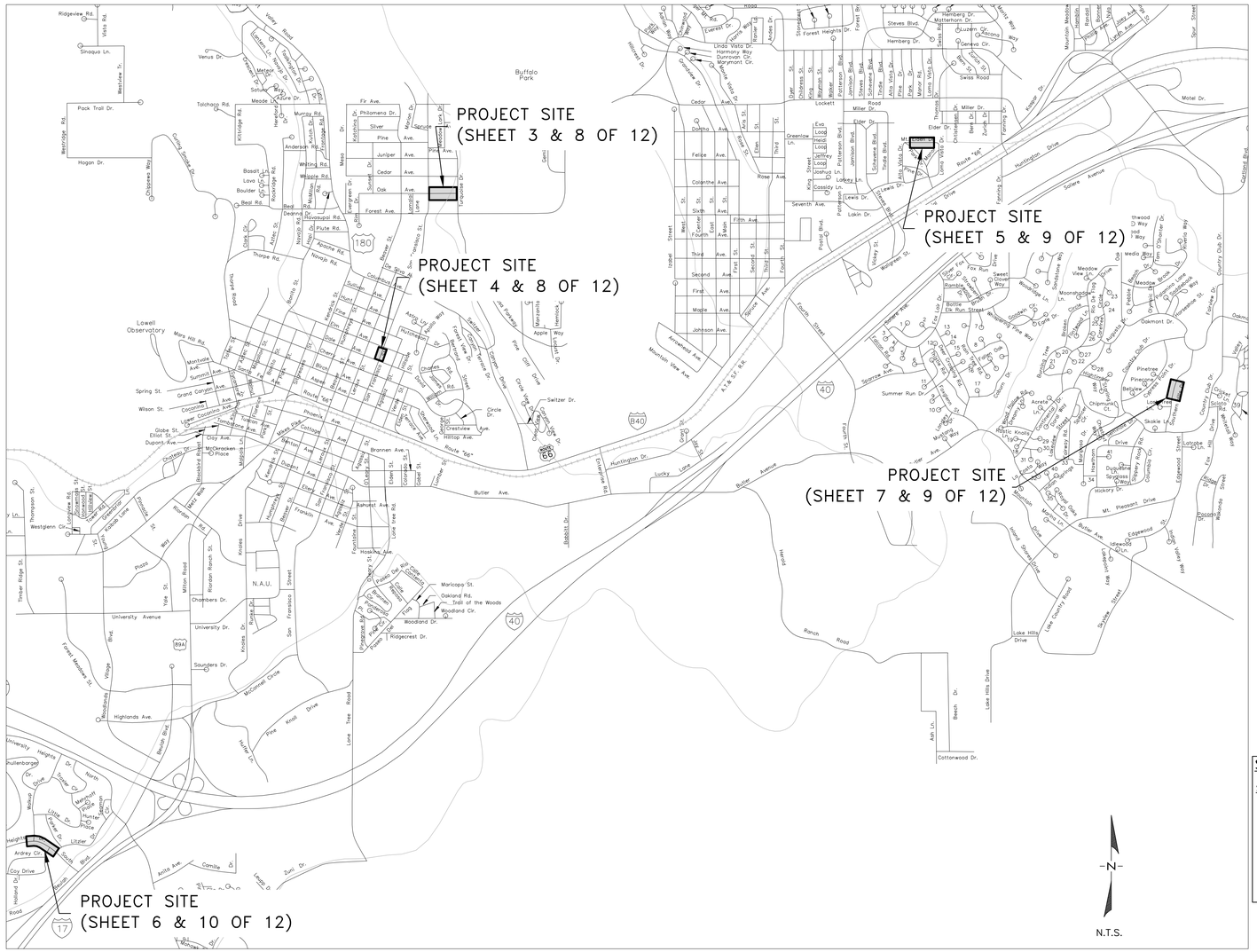
FLAGSTAFF BUNDLED DRAINAGE CONSTRUCTION PLANS

A PROPOSED IMPROVEMENT IN THE SOUTHWEST CORNER OF SECTION 15,
TOWNSHIP 21 NORTH, RANGE 7 EAST, GILA AND SALT RIVER MERIDIAN,
COCONINO COUNTY, ARIZONA

LEGEND

- EXISTING PROPERTY LINE
- EXISTING ROAD CENTERLINE
- EXISTING EASEMENT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING FLOWLINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- EXISTING STORM DRAIN
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING CABLE TV LINE
- EXISTING TELEPHONE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING BARBED WIRE FENCE
- EXISTING CHAIN LINK FENCE
- EXISTING WOOD FENCE
- EXISTING WALL
- EXISTING CONCRETE
- EXISTING STRUCTURE
- EXISTING PAVEMENT
- PROPOSED PROPERTY LINE
- PROPOSED ROAD CENTERLINE
- PROPOSED EASEMENT
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED FLOWLINE
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED STORM DRAIN
- PROPOSED GAS LINE
- PROPOSED OVERHEAD ELECTRIC LINE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED CABLE TV LINE
- PROPOSED TELEPHONE LINE
- PROPOSED FIBER OPTIC LINE
- PROPOSED BARBED WIRE FENCE
- PROPOSED CHAIN LINK FENCE
- PROPOSED WOOD FENCE
- PROPOSED WALL
- PROPOSED CONCRETE
- PROPOSED STRUCTURE
- PROPOSED PAVEMENT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING FIRE HYDRANT
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM DRAIN MANHOLE
- EXISTING CATCH BASIN
- EXISTING GAS VALVE
- EXISTING GAS METER
- EXISTING ELECTRIC METER
- EXISTING MISCELLANEOUS MANHOLE
- EXISTING UTILITY POLE
- EXISTING GUY ANCHOR
- EXISTING LIGHT POLE
- EXISTING SIGN POST
- EXISTING BOLLARD
- EXISTING TREE TO REMAIN (DIAMETER AND P=PINE, J=JUNIPER, D=DECIDUOUS)
- EXISTING TREE TO BE REMOVED (DIAMETER AND P=PINE, J=JUNIPER, D=DECIDUOUS)
- FOUND SECTION CORNER AS NOTED
- FOUND RIGHT-OF-WAY MONUMENT AS NOTED
- FOUND REBAR AS NOTED
- FOUND MONUMENT AS NOTED
- FOUND PIPE AS NOTED
- FOUND PANEL AS NOTED
- FOUND NAIL AS NOTED
- PROPOSED WATER VALVE
- PROPOSED WATER METER
- PROPOSED FIRE HYDRANT
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED GAS VALVE
- PROPOSED GAS METER
- PROPOSED ELECTRIC METER
- PROPOSED MISCELLANEOUS MANHOLE
- PROPOSED UTILITY POLE
- PROPOSED GUY ANCHOR
- PROPOSED LIGHT POLE
- PROPOSED SIGN POST
- PROPOSED BOLLARD
- PROPOSED TREE (DIAMETER AND P=PINE, J=JUNIPER, D=DECIDUOUS)
- 99 PARKING SPACE COUNT
- (3125) STREET ADDRESS
- FL79.75 EXISTING FLOWLINE GRADE



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CITY OF FLAGSTAFF APPROVAL

CITY ENGINEER	DATE
PUBLIC WORKS DIRECTOR	DATE
UTILITIES DIRECTOR	DATE

UTILITY ACKNOWLEDGEMENT

BY LETTER	11/15/12
ARIZONA PUBLIC SERVICE	DATE
BY LETTER	01/29/13
UNISOURCE ENERGY	DATE
BY LETTER	11/15/12
CENTURY LINK	DATE
BY LETTER	01/17/13
SUDDEN LINK	DATE

SUMMARY OF UTILITY CONFLICTS

SHEET NUMBER	CONFLICT
3	PROPOSED CMP & EXISTING GAS LINE
3	PROPOSED CMP & EXISTING WATER LINE (2 LOCATIONS)
3	PROPOSED CMP & EXISTING ELECTRIC LINE
4	PROPOSED CURB AND GUTTER & EXISTING WATER SERVICE
4	PROPOSED STORMDRAIN & EXISTING ELECTRIC LINE
6	PROPOSED CMP & EXISTING GAS LINE (2 LOCATIONS)
6	PROPOSED CMP & EXISTING ELECTRIC LINE (3 LOCATIONS)
6	PROPOSED CMP & EXISTING WATER LINE (2 LOCATIONS)

CONCEPT APPROVAL

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

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.

SURVEY NOTES

FIELD MEASUREMENTS USED TO PREPARE THIS MAP WERE MADE IN JUNE, 2012.

BASIS OF BEARINGS: DERIVED FROM GPS OBSERVATIONS

BASIS OF ELEVATIONS: NGVD 88

GPS OBSERVATIONS MADE UTILIZING CORS STATION: NAU FLAGSTAFF CORS ARP: PID – DL1882
NAD 83 (CORS) POSITION: 35° 10' 38.30164" N
111° 39' 25.29087" W
NAVD 88 ORTHO HEIGHT: 6929.1 FEET

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

Registered Professional Engineer (Civil)
CERTIFICATE NO. 34537
RICHARD L. SCHULLER
Date Signed 03-28-12
ARIZONA, U.S.A.
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

OWNER/DEVELOPER
CITY OF FLAGSTAFF
211 W. ASPEN AVE.
FLAGSTAFF, AZ 86001
(928) 774-7685

ENGINEER
WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
(928) 774-4636

COF DRAINAGE IMPROVEMENT PROGRAM
COF PROJECT NUMBER 993419

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

112801

11/8/12

FLAGSTAFF BUNDLED DRAINAGE PROJECTS
CONSTRUCTION PLANS
COVER SHEET

DRAFTED BY: CGE
DATE: 07/17/12
PROJ. NO.: 112801
FN: 01 COVER.dwg

C.O.F. GENERAL NOTES

6-17-010 CONSTRUCTION PLANS

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS FOR A ONE-YEAR PERIOD, SUBSEQUENT TO THE DATE OF APPROVAL. IF CONSTRUCTION WORK IS NOT STARTED WITHIN THE ONE-YEAR PERIOD, OR HAS BEEN DISCONTINUED FOR ANY REASON FOR LONGER THAN ONE 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 24 HOURS PRIOR TO BEGINNING DIFFERENT PHASES OF CONSTRUCTION SO THAT CITY INSPECTORS MAY BE SCHEDULED.

5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CURRENT CITY OF FLAGSTAFF "ENGINEERING DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS", THE 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 GOOD 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 21 OF THESE (FLAGSTAFF DESIGN) 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 JUDGEMENT, 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 HYDRANTS, WATER MAINS, AND STREET NAME SIGNS 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 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 D4956-07el STANDARD SPECIFICATIONS FOR RETROREFLECTIVE 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 ACRE, A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED IN ORDER TO OBTAIN A CONSTRUCTION GENERAL PERMIT FROM ADEQ.

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 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 (A.D.E.Q.) "BULLETIN NO. 8."

C.O.F. WATER AND SEWER NOTES CONT'D

F. WATER PIPE CLASSIFICATION SHALL BE CLASS 350 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 FEET, HORIZONTAL DISTANCE, AND LESS THAN TWO 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 INCHES OF CONCRETE FOR AT LEAST TEN FEET BEYOND THE AREA COVERED BY THIS PARAGRAPH.

(B) WITHIN TWO FEET HORIZONTALLY AND TWO FEET BELOW THE SEWER MAIN. WHEN A WATER MAIN IS PLACED BELOW THE 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 FEET, MEASURED FROM THE CENTER OF THE MANHOLE.

3. THE MINIMUM SEPARATION BETWEEN FORCE MAINS OR PRESSURE SEWERS AND WATER MAINS SHALL BE TWO FEET VERTICALLY AND SIX FEET HORIZONTALLY UNDER ALL CONDITIONS. WHERE A SEWER FORCE MAIN CROSSES ABOVE OR LESS THAN SIX FEET BELOW A WATER LINE, THE SEWER MAINS SHALL BE ENCASED IN AT LEAST SIX INCHES OF CONCRETE OR CONSTRUCTED USING MECHANICAL JOINT DUCTILE IRON PIPE FOR TEN 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 FOOT (1').

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 ARIZONA ADMINISTRATIVE CODE R18-9-E301(D)(2). MANHOLES SHALL BE TESTED BY FILLING THE MANHOLE WITH WATER. THE APPLICANT SHALL ENSURE THAT THE DROP IN WATER LEVEL DOES NOT EXCEED 0.001 OF THE TOTAL MANHOLE VOLUME IN ONE 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 C1244-93.

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 (A.D.E.Q.) REQUIREMENTS. WHEN A.D.E.Q. 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 C.O.F. STANDARDS SECTION 13-09-001-0002. (STRIP WIRE 2 INCHES AT TERMINATION OF THE SERVICE)

O. WATER VALVES SHALL BE ADJUSTED PER C.O.F. DETAIL NO. 9-03-060 AND MANHOLES SHALL BE ADJUSTED PER C.O.F. 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 A "S" ON THE TOP OR FACE OF CURB.

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 MATCH OR OTHER OCCURS ON A STREET WITH A BIKE LANE, THE JOINT SHALL BE LOCATED OUTSIDE OF THE BIKE LANE.

B. NO JOB WILL BE CONSIDERED COMPLETE UNTIL: A) ALL CURBS, PAVEMENTS, SIDEWALKS, CATCH BASINS, STORM DRAINS, AND MANHOLES HAVE BEEN CLEANED OF ALL DIRT AND DEBRIS; B) SURVEY MONUMENTS ARE INSTALLED AND STAMPED; C) 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. A CHIP SEAL IS REQUIRED ON ALL PUBLIC PAVING PROJECTS. ON PROJECTS WHERE THE CONTRACTOR CAUSES EXCESSIVE DAMAGE TO AN EXISTING PAVED STREET OR THERE ARE MULTIPLE STREET CUTS (MAXIMUM OF FOUR IN 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 3 INCHES OF AGGREGATE BASE COURSE (ABC). THE ABC SHALL BE CONSTRUCTED PER MAG SECTION 310 AND SHALL BE COMPACTED TO 95 % RELATIVE DENSITY. ALL PRECAST STRUCTURES SUCH AS MANHOLE BASES, CATCH BASINS, AND BOX CULVERTS SHALL BE CONSTRUCTED ON A MINIMUM OF 3 INCHES ABC.

L. PERMANENT PAVEMENT MARKINGS.
1. TRANSVERSE PAVEMENT MARKINGS SUCH AS STOP BARS, CROSSWALKS, ARROWS AND LEGENDS SHALL BE INSTALLED PER ADOT STANDARD SPECIFICATION 705, TYPE 1.
2. LONGITUDINAL PAVEMENT MARKINGS SHALL BE INSTALLED PER ADOT SPECIFICATION 708 AND SHALL BE APPLIED IN TWO COATS.

M. TEMPORARY PAVEMENT MARKINGS.
1. TEMPORARY PAVEMENT MARKINGS WHEN APPROVED, SHALL BE INSTALLED PER ADOT STANDARD SPECIFICATION 701-3.05.
2. THE USE OF TEMPORARY MARKINGS IS STRONGLY DISCOURAGED AND MAY ONLY BE USED WITH PRIOR APPROVAL.
a. WHEN IT IS USED, THE CONTRACTOR MUST BE AVAILABLE TO RESTRIPE AS NEEDED UNTIL THE PERMANENT MARKINGS CAN BE INSTALLED.

NOTE: WHEN IT IS IMPRACTICAL 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 4 INCHES.

ADEQ STANDARD NOTES

THE STATE LAW, ARS SECTION 49-104.B.10, REQUIRES THAT CONSTRUCTION OF THE PROJECT MUST BE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY. THIS CERTIFICATE WILL BE VOID IF CONSTRUCTION HAS NOT STARTED WITHIN ONE YEAR OF THE APPROVAL DATE. UPON REQUEST A WRITTEN TIME EXTENSION MAY BE GRANTED BY THE DEPARTMENT.

A DEFLECTION TEST OF THE TOTAL LENGTH OF ALL SEWER LINES MADE OF FLEXIBLE MATERIALS IS REQUIRED TO ENSURE THAT THE INSTALLATION MEETS OR EXCEEDS THE MANUFACTURER'S RECOMMENDATIONS PER AAC 1R18-9-E301(D)2(i).

ALL PVC WATERLINES AND FITTINGS SHALL HAVE NSF-PW SEAL.
ALL MATERIALS AND PRODUCTS USED IN DRINKING WATER SYSTEM SHALL CONFORM TO NSF STANDARD 61.

PIPE, FITTINGS, VALVES, FIRE HYDRANTS AND OTHER APPEARANCES SHALL CONFORM THE CURRENT STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION, AMERICAN STANDARDS ASSOCIATION OR THE FEDERAL GOVERNMENT.

EXFILTRATION/INFILTRATION FROM MANHOLES SHALL BE LIMITED TO 0.1 GALLON/HOUR/VERT FOOT.

INSTALLATION OF PVC SEWERS MUST BE IN CONFORMANCE WITH CURRENT STANDARD SPECIFICATION ASTM D2321.

PER AAC R18-9-301(D)(2)(b)(i), MINIMUM COVER REQUIRED FOR SEWER SERVICE MAINS IS 3'.

MANHOLES WILL BE TESTED PER AAC R18-9-E301(D)93)(e) USING THE WATERTIGHTNESS METHOD OR NEGATIVE AIR PRESSURE TESTING.

TEST EACH SEGMENT OF THE SEWER LINE FOR LEAKAGE USING THE APPLICABLE METHOD LISTED IN AAC R18-9-E301(D)(2)(j).

WOODSON ENGINEERING GENERAL NOTES

THE WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT EDITION(S) OF THE FOLLOWING SPECIFICATIONS AND THESE PLANS: MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, MAG UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, CITY OF FLAGSTAFF ENGINEERING DESIGN AND CONSTRUCTION STANDARDS, ADHS (ADEQ) ENGINEERING BULLETINS NO. 8 AND 10 AND ARIZONA ADMINISTRATIVE CODE R18-4 (WATER SYSTEMS), ARIZONA ADMINISTRATIVE CODE R18-9-E301 (SEWAGE WORKS), AWWA STANDARDS, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND ADOT STANDARD SPECIFICATIONS AND DRAWINGS.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COPIES OF THE ABOVE STANDARDS, SPECIFICATIONS, AND DETAILS, AS WELL AS ALL OTHER STANDARDS AND SPECIFICATIONS WHICH MAY BE NECESSARY TO COMPLETELY AND ACCURATELY INTERPRET THESE PLANS.

ALL QUANTITIES SHOWN ARE APPROXIMATE AND ARE FURNISHED SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THEY DO NOT NECESSARILY CORRESPOND TO BID SCHEDULE ITEMS. PAYMENT WILL BE BASED ON BID SCHEDULE ITEMS FOR THE ENTIRE JOB AS SHOWN OR INFERRED BY THESE PLANS. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR INDEPENDENTLY ESTIMATING QUANTITIES PRIOR TO BIDDING.

THE LOCATION OF EXISTING FEATURES INDICATED ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR MAKING COMPLETE AND ACCURATE ON-SITE DETERMINATIONS OF THE LOCATIONS OF ALL UTILITIES, STRUCTURES AND FIELD CONDITIONS, WHICH MAY AFFECT THE PROGRESS OF THE WORK.

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING WHAT PERMITS WILL BE REQUIRED FOR THE WORK AND OBTAINING AT HIS OWN EXPENSE ALL PERMITS REQUIRED UNLESS STATED OTHERWISE IN THE CONTRACT.

CERTIFICATION OF PRIVATE/NON-BUILDING STRUCTURES MAY BE REQUIRED BY THE CITY OF FLAGSTAFF. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY REQUIRED CERTIFICATIONS.

ALL ELEVATIONS SHOWN ON THE PLANS ARE FINISHED SURFACE ELEVATIONS (EXCEPT AS NOTED).

THE REGISTRANTS DUTY TO SEAL PROFESSIONAL DOCUMENTS DOES NOT EXTEND TO STANDARD DETAILS OR SPECIFICATIONS THAT HAVE BEEN OFFICIALLY ADOPTED AND PROVIDED BY THE AGENCY THAT HAS JURISDICTION OVER THIS PROJECT. THE STANDARD DETAILS AND SPECIFICATIONS SHOWN WITH THESE DOCUMENTS ARE INCLUDED TO PROVIDE CLEAR AND COMPLETE INFORMATION AND WERE NOT PREPARED BY THE REGISTRANT.

JOBSITE SAFETY

NEITHER THE PROFESSIONAL ACTIVITIES OF THE DESIGN PROFESSIONAL, NOR THE PRESENCE OF THE DESIGN PROFESSIONAL OR HIS OR HER EMPLOYEES AND SUB CONSULTANTS AT A CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE DESIGN PROFESSIONAL AND HIS OR HER PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR OTHER ENTITY OR THEIR EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PRECAUTIONS. THE CLIENT AGREES THAT THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR JOBSITE SAFETY, AND WARRANTS THAT THIS INTENT SHALL BE MADE EVIDENT IN THE CLIENT'S AGREEMENT WITH THE GENERAL CONTRACTOR. THE CLIENT ALSO AGREES THAT THE CLIENT, THE DESIGN PROFESSIONAL AND THE DESIGN PROFESSIONAL'S CONSULTANTS SHALL BE INDEMNIFIED AND SHALL BE MADE ADDITIONAL INSUREDS UNDER THE GENERAL CONTRACTOR'S GENERAL LIABILITY INSURANCE POLICY.

RIGHT-OF-WAY AND TRAFFIC CONTROL

THE CONTRACTOR SHALL PROVIDE ANY NECESSARY TRAFFIC CONTROL DEVICES REQUIRED FOR THE CONTROL OF VEHICLE AND PEDESTRIAN TRAFFIC AFFECTED BY THE CONSTRUCTION ALL TRAFFIC CONTROL PLANS MUST BE APPROVED BY THE OWNER OR HIS REPRESENTATIVE PRIOR TO IMPLEMENTATION.

CONSTRUCTION STAKES, LINES AND GRADES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR RETAINING A REGISTERED LAND SURVEYOR, LICENSED TO PRACTICE IN ARIZONA WHO SHALL BE RESPONSIBLE FOR PROVIDING ALL STAKES NECESSARY TO ESTABLISH CONSTRUCTION LINES AND GRADES. STAKES PROVIDED SHALL BE OF SUFFICIENT NUMBER TO SATISFY THE ENGINEER THAT THE WORK MAY BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS.

ALL COSTS ASSOCIATED WITH STAKING ARE TO BE BORNE BY THE CONTRACTOR. NO ADDITIONAL PAYMENT TO THE CONTRACTOR FOR EXTRA STAKES OR FOR RESTAKING WILL BE ALLOWED.

UTILITIES

UNDERGROUND UTILITY LOCATIONS SHOWN ON THESE PLANS WERE DETERMINED FROM FIELD MEASUREMENTS, CONSTRUCTION PLANS, RECORD PLANS OR UTILITY MAPS FURNISHED BY OTHERS. LOCATIONS OF UNDERGROUND UTILITIES ARE TO BE REGARDED AS APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH IN THE FIELD THE ACTUAL LOCATIONS OF ALL UNDERGROUND LINES WHICH MAY IN ANY WAY AFFECT THE WORK.

IT IS NOT WITHIN THE SCOPE OF THE PLANS FOR THE ENGINEER TO LOCATE, IDENTIFY OR FORESEE EVERY UTILITY CONFLICT WHICH MAY ARISE DURING THE CONSTRUCTION PHASE OF THE PROJECT. BUT IT IS THE INTENT OF THE OWNER TO REASONABLY COMPENSATE THE CONTRACTOR FOR THE WORK REQUIRED TO RELOCATE OR ADJUST UTILITIES CONFLICTING WITH THE CONSTRUCTION OF THE PROJECT. TO THAT END, UTILITIES (AS DEFINED IN MAG 101.2) WHICH ARE ENCOUNTERED WILL BE ADDRESSED AS FOLLOWS:

1) UTILITY RELOCATIONS OR ADJUSTMENTS NOTED ON THE PLANS SHALL BE PAID FOR PER THE BID SCHEDULE.

2) UTILITY RELOCATIONS OR ADJUSTMENTS NOT NOTED ON THE PLANS SHALL BE ADDRESSED ON A CASE BY CASE BASIS. THE ENGINEER SHALL DETERMINE WHAT WORK IS REQUIRED TO PRODUCE THE DESIRED FINAL PRODUCT. IF A UNIT BID PRICE DOES NOT EXIST THEN COMPENSATION MUTUALLY ACCEPTABLE TO THE OWNER, CONTRACTOR, AND ENGINEER SHALL BE MADE.

IN EITHER SITUATION, WORK ON THE SPECIFIC CASE SHALL NOT PROCEED UNTIL THE AMOUNT OF COMPENSATION IS AGREED UPON.

COMPENSATION FOR UTILITY RELOCATIONS AND ADJUSTMENTS SHALL NOT INCLUDE COSTS FOR REPAIR TO THE UTILITY DAMAGED BY THE CONTRACTOR OR HIS SUBCONTRACTOR(S). THE CONTRACTOR IS NOT RELIEVED OF THE RESPONSIBILITY FOR DETERMINING THE LOCATION OF ALL UTILITIES AFFECTING THE WORK.

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

AT LEAST 48 HOURS PRIOR NOTICE IS REQUIRED BEFORE DISRUPTING EXISTING UTILITY SERVICE TO MAKE CONNECTIONS OR DISCONNECTIONS. THE NOTICE MUST INCLUDE THE EXACT TIME OF THE DISRUPTION OF SERVICE AND THE EXPECTED DURATION OF THE LOSS OF SERVICE.

CERTAIN UTILITIES ARE TO REMAIN IN SERVICE DURING THE CONSTRUCTION OF THE FILL AND UPON COMPLETION OF THE CONTRACT. THESE UTILITIES SHALL BE PROTECTED DURING THE CONSTRUCTION AND CUT OR FILL PLACEMENT SHALL NOT PROHIBIT MAINTENANCE ACCESS TO THESE UTILITIES.

DRAINAGE MAINTENANCE DURING CONSTRUCTION

ADEQUATE DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES, BEST MANAGEMENT PRACTICES, AND-OR OTHER STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. DAMAGES TO ADJACENT PROPERTY AND/OR THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR'S 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.

CONSTRUCTION DRAINS SHALL BE PROVIDED AS NEEDED TO ENABLE WATER TO DRAIN FROM THE CONSTRUCTION AREA RAPIDLY AND WITHOUT DAMAGING THE WORK IN PROGRESS. TO FURTHER PROMOTE GOOD DRAINAGE OF THE SITE, DRAINAGE CHANNELS, CULVERTS, AND STRUCTURES, SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM IN SUCH A WAY THAT, DURING CONSTRUCTION, THEY DO NOT IMPEDE THE FLOW OF WATER FROM THE CONSTRUCTION AREA.

NO EXTENSION OF TIME SHALL BE GRANTED ON ACCOUNT OF THE TIME REQUIRED TO MAKE SUCH REPAIRS.

FILL CONSTRUCTION

SITE PREPARATION, EXCAVATION AND PLACEMENT SHALL BE IN ACCORDANCE WITH THE GEO-TECHNICAL REPORT (???????? DATED ?, OF ??. THE BID SCHEDULE ITEM FOR FILL CONSTRUCTION IS INTENDED TO INCLUDE FULL PAYMENT FOR ALL MATERIAL REQUIRED TO BUILD THE PROJECT AND THE DISPOSAL OF ANY EXCESS MATERIAL FROM THE SITE.

MISCELLANEOUS REMOVALS AND OTHER WORK

REMOVALS NECESSITATED BY THE WORK AS IT PROGRESSES AND NOT SPECIFICALLY CALLED OUT ON THE PLANS WILL BE CONSIDERED INCIDENTAL WORK.

WATER SUPPLY

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND PROVIDE ALL NECESSARY WATER FOR HIS CONSTRUCTION OPERATION AT HIS OWN EXPENSE.

CLEANUP AND DUST CONTROL

THROUGHOUT ALL PHASES OF THE CONSTRUCTION THE CONTRACTOR SHALL KEEP THE WORK AREA, ADJACENT PROPERTIES AND STREETS CLEAN AND FREE FROM RUBBISH, EXCESS MATERIALS, DUST AND DEBRIS GENERATED BY THE CONSTRUCTION ACTIVITY.

EROSION CONTROL – TO BE APPLIED IN ALL AREAS DISTURBED BY CONSTRUCTION.

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.

THE SEED SHALL CONSIST OF BLUE FLAX, CANADA BLUEGRASS, PRAIRIE CONEFLOWER, ROCKY MOUNTAIN PENSTEMON, STREAMBANK WHEATGRASS, 'COVAR' SHEEP FESCUE, LITTLE BLUESTEM, GAILLARDIA ARISTATA AND CALIFORNIA POPPY. WEED CONTENT OF SEED SHALL NOT EXCEED 0.5 PERCENT. APPLICATION RATES OF SEED AS SPECIFIED ARE FOR PURE LIVE SEED (PLS). PLS IS DETERMINED BY MULTIPLYING THE SUM OF THE GERMINATION AND HARD OR DORMANT SEED BY THE PURITY.

STRAW MULCH SHALL BE FROM OATS, WHEAT, RYE, OR OTHER GRAIN CROPS OF THE CURRENT SEASON AND BE FREE OF NOXIOUS WEEDS OR MOLD. EROSION CONTROL BLANKETS SHALL BE GRAIN CROP PRODUCTS; STRAW AND COCONUT FIBER BLENDS ARE PREFERRED. BOTH THE TOP AND BOTTOM OF EACH BLANKET SHALL BE COVERED WITH A PHOTO DEGRADABLE, EXTRUDED MESH. BLANKETS SHALL NOT CONTAIN ANY CHEMICAL ADDITIVES. OTHER ACCEPTABLE ALTERNATIVES WILL BE AT THE DISCRETION OF THE CITY ENGINEER.

THE AREA TO BE SEEDED SHALL BE PREPARED BY DISKING OR OTHER APPROVED METHODS OF LOOSENING THE SOIL. SEED SHALL BE PLANTED APPROXIMATELY 1/4 INCH (6 MM) DEEP, WITH A MAXIMUM DEPTH OF 1/2 INCH (13 MM). THE DISTANCE BETWEEN FURROWS SHALL NOT EXCEED 8 INCHES (200 MM). SEEDING SHALL BE APPLIED AT THE FOLLOWING RATE:

TYPE OF SEED	POUNDS/ACRE	KILOGRAM/HECTARE
BLUE FLAX	3	3.4
CANADA BLUEGRASS	0.5	0.6
PRAIRIE CONEFLOWER	1	1.1
ROCKY MOUNTAIN PENSTEMON	2.5	2.8
STREAMBANK WHEATGRASS	3	3.4
'COVAR' SHEEP FESCUE	3	3.4
LITTLE BLUESTEM	2	2.2
GAILLARDIA ARISTATA	4	4.5
CALIFORNIA POPPY	1	0.6

STRAW MULCH SHALL BE APPLIED TO THE SEEDED AREA WITHIN TWENTY-FOUR (24) HOURS AND SHALL BE UNIFORMLY APPLIED AT A RATE OF 2.5 TONS PER ACRE (5.6 MG/HA).
MULCH SHALL BE ANCHORED INTO THE SOIL NO MORE THAN TWO (2) INCHES (50 MM) AND SHALL NOT BE COVERED WITH AN EXCESSIVE AMOUNT OF SOIL. NO MORE THAN TWO (2) PASSES OF THE ANCHORING EQUIPMENT WILL BE ALLOWED. WHEN CUT OR FILL SLOPES THAT ARE GREATER THAN 6 FEET IN HEIGHT AND STEEPER THAN 3:1, THE SEEDED AREA MUST BE COVERED WITH EROSION CONTROL BLANKETS.
HYDRAULIC SEEDING METHODS WILL NOT SPECIFICALLY BE ALLOWED UNLESS PRIOR PERMISSION BY THE CITY ENGINEER HAS BEEN GRANTED. WHEN APPROVED, THE APPLICATION OF SEEDING WITH HYDRAULIC METHODS MUST UTILIZE A MINIMUM OF 1,500 POUNDS OF WOOD CELLULOSE FIBER PER ACRE (1680 KG/HA).
PREPARATION OF THE SEED BED AS DESCRIBED ABOVE SHALL BE REQUIRED.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) NOTE

THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REGULATES STORM WATER DISCHARGES FROM CONSTRUCTION SITES UNDER THE NATIONAL STORM WATER PROGRAM. THE PROJECT OWNER AND THE CONSTRUCTION CONTRACTOR SHARE RESPONSIBILITY AND LIABILITY UNDER THIS PROGRAM. ACTIVITIES COVERED UNDER THIS PROGRAM INCLUDE CLEARING, GRADING, AND EXCAVATION. PROJECTS THAT ARE INCLUDED HAVE DISTURBED AREAS WITH MORE THAN 1 ACRES. UNDER NPDES THE CONTRACTOR MUST PREVENT POLLUTANTS FROM THE SITE FROM ENTERING WATERS OF THE US

IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTROL EROSION AND RUNOFF FROM A CONSTRUCTION SITE. TO COMPLY WITH REGULATIONS, THE CONTRACTOR MUST FILE A NOTICE OF INTENT TO DISCHARGE (NOI) 2 DAYS BEFORE CONSTRUCTION BEGINS. A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MUST BE DEVELOPED BY BOTH THE OWNER AND THE CONTRACTOR AS PART OF COMPLIANCE WITH THESE REGULATIONS. THE OWNER AND THE CONTRACTOR MUST ALSO IMPLEMENT THE SWPPP. DURING CONSTRUCTION, BOTH THE OWNER AND THE CONTRACTOR MUST CERTIFY THAT ALL WORK PERFORMED PER NPDES REGULATIONS. AFTER CONSTRUCTION IS COMPLETE, THE OWNER AND THE CONTRACTOR MUST FILE A NOTICE OF TERMINATION. ALL WORK DESCRIBED ABOVE MUST BE PERFORMED IN ACCORDANCE WITH NPDES AND THE NATIONAL STORM WATER PROGRAM REGULATIONS.

GENERAL STRIPING NOTES

ALL PAVEMENT STRIPING SHALL CONFORM TO THE APPLICABLE ADOT SPECIFICATIONS FOR PAINT. ALL PARKING STALL STRIPING SHALL BE 4" WIDE, WHITE PAINT, TREATED FOR REFLECTIVITY. ALL STRIPING SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

EROSION PROTECTION

THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF SOILS AND PREVENTION OF EROSION DURING CONSTRUCTION. WHERE SLOPE STABILIZATION REQUIRES THE ESTABLISHMENT OF PLANTS, EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL PLANTS ARE ESTABLISHED TO THE SATISFACTION OF THE OWNER AND THE APPROVING AGENCY.

RESOURCE PROTECTION

THE CITY PLANNING DIRECTOR OR HIS AUTHORIZED REPRESENTATIVE MAY SUSPEND THE WORK BY WRITTEN NOTICE WHEN, IN HIS JUDGMENT, LAND DISTURBANCE IS OCCURRING IN RESOURCE PROTECTED AREAS.

TEMPORARY TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY ON-SITE CONSTRUCTION OR GRADING ACTIVITIES. FENCING SHALL CONSIST OF 6' HIGH CHAIN LINK SECURED TO T-POST OR SNOW FENCING SECURED TO T-POST, WITH TOP SUPPORT WIRE.

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 SWPPP.dwg

REVISIONS:

Registered Professional Engineer (Civil)
CERTIFICATE NO. 34537
RICHARD L. SCHULLER
ARIZONA, USA
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS

NOTES

HOR SCALE: NA
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

112801

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

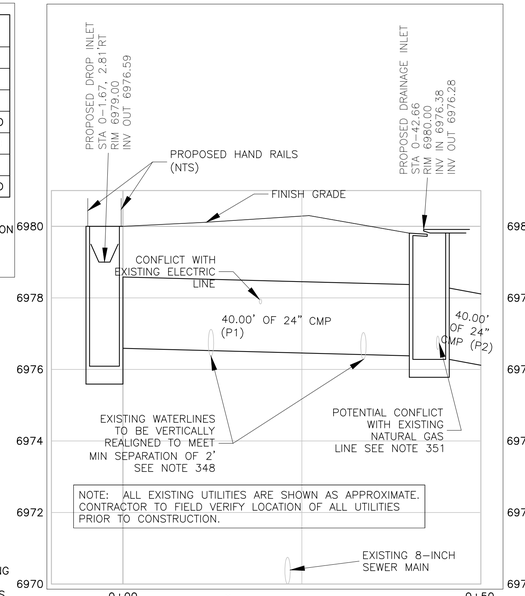
11/08/12

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS
NOTES

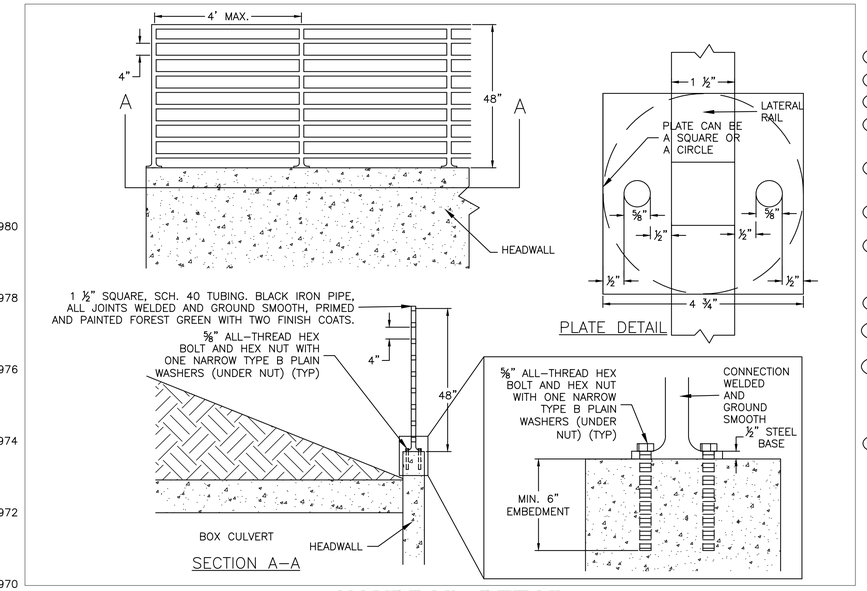
POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
5038	1533124.91	782597.47	6779.00	TOP OF HEADWALL
5039	1533123.35	782600.35	6976.59	P1 UPSTREAM END
5040	1533083.48	782601.86	6976.38	P1 DOWNSTREAM END
5041	1533080.79	782601.89	6980.00	TOP BACK OF CURB
5042	1533081.41	782601.90	6976.28	P2 UPSTREAM END
5043	1533056.63	782633.30	6974.80	P2 DOWNSTREAM END

NOTES: CONTRACTOR TO FIELD VERIFY ALL EXISTING STORM DRAIN ELEVATIONS AND CATCH BASIN ELEVATIONS PRIOR TO CONSTRUCTION.



24" CMP PROFILE
(LOOKING EAST)



HANDRAIL DETAIL

NOT TO SCALE

CONSTRUCTION NOTES
PUBLIC IMPROVEMENTS

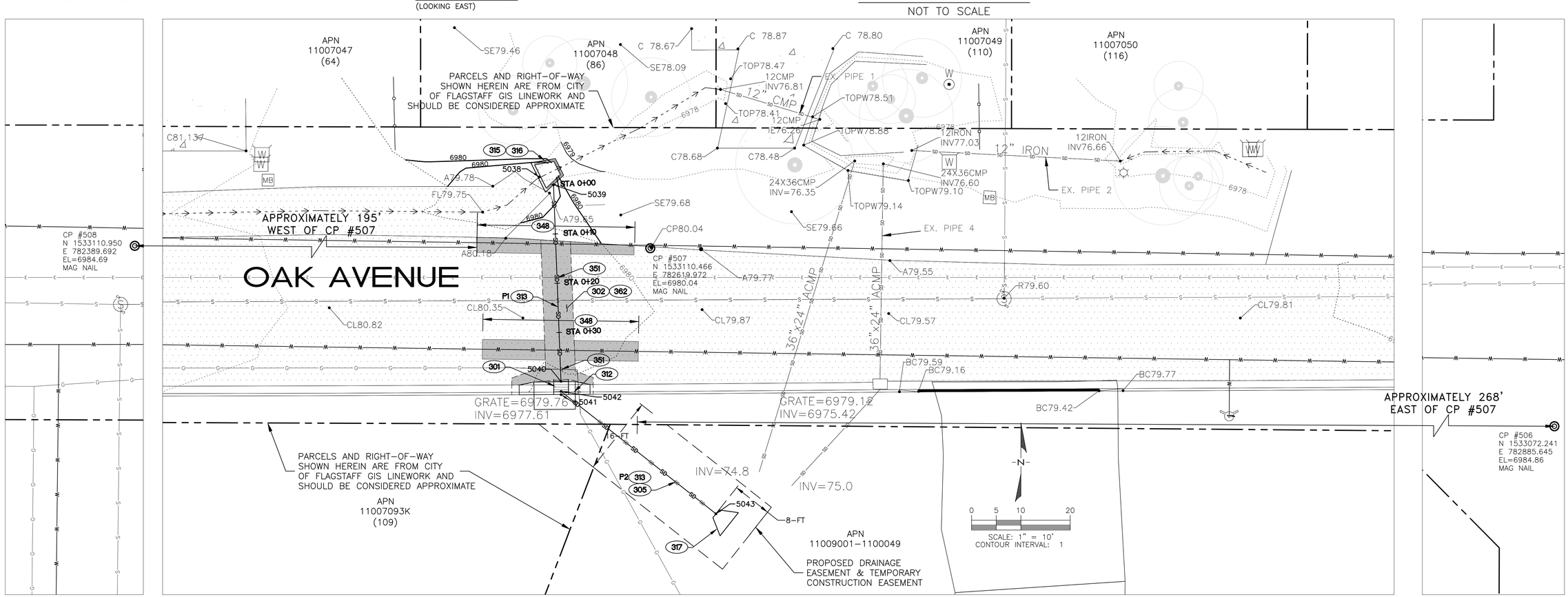
- **301** (1 EA.) SAWCUT, REMOVE & DISPOSE OF EXISTING CATCH BASIN
- **302** (40 S.Y.) SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT.
- **305** (40 L.F.) SAWCUT, REMOVE AND DISPOSE OF EXISTING STORM PIPE
- **312** (1 EA.) CONSTRUCT MAG SD NO. 533 (L=3') TYPE "D" CATCH BASIN WITH BIKE FRIENDLY NEENAH TYPE "L" VANE GRATE. THE CONTROL POINT LOCATED AT TOP BACK OF CURB AT MID POINT OF GRATE.
- **313** (80 L.F.) INSTALL 24" CMP (14 GA. HELICAL 2-2/3"X1/2") IN ACCORDANCE WITH MAG SS 601, 621, AND COF SD 8-02-010.
- **315** (1 EA.) INSTALL HANDRAIL PER DETAIL THIS SHEET ALONG THREE SIDES OF HEADWALL AS SHOWN IN PLAN VIEW.
- **316** (1 EA.) INSTALL HEADWALL DROP INLET & TRASH RACK PER MAG SD 501-5 AND 502-1. MODIFY INLET BOX FOR 24" PIPE AND ANGLE SHOWN. CONTROL POINT LOCATED CENTER TOP OF HEADWALL AT INLET END
- **317** (1 EA.) INSTALL NEW 24" FLARED END SECTION PER MANUFACTURERS SPECIFICATIONS. MATCH EXISTING LOCATION AND ELEVATION AT FLOWLINE.
- **351** (2 EA. CONTINGENCY PAY ITEM) CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF UTILITIES. RELOCATE AS NECESSARY. COORDINATE WITH UTILITY OWNER.
- **348** (2 EA.) MAINTAIN MINIMUM VERTICAL SEPARATION (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) BETWEEN EX WATERLINE AND NEW DRAINAGE CMP=1'(COF 13-09-001-0003). IF THERE IS A VERTICAL CONFLICT BETWEEN EX WATERLINE AND NEW DRAINAGE CMP, THE CONTRACTOR SHALL CONSTRUCT A VERTICAL REALIGNMENT OF WATERLINE IN ACCORDANCE WITH MAG SD NO. 370. VERTICAL ALIGNMENT MUST BE RESTRAINED PER MAG 303-1 & 303-2 AND CONSTRUCTED WITH RESTRAINED JOINT DUCTILE IRON PIPE.
- **362** (40 S.Y.) INSTALL NEW ASPHALT CONCRETE AND AGGREGATE BASE COURSE IN ACCORDANCE WITH MAG SS 310 & 321. PAVEMENT SECTION SHALL BE PER COF SD 10-09-010 OR MATCH EXISTING SECTION, WHICHEVER IS GREATER.

GENERAL NOTES

FIELD TOPOGRAPHY AND BOUNDARY SURVEY INFORMATION USED TO PREPARE THIS DRAWING WERE MADE BY WOODSON ENGINEERING & SURVEY, INC. IN JUNE, 2012.

ALL ELEVATIONS SHOWN ON THE PLANS ARE FINISHED SURFACE ELEVATIONS (EXCEPT AS NOTED).

THE INFORMATION ON THESE CONSTRUCTION PLANS CONCERNING THE TYPE, SIZE, AND LOCATION OF UTILITIES HAS BEEN SHOWN BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINATION OF EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES, IN PLACE, UNLESS OTHERWISE NOTED OR SPECIFIED.



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1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 PLAN.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date Signed 07-17-12 ARIZONA, U.S.A. EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE CONSTRUCTION PLANS

110 E. OAK AVENUE GRADING AND DRAINAGE PLAN

HOR SCALE: 1"=20'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 3 OF 12

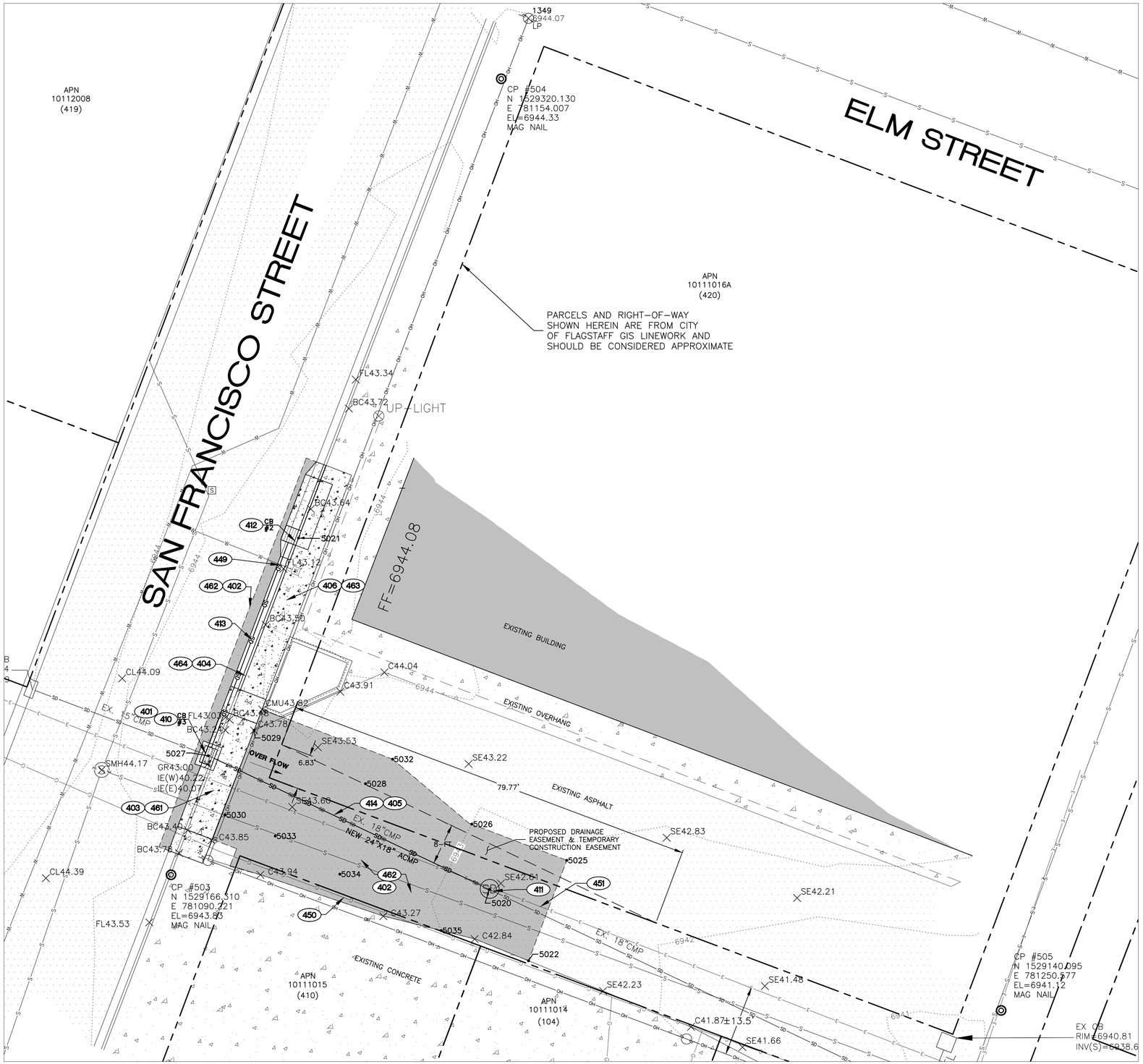
DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

112801

11/8/12

FLAGSTAFF BUNDLED DRAINAGE
OAK AVENUE
GRADING AND DRAINAGE PLAN



CONSTRUCTION NOTES
PUBLIC IMPROVEMENTS

401 (1 EA.) SAWCUT, REMOVE & DISPOSE OF EXISTING CATCH BASIN

402 (202 S.Y.) SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT.

403 (234 S.F.) SAWCUT, REMOVE AND DISPOSE OF CONCRETE FROM EXISTING DRIVEWAY.

404 (48 L.F.) SAWCUT, REMOVE AND DISPOSE OF EXISTING CURB AND GUTTER.

405 (60 L.F.) SAWCUT, REMOVE AND DISPOSE OF EXISTING STORM PIPE

406 (250 S.F.) SAWCUT, REMOVE & DISPOSE OF EXISTING SIDEWALK. REMOVE TO THE EXISTING JOINT LINE.

410 (1 EA.) CONSTRUCT NEW CATCH BASIN TYPE "F" WITH BIKE FRIENDLY NEENAH TYPE "L" VANE GRATE. ON NEW STORM PIPE PER MAG SD NO. 535 AT THE LOCATION INDICATED IN THE POINT TABLE, CONTROL POINT LOCATED AT MIDDLE OF CATCH BASIN. CONNECT EXISTING 15" TO NEW CB.

411 (1 EA.) CONSTRUCT 48" STORM DRAIN MANHOLE IN ACCORDANCE WITH MAG SD NO. 520 AND NO. 522 AT THE LOCATIONS LISTED IN THE POINT TABLE. CONNECT TO PROPOSED 24"X18" ACMP AND EXISTING 18" CMP. PROVIDE GRATED LID, TYPE NEENAH R-2668, TYPE C OR APPROVED EQUAL.

412 (1 EA.) CONSTRUCT MAG SD NO. 533 (L=10') TYPE "D" CATCH BASIN WITH BIKE FRIENDLY NEENAH TYPE "L" VANE GRATE. CONSTRUCT AT THE LOCATION IN THE POINT TABLE. CONTROL POINT LOCATED AT BACK OF CURB IN THE MIDDLE OF THE GRATE. MODIFY DEPTH (V) =3'4"

413 (44 L.F.) INSTALL 18" CMP (14 GA. HELICAL 2-2/3"X1/2") IN ACCORDANCE WITH MAG SS 601, 621, AND COF SD 8-02-010. CONNECT TO NEW CATCH BASINS PER LOCATIONS IN POINT TABLE.

414 (60 L.F.) INSTALL 24"x18" ALUMINIZED CMPA (16 GA. HELICAL 2-2/3"X1/2") IN ACCORDANCE WITH MAG SS 601 & 621. AND COF SD 8-02-010. CONNECT TO NEW CATCH BASINS OR MANHOLES PER LOCATIONS IN POINT TABLE.

449 (1 EA.) MAINTAIN MINIMUM VERTICAL SEPARATION (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) BETWEEN EX WATER SERVICE AND NEW DRAINAGE CMP=1' (COF ENGINEERING DESIGN STANDARDS 13-09-001-0003). IF THERE IS A VERTICAL CONFLICT BETWEEN EX WATERLINE AND NEW DRAINAGE CMP, THE CONTRACTOR SHALL CONSTRUCT A VERTICAL REALIGNMENT OF WATER SERVICE.

450 (1 LS.) PROTECT EXISTING GAS LINE IN PLACE. COORDINATE WITH UTILITY OWNER.

451 (1 EA. CONTINGENCY PAY ITEM) CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF UTILITIES. RELOCATE AS NECESSARY. COORDINATE WITH UTILITY OWNER.

461 (234 SF.) CONSTRUCT DRIVEWAY ENTRANCE IN ACCORDANCE WITH MAG SD NO. 250-2, COMMERCIAL W=24'. MODIFIED FOR MINIMAL RISE TO ALLOW FOR OVERFLOW DRAINAGE TO OCCUR. SEE POINT TABLE FOR MODIFIED ELEVATIONS. MODIFIED TO REMOVE SIDEWALK LANDING.

462 (202 S.Y.) INSTALL NEW ASPHALT CONCRETE AND AGGREGATE BASE COURSE IN ACCORDANCE WITH MAG SS 310 & 321. PAVEMENT SECTION SHALL BE PER COF SD 10-09-010 OR MATCH EXISTING SECTION, WHICHEVER IS GREATER.

463 (250 S.F.) CONSTRUCT 5' (TYP) WIDE SIDEWALK IN ACCORDANCE WITH MAG SD NO. 230, MODIFIED TO PLACE 3" AB UNDER ALL CURB. MATCH EXISTING GRADES EXCEPT AS NOTED ON THIS GRADING PLAN.

464 (48 L.F.) CONSTRUCT 6" (TYPE "A") VERTICAL CURB AND GUTTER IN ACCORDANCE WITH MAG SD NO. 220, MODIFIED TO PLACE 3" AB UNDER ALL CURB. MATCH EXISTING GRADES EXCEPT AS NOTED ON THIS GRADING PLAN.

NOTES: CONTRACTOR TO FIELD VERIFY ALL EXISTING STORM DRAIN ELEVATIONS AND CATCH BASIN ELEVATIONS PRIOR TO CONSTRUCTION

POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
5020	1529163.48	781151.72	6942.75	MH #1, INV IN 6939.33
5021	1529231.38	781114.85	6943.63	CB #2, INV OUT 6940.32
5022	1529149.70	781159.28	6942.60	MATCH EXISTING
5025	1529169.09	781166.67	6942.85	MATCH EXISTING
5026	1529176.09	781148.32	6943.00	MATCH EXISTING
5027	1529189.30	781097.43	6943.02	CB #3, INV CENTER 6940.10
5028	1529183.91	781127.79	6943.15	MATCH EXISTING
5029	1529194.21	781106.26	6943.30	DRIVEWAY
5030	1529177.87	781100.68	6943.45	DRIVEWAY
5032	1529188.64	781133.03	6943.38	MATCH EXISTING
5033	1529173.79	781110.35	6943.35	SE
5034	1529166.43	781122.83	6943.25	SE
5035	1529155.54	781142.40	6943.00	SE

GENERAL NOTES

FIELD TOPOGRAPHY AND BOUNDARY SURVEY INFORMATION USED TO PREPARE THIS DRAWING WERE MADE BY WOODSON ENGINEERING & SURVEY, INC. IN JUNE, 2012.

ALL ELEVATIONS SHOWN ON THE PLANS ARE FINISHED SURFACE ELEVATIONS (EXCEPT AS NOTED).

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112801

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

11/8/12

FLAGSTAFF BUNDLED DRAINAGE
SAN FRANCISCO STREET
GRADING AND DRAINAGE PLAN

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 PLAN.dwg

REVISIONS:

Registered Professional Engineer (Civil)
CERTIFICATE NO. 34537
RICHARD L. SCHULLER
Date Signed 07-17-12
ARIZONA, U.S.A.
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE CONSTRUCTION PLANS

420 N. SAN FRANCISCO STREET GRADING AND DRAINAGE PLAN

HOR SCALE: 1"=10'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 4 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

CONSTRUCTION NOTES
PUBLIC IMPROVEMENTS

502 (8 S.Y.) SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT.

504 (37 L.F.) SAWCUT, REMOVE AND DISPOSE OF EXISTING CURB AND GUTTER.

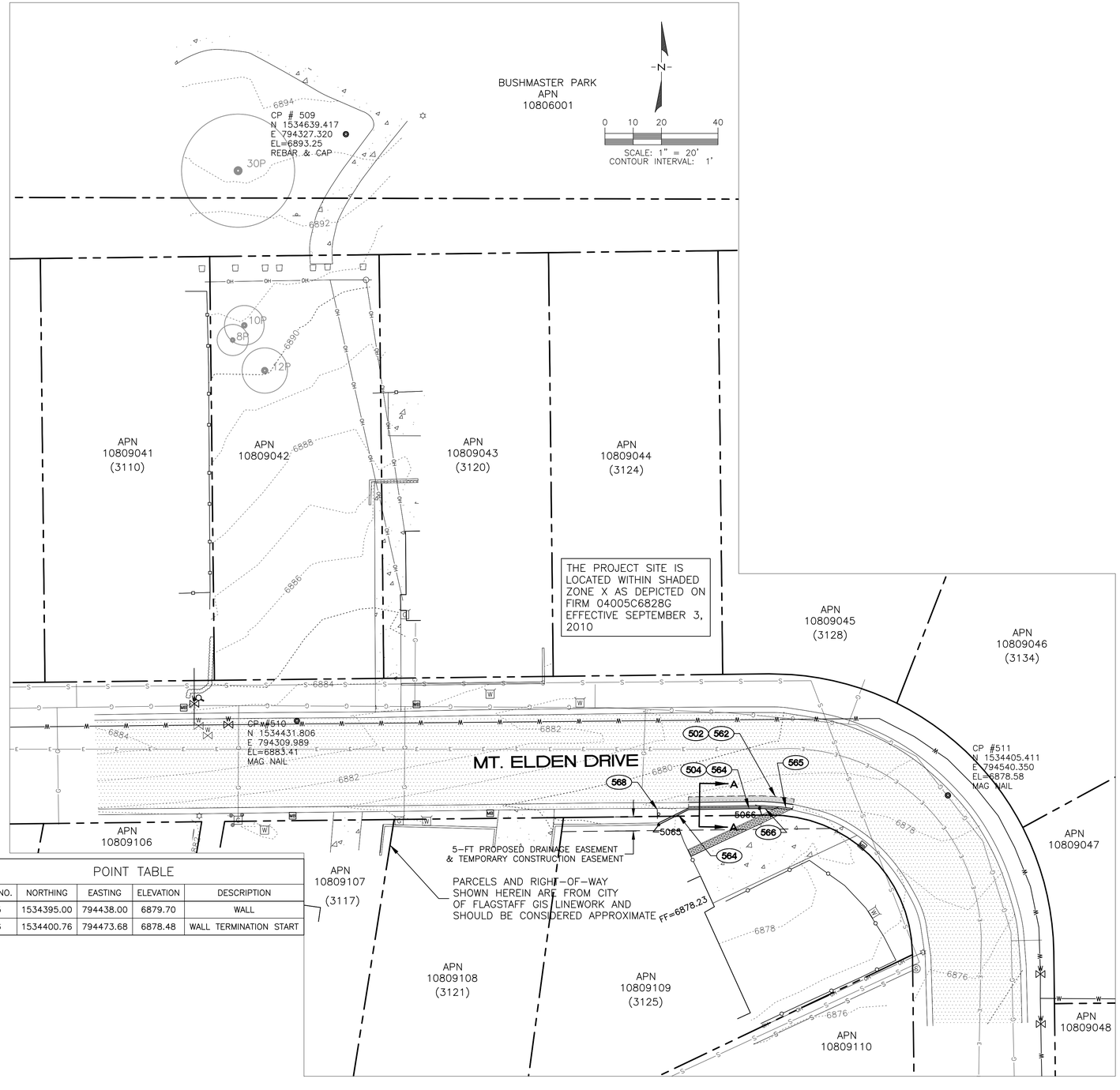
562 (8 S.Y.) INSTALL NEW ASPHALT CONCRETE AND AGGREGATE BASE COURSE IN ACCORDANCE WITH MAG SS 310 & 321. PAVEMENT SECTION SHALL BE PER COF SD 10-09-010 OR MATCH EXISTING SECTION, WHICHEVER IS GREATER.

564 (42 L.F.) CONSTRUCT 12" KNEE WALL IN ACCORDANCE WITH DETAIL ON THIS SHEET. MATCH EXISTING GRADES EXCEPT AS NOTED ON THIS GRADING PLAN. PROVIDE WATER TIGHT CONNECTION TO EXISTING WALL.

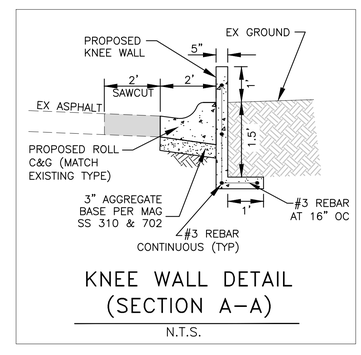
565 (37 L.F.) CONSTRUCT ROLL CURB AND GUTTER (TYPE "C", MATCH EXISTING) IN ACCORDANCE WITH MAG SD NO. 220, MODIFIED TO PLACE 3" AB UNDER ALL CURB. MATCH EXISTING GRADES.

566 (5 L.F.) INSTALL WALL TERMINATION TAPER TO H=0'.

568 (1 EA.) INSTALL STANDARD DELINEATOR PER COF STD DETAIL 10-06-011.



POINT TABLE				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
5065	1534395.00	794438.00	6879.70	WALL
5066	1534400.76	794473.68	6878.48	WALL TERMINATION START



KNEE WALL DETAIL
(SECTION A-A)
N.T.S.

GENERAL NOTES

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1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 PLAN.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date Signed 03-06-12 ARIZONA, U.S.A.
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE CONSTRUCTION PLANS

3125 E. MOUNT ELDEN DRIVE GRADING AND DRAINAGE PLAN

HOR SCALE: 1"=20'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 5 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

112801

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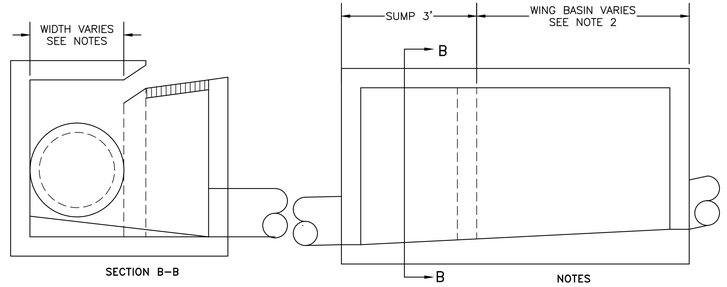
11/8/12

FLAGSTAFF BUNDLED DRAINAGE
MOUNT ELDEN DRIVE
GRADING AND DRAINAGE PLAN

POINT TABLE				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
5001	1517413.94	772940.59	6916.03	INV OUT 6912.45
5002	1517421.46	772817.61	6924.43	CB#4, INV OUT 6920.16
5003	1517341.88	772976.85	6914.23	INV IN 6908.23
5004	1517219.92	773251.37	6907.11	INV 6902.61
5005	1517289.11	773277.49	6907.02	INV OUT 6903.44

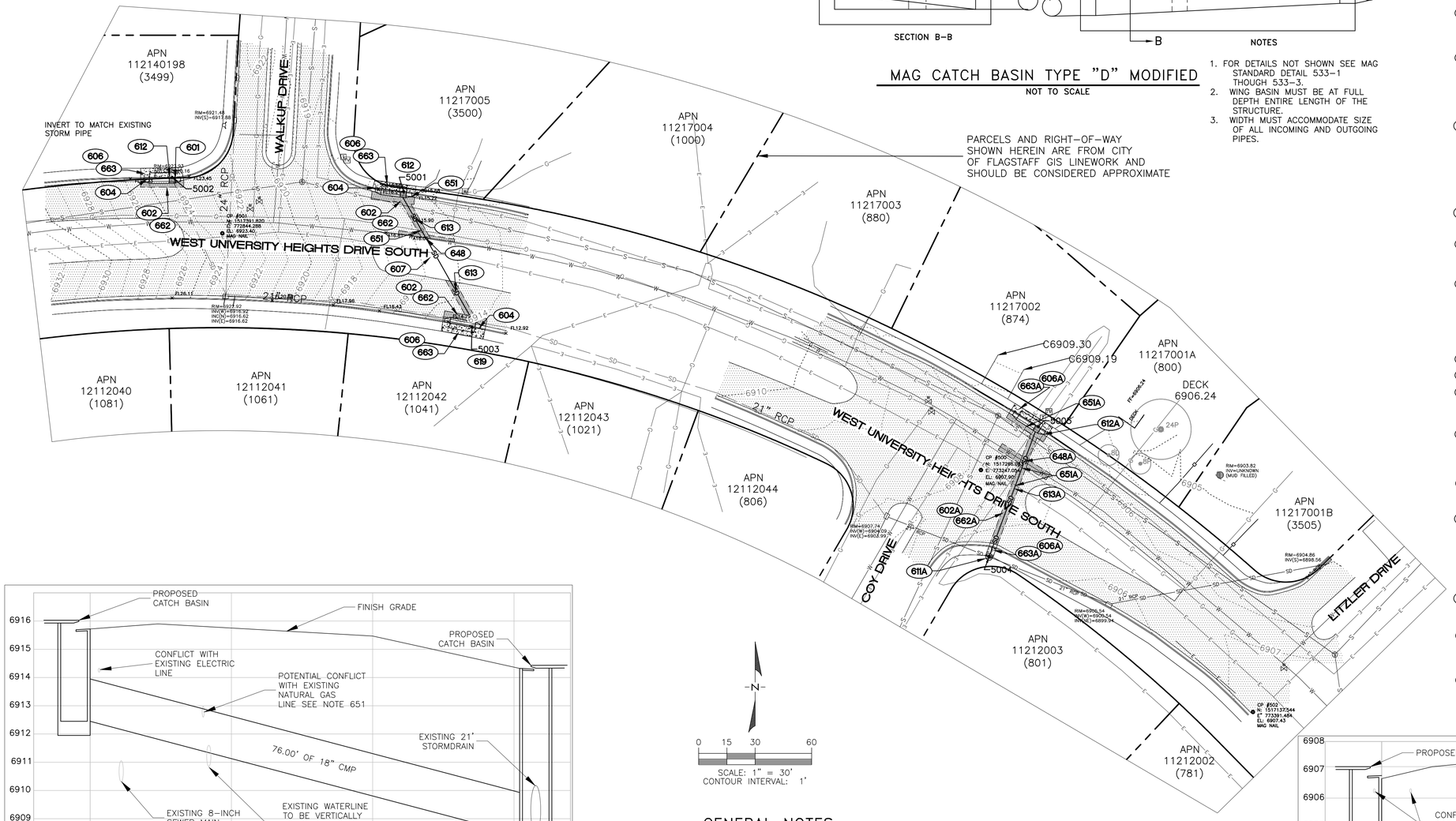
NOTES: CONTRACTOR TO FIELD VERIFY ALL EXISTING STORM DRAIN ELEVATIONS AND CATCH BASIN ELEVATIONS PRIOR TO CONSTRUCTION

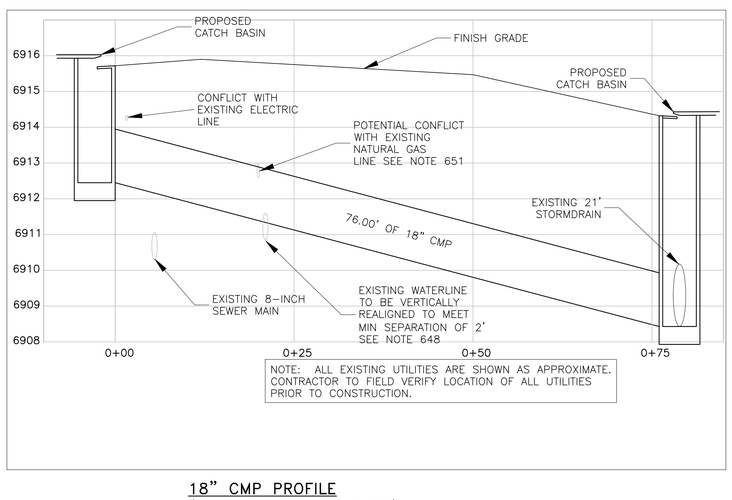


MAG CATCH BASIN TYPE "D" MODIFIED

NOT TO SCALE

1. FOR DETAILS NOT SHOWN SEE MAG STANDARD DETAIL 533–1 THOUGH 533–3.
2. WING BASIN MUST BE AT FULL DEPTH ENTIRE LENGTH OF THE STRUCTURE.
3. WIDTH MUST ACCOMMODATE SIZE OF ALL INCOMING AND OUTGOING PIPES.





18" CMP PROFILE
(NEAR WALKUP DRIVE LOOKING EAST)

GENERAL NOTES

FIELD TOPOGRAPHY AND BOUNDARY SURVEY INFORMATION USED TO PREPARE THIS DRAWING WERE MADE BY WOODSON ENGINEERING & SURVEY, INC. IN JUNE, 2012.

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CONSTRUCTION NOTES

PUBLIC IMPROVEMENTS

BASE BID

601 (1 EA.) SAWCUT, REMOVE & DISPOSE OF EXISTING CATCH BASIN.

602 (45 S.Y.) SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT.

604 (66 L.F.) SAWCUT, REMOVE AND DISPOSE OF EXISTING CURB AND GUTTER.

606 (311 S.F.) SAWCUT, REMOVE & DISPOSE OF EXISTING SIDEWALK.

607 (1 L.S.) REMOVE EXISTING LANDSCAPE AS NECESSARY AND REPLACE IN KIND.

612 (2 EA.) CONSTRUCT MAG SD NO. 533 (L=10') TYPE "D" CATCH BASIN WITH BIKE FRIENDLY NEENAH TYPE "L" VANE GRATE. CONSTRUCT AT THE LOCATION IN THE POINT TABLE. CONTROL POINT LOCATED AT BACK OF CURB IN THE MIDDLE OF THE CATCH BASIN.

613 (77 L.F.) INSTALL 18" CMP (14 GA. HELICAL 2–2/3"X1/2") IN ACCORDANCE WITH MAG SS 601, 621, AND COF SD 8–02–010. CONNECT TO NEW CATCH BASINS OR MANHOLES PER LOCATIONS IN POINT TABLE.

619 (1 EA.) CONSTRUCT MAG SD NO. 533 (L=10') TYPE "D" CATCH BASIN AND MODIFIED PER DETAIL ON THIS SHEET WITH BIKE FRIENDLY NEENAH TYPE "L" VANE GRATE. CONSTRUCT AT THE LOCATION IN THE POINT TABLE. CONTROL POINT LOCATED AT BACK OF CURB IN THE MIDDLE OF THE CATCH BASIN. REMOVE EXISTING PIPE AS NEEDED.

648 (1 EA.) MAINTAIN MINIMUM VERTICAL SEPARATION (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) BETWEEN EX WATERLINE AND NEW DRAINAGE CMP=1'(COF 13–09–001–0003). IF THERE IS A VERTICAL CONFLICT BETWEEN EX WATERLINE AND NEW DRAINAGE CMP, THE CONTRACTOR SHALL CONSTRUCT A VERTICAL REALIGNMENT OF WATERLINE IN ACCORDANCE WITH MAG SD NO. 370. VERTICAL ALIGNMENT MUST BE RESTRAINED PER MAG 303–1 & 303–2 AND CONSTRUCTED WITH RESTRAINED JOINT DUCTILE IRON PIPE.

651 (2 EA. CONTINGENCY PAY ITEM) CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF UTILITIES. RELOCATE AS NECESSARY. COORDINATE WITH UTILITY OWNER.

662 (45 S.Y.) INSTALL NEW ASPHALT CONCRETE AND AGGREGATE BASE COURSE IN ACCORDANCE WITH MAG SS 310 & 321. PAVEMENT SECTION SHALL BE PER COF SD 10–09–010 OR MATCH EXISTING SECTION, WHICHEVER IS GREATER.

663 (311 S.F.) CONSTRUCT 5' (TYP) WIDE SIDEWALK IN ACCORDANCE WITH MAG SD NO. 230, MODIFIED TO PLACE 3" AB UNDER ALL CURB. MATCH EXISTING GRADES.

ADD ALTERNATE #2

602A (46 S.Y.) SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT.

606A (112 S.F.) SAWCUT, REMOVE & DISPOSE OF EXISTING SIDEWALK.

611A (1 EA.) CONSTRUCT 48" STORM DRAIN MANHOLE IN ACCORDANCE WITH MAG SD NO. 520 AND NO. 522 AT THE LOCATIONS LISTED IN THE POINT TABLE. CONNECT TO PROPOSED 18" CMP AND EXISTING 21" RCP. INVERT TO TIE INTO THE EXISTING 21" RCP. REMOVE EXISTING PIPE AS NEEDED.

612A (1 EA.) CONSTRUCT MAG SD NO. 533 (L=10') TYPE "D" CATCH BASIN WITH BIKE FRIENDLY NEENAH TYPE "L" VANE GRATE. CONSTRUCT AT THE LOCATION IN THE POINT TABLE. CONTROL POINT LOCATED AT BACK OF CURB IN THE MIDDLE OF THE CATCH BASIN.

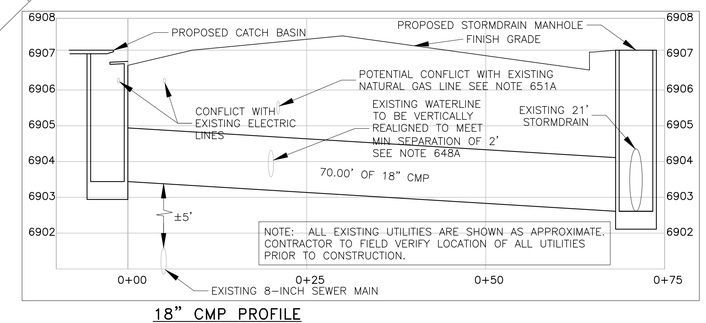
613A (71 L.F.) INSTALL 18" CMP (14 GA. HELICAL 2–2/3"X1/2") IN ACCORDANCE WITH MAG SS 601, 621, AND COF SD 8–02–010. CONNECT TO NEW CATCH BASINS OR MANHOLES PER LOCATIONS IN POINT TABLE.

648A (1 EA.) MAINTAIN MINIMUM VERTICAL SEPARATION (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) BETWEEN EX WATERLINE AND NEW DRAINAGE CMP=1'(COF 13–09–001–0003). IF THERE IS A VERTICAL CONFLICT BETWEEN EX WATERLINE AND NEW DRAINAGE CMP, THE CONTRACTOR SHALL CONSTRUCT A VERTICAL REALIGNMENT OF WATERLINE IN ACCORDANCE WITH MAG SD NO. 370. VERTICAL ALIGNMENT MUST BE RESTRAINED PER MAG 303–1 & 303–2 AND CONSTRUCTED WITH RESTRAINED JOINT DUCTILE IRON PIPE.

651A (3 EA. CONTINGENCY PAY ITEM) CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF UTILITIES. RELOCATE AS NECESSARY. COORDINATE WITH UTILITY OWNER.

662A (46 S.Y.) INSTALL NEW ASPHALT CONCRETE AND AGGREGATE BASE COURSE IN ACCORDANCE WITH MAG SS 310 & 321. PAVEMENT SECTION SHALL BE PER COF SD 10–09–010 OR MATCH EXISTING SECTION, WHICHEVER IS GREATER.

663A (112 S.F.) CONSTRUCT 5' (TYP) WIDE SIDEWALK IN ACCORDANCE WITH MAG SD NO. 230, MODIFIED TO PLACE 3" AB UNDER ALL CURB. MATCH EXISTING GRADES.



18" CMP PROFILE
(NEAR COY DRIVE LOOKING SOUTHEAST)

112801

11/8/12

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FLAGSTAFF BUNDLED DRAINAGE
UNIVERSITY HEIGHTS DRIVE
GRADING AND DRAINAGE PLAN

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 PLAN.dwg

REVISIONS:

Registered Professional Engineer
CERTIFICATE NO. 34537
RICHARD L. SCHULLER
Date signed 07-05-12
ARIZONA, U.S.A.
EXPIRES 3/31/2015

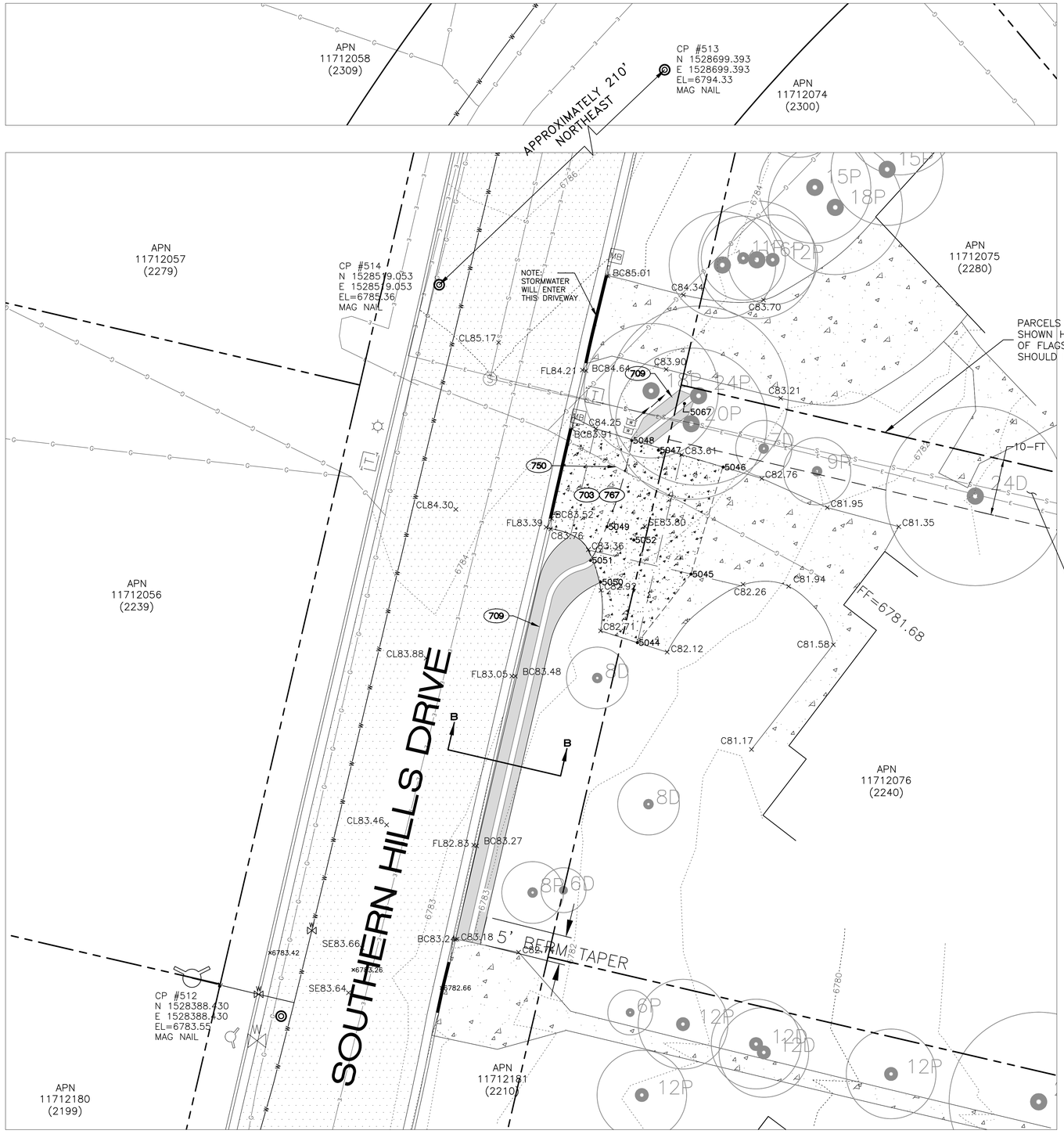
WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774–4636 FAX: (928) 774–4646

FLAGSTAFF BUNDLED DRAINAGE CONSTRUCTION PLANS

800 S. UNIVERSITY HEIGHTS DRIVE GRADING AND DRAINAGE PLAN

HOR SCALE: 1"=30'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 6 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS



PARCELS AND RIGHT-OF-WAY SHOWN HEREIN ARE FROM CITY OF FLAGSTAFF GIS LINEWORK AND SHOULD BE CONSIDERED APPROXIMATE

PROPOSED DRAINAGE EASEMENT & TEMPORARY CONSTRUCTION EASEMENT EXTENDED TO EAST PROPERTY LINE

BASE BID
CONSTRUCTION NOTES
PUBLIC IMPROVEMENTS

703 (732 S.F.) SAWCUT, REMOVE AND DISPOSE OF CONCRETE FROM EXISTING DRIVEWAY.

709 (86 L.F.) CONSTRUCT AND HAND COMPACT EARTHEN BERM PER DETAIL ON THIS SHEET. SEED AND STABILIZE PER SWPPP.

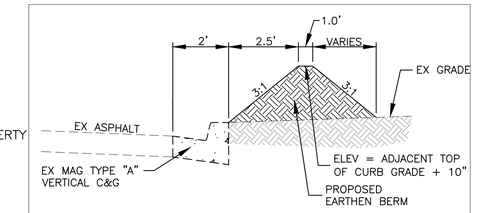
750 (1 LS.) PROTECT EXISTING GAS LINE IN PLACE. COORDINATE WITH UTILITY OWNER.

767 (732 SF.) CONSTRUCT DRIVEWAY, MATCH EXISTING SECTION. SEE POINT TABLE FOR MODIFIED ELEVATIONS.

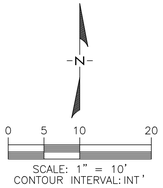
NOTE: CONTRACTOR TO STRINGLINE FINAL DRIVEWAY GRADE IN THREE PLACES MINIMUM TO OBTAIN HOMEOWNERS APPROVAL OF FINISH ELEVATIONS.

POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
5044	1528455.14	800348.52	6782.35	DW, MATCH EXISTING
5045	1528467.38	800358.09	6782.61	DW, MATCH EXISTING
5046	1528486.49	800363.84	6783.18	DW, MATCH EXISTING
5047	1528489.52	800352.28	6784.30	DW
5048	1528491.25	800347.50	6784.50	DW, HIGH POINT
5049	1528475.84	800343.09	6784.50	DW, HIGH POINT
5050	1528465.96	800341.94	6784.00	DW
5051	1528469.84	800340.13	6784.35	DW, HIGH POINT
5052	1528473.47	800347.87	6783.80	DW
5067	1528497.83	800356.92	6784.50	TOP



SECTION B-B
N.T.S.



GENERAL NOTES

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112801

11/8/12

FLAGSTAFF BUNDLED DRAINAGE
SOUTHERN HILLS DRIVE
GRADING AND DRAINAGE PLAN

CALL TWO WORKING DAYS BEFORE YOU DIG
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1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 PLAN.dwg

REVISIONS:

Registered Professional Engineer (Civil)
CERTIFICATE NO. 34537
RICHARD L. SCHULLER
Date Signed 03-06-12
ARIZONA, U.S.A.
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS

2240 SOUTHERN HILLS DRIVE
GRADING AND DRAINAGE PLAN

HOR SCALE: 1"=20'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 7 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

CONSTRUCTION SEQUENCING:

EROSION CONTROL SILT FENCE PER PLAN AND STABILIZED CONSTRUCTION ENTRANCES AT ALL CONSTRUCTION ENTRANCES TO THE SITE.

SITE CLEARING.

GENERAL SITE GRADING AND UTILITY INSTALLATIONS.

SEED/SOD STABILIZATION WITHIN TWO WEEKS AFTER COMPLETION OF FINAL GRADING OR DISTURBANCE.

REMOVE CONSTRUCTION SEDIMENT FROM DETENTION STORAGE AREAS AND STORM SEWER AS NECESSARY TO RE-ESTABLISH SITE TO SPECIFICATIONS INDICATED ON THE PLAN.

AFTER STABILIZATION, REMOVE SILT FENCE WITH MINIMAL DISTURBANCE.

SWPPP CONSTRUCTION NOTES:

1. DUST CONTROL WILL BE ACHIEVED ACCORDING TO BMP STANDARDS AS SHOWN ON THE DETAIL BMP 43-46 ON SHEET 12.

2. ALL SUBCONTRACTORS WILL BE RESPONSIBLE FOR CLEANOFF OF MUD OR DIRT PRIOR TO ENTRY ONTO CITY STREETS.

3. NO MAINTENANCE OF VEHICLES WILL BE DONE ONSITE.

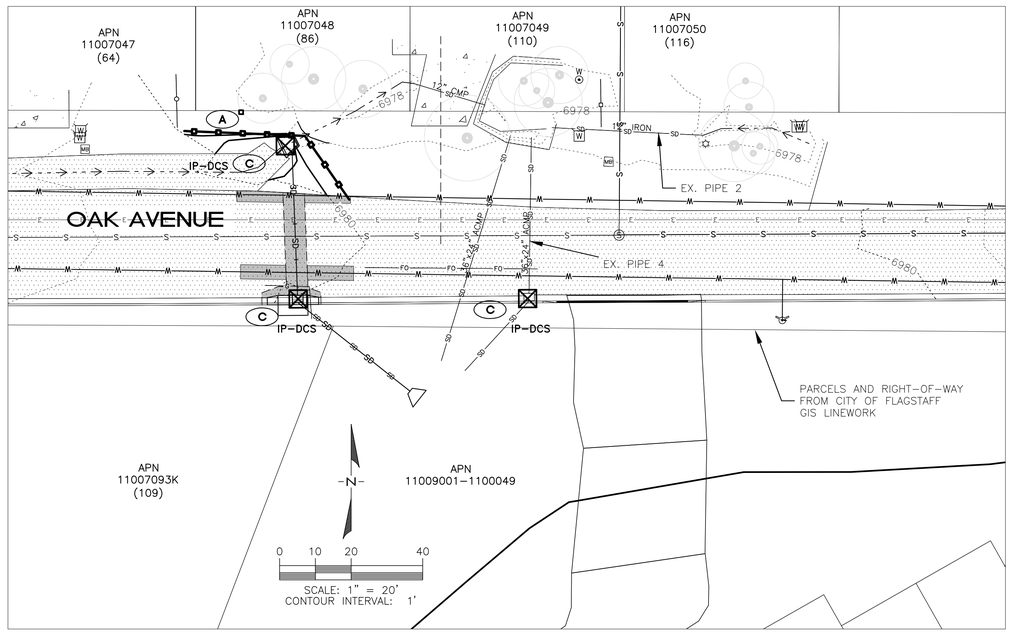
4. A FENCED YARD FOR EQUIPMENT WILL BE MAINTAINED AT THE SITE. SUBCONTRACTORS WILL FURNISH FENCE TO MAINTAIN SUPPLIES AND MINIMIZE WIND BLOWING DEBRIS. ALL DEBRIS TO BE PICKED UP ON A DAILY BASIS.

5. ANY GAS OR OIL SPILLED WILL REQUIRE IMMEDIATE NOTIFICATION TO OWNER AND APPROPRIATE CLEAN-UP. ANY CONTAMINATED SOIL SHALL BE HAULED TO HAZARDOUS WASTE LOCATION.

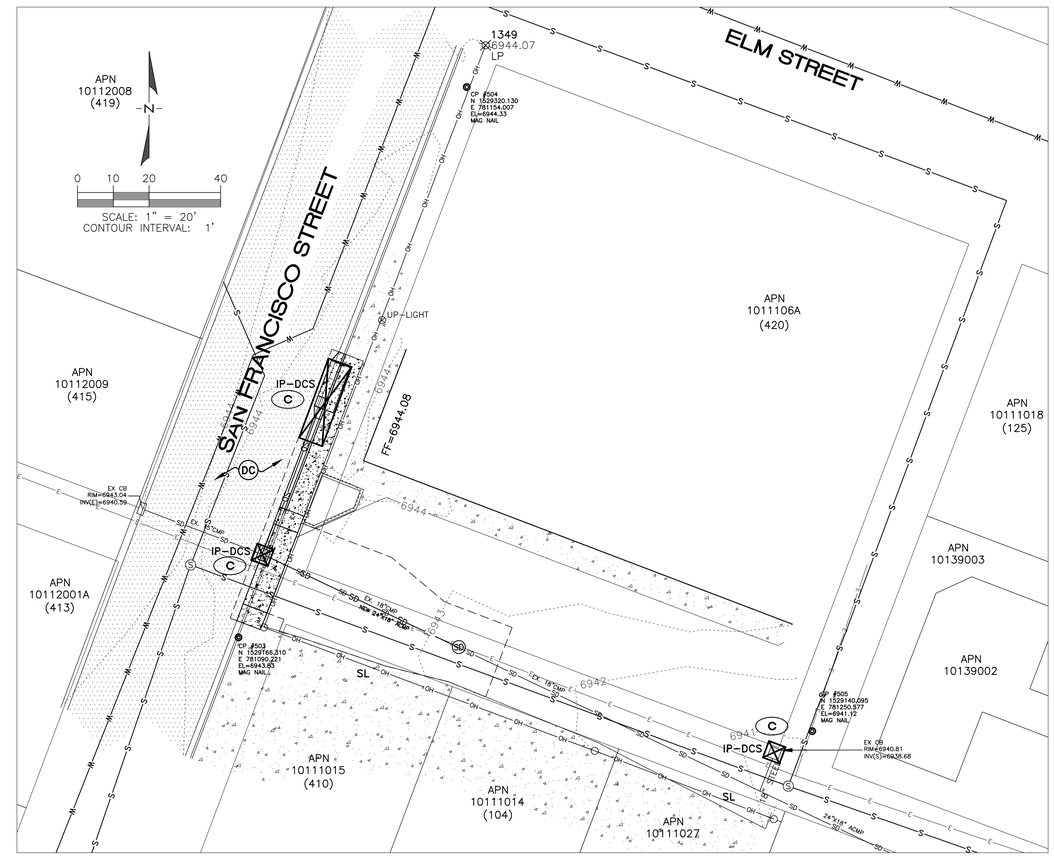
NOTE:

INLET PROTECTION SHALL BE PROVIDED FOR ALL STORM DRAIN(S) DURING CONSTRUCTION TO ENSURE THEY ARE NOT SILTED IN. PROVIDE INLET PROTECTION PER DETAIL DANDY CURB SACK INLET PROTECTION, SHEET 12. IF INLET IS UNSUITABLE FOR DANDY CURB INLET PROTECTION AND IF THE CITY ENGINEER APPROVES, PROVIDE INLET PROTECTION PER DETAIL BMP #69-73 ON SHEET 12.

110 E. OAK AVENUE



420 N. SAN FRANCISCO STREET



LEGEND

A	SF	SILT FENCE, BMP 63-68
B	IP	STORM DRAIN INLET PROTECTION, BMP 69-73
C	IP-DCS	STORM DRAIN INLET PROTECTION, DANDY CURB SACK
	DC	DUST CONTROL, BMP 43-46
E	SL	SEDIMENT LOG

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1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 SWPPP.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date signed: 07-16-12 ARIZONA U.S.A.
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS

110 E. OAK AVENUE
420 N. SAN FRANCISCO STREET
SWPPP

HOR SCALE: 1"=20'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 8 OF 12

DESIGNED BY: JJC
DRAFTED BY: GGE
CHECKED BY: RLS

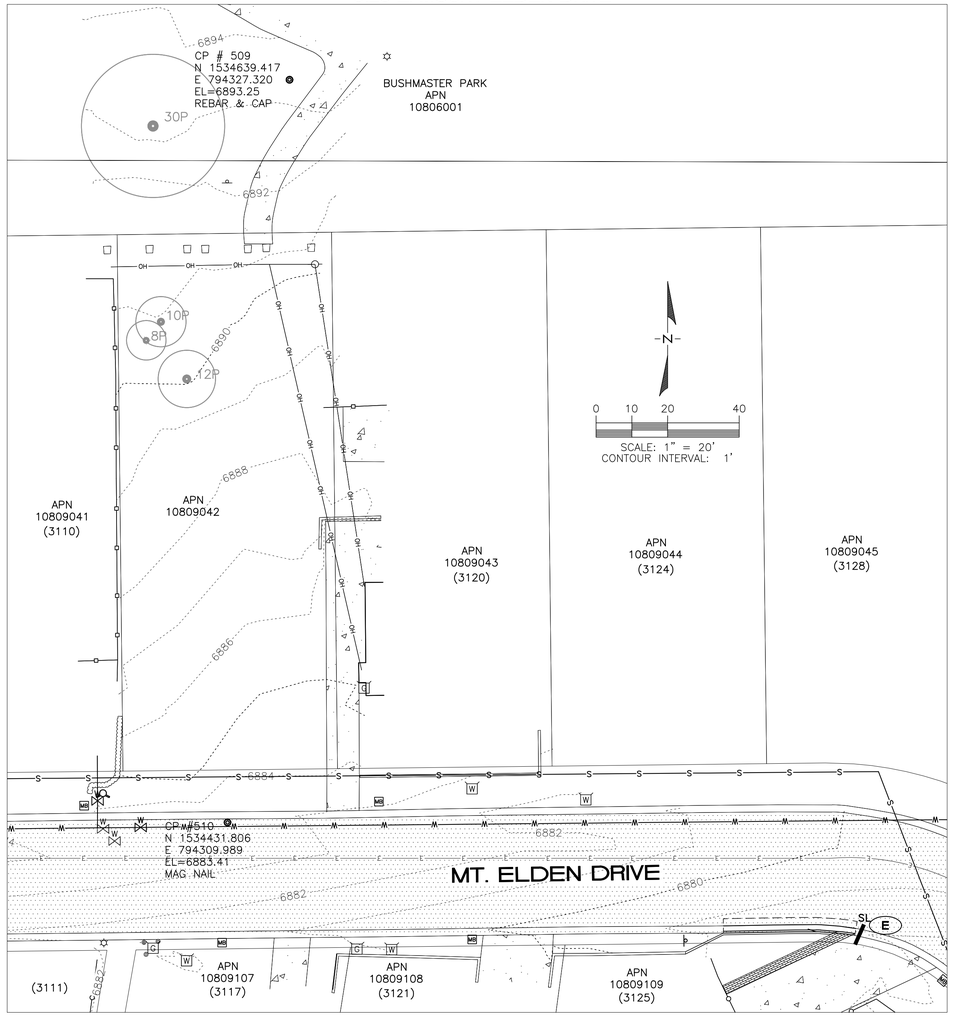
112801

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

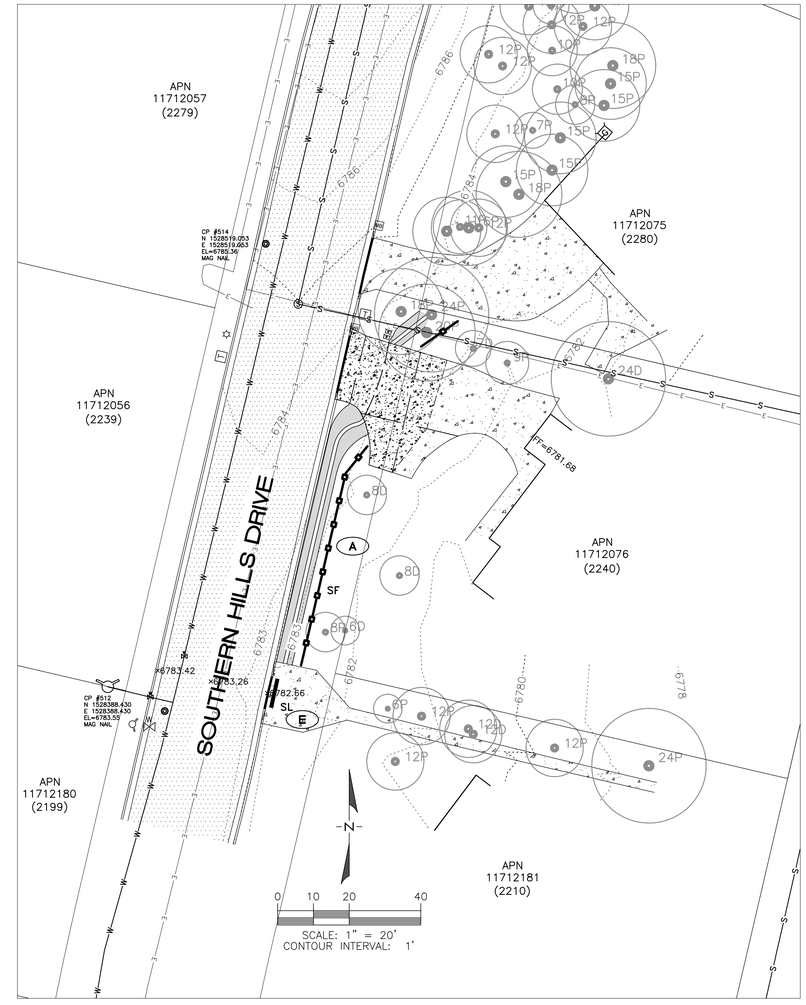
11/08/12

FLAGSTAFF BUNDLED DRAINAGE
OAK STREET AND SAN FRANCISCO STREET
SWPPP

3125 E. MOUNT ELDEN DRIVE



2240 SOUTHERN HILLS DRIVE



CONSTRUCTION SEQUENCING:

EROSION CONTROL SILT FENCE PER PLAN AND STABILIZED CONSTRUCTION ENTRANCES AT ALL CONSTRUCTION ENTRANCES TO THE SITE.

SITE CLEARING.

GENERAL SITE GRADING AND UTILITY INSTALLATIONS.

SEED/SOD STABILIZATION WITHIN TWO WEEKS AFTER COMPLETION OF FINAL GRADING OR DISTURBANCE.

REMOVE CONSTRUCTION SEDIMENT FROM DETENTION STORAGE AREAS AND STORM SEWER AS NECESSARY TO RE-ESTABLISH SITE TO SPECIFICATIONS INDICATED ON THE PLAN.

AFTER STABILIZATION, REMOVE SILT FENCE WITH MINIMAL DISTURBANCE.

NOTE:

INLET PROTECTION SHALL BE PROVIDED FOR ALL STORM DRAIN(S) DURING CONSTRUCTION TO ENSURE THEY ARE NOT SILTED IN. PROVIDE INLET PROTECTION PER DETAIL DANDY CURB SACK INLET PROTECTION, SHEET 12. IF INLET IS UNSUITABLE FOR DANDY CURB INLET PROTECTION AND IF THE CITY ENGINEER APPROVES, PROVIDE INLET PROTECTION PER DETAIL BMP #69-73 ON SHEET 12.

SWPPP CONSTRUCTION NOTES:

1. DUST CONTROL WILL BE ACHIEVED ACCORDING TO BMP STANDARDS AS SHOWN ON THE DETAIL BMP 43-46 ON SHEET 12.

2. ALL SUBCONTRACTORS WILL BE RESPONSIBLE FOR CLEANOFF OF MUD OR DIRT PRIOR TO ENTRY ONTO CITY STREETS.

3. NO MAINTENANCE OF VEHICLES WILL BE DONE ONSITE.

4. A FENCED YARD FOR EQUIPMENT WILL BE MAINTAINED AT THE SITE. SUBCONTRACTORS WILL FURNISH FENCE TO MAINTAIN SUPPLIES AND MINIMIZE WIND BLOWING DEBRIS. ALL DEBRIS TO BE PICKED UP ON A DAILY BASIS.

5. ANY GAS OR OIL SPILLED WILL REQUIRE IMMEDIATE NOTIFICATION TO OWNER AND APPROPRIATE CLEAN-UP. ANY CONTAMINATED SOIL SHALL BE HAULED TO HAZARDOUS WASTE LOCATION.

LEGEND

A	SF	SILT FENCE, BMP 63-68
B	IP	STORM DRAIN INLET PROTECTION, BMP 69-73
C	IP-DCS	STORM DRAIN INLET PROTECTION, DANDY CURB SACK
	DC	DUST CONTROL, BMP 43-46
E	SL	SEDIMENT LOG

DATE

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 SWPPP.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date Signed 02-20-15 ARIZONA, U.S.A.
EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS

2240 SOUTHERN HILLS DRIVE
3125 E. MOUNT ELDEN DRIVE
SWPPP

HOR SCALE: 1"=20'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 9 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

112801

11/08/12

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
MOUNT ELDEN DRIVE AND SOUTHERN HILLS DRIVE
SWPPP

LEGEND

A	SF	SILT FENCE, BMP 63–68
B	IP	STORM DRAIN INLET PROTECTION, BMP 69–73
C	IP–DCS	STORM DRAIN INLET PROTECTION, DANDY CURB SACK
	DC	DUST CONTROL, BMP 43–46
E	SL	SEDIMENT LOG

SWPPP CONSTRUCTION NOTES:

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5. ANY GAS OR OIL SPILLED WILL REQUIRE IMMEDIATE NOTIFICATION TO OWNER AND APPROPRIATE CLEAN–UP. ANY CONTAMINATED SOIL SHALL BE HAULED TO HAZARDOUS WASTE LOCATION.

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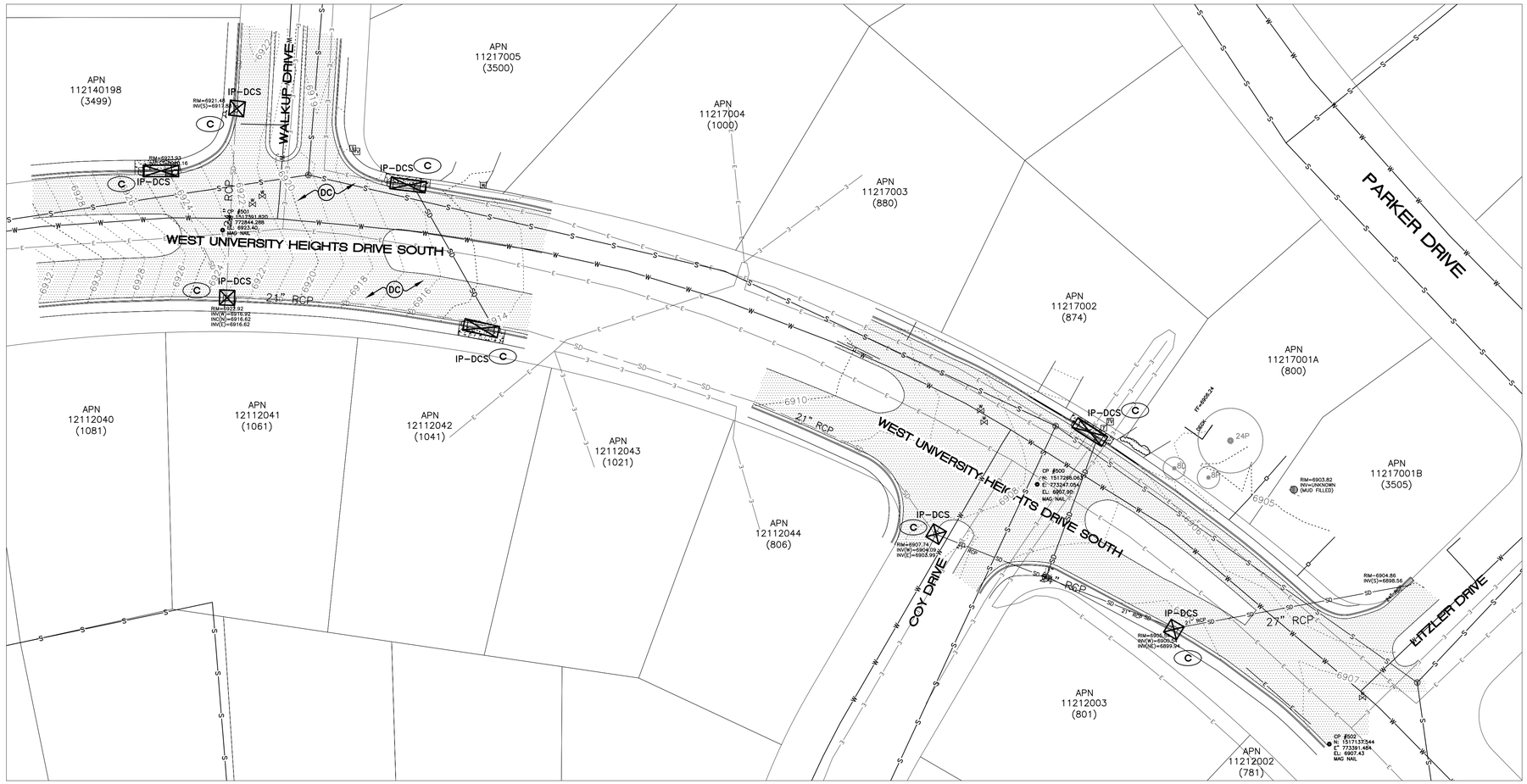

CONSTRUCTION SEQUENCING:

EROSION CONTROL SILT FENCE PER PLAN AND STABILIZED CONSTRUCTION ENTRANCES AT ALL CONSTRUCTION ENTRANCES TO THE SITE.

SITE CLEARING.

GENERAL SITE GRADING AND UTILITY INSTALLATIONS.

SEED/SOD STABILIZATION WITHIN TWO WEEKS AFTER COMPLETION OF FINAL GRADING OR DISTURBANCE.

REMOVE CONSTRUCTION SEDIMENT FROM DETENTION STORAGE AREAS AND STORM SEWER AS NECESSARY TO RE–ESTABLISH SITE TO SPECIFICATIONS INDICATED ON THE PLAN.

AFTER STABILIZATION, REMOVE SILT FENCE WITH MINIMAL DISTURBANCE.

N

0 15 30 60

SCALE: 1" = 30'
CONTOUR INTERVAL: 1'

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 SWPPP.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date signed 07-17-12 ARIZONA, U.S.A.
EXPIRES 3/31/2015

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FLAGSTAFF, AZ 86001
PHONE: (928) 774–4636 FAX: (928) 774–4646

FLAGSTAFF BUNDLED DRAINAGE CONSTRUCTION PLANS

800 S. UNIVERSITY HEIGHTS DRIVE SWPPP

HOR SCALE: 1"=30'
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 10 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

FLAGSTAFF BUNDLED DRAINAGE
UNIVERSITY HEIGHTS DRIVE
SWPPP

11/08/12

112801

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774–4636 FAX: (928) 774–4646

SYMBOL	DUST CONTROL BMP-43	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 1 OF 4
D.C.		

DIAGRAM

CONDITIONS WHERE PRACTICE APPLIES

- ___ PERIMETER CONTROL
- * SLOPE PROTECTION
- ___ SEDIMENT TRAPPING
- ___ DRAINAGE WAY & STREAM PROTECTION
- * TEMPORARY STABILIZATION
- ___ PERMANENT STABILIZATION & EXPOSURE LIMITS
- ___ NON-SEDIMENT POLLUTION CONTROL

DEFINITION

A COMPREHENSIVE PLAN TO LIMIT OFF-SITE SEDIMENTATION BY CONTROLLING THE SITES POTENTIAL FOR PRODUCING AIR BORNE FUGITIVE DUST AND TRACK-OUT OF SEDIMENTS.

PURPOSE

SEDIMENTS WHICH ARE TRANSPORTED FROM CONSTRUCTION SITES BY STORMWATER RUNOFF, WIND, EROSION AND VEHICLE TRACKOUT ARE OFTEN RE-DISPERSED TO THE AIR BY SUBSEQUENT VEHICULAR TRAFFIC AND HIGH WINDS. LIKEWISE, THESE SEDIMENTS MAY BE TRANSPORTED BY THE NEXT RAINFALL INTO PUBLIC STORM SEWER SYSTEMS. IMPLEMENTATION OF CONTROL MEASURES TO MINIMIZE THE GENERATION OF FUGITIVE DUST FROM CONSTRUCTION SITES WILL ALSO LIMIT QUANTITY OF SEDIMENTS IN STORMWATER.

APPROPRIATE APPLICATIONS

PRIMARY SOURCES OF DUST FROM DEVELOPMENT AND CONSTRUCTION ACTIVITIES ARE:

- GRADING OPERATIONS (LAND CLEARING AND EARTHMOVING)
- DRILLING AND BLASTING
- BATCH DROP OPERATIONS (LOADER OPERATION)
- EXPOSED AREAS, CLEARED UNSTABILIZED AREA
- VEHICLE TRAFFIC ON UNPAVED SURFACES
- SEDIMENT TRACKING ON PAVED SURFACES
- BLASTING AND WRECKING BALL OPERATIONS
- SOIL AND DEBRIS STORAGE PILES

THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF THE AIR POLLUTION CONTROL PERMIT. REFER TO APPENDIX D FOR ADDITIONAL INFORMATION ON DUST CONTROL IN MARICOPA COUNTY. THE DIVISION OF AIR POLLUTION CONTROL'S APPROACH TO REDUCE AIR POLLUTION FROM CONSTRUCTION SITES WILL BE TO REQUIRE:

SYMBOL	DUST CONTROL BMP-44	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 2 OF 4
D.C.		

- PERMITS REQUIRE THE USE OF REASONABLY AVAILABLE DUST CONTROL MEASURES.
- ENFORCE VISIBLE OPACITY EMISSION LIMITS TO DETERMINE COMPLIANCE
- REQUIRE DUST CONTROL PLANS FOR CONSTRUCTION OR LAND CLEARING PROJECTS
- ENFORCEMENT ACTIVITIES WITH PRIORITY GIVEN TO CITIZEN COMPLAINTS
- REQUIRE CONTRACTORS TO MAINTAIN RECORDS.

PLANNING CONSIDERATIONS

MANY OF THE REASONABLY AVAILABLE CONTROL MEASURES FOR CONTROLLING FUGITIVE DUST FROM CONSTRUCTION SITES CAN ALSO BE IMPLEMENTED AS BEST MANAGEMENT PRACTICES FOR STORMWATER POLLUTION PREVENTION. THOSE BEST MANAGEMENT PRACTICES INCLUDE:

- PAVE, VEGETATE, OR CHEMICALLY STABILIZE ACCESS POINTS TO PAVED ROADS
- PROVIDE COVERS FOR TRUCKS TRANSPORTING MATERIALS THAT CONTRIBUTE DUST
- PROVIDE FOR WET SUPPRESSION OR CHEMICAL STABILIZATION OF EXPOSED SOILS.
- PROVIDE FOR RAPID CLEANUP OF SEDIMENTS DEPOSITED ON PAVED ROADS.
- FURNISH STABILIZED CONSTRUCTION ROAD ENTRANCES AND VEHICLE WASH DOWN AREAS.
- STABILIZE UNPAVED HAUL ROADS, PARKING AND STAGING AREAS.
- IMPLEMENT DUST CONTROL SEDIMENT-LADEN STORMWATER ONTO PAVED SURFACES.
- STABILIZE ABANDONED CONSTRUCTION SITE USING VEGETATION OR CHEMICAL STABILIZATION METHODS.
- LIMIT THE AMOUNT OF AREAS DISTURBED BY CLEARING AND EARTH MOVING OPERATIONS BY SCHEDULING THESE ACTIVITIES IN PHASES.

THE FOLLOWING TABLE, DUST CONTROL APPLICATION PROVIDES GUIDANCE ON THE APPROPRIATE BEST MANAGEMENT PRACTICES RECOMMENDED FOR TYPICAL FIELD OPERATIONS AND CONDITIONS.
THERE ARE MANY PRODUCTS AVAILABLE AS DUST PALLIATIVES FOR CHEMICALLY STABILIZING GRAVEL ROADWAYS AND STOCKPILES. THE TYPES OF CHEMICALS AVAILABLE AND RECOMMENDATIONS FOR THEIR USE ARE TABULATED IN THE CHART OF COMMONLY USED DUST PALLIATIVES.

MAINTENANCE REQUIREMENTS

DUST CONTROL IS AN ONGOING PROCESS DURING SITE CONSTRUCTION. RE-APPLICATION OF DUST CONTROL MEASURE MAY BE NECESSARY UNTIL CONSTRUCTION IS COMPLETE.

SYMBOL	DUST CONTROL BMP-45	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 3 OF 4
D.C.		

FIELD CONDITION	PERMANENT VEGETATION	MULCHING	WET SUPPRESSION (WATERING)	CHEMICAL DUST SUPPRESSION	GRAVEL OR ASPHALT SURFACING	SAND FENCES	TEMPORARY GRAVEL CONSTRUCTION ENTRANCES/ EQUIPMENT WASH DOWN	HAUL TRUCK COVERS	MINIMIZE EXTENT OF AREA DISTURBED
DISTURBED AREAS NOT SUBJECT TO TRAFFIC	X	X	X	X	X				
DISTURBED AREAS SUBJECT TO TRAFFIC			X	X	X				X
MATERIAL STOCK PILE STABILIZATION			X	X		X			
DEMOLITION			X				X	X	
CLEARING/ EXCAVATION			X	X					X
TRUCK TRAFFIC ON UNPAVED ROADS			X	X	X			X	
MUD/DIRT CARRYOUT					X		X		

SYMBOL	DUST CONTROL BMP-46	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 4 OF 4
D.C.		

COMMONLY USED CHEMICAL DUST PALLIATIVES

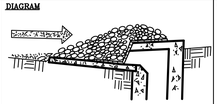
	SALTS	LIGNOSULFATES	BITUMENS
	DELIQUESCENT AND HYDROSCOPIC CHEMICALS	ORGANIC NON-BITUMINOUS BINDERS	PETROLEUM BASED PRODUCTS*
CHEMICAL TYPES	• CALCIUM CHLORIDE • MAGNESIUM CHLORIDE • NATURAL BRINES	• CALCIUM LIGNOSULFONATE • SODIUM LIGNOSULFONATE • AMMONIUM LIGNOSULFONATE	• BUNKER OIL • ASPHALT PRIMER • EMULSIFIED ASPHALT
LIMITATIONS	CAN LOSE EFFECTIVENESS IN DRY PERIODS WITH LOW HUMIDITY. LEACHES FROM ROAD IN HEAVY RAIN. NOT RECOMMENDED FOR GRAVEL ROAD SURFACES WITH LOW FINES. RECOMMEND 10-20% FINES.	NOT AFFECTED BY DRY WEATHER AND LOW HUMIDITY. LEACHED FROM ROAD IN HEAVY RAIN IF NOT SUFFICIENTLY CURED. BEST PERFORMANCE ON GRAVEL ROADS WITH HIGH SURFACE FINES (10-30%) AND DENSE COMPACT SURFACE WITH NO LOOSE GRAVEL.	GENERALLY EFFECTIVE REGARDLESS OF CLIMATE CONDITIONS MAY POTHOLE IN WET WEATHER. BEST PERFORMANCE ON GRAVEL ROADS WITH 5-10% FINES.
COMMENTS	CALCIUM CHLORIDE IS POPULAR. MAY BECOME GRAVEL SURFACES WITH HIGH FINES.	INEFFECTIVE ON GRAVEL SURFACES LOW IN FINES. MAY BECOME SLIPPERY WHEN WET ON GRAVEL SURFACES WITH HIGH FINES CONTENT.	CREATES A HARDENED CRUST.

*MOTOR OILS AND OIL TREATMENTS ARE NOT RECOMMENDED DUE TO ADVERSE EFFECTS ON PLANT LIFE AND GROUNDWATER.

*NOT RECOMMENDED DUE TO ADVERSE EFFECTS ON PLAN LIFE.

SYMBOL	STORM DRAIN INLET PROTECTION BMP-69	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 1 OF 5
I.P.		

DIAGRAM



CONDITIONS WHERE PRACTICE APPLIES

- ___ PERIMETER CONTROL
- * SLOPE PROTECTION
- ___ SEDIMENT TRAPPING
- ___ DRAINAGEWAY & STREAM PROTECTION
- ___ TEMPORARY STABILIZATION
- ___ PERMANENT STABILIZATION & EXPOSURE LIMITS
- ___ NON-SEDIMENT POLLUTION CONTROL

DEFINITION

A SEDIMENT FILTER OF AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN, DROP INLET OR CURB INLET.

PURPOSE

TO PREVENT SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED AREA.

APPROPRIATE APPLICATIONS

WHERE STORM DRAIN INLETS ARE TO BE MADE OPERATIONAL BEFORE PERMANENT STABILIZATION OF THE DISTURBED DRAINAGE AREA. DIFFERENT TYPES OF STRUCTURES ARE APPLICABLE TO DIFFERENT CONDITIONS:

A. FILTER FABRIC FENCE – APPLICABLE WHERE THE INLET DRAINS A RELATIVELY SMALL (LESS THAN 1 ACRE) FLAT AREA (LESS THAN 5 PERCENT SLOPE). DO NOT PLACE FABRIC UNDER GRATE AS THE COLLECTED SEDIMENT MAY FALL INTO THE DRAIN WHEN THE FABRIC IS RETRIEVED.

B. EXCAVATED DROP INLET SEDIMENT TRAP – PROTECTION AGAINST SEDIMENT ENTERING A STORM DRAIN INLET CAN BE PROVIDED BY EXCAVATING AN AREA IN THE APPROACH TO THE DRAIN. THE DRAINAGE AREA FOR A DRAIN PROTECTED IN THIS MANNER IS ONE ACRE. PROVIDE WEEP HOLES TO DRAIN THE SHALLOW POOL

♦ ADVANTAGES:

- INLET PROTECTION PREVENTS SEDIMENT FROM ENTERING THE STORM DRAIN SYSTEM AND CLOGGING IT.

SYMBOL	STORM DRAIN INLET PROTECTION BMP-70	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 2 OF 5
I.P.		

LIMITATIONS

- PONDING WILL OCCUR AT THE INLET WITH POSSIBLE SHORT TERM FLOODING.
- CURB INLETS ON SLOPES CANNOT BE EFFECTIVELY PROTECTED BECAUSE THE STORMWATER WILL BYPASS THE INLET AND CONTINUE DOWNGRADE.
- FILTER FABRIC FENCES ARE LIMITED TO STORM DRAIN INLETS FOR SMALL DRAINAGE AREAS OF FIVE ACRES OR LESS. FOR LARGER DRAINAGE AREAS, SMALLER SEDIMENT CATCHMENT AREAS ARE RECOMMENDED.

PLANNING CONSIDERATIONS

WHERE STORM SEWERS ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED, OR WHERE CONSTRUCTION IS ADJACENT TO AN EXISTING STORM SEWER, LARGE AMOUNTS OF SEDIMENT MAY ENTER THE STORM SEWER SYSTEM, IN CASES OF EXTREME SEDIMENT LOADING, THE STORM SEWER ITSELF MAY CLOG AND LOSE A MAJOR PORTION OF ITS CAPACITY. TO AVOID THESE PROBLEMS, IT IS NECESSARY TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM AT THE INLETS.

THIS PRACTICE CONTAINS SEVERAL TYPES OF INLET FILTERS AND TRAPS WHICH HAVE DIFFERENT APPLICATIONS DEPENDENT UPON SITE CONDITIONS AND TYPE OF INLET. OTHER INNOVATIVE TECHNIQUES FOR ACCOMPLISHING THE SAME PURPOSE ARE ENCOURAGED, BUT ONLY AFTER SPECIFIC PLANS AND DETAILS ARE SUBMITTED TO AND APPROVED BY THE LOCAL GOVERNMENT.

DESIGN AND SIZING CRITERIA

GRATES AND SPACES OF ALL INLETS SHOULD BE SECURED TO PREVENT SEEPAGE OF SEDIMENT-LADEN WATER. ALL INLET PROTECTION MEASURES SHOULD INCLUDE SEDIMENT SUMPS OF 1 TO 2 FEET IN DEPTH AND WITH 2:1 SIDE SLOPES, INSTALLATION PROCEDURE FOR FILTER FABRIC FENCE:

A. PLACE 2 INCH BY 2 INCH WOODEN STAKES AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3 FEET APART AND DRIVE THEM AT LEAST 8 INCHES INTO THE GROUND. THE STAKES MUST BE AT LEAST 3 FEET LONG.

SYMBOL	STORM DRAIN INLET PROTECTION BMP-71	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 3 OF 5
I.P.		

DESIGN AND SIZING CRITERIA

B. EXCAVATE A TRENCH APPROXIMATELY 8 INCHES WIDE AND 12 INCHES DEEP AROUND THE OUTSIDE PERIMETER OF THE STAKES.

C. STAPLE THE FILTER FABRIC (FOR MATERIALS AND SPECIFICATIONS, SEE SILT FENCE BMP) TO WOODEN STAKES SO THAT 32 INCHES OF THE FABRIC EXTENDS OUT AND CAN BE FORMED INTO THE TRENCH. USE HEAVY-DUTY STAPLES AT LEAST 1/2 INCH IN LENGTH.

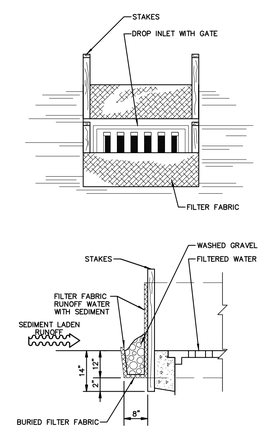
D. BACKFILL THE TRENCH WITH 3/4 INCH OR LESS WASHED GRAVEL ALL THE WAY AROUND.

MAINTENANCE REQUIREMENTS

FOR SYSTEMS USING FILTER FABRIC: INSPECTIONS SHOULD BE MADE ON A REGULAR BASIS, ESPECIALLY AFTER LARGE STORM EVENTS. IF THE FABRIC BECOMES CLOGGED, IT SHOULD BE REPLACED. SEDIMENT SHOULD BE REMOVED WHEN IT REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE FENCE. IF A SUMP IS USED, SEDIMENT SHOULD BE REMOVED WHEN IT FILLS APPROXIMATELY ONE-HALF THE DEPTH OF THE HOLE.

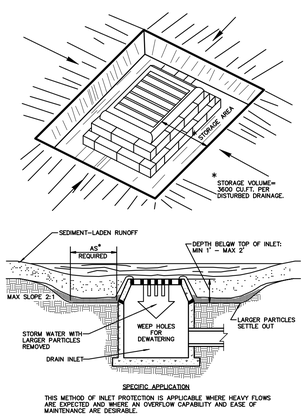
REFERENCES (1, 3, 11, 14, 23)

SYMBOL	STORM DRAIN INLET PROTECTION BMP-72	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 4 OF 5
I.P.		



FILTER FABRIC FENCE DROP INLET FILTER

SYMBOL	STORM DRAIN INLET PROTECTION BMP-73	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 5 OF 5
I.P.		



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPABILITY AND EASE OF MAINTENANCE ARE DESIRABLE.

EXCAVATED DROP INLET SEDIMENT TRAP

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 SWPPP.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date Signed 02-22-12 ARIZONA U.S.A. EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS

SWPPP
DETAILS 1

HOR SCALE: NA
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 11 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS

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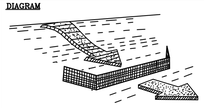
112801

11/08/12

FLAGSTAFF BUNDLED DRAINAGE
SWPPP
DETAILS 1

SYMBOL	SILT FENCE BMP-63	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	1 OF 6
S.F.			

DIAGRAM



CONDITIONS WHERE PRACTICE APPLIES

- PERIMETER CONTROL
- SLOPE PROTECTION
- SEDIMENT TRAPPING
- DRAINAGE WAY & STREAM PROTECTION
- TEMPORARY STABILIZATION
- PERMANENT STABILIZATION & EXPOSURE LIMITS
- NON-SEDIMENT POLLUTION CONTROL

DEFINITION

A TEMPORARY SEDIMENT BARRIER CONSISTING OF A FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS, ENTRENCHED AND, DEPENDING UPON THE STRENGTH OF THE FABRIC USED, WITH WIRE FENCE FOR SUPPORT.

PURPOSE

1. TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS DURING CONSTRUCTION OPERATIONS IN ORDER TO PREVENT SEDIMENT FROM LEAVING THE SITE.

2. TO DECREASE THE VELOCITY OF SHEET FLOWS AND LOW-TO-MODERATE LEVEL CHANNEL FLOWS.

APPROPRIATE APPLICATIONS

FILTER FENCES MUST BE PROVIDED JUST UPSTREAM OF THE POINT(S) OF DISCHARGE OF RUNOFF FROM A SITE, BEFORE THE FLOW BECOMES CONCENTRATED. THEY MAY ALSO BE USED.

1. BELOW DISTURBED AREAS WHERE RUNOFF MAY OCCUR IN THE FORM OF SHEET AND RILL EROSION; WHEREVER RUNOFF HAS THE POTENTIAL TO IMPACT DOWNSTREAM RESOURCES.

2. PERPENDICULAR TO MINOR SWALES OR DITCH LINES FOR UP TO ONE ACRE CONTRIBUTING DRAINAGE AREAS.

NOT INTENDED FOR USE IN DETAINING CONCENTRATED FLOW.

SYNTHETIC FABRIC FILTER FENCES ARE ONLY APPLICABLE FOR SHEET OR OVERLAND FLOWS AND NOT THE VOLUMES OF WATER IN CONCENTRATED FLOWS.

SYMBOL	SILT FENCE BMP-64	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	2 OF 6
S.F.			

LIMITATIONS

- FILTER FENCES WILL CREATE A TEMPORARY SEDIMENTATION POND ON THE UPSTREAM SIDE OF THE FENCE WHICH MAY CAUSE TEMPORARY FLOODING. FENCES NOT CONSTRUCTED ON A LEVEL CONTOUR WILL BE OVERTOPPED BY CONCENTRATED FLOW RESULTING IN FAILURE OF THE FILTER FENCE.
- FILTER FENCES ARE NOT PRACTICAL WHERE LARGE FLOWS OF WATER ARE INVOLVED, HENCE THE NEED TO RESTRICT THEIR USE TO DRAINAGE AREAS OF ONE ACRE OR LESS, AND FLOW RATES OF LESS THAN 0.5 CFS.
- PROBLEMS MAY ARISE FROM INCORRECT SELECTION OF PORE SIZE AND/OR IMPROPER INSTALLATION.
- DO NOT ALLOW WATER DEPTH TO EXCEED 1.5 FEET AT ANY POINT.
- IMPROPERLY INSTALLED FENCES ARE SUBJECT TO FAILURE FROM UNDERCUTTING, OVERTOPPING OR COLLAPSING.

PLANNING CONSIDERATIONS

LABORATORY WORK AT THE VIRGINIA HIGHWAY AND TRANSPORTATION RESEARCH COUNCIL HAS SHOWN THAT SILT FENCES CAN TRAP A MUCH HIGHER PERCENTAGE OF SUSPENDED SEDIMENTS THAN CAN STRAW BALES. SILT FENCES ARE PREFERABLE TO STRAW BARRIERS IN MAY CASES. HOWEVER, WHILE THE FAILURE RATE OF SILT FENCES IS LOWER THAN THAT OF STRAW BARRIERS, THERE ARE MANY INSTANCES LOCALLY IN WHICH FENCES HAVE BEEN IMPROPERLY INSTALLED. THE INSTALLATION METHODS OUTLINED HERE CAN IMPROVE PERFORMANCE.

- CONSTRUCT ALONG A LEVEL CONTOUR.
- SILT FENCES SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.
- PROVIDE SUFFICIENT ROOM FOR SEDIMENT REMOVAL EQUIPMENT BETWEEN THE SILT FENCE AND TOES OF SLOPES OR OTHER OBSTRUCTIONS.
- THE ENDS OF THE FILTER FENCE SHOULD BE TURNED UPHILL TO PREVENT STORMWATER FROM SLOWING AROUND FENCE.
- PROVIDE AN UNDISTURBED OR STABILIZED OUTLET SUITABLE FOR SHEET FLOW.
- DO NOT CONSTRUCT IN LIVE STREAMS OR INTERMITTENTLY FLOWING CHANNELS.

SYMBOL	SILT FENCE BMP-65	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	3 OF 6
S.F.			

DESIGN AND SIZING CRITERIA

- UPSTREAM DRAINAGE AREA LIMITED TO ONE ACRE OR LESS WHEN USED ALONE OR IN COMBINATION WITH SEDIMENT BASIN IN A LARGER SITE.
- MAXIMUM SLOPE STEEPNESS PERPENDICULAR TO FINE LINE, 1:1.
- MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE FENCE $\leq$ 100 FEET.
- NO CONCENTRATED FLOW GREATER THAN 0.5 CFS.

SELECTION OF A FILTER FABRIC IS BASED ON SOIL CONDITIONS AT THE CONSTRUCTION SITE (WHICH AFFECT THE EQUIVALENT OPENING SIZE (EOS) FABRIC SPECIFICATION) AND CHARACTERISTICS OF THE SUPPORT FENCE (WHICH AFFECT THE CHOICE OF TENSILE STRENGTH). THE DESIGNER SHALL SPECIFY A FILTER FABRIC THAT RETAINS THE SOIL FOUND ON THE CONSTRUCTION SITE YET WILL HAVE OPENINGS LARGE ENOUGH TO PERMIT DRAINAGE AND PREVENT CLOGGING. THE FOLLOWING CRITERIA IS RECOMMENDED FOR SELECTION OF THE EQUIVALENT OPENING SIZE:

1. IF 50 PERCENT OR LESS OF THE SOIL, BY WEIGHT, WILL PASS THE U.S. STANDARD SIEVE NO. 200, SELECT THE EOS TO RETAIN 85 PERCENT OF THE SOIL. THE EOS SHOULD NOT BE FINER THAN EOS 70.
2. FOR ALL OTHER SOIL TYPES, THE EOS SHOULD BE NO LARGER THAN THE OPENINGS IN THE U.S. STANDARD SIEVE NO. 70 (0.0083 IN. (0.21 MM)) EXCEPT WHERE DIRECT DISCHARGE TO A STREAM, LAKE OR WETLAND WILL OCCUR, THEN THE EOS SHALL BE NO LARGER THAN STANDARD SIEVE NO. 100.

TO REDUCE THE CHANCE OF CLOGGING, IT IS PREFERABLE TO SPECIFY A FABRIC WITH OPENINGS AS LARGE AS ALLOWED BY THE CRITERIA. NO FABRIC SHOULD BE SPECIFIED WITH AN EOS SMALLER THAN U.S. STANDARD SIEVE NO. 100 (0.0059 IN. (0.15 MM)). IF 85 PERCENT OR MORE OF A SOIL, BY WEIGHT, PASSES THROUGH THE OPENINGS IN A NO. 200 SIEVE (0.0029 IN. (0.074 MM)), FILTER FABRIC SHALL BE USED. MOST OF THE PARTICLES IN SUCH A SOIL WOULD NOT BE RETAINED IF THE EOS WAS TOO LARGE, AND THEY WOULD CLOG THE FABRIC QUICKLY IF THE EOS WAS SMALL ENOUGH TO CAPTURE THE SOIL.

SYMBOL	SILT FENCE BMP-66	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	4 OF 6
S.F.			

SELECTION OF FABRIC TENSILE STRENGTH AND BURSTING STRENGTH CHARACTERISTIC SHALL BE SUPPORTED WITH WIRE MESH IN AND AS RECOMMENDED BY THE FABRIC MANUFACTURER. FILTER FABRIC MATERIAL SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF SIX MONTHS OR EXPECTED USABLE LIFE AT A TEMPERATURE RANGE OF 0° TO 120°F.

- TYPICAL INSTALLATION:

FILTER FENCES ARE TO BE CONSTRUCTED ON A LEVEL CONTOUR TO MAXIMIZE THE AVAILABLE PONDING AREA AND PREVENT CONCENTRATION OF FLOW AGAINST THE FENCE.

A. POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 30 INCHES.

B. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 9 INCHES WIDE AND 12 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.

C. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES.

D. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE AND 20 INCHES OF THE FABRIC SHALL EXTEND INTO THE TRENCH. WHEN EXTRA STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED AND THE FILTER FABRIC STAPLED OR WIRED DIRECTLY TO THE POST.

E. THE USE OF JOINTS SHOULD BE AVOIDED. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP AND BOTH ENDS SECURELY FASTENED TO THE POST.

F. THE TRENCH SHALL BE BACKFILLED WITH 3/4 INCH MINIMUM DIAMETER WASHED GRAVEL OR COMPACTED NATIVE MATERIAL.

SYMBOL	SILT FENCE BMP-67	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	5 OF 6
S.F.			

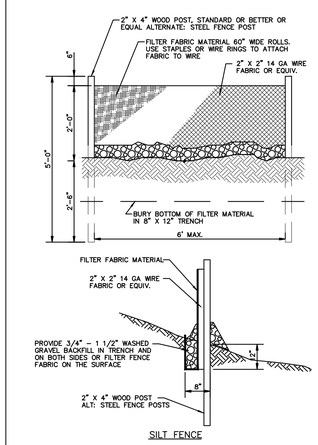
MAINTENANCE REQUIREMENTS

INSPECT MONTHLY DURING DRY PERIODS AND IMMEDIATELY AFTER EACH RAINFALL. REPAIR AS NECESSARY. SEDIMENT MUST BE REMOVED WHEN IT REACHES APPROXIMATELY ONE THIRD HEIGHT OF THE FENCE, ESPECIALLY IF HEAVY RAINS ARE EXPECTED.

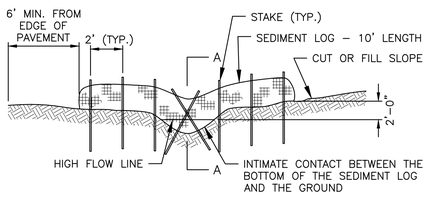
FILTER FENCES SHOULD NOT BE REMOVED UNTIL THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

REFERENCES (1, 2, 14)

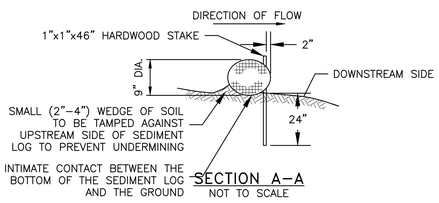
SYMBOL	SILT FENCE BMP-68	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	6 OF 6
S.F.			



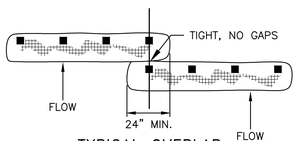
SILT FENCE



SEDIMENT LOG AND CHANNEL/DITCH
SECTIONAL ELEVATION
NOT TO SCALE



SECTION A–A
NOT TO SCALE



TYPICAL OVERLAP
NOT TO SCALE

SEDIMENT LOG
(TYP.)

NOTES

SEDIMENT LOGS SHALL BE LOCATED AS INDICATED IN PLANS OR AS DIRECTED BY THE ENGINEER. THEY SHALL BE SELECTED, INSTALLED, AND MAINTAINED WITH MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES.

LAY SEDIMENT LOG ACROSS PREPARED CHANNEL. TRENCHING OR BURIAL OF SEDIMENT LOGS IS NOT REQUIRED. THE INTIMATE CONTACT BETWEEN THE BOTTOM OF THE LOG AND THE GROUND IS MANDATORY. THE LOGS SHALL BE INSTALLED IN THE SWALE OR CHANNEL BOTTOM AND SHALL CONTINUE UP THE SIDE SLOPES 2'–0" ABOVE THE HIGH FLOW LINE, MEASURED PERPENDICULARLY TO THE FLOW OF WATER.

STAKE WITH 1" x 1" x 46" MIN. HARDWOOD STAKES ON 2 FEET CENTERS. THE STAKE SHALL BE PLACED THROUGH THE DOWNSTREAM SIDE ONLY 2" INTO THE LOG. IT IS ONLY NECESSARY FOR THE STAKES TO GRAB ONE OR TWO INCHES OF THE NETTING. DO NOT DRIVE THE STAKES THROUGH THE CENTER OF THE LOG. THE STAKES MUST BE DRIVEN INTO THE GROUND 24". CENTER STAKES SHALL BE PLACED IN AN "X" PATTERN.

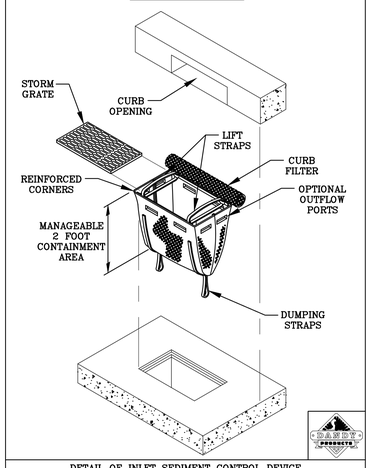
MAKE SURE NO GAPS EXIST BETWEEN THE SOIL AND THE SEDIMENT LOGS. REPAIR ANY RILLS OR GULLIES PROMPTLY. IN ROCKY CONDITIONS, THE ENGINEER WILL EVALUATE THE PLACEMENT OF SEDIMENT LOGS.

SLOPES STEEPER THAN 4:1 SHALL APPLY ROCK RIPRAP FOR CHANNEL/DITCH LINING OR CHECK DAMS WHEN SUITABLE.

TYPICAL OVERLAP APPLIES ONLY TO THE SITUATION WHERE CHANNEL/DITCH IS WIDER THAN THE LENGTH OF ONE SEDIMENT LOG.

SEDIMENT LOGS AND STAKES TO BE REMOVED ONCE CONSTRUCTION ACTIVITIES ARE COMPLETE. CONTRACTOR SHALL DISPOSE OF SEDIMENT LOGS, STAKES, AND ANY TRAPPED SEDIMENT MATERIAL AND FILL SHALLOW TRENCH CREATED BY SEDIMENT LOGS.

DANDY CURB SACK™



DETAIL OF INLET SEDIMENT CONTROL DEVICE WITH CURB FILTER

PROJECT:		DR. BY:
CITY/STATE:	DATE:	DR. NO:

DANDY CURB SACK™
SPECIFICATIONS

NOTE: THE DANDY CURB SACK™ WILL BE **MANUFACTURED IN THE U.S.A.** FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

REGULAR FLOW DANDY CURB SACK™ (BLACK)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.78 (400) x 1.40 (315)
Grab Tensile Elongation	ASTM D 4632	%	15 x 15
Puncture Strength	ASTM D 4833	kN (lbs)	0.67 (150)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	5506 (800)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.67 (150) x 0.73 (165)
UV Resistence	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	$l/min/m^2$ (gal/min/ft^2)	2852 (70)
Permittivity	ASTM D 4491	Sec^{-1}	0.90

HI-FLOW DANDY CURB SACK™ (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistence	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	$l/min/m^2$ (gal/min/ft^2)	5907 (145)
Permittivity	ASTM D 4491	Sec^{-1}	2.1

*Note: All Dandy Sacks™ can be ordered with our optional oil absorbent pillows

DANDY CURB SACK INLET PROTECTION DETAIL

WOODSON ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST. • FLAGSTAFF, AZ 86001 • PHONE: (928) 774-4636 FAX: (928) 774-4646

112801

11/08/12

FLAGSTAFF BUNDLED DRAINAGE
SWPPP
DETAILS 2

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT
1-800-782-5348
(OUTSIDE MARICOPA COUNTY)

FN: 03 SWPPP.dwg

REVISIONS:

Registered Professional Engineer (Civil) CERTIFICATE NO. 34537 RICHARD L. SCHULLER Date Signed 03-26-12 ARIZONA, U.S.A. EXPIRES 3/31/2015

WOODSON
ENGINEERING AND SURVEYING, INC.
124 N. ELDEN ST.
FLAGSTAFF, AZ 86001
PHONE: (928) 774-4636 FAX: (928) 774-4646

FLAGSTAFF BUNDLED DRAINAGE
CONSTRUCTION PLANS

SWPPP
DETAILS 2

HOR SCALE: NA
VERT SCALE: NA
DATE: 07/17/12
PROJECT NO.: 112801
AGENCY NO.:
SHEET NO.: 12 OF 12

DESIGNED BY: JLC
DRAFTED BY: GGE
CHECKED BY: RLS