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CI-04	1	08/29/12	MISC. SECTIONS AND DETAILS SECTIONS AND DETAILS
CI-05	1	08/29/12	INJECTION WELLS IW - 1 THROUGH IW-7, AND CH - 8
CI-06	1	08/29/12	INJECTION WELLS IW - 15, 20, 21, 22
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ST-02	1	08/29/12	CONTROL BUILDING - FLOOR PLAN
ST-03	1	08/29/12	CONTROL BUILDING - ELEVATIONS
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EF-01 S2	1	08/29/12	ENGINEERING FLOW SHEET - PROCESS EQUIPMENT
EF-02	1	08/29/12	ENGINEERING FLOW SHEET - MIDDLE FENCE INJECTION WELLS
EF-03	1	08/29/12	ENGINEERING FLOW SHEET - MIDDLE FENCE INJECTION WELLS
EF-04	1	08/29/12	ENGINEERING FLOW SHEET - MIDDLE FENCE INJECTION WELLS
EF-05	1	08/29/12	ENGINEERING FLOW SHEET - MIDDLE FENCE INJECTION WELLS
EF-06	1	08/29/12	ENGINEERING FLOW SHEET - NORTH FENCE INJECTION WELLS
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MP-03	1	08/29/12	CONTROL BUILDING - EQUIPMENT LAYOUT (UPPER)
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MP-05	1	08/29/12	WELL DETAILS
MP-06	1	08/29/12	INJECTION WELLS IW-16, 17 ,18 & 19 - PLAN AND SECTIONS
MP-07	1	08/29/12	INJECTION WELLS IW-15, 20 AND 22 - PLAN AND SECTIONS
MP-08	1	08/29/12	LAVATORY PLUMBING
MP-09	1	08/29/12	INJECTION WELL IW-08 - PLAN AND SECTIONS
MP-10	1	08/29/12	INJECTION WELLS IW-01 THRU IW-07 - PLAN AND SECTIONS
MP-11			REMOVED
MP-12	1	08/29/12	LINE LIST
MP-13	1	08/29/12	INJECTION WELLS IW-21A - PLAN AND SECTIONS
MP-14	1	08/29/12	INJECTION WELLS IW-21 - PLAN AND SECTIONS
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E-02	1	08/29/12	CONTROL BUILDING SINGLE LINE DIAGRAM
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E-04	1	08/29/12	CONTROL BUILDING - LIGHTING PLAN AND DETAILS
E-05	1	08/29/12	CONTROL BUILDING - PANELBOARD SCHEDULES
E-06	1	08/29/12	CONTROL BUILDING POWER PLAN
E-07 SHT. 1	1	08/29/12	CONTROL BUILDING MOTOR SCHEMATIC DIAGRAMS
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E-10	1	08/29/12	MAIN PLC CONTROL PANEL ARRANGEMENT
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E-11 SHT. 2	1	08/29/12	MAIN PLC CONTROL PANEL ANALOG INPUT WIRING DIAGRAM
E-11 SHT. 3	1	08/29/12	MAIN PLC CONTROL PANEL ANALOG OUTPUT WIRING DIAGRAM
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E-16 SHT. 2	1	08/29/12	INJECTION WELL IW-2 REMOTE I/O PANEL WIRING DIAGRAM
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E-16 SHT. 5	1	08/29/12	INJECTION WELL IW-5 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 6	1	08/29/12	INJECTION WELL IW-6 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 7	1	08/29/12	INJECTION WELL IW-7 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 15	1	08/29/12	INJECTION WELL IW-15 REMOTE I/O PANEL WIRING DIAGRAM
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E-16 SHT. 17	1	08/29/12	INJECTION WELL IW-17 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 18	1	08/29/12	INJECTION WELL IW-18 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 19	1	08/29/12	INJECTION WELL IW-19 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 20	1	08/29/12	INJECTION WELL IW-20 REMOTE I/O PANEL WIRING DIAGRAM
E-16 SHT. 22	1	08/29/12	INJECTION WELL IW-22 REMOTE I/O PANEL WIRING DIAGRAM

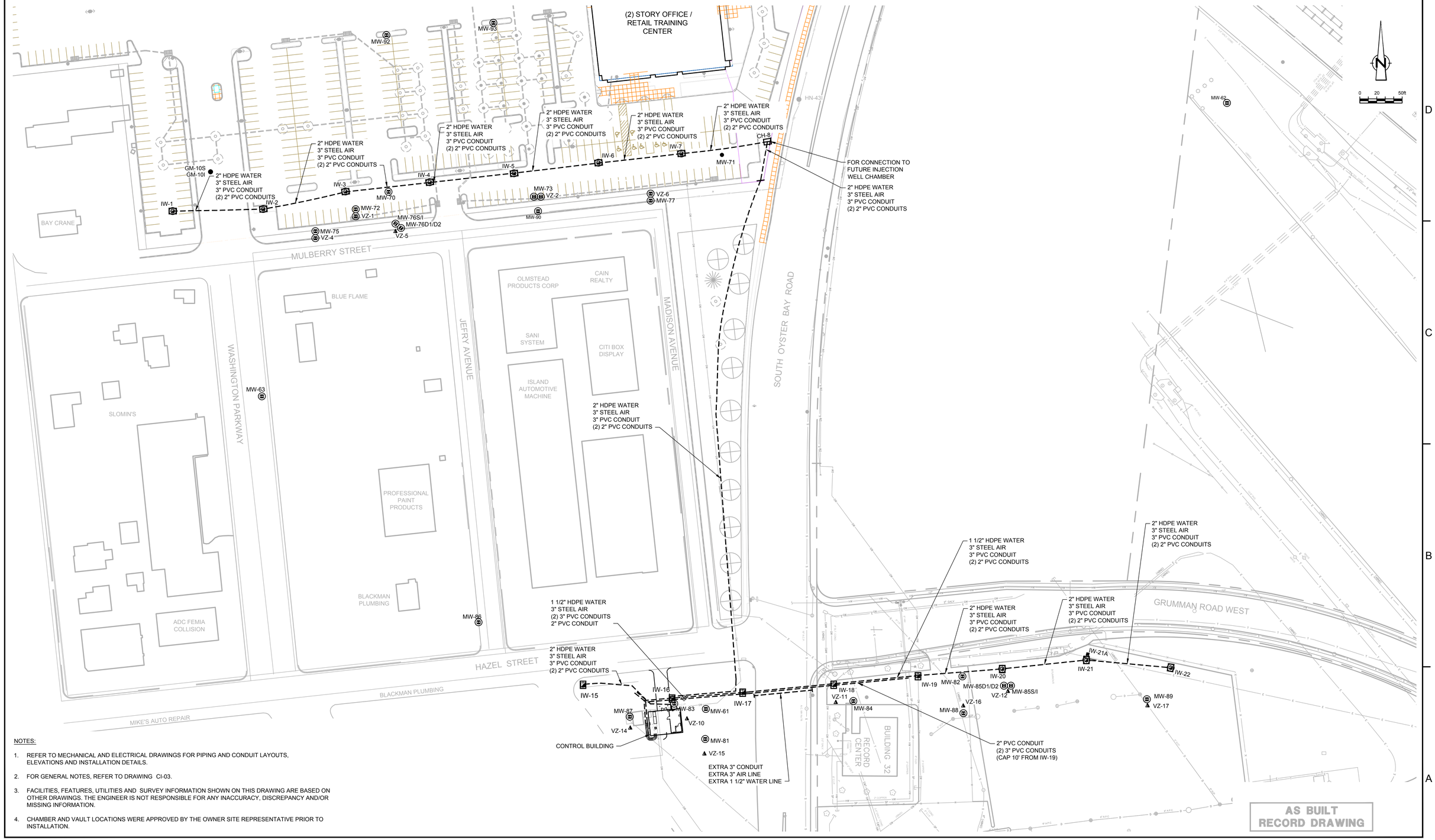
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE
TREATMENT SYSTEM
MIDDLE AND NORTH INJECTION FENCE
UNDERGROUND VAULTS

AS BUILT

06883-00(056)

CRA Infrastructure & Engineering, Inc.



NOTES:

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR PIPING AND CONDUIT LAYOUTS, ELEVATIONS AND INSTALLATION DETAILS.
2. FOR GENERAL NOTES, REFER TO DRAWING CI-03.
3. FACILITIES, FEATURES, UTILITIES AND SURVEY INFORMATION SHOWN ON THIS DRAWING ARE BASED ON OTHER DRAWINGS. THE ENGINEER IS NOT RESPONSIBLE FOR ANY INACCURACY, DISCREPANCY AND/OR MISSING INFORMATION.
4. CHAMBER AND VAULT LOCATIONS WERE APPROVED BY THE OWNER SITE REPRESENTATIVE PRIOR TO INSTALLATION.

LEGEND

- FORCEMAIN AND CONDUIT ALIGNMENT
- IW-6 INJECTION WELL LOCATION
- MW-90 MONITORING WELL LOCATION
- MW-78 / VZ-7 MONITORING WELL NEST AND VADOSE ZONE MONITORING WELL NEST LOCATION
- CHAMBER

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	JA

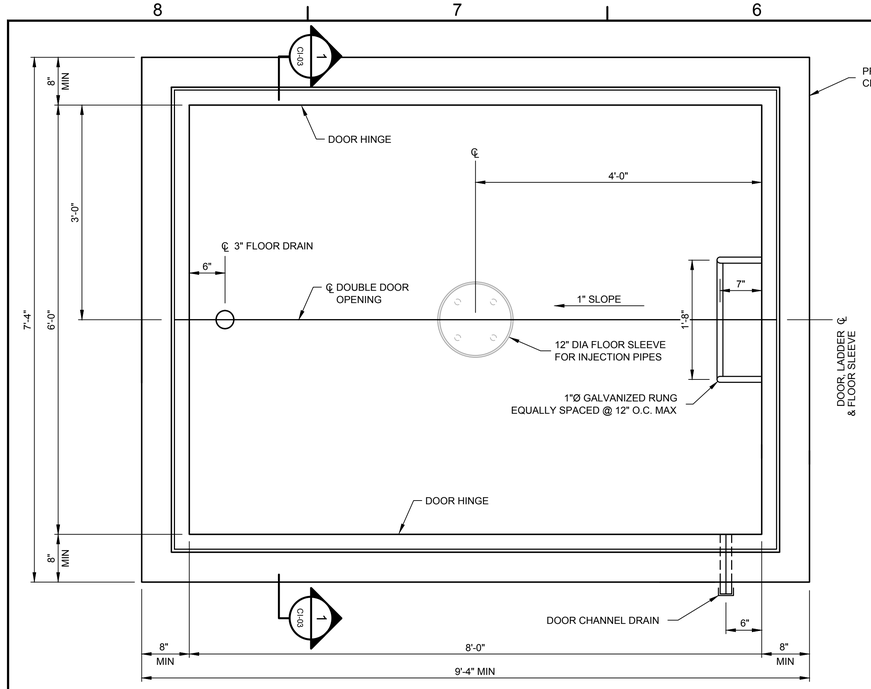
HOOKER/ RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELL SITE PLAN

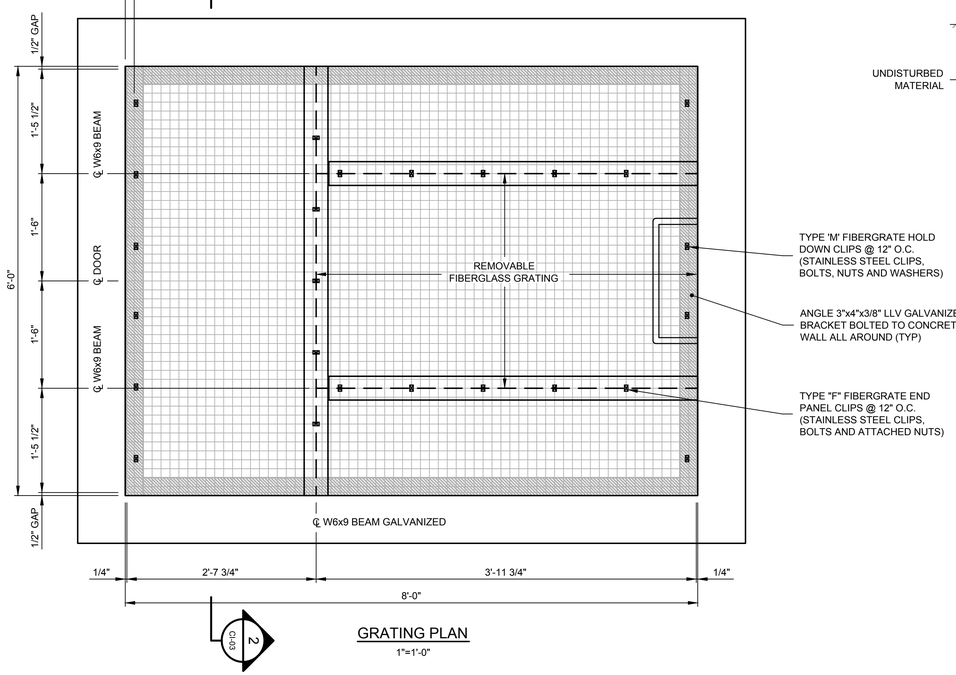
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By: J. WORRALL	Designed By: J. THORNTON	Drawn By: C. ROHRICH
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: CI-02



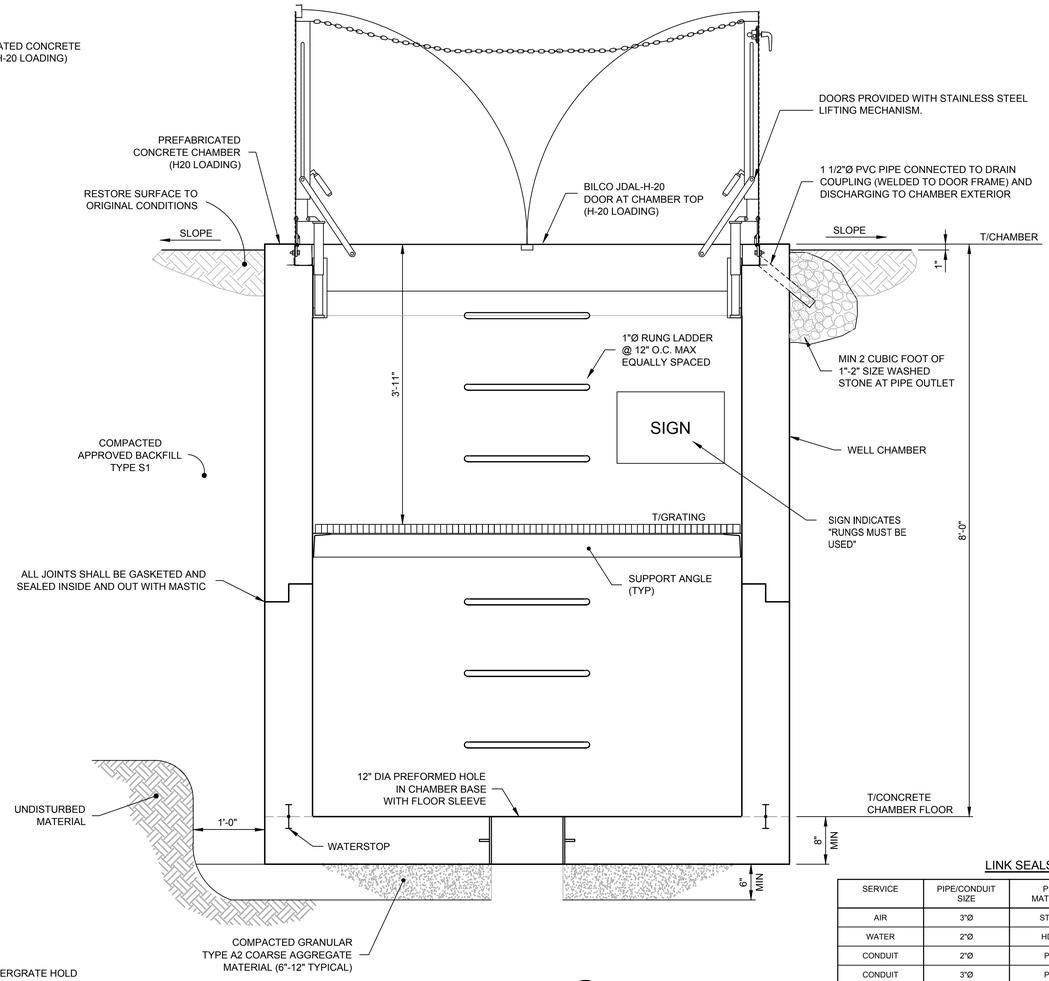
INJECTION WELL CHAMBER PLAN

1"=1'-0"



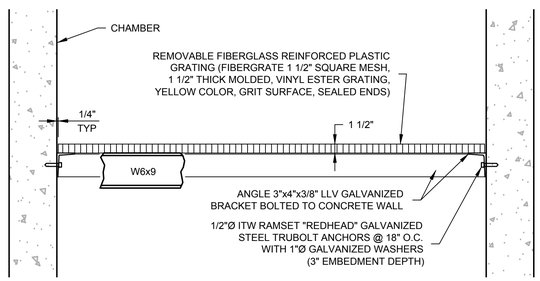
GRATING PLAN

1"=1'-0"



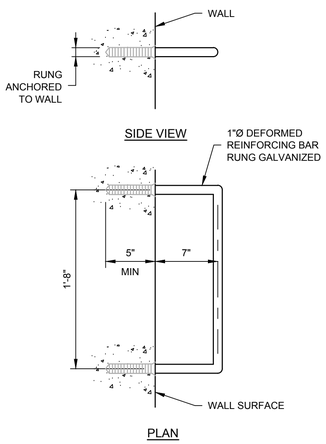
SECTION 1

1"=1'-0"



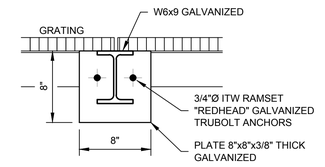
SECTION 2

1"=1'-0"



RUNG DETAIL

1 1/2"=1'-0"



BEAM PLATE DETAIL

1 1/2"=1'-0"

LINK SEALS AND WALL SLEEVES

SERVICE	PIPE/CONDUIT SIZE	PIPE MATERIAL	CHAMBER WALL SLEEVE	CHAMBER LINK SEAL
AIR	3"Ø	STEEL	WS-5-25-S	LS-300 (8 LINKS PER SEAL)
WATER	2"Ø	HDPE	CS-4	LS-300 (8 LINKS PER SEAL)
CONDUIT	2"Ø	PVC	CS-4	LS-300 (6 LINKS PER SEAL)
CONDUIT	3"Ø	PVC	CS-5	LS-300 (8 LINKS PER SEAL)
GROUND CABLE	-	-	WS-2-15-S	LS-200 (4 LINKS PER SEAL)
WELL	-	-	CS-12	-

NOTES

1. FOR WELL CHAMBER ORIENTATION REFER TO MECHANICAL DRAWINGS.
2. LINK SEALS AND WALL SLEEVES BY THUNDERLINE CORPORATION.
3. WALL SLEEVE LENGTH TO BE THE SAME AS CHAMBER CONCRETE THICKNESS.
4. THUNDERLINE MODEL CS WALL SLEEVES SHALL BE HDPE PLASTIC AND MODEL WS WALL SLEEVES SHALL BE GALVANIZED STEEL.
5. LOCATION OF 12" DIA SLEEVE IN CHAMBER FLOOR FOR INJECTION PIPES ARE IN ACCORDANCE WITH MECHANICAL DRAWINGS.
6. GRATING OPENINGS AND CUTOUTS FOR PIPING WERE FIELD LOCATED IN ACCORDANCE WITH MECHANICAL DRAWINGS.
7. LOWER 3'-0" SECTION OF CHAMBER WALLS AND BASE SLAB WAS CONSTRUCTED MONOLITHIC (SINGLE CONCRETE PLACEMENT) WITHOUT COLD JOINTS.
8. COMPACTION OF BACKFILL AROUND PIPING AND CONDUIT WAS PERFORMED CAREFULLY TO AVOID DISPLACEMENT OF PROTRUDING PIPE/CONDUIT AND TO PRESERVE SEAL AGAINST WATER INTRUSION.
9. FOR VAULT PENETRATIONS FOR PIPING SEE MECHANICAL DRAWINGS.

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	JA

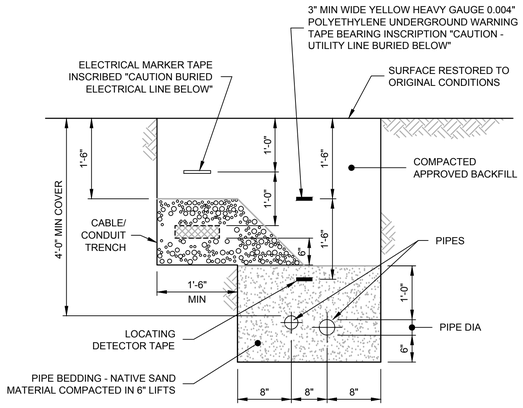
HOOKER/ RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS
IW - 16, 17, 18, 19

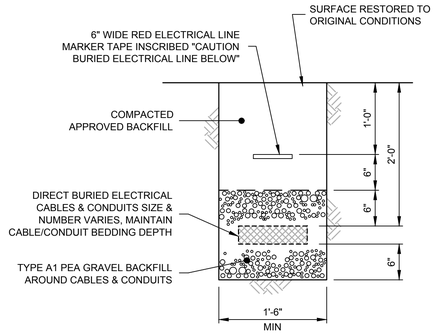
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By: J. WORRALL	Designed By: J. THORNTON	Drawn By: C. ROHRICH
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: CI-03



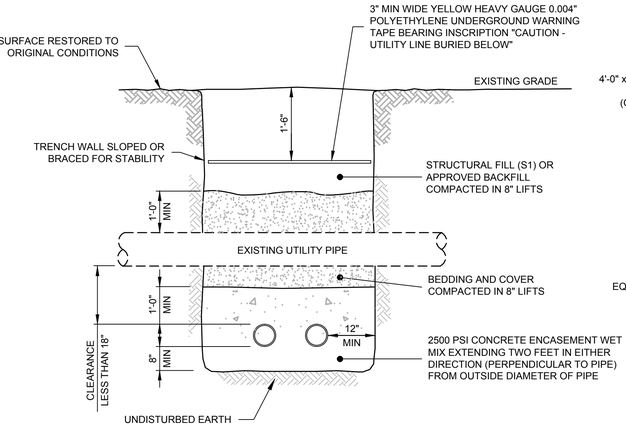
TYPICAL PIPE AND CABLE/CONDUIT TRENCH

NTS



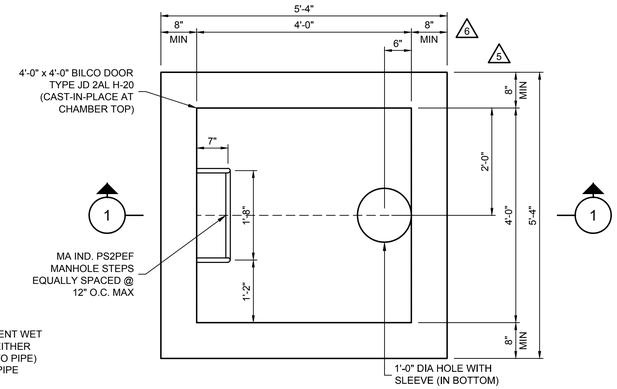
TYPICAL CABLE/CONDUIT TRENCH

NTS



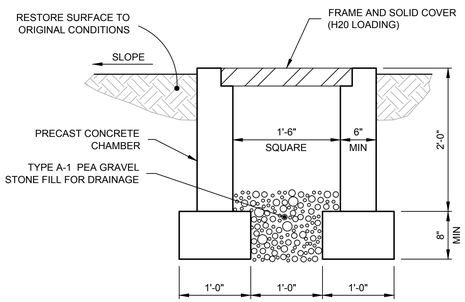
TYPICAL UTILITY PIPE CROSSING FORCEMAIN

NTS



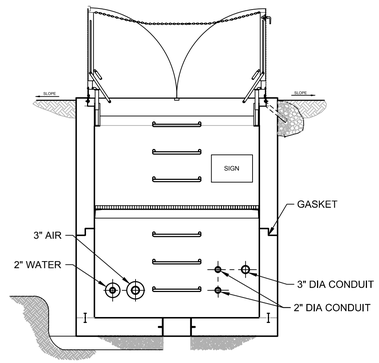
CONCRETE CHAMBER IW-21A

3/4"=1'-0"



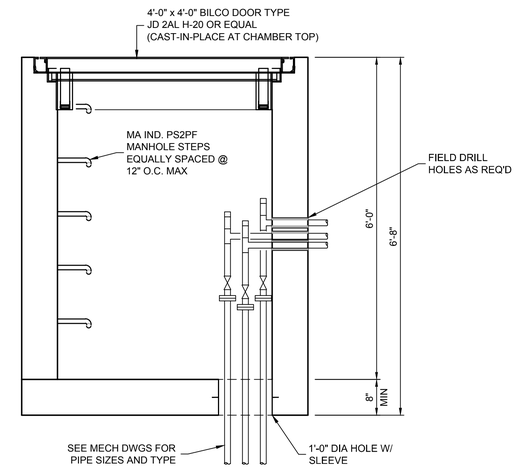
MONITORING WELL VAULT

1"=1'-0"



CONCRETE CHAMBER IW19 LOOKING SOUTH

NTS



SECTION 1

3/4"=1'-0"

NOTES

1. DESIGNED FOR H-20 LOADING

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	JA

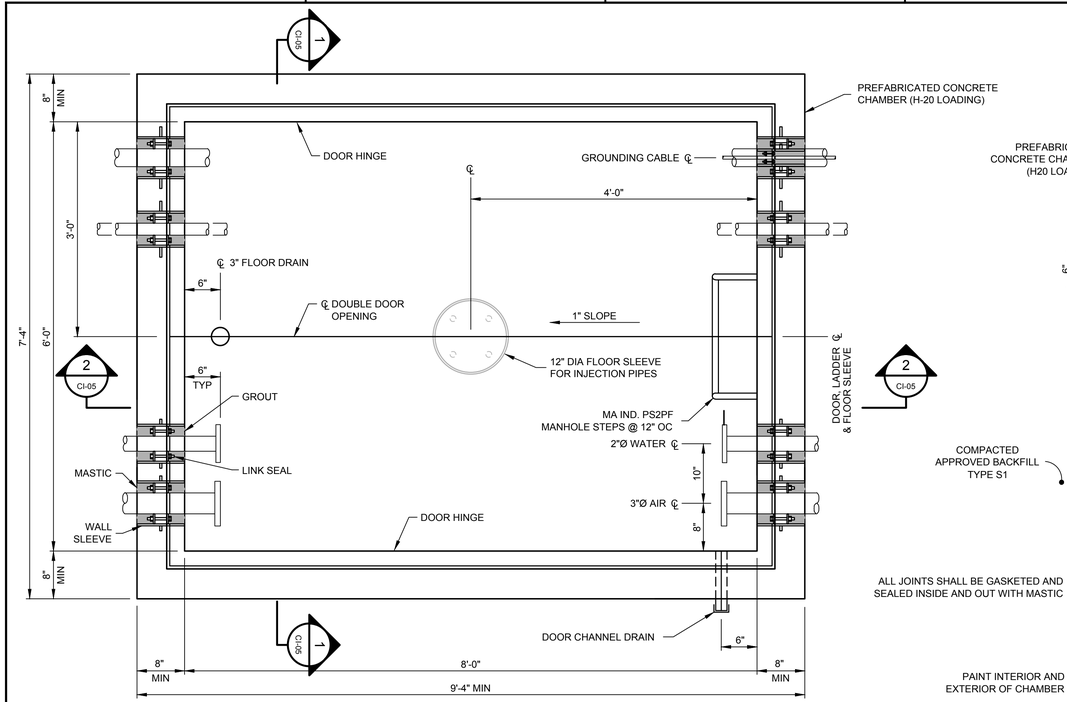
HOOKER/ RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

MISC. SECTIONS AND DETAILS

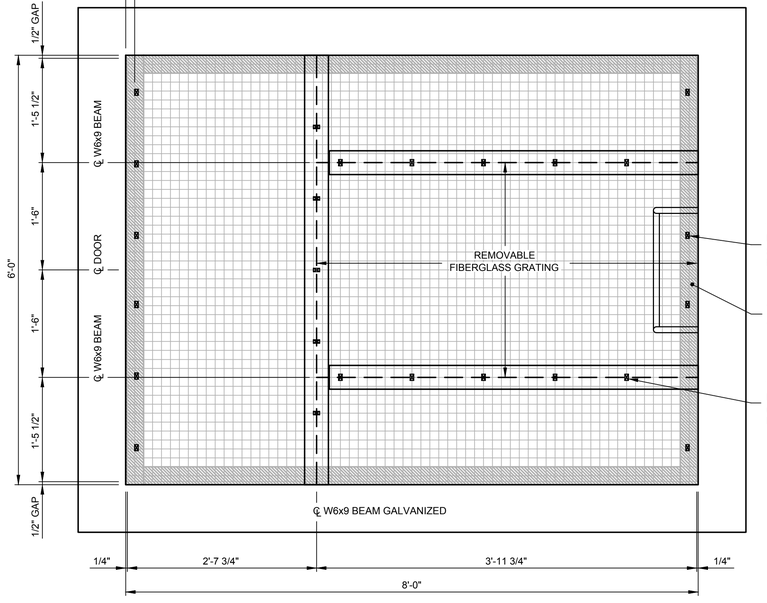
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By: J. WORRALL	Designed By: J. THORNTON	Drawn By: C. ROHRICH
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: CI-04



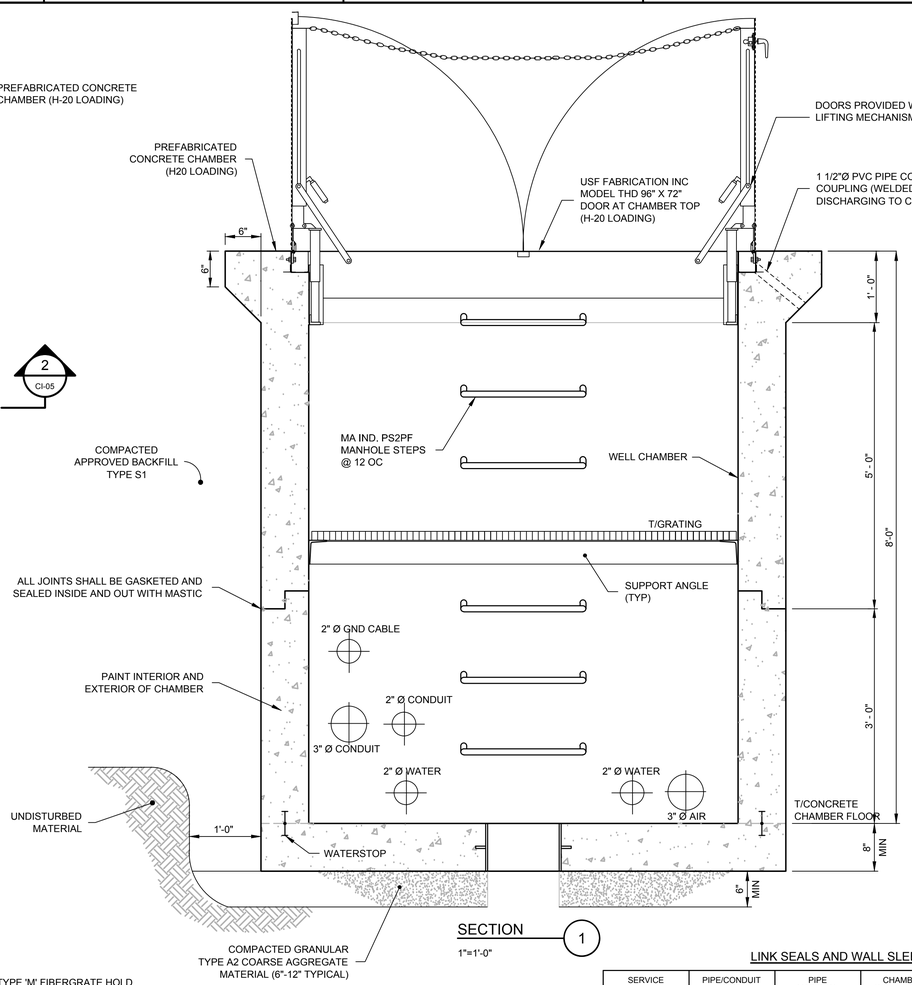
WELL PLAN

1"=1'-0"



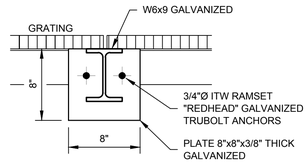
GRATING PLAN

1"=1'-0"



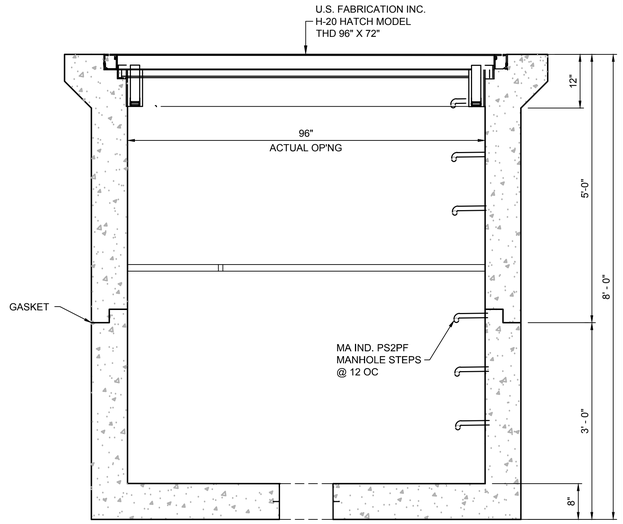
SECTION 1

1"=1'-0"



BEAM PLATE DETAIL

1 1/2"=1'-0"



SECTION 2

3/4"=1'-0"

LINK SEALS AND WALL SLEEVES

SERVICE	PIPE/CONDUIT SIZE	PIPE MATERIAL	CHAMBER WALL SLEEVE	CHAMBER LINK SEAL
AIR	3"Ø	STEEL	WS-5-25-S	LS-300 (8 LINKS PER SEAL)
WATER	2"Ø	HDPE	CS-4	LS-300 (8 LINKS PER SEAL)
CONDUIT	2"Ø	PVC	CS-4	LS-300 (6 LINKS PER SEAL)
CONDUIT	3"Ø	PVC	CS-5	LS-300 (8 LINKS PER SEAL)
GROUND CABLE	-	-	WS-2-15-S	LS-200 (4 LINKS PER SEAL)
WELL	-	-	CS-12	-

NOTES

1. FOR WELL CHAMBER ORIENTATION REFER TO MECHANICAL DRAWINGS.
2. LINK SEALS AND WALL SLEEVES BY THUNDERLINE CORPORATION.
3. WALL SLEEVE LENGTH TO BE THE SAME AS CHAMBER CONCRETE THICKNESS.
4. THUNDERLINE MODEL CS WALL SLEEVES SHALL BE HDPE PLASTIC AND MODEL WS WALL SLEEVES SHALL BE GALVANIZED STEEL.
5. LOCATION OF 12" DIA SLEEVE IN CHAMBER FLOOR FOR INJECTION PIPES ARE IN ACCORDANCE WITH MECHANICAL DRAWINGS.
6. GRATING OPENINGS AND CUTOUTS FOR PIPING WERE FIELD LOCATED IN ACCORDANCE WITH MECHANICAL DRAWINGS.
7. ALUMINUM CHAMBER DOOR IS FOR H20 LOADING AS MANUFACTURED BY USF FABRICATIONS.
8. LOWER 3'-0" SECTION OF CHAMBER WALLS AND BASE SLAB WAS CONSTRUCTED MONOLITHIC (SINGLE CONCRETE PLACEMENT) WITHOUT COLD JOINTS.
9. COMPACTION OF BACKFILL AROUND PIPING AND CONDUIT WAS PERFORMED CAREFULLY TO AVOID DISPLACEMENT OF PROTRUDING PIPE/CONDUIT AND TO PRESERVE SEAL AGAINST WATER INTRUSION.

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	JA

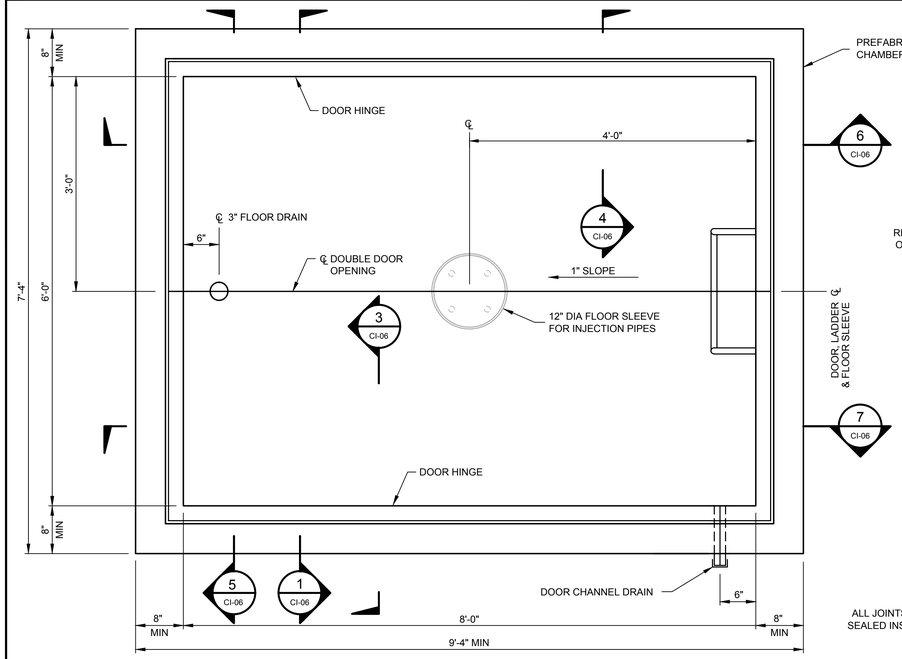
HOOKER/ RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS
IW - 1 THROUGH IW-7, AND CH - 8

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By: J. WORRALL	Designed By: J. THORNTON	Drawn By: C. ROHRICH
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: CI-05



WELL PLAN

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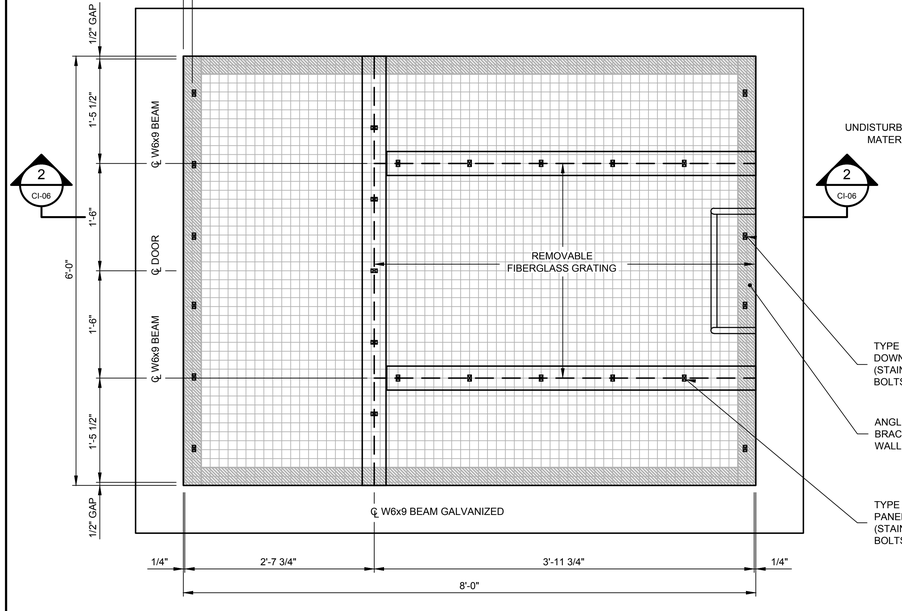
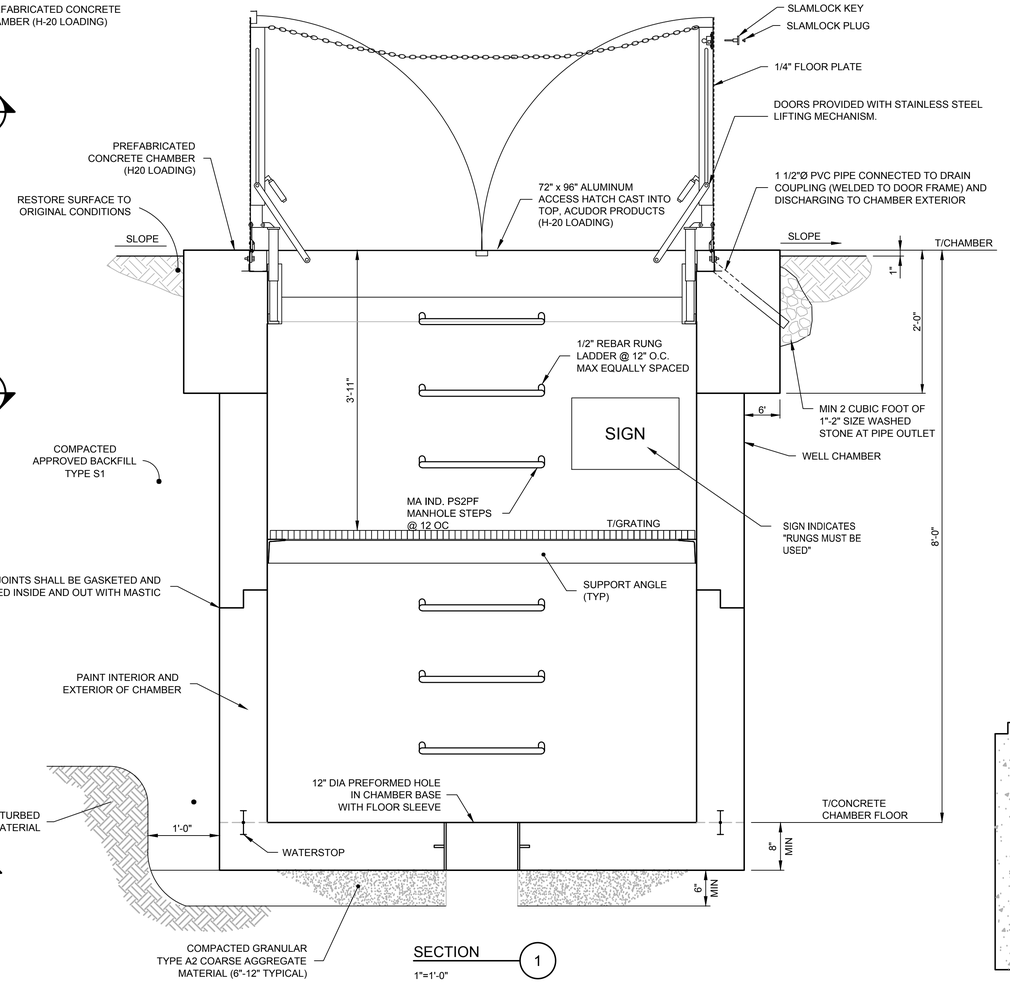


GRATING PLAN

1"=1'-0"



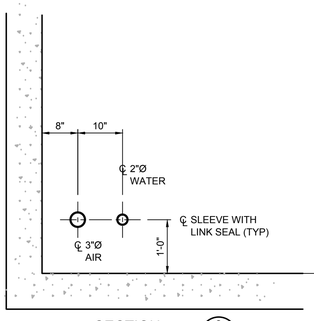
SECTION 1

1"=1'-0"

TYPE 'M' FIBERGRATE HOLD DOWN CLIPS @ 12" O.C. (STAINLESS STEEL CLIPS, BOLTS, NUTS AND WASHERS)

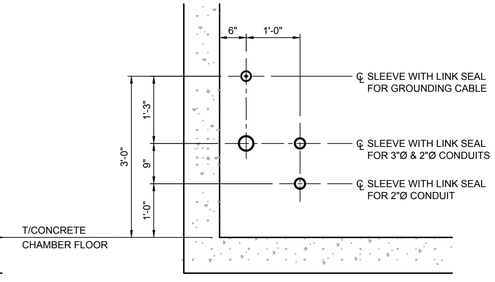
ANGLE 3"x4"x3/8" LLV GALVANIZED BRACKET BOLTED TO CONCRETE WALL ALL AROUND (TYP)

TYPE "F" FIBERGRATE END PANEL CLIPS @ 12" O.C. (STAINLESS STEEL CLIPS, BOLTS AND ATTACHED NUTS)



SECTION 3

3/4"=1'-0"



SECTION 4

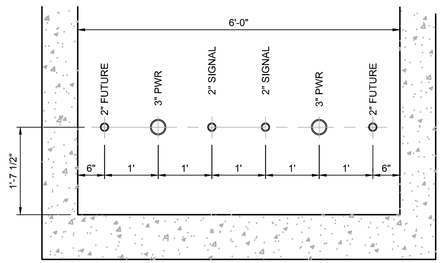
3/4"=1'-0"

LINK SEALS AND WALL SLEEVES

SERVICE	PIPE/CONDUIT SIZE	PIPE MATERIAL	CHAMBER WALL SLEEVE	CHAMBER LINK SEAL
AIR	3"Ø	STEEL	WS-5-25-S	LS-300 (8 LINKS PER SEAL)
WATER	2"Ø	HDPE	CS-4	LS-300 (8 LINKS PER SEAL)
CONDUIT	2"Ø	PVC	CS-4	LS-300 (6 LINKS PER SEAL)
CONDUIT	3"Ø	PVC	CS-5	LS-300 (8 LINKS PER SEAL)
GROUND CABLE	-	-	WS-2-15-S	LS-200 (4 LINKS PER SEAL)
WELL	-	-	CS-12	-

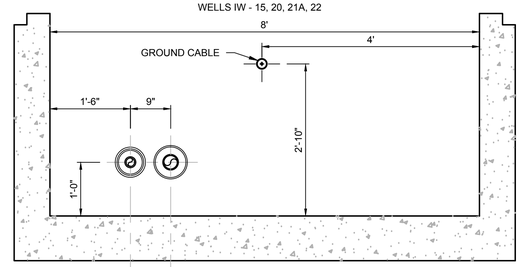
NOTES

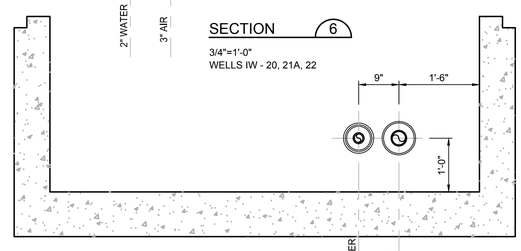
1. FOR WELL CHAMBER ORIENTATION REFER TO MECHANICAL DRAWINGS.
2. LINK SEALS AND WALL SLEEVES BY THUNDERLINE CORPORATION.
3. WALL SLEEVE LENGTH TO BE THE SAME AS CHAMBER CONCRETE THICKNESS.
4. THUNDERLINE MODEL CS WALL SLEEVES SHALL BE HDPE PLASTIC AND MODEL WS WALL SLEEVES SHALL BE GALVANIZED STEEL.
5. LOCATION OF 12" DIA SLEEVE IN CHAMBER FLOOR FOR INJECTION PIPES ARE IN ACCORDANCE WITH MECHANICAL DRAWINGS.
6. GRATING OPENINGS AND CUTOUTS FOR PIPING WERE FIELD LOCATED IN ACCORDANCE WITH MECHANICAL DRAWINGS.
7. ALUMINUM CHAMBER DOOR IS FOR H20 LOADING AS MANUFACTURED BY ACUDOR PRODUCTS
8. COMPACTION OF BACKFILL AROUND PIPING AND CONDUIT WAS PERFORMED CAREFULLY TO AVOID DISPLACEMENT OF PROTRUDING PIPE/CONDUIT AND TO PRESERVE SEAL AGAINST WATER INTRUSION.



SECTION 5

3/4"=1'-0"
WELLS IW - 15, 20, 21A, 22





SECTION 6

3/4"=1'-0"
WELLS IW - 20, 21A, 22

SECTION 7

3/4"=1'-0"
WELLS IW - 15, 20, 21A

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	JA

HOOKER/ RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS
IW - 15, 20, 21, 22

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By: J. WORRALL	Designed By: J. THORNTON	Drawn By: C. ROHRICH
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: CI-06

GENERAL NOTES

1. THE CONTRACTOR SHALL NOT SCALE THE DRAWINGS TO ESTABLISH DIMENSIONS. ALL DIMENSIONS SHALL BE CHECKED ON-SITE PRIOR TO ASSEMBLY OR CONSTRUCTION OF ANY WORK.
2. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS. THE METHODS, PROCEDURES AND SEQUENCES OF CONSTRUCTION TO BE USED ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. SUPPORTING FORMWORK FOR CONCRETE CONSTRUCTION SHALL NOT BE REMOVED BEFORE THE CONCRETE HAS GAINED SUFFICIENT STRENGTH TO SAFELY SUPPORT THE DEAD AND SUPERIMPOSED LOADS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID OVERLOADS, AND MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
3. THE CONTRACTOR SHALL REFER TO MECHANICAL & ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR SIZE AND LOCATION OF SLEEVES, ANCHORS, INSERTS AND OPENINGS REQUIRED.
4. PRINCIPAL OPENINGS IN THE STRUCTURE ARE SHOWN ON THE DRAWINGS. SLEEVES AND OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
5. MATERIALS SPECIFIED ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS SHALL BE USED UNLESS THE CONTRACTOR OBTAINS WRITTEN APPROVAL OF THE ENGINEER TO USE ALTERNATIVE MATERIALS. WHEN REQUESTING SUCH APPROVAL, THE CONTRACTOR SHALL PROVIDE ADEQUATE AND DETAILED MANUFACTURER'S LITERATURE AND TECHNICAL DATA FOR EACH MATERIAL PRIOR TO ITS POTENTIAL USE.

CONCRETE NOTES

1. CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301, 305, 306, 308, 315, 318 AND 350R SPECIFICATIONS.
2. LATEST REVISION AND/OR VERSION OF ALL CODES AND REFERENCE STANDARDS SHALL BE FOLLOWED.
3. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. SLUMP SHALL BE 3 1/2 INCHES ± 1 INCH.
4. CONCRETE SHALL BE AIR ENTRAINED. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150, TYPE II WITH AIR-ENTRAINING ADMIXTURE CONFORMING TO ASTM C260. AIR CONTENT (% BY VOLUME) SHALL NOT BE LESS THAN 4% NOR GREATER THAN 6.5% AND SHALL DEPEND ON MAXIMUM SIZE AGGREGATE USED.
5. NO ADMIXTURE SHALL CONTAIN CALCIUM CHLORIDE BASED COMPOUNDS. FLYASH AND POZZOLAN CONTENT SHALL NOT EXCEED 20% BY WEIGHT OF CEMENT.
6. REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS.
7. LAP SPLICES IN REINFORCING BARS SHALL BE A MINIMUM 38 TIMES BAR DIAMETERS. THE SPLICES SHALL NOT BE LESS THAN 18 INCHES.
8. CONCRETE PROTECTION FOR REINFORCING BARS (UNLESS OTHERWISE NOTED):
   A. FOOTINGS - 3 INCH BOTTOM AND SIDES, 2 INCH TOP
   B. GRADE BEAMS - 2 INCH BOTTOM AND SIDES, 1 1/2 INCH TOP (TO STIRRUPS)
   C. PIERS - 1 1/2 INCH (TO TIES)
   D. FORMED SLABS - 1 1/2 INCH TOP AND BOTTOM
   E. WALLS AND PADS - 2 INCH
   F. EXTERIOR SLABS ON FILL - 2 1/2 INCH BOTTOM, 2 INCH TOP
   G. INTERIOR SLABS ON FILL - 2 1/2 INCH BOTTOM, 1 1/2 INCH TOP
9. ANCHOR BOLTS SHALL BE CARBON STEEL CONFORMING TO ASTM A307 SPECIFICATIONS, WITH HEAVY HEX NUTS AND WASHERS. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED CONFORMING TO ASTM A123 AND A153 SPECIFICATIONS, AND SHALL BE ACCURATELY PLACED USING TEMPLATES.
10. NO CONSTRUCTION JOINT SHALL BE MADE UNLESS SHOWN ON DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER.
11. GROUT IN DRILLED HOLES FOR ANCHOR BOLTS AND REINFORCING STEEL DOWELS, AND UNDER BASE PLATES SHALL BE NON-SHRINK NON-METALLIC "MASTERFLOW 713" OR "MASTERFLOW 928" BY DEGUSSA BUILDING SYSTEMS. MANUFACTURER'S INSTRUCTIONS CONCERNING HOLE SIZE, SURFACE PREPARATION AND INSTALLATION SHALL BE FOLLOWED.
12. EDGE TOOL TOP HORIZONTAL EDGES OF PIERS, EQUIPMENT (PUMP) PADS. OTHER EXPOSED EDGES SHALL HAVE 3/4 INCH CHAMFER.
13. RAMPS, PADS AND SLABS SHALL BE TROWEL FINISHED TO WITHIN 1/8 INCH OF ELEVATIONS SHOWN ON DRAWINGS. FOLLOWING TROWELLING, PROVIDE NON-SLIP MEDIUM BROOM FINISH.
14. PROVIDE CORNER BARS TO MATCH HORIZONTAL BARS AT ALL EXTERIOR CORNERS.
15. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A82 AND A185 SPECIFICATIONS.
16. PROVIDE MINIMUM OF 6 INCH MECHANICALLY COMPACTED CRUSHED STONE UNDER SLABS AND WHERE OTHERWISE NOTED ON DRAWINGS.
17. JOINT SEALANT SHALL BE ONE-COMPONENT POLYURETHANE "SIKAFLEX-1A" BY SIKA CHEMICAL CORPORATION.
18. WATERSTOPS SHALL BE 6 INCH FLAT RIBBED PVC WATERSTOPS R6-316 OR 4 INCH RIBBED CENTER BULB PVC WATERSTOPS RB4-316 BY VINYLEX CORPORATION. WATERSTOPS SHALL BE HEAT FUSED AT ALL JOINTS.
19. PERIMETER FOUNDATION WALL RIGID INSULATION SHALL BE STYROFOAM SQUARE EDGE BY DOW CHEMICAL COMPANY; AND LATEX MODIFIED CONCRETE FACING, TONGUE AND GROOVE FORMAT, WITH GALVANIZED CLIPS AND FASTENERS.
20. PRIOR TO CASTING CONCRETE PADS AND PIERS, BASE SLAB AND WALL SHALL BE ROUGHENED, CLEANED AND COATED WITH A CONCRETE BONDING AGENT. BONDING AGENT SHALL BE "CONCRESIVE LIQUID (LPL)" OR "CONCRESIVE PASTE (LPL)" BY DEGUSSA BUILDING SYSTEMS. MANUFACTURER'S INSTRUCTIONS CONCERNING SURFACE PREPARATION AND APPLICATION SHALL BE FOLLOWED.

STRUCTURAL STEEL NOTES

1. FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO THE DESIGN DRAWINGS, SCOPE OF WORK AND SPECIFICATIONS, AND SHALL BE IN ACCORDANCE WITH THE AISC SPECIFICATIONS.
2. LATEST REVISION AND/OR VERSION OF ALL CODES AND REFERENCE STANDARDS SHALL BE FOLLOWED.
3. STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 SPECIFICATIONS. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B WITH YIELD STRESS OF 46 KSI.
4. ALL DIMENSIONS SHALL BE FIELD CHECKED BEFORE FABRICATION MAY BEGIN.
5. WELDING SHALL BE IN ACCORDANCE WITH THE AWS STRUCTURAL WELDING CODE. WELDED CONNECTIONS SHALL BE MADE WITH E70XX ELECTRODES. ROOT PASS AND TACK WELDS SHALL BE MADE WITH E6010 ELECTRODES. FILLET WELDS ON STANDARD FRAMED BEAM CONNECTIONS MAY BE 3/16 INCH MINIMUM. ALL OTHER FILLET WELDS SHALL BE 1/4 INCH MINIMUM.
6. GUSSET PLATES AND CLIP ANGLES SHALL BE 5/16 INCH THICK MINIMUM (UNLESS OTHERWISE NOTED). GENERALLY, ONE-SIDED CONNECTIONS FOR BEAMS SHALL NOT BE USED.
7. SHOP CONNECTIONS MAY BE EITHER WELDED OR BOLTED. FIELD CONNECTIONS SHALL BE BOLTED (UNLESS OTHERWISE NOTED). CONNECTIONS FOR NEW STEEL FRAMING TO EXISTING STEEL SHALL HAVE ONE END OF MEMBER BOLTED TO ALLOW FOR ADJUSTMENTS. WELDED CONNECTIONS, FIELD AND SHOP, SHALL BE CONTINUOUS FULL PENETRATION SEAL WELDS.
8. FASTENERS SHALL BE HIGH STRENGTH ASTM A325-N, 3/4 INCH DIAMETER GALVANIZED BOLTS WITH ASTM A194 GRADE 2H OR A563 GRADE DH NUTS TAPPED OVERSIZE AFTER GALVANIZING AND THREADS LUBRICATED. HARDENED WASHERS SHALL BE PROVIDED UNDER ROTATING PART OF NUT AND BOLT ASSEMBLY. CONNECTIONS NOTED WITH A325-SC BOLTS SHALL BE SLIP CRITICAL PER AISC SPECIFICATIONS.
9. BOLT HOLES SHALL NOT BE LARGER THAN 1/16 INCH PLUS DIAMETER OF THE BOLT. A MINIMUM OF TWO BOLTS PER CONNECTION SHALL BE REQUIRED.
10. WHERE BRACING FORCES ARE NOT GIVEN, DESIGN CONNECTIONS AT EACH END FOR 50% OF MEMBER CAPACITY IN TENSION.
11. ALL STRUCTURAL STEEL FRAMES INCLUDING GIRTS, PURLINS, MISCELLANEOUS STEEL; DOOR/WINDOW/OPENING FRAMES, DOORS, COMBINATION LOUVER/DAMPER AND SHUTTERS SHALL BE PAINTED.
12. PAINT SHALL CONSIST OF ONE COAT PRIMER (6 MILS DFT) EPOXY BAR-RUST 235 AND ONE COAT FINISH (2 MILS DFT) ALIPHATIC URETHANE DEVTHANE 379 BY ICI DULUX-DEVOE COATINGS.

FOUNDATION NOTES

1. FOUNDATION DESIGN IS BASED UPON A NET ALLOWABLE SOIL BEARING CAPACITY OF 3,000 POUNDS PER SQUARE FOOT FOR FOOTINGS BEARING ON APPROVED NATIVE SUBGRADE SOILS OR COMPACT STRUCTURAL GRANULAR FILL.
2. CONTRACTOR SHALL FIELD VERIFY THE FOUNDATION BEARING GRADE MATERIAL AND BEARING CAPACITY DURING CONSTRUCTION. FOUNDATIONS SHALL BE PLACED ON APPROVED BEARING GRADE.
3. NO FOOTING SHALL BEAR ON EXISTING FILL, SOFT/LOOSE, ORGANIC OR OTHER UNSUITABLE SOILS. IF ENCOUNTERED, THE EXISTING FILL AND UNSUITABLE SOILS AT THE FOOTING BEARING GRADE LEVEL SHALL BE REMOVED DOWN TO COMPETENT NATIVE SUBGRADE AND EXCAVATION BACKFILLED WITH COMPACTED STRUCTURAL GRANULAR FILL IN ACCORDANCE WITH THE SPECIFICATION.
4. EXISTING UNDERGROUND PIPING, REINFORCED CONCRETE STRUCTURES, UTILITIES, ELECTRICAL CABLES AND GROUNDING SYSTEMS NOT IDENTIFIED ON THE DRAWINGS MAY EXIST. WHEN UNCOVERED, THE CONTRACTOR MUST REPORT FINDINGS TO THE ENGINEER FOR IDENTIFICATION AND RECOMMENDED ACTION.
5. BACKFILL AROUND PIPES AND CABLES AS PER SPECIFICATIONS. NO PIPES OR CONDUITS SHALL BE PLACED IN FOOTINGS.
6. WHERE PIPES OR CONDUITS RUN PERPENDICULAR TO A FOOTING, STEP THE TOP OF THE FOOTING DOWN TO ALLOW PIPES OR CONDUITS TO RUN OVER TOP OF THE FOOTING. WHERE PIPES OR CONDUITS RUN PARALLEL TO A FOOTING, STEP BOTTOM OF FOOTING DOWN SO THAT A LINE DRAWN BETWEEN THE INVERT OF PIPE OR CONDUIT AND BOTTOM OF FOOTING SHALL NOT EXCEED 30 DEGREES ABOVE THE HORIZONTAL. NO PIPING OR CONDUIT SHALL BE ALLOWED TO PASS WITHIN A 30-DEGREE PLANE OF INFLUENCE BELOW AND AWAY FROM FOOTINGS.
7. MAXIMUM WALL FOOTING STEP SHALL BE 1'-0" VERTICAL SPACED NOT LESS THAN 2'-0" ON CENTER.
8. BUILDING FOUNDATIONS OVER EXISTING UTILITY LINES SHALL BEAR ONLY ON COMPACTED STRUCTURAL FILL PLACED AFTER REMOVAL OF ALL UNCONTROLLED FILL AND UNSUITABLE SOILS.

ARCHITECTURAL NOTES

1. BUILDING SHALL CONSIST OF PRE-ENGINEERED METAL, CLEAR SINGLE SPAN RIGID FRAME WITH STRAIGHT COLUMNS (NON-TAPERED) AND GABLED ROOF BEAMS.
2. ROOF SHALL HAVE A 2:12 PITCH.
3. ROOF PANELS SHALL BE 24 GAUGE STANDING SEAM STEEL.
4. EXTERIOR WALL PANELS SHALL BE 26 GAUGE.
5. INTERIOR WALL LINER PANELS SHALL BE 28 GAUGE (STANDARD HEIGHT 8'-3").
6. BOTTOM OF STEEL BASE PLATE TO BE AT EL. 100'-7".
7. BUILDING SHALL HAVE A 6" HIGH CURB AND 1" GROUT UNDER STEEL BASE PLATES.
8. CUTOUTS AND HOLES IN WALL AND ROOF PANELS SHALL BE COMPLETELY SEALED BY MECHANICAL/ELECTRICAL CONTRACTORS WITH FIRE STOP AND WEATHER PROOF MATERIALS AFTER PIPE/DUCT/CABLE INSTALLATIONS.
9. PAINT FOR CONTROL ROOM GYPSUM BOARD WALL SHALL CONSIST OF ONE COAT PRIMER (1 MIL DFT) ULTRA-HIDE PVA (1030) AND ONE COAT FINISH (2 MILS DFT) ULTRA-HIDE LATEX ENAMEL (1416) BY ICI PAINT STORES.
10. FIRE EXTINGUISHERS:
    CONTROL ROOM - (2 NOS) CLASS C TYPE,
    OTHER AREAS - (1 NO) CLASS ABC TYPE.
11. BASED ON USE, BUILDING IS NOT INTENDED TO BE "ACCESSIBLE" PER CODE.

PRECAST CONCRETE NOTES

1. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGHT OF 5,000 PSI AT 28 DAYS.
2. AIR ENTRAINED CONCRETE:
   A. CONCRETE SHALL BE AIR ENTRAINED
   B. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150, TYPE II WITH AIR ENTRAINING ADMIXTURE CONFORMING TO ASTM C260. AIR CONTENT (% BY VOLUME) SHALL NOT BE LESS THAN 5% NOR GREATER THAN 7%.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS.
4. LAP SPLICES IN REINFORCING SHALL BE IN ACCORDANCE WITH ACI 318 SPECIFICATIONS. LAP SPLICES SHALL NOT BE LESS THAN 18 INCHES.
5. CONCRETE PROTECTION FOR REINFORCING BARS SHALL BE INDUSTRY OR DOT STANDARDS, UNLESS NOTED OTHERWISE.
6. DESIGN LOADING TO MEET AASHTO HS-20-44 WITH 30% IMPACT. FOR HYDROSTATIC PRESSURE AND UPLIFT FORCES, WATER TABLE SHALL BE CONSIDERED AT THE GROUND SURFACE.
7. LIFTING HOLES IN PRECAST UNITS TO BE FILLED WITH CONCRETE REPAIR MATERIAL IN ACCORDANCE WITH NYSDOT 701-04 SPECIFICATION.

PERMIT NOTE

CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM CITY AND STATE AGENCIES FOR UTILITIES AND ROAD PAVEMENT INCLUDING RIGH-OF-WAY WORK.

CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM CITY AND STATE AGENCIES FOR UTILITIES AND ROAD PAVEMENT INCLUDING RIGH-OF-WAY WORK.

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	ZM

Approved

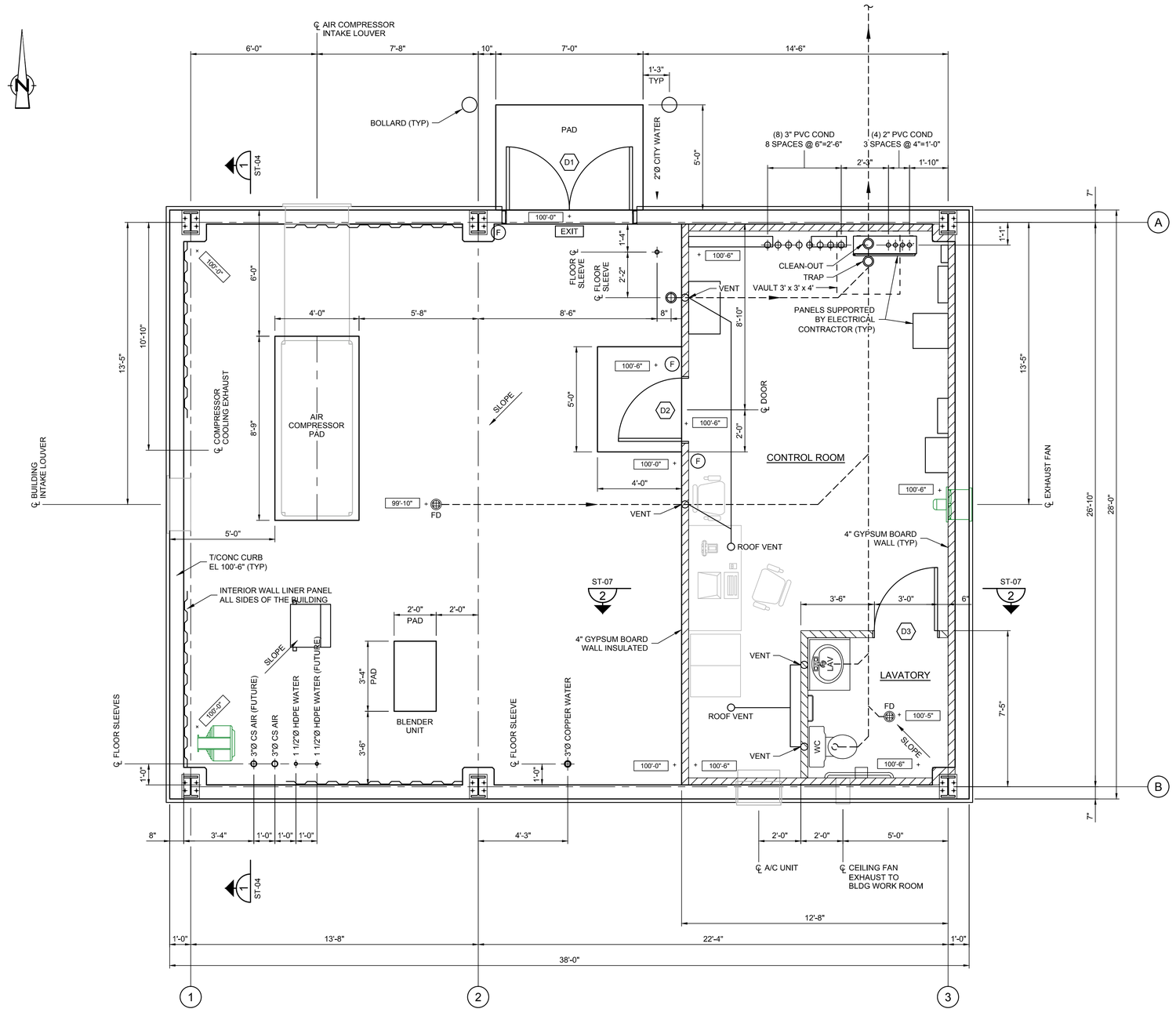
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING
GENERAL NOTES

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: ST-01



FLOOR PLAN

3/8" = 1'-0"

BUILDING CODE DATA

CODE:	BUILDING CODE OF NEW YORK STATE
LOCATION:	TOWN OF OYSTER BAY, NASSAU COUNTY, NEW YORK
BUILDING DIMENSIONS:	28'-0" x 38'-0" ONE STORY
BUILDING HEIGHT:	14'-6" NOMINAL EAVE - ABOVE FLOOR
BUILDING AREA:	1,064 SQUARE FEET (TABLE 503)
OCCUPANCY CLASS:	USE GROUP F-2 FACTORY INDUSTRIAL (SECTION 306.3)
CONSTRUCTION:	NON-COMBUSTIBLE TYPE 2B (SECTION 602.2, TABLE 601)
OCCUPANT LOAD:	ACTUAL - NONE; TABLE - 10 PERSONS (SECTION 1003.2.2.2)
BUILDING TYPE:	PRE-ENGINEERED METAL, STRUCTURAL STEEL RIGID FRAMED
BUILDING INSULATION:	WALLS - R19, ROOF - R30
FIRE SEPARATION DISTANCE:	GREATER THAN 30 FEET
FIRE RESISTANCE RATING:	EXTERIOR WALL - 0 HR (TABLES 601 & 602)
FIRE SEPARATION ASSEMBLIES:	NOT REQUIRED (TABLE 302.3.3)

STRUCTURAL LOADS (NON-FACTORED)

1. DEAD LOAD	STRUCTURAL, NONSTRUCTURAL, EQUIPMENT, PIPE, CABLE
2. FLOOR LIVE LOAD	
UNIFORMLY DISTRIBUTED LOAD	125 POUNDS PER SQUARE FOOT
CONCENTRATED LOAD	2,000 POUNDS (ON 2 1/2 FT x 2 1/2 FT SQUARE AREA)
3. ROOF LIVE LOAD	
0 - 200 SQUARE FEET TRIBUTARY AREA	20 POUNDS PER SQUARE FOOT
201 - 600 SQUARE FEET TRIBUTARY AREA	16 POUNDS PER SQUARE FOOT
OVER 600 SQUARE FEET TRIBUTARY AREA	12 POUNDS PER SQUARE FOOT
CONCENTRATED LOAD	200 POUNDS (ON AREA OF ONE SQUARE INCH)
4. ROOF SNOW LOAD	
GROUND SNOW LOAD	45 POUNDS PER SQUARE FOOT (FIGURE 1608.2)
SNOW EXPOSURE FACTOR	0.9 (TABLE 1608.3.1)
SNOW LOAD IMPORTANCE FACTOR	1.0 (SECTION 1604.5)
5. WIND LOAD	
BASIC WIND SPEED (3-SECOND GUST)	120 MILES PER HOUR (FIGURE 1609)
EXPOSURE CATEGORY	C (SECTION 1609.4)
WIND LOAD IMPORTANCE FACTOR	1.0 (SECTION 1604.5)
6. EARTHQUAKE LOAD	
SEISMIC USE GROUP	GROUP I (SECTION 1616.2)
SEISMIC IMPORTANCE FACTOR	1.0 (SECTION 1604.5)
SITE CLASS	D (SECTION 1615.1.1)
7. SPECIAL LOADS	
COLLATERAL IMPOSED CEILING LOAD	10 POUNDS PER SQUARE FOOT
PIPE/CABLE & EQUIPMENT LOADS	REFER DRAWINGS
FLOOD LOAD	NONE
UNIT HEATER	250 POUNDS EACH
AIR CONDITIONER	500 POUNDS
8. DEFLECTION LIMITATION	
EXTERIOR WALL AND ROOF SYSTEMS	NOT TO EXCEED 1/240 OF SPAN OF STRUCTURAL MEMBER
9. FOUNDATION	
NET ALLOWABLE SOIL BEARING PRESSURE	3,000 POUNDS PER SQUARE FOOT
MODULUS OF SUBGRADE REACTION	200 KIPS PER CUBIC FOOT

LEGEND

+ 100'-0"	ELEVATION FEET AMSL
EXIT	EXIT SIGN INSTALLED ABOVE DOOR
F	FIRE EXTINGUISHER
D1	DOOR
	DIRECTION OF FLOOR SLOPE
	UNIT HEATER
	WALL INTERIOR PANEL
	GYPSUM BOARD WALL (FIRE-RATED)
FD	FLOOR DRAIN

AS BUILT
RECORD DRAWING

NOTES

1. ELECTRICAL CONTRACTOR SHALL INSTALL CONDUITS IN CONTROL ROOM FLOOR SLAB AREA PRIOR TO SLAB CONSTRUCTION.
2. CONTRACTOR SHALL INSTALL FLOOR SLEEVES FOR PIPING PRIOR TO SLAB CONSTRUCTION.
3. REFER MECHANICAL DRAWINGS FOR PLUMBING.
4. FLOOR DRAIN SHALL BE FD-2330-PV3 HEAVY DUTY WITH SEDIMENT BASKET BY ZURN (TEL. (716) 665-1131, WWW.ZURN.COM).

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	ZM

Approved

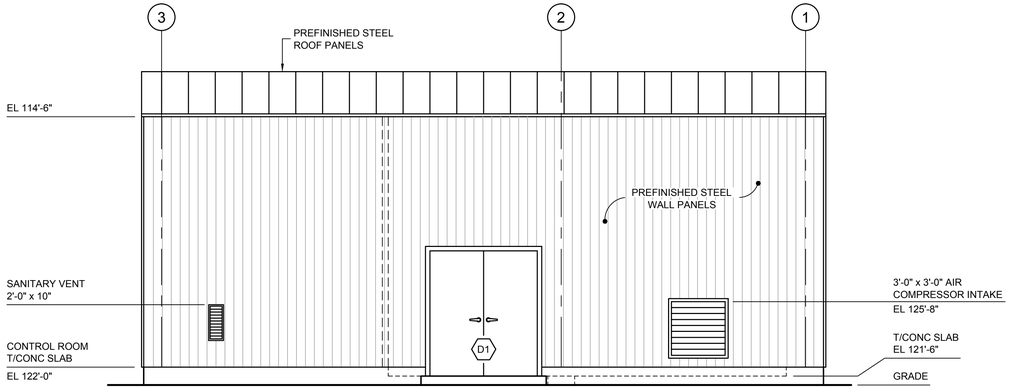
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

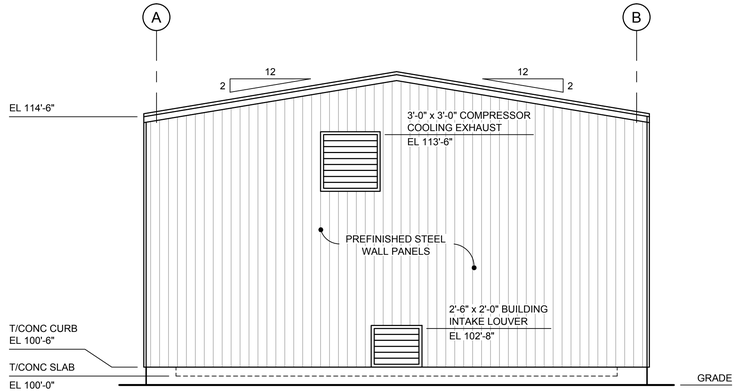
CONTROL BUILDING
FLOOR PLAN

CRA Infrastructure & Engineering, Inc.

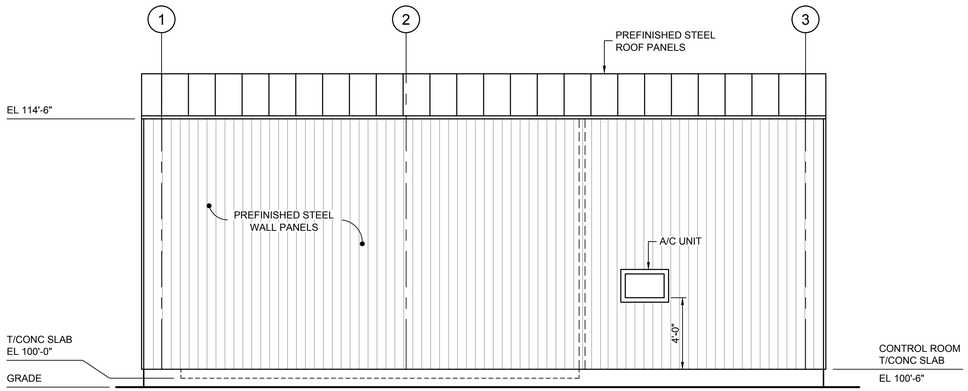
Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: 3/8"=1'-0"	Project No: 06883-00	Report No: 056	Drawing No: ST-02



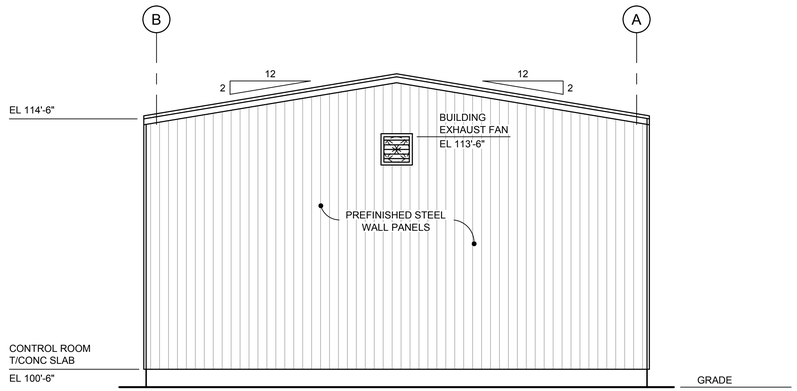
NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION

CONTRACTOR SHALL PROVIDE BUILDING EXTERIOR ELEVATION OF 114'-6" AND INTERIOR CLEARANCE AT PRIMARY RIGID FRAME OF MINIMUM 12'-8" ABOVE FLOOR SLAB EL 100'-0", WHICHEVER RESULTS IN GREATER BUILDING HEIGHT

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	ZM

Approved

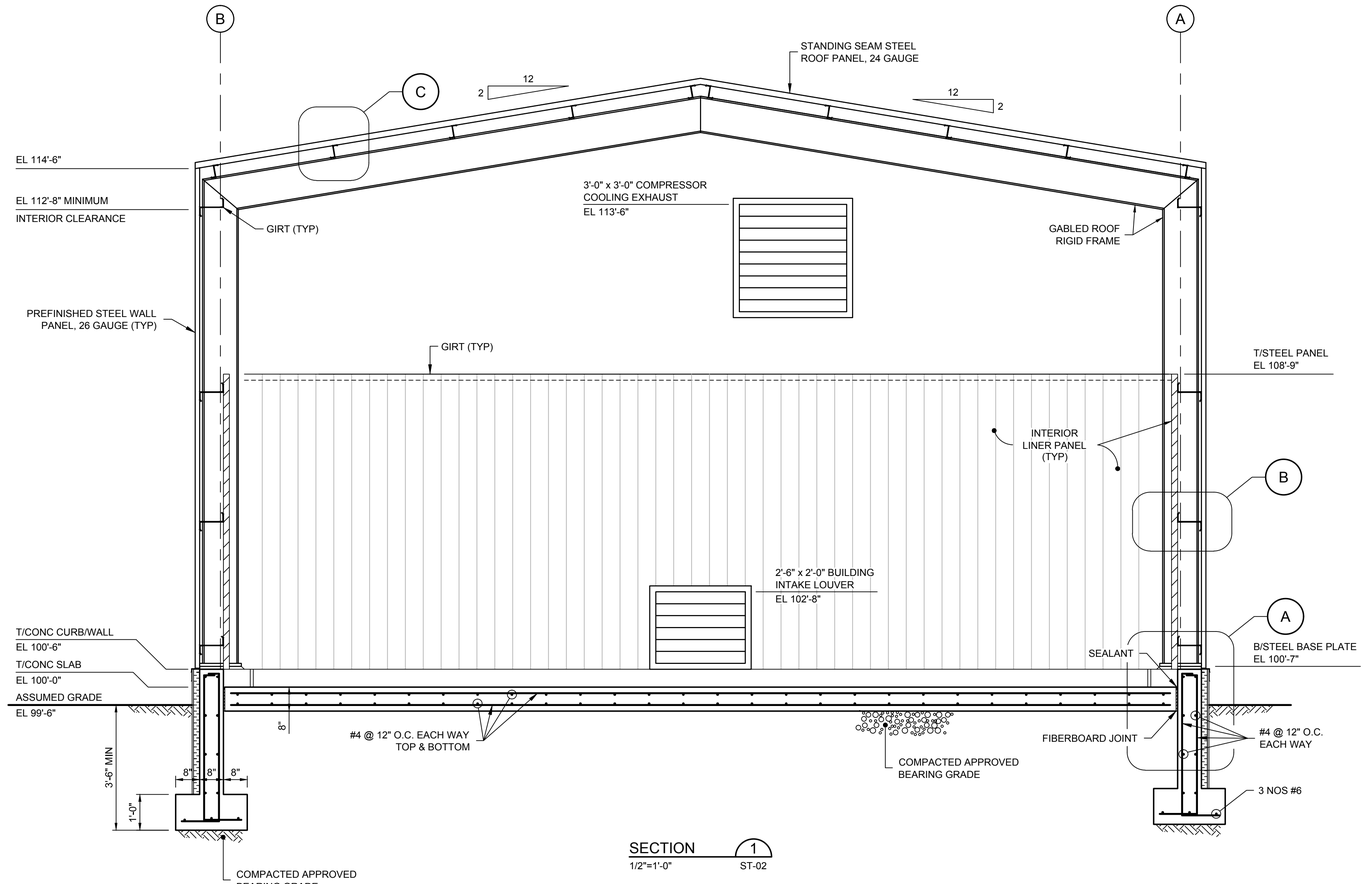
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING
ELEVATIONS

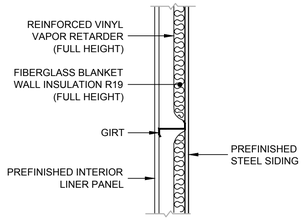
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: 1/4"-1'-0"	Project No: 06883-00	Report No: 056	Drawing No: ST-03

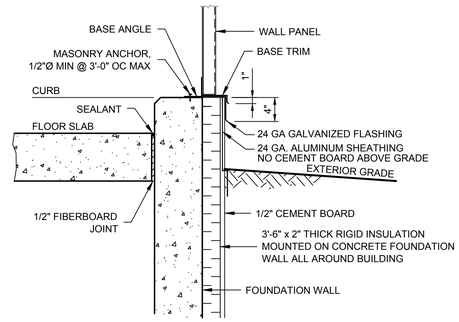


SECTION 1
1/2"=1'-0" ST-02

CONTRACTOR SHALL PROVIDE BUILDING EXTERIOR ELEVATION OF 114'-6" AND INTERIOR CLEARANCE AT PRIMARY RIGID FRAME OF MINIMUM 12'-8" ABOVE FLOOR SLAB EL 100'-0", WHICHEVER RESULTS IN GREATER BUILDING HEIGHT



WALL INSULATION B
NTS



WALL BASE A
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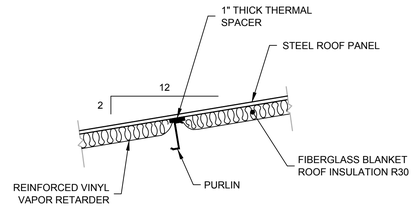
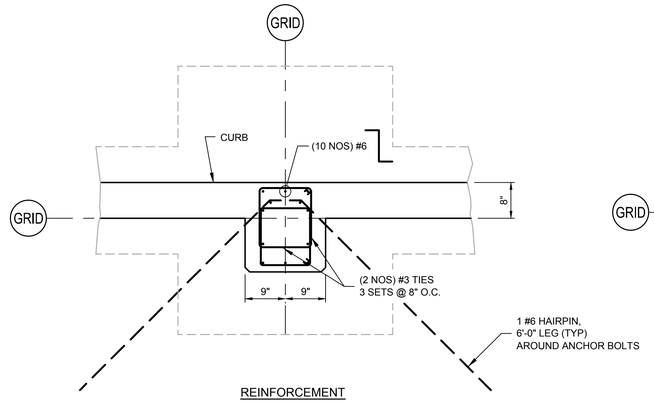


ROOF INSULATION C
NTS



REINFORCEMENT
3/4" = 1'-0"

INSET GIRT
1" = 1'-0"

BUILDING COLUMN PIERS - TYPICAL

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	ZM

Approved

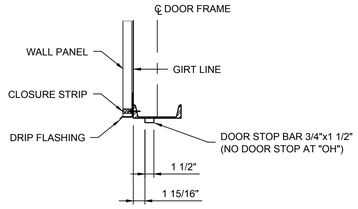
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING
SECTION AND DETAILS

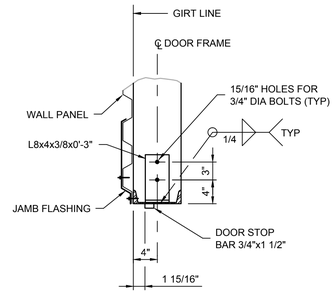
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: ST-04



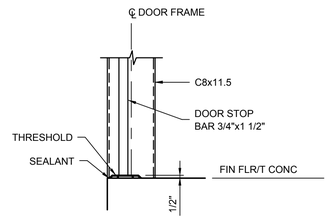
HEAD H-1

1"=1'-0"



JAMB J-1

1"=1'-0"



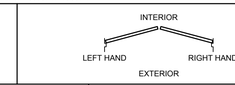
SILL S-1

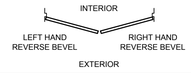
1"=1'-0"

DOOR & HARDWARE SCHEDULE

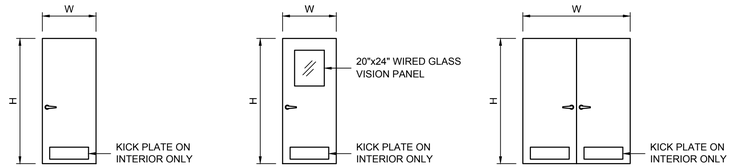
ABBREVIATIONS:

EN	ALUMINUM ENAMEL	SFT	1/4" SAFETY GLASS - STEEL WIRED
FRP	FIBERGLASS REINFORCED PLASTIC	SS	STAINLESS STEEL
GHM	GALVANIZED HOLLOW METAL	STL	STRUCTURAL STEEL
RBR	RUBBER		





DOOR												FRAME				HARDWARE							
DOOR MARK	TYPE	DOOR HAND	FIRE RATING LABELED	EXTERIOR	INTERIOR	THERMAL INSUL	DOOR OPENING WIDTH "W"	DOOR OPENING HEIGHT "H"	THICKNESS	MATERIAL	GLAZING	MATERIAL	HEAD DETAIL	JAMB DETAIL	SILL DETAIL	CLOSER	DOOR STOP	HINGES	KICK PLATE	PANIC SET	THRESHOLD	WEATHERSTRIP	REMARKS
D1	"C"	RHRB LHRB	-	X		R14.97	6'-0"	7'-0"	1 3/4"	GHM	-	STL	H-1	J-1	S-1	X	X	6	X	X	A	X	LHRB DOOR - DEAD BOLT T & B, RHRB DOOR - LATCHES & EXIT DEVICE
D2	"B"	RHRB	3/4 HR		X	R2.44	3'-0"	7'-0"	1 3/4"	GHM	SFT	STL	-	-	-	X	X	3	X	X	B	X	
D3	"A"	RHRB	-		X	-	3'-0"	7'-0"	1 3/4"	GHM	-	STL	-	-	-	X	-	3	X	-	-	-	INTERIOR LATCH



DOOR TYPES

1/4" = 1'-0"

DOOR AND HARDWARE NOTE

ALL DOORS AND HARDWARE SHALL BE AS SPECIFIED OR APPROVED EQUAL, AND SHALL CONFORM TO CODE REQUIREMENTS FOR ACCESSIBILITY.

DOORS

1. EXTERIOR DOORS SHALL BE "IMPERIAL" BY CECO DOOR PRODUCTS, 16 GAUGE, POLYURETHANE CORE, GALVANIZED AND PAINTED.
2. INTERIOR DOORS SHALL BE "REGENT" BY CECO DOOR PRODUCTS, 18 GAUGE, HONEYCOMB CORE, GALVANIZED AND PAINTED.

HARDWARE (MANUFACTURER'S STANDARD)

1. CLOSER: 1250 SERIES ALUMINUM ENAMEL (EN) - "SARGENT".
2. DOOR STOP: TRI BASE FLOOR STOP #259F-US26D - "HAGER".
3. HINGES: FULL MORTISE STAINLESS STEEL 32D, 4 1/2"x4 1/2"x0.134 GAUGE, #BB1191 - "HAGER".
4. KICK PLATE: STAINLESS STEEL 32D, 16 GAUGE, 8"x26", #220S - "HAGER".
5. PANIC SET:
   A. EXIT DEVICE: #12-9913-ETF, US 32D FIRE RATED - "SARGENT"; EXTERIOR DOOR BY BUTLER.
   B. PUSH PLATE: STAINLESS STEEL 32D, 3"x12", #30S - "HAGER".
   C. PULL PLATE: STAINLESS STEEL 32D, 3"x12", #32G - "HAGER".
   D. LOCKS: MORTISE - "SARGENT".
6. THRESHOLD:
   A. SKID RESISTANT ABRASIVE CAST ALUMINUM HEAVY DUTY, 4" WIDE, #624S - "HAGER".
   B. NON-SLIP ABRASIVE ALUMINUM SADDLE, 4" WIDE, #410S - "HAGER".
7. WEATHERSTRIP AND DOOR BOTTOM:
   A. WEATHERSTRIP JAMB & HEAD #870S-N - "HAGER".
   B. DOOR BOTTOM #774S-V - "HAGER".

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	ZM

Approved

WARNING: ALTERING THIS DOCUMENT IS IN VIOLATION OF THE NEW YORK STATE EDUCATION LAW EXCEPTING AS PROVIDED IN SECTION 7209, PART 2 OF THE LAW.

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

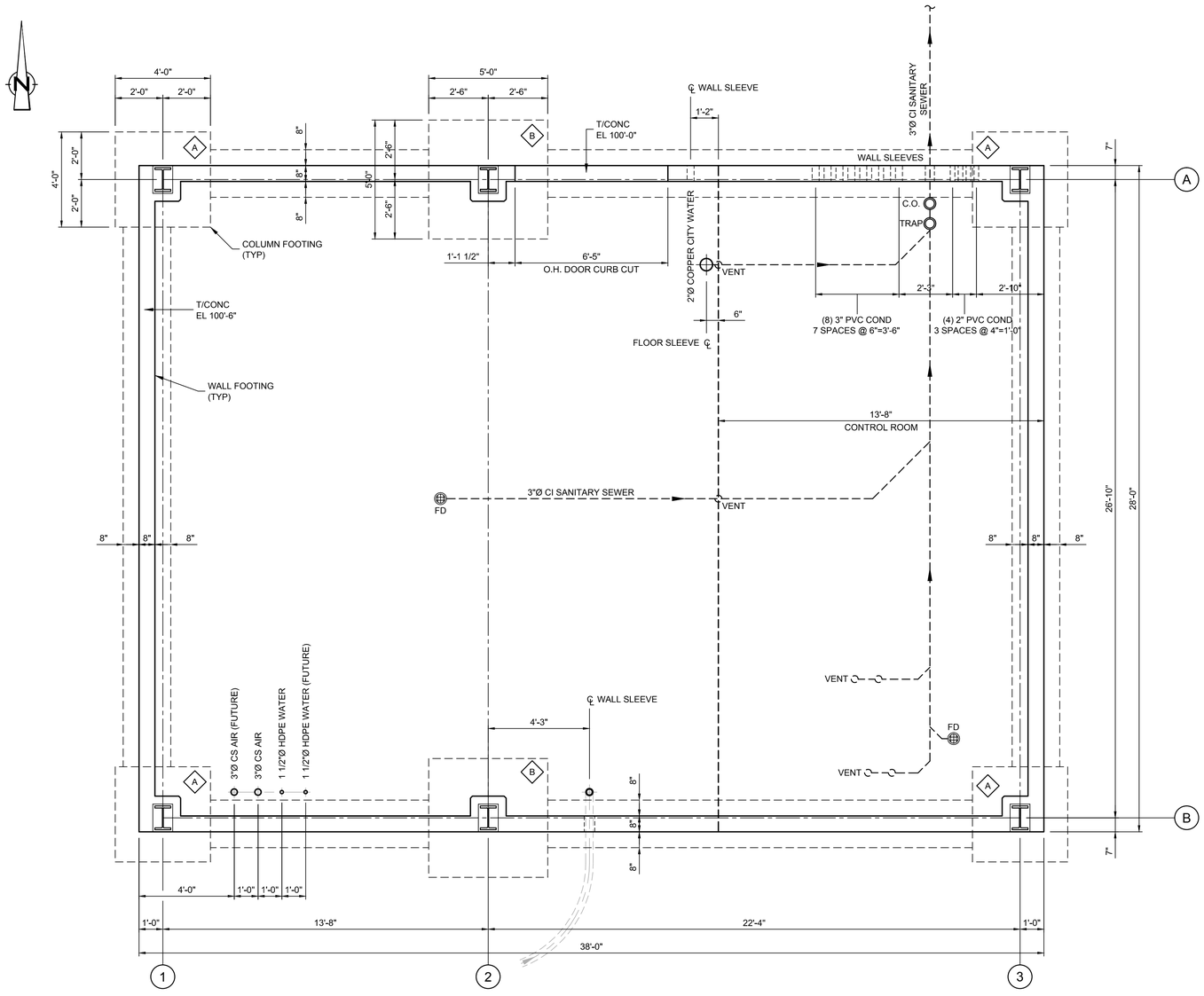
BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING
SCHEDULE & DETAILS

CRA Infrastructure & Engineering, Inc.

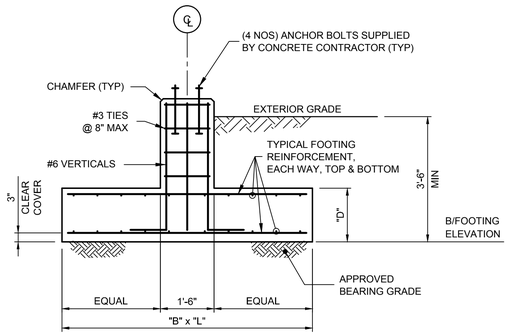
Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: ST-05

06883-00(056)ST-BU005 AUG 22/2012



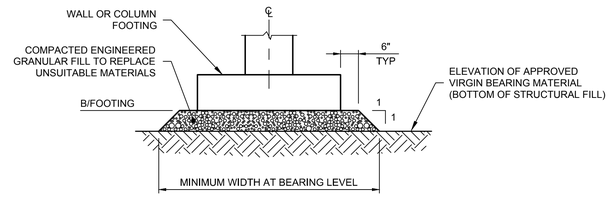
FOUNDATION PLAN

3/8" = 1'-0"



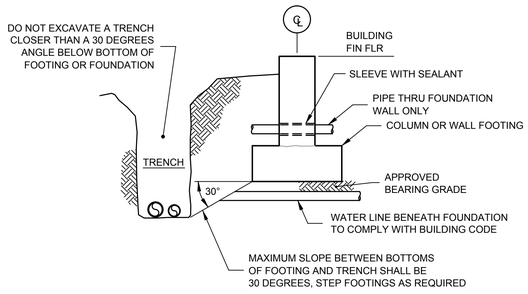
COLUMN FOOTING DETAIL

NTS



FILL BENEATH FOUNDATION

NTS



TRENCH NEAR FOOTING

NTS

COLUMN FOOTING SCHEDULE

FOOTING MARK	DIMENSIONS			REINFORCEMENT				NOTES
	"B" (EAST-WEST)	"L" (NORTH-SOUTH)	"D"	BOTTOM (EAST-WEST)	BOTTOM (NORTH-SOUTH)	TOP (EAST-WEST)	TOP (NORTH-SOUTH)	
A	4'-0"	4'-0"	1'-6"	7 #7	7 #7	5 #3	5 #3	-
B	5'-0"	5'-0"	1'-6"	7 #7	7 #7	5 #3	5 #3	-

NOTES

1. FOOTING SIZES AND DETAILS SHOWN ON VARIOUS DRAWINGS ARE BASED ON BUTLER MANUFACTURING COMPANY INFORMATION PROVIDED TO CRAIE.
2. FOOTING SIZES, DETAILS AND DESIGN SHALL BE VERIFIED/MODIFIED BASED ON ACTUAL PRE-ENGINEERED BUILDING LOADS PROVIDED BY MANUFACTURER PRIOR TO ORDERING MATERIALS FOR CONSTRUCTION.
3. FOR ANCHOR BOLT AND BUILDING COLUMN LAYOUT DETAILS REFER TO DRAWINGS BY PRE-ENGINEERED BUILDING MANUFACTURER.
4. BUILDING COLUMN FOUNDATION ANCHORS LAYOUT, NUMBER, TYPE, DIAMETER, LENGTH, EMBEDMENT DEPTH, AND OTHER DETAILS SHALL BE BASED ON BUILDING MANUFACTURER'S REQUIREMENTS AND LOADINGS. THE ANCHORS SHALL BE INSTALLED PER ITS MANUFACTURER'S RECOMMENDATIONS.
5. CONTINUE WALL HORIZONTAL AND VERTICAL REINFORCEMENTS INTO COLUMN PIERS AND FOUNDATIONS, RESPECTIVELY.
6. PROVIDE TYPICAL PIER REINFORCEMENTS FOR ALL BUILDING COLUMNS.

AS BUILT
RECORD DRAWING

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Approved

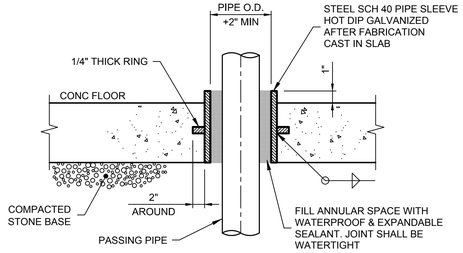
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING
FOUNDATION PLAN

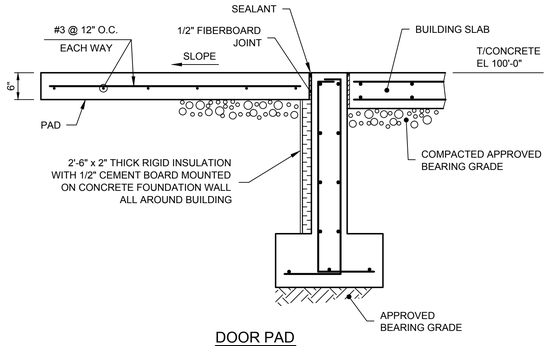
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: 3/8" = 1'-0"	Project No: 06883-00	Report No: 056	Drawing No: ST-06



PIPE FLOOR SLEEVE

NTS

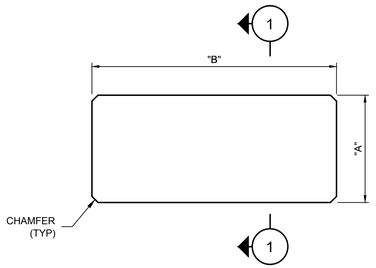


DOOR PAD

3/4"=1'-0"

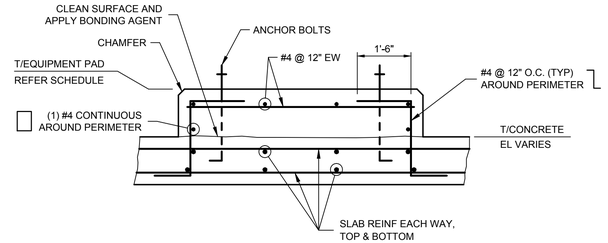
EQUIPMENT PAD SCHEDULE

EQUIP No	DESCRIPTION	TYPE	A	B	C	D	E	F	G	H	T/PAD EL	ANCHOR BOLTS	REMARKS
-	AIR COMPRESSOR	-	4'-0"	8'-9"	-	-	-	-	-	-	100'-8"	HILTI	-
-	SUPPLEMENT BLENDING UNIT	-	2'-0"	3'-4"	-	-	-	-	-	-	100'-8"	HILTI	-



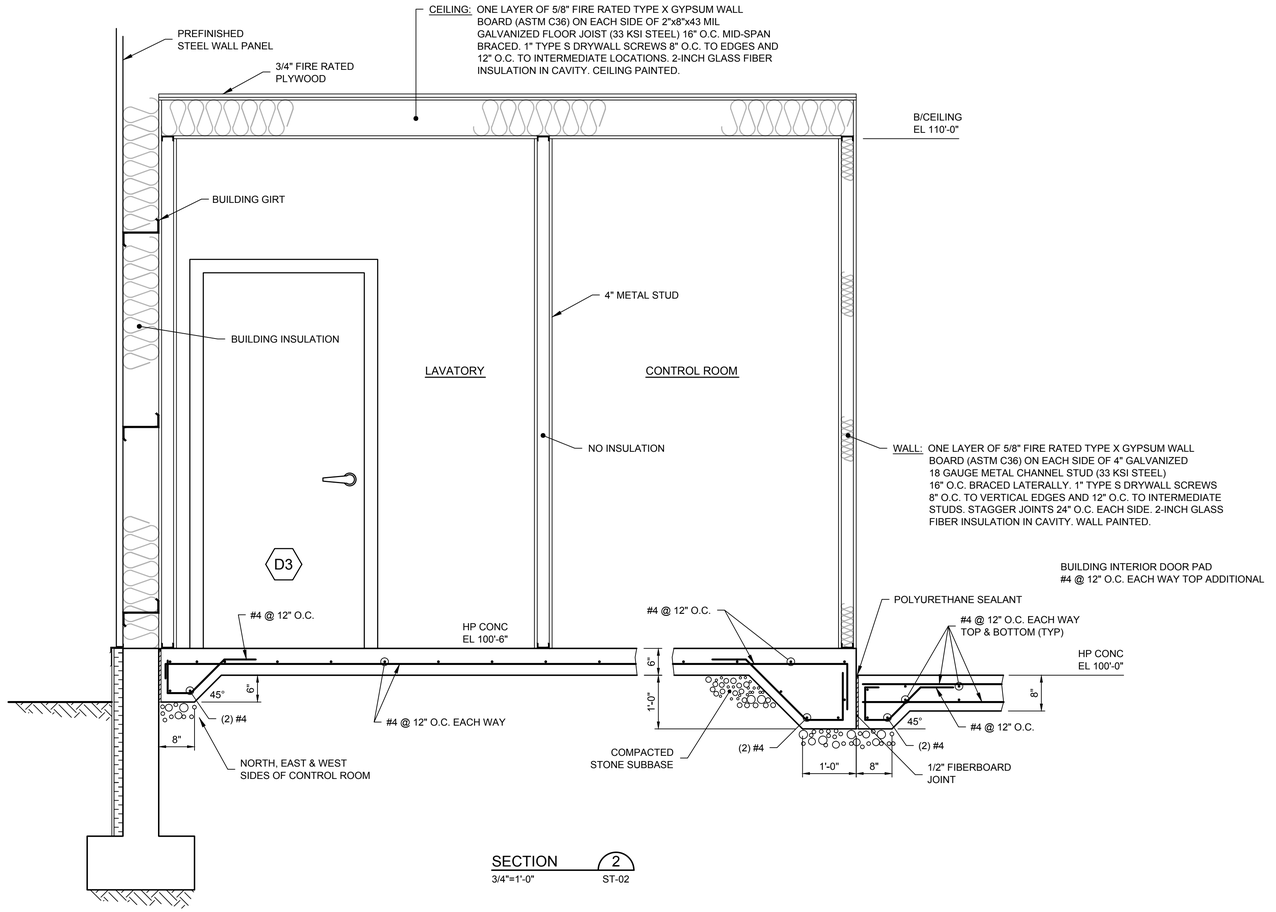
EQUIPMENT PAD

(FOR ORIENTATION REFER PLAN)



SECTION 1

NTS

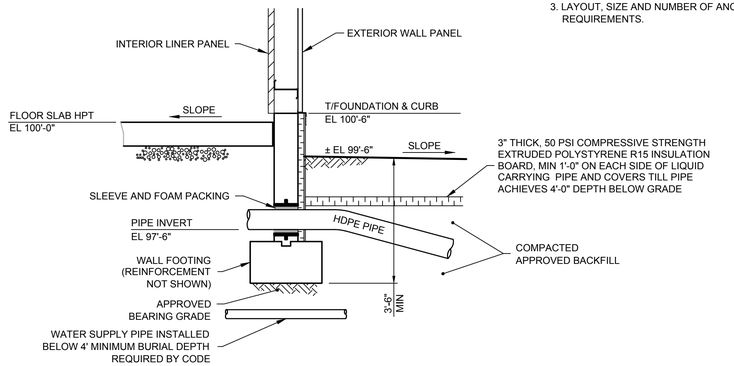


SECTION 2

3/4"=1'-0" ST-02

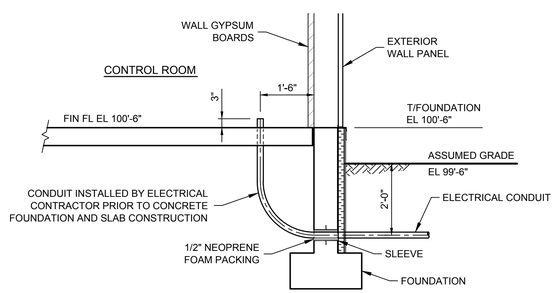
NOTES

1. HILTI ANCHOR BOLTS SHALL CONSIST OF HVA ANCHORING SYSTEM (HVU ADHESIVE AND HAS STAINLESS STEEL ROD) WITH SPECIFIED BOLT DIAMETER AND MINIMUM CONCRETE EMBEDMENT.
2. HILTI ANCHORS SHALL BE SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR.
3. LAYOUT, SIZE AND NUMBER OF ANCHORS SHALL BE AS PER MECHANICAL REQUIREMENTS.



PIPE CROSSING FOUNDATION

1/2" = 1'-0"



ELECTRICAL CONDUIT SLEEVE

1/2" = 1'-0"

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	ZM

Approved

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING
MISCELLANEOUS DETAILS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: AUGUST 2012
Project Manager: JK	Reviewed By: JGRW	Designed By: SKM	Drawn By: ZM
Scale: AS NOTED	Project No: 06883-00	Report No: 056	Drawing No: ST-07

PROCESS / INSTRUMENT LINES

- MAIN PROCESS LINE
- SECONDARY PROCESS LINE
- UNDEFINED SIGNAL
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL
- CAPILLARY TUBE, FILLED SYSTEM
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)
- INTERNAL SYSTEM LINK
- HYDRAULIC SIGNAL
- MECHANICAL LINK
- ELECTRICAL BINARY SIGNAL
- OFF PAGE CONNECTOR (TO / FROM SHEET No.)
- HARDWIRED INTERLOCK LOGIC (-1,2,3...IS OPTIONAL REFERENCE TO INTERLOCK DETAIL DESCRIPTION)

VALVE SYMBOLS

- BA- " — BALL VALVE
- BU- " — BUTTERFLY VALVE
- CH- " — CHECK VALVE
- GA- " — GATE VALVE
- GL- " — GLOBE VALVE
- THREE WAY VALVE (FAIL OPEN TO PATH A-C)
- FOUR WAY VALVE (FAIL OPEN TO PATH A-C AND B-D)
- DAMPER OR LOUVER

GENERAL INSTRUMENT SYMBOLS

- LOCALLY MOUNTED INSTRUMENTS
- PRIMARY PANEL MOUNTED INSTRUMENTS
- AUXILARY PANEL MOUNTED INSTRUMENTS WHERE x = PANEL No. WHEN MORE THAN ONE PANEL IS PRESENT
- BEHIND BOARD MOUNTED INSTRUMENTS
- INSTRUMENTS SHARING COMMON HOUSING
- IN LINE INSTRUMENTS AS INDENTIFIED
- SIGNAL CONVERTER (INPUT/OUTPUT)
  - * E - VOLTAGE, I - CURRENT
  - P - PNEUMATIC, B - BINARY (MODBUS, R5232...)
- PILOT LIGHT
  - A = AMBER, B = BLUE, C = CLEAR
  - G = GREEN, R = RED
  - W = WHITE, Y = YELLOW

DISTRIBUTED CONTROL / SHARED DISPLAY INSTRUMENTS

- INDICATOR/CONTROLLER/RECORDER OR ALARM POINTS - USUALLY USED TO INDICATE VIDEO DISPLAY (DCS OR HMI CONFIGURATIONS)
  * NORMALLY ACCESSIBLE TO OPERATOR
- NORMALLY BLIND OPERATION
  * NOT NORMALLY ACCESSIBLE TO OPERATOR
- DISTRIBUTED CONTROL INTERCONNECTING LOGIC CONTROLLER OR PLC WITH BINARY OR SEQUENTIAL LOGIC FUNCTIONS.
  * NORMALLY ACCESSIBLE TO OPERATOR
- NORMALLY BLIND OPERATION
  * NOT NORMALLY ACCESSIBLE TO OPERATOR

- INTERLOCK LOGIC IN CONTROLLER OR PLC WHERE:
  - 1,2,3.....IS OPTIONAL REFERENCE TO INTERLOCK DETAIL DESCRIPTION
  - x = PLC No. WHEN MORE THAN ONE PLC IS PRESENT IN THE SYSTEM

MISCELLANEOUS SYMBOLS

- REDUCER
- FLEXIBLE PIPE
- EXPANSION JOINT
- BLIND FLANGE
- HOSE CONNECTION
- SCREWED CAP, CLEANOUT
- Y-LINE STRAINER
- SPECIFICATION CHANGE
- FUNNEL DRAIN
- STATIC MIXER
- FILTER/REGULATOR/LUBRICATOR
- ANNUNCIATOR HORN
- FILTER/REGULATOR
- EQUIPMENT INSULATED WITH X" OF INSULATION
- RESET FOR LATCH-TYPE ACTUATOR
- OPEN VENT TO ATMOSPHERE
- INLINE BLANK
- RESTRICTION ORIFICE
- AIR EJECTOR
- TRAP
- PULSATION DAMPER
- BLOCK & BLEED ASSEMBLY
- TIE POINT TO EXISTING SYSTEM
- DRAIN (FLOOR, SEWER, ETC.)
- FLOW STRAIGHTENING VANE
- SPECIALITY PART
- AIR VENT, AUTOMATIC

SELF-ACTUATED REGULATORS, VALVES, AND OTHER DEVICES

- RUPTURE DISC FOR PRESSURE RELIEF
- RUPTURE DISC FOR VACUUM RELIEF
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE REDUCING REGULATOR (SELF CONTAINED)
- BACKPRESSURE REGULATOR (SELF CONTAINED)
- LEVEL REGULATOR WITH MECHANICAL LINKAGE

- CONSERVATION VENT
- FLAME ARRESTOR

PRIMARY ELEMENT SYMBOLS

- VARIABLE AREA FLOWMETER
- DIAPHRAM SEAL WITH PRESSURE LEAD LINE
- DIAPHRAM SEAL (LINE-MOUNTED)
- TEMPERATURE ELEMENT WITH THERMOWELL (OPTIONAL ELEMENT DESCRIPTION RTD, TYPE K...)
- FLOW SIGHT GLASS (LG - LEVEL SIGHT GLASS, SG - GENERAL SIGHT GLASS)
- LEVEL DEVICE, FLOAT TYPE

ACTUATOR SYMBOLS

- DIAPHRAM ACTUATOR
- CYLINDER ACTUATOR
- ROTARY MOTOR ACTUATOR
- SOLENOID ACTUATOR
- HAND ACTUATOR OR HANDWHEEL
- AIR ACTUATED VALVE W/POSITIONER
  OPTIONAL:
  D - DIRECT ACTING POSITIONER
  R - REVERSE ACTING POSITIONER
  VALVE FAIL SYMBOLS
  FO - FAIL OPEN
  FC - FAIL CLOSED
  FL - FAIL LOCKED (LAST POSITION)
  FI - FAIL INDETERMINATE
- LIMIT SWITCH ACTIVATED WHEN VALVE CLOSED (ZSH ACTIVATED WHEN VALVE OPEN)

ABBREVIATIONS:

POWER SUPPLY OR PURGE FLUID TYPES

AS - AIR SUPPLY
- IA - INSTRUMENT AIR
- PA - PLANT AIR

ES - ELECTRICAL SUPPLY
GS - GAS SUPPLY
HS - HYDRAULIC SUPPLY
NS - NITROGEN SUPPLY
SS - STEAM SUPPLY
WS - WATER SUPPLY

THE SUPPLY LEVEL MAY BE ADDED TO THE INSTRUMENT SUPPLY LINE, E.G., AG-100, A 100-PSI AIR SUPPLY; ES-24DC, A 24-VOLT DIRECT CURRENT POWER SUPPLY.

INSTRUMENTS:

HOA - HAND/OFF/AUTO
LOR - LOCAL/OFF/REMOTE
OPN - OPEN
CLS - CLOSE
SP - SETPOINT

INSTRUMENT / PROCESS LINES DESIGNATIONS

000	UNDERGROUND INSTRUMENTS
100	PROCESS INSTRUMENTS
200	VENDOR SUPPLIED INSTRUMENTS
300	UTILITY INSTRUMENTS
0000	UNDERGROUND LINES
1000	PROCESS LINES
2000	VENDOR SUPPLIED LINES
3000	UTILITY LINES
CS	CARBON STEEL PIPE
CSVD	CARBON STEEL VENT DUCT (12 GAUGE)
DVW	DRAIN VENT WASTE PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
KYA	KYNAR
PDE	CPVC, SOLID
PVC	POLYVINYL CHLORIDE PIPE SCHEDULE 40
PVE	POLYVINYL CHLORIDE PIPE SCHEDULE 80
PPL	POLYPROPYLENE LINED/LINED DUCTILE PIPE
SS	STAINLESS STEEL
TFD	TEFLON
B	BARE
I	INSULATED
J	JACKETED AND INSULATED
TE	ELECTRICALLY TRACED AND INSULATED

TYPICAL ISA LETTER COMBINATIONS

First-Letters	Initiating or Measured Variable	Controllers: Recording	Controllers: Indicating	Controllers: Blind	Controllers: Self-Actuated Control Valves	Readout Devices: Recording	Readout Devices: Indicating	Switches and Alarm Devices *: High **	Switches and Alarm Devices *: Low	Switches and Alarm Devices *: Comb	Transmitters: Recording	Transmitters: Indicating	Transmitters: Blind	Solenoids, Relays, Computing Devices	Primary Element	Test Point	Well or Probe	Viewing Device, Glass	Safety Device	Final Element
A	Analysis	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW			AV
B	Burner/Combustion	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW	BG		BZ
C	User's Choice																			
D	User's Choice																			
E	Voltage	ERC	EIC	EC		ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE					EZ
F	Flow Rate	FRC	FIC	FC	FCV, FICV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP		FG		FV
FQ	Flow Quantity	FQRC	FQIC			FQR	FQI	FQSH	FQSL			FQIT	FQT	FQY	FQE					FQV
FF	Flow Ratio	FFRC	FFIC	FFC		FFR	FFI	FFSH	FFSL						FE					FFV
G	User's Choice																			
H	Hand		HIC	HC						HS										HV
I	Current	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE					IZ
J	Power	JRC	JIC			JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE					JV
K	Time	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE					KV
L	Level	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG		LV
M	User's Choice																			
N	User's Choice																			
O	User's Choice																			
P	Pressure/Vacuum	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP			PSV, PSE	PV
PD	Pressure, Differential	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	PDT	PDY	PE	PP				PDV
Q	Quantity	QRC	QIC			QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE					QZ
R	Radiation	RRC	RIC	RC		RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE		RW			RZ
S	Speed/Frequency	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSHL	SRT	SIT	ST	SY	SE					SV
T	Temperature	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TW		TSE	TV
TD	Temperature, Differential	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TE	TP	TW			TDV
U	Multivariable					UR	UI							UY						UV
V	Vibration/Machinery Analysis					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE					VZ
W	Weight/Force	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE					WZ
WD	Weight/Force, Differential	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	WDT	WDY	WE					WDZ
X	Unclassified																			
Y	Event/State/Presence		YIC	YC		YR	YI	YSH	YSL				YT	YY	YE					YZ
Z	Position/Dimension	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE					ZV
ZD	Gauging/Deviation	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDRT	ZDIT	ZDT	ZDY	ZDE					ZDV

Note: This table is not all-inclusive.
* A, alarm, the annunciating device, may be used in the same fashion as S, switch, the actuating device.

** The letters H and L may be omitted in the undefined case.

Other Possible Combinations:

FO	(Restriction Orifice)	LLH	(Level Light High)	KQI	(Running Time Indicator)
FRK, HIK	(Control Stations)	LCH	(Level Control High)		

HMS (Hand Momentary Switch)
LCL (Level Control Low)

IDENTIFICATION LETTERS

	FIRST-LETTER: MEASURED OR INITIATING VARIABLE	FIRST-LETTER: MODIFIER	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: OUTPUT FUNCTION	SUCCEEDING-LETTERS: MODIFIER
A	Analysis		Alarm		
B	Burner/Combustion		User's Choice	User's Choice	User's Choice
C	User's Choice			Control	
D	User's Choice	Differential			
E	Voltage		Sensor (Primary Element)		
F	Flow Rate	Ratio (Fraction)			
G	User's Choice		Glass, Viewing Device		
H	Hand				High
I	Current (Electrical)		Indicate		
J	Power	Scan			
K	Time, Time Schedule	Time Rate of Change		Control Station	
L	Level		Light		Low
M	User's Choice	Momentary			Middle, Intermediate
N	User's Choice		User's Choice	User's Choice	User's Choice
O	User's Choice		Orifice, Restriction		
P	Pressure, Vacuum		Point (Test) Connection		
Q	Quantity	Integrate, Totalize			
R	Radiation		Record		
S	Speed, Frequency	Safety		Switch	
T	Temperature			Transmit	
U	Multivariable		Multifunction	Multifunction	Multifunction
V	Vibration, Machinery Analysis			Valve, Damper, Louver	
W	Weight, Force		Well		
X	Unclassified	X Axis	Unclassified	Unclassified	Unclassified
Y	Event, State, or Presence	Y Axis		Relay, Compute, Convert	
Z	Position, Dimension	Z Axis		Drive, Actuator, Unclassified Final Contiol Element	

AS BUILT RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

Approved

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

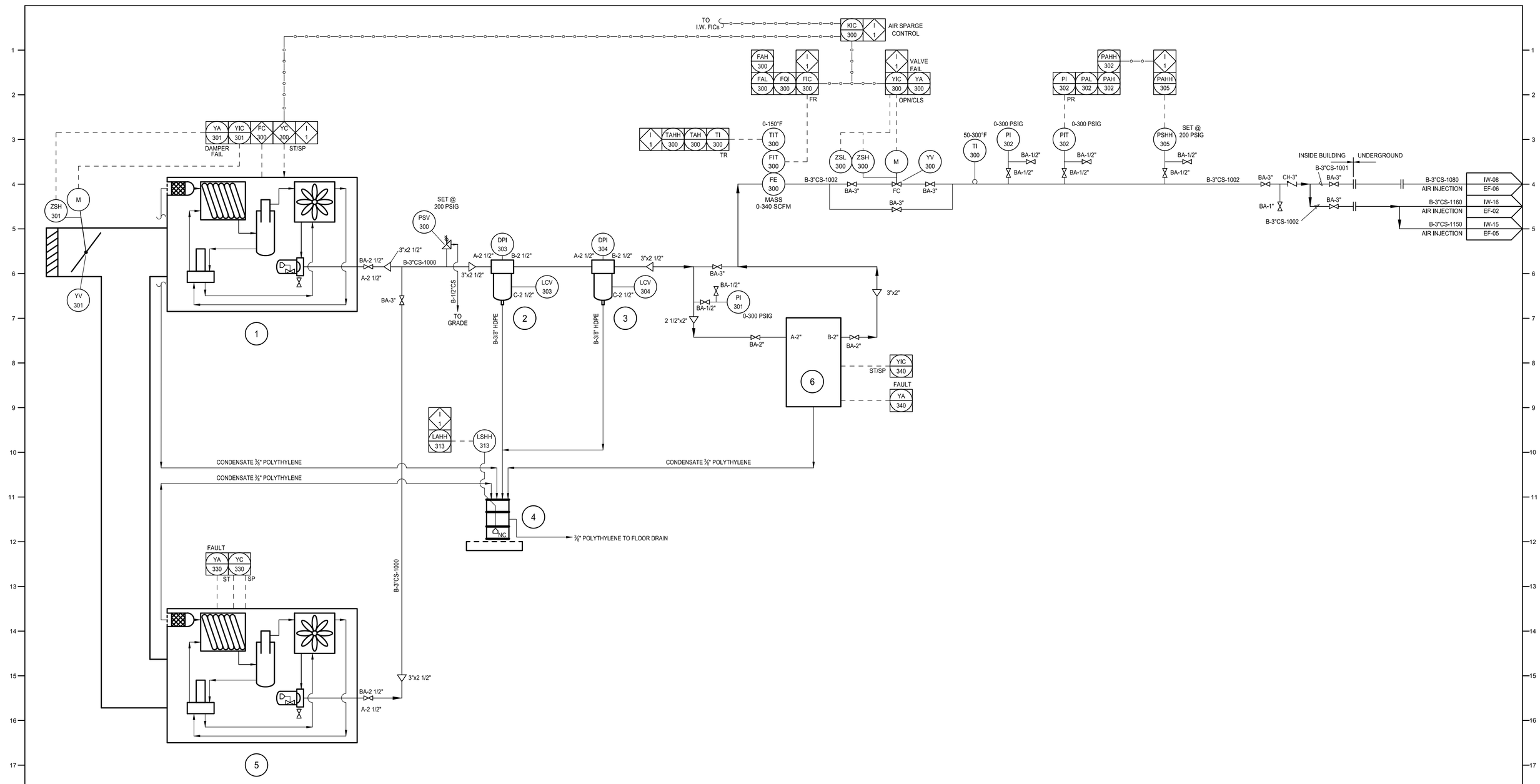
BIOSPAGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET LEGEND

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By:	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-00

06883-00(056)EF-BU000 AUG 29/2012



PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME	PRIMARY COMPRESSOR	MOISTURE/OIL SEPARATOR W/ AUTO DRAIN PREFILTER	MOISTURE/OIL SEPARATOR W/ AUTO DRAIN POLISHING FILTER	MOISTURE/OIL SEPARATOR DRUM W/ CONTAINMENT	AUXILIARY COMPRESSOR	COMPRESSED AIR DRYER						
DESCRIPTION: MATERIAL												
SIZE		2 1/2"	2 1/2"									
CAPACITY	337 SCFM	551 SCFM	551 SCFM	55 GALLON	100 SCFM @ 175 PSI	300 SCFM						
TEMP/PRESS	175 PSI	150°F/232 PSIG	150°F/232 PSIG		200 PSI	230 PSIG						
HP/V/RPM	100/460/2700				30/460/1765	460/3/60						
WEIGHT	3967 POUNDS	15 POUNDS	15 POUNDS		1292 POUNDS	735 POUNDS						
MANUFACTURE	ATLAS-COPCO				INGERSOLL-RAND	INGERSOLL-RAND						
MODEL	GA-75VSD	DD-260	PD-260		UP6-30	NVC300A						
VENDOR	GLAUBER	ATLAS COPCO	ATLAS COPCO		INGERSOLL-RAND	INGERSOLL-RAND						

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

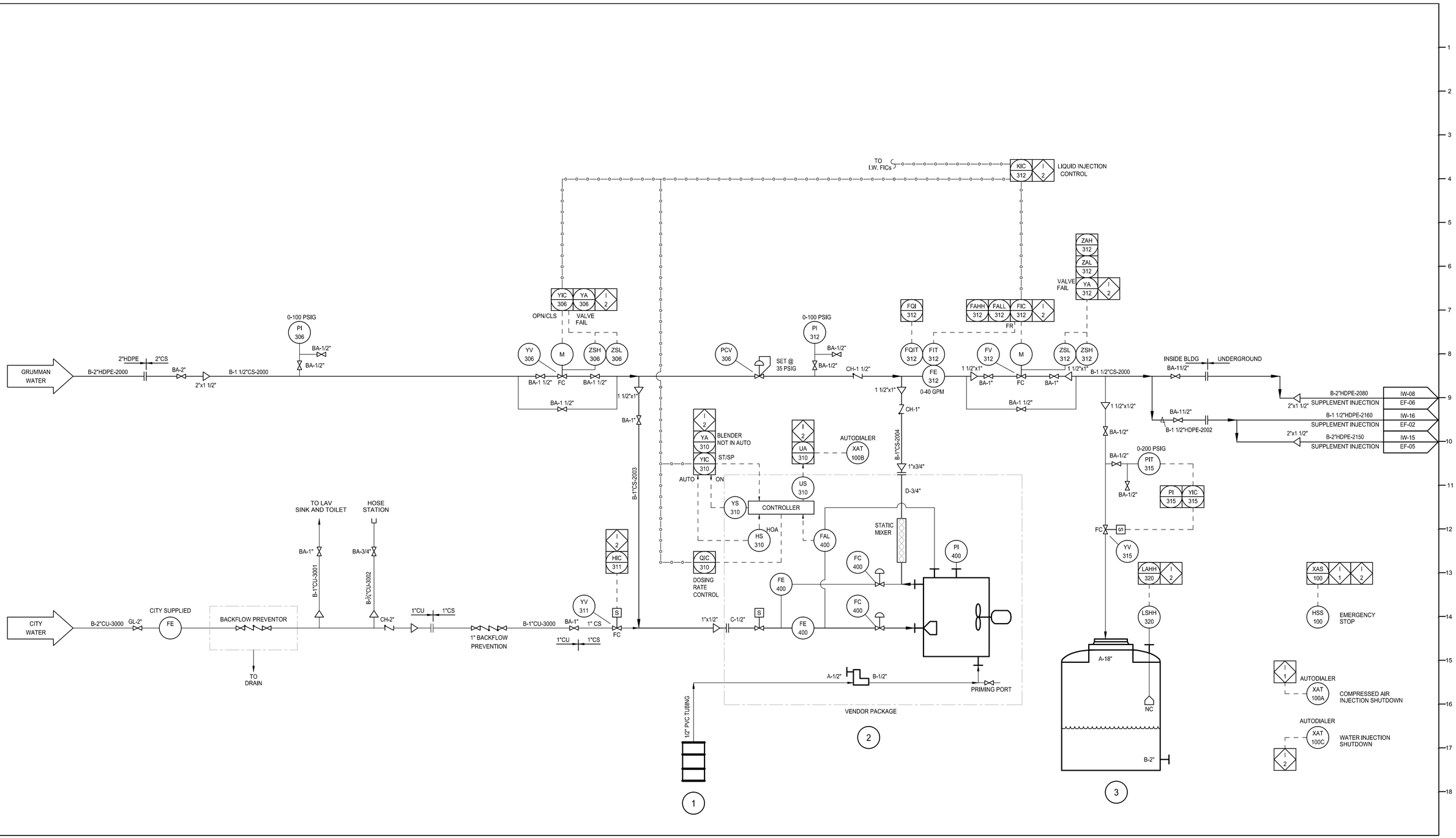
BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
PROCESS EQUIPMENT

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: MARCH 2010
Project Manager: J. KAY	Reviewed By:	Designed By: T. PESTKA	Drawn By: L. VAN NOTE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-01 S1

06883-00(056)EF-BU000 AUG 29/2012



PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME	SUPPLEMENT DRUM	SUPPLEMENT BLENDING UNIT	STORAGE TANK									
MATERIAL	MOLASSES	SS / PVC	54"D X 89"H									
SIZE		36"Wx16"Dx40"H	500 GALLONS									
CAPACITY		4 GPH SUPPLEMENT 300 GPH WATER										
TEMP/PRESS												
HP/V/RPM		15A/ 115 /										
WEIGHT												
MANUFACTURE		US FILTER STRANCO	IMG CORP.									
MODEL		M601-D4AA	DOUBLE ENCASEMENT									
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

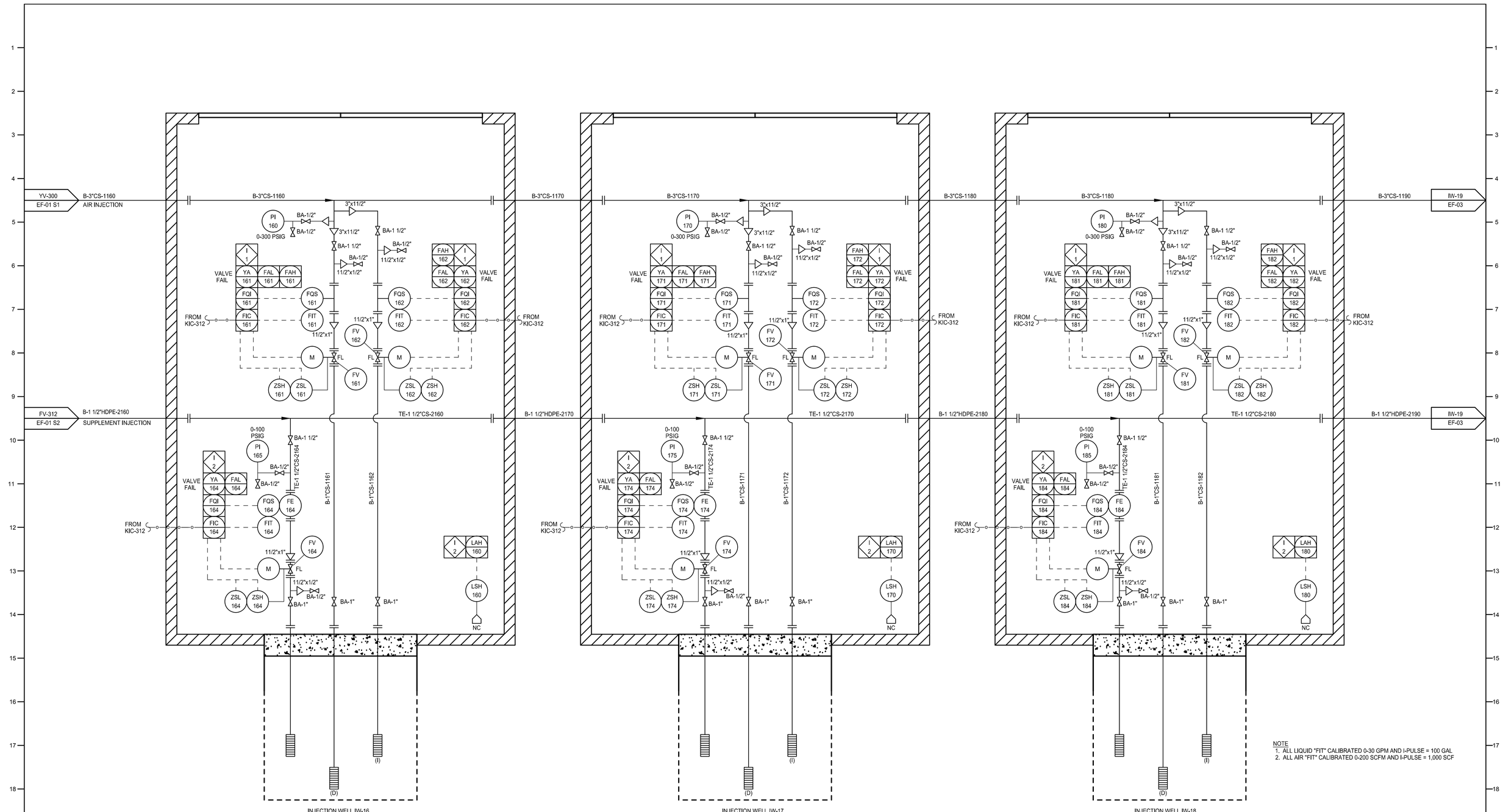
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
PROCESS EQUIPMENT

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-01 S2



PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/V/RPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

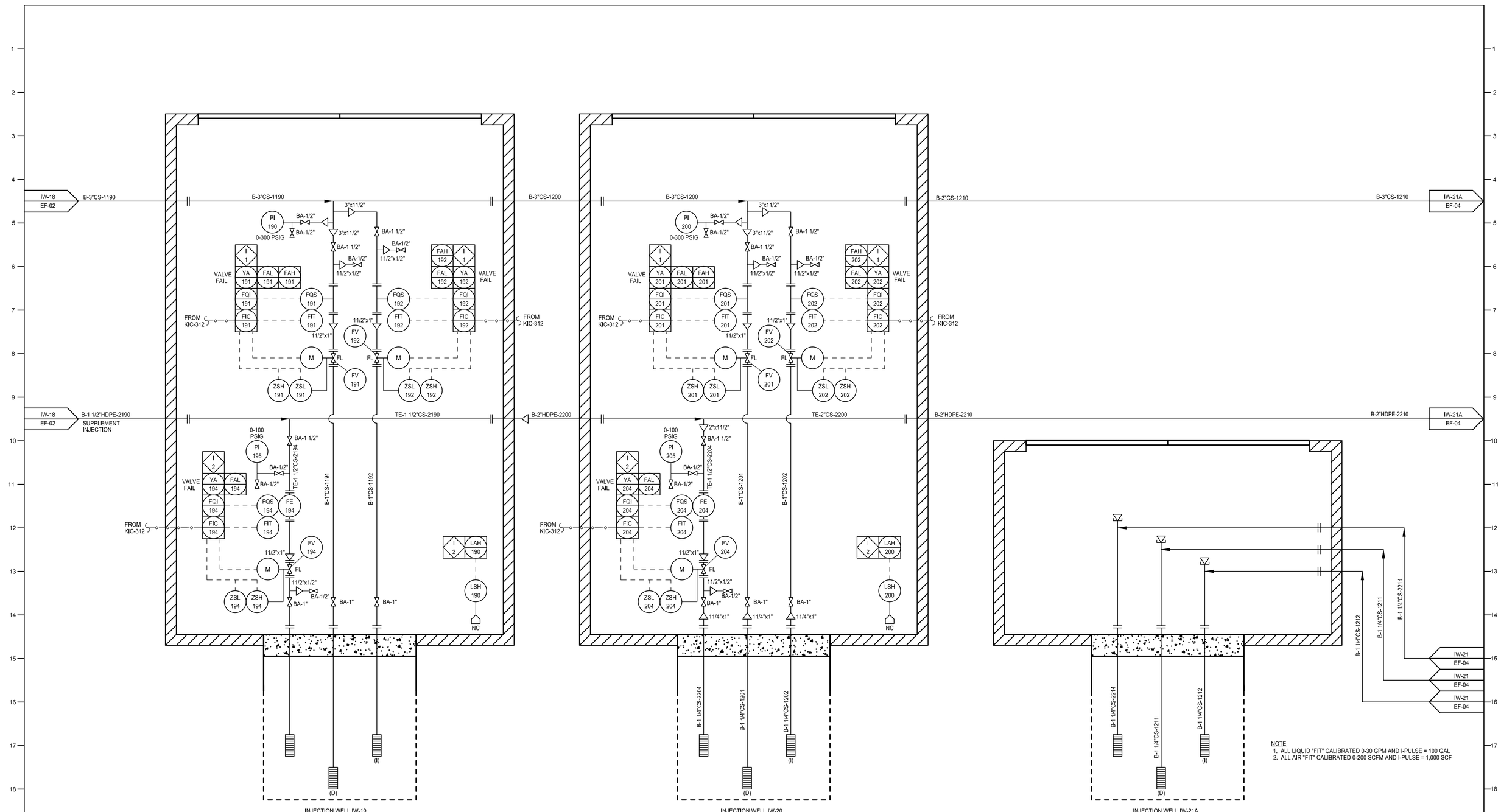
BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
MIDDLE FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-02

06883-00(056)EF-BU000 AUG 29/2012



PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/V/RPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

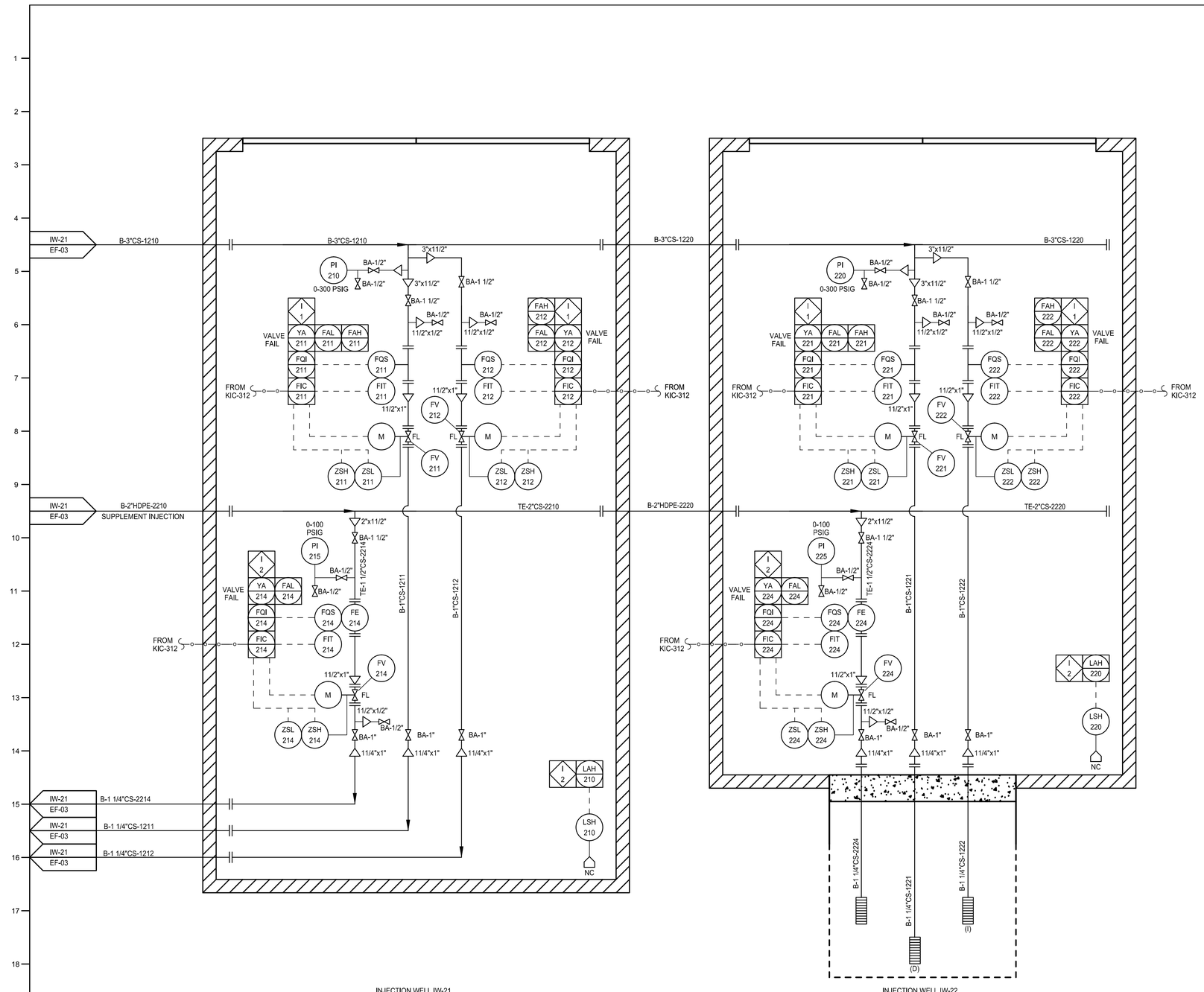
BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
MIDDLE FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-03

06883-00(056)EF-BU000 AUG 29/2012



INJECTION WELL IW-21

INJECTION WELL IW-22

NOTE
1. ALL LIQUID "FIT" CALIBRATED 0-30 GPM AND I-PULSE = 100 GAL
2. ALL AIR "FIT" CALIBRATED 0-200 SCFM AND I-PULSE = 1,000 SCF

PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/V/RPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

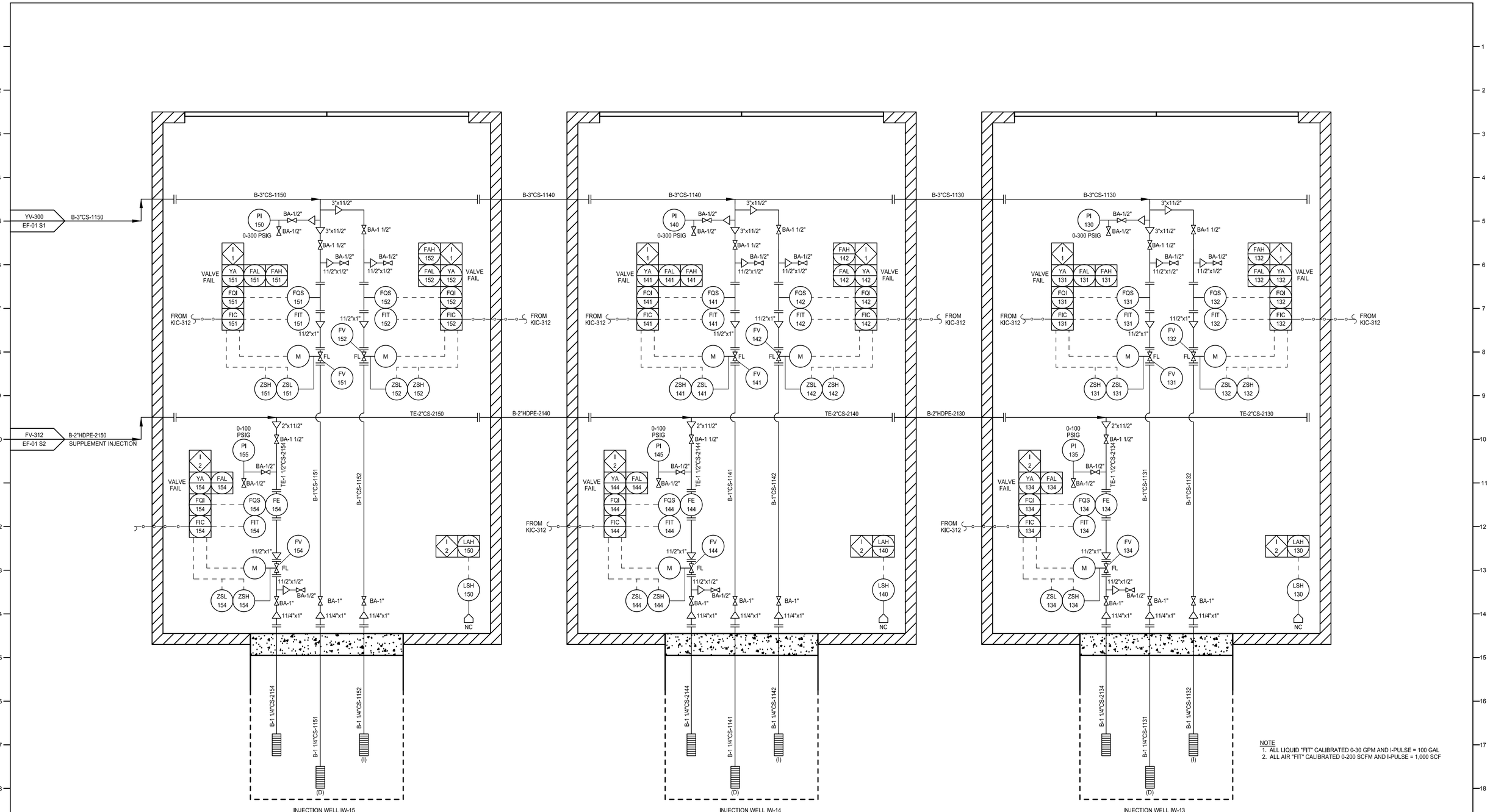
BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
MIDDLE FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-04

06883-00(056)EF-BU000 AUG 29/2012



PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/V/RPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
MIDDLE FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-05

YV-300
EF-01 S1

B-3"CS-1080
AIR INJECTION

B-3"CS-1080

B-3"CS-1070

B-3"CS-1070

B-3"CS-1060

B-3"CS-1060

B-3"CS-1050
AIR INJECTION

IW-05
EF-07

FV-312
EF-01 S2

B-2"HDPE-2080
SUPPLEMENT
INJECTION

TE-2"CS-2080

B-2"HDPE-2070

TE-2"CS-2070

B-2"HDPE-2060

TE-2"CS-2060

B-2"HDPE-2050
SUPPLEMENT INJECTION

IW-05
EF-07

PI 070
0-300 PSIG
BA-1/2"
3"x11/2"
BA-1 1/2"
11/2"x1/2"
VALVE FAIL
I 1
YA 071
FAL 071
FAH 071
FQI 071
FIC 071
FQS 071
FIT 071
11/2"x1"
FV 071
M
FL
ZSH 071
ZSL 071
FROM KIC-312
FAH 072
FAL 072
YA 072
FQI 072
FIC 072
FQS 072
FIT 072
FV 072
ZSL 072
ZSH 072

PI 060
0-300 PSIG
YA 061
FAL 061
FAH 061
FQI 061
FIC 061
FQS 061
FIT 061
FV 061
ZSH 061
ZSL 061
FAH 062
FAL 062
YA 062
FQI 062
FIC 062
FQS 062
FIT 062
FV 062
ZSL 062
ZSH 062

0-100 PSIG
PI 075
2"x11/2"
BA-1 1/2"
TE-1 1/2"CS-2074
I 2
YA 074
FAL 074
FQI 074
FIC 074
FQS 074
FE 074
FIT 074
FV 074
ZSL 074
ZSH 074
B-1"CS-1071
B-1"CS-1072
I 2 LAH 070
LSH 070
NC
B-1 1/4"CS-2074
B-1 1/4"CS-1071
B-1 1/4"CS-1072
(D)
(I)

PI 065
TE-1 1/2"CS-2064
YA 064
FAL 064
FQI 064
FIC 064
FQS 064
FE 064
FIT 064
FV 064
ZSL 064
ZSH 064
B-1"CS-1061
B-1"CS-1062
I 2 LAH 060
LSH 060
B-1 1/4"CS-2064
B-1 1/4"CS-1061
B-1 1/4"CS-1062

INJECTION WELL IW-08

INJECTION WELL IW-07

INJECTION WELL IW-06

NOTE
1. ALL LIQUID "FIT" CALIBRATED 0-30 GPM AND I-PULSE = 100 GAL
2. ALL AIR "FIT" CALIBRATED 0-200 SCFM AND I-PULSE = 1,000 SCF

PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/V/RPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
NORTH FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-06

06883-00(056)EF-BU000 AUG 29/2012

PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/VRPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

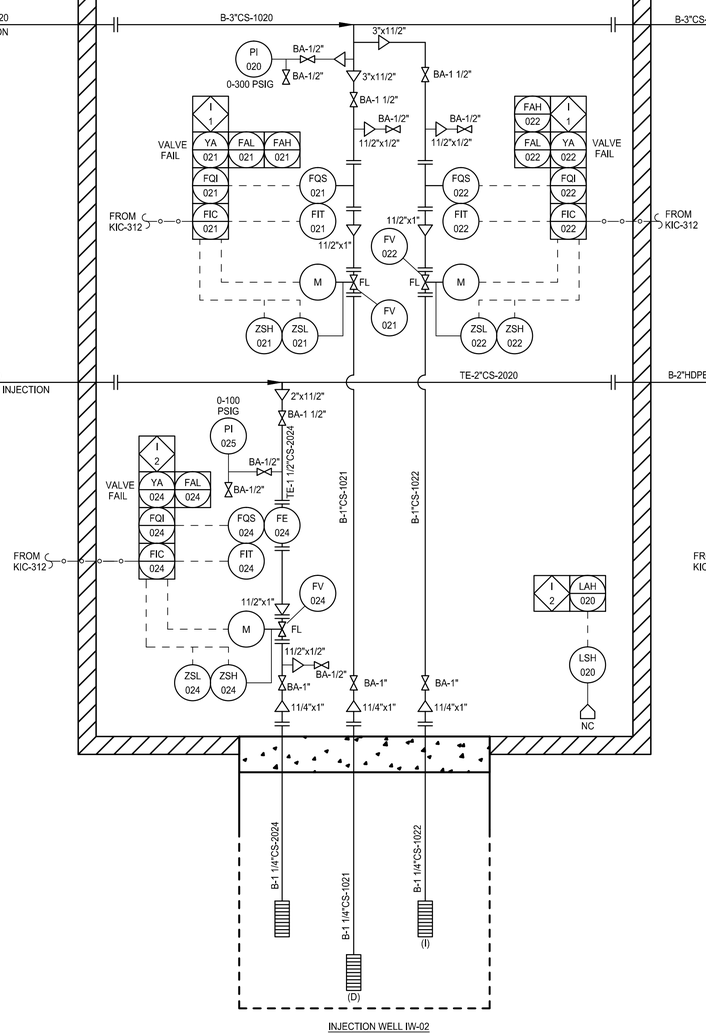
BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
NORTH FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-07

06883-00(056)EF-BU000 AUG 29/2012



NOTE
1. ALL LIQUID "FIT" CALIBRATED 0-30 GPM AND I-PULSE = 100 GAL
2. ALL AIR "FIT" CALIBRATED 0-200 SCFM AND I-PULSE = 1,000 SCF

PLANT ID.	1	2	3	4	5	6	7	8	9	10	11	12
NAME												
DESCRIPTION: MATERIAL												
SIZE												
CAPACITY												
TEMP/PRESS												
HP/VRPM												
WEIGHT												
MANUFACTURE												
MODEL												
VENDOR												

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

AS BUILT
RECORD DRAWING

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

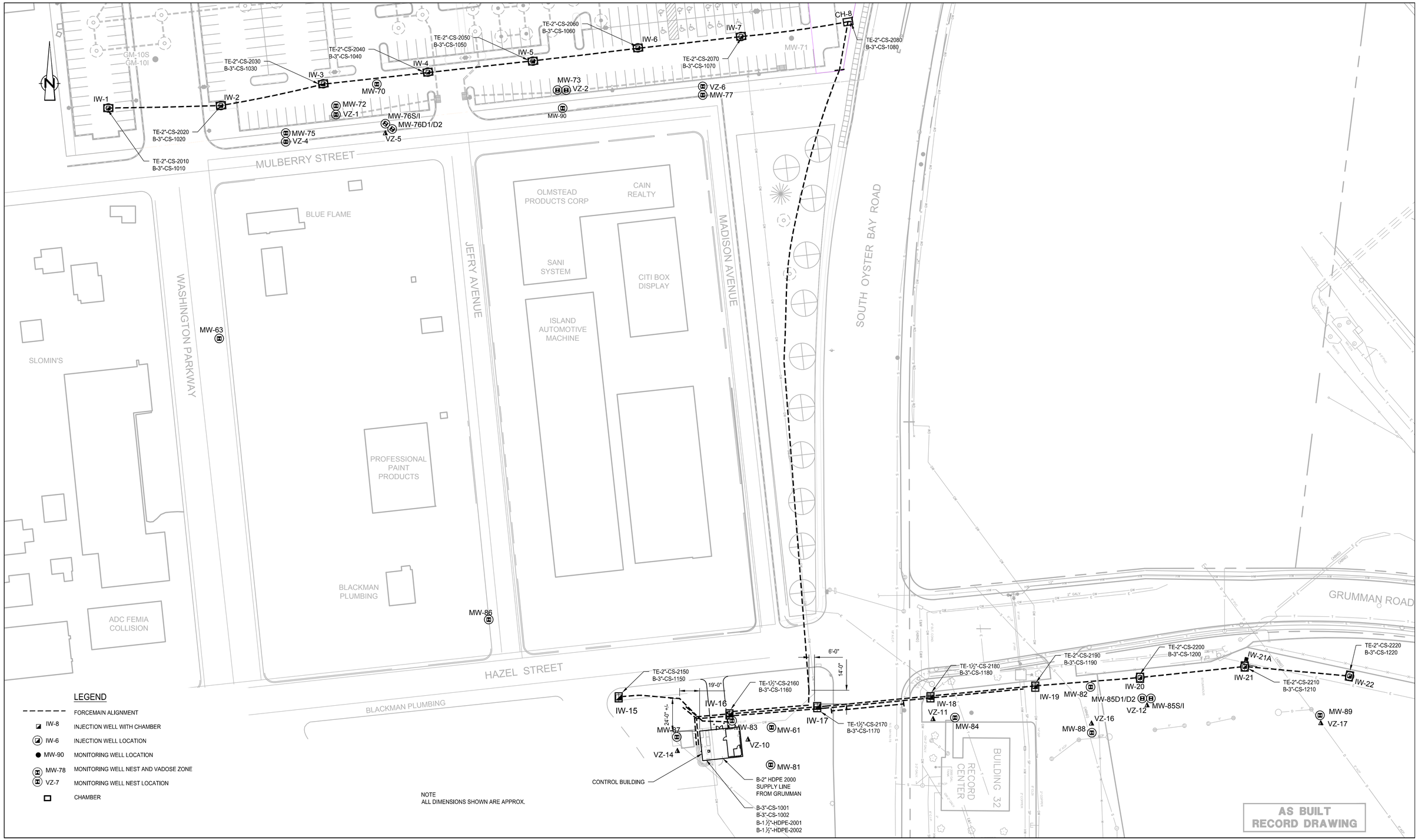
BIOSPARGE TREATMENT SYSTEM

ENGINEERING FLOW SHEET
NORTH FENCE INJECTION WELLS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B.A. BEEBE	Drawn By: B.A. BEEBE
Scale:	Project No: 06883-00	Report No: 056	Drawing No: EF-08

06883-00(056)EF-BU000 AUG 29/2012



LEGEND

- FORCEMAIN ALIGNMENT
- IW-8 — INJECTION WELL WITH CHAMBER
- IW-6 — INJECTION WELL LOCATION
- MW-90 — MONITORING WELL LOCATION
- MW-78 — MONITORING WELL NEST AND VADOSE ZONE
- VZ-7 — MONITORING WELL NEST LOCATION
- CHAMBER

NOTE
ALL DIMENSIONS SHOWN ARE APPROX.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

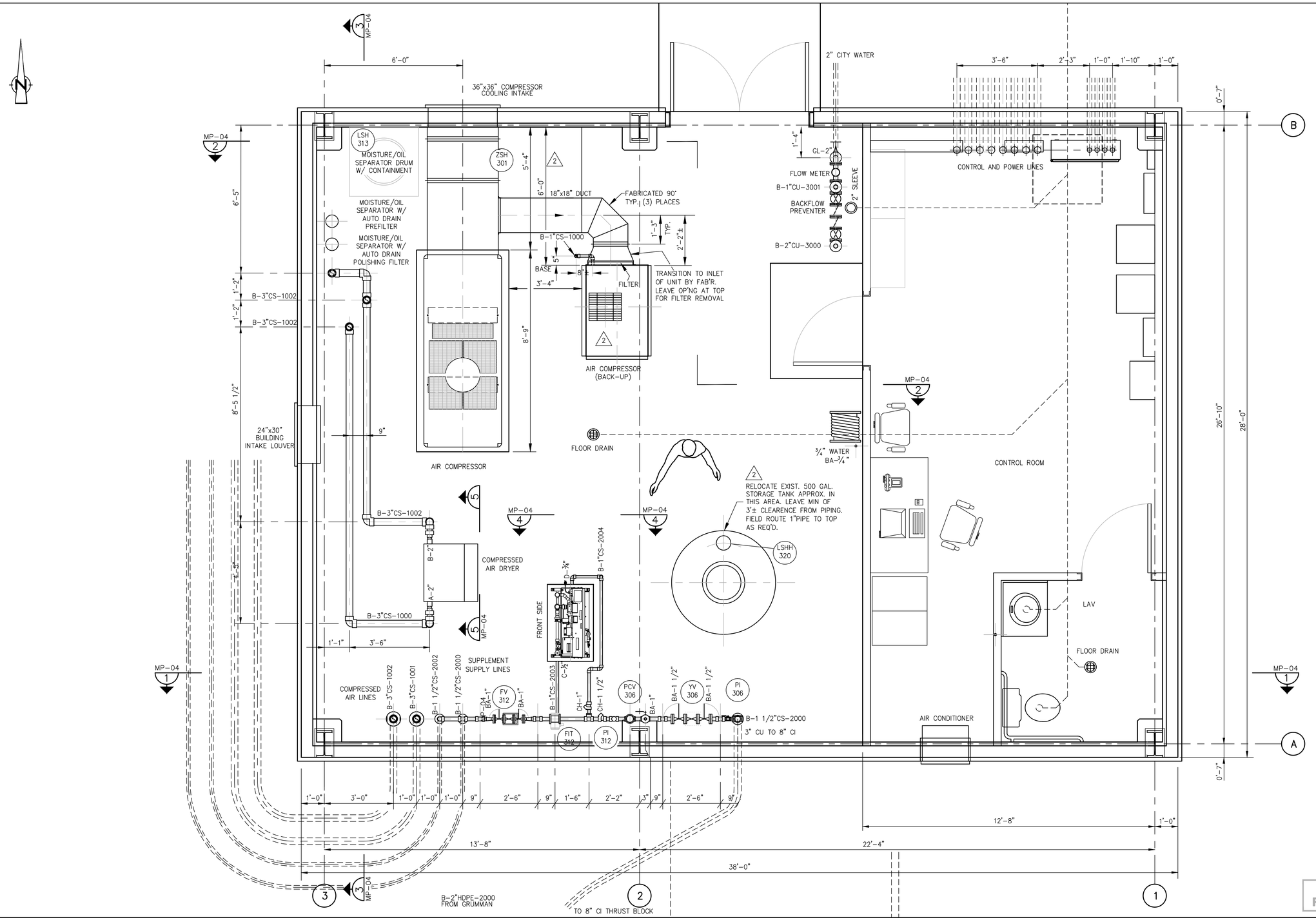
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING AND WELL FIELD PIPING PLAN

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: OCTOBER 2010
Project Manager: J. KAY	Reviewed By:	Designed By:	Drawn By: L. VAN NOTE
Scale: 1" = 40'	Project No: 06883-00	Report No: 056	Drawing No: MP-01



AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

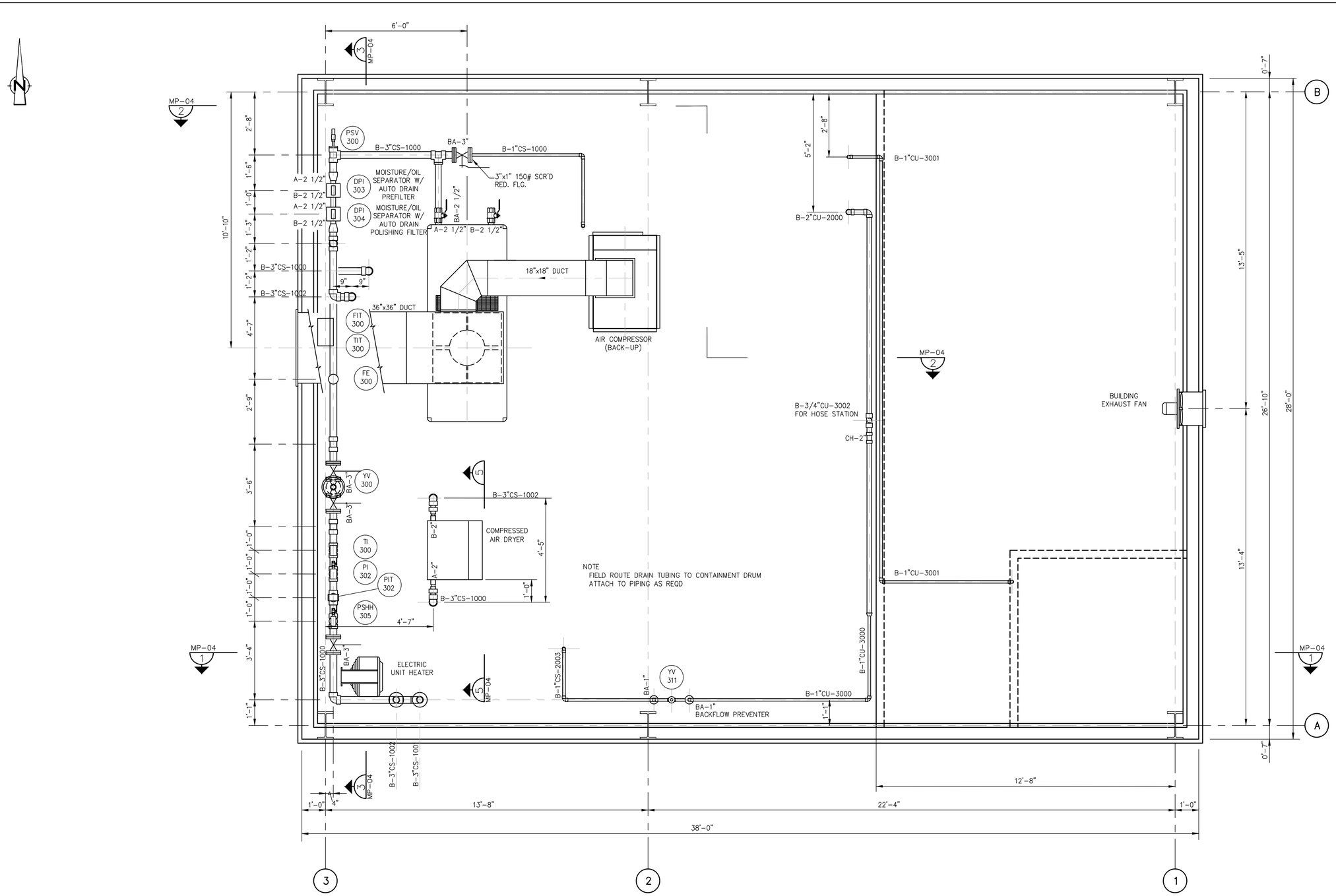
No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING EQUIPMENT LAYOUT AT GRADE

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: 1/2" = 1'-0"	Project No: 06883-00	Report No: 056	Drawing No: MP-02



AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

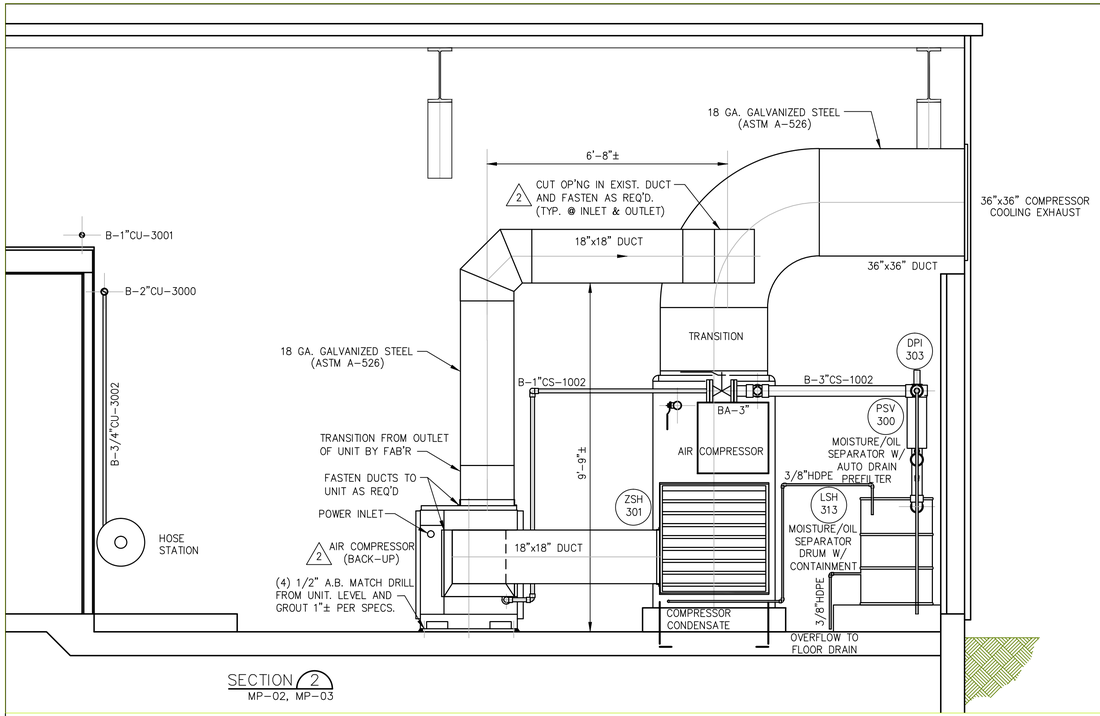
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

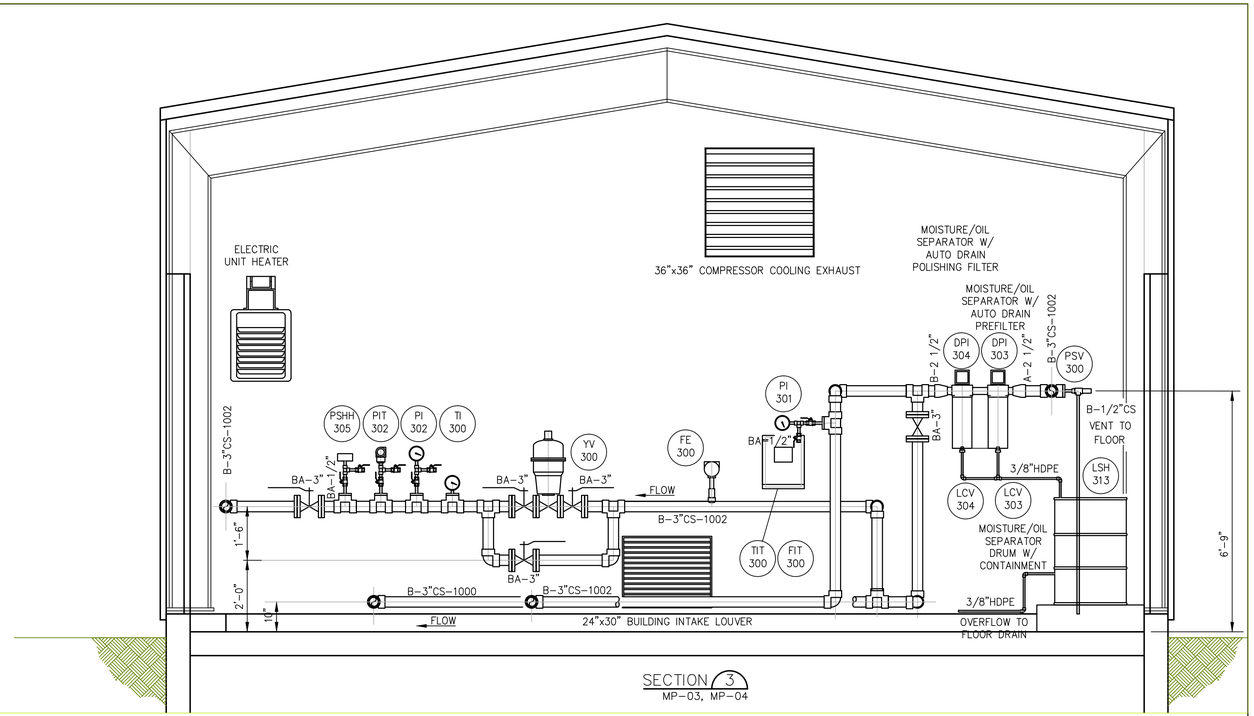
CONTROL BUILDING
EQUIPMENT LAYOUT (UPPER)

CRA Infrastructure & Engineering, Inc.

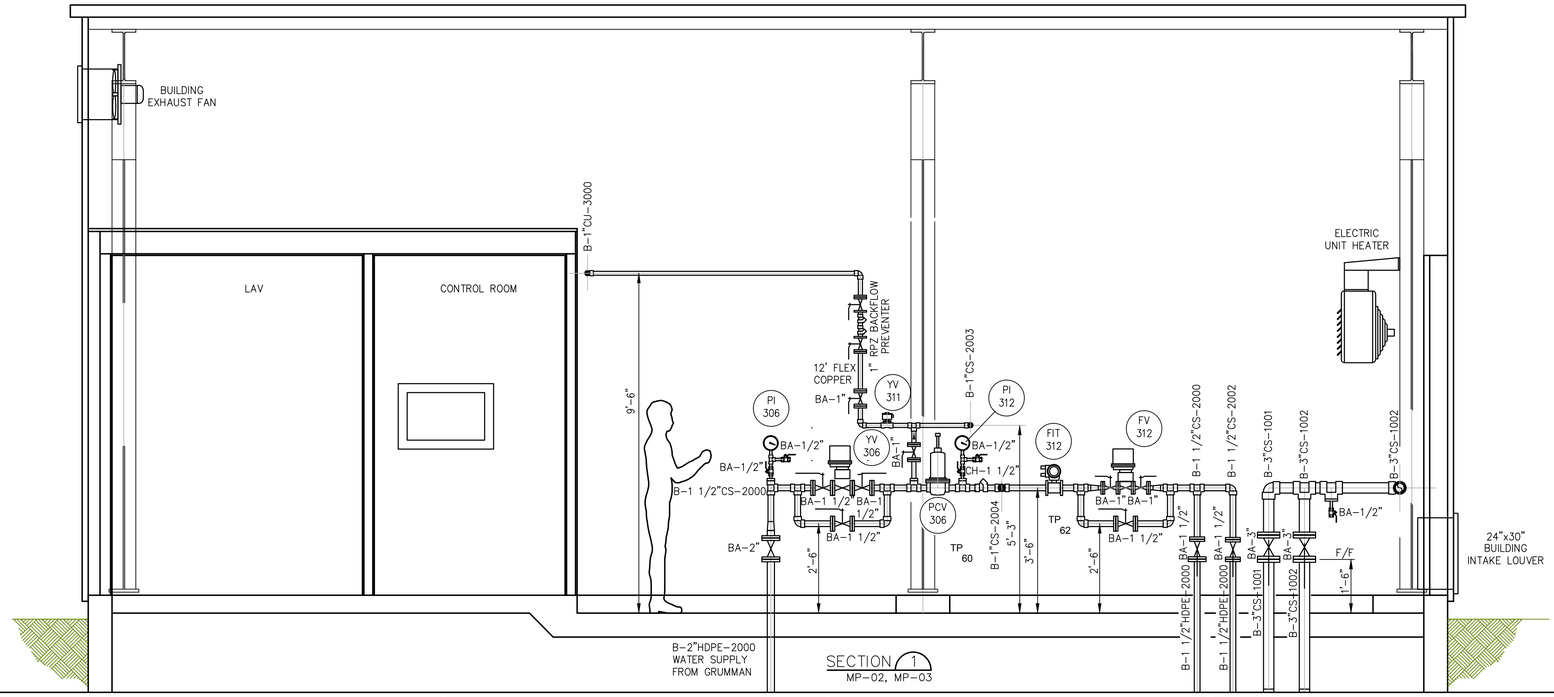
Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: 1/2" = 1'-0"	Project No: 06883-00	Report No: 056	Drawing No: MP-03



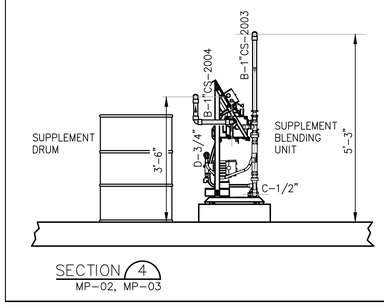
SECTION 2
MP-02, MP-03



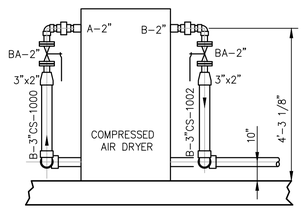
SECTION 3
MP-03, MP-04



SECTION 1
MP-02, MP-03



SECTION 4
MP-02, MP-03



SECTION 5
MP-02, MP-03

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

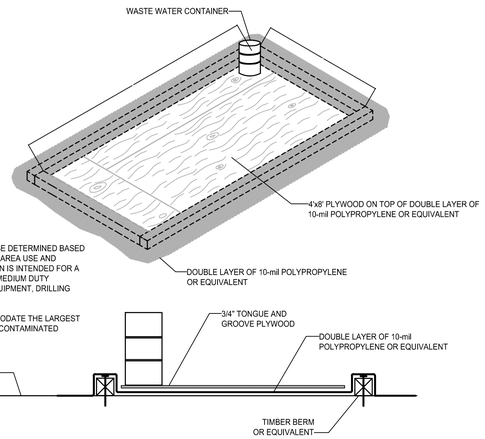
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

CONTROL BUILDING EQUIPMENT SECTIONS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: 1/2" = 1'-0"	Project No: 06883-00	Report No: 056	Drawing No: MP-04

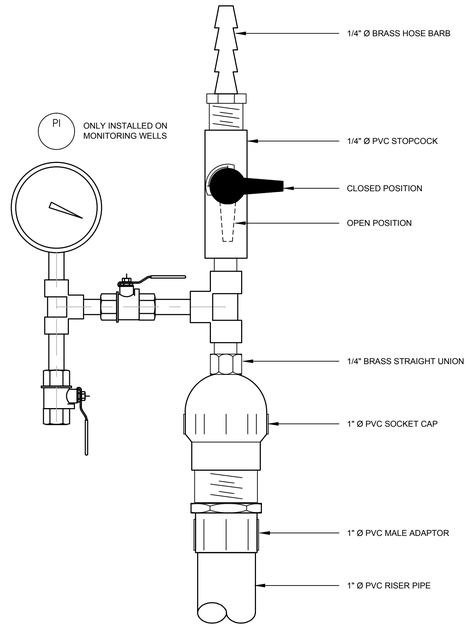


NOTES:

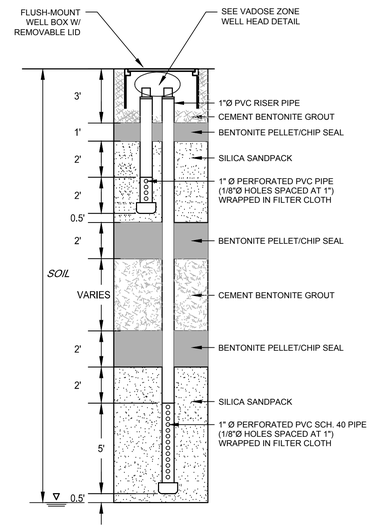
CONSTRUCTION MATERIALS TO BE DETERMINED BASED ON DESIRED DECONTAMINATION AREA USE AND DURATION. THE EXAMPLE SHOWN IS INTENDED FOR A SHORT TERM DURATION, AND A MEDIUM DUTY APPLICATION. (I.E. SAMPLING EQUIPMENT, DRILLING TOOLS, AUGERS)

FACILITY TO BE SIZED TO ACCOMODATE THE LARGEST PIECE OF ON-SITE POTENTIALLY CONTAMINATED EQUIPMENT.

TYPICAL DECONTAMINATION AREA (MEDIUM DUTY)

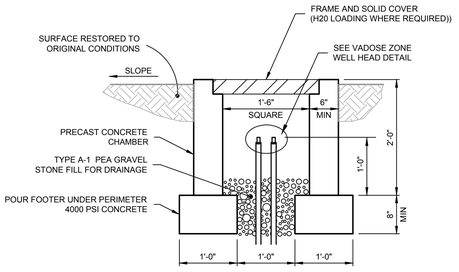


VADOSE ZONE WELL HEAD DETAIL

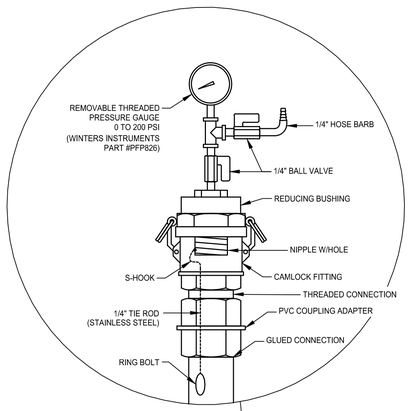


TYPICAL VADOSE ZONE MONITORING WELL DETAIL

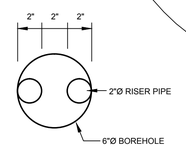
NOT TO SCALE



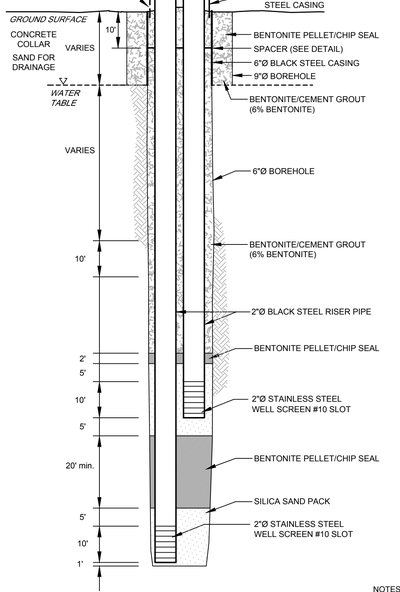
VADOSE ZONE MONITORING WELL VAULT



GROUNDWATER MONITORING WELL HEAD DETAIL



SPACER DETAIL

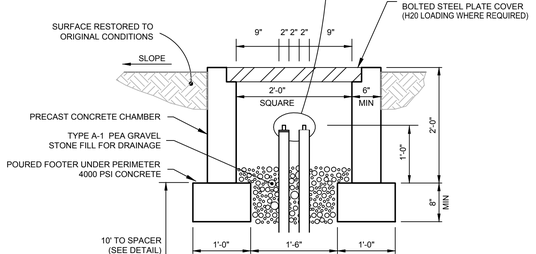


TYPICAL GROUNDWATER MONITORING WELL DETAIL

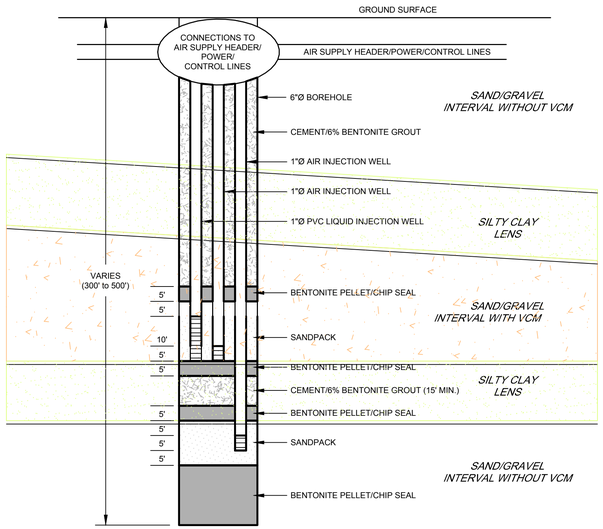
NOT TO SCALE

NOTES:

1. WELLS EXTEND TO DEPTH RANGING FROM 250' TO 450'
2. NUMBER OF MONITORED INTERVALS DETERMINED IN THE FIELD

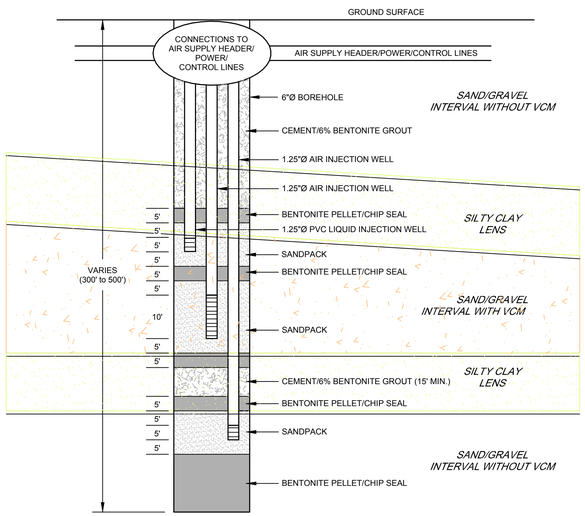


GROUNDWATER MONITORING WELL VAULT



TYPICAL INJECTION WELL DETAIL (IW-16, 17, 18 AND 19)

NOT TO SCALE



TYPICAL INJECTION WELL DETAIL (IW-1 THRU 7, 15, 20 THRU 22)

NOT TO SCALE

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

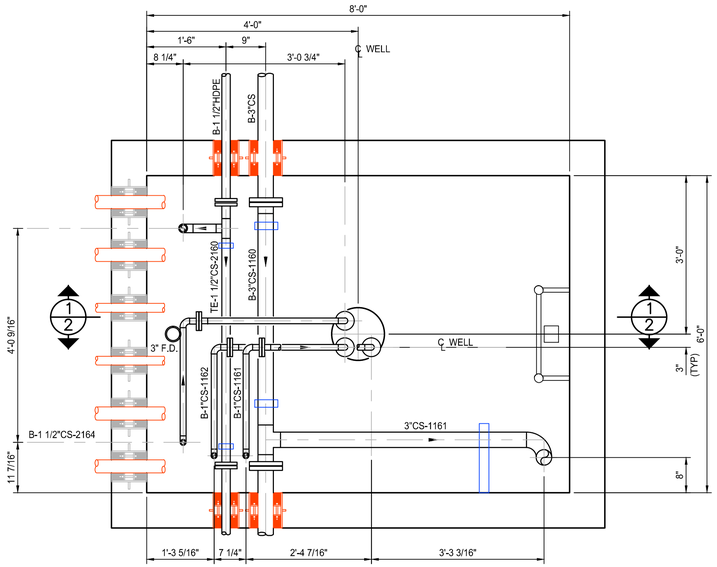
BIOSPARGE TREATMENT SYSTEM

WELL DETAILS

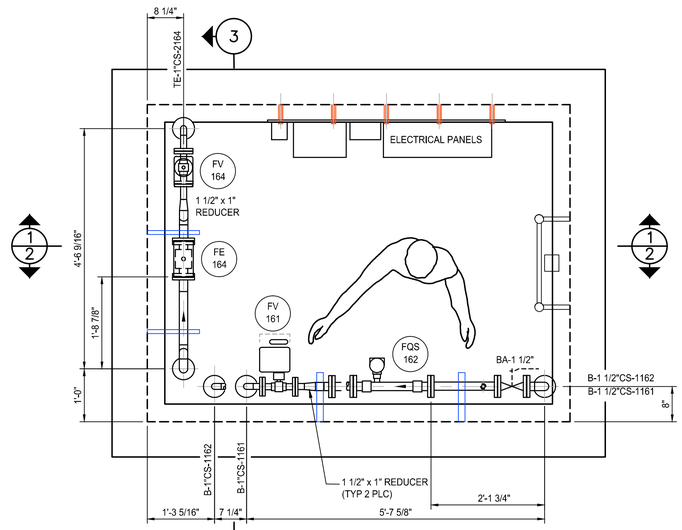
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: AUGUST 2012
Project Manager: J. KAY	Reviewed By:	Designed By:	Drawn By:
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-05

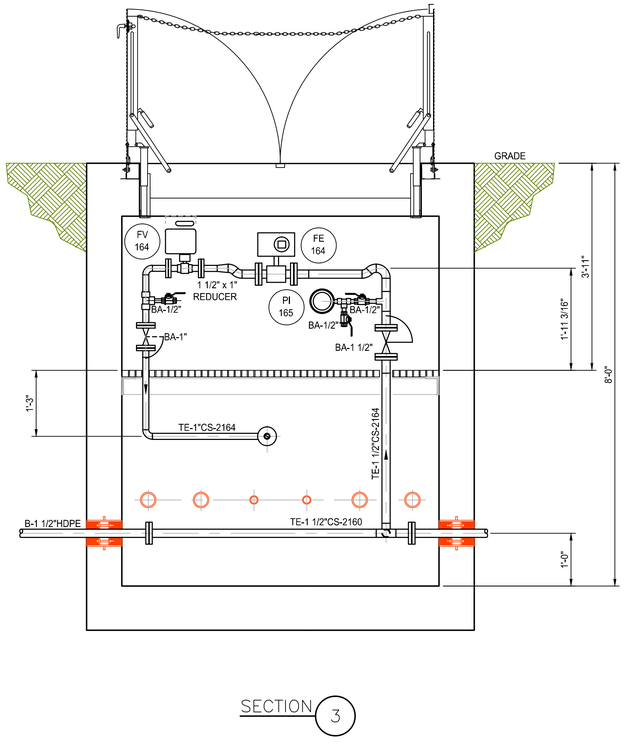
WELL NUMBER	LINE NUMBER	INSTRUMENT NUMBER				"TIE POINT" NUMBER
		PI	FE	FV	FSQ	
IW-16	TE-1 1/2"CS-2160					TP-4, TP-56
	B-3"-CS-1160	160				TP-6, TP-8
	TE-1 1/2"CS-2164	165	164	164		TP-5
	B-1 1/2"CS-1161			161	161	TP-7
	B-1 1/2"CS-1162			162	162	TP-9
IW-17	TE-1 1/2"CS-2170					TP-10, TP-57
	B-3"-CS-1170	170				TP-12, TP-14
	TE-1 1/2"CS-2174	175	174	174		TP-11
	B-1 1/2"CS-1171			171	171	TP-13
	B-1 1/2"CS-1172			172	172	TP-15
IW-18	TE-1 1/2"CS-2180					TP-16,TP-58
	B-3"-CS-1180	180				TP-18,TP-20
	TE-1 1/2"CS-2184	185	184	184		TP-17
	B-1 1/2"CS-1181			181	181	TP-19
	B-1 1/2"CS-1182			182	182	TP-21
IW-19	TE-1 1/2"CS-2190					TP-22
	B-3"-CS-1190	190				TP-24
	TE-1 1/2"CS-2194	195	194	194		TP-23
	B-1 1/2"CS-1191			191	191	TP-25
	B-1 1/2"CS-1192			192	192	TP-27



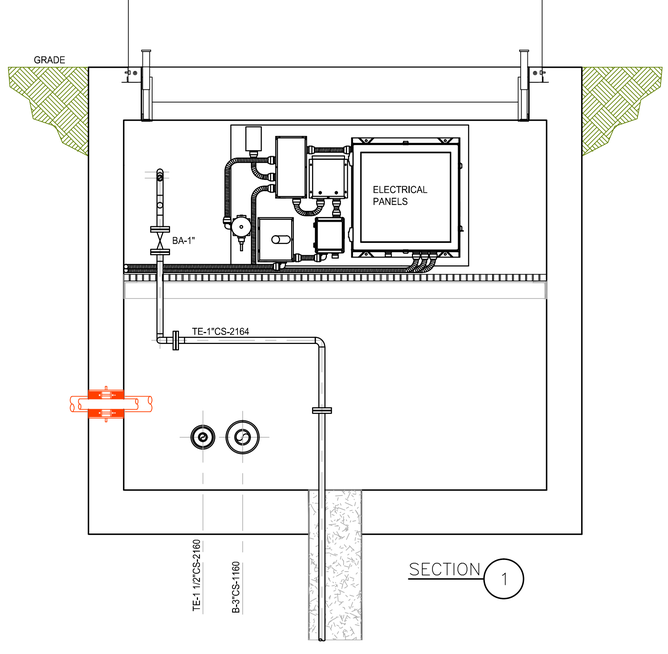
3 PLAN BELOW THE GRATING



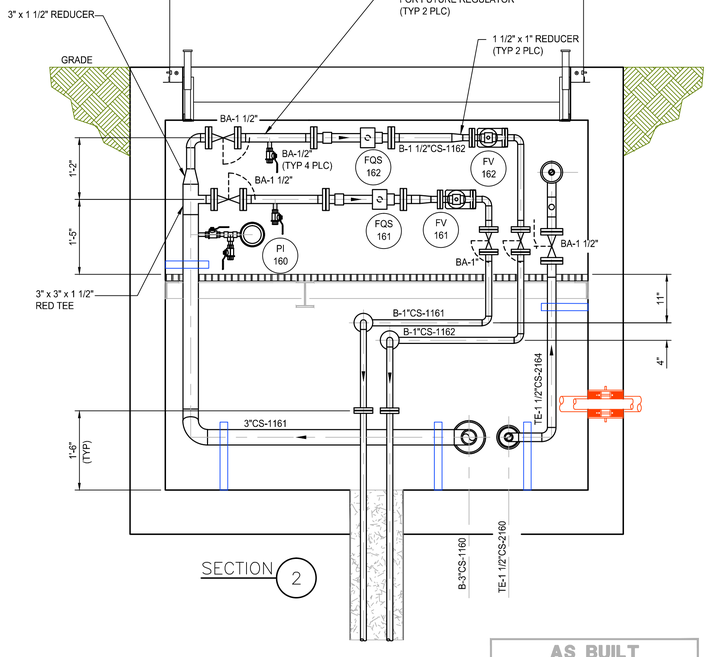
3 PLAN ABOVE THE GRATING



SECTION 3



SECTION 1



SECTION 2

AS BUILT
RECORD DRAWING

NOTES:

1. THE VAULT SHOWN ABOVE IS FOR WELL IW-16. ALL VAULTS WERE PIPED AS PER THIS TYPICAL DRAWING. INSTRUMENT AND LINE NUMBERS FOR THE OTHER VAULTS MAY BE FOUND ON TABLE.
2. WELLS IW-01 THRU IW-07 ARE LOCATED NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE NORTH SIDE OF THE VAULT.
3. WELLS IW-15 THRU IW-22 ARE LOCATED JUST NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE SOUTH SIDE OF THE VAULT.
4. ALL AIR, LIQUID, CONTROL, AND ELECTRICAL LINES PASS THRU THE VAULTS, EXCEPT IW-1, IW-8, IW-15, AND IW-22. CONTRACTOR PLUGGED ANY ADDITIONAL HOLES IN THESE VAULTS.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

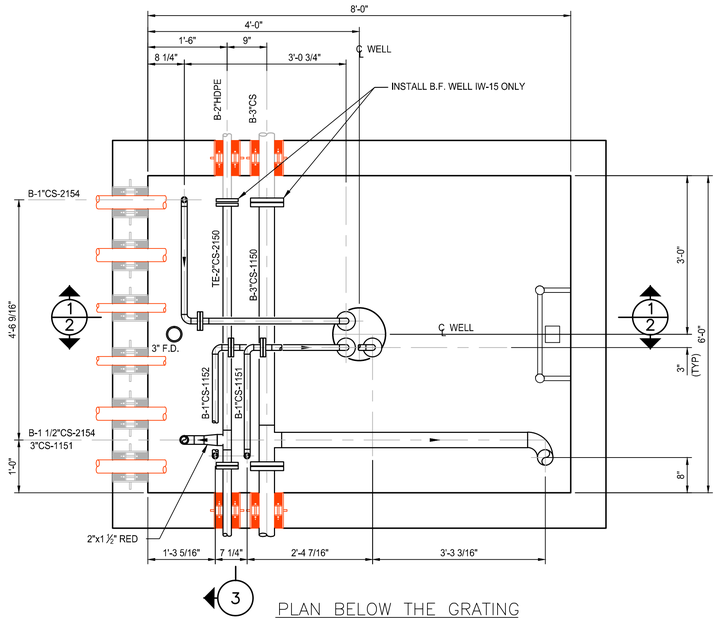
BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS IW-16, 17, 18 & 19
PLAN AND SECTIONS

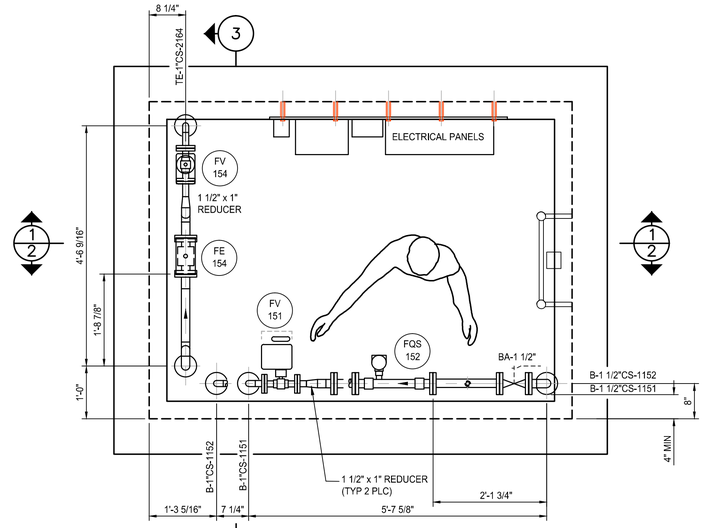
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-06

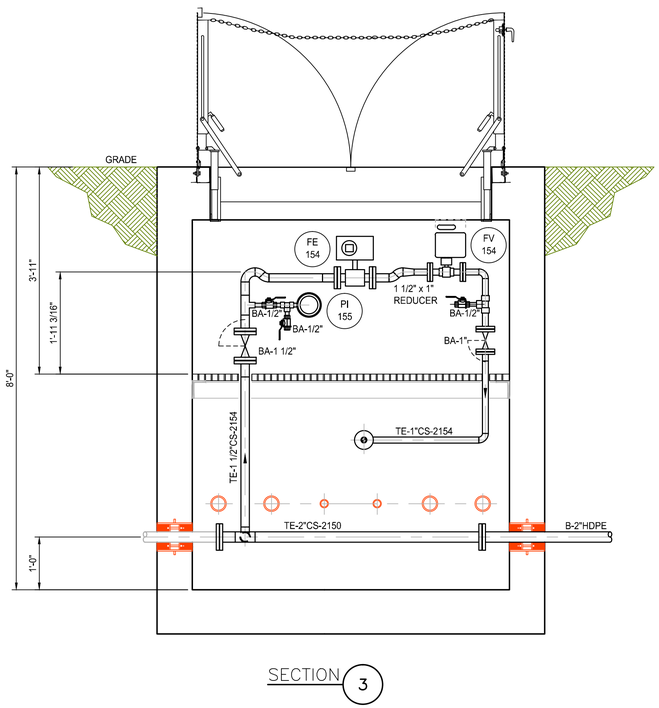
WELL NUMBER	LINE NUMBER	INSTRUMENT NUMBER			
		PI	FE	FV	FSQ
IW-15	TE-2"CS-2150				
	B-3"CS-1150	150			
	TE-1 1/2"CS-2154	155	154	154	
	B-1 1/2"CS-1151			151	151
	B-1 1/2"CS-1152			152	152
IW-20	TE-2"CS-2200				
	B-3"CS-1200	200			
	TE-1 1/2"CS-2204	205	204	204	
	B-1 1/2"CS-1201			201	201
	B-1 1/2"CS-1202			202	202
IW-22	TE-2"CS-2210				
	B-3"CS-1220	220			
	TE-1 1/2"CS-2224	225	224	224	
	B-1 1/2"CS-1221			221	221
	B-1 1/2"CS-1222			222	222



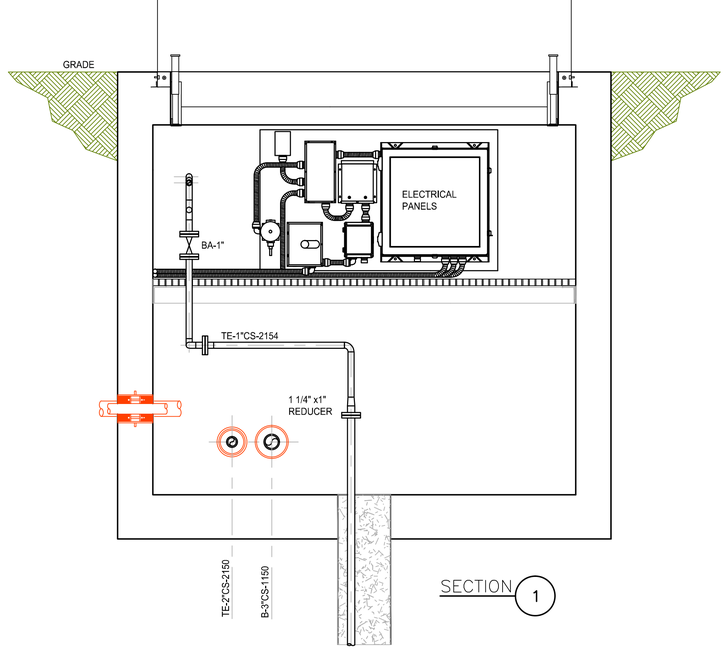
PLAN BELOW THE GRATING



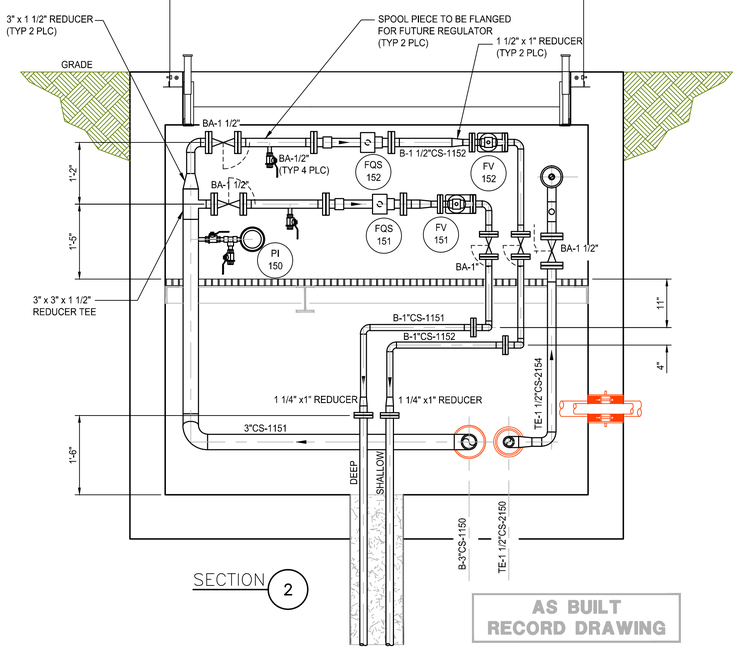
PLAN ABOVE THE GRATING



SECTION 3



SECTION 1



SECTION 2

AS BUILT RECORD DRAWING

NOTES:

1. THE VAULT SHOWN ABOVE IS FOR WELL IW-15. ALL VAULTS WERE PIPED AS PER THIS TYPICAL DRAWING. INSTRUMENT AND LINE NUMBERS FOR THE OTHER VAULTS MAY BE FOUND ON TABLE.
2. WELLS IW-01 THRU IW-07 ARE LOCATED NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE NORTH SIDE OF THE VAULT.
3. WELLS IW-15 THRU IW-22 ARE LOCATED JUST NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE SOUTH SIDE OF THE VAULT.
4. ALL AIR, LIQUID, CONTROL, AND ELECTRICAL LINES PASS THRU THE VAULTS, EXCEPT IW-1, IW-8, IW-15, AND IW-22. CONTRACTOR PLUGGED ANY ADDITIONAL HOLES IN THESE VAULTS.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

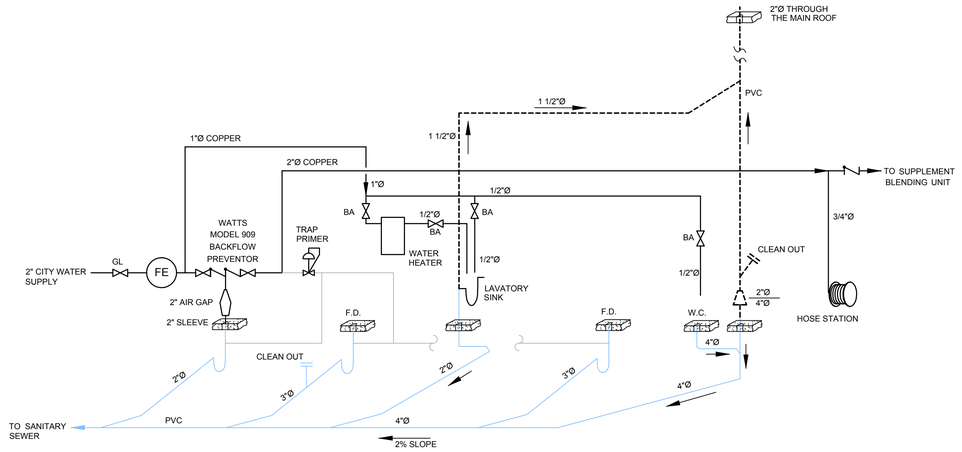
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS IW-15, 20 AND 22
PLAN AND SECTIONS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: NONE	Project No: 06883-00	Report No: 055	Drawing No: MP-07



GENERAL PLUMBING NOTES:

1. ALL WORKS MUST COMPLY WITH NEW YORK PLUMBING CODE.
2. REFER TO WRITTEN SPECIFICATIONS FOR SPECS ON FIXTURES, PIPING MATERIALS, INSTALLATIONS, ETC., UNLESS INDICATED OTHERWISE.
3. THESE PLANS MAKE NO ATTEMPT TO SHOW ALL ITEMS REQUIRED FOR COMPLETE INSTALLATION. ALL FIXTURES MUST BE ROUGHED IN AND INSTALLED IN STRICT ACCORDANCE WITH MFG'S SHOP DWGS AND INSTALLATION PROCEDURES. CONTRACTOR MUST FURNISH AND INSTALL ALL ITEMS, FITTINGS, AND MISCELLANEOUS HARDWARE NEEDED FOR PLUMBING-CODE COMPLIANCE AND COMPLETE OPERATIONAL SERVICE AND MAINTENANCE.

LAVATORY PLUMBING

NOT TO SCALE

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

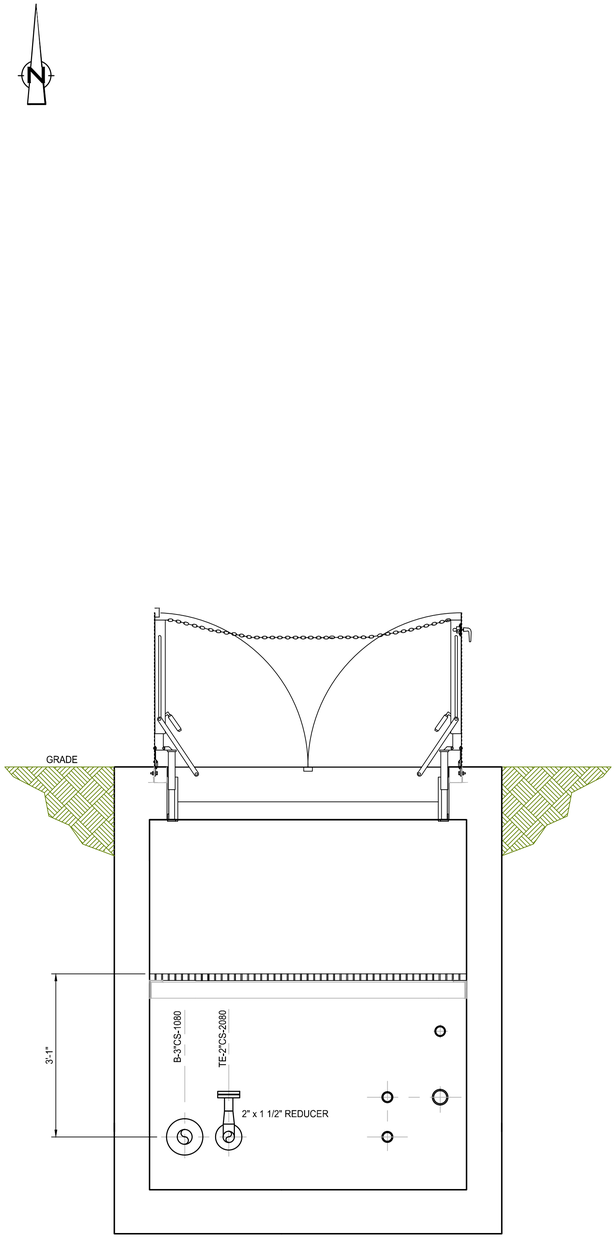
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

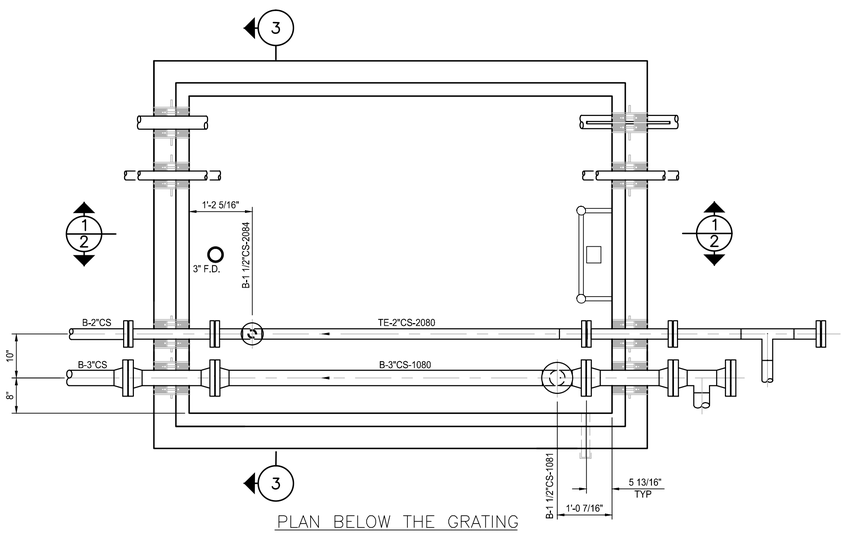
LAVATORY PLUMBING

CRA Infrastructure & Engineering, Inc.

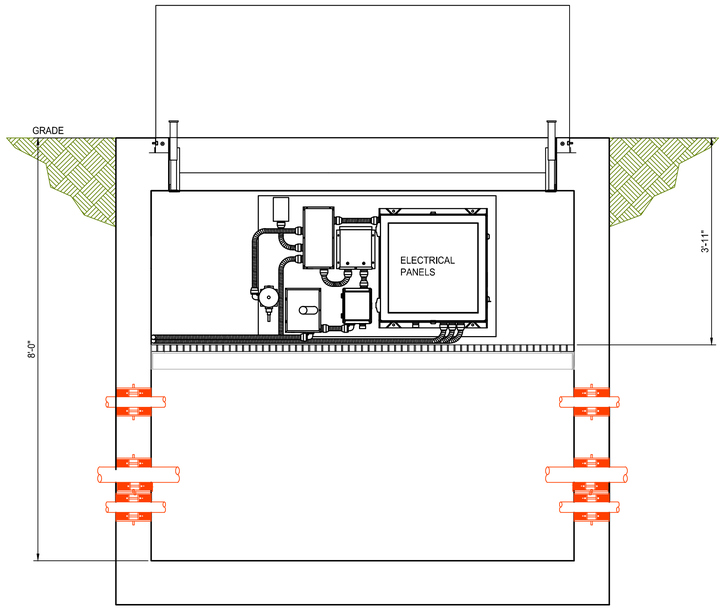
Source Reference:			Date: AUGUST 2012
Project Manager: J. KAY	Reviewed By:	Designed By:	Drawn By:
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-08



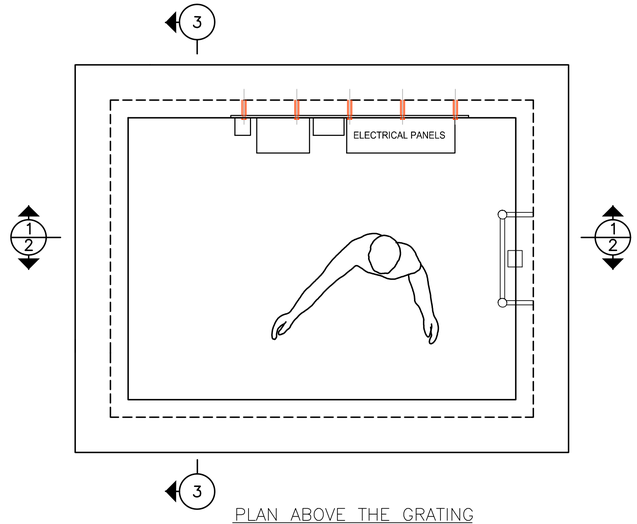
SECTION 3



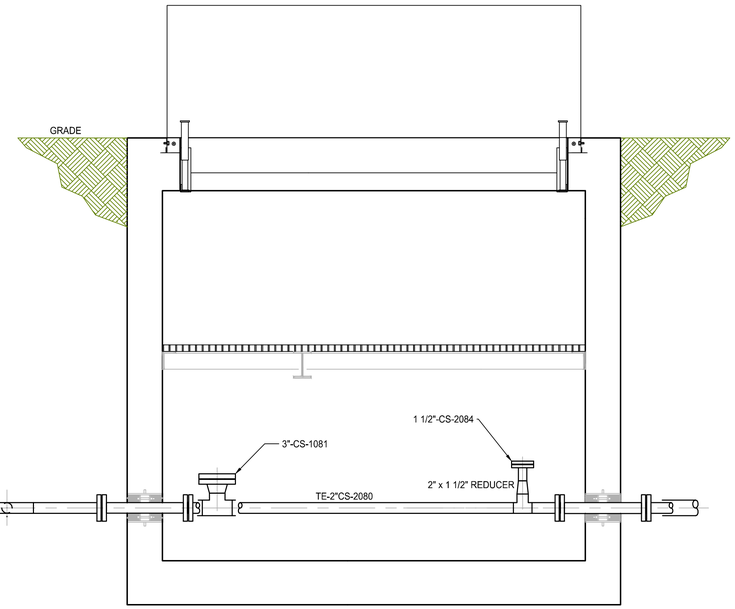
PLAN BELOW THE GRATING



SECTION 1



PLAN ABOVE THE GRATING



SECTION 2

AS BUILT
RECORD DRAWING

NOTES:

1. WELLS IW-01 THRU IW-07 ARE LOCATED NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE NORTH SIDE OF THE VAULT.
2. WELLS IW-15 THRU IW-22 ARE LOCATED JUST NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE SOUTH SIDE OF THE VAULT.
3. ALL AIR, LIQUID, CONTROL, AND ELECTRICAL LINES PASS THRU THE VAULTS, EXCEPT IW-1, IW-8, IW-15, AND IW-22. CONTRACTOR PLUGGED ANY ADDITIONAL HOLES IN THESE VAULTS.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

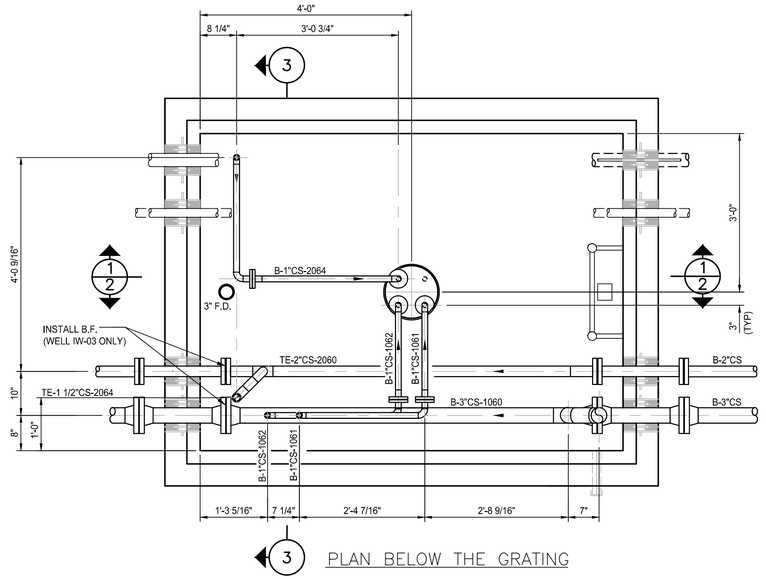
BIOSPARGE TREATMENT SYSTEM

INJECTION WELL IW-08
PLAN AND SECTIONS

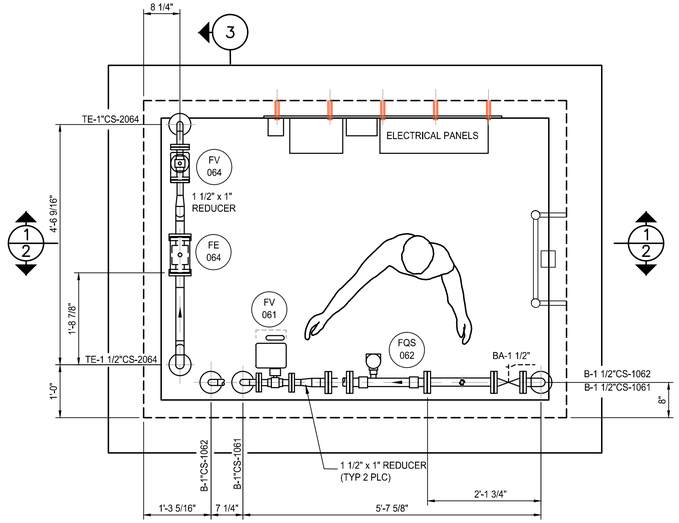
CRA Infrastructure & Engineering, Inc.

Source Reference:			Date:
			7-23-03
Project Manager:	Reviewed By:	Designed By:	Drawn By:
J. KAY		B. A. BEEBE	B. A. BEEBE
Scale:	Project No:	Report No:	Drawing No:
NONE	06883-00	056	MP-09

WELL NUMBER	LINE NUMBER	INSTRUMENT NUMBER				"TIE POINT" NUMBER
		PI	FE	FV	FSQ	
IW-01	TE-2"CS-2010					TP-72
	B-3"CS-1010	010				TP-71
	TE-1 1/2"CS-2014	015	014	014		
	B-1 1/2"CS-1011			011	011	
	B-1 1/2"CS-1012			012	012	TP-67,TP-69
IW-02	TE-2"CS-2020					TP-69,TP-70
	B-3"CS-1020	020				
	TE-1 1/2"CS-2024	025	024	024		
	B-1 1/2"CS-1021			021	021	
	B-1 1/2"CS-1022			022	022	
IW-03	TE-2"CS-2030					TP-64,TP-66
	B-3"CS-1030	030				TP-63,TP-65
	TE-1 1/2"CS-2034	035	034	034		
	B-1 1/2"CS-1031			031	031	
	B-1 1/2"CS-1032			032	032	
IW-04	TE-2"CS-2040					TP-45,TP-47
	B-3"CS-1040	040				TP-44,TP-46
	TE-1 1/2"CS-2044	045	044	044		
	B-1 1/2"CS-1041			041	041	
	B-1 1/2"CS-1042			042	042	
IW-05	TE-2"CS-2050					TP-41,TP-43
	B-3"CS-1050	050				TP-40, TP-42
	TE-1 1/2"CS-2054	055	054	054		
	B-1 1/2"CS-1051			051	051	
	B-1 1/2"CS-1052			052	052	
IW-06	TE-2"CS-2060					TP-37,TP-39
	B-3"CS-1060	060				TP-36,TP-38
	TE-1 1/2"CS-2064	065	064	064		
	B-1 1/2"CS-1061			061	061	
	B-1 1/2"CS-1062			062	062	
IW-07	TE-2"CS-2070					TP-33,TP-35
	B-3"CS-1070	070				TP-32,TP-34
	TE-1 1/2"CS-2074	075	074	074		
	B-1 1/2"CS-1071			071	071	
	B-1 1/2"CS-1072			072	072	



PLAN BELOW THE GRATING



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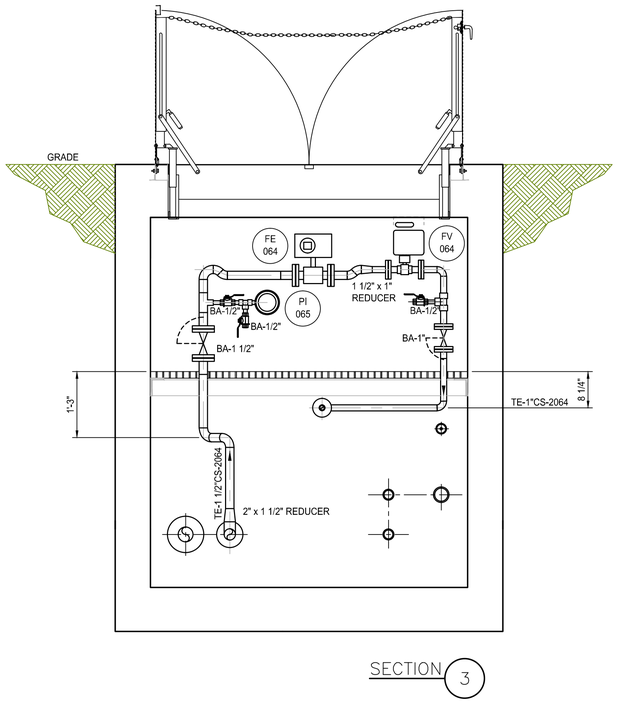
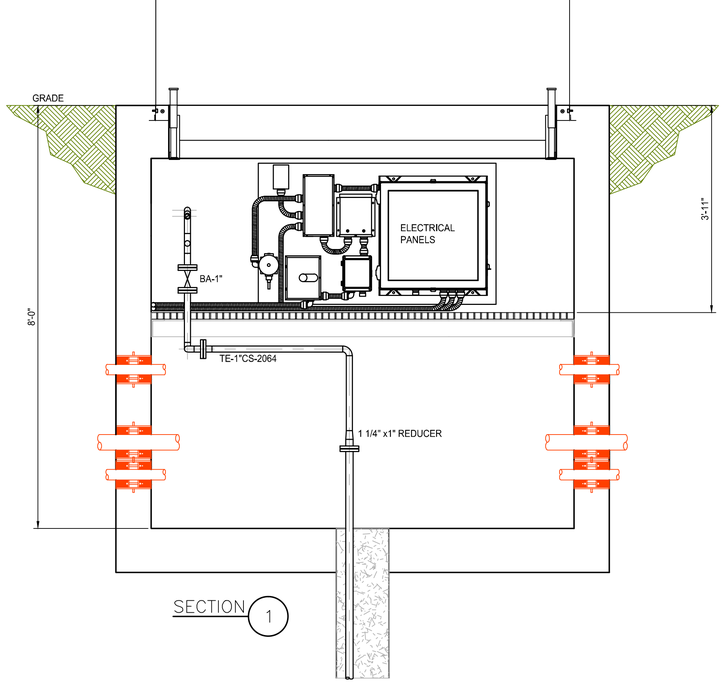
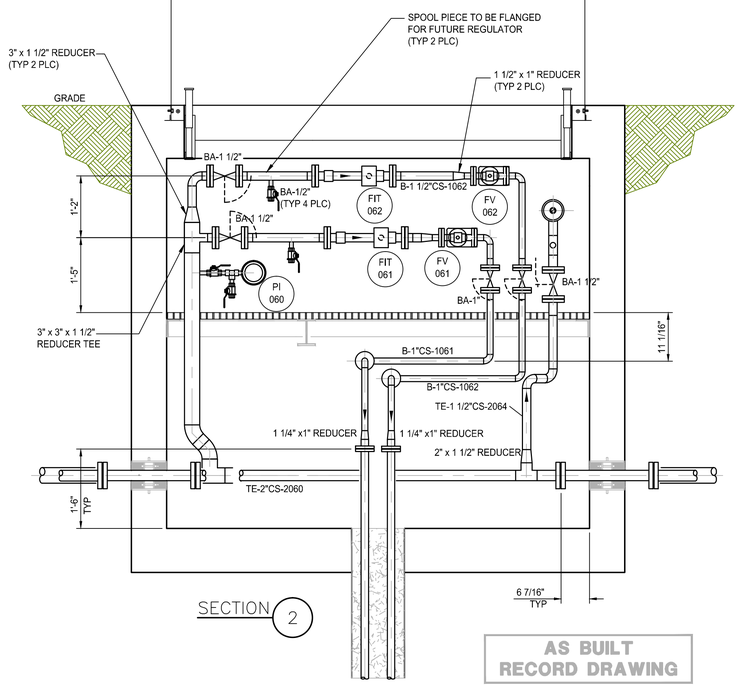


SECTION 3



SECTION 1



SECTION 2

AS BUILT
RECORD DRAWING

NOTES:

1. THE VAULT SHOWN ABOVE IS FOR WELL IW-06. ALL VAULTS WERE PIPED AS PER THIS TYPICAL DRAWING. INSTRUMENT AND LINE NUMBERS FOR THE OTHER VAULTS MAY BE FOUND ON TABLE.
2. WELLS IW-01 THRU IW-07 ARE LOCATED NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE NORTH SIDE OF THE VAULT.
3. WELLS IW-15 THRU IW-22 ARE LOCATED JUST NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE SOUTH SIDE OF THE VAULT.
4. ALL AIR, LIQUID, CONTROL, AND ELECTRICAL LINES PASS THRU THE VAULTS, EXCEPT IW-1, IW-8, IW-15, AND IW-22. CONTRACTOR PLUGGED ANY ADDITIONAL HOLES IN THESE VAULTS.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS IW-01 THRU IW-07
PLANS AND SECTIONS

CRA

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-10

REV	SIZE & LINE No.	DESCRIPTION (TO & FROM)	PIPING DRAWING	P & ID DRAWING	DATE COMPLETED	TRACED		INSULATION			TIE POINT No.	REMARKS
						STEAM	ELECTRICAL	THK	SPEC	JACKET		
	3"CS-1000	PRIMARY AIR COMPR TO COMPR AIR DRYER	MP-02, 03 & 04	EF-01 S1		N	N	N	N	N		INSIDE BLDG
	3"CS-1001	3"CS-1002 TO 3"CS-1080	MP-01	EF-01 S1		N	N	N	N	N		NORTH, UNDERGROUND
	3"CS-1002	COMPR AIR DRYER TO 3"CS-1160	MP-02, 03 & 04	EF-01 S1		N	N	N	N	N		INSIDE BLDG
	3"CS-1010	3"CS-1020 (IW-02) TO END	MP-01, 10	EF-08		N	N	N	N	N		IW-01
	3"CS-1011	3"CS-1010 TO WELL	MP-10	EF-08		N	N	N	N	N		IW-01
	3"CS-1012	3"CS-1011 TO WELL	MP-10	EF-08		N	N	N	N	N		IW-01
	3"CS-1020	3"CS-1030 (IW-03) TO 3"CS-1010 (IW-01)	MP-01, 10	EF-08		N	N	N	N	N		IW-02
	3"CS-1021	3"CS-1020 TO WELL	MP-10	EF-08		N	N	N	N	N		IW-02
	3"CS-1022	3"CS-1021 TO WELL	MP-10	EF-08		N	N	N	N	N		IW-02
	3"CS-1030	3"CS-1040 (IW-04) TO 3"CS-1020 (IW-02)	MP-01, 10	EF-07		N	N	N	N	N		IW-03
	3"CS-1031	3"CS-1030 TO WELL	MP-10	EF-07		N	N	N	N	N		IW-03
	3"CS-1032	3"CS-1031 TO WELL	MP-10	EF-07		N	N	N	N	N		IW-03
	3"CS-1040	3"CS-1050 (IW-05) TO 3"CS-1030 (IW-03)	MP-01, 10	EF-07		N	N	N	N	N		IW-04
	3"CS-1041	3"CS-1040 TO WELL	MP-10	EF-07		N	N	N	N	N		IW-04
	3"CS-1042	3"CS-1041 TO WELL	MP-10	EF-07		N	N	N	N	N		IW-04
	3"-CS-1050	3"CS-1060 (IW-06) TO 3"CS-1040 (IW-04)	MP-01, 10	EF-07		N	N	N	N	N		IW-05
	3"CS-1051	3"CS-1050 TO WELL	MP-10	EF-07		N	N	N	N	N		IW-05
	3"CS-1052	3"CS-1051 TO WELL	MP-10	EF-07		N	N	N	N	N		IW-05
	3"-CS-1060	3"CS-1070 (IW-07) TO 3"CS-1050 (IW-05)	MP-01, 10	EF-06		N	N	N	N	N		IW-06
	3"-CS-1061	3"CS-1060 TO WELL	MP-10	EF-06		N	N	N	N	N		IW-06
	3"-CS-1062	3"CS-1061 TO WELL	MP-10	EF-06		N	N	N	N	N		IW-06
	3"-CS-1070	3"CS-1080 (IW-08) TO 3"CS-1060 (IW-06)	MP-01, 10	EF-06		N	N	N	N	N		IW-07
	3"CS-1071	3"CS-1070 TO WELL	MP-10	EF-06		N	N	N	N	N		IW-07
	3"CS-1072	3"CS-1071 TO WELL	MP-10	EF-06		N	N	N	N	N		IW-07
	3"-CS-1080	3"CS-1001 TO 3"CS-1070	MP-01, 09	EF-06		N	N	N	N	N		IW-08

REV	SIZE & LINE No.	DESCRIPTION (TO & FROM)	PIPING DRAWING	P & ID DRAWING	DATE COMPLETED	TRACED		INSULATION			TIE POINT No.	REMARKS
						STEAM	ELECTRICAL	THK	SPEC	JACKET		
	3"CS-1150	3"CS-1060 TO 3"CS-1140 (IW-15)	MP-01, 06	EF-01 S1, 05		N	N	N	N	N		IN TRENCH
	3"CS-1151	3"CS-1150 TO WELL	MP-07	EF-05		N	N	N	N	N		IW-15
	3"CS-1152	3"CS-1151 TO WELL	MP-07	EF-05		N	N	N	N	N		IW-15
	3"CS-1160	3"CS-1002 TO 3"CS-1170 (IW-17)	MP-01, 06	EF-01 S1, 02		N	N	N	N	N		IW-16
	3"CS-1161	3"CS-1160 TO WELL	MP-06	EF-02		N	N	N	N	N		IW-16
	3"CS-1162	3"CS-1161 TO WELL	MP-06	EF-02		N	N	N	N	N		IW-16
	3"-CS-1170	3"CS-1160 (IW-16) TO 3"CS-1180 (IW-18)	MP-01, 06	EF-01 S1, 02		N	N	N	N	N		IW-17
	3"-CS-1171	3"CS-1170 TO WELL	MP-06	EF-02		N	N	N	N	N		IW-17
	3"-CS-1172	3"CS-1171 TO WELL	MP-06	EF-02		N	N	N	N	N		IW-17
	3"-CS-1180	3"CS-1170 (IW-17) TO 3"CS-1190 (IW-19)	MP-01, 06	EF-01 S1, 02		N	N	N	N	N		IW-18
	3"-CS-1181	3"CS-1180 TO WELL	MP-06	EF-02		N	N	N	N	N		IW-18
	3"-CS-1182	3"CS-1181 TO WELL	MP-06	EF-02		N	N	N	N	N		IW-18
	3"-CS-1190	3"CS-1180 (IW-18) TO 3"CS-1200 (IW-20)	MP-01, 06	EF-03		N	N	N	N	N		IW-19
	3"-CS-1191	3"CS-1190 TO WELL	MP-06	EF-03		N	N	N	N	N		IW-19
	3"-CS-1192	3"CS-1191 TO WELL	MP-06	EF-03		N	N	N	N	N		IW-19
	3"-CS-1200	3"CS-1190 (IW-19) TO 3"CS-1210 (IW-21)	MP-01, 07	EF-03		N	N	N	N	N		IW-20
	3"-CS-1201	3"CS-1200 TO WELL	MP-07	EF-03		N	N	N	N	N		IW-20
	3"-CS-1202	3"CS-1201 TO WELL	MP-07	EF-03		N	N	N	N	N		IW-20
	3"-CS-1210	3"CS-1200 (IW-20) TO 3"CS-1220 (IW-22)	MP-01, 07	EF-03		N	N	N	N	N		IW-21
	3"-CS-1211	3"CS-1210 TO WELL	MP-07	EF-03		N	N	N	N	N		IW-21
	3"-CS-1212	3"CS-1211 TO WELL	MP-07	EF-03		N	N	N	N	N		IW-21
	3"-CS-1220	3"CS-1210 (IW-21) TO END	MP-01, 07	EF-04		N	N	N	N	N		IW-22
	3"-CS-1221	3"CS-1220 TO WELL	MP-07	EF-04		N	N	N	N	N		IW-22
	3"-CS-1222	3"CS-1221 TO WELL	MP-07	EF-04		N	N	N	N	N		IW-22

REV	SIZE & LINE No.	DESCRIPTION (TO & FROM)	PIPING DRAWING	P & ID DRAWING	DATE COMPLETED	TRACED		INSULATION			TIE POINT No.	REMARKS
						STEAM	ELECTRICAL	THK	SPEC	JACKET		
	1 1/2"CS-2000	WATER SUPPLY TO 2"HDPE-2080	MP-02, 04	EF-01 S2		N	N	N	N	N		INSIDE BLDG
	1"CS-2004	1 1/2"CS-2000 TO SUPPLEMENT BLENDING UNIT	MP-02, 04	EF-01 S2		N	N	N	N	N		INSIDE BLDG
	2"CS-2010	2"HDPE-2030 (IW-03) TO END	MP-01, 10	EF-08			Y					IW-01
	1 1/2"CS-2014	2"HDPE-2010 TO WELL	MP-10	EF-08			Y					IW-01
	2"CS-2020	2"HDPE-2030 (IW-03) TO 2"HDPE-2010 (IW-01)	MP-01, 10	EF-08			Y					IW-02
	1 1/2"CS-2024	2"HDPE-2020 TO WELL	MP-10	EF-08			Y					IW-02
	2"CS-2030	2"HDPE-2040 (IW-04) TO 2"HDPE-2020 (IW-02)	MP-01, 10	EF-07			Y					IW-03
	1 1/2"CS-2034	2"HDPE-2030 TO WELL	MP-10	EF-07			Y					IW-03
	2"CS-2040	2"HDPE-2050 (IW-05) TO 2"HDPE-2030 (IW-03)	MP-01, 10	EF-07			Y					IW-04
	1 1/2"CS-2044	2"HDPE-2040 TO WELL	MP-10	EF-07			Y					IW-04
	2"CS-2050	2"HDPE-2060 (IW-06) TO 2"HDPE-2040 (IW-04)	MP-01, 10	EF-07			Y					IW-05
	1 1/2"CS-2054	2"HDPE-2050 TO WELL	MP-10	EF-07			Y					IW-05
	2"CS-2060	2"HDPE-2070 (IW-07) TO 2"HDPE-2050 (IW-05)	MP-01, 10	EF-06			Y					IW-06
	1 1/2"CS-2064	2"HDPE-2060 TO WELL	MP-10	EF-06			Y					IW-06
	2"CS-2070	2"HDPE-2080 (IW-08) TO 2"HDPE-2060 (IW-06)	MP-01, 10	EF-06			Y					IW-07
	1 1/2"CS-2074	2"HDPE-2070 TO WELL	MP-10	EF-06			Y					IW-07
	2"HDPE-2080	1 1/2"CS-2000 TO 2"HDPE-2070 (IW-07)	MP-01, 09	EF-06			Y					IW-08

REV	SIZE & LINE No.	DESCRIPTION (TO & FROM)	PIPING DRAWING	P & ID DRAWING	DATE COMPLETED	TRACED		INSULATION			TIE POINT No.	REMARKS
						STEAM	ELECTRICAL	THK	SPEC	JACKET		
	2"HDPE-2150	1 1/2"HDPE-2160 TO 2"HDPE-2140	MP-01, 07	EF-01 S2, 05			Y					IN TRENCH
	1"CS-2154	1 1/2"CS-2150 TO WELL	MP-07	EF-05			Y					IW-15
	1 1/2"HDPE-2160	1 1/2"HDPE-2002 TO 1 1/2"HDPE-2170 (IW-17)	MP-01, 06	EF-01 S1, 02			Y					IW-16
	1 1/2"CS-2164	1 1/2"CS-2160 TO WELL	MP-06	EF-02			Y					IW-16
	1 1/2"HDPE-2170	1 1/2"HDPE-2160 (IW-16) TO 1 1/2"HDPE2180 (IW-18)	MP-01, 06	EF-02			Y					IW-17
	1 1/2"CS-2174	1 1/2"CS-2170 TO WELL	MP-06	EF-02			Y					IW-17
	1 1/2"HDPE-2180	1 1/2"HDPE-2170 (IW-17) TO 1 1/2"HDPE2190 (IW-19)	MP-01, 06	EF-02			Y					IW-18
	1 1/2"CS-2184	1 1/2"CS-2180 TO WELL	MP-06	EF-02			Y					IW-18
	1 1/2"HDPE-2190	1 1/2"HDPE-2180 (IW-18) TO 1 1/2"HDPE2200 (IW-20)	MP-01, 06	EF-03			Y					IW-19
	1 1/2"CS-2194	2"CS-2190 TO WELL	MP-06	EF-03			Y					IW-19
	1 1/2"HDPE-2200	2"HDPE-2190 (IW-19) TO 2"HDPE2210 (IW-21)	MP-01, 07	EF-03			Y					IW-20
	1 1/2"CS-2204	2"CS-2200 TO WELL	MP-07	EF-03			Y					IW-20
	2"HDPE-2210	2"HDPE-2200 (IW-20) TO 2"HDPE2220 (IW-22)	MP-01, 07	EF-03			Y					IW-21
	1 1/2"CS-2214	2"CS-2210 TO WELL	MP-07	EF-03			Y					IW-21
	2"HDPE-2220	1 1/2"HDPE-2210 (IW-21) TO END	MP-01, 07	EF-04			Y					IW-22
	1 1/2"CS-2224	2"CS-2220 TO WELL	MP-07	EF-04			Y					IW-22

AS BUILT
RECORD DRAWING

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

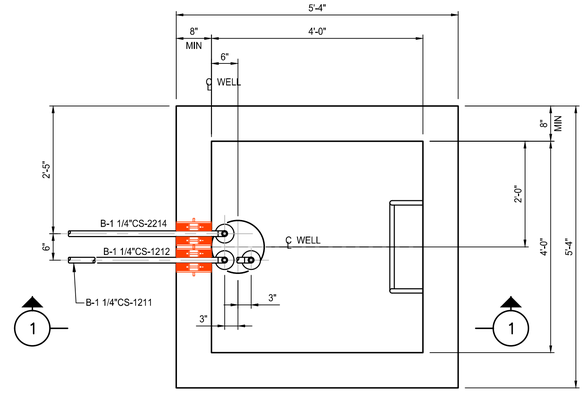
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

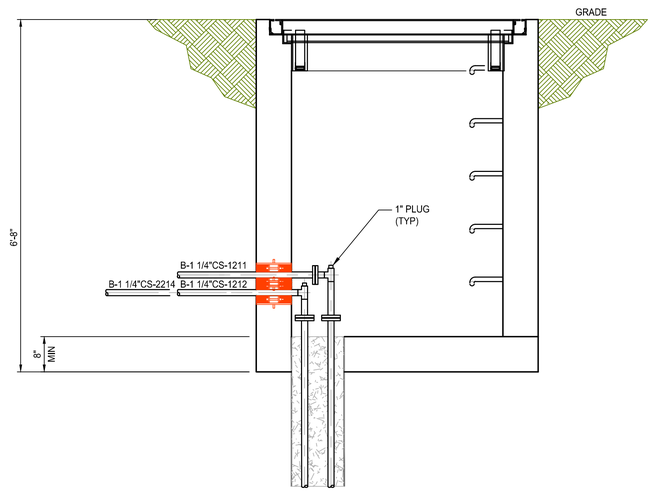
LINE LIST

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: SEPTEMBER 2003
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-12



PLAN VIEW



SECTION 1

AS BUILT
RECORD DRAWING

NOTES:

1. WELLS IW-01 THRU IW-07 ARE LOCATED NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE NORTH SIDE OF THE VAULT.
2. WELLS IW-15 THRU IW-22 ARE LOCATED JUST NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE SOUTH SIDE OF THE VAULT.
3. ALL AIR, LIQUID, CONTROL, AND ELECTRICAL LINES PASS THRU THE VAULTS, EXCEPT IW-1, IW-8, IW-15, AND IW-22. CONTRACTOR PLUGGED ANY ADDITIONAL HOLES IN THESE VAULTS.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

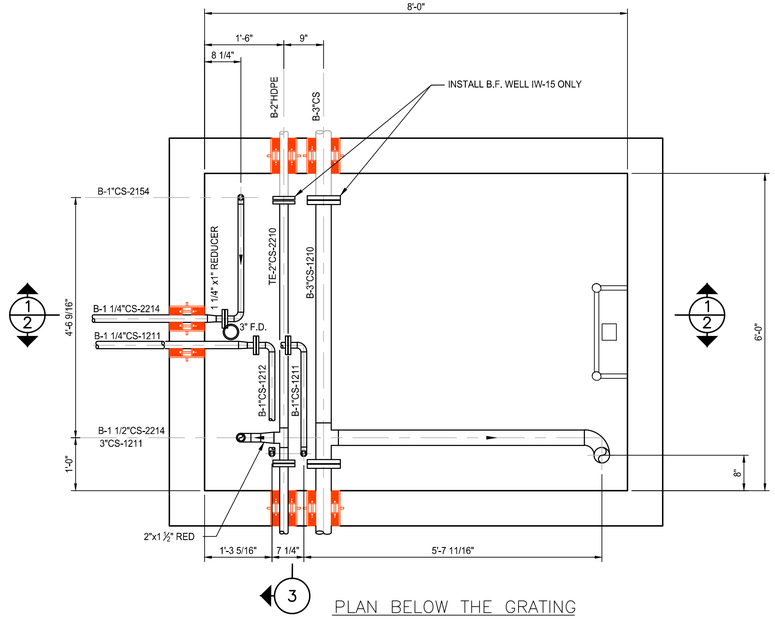
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS IW-21A
PLAN AND SECTIONS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-13



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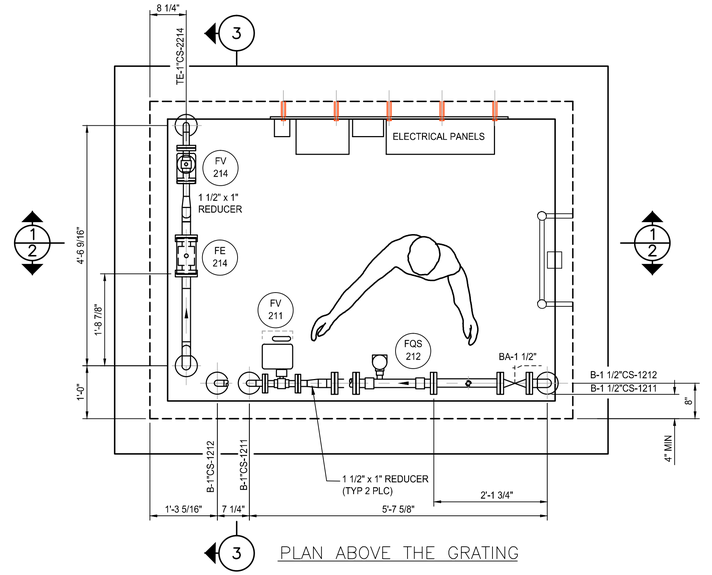

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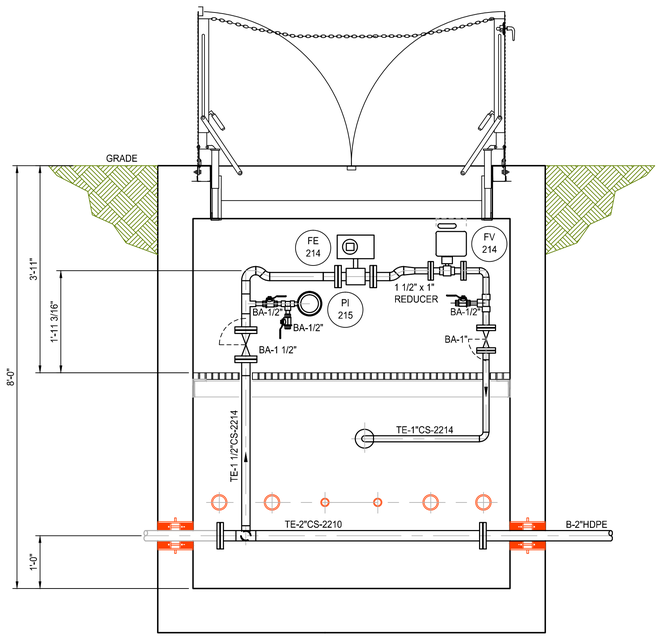
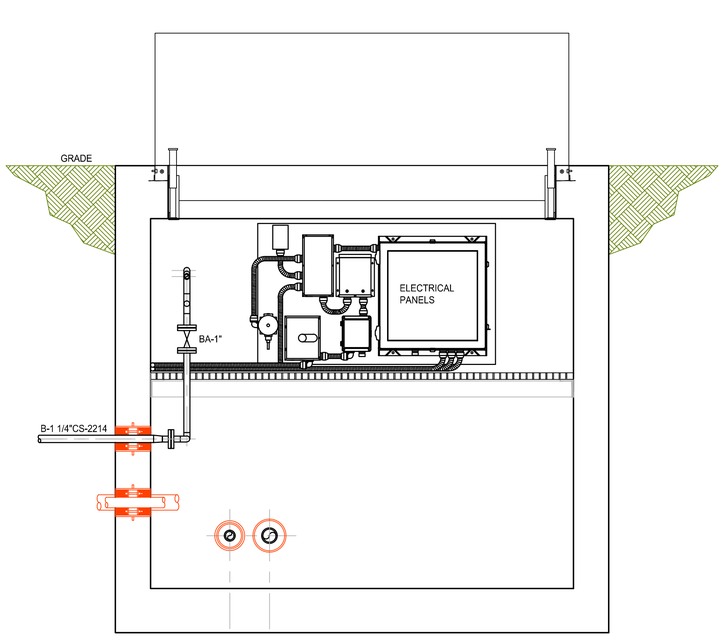
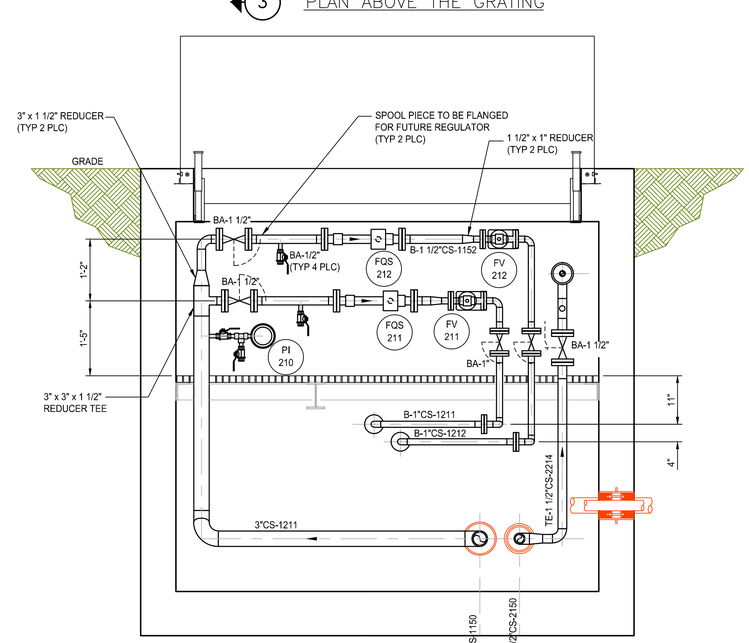


SECTION 3



SECTION 1



SECTION 2

AS BUILT
RECORD DRAWING

NOTES:

1. WELLS IW-01 THRU IW-07 ARE LOCATED NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE NORTH SIDE OF THE VAULT.
2. WELLS IW-15 THRU IW-22 ARE LOCATED JUST NORTH OF THE CONTROL BUILDING. THESE VAULTS ARE POSITIONED WITH THE WELL LOCATED ON THE SOUTH SIDE OF THE VAULT.
3. ALL AIR, LIQUID, CONTROL, AND ELECTRICAL LINES PASS THRU THE VAULTS, EXCEPT IW-1, IW-8, IW-15, AND IW-22. CONTRACTOR PLUGGED ANY ADDITIONAL HOLES IN THESE VAULTS.

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial
1	AS BUILT	08/29/12	LV

HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

BIOSPARGE TREATMENT SYSTEM

INJECTION WELLS IW-21
PLAN AND SECTIONS

CRA Infrastructure & Engineering, Inc.

Source Reference:			Date: 7-23-03
Project Manager: J. KAY	Reviewed By:	Designed By: B. A. BEEBE	Drawn By: B. A. BEEBE
Scale: NONE	Project No: 06883-00	Report No: 056	Drawing No: MP-14