CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES

ADDENDUM NO. 4

PROJECT NAME: **Medical Center Intersection Improvements Phase IX**

DATE: 08/05/2013

ADDENDUM NO. 4

This addendum should be included in and be considered part of the plans and specifications for the name of the project. The contractor shall be required to sign an acknowledgement of the receipt of this addendum and submit with their bid.

CIMS PROJECT NO.: **40-00309**

ENGINEER'S ESTIMATE

STATE OF TEXAS
DAN THOMAS
98622
LICENSED
PROFESSIONAL ENGINEER

Road	
Base	$4,599,289.00
Alt 1	$800,070.00
Alt 2	$780,269.00
SAWS	
Water Base	$428,089.95
Sewer Base	$15,450.00
CPS ENERGY	
Gas Base	$232,177.47
Total	*$6,855,345.42*

GEOTECHNICAL REPORT

- Geotechnical Report is attached to this addendum for Contractor use.

PROJECT MANUAL

- Replace "Governing Specifications" with Addendum No. 4 "Governing Specifications." Added Item 4411. Clarified location of Items 5000 and 16000.
- Add Specification Item 4411 to Project Manual.
- Replace document 020 "Bid Form" with the attached Addendum No. 4 - 020 "Bid Form". Updated Engineer's Estimate.

- Replace 025 "Unit Pricing Forms" for Base Bid and Add Alt #2 with Addendum No. 4 - 025 "Unit Pricing Forms." Added HAWK Allowance to Base Bid and added structural items 307.1 and 308.2 for Add Alt #2.

PLANS

Medical Center Phase IX Plan Sheets Base Bid.

- Replace Sheet 2 with Addendum No. 4 Sheets 2. Added Electrical and Structural Details for Add Alt #2 monument signage.
- Replace Sheet 9 & 10 with Addendum No. 4 Sheets 9 & 10. Changed CMU Wall item number to match specification number 4100. Added structural items 307.1 and 308.2 for Add Alt #2 and HAWK allowance.
- Replace Sheet 22 with Addendum No. 4 Sheet 22. Updated Add Alt TCP Narrative.
- Replace Sheet 104 with Addendum No. 4 Sheet 104. Updated Pole C Mast Arm Length.

Medical Center Phase IX Plan Sheets Additive Alternative 2.

- Add Addendum No. 4 Sheets E1.1, E1.2, E1.3, E1.4, E2.1, E3.1, E4.1, E4.2, E5.1, E6.1, E6.2, E6.3, E6.4, and S1.0.

CONTRACTOR'S QUESTIONS

1. The mast arm length of 40' on sheet 104 for Pole C does not match the landscape mast arm length on the landscape plans. What is the mast arm length for Pole C?

   Response: The mast arm length for Pole C is 36'. Sheet 104 will be corrected.

2. Please clarify how the additive alternative median utilities are supposed to cross the direct traffic box culverts.

   Response: The utilities are not expected to go under the culverts. It is expected that they will be cored through the top of the box culverts

3. The TCP Narrative (sheet 22) states that no additional contract days are given for the additive alternatives, however the contract specifies an additional thirty (30) days. Please Clarify.

   Response: The TCP Narrative (sheet 22) will be updated to reflect the additional thirty (30) days that the contract outlines for the additive alternatives.

4. What is the engineer's estimate with a breakdown of the different bid components (i.e. base bid, additive alternatives)?

   Response: An engineer's estimate is issued with this Addendum 4.

5. Is an attenuator truck necessary for the TCP as per the TXDOT TCP standards?

Response: TXDOT Standard states trucks should be used, but will not be required for this project. Contractor should use an attenuator truck if they feel it is necessary for worker safety (nspi).

6. Will night time work be required? If yes, what hours will the contractor be expected to work?

   Response: Some night time/weekend work may be required to work with local businesses. Contractor will need to work with business owners to coordinate times and submit for approval to city.

7. Is the Geotechnical Report available for us to review?

   Response: Yes. It is attached to this addendum.

Note: Addenda Acknowledgement Form for Addendum 4 is attached herein. This form must be signed and submitted with the bid package.

020

BID FORM

The estimated construction budget for this contract is $ 6,855,345.42

I. Base Bid

Amount of Street/Roadway Construction Base Bid (Insert Amount in Words and Numbers):

_____$_____

Amount of SAWS Water (12-5080) Base Bid (Insert Amount in Words and Numbers):

_____$_____

Amount of SAWS Sewer (12-5580) Base Bid (Insert Amount in Words and Numbers):

_____$_____

Amount of CPS (1713228) Base Bid (Insert Amount in Words and Numbers):

_____$_____

Total Amount of Base Bid (Insert Amount in Words and Numbers):

_____**$**_____

II. ALTERNATES

Amount of each Alternates (if applicable) insert in Numbers:

Additive Alternate #1 - Floyd Curl Irrigation Installation and Curb Replacement

Amount of Street/Roadway Construction Additive Alternative #1 (Insert Amount in Words and Numbers):

_____$_____

Additive Alternate #2 – Wurzbach Irrigation Installation and Curb Replacement

Amount of Street/Roadway Construction Additive Alternative #2 (Insert Amount in Words and Numbers):

_____$_____

Total Amount of Bid for all Base Bid and Additive Alternates (Insert Amount in Words and Numbers):

_____$_____

III. UNIT PRICES

Bidders shall submit unit pricing on the 025 Unit Pricing form, and it shall be attached immediately following this sheet.

Official Name of Company (legal)	Telephone No.
Address	Fax No.
City, State and Zip Code	E-mail Address

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY BASE BID
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	100			MOBILIZATION	LS	1			
	101			PREPARING RIGHT-OF-WAY	LS	1			
	103.1			REMOVE CONCRETE CURB	LF	4410			
	103.3			REMOVE SIDEWALKS AND DRIVEWAYS	SF	25495			
	104.1			STREET EXCAVATION	CY	14530			
	107.1			EMBANKMENT (FINAL)	CY	170			
	203.1			TACK COAT	GAL	3183			
	205.2			HOT MIX ASPHALTIC PAVEMENT TY B 12 IN. PAV THICKNESS	SY	16830			
	205.3			HOT MIX ASPHALTIC PAVEMENT TY C 2 IN. PAV THICKNESS	SY	17001			
	205.3			HOT MIX ASPHALTIC PAVEMENT TY C 4 IN. PAV THICKNESS	SY	14827			
	208.1			SALVAGING, HAULING & STOCKPILING RECLAIM ASPH PAV 2 IN.	SY	17001			
	209.2			BUS STOP CONCRETE PAD	SY	670			
	302.1			METAL FOR STRUCTURES	LBS	2700			
	308.1			DRILLED SHAFTS (36")	LF	120			
	500.1			CONCRETE CURB	LF	8847			
	500.101			CONCRETE RETAINING CURBS AT PAVERS AND RAMPS, COMPLETE PER DRAWINGS	LF	135			
	502.10			CONCRETE SIDEWALKS (4" THICK), COMPLETE PER DRAWINGS	SY	2679			
	502.101			5" CONCRETE SIDEWALK, COMPLETE PER DRAWINGS	SY	191			
	502.102			5" CONCRETE SIDEWALK, SCORED, COMPLETE PER DRAWINGS	SY	76			
	502.103			5" CONCRETE SLAB AT PAVERS, COMPLETE PER DRAWINGS	SY	1220			
	502.104			BUS STOP CONCRETE PADS (6" THICK), COMPLETE PER DRAWINGS	SY	28			
	502.201			CONCRETE SIDEWALK FOR TRENCH GRATE	SY	10			
	503.2			PORTLAND CEMENT CONCRETE DRIVEWAY COMMERCIAL	SY	1165			
	506.1			CONCRETE RETAINING WALLS COMBINATION TYPE	CY	10			
	515.2			MULCH AT EXISTING TREES (6" DEPTH), COMPLETE PER DRAWINGS	CY	230			
	522.1			SIDEWALK PIPE RAILING	LF	50			
	531.10			R3-4 NO U TURNS* (24" X 24")	EA	6			
	531.3			RL-1 STOP* (30")	EA	1			
	531.4			RL-2 YIELD* (36")	EA	3			
	531.6			R2-1 SPEED LIMIT* (24" X 30")	EA	3			
	531.11			R3-5 LEFT OR RIGHT ONLY* (30" X 36")	EA	4			
	531.13			R3-7 LEFT LANE MUST TURN LEFT OR RIGHT LANE MUST TURN RIGHT* (30" X 30")	EA	3			
	531.16			R3-9 TWO WAY LEFT TURN ONLY* (30" X 36")	EA	5			
	531.17			R4-7 KEEP RIGHT* (24" X 30")	EA	7			
	531.19			R6-1 ONE WAY (36" X 12")(HIGH DENSITY)	EA	1			
	531.57			9 INCH STREET NAME, BLOCK NUMBERS* (VARIES X 9")	EA	2			
	531.200			R3-9cP BEGIN (30"X12" PLAQUE)(HIGH DENSITY)	EA	2			
	531.201			R3-9cP END (30"X12" PLAQUE)(HIGH DENSITY)	EA	3			

PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY BASE BID
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	531.202			W4-1 THRU TRAFFIC MERGE LEFT (36"X36")(HIGH DENSITY)	EA	1			
	531.203			W4-2 LANE ENDS (36"X36")(HIGH DENSITY)	EA	1			
	531.204			D3-2 ADVANCE STREET NAME (36"X30")(HIGH DENSITY)	EA	1			
	535.1			4 INCH WIDE YELLOW LINE	LF	4248			
	535.2			4 INCH WIDE WHITE LINE	LF	1936			
	535.4			8 INCH WIDE WHITE LINE	LF	2598			
	535.5			12 INCH WIDE WHITE LINE	LF	59			
	535.7			24 INCH WIDE WHITE LINE	LF	871			
	535.8			RIGHT WHITE ARROW	EA	7			
	535.9			LEFT WHITE ARROW	EA	24			
	535.12			WORD "ONLY"	EA	6			
	535.18			SOLID WHITE YIELD LINES	EA	36			
	535.200			YELLOW MEDIAN NOSE	EA	1			
	535.201			24 INCH WIDE YELLOW LINE	LF	21			
	537.6			PAVEMENT MARKER (TYPE I C)	EA	320			
	537.8			PAVEMENT MARKER (TYPE II A A)	EA	120			
	540.1			ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 4)	LF	50			
	540.1			CURB INLET GRAVEL FILTERS	LF	270			
	540.9			TEMPORARY SEDIMENT CONTROL FENCE	LF	2130			
	554.1			EROSION CONTROL MATTING	SY	525			
	680.1			INSTALLATION OF HIGHWAY TRAFFIC SIGNALS [ISOLATED]	EA	1			
	680.2			INSTALLATION OF HAWK SIGNAL	ALLOWANCE	1	$200,000.00	$200,000.00	
	681.1			TEMPORARY TRAFFIC SIGNALS	EA	1			
	808			REINFORCED CONCRETE VAULT	EA	1			
	824			RELAY 8" FIRE LINE	EA	1			
	836			PIPE FITTINGS, ALL SIZES AND TYPES	TON	0.21			
	840			8" WATER TIE-INS	EA	1			
	2122.01			TREE PROTECTION	LF	1554			
	2122.02			TREE AND STUMP REMOVAL	EA	26			
	2122.03			TREE MITIGATION	IN	160			
	2780.01			CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	10980			
	2780.02			DETECTABLE WARNING CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	200			
	2780.03			RE-INSTALL SALVAGED PAVERS	SF	859			
	2810.01			IRRIGATION	SF	44178			
	2900.01			HYDROSEED SOIL MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	443			
	2900.02			SOD PLANTING MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	102			
	2900.21			LIVE OAK, 3"	EA	6			

PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY BASE BID
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	2900.22			CEDAR ELM, 3"	EA	4			
	2900.51			BERMUDA GRASS HYDROSEED, COMPLETE PER DRAWINGS	SF	35458			
	4410.1			RETAINING WALL VENEER	FSF	894			
	4410.2			RETAINING WALL CAP	LF	144			
	5370.01			GUARDRAIL	LF	127			
	104	2001		REMOVING CONC (PAV)	SY	190			
	104	2009		REMOVING CONC (RIPRAP)	SY	476			
	104	2040		REMOVING CONC (PAVERS)	SY	265			
	168	2001		VEGETATIVE WATERING	MG	283			
	340	2011		D-GR HMA(METH) TY-B PG64-22	TON	1212			
	423	2006		RETAINING WALL (CONC BLOCK)	SF	315			
	423	2007		RETAINING WALL (SPREAD FOOTING)	SF	1006			
	496	2040		REMOVE STR (RET WALL)	LF	135			
	496	2289		REMOVE STR (DRAINAGE FLUME)	EA	1			
	502	2001		BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	13			
	502	2055		OFF-DUTY POLICE OFFICERS	HR	560			
	508	2001		CONSTRUCTING DETOURS	STA	55			
	512	2008		PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	2900			
	512	2009		PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	560			
	512	2026		PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	4000			
	512	2027		PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	320			
	512	2044		PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	2900			
	512	2045		PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	560			
	529	2026		CONC CURB (ARMOR CURB SLOT)	LF	10			
	644	2060		REMOVE SM RD SN SUP & AM	EA	9			
	644	2080		RELOCATE SM RD SN SP & AM (GALV SQ) COSA	EA	1			
	662	2001		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)	LF	330			
	662	2004		WK ZN PAV MRK NON-REMOV (W) 4" (SLD)	LF	1074			
	662	2012		WK ZN PAV MRK NON-REMOV (W) 8" (SLD)	LF	792			
	662	2016		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)	LF	121			
	662	2017		WK ZN PAV MRK NON-REMOV (W) (ARROW)	EA	5			
	662	2027		WK ZN PAV MRK NON-REMOV (W) (WORD)	EA	1			
	662	2050		WK ZN PAV MRK REMOV (REFL) TY I-A	EA	47			
	662	2052		WK ZN PAV MRK REMOV (REFL) TY I-C	EA	66			
	662	2054		WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	41			
	662	2060		WK ZN PAV MRK REMOV (TRAF BTN) TY W	EA	218			
	662	2062		WK ZN PAV MRK REMOV (TRAF BTN) TY Y	EA	278			
	662	2064		WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	610			

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY BASE BID
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	662	2067		WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	12379			
	662	2075		WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	1132			
	662	2079		WK ZN PAV MRK REMOV (W) 24" (SLD)	LF	103			
	662	2084		WK ZN PAV MRK REMOV (W) (ARROW)	EA	11			
	662	2094		WK ZN PAV MRK REMOV (W) (WORD)	EA	5			
	662	2097		WK ZN PAV MRK REMOV (Y) 4" (BRK)	LF	270			
	662	2099		WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	17580			
	662	2113		WK ZN PAV MRK SHT TERM (TAB) TY W	EA	700			
	662	2214		WK ZN PAV MRK SHT TERM (TAB) TY Y	EA	300			
	772	2001		POST AND CABLE FENCE (REMOVAL)	LF	270			
	772	2003		POST AND CABLE FENCE (NEW INSTALLATION)	LF	272			
	1122	2046		BIOGRD EROSN CONT LOGS (4" DIA) INSTALL	LF	450			
	1122	2056		BIODEGRADBLE EROSION CONTROL LOGS REMOV	LF	450			
	6007	2001		REMOVING TRAFFIC SIGNALS	EA	1			

_____certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.
_____Acknowleged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY ADDITIVE ALTERNATIVE 2
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	100			MOBILIZATION	LS	1			
	101			PREPARING RIGHT-OF-WAY	LS	1			
	103.1			REMOVE CONCRETE CURB	LF	130			
	103.3			REMOVE SIDEWALKS AND DRIVEWAYS	SF	378			
	203.1			TACK COAT	GAL	283			
	205.3			HOT MIX ASPHALTIC PAVEMENT TY C 2 IN. PAV THICKNESS	SY	2822			
	208.1			SALVAGING, HAULING & STOCKPILING RECLAIM ASPH PAV 2 IN.	SY	2822			
	307.1			CONCRETE STRUCTURE (MISCELLANEOUS)	CY	0.7			
	308.2			DRILLED SHAFTS (60")	LF	20			
	500.4			CONCRETE CURB AND GUTTER	LF	130			
	500.102			6" FLUSH CONCRETE BAND, COMPLETE PER DRAWINGS	LF	1097			
	502.1			CONCRETE SIDEWALK	SY	42			
	502.103			5" CONCRETE SLAB AT PAVERS, COMPLETE PER DRAWINGS	SY	1158			
	511.6			REPLACING WITH FLOWABLE FILL AND PAVEMENT 6 INCHES COMPACTED DEPTH	SY	136			
	535.2			4 INCH WIDE WHITE LINE	LF	80			
	535.4			8 INCH WIDE WHITE LINE	LF	850			
	535.9			LEFT WHITE ARROW	EA	16			
	535.12			WORD "ONLY"	EA	4			
	537.6			PAVEMENT MARKER (TYPE I C)	EA	47			
	618.1			CONDUIT (2 INCH/PVC SCHEDULE 40)	LF	547			
	624.1			GROUND BOXES TYPE A (122311)	EA	8			
	814			6" DI PIPE	LF	64			
	824			RELAY 1 1/2" SHORT SERVICE	EA	9			
	828			6" GATE VALVE AND BOX	EA	1			
	828			20" BUTTERFLY VALVE AND BOX	EA	2			
	833			1" IRRIGATION METER AND METER BOX (COMPLETE)	EA	4			
	833			SAWS IMPACT FEES FOR MEDIAN IRRIGATION	EA	4			
	836			DUCTILE IRON FITTINGS	TON	0.47			
	844			2" BLOWOFF, PERMANENT	EA	1			
	2780.01			CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	9170			
	2810.02			IRRIGATION AT MEDIANS	SF	34829			
	2900.02			SOD PLANTING MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	144			
	2900.03			PLANTING SOIL MIX (12" DEPTH), COMPLETE PER DRAWINGS	CY	367			
	2900.04			MULCH AT PLANTING AREAS (4" DEPTH), COMPLETE PER DRAWINGS	CY	123			
	2900.1			GEOTEXTILE FABRIC	SF	8831			
	2900.11			RIVER ROCK	CY	89			

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY ADDITIVE ALTERNATIVE 2
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	2900.12			METAL EDGER	LF	699			
	2900.31			CRAPE MYRTLE TREE, #30 CONT., COMPLETE PER DRAWINGS	EA	144			
	2900.32			MOUNTAIN LAUREL, 8'-10' TALL, COMPLETE PER DRAWINGS	EA	47			
	2900.41			KNOCK OUT ROSE, 'PINK', #3 CONT., COMPLETE PER DRAWINGS	EA	54			
	2900.42			LINDHEIMER'S MUHLY GRASS, #3 CONT., COMPLETE PER DRAWINGS	EA	54			
	2900.43			TEXAS LANTANA, #3 CONT., COMPLETE PER DRAWINGS	EA	702			
	2900.44			RED YUCCA, #3 CONT., COMPLETE PER DRAWINGS	EA	593			
	2900.45			MEXICAN FEATHER GRASS, #1 CONT., COMPLETE PER DRAWINGS	EA	90			
	2900.52			TIF '419' BERMUDA, SOLID SOD, COMPLETE PER DRAWINGS	SY	1831			
	4410.50			CONCRETE UNIT MASONRY WALL W/ STONE VENEER, COMPLETE PER DRAWINGS	LF	60			
	5000.00			ENTRY MONUMENT PYLON SIGN, COMPLETE PER DRAWINGS	EA	2			
	16000.00			SITE ELECTRICAL (COMPLETE SYS INCL MTR, MTR CNDT, CNTRLS, & PEDESTAL)	ALLOWANCE	1	$82,000.00	$82,000.00	
	16000.00			LIGHTS AT ENTRY MONUMENT	EA	4			
	104	2009		REMOVING CONC (RIPRAP)	SY	2578			
	502	2001		BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4			

_____certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____Acknowleged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS
MANAGEMENT SERVICES

RECEIPT OF ADDENDUM NUMBER(S) **4** IS HEREBY ACKNOWLEDGED FOR PLANS AND

SPECIFICATIONS FOR CONSTRUCTION OF **MEDICAL CENTER INTERSECTION IMPROVEMENTS PHASE IX PROJECT 40-00309**

FOR WHICH BIDS WILL BE OPENED ON **TUESDAY, AUGUST 13, 2013 AT 2:00 P.M.**

THIS ACKNOWLEDGEMENT MUST BE SIGNED AND RETURNED WITH THE BID PACKAGE.

Company Name: _____

Address: _____

City/State/Zip Code: _____

Date: _____

_____
Signature

_____
Print Name/Title

CITY OF SAN ANTONIO, TEXAS
GOVERNING SPECIFICATIONS

All standard specifications and special specifications applicable to this project are identified as follows:

CITY OF SAN ANTONIO
STANDARD SPECIFICATIONS FOR CONSTRUCTION (JUNE 2008)

ITEM NO.	DESCRIPTION
100	MOBILIZATION
101	PREPARING RIGHT-OF-WAY
103	REMOVE CONCRETE
104	STREET EXCAVATION
107	EMBANKMENT
203	TACK COAT
205	HOT MIX ASPHALTIC CONCRETE PAVEMENT
208	SALVAGING, HAULING, & STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT
209	CONCRETE PAVEMENT
210	ROLLING
220	BLADING
300	CONCRETE
301	REINFORCING STEEL
302	METAL FOR STRUCTURES
303	WELDED WIRE FLAT SHEETS
307	CONCRETE STRUCTURES
308	DRILLED SHAFTS AND UNDER-REAMED FOUNDATIONS
400	EXCAVATION, TRENCHING, AND BACKFILLING
406	JACKING, BORING, OR TUNNELING PIPE
500	CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER
502	CONCRETE SIDEWALKS
503	ASPHALTIC CONCRETE, PORTLAND CEMENT CONCRETE, AND GRAVEL DRIVEWAYS
505	CONCRETE RIPRAP
506	CONCRETE RETAINING WALL – COMBINATION TYPE
511	CUTTING AND REPLACING PAVEMENTS (TRENCH REPAIR)
515	TOPSOIL
522	SIDEWALK PIPE RAILING
525	CONCRETE TRAFFIC BARRIERS (PORTABLE)
526	FIELD OFFICE
530	BARRICADES, SIGNS, AND TRAFFIC HANDLING
531	SIGNS
533	CLEANING AND REMOVAL OF PAVEMENT MARKINGS AND MARKERS
535	HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS
537	RAISED PAVEMENT MARKERS
540	TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL
554	EROSION CONTROL MATTING
550	TRENCH EXCAVATION SAFETY PROTECTION
600	TRAFFIC SIGNAL GENERAL CONDITIONS
615	TRAFFIC SIGNAL CONTROLLER CABINET
618	CONDUIT
620	ELECTRICAL CONDUCTORS

622	DUCT CABLE
624	GROUND BOXES
628	ELECTRICAL SERVICES
633	BATTERY BACKUP SYSTEM FOR TRAFFIC SIGNAL
636	ALUMINUM SIGNS
655	CONTROLLER FOUNDATION AND PEDESTAL POST
656	FOUNDATIONS FOR TRAFFIC CONTROL DEVICES
680	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS
681	TEMPORARY TRAFFIC SIGNALS
682	VEHICLE AND PEDESTRIAN SIGNAL HEADS
683	LED COUNTDOWN PEDESTRIAN SIGNAL MODULE
684	TRAFFIC SIGNAL CABLES
686	TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL)
687	PEDESTAL POLE ASSEMBLIES
688	PEDESTRIAN DETECTORS AND VEHICLE LOOP DETECTORS
695	EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM
700	COST LOADED PROJECT SCHEDULES
801	TREE AND LANDSCAPE PROTECTION
1000	WEB PORTAL

SPECIAL PROVISIONS

	SPECIAL PROVISIONS UPDATE MAY 2009
	SPECIAL PROVISIONS UPDATE FEBRUARY 2010
	SPECIAL PROVISIONS UPDATE JUNE 2010
	SPECIAL PROVISION TO THE GENERAL CONDITIONS
506SPL	CONCRETE RETAINING WALL
680SPL	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS

SPECIAL SPECIFICATIONS

696	RADAR DETECTION SYSTEM
800	PROJECT SIGN
1122	TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS
2122	TREE PROTECTION
2780	UNIT PAVERS
2810	PLANTING IRRIGATION
2900	PLANTS
3000	HANDLING ASBESTOS CEMENT PIPE
4410	STONE MASONRY VENEER
4411	CONCRETE MASONRY UNIT WALL VENEER
5000	ENTRY MONUMENT PYLON SIGN (SPECIFICATION INCLUDED ON PLAN SHEETS)
5300	OFF DUTY POLICE OFFICER
5730	HANDRAILS AND RAILING
6007	REMOVE TRAFFIC SIGNALS
9900	PAINTING
16000	MONUMENT ELECTRICAL SYSTEM (SPECIFICATION INCLUDED ON PLAN SHEETS)

TEXAS DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES 2004

104	REMOVING CONCRETE
168	VEGETATIVE WATERING
340	DENSE-GRADED HOT MIX ASPHALT (METHOD)
423	RETAINING WALL
496	REMOVING STRUCTURES
502	BARRICADES, SIGNS AND TRAFFIC HANDLING
508	CONSTRUCTION DETOURS
512	PORTABLE CONCRETE TRAFFIC BARRIER
529	CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER
644	SMALL ROADSIDE SIGN SUPPORTS AND ASSEMBLIES
662	WORK ZONE PAVEMENT MARKINGS
677	ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS
722	POST AND CABLE FENCE
	TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

SAN ANTONIO WATER SYSTEM
2008 SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION (REVISED JUNE 2009)

100	MOBILIZATION
101	PREPARING RIGHT-OF-WAY
413	FLOWABLE FILL
550	TRENCH EXCAVATION SAFETY PROTECTION
808	REINFORCED CONCRETE VAULTS
814	DUCTILE IRON PIPE
818	PVC PIPE INSTALLATION
824	SERVICE SUPPLY LINES (WATER)
826	VALVE BOX ADJUSTMENTS
828	GATE VALVES
833	METER AND METER BOX INSTALLATION
834	FIRE HYDRANTS
836	GREY IRON AND DUCTILE-IRON FITTINGS
840	WATER TIE-INS
841	HYDROSTATIC TESTING OPERATIONS
844	BLOW OFF ASSEMBLIES
846	AIR RELEASE ASSEMBLIES
851	ADJUSTING EXISTING MANHOLES
855	RECONSTRUCTION OF EXISTING MANHOLES
856	JACKING, BORING, OR TUNNELING PIPE

CPS ENERGY REQUIREMENTS AND SPECIFICATIONS FOR CONSTRUCTION OF NATURAL GAS DISTRIBUTION FACILITIES ON THE MEDICAL CENTER - PHASE IX HAMILTON WOLFE & BABCOCK

SECTION 04411 – CONCRETE MASONRY UNIT WALL VENEER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Custom concrete masonry unit wall veneer dry-stacked and anchored to concrete retaining wall back-up (specified elsewhere). Joints between units are to be ungrouted, but grout is required in specific locations behind veneer (refer to Detail 1/Sheet L3.21).

1.3 SUBMITTALS

A. Product Data: For each variety of concrete masonry unit, accessory, and other manufactured product specified.

B. Samples for Verification: Sets for each color, grade, finish, and variety of concrete masonry units required. Include 2 or more Samples in each set showing the full range of variations expected in these characteristics.

C. Qualification Data: For firms and persons specified in the “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Landscape Architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced mason who has completed veneer similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Mockups: Before installing concrete masonry unit veneer, construct sample wall panels to verify selections made under Sample submittals and to demonstrate successful technical and aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work.

1. Locate mockups in the locations indicated or, if not indicated, as directed by Landscape Architect.

2. Build mockups for each type of veneer in sizes approximately 48 inches (1200 mm) high by full thickness, including front face, side face, elevation drop, and back-up, and as follows:
3. Notify Landscape Architect 7 days in advance of the dates and times when mockups will be constructed.
4. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
   a. Approval of mockups does not constitute approval of deviations from Contract Documents contained in mockups, unless such deviations are specifically approved by Landscape Architect in writing.
   b. When directed, demolish and remove mockups from Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in undamaged condition.

B. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, or other causes.

C. Store cementitious materials off the ground, under cover, and in a dry location.

D. Store aggregates, covered and in a dry location, where grading and other required characteristics can be maintained and contamination avoided.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 PROJECT CONDITIONS

A. Protection of Veneer: During erection, cover tops of walls, projections, and sills with waterproof sheeting at the end of each day's work. Cover partially completed veneer when construction is not in progress.

B. Stain Prevention: Immediately remove soil to prevent it from staining the face of masonry veneer.
   1. Protect base of walls from rain-splashed mud splatter by coverings spread on the ground and over the wall surface.
   2. Protect sills, ledges, and projections
   3. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing dirt on completed masonry veneer.
   4. Cold-Weather Requirements: Do not use frozen materials for materials mixed or coated with ice or frost. Do not build on frozen sub-grade or setting beds. Remove and replace concrete masonry unit veneer damaged by frost or freezing conditions.
   5. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until concrete masonry unit veneer has dried out, but not less than 7 days after completing cleaning.

PART 2 - PRODUCTS

A CMU: Compac III Tri-Plane as manufactured by Keystone Retaining Wall Systems, Inc, (952) 897.1040. Or as required to match existing wall at project site.

1. Wall veneer units shall match existing wall at project site in terms of size, color, and texture of unit. Wall cap units shall match existing wall caps at project site in terms of size, color, and texture of unit. Note: units will be saw-cut to a thinner depth than full-size for installation as veneer, but provide full-size units to project site.

B. Masonry Adhesive. Manufacturer's recommended adhesive for use in securing wall can side wall caps.

2.1 VENEER ANCHORS

A. General: Provide galvanized steel anchor pins and tie wires. Refer to drawings for illustration and installation.

1. Anchor Pins.

2. Wire Ties.

2.2 MORTAR MATERIALS

A. Provide Type 'S' mortar.
B. Portland Cement: ASTM C 150 Type I or Type II.

1. Provide nonstaining white cement complying with staining requirement of ASTM C 91 for not more than 0.03 percent water-soluble alkali.

C. Hydrated Lime: ASTM C 207, Type S.

D. Aggregate for Mortar: ASTM C 144, unless otherwise indicated.

E. Water: Clean, free of oils, acids, alkalis, and organic matter.

2.3 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: solution of ½-cup (0.14-L) dry-measure tetrasodium polyphosphate and ½-cup (0.14-L) dry-measure laundry detergent dissolved in 1 gal. (4 L) of water.

B. Acidic Cleaner: Manufacture's standard-strength masonry cleaner designed for removing efflorescence, and other new construction stains from exposed masonry surfaces of type indicated without discoloring or damaging masonry surfaces; expressly approved for intended use by CMU producer.

2.3 FABRICATION

A. General: Fabricate veneer pieces in whole sizes and shapes to match existing wall face components.

B. Cut CMU blocks to produce whole pieces of thickness, size, and shape indicated.

C. Thickness of Concrete Masonry Veneer: Refer to drawings.

D. Dress joints straight and at right angle to face, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive concrete masonry unit wall veneer, with installer present for compliance with requirements for installation tolerances and other conditions affecting performance of concrete masonry unit veneer.
   1. Examine substrate to verify that inserts, reinforcement, veneer ties, flashing, and other items installed in unit masonry or concrete and required for or extending into concrete masonry unit veneer are correctly installed.
   2. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Advise installers of other work about specific requirements for placement of reinforcement, anchors, ties, flashing, and similar items to be built into veneer.

B. Protect veneer during erection as follows:
   1. Cover tops of walls with nonstaining, waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 24 inches (600 mm) down both sides and hold securely in place.
   2. Prevent staining of veneer from mortar, grout, sealants, and other sources. Immediately remove such materials without damaging veneer.
   3. Protect base of walls from rain-splashed mud splatter by coverings spread on the ground and over the wall surface.
   4. Protect sills, ledges, and projections.

C. Clean veneer surfaces that have become dirty or stained by removing soil stains, and foreign materials before setting. Clean by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 SETTING CONCRETE MASONRY UNIT WALL VENEER, GENERAL

A. Execute veneer by skilled, experienced masons.
   1. Employ skilled masonry fitters at the Project site to do necessary field cutting as CMU is set. Use power saws to cut CMU to depths indicated. Produce lines cut straight and true, with edges eased slightly to prevent snipping.
   2. Arrange units for good fit, in pattern indicated, with joint widths within tolerances indicated.

B. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure concrete masonry unit wall veneer in place against concrete retaining wall back-up. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors at 18” O.C horizontally and in each horizontal course of concrete masonry units. Use pins provided by manufacturer and use tie wires as indicated by the drawings.

C. Maintain uniform joint widths

D. Weep holes in the concrete retaining wall back-up will be located at intervals indicated on the structural drawings. To the extent practical, install bottom concrete masonry units so that vertical joints between units align with weep holes in the back-up wall.

3.4 INSTALLING ANCHORED CONCRETE MASONRY UNIT VENEER

A. Anchor CMU veneer to concrete retaining wall back-up with metal anchor pins embedded into the face of the concrete wall and wire ties connecting to steel pins provided by CMU manufacturer. Refer to drawings.
   1. Grill and epoxy grout metal anchor pins into face of concrete wall at the indicated spacing.
   2. Insert manufacturer’s steel pins into the CMU block where indicated., 2 pins per block.
   3. Connect CMU pins to masonry anchor pin with wire ties. Bend wire ties to completely encircle veneer connection pins. Tie minimum one pin per CMU block.
   4. Space ties as indicated, but not more than 16 inches (406 mm) o.c. vertically and 18 inches (457 mm) o.c. horizontally – refer to drawings.

B. Provide 1-inch (25 mm) airspace between veneer and back-up construction, unless otherwise indicated. Keep air space free of debris.

C. Adhere wall caps and side wall veneer (half of a wall cap) to the CMU blocks using manufacturer’s recommended adhesive

D. Keep joints clean of mortar and debris. Set units butt-jointed.

E. Fill behind lower course(s) with grout between face of concrete retaining wall and back of CMU veneer to prevent accumulation of water. Grout fill so that top of grout is at or slightly above adjacent finish grade at front face of wall.

3.5 ADJUSTING AND CLEANING

A. Remove and replace veneer of the following:
   1. Broken, chipped, stained, or otherwise damaged units.
      i. Defective joints
      ii. Veneer and joints not matching approved samples and mockups.
      iii. Veneer not complying with other requirements indicated.

B. Replace in a manner that results in veneer’s matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean veneer as work progresses.

D. Final Cleaning:

1. Test cleaning methods on mockup; leave one-half of panel un-cleaned for comparison purposes. Obtain Landscape Architect's approval of sample cleaning before proceeding with cleaning of masonry.
2. Protect adjacent veneer and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.

E. Protection: Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure concrete masonry unit wall veneer is without damage and deterioration at the time of Substantial Completion.

3.6 EXCESS MATERIALS AND WASTE

A. Excess Material: Excess shall become the property of the Contractor, who shall haul all excess material away from the project site.

END OF SECTION

020

BID FORM

The estimated construction budget for this contract is $ 6,855,345.42

I. Base Bid

Amount of Street/Roadway Construction Base Bid (Insert Amount in Words and Numbers):

_____$_____

Amount of SAWS Water (12-5080) Base Bid (Insert Amount in Words and Numbers):

_____$_____

Amount of SAWS Sewer (12-5580) Base Bid (Insert Amount in Words and Numbers):

_____$_____

Amount of CPS (1713228) Base Bid (Insert Amount in Words and Numbers):

_____$_____

Total Amount of Base Bid (Insert Amount in Words and Numbers):

_____**$**_____

II. ALTERNATES

Amount of each Alternates (if applicable) insert in Numbers:

Additive Alternate #1 - Floyd Curl Irrigation Installation and Curb Replacement

Amount of Street/Roadway Construction Additive Alternative #1 (Insert Amount in Words and Numbers):

_____$_____

Additive Alternate #2 – Wurzbach Irrigation Installation and Curb Replacement

Amount of Street/Roadway Construction Additive Alternative #2 (Insert Amount in Words and Numbers):

_____$_____

Total Amount of Bid for all Base Bid and Additive Alternates (Insert Amount in Words and Numbers):

_____$_____

III. UNIT PRICES

Bidders shall submit unit pricing on the 025 Unit Pricing form, and it shall be attached immediately following this sheet.

Official Name of Company (legal)	Telephone No.
Address	Fax No.
City, State and Zip Code	E-mail Address

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY BASE BID
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	100			MOBILIZATION	LS	1			
	101			PREPARING RIGHT-OF-WAY	LS	1			
	103.1			REMOVE CONCRETE CURB	LF	4410			
	103.3			REMOVE SIDEWALKS AND DRIVEWAYS	SF	25495			
	104.1			STREET EXCAVATION	CY	14530			
	107.1			EMBANKMENT (FINAL)	CY	170			
	203.1			TACK COAT	GAL	3183			
	205.2			HOT MIX ASPHALTIC PAVEMENT TY B 12 IN. PAV THICKNESS	SY	16830			
	205.3			HOT MIX ASPHALTIC PAVEMENT TY C 2 IN. PAV THICKNESS	SY	17001			
	205.3			HOT MIX ASPHALTIC PAVEMENT TY C 4 IN. PAV THICKNESS	SY	14827			
	208.1			SALVAGING, HAULING & STOCKPILING RECLAIM ASPH PAV 2 IN.	SY	17001			
	209.2			BUS STOP CONCRETE PAD	SY	670			
	302.1			METAL FOR STRUCTURES	LBS	2700			
	308.1			DRILLED SHAFTS (36")	LF	120			
	500.1			CONCRETE CURB	LF	8847			
	500.101			CONCRETE RETAINING CURBS AT PAVERS AND RAMPS, COMPLETE PER DRAWINGS	LF	135			
	502.10			CONCRETE SIDEWALKS (4" THICK), COMPLETE PER DRAWINGS	SY	2679			
	502.101			5" CONCRETE SIDEWALK, COMPLETE PER DRAWINGS	SY	191			
	502.102			5" CONCRETE SIDEWALK, SCORED, COMPLETE PER DRAWINGS	SY	76			
	502.103			5" CONCRETE SLAB AT PAVERS, COMPLETE PER DRAWINGS	SY	1220			
	502.104			BUS STOP CONCRETE PADS (6" THICK), COMPLETE PER DRAWINGS	SY	28			
	502.201			CONCRETE SIDEWALK FOR TRENCH GRATE	SY	10			
	503.2			PORTLAND CEMENT CONCRETE DRIVEWAY COMMERCIAL	SY	1165			
	506.1			CONCRETE RETAINING WALLS COMBINATION TYPE	CY	10			
	515.2			MULCH AT EXISTING TREES (6" DEPTH), COMPLETE PER DRAWINGS	CY	230			
	522.1			SIDEWALK PIPE RAILING	LF	50			
	531.10			R3-4 NO U TURNS* (24" X 24")	EA	6			
	531.3			RL-1 STOP* (30")	EA	1			
	531.4			RL-2 YIELD* (36")	EA	3			
	531.6			R2-1 SPEED LIMIT* (24" X 30")	EA	3			
	531.11			R3-5 LEFT OR RIGHT ONLY* (30" X 36")	EA	4			
	531.13			R3-7 LEFT LANE MUST TURN LEFT OR RIGHT LANE MUST TURN RIGHT* (30" X 30")	EA	3			
	531.16			R3-9 TWO WAY LEFT TURN ONLY* (30" X 36")	EA	5			
	531.17			R4-7 KEEP RIGHT* (24" X 30")	EA	7			
	531.19			R6-1 ONE WAY (36" X 12")(HIGH DENSITY)	EA	1			
	531.57			9 INCH STREET NAME, BLOCK NUMBERS* (VARIES X 9")	EA	2			
	531.200			R3-9cP BEGIN (30"X12" PLAQUE)(HIGH DENSITY)	EA	2			
	531.201			R3-9cP END (30"X12" PLAQUE)(HIGH DENSITY)	EA	3			

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ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	531.202			W4-1 THRU TRAFFIC MERGE LEFT (36"X36")(HIGH DENSITY)	EA	1			
	531.203			W4-2 LANE ENDS (36"X36")(HIGH DENSITY)	EA	1			
	531.204			D3-2 ADVANCE STREET NAME (36"X30")(HIGH DENSITY)	EA	1			
	535.1			4 INCH WIDE YELLOW LINE	LF	4248			
	535.2			4 INCH WIDE WHITE LINE	LF	1936			
	535.4			8 INCH WIDE WHITE LINE	LF	2598			
	535.5			12 INCH WIDE WHITE LINE	LF	59			
	535.7			24 INCH WIDE WHITE LINE	LF	871			
	535.8			RIGHT WHITE ARROW	EA	7			
	535.9			LEFT WHITE ARROW	EA	24			
	535.12			WORD "ONLY"	EA	6			
	535.18			SOLID WHITE YIELD LINES	EA	36			
	535.200			YELLOW MEDIAN NOSE	EA	1			
	535.201			24 INCH WIDE YELLOW LINE	LF	21			
	537.6			PAVEMENT MARKER (TYPE I C)	EA	320			
	537.8			PAVEMENT MARKER (TYPE II A A)	EA	120			
	540.1			ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 4)	LF	50			
	540.1			CURB INLET GRAVEL FILTERS	LF	270			
	540.9			TEMPORARY SEDIMENT CONTROL FENCE	LF	2130			
	554.1			EROSION CONTROL MATTING	SY	525			
	680.1			INSTALLATION OF HIGHWAY TRAFFIC SIGNALS [ISOLATED]	EA	1			
	680.2			INSTALLATION OF HAWK SIGNAL	ALLOWANCE	1	$200,000.00	$200,000.00	
	681.1			TEMPORARY TRAFFIC SIGNALS	EA	1			
	808			REINFORCED CONCRETE VAULT	EA	1			
	824			RELAY 8" FIRE LINE	EA	1			
	836			PIPE FITTINGS, ALL SIZES AND TYPES	TON	0.21			
	840			8" WATER TIE-INS	EA	1			
	2122.01			TREE PROTECTION	LF	1554			
	2122.02			TREE AND STUMP REMOVAL	EA	26			
	2122.03			TREE MITIGATION	IN	160			
	2780.01			CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	10980			
	2780.02			DETECTABLE WARNING CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	200			
	2780.03			RE-INSTALL SALVAGED PAVERS	SF	859			
	2810.01			IRRIGATION	SF	44178			
	2900.01			HYDROSEED SOIL MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	443			
	2900.02			SOD PLANTING MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	102			
	2900.21			LIVE OAK, 3"	EA	6			

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ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	2900.22			CEDAR ELM, 3"	EA	4			
	2900.51			BERMUDA GRASS HYDROSEED, COMPLETE PER DRAWINGS	SF	35458			
	4410.1			RETAINING WALL VENEER	FSF	894			
	4410.2			RETAINING WALL CAP	LF	144			
	5370.01			GUARDRAIL	LF	127			
	104	2001		REMOVING CONC (PAV)	SY	190			
	104	2009		REMOVING CONC (RIPRAP)	SY	476			
	104	2040		REMOVING CONC (PAVERS)	SY	265			
	168	2001		VEGETATIVE WATERING	MG	283			
	340	2011		D-GR HMA(METH) TY-B PG64-22	TON	1212			
	423	2006		RETAINING WALL (CONC BLOCK)	SF	315			
	423	2007		RETAINING WALL (SPREAD FOOTING)	SF	1006			
	496	2040		REMOVE STR (RET WALL)	LF	135			
	496	2289		REMOVE STR (DRAINAGE FLUME)	EA	1			
	502	2001		BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	13			
	502	2055		OFF-DUTY POLICE OFFICERS	HR	560			
	508	2001		CONSTRUCTING DETOURS	STA	55			
	512	2008		PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	2900			
	512	2009		PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	560			
	512	2026		PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	4000			
	512	2027		PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	320			
	512	2044		PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	2900			
	512	2045		PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	560			
	529	2026		CONC CURB (ARMOR CURB SLOT)	LF	10			
	644	2060		REMOVE SM RD SN SUP & AM	EA	9			
	644	2080		RELOCATE SM RD SN SP & AM (GALV SQ) COSA	EA	1			
	662	2001		WK ZN PAV MRK NON-REMOV (W) 4" (BRK)	LF	330			
	662	2004		WK ZN PAV MRK NON-REMOV (W) 4" (SLD)	LF	1074			
	662	2012		WK ZN PAV MRK NON-REMOV (W) 8" (SLD)	LF	792			
	662	2016		WK ZN PAV MRK NON-REMOV (W) 24" (SLD)	LF	121			
	662	2017		WK ZN PAV MRK NON-REMOV (W) (ARROW)	EA	5			
	662	2027		WK ZN PAV MRK NON-REMOV (W) (WORD)	EA	1			
	662	2050		WK ZN PAV MRK REMOV (REFL) TY I-A	EA	47			
	662	2052		WK ZN PAV MRK REMOV (REFL) TY I-C	EA	66			
	662	2054		WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	41			
	662	2060		WK ZN PAV MRK REMOV (TRAF BTN) TY W	EA	218			
	662	2062		WK ZN PAV MRK REMOV (TRAF BTN) TY Y	EA	278			
	662	2064		WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	610			

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PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY BASE BID
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	662	2067		WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	12379			
	662	2075		WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	1132			
	662	2079		WK ZN PAV MRK REMOV (W) 24" (SLD)	LF	103			
	662	2084		WK ZN PAV MRK REMOV (W) (ARROW)	EA	11			
	662	2094		WK ZN PAV MRK REMOV (W) (WORD)	EA	5			
	662	2097		WK ZN PAV MRK REMOV (Y) 4" (BRK)	LF	270			
	662	2099		WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	17580			
	662	2113		WK ZN PAV MRK SHT TERM (TAB) TY W	EA	700			
	662	2214		WK ZN PAV MRK SHT TERM (TAB) TY Y	EA	300			
	772	2001		POST AND CABLE FENCE (REMOVAL)	LF	270			
	772	2003		POST AND CABLE FENCE (NEW INSTALLATION)	LF	272			
	1122	2046		BIOGRD EROSN CONT LOGS (4" DIA) INSTALL	LF	450			
	1122	2056		BIODEGRADBLE EROSION CONTROL LOGS REMOV	LF	450			
	6007	2001		REMOVING TRAFFIC SIGNALS	EA	1			

_____certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____Acknowleged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY ADDITIVE ALTERNATIVE 2
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	100			MOBILIZATION	LS	1			
	101			PREPARING RIGHT-OF-WAY	LS	1			
	103.1			REMOVE CONCRETE CURB	LF	130			
	103.3			REMOVE SIDEWALKS AND DRIVEWAYS	SF	378			
	203.1			TACK COAT	GAL	283			
	205.3			HOT MIX ASPHALTIC PAVEMENT TY C 2 IN. PAV THICKNESS	SY	2822			
	208.1			SALVAGING, HAULING & STOCKPILING RECLAIM ASPH PAV 2 IN.	SY	2822			
	307.1			CONCRETE STRUCTURE (MISCELLANEOUS)	CY	0.7			
	308.2			DRILLED SHAFTS (60")	LF	20			
	500.4			CONCRETE CURB AND GUTTER	LF	130			
	500.102			6" FLUSH CONCRETE BAND, COMPLETE PER DRAWINGS	LF	1097			
	502.1			CONCRETE SIDEWALK	SY	42			
	502.103			5" CONCRETE SLAB AT PAVERS, COMPLETE PER DRAWINGS	SY	1158			
	511.6			REPLACING WITH FLOWABLE FILL AND PAVEMENT 6 INCHES COMPACTED DEPTH	SY	136			
	535.2			4 INCH WIDE WHITE LINE	LF	80			
	535.4			8 INCH WIDE WHITE LINE	LF	850			
	535.9			LEFT WHITE ARROW	EA	16			
	535.12			WORD "ONLY"	EA	4			
	537.6			PAVEMENT MARKER (TYPE I C)	EA	47			
	618.1			CONDUIT (2 INCH/PVC SCHEDULE 40)	LF	547			
	624.1			GROUND BOXES TYPE A (122311)	EA	8			
	814			6" DI PIPE	LF	64			
	824			RELAY 1 1/2" SHORT SERVICE	EA	9			
	828			6" GATE VALVE AND BOX	EA	1			
	828			20" BUTTERFLY VALVE AND BOX	EA	2			
	833			1" IRRIGATION METER AND METER BOX (COMPLETE)	EA	4			
	833			SAWS IMPACT FEES FOR MEDIAN IRRIGATION	EA	4			
	836			DUCTILE IRON FITTINGS	TON	0.47			
	844			2" BLOWOFF, PERMANENT	EA	1			
	2780.01			CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	9170			
	2810.02			IRRIGATION AT MEDIANS	SF	34829			
	2900.02			SOD PLANTING MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	144			
	2900.03			PLANTING SOIL MIX (12" DEPTH), COMPLETE PER DRAWINGS	CY	367			
	2900.04			MULCH AT PLANTING AREAS (4" DEPTH), COMPLETE PER DRAWINGS	CY	123			
	2900.1			GEOTEXTILE FABRIC	SF	8831			
	2900.11			RIVER ROCK	CY	89			

CITY OF SAN ANTONIO
025 UNIT PRICING FORM
PROJECT NAME: Medical Center Intersection Improvements Phase IX - ROADWAY ADDITIVE ALTERNATIVE 2
ID NO. 40-000309

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	2900.12			METAL EDGER	LF	699			
	2900.31			CRAPE MYRTLE TREE, #30 CONT., COMPLETE PER DRAWINGS	EA	144			
	2900.32			MOUNTAIN LAUREL, 8'-10' TALL, COMPLETE PER DRAWINGS	EA	47			
	2900.41			KNOCK OUT ROSE, 'PINK', #3 CONT., COMPLETE PER DRAWINGS	EA	54			
	2900.42			LINDHEIMER'S MUHLY GRASS, #3 CONT., COMPLETE PER DRAWINGS	EA	54			
	2900.43			TEXAS LANTANA, #3 CONT., COMPLETE PER DRAWINGS	EA	702			
	2900.44			RED YUCCA, #3 CONT., COMPLETE PER DRAWINGS	EA	593			
	2900.45			MEXICAN FEATHER GRASS, #1 CONT., COMPLETE PER DRAWINGS	EA	90			
	2900.52			TIF '419' BERMUDA, SOLID SOD, COMPLETE PER DRAWINGS	SY	1831			
	4410.50			CONCRETE UNIT MASONRY WALL W/ STONE VENEER, COMPLETE PER DRAWINGS	LF	60			
	5000.00			ENTRY MONUMENT PYLON SIGN, COMPLETE PER DRAWINGS	EA	2			
	16000.00			SITE ELECTRICAL (COMPLETE SYS INCL MTR, MTR CNDT, CNTRLS, & PEDESTAL)	ALLOWANCE	1	$82,000.00	$82,000.00	
	16000.00			LIGHTS AT ENTRY MONUMENT	EA	4			
	104	2009		REMOVING CONC (RIPRAP)	SY	2578			
	502	2001		BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4			

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_____Acknowleged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

Plotted on: 8/5/2013 10:29:04 AM
Design Filename: p:\5241\38\design\civil\General\5241381ndex01 ADD04.dgn

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE
2	INDEX OF SHEETS
3-4	PROJECT LAYOUT
5-6	HORIZONTAL ALIGNMENT DATA
7	CITY OF SAN ANTONIO GENERAL NOTES
8	SUPPLEMENTAL GENERAL NOTES
9-10	ESTIMATE AND QUANTITY SHEET
11	DRIVEWAY SUMMARY SHEET
12-14	EXISTING TYPICAL SECTIONS
15-19	PROPOSED TYPICAL SECTIONS
	TRAFFIC CONTROL PLAN
20	TRAFFIC CONTROL PLAN OVERALL PHASING LAYOUT
21-22	TRAFFIC CONTROL PLAN NARRATIVE AND SPECIAL NOTES
23-25	TRAFFIC CONTROL PLAN LAYOUT - PHASE I
26-27	TRAFFIC CONTROL PLAN LAYOUT - PHASE II STEP 1
28-30	TRAFFIC CONTROL PLAN LAYOUT - PHASE II STEP 2
31-33	TRAFFIC CONTROL PLAN LAYOUT - PHASE III STEP 1
34-35	TRAFFIC CONTROL PLAN LAYOUT - PHASE III STEP 2
36-37	TEMPORARY TRAFFIC SIGNAL PLAN
38	TEMPORARY TRAFFIC SIGNAL FOUNDATION LAYOUT
39	TEMPORARY TRAFFIC SIGNAL DETAILS
40-43	* CoSA - BARRICADE AND CONSTRUCTION STANDARDS (1 THRU 4)
44-55	* TxDOT - BARRICADE AND CONSTRUCTION STANDARDS BC (1 THRU 12) - 07
56	* TxDOT - TRAFFIC CONTROL PLAN TCP (1-1) - 12
57	* TxDOT - TRAFFIC CONTROL PLAN TCP (1-2) - 12
58	* TxDOT - TRAFFIC CONTROL PLAN TCP (1-4) - 12
59-63	* TxDOT - TRAFFIC CONTROL PLAN TCP (2-1 THRU 5)-12
64-66	* TxDOT - WORK ZONE STANDARDS WZ (TD, STPM & UL) - 03
67-68	* TxDOT - LOW PROFILE CONCRETE BARRIER (PORTABLE AND PRECAST) LPCB 10 (TYPE 1 & TYPE 2)
	ROADWAY PLAN
69-70	PROJECT DEMOLITION PLAN
71-75	ROADWAY PLAN & PROFILE HAMILTON WOLFE
76-78	ROADWAY PLAN BABCOCK
79-80	ROADWAY DETAILS
81	CONCRETE FLUME DETAIL
82-83	* CoSA - MISCELLANEOUS CONSTRUCTION STANDARDS I & II
84	* CoSA - WHEELCHAIR RAMP STANDARDS
85	* CoSA - CONCRETE DRIVEWAY STANDARDS
86	* CoSA - CONCRETE BUS STOP PAD
87	* CoSA - ELEVATED SIDEWALK & RETARD STANDARDS
88	* TxDOT - ARMOR CURB SLOT WITH CONCRETE FOUNDATION
89-91	RETAINING WALL LAYOUT (1-3)
92	* TxDOT - CONCRETE BLOCK RETAINING WALL RW(CB)
93	* TxDOT - RETAINING WALLS RW 1(L)B
94	* TxDOT - RETAINING WALL MISCELLANEOUS DETAILS RW 2
	DRAINAGE PLAN
95	DRAINAGE AREA SHEET
96	STORM DRAIN CALCULATIONS
	STORM WATER POLLUTION PREVENTION PLAN
97	STORM WATER POLLUTION PREVENTION PLAN (SW3P) LAYOUT
98	* CoSA - STORM WATER POLLUTION PREVENTION PLAN (SW3P) NARRATIVE
99	* TxDOT - ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)
100-101	* CoSA - TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1 & 2
	TRAFFIC ITEMS
102-105	TRAFFIC SIGNAL PLAN
106	TRAFFIC SIGNAL FOUNDATION LAYOUT
107	* CoSA - TRAFFIC SIGNAL DETAILS
108	* CoSA - CPS FSM DETAIL
109	* CoSA - RPOD AND RADD DETAIL
110-117	* TxDOT - ELECTRICAL DETAILS ED (1-5, 7, 10 & 13) - 03
118	* TxDOT - ARM DETAILS LUM-A-12
119-128	PAVEMENT MARKING AND SIGNING PLAN
129	SIGN DETAILS
130-145	* CoSA - TRAFFIC ENGINEERING STANDARDS (1 THRU 16)
146-149	* CoSA - TRAFFIC SIGN STANDARDS (1 THRU 4)
150	* TxDOT - DELINEATOR & OBJECT MARKER INSTALLATION & MATERIAL DESCRIPTION D & OM(1)-10
	UTILITIES
151-158	BASE MAP OF EXISTING UTILITIES
	CROSS SECTIONS
159-169	PROPOSED CROSS SECTIONS - HAMILTON WOLFE RD
170-177	PROPOSED CROSS SECTIONS - BABCOCK RD

SHEET NO.	DESCRIPTION
	LANDSCAPING PLAN
L1.00	OVERALL TREE PRESERVATION PLAN
L1.01	TREE PRESERVATION REFERENCE PLAN
L1.02-L1.17	PARTIAL TREE PRESERVATION PLAN
L1.18	TREE PRESERVATION NOTES AND DETAILS
L1.19	TREE PRESERVATION INVENTORY
L2.00	OVERALL SITE PLAN
L2.01	SITE REFERENCE PLAN
L2.02-L2.17	PARTIAL SITE PLAN
L2.18-L2.22	ENLARGED SITE PLAN
L3.01-L3.23	DETAILS
L3.24-L3.32	ADD ALT DETAILS
	SAWS SEWER JOB NO. 12-5580
1	TITLE
2	SEWER SYSTEM GENERAL NOTES
3	SEWER SYSTEM ADJUSTMENTS PLAN SHEET
	SAWS WATER JOB NO. 12-5080
1	TITLE
2	WATER SYSTEM GENERAL NOTES
3-10	WATER SYSTEM ADJUSTMENTS PLAN SHEETS
	CPS GAS MAIN
1	CPS COVER SHEET
2-4	LOCATION DATA TABLE
5-12	PLAN SHEETS
	ADDITIVE ALTERNATIVE - 1
1-2	TRAFFIC CONTROL LAYOUT ADDITIVE ALTERNATIVE #1
3	TRAFFIC CONTROL SCENARIOS ADDITIVE ALTERNATIVE #1
4	DETAILS ADDITIVE ALTERNATIVE #1
5	CURB REPLACEMENT DETAILS ADDITIVE ALTERNATIVE #1
A1.L2.00	ADD/ALT 1 OVERALL SITE PLAN
A1.L2.01	ADD/ALT 1 SITE REFERENCE PLAN
A1.L2.02-A1.L2.41	ADD/ALT 1 PARTIAL SITE PLAN
A1.L5.00	ADD/ALT 1 OVERALL SITE IRRIGATION PLAN
A1.L5.01	ADD/ALT 1 IRRIGATION REFERENCE PLAN
A1.L5.02-A1.L5.41	ADD/ALT 1 PARTIAL IRRIGATION PLAN
A1.L5.42	ADD/ALT 1 IRRIGATION NOTES
A1.L5.43-A1.L5.48	ADD/ALT 1 IRRIGATION DETAILS
	ADDITIVE ALTERNATIVE - 2
1-2	TRAFFIC CONTROL LAYOUT ADDITIVE ALTERNATIVE #2
3	TRAFFIC CONTROL SCENARIOS ADDITIVE ALTERNATIVE #2
4	DETAILS ADDITIVE ALTERNATIVE #2
5	CURB REPLACEMENT DETAILS ADDITIVE ALTERNATIVE #2
A2.L2.00	ADD/ALT 2 OVERALL SITE PLAN
A2.L2.01	ADD/ALT 2 SITE REFERENCE PLAN
A2.L2.02-A2.L2.26	ADD/ALT 2 PARTIAL SITE PLAN
A2.L2.27-A2.L2.28	ADD/ALT 2 ENLARGED SITE PLAN
A2.L5.00	ADD/ALT 2 OVERALL SITE IRRIGATION PLAN
A2.L5.01	ADD/ALT 2 IRRIGATION REFERENCE PLAN
A2.L5.02-A2.L5.26	ADD/ALT 2 PARTIAL IRRIGATION PLAN
A2.L5.27	ADD/ALT 2 IRRIGATION NOTES
E1.1-E1.4	ADD/ALT 2 PARTIAL ELECTRICAL SITE PLAN
E2.1	ADD/ALT 2 ELECTRICAL LEGEND AND NOTES
E3.1	ADD/ALT 2 ELECTRICAL SCHEDULES
E4.1-E4.2	ADD/ALT 2 ELECTRICAL DETAILS
E5.1	ADD/ALT 2 ELECTRICAL RISERS
E6.1-E6.4	ADD/ALT 2 ELECTRICAL SPECIFICATIONS
S1.0	ADD/ALT 2 MONUMENT AND STONE WALL FOOTING DETAILS

THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (*), HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED
PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 8/5/2013 DATE

ADDENDUM NO. 04

PAPE-DAWSON ENGINEERS
555 EAST RAMSEY | SAN ANTONIO, TEXAS 78216 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MEDICAL CENTER PHASE IX
BABCOCK RD & HAMILTON WOLFE RD
INDEX OF SHEETS

SHEET 1 OF 1

100 % SUBMITTAL	PROJECT NO. 5241-38		DATE: 8/5/2013
DRWN. BY: JS	DSGN. BY: JS	CHKD. BY: DT	SHEET NO. 2

ITEM NO.	DESCRIPTION	UNIT	QTY BASE BID	QTY ADD ALT 1	QTY ADD ALT 2
	TRAFFIC CONTROL PLAN				
TXDOT					
* 340-2011	D-GR HMA(METH) TY-B PG64-22	TON	1212	0	0
502-2001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	13	4	4
502-2055	OFF-DUTY POLICE OFFICERS	HR	560	0	0
508-2001	CONSTRUCTING DETOURS	STA	55	0	0
512-2008	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	2900	0	0
512-2009	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	560	0	0
512-2026	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	4000	0	0
512-2027	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	320	0	0
512-2044	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	2900	0	0
512-2045	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	560	0	0
662-2001	WK ZN PAV MRK NON-REMOV (W) 4" (BRK)	LF	330	0	0
662-2004	WK ZN PAV MRK NON-REMOV (W) 4" (SLD)	LF	1074	0	0
662-2012	WK ZN PAV MRK NON-REMOV (W) 8" (SLD)	LF	792	0	0
662-2016	WK ZN PAV MRK NON-REMOV (W) 24" (SLD)	LF	121	0	0
662-2017	WK ZN PAV MRK NON-REMOV (W) (ARROW)	EA	5	0	0
662-2027	WK ZN PAV MRK NON-REMOV (W) (WORD)	EA	1	0	0
662-2050	WK ZN PAV MRK REMOV (REFL) TY I-A	EA	47	0	0
662-2052	WK ZN PAV MRK REMOV (REFL) TY I-C	EA	66	0	0
662-2054	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	41	0	0
662-2060	WK ZN PAV MRK REMOV (TRAF BTN) TY W	EA	218	0	0
662-2062	WK ZN PAV MRK REMOV (TRAF BTN) TY Y	EA	278	0	0
662-2064	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	610	0	0
662-2067	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	12379	0	0
662-2075	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	1132	0	0
662-2079	WK ZN PAV MRK REMOV (W) 24" (SLD)	LF	103	0	0
662-2084	WK ZN PAV MRK REMOV (W) (ARROW)	EA	11	0	0
662-2094	WK ZN PAV MRK REMOV (W) (WORD)	EA	5	0	0
662-2097	WK ZN PAV MRK REMOV (Y) 4" (BRK)	LF	270	0	0
662-2099	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	17580	0	0
662-2113	WK ZN PAV MRK SHT TERM (TAB) TY W	EA	700	0	0
662-2214	WK ZN PAV MRK SHT TERM (TAB) TY Y	EA	300	0	0
	ROADWAY				
CoSA					
103.1	REMOVE CONCRETE CURB	LF	4410	160	130
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	25495	126	378
104.1	STREET EXCAVATION	CY	14530	0	0
107.1	EMBANKMENT (FINAL)	CY	170	0	0
203.1	TACK COAT	GAL	3183	382	283
205.2	HOT MIX ASPHALTIC PAVEMENT TY B 12 IN. PAV THICKNESS	SY	16830	0	0
205.3	HOT MIX ASPHALTIC PAVEMENT TY C 2 IN. PAV THICKNESS	SY	17001	3817	2822
205.3	HOT MIX ASPHALTIC PAVEMENT TY C 4 IN. PAV THICKNESS	SY	14827	0	0
208.1	SALVAGING, HAULING & STOCKPILING RECLAIM ASPH PAV 2 IN.	SY	17001	3817	2822
209.2	BUS STOP CONCRETE PAD	SY	670	0	0
302.1	METAL FOR STRUCTURES	LBS	2700	0	0
500.1	CONCRETE CURB	LF	8847	110	0
500.4	CONCRETE CURB AND GUTTER	LF	0	50	130
502.1	CONCRETE SIDEWALK	SY	0	14	42
502.201	CONCRETE SIDEWALK FOR TRENCH GRATE	SY	10	0	0
503.2	PORTLAND CEMENT CONCRETE DRIVEWAY COMMERCIAL	SY	1165	0	0
506.1	CONCRETE RETAINING WALLS COMBINATION TYPE	CY	10	0	0
511.6	REPLACING WITH FLOWABLE FILL AND PAVEMENT 6 INCHES COMPACTED DEPTH	SY	0	238	136
522.1	SIDEWALK PIPE RAILING	LF	50	0	0
TXDOT					
104-2001	REMOVING CONC (PAV)	SY	190	0	0
104-2009	REMOVING CONC (RIPRAP)	SY	476	1366	2578
104-2040	REMOVING CONC (PAVERS)	SY	265	0	0
423-2006	RETAINING WALL (CONC BLOCK)	SF	315	0	0
423-2007	RETAINING WALL (SPREAD FOOTING)	SF	1006	0	0
496-2040	REMOVE STR (RET WALL)	LF	135	0	0
496-2289	REMOVE STR (DRAINAGE FLUME)	EA	1	0	0
529-2026	CONC CURB (ARMOR CURB SLOT)	LF	10	0	0
772-2001	POST AND CABLE FENCE (REMOVAL)	LF	270	0	0
772-2003	POST AND CABLE FENCE (NEW INSTALLATION)	LF	272	0	0
SAWS					
808	REINFORCED CONCRETE VAULT	EA	1	0	0
824	RELAY 8" FIRE LINE	EA	1	0	0
836	PIPE FITTINGS, ALL SIZES AND TYPES	TON	0.21	0.00	0.00
840	8" WATER TIE-INS	EA	1	0	0
	STORM WATER POLLUTION PREVENTION PLAN				
CoSA					
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 4)	LF	50	0	0
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	2130	0	0
540.10	CURB INLET GRAVEL FILTERS	LF	270	0	0
554.10	EROSION CONTROL MATTING	SY	525	0	0
TXDOT					
1122-2046	BIOGRO EROSN CONT LOGS (4" DIA) INSTALL	LF	450	0	0
1122-2056	BIODEGRADBLE EROSION CONTROL LOGS REMOV	LF	450	0	0

ITEM NO.	DESCRIPTION	UNIT	QTY BASE BID	QTY ADD ALT 1	QTY ADD ALT 2
	LANDSCAPING				
CoSA					
307.1	CONCRETE STRUCTURE (MISCELLANEOUS)	CY	0	0	0.7
308.2	DRILLED SHAFTS (60")	LF	0	0	20
500.101	CONCRETE RETAINING CURBS AT PAVERS AND RAMPS, COMPLETE PER DRAWINGS	LF	135	0	0
500.102	6" FLUSH CONCRETE BAND, COMPLETE PER DRAWINGS	LF	0	1371	1097
502.10	CONCRETE SIDEWALKS (4" THICK), COMPLETE PER DRAWINGS	SY	2679	0	0
502.101	5" CONCRETE SIDEWALK, COMPLETE PER DRAWINGS	SY	191	0	0
502.102	5" CONCRETE SIDEWALK, SCORED, COMPLETE PER DRAWINGS	SY	76	0	0
502.103	5" CONCRETE SLAB AT PAVERS, COMPLETE PER DRAWINGS	SY	1220	1501	1158
502.104	BUS STOP CONCRETE PADS (6" THICK), COMPLETE PER DRAWINGS	SY	28	0	0
515.2	MULCH AT EXISTING TREES (6" DEPTH), COMPLETE PER DRAWINGS	CY	230	0	0
618.1	CONDUIT (2 INCH/PVC SCHEDULE 40)	LF	0	1074	547
624.1	GROUND BOXES TYPE A (122311)	EA	0	10	8
2122.01	TREE PROTECTION	LF	1554	0	0
2122.02	TREE AND STUMP REMOVAL	EA	26	0	0
2122.03	TREE MITIGATION	IN	160	0	0
2780.01	CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	10980	13515	9170
2780.02	DETECTABLE WARNING CONCRETE PAVERS ON 1" SAND BED, COMPLETE PER DRAWINGS	SF	200	0	0
2780.03	RE-INSTALL SALVAGED PAVERS	SF	859	0	0
2810.01	IRRIGATION	SF	44178	0	0
2810.02	IRRIGATION AT MEDIANS	SF	0	58443	34829
2900.01	HYDROSEED SOIL MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	443	0	0
2900.02	SOD PLANTING MIX (4" DEPTH), COMPLETE PER DRAWINGS	CY	102	395	144
2900.03	PLANTING SOIL MIX (12" DEPTH), COMPLETE PER DRAWINGS	CY	0	515	367
2900.04	MULCH AT PLANTING AREAS (4" DEPTH), COMPLETE PER DRAWINGS	CY	0	172	123
2900.10	GEOTEXTILE FABRIC	SF	0	12812	8831
2900.11	RIVER ROCK	CY	0	158	89
2900.12	METAL EDGER	LF	0	1327	699
2900.21	LIVE OAK, 3"	EA	6	0	0
2900.22	CEDAR ELM, 3"	EA	4	0	0
2900.31	CRAPE MYRTLE TREE, #30 CONT., COMPLETE PER DRAWINGS	EA	0	249	144
2900.32	MOUNTAIN LAUREL, 8'-10' TALL, COMPLETE PER DRAWINGS	EA	0	87	47
2900.41	KNOCK OUT ROSE, 'PINK', #3 CONT., COMPLETE PER DRAWINGS	EA	0	48	54
2900.42	LINDHEIMER'S MUHLY GRASS, #3 CONT., COMPLETE PER DRAWINGS	EA	0	48	54
2900.43	TEXAS LANTANA, #3 CONT., COMPLETE PER DRAWINGS	EA	0	675	702
2900.44	RED YUCCA, #3 CONT., COMPLETE PER DRAWINGS	EA	0	1034	593
2900.45	MEXICAN FEATHER GRASS, #1 CONT., COMPLETE PER DRAWINGS	EA	0	0	90
2900.51	BERMUDA GRASS HYDROSEED, COMPLETE PER DRAWINGS	SF	35458	0	0
2900.52	TIF '419' BERMUDA, SOLID SOD, COMPLETE PER DRAWINGS	SY	0	3533	1831
4410.10	RETAINING WALL VENEER	FSF	894	0	0
4410.20	RETAINING WALL CAP	LF	144	0	0
4411.00	CONCRETE UNIT MASONRY WALL W/ STONE VENEER, COMPLETE PER DRAWINGS	LF	0	0	60
5000.00	ENTRY MONUMENT PYLON SIGN, COMPLETE PER DRAWINGS	EA	0	0	2
5370.01	GUARDRAIL	LF	127	0	0
16000.00	SITE ELECTRICAL (COMPLETE SYS INCL MTR, MTR CNDT, CNTRLS, & PEDESTAL)	ALLLOW	0	0	1
16000.10	LIGHTS AT ENTRY MONUMENT	EA	0	0	4
TXDOT					
168-2001	VEGETATIVE WATERING	MG	283	0	0
SAWS - IRRIGATION FOR ADD ALT # 1 & 2					
814	6" DI PIPE	LF	0	0	64
824	RELAY 1 1/2" SHORT SERVICE	EA	0	16	9
828	6" GATE VALVE AND BOX	EA	0	0	1
828	20" BUTTERFLY VALVE AND BOX	EA	0	0	2
833	1" IRRIGATION METER AND METER BOX (COMPLETE)	EA	0	5	4
833	SAWS IMPACT FEES FOR MEDIAN IRRIGATION	EA	0	5	4
836	DUCTILE IRON FITTINGS	TON	0.00	0.00	0.47
844	2" BLOWOFF, PERMANENT	EA	0	0	1

* FOR CONTRACTORS INFORMATION ONLY

ADDENDUM NO. 04

PAPE-DAWSON ENGINEERS

555 EAST RAMSEY | SAN ANTONIO, TEXAS 78216 | PHONE: 210.375.9000 FAX: 210.375.9010

TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MEDICAL CENTER PHASE IX
BABCOCK RD & HAMILTON WOLFE RD
ESTIMATE AND QUANTITY SHEET

SHEET 1 OF 2

100 % SUBMITTAL	PROJECT NO.: 5241-38		DATE: 8/5/2013
DRWN. BY: BD	DSGN. BY: BD	CHKD. BY: DT	SHEET NO.: 9

ITEM NO.	DESCRIPTION	UNIT	QTY BASE BID	QTY ADD ALT 1	QTY ADD ALT 2
	TRAFFIC SIGNAL				
CoSA					
308.1	DRILLED SHAFTS (36")	LF	120	0	0
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS [ISOLATED]	EA	1	0	0
680.2	INSTALLATION OF HAWK SIGNAL	ALLOW	1	0	0
681.1	TEMPORARY TRAFFIC SIGNALS	EA	1	0	0
TXDOT					
6007-2001	REMOVING TRAFFIC SIGNALS	EA	1	0	0
	SIGNING AND PAVEMENT MARKINGS				
CoSA					
531.3	RL-1 STOP* (30")	EA	1	0	0
531.4	RL-2 YIELD* (36")	EA	3	0	0
531.6	R2-1 SPEED LIMIT* (24" X 30")	EA	3	0	0
531.10	R3-4 NO U TURNS* (24" X 24")	EA	6	0	0
531.11	R3-5 LEFT OR RIGHT ONLY* (30" X 36")	EA	4	0	0
531.13	R3-7 LEFT LANE MUST TURN LEFT OR RIGHT LANE MUST TURN RIGHT* (30" X 30")	EA	3	0	0
531.16	R3-9 TWO WAY LEFT TURN ONLY* (30" X 36")	EA	5	0	0
531.17	R4-7 KEEP RIGHT* (24" X 30")	EA	7	0	0
531.19	R6-1 ONE WAY (36" X 12")(HIGH DENSITY)	EA	1	0	0
531.57	9 INCH STREET NAME, BLOCK NUMBERS* (VARIES X 9")	EA	2	0	0
531.200	R3-9cP BEGIN (30"X12" PLAQUE)(HIGH DENSITY)	EA	2	0	0
531.201	R3-9cP END (30"X12" PLAQUE)(HIGH DENSITY)	EA	3	0	0
531.202	W4-1 THRU TRAFFIC MERGE LEFT (36"X36")(HIGH DENSITY)	EA	1	0	0
531.203	W4-2 LANE ENDS (36"X36")(HIGH DENSITY)	EA	1	0	0
531.204	D3-2 ADVANCE STREET NAME (36"X30")(HIGH DENSITY)	EA	1	0	0
535.1	4 INCH WIDE YELLOW LINE	LF	4248	0	0
535.2	4 INCH WIDE WHITE LINE	LF	1936	100	80
535.4	8 INCH WIDE WHITE LINE	LF	2598	1045	850
535.5	12 INCH WIDE WHITE LINE	LF	59	0	0
535.7	24 INCH WIDE WHITE LINE	LF	871	0	0
535.8	RIGHT WHITE ARROW	EA	7	0	0
535.9	LEFT WHITE ARROW	EA	24	26	16
535.12	WORD "ONLY"	EA	6	0	4
535.18	SOLID WHITE YIELD LINES	EA	36	0	0
535.200	YELLOW MEDIAN NOSE	EA	1	0	0
535.201	24 INCH WIDE YELLOW LINE	LF	21	0	0
537.6	PAVEMENT MARKER (TYPE I C)	EA	320	58	47
537.8	PAVEMENT MARKER (TYPE II A A)	EA	120	0	0
644-2060	REMOVE SM RD SN SUP & AM	EA	9	0	0
644-2080	RELOCATE SM RD SN SP & AM (GALV SQ) COSA	EA	1	0	0

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CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MEDICAL CENTER PHASE IX

BABCOCK RD & HAMILTON WOLFE RD

ESTIMATE AND QUANTITY SHEET

SHEET 2 OF 2

100 % SUBMITTAL	PROJECT NO. 5241-38		DATE: 8/5/2013
DRWN. BY: BD	DSGN. BY: BD	CHKD. BY: DT	SHEET NO.: 10

Plotted on: 8/5/2013 10:29:07 AM

TCP PLAN ADDITIONAL NOTES

1. GENERAL.

   A. IF SO PERMITTED BY THE ENGINEER, WORK ACTIVITIES ON SUNDAY SHALL BE APPROVED IN ADVANCE. LANE CLOSURES WILL BE ALLOWED IN ONE DIRECTION ONLY. NOTIFY THE ENGINEER OF IMPENDING/UPCOMING LANE CLOSURES AT LEAST (7) DAYS IN ADVANCE OF LANE CLOSURES. THE LANE CLOSURES SHALL BE IN COMPLIANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).

   B. LANE CLOSURES OTHER THAN THOSE SHOWN ON THE PHASING PLAN WILL NOT BE ALLOWED DURING NON-WORK HOURS. NO EQUIPMENT SHALL BE LEFT IN A POSITION THAT WILL ENDANGER THE TRAVELING PUBLIC.

   C. MAINTAIN ADEQUATE DRAINAGE THROUGHOUT ALL PHASES OF CONSTRUCTION, WITH THE STORM WATER POLLUTION PREVENTION PLAN IN PLACE.

   D. ACCESS TO PROPERTIES MUST BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE SHOWN.

   E. A MINIMUM 3:1 (H:V) TEMPORARY SAFETY SLOPE OF STABLE COMPACTED MATERIAL WILL BE REQUIRED ADJACENT TO THE EDGE OF PAVEMENT DURING NON WORKING HOURS.

   F. PER COSA SPECIFICATION 533, THE REMOVAL OF CONFLICTING PAVEMENT MARKINGS/MARKERS IS SUBSIDIARY TO THE VARIOUS PAVEMENT MARKING/MARKER PAY ITEMS. NO SEPARATE PAY FOR PAVEMENT MARKING/MARKER REMOVAL IS INCLUDED.

   G. ALL SAWS MANHOLES AND WATER VALVES ARE TO REMAIN ACCESSIBLE AT ALL TIMES. VALVES MAY REQUIRE ADDITIONAL ADJUSTMENTS IN AREAS OF TEMPORARY PAVEMENT (NO SEPARATE PAY ITEM.)

2. POLICE OFFICER NOTES

   A. REQUIRED POLICE OFFICER TIMES ARE: MONDAY THROUGH FRIDAY 6:00 A.M. TO 6:00 P.M. WHEN LANE CLOSURES OTHER THAN DETAILED IN THE PLANS ARE BEING USED. POLICE OFFICERS WILL BE REQUIRED AT THE ENGINEERS DISCRETION.

   B. WHEN THE OFFICER IS PRESENT HE IS REQUIRED TO BE DIRECTING TRAFFIC AT ALL TIMES. THE TRAFFIC SIGNAL WILL BE PUT ON FLASHING RED WHEN OFFICER IS PRESENT.

   C. TWO POLICE OFFICERS WILL BE REQUIRED WHEN IN THE INTERSECTION OF BABCOCK AND HAMILTON WOLFE.

SPECIAL NOTES AND PROVISIONS:

1. DO NOT CONSTRUCT FINAL HOTMIX LIFT UNTIL INSTRUCTED TO DO SO BY THE ENGINEER.
2. ALL CONFLICTING PAVEMENT MARKINGS MUST BE REMOVED.
3. CONTRACTOR TO USE TRAFFIC BUTTONS ON ALL CONCRETE PAVEMENT FOR TRAFFIC CONTROL MARKINGS.

PHASE I

1. INSTALL TEMPORARY EROSION CONTROL MEASURES.
2. BEGIN UTILITY (SAWS WATER, SAWS SEWER, AND CPS GAS) AND TREE RELOCATION WORK.
3. UTILITY WORK AND ROAD WORK (PHASE I) MAY BE CONCURRENT, HOWEVER ROADWAY WORK MAY NOT BEGIN UNTIL THE TEMPORARY TRAFFIC SIGNAL AND CPS GAS LINE WEST OF BABCOCK RD HAVE BEEN INSTALLED. ALL SAWS AND CPS UTILITY WORK MUST BE COMPLETE PRIOR TO BEGINNING PHASE II OF ROADWAY WORK.

HAMILTON WOLFE & BABCOCK

1. CONSTRUCT TEMPORARY ASPHALT WIDENING AS DETAILED IN PLANS ON HAMILTON WOLFE USING TCP 2-1 AND 2-2. ROADWAY SIDE SLOPES ARE NOT TO EXCEED 3:1.
2. INSTALL TEMPORARY TRAFFIC SIGNAL AND ALIGN SIGNAL HEADS WITH PROPOSED SECTION FROM PHASE I OF THE TCP PER TMUTCD.
3. STRIPE ROADWAY AS SHOWN IN PHASE I PLANS.
4. SHIFT TRAFFIC TO THE PROPOSED TCP PHASE I SECTION.
5. REMOVE EXISTING TRAFFIC SIGNAL.
6. BEGIN PHASE I CONSTRUCTION AS SHOWN IN THE CONSTRUCTION PLANS.
7. BUILD PAVEMENT SECTION, BUT DO NOT CONSTRUCT PORTION OF DIRECTIONAL ISLAND THAT IS TO BE BUILT IN PHASE III STEP 1.
8. STRIPE NEW CONSTRUCTION AS SHOWN IN PHASE II STEP 1 OF THE PLANS.
9. PROCEED TO PHASE II STEP 1 OF THE TCP. PHASE I WORK MAY CONTINUE ON BABCOCK WHILE BEGINNING PHASE II STEP 1 ON HAMILTON WOLFE.

PHASE II STEP 1

HAMILTON WOLFE

1. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING PAVEMENT MARKINGS AND CHANNELIZATION DEVICES FOR WESTBOUND TRAFFIC ONLY. ADJUST TRAFFIC SIGNAL HEADS ON THE TEMPORARY TRAFFIC SIGNAL PER TMUTCD. COVER HEADS NOT IN USE.
2. SHIFT HAMILTON WOLFE WESTBOUND TRAFFIC TO THE PROPOSED TCP PHASE II STEP 1 SECTION.
3. CONSTRUCT TEMPORARY ASPHALT PAVEMENT CROSS OVER FOR EASTBOUND TRAFFIC. TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS TO REMAIN FOR EASTBOUND TRAFFIC FROM PHASE I WHILE THIS PORTION IS BEING CONSTRUCTED.
4. INSTALL ALL REMAINING TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING PAVEMENT MARKINGS AND CHANNELIZATION DEVICES.
5. SHIFT EASTBOUND TRAFFIC TO THE PROPOSED TCP PHASE II STEP 1 SECTION.
6. CONSTRUCT PHASE II STEP 1 AS SHOWN IN THE PLANS.
7. STRIPE NEW CONSTRUCTION ON HAMILTON WOLFE IN ACCORDANCE WITH TCP PHASE II STEP 2.
8. COMPLETE ALL WORK IN PHASE I AND PHASE II STEP 1 BEFORE CONTINUING TO PHASE II STEP 2.

PHASE II STEP 2

HAMILTON WOLFE & BABCOCK

1. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING PAVEMENT MARKINGS AND CHANNELIZATION DEVICES. ADJUST TRAFFIC SIGNAL HEADS ON THE TEMPORARY TRAFFIC SIGNAL PER TMUTCD. COVER HEADS NOT IN USE.
2. SHIFT HAMILTON WOLFE TRAFFIC TO THE PROPOSED TCP PHASE II STEP 2 SECTION.
3. CONSTRUCT PHASE II STEP 2 AS SHOWN IN THE PLANS.
4. STRIPE NEW CONSTRUCTION AS SHOWN IN PHASE III STEP 1 OF THE PLANS.
5. COMPLETE ALL WORK BEFORE CONTINUING TO PHASE III STEP 1.

PHASE III STEP 1

HAMILTON WOLFE & BABCOCK

1. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING PAVEMENT MARKINGS AND CHANNELIZATION DEVICES. ADJUST TRAFFIC SIGNAL HEADS ON THE TEMPORARY TRAFFIC SIGNAL PER TMUTCD. COVER HEADS NOT IN USE.
2. SHIFT TRAFFIC TO THE PROPOSED TCP PHASE III STEP 1 SECTION.
3. BEGIN PHASE III STEP 1 WORK AS SHOWN IN THE PLANS.
4. STRIPE NEW CONSTRUCTION AS SHOWN IN PHASE III STEP 2 OF THE PLANS.
5. FINAL STRIPING TO BE DELINEATED WITH TEMPORARY TABS.
6. COMPLETE ALL WORK BEFORE CONTINUING TO PHASE III STEP 2.

PHASE III STEP 2

HAMILTON WOLFE

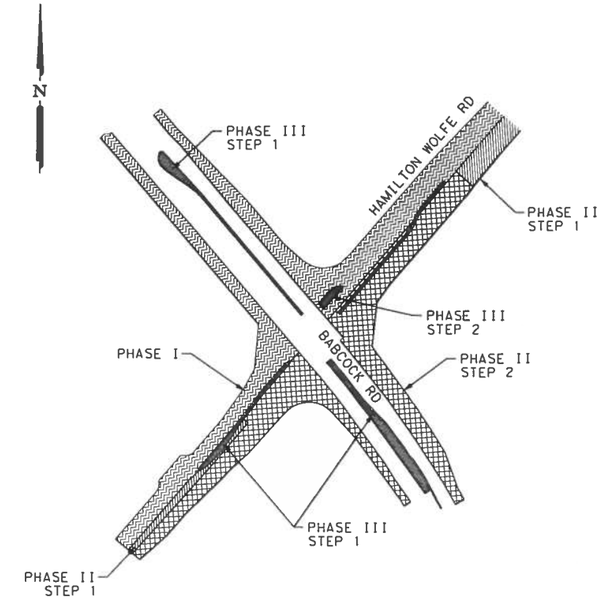
1. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING PAVEMENT MARKINGS AND CHANNELIZATION DEVICES. ADJUST TRAFFIC SIGNAL HEADS ON THE TEMPORARY TRAFFIC SIGNAL PER TMUTCD. COVER HEADS NOT IN USE.
2. SHIFT HAMILTON WOLFE TRAFFIC TO THE PROPOSED TCP PHASE III STEP 2 SECTION.
3. CONSTRUCT PHASE III STEP 2 WORK AS SHOWN IN THE PLANS. WORK MUST BE COMPLETED WITH IN TWO (2) WEEKS
4. UPON COMPLETION OF PHASE III STEP 2, REMOVE TEMPORARY SIGNALS AND SHIFT TRAFFIC TO THE ULTIMATE SECTIONS.
5. PLACE THE FINAL HOTMIX LIFT USING TEMPORARY LANE CLOSURES TCP1-4. MARKING TABS ARE TO BE USED AS TRAFFIC LANE DELINEATORS UNTIL FINAL STRIPING HAS BEEN COMPLETED.
6. STRIPE THE ROADWAY TO ITS ULTIMATE CONFIGURATION.

ADDITIVE ALTERNATIVE #1 (FLOYD CURL MEDIAN WORK)

1. CONTRACTOR MUST REQUEST NOTICE TO PROCEED ON THIS WORK FROM THE LANDSCAPE ARCHITECT.
2. ONCE CONTRACTOR HAS BEEN GIVEN NOTICE TO PROCEED THIS WORK MUST BE COMPLETED IN 4 MONTHS.
3. WORK CAN BE CONCURRENT WITH ADDTIVE ALTERNATIVE #2 AND MUST BE COMPLETE WITHIN OVERALL CONTRACT DAYS FOR THE PROJECT. THIRTY (30) ADDITIONAL CONTRACT DAYS ARE GIVEN FOR ADDITIVE ALTERNATIVE #1.

ADDITIVE ALTERNATIVE #2 (WURZBACH ROAD MEDIAN WORK)

1. CONTRACTOR MUST REQUEST NOTICE TO PROCEED ON THIS WORK FROM THE LANDSCAPE ARCHITECT.
2. ONCE CONTRACTOR HAS BEEN GIVEN NOTICE TO PROCEED THIS WORK MUST BE COMPLETED IN 4 MONTHS.
3. WORK CAN BE CONCURRENT WITH ADDTIVE ALTERNATIVE #1 AND MUST BE COMPLETE WITHIN OVERALL CONTRACT DAYS FOR THE PROJECT. THIRTY (30) ADDITIONAL CONTRACT DAYS ARE GIVEN FOR ADDITIVE ALTERNATIVE #2.



CONTRACTOR SHALL USE TRAFFIC BUTTONS ON ALL CONCRETE PAVEMENT FOR TRAFFIC CONTROL. DO NOT USE PAINT MARKINGS ON CONCRETE PAVEMENT FOR TRAFFIC CONTROL. PAID UNDER WORK ZONE PAVEMENT MARKING ITEMS.

DESIGN

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 8/5/2013 DATE

REVIEW & APPROVAL

STATE OF TEXAS — JAMES A. LUTZ — 84722 — LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 8/5/2013 DATE

ADDENDUM NO. 04

PAPE-DAWSON ENGINEERS
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TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MEDICAL CENTER PHASE IX
BABCOCK RD & HAMILTON WOLFE RD
TRAFFIC CONTROL PLAN
NARRATIVE AND SPECIAL NOTES

SHEET 2 OF 2

100 % SUBMITTAL	PROJECT NO.: 5241-38		DATE: 8/5/2013
DRWN. BY: BD	DSGN. BY: BD	CHKD. BY: DT	SHEET NO 22

Design Filename: p:\52\41\38\design\civil\tcp\5241138tcpNotes02_ADD04.dgn

ITEM	DESCRIPTION	UNIT	QTY
*****615.2	MODEL 2070 CONTROLLER WITH NEXT PHASE SOFTWARE	EA	1
****615.1	TRAFFIC SIGNAL CONTROLLER ASSEMBLY (TYPE 332 CABINET)	EA	1
*686.1	SPL STMC TRAF SIGNAL POLE WITH ARM	EA	4
308.1	SPL FDN FOR STMC TRAF SIG POLE	EA	4
531.87	PEDESTRIAN SIGN R10-4BL (5" X 7")	EA	4
531.88	PEDESTRIAN SIGN R10-4BR (5" X 7")	EA	4
531.89	METRO STREET NAME SIGNS (SPECIAL SEE LANDSCAPE PLANS)	EA	4
600.1	TRAFFIC SIGNAL GENERAL CONDITIONS N/A	EA	1
618.1	TRENCH CONDUIT (PVC SCHEDULE 40) (2")	LF	205
618.2	TRENCH CONDUIT (PVC SCHEDULE 40) (3")	LF	120
618.4	BORE CONDUIT (PVC SCHEDULE 40) (2")	LF	360
618.5	BORE CONDUIT (PVC SCHEDULE 40) (3")	LF	710
620.2	ELECTRICAL CONDUCTORS (NO. 8) (BARE)	LF	1745
620.3	ELECTRICAL CONDUCTORS (NO. 6) (INSULATED)	LF	44
621.1	TRAY CABLE (4 CONDR) (12 AWG)	LF	1749
624.1	GROUND BOXES TY A (122311)	EA	4
624.4	GROUND BOXES TY D (162922)	EA	4
624.5	GROUND BOXES TY A W APRON (122311)	EA	1
628.1	ELECTRICAL SERVICES (TYPE D) (120/240V)	EA	1
633.1	BATTERY BACKUP SYSTEM	EA	1
655.1	TYPE 332 CONTROLLER FOUNDATION WITH BBS BOX	EA	1
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS [ISOLATED]	EA	1
682.1	VEHICLE SIGNAL SECTION WITH BACK PLATE (3 SEC) (BLACK HOUSING)	EA	15
683.1	LED COUNTDOWN PEDESTRIAN SIGNAL MODULE	EA	8
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (14 AWG) (9 CONDUCTOR)	LF	3911
687.1	PED POLE ASSEMBLY (PUSH BUTTON POST, INCL. FND)	EA	5
687.2	PED POLE ASSEMBLY (13 FT TALL, GALVANIZED STEEL))	EA	1
688.2	PED DETECTORS (2 INCH PUSH BUTTON)	EA	8
688.3	AUDIBLE PEDESTRIAN SIGNAL UNITS [2" PUSHBUTTON AND SIGN]	EA	8
695.2	EMERGENCY PREEMPTION PHASE SELECTOR	EA	2
695.3	EMERGENCY PREEMPTION DETECTOR	EA	4
695.4	EMERGENCY PREEMPTION DETECTOR CABLE	LF	1064
696.1	RADAR ADVANCE DETECTION DEVICE (RADD)	EA	4
696.2	RADAR PRESENCE DETECTION DEVICE (RPDD)	EA	4
696.3	RADAR ADVANCE DETECTION DEVICE (RADD) COMMUNICATION AND POWER CABLE(S)	LF	689
696.4	RADAR PRESENCE DETECTION DEVICE (RPDD) COMMUNICATION AND POWER CABLE(S)	LF	746
6007	REMOVE TRAFFIC SIGNAL	EA	1
680.ITS01	802.11n, b/g/n Outdoor Mesh AP, FCC Cfg (Part#: AIR-CAP1552E-A-K9)	EA	1
680.ITS02	2400-2483.5 MHz, 4.0 dBi Omni Ant, with N Connect (Part #: AIR-ANT2547V-N)	EA	3
680.ITS03	Aironet 1550 Series AC Power Cord, 40 ft, N. Amer Plug (Part #: AIR-CORD-R3P-40NA	EA	1
680.ITS04	1550 Series Pole Mount Kit (Part #: AIR-ACCPMK1550)	EA	1
680.ITS05	Airnet 1550 Series AP SMARTnet 8x5xNBD Service (Part #: CON-SNT-CAP-1552Ex)	EA	1
680.ITS06	27331A 01010000 BELDEN (Power Cable) (Part #: VNTC 16-3-R10K-BED)	LF	300
680.ITS07	IND ETH 5E4P24 HLD (Ethernet Cable) (Part #: 7919A 01001000)	LF	300
680.ITS08	2955 12 TX W/SM UPLINKS (Part #:WS-C2955S-12)	EA	1
680.ITS09	19 IN RACK MOUNT KIT (Part #: CISCO STK-RACKMNT-2955)	EA	1
680.ITS10	CISCO, AC TO 24 V DC DIN RAIL PW (Part #: PWR-2955-AC)	EA	1
680.ITS11	SMARTNET 8X5XNBD 2955 12 TX w/Single Mode Uplinks (Part #:CON-SNTWSC2955S)	EA	1
680.ITS12	Su-a-5.3-6-bd-vl (Part #: ALV-853197)	EA	1
680.ITS13	Astro Bracket (Part #: AB-3004-29)	EA	1
680.ITS14	Aluminum Tube (Part #: AB-2003-23)	EA	1
680.ITS15	IND ETH 5E4P24 HLD (Ethernet Cable) (Part #: 7919A 01001000)	LF	300
682.SUB01	ASTRO-BRAC SIGNAL HEAD ASSEM (MAST ARM)	EA	16

* SIGNAL POLES & MAST ARMS ASSEMBLIES ARE TO BE C.O.S.A. SPECIAL STMC STYLE MAST ARM ASSEMBLY W/2 LUMINARES. GENERAL DETAILS ARE PROVIDED IN THE PLAN SET. DETAILED SHOP DRAWINGS SEALED BY A TEXAS LICENSED ENGINEER SHALL BE PROVIDED BY THE CONTRACTOR FOR APPROVAL BY THE CITY OF SAN ANTONIO PRIOR TO FABRICATION.

**** CONTRACTOR TO FURNISH AND DELIVER CONTROLLER AND CABINET ASSEMBLY TO COSA SHOP FOR PROGRAMMING AND TESTING FOUR WEEKS IN ADVANCE PRIOR TO CONTRACTOR INSTALLING EQUIPMENT IN THE FIELD.

***** 2070 CONTROLLER AND NEXT PHASE SOFTWARE ARE ITEMIZED IN 615.21. THE CONTRACTOR SHALL SUPPLY A CONFLICT MONITOR THAT CONFIRMS TO THE TEES SPECIFICATION FOR MODEL 2070L CONTROLLER. THE CONFLICT MONITOR SHALL BE EDI, MODEL 2018 KCLIP, OR APPROVED EQUAL.

ALL ITEMS EXCLUDING 308 ARE SUBSIDIARY TO ITEM 680 INSTALLATION OF HIGHWAY TRAFFIC SIGNAL SYSTEM AND ARE FOR CONTRACTOR'S INFORMATION ONLY.

				C	D	E	F	G	H	J	K	L	M
	POLE												
	POLE TYPE			STMC	STMC	STMC	STMC	STMC	STMC	STMC	STMC	STMC	STMC
	MAST ARM LENGTH (FEET)			36	N/A	50	N/A	N/A	36	N/A	50	N/A	N/A
	LUMINAIRE			YES	NO	YES	NO	YES	YES	NO	YES	NO	NO
	FOUNDATION TYPE			SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL
	FOUNDATION DEPTH (FEET)			SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL
CABLE	CIRCUIT			NUMBER OF CONDUCTORS									
#8 BARE	BARE BOND GROUND			1	1	1	1	1	1	1	1	1	1
9 COND. #14 AWG SOLID TYPE "A"	SIGNALS	Ø	1+6			2				1			
		Ø	2+5								2		
		Ø	4+7						2				
		Ø	3+8	2									
9 COND. #14 AWG SOLID TYPE "A"	PED SIGNALS	POLE	C	2									
		POLE	E			2							
		POLE	H						2				
		POLE	K								2		
9 COND. #14 AWG SOLID TYPE "A"	AUDIBLE PED SIGNAL UNIT AND PUSHBUTTON	POLE	C	1									
		POLE	D		1								
		POLE	F				1						
		POLE	G					1					
		POLE	H						1				
		POLE	J							1			
		POLE	L									1	
		POLE	M										1
EMERG PREEMPT	M138 OPTICOM CABLE	Ø	1+6			1							
		Ø	2+5								1		
		Ø	4+7						1				
		Ø	3+8	1									
POWER & DATA CABLE	RADAR PRESENCE DETECTION DEVICE (RPDD)	Ø	1+6	1									
		Ø	2+5						1				
		Ø	4+7	1									
		Ø	8+3						1				
POWER & DATA CABLE	RADAR ADVANCE DETECTION DEVICE (RADD)	Ø	2								1		
		Ø	4						1				
		Ø	6			1							
		Ø	8	1									
TRAY CABLE 4 COND, #12 AWG	DOUBLE LUMINAIRE	POLE	C	2									
		POLE	E			2							
		POLE	H						2				
		POLE	K								2		
POWER CABLE	WIRELESS ACCESS POINT CABLE	POLE	K								1		

DESIGN

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 8/5/2013 DATE

SEE LANDSCAPE PLANS FOR MAST ARM AND SIGNAL POLE DESIGN DETAILS

ADDENDUM NO. 04

SCALE: NTS

PAPE-DAWSON ENGINEERS

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CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

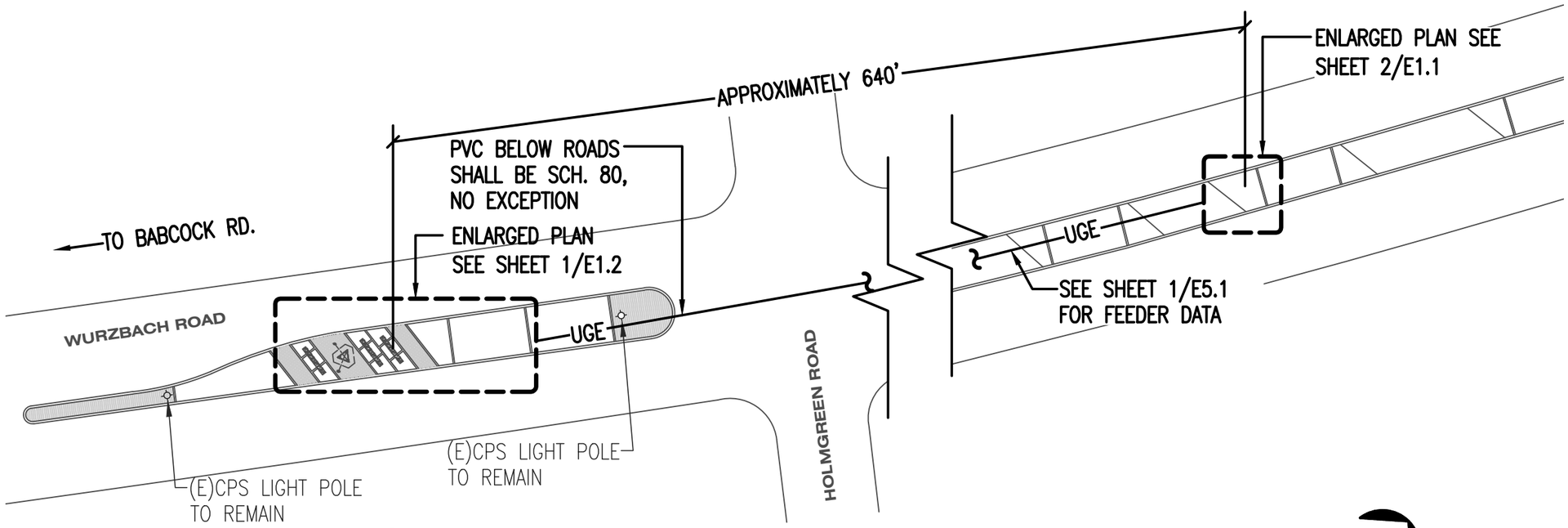
MEDICAL CENTER PHASE IX
BABCOCK RD & HAMILTON WOLFE RD

TRAFFIC SIGNAL PLAN

SHEET 3 OF 4

100 % SUBMITTAL	PROJECT NO. 5241-38		DATE: 8/5/2013
DRWN. BY: HM	DSGN. BY: HM	CHKD. BY: DT	SHEET NO. 104

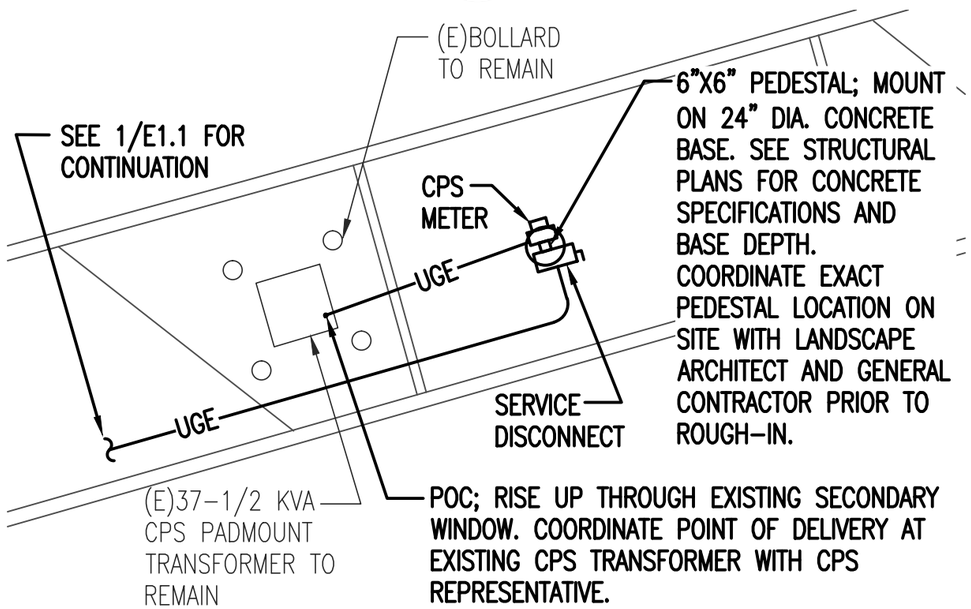
Plotted on: 8/5/2013 10:34:25 AM
Design Filename: P:\52\41\38\design\Civil\Traffic\5241381S02 A0004.dgn



1 PARTIAL ELECTRICAL SITE PLAN

1"=40'-0"

0 10 20 40 FT NORTH



2 ENLARGED ELECTRICAL SITE PLAN

1/8"=1'-0"

0 4 8 16 FT NORTH

NOTE:

1. SEE CIVIL PLANS FOR KEY MAP AND TRAFFIC, SAFETY AND PHASING NOTES.
2. SEE SHEET E2.1 FOR IMPORTANT GENERAL ELECTRICAL NOTES AND LEGEND

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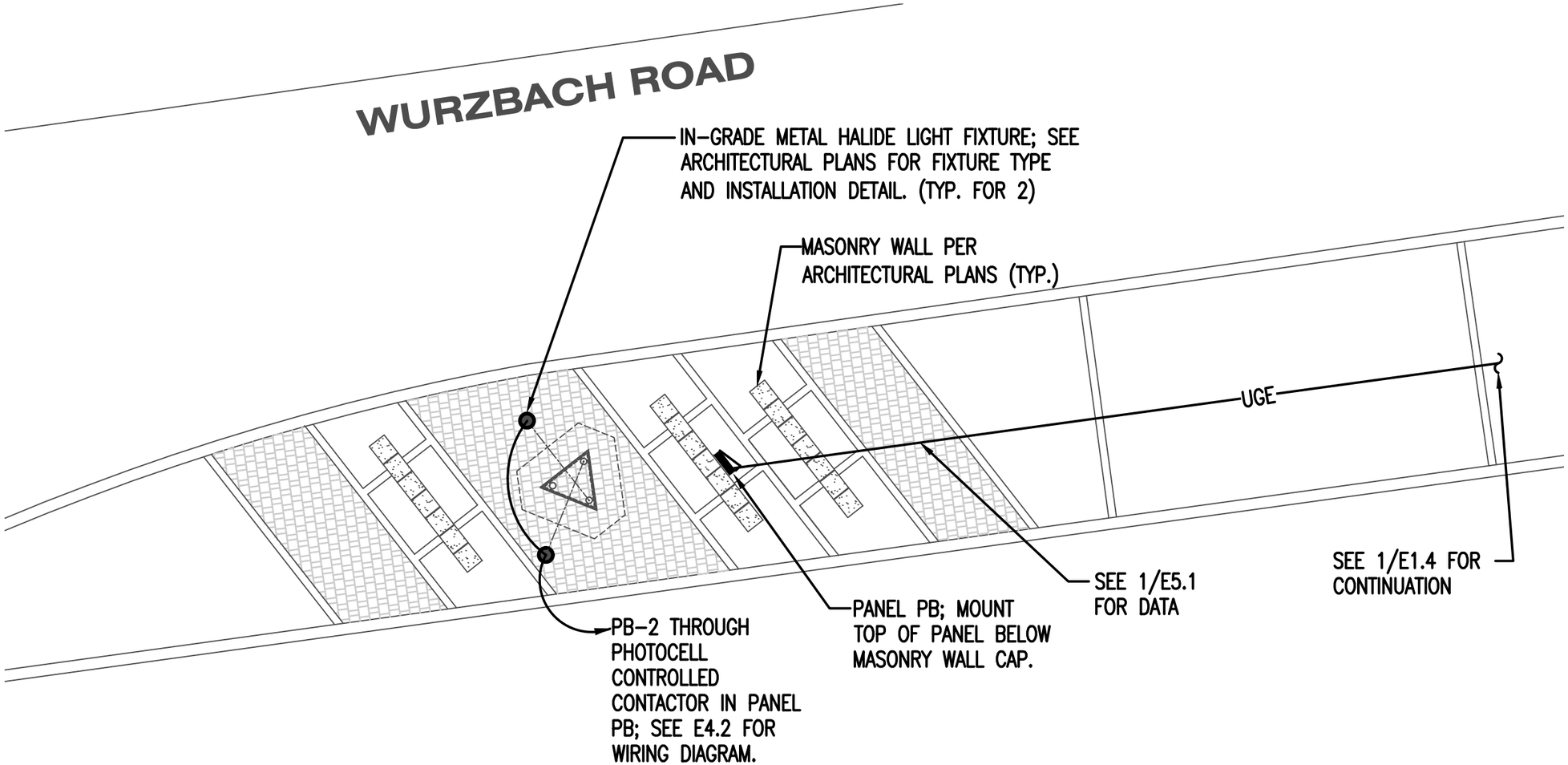
STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
PARTIAL ELECTRICAL SITE PLAN

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN		E1.1
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1	SHEET NO.: XX	01 of 13



1 ENLARGED ELECTRICAL SITE PLAN

1/8"=1'-0"

0 4 8 16 FT

NORTH

NOTE:

1. SEE CIVIL PLANS FOR KEY MAP AND TRAFFIC, SAFETY AND PHASING NOTES.
2. SEE SHEET E2.1 FOR IMPORTANT GENERAL ELECTRICAL NOTES AND LEGEND

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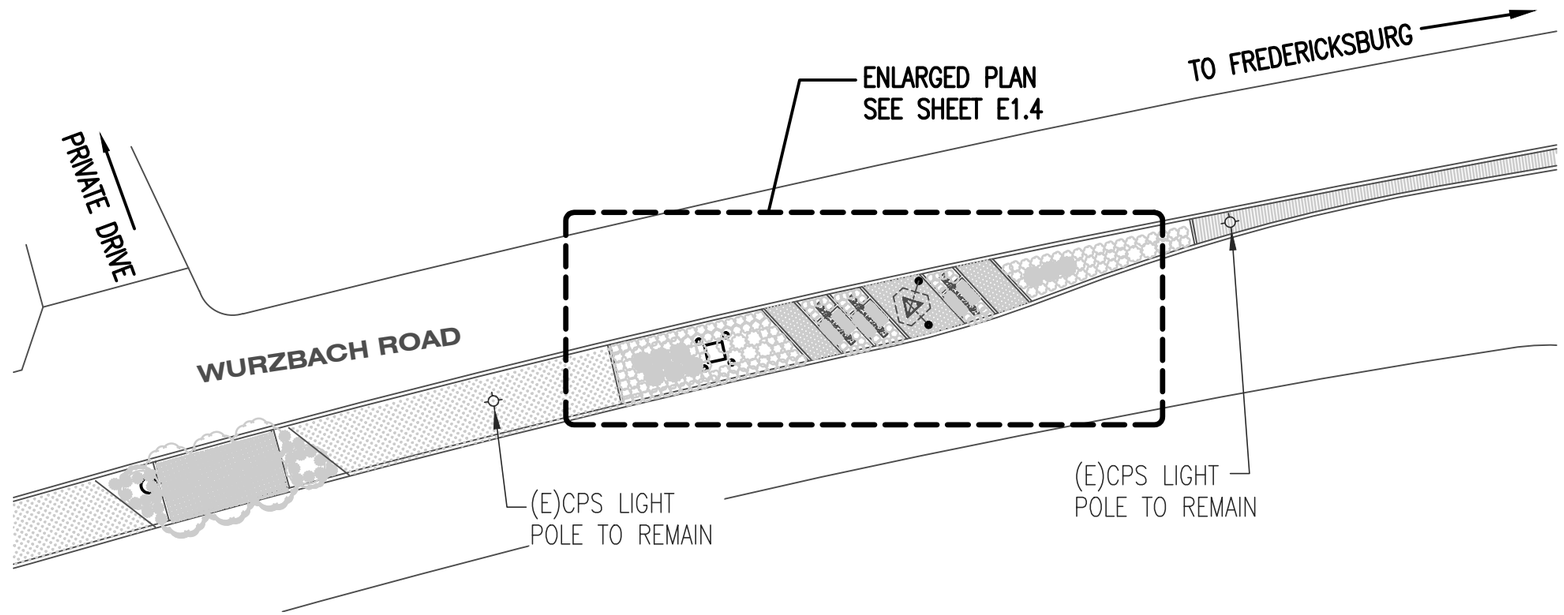
STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ENLARGED ELECTRICAL SITE PLAN

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E1.2	
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1		
	SHEET NO.: XX		



1 PARTIAL ELECTRICAL SITE PLAN

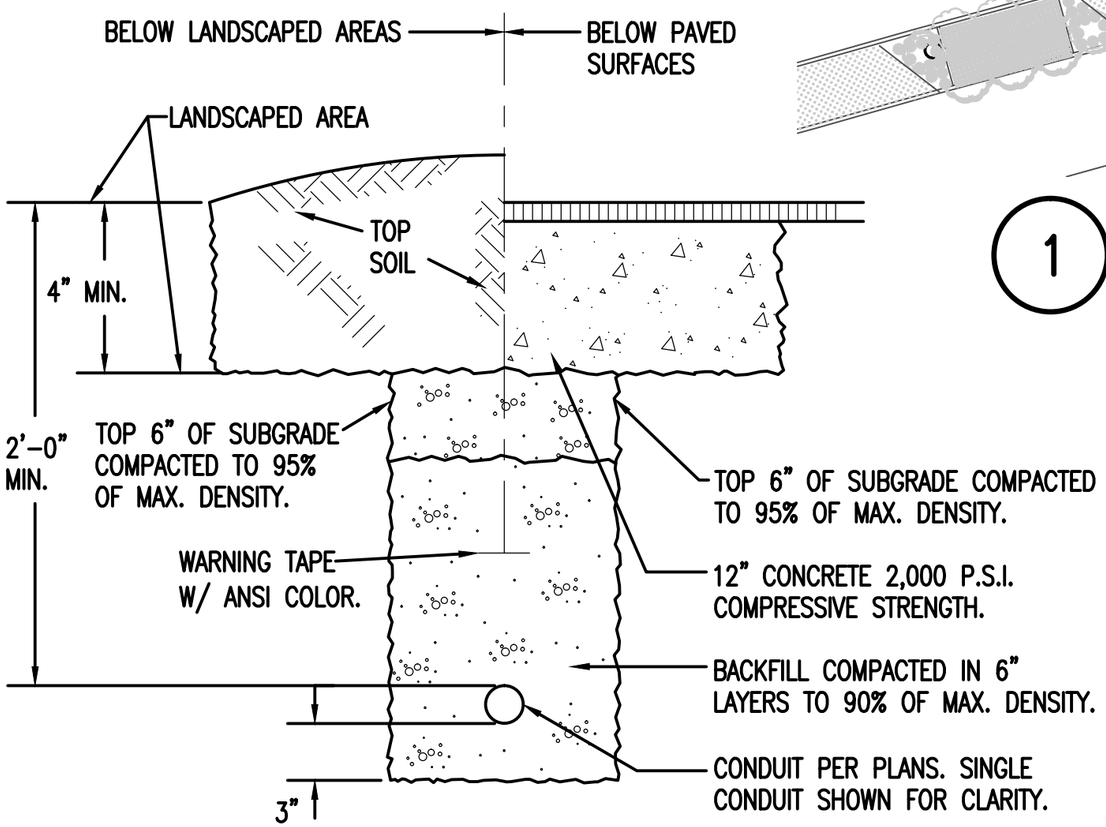
1"=30'-0"

0 15 30 60 FT

NORTH

NOTE:

1. SEE CIVIL PLANS FOR KEY MAP AND TRAFFIC, SAFETY AND PHASING NOTES.
2. SEE SHEET E2.1 FOR IMPORTANT GENERAL ELECTRICAL NOTES AND LEGEND



2 SECTION THRU TRENCH

N.T.S.

NOTE: TYPICAL FOR ALL ELECTRICAL SHEETS

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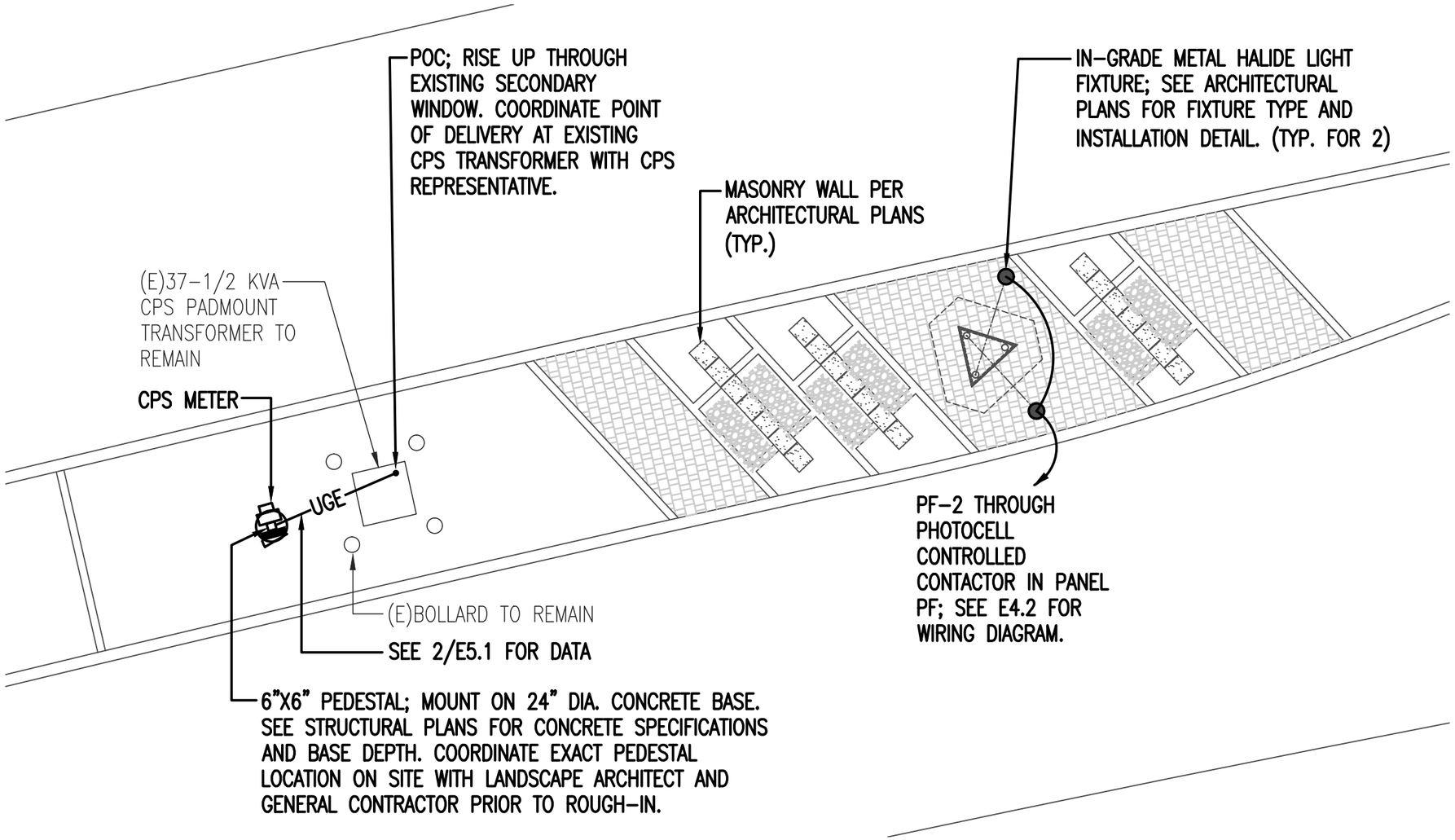
STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
PARTIAL ELECTRICAL SITE PLAN

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E1.3	
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1		
	SHEET NO.: XX		



1 ENLARGED ELECTRICAL SITE PLAN

1/8"=1'-0"

0 4 8 16 FT NORTH

NOTE:

1. SEE CIVIL PLANS FOR KEY MAP AND TRAFFIC, SAFETY AND PHASING NOTES.
2. SEE SHEET E2.1 FOR IMPORTANT GENERAL ELECTRICAL NOTES AND LEGEND

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STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ENLARGED ELECTRICAL SITE PLAN

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E1.4
DRWN. BY: JGZ	REF. NO.:	
CHKD. BY: SALM	PROJ NO.: 1225-1	
	SHEET NO.: XX	04 of 13

GENERAL ELECTRICAL NOTES: (ALL ELECTRICAL SHEETS)

1. ALL SITE UNDERGROUND CONDUIT SHALL BE BURIED A MINIMUM OF 24 INCHES DEEP BELOW FINISHED GRADE UNLESS OTHERWISE NOTED.

2. PROVIDE ANSI COLOR TAPE FOR IDENTIFICATION AT 18 INCHES DEEP ABOVE SERVICE CONDUIT RUNS.

3. ALL TURNS SHALL BE MADE WITH LONG SWEEP ELLS.

4. CONTRACTOR SHALL PROVIDE ALL EXCAVATING AND BACK FILLING REQUIRED FOR ALL NEW WORK INCLUDING FILL, COMPACTION, SURFACE, ETC. TO MEET ALL REQUIREMENTS AS APPLICABLE FOR THE AREA.

5. CONTRACTOR TO DETERMINE THE PRESENCE AND LOCATION OF ANY UNDERGROUND EQUIPMENT SUCH AS TELEPHONE, ELECTRIC POWER, WATER, GAS, SEWAGE LINES, ETC. WHETHER PREVIOUSLY EXISTING OR AS INSTALLED BY OTHER TRADES, PRIOR TO THE START OF CONSTRUCTION.

6. REFER TO LANDSCAPE ARCHITECTURAL PLANS FOR LIGHT FIXTURE TYPE AND MOUNTING.

7. CONTRACTOR SHALL MAINTAIN AN AS-BUILT DIMENSIONAL DRAWING ON SITE SHOWING ALL UNDERGROUND CONDUIT ROUTING AND TERMINATION POINTS.

8. SECONDARY POWER CONDUIT SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. ACTUAL ROUTING AND TERMINATION POINTS SHALL BE VERIFIED AND COORDINATED WITH OWNER AND LOCAL UTILITIES PRIOR TO START OF WORK.

9. PAINT ALL EXPOSED ELECTRICAL BOXES AND CONDUIT AS DIRECTED BY LANDSCAPE ARCHITECT ON SITE.

ELECTRICAL LEGEND

MARK	DESCRIPTION
	CIRCUIT HOME-RUN TO PANEL
	SWITCH LEG
	DENOTES ELECTRICAL KEYED NOTE
(E)	DENOTES EXISTING
POC	POINT OF CONNECTION
CKT	CIRCUIT
UGE	UNDERGROUND ELECTRICAL
WP	WEATHERPROOF
N.I.C.	NOT IN CONTRACT
	UPLIGHT FIXTURE
PC	PHOTO CELL
	DUPLEX CONVENIENCE OUTLET
GFI	OUTLET WITH GROUND FAULT CIRCUIT INTERRUPTER
J, J	JUNCTION BOX
PB	PULL BOX
M	INDIVIDUAL METER
	PANEL
	DISCONNECT SWITCH
T	TRANSFORMER
	GROUND

NOTE: NOT ALL MARKS MAY BE USED.
DASHED ITEMS INDICATE REMOVAL

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STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL LEGEND AND NOTES

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E2.1
DRWN. BY: JGZ	REF. NO.:	
CHKD. BY: SALM	PROJ NO.: 1225-1	
	SHEET NO.: XX	05 of 13

LOAD ANALYSIS
PROJECT: WURZBACH MEDIANS – BABCOCK
AREA (SF): N/A VOLTS: 240 SINGLE PHASE

LOAD DESCRIPTION			CONNECTED KVA	DIVERSITY	DEMAND KVA
LIGHTING:			1	1.25	1
TOTAL KVA:					1
TOTAL AMPS:					3
SERVICE ENTRANCE SIZE, AMPS:					60

LOAD ANALYSIS
PROJECT: WURZBACH MEDIANS – FREDRICKSBURG RD
AREA (SF): N/A VOLTS: 240 SINGLE PHASE

LOAD DESCRIPTION			CONNECTED KVA	DIVERSITY	DEMAND KVA
LIGHTING:			1	1.25	1
TOTAL KVA:					1
TOTAL AMPS:					3
SERVICE ENTRANCE SIZE, AMPS:					60

PANEL: PB COMMENTS: SEE RISER FOR ELECTROL SYSTEMS PART NUMBER
LOCATION: Exterior; see E1.2
120/ 240 VOLTS, 1 PHASE, 3 WIRE 70 AMP MAIN BREAKER 10 KAIC

CIRCUIT DATA NR	WIRE	GND	C	CKT NR	LOAD	CB POLE NR	CB TRIP A	CB LOAD VA	PHASE A	PHASE B	CB LOAD VA	CB TRIP A	CB POLE NR	LOAD	CKT NR	CIRCUIT DATA NR	WIRE	GND	C
				1	BUSSED SPACE				100		100	15	1	LIGHTING CONTROL	2	2	12	12	N/A
				3	BUSSED SPACE					100	100	20	1	IN-GRADE FLOOD LIGHTS	4	2	10	10	3/4"
				5	BUSSED SPACE				0			20	1	SPARE	6				
				7	BUSSED SPACE					0				BUSSED SPACE	8				
				9	BUSSED SPACE				0					BUSSED SPACE	10				
				11	BUSSED SPACE					0				BUSSED SPACE	12				

PANEL TYPE : NEMA 3R
MOUNTING: SURFACE
FED FROM: SEE RISER

PHASE CONN.	100	100	VA	0	% SPARE CAPACITY
TOTAL CONNECTED LOAD		0.2	KVA	95	% DEMAND FACTOR
CONNECTED + SPARE LOAD		0.2	KVA	1	AMPS CONNECTED
TOTAL DEMAND		0.2	KVA		
TOTAL DEMAND, AMPS		1	AT	240	VOLTS

PANEL: PF COMMENTS: SEE RISER FOR ELECTROL SYSTEMS PART NUMBER
LOCATION: Exterior; see E1.4
120/ 240 VOLTS, 1 PHASE, 3 WIRE 70 AMP MAIN BREAKER 10 KAIC

CIRCUIT DATA NR	WIRE	GND	C	CKT NR	LOAD	CB POLE NR	CB TRIP A	CB LOAD VA	PHASE A	PHASE B	CB LOAD VA	CB TRIP A	CB POLE NR	LOAD	CKT NR	CIRCUIT DATA NR	WIRE	GND	C
				1	BUSSED SPACE				100		100	15	1	LIGHTING CONTROL	2	2	12	12	N/A
				3	BUSSED SPACE					100	100	20	1	IN-GRADE FLOOD LIGHTS	4	2	10	10	3/4"
				5	BUSSED SPACE				0			20	1	SPARE	6				
				7	BUSSED SPACE					0				BUSSED SPACE	8				
				9	BUSSED SPACE				0					BUSSED SPACE	10				
				11	BUSSED SPACE					0				BUSSED SPACE	12				

PANEL TYPE : NEMA 3R
MOUNTING: SURFACE
FED FROM: SEE RISER

PHASE CONN.	100	100	VA	0	% SPARE CAPACITY
TOTAL CONNECTED LOAD		0.2	KVA	95	% DEMAND FACTOR
CONNECTED + SPARE LOAD		0.2	KVA	1	AMPS CONNECTED
TOTAL DEMAND		0.2	KVA		
TOTAL DEMAND, AMPS		1	AT	240	VOLTS

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CITY OF SAN ANTONIO

STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL SCHEDULES

ADDENDUM NO. 04

DATE: 07.29.2013 SCALE: AS SHOWN
DRWN. BY: JGZ REF. NO.:
CHKD. BY: SALM PROJ NO.: 1225-1
SHEET NO.: XX

E3.1

NOTES:
LABELS MUST BE PLACED ON THE INSIDE OF THE DOOR OF ENCLOSURE:
LISTED – ENCLOSED INDUSTRIAL CONTROL PANEL
LISTED – INDUSTRIAL CONTROL PANEL ENCLOSURE
LISTED – INDUSTRIAL CONTROL PANEL FOR SERVICE EQUIPMENT USE
MANUFACTURER NAME WITH (SHOP ORDER #)
DRAWING # AS RECORDED TO THE UL LABEL # USED.

INDUSTRIAL CONTROL PANEL – SUBJECT 508A
UL UNDERWRITERS LABORATORIES, INC.
ELECTROL SYSTEMS, INC. FILE NO. E166806

ALL INTERIOR COMPONENTS ARE TO BE LABELED

NAME PLATE SCHEDULE

N.P.	BREAKER	POLES	AMPS
MB–1	MAIN	2	70
NP–1	* BLANK SPACE	POLES	AMPS
NP–3	* BLANK SPACE	POLES	AMPS
NP–5	* BLANK SPACE	POLES	AMPS
NP–7	* BLANK SPACE	POLES	AMPS
NP–9	* BLANK SPACE	POLES	AMPS
NP–11	* BLANK SPACE	POLES	AMPS

NAME PLATE SCHEDULE

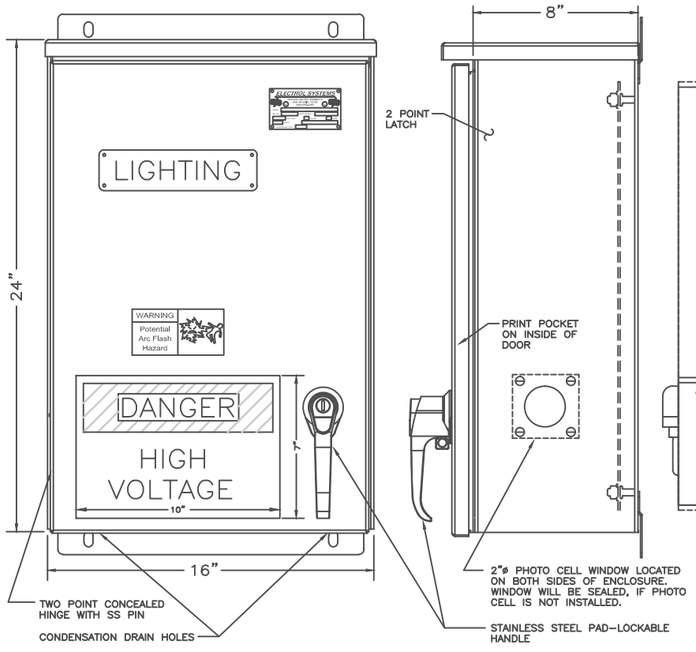
N.P.	BREAKER	POLES	AMPS
NP–2	CONTROL	1	15
NP–4	LIGHTING "A"	1	20
NP–6	LIGHTING "B"	1	20
NP–8	* BLANK SPACE	POLES	AMPS
NP–10	* BLANK SPACE	POLES	AMPS
NP–12	* BLANK SPACE	POLES	AMPS

* BLANK SPACE – HAS NO NAME PLATE BUT REQUIRES A BLANK INSERT ON DEAD FRONT

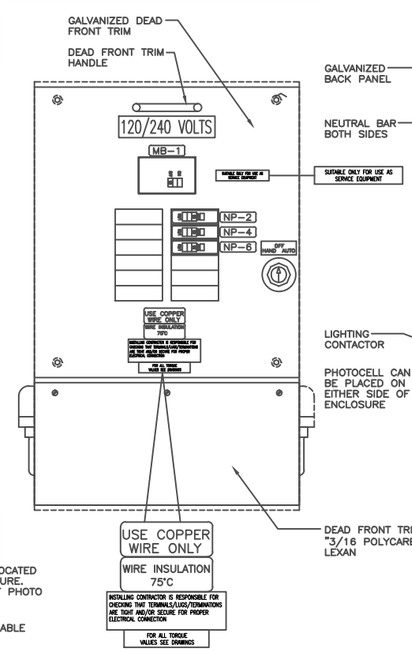
DWG CK:	DWG CK:	DWG CK:

PLEASE REFER ALL INQUIRIES TO OUR SHOP ORDER NUMBER ESI–13–213–ES1, ES2

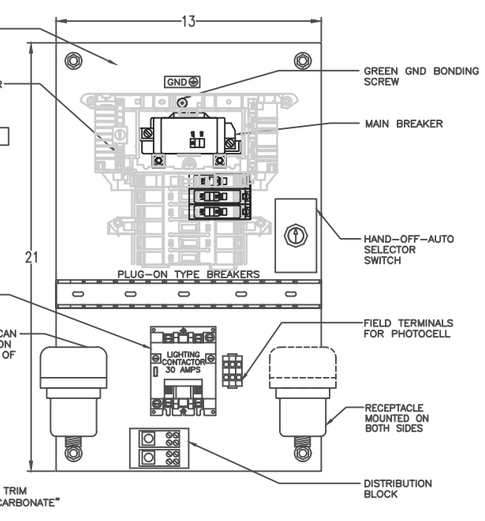
EXTERIOR PANEL LAYOUT



INTERIOR DEAD FRONT COVER LAYOUT



INTERIOR PANEL LAYOUT



TxDOT TYD(120/240)070(NS)AL(E)SP(U)
POWDER COATED ALUMINUM ENCLOSURE TX DOT STANDARD 2003

SERVICE ID:	LOCATION
ES–1	WURZBACH RD. @ BABCOCK RD.
ES–2	WURZBACH RD. @ FREDERICKSBURG RD.

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CONTRACTOR: ESA ENGINEERS	FILE: M:\DWG2013	REVISION: NO REVISION	REVISION DATE:
DATE: 25 JUL 13 DRAWN BY: LH SCALE: NTS	ELECTROL SYSTEMS, INC. 433 RECOLETA SAN ANTONIO, TX 78216 [210] 599–6485	PART#: ESI–PMD1224–070–ALE–115–215 PROJECT: MEDICAL CENTER PHASE IX	TITLE: ELECTRICAL SERVICE PANEL LAYOUT EXTERIOR / INTERIOR	REFERENCE # ESI–13–213–11

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CITY OF SAN ANTONIO

STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL DETAILS

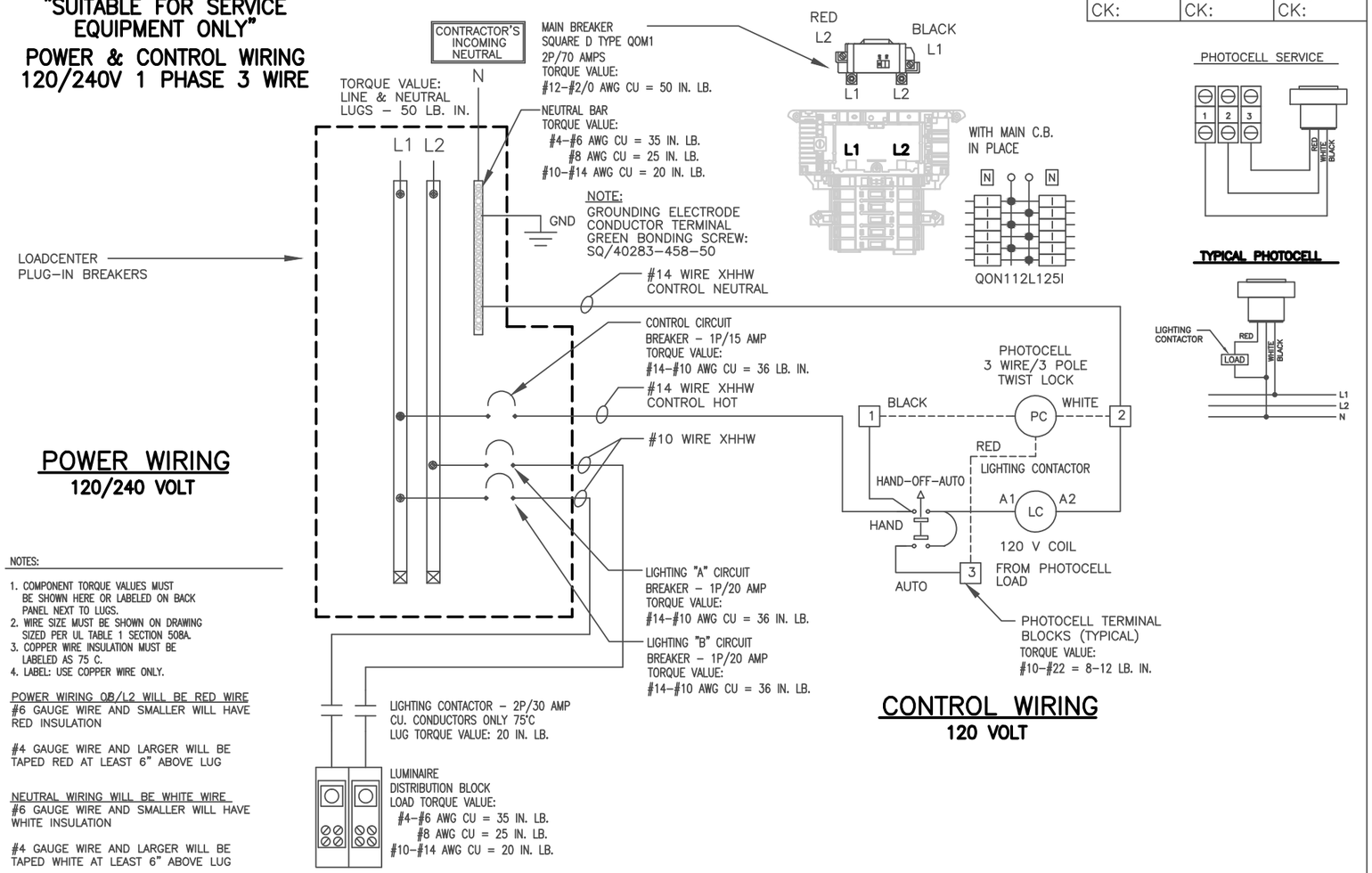
ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E4.1
DRWN. BY: JGZ	REF. NO.:	
CHKD. BY: SALM	PROJ NO.: 1225-1	
	SHEET NO.: XX	07 of 13

DWG CK:	DWG CK:	DWG CK:

"SUITABLE FOR SERVICE EQUIPMENT ONLY"

POWER & CONTROL WIRING
120/240V 1 PHASE 3 WIRE



POWER WIRING
120/240 VOLT

CONTROL WIRING
120 VOLT

NOTES:

1. COMPONENT TORQUE VALUES MUST BE SHOWN HERE OR LABELED ON BACK PANEL NEXT TO LUGS.
2. WIRE SIZE MUST BE SHOWN ON DRAWING SIZED PER UL TABLE 1 SECTION 508A.
3. COPPER WIRE INSULATION MUST BE LABELED AS 75 C.
4. LABEL: USE COPPER WIRE ONLY.

POWER WIRING OB/L2 WILL BE RED WIRE
#6 GAUGE WIRE AND SMALLER WILL HAVE RED INSULATION

#4 GAUGE WIRE AND LARGER WILL BE TAPED RED AT LEAST 6" ABOVE LUG

NEUTRAL WIRING WILL BE WHITE WIRE
#6 GAUGE WIRE AND SMALLER WILL HAVE WHITE INSULATION

#4 GAUGE WIRE AND LARGER WILL BE TAPED WHITE AT LEAST 6" ABOVE LUG

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CONTRACTOR: ESA ENGINEERS	FILE: M:\DWG2013	REVISION: NO REVISION	REVISION DATE:
DATE: 25 JUL 13 DRAWN BY: LH SCALE: NTS	ELECTROL SYSTEMS, INC. 433 RECOLETA SAN ANTONIO, TX 78216 [210] 599–6485	PART#: ESI–PMD1224–070–ALE–115–215 PROJECT: MEDICAL CENTER PHASE IX	TITLE: DIAGRAM POWER & CONTROL WIRING	REFERENCE # ESI–13–213–12

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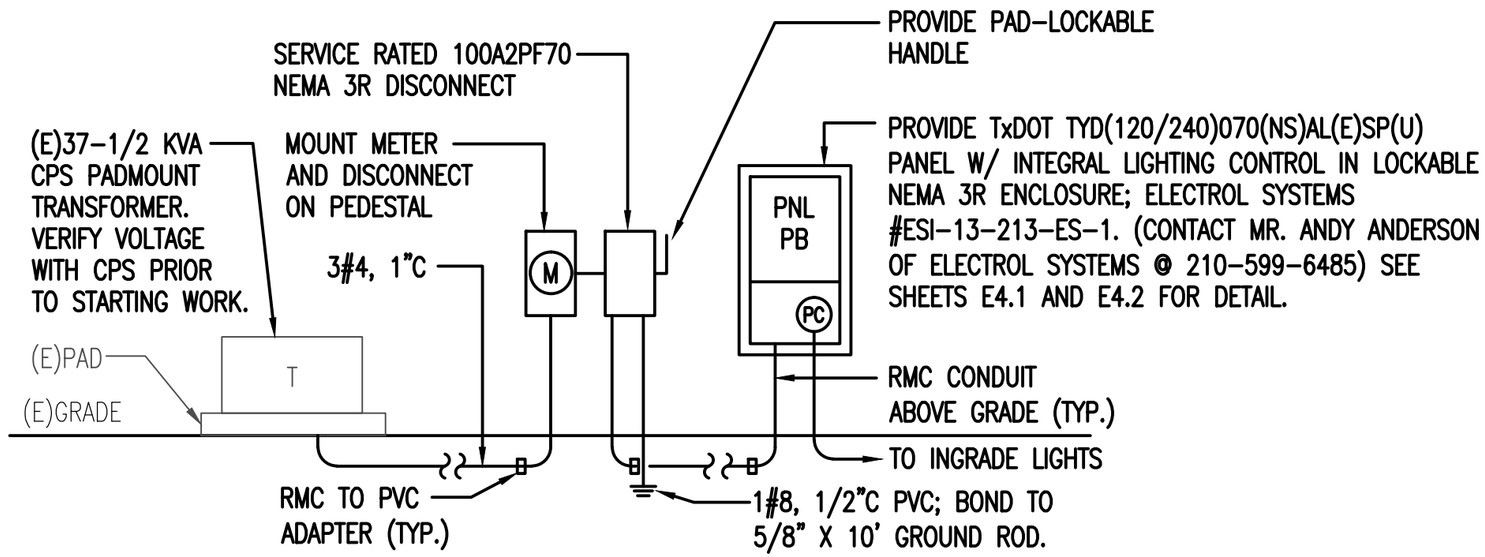
STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL DETAILS

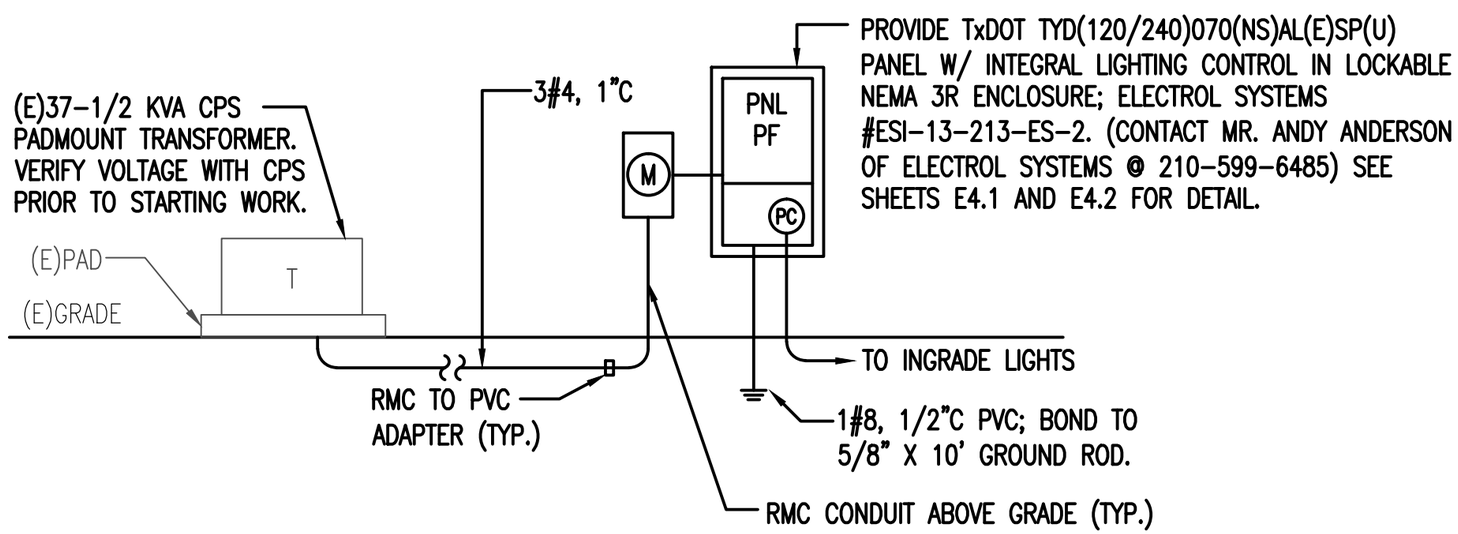
ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E4.2	
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1		
	SHEET NO.: XX		



1 ELECTRICAL RISER-WURZBACH RD AT BABCOCK RD

N.T.S.



2 ELECTRICAL RISER-WURZBACH RD AT FREDERICKSBURG RD

N.T.S.

GENERAL RISER DIAGRAM NOTES: (FOR SHEET E5.1)

1. MAIN SERVICE ENTRANCE GEAR SHALL BE LISTED AND LABELED AS SUCH.
2. GROUND RODS SHALL BE 5/8" X 8' MINIMUM. TEST SOIL FOR LESS THAN 25-OHM RESISTANCE AND ADD ADDITIONAL GROUND RODS AS REQUIRED.
3. CONNECTIONS TO GROUND RODS BELOW GRADE SHALL BE EXOTHERMIC WELD CONNECTIONS.
4. COORDINATE EXACT INSTRUMENT TRANSFORMER AND METER LOCATION AND DETERMINE THE CUSTOMER'S SIDE OF THE POINT OF SERVICE DELIVERY ON SITE WITH THE CPS REPRESENTATIVE.
5. INSTALL "ARC FLASH HAZARD" LABEL ON DISCONNECTS AND PANELS.

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CITY OF SAN ANTONIO

STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL RISERS

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E5.1
DRWN. BY: JGZ	REF. NO.:	
CHKD. BY: SALM	PROJ NO.: 1225-1	
	SHEET NO.: XX	09 of 13

SECTION 16000 – GENERAL ELECTRICAL PROVISIONS

PART 1 – GENERAL

1.01 WORK INCLUDED IN THIS SECTION

A. Referenced Documents: Bidding Requirements, Conditions of the Contract, and Division 01 – General Requirements are hereby made a part of this section.

B. Work included in Division 16 includes the furnishing of all labor, materials, tools, equipment, drayage, rigging, fees, permits, inspections, etc., necessary for the complete installation and operation of all electrical equipment and work as shown on the Plans and specified herein. Work includes the following general listings, in addition to which furnish all fittings, hangers, supports, conduits, sleeves, inserts and other such items and accessories required or necessary for the operation of a complete electrical system as shown on the Plans and/or specified herein:

1. Lighting and outlet system, including area lighting.

2. Service entrance.

3. Wiring, feeders, and panelboards.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Submittals: Division 1.

B. Painting: Division 9.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

Work shall conform to the latest editions of the following:

A. Power company electrical standard requirements.

B. International Energy Conservation Code (IECC).

C. National Electrical Code (NEC) with local amendments.

D. National Electrical Manufacturers Association (NEMA).

E. Occupational Safety and Health Administration (OSHA).

F. Underwriters' Laboratories, Inc. (UL), and shall be so labeled.

1.04 QUALIFICATIONS

Electrical Contractor of work specified herein to have been engaged in electrical contracting business for a minimum of five (5) years prior to bid date and be prepared to show evidence and references if requested by the Owner.

1.05 SUBMITTALS

Brochures shall be submitted for the following:

A. Light fixtures.

B. Panelboards.

C. Disconnects, fuses.

D. Lighting contactors, enclosures.

1.06 SUBSTITUTIONS AND DEVIATIONS

A. The intent of these specifications is to establish minimum quality standards for material and equipment installed. All materials, equipment, and apparatus shall be new and of the quality indicated in the following specifications.

B. It is not the Architect/Engineer's intention to discriminate against any manufacturer or product. Any manufacturer desiring to submit his product for approval as an equal to that specified may do so by providing a sample specification to the Engineer's office for approval a minimum of 10 working days prior to bid date.

1.07 FEES

Procure all the necessary and usual permits and certificates for all work installed. Deliver same to the Owner before final acceptance. Pay all inspection fees necessary.

1.08 SPECIAL CONDITIONS OF THE WORK

A. Drawings are necessarily diagrammatic and do not show every connection in detail or every line conduit in its exact location.

B. Investigate structural and finish conditions and arrange Work accordingly; furnish all fittings and accessories required to meet conditions and give satisfactory operation. Coordinate with other contractors to avoid interference with the Work.

1. Electrical Contractor, by submitting a sub-bid, sets forth that he has the necessary technical training and ability and that he will install his Work in a satisfactory and workmanlike manner up to the best standard of the trade, complete and in good working order.

2. If any of the requirements of the plans and specifications are impossible of performance, or if the installation will not perform satisfactorily, he shall report same to the Owner for correction during the bidding period.

3. No extra will be allowed for extra work or changes caused by failure to comply with above requirements.

4. The right to make any reasonable change in the location of outlets, apparatus, and equipment up to time of roughing-in is reserved by the Owner without involving any additional expense to the Owner.

1.09 SITE INVESTIGATION

A. Electrical Contractor shall visit the site and ascertain the conditions to be met there in installing his Work and make due provisions for same in his bid. It will be assumed that the Electrical Contractor in submitting his bid has visited the premises and that his bid covers all work necessary to properly install his Work. Failure to comply with these requirements shall not be considered justification for the omission or faulty installation of any of his Work, or for the payment of extra compensation for work covered by Specifications and Plans.

B. Locations and elevations of utilities shown on Plans have been obtained from site utility plans, existing plans, site inspection and utility companies serving the site. The Electrical Contractor shall examine the site verifying to his own satisfaction the location and elevation of all utilities and shall adequately inform himself as to their relationship to the Work before entering into a contract.

ADDENDUM NO. 04

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CITY OF SAN ANTONIO

STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL SPECIFICATIONS

DATE: 07.29.2013	SCALE: AS SHOWN	E6.1	
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1		
	SHEET NO.: XX		

C. Specifications and the Drawings in no way imply as to the condition of the soil to be encountered. No representations as to soil conditions are made or implied in any portion of the Contract documents.

D. All Work in connection with this Contract will be under the supervision and to the entire satisfaction of the Owner or his authorized representative who shall determine all questions as to the satisfactory completion of the Work, or any part thereof, and defects necessary to be remedied.

E. The Electrical Contractor shall give his personal attention to all parts of the Work and shall employ only skilled and reliable workmen in the performance thereof. They shall also accord to the Owner the right to decide upon and discontinue the services of any workman who does not possess satisfactory skill and qualifications, or is otherwise objectionable.

1.10 SAFETY STANDARDS

It shall be the responsibility of the Electrical Contractor to initiate, maintain and supervise all safety precautions required by local, state and federal laws, including OSHA (Occupational Safety and Health Administration).

PART 2 – PRODUCTS

2.01 MATERIALS

All materials described in Division 16 shall be new; no used materials shall be used. Brands and models listed are for quality assurance only; other brands equal in quality and approved for use are acceptable. Any material damaged during installation shall be replaced at Electrical Contractor's expense.

2.02 LIGHTING AND POWER PANELBOARDS

A. 240/120 volt, grounded wye panels as noted on Plans; Electrol Systems or equal, factory assembled, plug-on breakers.

B. Panels shall be listed by Underwriters' Laboratories, Inc.

C. Provide directory card with each circuit labeled on card.

2.03 DISCONNECT SWITCHES

A. General-Duty Disconnect Switches: Provide surface-mounted, general-duty type, sheet-steel enclosed switches, of types, sizes, and electrical characteristics indicated; rated 240 volts, 60 hertz, with 3-blades, 4-poles, solid neutral; incorporating spring assisted, quick-make, quick-break switches which are so constructed that switch blades are visible in OFF position with door open. Equip with operating handle which is integral part of enclosure base and whose position is easily recognizable, and is capable of being padlocked in OFF position. Construct current carrying parts of high-conductivity copper, with silver-tungsten type switch contacts, and stamped enclosure knockouts.

B. Fuses: Provide fuses for safety switches, as recommended by switch manufacturer, of classes, types, and ratings needed to fulfill electrical requirements for service indicated.

2.04 CONDUCTORS

All conductors shall be copper, 600V rating, type THHN, THHW unless shown otherwise.

2.05 CONDUIT

A. RMC for general application.

B. PVC acceptable in slabs or underground. Provide factory wrapped steel ells for rising exposed out of ground or slab. SCH. 80 PVC below roadways and drives.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Work shall be done in accordance with Plans and Specifications and shall meet rules and regulations of all governing agencies having jurisdiction.

B. If Plans and Specifications differ from required minimum standards set forth in ordinances, ordinances shall govern unless the Plans and Specifications exceed requirements, in which case Plans and Specifications shall govern.

C. If any disagreement between the Plans and Specifications and the ordinances occurs, attention must be called to same before signing of the Contract. After the contract has been signed, the Electrical Contractor is responsible for having all Work meet with the requirements of the governing ordinances. No extra to the contract will be granted to correct any discrepancy existing between the Work and the ordinances.

3.02 GUARANTEE

A. All electrical Work shall be guaranteed for a period of one (1) year from date of acceptance by Owner.

B. Upon notice of any electrical malfunction, the Electrical Contractor shall remedy the malfunction including all materials, equipment and labor at no extra cost to the Owner.

3.03 LOCATIONS OF FIXTURES AND EQUIPMENT

Fixtures and equipment shall be as shown on Plans and Elevations. Locations of fixtures or equipment not shown on Plans shall be established or verified in writing or by shop drawings.

3.04 PARTS LISTS AND MAINTENANCE MANUALS

A. The Electrical Contractor shall submit to the Owner 30 days prior to final acceptance, complete and detailed parts lists, maintenance manuals, etc., covering electrical equipment furnished under this Contract. Brochures shall include all as-built equipment shop drawings, all cuts and capacity information, names and addresses of manufacturers, stocking distributors, manufacturer's agents and/or factory representatives and shall cover all items of equipment on which submittal data is made and shall also include manuals and lists herein called for.

B. Brochures shall be in three copies, shall be bound, indexed and tabbed referencing all items to the Plans and Specifications regarding locations of equipment and materials.

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CITY OF SAN ANTONIO

STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL SPECIFICATIONS

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E6.2	
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1		
	SHEET NO.: XX		

3.05 AS-BUILT DRAWINGS

At the completion of this project, the Electrical Contractor shall provide the Owner with a set of marked-up drawings showing all conduit, outlets, etc., installed by the Electrical Contractor. These drawings shall be complete in every detail and shall incorporate all changes made during the course of the conduct of the project. These drawings shall be prepared in such a manner as to enable the Owner to properly maintain, operate, and repair both concealed and exposed Work. Actual routing of all underground conduit shall be shown.

3.06 PAINTING AND FINISHING

A. Paint all equipment, metal work, conduit, hangers and rods, etc., exposed to view and installed under this Division, with two coats of oil base metal protective paint in colors as directed by the Owner.

B. Refer to Division 9 for painting requirements.

3.07 LOCAL BOARDS

Before submitting a bid, Electrical Contractor shall familiarize himself with the rules of all governing boards having jurisdiction, and he shall notify the Owner before submitting his bid, if in his opinion, any work or material specified is contrary to such rules.

3.08 SEPARATE CONTRACTS WITH OWNER

A. The Owner reserves the right to let other contracts to perform tenant work. The Electrical Contractor shall afford other contractors reasonable opportunity for the storage and introduction of materials for execution of their Work and shall properly connect and coordinate his own Work with theirs. Cooperation shall be absolute to insure harmonious relations with these other contractors that all Work may be completed efficiently.

B. If any part of the Work depends upon work of other contractors for operation or results, Electrical Contractor shall inspect the other work, and shall promptly report to the Owner any condition that conflicts with his Work. Failure to do so shall constitute an acceptance as being suitable and proper as far as his own Work is concerned.

3.09 EXCAVATION AND BACKFILL

A. Electrical Contractor to provide all excavation required in execution of his Work.

B. Excavations shall be to depths indicated or required, protected and kept dry at all times, and properly backfilled, moistened and mechanically tamped to maximum compaction at completion.

C. Remove any surplus excavated earth from site.

D. Arrange for and pay all costs of paving patching if excavation required in city streets.

3.10 CONTRACTOR'S COORDINATION AND CLEANING UP

A. Electrical Contractor shall cooperate with the other contractors on the job to the end that as a whole, the job shall be completely finished, and shall carry on this Work in such a manner that none of the other contractors shall be handicapped, hindered, or delayed. When work is finished, remove from the premises all tools, machinery, debris, etc., occasioned by his Work, and leave the premises free of all obstructions and hindrances.

B. Where electrical work occurs in masonry walls, the installation shall be done sufficiently in advance of construction; fittings, appurtenances, etc., shall be installed in such a manner and at such locations as to avoid unnecessary cutting of masonry units. Work erected in advance of masonry shall be securely supported and held in position to prevent displacement. Cutting and fitting of masonry around properly located equipment will be done by masons. The Contractor shall have a representative on the job during all concrete pours to insure all of his equipment is adequately supported and protected and will not be adversely affected by such operations.

C. Cooperate with the local utility companies in such a manner that the installation of all services proceeds in an orderly manner, and meets all requirements of the specified companies involved.

3.11 ELECTRICAL EQUIPMENT BY OTHERS

Except for such items as are normally wired up at their point of manufacture and unless specifically noted to the contrary in the documents, execute all electric wiring of every character both for power supply and for pilot and control for equipment. Others will erect all motors in place ready for connection. Mount all starters and control equipment, furnishing supporting structures where necessary.

3.12 TESTING AND ADJUSTING

A. All systems shall be tested in the presence of the Owner.

B. All testing equipment necessary to satisfactorily conduct the required tests shall be provided, and the tests shall be made by the Electrical Contractor at his expense under the direction of the Owner.

C. All equipment furnished and installed and/or connected under the provisions of these Specifications shall be demonstrated to function electrically in the manner required.

D. The entire electrical installation shall be free from short circuits and improper grounds. Tests shall be made at each power panel and lighting panel with all switches closed. Each power circuit shall be tested at its switch. In testing for insulation values to ground, the power equipment shall be connected for normal operation. The instruments required for these tests shall be furnished by the Electrical Contractor.

E. Insulation values shall not be less than those required by the National Electric Code. Other specific tests shall be made in accordance with requirements stated in these Specifications.

F. If the tests indicate unsatisfactory materials, workmanship, or performance, the Electrical Contractor shall remove such defective materials and replace with new material at his own expense, shall correct defective workmanship, and shall then conduct same tests again until the satisfactory character of the work installed by him has been fully demonstrated to the satisfaction of the Owner.

3.13 PROTECTION OF UNDERGROUND CONDUIT

A. All steel conduit run underground shall be protected by a factory applied coating or wrapping consisting of one of the following:

1. Minnesota Mining and Manufacturing Company "Scotch Kote" Resin #202, factory applied coating with two-ply "Scotchwrap" #50 tape on field joints.

2. PVC plastic primer, followed by poly-vinyl plastic coating as supplied by Lone Star Steel Company "Extra Coat" or approved equal. Field joints shall be wrapped in strict accordance with manufacturer's directions.

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CITY OF SAN ANTONIO

STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL SPECIFICATIONS

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN		E6.3
DRWN. BY: JGZ	REF. NO.:		
CHKD. BY: SALM	PROJ NO.: 1225-1		
	SHEET NO.: XX		

B. Electrical Contractor shall submit samples and detailed Specifications for final approval.

3.14 GROUNDING

A. Grounding of electrical conduit system and neutral of wiring system for building shall be effectively made by connection to earth, using standard ground clamps and cables.

B. Ground wire shall be run in rigid conduit which is securely coupled to main distribution cabinet by using special clamps or double lock nuts and bushings, and run to most accessible point and connect to 3/4" by 8'0" copper clad weld ground rods using an approved bolted pressure clamp.

C. Service grounding conductor: Capacity not less than indicated in NEC Article 250.

D. Electrical continuity of all metallic raceway systems shall be assured. Wherever expansion joints occur, bonding shall be provided. Carefully and securely ground all fluorescent fixture bodies to the conduit system.

E. Provide continuous grounding wire through all PVC conduits.

3.15 WORKMANSHIP

A. Labor shall be performed in a thorough and workmanlike manner and with all reasonable rapidity to the satisfaction of the Owner.

B. Material or equipment shall be delivered to the project in the manufacturer's original, unopened, labeled containers and be adequately protected against moisture, tampering, or damage from improper handling or storage. Materials shall not be delivered to the job before they are ready for installation.

C. The Owner will require the removal from the premises of such material or work as in his opinion is not in accordance with the Specifications or Drawings. The Owner has authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract.

D. Any item of equipment shall be the product, modified as required by the requirements of the project, of a manufacturer experienced in the design, construction, and operation of equipment for the purpose required and who shall have furnished such equipment long enough to be able to show a record of successful operation.

3.16 CLEANING UP

It is the Electrical Contractor's responsibility to clean up all trash and debris caused by the work of this Division, keeping premises, street, sidewalks, and adjacent property clean and neat at all times and to dispose of such materials outside the legal limits of the project or as directed by the Owner.

END OF SECTION 16000

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STMC PHASE IX
ADDITIVE ALTERNATE #2
WURZBACH ROAD MEDIANS
ELECTRICAL SPECIFICATIONS

ADDENDUM NO. 04

DATE: 07.29.2013	SCALE: AS SHOWN	E6.4
DRWN. BY: JGZ	REF. NO.:	
CHKD. BY: SALM	PROJ NO.: 1225-1	
	SHEET NO.: XX	

Design Filename: T:\C-1272.02 Medical Cntr PH IX-Babcock&Hamilton Wolfe\Design\Civil\Construction Documents\FOUNDATION_DETAIL.dgn
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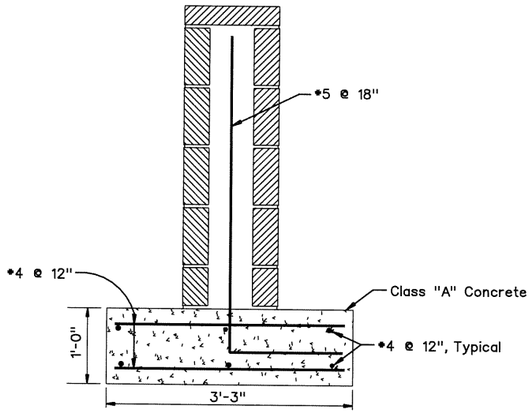
GENERAL NOTES :

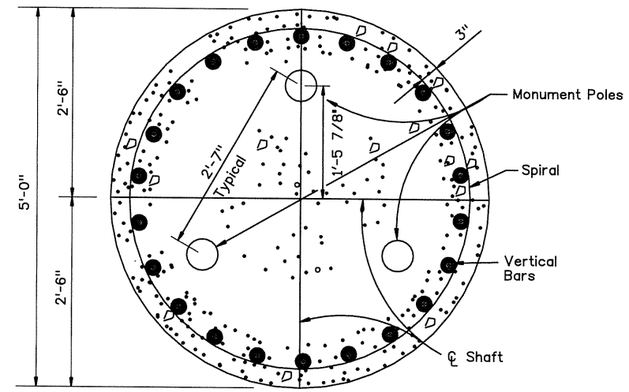
Reinforcing steel shall conform to Item 440.
Concrete shall be Class A or C.



STONE WALL FOOTING DETAIL

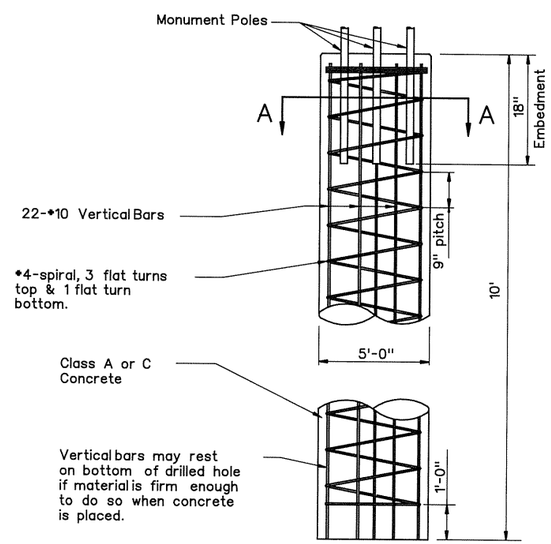
SCALE 1"=2'

Class "A" Concrete= 0.12 CY Per Foot of Wall



SECTION "A-A"

SCALE 1"=2'



ELEVATION

MONUMENT SIGN DRILLED SHAFT DETAILS

N.T.S

60' DS=10 LF Per Sign

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LORI DULLNIG-WARLEN
63520
REGISTERED PROFESSIONAL ENGINEER

Lori Dullnig-Warlen PE
7/31/13

0 20 40 60
SCALE:1" = 40'

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CITY OF SAN ANTONIO

BABCOCK RD & HAMILTON WOLFE RD MONUMENT AND STONE WALL FOOTING DETAILS

SURVY. BY:	APPR. BY: TRAFFIC ENGINEER	SCALE:
DRWN. BY: MC	APPR. BY: ASSISTANT CITY ENGINEER	REF. NO.:
DSGN. BY: LDW		PROJ NO.: 524138
CHKD. BY:		SHEET NO.: S1.0

Raba Kistner

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Project No. ASA07-081-00
February 21, 2008

Mr. James Lutz, P.E.
Pape-Dawson Engineers, Inc.
555 East Ramsey
San Antonio, TX 78216

RE: Geotechnical Engineering Study
South Texas Medical Center – Pavements
San Antonio, Texas

Dear Mr. Lutz:

Raba-Kistner Consultants Inc. (R-K) is pleased to submit the report of our Geotechnical Engineering Study for pavements at the above-referenced project. This study was performed in accordance with **R-K** Proposal No. PSA07-052-00 dated May 30, 2007. The purpose of this study was to drill borings at selected locations within the existing pavements, to perform laboratory testing to classify and characterize subsurface conditions, and to prepare an engineering report presenting pavement reconstruction recommendations and construction guidelines.

The following report contains our design recommendations and considerations based on our current understanding of the project design criteria. There may be alternatives for value engineering of the pavement systems, and **R-K** recommends that a meeting be held with the Owner and design team to evaluate these alternatives.

We appreciate the opportunity to be of service to you on this project. Should you have any questions about the information presented in this report, or if we may be of additional assistance on the materials testing-quality control program during construction, please call.

Very truly yours,

RABA-KISTNER CONSULTANTS, INC.

STATE OF TEXAS
Brian Mark Killingsworth
86296
LICENSED
PROFESSIONAL ENGINEER

T. Ian Perez, ~~E.I.T.~~
Graduate Engineer

Brian M. Killingsworth, P.E.
Senior Project Manager

2-21-2008

TIP/BMK/mem

Attachments

Copies Submitted: Above (3)

GEOTECHNICAL ENGINEERING STUDY

For

SOUTH TEXAS MEDICAL CENTER – PAVEMENTS
SAN ANTONIO, TEXAS

Prepared for

PAPE-DAWSON ENGINEERS, INC.
San Antonio, Texas

Prepared by

RABA-KISTNER CONSULTANTS, INC.
San Antonio, Texas

PROJECT NO. ASA07-081-00

February 21, 2008

Raba-Kistner

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ATTACHMENTS

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Logs of Borings
Key to Terms and Symbols
Results of Soil Analyses
Moisture-Density Relationship Curve
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CPCD-94, Concrete Pavement Details
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INTRODUCTION

Raba-Kistner Consultants, Inc. (R-K) has completed the authorized subsurface exploration and pavement analysis for the proposed widening and/or reconstruction of various intersections within the South Texas Medical Center (STMC) in San Antonio, Texas. The intersections to be widened or reconstructed include:

- Ewing Halsell Drive and Sid Katz Drive
- Wurzbach Road and Ewing Halsell Drive,
- Floyd Curl Drive and Hamilton Wolfe Road,
- Floyd Curl Drive and Charles Katz, and
- Babcock Road and Medical Drive.

Pavement designs are also provided for the reconstruction of:

- Hamilton Wolfe Road between Babcock Road and Ewing Halsell Drive, and
- Ewing Halsell Drive between Sid Katz Drive and Wurzbach Road.

In addition to the above, pavement design and detail recommendations for a concrete pavement round about to be constructed at the intersection of Ewing Halsell Drive and Sid Katz Drive is also provided.

This report briefly describes the procedures utilized during this study and presents our findings along with our pavement design analysis in accordance with the City of San Antonio Unified Development Code (UDC). Pavement construction considerations are also provided but are not considered to be exhaustive.

LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of south/central Texas and for the use of Pape-Dawson Engineers, Inc. and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses. This report is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from fifteen borings drilled within existing roadways. This report may not reflect the actual variations of the subsurface conditions across the site. The nature and extent of variations across the site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report.

BORINGS AND LABORATORY TESTS

Subsurface conditions at the site were evaluated by fifteen borings drilled at the locations shown on the Boring Location Map, Figure 1. These locations are approximate and distances were measured using hand-held GPS Locator, tape, angles, pacing, etc. The borings were drilled to depths of about 5 ft below the existing ground surface using a truck-mounted drilling rig. Bulk samples of representative native subgrade soils were also collected for use in California Bearing Ratio (CBR) and Lime Series testing.

The results of the characteristics testing are presented in graphical or numerical form on the boring logs illustrated on Figures 2 through 16. A key to classification terms and symbols used on the logs is presented on Figure 17. The results of the laboratory and field testing are also tabulated on Figure 18 for ease of reference.

Standard penetration test results are noted as "blows per ft" on the boring logs and Figure 18, where "blows per ft" refers to the number of blows by a falling hammer required for 1 ft of penetration into the soil.

In addition to the above, one CBR test and a Lime Series analysis were performed on the bulk specimens collected from the predominant native subgrade soils. The results of the CBR test are shown with the Moisture-Density Relationship curve on Figure 19. The results of the Lime Series tests are shown on Figure 20.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the Client.

FINDINGS AND TEST RESULTS

EXISTING PAVEMENTS

The approximate thickness of the existing asphalt and base materials were documented during our field exploration and are presented in the table below. It was not determined if the flexible base material encountered had been treated with a pozzolanic stabilizer; however, visually it did not appear that the base had a stabilizing agent.

Although extensive pavement distress surveys were not conducted, visual observations of the existing pavement indicate that there are several intersections and streets in the area of this study where significant cracking of the pavement is evident (both transverse and longitudinal) as well as areas of shoving and rutting. These distresses typically indicate that the existing asphaltic concrete has oxidized and is brittle. It also indicates that the asphaltic concrete is unstable and tends to "shear" under slow moving traffic or traffic that is coming to a stop. Most importantly, the distresses indicate that the subgrade is weak, possibly saturated, and more than likely requires drainage improvements. Please refer to the section entitled *Miscellaneous Pavement Related Considerations* at the end of this report for pertinent discussion.

Boring No.	Intersection or Street	Asphalt Thickness (in.)	Flexible Base Thickness (in.)
B-1	Ewing Halsell Drive and Sid Katz Drive	1-1/2	7-1/2
B-2	Ewing Halsell Drive and Sid Katz Drive	3-3/4	8-1/4
B-3	Wurzbach Road and Ewing Halsell Drive	3	8
B-4	Ewing Halsell Drive	3	6
B-5	Wurzbach Road and Ewing Halsell Drive	3	6-1/2
B-6	Floyd Curl Drive and Hamilton Wolfe Road	8	5-1/4
B-7	Floyd Curl Drive and Hamilton Wolfe Road	8-1/2	4-1/2
B-8	Babcock Road and Medical Drive	5-1/4	8-1/4
B-9	Babcock Road and Medical Drive	5	7
B-10	Hamilton Wolfe Road	12-1/2	5-1/2
B-11	Hamilton Wolfe Road	7-3/4	7-1/4
B-12	Hamilton Wolfe Road	8	4
B-13	Hamilton Wolfe Road	7-1/2	6/14
B-14	Hamilton Wolfe Road	9	4
B-15	Hamilton Wolfe Road	8-1/2	4-1/2

SUBSURFACE CONDITIONS

The subsurface stratigraphy at the boring locations can generally be described as stiff to very stiff dark brown clay with gravel and some calcareous deposits overlying soft to stiff tan clay. The dark brown clays are classified as plastic to highly plastic with measured plasticity indices ranging from 27 to 56 and the tan clays are classified as moderately plastic to highly plastic with measured plasticity indices ranging from 15 to 41. Borings B-3 and B-10 did contain some materials with low plasticity (i.e. PIs of 8 and 5), but these materials are not consistently encountered.

In general, the dark brown clays extend from the bottom of the pavement to a depth of approximately 4 feet with the tan clay below. The boring logs should be consulted for more specific stratigraphic information.

Subgrade Strength Characterization

The CBR was measured using *ASTM D 1883-05 Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils* and was determined to be 3.1 using the soaked sample methodology. Swell was also measured as part of the CBR procedure and was determined to be 4.4%. On the basis of the measured swell and our experience with soils in this area, we have assigned a reduced design CBR value of 3.0 for use in analyses.

Swell/Heave Potential

Assuming that the dark brown clays are approximately 5 ft thick and the tan clay soils extend from 5 ft to a depth 15 ft below the existing ground surface, the estimated range of Potential Vertical Rise for this site is on the order of 1-1/4 to 5-1/4 in. This range of values was determined using the empirical procedure, Texas Department of Transportation (TxDOT) Tex-124-E, Method for Determining the Potential Vertical Rise (PVR). A surcharge load of 1 psi, an active zone of 15 ft, and dry moisture conditions were assumed in estimating the above PVR values. A higher PVR is possible at this site, if higher plasticity soils exist below the 5 ft maximum depth of exploration.

PAVEMENT DESIGN ANALYSES

Pavement designs for high and low traffic values are presented in the following sections for both hot mixed asphaltic concrete and Portland cement concrete pavements. It is anticipated that the asphaltic concrete pavements will be used for the widenings and that either asphaltic concrete or Portland cement concrete pavement sections may be utilized for the reconstruction of the intersections and for the reconstruction of the pavements along Hamilton Wolfe Road and Ewing Halsell Drive. As indicated by Pape-Dawson, the roundabout at Ewing Halsell Drive and Sid Katz Drive will be Portland cement concrete.

PAVEMENT DESIGN PARAMETERS – HOT MIXED ASPHALTIC CONCRETE PAVEMENTS

The following input variables are utilized to design flexible base pavements (commonly referred to as Asphaltic Cement Concrete or Asphalt pavements) when using the procedures detailed in the *1993 AASHTO Guide for Design of Pavement Structures*:

- Performance Period
- Roadbed Soil Resilient Modulus psi
- Serviceability Indices
- Overall Standard Deviation
- Reliability, %
- Design Traffic, 18-kip ESALs

Performance Period

The pavement structure was designed for a 20 year performance period which is typical for most pavements.

Roadbed Soil Resilient Modulus

The Resilient Modulus (M_R) is the material property used to characterize the support characteristics of the roadbed soils in flexible pavement design. It is a measure of the soil's deformation response to cyclic applications of loads much smaller than a failure load. Using conventional correlations, local experience and a design CBR value of 3.0, as discussed above, a Resilient Modulus of 4,500 psi has been used for this project.

Construction Note: The subgrade may be treated with lime to facilitate construction as well as to provide additional support to the pavement structure. More detail regarding this option is provided in the *Pavement Construction Considerations* section of this report.

Serviceability Indices

An initial serviceability value of 4.2 and a terminal serviceability value of 2.5 were used for this pavement design, which results in a change of serviceability of 1.7.

Overall Standard Deviation

Overall standard deviation accounts for both chance variation in the traffic prediction and normal variation in pavement performance prediction for a given traffic. Higher values represent more variability; thus, the pavement thickness increases with higher overall standard deviations. A value of 0.49 is used for this pavement design.

Reliability, %

The reliability value represents a "safety factor," with higher reliabilities representing pavement structures with less chance of failure. The AASHTO Guide recommends values ranging from 50 to 99.9%, depending on the functional classification and the location (urban vs. rural) of the roadway. A reliability of 95% is used for this pavement design.

Design Traffic 18-kip ESAL

Traffic count data, in terms of Average Daily Traffic (ADT), for seven intersections was provided to us by Pape-Dawson Engineers on September 11, 2007. This data was generated from anticipated turning movements for the year 2010. The traffic count did not distinguish vehicle types, i.e., trucks vs. cars.

To assist in the design of the pavement sections, a software program entitled "AASHTOWare DARWin 3.1.01, Pavement Design and Analysis System" was utilized. This program is published by the American Association of State Highway and Transportation Officials (AASHTO) and is based on the 1993 edition of the AASHTO "Guide for the Design of Pavement Structures." Utilizing the traffic count data, the 18 kip Equivalent Single Axle Loads (ESALs) were calculated using the DARWin program over a 20 year design life. In order to convert the ADT data to ESALs the following inputs and assumptions were utilized:

• Low Volume Traffic (Two-Way ADT)	12,000
• High Volume Traffic (Two-Way ADT)	24,000
• Percent of All Truck in the Design Lane	100%
• Percent of Trucks in the Design Direction	50%
• Percent of Heavy Trucks (of ADT) FHWA Class 5 or Greater	5%
• Average Initial Truck Factor (ESAL's/truck)	0.7
• Annual Truck Factor Growth Rate	0%
• Annual Truck Volume Growth Rate	0%
• Growth Rate Model (Simple or Compound)	Simple

Low and high traffic ESAL values were determined for a 20 year design life and are shown below (approximate):

- Low Volume Traffic ESALs 1,500,000
- High Volume Traffic ESALs 3,000,000

Number of Construction Stages

The analysis assumed that there would not be any asphaltic concrete overlays during the design life and that only preventative maintenance or non-structural rehabilitation would be conducted. Therefore, only one construction stage was utilized.

Design Structural Numbers

The structural number of any pavement cross section is related to the CBR value of the pavement subgrade and the volume of traffic that the pavement will carry over its service life. The CBR provides an estimate of the relative strength of the subgrade and consequently indicates the ability of the pavement section to carry load. This site-specific CBR value is utilized in conjunction with specific pavement design parameters as well as the pavement Structural Number (SN) to analyze the amount of traffic that a specific pavement cross section can accommodate over the design life. Using the ESAL values as well as the above design data the required structural numbers (SN) were calculated using the DARWin program and are shown as:

- Low Volume Traffic SN 4.84
- High Volume Traffic SN 5.34

PAVEMENT SECTION OPTIONS – HOT MIXED ASPHALTIC CONCRETE PAVEMENTS

For the streets that are to be completely reconstructed or widened, the following pavement sections are recommended.

CBR = 3.0	Layer Description	TxDOT Spec. Item No.	COSA Spec. Item No.	Layer Thickness (in.)	Structural Coefficient	Structural Number
Low Traffic Volume	Asphaltic Concrete Surface – Type D	340	205	2.0	0.44	0.88
	Asphaltic Concrete Base – Type B	340	205	12.0	0.34	4.08
	Subgrade Widening / Street Excavation	112	104	6.0	--	0.00
	Total Thickness	--	--	**20.0**	--	**4.96**
High Traffic Volume	Asphaltic Concrete Surface – Type D	340	205	3.0	0.44	1.32
	Asphaltic Concrete Base – Type B	340	205	12.0	0.34	4.08
	Subgrade Widening / Street Excavation	112	104	6.0	--	0.00
	Total Thickness	--		**21.0**	--	**5.40**

It should be noted that the soils encountered in the borings immediately below the existing pavements typically had PI values greater than 20. In these cases the City of San Antonio

recommends that the upper 6 inches of the subgrade be lime treated. For construction expediency and due to limited access with the construction equipment needed to lime treat the soils, it is not possible to construct a lime treated layer. With this in mind, **R-K** recommends, at a minimum, scarifying the top 6 inches of the subgrade, moisture conditioning, and re-compacting the soil.

As stated in the *Swell/Heave Potential* section above, there is also the possibility of the subsurface soils swelling over 5 inches if the high PI subgrade is left untreated or is not removed. To assist in reducing the swell potential in areas where high PI soils are encountered, it is recommended to over-excavate the soil a minimum of 12 inches and replace with a fill material with a PI less than 20.

PAVEMENT DESIGN PARAMETERS – PORTLAND CEMENT CONCRETE PAVEMENTS

The following input variables are utilized to design rigid pavements (commonly referred to as Portland Cement Concrete or PCC pavements) when using the procedures detailed in the *1993 AASHTO Guide for Design of Pavement Structures*:

- Performance Period
- 28-day Concrete Modulus of Rupture, psi
- 28-day Concrete Elastic Modulus, psi
- Effective Modulus of Subbase/Subgrade Reaction, pci
- Serviceability Indices
- Load Transfer Coefficient
- Drainage Coefficient
- Overall Standard Deviation
- Reliability, %
- Design Traffic, 18-kip Equivalent Single Axle Loads (ESALs).

Performance Period

The pavement structure was designed for a 20 year performance period which is the same as the hot mixed asphaltic pavement design life.

28-day Concrete Modulus of Rupture, M_r

The M_r of concrete is a measure of the flexural strength of the concrete as determined by breaking concrete beam test specimens. An M_r of approximately 620 psi at 28 days was in the analysis and is typical of local concrete production.

28-day Concrete Elastic Modulus

Elastic modulus of concrete is an indication of concrete stiffness and varies depending on the coarse aggregate type used in the concrete. A modulus of 5,000,000 psi is used for this pavement design.

Effective Modulus of Subbase/Subgrade Reaction: k-value

Concrete slab support is characterized by the modulus of subgrade/subbase reaction, otherwise known as the k-value with units typically shown as psi/in. A k-value of 125 psi/in was used in the rigid pavement design procedure and is based upon the CBR of 3.0 discussed above.

Serviceability Indices

An initial serviceability value of 4.5 and a terminal serviceability value of 2.5 were used for this pavement design, which results in a change of serviceability of 2.0.

Load Transfer Coefficient

The load transfer coefficient is used to incorporate the effect of dowels, reinforcing steel, tied shoulders, and tied curb and gutter on reducing the stress in the concrete slab due to traffic loading and therefore causing a reduction in the required concrete slab thickness. The coefficients recommended in the AASHTO Guide are based on findings from the AASHO Road Test.

The load transfer coefficient used in this pavement design is 3.2.

Drainage Coefficient

The drainage coefficient characterizes the quality of drainage of the subbase layers under the concrete slab. Good draining pavement structures do not give water the chance to saturate the subbase and subgrade; thus, pumping is not as likely to occur.

There is no subbase recommended for this pavement structure. Therefore, the drainage coefficient used in this pavement design is 1.10 and is based upon local design experience for slabs without subbases on expansive clay subgrade.

Overall Standard Deviation

Overall standard deviation accounts for both chance variation in the traffic prediction and normal variation in pavement performance prediction for a given traffic. Higher values represent more variability; thus, the pavement thickness increases with higher overall standard deviations. A value of 0.39 is used for this rigid pavement design.

Reliability, %

The reliability value represents a "safety factor," with higher reliabilities representing pavement structures with less chance of failure. The AASHTO Guide recommends values ranging from 50% to 99.9%, depending on the functional classification and the location (urban vs. rural) of the roadway. A reliability of 95% is used for this rigid pavement design.

Design Traffic 18-kip ESAL

The 18-kip Equivalent Single Axle Loads (ESALs) is the same as the values determined in the hot mix asphaltic concrete pavement design parameters.

PAVEMENT SECTION OPTIONS – PORTLAND CEMENT CONCRETE PAVEMENTS

For the streets that are to be completely reconstructed or widened, the following pavement sections are recommended.

CBR = 3.0	Layer Description	TxDOT Spec. Item No.	COSA Spec. Item No.	Layer Thickness (in.)
Low Traffic Volume	Portland Cement Concrete Surface	360	209	8.0
	Subgrade Widening / Street Excavation	112	104	6.0
	Total Thickness	--	--	**14.0**
High Traffic Volume	Portland Cement Concrete Surface	360	209	9.0
	Subgrade Widening / Street Excavation	112	104	6.0
	Total Thickness	--	--	**15.0**

It should be noted that the soils encountered in the borings immediately below the existing pavements typically had PI values greater than 20. In these cases the City of San Antonio recommends that the upper 6 inches of the subgrade be lime treated. For construction expediency and due to limited access with the construction equipment needed to lime treat the soils, it is not possible to construct a lime treated layer. With this in mind, **R-K** recommends, at a minimum, scarifying the top 6 inches of the subgrade, moisture conditioning, and re-compacting the soil.

As stated in the *Swell/Heave Potential* section above, there is also the possibility of the subsurface soils swelling over 5 inches if the high PI subgrade is left untreated or is not removed. To assist in reducing the swell potential in areas where high PI soils are encountered, it is recommended to over-excavate the soil a minimum of 12 inches and replace with a fill material with a PI less than 20.

PAVEMENT MATERIALS AND CONSTRUCTION CONSIDERATIONS

ASPHALTIC CONCRETE SURFACE AND BASE COURSES

The asphaltic concrete surface and base courses should conform to TxDOT Standard Specifications 2004, Item 340 – *Dense Graded Hot Mix Asphalt (Method)*, Type D-Fine Surface (for surface courses) and Type B-Fine Base for base courses. Recycled asphalt pavement (RAP) should be limited to 20% of the total weight of the mix for Type D mixes and 30% of the total weight of the mix for Type B mixes. Higher percentages of RAP may be permissible depending on the material source. If higher percentages of RAP are desired, contact **R-K** for consideration.

R-K recommends the use of a PG 70-22 asphalt cement for the surface (or wearing) course and a PG 64-22 asphalt cement in the base course. The asphalt cement should conform to *TxDOT Standard Specification Item 300, Asphalts, Oils, and Emulsions* Performance-Graded Binders.

The asphaltic concrete should be compacted on the roadway to contain from 5 to 9 percent air voids computed using the maximum theoretical specific gravity (Rice) of the mixture determined according to Test Method Tex-227-F. Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method Tex-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project roadway specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required roadway specimens at their expense and in a manner and at locations selected by the Engineer.

It is recommended that the hot mix asphalt concrete pavement be placed with a paving machine only and not with a motor grader unless prior approval is granted by the Engineer for special circumstances or in restricted areas where use of a paving machine may not be practical.

TACK COAT

A tack coat should be placed between asphaltic concrete base and/or surface lifts and should be a PG binder with a minimum high-temperature grade of PG 58, SS-1H, CSS-1H, or EAP&T conforming to *TxDOT Standard Specifications 2004, Item 300 – Asphalts, Oils or Emulsions.* It is recommended that the application rates not exceed 0.1 gal/yd^2. See additional requirements for tack coats in the appropriate TxDOT Standard Specifications for Asphaltic Concrete Materials.

PORTLAND CEMENT CONCRETE (PCC) PAVEMENT

The Portland cement concrete utilized for paving should meet the material requirements shown in *TxDOT Standard Specifications 2004, Item 421 – Hydraulic Cement Concrete*, Class P with air entrained to result in a 4.5 percent ±1 percent air, should have a maximum slump of 3 inches (recommended placement slump of 1-½ inches), and should have a minimum 7-day job control compressive strength of 3,200 psi. A liquid membrane-forming curing compound (or equivalent) should be applied as soon as practical after broom finishing the concrete surface. The curing compound will help reduce the loss of water from the concrete. The reduction in the rapid loss in water will help reduce shrinkage cracking of the concrete.

REMOVING EXISTING PAVEMENT

Remove existing asphaltic concrete surface and granular base pavement layers in accordance with *TxDOT Standard Specifications 2004, Item 305 – Salvaging, Hauling, and Stockpiling Reclaimable Asphalt Pavement and Item 251 – Reworking Base Courses,* respectively. Stockpile materials in a manner that the reclaimed material will not become contaminated.

Reclaimed material, if used in the new pavement section, should be processed as necessary to meet the gradation requirements of TxDOT Item 247.2 Grade 3 and should be placed in accordance with *TxDOT Standard Specifications 2004, Item 351 – Flexible Pavement Structure Repair* Section 4 Subsection C "Mixing and Placing Base Material," or similar. Acceptable

reclaimed pavement treatment methods include cement and asphalt treatments in accordance with Items 275 and 292 respectively. If the reclaimed material is not treated, Item 247 is applicable for construction.

SITE PREPARATION

The existing pavement should be removed in accordance with the procedures stipulated in the section *Removing Existing Pavement.* The salvaged pavement material and excavated subgrade can be stockpiled and utilized as general fill, if necessary; otherwise, the excavated material should be completely removed from the site. The exposed subgrade should be prepared in accordance with *TxDOT Standard Specification Item 112, Subgrade Widening* or *City of San Antonio Standard Specification Item 104, Street Excavation.* The subgrade should be thoroughly proofrolled in order to locate and densify any weak, compressible zones. A minimum of 5 passes of a fully-loaded dump truck or a similar heavily-loaded piece of construction equipment should be used for planning purposes. Proofrolling operations should be observed by the Geotechnical Engineer or his representative to document subgrade condition and preparation. Weak or soft areas identified during proofrolling should be removed and replaced with a suitable, compacted backfill.

Upon completion of the proofrolling operations and just prior to placement of the pavement layers, the exposed subgrade should be moisture conditioned by scarifying to a minimum depth of 6 in. and recompacting to a minimum of 95 percent of the maximum density determined from TxDOT, Tex-114-E, Compaction Test. The moisture content of the subgrade should be maintained within the range of optimum moisture content to 3 percentage points above optimum moisture content until permanently covered.

CONCRETE PAVEMENT CONSTRUCTION CONTROL

Construction of Portland Cement Concrete Pavements should be controlled by the *TxDOT Standard Specifications 2004, Item 360 – Concrete Pavement* or *City of San Antonio Standard Specification Item 209, Concrete Pavement.* The surface of all concrete pavements should be textured. Texturing using carpet dragging should be in accordance with Item 360 Section 3, paragraph D, sub-paragraphs 1 and 2. Other texturing techniques may be utilized as described in ACI 330.1-03 Section 3 Subparagraph 9.

CONCRETE PAVEMENT TYPE

Jointed Plain Concrete Pavement (which is referred to by TxDOT as Concrete Pavement Contraction Design or CPCD) is suggested for roundabouts and roadways with crosswalks, adjacent parking, or sidewalks and is recommended as the pavement type for this city street.

CONCRETE PAVEMENT JOINT SPACING AND DETAILS

Construction joint spacing should not exceed 15 ft in either the longitudinal or transverse direction. The depth of sawcut should be a minimum of 1/4 of the slab depth (1/3 the slab depth is recommended) if utilizing a conventional saw or 1 inch when using an early entry saw (early entry sawing is recommended). The width of the joint will be a function of the sealant chosen to seal

the joint. It is recommended that a joint seal be utilized to minimize the introduction of incompressible material into the joint.

It is recommended that dowel bars be used to provide load transfer and reduce differential movement (or faulting) across transverse joints. Dowels should be smooth #9 bars (Grade 60 steel) spaced 12 inches on center with an embedment length of at least 8 inches.

Tie bars should be used to tie longitudinal joints within the pavement lanes. Tie bars should be deformed #4 bars at a minimum (Grade 60 steel) spaced 36 inches on center with a minimum length of 30 inches.

Isolation joints must be used around fixed structures including light standard foundations and drainage inlets to offset the effects of differential horizontal and vertical movements. Premolded joint fillers should be used around the fixed structures prior to placing the concrete pavement to prevent bonding of the slab to the structure and should extend through the depth of the slab but slightly recessed from the pavement surface to provide room for the joint sealant.

See Attachments for these suggested joint details as discussed above.

SUGGESTED PAVEMENT DETAILS

Suggested details that can be utilized for construction are:

- CPCD-94, Concrete Pavement Details, Contraction Design (CPCD) – standard for plain jointed concrete pavement and covers pavement thickness from 8 to 15 inches (See Figure 21).
- TxDOT JS-94, Concrete Paving Details, Joint Seals - specifies joint sealing requirements for concrete pavement (See Figure 22).
- Roundabout Joint Detail (See Figure 23).
- Transition Detail - Existing Asphalt Concrete Pavement to Newly Constructed Portland Cement Concrete (See Figure 24).

See Attachments for the suggested joint sealing detail as shown above.

MISCELLANEOUS PAVEMENT RELATED CONSIDERATIONS

Drainage Considerations

As with any soil-supported structure, the satisfactory performance of a pavement system is contingent on the provision of adequate surface and subsurface drainage. Insufficient drainage which allows saturation of the pavement subgrade and/or the supporting granular pavement materials will greatly reduce the performance and service life of the pavement systems.

Surface and subsurface drainage considerations crucial to the performance of pavements at this site include (but are not limited to) the following:

- Any known natural or man-made subsurface seepage at the site which may occur at sufficiently shallow depths as to influence moisture contents within the subgrade should be intercepted by drainage ditches or below grade French drains.
- Final site grading should eliminate isolated depressions adjacent to curbs, which may allow surface water to pond and infiltrate into the underlying soils. Curbs should be installed to a sufficient depth to reduce infiltration of water beneath the curbs and into the pavement base materials.
- Pavement surfaces should be maintained to help minimize surface ponding and to provide rapid sealing of any developing cracks. These measures will help reduce infiltration of surface water downward through the pavement section.

Utilities

Our experience indicates that significant settlement of backfill can occur in utility trenches, particularly when trenches are deep, when backfill materials are placed in thick lifts with insufficient compaction, and when water can access and infiltrate the trench backfill materials. The potential for water to access the backfill is increased where water can infiltrate flexible base materials due to insufficient penetration of curbs, and at sites where geological features can influence water migration into utility trenches (such as fractures within a rock mass or at contacts between rock and clay formations). It is our belief that another factor which can significantly impact settlement is the migration of fines within the backfill into the open voids in the underlying free-draining bedding material.

To reduce the potential for settlement in utility trenches, we recommend that consideration be given to the following:

- All backfill materials should be placed and compacted in controlled lifts appropriate for the type of backfill and the type of compaction equipment being utilized and all backfilling procedures should be tested and documented.
- Consideration should be given to wrapping free-draining bedding gravels with a geotextile fabric (similar to Mirafi 140N) to reduce the infiltration and loss of fines from backfill material into the interstitial voids in bedding materials.

Curb and Gutter

It is good practice to construct curbs such that the depth of the curb extends through the top 6 inches of the subgrade material to act as a protective barrier against the infiltration of water into the upper subgrade. Pavements that do not have this protective barrier to moisture tend to develop longitudinal cracks 1 to 2 ft from the edge of the pavement. Once these cracks develop, further degradation and weakening of the underlying subgrade may occur due to water seepage through the cracks.

Pavement Maintenance

Regular pavement maintenance is critical in maintaining pavement performance over a period of several years. All cracks that develop in asphalt pavements should be regularly sealed. Areas of moderate to severe fatigue cracking (also known as alligator cracking) should be sawcut and

removed. The underlying base should be checked for contamination or loss of support and any insufficiencies fixed or removed and the entire area patched.

All cracks that develop in concrete pavements should be routed and sealed regularly. Joints in concrete pavements should be maintained to reduce the influx of incompressible materials that restrain joint movement and cause spalling and/or cracking.

Other typical TxDOT or City of San Antonio maintenance techniques should be followed as required.

Construction Traffic

Construction traffic on prepared subgrade, base or incomplete asphalt concrete layers should be restricted as much as possible until the protective asphalt surface pavement is applied. Significant damage to the underlying layers resulting in weakening may occur if heavily loaded vehicles are allowed to use these areas.

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The following figures are attached and complete this report:

Figure 1	Boring Location Map
Figures 2 through 16	Logs of Borings
Figure 17	Key to Terms and Symbols
Figure 18	Results of Soil Analyses
Figure 19	Moisture-Density Relationship Curve
Figure 20	Lime Series Curve
Figure 21	CPCD-94, Concrete Pavement Details
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Figure 24	Concrete to HMA Pavement Transition

ATTACHMENTS

Raba Kistner

Engineering • Testing • Environmental
Facilities • Infrastructure

BORING LOCATION MAP

SOUTH TEXAS MEDICAL CENTER – PAVEMENTS
SAN ANTONIO, TEXAS

PROJECT No.:
ASA07-081-00

FIGURE 1A

THIS DRAWING IS PROVIDED FOR ILLUSTRATION ONLY, MAY NOT BE TO SCALE, AND IS NOT SUITABLE FOR DESIGN OR CONSTRUCTION PURPOSES.
NOTE: BASE MAP PROVIDED BY GOOGLE EARTH.

Raba Kistner

Engineering • Testing • Environmental
Facilities • Infrastructure

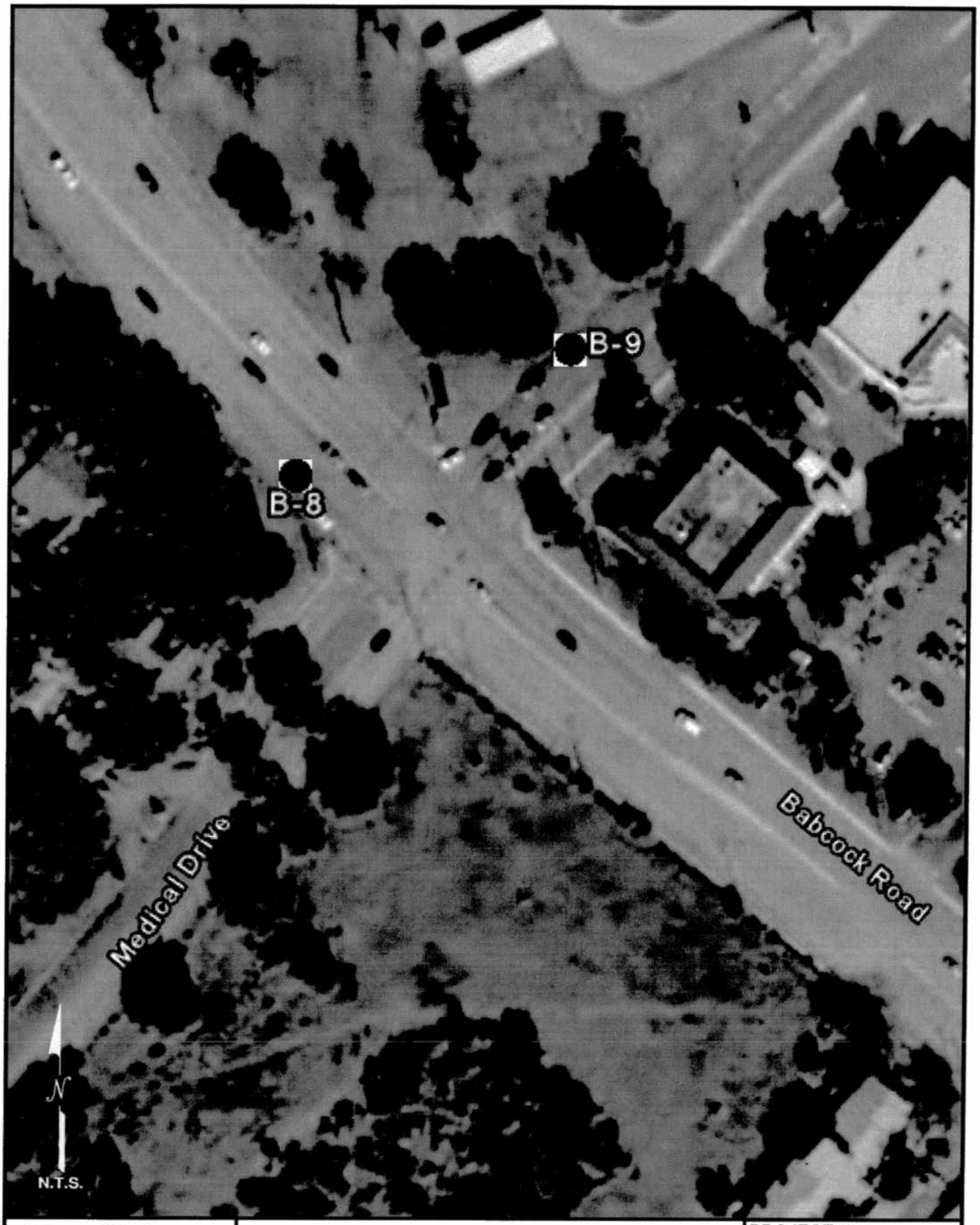
BORING LOCATION MAP

SOUTH TEXAS MEDICAL CENTER – PAVEMENTS
SAN ANTONIO, TEXAS

PROJECT No.:
ASA07-081-00

FIGURE 1B

THIS DRAWING IS PROVIDED FOR ILLUSTRATION ONLY, MAY NOT BE TO SCALE, AND IS NOT SUITABLE FOR DESIGN OR CONSTRUCTION PURPOSES.
NOTE: BASE MAP PROVIDED BY GOOGLE EARTH.



Raba Kistner

Engineering • Testing • Environmental
Facilities • Infrastructure

BORING LOCATION MAP

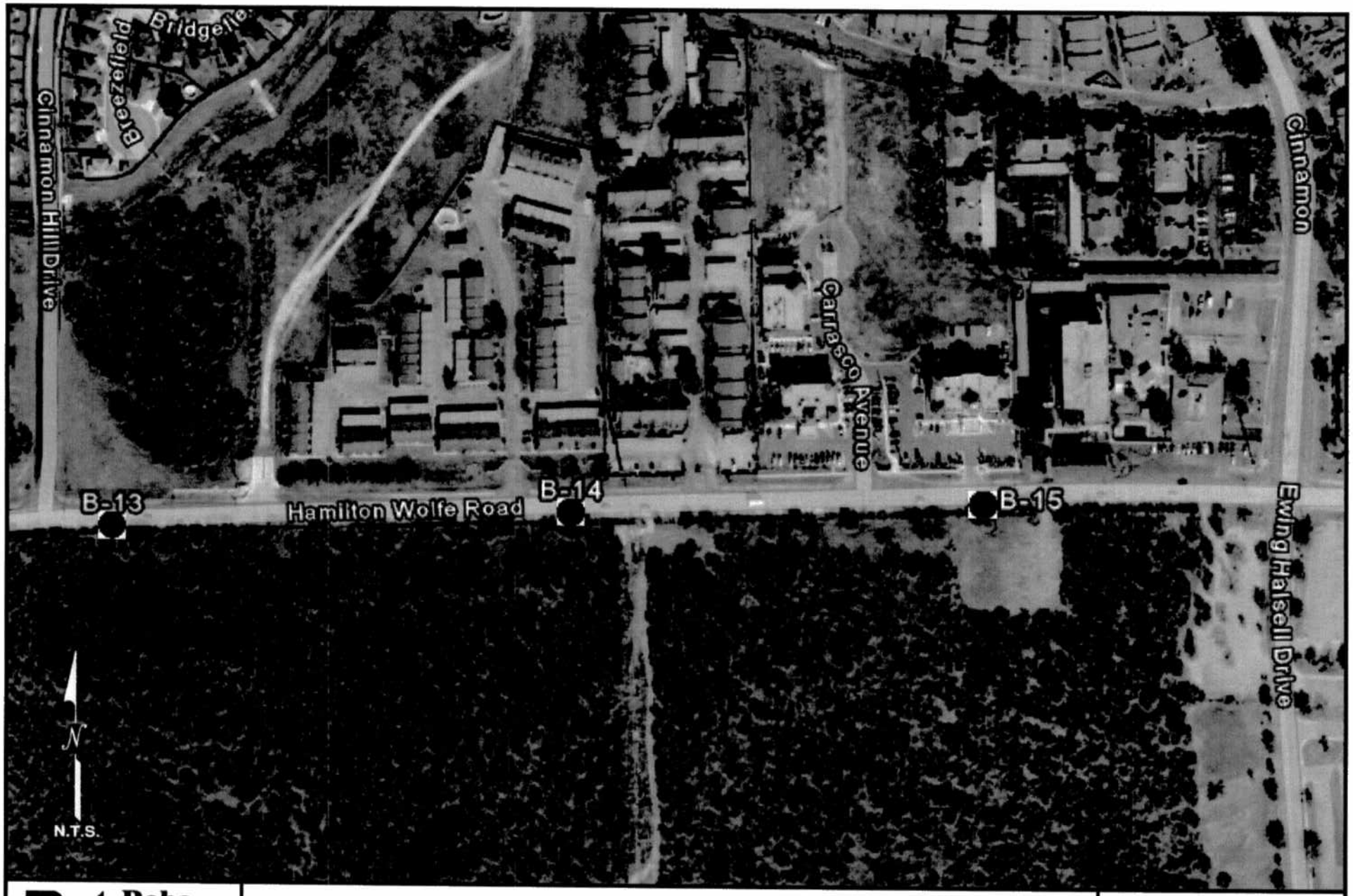
SOUTH TEXAS MEDICAL CENTER – PAVEMENTS
SAN ANTONIO, TEXAS

PROJECT No.:

ASA07-081-00

FIGURE 1C

THIS DRAWING IS PROVIDED FOR ILLUSTRATION ONLY, MAY NOT BE TO SCALE, AND IS NOT SUITABLE FOR DESIGN OR CONSTRUCTION PURPOSES.
NOTE: BASE MAP PROVIDED BY GOOGLE EARTH.



Raba Kistner

Engineering • Testing • Environmental
Facilities • Infrastructure

BORING LOCATION MAP

SOUTH TEXAS MEDICAL CENTER – PAVEMENTS
SAN ANTONIO, TEXAS

PROJECT No.: ASA07-081-0

FIGURE 1D

THIS DRAWING IS PROVIDED FOR ILLUSTRATION ONLY, MAY NOT BE TO SCALE, AND IS NOT SUITABLE FOR DESIGN OR CONSTRUCTION PURPOSES.
NOTE: BASE MAP PROVIDED BY GOOGLE EARTH.

LOG OF BORING NO. B-1

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT² (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (1-1/2 in.)					
			BASE MATERIAL (7-1/2 in.)					
			CLAY, Firm to Very Stiff, Dark Brown, with fine gravel					
				8			56	
				15				
5								

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	2

LOG OF BORING NO. B-2

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (3-3/4 in.)					
			BASE MATERIAL (8-1/4 in.)					
			CLAY, Very Stiff, Dark Brown, with fine gravel					
				19				
				18				
5								

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	3

LOG OF BORING NO. B-3

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (3 in.)					
			BASE MATERIAL (8 in.)					
			CLAY, Hard, Dark Brown, with gravel	40				
			CLAY, Very Stiff, Light Tan, with gravel	29			8	
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	4

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-4

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT² (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (3 in.)					
			BASE MATERIAL (6 in.)					
			CLAY, Very Stiff, Dark Brown, with fine gravel	17			50	
			CLAY, Stiff, Tan, with fine gravel	10				
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	5

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-5

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (3 in.)					
			BASE MATERIAL (6-1/2 in.)					
			CLAY, Very Stiff, Dark Brown, with fine gravel	16				
			CLAY, Very Stiff, Tan, with calcareous material	22				
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	6

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-6

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (8 in.)					
			BASE MATERIAL (5-1/4 in.)					
			CLAY, Firm, Dark Brown, with gravel	8				
			CLAY, Stiff, Tan, with ferric staining	14			17	
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/23/2007	**DATE MEASURED:**	8/23/2007	**FIGURE:**	7

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-7

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (8-1/2 in.)					
			BASE MATERIAL (4-1/2 in.)					
			CLAY, Firm to Stiff, Dark Brown, with gravel					
				9				
				6				
5								

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	8

LOG OF BORING NO. B-8

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (5-1/4 in.)					
			BASE MATERIAL (8-1/4 in.)					
			CLAY, Stiff to Very Stiff, Dark Brown, with calcareous material	11			35	
				15				
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	9

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-9

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (5 in.)					
			BASE MATERIAL (7 in.)					
			CLAY, Stiff, Dark Brown, with gravel					
			CLAY, Firm to Stiff, Tan, with fine gravel	10				
				5			15	
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	10

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-10

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (12-1/2 in.)					
			BASE MATERIAL (5-1/2 in.)					
			CLAY, Soft to Firm, Tan					
				3			5	
				8				
5								

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	11

LOG OF BORING NO. B-11

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (7-3/4 in.)					
			BASE MATERIAL (7-1/4 in.)					
			CLAY, Stiff to Very Stiff, Dark Brown, with gravel	16				
				11				
5			CLAY, Stiff, Tan, with calcareous material					

DEPTH DRILLED:	5 ft	DEPTH TO WATER:	Dry	PROJ. No.:	ASA07-081-00
DATE DRILLED:	8/22/2007	DATE MEASURED:	8/22/2007	FIGURE:	12

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-12

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (8 in.)					
			BASE MATERIAL (4 in.)					
			CLAY, Soft to Very Stiff, Tan					
				4				
				18			18	
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/22/2007	**DATE MEASURED:**	8/22/2007	**FIGURE:**	13

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-13

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (7-1/2 in.)					
			BASE MATERIAL (6-1/4 in.)					
			CLAY, Stiff, Dark Brown, with gravel					
				11				
				9			41	
5								

DEPTH DRILLED:	5 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA07-081-00
DATE DRILLED:	8/23/2007	**DATE MEASURED:**	8/23/2007	**FIGURE:**	14

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-14

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (9 in.)					
			BASE MATERIAL (4 in.)					
			CLAY, Firm, Dark Brown, with gravel	7				
			CLAY, Very Stiff, Tan, with ferric staining	20				
5								

DEPTH DRILLED:	5 ft	DEPTH TO WATER:	Dry	PROJ. No.:	ASA07-081-00
DATE DRILLED:	8/23/2007	DATE MEASURED:	8/23/2007	FIGURE:	15

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-15

South Texas Medical Center - Pavements
San Antonio, Texas

Raba Kistner

DRILLING METHOD:

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WIEGHT, pcf	SHEAR STRENGTH, TONS/FT (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			ASPHALT (8-1/2 in.)					
			BASE MATERIAL (4-1/2 in.)					
			CLAY, Firm, Dark Brown, with gravel	5			27	
			CLAY, Stiff, Tan, with ferric staining	12				
5								

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED:	5 ft	DEPTH TO WATER:	Dry	PROJ. No.:	ASA07-081-00
DATE DRILLED:	8/23/2007	DATE MEASURED:	8/23/2007	FIGURE:	16

KEY TO TERMS AND SYMBOLS

MATERIAL TYPES

SOIL TERMS

- CALCAREOUS
- CALICHE
- CLAY
- CLAYEY
- GRAVEL
- GRAVELLY
- PEAT
- SAND
- SANDY
- SILT
- SILTY
- FILL

ROCK TERMS

- CHALK
- CLAYSTONE
- CLAY-SHALE
- CONGLOMERATE
- DOLOMITE
- IGNEOUS
- LIMESTONE
- MARL
- METAMORPHIC
- SANDSTONE
- SHALE
- SILTSTONE

OTHER

- ASPHALT
- BASE
- CONCRETE/CEMENT
- BRICKS / PAVERS
- WASTE
- NO INFORMATION

WELL CONSTRUCTION AND PLUGGING MATERIALS

- BLANK PIPE
- SCREEN
- BENTONITE
- CEMENT GROUT
- BENTONITE & CUTTINGS
- CONCRETE/CEMENT
- CUTTINGS
- GRAVEL
- SAND
- VOLCLAY

SAMPLE TYPES

- AIR ROTARY
- GRAB SAMPLE
- CORE
- GEOPROBE SAMPLER
- MUD ROTARY
- NO RECOVERY
- NX CORE
- TEXAS CONE PENETROMETER
- SHELBY TUBE
- SPLIT BARREL
- SPLIT SPOON

STRENGTH TEST TYPES

- POCKET PENETROMETER
- TORVANE
- UNCONFINED COMPRESSION
- TRIAXIAL COMPRESSION UNCONSOLIDATED-UNDRAINED
- TRIAXIAL COMPRESSION CONSOLIDATED-UNDRAINED

NOTE: VALUES SYMBOLIZED ON BORING LOGS REPRESENT SHEAR STRENGTHS UNLESS OTHERWISE NOTED

PROJECT NO. ASA07-081-00

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DENSITY

Penetration Resistance Blows per ft	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
> 50	Very Dense

COHESIVE STRENGTH

Resistance Blows per ft	Consistency	Cohesion TSF
0 - 2	Very Soft	0 - 0.125
2 - 4	Soft	0.125 - 0.25
4 - 8	Firm	0.25 - 0.5
8 - 15	Stiff	0.5 - 1.0
15 - 30	Very Stiff	1.0 - 2.0
> 30	Hard	> 2.0

PLASTICITY

Plasticity Index	Degree of Plasticity
0 - 5	None
5 - 10	Low
10 - 20	Moderate
20 - 40	Plastic
> 40	Highly Plastic

ABBREVIATIONS

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Total BTEX
TPH = Total Petroleum Hydrocarbons
ND = Not Detected
NA = Not Analyzed
NR = Not Recorded/No Recovery
OVA = Organic Vapor Analyzer
ppm = Parts Per Million

Qam, Qas, Qal = Quaternary Alluvium
Qat = Low Terrace Deposits
Qbc = Beaumont Formation
Qt = Fluviatile Terrace Deposits
Qao = Seymour Formation
Qle = Leona Formation
Q-Tu = Uvalde Gravel
Ewi = Wilcox Formation
Emi = Midway Group
Mc = Catahoula Formation
El = Laredo Formation
Kknm = Navarro Group and Marlbrook Marl
Kpg = Pecan Gap Chalk
Kau = Austin Chalk

Kef = Eagle Ford Shale
Kbu = Buda Limestone
Kdr = Del Rio Clay
Kft = Fort Terrett Member
Kgt = Georgetown Formation
Kep = Person Formation
Kek = Kainer Formation
Kes = Escondido Formation
Kew = Walnut Formation
Kgr = Glen Rose Formation
Kgru = Upper Glen Rose Formation
Kgrl = Lower Glen Rose Formation
Kh = Hensell Sand

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: South Texas Medical Center - Pavements
San Antonio, Texas

FILE NAME: ASA07-081-00.GPJ 2/19/2008

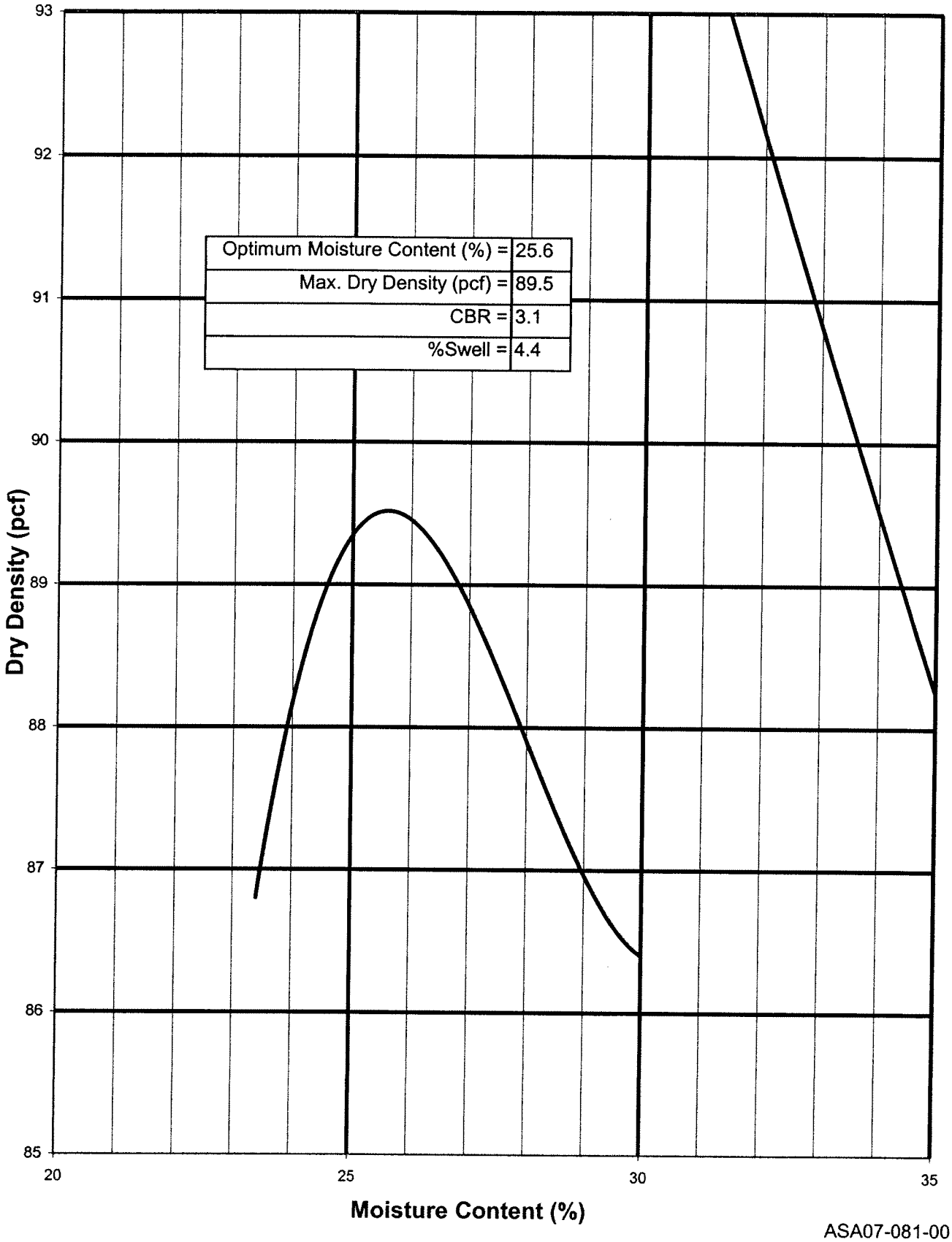
Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Compr. Strength (tsf)	Strength Test
B-1	1.0 to 2.5	8	41.6	86	30	56	CH				
	3.5 to 5.0	15	25.9								
B-2	1.0 to 2.5	19	21.1								
	3.5 to 5.0	18	20.1								
B-3	1.0 to 2.5	40	24.6								
	3.5 to 5.0	29	9.7	30	22	8	CL				
B-4	1.0 to 2.5	17	25.9	70	20	50	CH				
	3.5 to 5.0	10	28.1								
B-5	1.0 to 2.5	16	32.2								
	3.5 to 5.0	22	17.7								
B-6	1.1 to 2.6	8	11.1								
	3.5 to 5.0	14	19.6	35	18	17	CL				
B-7	1.1 to 2.6	9	12.0								
	3.5 to 5.0	6	12.9								
B-8	1.1 to 2.6	11	21.7	53	18	35	CH				
	3.5 to 5.0	15	23.1								
B-9	1.0 to 2.5	10	19.0								
	3.5 to 5.0	5	22.7	34	19	15	CL				
B-10	1.5 to 3.0	3	26.2	27	22	5	CL-ML				
	3.5 to 5.0	8	22.5								
B-11	1.3 to 2.8	16	19.8								
	3.5 to 5.0	11	18.1								
B-12	1.0 to 2.5	4	27.0								
	3.5 to 5.0	18	16.1	36	18	18	CL				
B-13	1.1 to 2.6	11	16.4								
	3.5 to 5.0	9	15.7	59	18	41	CH				
B-14	1.1 to 2.6	7	21.3								
	3.5 to 5.0	20	19.1								
B-15	1.1 to 2.6	5	25.6	47	20	27	CL				
	3.5 to 5.0	12	19.3								

PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial FV = Field Vane

PROJECT NO. ASA07-081-00

MOISTURE DENSITY RELATIONSHIP
South Texas Medical Center - Pavements



2/19/2008

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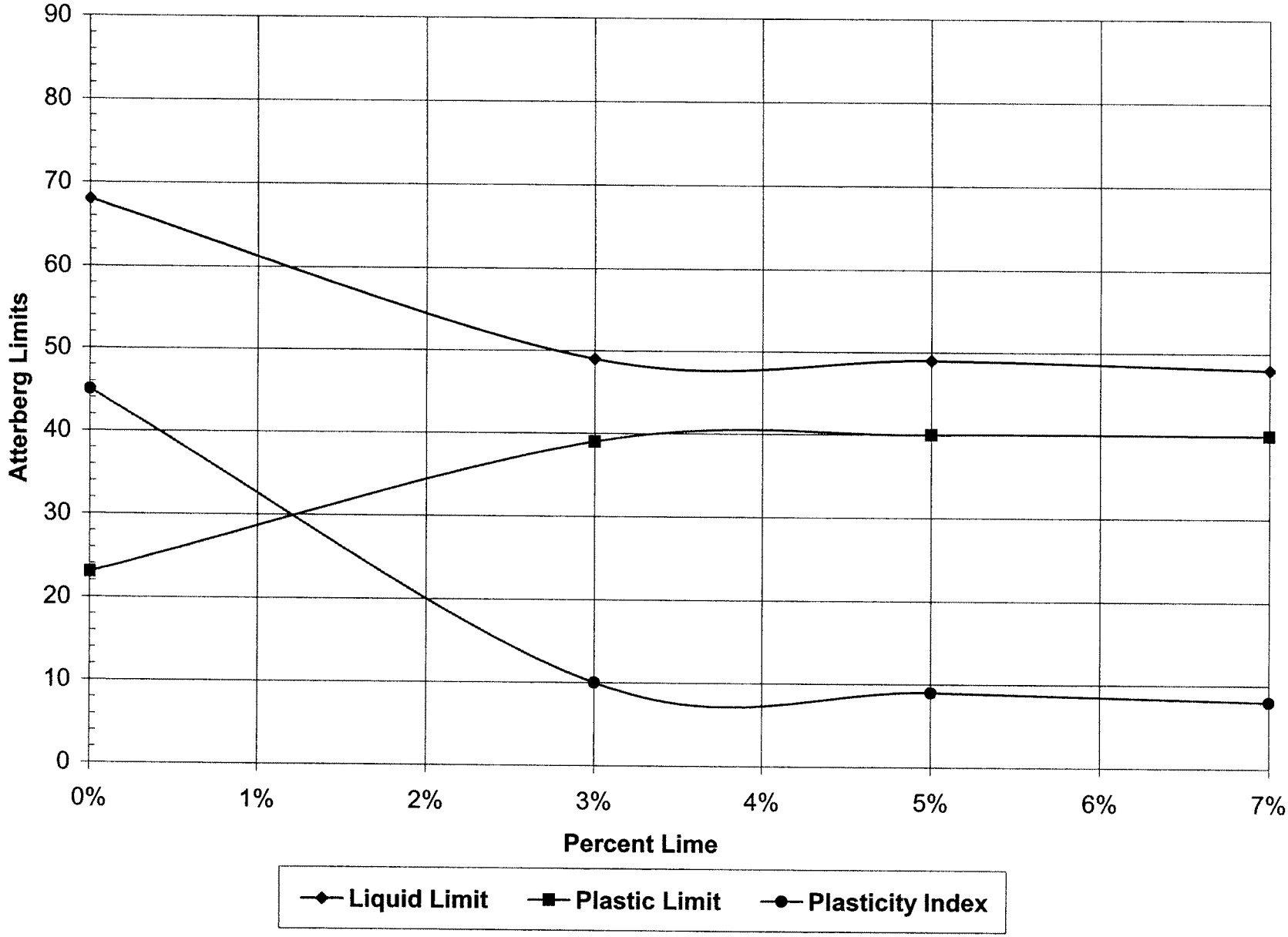
ASA07-081-00
Figure 19

LIME SERIES CURVE

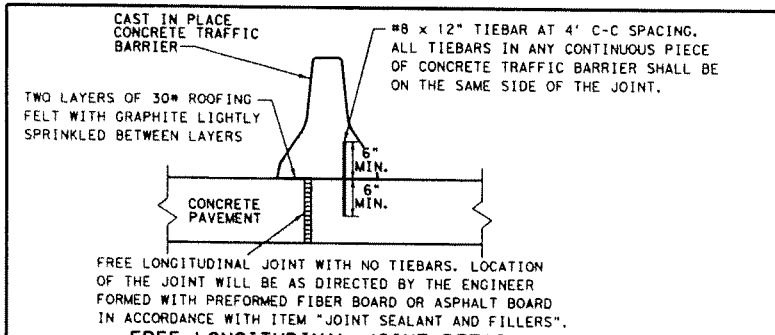
South Texas Medical Center - Pavements



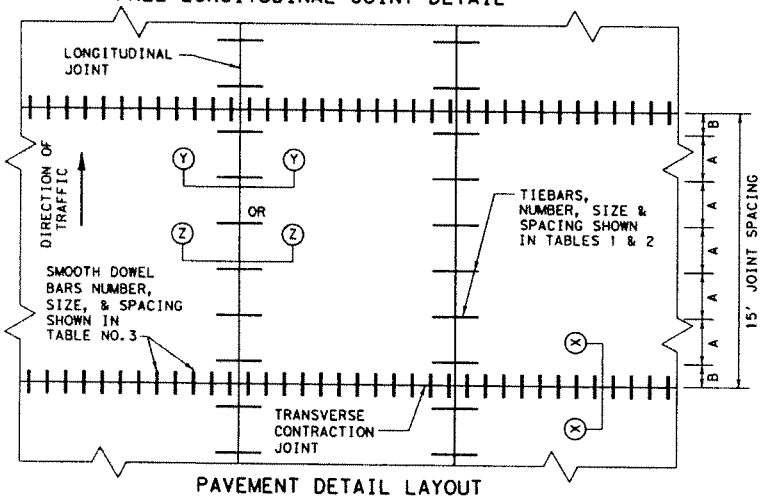
2/19/2008

Raba-Kistner

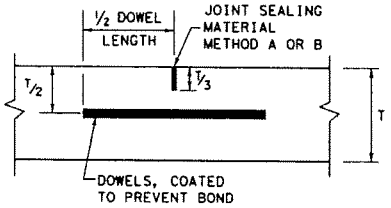
ASA07-081-00
Figure 20



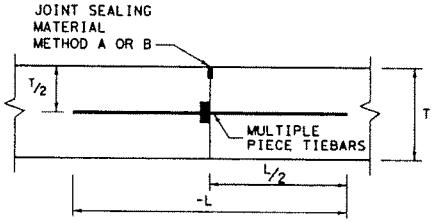
FREE LONGITUDINAL JOINT DETAIL



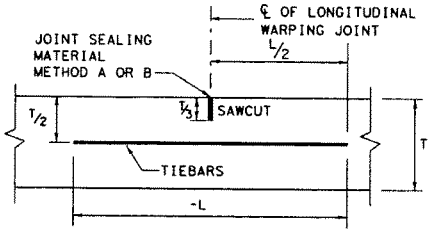
PAVEMENT DETAIL LAYOUT



TRANSVERSE CONTRACTION JOINT
SECTION X-X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y-Y



LONGITUDINAL WARPING JOINT
SECTION Z-Z

GENERAL NOTES

1. CONCRETE SLABS WIDER THAN 100' WITHOUT A FREE JOINT, ARE NOT COVERED BY THIS STANDARD.
2. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATIONS FOR "CONCRETE PAVEMENT" AND "REINFORCING STEEL."
3. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS, AND CROWN CROSS SLOPE SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
4. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR WILL BE SHOWN IN CONCRETE PAVEMENT DETAIL, JOINT SEALANT STANDARD (JS-94).
5. PAVEMENT WIDTHS IN EXCESS OF 16' SHALL BE PROVIDED WITH A LONGITUDINAL JOINT (SECTION Z-Z OR Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6" OF THE LANE LINES UNLESS SHOWN ELSEWHERE ON THE PLANS.
6. THE JOINT BETWEEN OUTSIDE LANE AND SHOULDER SHALL BE A LONGITUDINAL WARPING JOINT (SECTION Z-Z) UNLESS OTHERWISE SHOWN IN THE PLANS.
7. THE SPACING BETWEEN TRANSVERSE JOINTS SHALL BE 15 FEET UNLESS OTHERWISE SHOWN IN THE PLANS.
8. WHERE A MONOLITHIC CURB IS SPECIFIED, THE JOINT IN THE CURB SHALL COINCIDE WITH PAVEMENT JOINTS AND MAY BE FORMED BY ANY MEANS APPROVED BY THE ENGINEER.
9. TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USE OF METAL OR WOOD FORMS EQUAL IN DEPTH TO THE NOMINAL DEPTH OF THE PAVEMENT, OR BY METHODS APPROVED BY THE ENGINEER.
10. THE ENGINEER WILL ADJUST THE REQUIRED NUMBER OF TIEBARS FOR SLABS SHORTER OR LONGER THAN 15'. SPACING "B" WILL BE ADJUSTED TO MAINTAIN A MINIMUM CLEARANCE OF 2" BETWEEN THE TIEBAR AND THE DOWEL BARS AT THE TRANSVERSE JOINT AND THE "A" SPACING WILL REMAIN AS REQUIRED FOR THE PAVEMENT SLAB WIDTH.
11. MULTIPLE PIECE TIEBARS SHALL BE USED AT LONGITUDINAL CONSTRUCTION JOINTS UNLESS OTHERWISE SPECIFIED IN THE PLANS.
12. THE SAW CUT FOR LONGITUDINAL WARPING AND THE TRANSVERSE CONSTRUCTION JOINTS MAY BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGATE.

TABLE NO. 1 TIEBARS REQUIRED FOR LONGITUDINAL JOINT JOINTS FOR EACH 15' SLAB

ASTM A-616 OR A-615 (GRADE 60) STRAIGHT OR MULIPLE PIECE REINFORCING TIEBARS		CONCRETE SLAB THICKNESS	DISTANCE FROM THE LONGITUDINAL JOINT TO THE NEAREST LONGITUDINAL FREE EDGE			
			< OR =16'	< OR =24'	< OR =34'	< OR =50'
BAR LENGTH, "L" INCHES	BAR SIZE	"T" INCHES	REQUIRED NO. OF BARS	REQUIRED NO. OF BARS	REQUIRED NO. OF BARS	REQUIRED NO. OF BARS
42	#5 (5/8")	8	5	5	6	9
		9	5	5	7	10
		10	5	5	7	11
		11	5	6	8	12
		12	5	6	9	13
		13	5	7	9	13
		14	6	7	10	NA
		15	6	8	11	NA
50	#6 (3/4")	8	5	5	5	6
		9	5	5	5	7
		10	5	5	5	8
		11	5	5	6	8
		12	5	5	6	9
		13	5	5	7	10
		14	5	5	7	10
		15	5	6	8	11

THE DISTANCE TO THE FREE EDGE WILL BE DETERMINED BY THE ENGINEER AND THE DISTANCE WILL BE BASED ON THE NOMINAL WIDTHS OF THE LANES AND SHOULDERS PLUS ANY TIED RAMPS OR CONNECTING ROADWAYS.

TABLE NO. 2 TIEBAR SPACINGS
SPACING REQUIREMENT FOR 15' SLAB FOR REQUIRED NUMBER OF BARS

REQUIRED NO. OF BARS	REGUALR SPACING "A" INCHES	FIRST AT JOINT "B" INCHES
5	36	18
6	30	15
7	25	15
8	21	16.5
9	18	18
10	16	18
11	15	15
12	13	18.5
13	12	18

TABLE NO. 3 DOWELS REQUIEMENTS

T, IN.	DOWELS (SMOOTH BARS)	
	SIZE AND LENGTH	AVERAGE SPACING (INCHES)
8	1" X 18"	12
9	1 1/8" X 18"	12
10	1 1/4" X 18"	12
11	1 3/8" X 18"	12
12	1 1/2" X 18"	12
13	1 5/8" X 18"	12
14	1 3/4" X 18"	12
15	1 7/8" X 18"	12

PROJECT No. ASA07-081-00
Figure 21

Texas Department of Transportation
Construction Division (Pavements)

CONCRETE PAVEMENT DETAILS
CONTRACTION DESIGN
T-8 THRUGH 15 INCHES
CPCD-94

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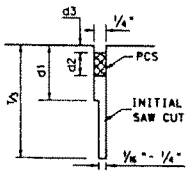
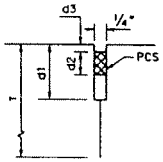
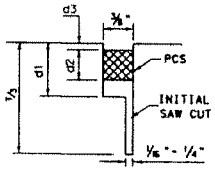


SAWED
LONGITUDINAL JOINT



LONGITUDINAL
CONSTRUCTION JOINT

LONGITUDINAL JOINT SEALS



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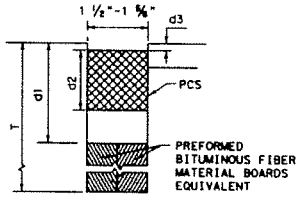


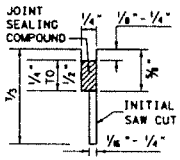
FORMED
FORMED EXPANSION JOINT

TRANSVERSE JOINT SEALS

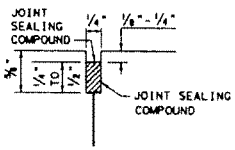
METHOD A: PREFORMED COMPRESSION SEALS (PCS)
(CLASS 6 PREFORMED JOINT SEALANT)

GENERAL NOTES FOR METHOD "A"

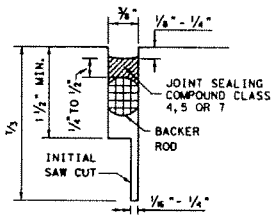
1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. DIMENSIONS d1, d2, AND d3 SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURES RECOMMENDATION.
4. THE JOINT RESERVOIR FOR SEALANT SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION AND THE TWO SAWED JOINTS.
5. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 AND PRIOR TO BEGINNING OPERATIONS, THE CONTRACTOR SHALL SUBMIT A STATEMENT FROM THE SEALANT MANUFACTURER SHOWING THE RECOMMENDED EQUIPMENT AND INSTALLATION PROCEDURES TO BE USED.
6. THE SAW CUT FOR THE LONGITUDINAL JOINT SHALL BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGATE.



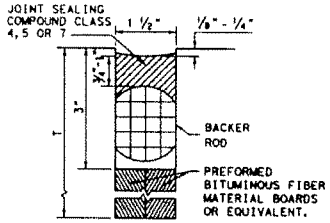
SAWED
LONGITUDINAL JOINT



LONGITUDINAL OR TRANSVERSE
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT



TRANSVERSE FORMED
EXPANSION JOINT

METHOD B: JOINT SEALING COMPOUND

GENERAL NOTES FOR METHOD "B"

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. THE ENGINEER SHALL SELECT A TARGET PLACEMENT THICKNESS FOR THE SEALANT DETAILS WHICH SHOW RANGES IN THICKNESS. THE TARGET THICKNESS WILL NORMALLY BE THE MIDPOINT OF THE RANGE.
4. THE JOINT RESERVOIR FOR SEALANT SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION AND THE TWO SAWED JOINTS.
5. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 AND PRIOR TO BEGINNING OPERATIONS, THE CONTRACTOR SHALL SUBMIT A STATEMENT FROM THE SEALANT MANUFACTURER SHOWING THE RECOMMENDED EQUIPMENT AND INSTALLATION PROCEDURES TO BE USED.
6. THE SAW CUT FOR THE LONGITUDINAL JOINT SHALL BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGATE.

PROJECT No. ASA07-081-00
Figure 22

Texas Department of Transportation
Construction Division (Pavement)

CONCRETE PAVING DETAILS
JOINT SEALS

JS-94

TxDOT SEPTEMBER 1994

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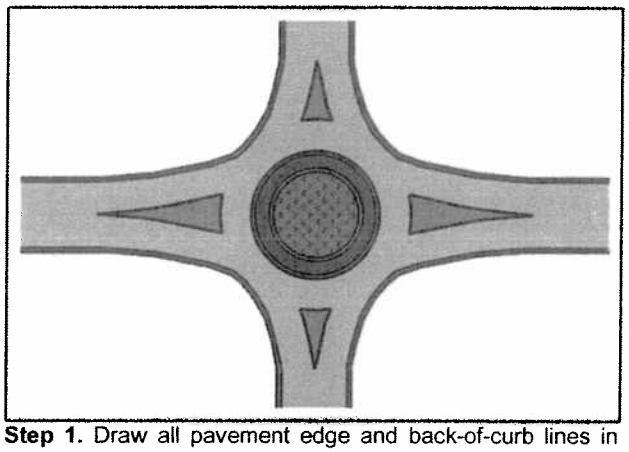
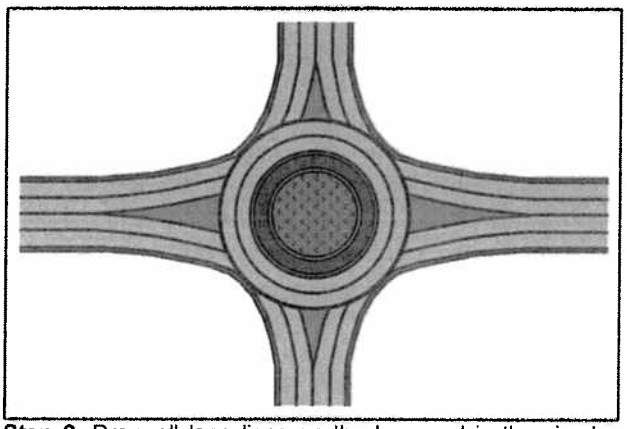
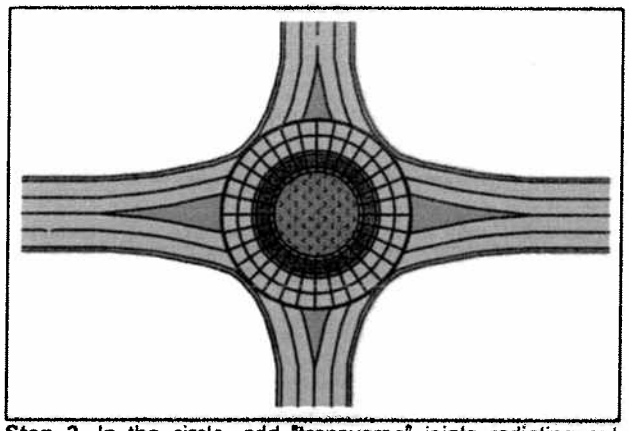


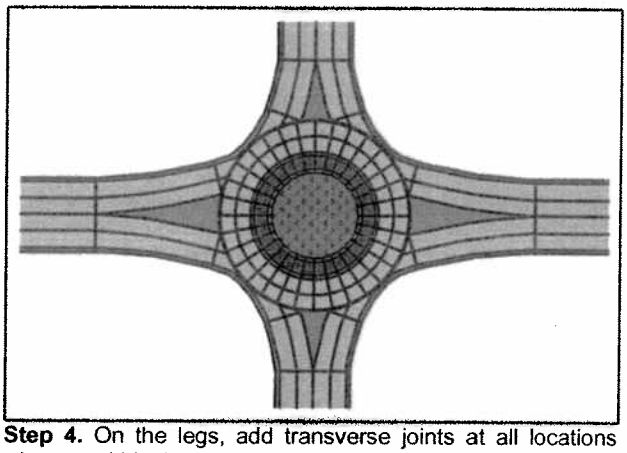
Step 1. Draw all pavement edge and back-of-curb lines in the plan view. Draw locations of all manholes, drainage inlets, and valve covers so that joints can intersect these.



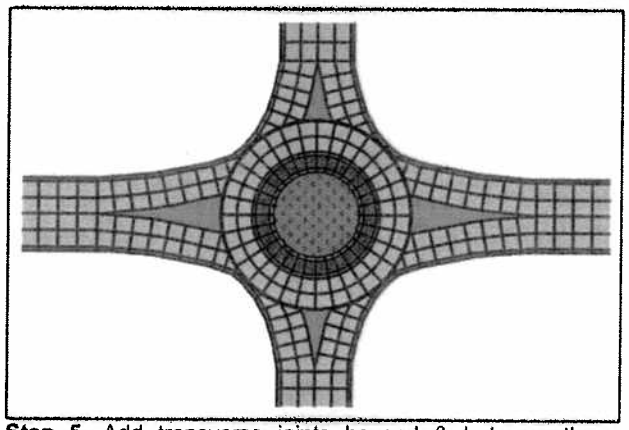
Step 2. Draw all lane lines on the legs and in the circular portion. If isolating circle from legs, do not extend these through the circle. If using "pave-through" method, determine which roadway will be paved through. Make sure no distance is greater than the maximum recommended width.



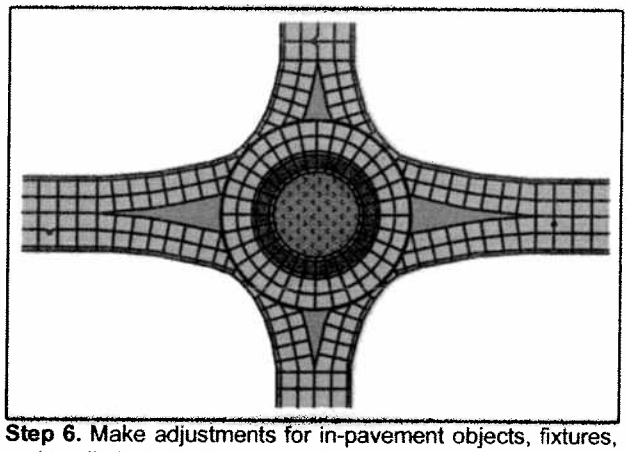
Step 3. In the circle, add "transverse" joints radiating out from the center of the circle. Make sure that the largest dimension of a pie-shaped slab is smaller than the maximum recommended. Extend these joints through the back of the curb & gutter.



Step 4. On the legs, add transverse joints at all locations where a width change occurs in the pavement (at bullnose of median islands, begin & end of curves, tapers, tangents, curb returns, etc.). Extend these joints through the back of the curb & gutter.

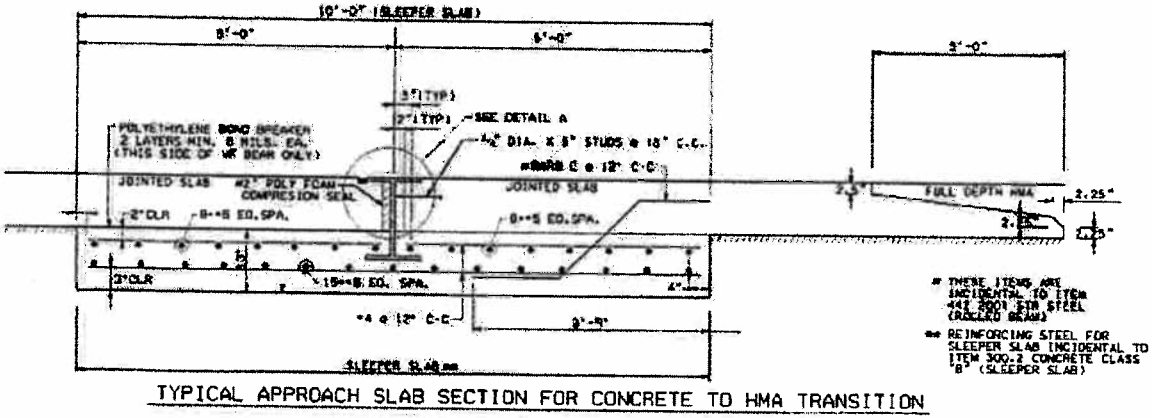


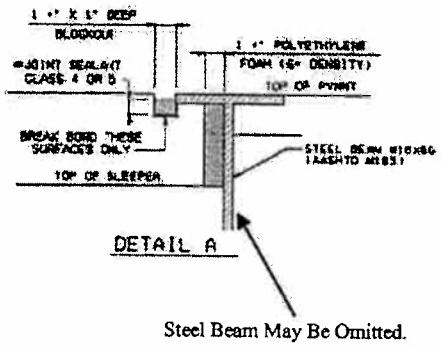
Step 5. Add transverse joints beyond & between those added in Step 4. Space joints out evenly between other joints, making sure to not violate maximum joint spacing.



Step 6. Make adjustments for in-pavement objects, fixtures, and to eliminate L-shapes, small triangular slabs, etc.

PROJECT No. ASA07-081-00
FIGURE 23





Concrete to Existing HMA Transition Joint Detail.

PROJECT No. ASA07-081-00
FIGURE 24

GEOTECHNICAL ENGINEERING STUDY

FOR

STMC SIGNAL POLE DESIGN
HAMILTON WOLFE ROAD AND BABCOCK ROAD
SAN ANTONIO, TEXAS

RABA KISTNER CONSULTANTS

Raba Kistner
Consultants, Inc.
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P.O. Box 690287
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TBPE Firm F-3257

Project No. ASA12-058-00
July 2, 2012

Mr. Dan Thoma, P.E.
Pape-Dawson Engineers, Inc.
555 East Ramsey
San Antonio, Texas 78216

RE: Geotechnical Engineering Study
STMC Signal Pole Design
Hamilton Wolfe Road and Babcock Road
San Antonio, Texas

Dear Mr. Thoma:

Raba Kistner Consultants Inc. (RKCI) has completed the authorized subsurface exploration for the proposed traffic signal poles proposed on the 4 corners at the intersection of Hamilton Wolfe Road and Babcock Road in San Antonio, Texas. This report briefly describes the procedures utilized during this study and presents our findings.

Project Description

RKCI was contracted by Pape-Dawson Engineers, Inc. (P-D) to drill one geotechnical boring; to obtain subgrade soil samples; and to present a written engineering report to include the field and laboratory testing as well as foundation design and construction considerations for the proposed signal pole.

Limitations

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of south/central Texas and for the use of P-D and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses. This report is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from one boring drilled at this site and our understanding of the project information provided to us. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions across the site. This is particularly true with respect to the depth of the surficial fill/clays, depth of gravels, and water seepage encountered at the 4 corner locations, especially since only a single boring was drilled for the evaluation of the 4 corners of this intersection. The nature and extent of variations across the site may not

become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report.

Borings and Laboratory Tests

Subsurface conditions at the site were evaluated by one boring drilled at the locations shown on the Boring Location Map, Figure 1. The boring was drilled to a depth of approximately 41 ft below the existing ground surface using a truck-mounted drilling rig. During drilling operations, Texas Cone Penetrometer (TCP) tests were conducted at regular intervals and grab samples were collected from the auger drilling.

Each sample was visually classified in the laboratory by a member of our Geotechnical Engineering staff. The results of field testing are presented on the boring log, Figure 2. A key to classification terms and symbols used on the logs is presented on Figure 3. The results of the laboratory and field testing are also tabulated on Figure 4 for ease of reference.

TCP test results are noted as “blows per foot” on the boring log (divided into 6 in. increments) where “blows per ft” refers to the number of blows by a falling hammer required for 1 ft of penetration into soil/weak rock. Where hard or dense materials were encountered, each increment was terminated at 50 blows even if 6 in. of penetration had not been achieved in that increment.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the Client.

Geology A review of the *Geologic Atlas of Texas, San Antonio Sheet*, indicates that this site is naturally underlain with the soils/rock of the Pecan Gap Chalk. The Pecan Gap Chalk weathers to form moderately deep soil and typically consists of clays, marly clays, and marl grading to chalk at depth. Thin seams of bentonite and/or bentonitic clays are also often encountered in this formation. Because such seams are typically thin and random, they are often difficult to locate and identify with standard geotechnical sampling methods and sampling intervals. Key geotechnical engineering concerns for development supported on this formation are expansive, soil-related movement.

Stratigraphy The stratigraphy can generally be described as dark brown and tan clay fill material overlying tan clay. The boring log should be consulted for more specific stratigraphic information. Each stratum shown on the boring log has been designated by grouping soils/rock that possesses similar physical and engineering characteristics. The lines designating the interfaces between strata on the boring log represents approximate boundaries. Transitions between strata may be gradual.

Groundwater Groundwater seepage was observed at 29 ft below the existing ground surface in our boring during the drilling operations. It must be noted that at the time of our field study the San Antonio area was in the midst of a historical drought. This drought has influenced local groundwater levels and it is possible for groundwater to exist beneath this site at shallow depths on a transient basis, particularly in the gravelly areas and following periods of normal precipitation. Fluctuations in groundwater levels can also occur due to variation in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater level.

Foundation Recommendations

Drilled, Straight-Shaft Piers We have computed allowable downward vertical capacities for 18, 24, 30, and 36 in. diameter drilled piers for the proposed traffic signal pole. Straight-shaft piers should be designed as friction and end bearing units using the capacities presented on the drilled pier capacity curves. Side shear resistance was neglected in the upper 5 ft of the pier shaft as well as in the bottom one shaft diameter.

Pier capacity curves were developed using the TxDOT Geotechnical Manual dated August 2006. The results are presented graphically on Figure 5. The capacity curves are based on the TCP blow count data from our boring. If the depth of fill material or the depth to the top of the marl strata vary from those encountered in or single boring, at any of the three corners that don't have a boring, then the pile capacity curves may need to be adjusted for those conditions. The indicated capacities on these figures are for dead plus live loads. Dead loads should not exceed two-thirds of the computed capacities.

The pier shafts will be subject to potential uplift forces if the surrounding expansive soils within the active zone are subjected to alternate drying and wetting conditions. The active zone assumed for calculation of the uplift force was assumed to be 15 ft below the existing ground surface at our boring locations. The maximum potential uplift force acting on the shaft may be estimated by:

$$F_u = 60*D$$

Where:

F_u = uplift force in kips; and
D = diameter of the shaft in feet.

Resistance to uplift forces exerted on the drilled, straight-shaft piers will be provided by the sustained compressive axial force (dead load) plus the allowable uplift resistance provided by the soil. The resistance provided by the soil depends on the shear strength of the soils adjacent to the pier shaft and below the depth of the active zone (estimated to be at least 15 ft below the existing ground surface). The allowable uplift resistance provided by the soils at this site may be estimated using the allowable uplift capacity curves presented graphically on Figure 6. Side shear resistance was neglected in the upper 5 ft of the pier shaft. If the depth of fill material or the depth to the top of the marl strata vary

from those encountered in our single boring, at any of the three corners that don't have a boring, then the pile uplift capacity curves may need to be adjusted for those conditions.

Reinforcing steel will be required in each pier shaft to withstand a net force equal to the uplift force minus the uplift resistive force and the sustained compressive load carried by that pier. We recommend that each pier be reinforced to withstand this net force or an amount equal to 1 percent of the cross-sectional area of the shaft, whichever is greater.

Our foundation design recommendations are based on the assumption that the proposed final grades will be similar to the existing grades at the time of our study. If finished ground elevations change significantly from those discussed in this report, supplemental recommendations may be required.

Lateral Resistance Resistance to lateral loads and the expected pier behavior under the applied loading conditions will depend not only on subsurface conditions, but also on loading conditions, the pier size, and the engineering properties of the pier. Once pier sizes, concrete strength, and reinforcement are finalized, piers should be analyzed to determine the resulting lateral deflection, maximum bending moment, and ultimate bending moment. This type of analysis is typically performed utilizing a computer analysis program and usually requires a trial and error procedure to appropriately size the piers and meet project tolerances.

To assist the design engineer in this procedure, we are providing the following soil parameters for use in analysis. These parameters are in accordance with the input requirements of one of the more commonly used computer programs for laterally loaded piles, the LPile program. If a different program is used for analysis, different parameters and limitations may be required than what were assumed in selecting the parameters given below. Thus, if a program other than LPile is used, **RKCI** must be notified of the analysis method, so that we can review and revise our recommendations if required.

The soil-related parameters required for input into the LPile program are summarized in the tables below:

Assumed Behavior for Analysis	Depth* (ft)	c (tsf)	k_s (pci)	k_c (pci)	ε_{50}	γ (pcf)
Soft Clay (Matlock)	0 to 5	0.25	100	-	0.01	115
Stiff Clay without free water (Reese)	5 to 41	1.67	1,000	400	0.005	125

*Depth below the existing ground surface at the time of our study

Where: c = undrained cohesion
k_s = p-y modulus (static)
k_c = p-y modulus (cyclic)
ε_{50} = strain factor
γ = effective unit weight

The parameters presented in the above table do **not** include factors of safety. We recommend that a factor of safety of at least 2 be introduced to the analysis by doubling the applied lateral loads and moments.

It should be noted that where piers are spaced closer than three shaft diameters center to center, a modification factor should be applied to the p-y curves to account for a group effect. We recommend the following p-Multipliers for the corresponding center to center pier spacings.

Spacing (in shaft diameters)	p-Multiplier
3	1.0
2	0.75
1	0.50

Foundation Construction Considerations

Temporary Casing and Slurry Techniques Groundwater seepage was observed in our boring at the time of our subsurface exploration. Some of the soils encountered in our boring were gravelly, and water may be encountered in these seams. Groundwater seepage and/or side sloughing may be encountered at the time of construction, depending on climatic conditions prevalent at the time of construction. Therefore, we recommend that the bid documents require the foundation contractor to specify unit costs for different lengths of casing and unit costs for slurry drilling techniques that may be required.

Drilled Piers Each drilled pier excavation should be examined by a geotechnical engineer who is familiar with the geotechnical aspects of the subsurface stratigraphy, the structural configuration, foundation design details and assumptions, prior to placing concrete. This is to observe that:

- The shaft has been excavated to the specified dimensions at the correct depth established by the previously mentioned criteria;
- Sufficient depth/penetration has been achieved by the pier shafts;
- The shaft has been drilled plumb within specified tolerances along its total length;
- Excessive cuttings, buildup and soft, compressible materials have been removed from the bottom of the excavation.

Reinforcement and Concrete Placement Reinforcing steel should be checked for size and placement prior to concrete placement. Placement of concrete should be accomplished as soon as possible after excavation to reduce changes in the moisture content or the state of stress of the foundation materials. No foundation element should be left open overnight without concreting.

Load Tests Load tests, if required, should be performed in accordance with TxDOT 2004 Standard Specifications for Construction of Highways, Streets and Bridges, Item 405, Foundation Test

Load procedures. The successful General Contractor should be responsible for providing all equipment, personnel, jacks, and construction (including reaction piles) necessary to conduct the tests.

We appreciate the opportunity to be of service to you on this project. If you have any questions or need additional assistance, please call.

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

Matthew J. Robbins, E.I.T.
Graduate Engineer

Garland L. Burch, P.E.
Senior Geotechnical Consultant

STATE OF TEXAS
GARLAND L. BURCH
38126
LICENSED
PROFESSIONAL ENGINEER
7-2-12

MJR/GLB/mem

Attachments

Copies Submitted: Above (3)

ATTACHMENTS

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SOURCE: Ariel photo provided by ESRI 2011.

BORING LOCATION MAP

STMC Signal Pole Design
Hamilton Wolfe Road and Babcock Road
San Antonio, Texas

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASA12-058-00
ISSUE DATE:	6/29/2012
DRAWN BY:	MJR
CHECKED BY:	MJR
REVIEWED BY:	GLB

FIGURE

1

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes

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LOG OF BORING NO. B-1

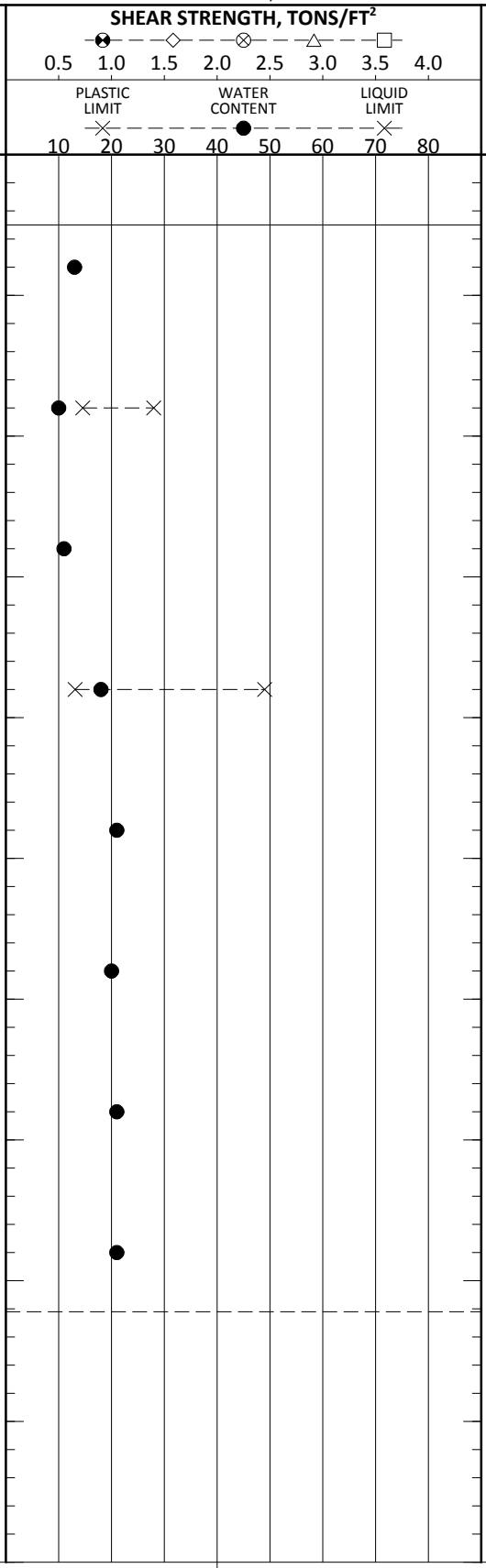
STMC Signal Pole Design
Hamilton Wolfe Road and Babcock Road
San Antonio, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: N 29.51564; W 98.59283

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
			FILL MATERIAL: CLAY, Dark Brown and Tan, with gravel				
			CLAY, Stiff to Very Hard, Tan				
5				39			
10				100/5"		13	
15			- with gravel above 15 ft	46			
20				32		36	
25				31			
30			DRILLER'S NOTE: WATER encountered at 29 ft	34			
35				59			
40				75			
			Boring Terminated				
45							



DEPTH DRILLED:	41.2 ft	**DEPTH TO WATER:**	Dry	**PROJ. No.:**	ASA12-058-00
DATE DRILLED:	6/25/2012	**DATE MEASURED:**	6/25/2012	**FIGURE:**	2

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

KEY TO TERMS AND SYMBOLS

MATERIAL TYPES

SOIL TERMS

- CALCAREOUS
- CALICHE
- CLAY
- CLAYEY
- GRAVEL
- GRAVELLY
- PEAT
- SAND
- SANDY
- SILT
- SILTY
- FILL

ROCK TERMS

- CHALK
- CLAYSTONE
- CLAY-SHALE
- CONGLOMERATE
- DOLOMITE
- IGNEOUS
- LIMESTONE
- MARL
- METAMORPHIC
- SANDSTONE
- SHALE
- SILTSTONE

OTHER

- ASPHALT
- BASE
- CONCRETE/CEMENT
- BRICKS / PAVERS
- WASTE
- NO INFORMATION

WELL CONSTRUCTION AND PLUGGING MATERIALS

- BLANK PIPE
- SCREEN
- BENTONITE
- CEMENT GROUT
- BENTONITE & CUTTINGS
- CONCRETE/CEMENT
- CUTTINGS
- GRAVEL
- SAND
- VOLCLAY

SAMPLE TYPES

- AIR ROTARY
- GRAB SAMPLE
- CORE
- GEOPROBE SAMPLER
- ROTOSONIC -DAMAGED
- MUD ROTARY
- NO RECOVERY
- NX CORE
- PITCHER
- ROTOSONIC -INTACT
- SHELBY TUBE
- SPLIT BARREL
- SPLIT SPOON
- TEXAS CONE PENETROMETER
- DISTURBED

STRENGTH TEST TYPES

- POCKET PENETROMETER
- TORVANE
- UNCONFINED COMPRESSION
- TRIAXIAL COMPRESSION UNCONSOLIDATED-UNDRAINED
- TRIAXIAL COMPRESSION CONSOLIDATED-UNDRAINED

NOTE: VALUES SYMBOLIZED ON BORING LOGS REPRESENT SHEAR STRENGTHS UNLESS OTHERWISE NOTED

PROJECT NO. ASA12-058-00

RABAKISTNER

REVISED 04/2012

FIGURE 3a

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DENSITY

Penetration Resistance Blows per ft	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
> 50	Very Dense

COHESIVE STRENGTH

Resistance Blows per ft	Consistency	Cohesion TSF
0 - 2	Very Soft	0 - 0.125
2 - 4	Soft	0.125 - 0.25
4 - 8	Firm	0.25 - 0.5
8 - 15	Stiff	0.5 - 1.0
15 - 30	Very Stiff	1.0 - 2.0
> 30	Hard	> 2.0

PLASTICITY

Plasticity Index	Degree of Plasticity
0 - 5	None
5 - 10	Low
10 - 20	Moderate
20 - 40	Plastic
> 40	Highly Plastic

ABBREVIATIONS

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Total BTEX
TPH = Total Petroleum Hydrocarbons
ND = Not Detected
NA = Not Analyzed
NR = Not Recorded/No Recovery
OVA = Organic Vapor Analyzer
ppm = Parts Per Million

Qam, Qas, Qal = Quaternary Alluvium
Qat = Low Terrace Deposits
Qbc = Beaumont Formation
Qt = Fluviatile Terrace Deposits
Qao = Seymour Formation
Qle = Leona Formation
Q-Tu = Uvalde Gravel
Ewi = Wilcox Formation
Emi = Midway Group
Mc = Catahoula Formation
El = Laredo Formation
Kknm = Navarro Group and Marlbrook Marl
Kpg = Pecan Gap Chalk
Kau = Austin Chalk

Kef = Eagle Ford Shale
Kbu = Buda Limestone
Kdr = Del Rio Clay
Kft = Fort Terrett Member
Kgt = Georgetown Formation
Kep = Person Formation
Kek = Kainer Formation
Kes = Escondido Formation
Kew = Walnut Formation
Kgr = Glen Rose Formation
Kgru = Upper Glen Rose Formation
Kgrl = Lower Glen Rose Formation
Kh = Hensell Sand

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil type.
Interlayered	Soil sample composed of alternating layers of different soil type.
Intermixed	Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.
Carbonate	Having more than 50% carbonate content.

SAMPLING METHODS

RELATIVELY UNDISTURBED SAMPLING

Cohesive soil samples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel samplers in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Cohesive soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample integrity and moisture content.

STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-in.-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: STMC Signal Pole Design
Hamilton Wolfe Road and Babcock Road
San Antonio, Texas

FILE NAME: ASA12-058-00.GPJ 6/29/2012

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test
B-1	3.0 to 5.0		13								
	5.0 to 6.6	39									
	8.0 to 10.0		10	28	15	13					
	10.0 to 11.7	100/5"									
	13.0 to 15.0		11								
	15.0 to 16.2	46									
	18.0 to 20.0		18	49	13	36					
	20.0 to 21.5	32									
	23.0 to 25.0		21								
	25.0 to 26.3	31									
	28.0 to 30.0		20								
	30.0 to 31.3	34									
	33.0 to 35.0		21								
	35.0 to 36.1	59									
	38.0 to 40.0		21								
	40.0 to 41.1	75									

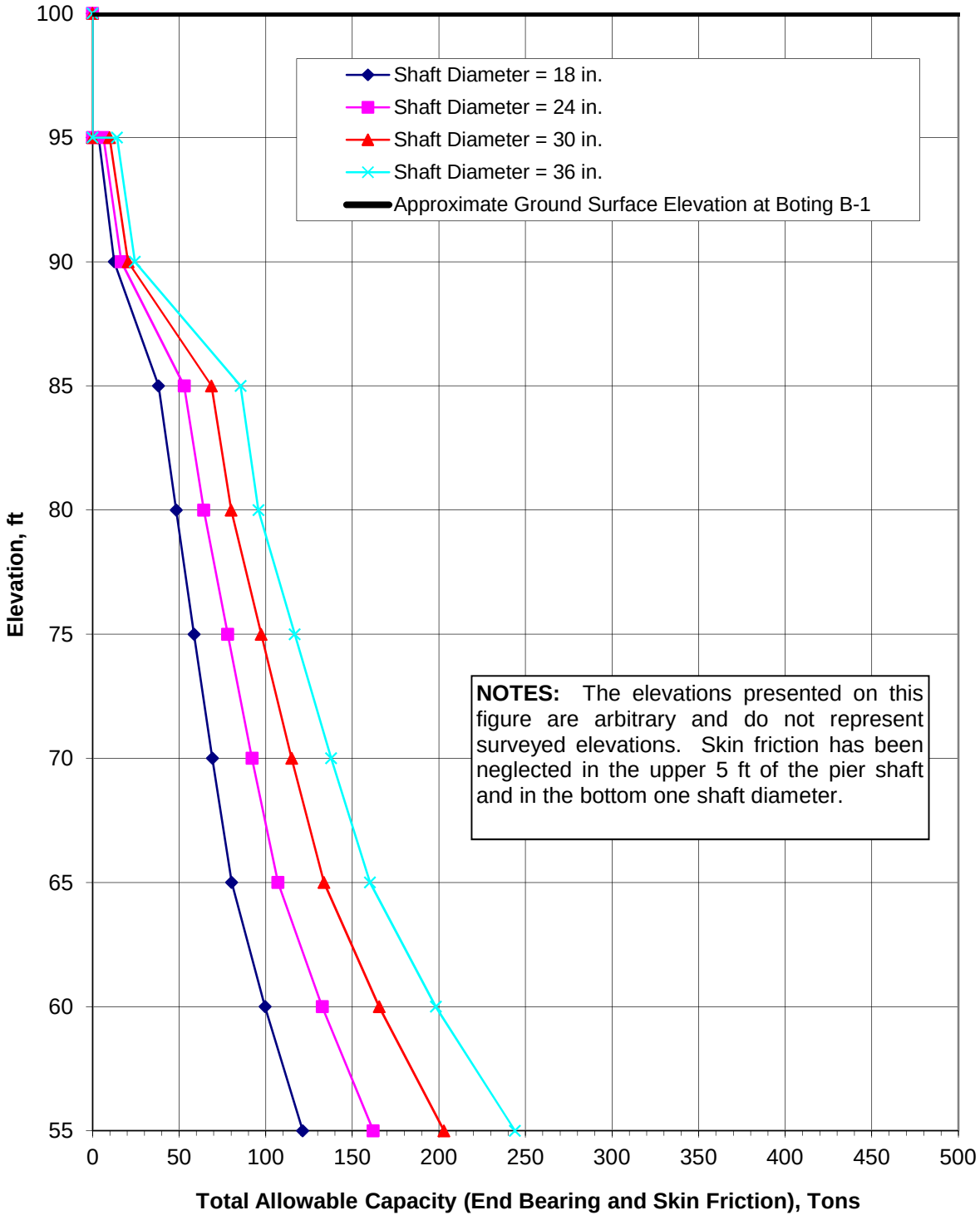
PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial

PROJECT NO. ASA12-058-00

DRILLED PIER AXIAL CAPACITY CURVE
Straight Shaft Piers

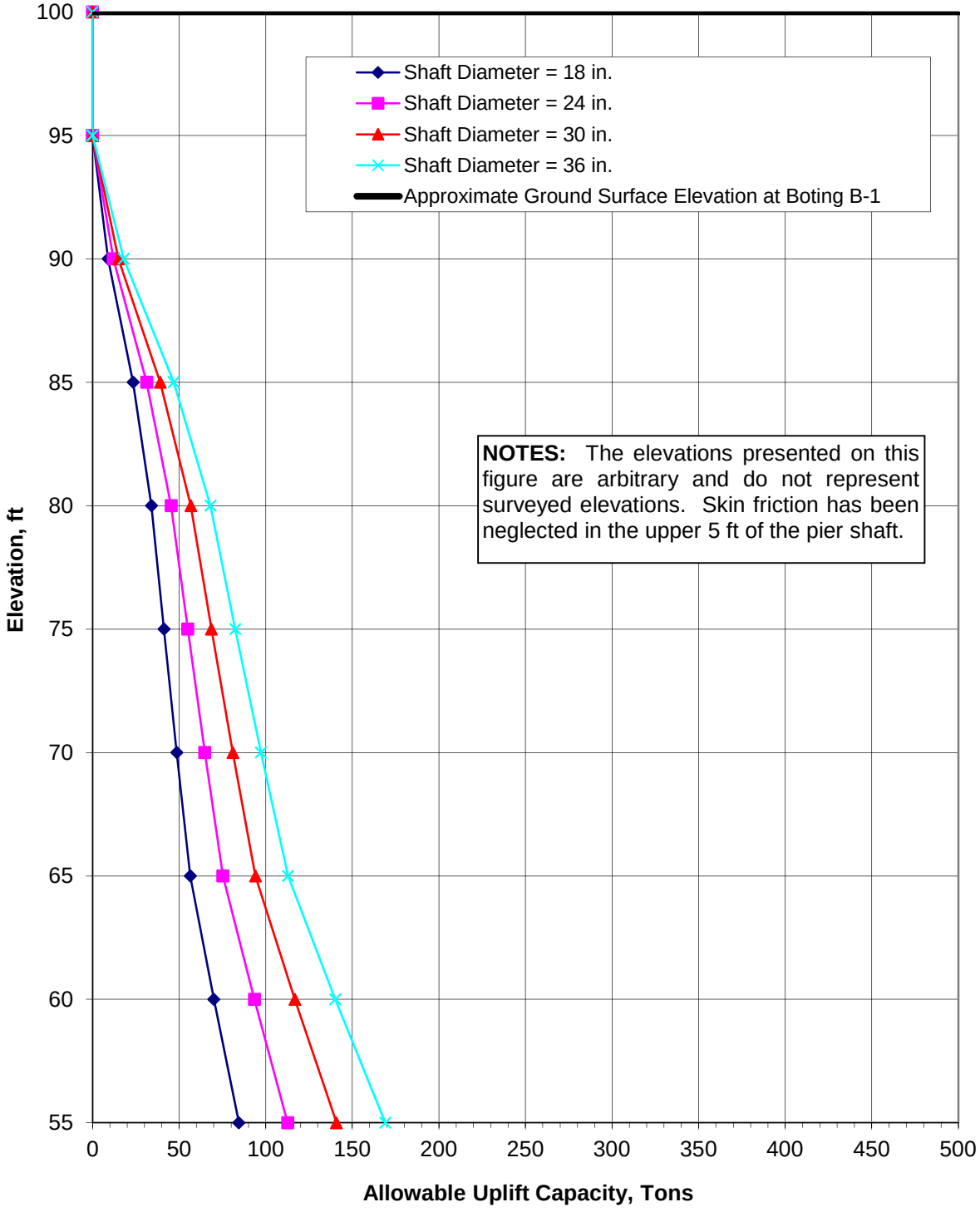
STMC Signal Pole Design - Hamilton Wolfe Road and Babcock Road
San Antonio, Texas
(Boring B-1)



NOTES: The elevations presented on this figure are arbitrary and do not represent surveyed elevations. Skin friction has been neglected in the upper 5 ft of the pier shaft and in the bottom one shaft diameter.

DRILLED PIER UPLIFT CAPACITY CURVE
Straight Shaft Piers

STMC Signal Pole Design - Hamilton Wolfe Road and Babcock Road
San Antonio, Texas
(Boring B-1)



Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

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