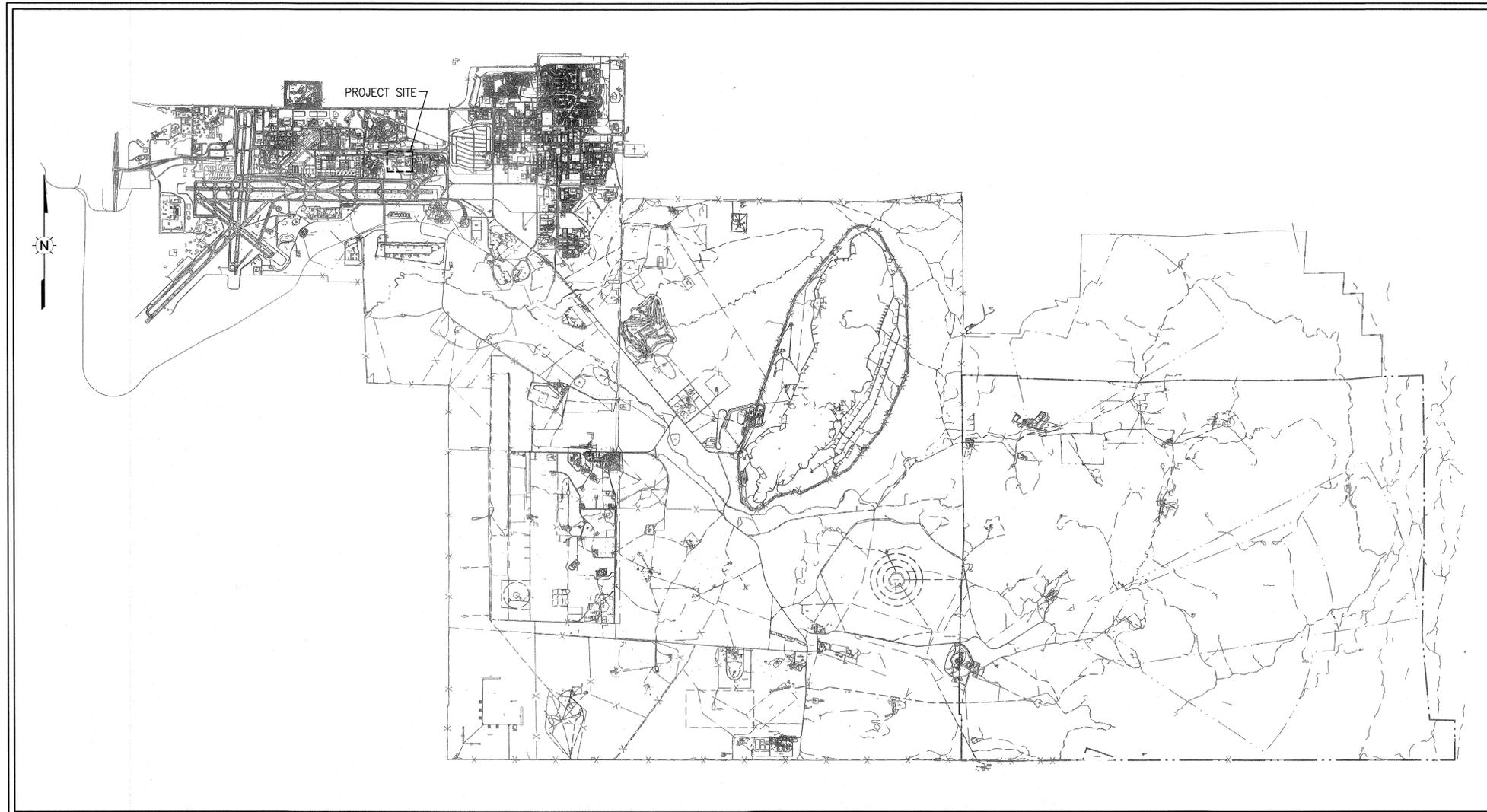


BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM

KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

DRAWING INDEX

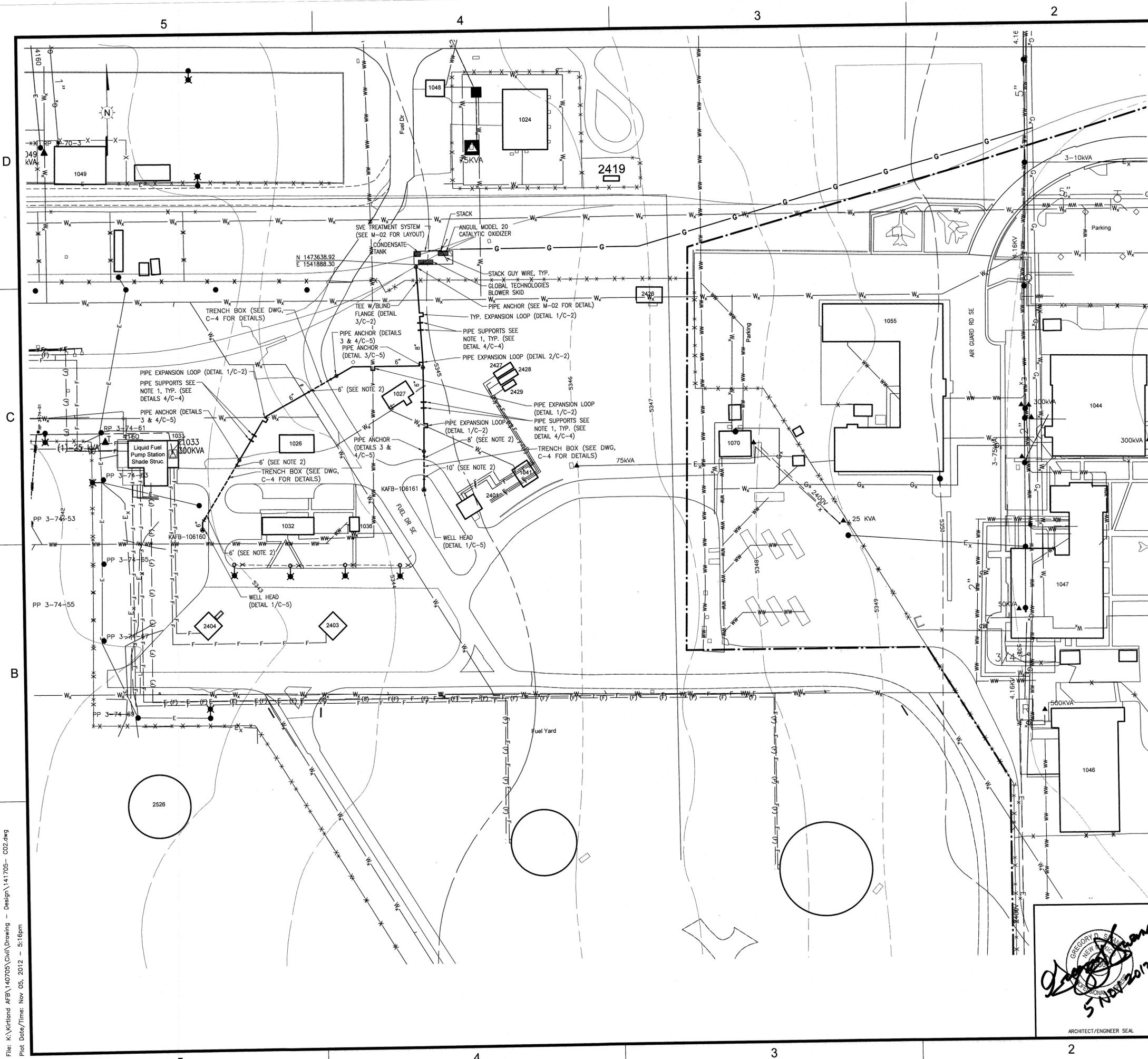
| CIVIL | | MECHANICAL | |
|-------------|------------------|-------------|----------------------------------|
| DRAWING NO. | DRAWING TITLE | DRAWING NO. | DRAWING TITLE |
| C-01 | COVER SHEET | P-1 | PROCESS FLOW DIAGRAM |
| C-02 | SITE PLAN | M-01 | MECHANICAL - GENERAL ARRANGEMENT |
| C-03 | CIVIL DETAILS | M-02 | MECHANICAL - SECTION VIEW |
| C-04 | CIVIL DETAILS | | |
| C-05 | CIVIL DETAILS | | |
| STRUCTURAL | | ELECTRICAL | |
| DRAWING NO. | DRAWING TITLE | DRAWING NO. | DRAWING TITLE |
| S-01 | STRUCTURAL NOTES | E-01 | LAYOUT AND ONE LINE DIAGRAM |
| S-02 | FOUNDATION PLAN | | |



1 SITE LOCATION MAP
SCALE: NTS

| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| | | | |
| | | | |
| | | | |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |

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|--------------------|---|----------------|-------------------------|
| | U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO | | |
| | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO | | |
| Designed by: JS | BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM COVER SHEET | | |
| Drawn by: JW | | | |
| Checked by: AS | | | |
| Reviewed by: | Plot Scale Ratio: 1 = 1 | Date: 10/11/12 | Sheet reference number: |
| Submitted by: | Design File: 140705-C01.dwg | Drawing Code: | C-1 |
| | Spec. No.: | Contract No.: | |



LEGEND:

EXISTING

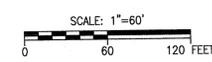
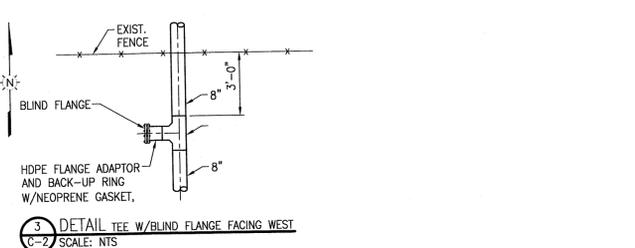
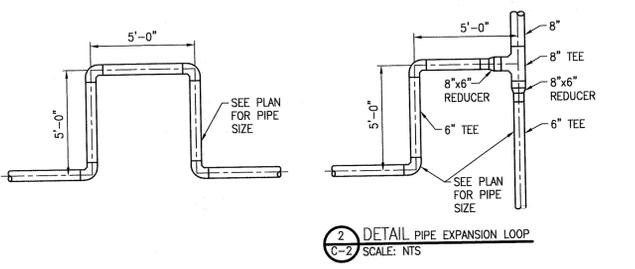
- BUILDING
- ROAD
- FENCE
- MAJOR CONTOURS
- MINOR CONTOUR
- GAS LINE
- STORM SEWER
- WASTE WATER LINE
- WATER LINE
- ELECTRICAL CABLE
- FUEL LINE
- FORMER FUEL LINE
- INDUSTRIAL WASTE LINE
- TRANSFORMER
- LIGHT POLE
- POWER POLE

NEW

- SVE TREATMENT SYSTEM
- EXTRACTION WELLS
- EXTRACTION WELL PIPING IN TRENCH BOX
- EXTRACTION WELL ABOVE GRADE PIPING
- GAS LINE
- PIPE SUPPORTS
- PIPE ANCHOR
- EXPANSION LOOP

T1049 (3)-25 KVA

- NOTES:**
- VACUUM PIPING WILL BE SUPPORTED BY 4"x4" PRESSURE TREATED POSTS LAID HORIZONTALLY ON GRADE EXCEPT WHERE NOTED BY PIPE ANCHORS. 6" PIPING SHALL BE SUPPORTED EVERY 8'-0" OC. 8" PIPING SHALL BE SUPPORTED EVERY 10'-0" OC.
 - MINIMUM DISTANCE REQUIRED FROM EDGE OF PAVED ROAD TO OUTSIDE DIAMETER OF PIPE.



| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |

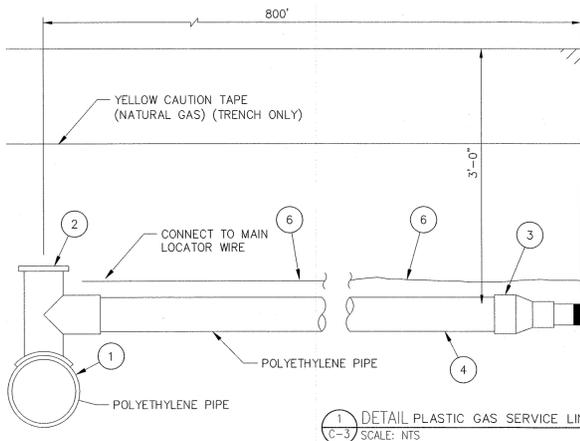
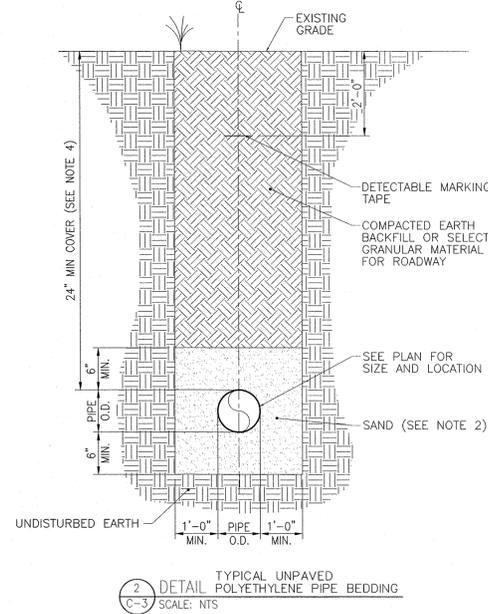
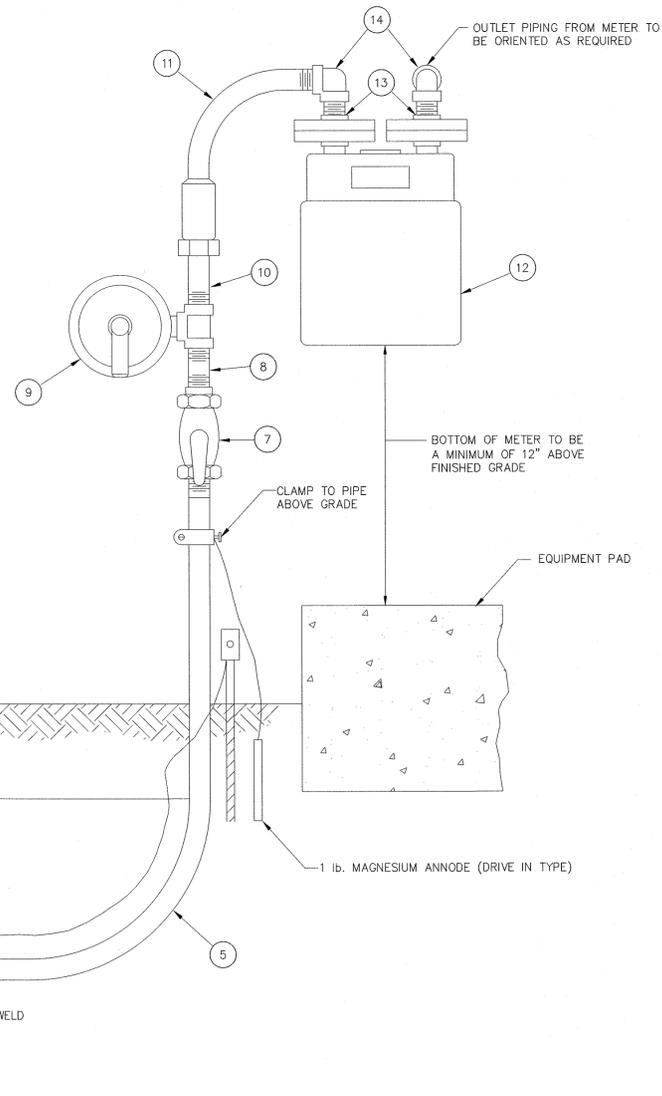
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|---|--|---|--|
| | U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO | | |
| | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO | | |
| BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM SITE PLAN | Designed by: JS Drawn by: JW Checked by: AS Reviewed by: Submitted by: | Plot Scale Ratio: 1 = 1 Design File: 140705-C02.dwg Spec. No.: Contract No.: | Date: 10/11/12 Drawing Code: Sheet reference number: C-2 |

Gregory D. ...
 5 Nov 2012
 ARCHITECT/ENGINEER SEAL

NOTES FOR DETAIL 1:

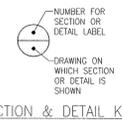
1. PRESSURE AT 5" MAIN IS 25 PSIG.
2. PRESSURE AT OUTLET OF GAS REGULATOR IS 10 PSIG.
3. GAS SERVICE LINE IS BURIED AT A DEPTH OF APPROXIMATELY 3'-0" BELOW GRADE, WITH LOCATION WIRE ON TOP.
4. GAS PIPING BELOW GRADE IS MDPE SDR11.
5. GAS PIPING ABOVE GRADE IS CARBON STEEL.
6. SIZE GAS METER FOR 2,000,000 BTUH INPUT, MINIMUM (METERED AT 10 PSIG).
7. GAS METER AND GAS PRESSURE REGULATOR PROVIDED BY CONTRACTOR.
8. GAS METER TO BE SENSUS SONIX MODEL 2,000, IRON CASE, WITH 2" W.C. DIFFERENTIAL, OR EQUAL.
9. GAS REGULATOR TO BE SENSUS SONIX 2" MODEL 121-8HP SERVICE REGULATOR; 25 PSIG INLET PRESSURE; 10 PSIG OUTLET PRESSURE; 6 TO 10 PSI SPRING; OR EQUAL.
10. SEE SHEET C-2 FOR LOCATION OF NATURAL GAS LINE.

| BILL OF MATERIAL | |
|------------------|---|
| ITEM | DESCRIPTION |
| 1 | 5" MDPE MAIN |
| 2 | PLASTIC TAPPING TEE (5" SADDLE TO 3" OUTLET) |
| 3 | TRANSITION FITTING, STEEL TO HDPE, 3"x2" REDUCER |
| 4 | 3" MDPE SDR11 SERVICE PIPE |
| 5 | PRE-FABRICATED STEEL METER RISER |
| 6 | LOCATOR WIRE |
| 7 | APPROVED GAS STOP WITH INTEGRAL INSULATING UNION |
| 8 | STANDARD WEIGHT BLACK STEEL NIPPLE 2 1/2" LONG |
| 9 | SERVICE REGULATOR |
| 10 | STANDARD WEIGHT BLACK STEEL NIPPLE 7" LONG, THREADED ONE END ONLY |
| 11 | COMPRESSION END METER SET FITTING |
| 12 | TEMPERATURE COMPENSATING METER |
| 13 | STANDARD METER SWIVEL - 2" FLANGED, FLAT FACE |
| 14 | STANDARD WEIGHT BLACK M.I. 90° SCREWED ELBOW |

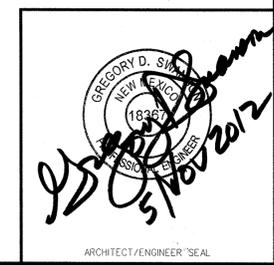


1 DETAIL PLASTIC GAS SERVICE LINE SCALE: NTS

2 TYPICAL UNPAVED POLYETHYLENE PIPE BEDDING SCALE: NTS

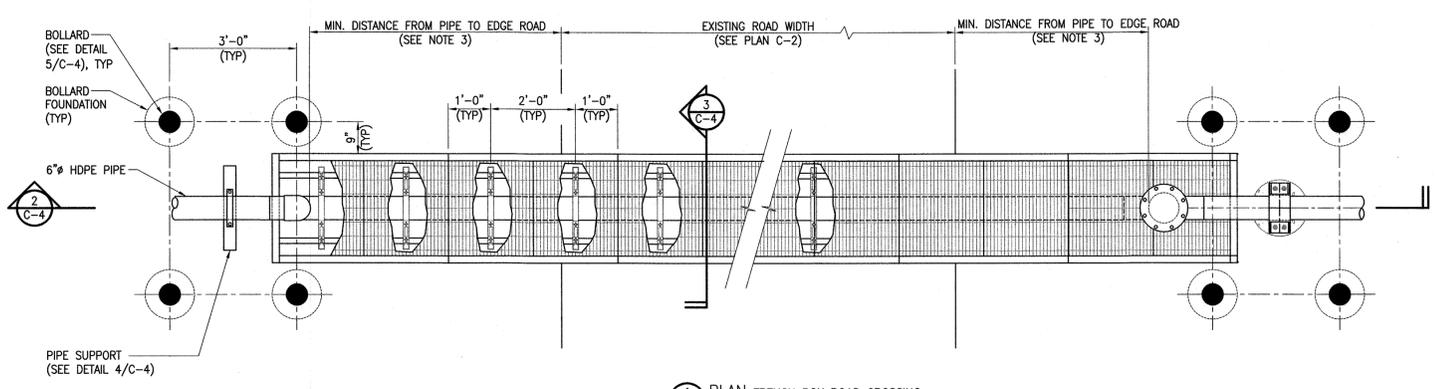


SECTION & DETAIL KEY

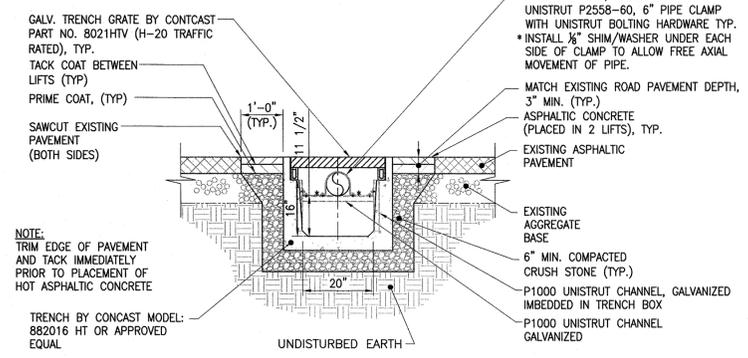


| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |

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|---------------------|--|--|--|---|---------------------------------|--------------------------------|
| | U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO | | | | | |
| | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO | | | | | |
| Designed by: MFL | BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM CIVIL DETAILS | | | | | |
| Drawn by: MFL | | | | | | |
| Checked by: JTS | | | | | | |
| Reviewed by: | | | | Plot Scale Ratio: 1 = 1 Design File: 140705-C3.dwg Spec. No.: | Date: 10/11/12 Drawing Code: | Sheet reference number: C-3 |
| Submitted by: | | | | Contract No.: | Drawing Code: | Sheet reference number: C-3 |

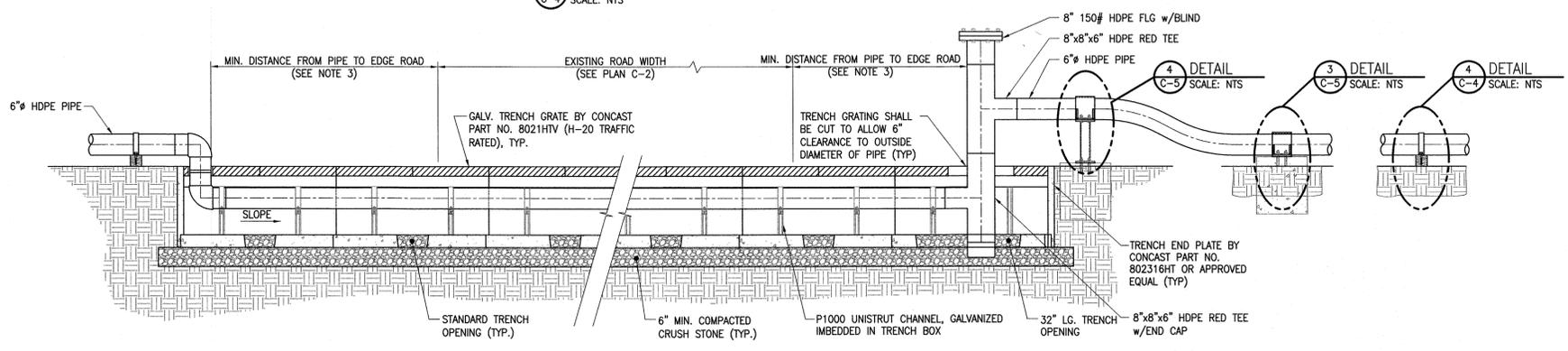


1 PLAN TRENCH BOX ROAD CROSSING
SCALE: NTS

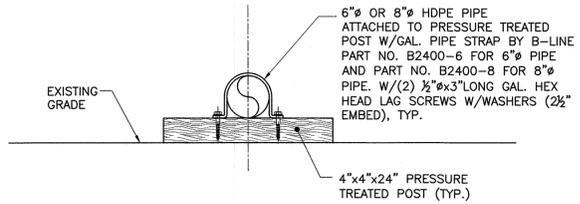


3 SECTION
SCALE: 1/2"=1'-0"

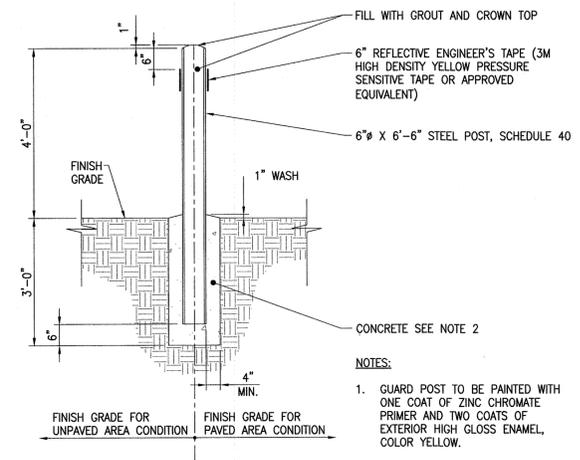
- TRENCH BOX NOTES:**
- TRENCH BOX SHALL BE H-20 RATED, OPEN END, REINFORCED CONCRETE TRENCH BOX WITH STEEL GRATING, BY CONCAST MODEL: 88206 HT, OR APPROVED EQUAL.
 - TRENCH BOX END PLATE SHALL BE SUITED FOR SELECTED TRENCH BOX, BY CONCAST MODEL: 802316 HT.
 - DISTANCE FROM EDGE OF ROAD FOR EACH ROAD CROSSING IS SHOWN ON DRAWING C-2.



2 SECTION
SCALE: NTS



4 DETAIL TYPICAL PIPE SUPPORT
SCALE: NTS



5 DETAIL TYPICAL BOLLARD
SCALE: NTS

| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |

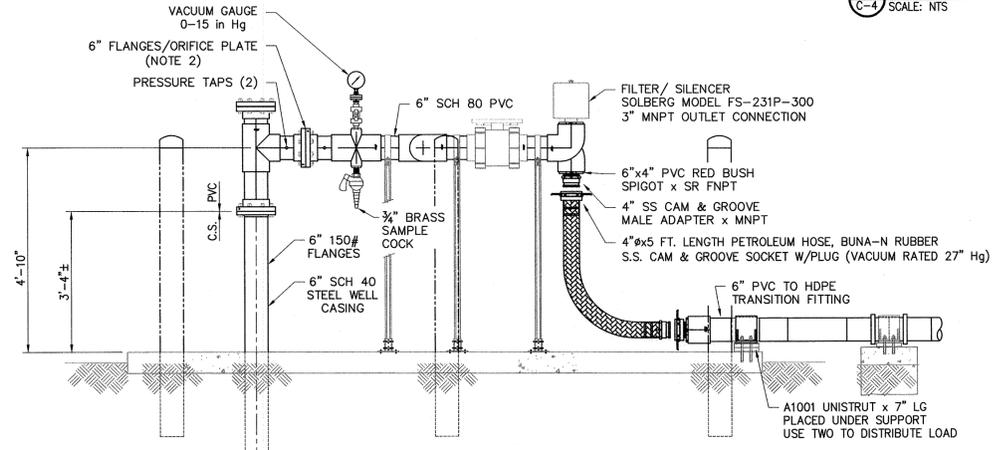
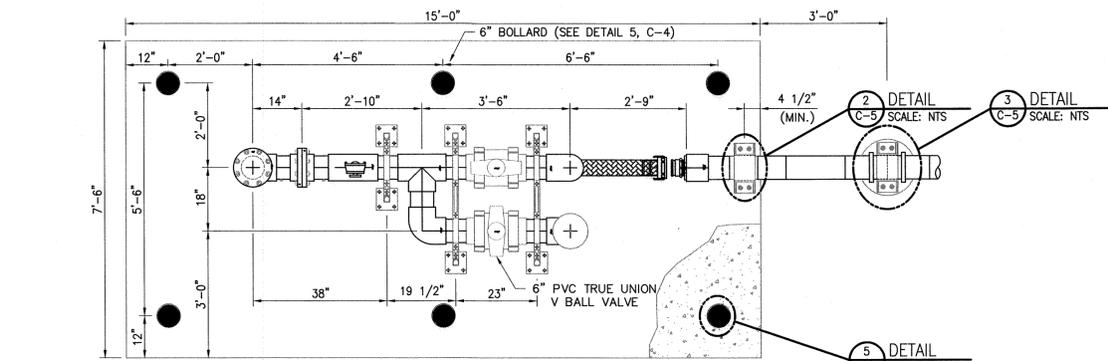
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|--------------------------|-----|---|-----------------------------|
| Shaw Environmental, Inc. | | U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO | |
| Designed by: | MFL | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO | |
| Drawn by: | JW | BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM CIVIL DETAILS | |
| Checked by: | JTS | | |
| Reviewed by: | | Plot Scale Ratio: 1 = 1 | Date: 08/02/12 |
| Submitted by: | | Design File: 140705-C4.dwg | Sheet reference number: C-4 |
| | | Spec. No.: | Drawing Code: |
| | | Contract No.: | |

GREGORY D. SWANSON
 ARCHITECT/ENGINEER SEAL
 5 NOV 2012

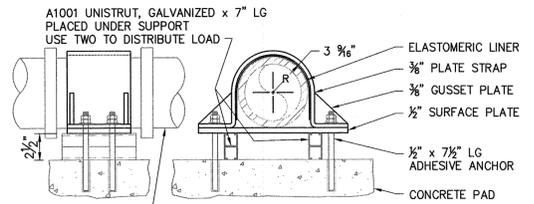
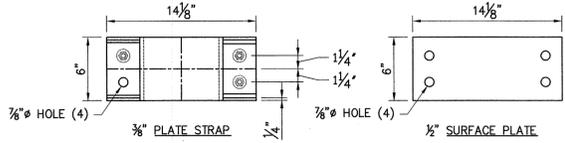
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WELL HEAD NOTES:

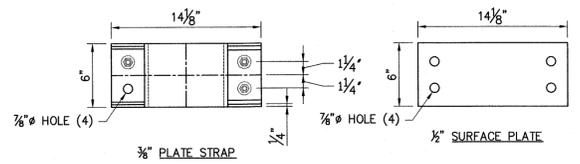
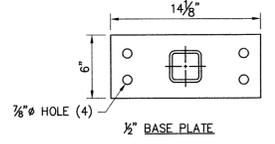
- VACUUM PIPING INSTRUMENT AND VALVE CLUSTER SHALL BE FIELD SUPPORTED WITH UNISTRUT SUPPORTS AND STRAPPING.
- MEASUREMENT DEVICE SHALL BE AN ORIFICE PLATE TO FIT A 6" FLANGE.
- SEE DRAWING S-01 FOR CONCRETE SPECIFICATIONS.



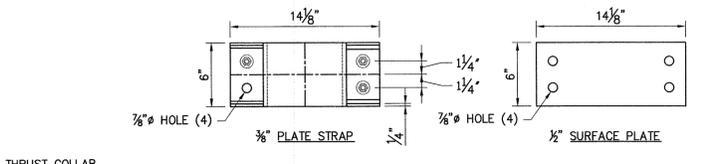
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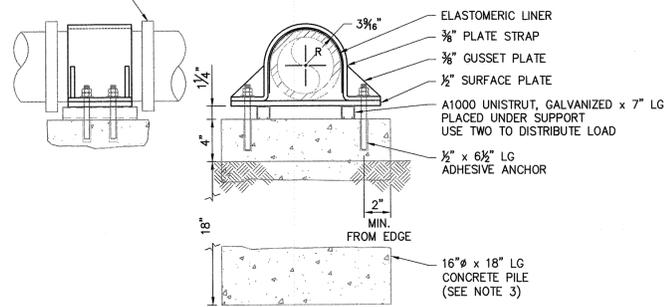
2 DETAIL HDPE PIPE FRICTION ANCHOR (SEE C-2 FOR LOCATIONS) SCALE: NTS



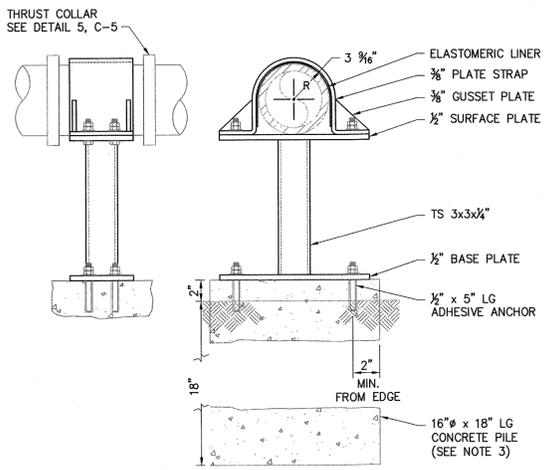
3 DETAIL HDPE PIPE FRICTION ANCHOR (SEE C-2 FOR LOCATIONS) SCALE: NTS



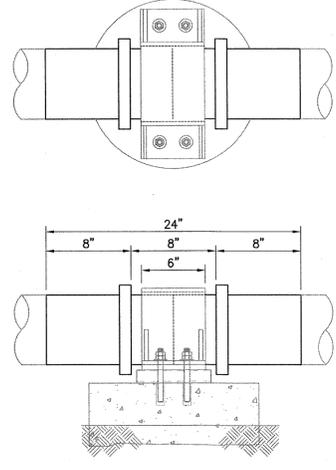
4 DETAIL HDPE PIPE FRICTION ANCHOR (SEE C-2 FOR LOCATIONS) SCALE: NTS



5 DETAIL HDPE PIPE THRUST COLLAR SCALE: NTS



6 DETAIL HDPE PIPE THRUST COLLAR SCALE: NTS



SECTION & DETAIL KEY

NUMBER FOR SECTION OR DETAIL LABEL

DRAWING ON WHICH SECTION OR DETAIL IS SHOWN

GREGORY D. S...
 1830...
 9/20/12
 5 NOV 2012

ARCHITECT/ENGINEER SEAL

| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |

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|---------------|-----|--|-----------------------------|
| | | U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO | |
| Designed by: | MFL | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO | |
| Drawn by: | MFL | BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM CIVIL DETAILS | |
| Checked by: | JTS | | |
| Reviewed by: | | Plot Scale Ratio: 1 = 1 | Date: 09/07/12 |
| Submitted by: | | Design File: 140705-C5.dwg | Sheet reference number: C-5 |
| | | Spec. No.: | Drawing Code: |
| | | Contract No.: | |

STRUCTURAL SYSTEM DESCRIPTION:

THE EXTENT OF NEW CONSTRUCTION FOR THIS PROJECT INCLUDES AN 18'-0" x 53'-0" CAST-IN-PLACE CONCRETE SLAB-ON-GRADE AND ISOLATED SPREAD FOUNDATIONS AND GUY-WIRE ANCHOR FOOTINGS TO SUPPORT SOIL VAPOR EXTRACTION TREATMENT EQUIPMENT, INCLUDING A CANTILEVER STACK STRUCTURE. STRUCTURAL DRAWINGS S-01 AND S-02 INCLUDE THE DESIGN OF THE CONCRETE FOUNDATION CONSTRUCTION CONSISTING OF A CONCRETE SLAB AND ISOLATED FOOTINGS. ENGINEER IS NOT RESPONSIBLE FOR ANY PORTION OF THE WORK OTHER THAN THAT OUTLINED ABOVE. THE DESIGN ADEQUACY OF THE EQUIPMENT BASES FRAME (SKID) AND STACK STRUCTURE INCLUDING BASE PLATE, GUY-WIRES AND ASSOCIATED HARDWARE INCLUDING ANCHORAGE OF ALL EQUIPMENT AND THE STACK STRUCTURE IS THE RESPONSIBILITY OF THE EQUIPMENT VENDOR.

CODES, GUIDES, SPECIFICATIONS AND REFERENCES:

Table with 2 columns: Code/Reference and Description. Includes ACI 318, ACI 301, ASCE/SEI 7, CRSI, IBC 2009, UFC, and various building code requirements.

ABBREVIATIONS:

Table with 2 columns: Abbreviation and Meaning. Includes ACI, A.F.F., B.F.F., B.F.G., C.J., C.L., CONT., CRSI, NS & FS, O.C. AND C.C., SYMM., T&B, U.N.O., UFC, and V.I.F.

DESIGN LOADS:

- 1. GRAVITY LOADS: CONCRETE SLAB-ON-GRADE: UNIFORM LIVE LOAD = 125 PSF, CONCENTRATED LIVE LOAD = 3000 LB FORCE ACTING ON 36 SQ. IN. AREA. 2. SNOW LOADS: GROUND SNOW LOAD = 10 PSF. 3. WIND LOADS: BASIC WIND SPEED = 100 MPH, WIND IMPORTANCE FACTOR = 1.15, OCCUPANCY CATEGORY = III, WIND EXPOSURE = C. 4. SEISMIC LOADS (CANTILEVER STACK): SEISMIC IMPORTANCE FACTOR = 1.25, OCCUPANCY CATEGORY = III, Sa = 0.550, S1 = 0.170, SITE CLASS = D, Sds = 0.500, Sd1 = 0.240, SEISMIC DESIGN CATEGORY = D, ANALYSIS PROCEDURE = NONSTRUCTURAL COMPONENT DESIGN, DESIGN BASE SHEAR: OXIDIZER STACK = 390 LBS.

SPECIAL LOADS:

- 1. BLOWER SKID = 9300 LBS
2. OXIDIZER SKID = 6000 LBS
3. OXIDIZER STACK = 1850 LBS

FOUNDATION NOTES:

- 1. FOUNDATIONS HAVE BEEN DESIGNED BASED ON AN ASSUMED SOIL BEARING CAPACITY OF 2000 PSF. FOUNDATIONS HAVE BEEN DESIGNED TO BEAR ON MATERIAL WHICH PROVIDES EVEN UNIFORM SUPPORT OF SHALLOW SPREAD AND CONTINUOUS FOOTINGS. SHOULD SUBSTANDARD SOIL CONDITIONS BE DISCOVERED, REMOVE MATERIAL AS REQUIRED AND PROVIDE ENGINEERED BACKFILL BELOW FOUNDATION BEARING AS REQUIRED TO PREVENT DIFFERENTIAL SETTLEMENT. DEPTH AND INSTALLATION REQUIREMENTS OF COMPACTED BACKFILL AS WELL AS VERIFICATION OF ALLOWABLE SOIL BEARING CONDITIONS SHALL BE PROVIDED BY A GEOTECHNICAL ENGINEER REGISTERED AND IN GOOD STANDING IN THE STATE OF NEW MEXICO PRIOR TO INSTALLATION OF REINFORCING OR CASTING OF CONCRETE. 2. ALL EXCAVATIONS FOR FOUNDATION BEARING SHALL BE APPROVED BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE AND REINFORCING. PROVIDE PROTECTIVE MEASURES TO COVER EXCAVATIONS SUBJECT TO RAINFALL IN AREAS THAT MUST REMAIN OPEN. IN THE EVENT EXCAVATIONS FILL WITH WATER, PROVIDE DRAINAGE MEASURES AS REQUIRED TO THOROUGHLY REMOVE ALL STANDING WATER PRIOR TO CONSTRUCTION OF FOUNDATION. AT CONTRACTOR'S OPTION, THE EXCAVATIONS SHALL BE UNDERCUT AND A 3" THICK MUD MAT OF 2000 PSI "CLSM" CONCRETE PLACED IN THE BOTTOM TO PROTECT THE BEARING SOILS. 3. THE GEOTECHNICAL ENGINEER SHALL MONITOR EXCAVATION AND BACKFILLING OPERATIONS TO VERIFY THAT THE DESIGN PARAMETERS LISTED HEREIN ARE OBTAINED DURING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED OF DEFICIENCIES PRIOR TO ANY SUBSEQUENT CONSTRUCTION. 4. CONCRETE FOUNDATION CONSTRUCTION HAS BEEN DESIGNED ASSUMING THE FOLLOWING MINIMUM SOIL PROPERTIES: UNIT WEIGHT OF SOIL = 110 PCF, PASSIVE PRESSURE COEFFICIENT = 3.0, MODULUS OF SUB-GRADE REACTION "k" FOR DESIGN OF SLAB-ON-GRADE = 150 PCF. A COEFFICIENT OF FRICTION AGAINST SLIDING OF 0.40 WAS ASSUMED FOR DESIGN OF FOUNDATIONS. GEOTECHNICAL ENGINEER TO VERIFY ALL ASSUMPTIONS USED FOR DESIGN AND NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OR DEFICIENCIES PRIOR TO START OF FOUNDATION/SLAB INSTALLATION. GEOTECHNICAL ENGINEER SHALL ALSO PROVIDE ANY REQUIREMENTS NECESSARY TO DESCRIBE SITE PREPARATION AND FOUNDATION CONSTRUCTION TECHNIQUES. GEOTECHNICAL ENGINEER'S REPORT SHALL SATISFY ALL REQUIREMENTS OF IBC 2009, SECTION 1803.1 AND THE GOVERNING BUILDING OFFICIAL.

GENERAL NOTES:

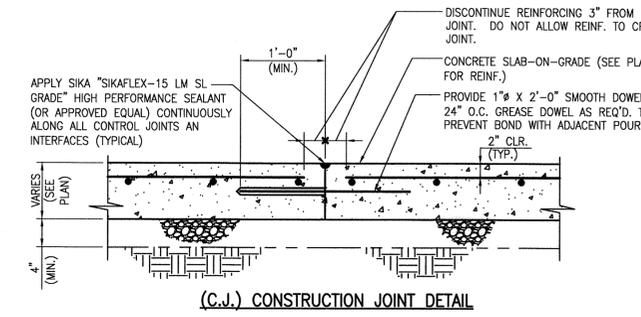
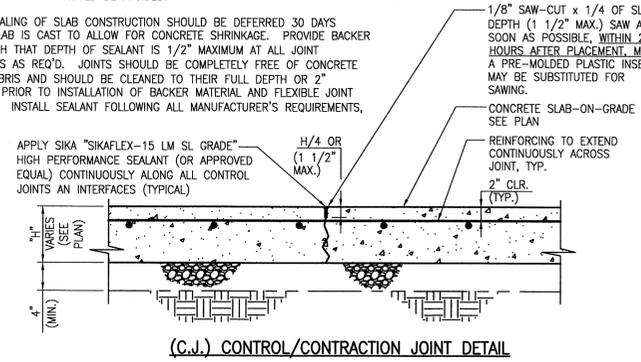
- 1. ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, 2009. 2. THE DESIGN AND SAFETY OF BRACING, TEMPORARY SUPPORTS, OPEN EXCAVATIONS, MEANS AND METHODS OF CONSTRUCTION AND SEQUENCES OF BUILDING ERECTION FOR ALL WORK IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION. 3. SUBMITTALS: AT A MINIMUM THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION OR FABRICATION OF MATERIALS: CONCRETE MIX DESIGN, REINFORCING STEEL SHOP DRAWINGS FOR CAST-IN-PLACE CONCRETE. 4. THE CONTRACTOR SHALL INVESTIGATE ACTUAL LOCATION OF EXISTING UNDERGROUND LINES AND UTILITIES BEFORE EXCAVATING AND ADVISE THE ENGINEER OF ANY INTERFERENCES. ALL EXCAVATIONS NEAR EXISTING LINES SHALL BE PERFORMED WITH EXTREME CAUTION. 5. CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH DRAWINGS OF OTHER DISCIPLINES AND SHOP/VENDOR DRAWINGS RELATED TO OTHER TRADES. VERIFY DIMENSIONS, ANCHORAGE LAYOUT/DETAILS AND WEIGHT OF ACTUAL EQUIPMENT PURCHASED OR OWNER FURNISHED EQUIPMENT WITH DETAILS AND MAXIMUM WEIGHTS SHOWN ON DRAWINGS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION OR INSTALLATION. 6. ALTERNATE PRODUCTS DESIGNATED AS "APPROVED EQUAL" MUST HAVE GOVERNING BUILDING CODE ACCEPTANCE AND BE SUBMITTED AND APPROVED IN WRITING BY THE ENGINEER PRIOR TO ORDERING OR FABRICATION OF MATERIALS. ALTERNATE PRODUCTS OR MATERIALS INSTALLED WITHOUT PRIOR WRITTEN APPROVAL ARE SUBJECT TO REMOVAL AND REPLACEMENT AT CONTRACTOR'S EXPENSE.

CONCRETE:

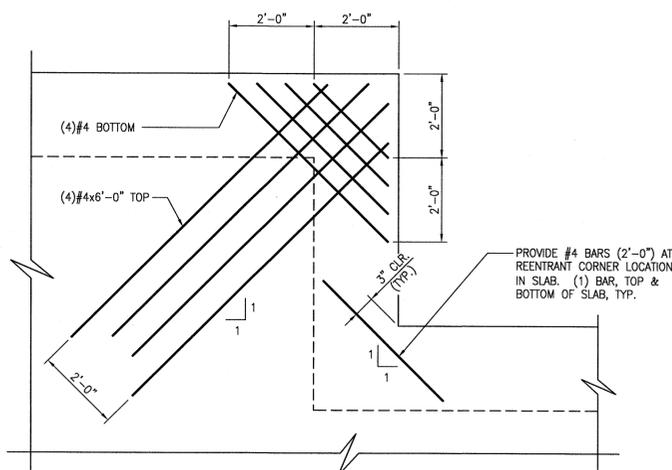
- 1. DESIGN AND CONSTRUCTION PER ACI 318, 301, AND THE GOVERNING BUILDING CODE. CONCRETE NOT EXPOSED TO WEATHER: NORMAL WEIGHT, 28 DAY COMPRESSIVE STRENGTH = 4000 PSI MINIMUM, TYPE I PORTLAND CEMENT, AGGREGATE PER ASTM C33 WITH MAX. SIZE = 1" WATER CEMENT RATIO = 0.45 (MAXIMUM), SLUMP LIMITS = 1" TO 3" (SLUMP WITHOUT ADMIXTURE). FOR CONCRETE WITH WATER REDUCING ADMIXTURES ADDED, MAXIMUM SLUMP SHALL NOT EXCEED 8" WITH ADMIXTURE. FLY-ASH MEETING ASTM C618 MAY BE SUBSTITUTED FOR MAXIMUM 20% OF THE REQUIRED PORTLAND CEMENT BY WEIGHT WITH PRIOR ENGINEER APPROVAL. 2. CONCRETE SUPPLIER NOTE: PROVIDE NON-CHLORIDE, WATER REDUCING AND ACCELERATING CONCRETE ADMIXTURE CONFORMING TO ASTM C 494, TYPE C AND E FOR HIGH EARLY STRENGTH. PROVIDE DOSING AND EVIDENCE OF PERFORMANCE IN CONCRETE MIX DESIGN SUBMITTAL WITH TEST DATA TO SUPPORT MIX DESIGN, SEE NOTE #7 BELOW. 3. CONTRACTOR SHALL PROVIDE CURING METHODS NOT LIMITED TO MOIST CURING OR INCORPORATION OF A CURING COMPOUND WHICH IS NOT A CURING/SEALER COMPOUND. PROVIDE SUBMITTAL OF PROPOSED CURING METHODS TO ENGINEER FOR APPROVAL. 4. CONCRETE EXPOSED TO WEATHERING: SAME MIX AS CONCRETE NOT EXPOSED TO WEATHER WITH THE ADDITION OF 3% TO 6% ENTRAINED AIR CONFORMING TO ASTM C260. WATER CEMENT RATIO = 0.45, SLUMP LIMITS = 1" TO 3" (SLUMP WITHOUT ADMIXTURE) 5. REINFORCING BARS TO BE DEFORMED BARS, ASTM A615 GR. 60 (Fy = 60 KSI) 6. ALL JOB SITE STRUCTURAL CONCRETE SHALL BE PROVIDED BY A SUPPLIER CERTIFIED BY THE NATIONAL READY-MIX CONCRETE ASSOCIATION IN ACCORDANCE WITH ASTM C94. 7. CONCRETE SHALL BE PLACED WITHIN 1 1/2 HOURS OF MIXING. DELIVERY TIMES FOR CONCRETE IS REDUCED WHEN AIR TEMPERATURE EXCEEDS 85-DEG. F. WATER ABOVE THE AMOUNTS CALLED FOR IN THE SUPPLIER'S APPROVED MIX DESIGN SHALL NOT BE ADDED WITHOUT APPROVAL OF THE ENGINEER. 8. CONTRACTOR NOTE: CONCRETE SUPPLIER SHALL PROVIDE MIX DESIGNS CONTAINING THE FOLLOWING INFORMATION TO THE ENGINEER FOR APPROVAL: COMPRESSIVE STRENGTH, WATER CEMENT RATIOS, FLY ASH CONTENT, PORTLAND CEMENT TYPE, FLY ASH TYPE, AGGREGATE SIZE, DATED TEST RESULTS AS OUTLINED AS SPECIFIED ACCORDING TO MINIMUM REQUIREMENTS OF ACI 301 AND ACI 318, CHAPTER 5, AND ANY ADMIXTURES PROPOSED FOR THE SPECIFIC MIX. MIX DESIGNS THAT DO NOT CONTAIN THE PRECEDING INFORMATION WILL NOT BE APPROVED BY THE ENGINEER. CONCRETE PLACED WITHOUT PRIOR APPROVAL OF THE MIX SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE. 9. CONTRACTOR SHALL PROVIDE ALL QUALITY ASSURANCE EVALUATIONS AND TESTS OF ALL CONCRETE PLACED FOLLOWING THE MINIMUM REQUIREMENTS OF ACI 301. 10. CONCRETE REINFORCING SHALL BE DETAILED AND CHECKED SHOP DRAWINGS SUBMITTED FOR ENGINEER APPROVAL PRIOR TO FABRICATION. SUBMIT ONE SET OF REPRODUCIBLE COPIES AND ONE SET OF PRINTS. 11. UNLESS OTHERWISE SHOWN OR NOTED, REINFORCING SHALL BE PLACED TO PROVIDE THE FOLLOWING CLEAR COVER (FACE OF CONCRETE TO FACE OF REINFORCING) 3" FOR CONCRETE CAST AGAINST GROUND, 2" FOR CAST IN FORMS AND EXPOSED TO WEATHER OR GROUND, AND 1/2" FOR ALL OTHER CONDITIONS. 12. ALL CONCRETE AND REINFORCING SHALL BE PLACED AND CURED IN ACCORDANCE WITH ACI MANUAL OF CONCRETE PRACTICE AND CRSI CODE OF STANDARD PRACTICE. TOLERANCES FOR CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 117. 13. FORMWORK SHALL CONFORM TO ACI 347. 14. HOT WEATHER CONCRETING SHALL CONFORM TO ACI 305R. COLD WEATHER CONCRETING SHALL CONFORM TO ACI 306.1. 15. UNLESS NOTED OR DETAILED OTHERWISE, ALL REINFORCING STEEL TO BE SPICED PER REQUIREMENTS OF ACI 318 CLASS "B" TENSION SPLICE. 16. AT ALL STRUCTURALLY REINFORCED SLABS CORNERS AND REENRANT CORNERS, PROVIDE ADDITIONAL #4 DIAGONAL REINFORCING BARS AT EACH CORNER IN THE SLAB, SEE TYPICAL DETAIL, THIS SHEET. CENTER BARS ON CORNER AND ORIENT AT 45-DEGREES TO PRIMARY REINFORCING AS INDICATED. PROVIDE BARS IN THE TOP AND BOTTOM FACE OF SLABS-ON-GRADE WHERE INDICATED, TYPICAL. 17. VERIFY SIZE AND LOCATION OF ALL MECHANICAL AND ELECTRICAL OPENINGS AND/OR SLEEVES AND EQUIPMENT PADS WITH THE MECHANICAL AND ELECTRICAL EQUIPMENT DETAILS AND SHOP DRAWINGS. 18. REFER TO DRAWINGS OF OTHER DISCIPLINES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND RECESSES NOT SHOWN ON THE STRUCTURAL DRAWINGS. 19. REINFORCING STEEL SHALL BE ACCURATELY PLACED AND FIRMLY HELD IN THE POSITIONS SPECIFIED. REINFORCING SHALL BE HELD IN PLACE WITH APPROVED BOLSTERS, CHAIRS AND SPACERS. CHAIR SPACING SHALL NOT EXCEED FOUR-FOOT IN EITHER DIRECTION. THE USE OF PLASTIC CHAIRS, PRECAST CONCRETE, STONE, BRICK, CMU, METAL PIPE, WOODEN BLOCKS OR ANY OTHER FOREIGN OBJECTS IS NOT PERMITTED. WELDING OF REINFORCING STEEL IS NOT PERMITTED.

NOTE:

- 1. ALL SLAB-ON-GRADE JOINT CONSTRUCTION SHOULD BE LOCATED AS REQUIRED TO PROVIDE A MAXIMUM DISTANCE BETWEEN JOINTS OF 20'-0". THE RESULTING PANELS SHOULD BE APPROXIMATELY SQUARE; ELONGATED AND L-SHAPED PANELS SHOULD BE AVOIDED. 2. JOINT SEALING OF SLAB CONSTRUCTION SHOULD BE DEFERRED 30 DAYS AFTER SLAB IS CAST TO ALLOW FOR CONCRETE SHRINKAGE. PROVIDE BACKER ROD SUCH THAT DEPTH OF SEALANT IS 1/2" MAXIMUM AT ALL JOINT LOCATIONS AS REQ'D. JOINTS SHOULD BE COMPLETELY FREE OF CONCRETE DUST/DEBRIS AND SHOULD BE CLEANED TO THEIR FULL DEPTH OR 2" MINIMUM PRIOR TO INSTALLATION OF BACKER MATERIAL AND FLEXIBLE JOINT SEALANT. INSTALL SEALANT FOLLOWING ALL MANUFACTURER'S REQUIREMENTS, TYP.



TYPICAL SLAB JOINT DETAILS FOR ALL 8" REINFORCED SLAB-ON-GRADE, SEE FOUNDATION PLAN SCALE 1"=1'-0"



TYPICAL SLAB-ON-GRADE CORNER REINF. DETAILS N.T.S.

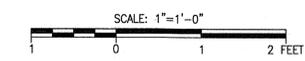
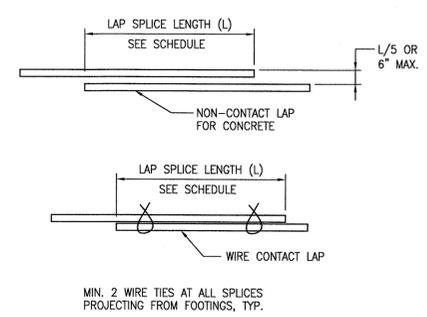


Table titled CLASS "B" LAP SPLICE SCHEDULE (fy = 60 KSI). It lists bar numbers (#4 to #9) and their corresponding horizontal top bars width and all other horizontal and vertical bars.

- NOTE: 1. ALL DETAILING OF REINFORCEMENT SHALL COMPLY WITH THIS SCHEDULE UNLESS SPECIFICALLY DETAILED OTHERWISE ON THE DRAWINGS. 2. THESE BAR DEVELOPMENT LENGTHS APPLY TO REGULAR WEIGHT CONCRETE.

CLASS "B" REINFORCING LAP SPLICE DETAILS AND SCHEDULE



Revisions table with columns for Symbol, Descriptions, Date, and Approved. Below it is the project information: U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO. KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO. BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM STRUCTURAL NOTES. Includes a signature and seal for Tommy Cook, Licensed Professional Engineer, New Mexico, No. 17109.

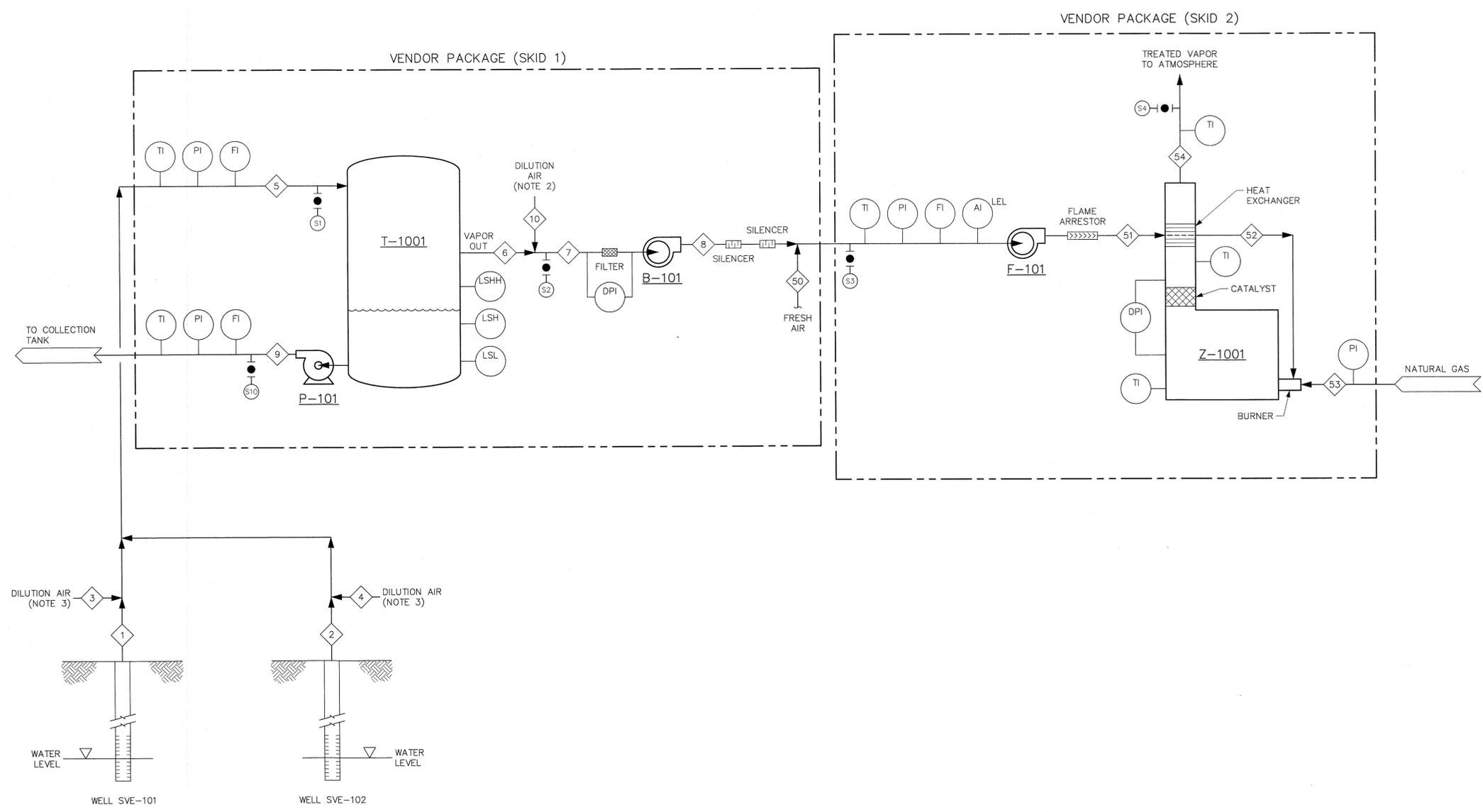
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NOTES:

- 1. VENDOR TO SUPPLY ITEMS MARK WITH AN ASTERICK (*).
- 2. DILUTION AIR MANUALLY ADJUSTED TO LIMIT LEL IN VAPORS TO THERMAL TREATMENT SYSTEM.
- 3. DILUTION AIR TO REDUCE CONDENSATION IN PIPELINE.
- 4. CONDENSATE RATE WILL DEPEND ON OUTSIDE TEMPERATURE. DURING WINTER UP TO 112 GALLONS PER DAY OF CONDENSATE CAN BE PRODUCED.

LEGEND:

- LEL - LOWER EXPLOSION LIMIT
- S2 - SAMPLE PORT



- B-101**
SVE-1 VACUUM/BLOWER
SYSTEM
1,200 SCFM
-12" Hg VACUUM
125 HP
- F-101**
SYSTEM FAN
2,500 SCFM
- P-101**
SVE-1 LIQUID
PUMP
5 GPM
- I-1001**
SVE-1
AIR/WATER
SEPARATOR
600 GALLON
48" DIA x 6' H
- Z-1001**
THERMAL CATALYTIC
OXIDIZER

| COMPONENT | STREAM NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 50 | 51 | 52 | 53 | 54 |
|-----------------------|--------------------|-----------------------|-----------------------|---------------------------|---------------------------|------------------|-----------------|---------------------|--------------|------------|--------------|-----------|-----------------|----------------|-------------|-----------|
| | | AIR FLOW FROM SVE-101 | AIR FLOW FROM SVE-102 | DILUTION AIR FROM SVE-101 | DILUTION AIR FROM SVE-102 | VAPOR FROM WELLS | SEPARATOR VAPOR | DILUTED INLET VAPOR | BLOWER VAPOR | CONDENSATE | DILUTION AIR | FRESH AIR | EXTRACTED VAPOR | COMBUSTION AIR | NATURAL GAS | STACK GAS |
| WATER FLOW (average) | lb/hr | | | | | | | | | | | | | | | |
| AIR FLOW (average) | lb/hr | 1,800 | 1,800 | 900 | 900 | 5,400 | 5,400 | 7,200 | 7,200 | (NOTE 4) | 1,800 | 4,050 | 11,250 | 11,250 | | 11,340 |
| LIQUID FLOW (maximum) | gpm | | | | | | | | | | | | | | | |
| LIQUID FLOW (average) | gpm | | | | | | | | | | | | | | | |
| AIR FLOW | acfm | 529 | 529 | | | 1,633 | 1,633 | 2,177 | 2,105 | | 479 | 1,078 | 3,104 | 5,529 | | 6,153 |
| AIR FLOW | scfm | 400 | 400 | 200 | 200 | 1,200 | 1,200 | 1,600 | 1,600 | | 400 | 900 | 2,500 | 2,500 | | 2,520 |
| TOTAL HYDROCARBONS | lb/hr | 45 | 45 | | | 90 | 90 | 90 | 90 | | | 90 | 90 | 90 | | 1.8 |
| TOTAL HYDROCARBONS | ppmv | 6,800 | 6,800 | | | 4,533 | 4,533 | 3,400 | 3,400 | | | 2,176 | 2,176 | | | 44 |
| GAS FLOW | lb/hr (scfh) | | | | | | | | | | | | | | 6 (162) | |
| TEMPERATURE | °F | 50 | 50 | 60 | 60 | 60 | 60 | 60 | 111 | 60 | 60 | 60 | 95 | 500 | | 600 |
| PRESSURE | psia | 10.7 | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | 12.04 | | 12.04 | 12.04 | 12.40 | 12.04 | | 12.04 |
| AIR DENSITY (AT 70°F) | lb/ft ³ | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | | 0.075 | 0.075 | 0.075 | 0.075 | | 0.075 |
| WATER DENSITY | lb/gal | | | | | | | | | 8.340 | | | | | | |

| Revisions | | | |
|-----------|-------------------------|---------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/5/12 | |

Shaw Environmental, Inc.
 U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 ALBUQUERQUE, NEW MEXICO

Designed by: ACS
 Drawn by: JWH
 Checked by: SES
 Reviewed by: JTS
 Submitted by:

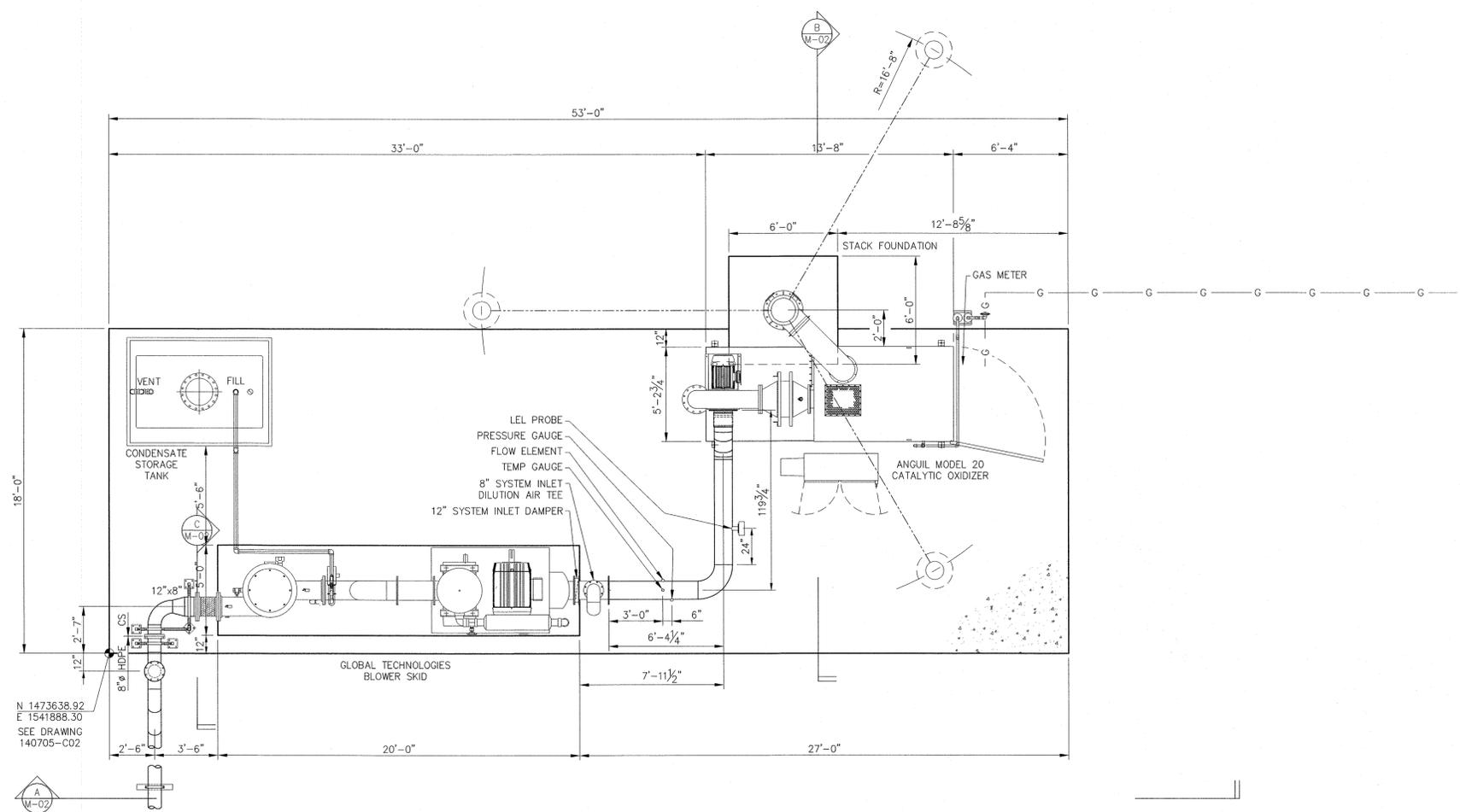
KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO
**SOIL VAPOR EXTRACTION (SVE) SYSTEM
 BULK FUELS FACILITY
 PROCESS FLOW DIAGRAM**

Plot Scale Ratio: 1 = 1
 Design File: 140705-P1.dwg
 Spec. No.:
 Contract No.:

Date: 11/22/11
 Drawing Code:
 Sheet reference number: P-1

ARCHITECT/ENGINEER SEAL

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 Plotted By: john.hubbard

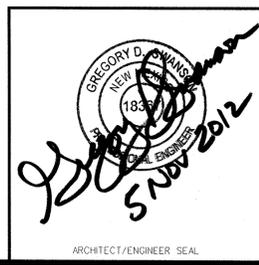


N 1473638.92
E 1541888.30
SEE DRAWING
140705-C02

PLAN VIEW
M-01 SCALE: 1/4"=1'-0"
EQUIPMENT GENERAL ARRANGEMENT



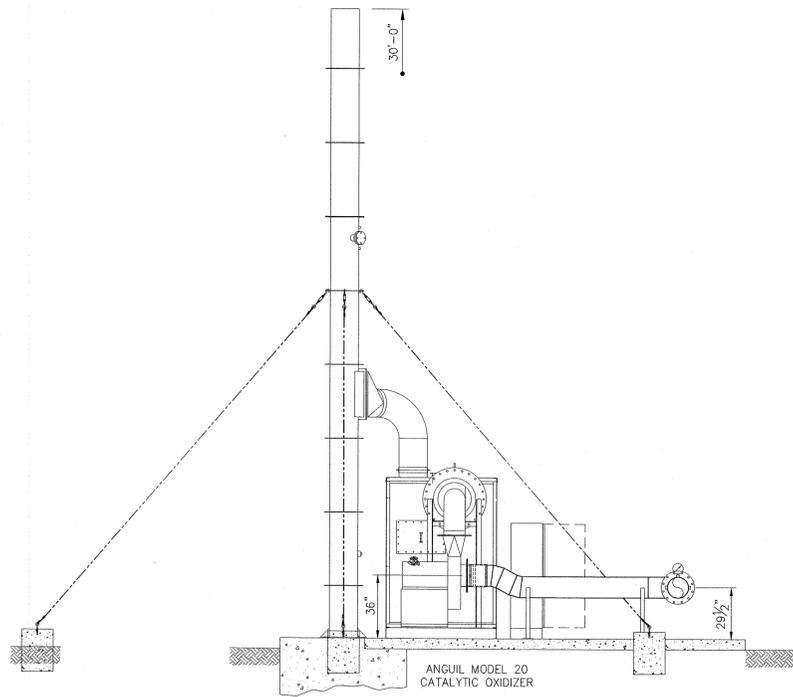
SECTION & DETAIL KEY
DRAWING ON WHICH SECTION OR DETAIL IS TAKEN



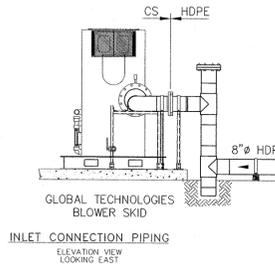
| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |

| | | | |
|--|--|--|---|
| | U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO | | |
| | Designed by: MFL Drawn by: MFL Checked by: JTS Reviewed by: Submitted by: | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM MECHANICAL - GENERAL ARRANGEMENT | Plot Scale Ratio: 1 = 1 Design File: 140705-M01_M02.dwg Spec. No.: Contract No.: |

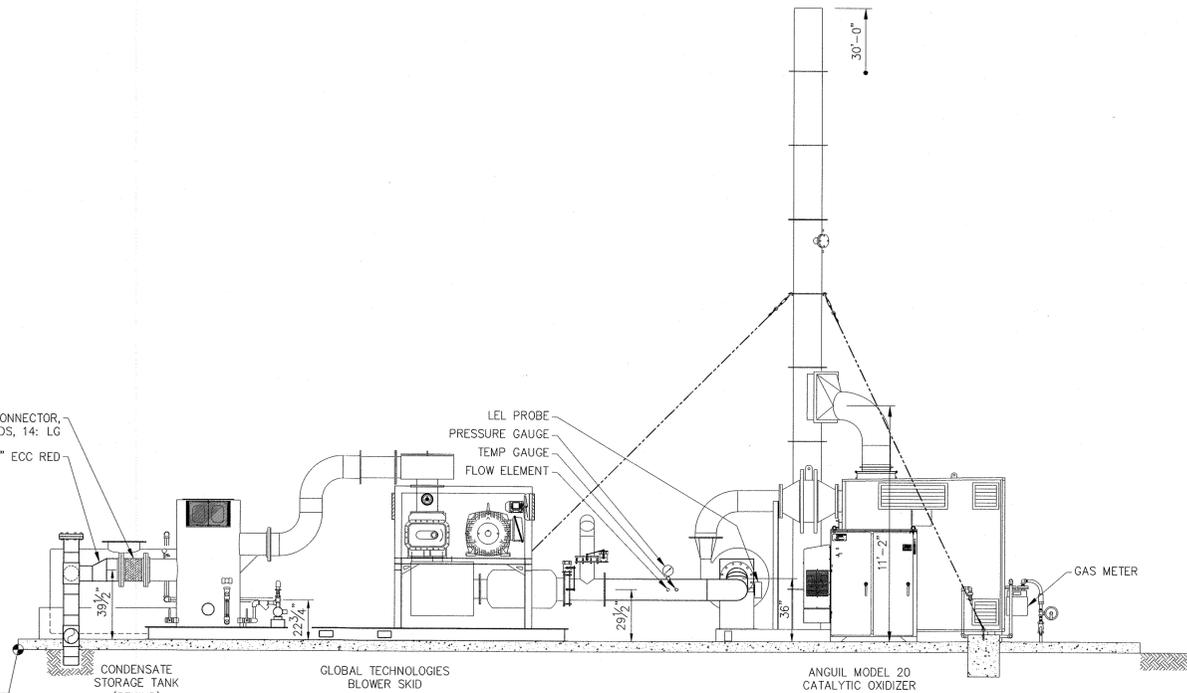
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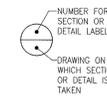
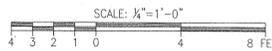
B SECTION VIEW
 M-01 SCALE: 1/4"=1'-0"
 MECHANICAL EQUIPMENT ARRANGEMENT
 ELEVATION VIEW
 LOOKING EAST



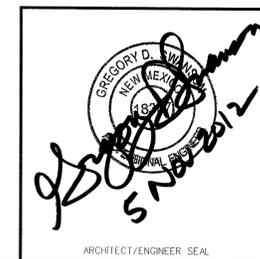
C SECTION VIEW
 M-01 SCALE: 1/4"=1'-0"



A SECTION VIEW
 M-01 SCALE: 1/4"=1'-0"
 MECHANICAL EQUIPMENT ARRANGEMENT
 ELEVATION VIEW
 LOOKING NORTH



SECTION & DETAIL KEY

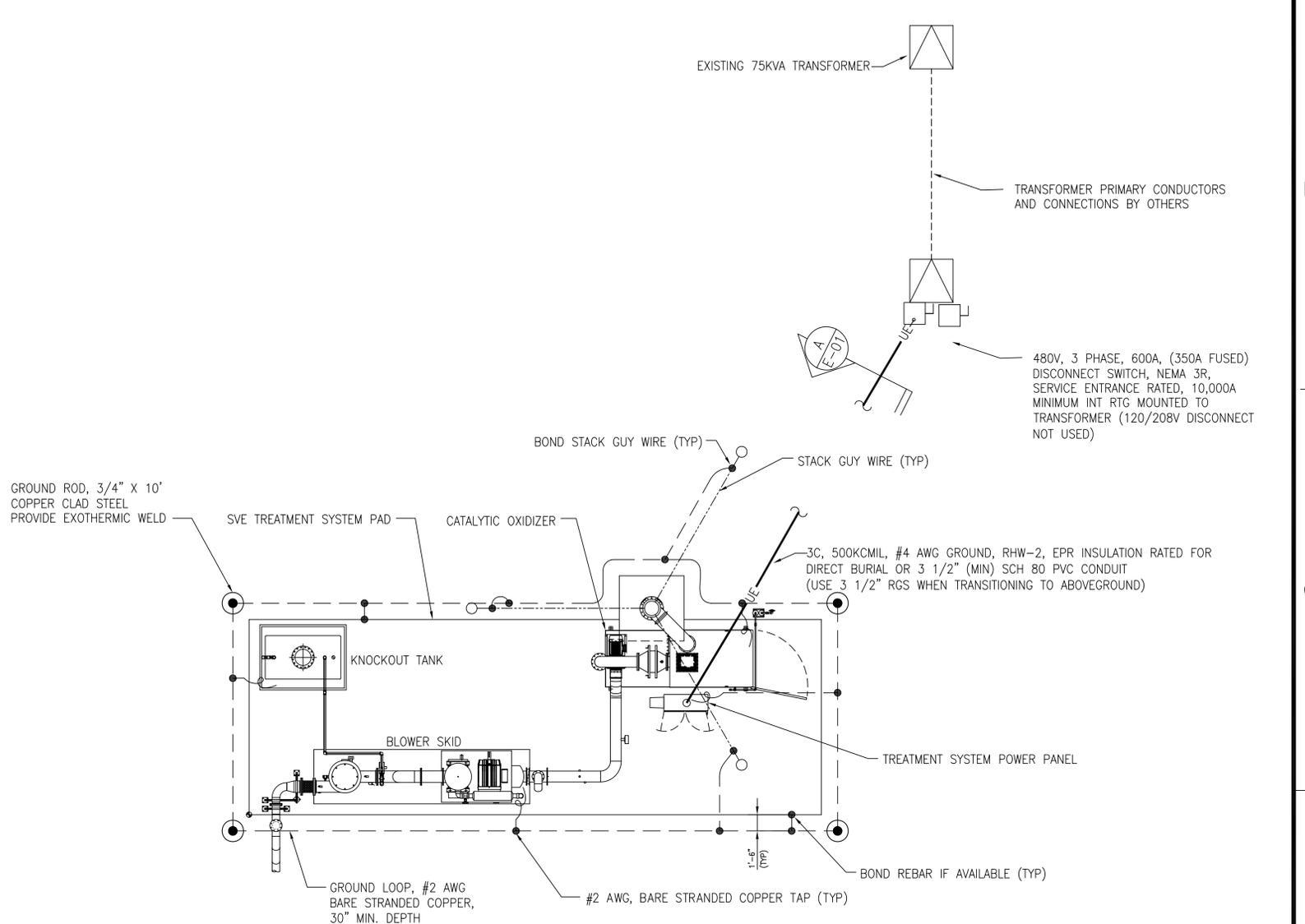
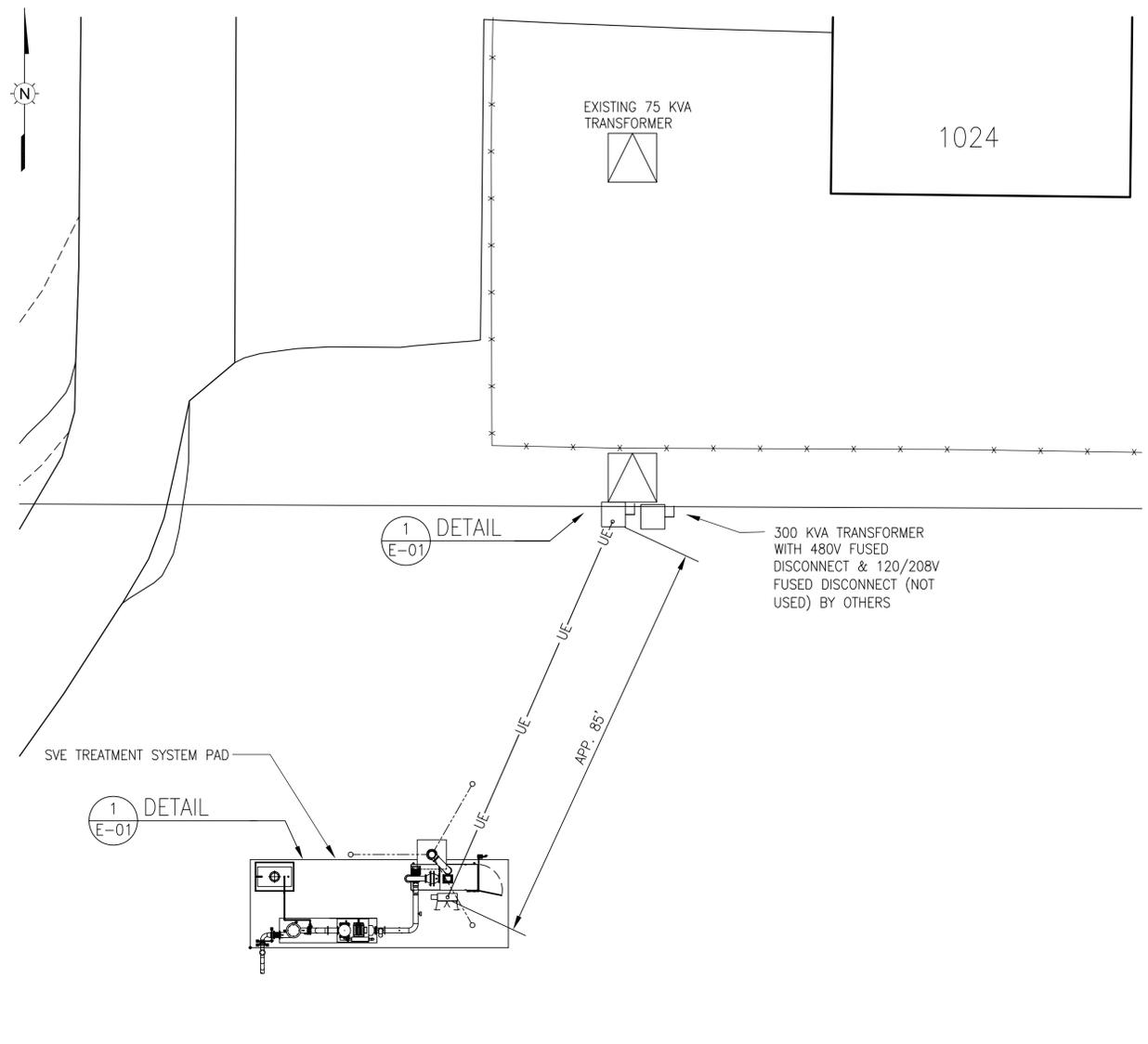


| Revisions | | | |
|-----------|-------------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| 0 | ISSUED FOR CONSTRUCTION | 11/05/12 | |



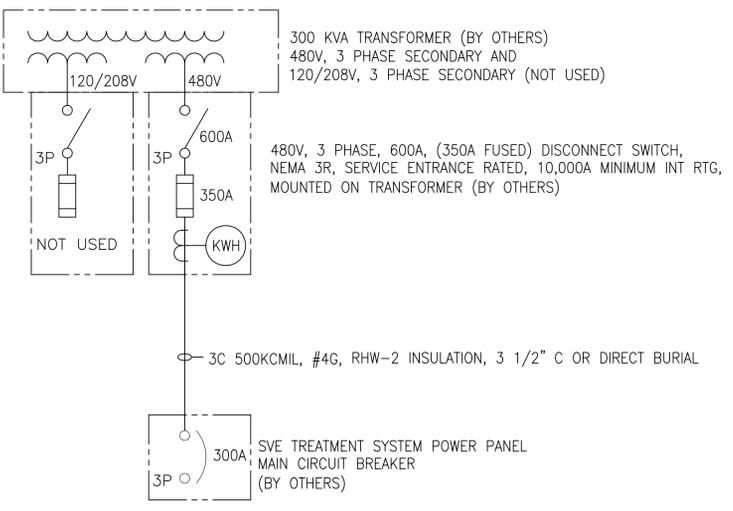
U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 ALBUQUERQUE, NEW MEXICO

| | | | |
|---------------------|--|----------------|-------------------------|
| Designed by: MFL | KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO | | |
| Drawn by: MFL | BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM MECHANICAL - SECTION VIEW | | |
| Checked by: JTS | | | |
| Reviewed by: | Plot Scale Ratio: 1 = 1 | Date: 08/10/12 | Sheet reference number: |
| Submitted by: | Design File: 140705-M01_M02.dwg | Drawing Code: | M-02 |
| | Spec. No.: | Contract No.: | |

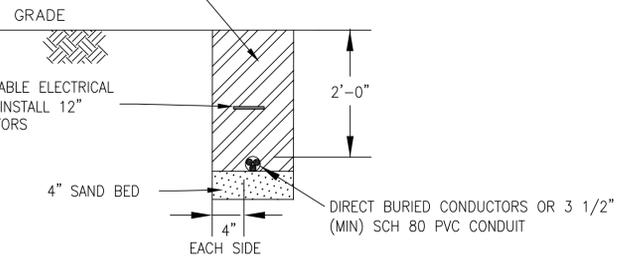


FOR REVIEW ONLY! - NOT FOR CONSTRUCTION

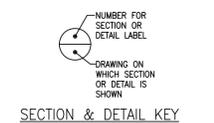
PRELIMINARY PROGRESS DRAWINGS ARE NOT FOR CONSTRUCTION OR FABRICATION. BILL OF MATERIALS, SHOP DRAWINGS, ETC., CREATED FROM THESE DRAWINGS MAY BE REVISED AT THE EXPENSE OF THE CONTRACTOR.



BACKFILL THAT DOES NOT CONTAIN LARGE ROCKS, PAVING MATERIALS, CINDERS, LARGE (>4") OR SHARP ANGULAR SUBSTANCES, OR CORROSIVE MATERIALS THAT MAY CAUSE CONDUIT DAMAGE. OTHERWISE PROVIDE 6" SAND ABOVE TOP OF CONDUIT(S). MACHINE COMPACTION WITHIN 6" OF CONDUCTORS IS NOT PERMITTED



A SECTION E-01 SCALE: NONE



| Revisions | | | |
|-----------|------------------|----------|----------|
| Symbol | Descriptions | Date | Approved |
| C | ISSUE FOR REVIEW | 11/05/12 | |
| B | ISSUE FOR REVIEW | 10/18/12 | |
| A | ISSUE FOR BID | 08/20/12 | |

Shaw Environmental, Inc.

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ALBUQUERQUE, NEW MEXICO

Designed by: TMB

Drawn by: TMB

Checked by: JSD

Reviewed by: JSD

Submitted by:

KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO

BULK FUELS FACILITY (BFF) SOIL VAPOR EXTRACTION AND THERMAL TREATMENT SYSTEM ELECTRICAL LAYOUT AND ONE LINE DIAGRAM

Plot Scale Ratio: 1 = 1

Design File: 140705-E01.dwg

Spec. No.:

Contract No.:

Date: 08/20/12

Drawing Code:

Sheet reference number: E-01

ARCHITECT/ENGINEER SEAL