The City Of

# San Angelo, Texas

**Engineering Services Department**
**72 W College Avenue, San Angelo, TX 76903**

## Addendum No. 1

**TO:** ALL PLAN HOLDERS

**DATE:** January 19, 2017

**PROJECT:** ES-01-17 SOUTHLAND BOULEVARD ROADWAY IMPROVEMENTS - PHASE I

The plans of the above referenced project are modified as described below. All bidders shall acknowledge receipt of this and all other addenda on the Bid Form. This addendum becomes a part of the contract documents. All provisions of the original plans, and contract documents shall remain in full force and effect, except as modified by this addendum.

1. **Bid Form**

   Delete pages 20-22 in the ES0117 RFCSP Bid Form. Replace with attached **Revised** Bid Form, pages 20-22.

   - Bid Item 0341 6008 – D-GR HMA TY-B PG64-22 – Quantity increased to 852 Tons
   - Bid Item 0341 6008 – D-GR HMA TY-C PG76-22 – Quantity increased to 723 Tons
   - Bid Item 0680 6003 – INSTALL HWY TRF SIG (SYSTEM) – Added to Bid Form
   - Bid Items 0690 6024, 0690 6025, and 0690 6029 – Removed from Bid Form

2. **Plans**

   a. **Plan Sheet 2**
   Remove and replace with attached Sheet 2.

   b. **Plan Sheets 5A-5H**
   Insert attached Sheets 5A-5H.

   c. **Plan Sheet 6**
   Remove and replace with attached Sheet 6.

   d. **Plan Sheet 7**
   Remove and replace with attached Sheet 7.

   e. **Plan Sheet 48**
   Remove and replace with attached Sheet 48.

3. **Submittal date**
   The revised submittal date is January 31, 2017 by 4:00 p.m., Local Time.

**Attachments**

1. **Contractor Questions and Answers**
2. **Revised Bid Form**
3. **Plan Sheet 2**
4. **Plan Sheets 5A-5H**
5. **Plan Sheet 6**

6. **Plan Sheet 7**
7. **Plan Sheet 48**

**Contractor's Questions and Answers**

1. Q: Would you consider furnishing the bidders an Excel Bid Form to fill out, print and turn in with our bids, in lieu of hand writing our bids on the current form?
   A: Yes. The City will furnish an Excel Bid Form

2. Q: The Plans are missing page 5, General Notes.
   A: The General Notes have been added.

3. Q: The Quantities in the Basis of Estimate on plan sheet no. 6 are not even close to correct.
   A: The Quantities in the Basis of Estimate have been updated on plan sheet no. 6 and have also been updated on the Bid Form.

4. Q: Did you take the continuous water condition behind the Southland curb (natural spring) into consideration when designing this project and what is the City's intent for addressing it during construction?
   A: During the design phase, the Engineer's GeoTech report did not indicate groundwater to be present near the surface from the core samples taken.

5. Q: The General Notes on plan sheet 7 says that at least one driveway to Sam's Club shall remain open at all times. Do the two driveways to Sam's Club off of Sherwood Way full-fill this requirement?
   A: No, at least one driveway on Southland Boulevard must remain open at all times during construction.

6. Q: Is it the City's intent to wait to give notice to proceed until after the Traffic signal pole at Sherwood Way has been relocated by the TXDOT contract?
   A: The City will issue the notice to proceed based on the coordination and agreement of the awarded contractor with TXDOT's contractor, Reece Albert.

7. Q: Would the City allow closure of Southland Blvd at night to complete the mill & overlay in phase 2?
   A: Yes. The City would consider closing Southland Blvd at night to complete the mill & overlay construction process.

8. Q: Due to the small confined areas, would it be acceptable for the contractor to blade lay (with motor-grader) the TY-B Hot Mix in lieu of using a paving machine?
   A: Yes. This would be acceptable.

9. Q: The two TY-1 Curb Ramps at Sherwood Way are part of the TXDOT contract. Will that change?
   A: The Engineer confirmed the two curb ramps will remain on each separate contract, but the TXDOT contract holds precedence since it was bid out first.

10. Q: What will happen to the existing underground utilities (Suddenlink fiber optic cable, Atmos gas line, City water line)?
    A: Based on the plans, the existing utilities should not be in the way of the roadway improvements. The Engineer and the City have contacted the franchise utilities for locates on their assets.

11. Q: Regarding Bid items 43 &44, please clarify the city's intent with the signal head quantities.
    A: The signal head quantities have been removed from the Bid Form. See attached Revised Plan Sheet 48.

**Addendum Number One Issued By:**
**City of San Angelo - Engineering Services Department**

Kent Conner

**Kent Conner, EIT**
**Project Engineer**

| No | Item Description | | Units | Est Qty | Unit Price | Extended |
|---|---|---|---|---|---|---|
| 1 | 662 6095 | WK ZN PAV REMOV (Y)4”(SLD) | LF | 136 | | |
| 2 | 104 6001 | REMOVING CONC (PAV) | SY | 415 | | |
| 3 | 104 6022 | REMOVING CONC (CURB AND GUTTER) | LF | 668 | | |
| 4 | 104 6036 | REMOVING CONC (SIDEWALK OR RAMP) | SY | 66 | | |
| 5 | 496 6004 | REMOVE STR (SET) | EA | 3 | | |
| 6 | 105 6011 | REMOVING STAB BASE AND ASPH PAV (2”-6”) | SY | 120 | | |
| 7 | 677 6001 | ELIM EXT PAV MRK & MRKS (4") | LF | 11 | | |
| 8 | 677 6003 | ELIM EXT PAV MRK & MRKS (8") | LF | 141 | | |
| 9 | 677 6007 | ELIM EXT PAV MRK & MARKS (24”) | LF | 364 | | |
| 10 | 677 6008 | ELIM EXT PAV MRK & MRKS (AAROW) | EA | 1 | | |
| 11 | 667 6012 | ELIM EXT PAV MRK & MRKS (WORD) | EA | 1 | | |
| 12 | 110 6001 | EXCAVATION (ROADWAY) | CY | 6 | | |
| 13 | 132 6001 | EMBANKMENT (FINAL)(ORD COMP)(TY A) | CY | 667 | | |
| 14 | 150 6002 | BLADING | HR | 25 | | |
| 15 | 247 6041 | FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS) | CY | 608 | | |
| 16 | 260 6002 | LIME (HYDRATED LIME (SLURRY)) | TON | 16.79 | | |
| 17 | 260 6027 | LIME TRT (EXST MATL)(8") | SY | 1,774.48 | | |
| 18 | 310 6005 | PRIME COAT (AE-P) | GAL | 254.39 | | |
| 19 | 316 6001 | ASPH (MULTI OPTION) | GAL | 356.14 | | |
| 20 | 316 6224 | AGGR(TY-PB GR-4 SAC-B) | CY | 10.18 | | |
| 21 | 341 6008 | D-GR HMA TY-B PG64-22 | TON | 852 | | |
| 22 | 341 6031 | D-GR HMA TY-C PG76-22 | TON | 723 | | |
| 23 | 354 6045 | PLANE ASPH CONC PAV (2") | SY | 3,363.09 | | |
| 24 | 529 6008 | CONC CURB & GUTTER (TY II) | LF | 511 | | |
| 25 | 530 6004 | DRIVEWAYS (CONC) | SY | 289 | | |
| 26 | 531 6002 | CONC SIDEWALKS (5") | SY | 296 | | |
| 27 | 531 6004 | CURB RAMPS (TY 1) | EA | 4 | | |
| 28 | 531 6013 | CURB RAMPS (TY 10) | EA | 2 | | |
| 29 | 5001 6001 | GEOGRID BASE REINFORCEMENT (TY I) | SY | 1,774.48 | | |

| No | Item Description | | Units | Est Qty | Unit Price | Extended |
|---|---|---|---|---|---|---|
| 30 | 462 6003 | CONC BOX CULV (4 FT X 2 FT) | LF | 45 | | |
| 31 | 467 6133 | SET (TY I)(S= 4 FT)(HW= 2 FT)(4:1) (P) | EA | 3 | | |
| 32 | 416 6031 | DRILL SHAFT (TRF SIG POLE) (30 IN) | LF | 12 | | |
| 33 | 618 6023 | CONDT (PVC) (SCH 40) (2") | LF | 14 | | |
| 34 | 618 6029 | CONDT (PVC) (SCH 40) (3") | LF | 10 | | |
| 35 | 618 6030 | CONDT (PVC) (SCH 40) (3") (BORE) | LF | 108 | | |
| 36 | 620 6007 | ELEC CONDR (NO.8) BARE | LF | 140 | | |
| 37 | 624 6010 | GROUND BOX TY D (162922)W/APRON | EA | 1 | | |
| 38 | 680 6003 | INSTALL HWY TRF SIG (SYSTEM) | EA | 1 | | |
| 39 | 684 6007 | TRF SIG CBL (TY A)(12 AWG)(2 CONDR) | LF | 30 | | |
| 40 | 684 6010 | TRF SIG CBL (TY A)(12 AWG)(5 CONDR) | LF | 35 | | |
| 41 | 684 6025 | TRF SIG CBL (TY A)(12 AWG)(20 CONDR) | LF | 130 | | |
| 2 | 686 6282 | RELOC TRF SG PL AM(S)SNGL MST ARM POLE | EA | 1 | | |
| 43 | 687 6001 | PED POLE ASSEMBLY | EA | 1 | | |
| 44 | 6002 6005 | VIVDS COMMUNICATION CABLE (COAXIAL) | LF | 130 | | |
| 45 | 644 6068 | RELOCATE SM RD SN SUP&AM TY 10BWG | EA | 1 | | |
| 46 | 644 6070 | RELOCATE SM RD SN SUP&AM TY S80 | EA | 3 | | |
| 47 | 666 6030 | REFL PAV MRK TY I (W)8"(DOT)(120MIL) | LF | 120 | | |
| 48 | 666 6036 | REFL PAV MRK TY I (W)8"(SLD)(120MIL) | LF | 390 | | |
| 49 | 666 6048 | REFL PAV MRK TY I (W)24"(SLD)(120MIL) | LF | 1,047 | | |
| 50 | 666 6300 | RE PM W/RET REQ TY I (W)4"(BRK)(120MIL) | LF | 165 | | |
| 51 | 666 6315 | RE PM W/RET REQ TY I (Y)4"(SLD)(120MIL) | LF | 900 | | |
| 52 | 668 6019 | PREFAB PAV MRK TY B (W)(ARROW) | EA | 3 | | |
| 53 | 668 6020 | PREFAB PAV MRK TY B (W)(DBL ARROW) | EA | 2 | | |
| 54 | 668 6027 | PREFAB PAV MRK TY B (W)(WORD) | EA | 3 | | |
| 55 | 672 6007 | REFL PAV MRKR TY I-C | EA | 35 | | |
| 56 | 672 6009 | REFL PAV MRKR TY II-A-A | EA | 22 | | |
| 57 | 160 6003 | FURNISHING AND PLACING TOPSOIL (4") | SY | 803 | | |
| 58 | 164 6027 | CELL FBR MLCH SEED(PERM)(URBAN)(CLAY) | SY | 803 | | |

| No | Item Description | | Units | Est Qty | Unit Price | Extended |
|---|---|---|---|---|---|---|
| 59 | 168 6001 | VEGETATIVE WATERING | MG | 0.02 | | |
| 60 | 506 6002 | ROCK FILTER DAMS (INSTALL) (TY 2) | LF | 70 | | |
| 61 | 506 6038 | TEMP SEDMT CONT FENCE (INSTALL) | LF | 50 | | |
| 62 | 506 6039 | TEMP SEDMT CONT FENCE (REMOVE) | LF | 50 | | |
| 63 | 506 6041 | BIODEG EROSN CONT LOGS (INSTL) (12") | LF | 500 | | |
| 64 | 506 6043 | BIODEG EROSN CONT LOGS (REMOVE) | LF | 500 | | |
| 65 | | MOBILIZATION (10%) | LS | 1 | | |
| 66 | | BARRICADES | LS | 1 | | |
| 67 | | CONTINGENCY | | | | $35,700.00 |
| | | | | | Total | |

| No. | | Sheet Title |
|---|---|---|
| | | **GENERAL INFORMATION** |
| 1 | | TITLE SHEET |
| 2 | | INDEX OF SHEETS |
| 3 | | HORIZONTAL ALIGNMENT LAYOUT, AND PROJECT CONTROLS |
| 4 | | TYPICAL SECTIONS |
| 5A-5H | | GENERAL NOTES |
| | | **SUMMARY OF QUANTITIES** |
| 6 | | SUMMARY OF QUANTITIES |
| | | **TRAFFIC CONTROL DETAILS** |
| 7 | | CONSTRUCTION SEQUENCE AND TYPICAL SECTIONS |
| 8 | | TRAFFIC CONTROL PLAN PHASE 1 |
| 9 | | TRAFFIC CONTROL PLAN PHASE 2 |
| | | **TRAFFIC CONTROL STANDARDS** |
| 10-21 | # | BC(1)-14 - BC(12)-14 ~ BARRICADE AND CONSTRUCTION |
| 22 | # | TCP(2-1)-12 ~ TRAFFIC CONTROL PLAN, CONVENTIONAL ROAD, SHOULDER WORK |
| 23 | # | TCP(3-3)-14 ~ TCP - MOBILE OPERATIONS - RAISED PAVEMENT MARKER INSTALLATION/REMOVAL |
| 24 | # | TCP(3-4)-13 ~ TCP - MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS |
| 25 | # | TREATMENT FOR VARIOUS EDGE CONDITIONS |
| 26 | # | WZ(STPM)-13 ~ WORK ZONE SHORT TERM PAVEMENT MARKINGS |
| 27 | # | WZ(BTS-1)-13 ~ TRAFFIC SIGNAL WORK TYPICAL DETAILS |
| 28 | # | WZ(BTS-2)-13 ~ TRAFFIC SIGNAL WORK BARRICADES AND SIGNS |
| 29 | # | WZ(UL)-13 ~ SIGNING FOR UNEVEN LANES |
| | | **ROADWAY DETAILS** |
| 30 | | ROADWAY REMOVAL LAYOUT |
| 31-32 | | INTERSECTION PLAN AND PROFILE |
| 33 | | DRIVEWAY DETAILS |
| | | **ROADWAY STANDARDS** |
| 34 | # | CCCG-12 ~ CONCRETE CURB AND CURB AND GUTTER |
| 35-38 | # | PED-12A ~ PEDESTRIAN FACILITIES CURB RAMPS |
| | | **DRAINAGE DETAILS** |
| 39 | | OVERALL DRAINAGE AREA MAP |
| 40 | | DRAINAGE PLAN |
| | | **DRAINAGE STANDARDS** |
| 41-42 | # | SCP-3&4 ~ SINGLE BOX CULVERTS, CAST-IN-PLACE, 0' TO 30' FILL |
| 43 | # | SCC-MD ~ SINGLE BOX CULVERTS, CAST-IN-PLACE, MISCELLANEOUS DETAILS |
| 44-45 | # | SETB-PD ~ SAFETY END TREATMENT, FOR BOX CULVERTS |
| | | **UTILITY DETAILS** |
| 46 | | EXISTING UTILITY LAYOUT |
| | | **SIGNALS DETAILS** |
| 47 | | EXISTING SIGNAL CONDITIONAS AT SAM'S/WALMART DRIVEWAY |
| 48 | | SIGNAL MODIFICATION AT SAM'S/WALMART DRIVEWAY |
| | | **TRAFFIC SIGNAL STANDARDS** |
| 49-52 | # | ED(1)-14 - ED(8)-14 ~ ELECTRICAL DETAILS |
| 53 | # | TS-FD-12 ~ TRAFFIC SIGNAL POLE FOUNDATION |
| | | **SIGNING & PAVEMENT MARKINGS DETAILS** |
| 54 | | SIGNING AND PAVEMENT MARKING LAYOUT |
| 55 | | PAVEMENT MARKING DETAILS |
| | | **SIGNING & PAVEMENT MARKINGS STANDARDS** |
| 56-58 | # | PM(1)-12 - PM(3)-12 ~ TYPICAL STANDARD PAVEMENT MARKINGS |
| 59 | # | SMD(GEN)-08 ~ SIGN MOUNTING DETAILS, SMALL ROADSIDE SIGNS, GENERAL NOTES & DETAILS |
| 60-62 | # | SMD(SLIP-1)-08 - SMD(SLIP-3)-08 ~ SIGN MOUNTING DETAILS |
| | | **ENVIRONMENTAL DETAILS** |
| 63 | | SW3P INDEX |
| 64 | | STORM WATER, POLLUTION PREVENTION PLAN |
| 65 | | BIODEGRADABLE EROSION CONTROL LOG DETAILS |
| | | **ENVIRONMENTAL STANDARDS** |
| 66 | # | EC(1)-09 ~ TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES, FENCE & BALED HAY |
| 67 | # | EC(2)-93 ~ TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES, ROCK FILTER DAMS |
| 68 | # | EC(3)-93 ~ TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES, CONSTRUCTION EXITS |

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A # HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

MICHAEL C. COYLE, PE — 1/11/2017 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 1/11/2017 | ADD GENERAL NOTES | MCC |

LJA Engineering, Inc.
FRN-F-1386

THE CITY OF SAN ANGELO TEXAS

SOUTHLAND BOULEVARD

INDEX OF SHEETS

SHEET 1 OF 1

SHEET NO. 2

5:05:40 PM 1/11/2017
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**BASIS OF ESTIMATE**

| Item No. | Description | Usage | Area | | Rate | | Estimated Quantity | |
|---|---|---|---|---|---|---|---|---|
| 150 | Blading | | 6.46 | STA | 3.9 | HR/STA | 25 | HR |
| 168 | Vegetative Watering | Side Slope | 803 | SY | 20 | GAL/SY | 0.016 | MG |
| 310 | Prime Coat | Asphalt | 4381 | SY | 0.3 | GAL/SY | 1095 | GAL |
| 316 | Seal Coat | Asphalt | 4381 | SY | 0.4 | GAL/SY | 1533 | GAL |
| 316 | Seal Coat | Aggregate | 4381 | SY | 100 | CY/SY | 44 | CY |
| 341 | HMA | Surface Course | 7744 | SY | 220 | LB/SY | 852 | TON |
| 341 | HMA | Base Course | 4381 | SY | 330 | LB/SY | 723 | TON |

**COMPACTION REQUIREMENTS**

| Item No. | Description | Course | Percent Minimum Density |
|---|---|---|---|
| 112 | Subgrade Widening | all | 95% |
| 247 | Flexible Base | all | 95% |
| 400 | Excavation and Backfill for Structures | all | 95% |

Note: Density will be tested in accordance with Tex-113-E, Tex-114-E, and Tex-115-E.



**County:** Tom Green
**City:** San Angelo
**Roadway:** Southland Boulevard 

**GENERAL NOTES**

The following Standard Sheets have been modified: none

Locate the project bulletin board at an approved location within the project limits such as at a field office, staging area, or stockpile, and make accessible to the public at all times. Do not remove the bulletin board from the project until approved. If a construction site notice is required for the project, post a copy at each geographically separated work location.

In those instances where fixed features require, vary the governing slopes indicated in these plans from within the limits to the extent determined.

If Contractor elects to establish a pit within 200 ft. of a public road, construct a barrier or other device in accordance with Natural Resources Code, Chapter 133, and Section 133.041.

Do not use salt water with solids in excess of 10,000 parts per million, as determined by evaporation.

In order to integrate traffic signals on Southland Blvd into the City network, this project is approved for sole source procurement for traffic signal equipment listed below:

- One (1) 5.8 GHz communication system
- One (1) 5-port minimum switch
- One (1) EDI MMU 16-LEip SmartMonitor

**Item 2, "Instructions to Bidders"**

For questions, contact:

Julia Antilley, Division Manager
Purchasing Division
72 West College Avenue
San Angelo, Texas 76903
(325) 657-4219
sapurch@cosatx.us

**Item 5, "Control of the Work"**

Place a row of 4 blue-tops at each station throughout the length of the proposed roadway for both subgrade and top lift of base course.

Responsibility for construction surveying shall conform to Section 5.9.3., "Method C."

Make suitable advance notification to affected non-participating municipalities regarding Class B underground facilities, call COSA at (325) 657-4295 to have the City's existing utilities located. A copy of the cross-sections and earthwork data may be obtained by qualified bidders by sending a request to the following email address: sapurch@cosatx.us. Cross-sections and earthwork data as provided is for non-construction purposes only and it is the responsibility of the prospective bidder to validate this information with the appropriate plans and Specifications.

**Item 7, "Legal Relations and Responsibilities"**

All motor vehicle equipment having an obstructed view to the rear shall have a reverse signal alarm audible above the surrounding noise level.

**Item 8, "Prosecution and Progress"**

Submit the sequence of work and estimated progress schedule on paper or as a Portable Document Format (PDF) electronic file compatible with Adobe Systems Incorporated "Acrobat Reader X".

Restricted work hours are from 7:30 A.M to 8:30 A.M. and from5:00 P.M. to 6:00 P.M.

**Item 9, "Measurement and Payment"**

Provide a conversion rate for units of payment for work subcontracted to disadvantaged business enterprises if units of payments differ from those shown on the plans.

The progress payment period shall end two working days before the last working day of the month. Deliver invoices to be paid as material on hand on or before the end of the progress payment period.

**Item 247, "Flexible Base"**

Stockpile flexible base produced for this project separately from any other stockpiled material and label stockpile with project number, material type, and grade.

Place flexible base in lifts of 4_ in. maximum.

**Item 310, "Prime Coat"**

If planing operations expose base material:

1. Refinish exposed base material in accordance with Item 251, Type D. This work will not be measured or paid for separately, but will be considered as included in payment for Item 310.
2. Place prime coat on refinished base material in accordance with Item 310.
3. Place one-course seal coat on primed base material in accordance with Item 316.

Refinish material that does not receive prime coat within one working day following acceptance of flexible base.

**Item 316, "Seal Coat"**

Cure the first surface treatment course a minimum of 2 days before placing the second course.

If cutback asphalt is used for the first surface treatment course, a minimum of 2 days curing time shall be required before placing the second course. COSA will assume interim maintenance of





the first course during the curing period provided that other items of work including clean-up have been completed as directed.

Cover or protect the following, as applicable: railings, bridge joints, utility covers, railroad crossings, and exposed concrete such as curbs, bridge approach slabs, bridge decks, sidewalks, mow strips, and concrete pavement.

Do not place wet aggregate.

Use medium pneumatic rollers that meet the requirements of Item 210, "Rolling." If trap rock aggregate is used, the Engineer may require steel wheel rollers.

**Item 354, "Planing and Texturing Pavement"**

Remove and dispose of existing raised pavement markers, jiggle bars, and traffic buttons before planing.

Mark and saw cut straight lines at the boundaries of planed areas. Do not saw cut pavement until the lines are approved.

**Item 496, "Removing Structures"**

This item shall include the complete removal and proper disposal of existing structures, including but not limited to the following: culvert barrels, railing, wingwalls, headwalls, retaining walls, safety end treatments, pipe runners, riprap, deck, overlay, approach slabs, joints, beams, bracing, drains, conduits, pipes, bents, abutments, columns, pilings, footings, web-walls, drilled shafts, reinforcing steel, bridge protective assemblies, clearance signs, etc. Portions of the structure at least 2 ft. below the permanent ground line may be left in place as directed.

Structures to be removed have surface coatings which may contain hazardous materials. Follow applicable safety standards.

Steel railing posts to be removed have surface coatings which contain hazardous materials. Removal of the existing railing posts shall be accomplished by unscrewing existing nuts and removing the steel posts. The use of a cutting torch or any other means that will produce fumes or stripping of paint shall not be used. Proper disposal is required for all of the railing elements. Follow applicable safety standards.

**Item 502, "Barricades, Signs and Traffic Handling"**

Provide flaggers at such times and locations as directed to ensure the safe passage of traffic through construction areas. When flaggers are used to control traffic, furnish and install signs CW20-7 "FLAGGER SYMBOL", CW20-7aD "FLAGGER AHEAD", and CW3-4 "BE PREPARED TO STOP". Flaggers shall use 24 in. STOP/SLOW paddles.

Warning reflectors mounted on plastic drums may be substituted in place of Type C steady burn warning lights.

Install orange plastic construction fencing around the perimeter of trenches and excavations to remain open at night, and at other locations shown on the plans or as directed. Construction fence shall be orange plastic, highly visible, 4 ft. high, and as approved. Construction fence supports shall be steel t-posts with safety caps, wooden posts having minimum dimension of 1 1/2 in, or

plastic drums. Embed steel or wooden posts sufficiently as directed. Steel or wooden supports shall extend to top of construction fence. Attach construction fence to supports sufficiently as directed. Do not exceed 8 ft. between supports. Do not use steel reinforcing bars as supports for construction fence.

As directed, furnish and install signs R9-8 "PEDESTRIAN CROSSWALK", R9-9 "SIDEWALK CLOSED", R9-10DBL "SIDEWALK CLOSED ↔ USE OTHER SIDE", R9-11L(R) "SIDEWALK CLOSED AHEAD ← CROSS HERE", and R9-11aL(R) "SIDEWALK CLOSED ← CROSS HERE". Place other additional appropriate warning or protective devices as directed for pedestrian safety. Do not obstruct pedestrian paths unless designated for closure.

Furnish and install anti-skid steel road plates suitable for pedestrian and vehicular traffic to cross trenches as needed for access to adjacent property and where directed. Where steel road plates are used, furnish and install signs CW8-24 “STEEL PLATE AHEAD”.

Prior to each work day, make provisions to exclude vehicles from parking within work areas.

Temporarily relocate existing permanent sign assemblies to temporary supports as shown on the plans, or as directed.

Omit advance warning signs and furnish and install reduced size signs CW20-1 “ROAD WORK AHEAD” mounted back to back with reduced size signs G20-2 “END ROAD WORK” signs at intersecting city streets and county roads.

Furnish and install signs CW20-1D “ROAD WORK AHEAD”, G20-1aT “ROAD WORK ←NEXT X MILES, NEXT X MILES→”, and G20-2 “END ROAD WORK” at intersecting state highways.

**Item 506, “Temporary Erosion, Sedimentation, and Environmental Controls”**

The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance with the Act’s policies and regulations. Migration patterns would not be affected by the proposed project. Remove non-active migratory bird nests from structures where work would be performed from September 1 through the end of February. Prevent migratory birds from building nests from March 1 to August 31. In the event that migratory birds are encountered on-site during project construction, avoid adverse impacts on protected birds, active nests, eggs, and/or young.

**Item 618, “Conduit”**

Where PVC, duct cable, and HDPE conduit 1 in. diameter and larger is allowed and installed as per COSA and TxDOT standards, optionally provide PVC elbows in place of the galvanized rigid metal elbows required by the Electrical Details standard sheets. Provide PVC elbows of the same schedule rating as the conduits to which they connect. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system that uses PVC elbows.

Secure permission from the proper authority before cutting into or removing any walks or curbs.

Install conduit under existing pavement by an approved boring method unless otherwise directed. Do not construct boring pits within 2 ft. of the edge of the pavement unless otherwise directed.





When conduits are bored, the vertical and horizontal tolerances shall not exceed 18 in. as measured from the intended target point.

Do not use a pneumatically driven device for punching holes beneath the pavement, commonly known as a “missile.”

Install a pull rope in conduit runs in excess of 60 ft.

Furnish and install duct seal at ends of conduits.

Optionally substitute HDPE conduit meeting the requirements of Item 622, “Duct Cable” for bores requiring PVC Schedule 40 and Schedule 80 conduit when approved. HDPE shall be the same size as the PVC conduit shown on the plans. No additional compensation will be paid when HDPE is substituted for this purpose.

Install a continuous bare or green insulated copper wire number 8 AWG or larger in every conduit throughout the electrical system in accordance with the electrical detail sheets and the NEC.

**Item 620, “Electrical Conductors”**

Grounding conductors that share the same conduit, junction box, ground box or structure shall be bonded together at every accessible point in accordance with the NEC.

**Item 644, “Small Roadside Sign Assemblies”**

Where foundations protrude through riprap or other concrete areas, wrap the foundation with 1/4-in. thick bituminous fiber sheets before placing concrete or repairing the concrete area. Bituminous fiber sheet tubes may be used for forming sign foundations instead of removable forms and shall be left in place below the finished concrete or riprap surface. Neatly trim the bituminous fiber sheets flush with the finished surface after the concrete has cured.

Drill and pour small roadside sign foundations on the same day or suitably cover the drilled hole.

Signs indicated to be mounted on the back of another sign or on a traffic signal pole or mast arm may require punch spacing different from that shown on the Standard Sheets. Adjust punch spacing on affected signs.

Cover each unfinished sign base with a reflectorized traffic cone.

Materials determined salvageable shall remain property of COSA. Deliver to the COSA’s maintenance section which has responsibility for the project area.

Before removal from the project site, spray-paint (with an oil-based paint), an “X” across the face of non-salvageable signs as directed.

**Item 662, “Work Zone Pavement Markings”**

Do not use temporary flexible-reflective roadway marker tabs to delineate stop bars, crosswalks, symbols, or words.

**Item 666, “Retroreflectorized Pavement Markings”**

Place glass beads for pavement markings in accordance with the following table:

| Marking Types | Glass Bead (Double Drop) Types | Glass Bead Rates | |
|---|---|---|---|
| | | Surface Treatment | Asphalt Concrete Pavement, Microsurfacing, Concrete Pavement |
| TY I markings | Type II | 12 LB per 100 SF | 6 LB per 100 SF |
| | Type III | 12 LB per 100 SF | 6 LB per 100 SF |
| TY II markings | Type II | 12 LB per GAL | 6 LB per GAL |
| | Type III | 12 LB per GAL | 6 LB per GAL |

Apply TY II marking material at a rate of 25 gallons per mile.

The striper speed shall not exceed 5 MPH during application. Convert to gravity-flow beaders (if not in use) to obtain optimum bead application, when directed.

Clean striper tanks before use if there is a build-up of dry paint, as directed. Flush lines and guns before use.

Reference existing markings before performing work that disturbs the markings, so that the markings can be re-established.

Provide a double-drop of Type II and Type III glass beads.

**Item 668, "Prefabricated Pavement Markings"**

When applying Type C specialty markings (symbols, words, etc.) over existing thermoplastic markings, first apply heat to the surface of the existing markings and roughen the surface with a shovel. Remove existing Type A, B, or C prefabricated markings prior to placing the new Type C markings.

**Item 684, "Traffic Signal Cables"**

Leave a minimum of 3 ft. of each signal cable in each signal pole base and controller enclosure.

Terminate the multiconductor signal cable shown on the plans on the terminal strip in the hand hole. Do not splice the conductors at the hand hole.

Identify each cable as shown on the plans with permanent marking labels using a double-tie strap label at each ground box, pole base and controller.

**Item 686, "Traffic Signal Pole Assemblies (Steel)"**

Set anchor bolts for signal poles so that two are in tension and two are in compression.





Traffic signal pole heights and mast arm lengths are shown on the plans for bidding purposes only. Before fabrication, make field measurements to determine the actual pole height necessary to ensure a vertical clearance between 17'-6" and 19'-0" from the roadway surface to the bottom of the lowest point on the signal head assembly or mast arm, and to determine the mast arm lengths required to mount the traffic signal heads over the travel lanes. The mast arm shall be straight and level in the span area where the signal heads are attached. These field measurements and elevations shall be determined from the actual field locations of the pole foundations, considering above- and below-ground utilities and the existing roadway elevations and widths.

**Item 687, "Pedestal Pole Assemblies"**

Inside each breakaway base, provide breakaway fuse-holders conforming to Material/Producer List, "Item 620 – Electrical Conductors" for ungrounded cables, neutral breakaway connectors for neutral cable, and pedestrian button cables.

| SUMMARY OF REMOVAL ITEMS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 104 | 104 | 104 | 104 | 496 | 105 | 644 | 677 | 677 | 677 | 677 | 677 | 677 | 677 |
| | 6001 | 6009 | 6022 | 6036 | 6004 | 6011 | 6076 | 6001 | 6003 | 6005 | 6007 | 6008 | 6009 | 6012 |
| | REMOVING CONC (PAV) | REMOVING CONC (RIPRAP) | REMOVING CONC (CURB AND GUTTER) | REMOVING CONC (SIDEWALK OR RAMP) | REMOV STR (SET) | REMOVING STAB BASE AND ASPH PAV (2"-6") | REMOVE SM RD SN SUP&AM | ELIM EXT PAV MRK & MRKS (4") | ELIM EXT PAV MRK & MRKS (8") | ELIM EXT PAV MRK & MRKS (12") | ELIM EXT PAV MRK & MRKS (24") | ELIM EXT PAV MRK & MRKS (ARROW) | ELIM EXT PAV MRK & MRKS (DBL ARROW) | ELIM EXT PAV MRK & MRKS (WORD) |
| | SY | SY | LF | SY | EA | SY | EA | LF | LF | LF | LF | EA | EA | EA |
| REMOVAL LAYOUT | | | | | | | | | | | | | | |
| SHEET 1 OF 1 | 415 | | 668 | 66 | 3 | 120 | | 11 | 141 | | 364 | 1 | | 1 |
| | | | | | | | | | | | | | | |
| **PROJECT TOTALS** | **415** | | **668** | **66** | **3** | **120** | | **11** | **141** | | **364** | **1** | | **1** |

| SUMMARY OF PAVEMENT MARKING ITEMS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 666 | 666 | 666 | 666 | 666 | 666 | 668 | 668 | 668 | 672 | 672 | 672 | 644 | 644 |
| | 6030 | 6036 | 6048 | 6300 | 6303 | 6315 | 6019 | 6020 | 6027 | 6007 | 6009 | 6010 | 6068 | 6070 |
| | REFL PAV MRK TYI (W)8" (DOT) (120MIL) | REFL PAV MRK TYI (W)8" (SLD) (120MIL) | REFL PAV MRK TYI (W)24" (SLD) (120MIL) | RE PM W/RET REQ TY I (W)4" (BRK) (120MIL) | RE PM W/RET REQ TY I (W)4" (SLD) (120MIL) | RE PM W/RET REQ TY I (Y)4" (SLD) (120MIL) | PREFAB PAV MRK TY B (W)(ARROW) | PREFAB PAV MRK TY B (W)(DBL ARROW) | PREFAB PAV MRK TY B (W)(WORD) | REFL PAV MRKR TY I-C | REFL PAV MRKR TY II-A-A | REFL PAV MRKR TY II-C-R | RELOCATE SM RD SN SUP&AM TY 10BWG | RELOCATE SM RD SN SUP&AM TY S80 |
| | LF | LF | LF | LF | LF | LF | EA | EA | EA | EA | EA | EA | EA | EA |
| SIGNING AND PAVEMENT MARKING LAYOUT | | | | | | | | | | | | | | |
| SHEET 1 OF 1 | 120 | 390 | 1,047 | 165 | 0 | 900 | 3 | 2 | 3 | 35 | 22 | 0 | 1 | 3 |
| | | | | | | | | | | | | | | |
| **PROJECT TOTALS** | **120** | **390** | **1,047** | **165** | | **900** | **3** | **2** | **3** | **35** | **22** | | **1** | **3** |

| SUMMARY OF DRAINAGE ITEMS | | |
|---|---|---|
| LOCATION | 462 | 467 |
| | 6003 | 6133 |
| | CONC BOX CULV (4FT X 2 FT) | SET (TY I) (S= 4FT) (HW= 2FT) (4:1) (P) |
| | LF | EA |
| DRAINAGE ITEMS | | |
| SHEET 1 OF 1 | 45 | 3 |
| | | |
| **PROJECT TOTALS** | **45** | **3** |

1

| SUMMARY OF ROADWAY ITEMS | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 110 | 132 | 150 | 247 | 260 | 260 | 310 | 316 | 316 | 341 | 341 | 354 | 529 | 530 | 531 | 531 | 531 | 5001 |
| | 6001 | 6001 | 6002 | 6041 | 6002 | 6027 | 6005 | 6001 | 6224 | 6008 | 6031 | 6045 | 6008 | 6004 | 6002 | 6004 | 6013 | 6001 |
| | EXCAVATION (ROADWAY) | EMBANKMENT (FINAL) (ORD COMP) (TY A) | BLADING | FL BS (CMP IN PLC) (TYA GR1-2) (FINAL POS) | LIME (HYDRATED LIME (SLURRY)) | LIME TRT (EXST MATL) (8") | PRIME COAT (AE-P) | ASPH (MULTI OPTION) | AGGR (TY-PB GR-4 SAC-B) | D-GR HMA TY-B PG64-22 | D-GR HMA TY-C PG76-22 | PLANE ASPH CONC PAV (2") | CONC CURB & GUTTER (TY II) | DRIVEWAYS (CONC) | CONC SIDEWALKS (5") | CURB RAMPS (TY 1) | CURB RAMPS (TY 10) | GEOGRID BASE REINFORCEMENT (TY I) |
| | CY | CY | HR | CY | TON | SY | GAL | GAL | CY | TON | TON | SY | LF | SY | SY | EA | EA | SY |
| ROADWAY ITEMS | | | | | | | | | | | | | | | | | | |
| SHEET 1 OF 1 | 6 | 667 | 25 | 608 | 17 | 1,774 | 254 | 356 | 10 | 168 | 112 | 3,363 | 511 | 289 | 296 | 4 | 2 | 1,774 |
| | | | | | | | | | | | | | | | | | | |
| **PROJECT TOTALS** | **6** | **667** | **25** | **608** | **17** | **1774** | **254** | **356** | **10** | **168** | **112** | **3363** | **511** | **289** | **296** | **4** | **2** | **1774** |

| SUMMARY OF EROSION CONTROL ITEMS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LOCATION | 160 | 164 | 168 | 506 | 506 | 506 | 506 | 506 |
| | 6003 | 6027 | 6001 | 6002 | 6041 | 6043 | 6038 | 6039 |
| | FURNISHING AND PLACING TOPSOIL (4") | CELL FBR MLCH SEED (PERM) (URBAN) (CLAY) | VEGETATIVE WATERING | ROCK FILTER DAMS (INSTALL) (TY 2) | BIODEG EROSN CONT LOGS (INSTL) (12") | BIODEG EROSN CONT LOGS (REMOVE) | TEMP SEDMT CONT FENCE (INSTALL) | TEMP SEDMT CONT FENCE (REMOVE) |
| | SY | SY | MG | LF | LF | LF | LF | LF |
| SW3P | | | | | | | | |
| SHEET 1 OF 1 | 803 | 803 | 0.0161 | 70 | 500 | 500 | 50 | 50 |
| | | | | | | | | |
| **PROJECT TOTALS** | **803** | **803** | **0.0161** | **70** | **500** | **500** | **50** | **50** |

| SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS | |
|---|---|
| LOCATION | 662 |
| | 6095 |
| | WK ZN PAV MRK REMOV (Y)4" (SLD) |
| | LF |
| TRAFFIC CONTROL PLAN | |
| SHEET 1 OF 1 | 136 |
| | |
| **PROJECT TOTALS** | **136** |

BASIS OF ESTIMATE *

| Item No. | Description | Usage | Area | Rate | Estimated Quantity |
|---|---|---|---|---|---|
| 150 | Blading | | 6.46 STA | 3.9 HR/STA | 25 HR |
| 168 | Vegetative Watering | Side Slope | 803 SY | 20 GAL/SY | 0.016 MG |
| 310 | Prime Coat | Asphalt | 4381 SY | 0.3 GAL/SY | 1095 GAL |
| 316 | Seal Coat | Asphalt | 4381 SY | 0.4 GAL/SY | 1533 GAL |
| 316 | Seal Coat | Aggregate | 4381 SY | 100 CY/SY | 44 CY |
| 341 | HMA | Surface Course | 7744 SY | 220 LB/SY | 852 TON |
| 341 | HMA | Base | 4381 SY | 330 LB/SY | 723 TON |

1

* FOR CONTRACTOR'S INFORMATION ONLY

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 01/11/2017 | BASIS OF EST AND ROADWAY | MCC |

LJA Engineering, Inc.
FRN-F-1386

THE CITY OF SAN ANGELO TEXAS

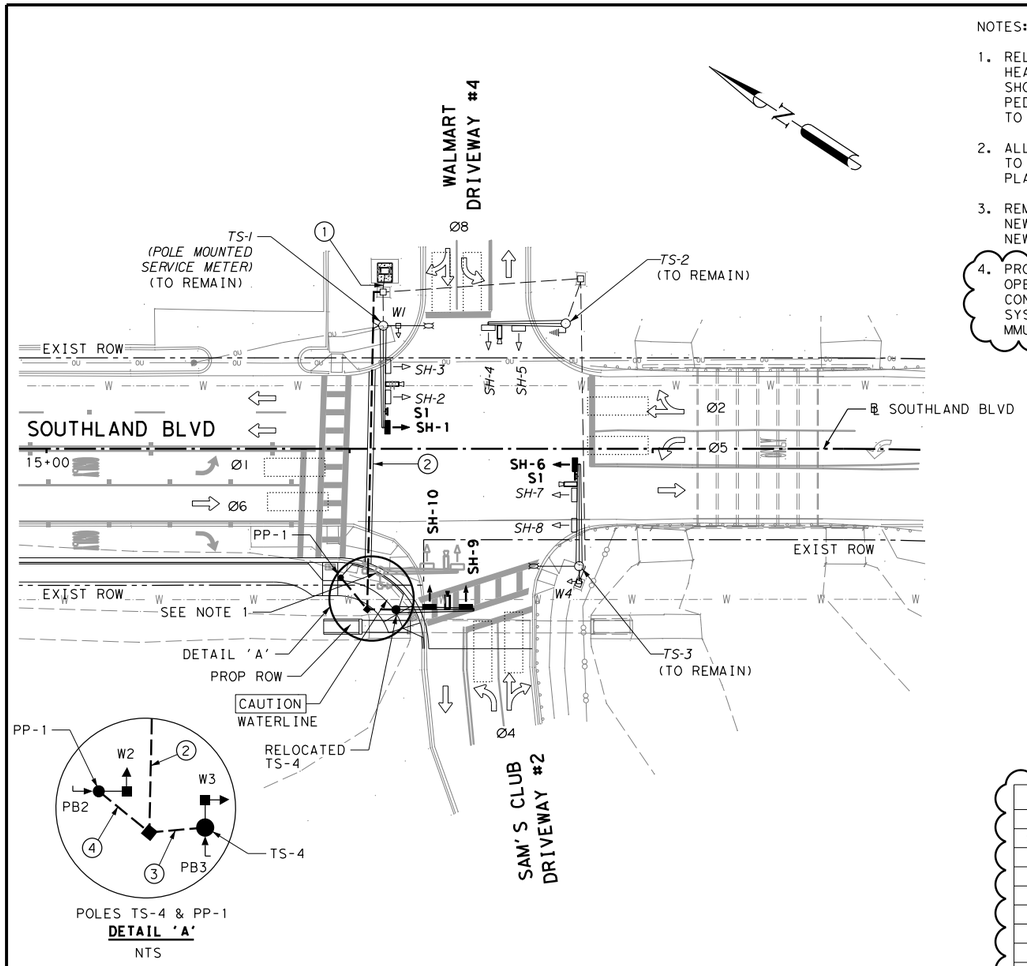
SOUTHLAND BOULEVARD

SUMMARY OF QUANTITIES

SHEET 1 OF 1

SHEET NO. 6

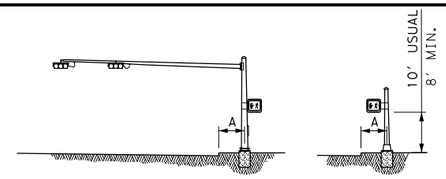
10:16:14 AM 1/11/2017
T:\2357\601\CADD\SHEETS\02-General\SB-GSS01.dgn




NOTES:

1. RELOCATE EXISTING SIGNAL POLE, SIGNAL HEADS, PUSH BUTTONS AND VIVDS CAMERA AS SHOWN ON THE PLAN. RELOCATE EXISTING PEDESTRIAN HEAD W2 AND PUSH BUTTON PB2 TO PROPOSED PEDESTAL POLE PP-1.
2. ALL OTHER EXISTING SIGNAL EQUIPMENTS ARE TO REMAIN UNLESS OTHERWISE NOTED ON THE PLAN.
3. REMOVE EXISTING SIGNAL HEADS AND INSTALL NEW SIGNAL HEADS FOR SH-1 & SH-6. CONNECT NEW SIGNAL HEADS TO EXISTING CABLES.
4. PROVIDE TO CITY OF SAN ANGELOS'S TRAFFIC OPERATIONS ONE (1) ECONOLITE COBALT CONTROLLER, ONE (1) 5.8 GHZ COMMUNICATION SYSTEM, A 5-PORT MIN. SWITCH, AND AN EDI MMU 16-LEIP SMARTMONITOR FOR INSTALLATION.

1

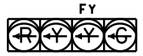



| SIGNAL POLE LOCATION | | | |
|---|---|---|---|
| POLE | A | STATION | OFFSET |
| **TS-4** | **4.5'** | **16+09.00** | **45.73' RT** |
| *TS-1* | | *EXISTING* | |
| *TS-2* | | *EXISTING* | |
| *TS-3* | | *EXISTING* | |
| **PP-1** | **5'** | **16+15.89** | **53.31' RT** |

## SIGNAL HEAD SCHEDULE

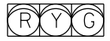
SIGNALS
SH-2
SH-3
SH-4
SH-5
SH-7
SH-8
(EXISTING)

PEDESTRIAN SIGNALS
W1, W4
(EXISTING)



**SIGNALS**
**SH-1**
**SH-6**
**(PROPOSED)**

**FY = FLASHING YELLOW**



**SIGNALS**
**SH-9**
**SH-10**
**(RELOCATED)**


PB1, PB4
(EXISTING)

**PEDESTRIAN SIGNALS**
**W2, W3**
**(RELOCATED)**


**PB2**
**(RELOCATED)**


**PB3**
**(RELOCATED)**

## SUMMARY OF QUANTITIES

| ITEM | CODE | DESCRIPTION | UNIT | QTY |
|---|---|---|---|---|
| *0416 | 6030 | DRILL SHAFT (TRF SIG POLE) (24 IN) | LF | 6 |
| 0416 | 6031 | DRILL SHAFT (TRF SIG POLE) (30 IN) | LF | 12 |
| 0618 | 6023 | CONDT (PVC) (SCH 40) (2") | LF | 14 |
| 0618 | 6029 | CONDT (PVC) (SCH 40) (3") | LF | 10 |
| 0618 | 6030 | CONDT (PVC) (SCH 40) (3")(BORE) | LF | 108 |
| 0620 | 6007 | ELEC CONDR (NO.8) BARE | LF | 140 |
| 0624 | 6010 | GROUND BOX TY D (162922)W/APRON | EA | 1 |
| 0680 | 6003 | INSTALL HWY TRF SIG (SYSTEM) | EA | 1 |
| | * | ECONOLITE COBALT ATC TRAFFIC CONTROLLER | EA | (1) |
| | * | 5.8 GHz COMMUNICATION SYSTEM, UBIQUITI NBE-MT-19-5GHz NANO BEAM 19dBi | EA | (1) |
| | * | 5-PORT SWITCH, UBIQUITI TS-5-POE | EA | (1) |
| | * | EDI MMU 16-LEip SMART MONITOR | EA | (1) |
| 0684 | 6007 | TRF SIG CBL (TY A)(12 AWG)(2 CONDR) | LF | 30 |
| 0684 | 6010 | TRF SIG CBL (TY A)(12 AWG)(5 CONDR) | LF | 35 |
| 0684 | 6025 | TRF SIG CBL (TY A)(12 AWG)(20 CONDR) | LF | 130 |
| 0686 | 6282 | RELOC TRF SG PL AM(S)SNGL MST ARM POLE | EA | 1 |
| 0687 | 6001 | PED POLE ASSEMBLY | EA | 1 |
| 6002 | 6005 | VIVDS COMMUNICATION CABLE (COAXIAL) | LF | 130 |

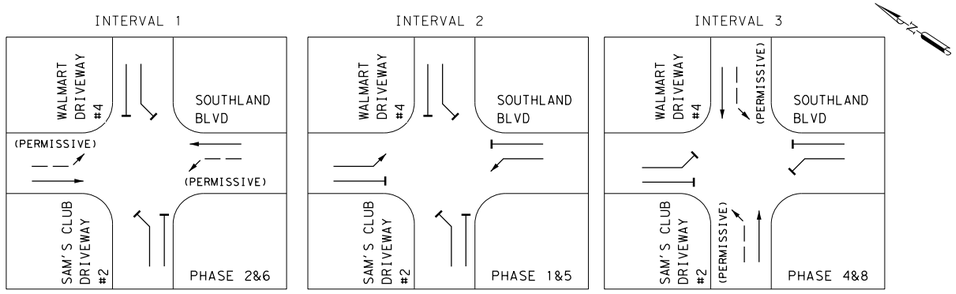
* SUBSIDIARY TO OTHER ITEMS

1

## SUMMARY OF CONDUIT AND CABLES

| RUN NO | CONDUIT | | | LENGTH | GRND | SIGNAL | | | VIVDS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TRENCH | TRENCH | BORE | | #8 AWG | 2/C | 5/C | 20/C | *3/C-#16 | COAXIAL |
| | 2" | 3" | 3" | | (BARE) | #12 AWG | #12 AWG | #12 AWG | | |
| 1 | | EXIST | | 8' | | | | 1 | 1 | 1 |
| 2 | | | 1 | 108' | 1 | | | 1 | 1 | 1 |
| 3 | | 1 | | 10' | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | 1 | | | 14' | 1 | 1 | 1 | | | |
| | | | | | | | | | | |
| TOTAL | 14' | 10' | 108' | | 132' | 24' | 24' | 126' | 126' | 126' |

* SUBSIDIARY TO ITEM 6002




| SEQUENCE CHART | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INTERVAL | PHASE 2&6 | | | PHASE 1&5 | | | PHASE 4&8 | | | FLASHING OPERATIONS |
| SIGNAL FACE | R/W | CLEAR 2&6 | CLEAR TO ALL PHASES | R/W | CLEAR 1&5 | CLEAR TO ALL PHASES | R/W | CLEAR 4&8 | CLEAR TO ALL PHASES | NORMAL AND EMERGENCY |
| SH-2, SH-3 | G | Y | R | R | R | R | R | R | R | R |
| SH-1 | <FY | <Y | <R | <G | <Y | <R | <R | <R | <R | <R |
| SH-7, SH-8 | G | Y | R | R | R | R | R | R | R | R |
| SH-6 | <FY | <Y | <R | <G | <Y | <R | <R | <R | <R | <R |
| SH-4, SH-5 | R | R | R | R | R | R | G | Y | R | R |
| SH-9, SH-10 | R | R | R | R | R | R | G | Y | R | R |

## SIGN DETAILS

S1


**R10-17T**
**30"X30"**

## LEGEND

- EXIST SIGNAL POLE
- EXIST MAST ARM
- EXIST SIGNAL CONTROLLER
- EXIST METER AND DISCONNECT
- EXIST HORIZONTAL SIGNAL HEAD
- EXIST PEDESTRIAN SIGNAL
- EXIST PUSH BUTTON
- EXIST LUMINAIRE WITH ARM
- EXIST ANTENNA
- EXIST GROUND BOX
- EXIST VIVDS CAMERA
- EXIST CONDUIT
- VIDEO DETECTION ZONE
- PROP PEDESTAL POLE
- RELOCATED SIGNAL POLE
- RELOCATED MAST ARM
- RELOCATED/NEW HORIZONTAL SIGNAL HEAD
- RELOCATED PEDESTRIAN SIGNAL
- RELOCATED PUSH BUTTON
- RELOCATED VIVDS CAMERA
- PROP MAST ARM SIGN
- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- PROP GROUND BOX, TYPE D
- TRAFFIC FLOW


| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 1/11/2017 | REPLACE TRAFFIC CONTROLLER | JO |

**LJA Engineering, Inc.**
FRN-F-1386

THE CITY OF SAN ANGELO TEXAS

SOUTHLAND BOULEVARD
SIGNAL MODIFICATION
AT SAM'S/WAL-MART DRIVEWAY

SHEET 2 OF 2

SHEET NO. 48

10:13:09 AM 1/11/2017
T:\2357\1601\CADD\SHEETS\09-Signals\SB-SG02.dgn