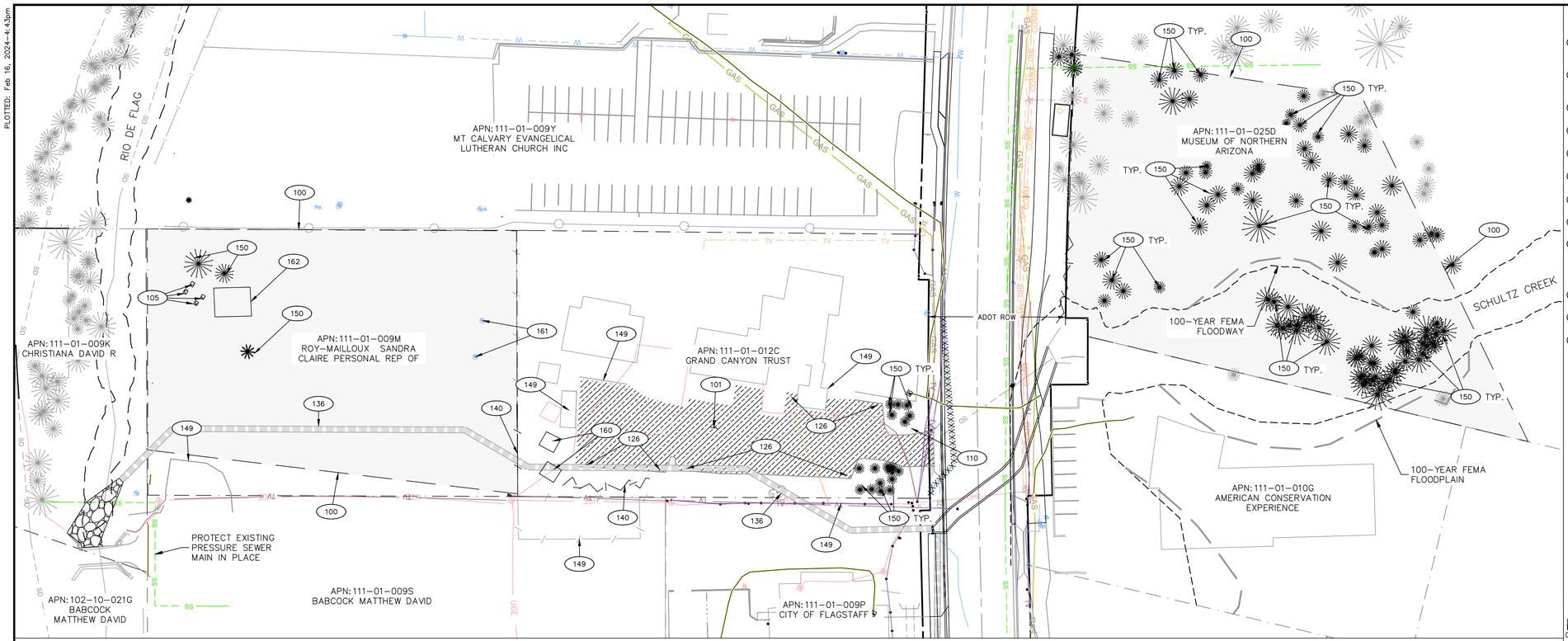
Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

DRAWING NO.
ADM01

SHT NO. 11 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 ADOT DEMO.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:43pm



CITY DEMOLITION KEYNOTES

100	2.11 AC	SITE GRADING. CLEAR AND GRUB SITE. COMPLETE ROUGH GRADING AS REQUIRED TO CONSTRUCT THE PROJECT.
101	1,218 SY	REMOVE EXISTING AC PAVEMENT PER M.A.G. SPECIFICATION 336 & 350. SAWCUT INCLUDED IN COST OF AC REMOVAL.
105	27 SF	REMOVE AND DISPOSE OF EXISTING CONCRETE SLAB PER M.A.G. SPECIFICATION 336 & 350.
110	1 EA	REMOVE AND SALVAGE EXISTING SIGN PER M.A.G. SPECIFICATION 336 & 350.
126	23 EA	REMOVE AND DISPOSE OF EXISTING CONCRETE CURB STOP PER M.A.G. SPECIFICATION 336 & 350.
136	574 LF	REMOVE AND DISPOSE OF EXISTING 48" STORM DRAIN PER M.A.G. SPECIFICATION 336 & 350.
140	141 LF	REMOVE AND SALVAGE EXISTING FENCE PER M.A.G. SPECIFICATION 336 & 350.
149	— NPI	PROTECT IN PLACE.
150	123 EA	REMOVE AND DISPOSE OF EXISTING TREE AND ROOTBALL PER M.A.G. SPECS. 336 & 350. CONTRACTOR TO COORDINATE WITH THE CITY OF FLAGSTAFF ON LOCATION TO REMOVE TREES FROM SITE THE SAME DAY THEY ARE DOWNED.
160	2 EA	REMOVE AND RELOCATE EXISTING SOLAR INFRASTRUCTURE AS NEEDED.
161	— NPI	PROTECT EXISTING SPIGOTS IN PLACE. CONTRACTOR TO FIELD VERIFY IF REMOVAL IS REQUIRED.
162	1 LS	REMOVE AND DISPOSE OF EXISTING WOOD PILE.

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

CITY OF FLAGSTAFF AND COCONINO COUNTY DEMOLITION PLAN

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

REVISIONS

NO.	DESCRIPTION	DATE	BY

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.6934 fax
www.ardurra.com

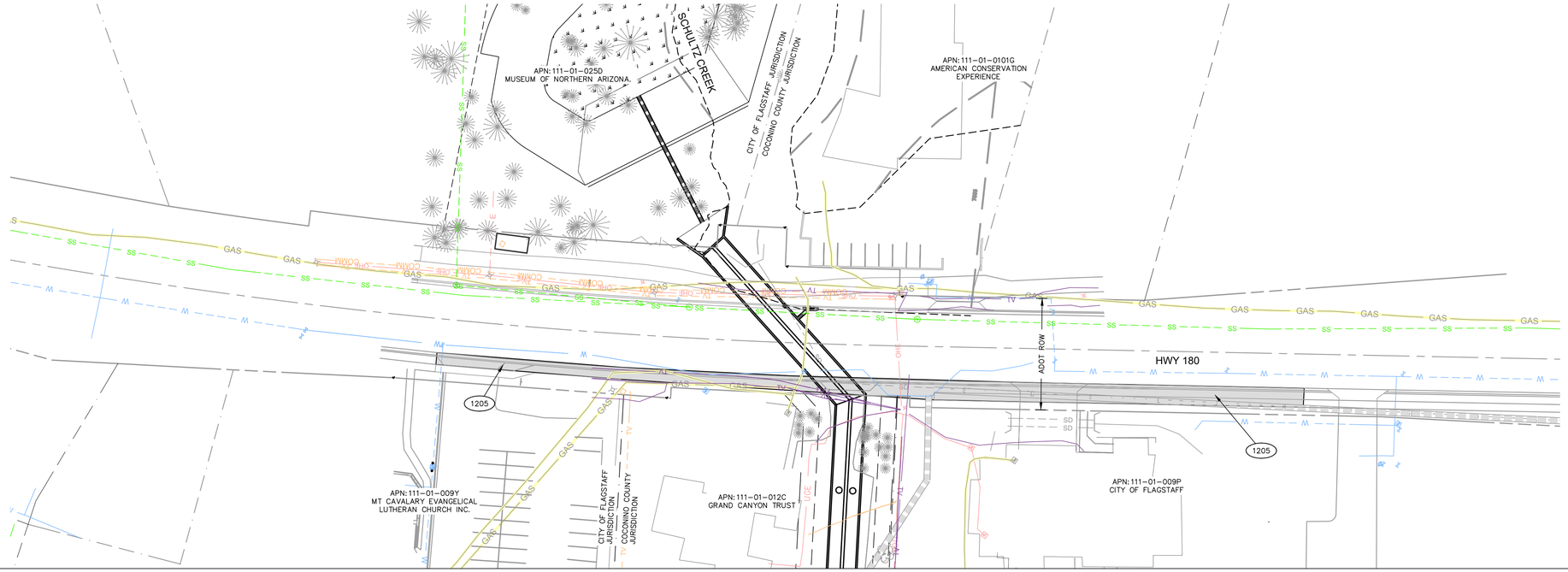
SWI
Shephard Wesnitzer, Inc.
An ARDURRA Company

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

DRAWING NO.
CDM01

SHT NO. 12
OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 CITY DEMO.DWG HSCHNOEBELEN



TRAFFIC CONTROL KEYNOTES

1205	671 SY	CONSTRUCT ASPHALT PAVEMENT SECTION FOR ADOT TEMPORARY SECTION PER DETAIL "D" ON SHEET DT01.

NOTES:
1) PLEASE REFER TO TEMPORARY TRAFFIC CONTROL PLAN FOR SIGNAGE, TEMPORARY ACCESS, AND PHASING DETAILS.

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

TEMPORARY TRAVEL LANE

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SCI

REVISIONS

NO.	DESCRIPTION	DATE	BY

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.8934 fax
www.ardurra.com

SWI
Shephard Wesnitzer, Inc.
An ARDURRA Company

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click Arizona811.com

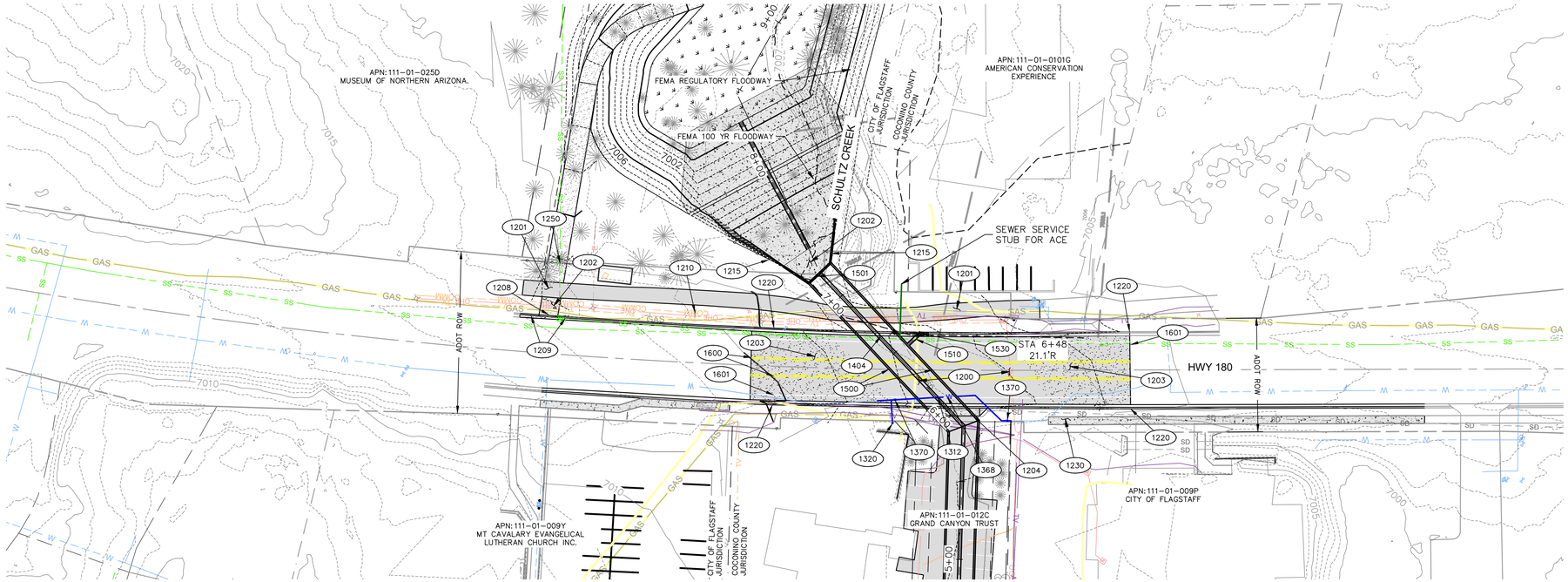
DRAWING NO.
TT01

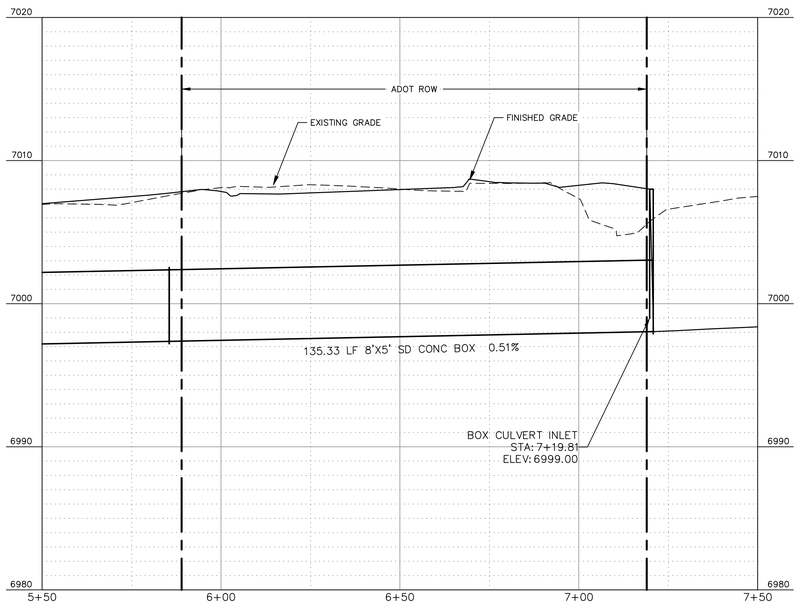
SHT NO. 13 OF 18

PLOTTED: Feb 16, 2024-4:43pm

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 TRAFFIC CONTROL PLAN.DWG HSCHNOEBELEN

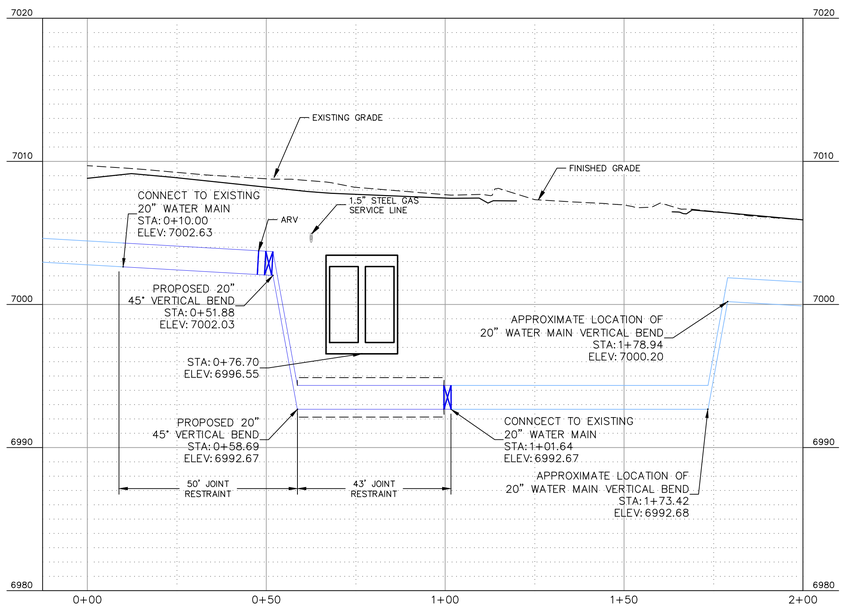
PLOTTED: Feb 16, 2024-4:44pm





BOX CULVERT PROFILE - ADOT ROW

PROFILE SCALE
H: 1" = 20'
V: 1" = 5'

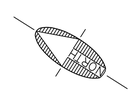


WATERLINE VERTICAL REALIGNMENT PROFILE

PROFILE SCALE
H: 1" = 20'
V: 1" = 5'

ADOT IMPROVEMENT KEYNOTES

1200	441 SY	CONSTRUCT ASPHALT PAVEMENT SECTION FOR ADOT RIGHT-OF-WAY PER DETAIL "A" ON SHEET DT01.
1201	194 SY	CONSTRUCT BIKE PATH ASPHALT PAVEMENT SECTION PER C.O.F. STD. DTL. 10-09-010 ON SHEET DT02 OR MATCH EXISTING SECTION, WHICHEVER IS GREATER.
1202	174 SF	CONSTRUCT CONCRETE SECTION FOR MAINTENANCE ACCESS PER DETAIL "B" ON SHEET DT01.
1203	495 SY	CONSTRUCT 3" ASPHALT PAVEMENT OVERLAY PER ADOT SPECIFICATIONS SECTION 413.
1204	1 EA	CONSTRUCT CONCRETE DRIVEWAY PER ADOT STD. DTL. C-06.10.
1208	12 LF	INSTALL MOUNTABLE CURB AND GUTTER (TYPE F) PER M.A.G. STD. DTL. 220-2. MODIFY TRANSITION FOR ADOT CURB & GUTTER TYPE E PER ADOT STD. DTL. C5.10 ON SHEET DT04.
1209	2 EA	CONSTRUCT CURB TRANSITION PER M.A.G. STD. DTL. 220-2 (TYPE F – A). MODIFY TRANSITION FOR ADOT CURB & GUTTER TYPE D PER ADOT STD. DTL. C5.10 ON SHEET DT04.
1210	1 EA	INSTALL SALVAGED "CENTER LANE ONLY" (X-R3-9A) SIGN ON NEW SIGN POST PER M.A.G. STD. DTL. 131 AND PLACEMENT PER MUTCD SECTION 2A AND COORDINATE WITH ADOT. CONTACT ADOT SIGN AND STRIPING AT 928-527-0899.
1215	90 LF	INSTALL SAFETY RAIL PER M.A.G. STD. DETAIL 145.
1220	458 LF	CONSTRUCT VERTICAL CURB AND GUTTER PER ADOT STD. DTL. C-05.10 (TYPE D) ON SHEET DT04. FOR H DIMENSION MATCH EXISTING ADJACENT H DIMENSION. INCLUDE 3" OF ABC UNDER THESE STRUCTURES WITHIN ADOT RIGHT-OF-WAY.
1230	100 SF	CONSTRUCT CONCRETE SIDEWALK PER ADOT STD. DTL. C-05.20 ON SHEET DT05. INCLUDE 3" OF ABC UNDER THIS STRUCTURE WITHIN ADOT RIGHT-OF-WAY.
1250	1 EA	INSTALL 12' ACCESS GATE ACROSS RAMP PER M.A.G. STD. DETAIL 145. GATE MUST BE MASH COMPLIANT. MATCH EXISTING GUARDRAIL COLOR.
1312	92 LF	CONSTRUCT 20"DIP CLASS 250 RESTRAINED WATER MAIN VERTICAL REALIGNMENT COMPLETE AND IN PLACE SIMILAR TO MAG STD DTL 370 WITH 4-45-DEGREE BENDS AND PER PROFILE ON THIS SHEET. ALL BENDS SHALL BE RESTRAINED PER MAG SPEC 610, 750, MAG STD DTL 303, AND AS MODIFIED PER COF ADDENDUMS TO MAG. DEFLECT WATERLINE TO PROVIDE 2' MIN. VERTICAL SEPARATION FROM OTHER EXISTING OR PROPOSED UTILITIES. TRENCH EXCAVATION COMPACTION PER ADOT STD. DTL. C-07.06 TYPE 'G' ON SHEET DT05, SLURRY BACKFILL PER ADOT STD. SPEC 501, PIPE BEDDING PER ADOT STD. SPEC 501-3.02. CONTRACTOR TO FULLY RESTRAIN EACH JOINT PER M.A.G. STD. DTL. 303.
1320	1 EA	INSTALL 1" AIR RELEASE VALVE PER C.O.F. STD. DTL. 9-03-101 ON SHEET DT02.
1368	30 LF	INSTALL 32" ø STEEL CASING PER DETAIL SB-49 ON SHEET DT02. USE CASING SPACERS PER C.O.F. STD. DTL. 9-06-010 ON SHEET DT02.
1370	2 EA	INSTALL 20" BUTTERFLY VALVE WITH CLASS 250 EPOXY-COATED RESILIENT SEAT (INCLUDING VALVE BOX AND COVER) PER MAG STD DTL 340 AND MAG SPEC 610. ADJUST BOX TO FINISH GRADE PER COF STD DTL 9-03-060 AND 9-03-62 ON DWG DT02. THRUST BLOCK PER MAG STD DTL 301 AND AS MODIFIED BY COF REVISIONS TO MAG SECTION 13-21-002-0380.
1404	40 EA	INSTALL SEWER PIPE ENCASEMENT ON EXISTING SEWER LINE PER M.A.G. STD. DTL. 404.
1500	135 LF	INSTALL DOUBLE 8'X5' PRECAST BOX CULVERT PER ADOT STD. DETAIL SD 6.02-1 ON SHEET DT04 OR PRECSAT BOX CULVERT PER ADOT STD DETAIL SD 6.20-1 THROUGH 6.20-5 ON SHEET DT05 AND DT06.
1501	1 EA	INSTALL INLET HEADWALL & WING WALLS WITH A 30° SKEW PER ADOT STD. DETAIL SD 6.01-1 THROUGH 6.01-4 AND SD 6.08-3 ON SHEET DT03.
1510	11 LF	INSTALL 24" CMP. TRENCH EXCAVATION BACKFILL, AND COMPACTION PER ADOT SPECIFICATIONS
1530	1 EA	INSTALL CATCH BASIN (TYPE 1) PER ADOT STD. DTL. C-15.10.
1600	458 LF	INSTALL 6" YELLOW SOLID / 6" YELLOW BROKEN STRIPE (10' SEGMENT WITH 30' GAPS), PER ADOT DWG. M-2 ON SHEET DT04. HORIZONTAL PLACEMENT AS SHOWN ON PLANS. PAVEMENT MARKINGS WITHIN ADOT ROW SHALL BE ACCORDING TO ADOT SPECIFICATIONS SECTION 709 (EPOXY).
1601	458 LF	INSTALL 12" SINGLE WHITE LANE STRIPING IN ACCORDANCE WITH ADOT STANDARD SPECIFICATIONS 709 (EPOXY).



PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

ADOT IMPROVEMENT PLAN

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.8934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

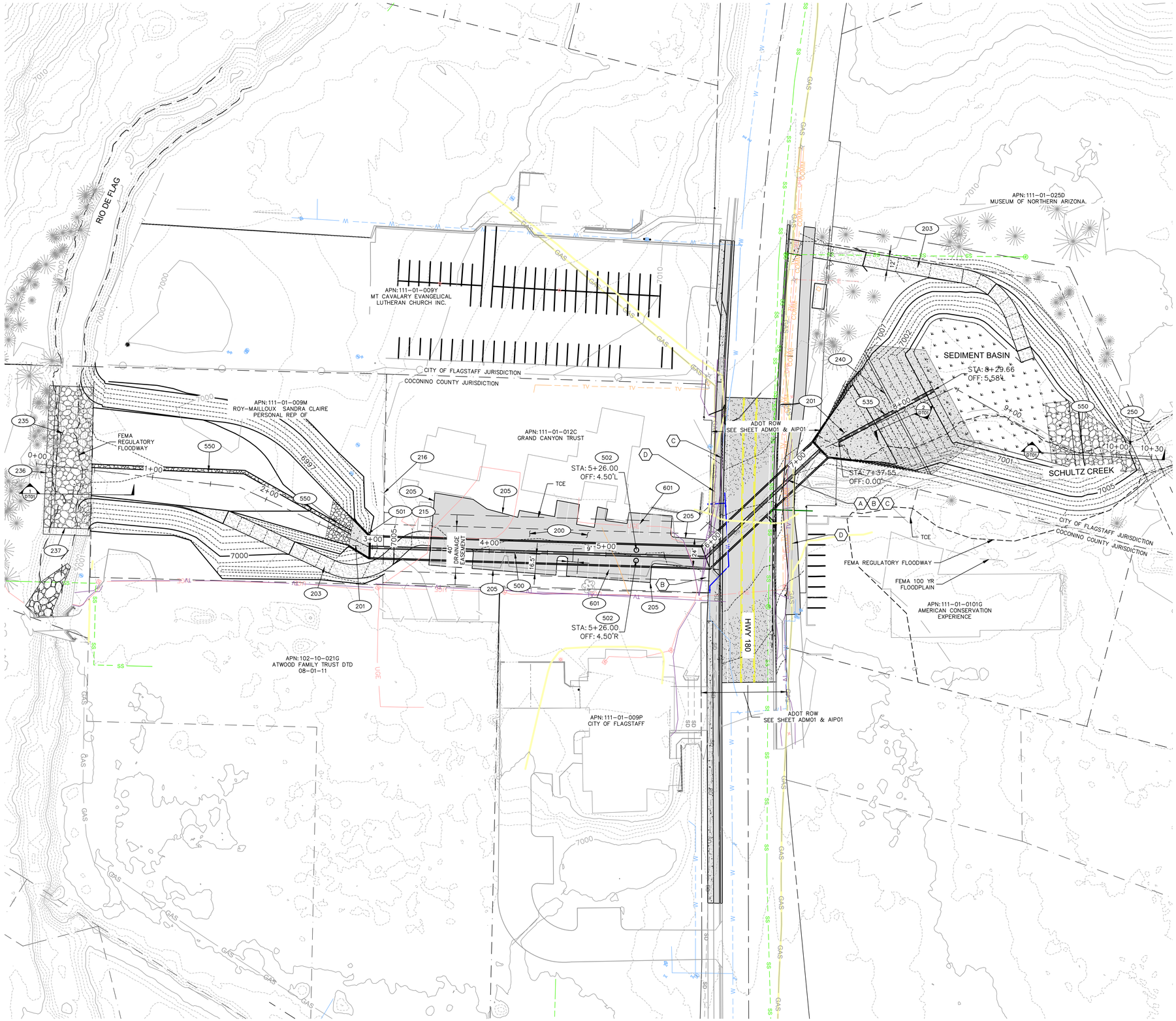
Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

DRAWING NO.
AIP01

SHT NO. 14 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 ADOT IMPROVEMENTS.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024–4:45pm



SCALE 1" : 40'
0 20 40

CITY IMPROVEMENT KEYNOTES

200	1,288 SY	CONSTRUCT ASPHALT PAVEMENT PER C.O.F. STD. DTL. 10–09–010.
201	509 SY	CONSTRUCT CONCRETE STRUCTURAL SECTION PER DETAIL "B" ON SHEET DT01.
203	591 SY	CONSTRUCT 6" RECLAIMED ASPHALT MILLING FOR MAINTENANCE ACCESS PER DETAIL "C" ON SHEET DT01.
205	715 LF	CONSTRUCT ASPHALT THICKENED EDGE PER M.A.G. STD. DTL. 201, TYPE 'A'.
215	60 LF	INSTALL SAFETY RAIL PER M.A.G. STD. DETAIL 145.
216	30 LF	REINSTALL OR REPLACE EXISTING WOOD FENCE CONTRACTOR TO COORDINATE WITH THE PROPERTY OWNER FOR LOCATION.
235	521 SY	INSTALL 12" GABION MATTRESS PER SECTION 1 ON SHEET DT01.
236	0 LF	INSTALL 6 FT TALL 3X3 GABION WALL PER SECTION 1 ON SHEET DT01.
237	40 LF	INSTALL CUTOFF WALL PER SECTION 1.1 ON SHEET DT01.
240	1 EA	INSTALL CONCRETE WEIR PER CROSS SECTION DETAIL 2 SHEET DT01.
250	8 EA	INSTALL BOLLARDS PER C.O.F. STD. DTL. 13–03–014. 10' SPACING.
500	288 LF	INSTALL DOUBLE 8'X5' PRECAST BOX CULVERT PER ADOT STD. DETAIL SD 6.02–1 ON SHEET DT02. SHORING PER DETAIL "F" ON SHEET DT01.
501	1 EA	INSTALL OUTLET HEADWALL & WING WALLS WITH A 30° SKEW PER ADOT STD. DETAIL SD 6.01–1 THROUGH 6.01–4 AND SD 6.08–3 ON SHEET DT03.
502	2 EA	INSTALL 30" ACCESS OPENING AND COLLAR PER M.A.G. STD. DTL. 522 AND PER MANUFACTURER'S RECOMMENDATION AND DETAILS.
535	92 LF	INSTALL 30" CMP. TRENCH EXCAVATION BACKFILL, AND COMPACTION PER COF SPECIFICATIONS.
550	3,190 SF	INSTALL ROCK RIP–RAP PER PLANS WITH A MAX SLOPE =4:1. ROCK RIP–RAP SHALL HAVE A MINIMUM D50 MIN=12" AND PLACED TO A DEPTH OF 24'.
551	643 SF	INSTALL ROCK RIP–RAP LOW FLOW CHANNEL WITH A MINIMUM D50 MIN=12" AND PLACED TO A DEPTH OF 24'.
601	347 LF	PAINT 4" SOLID WHITE PARKING STRIPING.

NON-CITY DRY UTILITY CONFLICTS

- (A) APS (POWER) – CONFLICT ANTICIPATED
- (B) ALTICE CABLE – CONFLICT ANTICIPATED
- (C) LUMEN – CONFLICT ANTICIPATED
- (D) UNISOURCE (GAS) – CONFLICT ANTICIPATED

FLAGSTAFF
ARIZONA

HIGHWAY 180 CROSSING

CITY OF FLAGSTAFF AND COCONINO COUNTY IMPROVEMENT PLAN

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SCI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.6934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA company

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click Arizona811.com

DRAWING NO.
CIP01

SHT NO. 15 OF 18

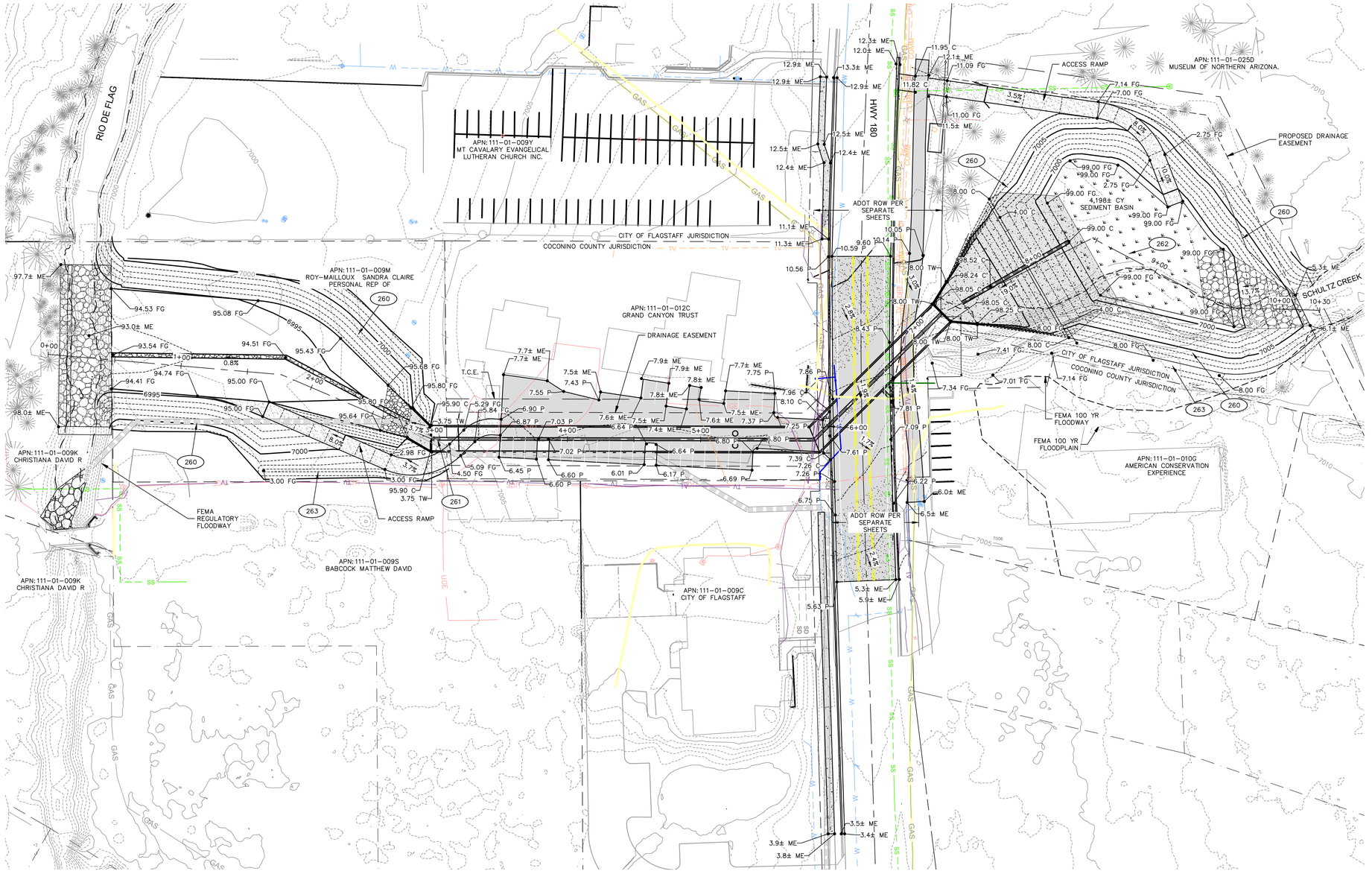
FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 IMPROVEMENT PLANS.DWG HSCHNOEBELEN

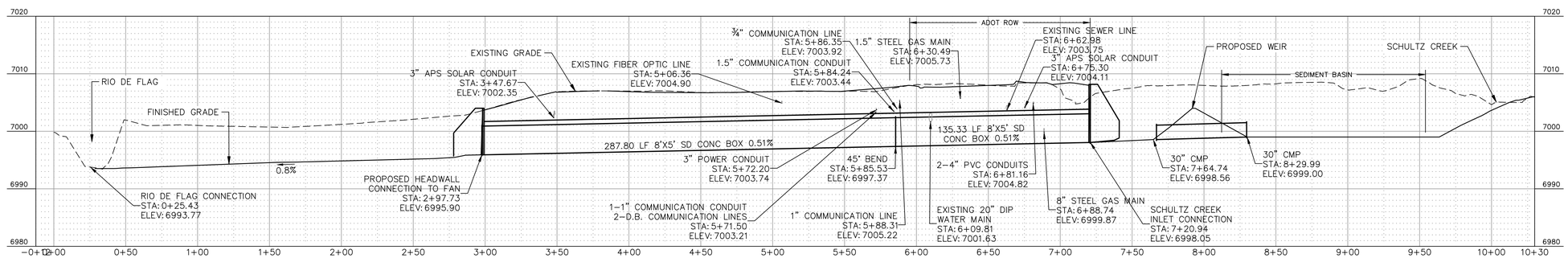
Xref \\Vr-fileflag\data\Projects\2023\223008\Drawings\XREF\Dwg_Status.dwg

PLOTTED: Feb 16, 2024–4:46pm

GRADING & DRAINAGE KEYNOTES

260	1 LS	CONSTRUCT CUT/FILL SLOPE (4' HORIZONTAL TO 1' VERTICAL) TO DAYLIGHT.
261	1 LS	CONSTRUCT CUT/FILL SLOPE (3' HORIZONTAL TO 1' VERTICAL) TO DAYLIGHT..
262	4,198 CY	CONSTRUCT SEDIMENT BASIN.
263	1 LS	CONSTRUCT BERM COMPACTED TO 95% DENSITY PER ASTM D–698.





PROFILE SCALE
H: 1" = 40'
V: 1" = 10'

SCALE 1" : 40'
0 20 40

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING OR RECORDING

FLAGSTAFF
ARIZONA

HIGHWAY 180 CROSSING

GRADING & DRAINAGE PLAN

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS, KMF
CHECKED:	SCI

NO.	DESCRIPTION	DATE	BY
REVISIONS			

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.6934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA Company

Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

DRAWING NO.
GD01

SHT NO. 16 OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 GRADING & DRAINAGE.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024-4:47pm

MANAGEMENT STRATEGIES

1. CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE. MUD AND DEBRIS SHALL BE WASHED FROM ALL CONSTRUCTION VEHICLES AND EQUIPMENT BEFORE LEAVING THE SITE. A WATER TANK TRUCK WILL BE USED IF PUBLIC WATER IS UNAVAILABLE.

3. INSTALL PERIMETER CONTROLS AS SHOWN TO INCLUDE DIVERSION DIKES AND SILT FENCE. SEDIMENT TRAPPING MEASURES SHALL BE INSTALLED AS A FIRST STEP IN GRADING

4. GRADING OPERATIONS MAY COMMENCE ONCE PERIMETER CONTROLS, DIVERSIONS AND TRAPPING MEASURES ARE INSTALLED.

5. FILL SLOPE SURFACES SHALL BE LEFT IN ROUGHENED CONDITION TO REDUCE SHEET AND RILL EROSION OF THE SLOPES. THE CONTRACTOR SHALL REDIRECT CONCENTRATED FLOW AWAY FROM THE FILL SLOPES BY INSTALLING EARTH BERMS AND DIRECT THE RUN-OFF TO STABILIZED OUTLET OR SEDIMENT BASIN AND TRAPPING DEVICES.

6. TEMPORARY SEEDING, SODDING OR OTHER STABILIZATION METHODS WILL FOLLOW IMMEDIATELY AFTER GRADING.

7. ONCE THE UTILITIES, CURB AND GUTTER, AND THE ROADS ARE BROUGHT NEAR FINAL GRADE IN A MANNER SUCH THAT STORM SEWER SYSTEMS ARE FUNCTIONAL INSTALL THE STANDARD INLET PROTECTION AROUND THE STRUCTURES AND SILT FENCE ALONG THE SITE PERIMETER.

8. FOR VEGETATIVE STABILIZATION OF ALL DENUDED AREAS SEE EROSION CONTROL MEASURES AND VEGETATIVE PRACTICES.

9. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

10. AFTER ACHIEVING FINAL STABILIZATION, THE TEMPORARY EROSION & SILTATION CONTROLS WILL BE CLEANED UP AND REMOVED FROM THE SITE.

GENERAL LAND CONSERVATION NOTES

1. VEGETATED STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRECIPITATION OR IRRIGATION IS AVAILABLE.

2. ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE THOSE REQUIRED FOR THE PERIMETER CONTROLS.

3. DURING CONSTRUCTION, ALL STORM SEWER INLETS WILL BE PROTECTED BY INLET PROTECTION DEVICES, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.

4. ANY DISTURBED AREA NOT COVERED BY NOTE #1 ABOVE AND NOT PAVED, SODDED OR BUILT UPON IS TO BE MULCHED WITH HAY OR STRAW MULCH AT THE RATE OF TWO TONS PER ACRE AND OVER-SEEDED AS SOON AS PRECIPITATION OR IRRIGATION IS AVAILABLE.

5. AT THE COMPLETION OF CONSTRUCTION PROJECTS, AND PRIOR TO THE RELEASE OF THE BOND, ALL TEMPORARY SILTATION AND EROSION CONTROLS SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED.

6. TEMPORARY DIVERSIONS, SEEDED AND MULCHED OR SILT FENCE AND OTHER CONTROL MEASURES AS NECESSARY ARE TO BE PLACED AS INDICATED ON THE DRAWINGS PRIOR TO OR THE FIRST STEP IN EXCAVATION.

7. WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES. NO MATERIAL IS TO BE PLACED IN STREAMBEDS. NO STOCKPILE IS PERMITTED. WHERE SOIL IS PLACED ON DOWNHILL SIDE OF TRENCHES, IT IS TO BE BACK-SLOPE TO DRAIN TOWARD THE TRENCH. WHEN NECESSARY TO DEWATER THE TRENCHES, THE PUMP DISCHARGE HOSE MUST OUTLET IN A STABILIZED AREA TO AN EXISTING STORM INLET OR DITCH IF NO INLET AVAILABLE.

EROSION & SEDIMENT CONTROL STANDARD NOTES

1. THE CONTRACTOR MUST NOTIFY BLUE STAKE AT 1-800-STAKE-IT AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH APPLICABLE COUNTY ORDINANCES AND POLICIES.

2. ALL EROSION CONTROL MEASURES SHOWN ON THE APPROVED PLAN MUST BE IN PLACE AND INSPECTED AND APPROVED BY THE PRIOR TO CLEARING, STRIPPING OF TOPSOIL OR GRADING.

3. THE CONTRACTOR SHALL POST A SIGN AT THE MAIN ENTRANCE TO THE CONSTRUCTION SITE CONTAINING THE AZPDES AUTHORIZATION NUMBER AND/OR COPY OF NOTICE OF INTENT AUTHORIZATION, CONSTRUCTION SITE OPERATOR CONTACT NAME AND TELEPHONE NUMBER, A BRIEF PROJECT DESCRIPTION, AND THE LOCATION OF THE APPROVED STORM WATER POLLUTION PREVENTION PLAN. THE SIGN SHALL ALSO DISPLAY THE NAME, CONTACT INFORMATION, AND QUALIFICATIONS OF THE PERSONNEL PERFORMING ROUTINE INSPECTIONS.

4. THE CONTRACTOR'S REPRESENTATIVE IS RESPONSIBLE FOR THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION.

5. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL COMPLETE AND ADEQUATE STABILIZATION IS ACHIEVED.

6. WATER MUST BE PUMPED INTO AN APPROVED FILTERING DEVICE DURING DEWATERING OPERATIONS.

7. THE CONTRACTOR'S REPRESENTATIVE SHALL INSPECT AND DOCUMENT ALL EROSION AND SEDIMENT CONTROL MEASURES DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:

A. GRAVEL OUTLETS WILL BE CHECKED REGULARLY FOR SEDIMENT BUILDUP WHICH WILL PREVENT DRAINAGE. IF THE GRAVEL IS CLOGGED BY SEDIMENT, IT SHALL BE REMOVED AND CLEANED OR REPLACED.

B. SILT FENCE AND SEDIMENT BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.

C. SEEDED AND SODDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED OR SODDED AS NEEDED.

8. INSPECTION FORMS SHALL BE COMPLETED BY THE CONTRACTOR'S INSPECTOR WITH THE MINIMUM FOLLOWING INFORMATION: INSPECTION DATE, TITLE AND QUALIFICATIONS OF EACH INSPECTOR, WEATHER INFORMATION FOR PERIOD SINCE LAST INSPECTION, LOCATION OF DISCHARGE OF SEDIMENT OR OTHER POLLUTANTS, LIST OF BMPS THAT NEED TO BE MAINTAINED OR INADEQUATE, LIST ADDITIONAL NEEDED BMPS, CORRECTIVE ACTION REQUIRED, SOURCES OF ALL NON-STORMWATER AND CONTROL MEASURES, DATES WHEN MAJOR GRADING ACTIONS OCCURRED, POLLUTANT DISCHARGE STATUS OF STORAGE AREAS, AND DATES WHEN CONSTRUCTION ACTIVITIES CEASED.

9. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING INSPECTION RECORDS FOR AT LEAST THREE (3) YEARS FOLLOWING THE COMPLETION OF PROJECT.

10. THE SWPPP SHALL BE MODIFIED BY THE CONTRACTOR WITHIN 7 CALENDAR DAYS FOLLOWING THE INSPECTION OF AN INADEQUATE BMP WHEN NEEDED. BMPS SHALL BE MODIFIED OR ADDED AS SOON AS PRACTICABLE AFTER THE BMP HAS BEEN DETERMINED INADEQUATE.

11. PERMANENT SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED AND ALL WORK COMPLETED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN UNDISTURBED FOR LONGER THAN FOURTEEN (14) DAYS. ROADS AND PARKING AREAS SHALL BE STABILIZED AS SOON AS PRECIPITATION OR IRRIGATION IS AVAILABLE.

12. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WILL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION AND AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, AS AUTHORIZED BY THE INSPECTORS. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES WILL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

13. WHEN SEDIMENT IS TRANSPORTED ONTO A PAVED ROAD SURFACE, THE ROAD WILL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT WILL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING WILL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.

14. AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.

15. FLOOD PLAIN LIMITS SHALL BE CLEARLY MARKED IN THE FIELD BY FLAGS, SIGNS, ETC.

16. TREE SAVE AREAS SHALL BE CLEARLY MARKED IN THE FIELD BY ORANGE SAFETY FENCE.

17. ORANGE SAFETY FENCE MUST BE INSTALLED AROUND ALL SILT TRAPS AND SEDIMENT BASINS.

18. SEEDING AND MULCHING SHALL BE IN ACCORDANCE WITH THE STANDARDS.

19. THE SWPPP SHALL BE MODIFIED BY THE CONTRACTOR WITHIN 15 BUSINESS DAYS FOLLOWING ANY CHANGE IN DESIGN, CONSTRUCTION OPERATION, OR MAINTENANCE THAT HAS A SIGNIFICANT EFFECT ON DISCHARGE OR NOT PREVIOUSLY ASSESSED IN THE SWPPP.

20. THE SWPPP SHALL BE MODIFIED BY THE CONTRACTOR WITHIN 15 BUSINESS DAYS IF IT IS DETERMINED THAT DISCHARGE IS CAUSING OR CONTRIBUTING TO WATER QUALITY EXCEEDENCES OR THE SWPPP IS INEFFECTIVE.

EROSION CONTROL MEASURES

ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS ESTABLISHED HEREIN.

STRUCTURAL PRACTICES

1. SILT FENCE BARRIER: SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED DOWNSLOPE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT LADEN RUNOFF FROM SHEET FLOW AS INDICATED ON THE PLANS.

2. A TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED WHERE THE ACCESS AREA INTERSECTS WITH EXISTING ROADS DURING MUDDY CONDITIONS. DRIVERS OF CONSTRUCTION VEHICLES WILL BE REQUIRED TO WASH THEIR WHEELS BEFORE ENTERING THE HIGHWAY.

3. STORM DRAIN INLET & SPILLWAY PROTECTION: ALL STORM SEWER INLETS AND SPILLWAYS SHALL BE PROTECTED DURING CONSTRUCTION. SEDIMENT-LADEN WATER SHALL BE FILTERED BEFORE ENTERING THE STORM SEWER INLETS AND CULVERTS.

VEGETATIVE PRACTICES

1. TOP SOILING (STOCKPILE) TOPSOIL WILL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS ARE TO BE STABILIZED WITH TEMPORARY VEGETATION. PRIOR TO LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION & SEDIMENT PLAN TO THE CITY OF FLAGSTAFF COVERING THE STOCKPILE AREA WHICH MAY HAVE TO BE APPROVED BY THE PLAN APPROVING AUTHORITY BEFORE ANY ACTIVITY COMMENCES.

2. TEMPORARY SEEDING ALL DENUDED AREAS WHICH WILL BE LEFT DORMANT FOR EXTENDED PERIODS OF TIME SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED.

3. GRASS AREAS THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPLACED WITH SOD BY THE CONTRACTOR. THE SOD GRASS TYPE SHALL MATCH THE EXISTING AND SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL THE SOD IS STABILIZED.

GENERAL NOTES FOR EROSION CONTROL

1. A STANDBY CREW FOR EMERGENCY WORK SHALL BE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES OR TO REPAIR ANY DAMAGED EROSION CONTROL MEASURES, ESPECIALLY WHEN RAIN IS IMMINENT.

2. DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT APPROVAL OF THE INSPECTOR.

3. ALL PROTECTIVE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH DAY.

4. AFTER A RAIN STORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS AND DESILTING BASINS. ANY GRADED SLOPE SURFACE PROTECTION MEASURE DAMAGED DURING A RAIN STORM SHALL BE IMMEDIATELY REPAIRED.

5. FILL SLOPES AT THE CONSTRUCTION SITE PERIMETER MUST DRAIN AWAY FROM THE TOPS OF THE SLOPES AT THE END OF EACH DAY.

6. A COPY OF THE PROJECTS STORM WATER POLLUTION PROTECTION PLAN (SWPPP) SHALL BE MAINTAINED AT THE CONSTRUCTION SITE AND ALWAYS AVAILABLE FOR REVIEW.

7. PROTECT ALL STORM DRAINAGE STRUCTURES FROM SEDIMENT CLOGGING BY PROVIDING INLET PROTECTION AT ALL OPENINGS.

8. AVOID PAVING DURING WET WEATHER.

9. STORE MATERIALS AWAY FROM DRAINAGE COURSES TO PREVENT CONTACT WITH STORM WATER.

10. PLACE DRIP PANS OR ABSORBENT MATERIALS UNDER CONSTRUCTION EQUIPMENT WHEN NOT IN USE.

11. CLEAN UP SPILLS WITH ABSORBENT MATERIALS.

12. OLD ASPHALT MUST BE DISPOSED OF PROPERLY.

13. KEEP WORK SITE CLEAN AND ORDERLY DAILY.

14. PROPERLY STORE PAINTS AND SOLVENTS.

15. PERMANENTLY MARK STORM DRAIN STRUCTURES IN A MANNER APPROVED BY THE CONSTRUCTION INSPECTOR TO MINIMIZE INADVERTENT DISPOSAL OF RESIDUAL PAINTS, SOLVENTS, OR ANY OTHER POLLUTANT.

16. ALLOW MATERIAL DELIVERY AND STORAGE ONLY IN DESIGNATED AREAS AND AVOID TRANSPORT NEAR DRAINAGE PATHS AND WATERWAYS.

17. MINIMIZE THE USE OF HAZARDOUS MATERIALS ON SITE.

18. CLEAN UP LEAKS AND SPILLS IMMEDIATELY.

19. USE WATERTIGHT DUMPSTERS FOR TRASH AND CONSTRUCTION WASTE.

20. COLLECT SITE TRASH AS NEEDED, ESPECIALLY DURING RAINY OR WINDY CONDITIONS.

21. ARRANGE FOR REGULAR WASTE COLLECTION BEFORE CONTAINERS OVERFLOW.

22. DO NOT ALLOW BRUSHES OR PAINT CONTAINERS TO BE CLEANED OUT IN THE DIRT, STREET, GUTTER, OR STORM DRAINS.

23. STORE AND COVER DRY AND WET MATERIALS FROM CONCRETE PLACEMENT AWAY FROM DRAINAGE AREAS.

24. PERFORM WASHOUT OF CONCRETE TRUCKS IN DESIGNATED AREAS ONLY. WASHOUT AREAS SHALL BE AWAY FROM STORM DRAINS, OPEN DITCHES, OR STREETS.

25. TEMPORARY SANITARY FACILITIES SHALL BE MAINTAINED IN GOOD WORKING ORDER BY A LICENSED SERVICE.

26. CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING HIS PLAN THROUGHOUT CONSTRUCTION AND INDICATE ANY AND ALL REVISIONS / UPDATES ON THIS PLAN.

27. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT STORM WATER WILL BE CONTAINED WITHIN THE PROJECT OR CHANNELED INTO THE STORM DRAIN SYSTEM PROVIDED THAT IT IS FREE FROM POLLUTANTS AND DEBRIS.

28. CITY APPROVAL OF PLANS DOES NOT RELIEVE THE DEVELOPER FROM CORRECTING ERRORS OR OMISSIONS DISCOVERED DURING CONSTRUCTION. CONFORMANCE WITH THE REQUIREMENTS OF THIS PLAN SHALL IN NO WAY RELIEVE THE DEVELOPER FROM HIS RESPONSIBILITIES TO THE SITE AND ADJACENT PROPERTIES. TEMPORARY EROSION CONTROL SHALL CONSIST OF, BUT NOT BE LIMITED TO, CONSTRUCTING SUCH FACILITIES AND TAKING SUCH MEASURES AS ARE NECESSARY TO PREVENT, CONTROL AND ABATE WATER, MUD AND EROSION DAMAGE TO PUBLIC AND PRIVATE PROPERTY AS A RESULT OF THE CONSTRUCTION OF THIS PROPERTY.

29. CLEARING AND GRUBBING SHOULD BE LIMITED TO AREAS THAT WILL RECEIVE IMMEDIATE GRADING. EROSION CONTROL MEASURES WILL BE REQUIRED TO PROTECT AREAS WHICH HAVE BEEN CLEARED AND GRUBBED. THESE MEASURES MAY INCLUDE BUT NOT BE LIMITED TO: GRADED DITCHES, SAND OR GRAVEL BAGS, BARRIERS AND SILT FENCING. CARE SHALL BE EXERCISED TO PRESERVE VEGETATION BEYOND LIMITS OF GRADING AND PREVENT SEDIMENT DISCHARGE WHILE CONSTRUCTION IN THIS AREA IS ACTIVE.

30. SEDIMENT CONTROL SHALL BE USED AT THE TOE OF ANY ERODIBLE SLOPE.

31. CONTRACTOR SHALL IMMEDIATELY RESTORE ANY DAMAGED EROSION CONTROL MEASURE WITHIN THE PROJECT BOUNDARY.

32. FACES OF FINISHED CUT AND FILL SLOPES SHALL BE PREPARED AND MAINTAINED TO CONTROL AGAINST EROSION. THESE PERMANENT CONTROL MEASURES MAY CONSIST OF ADEQUATE SEEDING, PLANTING AND JUTE MATTING. THE PROTECTION FOR THE SLOPES SHALL BE INSTALLED AS SOON AS PRACTICABLE AND PRIOR TO CALLING FOR FINAL APPROVAL.

33. AFTER A RAIN STORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM STREETS, CHECK BERMS AND BASINS.

34. CONTRACTOR / SUBCONTRACTOR TRAINING IN SEDIMENT AND EROSION CONTROL IN ACCORDANCE WITH AZPDES.

35. THE PERMITTEE AND CONTRACTOR SHALL BE RESPONSIBLE, AND TAKE NECESSARY PRECAUTIONS, TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.

36. ALL DISTRUBED AREAS SHALL BE HYDROSEEDED IN ACCORDANCE WITH CITY OF FLAGSTAFF ENGINEERING STANDARDS SECTION 13-17. A REVEGETATION PLAN WILL BE REQUIRED TO BE IMPLEMENTED AND PROVED SUCCESSFUL PRIOR TO PROJECT CLOSEOUT. CONTRACTOR SHALL PROVIDE 70% SUCCESSFUL REGROWTH PER ADEQ PERMANENT STABILIZATION REQUIREMENTS FOR ALL AREAS DISTURBED DURING CONSTRUCTION. SOIL CONDITIONERS AND WATERING ARE REQUIRED IN ACCORDANCE WITH 13-17-002-004 AND 13-17-002-0005.6.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO MAG STANDARDS, AZPDES STANDARDS AND SPECIFICATIONS AND GENERALLY ACCEPTED CONSTRUCTION PRACTICE.

2. THESE PLANS REPRESENT A REASONABLE EFFORT TO IMPLEMENT THE MOST CURRENT BEST MANAGEMENT PRACTICES (BMPS) IN MITIGATING STORM WATER POLLUTION DURING CONSTRUCTION. THE EFFECTIVENESS OF THE MITIGATION MEASURES DEPICTED IN THESE PLANS DEPEND IN PART ON PROPER INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND REPAIR OF THE DEVICES SELECTED.

MAINTENANCE:

IN GENERAL, ALL EROSION & SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. REFER TO THE ATTACHED EROSION & SEDIMENT CONTROL STANDARD NOTES FOR DETAILED MAINTENANCE AND REVEGATATION / STABILIZATION REQUIREMENTS.

THE DETAILS SHOWN ON THE DETAIL SHEET ARE BY SHEPHARD - WESNITZER, INC. AND BY EROSION DRAW 4.0 (COPYRIGHT 2002 © JOHN MCULLAH) UNDER A LICENSE AGREEMENT.

TEMPORARY CONCRETE WASHOUT FACILITY NOTES

1. CONTRACTOR TO DESIGNATE EQUIP./MATERIAL STORAGE SITE AND CONCRETE WASHOUT AS PART OF SWPPP PRIOR TO START OF CONSTRUCTION.

2. TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE LOCATED A MINIMUM OF 50 FEET FROM STORM DRAIN INLETS, OPEN DRAINAGE FACILITIES AND WATERCOURSES, UNLESS DETERMINED UNFEASIBLE BY ENGINEER. EACH FACILITY SHALL BE LOCATED AWAY FROM CONSTRUCTION TRAFFIC OR ACCESS AREAS TO PREVENT DISTURBANCE OR TRACKING.

3. TEMPORARY CONCRETE WASHOUT FACILITIES SHALL HAVE A TEMPORARY PIT (BELOW GRADE) OR BERMED AREA (ABOVE GRADE) OF SUFFICIENT VOLUME TO COMPLETELY CONTAIN ALL LIQUID AND WASTE CONCRETE MATERIALS GENERATED DURING WASHOUT PROCEDURES. IF LOCATED ABOVE GRADE, THE WASHOUT AREA SHALL BE LINED WITH AN IMPERMEABLE MATERIAL.

4. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP, REMOVED AND DISPOSED OF PER BMP "SOLID WASTE MANAGEMENT."

5. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, AS DETERMINED BY THE ENGINEER, THE HARDENED CONCRETE SHALL BE REMOVED AND PROPERLY DISPOSED OF. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE COME THE PROPERTY OF THE CONTACTOR, SHALL BE REMOVED THE SITE OF THE WORK AND SHALL BE DISPOSED OF OUTSIDE THE HIGHWAY RIGHT-OF-WAY.

6. HOLE, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE FACILITIES SHALL BE BACKFILLED AND REPAIRED.

7. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CONSTRUCTION SEQUENCE

1. INSTALL INLET PROTECTION
2. PAVEMENT REMOVAL AND INSTALL HAY BALES
3. INSTALL CONSTRUCTION ENTRANCES
4. DRAINAGE INFRASTRUCTURE/UTILITIES
5. SITE CONSTRUCTION
6. PERMANENT REVEGETATION/SLOPE STABILIZATION
7. SCHEDULED MONITORING AND MAINTENANCE

FLAGSTAFF ARIZONA

HIGHWAY 180 CROSSING

EROSION CONTROL PLAN (1)

JOB NO: 223008
DATE: FEB 24
SCALE: AS SHOWN
DRAWN: HAS
DESIGN: HAS/KMF
CHECKED: SCI

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.6934 fax
www.ardurra.com

Shephard Wesnitzer, Inc.
An ARDURRA company

REVISIONS

NO.	DESCRIPTION	DATE	BY

Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

PRELIMINARY

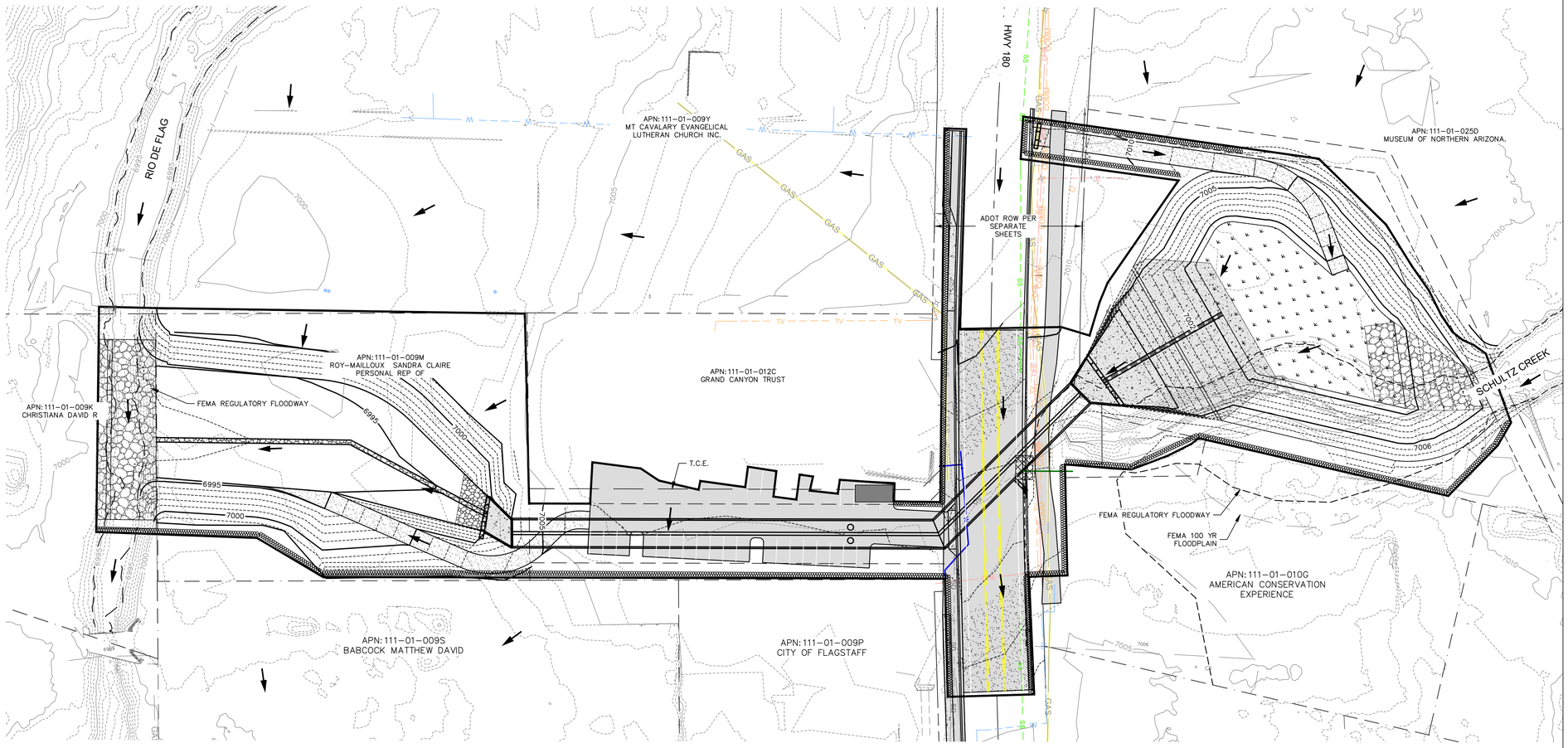
NOT FOR CONSTRUCTION, BIDDING OR RECORDING

DRAWING NO.
EC01

SHT NO. 17 OF 18

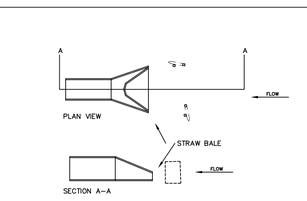
FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 EROSION CONTROL PLAN.DWG HSCHNOEBELEN

PLOTTED: Feb 16, 2024–4:47pm

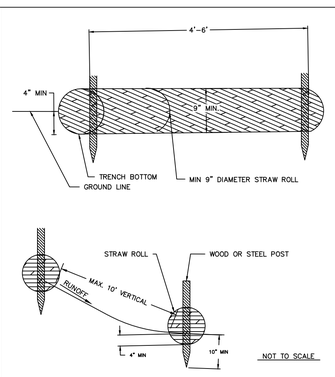


LEGEND

- DISTURBED AREA
- DRAINAGE FLOW DIRECTION
- "STRAW ROLLS" PER DETAIL ON THIS SHEET.
- "DROP INLET PROTECTION PER ULTRATECH INTERNATIONAL INC., ULTRA–FILTER SOCK" OR APPROVED EQUAL.
- CULVERT INLET/OUTLET PROTECTION
- CONCRETE WASHOUT

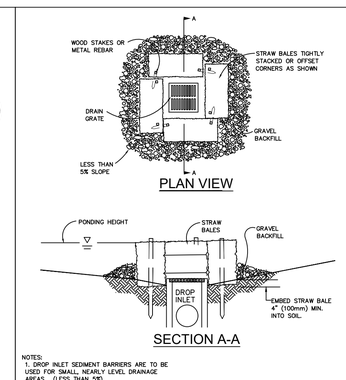


CULVERT INLET/
OUTLET PROTECTION



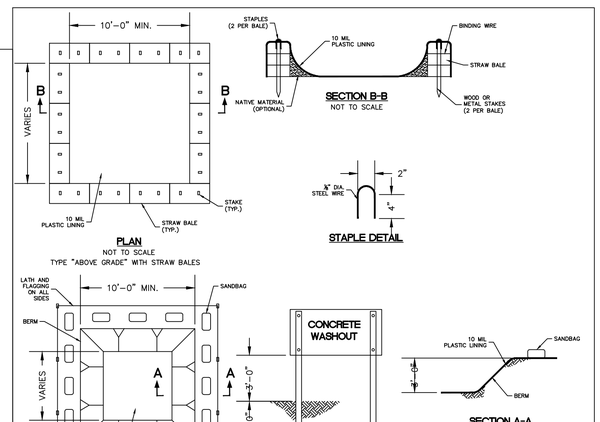
NOTES:
1. STAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH 3"–5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWS TO RUN UNDER OR AROUND ROLL.

STRAW ROLL
STAKED
IN TRENCH

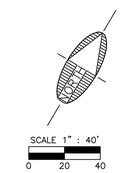


NOTES:
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EMBED THE BALES 4" (100mm) INTO THE SOIL AND OFFSET CORNERS OR PLACE BALES WITH ENDS TIGHTLY ABUTTING. GRAVEL BACKFILL WILL PREVENT EROSION OR FLOW AROUND THE BALES.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

STRAW BALE/GRAVEL
DROP INLET
SEDIMENT BARRIER



CONCRETE
WASHOUT
DETAILS



PRELIMINARY

NOT FOR CONSTRUCTION,
BIDDING OR RECORDING

FLAGSTAFF
ARIZONA

HIGHWAY 180 CROSSING

EROSION CONTROL PLAN (2)

JOB NO:	223008
DATE:	FEB 24
SCALE:	AS SHOWN
DRAWN:	HAS
DESIGN:	HAS/KMF
CHECKED:	SCI

REVISIONS NO.	DESCRIPTION	DATE	BY

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0334
928.774.8934 fax
www.ardurra.com

SVM
Shephard Wesnitzer, Inc.
An ARDURRA Company

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click Arizona811.com

DRAWING NO.
EC02

SHT NO. 18 | OF 18

FILE: P:\2023\223008\DRAWINGS\CONSTRUCTION PLANS\223008 EROSION CONTROL PLAN.DWG HSCHINDEBELEN