



PIMA COUNTY BOARD OF SUPERVISORS

RICHARD ELIAS, CHAIRMAN, DISTRICT 5

ALLY MILLER, DISTRICT 1

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RAMON VALADEZ, DISTRICT 2

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PROJECT IN SUPERVISOR DISTRICT 4

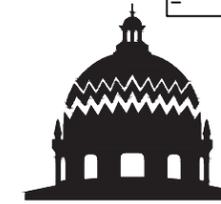
HOUGHTON ROAD AT ANDRADA ROAD AND CAMINO DEL EMPERADOR INTERSECTION IMPROVEMENTS

PIMA COUNTY PROJECT NO. CTR.4SHRAI

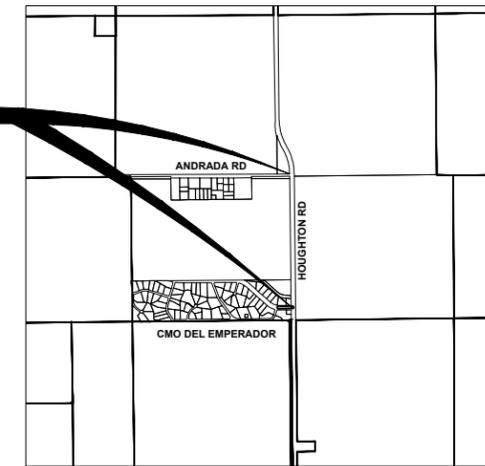
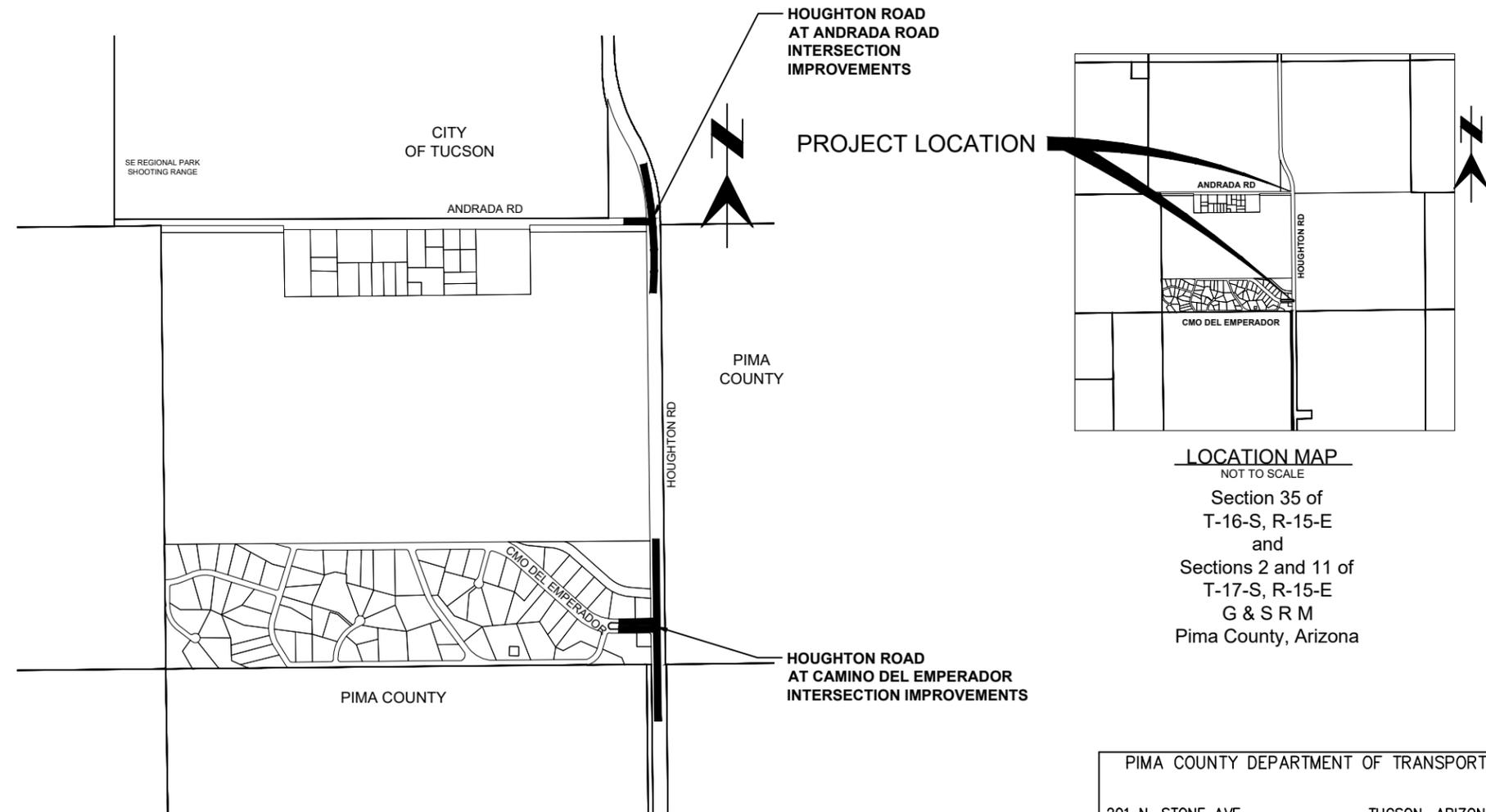
GENERAL PROJECT DESCRIPTION

THE PROJECT CONSISTS OF ADDING NORTHBOUND LEFT TURN LANES ON HOUGHTON ROAD AT THE INTERSECTIONS OF ANDRADA ROAD AND AT CAMINO DEL EMPERADOR. INTERSECTION IMPROVEMENTS INCLUDE, GRADING, PAVED TRAVEL LANES AND PAVED SHOULDERS, HEADER CURB, STRIPING AND SIGNING AND EROSION CONTROL.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	CTR.4SHRAI	1	26	----



PIMA COUNTY
TRANSPORTATION



LOCATION MAP
NOT TO SCALE
Section 35 of
T-16-S, R-15-E
and
Sections 2 and 11 of
T-17-S, R-15-E
G & S R M
Pima County, Arizona

SHEET INDEX		
SHT NO.	SHT NAME	DESCRIPTION
1	C1	TITLE SHEET
2-3	G1-G2	GENERAL NOTES & STRUCTURAL SECTIONS
4	TS1	TYPICAL ROADWAY SECTIONS
5-8	R1-R4	ROADWAY PLANS
9	DTL1	DETAIL SHEETS
10-12	PM1-PM3	PAVEMENT MARKING GENERAL NOTES & PLANS
13-17	S1-S5	SIGNING PLANS GENERAL NOTES & PLANS
18-19	U1-U2	UTILITY PLANS
20-26	EC01-EC07	EROSION AND POLLUTION CONTROL PLANS

NO.	REVIEWED BY	ENGINEER	DATE
NO.	AS BUILT	ENGINEER	DATE

100% PLANS
FOR
CONSTRUCTION
PURPOSES

PIMA COUNTY DEPARTMENT OF TRANSPORTATION			
201 N. STONE AVE.		TUCSON, ARIZONA 85701	
ANA M. OLIVARES, P.E., DIRECTOR			
REVIEWED BY	ENGINEER	DATE	APPROVED _____20__
MGR. DESIGN ENGR.	S. Wilson		
MGR. TRAFFIC ENGR.			
MGR. FIELD ENGR.			DIRECTOR
SCALES:	HORIZ. N/A VERT. N/A	SHEET C1 OF C1	PAGE 1 OF 26

5/3/2018 11:19:50 AM



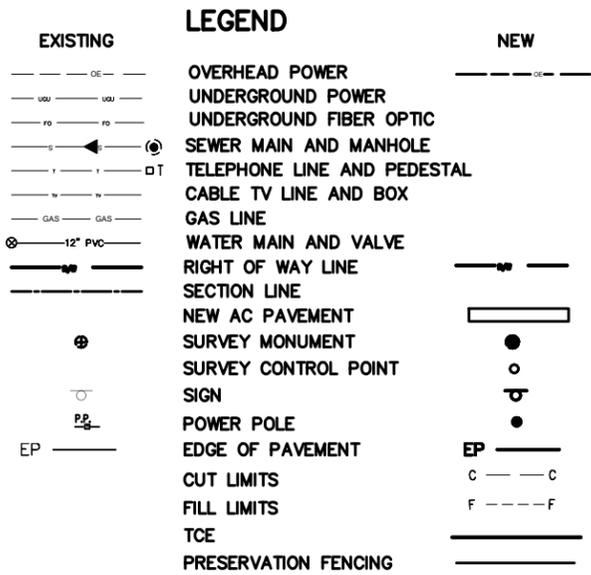
PCDOT Project No. 4SHRAI

GENERAL CONSTRUCTION NOTES:

- CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, VOL. 1, 2015 EDITION AND ANY CURRENT UPDATES. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT PIMA ASSOCIATION OF GOVERNMENTS (PAG) STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC IMPROVEMENTS.
- UTILITY LOCATIONS SHOWN ON PLANS WERE COMPILED BASED ON THE BEST INFORMATION AVAILABLE TO THE DEPARTMENT. UTILITY INFORMATION IS NOT INTENDED TO BE EXACT OR COMPLETE. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL UTILITIES WITH THE APPROPRIATE ORGANIZATION. THE CONTRACTOR SHALL CONTACT "BLUE STAKE" AT 1-800-782-5348 TWO (2) FULL WORKING DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION (SATURDAYS AND SUNDAYS ARE NOT CONSIDERED WORKING DAYS).
- RIGHT-OF-WAY ENCROACHMENTS SHALL BE REMOVED ONLY BY ORDER OF PIMA COUNTY, UNLESS OTHERWISE NOTED.
- REMOVAL OF ALL CACTI AND NATIVE PLANTS SHALL BE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE "ARIZONA NATIVE PLANT LAW" A.R.S, CHAPTER 7.
- THE BASIS OF BEARING FOR THIS PROJECT WAS ESTABLISHED USING THE ARIZONA COORDINATE SYSTEM, NAD 1983 (2011), CENTRAL ZONE 0202, AS OBSERVED FROM PIMA COUNTY OPUS CONTROL POINT "16S15E_Z21", BEING A 3-1/2" USDI GEOLOGICAL SURVEY BRASS CAP STAMPED "73MDC ELEV 3181 ABOVE SEA LEVEL". THE BEARING HELD FOR THIS PROJECT IS BETWEEN THE SOUTHWEST CORNER OF SECTION 1, BEING A 1-1/2" ALUMINUM CAP STAMPED "S/S RLS 7599", AND THE WEST QUARTER CORNER OF SECTION 1, BEING A 2-1/2" GLO CAP. SAID BEARING BEING N 00°36'47" W.
- THE BASIS OF ELEVATION FOR THIS PROJECT IS PIMA COUNTY OPUS CONTROL POINT "16S15E_Z21" HAVING AN NAVD88 ELEVATION OF 3183.25 FEET, AS DETERMINED BY DIFFERENTIAL LEVELING AND ADJUSTED BY PIMA COUNTY SURVEY IN JULY 1990.
- THE COORDINATES ARE DERIVED FROM STATE PLANE VALUES BY USING THE FOLLOWING FORMULAS. THE PUBLISHED COMBINED SCALE FACTOR FOR PIMA COUNTY OPUS CONTROL POINT "16S15E_Z21" WAS USED TO CONVERT GRID COORDINATES TO SURFACE COORDINATES FOR THIS PROJECT.

SURFACE NORTHING COORDINATES ARE DERIVED BY DIVIDING THE GRID COORDINATES BY 0.99989626 AND THEN SUBTRACTING 300,000.
SURFACE EASTING COORDINATES ARE DERIVED BY DIVIDING THE GRID COORDINATE BY 0.99989626 AND THEN SUBTRACTING 1,000,000.

FOR PIMA COUNTY OPUS CONTROL POINT "16S15E_Z21" THE SURFACE COORDINATES ARE:
NORTHING: (362,215.108/ 0.99989626) - 300,000 = 62,252.688
EASTING: (1,054,635.774/ 0.99989626) - 1,000,000 = 54,745.194
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL CONNECTING ROADWAYS, DRIVEWAYS, ALLEYS, AND MAILBOXES DURING CONSTRUCTION. THE CONTRACTOR WILL NOT RESTRICT EMERGENCY VEHICLES, U.S. POSTAL DELIVERY, SOLID WASTE COLLECTIONS, AND/OR ACCESS TO THE ADJACENT PROPERTIES, EXCEPT AS APPROVED BY THE ENGINEER.
- OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, OR DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND RESOLVED BEFORE PROCEEDING WITH THE WORK.
- ALL STATIONING SHOWN ON THE PLANS AND PROFILES IS ALONG THE CONSTRUCTION CENTERLINE UNLESS OTHERWISE NOTED.
- EXISTING UTILITIES INCLUDE, BUT MAY NOT BE LIMITED TO, OVERHEAD AND UNDERGROUND ELECTRIC, TELEPHONE, TELEVISION, SEWER, GAS, PETROLEUM, AND WATER, AND SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED AND SHOWN ON THESE PLANS.
- EXISTING TOPOGRAPHIC CONDITIONS ON THE PLAN SHEETS REFLECT CONDITIONS AS OF DECEMBER 2017.
- POSTED SPEED FOR HOUGHTON ROAD = 50 MPH.
- POSTED SPEED FOR ANDRADA ROAD = 40 MPH.
- POSTED SPEED FOR CAMINO DEL EMPERADOR = 25 MPH.
- DESIGN VEHICLE = WB-62
- ASPHALTIC CONCRETE SHALL CONFORM TO SECTION 406 "ASPHALTIC CONCRETE" OF THE STANDARD SPECIFICATION EXCEPT AS MODIFIED AS FOLLOWS:
 - EFFECTIVE AIR VOIDS SHALL BE 4.5±0.2% FOR ALL ARTERIAL, COLLECTOR, AND MAJOR STREETS DESIGNATIONS AND 4.0±0.2% FOR LOCAL STREETS
 - THE BITUMINOUS MATERIAL FOR PAG 2 TERMINAL MIX SHALL BE AN ASPHALT BINDER PERFORMANCE GRADE PG 76-22 TR+, IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1005.
- CHIP SEAL MATERIALS SHALL CONFORM TO THE FOLLOWING:
 - THE TYPE OF BITUMINOUS MATERIAL SHALL BE CRS-2P
 - BITUMINOUS APPLICATION RATE SHALL BE .45 GAL/YD²
 - CHIP APPLICATION RATE SHALL BE 27LBS/YD²
 - CHIPS SHALL BE CLASS I, SINGLE APPLICATION
- BITUMINOUS MATERIAL FOG COAT SHALL BE GRADE PMCQS-1H AS SPECIFIED IN THE MARICOPA ASSOCIATION OF GOVERNMENTS UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2018 REVISION TO THE 2015 EDITION, SECTION 713 EMULSIFIED ASPHALTS MATERIALS. THE BITUMINOUS MATERIAL SHALL BE A 50:50 DILUTE AND APPLIED AT A RATE OF 0.12-0.15 GAL/SY.
- THE CONTRACTOR SHALL NOT RESTRICT NORMAL TRAFFIC FLOW ON HOUGHTON ROAD, ANDRADA ROAD AND CAMINO DEL EMPERADOR FROM 7:00AM TO 9:00AM AND 4:00PM TO 6:00PM WEEKDAYS.



Waters of the U.S.

WATER COURSE	PREVIOUSLY DISTURBED AREA	DISTURBED AREA
1	32 SY	25 SY
2	60 SY	43 SY
3	44 SY	17 SY
Total	136 SY	85 SY

MITIGATION NOTES:

- IF VEGETATION CLEARING WILL OCCUR DURING THE MIGRATORY BIRD BREEDING SEASON (MARCH 1-AUGUST 31), THE CONTRACTOR SHALL AVOID ANY ACTIVE BIRD NESTS. IF ACTIVE NESTS CANNOT BE AVOIDED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO EVALUATE THE SITUATION. DURING THE NONBREEDING SEASON (SEPTEMBER 1-FEBRUARY 28), VEGETATION REMOVAL IS NOT SUBJECT TO THIS RESTRICTION.
- REMOVAL AND/OR TREATMENT OF NOXIOUS OR INVASIVE SPECIES SHALL TAKE PLACE PRIOR TO THE START OF CLEARING AND GRUBBING.
- IF ANY SONORAN DESERT TORTOISES ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL ADHERE TO THE ATTACHED ARIZONA GAME AND FISH DEPARTMENT "GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS" REVISED SEPTEMBER 22, 2014. IF ANY TORTOISE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO REPORT THE ENCOUNTER.
- IF PREVIOUSLY UNIDENTIFIED CULTURAL RESOURCES ARE ENCOUNTERED DURING ACTIVITY RELATED TO THE CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY AT THAT LOCATION NOTIFY THE ENGINEER AND SHALL TAKE ALL REASONABLE STEPS TO SECURE THE PRESERVATION OF THOSE RESOURCES. THE ENGINEER WILL CONTACT THE ARIZONA DEPARTMENT OF TRANSPORTATION ENVIRONMENTAL PLANNING GROUP, HISTORIC PRESERVATION TEAM, (602.712.8636 OR 602.712.7767) AND THE PIMA COUNTY HISTORIC PRESERVATION DIVISION (520.724.6405) IMMEDIATELY, AND MAKE ARRANGEMENTS FOR PROPER TREATMENT OF THOSE RESOURCES.
- IN THE EVENT THAT HUMAN REMAINS, INCLUDING HUMAN SKELETAL REMAINS, CREMATIONS, AND/OR CEREMONIAL AND FUNERARY OBJECTS OR ARCHAEOLOGICAL MATERIALS, ARE FOUND DURING EXCAVATION OR CONSTRUCTION, GROUND-DISTURBING ACTIVITIES MUST CEASE IN THE IMMEDIATE VICINITY OF THE DISCOVERY. ARIZONA REVISED STATUTES 41-865 AND 41-844 REQUIRE THAT THE ARIZONA STATE MUSEUM BE NOTIFIED (520.621.4795) OF THE DISCOVERY SO THAT CULTURAL GROUPS WHO CLAIM CULTURAL OR RELIGIOUS AFFINITY WITH THEM CAN MAKE APPROPRIATE ARRANGEMENTS FOR THE REPATRIATION AND REBURIAL OF THE REMAINS. THE HUMAN REMAINS WILL BE REMOVED FROM THE SITE BY A PROFESSIONAL ARCHAEOLOGIST PENDING CONSULTATION AND REVIEW BY THE ARIZONA STATE MUSEUM AND THE CONCERNED CULTURAL GROUPS.
- THE CONTRACTOR SHALL AMEND, CERTIFY, AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN, PREPARE AND FILE A NOTICE OF INTENT AND NOTICE OF TERMINATION, AND PROVIDE APPROPRIATE NOTIFICATION TO THE DESIGNATED MUNICIPAL SEWER SYSTEM OPERATOR, AND PROVIDE THE PIMA COUNTY DEPARTMENT OF TRANSPORTATION WITH THE FINAL STORMWATER POLLUTION PREVENTION PLAN AN ALL APPLICABLE COPIES OF RECORD.
- THE CONSTRUCTION CONTRACTOR SHALL COMPLY WITH ALL 401 AND 404 NATIONWIDE, GENERAL, AND REGIONAL CONDITIONS OF NATIONWIDE PERMITS 14 AS ESTABLISHED BY THE UNITED STATES ARMY CORPS OF ENGINEERS.
- THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AIR QUALITY AND DUST CONTROL RULES, REGULATIONS, AND ORDINANCES THAT APPLY TO ANY WORK PERFORMED PURSUANT TO THE CONTRACT.
- IF SUSPECTED HAZARDOUS MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, WORK SHALL CEASE AT THAT LOCATION AND THE ENGINEER WILL BE NOTIFIED IMMEDIATELY TO MAKE ARRANGEMENTS FOR PROPER TREATMENT OR DISPOSAL OF THOSE MATERIALS.



Ana M. Olivares, P.E., Director

Date	12/2017	Date	12/2017	Date	12/2017
Designed	S. WILSON	Engineer		Checked	S. WILSON
Drawn	J. BOLEY	Prof. Engr.		Prof. Engr.	S. WILSON

PIMA COUNTY
TRANSPORTATION

HOUGHTON ROAD
AT ANDRADA RD AND CAMINO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
GENERAL NOTES

CRACK SEALING NOTES:

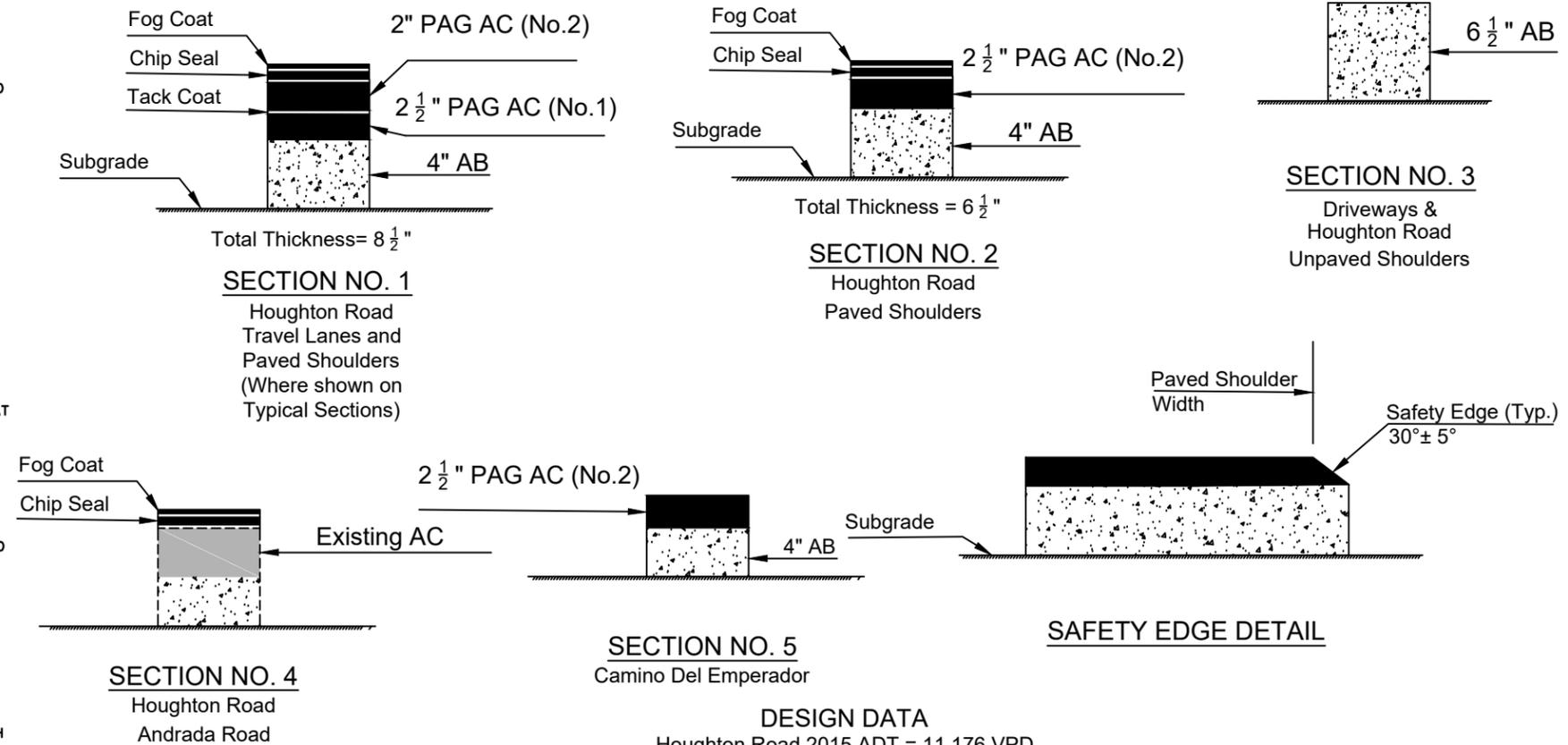
1. CRACK SEALING AND FILLING: THIS WORK CONSISTS OF FURNISHING AND PLACING SEALANT OR FILLER MATERIAL IN CONTRACTOR PREPARED CRACKS AND JOINTS OF ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE PAVEMENTS. ALL CRACKS AND JOINTS, INCLUDING THE SPACE BETWEEN ASPHALT CONCRETE PAVEMENT AND CONCRETE CURB AND GUTTER, WHICH HAVE A CLEAR OPENING OF ONE-QUARTER INCH (1/4") OR GREATER, SHALL BE SEALED FOR THE LENGTH OF THE CRACK THAT EQUALS OR EXCEEDS ONE-EIGHTH INCH (1/8") IN WIDTH. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN CRACKS ARE ENCOUNTERED THAT HAVE AN OPENING GREATER THAN ONE AND ONE-HALF INCHES (1 1/2"). THE ENGINEER'S AUTHORIZATION IS REQUIRED PRIOR TO FILLING ANY CRACKS HAVING AN AVERAGE CLEAR OPENING GREATER THAN ONE AND ONE-HALF INCHES (1 1/2").
2. MATERIAL FOR CRACKS: CRACKS AND JOINTS WHICH HAVE A CLEAR OPENING GREATER THAN ONE-QUARTER INCH (1/4") SHALL BE CLASSIFIED AS CRACKS. SEALANT MATERIALS FOR CRACKS SHALL BE A PREMIXED, SINGLE COMPONENT MIXTURE OF ASPHALT CEMENT, AROMATIC EXTENDER OILS, POLYMERS, AND GRANULIZED RUBBER IN A CLOSELY CONTROLLED MANUFACTURING PROCESS. MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS WHEN HEATED IN ACCORDANCE WITH ASTM D5078 AND THE MANUFACTURER'S MAXIMUM SAFE HEATING TEMPERATURE.

TEST	REQUIREMENT
Cone Penetration (ASTM D5329)	20-40
Resilience (ASTM D5329)	30% Minimum
Softening Point (ASTM D113)	210°F (99°C) Minimum
Ductility, 77°F (25°C) (ASTM D113)	30 cm Minimum
Flexibility (ASTM D3111 *Modified)	Pass at 30°F (-1°C)
Flow 140°F (60°C) (ASTM D5329)	3 mm Maximum
Brookfield Viscosity 380°F (193°C) (ASTM D2669)	90 Poise Maximum
Asphalt Compatibility (ASTM D5329)	Pass
Bitumen Content (ASTM D4)	60% Minimum

3. PRIOR TO APPLICATION OF CRACK SEALANT MATERIAL, THE CONTRACTOR SHALL SUBMIT THE MATERIAL MANUFACTURER'S PRODUCT SPECIFICATIONS TOGETHER WITH INSTALLATION RECOMMENDATIONS WHICH SHALL INCLUDE SURFACE PREPARATION, PRODUCT INSTALLATION, AND CURING REQUIREMENTS. CERTIFICATION OF COMPLIANCE FOR SEALANT MATERIAL SHALL BE SUBMITTED TO THE ENGINEER. THE ENGINEER MAY REQUEST MATERIAL SAMPLES FOR TESTING, PRIOR TO AND DURING PRODUCTION, TO VERIFY THE QUALITY OF THE MATERIALS AND TO ENSURE CONFORMANCE WITH THE APPLICABLE SPECIFICATIONS.
4. COVER MATERIAL SHALL MEET THE REQUIREMENTS FOR CLASS I GRADING OR THE CITY OF TUCSON/PIMA COUNTY STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, 2003 EDITION, SECTION 404-2.02(C) COVER MATERIALS.
5. WHEN DELETERIOUS MATERIALS ARE PRESENT IN THE CRACKS AND JOINTS, THEY SHALL BE REMOVED AND THOSE CRACKS AND JOINTS SHALL BE TREATED WITH A HERBICIDE THAT STERILIZES THE SOIL SUBJECT TO THE APPROVAL OF THE ENGINEER. COST FOR TREATMENT IS INCIDENTAL.
6. ROUTING IS NOT REQUIRED FOR THIS WORK.
7. VACUUMING: FINAL CLEANING SHALL THOROUGHLY CLEAN CRACKS AND JOINTS TO A MINIMUM DEPTH OF 1" FOR CRACKS THAT ARE 3/8" OR NARROWER AND TO THE FULL ASPHALT DEPTH FOR CRACKS THAT ARE WIDER THAN 3/8". SURFACES ARE TO BE INSPECTED TO ASSURE ADEQUATE CLEANLINESS AND DRYNESS. HIGH PRESSURE 90 PSI MINIMUM, DRY OIL FREE COMPRESSED AIR SHALL BE USED FOR FINAL CLEANING AND DUST REMOVAL FROM CRACKS. THE HIGH PRESSURE TOOL SHALL BE INTEGRAL WITH A VACUUM UNIT TO COLLECT THE DUST AND RESIDUE. BOTH SIDES OF THE CRACK OR JOINT SHALL BE CLEANED.
8. WEATHER: IN NO CASE SHALL SEALANT BE PLACED DURING DAMP ROADWAY CONDITIONS SUCH AS WET ROADWAY SURFACES OR DAMP MATERIAL INSIDE THE CRACKS. OPERATIONS STOPPED BY THE ENGINEER, DUE TO WEATHER, SHALL BE AT NO ADDITIONAL COST TO THE CONTRACTING AGENCY. IF INSTALLING AT NIGHT, ENSURE THAT DEW IS NOT FORMING ON THE PAVEMENT SURFACE. SEALANT MATERIAL SHALL ONLY BE APPLIED WHEN PAVEMENT TEMPERATURE EXCEEDS 40°F (4°C). IF PAVEMENT TEMPERATURE IS LOWER THAN 40°F (4°C), IT MAY BE WARMED USING A HEAT LANCE THAT PUTS NO DIRECT FLAME ON THE PAVEMENT.
9. TEMPERATURE: SEALANT TEMPERATURES ARE TO BE MAINTAINED AT THE MAXIMUM HEATING TEMPERATURE RECOMMENDED BY THE MANUFACTURER.
10. EQUIPMENT: THE MELTER APPLICATOR UNIT SHALL BE A SELF-CONTAINED DOUBLE BOILER DEVICE WITH THE TRANSMITTAL OF HEAT THROUGH HEAT TRANSFER OIL. IT SHALL BE EQUIPPED WITH AN ON BOARD AUTOMATIC HEAT CONTROLLING DEVICE TO PERMIT THE ATTAINMENT OF A PREDETERMINED TEMPERATURE, AND THEN MAINTAIN THAT TEMPERATURE AS LONG AS REQUIRED. THE UNIT SHALL ALSO HAVE A MEANS TO VIGOROUSLY AND CONTINUOUSLY AGITATE THE SEALANT TO MEET THE REQUIREMENTS OF APPENDIX X1.1 OF ASTM D6690. THE SEALANT SHALL BE APPLIED TO THE PAVEMENT UNDER PRESSURE SUPPLIED BY A GEAR PUMP WITH A HOSE AND WAND AND DIRECT CONNECTING APPLICATOR TIP. THE PUMP SHALL HAVE SUFFICIENT PRESSURE TO APPLY DESIGNATED SEALANT AT A RATE OF AT LEAST THREE (3) GALLONS (11.4 L) PER MINUTE. MELTER APPLICATORS SHALL BE APPROVED FOR USE BY THE SEALANT MANUFACTURER.
11. PLACEMENT OF SEALANT: THE SEALANT SHALL BE APPLIED IN CRACKS, JOINTS, AND SEALANT RESERVOIRS UNIFORMLY FROM BOTTOM TO TOP AND SHALL BE FILLED WITHOUT FORMATION OF ENTRAPPED AIR OR VOIDS. CRACKS AND JOINTS SHALL BE SLIGHTLY OVERFILLED THEN LEVELED WITH A 3" SEALING DISK OR V-SHAPED SQUEEGEE TO CREATE A NEAT BAND EXTENDING APPROXIMATELY 1" ON EACH SIDE OF THE CRACK OR JOINT FOR SURFACE WATERPROOFING. THE BAND SHALL BE AS NEAT AND AS THIN AS POSSIBLE AND SHALL NOT EXTEND MORE THAN 1/8 INCH ABOVE THE PAVEMENT SURFACE. DURING AND AFTER PLACEMENT OF THE SEALANT, THE CONTRACTOR SHALL PROTECT AGAINST HARM TO PERSONS OR ANIMALS THAT MAY BE EXPOSED TO THE HOT MATERIAL.

12. OPENING TO TRAFFIC: SEALANT MATERIAL SHALL NOT BE EXPOSED TO TRAFFIC UNTIL FULLY CURED. IF THE SEALED AREA MUST BE OPENED TO TRAFFIC, BLOTTER MATERIAL SHALL BE APPLIED TO THE SURFACE OF ALL UNCURED SEALANT MATERIAL. ALL SEALED CRACKS THAT HAVE A CLEAR OPENING OF 1 1/2 INCHES OR GREATER SHALL HAVE BLOTTER MATERIAL APPLIED PRIOR TO OPENING TO TRAFFIC. ON TWO LANE ROADS OR WHERE TRAFFIC MAY COME IN CONTACT WITH THE HOT SEALANT BEFORE IT CURES, A BLOTTER OR SPECIALIZED BOND BREAKING MATERIAL SHALL BE USED TO PREVENT ASPHALT BLEEDING AND/OR PICKUP OF SEALANT BY VEHICULAR TRAFFIC. BLOTTER MATERIAL SHALL BE COMPATIBLE WITH THE CRACK SEALANT.
13. THE CONTRACTOR, AT NO ADDITIONAL COST TO THE CONTRACTING AGENCY, SHALL CORRECT UNACCEPTABLE WORK UNACCEPTABLE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, UNSEALED OR UNFILLED CRACKS, MATERIAL WASTAGE ON THE SIDES OF THE ROADWAY, AND EXCESS QUANTITIES OF MATERIAL ON THE ROADWAY THAT ADVERSELY AFFECTS DRIVING. THE CONTRACTOR SHALL NOT PROGRESS TO A NEW AREA UNTIL THE UNACCEPTABLE WORK IS CORRECTED TO THE SATISFACTION OF THE ENGINEER. CORRECTION OF UNACCEPTABLE WORK SHALL BE ACCOMPLISHED WITHIN FIVE WORKING DAYS AFTER NOTIFICATION FROM THE ENGINEER OF THE UNACCEPTABLE WORK.

STRUCTURAL SECTIONS



DESIGN DATA
 Houghton Road 2015 ADT = 11,176 VPD
 Houghton Road Design Speed = 55 MPH
 Houghton Rd Classification: Rural Principle Arterial

Date	Designed	Drawn	Checked	Prof. Engr.
12/2017	S. WILSON	J. BOLEY	S. WILSON	S. WILSON
12/2017				
12/2017				

No.	Revision Description	Engineer	Date

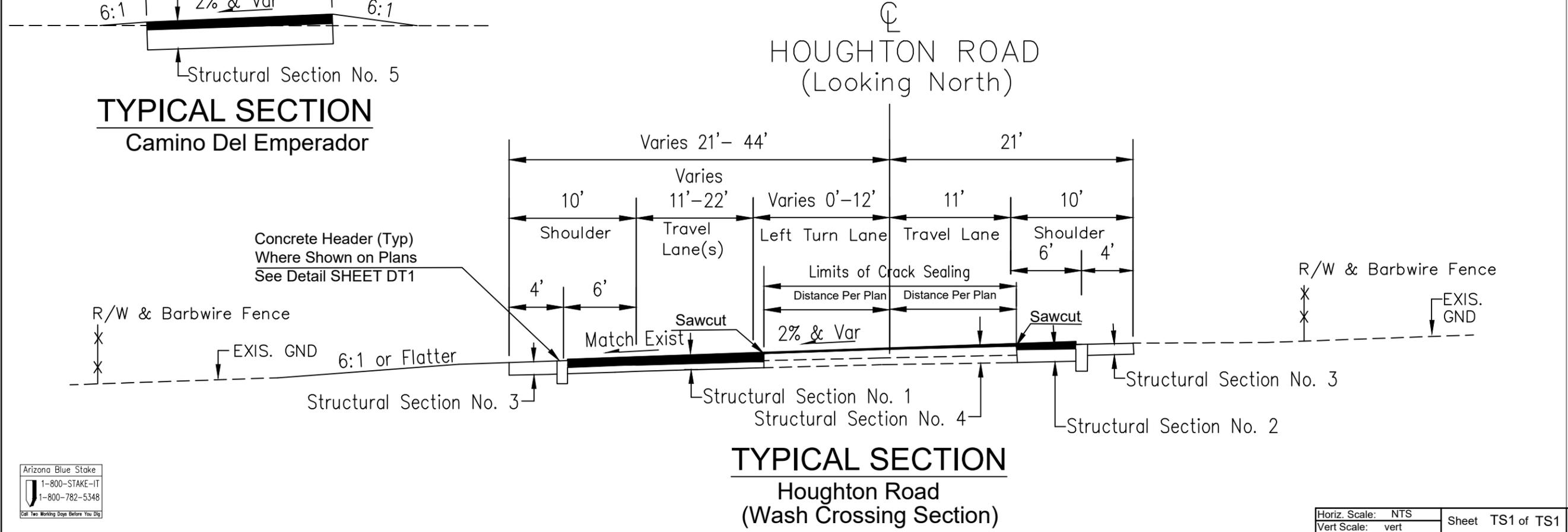
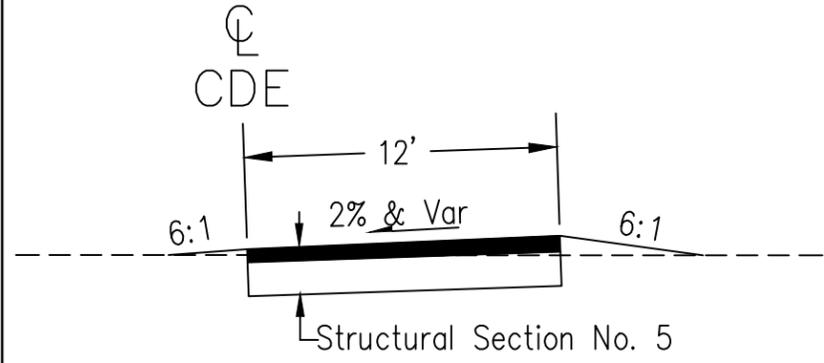
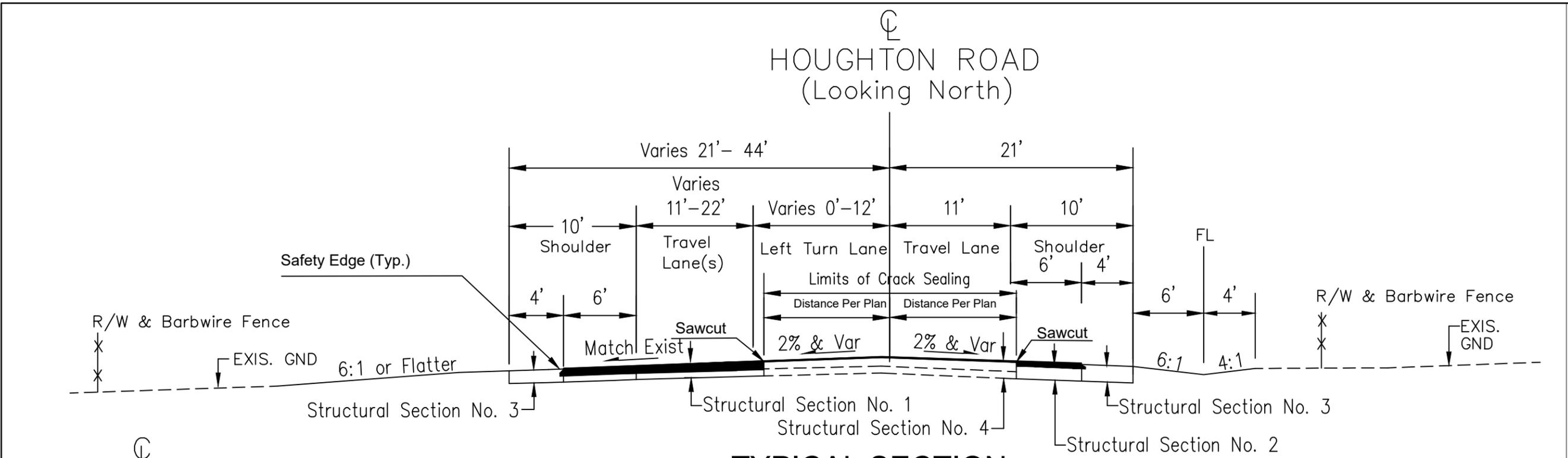

PIMA COUNTY
 TRANSPORTATION

Pima County Department of Transportation
HOUGHTON ROAD
 AT ANDRADA RD AND CNVO DEL EMPERADOR
 INTERSECTION IMPROVEMENTS
STRUCTURAL SECTIONS

Ana M. Olivares, P.E., Director

45494- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT





Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig

Pima County Department of Transportation

HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
TYPICAL SECTIONS

Ana M. Olivares, P.E., Director

No.	Revision Description	Engineer	Date

Designed	Checked	Date
S. WILSON	S. WILSON	12/2017
J. BOLEY	S. WILSON	12/2017
	S. WILSON	12/2017

45HRAI- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENTS

Curve Data

CURVE NUMBER	RADIUS	Δ	CURVE LENGTH
①	45'	39°39'0"	31.14'
②	75'	50°55'32"	66.74'
③	45'	90°05'27"	70.75'
④	1950'	21°52'45"	744.64'

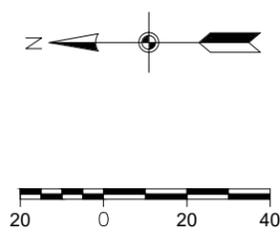
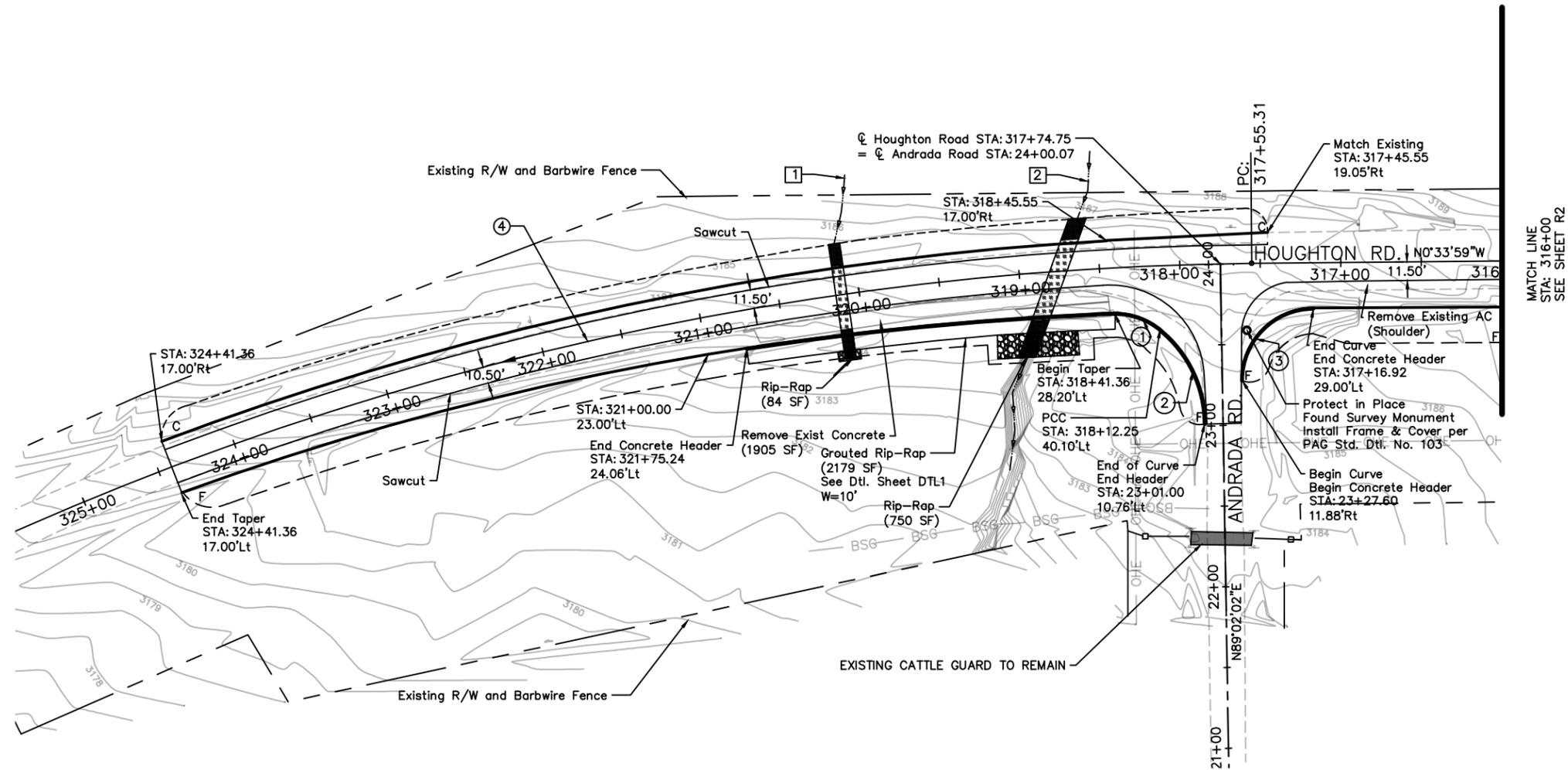
Control Point Coordinates

Point Number	Station	Northing	Easting
1	308+78.09	61305.4953	54866.1742
2	317+55.36	62182.6682	54857.5035
3	317+74.80	62202.1028	54857.2145
4	324+99.95	62907.8698	54709.8905
5	22+00.00	62198.7309	54657.1733

Legend

- Disturbed Area Ordinary High Water
- Previously Disturbed Area Ordinary High Water
- Existing Waters of the U.S.
- 1 Watercourse Number

SEE GENERAL NOTES (SHEET G1) FOR WATERS OF THE US SUMMARY



Designed	Drawn	Checked	Prof. Engr.	Date
S. Wilson	J. Boley	S. Wilson	S. Wilson	1/2018
				1/2018
				1/2018

No.	Revision Description	Engineer	Date

No.	Revision Description	Engineer	Date

Pima County Department of Transportation

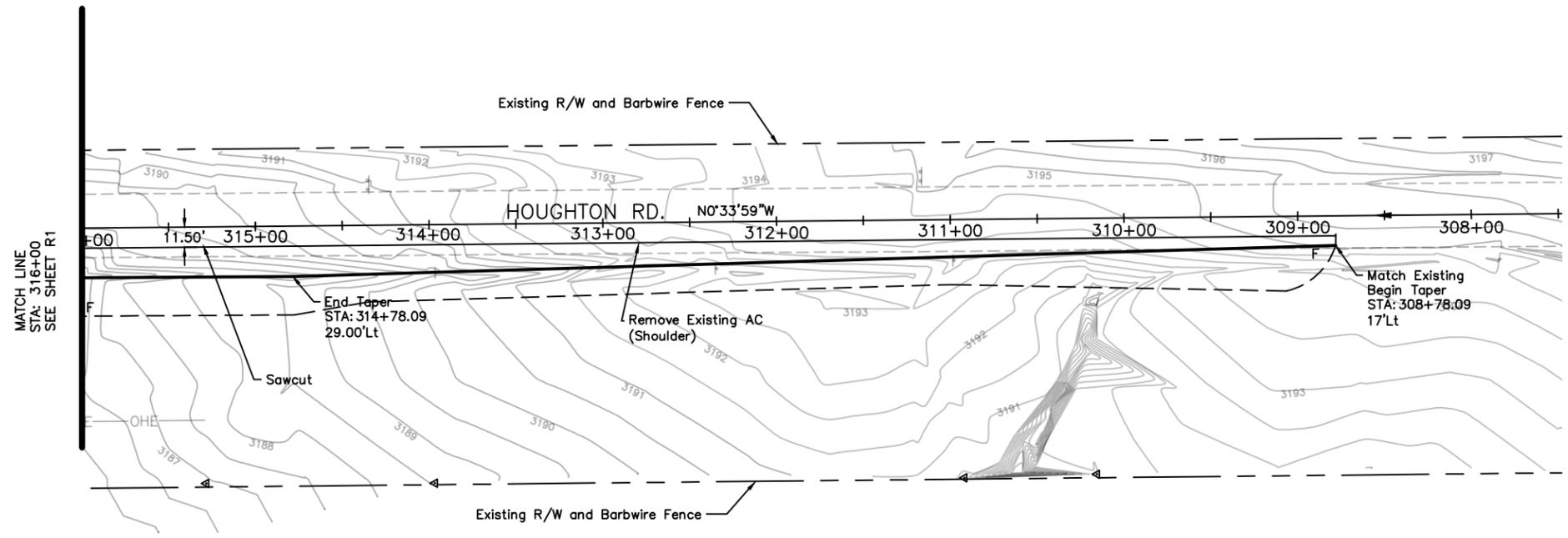


HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
ROADWAY PLANS

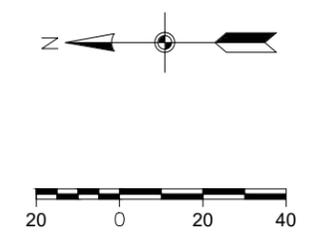
Ana M. Olivares, P.E., Director

ASHRAI- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig



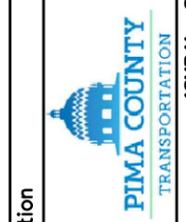
MATCH LINE
STA: 316+00
SEE SHEET R1



Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig

Designed	Date
S. Wilson	1/2018
Drawn	Date
L. Bailey	1/2018
Checked	Date
S. Wilson	1/2018
Prof. Engr.	Date
S. Wilson	1/2018

No.	Revision Description	Engineer	Date



Pima County Department of Transportation
HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
ROADWAY PLANS

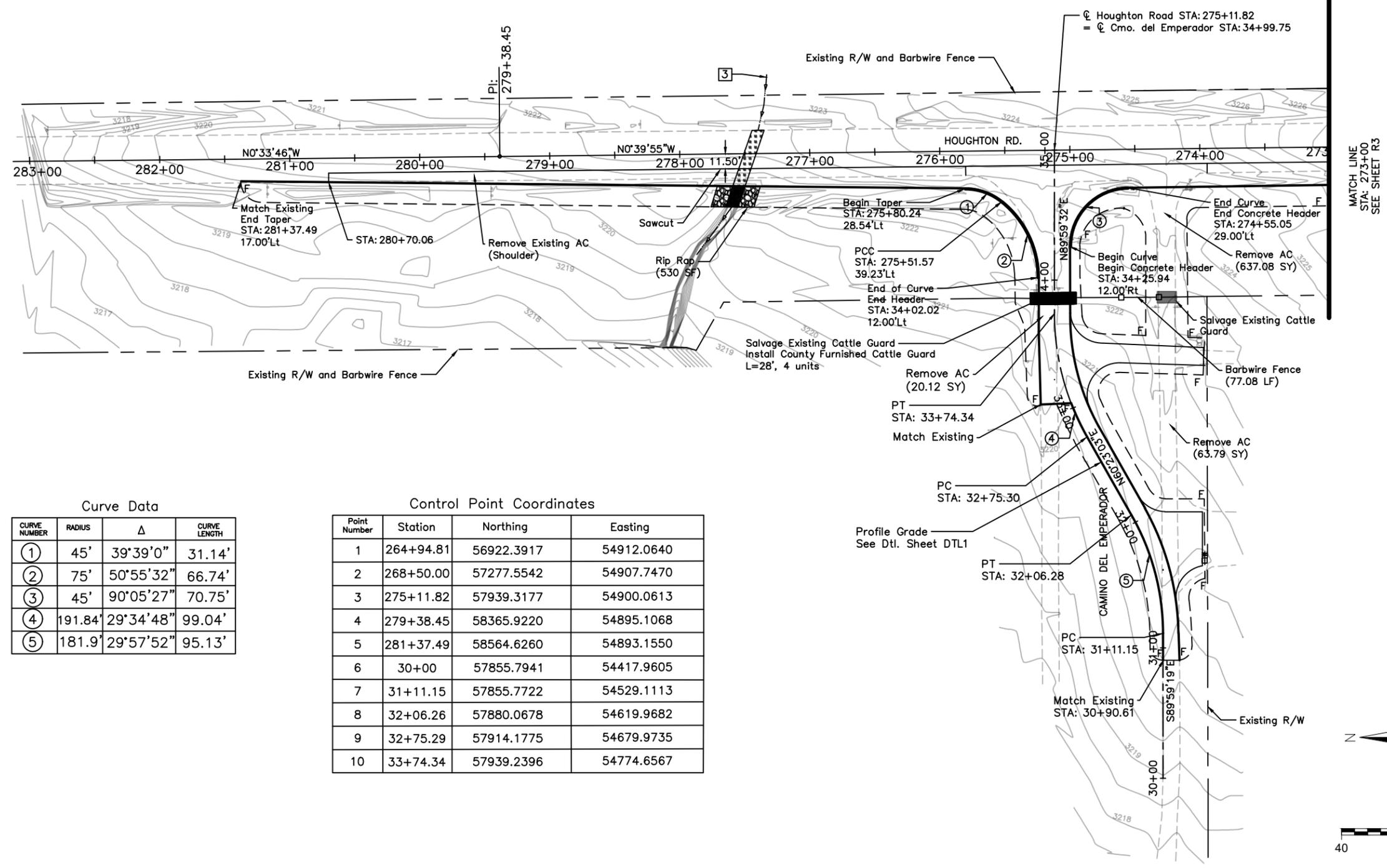
Ana M. Olivares, P.E., Director

4SHRAI- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

Legend

- Disturbed Area
- Ordinary High Water
- Previously Disturbed Area
- Ordinary High Water
- Existing Waters of the U.S.
- Watercourse Number

SEE GENERAL NOTES (SHEET G1) FOR WATERS OF THE US SUMMARY



Curve Data

CURVE NUMBER	RADIUS	Δ	CURVE LENGTH
①	45'	39°39'0"	31.14'
②	75'	50°55'32"	66.74'
③	45'	90°05'27"	70.75'
④	191.84'	29°34'48"	99.04'
⑤	181.9'	29°57'52"	95.13'

Control Point Coordinates

Point Number	Station	Northing	Easting
1	264+94.81	56922.3917	54912.0640
2	268+50.00	57277.5542	54907.7470
3	275+11.82	57939.3177	54900.0613
4	279+38.45	58365.9220	54895.1068
5	281+37.49	58564.6260	54893.1550
6	30+00	57855.7941	54417.9605
7	31+11.15	57855.7722	54529.1113
8	32+06.26	57880.0678	54619.9682
9	32+75.29	57914.1775	54679.9735
10	33+74.34	57939.2396	54774.6567

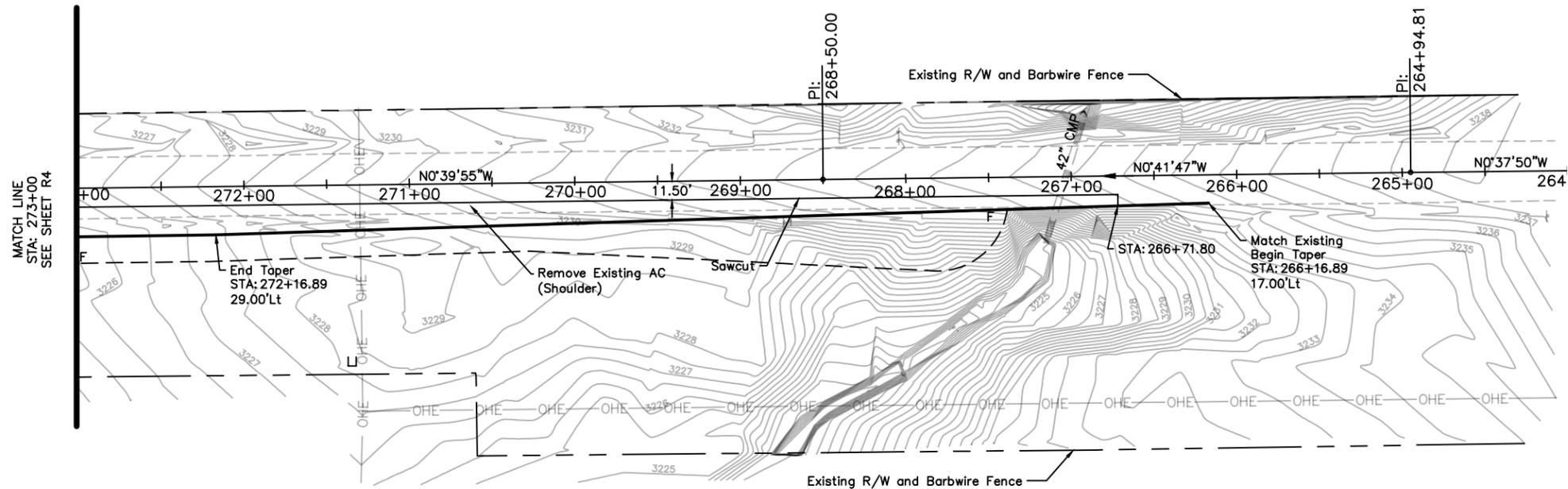
Ana M. Olivares, P.E., Director

Revision No.	Description	Engineer	Date

PIMA COUNTY
TRANSPORTATION

HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
ROADWAY PLANS

Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig



MATCH LINE
STA: 273+00
SEE SHEET R4

End Taper
STA: 272+16.89
29.00'Lt

Remove Existing AC
(Shoulder)

Sawcut

STA: 266+71.80

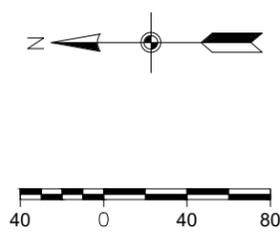
Match Existing
Begin Taper
STA: 266+16.89
17.00'Lt

Existing R/W and Barbwire Fence

Existing R/W and Barbwire Fence

PI: 268+50.00

PI: 264+94.81



Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig

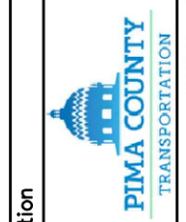
Horiz. Scale: 1" = 40'
Vert Scale: -

Sheet R4 of R4

Page 8 of 26

Designed	Date
S. Wilson	1/2018
Drawn	Date
J. Boley	1/2018
Checked	Date
S. Wilson	1/2018
Prof. Engr.	Date
S. Wilson	1/2018

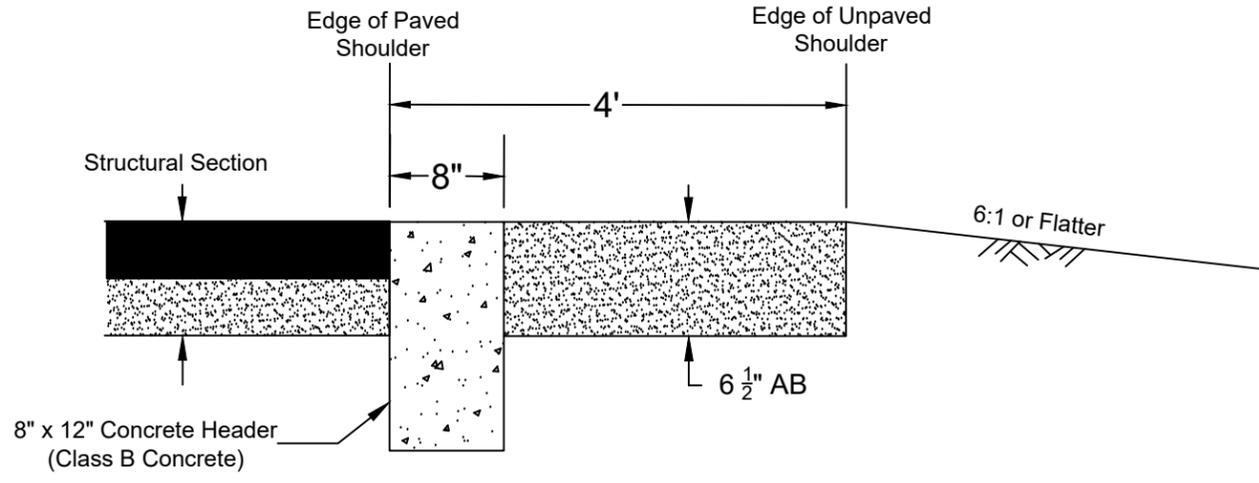
No.	Revision Description	Engineer	Date



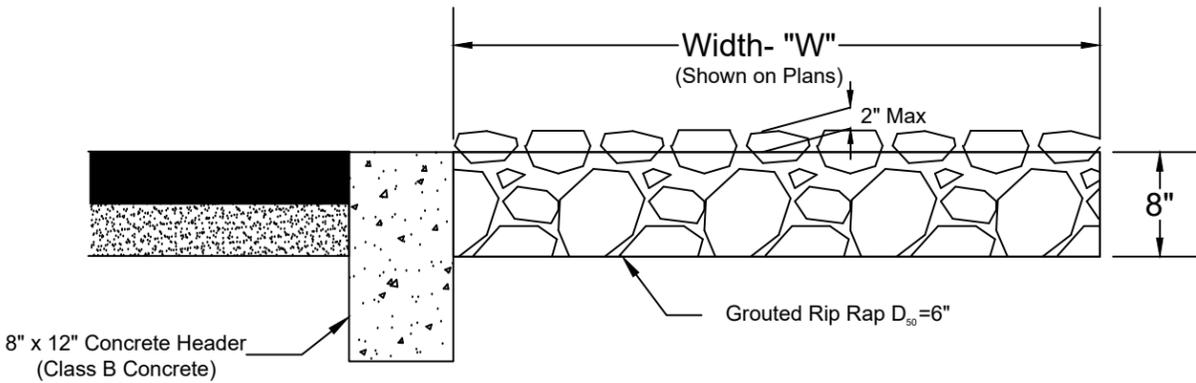
Pima County Department of Transportation
HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
ROADWAY PLANS

Ana M. Olivares, P.E., Director

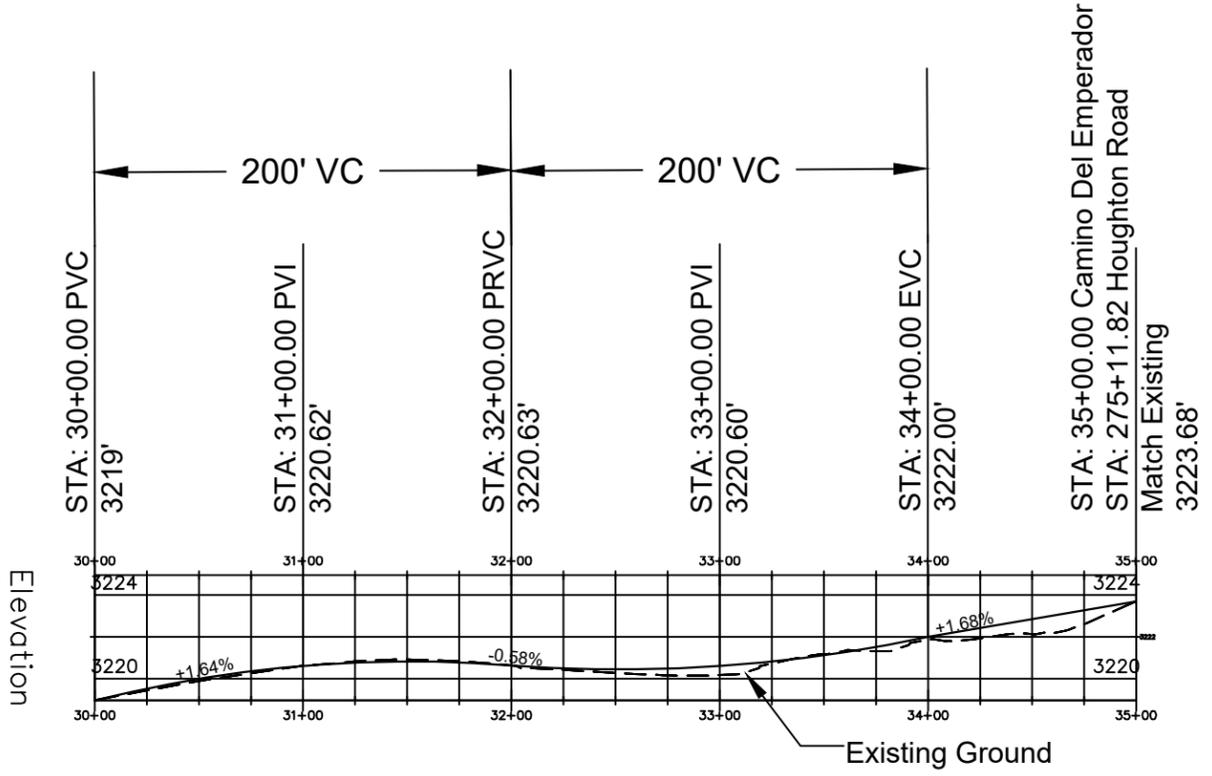
4SHRAI- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT



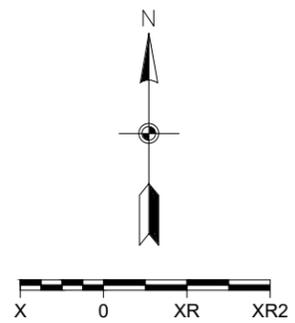
CONCRETE HEADER DETAIL
NTS



GROUTED RIP-RAP DETAIL
NTS



PROFILE GRADE- CAMINO DEL EMPERADOR
Scale: H. 1"=40' V. 1"=4'



Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig

No.	Revision Description	Engineer	Date

Designed	Date
S. WILSON	3/20/18
Drawn	Date
J. BOLEY	3/20/18
Checked	Date
S. WILSON	3/20/18
Prof. Engr.	Date
S. WILSON	3/20/18

Ana M. Olivares, P.E., Director

Pima County Department of Transportation



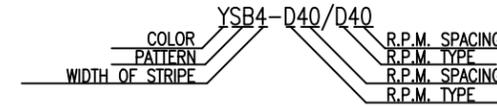
HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
ROADWAY PLANS

45HRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

PAVEMENT MARKINGS GENERAL NOTES

THE FOLLOWING NOTES SHALL APPEAR ON ALL PAVEMENT MARKING PLANS AND ARE INCLUDED HERE FOR THE USER'S REFERENCE.

- ALL EQUIPMENT/MATERIALS AND CONSTRUCTION SHALL MEET OR EXCEED THE REQUIREMENTS CONTAINED IN THE CURRENT PIMA ASSOCIATION OF GOVERNMENTS (PAG) STANDARD SPECIFICATIONS AND THE STANDARD DETAILS FOR PUBLIC IMPROVEMENTS, THE SPECIAL PROVISIONS AND THE APPROVED PLANS. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE PC/COT PAVEMENT MARKING DESIGN MANUAL AND APPLICABLE AMENDMENTS.
- THE STRIPING CONTRACTOR SHALL CONTACT THE PIMA COUNTY PAVEMENT MARKING SUPERVISOR (520-724-2624) AT LEAST 3 WORKING DAYS IN ADVANCE OF ANY PAVEMENT MARKING LAYOUT BEING INSTALLED TO SCHEDULE INSPECTION AND APPROVAL OF PAVEMENT MARKINGS DURING NORMAL BUSINESS HOURS MONDAY THROUGH FRIDAY, STATE HOLIDAYS EXCLUDED.
- UPON APPROVAL OF THE PAVEMENT MARKING LAYOUT, THE PIMA COUNTY PAVEMENT MARKING SUPERVISOR WILL ISSUE WRITTEN AUTHORIZATION TO THE CONTRACTOR TO PROCEED WITH INSTALLING ALL PAVEMENT MARKINGS AND ASSOCIATED REFLECTIVE RAISED PAVEMENT MARKINGS.
- THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED AND APPROVED BY THE TRAFFIC ENGINEER OR THEIR DESIGNEE.
- THE DESIGN SPEED FOR HOUGHTON ROAD IS 55 MPH. THE DESIGN VEHICLE IS WB-62. THE POSTED SPEED LIMIT IS 50 MPH.
- ALL LANE DIMENSIONS ARE MEASURED FROM THE CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
- THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, APPLICABLE MARKING DETAILS, AND SPECIFIED PIMA COUNTY STANDARDS WHEN INSTALLING PAVEMENT STRIPING, SYMBOLS, LEGENDS, AND MARKERS.
- PAINTED LAYOUT STRIPING SHALL BE 15 MIL (0.015") THICK, WATER BASED PAINT PLACED ON THE FINAL PAVEMENT SURFACE WITH 8 POUNDS PER GALLON OF AASHTO M 247-13 TYPE I GLASS BEADS WITH ADHESION/MOISTURE PROOF COATING. PAINTED LAYOUT STRIPING SHALL BE INSTALLED WITHIN FIVE (5) WORKING DAYS OF THE FINAL PAVEMENT SURFACE BEING COMPLETED.
- PAINTED SYMBOLS AND LEGENDS SHALL BE APPLIED AT THE SAME TIME AS THE PAINTED STRIPING, WITH THE EXCEPTION OF BIKE LANE SYMBOLS AND WORDS (SUCH AS STOP, AHEAD, ONLY, ETC.).
- THE FINAL LONGITUDINAL STRIPING SHALL BE 90 MIL (0.090") THICK RIBBON EXTRUDED THERMOPLASTIC REFLECTORIZED STRIPING PLACED OVER THE PAINTED LAYOUT STRIPING WITH A SINGLE DROP OF 10 POUNDS PER 100 SQUARE FEET OF AASHTO M 247-13 GLASS BEADS. THE FINAL LONGITUDINAL STRIPING SHALL BE PLACED WITHIN 21 TO 30 CALENDAR DAYS OF THE FINAL PAVEMENT SURFACE BEING COMPLETED. ALL PREVIOUSLY EXEMPTED LONGLINE MARKINGS SHALL BE APPLIED DURING THE FINAL LONGITUDINAL STRIPING.
- ALL FINAL TRANSVERSE STRIPING, INCLUDING SYMBOLS AND LEGENDS, SHALL BE 90 MIL (0.090") ALKYD HAND CART EXTRUDED THERMOPLASTIC WITH 10 POUNDS PER 100 SQUARE FOOT OF AASHTO M 247-13 TYPE I GLASS BEADS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS ON THE FINAL SURFACE COURSE FOLLOWING ONE CONTROL LINE PER DIRECTION OF TRAVEL CONSISTING OF CONTROL POINTS THAT HAVE BEEN SET TO NO MORE THAN 50 FEET APART ON CURVE SECTIONS AND 200 FEET IN TANGENT SECTIONS WHERE THE PAVEMENT MARKING PATTERN DOES NOT CHANGE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE CONSTRUCTION JOINT IS NO MORE THAN ONE FOOT OFFSET FROM THE FINAL STRIPING.
- ALL RETROREFLECTIVE RAISED PAVEMENT MARKERS (RRPMs or RPMs) SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C or G PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR (or WHITE) REFLECTIVE FACE OF EACH MARKER IS FACING APPROACHING TRAFFIC AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW TO WHICH IT APPLIES.
- ALL RETROREFLECTIVE RAISED PAVEMENT MARKERS (RRPMs or RPMs) SHALL BE INSTALLED PER THE CURRENT EDITION OF THE PC/COT PAVEMENT MARKING MANUAL AND APPLICABLE AMENDMENTS.
- ALL REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SECTION 701 OF THE PC/COT STANDARD SPECIFICATIONS. PAINTING OVER EXISTING STRIPING DOES NOT CONSTITUTE APPROVED STRIPING OBLITERATION.
- FOR PRIVATE DEVELOPMENT PROJECTS, THE DESIGN CONSULTANT/PROJECT MANAGER SHALL BE REQUIRED TO PRODUCE AS-BUILT STRIPING PLANS WITHIN 90 DAYS OF STRIPING COMPLETION.
- UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKINGS SHALL BE INSTALLED BY THE CONTRACTOR.
- UPON FINAL INSPECTION, A WRITTEN ACCEPTANCE OR ITEMIZED PUNCHLIST OF MISSING OR UNACCEPTABLE PAVEMENT MARKINGS SHALL BE SUBMITTED TO THE CONTRACTOR AND PIMA COUNTY BY THE TRAFFIC ENGINEER OR DESIGNATED REPRESENTATIVE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL STRIPING UNTIL PROJECT IS APPROVED FOR "CONSTRUCTION ACCEPTANCE" BY PIMA COUNTY (FULLY OPEN TO TRAFFIC, ALL PUNCHLIST ITEMS ARE COMPLETED, AND THE ONE YEAR MINIMUM WARRANTY BEGIN). IF THE PAVEMENT MARKING MATERIAL MANUFACTURER OFFERS A LONGER WARRANTY, THE CONTRACTOR SHALL TRANSFER THAT WARRANTY TO PIMA COUNTY.
- THE PC/COT PAVEMENT MARKING MANUAL IS AVAILABLE ONLINE.



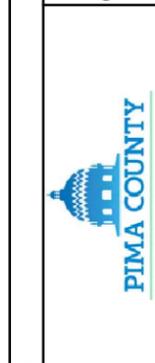
LINE STYLE DESIGNATION
SEE 2008 PIMA COUNTY AND CITY OF TUCSON PAVEMENT MARKING DESIGN MANUAL, SHEET 2-3 FOR FURTHER DESCRIPTIONS.

PAVEMENT MARKING QUANTITIES-SHEET PM2 TO PM3			
BID ITEM	ITEM	UNIT	QUANTITY
7040003	Pavement Marking (White Extruded Thermoplastic) (0.060")	L.F.	16209
7040004	Pavement Marking (Yellow Extruded Thermoplastic) (0.060")	L.F.	15244
7040032	Pavement Marking (White Extruded Thermoplastic) (Symbol) (0.090")	Each	4
7040062	Pavement Marking (White Extruded Thermoplastic) ('ONLY') (0.090")	Each	2
7040130	Pavement Marking (White Extruded Thermoplastic) (0.090")	L.F.	240
7040140	Pavement Marking (Yellow Extruded Thermoplastic) (0.090")	L.F.	888
7060030	Raised Pavement Marker (Type G)	Each	16
7060025	Raised Pavement Marker (Type D)	Each	168
7080001	Painted Pavement Marking	Each	32581
7080010	Painted Pavement Symbol or Legend	Each	5

Designed	S. WILSON	12/2017
Drawn	J. BOILEY	12/2017
Checked	S. WILSON	12/2017
Prof. Engr.	S. WILSON	12/2017

Revision	Description	Engineer	Date
No.			

100% PLANS FOR CONSTRUCTION PURPOSES



Pima County Department of Transportation
HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
PAVEMENT MARKING GENERAL NOTES

Ana M. Olivares, P.E., Director

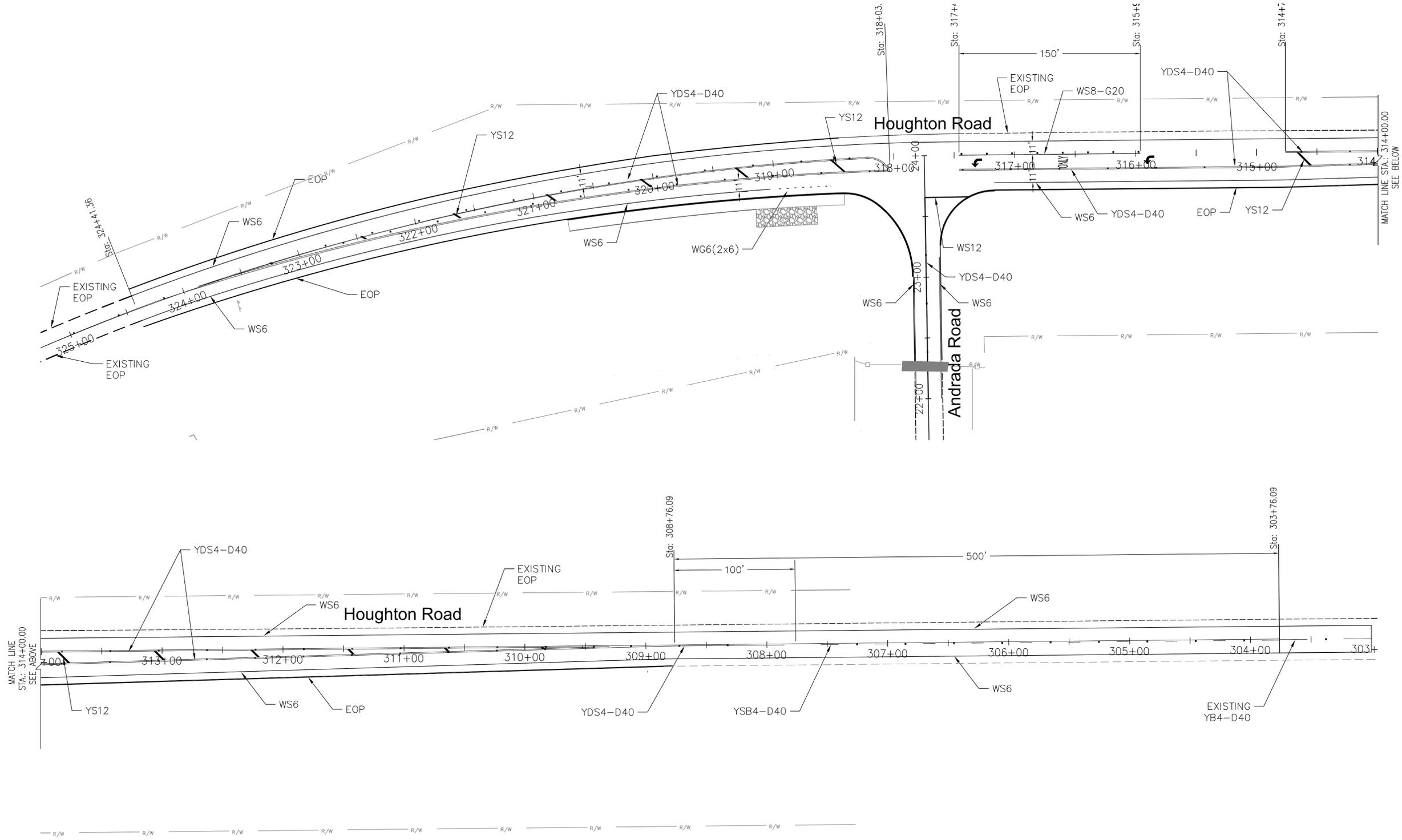
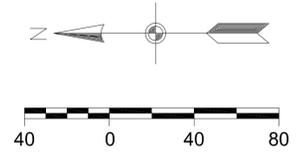
5/3/2018 11:21:33 AM



4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

3/9/2018 11:31:55 AM

Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
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Pima County Department of Transportation
HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
PAVEMENT MARKINGS



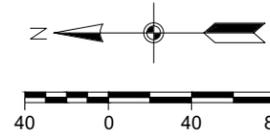
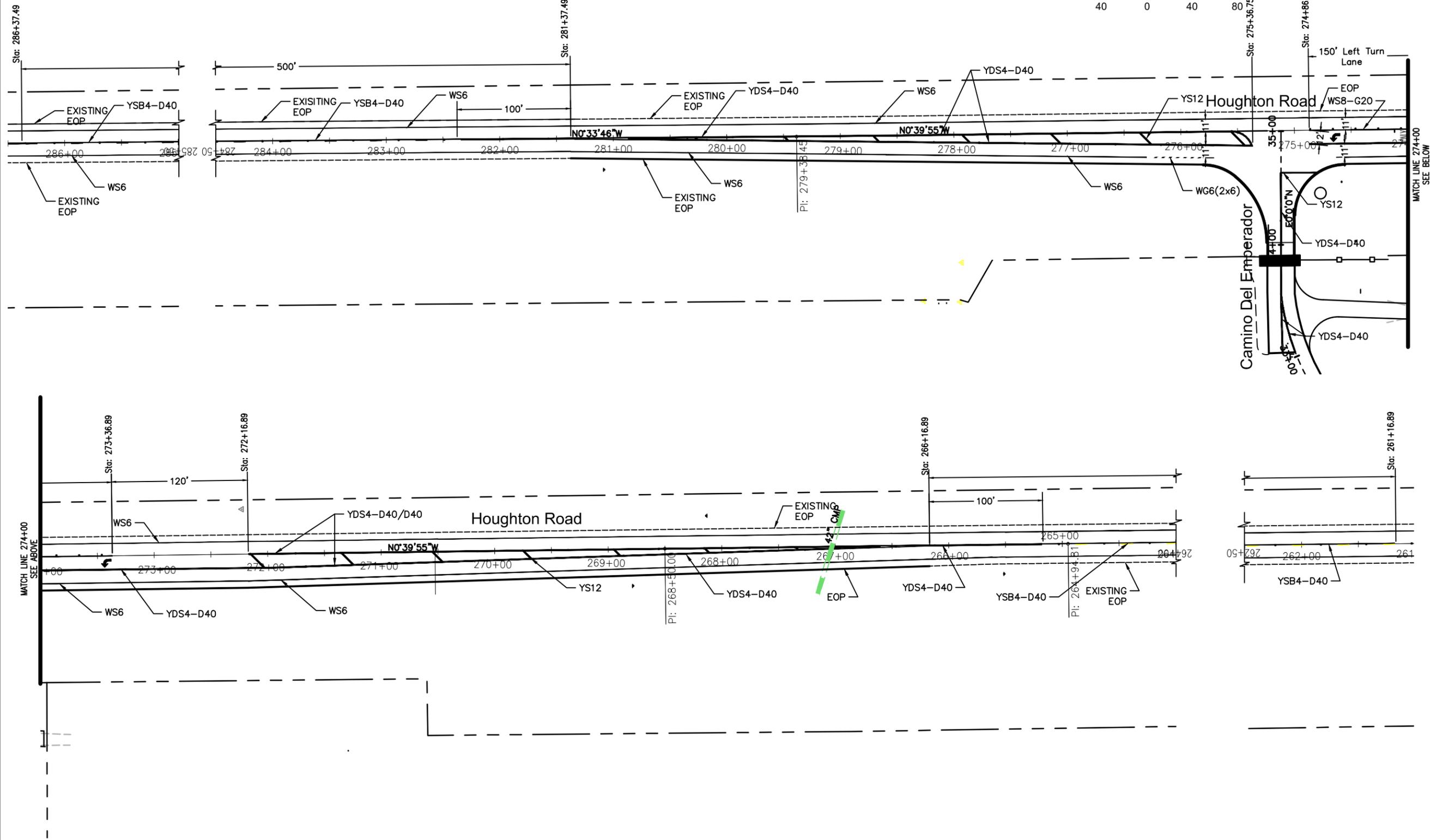
4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

Ana M. Olivares, P.E., Director

Date	Designed	Drawn	Checked	Prof. Engr.
12/2017	S. WILSON	J. BOLEY	S. WILSON	S. WILSON
12/2017				
12/2017				
12/2017				

No.	Revision Description	Engineer	Date

5/3/2018 11:23:34 AM



Designed	Date
S. WILSON	12/2017
J. BOLEY	12/2017
S. WILSON	12/2017
S. WILSON	12/2017

No.	Revision Description	Engineer	Date

100% PLANS FOR CONSTRUCTION PURPOSES



Pima County Department of Transportation
HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
PAVEMENT MARKINGS

Ana M. Olivares, P.E., Director

4SHRAI- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

SIGNING GENERAL NOTES:

THE FOLLOWING NOTES SHALL APPEAR ON ALL TRAFFIC SIGNAL PLANS AND ARE INCLUDED HERE FOR THE USER'S REFERENCE.

1. ALL EQUIPMENT, MATERIALS AND CONSTRUCTION SHALL MEET OR EXCEED THE REQUIREMENTS CONTAINED IN THE CURRENT PIMA ASSOCIATION OF GOVERNMENTS (PAG) STANDARD SPECIFICATIONS AND THE STANDARD DETAILS FOR PUBLIC IMPROVEMENTS, THE SPECIAL PROVISIONS AND THE APPROVED PLANS.
2. ALL SIGNS SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE LATEST EDITION OF THE PIMA COUNTY/CITY OF TUCSON TRAFFIC SIGNING DESIGN MANUAL, THESE PLANS, THE SPECIAL PROVISIONS AND APPLICABLE AMENDMENTS.
3. SIGNS MAY BE MODIFIED AND LOCATIONS ADJUSTED TO FIT CONDITIONS AT THE DISCRETION OF THE TRAFFIC ENGINEER.
4. THE DESIGN SPEED FOR HOUGHTONG ROAD IS 55 MPH. THE POSTED SPEED LIMIT IS 50 MPH. SIGN PLACEMENT SHALL BE BASED ON THE POSTED SPEED LIMIT.
5. POST LENGTHS INDICATED ON SIGN SUMMARY SHEETS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ACTUAL POST LENGTHS.
6. ALL PERFORATED POSTS SHALL BE INSTALLED IN A CONCRETE FOUNDATION, UNLESS OTHERWISE DIRECTED BY THE TRAFFIC ENGINEER.
7. ALL SIGN STATION LOCATIONS ARE APPROXIMATE, THE CONTRACTOR SHALL VERIFY ACTUAL SIGN LOCATIONS WITH THE TRAFFIC ENGINEER PRIOR TO THE INSTALLATION OF ANY SIGNS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH BLUE STAKE FOR INSTALLING ALL TRAFFIC SIGNS IN THE FIELD AND FOR MAINTAINING ALL SIGNING UNTIL PROJECT IS APPROVED FOR "CONSTRUCTION ACCEPTANCE" BY PIMA COUNTY (FULLY OPEN TO TRAFFIC, ALL PUNCH LIST ITEMS ARE COMPLETED, AND ONE YEAR WARRANTIES BEGIN).
9. ALL OVERHEAD MOUNTED SIGNS SHALL BE DIAMOND GRADE SHEETING, TYPE XI. ALL SCHOOL SIGNS SHALL BE FLORESCENT YELLOW/GREEN, DIAMOND GRADE SHEETING, TYPE XI. ALL OTHER SIGNS SHALL BE HIGH INTENSITY PRISMATIC SHEETING, TYPE IV. ALL GROUND MOUNTED SIGNS SHALL HAVE AN ANTI GRAFFITI COATING APPLIED TO SIGN FACE, 3M #1160 FILM OR EQUIVALENT.
10. ALL NEW SIGNS SHALL HAVE 0.080 GUAGE, RADIUS CORNER, ALUMINUM BACKING UNLESS OTHERWISE NOTED.
11. PRIOR TO DISTURBING ANY TRAFFIC SIGNS, A SIGN CONDITION INVENTORY OF ALL EXISTING SIGNING SHALL BE CONDUCTED BY THE CONTRACTOR AND PROVIDED TO THE SIGN SHOP SUPERVISOR (520-724-2611). INVENTORY SHALL INDICATE CURRENT SIGN LOCATION AND CONDITION, INCLUDING ANY EXISTING DAMAGE OR DEFICIENCIES.
12. ANY SIGNS AND POSTS BEING RE-USED ON THIS PROJECT SHALL BE STOCKPILED IN A MANNER TO AVOID DAMAGE AND MAINTAIN THE INTEGRITY OF THE SIGNS. SAFE STORAGE OF STOCKPILE AND PAYMENT FOR DAMAGE TO THE STOCKPILE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
13. ALL SIGNS AND POSTS NOT BEING RE-USED ON THIS PROJECT SHALL BE DISMANTLED, STACKED AND DELIVERED TO THE OWNER (CITY OR BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFE STORAGE AT THE CONSTRUCTION SITE UNTIL DELIVERY, AND THE SAFE UNLOADING OF THE SALVAGED MATERIAL. NOTIFICATION OF DELIVERY SHALL BE MADE AT LEAST TWO WORKING DAYS (48 HOURS) PRIOR TO DELIVERY. PIMA COUNTY SIGN SHOP. PIMA COUNTY SIGN SHOP 1313 S. MISSION ROAD (520-724-2367). NO FRIDAY DELIVERIES.

SIGNING QUANTITIES			
Item No.	Description	UNIT	QUANTITY
2020034	Removal of Signs and Delineators	EACH	4
6070220	Relocate Signs	EACH	19
6070010	Sign Post (Perforated) (Single)	L.F.	72
6070110	Foundation for Sign Post (Perforated)	EACH	6
6080014	Sign Panel (Traffic Control) (Permanent) (Type XI)	S.F.	38

Ana M. Olivares, P.E., Director

Date	Designed	Checked	Prof. Engr.
12/2017	S. WILSON	J. BOLEY	S. WILSON
12/2017	S. WILSON	S. WILSON	S. WILSON
12/2017	S. WILSON	S. WILSON	S. WILSON

No.	Revision Description	Engineer	Date

100% PLANS FOR CONSTRUCTION PURPOSES



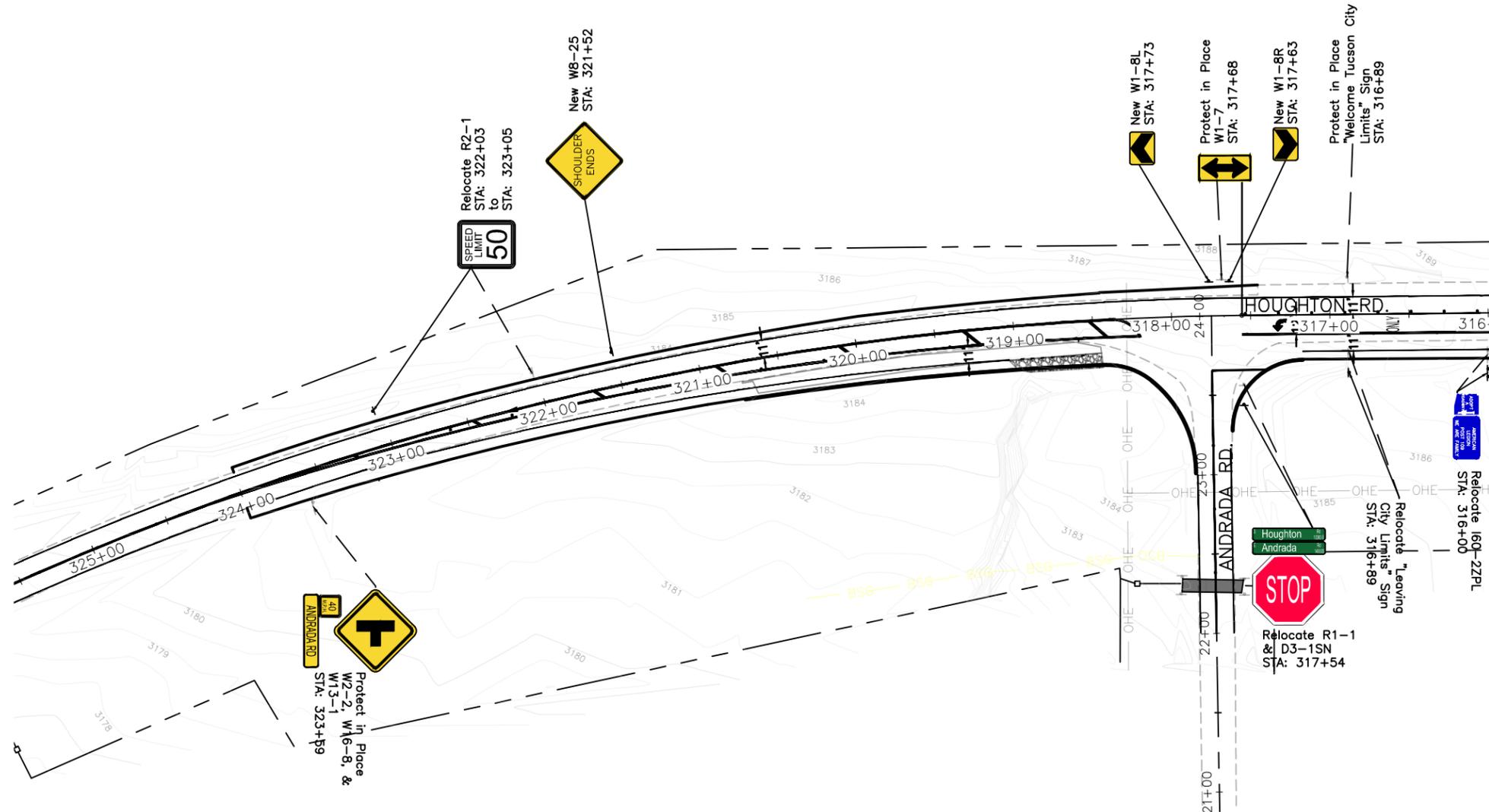
Pima County Department of Transportation
HOUGHTON ROAD
 AT ANDRADA RD AND CMO DEL EMPERADOR
 INTERSECTION IMPROVEMENTS
 SIGNING GENERAL NOTES

4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

5/3/2018 11:14:27 AM



Arizona Blue Stake
 1-800-STAKE-IT
 1-800-782-5348
 Call Two Working Days Before You Dig



MATCH LINE
 STA: 316+00
 SEE SHEET S3

Pima County Department of Transportation

HOUGHTON ROAD
 AT ANDRADA RD AND CMO DEL EMPERADOR
 INTERSECTION IMPROVEMENTS
 SIGNING PLANS

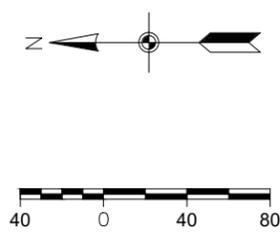
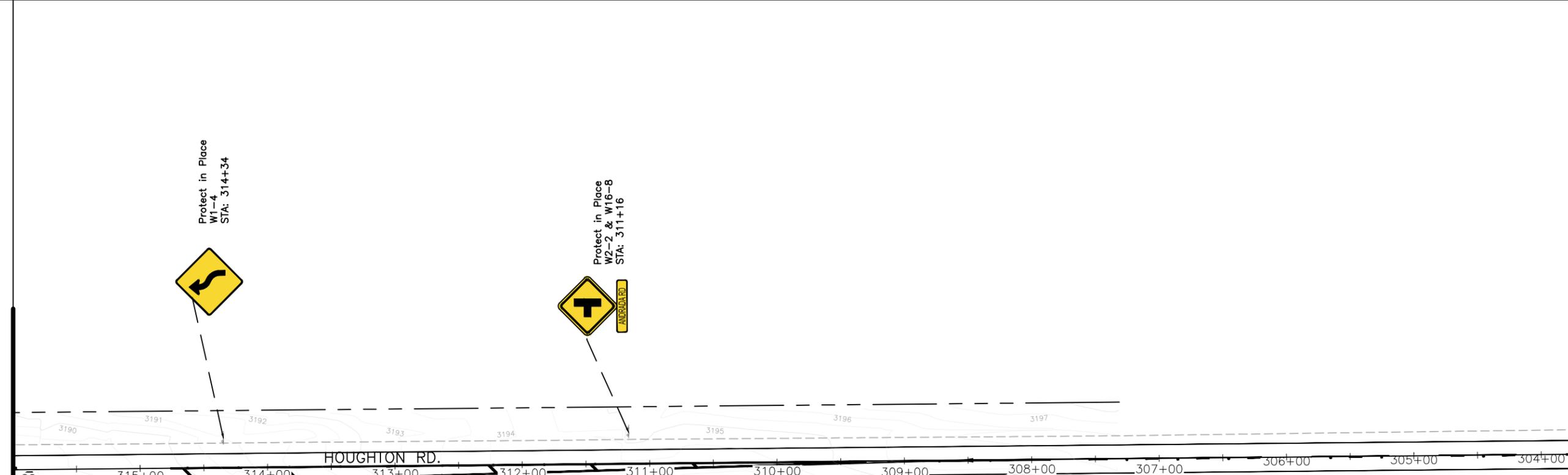
PIMA COUNTY
 TRANSPORTATION

Ana M. Olivares, P.E., Director

No.	Revision Description	Engineer	Date

Designed	Date
S. Wilson	1/2018
Drawn	Date
J. Bailey	1/2018
Checked	Date
S. Wilson	1/2018
Prof. Engr.	Date
S. Wilson	1/2018

Arizona Blue Stake
 1-800-STAKE-IT
 1-800-782-5348
 Call Two Working Days Before You Dig



MATCH LINE
 STA: 316+00
 SEE SHEET S2

Designed	Date
S. Wilson	1/2018
J. Bailey	1/2018
S. Wilson	1/2018
S. Wilson	1/2018

No.	Revision Description	Engineer	Date

Ana M. Olivares, P.E., Director

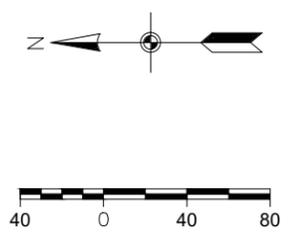
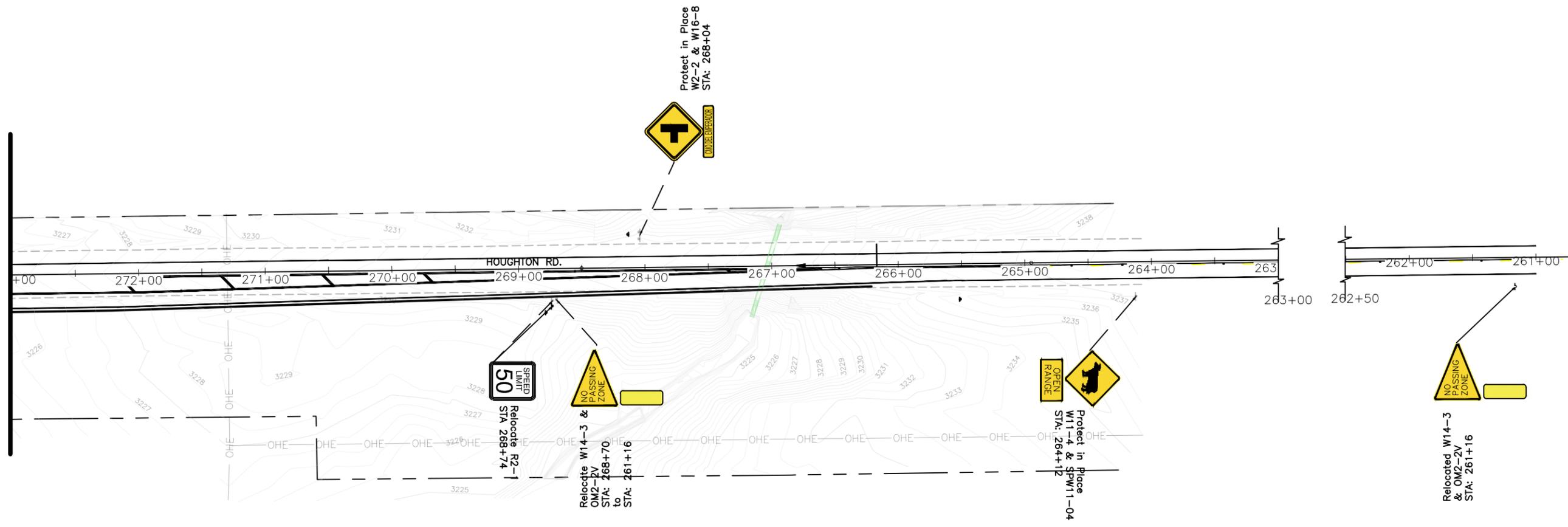
Pima County Department of Transportation



HOUGHTON ROAD
 AT ANDRADA RD AND CMO DEL EMPERADOR
 INTERSECTION IMPROVEMENTS
 SIGNING PLANS

4SHRAI- SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

MATCH LINE
STA: 273+00
SEE SHEET S4



Arizona Blue Stake
1-800-STAKE-IT
1-800-782-5348
Call Two Working Days Before You Dig

Pima County Department of Transportation

HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
SIGNING PLANS

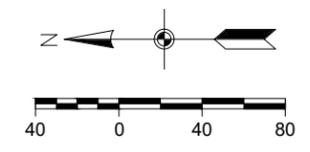
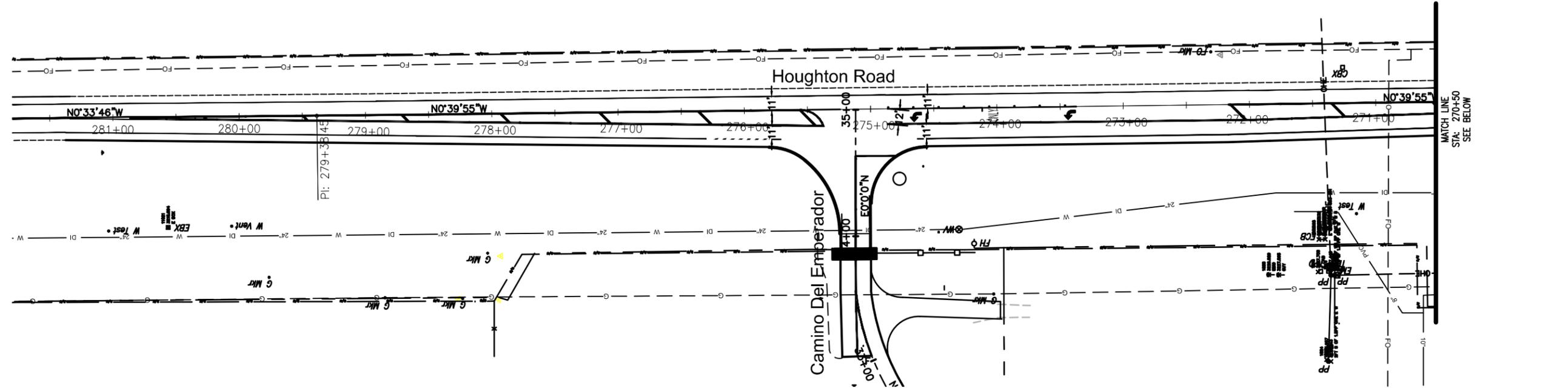
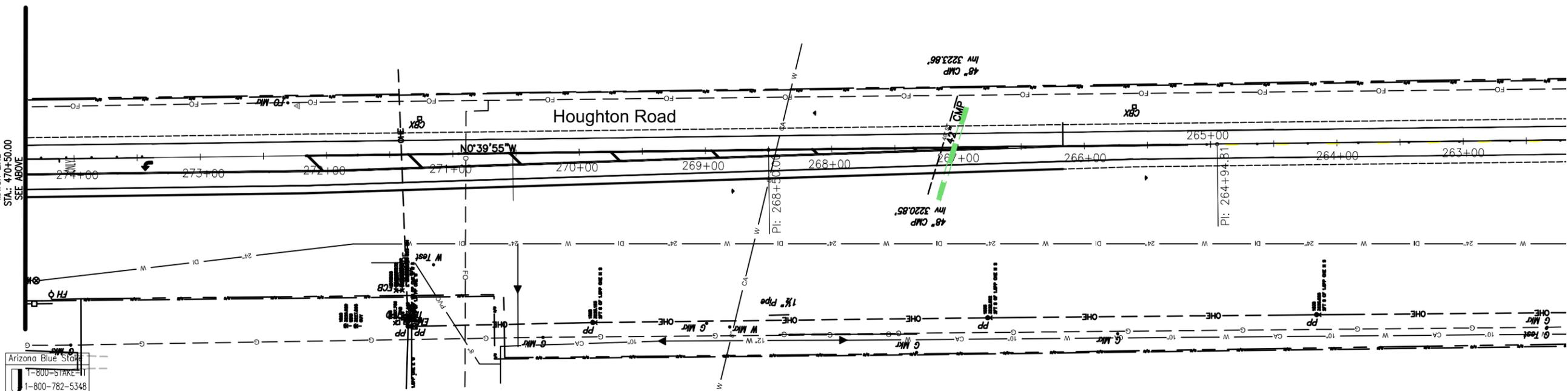
4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

No.	Revision Description	Engineer	Date

Ana M. Olivares, P.E., Director

Designed	Date
S. Wilson	1/2018
Drawn	Date
J. Bailey	1/2018
Checked	Date
S. Wilson	1/2018
Prof. Engr.	Date
S. Wilson	1/2018

5/3/2018 11:26:48 AM



Arizona Blue Stakes
 1-800-5-STAKE-11
 1-800-782-5348
 Call Two Working Days Before You Dig

Horiz. Scale: 1"=40'
 Vert Scale: vert

Pima County Department of Transportation

HOUGHTON ROAD
 AT ANDRADA RD AND CMO DEL EMPERADOR
 INTERSECTION IMPROVEMENTS
 UTILITY PLANS



100% PLANS FOR CONSTRUCTION PURPOSES

No.	Revision Description	Engineer	Date

Ana M. Olivares, P.E., Director

Designed	Date
S. WILSON	12/2017
Drawn	Date
J. BOLEY	12/2017
Checked	Date
S. WILSON	12/2017
Prof. Engr.	Date
S. WILSON	12/2017

4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

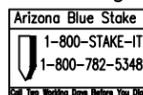
GENERAL NOTES:

1. Areas outside of the Project Disturbance Limits or Right of Way shall remain undisturbed. Should additional area require disturbance, the Engineer, Owner and appropriate parties must be notified. Any project related activities or disturbance beyond the Project Disturbance Limits or Right of Way will require historic and cultural resources compliance to have been included before any disturbance can occur. The Plans and NOI must be updated accordingly and reflect additional BMPs.
2. All disturbed soils shall be stabilized. Apply seed mix to disturbed soils.
3. Seeding limits shown on plans are estimated on anticipated limits of soil disturbance. Seeding shall be field adjusted to match limits of soil disturbance.
4. All Erosion Control Measures shall be installed within 14 days of establishing rough grade. Disturbed areas where construction is delayed for more than 14 days require Temporary Erosion Control Measures.
5. Erosion Control Measures shall be installed at perimeter of Limits of Disburbance, as shown on plans.
6. Sediment Control Measures shall be installed on all side slope boundaries. Sediment controls shall be placed on side slope boundaries when adjacent side slope is at lower elevation than project area with potential to receive stormwater runoff. Adjacent slopes at higher elevation than project area do not require perimeter control.
7. Sediment Wattles shall be installed on slopes, per Erosion & Pollution Control plans, and per Detail E1. Ends of Wattles shall be turned upslope at a 45 degree angle, 3' min., Typ.
8. Contractor shall determine final location of Stabilized Construction Entrance/Exit Gravel Pad according to site conditions and/or construction sequencing, with approval from the Engineer. Use of other access points must be approved by the Engineer.
9. Sweeping and/or vacuuming may be required as a secondary measure if trackout is visible.
10. Containment Areas shall be identified on Contractor's Stormwater Pollution Prevention Plan.
11. Spill response equipment shall be accessible in case of a spill, and located within/near the Containment Area.
12. Quantities shown in Summary of Quantities are for Contractor convenience. Contractor to verify all quantities.
13. All work and materials relating to the BMPs detailed within these Plans (including all materials used for BMPs, all ground preparation, furnishing, installing, maintenance, final removal, and disposal of temporary BMPs, as well as returning the area to an acceptable condition as approved by the Engineer) shall be paid for under the Erosion and Pollution Control bid items.

GENERAL NOTES (CONTINUED):

14. The work covered by this section shall also include the preparation of soil within areas to be seeded, the hydroseeding of disturbed area with native plants (Class II), and the installation of a temporary, degradable erosion control blanket in areas designated on the project plans.
15. Seed mix species and the Pure Live Seed (PLS) will be as shown on the Sheet EC02.
16. The seed is to be obtained from seed suppliers through harvesting of wildland collections, or field-grown seeds grown prior to or during the contract period.
17. Weed content of the contract-specified seed mix is not exceed 0.5 percent.
18. Seed is to be stored under dry conditions, at temperatures of between 35° F and 120° F, and out of direct sunlight. Seed that has become moldy, wet, or otherwise damaged, will not be acceptable. Seed shall be called for in pounds of pure, live seed (PLS), where PLS is defined as the product of seed germination (G) and seed Purity (P) all divided by 100.
19. Upon completion of the hydroseeding operations, erosion control blankets shall only be installed over those seeded areas that are indicated on the landscape plans to receive erosion control blanket. The blanket shall be installed as detailed on the project plans and per the manufacturer's written instructions and recommendations. The blanket shall be installed as soon as possible after seeding. The Contractor shall be responsible for reseeding any seeded areas disturbed by the installation of the blanket or that area eroded prior to the installation of the blanket.
20. The initial application for Seeding (Class II) will be measured either by the square yard of ground surface, to the nearest 100 square yards seeded, or by the acre to the nearest 0.1 acre, complete-in-place. The second application for Seeding (Class II) will be measured either by the square yard of ground surface, to the nearest 100 square yards seeded, or by the acre to the nearest 0.1 acre, complete-in-place.
21. Accepted quantities of seeding, measured as provided for above, will be paid for at the contract unit price indicated in the Bidding Schedule and will be considered as compensation, in full, for the item complete in place, including all labor, equipment, materials, tools, supplies and incidentals necessary for the work in conformance with the requirements herein, the project plans or as may be directed by the Engineer. Price adjustments for variation in total bid quantity per Subsections 109-3 and 109-4 of the Standard Specifications do not apply to work under this item.
22. No direct measurement or payment will be made for the preparation or the preservation of seeding areas, the cost being considered as included in the cost of the contract item.
23. When multiple mobilizations are required to accomplish seeding as specified herein, the cost will be included in the price bid for the seeding. No adjustments will be made to the contract for the number of seeding mobilization activities. Should the contractor fail to provide seeding for a sub-area as specified herein, the Engineer will immediately notify the contractor of such non-compliance. Should the contractor fail to immediately remedy the unstabilized area, the Engineer may suspend work until such seeding stabilization has been completed, or proceed to provide the necessary seeding stabilization. The entire cost of such work will be deducted from the monies due or to become due to the contractor. In addition, no adjustment to the contract time will be made for suspensions resulting from the contractor's failure to provide seeding for a sub-area within the time periods specified herein.

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Ana M. Olivares, P.E., Director

No.	Revision Description	Engineer	Date

Pima County Department of Transportation
HOUGHTON ROAD
 AT ANDRADA RD AND CMO DEL EMPERADOR
 INTERSECTION IMPROVEMENTS
 EROSION AND POLLUTION CONTROL PLANS

4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

EROSION AND POLLUTION CONTROL BMP
SUMMARY OF QUANTITIES

SYMBOL	BMP	UNIT	QTY.	REFERENCE	BID ITEM NO.
	9" Dia. Sediment Wattle	L.F.	910	Detail E1	8100001
	20" Dia. Sediment Log in Ditch/Channel	L.F.	190	Detail E2	8100001
Not Shown on Plans	Stabilized Construction Entrance/Exit Gravel Pad	EACH	1	Detail E3	8100001
	Seeding (Class II)	AC	2.0	N/A	8050004
	Preservation Fencing	L.F.	350	N/A	2010004

SEED MIX 1 - (CLASS II) (TYPE A); LOW GROW SEED-MIX
SCHEDULE FOR ROADSIDE AREAS - CLEAR ZONE

BOTANICAL NAME	COMMON NAME	PLS LBS. /ACRE
<i>Aristida purpurea</i>	Purple Three-Awn	2.0
<i>Balleya multiradiata</i>	Desert Marigold	1.0
<i>Bouteloua aristidoides</i>	Needle Grama	1.5
<i>Bouteloua gracilis "Hachita"</i>	"Hachita" Blue Grama	1.0
<i>Bouteloua rothrockii</i>	Rothrock Grama	1.0
<i>Dyssodia pentachaeta</i>	Golden Dogbane	0.5
<i>Encelia farinosa</i>	Brittlebush	0.5
<i>Eschscholtzia mexicana</i>	Mexican Poppy	2.0
<i>Glandularia gooddingii</i>	Southwestern Mock Vervain	0.5
<i>Hilaria belangeri</i>	Curly Mesquite	1.0
<i>Isocoma tenuisecta</i>	Burroweed	1.0
<i>Kalstroemia grandiflora</i>	Arizona Poppy	2.0
<i>Lesquerella gordonii</i>	Bladderpod	0.5
<i>Parthenum incanum</i>	Mariola	0.5
<i>Penstemon parryi</i>	Parry's Penstemon	1.0
<i>Phacelia crenulata</i>	Desert Bluebells	1.0
<i>Psilostrophe cooperii</i>	Paperflower	0.5
<i>Senna covesii</i>	Desert Senna	2.0
<i>Sphaeralcea ambigua</i>	Desert Globemallow	1.5
<i>Zinnia acerosa</i>	Desert Zinnia	0.5

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Horiz. Scale: NTS
Vert Scale: vert

Ana M. Olivares, P.E., Director

Date	Designed	Drawn	Checked	Prof. Engr.
12/2017	S. WILSON	J. BOLEY	S. WILSON	S. WILSON
12/2017				
12/2017				

No.	Revision Description	Engineer	Date

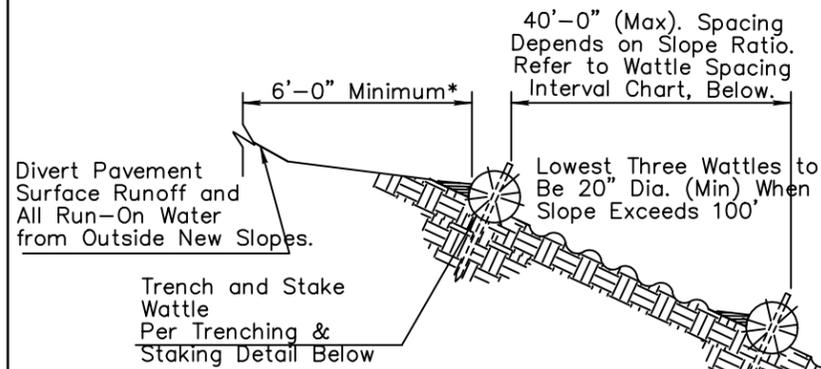


Pima County Department of Transportation

HOUGHTON ROAD
AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
EROSION AND POLLUTION CONTROL PLANS

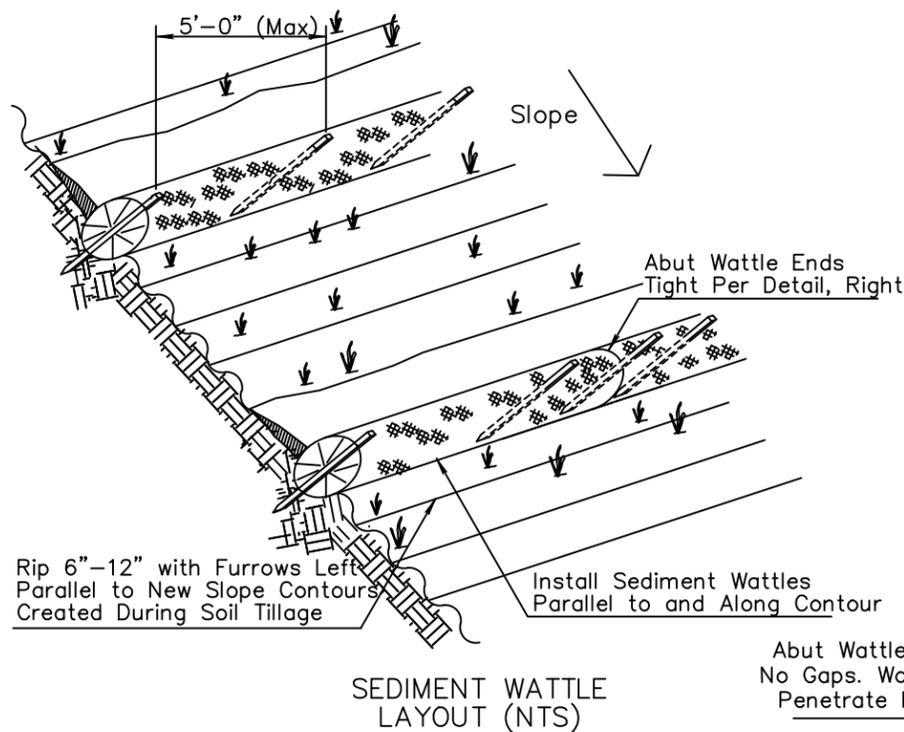
4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

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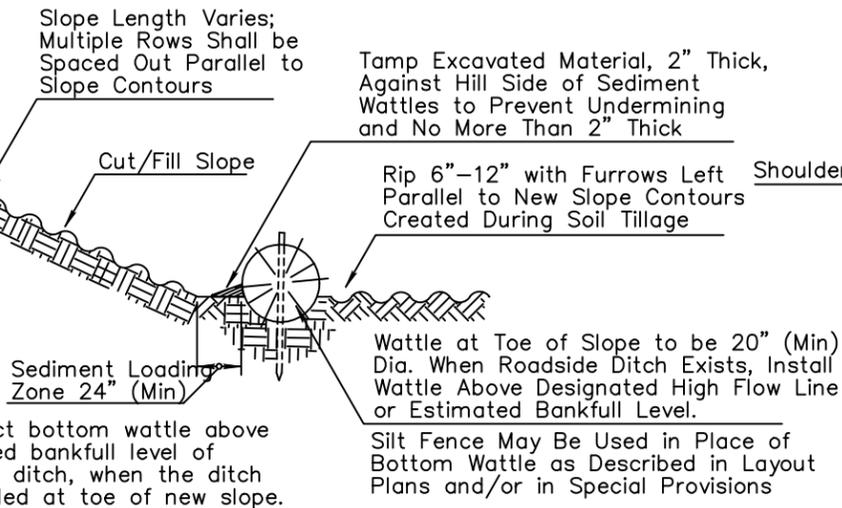


WATTLE SPACING INTERVALS	
Slope Ratio (H:V)	Maximum Spacing Interval
2:1	10'
3:1	20'
4:1	30'
5:1	40'
6:1	40'

- * Notes:
- 1) Top Row Shall Not be Placed within 6'-0" of Edge of Pavement and 9'-0" from Outside Surface of Barrier.
 - 2) For erosive soils, place rows of wattles closer together.
 - 3) For soils with low erosive potential, place rows of wattles further apart.

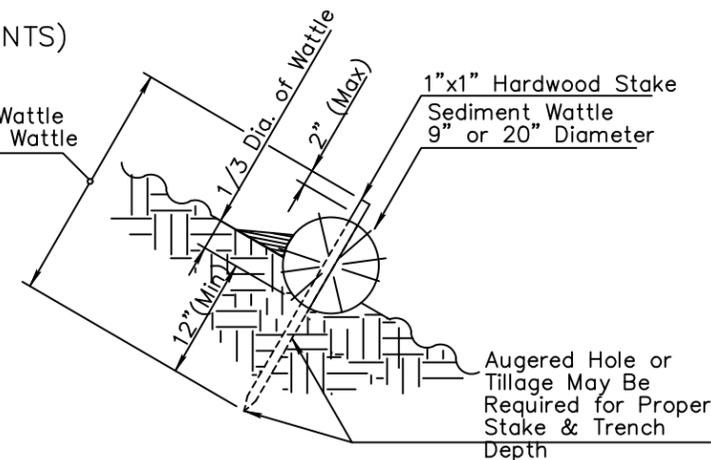


SEDIMENT WATTLE LAYOUT (NTS)

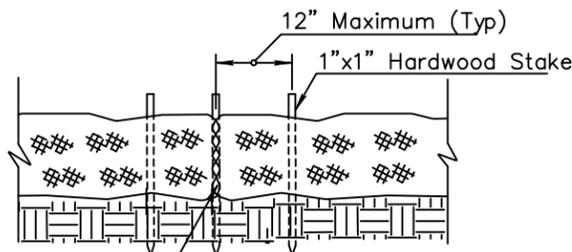


SECTION (NTS)

Stake Length:
24" for 9" Dia. Wattle
33" for 20" Dia. Wattle

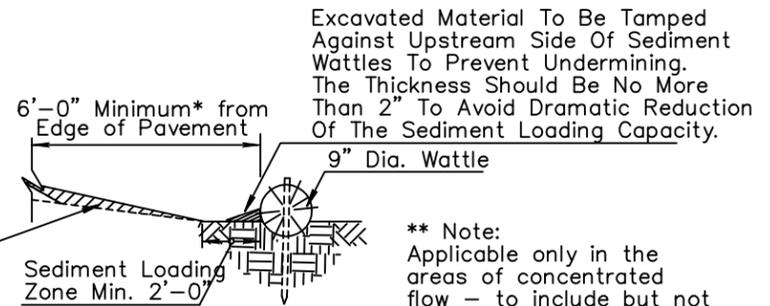


SEDIMENT WATTLE STAKING DETAIL (NTS)



SEDIMENT WATTLE OVERLAP (NTS)

Abut Wattle Ends Tight, No Gaps. Wood Stake to Penetrate Netting Only.



NEW SHOULDER BUILDUP PROTECTION SECTION (NTS)

NOTES:

1. Install Sediment Wattles as slopes are constructed to grade or as directed by the Engineer. Select, install and maintain in conformance with manufacturers' specifications to meet site conditions for slope protection and in accordance with good engineering practices.
2. Sediment Wattles shall be in continuous contact with trench bottom and sides. Do not overlap wattle ends on top of each other. A 20" Dia. wattle may be made from 2-3 rolled excelsior or straw blankets.
3. Butt adjoining wattles tightly against each other. Drive the first end stake of the second wattle at an angle toward the first wattle to help abut them tightly.
4. Repair any rills or gullies promptly. Make field adjustments and corrections of Wattle BMP immediately if it is causing flooding, erosion, and/or affecting roadway safety.
5. For seeded areas, tillage shall be performed to form minor ridges and furrows parallel to new slope contours and as specified in Section 805 of the Project Specifications.
6. Divert and direct run-on water from outside of the slopes to the spillways and/or rock riprap/rock mulch. Diversion dikes and/or ditches are necessary on natural undisturbed slopes beyond the top limits of new slopes to divert run-on water.
7. Installation and maintenance of Sediment Wattle BMPs shall not negatively impact traffic safety, nor the designed function of roadway or bridge drainage facilities.
8. Install and maintain Sediment Wattle BMPs to carry the stormwater of at least 2-year, 24-hour events.
9. Refer to Project Specification Section 810 for Sediment Wattle material specifications.
10. Make field adjustments and corrections to ensure NO sensitive biological resources (native species / habitats) will be adversely impacted.

** Note:
Applicable only in the areas of concentrated flow - to include but not be limited to roadway sag spots and drop-off repair locations as per the direction of the Engineer.

DETAIL 1
SEDIMENT WATTLE

Ana M. Olivares, P.E., Director

Date	Designed	Drawn	Checked	Prof. Engr.
12/2017	S. WILSON	J. BOLEY	S. WILSON	S. WILSON
12/2017				
12/2017				

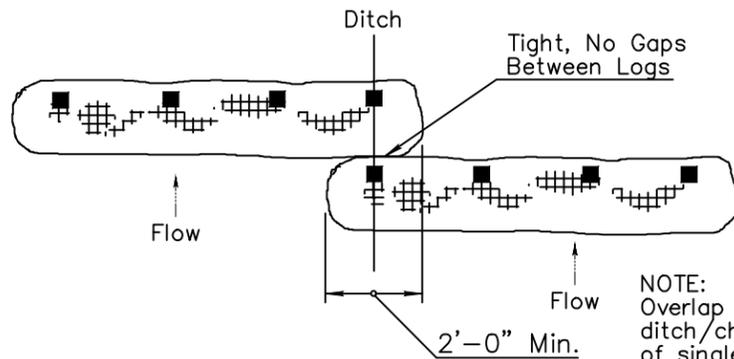
No.	Revision Description	Engineer	Date



Pima County Department of Transportation

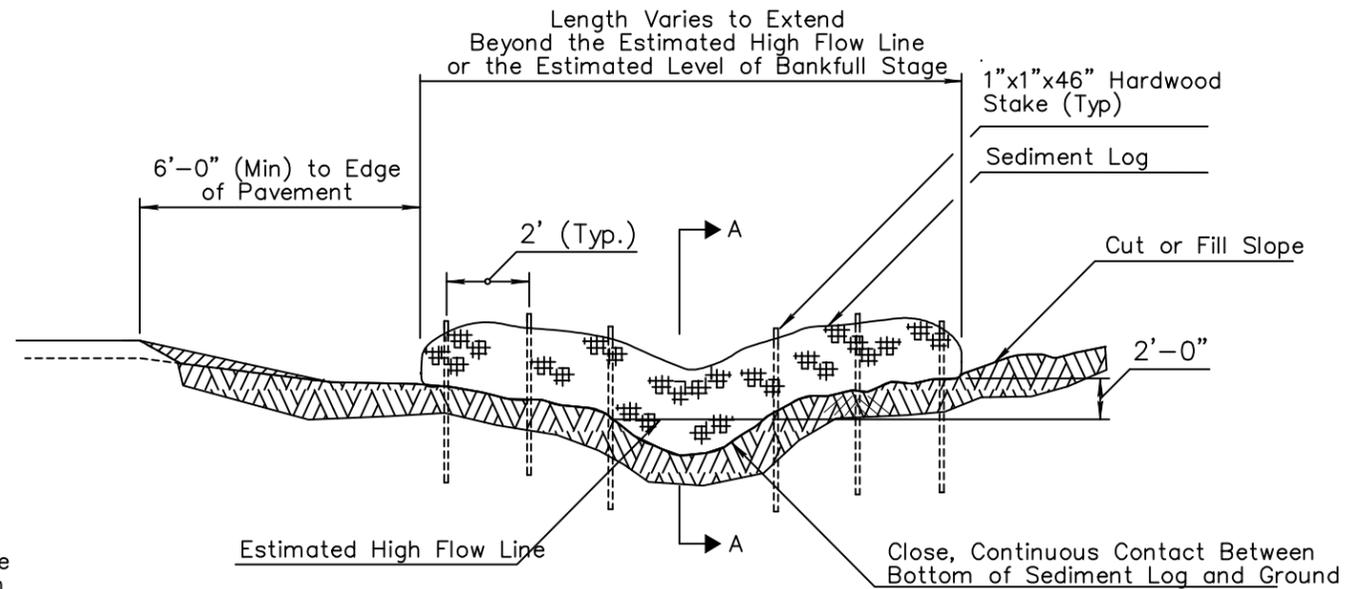
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AT ANDRADA RD AND CMO DEL EMPERADOR
INTERSECTION IMPROVEMENTS
EROSION AND POLLUTION CONTROL PLANS

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TYPICAL OVERLAP PLAN (NTS)

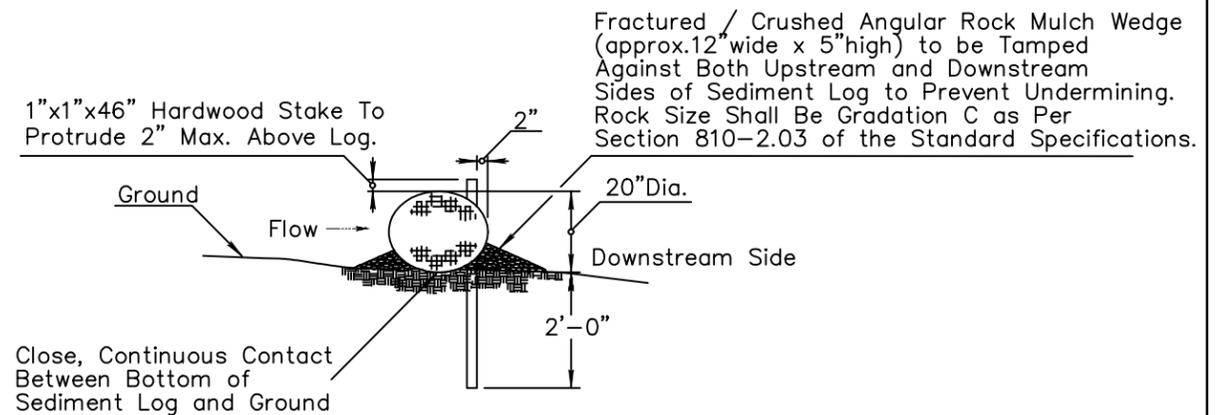
NOTE: Overlap applies to situations where ditch/channel is wider than length of single Sediment Log. Two or multiple Sediment Logs may be necessary.



SEDIMENT LOG IN DITCH/CHANNEL SECTIONAL ELEVATION (NTS)

NOTES:

1. Locate Sediment Logs as indicated in plans, SWPPP, or as directed by the Engineer.
2. Select, install and maintain Logs per manufacturers' specifications and good engineering practices.
3. Lay Sediment Log across prepared roadside ditch or channel. Trenching or burial of Sediment Logs is not required. The close, continuous contact between the bottom of the Log and the ground is mandatory. The Logs shall be installed in the roadside ditch, swale or channel bottom perpendicular to the flow of water as shown on detail this sheet.
4. Stake Log as shown. Stakes shall be placed through downstream side only as shown.
5. DO NOT drive stakes through center of the Log. Stakes must be driven into the ground as shown.
6. Ensure that no gaps exist between soil and bottom of Sediment Log. Repair any rills or undercuts promptly.
7. Placement of Sediment Logs shall be evaluated by the Engineer in rocky soil conditions.
8. Remove Sediment Log BMPs within the ditches/channels as per the direction of the Engineer or as soon as practicable upon stabilization of the construction disturbed area.
9. Dispose of Sediment Logs and trapped sediment material and fill trench created by Sediment Log.
10. The installation and maintenance of Sediment Log BMPs shall not negatively impact traffic safety, nor the designed function of roadway or bridge drainage facilities. Sediment Logs shall be installed and maintained to carry the stormwater of at least 2-year, 24-hour events.
11. Make field adjustments and corrections of Sediment Log BMP immediately if it is causing flooding, erosion, and/or affecting roadway safety.
12. Rock mulch/riprap may be required for channel/ditch lining or rock check dams for longitudinal ditch slopes that exceed 5% and/or for soil conditions not suitable for Log installation.
13. The Sediment Log BMP's pay/bid item shall include all materials used for this BMP: all ground preparation, furnishing, installing, maintenance, final removal, and disposal, as well as returning the area to an acceptable condition as approved by the Engineer.
14. Refer to Standard Specification Section 810-2.06(B) for Sediment Log material specifications.
15. Make field adjustments and corrections to ensure NO sensitive biological resources (native species / habitats) will be adversely impacted.
16. Construct Rock Wedge with angular-shaped Gradation C Rock Mulch as defined in Section 810-2.03 of the Standard Specifications and these special provisions. Natural river-run materials such as rounded river rocks/cobblestones and pebbles are NOT acceptable.



SECTION A-A (NTS)

DETAIL E 2
SEDIMENT LOG

Designated	S. WILSON	Date	12/2017
Drawn	J. BOLEY	Checked	12/2017
Prof. Engr.	S. WILSON	Prof. Engr.	12/2017

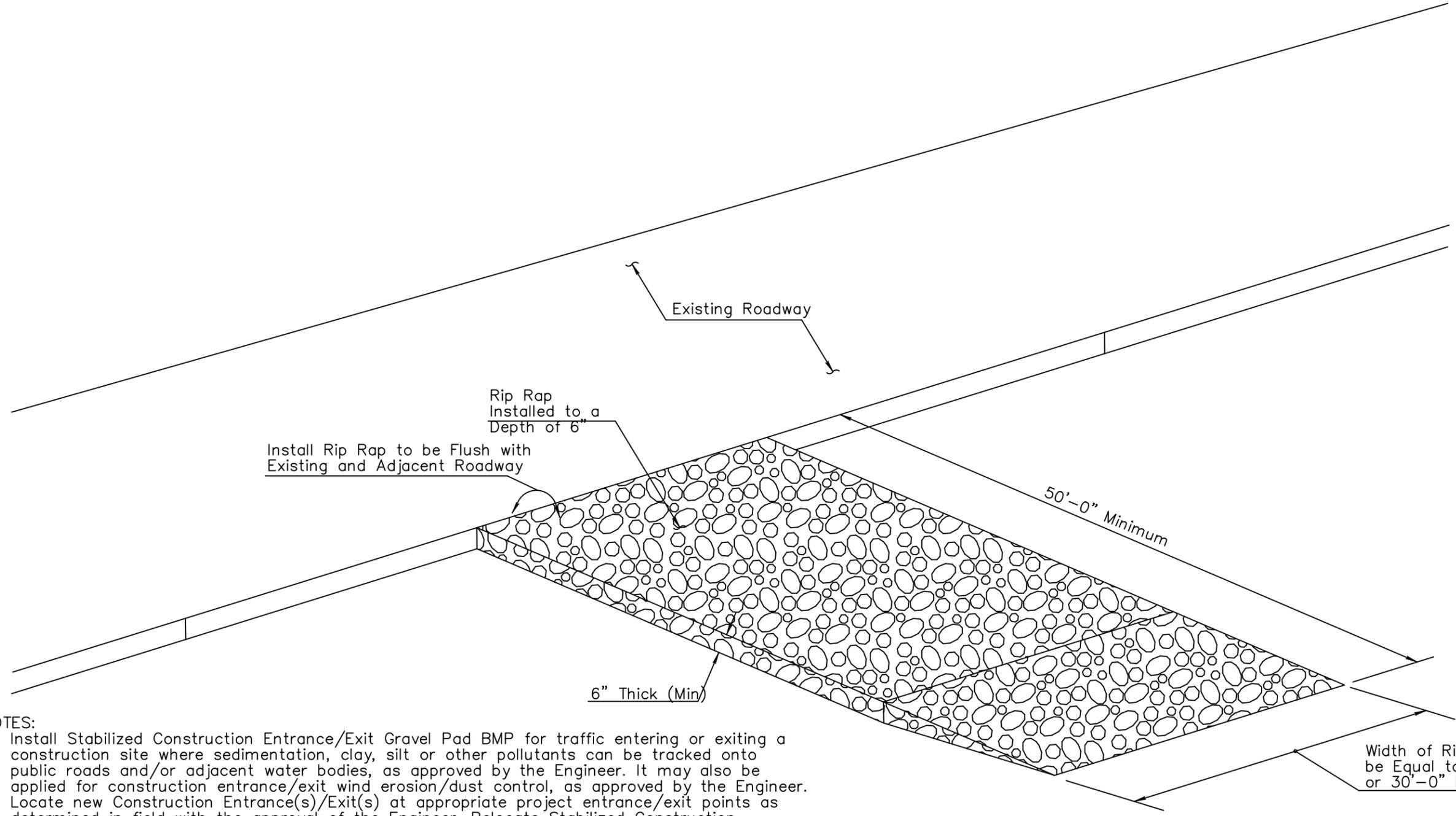
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Ana M. Olivares, P.E., Director

4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT





NOTES:

1. Install Stabilized Construction Entrance/Exit Gravel Pad BMP for traffic entering or exiting a construction site where sedimentation, clay, silt or other pollutants can be tracked onto public roads and/or adjacent water bodies, as approved by the Engineer. It may also be applied for construction entrance/exit wind erosion/dust control, as approved by the Engineer.
2. Locate new Construction Entrance(s)/Exit(s) at appropriate project entrance/exit points as determined in field with the approval of the Engineer. Relocate Stabilized Construction Entrance/Exit Gravel Pad BMP as needed as project progresses. Replace Rip Rap materials in drive paths when dirt or mud accumulates.
3. Rip Rap materials shall be fractured/crushed rocks in angular shape as defined in Section 810 of the Project Specifications. Natural river-run materials, especially rounded natural river rocks, are not acceptable.
4. Field adjust and correct Construction Entrance/Exit Rip Rap Pad BMP immediately if it is causing flooding and/or affecting roadway safety.

BIRD'S EYE VIEW (NTS)

DETAIL 3

STABILIZED CONSTRUCTION ENTRANCE/EXIT

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EROSION AND POLLUTION CONTROL PLANS



4SHRAI - SOUTH HOUGHTON ROAD INTERSECTION IMPROVEMENT

No.	Revision Description	Engineer	Date

Ana M. Olivares, P.E., Director

Designed	Date
S. WILSON	12/2017
Drawn	Date
J. BOLEY	12/2017
Checked	Date
S. WILSON	12/2017
Prof. Engr.	Date
S. WILSON	12/2017

