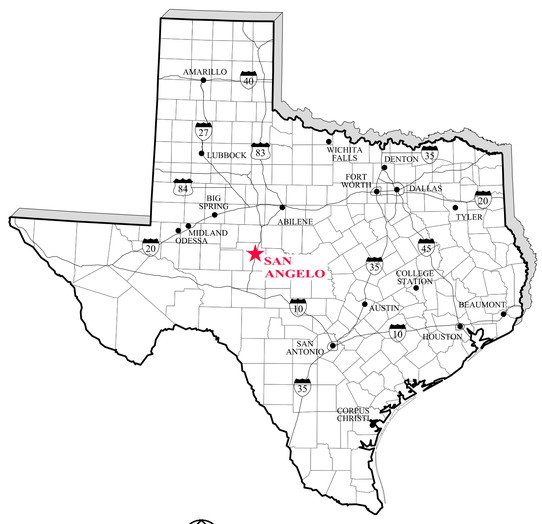
CITY OF SAN ANGELO, TEXAS

2017 SULPHUR DRAW WASTEWATER IMPROVEMENTS PROJECT

AUGUST, 2017



VICINITY MAP
NO SCALE

MAYOR
BRENDA GUNTER

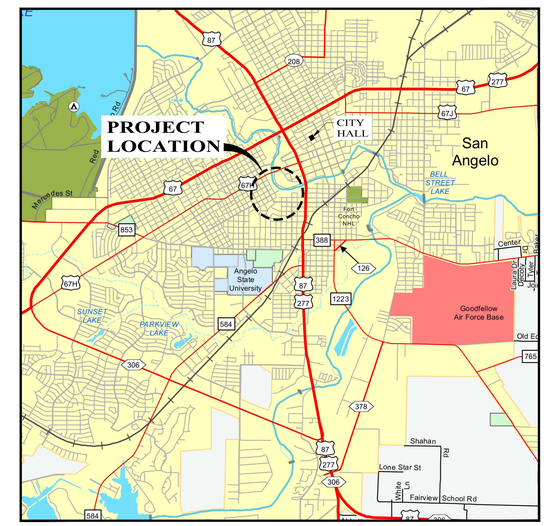
CITY COUNCIL
TOMMY HIEBERT
TOM THOMPSON
HARRY THOMAS
LUCY GONZALES
LANE CARTER
BILLIE DEWITT

CITY MANAGER
DANIEL VALENZUELA

EXECUTIVE DIRECTOR OF PUBLIC WORKS
RICKY DICKSON

CITY ENGINEER
RUSSELL PEHL, PE

WATER UTILITIES DIRECTOR
BILL RILEY



LOCATION MAP
SCALE: 1" = 6000'

08/15/2017
JOSEPH T. MANGREM
117205
LICENSED
PROFESSIONAL ENGINEER

Joseph T. Mangrem

JOSEPH T. MANGREM, P.E.

ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
325-698-5560
Abilene, Texas 79601
PE Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

SHEET INDEX

CONTRACT NO.
16-6683

SHEET NO.
1 OF 20

ENPROTEC / HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
ENPROTEC / HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
ENPROTEC / HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING

GENERAL CONSTRUCTION NOTES

1. ALL EXISTING UNDERGROUND UTILITIES SHOWN ON DRAWINGS WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE BUT ARE NOT GUARANTEED TO BE COMPLETE OR DEFINITE. CONTRACTOR SHALL REQUEST THE EXACT LOCATION OF EXISTING FACILITIES BY CALLING THE TEXAS ONE-CALL LOCATE SERVICE [811] AND THE CITY OF SAN ANGELO WATER UTILITIES DEPARTMENT [(325) 657-4295] AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES WHICH OCCUR FROM THE FAILURE TO EXACTLY LOCATE AND PRESERVE UNDERGROUND UTILITIES.

2. CONTRACTOR SHALL "POTHOLE" ALL UNDERGROUND UTILITY CROSSINGS AHEAD OF THE CONSTRUCTION CREWS TO LOCATE AND VERIFY EXACT EXISTING VERTICAL ELEVATIONS. CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY UPON IDENTIFICATION OF A POTENTIAL CONFLICT.

3. CONSTRUCTION SHALL BE IN COMPLIANCE WITH §217.53 OF THE CURRENT TCEQ REGULATIONS IN REGARD TO INSTALLATION METHOD, MATERIAL TYPE AND SEPARATION DISTANCE BETWEEN WATER MAINS AND WASTEWATER COLLECTION FACILITIES.

4. IF CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, WORK SHALL IMMEDIATELY CEASE IN THE AREA OF DISCOVERY. WORK MAY CONTINUE IN THE PROJECT AREA WHERE NO CULTURAL MATERIALS ARE PRESENT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND THE TEXAS HISTORICAL COMMISSION AT (512) 463-6100.

5. CLEARING OF TREES ALONG THE PROJECT ROUTE SHALL ONLY BE CONDUCTED BETWEEN SEPTEMBER 1 AND FEBRUARY 28 AND MUST BE APPROVED BY THE OWNER PRIOR TO REMOVAL. TRIMMING OF TREES ALONG THE PROJECT ROUTE SHALL BE PERFORMED BY A LICENSED ARBORIST, NEATLY AND WITH UTMOST CARE FOR THE HEALTH OF THE TREE. COORDINATE REMOVAL AND TRIMMING WITH OWNER PRIOR TO WORK.

6. CONTRACTOR SHALL PROTECT EXISTING TREES ALONG THE PROJECT ROUTE TO THE EXTENT PRACTICAL.

7. WORK WITHIN THE BANKS OF THE NORTH CONCHO RIVER SHALL COMPLY WITH THE REQUIREMENTS OF ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 12 AND THE PROJECT AQUATIC RESOURCE RELOCATION PLAN.

8. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE VERIFIED BY THE CONTRACTOR. HORIZONTAL OR VERTICAL ALIGNMENT CHANGES ARE TO BE APPROVED BY THE OWNER.

9. ANY RELOCATION OF AN EXISTING UTILITY NOT SHOWN ON THE DRAWINGS, WHETHER TEMPORARY OR PERMANENT, SHALL BE APPROVED BY THE OWNER PRIOR TO RELOCATION AND SHALL CONFORM TO ALL APPLICABLE GOVERNING STANDARDS AND SPECIFICATIONS.

10. UTILITY SERVICE LINES ARE NOT GENERALLY SHOWN ON DRAWINGS. CONTRACTOR SHALL ANTICIPATE THAT SUCH SERVICE LINES EXIST AND TAKE MEASURES TO IDENTIFY AND PROTECT THEM DURING CONSTRUCTION. DAMAGED SERVICE LINES SHALL BE PROMPTLY REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIALS AND EQUIPMENT STORED ON OR OFF THE JOB-SITE IN A SAFE AND WORKMAN-LIKE MANNER, DURING AND AFTER WORKING HOURS, UNTIL JOB COMPLETION.

12. CONTRACTOR SHALL PREPARE AND SUBMIT A SCHEDULE FOR ALL PHASES OF CONSTRUCTION AND PROVIDE AN UPDATED SCHEDULE FOLLOWING ANY SIGNIFICANT DEVIATION FROM THE SCHEDULE. PHASING OF CONSTRUCTION SHALL GENERALLY PROCEED AS FOLLOWS:
    - INSTALL LIFT STATION AND LINE "B" (FORCE MAIN).
        - WORK WITHIN THE NORTH CONCHO RIVER AND THE SANTA FE PARK GOLF COURSE MUST BE COMPLETED PRIOR TO FEBRUARY 28, 2018.
    - INSTALL LINE "C" (30" GRAVITY MAIN).
    - INSTALL LINE "A" (18" GRAVITY MAIN).
    - REHABILITATE EXISTING GRAVITY MAINS AND MANHOLES.
    - ABANDON EXISTING GRAVITY MAINS AND MANHOLES.

13. CONTRACTOR SHALL SCHEDULE AND COORDINATE WORK WITH OWNER AS FAR IN ADVANCE AS PRACTICAL TO MINIMIZE DISTURBANCES TO RESIDENTS AND BUSINESSES ALONG THE PROJECT ROUTE.

14. CONTRACTOR SHALL PREPARE AND SUBMIT A BYPASS PUMPING PLAN (BPP) FOR EACH PHASE OF CONSTRUCTION. IMPLEMENTATION AND MAINTENANCE OF BYPASS PUMPING OPERATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THROUGHOUT CONSTRUCTION.

15. THE OWNER WILL DESIGNATE LOCATIONS ALONG THE PROJECT ROUTE FOR CONTRACTOR'S USE IN STORAGE AND STAGING EQUIPMENT AND MATERIALS.

16. CONTRACTOR SHALL NOT STORE MATERIALS OR EQUIPMENT OR PLACE EXCESS EXCAVATED MATERIAL ON PRIVATE PROPERTY WITHOUT PRIOR WRITTEN AGREEMENT WITH THE PROPERTY OWNER.

17. CONTRACTOR SHALL PROMPTLY REMOVE AND LEGALLY DISPOSE OF ALL CUT VEGETATION, STUMPS, ROCKS, EXCAVATED MATERIAL AND OTHER DEBRIS NOT DESIGNATED TO REMAIN ON THE PROJECT SITE.

18. ALL AREAS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION.

19. EXISTING IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO LANDSCAPING, FENCES, MAILBOXES, CULVERTS, HEADWALLS, SIDEWALKS, UTILITY PIPELINES AND DRAINAGE STRUCTURES, WHICH ARE DAMAGED, REMOVED OR ALTERED DURING CONSTRUCTION BUT DO NOT HAVE AN INDIVIDUAL BID ITEM, SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, IN THE SAME LOCATION AND IN A CONDITION AS GOOD OR BETTER THAN FOUND, AT NO ADDITIONAL COST TO THE OWNER.

20. IN AREAS WHERE EXISTING LANDSCAPING REQUIRES REMOVAL, CONTRACTOR SHALL CONTACT RESIDENT AND OBTAIN DESIRED LOCATION TO RELOCATE.

21. CONTRACTOR SHALL REPLACE TOPSOIL AND RESEED ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES AND NOT SPECIFIED FOR OTHER SURFACE REPLACEMENT.

22. CONTRACTOR SHALL RESTORE PAVEMENT TO AS GOOD OR BETTER THAN THE CONDITION PRIOR TO CONSTRUCTION, TO THE SATISFACTION OF THE OWNER.

23. CONTRACTOR SHALL REVIEW GEOTECHNICAL REPORT AND BECOME FAMILIAR WITH LOCAL UNDERGROUND CONDITIONS EXPECTED TO BE ENCOUNTERED ON THIS PROJECT. ALL EXCAVATION IS CONSIDERED "UNCLASSIFIED" AND IS SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE PROJECT.

24. CONTRACTOR SHALL PREPARE AND SUBMIT A TRENCH SAFETY SYSTEM PLAN (TSSP) FOR ALL PHASES OF CONSTRUCTION. IMPLEMENTATION AND MAINTENANCE OF TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THROUGHOUT CONSTRUCTION.

25. CONTRACTOR SHALL PROVIDE SHEETING, SHORING AND BRACING AS NECESSARY TO ADEQUATELY PROTECT WORKMEN AND EXISTING STRUCTURES AND UTILITIES DURING ALL PHASES OF CONSTRUCTION IN ACCORDANCE WITH OSHA REQUIREMENTS.

26. CONTRACTOR SHALL COVER OPEN EXCAVATIONS IN TRAFFICKED AREAS WITH ANCHORED ½" STEEL PLATES DURING NON-WORKING HOURS. OPEN EXCAVATIONS IN NON-TRAFFICKED AREAS SHALL BE OTHERWISE PROTECTED.

27. USE APPROPRIATE COMPACTION EQUIPMENT FOR THE TYPE OF SOIL ENCOUNTERED. CLAY BACKFILLS NORMALLY REQUIRE CONSOLIDATED BY SHEEP'S-FOOT ROLLER WHEREAS SAND AND GRAVEL CAN BE COMPACTED WITH VIBRATORY EQUIPMENT. THE OWNER MAY REJECT SPECIFIC TYPES OF EQUIPMENT ON SITE AS SOIL CONDITIONS MAY VARY AND AS LOCATION WARRANTS (IE. PROXIMITY TO EXISTING STRUCTURES).

28. IF GROUND WATER IS ENCOUNTERED THE CONTRACTOR SHALL USE PUMPS AND/OR WELL POINTS TO DEWATER THE AREA TO ALLOW UNDERGROUND CONSTRUCTION. COST OF DEWATERING SHALL BE INCLUDED IN THE UNIT BID FOR INSTALLATION OF PROPOSED LINE OR STRUCTURE.

29. CONTRACTOR SHALL TEST MATERIALS TO BE USED FOR BACKFILLING AND ADJUST MOISTURE CONTENT TO SPECIFIED LEVELS BY ADDING WATER OR DRYING SOILS AS NECESSARY AND AS SPECIFIED.

30. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING CONSTRUCTION MATERIALS TESTING THROUGH THE DESIGNATED FIELD REPRESENTATIVE 24 HOURS PRIOR TO TESTING. CONTRACTOR IS RESPONSIBLE FOR ADHERING CLOSELY TO TESTING SCHEDULE TO AVOID ANY DELAYS IN THE FIELD.

31. CONTRACTOR SHALL VERIFY THAT BENCH MARKS HAVE NOT BEEN DISTURBED AND NOTIFY THE OWNER IMMEDIATELY UPON IDENTIFICATION OF A POTENTIAL ISSUE.

32. CONTRACTOR SHALL KEEP STREETS, RIGHTS-OF-WAY AND THE WORK AREA CLEAN OF DIRT, MUD AND OTHER OBJECTIONABLE DEBRIS.

33. CONTRACTOR SHALL MINIMIZE THE GENERATION OF NUISANCE DUST BY WATERING AND/OR SWEEPING AS NEEDED.

34. CONTRACTOR SHALL INCORPORATE MEASURES DURING CONSTRUCTION TO MINIMIZE THE GENERATION OF NUISANCE ODORS FROM THE EXISTING WASTEWATER COLLECTIONS SYSTEM AND CONSTRUCTION ACTIVITIES.

35. CONTRACTOR SHALL FOLLOW ALL CITY ORDINANCES REGARDING NOISE AND ENVIRONMENTAL IMPACTS.

36. CONTRACTOR SHALL KEEP ACCURATE RECORDS OF AS-BUILT CONDITIONS AND PROVIDE TO THE ENGINEER TO AID IN THE PREPARATION OF AS-BUILT RECORD DRAWINGS. AS-BUILT RECORD DRAWINGS WILL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF ALL CONSTRUCTION.

37. CONTRACTOR SHALL PROVIDE TO THE OWNER ALL MATERIAL AND EQUIPMENT OPERATION AND MAINTENANCE (O&M) MANUALS, SPARE PARTS LISTS, ETC., AS RECOMMENDED BY THE EQUIPMENT MANUFACTURERS AND REQUIRED BY THE PROJECT DOCUMENTS, PRIOR TO FINAL ACCEPTANCE OF THE WORK.

LIMITS OF CONSTRUCTION

1. CONTRACTOR SHALL TAKE PHOTO/VIDEO EVIDENCE OF EXISTING CONDITIONS OF THE PROJECT SITE AREA PRIOR TO CONSTRUCTION AND SUBMIT TO THE OWNER PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS.

2. LIMIT OPERATIONS TO WITHIN THE CONFINES OF THE CONSTRUCTION WORK LIMITS SHOWN ON THE DRAWINGS AND DESIGNATED BY THE OWNER.

3. LIMIT THE STORAGE OF EQUIPMENT, MATERIALS, STOCK PILES, ETC. TO ONE (1) CONSTRUCTION WEEK ALONG CONSTRUCTION ROUTE WITHIN THE PUBLIC RIGHT OF WAY. STORAGE LONGER THAN ONE (1) WEEK SHALL BE LOCATED IN OWNER DESIGNATED AREAS.

4. WHEN TUNNELING OR AUGURING IS SHOWN IN PLANS, ACCESS (OPEN CUT) FROM SURFACE IS PROHIBITED. THE EXCEPTION TO THIS RESTRICTION IS FOR EMERGENCY SITUATIONS WHERE ACTION IS REQUIRED TO SAFE GUARD THE WORK IN PROGRESS OR OTHER EXISTING UTILITIES. IN THIS CASE, THE OWNER IS TO BE IMMEDIATELY NOTIFIED OF ADDITIONAL TRAFFIC CONTROL PROCEDURES AND ANY OTHER NECESSARY ACTIONS THAT WILL BE TAKEN UNTIL THE SITUATION HAS BEEN RECTIFIED.

TRAFFIC NOTES

1. CONTRACTOR SHALL PREPARE AND SUBMIT A TRAFFIC CONTROL PLAN (TCP) FOR EACH PHASE OF CONSTRUCTION. IMPLEMENTATION AND MAINTENANCE OF TRAFFIC CONTROLS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THROUGHOUT CONSTRUCTION.

2. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), LATEST EDITION, DURING CONSTRUCTION.

3. WHEN APPLICABLE, CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS SIGNAL OPERATION AT SIGNALIZED INTERSECTIONS, FOR ADJUSTING AND/OR RELOCATING EXISTING TRAFFIC SIGNAL EQUIPMENT OR PROVIDING, INSTALLING, AND MAINTAINING TEMPORARY SIGNAL EQUIPMENT AS NEEDED FOR CONSTRUCTION AND TO PROVIDE LINE-OF-SIGHT SIGNAL INDICATIONS, AND FOR IMMEDIATELY REPLACING AND/OR REPAIRING ANY TRAFFIC SIGNAL EQUIPMENT, CABLES, OR CONDUIT THAT IS CUT OR DAMAGED.

4. THE CONSTRUCTION WARNING SIGNS AND END OF CONSTRUCTION SIGNS SHALL BE PLACED AT PROJECT LIMITS AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF THE CONSTRUCTION.

5. CONTRACTOR SHALL MAINTAIN TRAFFIC IN EACH DIRECTION BY MEANS OF FLAGMEN OR DETOUR.

6. CONTRACTOR SHALL PROVIDE AND MAINTAIN PEDESTRIAN SAFETY FENCES AND BARRICADES AT ALL TIMES AT EACH SITE WHERE PEDESTRIAN TRAFFIC IS EVIDENT.

7. CONTRACTOR SHALL PROMPTLY PLACE AND MAINTAIN TEMPORARY COLD-MIX PAVING ON PAVEMENT CUTS RELEASED TO GENERAL TRAFFIC UNTIL FINAL PAVEMENT IS PLACED.

8. CONTRACTOR MUST NOTIFY BUSINESSES AND RESIDENTS IMPACTED BY CONSTRUCTION AT LEAST ONE WEEK PRIOR TO CONSTRUCTION START IN THEIR AREA.

9. A NOTICE, PREPARED BY THE CONTRACTOR AND APPROVED BY THE OWNER, SHALL BE HAND DELIVERED BY THE CONTRACTOR TO ALL RESIDENTS AND BUSINESSES WITHIN THE VICINITY OF CONSTRUCTION NOTIFYING THEM OF THE PROPOSED CONSTRUCTION AND POSSIBLE DISRUPTIONS IN SERVICE TO WATER, SEWER, ROADS, ACCESS, ETC. NOTICE SHALL INCLUDE DATES OF WORK AND NUMBERS TO CONTACT IN CASE OF ANY QUESTIONS.

10. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS TO DETERMINE AN APPROPRIATE TIME TO CROSS DRIVEWAYS AND PROVIDE ALTERNATE MEANS OF ACCESS DURING CONSTRUCTION ACTIVITIES IN ONE OR MORE OF THE FOLLOWING METHODS: (1) ANCHORED ½" STEEL PLATES (2) BACKFILLING IMMEDIATELY AFTER CONSTRUCTION AND PLACING CALICHE SURFACE FOR TEMPORARY DRIVEWAY PURPOSES. COST FOR NOTIFICATIONS AND MAINTAINING ACCESS SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS.

DRAINAGE NOTES

1. CONTRACTOR SHALL PREPARE AND SUBMIT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR ALL PHASES OF CONSTRUCTION. IMPLEMENTATION AND MAINTENANCE OF STORMWATER CONTROLS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THROUGHOUT CONSTRUCTION.

2. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNER.

3. NO EXCESS EXCAVATED MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAYS, UNLESS SPECIFICALLY AUTHORIZED BY OWNER IN WRITING.

Joseph T. Thayer

DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	NONE

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017
STATE OF TEXAS
JOSEPH T. MANGRUM
117205
LICENSED
PROFESSIONAL ENGINEER

ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street Abilene, Texas 79601
325-698-5560 PE Firm Registration No. 2165
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO
TEXAS
2017 SULPHUR DRAW
WASTEWATER IMPROVEMENTS PROJECT

GENERAL CONSTRUCTION NOTES

CONTRACT NO. 16-6683

SHEET NO.

SCALE IN FEET

75 0 150

WASTEWATER FLOW SUMMARY TABLE (GPM)		
	AVERAGE	PEAK
METERING MH #1	200	420
METERING MH #2	260	450
METERING MH #3	275	560
METERING MH #4	615	1275

WASTEWATER FLOWS WERE COLLECTED DURING THE MONTHS OF APRIL-MAY, 2017 AND ARE PROVIDED FOR PLANNING PURPOSES. CONTRACTOR SHALL VERIFY FLOW VOLUMES IN THE FIELD AND PROVIDE APPROPRIATELY SIZED EQUIPMENT FOR CONSTRUCTION AND BYPASS PUMPING OPERATIONS.

APPROXIMATE SEWER MANHOLE REHAB QUANTITIES	
4' DIAMETER	QTY
1-5 FOOT DEPTH	5
5-10 FOOT DEPTH	10
10-15 FOOT DEPTH	9
15-20 FOOT DEPTH	5
20-25 FOOT DEPTH	2
TOTAL:	31

APPROXIMATE SEWER MAIN REHAB QUANTITIES	
DIAMETER	QTY
6" SEWER LINE	808
8" SEWER LINE	829
10" SEWER LINE	2045
12" SEWER LINE	20
18" SEWER LINE	470
TOTAL:	4172

NOTES

1. ABANDONED MANHOLES SHALL BE REMOVED TO 2' BELOW SURFACE, GROUT FILLED, AND SURFACE RESTORED.
2. DIAMETER AND CONDITION OF EXISTING SANITARY SEWER MAINS AND MANHOLES MAY VARY. CONTRACTOR TO FIELD VERIFY LENGTHS, SIZES, AND MATERIAL TYPE / CONDITION PRIOR TO THE WORK, AT NO ADDITIONAL COST TO THE OWNER.

LEGEND

- LIGHT POLE
- POWER POLE
- MANHOLE
- SIGN
- IRON ROD
- MANHOLE
- CHAIN LINK FENCE
- GAS LINE
- SEWER LINE
- WATER LINE
- OVERHEAD ELECTRICAL LINE
- **PROPOSED MANHOLE**
- **LINE "A" - PROPOSED 18" SANITARY SEWER LINE**
- **LINE "B" - PROPOSED 10" FORCE MAIN LINE**
- **LINE "C" - PROPOSED 30" SANITARY SEWER LINE**
- **EXISTING SANITARY SEWER TO BE GROUT FILLED**
- **EXISTING SANITARY SEWER LINE AND/OR MANHOLE TO BE REHABILITATED**
- **EXTENTS OF SHEET**

DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	1" = 150'

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017

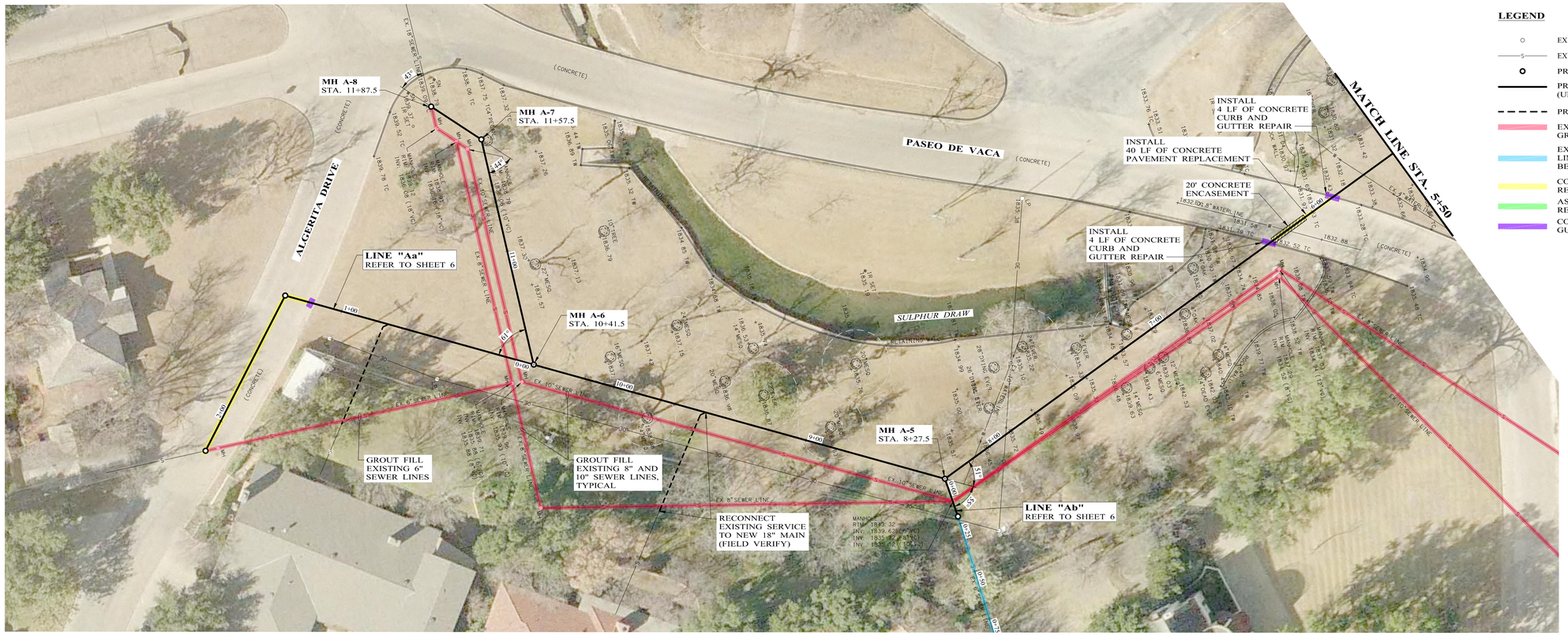
JOSEPH T. MANGRUM 117205

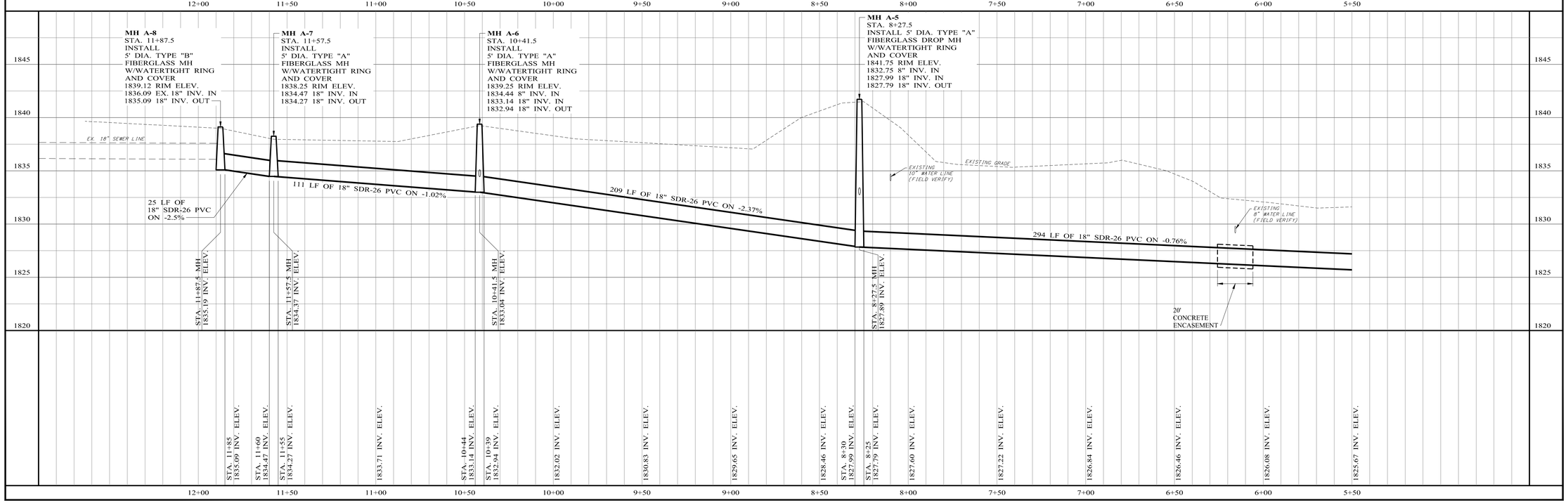
ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
Abilene, Texas 79601
325-698-5560
PE Firm Registration No. 3151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO TEXAS
2017 SULPHUR DRAW WASTEWATER IMPROVEMENTS PROJECT
OVERALL MAP

CONTRACT NO. 16-6683

SHEET NO.





DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HOR. 1"= 30' VERT. 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017
JOSEPH T. MANGRUM
117205
LICENSED
PROFESSIONAL ENGINEER

Joseph T. Mangrum

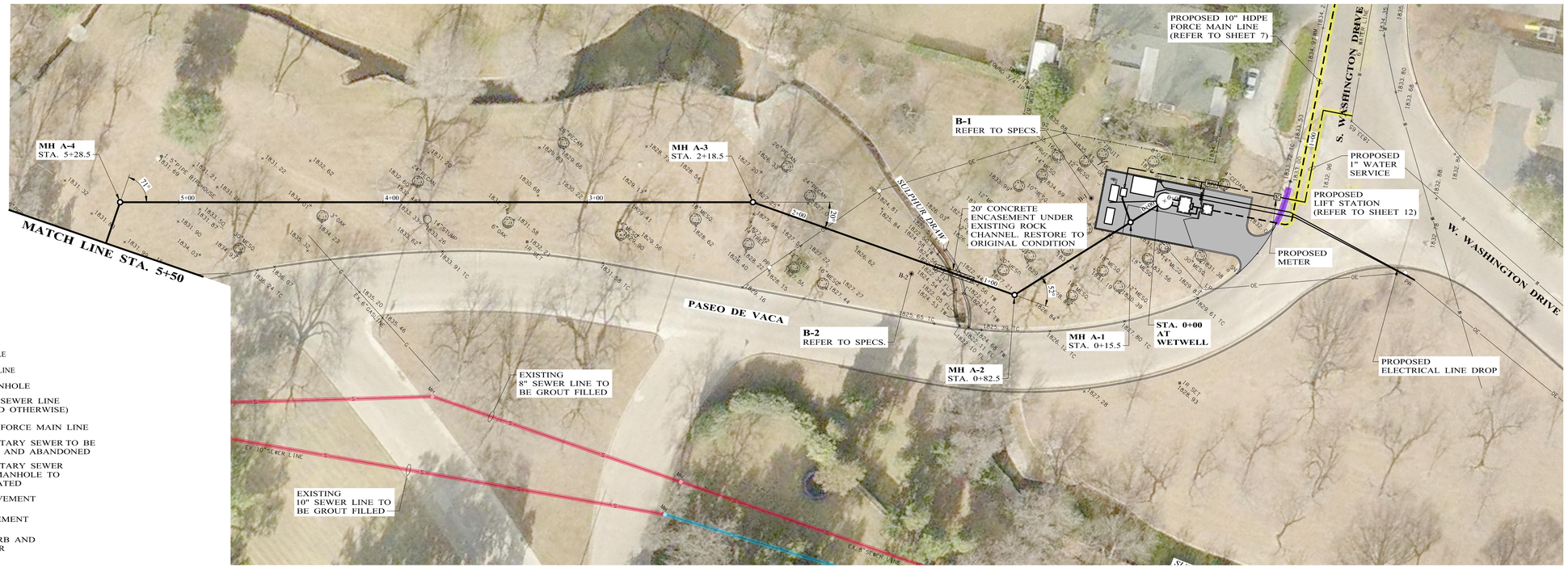
ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
Abilene, Texas 79601
402 Cedar Street
325-698-5560
PE Firm Registration No. 2151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO
TEXAS
2017 SULPHUR DRAW
WASTEWATER IMPROVEMENTS PROJECT

LINE "A"
18" GRAVITY LINE

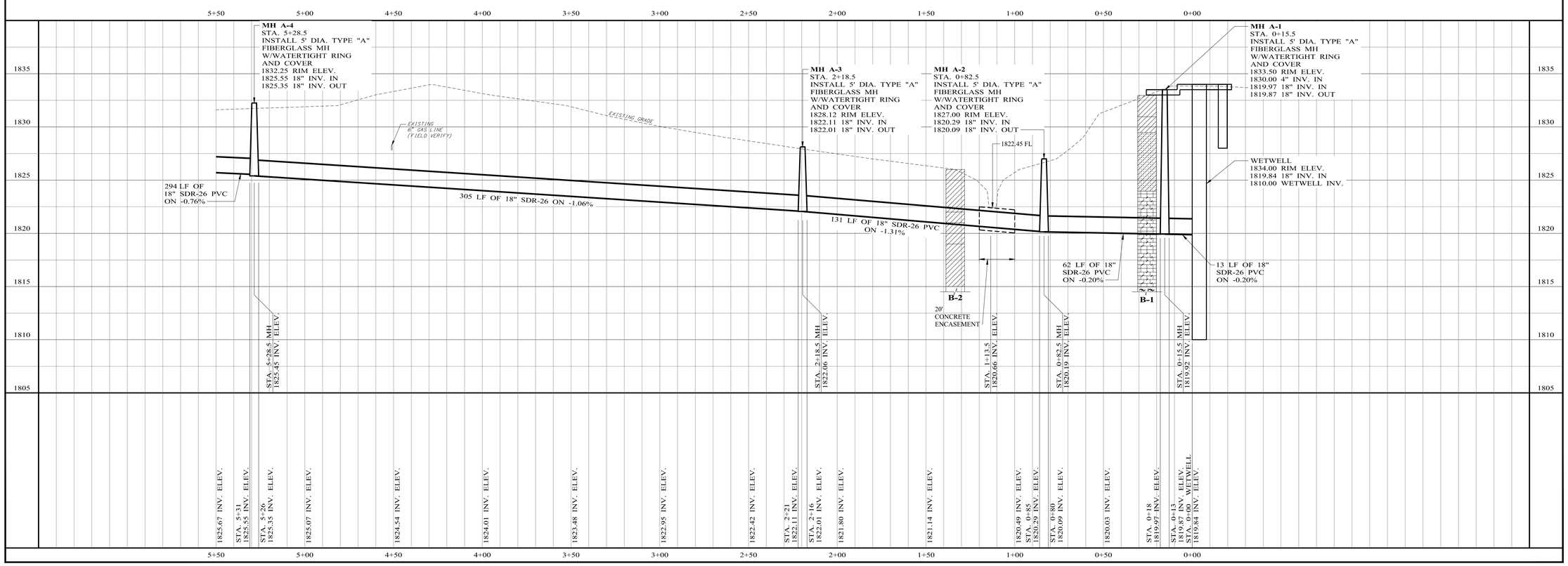
CONTRACT NO.
16-6683

SHEET NO.
4 OF 20



LEGEND

- EXISTING MANHOLE
- EXISTING SEWER LINE
- PROPOSED MANHOLE
- PROPOSED 18" SEWER LINE (UNLESS NOTED OTHERWISE)
- PROPOSED 10" FORCE MAIN LINE
- EXISTING SANITARY SEWER TO BE GROUT FILLED AND ABANDONED
- EXISTING SANITARY SEWER LINE AND/OR MANHOLE TO BE REHABILITATED
- CONCRETE PAVEMENT REPLACEMENT
- ASPHALT PAVEMENT REPLACEMENT
- CONCRETE CURB AND GUTTER REPAIR



DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HORZ: 1"= 30' VERT: 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017

JOSEPH T. MANGRUM 117205 LICENSED PROFESSIONAL ENGINEER

Joseph T. Mangrum

ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street Abilene, Texas 79601
325-698-5560
PE Firm Registration No. 1515
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

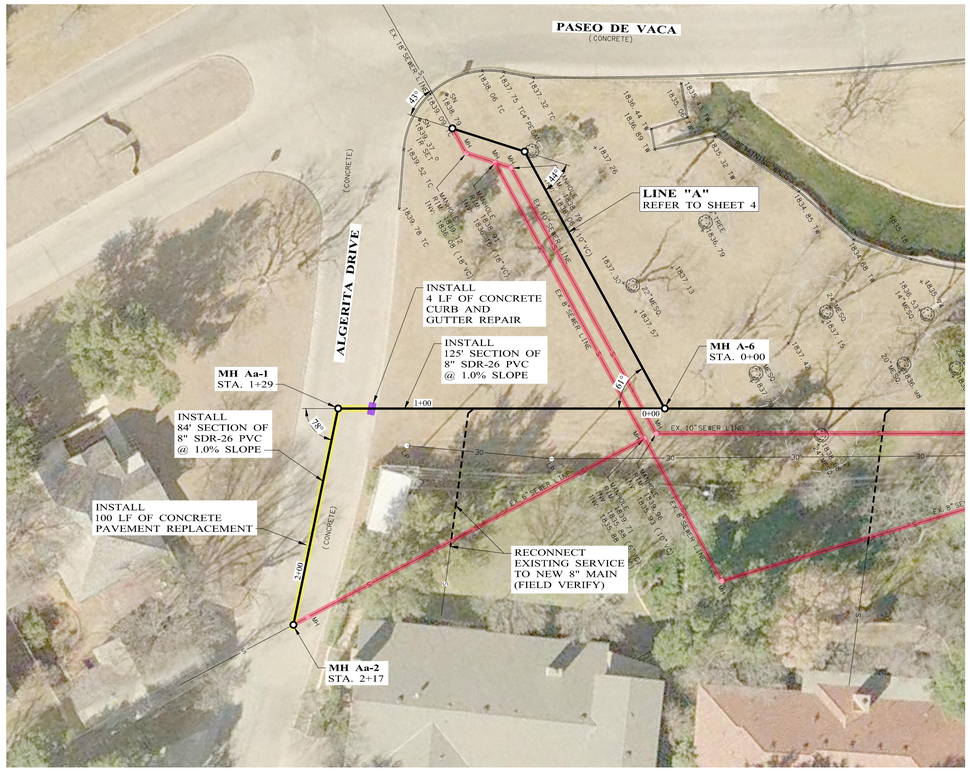
CITY OF SAN ANGELO
TEXAS
2017 SULPHUR DRAW
WASTEWATER IMPROVEMENTS PROJECT

LINE "A"
18" GRAVITY LINE

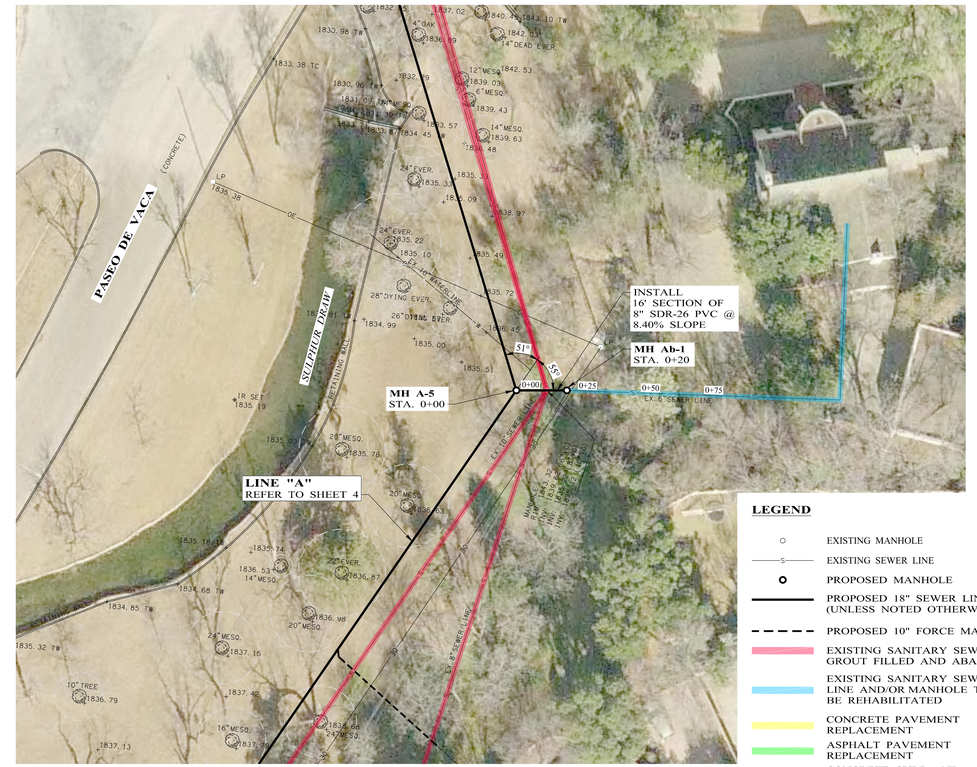
CONTRACT NO. 16-6683

SHEET NO.

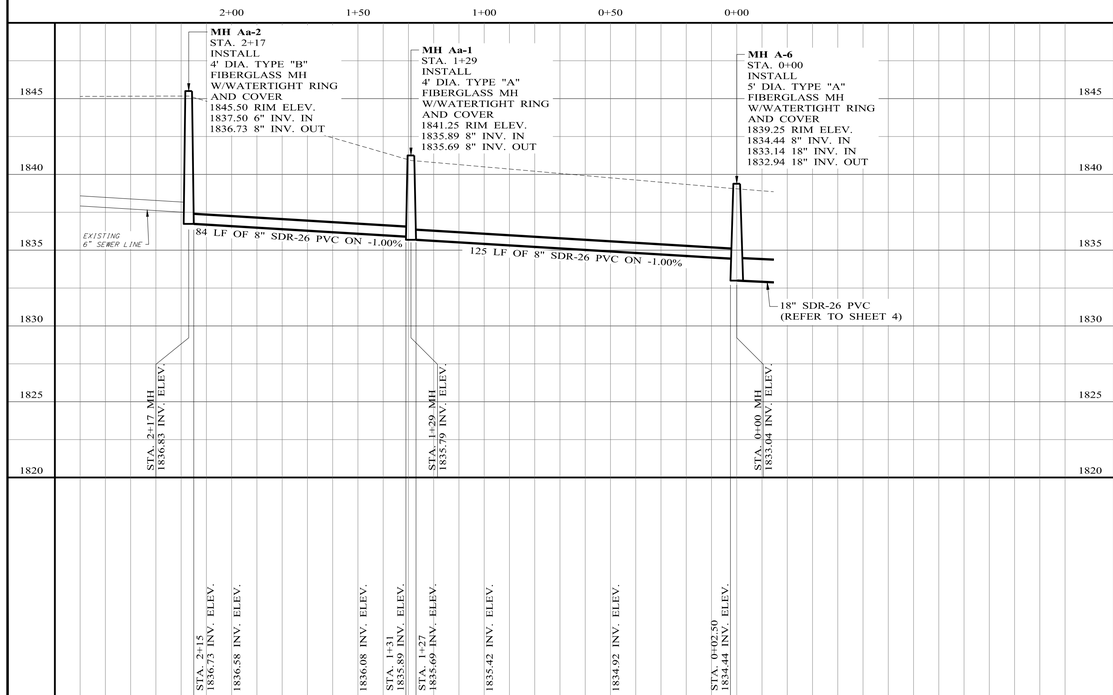
5 OF 20

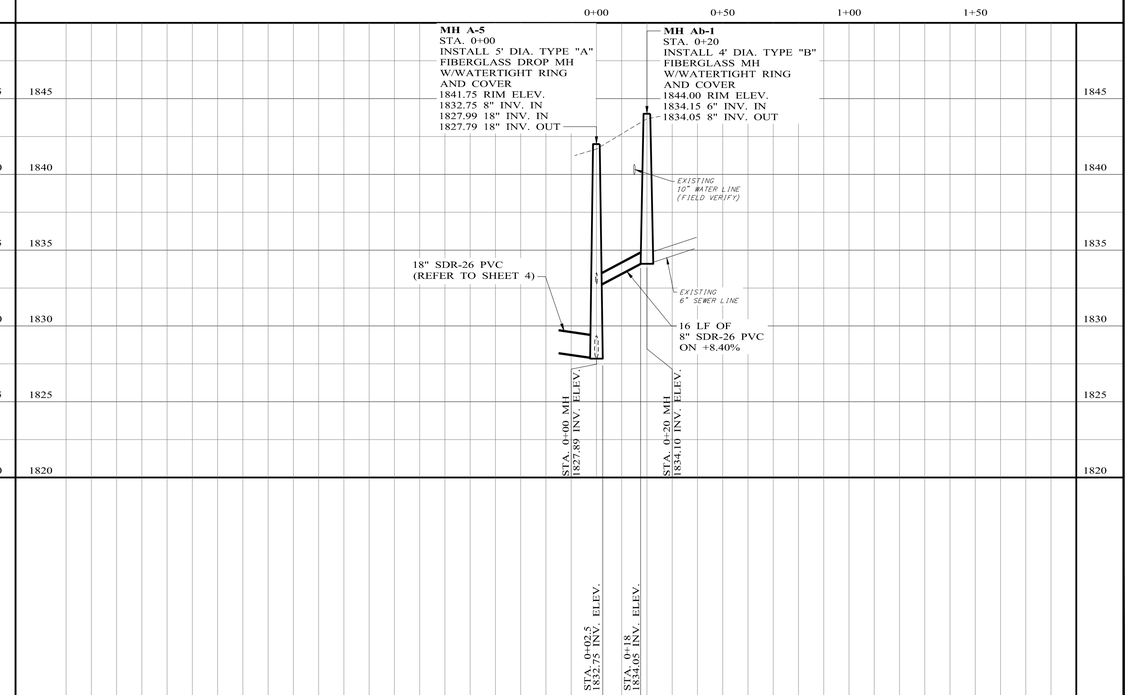


LINE "Aa"



LINE "Ab"





DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HORZ: 1"= 30' VERT: 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017
JOSEPH T. MANGRUM
117205
LICENSED
PROFESSIONAL ENGINEER

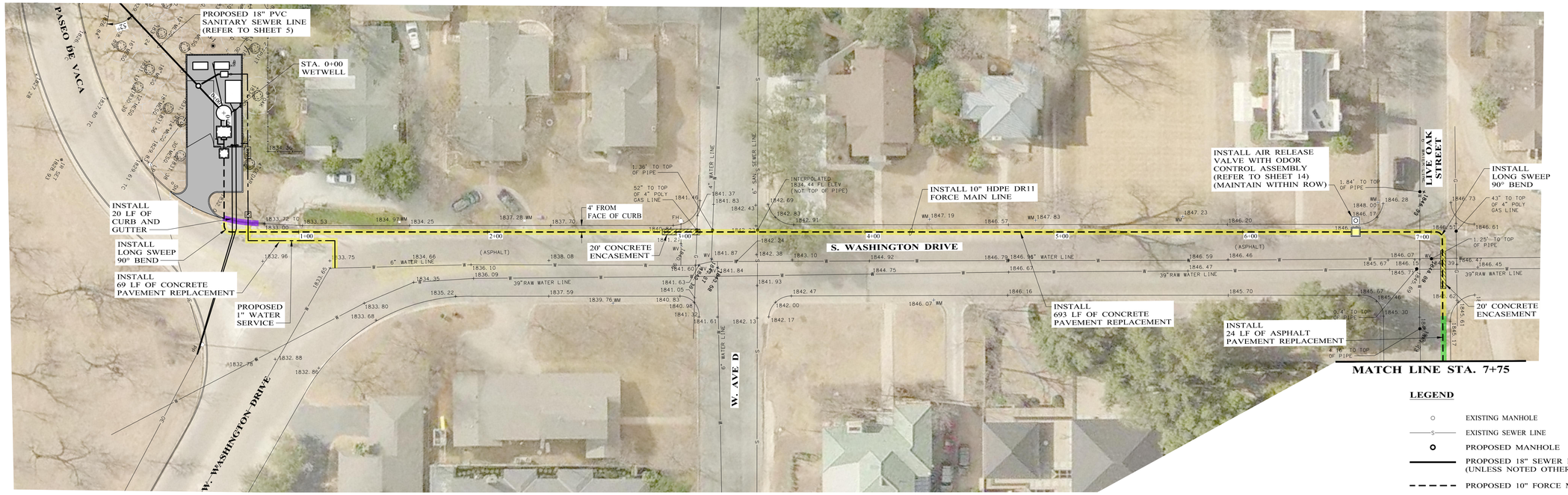
ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street Abilene, Texas 79601
325-698-5560 PE Firm Registration No. 2415
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO
TEXAS
2017 SULPHUR DRAW
WASTEWATER IMPROVEMENTS PROJECT

LINE "Aa" AND "Ab"
8" GRAVITY LINE

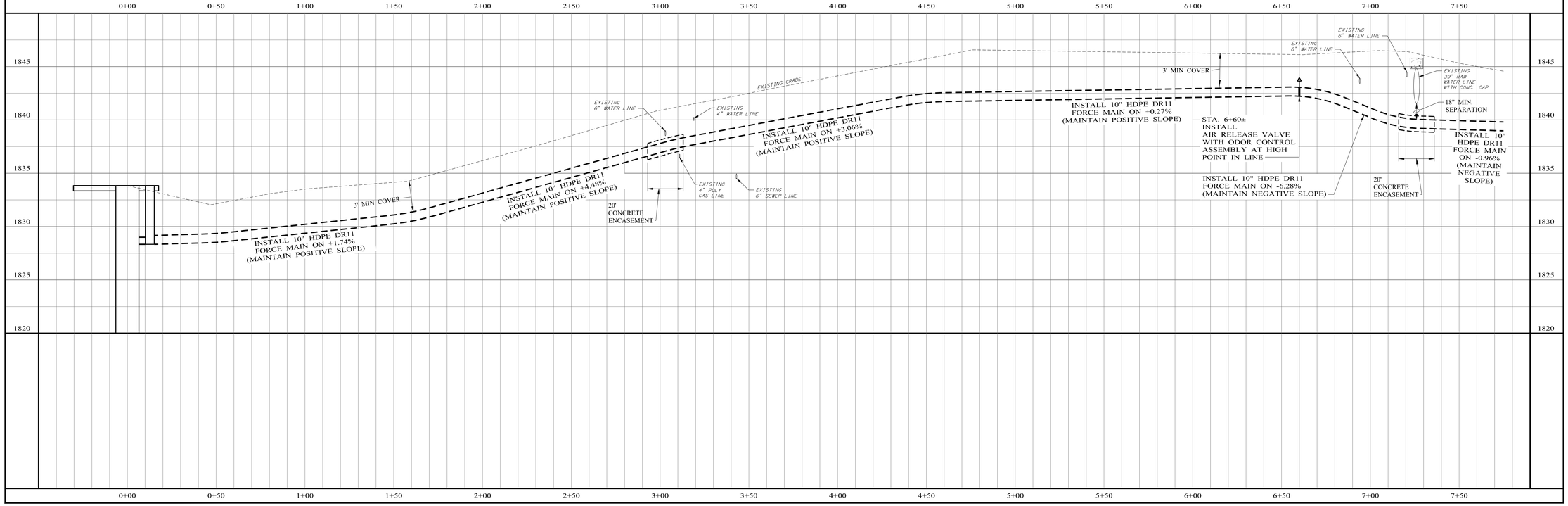
CONTRACT NO.
16-6683

SHEET NO.
6 OF 20



LEGEND

- EXISTING MANHOLE
- EXISTING SEWER LINE
- PROPOSED MANHOLE
- PROPOSED 18" SEWER LINE (UNLESS NOTED OTHERWISE)
- PROPOSED 10" FORCE MAIN LINE
- EXISTING SANITARY SEWER TO BE GROUT FILLED AND ABANDONED
- EXISTING SANITARY SEWER LINE AND/OR MANHOLE TO BE REHABILITATED
- CONCRETE PAVEMENT REPLACEMENT
- ASPHALT PAVEMENT REPLACEMENT
- CONCRETE CURB AND GUTTER REPAIR



DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HORZ: 1"= 30' VERT: 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017
JOSEPH T. MANGRUM
117205
LICENSED PROFESSIONAL ENGINEER

Joseph T. Mangrum

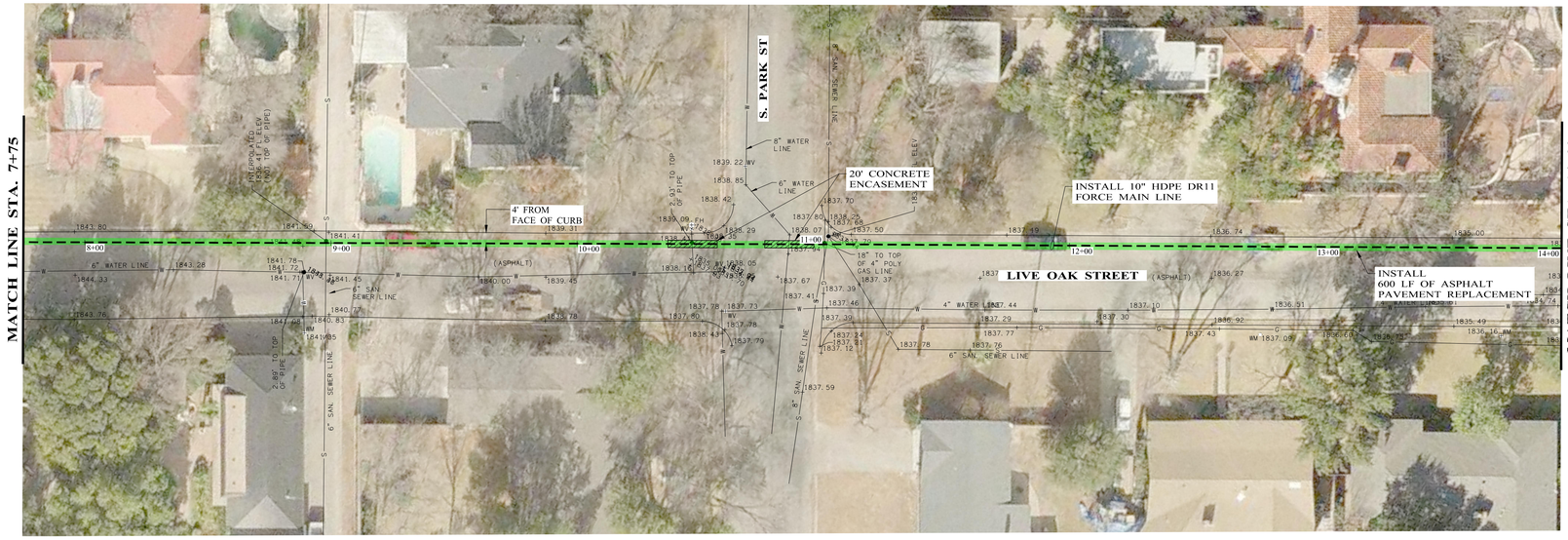
ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street Abilene, Texas 79601
325-673-4548 Texas Registration No. F-451
PE Firm Registration No. 50103
PG Firm Registration No. 10011900 & 10007300
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO
TEXAS
2017 SULPHUR DRAW
WASTEWATER IMPROVEMENTS PROJECT

LINE "B"
10" FORCE MAIN LINE

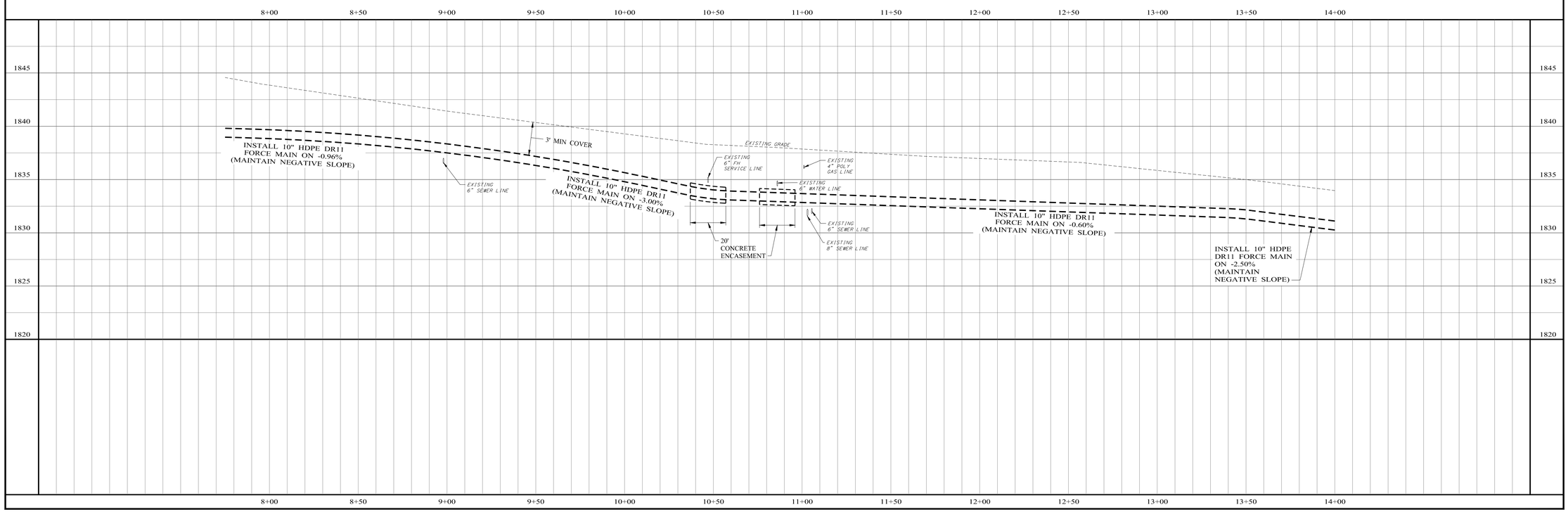
CONTRACT NO. 16-6683

SHEET NO.
7 OF 20



LEGEND

- EXISTING MANHOLE
- EXISTING SEWER LINE
- PROPOSED MANHOLE
- PROPOSED 18" SEWER LINE (UNLESS NOTED OTHERWISE)
- PROPOSED 10" FORCE MAIN LINE
- EXISTING SANITARY SEWER TO BE GROUT FILLED AND ABANDONED
- EXISTING SANITARY SEWER LINE AND/OR MANHOLE TO BE REHABILITATED
- CONCRETE PAVEMENT REPLACEMENT
- ASPHALT PAVEMENT REPLACEMENT
- CONCRETE CURB AND GUTTER REPAIR



DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HOR: 1"= 30' VERT: 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017

JOSEPH T. MANGRUM 117205 LICENSED PROFESSIONAL ENGINEER

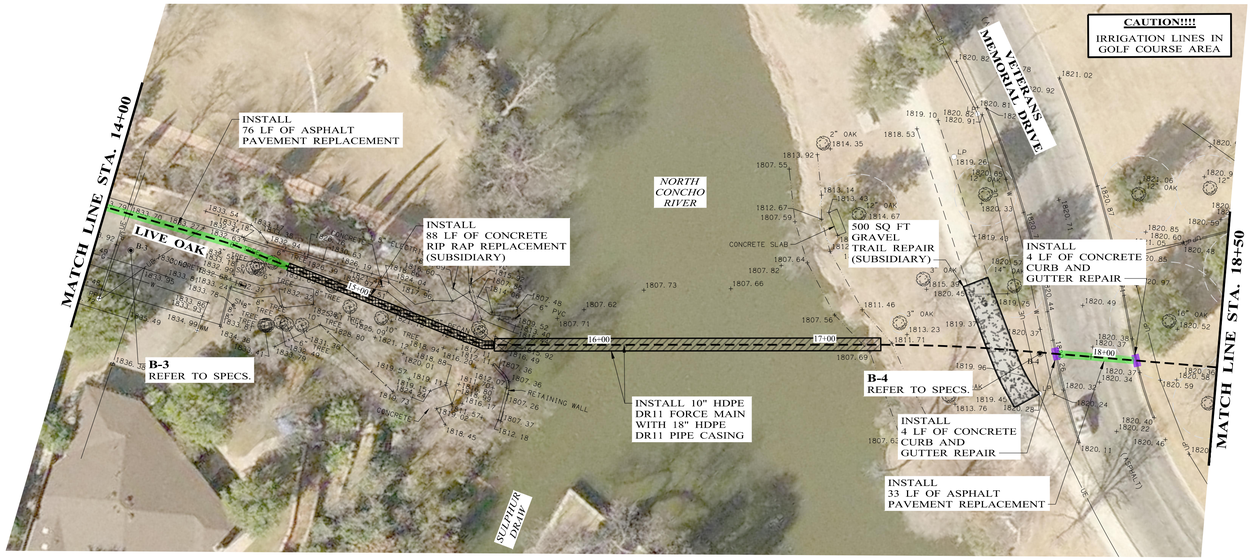
ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street Abilene, Texas 79601
325-698-5560 PE Firm Registration No. 3151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO TEXAS
2017 SULPHUR DRAW WASTEWATER IMPROVEMENTS PROJECT
LINE "B" 10" FORCE MAIN LINE

CONTRACT NO. 16-6683

SHEET NO.

8 OF 20



LEGEND

- EXISTING MANHOLE
- EXISTING SEWER LINE
- PROPOSED MANHOLE
- PROPOSED 18" SEWER LINE (UNLESS NOTED OTHERWISE)
- PROPOSED 10" FORCE MAIN LINE
- EXISTING SANITARY SEWER TO BE GROUT FILLED AND ABANDONED
- EXISTING SANITARY SEWER LINE AND/OR MANHOLE TO BE REHABILITATED
- CONCRETE PAVEMENT REPLACEMENT
- ASPHALT PAVEMENT REPLACEMENT
- CONCRETE CURB AND GUTTER REPAIR

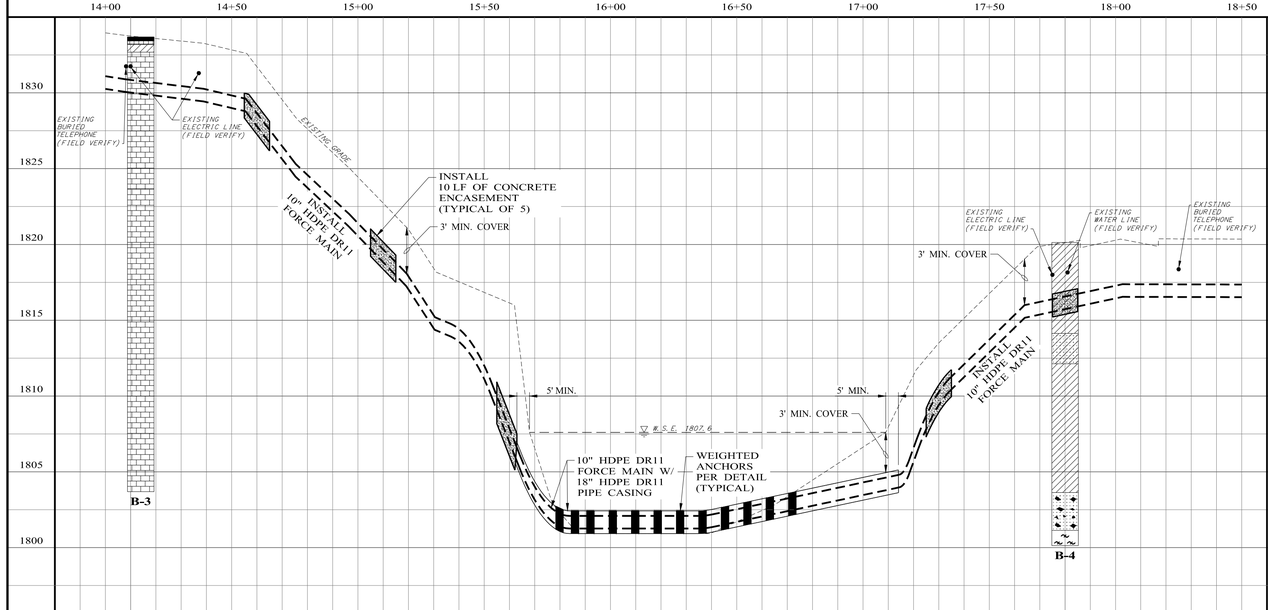
RIVER CROSSING NOTES:

1. ALL EXCAVATION WITHIN 5' OF EDGE OF RIVER BANK SHALL BE CONCRETE ENCASEMENT WITH FLOWABLE BACKFILL.
2. WHILE WORKING WITHIN THE BANKS OF THE NORTH CONCHO RIVER, THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 12 AND THE PROJECT AQUATIC RESOURCE PROTECTION PLAN, PROVIDED BY THE OWNER.
3. CONTRACTOR SHALL RESTORE RIVER BANKS TO PRE-EXISTING CONDITIONS.
4. ALL EXCAVATION IS UNCLASSIFIED AND SUBSIDIARY.

GENERAL CONSTRUCTION NOTES:

1. CLEARING OF TREES ALONG THE PROJECT ROUTE SHALL ONLY BE CONDUCTED BETWEEN SEPTEMBER 1 AND FEBRUARY 28 AND MUST BE APPROVED BY THE OWNER PRIOR TO REMOVAL. TRIMMING OF TREES ALONG THE PROJECT ROUTE SHALL BE PERFORMED BY A LICENSED ARBORIST, NEATLY AND WITH UTMOST CARE FOR THE HEALTH OF THE TREE. COORDINATE REMOVAL AND TRIMMING WITH OWNER PRIOR TO WORK.
2. CONTRACTOR SHALL PROTECT EXISTING TREES ALONG THE PROJECT ROUTE TO THE EXTENT PRACTICAL.

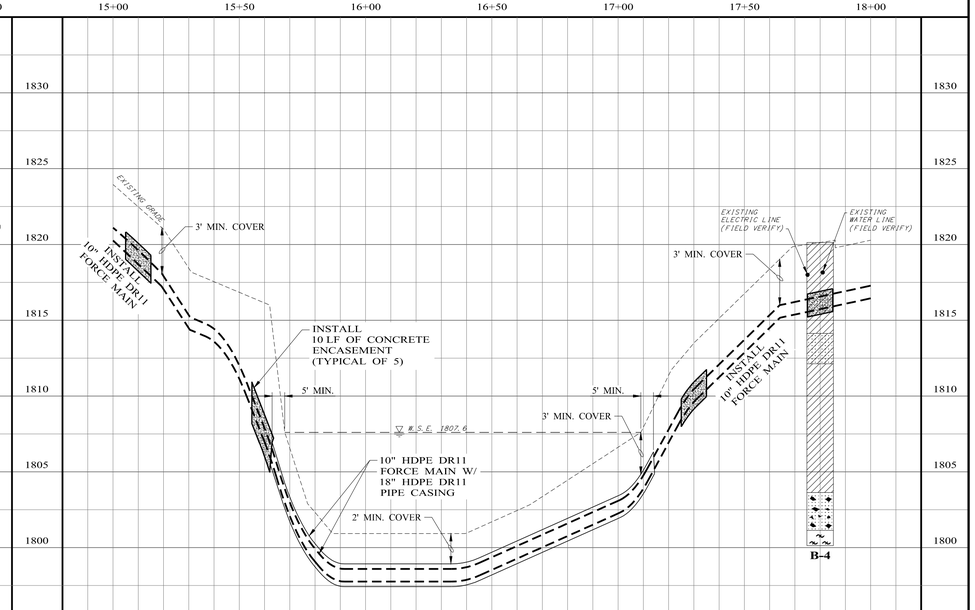
BASE BID



BASE BID NOTES:

1. LAY PIPELINE ALONG RIVER BOTTOM WITH WEIGHTED ANCHORS, SUBSIDIARY TO BASE BID.
2. MAINTAIN 3' COVER AT STANDARD WATER SURFACE SHORELINE AND EXTEND CONCRETE ENCASEMENT 5' BEYOND SHORELINE.

ALTERNATE BID #1



ALT. BID #1 NOTES:

1. OPEN CUT AND MAINTAIN 2' COVER FOR FULL WIDTH OF RIVER WITH CONCRETE ENCASEMENT, SUBSIDIARY TO ALT. BID #1.
2. MAINTAIN 3' COVER AT STANDARD WATER SURFACE SHORELINE AND EXTEND CONCRETE ENCASEMENT 5' BEYOND SHORELINE.

DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HOR: 1"= 30' VERT: 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017
JOSEPH T. MANGRUM
117205
LICENSED
PROFESSIONAL ENGINEER

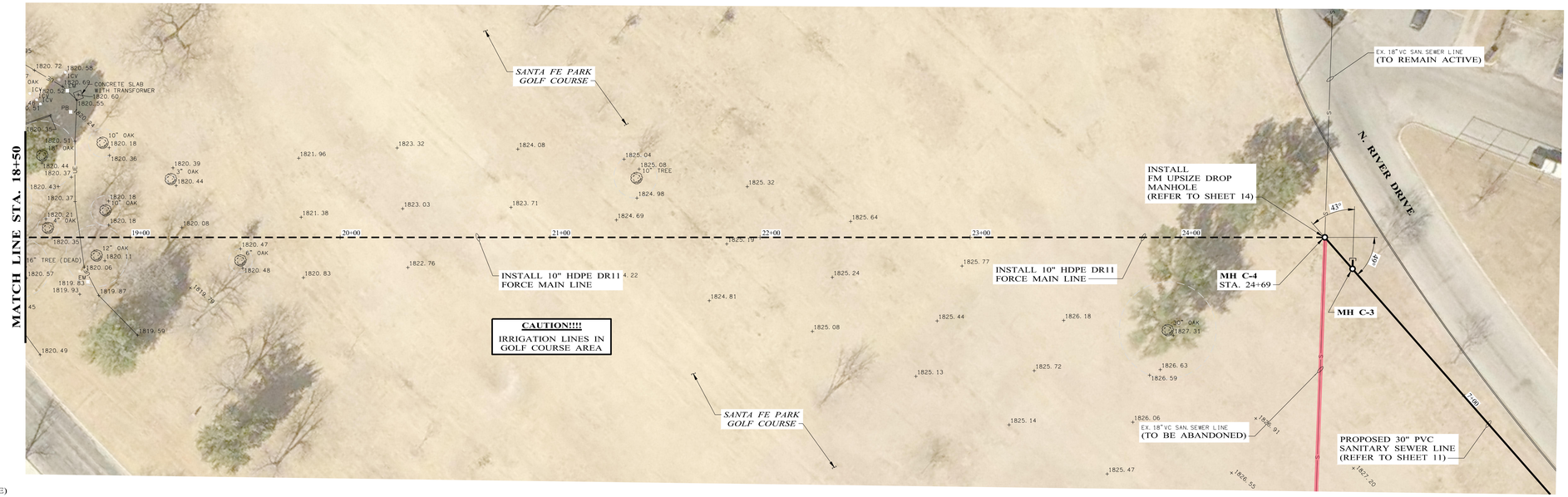
ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
Abilene, Texas 79601
325-698-5560
PE Firm Registration No. 1515
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO
TEXAS
2017 SULPHUR DRAW
WASTEWATER IMPROVEMENTS PROJECT

LINE "B"
10" FORCE MAIN LINE

CONTRACT NO.
16-6683

SHEET NO.

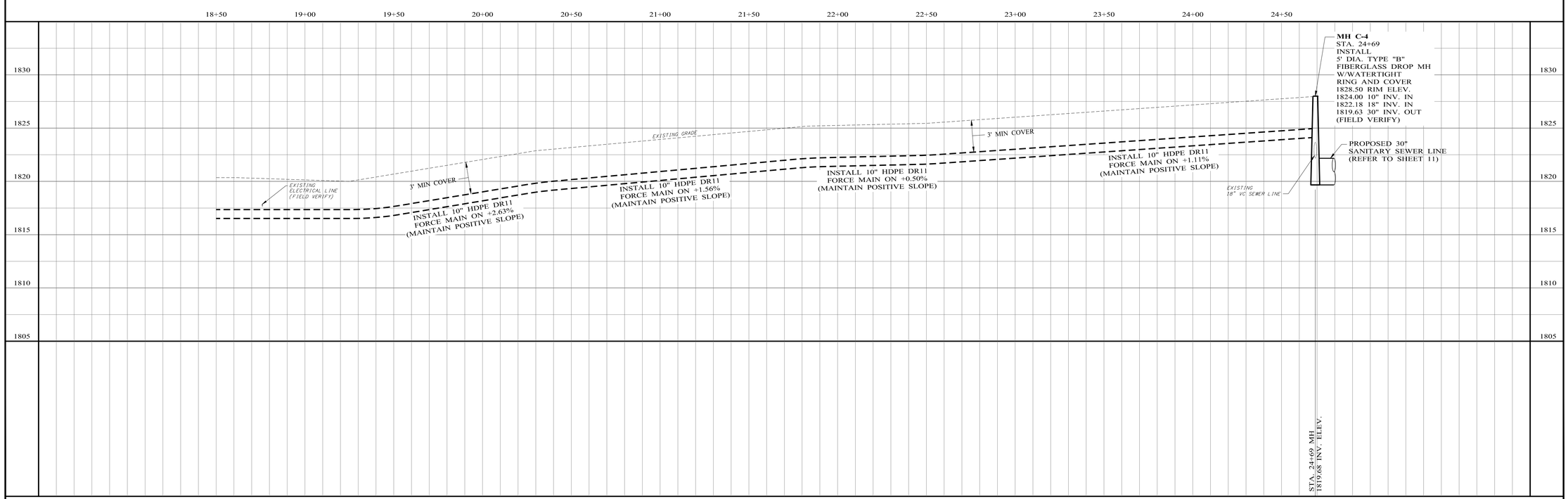


LEGEND

- EXISTING MANHOLE
- EXISTING SEWER LINE
- PROPOSED MANHOLE
- PROPOSED 18" SEWER LINE (UNLESS NOTED OTHERWISE)
- PROPOSED 10" FORCE MAIN LINE
- EXISTING SANITARY SEWER TO BE GROUT FILLED AND ABANDONED
- EXISTING SANITARY SEWER LINE AND/OR MANHOLE TO BE REHABILITATED
- CONCRETE PAVEMENT REPLACEMENT
- ASPHALT PAVEMENT REPLACEMENT
- CONCRETE CURB AND GUTTER REPAIR

GOLF COURSE RESTORATION NOTES:

1. CONTRACTOR SHALL REPLACE TOPSOIL AND RESEED ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.
2. CONTRACTOR SHALL PROTECT EXISTING IRRIGATION LINES AND REPAIR IF DAMAGED.



DESIGNED BY:	J.T.M.
DRAWN BY:	3K
CHECKED BY:	S.D.
DATE:	08/15/2017
SCALE:	HORZ. 1"= 30' VERT. 1"= 5'

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

08/15/2017

JOSEPH T. MANGRUM 117205 LICENSED PROFESSIONAL ENGINEER

ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street Abilene, Texas 79601
325-698-5560
PE Firm Registration No. 2151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

CITY OF SAN ANGELO TEXAS
2017 SULPHUR DRAW WASTEWATER IMPROVEMENTS PROJECT
LINE "B" 10" FORCE MAIN LINE

CONTRACT NO. 16-6683

SHEET NO.