

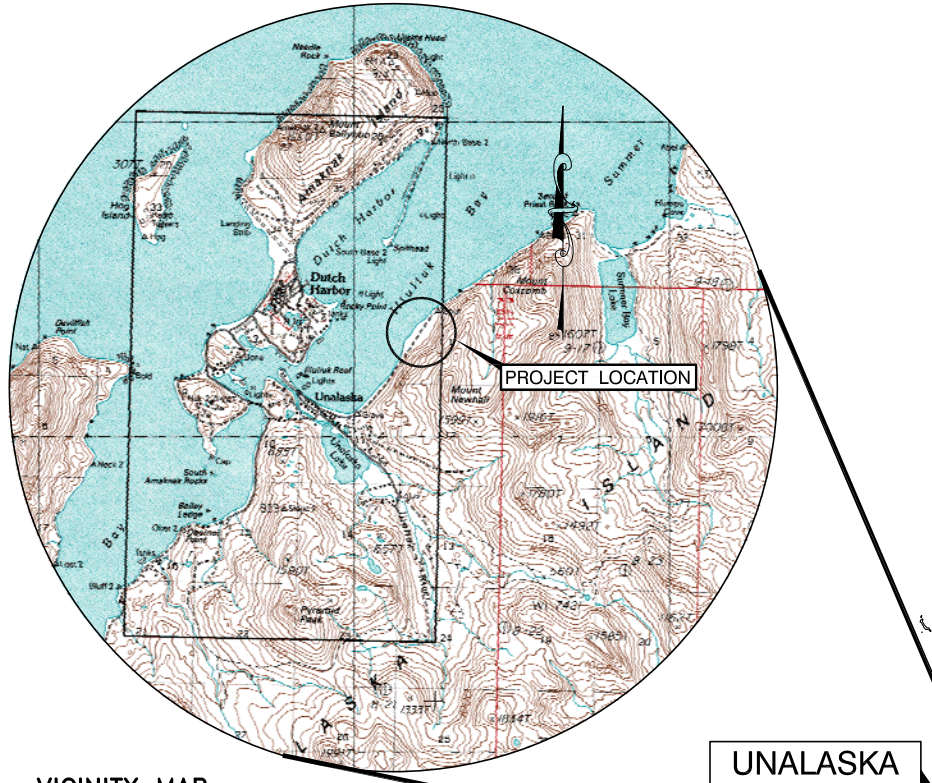


CITY OF UNALASKA

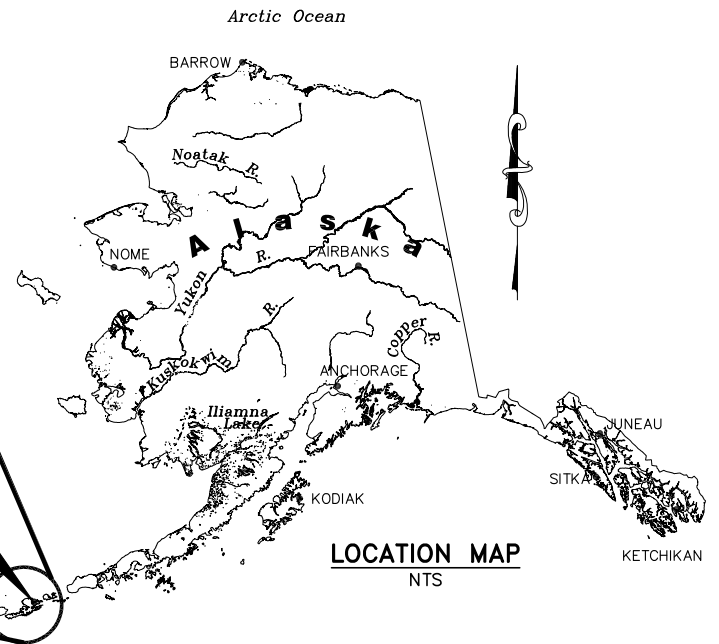
CELLS II-1 & II-2 DESIGN

MAY, 2014

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VICINITY MAP
 SCALE:
 1"=5000'
 SOURCE:
 U.S.G.S. QUAD



LOCATION MAP
 NTS

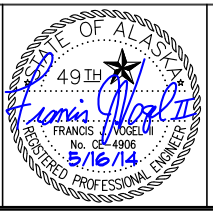
- NOTES**
- UNITS ARE MEASURED IN U.S. FEET.

FOR CONSTRUCTION V.2

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 Xrefs: BR22\34BR_UNAK.DWG - Images: I53166G3.TIF BHCLOGO_BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF

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 Project No. 211042



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CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
TITLE SHEET, LOCATION AND VICINITY MAPS, AND SHEET INDEX

SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14

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ABBREVIATIONS

AZ	AZIMUTH	REC	RECORDED
☉	CENTERLINE	REINF	REINFORCED
CLR	CLEAR	REQ'D	REQUIRED
CB	CATCH BASIN	RD	ROAD
CIP	CAST IN PLACE	ROW	RIGHT OF WAY
CMP	CORRUGATED METAL PIPE	RT	RIGHT
CO	CLEANOUT	S	SLOPE, SEWER
COE	CORPS OF ENGINEERS	SCH	SCHEDULE
CONC	CONCRETE	SOC	SOCKET
CONT	CONTINUOUS	SS, SST	SEWER, STAINLESS STEEL
CP	CONTROL POINT	STA	STATION
CPP	CORRUGATED PLASTIC PIPE	SP	SUMP PUMP
D	DIAMETER, DEPTH	TBM	TEMPORARY BENCHMARK
DIA	DIAMETER	TYP	TYPICAL
DI	DUCTILE IRON	UE, UG/E	UNDERGROUND ELECTRIC
DWG	DRAWING	UG	UNDERGROUND
E	EASTING	V	VERTICAL
EHT	EXTREME HIGH TIDE	W	WATER, WIDTH
EL, ELEV	ELEVATION		
ELT	EXTREME LOW TIDE		
EX	EXISTING		
FF	FINISHED FLOOR		
FM	FORCE MAIN, FLOW METER		
FND	FOUND		
GAL	GALLON		
H, HORZ	HORIZONTAL		
HAZ-MAT	HAZARDOUS MATERIAL		
HDPE	HIGH DENSITY POLYETHYLENE		
HYD	HYDRANT		
IE	INVERT ELEVATION		
INF	INFLUENT		
INV	INVERT		
L	LEACHATE, LENGTH		
LC	LEACHATE		
LFLS	LANDFILL LIFT STATION		
LS	LIFT STATION		
LT	LEFT, LEVEL TRANSMITTER		
LCP	LEACHATE CONVEYANCE PIPE		
LT	LEVEL TRANSMITTER		
MAX	MAXIMUM		
MDD	MAXIMUM DRY DENSITY		
ME	MATCH EXISTING		
MH	MANHOLE		
MIN	MINIMUM		
MLLW	MEAN LOWER LOW WATER		
MOA	MUNICIPALITY OF ANCHORAGE		
MSL	MEAN SEA LEVEL		
N	NORTHING		
NIC	NOT IN CONTRACT		
NOM	NOMINAL		
NTS	NOT TO SCALE		
OC	ON CENTER		
OD	OUTSIDE DIAMETER		
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM		
PERF	PERFORATED		

LEGEND

	EXISTING	PROPOSED
DRAINAGE	---	---
EDGE OF ROAD	---	---
MAJOR CONTOUR	60	60
MINOR CONTOUR	61	61
PROPERTY LINE	---	---
LIMIT OF FILL	
GRADE BREAK		-----
LEACHATE CLEANOUT	☐ c.o.	☐ c.o.
CULVERT	—>—	—>—
DRAINAGE ARROW		←
SPOT ELEVATION		68.0
STORM DRAIN MANHOLE	☐	☐
TBM	X	●
FND 2 1/2" ALUMINUM CAP	⊕	⊕
MONITORING WELL	⊗	⊗
ELECTRICAL BOX	⊠	⊠
HYDRANT	⊗	⊗
WATER VALVE	⊗	⊗
SEWER MANHOLE	⊙	⊙
RB4 (SOIL BORING LOCATION)	⊗	⊗
HP6 (HAND AUGER PROBE LOCATION)	⊗	⊗
SIGN	⊥	⊥
TEST PIT WITH MONITORING PIPE	⊕	⊕
SURVEY CONTROL POINT	△	△
BOLLARD	●	●
COORDINATE POINT NUMBER		75

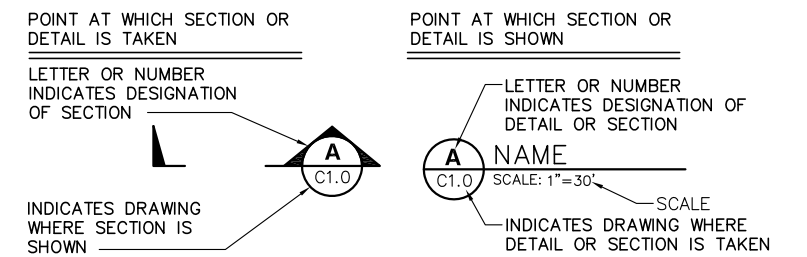
GENERAL NOTES

- EXISTING FEATURES SHOWN IN THESE DRAWINGS WERE COMPILED FROM FIELD SURVEYS, ASBUILTS, AND MULTIPLE OTHER DOCUMENTS. LOCATIONS OF BURIED FEATURES SHOWN ARE APPROXIMATE AND ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

SECTIONS AND DETAILS

SHOT ROCK		GEOMEMBRANE	—
IMPORT FILL		GEOSYNTHETIC CLAY LINER (GCL)	
LINER FOUNDATION MATERIAL		GEOTEXTILE	---
DRAIN LAYER MATERIAL			
SURFACE COURSE			
CONCRETE			
QUARRY SPALLS			

SECTIONS AND DETAIL DESIGNATION

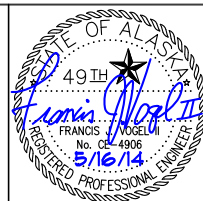


REFERENCE TO DETAILS AND SECTIONS ARE ALSO DESIGNATED BY X/A-Y, WHERE X IS A NUMBER FOR DETAILS AND A LETTER FOR SECTIONS, AND A-Y IS THE DRAWING ON WHICH THE SECTION OR DETAIL APPEARS

FOR CONSTRUCTION V.2

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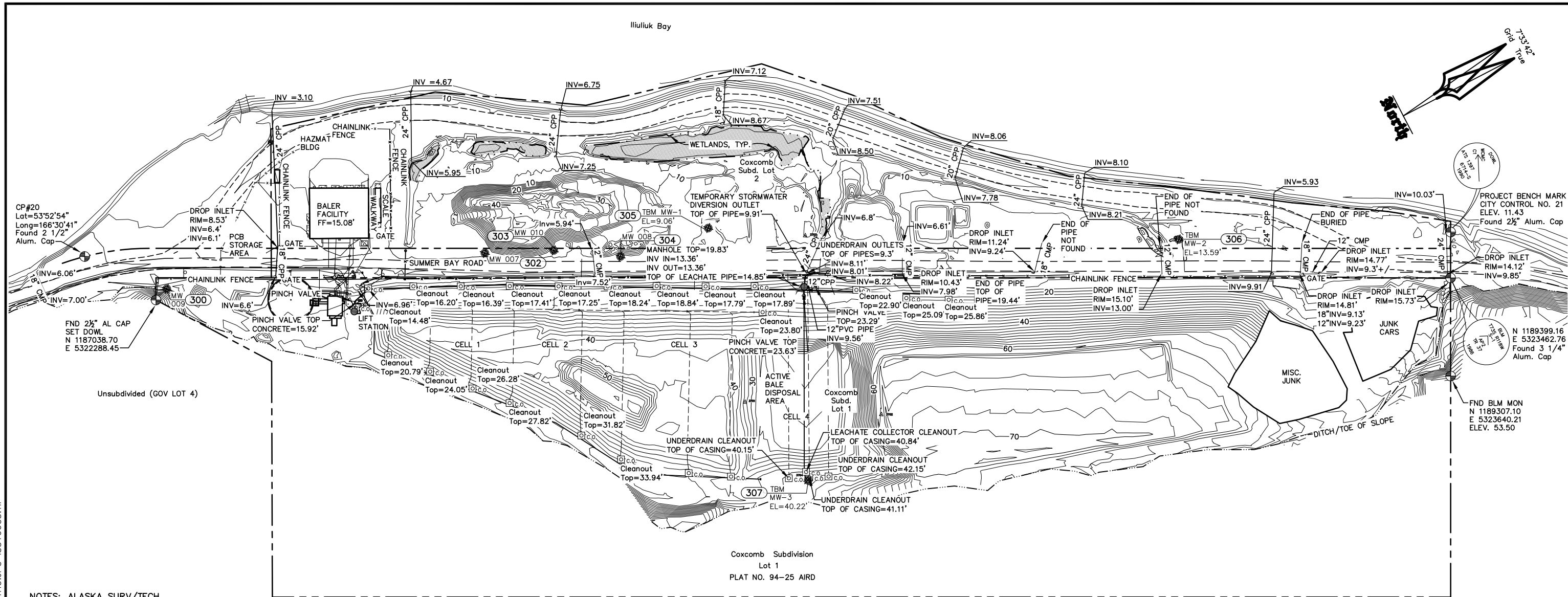


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CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION					SHEET
ABBREVIATIONS, LEGEND AND GENERAL NOTES					G-2
SCALE: SHOWN	DESIGNED: FJV	CHECKED: FJV	DRAWN: DES	DATE: 5/16/14	SHEET 2 OF 43

User: DSQUER May 23, 2014 - 1:43pm
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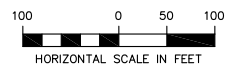
NOTES: ALASKA SURV/TECH

1. VERTICAL DATUM IS MEAN LOWER LOW WATER (MLLW = 0.00')
2. BASIS OF VERTICAL DATUM FOR THIS SURVEY IS FROM CITY OF UNALASKA INTEGRITY SURVEYS 1994-1995. "SURVEY CONTROL DOCUMENTS" PUBLISHED BY THE PUBLISHED ELEVATION OF 11.43 FEET FOR CITY CONTROL POINT NO 21 WAS USED AS A BASIS AND WAS VERIFIED BY OBSERVING CITY CONTROL POINT NO 13 AT A PUBLISHED ELEVATION OF 91.79 FEET. THE OBSERVED ERROR WAS .02'
3. BASIS OF COORDINATES FOR THIS TOPOGRAPHIC SURVEY, ARE: N 1189442.1116 AND E 5323380.1613, AS PUBLISHED BY INTEGRITY SURVEYS, "CITY OF UNALASKA SURVEY CONTROL", FOR CITY CONTROL POINT NO 21, A RECOVERED 2 1/2" ALUM CAP SET BY "DOWL" FOR ATS 1397.
4. BASIS OF BEARING FOR THIS SURVEY IS THE GRID BEARING OF N69°46'46"W BETWEEN UNALASKA CITY CONTROL POINT NO 21, USED AS A BASIS OF ELEVATION AS WELL AS THE BASIS OF COORDINATES AND CITY CONTROL POINT NO 13 (NOT SHOWN).
5. FIELD SURVEY WAS COMPLETED USING A CONFORMAL GRID SYSTEM, MEASURING TRUE GROUND DISTANCES, WITH NO SCALE FACTOR APPLIED. THE SURVEY WAS BASED ON THE RECORD PLAT BEARINGS. THE RTK-GPS WAS LOCALIZED USING TWO RECOVERED PROPERTY CORNERS AND VERIFIED WITH TWO ADDITIONAL RECOVERED CORNERS FOR A CHECK. AFTER COMPLETION OF ALL PROPERTY CORNER SEARCHS AND TOPOGRAPHIC SURVEYS, THE ENTIRE SURVEY WAS ROTATED 07°33'43" AND MOVED TO THE "CITY COORDINATE SYSTEM" USING THE BASIS OF COORDINATES AND BASIS OF BEARING NOTED.
6. UPDATED FIELD SURVEY WAS COMPLETED MAY 15-19, 2013 - BY AST.
7. INFORMATION REGARDING THE LOCATION OF THE UNDERGROUND UTILITIES WAS PROVIDED BY ON SITE CITY EMPLOYEES WHERE SIGNALS WERE AVAILABLE. WHERE NOT AVAILABLE, ASBUILT DRAWINGS PROVIDED BY THE CITY WERE USED.
8. THE COORDINATES SHOWN ON THIS TOPOGRAPHIC SURVEY ARE BASED ON THE CITY OF UNALASKA-CITY CONTROL COORDINATE SYSTEM (SEE NOTE 5).
9. CONTOURS ARE IN FEET, WITH ONE FOOT INTERVALS.
10. PROPERTY LINES, RIGHT-OF-WAY LINES AND EASEMENTS NOTED ON THIS DRAWING ARE BASED ON FIVE FOUND RECORD CORNERS.

NOTES:

1. REFER TO SHEET C-206 FOR EXISTING MONITOR WELL COORDINATE TABLE.
2. A JUNE 2008 SURVEY BY SEGGESEER WAS USED AS THE BASE SURVEY. THIS SURVEY WAS UPDATED ON 5/15/13 BY AST AND AGAIN ON 5/11/14 BY EDGE SURVEY TO SHOW CONDITIONS AS OF THAT DATE.

ALASKA SURV/TECH SURVEYING AND DEVELOPMENT SINCE 1981 PO Box 417 Newman Lake, WA 99025 Ph (509) 226-0008 Cell (208) 651-0174					
NAME	NORTHING	EASTING	REC. ELEV.	OBS ELEV.	FOUND/SET
CITY CONTROL NO 21	N 1189442.11	E 5323380.16	11.43	11.43	AL CAP
CITY CONTROL NO 13	N 1192590.53	E 5314832.54	91.79	91.77	AL CAP
TBM MP-2 (MW-2)	N 1188940.60	E 5323138.70		13.77	X- IN CONC
TBM MP-1 (MW-1)	N 1188100.88	E 5322676.80		9.14	X- IN CONC
TBM LIFTSTA (NE COR)	N 1187401.93	E 5322494.00		16.15	X- IN CONC



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CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
SURVEY CONTROL SHEET

SHEET **G-3**

SCALE: SHOWN	DESIGNED: FJV	CHECKED: FJV	DRAWN: DES	DATE: 5/16/14	SHEET 3 OF 43
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EXISTING FENCE, CLEANOUTS, CULVERTS, AND MONITORING WELLS DEMOLITION PLAN, SEE SHT C-102

Iliuliuk Bay

NEW LEACHATE COLLECTION PIPING, SEE SHT C-221

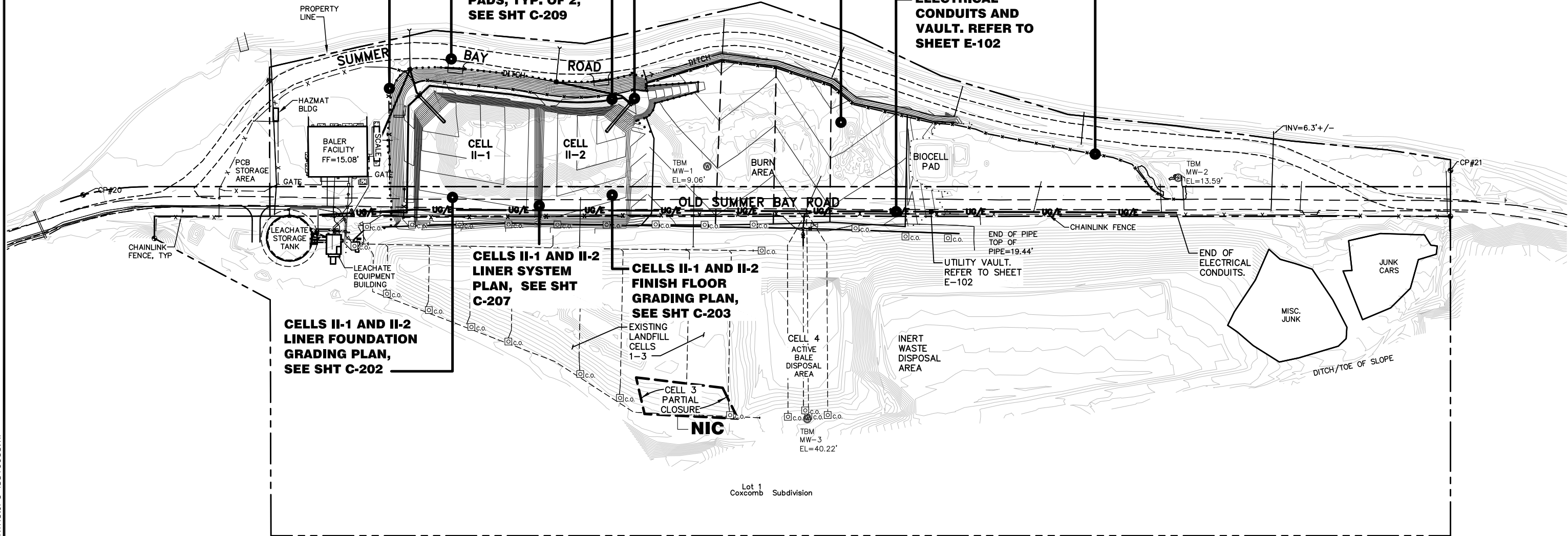
STOCKPIPE FILL PLAN, SEE SHT C-230

NEW CHAIN LINK FENCE, SEE SHT C-210

NEW MONITORING WELLS ACCESS PADS, TYP. OF 2, SEE SHT C-209

NEW LEACHATE COLLECTION PUMP PLANS, SEE SHT M-201

ELECTRICAL CONDUITS AND VAULT. REFER TO SHEET E-102



CELLS II-1 AND II-2 LINER FOUNDATION GRADING PLAN, SEE SHT C-202

CELLS II-1 AND II-2 LINER SYSTEM PLAN, SEE SHT C-207

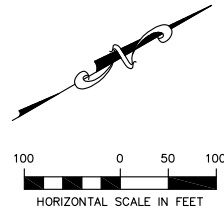
CELLS II-1 AND II-2 FINISH FLOOR GRADING PLAN, SEE SHT C-203

CELL 3 PARTIAL CLOSURE

NIC

Lot 1 Coxcomb Subdivision

Unsubdivided



ESTIMATE OF MAJOR EARTHWORK QUANTITIES

FOR INFORMATIONAL PURPOSES ONLY - CONTRACTOR RESPONSIBLE FOR THE MATERIALS AND QUANTITIES USED FOR BIDDING PURPOSES. REFER TO DRAWINGS AND SPECIFICATIONS FOR DETAILS.

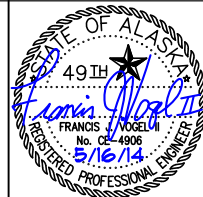
- SHOT ROCK STOCKPILE - 46,660 CY
- QUARRY SPALLS - 3,840 TONS (BASED ON 2,400 CY)
- LINER FOUNDATION MATERIAL - 4,560 (BASED ON 123,000 SF FLOOR AREA)
- DRAIN ROCK - 9,820 CY
- D-1 AGGREGATE/SURFACE COURSE - 1,500 CY.

FOR CONSTRUCTION V.2

User: DSQUIER May 23, 2014 - 1:44pm
 Drawing: K:\JOBS\211042 CELLS 2-1 & 2-2\ACAD-DESIGN\CELL II-1 II-2 DESIGN\REBID SET\211042_G4.DWG - Layout: G4
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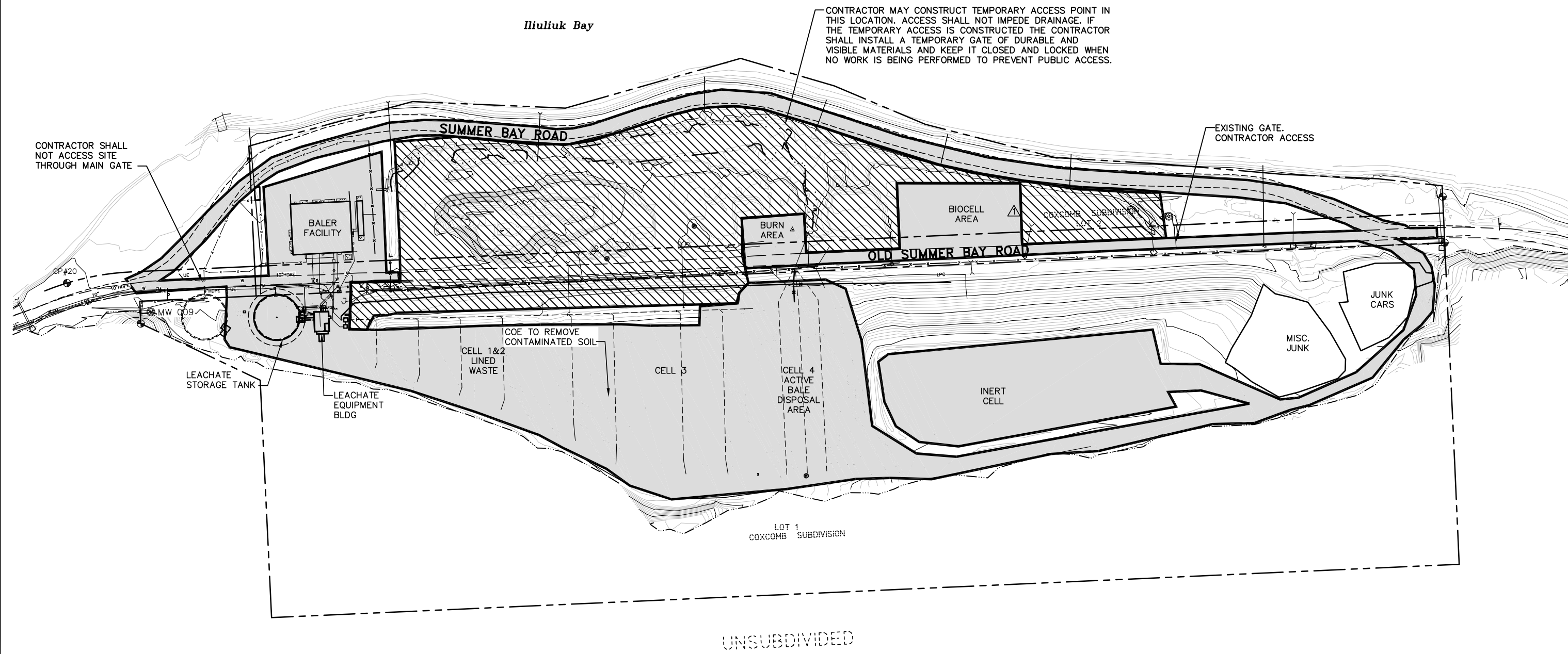


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CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION					SHEET
SITE PLAN					G-4
SCALE: SHOWN	DESIGNED: FJV	CHECKED: FJV	DRAWN: DES	DATE: 5/16/14	SHEET 4 OF 43

User: DSQUIER May 23, 2014 - 1:44pm
 Drawing: K:\JOBS\211042_CELLS 2-1 & 2-2\ACAD-DESIGN\CELL II-1 II-2 DESIGN-REBID SET\211042_C101.DWG - Layout: C3
 Xrefs: BR22\34BR_UNAK.DWG 211042_BASE.DWG 211042_BHC_PIPING.DWG - Images: BHCLOGO_BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF



CONTRACTOR MAY CONSTRUCT TEMPORARY ACCESS POINT IN THIS LOCATION. ACCESS SHALL NOT IMPEDE DRAINAGE. IF THE TEMPORARY ACCESS IS CONSTRUCTED THE CONTRACTOR SHALL INSTALL A TEMPORARY GATE OF DURABLE AND VISIBLE MATERIALS AND KEEP IT CLOSED AND LOCKED WHEN NO WORK IS BEING PERFORMED TO PREVENT PUBLIC ACCESS.

CONTRACTOR SHALL NOT ACCESS SITE THROUGH MAIN GATE

EXISTING GATE. CONTRACTOR ACCESS

NOTES:

1. THIS SITE IS AN OPERATING LANDFILL. CELLS 3 & 4 ARE THE ACTIVE DISPOSAL AREA. LOOSE REFUSE IS DELIVERED TO THE BALER FACILITY. BALED WASTE IS THEN TRANSPORTED TO CELLS 3 & 4 FOR FINAL DISPOSAL. REFER TO THE LEGEND FOR LANDFILL OPERATION HOURS AND REQUIREMENTS.
2. CONTRACTOR ACCESS TO AREAS NOT DESIGNATED IN THE LEGEND MUST BE APPROVED BY THE CITY.
3. CONTRACTOR SHALL MAINTAIN A MINIMUM OF ONE LANE OF TRAFFIC ON SUMMER BAY ROAD AT ALL TIMES.

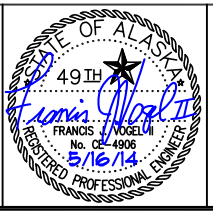
LEGEND

- DESIGNATED CONTRACTOR WORK/STAGING/ STOCKPILE AREA
- AREA NECESSARY FOR LANDFILL OPERATIONS. CONTRACTOR MUST PROVIDE UNINTERRUPTED ACCESS FOR LANDFILL OPERATIONS BETWEEN THE HOURS 9AM AND 6PM TUESDAY-SATURDAY.

FOR CONSTRUCTION V.2

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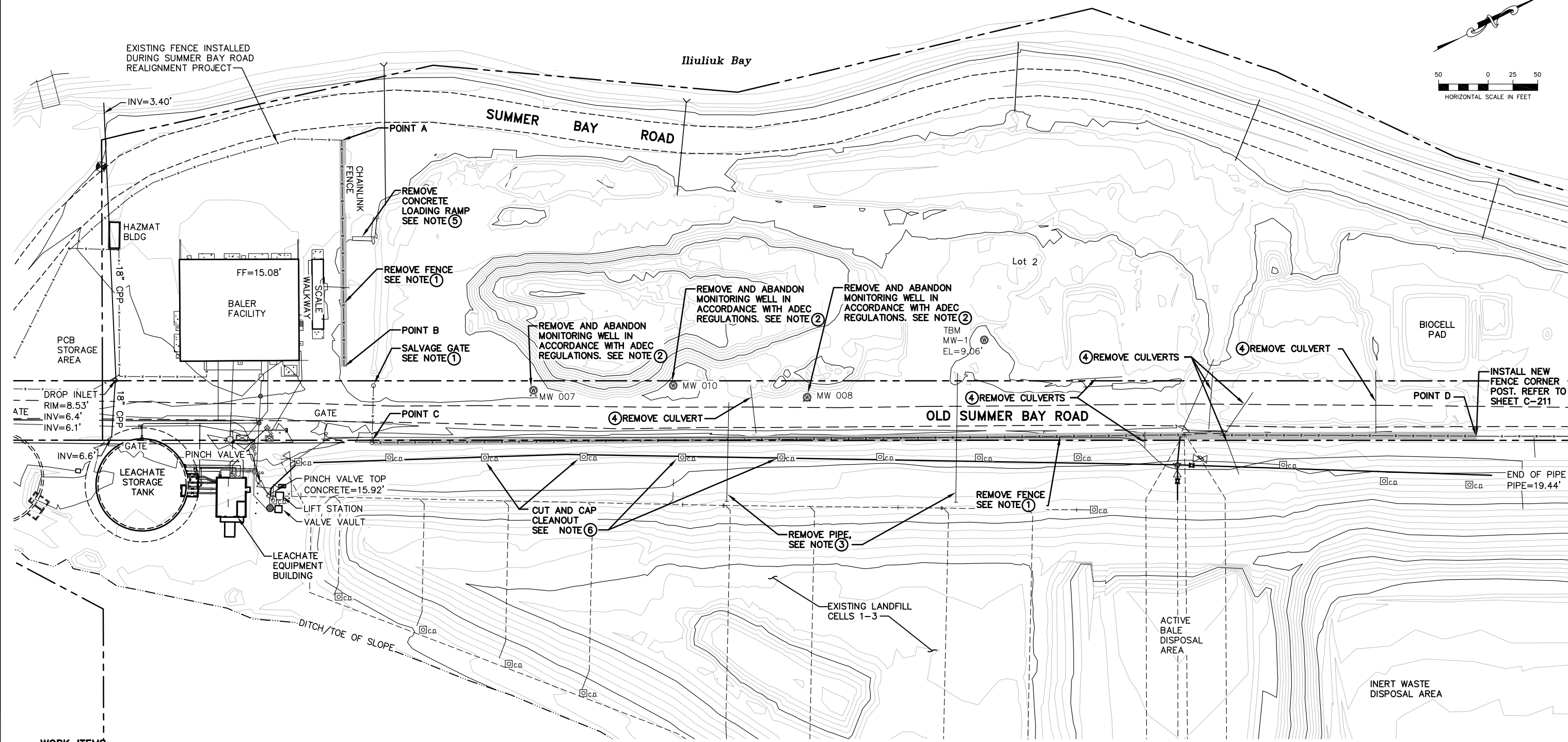
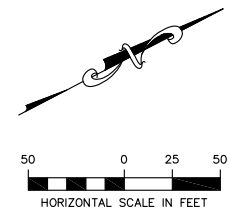


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CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
CONSTRUCTION LIMITS
 SCALE: SHOWN | DESIGNED: FJV | CHECKED: FJV | DRAWN: DES | DATE: 5/16/14

SHEET
C-101
 SHEET 5 OF 43



WORK ITEMS:

- ① REMOVE EXISTING FENCE ALONG NORTH SIDE OF BALER BUILDING BETWEEN POINT "A" AND POINT "B" AND ALONG THE OLD SUMMER BAY ROAD BETWEEN POINT "C" AND POINT "D". SALVAGE EXISTING GATE, RELOCATE AS SHOWN ON SHEET C-210 AND DELIVER TO CITY. FENCING MATERIAL SHALL BE ROLLED UP AND DISPOSED OF AT INERT WASTE AREA.
- ② ABANDON MONITORING WELLS 007, 008 & 010. FILL PVC, SALVAGE CASING AND LOCKING LID, DELIVER TO CITY. CONSTRUCT NEW MONITORING WELLS AS SHOWN ON SHEET C-209 AS DEFINED IN THE SPECIFICATIONS AND ADEC REGULATIONS, SEE APPENDIX D IN CONTRACT DOCUMENTS.
- ③ IF THE EXISTING 8" PERFORATED HDPE PIPE OR 12" PVC PIPE IS ENCOUNTERED DURING EXCAVATION. REMOVE SECTION LOCATED WITHIN THE CONSTRUCTION LIMITS AND PLUG REMAINING PIPE WITH CONCRETE END PLUG. USE CAUTION WHEN REMOVING THESE PIPES AS THEY CONNECT TO EXISTING CELL LINERS. OTHER EXISTING PIPES WITHIN WORK AREA SHALL BE REMOVED IN A SIMILAR MANNER.
- ④ REMOVE EXISTING CULVERTS CROSSING AND ADJACENT TO THE OLD SUMMER BAY ROAD ALIGNMENT.
- ⑤ REMOVE CONCRETE LOADING RAMP AND DISPOSE OF AT INERT WASTE AREA. CONCRETE SHALL BE BROKEN INTO PIECES NO LARGER THAN 30".
- ⑥ CUT AND CAP CLEANOUT, TYP OF 4. SEE DET 3/SHT C-223.

GENERAL NOTES:

- 1. LANDFILL TO REMAIN IN FULL OPERATION DURING CONSTRUCTION. SEE SHEET C-101 FOR REQUIRED ACCESS WHEN LANDFILL IS OPEN.
- 2. CONSTRUCTION ACTIVITIES WILL BE NEXT TO AN ACTIVE LANDFILL. REFER TO SHEET C-201 FOR LIMITS OF LINED LANDFILL CELLS. NOTIFY ENGINEER IF ANY SUSPECTED LANDFILL DEBRIS IS ENCOUNTERED DURING EXCAVATION ACTIVITIES.
- 3. REPAIR AND/OR REPLACE THE EXISTING FENCE AND GATES AS NEEDED FOR CONSTRUCTION ACCESS IN ACCORDANCE WITH THE REQUIREMENTS OF SHEET C-211.
- 4. THE CONTRACTOR SHALL DOCUMENT BY PHOTOLOG THE EXISTING CONDITIONS. THE CONTRACTOR SHALL USE LOGS FOR REPAIRS AND/OR REPLACEMENTS TO DAMAGED FACILITIES AND DISTURBED AREAS BY CONSTRUCTION.

FOR CONSTRUCTION V.2

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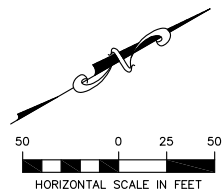
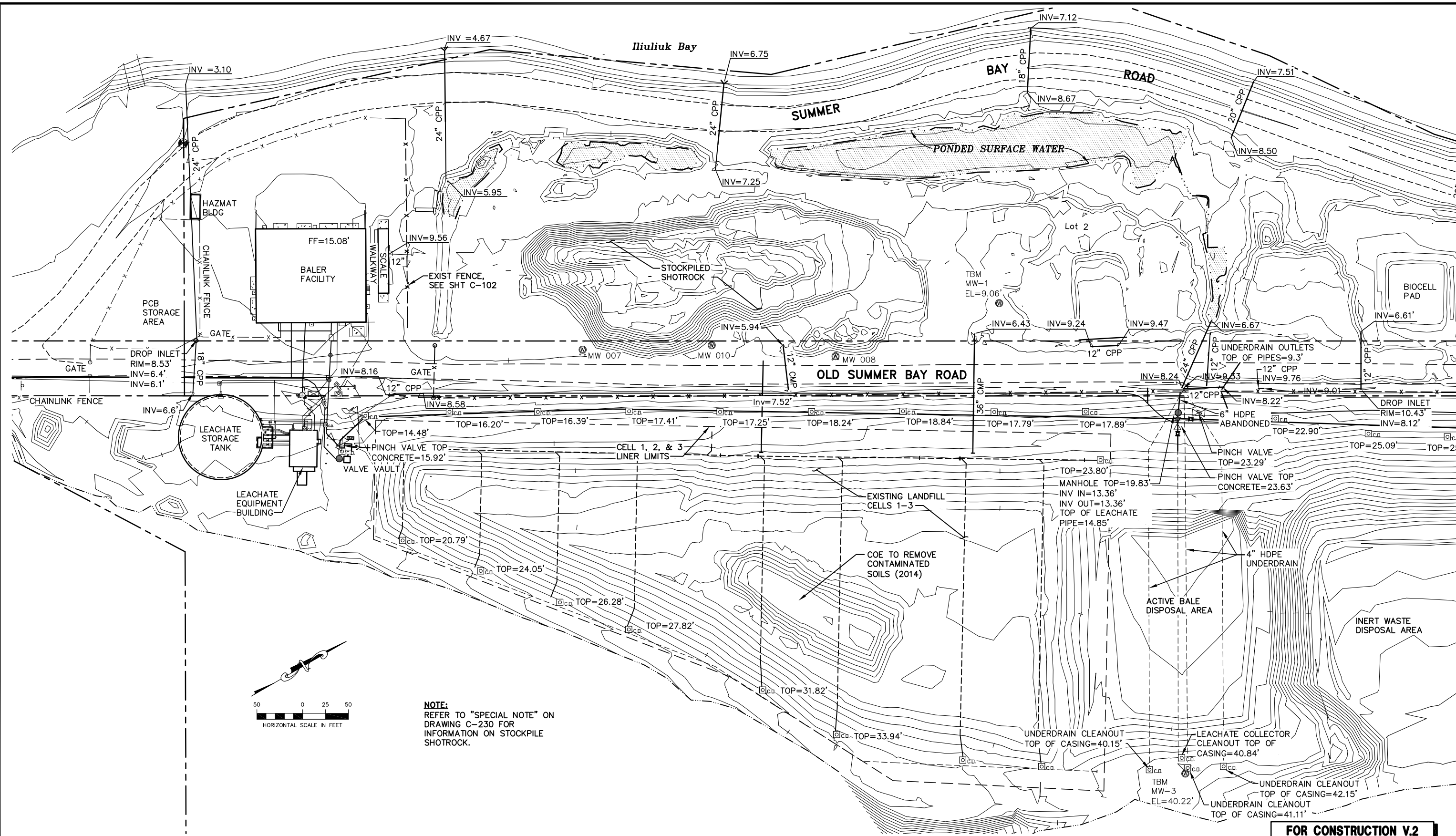
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DEMOLITION PLAN
 SCALE: SHOWN | DESIGNED: FJV | CHECKED: FJV | DRAWN: DES | DATE: 5/16/14

SHEET
C-102
 SHEET 6 OF 43

User: DSQUER May 23, 2014 - 1:45pm
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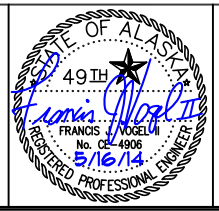


NOTE:
 REFER TO "SPECIAL NOTE" ON
 DRAWING C-230 FOR
 INFORMATION ON STOCKPILE
 SHOTROCK.

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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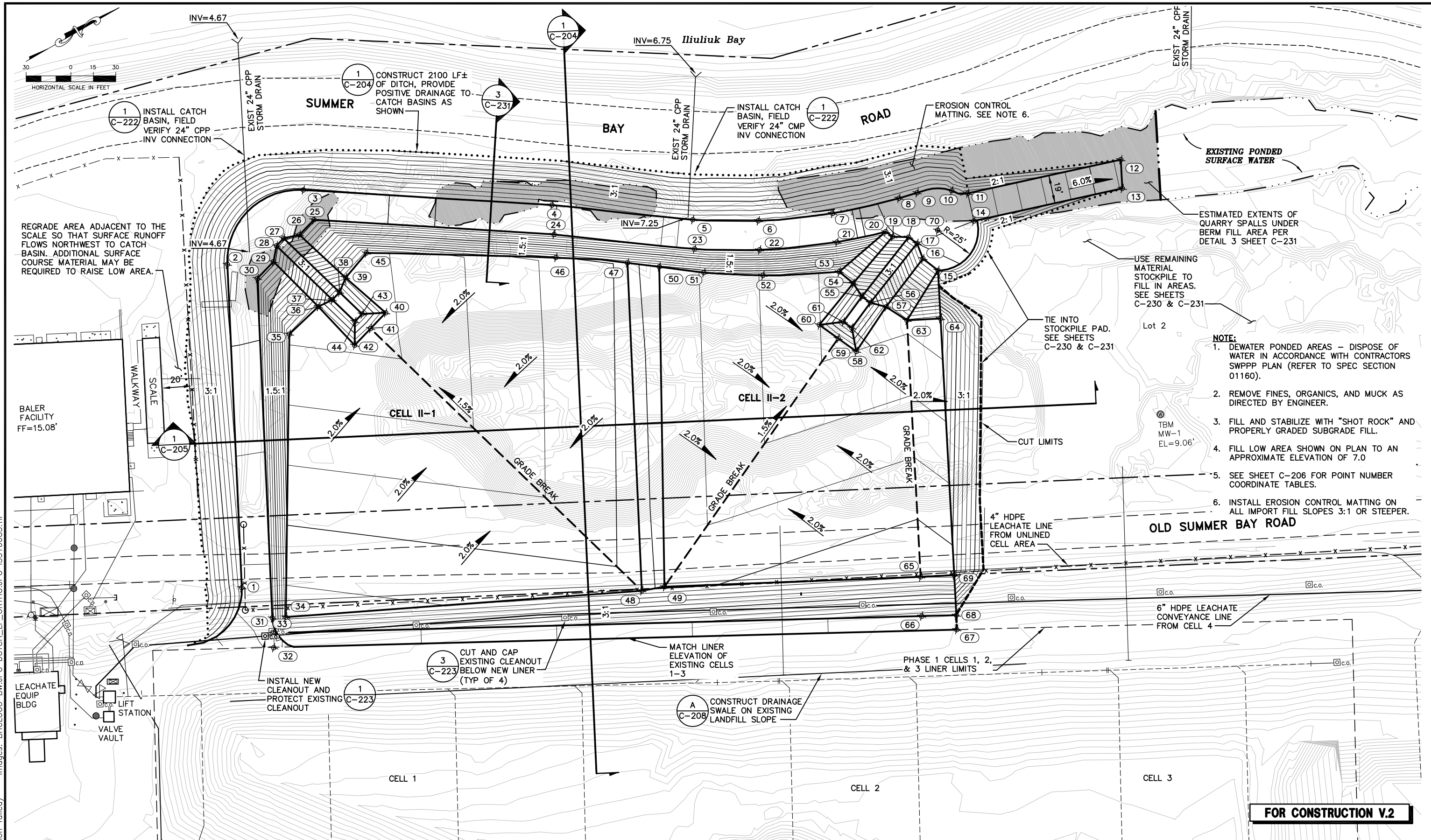
BHC
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 Seattle, Washington 98104-1820



CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
EXISTING CONDITIONS PLAN
 SCALE: SHOWN | DESIGNED: FJV | CHECKED: FJV | DRAWN: DES | DATE: 5/16/14

SHEET
C-201
 SHEET 7 OF 43

User: DSQUER May 23, 2014 - 1:45pm
 Drawing: K:\JOBS\211042 CELLS 2-1 & 2-2\ACAD-DESIGN\CELL II-1 II-2 DESIGN-REBID SET\211042_C202-6.DWG - Layout: C202
 Xrefs: (DIESEL evaluation failed) - Images: BHCLGO BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF



EXISTING PONDED SURFACE WATER

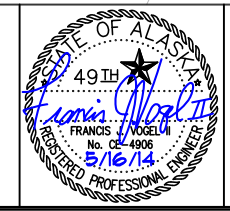
ESTIMATED EXTENTS OF QUARRY SPALLS UNDER BERM FILL AREA PER DETAIL 3 SHEET C-231

- NOTE:**
1. DEWATER PONDED AREAS - DISPOSE OF WATER IN ACCORDANCE WITH CONTRACTORS SWPPP PLAN (REFER TO SPEC SECTION 01160).
 2. REMOVE FINES, ORGANICS, AND MUCK AS DIRECTED BY ENGINEER.
 3. FILL AND STABILIZE WITH "SHOT ROCK" AND PROPERLY GRADED SUBGRADE FILL.
 4. FILL LOW AREA SHOWN ON PLAN TO AN APPROXIMATE ELEVATION OF 7.0
 5. SEE SHEET C-206 FOR POINT NUMBER COORDINATE TABLES.
 6. INSTALL EROSION CONTROL MATTING ON ALL IMPORT FILL SLOPES 3:1 OR STEEPER.

FOR CONSTRUCTION V.2

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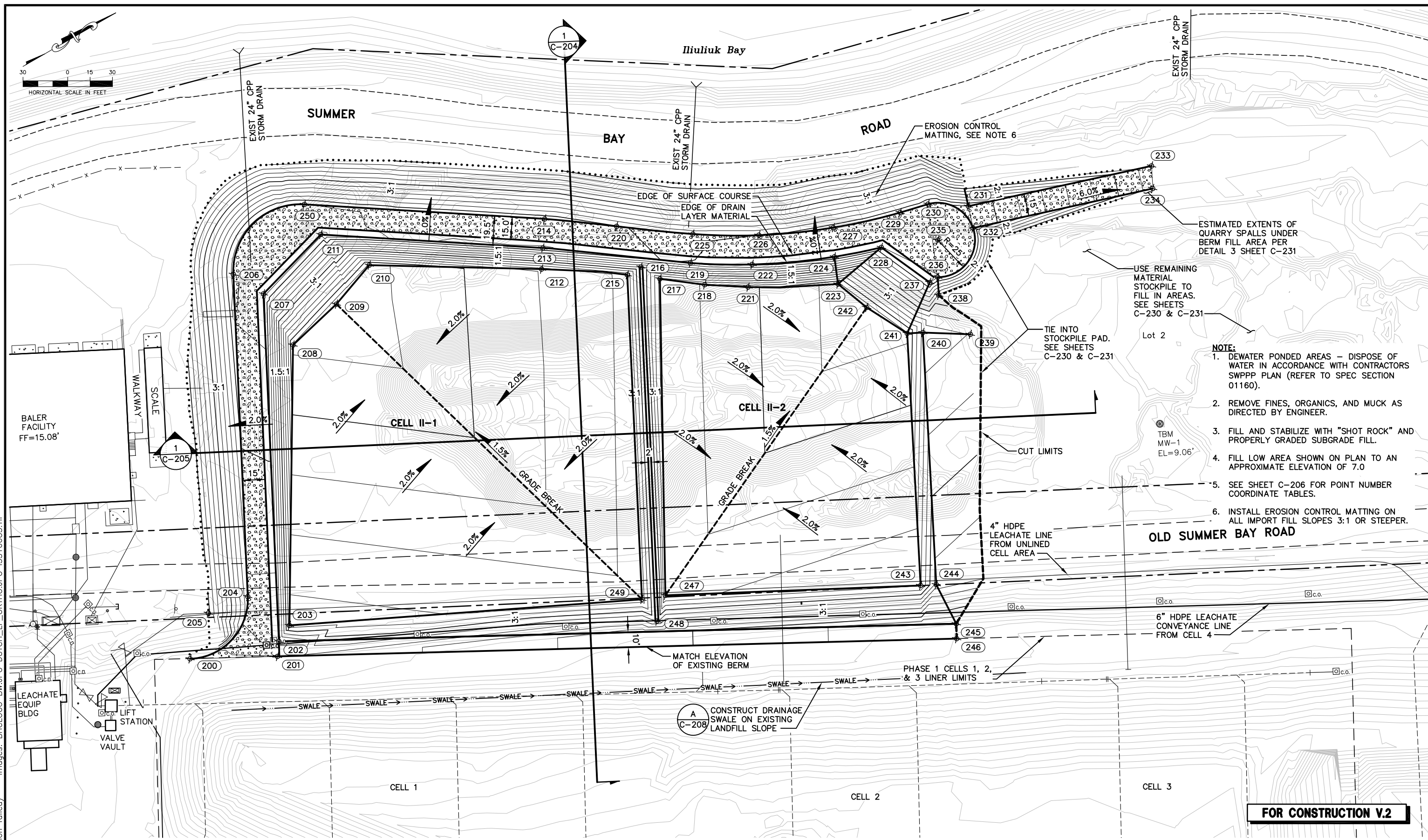


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
 LINER FOUNDATION GRADING PLAN

SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14

SHEET
C-202
 SHEET 8 OF 43

User: DSQUER May 23, 2014 - 1:46pm
 Drawing: K:\JOBS\211042 CELLS 2-1 & 2-2\ACAD-DESIGN\CELL II-1 II-2 DESIGN\REBID SET\211042_C202-6.DWG - Layout: C203
 Xrefs: (DIESEL evaluation failed) - Images: BHCLGO BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF



- NOTE:**
1. DEWATER PONDED AREAS - DISPOSE OF WATER IN ACCORDANCE WITH CONTRACTORS SWPPP PLAN (REFER TO SPEC SECTION 01160).
 2. REMOVE FINES, ORGANICS, AND MUCK AS DIRECTED BY ENGINEER.
 3. FILL AND STABILIZE WITH "SHOT ROCK" AND PROPERLY GRADED SUBGRADE FILL.
 4. FILL LOW AREA SHOWN ON PLAN TO AN APPROXIMATE ELEVATION OF 7.0
 5. SEE SHEET C-206 FOR POINT NUMBER COORDINATE TABLES.
 6. INSTALL EROSION CONTROL MATTING ON ALL IMPORT FILL SLOPES 3:1 OR STEEPER.

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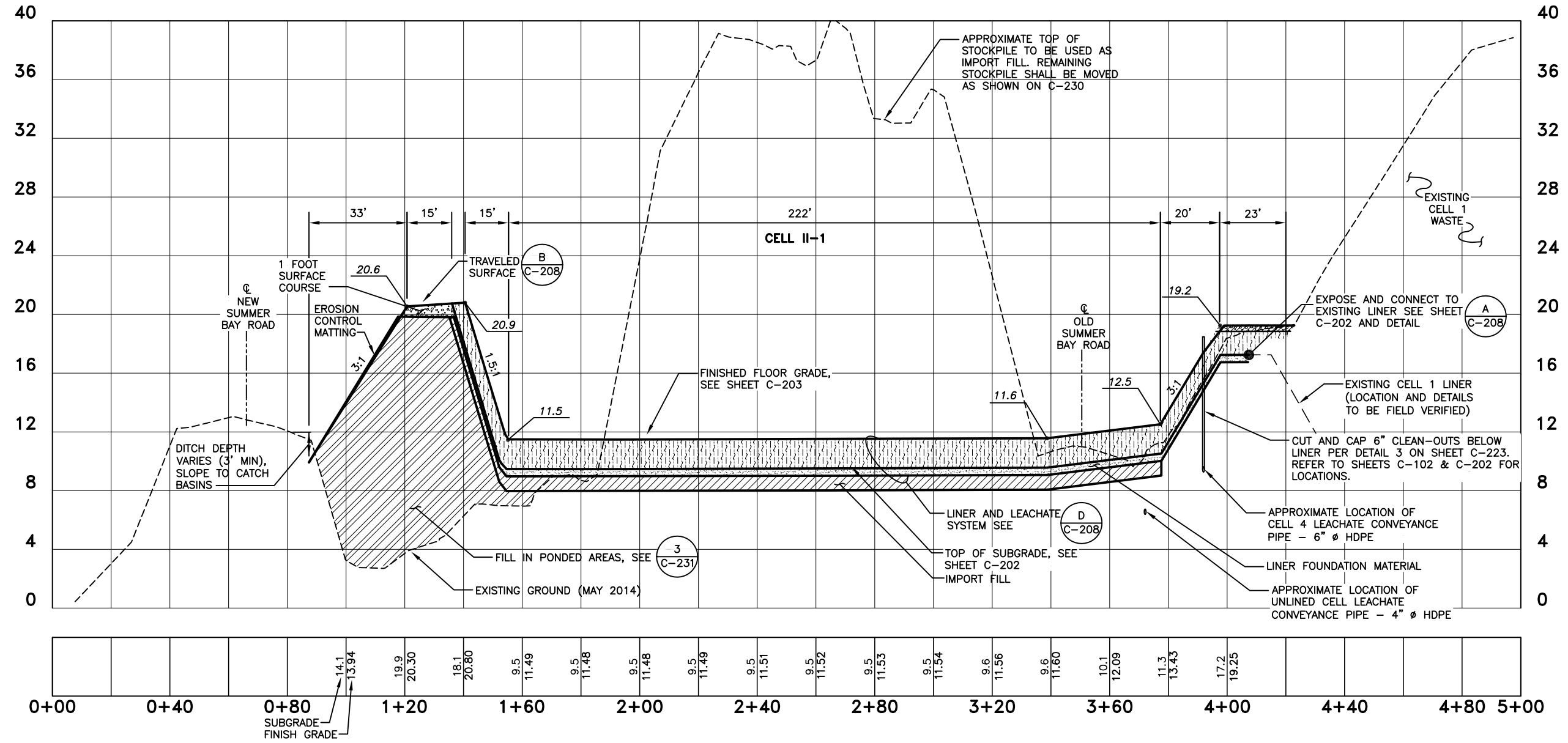
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UNALASKA

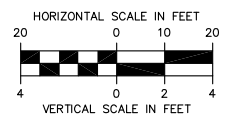
CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
FINISHED FLOOR GRADING PLAN
 SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14

SHEET
C-203
 SHEET 9 OF 43

User: DSQUIER May 23, 2014 - 1:46pm
 Drawing: K:\JOBS\211042 CELLS 2-1 & 2-2\ACAD-DESIGN\CELL II-1 II-2 DESIGN-REBID SET\211042_C202-6.DWG - Layout: C204
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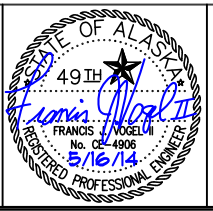
1 CELL II-1 SECTION
 C-203 SCALE: NTS



FOR CONSTRUCTION V.2

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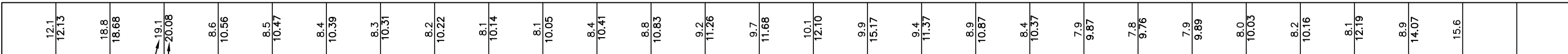
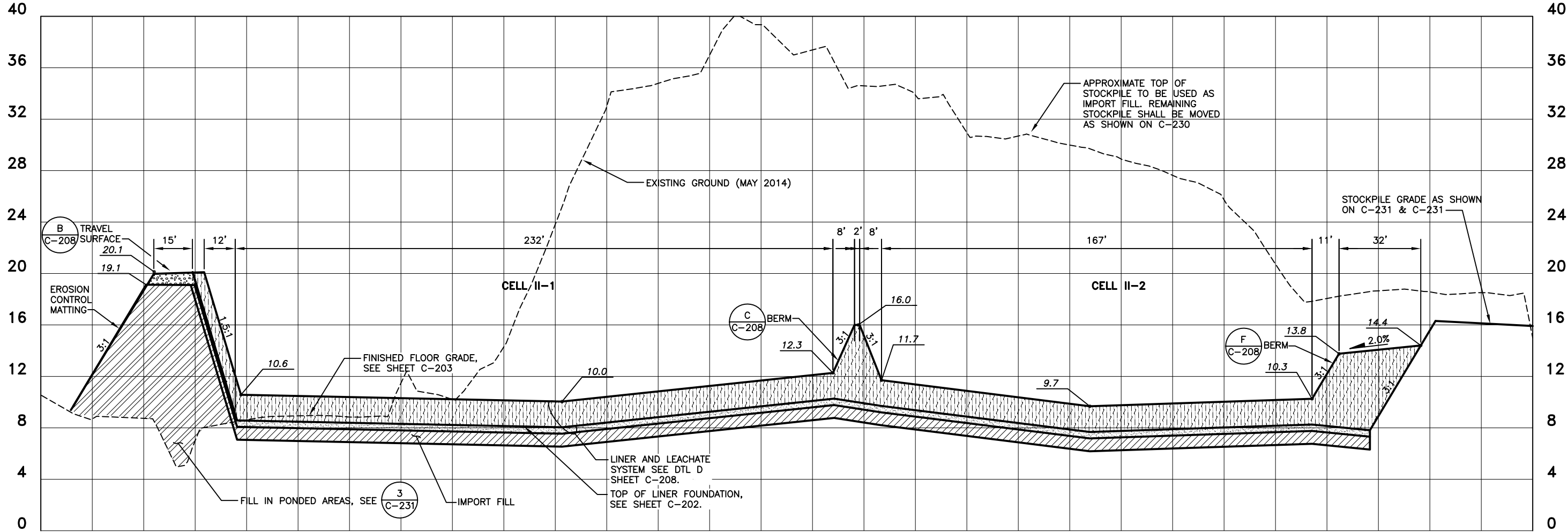


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
CELL II-1 SECTION

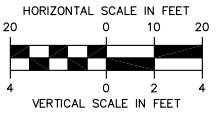
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SHEET
C-204
SHEET 10 OF 43

User: DSQUIER May 23, 2014 - 1:46pm
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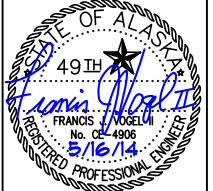
1
 C-203 **CELL II-1 & CELL II-2 SECTION**
 SCALE: SHOWN



FOR CONSTRUCTION V.2

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NO.	DATE	BY	DESCRIPTION

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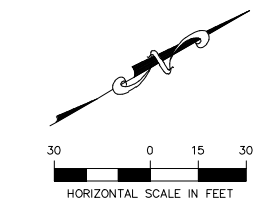
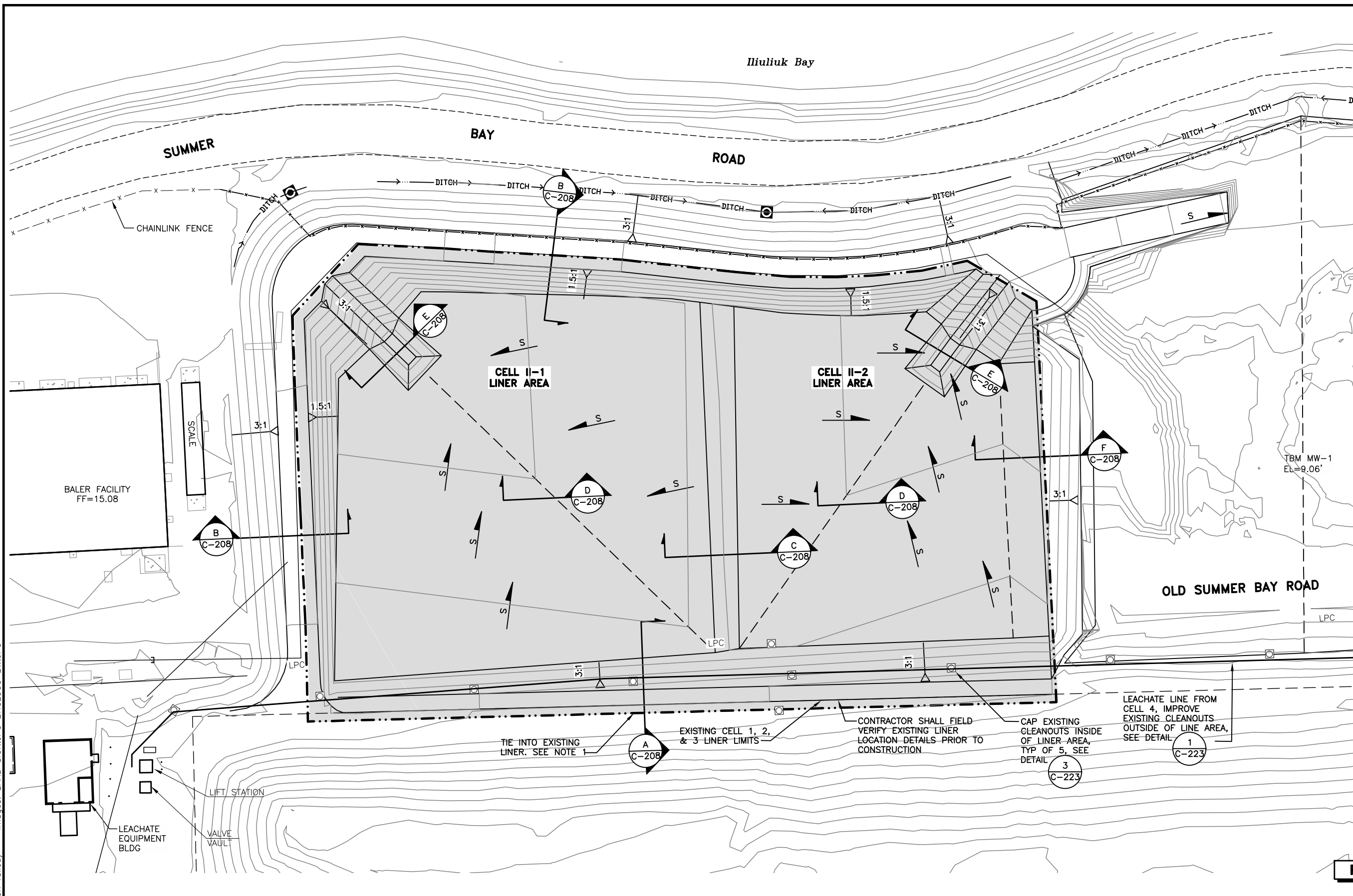
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CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
CELLS II-1 & II-2 SECTIONS
 SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14

SHEET
C-205
 SHEET 11 OF 43

User: PSIMON May 13, 2014 - 3:19pm
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 Xrefs: (DIESEL evaluation failed) - Images: BARD_SIGN.JPG BHCLOGO_BW.JPG



- CONSTRUCTION NOTES:**
- EXISTING MEMBRANE SHALL NOT BE DAMAGED DURING CONSTRUCTION. IF, IN THE OPINION OF THE ENGINEER, CONTRACTOR'S METHOD COULD OR DID DAMAGE THE GEOMEMBRANE, THEN CONSTRUCTION TECHNIQUES USED TO EXPOSE GEOMEMBRANE SHALL BE MODIFIED. THE CONTRACTOR SHALL TEST AND REPAIR ALL DAMAGED GEOMEMBRANE AT NO COST TO THE OWNER.
 - PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT A PROPOSED METHOD OF CONSTRUCTION AND SHORING TO PREVENT EXISTING SLOPE FROM BECOMING UNSTABLE.
 - CONTOURS WITHIN LINER LIMITS ARE SUBGRADE CONTOURS.

LEACHATE LINE FROM CELL 4, IMPROVE EXISTING CLEANOUTS OUTSIDE OF LINE AREA, SEE DETAIL 1 C-223

CAP EXISTING CLEANOUTS INSIDE OF LINER AREA, TYP OF 5, SEE DETAIL 3 C-223

TIE INTO EXISTING LINER. SEE NOTE 1 A C-208

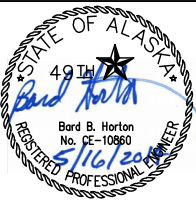
EXISTING CELL 1, 2, & 3 LINER LIMITS

CONTRACTOR SHALL FIELD VERIFY EXISTING LINER LOCATION-DETAILS PRIOR TO CONSTRUCTION

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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 Seattle, Washington 98101

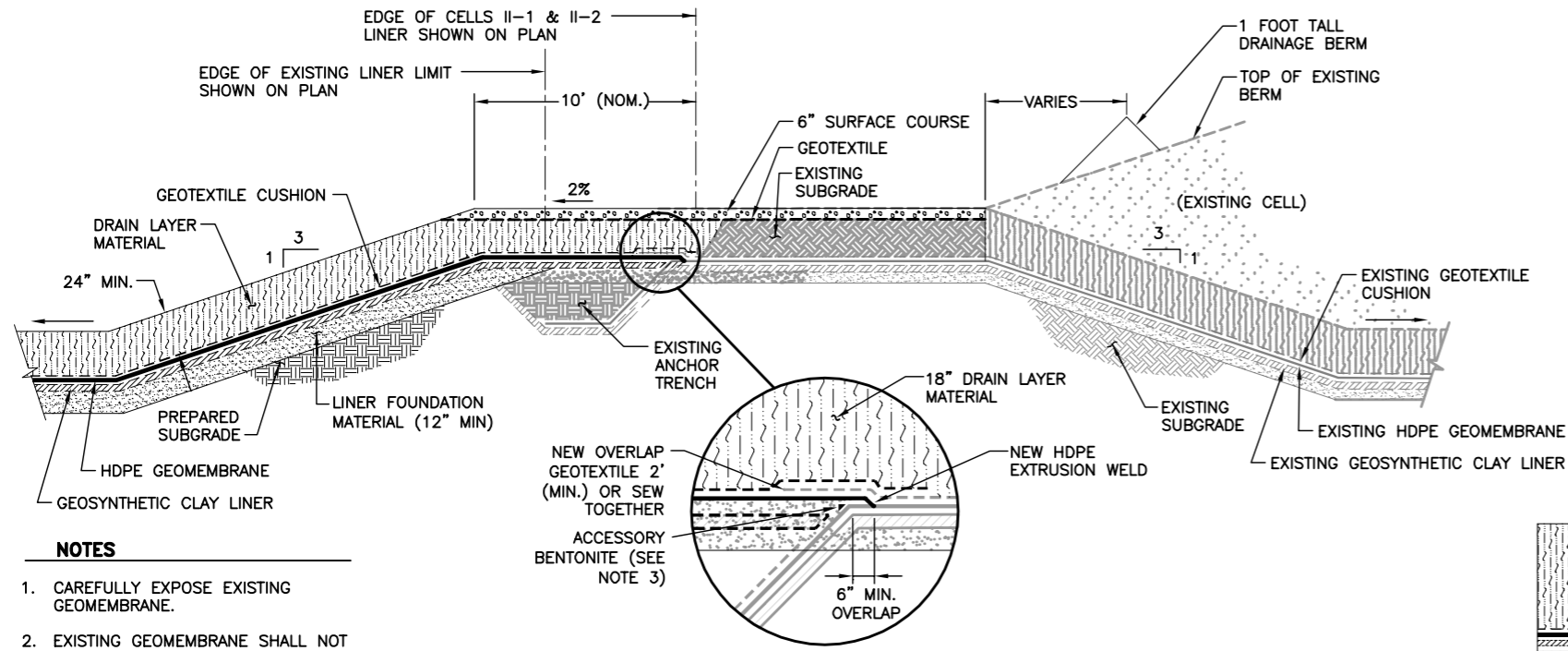


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
 LINER SYSTEM PLAN

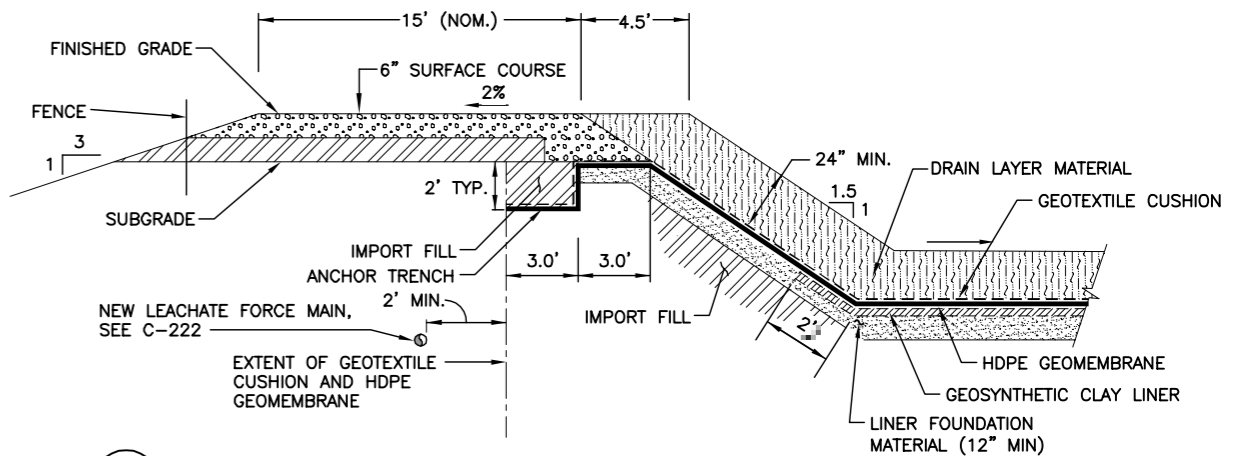
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SHEET
C-207
 SHEET 13 OF 43

User: PSIMON May 13, 2014 - 9:38am
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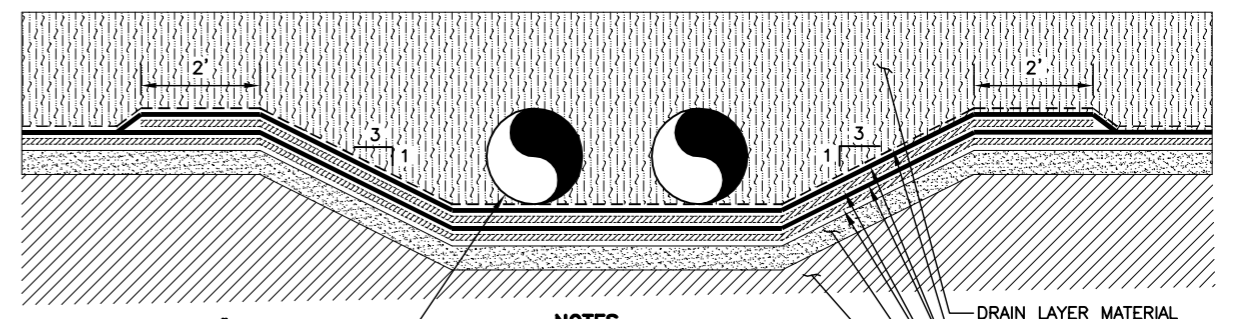


A CELLS 1, 2 & 3 TO CELLS II-1 & II-2 TIE IN SECTION
 SCALE: NTS

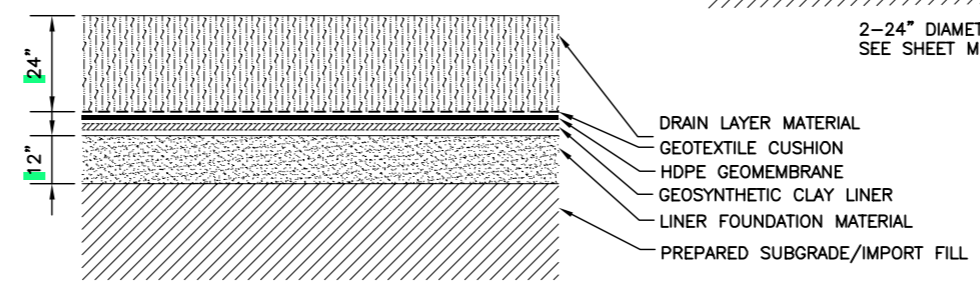


B TYPICAL LINER SYSTEM ANCHOR TRENCH SECTION
 SCALE: NTS

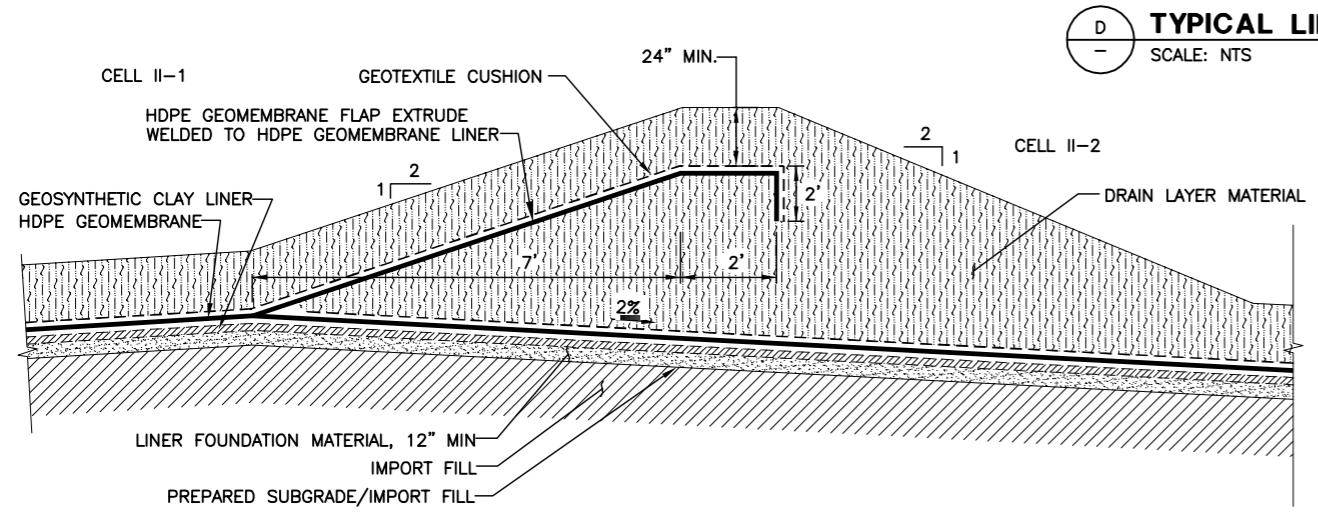
- NOTES**
- CAREFULLY EXPOSE EXISTING GEOMEMBRANE.
 - EXISTING GEOMEMBRANE SHALL NOT BE DAMAGED DURING CONSTRUCTION. IF, IN THE OPINION OF THE ENGINEER, CONTRACTOR'S METHOD COULD OR DID DAMAGE THE GEOMEMBRANE, THEN CONSTRUCTION TECHNIQUES USED TO EXPOSE GEOMEMBRANE SHALL BE MODIFIED. THE CONTRACTOR SHALL TEST AND REPAIR ALL DAMAGED GEOMEMBRANE AT NO COST TO THE OWNER.
 - PLACE ACCESSORY BENTONITE ALONG SEAM AT 1/4 POUND PER LINEAR FOOT PER SECTION 02076 - GEOSYNTHETIC CLAY LINER.
 - TO GEOMEMBRANE 3" MINIMUM RADIUS OR CHAMFER ARE REQUIRED FOR ANCHORING TRENCHES AND ANCHORING END SECTIONS.



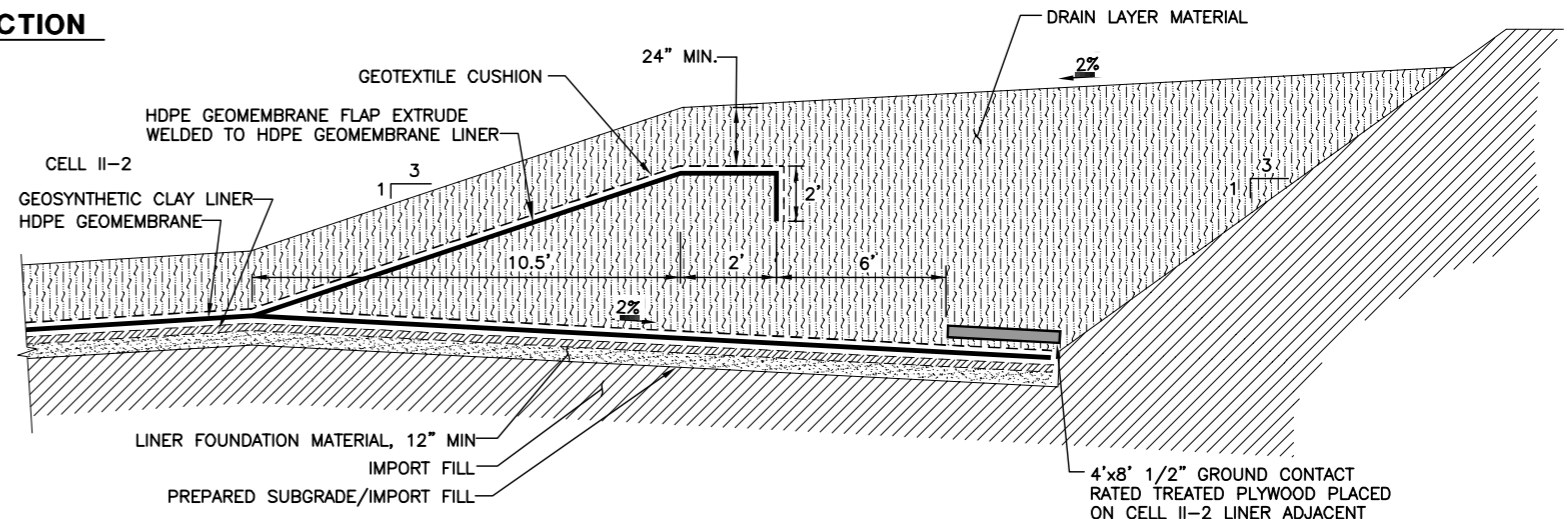
E LINER SUMP SECTION
 SCALE: NTS



D TYPICAL LINER SECTION
 SCALE: NTS



C INTERMEDIATE BERM SECTION
 SCALE: NTS



F END BERM SECTION
 SCALE: NTS

FOR CONSTRUCTION V.2

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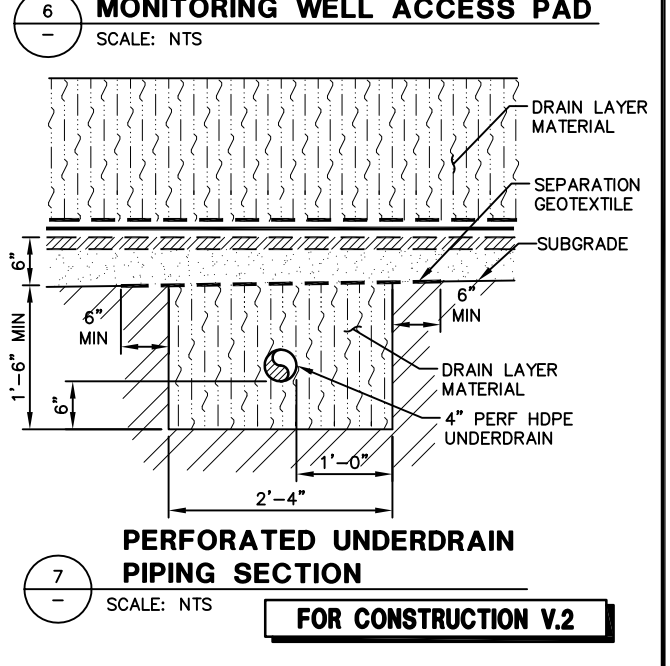
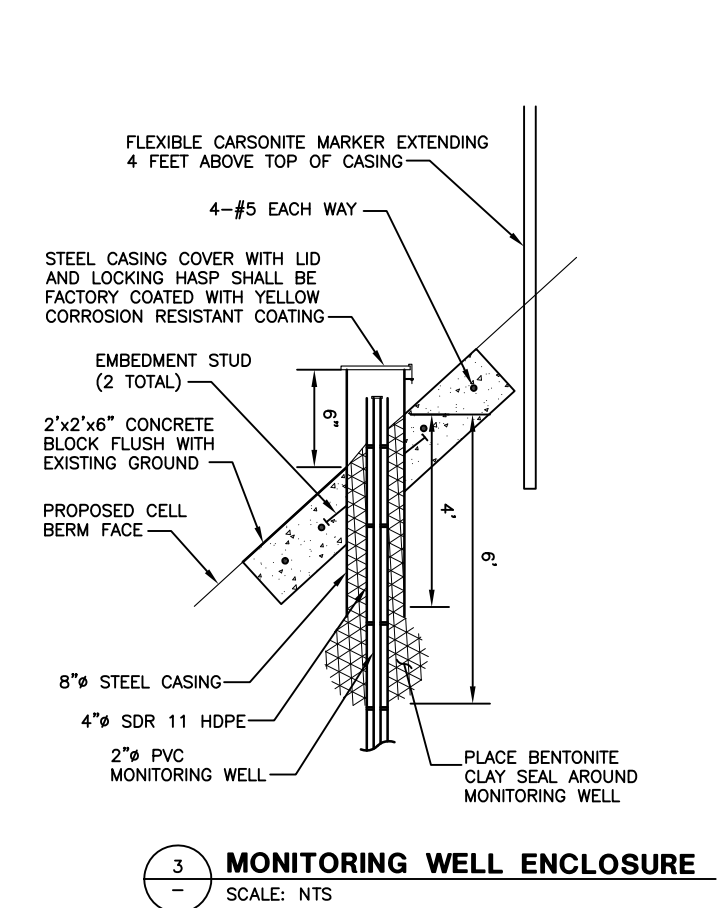
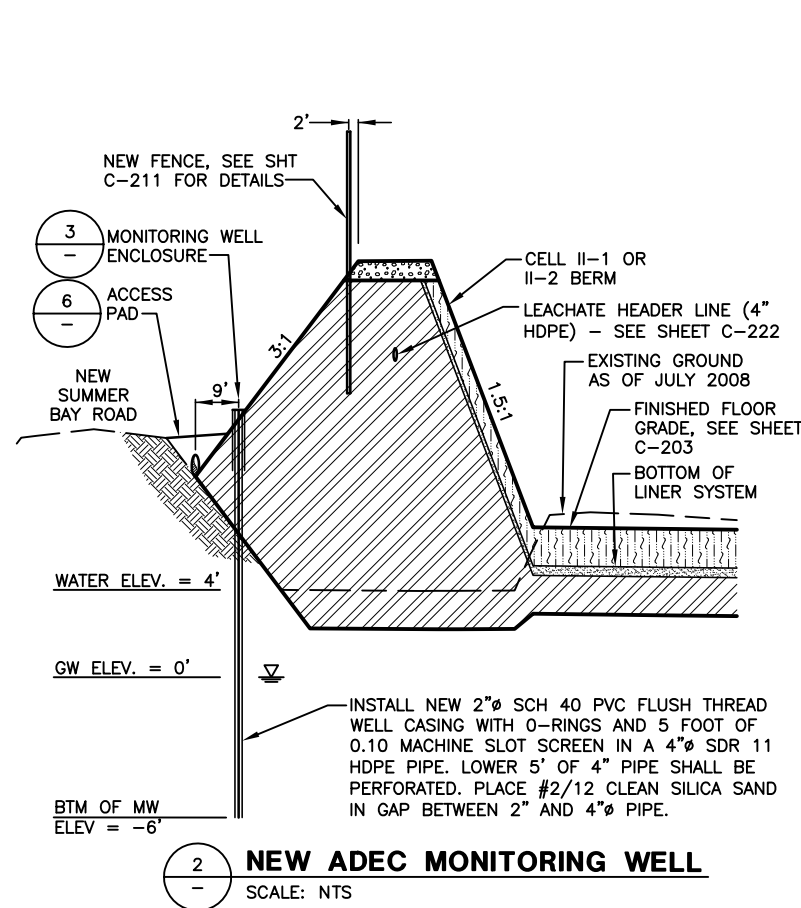
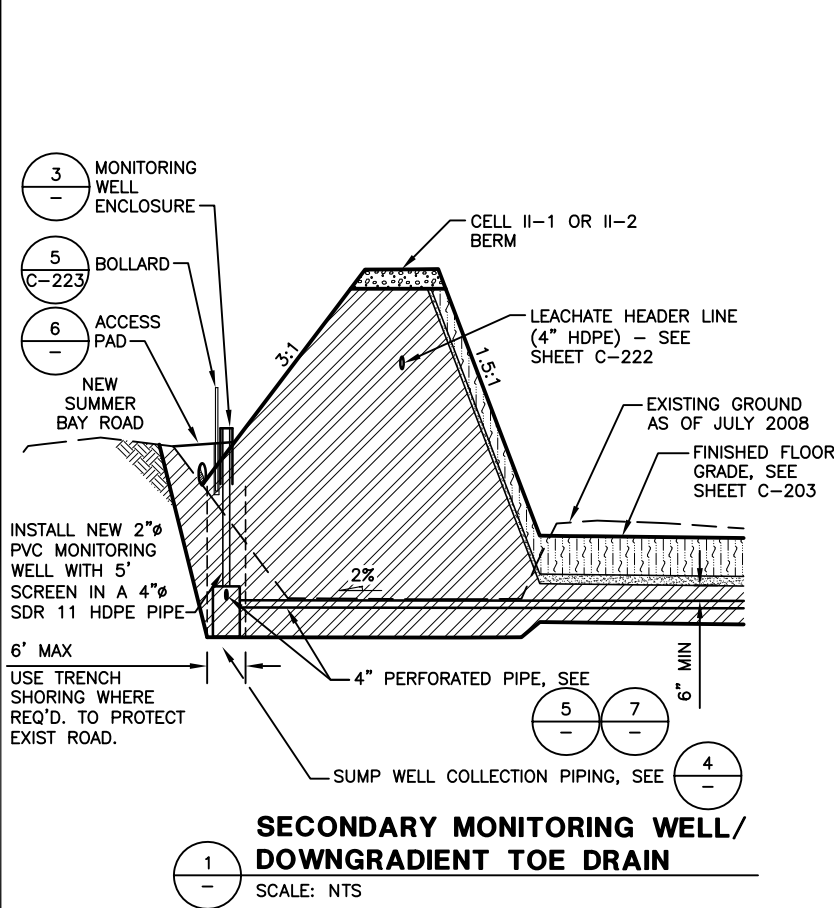
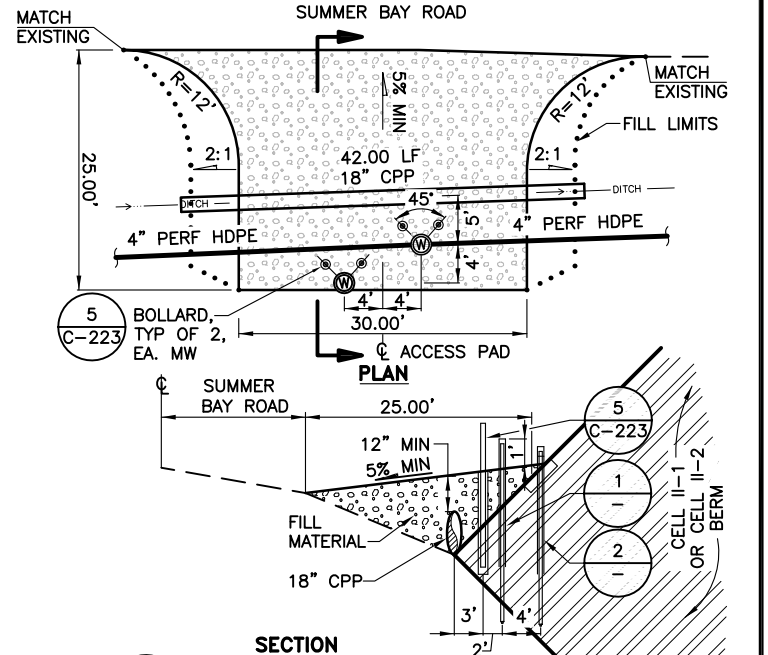
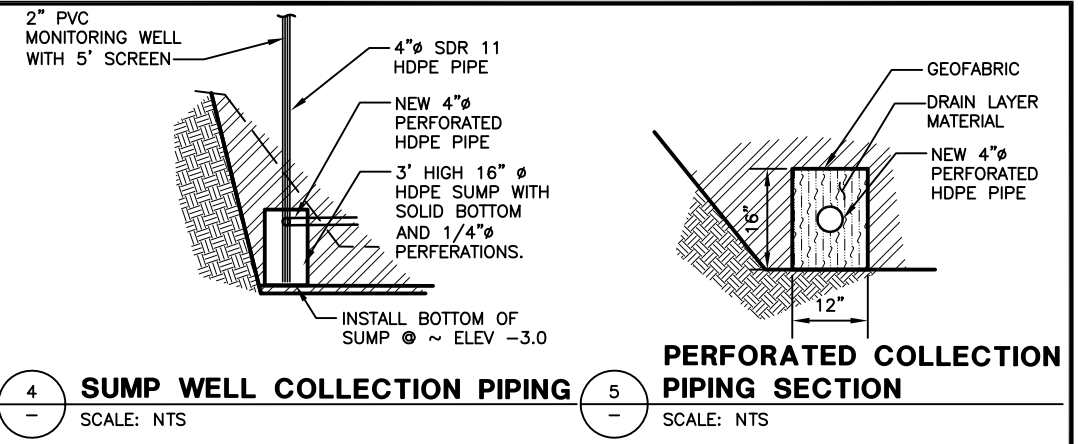
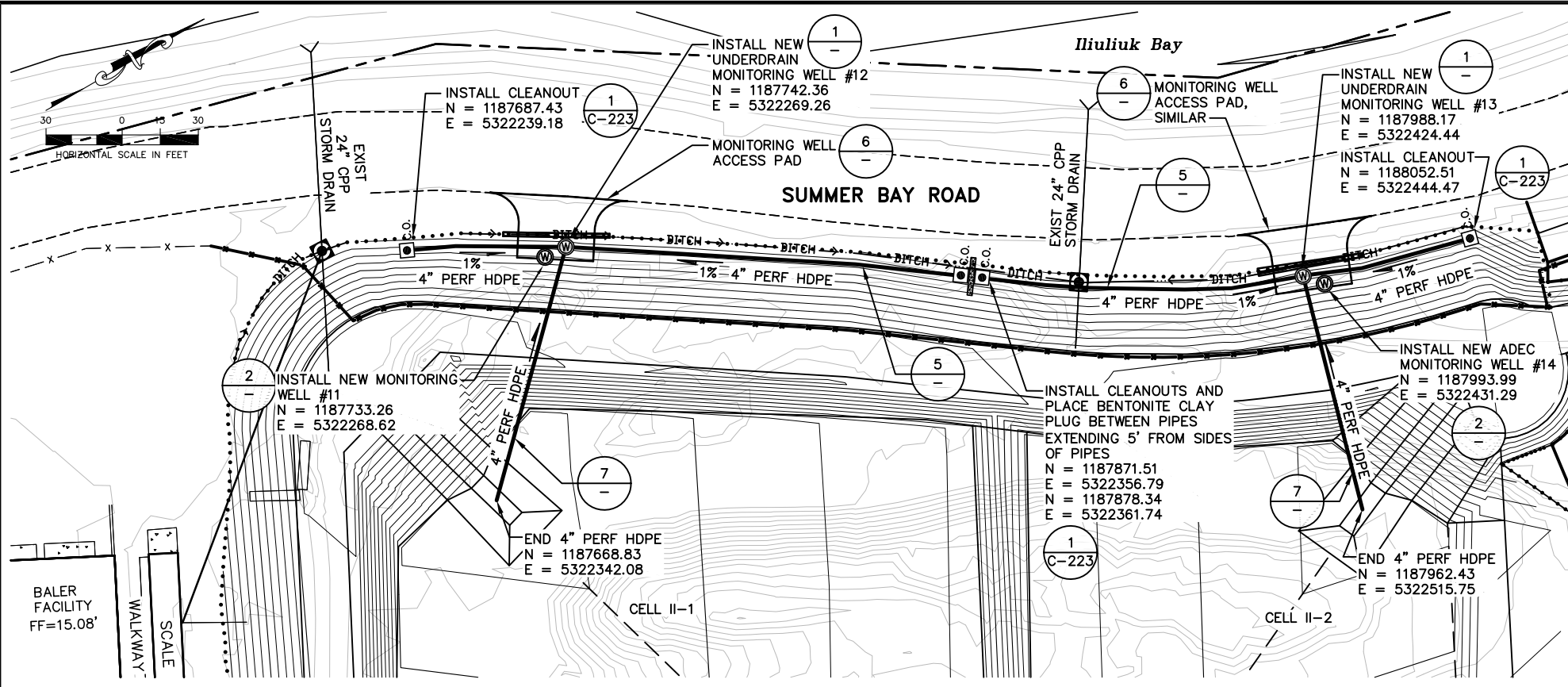
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 Seattle, Washington 98104-1820



CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
 LINER SYSTEM SECTIONS
 SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14

SHEET
 C-208
 SHEET 14 OF 43

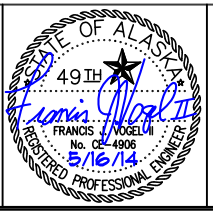
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 Xrefs: BR22\34BR_UNAK.DWG 211042_SITE-LAYOUT.DWG - Images: BH.CLOGO_BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF



FOR CONSTRUCTION V.2

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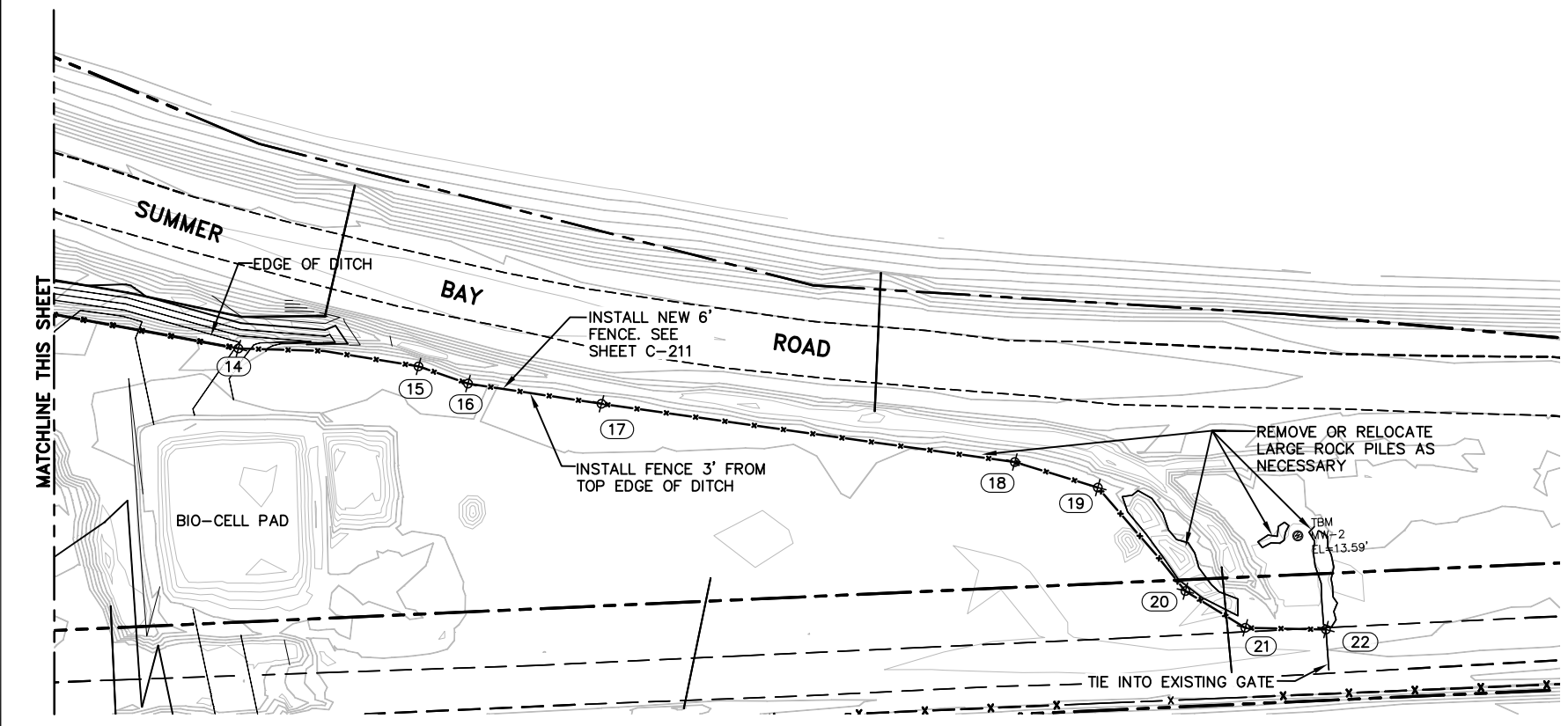
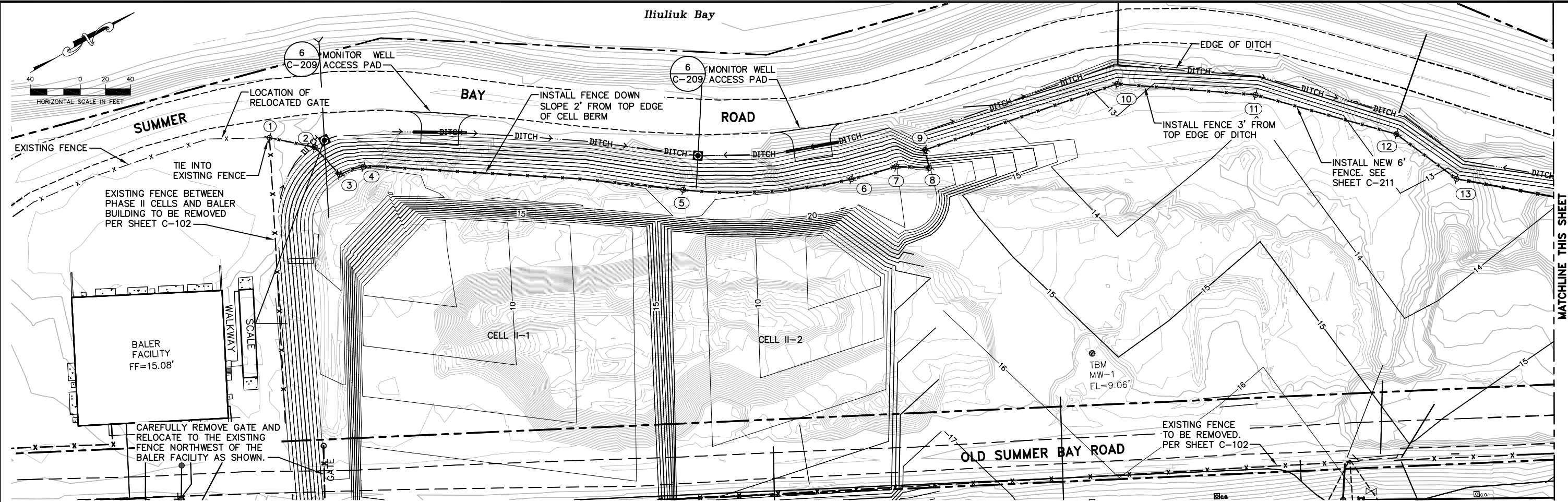
BHC
CONSULTANTS
BHC Consultants, LLC
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Seattle, Washington 98104-1820



CITY OF UNALASKA
CELLS II-1 & II-2 LANDFILL EXPANSION
MONITORING WELLS CONSTRUCTION PLAN AND DETAILS

SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14 SHEET 15 OF 43

User: DSQUER May 23, 2014 - 1:46pm
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FENCE COORDINATE TABLE		
POINT #	NORTHING	EASTING
1	1187621.42	5322199.03
2	1187648.88	5322223.67
3	1187655.25	5322252.61
4	1187674.75	5322256.48
5	1187886.62	5322400.18
6	1188007.14	5322459.87
7	1188043.28	5322468.98
8	1188065.48	5322483.16
9	1188069.81	5322469.07
10	1188229.04	5322500.20
11	1188320.32	5322563.00

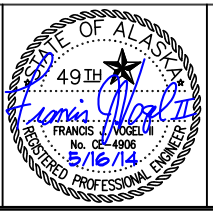
FENCE COORDINATE TABLE		
POINT #	NORTHING	EASTING
12	1188402.06	5322646.40
13	1188425.78	5322701.28
14	1188553.88	5322810.63
15	1188623.46	5322860.58
16	1188639.68	5322879.34
17	1188689.61	5322919.19
18	1188845.22	5323040.88
19	1188873.21	5323071.00
20	1188884.58	5323134.12
21	1188900.44	5323163.38
22	1188933.11	5323183.16

NOTES:
 1. PULL POSTS SHALL BE INSTALLED AT POINTS 1, 2, 3, 4, 7, 8, 9, 10, 13, 19, AND 22. PULL POST SPACING BETWEEN THESE POINTS SHALL BE NO MORE THAN 50'.

FOR CONSTRUCTION V.2

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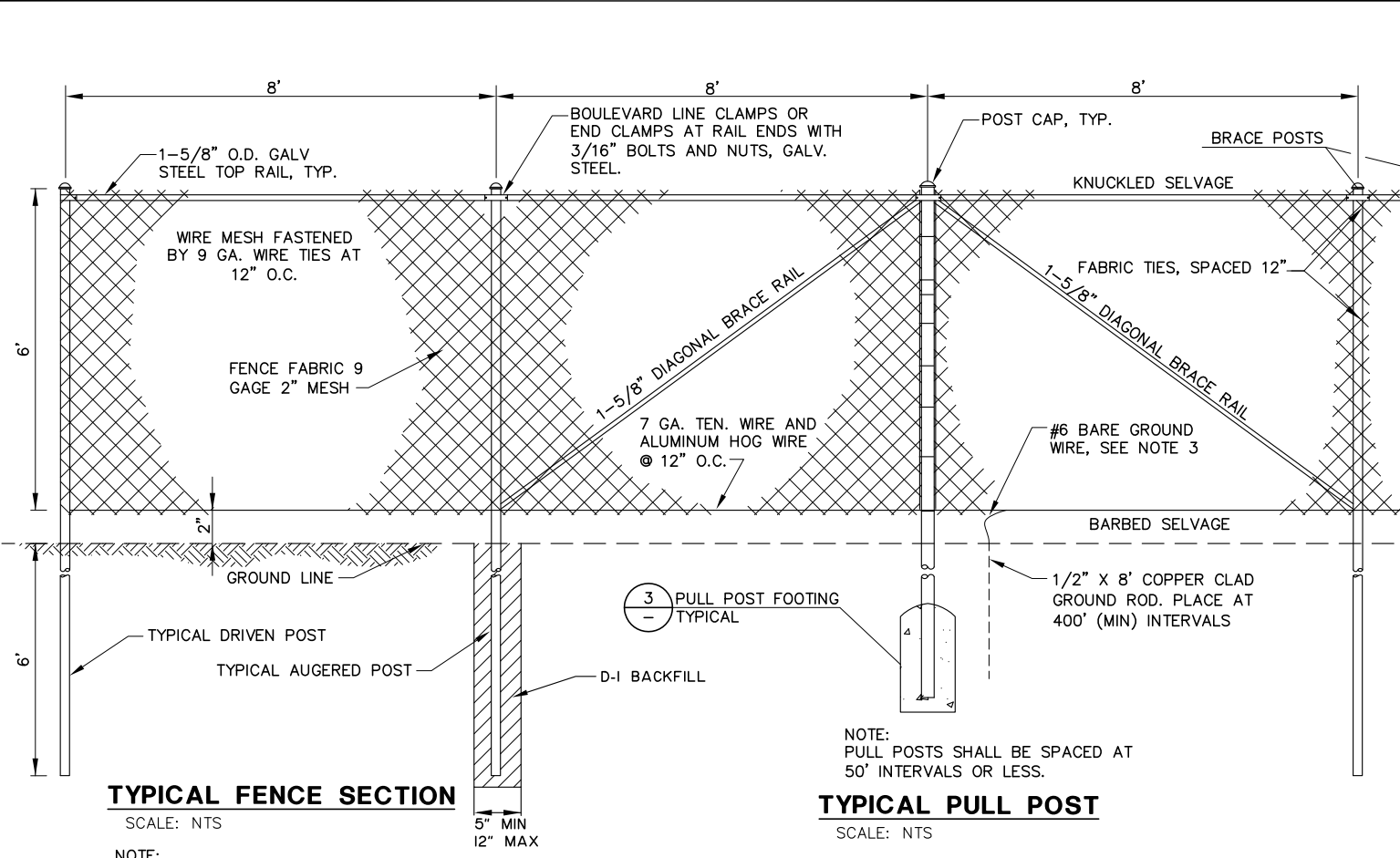
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 BHC Consultants, LLC
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 Seattle, Washington 98104-1820



CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
FENCING PLAN
 SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14

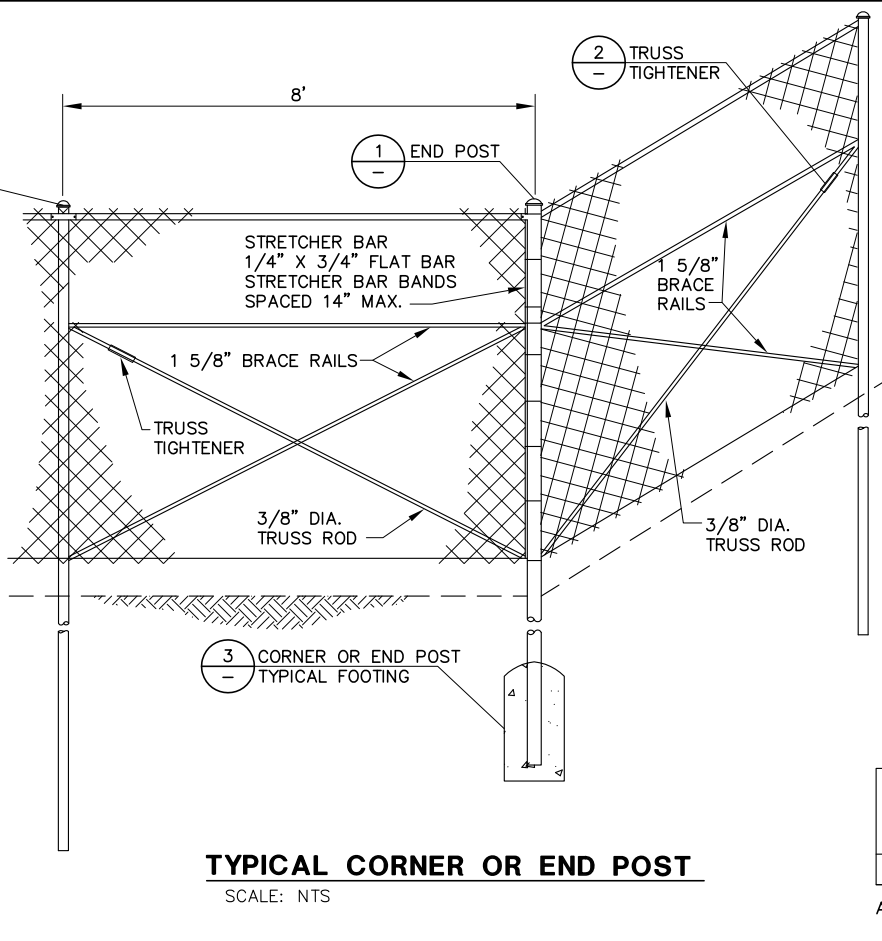
SHEET
C-210
 SHEET 16 OF 43

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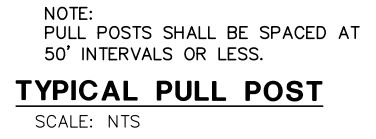
TYPICAL FENCE SECTION
SCALE: NTS

- NOTE:
 1. FABRIC SHALL BE PLACED ON ROAD SIDE OF POST.
 2. LINE POSTS SHALL BE DRIVEN OR AUGURED AS SHOWN ABOVE.



TYPICAL CORNER OR END POST
SCALE: NTS

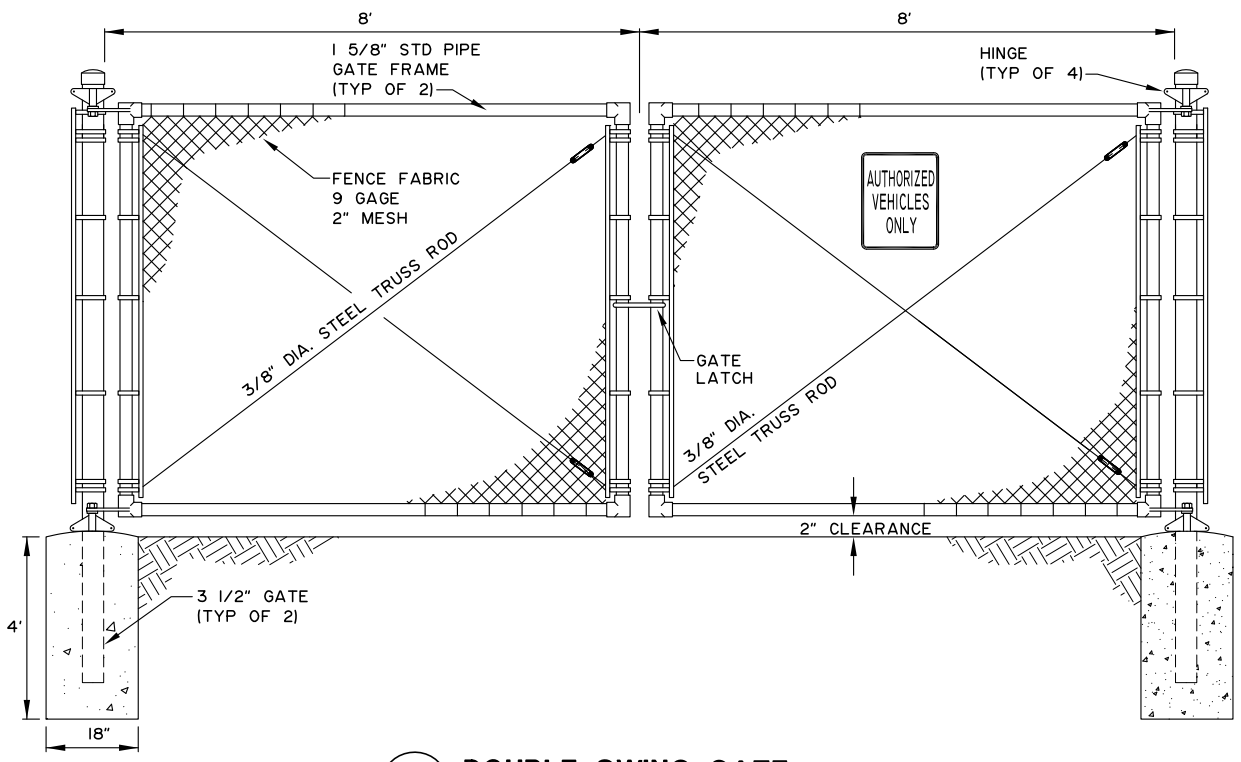
- NOTES**
- POST TOPS SHALL BE SECURELY FASTENED TO POST.
 - BRACE RAILS AND TRUSS RODS SHALL BE SECURELY FASTENED TO POST WITH BRACE BANDS WITH THREADED TAKE-UP ADAPTOR FOR TRUSS RODS.
 - GROUND WIRE SHALL BE ATTACHED TO FENCE FABRIC BY MEANS OF A SPLIT BOLT.
 - FABRIC SHALL BE STRETCHED TO A SMOOTH UNIFORM APPEARANCE.
 - DETAILS SHOWN INDICATE GENERAL DESIGN AND DIMENSIONS MAY VARY AMONG MANUFACTURERS.
 - SWING GATES SHALL BE CONSTRUCTED WITH GATE STOP, PADLOCK, AND LATCH ASSEMBLY.
 - GATE FABRIC SHALL BE OF THE SAME DESIGN AND HEIGHT OF LINE FENCE FABRIC.
 - GATE FABRIC SHALL BE FURNISHED WITH KNUCKLE SELVAGE TOP AND BOTTOM.
 - GATE FRAMES MAY BE FABRICATED BY WELDING OR RIVETING AND SHALL BE BRACED TO ELIMINATE SAGGING. HINGES, LATCHES AND OTHER GATE APPURTENANCES SHALL BE OF SUFFICIENT STRENGTH AND DESIGN TO ASSURE EASY TROUBLE FREE OPERATION.
 - ALL FENCING SHALL HAVE A 1.2 OZ/SF GALVANIZED COATING.
 - CONTRACTOR TO PROVIDE COMPLETE SHOP DRAWINGS SUBMITTAL FOR NEW PROJECT FENCING.
- | FABRIC HEIGHT | POST | | TOP OR BRACE RAIL |
|---------------|---------------------------|----------------------|-------------------|
| | END-CORNER-PULL PIPE SIZE | LINE-BRACE PIPE SIZE | PIPE SIZE |
| 6' | 4" | 3" | 1 5/8" |
- ALL PIPES SHALL BE SCH 40 ASTM F1083 E>30,000 PSI



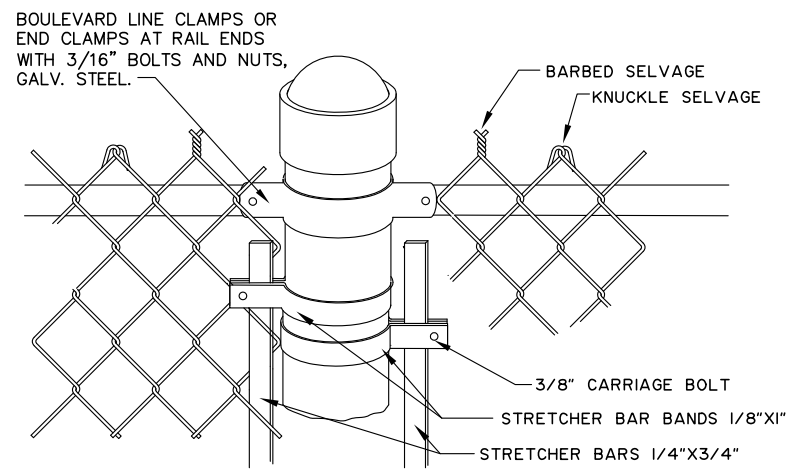
TYPICAL PULL POST
SCALE: NTS



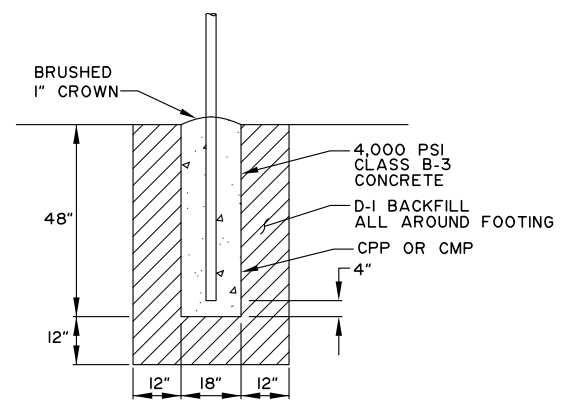
TRUSS ROD DETAIL
SCALE: NTS



DOUBLE SWING GATE
SCALE: NTS



END - CORNER - PULL POST TOP DETAIL
SCALE: NTS



END - CORNER - PULL POST FOOTING DETAIL
SCALE: NTS

FOR CONSTRUCTION V.2

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 ENGINEERING SERVICES CORPORATION
 Phone (907) 563-0013 Fax (907) 563-6713
 Project No. 211042



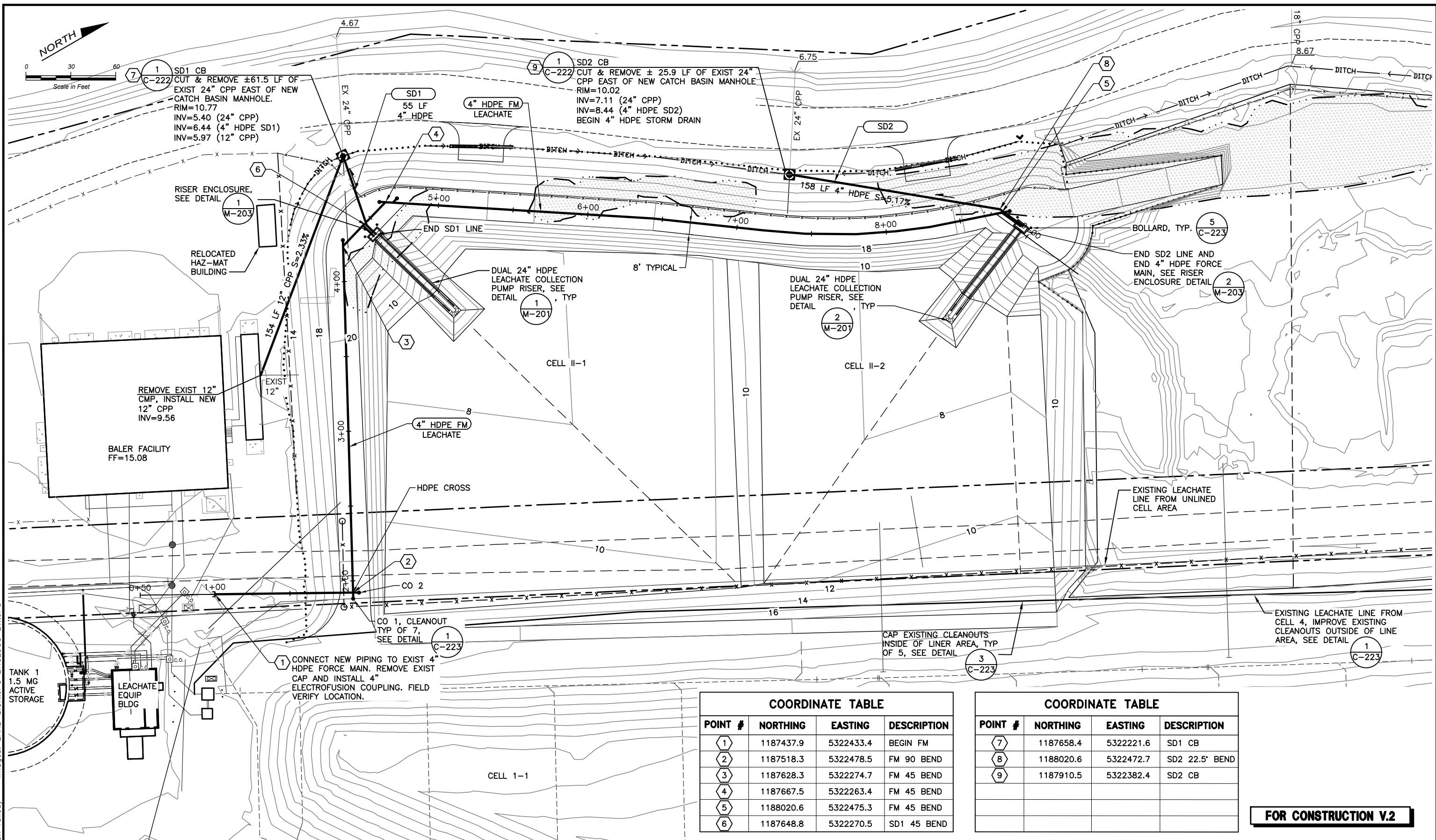
BHC
 CONSULTANTS
 BHC Consultants, LLC
 720 Third Avenue, Suite 1200
 Seattle, Washington 98104-1820



CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
FENCE DETAILS
 SCALE: SHOWN | DESIGNED: FJV | CHECKED: FJV | DRAWN: DES | DATE: 5/16/14

SHEET
C-211
 SHEET 17 OF 43

User: PSIMON May 13, 2014 - 9:43am
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 Xrefs: (DIESEL evaluation failed) - Images: BARD_SIGN.JPG BHCLOGO_BW.JPG



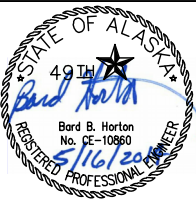
COORDINATE TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	1187437.9	5322433.4	BEGIN FM
2	1187518.3	5322478.5	FM 90 BEND
3	1187628.3	5322274.7	FM 45 BEND
4	1187667.5	5322263.4	FM 45 BEND
5	1188020.6	5322475.3	FM 45 BEND
6	1187648.8	5322270.5	SD1 45 BEND

COORDINATE TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
7	1187658.4	5322221.6	SD1 CB
8	1188020.6	5322472.7	SD2 22.5' BEND
9	1187910.5	5322382.4	SD2 CB

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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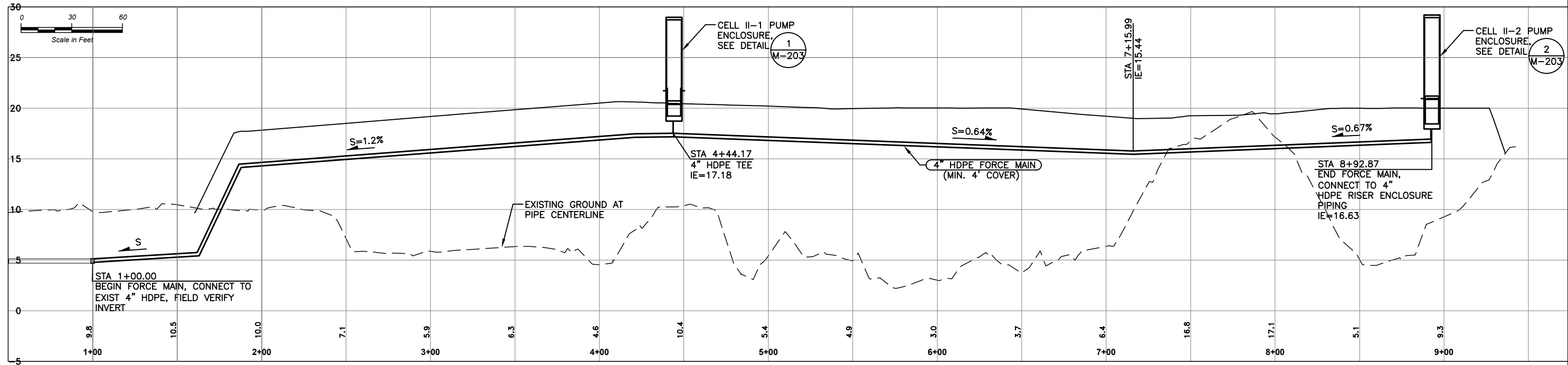
BHC
 CONSULTANTS
 BHC Consultants, LLC
 1601 Fifth Avenue, Suite 500
 Seattle, Washington 98101



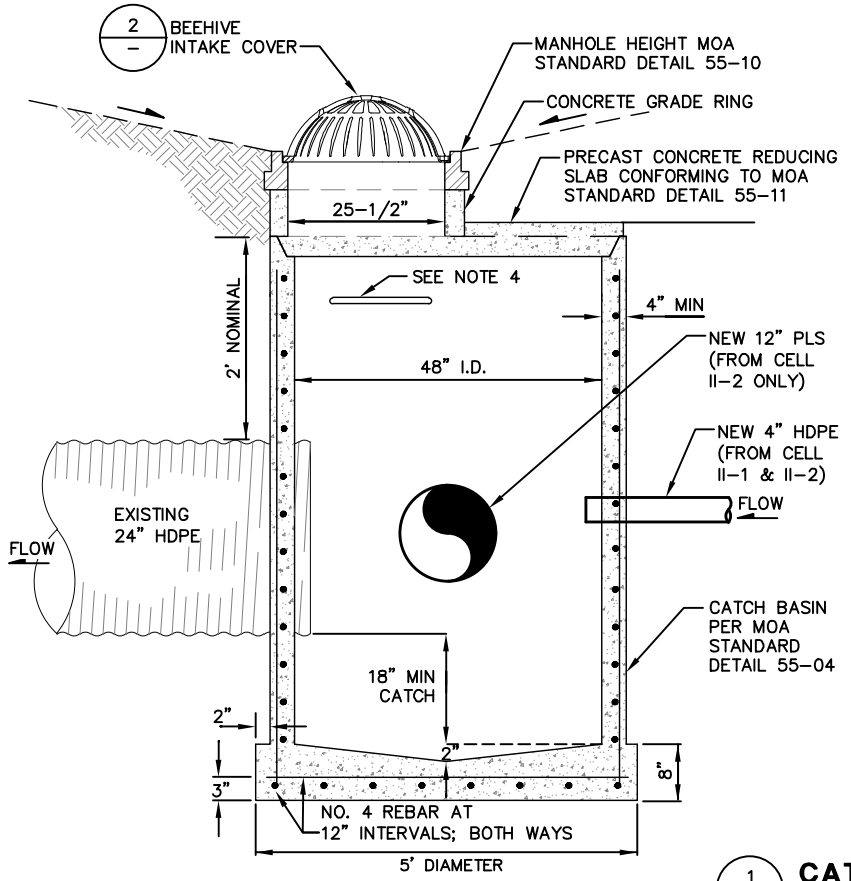
CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
LANDFILL CELL LEACHATE COLLECTION PIPING PLAN

SCALE: SHOWN DESIGNED: PC CHECKED: BH DRAWN: CAD DATE: 5/16/14

User: PSIMON May 13, 2014 - 9:58am
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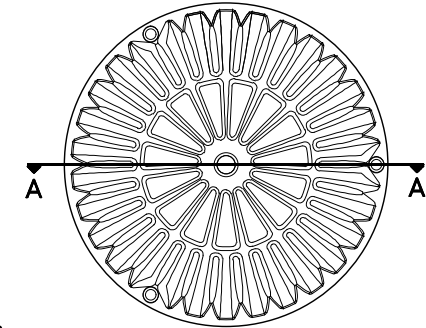
A
C-221 LEACHATE INFLUENT TO LEACHATE EQUIP. BUILDING



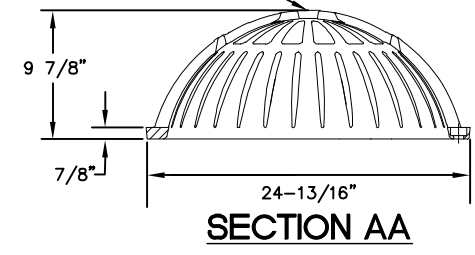
1
C-221 **CATCHBASIN MANHOLE**
 SCALE: NTS

NOTES

1. MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. C-478.
2. EXTEND PIPE 2" INTO MANHOLE. SEAL PIPE PENETRATIONS WITH NON-SHRINKABLE GROUT MIXED WITH POTABLE WATER.
3. BLOCKOUTS SHALL BE FORMED.
4. PLACE RUNGS 12" ON-CENTER ON UNOBSTRUCTED SIDE OF MANHOLE 18" MAX. FROM BOTTOM OF MANHOLE & 6" MAX. FROM TOP.
5. MANHOLE SHALL HAVE MINIMUM OF ONE 6" GRADE RING.
6. BACKFILL AROUND MANHOLE WITH A MINIMUM OF 3' TYPE A BORROW MATERIAL. BACKFILL SHALL BE INCIDENTAL TO COST OF MANHOLE INSTALLATION.
7. STEEL REQ'D FOR BARREL SHALL CONFORM TO A.S.T.M. C-478. EMBED STEEL IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
8. "RAM-NEK" OR EQUAL AT ALL JOINTS. HEAT "RAM-NEK" AND SEAL SURFACES BEFORE FINAL ASSEMBLY.
9. INSTALL IN CONFORMANCE WITH ADOT&PF SECTION 604; COMPACT IMPORTED TYPE A BORROW MATERIAL AND MINIMUM OF 12" OF D-1 UNDER THE BASE TO 95% MDD.
10. MUNICIPALITY OF ANCHORAGE (MOA) STANDARD SPECIFICATIONS (2009) ARE REFERENCED.
11. JOINTS SHALL BE LOCATED TO MAINTAIN A MINIMUM OF 12" OF WALL TO ANY HOLE.



CASTING PER MOA STANDARD DETAIL 55-09



2
BEEHIVE INTAKE COVER
 SCALE: NTS

FOR CONSTRUCTION V.2

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 Project No. 211042

STATE OF ALASKA
 49th
 Bard B. Horton
 No. CE-10980
 REGISTERED PROFESSIONAL ENGINEER

BHC
 CONSULTANTS
 BHC Consultants, LLC
 1601 Fifth Avenue, Suite 500
 Seattle, Washington 98101

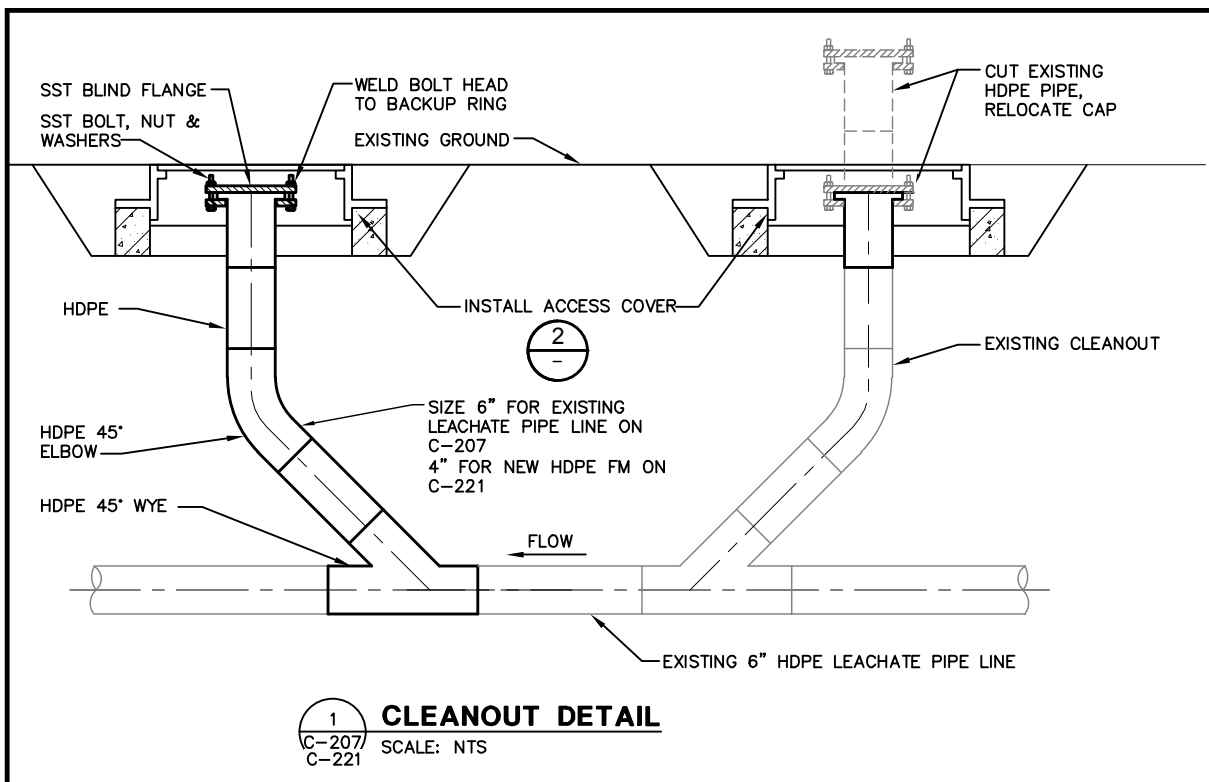
UNALASKA

CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
LANDFILL CELL PIPING PROFILE AND DETAILS

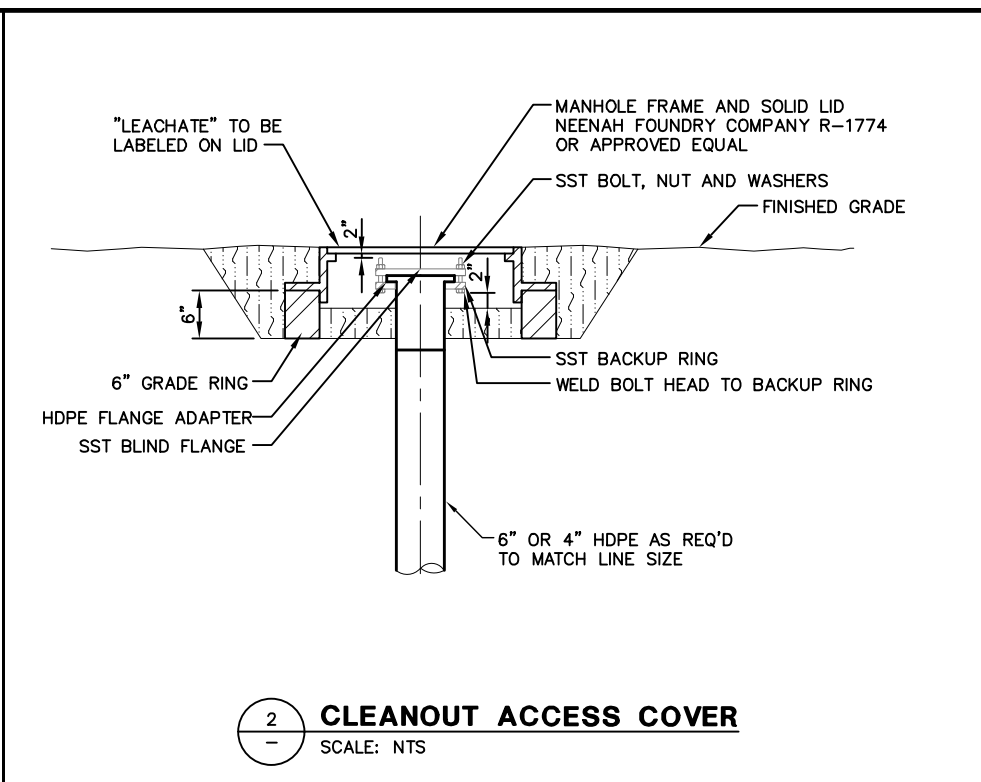
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SHEET
C-222
 SHEET 19 OF 43

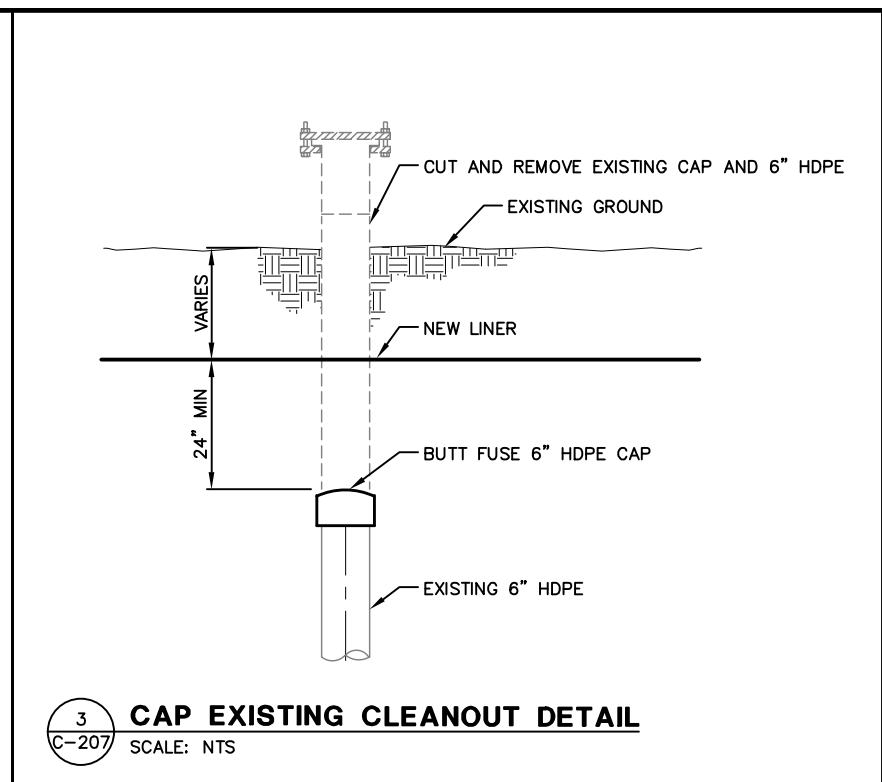
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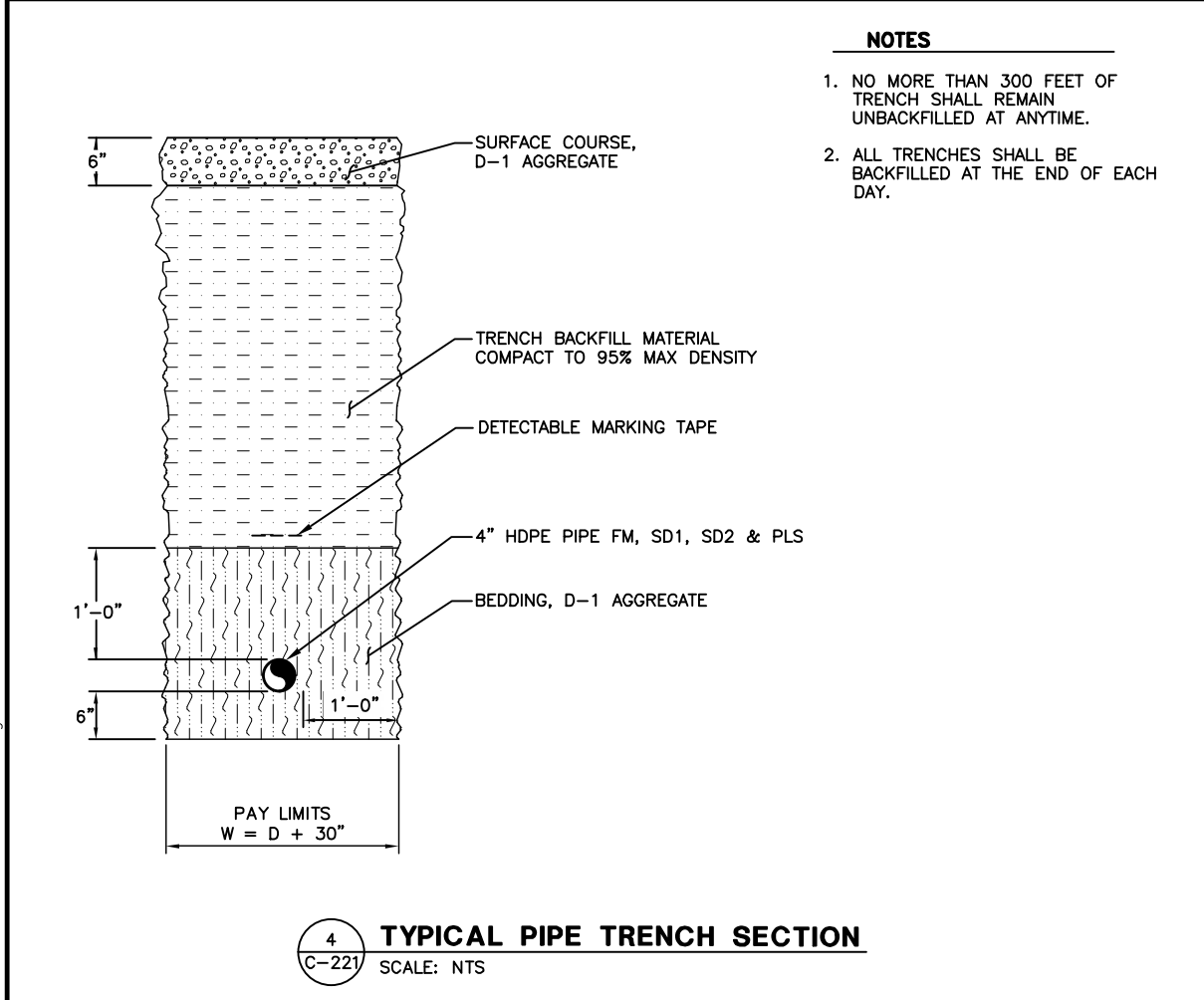
1 CLEANOUT DETAIL
 C-207
 C-221 SCALE: NTS



2 CLEANOUT ACCESS COVER
 C-207
 C-221 SCALE: NTS

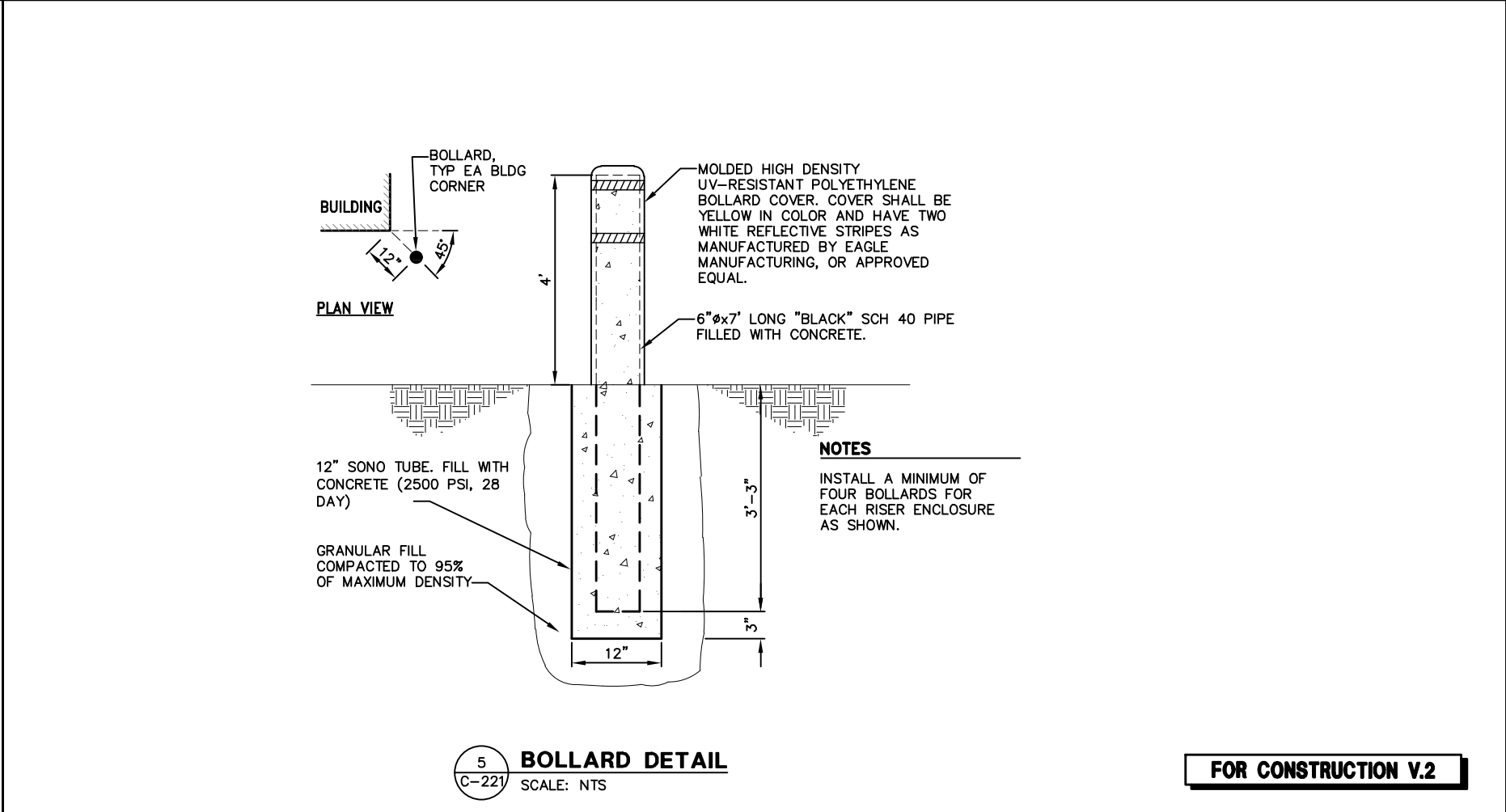


3 CAP EXISTING CLEANOUT DETAIL
 C-207
 C-221 SCALE: NTS



4 TYPICAL PIPE TRENCH SECTION
 C-221 SCALE: NTS

- NOTES**
1. NO MORE THAN 300 FEET OF TRENCH SHALL REMAIN UNBACKFILLED AT ANYTIME.
 2. ALL TRENCHES SHALL BE BACKFILLED AT THE END OF EACH DAY.



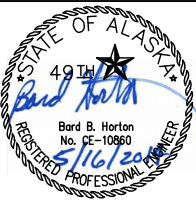
5 BOLLARD DETAIL
 C-221 SCALE: NTS

- NOTES**
- INSTALL A MINIMUM OF FOUR BOLLARDS FOR EACH RISER ENCLOSURE AS SHOWN.

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

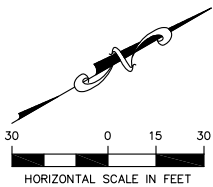
Bristol
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 Project No. 211042



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 1601 Fifth Avenue, Suite 500
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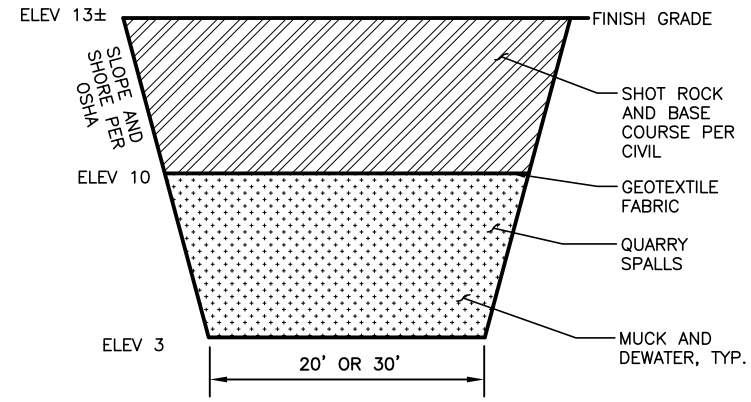


CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION					SHEET
LEACHATE PIPING DETAILS					C-223
SCALE: SHOWN	DESIGNED: FJV	CHECKED: FJV	DRAWN: DES	DATE: 5/16/14	SHEET 20 OF 43

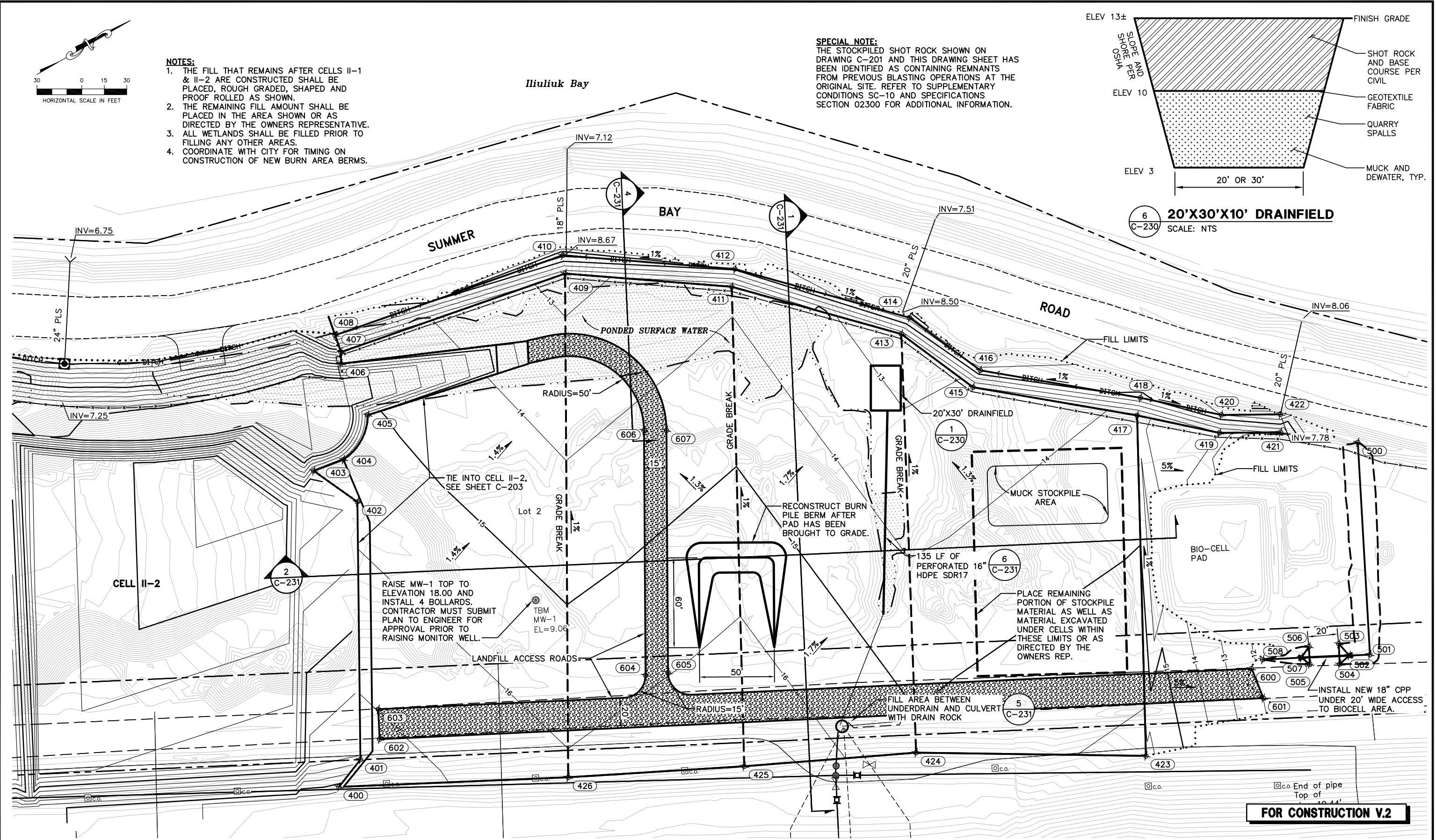


- NOTES:**
1. THE FILL THAT REMAINS AFTER CELLS II-1 & II-2 ARE CONSTRUCTED SHALL BE PLACED, ROUGH GRADED, SHAPED AND PROOF ROLLED AS SHOWN.
 2. THE REMAINING FILL AMOUNT SHALL BE PLACED IN THE AREA SHOWN OR AS DIRECTED BY THE OWNERS REPRESENTATIVE.
 3. ALL WETLANDS SHALL BE FILLED PRIOR TO FILLING ANY OTHER AREAS.
 4. COORDINATE WITH CITY FOR TIMING ON CONSTRUCTION OF NEW BURN AREA BERMS.

SPECIAL NOTE:
 THE STOCKPILED SHOT ROCK SHOWN ON DRAWING C-201 AND THIS DRAWING SHEET HAS BEEN IDENTIFIED AS CONTAINING REMNANTS FROM PREVIOUS BLASTING OPERATIONS AT THE ORIGINAL SITE. REFER TO SUPPLEMENTARY CONDITIONS SC-10 AND SPECIFICATIONS SECTION 02300 FOR ADDITIONAL INFORMATION.



6 20'X30'X10' DRAINFIELD
 C-230 SCALE: NTS

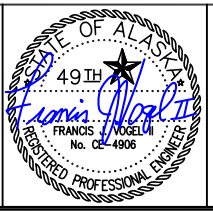


FOR CONSTRUCTION V.2

User: DSQUER May 23, 2014 - 1:50pm
 Drawing: K:\JOBS\211042 CELLS 2-1 & 2-2\ACAD-DESIGN\CELL II-1 II-2 DESIGN_REBID SET\211042_C230-1.DWG - Layout: C230
 Xrefs: BR22\34BR_UNAK.DWG 211042_BASE.DWG 211042_SITE-LAYOUT.DWG - Images: BHCLGO_BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF

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NO.	DATE	BY	DESCRIPTION

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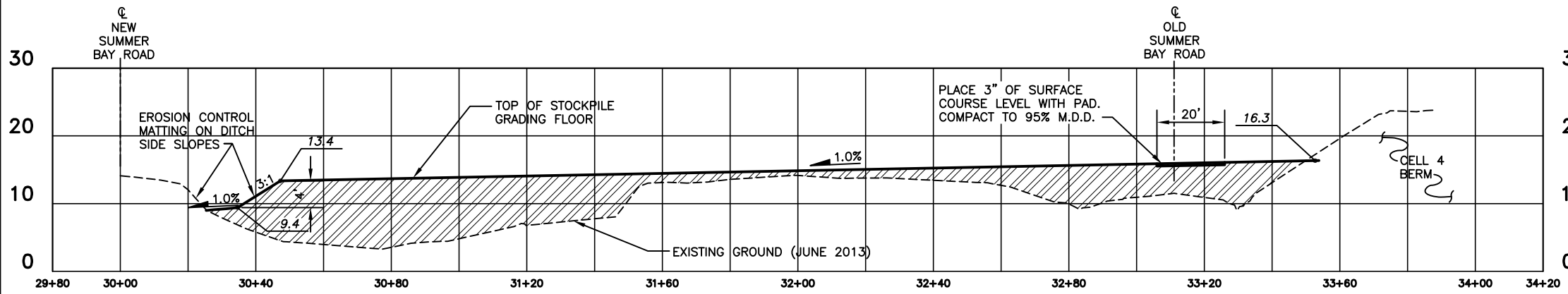


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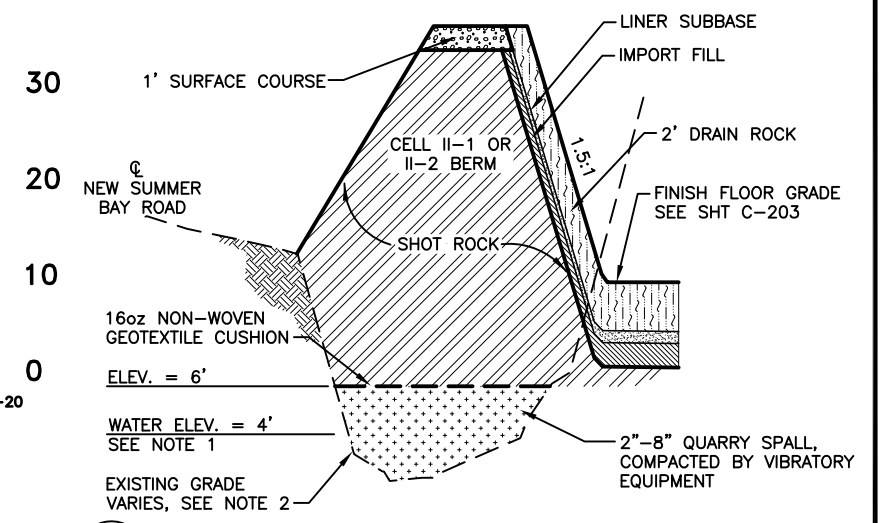


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
STOCKPILE FILL PLAN
 SCALE: SHOWN DESIGNED: FJV CHECKED: FJV DRAWN: DES DATE: 5/16/14 SHEET 21 OF 43

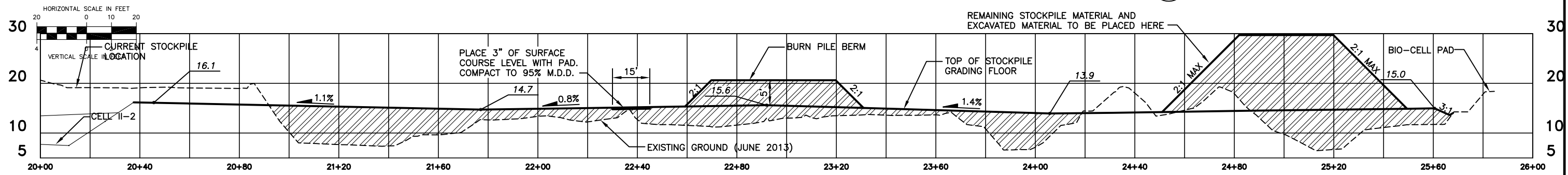
SHEET
C-230
 SHEET 21 OF 43



1 STOCKPILE GRADING SECTION
C-230 SCALE: SHOWN



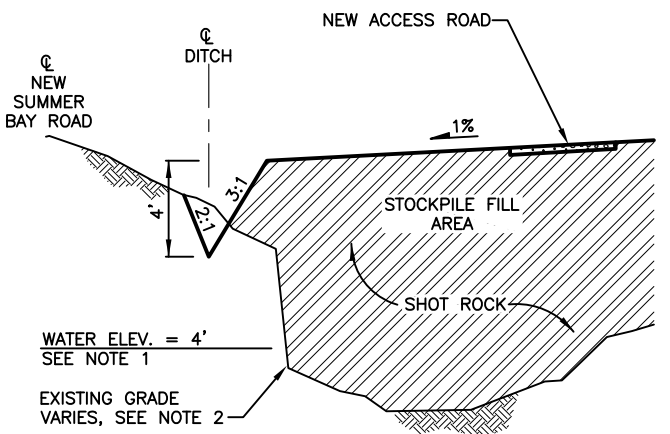
3 PONDED FILL AREA UNDER BERMS SECTION
C-202 SCALE: NTS



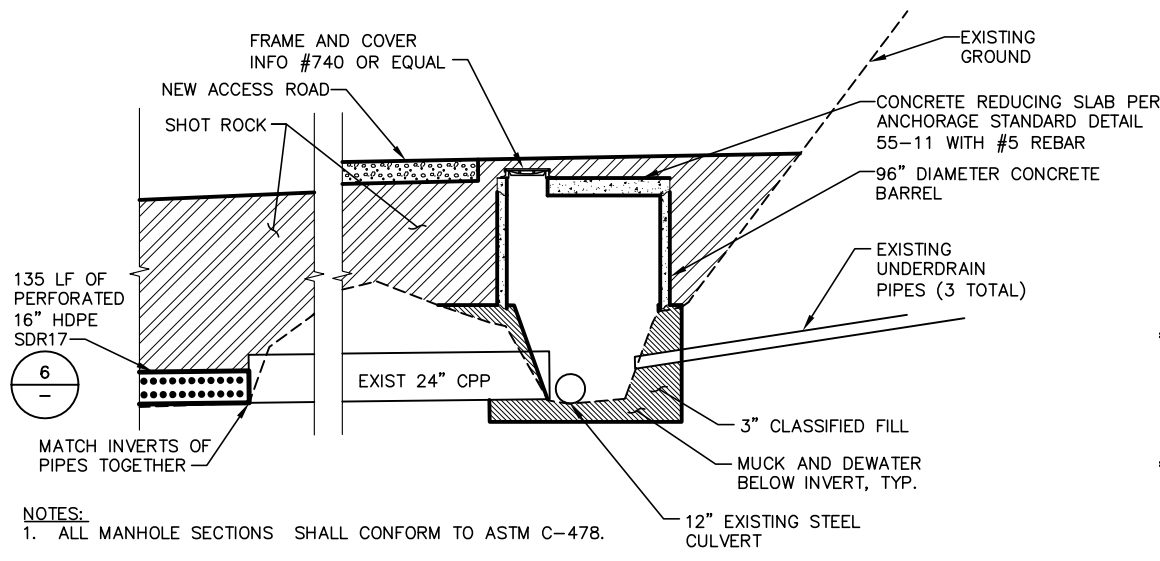
2 STOCKPILE GRADING SECTION
C-230 SCALE: SHOWN

NOTES: SECTIONS 3 AND 4 THIS SHEET

- DEWATER PONDED AREAS - DISPOSE OF WATER IN ACCORDANCE WITH CONTRACTORS SWPPP PLAN (REFER TO SPEC SECTION 01160).
- REMOVE ORGANICS AND SILTS FROM PONDED AREA - DISPOSE OF MATERIALS WITHIN LANDFILL PROPERTY AS DIRECTED BY ENGINEER.

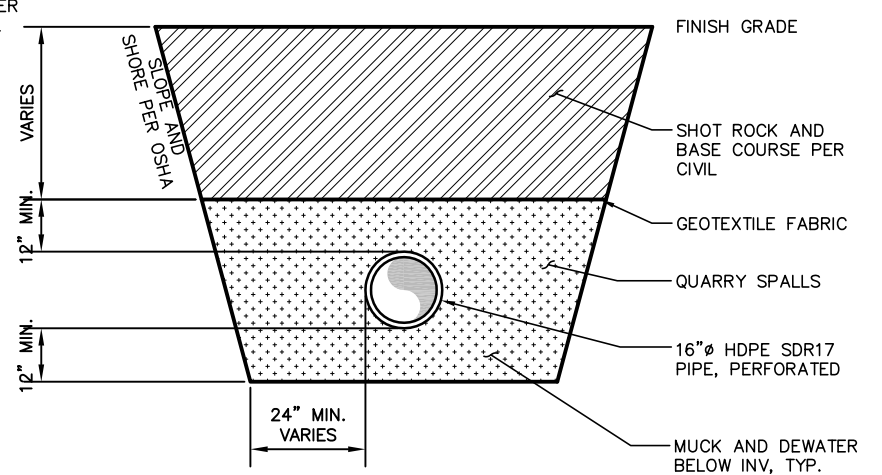


4 PONDED FILL (OUTSIDE OF BERMS) SECTION
C-230 SCALE: NTS



- NOTES:**
- ALL MANHOLE SECTIONS SHALL CONFORM TO ASTM C-478.
 - "RAM-NEK" OR EQUAL AND PRIME BARREL JOINTS. HEAT "RAM-NEK" AND SEAL SURFACES BEFORE FINAL ASSEMBLY.

5 UNDERDRAIN CONNECTION DETAIL
C-230 SCALE: NTS



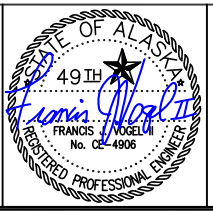
6 FRENCH DRAIN DETAIL
C-230 SCALE: NTS

FOR CONSTRUCTION V.2

User: DSQUER May 23, 2014 - 1:50pm
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Xrefs: BR22\34BR_UNAK.DWG 211042_BASE.DWG 211042_SITE-LAYOUT.DWG - Images: BHCLGO_BW.JPG DUTCH_LF_ORTHO.JPG I53166G3.TIF

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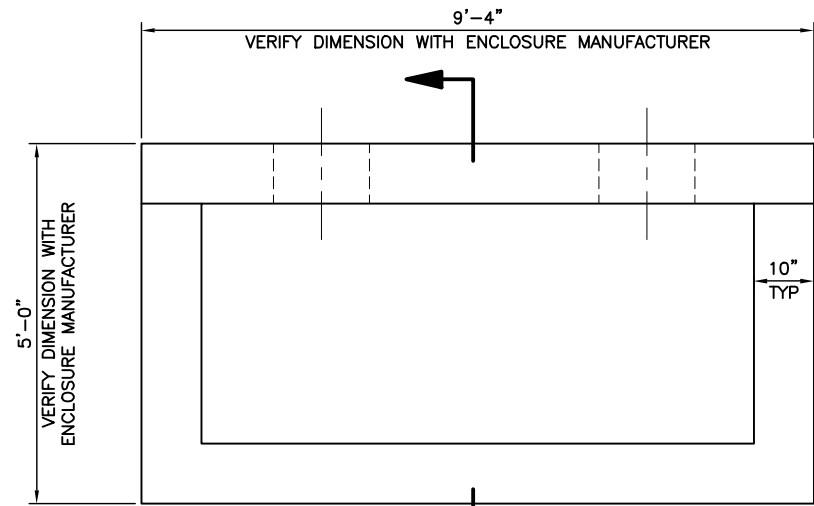
CITY OF UNALASKA
CELLS II-1 & II-2 LANDFILL EXPANSION

STOCKPILE FILL SECTIONS

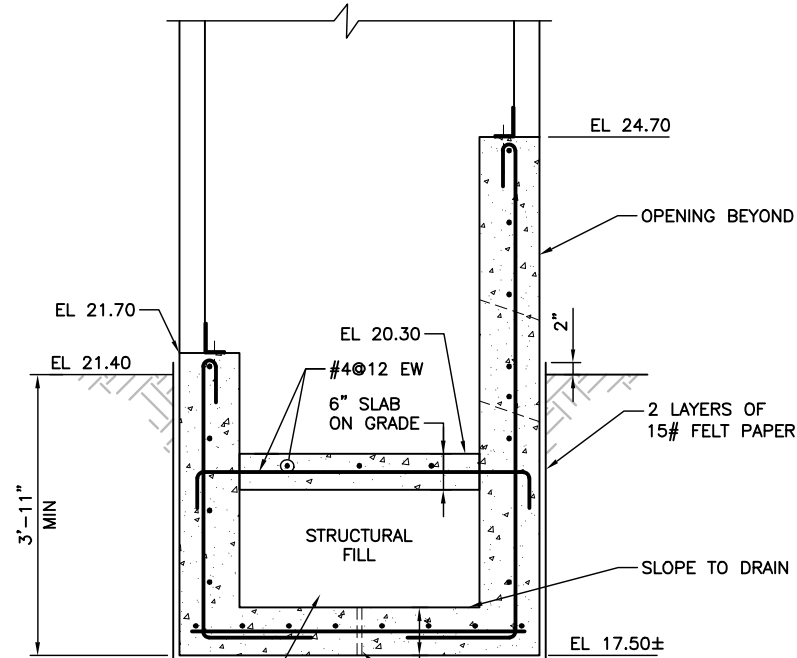
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SCALE: SHOWN	DESIGNED: FJV	CHECKED: FJV	DRAWN: DES	DATE: 5/16/14	SHEET 22 OF 43
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PLAN VIEW

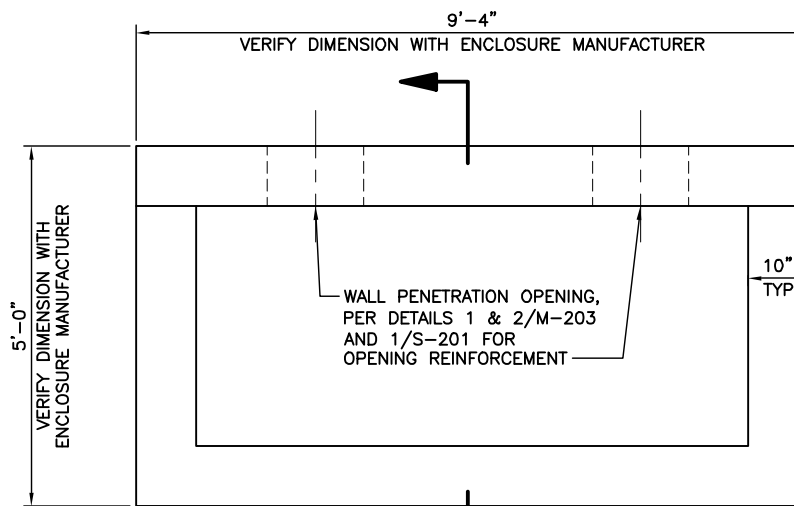


SECTION

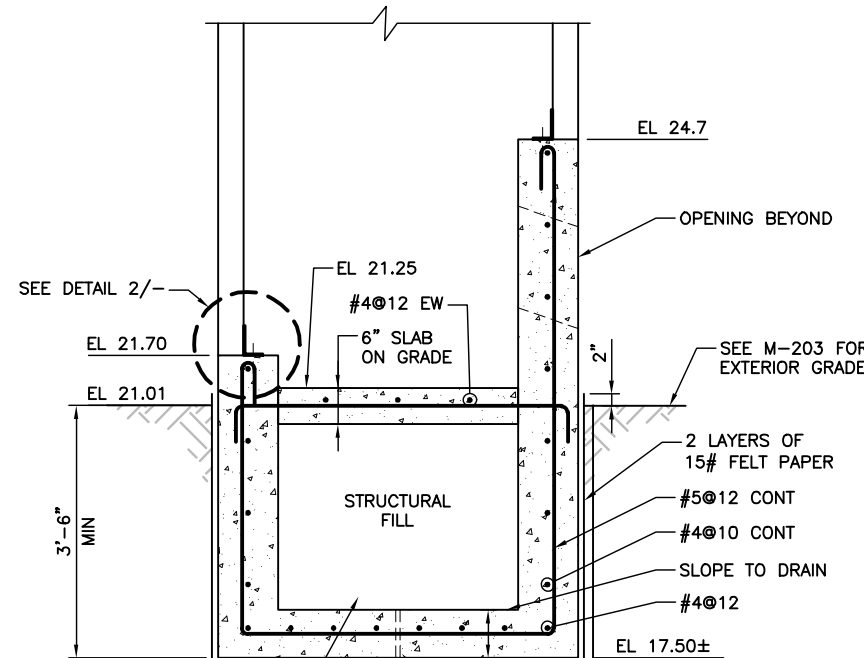
IN LIEU OF STRUCTURAL FILL, AT CONTRACTOR OPTION, PROVIDE SINGLE POUR CONCRETE SLAB IN LIEU FOOTING FROM TOP OF SLAB TO BASE OF FOOTING

3/4" DIA DRAIN HOLE NEAR CENTER, LOCATED AS REQUIRED TO AVOID PIPING

B CELL II-1 SIDE SLOPE PUMP RISER ENCLOSURE FOUNDATION
 M-203 SCALE: 3/4" = 1'-0"



PLAN VIEW

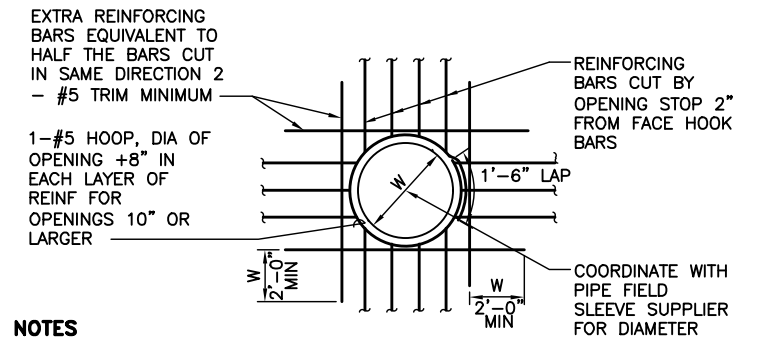


SECTION

IN LIEU OF STRUCTURAL FILL, AT CONTRACTOR OPTION, PROVIDE A SINGLE POUR CONCRETE SLAB INSTEAD OF SHOWN 2 SLAB CONSTRUCTION

3/4" DIA DRAIN HOLE NEAR CENTER, LOCATED AS REQUIRED TO AVOID PIPING

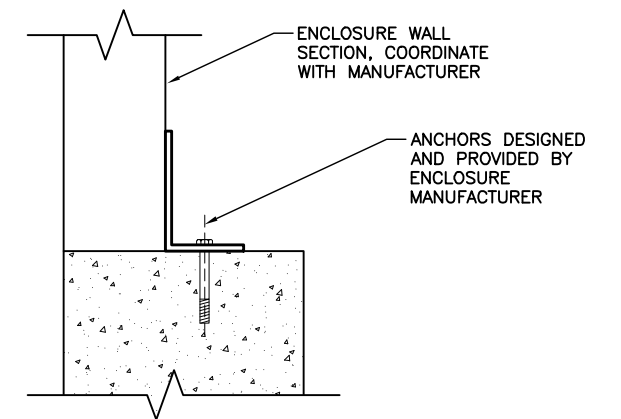
B CELL II-2 SIDE SLOPE PUMP RISER ENCLOSURE FOUNDATION
 M-203 SCALE: 3/4" = 1'-0"



NOTES

1. REINFORCEMENT IN OTHER DIRECTION SHALL BE TREATED IN A SIMILAR MANNER.
2. "W" AND "L" = DIMENSION OF OPENING. FOR CIRCULAR OPENINGS "W" = DIAMETER.
3. OMIT ADDED REINFORCING WHEN SPECIAL REINFORCING INDICATED ON PLANS OR DETAILS EXCEED REINFORCING SHOWN HERE.
4. OPENING DETAILS SHOWN ARE TYPICAL UNLESS NOTED OTHERWISE.
5. SEE MECHANICAL DRAWINGS FOR SLAB AND WALL OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.

1 REINFORCING AT WALL OPENING
 NTS



2 ENCLOSURE DETAIL
 NTS

FOR CONSTRUCTION V.2

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 ENGINEERING SERVICES CORPORATION
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 Project No. 211042

STATE OF ALASKA
 49th
 Bard B. Horton
 No. CE-10980
 REGISTERED PROFESSIONAL ENGINEER

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 1601 Fifth Avenue, Suite 500
 Seattle, Washington 98101

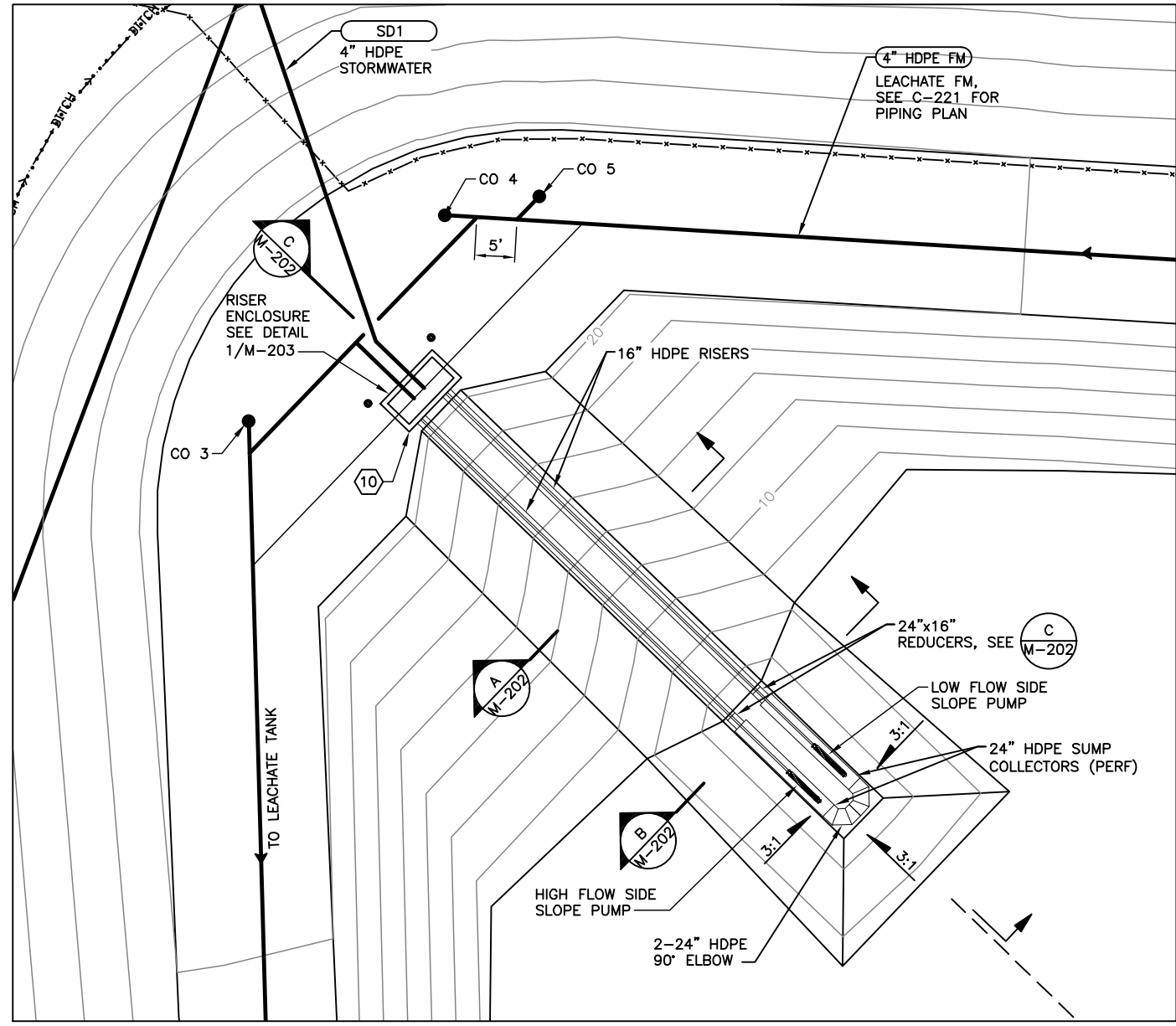
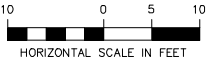
UNALASKA

CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
 PUMP RISER ENCLOSURE FOUNDATION
 PLANS AND SECTIONS

SCALE: SHOWN DESIGNED: KD CHECKED: BH DRAWN: PS DATE: 5/16/14

SHEET
S-201
 SHEET 23 OF 43

User: PSIMON May 13, 2014 - 10:01am
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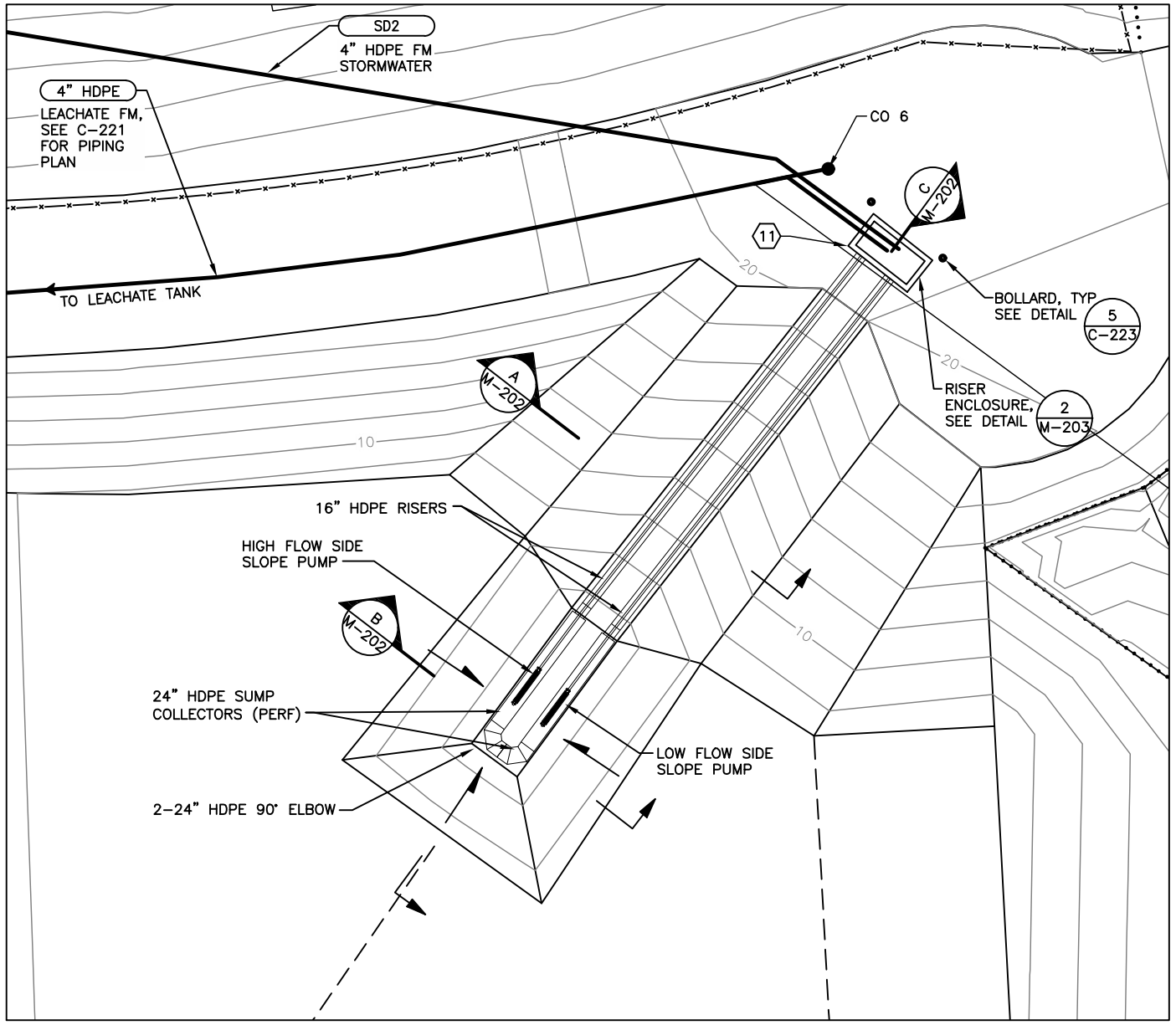


1 CELL 2-1 LEACHATE COLLECTION SUMP AND RISER AT LINER GRADE
 C-221 SCALE: 1" = 10'-0"

COORDINATE TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
10	1187646.8	5322282.3	SE BLDG COR
11	1188022.9	5322486.5	SW BLDG COR

NOTES

1. STORMWATER DIVERSION AND LEACHATE CONTROL VALVES IN RISER ENCLOSURES, SEE DETAILS 1 & 2/M-203.
2. FORCE MAIN CLEAN OUTS SEE SIMILAR DETAIL 1/C-223.
3. ORIENT RISER ENCLOSURES PERPENDICULAR TO 16" RISER PIPES.

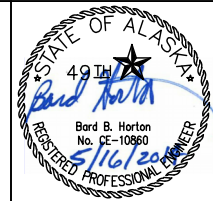


2 CELL 2-2 LEACHATE COLLECTION SUMP AND RISER AT LINER GRADE
 C-221 SCALE: 1" = 10'-0"

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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 ENGINEERING SERVICES CORPORATION
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 Project No. 211042



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 1601 Fifth Avenue, Suite 500
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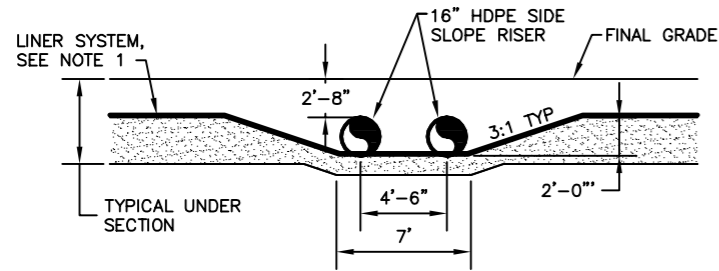


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
LEACHATE COLLECTION PUMP PLANS

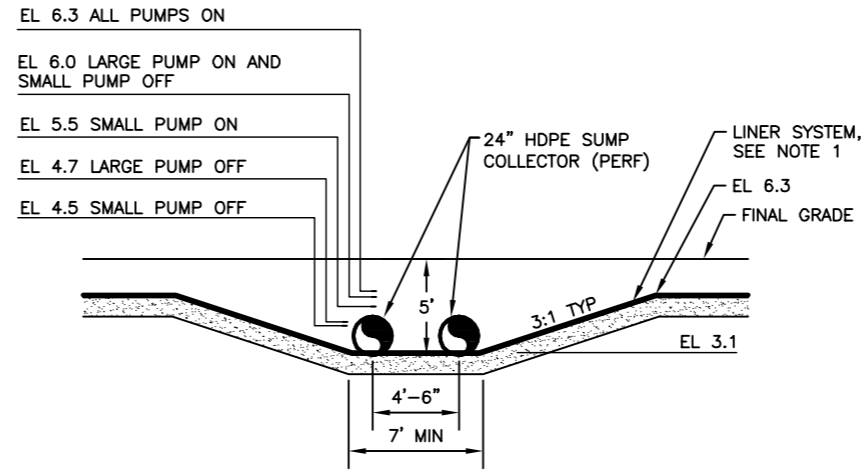
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SHEET
M-201
 SHEET 24 OF 43

User: PSIMON May 13, 2014 - 10:03am
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 Xrefs: BR22X34BR_UNAK.DWG AK_HORTON.DWG - Images: BARD_SIGN.JPG BHCLOGO_BW.JPG



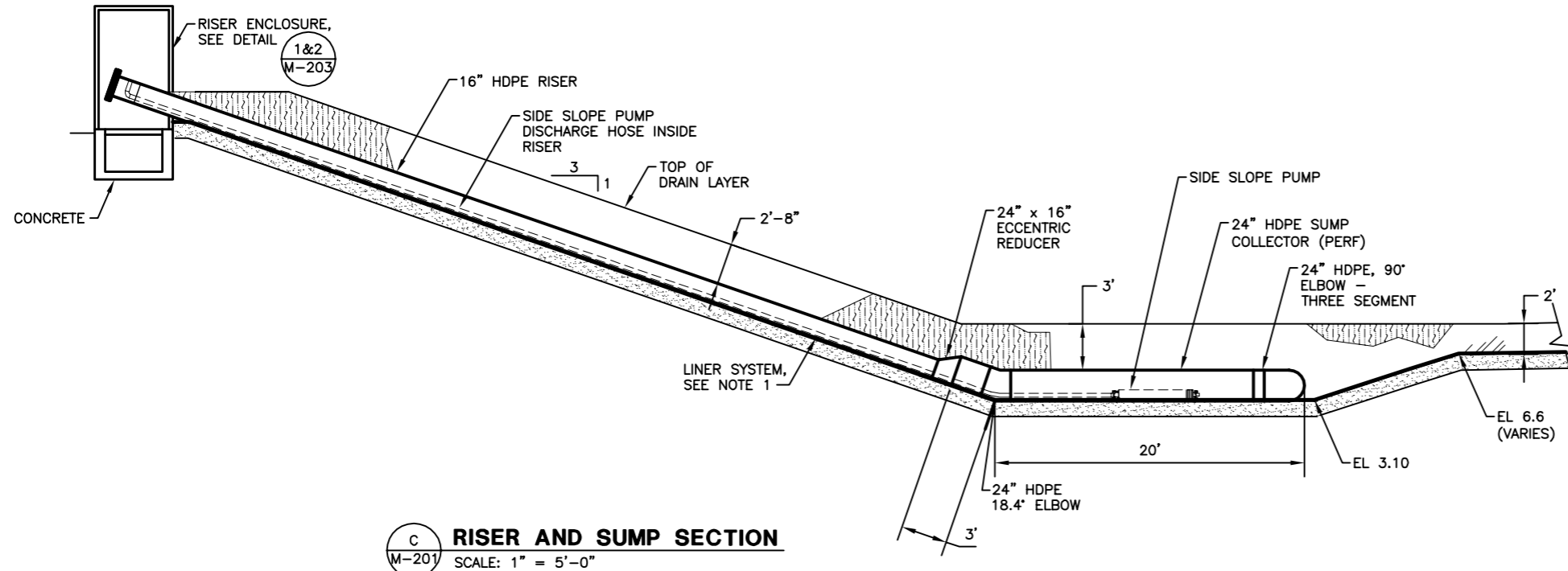
A RISER SECTION
 M-201 SCALE: 1" = 5'-0"



B SUMP SECTION
 M-201 SCALE: 1" = 5'-0"

NOTES:

- FOR LINING SYSTEM COMPONENTS, SEE DWG C-208. FOR ELEVATIONS SEE DWG C-202.



C RISER AND SUMP SECTION
 M-201 SCALE: 1" = 5'-0"

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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 Phone (907) 563-0013 Fax (907) 563-6713
 Project No. 211042



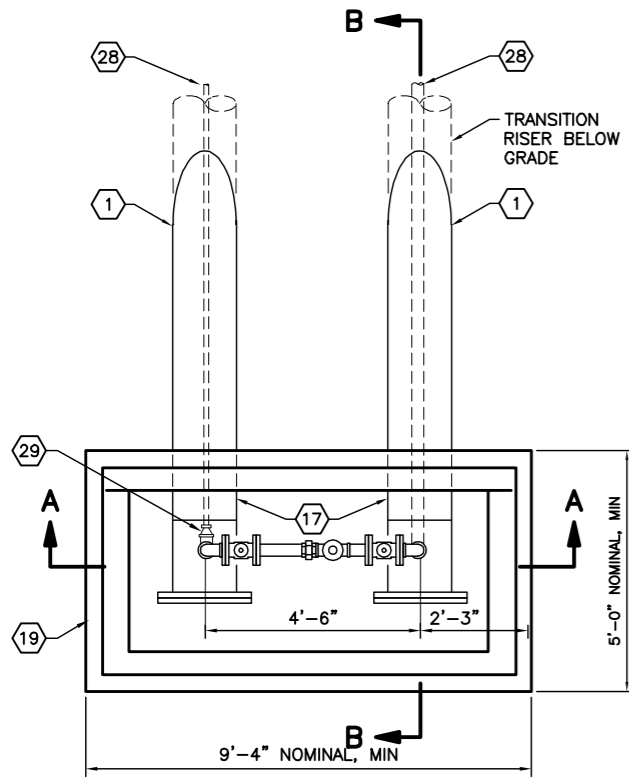
BHC
 CONSULTANTS
 BHC Consultants, LLC
 1601 Fifth Avenue, Suite 500
 Seattle, Washington 98101



CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
 LEACHATE COLLECTION PUMP RISER SECTIONS AND DETAILS
 SCALE: SHOWN DESIGNED: JF CHECKED: BH DRAWN: GC DATE: 5/16/14

SHEET
 M-202
 SHEET 25 OF 43

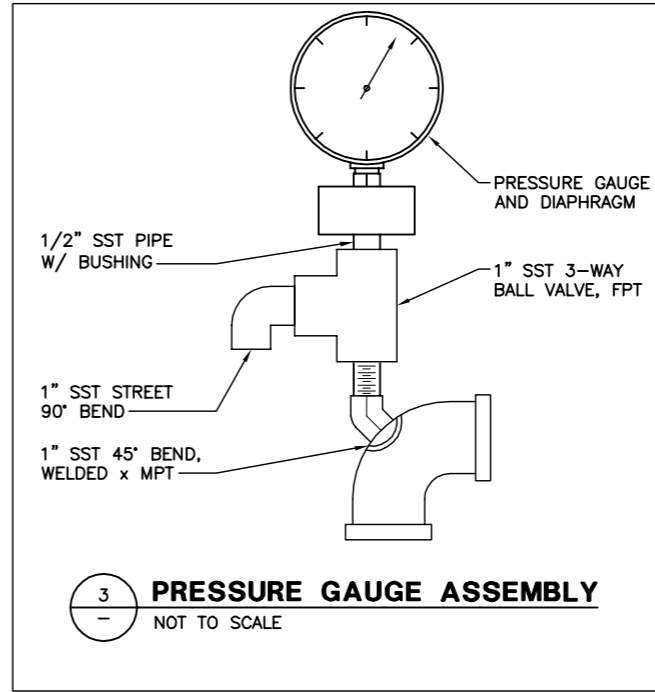
User: PSIMON May 13, 2014 - 10:04am
 Drawing: S:\CAD\UNALASKA\12-10206-02 PHASE 2 LF EXP\DWG\P10-10206-01-002_M-203.DWG - Layout: M203
 Xrefs: BR22X34BR_UNAK.DWG AK HORTON.DWG - Images: BARD_SIGN.JPG BHCLOGO_BW.JPG



PLAN VIEW
SIMILAR FOR DETAILS 1 & 2

MATERIALS LIST:

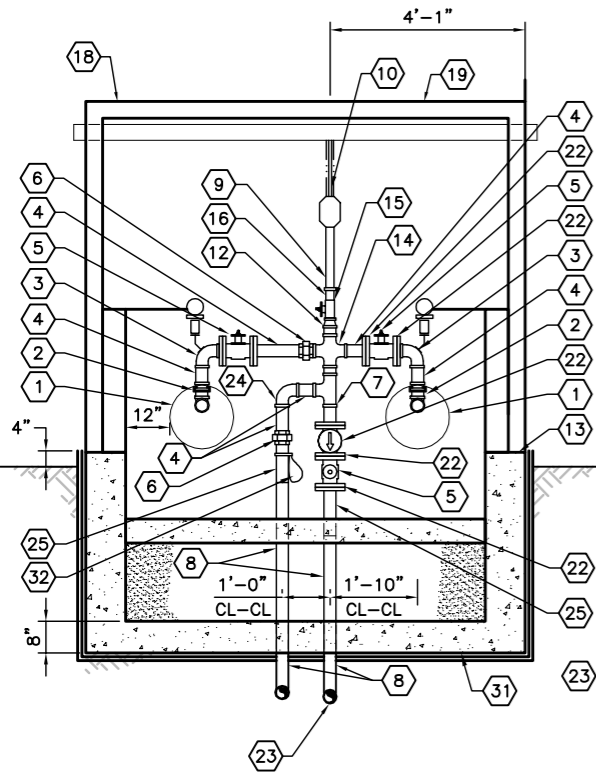
- | | |
|---|--|
| 1 16" HDPE RISER | 20 2 LAYERS OF 15# FELT PAPER |
| 2 3" SST DISCONNECT ADAPTER W/ UNION, NPT | 21 CONCRETE WALL PENETRATION |
| 3 3" SST STREET 90° ELBOW, NPT AND PRESSURE GAUGE, SEE DET 1/- | 22 3" SST CL 150 FLANGE THREADED FITTING |
| 4 3" SST NIPPLE, NPT | 23 4" x 3" HDPE REDUCING TEE |
| 5 3" PLUG VALVE, FL x FL | 24 3" SST 90° ELBOW, NPT |
| 6 3" SST UNION, NPT | 25 3" HDPE x SST NPT ADAPTER |
| 7 3" SST TEE, NPT | 26 3" HDPE 90° BEND |
| 8 3" HDPE | 27 4" x 3" HDPE REDUCER |
| 9 2" AIR/VACUUM RELEASE VALVE WITH 2" x 1" SST BUSHING IN DISCHARGE | 28 HOSE FROM SIDE SLOPE PUMP, 1.5" FLOW PUMP AND 3" HIGH FLOW PUMP |
| 10 PENETRATION FOR 1" SCH 40 SST VENT PIPE, SEE NOTE 7 | 29 3" x 1.5" SST REDUCER |
| 11 1" SST UNION AND VENT PIPE | 30 3" CHECK VALVE, FL x FL |
| 12 3" x 2" SST REDUCING NIPPLE | 31 PIPE SUPPORT, CUT AND WELDED TO MATCH 3:1 PIPE SLOPE, TYP EA RISER PIPE |
| 13 CONCRETE FOUNDATION | 32 3" SST PIPE PLUG. PLACE IN BAG AND SECURE TO PIPE. |
| 14 3" SST CROSS, NPT | |
| 15 2" SST BALL VALVE, NPT | |
| 16 2" SST NIPPLE, NPT | |
| 17 16" HDPE FLANGE ADAPTOR WITH LIGHT WEIGHT POLYPROPYLENE COATED DI BACKUP RING AND PVC BLIND FLANGE | |
| 18 3" PERFORATED PVC VENT PIPE | |
| 19 ENCLOSURE, SEE ATTACHED REF. DWGS | |



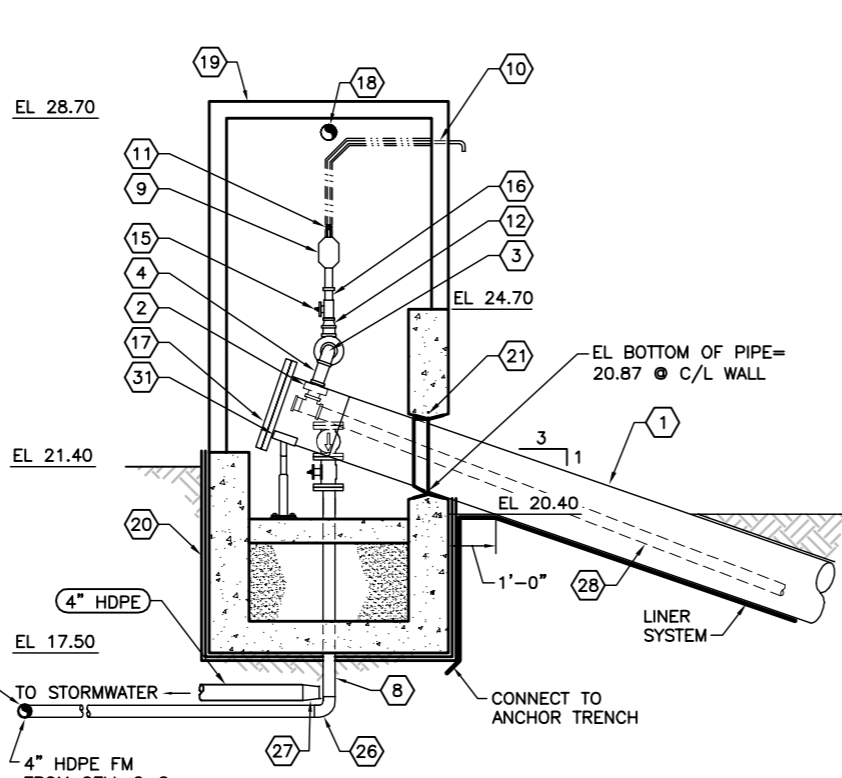
3 PRESSURE GAUGE ASSEMBLY
NOT TO SCALE

NOTES:

- PROVIDE 4'-0" MINIMUM COVER OVER PIPES.
- HDPE PIPE AND FITTINGS WITH DIAMETER 2" AND GREATER SHALL BE DR17.
- METAL PIPE AND FITTINGS SHALL BE SCH 40 TYPE 316 STAINLESS STEEL.
- PIPING ABOVE GRADE IN ENCLOSURE 3" AND SMALLER SHALL BE HEAT TRACED AND INSULATED.
- ONCE LEACHATE IS PRODUCED IN CELL 2-1 OR 2-2, FLOW SHALL BE ROUTED TO THE TANK. MODIFY PIPING IN ASSOCIATED RISER ENCLOSURE AS FOLLOWS:
 - OPEN VALVE 3" PLUG VALVE LEADING TO TANK
 - DISCONNECT STORM PIPING AND PLUG BRANCH ON TEE
- SEE ELECTRICAL DRAWINGS FOR ELECTRICAL COMPONENT INFORMATION.
- SECURE 1" SCH 40 VENT PIPE TO ENCLOSURE CEILING WITH STAINLESS STEEL CLAMP, CONTRACTOR TO COORDINATE VENT PIPE PENETRATION WITH MANUFACTURER.
- PRESSURE GAUGE ASSEMBLIES NOT SHOWN IN ALL VIEWS FOR CLARITY.

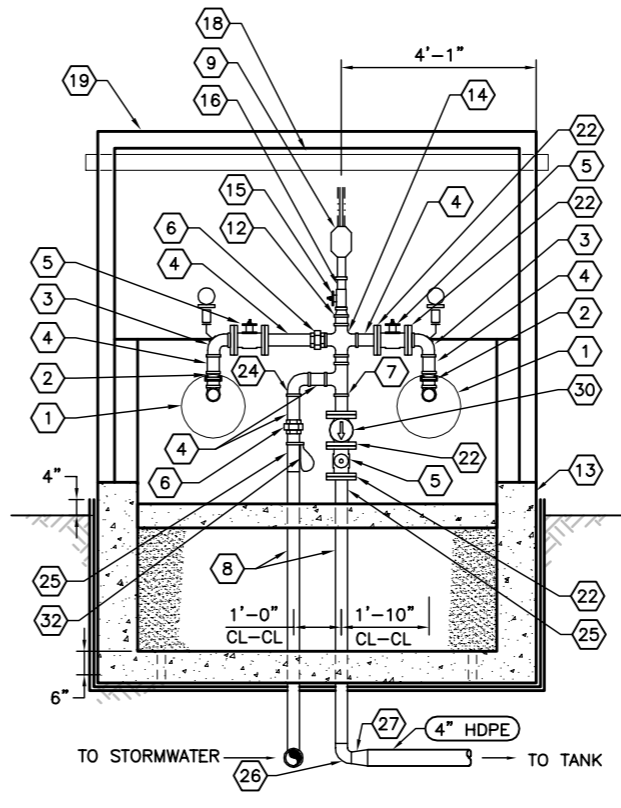


SECTION A-A

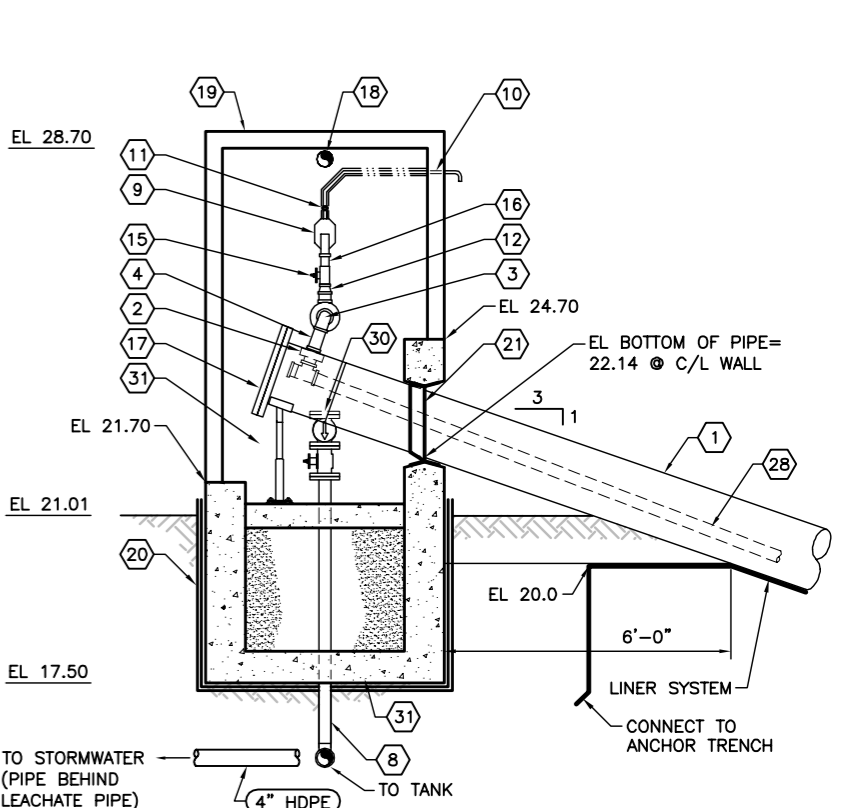


SECTION B-B

1 CELL II-1 SIDE SLOPE PUMP RISER ENCLOSURE
SCALE: 1/2" = 1'-0"



SECTION A-A

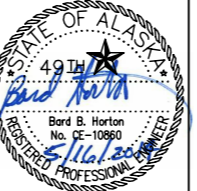


SECTION B-B

2 CELL II-2 SIDE SLOPE PUMP RISER ENCLOSURE FOR CONSTRUCTION V.2
SCALE: 1/2" = 1'-0"

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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Project No. 211042



BHC CONSULTANTS
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CITY OF UNALASKA
CELLS II-1 & II-2 LANDFILL EXPANSION
LEACHATE COLLECTION PUMP RISER ENCLOSURE
PLANS AND SECTIONS
SCALE: SHOWN DESIGNED: JF CHECKED: BH DRAWN: GC DATE: 5/16/14

SHEET
M-203
SHEET 26 OF 43

May 13, 2014 - 5:00pm
 Drawing: P:\PROJECTS\BRISTOL_ENVIRON\UNALASKA_LANDFILL_PH_2\DWGS\ELEC\E101 LEGEND AND ABBREVIATIONS.DWG - Layout: E101 LEGEND AND ABBREVIATIONS
 Xrefs: XBRISTOL_ENVIRON_UNALASKA_PHASE_2_CELLS_2_AND_3_BORDER.DWG - Images: None

ELECTRICAL LEGEND

	MOTOR, SINGLE PHASE, HP=HORSE POWER
	MOTOR, 3-PHASE, HP=HORSE POWER
	JUNCTION BOX
	GROUND ROD
	CLASS 1, DIVISION 1, HAZARDOUS LOCATION SEAL-OFF FITTING
	CONDUIT RUN UNDERGROUND OR IN CONCRETE
	EXPOSED CONDUIT, GRC UNLESS OTHERWISE SHOWN
	HOMERUN TO PANEL "X", CIRCUITS NO. Y AND Z. CONDUIT RUNS NOT SLASHED OR OTHERWISE DEFINED ARE 1/2" C WITH 3#12.
	CONDUIT RUN - CHANGE IN ELEVATION
	LIQUID-TIGHT FLEXIBLE CONDUIT
	DISCONNECT SWITCH
	COMBINATION MOTOR STARTER
	CONTROL PANEL OR CONTROLLER
	MANUAL MOTOR STARTER
	PANELBOARD
	120V, 20A SIMPLEX RECEPTACLE
	120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20R.
	120V DUPLEX GROUND FAULT INTERRUPTING RECEPTACLE, NEMA CONFIGURATION 5-20R.
	120V, 20A SINGLE POLE SWITCH. XP = EXPLOSION PROOF, L = LED, M = MANUAL MOTOR STARTER W/ THERMAL OVERLOADS
	120V, 20A 3-WAY SWITCH
	THERMOSTAT
	KILOWATT-HOUR METER
	MOLDED CASE CIRCUIT BREAKER, X = AMPERE RATING, Y = NO. OF POLES, * = GFI PROTECTED
	HEATER
	CHEMICAL METERING PUMP
	MOTOR OPERATED VALVE
	HEAT TRACE POWER POINT
	HEAT TRACE END KIT
	ELECTRIC HEAT TRACE
	MOTORIZED DAMPER

ABBREVIATIONS

A	ANALOG SIGNAL, AMPERE
AFF	ABOVE FINISH FLOOR
AI	ANALOG INPUT
AO	ANALOG OUTPUT
BCU	BARE COPPER
C	CONDUIT
CP	CONTROL PANEL
CU	COPPER
D	DIGITAL SIGNAL
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
(E)	EXISTING
EXP	EXPLOSION PROOF (HAZARDOUS AREA)
FS	FLOW SWITCH
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTING
GRC	GALVANIZED RIGID (STEEL) CONDUIT
HOA	HAND-OFF-AUTO
HL	HIGH LEVEL
HP	HORSEPOWER
KVA	KILO-VOLT-AMPERES
LTF	LIQUID TIGHT FLEXIBLE CONDUIT (METALLIC)
MCC	MOTOR CONTROL CENTER
(N)	NEW
N.I.C.	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
PH	PHASE
SIG	SIGNAL
TWSH	TWISTED WIRE SHIELDED
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WP	WEATHERPROOF
XFMR	TRANSFORMER
ZS	LIMIT SWITCH

INSTRUMENT IDENTIFIER	
XX = FUNCTION / YY = LOOP	
AE	ANALYZER ELEMENT
AIT	ANALYZING INDICATING TRANSMITTER
CL	CLOSED (FULLY)
DO	DISSOLVED OXYGEN
E(x)A	VOLTAGE ALARM (X = AC OR DC)
ESD	EMERGENCY SHUTDOWN
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
HS	HAND SWITCH
LOR	LOCAL-OFF-REMOTE
LSH	LEVEL SWITCH HIGH
LT	LEVEL TRANSMITTER
MOV	MOTOR OPERATED VALVE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
O/C	OPEN/CLOSE
OIT	OPERATOR INTERFACE TERMINAL
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
RL	RUN LIGHT
SC	SPEED CONTROL
S/S	STOP/START
SI	SPEED INDICATOR
TS	TEMPERATURE SWITCH
YA	ALARM STATUS
ZS	LIMIT SWITCH

INSTRUMENTATION LEGEND	
	FIELD MOUNTED INSTRUMENT XX = FUNCTION; YY = TAG NO.
	MCC MOUNTED INSTRUMENT XX = FUNCTION; YY = TAG NO.
	PANEL MOUNTED INSTRUMENT XX = FUNCTION; YY = TAG NO.
	PLC MOUNTED INSTRUMENT XX = FUNCTION; YY = TAG NO.

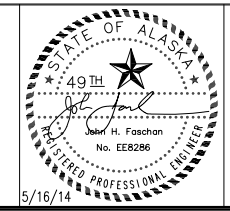
CIRCUIT AND DEVICE LEGEND

A1,a	GROUP OR EQUIPMENT IDENTIFICATION. "A" DENOTES PANEL NAME "1" DENOTES CIRCUIT NUMBER "a" DENOTES SWITCH LEG AS INDICATED.
\$3,a	SWITCH IDENTIFICATION. "3" DENOTES SWITCH CONFIGURATION "a" DENOTES SWITCH LEG AS INDICATED.

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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 ENVIRONMENTAL & ENGINEERING
 SERVICES CORPORATION
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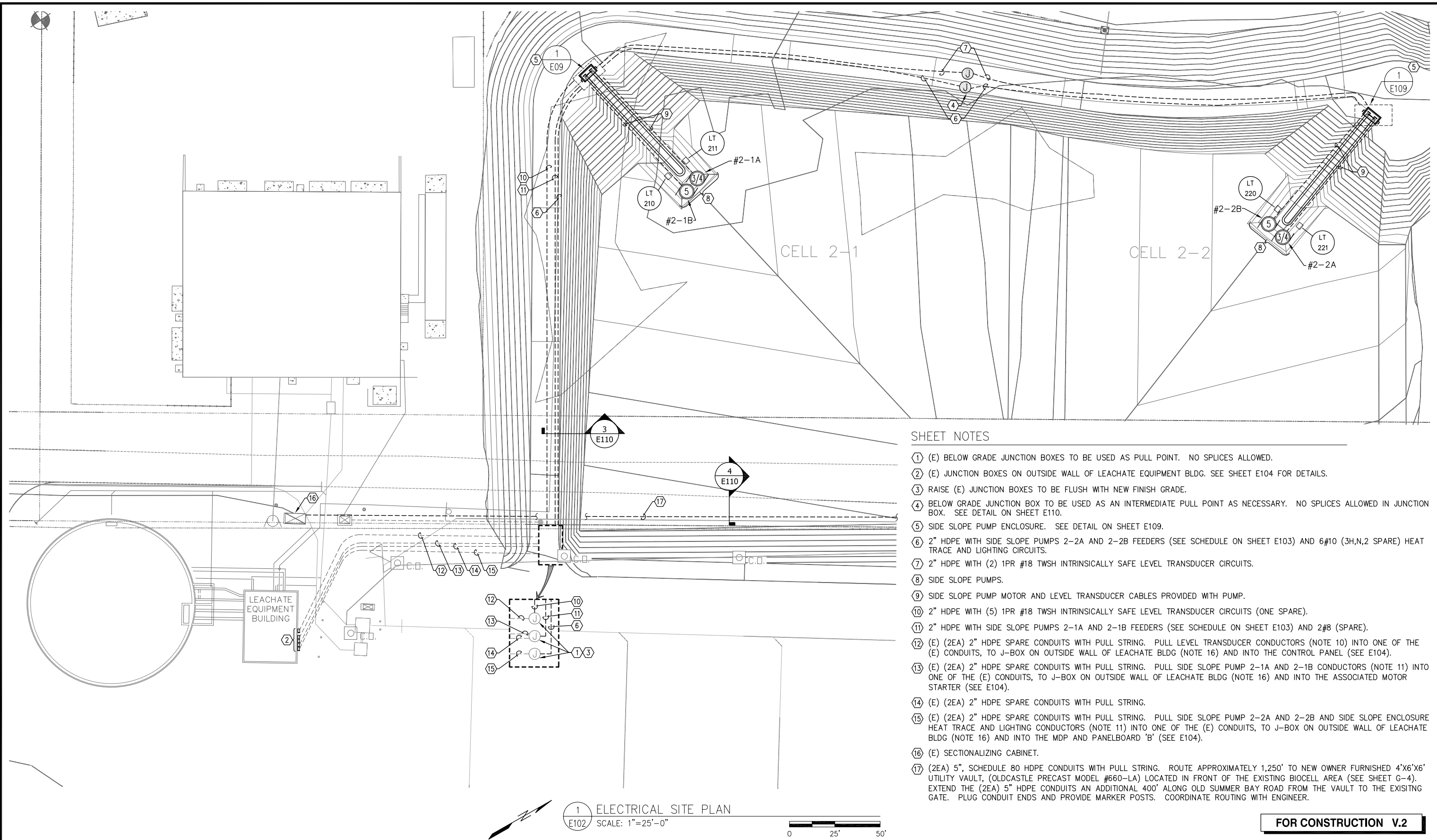
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 213 W. FIREWEED LANE
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CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION				
LEGEND AND ABBREVIATIONS				
SCALE: SHOWN	DESIGNED: JHF	CHECKED: JHF	DRAWN:	DATE: 5/16/14

SHEET
E101
SHEET 27 OF 43

May 13, 2014 - 5:01pm
 Drawing: P:\PROJECTS\BRISTOL_ENVIRON\UNALASKA_LANDFILL_PH 2\DWGS\ELEC\E102 ELECTRICAL SITE PLAN PHASE 2 CELLS 2 AND 3.DWG - Layout: E102 ELECTRICAL SITE PLAN
 Xrefs: (DIESEL evaluation failed) - Images: None



SHEET NOTES

- ① (E) BELOW GRADE JUNCTION BOXES TO BE USED AS PULL POINT. NO SPLICES ALLOWED.
- ② (E) JUNCTION BOXES ON OUTSIDE WALL OF LEACHATE EQUIPMENT BLDG. SEE SHEET E104 FOR DETAILS.
- ③ RAISE (E) JUNCTION BOXES TO BE FLUSH WITH NEW FINISH GRADE.
- ④ BELOW GRADE JUNCTION BOX TO BE USED AS AN INTERMEDIATE PULL POINT AS NECESSARY. NO SPLICES ALLOWED IN JUNCTION BOX. SEE DETAIL ON SHEET E110.
- ⑤ SIDE SLOPE PUMP ENCLOSURE. SEE DETAIL ON SHEET E109.
- ⑥ 2" HDPE WITH SIDE SLOPE PUMPS 2-2A AND 2-2B FEEDERS (SEE SCHEDULE ON SHEET E103) AND 6#10 (3H,N,2 SPARE) HEAT TRACE AND LIGHTING CIRCUITS.
- ⑦ 2" HDPE WITH (2) 1PR #18 TWSH INTRINSICALLY SAFE LEVEL TRANSDUCER CIRCUITS.
- ⑧ SIDE SLOPE PUMPS.
- ⑨ SIDE SLOPE PUMP MOTOR AND LEVEL TRANSDUCER CABLES PROVIDED WITH PUMP.
- ⑩ 2" HDPE WITH (5) 1PR #18 TWSH INTRINSICALLY SAFE LEVEL TRANSDUCER CIRCUITS (ONE SPARE).
- ⑪ 2" HDPE WITH SIDE SLOPE PUMPS 2-1A AND 2-1B FEEDERS (SEE SCHEDULE ON SHEET E103) AND 2#8 (SPARE).
- ⑫ (E) (2EA) 2" HDPE SPARE CONDUITS WITH PULL STRING. PULL LEVEL TRANSDUCER CONDUCTORS (NOTE 10) INTO ONE OF THE (E) CONDUITS, TO J-BOX ON OUTSIDE WALL OF LEACHATE BLDG (NOTE 16) AND INTO THE CONTROL PANEL (SEE E104).
- ⑬ (E) (2EA) 2" HDPE SPARE CONDUITS WITH PULL STRING. PULL SIDE SLOPE PUMP 2-1A AND 2-1B CONDUCTORS (NOTE 11) INTO ONE OF THE (E) CONDUITS, TO J-BOX ON OUTSIDE WALL OF LEACHATE BLDG (NOTE 16) AND INTO THE ASSOCIATED MOTOR STARTER (SEE E104).
- ⑭ (E) (2EA) 2" HDPE SPARE CONDUITS WITH PULL STRING.
- ⑮ (E) (2EA) 2" HDPE SPARE CONDUITS WITH PULL STRING. PULL SIDE SLOPE PUMP 2-2A AND 2-2B AND SIDE SLOPE ENCLOSURE HEAT TRACE AND LIGHTING CONDUCTORS (NOTE 11) INTO ONE OF THE (E) CONDUITS, TO J-BOX ON OUTSIDE WALL OF LEACHATE BLDG (NOTE 16) AND INTO THE MDP AND PANELBOARD 'B' (SEE E104).
- ⑯ (E) SECTIONALIZING CABINET.
- ⑰ (2EA) 5", SCHEDULE 80 HDPE CONDUITS WITH PULL STRING. ROUTE APPROXIMATELY 1,250' TO NEW OWNER FURNISHED 4'X6'X6' UTILITY VAULT, (OLDCASTLE PRECAST MODEL #660-LA) LOCATED IN FRONT OF THE EXISTING BIOCELL AREA (SEE SHEET G-4). EXTEND THE (2EA) 5" HDPE CONDUITS AN ADDITIONAL 400' ALONG OLD SUMMER BAY ROAD FROM THE VAULT TO THE EXISITNG GATE. PLUG CONDUIT ENDS AND PROVIDE MARKER POSTS. COORDINATE ROUTING WITH ENGINEER.

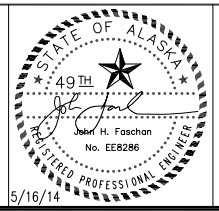
FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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ANCHORAGE, AK 99503
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CITY OF UNALASKA
CELLS II-1 & II-2 LANDFILL EXPANSION

ELECTRICAL SITE PLAN

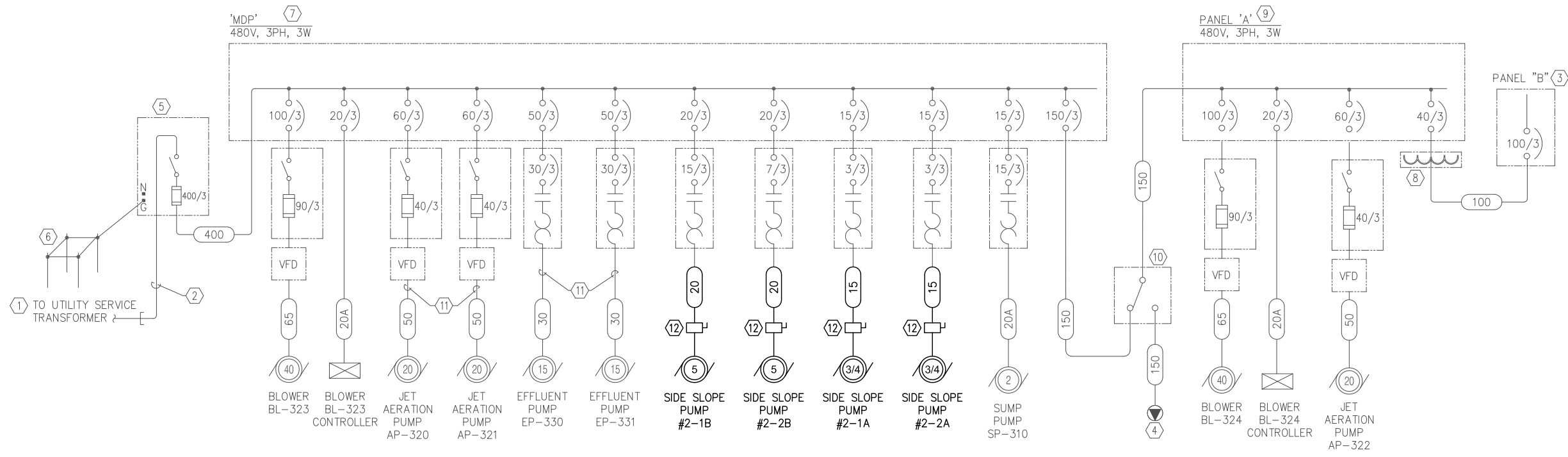
SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14

SHEET

E102

SHEET 28 OF 43

May 13, 2014 - 5:01pm
 Drawing: P:\PROJECTS\BRISTOL ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E103 POWER ONE-LINE.DWG - Layout: POWER ONE-LINE AND MCC ELEVATION
 Xrefs: XBRISTOL ENVIRON UNALASKA PHASE 2 CELLS 2 AND 3 BORDER.DWG - Images: None



- ### SHEET NOTES
- ① 480V, 3-PHASE SERVICE FROM UTILITY.
 - ② PROVIDE MIN OF (2) 2" GRC CONDUIT STUB OUTS FOR THE UTILITY SERVICE LATERALS. COORDINATE EXACT REQUIREMENTS W/ UTILITY.
 - ③ 120/208V, 100A, 3Ø, 42-SPACE, NEMA 1 PANELBOARD.
 - ④ GENERATOR PLUG-IN RECEPTACLE. 480V, 200A, 3W, 4-POLE APPLETON CAT# ADJA20034-200 OR EQUAL. PROVIDE WITH MATCHING PLUG-IN.
 - ⑤ 400A, 480V, 3Ø MAIN FUSED DISCONNECT. PROVIDE WITH PLACARD WITH RED LETTERING LABELED "ELECTRICAL POWER MAIN DISCONNECT".
 - ⑥ GROUNDING ELECTRODE SYSTEM, (GES). SEE NOTE 1 SHEET E104.
 - ⑦ 480V, 400A, 3Ø, 3-WIRE, 42-SPACE NEMA 1 PANELBOARD.
 - ⑧ 30kVA, 480:208Y120V TRANSFORMER.
 - ⑨ 480V, 250A, 3Ø, 3W, NEMA 1 PANELBOARD.
 - ⑩ 480V, 200A 3-POLE MANUAL TRANSFER SWITCH, NEMA 1, SQUARE D CAT# 82344 OR EQUAL.
 - ⑪ INCLUDE ADDITIONAL #12 CONDUCTORS W/ FEEDER CONDUCTORS AS REQUIRED FOR MOTOR/PUMP THERMAL, VIBRATION AND OTHER PROTECTIVE SWITCHES. COORDINATE WITH MOTOR/PUMP SUPPLIER. WIRE SWITCHES TO MOTOR VFD/STARTERS TO DISABLE MOTOR AS APPROPRIATE.
 - ⑫ LOCAL DISCONNECT. SEE SHEET E109 FOR DETAILS.

1 POWER ONE-LINE DIAGRAM
SCALE: NTS

2 MCC 'A' AND MCC 'B' ELEVATION
SCALE: NTS

FEEDER SCHEDULE	
15	(3) #10, (1) #10 GRD
20	(3) #8, (1) #8 GRD
20A	1/2"C, (3) #12, (1) #12 GRD
30	3/4"C, (3) #10, (1) #10 GRD
50	1"C, (3) #8, (1) #8 GND (SEE NOTE 11).
50A	3/4"C, (3) #8, (1) #8 GND
65	1"C, (3) #6, (1) #8 GND
100	(4) #2, (1) #8 GND
150	2"C, (3) #1/0, (1) #6 GND
400	2"C, 2 SETS: (3) #3/0, (1) #2 GND

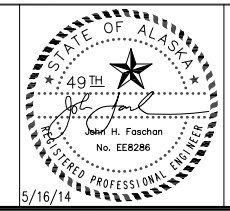
SERVICE LOAD SUMMARY			
DESCRIPTION	LOAD (KVA)	NEC FACTOR	NEC LOAD (KVA)
BLOWER, BL-323	1 @ 40 HP = 41.4	1.25	51.8
BLOWER, BL-324	1 @ 40 HP = 41.4	1.00	41.4
BLOWER CONTROLLERS	2 @ 3 AMPS = 5.0	1.00	5.0
JET AERATION PUMPS	2 @ 20 HP = 42.9	1.00	42.9
EFFLUENT PUMP	1 @ 15 HP = 16.7	1.00	16.7
SIDE SLOPE PUMP	2 @ 5 HP = 12.1	1.00	12.1
PANEL "A"	1 @ 22.7KVA = 22.7	PER SCHED	25.4
SIDE SLOPE PUMP	2 @ 1/2 HP = 1.8	1.00	1.8
SUMP PUMP	1 @ 2 HP = 2.7	1.00	2.7
TOTAL KVA	= 186.7		199.8
CONNECTED AMPS (@ 480V, 3PH)	= 224.8		240.6

BOLD LINE-TYPE INDICATES NEW WORK. ALL ELSE IS EXISTING.

FOR CONSTRUCTION V.2

REVISIONS			
NO.	DATE	BY	DESCRIPTION

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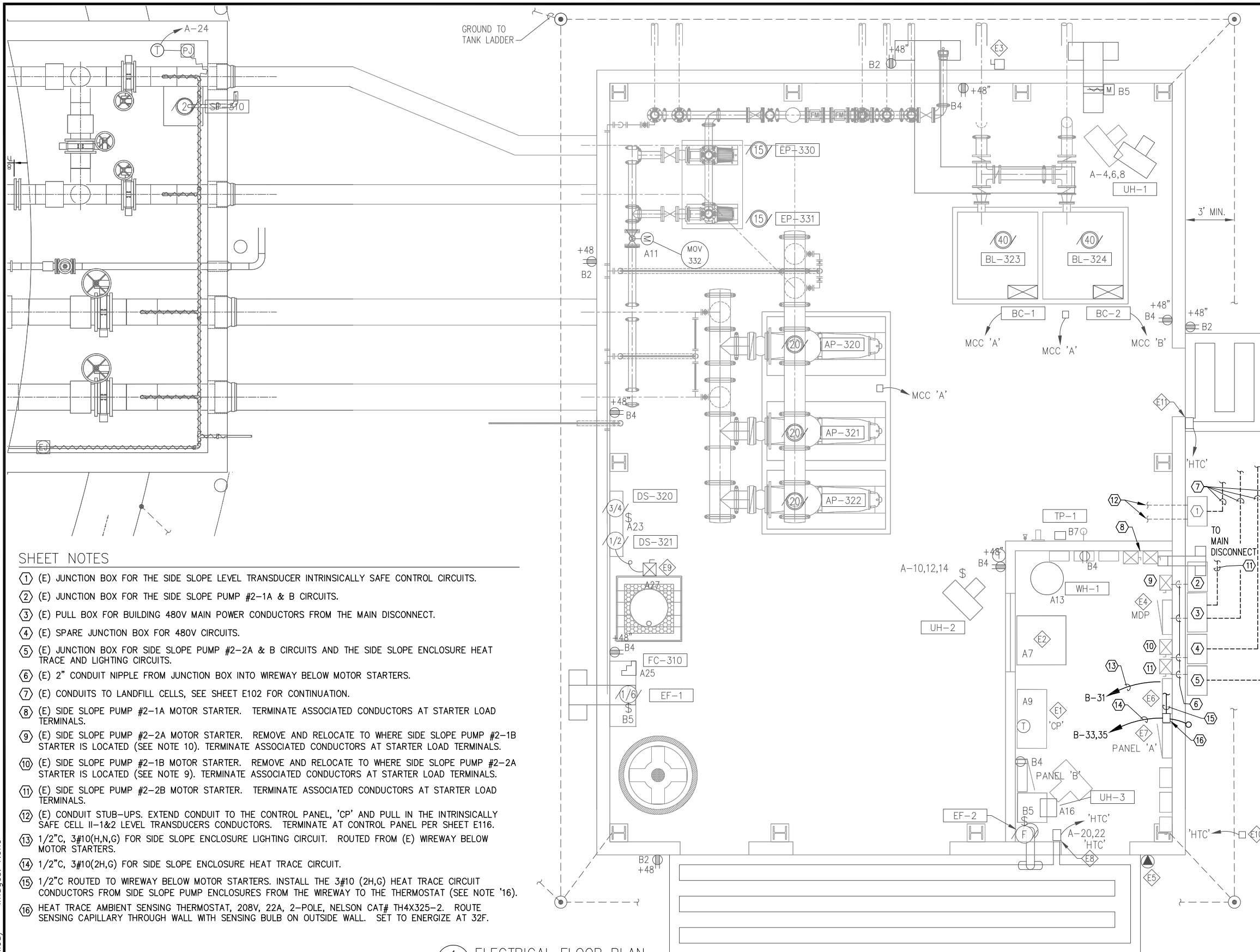


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
POWER ONE-LINE AND MCC ELEVATION

SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14 SHEET 29 OF 43

SHEET
E103

May 13, 2014 - 5:01pm
 Drawing: P:\PROJECTS\BRISTOL ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E104 ELECTRICAL FLOOR PLAN.DWG - Layout: ELECTRICAL FLOOR PLAN
 Xrefs: (DIESEL evaluation failed) - Images: None



COMPONENT SCHEDULE	
ITEM NO.	DESCRIPTION
E1	LEACHATE EQUIPMENT CONTROL PANEL 'CP'.
E2	UPS
E3	MAIN DISCONNECT.
E4	MDP
E5	GENERATOR PLUG-IN RECEPTACLE.
E6	MANUAL TRANSFER SWITCH
E7	PANEL 'A'
E8	SNOW MELT HEAT TRACE CONTROLLER 'HTC' AND CONTACTOR. SEE SCHEMATIC ON SHEET E110.
E9	DESCALING RECIRC PUMP, DS-321 STARTER, SEE SHEET E110.
E10	POST-MOUNTED SNOW SENSOR. INSTALL +60" AFF. SENSOR SHALL BE EXPOSED TO SNOWFALL. PROVIDE 1EA SPARE SENSORS. ETI #CIT-1 OR EQUAL.
E11	NEMA 3R J-BOX FOR HEAT TRACE CONNECTION. SIZE AS REQUIRED.
E12	NEMA 1 J-BOX FOR HEAT TRACE CONNECTION. SIZE AS REQUIRED.

SHEET NOTES

- 1 (E) JUNCTION BOX FOR THE SIDE SLOPE LEVEL TRANSDUCER INTRINSICALLY SAFE CONTROL CIRCUITS.
- 2 (E) JUNCTION BOX FOR THE SIDE SLOPE PUMP #2-1A & B CIRCUITS.
- 3 (E) PULL BOX FOR BUILDING 480V MAIN POWER CONDUCTORS FROM THE MAIN DISCONNECT.
- 4 (E) SPARE JUNCTION BOX FOR 480V CIRCUITS.
- 5 (E) JUNCTION BOX FOR SIDE SLOPE PUMP #2-2A & B CIRCUITS AND THE SIDE SLOPE ENCLOSURE HEAT TRACE AND LIGHTING CIRCUITS.
- 6 (E) 2" CONDUIT NIPPLE FROM JUNCTION BOX INTO WIREWAY BELOW MOTOR STARTERS.
- 7 (E) CONDUITS TO LANDFILL CELLS, SEE SHEET E102 FOR CONTINUATION.
- 8 (E) SIDE SLOPE PUMP #2-1A MOTOR STARTER. TERMINATE ASSOCIATED CONDUCTORS AT STARTER LOAD TERMINALS.
- 9 (E) SIDE SLOPE PUMP #2-2A MOTOR STARTER. REMOVE AND RELOCATE TO WHERE SIDE SLOPE PUMP #2-1B STARTER IS LOCATED (SEE NOTE 10). TERMINATE ASSOCIATED CONDUCTORS AT STARTER LOAD TERMINALS.
- 10 (E) SIDE SLOPE PUMP #2-1B MOTOR STARTER. REMOVE AND RELOCATE TO WHERE SIDE SLOPE PUMP #2-2A STARTER IS LOCATED (SEE NOTE 9). TERMINATE ASSOCIATED CONDUCTORS AT STARTER LOAD TERMINALS.
- 11 (E) SIDE SLOPE PUMP #2-2B MOTOR STARTER. TERMINATE ASSOCIATED CONDUCTORS AT STARTER LOAD TERMINALS.
- 12 (E) CONDUIT STUB-UPS. EXTEND CONDUIT TO THE CONTROL PANEL, 'CP' AND PULL IN THE INTRINSICALLY SAFE CELL II-1&2 LEVEL TRANSDUCERS CONDUCTORS. TERMINATE AT CONTROL PANEL PER SHEET E116.
- 13 1/2"C, 3#10(H,N,G) FOR SIDE SLOPE ENCLOSURE LIGHTING CIRCUIT. ROUTED FROM (E) WIREWAY BELOW MOTOR STARTERS.
- 14 1/2"C, 3#10(2H,G) FOR SIDE SLOPE ENCLOSURE HEAT TRACE CIRCUIT.
- 15 1/2"C ROUTED TO WIREWAY BELOW MOTOR STARTERS. INSTALL THE 3#10 (2H,G) HEAT TRACE CIRCUIT CONDUCTORS FROM SIDE SLOPE PUMP ENCLOSURES FROM THE WIREWAY TO THE THERMOSTAT (SEE NOTE '16).
- 16 HEAT TRACE AMBIENT SENSING THERMOSTAT, 208V, 22A, 2-POLE, NELSON CAT# TH4X325-2. ROUTE SENSING CAPILLARY THROUGH WALL WITH SENSING BULB ON OUTSIDE WALL. SET TO ENERGIZE AT 32F.

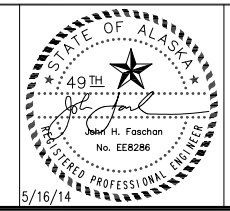
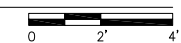
EQUIPMENT CONNECTION SCHEDULE							
TAG ID	LOAD					CIRCUIT SIZE	NOTES
	KW	HP	FLA	V	PH		
BL-323		40	52	480	3	SEE FEEDER SCHEDULE SHT. E103	1
BL-324		40	52	480	3	SEE FEEDER SCHEDULE SHT. E103	1
AP-320		25	34	480	3	SEE FEEDER SCHEDULE SHT. E103	1
AP-321		25	34	480	3	SEE FEEDER SCHEDULE SHT. E103	1
AP-322		25	34	480	3	SEE FEEDER SCHEDULE SHT. E103	1
EP-330		15	21	480	3	SEE FEEDER SCHEDULE SHT. E103	1
EP-331		15	21	480	3	SEE FEEDER SCHEDULE SHT. E103	1
SP-310		2		480	3	SEE FEEDER SCHEDULE SHT. E103	1
DS-320	3/4		120	1	1/2"C, 2#12 (H,N), 1#12 (G)		1
DS-321	1/2		120	1	1/2"C, 2#12 (H,N), 1#12 (G)		1
FC-310		1	120	1	1/2"C, 2#12 (H,N), 1#12 (G)		1
UH-1	3		8.3	208	3	1/2"C, 3#12 (3H), 1#12 (G)	1
UH-2	3		8.3	208	3	1/2"C, 3#12 (3H), 1#12 (G)	1
UH-3	1		8.3	120	1	1/2"C, 2#12 (H,N), 1#12 (G)	1
EF-1		1/6	4.4	120	1	1/2"C, 2#12 (H,N), 1#12 (G)	1
EF-2	0.02			120	1	1/2"C, 2#12 (H,N), 1#12 (G)	1
WH-1	2			120	1	1/2"C, 2#12 (H,N), 1#12 (G)	1
TP-1	0.02			120	1	1/2"C, 2#12 (H,N), 1#12 (G)	1

NOTES: 1. COORDINATE WITH MECHANICAL.

BOLD LINE-TYPE INDICATES NEW WORK. ALL ELSE IS EXISTING.

FOR CONSTRUCTION V.2

1 ELECTRICAL FLOOR PLAN
E104 SCALE: 3/8"=1'-0"

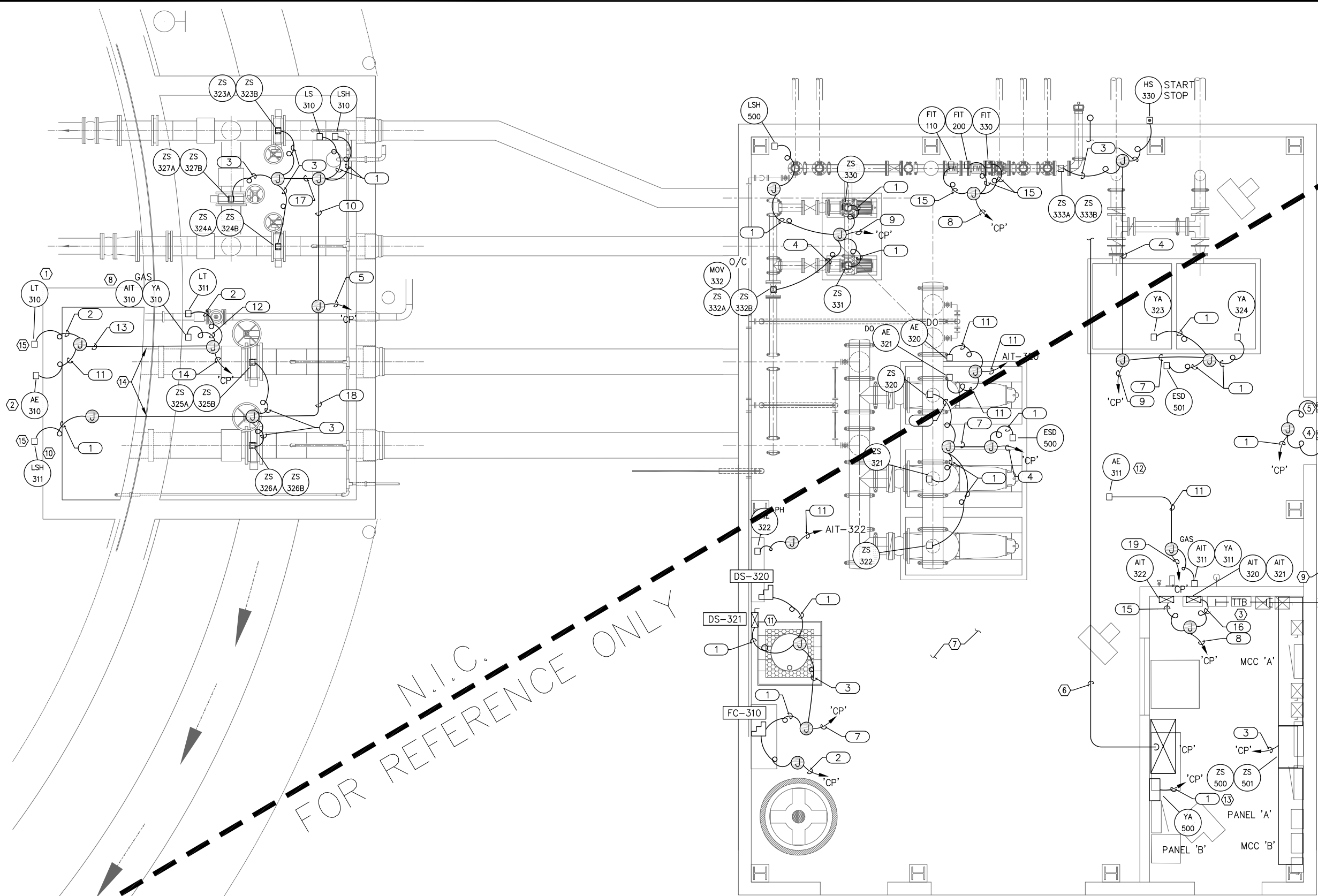


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CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION					SHEET
ELECTRICAL FLOOR PLAN					E104
SCALE: SHOWN	DESIGNED: JHF	CHECKED: JHF	DRAWN:	DATE: 5/16/14	SHEET 30 OF 43

May 13, 2014 5:01pm
 Drawing: P:\PROJECTS\BRISTOL_ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E105 INSTRUMENTATION PLAN.DWG - Layout: INSTRUMENTATION PLAN
 Xrefs: (DIESEL evaluation failed) - Images: None



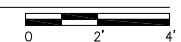
SHEET NOTES

- ① ULTRASONIC LEVEL TRANSMITTER MOUNTED ON TOP OF TANK.
- ② GAS SENSOR MOUNTED ON BLIND FLANGE AT TOP OF TANK. EXTEND SENSOR THROUGH FLANGE TO BELOW THE LEVEL OF THE INSIDE OF THE TOP OF THE TANK. SEE DETAIL ON SHEET M-111.
- ③ 2'x4'x3/4" PLYWOOD BACKBOARD FOR TELEPHONE EQUIPMENT.
- ④ ALARM HORN, 24VDC WITH WEATHERPROOF BACK BOX, FEDERAL MODEL #50GC OR EQUAL.
- ⑤ RED ALARM STROBE, 24VDC FEDERAL MODEL #141 OR EQUAL.
- ⑥ 3/4", WITH PULL STRING FOR CABLE FOR SCADA SYSTEM RADIO. RADIO AND CABLE TO BE PROVIDED BY THE OWNER.
- ⑦ ALL CONDUIT TO BE ROUTED ALONG WALLS OR 8' MINIMUM AFF. CONDUIT NOT TO BE ROUTED ALONG FLOOR.
- ⑧ GAS SENSOR TRANSMITTER MOUNTED AT BASE OF TANK.
- ⑨ ROUTE CONDUIT TO TELEPHONE UTILITY PEDESTAL.
- ⑩ TANK HIGH LEVEL FLOAT MOUNTED AT TOP OF TANK.
- ⑪ DESCALING RECIRCULATION PUMP, DS-321 MOTOR STARTER.
- ⑫ GAS SENSOR MOUNTED ON CEILING.
- ⑬ BATTERY CHARGER FAULT SIGNAL.
- ⑭ PROVIDE GALVANIZED UNISTRUT BRACKETS WELDED TO OUTSIDE OF TANK WALL FOR CONDUIT SUPPORT. PROVIDE SPARE LENGTH FOR 100% ADDITIONAL FUTURE CONDUITS. PAINT BRACKETS AND CONDUIT PER SPEC. SECTION 9911.2.1A.
- ⑮ SEE SHEET M-111 FOR MOUNTING DETAIL. PROVIDE GRC CONDUIT FITTING W/ STRAIN RELIEF CORD GRIP SECURED TO INSIDE OF TANK HATCH FOR INSTRUMENT WIRING CONNECTION POINT.

CONTROL CIRCUIT SCHEDULE

1	1/2" C, 3#14 (2SIG,G)
2	1/2" C, 1PR#18 TWSH
3	1/2" C, 5#14 (4SIG,G)
4	3/4" C, 9#14 (8SIG,G)
5	1-1/4" C, 31#14 (26SIG,4SPARE,G)
6	3/4" C, 2PR#18 TWSH
7	1/2" C, 7#14 (6SIG,G)
8	1" C, (3) 1PR #18 TWISH & 3#14 (+24V, -24V,G)
9	1" C, 15#14 (14,SIG,G)
10	1" C, 17#14 (16,SIG,G)
11	1/2" C, WITH SENSOR CABLE PER MANUFACTURER'S REQUIREMENTS.
12	3/4" C, 1PR #18 TWISH & 3#14 (2SIG,G) & SENSOR CABLE.
13	3/4" C, 1PR #18 TWISH & SENSOR CABLE
14	1" C, 3PR #18 TWISH & 3#14 (2SIG,G)
15	1/2" C, 1PR #18 TWISH & 3#14 (+24V, -24V,G)
16	3/4" C, (2)1PR #18 TWISH & 3#14 (+24V, -24V,G)
17	3/4" C, 13#14 (12SIG,G)
18	3/4" C, 11#14 (10SIG,G)
19	1/2" C, 1PR #18 TWISH & 3#14 (2SIG,G)

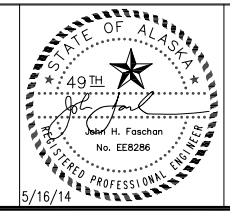
1 INSTRUMENTATION PLAN
 E105 SCALE: 3/8"=1'-0"



FOR CONSTRUCTION V.2

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CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION

INSTRUMENTATION PLAN

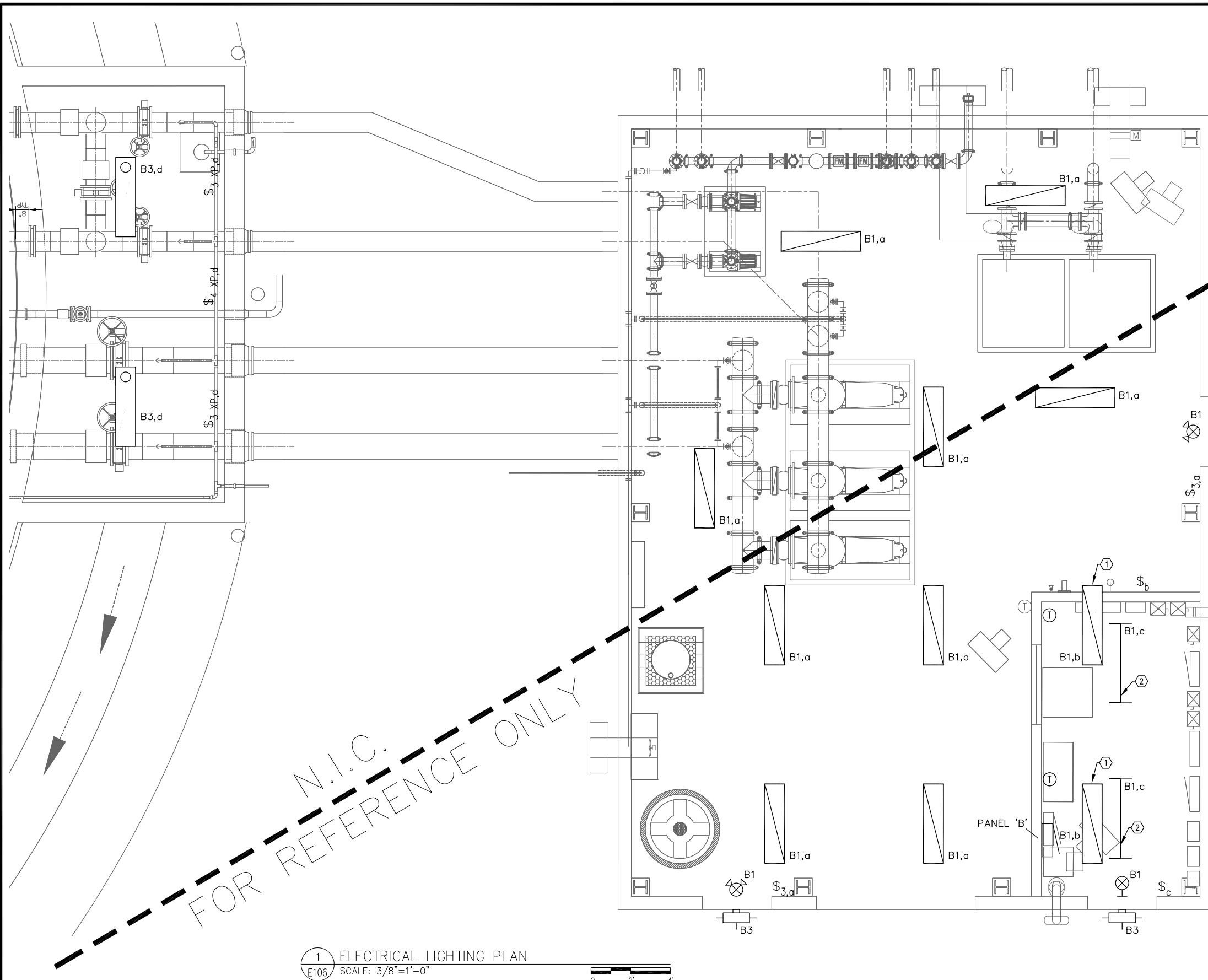
SHEET **E105**

SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14 SHEET 31 OF 43

May 13, 2014 - 5:01pm
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 Xrefs: (DIESEL evaluation failed) - Images: None

SHEET NOTES

- ① SURFACE MOUNT FIXTURE ON CEILING ABOVE ELECTRICAL ROOM
- ② FIXTURE IN ELECTRICAL ROOM



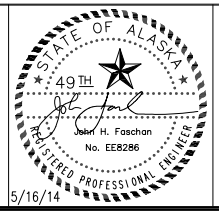
① ELECTRICAL LIGHTING PLAN
 E106 SCALE: 3/8"=1'-0"

FIXTURE SCHEDULE			
FIXTURE SYMBOL	LAMP SIZE	MOUNTING	DESCRIPTION
	3-32W FLUOR	CHAIN HUNG @ 10'-0" AFF	FLUORESCENT, 3-LAMP, DAMP LOCATION FIXTURE, LITHONIA #DM-3-32-120-GEB10IS.
	100W LED	SURFACE CEILING	CLASS 1, DIVISION 1, NEMA 4X, 120V LED LINEAR FIXTURE, DIALITE #LSC3C4M3GEX.
	3-32W FLUOR	SURFACE CEILING	FLUORESCENT, 3-LAMP, INDUSTRIAL FIXTURE, LITHONIA #AF10-3-32-120-GEB10IS.
	1-29W LED	EXTERIOR WALL MOUNT	LED WALL PACK, SEMI-CUTOFF, 120V, ENERGY TECH SOLUTIONS #WP-36E-MV-SCO. PROVIDE WITH PHOTOCELL.
	LED	WALL MOUNT ABOVE DOOR	EXIT SIGN, SINGLE FACE, RED LETTERS, ALUMINUM FRAME, 90 MIN. BATTERY, LITHONIA #LE-S-1-R-120/277-ELN.
	LED	WALL MOUNT ABOVE DOOR	EXIT SIGN/EMERGENCY LIGHT FIXTURE, SINGLE FACE, RED LETTERS, CLASS 1, DIV 2 RATED, BATTERY, LITHONIA #LHZ-S-1-R-120/277.

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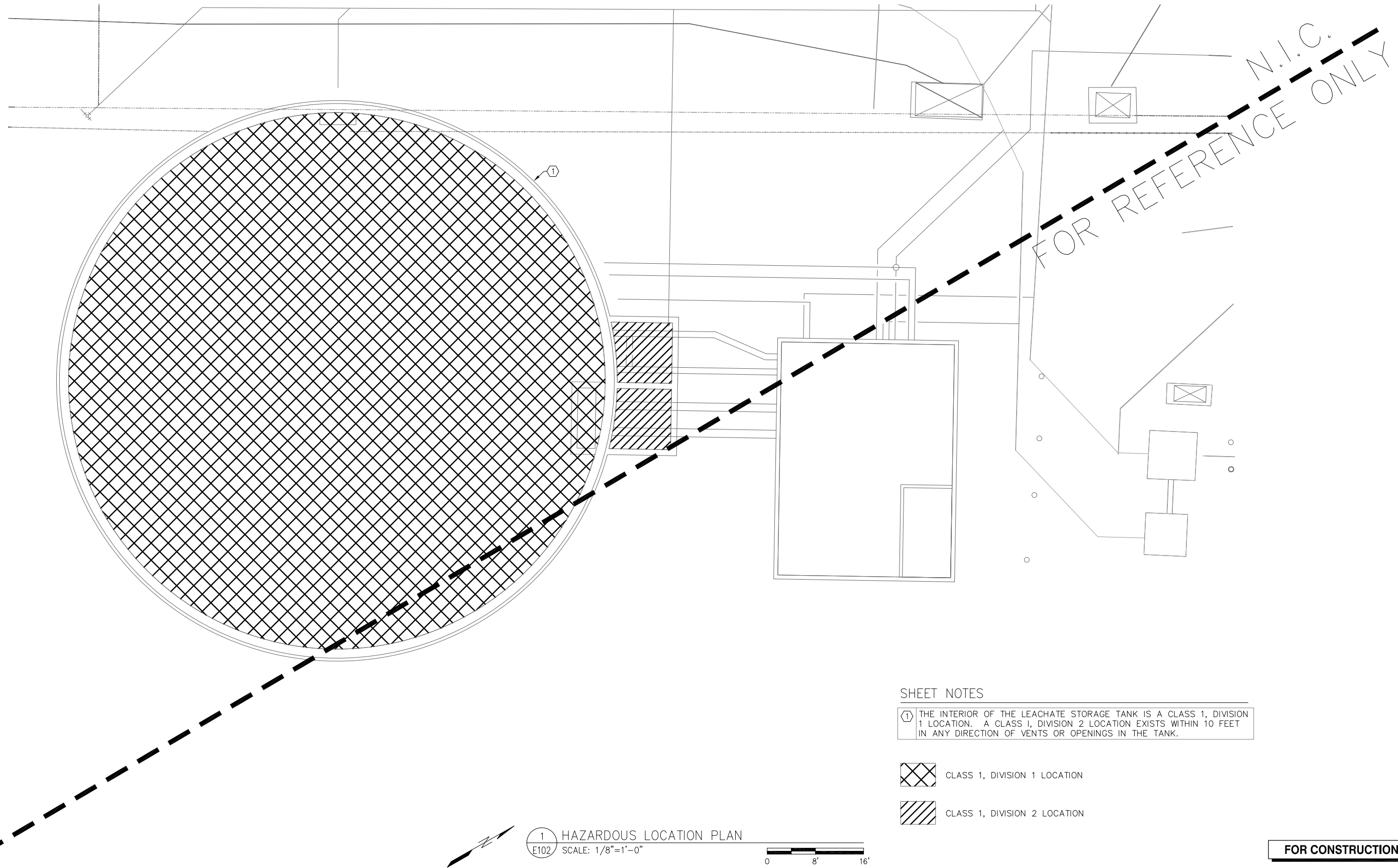
CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION

LIGHTING PLAN

SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14



SHEET
E106
 SHEET 32 OF 43

May 13, 2014 - 5:01pm
 Drawing: P:\PROJECTS\BRISTOL_ENVIRON\UNALASKA_LANDFILL_PH_2\DWGS\ELEC\E108_HAZARDOUS_LOCATION_PLAN.DWG - Layout: HAZARDOUS_LOCATION_PLAN
 Xrefs: (DIESEL_evaluation failed) - Images: None



SHEET NOTES

① THE INTERIOR OF THE LEACHATE STORAGE TANK IS A CLASS 1, DIVISION 1 LOCATION. A CLASS 1, DIVISION 2 LOCATION EXISTS WITHIN 10 FEET IN ANY DIRECTION OF VENTS OR OPENINGS IN THE TANK.


-  CLASS 1, DIVISION 1 LOCATION
-  CLASS 1, DIVISION 2 LOCATION


 ① HAZARDOUS LOCATION PLAN
 E102 SCALE: 1/8"=1'-0"

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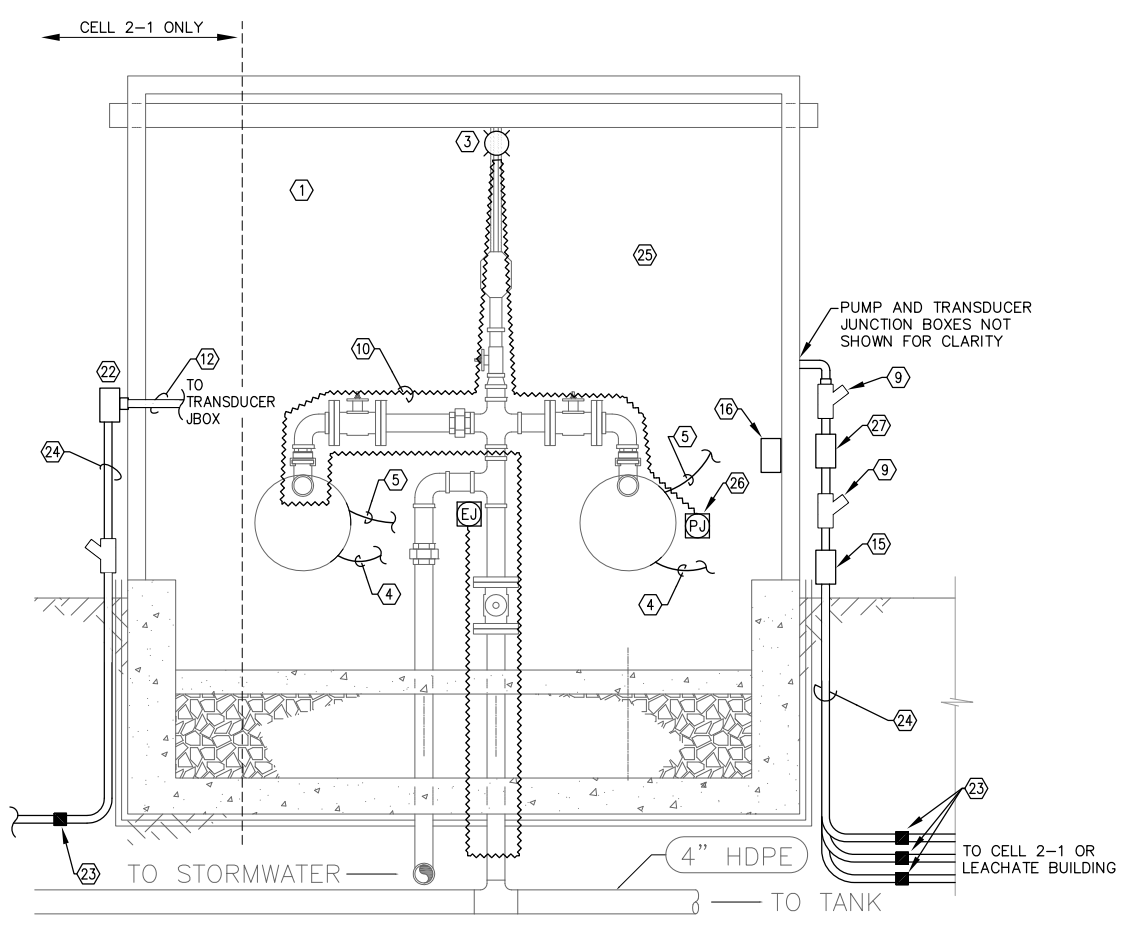
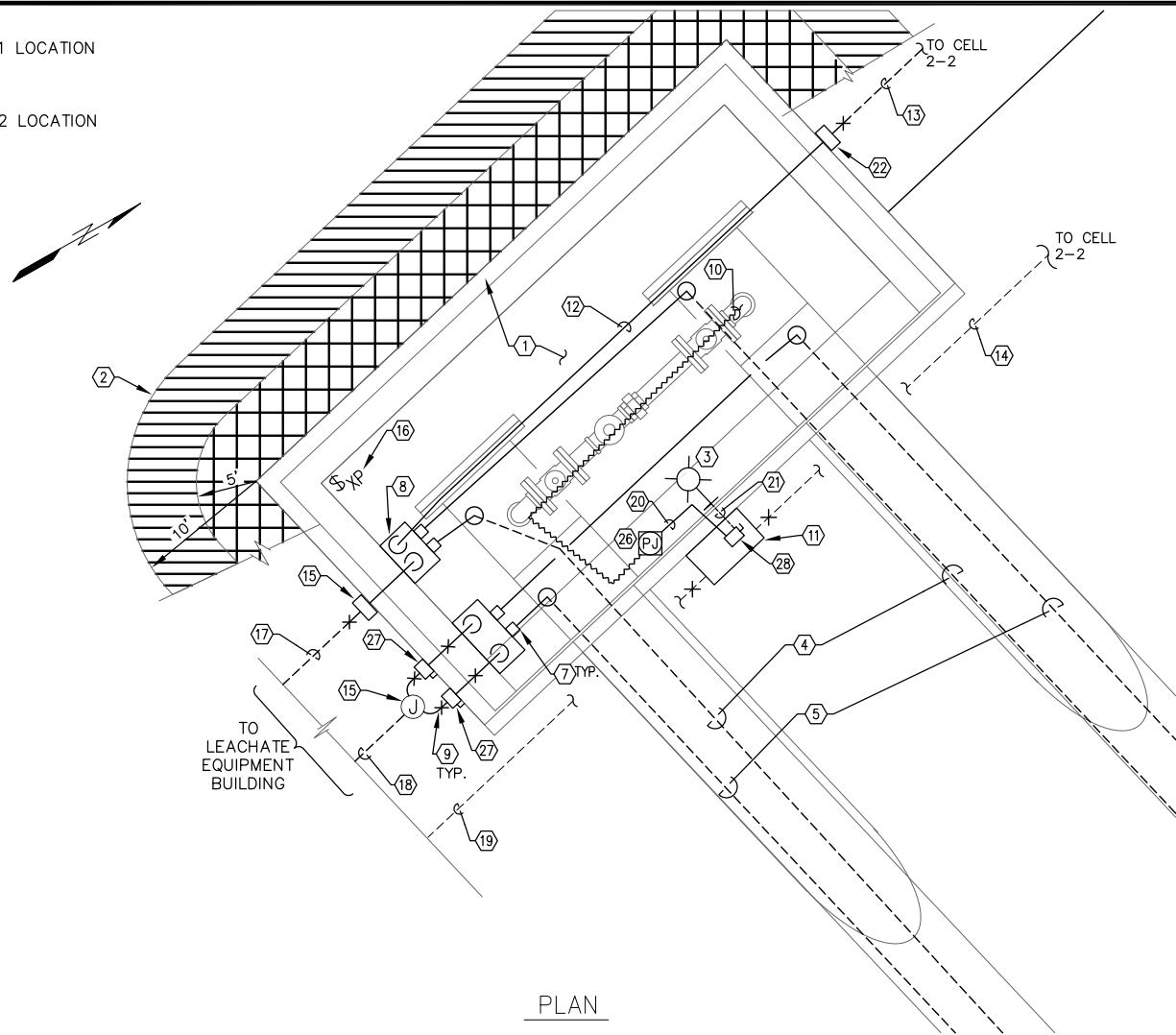


CITY OF UNALASKA
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HAZARDOUS LOCATION PLAN
 SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14

SHEET
E108
 SHEET 34 OF 43

May 13, 2014 - 5:01pm
 Drawing: P:\PROJECTS\BRISTOL ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E109 SCOPE PUMP ENCLOSURE.DWG - Layout: SIDE SLOPE PUMP ENCLOSURE ELECTRICAL DETAILS
 Xrefs: XBRISTOL ENVIRON UNALASKA PHASE 2 CELLS 2 AND 3 BORDER.DWG - Images: None

-  CLASS 1, DIVISION 1 LOCATION
-  CLASS 1, DIVISION 2 LOCATION



1 SIDE SLOPE PUMP ENCLOSURE ELECTRICAL DETAILS
 E109 SCALE: 3/4" = 1'-0"


SHEET NOTES

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> ① A CLASS 1, DIVISION 1, HAZARDOUS LOCATION EXISTS WITHIN THE ENCLOSURE AND WITHIN 5 FEET IN ANY DIRECTION OF ENCLOSURE VENTS OR OPENINGS. ② A CLASS 1, DIVISION 2 LOCATION EXISTS BETWEEN 5 FEET AND 10 FEET OF ANY ENCLOSURE VENTS AND OPENINGS. ③ CLASS 1, DIVISION 1, 100W, 120V INCANDESCENT LIGHT FIXTURE CROUSE-HINDS CAT# EVCX OR EQUAL. ④ LEVEL TRANSDUCER CABLE. ROUTE AND SECURE AS NECESSARY TO AVOID DAMAGE. ⑤ PUMP CABLE. ROUTE AND SECURE AS NECESSARY TO AVOID DAMAGE. ⑥ CLASS 1, DIVISION 1 RATED JUNCTION BOX FOR SPLICING PUMP CABLES. ⑦ CLASS 1, DIVISION 2 CORD GRIP WITH STRAIN RELIEF KELLEMS OR EQUAL SIZE AS REQUIRED. ⑧ NEMA 3R JUNCTION BOX FOR SPLICING TRANSDUCER CABLES. LABEL "INTRINSICALLY SAFE WIRING ONLY". | <ul style="list-style-type: none"> ⑨ HAZARDOUS LOCATION SEAL-OFF FITTING. ⑩ CLASS 1, DIVISION 1, 208V, 5W/FT SELF-LIMITING HEAT TRACE NELSON CAT# LT25J-D1 OR EQUAL. ⑪ CLASS 1, DIVISION 1 RATED JUNCTION BOX FOR SPLICING HEAT TRACE AND LIGHTING CIRCUIT CONDUCTORS. ⑫ 3/4"C, (2)#1PR #18TWSH (AT CELL 2-1 ONLY). ⑬ SEE SHEET E102 NOTE 7 (AT CELL 2-1 ONLY). ⑭ SEE SHEET E102 NOTE 6 (AT CELL 2-1 ONLY). ⑮ CLASS 1, DIVISION 1 RATED JUNCTION BOX OR FITTING FOR PULLING PURPOSES. ⑯ CLASS 1, DIVISION 1, 120V, 20A FACTORY SEALED SNAP SWITCH. ⑰ SEE SHEET E102 NOTE 10 (CELL 2-1), SHEET E102 NOTE 7 (CELL 2-2). ⑱ SEE SHEET E102 NOTE 11 (CELL 2-1 ONLY). | <ul style="list-style-type: none"> ⑲ SEE SHEET E102 NOTE 6. ⑳ 1/2"C, 3#10 (2H,G) ㉑ 1/2"C, 3#12 (SWITCHLEG,N,G) ㉒ NEMA 3R INTRINSICALLY SAFE PULL BOX. ㉓ HDPE TO GRC COUPLING. ㉔ 2" GRC RISER. ㉕ ALL CONDUITS AND CONNECTIONS NOT SHOWN FOR CLARITY. ㉖ CLASS 1, DIVISION 1 HEAT TRACE CONNECTION POINT. ㉗ CLASS 1, DIVISION 1, 480V, 30A, 5HP, 3-POLE DISCONNECT SWITCH CROUSE-HINDS CAT# FLS30364-1-33 OR EQUAL. PROVIDE WITH PLACARD IDENTIFYING THE MOTOR THE DISCONNECT CONTROLS. ㉘ CLASS 1, DIVISION 1, 120V, 15A, 3-POLE DISCONNECT SWITCH CROUSE-HINDS CAT# EDSC3123 OR EQUAL. PROVIDE WITH PLACARD "HEAT TRACE/LIGHTING DISCONNECT". |
|---|---|---|

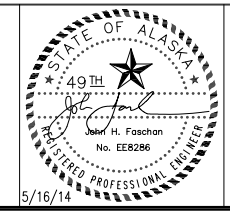
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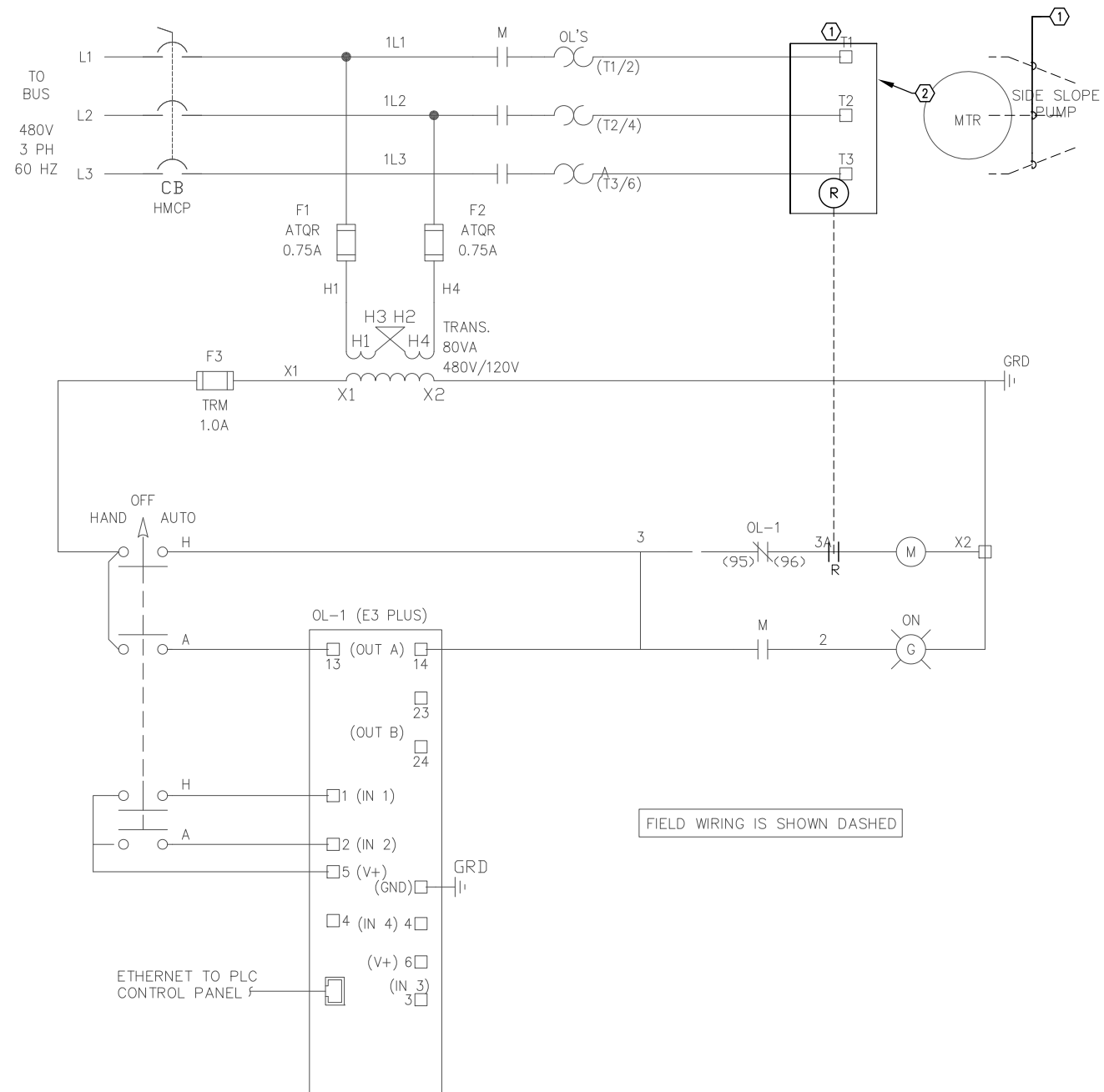
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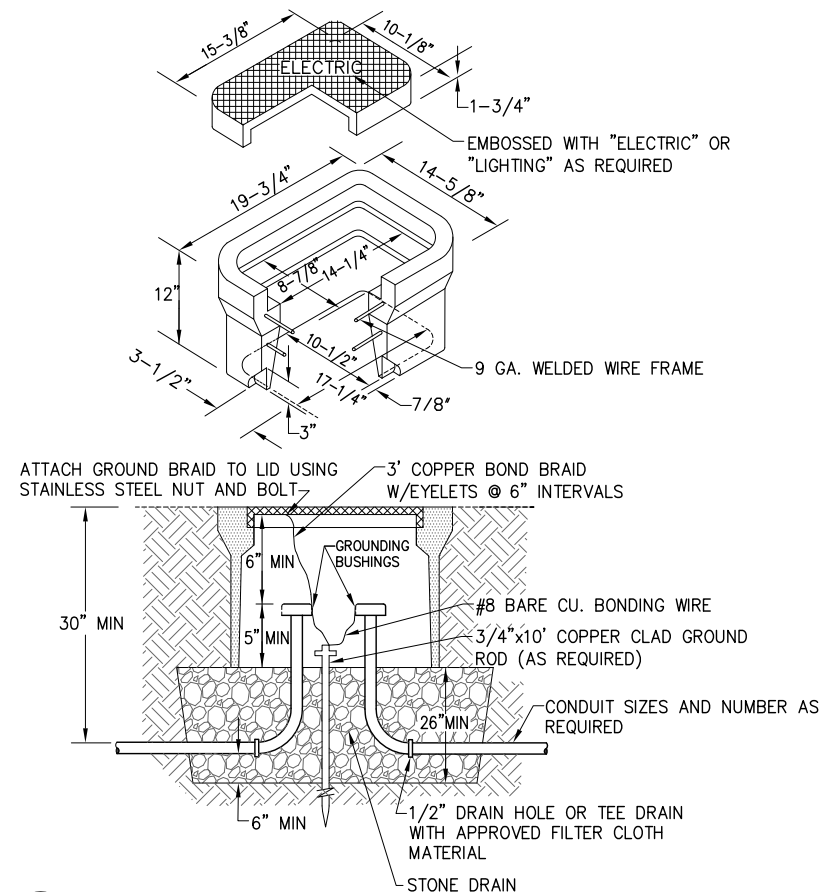
CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION SIDE SLOPE PUMP ENCLOSURE ELECTRICAL DETAILS				
SCALE: SHOWN	DESIGNED: JHF	CHECKED: JHF	DRAWN:	DATE: 5/16/14

SHEET
E109
SHEET 35 OF 43

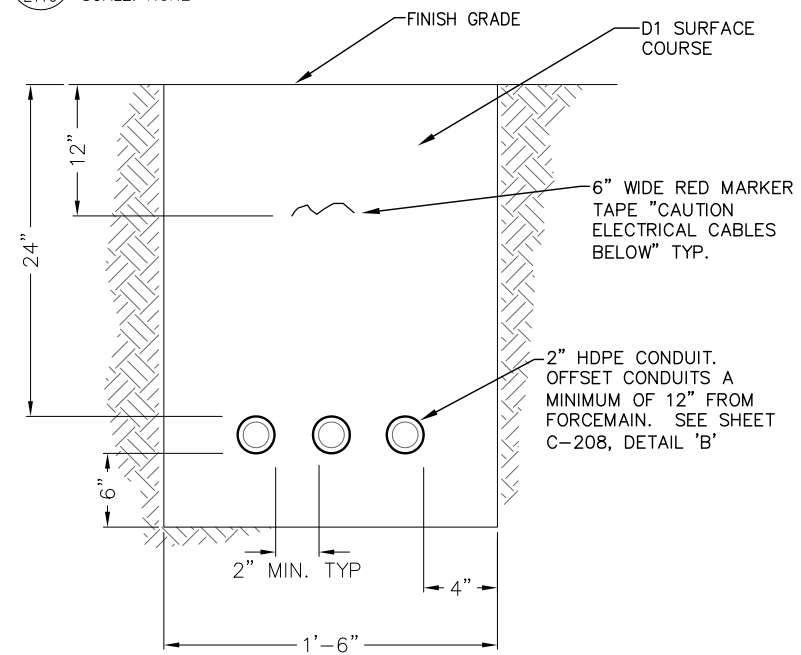
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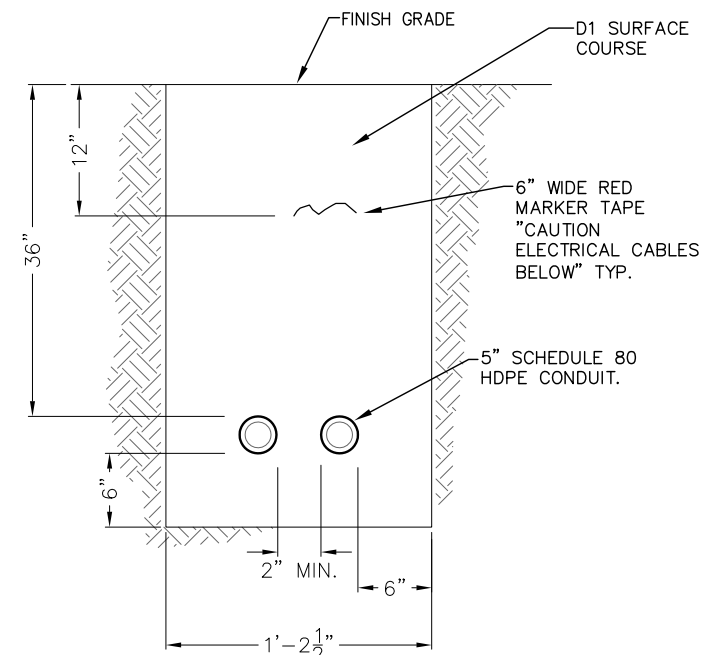
1 TYPICAL SIDE SLOPE PUMP SCHEMATIC
 E110 SCALE: NONE



2 JUNCTION BOX DETAIL
 E110 SCALE: NONE



3 TRENCH DETAIL
 E110 SCALE: NTS



4 TRENCH DETAIL
 E110 SCALE: NTS

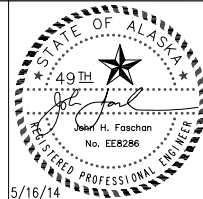
SHEET NOTES

- 1 PROVIDE MOTOR CONDUCTORS AND PUMP DRAWDOWN RELAYS. STARTER AND ALL OTHER CONNECTIONS ARE EXISTING.
- 2 PROVIDE PUMP DRAWDOWN RELAY, SYMCOM MODEL 777-LR-KW/HP-P2. WIRE INTO (E) PUMP MOTOR STARTER CIRCUIT AS SHOWN PER MANUFACTURER'S INSTRUCTIONS. PROGRAM RELAY TO TRIP ON UNDERCURRENT (WELL PUMP RUN DRY CONDITION).

FOR CONSTRUCTION V.2

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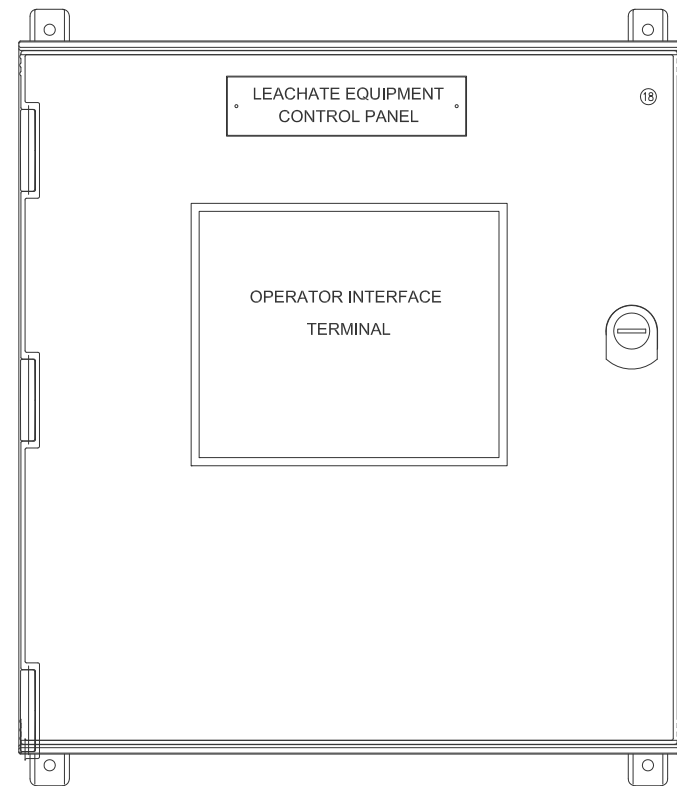


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CITY OF UNALASKA CELLS II-1 & II-2 LANDFILL EXPANSION				SHEET	
ELECTRICAL DETAILS				E110	
SCALE: SHOWN	DESIGNED: JHF	CHECKED: JHF	DRAWN:	DATE: 5/16/14	SHEET 36 OF 43

May 13, 2014 5:02pm
 Drawing: P:\PROJECTS\BRISTOL ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E111 CONTROL PANEL LAYOUT AND FUNCTIONAL NARRATIVE.DWG - Layout: CONTROL PANEL LAYOUT AND FUNCTIONAL NARRATIVE
 Xrefs: XBRISTOL ENVIRON UNALASKA PHASE 2 CELLS 2 AND 3 BORDER.DWG - Images: None



FRONT PANEL VIEW

TANK LEVEL	PUMP 1	PUMP 2	HEADERS OPERATING
3-6 FEET	50%	OFF	1
7-9 FEET	75%	OFF	1
10-12 FEET	100%	OFF	1
13-15 FEET	60%	60%	1 & 2
16-18 FEET	70%	70%	1 & 2
19-24 FEET	80%	80%	1 & 2
24-28 FEET	90%	90%	1 & 2
29-33 FEET	100%	100%	1 & 2

xx INDICATES AN OPERATOR ADJUSTABLE SETPOINT. COORDINATE WITH OWNER TO DETERMINE WHICH SETPOINTS ARE TO BE PASSWORD PROTECTED.

FUNCTIONAL NARRATIVE

THIS CONTROL PANEL CONTROLS THE BLOWERS, AERATION PUMPS, EFFLUENT PUMPS, SIDE SLOPE PUMPS AND THE FOAM CONTROL AND DESCALING SYSTEMS.

BLOWERS

THE BLOWERS HAVE HAND-OFF-AUTO MODES OF OPERATION. IN THE HAND MODE, THE SELECTED BLOWER WILL RUN CONTINUOUSLY UNLESS A BLOWER FAULT CONDITION OCCURS. IN AUTO MODE, THE BLOWERS OPERATE IN A LEAD LAG MODE BASED ON THE AMOUNT OF DISSOLVED OXYGEN (DO) SENSED IN THE DISCHARGE LINE OF THE AERATION PUMPS. THERE ARE TWO DO SENSORS FOR REDUNDANCY. THE CONTROLLING SENSOR WILL BE SELECTABLE BY THE OPERATOR AT THE OPERATOR INTERFACE (OIT) SCREEN. IF THE DO SENSORS VARY BY MORE THAN 10% AN ALARM WILL BE GENERATED AND THE SENSOR THAT READS THE LOWEST WILL CONTROL. IF THE DO IS BELOW THE REQUIRED SETPOINT xx FOR xx MINUTES, THEN THE LEAD BLOWER WILL START AND THE SPEED OF THE LEAD BLOWER WILL VARY FROM A MINIMUM SPEED TO FULL SPEED IN ORDER TO MAINTAIN THE DO SETPOINT. IF THE DEMAND IS SUCH THAT THE LEAD BLOWER CANNOT REACH THE SETPOINT AFTER RUNNING AT FULL SPEED FOR xx MINUTES, THEN THE LAG BLOWER WILL BE STARTED AT ITS MINIMUM SPEED. BOTH BLOWERS WILL THEN MODULATE TO MAINTAIN THE SETPOINT. IF THE DEMAND DECREASES SUCH THAT BOTH BLOWERS ARE RUNNING AT LESS THAN HALF SPEED FOR xx MINUTES, THEN THE LAG BLOWER WILL SHUT DOWN AND THE LEAD BLOWER WILL PICK UP THE DEMAND. IF THE DEMAND CONTINUES TO DECREASE AND THE LEAD BLOWER IS MAINTAINING THE SETPOINT AND IS RUNNING AT ITS MINIMUM SPEED FOR xx MINUTES, THEN IT WILL ALSO SHUT DOWN. THE LEAD BLOWER SHALL ALTERNATE ON EACH START CYCLE OR AFTER IT HAS BEEN RUNNING CONTINUOUSLY FOR 24 HOURS. EACH BLOWER HAS A CONTROLLER WHICH MONITORS THE BLOWER'S OPERATION. IF THE CONTROLLER DETECTS AN ALARM CONDITION, THE ASSOCIATED BLOWER WILL BE DISABLED AND THE OTHER BLOWER WILL BECOME THE LEAD. EACH BLOWER RUN TIME WILL BE MONITORED AND AN ALARM WILL BE GENERATED TO ALERT OPERATORS WHEN THE MAXIMUM RUN TIME BETWEEN BLOWER OIL CHANGES HAS BEEN EXCEEDED.

AERATION PUMPS

THE AERATION PUMPS HAVE HAND-OFF-AUTO MODES OF OPERATION. IN THE HAND MODE, THE SELECTED PUMP WILL RUN CONTINUOUSLY UNLESS A PUMP FAULT CONDITION OCCURS. IN AUTO MODE, ONLY TWO OF THE THREE AERATION PUMPS WILL OPERATE AT ANY ONE TIME WITH THE LEAD, LAG AND STANDBY PUMPS OPERATOR SELECTABLE OR SET FOR AUTO ALTERNATION. THE AERATION PUMPS WILL ALSO ALTERNATE ON A DAILY CYCLE TO EQUALIZE WEAR ON EACH PUMP. THE AERATION PUMPS WILL OPERATE BASED ON EITHER THE LEVEL IN THE LEACHATE TANK OR THE SPEED AND NUMBER OF BLOWERS RUNNING. IT IS NOT CLEAR AT THIS TIME WHETHER TANK LEVEL OR BLOWER SPEED WILL BE THE CONTROLLING FACTOR FOR AERATION PUMP SPEED. THE CONTROL PANEL WILL BE PROGRAMMED FOR BOTH WITH THE CONTROLLING VARIABLE OPERATOR SELECTABLE ON THE OIT. IF CONTROLLING ON TANK LEVEL, THE AERATION PUMPS WILL CONTINUOUSLY VARY IN SPEED LINEARLY THROUGH THE POINTS SHOWN IN THE TABLE ON THIS SHEET.

IF CONTROLLING ON BLOWER SPEED, THE NUMBER OF AERATION PUMPS RUNNING AND THEIR SPEED WILL MATCH THE BLOWERS.

WHEN AN AERATION PUMP IS CALLED TO RUN, ITS ASSOCIATED CHECK VALVE WILL OPEN. IF THE CHECK VALVE LIMIT SWITCH DOES NOT DETECT THE VALVE OPENING AFTER xx SECONDS, THE PUMP WILL SHUT DOWN AND AN ALARM WILL BE GENERATED. AFTER THE PUMP STOPS, THE ASSOCIATED CHECK VALVE WILL CLOSE.

EFFLUENT PUMPS

THE EFFLUENT PUMPS HAVE HAND-OFF-AUTO MODES OF OPERATION. IN THE HAND MODE, THE SELECTED PUMP WILL RUN CONTINUOUSLY UNLESS A PUMP FAULT CONDITION OCCURS. IN AUTO MODE, THE MAIN AND STANDBY PUMP CAN BE SELECTED AT THE OIT OR THEY CAN BE SELECTED TO AUTO ALTERNATE. THE MODE OF OPERATION OF THE MAIN EFFLUENT PUMP DEPENDS ON THE POSITION OF THE MANUAL VALVE, V-333 AS DETECTED BY LIMIT SWITCHES ON THE VALVE. IF THE VALVE IS POSITIONED TO DIRECT EFFLUENT TO THE WASTEWATER TREATMENT PLANT (WWTP), THEN AN EFFLUENT PUMP WILL BE CALLED TO START EVERY xx MINUTES AS SELECTED BY THE OPERATOR. THE PUMP WILL RUN UNTIL IT PUMPS 5% OF THE MEASURED RECEIVED FLOW AT THE WWTP THAT IS TOTALIZED OVER THE TIME PERIOD MEASURED SINCE THE LAST PUMP CYCLE. THE WWTP INFLUENT FLOW TOTALIZATION SIGNAL WILL BE PROVIDED BY THE OWNER TO THIS PANEL VIA A RADIO LINK. THE OWNER WILL PROVIDE AND INSTALL A RADIO AND AN ETHERNET CABLE TO CONNECT TO THIS PANEL FOR THIS SIGNAL. PROVIDE ALL NECESSARY COORDINATION AND PROGRAMMING TO ACCEPT THIS SIGNAL.

IF THE MANUAL VALVE, V-333 IS POSITIONED TO DIRECT EFFLUENT TO THE TRUCK FILL STATION, THEN THE SELECTED EFFLUENT PUMP WILL START AND STOP BASED ON SIGNALS RECEIVED FROM THE PUSHBUTTON STATION AT THE TRUCK FILL STAND.

IN EITHER MODE OF OPERATION, WHEN AN EFFLUENT PUMP IS CALLED TO RUN, MOTOR OPERATED VALVE, MOV-332 WILL BE CALLED TO OPEN. ONCE A 'VALVE FULL OPEN' SIGNAL IS RECEIVED, THE PUMP WILL START. IF A MOV-332 VALVE OPEN SIGNAL IS NOT DETECTED AFTER xx SECONDS, AN ALARM WILL BE GENERATED AND THE PUMP WILL NOT START. IF THE EFFLUENT PUMP STARTS, ITS ASSOCIATED CHECK VALVE WILL OPEN. IF THE CHECK VALVE LIMIT SWITCH DOES NOT DETECT THE VALVE OPENING AFTER xx SECONDS, THE PUMP WILL SHUT DOWN AND AN ALARM WILL BE GENERATED. AFTER AN EFFLUENT PUMP STOPS, VALVE MOV-332 WILL BE CLOSED AND THE ASSOCIATED CHECK VALVE WILL CLOSE.

FOAM PUMP

THIS PANEL MONITORS THE LEVEL OF FOAM IN THE LEACHATE TANK BY COMPARING THE ULTRASONIC LEVEL SIGNAL WITH THE LIQUID LEVEL SIGNAL (PRESSURE TRANSMITTER) IN THE LEACHATE TANK. THE FOAM LEVEL WILL BE DISPLAYED ON THE OPERATOR INTERFACE PANEL (OIT). IF THE FOAM LEVEL IS ABOVE AN OPERATOR SELECTABLE SETPOINT, THE FOAM INJECTION PUMP WILL START. THE DOSAGE OF INJECTION OF SILICON SOLUTION INTO THE TANK INFLUENT LINE WILL BE MANUALLY ADJUSTED, BUT THE RATE OF DOSAGE INJECTION WILL BE PROPORTIONAL TO THE COMBINED INFLUENT FLOW AS MEASURED BY FLOWMETERS ON THE LIFT STATION INFLUENT LINE (FIT-110) AND THE LANDFILL CELL INFLUENT LINE (FIT-200).

DESCALING PUMPS

THERE ARE TWO SETS OF INLET AND OUTLET PIPES BETWEEN THE LEACHATE TANK AND THE AERATION PUMPS. PERIODICALLY, ONE SET OF PIPES WILL BE MANUALLY ISOLATED FROM THE SYSTEM FOR DESCALING. WHEN THIS IS DONE, THE OPERATOR CAN INITIATE THE DESCALING PROCESS BY PRESSING 'START DESCALING' ON THE OIT. ONCE INITIATED, THE RECIRCULATION PUMP WILL START AND THE PANEL WILL BEGIN MONITORING THE PH LEVEL IN THE ISOLATED AERATION PUMP LINES. THE CHEMICAL METERING PUMP WILL ALSO START TO BEGIN INJECTING ACID AND WILL CONTINUE UNTIL THE TARGET PH SETPOINT IS REACHED. THE METERING PUMP WILL THEN SHUT OFF AND THE RECIRCULATION PUMP WILL CONTINUE TO OPERATE. IF THE PH REBOUNDS ABOVE THE PH SETPOINT AFTER xx MINUTES, THE METERING PUMP WILL BE CALLED BACK ON AND MORE ACID WILL BE INJECTED. THE PROCESS WILL CONTINUE UNTIL THE PH LEVEL IS MAINTAINED WITHIN xx% OF THE SETPOINT FOR xx MINUTES AFTER THE METERING PUMP STOPS. THE PANEL WILL THEN DISPLAY A 'DESCALING COMPLETE' MESSAGE ON THE OIT AND THE RECIRCULATION PUMP WILL STOP. THE PANEL WILL RECORD THE ON/OFF TIMES AND TOTAL RUN DURATION OF THE ACID METERING AND RECIRCULATION PUMPS DURING THE DESCALING OPERATION.

SIDE SLOPE PUMPS

THIS PANEL ALSO CONTROLS THE OPERATION OF THE LANDFILL SIDE SLOPE LEACHATE PUMPS. THE SIDE SLOPE PUMPS HAVE HAND-OFF-AUTO AND LOCAL-OFF-REMOTE MODES OF OPERATION. A LOCAL-OFF-REMOTE SELECTOR SWITCH AT EACH OF THE SIDE SLOPE PUMPS ALLOWS LOCAL CONTROL. WHEN IN THE LOCAL POSITION, THE PUMP CAN BE MANUALLY CONTROLLED THROUGH A LOCAL START/STOP SELECTOR SWITCH. ONCE STARTED LOCALLY, THE PUMP WILL RUN CONTINUOUSLY UNLESS A PUMP FAULT OR LEACHATE WELL DRAWDOWN CONDITION OCCURS. WHEN IN THE LOCAL OFF POSITION, THE PUMP CANNOT BE STARTED LOCALLY OR REMOTELY. WHEN IN THE REMOTE POSITION, THE PUMP IS CONTROLLED BY THE HAND-OFF-AUTO SWITCH AT THE PUMP STARTER IN THE MOTOR CONTROL CENTER. IN HAND MODE, THE PUMP WILL RUN CONTINUOUSLY UNLESS A PUMP FAULT OR LEACHATE WELL DRAWDOWN CONDITION OCCURS. IN THE AUTO POSITION, THE PUMPS WILL RUN IN A LEAD, LAG OR AUTO-ALTERNATE SCENARIO AS SELECTED BY THE OPERATOR. WHEN THE LEVEL IN THE LEACHATE WELL REACHES xx FEET, THE LEAD PUMP STARTS. IF THE LEVEL CONTINUES TO RISE TO xx FEET, THE LAG PUMP STARTS. BOTH PUMPS STOP WHEN THE LEVEL IS PUMPED DOWN TO xx FEET. IF THE LEVEL REACHES xx FEET A HIGH LEVEL ALARM WILL BE GENERATED.

MISCELLANEOUS

THIS PANEL MONITORS THE EMERGENCY SHUTDOWN (ESD) PUSHBUTTONS AND WILL DISABLE ALL PUMPS AND SOUND AN ALARM WHENEVER AN ESD CONDITION IS DETECTED. THE PANEL GENERATES A LEAK DETECTION ALARM BY MONITORING THE OPERATION OF THE SUMP PUMP IN THE VALVE VAULT. IF THE SUMP PUMP STARTS TWICE IN LESS THAN xx MINUTES, THEN A LEAK DETECTION ALARM IS GENERATED.

AUTO-RESTART: AFTER A POWER FAILURE, THE CONTROL PANEL WILL RE-START ALL PUMPS AND RETURN TO THE OPERATING CONDITION THAT WAS PRESENT PRIOR TO THE POWER OUTAGE.

IN ADDITION TO PUMP CONTROL, THIS PANEL ALSO MONITORS AND DISPLAYS STATUS SIGNALS INCLUDING THE MANUAL TRANSFER SWITCH POSITION, THE TANK AND BUILDING GAS MONITOR LEVEL AND TROUBLE CONDITION, TANK, VALVE VAULT AND BUILDING HIGH LEVEL FLOATS, BLOWER, AERATION AND EFFLUENT PUMP ALARMS, ETC. WHENEVER THE CONTROL PANEL DETECTS AN ALARM CONDITION, AN EXTERIOR ALARM HORN/STROBE WILL ENERGIZE AND AN APPROPRIATE ALARM MESSAGE WILL BE ANNUNCIATED ON THE OIT. THE ALARM EXTERIOR HORN/STROBE CAN BE SILENCED BY PRESSING THE ALARM ACKNOWLEDGE PUSHBUTTON, BUT THE ALARM CONDITION WILL REMAIN ANNUNCIATED AT THE OIT UNTIL THE ALARM CONDITION CLEARS.

THE OPERATOR INTERFACE PANEL IN THE CONTROL PANEL SHALL BE PROGRAMMED TO GRAPHICALLY DISPLAY THE LEACHATE TREATMENT PROCESS. TANK LEVELS, VALVE POSITIONS, PUMP STATUS AND ALARM CONDITIONS WILL ALL BE DISPLAYED. ALL PROCESS SETPOINTS SHALL BE OPERATOR ADJUSTABLE THROUGH A PASSWORD PROTECTED SETPOINT SCREEN. ALL ALARMS SHALL BE LOGGED WITH A TIME AND DATE STAMP AND AN ALARM HISTORY SHALL BE ACCESSIBLE THROUGH AN ALARM SCREEN.

SHEET NOTES


- ① THE FUNCTIONAL NARRATIVE AS SHOWN HAS ALREADY BEEN PROGRAMMED INTO THE PLC CONTROL PANEL BY BOREAL CONTROLS INC. COORDINATE WITH THEM TO MAKE THE CHANGES SHOWN.

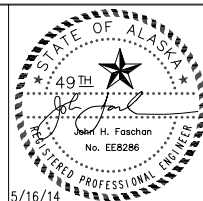
1 CONTROL PANEL LAYOUT AND FUNCTIONAL NARRATIVE
 E108 SCALE: NTS

BOLD LINE-TYPE INDICATES NEW WORK. ALL ELSE IS EXISTING.

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CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
**CONTROL PANEL LAYOUT AND
 FUNCTIONAL NARRATIVE**

SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14 SHEET 37 OF 43

SHEET
E111
 SHEET 37 OF 43

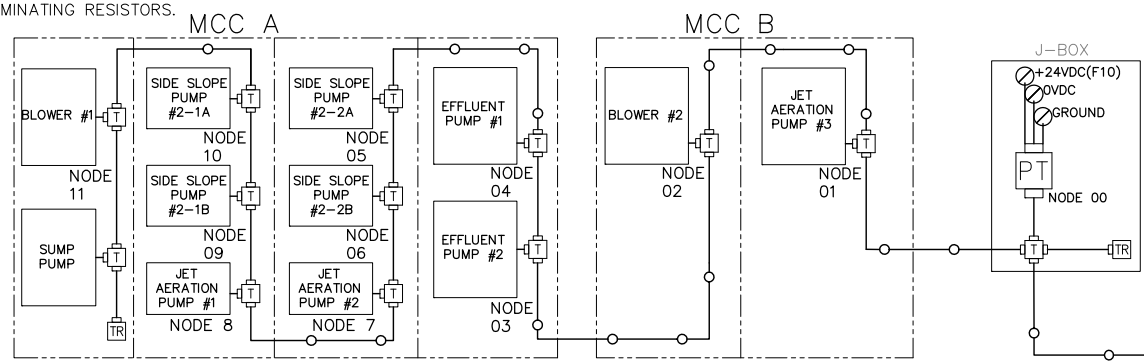
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1	1769-PB4	AB	24 VDC POWER SUPPLY	8	1769-ECL	AB	LEFT END CAP	15	-	-	CAT 5 ETHERNET CABLE, 2 PAIR, RJ 45
2	1769-L35E	AB	COMPACT LOGIX PROCESSOR (CPU)	9	1769-ECR	AB	RIGHT END CAP	16	-	-	ETHERNET RADIO W/ INTEGRAL ANTENNA
3	1769-IQ16	AB	16 POINT DISCRETE INPUT MODULE	10	-	-	CAT 5 ETHERNET CABLE, 2 PAIR, RJ 45	17			
4	1769-OB16	AB	16 POINT DISCRETE OUTPUT MODULE	11	2711P-T7C4D1	AB	PANELVIEW PLUS 700 TOUCH SCREEN	18			
5	1769-IF4	AB	4 POINT ANALOG INPUT MODULE	12	1769-SDN	AB	DEVICENET SCANNER	19			
6	1769-OF4	AB	4 POINT ANALOG OUTPUT MODULE	13	405TX	NTRON	NTRON ETHERNET SWITCH	20			
7	NOT USED			14	-	-	DEVICENET CABLE	21			

NOTE:

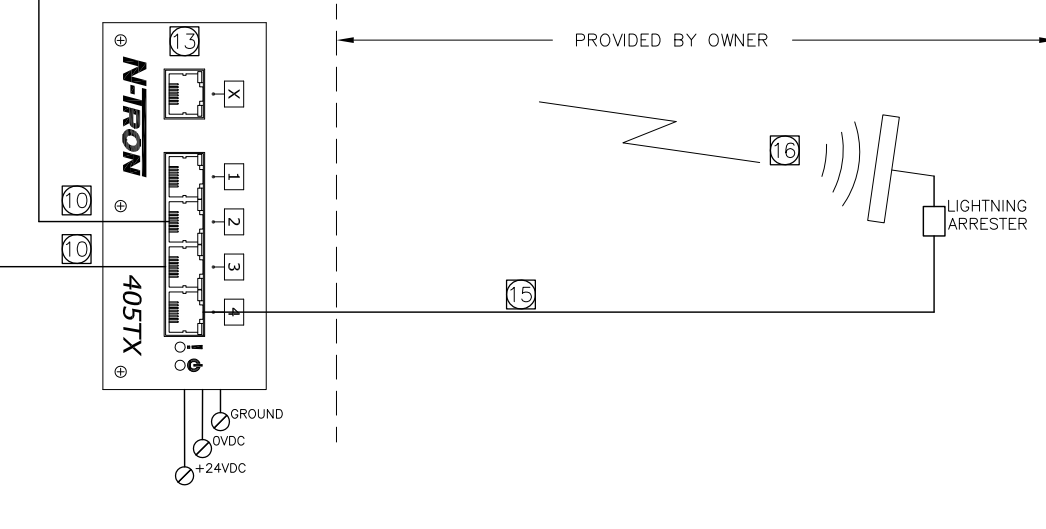
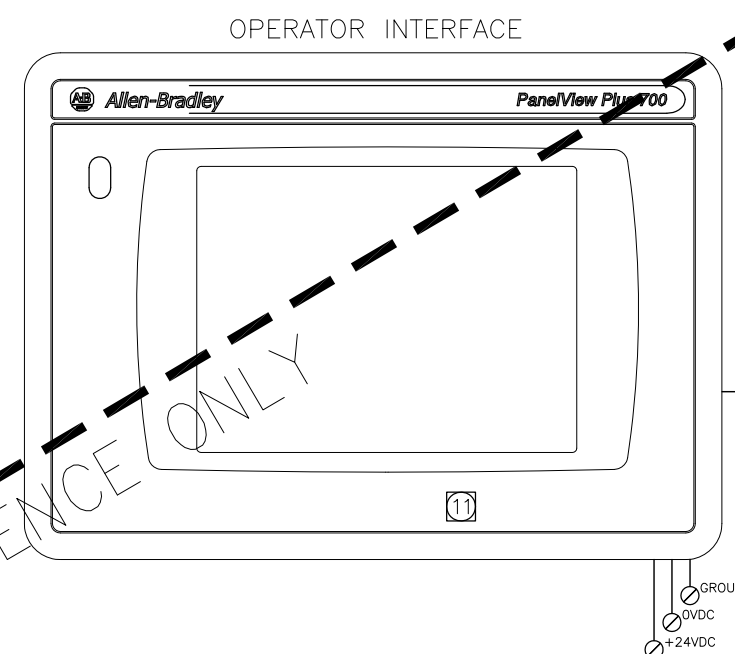
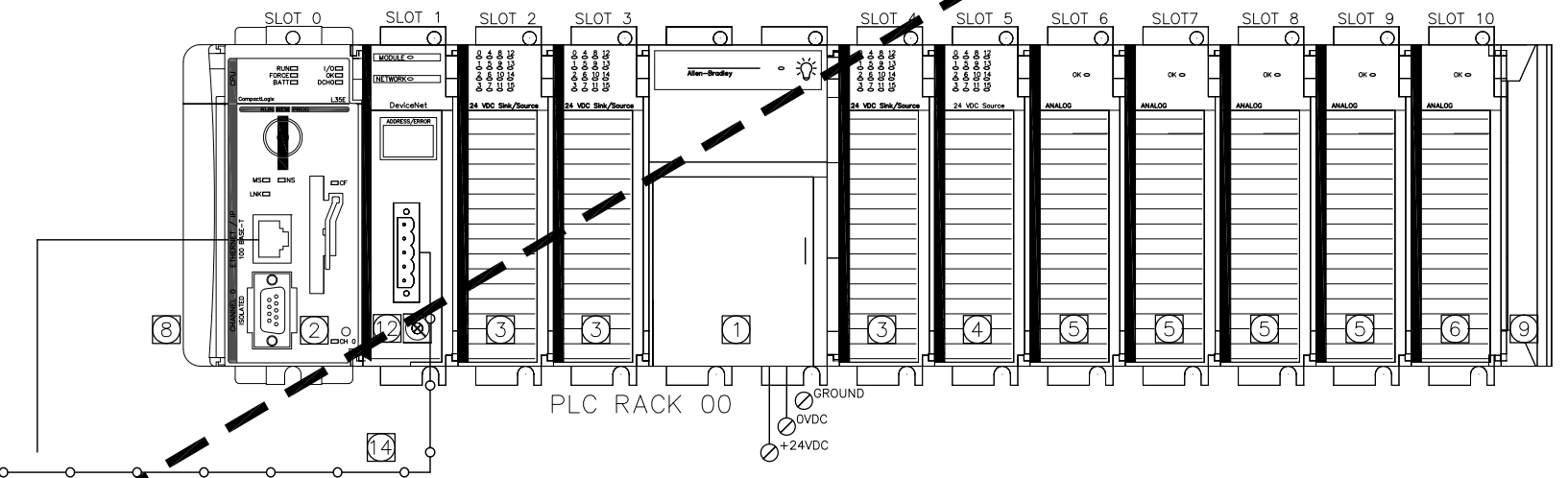
- FOR DETAILED DEVICENET INSTALLATION INCLUDING CABLE REQUIREMENTS, REFER TO ALLEN BRADLEY PUBLICATION DN-6.7.2
- TERMINATING RESISTORS MUST BE CONNECTED TO EACH END OF THE DEVICENET NETWORK. OMIT THE RESISTOR(S) IF THE DEVICE(S) ALREADY ARE EQUIPPED WITH INTERNAL TERMINATING RESISTORS.

LEGEND

- TERMINATING RESISTOR
- SINGLE PORT TAP
- POWER TAP
- DEVICENET CABLE



NOTE:
DEVICE ORDER AND ARRANGEMENT IS DIAGRAMATIC.
ARRANGE TO SUIT FIELD CONDUITS AND CONDITIONS.



1 CONTROL PANEL BLOCK DIAGRAM
E109 SCALE: NTS

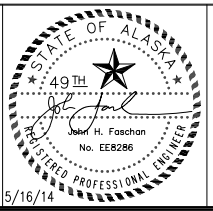
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May 13, 2014 5:02pm
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Xrefs: XBRISTOL ENVIRON UNALASKA PHASE 2 CELLS 2 AND 3 BORDER.DWG - Images: None

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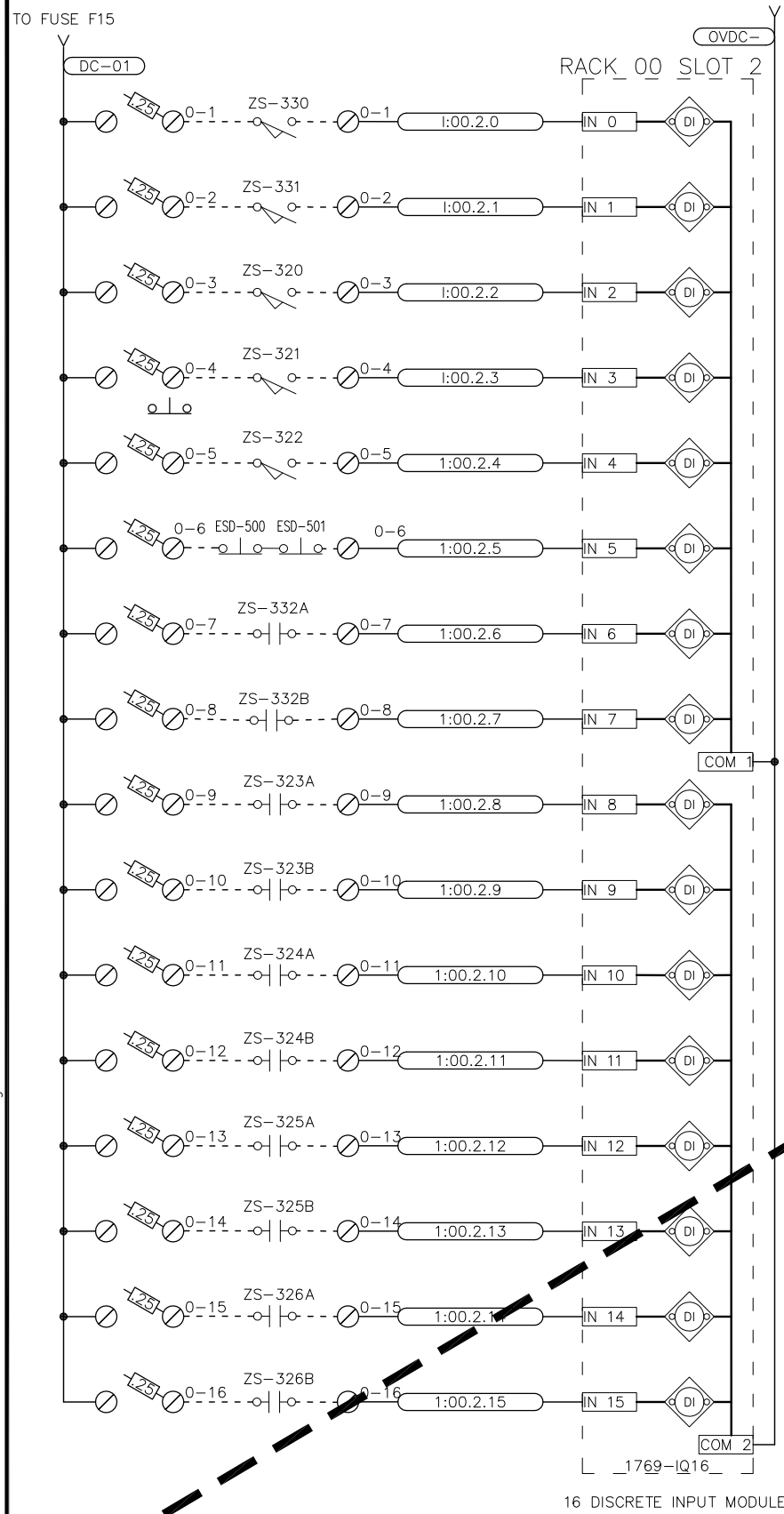


CITY OF UNALASKA
CELLS II-1 & II-2 LANDFILL EXPANSION
CONTROL PANEL BLOCK DIAGRAM

SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14 SHEET 38 OF 43

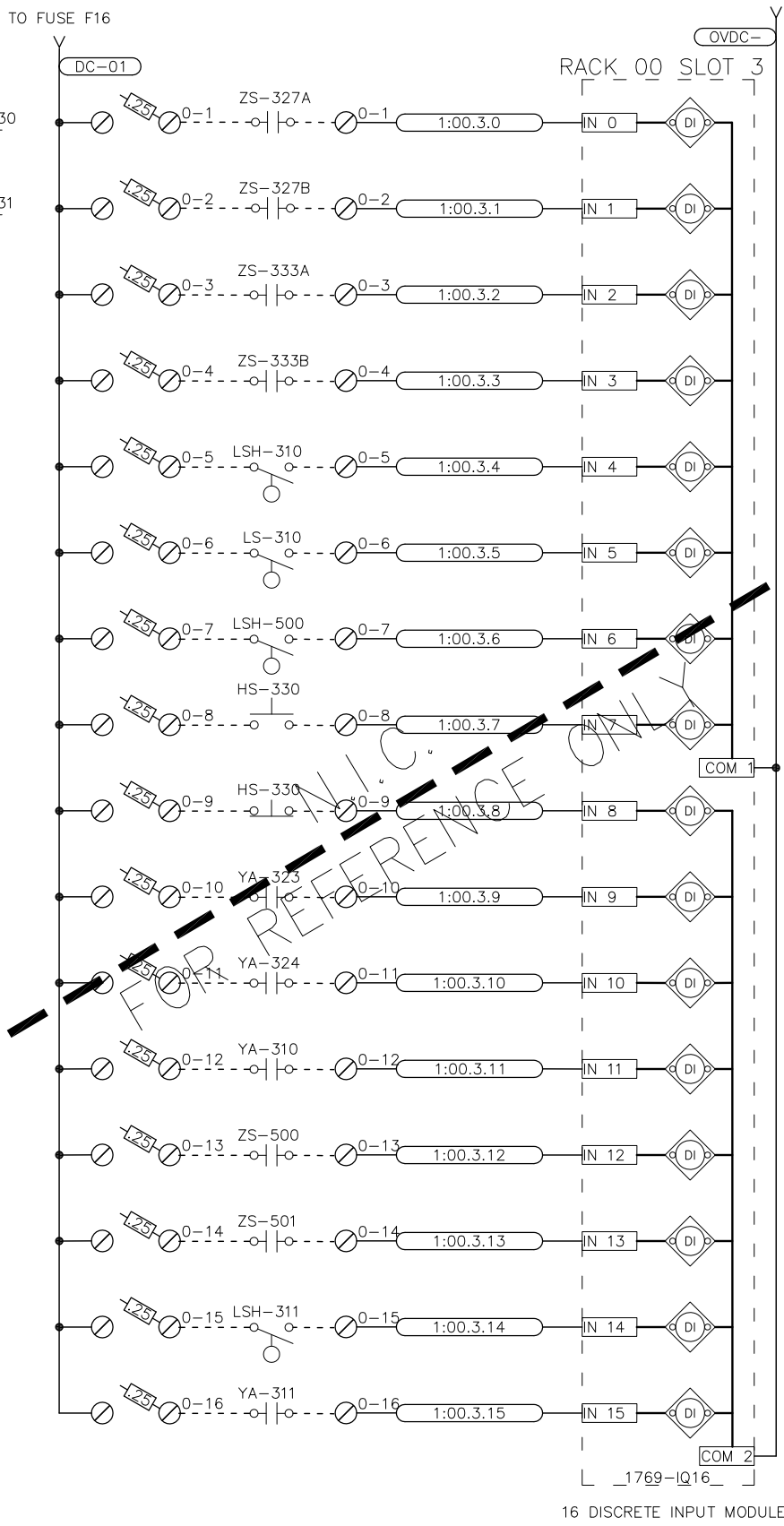
SHEET
E112

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 Xrefs: XBRISTOL ENVIRON UNALASKA PHASE 2 CELLS 2 AND 3 BORDER.DWG - Images: None



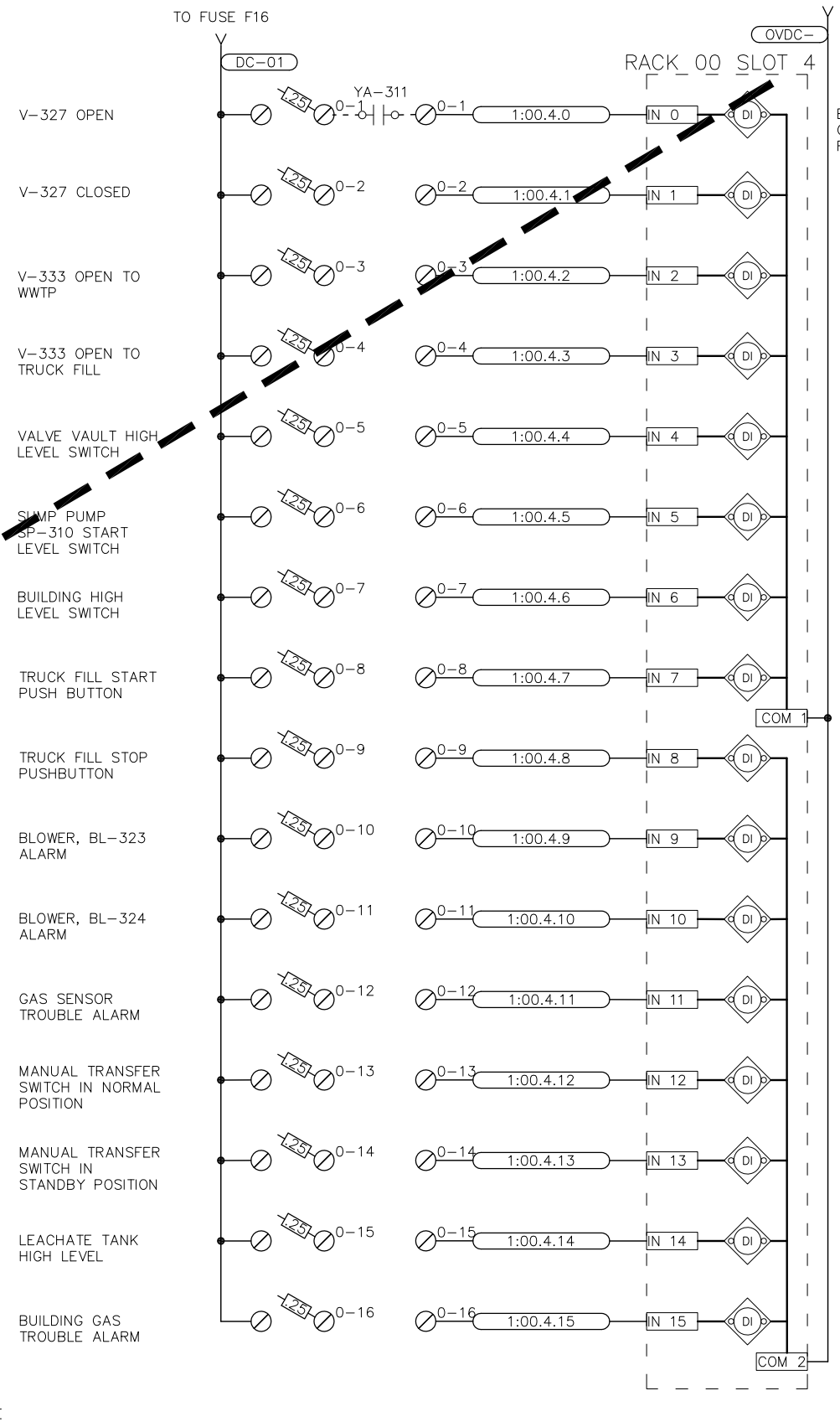
- EFFLUENT PUMP EP-330 CHECK VALVE OFFSEAT SWITCH
- EFFLUENT PUMP EP-331 CHECK VALVE OFFSEAT SWITCH
- JET AERATION PUMP AP-320 CHECK VALVE OFFSEAT SWITCH
- JET AERATION PUMP AP-321 CHECK VALVE OFFSEAT SWITCH
- JET AERATION PUMP AP-322 CHECK VALVE OFFSEAT SWITCH
- EMERGENCY SHUT DOWN, ESD
- EFFLUENT VALVE MOV-332 OPEN
- EFFLUENT VALVE MOV-332 CLOSED
- V-323 OPEN
- V-323 CLOSED
- V-324 OPEN
- V-324 CLOSED
- V-325 OPEN
- V-325 CLOSED
- V-326 OPEN
- V-326 CLOSED

16 DISCRETE INPUT MODULE



- V-327 OPEN
- V-327 CLOSED
- V-333 OPEN TO WWTP
- V-333 OPEN TO TRUCK FILL
- VALVE VAULT HIGH LEVEL SWITCH
- SLUMP PUMP SP-310 START LEVEL SWITCH
- BUILDING HIGH LEVEL SWITCH
- TRUCK FILL START PUSH BUTTON
- TRUCK FILL STOP PUSHBUTTON
- BLOWER, BL-323 ALARM
- BLOWER, BL-324 ALARM
- GAS SENSOR TROUBLE ALARM
- MANUAL TRANSFER SWITCH IN NORMAL POSITION
- MANUAL TRANSFER SWITCH IN STANDBY POSITION
- LEACHATE TANK HIGH LEVEL
- BUILDING GAS TROUBLE ALARM

16 DISCRETE INPUT MODULE



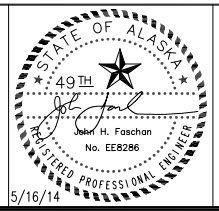
- BATTERY CHARGER FAULT
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE

1 CONTROL PANEL DISCRETE I/O
E110 SCALE: NTS

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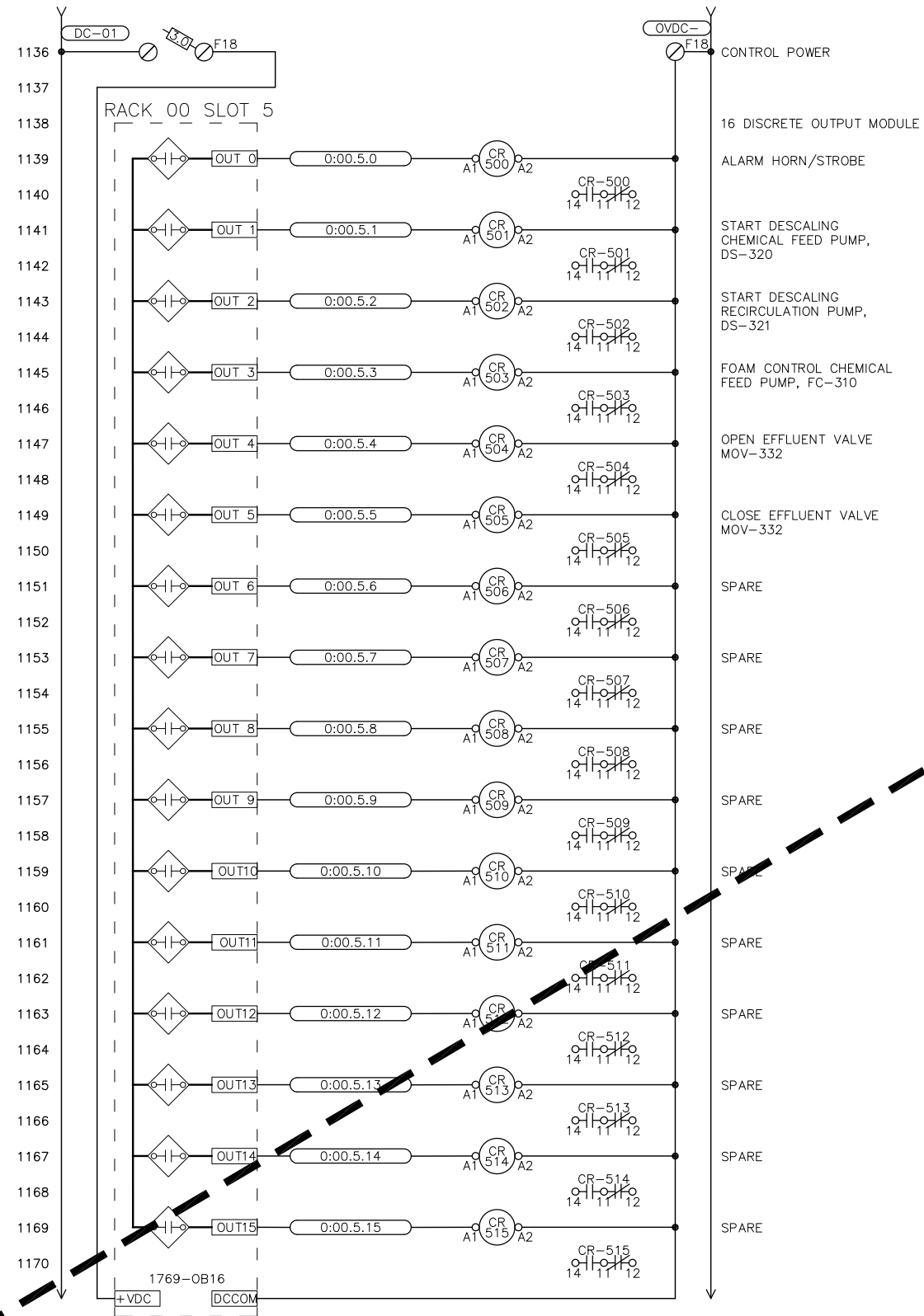


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
CONTROL PANEL DISCRETE INPUTS

SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14 SHEET 39 OF 43

SHEET
E113

May 13, 2014 - 5:02pm
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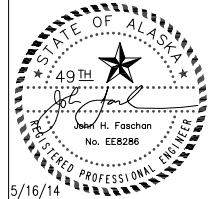


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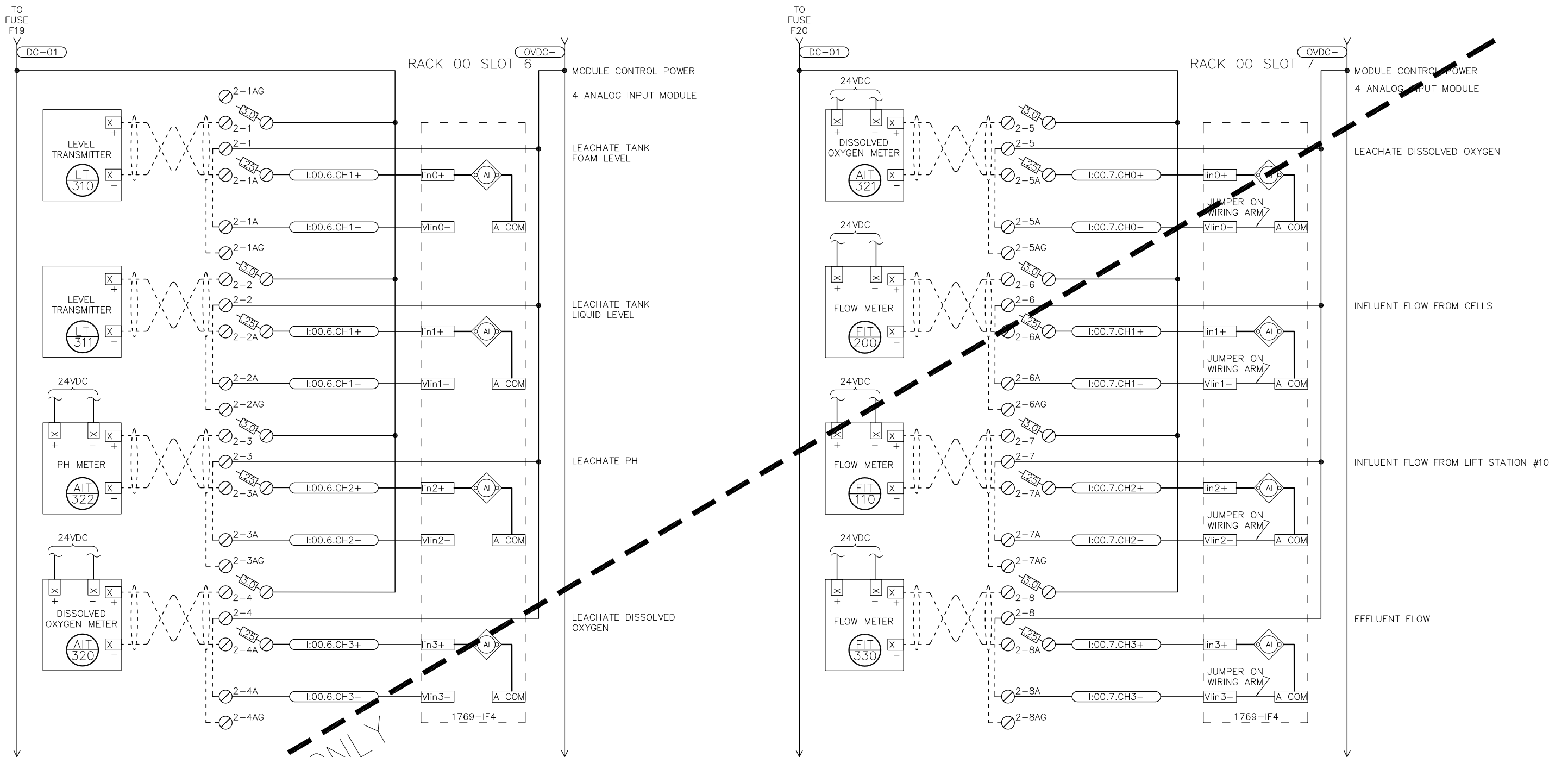


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CONTROL PANEL DISCRETE OUTPUTS				E114	
SCALE: SHOWN	DESIGNED: JHF	CHECKED: JHF	DRAWN:	DATE: 5/16/14	SHEET 40 OF 43

May 13, 2014 - 5:02pm
 Drawing: P:\PROJECTS\BRISTOL_ENVIRON\UNALASKA_LANDFILL_PH_2\DWGS\ELEC\E115 CONTROL PANEL ANALOG INPUTS
 Xrefs: XBRISTOL_ENVIRON_UNALASKA_PHASE_2_CELLS_2_AND_3_BORDER.DWG - Images: None



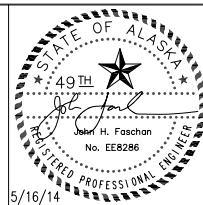
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1 CONTROL PANEL ANALOG I/O
 E111 SCALE: NTS

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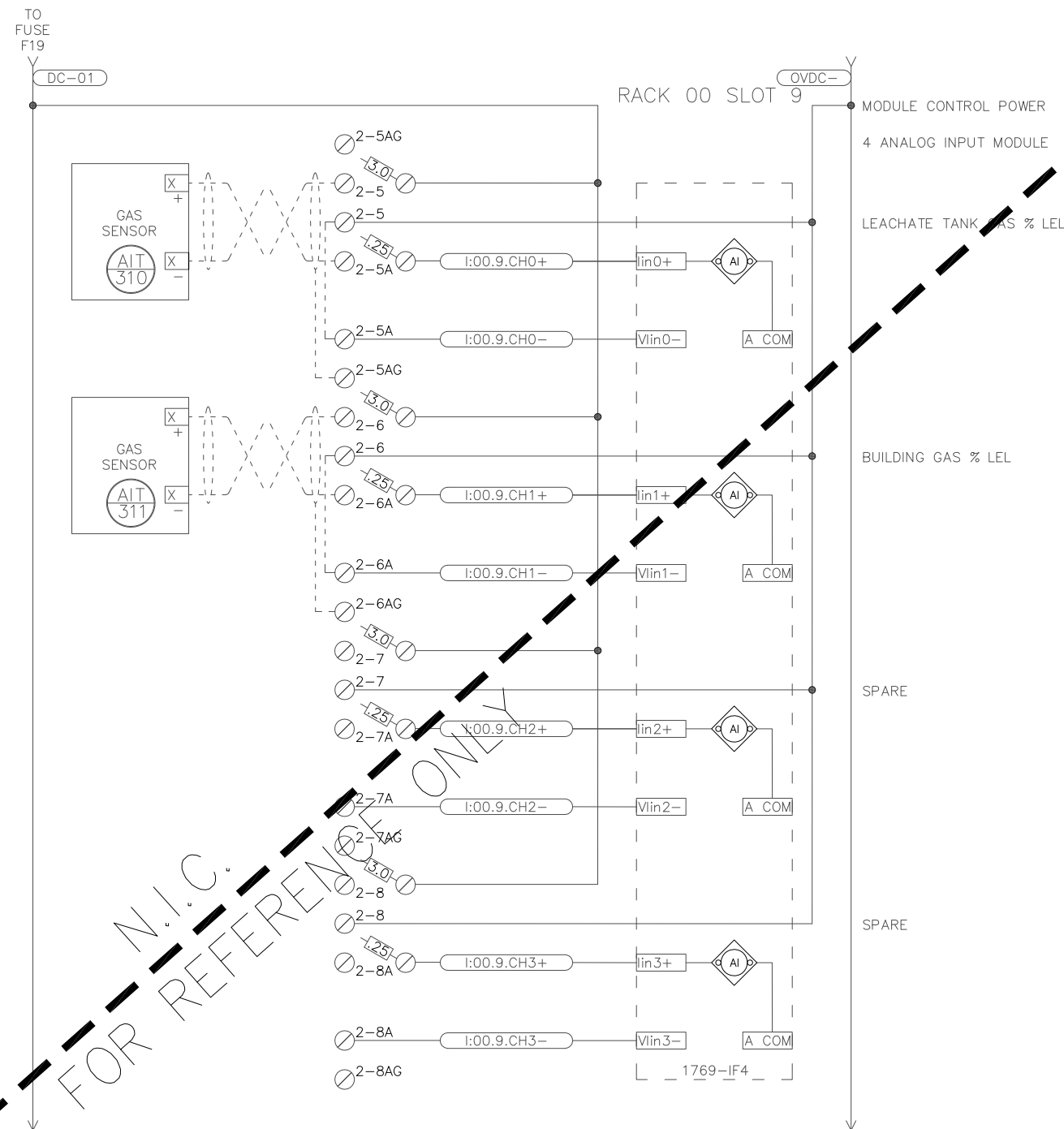
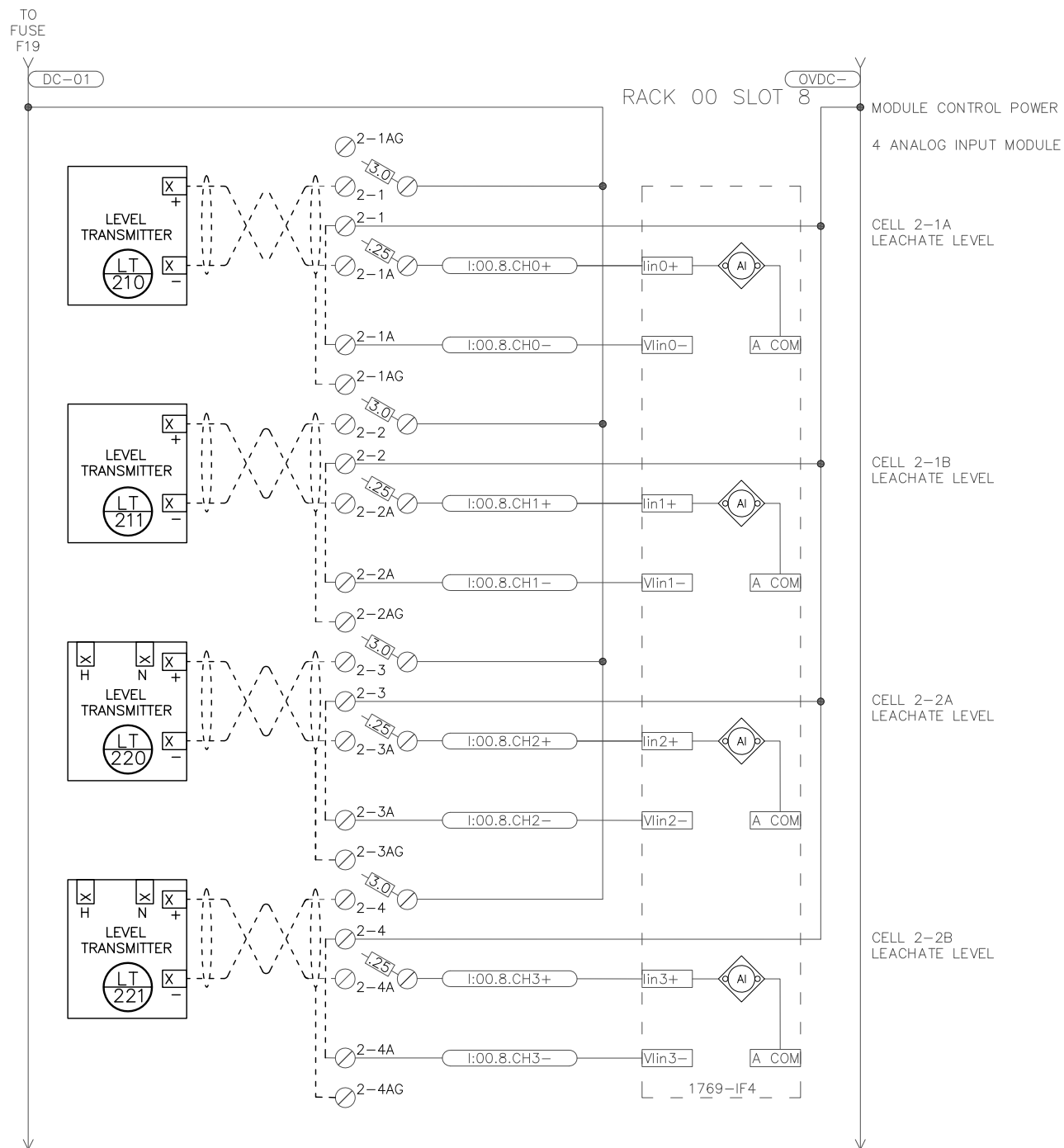


CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
CONTROL PANEL ANALOG INPUTS

SCALE: SHOWN	DESIGNED: JHF	CHECKED: JHF	DRAWN:	DATE: 5/16/14
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SHEET
E115
 SHEET 41 OF 43

May 13, 2014 - 5:02pm
 Drawing: P:\PROJECTS\BRISTOL ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E116 CONTROL PANEL ANALOG INPUTS
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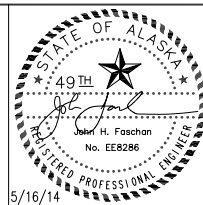
1 CONTROL PANEL ANALOG INPUTS
 E111 SCALE: NTS

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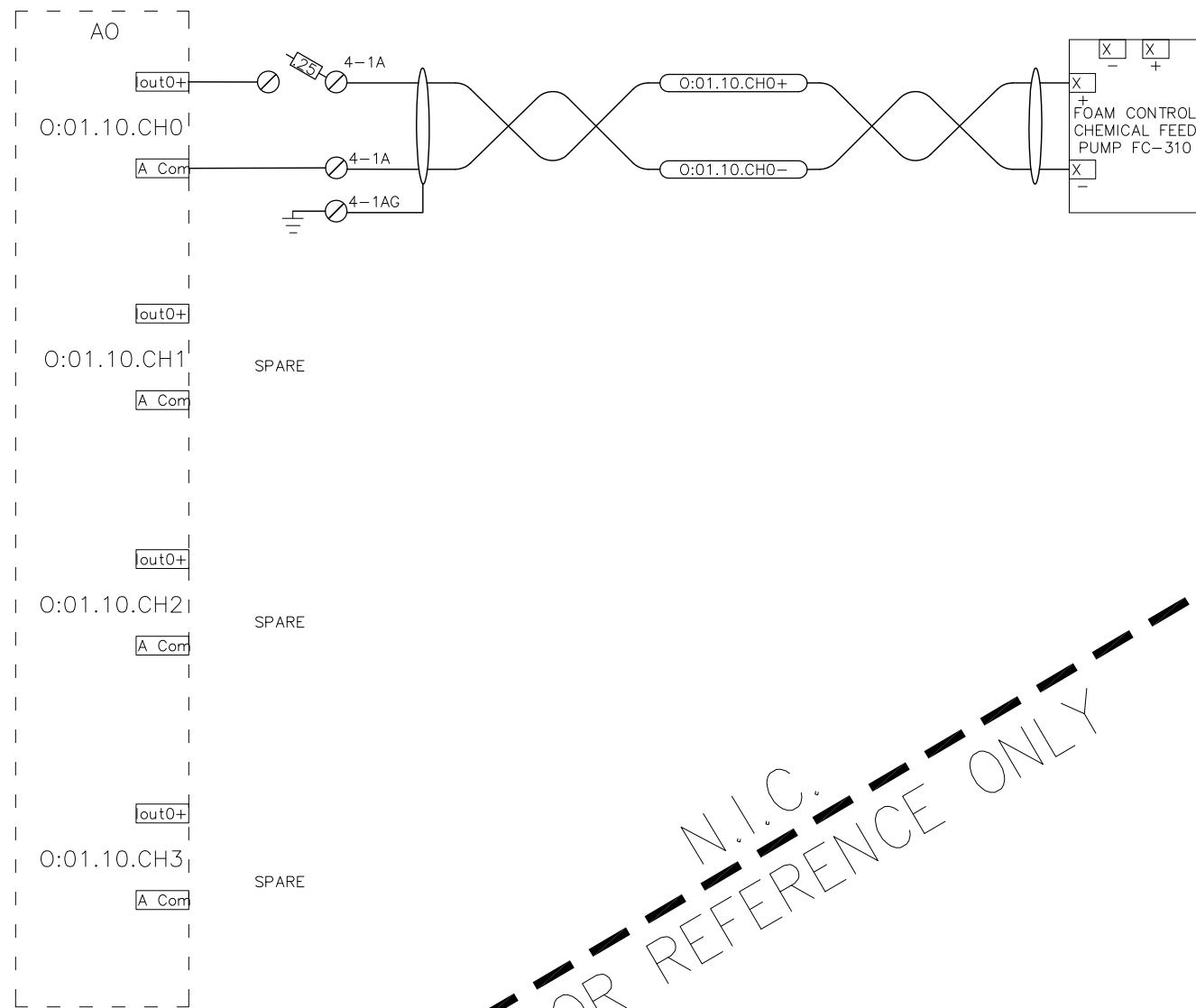
CITY OF UNALASKA
 CELLS II-1 & II-2 LANDFILL EXPANSION
CONTROL PANEL ANALOG INPUTS
 SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14 SHEET 42 OF 43

SHEET
E116
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May 13, 2014 - 5:02pm
 Drawing: P:\PROJECTS\BRISTOL ENVIRON\UNALASKA LANDFILL PH 2\DWGS\ELEC\E117 CONTROL PANEL ANALOG OUTPUTS.DWG - Layout: CONTROL PANEL ANALOG OUTPUTS
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RACK 00 SLOT 10

4 ANALOG OUTPUT MODULE



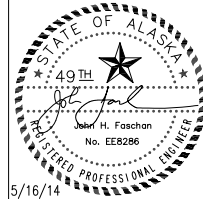
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1 CONTROL PANEL ANALOG INPUTS
 E111 SCALE: NTS

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CITY OF UNALASKA
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CONTROL PANEL ANALOG OUTPUTS
 SCALE: SHOWN DESIGNED: JHF CHECKED: JHF DRAWN: DATE: 5/16/14

SHEET
E117
 SHEET 43 OF 43